Date: August 11, 2015
To: Joseph Street, California Coastal Commission
From: Donna Gilmore
Re: San Onofre Spent Fuel Pool Island Project Application No. 9-15-0162 -- Response to SCE Comments on Staff Report

These are additional reasons the Coastal Commission should deny the permit for the Spent Fuel Pool Island Project. SCE should be required to provide evidence this system will work before it is approved by the Coastal Commission and should have the required NRC License Amendment. This is an unproven multi-million dollar project that needs additional analysis. SCE has provided no feasible alternatives if this system is not adequate. Please don't allow SCE to implement another San Onofre experiment in our Coastal communities.

- **NRC is now requiring a License Amendment for the new chiller spent fuel cooling system, including requiring the existing cooling system run parallel with the new chiller system, prior to granting an NRC License Amendment.** (SCE Comments on SFPI Staff Report). SCE also states the NRC License Amendment may take six months. There is no guarantee it will be approved. The fact that the NRC wants the systems to run parallel to the existing system is another serious indicator to not rush into this. NRC License Amendment approval should be granted prior to considering a Coastal permit. There is no reason to rush this project.

- **SCE's statement that "The Rancho Seco and Crystal River nuclear plants have very similar systems/configurations to that of the proposed project" is not true, or at best misleading.** Zion spent fuel pools were cooled with towers and not air chillers in their Spent Nuclear Fuel Island system. Therefore, this is not a comparable system to SCE's plan to cool San Onofre Spent Nuclear Fuel Pools with air chillers. In addition, Zion's fuel is much cooler than San Onofre's fuel. Zion's fuel cooled for many more years (> 18 years), has significantly fewer fuel assemblies, and has significantly fewer high burnup fuel assemblies (only 36 high burnup fuel assemblies).

  In Tom Palmisano's original list of nuclear plants using Spent Fuel Pool Islands, he states "Zion Unit 1 & 2 Pressurized water reactors (1040 MWe each) last operated in February, 1998 and Spent Fuel Nuclear Island Pool Cooling System implemented after final shutdown." Zion did shutdown in February 1998 and implemented a "Spent Fuel Nuclear Island Pool Cooling System" after final shutdown. However, they implemented a cooling tower system, not an air chiller system. (Zion unloaded the pools this year).

  SCE has provided no evidence that air chillers have ever been used for primary spent fuel pool cooling, other than at Rancho Seco, which is not comparable, as explained in my previously submitted comments.

- **If this unproven chiller system does not work adequately or is not maintainable for the needed lifespan, it is not feasible to convert to something different**. SCE has provided no evidence there is another cooling system they could implement other than leaving the existing system installed or installing a cooling tower(s). Cooling towers are

extremely expensive and can cost billions of dollars and have many other impacts. Examples of this are in SCE's *Feasibility Study for Installation of Cooling Towers at San Onofre Nuclear Generating Station*, September 2009. It's not directly comparable to cooling both reactors and spent fuel pools, but contains many of the same issues. http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/powerplants/san_onofre/docs/so_study2009sept18.pdf

SCE's idea of having spare parts assumes they will be able to access and repair the system in a timely fashion. That is not adequate for a system that must continually operate with minimal down time.

- **SCE Cover letter to Staff Comments stating SCE's goal of reducing safety standards, such as seismic, is unacceptable.** Please verify the system meets seismic standards based on current USGS seismic data.

This is an unproven multi-million dollar project. SCE should be required to provide evidence this system will work before it is approved by the Coastal Commission and should have the required NRC License Amendment prior to the Coastal Commission considering this. Please don't allow SCE to implement another San Onofre experiment in our Coastal communities.

References on following pages.

Thank you.

REFERENCES

- SCE Comments on SFPI Staff Report – Letter, 8/7/2015
https://sanonofresafety.files.wordpress.com/2011/11/20150807-sfpi-comments-staff-rpt-cvr-ltr.pdf

- SCE Comments on SFPI Staff Report – Table, 8/6/2015
https://sanonofresafety.files.wordpress.com/2011/11/20150806-sfpi-comments-staff-rpt-table.pdf

- NRC Inspection Report 50-295/99004(DNMS); 50-304/99004(DNMS), Zion 1 and 2, February 29, 2000 http://pbadupws.nrc.gov/docs/ML0036/ML003692912.pdf

  Page 6
  (Closed) IFI 50-295/1994009-01 and 50-304/19994009-01(DNMS) "Service Water Concerns: **The spent fuel cooling system is now being cooled by cooling towers** that are supplied water by the city water system. The status of the service water system heat exchangers and throttled valve position have no bearing on the safe storage of spent fuel in the SFP. Therefore this item is not applicable to a permanently shutdown/decommissioning reactor.

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  The licensee had finished work on converting the spent fuel pool area into a clear SFNI [Spent Fuel Nuclear Island].

  As a result of installation of the new cooling system, the existing component cooling water system that previously supplied the spent fuel pool heat exchangers with cooling water was isolated from the heat exchangers and the new secondary loop cooling water was routed to the shell side of the heat exchangers.

  Control room annunciation for abnormal secondary loop cooling system conditions is provided. Cooling tower fan operation is automatic based on spent fuel pool temperature. A cooling tower by-pass line was provided for when heat removal is not required to maintain the temperature of the SFP in the normal range (less than 120°F.) Cooling tower reservoir heaters were provided to prevent freezing in the outside towers.

  SFNI electrical power is supplied from two new 12 kV independent Zion City Power Lines. Two new 480 volt step-down transformers have also been installed on power poles near the two cooling towers. The new system's electrical supply is independent from the 345 kV plant switch-yard ring bus and is not routed through any other electrical system onsite. The SFNI is no longer dependent on the station's auxiliary power system.

- Submittal of Defueled Safety Analysis Report Update, Revision 8, 10 CFR 50.59 Report of Changes, Tests and Experiments, 10 CFR 72.48 Report of Changes, Tests and Experiments Permanently Defueled Technical Specifications Bases Change Update, October 1, 2014 http://pbadupws.nrc.gov/docs/ML1427/ML14279A196.pdf

  Page 3-iv & 4.7
  3.10.1 Spent Fuel Pool Secondary Loop Cooling System 3-43a
  3.10.1.1 Design Basis 3-43a
  3.10.1.2 System Description 3-43a
  3.10.1.3 Components 3-43b
  3.10.1.3.1 **Cooling Tower** 3-43b
  3.10.1.3.2 Cooling Pumps 3-43b
- Fuel Loading Plan for Dry Storage & Transport, Zion Nuclear Power Station, March 03, 2011 Presentation to NRC http://pbadupws.nrc.gov/docs/ML1106/ML110610164.pdf

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  • **High Burn Up Fuel: 36 assemblies** (45,000 MWd/MTU and higher)
  • High Reactivity Fuel: – low burnup with higher initial enrichment
  • **All fuel well under thermal limit (>14 yr cooled [in 2011])**

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  ZNPS Loading Plan – Place 36 fuel assemblies with nominal burn up > 45 GWd/MTU in Damaged Fuel Cans

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  • 2,226 assemblies in 61 MAGNASTOR canisters
  • Damaged [approx 10 assemblies] & High Burnup Fuel [36 assemblies]
  – Load in Damaged Fuel Cans (~10 + 36)

- NRC Docket Nos. 50–295 and 50–304; NRC–2015–0168, ZionSolutions, LLC, Zion Nuclear Power Station, Units 1 and 2, Federal Register Vol. 80, No. 144, July 28, 2015, pp 45003 – 45005 http://www.gpo.gov/fdsys/pkg/FR-2015-07-28/pdf/2015-18474.pdf

  Zion Nuclear Power Station (ZNPS), Units 1 and 2 were permanently shut down in February 1998, for economic reasons. As of January 12, 2015, all of the spent fuel at the ZNPS had been transferred to the ZNPS ISFSI.

- License Amendment Request for Proposed Revision to Zion Nuclear Power Station Defueled Station Emergency Plan and Request for Exemption from Certain Requirements of 10 CFR 50.47, and 10 CFR 50, Appendix E, 5/27/2014
  http://pbadupws.nrc.gov/docs/ML1414/ML14148A295.pdf

  Page 2-2: Sixty-one (61) VCCs [canisters] are used for the storage of spent fuel.

- Feasibility Study for Installation of Cooling Towers at San Onofre Nuclear Generating Station, September 2009
  http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/powerplants/san_onofre/docs/so_study2009sept18.pdf

  Executive Summary
  This feasibility study was conducted to determine if closed-loop cooling could be engineered for SONGS given the site-specific constraints and, if closed-loop cooling was possible, to provide a comprehensive description of the major elements necessary to retrofit SONGS Units 2 and 3 to closed-looped cooling. It should be noted that no nuclear stations designed solely for once-through cooling have been converted to closed-loop cooling; any closed-loop conversion design would be unprecedented and would present inherent uncertainties.

  Retrofitting SONGS with a closed-loop cooling system would be challenged with insuperable permitting obstacles, unparalleled – "one of a kind" – engineering challenges, adverse environmental impacts likely greater than those imposed by once-through cooling, and initial costs exceeding $3.0 billion. The closed-loop cooling system would be thermodynamically inferior to the present system which would result in a significant reduction in generating capacity up to 191 MWe. The potential for decreased electrical output from a non-carbon emitting source would only serve to undermine the State's ability to meet its greenhouse gas emissions reduction goals under California Assembly Bill AB 32.

  Several studies on the possibility of converting SONGS to closed-loop cooling were completed prior to this assessment, with each study concluding that a retrofit of SONGS to closed-loop cooling would be feasible; however, these studies neglected to identify or resolve site-specific land use constraints, environmental impacts (in particular air emission limitations), or conversion cost issues. This feasibility study identifies the substantial land use constraints, initial costs exceeding $3.0 billion dollars and annual costs exceeding $85 million, considerable losses in generation during conversion and during post-retrofit operation, significant adverse environmental impacts, and likely insurmountable permitting obstacles which would be encountered if SCE were to attempt to retrofit SONGS with closed-loop cooling.