Idaho National Engineering Laboratory

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EGG-NTA-7356 Revision 1
February 1988

INFORMAL REPORT

TECHNICAL EVALUATION REPORT FOR CONFORMANCE TO NRR GENERIC LETTERS 83-36 AND 83-37 BY FORT ST. VRAIN NUCLEAR GENERATING STATION

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EG&G Idaho

Work performed under DOE Contract No. DE-AC07-76ID01570

Prepared for the
U.S. NUCLEAR REGULATORY COMMISSION

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Docket No. 50-267

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Published February 1988
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Idaho Falls, ID 83415

Prepared for the
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Under DOE Contract DE-AC07-76ID01570
FIN No. D6023

ABSTRACT

This EG&G Idaho, Inc., report evaluates various submittals provided by Public Service Company of Colorado (PSC) for the Fort St. Vrain Nuclear Generating Station. The submittals are in response to Generic Letters No. 83-36 and 83-37, "NUREG-0737 Technical Specifications (TS)." Applicable sections of the Technical Specifications for the plants are evaluated to determine compliance to the guidelines established in the generic letters. This Revision 1 incorporates review of PSC's latest submittal of May 15, 1987.

FOREWORD

This report is supplied as part of the "Technical Assistance for Operating Reactors Licensing Actions," being conducted for the U.S. Nuclear Regulatory Commission, Washington D.C., by EG&G Idaho, Inc., NRC Technical Assistance.

The U.S. Nuclear Regulatory Commission funded the work under authorization B&R 20-19-10-11 1, FIN No. D6023.

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TAC No. 54535

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1. INTRODUCTION

On November 1, 1983, letters were sent by the Director, Division of Licensing, to all boiling water reactor[1] and all pressurized water reactor licensees.[2] These Generic Letters (83-36 and 83-37) provided NRC Staff guidance on the content of the Technical Specifications associated with certain items in NUREG-0737.[3] Public Service Company of Colorado submitted responses to these Generic Letters in the following correspondences: P-84046,[4] P-84101,[5] P-84242,[6] and P-85448.[7] The original INEL report dated November 24, 1986[16] provided the technical evaluation of these earlier PSC submittals and made recommendations for resolving the remaining issues. This Revision 1 to the original report adds a review of PSC's latest submittal of May 15, 1987.[17] As the Licensee's latest submittal only addressed the Generic Letter items not found in compliance in the original of this report, only the evaluation of those items (II.E.1.1, II.F.1.1, and III.D.3.4) are revised here. The evaluation of the other items (II.B.1, II.B.3, II.F.1.2, II.F.1.3, II.F.1.4, II.F.1.5, II.F.1.6, and II.F.2) remain unchanged and are retained in this report for completeness. Also, the evaluation of the noncompliance items (II.E.1.1, II.F.1.1, and III.D.3.4) from the original of this report[16] are also repeated as they establish the necessary background information. Immediately following the repeated evaluation from the original report for each of these noncompliance items is the evaluation against the Licensee's latest submittal of May 15,1987. Conclusions of the evaluations for Items II.E.1.1, II.F.1.1, and III.D.3.4 are against the Licensee's Latest submittal of May 15, 1987.

2. DISCUSSION AND EVALUATION

The Licensee was requested to provide Technical Specifications for several different systems. Each of these proposals is discussed and evaluated in an individual subsection below:

2.1 Reactor Coolant System Vents (II.B.1)

The Generic Letter contained the following statement.

> "At least one reactor coolant system vent path (consisting of at least two valves in series which are powered from emergency buses) shall be operable and closed at all times (except for cold shutdown and refueling) at each of the following locations:
>
> a. Reactor Vessel Head
>
> b. Pressurizer Steam Space
>
> c. Reactor Coolant System High Point"

A typical Technical Specification for reactor coolant system vents was provided. For the plants using a power operated relief valve (PORV) as a reactor coolant system vent, the block valve was not required to be closed as long as the PORV was operable.

Evaluation:

This item, II.B.1, was declared to be not applicable (NA) to Fort St. Vrain in earlier Nuclear Regulatory Commission (NRC) correspondence.[8] Therefore, no Technical Specifications are required for this item.

2.2 Post-Accident Sampling (II.B.3)

The Generic Letter contained the following statement.

> "Licensees should ensure that their plant has the capability to obtain and analyze reactor coolant and containment atmosphere samples under accident conditions. An administrative program should be established, implemented and maintained to ensure this capability. The program should include:
>
> a. Training of personnel
>
> b. Procedures of sampling and analysis, and
>
> c. Provisions for maintenance of sampling and analysis equipment.
>
> "It is acceptable to the staff, if the Licensee elects to reference this program in the administrative controls section of the Technical Specifications and include a detailed description of the program in the plant operations manuals. A copy of the program should be easily available to the operating staff during accident and transient conditions."

A typical Technical Specification for post-accident sampling was provided which further required the capability to sample and analyze radioactive iodines and particulates in plant gaseous effluents.

Evaluation:

NRC letter, dated August 28, 1985,[9] stated that the review of this item should be included in the Technical Specification Upgrade Program (TSUP) as the Upgrade Program draft more closely followed the guidance contained in the Generic Letters than the proposed application of

July 31, 1984.[6] Post-accident sampling is covered in the TSUP draft, dated November 30, 1985,[7] page 6-25. Specification 6.8.4.c adequately addresses iodines and particulates in the gaseous effluents and containment sampling as well as reactor coolant sampling. Since Fort St. Vrain has no Containment in the sense of the Generic Letter, sampling of Reactor Building atmosphere is proposed in lieu of containment sampling. This is judged to be an acceptable alternative.

As a result of the review of the cited material, the Licensee's response is judged to meet the requirements of the Generic Letter for Item II.B.3.

2.3 Long Term Auxiliary Feedwater System Evaluation (II.E.1.1)

The Generic Letter contains the following statement.

> "The objective of this item is to improve the reliability and performance of the auxiliary feedwater (AFW) system. Technical Specifications depend on the results of the licensee's evaluation and staff review of each plant. The limiting conditions of operation (LCO) and surveillance requirements for the AFW system should be similar to safety-related systems. Typical generic Technical Specifications are provided in Enclosure 3. These specifications are for a plant which has three auxiliary feedwater pumps. Plant-specific Technical Specifications could be established by using the generic Technical Specifications for the AFW system."

Evaluation:

The evaluation of this item from the original report[16] is repeated here as it establishes the necessary background information.

The Licensee's most recent response to this item[5] states that the Fort St. Vrain comparable system to the PWR auxiliary feedwater system is the Prestressed Concrete Reactor Vessel (PCRV) liner cooling system, addressed by Technical Specification LCO 4.2.13. Additional proposed and existing Technical Specifications were discussed in the Licensee's submittal, which relate to "concerns expressed in G-84080, March 8, 1984, relative to the operability of safe shutdown cooling equipment." Although application of criteria developed for PWRs is sometimes considerably modified when applied to FSV, sufficient justification does not appear to exist, in this instance, for designating the PCRV liner cooling system as the FSV system comparable to the PWR auxiliary feedwater system. First, the NRC has previously accepted the emergency feedwater and emergency condensate systems as satisfying the equipment requirement of Item II.E.1.1.[8] Also, Public Service Company's (PSC's) earlier response[4] to the NRC's request for Technical Specifications, was that they propose to use existing LCO 4.3.4, which again are specifications on the emergency feedwater and emergency condensate systems. Second, the intent of Item II.E.1.1 is to ensure operability of the cooling mode normally relied upon to remove heat from the primary coolant system when the main feedwater system is not available. This intent of Item II.E.1.1 is set forth in NUREG-0737 (page II.E.1.1-1, and -2[3]); Standard Review Plan, Section 10.4.9, and the associated branch technical position ASB 10-1. The cooling mode normally relied upon at FSV on loss of main feedwater is the emergency feedwater and emergency condensate systems described in FSV FSAR, Section 10.3.6, "Loss of Main Feedwater Line or Condensate Line," and 10.3.7, "Simultaneous Loss of All Three Boiler Feed Pumps." The PCRV liner cooling system, on the other hand, is part of the safe shutdown cooling system relied upon for a permanent loss of forced circulation (LOFC), which is the Design Basis Accident No. 1 described in FSAR, Section 14.10. The Licensee should, therefore, retain LCO 4.3.4 as the appropriate Technical Specifications to satisfy the Generic Letter, but these Specifications should be augmented as indicated in the NRC Letter, G-84080, as described below.

The Licen ee, in their response, should address Technical Specifications appropriate to circulator operation on water turbine drive. These Technical Specifications may already exist and only require identification, or, to be determined by the Licensee, may require additional new specifications. Loss of main feedwater at FSV would usually result in loss of circulator steam drive. Therefore, emergency feedwater or emergency condensate will only be effective in supplying cooling if the circulator water turbine drive is ensured. This added requirement for FSV has no counterpart in the PWR loss of main feedwater scenarios. In the PWR, primary coolant circulation is by electric motor driven primary coolant pumps. As such, loss of main feedwater (and steam) does not usually effect the operability of these electric motor driven pumps. In the subject Licensee's letter, reference is made to "concerns expressed in G-84080, March 8, 1984, relative to the operability of safe shutdown cooling equipment." The NRC letter, G-84080, however, only stated that "in addition, appropriate surveillance testing requirements should be included in the FSV TS which demonstrate header operability including proper circulator operation when powered from each header." This previous NRC statement apparently was to clarify the additional need for circulator water turbine drive and the emergency feedwater and emergency condensate header operability. Involvement of safe shutdown cooling (reactor plant cooling system/PCRV liner cooling system) is not necessary. As pointed out above, safe shutdown cooling is required by the permanent loss of forced circulation accident scenario. Forced circulation emergency cooling using the emergency feedwater and condensate systems and circulator water turbine drive, is, on the other hand, the system relied upon for loss of main feedwater. While the safe shutdown cooling system (FSAR Section 9.7.5) and forced circulation emergency cooling (FSAR Section 6.3) have some common components, only the latter are of concern as the comparables to the PWR auxiliary feedwater system. A majority of the Technical Specifications referenced in the subject Licensee's letter, are associated with the safe shutdown cooling/PCRV liner cooling systems. The Licensee should extract only those specifications from their March 30, 1984, letter that deal with forced circulation emergency cooling, such as those on the helium circulators, bearing water system, and bearing water accumulators. These latter specifications together with an augmented LCO 4.3.4, (see G-84080

requirements for added operability and surveillance testing for this LCO), and whatever other specifications on the forced circulation emergency cooling judged necessary by the Licensee, would then constitute the required Licensee response.

The Licensee responded to these above concerns on Item II.E.1.1 of the original of this report[16] in their letter dated May 15, 1987.[17] The Licensee's latest responses for this item are evaluated below.

The Licensee's latest response to this item[17] states that the functions of a PWR auxiliary feedwater system are more appropriately compared to the provisions of cooling water to the steam generators via the emergency feedwater or condensate headers at FSV. The Licensee also agrees that it is appropriate to consider helium circulator water turbine drive at FSV because it is required, along with secondary coolant flow, for forced circulation cooling. The Licensee further identifies that neither the auxiliary boiler feed pumps nor the condensate pumps are explicitly required in the Technical Specifications. The Licensee's reasoning is that although the auxiliary boiler pumps and the condensate pumps are relied upon during startup and shutdown and when normal feedwater (steam) are not available, safe shutdown cooling relies upon firewater via the firewater pumps, circulating water pumps, and the storage ponds. This general identification of the FSV comparables to the PWR auxiliary feedwater system is in agreement with the Staff position recommended in the November 24, 1986[16] evaluation. However, PSC's identification of the explicit Technical Specifications to implement the FSV comparables to the PWR auxiliary feedwater system is inadequate and not in compliance with the generic Technical Specification guidelines given in Generic Letters 83-36 and 83-37. Although PSC has correctly identified the existing appropriate Technical Specifications for the involved equipment, these specifications generally lack adequacy and are better addressed in the Technical Specification Upgrade Program TSUP[18] effort and the related effort on the safety related cooling functions[19,20,21] Therefore, it is recommended that this issue be addressed in terms of the proposed technical specifications in the TSUP and the related effort on the specifications on the safety related cooling functions. As the effort on the TSUP and the

safety related cooling functions is near completion, these have been evaluated for the appropriate Technical Specifications for the FSV comparables to the PWR auxiliary feedwater system. This evaluation is presented below.

For implementation of Technical Specifications to address the FSV comparable equipment to the PWR auxiliary feedwater system, the licensee identified the following items which have been put in table form (Table 1, the Technical Specification sections identified are from the existing FSV Technical Specifications).

TABLE 1. PSC'S DESIGNATED FSV EQUIVALENT IN THE EXISTING TECHNICAL SPECIFICATIONS TO PWR AUXILIARY FEEDWATER SYSTEM

TS Section	Equipment Operability and/or Surveillances
LCO 4.3.4	Emergency condensate and emergency feedwater headers
LCO 4.3.2	Boiler Feed Pumps
LCOs 4.2.6 and SR 5.2.10	Firewater pumps and piping
LCO 4.2.5	Circulating water makeup system
LCO 4.3.5	Storage ponds
LCO 4.2.19	Emergency water booster pumps
LCO 4.2.3	Helium circulator turbine water removal pumps
LCO 4.3.1	Economizer-evaporator-superheater and reheater sections of the steam generators
LCO 4.2.2 SR 5.2.7	Helium circulator water turbine drives, bearing water and bearing water accumulators
SR 5.2.8	Circulator bearing water pumps and makeup pumps surveillances
SR 5.2.9	Bearing water accumulator surveillances

Except for the condensate pumps and the condensate storage tanks the equipment identified by the Licensee is sufficient as it agrees in principal with the safety analysis requirements as presented in FSAR Rev. 5 Sections 1.4, 10.3, and 14.4 and the equipment agreed to by the NRC Staff[8] as being equivalent to the PWR auxiliary feedwater system. However, as noted above, the associated existing Technical Specifications do not adequately address the Generic Letter guidelines for the identified equipment. Without specifying the deficiencies item by item for each piece of equipment, it is sufficient to say that the associated existing Technical Specifications lack adequacy in the following areas: condensate pumps and condensate storage tanks, flow path operability, redundancy, new six inch vent valves, mode applicability, action statements, and surveillance requirements. For Example, existing LCO 4.3.1 does not specify redundancy in the economizer-evaporator-superheater (EES) heat transfer sections, definitive mode applicability, action statements, surveillances, or the operability of the new six inch vent valves. As the ongoing effort in the TSUP and safety related cooling function Technical Specifications have already proposed appropriate corrections to the majority of the above identified deficiencies, the evaluation below is against these ongoing proposals.

Based on a review of the draft Technical Specifications submitted in the TSUP[18] and the separate Licensee submittal[19] on the safety related cooling functions, it is judged that these submittals provide a much better basis for implementing TSs for the FSV equivalent equipment to the PWR auxiliary feedwater system. Therefore, a review has been made against the TSUP and separate safety related cooling function submittals to define which Technical Specifications best implement the guidelines of the Generic Letters 83-36 and 83-37 on the FSV equivalent to the PWR auxiliary feedwater system. This definition of the appropriate proposed Technical Specification is given in Table 2 below.

TABLE 2. PROPOSED DEFINITION OF FSV TS'S TO IMPLEMENT FSV EQUIPMENT EQUIVALENT TO PWR AUXILIARY FEEDWATER SYSTEM

	LCO	SR	Reference
Storage ponds	3.5.4.c	4.5.4.1. a,h,i	TSUP
Circ water pit	3.5.4.d	4.5.4.1.h,g	TSUP
Circ water pumps	3.5.4.a	4.5.4.1.c,h	TSUP
Flow paths to	3.5.4.d	4.5.4.1.d,e,f,g,h	TSUP
Fire pump pits	3.5.4.b	4.5.4.1.g,h	TSUP
Flow paths to	3.5.4.d	4.5.4.1.d,e,f,g,h	TSUP
Fire pumps	3.5.4.b	4.5.4.1.b,g,h; 4.5.4.2	TSUP
Condensate storage tank	Not presently specified		Ref 20
Flow path to	Not presently specified		Ref 20
Condensate pumps	Not presently specified		Ref 20
*Flow paths from fire pumps to	3.5.1.1.b.2); 3.5.4.d	4.5.4.1.d,e,f,g,h	TSUP and Ref 19
Flow paths from condensate pumps to	Not presently specified		
Emergency feedwater header	3.5.3	4.5.3	TSUP
Emergency condensate header	3.5.1.1.b.2); 3.5.3; 3.5.4.d	4.5.1.1.b.1; 4.5.4.1.d,e,f,g,h	TSUP Ref 19
Flow paths to		4.5.1.1.b.1,2,3	Ref 19
Steam Generator EES	3.5.1.1.a.2	4.5.1.1.b.2,3	Refs 19 and 21
New 6" vent valves		4.5.1.1.b	Ref 21

* This section of Table 2 identifies cooling to the steam generators from the firewater pumps and the condensate pumps.

TABLE 2. (continued)

	LCO	SR	Reference
**Flow paths from fire pumps to	3.5.1.1.b.2)	4.5.1.1.a.4.a,b; 4.5.4.1.d,e,f,g,h	Ref 19
Flow paths from condensate pumps to	Not presently specified	4.5.1.1.a.4.b; 4.5.4.1.d,e,f,g,h	Ref 19
Emergency water Booster pumps	3.5.1.1.b.2)	4.5.1.1.a.3.c) 4.5.1.1.a.4.b)	Ref 19
Flow paths to	3.5.1.1.b.2)	4.5.1.1.a.4.b)	Ref 19
Circulator water turbine drives	3.5.1.1.a.1	4.5.1.1.a.3.a,b; 4.5.1.1.a.4.b; 4.5.1.1.a.5.a)	Ref 19
Circulator turbine water removal pumps	3.5.1.1.b.3)	4.5.1.1.a.2.a)	Ref 19
Circulator bearing water makeup pumps	3.5.1.1.b.4)	4.5.1.1.a.2.c)	Refs 19 and 20
Circulator bearing water accumulators	3.5.1.1.b.5)	4.5.1.1.a.1	Ref 19

** This section of Table 2 identifies water to the circulator water drives from the firewater pumps and the condensate pumps.

As the TSUP and safety related cooling function amendment submittals are still in review and NRC Staff comment resolution is still ongoing, final disposition of those NRC staff comments[20,21,22] will be tracked in those reviews under TAC No. 56565. The majority of the concerns expressed above on the inadequacy of the existing TS sections identified in the Licensee's latest submittal, to implement the requirements for the equipment in Table 2 are already resolved or are the subject of ongoing resolution in the TSUP and safety related cooling function effort. These were the concerns expressed above of inadequate specifications, mode applicability, action statements, and surveillance requirements. However, in addition to the comments made in the TSUP and safety related cooling function correspondence on the equipment identified in Table 2, the

independent review performed here has resulted in the further comments identified below.

As an aside, note that redundancy in equipment to satisfy the single failure criterion, seismic qualification, safety class and emergency power requirements were the subject of and approved by the NRC Staff in the equipment review phase[8] of this issue of the FSV equivalent to the PWR auxiliary feedwater system. It is noted that the equipment identified in Table 2 meets the redundancy requirements for the single failure criterion (FSAR Section 10.3.10 and Figure 10.3-4), seismic qualification (FSAR Section 1.4.5), safety class (FSAR Table 1.4-1), and essential bus requirements (FSAR Tables 8.2-4 and 8.2.7 and Figures 8.2-9 and 8.2-10) with the following exceptions. The condensate storage tanks and condensate pumps are not seismically qualified or safety class 1. As the NRC Staff previously accepted these conditions, they are not subject to re-review here but are simply noted in passing.

The Licensee agrees and states[17] that the primary functions of a PWR auxiliary feedwater system are "(1) To provide cooling water during normal startup and shutdown, which are the primary functions of a PWR Auxiliary Feedwater System identified in NUREG-0770 and NUREG-0800, and (2) to remove heat from the primary coolant system when the main feedwater system is not available." The Licensee also stated[17] that "During normal startup and shutdown, flow is provided to the steam generators via the emergency feedwater header supplied by a main boiler feed pump, or via the emergency condensate header supplied by any of four condensate pumps, depending on plant conditions." The Licensee identified LCO 4.3.2 for the operability of the boiler feed pumps but argues that explicit Technical Specifications are not required for the condensate pumps because of their normally operating condition. It is also the purpose of the PWR Auxiliary Feedwater System (AFWS) to provide core cooling through steam generator heat removal under the above noted conditions before needing to fall back to the next defense in depth cooling capability of the Residual Heat Removal System (RHR) and or Emergency Core Cooling System (ECCS). The fire water source of the FSV safe shutdown cooling system under some circumstances (either loss of condensate storage tanks or loss of the condensate pumps) fulfills

the function of the PWR AFWS and together with the Prestressed Concrete Reactor Vessel Liner Cooling System always fulfills the functions of the PWR ECCS. The FSV safe shutdown cooling system components of Table 2 with firewater as a source, therefore, provide the equivalent to the PWR AFWS only as the exception rather than the rule. The use of the safe shutdown cooling system components of Table 2 with the firewater source is the exception rather than the rule because the water source is firewater and would not be used except as a last resort. The safe shutdown cooling system components of Table 2 with the condensate storage tanks and condensate pumps as water source is the preferred and most routinely used capability when normal feedwater cooling is not available. Therefore, the condensate storage tanks and condensate pumps (the two 12-1/2% pumps on essential buses) should have explicit technical specifications. This position is consistent with the identification of the condensate storage tanks and condensate pumps as components of the FSV equivalent to the PWR AFWS in the equipment approval phase[8] and is consistent with concerns expressed by the NRC Staff in the submittal of April 17 1987[20] on the safety related cooling functions. The PWR STS has specifications for the condensate storage tank in Section 3.7.1.3 (STS Rev. 5 draft) as the water source for the auxiliary feedwater pumps. Operability of both steam generator EES sections and of the recently installed six inch vent lines are adequately addressed in the NRC Staff comments in Enclosure 3 to the letter of July 2, 1987.[21] These concerns only need to be tracked to ensure they are implemented. The Licensee already has an existing amendment application to specify operability of both EES sections.[23]

The flow path operability of proposed LCO 3.5.4.d covers the path from the circulating water storage ponds to the circulating water pit to the circulating water makeup pumps to the fire water pumps to the emergency condensate header but does not address a similar path to the emergency feedwater header. Per FSAR Figures 10.3-4, 10.3-6, 10.3-7, and 10.3-9, the path to the emergency feedwater header provides the required flow path redundancy and should be specified. Likewise an operable flow path should be specified from the condensate storage tanks to the condensate pumps to

the emergency condensate header. Appropriate action statements, surveillances, and bases should be specified for such added specifications.

The flow path from the firewater system to the emergency water booster pumps does not have an adequate surveillance requirement. Surveillance requirement 4.5.1.1.a.4.b) simulates firewater to the emergency water booster pumps using condensate. From FSAR Figures I.2-1 and 10.3-4 it is not obvious that simulating firewater with condensate checks any valves in the firewater to emergency water booster pump flow path. Surveillance requirements 4.5.4.1.d,e,f,g and h only check valve and path operability from the firewater system to the emergency condensate header isolation valve (LCO 3.5.4.d). To close the flowpath check, surveillance requirement 4.5.1.1.a.4.b) needs to be specific in stating that the condensate is via the emergency condensate header to ensure that any valves between the emergency condensate header and the emergency water booster pumps are checked.

As a result of the review of the cited material, the Licensee is not in compliance with the requirement of Item II.E.1.1; therefore, this issue is considered to be open. However, in the TSUP[20,21,22] and during the PSC/NRC meeting of August 24, 25, 1987 and December 2, 3, 1987 the Licensee informally committed to various revisions to the safety related cooling functions and their auxiliaries that resolve a large number of the concerns of inadequacy in the Licensee's existing technical specifications for Item II.E.1.1. These commitments and revisions were summarized in the Licensee's letter of December 23, 1987.[26] These proposed revisions need to be tracked to completion and this is being pursued by the NRC Staff under TAC No. 56565. The remaining items of concern on the condensate pumps, condensate storage tanks, and flow paths from these components and from the firewater system are detailed in the above evaluation.

2.4 Noble Gas Effluent Monitors (II.F.1.1)

The Generic Letter contained the following statement.

> "Noble gas effluent monitors provide information, during and following an accident, which are considered helpful to the

operator in assessing the plant condition. It is desired that these monitors be operable at all times during plant operation, but they are not required for safe shutdown of the plant. In case of failure of the monitor, appropriate actions should be taken to restore its operational capability in a reasonable period of time. Considering the importance of the availability of the equipment and possible delays involved in administrative controls, 7 days is considered to be the appropriate time period to restore the operability of the monitor. An alternate method for monitoring the effluent should be initiated as soon as practical, but no later than 72 hours after the identification of the failure of the monitor. If the monitor is not restored to operable conditions within the 7 days after the failure a special report should be submitted to the NRC within 14 days following the event, outlining the cause of inoperability, actions taken and the planned schedule for restoring the system to operable status."

A typical Technical Specification for noble gas effluent monitors was also provided which specified monitor locations and measurement ranges.

Evaluation:

The evaluation of this item from the original of this report[16] is repeated here as it establishes the necessary background information.

The Licensee responded in the February 9, 1984, submittal[4] that existing FSV specifications ELCO 8.1.1g), 3), 4), and 8) and AC 7.4 adequately meet the intent of Generic Letter 83-37. The November 30, 1985, draft submittal,[7] page 3/4 3-78, also references Specification 8.1.1 for requirements on gaseous effluent monitoring. NRC letter, dated January 9, 1986,[10] accepted the design of monitors RT-7324-1 and -2 as meeting the instrument requirements for the noble gas effluent monitors.

Specification 8.1.1.g), 3) does not identify the mode applicability. Although Specification 8.1.1g), 8) states that best efforts shall be exerted to return one or more failed instruments to operable status within thirty days, it does not comply with the 7 days of the Generic Letter or the 14 days for a Special Report. Also, the Generic Letter recommended seven locations for noble gas effluent monitoring while RT-7324-1 and -2 together only monitor one location (this is for information only as many of the locations in the Generic Letter are not applicable to FSV and also because the NRC letter[10] accepted monitoring of only one location). Also, the daily channel check and quarterly functional test, Specification ESR 8.1.1, do not comply with the Generic Letter requirements of at least once per 12 hours and at least once per 31 days, respectively. No specific information was submitted to justify these areas of noncompliance with the Generic Letter. Also, the existing Technical Specifications ELCO 8.1.1g), and ESR 8.1.1 are not in standard format and as such are not as suited for making this change to, as would be existing Tables 3.3.2-1 and 4.3.2-1 in the November 30, 1985, Technical Specification Upgrade Program draft

The Licensee responded to these above concerns on Item II.F.1.1 of the original of this report[16] in their letter dated May 15, 1987.[17] The Licensee's latest responses for this item are evaluated below.

The Licensee states that "ELCO 8.1.1.g.1 identifies the operability requirement for the gaseous effluent monitors and states the applicability as during power operation and/or a release from the gaseous waste holdup system." This Licensee position is not in compliance with the requirements of the Generic Letter. The Generic Letter requires Modes 1, 2, 3, and 4 applicability to the noble gas effluent monitors. This mode applicability is down to 200°F for PWRs. Requiring mode applicability down to 200°F is to ensure noble gas effluent monitoring anytime there is a potential for a high energy break which could result in fission product release to the environment. By requiring fluid temperature below 200°F ensures in a PWR that pressures are very low and that instantaneous vaporization will not occur even if there were a break. FSV's applicability for the noble gas effluent monitors to power operation and/or a release from the gaseous waste holdup system does not meet the Generic Letter intent of establishing

monitoring anytime the primary system has a high energy content in terms of pressure and temperature. At FSV the primary system may have a high energy content and therefore be susceptible to boundary failures during low power, startup, and shutdown conditions as well as during power operation. Also, requiring monitoring during releases from the gaseous waste holdup system ensures accountability during planned releases but again gives no assurance of monitoring capability during unplanned releases. The noble gas effluent monitoring capability during unplanned releases is especially important as the major part of the release may be over in a short time period and may therefore be missed if monitoring instruments are not already in operation. Also during unplanned releases the magnitude of the release and the accompanying fission product radiation hazard are often such that normal accessibility to the monitoring instruments for maintenance or repair or for taking grab samples is lost. It is just for these reasons that the Generic Letter requires noble gas effluent monitoring capability to already be established anytime that there is a potential for a high energy break since after the fact attempts to establish such capability are usually unsuccessful. It is recommended that FSV tie the applicability of the noble gas effluent monitors to low primary system temperature and pressure at which boundary failure becomes insignificant. In other areas of the Technical Specification Upgrade Program such as the safety related cooling functions or ac and dc power, the PWR mode structure was accomodated by requiring applicability at all times in the Power and Low Power Modes and additionally in the Startup, Shutdown, and Refueling modes when the calculated bulk core temperature was above 760°F. Accomodating the PWR noble gas monitor applicability in the FSV Low Power, Startup, Shutdown, and Refueling modes should be approached in a similar manner.

PSC agreed in their May 15, 1987[17] response to propose a change to require failed noble gas effluent monitoring instruments to be returned to operable status within 7 days or submit a Special Report to the Commission within 14 days. This proposed change was provided to the NRC Staff on October 1, 1987[25] and required restoring an inoperable noble gas monitor within 7 days or the writing of a Special Report to the Commission within

14 days. This change is therefore acceptable and will be tracked relative to the subject amendment request under TAC No. 66506.

PSC continues to consider acceptable their daily channel checks and quarterly functional tests required by ESR 8.1.1, although not in compliance with the Generic Letter requirements of once per 12 hours and at least once per 31 days, respectively. Since the 12 hour versus 24 hour channel check frequency is small, and FSV does use 24 hours in most other checks, it is judged that the consistency of staying with 12 hours is reasonable and therefore acceptable. However the Licensee did not provide any site specific technical justification for not complying with the monthly functional test. The Licensee did state the present frequencies were agreed to in the TS without a technical justification such as instrument stability and backed up by vendor or operational data taken during surveillance testing or possibly reduced probabilities of fission product releases, the Licensee's position on the longer interval for the surveillance is unacceptable. Also the review of the noble gas effluent monitors per Generic Letter 83-36 and 83-37 is generally independent of considerations made in the TSUP. The restrictive guidelines under which the TSUP is being pursued are not necessarily applicable to this broader review under Generic Letters 83-36 and 83-37. Whatever final disposition of the noble gas effluent monitoring frequencies is accepted by the NRC Staff per this review process will eventually be required to be reflected in the TSUP and not vice versa.

PSC continues to consider the format in ELCO 8.1.1.g and ESR 8.1.1 acceptable in lieu of the standard format recommended in the Generic Letter. PSC quotes agreements reached with the NRC Staff at the beginning of the TSUP that PSC would not reformat the ELCOs and ESRs at this time. Again guidelines reached for the TSUP are not necessarily applicable to this separate broader review per Generic Letters 83-36 and 83-37. Even so, there is no reluctance to accept the existing ELCO and ESR formats except as they are deficient in specifying measurement range and mode applicability for the surveillances for the noble gas effluent monitors. If PSC would choose to use the format of the TSUP in Tables 3.3.2-1 and 4.3.2-1 as was recommended in the original of this report, all of these

deficienc. would be easily corrected simply by filling in the entries in the tables p. vided. If PSC chooses to continue to use the ELCO 8.1.1.g and CSR 8.1.1 ormat, measurement range and mode applicability for the surveillances should be provided. PSC's reference to the Offsite Dose Calculation Manual (ODCM) for the alarm/trip setpoint is acceptable as the ODCM establishes the techniques for obtaining alarm/trip setpoints to maintain releases less than 10 CFR 20 limits which are for routine releases. Alarm/trip setpoints set per the techniques in the ODCM, therefore, would be actuated much earlier than a high setpoint set to protect against large releases for accident situations. Therefore, setting alarm/trip setpoints per the ODCM techniques obviates the need for a fixed high setpoint per the guidance of the GL 83-36, 37.

As a result of the review of the cited material, the Licensee is not in compliance with the requirements on Item II.F.1.1 on mode applicability, measurement range and monthly functional testing; therefore, this issue is considered to be open.

2.5 Sampling and Analysis of Plant Effluents (II.F.1.2)

The Generic Letter contains the following statement.

> "Each operating nuclear power reactor should have the capability to collect and analyze or measure representative samples of radioactive iodines and particulates in plant gaseous effluents during and following an accident. An administrative program should be established, implemented and maintained to ensure this capability. The program should include:
>
> a. Training of personnel
>
> b. Procedures for sampling and analysis, and

c. Provisions for maintenance of sampling and analysis equipment.

"It is acceptable to the staff, if the Licensee elects to reference this program in the administrative controls section of the Technical Specifications and include a detailed description of the program in readily available procedures to the operating staff during accident and transient conditions."

Evaluation:

Item II.F.1.2 was declared to require no further action in earlier NRC correspondence.[12] Therefore, no further Technical Specifications are required for this item.

2.6 Containment High-Range Radiation Monitor (II.F.1.3)

The Generic Letter contained the following statement.

"A minimum of two in-containment radiation level monitors with a maximum range of 10^8 rad/hr (10^7 R/hr for photon only) should be operable at all times except for cold shutdown and refueling outages. In case of failure of the monitor, appropriate actions should be taken to restore its operational capability as soon as possible. If the monitor is not restored to operable condition within seven days after the failure, a special report should be submitted to the NRC within 14 days following the event, outlining the cause of inoperability, actions taken and the planned schedule for restoring the equipment to operable status.

"Typical surveillance requirements are shown in Enclosure 3. The setpoint for the high radiation level alarm should be determined such that spurious alarms will be

precluded. Note that the acceptable calibration techniques for these monitors are discussed in NUREG-0737."

Evaluation:

The Licensee responded in the July 31, 1984, submittal.[6] However, NRC letter, dated August 28, 1985,[9] stated that the review of this item should be included in the Technical Specification Upgrade Program as the Upgrade Program draft more closely followed the guidance contained in the Generic Letter than the proposed application of July 31, 1984. Table 3.3.2-1 and the basis, P. 3/4 3-77, of the TSUP draft identifies only one monitor RT-93250-14 with an alarm of $\leq$3.0 R/hr and an upper range limit of 10^4 R/hr. This is not in compliance with the requirements of two operable monitors each with an upper range limit of 10^8 R/hr. Also, the action statement does not require a special report to be submitted to the NRC if the monitor is not restored to operable status within seven days after failure as required by the Generic Letter and as committed to by PSC in their letter P-84101, dated March 30, 1984.[5] However, PSC does require reactor shutdown within 36 hours if the monitor is not restored to operable status within 7 days. The monitor is located in the Reactor Building since Fort St. Vrain does not have a Containment in the sense used in the Generic Letter.

NRC letter, dated May 14, 1984,[11] stated that PSC's single high-range radiation monitor was acceptable since the maximum credible dose in the Reactor Building was less than 2R/hr, and with such a low dose, the monitor is easily replaceable, making a redundant system unnecessary.

As a result of the review cited above and the previous NRC acceptance of the instrumentation, the Licensee's proposed Technical Specifications in the TSUP is judged to meet the requirements of the Generic Letter.

2.7 Containment Pressure Monitor (II.F.1.4)

The Generic Letter contained the following statement.

> "Containment pressure should be continuously indicated in the control room of each operating reactor during Power Operation, Startup and Hot Standby modes of operation. Two channels should be operable at all times when the reactor is operating in any of the above mentioned modes. Technical Specifications for these monitors should be included with other accident monitoring instrumentation in the present Technical Specifications. Limiting conditions for operating (including the required Actions) for the containment pressure monitor should be similar to other accident monitoring instrumentation included in the present Technical Specifications."

Evaluation:

Item II.F.1.4 was declared to require no further action in earlier NRC correspondence.[12] Therefore, no further Technical Specifications are required for this item.

2.8 Containment Water Level Monitor (II.F.1.5)

The Generic Letter contained the following statement.

> "A continuous indication of containment water level should be provided in the control room of each reactor during Power Operation, Startup and Hot Standby modes of operation. At least one channel for narrow range and two channels for wide range instruments should be operable at all times when the reactor is operating in any of the above modes.
>
> "Narrow range instruments should cover the range from the bottom to the top of the containment sump. Wide range

instruments should cover the range from the bottom of the containment to the elevation equivalent to a 600,000 gallon (or less if justified) capacity.

"Technical Specifications for containment water level monitors should be included with other accident monitoring instrumentation in the present Technical Specifications. LCOs (including the required Actions) for wide range monitors should be similar to other accident monitoring instrumentation included in the present Technical Specifications. LCOs for narrow range monitor should include the requirement that the inoperable channel will be restored to operable status within 30 days or the plant should be brought to at least a hot standby condition within the next six hours. If both monitors are inoperable, at least one monitor should be restored to operable status within 72 hours or the plant should be brought to at least hot standby condition within the next six hours."

Evaluation:

Item II.F.1.5 was declared to be not applicable to Fort St. Vrain in earlier NRC correspondence.[8] Therefore, no Technical Specifications are required for this item.

2.9 Containment Hydrogen Monitor (II.F.1.6)

The Generic Letter contained the following statement.

"Two independent containment hydrogen monitors should be operable at all times when the reactor is operating in Power Operation or Startup modes. LCO for these monitors should include the requirement that with one hydrogen monitor inoperable, the monitor should be restored to operable status within 30 days or the plant should be brought to at least a hot standby condition within the next six hours. If

both monitors are inoperable, at least one monitor should be restored to operable status within 72 hours or the plant should be brought to at least hot standby condition within the next six hours."

Evaluation:

Item II.F.1.6 was declared to be NA to Fort St. Vrain in earlier NRC correspondence.[8] Therefore, no Technical Specifications are required for this item.

2.10 Instrumentation for Determination of Inadequate Core Cooling (II.F.2)

Item II.F.2 was declared[5,12] to be superseded by the implementation of Regulatory Guide 1.97 in response to Generic Letter 82-28, and appropriate Technical Specifications will be required and will be tracked separately with that issue (Multi-Plant Action A-17).

2.11 Control Room Habitability Requirements (III.D.3.4)

The Generic Letter made the following statement.

"Licensees should assure that control room operators will be adequately protected against the effects of the accidental release of toxic and/or radioactive gases and that the nuclear power plant can be safely operated or shutdown under design basis accident conditions. If the results of the analyses of postulated accidental release of toxic gases (at or near the plant) indicate any need for installing the toxic gas detection system, it should be included in the Technical Specifications. Typical acceptable LCO and surveillance requirements for such a detection system (e.g. chlorine detection system) are provided in

Enclosure 3. All detection systems should be included in the Technical Specifications.

"In addition to the above requirements, other aspects of the control room habitability requirements should be included in the Technical Specifications for the control room emergency air cleanup system. Two independent control room emergency air cleanup systems should be operable continuously during all modes of plant operation and capable of meeting design requirements. Sample Technical Specifications are provided in Enclosure 3."

Evaluation:

The evaluation of this item from the original of this report[16] is repeated here as it establishes the necessary background information.

NRC letter, dated August 28, 1985,[9] stated that the review of this item should be included in the Technical Specification Upgrade Program as the Upgrade Program draft more closely followed the guidance contained in the Generic Letter than the proposed application of July 31, 1984.[6]

The chlorine detection and alarm system is specified on P. 3/4 3-93 of the November 30, 1985, draft.[7] Only one system is specified rather than the required two independent systems. NRC letter, dated September 8, 1983,[13] accepted the single chlorine detection and alarm system as meeting the criteria identified in Item III.D.3.4 of NUREG 0737. Therefore, this aspect of the chlorine detection and alarm system is assumed settled. Action statements, 3.3.2.6.a.1 and 3.3.2.6.a.2, require returning an inoperable system to operable status within 24 hours or for the chlorine bottle discharge valves to be closed, and a patrol made every two hours. This is not in compliance with the Generic Letter requirement to initiate the emergency ventilation system within one hour of having both chlorine detection systems inoperable (in this case only one). Also, SR 4.3.2.6.a specifies a channel check once per 24 hours versus the required once per 12 hours. The Licensee in Attachment 1 to their

November 27, 1985, Letter,[7] states that operating the emergency ventilation system with a chlorine leak would just circulate chlorine rather than fresh air. So the emergency ventilation action was deleted and a patrol action substituted. Also, 12 hours was changed to 24 hours since that is the frequency generally used for channel checks at Fort St. Vrain. Fort St. Vrain's general channel check frequency is inadequate as an argument here since FSV has no unique features relative to chlorine detection. FSAR, Section 7.4.1, states that the preferred mode of operation during an on-site toxic gas release is the minimum makeup mode using emergency makeup flow. Also, Regulatory Guide 1.95,[14] requires that immediately after control room isolation, the emergency recirculating charcoal filter or equivalent equipment designed to remove chlorine be started up and operated. The FSV emergency ventilation system which can take suction from the turbine building or outside air and has filters F-7502, F-7503, and F-7504 appears to have been designed for and is capable of chlorine cleanup as stated in the Licensee's letter of December 20, 1980.[15] Therefore, in spite of the Licensee's discussion in Attachment 2,[7] the action statement and the surveillance frequency on channel checks are not in compliance with the guidelines.

The control room emergency ventilation system is specified on page 3/4 7-56 of the November 30, 1985, draft.[7] Only one system is specified rather than the required two independent systems. Again, NRC letter, dated September 8, 1983,[13] accepted the single control room emergency ventilation system. This aspect of the emergency ventilation system is assumed settled. Action Statement 3.7.9.a allows 7 days to restore one inoperable fan or requires shutdown in the next 24 hours. Action Statement 3.7.9.b allows 24 hours to restore one inoperable fan when control room pressure is less than 0.05 inch water gauge or requires shutdown in the next 24 hours. One fan is adequate to maintain 0.05 inch water gauge pressure (Basis, page 3/4 7-59).[7] Sufficient air is available in the control room even if it is isolated to sustain 25 people for at least 12 hours with only 0.1% oxygen depletion (see FSAR, Section 11.2.2.6). For these reasons and as no direct comparable is made in the Generic Letter (the Action Statement there is for two independent systems), these action statements are judged to be acceptable. Action

Statement 3.7.9.c would allow operation for 7 days with shutdown in the next 24 hours with the control room emergency makeup ventilation filter inoperable. Again, no direct comparable is made in the Generic Letter. Loss of the filter defeats the purpose of the emergency ventilation, and is equivalent to having no ventilation. Therefore, FSV is not in compliance with the intent of the guidance in the Generic Letter which requires shutdown within 6 hours when only one of the two systems continues to be inoperable beyond 7 days. In the shutdown and refueling mode of FSV, the Action Statement allowing 7 days for restoration is, again, not in compliance with the guidance of, in this case, immediately suspending core alterations and operations which may result in positive reactivity changes upon total loss of the control room emergency ventilation/cleanup. FSV does not have a 12-hour frequency check of the control room air temperature or 31-day frequency of a 10-hour flow check and is, therefore, not in compliance with the guidelines. Testing of the filter is not in compliance with the guidelines in the following ways: (1) specifies a one sided test flow versus a range (450 ACFM versus 450 ACFM ±10%); (2) lacks a penetration test after partial or complete charcoal adsorber replacement; (3) lacks a heater dissipation test; (4) lacks a test of automatic switchover into the recirculation mode; and (5) specifies penetration of less than 5% at 30 degrees C, 95% RH rather than 3% at 30 degrees C, 95% RH (see ANSI N509-1980). Also, the Licensee stated in the letter, dated March 30, 1984 (Ref. 5), that existing LCO 4.10.1 requires control room heating, ventilation, and air conditioning (HVAC) isolation damper operability and that the control room fans and dampers are tested according to existing TS SR 5.10.1. However, in the TSUP, Section 3.7.6.3, the existing requirement for reactor shutdown after 72 hours with inoperable dampers has been deleted without explanation. SR 5.10.1 tests the response of the control room fans and dampers to a simulated signal from the Halon Fire Suppression System. This surveillance has no applicability to Item III.D.3.4 which is concerned with response to toxic gases (chlorine) and radiation, not fire suppression.

The Licensee responded to these above concerns on Item III.D.3.4 of the original of this report[16] in their letter dated May 15, 1987.[17] The Licensee's latest responses for this item are evaluated below.

The Licensee as a general note for this item stated[17] that "as indicated by the NRC in Reference 1, this item is being reviewed as a part of the Technical Specification Upgrade Program (TSUP). Final Resolution of the concerns identified in Reference 1 will be achieved in conjunction with the resolution of other TSUP issues." Reference 1 in the Licensee's Letter[17] is simply the original of this report[16] and for the subject item III.D.3.4, the original report evaluation was just repeated above. For clarification, the opening statements of the original evaluation simply noted that the NRC letter dated August 28, 1985,[9] recommended that the review of this item III.D.3.4 be included in the TSUP as the Upgrade Program draft more closely followed the guidance contained in the Generic Letter than the proposed application of July 21, 1984.[6] The subsequent content of the original of this report then goes on to make the evaluation. So the evaluation of item III.D.3.4 is per the Generic Letter and is the subject of this report not the TSUP. However, following the advice of the quoted NRC letter of August 28, 1985, the evaluation was made against the material for this item in the TSUP as opposed to the proposed Licensee application of July 31, 1984. That doesn't at all imply that this item resolution is per the TSUP. Again on the contrary, the final disposition of the acceptance of this item will be as judged by the NRC Staff in this report per the Generic Letter and the TSUP material on this item will be so revised to reflect this and not vice versa.

Relative to the comments on Actions 3.3.2.6.a.1 and 3.3.2.6.a.2, PSC continues to state that the actions are acceptable. As justification PSC states that during TSUP discussions with the NRC in July 1985, it was agreed that switching to the minimum makeup mode was not desirable because in that mode, the intake is lower than normal and increases the chances of introducing chlorine into the system. Also, notwithstanding that the minimum makeup mode intake has filters that are rated for chemical

releases, PSC continues to choose as the action to close the chlorine bottle discharge valves and patrol the area once every 2 hours.

PSC's response to the comments on the Actions 3.3.2.6.a.1 and 3.3.2.6.a.2 continues to be inadequate. First, PSC provides no justification or discussion for allowing 24 hours to restore the single chlorine detection and alarm system to operable status versus the one hour allowed by the Generic Letter. The Generic Letter Action with no operable chlorine detection system is to restore a system to operable status within 1 hour or place the control room emergency ventilation system in the recirculation mode. Placing the control room emergency ventilation system in the recirculation mode is essentially the automatic action initiated in a PWR upon receipt of a toxic gas signal. So the Generic Letter guidance is to have a chlorine detection system operable or within 1 hour place the system in the same status as if a high toxic gas signal had actually been received. Second, the previous NRC comment on the Action was simply to substitute "recirculation" for "minimum makeup." PSC answered this comment in Attachment 2 of PSC letter dated November 27, 1985[18] by stating the resolution was to "leave as is" because operating in the minimum makeup mode would just circulate chlorine gas. The NRC Staff comment letter on this PSC submittal was contained in the letter of May 30, 1986 and the Chlorine Detection and Alarm System was specifically stated on the first page to be an "ongoing review outside the TSUP." The ongoing review outside the TSUP was submitted as the original of this report[16] and had already addressed all preceding correspondence and discussions and continued to take exception to PSC's reluctance to place the control room ventilation system in recirculation/minimum makeup per FSV FSAR Section 7.4.1 and per the Generic Letter. To defend closing the chlorine bottle discharge valves, except during chlorination, and patrol the area once every two hours, PSC should demonstrate that the control room would not exceed the Regulatory Guide 1.95[14] limit of 15 ppm by volume (45 mg/m^3) within two minutes after the operators are made aware of the presence of chlorine. For both a low-leakage-rate release and a short-term puff emanating from inside the Chemical Building, PSC should demonstrate using the instantaneous release diffusion model appearing in Appendix B of Regulatory Guide 1.78,[24] that the Regulatory Guide 1.95, 15 ppm limit is

not exceeded. This analysis should account for any Chemical Building air volume recycling, any exfiltration and or leakage due to the building becoming pressurized with chlorine gas, and the release duration should allow for the two hours between patrols and the time it takes the patrol to discover the chlorine gas and report it to the control room. As PSC's design of the chlorine detector being inside the Chemical Building was stated in PSC's letter of December 20, 1980[15] and was accepted by the NRC Staff in the letter of September 8, 1983,[13] then it is assumed that the NRC Staff also accepted PSC's explanation that the detector would probably not respond to an offsite puff release or an onsite release due to handling of the chlorine storage bottles, as this is done outside the building, and, therefore, is not an issue. However since the NRC Staff did require that the chlorine detector be installed and that it be subjected to Technical Specifications per the Generic Letter 83-36, then for, at least, releases inside the Chemical Building, PSC must adhere to the Generic Letter guidelines. As a future response, PSC should not restate the position given in their letter of February 9, 1984[4] that "this detector was not required per NRC Regulatory Guide 1.95" since the NRC Staff obviously did not accept this position in so requiring it. Further, although PSC has repeatedly stated that operation in the minimum makeup mode would probably introduce chlorine gas into the control room ventilation system because of the lower than normal elevation of the intake, PSC has never provided any information to establish what level of chlorine gas might be obtained, accounting for the intake air flow rate, intake filter, F-7502, removal efficiency, recirculation flow rate, and control room filters F-7503 and F-7504 removal efficiencies. If in fact this recirculation mode with minimum makeup taking suction from inside the isolated turbine building as described in FSAR Section 7.4.1 cannot maintain a chlorine release within limits then FSAR Section 7.4.1 should note this inadequacy. Also, if operation in the recirculation mode with minimum makeup does cause chlorine to be introduced into the control room ventilation system then the higher normal air intake will also introduce chlorine gas but reduced by axial diffusion and under these circumstances PSC has again never provided data for which operating mode results in the least chlorine intrusion. If the recirculation mode with minimum makeup can in fact maintain chlorine levels within the limit, then it is a viable option for when the chlorine

detection and alarm system is inoperable. PSC's alternate position of closing the chlorine bottle discharge valves and establishing a patrol every two hours, is of course, an acceptable option too, provided the analysis discussed above can demonstrate its acceptance.

Relative to a 12 hour channel check, PSC restated its earlier position that a 24 hour channel check is appropriate when considered in the perspective of the remainder of the TSUP instrument surveillances. Again, PSC's 24 hour surveillances for other instruments such as accident mitigation or other PPS activities were based on arguments of longer times to reach fuel damage because of the higher temperature above normal before the coated particle graphite fuel reaches failure limits and because of the large heat sink provided by the graphite core matrix and reflector. These arguments have limited applicability to a chlorine release since for chlorine it is maintenance of control room functions by operating personnel that is imperative. However, because of the limited usefulness of the chlorine detector, being inside the Chemical Building and thus not being responsive to offsite or outside the building chlorine gas bottle handling releases, and because 12 hours versus 24 hours is small, and because consistency of a 24 hour surveillance is expected to be advantageous, it is judged that the 24 hour channel check is acceptable.

PSC's response to Action 3.7.9.c for when the control room emergency ventilation system filter (F-7502) is inoperable is to restore the filter to operable status in 72 hours or be in shutdown within the next 24 hours. This action is inconsistent with Action 3.7.9.a for loss of the emergency filter fan (C-7506) as loss of the fan most likely renders the filter useless. Also FSAR Section 11.2.2.6 appears to only remain valid in its conclusion of personnel protection against excessive doses provided that positive pressure is maintained in the control room. Otherwise control room inleakage of contaminated air needs to be accounted for but does not appear to be. It, therefore, appears appropriate that inoperability of the control room emergency ventilation filter should be tied to control room positive pressure as is the case for the emergency and supply fans. Therefore, PSC's proposal to restore the filter to operable status in 72 hours or be in shutdown within the next 24 hours should be contingent

upon a control room positive pressure of >0.05 inches water gauge. Simply allowing 72 hours for repair or shutdown within the next 24 hours without personnel protection far exceeds the Generic Letter guidance of being in cold shutdown within 36 hours for similar conditions. The NRC staff[13] has already accepted PSC's essentially single control room ventilation system together with maintenance of at least a control room positive pressure >0.05 inches water gauge in Lieu of the Generic Letter two independent systems. Further reduction of requirements are not warranted. Also Action 3.7.9.b should be deleted, since as just covered, <0.05 inches water gauge control room pressure does not support the conclusions of FSAR Section 11.2.2.6.

PSC's response for the Shutdown and Refueling Action continues to be 7 days to restore an inoperable control room emergency ventilation system before suspending core alterations, control rod motion or movement of irradiated fuel. PSC should make the Action consistent with the approach used for the Actions under Power, Low Power and Startup. Namely, where the Generic Letter for power, startup, hot standby and hot shutdown has allowed 7 days for restoration with one of two independent control room emergency ventilation systems inoperable, PSC's fallback position with its only single system inoperable, is maintenance of a control room positive pressure of >0.05 inches water gauge. For shutdown and refueling PSC should similarly make the 7 days for restoration contingent on providing a control room positive pressure of >0.05 inches water gauge. Stating general considerations of overall radioactive sources at FSV being several orders of magnitude lower than comparable PWRs is vague and is not inclusive of inadvertent criticality accidents, chlorine inhalation or smoke inhalation.

Also, as PSC's shutdown mode does not distinguish between hot standby, hot shutdown and cold shutdown, as is done in the Generic Letter, the Applicable Modes and the Actions should invoke the Calculated Bulk Core Temperature concept of 760°F used in other similar instances. Again, in the TSUP, in areas such as the safety related cooling functions and ac and dc power, the PWR mode structure applicability of modes 1, 2, 3, and 4 (down to 200°F) was accomodated at FSV by requiring mode applicability to

Power and Low-Power and additionally to Startup, Shutdown, and Refueling when the calculated bulk core temperature was >760°F. Accomodating the PWR applicability for the control room emergency ventilation system should be approached in a similar manner.

With regard to the daily check of control room air temperature versus the Generic Letter Guidance of 12 hours, it is judged that for consistency with FSV's general use of a daily surveillance and since the control room is constantly manned, that the intent is met.

PSC agrees to add a surveillance requirement to operate the emergency ventilation system for 10 hours once per 31 days. This is acceptable but needs to be tracked until completed. The NRC Staff should request the Licensee to provide a schedule for when these revisions would be formally submitted.

With regard to the emergency ventilation filter, PSC agrees to specify a flow range when the system flow rate is called out, a penetration test after partial or complete charcoal absorber replacement, a surveillance to demonstrate automatic switchover into the recirculation mode, and to revise the iodine penetration limit to less than 3% at 30 degrees C, 95% RH. In proposed SR 4.7.9.d.2, PSC should add the words "with flow through the HEPA filter and charcoal absorber banks." As PSC's proposals in these areas meet the Generic Letter guidance, they are acceptable but need to be tracked to completion. The NRC Staff should request the Licensee to provide a schedule for when these revisions would be formally submitted.

A heater dissipation test is not required as the system does not utilize heaters because of the dry climate. As lack of heaters was previously accepted by the NRC Staff when the control room ventilation system design was accepted,[13] this issue is assumed closed.

PSC stated that the requirement to shut down the reactor within 72 hours with inoperable control room ventilation system isolation dampers is because there is no comparable requirement in the STS. This is acceptable as proposed SR 4.7.6.3.c demonstrates proper damper action on

simulated halon test signal and because of the proposed SR 4.7.9.d.2 to demonstrate proper damper action on a simulated high radiation test signal. However, proposed SR 4.7.6.3.c and SR 4.7.9.d.2 need to be tracked to completion in the TSUP, TAC No. 56565.

As a result of the review of the cited material, the Licensee's response is judged to be not in compliance with the requirements of the Generic Letter, Item III.D.3.4. As a resolution to some of the non-compliance areas PSC did propose that they would revise certain of the surveillance requirements. These proposed revisions are detailed above. The NRC Staff should request the Licensee to provide a schedule for when these proposed revisions would be formally submitted.

3. SUMMARY

The following subsections describe those issues that are considered to have been satisfactorily addressed by the Licensee:

Post-Accident Sampling (II.B.3)
Sampling and Analysis of Plant Effluents (II.F.1.2)
Containment High-Range Radiation Monitors (II.F.1.3)
Containment Pressure Monitor (II.F.1.4)

The Licensee is not in compliance with the Generic Letter guidance for the following items:

Long-Term Auxiliary Feedwater System Evaluation (II.E.1.1)
Noble Gas Effluent Monitor (II.F.1.1)
Control Room Habitability Requirements (III.D.3.4)

In previous correspondence with the Licensee, the following items have been designated as not applicable to Fort St. Vrain:

Reactor Coolant System Vents (II.B.1)
Containment Water Level Monitor (II.F.1.5)
Containment Hydrogen Monitor (II.F.1.6)

Instrumentation for determination of inadequate core cooling, Item II.F.2, will be tracked separately relative to Regulatory Guide 1.97 (Multi-Plant Action A-17).

4. REFERENCES

1. D. G. Eisenhut, NRC letter to all Boiling Water Reactor Licensees, "NUREG-0737 Technical Specifications (Generic Letter 83-36)," November 1, 1983.

2. D. G. Eisenhut, NRC letter to all Pressurized Power Reactor Licensees, "NUREG/0737 Technical Specifications (Generic Letter 83-37)," November 1, 1983.

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NRC FORM 335 (2-84) NRCM 1102 3201 3202

U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET

SEE INSTRUCTIONS ON THE REVERSE

1 REPORT NUMBER (Assigned by TIDC and Vol. No. if any)

EGG-NTA-7356 Revision 1

2 TITLE AND SUBTITLE

TECHNICAL EVALUATION REPORT FOR CONFORMANCE TO NRR GENERIC LETTER 83-36 AND 83-37 BY FORT ST. VRAIN NUCLEAR GENERATING STATION

3 LEAVE BLANK

4 DATE REPORT COMPLETED

MONTH: February YEAR: 1988

5 AUTHOR(S)

J. C. Stachew

6 DATE REPORT ISSUED

MONTH: February YEAR: 1988

7 PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

NRC Technical Assistance
EG&G Idaho, Inc.
P. O. Box 1625
Idaho Falls, ID 83415

8 PROJECT/TASK/WORK UNIT NUMBER

9 FIN OR GRANT NUMBER

D6023

10 SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)

Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

11a TYPE OF REPORT

Final Technical Evaluation Report

b PERIOD COVERED (Inclusive dates)

12 SUPPLEMENTARY NOTES

13 ABSTRACT (200 words or less)

Revision 1 to final Technical Evaluation Report on the audit of the Fort St. Vrain Nuclear Generating Station Technical Specifications performed for the NRC in connection with conformance to the requirements of the NRR Generic Letters Nos. 83-36 and 83-37, "NUREG-0737 Technical Specifications."

14 DOCUMENT ANALYSIS - a KEYWORDS/DESCRIPTORS

15 AVAILABILITY STATEMENT

Unlimited

b IDENTIFIERS/OPEN-ENDED TERMS

16 SECURITY CLASSIFICATION

(This page) Unclassified

(This report) Unclassified

17 NUMBER OF PAGES

18 PRICE