



September 29, 2023

Monica Curry
Manager, Transmission Maintenance and Construction
San Diego Gas & Electric
5488 Overland Avenue
San Diego, California 92123

**Subject: 2023 California Independent System Operator Corporation (ISO)
Maintenance Review – Draft Report**

This report documents the ISO 2023 annual maintenance review of the San Diego Gas & Electric (SDG&E) filed maintenance practices for those transmission facilities placed under ISO operational control.

The report first describes the details of the maintenance review including the facilities, equipment types, procedures reviewed, and concludes with the review of the results. The results describe where maintenance programs are showing positive results and where additional focus may be required. The 'Deviations to the Maintenance Practices' section of this document covers the areas requiring additional focus.

The ISO thanks SDG&E's staff on their effort to gather and provide data. The ISO also appreciates that SDG&E personnel were readily available during this year's review.

THE REVIEW

On Monday, August 28, 2023, a presentation by SDG&E compliance, management and technical staff kicked off the ISO's annual maintenance review. ISO representatives received maintenance station and transmission line records information from SDG&E personnel which the ISO began the review.

Stations Records Review

Review of the station maintenance records included the examination of records and reports in SDG&E's maintenance management system, and included the review of sample check off sheets and history cards or records for the following equipment placed under ISO operational control:

- Circuit breakers
- Transformers/Regulators
- Voltage regulators
- Insulators/Bushings/Arrestors
- Protective relay systems
- Remedial Action Scheme (RAS) / Special Protection Scheme (SPS) selected for review

- Battery systems
- Disconnect switches
- Reactive power components

In accordance with ISO Maintenance Procedure 4, section 4.1.2, the ISO selected the stations listed below and reviewed the records for the above referenced equipment.

SDG&E Stations

Voltage Class (kV)	Station
500 kV	Miguel
230 kV	Miguel
230 kV	Otay Mesa
138 kV	Miguel
138 kV	Laguna Nigel
138kV	Friars
69 kV	Miguel
69 kV	Otay
69 kV	Encinitas
RAS/SPS	138kV TL13810A RAS

Station Site Visits

Starting on August 29, 2023 and concluding on August 30, 2023, the ISO visited all of the stations listed above. The station site visits consisted of an examination of the station logs, single line diagrams, review of history maintenance spreadsheets or records, and inspection of the general condition of equipment, fences, grounds, buildings, and relays.

Transmission Line Records Review

The transmission line maintenance records review included the examination of records and various line patrol reports, for the following activities and equipment placed under ISO operational control:

- Patrols and inspections
- Vegetation management
- Structures/Foundations
- Structure grounds
- Insulators
- Guys/anchors
- Conductor and shield wire
- Rights-of-Way
- Disconnects/pole-top switches

In accordance with ISO Maintenance Procedure 4, section 4.1.2 the following facilities were selected and reviewed:

SDG&E Transmission Lines

Voltage Class (kV)	Transmission Line
500 kV	50003 (Ocotillo - Suncrest)
230 kV	23004 (Mission - San Luis Rey)
230 kV	23023 (Miguel - Mission)
230 kV	23051 (Sycamore Canyon-Palomar Energy)
138 kV	13804 (Penasquitos - Encina - Batiquitos)
138 kV	13821 (Sycamore Canyon-Santee)
138 kV	13826 (Miguel - Proctor Valley)
69 kV	627 (Jamacha - Miguel)
69 kV	629 (Descanso - Glenclyff - Cameron - Crestwood)
69 kV	642 (South Bay - Sweetwater - Montgomery)
69 kV	678 (Alpine - Los Coches)
69 kV	696 (Ash - Escondido)

Transmission Line Site Visits

From August 29, 2023 and concluding on August 31, 2023, the ISO visited selected line sections. The site visits consisted of an inspection to view vegetation management, erosion control, right-of-way access, condition of steel structures, insulators, conductors and shield wire, foundations, wood poles, guys, and anchors. The ISO conducted site visits to selected line sections for all of the lines listed above.

Positive Results:

The ISO appreciates SDG&E's efforts in providing the substation and transmission line maintenance records to facilitate the annual maintenance review. The records provided were complete, well laid out and organized. SDG&E staff also provided quick and thorough responses to the ISO's questions during the maintenance records review.



During the ISO transmission line field visit, the ISO representative encountered SDG&E's construction contractors completing work at several locations on the TL642 (South Bay - Sweetwater – Montgomery) 69 kV transmission line. Locations where construction work was completed revealed very well-constructed structures that adhere to acceptable standards and requirements.

Deviations to the Maintenance Practices

Deviations to the maintenance practices are categorized as findings, concerns, or observations. 'Findings' are deviations related to a similar cause that indicates a systemic problem with adherence to the maintenance practices; 'concerns' are deviation(s) related to a similar cause that indicates a local problem with adherence to the maintenance practices; and 'observations' are deviation(s) that do not indicate a systemic or local problem.

During this year's review, station maintenance had no findings, no concerns, and three observations. Transmission line maintenance had no findings, no concerns, and two observations.

Findings – Stations: (None)**Concerns – Stations: (None)****Observations – Stations: (Three)****1. Protective Relaying Record inconsistencies:**

The drawings provide by SDG&E did not match the specific relays located in the field at the Miguel Substation. This is a repeat observation since the ISO noted the same observation last year for the documentation associated with the Penasquitos substation. Specifically, the single lines provided at the Miguel substation identified different relays than were in the field and listed in the maintenance reports. For example, the drawing for the 230kV line protection on the Miguel to Mission 230kV line , TL 23023, showed a SEL-311L and SEL-321 in service when the actual relays in the maintenance report and in the field were a SEL-411L and SEL-421-5.

2. Maintenance done late

The bushing Insulgrease maintenance activity for the Miguel Bank 80 A phase CCVT and the Miguel 69kv south bus differential relays relay calibration and trip tests were completed late

3. Bushing Insulgrease contamination limits

During the field maintenance inspections, ISO staff identified a number of heavily contaminated circuit breaker bushings. The bushings were coated with Insulgrease and it unclear whether there is a limit to the external contamination that may jeopardize the bushing withstand performance.

Other Substation General Maintenance Items**Miguel**

1. The viewing window for the 500kV CB4X is cloudy and will not allow the operator to read the counter operations or other information.

4. There were a number of bird nests in the 12kV tertiary bus work.



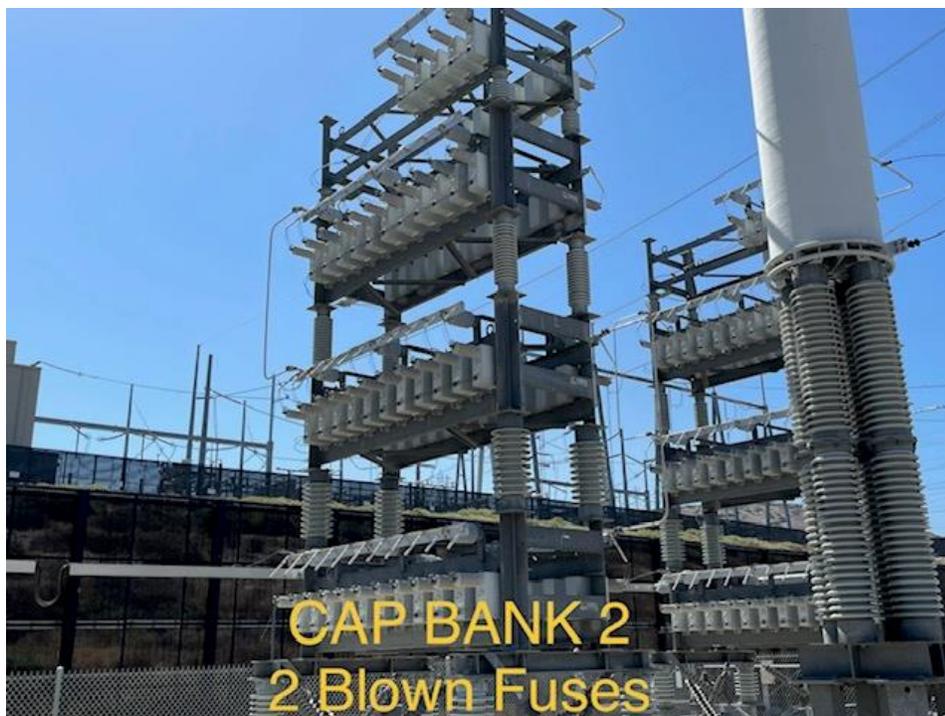
5. The raceway trench covers in a number of areas were damaged or broken.



6. The air core tertiary reactors showed heavy wear. Replacements are onsite.



7. There was a moderate amount of vegetation growth in the 230kV yard
8. 230kV Cap Bank # 2 had 2 capacitors with blown fuses



- 9. 230kV CB 8T had a torn door gasket
- 10. The counter for the 69kV OCB 11N was broken and needs to be replaced.
- 11. Bank 60 has a small radiator oil leak and missing radiator fan.



12. 69kV Cap Bank 1 and Cap Bank 2 have a number of leaking caps; 2 on Cap Bank 1 and 2 on Cap Bank 2



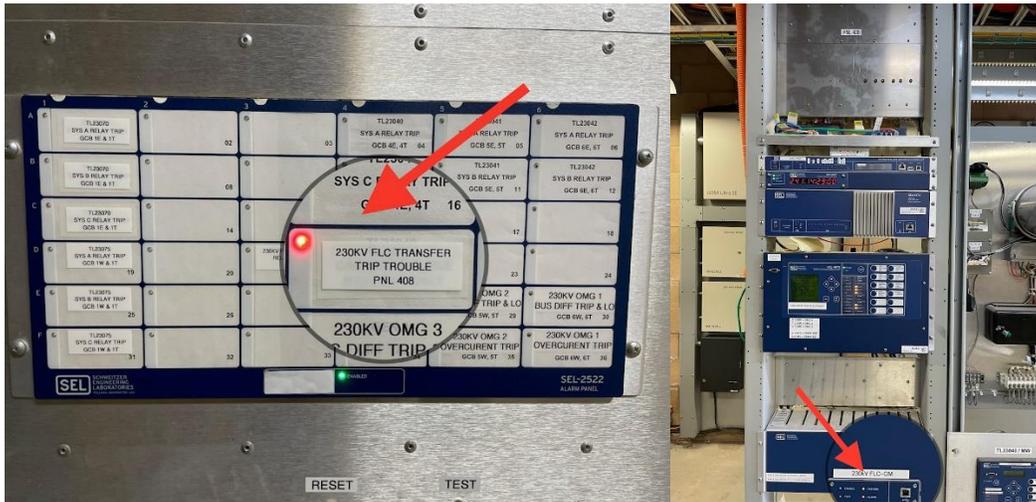
13. There was minor vegetation growth in the 69kV and 230kV yards.

Otay:

1. The site had minor vegetation growth in the yard.

Otay Mesa:

1. There was a 230kV FLC Transfer Trip Trouble alarm on the annunciator



Friars:

1. The battery records at the substation showed readings that indicated additional correctional steps were necessary. Specifically, the recorded low voltage cell readings were below the lower tolerance for one cell that had a recorded level of 1.17VDC.

Laguna Niguel:

1. The site had minor vegetation growth in the yard.

Encinitas:

1. The circuit breaker counter for the bus tie circuit breaker was non-operational.
2. There was debris bridging a number of the insulator sheds on one insulator on CB TL660

Findings – Transmission Lines: (None)

Concerns – Transmission Lines: (None)

Observations – Transmission Lines: (Two)

- 1 During the ISO field visit of the underground vault on line TL642 (South Bay - Sweetwater - Montgomery), It was observed that some underground cable support brackets were rusted. The ISO representative determined that the rust is still superficial

and recommends that these brackets be cleaned and treated during the next vault maintenance work.



- 2 During the ISO field visit, ground erosion was observed at the footings of structure Z524961 on transmission line 23004 (Mission - San Luis Rey). The ISO recommends that preventive measures be taken to avoid further erosion.



Other Transmission Line General Maintenance Items

The maintenance items discovered during the review that were not considered deviations from the maintenance practices but need attention are:

1. During the ISO field visit, overgrown vegetation was observed at multiple locations along the Right of Way of transmission line 23004 (Mission - San Luis Rey). The ISO representative noticed evidence of vegetation trimming along the line and determined that the required electrical clearance was not infringed. The ISO recommend that vegetation growth be monitored along this line and danger trees be removed if necessary.



2. During the ISO record review, it was noticed that within the wood pole groundline inspection section of the transmission record, several structures had multiple “Install Dates”. An example is Z97128 on transmission line 23004 (Mission - San Luis Rey) for which the record indicates that it was installed in 1970 (line 3 of the record) and 1982 (line 1 of the record). SDG&E representative indicated that this was as a result in data collection error. The ISO recommend that the structure installation date be validated prior to entry into the system.

ISO Expectations:

The ISO looks forward to hearing from SDG&E on how it plans to address the observations and open items listed throughout this report.

Please do not hesitate to contact me at (916) 351-4428 if you have any questions concerning this report.

Respectfully,

DocuSigned by:

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Scott Vaughan
Manager, Transmission Assets
ISO

cc: Neil Millar
Stephen Ritty
Kingsley Tenjoh
Adalberto Baca- Chavez