

WOLF CREEK

NUCLEAR OPERATING CORPORATION

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June 16, 1994

WO 94-0071

U. S. Nuclear Regulatory Commission
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Reference: Letter dated May 19, 1994, from T. P. Gwynn, NRC/RIV,
to N. S. Carns, WCNOG
Subject: Docket No. 50-482: Reply to Notices of Violation
482/9404-01, -02, and -03

Gentlemen:

Attached is Wolf Creek Nuclear Operating Corporation's (WCNOG's) Reply to Notices of Violation 482/9404-01, -02 and -03, which were documented in the Reference (NRC Inspection Report 50-482/94-04).

Violation 482/9404-01 concerned WCNOG's failure to justify each deviation from the Westinghouse Owner's Group generic technical Emergency Response Guidelines (ERGs) and document these justifications in a maintained background document or data package for Revision 4 of the Wolf Creek Generating Station (WCGS) Emergency Management Guidelines (EMGs).

Violation 482/9404-02 concerned WCNOG's failure to designate an appropriate subject matter expert and adequately assess the effects of radiation levels on the ability to perform local operator actions called for in Revision 4 of the EMGs.

Violation 482/9404-03 concerned the fact that WCGS EMG FR-H1, "Response to Loss of Secondary Heat Sink," Revision 4, was not maintained, in that a step was inadvertently omitted from the procedure.

WCNOG's response to these three Notices of Violation is provided in the Attachment to this letter. WCNOG recognizes the importance of maintaining accurate and appropriately updated EMGs. The corrective actions taken for these violations have been comprehensive and have brought WCGS into compliance with the applicable regulations and procedure requirements.

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If you should have any questions regarding this response, please contact me at (316) 364-8831, extension 4450, or Mr. R. D. Flannigan at extension 4500.

Very truly yours,



Otto L. Maynard

NSC/jra

Attachment

cc: L. J. Callan (NRC), w/a
G. A. Pick (NRC), w/a
W. D. Reckley (NRC), w/a
T. Reis (NRC), w/a

Reply to Notices of Violation 482/9404-01, -02, and -03

Violation 482/9404-01: Failure to justify each deviation from the Westinghouse Owner's Group (WOG) generic technical Emergency Response Guidelines (ERGs) and document these justifications in a maintained background document or data package for Revision 4 of the corresponding Wolf Creek Generating Station (WCGS) Emergency Management Guidelines (EMGs).

"During an NRC inspection conducted on April 4-8, 1994, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, the violations are listed below:

- A. Technical Specification 6.8.1.b requires that written procedures be established, implemented, and maintained covering the emergency operating procedures required to implement the requirements of NUREG-0737, "Clarification of TMI Action Plan Requirements," and Supplement 1 to NUREG-0737 as stated in Generic Letter 82-33, "Supplement 1 to NUREG-0737, Requirements for Response Capabilities," Section 7.1.

Procedure AP 35-001, "Procedure Writer's Guide," Revision 2, Section 6.6.2, states that a background document shall be written and maintained for all emergency operating procedures.

Procedure ADM 01-052, "Emergency Procedure Generation Package," Revision 5, Section 6.2.5, states that the technical basis for each emergency operating procedure shall be described in a background document. Section 6.3.7 of ADM 01-052 states that justification for each deviation from the generic technical guidelines shall be documented in a background document or data package for the procedure. Section 6.3.8 states that justification for each safety significant deviation from the generic technical guideline shall clearly describe why this deviation is necessary on a plant-specific basis.

Contrary to the above, the licensee failed to justify each deviation from the generic technical guidelines and document these justifications in a maintained background document or data package for Revision 4 of the emergency operating procedures."

Admission of Violation:

WCNOC acknowledges and agrees that a violation of WCGS Technical Specifications (TS) occurred when personnel failed to ensure the appropriate WCGS procedural requirements were followed for the documentation of WOG ERG deviation justifications prior to approval and issuance for use of Revision 4 to the WCGS EMGs.

Reason for Violation:

The root cause of this violation is cognitive personnel error in failing to ensure appropriate plant procedures were adhered to during the review and approval of, and prior to issuance for use of the WCGS EMGs, Revision 4. A contributing factor to this violation was the fact that procedure ADM 01-052, "Emergency Procedure Generation Package," Revision 5, did not specifically require the background document for EMG procedures to be revised at the time of the corresponding procedure revision.

The intent of the Plant-Specific Background Document is to provide information useful towards understanding the steps in the EMGs. This includes the purpose and content of the step itself, its basis, operator knowledge and abilities, plant design/system capabilities, and applicable references. This also documents any deviations taken to the WOG ERGs. The background information for each step in the WCGS EMGs, up to and including Revision 3, used the WOG ERGs Background Documents and the procedure data package. The changes to these procedures and the basis for them associated with Revision 4 of the WCGS EMGs were covered in licensed operator requalification training in the classroom and on the plant-specific simulator. This information is now in the plant-specific background document recently issued with WCGS EMGs, Revision 5.

Revision 4 of the WCGS EMGs was issued without a background document because it was desired to devote the necessary plant personnel resources towards their timely issuance in order to meet available licensed operator requalification training dates. The issuance of Revision 4 resolved a significant number of technical and human factor concerns identified in comments from the operating crews, simulator instructors and management personnel. Also, Revision 4 of the WCGS EMGs was developed and issued after the release of the comprehensive setpoint document for all setpoints listed and utilized in the EMGs. This also assisted in ensuring the technical adequacy of these changes.

Corrective Steps That Have Been Taken and the Results Achieved:

WCNOC had discovered this condition previously and a Performance Improvement Request (PIR) # 94-0690 was issued on April 1, 1994.

A draft of Revision 5 to the WCGS EMGs and the Plant-Specific Background Document was written and underwent an appropriate review in accordance with station procedures. This review was conducted by plant operators, training instructors and Operations management, and was completed on March 30, 1994. This included an independent review conducted by Volian Enterprises, the engineering vendor for the WCGS EMGs. Comments were resolved and/or incorporated into the proposed WCGS EMGs, Revision 5, by May 6, 1994. Finally, Revision 5 of the WCGS EMGs and the associated Plant-Specific Background Document were approved for issuance on May 26, 1994. This corrective action ensured the appropriate deviation justifications remaining from Revision 4, as well as any new ones for Revision 5, were properly documented per procedures.

Procedure ADM 01-052, "Emergency Procedure Generation Package," Revision 7, now includes Step 6.2.9 that specifically requires the background document for affected changes be revised at the time of a procedure revision. This corrective action, which was completed on April 30, 1994, will ensure EMG procedural deviations from the WOG ERGs are appropriately documented, as intended.

A new form was added to Revision 7 of ADM 01-052 which will be used to compile and verify all relevant material is placed in the procedure history file. Section 6.6 of ADM 01-052 was modified to require the procedure history file be completed within 45 days of a revision to a procedure. This corrective action, which was completed on April 30, 1994, was taken to provide verification that such documents as the Plant-Specific Background Document have, in fact, been appropriately filed with each EMG revision.

Training was conducted on the above changes to ADM 01-052 requirements for the procedure writers in the Operations Procedure Group. This corrective action provided additional assurance that the purpose and scope of these changes were understood by the procedure writers so as to prevent recurrence of the conditions surrounding this violation.

The Operations procedure writers were trained on April 15, 1994, on the importance of following procedures. This action provided a follow-up on the significance of this violation and WCNOG policies and expectations in this area so as to prevent recurrence of this violation.

The individual involved in not following the WCNOG associated procedural requirements associated with this violation has been appropriately counseled in accordance with corporate disciplinary policy. This will assist in preventing recurrence of the conditions surrounding this violation as it stressed the importance of procedural compliance.

Corrective Steps That Will be Taken to Avoid Further Violations:

The corrective actions described above are considered appropriate and sufficient to avoid further violations of this nature. Therefore, all corrective actions are completed and WCNOG is in full compliance with WCGS Technical Specification 6.8.1.b and the associated WCNOG procedures.

Date When Full Compliance Will be Achieved:

All corrective actions related to this violation were completed by May 26, 1994, with the final approval of Revision 5 to the WCGS EMGs.

Actual or Potential Safety Consequences of This Violation:

The following WCGS procedural requirements are applicable to this discussion:

- ADM 01-052, Revision 5, Section 6.2.1, requires that all EMGs be based upon the latest revision of the WOG ERGs as part of the technical justification for the associated procedures. The WCGS EMGs, Revision 4, were based on the latest revision of the WOG ERGs.
- ADM 01-052, Revision 5, Section 6.3.7, requires that each deviation from the generic technical guidelines be documented in a background document or data package for the affected procedure. The WCGS EMGs, Revision 4, were issued without a background document for the previously stated reasons (see Reason for Violation).
- ADM 01-052, Revision 5, Section 6.4.4.3, requires that the procedure be reviewed to ensure all deviations are technically accurate, properly classified, and adequately justified.

The changes to the WCGS EMGs, Revision 4, were based on the WOG ERGs. These changes were reviewed and signed off as technically accurate. This is evidenced by the Item 2 sign-offs per ADM 01-052, Revision 5, Attachment C, for each verified procedure. Part of the technical adequacy review includes evaluation to ensure that the deviations from the generic technical guidelines are necessary due to plant-specific design or operational requirements. This review and sign-off was completed by an individual well versed in WOG ERG requirements and the associated WCGS deviations. The review was conducted in accordance with ADM 01-052, Revision 5, Attachment A.

The WCGS EMGs, Revision 4, went through the program required verification and validation (V&V) activities.

Training was conducted on the Revision 3 to Revision 4 changes with the operators. This included reviewing the procedure step by step and discussing the basis for each change. This training was given by the procedure writer involved with these changes and consequently had the most knowledge regarding the bases for the changes.

The WCGS EMGs, Revision 4, had been used on the simulator for Licensed Operator Requalification Training for the last three cycles. All six operating crews and six staff crews had used this version of the EMGs without major technical difficulty and with no transient/accident mitigation strategy problems.

The V&V activities, the training of the operators and the successful use of the EMGs provided a high level of assurance that the procedures were technically correct and worked in guiding the procedure end-user in appropriately managing plant emergency conditions for which the procedures were written.

The issuance of the WCGS EMGs, Revision 4, without the required background document, which would have provided written classification and justification for each deviation, was an administrative problem only and did not affect the technical quality of these procedures. Thus, the actual or potential consequences of this violation had minimal safety significance since equipment operability was not impacted, and the changes made for Revision 4 of the WCGS EMGs were well within the existing plant-specific system design bases and consistent with the capabilities of appropriately trained and licensed operators for their use.

Violation 482/9404-02: Failure to designate an appropriate subject matter expert and adequately assess the effects of radiation levels on the ability to perform local operator actions called for in Revision 4 of the WCGS EMGs.

"B. Technical Specification 6.8.1.b requires that written procedures be established, implemented, and maintained covering the emergency operating procedures required to implement the requirements of NUREG-0737, "Clarification of TMI Action Plan Requirements," and Supplement 1 to NUREG-0737 as stated in Generic Letter 82-33, "Supplement 1 to NUREG-0737, Requirements for Response Capabilities," Section 7.1.

Procedure ADM 01-052, "Emergency Procedure Generation Package," Revision 5, Section 6.4.3, states emergency operating procedure verification shall be performed by subject matter experts designated by the Operations Manager. Section 6.4.5 states that each reviewer shall evaluate the procedure against the verification criteria provided in Attachment A. Attachment A required the reviewer to determine if all emergency operating procedure local operator actions were capable of being performed under worst case environmental conditions (radiation levels, steam, flooding, toxic gases, and lighting levels).

Contrary to the above, the licensee failed to designate an appropriate subject matter expert and adequately assess the effects of radiation levels on the ability to perform local operator actions called for in Revision 4 of the emergency operating procedures."

Admission of Violation:

WCNOC acknowledges and agrees that a violation of WCGS Technical Specifications (TS) occurred when personnel failed to ensure the appropriate engineering evaluation (required in this case for the purposes of a subject matter expert) of postulated post-accident room/area radiation levels was completed prior to the approval for use of WCGS EMGs, Revision 4.

Reason for Violation:

The root cause of this violation is cognitive personnel error in failing to ensure appropriate plant procedures were adhered to during the review and approval of, and prior to issuance for use of the WCGS EMGs, Revision 4. Although this EMG local operator action verification criterion had been evaluated by plant operators during walkdowns of these procedures, operators should not have been considered as the "subject matter experts" for this activity sign-off in Signature Block 4 of Attachment C to ADM 01-052.

ADM 01-052, Attachment A, provides criteria to be used in the verification of local operator actions related to the EMGs. Criterion 4.2 of Attachment A states: "Can all local operator actions be performed under worst case

environmental conditions postulated for the procedure? Environmental conditions to be considered shall include radiation levels, steam, flooding, toxic gases, and lighting levels." As stated above, during the verification of the Revision 4 EMGs, this criterion was evaluated by plant operators during their walkdowns of the EMG procedures. Since the basis for this violation was that plant operators should not be considered subject matter experts in the field of postulated post-accident radiation levels, the requirements of ADM 01-052, Attachment A, Criterion 4.2 were not satisfied.

Corrective Steps That Have Been Taken and the Results Achieved:

Performance Improvement Request (PIR) # 94-0767 was initiated on April 15, 1994, to formulate the corrective actions for this violation.

Operations had provided a list of local operator actions, along with the type of accident in progress for each required action step, to Engineering in February 1993. This was to ensure that local operator actions could be performed under worst case radiation environmental conditions. At that time, Engineering commenced this evaluation for postulated post-accident conditions for each of these local operator actions. The plant rooms/areas in which the local operator actions take place were identified by Operations using a draft copy of WCGS EMGs, Revision 4. Prior to approval of the Revision 4 EMGs, Operations held several discussions with Engineering regarding the accessibility of all rooms/areas assuming at least one train of the Emergency Core Cooling System (ECCS) was in operation or if natural circulation was in progress. However, no formal documentation of this preliminary finding was ever obtained. The Revision 4 EMGs were approved on November 16, 1993, while the formal radiation study was still in progress. Therefore, a formal subject matter expert review of expected radiation levels for EMG local operator actions was not completed and documented at the time the Revision 4 EMGs were issued for use.

The result of Engineering's evaluation was transmitted to Operations via letter ES 94-0064 on February 4, 1994. This evaluation showed that all areas would be accessible during non-Loss of Coolant Accident (LOCA) events. However, some areas may not be accessible post-LOCA. Postulated post-accident radiation dose rates were determined based on NUREG-0737 source terms, which very conservatively assume a LOCA inside Containment coincident with a failure of both ECCS trains and no natural circulation capability. These assumptions would only be applicable after the operator had entered the EMG Functional Restoration Procedures for inadequate or degraded core cooling. Therefore, the radiation dose rates determined in this engineering evaluation are considered to be overly conservative for the great majority of the EMG procedure steps based on postulated plant conditions and equipment availability/operability. This engineering evaluation also determined that if at least one train of ECCS performs properly, or if natural circulation is achieved prior to fuel damage during a LOCA, then more realistic radioactive source terms could be assumed. This resulted in the evaluation concluding that all rooms/areas would be accessible. The existing WCGS EMGs currently establish ECCS flow and verify natural circulation, by verifying Reactor Coolant System (RCS) heat removal is adequate, as part of the initial response

to all accident conditions. Therefore, it is expected that at least one train of ECCS will be injecting or natural circulation will be in progress during the performance of nearly all EMGs, except under severely degraded equipment conditions leading to core damage.

The results of the engineering evaluation completed on February 4, 1994, were compared to the approved Revision 4 EMGs. It was determined that all local operator actions which were essential to event mitigation strategies could be performed given the postulated area radiation levels identified by Engineering. Local operator actions in areas determined to be potentially inaccessible per this evaluation are "contingency actions" and are not essential to event mitigation and would be attempted only if actual post-accident radiation levels actually permitted it. Therefore, WCGS EMGs, Revision 4, can be performed under worst case postulated area radiation level conditions, and the verification requirements of ADM 01-052, Attachment A, have now been satisfied. Documentation of this review was included in the Revision 4 EMG verification history file on June 14, 1994.

ADM 01-052 was revised to require that local operator actions are checked against the appropriate plant evaluations covering environmental hazards. If the necessary plant evaluation does not exist, the procedure requires Engineering to perform one to ensure the feasibility of the affected actions.

WCNOC completed the review and approval of WCGS EMGs, Revision 5, on May 26, 1994. Revision 5 to the EMGs was compared to the results of the engineering evaluation of postulated post-accident area radiation levels to the ensure continued validity of these conclusions regarding local operator actions. The results of this review concluded that this revision did not change the scope of the associated local operator actions within the WCGS EMGs nor were there any changes to the essential event mitigation strategies associated with these actions. This conclusion was based on the following:

1. The radiation study provided by Engineering only provides dose rate information for areas in the Auxiliary Building and some areas of the Control Building. This dose rate information was obtained from Bechtel radiation studies used to establish post-accident gamma radiation zones per NUREG-0737. Since other areas of the plant were not evaluated in the Bechtel study, it is assumed that radiation levels in these other areas will be low enough to allow performance of local actions. This assumption will be validated in future Engineering evaluations of post-accident environmental conditions.
2. The local actions for which a radiation level was provided were evaluated to determine if the actions are critical to the event mitigation. Critical actions have been defined as those actions which are required by the WOG ERGs or plant specific design to satisfy the intent of the procedure.

3. If performance of a critical local action may not be possible under worst case radiation levels, an assessment was made to determine if alternate actions were available to accomplish the intent of the original local action. These alternate actions do not have to be specifically stated in the procedure, but must be physically possible under worst case radiation levels. This is a reasonable approach since the radiation study states that "use of more realistic source terms would permit access to all rooms." Therefore, it is highly unlikely that alternate actions will be required.

Therefore, the formal engineering evaluation of local radiation levels completed on February 4, 1994, for the Revision 4 EMGs remains applicable to the Revision 5 EMGs and no additional actions to comply with ADM 01-052 verification requirements for this matter are necessary. Documentation of this review was included in the Revision 5 EMG verification history file on June 14, 1994.

Training is currently being conducted for the licensed operators on the Revision 5 EMGs (including this issue on procedural compliance) as part of Requalification Cycle 94-5. This training is being conducted by the procedures writer, thereby greatly enhancing the transfer of in-depth knowledge on the scope, purpose, basis, associated issues (such as this NRC Violation) etc., for these changes to key operations personnel. This is considered an enhancement and not a corrective action necessary for compliance.

Additional corrective action for this violation included counseling of the individuals involved in this violation of TS and ADM procedural requirements.

On May 26, 1994, as part of the Revision 5 EMGs, Caution Steps were added to EMGs E-0 and C-0, entitled "Reactor Trip or Safety Injection" and "Loss of All Power", respectively, which remind the operators to evaluate potential radiation levels before initiating local operator actions. Similar information was added to the EMG Plant-Specific Background Document for these procedures which explains that this evaluation should be based on the availability of ECCS and natural circulation flow. Placement of these caution statements within these EMGs will help ensure proper consideration is given at the EMG entry points.

Corrective Steps That Will be Taken to Avoid Further Violations:

The corrective actions described above are considered appropriate and sufficient to avoid further violations of this nature. Therefore, all corrective actions are completed and WCNOG is in full compliance with WCGS TS 6.8.1.b and the associated WCNOG procedures.

Date When Full Compliance Will be Achieved:

All corrective actions related to this violation were completed by June 14, 1994. Full compliance with the associated regulatory requirements has already been achieved.

Actual or Potential Safety Consequences of This Violation:

The results of the engineering evaluation of local area radiation levels indicate that the Revision 4 EMG accident mitigative strategies were appropriate and essential local operator actions could have been adequately performed as written for design basis accidents. Thus, this violation was administrative in nature only and the safety consequences were minimal.

In addition, the following factors mitigated the potential safety consequences of this violation:

- After the Emergency Plan is activated and the Technical Support Center is staffed, during the performance of WCGS EMG local operator action steps, a Health Physics (HP) Technician is available to be sent out with the operator to verify actual area/room environmental conditions. Also, the operator will be made aware of the increased radiation levels from installed radiation monitoring equipment. Therefore, notwithstanding the prior lack of an adequate documented evaluation of postulated post-accident area radiation levels, each area/room is checked out to ensure accessibility under actual accident conditions.
- During an actual plant emergency condition (i.e., requires use of the EMGs), the WCNOE Emergency Response Organization (ERO) and facilities would be activated. The engineering and technical support provided by the ERO would assist the Control Room operators in determining alternative/contingency actions if an area/room used for local operator action was in fact inaccessible during actual in-plant post-accident conditions.
- WCNOE is committed to the safe operation of this facility with its primary licensed responsibility to protect the public health and safety. Accordingly, irrespective of given in-plant area radiation levels during an actual emergency, WCNOE will do whatever is necessary to ensure the plant is brought to and maintained in a safe shutdown condition by taking appropriate operator action(s) necessary to avoid : (1) core damage; (2) the loss of fission product barriers; and (3) the unnecessary release of radioactive material to the environment. Therefore, the WCNOE action(s) taken will maximize personnel, plant and public health and safety.

Additional Information Related to This Violation:

Although this specific violation involves the adequacy of the assessment of local area radiation levels, other postulated post-accident environmental conditions, as noted above from ADM 01-052, Attachment A, Criterion 4.2, also need to be evaluated by the appropriate subject matter expert(s). This is also discussed in NRC Inspection Report 50-482/94-04 and is being tracked as an Inspector Follow-up Item (IFI 482/9404-04). In response to this IFI concern, PIR # 94-1041 was initiated on June 6, 1994, to determine the corrective actions for this broader issue of evaluating all worst-case local environmental conditions. The final corrective actions for this PIR are under evaluation at this time.

Finally, further engineering studies are to be done addressing the other aspects of worst-case local environmental conditions. This environmental hazards study will be accomplished by September 30, 1994.

Violation 482/9404-03: WCGS EMG FR-H1, "Response to Loss of Secondary Heat Sink," Revision 4, was not maintained, in that a step was inadvertently omitted from the procedure.

"C. Technical Specification 6.8.1.b requires that written procedures be established, implemented, and maintained covering the emergency operating procedures required to implement the requirements of NUREG-0737, "Clarification of TMI Action Plan Requirements," and Supplement 1 to NUREG-0737 as stated in Generic Letter 82-33, "Supplement 1 to NUREG-0737, Requirements for Response Capabilities," Section 7.1

Contrary to the above, EMG FR-H1, "Response to Loss of Secondary Heat Sink," Revision 4, was not maintained, in that Step 56 was inadvertently omitted from the procedure."

Admission of Violation:

WCNOC acknowledges and agrees that a violation of WCGS TS 6.8.1.b occurred when personnel failed to ensure all appropriate procedure steps were incorporated into the original of EMG FR-H1 prior to its final approval and issuance for use.

Reason for Violation:

The root cause of this violation was cognitive personnel error for failure to do an adequate page and step check. A contributing factor was that a vendor procedure computer program was modified without appropriate involvement of vendor personnel who were more knowledgeable of the procedure computer program.

The WCGS EMG procedures are maintained electronically using a vendor software program called "VE-PROMS" purchased from Volian Enterprises. In an effort to determine how EMG FR-H1 was printed with Step 56 missing, discussions between Volian Enterprise personnel and the WCNOC EMG procedure writer were conducted. Based on these discussions, the following sequence of events, with a description of how the "VE-PROMS" software program responds, is provided below:

- The EMG procedure writer printed a final copy of all Revision 4 EMG procedures in preparation for final signatures and approval.
- The EMG procedure writer then performed a page-by-page review of the EMG procedures. The purpose of this review was to ensure that the printouts were complete. No missing steps were noted at this time.
- Based on this review, it was discovered that Step 44 in EMG FR-H1 was too long and would not fit onto a single page as required by the plant-specific Writer's Guide for these procedures.

- Rewriting Step 44 was not desirable from a human factors standpoint. "VE-PROMS" has a feature which will compress the text of long steps so that they will fit onto a single page. It was decided at that time that activating this software feature of "VE-PROMS" was the correct solution to fix the human factors format problem with Step 44.
- The "VE-PROMS" step compression feature can be turned on by modifying WCNOG EMG procedure format files, using the DOS text editor. This type of change is usually performed by vendor personnel with a transmittal of the "VE-PROMS" revised formatting files. In this case, the EMG procedure writer, who has worked for the vendor assisted in developing the WCGS format files, and had experience in the format file operation, made the necessary changes to activate the step compression software feature for dual-column format procedures.
- Procedure EMG FR-H1 was reprinted. The EMG procedure writer then reviewed Step 44 and found it to be complete on a single page. The remainder of the procedure was checked to ensure that all steps were complete on a page. However, a specific check, at that time, to determine if any steps were missing from this procedure was not conducted.
- It has been postulated by the vendor that Step 56 was missing from the second printing of EMG FR-H1 because the document was not repaginated after the step compression flag in the "VE-PROMS" software was activated. Repagination will only occur automatically if the text of a procedure has been changed. Changing the format file does not trigger automatic repagination but will affect the printed procedure output. Therefore, manual repagination should have been used to ensure the printed output was correct and complete.

Corrective Steps That Have Been Taken and the Results Achieved:

PIR # 94-0708 was initiated on April 6, 1994, to develop the corrective action plan for this violation of plant TS.

Temporary/permanent change Number MA 94-0079 was generated to procedure EMG FR-H1 to incorporate Step 56. This change was issued on April 5, 1994, and was then hand carried to the Control Room for incorporation into the controlled copy of the procedure. Since that time, Revision 5 of the WCGS EMGs was approved on May 26, 1994, which also incorporates the appropriate step in this case.

In addition to correction of EMG FR-H1, a generic implications review was manually conducted on controlled copies of all EMG procedures to ensure that all required steps were incorporated. No additional missing steps were identified from this review. This action was completed the next day, on April 6, 1994.

Controlled copies of the WCGS Off-Normal (OFNs) Procedures were also manually checked on April 7, 1994, and no discrepancies were found. Finally, Alarm Response Procedures (ALRs) approved after October 1, 1993 (this was prior to the date the previous version of "VE-PROMS" software was placed in operation at WCGS) were manually page checked on April 7, 1994, and, again, no discrepancies were found. Also, this software anomaly could not be reproduced with the current software version in use at WCGS.

The EMGs, OFNs and ALRs are the only procedures in dual column format and these procedures were re-reviewed. No other procedures needed to be checked. It should be noted that development of the WCNOG format files for dual-column format procedures is now complete and no further changes to these software files are anticipated.

Also, the vendor, Volian Enterprises, issued an urgent notice to all "VE-PROMS" software package users describing this issue and identifying user responsibilities.

On June 2, 1994, procedure ADM 07-100, Revision 55, entitled "Preparation, Review, Approval and Distribution of WCGS Procedures," was revised to add Step 5.10, which states "It is the responsibility of the procedure reviewer(s) to review the procedure to the criteria of Attachment B." Also, on June 2, 1994, Attachment B to ADM 07-100, Revision 55, was added to this procedure which describes the procedure review criteria. These changes were discussed in advance via training for the procedure writers that use the "VE-PROMS" procedure computer program, which described this event and the requirements of the ADM 07-100.

Corrective Steps That Will be Taken to Avoid Further Violations:

The corrective actions described above are considered appropriate and sufficient to avoid further violations of this nature. Therefore, all corrective actions are completed and WCNOG is in full compliance with WCGS TS 6.8.1.b.

Date When Full Compliance Will be Achieved:

All corrective actions related to this violation were completed by June 2, 1994. Therefore, WCNOG has achieved full compliance with TS 6.8.1.b relative to this violation.

Actual or Potential Safety Consequences of This Violation:

One of the purposes of EMG FR-H1, "Response to Loss of Secondary Heat Sink," is to establish Reactor Coolant System (RCS) feed and bleed decay heat removal. Once a secondary heat sink is reestablished, then RCS feed and bleed is terminated. It is expected for most loss of heat sink events, that the operators will transition to EMG E-1, "Loss of Reactor or Secondary Coolant," at EMG FR-H1, Step 47 when only one Centrifugal Charging Pump (CCP) is running

and Pressurizer Power Operated Relief Valves (PORVs) are closed. To reach the point in EMG FR-H1 where Step 56 was missing, the following conditions must be satisfied:

1. One CCP is injecting through the Boron Injection Tank (BIT).
2. Both Safety Injection (SI) pumps are not running or have stopped.
3. RCS sub-cooling is greater than 285 degrees F [305 degrees F].
4. Pressurizer level is greater than 4% [33%].

According to the WOG ERG Background Documents, these conditions can only be met if RCS feed and bleed operations has been in progress for an extended period of time.

Steps 48 through 54 of EMG FR-H1 involve realignment of the running CCP to inject through the normal charging header at 60 gallons per minute (gpm). Step 55 directs the operator to close any Pressurizer PORVs and Reactor Vessel Head Vents that may be open at this time. The missing step from EMG FR-H1 directs the operator to transition to EMG E-1, if RCS pressure indicates below the shutoff head of the Residual Heat Removal (RHR) pumps or RCS pressure is decreasing rapidly. By entering EMG E-1, the operators can then assess plant conditions to determine which event is in progress and then make further transitions to the appropriate procedures. If a transition to EMG E-1 is not required, the missing step would have directed the operators to stop the RHR pumps, which prevents them from overheating since they would be running in the recirculation mode at that time. After adjusting charging flow to maintain Pressurizer water level in Step 57, Step 58 would then transition the operators to EMG ES-03, "SI Termination," Step 1.

In regards to the actual safety consequences of this violation, there were none. This is true since no events or plant conditions physically occurred at WCGS which required the use of missing Step 56 from EMG FR-H1.

Regarding the potential safety significance of this missing procedure step, there are several possible event scenarios or plant conditions which were evaluated, as follows:

- 1) SCENARIO #1: RCS pressure is above the RHR pump shutoff head, the RHR pumps remain running if not already stopped and the operators transition from Step 58 of EMG FR-H1 to EMG ES-03 for SI termination. This is an appropriate transition for the existing plant conditions.

For this scenario, the RHR pumps may be running when they should have been stopped. Guidance to stop an RHR pump that is not injecting is contained in EMG FR-H1, Step 38, which states "Check If RHR Pumps Should Be Stopped." Step 38 is identified as a continuous action step which then applies throughout the remainder of the event. Therefore, the operator would monitor for conditions requiring RHR pump shutdown. In addition, Step 14 of EMG ES-03 would direct the operators to stop the RHR pumps as part of the SI termination. Therefore, for Scenario #1, sufficient guidance existed in other locations of the EMGs, disregarding the benefits of missing Step 56 of EMG FR-H1, to ensure that the RHR pumps are shutdown, when required, to prevent pump damage due to overheating. Also, note that, for this condition, transitioning to EMG ES-03

is appropriate, and the operators would be in the correct action steps/procedure for the postulated event.

- 2) SCENARIO #2: RCS pressure is below the shutoff head of the RHR pumps and the operators transition from Step 58 of EMG FR-H1 to EMG ES-03 for SI termination. This is not an appropriate transition for the postulated plant conditions.

For this scenario, RCS pressure decreases to below the shutoff head of the RHR pumps after aligning CCP flow to the normal charging header and injection is reduced to 60 gpm. This would indicate that a problem exists which may require increased RCS makeup flow. Step 57 of EMG FR-H1 directs the operators under these conditions to increase charging flow as necessary to maintain Pressurizer water level. At this point, the Pressurizer would be full due to PORVs being open during RCS feed and bleed operations. The operators may not recognize the need to increase charging flow at this time. Upon transitioning to EMG ES-03, the operators would be immediately instructed, by procedure, to monitor the foldout page for EMG ES-03. The first item on this foldout page is the SI Reinitiation Criteria. This criteria would instruct the operators to start additional ECCS pumps in order to maintain the necessary RCS sub-cooling and Pressurizer water level. Therefore, sufficient guidance exists to immediately provide additional makeup to the RCS, as necessary.

The foldout page for procedure EMG ES-03 also contains criteria for determining if a transition to EMG E-2, "Faulted Steam Generator Isolation," or EMG E-3, "Steam Generator Tube Rupture," is required. These procedure's foldout pages have items that are identical to those found in EMG E-1. Therefore, an inappropriate transition to EMG ES-03 will provide the same guidance for identification of faulted or ruptured Steam Generator conditions as would be encountered by a correct transition to EMG E-1.

Finally, for this scenario, it is necessary to ensure the operators will eventually transition to EMG E-1, which is one of the main purposes of the missing step in EMG FR-H1. As the operator proceeds through EMG ES-03, the following Steps would provide the necessary transition points to procedure EMG E-1:

- I. Step 4, when RCS pressure is stable or increasing.
- II. Step 15, when the minimum RCS sub-cooling or Pressurizer water level cannot be maintained.
- III. Step 38, when the minimum RCS sub-cooling or Pressurizer water level cannot be maintained.

Based on this evaluation, adequate guidance is provided in EMG ES-03 to direct the operators to EMG E-1 when required. The absence of Step 56 from EMG FR-H1, however, could result in some delay time in entering EMG E-1. An evaluation performed under PIR # 94-0708 indicates that the action step delays could forego entry into EMG E-1 by anywhere from 195 second (about 3 minutes) to 1215 seconds (about 20 minutes). The actual delay would be dependent upon the magnitude of the RCS leakage. In any case, with Step 56 missing from EMG FR-H1, sufficient guidance exists to ensure that the operators will eventually safely enter the appropriate EMG procedure. Adequate guidance, therefore,

exists to ensure that RCS injection will be initiated, as necessary to protect the core until the appropriate procedure is entered.

- 3) SCENARIO #3: The operators discover that Step 56 is missing from EMG FR-H1 and must determine the appropriate course of action.

For this scenario, the operators would be expected to perform one of three actions. Due to the potentially severe nature of a loss of heat sink event, the Emergency Plan requires Technical Support Center (TSC) activation. As referenced in the WOG ERG Background Documents, the point in EMG FR-H1 where the missing step is located cannot be reached unless RCS Feed and Bleed operations has been in progress for a long period of time. Therefore, the TSC staff would be available to assist the operators in determining the appropriate action(s).

One course of action would be to determine what information was contained in the missing step. This would result in delaying event mitigation. Due to the accessibility of WOG ERGs and their background material, it is reasonable to assume that the TSC would be able to determine the content of the missing step within 10 to 20 minutes. Since SI has been terminated and normal charging flow established, this delay is acceptable if plant conditions are not degrading. Also, critical safety function monitoring would require a transition to EMG FR-C1, "Response to Inadequate Core Cooling," if conditions degrade to the point where the core starts to uncover. Therefore, sufficient guidance is provided to maintain core cooling while determining the content of the missing step.

A second course of action would be to perform EMG ES-01, "Rediagnosis." This procedure is specifically designed to direct the operators to the appropriate procedure(s) and can be used at any time the EMGs are in effect. Since SI has been terminated, EMG ES-01 would direct the operators to an E-0 series procedure. Also, since SI would have been in operation, the appropriate E-0 series procedure would be EMG ES-03, "SI Termination." The operators would then proceed as discussed above under Scenario #2.

A third course of action would be to just continue on in EMG FR-H1. This would be appropriate too, since the rules for EMG usage state that if a step cannot be completed, the operator should continue to the next step. This again would transition the operators to EMG ES-03 and the event mitigation strategy would proceed as discussed above in Scenario #2.

In conclusion, with Step 56 missing from EMG FR-H1, had the need arisen for this procedure to be used, there: (1) was sufficient guidance in other EMGs to take the appropriate operator actions; (2) the operators would have been guided to the appropriate procedures in any case; and (3) the event-specific mitigation strategy, depending on plant conditions would have been adequate. Therefore, the potential safety consequences of this violation were minimal.