



Crystal River Nuclear Plant
15760 W. Power Line Street
Crystal River, FL 34428

Docket 50-302
Operating License No. DPR-72

10 CFR 50.12
10 CFR 50.54(w)(1)

December 17, 2015
3F1215-01

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Subject: Crystal River Unit 3 – Request for Exemption From 10 CFR 50.54(w)(1)
Regarding Onsite Insurance Coverage

- References:
1. CR-3 to NRC letter, "Crystal River Unit 3 – Certification of Permanent Cessation of Power Operations and that Fuel Has Been Permanently Removed from the Reactor," dated February 20, 2013. (ADAMS Accession No. ML13056A005)
 2. NRC to CR-3 letter, "Crystal River Unit 3 Nuclear Generating Plant Certification of Permanent Cessation of Operation and Permanent Removal of Fuel from the Reactor," dated March 13, 2013. (ADAMS Accession No. ML13058A380)
 3. NRC to CR-3 letter dated March 31, 2015, "Crystal River Unit 3 – Issuance of Amendment Regarding Changes to the Emergency Plan and Emergency Action Levels (TAC No. MF3415)" (ADAMS Accession No. ML15027A209)
 4. NRC to CR-3 letter dated March 30, 2015, "Crystal River Unit 3 – Exemptions From Certain Emergency Planning Requirements and Related Safety Evaluation (TAC No. MF2981)" (ADAMS Accession No. ML15058A906)

Dear Sir:

In accordance with 10 CFR 50.12, "Specific Exemptions," Duke Energy Florida, LLC, formerly known as Duke Energy Florida Inc. (DEF) hereby requests a permanent exemption from 10 CFR 50.54(w)(1) for Crystal River Unit 3 (CR-3). 10 CFR 50.54(w)(1) requires individual power reactor licensees to obtain insurance coverage from private sources to provide protection covering the licensee's obligation, in the unlikely event of an accident, to stabilize and decontaminate the reactor and the reactor site. Specifically, licensees must obtain insurance having a minimum coverage limit for each reactor station site of either \$1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. This insurance coverage is referred to as "onsite coverage" or "onsite insurance coverage."

DEF is requesting an exemption to 10 CFR 50.54(w)(1) to reduce the CR-3 minimum onsite insurance coverage to \$50 million.

The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient property damage insurance to ensure adequate funding of onsite post-accident recovery, stabilization and decontamination costs following an accident at an operating nuclear power plant. However, the regulation does not take into consideration the reduced potential for, and consequences of, such nuclear incidents at permanently shutdown facilities. The CR-3 facility is a single reactor site and the reactor is permanently shut down and defueled (References 1 and 2). The

proposed exemption would allow a reduction in the level of onsite insurance coverage to a level that is commensurate with the permanently defueled status of the CR-3 facility and the underlying purpose of the rule.

The exemption request is provided in the attachment to this letter. DEF requests approval of this proposed exemption by March 31, 2017. The CR-3 reactor was last critical on September 26, 2009. All significant radioactive sources are in the spent fuel pools, and decay heat and source term continue to significantly diminish. CR-3 determined that the only remaining postulated accident in the permanently defueled condition is the fuel handling accident (FHA). The Radioactive Waste Decay Tank Rupture Accident previously described in the Final Safety Analysis Report is no longer credible as all waste gas has been released and the tank relief valves have been removed. Accident source terms no longer contain particulates (alkali metals), halogens (iodines), or noble gases that contribute to dose consequences.

DEF evaluated the consequences of an FHA. The calculation assumed that when the fuel assemblies are damaged underwater, alkali metals (e.g., cesium) remain trapped in the pools, and halogens (iodine's) are decayed. As a result of decay time and diminishing decay heat during the past 6 years, a release from an FHA would only consist of the noble gas Kr-85. The FHA analysis shows that the dose consequences at the site boundary are well below the 10 CFR 50.67 dose limits without relying upon any systems, structures, or components (SSCs) to remain functional during and following the event.

Additionally, DEF evaluated the effects of a beyond design basis accident where the spent fuel assemblies in the spent fuel pool (SFP) are uncovered following a drain down event. The beyond design basis accident SFP drain down event is calculated for the hypothetical situation where the pool is completely dry, with and without ventilation running. The calculation demonstrates that for spent fuel in the pool with decay times much longer than one year, which is the case for the current condition of CR-3, a zirconium fire cannot occur. A fire would be necessary to create a significant airborne release. Due to the significant decay time, an airborne release from the spent fuel assemblies in the SFP's is not expected in the event of a loss of water inventory. The NRC concurred with these conclusions in References 3 and 4 where CR-3 received exemptions for emergency planning in accordance with the planning standards of 10 CFR 50.47, and emergency planning requirements of 10 CFR 50, Appendix E.

There are no new regulatory commitments made within this submittal.

If you have any questions regarding this submittal, please contact Mr. Phil Rose, Lead Engineer, Nuclear Regulatory Affairs, at (352) 563-4883.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 17, 2015.

Sincerely,



Ronald R. Reising, Senior Vice President
Operations Support

RRR/par

Attachments:

- A. Request for Exemption from 10 CFR 50.54(w)(1)
- B. No Significant Hazards Consideration, Environmental Assessment and Conclusions

cc: NRR Project Manager
Regional Administrator, Region I

**DUKE ENERGY FLORIDA, LLC, FORMERLY KNOWN AS
DUKE ENERGY FLORIDA INC.**

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT A

REQUEST FOR EXEMPTION FROM 10 CFR 50.54(W)(1)

**REQUEST FOR EXEMPTION FROM 10 CFR 50.54(W)(1) REGARDING ONSITE
INSURANCE COVERAGE**

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I. Description of Requested Exemption

Pursuant to 10 CFR 50.12, "Specific exemptions," Duke Energy Florida, LLC, formerly known as Duke Energy Florida Inc., (DEF) requests a permanent exemption from 10 CFR 50.54(w)(1) for Crystal River Unit 3 (CR-3). 10 CFR 50.54(w)(1) requires individual power reactor licensees to obtain insurance coverage from private sources to provide protection covering the licensee's obligation, in the unlikely event of an accident, to stabilize and decontaminate the reactor, and the reactor site. Specifically, licensees must obtain insurance having a minimum coverage limit for each reactor station or site of either \$1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. This insurance coverage is referred to as "onsite coverage" or "onsite insurance coverage."

DEF is requesting an exemption to 10 CFR 50.54(w)(1) to reduce the minimum CR-3 onsite insurance coverage limit to \$50 million.

10 CFR 50.54(w)(1) states:

"(w) Each power reactor licensee under this part for a production or utilization facility of the type described in §§ 50.21(b) or 50.22 shall take reasonable steps to obtain insurance available at reasonable costs and on reasonable terms from private sources or to demonstrate to the satisfaction of the NRC that it possesses an equivalent amount of protection covering the licensee's obligation, in the event of an accident at the licensee's reactor, to stabilize and decontaminate the reactor and the reactor station site at which the reactor experiencing the accident is located provided that:

(1) The insurance required by paragraph (w) of this section must have a minimum coverage limit for each reactor station site of either \$1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. The required insurance must clearly state that, as and to the extent provided in paragraph (w)(4) of this section any proceeds must be payable first for stabilization of the reactor and next for decontamination of the reactor and the reactor station site. If a licensee's coverage falls below the required minimum, the licensee shall within 60 days take all reasonable steps to restore its coverage to the required minimum. The required insurance may, at the option of the licensee be included within policies that also provide coverage for other risks, including, but not limited to, the risk of direct physical damage."

II. Background

CR-3 has been shut down since September 26, 2009. On February 5, 2013, DEF announced that CR-3 would be retired. DEF notified the Nuclear Regulatory Commission (NRC) on February 20, 2013 of the permanent cessation of power operations and that CR-3 had removed all fuel from the reactor (Reference 1). By letter dated March 13, 2013, the NRC acknowledged CR-3's certification of permanent cessation of power operation and permanent removal of fuel from the reactor vessel (Reference 2). Accordingly, pursuant to 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for CR-3 no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel. Currently, spent fuel from reactor operations is stored in the spent fuel pool, and an onsite Independent Spent Fuel Storage Installation (ISFSI) is being constructed where all spent fuel will be stored by February 2018.

III. Discussion and Justification

The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient property damage insurance to ensure adequate funding of onsite post-accident recovery, stabilization and decontamination costs following an accident at an operating nuclear power plant. The requirements of 10 CFR 50.54(w)(1) were developed taking into consideration the risks associated with an operating nuclear power reactor, including the potential consequences of a release of radioactive material from the reactor. However, the regulation does not take into consideration the reduced potential for, and consequences of, such nuclear incidents at permanently shutdown facilities. The CR-3 facility is a single reactor site that is permanently shut down and defueled. The proposed exemption would allow a reduction in the level of onsite insurance coverage to a level that is commensurate with the permanently defueled status of CR-3 and the underlying purpose of the rule.

Although the likelihood of an accident at an operating reactor is small, the consequences can be large, in part due to the high temperatures and pressures of the reactor coolant system as well as the inventory of radionuclides. For a permanently shut down and defueled reactor, nuclear accidents involving the reactor and its associated systems, structures and components are no longer possible. Furthermore, reductions in the probability and consequences of non-operating reactor nuclear incidents are substantially reduced and attributed to: (1) the decay heat from the spent fuel decreases over time, reducing the amount of cooling required to prevent the spent fuel from heating up to a temperature that could compromise the ability of the fuel cladding to retain fission products; and (2) the relatively short-lived radionuclides contained in the spent fuel, particularly volatile components like iodine and noble gasses, decay away, thus reducing the inventory of radioactive materials available for release.

Although the potential for, and consequences of, nuclear accidents decline substantially after a plant permanently defuels its reactor, they are not completely eliminated. There are potential onsite and offsite radiological consequences that could be associated with the onsite storage of the spent fuel in the spent fuel pool (SFP). In addition, a site with a permanently shut down and defueled reactor may contain an inventory of radioactive liquids, activated reactor components, and contaminated materials. For purposes of modifying the amount of onsite insurance coverage maintained by a permanently shut down and defueled reactor licensee, the potential radiological consequences of these non-operating reactor incidents are appropriate to consider, despite their very low probability of occurrence.

A. Reduced Scope and Severity of Radiological Accidents at CR-3

CR-3 Final Safety Analysis Report (FSAR) Section 14 described the design basis accidents (DBA) scenarios that were applicable to CR-3 power operations. The most severe postulated accidents for operating nuclear power plants involve damage to the reactor core and the release of large quantities of fission products to the reactor coolant system. Many of the FSAR accident scenarios for operating plants involve failures or malfunctions of systems which could affect the reactor core.

DEF is decommissioning CR-3 using the SAFSTOR method where most fluid systems are drained and isolated, and the plant is left in a stable condition until final decontamination and dismantlement activities begin. The irradiated fuel will be stored in

the spent fuel pool (SFP) and in the near future in the ISFSI until the fuel can be ultimately shipped off site to an approved repository. The reactor, reactor coolant system (RCS) and secondary systems are no longer in operation, and have no function related to the safe storage and management of irradiated fuel. CR-3 decommissioning plans were delineated in the Crystal River Unit 3 Post-Shutdown Decommissioning Activities Report (PSDAR) (Reference 3).

Since all fuel has been permanently removed from the CR-3 reactor vessel, the postulated accidents involving failure or malfunction of the reactor, RCS, or secondary system are no longer applicable. The remaining credible CR-3 postulated accident in the permanently defueled condition is the fuel handling accident (FHA).

DEF evaluated the consequences of an FHA in the permanently defueled condition. The calculation assumed that when the fuel assemblies are damaged underwater, alkali metals (e.g., cesium) remain trapped in the 23 feet of water in the pools, and halogens (iodine's) are decayed. As a result of decay time and diminishing decay heat during the past 6 years, a release from an FHA would only consist of the noble gas Kr-85. The dose consequences from a FHA in the permanently defueled condition would be less than the Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs) (Reference 4) at the exclusion area boundary (EAB). The analysis assumes spent fuel pool decontamination based upon at least 23 feet of water depth, no credit is taken for emergency ventilation or filtration for the control room or otherwise, and no credit is taken for control room atmospheric dispersion for a bounding upper limit of acceptable control room unfiltered inflow.

The FHA analysis shows that the dose consequences at the site boundary are well below the 10 CFR 50.67 dose limits without relying upon any systems, structures, or components (SSCs) to remain functional during and following the event. The supporting calculation and results of this event were provided in Enclosure 6 of Reference 5.

B. NRC Proposed Rulemaking

The NRC Staff has generically evaluated the legal, technical, and policy issues regarding the financial protection requirements for large nuclear power plants that have been permanently shut down. The results of these evaluations were summarized in SECY-96-256 (Reference 6), and the NRC Staff recommended a course of action that was approved by the Commission in a Staff Requirements Memorandum (SRM) (Reference 7). These documents established the basis for the NRC exercising its discretionary authority to specify an appropriate level of onsite insurance coverage for permanently shutdown nuclear power reactors.

In SECY-97-186 (Reference 8), the NRC Staff proposed rulemaking for Commission approval that was consistent with SECY-96-256, Option 2. In SECY-97-186, the NRC Staff proposed changes to 10 CFR 50.54(w)(1) that would establish appropriate levels of onsite insurance coverage for plants that are permanently shut down and defueled, and that meet specified facility configurations during permanent shut down.

On October 30, 1997, the NRC published a proposed rulemaking to amend regulations governing liability coverage for permanently shutdown nuclear plants. The proposed rulemaking established four different configurations for permanently shutdown plants that encompassed anticipated spent fuel characteristics and storage modes during the

period between permanent shutdown and termination of the license. The rulemaking proposed financial protection requirements for each of the four specified plant configurations, including a configuration where the plant is permanently shut down, the reactor defueled, and the spent fuel stored in the spent fuel pool is not susceptible to a zircaloy cladding failure or gap release caused by an incipient fuel cladding failure if the pool is accidentally drained.

However, the NRC Staff rulemaking efforts were suspended prior to issuing the final rule when it was realized that an NRC Staff-approved technical basis did not exist for generic decay times after which the zirconium cladding failure concern could be eliminated. The proposed changes to regulations governing onsite insurance coverage were subsequently included in a risk-informed, integrated rulemaking initiative for decommissioning nuclear power plants, which has yet to be acted upon. This rulemaking initiative, documented in SECY-00-145 (Reference 9), included onsite insurance coverage requirements based on the proposed decommissioning insurance rulemaking issued on October 30, 1997, as modified to address the public comments received in response to the proposed rulemaking. The modified rulemaking, as incorporated into SECY-00-145, would have allowed the minimum onsite insurance coverage to be reduced to \$50 million once the spent fuel in the spent fuel pool is no longer thermally and hydraulically capable of sustaining a zirconium fire, based upon the plant-specific analysis.

As discussed in the Staff response to a question in SECY-00-145 (see "NRC Staff Responses to NEI White Paper Comments on Improving Decommissioning Regulations," page 6, Question 3):

"The staff believes that full insurance coverage must be maintained for 5 years or until a licensee can show by analysis that its spent fuel pool is no longer vulnerable to such [a zirconium] fire."

In addition, as discussed in the Staff response to a question in SECY-00-145 (see "NRC Staff Responses to NEI White Paper Comments on Improving Decommissioning Regulations," page 5, Question 2):

"Since the zirconium fire scenario would be possible for up to several years following shutdown, and since the consequences of such a fire are severe in terms of property damage and land contamination, the staff position is that full onsite liability coverage must be retained for five years or until analysis has indicated that a zirconium fire is no longer possible."

In a memorandum dated August 16, 2002 (Reference 10), the NRC Executive Director for Operations provided the NRC Commissioners a status of the regulatory exemptions for plants in decommissioning. This memorandum stated:

"In the absence of any anticipated nuclear power plant decommissionings in the near term, the staff believes that there is no immediate need for moving forward with a majority of the decommissioning regulatory improvement work that is currently planned. Specifically, broad scope regulatory improvements for decommissioning nuclear power plants do not appear to be of sufficient priority given a lack of future licensees that would benefit at this time. Due to higher priorities, resources are being deferred for decommissioning rulemakings that are

not currently in progress or not related to security...If any plants do unexpectedly shutdown permanently, decommissioning regulatory issues would continue to be addressed through the exemption process in a manner similar to current practice.”

Thus, the proposed rulemaking process changes for decommissioning plants discussed above were stopped in deference to the exemption process that have been used for previous licensees.

C. Plant-specific Analyses of Beyond Design Basis Events (BDBE)

DEF assessed the following beyond design basis events associated with irradiated fuel stored in the CR-3 SFP. Supporting calculations for these assessments were provided to the NRC in Enclosure 6 of Reference 5. A summary of the assessments is provided below:

1. Loss of Spent Fuel Pool Normal Cooling

The event postulated is a complete loss of SFP cooling where the SFP decay heat generation rates, the SFP heat loads, and the resulting SFP heat-up rates as a function of the time after shutdown from the last cycle of operations are calculated. The results of the analysis indicated that the time to reach 212°F on July 1, 2013 was 107.7 hours and the total time from the loss of cooling to boil off inventory to 10 feet above the fuel storage racks was 19.9 days. Because of the relative ease in establishing an alternative means of cooling water to the SFP, it is reasonable to conclude that fuel damage cannot occur due to a loss of normal cooling capability to the SFP.

2. Loss of Pool Inventory Air Cooled Heatup

This postulated event is the complete draining of all SFP water where spent fuel cooling would depend upon natural air circulation through the spent fuel racks. The analysis considers whether the spent fuel decay heat is sufficiently low so that air cooling is adequate to maintain the clad temperature below the point of self-sustained zirconium oxidation (zirconium fire). The analysis results show that as of September 26, 2013, the surface temperature of the cladding in the SFPs will not exceed the failure temperature for zirconium (565°C for cladding swelling and 800°C for self-sustained zirconium oxidation) following a total loss of water from the pools due to adequate natural circulation and heat rejection to the outside through the fuel handling floor elevation walls and roof.

3. Hottest Fuel Assembly Adiabatic Heatup

A site-specific adiabatic heatup analysis to address a partial drain down of the SFP was performed to conservatively evaluate the length of time for uncovered spent fuel assemblies to reach a critical temperature for clad damage assuming no air-cooling. As stated in SECY-99-168 (Reference 11), the criterion considers the time for the hottest assembly to heat up from 30°C to 900°C adiabatically. The calculation determined that it took 19.7 hours for a complete loss of air-cooling to result in the cladding heating up to 900°C. There is considerable time, 19.7 hours, for personnel at the plant to respond with additional resources, equipment, and capability to restore cooling to the SFP after an incredible catastrophic drain down event, and, if necessary, initiate offsite protective

measures before a postulated radioactive release resulting from spent fuel overheating occurs.

4. Loss of Pool Inventory Dose

This postulated event is the radiological impact, radiation shine dose, for the Control Room and the public at the exclusion area boundary (EAB) in the event spent fuel assemblies are uncovered following drain down (loss of water inventory). The radiological impact was evaluated for the condition of the fuel assemblies as of September 26, 2013. The dose rates due to scattered radiation and direct shine from spent fuel assemblies in the CR-3 SFP ranged, depending on location, from 7.72 E-06 rem/hr at the Control Room to 8.91 E-09 rem/hr at the North Exclusion Area Boundary, which is well below the offsite emergency planning zone criteria of 1 rem projected for a four day period. This allows considerable time to develop and implement onsite mitigative actions and provide confidence that additional offsite measures could be taken without planning if efforts to re-establish shielding over the spent fuel are delayed.

5. Radioactive Waste Handling Event

The event is postulated to be the airborne dispersal of radioactive waste resin upon dropping a high integrity container (HIC) outside the power block. Although an airborne release is not expected to occur with a drop, or while in storage awaiting shipment, due to the low flammability and reactivity of the spent resin, a release is nevertheless postulated.

The event is based on a release of radioactive material with activity and isotopic mix taken from the resin shipments which occurred during a recent 5 1/2 year period. Resin shipments made from 2008 through June 2013 were reviewed and the isotopic distribution (except for Cobalt-60) was obtained from the shipment with the highest overall activity. Cobalt-60 activity was taken from a different shipment to assure that the highest activity was used and the dose was maximized. This created a composite maximum shipment having a total activity of approximately 116 curies which is approximately twice the activity of the average shipment made during this period. A release fraction of 10% is assumed. The release is assumed to occur outside of the Auxiliary Building on the south berm. The dropped spent resin HIC consequences indicate that the dose is 40 mrem TEDE at the site boundary over a 2-hour period, which is well below the PAG limit of 1 rem.

Based upon the plant-specific qualitative comparison and quantitative analyses discussed above, DEF concludes that the criteria for reducing the minimum onsite insurance coverage limit required by 10 CFR 50.54(w)(1) from \$1.06 billion to \$50 million, as established in SECY-00-145 and its predecessor documents, will be met at CR-3 at this time. Therefore, DEF concludes that the proposed exemption is justified.

The proposed reduction in the minimum level of onsite insurance coverage from \$1.06 billion to \$50 million would continue to serve the underlying purpose of the rule and provide a conservative level of financial protection considered commensurate with the significant reduction in the probability and consequences of potential nuclear incidents at CR-3. The exemption would not present an undue risk to the health and safety of the public because the analyses demonstrate that dose to the public for events that can occur during decommissioning are well below the acceptable limits. Consistent with

NRC's conclusions documented in SECY-00-145, the proposed reduction in the level of onsite insurance coverage would continue to provide sufficient property damage insurance to ensure funding for onsite post-accident recovery, stabilization, and decontamination costs in the very unlikely event of a nuclear incident at CR-3.

6. Rapid Drain Down Due to Cask Drop Event

CR-3 is in the process of installing a single failure-proof auxiliary building crane (FHCR-5) to be utilized for the loading of spent fuel assemblies into the dry shielded canisters for that will be stored in the Horizontal Storage Modules at the Independent Spent Fuel Storage Installation (ISFS). This crane will be used for lifting heavy loads near and over the SFP. Because the auxiliary building crane will not lower its load in an uncontrolled fashion, a cask drop event is not considered a credible initiator of a rapid SFP drain down event at CR-3.

D. Previous Exemptions

Other decommissioning plants have been granted exemptions allowing for reductions in onsite insurance coverage. Two specific examples are provided in Reference 12 for Zion Units 1 and 2, and Reference 13 for Kewaunee Power Station.

E. Summary

DEF is requesting an exemption to 10 CFR 50.54(w)(1) to allow a reduction in the CR-3 minimum onsite insurance coverage to \$50 million. The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient onsite insurance to ensure adequate funding of onsite post-accident recovery, stabilization, and decontamination following an accident at an operating nuclear power plant. The requirements of 10 CFR 50.54(w)(1) were developed taking into consideration the risks associated with the operation of an operating nuclear power reactor, including the potential consequences of a release of radioactive material from the reactor. However, the regulation does not take into consideration the reduced potential for, and consequences of, nuclear incidents at permanently shut down facilities.

CR-3 is a single unit reactor site with the reactor permanently shut down and defueled. As a result, it is no longer possible for the radiological consequences of design basis accidents or other credible events at CR-3 to exceed the limits of the EPA PAGs at the EAB. DEF performed site-specific analyses for cases where the spent fuel pool is assumed to be accidentally drained. These analyses show that if the CR-3 spent fuel pool is assumed to be accidentally drained: (1) air cooling of the spent fuel assemblies in the SFP will be sufficient to maintain the integrity of the fuel cladding; and (2) if air cooling is interrupted, considerable time is available to implement compensatory measures (such as refilling the SFP or spraying water on the spent fuel) to restore necessary cooling. The NRC concurred with these conclusions in the "Crystal River Unit 3 – Exemptions From Certain Emergency Planning Requirements and Related Safety Evaluation (TAC No. MF2981)" (Reference 14).

IV. Justification for Exemption and Special Circumstances

10 CFR 50.12 states that the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of the

regulations of Part 50 which are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. 10 CFR 50.12 also states that the Commission will not consider granting an exemption unless special circumstances are present. As discussed below, this exemption request satisfies the provisions of Section 50.12.

A. The exemption is authorized by law

The requested exemption is authorized by law and similar exemptions have been granted by the Commission. Other permanently shutdown plants that have granted similar exemptions are discussed in Section D above. In addition, the requested exemption is consistent with the guidelines presented by the NRC staff in SECY 96-256. The proposed exemption is not contrary to the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

B. The exemption will not present an undue risk to public health and safety

The requirements of 10 CFR 50.54(w)(1) and the existing level of CR-3 onsite insurance coverage are predicated on the assumption that the reactor is operating. However, CR-3 is permanently shut down and defueled. The permanently defueled status of the facility has resulted in a significant reduction in the number and severity of potential accidents, and correspondingly, a significant reduction in the potential for, and severity of, onsite property damage. The proposed reduction in the amount of onsite insurance coverage does not impact the probability or consequences of potential accidents. The proposed level of insurance coverage is commensurate with the reduced risk and reduced cost consequences of potential nuclear incidents at CR-3. Therefore, granting the requested exemption will not present an undue risk to the health and safety of the public.

C. The exemptions are consistent with the common defense and security

The proposed exemption would not eliminate any requirements associated with physical protection of the site and would not adversely affect DEF's ability to physically secure the site or protect special nuclear material. Physical security measures at CR-3 are not affected by the requested exemption. Therefore, the proposed exemption is consistent with the common defense and security.

D. Special Circumstances

Pursuant to 10 CFR 50.12(a)(2), the NRC will not consider granting an exemption to its regulations unless special circumstances are present. DEF believes that special circumstances are present as discussed below.

1. Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. (10 CFR 50.12(a)(2)(ii))

The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient property damage insurance to ensure funding of onsite post-accident recovery stabilization, and decontamination costs following an accident at an operating nuclear power plant. The requirements of 10 CFR 50.54(w)(1) were developed taking into consideration the risks associated with the operation of an operating nuclear power

reactor, including the potential consequences of a release of radioactive material from the reactor. However, the regulation does not take into consideration the reduced potential for, and consequences of, nuclear incidents at permanently shutdown facilities.

CR-3 is a single unit reactor site where the reactor is permanently shut down and defueled. As a result, it is no longer possible for the radiological consequences of design basis accidents or other credible events to exceed the limits of the EPA PAGs at the EAB. DEF has performed site-specific analyses for cases where the spent fuel pool is assumed to accidentally drain. These analyses show that if the CR-3 spent fuel pool is assumed to be accidentally drained: (1) air cooling of the spent fuel assemblies in the SFP will be sufficient to maintain the integrity of the fuel cladding; and (2) if air cooling is interrupted, considerable time is available to implement compensatory measures to restore necessary cooling.

The proposed reduction in the level of onsite insurance coverage from \$1.06 billion to \$50 million would continue to serve the underlying purpose of the rule by requiring a conservative level of financial protection considered commensurate with the significant reduction in the probability and consequences of nuclear incidents at CR-3. Consistent with the NRC's conclusions documented in SECY-00-145, the proposed reduction in the level of onsite insurance coverage would continue to require sufficient property damage insurance to ensure funding for onsite post-accident recovery, stabilization, and decontamination costs in the unlikely event of CR-3 accident.

Therefore, application of the requirement in 10 CFR 50.54(w)(1) to maintain \$1.06 billion in onsite insurance coverage is not necessary to achieve the underlying purpose of this rule and special circumstances are present as defined in 10 CFR 50.12(a)(2)(ii).

2. Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated. (10 CFR 50.12(a)(2)(iii))

Continued compliance with 10 CFR 50.54(w)(1) would require DEF maintain \$1.06 billion in onsite insurance coverage. The reduction in onsite insurance coverage from \$1.06 billion to \$50 million would continue to require a level of financial protection commensurate with the underlying purpose of the rule while eliminating an unnecessary financial burden.

Continued application of the requirement to maintain \$1.06 billion in onsite insurance coverage for CR-3 would result in undue hardship and costs being incurred by CR-3 decommissioning trust fund for the purchase of unnecessary levels of onsite insurance coverage. The NRC has granted similar exemptions to other decommissioning facilities.

Therefore, compliance with the rule would result in an undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly

situated. Therefore, the special circumstances are present as defined in 10 CFR 50.12(a)(2)(iii).

V. Conclusion

Pursuant to the provisions of 10 CFR 50.12, "Specific exemptions," Duke Energy Florida, Inc., hereby requests an exemption from 10 CFR 50.54(w)(1) for Crystal River Unit 3. The requested exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. In addition, special circumstances are present as set forth in 10 CFR 50.12.

VI. References

1. CR-3 to NRC letter, "Crystal River Unit 3 – Certification of Permanent Cessation of Power Operations and that Fuel Has Been Permanently Removed from the Reactor," dated February 20, 2013. (ADAMS Accession No. ML13056A005)
2. NRC to CR-3 letter, "Crystal River Unit 3 Nuclear Generating Plant Certification of Permanent Cessation of Operation and Permanent Removal of Fuel from the Reactor," dated March 13, 2013. (ADAMS Accession No. ML13058A380)
3. CR-3 to NRC letter, "Crystal River Unit 3 – Post-Shutdown Decommissioning Activities Report," dated December 2, 2013. (ADAMS Accession No. ML13340A009)
4. U.S. Environmental Protection Agency, "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft Interim Use and Public Comment dated March 2013 (PAG Manual).
5. CR-3 to NRC letter, "Crystal River Unit 3 – License Amendment Request #315, Revision 0, Permanently Defueled Emergency Plan and Emergency Action Level Scheme and Request for Exemption to Certain Radiological Emergency Response Plan Requirements Defined by 10 CFR 50," dated September 6, 2013. (ADAMS Accession No. ML13274A584)
6. SECY-96-256, "Changes to the Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors, 10 CFR 50.54(w) and 10 CFR 140.11," dated December 17, 1996.
7. Staff Requirements Memo, "Re: SECY-96-256, Changes to the Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors," dated January 28, 1997. (ADAMS Accession No. 9702070060).
8. SECY-97-186, "Changes to the Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors, 10 CFR 50.54(w) and 10 CFR 140.11," dated August 13, 1997.
9. SECY-00-145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," dated June 28, 2000.
10. Memorandum from William D. Travers (NRC) to NRC Commissioners, "Status of Regulatory Exemptions for Decommissioning Plants (WITS 200100085, WITS 199900133, WITS 199900072)," dated August 16, 2002.
11. SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," dated June 30, 1999.
12. Federal Register Volume 64, Number 248, December 28, 1999, pages 72700-72701, "In the Matter of Commonwealth Edison Company (Zion Nuclear Power Station, Units 1 and 2): Exemption."

13. U.S. Nuclear Regulatory Commission to Dominion Energy Kewaunee, Inc., “Kewaunee Power Station – Exemption From the Requirements of Title 10 of the Code of Federal Regulations, Part 50, Section 50.54(w)(1) Concerning Insurance for Post-Accident Site Decontamination (TAC No. MF3915),” dated April 3, 2015. (ADAMS Accession No. ML15033A245)
14. NRC to CR-3 letter dated March 30, 2015, “Crystal River Unit 3 – Exemptions From Certain Emergency Planning Requirements and Related Safety Evaluation (TAC No. MF2981)” (ADAMS Accession No. ML15058A906)

**DUKE ENERGY FLORIDA, LLC, FORMERLY KNOWN AS
DUKE ENERGY FLORIDA INC.**

DOCKET NUMBER 50 - 302 / LICENSE NUMBER DPR - 72

ATTACHMENT B

**NO SIGNIFICANT HAZARDS CONSIDERATION,
ENVIRONMENTAL ASSESSMENT AND CONCLUSIONS**

Regulatory Analysis

No Significant Hazards Consideration Determination

Pursuant to 10 CFR 50.12, "Specific exemptions," Duke Energy Florida, LLC, formerly known as Duke Energy Florida Inc., (DEF) requests a permanent exemption from 10 CFR 50.54(w)(1) for Crystal River Unit 3 (CR-3). DEF is proposing an exemption to 10 CFR 50.54(w)(1) to reduce the minimum coverage limit of 10 CFR 50.54(w)(1) from \$1.06 billion to \$50 million. DEF has evaluated the proposed exemption to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92 as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed exemption to onsite insurance coverage has no effect on plant systems, structures and components (SSCs) and no effect on the capability of any plant SSC to perform its intended design function. The proposed exemption would not increase the likelihood of the malfunction of any plant SSC. The proposed exemption would have no effect on the probability of consequences of any of the previously evaluated accidents in the CR-3 Final Safety Analysis Report (FSAR).

Therefore, the proposed exemption does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed exemption does not involve a physical alteration of the plant. No new or different type of equipment will be installed and there are no physical modifications to existing equipment associated with the proposed exemption. Similarly, the proposed exemption would not physically change any structures, systems or components involved in the mitigation of any accidents. Thus, no new initiators or precursors of a new or different kind of accident are created. Furthermore, the proposed exemption does not create the possibility of a new accident as a result of new failure modes associated with any equipment or personnel failures. No changes are being made to parameters within which the plant is normally operated, or in the setpoints which initiate protective or mitigative actions, and no new failure modes are being introduced.

Therefore, the proposed exemption does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed exemption does not alter the design basis or any safety limits for the plant. The proposed exemption does not impact station operation or any plant SSC that is relied upon for accident mitigation.

Therefore, the proposed exemption does not involve a significant reduction in a margin of safety.

Based upon the above significant hazards evaluation, DEF concludes that the proposed exemption presents no significant hazards consideration, and accordingly, a finding of “no significant hazards consideration” is justified.

Environmental Considerations

10 CFR 51.22(c)(9) provides criteria for and identification of licensing and regulatory actions that are eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if the amendment changes a requirement with respect to use of a facility component within the restricted area provided that: (i) the amendment involves a no significant hazards consideration; (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite; and (iii) there is no significant increase in individual or cumulative occupational radiation exposure.

There are no expected changes in the types, characteristics, or quantities of effluents discharged to the environment associated with the proposed exemption. There are no materials or chemicals introduced into the plant that could affect the characteristics or types of effluents released offsite. In addition, the method of operation of waste processing systems will not be affected by the exemption. The proposed exemption will not result in changes to the design basis requirements of SSCs that function to limit or monitor the release of effluents. All the SSCs associated with limiting the release of effluents will continue to perform their functions. Therefore, the proposed exemption will result in no significant change to the types or significant increase in the amounts of any effluents that may be released offsite.

The exemption would result in no expected increases in individual or cumulative occupational radiation exposure on either the workforce or the public. There are no expected increases in normal occupational doses. There are no construction activities associated with the proposed exemption. The requirements from which the exemption is sought involve financial protection and for the indemnification and limitation of liability of licensees pursuant to Section 170 of the Atomic Energy Act of 1954, as amended and 10 CFR 50.54(w)(1).

The proposed exemption meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(25), because the proposed exemption involves: (i) no significant hazards consideration; (ii) no significant change in the types or significant increase in the amounts of effluent that may be released offsite; (iii) no significant increase in individual or cumulative occupational radiation exposure; (iv) no significant construction impact; and (v) the requirements from which the exemption is sought involves: (H) Surety, insurance or indemnity requirements. Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with this proposed exemption.