



## Department of Energy

Idaho Operations Office  
1955 Fremont Avenue  
Idaho Falls, ID 83415

December 23, 2010

United States Nuclear Regulatory Commission  
Attn: Chris Staab  
Executive Boulevard Building  
6003 Executive Boulevard  
Rockville, MD 20852  
MS: EBB-3D-02M

**SUBJECT:** Docket No. 72-09 Response to Nuclear Regulatory Commission Request for Additional Information to Support the Environmental Review of the Renewal Request for the Fort St. Vrain Independent Spent Fuel Storage Installation Site Specific License (EM-FMDP-10-121)

**Reference:** Diana Diaz-Toro letter to Kenneth R. Whitham, Request for Additional Information to Support the Environmental Review of the Renewal Request for the Fort St. Vrain Independent Spent Fuel Storage Installation Site Specific License, Docket No. 72-09, November 30, 2010

Dear Mr. Staab:

Per the reference, the Nuclear Regulatory Commission transmitted a Request for Additional Information (RAI) for Docket No. 72-09: Fort St. Vrain Independent Spent Fuel Storage Installation Site Specific License. Enclosed you will find a copy of the FSV response to the specific questions in the RAI and five copies of a compact disk containing Adobe Acrobat copies of the RAI response and additional requested documents.

If you have any questions or additional comments regarding our response to the RAI, please contact me at (208) 526-4151.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Whitham", followed by the word "for" in a smaller, less distinct script.

Kenneth R. Whitham  
DOE-ID Licensing Manager

DOE-IDAHO OPERATIONS OFFICE

DOCKET NO. 72-09

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

RENEWAL TO THE FORT ST. VRAIN INDEPENDENT SPENT FUEL STORAGE

INSTALLATION SITE SPECIFIC LICENSE

Subsequent to the November 10, 2009 submittal of an application by the Department of Energy Idaho Operations Office (DOE-ID) for renewal of the Fort St. Vrain Independent Spent Fuel Storage Installation Site Specific License for a period of 20 years, the U.S. Nuclear Regulatory Commission (NRC) submitted a Request for Additional Information (RAI) on November 30, 2010 identifying information needed by the NRC staff to complete its environmental assessment of the proposed action described in the license renewal application. Each individual RAI listed below describes information needed by the staff for it to complete its environmental assessment to determine whether the applicant (DOE-ID) has demonstrated compliance with the regulatory requirements, as well as the DOE-ID response to each RAI.

**RAI 1**

**Please provide an electronic or hard copy of the following reference documents:**

- (SAR Ch2 Ref 23): "Geology and Seismology, Fort St. Vrain Nuclear Generating Station near Platteville, Colorado", Colorado School of Mines Foundation, Inc.
- Reply from Mr. E. C. Nichols, State Historic Preservation Officer, Colorado History Museum, to the October 26, 2009, Letter from Mr. J. Hagers, DOE-ID, regarding a Request for Consultation on the Extension of the Operating License for the Fort St. Vrain Independent Spent Fuel Storage Installation and Potential to Cause Effects on Historic Properties (EM-FMDP-09-081).
- Concurrence received October 20, 2009, from Ms. S. Linner, Colorado Field Office, U.S. Fish and Wildlife Service, to the October 13, 2009, Letter from Mr. J. Hagers, DOE-ID, to Ms. S. Linner, regarding Request for Concurrence on Determination that Extension of the Operating License for the Fort St. Vrain Independent Spent Fuel Storage Installation Will Not Likely Adversely Affect Endangered or Threatened Species and Critical Habitat (EM-FMDP-09-071).
- Weld County Resolution, Re: Approve Site Specific Development Plan and Use by Special Review Permit No. 1647 and A 1041 Permit for a Major Facility of a Public Utility (Fort Saint Vrain Generating Facility and Associated Natural Gas Pipeline) in the I-3 (Industrial) and A (Agricultural) Zone Districts – Public Service Company of Colorado, March 5, 2008.
- Environmental Supplement Reference E2.8-2: "Final Environmental Statement Related to Operation of the Fort St. Vrain Nuclear Generating Station of Public Service Company of Colorado, Docket Number 50-287, US Atomic Energy Commission, dated August, 1972."

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

Response

Digital copies of the referenced documents listed are submitted on a CD accompanying this response.

**RAI 2**

**Please describe the vault area liquid effluent monitoring program at the FSV ISFSI site.**

The applicant states that "the vault area contains a collection system that collects any potentially radioactive liquids. Liquid collected in this collection system is sampled on a quarterly basis and monitored to determine if it is radioactive or not prior to disposal" (E3.5.2). Please describe the types of samples taken, sampling locations, collection frequency, method of collection, and type of radionuclide analysis with lower limits of detection for the vault area. Also include any radiation detected.

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

Response

Technical procedure TPR-5613, FSV ISFSI Radiation Survey and Vault Drain System Sample Collection and Analysis, Revision 7, dated September 27, 2006 discusses the vault drain sample collection and analysis. A digital copy is provided on the CD accompanying this response. The vault drain system is checked quarterly for liquid. If liquid is present, a sample is collected from a capped valve on the vault drain system outside the northeast corner of the ISFSI. The sample is analyzed for fission and activation products as well as tritium (due to an estimated 878 Ci of tritium retained in the graphite of the fuel blocks). Lower Limits of Detection are based on values in 10 CFR 20, Appendix B, Table 2, Column 2 for liquid effluents.

Liquid was found twice in the vault drain system during 2001. The analytical results for the sample collected July 3, 2001 indicated gross alpha radioactivity less than the Minimum Detectable Activity (MDA) of 16 pCi/liter, gross beta radioactivity of  $328 \pm 18$  pCi/liter (MDA of 26 pCi/liter), no detectable gamma emitting fission or activation product activity, and no detectable tritium (less than MDA of 441 pCi/liter). The gross beta radioactivity was attributed to thorium daughter activity detected using gamma spectroscopy. Such activity is naturally occurring resulting from the concrete/oxidation leachates present in the vault drain sample, as corroborated by a high net weight of solids in the sample compared to a rainwater sample.<sup>1</sup>

The analytical results for the sample collected October 8, 2001 indicated no detectable gamma emitting fission or activation product activity, but detectable tritium at 476 pCi/liter (MDA of 435 pCi/liter), well below the  $1E6$  pCi/liter concentration limit in 10 CFR 20, Appendix B, Table 2, Column 2 for liquid effluents. Tritium is produced naturally in the atmosphere. There is also residual tritium activity in the atmosphere from nuclear weapons testing.

Radiological conditions in the vault drain system sample pit in 2001 were characterized as general area and surface contact radiation levels less than 0.2 mrem/h, and loose surface

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1. Letter from F. J. Borst to J. R. Newkirk, Vault Drain Sample Result Evaluation, dated August 9, 2001.

radioactive contamination levels less than 100 net cpm above background.

No liquid has been found in the vault drain system since 2001.

### RAI 3

**Please provide additional information regarding the intent to remove the spent fuel and decommission the FSV ISFSI by the year 2035.**

Because this activity is in the reasonably foreseeable future please provide a description of the activity. Consider when the activity might begin, what permits would be required, the number of shipments to empty the facility, and the frequency of shipments and how long this activity will take to complete.

Clarify in detail how the spent fuel storage containers will be transported.

At the time of decommissioning what is the potential dose to the worker and public and what is the estimated collective dose.

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

### Response

On February 13, 1996 the DOE Assistant Secretary for Environmental Management and the Governor of Colorado signed an agreement whereby DOE committed to remove all the spent nuclear fuel currently stored in the FSV ISFSI from the state of Colorado no later than January 1, 2035. On December 20, 2007 the DOE-ID Manager, under authority of the Secretary of Energy, provided the Governor of Colorado courtesy notification of DOE's intent to apply for a license renewal for the FSV ISFSI. In the courtesy notification DOE reaffirmed its commitment made in the 1996 agreement to remove all the spent nuclear fuel by January 1, 2035. If DOE's plan for spent nuclear fuel removal extends beyond November 30, 2031 (the anticipated expiration date of the requested renewed license), another license renewal application will be submitted in accordance with 10 CFR 72.42 no later than November 30, 2029 to permit spent nuclear fuel removal within the terms of the 1996 agreement and the license.

When DOE decides to permanently cease spent nuclear fuel storage operations at the FSV ISFSI, DOE will notify the NRC within 60 days of the decision in accordance with 10 CFR 72.54(d)(1). A Final Decommissioning Plan will be submitted for NRC review and approval within 12 months of the notification and prior to any decommissioning activity. When this decision will be made is uncertain, but the Final Decommissioning Plan will provide a detailed description of the activity. DOE does not foresee the need for any additional permits. A minimum of 244 shipments will be necessary to empty the FSV ISFSI of spent nuclear fuel. Assuming two shipments can be completed each week, it will take about 2.5 years to empty the FSV ISFSI. The spent nuclear fuel will remain in the Fuel Storage Containers and transported in TN-FSV casks in accordance with Certificate of Compliance No. 9253 (Docket Number 71-9253), the associated Safety Analysis Report, and 49 CFR 173.

The potential occupational radiation exposure received during the defueling campaign will depend on the radiological conditions at the time. Based on ISFSI loading operations (and as documented in Section 7.4 of the SAR), the average individual radiation exposure will be less

than 6.5 person-mrem per fuel transfer. The collective occupational radiation exposure is expected to be less than 1.6 person-rem. The radiation exposure rate to the public will be indistinguishable from natural background radiation and less than 0.15 mrem/y to the nearest resident.

#### RAI 4

**Please provide more details on the current monitoring and surveillance program.**

When the FSV power station was in operation the ISFSI was incorporated in their monitoring and surveillance programs, to include routine site patrols by FSV security personnel. The 1990 Environmental Report section 6.2.2 stated, "When the Fort St. Vrain reactor operating license is amended or terminated, those portions of the program that are relevant to the ISFSI will be retained or modified." Please describe the current monitoring and surveillance programs.

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

#### Response

The current physical protection monitoring and surveillance program, as described in the Physical Protection Plan (PLN-176), is Safeguards Information. The Physical Protection Program is compliant with 10 CFR 72, Subpart H – Physical Protection and applicable NRC Orders issued since September 11, 2001. Additional ISFSI monitoring and surveillance program elements and respective implementing documents include the following.

- Visual inspections of the cooling inlet/outlet screens (TPR-5593)
- Visual checks of tornado clamps (TPR-5593)
- Security rounds (MCP-324)
- Security equipment tests (MCP-3025 and various technical procedures)
- Operability verification of emergency communication equipment (EPI-108)
- Implementation of the Radiological Environmental Monitoring Program in accordance with 10 CFR 72.44 (MCP-2955)
- Accelerograph functional tests (TPR-5665)
- Crane inspections (TPR-5654)
- Fire detection and suppression equipment inspections (TPR-5673)
- Oil and gas industry activity monitoring (MCP-3754)
- Vault drain system checks (TPR-5613)
- Radiological surveys (TPR-5613)
- Charge face and chimney tritium sampling (TPR-6370)
- Visual inspections of the MVDS crane hoist dead stop device (TPR-5612)
- Isolation valve inspections (TPR-5606)
- Shield plug handling device inspections (TPR-5606)
- Standby storage well inspections (TPR-5590)
- Cask load/unload port seismic restraint inspections (TPR-5599)
- Lifting equipment inspections (TPR-5600)
- Container handling machine inspections (TPR-5602)
- Vault module inspections (TPR-5608)
- Cask load/unload port inspections (TPR-5610)
- Container handling machine raise/lower mechanism inspections (TPR-5605)

- Safety and health inspections (MCP-3449)
- Periodic fuel storage container leak testing (TPR-5604 and TPR-5598)
- MVDS building inspections (TPR-5589)
- MVDS crane hoist limit switch functional testing (TPR-6271)
- Isolation valve and control interlock functional testing (TPR-5653 and TPR-5655)
- Fuel storage container gas space sampling (TPR-6493)
- Fuel storage container grapple inspections (TPR-5609)

Implementing procedures describing details and frequencies of the respective ISFSI monitoring and surveillance program elements are available for review.

#### RAI 5

**Please provide additional details on the evaluations completed to determine that the continued operation of the FSV ISFSI will not result in adverse modification of critical habitat.**

Explain the steps taken to verify that proposed threatened species, the mountain plover, identified by the U.S. Fish and Wildlife Services (FWS) is not impacted by the continued operation of the FSV ISFSI. The FWS response letter to the NRC's request for information regarding endangered or threatened species and critical habitat can be found in ADAMS under reference number ML103340416.

Given that the FWS have identified a bald eagle concentration area within 0.5 miles of the FSV ISFSI facility, describe the steps that will be taken to ensure protection of the identified historic bald eagle nests and associated riparian habitat during reasonable foreseeable actions, up to and including decommissioning and fuel removal.

What preventative measures are being employed at each of the facilities three tall structures (i.e., a 204 foot tower, an unlit 145 foot transmission line tower, and a 253 foot "plant" structure with red lighting) identified in the Federal Aviation Administration's Digital Obstacle File to limit the potential for avian collisions and mortality on migratory birds.

This information is necessary in order for the NRC staff to assess the environmental impacts of the proposed action as required by 10 CFR 51.30.

#### Response

In October 2009 DOE-ID requested concurrence from the Colorado Field Office of the U.S. Fish and Wildlife Service (FWS) on the determination that extension of the operating license for the FSV ISFSI will not likely adversely affect endangered or threatened species and critical habitat.<sup>2</sup> Nine endangered or threatened species, and their respective critical habitats, as identified by the Colorado Field Office or described in 50 CFR 17 were discussed in the request. Due to the passive nature and operation of dry fuel storage at the FSV ISFSI, FWS concurred on October 20, 2009 that an extension of the FSV ISFSI operating license was not likely to adversely affect any endangered or threatened species and critical habitat.<sup>3</sup> The referenced FWS response letter to the NRC includes a recommendation to address potential impacts of the FSV ISFSI

2. DOE-ID letter EM-FMDP-09-071 dated October 13, 2009.

3. Facsimile of concurrence received by DOE-ID dated November 3, 2009.

license extension on the proposed threatened species mountain plover.<sup>4</sup> The recommendation is accepted in accordance with 50 CFR 402.10. Recognizing the preferred habitat of the mountain plover, and the fact that the passive nature and operation of dry fuel storage at the FSV ISFSI will not likely adversely affect the three endangered or threatened avian species identified, no additional steps will be taken to assure the same for the mountain plover.

The bald eagle concentration and riparian habitat along Saint Vrain Creek west of the ISFSI is incorrectly identified by FWS as being within 0.5 miles of the ISFSI. However, a riparian habitat along a half-mile section of the South Platte River due east of the ISFSI is within 0.5 miles of the ISFSI. The fact that a bald eagle concentration, several historic bald eagle nests, and a bald eagle roost area are observed in proximity to the FSV ISFSI after 19 plus years of operation lends credence to the fact that the passive nature and operation of dry fuel storage has not had an adverse impact on the bald eagle population and habitat. Buffer zone and seasonal restriction guidance published by the Colorado Division of Wildlife for raptor protection, while applicable to the FSV ISFSI, is not warranted. All fuel storage and movement (aside from occasional vehicle traffic on WCR 19 ½ and the access road into the facility) is performed inside the facility. The final decommissioning alternative ultimately chosen by DOE and approved by NRC will dictate the need for work activity restriction during decommissioning. Since the riparian habitat and bald eagle concentration is on land owned by the Public Service Company of Colorado (PSCo) out to radial distance of 0.5 to 2 miles from the ISFSI, any control of human encroachment on active bald eagle nests and roosts is the responsibility of PSCo. PSCo has an agreement in place with the Colorado Division of Wildlife for such encroachment because the area is used by farmers and oil and gas personnel on a regular basis.

The ISFSI sits on 3.83 acres of DOE-owned property. The ISFSI structure is 91 feet tall and is the tallest structure on the property. The three tall structures referenced in this RA are located on PSCo property. Two are transmission towers located south of the natural gas power plant, and the third is the Reactor Building of the decommissioned nuclear generating station. The ISFSI structure is lighted at night. No additional preventive measures are being employed by DOE to limit the potential for avian collisions and mortality on migratory birds.

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4. FWS letter to NRC dated November 22, 2010 (ML103340416).

ID DISTRIBUTION:

DOE-ID Administrative Support Center  
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CONCURRENCE:

M. O'Hagan *MOH. 12/23/10*

RECORD NOTES:

1. This letter was written to transmit the DOE-ID response to the NRC's request for additional information
2. B. Beller <sup>*wrote*</sup> ~~wrote~~ this letter
3. This letter/memo closes Pegasus number N/A
4. The attached correspondence has no relation to the Naval Nuclear Propulsion Program.
5. The attached correspondence has no relation to the ARRA stimulus funding.