

January 13, 2005

EA-04-231

EA-04-232

Mr. Mark B. Bezilla
Vice President-Nuclear, Davis-Besse
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION
SPECIAL EMERGENCY PREPAREDNESS INSPECTION - DISCREPANT
ALERT AND NOTIFICATION SYSTEM PERFORMANCE INDICATOR DATA
INSPECTION REPORT 05000346/2004018(DRS) APPARENT VIOLATIONS
AND PRELIMINARY WHITE FINDING

Dear Mr. Bezilla:

On October 29, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed a special emergency preparedness inspection at your Davis-Besse Nuclear Power Station. The enclosed report documents the inspection findings, which were discussed on October 29, 2004, with you and members of your staff. On November 29, 2004, Region III staff contacted Mr. J. Vetter of your staff to inform you that the enclosed report also incorporates the NRC's review of your submittal, dated November 4, 2004, that included re-computed Alert and Notification System (ANS) Performance Indicator (PI) data.

The inspection examined activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Specifically, this inspection focused on your ANS PI data, which the NRC has determined to be discrepant, as well as your assessment of the causes for and your responses to an unsuccessful scheduled ANS test on May 7, 2004. The inspection also addressed the Ottawa County officials' loss of their capability to activate all 54 of the Emergency Planning Zone (EPZ) sirens for about 10 days. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The report discusses a finding that appears to have a low to moderate safety significance (White). The finding, as described in Section V of this report, relates to the Ottawa County Sheriff's Dispatch Center unknowingly losing the capability to activate the 54 EPZ sirens for 10.3 days prior to it performing an unsuccessful, monthly ANS test on May 7, 2004. The inspectors also concluded that Ottawa County officials were vulnerable to unknowingly losing their capability to activate the 54 EPZ sirens for up to about 30 days prior to the May 7 test. This finding was assessed based on the best available information, using the applicable Emergency Preparedness Significance Determination Process (SDP) and was preliminarily determined to be a White Finding. The final resolution of this finding will convey the importance to safety by assigning the corresponding color, i.e. White, a finding with some increased

importance to safety, which may require additional NRC inspection. The finding has a low to moderate safety significance because the Ottawa County Sheriff's Dispatch Center loss of siren activation capability for 10 days, and the degraded capability to activate the system for 30 days, could have adversely impacted the safety of some of the EPZ population.

The finding is also an apparent violation of NRC requirements, a degradation of the risk significant emergency planning standard 10 CFR 50.47(b)(5), and is being considered for escalated enforcement action in accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600. The current Enforcement Policy is included on the NRC's Web site at www.nrc.gov.

Before we make a final decision on this matter, we are providing you an opportunity: (1) to present to the NRC your perspectives on the facts and assumptions, used by the NRC to arrive at the finding and its significance, at a Regulatory Conference; or (2) submit your position on the finding to the NRC in writing. If you request a Regulatory Conference, it should be held within 30 days of the receipt of this letter and we encourage you to submit supporting documentation at least one week prior to the conference in an effort to make the conference more efficient and effective. If a Regulatory Conference is held, it will be open for public observation. If you decide to submit only a written response, such submittal should be sent to the NRC within 30 days of the receipt of this letter.

Based on this inspection, the inspectors also identified an issue that is an apparent violation of 10 CFR 50.9(a) of the Commission's regulations. Specifically, the inspectors concluded that the initial ANS PI data, submitted by your staff, were discrepant for the second and third calendar quarters of 2004 due to your staff's incorrect interpretation of Revision 2 of the NRC-endorsed Nuclear Energy Institute 99-02 publication. Your staff incorrectly counted, as PI opportunities, the extra, "silent" siren activation tests that you performed beginning on June 1, 2004. This position did not change even after you consulted with the NRC staff on this issue prior to the quarterly data submittal, and again after the data was officially submitted in July 2004. Consequently, you had several opportunities to correct the data using the correct PI guidance, but no action was taken. As a result, the ANS PI data for the 12 month periods ending on June 30 and September 30 of 2004, should have been classified as being in the White performance band, rather than in the Green performance band, at the end of both 12 month periods.

Before we make a final decision on this matter, we are providing you an opportunity (1) to present to the NRC your perspectives on the facts and assumptions, used by the NRC to arrive at the finding and its significance, at a Predecisional Enforcement Conference or (2) submit your position on the finding to the NRC in writing. **If you request a Predecisional Enforcement Conference, it should be held within 30 days of the receipt of this letter and we encourage you to submit supporting documentation at least one week prior to the conference in an effort to make the conference more efficient and effective.** If a Predecisional Enforcement Conference is held, it will be open for public observation. If you decide to submit only a written response, such submittal should be sent to the NRC within 30 days of the receipt of this letter.

Please contact Kenneth Riemer of the Division of Reactor Safety, Security and Preparedness Branch, at 630-829-9757 within 10 business days of your receipt of this letter to notify the NRC of your intentions. If we have not heard from you within 10 days, we will continue with our significance determination and enforcement decisions and you will be advised by separate correspondence of the results of our deliberations on these matters.

Since the NRC has not made final a determination in these matters, no Notices of Violation are being issued for these inspection findings at this time. In addition, please be advised that the number and characterization of apparent violations described in the enclosed inspection report may change as a result of further NRC review.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Steven A. Reynolds, Chairman
Davis-Besse Oversight Panel

Docket No. 50-346
License No. NPF-3

Enclosure: Inspection Report 0500346/2004018(DRS)
w/Attachment: Supplemental Information

See Attached Distribution

M. Bezilla

-4-

cc w/encl: The Honorable Dennis Kucinich
G. Leidich, President - FENOC
J. Hagan, Senior Vice President
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W. King, FEMA, Region V

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Davis-Besse Oversight Panel

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w/Attachment: Supplemental Information

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cc w/encl: The Honorable Dennis Kucinich
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-346
License No: NPF-3

Report No: 05000346/2004018(DRS)

Licensee: FirstEnergy Nuclear Operating Company (FENOC)

Facility: Davis-Besse Nuclear Power Station

Location: 5501 North State Route 2
Oak Harbor, OH 43449-9760

Dates: October 25 through October 29, 2004

Inspectors: T. Ploski, Senior Emergency Preparedness Inspector
R. Kahler, Team Leader, Emergency Preparedness
Directorate, Office of Nuclear Safety and Incident
Response

Observer: S. Eischen, Radiological Analyst, Ohio Emergency
Management Agency

Approved by: K. Riemer, Chief
Security and Preparedness Branch

SUMMARY OF FINDINGS

IR 05000346/2004018(DRS); 10/25/2004 - 10/29/2004; Davis-Besse Nuclear Power Station; Special Emergency Preparedness Inspection; Discrepant Performance Indicator (PI) Data and Degraded Siren Activation Capability.

This report covers a five-day special onsite inspection regarding the conduct and results of tests of the Emergency Planning Zone's (EPZ) public Alert and Notification System (ANS), a revision to the testing program that was implemented on June 1, 2004, and the licensee's selection of tests as ANS performance indicator opportunities. The inspection also addressed Ottawa County officials' degraded capability to activate the 54 EPZ sirens. The inspection was conducted by a Region III senior emergency preparedness inspector and a Headquarters senior emergency preparedness specialist. One apparent violation and one preliminary White finding were identified.

The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Emergency Preparedness

- Apparent Violation. An Apparent Violation of 10 CFR 50.9(a) of the Commission's regulations was identified.

The ANS Performance Indicator (PI) data submitted by the licensee for the second and third calendar quarters of 2004 were discrepant. Specifically, the licensee incorrectly interpreted Revision 2 of the NRC-endorsed Nuclear Energy Institute publication that provided criteria on what ANS tests could be counted as PI opportunities, and incorrectly counted as PI opportunities its "silent" siren activation tests that it performed beginning on June 1, 2004. As a result of counting these "silent tests," the licensee's reported ANS PI data remained in the Green performance band throughout the 12 month periods ending on June 30 and September 30, 2004. In contrast, the NRC concluded that these ANS PI data should have been classified as being in the White performance band at the ends of both 12 month periods based on counting only the regularly scheduled monthly tests.

The licensee's submittals of discrepant ANS PI data for the second and third calendar quarters of 2004 adversely impacted the NRC's ability to perform its regulatory function. Specifically, a White PI would have resulted in a supplemental inspection in accordance with NRC Manual Chapter 0608, "Performance Indicator Program," and Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area."

- TBD. A preliminary White finding was identified.

The Ottawa County Sheriff Dispatch Center lost its capability to activate all 54 EPZ sirens from April 27 through May 7, 2004, (10 days) and its capability to activate all 54 EPZ sirens was degraded from April 6 through May 7, 2004 (30 days).

The finding was more than minor because if Ottawa County officials needed to promptly activate the EPZ sirens between the morning of April 27 and noontime on May 7, 2004, the EPZ sirens would not have activated and the safety of some of the EPZ population could have been adversely impacted. The preliminary White finding was associated with one of the attributes of the Emergency Preparedness Cornerstone, specifically the facilities and equipment attribute. This preliminary finding was assessed using the Emergency Preparedness SDP and was considered to be a degradation of the risk significant emergency planning standard 10 CFR 50.47(b)(5).

B. Licensee-Identified Violations

No findings of significance were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Emergency Preparedness

I. Overview

On Friday, May 7, 2004, Ottawa County officials conducted a scheduled monthly test of the alert and notification system (ANS) for the Davis-Besse Nuclear Power Station's plume exposure pathway Emergency Planning Zone (EPZ). None of the sirens within the Ottawa County portion of the EPZ activated as expected. The problem was diagnosed and short-term corrective actions were implemented within one hour. The licensee reported the test failure to the Nuclear Regulatory Commission (NRC) in accordance with the requirements of Title 10 of the Code of Federal Regulations (10 CFR 50.72 (b)(3)(xiii)).

One result of the May 7 test failure was a joint decision by Ottawa County officials and the licensee to increase the frequency of EPZ siren system testing. Repeats of the ANS test were successfully conducted by Ottawa County officials on May 14 and May 21, 2004. A joint decision was made to further revise the testing schedule and testing method by having licensee staff perform additional "silent tests" on Monday through Friday of the licensee's normal business days beginning on June 1, 2004. The licensee accordingly revised its procedure, which encompassed the EPZ siren testing program and its counting of siren tests as ANS PI opportunities, effective on June 1, 2004.

The licensee correctly decided not to count the extra tests, conducted by county officials on May 14 and May 21, as ANS PI opportunities, since these tests were not normally scheduled tests, as described in the licensee's relevant procedure. In contrast, the licensee revised this procedure and began counting its extra Monday through Friday "silent tests" as PI opportunities beginning with the extra test conducted on June 1 and continuing through at least September 30, 2004.

When the NRC staff became aware in June of the licensee's decision to count its extra Monday through Friday tests as ANS PI opportunities, the NRC discussed the matter with licensee staff and management and questioned the appropriateness of the licensee's plans. As noted in the NRC's letter, dated October 21, 2004, to senior licensee management, the NRC staff discussed the issue of the licensee's decision to revise its ANS PI data reporting with licensee personnel on multiple occasions. The licensee counted the extra tests that it began performing on June 1 as ANS PI opportunities and reported the ANS PI data for the second and third quarters of Calendar Year 2004 as GREEN.

In accordance with NRC Manual Chapter 0608, "Performance Indicator Program," the NRC staff determined that the licensee's ANS PI data were discrepant and that a special emergency preparedness (EP) inspection would be conducted using Inspection Procedure (IP) 71150, "Discrepant or Unreported Performance Indicator Data." As a

result of the NRC's determination, the color of the ANS PI data available on NRC's Web Page was changed by the NRC staff from Green to Gray to indicate that these PI data were under increased review by NRC. Once the root causes of the discrepant ANS data have been identified and corrected, and the NRC has verified that the licensee can accurately assess and report its ANS PI opportunities, oversight of the ANS PI reporting will return to normal per IP 71151, "Performance Indicator Verification."

This special EP inspection reviewed the licensee's responses to the unsuccessful May 7 test, particularly with respect to the reporting requirements of the PI Program. The inspection also reviewed the licensee's decision to revise its procedures for counting ANS PI opportunities during a calendar quarter, rather than at the beginning of the next calendar quarter. Another inspection objective was to gather additional information on the unsuccessful May 7 test, so that NRC could better understand and then determine the risk significance of Ottawa County officials being unable to activate the EPZ sirens as expected.

Siren Configuration And Unsuccessful Test on May 7, 2004

Configuration

As indicated in Section 7.7 of the current Revision 23 of the licensee's emergency plan, the EPZ "Prompt Notification System" (ANS), consisted of 54 sirens that Ottawa County officials would activate from the Ottawa County Sheriff's Dispatch Center. Forty-nine of the 54 EPZ sirens were located within Ottawa County. The other five EPZ sirens were located in Jerusalem Township of neighboring Lucas County. The staff of the Ottawa County Sheriff's Dispatch Center have the capability of activating all 54 EPZ sirens. Lucas County officials can activate the five EPZ sirens within Jerusalem Township; however, Lucas County officials cannot activate the 49 EPZ sirens located within Ottawa County.

Several control systems within Ottawa County were associated with the EPZ sirens, including those used by Sheriff's Dispatch Center staff, the licensee's siren maintenance staff, a local ANS equipment vendor, and a control system within the licensee's Emergency Operations Facility (EOF). With one important exception, these control systems were configured as follows. A control system had a Central Computer Unit (CCU) that was linked to a Radio Interface Device (RID) that transmitted a radio signal to each siren's Remote Terminal Unit (RTU). Each of the five EPZ sirens within Jerusalem Township were equipped with two RTUs - one associated with the Lucas County siren control system and one associated with the Ottawa County siren control system. The significant configuration exception was that the Ottawa County Sheriff's Dispatch Center's control system used a touch screen control console to communicate directly with the RID, instead of communicating to the RID through a CCU.

The ANS for the Davis-Besse Station EPZ had several design features that were relevant to the May 7 failed test. An "eavesdropping" feature allowed all on-line CCUs to monitor and record system commands and data. When a poll command would be sent, all on-line CCUs' time clocks would be updated to match the time clock of the CCU that sent the poll command. The EOF control system's CCU was programmed to

automatically perform a daily poll of all EPZ sirens every morning. While this automatic daily poll would synchronize all online CCU and RTU clocks to the time on the EOF's CCU, the RID associated with the Sheriff's Dispatch Center's touch screen control system was not affected by this automatic daily poll. Also, if a maintenance technician used a portable CCU and sent a poll command while troubleshooting a siren malfunction or when performing preventive maintenance, all on-line CCUs and relevant RTU time clocks would be updated to match the time clock of the technician's portable CCU. The ANS also had a "time synchronization feature" such that if there was a time clock difference greater than 90 minutes between the device that sent a signal to a siren's RTU and the RTU's time clock, the siren would not activate. The time synchronization feature was intended to reduce the potential of an unauthorized person activating EPZ siren(s) by playing a recording of the siren activation signal.

Test Failure

The Ottawa County Sheriff's Dispatch Center lost its capability to activate all 54 EPZ sirens from April 27 through May 7, 2004, (10 days) and its capability to activate all 54 sirens was degraded from April 6 through May 7, 2004 (30 days).

Several factors contributed to the test failure. The ANS online CCU clocks were reset to daylight savings time on the morning of April 5, when a member of the licensee's EP staff updated the EOF CCU to daylight savings time. The EP staff member also used the EOF CCU to poll EPZ siren Number 013 to determine if a previous signal transmission problem still existed. The poll of siren Number 013 caused only its RTU to become synchronized to the EOF CCU for daylight savings time, while the remaining 53 EPZ siren RTUs remained one hour behind daylight savings time. All other online CCUs, including the CCU at the Sheriff's Dispatch Center, were updated to daylight savings time due to the eavesdropping feature. Since the siren maintenance technician's portable CCU was not online, the technician's CCU was not updated to daylight savings time. Since the RID at the Sheriff's Dispatch Center was not linked to any online CCU, the time clock setting of the equipment used by the Sheriff's Dispatch Center staff to activate the EOF sirens remained one hour behind daylight savings time.

On April 6, the automatic poll by the EOF CCU of all 54 EPZ sirens occurred, which also changed their RTUs to daylight savings time. At this point, all sirens (CCUs and RTUs) were on daylight savings time. However, the Sheriff's Dispatch Center RID remained one hour behind all online CCUs and was now one hour behind all EPZ siren RTUs.

A second factor contributing to the May 7 test failure was that the siren maintenance technician's CCU clock was set about one hour ahead of daylight savings time for unknown reasons. On April 26, the technician performed maintenance on siren Number 101 that involved the use of the portable CCU to poll only siren Number 101. This poll of siren Number 101 using the technician's portable CCU caused the siren Number 101 RTU clock and, because of the eavesdropping feature, all online CCU clocks (including the EOF CCU clock), to become one hour ahead of daylight savings time.

The Ottawa County Sheriff Dispatch Center RID, which remained one hour behind daylight savings time, was unaffected by this poll of siren Number 101 and now became about two hours behind the RTU associated with siren Number 101 and about one hour behind the other 53 EPZ siren RTUs.

On April 26, the automatic poll of all EPZ sirens by the EOF CCU occurred. This automatic poll reset all siren RTU clocks and all online CCUs to be about one hour ahead of daylight savings time. The Sheriff Dispatch Center RID was unaffected by this automatic poll of all sirens by the EOF CCU. Thus, the Sheriff's Dispatch Center staff lost the capability to activate the 54 EPZ sirens on April 26, because the Sheriff's Dispatch Center RID clock was now about two hours out of synchronization with the siren RTUs when compared to the clock synchronization feature 90 minute time limit.

The inspectors concluded that Ottawa County officials were vulnerable to unknowingly losing the capability to activate all 54 EPZ sirens at any time between the automatic poll on the morning of April 6 and the noontime test on May 7, 2004, or roughly 30 days. The duration of a loss of the capability to activate the 54 EPZ sirens was dependent on when the licensee's technician would have used the portable CCU (with its incorrect time clock setting) to perform work on any EPZ siren.

On May 7, the Sheriff's Dispatch Center staff attempted to perform the monthly 60 second ANS test using its touch screen console and its associated RID. It became apparent that the siren activation signal had been transmitted; however, it also was apparent that the nearby EPZ sirens had not sounded as expected. The licensee contacted the local ANS vendor. The vendor successfully activated the EPZ sirens using the vendor's CCU and RID equipment that were set to daylight savings time. Licensee staff used the EOF CCU to send a poll command to all 54 EPZ sirens. This poll resulted in resetting all 54 siren RTU clocks to daylight savings time. Although the Sheriff's Dispatch Center RID clock was now 60 minutes different from the siren RTU clocks, the Sheriff's staff capability to activate the EPZ sirens was restored, because this 60 minutes difference was less than the 90 minute time limit of the clock synchronization feature.

As noted earlier in this inspection report, licensee and Ottawa County officials made a joint decision to increase ANS testing following the May 7 unsuccessful test. While more frequent testing of ANS components could identify equipment problems sooner, and could also provide more information with which to trend malfunctions of various ANS components, the inspectors concluded that none of the silent tests that were instituted on June 1 would have identified the causes of the unsuccessful siren activation test on May 7.

II. Testing Program

Testing Prior to Failure

The ANS test schedule that was in effect prior to the May 7 test was described in Revision 2 of licensee Procedure RA-EP-04400, "Prompt Notification System Test." The procedure documented that a 60 seconds duration test of the 54 EPZ sirens would

“normally” be performed by the Ottawa County Sheriff’s Dispatcher on the first Friday of every month at noon. An annual 3-minute duration test of the 54 EPZ sirens would “normally” be done by the Ottawa County Sheriff’s Dispatcher. The procedure documented that only the results of the aforementioned 13 scheduled tests would be counted as PI opportunities.

However, the procedure did not clearly document whether the licensee would count the portion of an annual or monthly test of the five EPZ sirens within Jerusalem Township as ANS PI opportunities if a test of these five sirens was not initiated by the Ottawa County Sheriff’s Dispatcher. The inspectors concluded it was possible that Lucas County officials, rather than Ottawa County officials, could have activated the five EPZ sirens within Jerusalem Township for an annual three minute test and/or any monthly 60 second EPZ siren test, and that the licensee could have counted the results of such tests of the five Jerusalem Township sirens as ANS PI opportunities. The licensee’s submittal, dated November 4, 2004, clarified that Lucas County officials, rather than Ottawa County officials, had activated the five Jerusalem Township sirens for every monthly test since at least April 2003. Since Lucas County officials, and not Ottawa County officials, had activated the five sirens, the licensee had incorrectly counted the tests of these five sirens as ANS PI opportunities.

Testing Subsequent to Failure

As one response to the May 7 ANS test failure, the licensee coordinated with Ottawa County officials to perform additional tests of all 54 EPZ sirens on Friday, May 14 and May 21, 2004. Since these extra tests were not “scheduled tests,” as described in Procedure RA-EP-04400, the licensee correctly decided that it could not count these unscheduled tests as ANS PI opportunities.

The licensee subsequently issued Revision 3 of Procedure RA-EP-04400, which had an effective date of June 1, 2004. The revised procedure included the following information on how scheduled tests would be conducted and counted as ANS PI opportunities effective on June 1, 2004:

- The annual, three minutes duration test would “normally” be conducted in March and would “normally” be conducted by the Ottawa County Sheriff’s Dispatcher. The inspectors concluded that it remained possible for Lucas County officials, rather than Ottawa County officials, to activate the five Jerusalem Township sirens for this annual test and for the licensee to inappropriately count the results of this annual test of these five EPZ sirens as ANS PI opportunities.
- The monthly tests would “normally” be performed by the Ottawa County Sheriff’s Dispatcher. However, the revised procedure documented that the five EPZ sirens within Jerusalem Township were “normally” tested in conjunction with Lucas County’s siren test program. The inspectors concluded that it remained possible for Lucas County officials to activate the five Jerusalem Township sirens during a monthly test and for the licensee to inappropriately count the test results of these five sirens as ANS PI opportunities.

- Silent tests were added to the types of scheduled tests that would be counted as ANS PI opportunities. The revised procedure documented that the silent tests were “normally” performed by licensee staff “each working day” and could be performed using either the EOF CCU or another CCU located at the Ottawa County Sheriff’s Dispatch Center. The revised procedure also indicated that a silent test would be performed from the Sheriff’s Dispatch Center at least once per week. Licensee EP staff clarified that “each working day” meant Monday through Friday of the licensee’s normal business week, rather than also on weekends and holidays. Based on discussions with EP staff and records reviews, the inspectors determined that a silent test was typically conducted on Fridays by an EP staff member using the CCU that was kept at the Ottawa County Sheriff’s Dispatch Center.

The inspectors toured the Ottawa County Sheriff’s Dispatch Center and verified that the Sheriff personnel would use touch screen equipment to activate the EPZ sirens, rather than the CCU that was located separately within the Dispatch Center. The inspectors also observed a daily ANS silent test that was performed by licensee staff using the siren control system located within the EOF.

Revisions 2 and 3 of Procedure RA-EP-04400 included instructions that whomever performed a scheduled siren test was to notify the licensee’s on-call, Emergency Offsite Manager (EOM) if any five or more sirens failed to activate. Procedure RA-EP-00420 indicated that the EOM, which was an EOF position filled by senior licensee EP staff, was responsible for assessing the reportability of ANS malfunctions per 10 CFR 50.72(b)(xiii), and for making various coordination calls and initiating corrective actions. The inspectors noted that, although the EOF was located in the Davis-Besse Station Owner Controlled Area, the EOF was not staffed 24 hours per day, seven days per week, by an EOM or by other licensee staff who were trained to use the EOF ANS control system.

III. **Assessment of Performance Indicator (PI) Data**

Assessment of Licensee PI calculation

The NRC staff concluded that the licensee’s ANS PI data were discrepant for the second and third quarters of 2004, based on the following text of Revision 2 of the NRC-endorsed, Nuclear Energy Institute (NEI) 99-02 publication (emphasis added by *italics*):

“Periodic tests are the regularly scheduled tests (documented in the licensee’s test plan or guidelines) that are conducted to actually test the ability of the sirens to perform their function (e.g., silent, growl, siren sound test)...

”It may be possible for sirens to be activated from multiple control stations... If the use of redundant control stations is in approved procedures and is part of the actual system activation process, then activation from either control station should be considered a success... *If the redundant control station is not normally attended, requires setup or initialization, it may not be considered as*

part of the regularly scheduled test. Specifically, if the station is only made ready for the purpose of siren tests it should not be considered as part of the regularly scheduled test.”

As described in NRC Inspection Manual Chapter 0608, “Performance Indicator Program,” the Reactor Oversight Program includes a Frequently Asked Question (FAQ) process that external and internal stakeholders can use to seek clarifications on the NRC’s PI Program or its implementation. The following excerpt of FAQ 358, dated February 19, 2004, was also relevant to this IP 71150 inspection (emphasis added by *italics*):

Question: Can the licensee modify the ANS testing methodology when calculating the site value for this indicator ?

Answer: Yes. Page 95, lines 19-23 of NEI 99-02 will be modified as follows: Changes to the activation and/or testing methodology shall be noted in the licensee’s quarterly PI report in the comment section. Siren systems may be designed with equipment redundancy, multiple signals, or feedback capability. It may be possible for sirens to be activated from multiple control stations or signals. If the use of redundant control stations or multiple signals is in approved procedures *and is part of the actual system activation process*, then activation from either control station or any signal should be considered a success.

As indicated in Section II of this Inspection Report, the licensee issued Revision 3 of Procedure RA-EP-04400, which became effective on June 1, 2004. Among the changes introduced in Revision 3 was the inclusion of 10 second silent ANS tests on Monday through Friday of the licensee’s normal business days.

* Although Procedure RA-EP-04400 documented that licensee staff would perform the silent tests using either the siren control system installed in the Davis-Besse Station EOF or the CCU workstation maintained within the Ottawa County Sheriff’s Dispatch Center, the inspectors concluded that none of the silent tests instituted on June 1, 2004, were eligible to be ANS PI opportunities. The licensee EOF was not a “normally attended” facility in which a trained licensee staffer was always present to activate the EPZ sirens. Instead, the licensee emergency plan indicated that the EOF would become staffed following any Alert or higher emergency declaration. Also, as noted in Section III of this Inspection Report, a member of the licensee’s EP staff had to report to the Sheriff’s Dispatch Center to perform a silent ANS test that involved the use of CCU equipment that was different from the touch screen equipment that the Dispatch Center’s staff would use to activate the EPZ’s sirens.

* The inspectors also concluded that the monthly one minute and annual three minute tests of the five EPZ sirens within Jerusalem Township of Lucas County could only be counted as ANS PI opportunities if Ottawa County officials activated these five sirens when they activated the 49 EPZ sirens within Ottawa County and if the Sheriff’s Dispatch Center staff used the same touch screen

equipment to activate the EPZ sirens that they would use during an actual emergency. As indicated in Section II of this Inspection Report, the siren control system used by Ottawa County and Lucas County officials were independent of each other. As a result, the five EPZ sirens located within Jerusalem Township were equipped with two RTUs - one associated with the Lucas County siren control system and one associated with the Ottawa County siren activation system. Thus, if Lucas County officials, rather than Ottawa County officials, actually activated the five sirens in Jerusalem Township during a monthly and/or annual test, they would be using some different components during these tests compared to the components that would have been tested by Ottawa County staff.

- * Finally, Revision 2 of Procedure RA-EP-04400 was effective at the beginning of the second calendar quarter of 2004. The revised procedure did not include the Monday through Friday silent tests in the EPZ siren test program. The inspectors concluded that counting the silent tests as ANS PI opportunities was a significant change to the licensee's program for defining ANS PI opportunities that should not have been implemented before the beginning of the next (third) calendar quarter of 2004. However, the fact that the siren control systems used by licensee staff in the EOF or at the Ottawa Sheriff's Dispatch Center to perform the silent tests differed from the touch screen equipment that would be used by Ottawa County staff to activate the EPZ sirens already eliminated all silent tests as ANS PI opportunities per the aforementioned texts of NEI 99-02 and FAQ 358.

NRC Calculation of ANS PI

The inspectors re-calculated the licensee's ANS PI data for the 12 month periods ending on June 30 and September 30, 2004. In performing these recalculations, the inspectors recognized that the annual test described in Revisions 2 and 3 of Procedure RA-EP-04400 was performed in late March 2004 by Ottawa County Sheriff's Dispatch Center personnel using their touch screen control equipment to activate all 54 EPZ sirens. The inspectors' recalculations did not include the unscheduled tests performed on May 14 and 21, 2004, and did not include any silent tests performed per Revision 3 of that procedure.

In view of the possibility that Lucas County officials, rather than Ottawa County officials, may have activated the five EPZ sirens within Jerusalem Township during some or all of the monthly tests, the inspectors performed the following recalculations using each of the following assumptions in order to bound their recalculation with "best case" and "worst case" results: (1) Lucas County officials activated the five Jerusalem Township EPZ sirens during all monthly tests; or (2) Ottawa County Officials activated the five Jerusalem Township sirens during all monthly tests.

The following subsections indicate that, whether or not the inspectors' recalculations involved "best case" or "worst case" assumptions, the NRC staff concluded that the licensee's ANS PI data should have been classified in the White performance band at the ends of the 12 month periods on June 30, 2004 and on September 30, 2004.

In contrast, the licensee's original submittals of PI data for the second and third calendar quarters of 2004 resulted in the incorrect depiction of ANS performance remaining within the GREEN performance band for both 12 month periods.

Second Quarter 2004 PI Data

"Best Case" ANS PI Re-Calculation for 12 Month Period Ending June 30, 2004

Assuming that all monthly tests of the five Jerusalem Township sirens were initiated by Ottawa County officials, the only change that needed to be made to the licensee's quarterly ANS PI data submittals for this 12 month period was the elimination of the silent tests that took place on Monday through Friday beginning on June 1, 2004. The ANS PI records indicated that the result of the monthly test conducted on June 4 was that all 54 EPZ sirens sounded when activated by the Ottawa County Dispatch Center's staff. Therefore, the ANS PI data for the second calendar quarter of 2004 should be 108 successful siren activations in 162 activation opportunities, rather than 1234 successful activations in 1296 opportunities per the licensee's ANS PI data submittal.

Based on records review, including ANS test results posted on NRC's Web Page, the inspectors determined that the "best case" test results were a total of 645 successful siren activations in 702 opportunities for the 12 month period ending June 30, 2004. Since the ANS PI value is the number of successful test results divided by the number of test opportunities over a 12 month period, the ANS PI results were about 91.8 percent for this 12 month period, which is classified as being in the WHITE performance band.

"Worst Case" ANS PI Re-Calculation for 12 Month Period Ending June 30, 2004

Use of the "worst case" assumption in the inspectors' re-calculation meant that tests of the five Jerusalem Township sirens would be eliminated as ANS PI opportunities, as well as all 10 second silent tests performed in June 2004. Thus, a maximum result for any monthly siren test would be 49 successful siren activations in 49 opportunities. Based on records review, the inspectors determined that there were a total of 593 successful siren activations in 642 activation opportunities. Based on the "worst case" assumption, the ANS PI results were about 92.4 percent for this 12 month period, which is classified as being in the White performance band.

In contrast, the licensee's calculation for the 12 month period ending June 30, 2004, was 1771 successful tests out of 1836 test opportunities, or about a 96.5 percent success rate that kept the ANS PI in the Green performance band.

The inspectors concluded that the ANS PI data reported by the licensee were discrepant whether a "best case" or "worst case" assumption was made about the monthly testing of the five EPZ sirens within Jerusalem Township.

Third Quarter 2004 PI Data

“Best Case” ANS PI Re-Calculation for 12 Month Period Ending September 30, 2004

During this inspection, the inspectors requested and received the licensee’s ANS PI records for the third quarter of 2004, since the licensee had recently made its submittal of third quarter PI data to NRC Headquarters. All 54 EPZ sirens activated as expected on the first Friday in July, August, and September. Assuming that Ottawa County officials activated the five Jerusalem Township sirens in each of these three monthly tests, the inspectors concluded that the licensee’s ANS PI submittal for the third calendar quarter of 2004 should have been 162 successful siren activations for 162 activation test opportunities. Therefore, the “best case” test results for this 12 month period were 645 successful activations in 702 activation opportunities. Based on the “best case” assumption, the ANS PI results were about 91.9 percent for this 12 month period, which is in the White performance band.

“Worst Case” ANS PI Re-Calculation for 12 Month Period Ending September 30, 2004

Use of the “worst case” assumption in the inspectors’ re-calculation meant that the five Jerusalem Township sirens would be eliminated as ANS PI opportunities, as well as all 10 second silent tests performed in the third calendar quarter of 2004. The maximum result for each of the three monthly siren tests was achieved during this quarter (49 successful siren activations in 49 activation opportunities). The inspectors determined that there were a total of 593 successful siren activations in 642 activation opportunities. Based on the “worst case” assumption, the ANS PI results were about 92.4 percent for this 12-month period, which is in the White performance band.

The licensee’s ANS PI data submittal for the third quarter of 2004 was 3395 successes in 3402 activation opportunities. The licensee’s ANS PI submittals for the 12-month period ending on September 30, 2004, indicated a total of 5004 successes in 5076 opportunities, or about a 98.6 percent that was in the Green performance band. In contrast, the inspectors concluded that the ANS PI data reported by the licensee for the 12 month period ending on September 30, 2004, were in the White performance band whether a “best case” or “worst case” assumption was made about the monthly testing of the five Jerusalem Township sirens.

Licensee Re-Submittal of PI Data

Subsequent to the onsite inspection, NRC received the licensee’s submittal, dated November 4, 2004, titled “Correction of Performance Indicator Data for the Davis-Besse Nuclear Power Station Alert and Notification System”. This submittal adequately summarized the inspectors’ preliminary conclusions regarding which EPZ siren tests

could or could not be counted as ANS PI opportunities. The inspectors noted that the licensee's re-calculations for the 12-month periods ending June 30 and September 30, 2004, matched the inspectors' "worst case" calculations summarized above.

V. Findings

Discrepant PI

The licensee's initial submittals of ANS PI data for the second and third calendar quarters of 2004 were discrepant because the licensee incorrectly interpreted relevant text of Revision 2 of the NEI 99-02 publication that provided criteria on what ANS tests could be counted as PI opportunities. As a result, the licensee incorrectly counted its "silent" ANS tests, which it began performing on June 1, 2004, as PI opportunities.

The licensee's PI data for the 12 month period ending on June 30 indicated that about 96.5 percent of the siren tests that it counted as ANS PI opportunities were successful. The licensee's PI data for the 12 month period ending on September 30 indicated that about 98.6 percent of the siren tests that it counted as ANS PI opportunities were successful. Thus, ANS reliability for the 12 month periods ending on June 30 and September 30, 2004, incorrectly depicted that ANS reliability remained in the licensee response (Green) band despite the unsuccessful results of the monthly test conducted on May 7, 2004. In contrast, the inspectors calculated that only about 92.4 percent of the siren tests were successful PI opportunities in each of these 12 month periods.

The licensee's submittals of discrepant ANS PI data for the second and third calendar quarters of 2004 adversely impacted the NRC's ability to perform its regulatory function. Specifically, a White PI would have resulted in a supplemental inspection in accordance with NRC Manual Chapter 0608, "Performance Indicator Program," and IP 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area."

Section IV, Section IX, and Supplement VII of NRC's Enforcement Policy addressed violations involving the submittal of inaccurate or incomplete information to NRC. The inspectors determined that an apparent violation of 10 CFR 50.9(a), "Completeness and Accuracy of Information," occurred in that the licensee submitted discrepant ANS PI data for the second and third calendar quarters of 2004. This is an Apparent Violation (AV) 05000346/2004018-01.

Siren Capability

The Ottawa County Sheriff Dispatch Center lost its capability to activate all 54 EPZ sirens from April 27 through May 7, 2004, (10 days) and its capability to activate all 54 sirens was degraded from April 6 through May 7, 2004 (30 days). In accordance with NRC Manual Chapter 0612, the inspectors determined that the issue was a performance deficiency. The inspectors concluded that this was an apparent degradation of the risk significant emergency preparedness Planning Standard 10 CFR 50.47(b)(5), which states, in part, that "the means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established."

In accordance with Appendix B of Manual Chapter 0612, the inspectors determined that this performance deficiency was more than minor because, if Ottawa County officials needed to promptly activate the EPZ sirens between the morning of April 27 and noon on May 7, 2004, the EPZ sirens would not have activated and the safety of some of the EPZ population could have been adversely impacted. The preliminary White finding was associated with one of the attributes of the Emergency Preparedness Cornerstone, specifically the facilities and equipment attribute.

Manual Chapter 0609, Appendix B (“Emergency Preparedness Significance Determination Process”) defines risk significant planning standards and includes 10 CFR 50.47(b)(4), (5), (9), or (10). The Ottawa County Sheriff’s Dispatch Center loss of activation capability for 10 days, and the degraded capability to activate the system for 30 days, was a degradation of 10 CFR 50.47(b)(5), a risk significant planning standard (the means to provide early notification to the public in the 10 mile EPZ).

The inspectors assessed the significance of this issue in accordance with Appendix B of NRC Manual Chapter 0609, “Emergency Preparedness Significance Determination Process. The inspectors concluded that the Ottawa County Sheriff’s Dispatch Center degraded capability to activate the EPZ sirens was due to the combined affects of a design feature and a flaw in the ANS maintenance program that existed for a significant period of time. Manual Chapter 0609, Appendix B, Section 4.5 states that the risk significant planning standard functions associated with 50.47(b)(5) includes the administrative and physical means have been established for alerting and providing prompt instructions to the public in the 10 mile EPZ. Examples of degradation of the risk significant planning standard function (preliminary White Finding) include the following: The public alert and notification system has design flaws or deficiencies in the test program, the maintenance program, or procedures that degrade a portion of the system for a significant period of time. This was a preliminary White finding (05000346/2004018-02).

Meetings

a. Onsite Exit Meeting

The inspectors presented the preliminary inspection results to Mr. M. Bezilla and other members of licensee management and staff on October 29, 2004. The inspectors and licensee agreed that a vendor’s document that was reviewed during the inspection should be considered as proprietary, as requested by the vendor.

b. Re-Exit Meeting

On November 29, 2004, Region III staff contacted Mr. J. Vetter of the licensee’s staff to inform him that this Inspection Report would include NRC’s review the licensee’s submittal, dated November 4, 2004, that included re-computed ANS PI data.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

B. Allen, Plant Manager
M. Bezilla, Site Vice President
A. Bless, Regulatory Compliance Specialist
B. Cope, Senior EP Specialist
C. DeTray, Nuclear Quality Assurance Specialist
K. Dunn, Nuclear Document Control Supervisor
V. Higaki, Corporate EP Manager
R. Hruby, Nuclear Oversight Manager
S. Loehlein, Engineering Director
K. Ostrowski, Operations Manager
R. Strauss, Offsite EP Specialist
P. Timmerman, Senior EP Specialist
J. Vetter, EP Supervisor
D. Wahlers, Nuclear Quality Assurance Supervisor
D. White, Senior Nuclear Technician
J. Whitright, Staff Nuclear Engineer
R. Wilkins, Communications Specialist
L. Winckowski, Senior Nuclear Specialist
A. Wise, Supervisor, Nuclear Electrical Systems Engineers
G. Wolf, Regulatory Compliance Engineer

Nuclear Regulatory Commission

K. Riemer, Chief, Plant Support Branch
C. Thomas, Davis-Besse Senior Resident Inspector

Ottawa County

J. Greer, County Emergency Management Agency Director
J. Witt, County Administrator

Ohio Emergency Management Agency

S. Eischen, Radiological Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000346/2004018-01	AV	Submittals of Inaccurate ANS PI Data for Second and Third Calendar Quarters of 2004
05000346/2004018-02	TBD	Ottawa County Officials Unknowingly Lost Their Capability to Activate EPZ Sirens for About 10.3 Days and were Vulnerable to Lose this Capability for About 30 Days

Closed

None.

Discussed

None.

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

Event Report 40734; Loss of Emergency Preparedness Capability Due to Inability to Activate Sirens; dated May 7, 2004

Draft RCA Report for CR 04-03213; EPZ Sirens Fail to Activate; dated June 23, 2004

RCA Report for CR 04-03213; EPZ Sirens Fail to Activate; dated September 21, 2004

Davis-Besse Nuclear Power Station Emergency Plan; Section 7.7; Prompt Notification System; Revision 23

Procedure HS-EP-4400; Prompt Notification System Test; Revision 1; dated January 29, 1987

Procedure RA-EP-00400; Prompt Notification System Maintenance; Revision 2; dated July 18, 2003

Procedure RA-EP-00420; Response to Prompt Notification System Malfunction; Revision 1; dated February 5, 2001

Procedure RA-EP-04400; Prompt Notification System Test; Revision 2; dated July 19, 2003

Procedure RA-EP-04400; Prompt Notification System Test; Revision 3; dated June 1, 2004

Davis-Besse Business Practice - EMER-0003; NRC PI for ANS Reliability; Revision 0; dated April 14, 2004

Davis-Besse Business Practice - EMER-0003; NRC PI for ANS Reliability; Revision 1; dated June 10, 2004

Licensee's Submittal of ANS PI Data for Third Calendar Quarter of 2004; dated October 12, 2004

Operating Experience Submittal 18511; Siren System Failure to Activate for Routine Test; dated June 4, 2004

Licensee Telephone Call Documentation; Question on Need to Obtain FEMA Approval Prior to Changing Frequency of Siren Testing; dated June 30, 2004

Licensee Telephone Call Documentation; Question on Need to Obtain Approval from FEMA Prior to Changing Frequency of Siren Testing; dated July 7, 2004

Licensee Telephone Call Documentation; Siren Testing Approval; dated July 19, 2004

Licensee Telephone Call Documentation; Changes to Davis-Besse Siren Testing; dated July 20, 2004

Monthly ANS Test Results January 2004 through September 2004

CR 04-03213; Loss of Control to Activate EPZ Sirens

CA I Through 14 to CR 03213

CR 04-04323; Evaluate the Need to Obtain Approval from FEMA to Increase Siren Test Frequency

WHITE Paper Review of CR 04-04323; Evaluate the Need to Obtain Approval from FEMA to Increase Siren Test Frequency; Revisions 0 and 1

CA 1 to CR 04-04323; Determine if an Operating Experience Report Should be Issued

Ottawa County SOP 26; Siren Activation; Revision 14

Ottawa County SOP 38; Emergency at the Davis-Besse Nuclear Power Station; Revision 13

Ottawa County Suggested Operating Guideline 26; Siren Activation for an Emergency at the Davis-Besse Nuclear Power Station; Revision 14

Procedure NOP-SS-1001; FENOC Administrative Program for Computer Related Activities; Revision 2

CR 04-06632; NRC Questions Regarding Submittal of Siren PI Data

CR 04-06633; Differences Between the Emergency Plan and Siren Test Methodology

Letter to NRC Serial Number 3104; Correction of Performance Indicator Data for the Davis-Besse Nuclear Power Station Alert and Notification System; dated November 4, 2004

LIST OF ACRONYMS USED

ADAMS	NRC's Agency-Wide Document Access and Management System
ANS	Alert and Notification System
CA	Corrective Action
CCU	Central Computer Unit
CFR	Code of Federal Regulations
CR	Condition Report
DRS	Division of Reactor Safety
EOF	Emergency Operations Facility
EOM	Emergency Offsite Manager
EP	Emergency Preparedness
EPZ	Emergency Planning Zone
FAQ	Frequently Asked Question
FEMA	Federal Emergency Management Agency
FENOC	First Energy Nuclear Operating Company
IP	Inspection Procedure
IR	Inspection Report
MC	NRC Manual Chapter
NEI	Nuclear Energy Institute
NRC	United States Nuclear Regulatory Commission
NUREG	Nuclear Regulatory Guide
OE	Operating Experience (Report)
PI	Performance Indicator
RCA	Root Cause Analysis (Report)
RID	Radio Interface Device
RTU	Remote Terminal Unit
SDP	Significance Determination Process
SOP	Standard Operating Procedure