



KANSAS GAS AND ELECTRIC COMPANY

GLENN L KOESTER  
VICE PRESIDENT - NUCLEAR

April 4, 1984

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

KMLNRC 84-048  
Re: Docket No. STN 50-482  
Ref: NRC Letter dated 2/29/84 from BJYoungblood,  
NRC, to GLKoester, KG&E  
Subj: Procedures Generation Package

Dear Mr. Denton:

The Referenced letter requested additional information be provided concerning the Wolf Creek Procedures Generation Package. Transmitted herewith are responses to questions in the Referenced letter. A revision to the Wolf Creek Procedures Generation Package which formally incorporates the appropriate information from these responses is also provided.

This information is hereby incorporated into the Wolf Creek Generating Station, Unit No. 1, Operating License Application.

Yours very truly,

GLK:bb  
Attach

cc: PO'Connor (2)  
WSchum

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PDR ADDCK 05000482  
F PDR

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OATH OF AFFIRMATION

STATE OF KANSAS       )  
                              ) SS:  
COUNTY OF SEDGWICK )

I, Glenn L. Koester, of lawful age, being duly sworn upon oath, do depose, state and affirm that I am Vice President - Nuclear of Kansas Gas and Electric Company, Wichita, Kansas, that I have signed the foregoing letter of transmittal, know the contents thereof, and that all statements contained therein are true.

KANSAS GAS AND ELECTRIC COMPANY

ATTEST:

*E.D. Prothro*

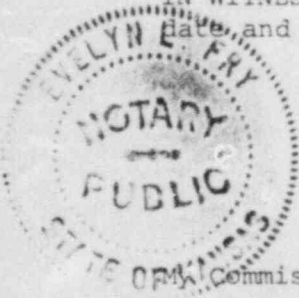
E.D. Prothro, Assistant Secretary

By *Glenn L. Koester*  
Glenn L. Koester  
Vice President - Nuclear

STATE OF KANSAS       )  
                              ) SS:  
COUNTY OF SEDGWICK )

BE IT REMEMBERED that on this 4th day of April, 1984, before me, Evelyn L. Fry, a Notary, personally appeared Glenn L. Koester, Vice President - Nuclear of Kansas Gas and Electric Company, Wichita, Kansas, who is personally known to me and who executed the foregoing instrument, and he duly acknowledged the execution of the same for and on behalf of and as the act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the date, and year above written.



*Evelyn L. Fry*  
Evelyn L. Fry, Notary

Commission expires on August 15, 1984.

RESPONSES TO  
REQUEST FOR ADDITIONAL INFORMATION  
WOLF CREEK GENERATING STATION  
PROCEDURES GENERATION PACKAGE (PGP)

- Q 1. PGP, Page 1 of 12, item 1.2 - This item should be expanded to provide a commitment that the PGP will be used in developing and revising emergency operating procedures (EOPs). Note that the various parts of the PGP (e.g., use of the validation program for major, but not for minor, revisions) allow flexibility in use of the process defined by the PGP.
- R 1. Section 1.2 has been revised to show that PGP will be used in EMG development and revision process.
- Q 2. PGP, Page 2 of 12, Item 2.2.1.2 - This item provides an adequate description of the process to be used in developing plant-specific technical guidelines. To complete the plant-specific technical guidelines, the process will need to be followed through, and any resulting deviations from generic technical guidelines, along with supporting technical justification or analysis, submitted to the NRC staff for review. This will allow us to complete our review of the technical basis of the Wolf Creek EOPs. (NOTE: Deviations are any modifications, additions, or deletions of guideline actions necessary because of plant design differences, equipment operating characteristics, or plant operating philosophy.)
- R 2. The technical justifications or analyses for all deviations from the general technical guidelines will be available for NRC review prior to fuel load. However, since the generic plant used in the Westinghouse Owners' Group guideline development program was a SNUPPS type, 4 loop, 1150 MW plant, very few deviations from the general technical guidelines resulted during the development of the Wolf Creek technical guidelines.
- Q 3. The PGP refers to EOPs as "EMGs," while FSAR Rev. 1, dated February 1981, Section 13.5.2, uses the term "Emergency Procedures." The two documents (FSAR and PGP) should use a consistent, well-defined title for this category of procedures.
- R 3. The PGP defines EOP's (Emergency Operating Procedures) as EMG's. See Item 1.1 of the PGP. KG&E desires to use this designator (EMG) in our references to the specific group of procedures which are set forth by the Westinghouse Owners' Group.

Emergency Procedures as used in the FSAR Section 13.5.2 refers to a general group or procedures. This Group includes EMG's, OFF normal procedures (OFN's), Emergency Plan Implementing Procedures, (EPIP's), etc.

Q 4. PGP, Page 1 of 12, Item 2.0 - This item, which discusses the plant-specific technical guidelines, needs to be modified to provide a description of an existing or planned program to:

- a. identify operator information and control requirements, and
- b. use the information and control requirements in evaluating the adequacy of existing (or currently planned) instrumentation and controls. The staff is aware of the generic task analysis performed by the Westinghouse Owners' Group. The generic analysis appears, from the documentation we have reviewed, to be based on existing instrumentation for conducting a given task. In some cases, the tasks specified in the generic analysis are based on existing instrumentation. To complete our review of the plant-specific technical guideline portion of the PGP, we need to review your description of an analysis of information and control requirements for performing tasks based on the functional and system operational requirements.

R 4.a Validation of Rev. 0 of the ERG's was performed at Callaway, on a SNUPPS PWR simulator. Through this and the CRDR effort, information and control requirements are inherently included in the Wolf Creek EMG's.

Operator information and control requirements have been refined for WCGS by the following processes: WCGS Operators wrote the initial EMG drafts. These drafts were used on the Wolf Creek simulator to verify adequacy, content and technical accuracy. These comments were incorporated in later EMG drafts. This process has been repeated for three different ERG Revisions; WOG Rev. 0, 9/1/82, WOG Rev. 1, 7/1/83, and WOG Rev. 1, 9/1/83.

R 4.b The general procedure for the system review and task analysis is illustrated in Figure 1. The starting point is an emergency plant event or condition. The term "plant event" is applied to transients or accidents that have been postulated by the plant designers and are recognized by the operators from the instrumentation available to them. The term "plant condition" applied to transients or accidents that may not have been postulated or are not recognized by the operators.

The systems/subsystems analysis referred to in Figure 1 has been performed on a generic basis for all Westinghouse plants by Westinghouse and the Westinghouse Owners' Group (WOG). Plant events postulated include all combinations of initiating sequences and single or multiple equipment failures with calculated probabilities of occurrence greater than  $10^{-8}$  per reactor year and many with probabilities lower than that. For these postulated plant events the systems and broad functional requirements to mitigate each event have been defined. This portion of the systems analysis is the basis for "event related" function analysis. Plant conditions (events not postulated or not recognized by the operators) have been

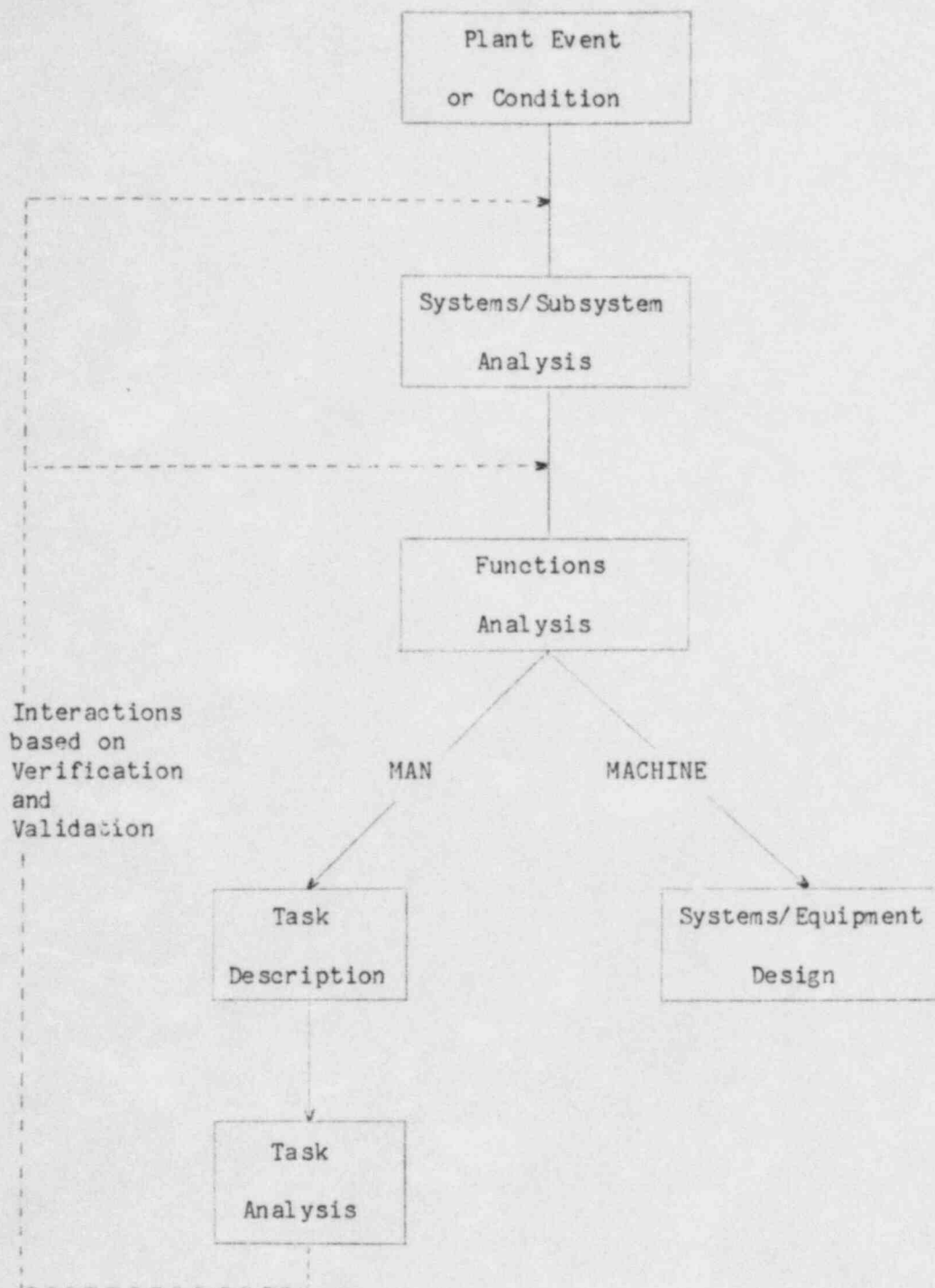


Figure 1 - System Review/Task Analysis Procedure



addressed by identifying critical safety functions (CSFs) necessary to preclude or limit fuel damage and/or release of radiation. A set of generic CSF status trees and broad functional requirements to restore any compromised CSFs have been developed. This portion of the systems analysis is the basis for "symptom related" function analyses.

The function analysis consists of developing in detail generic event related and symptom related emergency procedures. This work has been done by experienced Westinghouse and utility operations personnel, under the sponsorship of the WOG. Collectively these procedures are termed Emergency Response Guidelines (ERGs). Extensive background documentation has been developed for the ERGs. The background information includes calculations of emergency events, which serve to identify the ranges over which plant parameters are expected to vary and to identify parameter values at which operator actions should be taken. The background analysis has also considered which parameters are the most effective indicators to an operator of the plant condition and progress of events. This includes consideration of which instruments and controls are safety-grade and qualified for post-accident conditions and which are not. This bears on the accuracy with which an instrument indicates the true parameter value. The plant-specific emergency operating procedures for Wolf Creek are based on and closely follow the ERGs.

A standard Westinghouse plant design (RESAR-3) was the basis for the SNUPPS design. This standard design had evolved on the basis of many years of licensing and operation of Westinghouse-designed reactors. Most of the decisions of when the response to a functional requirement should be automatic (machine) and when manual (man) were made during that evolutionary design process. In only a limited number of cases have changes in the allocation of tasks between man and machine been indicated to be desirable by more recent reactor and simulator operating experience.

Task descriptions have also been developed on a generic basis by Westinghouse and the WOG. This program was begun in late 1981 to address the recommendation in Section 3.4 of NUREG-0700. It has consisted of a methodical review of the ERGs and identification of every monitoring task (instrumentation) and operational task (control) identified by each step of each event related and each symptom related procedure. These various tasks, many of which are required by more than one procedure, have been combined into the one comprehensive set of tasks. Since the SNUPPS emergency operating procedures closely follow the ERGs, this system review and task analysis (SRTA) program conducted by Westinghouse is directly applicable to the identification of task descriptions for the SNUPPS control room. This effort has identified 141 categories of monitoring tasks (instrumentation) and 119 categories of operational tasks (controls).

The task analysis function was performed by the SNUPPS Detailed Control Room Design Review Team on a SNUPPS-specific basis. The first step was to review the nature of each task description. Most of the tasks (all but 17 categories of the monitoring tasks and all

but 10 categories of the operational tasks) are strictly "digital" in nature. That is, a typical monitoring task is to ascertain whether a component is operating or not, whether a valve or breaker is lined up one way or the other, or whether a flow meter is indicating other than zero flow. Or, in the case of controls, the typical task is to turn equipment on or off or to reposition a valve or breaker. Several of these "digital" operational tasks are manual backups to automatic actions.

An example category of monitoring tasks is the set of tasks requiring the operator to take action based on the value of reactor coolant system wide range pressure. There are approximately forty subtasks in this category and more than sixteen specific values of wide-range pressure are cited as bases for operator action. These subtasks are explicitly defined in the ERGs and SRTA developed for the Westinghouse Owners' Group. The task review process has been to examine each of these subtasks against the checklist in Attachment 1. Similar procedures have been followed for each of the other 16 categories of monitoring tasks. In addition, since the majority of the monitoring tasks use instruments identified in Regulatory Guide 1.97, Rev. 2, the instrument range determined from the SRTA has been checked against the instrument range specified in RG 1.97, Rev. 2. It has been determined that these two sources of range data are consistent.

Ten categories of operational tasks require the operator to exercise some form of modulating control. These tasks were examined using the checklists in Attachment 1 and were also performed on a SNUPPS simulator to verify task performance capability.

Q 5. Writer's Guide, Page 4 of 31, Item 3.1 - The contents and format of the cover page should be identified. If ADM 07-100 already specifies this information, the Writer's Guide should reference the administrative procedure.

R 5. Section 3.1 has been revised to include this information.

Q 6. Writer's Guide, Page 6 of 31, Item 5.0 - Instructions should be provided in this section that would ensure:

- a. that steps, cautions, and notes will be wholly contained on a page (i.e., a step will not be broken up between pages, unless the step is more than one page long), and
- b. that cautions and notes will be on the same page as the step(s) to which they apply.

R 6. a. Section 5.1 was revised to address this concern.

b. Section 5.3 has been revised.

Attachment 1

Forms Used for Task Analysis and  
Verification of Task Performance Capabilities



(PI 934, 935, 936, 937)

Containment Pressure

DISPLAY

UNDESIRABLE  
OVERLAPPING  
SCALE OR  
DISPLAY TYPE  
SUPERFLUOUS

TASK CONTEXT	DISPLAY RANGE		DISPLAY PRECISION		DISPLAY UNITS		SURFACE
	REQ'D	ACTUAL	REQ'D	ACTUAL	REQ'D	ACTUAL	

- Has remained below Hi-2 setpoint (17psig)
- Has remained below Hi-3 setpoint (27psig)
- Normal (0 psig)
- Less than 2psig
- Greater or less than 60 psig

0-30	0-60	✓	±0.5	±0.25	psig	psig	✓
0-30	0-60	✓	±0.5	±0.25			✓
0-30	0-60	✓	±0.5	±0.25			✓
0-30	0-60	✓	±0.5	±0.25			✓
0-60+	0-180	✓	±2.5	±1.5			✓

PI 938, 939

CONTRA Ayr Feedwater Flow

TASK CONTEXT	CONTROL RANGE		CONTROL PRECISION		UNNECESSARY DUPLICATION AVOIDED	TYPE OF CONTROL SUFFICIENT
	REQ'D	ACTUAL	REQ'D	ACTUAL		
Control AFW flow					✓	ALHK-5A, -6A, -7A, -8A, -9A, -10A, -11A, -12A BACKUP "AUTO/MANUAL POSITIONS ON CONTROL SHOULD BE LABELED "OPEN" CLOSE"

201/11/00

- Q 7. Writer's Guide, Page 6 of 31, Item 5.0 - This section should be expanded to provide guidance regarding:
- a. how to provide the operator a means of keeping track of recurring, periodic, or time-dependent steps. For example, a step like, "Check CST level every 30 minutes," should have a space to note the reference time.
  - b. how to write steps that are to be performed concurrently.
- R 7. a. This section will not be expanded to include this concern. If reoccurring checks are required, they will appear in the Procedure as positive action steps.
- b. Section 5.1, bullet #9 was revised to include this information.
- Q 8. Writer's Guide, Page 16 of 31, Item 6.5 - This section should be modified to ensure that units used in EOPs are the same as the instrument display without conversion, translation, or mental manipulation. This is not intended to preclude computations, either directly, or in tabular or graphic form, but is intended to ensure that any instrument readings needed for operation or computation are directly obtainable.
- R 8. Section 6.5 the last bullet already contains this information and will not be changed.
- Q 9. Writer's Guide, Page 19 of 31, Item 7.6; or Page 5 of 31, Item 4.2; or Page 13 of 31, Item 5.9.4; or Page 21 of 31, Item 8.1 - The Writer's Guide should be modified to address the location of printed operator aids within the EOPs. For example, will they be printed on the facing page where referenced, or will they be included at the end of the procedure as an attachment? Within the attachment, will the aids be ordered by category (i.e., all "figures" together, all "tables" together), or will they be ordered by sequence of reference in the procedure?
- R 9. This concern was addressed in a new Paragraph 5.9.5.
- Q 10. Writer's Guide, Page 21 of 31, No Specific Item - Because of the possible need to rapidly identify and access EOPs, or portions of EOPs, the Writer's Guide should include, or reference, a unique means of labeling or otherwise identifying the set of EOPs, and their necessary parts, to facilitate rapid identification and access.
- R 10. The identification of the set of EMG's and it's parts are included in a new Paragraph 8.2 of the revision to the Writer's Guide.

- Q 11. Writer's Guide, Page 21 of 31, Item 8.1 - This section should be expanded to address how you will ensure that reproduced copies are legible and useable.
- R 11. Section 8.2 was revised to include the reference to ADM-07-100. This concern is addressed in Section 4.3 of ADM 07-100.
- Q 12. PGP, Page 4 of 12, Item 4.0 - While it appears that the Wolf Creek EOP Validation/Verification (V/V) program may have considered the significant items necessary for a successful V/V program, a more detailed description of the V/V program is needed in the PGP to:
- a. enable the NRC staff to complete its review of the adequacy of the items, and
  - b. ensure future changes to EOPs are subjected to a well-developed, documented, and consistently effective V/V process.

Specifically, the V/V section of the PGP should be modified to:

- a. include as an objective (PGP Section 4.2) that the EMGs are effective in mitigating transients and accidents,
- b. describe how, and to what extent, each specific objective listed in PGP Section 4.2 will be met by the combination of V/V methods to be used in meeting it. For example, one of the listed objectives is to determine whether the EMGs are useable. Useability is a function of a procedure's readability, completeness, accuracy, and convenience. A desk-top review by a normal shift complement can evaluate (1) readability (in a low-stress environment), (2) completeness to the extent that it reflects the technical guidelines, (3) accuracy, given the operators' perceptions of the plant, and (4) convenience, up to, but not including, the point of actually using the procedure in the control room. To complete the readability evaluation under close-to-normal operating conditions, the EOPs need to be exercised on a simulator. To complete the accuracy evaluation, the EOPs need to be exercised on a plant-specific simulator. To complete the convenience evaluation, the EOPs need to be walked through the control room in real-time exercises.
- c. describe how the composition of the operating team that will be implementing the procedure(s) being evaluated is to be determined. For example, in evaluating EMG usefulness in a desk-top operating team review, each shift position (shift supervisor, control room supervisor, SRO and RO) will be represented. Each member should be from a different shift to ensure that a range of experience and philosophy will be represented by those most familiar with the overall plant. The assistant plant manager will be an additional member to provide management philosophy input, along with a member of the design engineering staff to provide design analysis input.

- d. describe how the evaluation team composition is to be determined. For example, in determining EMG usefulness on the simulator, the evaluation team should consist of a member with operations experience to provide an integrated evaluation of EMG effectiveness; a member of the design engineering staff to evaluate the technical aspects of the EOPs and the simulator's response to the scenario, and a human factors engineer to evaluate the operators' interactions with the procedures and plant hardware.
  - e. describe the criteria for selecting scenarios for the various V/V methods to be used. The criteria should be based on the objectives to be met. For example, in a control room walkthrough for verifying the correspondence between the procedure and control room/plant hardware, no particular event scenario is necessary. It is necessary, however, to evaluate all steps. For the simulator evaluations, more extensive criteria for selecting scenarios are needed.
  - f. indicate that future significant revisions to the EMGs will be subjected to the V/V process. This should include a description of what constitutes "significant" revisions.
- R 12. a. Section 4.2 of the PGP was revised to respond to this concern. ADM 02-022, Attachment 2 has also been revised.
- b. - f. Sections 4.3 and 4.4 have been added to respond to these concern.
- Q 13. PGP, Page 6 of 12, Item 5.4 - This section should indicate the type of simulator (plant-specific or generic) to be used.
- R 13. Paragraph 5.4 has been revised to specify Plant Specific Simulator.
- Q 14. PGP, Page 6 of 12, Item 5.4 - Because training simulators do not, in all cases or scenarios, provide a completely accurate duplication of plant-response, this section of the PGP should be expanded to include control room walkthroughs in addition to the simulator exercises.
- R 14. Paragraph 5.4.2 was revised in include walkthroughs and desk-top instruction.
- Q 15. PGP, Page 7 of 12, Item 5.4.2 - This section should be expanded to more fully describe "realistic scenarios." These should include multiple and sequential failures.
- R 15. Paragraph 5.4.4 was added to address this concern.



- Q 16. PGP, Page 5 of 12, Item 5.0 - This section should provide a commitment to complete the initial licensed operator training on EMGs prior to implementation of the EMGs.
- R 16. A statement was added to Paragraph 5.4 to provide this commitment.