Attachment 6a

SONGS Spent Fuel Storage:

Offsite and Onsite Location Alternatives

SONGS SPENT FUEL STORAGE: OFFSITE AND ONSITE LOCATION ALTERNATIVES

1.0 PURPOSE

Southern California Edison (SCE) and the co-owners are in the process of decommissioning the San Onofre Nuclear Generating Station (SONGS). SONGS is located on land subject to an easement granted by the Department of the Navy (Navy), which will expire in May 2024. SCE is currently storing spent fuel in both wet and dry storage facilities onsite in a safe and secure manner, and will continue to do so until an interim storage facility becomes available or the U.S. Department of Energy (DOE) accepts the spent fuel from the site for permanent disposal in a high level waste repository. SCE is aligned with many stakeholders who believe that DOE should act as soon as possible and fulfill its contractual obligation to remove spent fuel from commercial nuclear power plants, with priority given to those plants that are decommissioning or already have decommissioned. SCE supports all reasonable and safe options for storage and eventual disposal of spent fuel.

This paper evaluates potential dry storage alternatives for SONGS spent fuel at locations either outside of the SONGS site (i.e., the easement area) or at other locations at or adjacent to the existing SONGS site.

2.0 SUMMARY CONCLUSION

No facilities are currently available or feasible for storing spent fuel from SONGS at offsite locations. A study of alternative locations onsite or adjacent to the SONGS site indicates that the existing pad for dry spent fuel storage is the optimal location for the expanded Independent Spent Fuel Storage Installation (ISFSI).

3.0 BACKGROUND

3.1 Legal and Regulatory Provisions Related to the Storage and Disposal of Spent Fuel

In accordance with the Nuclear Waste Policy Act of 1982, DOE has responsibility for establishing a repository for the disposal of spent fuel. DOE has not yet established such a repository. Accordingly, spent fuel is currently being temporarily stored at various sites throughout the United States, mostly at the sites of nuclear power plants.

The Nuclear Regulatory Commission (NRC) has responsibility for regulation of nuclear power plants. Nuclear power plants are licensed by the NRC pursuant to 10 CFR Part 50 (or Part 52 for newer plants).

Nuclear power plants have pools for cooling and storing spent fuel. However, the spent fuel pools (also referred to as "wet storage") do not have the capacity to hold the total amount of

spent fuel generated over the lifetime of a plant. Therefore, most plants have established ISFSIs (also referred to as "dry storage") at their sites. An ISFSI may also be located outside the plant site, typically on adjacent land owned by the utility. If the ISFSI is located outside the NRC licensed area, a new or amended NRC license is required. The NRC has concluded that storage of spent fuel in either a pool or an ISFSI is safe.

The NRC regulates ISFSIs pursuant to 10 CFR Part 72. Part 72 provides for two types of licenses for ISFSIs:

- General License – Under its existing license issued pursuant to 10 CFR Part 50 or Part 52, a nuclear power plant is licensed to store spent fuel in its spent fuel pool and automatically obtains a general license for an ISFSI by satisfying the requirements in Subpart K to 10 CFR Part 72, without the need for submitting an application to the NRC, obtaining NRC approval, or being subject to hearing at the request of an interested member of the public.

- Specific License – A person who desires to construct and operate an ISFSI away from the site of a nuclear power plant (or that otherwise cannot satisfy the requirements in Subpart K of Part 72) must apply for a specific license from the NRC. The application for a specific license for an ISFSI is subject to review and approval by the NRC and an opportunity for hearing by an interested member of the public.

3.2 Storage of Spent Fuel at SONGS

Pursuant to, and as part of, its license to operate a power reactor under 10 CFR Part 50, SONGS has two spent fuel pools and an ISFSI that are authorized, constructed, operated, and maintained under that general license. A total of 1,726 spent fuel assemblies have been generated in SONGS Unit 2 and 1,734 spent fuel assemblies have been generated in SONGS Unit 3, for a total of 3,460 spent fuel assemblies. At present, 2,668 spent fuel assembles are located in the SONGS spent fuel pools. In addition, 395 spent fuel assemblies from SONGS Unit 1 and 792 spent fuel assemblies from SONGS Units 2 and 3 are stored in the existing ISFSI, which is located within the Navy easement area on the SONGS site.[1]

No additional NRC authorization is required for expansion of the ISFSI at the SONGS site. To allow for the completion of decommissioning, SCE will request Navy authorization to extend the term of its existing easement[2] until 2051, when SCE expects that the DOE will have accepted the spent fuel at a DOE repository;[3] the NRC will have terminated its license for SONGS; and SCE will have restored the site in accordance with applicable requirements.

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[1] *See* SONGS Units 2 and 3 Irradiated Fuel Management Plan, p. 2; publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML14269A032.

[2] SCE understands that the Navy will likely issue SCE a new lease for use of the SONGS site rather than extending the term of the existing easement.

[3] As explained in SCE's September 2014 Post Shutdown Decommissioning Activities Report submitted to the NRC (publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML14269A033), the 2051 date is based on the assumption that the DOE will begin accepting spent fuel from SONGS in 2024 and

In 2000, the California Coastal Commission (CCC) issued a Coastal Development Permit (CDP) for construction of a temporary spent fuel storage facility for Unit 1. In 2001, the CCC issued a CDP for construction of the existing Units 2 and 3 ISFSI. SCE is planning to expand the ISFSI to accommodate the remaining inventory of spent fuel in the SONGS Units 2 and 3 spent fuel pools. Therefore, SCE is now requesting the CCC to approve an expansion of the ISFSI.

There will be significant cost savings for the benefit of SCE's ratepayers by completing the transfer of spent fuel to the ISFSI in a timely manner. In addition, many stakeholders in the vicinity of SONGS have expressed a preference for storage of spent fuel in an ISFSI rather than in spent fuel pools. Subject to completion of the CCC permitting process for the expanded ISFSI, SCE plans to commence the movement of the remaining spent fuel from the Unit 2 and Unit 3 pools to the ISFSI in 2017, and expects to complete the transfer in 2019.[4]

The following sections address the issue of whether there are any alternatives to the expansion of the SONGS ISFSI on the existing pad, either currently or during the next several years when the fuel is scheduled to be moved from the pools to the ISFSI.

4.0 EVALUATION OF OPTIONS FOR STORING SPENT FUEL OFFSITE

There are several potential options for storing SONGS spent fuel at offsite locations:

- Disposing of spent fuel in a DOE permanent high level waste repository or storing spent fuel in a DOE-operated monitored retrievable storage facility
- Storing spent fuel at an existing ISFSI owned and operated by a third party
- Storing spent fuel at an ISFSI to be developed in the future by a third party
- Storing spent fuel at an away-from-reactor ISFSI to be developed by SCE

Each of these options is evaluated below.

4.1 Disposing of Spent Fuel in a High Level Waste Repository or Storing Spent Fuel in a Monitored Retrievable Storage Facility

In 2008, DOE applied to the NRC for a license to dispose of spent fuel at a high level waste repository at Yucca Mountain, Nevada. However, that application received strong opposition from the State of Nevada, as well as from several local governments. The State petitioned to intervene in the application proceeding, and approximately 300 contentions were accepted for litigation. Following the election in 2008, the Obama administration decided not to pursue the license application. In 2010, DOE filed a motion with the NRC seeking permission to withdraw

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will accept the last spent fuel from SONGS in 2049. These dates were calculated based on the previously documented positions of the DOE, which indicate where the SONGS fuel is placed in the queue for spent fuel shipments from the industry.

[4] *See* SONGS Units 2 and 3 Irradiated Fuel Management Plan, p. 2; publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML14269A032.

its application for the Yucca Mountain repository. Although the motion was denied by the NRC, the NRC hearing process was suspended in 2011 for lack of funding from Congress.[5]

Currently, no repositories exist in the United States for permanent disposal of spent nuclear fuel, nor has such a repository been licensed. Furthermore, there are no near term prospects for licensing and development of a permanent repository. Therefore, shipment of SONGS spent fuel to a permanent DOE repository is not a viable alternative to the SONGS ISFSI at this time.[6]

Section 141 of the Nuclear Waste Policy Act calls for DOE to develop a monitored retrievable storage (MRS) facility for the long-term storage of spent fuel. However, Section 148 of the Act links such a facility to the development of a repository. In particular, the Act prohibits construction of a MRS facility until the NRC has issued a license for a repository. Furthermore, a site for a MRS facility has not yet been proposed for licensing, due to opposition by states that were being considered as potential sites for the facility.[7] Thus, a MRS facility is not currently available for long-term storage of spent fuel, and there are no near term prospects for such a facility.

In light of the decision not to pursue the license application for the repository at Yucca Mountain, President Obama formed the President's Blue Ribbon Commission on America's Nuclear Future in 2010. The purpose of the Blue Ribbon Commission was, in part, to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle and recommend a new strategy.

A key finding of the Blue Ribbon Commission is that local consent is vital to establishing a high level waste repository.[8] This conclusion was based not only upon the Blue Ribbon Commission's consideration of the events related to the Yucca Mountain facility and a MRS facility, but also its review of spent fuel storage facilities (which are discussed in the sections below). As stated by the Commission:

> As is clear from even this very short account of past efforts to site consolidated storage facilities for [spent fuel], it has proved difficult to locate a site that has enough community and state support to succeed.[9]

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[5] *See* U.S. NRC – Backgrounder on Licensing Yucca Mountain; available at http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/yucca-license-review.html.

[6] Section 302(a)(5) of the Nuclear Waste Policy Act of 1982, 42 U.S.C. § 10222(a)(5), required DOE to begin to dispose of spent fuel approximately 15 years after passage of the Act. DOE did not meet that date and has no facility capable of receiving spent fuel from nuclear power plants for disposal.

[7] *See* Blue Ribbon Commission on America's Nuclear Future, "Report to the Secretary of Energy" (Jan. 2012), pp. 22-23; available at http://energy.gov/sites/prod/files/2013/04/f0/brc_finalreport_jan2012.pdf.

[8] *Id.* at pp. viii-x.

[9] *See* Blue Ribbon Commission on America's Nuclear Future, "Transportation and Storage Subcommittee Report to the Full Commission, Updated Report" (Jan. 2012), p. 60; available at http://cybercemetery.unt.edu/archive/brc/20120620215746/http://brc.gov/sites/default/files/documents/final_updated_ts_report_012612.pdf.

SCE is hopeful that the Blue Ribbon Commission's findings will help the DOE move forward with obtaining a NRC license for a spent fuel repository.

4.2 Storing Spent Fuel at an Existing ISFSI Owned and Operated by a Third Party

There are 66 existing ISFSIs owned and operated by third parties in the United States. They consist of the following facilities:[10]

- 53 ISFSIs are located at the sites of nuclear power reactors and are each the subject of a general license issued by the NRC pursuant to Subpart K of 10 CFR Part 72. As provided in 10 CFR § 72.212, the general license for those ISFSIs is limited to storage of spent fuel that is authorized for possession under the 10 CFR Part 50 reactor license for that site. Therefore, those ISFSIs cannot accept spent fuel from SONGS.

- 12 ISFSIs are located at the site of a nuclear power reactor and are the subject of a specific license issued by the NRC pursuant to Subpart K of 10 CFR Part 72. Those ISFSIs include several in California, including the sites of the Humboldt Bay, Rancho Seco, and Diablo Canyon nuclear power plants. However, the ISFSI license for each of those plants limits the ISFSI to storage of spent fuel generated by that plant.[11] Therefore, those ISFSIs cannot accept spent fuel from SONGS.

- GE-Hitachi owns and operates an ISFSI at Morris, Illinois. When the NRC renewed the license for the Morris facility in 2004, it did not authorize the facility to receive any more spent fuel but only to continue to store the spent fuel that was on the site.[12] Accordingly, the Morris ISFSI cannot accept spent fuel from SONGS Units 2 and 3.[13]

In theory, it might be possible for an existing ISFSI to request NRC approval of a license amendment to allow it to store spent fuel from SONGS. However, such a license amendment request would likely generate substantial public opposition. It is unlikely that any of the licensees of those ISFSIs will want to incur such opposition or to store spent fuel generated by another company. Furthermore, a license amendment proceeding would likely be quite lengthy. For

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[10] *See* U.S. Independent Spent Fuel Storage Installations (July 2013), publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML13197A187.

[11] *See* Humboldt Bay ISFSI License SNM-2514 (Nov. 17, 2005); Rancho Seco ISFSI License SNM-2510 (June 30, 2000); Diablo Canyon ISFSI License SNM-2511 (Mar. 22, 2004); publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ accession numbers ML053220339, ML003729742, and ML040780221, respectively.

[12] *See* NRC Safety Evaluation Report, Docket No. 72-1, Independent Spent Fuel Storage Installation in Morris, Illinois (Dec. 21, 2004), pp. 1-3, publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ accession number ML043630514. The Morris facility was initially envisioned as a facility for reprocessing spent fuel, and received spent fuel from nuclear plants for that purpose. GE eventually decided not to reprocess spent fuel, and the facility was converted into an ISFSI. The ISFSI is currently full.

[13] The Morris ISFSI currently stores some spent fuel from SONGS Unit 1. *See* NRC Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, NUREG-2157 (Sept. 2014), p. 2-7; available at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2157/.

example, in 1978, Duke Power Company applied for a license amendment to ship spent fuel assemblies from its Oconee nuclear power plant and to store them in the spent fuel pools at its McGuire nuclear power plant. There were a number of petitions to intervene and requests for hearing on the license amendment request. As a result of that litigation, NRC authorization for the license amendment was delayed for years and was not issued until 1981.[14] Thus, even if a willing licensee could be found and the NRC were to eventually grant such a license amendment, it is highly unlikely that an existing third party ISFSI would be available to accept spent fuel from SONGS in the near term. Because the likelihood of successfully being able to store SONGS spent fuel at such a location is too speculative, SCE must plan for an ISFSI expansion at SONGS.

In summary, none of the existing ISFSIs owned and operated by third parties are viable options for storage of spent fuel from SONGS at this time.

4.3 Storing Spent Fuel at an ISFSI to be Developed by a Third Party

Third parties could seek to develop an ISFSI that could accept SONGS spent fuel. Possible ISFSIs are discussed below.

4.3.1 ISFSIs to be Developed Under a General License

Eleven nuclear power plant sites are pursing general licenses for ISFSIs pursuant to Subpart K of 10 CFR Part 72.[15] As discussed above, an ISFSI with a general license is only eligible to store spent fuel authorized to be possessed under the specific license for the nuclear power reactor at the site of the ISFSI. A licensee with an ISFSI developed under a general license could seek an amendment to its license to authorize receipt of spent fuel from SONGS. Any such license amendment would likely be controversial, and it would likely take several years to obtain such an amendment. Moreover, it would be difficult, if not impossible, to persuade another reactor licensee to accept possession of the SONGS spent fuel at its reactor site. Accordingly, such an ISFSI is not a viable option for storage of spent fuel from SONGS.

4.3.2 ISFSI to be Developed by Private Fuel Storage

Private Fuel Storage (PFS) is a consortium consisting of a number of licensees of nuclear power plants for the purpose of developing an ISFSI for their spent fuel.[16] PFS has a specific license issued by the NRC for an ISFSI pursuant to 10 CFR Part 72. The ISFSI would be located on the Reservation of the Skull Valley Band of Goshute Indians in Utah. PFS submitted its license application to the NRC on June 20, 1997. The application was opposed by the State of Utah,

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[14] *Duke Power Co.* (Amendment to Materials License SNM-1773 – Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), LBP-80-28, 12 NRC 459 (1980); *rev'd* ALAB-651, 14 NRC 307 (1981).

[15] *See* U.S. Independent Spent Fuel Storage Installations, publicly available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML13197A187.

[16] SCE is nominally a member of PFS, but is no longer involved with the venture in any active way. *See* pretrial brief in *Southern Cal. Edison Co. v. United States*, 93 Fed. Cl. 337 available at https://sanonofresafety.files.wordpress.com/2013/06/pretrialbriefcaseno04-109cv-federalsuit.pdf.

which submitted a petition to intervene and request for hearing by the NRC on the application. Following extensive litigation, the license for the ISFSI was issued by the NRC on February 21, 2006, almost nine years later.

However, other agencies refused to issue non-nuclear permits necessary to enable the ISFSI to be constructed and operated. As a result, construction has never commenced on the ISFSI, and PFS requested the NRC in 2012 to terminate the license for the ISFSI.[17] Although PFS later withdrew that request on September 12, 2014, PFS has no current plans to construct and operate the ISFSI.

In late 2014, the U.S. General Accounting Office (GAO) issued a report to Congress summarizing the experience of PFS:

> The experience of Private Fuel Storage is another example in which a consortium of owners and generators of spent nuclear fuel found a willing community to host a consolidated interim storage site on the Goshute Indian reservation in Utah. The state of Utah opposed the effort and although the Private Fuel Storage site received a license in 2006, operations never began there because of ongoing legal battles and land use issues. A spokesperson for the State of Utah stated that if the owners and generators renewed their efforts to begin operations at Private Fuel Storage, Utah would continue to fight the effort.[18]

Accordingly, storage of SONGS spent fuel at the PFS ISFSI is not a viable option. Moreover, the PFS experience is indicative of the difficulty and uncertainty a private party would experience in attempting to develop an away-from-reactor ISFSI in the absence of state and local support.

4.3.3 ISFSI to be Developed at Idaho National Laboratory

The DOE has a license for an ISFSI at Idaho National Laboratory (INL). However, that ISFSI has never been built. Furthermore, that ISFSI was limited to the storage of spent fuel from Peach Bottom Unit 1, the Shippingport reactor, and various research reactors.[19] Also, a 1995 settlement agreement between DOE and the State of Idaho requires the DOE to remove all spent fuel from INL by 2035.[20] Accordingly, the Idaho ISFSI would not be a viable option to receive spent fuel from SONGS.

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[17] *See* Letter dated Dec. 20, 2012 from Robert M. Palmberg (PFS) to NRC, available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML12356A063.

[18] *See* U.S. General Accounting Office, GAO-15-141, "Fuel Management – Outreach Needed to Help Gain Public Acceptance for Federal Activities That Address Liability" (Oct. 2014), p. 32; available at http://www.gao.gov/assets/670/666454.pdf.

[19] *See* NRC Environmental Impact Statement for the Proposed Idaho Spent Fuel Facility at the Idaho National Engineering and Environmental Laboratory in Butte County, Idaho, NUREG-1773 (Jan. 2004), pp. xv-xvi; available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML040490135.

[20] *See* the Idaho Department of Environmental Quality website Re the 1995 Settlement Agreement, available at https://www.deq.idaho.gov/inl-oversight/oversight-agreements/1995-settlement-agreement.aspx.

4.3.4 ISFSI to be Developed by Waste Control Specialists

Waste Control Specialists (WCS) has announced its intention to apply for a Part 72 specific license for an ISFSI at the site of its currently licensed low level waste storage facility in Andrews County, Texas. WCS plans to submit its license application for the ISFSI in April 2016.[21] WCS has indicated that it expects to get its license in 2019 and to complete construction and begin accepting spent fuel in December 2020.[22]

Several anti-nuclear groups, including Public Citizen and the Sustainable Energy and Economic Development (SEED) Coalition, have announced their opposition to the WCS ISFSI.[23] Such opposition could significantly delay WCS' effort to license an ISFSI in Texas. On the other hand, the WCS ISFSI does have the support of local government. Early in 2015, the Andrews County Commissioners Court unanimously adopted a resolution[24] in support of the used fuel storage facility to be developed by WCS, submitting that document to its elected officials in Austin, Texas and Washington, D.C.[25]

Even if the WCS ISFSI (or some other third-party party ISFSI) were to be licensed by the NRC, receive all of the necessary non-nuclear permits, and be constructed, there is no guarantee that the facility would immediately accept all the spent fuel from SONGS due to demand for storage by other nuclear power plant operators. Additionally, even assuming the WCS ISFSI is able to accept all of the spent fuel from SONGS, it is likely that shipments of spent fuel to the ISFSI would be spread over many years. The NRC has estimated that transfer of spent fuel from reactors to an away-from-reactor ISFSI might occur over a period of 20 or more years.[26] For SONGS, this shipment schedule corresponds to 2040 as the earliest date when the final shipment of spent fuel would be sent to the WCS ISFSI.

In summary, the WCS ISFSI is not currently available, nor will it be available within the next several years. Under such circumstances, the WCS ISFSI is not a viable near-term alternative to the storage of spent fuel in the SONGS ISFSI.

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[21] *See* Letter dated Feb. 6, 2015 from William J. Lindquist, CEO of WCS, to NRC, available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML15040A687 and Valhi Press Release, available at http://www.wcstexas.com/pdfs/press/2.7.FINAL.PR.pdf.

[22] *Id.*; *See also* The Texas Tribune, "West Texas Site Wants Nation's Spent Nuclear Fuel" (Feb. 9, 2015), available at http://www.nei.org/News-Media/News/News-Archives/NEI-Calls-WCS-Interim-Used-Fuel-Project-Significan.

[23] *See* Public Citizen Press Release dated Feb. 9, 2015, entitled "Proposed High-Level Radioactive Waste Storage Site is All Risk and No Reward for Texas," available at http://www.citizen.org/pressroom/pressroomredirect.cfm?ID=4406.

[24] *See* Resolution, entitled "A resolution in support of establishing a site in Andrews County for consolidated interim storage of spent nuclear fuel and high-level radioactive waste," available at http://www.co.andrews.tx.us/docs/WCS_Resolution.pdf.

[25] *See* WCS Overview Document dated Feb. 9, 2015, available at http://wcsstorage.com/project-overview/.

[26] *See* NRC Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel, NUREG-2157 (Sept. 2014), pp. 5-3 to 5-4; available at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2157/.

4.3.5 ISFSI to be Developed in New Mexico

Most recently, Holtec International (Holtec) and the Eddy Lea Energy Alliance (ELEA), LLC announced their plans to establish an underground consolidated interim storage facility in southeastern New Mexico.[27] ELEA, a limited liability company owned by the Cities of Carlsbad and Hobbs, and Eddy County and Lea County, has successfully secured the support of the State of New Mexico to build an interim storage facility on their industrial land. Holtec will design, license, build and operate the storage facility, which will be an enlarged version of the HI-STORM UMAX system, which is proposed for the SONGS ISFSI expansion. Although the Holtec/ELEA initiative has the benefit of local support, it is still in the early planning stages and would not be a viable near-term alternative to the proposed ISFSI expansion.

4.4 Storing Spent Fuel at an Away-From-Reactor ISFSI to be Developed by SCE

It would be theoretically possible for SCE to apply for a specific license for and to seek to develop its own ISFSI away from the SONGS site. As discussed above, a number of licensees have applied for specific licensees for and have developed ISFSIs located at the site of their nuclear power plants. However, none have sought to develop an ISFSI away from the reactor site (except for the consortium comprising PFS). For several reasons, such an alternative is not practical for SCE.

First, pursuant to 10 CFR Part 72, SCE would need to apply for a specific license for an ISFSI located outside the current SONGS NRC licensed area, which would include sites such as the "Mesa lease" area east of Interstate 5. To be in a position to prepare and submit a license application, SCE would need to perform a comprehensive feasibility analysis to identify and evaluate alternative sites and to select a preferred site. Furthermore, SCE would need to investigate the characteristics of the preferred site, such as geological and seismological characteristics of the site per Subpart E of Part 72. Such a process, including development of a license application, typically takes about two years. Therefore, even if SCE were to start today to evaluate alternatives sites, determine the site characteristics, and prepare a license application, SCE could not submit a license application sooner than the application for the WCS ISFSI. Additional time would then be necessary for the NRC to process such an application.

The three existing ISFSIs with specific licenses in California illustrate the difficulties that sometimes arise in obtaining a specific license for an ISFSI:

- Rancho Seco applied for a specific license for an ISFSI on October 4, 1991. The license was not issued until June 30, 2000, almost nine years later.

- Humboldt Bay applied for a specific license for an ISFSI on December 15, 2003. The license was not issued until November 17, 2005, almost two years later.

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[27] *See* Holtec Highlights, available at http://us7.campaign-archive2.com/?u=97609a78e0424083cf3f478b3&id=451ddc49e3&e=f2f6fccc73

- Diablo Canyon applied for a specific license for an ISFSI on December 21, 2001. The license was not issued until March 22, 2004, more than two years later. However, that license was subject to litigation, and the U.S. Court of Appeals ruled that the NRC's environmental review of the application was inadequate.[28] The NRC then performed supplemental environmental reviews, which were subject to still further ligation. As a result, the first ISFSI storage cask was not loaded until 2009, about 7½ years after submission of the application.[29]

As demonstrated by the events of 2012-2013 leading to the permanent shut down of SONGS, there is substantial opposition to nuclear facilities in southern California. It should be expected that there would be strenuous objections to locating an away-from-reactor ISFSI in southern California. Such opposition would likely delay (if not prevent) licensing and operation of an away-from-reactor ISFSI in southern California, similar to the delays experienced by Diablo Canyon for its ISFSI.

Furthermore, as indicated by the experience of PFS in Utah, even if SCE were eventually to be successful in obtaining a license from the NRC for an away-from-reactor ISFSI, the ISFSI would need numerous other federal, state, and local permits and approvals. In that regard, the Western Governors' Association recently issued a policy stating that no centralized spent fuel storage facility, "whether publicly or privately owned, shall be located within the geographic boundaries of a Western state or U.S. flag island without the written consent of the governor, in whose state or territory the facility is to be located."[30]

Accordingly, the alternative of SCE constructing and operating an away-from-reactor ISFSI is not a viable alternative to the proposed SONGS ISFSI expansion.

5.0 EVALUATION OF ALTERNATE ONSITE LOCATIONS

Due to the challenges associated with locating an ISFSI offsite, SCE's efforts focused on identifying an optimal onsite location for the ISFSI. The process of identifying potential alternate spent fuel storage sites at SONGS, and the necessary haul paths/transportation paths, was performed by reviews of drawings, discussions with site personnel, and review of past ISFSI siting reports. The selection of potential on-site locations was guided by the estimated size of the ISFSI and NRC requirements, including security requirements.

Some additional key considerations in identifying potential sites were maintaining travel paths to support decontamination and demolition, the extent of the potential location site preparation work and the NRC guidelines for siting a spent fuel storage area. A cursory review of the

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[28] *San Luis Obispo Mothers for Peace v. NRC*, 449 F. 3d 1016 (9th Cir. 2006).

[29] *See* NRC Inspection Report 05000275/2013008 Re Diablo Canyon Power Plant Independent Spent Fuel Storage Installation (ISFSI) (May 20, 2013), p. 2, available in the NRC ADAMS system at http://adams.nrc.gov/wba/ Accession Number: ML13140A430.

[30] *See* Western Governors' Association Policy Resolution 2014-06, "Storage and Disposal of Radioactive Waste and Spent Nuclear Fuel" (March 6, 2014); available at http://www.westgov.org/policies/302-energy/595-storage-disposal-radioactive-waste-spent-nuclear-fuel-wga-resolution.

SONGS site layout demonstrates that the existing main structures occupy a significant portion of the site footprint. Significant decontamination and demolition work is not slated to occur for several years, therefore locations occupied by existing structures, such as the turbine pedestal or the emergency diesel generator buildings, were not considered because those locations would not allow for the timely removal of fuel from the spent fuel pools. The plant access road on the east side of the power block has a rail spur which will be refurbished/replaced, as necessary, for the removal of contaminated and non-contaminated demolition debris. It is strategically important to maintain this travel path to support an efficient demolition. Structures which support wet spent fuel storage were also not considered as these structures would be needed at least until the expanded ISFSI is constructed.

An evaluation of potential sites in light of the above considerations resulted in the identification of five possible onsite locations for the ISFSI: (1) the Reservoir; (2) the North Industrial Area (NIA), which is the site of the existing ISFSI; (3) the K Buildings; (4) the Make-Up Demineralizer (MUD) Area; and (5) the South Yard. The five alternative sites considered (identified in the attached aerial image) require minimal demolition and remediation of existing facilities, provide adequate access for fuel transfer once the storage facility is complete and do not block the travel path of future decontamination and demolition activities.

A location rating process was then performed (similar to a Kemper-Tregoe process) to identify a preferred site. Each site was evaluated against a weighted criterion. The weighting applied to each evaluation criterion was established and then each site was rated on how well it meets the criterion. There are twenty-two evaluation criteria in all. The criteria with the highest weighting (and, therefore, the larger impact on the final rating) are as follows;

1. Licensing, Permitting and Long Term Storage Considerations – Evaluate site for ease of licensing and permitting and suitability for long term storage.
2. Potential for DOE Reimbursement – Potential for reimbursement from DOE for the costs associated with establishing storage at the site.
3. Hazards at the ISFSI Site – ISFSI site should avoid to the maximum extent possible fire, explosion, collapse and other hazards.
4. Avoid Natural or Man Made Events – The selected site should not be subject to events that may impact its safety.
5. Foundation Conditions – Subsurface conditions should be adequate to support static and dynamic loads and should remain stable during seismic events.
6. Conservation of Protected Natural Resources – Site should not impact nearby protected natural resources. Mitigating measures should be implemented if required.

ISFSI Alternate Location Evaluation Results – Relative Ranking of the Sites

		NIA	Reservoir	K-Buildings	MUD Area	South Yard
	Criteria / Weighted Scoring	**Site 1**	**Site 2**	**Site 3**	**Site 4**	**Site 5**
1	**Licensing, Permitting and Long Term Storage Considerations**	1	2	2	2	2
2	**Potential for DOE Reimbursement**	1	2	2	2	2
3	**Hazards at ISFSI Site**	1	2	3	1	1
4	**Avoid Natural or Man Made Events**	2	1	3	3	3
5	**Approximate Average Site Grade**	2	1	2	1	2
6	**Foundation Conditions**	1	4	2	3	4
7	**Conservation of Protected Natural Resources**	1	4	3	2	3
8	**Public Perception Impacts**	1	3	2	3	3
9	**Haul Path Transfer/Transport Distance and other Transfer/Transport Elements**	2	4	1	4	3
10	**Haul Path Buried Utilities Impact**	1	2	2	2	2
11	**Hazards Along Haul Path**	1	2	1	2	2
12	**Security Monitoring Impact**	1	3	2	3	3
13	**Vehicle Barrier System Impacts**	1	3	2	3	3
14	**Environmental Monitoring Program Impact**	1	3	2	3	3
15	**Decommissioning Operations**	2	1	4	3	4
16	**Maximize Shielding for Normal Operation**	1	2	1	2	2
17	**On-site Radiological Impact**	2	1	3	2	2
18	**Controlled Area Boundary**	1	2	1	2	2
19	**Site Preparation**	1	3	2	2	3
20	**Construction Access**	3	1	4	2	2
21	**Construction Impact**	3	1	4	2	2
22	**Availability of Electrical Power and Other Tie-ins**	1	4	2	2	3
	Overall Ranking	**1**	**2**	**4**	**3**	**5**

The table above provides the results of the scoring and evaluation of potential sites, as well as the relative ranking of each of the sites for each of the criteria.

Specific concerns identified include unqualified fill in the Reservoir and the South Yard, the close proximity of the bluffs to the K-Buildings and the close proximity of Interstate-5 to the MUD Area. The NIA was ultimately selected as the project site for the following reasons: (1) the project site is currently developed with an ISFSI; (2) the project site has adequate space to

accommodate the proposed expansion; (3) the location is in close proximity to the existing storage pools and has established access to/from the pools to the ISFSI; and (4) the project site is underlain with soils from the San Mateo Formation, which is considered more geologically stable than the other locations at the SONGS site underlain by the Monterey Formation.

6.0 CONCLUSIONS

Except for the ISFSI at SONGS, there are no existing ISFSIs that can receive spent fuel from SONGS in the near term. SCE expects that any attempts for a third party to modify its existing ISFSI license to allow for storage of spent fuel from SONGS would be met with strong opposition. Public opposition to new ISFSIs, whether they would be proposed by SCE or a third party, is expected to be high and to result in considerable delays to any development. Thus, at this time, developing an away-from-reactor ISFSI does not constitute a reasonable alternative to the SONGS ISFSI.

Expansion of the SONGS ISFSI is the only viable option for the additional temporary storage of SONGS spent fuel outside the spent fuel pools. Consideration was given to siting the ISFSI in other locations within the boundary of the SONGS site. However, an evaluation of the potential sites confirmed that the existing pad is the optimal location for continued storage until either an interim storage facility or a permanent repository becomes available.

LSA

LEGEND

- North Industrial Area
- Assessor Parcel
- 100ft Buffer of Parcel
- Adjacent Parcels

0 150 300
FEET

SONGS ISFSI Expansion Project

Onsite Location Alternatives