

ENCLOSURE 1

SAFETY EVALUATION REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATIONS  
RELATED TO THE INSERVICE TESTING PROGRAM AND REQUESTS FOR RELIEF  
UNION ELECTRIC COMPANY  
WOLF CREEK GENERATING STATION  
DOCKET NO.: 50-482

INTRODUCTION

Technical Specification 4.0.5 for the Wolf Creek Generating Station (WCGS) states that inservice inspection of ASME Code Class 1, 2 and 3 components and inservice testing (IST) of ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda as required by 10 CFR Part 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR Part 50, Section 50.55(g)(6)(i). Certain requirements of the applicable Code edition and addenda of Section XI are impractical to perform because of certain plant system and component designs.

Regulation 10 CFR 50.55(g)(6)(i) authorizes the Commission to grant relief from these requirements upon making the necessary findings. This Safety Evaluation Report (SER) contains NRC staff's findings with respect to granting or not granting reliefs submitted as part of the licensee's IST program.

By letters dated September 5 and 18, 1981, Kansas Gas and Electric Company (KG&E) submitted its first ten year IST program and additional information related to requests for relief from certain code requirements determined to be impractical to perform on the Wolf Creek Generating Station. Subsequent revisions were provided by letters dated July 31, 1984, February 25, 1985, July 29, 1985, June 10, 1986, and March 2, 1987. Additional information was submitted by letters dated April 24, 1987 and September 11, 1987.

The original program was based on the requirements of the 1977 Edition through the Summer of 1978 Addenda of Section XI of the ASME Code. However, revisions were made to the program such that the IST program now meets the requirements of the 1980 Edition through Winter of 1981 Addenda to Section XI of the ASME Code and remains in effect until September 3, 1995.

#### EVALUATION

The IST program and the requests for relief from the requirements of Section XI that have been determined to be impractical to perform and the justification for testing certain valves at cold shutdown have been reviewed by the staff's contractor, EG&G, Idaho, Inc. (EG&G). In addition to the review of the IST program, justifications for cold shutdown as opposed to quarterly testing, and relief requests, EG&G and staff members met with KG&E representatives on September 8 and 9, 1986, at the SNUPPS office in Gaithersburg, Maryland, to discuss questions resulting from the review. The Technical Evaluation Report (TER) provided in Attachment 1 is EG&G's evaluation of the licensee's IST program and relief requests. The staff has reviewed the TER and with one exception noted below concurs with the evaluations and conclusions contained in the TER. A summary of the relief request determinations is presented in Table 1. The granting of relief is based upon the fulfillment of any commitments made by the licensee in its basis for each relief request and the alternate proposed testing.

In request PR 8 evaluated in TER Section 3.3.2, KG&E requested relief from the flow measurement requirements in Section XI, paragraph IWP-4600, for the boric acid transfer pumps PBGO2A and PBGO2B and the emergency fuel oil transfer pumps PJE01A and PJE01B. The licensee indicated in the relief request that there is no flow

instrumentation installed in the flow paths of these pumps and that the pump tests are performed with the system lined up in a recirculation flow path or fixed resistance flow path.

The licensee has not provided sufficient information to demonstrate that installation of flow measurements devices is impractical. In order for the licensee to assemble the information necessary to support their request relief, interim relief on request PR 8 is granted until November 30, 1988. This relief is based upon the testing of these pumps which, except for flow measurement, is in accordance with the Code, the fact that the flow devices are not presently installed, and a reasonable length of time to assemble the necessary data. The licensee should include, as appropriate, proposed alternative testing that permits measurement of Code required parameters at a decreased frequency such as cold shutdown or refueling. The licensee should justify the present or proposed alternative testing in terms of all the potential pump failure mechanisms for these pumps and the means by which the IST program will detect degradation. The licensee should include in their discussion, as necessary, the pump vibration monitoring techniques to be used, failure rates for similar pumps in use at nuclear power plants, and scheduled maintenance performed on these pumps.

In the TER EG&G also identified several deficiencies and inconsistencies in the Wolf Creek IST program. These items are listed and summarized in Appendix C of

the TER and in most cases also discussed in the body of the TER. The licensee is required to address each of these items by either correcting the IST program and testing procedures and/or by providing the NRC with the appropriate relief requests and supporting bases. These items should all be corrected within 3 months of the date of this SER.

#### INSPECTION

An inspection of the Wolf Creek Station IST program should be conducted by Region IV. The inspection should focus on the adequacy of implementing procedures for the IST program, satisfactory actions to resolve the items addressed in Appendix C of the TER, and programmatic aspects of the Wolf Creek IST program/procedures and changes to the same.

#### CONCLUSION

Based on the review of the licensee's IST program and relief requests, the staff concludes that the IST program as evaluated and modified by this SER will provide reasonable assurance of the operational readiness of safety-related pumps and valves to perform their safety-related functions. The staff has determined that pursuant to 10 CFR 50.55a(g)(6)(i) granting relief where the Code requirements are impractical is authorized by law and will not endanger life or property, or the common defense and security. The staff has also concluded that granting relief is otherwise in the public interest considering the burden that could result if the requirements were imposed on the facility. During the review of the licensee's inservice testing program the staff identified certain misinterpretations or

omissions of Code requirements. These items are discussed in the TER. The IST program for Wolf Creek through the submittal dated March 2, 1987, is acceptable for implementation provided that the items noted above are corrected promptly. Relief requests contained in any subsequent revisions may not be implemented without prior approval by NRC.

TABLE 1SUMMARY OF RELIEF REQUESTS

Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
PR 1	3.1.1	IWP 3100-1 Bearing temperature measurement All pumps in program	None	Granted only for pumps without per- manently installed temperature moni- tors or are inac- cessible for port- able temperature measuring device
PR 12	3.2.1	IWP 4120 Full scale range re- quirement All pumps in program	Detector with multi- ple over lap- ping scales	Granted
PR 6	3.2.2	IWP 4110-1 Instrument accuracy requirement PJE01A & B	Level indi- cator of plus or minus 2.5%	Granted
PR 3	3.3.1	IWP 3100-1 Inlet pressure measurement PEF01A & B PJE01A & B	Measure pump suction fluid height	Granted
PR 8	3.3.2	IWP 4600 Flow rate meter PBG02A & B PJE01A & B	None	Interim Relief Granted until Nov. 30, 1988



Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
PR 4	3.4.1	IWP 3100-1 Vibration measurement PJE01A & B	None	Granted
PR 9	3.4.2	IWP 4510 Vibration measurement location PEF01A & B	Motor bearings housing	Granted, provided licensee measures vibration on bearing housing with motor thrust bearing
PR 10	3.5.1	IWP 3500(a) Test duration PJE01A & B	1 minute pump run after discharge pressure stabilizes	Granted
PR 11	3.5.2	IWP 3100-2 & 3230(b) Required action (high) & Alert range (high) limits & corrective action for flowrate & differential pressure measurements PAL01A & B, PAL02, PBG05A & B, PEF01B, PEG01A, B, & C, PEJ01A & B, PEM01A, PJE01A & B, PEC01A & B	Increase Alert range (high) to 105%; delete Required action (high) range limit & corrective action for flowrate & differential pressure measurements	Denied

Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
VR 22	4.1.1.1	IWV 3417(a) Corrective action Cold shutdown exercised power operated valves	Test degraded valves during cold shutdowns & refueling outages	Denied
VR 5	4.1.2.1	IWV 3421 through 3425 Leak rate testing Containment isolation valves	10 CFR 50 Appendix J testing	Granted, provided licensee also implements Section XI, IWV 3426 & 3427 requirements
VR 21	4.1.3.1	IWV 3421 through 3427 Leak rate testing RCS pressure isolation valves	Leak rate testing in accordance with Technical Specifications 3.4.6.2.f & 4.4.6.2.2	Granted
VR 4	4.1.3.2	IWV 3522 Verify valve closure RCS pressure isolation valves	RCS pressure isolation leak rate testing	Granted



Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
VR 11	4.2.1.1	IWV 3300 Remote valve position indication verification 8010A, B, & C	Disconnect position indication switch & simulate valve movement	Granted
VR 3	4.2.2.1	IWV 3522 Verify valve closure V118, 148, 178, & 208	Closure verification during refueling outage leak rate testing	Granted
VR 12	4.2.2.2	IWV 3522 Full-stroke exercise V001, 022, 040, & 059	Full-stroke exercise during refueling outages	Granted
VR 10	4.2.2.3	IWV 3522 Full-stroke exercise 8949A, B, C, & D	Full-stroke exercise during refueling outages	Granted
VR 9	4.2.2.4	IWV 3522 Full-stroke exercise 8948A, B, C, & D	Partial-stroke exercise during refueling outages	Denied
VR 2	4.3.1.1	IWV 3522 Full-stroke exercise 8481A & B	Full-stroke exercise during refueling outages	Granted
VR 19	4.3.1.2	IWV 3522 Full-stroke exercise 8546A & B	Full-stroke exercise during refueling outages	Granted

Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
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VR 3	4.3.2.1	IWV 3522 Verify valve closure V8381	Closure verifi- cation during refueling outage leak rate testing	Granted
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VR 3	4.4.1.1	IWV 3522 Verify valve closure V204	Closure verifi- cation during refueling outage leak rate testing	Granted
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VR 20	4.5.1.1	IWV 3522 Full-stroke exercise 8958A & B	Full-stroke ex- ercise during re- fueling outages	Granted
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VR 18	4.5.1.2	IWV 3522 Full-stroke exercise 8969A & B	Full-stroke ex- ercise during re- fueling outages	Granted
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VR 7 & VR 8	4.6.1.1	IWV 3522 Full-stroke exercise 8922A & B, 8926A & B	Full-stroke ex- ercise during re- fueling outages	Granted
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VR 13	4.6.2.1	IWV 3522 Full-stroke exercise V001, 002, 003, & 004	Full-stroke ex- ercise during re- fueling outages	Granted
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VR 12	4.6.2.2	IWV 3522 Full-stroke exercise V240, 241, & 8815	Full-stroke ex- ercise during re- fueling outages	Granted
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Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
VR 15	4.7.1.1	IWV 3522 Full-stroke exercise V002, 008, 013, & 017	Disassembly/in- spection/manual full-stroke exer- cising during cold shutdowns	Granted
VR 17	4.7.1.2	IWV 3522 Full-stroke exercise V003, 004, 009, & 010	Partial-stroke ex- ercise every 3 months	Denied
VR 14	4.8.1.1	IWV 3522 Full-stroke exercise 8956A, B, C, & D	Partial-stroke ex- ercise during re- fueling outages	Denied
VR 13	4.8.1.2	IWV 3522 Full-stroke exercise V010, 020, 030, & 040	Full-stroke ex- ercise during re- fueling outages	Granted
VR 16	4.9.1.1	IWV 3522 Full-stroke exercise V001, 002, 024, & 025	Test series check valves as single check valve	Denied
VR 3	4.10.1.1	IWV 3522 Verify valve closure V204	Closure verifi- cation during refueling outage leak rate testing	Granted

Relief Request Number	TER Section	Section XI Requirement/ Subject/Pump or Valve Number	Alternate Method of Testing	Relief Action by USNRC
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VR 6	4.11.1.1	IWV 3413 Stroke time measurement PV1A & B, 101A & B	Measure time diesel requires to reach rated speed & observe starting air tank pressure changes	Granted
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