

## Private ISF

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**From:** Betsy Prine <bprine@longenecker-associates.com>  
**Sent:** Friday, January 27, 2017 1:04 PM  
**To:** PrivateISF  
**Subject:** Response to RFI on Private Initiatives to Develop Consolidated SNF Storage Facilities  
**Attachments:** L&A Response to RFI on Pls for ISFs-final.pdf

Mr. Griffith,

Please find our response to this RFI attached.

Should you have questions, please don't hesitate to let us know.

Thank you!

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January 27, 2017

Mr. Andrew Griffith  
DOE Office of Nuclear Energy  
U.S. Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585

**RE: DOE RFI – Private Initiatives to Develop Consolidated Interim Storage Facilities**

Mr. Griffith,

Longenecker & Associates, Inc. is pleased to submit the attached response to the above referenced RFI.

After reviewing, should you have questions or would like to discuss further, please don't hesitate to contact me.

Sincerely,

A handwritten signature in blue ink that reads 'John R. Longenecker'. The signature is written in a cursive, flowing style.

John R. Longenecker  
President

**Response to Request for Information (RFI) on  
Private Initiatives to Develop Consolidated SNF Storage Facilities**

Company Name and Address of Respondent: Longenecker & Associates, Inc.  
2514 Red Arrow Dr.  
Las Vegas, NV 89135

Longenecker & Associates (L&A) is a woman-owned and operated small business with extensive experience in the design and operation of DOE nuclear facilities, including facilities for spent nuclear fuel (SNF) storage, transportation and licensing. L&A has supported DOE in the following recent DOE projects and IDIQ Task Orders directly applicable to consolidated Interim Storage Facilities (ISFs) for SNF. These include:

- IDIQ Task Order 11: Development of Consolidated Storage Facility Design Concepts
- IDIQ Task Order 14: Transfer of Used Nuclear Fuel Stored in Non-Disposable Canisters
- IDIQ Task Order 15: Feasibility Study for Large Casks in CPP-603 \*
- IDIQ Task Order 16: Generic Design Alternatives for Dry Storage of Spent Nuclear Fuel

\* includes separate deliverables (White Paper, Expanded Scope, Procurement Study, etc.)

L&A was a major contributor to all products delivered to DOE under the above Task Orders (as well as earlier TOs # 5, 6, 7 and 10), as part of the IDIQ Team led by Chicago Bridge & Iron (CB&I) Federal Services. L&A performed significant portions of the design and analysis work, all of the cost analyses, most of the schedule analyses and report preparation and editing. L&A personnel conducted all transportation system design and analysis, all of the security design work, and all research and development (R&D) inputs for these tasks.

L&A has also served as a prime contractor to DOE for many complex projects that are relevant to this RFI. In 2010, L&A was selected to staff and manage the work of the President's Blue Ribbon Commission on America's Nuclear Future (BRC), which addressed the need for an ISF.

Recently, the CB&I team (CB&I, L&A, Holtec) was selected for a contract award for the "Pilot Interim Storage of Spent Nuclear Fuel: Generic Design and Topical Safety Analysis Report."

As a small business, L&A does not currently intend to participate in any Private Initiatives (PIs) created for the design, licensing and construction of an ISF. So, even though L&A has no current business interest in the subject of this RFI, L&A is committed to supporting DOE, either via teaming arrangements under DOE's IDIQ process, or as an independent contractor, in DOE's efforts to establish an ISF in the U.S., including supporting efforts such as consent-based siting,<sup>1</sup> transportation planning, etc.

As such, the responses to the RFI below are intended to support DOE's perspective, as DOE addresses views on PIs from the nuclear industry, Congress, potential local communities, and other stakeholders.

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<sup>1</sup> For example, L&A is currently helping DOE organize an outside advisory committee to support consent-based siting of a deep borehole storage project.

## Response to RFI

### General Comments

L&A believes that the findings and recommendations of the BRC established a solid foundation for an integrated waste management system that will provide for the safe and secure transportation, storage, and disposal of the nation's SNF and HLW. These recommendations were adopted by the Administration's 2013 Strategy Paper, and include:

- A pilot interim storage facility (ISF), initially focused on accepting spent nuclear fuel from shutdown commercial reactor sites
- A larger, consolidated ISF, potentially co-located with the pilot facility and/or with a geologic repository, that provides flexibility within the integrated waste management system
- One or more geologic repositories for SNF and HLW

The BRC also recommended a consent-based siting process, and creation of a new organization that would be dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed.

L&A believes that DOE should aggressively pursue PIs as a means of implementing pilot ISFs and larger consolidated ISFs. PIs are likely to achieve operational status for these facilities at lower cost and on a faster schedule than the traditional model (federally financed capital project resulting in a government-owned and contractor-operated [GOCO]). These likely benefits and reasons why they can be predicted are discussed below in answers to specific RFI questions. It is important to note that the quality, safety, environmental protection, and performance of ISFs would not be compromised under a properly managed PI approach. This is due in large part to the fact that PI-based ISFs must comply with NRC regulations (10CFR Part 72 and 10CFR Part 73), and that they must satisfy NRC's rigorous NRC licensing and oversight process.

L&A sees no inherent conflict between simultaneous DOE efforts toward ISFs that would be designed, constructed and operated as GOCOs, and DOE efforts toward ISFs designed, constructed and operated as PIs. At this largely conceptual stage, DOE efforts toward a DOE facility (such as envisioned in Task Orders #11, 16, and the recently awarded ISF/TSAR project), would be of direct value to future PIs. Similarly, PI efforts to design and license ISFs would help inform a future DOE-owned GOCO facility. DOE should pursue both avenues in parallel at this time, since future legislation will likely determine the chosen pathway. DOE will be best prepared to implement whatever future direction Congress dictates, if it vigorously supports detailed design and licensing efforts along both avenues.

The nuclear industry (i.e., utilities that generate SNF and currently store SNF at their reactor sites) strongly supports the establishment of a new management and disposal organization outside the DOE, dedicated solely to executing the waste management program. DOE has agreed with this BRC recommendation and has indicated that it is prepared to support the transfer of its current role to a new organization based on direction from Congress. Various bills have been proposed in Congress to implement this management approach. L&A believes that the need for this new organization is even more acute under a PI scenario.

An important step in evaluating which path to follow (GOCO vs. PI) for managing ISFs will be to answer the larger question, "What would be the respective roles of DOE and the new management organization, if the latter is established; and then, what would be the respective

roles of DOE / the new management organization with respect to PI organizations?” Clearly, under most scenarios, there are a number of core functions that DOE is likely to retain. These include de-inventory of stranded sites; accepting, taking title to and transporting SNF from plant sites to the ISF; R&D support; liaison with other federal agencies (NRC, DOT, EPA, etc.), as well as state governments, tribal organizations, etc. Given the critical path status of transportation – including route planning for each site, emergency response planning and training, procurement of transportation casks and overpacks, procurement and testing of rolling stock, staffing, etc. – DOE will need assistance from Congress in defining clear responsibilities for each entity and associated budget mechanisms to begin this important work.

Numerous critical steps toward establishing the pilot ISF and the larger consolidated ISF must be pursued in parallel, not in series. These include:

- A formal consent-based siting process to identify willing host sites (see Ref. 1 below)
- Urgent actions toward establishing DOE’s SNF transportation system, a responsibility that DOE should retain, even if ISFs are built and operated as PIs, for storage of commercial SNF on behalf of DOE. Legislation will be required.
- Completing the NRC review of the Yucca Mountain repository. This must be pursued in parallel with ISFs as a confidence-building measure for members of Congress who will likely continue to oppose ISFs unless progress is made on resolving the status of Yucca Mountain. It also gives confidence to state and local entities hosting ISFs that stored fuel will eventually proceed to a repository. This review is essential to validating the NRC review process, even if consent-based siting activities aimed at this or alternate repository sites are undertaken.
- An aggressive public awareness and outreach initiative, supported by both DOE and industry, to inform the public – host communities in particular – of the design and safety aspects of SNF, the casks used for storage and transportation, and the facilities that will manage SNF.

L&A found that three key references were particularly useful in informing this RFI response:

- 1.) “Draft Consent Based Siting Process for Consolidated Storage and Disposal Facilities for Spent Nuclear Fuel and High-Level Waste,” DOE, January, 2017
- 2.) MIT Paper, “Coupling Fuel Cycles with Repositories: How Repository Institutional Choices may Impact Fuel Cycle Design,” Charles Forsberg and Warren Miller, Oct. 2013
- 3.) Screening and Identification of Sites for a Proposed Monitored Retrievable Storage Facility, U.S. DOE, Office of Civilian Radioactive Waste Management, DOE/RW-0023, May 1985

### Answers to Specific RFI Questions

1. What key factors should be considered to ensure that PIs, as part of the overall integrated nuclear waste management system, would provide a workable solution for interim storage of spent nuclear fuel and high-level waste?

As addressed in the Draft Consent Based Siting Process Report (Reference 1), a vetting process with defined acceptance criteria for approval of a site and associated owner, needs to be developed and put forth in policy and procedures to provide guidance for review and approval of PIs. This should be a multi-stage effort with “gates” to allow stage approval to move to the next

level. 10 CFR Part 52 provides guidance on acceptable site characteristics for nuclear stations. Similar criteria should be developed and implemented in a graded approach to address both interim and final disposition sites and the associated owners. Note that a starting point for development of screening criteria may be found in Reference 3, above.

2. How could a PI benefit:

a. the local community and state or Tribe in which an ISF is sited?

b. neighboring communities?

Following the analysis in Reference 2 (MIT Paper), a local community and state or Tribe can benefit greatly from the location of a PI within their jurisdiction in multiple ways. The option to classify an ISF (or repository) as “storage only,” is much less attractive than the option for a “storage plus multiple supporting missions” ISF (or repository). The latter provides much greater benefits and incentives for state and local entities in both direct dollars and indirect benefits thru payroll and ancillary services (hotels, restaurants, local vendors, etc.). Obviously, PIs benefit from these incentives when they result in a willing and supportive host site.

3. What type of involvement if any should the Department or other federal agency consider having with the PI and the community regarding organizational, structural, and contractual frameworks and why?

DOE (or new management organization) involvement with a PI and the local community regarding organizational, structural and contractual framework will be substantial:

- DOE and/or the new organization could help establish oversight committees that include local community, utility representatives, local/state government reps., etc.
- DOE may consider contracting with one or more PIs for the acceptance and storage of SNF under the Standard Contract.<sup>2</sup> This would result in DOE taking title to SNF as it leaves NPP sites. There would be benefit to all stakeholders: DOE, PIs, utilities, and local communities, if DOE had title to SNF during storage and transport from a nuclear liability standpoint.

The Department should have sole source direct contracts with PIs, with an authorized license approved by the NRC, for whatever level of operation is approved, from the start of siting, thru commercial operation to retirement/decommissioning. DOE (or the new organization) should have a direct relationship in monitoring and paying for all required functions, from licensing to security and excellent operations— similar to INPO best practices.

4. What are the benefits and drawbacks of a PI, compared to a federally financed capital project resulting in a government-owned contractor-operated (GOCO) interim storage facility?

Benefits:

Projects managed under PIs can be accomplished on a shorter timeframe at a lower cost than projects managed by GOCOs. DOE contracting rules and DOE project management sequencing and approval processes typically result in higher cost structures and protracted schedules. PIs typically require less up front appropriations, and enable a pay-as-you-go strategy. Further, PIs operating under a new management organization would not be hampered by the appropriations

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<sup>2</sup> Standard Contract for the Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste, U.S. Code of Federal Regulations, Title 10, Part 961.

process and the political uncertainty associated with a change in leadership in Congress or the Administration.

A privately funded PI that is operated as a commercial entity will be motivated by profit/loss pressures and incentives for performance. PIs can manage risk more effectively than is possible under DOE processes. The relationship between the PI and DOE (or a new management organization) would in effect be a “public/private partnership,” with a sharing of the risk and benefits between the private contractor and government entities.

PIs will encounter fewer regulatory hurdles. For example, PIs would be required to satisfy NRC’s NEPA requirements, whereas a GOCO would be required to satisfy both NRC’s NEPA requirements and DOE’s NEPA requirements – an unnecessary duplication of effort.

Drawbacks:

Both PIs with pilot ISF plans under development plan to license their facilities only, at least initially. They lack a sure path to funding the capital investment to build the facilities. A GOCO could potentially have better access to appropriations if authorized by Congress.

5. What assurances to the Government do you think would be appropriate, to ensure that SNF stored at a private ISF, would be managed effectively so as to contain costs to the Government?

DOE should issue an RFP for storage of stranded fuel from shutdown NPPs. Both currently proposed facilities (i.e., Waste Control Specialists in Andrews County West Texas, and the Eddy-LEA Energy Alliance in New Mexico) are likely to be necessary, given the number of premature shutdowns that have occurred recently or that have been announced, and the diverse design and management approaches proposed by each. As currently envisioned, neither facility will be capable of managing and storing all stranded fuel on its own. Hence, DOE should consider the option of selecting both proposals at the pilot ISF stage. This would ensure competition, and validate the merits and cost/schedule performance of each concept. A separate RFP could be issued later for expanded storage of SNF for a consolidated ISF at the preferred or best performing site, or at both sites.

DOE should develop a template for an incentivized contract that would then be implemented in the RFP for pilot ISP proposals. The incentives would reward good performance in all aspects of PI activities.

Independent oversight boards could be implemented to provide strong oversight to the operation of a PI. PIs would also benefit from local advisory boards that provide direct advice to the PI. Either model would provide avenues for valuable citizen input. State and local stakeholders will likely conclude that such boards would be more acceptable if not run by the PI or the U.S. Government. DOE (or the new organization) should develop concepts by which local groups/universities would be employed as a layer of oversight of PIs, such as the CERMC at WIPP, which provided significant confidence to the citizens of Carlsbad that they had an independent monitor on all WIPP activities.

6. What possibilities are there with respect to business models for a PI, and what are the benefits and disadvantages of those models?

The DOE contract with the PI needs to be based on a standard template to compensate the PI for the level of services authorized by its NRC license, including funding for

O&M commensurate with the safety and licensing basis of the operation. The business model needs to include the optimum elements of a “public/private partnership” and address, in a graded approach, the level of service provided by the PI.

7. How could a PI manage liabilities that might arise during the storage period?

PIs can manage liabilities using the following sequence:

1. DOE takes title to SNF as it leaves NPP sites
2. DOE pays cost of storage of SNF at the PI CISF.
3. DOE responsible for transport of SNF:
  - Routing approval and working with State Regional groups
  - Procurement of cask fleet and rolling stock
  - Emergency response and emergency planning for transport
  - DOE hires transportation contractor(s) to manage above efforts and interface with PI CISFs.

The “public/private partnership” between the PI and government needs to be addressed in contractual terms with consideration to those elements of operation that are within the control of the PI and those that may occur due to aging or other mechanisms, that incur liability to the ultimate owner (DOE). It is critical to address both performance objectives and potential failure mechanisms, as well as mitigating actions for contingencies, as part of the approval process for PI-managed facilities.

8. What state/local/tribal authorizations/approvals would be needed?

Approvals by state/local/tribal organizations would take place during PI the CISF licensing process. If there were concerns regarding PI efforts, they would intervene in this process.

As documented in Reference 1, standard template guidance needs to be developed for state/local/tribal authorizations/approvals. Templates should include mechanisms for oversight of ISFs and associated operations, to ensure that best practices (similar to the role of INPO) are continued thru the life of the ISF.

9. How can the Government continue to explore or implement the PI concept in a fair, open and transparent manner going forward?

DOE (or the new organization) should implement a standard open process, with “gates” for successfully meeting stages of acceptance criteria, to address each applicant’s progress toward the multiple levels of PI licensing. Each of these has an associated set of acceptance criteria that it must meet and maintain.

10. What, if any, supporting agreements might be expected between the Government and the host state/tribe/local community associated with a PI?

In accordance with Phase IV of Reference 1, terms and conditions must be developed, approved and implemented between DOE (or the new organization) and the host community to address their formalized role in the oversight of the operation of the facility.

11. What other considerations should be taken into account?

PIs, operating under the new management organization, should be central to an overall integrated SNF management system that includes ultimate disposal. PIs should not be stand-alone elements in an integrated SNF management system. PIs should be recognized as key parts, along with



other supporting parts in the overall strategy. That strategy should be updated as new technological options go thru R&D to the commercial deployment phase.

12. Are there any alternative approaches to developing non-federally-owned facilities that might be proposed (e.g., how projects would be financed, anticipated regulatory and legal issues, etc.). If so, what are they, are there proposed solution, and how would the above questions be answered with respect to such approaches?

DOE, Congress and States in which ISFs are located should allow the PI to accept some international SNF with an eventual destination of the U.S. repository. The U.S. has a huge incentive for allowing this flexibility. As noted in Ref. 2, failure to establish a SNF management system in the U.S. has undermined U.S. interests in non-proliferation. A U.S. capability to lease reactor fuel to other nations under “take-back” provisions would discourage those nations, particularly smaller ones, from developing reprocessing capabilities. This would help break the Russian monopoly on fuel take-back, which severely hampers U.S. reactor vendors. Leasing and take-back would require legislation that would enable the ISF and the SNF repository to accept a limited amount of international material.

If international agreements are promulgated to address the return of leased fuel from foreign countries, the source of income is not the U.S. taxpayer, but the country that benefits from the generation of nuclear energy using U.S.-supplied fuel. Fuel leasing and take-back arrangements would enable U.S. reactor and fuel vendors, as well as ISF host States and PIs to obtain real financial benefits early during the construction and operation of ISFs.

Inputs provided by:

Pete Lyons (Former Assistant Secretary of Energy for Nuclear Energy). Buzz Savage (former Deputy Assistant Secretary for Fuel Cycle Technologies), Ted Quinn, Gary Vine, Dave Jansen.