UNITED STATES
NUCLEAR REGULATORY COMMISSION
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MEMORANDUM TO: Jonathan Greives, Regional Administrator, Region I
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FROM: Jeremy R. Groom, Acting Director
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Date: 2026.07.22 16:52:28 -04'00'

SUBJECT: ENFORCEMENT GUIDANCE MEMORANDUM 2026-001, ENFORCEMENT DISCRETION NOT TO CITE CERTAIN VIOLATIONS OF 10 CFR 50.48 AND 10 CFR 50.72 INVOLVING UNCOORDINATED CIRCUIT INTERRUPTION DEVICES

PURPOSE:

This enforcement guidance memorandum (EGM) provides Nuclear Regulatory Commission (NRC) staff with guidance to exercise enforcement discretion and not cite certain violations of requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48, "Fire Protection," and 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Power Reactors," involving uncoordinated circuit interruption devices, consistent with Section 3.2, "Old Design Issues," and Section 3.5, "Violations Involving Special Circumstances" of the NRC Enforcement Policy.

BACKGROUND:

On December 22, 2025, the NRC issued Integrated Inspection Report 05000277/2025003 and 05000278/2025003 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML25356A003) to Peach Bottom Atomic Power Station, Units 2 and 3. The report documented a single Green non-cited violation (NCV) of 10 CFR Part 50, Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," Section III.G.2. The violation involved the failure to protect direct current (DC) control cables to ensure that at least one train of systems necessary to achieve and maintain hot shutdown conditions remained free of fire damage.

Specifically, the NCV identified six DC control circuits at Peach Bottom that lacked proper coordination of overcurrent protection due to inadequate fuse sizing. This NCV closed an Unresolved Item (URI) opened on March 13, 2025, in Inspection Report 05000277/2024011 and 05000278/2024011 (ADAMS No. ML25071A091), when the cumulative impact and significance of potential deficiencies associated with uncoordinated circuits were not yet understood. A similar issue was previously identified at the James A. FitzPatrick Nuclear Power Plant, as documented in Integrated Inspection Report 05000333/2021014 (ADAMS No. ML22140A054).

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These issues originated when a population of cables was found to have inadequate coordination between cable ampacity and overcurrent protection. In certain circuits, fuse/breaker ratings exceeded the capability of the associated conductor sizes, meaning the fuses/breakers might not clear faults under some postulated fire conditions. This lack of coordination could allow a fire in one area to propagate damage to cables in another fire area, potentially affecting equipment credited for safe shutdown and challenging compliance with 10 CFR Part 50, Appendix R, Section III.G.2. Since compliance with 10 CFR Part 50, Appendix R, Section III.G.2 relied on the assumption that damage and spurious operations would be restricted to damage in a single fire area, potential damage to a cable required to achieve safe shutdown in another fire area represents an unanalyzed condition. Generic Letter (GL) 81-12 “Fire Protection Rule (45 FR 76602, 11/19/80),” largely dealt with associated circuits but was also focused on damage contained to a single fire area. Also, Information Notice (IN) 2014-10 “Potential Circuit Failure-Induced Secondary Fires or Equipment Damage,” identified the potential for this condition to exist.

In response to the issue identified in Inspection Report 05000333/2021014, FitzPatrick conducted evaluations of vulnerable circuits with respect to 10 CFR Part 50, Appendix R safe shutdown capability. Similarly, Peach Bottom conducted evaluations and testing to determine whether postulated hot shorts within these circuits could generate sufficient heat to damage adjacent cables. Extensive testing at Peach Bottom and analysis at both plants concluded that for most cable configurations, even with incorrectly sized fuses, the heat generated would not cause such damage. However, for a small fraction of cables (less than 2 percent of affected cables at each site), the installed configuration did not comply with 10 CFR 50.48 requirements because a fire in one area could propagate damage to cables in another fire area and impact the ability to achieve safe shutdown.

Description of Noncompliances:

This EGM involves noncompliances related to circuits associated by a common enclosure. Associated circuits of concern are a subset of power or control cables (safety-related or non-safety-related, Class 1E or non-Class 1E) that may interfere with post-fire safe shutdown due to fire-induced cable damage (i.e. hot shorts, shorts to ground, etc.) and that have a physical separation from safe shutdown circuits less than the deterministic criteria in the plant-specific licensing basis.

For cables outside containment, these deterministic criteria may be found in, for example:

- 10 CFR Part 50, Appendix R, Section III.G.2.a, b, and c
- License conditions imposing Regulatory Guide 1.189, “Fire Protection for Nuclear Power Plants,” Regulatory Positions 5.3.1.1.a, b, and c
- National Fire Protection Association Standard 805 (NFPA 805), “Performance-Based Standard for Fire Protection for Light Water Electric Generating Plants,” 2001 edition, Section 4.2.3.3.a, b, and c

Similarly, for cables inside non-inerted containment, the criteria may be found in:

- 10 CFR Part 50, Appendix R, Section III.G.2.a, b, c, d, e, and f
- License conditions imposing Regulatory Guide 1.189, Regulatory Positions 5.3.1.1.a, b, and c and 6.1.1.1.a, b, and c
- NFPA 805, 2001 edition, Sections 4.2.3.3.a, b, and c and 4.2.3.4.a, b, and c

Circuits Associated by Common Enclosure:

Cables that share enclosures (typically raceways) with redundant safe shutdown cables should be analyzed to determine their effect on redundant safe shutdown equipment. The enclosure may be in the fire area where the initial fire occurs, or in another fire area. The concern is that the effects of a fire can cause fire-induced faults on inadequately protected cables, which could cause an overcurrent condition resulting in cable damage within the shared enclosure in the same or another fire area. This situation could result in damage that could disable the equipment credited to achieve safe shutdown. This concern was most prevalent in circuits with long lengths of cable and oversized fuses, resulting in low fault amperages due to high circuit resistance. In these cases, the postulated fault could generate amperage in excess of the cable capability, but lower than the fuse/breaker rating.

Reportability Aspects:

Both Fitzpatrick and Peach Bottom submitted 8-hour non-emergency reports under 10 CFR 50.72 for these vulnerable circuits. Specifically, both facilities reported under 10 CFR 50.72(b)(3)(ii)(B), which requires that licensees inform the NRC of any event or condition that results in the plant being in an unanalyzed condition that significantly degrades plant safety.

BASIS FOR GRANTING ENFORCEMENT DISCRETION:

For both FitzPatrick and Peach Bottom, the licensee and the NRC expended substantial resources over several years to determine the regulatory significance of performance issues associated with uncoordinated circuit interruption devices. These efforts were not required to restore compliance but were instead focused on evaluating whether the issues met thresholds for reportability or for significance under the Reactor Oversight Process (ROP). In both cases, the resources needed to assess regulatory and reportability significance far exceeded those required to implement timely corrective actions. Said differently, the issue of concern could have been conservatively resolved with a fraction of the resources by appropriately replacing fuses and circuit breakers for all potentially affected circuits.

The NRC recognizes that other operating plants may be susceptible to similar design vulnerabilities. Requiring each site to perform similarly extensive evaluations solely to determine regulatory significance or reportability would detract from higher safety-significance work.

To enable licensees to focus their resources on correcting the design error and restore compliance, as opposed to determining the regulatory significance, NRC staff with significant experience in fire protection and fire risk assessment at operating nuclear plants performed an evaluation of the potential safety significance of this issue using a bounding evaluation that could be applicable to all operating reactors in the U.S. The bounding calculation recognized that power plant designs and fire protection features vary from plant to plant and, therefore, utilized several surrogates to represent bounding scenarios. Additionally, the bounding calculation combined undesirable fire protection characteristics of different fire areas to arrive at a conservative assessment of the potential risk (e.g., the calculation used the relatively high fire ignition frequency in the control room without crediting the operators' ability to detect and suppress such fires with high reliability). The cognizant fire protection and fire risk assessment staff concluded that that potential risk associated with individual fire scenarios attributed to this design error, at any nuclear plant, (a) does not pose a significant safety risk that requires prompt corrective actions in comparison to the threshold for such action provided in NRR Office Instruction LIC-504 "Integrated Risk-Informed Decision-Making Process for Emergent Issues,"

and (b) does not meet the criteria for a Red finding under the NRC's ROP. Furthermore, based on their extensive experience relating to fire protection and fire risk assessment at U.S. nuclear power plants, the NRC staff also concluded that the cumulative safety impact of this issue is extremely unlikely to pose an immediate significant risk to public health and safety in comparison to the threshold used in NRR Office Instruction LIC-504.

Enclosure 1 to this memorandum provides details of the bounding calculation performed by the NRC staff and the associated assumptions that enabled the staff to draw its conclusions with respect to the individual fire scenarios and the cumulative fire risk attributed to this design error. Under these conservative assumptions, the calculated increase in core damage frequency (CDF) was mid E-5 per year, more than an order of magnitude below the 1E-3 per year risk threshold in NRR Office Instruction LIC-504. In addition to the calculations provided in Enclosure 1, the NRC staff's evaluation was informed by the experience gained from the detailed evaluations performed at Peach Bottom and FitzPatrick to demonstrate regulatory significance. The staff expects the actual risk significance at other plants to be substantially lower than the bounding assessment suggests, given the insights from testing and cable performance data obtained from those sites.

Per LIC-504, an increase in CDF of 1E-3 per year serves as a guideline for determining whether additional immediate regulatory actions such as issuing an order to shutdown are needed to place a plant in a safe condition. The staff's analysis demonstrates that the increase in CDF associated with these issues is well below that level and does not warrant immediate regulatory action. Therefore, based on this conservative analysis, providing broad enforcement discretion will not impose a significant additional risk to public health and safety that must be eliminated promptly.

ACTIONS:

In accordance with Section 3.5 of the Enforcement Policy, the agency will exercise enforcement discretion and will not cite NRC licensees for certain violations of 10 CFR Part 50, Appendix R or equivalent fire protection requirements, and associated reportability requirements under 10 CFR 50.72, associated with this EGM. This enforcement discretion applies to both NRC-identified and licensee-identified circuit vulnerabilities.

Specifically, Section 3.5 of the Enforcement Policy states that the NRC may reduce or refrain from issuing a notice of violation based on factors including the significance of the violation, the age of the violation, and other relevant circumstances. The NRC is exercising enforcement discretion because the safety significance of these violations and the resources required to reach a regulatory conclusion are not commensurate with the bounding risk significance. The NRC has found that extensive and disproportionate resources are required to evaluate reportability and regulatory thresholds. For these issues, the total level of assessment effort far exceeds those needed to implement timely corrective actions.

Further supporting the appropriateness of enforcement discretion, this issue reflects an old design vulnerability that aligns with the criteria outlined in Section 3.2 of the Enforcement Policy. The violation stems from original design decisions that were unlikely to be identified through routine surveillance or quality assurance activities, and that would be addressed through corrective actions initiated by the licensee. Applying normal enforcement guidance under these circumstances would be unwarranted and inconsistent with the intent of the Enforcement Policy, which allows discretion when the merits of the case, including safety significance and disproportionate resource burden, justify an alternative approach.

Identification Phase:

This EGM establishes an initial period of enforcement discretion for noncompliances related to circuits associated by common enclosure, and establishes one year from the issuance date of this EGM as the date by which licensees, to be eligible for enforcement discretion, must:

- Determine whether these conditions exist at their plant;
- Determine the extent to which these conditions exist at their plant;
- Enter these conditions into their Corrective Action Program; and
- Establish adequate compensatory measures, if needed.

Noncompliances identified after this period and/or not included in the Corrective Action Program will be dispositioned in accordance with the Enforcement Policy.

Corrective Action Phase:

Upon completion of the identification phase, a further period of enforcement discretion is provided, on a unit-specific basis, until the end of the second refueling outage (after the end of the identification phase), to allow licensees to complete the corrective actions for those noncompliances entered into the Corrective Action Program during the initial period of enforcement discretion. To receive enforcement discretion during this corrective action phase, adequate compensatory measures must be established and/or maintained, if needed, until the noncompliances are resolved. At the end of this period, the enforcement discretion will end for all unresolved noncompliances, regardless of any compensatory measures that are still in place.

Corrective actions for these noncompliances are determined by the licensee, but could involve actions to:

- comply with licensee's approved licensing basis, such as modifications to install appropriately sized fuses or circuit breakers; or
- submit appropriate exemption requests or license amendments; or
- adopt National Fire Protection Association Standard 805 (NFPA 805), through 10 CFR 50.48(c).[1]

The NRC staff will process any exemption or license amendment requests in accordance with applicable agency office instructions. If a licensee submits an exemption or license amendment request before the end of the second discretion period, then the licensee will continue to receive enforcement discretion while the NRC staff reviews the application. If the NRC does not accept the application for review (with no opportunity to supplement), or denies the application after accepting it for review, then the licensee will no longer receive enforcement discretion, and the noncompliances related to these associated circuits will be dispositioned in accordance with the Enforcement Policy.

[1] Licensees who submit their letter of intent to transition to NFPA 805 will have enforcement discretion as stated in the NRC Enforcement Policy, Section 9.1, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)."

Documentation:

While violations associated with this enforcement discretion do not require discussion at an Enforcement Panel, they do require assignment of an Enforcement Action (EA) tracking number and shall be documented in an inspection report. The following or similar language should be included in the cover letter to the inspection report which discusses the violation:

> A violation of [insert unit-specific licensing basis, typically either 10 CFR Part 50, Appendix R, Sections III.G.2 or III.G.3 or the licensee's approved fire protection program, as required by 10 CFR 50.48,] was identified. Because the violation was associated with circuits associated by common enclosure and identified during the discretion period as described in Enforcement Guidance Memorandum (EGM) 26-001, the NRC is exercising enforcement discretion to not cite the violation and related reportability requirements, in accordance with EGM-26-001.

SUMMARY:

This EGM describes an identification phase and a corrective action phase for enforcement discretion, including associated timelines and action requirements, and emphasizes that enforcement discretion may be provided until:

A. the end of the second refueling outage, on a unit-specific basis, after the end of the identification phase, when the licensee must complete all corrective actions associated with noncompliances involving circuits associated by common enclosure in order to receive enforcement discretion, or

B. the staff's disposition of an acceptable license amendment request (such as one requesting to adopt NFPA 805) or exemption request, as described above, that is submitted by the end of the second refueling outage, on a unit-specific basis, after the end of the identification phase.

EXPIRATION:

This EGM will expire on December 31, 2035.

SUBJECT: ENFORCEMENT GUIDANCE MEMORANDUM 2026-001, ENFORCEMENT DISCRETION NOT TO CITE CERTAIN VIOLATIONS OF 10 CFR 50.48 AND 10 CFR 50.72 INVOLVING UNCOORDINATED CIRCUIT INTERRUPTION DEVICES DATE: JULY 22, 2026

DISTRIBUTION:
PUBLIC
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Enforcement Guidance Memorandum (EGM) 2026-001, Enforcement Discretion Not to Cite Certain Violations of 10 CFR 50.48 and 10 CFR 50.72 Involving Uncoordinated Circuit Interruption Devices

Issue Background:

Peach Bottom identified two populations of uncoordinated circuits, feeder circuits and control circuits, that were potentially unprotected. The concern was that the fuses were not the correct size for the gauge of cable and would not deenergize the cable during certain postulated fires, causing enough heat to potentially damage adjacent safe shutdown cables. Figure 1, an illustration provided by Constellation Energy, summarizes the issue. As shown in Figure 1, a fire in fire area 2 results in a fire-induced short that causes thermal damage along the entire length of the aggressor cable (red) due to improperly sized protective devices. The damaged aggressor cable can then cause damage to victim cables (green) in fire area 1, which were credited for safe shut down for a fire in fire area 2.

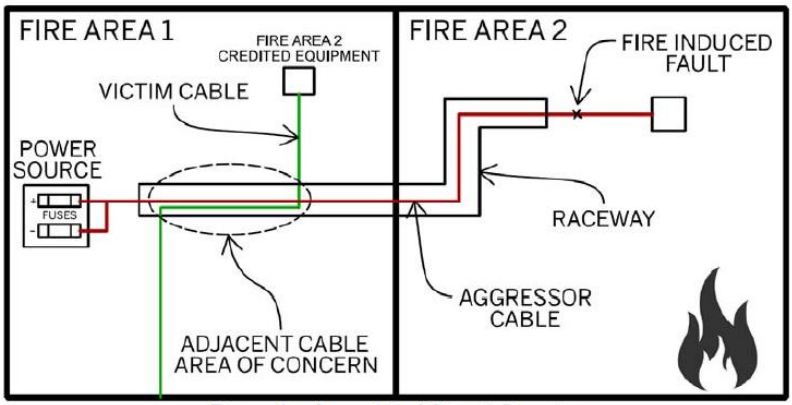

Figure 1 – Associated Circuit Drawing

Both the NRC staff and the operators of FitzPatrick and Peach Bottom, expended substantial resources over several years to determine the regulatory significance of performance deficiencies related to this issue. These efforts were not required to restore compliance but were instead focused on evaluating whether the issues met thresholds for reportability or for significance under the ROP. In both cases, the resources needed to assess regulatory significance and reportability far exceeded those required to implement timely corrective actions. Said differently, the issue of concern could have been conservatively corrected with a fraction of the resources by appropriately replacing fuses and circuit breakers for all potentially affected circuits.

Objective:

The primary objectives of this analysis are to demonstrate that fire scenarios attributed to this design error at any nuclear plant: (a) do not to pose a significant safety risk that requires prompt corrective actions in comparison to the threshold for such action provided in NRC Office Instruction LIC-504 “Integrated Risk-Informed Decision-making Process for Emergent Issues,” and (b) highly unlikely to constitute an issue whose significance constitutes a Red finding per the guidance of the NRC’s ROP.

Risk Assessment:

To support this EGM, a bounding estimate of the change in Core Damage Frequency (CDF) was calculated showing this issue to be less than Red (delta CDF significantly less than 1E-4 per year per fire scenario). It is recognized that power plant designs and fire protection features vary from plant to plant. Therefore, for the purpose of this analysis, and to account for plant differences, several surrogates have been chosen to represent bounding scenarios.

In accordance with the risk significance determination supporting the ROP, a bounding estimate of the change in CDF value for an entire area due to fires in the area is calculated from the following equation:

$\Delta CDF \approx DF \times FIF \times SF \times NSP \times CCDP \times SFDF$

1.0 x 4.9E-3 x 1.0 x 0.26 x 0.1 x 0.46 = 5.9E-5/year

Where:

DF = Duration Factor

Since the objective of the risk assessment is to assess the increase in CDF as opposed to estimate the additional risk imposed during a finite duration, a realistic value of 1.0 was chosen for the Duration Factor. Use of the duration factor does not introduce any conservatism.

FIF = Fire ignition frequency for the area

The Main Control Room (MCR) was chosen as a surrogate for the worst fire area with respect to the fire ignition frequency in the plant. Typically, the MRC contains several types of ignition sources and includes both trains of safety-related equipment. Additionally, the MCR represents an area where alternate shutdown is employed.

A frequency of 4.9E-3 per year was chosen based on NUREG-2169, “Nuclear Power Plant Fire Ignition Frequency and Non-Suppression Probability Estimation Using the Updated Fire Events Database: United States Fire Event Experience Through 2009.” In addition to the above, the use of the ignition frequency for the control room obviated the need to estimate various types of equipment in a particular area which can be highly plant specific.

SF = Bounding severity factor for the area

A value of 1.0 was chosen as a bounding factor. This introduces significant conservatism because a value of 1.0 assumes a full room burnout. NRC staff chose to use this significant conservatism because the objective of the analysis is to develop an upper bound CDF applicable to any scenario at any nuclear power plant.

NSP = Bounding non-suppression probability for the area

The MCR is a continuously staffed area where detection would be almost instantaneous, and suppression would follow shortly after. However, a different surrogate was chosen to represent a more conservative bounding value.

A value of 0.26 was chosen representing the mean value for all fires at 20 minutes from NUREG-2169. Use of 0.26 for a control room fire introduces significant conservatism because the NSP for a control room fire at 20 minutes per NUREG-2169 is 0.002. NRC staff chose to use this significant conservatism because the objective of the analysis is to develop an upper bound CDF applicable to any scenario at any nuclear power plant.

CCDP = Bounding conditional core damage probability for the area

A value of 0.1 was chosen as a screening CCDP for Alternate Shutdown from Inspection Manual Chapter (IMC) 0609, Appendix F, Fire Protection SDP. For a control room fire this probability is realistic.

SFDF = Secondary Fire Damage Factor

A hot short would have to occur on the uncoordinated circuit where the incorrectly sized fuses (or the lack of fuses altogether) would not interrupt the fault, thereby causing the cable to overheat (perhaps starting a secondary fire) and damage the credited safe shutdown equipment.

A value of 0.46 was chosen as the conditional probability of a hot short on the uncoordinated cables from NUREG/CR-7150, "Joint Assessment of Cable Damage and Quantification of Effects from Fire (JACQUE-FIRE), Volume 2: Expert Elicitation Exercise for Nuclear Power Plant Fire-Induced Electrical Circuit Failure."

Conclusion:

Based on the best available information, the NRC determined that the increase in CDF with any postulated single fire scenario due to faulty circuits should be of the order of 1E-7/year or below. However, at a given nuclear plant, the subject design error could result in a large number of scenarios. At Peach Bottom NPP, the licensee identified hundreds of scenarios that need to be rectified, but only a subset of these scenarios created the potential for violations of any safety significance. Therefore, based on the calculation provided above and based on their extensive experience relating to fire protection and fire risk assessment at U.S. nuclear power plants, the NRC staff concluded that a delta CDF of 5.9 E-5/year constitutes a reasonable upper bound.

Per LIC-504, an increase in CDF greater than on the order of 1E-3 per year serves as a guideline for determining whether additional immediate regulatory actions such as issuing an order to shutdown are needed to place a plant in a safe condition. The staff's analysis demonstrates that the delta CDF associated with these issues is well below that level and does not warrant immediate regulatory action. Therefore, based on this conservative analysis, providing broad enforcement discretion, up to two refueling outages for each impacted unit, will not impose significant additional risk to public health and safety that must be eliminated promptly.

Risk-informed evaluations require the NRC staff to consider factors beyond increases in CDF in determining whether immediate regulatory action is warranted. Therefore, in addition to the CDF, the NRC staff considered whether the identified error causes a significant degradation in defense-in-depth and safety margin. The NRC staff used the definition of defense-in-depth in 10 CFR 50.48 and the guidance on defense-in-depth and safety margins in Regulatory Guide 1.174, Rev. 3, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and concluded that the identified

design error does not constitute significant degradation to the defense-in-depth or safety margins.