NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

October 31, 2023

VIA ELECTRONIC FILING

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

Re: **NERC Full Notice of Penalty regarding the Midcontinent Independent System Operator, Inc., FERC Docket No. NP24-_-000**

Dear Ms. Bose:

The North American Electric Reliability Corporation (NERC) hereby provides this Notice of Penalty[1] regarding Midcontinent Independent System Operator, Inc. (MISO) and referred to herein as the Entity, NERC Registry ID# NCR00826,[2] in accordance with the Federal Energy Regulatory Commission's (Commission or FERC) rules, regulations, and orders, as well as NERC's Rules of Procedure including Appendix 4C (NERC Compliance Monitoring and Enforcement Program (CMEP)).[3]

NERC is filing this Notice of Penalty, with information and details regarding the nature and resolution of the violations,[4] with the Commission because ReliabilityFirst Corporation (ReliabilityFirst), Midwest Reliability Organization (MRO), and SERC Reliability Corporation (SERC) (collectively, the Regional Entities), and the Entity have entered into a Settlement Agreement to resolve all outstanding issues

[1] *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards, Order No. 672, 114 FERC ¶ 61,104, order on reh'g, Order No. 672-A, 114 FERC ¶ 61,328 (2006); Notice of New Docket Prefix "NP" for Notices of Penalty Filed by the N. Am. Elec. Reliability Corp., Docket No. RM05-30-000 (February 7, 2008); Mandatory Reliability Standards for the Bulk-Power System, Order No. 693, 118 FERC ¶ 61,218, order on reh'g, Order No. 693-A, 120 FERC ¶ 61,053 (2007).*

[2] The Entity was included on the NERC Compliance Registry as follows: as a Balancing Authority (BA) in Midwest Reliability Organization (MRO), ReliabilityFirst Corporation (ReliabilityFirst), and SERC Reliability Corporation (SERC) on January 6, 2009; as a Planning Authority/Planning Coordinator (PA/PC), a Reliability Coordinator (RC), and Transmission Service Provider (TSP) in MRO and ReliabilityFirst on May 30, 2007 and in SERC on May 31, 2007; as a Resource Planner (RP), Transmission Operator (TOP) and Transmission Planner (TP) in ReliabilityFirst and SERC on December 19, 2013 and in MRO on October 1, 2020.

[3] *See* 18 C.F.R § 39.7(c)(2) and 18 C.F.R § 39.7(d).

[4] For purposes of this document, each violation at issue is described as a "violation," regardless of its procedural posture and whether it was a possible, alleged, or confirmed violation.

arising from the Regional Entities' determination and findings of the violations of the Operations and Planning Reliability Standards listed below.

According to the Settlement Agreement, the Entity stipulates to the facts in the Settlement Agreement for the sole purpose of resolving the violations and admits that the facts constitute the violations and has agreed to the assessed penalty of eight hundred fifteen thousand dollars ($815,000), in addition to other actions to mitigate the instant violations and facilitate future compliance under the terms and conditions of the Settlement Agreement.

The Entity's penalty will be divided among the Regional Entities as follows. The Entity shall pay $815,000 to ReliabilityFirst, and ReliabilityFirst shall divide that penalty amount in three parts based on the relative net energy load (NEL) for each Region and shall distribute NEL-based proportional allocations to MRO ($138,550) and SERC ($407,500).[5]

Statement of Findings Underlying the Violations

This Notice of Penalty incorporates the findings and justifications set forth in the Settlement Agreement, by and between the Regional Entities and the Entity. The details of the findings and basis for the penalty are set forth in the Settlement Agreement and herein.

In accordance with Section 39.7 of the Commission's regulations, 18 C.F.R. § 39.7 (2023), NERC provides the following summary table identifying each violation of a Reliability Standard resolved by the Settlement Agreement. Further information on the subject violations is set forth in the Settlement Agreement and herein.

[5] NEL is published in NERC's annual business plan and budget and is used as a method to prorate fee assessments pursuant to the Regional Entity Coordinated Oversight Memorandum of Understanding among the Regional Entities. The calculation used for this Agreement is based on the NERC 2023 budget, which indicates the following NEL values in the ERO: SERC: 32.461%, MRO: 11.079%, and ReliabilityFirst: 21.906%. For purposes of penalty calculation in this Agreement, the NEL values correspond to weighted penalties of 50% to SERC, 17% to MRO, and 33% to ReliabilityFirst.

Violation(s) Determined and Discovery Method *SR = Self-Report / SC = Self-Certification / CA = Compliance Audit / SPC = Spot Check / CI = Compliance Investigation								
NERC Violation ID	**Standard**	**Req.**	**VRF/VSL**	**Applicable Function(s)**	**Discovery Method* & Date**	**Violation Start-End Date**	**Risk**	**Penalty Amount**
2021-00944	IRO-008-2	R1	Medium/ Severe	RC	SR 11/5/21	2/10/2018 to 2/11/2021	Serious	$815K
RFC2020023459	IRO-008-2	R5	High/ Severe[6]	RC	SR 5/18/20	12/9/2019 to 12/9/2019	Moderate	

Information About the Entity

MISO is a Regional Transmission Organization (RTO) headquartered in Carmel, Indiana, and geographically situated over 15 states and one Canadian province. As an ISO/RTO, MISO is a not-for-profit organization. MISO encompasses over 192,000 MW of total generation capacity and over 65,000 miles of interconnected, high voltage power lines. MISO is the TSP for these facilities but does not own or operate them; it performs BA functions and is responsible for matching generation with load. MISO is the Market Operator and RC for its geographic area. It uses security-constrained economic dispatch to match generation with load and to maintain transmission line loading within operating limits. MISO normally peaks in the summer and had an all-time electric summer peak load of 127,125 MW for its market area and 133,181 MW for its reliability coordination area.

IRO-008-2 R1 – Violation ID 2021-00944

The Regional Entities determined that the Entity, for approximately three years, did not maintain complete Operational Planning Analyses to assess whether the planned operations for the next day would exceed System Operating Limits (SOLs) and Interconnection Reliability Operating Limits (IROLs) within its RC Area. The Entity missed approximately 3,900 of 15,000 contingences that should have been included in its next-day Operational Planning Analysis. The total missed contingencies would have increased the number of contingencies being monitored by 35%. There was no pattern regarding types of missed contingencies and the Entity did not miss all 3,900 contingencies for the entirety of the violation. The Entity concluded that it only used the contingency files at issue in the day-ahead Operational Planning Analysis and not in any other studies or analyses. Attachment A includes additional facts regarding the violation.

[6] The Settlement Agreement contains the incorrect VSL determination for NERC Violation ID RFC2020023459 due to typographical errors. The VSL has been corrected in the table shown here.

The causes of this violation were (1) inadequate processes, including not adequately ensuring day-ahead contingency files were being properly updated and reviewed to reflect topology changes and not having an adequate process to transfer institutional knowledge regarding the contingency review process when responsibility for managing the process was transferred to another employee; and (2) ineffective detective controls in place to discover the missing contingencies.

The Regional Entities determined that the violation posed a serious risk to the reliability of the Bulk Power System (BPS). Attachment A includes the facts regarding the violation that the Regional Entities considered in their risk assessment.

The Entity submitted its mitigating activities to address the referenced violation, with a completion date of July 6, 2022. Attachment A includes a description of the mitigating activities the Entity took to address this violation. On March 13, 2023, ReliabilityFirst verified the Entity completed the mitigating activities. Attachment C includes ReliabilityFirst's verification of the mitigating activities.

IRO-008-2 R5 – Violation ID RFC2020023459

The Regional Entities determined that the Entity did not notify impacted Transmission Owners (TOs) and BAs within its RC Area and other impacted RCs of an SOL exceedance in real time operations because the Entity was not monitoring the transmission line and associated equipment for overloads. The Entity incorrectly marked this line as exterior to the Entity when the line was actually interior to the Entity. The line exceeded its then-normal continuous rating for 78 minutes in real time operations before the Entity began monitoring the line. There was no loss of load resulting from this violation. Attachment A includes additional facts regarding the violation.

The cause of this violation was inadequate asset and configuration management when the Entity incorrectly modeled the line and related equipment as external, causing the Entity to incorrectly believe that another RC was responsible for monitoring and solving the SOL exceedance.

The Regional Entities determined that the violation posed a moderate risk to the reliability of the BPS. Attachment A includes the facts regarding the violation that the Regional Entities considered in their risk assessment.

The Entity submitted its Mitigation Plan to address the referenced violation. Attachment A includes a description of the mitigating activities the Entity took to address this violation. A copy of the Mitigation Plan is included as Attachment 2.

The Entity certified that it completed all mitigation activities. A copy of the Entity's certification of completion of the Mitigation Plan is included as Attachment 3. ReliabilityFirst verified that the Entity had completed all mitigation activities. Attachment 4 provides specific information on ReliabilityFirst's verification of the Entity's completion of the activities.

Regional Entity's Basis for Penalty

According to the Settlement Agreement, the Regional Entities have assessed a penalty of eight hundred fifteen thousand dollars ($815,000) for the referenced violations. In reaching this determination, the Regional Entities considered the following factors:

1. The violation of IRO-008-2 R1 posed a serious risk to the reliability of the BPS and the violation of IRO-008-2 R5 posed a moderate risk to the reliability of the BPS, as discussed in Attachment A;
2. The Entity self-reported all of the violations, as discussed in Attachment A;
3. The Entity was cooperative throughout the compliance enforcement process;
4. The Entity agreed to the settlement of and admitted to the violations; and
5. There were no other mitigating or aggravating factors or extenuating circumstances that would affect the assessed penalty/disposition method.

After consideration of the above factors, the Regional Entities determined that, in this instance, the penalty amount of eight hundred fifteen thousand dollars ($815,000) is appropriate and bears a reasonable relation to the seriousness and duration of the violations.

Statement Describing the Assessed Penalty, Sanction, or Enforcement Action Imposed[7]

Basis for Determination

Taking into consideration the Commission's direction in Order No. 693, the NERC Sanction Guidelines and the Commission's July 3, 2008, October 26, 2009, and August 27, 2010 Guidance Orders,[8] NERC Enforcement staff reviewed the applicable requirements of the violations at issue, and considered the factors listed above.

[7] *See* 18 C.F.R. § 39.7(d)(4).

[8] *N. Am. Elec. Reliability Corp., "Guidance Order on Reliability Notices of Penalty," 124 FERC ¶ 61,015 (2008); N. Am. Elec. Reliability Corp., "Further Guidance Order on Reliability Notices of Penalty," 129 FERC ¶ 61,069 (2009); N. Am. Elec. Reliability Corp., "Notice of No Further Review and Guidance Order," 132 FERC ¶ 61,182 (2010).*

For the foregoing reasons, NERC Enforcement staff approved the resolution between the Regional Entities and the Entity and believes that the assessed penalty of eight hundred fifteen thousand dollars ($815,000) is appropriate for the violations and circumstances at issue and is consistent with NERC's goal to promote and ensure reliability of the BPS.

Pursuant to 18 C.F.R. § 39.7(e), the penalty will be effective upon expiration of the 30-day period following the filing of this Notice of Penalty with FERC, or, if FERC decides to review the penalty, upon final determination by FERC.

Attachments to be Included as Part of this Notice of Penalty

The attachments to be included as part of this Notice of Penalty are the following documents:

1. Settlement Agreement by and between the Regional Entities and the Entity executed September 15, 2023, included as Attachment A;
2. Record documents for the violation of IRO-008-2 R5 (RFC2020023459):
    A. The Entity's Self-Report dated May 18, 2020, included as Attachment 1 to the Settlement Agreement;
    B. The Entity's Mitigation Plan designated as RFCMIT015168 submitted July 9, 2020, included as Attachment 2 to the Settlement Agreement;
    C. The Entity's Certification of Mitigation Plan Completion dated October 15, 2020, included as Attachment 3 to the Settlement Agreement;
    D. ReliabilityFirst's Verification of Mitigation Plan Completion dated October 21, 2020, included as Attachment 4 to the Settlement Agreement;
3. Record documents for the violation of IRO-008-2 R1 (2021-00944):
    E. The Entity's Self-Report dated November 5, 2021, included as Attachment B;
    F. ReliabilityFirst's Verification of Mitigating Activities Completion dated March 13, 2023, included as Attachment C.

Notices and Communications: Notices and communications with respect to this filing may be addressed to the following:

*Persons to be included on the Commission's service list are indicated with an asterisk. NERC requests waiver of the Commission's rules and regulations to permit the inclusion of more than two people on the service list. Mary-James Young **MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.** 720 City Center Drive Carmel, IN 46032 myoung@misoenergy.org 317-249-4891 Phone Talia Boyne **MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.** 720 West City Center Drive Carmel, IN 46032-3826 pcc@misoenergy.org tboyne@misoenergy.org 317-249-4930 Phone Jacob Krause* **MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.** 720 City Center Drive Carmel, IN 46032 jkrouse@misoenergy.org 317-408-7401 Phone Price Marr* **MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.** 720 West City Center Drive Carmel, IN 46032 pmarr@misoenergy.org 317-697-2765 Phone	Tasha R. Ward* Director of Enforcement and External Affairs **Midwest Reliability Organization** 380 St. Peter Street, Suite 800 Saint Paul, MN 55102 tasha.ward@mro.net 651-256-5188 Phone Niki Schaefer* Vice President & General Counsel **RELIABILITYFIRST CORPORATION** 3 Summit Park Drive, Suite 600 Cleveland, OH 44131 niki.schaefer@rfirst.org 216-503-0611 Phone Kristen M. Senk* Senior Managing Counsel, Legal & Enforcement **RELIABILITYFIRST CORPORATION** 3 Summit Park Drive, Suite 600 Cleveland, OH 44131 kristen.senk@rfirst.org 216-503-0669 Phone Thomas L. Scanlon* Managing Enforcement Counsel **RELIABILITYFIRST CORPORATION** 3 Summit Park Drive, Suite 600 Cleveland, OH 44131 tom.scanlon@rfirst.org 216-503-0658 Phone

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Conclusion

NERC respectfully requests that the Commission accept this Notice of Penalty as compliant with its rules, regulations, and orders.

Respectfully submitted,

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cc: MISO
ReliabilityFirst
MRO
SERC

Attachments

ATTACHMENT A

Settlement Agreement by and among

ReliabilityFirst Corporation, Midwest Reliability Organization, SERC Reliability Corporation, and Midcontinent Independent System Operator, Inc. executed September 15, 2023

CONFIDENTIAL

RELIABILITY FIRST

In re: **MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.** NERC Registry ID No. NCR00826	)	**Violation ID Nos.:** 2021-00944 (IRO-008-2 R1) RFC2020023459 (IRO-008-2 R5)

SETTLEMENT AGREEMENT
AMONG
RELIABILITYFIRST CORPORATION,
MIDWEST RELIABILITY ORGANIZATION,
SERC RELIABILITY CORPORATION,
AND
MIDCONTINENT INDEPENDENT SYSTEM OPERATOR, INC.

I. EXECUTIVE SUMMARY

1. ReliabilityFirst Corporation ("ReliabilityFirst"), Midwest Reliability Organization ("MRO"), and SERC Reliability Corporation ("SERC") (collectively "the Regions") and Midcontinent Independent System Operator, Inc. ("MISO")[1] (collectively, the "Parties") enter into this Settlement Agreement ("Agreement") to resolve violations by MISO of the above-captioned Reliability Standard Requirements.[2]

2. The Parties stipulate to the facts in this Agreement for the sole purpose of resolving the violations. MISO admits that these facts constitute violations of the above-captioned Reliability Standard Requirements.

3. This Agreement resolves two violations, including one serious risk violation and one moderate risk violation as determined by the Regions. Both of these violations were self-reported by MISO and were not reported in connection with an ongoing

[1] MISO is a Multi-Regional Registered Entity ("MRRE") and participates in the Coordinated Oversight program. ReliabilityFirst is the Lead Regional Entity and MRO and SERC are the Affected Regional Entities, as such ReliabilityFirst coordinated the disposition of these issues with MRO and SERC.

[2] This Agreement references the version of the Reliability Standard in effect at the time the violation began. MISO, however, committed to perform mitigating actions to comply with the most recent version of the Reliability Standard Requirement, in the interest of reliability.

or upcoming Compliance Monitoring engagement.

4. The moderate risk IRO-008-2 R5 violation involved MISO not monitoring an overload in real time operations on a 115 kV base case constraint. MISO operators should have managed the overload on the equipment since a MISO member owned the most limiting element. Due to an asset and configuration management error, MISO incorrectly marked this line as exterior to MISO when the line was in fact interior to MISO. MISO was not monitoring the line due to this error. Southwest Power Pool ("SPP") informed MISO of the problem on December 9, 2020. Before MISO began monitoring the line, the line exceeded its then-normal continuous rating for 78 minutes in real time operations. MISO did not have effective internal controls in place to ensure it was monitoring the correct overloads. However, MISO performed an after-the-fact analysis which showed that a trip of this line would not have adversely affected the Bulk Electric System ("BES") with an Interconnection Reliability Operating Limit ("IROL") condition or loss of load. The Transmission Operator ("TOP") updated its rating methodology after the event, and if the updated ratings had been available during the event, the event would not have been deemed as an SOL exceedance since the flows were below the updated normal rating.

5. The serious risk IRO-008-2 R1 violation involved MISO missing contingencies in its Day-Ahead Analysis for more than three years. MISO's Day-Ahead Analysis is an Operational Planning Analysis, and that term will be used throughout this Agreement for consistency purposes.[3] At the time the error was found, MISO was missing approximately 3,900 contingencies, which would have increased the number of contingencies being monitored by 35%. MISO was not missing 3,900 contingencies for the entirety of the violation as the number of missed contingencies increased during the violation. The missing contingencies were spread throughout MISO's footprint and involved multiple types of contingencies and equipment (in other words, there was no pattern regarding types of missed contingencies). MISO discovered this violation when a new engineer joined the relevant team and performed additional analysis around the process for updating the study model and discovered the missing contingencies. MISO made the necessary corrections to include the missing contingencies, and self-reported to ReliabilityFirst. As a result of these missing contingencies, MISO's Operational Planning Analysis included incomplete data for approximately three years. The Regions note that although the risk remains serious, MISO performs a variety of other studies which all feed into MISO's Day Ahead Market Summary ("DAMS") report and these other studies covered some of the missing contingencies during the noncompliance period.

6. This violation reflected MISO's lack of awareness. MISO has heightened

[3] Per the NERC Glossary, an Operational Planning Analysis is an evaluation of projected system conditions to assess anticipated (pre-Contingency) and potential (post-Contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to, load forecasts; generation output levels; Interchange; known Protection System and Special Protection System status or degradation; Transmission outages; generator outages; Facility Ratings; and identified phase angle and equipment limitations.

responsibility based on its registered functions and roles, and MISO sits overtop of a wide transmission area and is relied on to promote wide-area reliability. MISO's failure to perform complete Operational Planning Analyses to assess planned operations for the next-day sets up control room operators for potential failure, though no known failure occurred in this case. Due to the complexity of operating the BES, it is very difficult for control room operators to reliably operate the BES without effective action plans developed in advance of real time operations.

7. As discussed in more detail below, the Regions are imposing a monetary penalty of $815,000 for these violations.

II. OVERVIEW OF MISO

8. MISO is a Regional Transmission Organization headquartered in Carmel, Indiana, and geographically situated over 15 states and one Canadian province. As an ISO/RTO, MISO is a not for profit organization. MISO encompasses over 192,000 megawatts ("MW") of total generation capacity and over 65,000 miles of interconnected, high voltage power lines.

9. MISO is the Transmission Service Provider for these facilities but does not own or operate them. It performs Balancing Authority functions and is responsible for matching generation with load. MISO is the Market Operator and Reliability Coordinator for its geographic area. MISO uses security-constrained economic dispatch to match generation with load and to maintain transmission line loading within operating limits. MISO normally peaks in the summer and had an all-time electric summer peak load of 127,125 MW for its market area and 133,181 MW for its reliability coordination area.

10. MISO is registered on the NERC Compliance Registry as a Balancing Authority, Planning Authority/Planning Coordinator, Reliability Coordinator ("RC"), Resource Planner, TOP, Transmission Planner and Transmission Service Provider in the ReliabilityFirst region. In its capacity as a RC, MISO is subject to compliance with the above-captioned Reliability Standard Requirements.

III. VIOLATIONS

A. IRO-008-2 R1 (2021-00944)

11. IRO-008 ensures that a Responsible Entity performs analyses and assessments to prevent instability, uncontrolled separation, or Cascading.

12. A violation of IRO-008 R1 has the potential to affect the reliable operation of the BES because not performing an accurate Operational Planning Analysis to assess whether the planned operations for the next-day will exceed System Operating Limits ("SOLs") and Interconnection Operating Reliability Limits ("IROLs") within a RC's footprint provides the RC's System Operators with incomplete information. This makes it more difficult to reliably operate the BES as well as

respond to and mitigate potential and actual issues.

13. IRO-008-2 R1 states:

> **R1.** Each Reliability Coordinator shall perform an Operational Planning Analysis that will allow it to assess whether the planned operations for the next-day will exceed SOLs and IROLs within its Wide Area.

Description of Violation and Risk Assessment

14. On November 5, 2021, MISO submitted a Self-Report to ReliabilityFirst stating that, as a RC, it was in violation of IRO-008-2 R1, due to incomplete contingency assessments.

15. For approximately three years, MISO failed to perform complete Operational Planning Analyses to assess whether the planned operations for the next-day would exceed SOLs and IROLs within its Wide Area.

16. As background, MISO is responsible for producing a "Next Day" analysis of the power system to assess whether the planned operations for the next day will exceed SOLs and IROLs within the MISO footprint. MISO analyzes breaker-to-breaker contingencies in its Next-Day studies. These include single tripping events of Generators, Lines, Transformers and High-Voltage Direct Current ("HVDC") facilities.

17. MISO's Forward Engineering and Support ("FRES") team discovered a deficiency in the process of running its Operational Planning Analysis on February 10, 2021. More specifically, a FRES Engineer was added to the team and started to perform additional analysis around the process for updating the study model. The new engineer located a deficiency in the Contingency Files utilized to run the analysis.

18. Specifically, the MISO active contingency file for the Operational Planning Analysis did not contain events that were needed to simulate the loss of many of MISO's facilities. MISO was missing approximately 3,900 contingencies by the time the issue was discovered; the initial number of missing contingencies was smaller. MISO has approximately 15,000 contingencies which should be included in its analysis.

19. MISO corrected the noncompliance and included the missing 3,900 contingencies to run a complete and accurate analysis on February 11, 2021. The missed contingencies shared no commonality regarding geography, type, electrical location, region, voltage class, risk, operating companies, nomenclature, in service date, or any other discernable pattern.

20. MISO performed an extent of condition review and determined that MISO's real-time studies included all the contingencies. MISO concluded that it only used the contingency files at issue in the day-ahead Operational Planning Analysis and not in any other studies or analyses.

21. MISO missed multiple opportunities to detect and correct this violation. MISO uses the TARA tool for analyzing next-day system performance. While incorrect input files were being uploaded, MISO missed warning information that contained details on inconsistencies between the contingency file and the model being analyzed. MISO uses two sets of contingency files in its Operational Planning Analysis. The first is a base case file which represents system topology with all lines in-service. The second is a temporary file which contains temporary topology changes to match planned and forced outages on the system. MISO reported that the base case file was updated generally quarterly and that the temporary file is updated on a continuous basis to ensure it reflects temporary contingencies created by planned or forced outages. For approximately three years, MISO reported it performed these updates, but failed to discover the 3,900 missing contingencies. This demonstrates that MISO did not have effective controls in place to ensure that it properly updated its contingency files.

22. MISO had a separate noncompliance (IRO-008-1 R1(RFC2021024806)) with an overlapping duration that contributes to the risk of this violation. In that prior noncompliance, MISO failed to account for approximately 1.3% of thermal monitoring and 4.4% of voltage monitoring within its footprint in its Operational Planning Analysis from February 2017 through August 2020. MISO finished mitigating this prior noncompliance as of October 2021.

23. This violation involves the management practices of asset and configuration management and verification. The root cause was a variety of process gaps. Specifically, the missing contingencies resulted from a process that did not adequately ensure the day-ahead contingency files were being satisfactorily updated and reviewed to reflect topology changes. Additionally, when another employee became responsible for managing the contingency review process, some institutional knowledge was lost. MISO also had ineffective detective controls in place to discover the missing contingencies.

24. The violation began on February 10, 2018, the date MISO first missed contingencies in its Operational Planning Analysis. The violation ended on February 11, 2021, the date MISO added all of the missing contingencies into its Operational Planning Analysis and reran the analysis with all of the correct contingencies.

25. This violation posed a serious or substantial risk to the reliability of the bulk power system based on the following factors.[4] The risk posed by missing increasing numbers of contingencies from MISO's Operational Planning Analysis over the course of three years is providing MISO's System Operators with incomplete information, which makes it more difficult to reliably operate the BES as well as respond to and mitigate potential and actual issues. Operating with incomplete information can also adversely impact near-term planning and decision making

[4] IRO-008-2 R1 has a VRF of "Medium" pursuant to the VRF Matrix. According to the VSL Matrix, this issue warranted a "Severe" VSL.

(e.g., unplanned and planned outages). The risk is increased because of the long duration of the violation and the repeated failure of multiple MISO internal controls to identify this violation more quickly which demonstrate a lack of awareness. The risk is also increased because of the large scope of the violation at the time MISO identified and corrected it, missing approximately 3,900 contingencies by the end of the violation period, in MISO's critical role as the RC to develop daily Operational Planning Analyses. The RC is the highest level of authority responsible for reliable operation of the Bulk Power System ("BPS") and MISO's footprint covers 15 states, one Canadian province, and more than 40 million people. MISO's TOPs also rely on MISO to perform complete studies. The Regions note that although the risk remains serious, MISO performs a variety of other studies which all feed into MISO's DAMS report and these other studies covered some of the missing contingencies during the noncompliance period. That report provides a list of potential items to watch, constraints which may bind, expected outages on the system, and other relevant forecast information to help System Operators reliably operate the MISO system.

Mitigating Actions

26. On May 27, 2022, and July 14, 2022, MISO submitted Mitigating Activities to ReliabilityFirst to address the noncompliance with IRO-008-2 R1. ReliabilityFirst rejected MISO's first submission on June 8, 2022, requested more detail on the proposed milestones (which MISO provided) and then accepted the Mitigating Activities on August 1, 2022.

27. For its mitigation, MISO committed to take the following actions by July 6, 2022: First, MISO corrected the missing contingencies upon discovering the violation. Second and third, MISO updated the incorrect contingency files. Fourth, MISO met with its engineers to discuss contingency file automation implementation challenges and team alignment on status. Fifth, MISO met with Operations Planning management to discuss offline contingency files. Sixth, MISO had a follow-up meeting to discuss contingency automation. Seventh, MISO had a follow-up meeting with MISO engineers to discuss contingency modifications and to bring a new member of the team up to speed to help with coding challenges. Eighth, MISO discussed and tracked mitigation actions with the compliance team. Ninth, MISO had a meeting to discuss an algorithm for contingency mapping. Tenth, MISO met to verify corrective actions are on track for Model-On-Demand. Eleventh, MISO discussed its pre-launch contingency automation tool with internal stakeholders to preview and approve prior to implementation. Twelfth, MISO implemented the contingency automation tool into the workflow for day-ahead planning.

28. MISO has provided evidence to demonstrate its completion of these Mitigating Activities to ReliabilityFirst. ReliabilityFirst will verify the entity's completion of these Mitigating Activities.

B. IRO-008-2 R5 (RFC2020023459)

29. IRO-008 ensures that a Responsible Entity performs analyses and assessments to prevent instability, uncontrolled separation, or Cascading.

30. A violation of IRO-008 R5 has the potential to affect the reliable operation of the BES because impacted TOPs, Balancing Authorities, and other RCs would not be aware of an actual or expected condition that results in, or could result in, a SOL or IROL. That lack of awareness makes it more difficult for TOPs, Balancing Authorities, and other RCs to reliably operate the BES as well as respond to and mitigate potential and actual issues.

31. IRO-008-2 R5 states:

> **R5.** Each Reliability Coordinator shall notify impacted Transmission Operators and Balancing Authorities within its Reliability Coordinator Area, and other impacted Reliability Coordinators as indicated in its Operating Plan, when the results of a Real-time Assessment indicate an actual or expected condition that results in, or could result in, a SOL or IROL exceedance within its Wide Area.

Description of Violation and Risk Assessment

32. On May 18, 2020, the entity submitted a Self-Report to ReliabilityFirst stating that, as a RC, it was in violation of IRO-008-2 R5. *See*, Self-Report, **Attachment 1**.

33. MISO failed to notify impacted Transmission Operators and Balancing Authorities within its RC Area and other impacted RCs of an SOL exceedance in real time operations because MISO was not monitoring the transmission line and associated equipment for overloads.

34. On December 9, 2019, at 10:20 PM EST, SPP notified MISO that there was an overload in real time operations on a jointly owned 115 kV transmission line base case constraint. The limiting rating on the transmission line was on a current transformer ("CT") owned by a MISO member. MISO operators were responsible for and should have managed the overload on the equipment since a MISO member owned the most limiting element and MISO is the RC.

35. Although the MISO Real-Time Contingency Analysis ("RTCA") did include the equipment in both its pre-contingency and post-contingency analyses, MISO did not monitor the equipment because MISO incorrectly modeled the equipment as external to MISO. As a result, MISO did not take any action on the constraint for the base case overload in real time operations.

36. MISO had previously monitored the transmission line and equipment at issue in the violation and had it correctly modeled as being interior to MISO meaning that MISO was responsible for its monitoring. Sometime around July 24, 2019, however, MISO operators used a function in the MISO RTCA to incorrectly "alias"

the transmission line to a SPP member. MISO stopped monitoring the aliased equipment because MISO marked it as external to MISO because SPP, and not MISO, is the RC for the other joint owner. This error masked ownership and masked an SOL resulting in MISO incorrectly believing that this line was external and being monitored by another RC.[5]

37. MISO did not take any congestion management actions on the equipment until after SPP notified MISO of the base case constraint. MISO performed an after-the-fact analysis and confirmed that there was a 78-minute base case overload on the constraint where the flows on the constraint exceeded the normal continuous rating. Post contingent overloads also existed on the monitored element during this time.

38. This violation involves the management practices of asset and configuration management. The root cause was that MISO incorrectly marked the transmission line and equipment as external to MISO which caused MISO to incorrectly believe that another RC, SPP, had the responsibility to monitor and solve the SOL exceedance.[6]

39. The violation began on December 9, 2019, when MISO failed to notify impacted TOPs and Balancing Authorities within its RC Area and other impacted RCs of an SOL exceedance because MISO incorrectly marked the transmission line as external. The violation ended 78 minutes later on December 9, 2019, when the exceedance at issue ended.

40. This violation posed a moderate risk and did not pose a serious or substantial risk to the reliability of the bulk power system based on the following factors.[7] The failure to manage and mitigate overloads could lead to equipment failure, reliability issues, and potential cascading outages. The risk is increased because MISO did not discover this violation, MISO had to be informed by a third party that it should have been monitoring and managing this equipment. The risk is also increased because MISO's failure to monitor resulted in a 78-minute unmonitored overload in real time operations, which could have caused reliability problems. No automatic protective features were activated, and there was no loss of load as a result of this violation. The Regions note that MISO performed an after-the-fact analysis which showed that a trip of this line would not have adversely affected the BPS with an IROL condition or loss of load. The SOL limits during the event were

[5] The alias function was initially designed to help MISO identify correct MISO TOPs for equipment that is jointly owned by multiple MISO TOPs. Whenever an overloaded constraint is shown in RTCA, MISO is required to call the TOP that owned the constraint and verify ratings. When an equipment is owned by multiple MISO TOPs, MISO utilized the alias function to identify the TOP that they need to call and verify ratings. Aliasing equipment for these scenarios did not require tracking since equipment was just being aliased internally and RTCA always showed the constraint as a MISO constraint.

[6] The alias feature usage is also almost exclusively limited in usage to the MISO North region. The MISO RTCA indicated the line as 1st tier external due to an alias on the line that masked ownership and the SOL. The aliasing error resulted in MISO taking no action for approximately 78 minutes as MISO operators assumed that someone else would solve the issue.

[7] IRO-008-2 R5 has a VRF of "High" pursuant to the VRF Matrix. According to the VSL Matrix, this issue warranted a "Lower" VSL.

79.6 MVA normal and 87.6 MVA emergency. The max base case flow on the transmission line during the event was at 90 MVA. After the event, the TOP updated its rating methodology, and if the updated ratings had been available during the event, the event would not have been deemed as an SOL exceedance since the flows were below the updated normal rating.

Mitigating Actions

41. On July 9, 2020, the entity submitted to ReliabilityFirst a Mitigation Plan to address the violation of IRO-008-2 R5. *See* RFCMIT015168, **Attachment 2**. On July 13, 2020, ReliabilityFirst accepted the Mitigation Plan.

42. In the Mitigation Plan, the entity committed to take the following actions by September 15, 2020[8]: First, the entity removed alias functionality. Second, the entity restored alias functionality with restricted access. Third, the entity provided guidance for alias usage upon restoration.

43. On October 15, 2020, the entity certified to ReliabilityFirst that it completed this Mitigation Plan as of September 15, 2020. *See* Certification of Mitigation Plan Completion, **Attachment 3**. On October 21, 2020, ReliabilityFirst verified the entity completed the Mitigation Plan on September 15, 2020. *See* Mitigation Plan Verification for RFCMIT015168, **Attachment 4**.

IV. ADJUSTMENT FACTORS

44. In addition to the facts and circumstances stated above, the Regions considered the following factors in its penalty determination.

Cooperation

45. MISO has been cooperative throughout the enforcement process. After self-reporting the violations, MISO voluntarily provided the Regions with an abundance of information regarding the violation in a manner that was detailed, well-organized and timely. MISO responded to numerous RFIs and met with the Regions multiple times to discuss responses to the RFIs and to answer questions related to the violations. MISO fully cooperated throughout the mitigation process and implemented mitigation designed to prevent recurrence and improve reliability. MISO has been transparent with the Regions regarding the violations, and MISO's processes and systems. The Regions are awarding mitigating credit for this level of cooperation.

Self-Disclosure

46. Effective oversight of the reliability of the BES depends on robust and timely self-reporting by Registered Entities. MISO self-identified and reported both of the violations at issue in this Agreement. The Regions seeks to encourage this type of

[8] The entity requested, and ReliabilityFirst approved, an extension from September 1, 2020, to September 15, 2020.

self-reporting, characterized by detection that is unconnected to a pending regional compliance monitoring action. Therefore, the Regions are awarding mitigating credit to MISO for self-reporting.

Compliance History

47. When assessing the penalty for the violations at issue in this Agreement, the Regions considered whether the facts of these violations constitute repetitive infractions. The Regions considered MISO's compliance history and determined that MISO has no relevant instances of noncompliance.

V. PENALTY

48. Based upon the foregoing, MISO shall pay a monetary penalty of $815,000 to the Regions. MISO will pay the monetary penalty to ReliabilityFirst and ReliabilityFirst shall divide that penalty amount in three parts based on the relative net energy for load ("NEL") for each Region[9] and shall distribute NEL-based proportional allocations to MRO and SERC. Of the total penalty remitted, ReliabilityFirst shall distribute $138,550 to MRO and $407,500 to SERC.

49. MISO acknowledges that the monetary penalty is due and owing upon execution of this Agreement, and that payment will be made by MISO upon completion of the FERC regulatory proceedings under the process directed by MISO's Schedule 34 Tariff ("MISO Tariff") in a Section 205 filing, or as otherwise directed by FERC.

50. The Regions acknowledge that MISO is required to execute regulatory filings at FERC as a necessary step to satisfy MISO's Tariff obligations. Within thirty (30) days after the Agreement is approved by the Commission or by operation of law, MISO will initiate a Tariff filing under Federal Power Act Section 205 to recover the penalty amount under this Agreement, and MISO will use reasonable efforts to obtain FERC approval of the filing, which will request FERC's approval of MISO's allocation/recovery of the monetary penalty.

51. In the event FERC rejects or does not accept MISO's request for recovery of the Recoverable Penalty in the Section 205 proceeding, MISO will in a timely manner continue to execute the regulatory process prescribed by FERC to satisfy MISO's Tariff obligations or take other appropriate action to pursue a regulatory or legal process to complete any related proceedings (collectively the "Proceedings").

52. If MISO fails to timely remit the monetary penalty payment to the Regions, interest will commence to accrue on the outstanding balance, pursuant to 18 C.F.R. § 35.19a

[9] NEL is published in NERC's annual business plan and budget and is used as a method to prorate fee assessments pursuant to the Regional Entity Coordinated Oversight Memorandum of Understanding among the Regions. The calculation used for this Agreement is based on the NERC 2023 budget, which indicates the following NEL values in the ERO: SERC: 32.461%, MRO: 11.079%, and ReliabilityFirst: 21.906%. For purposes of penalty calculation in this Agreement, the NEL values correspond to weighted penalties of 50% to SERC, 17% to MRO, and 33% to ReliabilityFirst.

(a)(2)(iii), on the 31st day after the date on the invoice issued by ReliabilityFirst to MISO for the monetary penalty payment. The Regions agree that no invoice will be issued until the completion of the Proceedings.

VI. ADDITIONAL TERMS

53. The Parties agree that this Agreement is in the best interest of BES reliability. The terms and conditions of the Agreement are consistent with the regulations and orders of the Commission and the NERC Rules of Procedure.

54. The Regions shall report the terms of all settlements of compliance matters to NERC. NERC will review the Agreement for the purpose of evaluating its consistency with other settlements entered into for similar violations or under similar circumstances. Based on this review, NERC will either approve or reject this Agreement. If NERC rejects the Agreement, NERC will provide specific written reasons for such rejection and the Regions will attempt to negotiate with MISO a revised settlement agreement that addresses NERC's concerns. If a settlement cannot be reached, the enforcement process will continue to conclusion. If NERC approves the Agreement, NERC will (a) report the approved settlement to the Commission for review and approval by order or operation of law and (b) publicly post the violations and the terms provided for in this Agreement.

55. This Agreement binds the Parties upon execution and may only be altered or amended by written agreement executed by the Parties. MISO expressly waives its right to any hearing or appeal concerning any matter set forth herein, unless and only to the extent that MISO contends that any NERC or Commission action constitutes a material modification to this Agreement.

56. The Regions reserve all rights to initiate enforcement action against MISO in accordance with the NERC Rules of Procedure in the event that MISO fails to comply with any of the terms or conditions of this Agreement. MISO retains all rights to defend against such action in accordance with the NERC Rules of Procedure.

57. MISO consents to the Regions future use of this Agreement for the purpose of assessing the factors within the NERC Sanction Guidelines and applicable Commission orders and policy statements, including, but not limited to, the factor evaluating MISO's history of violations. Such use may be in any enforcement action or compliance proceeding undertaken by NERC or any Regional Entity or both, provided however that MISO does not consent to the use of the conclusions, determinations, and findings set forth in this Agreement as the sole basis for any other action or proceeding brought by NERC or any Regional Entity or both, nor does MISO consent to the use of this Agreement by any other party in any other action or proceeding.

58. MISO affirms that all of the matters set forth in this Agreement are true and correct to the best of its knowledge, information, and belief, and that it understands that the

Regions enters into this Agreement in express reliance on the representations contained herein, as well as any other representations or information provided by MISO to the Regions during any MISO interaction with the Regions relating to the subject matter of this Agreement.

59. Upon execution of this Agreement, the Parties stipulate that the alleged violations resolved though this Agreement will be considered violations. The parties further stipulate that all required, applicable information listed in Section 5.3 of the CMEP is included within this Agreement.

60. Each of the undersigned agreeing to and accepting this Agreement warrants that he or she is an authorized representative of the party designated below, is authorized to bind such party, and accepts the Agreement on the party's behalf.

61. The undersigned agreeing to and accepting this Agreement warrant that they enter into this Agreement voluntarily and that, other than the recitations set forth herein, no tender, offer, or promise of any kind by any member, employee, officer, director, agent, or representative of the Parties has been made to induce the signatories or any other party to enter into this Agreement.

62. The Agreement may be signed in counterparts.

63. This Agreement is executed in duplicate, each of which so executed shall be deemed to be an original.

[SIGNATURE PAGE TO FOLLOW][10]

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

[10] An electronic version of this executed document shall have the same force and effect as the original.

ENDORSED BY:

/s/ Niki Schaefer
Niki Schaefer
Vice President & General Counsel
ReliabilityFirst Corporation

September 1, 2023
Date

AGREED TO AND ACCEPTED BY:

Midcontinent Independent System Operator, Inc.

Jennifer Curran
Senior Vice President,
Planning and Operations and
Chief Compliance Officer
Midcontinent Independent System Operator, Inc.

Date

ReliabilityFirst Corporation

/s/ Timothy R. Gallagher
Timothy R. Gallagher
President & Chief Executive Officer
ReliabilityFirst Corporation

September 3, 2023
Date

Midwest Reliability Organization

Tasha R. Ward
Tasha Ward
Director of Enforcement and External Affairs
Midwest Reliability Organization

September 15, 2023
Date

SERC Reliability Corporation

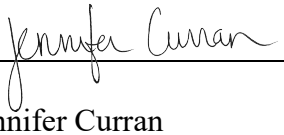
ENDORSED BY:

Niki Schaefer
Vice President & General Counsel
ReliabilityFirst Corporation

Date

AGREED TO AND ACCEPTED BY:

Midcontinent Independent System Operator, Inc.



Jennifer Curran
Senior Vice President,
Planning and Operations and
Chief Compliance Officer
Midcontinent Independent System Operator, Inc.

8/30/2023
Date

ReliabilityFirst Corporation

Timothy R. Gallagher
President & Chief Executive Officer
ReliabilityFirst Corporation

Date

Midwest Reliability Organization

Tasha Ward
Director of Enforcement and External Affairs
Midwest Reliability Organization

Date

SERC Reliability Corporation

09/11/2023

Jason Blake
President and CEO
SERC Reliability Corporation

Date

Self Report

Entity Name: Midcontinent Independent System Operator, Inc. (MISO)

NERC ID: NCR00826

Standard: IRO-008-2

Requirement: IRO-008-2 R5.

Date Submitted: May 18, 2020

Has this violation previously been reported or discovered?: No

Entity Information:

Joint Registration Organization (JRO) ID:

Coordinated Functional Registration (CFR) ID:

Contact Name: Jami Young

Contact Phone: 3172494891

Contact Email: myoung@misoenergy.org

Violation:

Violation Start Date: December 09, 2019

End/Expected End Date:

Reliability Functions: Reliability Coordinator (RC)

Is Possible Violation still occurring?: No

Number of Instances: 1

Has this Possible Violation been reported to other Regions?: No

Which Regions:

Date Reported to Regions:

Detailed Description and Cause of Possible Violation:

Introduction

On December 9, 2019, at 22:20 system time, SPP notified the MISO reliability coordinator (RC) that there was an overload on the OTP Forman-WAPA Forman 115KV base case constraint. The facility is jointly owned by WAPA and OTP, but the limiting rating on the transmission line was on a current transformer (CT) that is owned by Otter Tail Power (OTP). MISO operators should have managed the overload on the equipment since OTP owned the most limiting element. Although the MISO Real-Time Contingency Analysis (RTCA) did include the equipment in both pre contingency and post contingency analysis, it was being modeled as MISO first-tier (external), and MISO, the RC, did not take any action on the constraint for the base case overload as a result of the equipment being monitored under 1st- tier. The MISO RC started congestion management on the equipment immediately after the Southwest Power Pool RC contacted the MISO RC. After the fact analysis confirmed that there was an 88-minute base case overload on the constraint where the flows on the constraint exceeded normal continuous rating. Post contingent overloads also existed on the monitored element during this time.

Discovery

Flowgate 25362

Forman_FormanWAPA_115kV_flo_Ellenda_230kV_115kV_XF (Forman) was assigned to MISO and became effective at 00:00 on 12/08/2019. The RC on 12/08 saw the flowgate assigned to WAPA, vice Otter Tail Power (OTP), as the equipment was modeled in both pre contingency and post contingency analysis as MISO first-tier (external).

Self Report

An overload was experienced on the Forman line from 21:17 to 22:47 on 12/09/2019, Southwest Power Pool (SPP) notified MISO that they saw the overload from WAPA. Immediately after the call from SPP, MISO took action to initiate market to market relief. MISO also initiated a call to OTP to confirm ownership of the line. OTP indicated to MISO on the phone after the event that the ownership of the line belonged to WAPA. OTP's Supervisor of Operations Engineering confirmed by email on 12/11/2019 that WAPA owns the line with OTP owning the limiting element on the OTP side of the line. After an extensive review, MISO is aligned with that conclusion and is monitoring the line.

After the fact analysis confirmed that there was an 88-minute base case overload on the constraint where the flows on the constraint exceeded normal continuous rating. Post contingent overloads also existed on the monitored element during this time. (See Exhibit A)

The monitoring of the line currently is owned by MISO, and the line is currently modeled as being interior to MISO. Sometime around 7/24/2019, MISO operators used a function in MISO RTCA to "alias" the Forman (OTP)-Forman (WAPA) to WAPA. MISO RCs do not currently track aliased equipment, creating a latent error* that eventually masked ownership and masked an SOL to the MISO RC.

The MISO Operating Plan, MISO Congestion Management Procedure, requires the MISO RC to confirm constraints and applicable limits, discuss a solution to mitigate the constraint, review the applicability of T-notes and relevant operating guides, and finally to implement the agreed-upon solution. Post contingency action plans require a plan to be studied to determine effectiveness, confirmed with the transmission operator, and implemented as soon as possible to mitigate the constraint within 30 minutes.

OTP re-evaluated the ratings of the line weeks later and raised them above the setpoint that was reached during the December event.

Root Cause
The usage of an alias function in real-time displays obscured the ownership of line constraints and created confusion over which RC had the responsibility to solve the SOL exceedance. MISO real-time displays have an alias functionality that is no longer trained to operators, nor are aliased monitoring points logged or tracked. The alias feature usage is also almost exclusively limited in usage to the MISO North region. The MISO RTCA indicated the Forman line as 1st - tier due to an alias on the line that masked ownership and the SOL. The aliasing error resulted in the MISO RC taking no action for approximately 88 minutes as operators in each control room (WAPA/OTP/SPP/MISO) made assumptions that the other would solve the issue. The RC would not have any way of recognizing that the line needed to be aliased back to OTP before the event occurred.

Mitigating Activities:

Description of Mitigating Activities and Preventative Measure: MISO will improve the process for the "alias function" by removing real-time changes in ownership of constraints via real-time displays. The review of ownership and changes will be moved up to the real-time support function allowing us to validate these prior to the operating day.

Date Mitigating Activities Completed:

Impact and Risk Assessment:

Potential Impact to BPS: Minimal

Actual Impact to BPS: Minimal

Self Report

Description of Potential and Actual Impact to BPS:	No automatic protective features were activated and there was no loss of load as a result of this issue. Moreover, an after the event analysis showed that the trip of this line would not have adversely affected the BPS with an IROL condition or loss of load. Further studies by OTP resulted in new SOL limits that are higher than the peak experienced during the December overload.
Risk Assessment of Impact to BPS:	Low risk of adverse impact to the BPS, based MISO's after event analysis and based on the location of the line and the length of time of the overload.
Additional Entity Comments:	

Additional Comments		
From	Comment	User Name
No Comments		

Additional Documents			
From	Document Name	Description	Size in Bytes
Entity	Exhibit A.pdf	This is a visual to show the 88 minute base case overload on the constraint discussed under "Discovery".	76,133

Mitigation Plan

Mitigation Plan Summary

Registered Entity: Midcontinent Independent System Operator, Inc.

Mitigation Plan Code: RFCMIT015168

Mitigation Plan Version: 1

NERC Violation ID	Requirement	Violation Validated On
RFC2020023459	IRO-008-2 R5.	

Mitigation Plan Submitted On: July 09, 2020

Mitigation Plan Accepted On:

Mitigation Plan Proposed Completion Date: September 01, 2020

Actual Completion Date of Mitigation Plan:

Mitigation Plan Certified Complete by MISO On:

Mitigation Plan Completion Verified by RF On:

Mitigation Plan Completed? (Yes/No): No

Compliance Notices

Section 6.2 of the NERC CMEP sets forth the information that must be included in a Mitigation Plan. The Mitigation Plan must include:

(1) The Registered Entity's point of contact for the Mitigation Plan, who shall be a person (i) responsible for filing the Mitigation Plan, (ii) technically knowledgeable regarding the Mitigation Plan, and (iii) authorized and competent to respond to questions regarding the status of the Mitigation Plan. This person may be the Registered Entity's point of contact described in Section B.
(2) The Alleged or Confirmed Violation(s) of Reliability Standard(s) the Mitigation Plan will correct.
(3) The cause of the Alleged or Confirmed Violation(s).
(4) The Registered Entity's action plan to correct the Alleged or Confirmed Violation(s).
(5) The Registered Entity's action plan to prevent recurrence of the Alleged or Confirmed violation(s).
(6) The anticipated impact of the Mitigation Plan on the bulk power system reliability and an action plan to mitigate any increased risk to the reliability of the bulk power-system while the Mitigation Plan is being implemented.
(7) A timetable for completion of the Mitigation Plan including the completion date by which the Mitigation Plan will be fully implemented and the Alleged or Confirmed Violation(s) corrected.
(8) Implementation milestones no more than three (3) months apart for Mitigation Plans with expected completion dates more than three (3) months from the date of submission. Additional violations could be determined or recommended to the applicable governmental authorities for not completing work associated with accepted milestones.
(9) Any other information deemed necessary or appropriate.
(10) The Mitigation Plan shall be signed by an officer, employee, attorney or other authorized representative of the Registered Entity, which if applicable, shall be the person that signed the Self Certification or Self Reporting submittals.
(11) This submittal form may be used to provide a required Mitigation Plan for review and approval by regional entity(ies) and NERC.

• The Mitigation Plan shall be submitted to the regional entity(ies) and NERC as confidential information in accordance with Section 1500 of the NERC Rules of Procedure.

• This Mitigation Plan form may be used to address one or more related alleged or confirmed violations of one Reliability Standard. A separate mitigation plan is required to address alleged or confirmed violations with respect to each additional Reliability Standard, as applicable.

• If the Mitigation Plan is accepted by regional entity(ies) and approved by NERC, a copy of this Mitigation Plan will be provided to the Federal Energy Regulatory Commission or filed with the applicable governmental authorities for approval in Canada.

• Regional Entity(ies) or NERC may reject Mitigation Plans that they determine to be incomplete or inadequate.

• Remedial action directives also may be issued as necessary to ensure reliability of the bulk power system.

• The user has read and accepts the conditions set forth in these Compliance Notices.

Entity Information

Identify your organization:

Entity Name: Midcontinent Independent System Operator, Inc.

NERC Compliance Registry ID: NCR00826

Address: 720 West City Center Drive
Carmel IN 46032-3826

Identify the individual in your organization who will serve as the Contact to the Regional Entity regarding this Mitigation Plan. This person shall be technically knowledgeable regarding this Mitigation Plan and authorized to respond to Regional Entity regarding this Mitigation Plan:

Name: Jami Young
Title: SR Corporate Counsel
Email: myoung@misoenergy.org
Phone: 317-249-4891

Violation(s)

This Mitigation Plan is associated with the following violation(s) of the reliability standard listed below:

Violation ID	Date of Violation	Requirement
Requirement Description		
RFC2020023459	12/09/2019	IRO-008-2 R5.
Each Reliability Coordinator shall notify impacted Transmission Operators and Balancing Authorities within its Reliability Coordinator Area, and other impacted Reliability Coordinators as indicated in its Operating Plan, when the results of a Real-time Assessment indicate an actual or expected condition that results in, or could result in, a System Operating Limit (SOL) or Interconnection Reliability Operating Limit (IROL) exceedance within its Wide Area		

Brief summary including the cause of the violation(s) and mechanism in which it was identified:

On December 9, 2019, at 22:20 system time, SPP notified the MISO reliability coordinator (RC) that there was an overload on the OTP Forman-WAPA Forman 115KV base case constraint. The facility is jointly owned by WAPA and OTP, but the limiting rating on the transmission line was on a current transformer (CT) that is owned by Otter Tail Power (OTP). MISO operators should have managed the overload on the equipment since OTP owned the most limiting element. Although the MISO Real-Time Contingency Analysis (RTCA) did include the equipment in both pre contingency and post contingency analysis, it was being modeled as MISO first-tier (external), and MISO, the RC, did not take any action on the constraint for the base case overload as a result of the equipment being monitored under 1st- tier. The MISO RC started congestion management on the equipment immediately after the Southwest Power Pool RC contacted the MISO RC. After the fact analysis confirmed that there was an 88-minute base case overload on the constraint where the flows on the constraint exceeded normal continuous rating. Post contingent overloads also existed on the monitored element during this time.

Relevant information regarding the identification of the violation(s):

The usage of an alias function in real-time displays obscured the ownership of line constraints and created confusion over which RC had the responsibility to solve the SOL exceedance. MISO real-time displays have an alias functionality that is no longer trained to operators, nor are aliased monitoring points logged or tracked. The alias feature usage is also almost exclusively limited in usage to the MISO North region. The MISO RTCA indicated the Forman line as 1st -tier due to an alias on the line that masked ownership and the SOL. The aliasing error resulted in the MISO RC taking no action for approximately 88 minutes as operators in each control room (WAPA/OTP/SPP/MISO) made assumptions that the other would solve the issue. The RC would not have any way of recognizing that the line needed to be aliased back to OTP before the event occurred.

Plan Details

Identify and describe the action plan, including specific tasks and actions that your organization is proposing to undertake, or which it undertook if this Mitigation Plan has been completed, to correct the violation(s) identified above in Section C.1 of this form:

The usage of an alias function in real-time displays obscured the ownership of line constraints and created confusion over which RC had the responsibility to solve the SOL exceedance. To prevent an instance of monitoring points being masked or aliased and not actively monitored, the feature will be disabled and eventually restored for admin type purposes with restricted access and guidance offered to those with access for acceptable use going forward.

Provide the timetable for completion of the Mitigation Plan, including the completion date by which the Mitigation Plan will be fully implemented and the violations associated with this Mitigation Plan are corrected:

Proposed Completion date of Mitigation Plan: September 01, 2020

Milestone Activities, with completion dates, that your organization is proposing for this Mitigation Plan:

Milestone Activity	Description	*Proposed Completion Date (Shall not be greater than 3 months apart)	Actual Completion Date	Entity Comment on Milestone Completion	Extension Request Pending
Milestone 1	Remove alias functionality	07/17/2020			No
Milestone 2	Restore alias functionality with restricted access	08/14/2020			No
Milestone 3	Provide guidance for alias usage upon restoration	09/01/2020			No

Additional Relevant Information

Reliability Risk

Reliability Risk

While the Mitigation Plan is being implemented, the reliability of the bulk Power System may remain at higher Risk or be otherwise negatively impacted until the plan is successfully completed. To the extent they are known or anticipated : (i) Identify any such risks or impacts, and; (ii) discuss any actions planned or proposed to address these risks or impacts.

Low risk of adverse impact to the BPS, based MISO's after event analysis and based on the location of the line and the length of time of the overload.

Prevention

Describe how successful completion of this plan will prevent or minimize the probability further violations of the same or similar reliability standards requirements will occur

MISO will improve the process for the "alias function" by removing real-time changes in ownership of constraints via real-time displays. The review of ownership and changes will be moved up to the real-time support function allowing us to validate these prior to the operating day.

Describe any action that may be taken or planned beyond that listed in the mitigation plan, to prevent or minimize the probability of incurring further violations of the same or similar standards requirements

Authorization

An authorized individual must sign and date the signature page. By doing so, this individual, on behalf of your organization:

* Submits the Mitigation Plan, as presented, to the regional entity for acceptance and approval by NERC, and

* if applicable, certifies that the Mitigation Plan, as presented, was completed as specified.

Acknowledges:

1. I am qualified to sign this mitigation plan on behalf of my organization.

2. I have read and understand the obligations to comply with the mitigation plan requirements and ERO remedial action directives as well as ERO documents, including but not limited to, the NERC rules of procedure and the application NERC CMEP.

3. I have read and am familiar with the contents of the foregoing Mitigation Plan.

Midcontinent Independent System Operator, Inc. Agrees to be bound by, and comply with, this Mitigation Plan, including the timetable completion date, as accepted by the Regional Entity, NERC, and if required, the applicable governmental authority.

Authorized Individual Signature: _____

(Electronic signature was received by the Regional Office via CDMS. For Electronic Signature Policy see CMEP.)

Authorized Individual

Name: Renuka Chatterjee

Title: Executive Director System Operations

Authorized On: July 08, 2020

Certification of Mitigation Plan Completion

Submittal of a Certification of Mitigation Plan Completion shall include data or information sufficient for the Regional Entity to verify completion of the Mitigation Plan. The Regional Entity may request additional data or information and conduct follow-up assessments, on-site or other Spot Checking, or Compliance Audits as it deems necessary to verify that all required actions in the Mitigation Plan have been completed and the Registered Entity is in compliance with the subject Reliability Standard. (CMEP Section 6.6)

Registered Entity Name: Midcontinent Independent System Operator, Inc.

NERC Registry ID: NCR00826

NERC Violation ID(s): RFC2020023459

Mitigated Standard Requirement(s): IRO-008-2 R5.

Scheduled Completion as per Accepted Mitigation Plan: September 15, 2020

Date Mitigation Plan completed: September 15, 2020

RF Notified of Completion on Date: October 15, 2020

Entity Comment:

Additional Documents			
From	Document Name	Description	Size in Bytes
Entity	534 RFC2020023459 Certify Complete Package.pdf	Complete Milestone Package for Mitigation Plan.	1,582,067

I certify that the Mitigation Plan for the above named violation(s) has been completed on the date shown above and that all submitted information is complete and correct to the best of my knowledge.

Name: Renuka Chatterjee

Title: Executive Director System Operations

Email: rchatterjee@misoenergy.org

Phone: 1 (317) 249-5477

Authorized Signature _____ Date _____

(Electronic signature was received by the Regional Office via CDMS. For Electronic Signature Policy see CMEP.)

RELIABILITY FIRST

Mitigation Plan Verification for RFC2020023459

Midcontinent Independent System Operator, Inc. ("MISO")

Standard/Requirement: IRO-008-2 R5.

NERC Mitigation Plan ID: RFCMIT015168

Date of Completion of Mitigation: September 15, 2020

Description of Issue: Case File

Evidence Reviewed	
File Name	**Description of Evidence**
File 1	534 RFC2020023459 Certify Complete Package
File 2	SR-1 Exhibit A
File 3	RFI RFC2020023459_MISO Response

Verification of Mitigation Plan Completion

Milestone 1: Remove alias functionality.

Proposed Completion Date: 07/17/2020

Actual Completion Date: 6/25/2020

File 3 RFI RFC2020023459_MISO Response.docx includes the following:

- PDF Page 2 consists of a screenshot of the Real Time Displays that were updated and released on 6/24/2020. Version RTD 9.10.0 is circled in red.
- PDF Page 3 consists of a screenshot of change ticket 11591 that removed the alais functionality with the description of the change request.

Milestone #1: Completion verified.

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Milestone 2: Restore alias functionality with restricted access.

Proposed Completion Date: 08/14/2020

Actual Completion Date: 9/14/2020

File 3 RFI RFC2020023459_MISO Response.docx includes the following:

- PDF Page 4 consists of a screenshot of change ticket 11628 showing that the alias function was restored with restricted access. NOTE: Although the development of restoring the alias function was started and completed by 8/14/20, the proposed changes had not been deployed to Production until 9/14/2020 due to hurricane issues in the MISO footprint.

Milestone #2: Completion verified.

Milestone 3: Provide guidance for alias usage upon restoration.

Proposed Completion Date: 09/01/2020

Actual Completion Date: 9/15/2020

File 3 RFI RFC2020023459_MISO Response.docx include the following:

- PDF Page 7 consists of an internal email dated 9/15/2020 which explains that the alias function in RTCA RT displays has been enabled, but only for the Reliability Engineer role.
- PDF Pages 7 & 8 consists of the Guidance on Alias Function Usage in RTCA.

Milestone #3: Completion verified.

The Mitigation Plan is hereby verified complete.

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Date: October 21, 2020

Anthony Jablonski
Manager, Risk Analysis & Mitigation
ReliabilityFirst Corporation

ATTACHMENT B

Record documents for the violation of IRO-008-2 R1 (2021-00944):
B. The Entity's Self-Report dated November 5, 2021

Finding Record - Violation ID: 2021-00944

General information

Compliance Enforcement Authority:	RF
Registration:	NCR00826 - Midcontinent Independent System Operator, Inc.
Applicable Requirement:	IRO-008-2 R1.
Applicable Part(s):	
Applicable Reliability Function(s):	RC
Region - Jurisdiction in which the Potential Noncompliance Occurred:	RF-US
Other Region - Jurisdiction(s) where you are reporting this Potential Noncompliance:	
Entity in Coordinated Oversight:	Yes
Associated Registrations Impacted:	
If Finding from Audit, related Audit Finding ID:	
Finding Created by CEA:	No

Discovery and Description

Monitoring Method:	Self-Report
When was the Potential Noncompliance discovered?:	February 10, 2021
When did the Potential Noncompliance start?:	February 10, 2018
Is the Potential Noncompliance still occurring?:	No
When did you return to compliance?:	February 11, 2021
What is the basis for selecting the start date?:	Because of the nature of the technical miss, MISO cannot determine an actual start date, but based upon a review of the data during discovery, this appeared to be around the timeframe where the issue is estimated to have begun.
How was the Potential Noncompliance Discovered?:	MISO's Forward Engineering and Support team discovered a deficiency in the process of running Next Day analysis. The deficiency was located in the Contingency Files utilized to run the analysis. The discovery was made when a Forward Reliability Engineering and Support (FRES) Engineer was added to the team and started to perform additional analysis around the process for updating the study model. On approximately 2/10/2021, it was recognized that the MISO active contingency file for the Day-Ahead Analysis did not contain events that were needed to simulate the loss of many of our transferred facilities. To address the gap, approximately 3900 contingencies were written to simulate these events and included in our analysis on 2/11, only one day after the issue was discovered. MISO has approximately 15,000 contingencies included for the Next Day analysis. This analysis is only one layer in the overall strategy to mitigate conditions that could adversely impact the reliability of the BES.
Please describe the Potential Noncompliance in detail:	MISO is responsible for producing a "Next Day" analysis of the power system to assess whether the planned operations for the next day will exceed System Operating Limits (SOLs) and Interconnection Operating Reliability Limits (IROLs) within the MISO Wide Area. MISO's Forward Engineering and Support team discovered a deficiency in the process of running Next Day analysis. The deficiency was located in the Contingency Files utilized to run the analysis. On approximately 2/10/2021, it was recognized that the MISO active contingency file for the Day-Ahead Analysis did not contain events that were needed to simulate the loss of many of our transferred facilities. To address the gap, approximately 3900 contingencies were written to simulate these events and included in our analysis on 2/11.

Extent of Condition and Root Cause

Has an Extent of Condition Review been performed?:	Yes
If yes, what was/is the Extent of Condition?:	Analysis of the missing facilities indicated that the contingency gap was caused by an inadequate process for updating the day-ahead analysis model with topology changes. The process for ensuring adequacy and verification of sufficient analysis was inadequate.
What cause(s) led to the Potential Noncompliance?:	Analysis of the missing facilities indicated that the contingency gap was caused by an inadequate process for updating the day-ahead analysis model with topology changes. The process for ensuring adequacy and verification of sufficient analysis was inadequate.

Risk and Impact

What do you think the Potential Impact to the BPS was/is from this Potential Noncompliance?:	Minimal
Why do you believe that to be the correct Potential Impact?:	The risk was low to the BES as the probability of experiencing adverse reliability conditions due to this omission was low. The day-ahead analysis and the omitted contingencies were being analyzed in multiple analyses, and this particular study is only one layer in the MISO reliability strategy. The Next-Day operating plan is a snapshot of the next operating day, where a potential SOL or IROL could be detected. Additional studies are completed in a similar time horizon of the Next Day Operating Plan both in Outage Coordination and Planning as well as studies throughout the Operating Day that would have detected and mitigated issues in the operating day. The MISO members were also conducting their analysis and could have identified any potential IROL or SOL issues related to the missing facilities. Multiple members share their similar analysis performed by the TOPs with their study of the same time horizon. MISO has an exception reporting process for discrepancies in our day-ahead analysis for members to report issues with the study.
How likely is it that Impact could have occurred?:	No IROL or SOL conditions were experienced as a result of this gap in the day-ahead study. The actual experienced risk to the BES was low.
Was there any actual impact to the BPS?:	No
If yes, what was the Actual Impact to the BPS?	

Additional Comments

Please provide any additional comments	

ATTACHMENT C

Record documents for the violation of IRO-008-2 R1 (2021-00944):

C. ReliabilityFirst's Verification of Mitigating Activities Completion dated March 13, 2023

RELIABILITY FIRST

Mitigating Activities Verification for 2021-00944

Midcontinent Independent System Operator, Inc.

Standard/Requirement: IRO-008-2 R1.

NERC Registry ID: NCR00826

Date of Completion of Mitigation: July 6, 2022

Description of Issue CF2021-00944

Evidence Reviewed	
File Name	**Description of Evidence**
File 1	2021-00944 Evidence Package_Redacted.pdf
File 2	RFI 2021-00944_REPLY_MISO_03242022.docx
File 3	RFI_2021_00944_MISO_REPLY_Feb_2022.pdf
File 4	MISO RFI Response 2021_00944.docx
File 5	MISO RFI 2021 00944 2.3.23 MISO Response.docx
File 6	Contingency Creator High Level Process v2.docx
File 7	CON-PLUG-2-11-21.con

Verification of Mitigating Activity Completion

Mitigating Activity 1: Correction of contingencies upon discovery of the issue.

Completion Date: 2/10/2021

Mitigating Activity #1: MISO provided an attestation, dated August 25, 2022, where the Lead Operations Planning FRES stated that MISO made the correction of contingencies upon discovery of the issue and was completed on February 10, 2021. MISO also provided the updated contingency file, *CON-PLUG-2-11-21.con*. Milestone met.

Mitigating Activity 2: Contingency file update.

Completion Date: 3/17/2021

Mitigating Activity #2: MISO provided an attestation, dated August 25, 2022, where the Lead Operations Planning FRES stated that MISO updated its contingency file and was completed on March 17, 2021. MISO also provided the updated contingency file, *CON-PLUG-2-11-21.con*. Milestone met.

Mitigating Activity 3: Contingency file update.

Completion Date: 6/29/2021

Mitigating Activity #3: MISO provided an attestation, dated August 25, 2022, where the Lead Operations Planning FRES stated that MISO updated its contingency file and was completed on June 29, 2021. MISO also provided the updated contingency file, *CON-PLUG-2-11-21.con*. Milestone met.

Mitigating Activity 4: Meeting with MISO engineers to discuss contingency file automation implementation challenges and team alignment on status.

Completion Date: 9/15/2021

Mitigating Activity #4: MISO provided a Microsoft Teams meeting invite showing the meeting with held on September 15, 2021 with a subject of "CROW Contingency Discussion." Milestone met.

Mitigating Activity 5: Meeting with Operations Planning management to discuss offline contingency files.

Completion Date: 9/27/2021

Mitigating Activity #5: MISO provided a Microsoft Teams meeting invite showing the meeting with Operations Planning management held on September 27, 2021 with a subject of "Offline Contingency File maintenance." Milestone met.

Mitigating Activity 6: Follow-up meeting to discuss contingency automation.

Completion Date: 12/6/2021

Mitigating Activity #6: MISO provided a Microsoft Teams meeting invite showing the meeting held on December 6, 2021 with a subject of "Contingency check-in." Milestone met.

Mitigating Activity 7: Follow-up meeting with MISO engineers to discuss contingency modifications. Additionally, to bring new member of team up to speed to help with coding challenges.

Completion Date: 12/8/2021

Mitigating Activity #7: MISO provided a Microsoft Teams meeting invite showing the meeting held on December 8, 2021 with a subject of "Contingency Project Update Meeting." Milestone met.

Mitigating Activity 8: Discussed and tracked mitigation actions with compliance team.

Completion Date: 2/14/2022

Mitigating Activity #8: MISO provided a Microsoft Teams meeting invite showing the meeting held on February 14, 2022 with a subject of "Review RFI Responses for Issue [Redacted] Day Ahead Study Issues." Milestone met.

Mitigating Activity 9: Meeting to discuss an algorithm for contingency mapping.

Completion Date: 3/9/2022

Mitigating Activity #9: MISO provided a Microsoft Teams meeting invite showing the meeting held on March 9, 2022 with a subject of "Contingency IDC-EMS mapping algorithm." Milestone met.

Mitigating Activity 10: Meeting to verify corrective actions on track for Model On Demand.

Completion Date: 6/6/2022

Mitigating Activity #10: MISO provided a Microsoft Teams meeting invite showing the meeting held on June 6, 2022 with a subject of "Discuss Contingency Automation." Milestone met.

Mitigating Activity 11: Pre-launch contingency automation tool with internal stakeholders to preview and approve prior to implementation

Completion Date: 7/1/2022

Mitigating Activity #11: MISO provided a Microsoft Teams meeting invite showing the meeting held on July 1, 2022 with a subject of "Contingency program Pre-Launch." Milestone met.

Mitigating Activity 12: Implement contingency automation tool into workflow for day-ahead planning.

Completion Date: 7/6/2022

Mitigating Activity #12: MISO provided a screenshot of their contingency automation tool after running and creating all outputs. The tool was updated on July 6, 2022, running the new process for the first time. The screenshot was from July 13, 2022 showing the process was continuing to run after implementation. Additionally, MISO provided the process to run the new script each week. The output of this script will identify facilities not present in the contingency file and thus needs investigation. This process is a manual weekly task performed by MISO engineers who have a calendar reminder to perform the task. There is also an associated work level instructions to aid MISO personnel in this task. Milestone met.

The Mitigating Activities are hereby verified complete.

Date: March 13, 2023

Anthony Jablonski
Senior Manager, Risk Analysis & Mitigation
ReliabilityFirst Corporation