

WOLF CREEK

NUCLEAR OPERATING CORPORATION

Otto L. Maynard
Vice President Plant Operations

March 21, 1996

WO 96-0045

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

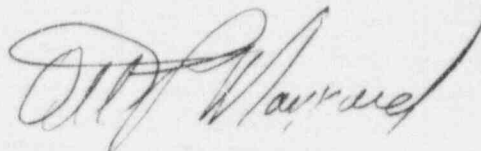
Subject: Docket No. 50-482: Licensee Event Report 96-003

Gentlemen:

The attached Licensee Event Report (LER) is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) concerning a failure to comply with the Technical Specifications.

If you should have any questions regarding this submittal, please contact me at (316) 364-8831, extension 4450, or William M. Lindsay at extension 8760.

Very truly yours,



Otto L. Maynard

OLM/jad

Attachment

cc: L. J. Callan (NRC), w/a
W. D. Johnson (NRC), w/a
J. F. Ringwald (NRC), w/a
J. C. Stone (NRC), w/a

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

WOLF CREEK GENERATING STATION

DOCKET NUMBER (2)

05000482

PAGE (3)

1 OF 6

TITLE (4)

Failure To Maintain Containment Closure

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	20	96	96	003	00	03	21	96	FACILITY NAME	DOCKET NUMBER
OPERATING			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
6			20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)	
POWER			20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)	
0			20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER	
			20.405(a)(1)(iii)		X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)			
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)			
			20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

William M. Lindsay

Manager Performance Assessment

TELEPHONE NUMBER (Include Area Code)

316-364-8831, ext. 8760

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
N/A									

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED

MONTH

DAY

YEAR

YES

X

NO

(If yes, completed EXPECTED SUBMISSION DATE)

ABSTRACT:

On February 20, 1996, at approximately 0805 Central Standard Time (CST), WCNO Operations personnel identified that a blind flange installed in place of Steam Generator "D" Spring Loaded Main Steam Safety Relief Valve ABV0045, provided questionable containment closure. This flange was originally installed on February 12, 1996. The flange's closure was considered questionable because it may not have been adequately secured.

On February 16, 1996, at approximately 1030 CST, manways and hand holes of Steam Generator "D" were removed. At this point, a blind flange on the relief valve pipe opening for ABV0045 was used for containment closure. The steam generator hand holes and manways remained open until February 23, 1996. Core alteration activities continued intermittently during the time the breach was in effect, but not during the time from discovery to correction of this problem. Review determined the root cause to be ineffective work package instructions, and insufficient Maintenance procedural guidance for the identification and control of containment closure. Effective containment closure was restored, containment closure requirements were reviewed with Maintenance personnel, and amplifying procedural guidance is being developed. Although the blind flange was in place, WCNO is taking a conservative approach, and is reporting this condition as a breach of containment closure.

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				96	003	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Plant Conditions Prior to the Trip:

Operational Status = Mode 6.
Reactor Coolant Temperature = 96 degrees Fahrenheit
Reactor Coolant Pressure = Atmospheric
Reactor Power = 0

Basis for Reportability:

On February 20, 1996, at approximately 0805 CST, WCNOC personnel identified that the blind flange installed in place of Steam Generator "D" Main Steam Safety Relief Valve ABV0045, did not appear to adequately ensure containment closure. This flange was originally installed on February 12, 1996. Containment closure for penetrations had been visually verified on February 15, 1996, as required by Technical Specification 4.9.4 in accordance with Surveillance Test Procedure STS GP-001, "Containment Penetration Integrity Verification" and STS GP 007, "Containment Penetration Isolation Verification." The blind flange in question and blind flanges on the five other Main Steam Safety Relief valves that had been removed were verified to be installed prior to removing the manway covers on February 16, 1996.

On February 16, 1996, at approximately 1030 CST, manways and hand holes of Steam Generator "D" were removed, and remained open until February 23, 1996. During this period, the blind flanges were used for containment closure.

WCNOC Technical Specification 3.9.4, requires each penetration of the containment building to be closed by an isolation valve, blind flange, manual valve, or approved functional equivalent prior to core alteration or movement of irradiated fuel. Permission to move fuel was granted at 2227 CST on February 17, 1996, and fuel off-load commenced at 2230 CST on that date. This fuel movement occurred during the time the blind flanges were used for containment closure. Core alteration activities continued intermittently during the period before the discovery. Fuel movement had stopped prior to the discovery of the questionable flange, and no further movement occurred until the flange was ensured to be effectively secured. The flange was secured on February 20, 1996, at approximately 1127 CST.

This incident* is therefore reportable under 10CFR50.73(a)(2)(i)(B).

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Description of Event:

On February 20, 1996, at approximately 0805 CST, two Wolf Creek Nuclear Operating Corporation (WCNOC) Operations Turbine Building Watch personnel were performing normal rounds, when they identified an installed blind flange which did not appear to provide effective containment closure.

During the shift turnover prior to their rounds, these two Nuclear Station Operators (NSOs) had been directed to check for the status of containment closure. It should be noted that this direction exceeded WCNOC Technical Specifications and WCNOC program requirements. The direction was provided by Operations management as a conservative approach to maintaining effective containment closure. This conservative approach is in keeping with the philosophy of WCNOC's "Stop; Think; Act; Review" (STAR) program.

Subsequently, at approximately 0805 CST, when performing the watch activities, these two NSOs identified that some bolts were loose on a three-quarter inch thick stainless steel blind flange installed in place of Steam Generator "D" Main Steam Safety Valve ABV0045. This flange was present to assure containment closure and foreign material exclusion. Bolts were found installed in eight of the flange's twelve available bolt holes, and four of these installed bolts were found loose to the point they could be further tightened by hand. The Operations personnel reported that they initially noticed what appeared to be a very small, but visible spacing between the flange and its gasket when a flashlight was placed on the opposite side of the flange. At that point they checked the bolts for tightness, and found that some of them could be further tightened by hand.

By using the flashlight in a similar fashion, the same personnel had previously checked the five other blind flanges that were also installed to maintain containment closure in place of Main Steam Safety Valves ABV0059, ABV0067, ABV0075, ABV0077, ABV0079. The ABV0045 valve's replacement flange was the last of the six flanges checked, and the only closure which caused concern. There were no gaps or spacing visible when the other five blind flanges were checked. After finding the loose bolts on the ABV0045 replacement flange, Operations personnel went back and also checked the bolt tightness on the other five flanges. The bolts on the other five flanges were found to be adequately secured.

The Control Room was immediately notified of the identified condition, and Control Room personnel notified WCNOC Mechanical Maintenance personnel. The blind flange covering the ABV0045 pipe opening was more securely closed by Maintenance personnel, and verified closed by Operations personnel at 1127 CST on February 20, 1996. During the period from discovery until effective closure, core alterations were not in progress and Control Room personnel understood not to start core alterations.

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The removal of the Main Steam Safety Relief Valves was necessary in order to send them to an off-site facility for testing. The planners responsible for planning the removal of the valves, evaluated the removal and specified three-quarter inch thick stainless steel blind flanges to be installed as covers over the exposed openings, with 8 bolts in each flange.

The planner was aware of the need for containment closure, and specified these heavy flanges and bolting based on his evaluation of what was needed to withstand containment closure requirements. However, the work package indicated that these flanges were for foreign material exclusion and did not inform the workers that the flanges were for containment closure. Although the planner did not formally document an analysis or evaluation on the ability of these flanges to meet containment closure requirements, he did discuss the closure with the responsible system engineer.

It should be pointed out that these containment penetration openings are somewhat unique. The standard penetrations are verified using the Operations checklist. The fact that planners didn't seek definitive engineering guidance for this non-standard closure was a contributing cause.

Root Cause and Corrective Actions:

Root Cause:

The root cause of this event was determined to be insufficient work package guidance for effective containment closure. Work Package WP 102084, which was used to install the blind flange in place of Steam Generator "D" Main Steam Safety Relief Valve ABV0045, called for mechanical maintenance to fabricate temporary flanges and provide bolting. This Work Package identified the pipe openings resulting from the valve removal as Foreign Material Exclusion (FME) boundaries, but did not specifically identify the pipe openings as containment closure boundaries. Specific direction as to what was needed for containment closure was not given in the package. The personnel installing the flanges were not aware that the flanges would be used for containment closure.

Contributing Factors:

Further review also revealed that there was no existing standard procedural guidance or methodology for maintenance planners to use in determining what constitutes effective containment closure.

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Corrective Actions:

The following corrective actions were implemented.

- WCNOG Maintenance personnel immediately implemented effective containment closure for the blind flange. The pipe opening resulting from the removal of Main Steam Safety Relief Valve ABV0045 was closed and secured by Maintenance personnel. This closure was verified at 1127 CST on February 20, 1996, by the WCNOG Maintenance "Tiger Team" and later verified by Operations personnel.
- Work Package 102084, the work instruction originally used to install the blind flange in place of Main Steam Safety Relief Valve ABV0045, was modified to identify the installation of the blind flange as a containment closure boundary. The work package also now provides information necessary for effective containment closure. Task 6 of the work package now contains this information.
- Similarly, Work Packages 102090, 102091, 102092, 102093, 102094, which were used for the installation of blind flanges on five other main steam valves, were also modified to identify the flanges as a containment closure boundary and to provide information necessary for effective closure.
- The personnel that initiated work packages 102084, 102090, 102091, 102092, 102093, 102094, are now aware of the need to incorporate specific requirements for containment closure in the work packages.
- Standard guidance and methodology concerning closure of temporary containment penetrations are being evaluated and will be incorporated in procedures, as applicable, by July 1, 1996.

Safety Significance:

The questionable containment closure in this event did not result in any adverse consequences to the plant. No systems were rendered inoperable, and no equipment was damaged. A pressurized release of radioactive gases and material in the containment could have resulted in a unmonitored and unfiltered release to the outside atmosphere. However, a fuel handling accident would have resulted in virtually unmeasurable pressurization of the containment, with a potential release well below the 10 CFR 100 guidelines.

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A loss of Residual Heat Removal (RHR) cooling for an extended period of time may have produced containment pressures up to a maximum of ten psig; however, the consequences of this release of radioactivity would have been expected to be significantly lower than those from a fuel handling accident. This was because the radioactive concentrations in the core region when fuel off-loading was commenced (approximately 20 days after shutdown) were relatively low due to radioactive decay of the fission product inventory.

It should also be emphasized that, should a loss residual heat removal cooling occur at the beginning of fuel off-loading, the elapsed time for core boiling to occur, with resultant start of containment pressurization, is estimated to be approximately sixteen hours. This evaluation is based on the normal water level maintained in the refueling pool at that time and does not consider operator actions. If operators take action to restore the RHR cooling capability, or use alternative methods of cooling the core within this sixteen hour time interval, containment pressurization would not occur. It is extremely unlikely that operators would fail to take action within this period of time.

Even if a release were to have taken place through the potential leakage path, the potential dose consequences for either a fuel handling accident or a loss of Residual Heat Removal (RHR) cooling would have been well below 10CFR100 guideline limits. The failure to maintain effective containment closure in this event did not create an unanalyzed condition of the plant.

Therefore, public health and safety were not jeopardized, even though containment closure was questionable.

Other Previous Occurrences:

Two other events involving a breach of containment closure have been reported. Neither of these events involved the use of blind flanges. One event occurred on November 13, 1986, and was reported in LER 86-064. This event involved the stroking of a valve during core alterations.

The other event occurred during refueling operations on March 17, 1993, and was reported in LER 93-015. In this second event, a particulate filter on a containment atmospheric radiation monitor was changed without isolating the containment flow path.

As provided in NUREG 1022 guidelines, the two events discussed above are not considered previous occurrences, because they involved different systems, different failures, different root causes, and a different sequence of events.