Lessons Learned after 20 Years of Experience with the 10 CFR 72 General License Process – 14019

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ABSTRACT

Title 10, Part 72 of the U.S. Code of Federal Regulations (10 CFR 72), Section 210, "General License Issued," permits licensees of nuclear power plants in the United States to store spent nuclear fuel (SNF) in an on-site Independent Spent Fuel Storage Installation (ISFSI) without a site-specific application and approval from the U. S. Nuclear Regulatory Commission (NRC). The intent of the general license is to provide nuclear power plant owner/operators the ability to leverage their safe plant operating experience and knowledge with an efficient regulatory process to safely move SNF into dry storage without requiring site-specific NRC approval to do so.

The general license process has worked well, on the whole, over the past 20-plus years with over 1,400 storage systems deployed to date using this type of license. However, there are several unintended consequences for both the plant owners and the NRC that were created by the general license. These consequences have caused the industry and the NRC to expend resources to address matters of little safety consequence that could have otherwise been used to more directly focus on the safe, economical movement of SNF from wet pool storage to on-site dry storage. This paper summarizes the experience with the 10 CFR 72 general license rule in the United States primarily from the cask vendor and licensee perspective, identifies some of these unintended consequences, and suggests improvements to the general license regulatory framework to allow plant owners and the NRC to better focus their resources on matters that have a direct impact on nuclear safety.

INTRODUCTION

The United States Nuclear Waste Policy Act (NWPA) (as amended) requires the U.S. Department of Energy (DOE), the U.S. Nuclear Regulatory Commission (NRC) and other authorized federal officials to "take such actions as … necessary to encourage and expedite the effective use of available storage, and necessary additional storage, [of spent nuclear fuel] at the site of each civilian nuclear power reactor." The NWPA further directs that the "[DOE] shall establish a demonstration program, in cooperation with the private sector, for the dry storage of spent nuclear fuel at civilian nuclear power reactor sites, with the objective of establishing one or more technologies that the [NRC] may, by rule, approve for use at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific approvals by the Commission."

As directed by the NWPA, the NRC in 1990 added the GL[1] process to its regulations in 10 CFR 72 for storage of SNF at an ISFSI co-located at a power reactor site. The Part 72 general license permits holders of power reactor licenses to store SNF at an onsite ISFSI without an application and site-specific approval from the NRC. NRC involvement in the implementation of a GL is

[1] "GL" is used interchangeably in this paper to refer to the general license and the general licensee.

via approval (certification) of the dry storage cask design and through the inspection program. General licensees are required to comply with the conditions of the GL enumerated in the Part 72 regulations which include, among other conditions, a requirement to store the SNF in cask that has been certified for use by the NRC and granted a Certificate of Compliance (CoC).

In the 20 years since the Part 72 GL rule was approved, over 1,400 dry storage systems have been deployed by licensees using the GL at nuclear power plant sites. This includes both vertical and horizontal systems in service at 47 operating plant sites and at six shutdown plant sites (i.e., those with no operating reactor). Seventy-four (74) of the 1,400-plus storage systems placed in service under the general license through June, 2012 are bolted-lid bare fuel casks and the balance are welded, canister-based systems. The storage systems are completely passive, requiring no electric power or other auxiliary system support to safely store the fuel. Many of the storage systems are outfitted with temperature or cask cavity helium monitoring systems.

Over that same 20 years many lessons have been learned about the advantages and disadvantages of the GL process. In the discussion below two major topics are discussed. First, control and maintenance of the licensing basis for the cask system by the CoC holder and GL are discussed. Second, the CoC amendment process is discussed.

DISCUSSION

Background

Several SNF dry storage cask designs were initially certified by the NRC for use by GLs in the early 1990s. Plant owners needing to move SNF from wet to dry storage chose the cask that met their needs based on their urgency to move SNF out of the spent fuel pool, and the ability of the cask vendor to fabricate and deliver the hardware. In the early days of GL use, the casks were designed and licensed for low capacity (up to 24 PWR or 52 BWR assemblies) and modest heat loads, burnups, and enrichments, resulting in the oldest, coldest SNF being moved to dry storage. Toward the mid-1990s cask vendors began optimizing their cask designs based on users' anticipated needs to store hotter, higher-enriched, higher burnup fuel. In addition, the cask capacities increased from 24 to 32 PWR assemblies and from 52 to 68 BWR assemblies to try to minimize ISFSI pad size and cask loading costs. Furthermore, the casks designs evolved from storage-only, bolted-lid, bare fuel casks, to dual purpose[2], canister-based, ventilated cask systems. A cask "system" is comprised of a storage canister and a ventilated storage cask or horizontal storage module. There are currently three vendors who dominate the U.S. dry cask storage market – Transnuclear, Holtec International, and NAC International.

Cask designs continue to evolve today with PWR canister capacities reaching 37 assemblies and BWR canister storage capability up to 89 assemblies. Implementation of this continuous evolution in cask design starts with the cask vendors, who must seek and receive NRC approval of a new CoC or an amendment to the existing CoC authorizing the improved cask design for use by GLs. As of this writing, one cask system has been amended 11 times since its initial approval in 1995. It has become customary for cask CoCs to be amended six or seven times to add capabilities incrementally.

[2] Certified for storage under 10 CFR 72 and transportation under 10 CFR 71.

Certified cask designs are listed by CoC number in 10 CFR 72.214, as shown in Figure 1 below for the Transnuclear Standardized NUHOMS® Horizontal Module Storage System for Irradiated Nuclear Fuel.

Certificate Number: 1004.
Initial Certificate Effective Date: January 23, 1995.
Amendment Number 1 Effective Date: April 27, 2000.
Amendment Number 2 Effective Date: September 5, 2000.
Amendment Number 3 Effective Date: September 12, 2001.
Amendment Number 4 Effective Date: February 12, 2002.
Amendment Number 5 Effective Date: January 7, 2004.
Amendment Number 6 Effective Date: December 22, 2003.
Amendment Number 7 Effective Date: March 2, 2004.
Amendment Number 8 Effective Date: December 5, 2005.
Amendment Number 9 Effective Date: April 17, 2007.
Amendment Number 10 Effective Date: August 24, 2009.
SAR Submitted by: Transnuclear, Inc.
SAR Title: Final Safety Analysis Report for the Standardized NUHOMS® Horizontal Modular Storage System for Irradiated Nuclear Fuel.
Docket Number: 72-1004.
Certificate Expiration Date: January 23, 2015.
Model Number: NUHOMS®-24P, –24PHB, –24PTH, –32PT, –32PTH1, –52B, –61BT, and –61BTH.

Fig. 1 Excerpt from 10 CFR 72.214

Cask Licensing Basis Documents

The information in cask CoCs is controlled by the NRC. That is, CoC holders must seek NRC review and approval to add, delete, or modify any information contained in the CoC, no matter how minor. The cask CoCs are supported by vendor-maintained Updated Final Safety Analysis Reports (UFSARs) that describe the cask system design, operation, maintenance, and safety analyses. Cask CoC holders are permitted to implement changes to the cask design, operation, and safety analyses as described in the UFSAR and conduct tests and experiments on the cask without prior NRC approval under certain conditions set forth in 10 CFR 72.48. CoC holders are required to update the cask UFSAR no less frequently than every two years to reflect changes incorporated via amendment to the CoC and those implemented pursuant to 10 CFR 72.48.

Plant owners choosing to build and operate an ISFSI under the Part 72 GL must choose a generic cask design listed in 10 CFR 72.214 for dry storage of the SNF at the ISFSI as a condition of the GL. They may choose the original version of the CoC or any amended version of the CoC as the governing cask licensing basis. That choice of CoC also includes an associated cask UFSAR revision, which provides additional details and requirements to be complied with to use the cask as the CoC holder intended, and as licensed by the NRC. The GL may deviate from the cask UFSAR (e.g., in its operating procedures) without obtaining prior NRC approval, subject to the same conditions in 10 CFR 72.48 that apply to CoC holders. Lastly, 10 CFR 72.212 requires the GL to create a report, colloquially known as the “212 Report,” to:

1) Document how the conditions of the generic CoC will be implemented at the specific site,

2) Summarize the off-site radiation dose analysis for the particular ISFSI site,

3) Summarize site-specific evaluations required to demonstrate that the generic cask design criteria bound the site-specific ISFSI conditions, and
4) Address any site-specific hazards not contemplated in the generic cask design.

The 212 Report is maintained over the life of the ISFSI and revised from time to time to reflect activities such as adoption of a later cask CoC amendment.

Thus, in addition to the Part 72 regulations themselves and any NRC orders that may apply, the licensing basis for an ISFSI operated under a general license is comprised of the following:

- The cask CoC version chosen by the GL (initial version or subsequent amendment),
- The cask UFSAR version applicable to the chosen cask CoC amendment, as modified by any applicable changes implemented by the CoC holder and the GL against that UFSAR revision (initial version or subsequent revision), and
- The site 212 Report, latest revision.

Vendor Control of the Cask Licensing Basis

As previously discussed, the cask vendors are continuously improving the cask designs and allowable contents of the storage system to respond to market demand. These design improvements generally require amendments to the cask CoC which, in turn, require revisions to the cask UFSAR. The cask vendors modify information in the CoC to reflect the latest approved cask design and contents requirements rather than just adding new the information to that approved in the original CoC and previous amendments.

The cask vendors have historically modified the information in the cask UFSAR to match only the corresponding information in the latest amendment of the CoC and to reflect the new or revised safety analyses used to support the CoC amendment (e.g., a revised thermal analysis). This results in the latest UFSAR revision not being completely comprehensive and representative of the original CoC and all previously approved cask CoC amendments. The outcome of this practice is that each CoC amendment has an associated unique cask UFSAR revision, instead of a single, latest revision UFSAR being the cask UFSAR of record for users of the original cask CoC or any amendment(s) to the CoC.

General Licensee Experience

General licensees have successfully used the Part 72 general license to place SNF in dry storage for over 20 years with few significant field problems. Spent nuclear fuel continues to be stored safely and securely at the ISFSIs as the cask count steadily grows in number by about 100 to 150 casks per year. However, maintenance of the licensing basis for the casks in storage is becoming increasingly complicated for GLs and for NRC inspectors who must understand what the licensing basis is for any cask or group of casks at an ISFSI to perform a meaningful inspection. This increased complication is due to several factors, the most significant of which are the ability of the GL to choose the original CoC or any approved amendment for use, and the manner in which the cask vendors maintain the cask UFSAR to only reflect the latest approved CoC amendment.

Generally licensees have largely shown a trend of loyalty to their original cask vendor over the years. Even though the regulations permit GLs to switch cask designs at any time, with few exceptions, GLs have not chosen to do so fearing an additional cost to change technologies with little additional benefit, given that all cask designs generally do or will, with amendments, meet their SNF storage needs.

General licensees are not *required* to adopt a later CoC amendment to a cask CoC that they are already using when it is approved for the cask system because the later amendment does not supersede the original CoC or any previous amendment (see Figure 1). The original CoC and all amendments are "active" because any version of the CoC could be the current licensing basis for one or more GLs somewhere in the country storing SNF at their ISFSI. GLs are also not required (and in many cases cannot) adopt the latest cask UFSAR revision because 1) there is no benefit to the GL for casks already in storage service to balance the cost to change the cask licensing basis as described in the 212 Report, and 2) the later UFSAR revision may not reflect the CoC version previously used to load casks at their ISFSI.

General licensees have, however, voluntarily adopted later amendments to their chosen cask CoC for later cask loading campaigns to take advantage of additional cask capabilities, including higher capacity, higher enrichment, higher burnup fuel, storage of integral non-fuel hardware (e.g., control rod assemblies), and higher heat capacity. With that decision, the GL must adopt the concomitant cask UFSAR revision and revise the site's ISFSI-related procedures (if impacted) and 212 Report to reflect the casks loaded under the new cask licensing basis.

The Part 72 regulations were revised in 2011 to provide explicit permission for GLs to adopt and apply a later cask CoC amendment to casks loaded in accordance with the original CoC or a previous amendment and still in service at the ISFSI. 10 CFR 72.212(b)(3) and (4) state the following:

> "(3) Ensure that each cask used by the general licensee conforms to the terms, conditions, and specifications of a CoC or an amended CoC listed in § 72.214.
>
> (4) In applying the changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC, [the licensee must] register each such cask with the Nuclear Regulatory Commission no later than 30 days after applying the changes authorized by the amended CoC. This registration may be accomplished by submitting a letter using instructions in § 72.4 containing the following information: the licensee's name and address, the licensee's reactor license and docket numbers, the name and title of a person responsible for providing additional information concerning spent fuel storage under this general license, the cask certificate number, the CoC amendment number to which the cask conforms, cask model number, and the cask identification number. A copy of each submittal must be sent to the administrator of the appropriate Nuclear Regulatory Commission regional office listed in appendix D to part 20 of this chapter."

In theory, this change to the regulations permits the GL to operate the ISFSI under one CoC amendment and the latest UFSAR revision, thus unifying the licensing basis for all of the casks at an ISFSI. However, because the latest cask UFSAR revisions issued by the CoC holders usually do not accurately reflect the original CoC and all previously-approved amendments, GLs have been reluctant to take advantage of this permission. This is because it would require convincing the CoC holder to restore a large amount of information to the cask UFSAR and clearly delineate which FSAR information applies to which CoC amendment(s). This has resulted in some GLs having multiple cask licensing bases active simultaneously for their ISFSI. The GLs keep track of this by describing in their 212 Reports the different licensing bases for different groups of casks at the ISFSI and they must potentially maintain different operating, maintenance, surveillance, and/or unloading requirements in their procedures to reflect the different cask licensing bases.

An example of this dilemma can be taken from the HI-STORM 100 System CoC [2] and UFSAR. The original HI-STORM CoC as well as Amendments 1 and 2 include a technical specification (TS) requiring the gas inside the canister fuel cavity to be cooled to less than or equal to 93.3^{o}C (200^{o}F) before the canister is re-flooded with water during unloading operations. Thus, any canisters loaded in accordance with the original HI-STORM CoC, Amendment 1, or Amendment 2 must meet this TS requirement if they are to be unloaded. In HI-STORM Amendment 3 this TS was changed to delete the fuel cavity gas pre-cooling requirement and allow direct reflooding of the canister fuel cavity while maintaining pressure less than 0.690 MPa (100 psig). This new TS requirement remains in the CoC through Amendment 8. Thus, any canister loaded in accordance with CoC Amendment 3 or later must meet this revised TS requirement if the canister needs to be unloaded.

A GL with HI-STORM 100 casks in service at the ISFSI that were loaded under Amendment 2 or earlier and others loaded under Amendment 3 or later must maintain procedures with both sets of requirements and have controls in place to apply the correct unloading requirements on a serial number-specific basis according to the licensing basis under which the cask was loaded.

The CoC Amendment Process

In response to the “by rule” provision of the NWPA, the NRC created a process by which SNF dry storage cask designs could be approved generically by rulemaking and used by any GL without a site-specific licensing action. Rulemaking has the advantage of providing for public participation in the cask design approval process, with opportunities for the public to attend meetings and submit comments on any proposed NRC approval of a cask design. Rulemaking, by design is a slow-moving, deliberate process that ensures the public has a reasonable opportunity to weigh in on the cask design approval, with an understanding that use of a GL requires no such opportunity on a site-specific basis where the cask will be used.

Approved cask designs are listed in 10 CFR 72.214 ordered by CoC number. It is important to note that subsequent CoC amendments do not supersede and in no way alter the originally approved CoC or a previous amendment. Thus, unless the NRC issues an order, GLs are only obligated to comply with new CoC requirements if they choose to adopt a later CoC amendment containing those requirements.

Cask CoCs are comprised of a front section with largely administrative information such as a description of the cask design and other general requirements for GLs to use the cask. Attached or appended to the CoC are detailed requirements for cask design features, preparation of the cask for storage, operation of the cask, and authorized contents of the cask. Because casks are generically designed to store a vast array of PWR and BWR fuel types in differing quantities and with different characteristics, the CoCs and appendices have grown over time to 100 pages or more.

NRC regulations (§72.244) require the CoC, including attachments or appendices, to be amended if any information in the CoC, attachments, or appendices is added, removed, or modified. Amendments to a cask CoC require the NRC to perform a rulemaking to 1) change the §72.214 regulation citation to list the amendment and 2) allow public participation in the review and approval of a change to the cask design or contents. This process is very different from an NRC license amendment for a power reactor, which allows the NRC to issue the license amendment upon technical approval if a determination can be made about the proposed amendment that it does not involve a significant hazard. (Public intervention is permitted with reactor license amendments but contentions and petitions for hearing are handled in parallel with the amendment approval unless a significant hazard is involved.) Power reactor licensing also includes provisions for exigent and emergency license amendments as well as for the NRC to issue a notice of enforcement discretion (NOED) to permit licensees to deviate from their operating license in certain circumstances.

Part 72 GLs do not have a physical license; the general license is granted by rule to all power reactor licensees. Processes such as the exigent and emergency license amendment processes and the NOED process used for power reactors and Part 72 specific licenses do not exist for Part 72 GLs. If a GL requires a change to a cask CoC, a CoC amendment and associated rulemaking are required which, experience shows, takes several months to complete in the best of circumstances. In some cases, GLs requiring a CoC amendment to move forward with dry cask storage activities have requested and received exemptions from the regulations to use the proposed amended CoC after the technical review of the amendment is complete and before the rulemaking process has run its course. Use of exemptions as a normal licensing process is workable but not desirable for either the industry of the NRC. But even the exemption approach cannot reduce the time required to use a modified CoC to less than about six weeks.

The need for a CoC amendment is directly proportional to the amount of detail contained in the CoC and its attachments or appendices. Today's cask CoCs contain an extraordinary amount of detail, especially for the contents of the cask. The CoCs contain numerous tables and figures setting down the exact requirements for each fuel assembly to be stored in terms of physical characteristics (e.g., initial enrichment, cladding thickness, assembly length, and fuel pellet diameter) and operational characteristics (e.g., burnup, cooling time, and decay heat). The limits in both cases are numerical and inviolable. For instance, allowable fuel cladding dimension limits are specified to the 0.00025 cm (0.0001 inch) and a fuel assembly with a cladding dimension exceeding that limit, even by just another 0.00025 cm (0.0001 inch), cannot be loaded without violating the CoC. Because of this extensive level of CoC detail, there is virtually no flexibility for cask vendors to alter the allowed contents for a cask without prior NRC approval.

In addition, CoCs often include requirements that have little impact on safety and/or are adequately governed by other regulatory requirements, yet require an amendment to change simply because they are in the CoC.

The reason for the broad-based and detailed content of cask CoCs is that there are no specific regulatory requirements in 10 CFR 72 for the contents of a cask CoC. Requirements in 10 CFR 72.44 pertaining to technical specifications apply only to Part 72 specific licenses. CoC holders must comply with 10 CFR 72, Subpart L in acquiring NRC approval of a cask design. Subpart L states the following in §72.236(a):

> (a) Specifications must be provided for the spent fuel to be stored in the spent fuel storage cask, such as, but not limited to, type of spent fuel (i.e., BWR, PWR, both), maximum allowable enrichment of the fuel prior to any irradiation, burn-up (i.e., megawatt-days/MTU), minimum acceptable cooling time of the spent fuel prior to storage in the spent fuel storage cask, maximum heat designed to be dissipated, maximum spent fuel loading limit, condition of the spent fuel (i.e., intact assembly or consolidated fuel rods), the inerting atmosphere requirements."

A review of the cask CoCs from the primary three vendors over their entire product lines reveals two things: 1) the information required by §72.236(a) to be in the CoC has been included at a very high level of detail that is not specifically required by the regulations and 2) information beyond that specified in §72.236(a) is being included in the CoCs (e.g., training requirements and neutron absorber fabrication testing requirements). Absent any specific criteria in the regulations, the content of the CoCs is currently determined subjectively by the NRC staff reviewer and his or her branch chief based on what they think is "important" in that area of review. With no binding guiding criteria (i.e., in the Part 72 regulations), the level of detail in the CoCs has grown over the years as the cask capacities and capabilities have increased and the results of the safety analyses have approached acceptance limits. This essentially leaves to each individual reviewer and branch chief the responsibility to decide what information pertaining to cask design and use should require NRC approval to change and what material is adequately governed by other regulatory change processes, such as 10 CFR 72.48.

Lessons Learned

The overarching lesson learned after 20-plus years using the Part 72 general license process is that, while it is straightforward to initially implement, there are some unintended consequences for using the GL rule over long term ISFSI operations for licensees, cask vendors, and the NRC. The following observations are made:

- General licensees must perform a detailed review of the chosen CoC well before use to identify any CoC changes they need before they load fuel to allow the CoC holder at least 18 months to prepare and submit the amendment request, the NRC to perform the technical review, and for the rulemaking process to run its course.

- It is not possible at this time for GLs to update the cask licensing basis for all casks at an ISFSI to one single CoC amendment because neither the latest CoC amendment nor the

latest cask UFSAR revision is necessarily representative of the original CoC and all previous amendments under which the older casks were loaded. Thus, many GLs maintain more than one cask licensing basis and associated administrative controls for operating, maintaining, surveilling, and potentially unloading any of the casks at the ISFSI. This creates a human error trap for potentially applying the wrong requirements to a cask.

- It is difficult to effectively implement the NRC inspection program for ISFSIs when several different cask licensing bases apply to different groups of casks and the ISFSI facility.

- The level of detail contained in cask CoCs is very high and increasing with increasing cask capability to store higher burnup, higher heat load fuel and the results of cask safety analyses approaching acceptance limits. Absent specific, codified selection criteria, CoC content is subject to the individual NRC staff reviewers' opinions about what information is important enough for NRC to retain change control over. This results in negotiated CoC content during the technical review of a cask application and essentially customized CoCs for each cask design.

- The amount of information in cask CoCs is not commensurate with the low public health and safety risk of SNF storage in passive dry storage casks. The detail in a cask CoC exceeds that of power reactor technical specifications in many respects, which inverts the concept of risk-informing NRC regulatory requirements and guidance.

- Outside of the issuance of an Order or new rule, the NRC cannot compel GLs to implement a new requirement because new CoC amendments do not supersede previous CoC amendments or the original CoC, and GLs are not required to adopt a new CoC amendment. GLs are also not required to adopt later UFSAR revisions.

On the whole, the general license process remains a good, cost-effective option for transferring fuel to dry storage in the United States compared to licensees acquiring a specific Part 72 ISFSI license. The GL process should be retained. However, there are several areas where the GL process can be improved for the benefit of both the Industry and the NRC.

CONCLUSIONS

Rulemaking remains the best option for amending a cask CoC. However, a method to legally make corrections or other inconsequential clarifications to a CoC needs to be developed so that non-safety-significant errors in the CoC can be corrected in a timely manner without rulemaking. But that only addresses a symptom. Overshadowing any improvement to the rulemaking process is the need to re-evaluate what the appropriate level of detail is for the content of CoCs so that the Industry and the NRC are focusing their resources on safety-significant matters.

Full advantage needs to be taken of the experience and safety culture of the industry in the manner intended by the NWPA by giving CoC holders and licensees more flexibility to use the 10 CFR 72.48 process to evaluate the need for prior NRC approval of changes to cask design and

operation that have a small safety consequence. To achieve this objective, risk-informed criteria for the contents of a cask CoC (and specific ISFSI licenses) should be codified in the Part 72 regulations. Codified criteria would significantly reduce the amount of subjectivity now given to the NRC staff to determine what information is included in the CoC and requires prior NRC approval to change. Due credit for other regulatory programs, such as the Quality Assurance and training programs of the cask vendor and licensees should be observed in developing these criteria. This approach would solve the same problem in the same manner used to do away with customized plant technical specifications two decades ago.

A strong recommendation for selection criteria to be used for CoC content was included in Petition for Rulemaking (PRM) 72-7 submitted to the NRC by the Nuclear Energy Institute in October, 2012 [3]. This PRM suggests amending the 10 CFR 72 regulations to add specific format and content requirements for cask CoCs which do not currently exist. Key parts of the suggested contents of a CoC are tied to proposed selection criteria that cask vendors, with NRC concurrence, would use to standardize the contents of CoCs across all cask designs, to the extent practicable. The selection criteria suggested in the PRM for cask CoC content were developed using the selection criteria in 10 CFR 50.36 for determining power reactor technical specifications. The use of selection criteria to determine CoC content would establish a common set of requirements to be used by NRC staff to consistently determine, on a risk-informed basis, what information in the CoCs the NRC retains changes control over and what information is subject to other change controls processes, such as 10 CFR 72.48.

REFERENCES

1. United States Code of Federal Regulations, Title 10, *Energy*, Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and reactor-Related Greater then Class C Waste.

2. 10 CFR 72 Certificate of Compliance 1014, HI-STORM 100 Cask System, as amended.

3. Letter from Anthony R. Pietrangelo, Nuclear Energy Institute, to Annette L. Vietti-Cook, Nuclear Regulatory Commission, “Petition to Amend 10 CFR Part 72, ‘Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste’, dated October 3, 2012.”