BEFORE THE COURT OF ADMINISTRATIVE HEARINGS
FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION
STATE OF MINNESOTA

IN THE MATTER OF XCEL ENERGY'S PETITION FOR APPROVAL OF ITS 2023 ANNUAL FUEL FORECAST AND MONTHLY FUEL COST CHARGES	MPUC Docket No. E002/AA-22-179 CAH Docket No. 21-2500-40336

REBUTTAL TESTIMONY OF

ALLEN L. HISER, JR.

On Behalf of

NORTHERN STATES POWER COMPANY

August 13, 2025

Exhibit___(ALH-2)

Cable Replacement and Subsequent License Renewal

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Schedule

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND OCCUPATION.

A. My name is Allen L. Hiser, Jr. I am employed by Enercon as a Senior Regulatory Services Engineer and am providing Rebuttal Testimony on behalf of Northern States Power Company – Minnesota, d/b/a Xcel Energy (Xcel Energy or the Company).

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS PROCEEDING?

A. Yes. I provided Direct Testimony in this matter on the topics of Cable Repair and Subsequent License Renewal (SLR) at Prairie Island Nuclear Generating Plant (PINGP). In that testimony, I concluded that (1) it was appropriate to replace the damaged cables rather than repair them, and (2) that the DC control cables at issue would likely have been subject to replacement during the SLR operating period, either in a planned shutdown due to identified degradation or following an unplanned dual unit outage after a cable failure.

Q. DID ANY INTERVENORS PROVIDE DIRECT TESTIMONY REGARDING THOSE TOPICS OR ANY OF YOUR CONCLUSIONS?

A. Yes. The Department of Commerce (Department) and Office of Attorney General (OAG) both provided Direct Testimony on issues raised in my Direct Testimony. Department witness Andrew Golden and OAG witness Shoua Lee suggested that the Commission should not consider offsets for avoided outage costs that would be associated with an eventual cable failure due to degradation, because Xcel Energy has not shown that it was prudent for the Company not to already have inspected and replaced a 50-year-old control cable buried in direct contact with the soil.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. My Rebuttal Testimony responds to the above issue raised by the Department and the OAG.

Q. HOW DO YOU RESPOND TO THESE WITNESSES' APPARENT CONTENTION THAT AN EVENTUAL CABLE FAILURE DUE TO DEGRADATION MIGHT DEMONSTRATE IMPRUDENCE ON THE PART OF THE COMPANY?

A. Based on my 48 years in the nuclear power industry, I do not believe this contention, offered by witnesses with no nuclear industry experience, has any basis beyond their lay opinions. That is because there is no guidance or industry standard that would require inspection or testing of the cables that were damaged. The Nuclear Regulatory Commission (NRC)—which provides aging management guidance for all aspects of nuclear power plants—has not identified any needed aging management (such as specific testing/inspections) for these cables during the license renewal (LR) operating term. PINGP is currently in the LR operating term which runs from 40 to 60 years after initial licensing. The NRC does not require aging management for these cables because world-wide nuclear operating experience to date has not demonstrated a concern that such cables are likely to fail or lose function during the LR operating term. Because there is a lack of NRC requirement for a time-based inspection of the cables, therefore, inspection is warranted only in certain situations, such as a history of cable failures, water ponding in the area that could cause degradation, or connected equipment not operating as expected. None of these conditions were evident prior to the cable cut and forced outage, and thus, consistent with NRC guidance, it was prudent for Xcel Energy not to have already inspected and replaced the subject cables.

The only potentially relevant guidance applies for the subsequent license renewal period. PINGP has not yet entered this period, which runs from 60 to 80 years after initial licensure. For context, in the development of guidance for the SLR period, the NRC considered that low voltage DC control cables were a low risk for failure and, accordingly, recommended inspections or testing on only a sample of these cables. Without prior knowledge of the condition of the subject DC control cables, the NRC's generic guidance for SLR would have had Xcel Energy inspect/test only approximately 20 percent of these type of cables, as I discussed in my Direct Testimony.

In any event, the Company has conducted functional testing of the control cables at issue, as set forth in the Company's supplemental response to OAG IR No. 8. As noted in that response, "the DC control cables were periodically tested in conjunction with the functional testing of the end components of the cable(s) . . ." and "[t]est results reviewed to-date do note indicate any issues with any of the conductors."[1]

Given the lack of industry and NRC operating experience and guidance stating that such inspections are required or prudent, it is only in hindsight that the lack of inspection and replacement of the DC control cables can be questioned. In fact, if the Company had used its resources to inspect these cables, in the face of no operating experience or guidance, such a decision could reasonably have been challenged as imprudent due to the lack of technical basis, especially given

[1] The Company's Supplemental response to OAG Information Request (IR) No. 8 is attached to Hiser Rebuttal Testimony as Exhibit___(ALH-2), Schedule 1.

that testing of the end components attached to those cables did not show any concerns.

II. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

☐ **Not-Public Document – Not For Public Disclosure**
☐ **Public Document – Not-Public Data Has Been Excised**
☒ **Public Document**

Xcel Energy	Information Request No.	8
Docket No.:	E002/AA-22-179	**Supplement**
Response To:	Minnesota Office of the Attorney General	
Requestor:	Judy Sigal	
Date Received:	June 2, 2025	

Question:

A. Identify every test or inspection of a buried cable that occurred at Prairie Island Nuclear Generating Plant from January 1, 2000 through the date of the Event, including:
    1. The date of the test or inspection;
    2. The reason for the test or inspection;
    3. The type of test or inspection;
    4. The type of cable tested or inspected, including the voltage; and
    5. The condition of the cable and any repairs or other corrective actions that were undertaken.
B. If the DC control cables were included in any of the tests or inspections identified in response to A, provide the details of each test or inspection of the DC control cables, including any documents memorializing the results of the test or inspection.
C. Prior to the Event, had the DC control cables ever been inspected, tested, or replaced since their original installation? If so, explain the circumstances that led to their testing, inspection, or replacement and provide any documents memorializing the inspection, test, or replacement.

Any responsive documents must be provided in their unlocked native format with all formulas and links intact.

Response:

Xcel Energy objects to this Information Request on the grounds that it is overly broad, unduly burdensome and not relevant to any issue in this proceeding by requesting extensive information about *any* buried cable at PINGP over the past 25 years instead of just the kind of cable at issue here: DC control cables. Xcel Energy objects to this Information Request on the grounds that it is overly broad, unduly burdensome, and not relevant to any issue in this proceeding by requesting extensive information about *any* buried cable at PINGP over the past 25 years instead of just the cable at issue here. Subject to and without waiving this objection, the Company responds as follows:

The Company has attempted to find the requested information, including assigning an engineer to research this data full time. This is a manual process of review through multiple databases that requires identifying all buried cables, determining the type of each buried cable, identifying the conductors within each cable, determining what component was at the end of each conductor, and finally identifying and collecting the requested information. To-date, the Company has spent approximately 40 hours and has not yet completed the first step of identifying buried cables, with over 400 buried cables identified thus far. Xcel Energy anticipates that approximately 56 additional hours would be needed just to identify all of the buried cables at PINGP. Given the significant burden and time required to respond to this request as written, as well as the tenuous relevance of the information sought, the Company will respond with the requested information only as to the DC control cables at issue in this matter. The Company will supplement this response when that information is available. An engineer has been assigned to research this data full time and after two weeks, Xcel Energy will submit the available data set collected at that time and will continue with any remaining research.

Supplement:
The Company maintains its initial objections to this request. Without waiving any objections, the Company further responds as follows:

A. Please see Attachment A to this response, which includes the information the Company has been able to locate to-date. Consistent with the Company's objections, Attachment A includes identification of every conductor in the DC control cable bundle at issue in this proceeding ("Conductor Name" column). The DC control cables were periodically tested in conjunction with the functional testing of the end components of the cable(s), and that testing is captured in Attachment A. Also consistent with its objections, the Company is reviewing and collecting data from January 1, 2010 until October 19, 2023. Data prior to that date is only available on microfiche and would be unduly burdensome and time-consuming to collect and review.

    1. Available responsive information is provided in Attachment A. Additional information will be added as it is located.

    2. Available responsive information is provided in Attachment A. Additional information will be added as it is located.

    3. Available responsive information is provided in Attachment A. Additional information will be added as it is located. Conductors highlighted in green were functionally tested with preventative electrical (PE) procedures. A functional test means that the component or

equipment at the end of the conductor was tested. Successful operation of the component indicates that the conductor is performing its intended function (i.e., to conduct direct current). Conductors highlighted in blue in Attachment A were also functionally tested, although through plant operation instead of a PE, and these operations are recorded in the Operations Narrative Log. Again, successful operation of the component or equipment indicates that the conductor is performing its intended function. Conductors with no highlighting are still being investigated and the response will be supplemented when that information has been collected.

4. Every conductor identified in Attachment A is a control cable (600V). In addition, the "Equipment" column indicates the component or equipment at the end of the conductor that was also tested as part of the functional testing. As previously stated, operation of the identified component functionally tests the conductor's ability to conduct direct current.

5. To-date, the Company has not identified any notes/results indicating that repairs or corrective actions were needed or taken with respect to the conductors.

The Company is continuing to manually review the available data and compile the requested information. Attachment A provides the information that is currently available; the Company will further supplement this response when the remainder of the information has been compiled.

B. As indicated in subpart A, all conductors identified in Attachment A are control cables within the DC Control Cable bundle at issue. Attachment A indicates which of the reviewed conductors have been functionally tested. Test results reviewed to-date do not indicate any issues with any of the conductors. The Company is currently reviewing data and will populate the spreadsheet with test results. Please see Attachment A for additional information. Responsive portions of the Operations Narrative Log will be produced when the responsive information has been compiled.

C. The Company objects to the term "inspection" as vague, in that it is unclear the distinction being made between "inspection" and "testing." Subject to and without waiving this objection, the Company responds as follows: Yes, prior to the Event the DC control cables were tested in conjunction with the functional testing of the end components of the cable(s) as described in subparts A and B. The cables were not replaced prior to the Event. To the extent "inspection"

means visual inspection, information reviewed to-date does not indicate that the DC control cables were previously excavated and inspected.

Witness:	n/a	**As to Objections:**
Preparer:	Amanda J. Jepson	Lauren Steinhaeuser
Title:	Manager, Nuclear Regulatory Policy	Assistant General Counsel
Department:	Nuclear Policy Planning	Legal Services
Telephone:	(651) 212-1679	Lauren.Steinhaeuser@xcelenergy.com
Date:	June 13, 2025	**Supplement:** July 3, 2025

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Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
1CS-12	13P14	Panel 13 , ckt 14 in the plant. This is for 8H16, 8H17 52xa, 52xb		
1CS-12	16NC	8H16 Bkr 52b contact to plant		
1CS-12	16NO	8H16 Bkr 52a contact to plant		
1CS-12	16TT1	BKR 8H16 Trip Coil 2 Monitor - Red Light in Plant	End device is 46381-03 Red Light (in Control Room) and Trip Coil # 2 for BKR 8H16. This light is normally illuminated when BKR 8H16 is closed, which is the normal position for when Unit 1 is online. A CAP search was performed and no issues were noted with this light.	
1CS-12	1UPLOT	GEN1 Pri Cross Trip from Sub to Plant - 86PX/1G Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-12	T28P	BKR 8H16 Trip Coil 2 Monitor - Red Light in Plant	End device is 46381-03 Red Light (in Control Room) and Trip Coil # 2 for BKR 8H16. This light is normally illuminated when BKR 8H16 is closed, which is the normal position for when Unit 1 is online. A CAP search was performed and no issues were noted with this light.	
1CS-12	T30N	GEN1 Pri Cross Trip from Sub to Plant - 86PX/1G Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
	CABLE GRD/SHIELD			
1CS-13	+TC46AI604	1R Sta Aux MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #604		
1CS-13	-TC46AI604	1R Sta Aux MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #604		
1CS-13	1GTAXN2	GSU1 Cross Trip 1 from Plant to Sub - 86-1/1GTX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-13	1GTAXT2	GSU1 Cross Trip 1 from Plant to Sub - 86-1/1GTX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-13	M45N	1R Reserve Trans. Pri. Rly'g Aux Lockout Relays	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-13/1CS-1	RTPLON	1R Pri Trip from Sub to Plant - 86-PX/1R Aux Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-13/1CS-1	RTPLOT	1R Pri Trip from Sub to Plant - 86-PX/1R Aux Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-13/1CS-1	1RAXN2	1R Trip 1 from Plant to Sub - 86-1/RX Lockout Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-13/1CS-1	1RAXT2	1R Trip 1 from Plant to Sub - 86-1/RX Lockout Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-14	13P14	Panel 13 , ckt 14 in the plant. This is for 8H16, 8H17 52xa, 52xb		
1CS-14	17NC	8H17 Bkr 52b contact to plant		
1CS-14	17NO	8H17 Bkr 52a contact to plant		
1CS-14	17TT1	BKR 8H17 Trip Coil 2 Monitor - Red Light in Plant		
1CS-14	1GTBXN2	GSU1 Cross Trip 2 from Plant to Sub - 86-2/1GTX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-14	1GTBXT2	GSU1 Cross Trip 2 from Plant to Sub - 86-2/1GTX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-14	T29P	BKR 8H17 Trip Coil 2 Monitor - Red Light in Plant		
1CS-15	+TC46AI603	1R Sta Aux MW Reading from Plant to Sub - PACTC4-6 Analog Input #603		
1CS-15	+TC46AI608	TR10 Tertiary MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #608		
1CS-15	-TC46AI603	1R Sta Aux MW Reading from Plant to Sub - PACTC4-6 Analog Input #603		
1CS-15	-TC47AI403	#1 Main Sta Aux MW Reading from Plant to Sub - PACTC4-7 Analog Input #403		

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Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
1CS-15	+TC47AI403	#1 Main Sta Aux MW Reading from Plant to Sub - PACTC4-7 Analog Input #403		
1CS-14	-TC46AI608	TR10 Tertiary MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #608		
1CS-16	16CX	BKR 8H16 Close Command - 1CX-3 Aux Relay	This is the only device which can be used to close breaker 8H16. Operation Log entries for when 8H16 was closed demonstrates functionality.	
1CS-16	16GL	BKR 8H16 Open Status - Green Light in Plant	This is for the green light on Control Switch 46381 (In Control Room). This illuminates when breaker 8H16 is open. No CAPS or Maintenance Notifications were found and it is not mentioned in the OPS logs.	
1CS-16	16T1	BKR 8H16 Trip Coil 1 Monitor - Red Light in Plant	This is for a red light on Control Switch 46381 (In Control Room) to the Trip Coil 1 monitor. This light is normally illuminated. No CAPs or Maintenance Notifications were found and it is not mentioned in the OPS logs.	
1CS-16	16TX	BKR 8H16 Trip Command - 1TX-3 Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-17	1GAXN2	GEN1 Cross Trip 1 from Plant to Sub - 86-1/1GX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-17	1GAXT2	GEN1 Cross Trip 1 from Plant to Sub - 86-1/1GX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-17	1USLOT	GEN1 Sec Cross Trip from Sub to Plant - 86SX/1G Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-16	U37P	BKR 8H16 Close Command - 1CX-3 Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-17	U42N	GEN1 Sec Cross Trip from Sub to Plant - 86SX/1G Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-16	1G41XN	GEN1 Field Breaker Closed Status - 41X/1G Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-16	1G41XP	GEN1 Field Breaker Closed Status - 41X/1G Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-101	1RBXN2	1R Trip 2 from Plant to Sub - 86-2/RX Lockout Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-105	1RBXT2	1R Trip 2 from Plant to Sub - 86-2/RX Lockout Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-17	M32N	1R Reserve Trans. Sec. Rly'g Aux Lockout Relays	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-17/1CS-1	RTSLON	1R Sec Trip from Sub to Plant - 86-SX/1R Aux Relay	PE5037 - Procedure Tests End Device	2021, 2019, 2011
1CS-17/1CS-1	RTSLOT	1R Sec Trip from Sub to Plant - 86-SX/1R Aux Relay	PE5031, PE5037 - Procedures Test End Device	PE 5031 -2022, 2020, 2018, 2016, 2014, 2012, 2011 PE 5037 - 2021, 2019, 2011
1CS-18	17CX	BKR 8H17 Close Command - 1CX-3 Aux Relay	17CX is for 8H17 close coil. This is the only device which can be used to close breaker 8H17. Operation Log entries for when 8H17 was closed demonstrates functionality.	
1CS-18	17GL	BKR 8H17 Open Status - Green Light in Plant	17GL is for the green light on Control Switch 46380. This illuminates when breaker 8H17 is open. No CAPs or Maintenance Notifications were found and it is not mentioned in the OPS logs.	
1CS-18	17T2	BKR 8H17 Trip Coil 1 Monitor - Red Light in Plant	17T2 connects a red light on Control Switch 46380 to the Trip Coil 1 monitor. This light is normally illuminated. No CAPs or Maintenance Notifications were found and it is not mentioned in the OPS logs.	
1CS-18	17TX	BKR 8H17 Trip Command - 1TX-3 Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011

Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
1CS-18	1GBXN2	GEN1 Cross Trip 2 from Plant to Sub - 86-2/1GX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-18	1GBXT2	GEN1 Cross Trip 2 from Plant to Sub - 86-2/1GX Lockout Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-18	U38P	BKR 8H17 Close Command - 1CX-3 Aux Relay	PE5031 - Procedure Tests End Device	2022, 2020, 2018, 2016, 2014, 2012, 2011
1CS-19	+TC46AI605	CT1 MW Reading from Plant to Sub - PACTC4-6 Analog Input #605		
1CS-19	+TC46AI607	TR10 Tertiary MW Reading from Plant to Sub - PACTC4-6 Analog Input #607		
1CS-19	-TC46AI605	CT1 MW Reading from Plant to Sub - PACTC4-6 Analog Input #605		
1CS-19	-TC46AI607	TR10 Tertiary MW Reading from Plant to Sub - PACTC4-6 Analog Input #607		
1CS-19	SSA1	Orion-LX OUT4 to plant annunciator	SSA1 and SSA2 connect to the plant annunciator system to indicate Substation Local Alarm.	Numerous Instances - 21 Pages of Ops Logs
1CS-19	SSA2	Orion-LX OUT4 to plant annunciator	SSA1 and SSA2 connect to the plant annunciator system to indicate Substation Local Alarm.	Numerous Instances - 21 Pages of Ops Logs
1CS-20	16ACX	MOD 8H16A Close Command - 1CX-1 Aux relay	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	16AGL	MOD 8H16A Open Status - Green Light in Plant	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	16ARL	MOD 8H16A Closed Status - Red Light in Plant	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	16ATX	MOD 8H16A Trip Command - 1TX-1 Aux relay	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	16BCX	MOD 8H16B Close Command - 1CX-2 Aux relay	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	

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Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
1CS-20	16BGL	MOD 8H16B Open Status - Green Light in Plant	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	16BRL	MOD 8H16B Closed Status - Red Light in Plant	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	16BTX	MOD 8H16B Trip Command - 1TX-2 Aux relay	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	T26P	MOD 8H16A Close Command - 1CX-1 Aux relay	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-20	T26P	MOD 8H16B Close Command - 1CX-2 Aux relay	16ACX, 16AGL, 16ARL, 16ATX, 16BCX, 16BGL, 16BRL, 16BTX and T26P are for the Close, Trip, Red Light and Green Light for both 8H16A and 8H16B Motor Operated Disconnects (MOD). Operation Log entries for when the MODs open and close, were found if they were logged. No CAPs or Maintenance notifications were written against 4647601, 4647602, 4649901 and 4649902 which are the red and green lights in the control room.	
1CS-21	PACTC47P	GEN1 MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #301		
1CS-21	-TC47AI402	GEN1 MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #402		
1CS-21	TC47I301	GEN1 MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #301		
1CS-21	PACTC46P	TR10 Tertiary MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #305		
1CS-21	TC46I305	TR10 Tertiary MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #305		
1CS-21	+TC47AI401	GEN1 MW Reading from Plant to Sub - PACTC4-7 Analog Input #401		
1CS-21	-TC47AI401	GEN1 MW Reading from Plant to Sub - PACTC4-7 Analog Input #401		
1CS-21	+TC47AI402	GEN1 MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #402		
1CS-22	17B1CX	MOD 8H17B1 Close Command - 1CX-1 Aux relay		
1CS-22	17B1GL	MOD 8H17B1 Open Status - Green Light in Plant		
1CS-22	17B1RL	MOD 8H17B1 Closed Status - Red Light in Plant		
1CS-22	17B1TX	MOD 8H17B1 Trip Command - 1TX-1 Aux relay		
1CS-22	17B2CX	MOD 8H17B2 Close Command - 1CX-2 Aux relay		
1CS-22	17B2GL	MOD 8H17B2 Open Status - Green Light in Plant		

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Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
1CS-22	17B2RL	MOD 8H17B2 Closed Status - Red Light in Plant		
1CS-22	17B2TX	MOD 8H17B2 Trip Command - 1TX-2 Aux relay		
1CS-22	T27P	MOD 8H17B1 Close Command - 1CX-1 Aux relay		
1CS-22	T27P	MOD 8H17B2 Close Command - 1CX-2 Aux relay		
1CS-23	11BV0	4.16KV Bus 11 Potential Analog Isolator MODEL #401006		
1CS-23	+TC47AI404	#1 Main Sta Aux MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #404		
1CS-23	11BV15	4.16KV Bus 11 Potential Analog Isolator MODEL #401006		
1CS-23	11BV33	4.16KV Bus 11 Potential Analog Isolator MODEL #401006		
1CS-23	+TC46AI606	CT1 MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #606		
1CS-23	-TC46AI606	CT1 MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #606		
1CS-23	-TC47AI404	#1 Main Sta Aux MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #404		
1CS-6	1B8YV0	345KV Bus 1 Voltage to GEN1 Sync Scope	These are for 8H16 synchroscope for Unit 1 and are only used when the breaker is closed. Operations Log entries were used to determine when 8H16 was closed.	
1CS-6	1B8YV1	345KV Bus 1 Voltage to GEN1, GEN2 Sync Scope	These are for 8H16 synchroscope for Unit 1 and are only used when the breaker is closed. Operations Log entries were used to determine when 8H16 was closed.	
1CS-5	1GSV01	GEN1 Sync Scope Voltage - POT IND 1GSVA4		
1CS-5	1GSVA4	GEN1 Sync Scope Voltage - POT IND 1GSVA4		
1CS-7	61BVY2	161KV Bus 1 Voltage to Aux PT Cab in Plant (Computer Input)	These conductors feed transducer 28309 which are an input to Plant Computer point 1V0331A which monitors the voltage on the 161 kV line. Plant Computer data is only available to early 2022.	
1CS-7	61BVY3	161KV Bus 1 Voltage to Aux PT Cab in Plant (Computer Input)	These conductors feed transducer 28309 which are an input to Plant Computer point 1V0331A which monitors the voltage on the 161 kV line. Plant Computer data is only available to early 2022.	
1CS-7	RRK18XV0	345KV RRK (line1) Voltage to GEN1 Sync Scope	These are for 8H17 synchroscope for Unit 1 and are only used when the breaker is closed. Operations Log entries were used to determine when 8H17 was closed.	
1CS-7	RRK18XV1	345KV RRK (line1) Voltage to GEN1 Sync Scope	These are for 8H17 synchroscope for Unit 1 and are only used when the breaker is closed. Operations Log entries were used to determine when 8H17 was closed.	
1CS-11	CT15A2	TR10 Tert Voltage to WHM, W/XD, and VAR/XD in plant		
1CS-11	CT15B2	TR10 Tert Voltage to WHM, W/XD, and VAR/XD in plant		
1CS-11	CT15C2	TR10 Tert Voltage to WHM, W/XD, and VAR/XD in plant		
1CS-11	CT15N	TR10 Tert Voltage to WHM, W/XD, and VAR/XD in plant		
1CS-8	CTMC0 / 3CTM0 (Plant)	1H4 current to WHM, W/XD, and VAR/XD in plant		
1CS-8	CTMC1 / WHSUB7C (Plant)	1H4 current to WHM, W/XD, and VAR/XD in plant		
1CS-8	CTMC2 / WHSUB5C (Plant)	1H4 current to WHM, W/XD, and VAR/XD in plant		
1CS-8	CTMC3 / WHSUB3C (Plant)	1H4 current to WHM, W/XD, and VAR/XD in plant		
1CU-454	RED	Plant GAI TRONICS PAGING SYSTEM		
1CU-454	BLUE	Plant GAI TRONICS PAGING SYSTEM		
1CU-454	GRN	Plant GAI TRONICS PAGING SYSTEM		
1CU-454	BLK	Plant GAI TRONICS PAGING SYSTEM		

Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
1CU-454	WHT-14	Plant GAI TRONICS PAGING SYSTEM		
1CU-454	BLK-14	Plant GAI TRONICS PAGING SYSTEM		
1CU-454	ORG	Plant GAI TRONICS PAGING SYSTEM		
2CS-7	2GSV01	GEN2 Sync Scope Voltage - POT IND 2GSVA4		
2CS-17	2GSVA4	GEN2 Sync Scope Voltage - POT IND 2GSVA4		
2CS-8	HMP8XV0	345KV HMP Voltage to GEN2 Sync Scope	These are for 8H14 synchroscope for Unit 2 and are only used when the breaker is closed. Operations Log entries were used to determine when 8H14 was closed	
2CS-8	HMP8XV1	345KV HMP Voltage to GEN2 Sync Scope	These are for 8H14 synchroscope for Unit 2 and are only used when the breaker is closed. Operations Log entries were used to determine when 8H14 was closed	
2RXMV1/2CS	-TC47AI405	2RX Sta Aux MW Reading from Plant to Sub - PACTC4-7 Analog Input #405		
2RXMV2A/2C	+TC47AI406	2RX Sta Aux MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #406		
2RXMV1/2CS	-TC47AI406	2RX Sta Aux MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #406		
2RXMV2/2CS	+TC47AI405	2RX Sta Aux MW Reading from Plant to Sub - PACTC4-7 Analog Input #405		
2CS-18	2RYAXN2	2RY Cross Trip 1 from Plant to Sub - 86-1X/2RY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	2RYAXT2	2RY Cross Trip 1 from Plant to Sub - 86-1X/2RY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	2RYBXN2	2RY Cross Trip 2 from Plant to Sub - 86-2X/2RY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	2RYBXT2	2RY Cross Trip 2 from Plant to Sub - 86-2X/2RY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	L57N	2RSX Pri Cross Trip from Sub to Plant - 86-PX/2RSX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	L57P1	2RSX Pri Cross Trip from Sub to Plant - 86-PX/2RSX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	L58N	2RSY Pri Cross Trip from Sub to Plant - 86-PX/2RSY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	L58P1	2RSY Pri Cross Trip from Sub to Plant - 86-PX/2RSY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	M34N	2RSY Sec Cross Trip from Sub to Plant - 86-SX/2RSY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-18	M34P1	2RSY Sec Cross Trip from Sub to Plant - 86-SX/2RSY Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-19	10TERMC0 / WH10BN(Plant)	TR10 Tert Current to WHM, W/XD, and VAR/XD in plant		
2CS-19	10TERMC1 / WH10B1(Plant)	TR10 Tert Current to WHM, W/XD, and VAR/XD in plant		
2CS-19	10TERMC2 / WH10B2(Plant)	TR10 Tert Current to WHM, W/XD, and VAR/XD in plant		
2CS-19	10TERMC3 / WH10B3(Plant)	TR10 Tert Current to WHM, W/XD, and VAR/XD in plant		
2CS-19	2RXAXN2	2RX Cross Trip 1 from Plant to Sub - 86-1X/2RX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-19	2RXAXT2	2RX Cross Trip 1 from Plant to Sub - 86-1X/2RX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-19	2RXBXN2	2RX Cross Trip 2 from Plant to Sub - 86-2X/2RX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-19	2RXBXT2	2RX Cross Trip 2 from Plant to Sub - 86-2X/2RX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-19	M33N	2RSX Sec Cross Trip from Sub to Plant - 86-SX/2RSX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	
2CS-19	M33P1	2RSX Sec Cross Trip from Sub to Plant - 86-SX/2RSX Lockout Relay	PE 2RS-X-Y - Procedure Tests End Device	

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2CS-20	14B1CX	MOD 8H14B1 Close Command - 1CX-1 Aux relay		
2CS-20	14B1GL	MOD 8H14B1 Open Status - Green Light in Plant		
2CS-20	14B1RL	MOD 8H14B1 Closed Status - Red Light in Plant		
2CS-20	14B1TX	MOD 8H14B1 Trip Command - 1TX-1 Aux relay		
2CS-20	14B2CX	MOD 8H14B2 Close Command - 1CX-2 Aux relay		
2CS-20	14B2GL	MOD 8H14B2 Open Status - Green Light in Plant		
2CS-20	14B2RL	MOD 8H14B2 Closed Status - Red Light in Plant		
2CS-20	14B2TX	MOD 8H14B2 Trip Command - 1TX-2 Aux relay		
2CS-20	T23P	MOD 8H14B1 Close Command - 1CX-1 Aux relay		
2CS-20	T23P	MOD 8H14B2 Close Command - 1CX-2 Aux relay		
2CS-21	22P9C	BKR 2RSX Open Status - Green Light in Plant		
2CS-21	33GL3	BKR 2RSY Open Status - Green Light in Plant		
2CS-21	33RL3	BKR 2RSY Closed Status - Red Light in Plant		
2CS-21	34GL1	BKR 2RSX Open Status - Green Light in Plant		
2CS-21	34RL1	BKR 2RSX Closed Status - Red Light in Plant		
2CS-21	PACTC46P	GEN2 MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #301		
2CS-21	TC46I301	GEN2 MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #301		
2CS-21	13ACX	MOD 8H13A Close Command - 1CX-1 Aux relay	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-21	13AGL	MOD 8H13A Open Status - Green Light in Plant	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-22	13ARL	MOD 8H13A Closed Status - Red Light in Plant	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-21	13ATX	MOD 8H13A Trip Command - 1TX-1 Aux relay	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	

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Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
2CS-22	13BCX	MOD 8H13B Close Command - 1CX-2 Aux relay	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-22	13BGL	MOD 8H13B Open Status - Green Light in Plant	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-22	13BRL	MOD 8H13B Closed Status - Red Light in Plant	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-22	13BTX	MOD 8H13B Trip Command - 1TX-2 Aux relay	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-22	T22P	MOD 8H13A Close Command - 1CX-1 Aux relay	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-22	T22P	MOD 8H13B Close Command - 1CX-2 Aux relay	Conductors 13ACX, 13AGL, 13ARL, 13ATX, 13BCX, 13BGL, 13BRL, 13BTX, T22P are for the Close, Trip, Red Light and Green Light for both 8H13A and 8H13B MODs. Below are Operation Log entries for when the MODs were opened and closed, if they were logged. No CAPS or Maintenance notifications were written against 4964701, 4964702, 4964801 and 4964802 which are the red and green lights in the control room.	
2CS-23	21BV0	4.16KV Bus 21 Potential Analog Isolator MODEL #401006		
2CS-23	-TC44AI604	GEN2 MW Reading from Plant to Sub - PACTC4-4 Analog Input #604		
2CS-23	21BV15	4.16KV Bus 21 Potential Analog Isolator MODEL #401006		
2CS-23	21BV33	4.16KV Bus 21 Potential Analog Isolator MODEL #401006		
2CS-23	+TC44AI605	GEN2 MVAR Reading from Plant to Sub - PACTC4-4 Analog Input #605		
2CS-23	-TC44AI605	GEN2 MVAR Reading from Plant to Sub - PACTC4-4 Analog Input #605		
2CS-23	+TC44AI604	GEN2 MW Reading from Plant to Sub - PACTC4-4 Analog Input #604		
2CS-10	13TT1	BKR 8H13 Trip Coil 2 Monitor - Red Light in Plant		
2CS-10	23P14	Panel 23 , ckt 14 in the plant. This is for 8H13, 8H14 52xa, 52xb		

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Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
2CS-10	2UPLOT	GEN2 Pri Cross Trip from Sub to Plant - 86PX/2G Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-10	8H13NC	BKR 8H13 52b contact to plant		
2CS-10	8H13NO	BKR 8H13 52a contact to plant		
2CS-10	T11P	BKR 8H13 Trip Coil 2 Monitor - Red Light in Plant		
2CS-10	T7N	GEN2 Pri Cross Trip from Sub to Plant - 86PX/2G Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-11	2GTAXN2	GSU2 Cross Trip 1 from Plant to Sub - 86-1/2GTX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-11	2GTAXT2	GSU2 Cross Trip 1 from Plant to Sub - 86-1/2GTX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2RX-3/2CS-11	PACTC47P	2RX Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #303		
2RY-2/2CS-11	TC47I304	2RY Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #304		
2RY-3/2CS-11	PACTC47P	2RY Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #304		
2RX-2/2CS-11	TC47I303	2RX Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #303		
2CS-12	14TT8	BKR 8H14 Trip Coil 2 Monitor - Red Light in Plant		
2CS-12	23P14	Panel 23 , ckt 14 in the plant. This is for 8H13, 8H14 52xa, 52xb		
2CS-12	2GTBXN2	GSU2 Cross Trip 2 from Plant to Sub - 86-2/2GTX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-12	2GTBXT2	GSU2 Cross Trip 2 from Plant to Sub - 86-2/2GTX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-12	8H14NC	BKR 8H14 52b contact to plant		
2CS-12	8H14NO	BKR 8H14 52a contact to plant		
2CS-12	L14P	BKR 8H14 Trip Coil 2 Monitor - Red Light in Plant		
2CS-12	PACTC46P	1R Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #303		
2CS-12	TC46I303	1R Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #303		
2CS-13	PACTC46P	#2 Main Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #302		
2CS-13	PACTC46P	CT1 MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #304		
2CS-13	TC47I302	#1 Main Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #302		
2CS-13	PACTC47P	#1 Main Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-7 Analog Input #302		
2CS-13	TC46I302	#2 Main Sta Aux MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #302		
2CS-13	TC46I304	CT1 MW Hrs Reading from Plant to Sub - PACTC4-6 Analog Input #304		
2CS-14	13CX	BKR 8H13 Close Command - 1CX-3 Aux Relay		
2CS-14	13GL	BKR 8H13 Open Status - Green Light in Plant		
2CS-14	13T1	BKR 8H13 Trip Coil 1 Monitor - Red Light in Plant		
2CS-14	13TX	BKR 8H13 Trip Command - 1TX-3 Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-14	2GAXN2	GEN2 Cross Trip 1 from Plant to Sub - 86-1/2GX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-14	2GAXT2	GEN2 Cross Trip 1 from Plant to Sub - 86-1/2GX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010

Cable Name	Conductor Name	Equipment	Test Procedure Number/Reason (If Available)	Test Date (If Tested)
2CS-14	2USLOT	GEN2 Sec Cross Trip from Sub to Plant - 86SX/2G Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-14	U16P	BKR 8H13 Close Command - 1CX-3 Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-14	U9N	GEN2 Sec Cross Trip from Sub to Plant - 86SX/2G Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-15	23N25	GEN2 Field Breaker Closed Status - 41X/2G Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-14	2G41XP	GEN2 Field Breaker Closed Status - 41X/2G Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2RYMV1/2CS-	-TC47AI407	2RY Sta Aux MW Reading from Plant to Sub - PACTC4-7 Analog Input #407		
2CS-15	+TC46AI601	#2 Main Sta Aux MW Reading from Plant to Sub - PACTC4-6 Analog Input #601		
2CS-15	+TC46AI602	#2 Main Sta Aux MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #602		
2CS-15	-TC46AI601	#2 Main Sta Aux MW Reading from Plant to Sub - PACTC4-6 Analog Input #601		
2CS-15	-TC46AI602	#2 Main Sta Aux MVAR Reading from Plant to Sub - PACTC4-6 Analog Input #602		
2RYMV2A/2C	+TC47AI408	2RY Sta Aux MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #408		
2RYM1/2CS-1	-TC47AI408	2RY Sta Aux MVAR Reading from Plant to Sub - PACTC4-7 Analog Input #408		
2RYMV2/2CS-	+TC47AI407	2RY Sta Aux MW Reading from Plant to Sub - PACTC4-7 Analog Input #407		
2CS-16	14CX	BKR 8H14 Close Command - 1CX-3 Aux Relay		
2CS-16	14GL	BKR 8H14 Open Status - Green Light in Plant		
2CS-16	14T8	BKR 8H14 Trip Coil 1 Monitor - Red Light in Plant		
2CS-16	14TX	BKR 8H14 Trip Command - 1TX-3 Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-16	2GBXN2	GEN2 Cross Trip 2 from Plant to Sub - 86-2/2GX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-16	2GBXT2	GEN2 Cross Trip 2 from Plant to Sub - 86-2/2GX Lockout Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010
2CS-16	M14P	BKR 8H14 Close Command - 1CX-3 Aux Relay	PE5033 - Procedure Tests End Device	2024, 2019, 2017, 2015, 2013, 2012, 2010