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NERC Lessons Learned and Alerts

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Link: Lessons Learned (nerc.com)

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NERC Lessons Learned

Insulator Flashovers Due to Combination of Salt Spray Deposits Followed by Light Rainfall Initiating Loss of Load

Interest Groups:	TO/TOP
Problem Statement:	• Multiple parallel insulators in a bulk power substation that had been exposed to salt spray during a tropical storm flashed over two and a half days later when light rain began to fall. The flash overs were attributable to dry band arcing. Relay misoperations in the presence of the flashover faults resulted in loss of load
Lessons Learned :	• Inclement weather near salt water can cause salt to build a dry film on surfaces • Wetting of that film during subsequent rainfall can result in dry band arcing during the critical wetting period, possibly resulting in flashovers
	• The probability of flashovers is significantly increased where parallel columns are used as arcing on one column can jump across and meet up with arcing on the adjacent column.

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Multiple Faults in Rapid Succession Contribute to Relay Misoperations Leading to Loss of Load

Interest Groups:	TO/TOP
Problem Statement:	• Four separate faults occurred in rapid succession in a bulk power substation as a result of weather-induced salt contamination. Relay misoperations in the presence of the faults resulted in loss of load.
Impacts:	• A breaker failure relaying scheme incorrectly registered one breaker closed and tripped the adjacent bus section and the transmission line connected to it. • A back-up relaying scheme used to protect a Phase Angle Regulator (PAR) did not have a proper polarizing source. • Saturation of an auxiliary CT caused inaccurate input to a line differential relaying circuit, resulting in tripping of the associated transmission line. • Overreaching of the Zone 1 ground distance elements occurred in the stepped distance relaying scheme
Lessons Learned:	• Interconnecting old and new protective relays can introduce unforeseen problems. • Current sensing elements used to determine if circuit breakers have opened when called upon to trip may be subjected to repeated pickup and dropout. Chattering can result in mechanical damage, including tack welding of contacts.

NERC Lessons Learned

Loss of Monitoring or Control Capability due to a Software Version Mismatch

Interest Groups:	TO/RC/BA
Problem Statement:	• A couple of entities have experienced energy management system (EMS) outages due to a software version mismatch between the product development system (PDS), quality assurance system (QAS), and production system (production)
Corrective Actions:	• In each of these cases, upon noticing the degradation of the situational awareness, the entity contacted the appropriate personnel (the RC and operations support staff) to assist with monitoring and to help repair the situation.
Lessons Learned:	• Entities should work with SCADA/EMS vendors to review and build patching procedures and database maintenance processes • Checking the software version across all the entity's systems (PDS, QAS, and production) is paramount during database maintenance and should be executed before the database is rolled out to production • Any database changes requiring FEP/SCADA validation should not be made on production directly

NERC Alert

Cold Weather Preparations for Extreme Weather Events

Initial Distribution: August 18, 2021

Entity Distribution:	Balancing Authority, Generator Owner, Reliability Coordinator, Transmission Operator
Problem Statement:	• The recent extreme cold weather events across large portions of North America have highlighted the need to assess current operating practices and identify some recommended improvements, so that system operations personnel are better prepared to address these challenges. • The alert will assist in determining the winter readiness of RCs, BAs, TOPs, and GOs.
Recommendations:	• RCs, BAs, and TOPs should create, or add to, seasonal operating plans for the upcoming winter season at least two months before their winter season, • GOs should review RCs, BAs, and TOPs seasonal operating plans to ensure they contain the current generator availability, fuel supplies, and other related assumptions
	• GOs should communicate to their RCs, BAs, and TOPs, forecast and actual unit de-rates and unavailability during extreme cold weather events and conditions • Manual and Automatic Load Shedding considerations • GOs should conduct dual fuel assessments to ensure resources can switch to the alternate fuel and monitor how much alternate fuel is on site

Thank You

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