



Energy Harbor Nuclear Corp
Perry Nuclear Power Plant
10 Center Road
P.O. Box 97
Perry, Ohio 44081

Frank R. Payne
Site Vice President, Perry Nuclear

440-280-5382
440-392-4723 (cell)

April 9, 2020
L-20-055

10 CFR 50.73(a)(2)(i)(B)
10 CFR 50.73(a)(2)(v)(C)

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Perry Nuclear Power Plant
Docket No. 50-440, License No. NPF-58
Licensee Event Report Submittal

Enclosed is Licensee Event Report (LER) 2020-001, "Combustible Gas Mixing Compressor was declared Inoperable due to Degraded Thermal Overloads resulting in Technical Specification Violation". There are no regulatory commitments contained in this submittal.

If there are any questions or if additional information is required, please contact Mr. Glendon Burnham, Manager – Regulatory Compliance, at (440) 280-7538.

Sincerely,

A handwritten signature in black ink, appearing to read "Frank R. Payne", written over a horizontal line.

Frank R. Payne

Enclosure:
LER 2020-001

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III Regional Administrator

Enclosure
L-20-055

LER 2020-001



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours.
Comments regarding burden estimate to the Information Services Branch (T-6 A10M),
U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to
Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and
Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725
17th Street NW, Washington, DC 20503; e-mail: omb_submission@omb.eop.gov. The NRC
may not conduct or sponsor, and a person is not required to respond to, a collection of
information unless the document requesting or requiring the collection displays a currently valid
OMB control number.

| | | |
|--|--------------------------------------|--------------------------|
| 1. Facility Name Perry Nuclear Power Plant | 2. Docket Number 05000-440 | 3. Page 1 OF 3 |
|--|--------------------------------------|--------------------------|

4. Title
Combustible Gas Mixing Compressor Inoperability resulting in a Technical Specification Violation

| 5. Event Date | | | 6. LER Number | | | 7. Report Date | | | 8. Other Facilities Involved | |
|---------------|-----|------|---------------|-------------------|---------|----------------|-----|------|------------------------------|---------------|
| Month | Day | Year | Year | Sequential Number | Rev No. | Month | Day | Year | Facility Name | Docket Number |
| 03 | 06 | 2020 | 2020 | 001-00 | | 05 | 04 | 2020 | | 05000 |
| | | | | | | | | | Facility Name | Docket Number |
| | | | | | | | | | | 05000 |

| | | | | | | | | | | |
|--------------------------|--|---|--|---|--|--|--|--|--|--|
| 9. Operating Mode | 11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply) | | | | | | | | | |
| 1 | <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | | | | | | |
| | <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) | | | | | | |
| 10. Power Level | <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) | | | | | | |
| 100 | <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> 73.77(a)(1) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | <input type="checkbox"/> 73.77(a)(2)(i) | | | | | | |
| | <input type="checkbox"/> 20.2203(a)(2)(vi) | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(vii) | <input type="checkbox"/> 73.77(a)(2)(ii) | | | | | | |
| | | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A) | | | | | | | |

12. Licensee Contact for this LER

| | |
|--|--|
| Licensee Contact Hali Jenkins – Regulatory Compliance | Telephone Number (Include Area Code) 440-280-6378 |
|--|--|

13. Complete One Line for each Component Failure Described in this Report

| Cause | System | Component | Manufacturer | Reportable to ICES | Cause | System | Component | Manufacturer | Reportable to ICES |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
| D | BB | RLY | C770 | Y | | | | | |

| | | | | |
|---|-------------------------------------|-------|-----|------|
| 14. Supplemental Report Expected | 15. Expected Submission Date | Month | Day | Year |
| <input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No | | | | |

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On February 3, 2020, while performing testing on Combustible Gas Mixing Compressor (CGMC) B it tripped on thermal overload approximately 20 seconds after start. The trip resulted in Inoperability for the B compressor. Troubleshooting determined that the overload relay was degraded. On March 6th, 2020 it was discovered that a procedure inadequacy for overload relay testing resulted in a past inoperability of the CGMC B from November 1, 2019 to February 14, 2020. This is in violation of Technical Specification 3.6.3.3, which requires restoration within 30 days or be in in mode 3 within 12 hours. Due to instances of inoperability of CGMC A during this time period, this also resulted in a loss of safety function for the system.

The direct cause was determined to be a degraded overload relay. The apparent cause was determined to be inadequate procedural guidance for testing the overload relay. The procedure was revised for clarification of testing this type of overload relay.

The safety significance of this event is considered very small in accordance with the Regulatory Guidance. This event is reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by the plant technical specifications, and 10 CFR 50.73(a)(2)(v)(C) as an event or condition that could have prevented the fulfillment of a safety function of the Combustible Gas Mixing System.



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: oir_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

| | | | | |
|--|-----------------------------------|------------------|------------------------------|-------------------|
| 1. FACILITY NAME Perry Nuclear Power Unit 1 | 2. DOCKET NUMBER 05000-440 | 3. LER NUMBER | | |
| | | YEAR 2020 | SEQUENTIAL NUMBER 001 | REV NO. 00 |

NARRATIVE

Energy Industry Identification System (EIS) codes are identified in the text as [XX].

INTRODUCTION

On February 3, 2020, while the plant was at 100 percent rated thermal power, surveillance testing was being performed on the Combustible Gas Mixing Compressor (CGMC) B [BB]. CGMC B tripped on thermal overload [RLY] approximately 20 seconds after start. The local panel had High Motor Amp S/D alarm locked in after the trip. The trip resulted in Inoperability for the B compressor under Technical Specification (TS) 3.6.3.3, Condition A, Combustible Gas Mixing System, at 2150 on February 3, 2020. Troubleshooting determined that the overload relay was degraded. The overload relay was replaced, and post maintenance testing was satisfactory for CGMC B. TS 3.6.3.3 was met on February 14, 2020 at 1210 when CGMC B was returned to OPERABLE.

On March 6, 2020, as a result of the investigation into the February 3rd event it was determined that the procedural guidance for testing was inadequate. Based on the procedural guidance being inadequate it was determined that when the thermal overload relay was tested in November of 2019 it was in a degraded condition when it was returned to operability.

EVENT DESCRIPTION

On February 3, 2020, while performing surveillance testing, CGMC B tripped on thermal overload approximately 20 seconds after start. The local panel had High Motor Amp S/D alarm locked in after the trip. The trip resulted in Inoperability for the B compressor under Technical Specification (TS) 3.6.3.3, Condition A, Combustible Gas Mixing System, at 2150 on February 3, 2020. Troubleshooting, performed for the CGMC B motor, determined that the overload relay was degraded. The overload relay was replaced, and post maintenance testing was satisfactory for CGMC B. TS 3.6.3.3 was met on February 14, 2020 at 1210 when CGMC B was returned to OPERABLE.

Surveillance testing is performed once per 92 days. A review of the past three years was performed, and a similar issue was identified. A Condition Report documented CGMC B tripping on thermal overload on November 1, 2019, during testing. TS 3.6.3.3, Condition A was entered at 0915 on November 1, 2019. A work order reset the overload relay and ran the compressor successfully on November 1, 2019, with normal amperages and voltages. The overload relay was also bench tested on November 4, 2019 with satisfactory results. TS 3.6.3.3 was met on November 4, 2019 at 1411.

On March 6, 2020, as a result of the investigation into the February 3, 2020 trip it was determined that inadequate procedural guidance is why the degraded thermal overload relay passed testing during the previous trip in November of 2019. Therefore, based upon this new information, CGMC B was determined to be inoperable from November 1, 2019 at 0915 to February 14, 2020 at 1210. This is in violation of TS 3.6.3.3, which requires restoration within 30 days, or be in in mode 3 within 12 hours.

This issue is reportable under 10 CFR 50.73(a)(2)(i)(B) as an operation or condition prohibited by the plant's technical specifications. During this same time period the opposite train, CGMC A, was also inoperable at various times for surveillance testing. This results in a reportable loss of safety function per 50.73(a)(2)(v)(C) as an event or condition that could have prevented fulfillment of the safety function.



**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; e-mail: oir_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

| | | | | |
|--|-----------------------------------|------------------|------------------------------|-------------------|
| 1. FACILITY NAME Perry Nuclear Power Unit 1 | 2. DOCKET NUMBER 05000-440 | 3. LER NUMBER | | |
| | | YEAR 2020 | SEQUENTIAL NUMBER 001 | REV NO. 00 |

NARRATIVE

CAUSE

The direct cause was determined to be a degraded overload relay. The apparent cause was determined to be inadequate procedural guidance for testing the overload relay.

EVENT ANALYSIS

A Probabilistic Risk Assessment (PRA) evaluation was performed for the November 1, 2019 to February 14, 2020 Combustible Gas Mixing Compressor B Inoperability event. The Combustible Gas Control System is not modeled in the PRA. The Combustible Gas Control System's function is to protect the Containment vessel following a core damage event. As such, inoperability of the Mixing Compressor B would have no effect on core damage frequency. The Combustible Gas Mixing Compressors, Hydrogen Recombiners, and Hydrogen Igniters, are used to control hydrogen while the hydrogen concentration is below the Hydrogen Deflagration Overpressure Limit in the Containment and Drywell. If the hydrogen concentration is above the Hydrogen Deflagration Overpressure Limit, then Containment Spray and Containment Venting are utilized to reduce Containment hydrogen concentrations. As the Hydrogen Ignition System, the Hydrogen Recombiners, Containment Spray, and Containment Venting were not compromised by this event and provide defense-in-depth for mitigation of hydrogen and combustible gas accumulation in the Containment, this demonstrates that the risk impact of the Combustible Gas Mixing Compressor B Inoperability is very small.

CORRECTIVE ACTIONS

The procedure was revised for clarification of testing this type of overload relay.

PREVIOUS SIMILAR EVENTS

None

COMMITMENTS

None