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UNITED STATES NUCLEAR REGULATORY COMMISSION
Washington, DC, 20555-0001
Attn: Rulemakings and Adjudications Staff
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RAYMOND LUTZ and CITIZENS OVERSIGHT, INC Petitioners v. NUCLEAR REGULATORY COMMISSION, and the NUCLEAR INDUSTRY, Respondents. Docket Nos.: All NRC Licensees	**PETITION UNDER 10 C.F.R. §2.802 and 2.803 SEEKING RULEMAKING ACTION BY THE U.S. NUCLEAR REGULATORY COMMISSION OR UNDER 10 C.F.R. §2.206, AS APPROPRIATE** **REGARDING** **REGULATIONS AND ENFORCEMENT REGARDING SPENT FUEL STORAGE SYSTEMS** DATE: 02 JAN 2017

1. Raymond Lutz and Citizens Oversight, Inc, ("Petitioners"), hereby submits this "Petition Under 10 C.FR. §2.802 and §2.803 Seeking Rulemaking Action of the US. Nuclear Regulatory Commission", (Petition) or under 10 C.FR. §2.206 seeking enforcement action, as appropriate. For the reasons stated below, the U.S. Nuclear Regulatory Commission (NRC) should grant the Petition as a matter of law:

NRC HAS JURISDICTION AND AUTHORITY TO GRANT PETITION

2. The U.S. Nuclear Regulatory Commission (NRC) is the government agency charged by the United States Congress to protect public health and safety and the environment related to the operation of commercial nuclear reactors in the United States of America (USA), including the shutdown and safe storage of nuclear spent fuel and nuclear waste resulting from the operation of

those power plants. Congress charged the NRC with this grave responsibility in creation of the agency through passing the Energy Reorganization Act of 1974, as amended, 42 U.S.C.A. §5851 (ERA). In the instant action, various utility operators in the US, are collectively and singularly a "licensee" of the NRC and subject to NRC regulations and authority under 10 C.F.R. §50, 10 C.F.R. §72 and under other NRC regulations and authority in the operation of nuclear reactors and independent spent fuel storage installations (ISFSIs) within the continental United States. Thus, the agency has jurisdiction and authority to grant the Petition.

3. Petitioner requests that the NRC accept this petition as 2.802 petition. If enforcement action is also deemed appropriate, we request that it be processed also under Section 2.206, and under any open dockets as appropriate, including, but not limited to Docket NRC-2017-0211, and to open dockets as necessary to accomplish the changes proposed herein.

4. Petitioner Contact Information:

Petitioner's names:	Raymond Lutz and Citizens Oversight, Inc.
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5. Petitioner's organizational or corporate status:

Corporation	Citizens Oversight, Inc.
State of incorporation	Delaware
Type	501(c)3 Nonprofit
Registered agent	Contact Raymond Lutz
Raymond Lutz	Founder, President
Donations Accepted:	http://copswiki.org/Common/DonateToCitizensOversight

Statement of the Problem & Proposed Solution

6. CONTENTION 1: MISMATCH BETWEEN NRC REGULATIONS AND REALITY OF SPENT FUEL STORAGE.

This petition is focused on Part 72 regulations regarding spent nuclear fuel (SNF) and related regulations. The crux of the problem has to do with a mismatch between these NRC regulations which define elements of Independent Spent Fuel Storage Installations (ISFSIs,) which were originally based on the expectation that a deep geologic repository would be open in 1998, versus the reality of the current storage paradigm implied by storage at nuclear plants "indefinitely," as now allowed under the "NRC Continued Storage of Spent Nuclear Fuel" document.[1]

There is no deep geologic repository, and we assert that the SNF is so thermally and radioactively "hot" that, even if a deep geologic repository were available for use, it could not be used for many decades or centuries without active cooling. If Yucca Mountain were open today and put into use, it would have to be actively cooled for some 100 to 200 years,[2] effectively placing that waste on the surface. Thus, the actual situation has now changed, while the NRC regulations have not changed sufficiently to respect the current reality.

7. **CONTENTION 2: NRC NOT ORGANIZED TO ADDRESS STORAGE DOMAIN**

The change in the storage paradigm reveals two very different underlying regulatory domains:

a) licensing of operating commercial nuclear plants during their useful life, and

b) regulating SNF storage from those nuclear plants indefinitely.

The first has been the primary activity of the NRC since it was founded while the second has only recently started to become important. As time progresses, the primary activity of the NRC is expected to transition from the former to the latter.

8. The big difference between the two activities mainly has to do with the time frame within which the regulations must operate. The former activity has a relatively limited time frame, initially

[1]NRC "Continued Storage Of Spent Nuclear Fuel" (2014) https://www.nrc.gov/docs/ML1417/ML14177A474.pdf

[2] From NUREG-1949, Vol. 2, "Safety Evaluation Report Related to Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada – Volume 2: Repository Safety Before Permanent Closure", page 2-65 "The first set of emplaced waste packages would be subjected to approximately 100 years of forced ventilation, and the last set would be subjected to 50 years of forced ventilation, on the basis of information in SAR Section 1.3.1."

each plant was licensed for 40 years, with possible license extension of up to an additional 40 years, resulting in 80 years total. The latter activity has "indefinite" time frame. Whereas constant monitoring and surveillance protocols can be easily instituted by the staff at any operating plant, such monitoring may not be feasible over the long term of "indefinite" storage. Such "indefinite" storage should be passive in two respects, a) not requiring power to run and b) preferably not requiring substantial inspection and maintenance.

9. Initially, the required life of SNF storage systems was relatively short, as they were only needed until about 1998 when the Yucca Mountain (YM) site would be available for final disposal, and so the licensing periods for SNF storage and the Certificate of Compliance (CoC) of SNF containers have identical license periods as has been useful for operating nuclear plant – 40 years each.

10. **CONTENTION 3: LICENSING PERIOD, DESIGN LIFE, PASSIVE LIFE should all be separately defined.**

Until a geologic repository exists, we believe it is imprudent and unreasonable for the NRC to have regulations that do NOT embrace the longer time frame which is likely the reality, and therefore a longer *design life.* Without explicitly defining the *design life*, there is no confidence that, at the end of the license period, there will be any other option available other than continued storage on the surface in the same failing containers, and at the same impractical location.

At present, the license term and renewal periods for the facility operating license and CoC are defined to be (up to) 40 years, and the *design life* is only implied as perhaps several multiples of the licensing period. Our position is that the ***design life*** should be explicitly defined as the initial 1,000 years of the expected 150,000 year minimal time frame that the waste will be considered toxic (more toxic than the original raw ore[3]). *Design Life Expectancy* is the overall time the system

[3] After 150,000 years, the SNF is about as hazardous as the original ore. "Although uranium itself is barely radioactive, the ore which is mined must be regarded as potentially hazardous due to uranium's decay products, especially if it is high-grade ore. The gamma radiation comes principally from isotopes of bismuth and lead in the uranium decay series. The radiation hazards involved are similar to those in many mineral sands mining and treatment operations." (From http://www.world-nuclear.org/information-library/safety-and-security/radiation-and-health/occupational-safety-in-uranium-mining.aspx)

is expected to maintain safe confinement despite aging mechanisms, allowing inspections and minimal replacement of subcomponents.

Also, we assert ***passive life*** should be defined with the goal of 300 years, such that the storage system will remain safe, contained, and shielded from the environment for a minimum of 300 years with no maintenance or other intervention.

11. CONTENTION 4: NRC Regulations should embrace HELMS.

A more rigorous statement of the problem and technical context is provided in the companion document, "A New Strategy: Storing Spent Nuclear Fuel Waste, Featuring HELMS: "Hardened Extended-life Local Monitored Surface" Storage and DWC "Dual Wall Canisters," which is attached to this petition, and incorporated in its entirety.

12. In summary, the HELMS proposal suggests that the NRC and the public embrace surface storage, since that is actually how the waste is being stored today, and that we should plan to store it safely, passively, and indefinitely on the surface. The time is over to rely on "figuring it out later." We take steps to prudently move toward safe continued surface storage, and we assert that a design life goal of 1,000 years is prudent.

13. HELMS stands for Hardened, Extended-life, Local, Monitored Surface Storage. **Hardened** to deal with the reality of the terrorist and other unpredictable events, **Extended-Life** to embrace a 1,000 year DESIGN LIFE, 300 year PASSIVE LIFE, while still allowing a 40-year license term. **Local**, to imply that the waste will likely be moved to perhaps a half-dozen Consolidated Interim Storage (CIS) sites which are near the source of the waste but away from the coastal areas and other waterways. **Monitored,** by defining and included a standard monitoring electronics package that can provide 7/24 monitoring during the initial decades of storage. **Surface,** to embrace the fact that a) the waste is simply too hot to place in any geologic repository, b) no geologic repository actually exists, and c) if the SNF is emplaced in the repository, it would need to be actively ventilated for up to 200 years.

14. It appears at this juncture that yet again, the NRC is relying upon some magical solution to be developed to deal with the waste once the current dry storage facilities (ISFSIs) start to reach

their useful life, since the time horizon of the NRC license is only 40 years. At the end of the term, will there be any option to deal with corroding and cracking canisters, or will the NRC simply approve just about anything as "safe" because it will be very expensive to fully repackage the waste? Or will the NRC just revise the requirements ever lower, or perhaps through budget cuts, just forget about it? Today, we are again painting ourselves into yet another corner through imprudent planning.

15. CONTENTION 5: Consolidated and MRS storage should be HELMS compliant. Consolidated Interim Storage has been proposed. The expected useful life of these facilities is much longer, and therefore, most specifically in this case, the *design life* of the facility must be much longer, and we assert 1,000 years should be the design goal.

16. It is our intention that this petition and the HELMS document can be applied to a number of NRC proceedings currently in process, have been recently closed, and to any other proceedings that may need to be opened to address how the NRC focus can start to shift from operating nuclear plants – and their relatively short life – to the regulation of dry storage facilities, and their very long required useful life.

17. Regulations Affected

The following regulations deal with issues which are related to the recommended changes described by the HELMS document, and assuming we embrace the use of the DWC system. We have attempted to make recommendations regarding changes we feel are appropriate, under the concept that the term for the license and CoC are not changed (i.e. 40 years), while the new concepts of Passive Life and Design Life are added. Experts at the NRC will no doubt be aware of many other documents and regulations that will be affected, and we hope to work with those persons and groups directly to orchestrate the changes needed.

For purposes of discussion and review, each item below is numbered ("CN") as a separate Contention Number of this petition. Clearly, these contentions do not stand alone and are interdependent.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
6	§ 72.3 Definitions	Design Life	Add: Design Life means the entire expected duration of the spent fuel storage system, including minimal periodic replacement of specific components. The Design Life must be at least 1,000 years.
7		Passive Life	Add: Passive Life means the period of time the storage system is designed to maintain confinement and safety despite expected degradation due to aging. The Passive Life must be at least 300 years.
8		Term	Term of the License and CoC are not changed.
9		TLAAs, [Time Limited Aging Analyses]	Add: (7) TLAA shall embrace not only the term of the license but also the Design Life and Passive Life of the facility.
10	§ 72.22 Contents of application: General and financial information.	Existing Text: (3) Involve time-limited assumptions defined by the current operating term, for example, 40 years;	Change to: (3) Involve time-limited assumptions defined by the Design Life and Passive Life, for example, 1,000 years and 300 years, respectively.
11		Existing Text: (2) Estimated operating costs over the planned life of the ISFSI;	Change to: (2) Estimated operating costs over the planned Design Life of the ISFSI;
12	§ 72.24 Contents of application: Technical information.	Existing Text: (d) (1) The margins of safety during normal operations and expected operational occurrences during the life of the ISFSI or MRS; and	Change to: (d) (1) The margins of safety during normal operations and expected operational occurrences during the Design Life of the ISFSI or MRS; and
13	§ 72.42 Duration of license; renewal.	Licenses are defined at 40 years.	Add: License renewals are not limited in number as long as the period of the license is within the Design Life of the facility.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
14	§ 72.42 Duration of license; renewal.	Existing Text: (1) TLAAs that demonstrate that structures, systems, and components important to safety will continue to perform their intended function for the requested period of extended operation	Change to: (1) TLAAs that demonstrate that structures, systems, and components important to safety will continue to perform their intended function for the requested period of extended operation and for the Design Life of the facility.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
15	§ 72.91 General considerations for Consolidated or Off-site Storage of Spent Fuel from closed nuclear plants	(Does not exist, newly proposed. We provide a general guide to the text, to be further reviewed and substantiated by relevant experts, and to the extent possible, limiting exposure to risks utilizing worst-case design criteria rather than Probability Risk Assessment as the time scales are too long to estimate the probability with any certainty.)	Change to: A consolidated or off-site ISFSI or MRS site shall be: (a) limited to 20,000 tons of SNF, perhaps from the nearest 12 or fewer closed nuclear plants, to result in no more than six consolidated facilities located in the continental U.S. (b) chosen to minimize transportation distances from the originating SNF site while respecting the other siting constraints. (c) preferably chosen within the state of the originating SNF site or at a location shared among a number of adjacent originating SNF states. (d) chosen cognizant of sea level rise and other changes due to climate change predicted over the next 1,000 years. (e) At least five miles from any ocean, bay, river, lake, or other important water resource. (f) At least 300 ft above sea level if it is within 30 miles of any ocean. (g) At least 15 miles from the boundary of any city, town or other population center, and at least 5 miles from residential properties. (h) preferably east of 104° west longitude so as to avoid the region of high-seismic activity to the west of this line. (i) At least 5 miles from any major road, railroad, waterway or industrial area.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
16	§ 72.96 Siting limitations.	Existing Text: (a) An ISFSI which is owned and operated by DOE must not be located at any site within which there is a candidate site for a HLW repository. ... (b) An MRS must not be sited in any State in which there is located any site approved for site characterization for a HLW repository. ... (c) If an MRS is located, or is planned to be located, within 50 miles of the first HLW repository, any Commission decision approving the first HLW repository application must limit the quantity of spent fuel or high-level radioactive waste that may be stored. This limitation shall prohibit the storage of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal, or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel, in both the repository and the MRS until such time as a second repository is in operation. (d) An MRS ... may not be constructed in the State of Nevada. ...	(delete this provision as long as 72.91 is added)
17	§ 72.106 Controlled area of an ISFSI or MRS.	(b) … The minimum distance from the spent fuel, high-level radioactive waste, or reactor-related GTCC waste handling and storage facilities to the nearest boundary of the controlled area must be at least 100 meters.	This constraint is frequently violated, such as at San Onofre, because the controlled area is not actually fully controlled in a passive manner (see below). No changes proposed, however, this may be appropriate for 2.206 enforcement action.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
18	§ 72.106 Controlled area of an ISFSI or MRS.	Existing Text: (c) The controlled area may be traversed by a highway, railroad or waterway, so long as appropriate and effective arrangements are made to control traffic and to protect public health and safety.	Change to: (c) For wet storage or dry storage at operating plants, the controlled area may be traversed by a highway, railroad or waterway, so long as appropriate and effective arrangements are made to control traffic and to protect public health and safety. For dry storage at shutdown plants or at any offsite ISFSI, MRS, or CIS facility, the controlled area must not be traversed by any highway, railroad, or waterway and control of the area must utilize fully passive access control.
19	§ 72.122 Overall requirements	Existing Text: (h) Confinement barriers and systems. (1) The spent fuel cladding must be protected during storage against degradation that leads to gross ruptures or the fuel must be otherwise confined such that degradation of the fuel during storage will not pose operational safety problems with respect to its removal from storage. This may be accomplished by canning of consolidated fuel rods or unconsolidated assemblies or other means as appropriate.	Change To: (h) Confinement barriers and systems. (1) The spent fuel cladding must be protected during storage against degradation that leads to gross ruptures or the fuel must be otherwise confined such that degradation of the fuel and cladding during storage will not pose operational safety problems. This may be accomplished by adding an outer shell of a dual-wall canister system once the canister has cooled to a point that such a second confinement barrier can be added and maintain adequate heat dissipation in addition to any canning of consolidated fuel rods or unconsolidated assemblies or other means as appropriate.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
20	§ 72.122 Overall requirements	(h) (3) Ventilation systems and off-gas systems must be provided where necessary to ensure the confinement of airborne radioactive particulate materials during normal or off-normal conditions.	Comment Unfortunately, dry storage systems do not have any additional barrier to ensure confinement of airborne radioactive particulate materials as indicated in this provision. The term "where necessary" is a way to allow implementors to avoid an additional barrier normally embraced by the Defense in Depth philosophy. Change to: (h) (3) Ventilation systems and off-gas systems must be provided to ensure the confinement of airborne radioactive particulate materials during normal or off-normal conditions. Dual-wall canister design in dry storage systems can fulfill this requirement. An outer building (of sufficient strength to resist terrorist attacks other than nuclear) should also be considered to provide defense-in-depth.
21		(h) (4) Storage confinement systems must have the capability for continuous monitoring in a manner such that the licensee will be able to determine when corrective action needs to be taken to maintain safe storage conditions. For dry spent fuel storage, periodic monitoring is sufficient provided that periodic monitoring is consistent with the dry spent fuel storage cask design requirements. The monitoring period must be based upon the spent fuel storage cask design requirements.	(h) (4) Storage confinement systems must have the capability for continuous monitoring in a manner such that the licensee will be able to determine when corrective action needs to be taken to maintain safe storage conditions. For dry spent fuel storage, periodic monitoring is sufficient after the initial license term of 40 years, provided that periodic monitoring is consistent with the dry spent fuel storage cask design requirements. The monitoring period must be based upon the spent fuel storage cask design requirements. During the initial license period, continuous monitoring shall be maintained.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
22	§ 72.122 Overall requirements	Existing Text: (h) (5) The package must be designed to confine the high-level radioactive waste for the duration of the license.	Change to: (h) (5) The package must be designed to confine the high-level radioactive waste for the duration of the license and for the Design Life of the facility, and for the Passive Life of the facility, without any administrative control.
23	§ 72.124 Criteria for nuclear criticality safety. (b)	Existing Text: ...significant degradation of the neutron absorbing materials cannot occur over the life of the facility.	Change to: ...significant degradation of the neutron absorbing materials cannot occur over the Design Life of the facility.
24	§ 72.144 Quality assurance program.	Existing Text: ...shall carry out the program in accordance with these procedures throughout the period during which the ISFSI or MRS is licensed or the spent fuel storage cask is certified.	Change to: ...shall carry out the program in accordance with these procedures throughout the period during which the ISFSI or MRS is licensed or the spent fuel storage cask is certified, and within the Design Life of the facility.
25	§ 72.212 Conditions of general license issued under § 72.210.	Existing Text: ...shall terminate when the cask's Certificate of Compliance expires	This section does not embrace the concept of a dual-wall cask (DWC) with an outer shell that can be replaced without replacing the inner shell.
26	§ 72.236 Specific requirements for spent fuel storage cask approval and fabrication.	Existing Text: (e) The spent fuel storage cask must be designed to provide redundant sealing of confinement systems.	Change to: (e) The spent fuel storage cask must be designed to provide redundant sealing of confinement systems, and after the cask has cooled so that any portion is below 70°C, the spent fuel storage cask must be designed to provide redundant confinement systems.
27		Existing Text: (g) The spent fuel storage cask must be designed to store the spent fuel safely for the term proposed in the application, and permit maintenance as required.	Change To: (g) The spent fuel storage cask must be designed to store the spent fuel safely for the Design Life of the storage system.

CN	Regulations Section	Issue of Existing Text	Comment or New Text
28	§ 72.236 Specific requirements for spent fuel storage cask approval and fabrication.		Add: (o) The spent fuel storage system must be designed to provide an extended Design Life of 1,000 years, including periodic replacement of an outer containment shell no more frequently than once every 300 years (the Passive Life specification).
29	§ 72.238 Issuance of an NRC Certificate of Compliance.	Existing Text: A Certificate of Compliance for a cask model will be issued by NRC for a term not to exceed 40 years on a finding that the requirements in § 72.236(a) through (i) are met.	Change To: A Certificate of Compliance for a cask model will be issued by NRC for a term not to exceed 40 years on a finding that the requirements in § 72.236(a) through (i) and (o) are met.
30	§ 72.240 Conditions for spent fuel storage cask renewal.	Existing Text: (a) The certificate holder may apply for renewal of the design of a spent fuel storage cask for a term not to exceed 40 years. In the event that the certificate holder does not apply for a cask design renewal, any licensee using a spent fuel storage cask, a representative of such licensee, or another certificate holder may apply for a renewal of that cask design for a term not to exceed 40 years.	(no change)
31		Existing Text: (c) (2) Time-limited aging analyses that demonstrate that structures, systems, and components important to safety will continue to perform their intended function for the requested period of extended operation;	Change To: (c) (2) Time-limited aging analyses that demonstrate that structures, systems, and components important to safety will continue to perform their intended function for the requested period and extended operation and for the Design Life of the facility;

18. CONTENTION 32. Regulatory Issue Resolution Protocol (RIRP) on CISSC should be reopened.

The Regulatory Issue Resolution Protocol (RIRP) regarding Chloride Induced Stress Corrosion Cracking of spent fuel canisters was resolved by adding administrative controls, increased inspections, and improved aging management protocols. We disagree that this is sufficient because of the reasons put forth above. Administrative controls are insufficient for the actual period of time we must plan for surface storage. Therefore, this RIRP should be reopened and the design of the canister system should be revised along the lines of the Dual-wall cask design. One part of the response to this RIRP was the generation of NUREG-2214, below, which we also find insufficient.

19. COMMENT ON MAPS (NUREG-2214)

NUREG-2214 is entitled: "Managing Aging Processes In Storage (MAPS) Report."[4] Unfortunately, we were misinformed about the closure date for comment and respectfully submit this comment after the closure date. Our comment is comprised by the HELMS document as a basis, and the following.

CONTENTION 33. Although we view NUREG-2214 as a large step in the right direction as it contains a wealth of valuable information on aging processes and expectations, we have a fundamental disagreement with this document. The abstract says "The MAPS Report evaluates known aging degradation mechanisms to determine if they could affect the ability of dry storage system components to fulfill their safety functions in the 20- to 60-year period of extended operation." We view this time scale as to be insufficient, as we have outlined. Simply stated, 20 to 60 years does not acknowledge the clear reality of the likely situation, which we believe is 300 to 1,000 years, and that only deals with the first 1/150th of the problem.

The NUREG-2214 should be enhanced by avoiding the view that we are only interested in the 20 to 60 year time frame. At present, if an aging mechanism is not expected to be significant within that period of interest, the current text just says it is "not credible." We would prefer that the full life of the subject material be provided, and if it is unknown, then that can be stated. This would

[4] https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2214/

make the document useful for planning for the longer time scales we assert are necessary for a prudent spent fuel storage plan to be developed.

This document is based on an invalid assumption. It is not credible that spent fuel storage systems can exist for only 20 to 60 years. To make such an assumption is patently imprudent.

20. COMMENT ON "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities" (NUREG-2215 – Docket ID NRC-2017-0211)

The Standard Review Plan for Spent Fuel Dry Storage Systems comment period closes on January 2, 2018[5]. Since NUREG-2215 is modeled largely as a result of the thinking behind Part 72, it suffers from many of the same considerations already mentioned for Part 72, above. Therefore, our comment on NUREG-2215 includes the entirety of the instant document and the companion HELMS document. The vast majority of NUREG-2215 will require no changes even if we achieve our goal of getting the nuclear industry and regulator agency to embrace the HELMS criteria. However, throughout, there are a few important changes and since the concept of longer life is a fundamental assumption to the review plan, other changes throughout NUREG-2215 will be required. And specifically, we offer the following specific comments.

21. **CONTENTION 34. LICENSE TERM vs. DESIGN LIFE vs. PASSIVE LIFE.**

The most important underlying issue is the difference between the licensing period and the expected Design Life of the Dry Storage Facility (DSF). Since NUREG-2215 relies on Part 72, one reasonable approach is to remove absolute references to the license period and licensed life, and change the wording slightly to allow a difference between the term of the license and the expected life of the system. Page 3-7 says, "The applicant should demonstrate that the design will last for the proposed effective certificate or license term, as applicable." This should be changed perhaps to "The applicant should demonstrate that the design will last for the proposed effective certificate or license term, as applicable, will last for the proposed PASSIVE LIFE with no administrative controls or maintenance, and will last for the DESIGN LIFE with specified periodic maintenance."

[5] Although this document has been submitted as comment to NUREG-2215 prior to the deadline, the version we submit in the formal petition process may be slightly revised. Please utilize the petition version once it is submitted.

22. Recommend removal of absolute terms from this document, i.e. “The maximum license term for a DSF is 40 years from the date of issuance (see 10 CFR 72.42(a)).” and instead opt for indirect reference such as “The maximum license term for a DSF is defined by 10 CFR 72.42(a)).” or maybe both “The maximum license term for a DSF is defined by 10 CFR 72.42(a)), and is 40 years as of this writing.” The point is to avoid having to rewrite this document should Part 72 change in this respect.

23. With that said, we recommend that the LICENSE TERM of 40 years is fine as long as the DESIGN LIFE and PASSIVE LIFE are separately defined to probably 1,000 years and 300 years, respectively. (Please see the more thorough definition of these terms above.)

24. Table 3-2 on page 3-22 defines “Design Life” as “Limited to the requested term in the application, not to exceed the applicable limit in either 10 CFR 72.42(a) or 10 CFR 72.230(b)” This is incorrect. That is the LICENSE PERIOD. The DESIGN LIFE should be defined as the entire life expectancy of the DSF, including periodic maintenance, while the PASSIVE LIFE should be defined as the expected time within which the system will maintain safety, including containment and shielding, with no administrative controls, inspections or maintenance.

25. **CONTENTION 35.** A NEW SECTION is needed to separately address the needs for HELMS-compliant extended-life storage at a DSF (MRS and CIS storage) to separately address the longer life requirements for these systems. The design, and therefore the Review Plan for the temporary DSF storage facilities addressed in the existing document is insufficient for HELMS-compliant systems. Any spent fuel canisters in CIS and MRS facilities should be cool enough to require the outer shell of the DWC system when those canisters are moved to those facilities, and those facilities should be HELMS-compliant.

26. **CONTENTION 36.** Overpack Dimensions for any on-site facilities SHOULD include the option that they can be upgraded to incorporate the outer shell of the DWC system, and be HELMS compliant. Thus, they SHOULD provide adequate dimensional space between the overpack and the MPC canister so that the DWC outer shell can be added at the appropriate time. However, if there is a plan in place to move the canisters to another CIS or MRS facility, then this

requirement can be relaxed. The trouble is that at present, there are no CIS or MRS facilities available, they are only a figment of the collective imagination of the NRC and the industry. Until these are available, then we believe it is imprudent and unreasonable to design the DSF without an upgrade path to DWC or other design improvements that can meet the minimal 1,000 year DESIGN LIFE and 300 year PASSIVE LIFE expectancies.

27. **CONTENTION 37.** Page 8-43, "8.5.15 Management of Aging Degradation"

Current text says "Initial Storage Term – In some cases, materials degradation may challenge the ability of a component to fulfill its intended function for the duration of the storage term. If an applicant cannot demonstrate adequate materials performance, then the SAR should describe maintenance programs (e.g., monitoring, inspections) to address issues associated with materials aging degradation."

We have thoroughly described our rationale for extended-life criteria of HELMS and our proposed solution for the extended life criterion, the Dual-Wall canister outer shell, which can be added after about 10 to 20 years of containment in the DSF, which is the likely worst-case time when the spent fuel is probably cool enough to allow the surrounding outer shell to be used, and yet any part of the canister is not below 70°C, so that deliquescence will not occur and prompt CISSC.

Therefore, we disagree that any DSF or DSS should be used in a manner that extensive manual inspections, such as by using inspection robots, is required. With that said, the HELMS criteria does include the ability to constantly monitor the DWC system.

28. **CONTENTION 38.** Page 9-3, "9.4.2 Confinement Monitoring Capability"

The Blue Ribbon Commission acknowledged that existing DSFs do not provide adequate monitoring. The wording in Part 72 is inadequate because of the term "as needed". Monitoring should be mandatory.

On Page 9-4, this section continues with the following: "The application should describe the proposed monitoring capability and surveillance plans for mechanical closure seals. In instances involving welded closures, the staff has accepted that no closure monitoring system is required. This practice is consistent with the fact that other welded joints in the confinement system are not

monitored because the initial staff review considers the integrity of the confinement boundary for the licensing period."

That may be fine for a single 40-year license period but it is not sufficient for the second or subsequent renewals of that license. Thus here, we again point to the difference between the "licensing period" and the DESIGN LIFE and PASSIVE LIFE. These terms are not clearly defined and thus this problem arises. Of course welded joints must be monitored, and we suggest that the DWC with sacrificial outer shell and pressure loss detection is sufficient to determine if the welds, and other aspects of the enclosed MPC are sound.

29. **CONTENTION 39.** Page 11-6, "11.4.5 Repair and Maintenance (SL)"

Currently reads as follows: "The SAR should contain a description of the repair and maintenance facilities and describe the operation of these facilities, including provision for contamination control and occupational exposure minimization."

This has been an area where we do not see sufficient detail by licensees, most particularly with regard to removing canned assemblies. MPC with no canned assemblies should perhaps be relieved of the constraint that assemblies should be easily removed and inspected. At the canister level, the use of a DWC system can allow improved handling capability without the use of hot cell or fuel pool, which are likely needed if the canister is ever opened to inspect the contents or if the canister becomes compromised and must be replaced.

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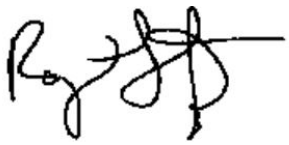
Respectfully submitted,



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