



## Department of Energy

Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, ID 83415

April 27, 2016

Attn: Document Control Desk  
Director, Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: License Exemption Request for the Fort Saint Vrain Independent Spent Fuel Storage Installation (Docket 72-9) (SNM-2504) (EM-NRC-16-009)

REFERENCE: 1. License Exemption Request for the Fort Saint Vrain Independent Spent Fuel Storage Installation (Docket 72-9) (SNM-2504) (EM-FMDP-15-019)

2. Letter from M. Lombard to R. Provencher dated June 4, 2015. Fort St. Vrain Independent Spent Fuel Storage Installation Exemption for Delay in Leak Testing Technical Specification Requirement and Aging Management Surveillance (TAC NO. L25003)

Dear Sir or Madam:

U.S. Department of Energy, Idaho Operations Office (DOE-ID) submitted reference 1 for a specific exemption from a requirement in the Fort Saint Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) Technical Specifications, and a commitment in the FSV ISFSI Safety Analysis Report, on March 19, 2015. The U.S. Nuclear Regulatory Commission granted exemption in reference 2 on June 4, 2015. Due to a delay in performing the requirement and commitment, DOE-ID is requesting a 6 month extension to the approved specific exemption.

This re-application is developed in accordance with 10 CFR 72.7 for the same two specific exemptions; one from a Technical Specification surveillance required by 10 CFR 72.44(c)(1), and (c)(3), and another from an aging management program commitment made during the FSV ISFSI license renewal process.

Please contact me at (208) 526-8888 with any questions.

Sincerely,

Steven R. Ahrendts  
NRC Licensed Facilities Director

Enclosure  
cc:  
Bernard H. White IV

NMSS 20  
NMSS 26

**Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI):  
Application for Specific Exemption from a Requirement in the Technical Specifications,  
and a Commitment in the Safety Analysis Report**

DOE-ID submitted an application for a specific exemption from a requirement in the FSV ISFSI Technical Specifications, and a commitment in the FSV ISFSI Safety Analysis Report, on March 19, 2015.<sup>1</sup> The U.S. Nuclear Regulatory Commission (NRC) issued the exemption on June 4, 2015.<sup>2</sup> Due to an unforeseen delay in performing the requirement and commitment by June 2016, DOE-ID is requesting a six-month extension to the approved specific exemption from the requirement and commitment. This re-application is developed in accordance with 10 CFR 72.7 for the same two specific exemptions; one from a Technical Specification surveillance required by 10 CFR 72.44(c)(1) and (c)(3), and another from an aging management program commitment made during the FSV ISFSI license renewal process.

**Exemption from 5-Year Seal Leak Test**

The Limiting Condition for Operation (LCO) for Technical Specification 3.3.1 states that the Fuel Storage Container (FSC) or storage well seal leakage rate shall not exceed  $1 \times 10^{-3}$  standard cc/sec.<sup>3</sup> Surveillance Requirement (SR) 3.3.1.1 calls for one FSC from each vault to be leak tested every five years. The basis for SR 3.3.1.1 is that performance of a leak test of at least six FSC closures every five years provides reasonable assurance of continued integrity. Three FSCs were last leak tested on June 21, 2010 (FSCs located in positions A35, B41, and C41) and another three FSCs were last leak tested June 22, 2010 (FSCs located in positions D41, E41, and F28). The next FSC seal leak testing was to have been performed no later than June 21 and 22, 2015. An extended specific exemption from SR 3.3.1.1 is requested for an additional six months to complete the seal leak test surveillance. Each of the six FSCs identified above were seal leak tested in 1991 after being loaded with fuel blocks, and another four times (1996, 2001, 2005, and 2010) since they were stored at the ISFSI. In each case the seal leak test results demonstrated leakage rates less than the required limit of  $1 \times 10^{-3}$  standard cc/sec. Seal leak rate testing will be completed no later than December 2016 at which time the seal leak rates are expected to remain less than  $1 \times 10^{-3}$  standard cc/sec based on data trend analysis. The results of the attached Licensing Evaluation FSV-16-002, performed in accordance with 10 CFR 72.48, indicate this extended specific exemption will not have an adverse effect on a design function.

**Exemption from Hydrogen Sampling**

The FSV ISFSI Aging Management Program includes a commitment to sample one FSC in each vault for hydrogen no later than June 2015.<sup>4</sup> The commitment to sample FSCs for hydrogen resulted from discussions with NRC technical reviewers during the license renewal process via formal Requests for Additional Information regarding the potential for hydrogen generation from corrosion.<sup>5</sup> The specific

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<sup>1</sup> DOE-ID letter to NRC, License Exemption Request for the Fort Saint Vrain Independent Spent Fuel Storage Installation (Docket 72-9) (SNM-2504) (EM-FMDP-15-019), March 19, 2015

<sup>2</sup> NRC letter to DOE-ID, Fort St. Vrain Independent Spent Fuel Storage Installation – Exemption for Delay in Leak Testing Technical Specification Requirement and Aging Management Surveillance (Docket No. 72-09, TAC No. L25003), June 4, 2015

<sup>3</sup> Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) license (SNM-2504), Appendix B, Technical Specification 3.3.1, Seal Leak Rate

<sup>4</sup> FSV ISFSI Safety Analysis Report, Revision 11, Section 9.8, Aging Management Program

<sup>5</sup> Request for Additional Information, Renewal to the Fort St. Vrain Independent Spent Fuel Storage Installation Site Specific License, Docket No. 72-09, ADAMS Ascension No. ML 100980230, April 12, 2010

FSC numbers, storage locations, and date of hydrogen sampling were set in order to coincide with the FSC seal leak rate testing schedule.

A specific exemption from the Aging Management Program commitment date for sampling is requested to be extended another six months to coincide with the seal leak testing schedule. Instead of one-time sampling for hydrogen 24 years into a 40-year license duration, the FSCs will be sampled 25 years into a 40-year license duration. The FSV ISFSI SAR, Section 4.2.3.2.3 commitment that FSCs will be analyzed for flammable concentrations of hydrogen gas prior to handling or removal of the FSC lid bolts, and evacuated or purged with air as necessary, remains in effect. The FSV ISFSI SAR, Section 4.2.3.2.3 reiterates the basis for the unlikelihood of any significant buildup of hydrogen within an FSC as previously documented by Public Service Company of Colorado and evaluated by the NRC.<sup>6,7</sup> The reasons for determining the unlikelihood of any hydrogen buildup included the following.

- General corrosion, as opposed to galvanic corrosion (which would require water to allow ionization to take place), was determined to be the only corrosion mechanism of concern for the conditions that would exist inside a fuel storage container.
- General corrosion of carbon steel inside a fuel storage container would not result in the production of significant quantities of hydrogen since the pH of water evaporating from the graphite blocks would essentially be neutral.
- Corrosion on the internal wall of a fuel storage container due to potential water contained in the graphite fuel elements was not detrimental to the safe function of the fuel storage containers during their 40-year design lifetime.
- Prior to loading fuel into storage containers, the fuel blocks were maintained in a dry helium environment throughout their storage period in the Reactor Building; stored in either the reactor vessel or the fuel storage wells.
- The spent fuel blocks were dry when they were loaded into the fuel storage containers.

Within the NRC approval letter for the prior exemption request previously referenced, the Staff included a discussion of galvanic corrosion as referenced within FSV ISFSI SAR Chapter 4, Section 4.2.3.2.3. The effort assumed complete consumption of oxygen and water in the corrosion process. While it was not clear that sufficient carbon steel is available, this approach was deemed conservative as it maximized the amount of hydrogen that could be formed. The staff concluded that while a significant amount of hydrogen could be generated under these assumptions, other limitations would apply. First, under these conditions there would be no available oxygen as it was removed in the reduction reactions. In addition, there was no credible source of ignition during normal fuel storage operations. Finally, as previously mentioned prior to loading there are inspection steps which would identify any potential hydrogen build-up. As a result, even adding consideration for galvanic corrosion the delay of testing would not indicate an increase in the probability of either a hydrogen ignition event or failure of the FSC integrity due to corrosion.

The results of the attached Licensing Evaluation FSV-16-003, performed in accordance with 10 CFR 72.48, indicate this specific exemption will not have an adverse effect on a design function.

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<sup>6</sup> A.C. Crawford letter (P-96071) to W.D. Travers, NRC Bulletin 96-04, August 19, 1996

<sup>7</sup> L.E. Kokajko letter to M.J. Fisher, Staff Evaluation of Response to NRC Bulletin 96-04, Chemical, Galvanic, or Other Reactions in Spent Fuel; Storage and Transportation Casks for the Fort St. Vrain Independent Spent Fuel Storage Installation, April 18, 1997

The information in this letter has been reviewed in accordance with DG-SGI-1 and CB-NRC-1. For additional information regarding this application for specific exemptions, please contact Gregory G. Hall at (208) 533-0380.

## **Licensing Evaluation FSV-16-002**

### **Application for Specific Exemption from a Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) Technical Specification Requirement**

#### **Introduction**

The Limiting Condition for Operation (LCO) 3.3.1 for Technical Specification 3.3.1 is a Fuel Storage Container (FSC) or storage well seal leakage rate shall not exceed  $1\text{E-}3$  standard cc/sec. The Surveillance Requirement (SR) 3.3.1.1 states one FSC from each vault will be leak tested every five years. The basis for SR 3.3.1.1 is performance of a 5-year leak test of at least six FSC closures provides reasonable assurance of continued integrity. Three FSCs were last leak tested on June 21, 2010 (FSCs located in positions A35, B41, and C41) and another three FSCs were last leak tested June 22, 2010 (FSCs located in positions D41, E41, and F28).

SR 3.3.1.1 requires that the next FSC seal leak testing was to have been performed no later than June 21 and 22, 2015. Because of the potential for an adverse effect on a design function, an application for a specific exemption from SR 3.3.1.1 to request an additional year to complete the seal leak test surveillance was evaluated in accordance with 10 CFR 72.48 (Licensing Evaluation FSV-15-001), as implemented through MCP-2925.<sup>1</sup> DOE-ID submitted the application for a specific exemption on March 19, 2015.<sup>2</sup> The U.S. Nuclear Regulatory Commission (NRC) issued the exemption on June 4, 2015.<sup>3</sup>

Due to an unforeseen delay in performing the seal leak test surveillance by June 2016, DOE-ID is requesting a six-month extension to the approved specific exemption.

#### **Evaluation**

##### **1. Does the Activity Result in More than a Minimal Increase in the Frequency of Occurrence of an Accident Previously Evaluated in the Safety Analysis Report (SAR)?**

The Maximum Credible Accident evaluated for the FSV ISFSI is the radiological consequences at the site boundary resulting from the leak of one FSC in a vault module (FSV ISFSI SAR, Section 8.2.15). Two failure modes causing the accident are postulated; failure of the redundant metal O-ring seals, and failure of the FSC due to corrosion. Since no credible failure mechanism for the FSC design features (redundant seals and corrosion protection afforded in the design) is identified, both of the failure modes are considered low probability events. This event is a Design Event IV category; low frequency with a high consequence. The release from a single failed FSC containing six fuel blocks is assumed to occur

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<sup>1</sup> MCP-2925, Screen and Evaluate Changes, Revision 18, August 2011.

<sup>2</sup> DOE-ID letter to NRC, License Exemption Request for the Fort Saint Vrain Independent Spent Fuel Storage Installation (Docket 72-9) (SNM-2504) (EM-FMDP-15-019), March 19, 2015.

<sup>3</sup> NRC letter to DOE-ID, Fort St. Vrain Independent Spent Fuel Storage Installation – Exemption for Delay in Leak Testing Technical Specification Requirement and Aging Management Surveillance (Docket No. 72-09, TAC No. L25003), June 4, 2015.

into the storage vault module over a 10 minute period (chosen to represent an instantaneous loss of containment). Releasable gaseous and particulate matter is assumed to be instantaneously released to the atmosphere via the outlet cooling stack with no filtration of the release. The radiological consequences at the controlled area boundary for a single leaking FSC are within the requirements of 10 CFR 72.106.

Each of the six FSCs identified above were seal leak tested after being loaded with fuel blocks, and four additional times (1996, 2001, 2005, and 2010) since they were stored at the ISFSI. In each case the seal leak test results indicated leakage rates less than the required limit of  $1\text{E-}3$  standard cc/sec. Seal leak rates are also estimated to be less than  $1\text{E-}3$  standard cc/sec in 2017.<sup>4</sup> A seal leak test result is a measure of confinement integrity. If confinement integrity has been jeopardized, the seal leak test result is an after-the-fact determination that a potential radioactive release has occurred. The proposed specific exemption (delay in performing a fifth verification of the confinement safety function of the FSC lid seals and sealing surfaces during the 40-year license duration) will not affect the frequency of occurrence of a seal leak; therefore it will not change the licensing basis of the ISFSI design, and will not impact the original conclusion reached about the acceptability of the FSC and lid seal design. The Maximum Credible Accident will remain a low probability event.

**2. Does the Activity Result in More than a Minimal Increase in the Likelihood of Occurrence of a Malfunction of an Item Important to Safety Previously Evaluated in the SAR?**

The test method used to leak test an FSC in each vault every five years is essentially a verification of the continued integrity afforded by the lid seals and sealing surfaces. The lid seal material specification is GEC Technical Specification 362 F 0058, described as silver plated Inconel X750 annealed condition.<sup>5</sup> The FSC container lid material specification is ASME SA-350, GR LF2, described as carbon and low alloy steel forgings requiring notch toughness testing for piping components. The FSC container material specification is ASME SA-333, GR 6, described as seamless and welded steel pipe for low temperature service. The FSV ISFSI [Important to Safety (ITS) components inclusive] has a design life of 40 years. The facility and the FSCs have been exposed to normal design conditions since initial licensing in 1991. The FSC surfaces have been subjected to outside cooling air, elevated temperatures and gamma and neutron radiation from the stored fuel. During the past 25 years of passive storage, seal leak test results and radiological survey results have not been indicative of a FSC malfunction. The proposed specific exemption will not affect the material condition of the subcomponents, hence the likelihood of occurrence of a seal or sealing surface malfunction previously evaluated in the SAR.

**3. Does the Activity Result in More than a Minimal Increase in the Consequences of an Accident Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 1, the Maximum Credible Accident evaluated for the FSV ISFSI is the radiological consequences at the site boundary resulting from the leak of a single fully loaded FSC in a vault module (FSV ISFSI SAR, Section 8.2.15). Releasable gaseous and particulate matter is

<sup>4</sup> Engineering Design File (EDF) No. 10727, Estimation of 2017 Leak Rates of Fort St. Vrain Fuel Storage Containers, March 2015.

<sup>5</sup> EDF-8612, FSV ISFSI MVDS Fuel Storage Container and Support Stool Aging Management Review, Revision 2, March 2010.

assumed to be instantaneously released to the atmosphere via the outlet cooling stack with no filtration of the release. Therefore, the radiological consequence at the controlled area boundary for a single leaking FSC is only 0.02% of the required limit in 10 CFR 72.106. The Maximum Credible Accident and subsequent offsite consequence bounds a seal leak event. The proposed specific exemption may delay discovery of one or more leaking FSCs, but result in no increase in the consequences of an accident previously evaluated in the SAR.

**4. Does the Activity Result in More than a Minimal Increase in the Consequences of a Malfunction of an Item Important to Safety Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 3, the Maximum Credible Accident evaluated for the FSV ISFSI is the radiological consequences at the site boundary resulting from the leak of a single FSC in a vault module (FSV ISFSI SAR, Section 8.2.15). Releasable gaseous and particulate matter is assumed to be instantaneously released to the atmosphere via the outlet cooling stack with no filtration of the release. The radiological consequences at the controlled area boundary for one malfunctioning (leaking) FSC are only 0.02% of the required limit in 10 CFR 72.106. The Maximum Credible Accident and subsequent offsite consequence bounds a seal malfunction (leakage) event. The proposed specific exemption may delay discovery of one or more malfunctioning (leaking) FSCs, but result in no increase in the consequences of a malfunctioning item ITS (single FSC) previously evaluated in the SAR.

**5. Does the Activity Create a Possibility for an Accident of a Different Type than Any Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 1, the Maximum Credible Accident evaluated for the FSV ISFSI is the radiological consequences at the site boundary resulting from the leak of a single FSC in a vault module (FSV ISFSI SAR, Section 8.2.15). Two failure modes causing the accident are postulated; failure of the redundant metal O-ring seals, and failure of the FSC due to corrosion. Since no credible failure mechanism for the FSC design features (redundant seals and corrosion protection afforded in the design) is identified, both of the failure modes are considered low probability events. This event is a Design Event IV category; low frequency with a high consequence. The release from a single failed FSC is assumed to occur into the storage vault module over a 10 minute period (chosen to represent an instantaneous loss of containment) and is bounding. Releasable gaseous and particulate matter is assumed to be instantaneously released to the atmosphere via the outlet cooling stack with no filtration of the release. The radiological consequences at the controlled area boundary for a single leaking FSC are within the requirements of 10 CFR 72.106. The proposed specific exemption will not create a possibility for an accident of a different type than any previously evaluated in the SAR.

**6. Does the Activity Create a Possibility for a Malfunction of an Item Important to Safety with a Different Result than Any Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 1, the Maximum Credible Accident evaluated for the FSV ISFSI is the radiological consequences at the site boundary resulting from the leak of a single FSC in a vault module (FSV ISFSI SAR, Section 8.2.15). Two failure modes causing the accident are postulated; failure of the redundant metal O-ring seals, and failure of the FSC due to corrosion. Since no credible

failure mechanism for the FSC design features (redundant seals and corrosion protection afforded in the design) is identified, both of the failure modes are considered low probability events. This event is a Design Event IV category; low frequency with a high consequence. The proposed specific exemption will not create a possibility for a malfunction of an item ITS (single FSC) with a different result than any previously evaluated in the SAR. The radiological consequences at the controlled area boundary for a single malfunctioning (leaking) FSC will remain within the requirements of 10 CFR 72.106.

**7. Does the Activity Result in a Design Basis Limit for a Fission Product Barrier as Described in the SAR Being Exceeded or Altered?**

The design basis of the fission product barrier afforded by the FSC and its subcomponents is confinement of the radioactive contents contained within. The design basis limit is characterized by the requirements of 10 CFR 72.106. As discussed in Evaluation Question No. 1, the Maximum Credible Accident evaluated for the FSV ISFSI is the radiological consequences at the site boundary resulting from the leak of a single FSC in a vault module (FSV ISFSI SAR, Section 8.2.15). The release from a failed FSC is assumed to occur into the storage vault module over a 10 minute period (chosen to represent an instantaneous loss of containment). Releasable gaseous and particulate matter is assumed to be instantaneously released to the atmosphere via the outlet cooling stack with no filtration of the release. The radiological consequence at the controlled area boundary for a single leaking FSC is within the design basis limit (as referred to the requirements of 10 CFR 72.106). The proposed specific exemption may delay discovery of one or more malfunctioning (leaking) FSCs, but not result in a design basis limit for a single FSC as described in the SAR being exceeded or altered.

**8. Does the Activity Result in a Departure from a Method of Evaluation Described in the SAR Used in Establishing the Design Bases or in the Safety Analyses?**

The method of evaluation described in the SAR and Technical Specification for verifying the confinement integrity (seal leak rate below an acceptable limit) of an FSC is periodic seal leak rate testing. Considering the results of previous seal leak testing, a one-time increase in the periodicity from 5 years to 6.5 years will still provide reasonable assurance of continued FSC confinement integrity. The proposed specific exemption will not be a departure from a method of evaluation described in the SAR used in establishing the design basis or in the safety analyses.

**Conclusion**

The results of the evaluation indicate the proposed specific exemption will not have an adverse effect on a design function. This licensing evaluation should accompany the application for the specific exemption.

The information in this licensing evaluation has been reviewed in accordance with DG-SGI-1 and CB-NRC-1.

Evaluator/Date:

 4/14/16



Safety Analyst/Technical Reviewer/Date:

Shell for IR Newkirk 4/14/16

FSV ISFSI Manager/Date:

J. Bora 4/20/16

Manager, ISFSI Management/Date:

John Bell 4-20-16

DOE-ID ISFSI Facility Director/Date:

S. R. [Signature] 4/20/16

## **Licensing Evaluation FSV-16-003**

### **Application for Specific Exemption from a Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) Safety Analysis Report Commitment**

#### **Introduction**

The FSV ISFSI Aging Management Program described in FSV ISFSI Safety Analysis Report (SAR), Revision 11, Section 9.8, includes a commitment to sample one Fuel Storage Container (FSC) in each vault for hydrogen no later than June 2015 for NRC information purposes. The commitment to sample FSCs for hydrogen resulted from discussions during the NRC technical review of the license renewal application (Requests for Additional Information) regarding the potential for hydrogen generation as an indication of corrosion. The FSC number, storage locations, and date of sampling were agreed upon to be consistent with the FSC seal leak rate testing schedule; sampling of hydrogen in FSCs located in positions A35, B41, C41, D41, E41, and F28 in June 2015.

None of the FSCs have been sampled for hydrogen since being placed into storage. Because of the potential for an adverse effect on a design function, an application for a specific exemption from the SAR, Section 9.8 commitment to request an additional year to complete the hydrogen sampling in conjunction with seal leak rate testing was evaluated in accordance with 10 CFR 72.48 (Licensing Evaluation FSV-15-002), as implemented through MCP-2925.<sup>1</sup> DOE-ID submitted the application for a specific exemption on March 19, 2015.<sup>2</sup> The U.S. Nuclear Regulatory Commission (NRC) issued the exemption on June 4, 2015.<sup>3</sup>

Due to an unforeseen delay in performing the hydrogen sampling by June 2016, DOE-ID is requesting a six-month extension to the approved specific exemption.

#### **Evaluation**

##### **1. Does the Activity Result in More than a Minimal Increase in the Frequency of Occurrence of an Accident Previously Evaluated in the Safety Analysis Report (SAR)?**

There are no off-normal operations or accident analyses documented in the FSV ISFSI SAR that identify hydrogen buildup as the cause for an event. The FSV ISFSI SAR, Section 8.2.4, Fire and Explosions, accident analysis states in Subsection 8.2.4.1 that only minor local fires are considered possible within the ISFSI facility, no means of propagating internal explosions are foreseen, and loading from such explosions are not considered. The proposed specific exemption replacing one-time sampling of six FSCs for hydrogen no later than 25 years into the 40-year license duration with one-time-sampling

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<sup>1</sup> MCP-2925, Screen and Evaluate Changes, Revision 18, August 2011.

<sup>2</sup> DOE-ID letter to NRC, License Exemption Request for the Fort Saint Vrain Independent Spent Fuel Storage Installation (Docket 72-9) (SNM-2504) (EM-FMDP-15-019), March 19, 2015.

<sup>3</sup> NRC letter to DOE-ID, Fort St. Vrain Independent Spent Fuel Storage Installation – Exemption for Delay in Leak Testing Technical Specification Requirement and Aging Management Surveillance (Docket No. 72-09, TAC No. L25003), June 4, 2015.

for hydrogen 25 years into the 40-year license duration will not result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the SAR.

**2. Does the Activity Result in More than a Minimal Increase in the Likelihood of Occurrence of a Malfunction of an Item Important to Safety Previously Evaluated in the SAR?**

The FSV ISFSI SAR, Section 4.2.3.2.3 makes reference to a Public Service Company of Colorado letter P-96071 as the basis for the unlikelihood of any significant buildup of hydrogen within an FSC.<sup>4</sup> Section 4.2.3.2.3 also contains a narrative in response to the NRC's evaluation of the letter with a commitment that states FSCs will be analyzed for flammable concentrations of hydrogen gas prior to handling or removal of the lid bolts, and evacuated or purged with air as necessary.<sup>5</sup> The FSC container material specification is ASME SA-333, GR 6, described as seamless and welded steel pipe for low temperature service. The FSC container lid material specification is ASME SA-350, GR LF2, described as carbon and low alloy steel forgings requiring notch toughness testing for piping components. The lid seal material specification is GEC Technical Specification 362 F 0058, described as silver plated Inconel X750 annealed condition. The FSV ISFSI [Important to Safety (ITS) components inclusive] has a design life of 40 years. The proposed specific exemption will not affect the material condition of the subcomponents of the FSC, hence the likelihood of occurrence of a malfunction of an ITS FSC previously evaluated in the SAR.

**3. Does the Activity Result in More than a Minimal Increase in the Consequences of an Accident Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 1, the Fire and Explosions accident analysis states that no means of propagating internal explosions are foreseen, and loading from such explosions are not considered. The proposed specific exemption therefore will not result in more than a minimal increase in the consequences of an accident previously evaluated in the SAR.

**4. Does the Activity Result in More than a Minimal Increase in the Consequences of a Malfunction of an Item Important to Safety Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 3, the Fire and Explosions accident analysis states that no means of propagating internal explosions are foreseen, and loading from such explosions are not considered. The proposed specific exemption therefore will not result in more than a minimal increase in the consequences of a malfunction of an item Important to Safety previously evaluated in the SAR.

**5. Does the Activity Create a Possibility for an Accident of a Different Type than Any Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 1, the Fire and Explosions accident analysis states that no means of propagating internal explosions are foreseen, and loading from such explosions are not

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<sup>4</sup> A.C. Crawford letter to W.D. Travers, NRC Bulletin 96-04, August 19, 1996.

<sup>5</sup> L.E. Kokajko letter to M.J. Fisher, Staff Evaluation of Response to NRC Bulletin 96-04, Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks for the Fort St. Vrain Independent Spent Fuel Storage Installation, April 18, 1997.

considered. The proposed specific exemption therefore will not create a possibility for an accident of a different type than any previously evaluated in the SAR.

**6. Does the Activity Create a Possibility for a Malfunction of an Item Important to Safety with a Different Result than Any Previously Evaluated in the SAR?**

As discussed in Evaluation Question No. 3, the Fire and Explosions accident analysis states that no means of propagating internal explosions are foreseen, and loading from such explosions are not considered. The proposed specific exemption therefore will not create a possibility for a malfunction of an item Important to Safety with a different result than any previously evaluated in the SAR.

**7. Does the Activity Result in a Design Basis Limit for a Fission Product Barrier as Described in the SAR Being Exceeded or Altered?**

The design basis of the fission product barrier afforded by the FSC and its subcomponents is confinement of the radioactive contents contained within. The design basis limit is characterized by the off-site exposure requirements of 10 CFR 72.106. As discussed in Evaluation Question No. 1, the Fire and Explosions accident analysis states that no means of propagating internal explosions are foreseen, and loading from such explosions are not considered. The proposed specific exemption will not result in a design basis limit as described in the SAR being exceeded or altered.

**8. Does the Activity Result in a Departure from a Method of Evaluation Described in the SAR Used in Establishing the Design Bases or in the Safety Analyses?**

There is no design basis established for the FSC based on the potential for hydrogen generation. The design basis is confinement of the radioactive material contained within an FSC. Therefore, the proposed specific exemption does not involve a change to a method of evaluation described in the SAR used in establishing the design basis or in the safety analyses.

**Conclusion**

The results of the evaluation indicate the proposed specific exemption will not have an adverse effect on a design function. This licensing evaluation should accompany the application for the specific exemption.

The information in this licensing evaluation has been reviewed in accordance with DG-SGI-1 and CB-NRC-1.

Evaluator/Date:

Stall 4/14/16

Safety Analyst/Technical Reviewer/Date:

Stall for JP Newkirk 4/14/16

FSV ISFSI Manager/Date:

JB 4/20/16

Manager, ISFSI Management/Date:

W. Wall 4-20-16

DOE-ID ISFSI Facility Director/Date:

 4/20/16