ISFSI LICENSE AND CASK CoC FORMAT, CONTENT, AND SELECTION CRITERIA

Background

Guidance for the content of a specific ISFSI license and a dry storage system (DSS) cask CoC must begin with, and not come into conflict with the applicable regulations. The 10 CFR 72 regulations contain requirements for the content of the technical specifications (TS) of a specific ISFSI license in 10 CFR 72.44(c). The regulations also include requirements for specific information to be included in a DSS CoC in 10 CFR 72.236(a), but include no format and content requirements similar to those for a specific license. When issued, both specific ISFSI licenses and DSS CoCs include conditions in the body of the license/CoC and other information, including the TS, is included in one or more appendices to the license/CoC. Both the conditions of the license/CoC and any appendices are subject to the same requirement to seek NRC approval of any changes to the information contained therein. For this RIRP, the focus will start with the DSS CoC.

The 10 CFR 72.44(c) format and content criteria for specific ISFSI licenses do not apply to DSS CoC/TS, and there are no analogous criteria in the regulations for DSS CoCs. The format and content of CoCs have been determined via the NRC's review process and have evolved over the years. 10 CFR 72.236(a) states:

> *"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."*

Given the lack of additional regulatory requirements for DSS CoC/TS content, the CoCs have become voluminous and difficult to implement, with compliance requirements for the CoC holder and the general licensee mixed together. Industry Petition for Rulemaking (PRM) 72-7 addressed the both the CoC format and content problem and the lack of selection criteria. Industry proposes that the format, content, and selection criteria proposed in PRM 72-7, with certain modifications, be used in a pilot CoC amendment to make the contents of a DSS CoC more safety- and risk-focused and the level of detail more appropriate. In the pilot CoC amendment for the RIRP, the existing CoC condition, TS, administrative controls, authorized contents, and design features will be evaluated against the following guidance and selection criteria to determine if it is retained in whole or in part, deleted entirely, or relocated to another licensing basis document (e.g., the cask FSAR) as necessary:

CoC Body - Certified Design: Certified Design is implemented by the Certificate Holder and includes:

Section I, Technology. A concise description of the dry storage system for the purpose of identifying whether future modifications would be considered a significant deviation to the type of technology or included components, or fundamental manner in which the cask system operates, such that modification to these could not be performed through an amendment under 72.244.

Section II, Design Features. The design features that would have a significant effect on safety if altered or modified, such as materials of construction and geometric arrangement, would require an amendment under 72.244 in order to modify.

CoC Appendix A - Inspections, Tests, and Evaluations: Inspections, Tests, and Evaluations (ITE), and acceptance criteria, that are necessary and sufficient to provide reasonable assurance that, if the ITE are performed and the acceptance criteria met, a cask has been manufactured and will operate in conformance with the certified design, and that the safety functions of confinement, sub-criticality and shielding will be performed. The entity responsible for implementing the ITE (i.e., Certificate Holder or Licensee) will be identified.

Documentation that the ITE and acceptance criteria are satisfied is not submitted for NRC review or approval, but shall be documented (i.e., in the general licensee's 10 CFR 72.212 Evaluation report) and made available for NRC inspection. In addition to inspections and tests, this section is where key generic design criteria used by the CoC holder in the cask design, which require general licensee evaluation (e.g., ambient temperature, seismic, wind, etc.), would be relocated, if retained. This information is currently generally included in the Design Features section of the CoC in a subsection entitled "Site-Specific Parameters and Analyses." A determination of which design criteria and required analyses to retain in the CoC would be based on safety significance, risk insights, and expert knowledge.

CoC Appendix B - Technical Specifications: Technical Specifications are implemented by the licensee and will include the following:

Section 1, Definitions, Use and Application. This section includes key definitions and the administrative rules for implementing the logic of the Limiting Conditions for Operation (LCOs) and Surveillance Requirements in the Technical Specifications. We anticipate this will be a verbatim transfer of information currently in Section 1 of the CoCs.

Section 2, Approved Contents. Approved contents are the minimum set of parameters defining the contents approved for storage in the certified design that would have a significant effect on safety if altered or modified. Information in the Approved Contents section of the technical specifications must meet one or more of the following criteria:

Criterion A1. The characteristic or parameter is identified in 10 CFR 72.236(a);

Criterion A2. A characteristic or parameter for which verification is a necessary condition to provide reasonable assurance that the cask safety functions of confinement, sub-criticality, and shielding will be performed;

Criterion A3. A characteristic or parameter that has a significant impact on public health and safety, based on risk insights and expert knowledge.

Section 3, Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs): Limiting conditions are the lowest functional capability or performance levels of equipment required for safe operation of the ISFSI facility and cask. Functional and operating limits for a cask are limits on fuel handling and storage conditions that are found to be necessary to protect the integrity of the stored fuel, to protect employees against occupational exposures and to guard against the uncontrolled release of radioactive materials. Monitoring instruments and limiting control settings for casks are those related to fuel handling and storage conditions having significant safety functions.

Section 3.0 will include overarching requirements for the LCOs and SRs of the type currently included in Section 3.0 the CoC. Subsequent subsections will include LCOs for operation of the ISFSI facility or cask with appropriate SRs to ensure operability must be established for each item meeting one or more of the following criteria:

Criterion L1. Installed instrumentation that is used to detect, and indicate a significant abnormal degradation of the cask confinement boundary;

Criterion L2. An initial condition of a design basis accident that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;

Criterion L3. A structure, system, or component that has a significant impact on public health and safety, based on risk insights and expert knowledge.

Section 4, Administrative Controls. Administrative controls include the organization and management of procedures, recordkeeping, review and audit, and reporting requirements necessary to assure that the operations involved in the storage of spent fuel and reactor-related GTCC waste in an ISFSI are performed in a safe manner. Programs descriptions included in this section are expected be at a high level and include only the essential elements of the programs required to assure safe cask or ISFSI operation, with additional supporting information relocated to the FSAR, as necessary. Implementation details would be included in general licensee procedures.

Each existing individual CoC requirement receives a written evaluation against the CoC format and content guidance and selection criteria previously described using rick insights and expert knowledge. The results of that evaluation are recorded in a "split document" comprised of the table below. This table records the decision-making process and justification for retaining a CoC requirement in the CoC or relocating it. Retained requirements may be moved to a different section of the CoC and/or partially retained. Removed or relocated requirements will defer to the regulations directly, be moved to the cask FSAR or other document, or deleted entirely, with appropriate justification. The basis for the determination on each CoC requirement is documented in the "Evaluation Summary" column.

CASK CoC FORMAT, CONTENT, AND SECTION CRITERIA EVALUATION

CoC Requirement (Examples)	CoC Body Certified Design		Appendix A Inspections, Tests, and Evaluations	Appendix B, Technical Specifications							
	Section I. Technology	Section II. Design Features		Section 1 Definitions, Use and Application	Section 2, Approved Contents (Selection Criteria)			Section 3, Limiting Conditions for Operation (LCOs)* and Surveillance Requirements (SRs) (Selection Criteria)			Section 4, Administrative Controls
					A1	A2	A3	L1	L2	L3	
CoC Condition No. X											
CoC Condition No. Y											
LCO No.											
Administrative Control No.											
Approved Contents No.											
Design Feature No.											

CASK CoC FORMAT, CONTENT, AND SECTION CRITERIA EVALUATION (CONTINUED)

CoC Requirement (Examples)	Rick Insight**: Will retaining or removing this requirement from the CoC result in...			Evaluation Summary
	...a significant increase in the probability or consequences of an accident previously evaluated in the cask FSAR?	...the possibility of a new or different kind of accident being created compared to those previously evaluated in the FSAR?	...a significant reduction in the margin of safety for ISFSI or cask operation	
CoC Condition No. X				
CoC Condition No. Y				
LCO No.				
Administrative Control No.				
Approved Contents No.				
Design Feature No.				

* All LCOs also require an Applicability, Condition(s), Required Action(s), Completion Time(s), Surveillance Requirement(s), and Frequency(ies). Refer to NUREG-1745 for additional guidance.
* In performing the risk insight evaluation above, the evaluator should think about subsequent changes to a relocated CoC requirement. Specifically, ask the question "what is the likelihood and worst possible consequences of a future change to this requirement in the less-conservative direction"?