

**BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION
SUITE 350
121 SEVENTH PLACE EAST
ST. PAUL, MINNESOTA 55101-2147**

Katie Sieben
Joseph Sullivan
Valerie Means
Matthew Schuerger
John Tuma

Chair
Vice Chair
Commissioner
Commissioner
Commissioner

In the Matter of the Review of the July 2018–
December 2019 Annual Automatic
Adjustment Reports

MPUC Docket No. E-999/AA-20-171
OAH Docket No. 82-2500-37082

**MINNESOTA DEPARTMENT OF COMMERCE,
DIVISION OF ENERGY RESOURCES**

**EXCEPTIONS TO THE REPORT OF THE
ADMINISTRATIVE LAW JUDGE**

August 31, 2021

The Minnesota Department of Commerce appreciates the Administrative Law Judge's (ALJ) thorough review of Minnesota Power's forced outages and associated costs from July 2018 to December 2019. The Department agrees with the ALJ's conclusion that the costs related to Boswell Unit No. 4's hot reheat line outage were not reasonably and prudently incurred. Regarding the outage caused by Boswell Unit No. 3's phase bushing failure, however, the Department believes that the ALJ misapplied the agreed upon definition of good utility practice. The ALJ found that Minnesota Power's failure to track the excess seal oil used to flood the float trap caused the phase bushings to fail. But the ALJ concluded that, because Minnesota Power had no industry standard to follow, there was no good utility practice from which to deviate. Given Minnesota Power's lack of reasonable judgment in failing to track the excess seal oil, the related outage costs should not be considered reasonably and prudently incurred. In addition, the ALJ appears to have misunderstood certain undisputed, technical aspects of the hydrogen leak, which may have influenced her conclusions. The Department also offers limited technical corrections and clarifications to the ALJ's report for the Commission's consideration.

EXCEPTIONS

Minnesota Power flooded the seal oil system's float trap to locate a hydrogen leak. The ALJ found that Minnesota Power's subsequent failure to track or remove all excess seal oil caused the phase bushings to become soaked in seal oil, overheat, and fail.¹ The ALJ, however, did not conclude this was inconsistent with good utility practice due to a misapplication of the relevant and undisputed standard. The ALJ's conclusion also appears to misunderstand the risk that the hydrogen leak presented when Minnesota Power flooded the float trap with seal oil. Lastly, the

¹ ALJ Report ¶¶ 153–54.

Department provides red-line suggestions to correct the ALJ's misapplication of the legal standard and technical misunderstandings.

I. THE ALJ INCORRECTLY APPLIED THE GOOD UTILITY PRACTICE STANDARD IN CONCLUDING THAT FORCED OUTAGE COSTS FROM THE PHASE BUSHINGS FAILURE WERE REASONABLY AND PRUDENTLY INCURRED.

The ALJ's factual findings support a determination that Minnesota Power's failure to exercise reasonable judgment as required by good utility practice caused Boswell Unit No. 3's phase bushings to fail. The ALJ found that the phase bushings were soaked with seal oil and became overheated and failed because Minnesota Power failed to track the amount of seal oil it used and did not inspect the generator before restarting the plant.² The ALJ erroneously concluded, however, that Minnesota Power acted in line with good utility practice because "The problem resulted from a failure to consider every possible undesired consequence of the hydrogen leak repair but not from a failure to perform advised maintenance or from a failure to adhere to industry standards."³

This conclusion ignores part of the "good utility practice" definition. There are two separate and undisputed aspects of "good utility practice": (1) practices, methods, and acts that are approved by a significant portion of the electric utility industry; and (2) practices, methods, and

² *Id.* ¶¶ 129 ("Minnesota Power did not keep track of the amount of additional seal oil it allowed into the system versus the amount of oil it took out before putting the hydrogen cooling system back online."); 130 ("Minnesota Power also did not inspect whether additional oil remained in the generator after completion of the hydrogen leak repairs."); 152 ("Minnesota Power also blamed its failure to detect the oil leakage on an alarm that was not properly configured. But Minnesota Power admitted that it was responsible for the improper configuration."); 153 ("Minnesota Power's alternative theories of what caused the phase bushing failure are unpersuasive."); 154 ("[T]he phase bushing failure was a consequence of the oil that was added to the float valve to address the hydrogen gas leak.").

³ *Id.* ¶ 154.

acts that accomplish the desired result using reasonable judgment with the facts known at the time at a reasonable cost consistent with good business practices, reliability, safety, and expedition.⁴

In discussing Minnesota Power's compliance with good utility practice regarding the phase bushing's outage, the ALJ focused only on whether Minnesota Power had acted in line with "the practices, methods, and acts" approved by "a significant portion of the electric utility industry." The ALJ found that because the hydrogen leak was novel, there was no industry standard for locating the hydrogen leak or testing the improperly configured alarm, and therefore no standard to avoid seal oil leaks into the phase bushings.⁵

Under the second aspect of the good utility practice standard, however, the record established that Minnesota Power failed meet its burden to show it exercised "reasonable judgment in light of the facts known at the time" in failing to track the seal oil. When Minnesota Power flooded the float trap, it knew it was introducing significantly more seal oil than was standard.⁶ Reasonable judgment dictates that tracking excess seal oil and ensuring it was removed would have jointly accomplished the goals of finding the hydrogen-leak's source and avoiding damage to other parts of the plant. Instead, as the ALJ recognized, Minnesota Power's actions caused an unknown amount of seal oil to leak into the generator, soaking the phase bushings and causing them to fail just over two weeks after Minnesota Power restarted the generator.⁷ This is not, as the ALJ determined, "a failure to consider every possible undesired consequence of the hydrogen leak repair," it was a failure to exercise reasonable judgment knowing that cleanliness and

⁴ *Id.* ¶ 45.

⁵ *Id.* ¶ 154.

⁶ *See id.*; MP Ex. 7, PJU-4 at 9 (Undeland Direct) ("As part of the troubleshooting effort, the oil level in the float trap tank was raised using the manual isolation and bypass valves. Once the oil level went well above normal operating level, the leak stopped.").

⁷ *Id.*

documentation of maintenance activity is essential to safe, reliable operations in industrial settings.⁸

II. THE ALJ’S PHASE-BUSHING-OUTAGE CONCLUSION MISUNDERSTANDS UNDISPUTED, TECHNICAL ASPECTS OF THE RECORD.

The ALJ’s phase-bushing-outage conclusion misunderstands undisputed, technical evidence regarding the hydrogen leak. In concluding that Minnesota Power’s attempts to locate the hydrogen leak were consistent with good utility practice, the ALJ highlighted a perceived urgent danger presented by the leak. This finding reflects a misunderstanding about technical aspects of the hydrogen leak and may have affected the ALJ’s conclusion on the phase bushing outage. These conclusions state:

But in the moment, knowing that the barrier between dangerous hydrogen gas and the plant was seal oil, that seal oil resolved the leak, and without an industry or OEM protocol for the problem, it is reasonable to find that Minnesota Power made reasonable and prudent decisions in attempting to resolve the problem.⁹

To be clear, Minnesota Power flooded the float trap with seal oil while Boswell Unit No. 3 was *shut down* for a planned outage that was extended to address the hydrogen leak.¹⁰ Hydrogen gas was not present while Minnesota Power was working to repair the hydrogen leak.¹¹ Moreover,

⁸ See, e.g., MP Ex. 5 at 7–8, 13–14 (Simmons Direct) (describing Minnesota Power’s long-term maintenance planning); MP Ex. 6 at 14 (Poulter Direct) (describing inspection programs including those related to “cleanliness”).

⁹ ALJ Report ¶ 154.

¹⁰ *Id.* ¶ 122.

¹¹ See MP Ex. 7, PJU-4 at 4, 8 (Undeland Direct) (explaining that during the first weekend outage on February 2 and 3, 2019, “the unit was purged of hydrogen and pressurized with air and helium” and “air tests” were used “to check the rate of leakage with air prior to the use of hydrogen gas, which is combustible”).

the seal oil itself was not what *fixed* the leak; the seal oil instead helped Minnesota Power *locate* the leak. Subsequently, Minnesota Power fixed the leak by replacing the float valve.¹²

An accurate understanding, therefore, demonstrates that in the moment that Minnesota Power was introducing additional seal oil, hydrogen was not flowing through the system and did not present the urgent risk the report describes.

III. THE COMMISSION SHOULD REVISE SPECIFIC FINDINGS RELATED TO THE PHASE BUSHING OUTAGE.

The Department takes exception to ALJ's findings of fact and conclusions of law below, and requests the following revisions:

Findings of Fact

135. The problems, analysis and actions related to the hydrogen gas leak provide an object lesson in the difficulty of evaluating maintenance prudence, practice, and expenditures on a case-by-case basis. The parties agree that hydrogen leaks are dangerous and require immediate action. The hydrogen leak presented a unique puzzle such that GE, the original OEM, Power Plant Services with an ex-GE engineer on staff, and an external contractor that specializes in hydrogen leak location were not able to troubleshoot the source of the problem. These facts illustrate the lack of a template for prudent, good utility practice in certain situations. Unlike, for example, the frequency of certain system inspections, seldom seen problems cannot be deemed to have a common industry practice. ~~In hindsight, it would have been better practice to Exercising reasonable judgment, however, Minnesota Power should have measured the amount of seal oil that was pumped into the system. Additionally, Minnesota Power should have cleaned up excess seal oil before restarting the plant. But in the moment, knowing that the barrier between dangerous hydrogen gas and the plant was seal oil, that seal oil resolved the leak, and without an industry or OEM protocol for the problem, it is reasonable to find that Minnesota Power made reasonable and prudent decisions in attempting to resolve the problem.~~

...

¹² ALJ Report ¶¶ 127–28.

154. The Administrative Law Judge concludes that Minnesota Power ~~made~~ failed to make reasonable and prudent decisions in ~~addressing~~ causing the phase bushing failure. The Administrative Law Judge agrees that the phase bushing failure was a consequence of the oil that was added to the float valve to address the hydrogen gas leak. ~~However, with regard to the phase bushings, just as in responding to the hydrogen leak, the Company made the best decisions it was able to make~~ Based on the knowledge it had at the time, the Company failed to exercise reasonable judgment by failing to record and track the amount of seal oil it used to test the hydrogen leak and clean up excess seal oil so it did not damage other plant components. There was no evidence that there was an industry standard for testing of the improperly configured alarm or a specific schedule for anything related to the bushings' failure. The problem resulted from a failure to consider every possible undesired consequence of the hydrogen leak repair but not from a failure to perform advised maintenance or failure to adhere to industry standards.

...

156. Based on the findings above, the Administrative Law Judge finds that Minnesota Power's maintenance and inspection of the hydrogen gas leak ~~and bushings failures were~~ was not the result of a failure to adhere to good utility practice. ~~However, Minnesota Power did not act reasonably, prudently, or in line with good utility practice when it failed to record the amount of excess seal oil that it introduced to locate the hydrogen gas leak and failed to ensure that all excess seal oil was removed. This failure resulted in seal oil soaking the generator's phase bushings and causing them to overheat and fail.~~

157. Having concluded that the hot reheat line and phase bushings outage ~~was~~ were not consistent with good utility practice, the Administrative Law Judge concludes that the expenses associated with the se outages were not reasonably and prudently incurred as set forth in the Commission's referral order and as a result should be refunded to customers as discussed further below.

158. Minnesota Power's incremental forced outage costs associated with Boswell Unit No. 4's hot reheat line were not reasonably and prudently incurred because they resulted from outages that likely could have been avoided with maintenance and inspection programs aligned with good utility practices. Minnesota Power's incremental forced outage costs associated with Boswell Unit No. 3's phase bushings failure were not reasonably incurred because they resulted from an outage that likely could have been avoided if Minnesota

Power had acted in line with good utility practice by exercising reasonable judgment with the facts known to it at the time. Accordingly, the expenses relating to the purchase of replacement power from third parties over and above Boswell's own generation costs should not be charged to customers and should be refunded along with interest.

159. The Department and Minnesota Power agree that the ~~on the~~ amount of incremental costs associated with of Boswell Unit No. 4's hot reheat line outage and Boswell Unit No. 3's phase bushing failure respectively total \$4,482,456 and \$1,764,695 not including interest.²⁷⁷

²⁷⁷ Ex. 12 at 16 (Campbell Direct); Ex. 16, LOB-1 (Oehlerking-Boes Rebuttal).

Conclusions of Law

5. Based on the findings above and the record in this proceeding, Minnesota Power did not demonstrate by a preponderance of the evidence that its maintenance practices for its Hot Reheat Line were consistent with good utility practice, or that any deviation from good utility practice did not contribute to the outage. Minnesota Power also did not demonstrate by a preponderance of the evidence that it acted in line with good utility practice in its actions that caused the phase bushing outage.

5. [sic.] The Administrative Law Judge concludes that Minnesota Power did not reasonably and prudently incur forced outage costs resulting from the Hot Reheat Line and phase bushing outages at issue in this proceeding. The Company and the Department agree on the refund owed to customers.²⁸⁷ Interest should be calculated using the U.S. Federal Reserve Prime Rate.²⁸⁸

CORRECTIONS & CLARIFICATIONS

The Department again thanks the ALJ for her thorough and detailed report on this highly complex and technical matter. Due to this proceeding's technical nature, the Department requests

that the Commission make corrections and clarifications to the ALJ's report to conform the report with filed testimony, errata, and exhibits.

In Finding of Fact No. 30, the Department requests that the Commission clarify when forced outage cost refunds historically have been required. The finding currently suggests that the Commission never requires refunds when utility employees make mistakes. This finding, however, is inconsistent with other Commission orders and other findings within the report itself. Indeed, Conclusion of Law No. 6 states, "The Commission has repeatedly used rate riders to refund overcharges and imprudently incurred utility costs," citing orders in Docket Nos. E-002/M-04-1970, E-015/M-15-875, and E- 999/AA-15-611.¹³ Consistent with past orders, the Department respectfully requests that the Commission adjust Finding of Fact No. 30 to clarify that forced outage costs arising from utility mistakes that are shown to be imprudent may be subject to refund.

A redline of the requested clarification is below:

30. Historically, even when ~~there has been evidence of actual~~ mistakes leading to outages, the Commission has not required refunds of forced outage costs ~~absent sufficient detail in the record to resolve disputes of fact.~~³⁹ As an example, Minnesota Power cited a case where the Department recommended refunds of forced outage costs resulting from an Allen wrench falling into a duct at a generating station. There the Commission declined to require a refund stating, "[t]he record in this docket does not contain detail sufficient . . . to resolve disputes of fact necessary to finally determine the prudence of the utilities' plant operation and maintenance." The Commission further stated, "[t]he prudence of costs related to the forced outages identified by the Department remain subject to review by the Commission at a future date."⁴⁰

¹³ ALJ Report ¶ 37.

In Finding of Fact No. 39, the Department requests that the Commission correct the years covered during the AAA reporting period from “2019 and 2020” to “2018 and 2019.”¹⁴ A redline of the requested correction is below:

39. After reviewing Minnesota Power’s AAA Report, the Department concluded that the Company’s purchased power costs had increased significantly in 201~~89~~ and 201~~920~~. Purchased power is wholesale electricity procured by the utility from a third-party such as an independent power producer or a regional transmission operator such as the Midcontinent Independent System Operator (MISO). Specifically, the Department found that Minnesota Power’s total costs per megawatt hour were 10.2 percent higher in 2019 than 2018.⁵³ The Department requested that the Company describe the main factors driving these cost increases and provide support for the \$13.6 million in MISO charges for February 2019 and provide any plant outages information for February 2019, in its reply comments.⁵⁴ The Department also requested that Minnesota Power provide information comparing budgeted to actual generation maintenance expense.⁵⁵

In Finding of Fact No. 72, the Department requests that the Commission correct the word “traverse” to “transverse.” The Department’s witness Mr. Polich corrected his pre-filed testimony on the stand at the evidentiary hearing.¹⁵ A redline of the requested correction is below:

72. Thielsch’s inspection revealed six additional damaged or degraded pipe sections. Three sections, approximately 20 feet in length, had to be replaced entirely, and an additional three sections with significant-~~traverse~~ transverse cracking were repaired with steel patches that ran along the welded seam of the pipe, 140 feet in length.¹²⁵ Thielsch concluded that the hot reheat line’s cracking started approximately seven to nine years before the actual rupture.¹²⁶

In Finding of Fact No. 159, the Department requests that the Commission add the incremental cost dollar amounts associated with the hot reheat line and phase bushing outages. In

¹⁴ Dep’t Review of the July 2018-Dec. 2019 Annual Automatic Adjustment Reports at 22, 51 (Apr. 15, 2020) (eDocket Nos. 20204-162132-02, 20204-162132-01).

¹⁵ Evid. Hrg. Tr. at 48 (Polich).

the Department's view, these additions would clarify the amount owed to customers before the interest calculation is applied. A redline with the requested adjustments is below:

159. The Department and Minnesota Power agree that the ~~on the~~ amount of incremental costs ~~associated with of~~ Boswell Unit No. 4's hot reheat line ~~outage and Boswell Unit No. 3's phase bushing failure respectively~~ total \$4,482,456 and \$1,764,695 not including interest.²⁷⁷

²⁷⁷ Ex. 12 at 16 (Campbell Direct); Ex. 16, LOB-1 (Oehlerking-Boes Rebuttal).

Dated: August 31, 2021

Respectfully submitted,

KEITH ELLISON
State of Minnesota
Attorney General

/s/ Katherine Hinderlie

KATHERINE HINDERLIE (#0397325)

RICHARD DORNFELD (#0401204)
Assistant Attorneys General

445 Minnesota Street, Suite 1400
St. Paul, Minnesota 55101-2131
(651) 757-1468 (Voice)
(651) 297-1235 (Fax)
katherine.hinderlie@ag.state.mn.us

ATTORNEYS FOR MINNESOTA
DEPARTMENT OF COMMERCE, DIVISION
OF ENERGY RESOURCES