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June 14, 1994  
Fort St. Vrain  
Unit No. 1  
P-94051

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Docket No. 50-267

SUBJECT: QUARTERLY SUBMITTAL OF THE 10 CFR 50.59 REPORT OF  
CHANGES, TESTS AND EXPERIMENTS FOR FORT ST. VRAIN  
DECOMMISSIONING

REFERENCE: NRC Letter dated November 23, 1992, Erickson to  
Crawford (G-92244)

Gentlemen:

This letter transmits the quarterly 10 CFR 50.59 Report of Changes, Tests, and Experiments affecting Decommissioning of the Fort St. Vrain (FSV) Nuclear Station. The attached report includes a description of each change, test and experiment as well as a summary of the safety evaluation. This report covers the period of February 16, 1994 through May 15, 1994.

This report is being submitted pursuant to Condition (b)(2) of the "Order Approving Decommissioning Plan and Authorizing Decommissioning of Facility", transmitted in the referenced letter, which states the following:

"The licensee shall submit, as specified in 10 CFR 50.4, a report containing a brief description of any changes, tests and experiments, including a summary of the safety evaluation of each. The report must be submitted quarterly."

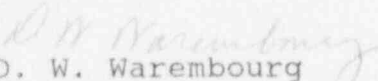
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If you have any questions concerning this report, please contact  
Mr. M. H. Holmes at (303) 620-1701.

Sincerely,

  
D. W. Warembourg  
Decommissioning Program Director

DWW/JRJ

Attachment

cc: Mr. John H. Austin, Chief  
Decommissioning and Regulatory  
Issues Branch

Regional Administrator, Region IV

Mr. Robert M. Quillin, Director  
Radiation Control Division  
Colorado Department of Health

JUNE 1994  
QUARTERLY 10 CFR 50.59 REPORT OF CHANGES, TESTS AND EXPERIMENTS  
FOR FSV DECOMMISSIONING

Background:

The following is a brief discussion of 10 CFR 50.59 changes to the Fort St. Vrain (FSV) facility or procedures as described in the Decommissioning Plan (DP) and tests and experiments not described in the DP, in the time period from February 16, 1994 through May 15, 1994.

While this report is similar to past reports of changes, tests and experiments submitted in accordance with 10 CFR 50.59, the quarterly decommissioning reports are submitted pursuant to Paragraph (b)(2) of the FSV Decommissioning Order (issued in NRC letter dated November 23, 1992, Erickson to Crawford), which states:

"The licensee shall submit, as specified in 10 CFR 50.4, a report containing a brief description of any changes, tests and experiments, including a summary of the safety evaluation of each. The report must be submitted quarterly."

Changes to the FSV Facility or its Procedures as Described in the Decommissioning Plan

Descriptions of changes to the facility and procedures as described in the DP, along with a summary of the safety evaluations, are as follows:

**1. Diving Operations in the PCRV**

Underwater diving operations are being conducted in the Prestressed Concrete Reactor Vessel (PCRV) to remove internal components. The need to use divers in the PCRV arose due to: 1) the difficulty in designing remote tooling to separate the core support floor (CSF) from the CSF support columns and steam generators, located beneath the CSF; 2) the potential need to maintain the PCRV shield water level higher than originally anticipated for certain operations based on higher dose rates from the PCRV liner and core support floor area components; and 3) the capability of divers to segregate more highly activated/contaminated wastes from lower wastes while underwater (i.e., CSF insulation, Inconel components).

None of the FSV decommissioning licensing basis documents considered the possibility of divers in the PCRV, so there were no specific criteria established for divers in the DP. Appendix A of Regulatory Guide 8.38 (Reference 1), lists six items to be

considered when using divers in high and very high radiation areas. All six of these recommendations for the use of underwater divers have been adopted at FSV to assure the safety of divers in the PCRV and maintain oversight by the FSV Radiation Protection organization. Controls have been established to minimize the potential for unplanned exposures of divers working in the vicinity of highly activated components. While the divers wear dry suits that prevent their skin from contacting the contaminated shield water, the safety evaluation included the results of conservative calculations of doses which could result if a diver were exposed to contaminated shield water. The whole body dose from such a mishap would not be expected to exceed 2 mrem.

The safety evaluation considered that, were it possible for divers to perform an operation that would breach the PCRV confinement causing a leak of contaminated water, the consequences of the incident would be bounded by the Loss of PCRV Shielding Water Accident, evaluated in DP Section 3.4.7. As with remote tooling, all component removal operations conducted by divers will be closely controlled procedurally and by supervisory/cognizant personnel to prevent the removal of wrong components, such as penetration closures, that could result in PCRV breaches. Neither the probability of occurrence of accidents or malfunctions previously evaluated in the DP, nor their consequences, are increased by diving operations in the PCRV.

The use of underwater divers in the PCRV does not create new accidents or malfunctions not previously analyzed since potential mishaps would not result in offsite releases of radioactivity. Similar controls are placed on the divers as have been used with remote tooling for component removal operations. While the use of underwater divers in contaminated and potentially high radiation areas is not part of any margins of safety defined in the Decommissioning Technical Specifications, the controls to be used in diving operations will be strictly enforced with reference to maintaining exposures to divers and any associated workers within regulatory limits and as low as reasonably achievable (ALARA).

Based on the above, it was determined that the use of divers in the PCRV does not constitute an unreviewed safety question.

## **2. Safety Evaluation for Core Support Floor Removal**

This item addresses some work activities associated with removal of the Core Support Floor (CSF) and subsequent PCRV component removal that are different from the descriptions in Section 2.3.3.10 of the DP. The variations in work activities help maintain radiation exposures ALARA. Activities that differ from the DP descriptions are as follows:

- The DP indicates that the shield water level will be lowered

to slightly above the top of the CSF following core barrel removal. However, the present plan is to maintain the PCRV shield water level as high as necessary to maintain radiological doses ALARA for the required operations. The higher-than-expected dose rates from components remaining in the PCRV dictate the elevated water level. It is planned to maintain the water level well above the top of the CSF while the CSF is being separated from the CSF columns and steam generators, and while the CSF is being lifted. The elevated PCRV shield water level will help to assure that dose rates to workers during CSF removal (as well as future component removal operations) do not exceed those projected in the DP, while the CSF and other components are submerged.

- The DP indicates that the CSF upper insulation will be removed prior to removing the CSF from the PCRV and sectioning it for shipment offsite. However, current plans would permit some of the CSF upper insulation to remain attached to the CSF during removal of the CSF from the PCRV and sectioning of the CSF. The insulation that may remain consists of the carbon steel cover plates and the Kaowool between the cover plates and the CSF carbon steel casing. The cover plates that are made of Inconel will be removed before the CSF is raised, which is expected to significantly reduce the contact dose rates. The activation level, and therefore the contact dose rate, of the remaining cover plates will be nearly the same as the CSF carbon steel casing. There is no significant radiological gain achieved by removing the bottom layer of kaowool insulation and its carbon steel cover plates.

- The DP states that the steel beam monorail spider and center turntable assembly attached to the bottom of the CSF need not be removed prior to segmenting the CSF using the diamond wire cutting process. It is now planned to remove the monorail assembly prior to sectioning the CSF in order to ease the diamond wire cutting process. An efficient diamond wire cutting process will result in lower doses to the workers. Before the introduction of divers in the PCRV, there were no viable means available to remove this monorail assembly.

The safety evaluation concluded that the alternate methods for CSF removal, including an elevated water level, do not increase the probability or consequences of accidents or malfunctions previously evaluated in the DP. Conditions which could occur as the result of maintaining an elevated shield water level in the PCRV during component removal are bounded by the Loss of PCRV Shield Water Accident evaluated in DP Section 3.4.7, which assumes release of 423,500 gallons of water from the PCRV with the maximum tritium concentration permitted by the Decommissioning Technical Specifications. The weight of the CSF with the additional upper insulation will be within the required capacity and safety margin of the strand jacking system that will be used to lift the CSF and

it is considered that drop of the CSF while it is being lifted in the PCRV is not credible, due to the design of the strand jacking system. The consequences of a drop of a CSF segment would be bounded by the consequences of the postulated drop of a top head concrete wedge analyzed in DP Section 3.4.3. Removal of the monorail assembly from the bottom of the CSF has no effect on the probability or consequences of accidents previously evaluated in the DP.

The possibility of an accident or malfunction different than any previously evaluated in the DP is not created by the alternate CSF removal methods. The operations involve the same PCRV components and handling operations as originally described in the DP. The alternate methods do not affect the bases for any Decommissioning Technical Specifications and no margins of safety are reduced.

Based on the above, it was concluded that the alternate CSF removal methods do not constitute an unreviewed safety question.

#### Tests or Experiments not Described in the Decommissioning Plan

No tests or experiments have been conducted during this reporting period that are not described in the DP.

#### References

1. U.S. Nuclear Regulatory Commission Regulatory Guide 8.38, June 1993; Subject: "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants."