

September 30, 2013

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

**Re: NERC Full Notice of Penalty regarding California Independent System Operator,
FERC Docket No. NP13-_-000**

Dear Ms. Bose:

The North American Electric Reliability Corporation (NERC) hereby provides this Notice of Penalty¹ regarding California Independent System Operator (CAISO), NERC Registry ID# NCR05048,² 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

CAISO manages the flow of electricity across the high-voltage, long-distance power lines that make up 80 percent of California's power grid. The nonprofit public benefit corporation serves approximately 30 million Californians.

¹ *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards* (Order No. 672), III FERC Stats. & Regs. ¶ 31,204 (2006); *Notice of New Docket Prefix "NP" for Notices of Penalty Filed by the North American Electric Reliability Corporation*, Docket No. RM05-30-000 (February 7, 2008). See also 18 C.F.R. Part 39 (2011). *Mandatory Reliability Standards for the Bulk-Power System*, FERC Stats. & Regs. ¶ 31,242 (2007) (Order No. 693), *reh'g denied*, 120 FERC ¶ 61,053 (2007) (Order No. 693-A). See 18 C.F.R § 39.7(c)(2).

² North American Electric Reliability Corporation (NERC) confirmed that CAISO was included on the NERC Compliance Registry as a Balancing Authority (BA), Planning Authority, Transmission Operator (TOP), and Transmission Service Provider on June 17, 2007. As a BA, CAISO is subject to the requirements of NERC Reliability Standard COM-002-2; as a TOP, CAISO is subject to the requirements of NERC Reliability Standards TOP-STD-007-0 and TOP-004-1; and as a BA and TOP, CAISO is subject to the requirements of NERC Reliability Standards EOP-001-0, EOP-003-1, and TOP-002-2. CAISO is a participant in Coordinated Functional Registrations (CFRs) (formerly known as Type II Joint Registration Organization (JRO) Registrations) with various registered entities, including: (i) JRO00008 with San Diego Gas & Electric (SDG&E), originally dated September 11, 2008; and (ii) JRO00009 with Southern California Edison - Transmission & Distribution Business Unit (SCE), originally dated September 11, 2008. Under the CFRs between CAISO and SDG&E and SCE, CAISO is identified as the responsible entity for certain Reliability Standards and Requirements, including among others, EOP-001-0, EOP-003-1, and TOP-004-1.

³ See 18 C.F.R § 39.7(c)(2).

**3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
404-446-2560 | www.nerc.com**

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 2

As the grid operator, CAISO manages approximately 26,000 circuit-miles of power lines. CAISO forecasts electrical demand, accounts for operating reserves, and dispatches power plant units to meet demand while ensuring enough transmission capacity is available to deliver the power.

CAISO has its headquarters and primary control center in Folsom, California and has a secondary control center located in Alhambra, California.

This Notice of Penalty is being filed with the Commission because North American Electric Reliability Corporation (NERC) and CAISO have entered into a Settlement Agreement to resolve all outstanding issues arising from NERC's determination and findings of the violations⁴ of NERC Reliability Standards COM-002-2 Requirement (R)2, EOP-001-0 R3, EOP-003-1 R8, TOP-002-2 R1, TOP-004-1 R6, and Western Electricity Coordinating Council (WECC) Regional Reliability Standard TOP-STD-007-0 WR1. According to the Settlement Agreement, CAISO neither admits nor denies the violations, but has agreed to the assessed penalty of one hundred twenty thousand dollars (\$120,000), in addition to other remedies and actions to mitigate the instant violations and facilitate future compliance under the terms and conditions of the Settlement Agreement. Accordingly, the violations identified as NERC Violation Tracking Identification Numbers NCEA201100110, NCEA201100111, NCEA201100112, NCEA201100114, NCEA201100115, and NCEA201100118 are being filed in accordance with the NERC Rules of Procedure and the CMEP.

Statement of Findings Underlying the Violations

This Notice of Penalty incorporates the findings and justifications set forth in the Settlement Agreement executed on August 23, 2013, by and between NERC and CAISO, which is included as Attachment A. The details of the findings and basis for the penalty are set forth in the Settlement Agreement and herein. This Notice of Penalty filing contains the basis for approval of the Settlement Agreement by the NERC Board of Trustees Compliance Committee (NERC BOTCC). In accordance with Section 39.7 of the Commission's regulations, 18 C.F.R. § 39.7 (2013), NERC provides the following summary table identifying each violation of a Reliability Standard resolved by the Settlement Agreement, as discussed in greater detail below.

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.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 3

Region	Registered Entity	NOC ID	NERC Violation ID	Reliability Std.	Req. (R)	VRF	Total Penalty
North American Electric Reliability Corporation	California Independent System Operator	NOC-2060	NCEA201100110	EOP-001-0	R3; R3.3	Medium	\$120,000
			NCEA201100111	EOP-003-1	R8	High	
			NCEA201100112	TOP-STD-007-0	WR1	N/A	
			NCEA201100114	TOP-002-2	R1	Medium ⁵	
			NCEA201100115	TOP-004-1	R6	Medium	
			NCEA201100118	COM-002-2	R2	Medium	

On Friday, November 7, 2008, the Western Interconnection Bulk Electric System (BES) experienced a category two⁶ disturbance initiated by the forced outage of the San Diego Gas & Electric (SDG&E) TL 50001, a 500 kV line between the Imperial Valley and Miguel Substations, due to a fire in a series capacitor bank (the Event).

SDG&E initially informed CAISO that the unscheduled outage of TL 50001 was expected to last approximately 15 minutes. At the direction of CAISO, SDG&E delayed the TL 50001 outage to the extent possible to allow CAISO and Arizona Public Service (APS) to make BES system adjustments before the line was deenergized.

The TL 50001 outage began at 10:56 a.m. Deenergizing the line led to operation of two Remedial Action Schemes that shed 855 MW of generation and the opening of another line. System Operating Limits (SOLs) were immediately exceeded on Path 49, operated by APS, and on the Southern California Import Transmission (SCIT) nomogram,⁷ operated by CAISO. Switching errors delayed isolating the capacitors. After the capacitors were isolated, an excessive phase angle delayed returning the line to

⁵ The Disposition Document for this violation lists the Violation Risk Factor (VRF) as “High.”

⁶ Classified by NERC as a category two due to the loss of less than 500 MW of load.

⁷ The SCIT nomogram is monitored by CAISO to protect the CAISO bulk transmission system against the next worst contingency within CAISO. CAISO is the Path Operator for the SCIT.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 4

service as originally planned. Load shedding was attempted to relieve the SOL exceedances, but it was executed improperly. Ultimately, approximately 250 MW were shed, interrupting service to 140,000 customers.

EOP-001-0 R3

The purpose statement of Reliability Standard EOP-001-0 provides: “Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator.”

EOP-001-0 R3.3 provides in pertinent part: “Each Transmission Operator and Balancing Authority shall... Develop, maintain, and implement a set of plans for load shedding...”

EOP-001-0 R3.3 has a “Medium” Violation Risk Factor (VRF) and a “Severe” Violation Severity Level (VSL). The subject violation applies to CAISO’s Balancing Authority (BA) and Transmission Operator (TOP) functions.

During the Event, when the SOLs were immediately exceeded on Path 49 and on the SCIT nomogram, CAISO attempted to relieve these exceedances, in part, via load shedding to be executed by SCE. The SCE load shedding program was not fully executed, so the attempted load shedding was unsuccessful. One month before the Event, SCE replaced its Energy Management System (EMS) and Telecom network, which resulted in the distribution circuit load shedding (DCLS) execution process being changed. SCE had not completed training of its operations personnel on the new procedures prior to the Event. Consequently, on the day of the Event, the SCE Grid Control Center operator attempted to execute the superseded, older process for load shedding, resulting in less than the requested load being shed.

Thirteen minutes into the Event, the SCIT 20-minute time limit⁸ became a heightened concern because SDG&E indicated that the Imperial Valley – Miguel 500 kV line would not be returned within the prior estimate of approximately 15 minutes. At 11:12 a.m., the California Mexico Reliability Coordinator (CMRC) issued a Reliability Coordinator Directive to CAISO to return SCIT to within the acceptable limit. At this point, the CAISO shift supervisor determined that interchange schedule curtailments alone were too late and, therefore, decided to shed 600 MW interruptible load in addition to cutting 700 MW of East of Colorado River (EOR) interchange schedules in an attempt to return the system to within the

⁸ TOP-007-0 WR1 requires such exceedance to be eliminated within 20 minutes.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 5

SCIT nomogram and EOR operating limit. A misunderstanding occurred regarding the amount of interruptible load available in the SCE area that could be interrupted in 10 minutes or less; only 50 MW were actually dropped in that time frame. The amount of interruptible load available in the short term was not sufficient (approximately 50 MW were actually shed from 600 MW requested), and additional (i.e., firm load) shedding was necessary to return the system back to normal.

At 11:18 a.m., the CAISO shift supervisor requested an additional 1,000 MW of firm load to be shed in the SCE area, of which 200 MW were ultimately shed. The SCE system logs indicate that some of the firm load shedding was not communicated or executed correctly by SCE personnel. Despite CAISO's mitigation effort, the SCIT nomogram was exceeded for approximately 24 minutes, four minutes over the applicable time limit. The above sequence of events indicates that plans to effect load shedding had not been fully implemented in the SCE service territory. Throughout the entire Event, approximately 200 MW were actually shed.

While attempting to execute the CAISO order, SCE shed load not included in its present plan, failed to shed load that was in the plan, and local control centers where plans had not been implemented were actually restoring some circuits shed by other centers. The lack of a fully-implemented set of load shedding plans hindered the load relief necessary to relieve the exceeded stability limit and restore the bulk power system (BPS) to a stable mode.

NERC determined that load shedding plans had not been implemented in the SCE area. CAISO is the responsible entity under CFR JRO00009 for SCE's failure to implement its load shedding program properly.

NERC determined the duration of the violation to be during the Event on November 7, 2008.

NERC determined that the violation posed a serious or substantial risk to the reliability of the BPS. Specifically, SCE's failure to have adequate emergency plans prolonged the Event. This violation resulted in insufficient load shedding to reduce flows adequately. The lack of a fully-implemented set of load shedding plans hindered the load relief necessary to relieve the exceeded stability limit and restore the BPS to a stable mode.

EOP-003-1 R8

The purpose statement of Reliability Standard EOP-003-1 provides: "A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the Interconnection."

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 6

EOP-003-1 R8 provides: “Each Transmission Operator or Balancing Authority shall have plans for operator controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.”

EOP-003-1 R8 has a “High” VRF and a “High” VSL. The subject violation applies to CAISO’s BA and TOP functions.

NERC determined that SCE was not capable of implementing the requested load shedding in a timeframe adequate for responding to the Event. Some of the local control centers had not upgraded to the new DCLS software being implemented at the time. CAISO is the responsible entity under CFR JRO00009 for SCE’s failure to shed load.

NERC determined the duration of the violation to be during the Event on November 7, 2008.

NERC determined that this violation posed a serious or substantial risk to the reliability of the BPS. Specifically, SCE’s failure to implement load shedding in a timeframe adequate to respond to an emergency event prolonged the Event.

TOP-STD-007-0 WR1

The purpose statement of Reliability Standard TOP-STD-007-0 WR1 provides: “Regional Reliability Standard to ensure the Operating Transfer Capability limits requirements of the Western Interconnection are not exceeded.”

TOP-STD-007-0 WR1 provides:

WR1. Operating Transfer Capability Limit Criteria

Actual power flow and net scheduled power flow over an interconnection or transfer path shall be maintained within Operating Transfer Capability Limits (“OTC”). The OTC is the maximum amount of actual power that can be transferred over direct or parallel transmission elements comprising:

- An interconnection from one Transmission Operator area to another Transmission Operator area; or

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 7

- A transfer path within a Transmission Operator area.

The net schedule over an interconnection or transfer path within a Transmission Operator area shall not exceed the OTC, regardless of the prevailing actual power flow on the interconnection or transfer path.

a. Operating limits. No elements within the interconnection shall be scheduled above continuous operating limits. An element is defined as any generating unit, transmission line, transformer, bus, or piece of electrical equipment involved in the transfer of power within an interconnection.

b. Stability. The interconnected power system shall remain stable upon loss of any one single element without system cascading that could result in the successive loss of additional elements. The system voltages shall be within acceptable limits defined in the WECC Reliability Criteria for Transmission System Planning. If a single event could cause loss of multiple elements, these shall be considered in lieu of a single element outage. This could occur in exceptional cases such as two lines on the same right-of-way next to an airport. In either case, loss of either single or multiple elements should not cause uncontrolled, widespread collapse of the interconnected power system. For purposes of this Section, stability shall include transient stability, post transient stability or dynamic stability whichever is most limiting to OTC.

c. System contingency response. Following the outage and before adjustments can be made:

- (i) No remaining element shall exceed its short-time emergency rating.
- (ii) The steady-state system voltages shall be within emergency limits.

The limiting event shall be determined by conducting power flow and stability studies while simulating various operating conditions. These studies shall be updated as system configurations introduce significant changes in the interconnection.

TOP-STD-007-0 WR1 does not have an assigned VRF or VSL. The subject violation applies to CAISO's TOP function.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 8

On November 13, 2008, CAISO submitted a Self-Report. Per the WECC Path Catalog, the SCIT is treated as a Path and CAISO is identified as the Path operator. The SCIT nomogram SOL stability limit exceedance described above was not fully relieved until at least 24 minutes after the occurrence of the exceedance. TOP-007-0 WR1 requires such exceedances to be eliminated within 20 minutes. Therefore, CAISO was not in compliance with TOP-007-0 WR1 because the exceedance continued for 24 minutes, four minutes beyond that allowed by the Standard.

NERC determined the duration of the violation to be during the Event on November 7, 2008.

NERC determined that this violation posed a moderate risk to the reliability of the BPS, but did not pose a serious or substantial risk. The SCIT nomogram stability limit was exceeded by approximately 2,000 MW for four minutes beyond the time limit established by the Regional Standard. Although its actions were limited in scope, CAISO did react immediately when smoke was first reported at the series capacitor bank by preparing the system for the loss of the 500 kV transmission line.

TOP-002-2 R1

The purpose statement of Reliability Standard TOP-002-2 R1 provides: "Current operations plans and procedures are essential to being prepared for reliable operations, including response for unplanned events."

TOP-002-2 R1 provides:

Each Balancing Authority and Transmission Operator shall maintain a set of current plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained.

TOP-002-2 R1 has a "Medium" VRF and a "Severe" VSL. The subject violation applies to CAISO's BA and TOP functions.

During the Event, CAISO did not fully implement plans and procedures related to the loss of TL 50001 and the emergency obligation to relieve the resulting SCIT SOL exceedance. CAISO's response varied from the procedures in place to address the TL 50001 emergency, specifically, CAISO Procedure T-142,

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 9

Emergency Overload Mitigation for SCIT Following Contingencies. CAISO did not fully implement these procedures in responding to the emergency. The T-142 procedure sets out 26 specific steps to be taken to relieve SCIT stability SOL exceedance; CAISO only completed 5 of the 26 steps. NERC determined that CAISO did not perform certain early steps in the procedures that may have been important to relieving the SCIT SOL exceedance.

CAISO also did not follow its load shedding procedure. The CAISO system operator did not request SDG&E to shed interruptible load before directing SCE to shed firm load, nor did the system operator request any other entities to shed firm load per CAISO procedure.

NERC determined the duration of the violation to be during the Event on November 7, 2008.

NERC determined that this violation posed a serious or substantial risk to the reliability of the BPS. Specifically, not following load shedding procedures and implementing some procedures erroneously could potentially cause an increase in the duration and scope of this and similar emergency situations.

TOP-004-1 R6

The purpose statement of Reliability Standard TOP-004-1 R6 provides: "To ensure that the transmission system is operated so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single Contingency and specified multiple Contingencies."

TOP-004-1 R6 provides in pertinent part:

R6. Transmission Operators, individually and jointly with other Transmission Operators, shall develop, maintain, and implement formal policies and procedures to provide for transmission reliability. These policies and procedures shall address the execution and coordination of activities that impact inter- and intra-Regional reliability, including:

R6.3. Switching transmission elements.

TOP-004-1 R6 has a "Medium" VRF and a "Severe" VSL. The subject violation applies to CAISO's TOP function.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 10

To address the faulty series capacitor bank on TL 50001, SDG&E's plan was to deenergize the line, open isolating Motor Operated Disconnects (MODs) on both sides of the capacitor, and return the line to service with the capacitor isolated by the open MODs. All of the equipment required to perform these operations was remotely controlled from the SDG&E operations center, and SDG&E intended to use this remote control capability to operate the devices.

When SDG&E deenergized TL 50001 at 10:56 a.m. on November 7, 2008, three SOLs were immediately exceeded. The SCIT nomogram, a stability limit, was exceeded by approximately 2,000 MW. The Path 49 SOL was exceeded by 980 MW. The SOL on Path 44 was also exceeded.

Exceedance of stability-related SOLs had to be relieved within 20 minutes, and exceedances of thermal SOLs had to be relieved within 30 minutes. Therefore, the emergency condition created by the SCIT exceedance required relief by 11:16 a.m., while that of the Path 49 SOL required relief by 11:26 a.m. Expedient isolation of the faulty series capacitor bank and the subsequent return to service of TL 50001 was essential to BPS reliability.

The isolation of the TL 50001 series capacitor bank required SDG&E to: 1) open remotely the TL 50001 circuit breakers at the Miguel and Imperial Valley Substations; 2) close a maintenance breaker shunting the faulty series capacitor bank at Imperial Valley; 3) open the capacitor bypass circuit breaker; 4) open the capacitor MODs; 5) close ground disconnects; and 6) close the TL 50001 circuit breakers at Miguel and Imperial Valley. The initial SDG&E estimate of the time required to accomplish the above remote switching was 15 minutes.

Although SDG&E personnel promptly deenergized TL 50001, the opening of the isolating MODs (item 3 above) required 16 minutes to accomplish because an operator did not correctly follow the appropriate steps in the initial attempt.

The delay in isolating the faulty capacitors resulted from the SDG&E system operator overlooking the requirement to close a maintenance circuit breaker before attempting to open the isolating disconnects. The control equipment is interlocked, and the disconnects cannot be opened unless the maintenance circuit breaker has been closed.

Although SDG&E had prepared a switching procedure for the companion TL 50002 line at Imperial Valley, a separate procedure had not been developed for TL 50001.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 11

CAISO is the responsible entity under CFR JRO00009 for SDG&E's failure to develop, maintain, or implement procedures specifically for switching the capacitor bank on TL 50001, instead of relying on joint procedures for the TL 50002 and TL 50001 capacitor banks.

NERC determined the duration of the violation to be during the Event on November 7, 2008.

NERC determined that this violation posed a serious or substantial risk to the reliability of the BPS. Specifically, SDG&E relied on a switching procedure for a companion line (TL 50002) to attempt to isolate the TL 50001 capacitor bank on the day of the Event. This procedure used language specific to equipment on the TL 50002 line, causing significant delays in switching the TL 50001 equipment on the day of the Event.

COM-002-2 R2

The purpose statement of Reliability Standard COM-002-2 provides: "To ensure Balancing Authorities, Transmission Operators, and Generator Operators have adequate communications and that these communications capabilities are staffed and available for addressing a real-time emergency condition. To ensure communications by operating personnel are effective."

COM-002-2 R2 provides: "Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall issue directives in a clear, concise, and definitive manner; shall ensure the recipient of the directive repeats the information back correctly; and shall acknowledge the response as correct or repeat the original statement to resolve any misunderstandings."

COM-002-2 R2 has a "Medium" VRF and a "Severe" VSL. The subject violation applies to CAISO's BA function.

During the Event at 11:06 a.m., CAISO failed to issue directives in a clear, concise manner and did not ensure that the recipient of the directive repeated the information back correctly as required by the Standard. The following conversation at the CAISO Control Center between CAISO and SCE was at issue:

SCE operator: [name omitted], Southern Cal.

CAISO operator: Hey, [names omitted], ah, if there's anything else you can get moving up we'd appreciate it.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 12

SCE operator: Okay.

CAISO operator: ASAP. Ah, whatever's in market first but whatever you can get moving fast.

SCE operator: Okay, great.

While intended as a directive to bring on additional generation to alleviate the SOL exceedances being experienced, this directive was not issued in a clear, concise, and definitive manner, and therefore constituted a violation of COM-002-2 R.2.

NERC determined the duration of the violation to be at 11:06 a.m. on November 7, 2008 when the directive was not issued in a clear, concise, and definitive manner.

NERC determined that this violation posed a moderate risk to the reliability of the BPS, but did not pose a serious or substantial risk. Specifically, the failure to use three-part communication to issue the directive may have contributed to the duration of the Event. Although the directive was followed during this Event, a more concise directive could have expedited the requested action.

Regional Entity's Basis for Penalty

According to the Settlement Agreement, NERC has assessed a penalty of one hundred twenty thousand dollars (\$120,000) for the referenced violations. In reaching this determination, NERC considered the following factors:

1. the violations constituted CAISO's first occurrence of violations of the subject NERC Reliability Standards;⁹
2. CAISO self-reported the violation of TOP-STD-007-0 WR1;

⁹ This Notice of Penalty is concurrently being filed with two other Notices of Penalty involving violations arising from the Event. The first Notice of Penalty is a Settlement Agreement addressing a violation of PER-002-0 R1 for SDG&E. The second Notice of Penalty is a Settlement Agreement addressing a violation of PER-002-0 R1 for SCE.

A Stipulation and Consent Agreement covering violations of PER-002-0 R1 and R3.1 and TOP-002-2a R1 and R6 for the CAISO with an assessed penalty of \$200,000 was entered into with the FERC Office of Enforcement on November 20, 2012. On December 14, 2012, FERC issued an order approving the Stipulation and Consent Agreement. These violations were not considered aggravating for penalty purposes because they occurred after the Event and therefore were not indicative of repetitive conduct.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 13

3. NERC reported that CAISO was cooperative throughout the compliance enforcement process;
4. CAISO had a compliance program at the time of the violation which NERC considered a mitigating factor;¹⁰
5. there was no evidence of any attempt to conceal a violation nor evidence of intent to do so;
6. NERC determined that the violations of EOP-001-0 R3, EOP-003-1 R8, TOP-002-2 R1, and TOP-004-1 R6 posed a serious or substantial risk to the reliability of the BPS, as discussed above. NERC determined that the violations of TOP-STD-007-0 WR1 and COM-002-2 R2 posed a moderate but not serious or substantial risk to the reliability of the BPS, as discussed above;
7. CAISO also has voluntarily undertaken the following significant additional activities, considered to be above and beyond mitigating activities, to improve its operations further:
 - a. invested \$615,000 in revising procedures and improving accessibility and online access to procedures;
 - b. invested approximately \$1.7 million in the construction of two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom; and
 - c. augmented control room staffing at an incremental cost of approximately \$265,000 annually.
8. NERC reported that there were no other mitigating or aggravating factors or extenuating circumstances that would affect the assessed penalty.

After consideration of the above factors, NERC determined that, in this instance, the penalty amount of one hundred twenty thousand dollars (\$120,000) is appropriate and bears a reasonable relation to the seriousness and duration of the violations.

¹⁰ At the time of the violation, CAISO had an internal compliance program (ICP). The ICP has the following characteristics: the ICP is well- documented; the ICP is widely disseminated throughout the organization; CAISO has named and staffed an ICP oversight position; the ICP oversight position is supervised at a high level in the organization; the ICP position has independent access to the chief executive officer and board of directors; the ICP is operated and managed to be independent of those responsible for compliance with the Reliability Standards; CAISO has dedicated sufficient resources (staff and budget) to its ICP; the ICP has the support and participation of senior management; the ICP is reviewed annually; the ICP includes appropriate and sufficient training for all staff; the ICP includes formal, internal self-auditing for compliance with all applicable Reliability Standards on a set periodic basis; the ICP includes disciplinary action for employees involved in violations of Reliability Standards, if appropriate; and the ICP has internal controls, including self-assessment and self-enforcement, to prevent reoccurrence of Reliability Standard violations.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 14

Status of Mitigation Plan¹¹

EOP-001-0 R3

SCE completed the following mitigation activities to address CAISO's violation of EOP-001-0 R3:

1. Established quarterly DCLS exercises beginning March 30, 2009 and conducted every quarter since that date, with one unannounced readiness drill each year;
2. Revised procedures with specific requirements for notification to the four grid management centers (GMCs), and, in turn, the GMCs have requirements to notify switching centers within their jurisdiction;
3. Created job aides for operators in all four GMCs; and
4. SCE's power system controls organization developed a change management procedure for certain assets in which the SCE demand side management program's Alhambra Control Platform is included.

CAISO certified on August 23, 2013 that the above mitigation activities were complete. As evidence of completion of its mitigation activities, CAISO submitted the following:

1. DCLS exercise script;
2. DCLS training roster – 2009 Q1, Q2, Q3, Q4;
3. *Unannounced Load Shed Readiness Drill Roster – 12-19-11;*
4. *EMS Load Shed Program Interim Procedures;*
5. *System Operating Bulletin 21 – Capacity Shortage Contingency Plan, revised June 19, 2009;*
6. Load Shed Job Aid Lightpipe;
7. Load Shed Job Aid Mira Loma;
8. Load Shed Job Aid Orange County;
9. Load Shed Job Aid Ventura; and
10. *SCE Power System Controls Change Management Procedure P29-001* and signature page.

¹¹ See 18 C.F.R § 39.7(d)(7).

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 15

On August 23, 2013, after NERC's review of CAISO's submitted evidence, NERC verified that CAISO's mitigation activities were completed.

EOP-003-1 R8

SCE completed the following mitigation activities to address CAISO's violation of EOP-003-1 R8:

1. Established quarterly DCLS exercises beginning March 30, 2009 and conducted every quarter since that date, with one unannounced readiness drill each year;
2. Revised procedures with specific requirements for notification to the four GMCs, and, in turn, the GMCs have requirements to notify switching centers within their jurisdiction;
3. Created job aides for operators in all four GMCs; and
4. SCE's power system controls organization developed a change management procedure for certain assets in which the SCE demand side management program's Alhambra control platform is included.

CAISO certified on August 23, 2013 that the above mitigation activities were complete. As evidence of completion of its mitigation activities, CAISO submitted the following:

1. DCLS exercise script;
2. DCLS training roster – 2009 Q1, Q2, Q3, Q4;
3. Unannounced Load Shed Readiness Drill Roster – 12-19-11;
4. EMS Load Shed Program Interim Procedures;
5. *System Operating Bulletin 21 – Capacity Shortage Contingency Plan*, revised June 19, 2009;
6. Load Shed job aid Lightpipe;
7. Load Shed job aid Mira Loma;
8. Load Shed job aid Orange County;
9. Load Shed job aid Ventura; and
10. *SCE Power System Controls Change Management Procedure P29-001* and signature page.

On August 23, 2013, after NERC's review of CAISO's submitted evidence, NERC verified that CAISO's mitigation activities were completed.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 16

TOP-STD-007-0 WR1

CAISO completed the following mitigation activities to address its violation of TOP-STD-007-0 WR1:

1. Developed SCIT training module:
 - a. First step of training was an in-depth explanation of nomograms and of the SCIT nomogram with all the components comprised in the SCIT calculation; and
 - b. Second step was review of the Event with a lessons learned section for discussion.
2. CAISO delivered and implemented SCIT training:
 - a. Nine training sessions were held for operators who took the NERC-accredited continuing education EOR/SCIT training module.
3. CAISO evaluated procedures and developed job aid tools:
 - a. Additions to the SCIT nomogram display were added to assist operators mitigating path issues to aid the decision-making process for the dispatchers by calculating the net amount of interchange schedules that need to be curtailed and the corresponding generation increments by region (SP-15 or NP-15) that are most effective.
4. CAISO corrected or combined, as necessary, procedures and deployed job aid tools:
 - a. Multiple operating procedures were revised and rolled into one SCIT operating procedure (T-103) with multiple attachments included. T-103 became effective on January 15, 2009.

The following are additional mitigation actions above and beyond what was necessary to mitigate the violation:

1. CAISO revised procedures and improved accessibility and online access to procedures:
 - a. Beginning in 2010, CAISO undertook an initiative to revise its operating procedures to make them more functional for users and more readily accessible. Under the redesign initiative, the CAISO operating procedures and desktop procedures were combined into approximately 240 procedures and related documents with a consistent numbering convention and standardized templates for content;
 - b. The new organization method is aligned to the CAISO processes and is more consistent with the NERC functional model;

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 17

- c. In addition, a new technical storage platform was deployed (SharePoint) to improve user access and search capability;
 - d. Normalizing the procedures improved the accessibility of the content, enabled better training, and eased the ability of individual operators to transfer between desks;
 - e. Training was provided on the new procedures; and
 - f. The CAISO invested approximately \$615,000 in this initiative.
2. Constructed two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom:
 - a. These rooms include the video wall, phone system, and most of the desktop monitors used by the operators in the control rooms to replicate the look and feel of the control room for simulator training;
 - b. Operator training is provided quarterly;
 - c. Previously, CAISO had used a classroom setting for computer-based simulation training;
 - d. Improved training facilities allow for better and more realistic training that replicates the operational behavior of the BPS during normal and emergency conditions; and
 - e. The hardware, IT equipment and AV related costs incurred for these training rooms were approximately \$1.7 million.
3. CAISO augmented control room staffing:
 - a. At the time of the Event, operating engineers were on call to support the operators. Beginning the first quarter of 2011, an operating engineer is in the control room at all times;
 - b. CAISO added six operating engineers to the staffing in the control room, plus a managing operating engineer;
 - c. The addition of the operating engineers to the control room has provided numerous reliability-related benefits; and
 - d. The continuous staffing represents an incremental cost to CAISO of approximately \$265,000 annually.
4. CAISO improved real-time contingency analysis (RTCA) run time:

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 18

- a. The frequency of the run time for the EMS has been increased from every 15 minutes to every five minutes.
5. CAISO made available a daily report of interruptible load:
 - a. As of June 1, 2012, CAISO began receiving a daily report from PG&E, SCE, and SDG&E of demand response resource forecast and availability information; and
 - b. This report includes information about the interruptible load that will be available in the event of emergency operations.

CAISO certified on August 23, 2013 that the above mitigation activities were complete. As evidence of completion of its mitigation activities, CAISO submitted the following:

1. Training plan EOR/SCIT nomogram training module;
2. External EOR-SCIT training module (Instructors) 12-31-2008;
3. NERC continuing education EOR/SCIT training module attendance sheet;
4. CAISO SCIT Operating Procedure T-103;
5. CAISO crew list; and
6. Updated nomogram with added box to show the operators the most efficient mitigation method depending on system conditions.

On August 23, 2013, after NERC's review of CAISO's submitted evidence, NERC verified that CAISO's mitigation activities were completed.

TOP-002-2 R1

CAISO completed the following mitigation activities to address its violation of TOP-002-2 R1:

1. Developed SCIT training module:
 - a. First step of training was an in-depth explanation of nomograms and of the SCIT nomogram with all the components comprised in the SCIT calculation; and
 - b. Second step was review of the Event with a lessons learned section for discussion.
2. Delivered and implemented SCIT training:
 - a. Nine training sessions were held for operators who took the NERC accredited continuing education EOR/SCIT training module.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 19

3. Corrected or combined as necessary procedures and deployed job aid tools:
 - a. Multiple operating procedures were revised and rolled into one SCIT operating procedure (T-103) with multiple attachments included. T-103 became effective on January 15, 2009.
4. Revised procedures and improved accessibility and online access to procedures:
 - a. Beginning in 2010, CAISO undertook an initiative to revise its operating procedures to make them more functional for users and more readily accessible. Under the redesign initiative, CAISO operating procedures and desktop procedures were combined into approximately 240 procedures and related documents with a consistent numbering convention and standardized templates for content;
 - b. The new organization method is aligned to the CAISO processes and is more consistent with the NERC functional model;
 - c. In addition, a new technical storage platform was deployed (SharePoint) to improve user access and search capability;
 - d. Normalizing the procedures improved the accessibility of the content, enabled better training and eased the ability of individual operators to transfer between desks;
 - e. Training was provided on the new procedures; and
 - f. CAISO invested approximately \$615,000 in this initiative.
5. Constructed two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom:
 - a. These rooms include the video wall, phone system, and most of the desktop monitors used by the operators in the control rooms to replicate the look and feel of the control room for simulator training;
 - b. Operator training is provided quarterly;
 - c. Previously, CAISO used a classroom setting for computer-based simulation training;
 - d. Improved training facilities allow for better and more realistic training that replicates the operational behavior of the BPS during normal and emergency conditions; and
 - e. The hardware, IT equipment, and AV-related costs incurred for these training rooms were approximately \$1.7 million.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 20

CAISO certified on August 23, 2013 that the above mitigation activities were complete. As evidence of completion of its mitigation activities, CAISO submitted the following:

1. Training Plan EOR/SCIT nomogram training module;
2. External EOR-SCIT training module (Instructors) 12-31-2008;
3. NERC continuing education EOR/SCIT training module attendance sheet;
4. CAISO SCIT Operating Procedure T-103;
5. CAISO Crew List; and
6. Updated nomogram with added box to show the operators the most efficient mitigation method depending on system conditions.

On August 23, 2013, after NERC's review of CAISO's submitted evidence, NERC verified that CAISO's mitigation activities were completed.

TOP-004-1 R6

To mitigate CAISO's violation of TOP-004-1 R6, SDG&E implemented the GIP2105 procedure on January 23, 2009. This procedure specifically addressed switching the TL 50001 line.

CAISO certified on August 23, 2013 that the above mitigation activities were complete. As evidence of completion of its mitigation activities, CAISO submitted the SDG&E procedure GIP2105 (500 kV TL 50001 Procedure).

On August 23, 2013, after NERC's review of CAISO's submitted evidence, NERC verified that CAISO's mitigation activities were completed.

CAISO completed the following mitigation activities to address its violation of COM-002-2 R2:

1. Constructed two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom:
 - a. These rooms include the video wall, phone system, and most of the desktop monitors used by the operators in the control rooms to replicate the look and feel of the control room for simulator training;
 - b. Operator training is provided quarterly;
 - c. Previously, CAISO had used a classroom setting for computer-based simulation training;

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 21

- d. Improved training facilities allow for better and more realistic training that replicates the operational behavior of the BPS during normal and emergency conditions; and
 - e. The hardware, IT equipment, and AV-related costs incurred for these training rooms were estimated by CAISO as approximately \$1.7 million.
2. Provided at least eight training classes per year since March 31, 2009, including:
 - a. Communications Professionalism: Three-Part Communication;
 - b. Communications and Directives: Three-Way Listening; and
 3. Integrated three-part communications training into all simulator training scripts.

CAISO certified on August 23, 2013 that the above mitigation activities were complete. As evidence of completion of its mitigation activities, CAISO submitted the following:

1. 2009 training:
 - a. CETAC 2009 -- A Day in the Life of a System Operator, Date: March 2009; individual learning activity application and class roster; and
 - b. CETAC 2009 SW09 System Operating Limits, Date: April 2009; individual learning activity application and class roster.
2. 2010 training:
 - a. CETAC 2010 -- 8 hrs. on Restoration Concepts & Applications, Date: April-May, 2010; individual learning activity application and class roster;
 - b. SW10 Critical Communications Course, Date: April-May, 2010; individual learning activity application and class roster;
 - c. SW10 WECC RC Communications and Directives, Date: April-May, 2010; individual learning activity application and class roster; and
 - d. CAISO Communications Professionalism, Date: November-December, 2010; individual learning activity application and class roster.
3. 2011 training:
 - a. Humboldt Severe Weather Simulation, Date: January-February, 2011; individual learning activity application and class roster;

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 22

- b. Path 61 Drum Area Overgen Simulation, Date: April-June, 2011; individual learning activity application and class roster;
 - c. COI, Fresno, CFE Simulation, Date: July-August, 2011; individual learning activity application and class roster; and
 - d. SDG&E Islanding Simulation, Date: October - November, 2011; individual learning activity application and class roster.
4. 2012 Training:
- a. CAISO Communications Professionalism 3 part Communications, Date: February – March, 2012; individual learning activity application and class roster;
 - b. CW12 Three Way Listening, Date: March-April, 2012; individual learning activity application and class roster;
 - c. Simulation Training Q1, Date: January-March, 2012; individual learning activity application and class roster; and
 - d. 2012 Simulation Training Q2, Date: May 30, 2012; individual learning activity application and class roster.

On August 23, 2013, after NERC's review of CAISO's submitted evidence, NERC verified that CAISO's mitigation activities were completed.

Statement Describing the Assessed Penalty, Sanction or Enforcement Action Imposed¹²

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,¹³ the NERC BOTCC reviewed the Settlement Agreement and supporting documentation on September 10, 2013. The NERC BOTCC approved the Settlement Agreement, including NERC's assessment of a one hundred twenty thousand dollar (\$120,000) financial penalty against CAISO and other actions to

¹² See 18 C.F.R. § 39.7(d)(4).

¹³ *North American Electric Reliability Corporation*, "Guidance Order on Reliability Notices of Penalty," 124 FERC ¶ 61,015 (2008); *North American Electric Reliability Corporation*, "Further Guidance Order on Reliability Notices of Penalty," 129 FERC ¶ 61,069 (2009); *North American Electric Reliability Corporation*, "Notice of No Further Review and Guidance Order," 132 FERC ¶ 61,182 (2010).

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 23

facilitate future compliance required under the terms and conditions of the Settlement Agreement. In approving the Settlement Agreement, the NERC BOTCC reviewed the applicable requirements of the Commission-approved Reliability Standards and the underlying facts and circumstances of the violations at issue.

In reaching this determination, the NERC BOTCC considered the following factors:

1. the violations constituted CAISO's first occurrence of violations of the subject NERC Reliability Standards;
2. CAISO self-reported the violation of TOP-STD-007-0 WR1;
3. NERC reported that CAISO was cooperative throughout the compliance enforcement process;
4. CAISO had a compliance program at the time of the violation which NERC considered a mitigating factor, as discussed above;
5. there was no evidence of any attempt to conceal a violation nor evidence of intent to do so;
6. NERC determined that the violations of EOP-001-0 R3, EOP-003-1 R8, TOP-002-2 R1, and TOP-004-1 R6 posed a serious or substantial risk to the reliability of the BPS, as discussed above. NERC determined that the violations of TOP-STD-007-0 WR1 and COM-002-2 R2 posed a moderate but not serious or substantial risk to the reliability of the BPS, as discussed above;
7. CAISO also has voluntarily undertaken the following significant additional activities, considered to be above and beyond mitigating activities, to improve its operations further:
 - a. Invested \$615,000 in revising procedures and improving accessibility and online access to procedures;
 - b. Invested approximately \$1.7 million in the construction of two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom; and
 - c. Augmented control room staffing at an incremental cost of approximately \$265,000 annually.
8. NERC reported that there were no other mitigating or aggravating factors or extenuating circumstances that would affect the assessed penalty.

For the foregoing reasons, the NERC BOTCC approved the Settlement Agreement and believes that the assessed penalty of one hundred twenty thousand dollars (\$120,000) is appropriate for the violations

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 24

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:

- a) Settlement Agreement by and between NERC and CAISO executed August 23, 2013, included as Attachment A;
 - a. Disposition of Violation document, included as Attachment 1 to the Settlement Agreement;¹⁴
 - i. Disposition Document for COM-002-2 R2, included as Attachment a to the Disposition Document;
 - ii. Disposition Document for EOP-001-0 R3, included as Attachment b to the Disposition Document;
 - iii. Disposition Document for EOP-003-1 R8, included as Attachment c to the Disposition Document;
 - iv. Disposition Document for TOP-STD-007-0 WR1, included as Attachment d to the Disposition Document;
 - v. Disposition Document for TOP-002-2 R1, included as Attachment e to the Disposition Document; and
 - vi. Disposition Document for TOP-004-1 R6, included as Attachment f to the Disposition Document.

¹⁴ The Disposition Documents serve as NERC's Verification of mitigation activity completion.

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 25

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

<p>Gerald W. Cauley President and Chief Executive Officer North American Electric Reliability Corporation 3353 Peachtree Road NE Suite 600, North Tower Atlanta, GA 30326 (404) 446-2560</p> <p>Charles A. Berardesco* Senior Vice President and General Counsel North American Electric Reliability Corporation 1325 G Street N.W., Suite 600 Washington, DC 20005 (202) 400-3000 (202) 644-8099 – facsimile charles.berardesco@nerc.net</p> <p>Lisa Milanese* Director, Corporate Compliance California ISO 250 Outcropping Way Folsom, CA 95630 (916) 351-2172 lmilanese@caiso.com</p> <p>Burton Gross* Assistant General Counsel -- Litigation and Mandatory Standards California ISO 250 Outcropping Way Folsom, CA 95630 Phone: 916-608-7268 Email: bgross@caiso.com</p>	<p>Sonia C. Mendonça* Assistant General Counsel and Director of Enforcement North American Electric Reliability Corporation 1325 G Street N.W. Suite 600 Washington, DC 20005 (202) 400-3000 (202) 644-8099 – facsimile sonia.mendonca@nerc.net</p> <p>Edwin G. Kichline* North American Electric Reliability Corporation Senior Counsel and Associate Director of Enforcement Processing 1325 G Street N.W. Suite 600 Washington, DC 20005 (202) 400-3000 (202) 644-8099 – facsimile edwin.kichline@nerc.net</p> <p>Roger Collanton* Deputy General Counsel - Legal California ISO 250 Outcropping Way Folsom, CA 95630 (916) 608-7102 rcollanton@caiso.com</p>
--	--

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 26

John Pespisa*
Director, NERC Compliance Program
Southern California Edison
2244 Walnut Grove Ave.
Rosemead, CA 91770
(626) 302-3308
John.pespisa@sce.com

*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.

Stacy Van Goor*
Assistant General Counsel – Regulatory
San Diego Gas & Electric
101 Ash Street HQ12
San Diego, CA 92101
svangoor@semprautilities.com

Erin K. Moore*
Senior Attorney
Southern California Edison
2244 Walnut Grove Ave.
Rosemead, CA 91770
(626) 302-6848
Erin.moore@sce.com

NERC Notice of Penalty
California Independent System Operator
September 30, 2013
Page 27

Conclusion

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

Gerald W. Cauley
President and Chief Executive Officer
North American Electric Reliability Corporation
3353 Peachtree Road NE
Suite 600, North Tower
Atlanta, GA 30326
(404) 446-2560

Charles A. Berardesco
Senior Vice President and General Counsel
North American Electric Reliability Corporation
1325 G Street N.W., Suite 600
Washington, DC 20005
(202) 400-3000
(202) 644-8099 – facsimile
charles.berardesco@nerc.net


Respectfully submitted,
/s/ Sonia Mendonça
Sonia C. Mendonça
Assistant General Counsel and Director of
Enforcement
North American Electric Reliability
Corporation
1325 G Street N.W.
Suite 600
Washington, DC 20005
(202) 400-3000
(202) 644-8099 – facsimile
sonia.mendonca@nerc.net

cc: California Independent System Operator
North American Electric Reliability Corporation

Attachments

Attachment A

**Settlement Agreement by and between
NERC and CAISO executed August 23,
2013**



**SETTLEMENT AGREEMENT
OF
NORTH AMERICAN ELECTRIC RELIABILITY
CORPORATION
AND
CALIFORNIA INDEPENDENT SYSTEM OPERATOR**

I. INTRODUCTION

1. Staff of the North American Electric Reliability Corporation (NERC) and the California Independent System Operator Corporation (CAISO) enter into this Settlement Agreement (Settlement Agreement) to resolve all outstanding issues arising from a preliminary and non-public Compliance Investigation resulting in NERC's determination and findings, pursuant to the NERC Rules of Procedure, of six violations by CAISO of NERC Reliability Standards COM-002-2 Requirement (R)2, EOP-001-0 R3, EOP-003-1 R8, TOP-002-2 R1, TOP-004-1 R6, and Western Electricity Coordinating Council (WECC) Regional Reliability Standard TOP-STD-007-0 WR1, NERC Violation IDs NCEA201100118, NCEA201100115, NCEA201100114, NCEA201100112, NCEA201100111, and NCEA201100110. Under two coordinated functional registrations, CAISO is deemed responsible for actions or omissions by Southern California Edison that caused or contributed to the violations of EOP-001-0 R3 and EOP-003-1 R8, and by San Diego Gas and Electric that caused or contributed to the violation of TOP-004-1 R6.
2. CAISO neither admits nor denies the violations of NERC Reliability Standards COM-002-2, EOP-001-0, EOP-003-1, TOP-STD-007-0, TOP-002-2, and TOP-004-1 but has agreed to the proposed penalty of one hundred twenty thousand dollars (\$120,000) to be assessed to CAISO, in addition to other remedies and mitigation actions to mitigate the alleged violations and ensure future compliance under the terms and conditions of this Settlement Agreement.

II. STIPULATION

3. The facts stipulated herein are stipulated solely for the purpose of resolving the matters between CAISO and NERC discussed herein and do not constitute stipulations or admissions for any other purpose. The attached Disposition Documents are incorporated herein in their entirety. CAISO and NERC hereby stipulate and agree to the following.



Background

4. See the attached Disposition Document for: (i) a description of CAISO, (ii) summaries of the system event during which NERC alleges the subject NERC and WECC Reliability Standard violations occurred, and (iii) NERC's findings and determinations with respect to those events. As noted therein, NERC has found that CAISO incurred the violations identified below, which related to the November 7, 2008 disturbance initiated by the forced outage of the San Diego Gas & Electric Company TL 50001, a 500 kV line between the Imperial Valley and Miguel substations.

Violation of NERC Reliability Standard COM-002-2 R2

5. See Attachment a to the Disposition Document for the description of the violation.

Violation of NERC Reliability Standard EOP-001-0 R3

6. See Attachment b to the Disposition Document for the description of the violation.

Violation of NERC Reliability Standard EOP-003-1 R8

7. See Attachment c to the Disposition Document for the description of the violation.

Violation of NERC Reliability Standard TOP-STD-007-0 WR1

8. See Attachment d to the Disposition Document for the description of the violation.

Violation of NERC Reliability Standard TOP-002-2 R1


9. See Attachment e to the Disposition Document for the description of the violation.

Violation of NERC Reliability Standard TOP-004-1 R6

10. See Attachment f to the Disposition Document for the description of the violation.

III. PARTIES' SEPARATE REPRESENTATIONS

STATEMENT OF NERC AND SUMMARY OF FINDINGS

- 
11. NERC finds that CAISO incurred each violation listed above for the reason indicated in the violation description section in the Disposition Document.
 12. NERC accepts that the findings include corrective and mitigation actions that address the conditions at CAISO that resulted in the indicated violations. CAISO is obligated to complete the remaining mitigating activities outlined in Section IV below.
 13. NERC agrees that this Settlement Agreement is in the best interest of the parties and in the best interest of bulk power system reliability.

STATEMENT OF CAISO

14. CAISO neither admits nor denies that the facts set forth and agreed to by the parties for the purposes of this Settlement Agreement constitute violations of COM-002-2 R2, EOP-001-0 R3, EOP-003-1 R8, TOP-002-2 R1, TOP-004-1 R6, and WECC Regional Reliability Standard TOP-STD-007-0 WR1.
15. CAISO has agreed to enter into this Settlement Agreement with NERC to avoid extended litigation with respect to the matters described or referred to herein, to avoid uncertainty, and to effectuate a complete and final resolution of the issues set forth herein. CAISO agrees that this Settlement Agreement is in the best interest of the parties and in the best interest of maintaining a reliable electric infrastructure.

IV. MITIGATING ACTIVITIES, REMEDIES AND SANCTIONS

16. NERC and CAISO agree that CAISO mitigated the violations addressed herein as discussed in the attached Disposition Document.
17. CAISO has certified to NERC that the foregoing mitigating activities were completed and NERC hereby accepts such certification.
18. NERC staff also considered the specific facts and circumstances of the violations and CAISO's actions in response to the violations in determining a proposed penalty that meets the requirement in Section 215 of the Federal Power Act that "[a]ny penalty imposed under this section shall bear a reasonable relation to the seriousness of the violation and shall take into consideration the efforts...to remedy the violation in a timely manner."¹ The factors considered by NERC Staff in the determination of the appropriate penalty are set forth in the Disposition Document.
19. Based on the above factors, as well as the mitigation actions and preventative measures taken, CAISO shall pay the monetary penalty of one hundred and twenty thousand


¹ 16 U.S.C. § 824o (e)(6).

[REDACTED]

dollars (\$120,000) to NERC, via wire transfer to NERC within twenty days after the Settlement Agreement is either approved by the Federal Energy Regulatory Commission (Commission) or becomes effective by operation of law.

V. ADDITIONAL TERMS

20. The signatories to the Settlement Agreement agree that they enter into the Settlement 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 NERC or CAISO has been made to induce the signatories or any other party to enter into the Settlement Agreement.
21. The NERC Board of Trustees (Board) will review the Settlement Agreement for the purpose of evaluating its consistency with other Settlement Agreements entered into for similar violations or under other, similar circumstances. Based on this review, the Board will either approve or reject the Settlement Agreement and notify CAISO of changes to the Settlement Agreement that would result in approval. If the Board rejects the Settlement Agreement, NERC will provide specific written reasons for such rejection and attempt to negotiate a revised Settlement Agreement with the CAISO including any changes to the Settlement Agreement specified by the Board. If a settlement cannot be reached, the enforcement process shall continue to conclusion. If NERC approves the Settlement Agreement, NERC will: (i) report the approved Settlement Agreement to the Commission for the Commission's review and approval by order or operation of law and (ii) publicly post this Settlement Agreement.
22. This Settlement Agreement shall become effective upon the Commission's approval of the Settlement Agreement by order or operation of law as submitted to it or as modified in a manner acceptable to the parties.
23. CAISO agrees that this Settlement Agreement, when approved by the Board and the Commission, shall represent a final resolution of all matters set forth herein and CAISO waives its right to further hearings and appeal, unless and only to the extent that CAISO contends that any NERC or Commission action on the Settlement Agreement contains one or more material modifications to the Settlement Agreement. In addition, failure to make a timely penalty payment will result in interest payable to NERC that will begin to accrue pursuant to the Commission's regulations at 18 C.F.R. § 35.19(a)(2)(iii) from the date that payment is due, in addition to the penalty specified above. Failure to comply with any of the terms and conditions agreed to herein, or any other conditions of this Settlement Agreement, shall be deemed to be either the same alleged violations that initiated this Settlement Agreement and/or additional violation(s) and may subject CAISO to new or additional enforcement, penalty or sanction actions in accordance with the NERC Rules of Procedure. CAISO shall retain all rights to defend against such enforcement actions, also according to the NERC Rules of Procedure.

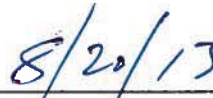
- 
24. CAISO consents to the use of NERC's determinations, findings, and conclusions set forth in this Settlement Agreement for the purpose of assessing the factors, including the factor of determining the CAISO's history of violations, in accordance with the NERC Sanction Guidelines and applicable Commission orders and policy statements. Such use may be in any enforcement action or compliance proceeding undertaken by NERC and/or any Regional Entity; provided, however, that CAISO does not consent to the use of the specific acts set forth in this Settlement Agreement as the sole basis for any other action or proceeding brought by NERC and/or any Regional Entity, nor does CAISO consent to the use of this Settlement Agreement by any other party in any other action or proceeding.
 25. Each of the undersigned warrants that he or she is an authorized representative of the entity designated, is authorized to bind such entity and accepts the Settlement Agreement on the entity's behalf.
 26. The undersigned representative of each party affirms that he or she has read the Settlement Agreement, that all of the matters set forth in the Settlement Agreement are true and correct to the best of his or her knowledge, information and belief, and that he or she understands that the Settlement Agreement is entered into by such party in express reliance on those representations, provided, however, that such affirmation by each party's representative shall not apply to the other party's statements of position set forth in the Parties' Separate Representations Section of this Settlement Agreement.
 27. The Settlement Agreement may be signed in counterparts.
 28. This Settlement Agreement is executed in duplicate, each of which so executed shall be deemed to be an original.



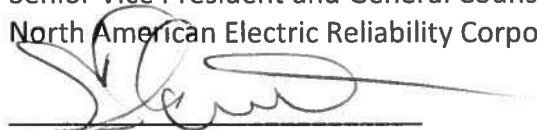
Agreed to and accepted:



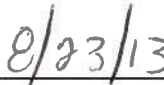
Charles Berardesco
Senior Vice President and General Counsel
North American Electric Reliability Corporation



Date



Eric Schmitt
Vice President, Operations
California Independent System Operator Corporation



Date

DISPOSITION OF VIOLATION¹
INFORMATION COMMON TO INSTANT VIOLATIONS

Dated August 22, 2013

NERC TRACKING NO.

NOC#
NOC-2060

NCEA201100110
NCEA201100111
NCEA201100112
NCEA201100114
NCEA201100115
NCEA201100118

REGISTERED ENTITY
California Independent System Operator (CAISO)

NERC REGISTRY ID
NCR05048

REGIONAL ENTITY
NERC Compliance Enforcement Authority (NERC)

I. REGISTRATION INFORMATION

ENTITY IS REGISTERED FOR THE FOLLOWING FUNCTIONS (BOTTOM ROW INDICATES
REGISTRATION DATE):

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
X						X						X		X
6/17/07						6/17/07						6/17/07		6/17/07

* VIOLATION APPLIES TO SHADED FUNCTIONS

DESCRIPTION OF THE REGISTERED ENTITY

CAISO manages the flow of electricity across the high-voltage, long-distance power lines that make up 80 percent of California's power grid. The nonprofit public benefit corporation serves approximately 30 million Californians.

As the grid operator, CAISO manages approximately 26,000 circuit-miles of power lines. CAISO forecasts electrical demand, accounts for operating reserves and dispatches power plant units to meet demand while ensuring enough transmission capacity is available to deliver the power.

¹ For purposes of this document and attachments hereto, each violation at issue is described as a "violation," regardless of its procedural posture and whether it was a possible, alleged or confirmed violation.

CAISO has its headquarters and primary control center in Folsom, California and has a secondary control center located in Alhambra, California.

CAISO is a participant in Coordinated Functional Registrations (CFRs) (formerly known as Type II Joint Registration Organization (JRO) Registrations) with various registered entities, including: (i) JRO0008 with San Diego Gas & Electric (SDG&E), originally dated September 11, 2008; and (ii) JRO0009 with Southern California Edison - Transmission & Distribution Business Unit (SCET), originally dated September 11, 2008. Under the CFRs between CAISO and SDGE and SCET, CAISO is identified as the responsible entity for certain Reliability Standards and Requirements, including among others, EOP-001-0, EOP-003-1, and TOP-004-1.

DESCRIPTION OF THE RELEVANT SYSTEM EVENT

On Friday, November 7, 2008, the Western Interconnection bulk electric system (BES) experienced a category two² disturbance initiated by the forced outage of the SDG&E TL50001, a 500 kV line between Imperial Valley and Miguel Substations, due to a fire in a series capacitor bank. At about 10:40 PST, SDG&E advised CAISO that the series capacitor bank on TL50001 “was smoking” and that they were “probably close to losing the line.” SDG&E initially informed CAISO that the unscheduled outage of TL50001 was expected to last approximately 15 minutes. At the direction of CAISO, SDG&E delayed the TL50001 outage to the extent possible to allow the CAISO and Arizona Public Service (APS) to make BES system adjustments before the line was deenergized. The actions taken by CAISO included: (a) starting Southern peakers; (b) taking Hoover off of Automatic Generation Control (AGC); and (c) certain coordinating activities. The TL50001 outage began at 10:56 PST.

De-energizing the line led to operation of two Remedial Action Schemes that shed 855 MW of generation and the opening of another line. System Operating Limits (SOLs) were immediately exceeded on Path 49, operated by APS and on the Southern California Import Transmission (SCIT)³ nomogram, operated by CAISO.

Switching errors delayed isolating the capacitors. After the capacitors were isolated, an excessive phase angle delayed returning the line to service. Load shedding was attempted to relieve the SOL exceedances, but was improperly executed. Approximately 250 MW were finally shed, interrupting service to 140,000 customers.

The SOL exceedance on the SCIT nomogram was corrected in 24 minutes following load shedding and other measures. The line was returned to service after approximately 50 minutes.

² Classified by NERC as a category two due to the loss of less than 500 MW of load.

³ The SCIT nomogram is monitored by the CAISO to protect the CAISO bulk transmission system against the next worst contingency within the CAISO. CAISO is the Path Operator for the SCIT.

NERC determined that CAISO, as the responsible entity under its CFR, had not implemented an effective load shedding plan within its footprint during the Event, it had not fully implemented its plans for a SCIT emergency overload, it had allowed the System Operating Limit on the SCIT to be exceeded for four minutes longer than the applicable 20-minute time frame, and, as the responsibly party under the CFR, had not implemented a procedure for switching the capacitor bank on the TL50001, as required.

IS THERE A SETTLEMENT AGREEMENT YES NO

WITH RESPECT TO THE VIOLATION(S), REGISTERED ENTITY

NEITHER ADMITS NOR DENIES IT (SETTLEMENT ONLY) YES
 ADMITS TO IT YES
 DOES NOT CONTEST IT (INCLUDING WITHIN 30 DAYS) YES

WITH RESPECT TO THE ASSESSED PENALTY OR SANCTION, REGISTERED ENTITY

ACCEPTS IT/ DOES NOT CONTEST IT YES

II. PENALTY INFORMATION

TOTAL ASSESSED PENALTY OR SANCTION OF **\$120,000** FOR **SIX** VIOLATIONS OF RELIABILITY STANDARDS.

(1) REGISTERED ENTITY'S COMPLIANCE HISTORY

PREVIOUSLY FILED VIOLATIONS OF ANY OF THE INSTANT RELIABILITY STANDARD(S) OR REQUIREMENT(S) THEREUNDER
 YES NO

LIST VIOLATIONS AND STATUS

ADDITIONAL COMMENTS

PREVIOUSLY FILED VIOLATIONS OF OTHER RELIABILITY STANDARD(S) OR REQUIREMENTS THEREUNDER
 YES NO

LIST VIOLATIONS AND STATUS

A Stipulation and Consent Agreement covering violations of PER-002-0 R1 and R3.1 and TOP-002-2a R1 and R6 for the CAISO with an assessed penalty of \$200,000 was entered into with the FERC Office of Enforcement on November 20, 2012. On December 14, 2012, FERC issued an order approving the Stipulation and Consent Agreement.

A NOCV covering a violation of IRO-STD-006-0 WR1 for CAISO (NOC-195) with an assessed penalty of \$0 was filed with FERC under NP10-47-000 on February 1, 2010. On March 3, 2010 FERC issued an order stating it would not engage in further review of the Notice of Penalty.

NERC determined that CAISO's previous violations did not constitute prior violations and were not considered aggravating factors in the penalty determination because they involved Standards that are not the same or similar to the instant violations. Moreover, there was nothing in the record to suggest that broader corporate issues were implicated.

ADDITIONAL COMMENTS

(2) THE DEGREE AND QUALITY OF COOPERATION BY THE REGISTERED ENTITY (IF THE RESPONSE TO FULL COOPERATION IS "NO," THE ABBREVIATED NOP FORM MAY NOT BE USED.)

FULL COOPERATION YES NO
IF NO, EXPLAIN

(3) THE PRESENCE AND QUALITY OF THE REGISTERED ENTITY'S COMPLIANCE PROGRAM

IS THERE A DOCUMENTED COMPLIANCE PROGRAM
YES NO UNDETERMINED
EXPLAIN

At the time of the violation, CAISO had an internal compliance program (ICP). The ICP has the following characteristics: the ICP is well-

documented; the ICP is widely disseminated throughout the organization; CAISO has named and staffed an ICP oversight position; the ICP oversight position is supervised at a high level in the organization; the ICP position has independent access to the chief executive officer and board of directors; the ICP is operated and managed to be independent of those responsible for compliance with the Reliability Standards; CAISO has dedicated sufficient resources (staff and budget) to its ICP; the ICP has the support and participation of senior management; the ICP is reviewed annually; the ICP includes appropriate and sufficient training for all staff; the ICP includes formal, internal self-auditing for compliance with all applicable Reliability Standards on a set periodic basis; the ICP includes disciplinary action for employees involved in violations of Reliability Standards, if appropriate; and the ICP has internal controls including self-assessment and self-enforcement to prevent reoccurrence of Reliability Standard violations.

EXPLAIN SENIOR MANAGEMENT'S ROLE AND INVOLVEMENT WITH RESPECT TO THE REGISTERED ENTITY'S COMPLIANCE PROGRAM, INCLUDING WHETHER SENIOR MANAGEMENT TAKES ACTIONS THAT SUPPORT THE COMPLIANCE PROGRAM, SUCH AS TRAINING, COMPLIANCE AS A FACTOR IN EMPLOYEE EVALUATIONS, OR OTHERWISE.
See above.

(4) ANY ATTEMPT BY THE REGISTERED ENTITY TO CONCEAL THE VIOLATION(S) OR INFORMATION NEEDED TO REVIEW, EVALUATE OR INVESTIGATE THE VIOLATION.

YES NO
IF YES, EXPLAIN

(5) ANY EVIDENCE THE VIOLATION(S) WERE INTENTIONAL (IF THE RESPONSE IS "YES," THE ABBREVIATED NOP FORM MAY NOT BE USED.)

YES NO
IF YES, EXPLAIN

(6) ANY OTHER MITIGATING FACTORS FOR CONSIDERATION

YES NO
IF YES, EXPLAIN

CAISO self-reported the violation of TOP-STD-007-0 WR1. CAISO also has voluntarily undertaken the following significant additional activities, considered to be above and beyond mitigating factors, to further improve its operations:

- 1. Invested \$615,000 in revising procedures, improved accessibility and online access to procedures;**
- 2. Invested approximately \$1.7 million in the construction of two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom; and**
- 3. Augmented control room staffing at an incremental cost of approximately \$265,000 annually.**

(7) ANY OTHER AGGRAVATING FACTORS FOR CONSIDERATION

YES NO
IF YES, EXPLAIN

(8) ANY OTHER EXTENUATING CIRCUMSTANCES

YES NO
IF YES, EXPLAIN

OTHER RELEVANT INFORMATION:

NOTICE OF ALLEGED VIOLATION AND PROPOSED PENALTY OR SANCTION ISSUED
DATE: OR N/A

SETTLEMENT REQUEST DATE
DATE: **6/1/11** OR N/A

NOTICE OF CONFIRMED VIOLATION ISSUED
DATE: OR N/A

SUPPLEMENTAL RECORD INFORMATION
DATE(S) OR N/A

REGISTERED ENTITY RESPONSE CONTESTED
FINDINGS PENALTY BOTH DID NOT CONTEST



HEARING REQUESTED

YES NO

DATE

OUTCOME

APPEAL REQUESTED

-

DISPOSITION OF VIOLATION

Dated August 22, 2013

NERC TRACKING NO.
NCEA201100118**I. VIOLATION INFORMATION**

RELIABILITY STANDARD	REQUIREMENT(S)	SUB-REQUIREMENT(S)	VRF(S)	VSL(S)
COM-002-2	R2		Medium	Severe

VIOLATION APPLIES TO THE FOLLOWING FUNCTIONS:

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
X														

PURPOSE OF THE RELIABILITY STANDARD AND TEXT OF RELIABILITY STANDARD AND REQUIREMENT(S)/SUB-REQUIREMENT(S)

The purpose statement of COM-002-2 provides: "To ensure Balancing Authorities, Transmission Operators, and Generator Operators have adequate communications and that these communications capabilities are staffed and available for addressing a real-time emergency condition. To ensure communications by operating personnel are effective."

COM-002-2 R2 provides: "Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall issue directives in a clear, concise, and definitive manner; shall ensure the recipient of the directive repeats the information back correctly; and shall acknowledge the response as correct or repeat the original statement to resolve any misunderstandings."

VIOLATION DESCRIPTION

During the November 7, 2008 event (Event) as described in Attachment 1, at 11:06 a.m. the CAISO failed to issue directives in a clear, concise manner and did not ensure that the recipient of the directive repeated the information back correctly as required by the Standard. The following conversation at the California Independent System Operator (CAISO) Control Center between the CAISO and Southern California Edison (SCE) was at issue:

SCE operator: [name omitted], Southern Cal.

CAISO operator: Hey, [names omitted], ah, if there's anything else you can get moving up we'd appreciate it.

SCE operator: Okay.

CAISO operator: ASAP. Ah, whatever's in market first but whatever you can get moving fast.

SCE operator: Okay, great.

While intended as a directive to bring on additional generation to alleviate the System Operating Limit exceedances being experienced, this directive was not issued in a clear, concise, and definitive manner, and therefore constitutes a violation of COM-002-2 R.2.

RELIABILITY IMPACT STATEMENT- POTENTIAL AND ACTUAL
NERC determined that the violation posed a moderate but not a serious or substantial risk to the reliability of the bulk power system (BPS). The failure to use three-part communication to issue the directive in a COM-002-2 R2 compliant manner may have contributed to the duration of the Event.

II. DISCOVERY INFORMATION

METHOD OF DISCOVERY

- SELF-REPORT
- SELF-CERTIFICATION
- COMPLIANCE AUDIT
- COMPLIANCE VIOLATION INVESTIGATION
- SPOT CHECK
- COMPLAINT
- PERIODIC DATA SUBMITTAL
- EXCEPTION REPORTING

DURATION DATE(S) **11/7/08**

DATE DISCOVERED BY OR REPORTED TO REGIONAL ENTITY **1/9/09**

IS THE VIOLATION STILL OCCURRING YES NO
IF YES, EXPLAIN

REMEDIAL ACTION DIRECTIVE ISSUED YES NO
PRE TO POST JUNE 18, 2007 VIOLATION YES NO

III. MITIGATION INFORMATION

FOR FINAL ACCEPTED MITIGATION PLAN:

- MITIGATION PLAN NO.
- DATE SUBMITTED TO REGIONAL ENTITY
- DATE ACCEPTED BY REGIONAL ENTITY
- DATE APPROVED BY NERC
- DATE PROVIDED TO FERC

IDENTIFY AND EXPLAIN ALL PRIOR VERSIONS THAT WERE ACCEPTED OR REJECTED, IF APPLICABLE

MITIGATION PLAN COMPLETED YES NO

EXPECTED COMPLETION DATE

EXTENSIONS GRANTED

ACTUAL COMPLETION DATE

DATE OF CERTIFICATION LETTER
CERTIFIED COMPLETE BY REGISTERED ENTITY AS OF

DATE OF VERIFICATION LETTER
VERIFIED COMPLETE BY REGIONAL ENTITY AS OF

ACTIONS TAKEN TO MITIGATE THE ISSUE AND PREVENT RECURRENCE

- 1. Constructed two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom;**
 - a. **These room include the video wall, phone system, and most of the desktop monitors used by the operators in the control rooms to replicate the look and feel of the control room for simulator training;**
 - b. **Operator training is provided quarterly;**
 - c. **Previously, CAISO had used a classroom setting for computer-based simulation training;**
 - d. **Improved training facilities allow for better and more realistic training that replicates the operational behavior of the BPS during normal and emergency conditions;**
 - e. **The hardware, IT equipment and AV related costs incurred for these training rooms was estimated by CAISO as approximately \$1.7 million;**

2. Since March 31, 2009, operators have been provided at least eight or nine training classes per year that include:
 - a. **Communications Professionalism: Three-Part Communication;**
 - b. **Communications and Directives: Three-Way Listening; and**
 - c. **Three part communications training is integrated into all simulator training scripts.**

LIST OF EVIDENCE REVIEWED BY REGIONAL ENTITY TO EVALUATE COMPLETION OF MITIGATION PLAN OR MILESTONES (FOR CASES IN WHICH MITIGATION IS NOT YET COMPLETED, LIST EVIDENCE REVIEWED FOR COMPLETED MILESTONES)

2009 training

1. **CETAC 2009 -- A Day in the Life of a System Operator, Date: March 2009; Individual Learning Activity Application and Class Roster**
2. **CETAC 2009 SW09 System Operating Limits, Date: April 2009; Individual Learning Activity Application and Class Roster**

2010 training

3. **CETAC 2010 -- 8 hrs. on Restoration Concepts & Applications, Date: April-May, 2010; Individual Learning Activity Application and Class Roster**
4. **SW10 Critical Communications Course, Date: April-May, 2010; Individual Learning Activity Application and Class Roster**
5. **SW10 WECC RC Communications and Directives, Date: April-May, 2010; Individual Learning Activity Application and Class Roster**
6. **CAISO Communications Professionalism, Date: November-December, 2010; Individual Learning Activity Application and Class Roster**

2011 training

7. **Humboldt Severe Weather Simulation, Date: January-February, 2011; Individual Learning Activity Application and Class Roster**
8. **Path 61 Drum Area Overgen Simulation, Date: April-June, 2011; Individual Learning Activity Application and Class Roster**

9. **COI, Fresno, CFE Simulation, Date: July-August, 2011; Individual Learning Activity Application and Class Roster**
10. **SDG&E Islanding Simulation, Date: October - November, 2011; Individual Learning Activity Application and Class Roster**

2012 Training

11. **CAISO Communications Professionalism 3 part Communications, Date: February – March, 2012; Individual Learning Activity Application and Class Roster**
12. **CW12 Three Way Listening, Date: March-April, 2012; Individual Learning Activity Application and Class Roster**
13. **Simulation Training Q1, Date: January-March, 2012; Individual Learning Activity Application and Class Roster**
14. **2012 Simulation Training Q2, Date: May 30, 2012; Individual Learning Activity Application and Class Roster**

DISPOSITION OF VIOLATION

Dated August 22, 2013

NERC TRACKING NO.
NCEA201100110**I. VIOLATION INFORMATION**

RELIABILITY STANDARD	REQUIREMENT(S)	SUB-REQUIREMENT(S)	VRF(S)	VSL(S)
EOP-001-0	R3	R3.3	Medium	High

VIOLATION APPLIES TO THE FOLLOWING FUNCTIONS:

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
X												X		

PURPOSE OF THE RELIABILITY STANDARD AND TEXT OF RELIABILITY STANDARD AND REQUIREMENT(S)/SUB-REQUIREMENT(S)

The purpose statement of EOP-001-0 provides: "Each Transmission Operator and Balancing Authority needs to develop, maintain, and implement a set of plans to mitigate operating emergencies. These plans need to be coordinated with other Transmission Operators and Balancing Authorities, and the Reliability Coordinator."

EOP-001-0 R3 provides in pertinent part:

R3. Each Transmission Operator and Balancing Authority shall:

R3.3. Develop, maintain, and implement a set of plans for load shedding.

VIOLATION DESCRIPTION

The California Independent System Operator (CAISO) and Southern California Edison (SCE) executed a Reliability Standards Agreement, effective September 11, 2008 (JRO 00009). The JRO identifies the CAISO as the Responsible Entity for EOP-001-0 R.3. Therefore, the CAISO is responsible for SCE's failure to properly implement the load shedding program during the November 7, 2008 event (Event), as described in Attachment 1.

During the Event, when the System Operating Limits (SOLs) were immediately exceeded on Path 49 and on the Southern California Import Transmission (SCIT) nomogram, the CAISO attempted to relieve these exceedances, in part, via load shedding. The SCE load shedding program was not fully executed so the attempted load shedding was unsuccessful. One month before the Event, SCE replaced its Energy Management System and Telecom network, which resulted in the Distribution Circuit Load Shedding execution process being changed. SCE had not completed training of its operations personnel on the new procedures prior to the Event. Consequently, on the day of the Event, the SCE Grid Control Center operator attempted to execute the superseded, older process for load shedding, resulting in less than the requested load being shed.

Thirteen minutes into the Event, the SCIT 20-minute time limit became a heightened concern because San Diego Gas & Electric Company indicated that the Imperial Valley – Miguel 500 kV line would not be returned within the prior estimate of approximately 15 minutes. At 11:12 a.m., the California Mexico Reliability Coordinator (CMRC) issued a Reliability Coordinator Directive to the CAISO to return SCIT to within acceptable limit.

At this point, the CAISO shift supervisor determined that interchange schedule curtailments alone were too late and, therefore, decided to shed 600 MW interruptible load in addition to cutting 700 MW of EOR interchange schedules in an attempt to return the system to within the SCIT nomogram and EOR operating limit. A misunderstanding occurred regarding the amount of interruptible load available in the SCE area that could be interrupted in 10 minutes or less; only 50 MW was actually dropped in that time frame. The amount of interruptible load available in the short term was not sufficient (approximately 50 MW was actually shed from 600 MW requested), and additional (*i.e.*, firm load) shedding was necessary to return the system back to normal.

At 11:18 a.m., the CAISO shift supervisor requested an additional 1,000 MW of firm load to be shed in the SCE area, of which 200 MW was ultimately shed. The SCE system logs indicate that some of the firm load shedding was miscommunicated or incorrectly executed by SCE personnel. Despite the CAISO mitigation effort, the SCIT nomogram was exceeded for approximately 24 minutes, four minutes over the applicable time limit. The above sequence of events indicates that plans to effect load shedding had not been fully implemented in the SCE service territory. Throughout the entire Event, approximately 200 MW was actually shed.

While attempting to execute the CAISO order, SCE shed load not included in its present plan, failed to shed load that was in the plan, and local control centers where plans had not been implemented were actually restoring some circuits shed by other centers. The lack of a fully implemented set of load shedding plans hindered the load relief necessary to relieve the exceeded stability limit and restore the bulk power (BPS) system to a stable mode.

In total, the above observations reveal that load shedding plans had not been implemented in the SCE area, resulting in a violation by the CAISO of the Standard due to its responsibilities under the JRO.

RELIABILITY IMPACT STATEMENT- POTENTIAL AND ACTUAL

NERC determined that the violation posed a serious or substantial risk to the reliability of the BPS. Specifically, SCE's failure to have adequate emergency plans prolonged the emergency events. This violation of EOP-001-0 resulted in insufficient load shedding to adequately reduce flows. The lack of a fully implemented set of load shedding plans hindered the load relief necessary to relieve the exceeded stability limit and restore the BPS to a stable mode.

II. DISCOVERY INFORMATION

METHOD OF DISCOVERY

- SELF-REPORT
- SELF-CERTIFICATION
- COMPLIANCE AUDIT
- COMPLIANCE VIOLATION INVESTIGATION
- SPOT CHECK
- COMPLAINT
- PERIODIC DATA SUBMITTAL
- EXCEPTION REPORTING

DURATION DATE(S) **11/7/08**

DATE DISCOVERED BY OR REPORTED TO REGIONAL ENTITY **1/9/09**

IS THE VIOLATION STILL OCCURRING YES NO
 IF YES, EXPLAIN

REMEDIAL ACTION DIRECTIVE ISSUED YES NO
 PRE TO POST JUNE 18, 2007 VIOLATION YES NO

III. MITIGATION INFORMATION

FOR FINAL ACCEPTED MITIGATION PLAN:
 MITIGATION PLAN NO.
 DATE SUBMITTED TO REGIONAL ENTITY
 DATE ACCEPTED BY REGIONAL ENTITY
 DATE APPROVED BY NERC

DATE PROVIDED TO FERC

IDENTIFY AND EXPLAIN ALL PRIOR VERSIONS THAT WERE ACCEPTED OR REJECTED, IF APPLICABLE

MITIGATION PLAN COMPLETED YES NO

EXPECTED COMPLETION DATE

EXTENSIONS GRANTED

ACTUAL COMPLETION DATE

DATE OF CERTIFICATION LETTER
CERTIFIED COMPLETE BY REGISTERED ENTITY AS OF

DATE OF VERIFICATION LETTER
VERIFIED COMPLETE BY REGIONAL ENTITY AS OF

ACTIONS TAKEN TO MITIGATE THE ISSUE AND PREVENT RECURRENCE

1. Established quarterly Distribution Circuit Load Shed (“DCLS”) exercises beginning March 30, 2009 and conducted every quarter since that date with one unannounced readiness drill each year.
2. Revised procedures with specific requirements for notification to the four Grid Management Centers and, in turn, the Grid Management Centers have requirements to notify switching centers within their jurisdiction.
3. Created job aides for operators in all four Grid Management Centers.
4. SCE’s Power System Controls organization developed a change management procedure for Critical Cyber Assets in which the SCE demand side management program’s Alhambra Control Platform is included.

LIST OF EVIDENCE REVIEWED BY REGIONAL ENTITY TO EVALUATE COMPLETION OF MITIGATION PLAN OR MILESTONES (FOR CASES IN WHICH MITIGATION IS NOT YET COMPLETED, LIST EVIDENCE REVIEWED FOR COMPLETED MILESTONES)

1. DCLS exercise script
2. DCLS training roster – 2009 Q1, Q2, Q3, Q4
3. Unannounced Load Shed Readiness Drill Roster – 12-19-11
4. EMS Load Shed Program Interim Procedures
5. System Operating Bulletin 21 – Capacity Shortage Contingency Plan, revised June 19, 2009
6. Load Shed Job Aid Lightpipe
7. Load Shed Job Aid Mira Loma

8. Load Shed Job Aid Orange County
9. Load Shed Job Aid Ventura
10. SCE Power System Controls Change Management Procedure P29-001 and signature page.

DISPOSITION OF VIOLATION

Dated August 22, 2013

NERC TRACKING NO.
NCEA201100111

I. VIOLATION INFORMATION

RELIABILITY STANDARD	REQUIREMENT(S)	SUB-REQUIREMENT(S)	VRF(S)	VSL(S)
EOP-003-1	R8		High	High

VIOLATION APPLIES TO THE FOLLOWING FUNCTIONS:

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
X												X		

PURPOSE OF THE RELIABILITY STANDARD AND TEXT OF RELIABILITY STANDARD AND REQUIREMENT(S)/SUB-REQUIREMENT(S)

The purpose statement of EOP-003-1 provides: “A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the Interconnection.”

EOP-003-1 R8 provides: “Each Transmission Operator or Balancing Authority shall have plans for operator controlled manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.”

VIOLATION DESCRIPTION

The California Independent System Operator (CAISO) and Southern California Edison - Transmission and Distribution Business Unit (SCE) executed JRO00009, effective September 11, 2008. The Coordinated Functional Registration (CFR) (formerly known as Type II Joint Registration Organization (JRO) identifies CAISO as the Responsible Entity for EOP-003-1 R.8. Therefore, CAISO is responsible for SCE’s failure to implement load shedding in a timeframe adequate for responding to the emergency during the November 7, 2008 event (Event), as described in Attachment 1.

During the Event, the System Operating Limit (SOL) was immediately exceeded on the Southern California Import Transmission (SCIT) nomogram by approximately 2,500 MW. CAISO attempted to relieve this exceedance, in part, via load shedding. The SCE

load shedding program was not fully executed so the attempted load shedding was unsuccessful. One month before the Event, SCE replaced its Energy Management System and Telecom network, which resulted in the Distribution Circuit Load Shedding execution process being changed. SCE had not completed training of its operations personnel on the new procedures prior to the Event. Consequently, on the day of the Event, the SCE Grid Control Center operator attempted to execute the superseded, older process for load shedding, resulting in less than the requested load being shed.

Thirteen minutes into the Event, the SCIT 20-minute time limit became a heightened concern because San Diego Gas & Electric indicated the Imperial Valley – Miguel 500 kV line would not be returned within the prior estimate of approximately 15 minutes. At 11:12 a.m., the California Mexico Reliability Coordinator (CMRC) issued a Reliability Coordinator Directive to CAISO to return SCIT to within acceptable limit.

At this point, the CAISO shift supervisor determined that interchange schedule curtailments alone were too late and, therefore, decided to shed 600 MW interruptible load in addition to cutting 700 MW of East Of River interchange schedules in an attempt to return the system to within the SCIT nomogram and EOR operating limit. A misunderstanding occurred regarding the amount of interruptible load available in the SCE area that could be interrupted in 10 minutes or less; only 50 MW was actually dropped in that time frame.

At 11:18 a.m., the CAISO shift supervisor requested an additional 1,000 MW of firm load to be shed in the SCE area, of which 200 MW was ultimately shed. The SCE system logs indicate that some of the firm load shedding was miscommunicated or incorrectly executed. Despite the CAISO mitigation effort, the SCIT nomogram was exceeded for approximately 24 minutes, four minutes over the applicable time limit.

The above sequence of events show that CAISO, as the Responsible Entity under JRO00009 was not capable of implementing the load shedding in a timeframe adequate for responding to the emergency. Throughout the entire Event, approximately 200 MW was actually shed.

While attempting to execute the CAISO order, SCE shed load not included in its present plan, failed to shed load that was in the plan, and local control centers where plans had not been implemented were actually restoring some circuits shed by other centers.

The above sequence of events reveal that SCE was not capable of implementing the load shedding in a timeframe adequate for responding to the Event, resulting in a violation by the CAISO of the Standard due to its responsibilities under the CFR.

RELIABILITY IMPACT STATEMENT- POTENTIAL AND ACTUAL

NERC determined that the violation posed a serious or substantial risk to the reliability of the bulk power system (BPS). Specifically, the SCE's failure to implement load

shedding in a timeframe adequate to respond to an emergency event prolonged the Event.

II. DISCOVERY INFORMATION

METHOD OF DISCOVERY

- SELF-REPORT
- SELF-CERTIFICATION
- COMPLIANCE AUDIT
- COMPLIANCE VIOLATION INVESTIGATION
- SPOT CHECK
- COMPLAINT
- PERIODIC DATA SUBMITTAL
- EXCEPTION REPORTING

DURATION DATE(S) **11/7/08**

DATE DISCOVERED BY OR REPORTED TO REGIONAL ENTITY **1/9/09**

IS THE VIOLATION STILL OCCURRING YES NO
IF YES, EXPLAIN

REMEDIAL ACTION DIRECTIVE ISSUED YES NO
PRE TO POST JUNE 18, 2007 VIOLATION YES NO

III. MITIGATION INFORMATION

FOR FINAL ACCEPTED MITIGATION PLAN:

- MITIGATION PLAN NO.
- DATE SUBMITTED TO REGIONAL ENTITY
- DATE ACCEPTED BY REGIONAL ENTITY
- DATE APPROVED BY NERC
- DATE PROVIDED TO FERC

IDENTIFY AND EXPLAIN ALL PRIOR VERSIONS THAT WERE ACCEPTED OR REJECTED, IF APPLICABLE

MITIGATION PLAN COMPLETED YES NO

EXPECTED COMPLETION DATE

EXTENSIONS GRANTED

ACTUAL COMPLETION DATE

DATE OF CERTIFICATION LETTER
CERTIFIED COMPLETE BY REGISTERED ENTITY AS OF

DATE OF VERIFICATION LETTER
VERIFIED COMPLETE BY REGIONAL ENTITY AS OF

ACTIONS TAKEN TO MITIGATE THE ISSUE AND PREVENT RECURRENCE

1. Established quarterly Distribution Circuit Load Shed (“DCLS”) exercises beginning March 30, 2009 and conducted every quarter since that date with one unannounced readiness drill each year.
2. Revised procedures with specific requirements for notification to the four Grid Management Centers and, in turn, the Grid Management Centers have requirements to notify switching centers within their jurisdiction.
3. Created job aides for operators in all four Grid Management Centers.
4. SCE’s Power System Controls organization developed a change management procedure for Critical Cyber Assets in which the SCE demand side management program’s Alhambra Control Platform is included.

LIST OF EVIDENCE REVIEWED BY REGIONAL ENTITY TO EVALUATE COMPLETION OF MITIGATION PLAN OR MILESTONES (FOR CASES IN WHICH MITIGATION IS NOT YET COMPLETED, LIST EVIDENCE REVIEWED FOR COMPLETED MILESTONES)

1. DCLS exercise script
2. DCLS training roster – 2009 Q1, Q2, Q3, Q4
3. Unannounced Load Shed Readiness Drill Roster – 12-19-11
4. EMS Load Shed Program Interim Procedures
5. System Operating Bulletin 21 – Capacity Shortage Contingency Plan, revised June 19, 2009
6. Load Shed Job Aid Lightpipe
7. Load Shed Job Aid Mira Loma
8. Load Shed Job Aid Orange County
9. Load Shed Job Aid Ventura
10. SCE Power System Controls Change Management Procedure P29-001 and signature page.

DISPOSITION OF VIOLATION

Dated August 22, 2013

NERC TRACKING NO.
NCEA201100112

I. VIOLATION INFORMATION

RELIABILITY STANDARD	REQUIREMENT(S)	SUB-REQUIREMENT(S)	VRF(S)	VSL(S)
TOP-STD-007-0	WR1		N/A	N/A

VIOLATION APPLIES TO THE FOLLOWING FUNCTIONS:

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
												X		

PURPOSE OF THE RELIABILITY STANDARD AND TEXT OF RELIABILITY STANDARD AND REQUIREMENT(S)/SUB-REQUIREMENT(S)

The purpose statement of TOP-STD-007-0 provides: "Regional Reliability Standard to ensure the Operating Transfer Capability limits requirements of the Western Interconnection are not exceeded."

TOP-STD-007-0 WR1 provides:

WR1. Operating Transfer Capability Limit Criteria

Actual power flow and net scheduled power flow over an interconnection or transfer path shall be maintained within Operating Transfer Capability Limits ("OTC"). The OTC is the maximum amount of actual power that can be transferred over direct or parallel transmission elements comprising:

- An interconnection from one Transmission Operator area to another Transmission Operator area; or**
- A transfer path within a Transmission Operator area.**

The net schedule over an interconnection or transfer path within a Transmission Operator area shall not exceed the OTC, regardless of the prevailing actual power flow on the interconnection or transfer path.

a. Operating limits. No elements within the interconnection shall be scheduled above continuous operating limits. An element is defined as any generating unit, transmission line, transformer, bus, or piece of electrical equipment involved in the transfer of power within an interconnection.

b. Stability. The interconnected power system shall remain stable upon loss of any one single element without system cascading that could result in the successive loss of additional elements. The system voltages shall be within acceptable limits defined in the WECC Reliability Criteria for Transmission System Planning. If a single event could cause loss of multiple elements, these shall be considered in lieu of a single element outage. This could occur in exceptional cases such as two lines on the same right-of-way next to an airport. In either case, loss of either single or multiple elements should not cause uncontrolled, widespread collapse of the interconnected power system. For purposes of this Section, stability shall include transient stability, post transient stability or dynamic stability whichever is most limiting to OTC.

c. System contingency response. Following the outage and before adjustments can be made:

(i) No remaining element shall exceed its short-time emergency rating.

(ii) The steady-state system voltages shall be within emergency limits.

The limiting event shall be determined by conducting power flow and stability studies while simulating various operating conditions. These studies shall be updated as system configurations introduce significant changes in the interconnection.

VIOLATION DESCRIPTION

On November 7, 2008, a fire in a series capacitor bank on San Diego Gas and Electric TL 50001 forced the removal of the line from service. The removal from service of this line resulted in a revised stability System Operating Limits (SOLs) for the Southern California Import Transmission (SCIT) nomogram. The SCIT nomogram is monitored by CAISO to protect the CAISO bulk transmission system against the next worst contingency within the CAISO footprint. The revised stability SOL resulted in SCIT loading exceeding the limit by approximately 2,000 MW. Per the WECC Path Catalog,

the SCIT is treated as a Path and CAISO is identified as the Path operator. CAISO self-reported the violation on November 13, 2008.

The SCIT nomogram SOL exceedance was not fully relieved until at least 24 minutes after the occurrence of the exceedance. TOP-007-0 WR1 requires such exceedances to be eliminated within 20 minutes. Therefore, CAISO was not in compliance with TOP-007-0 WR1 because the exceedance continued for 24 minutes, four minutes beyond that allowed by the Standard.

RELIABILITY IMPACT STATEMENT- POTENTIAL AND ACTUAL
 NERC determined that the violation posed a moderate risk to the reliability of the bulk power system (BPS). The SOL was exceeded for a total of 24 minutes, only four minutes outside the required timeframe. Although CAISO began preparing the system for the TL 50001 removal of service when smoke at the series capacitor bank was first reported, it could have taken more decisive action earlier to relieve the SOL exceedance.

II. DISCOVERY INFORMATION

METHOD OF DISCOVERY

- SELF-REPORT
- SELF-CERTIFICATION
- COMPLIANCE AUDIT
- COMPLIANCE VIOLATION INVESTIGATION
- SPOT CHECK
- COMPLAINT
- PERIODIC DATA SUBMITTAL
- EXCEPTION REPORTING

DURATION DATE(S) **11/7/08**

DATE DISCOVERED BY OR REPORTED TO REGIONAL ENTITY **11/13/08**

IS THE VIOLATION STILL OCCURRING YES NO
 IF YES, EXPLAIN

REMEDIAL ACTION DIRECTIVE ISSUED YES NO
 PRE TO POST JUNE 18, 2007 VIOLATION YES NO

III. MITIGATION INFORMATION

FOR FINAL ACCEPTED MITIGATION PLAN:

MITIGATION PLAN NO.
DATE SUBMITTED TO REGIONAL ENTITY
DATE ACCEPTED BY REGIONAL ENTITY
DATE APPROVED BY NERC
DATE PROVIDED TO FERC

IDENTIFY AND EXPLAIN ALL PRIOR VERSIONS THAT WERE ACCEPTED OR REJECTED, IF APPLICABLE

MITIGATION PLAN COMPLETED YES NO

EXPECTED COMPLETION DATE

EXTENSIONS GRANTED

ACTUAL COMPLETION DATE

DATE OF CERTIFICATION LETTER March 30, 2009
CERTIFIED COMPLETE BY REGISTERED ENTITY AS OF March 30, 2009

DATE OF VERIFICATION LETTER May 7, 2009
VERIFIED COMPLETE BY REGIONAL ENTITY AS OF March 30, 2009

ACTIONS TAKEN TO MITIGATE THE ISSUE AND PREVENT RECURRENCE

1. **CAISO developed SCIT training module:**
 - a. **First step of training was an in-depth explanation of nomograms and of the SCIT nomogram with all the components comprised in the SCIT calculation; and**
 - b. **Second step was review of the Event with a lessons learned section for discussion.**
2. **CAISO delivered and implemented SCIT training:**
 - a. **Nine training sessions were held for operators who took the NERC accredited continuing education EOR/SCIT training module.**
3. **CAISO evaluated procedures and developed job aid tools:**
 - a. **Additions to the SCIT nomogram display were added to assist operators mitigating path issues to aid the decision-making process for the dispatchers by calculating the net amount of interchange schedules that need to be curtailed and the corresponding generation increments by region (SP15 or NP-15) that are most effective.**
4. **CAISO corrected or combined as necessary procedures and deployed job aid tools:**

- a. **Multiple operating procedures were revised and rolled into one SCIT operating procedure (T-103) with multiple attachments included. T-103 became effective on January 15, 2009;**

The following are additional mitigation actions above and beyond what was necessary to mitigate the violation:

- 5. **CAISO revised procedures, improved accessibility and online access to procedures:**
 - a. **Beginning in 2010, the CAISO undertook an initiative to revise its operating procedures to make them more functional for users and more readily accessible. Under the redesign initiative, the CAISO operating procedures and desktop procedures were combined into approximately 240 procedures and related documents with a consistent numbering convention and standardized templates for content;**
 - b. **The new organization method is aligned to the CAISO processes and is more consistent with the NERC functional model;**
 - c. **In addition, a new technical storage platform was deployed (SharePoint) to improve user access and search capability;**
 - d. **Normalizing the procedures improved the accessibility of the content, enabled better training and eased the ability of individual operators to transfer between desks;**
 - e. **Training was provided on the new procedures; and**
 - f. **The CAISO invested approximately \$615,000 in this initiative.**
- 6. **Constructed two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom:**
 - a. **These room include the video wall, phone system, and most of the desktop monitors used by the operators in the control rooms to replicate the look and feel of the control room for simulator training;**
 - b. **Operator training is provided quarterly;**
 - c. **Previously, CAISO had used a classroom setting for computer-based simulation training;**
 - d. **Improved training facilities allow for better and more realistic training that replicates the operational behavior of the BPS during normal and emergency conditions; and**
 - e. **The hardware, IT equipment and AV related costs incurred for these training rooms were approximately \$1.7 million.**
- 7. **CAISO augmented control room staffing:**
 - a. **At the time of the Event, operating engineers were on call to support the operators. Beginning the first quarter of 2011, an operating engineer is in the control room at all times;**

- b. CAISO added six operating engineers to the staffing in the control room plus a managing operating engineer;
 - c. The addition of the operating engineers to the control room has provided numerous reliability-related benefits; and
 - d. The continuous staffing represents an incremental cost to CAISO of approximately \$265, 000 annually.
8. CAISO improved real-time contingency analysis (RTCA) run time:
- a. The frequency of the run time for the Energy Management System has been increased from every 15 minutes to every five minutes.
9. CAISO made available a daily report of interruptible load:
- a. As of June 1, 2012, the CAISO began receiving a daily report from PG&E, SCE and SDG&E of demand response resource forecast and availability information; and
 - b. This includes information about the interruptible load that will be available in the event of emergency operations.

LIST OF EVIDENCE REVIEWED BY REGIONAL ENTITY TO EVALUATE COMPLETION OF MITIGATION PLAN OR MILESTONES (FOR CASES IN WHICH MITIGATION IS NOT YET COMPLETED, LIST EVIDENCE REVIEWED FOR COMPLETED MILESTONES)

- 1. Training Plan EOR/SCIT Nomogram Training Module;
- 2. External EOR-SCIT Training Module (Instructors) 12-31-2008;
- 3. NERC continuing education EOR/SCIT training module attendance sheet;
- 4. CAISO SCIT Operating Procedure T-103;
- 5. CAISO Crew List; and
- 6. Updated nomogram with added box to show the operators the most efficient mitigation method depending on system conditions.

DISPOSITION OF VIOLATION

Dated August 22, 2013

NERC TRACKING NO.
NCEA201100114**I. VIOLATION INFORMATION**

RELIABILITY STANDARD	REQUIREMENT(S)	SUB-REQUIREMENT(S)	VRF(S)	VSL(S)
TOP-002-2	R1		High	Severe

VIOLATION APPLIES TO THE FOLLOWING FUNCTIONS:

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
X												X		

PURPOSE OF THE RELIABILITY STANDARD AND TEXT OF RELIABILITY STANDARD AND REQUIREMENT(S)/SUB-REQUIREMENT(S)

The purpose statement of TOP-002-2 provides: "Current operations plans and procedures are essential to being prepared for reliable operations, including response for unplanned events."

TOP-002-2 R1 provides:

Each Balancing Authority and Transmission Operator shall maintain a set of current plans that are designed to evaluate options and set procedures for reliable operation through a reasonable future time period. In addition, each Balancing Authority and Transmission Operator shall be responsible for using available personnel and system equipment to implement these plans to ensure that interconnected system reliability will be maintained.

VIOLATION DESCRIPTION

During the Event, as described in Attachment 1, the California Independent System Operator (CAISO) did not fully implement plans and procedures related to the loss of TL 50001 and the emergency obligation to relieve the resulting Southern California Import Transmission (SCIT) SOL exceedance. CAISO's response varied from the procedures in place to address the TL50001 emergency, specifically, CAISO Procedure T-142, Emergency Overload Mitigation for SCIT Following Contingencies. CAISO did not fully implement these procedures in responding to the emergency. The T-142 procedure sets out 26 specific steps to be taken to relieve SCIT stability SOL

exceedance. NERC determined that CAISO did not perform certain early steps in the procedures that may have been important to relieving the SCIT SOL exceedance.

CAISO also did not follow its load shedding procedure. The CAISO system operator did not did not request San Diego Gas & Electric (SDGE) to shed interruptible load before directing California Edison - Transmission and Distribution Business Unit (SCE) to shed firm load, nor did he request any other entities to shed firm load per E-508A.

NERC determined that the CAISO did not fully implement the plans established to ensure that interconnected system reliability was maintained. While it effectively used personnel and equipment during the November 7, 2008 event, it did not fully implement its T-142 plan.

RELIABILITY IMPACT STATEMENT- POTENTIAL AND ACTUAL

NERC determined that the violation posed a potentially serious or substantial risk to the reliability of the bulk power system (BPS). Specifically, CAISO, in not fully following its procedures, could have prolonged the Event. The actual risk to the BPS was moderate because load would have been shed in any event.

II. DISCOVERY INFORMATION

METHOD OF DISCOVERY

- SELF-REPORT
- SELF-CERTIFICATION
- COMPLIANCE AUDIT
- COMPLIANCE VIOLATION INVESTIGATION
- SPOT CHECK
- COMPLAINT
- PERIODIC DATA SUBMITTAL
- EXCEPTION REPORTING

DURATION DATE(S) **11/7/08**

DATE DISCOVERED BY OR REPORTED TO REGIONAL ENTITY **1/9/09**

IS THE VIOLATION STILL OCCURRING YES NO
 IF YES, EXPLAIN

REMEDIAL ACTION DIRECTIVE ISSUED YES NO
 PRE TO POST JUNE 18, 2007 VIOLATION YES NO

III. MITIGATION INFORMATION

FOR FINAL ACCEPTED MITIGATION PLAN:

- MITIGATION PLAN NO.
- DATE SUBMITTED TO REGIONAL ENTITY
- DATE ACCEPTED BY REGIONAL ENTITY
- DATE APPROVED BY NERC
- DATE PROVIDED TO FERC

IDENTIFY AND EXPLAIN ALL PRIOR VERSIONS THAT WERE ACCEPTED OR REJECTED, IF APPLICABLE

MITIGATION PLAN COMPLETED YES NO

EXPECTED COMPLETION DATE

EXTENSIONS GRANTED

ACTUAL COMPLETION DATE

DATE OF CERTIFICATION LETTER
CERTIFIED COMPLETE BY REGISTERED ENTITY AS OF

DATE OF VERIFICATION LETTER
VERIFIED COMPLETE BY REGIONAL ENTITY AS OF

ACTIONS TAKEN TO MITIGATE THE ISSUE AND PREVENT RECURRENCE

- 1. CAISO developed SCIT training module:**
 - a. **First step of training was an in-depth explanation of nomograms and of the SCIT nomogram with all the components comprised in the SCIT calculation; and**
 - b. **Second step was review of the Event with a lessons learned section for discussion.**
- 2. CAISO delivered and implemented SCIT training:**
 - a. **Nine training sessions were held for operators who took the NERC accredited continuing education EOR/SCIT training module.**
- 3. CAISO corrected or combined as necessary procedures and deployed job aid tools:**
 - a. **Multiple operating procedures were revised and rolled into one SCIT operating procedure (T-103) with multiple attachments included. T-103 became effective on January 15, 2009.**
- 4. CAISO revised procedures, improved accessibility and online access to procedures:**
 - a. **Beginning in 2010, CAISO undertook an initiative to revise its operating procedures to make them more functional for users and**

- more readily accessible. Under the redesign initiative, CAISO operating procedures and desktop procedures were combined into approximately 240 procedures and related documents with a consistent numbering convention and standardized templates for content;
- b. The new organization method is aligned to the CAISO processes and is more consistent with the NERC functional model;
 - c. In addition, a new technical storage platform was deployed (SharePoint) to improve user access and search capability;
 - d. Normalizing the procedures improved the accessibility of the content, enabled better training and eased the ability of individual operators to transfer between desks;
 - e. Training was provided on the new procedures; and
 - f. CAISO invested approximately \$615,000 in this initiative.
5. CAISO constructed two simulator training rooms that replicate, in smaller scale, the control rooms in Alhambra and Folsom:
- a. These room include the video wall, phone system, and most of the desktop monitors used by the operators in the control rooms to replicate the look and feel of the control room for simulator training;
 - b. Operator training is provided quarterly;
 - c. CAISO has used a classroom setting for computer-based simulation training;
 - d. Improved training facilities allow for better and more realistic training that replicates the operational behavior of the BPS during normal and emergency conditions; and
 - e. The hardware, IT equipment and AV related costs incurred for these training rooms were approximately \$1.7 million.

LIST OF EVIDENCE REVIEWED BY REGIONAL ENTITY TO EVALUATE COMPLETION OF MITIGATION PLAN OR MILESTONES (FOR CASES IN WHICH MITIGATION IS NOT YET COMPLETED, LIST EVIDENCE REVIEWED FOR COMPLETED MILESTONES)

1. Training Plan EOR/SCIT Nomogram Training Module;
2. External EOR-SCIT Training Module (Instructors) 12-31-2008;
3. NERC continuing education EOR/SCIT training module attendance sheet;
4. CAISO SCIT Operating Procedure T-103;
5. CAISO Crew List; and
6. Updated nomogram with added box to show the operators the most efficient mitigation method depending on system conditions.

DISPOSITION OF VIOLATION

Dated August 22, 2013

NERC TRACKING NO.
NCEA201100115**I. VIOLATION INFORMATION**

RELIABILITY STANDARD	REQUIREMENT(S)	SUB-REQUIREMENT(S)	VRF(S)	VSL(S)
TOP-004-1	R6		Medium	Moderate

VIOLATION APPLIES TO THE FOLLOWING FUNCTIONS:

BA	DP	GO	GOP	IA	LSE	PA	PSE	RC	RP	RSG	TO	TOP	TP	TSP
												X		

PURPOSE OF THE RELIABILITY STANDARD AND TEXT OF RELIABILITY STANDARD AND REQUIREMENT(S)/SUB-REQUIREMENT(S)

The purpose statement of TOP-004-1 provides: "To ensure that the transmission system is operated so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single Contingency and specified multiple Contingencies."

TOP-004-1 R6 provides:

R6. Transmission Operators, individually and jointly with other Transmission Operators, shall develop, maintain, and implement formal policies and procedures to provide for transmission reliability. These policies and procedures shall address the execution and coordination of activities that impact inter- and intra-Regional reliability, including:

R6.3. Switching transmission elements.

VIOLATION DESCRIPTION

The California Independent System Operator (CAISO) and San Diego Gas & Electric (SDGE) executed JRO00009, effective September 11, 2008. The CFR identifies CAISO as the Responsible Entity for TOP-004-1 Requirement 6. Therefore, CAISO is responsible

for SDGE's failure to develop, maintain or implement procedures specifically for switching the capacitor bank on TL50001, instead of relying on joint procedures for the TL50002 and TL50001 capacitor banks.

To address the faulty series capacitor bank on TL 50001, SDGE's plan was to de-energize the line, open isolating Motor Operated Disconnects (MODs) on both sides of the capacitor, and return the line to service with the capacitor isolated by the open MODs. All the equipment required to perform these operations was remotely controlled from the SDGE Operations Center and SDGE intended to use this remote control capability to operate the devices.

When SDGE de-energized TL 50001 at 10:56 a.m. on November 7, 2008, three System Operating Limits (SOLs) were immediately exceeded. The SCIT nomogram, a stability limit, was exceeded by approximately 2,000 MW. The Path 49 SOL was exceeded by 980 MW. The SOL on Path 44 was also exceeded.

Based on the rules that existed at the time, exceedances of stability related SOLs had to be relieved within 20 minutes, and exceedances of thermal SOLs had to be relieved within 30 minutes. Therefore, the emergency condition created by the SCIT exceedance required relief by 11:16 a.m., while that of the Path 49 SOL required relief by 11:26 a.m. Expedient isolation of the faulty series capacitor bank and the subsequent return to service of TL 50001 was essential to bulk power system (BPS) reliability.

The isolation of the TL 50001 series capacitor bank required SDGE to: 1) remotely open the TL 50001 circuit breakers at the Miguel and Imperial Valley Substations; 2) close a maintenance breaker shunting the faulty series capacitor bank at Imperial Valley; 3) open the capacitor bypass circuit breaker; 4) open the capacitor MODs; 5) close ground disconnects; and 6) close the TL 50001 circuit breakers at Miguel and Imperial Valley. The initial SDGE estimate of the time required to accomplish the above remote switching was 15 minutes.

Although SDGE personnel promptly de-energized TL 50001, the opening of the isolating MODs, item 3 above required 16 minutes to accomplish because an operator did not correctly carry out the existing procedures in the initial attempt.

The delay in isolating the faulty capacitors resulted from the SDGE system operator overlooking the requirement to close a maintenance circuit breaker before attempting to open the isolating disconnects. The control equipment is interlocked and the disconnects cannot be opened unless the maintenance circuit breaker has been closed.

Although SDGE had prepared a switching procedure for the companion TL 50002 line at Imperial Valley, a separate procedure had not been developed for TL 50001.

RELIABILITY IMPACT STATEMENT- POTENTIAL AND ACTUAL
NERC determined that the violation posed a serious or substantial risk to the reliability of the BPS. The failure to prepare a separate switching procedure specifically for TL 50001 may have resulted in a delay in isolating the faulty capacitors.

II. DISCOVERY INFORMATION

METHOD OF DISCOVERY

- SELF-REPORT
- SELF-CERTIFICATION
- COMPLIANCE AUDIT
- COMPLIANCE VIOLATION INVESTIGATION
- SPOT CHECK
- COMPLAINT
- PERIODIC DATA SUBMITTAL
- EXCEPTION REPORTING

DURATION DATE(S) **11/7/08**

DATE DISCOVERED BY OR REPORTED TO REGIONAL ENTITY **1/9/09**

IS THE VIOLATION STILL OCCURRING YES NO
 IF YES, EXPLAIN

REMEDIAL ACTION DIRECTIVE ISSUED YES NO
 PRE TO POST JUNE 18, 2007 VIOLATION YES NO

III. MITIGATION INFORMATION

FOR FINAL ACCEPTED MITIGATION PLAN:

- MITIGATION PLAN NO.
- DATE SUBMITTED TO REGIONAL ENTITY
- DATE ACCEPTED BY REGIONAL ENTITY
- DATE APPROVED BY NERC
- DATE PROVIDED TO FERC

IDENTIFY AND EXPLAIN ALL PRIOR VERSIONS THAT WERE ACCEPTED OR REJECTED, IF APPLICABLE

MITIGATION PLAN COMPLETED YES NO

EXPECTED COMPLETION DATE

EXTENSIONS GRANTED

ACTUAL COMPLETION DATE

DATE OF CERTIFICATION LETTER
CERTIFIED COMPLETE BY REGISTERED ENTITY AS OF

DATE OF VERIFICATION LETTER
VERIFIED COMPLETE BY REGIONAL ENTITY AS OF

ACTIONS TAKEN TO MITIGATE THE ISSUE AND PREVENT RECURRENCE

SDGE implemented the GIP2105 procedure on January 23, 2009. This procedure specifically addressed switching the TL50001 line.

LIST OF EVIDENCE REVIEWED BY REGIONAL ENTITY TO EVALUATE COMPLETION OF MITIGATION PLAN OR MILESTONES (FOR CASES IN WHICH MITIGATION IS NOT YET COMPLETED, LIST EVIDENCE REVIEWED FOR COMPLETED MILESTONES)

San Diego Gas and Electric Procedure GIP2105 (500kV TL50001 Procedure)