Engineering Connection Assessment

P2461 Aira Solar Project Connection

Aira Wind Power Inc

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NOTE:

The conclusions and recommendations in this report are based on the results presented in *Attachment A: Engineering Connection Assessment: Study Results*, which was prepared by a third party consultant in accordance with the AESO Connection Process.

The AESO has reviewed the *Engineering Connection Assessment: Study Results*, and finds it acceptable for the purpose of assessing the potential impacts of the proposed connection on the performance of the Alberta interconnected electric system.

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Attachments

Attachment A: Engineering Connection Assessment Results

1 Introduction

This AESO Engineering Connection Assessment describes the engineering studies that were completed to assess the impact of the Project (as defined below) on the performance of the Alberta interconnected electric system (AIES). This report also provides the AESO's conclusions and recommendations based on the results of the engineering studies.

Attached to this Engineering Connection Assessment are the results of the engineering studies (see Attachment A) and the scope and methodology used to perform the studies (see Attachment A1 to Attachment A). These attachments provide details regarding the technical criteria, assumptions, and methods for performing these engineering studies, and the results of the engineering studies.

1.1 Project Overview

Aira Wind Power Inc. (Market Participant) has submitted a request for system access service to the Alberta Electric System Operator (AESO) to connect its proposed Aira Solar Project (Facility) to the AIES. The Facility includes a collector substation, to be designated as the Moose Trail 1049S substation.

The Market Participant's request includes: a request for a new system access service in the area, with a Rate STS, *Supply Transmission Service*, contract capacity of 450 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1 MW; and a request for transmission development (collectively, the Project).

The scheduled in-service date (ISD) for the Project is May 30, 2025.

2 Assessment Scope

2.1 Objectives

The objectives of the AESO Engineering Connection Assessment are as follows:

- Assess the impact of the Project on the performance of the AIES.
- Evaluate Project connection alternatives and identify the AESO's preferred alternative.
- Recommend mitigation measures, if required, to reliably connect the Project to the AIES.
- Identify Project dependencies, including any TFO projects or AESO plans to expand or enhance the transmission system that must be completed prior to connection.

2.2 Existing System

Geographically, the Project is located in the AESO planning area Medicine Hat (Area 4), which is part of the AESO South planning region. Medicine Hat (Area 4) is surrounded by the planning areas of Vauxhall (Area 52), Empress (Area 48), and Brooks (Area 47).

From a transmission system perspective, Medicine Hat (Area 4) consists primarily of a 240 kV and 138 kV transmission system. Medicine Hat (Area 4) is connected to the to Brooks (Area 47) through a 138 kV transmission line and two 240 kV transmission lines, connected to Vauxhall (Area 52) through a 138 kV transmission line and connected to Empress (Area 48) through a 138 kV transmission line.

Existing constraints in the South planning region are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (TCM Rule).

2.3 Study Area

The Study Area for the Project consists of the AESO Planning areas of Medicine Hat (Area 4) and Brooks (Area 47), including the tie lines connecting these planning areas to the rest of the AIES. All transmission facilities within the Study Area will be studied and monitored for violations of the Reliability Criteria (defined in Section 3.1 of Attachment A1).

3 Connection Alternatives

3.1 Overview

The AESO, in consultation with the TFO in the Study Area and the Market Participant, examined six transmission alternatives to meet the Market Participant's request for system access service, as detailed in Section 3.2.

3.2 Connection Alternatives Examined

Below is a description of the developments associated with the transmission alternatives that were examined for the Project. Elkwater 264S substation has been energized recently as a result of P0693 Wild Rose 2 Wind Farm connection.

Alternative 1 – In-and-out connection to the 240 kV transmission line 983L

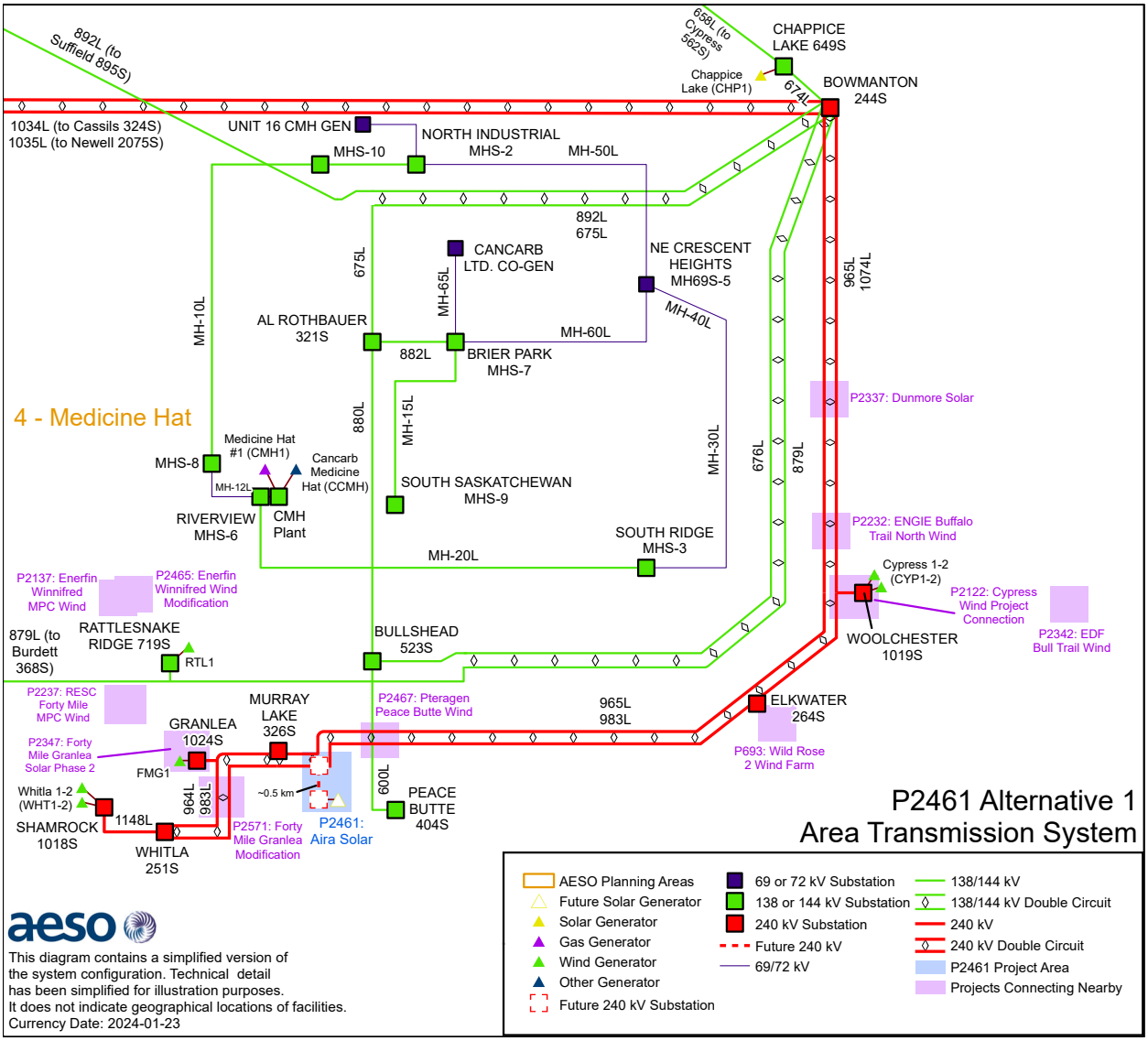
This alternative includes the following developments:

- Add a new 240 kV switching substation, including three 240 kV circuit breakers connected to the existing 240 kV transmission line 983L (between the existing Whitla 251S and Elkwater 264S substations) using an in-and-out configuration;
- Add one 240 kV circuit, approximately 0.5 km in length[1] to connect the Facility to the proposed 240 kV substation; and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 3-1.

[1] Exact line length to be determined by the TFO

Figure 3-1: Connection Alternative 1



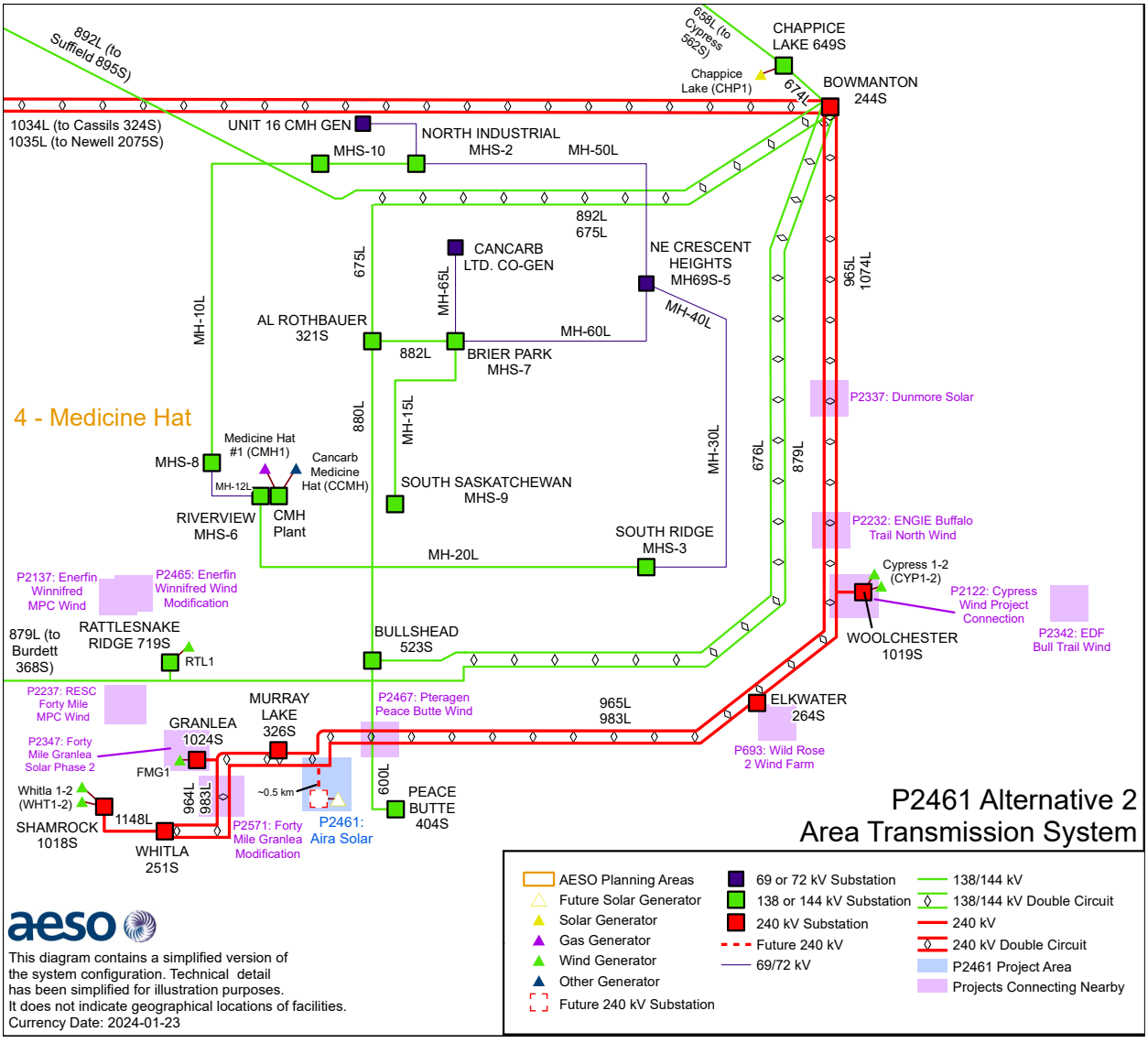
Alternative 2 – T-tap connection to the 240 kV transmission line 983L

This alternative includes the following developments:

- Add one 240 kV circuit, approximately 0.5 km in length,[2] to connect the Facility to the existing 240 kV transmission line 983L (between the existing Whitla 251S and Elkwater 264S substations) using a T-tap configuration; and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 3-2.

Figure 3-2: Connection Alternative 2



[2] Exact line length to be determined by the TFO

Alternative 3 – In-and-out connection to the 240 kV transmission line 964L

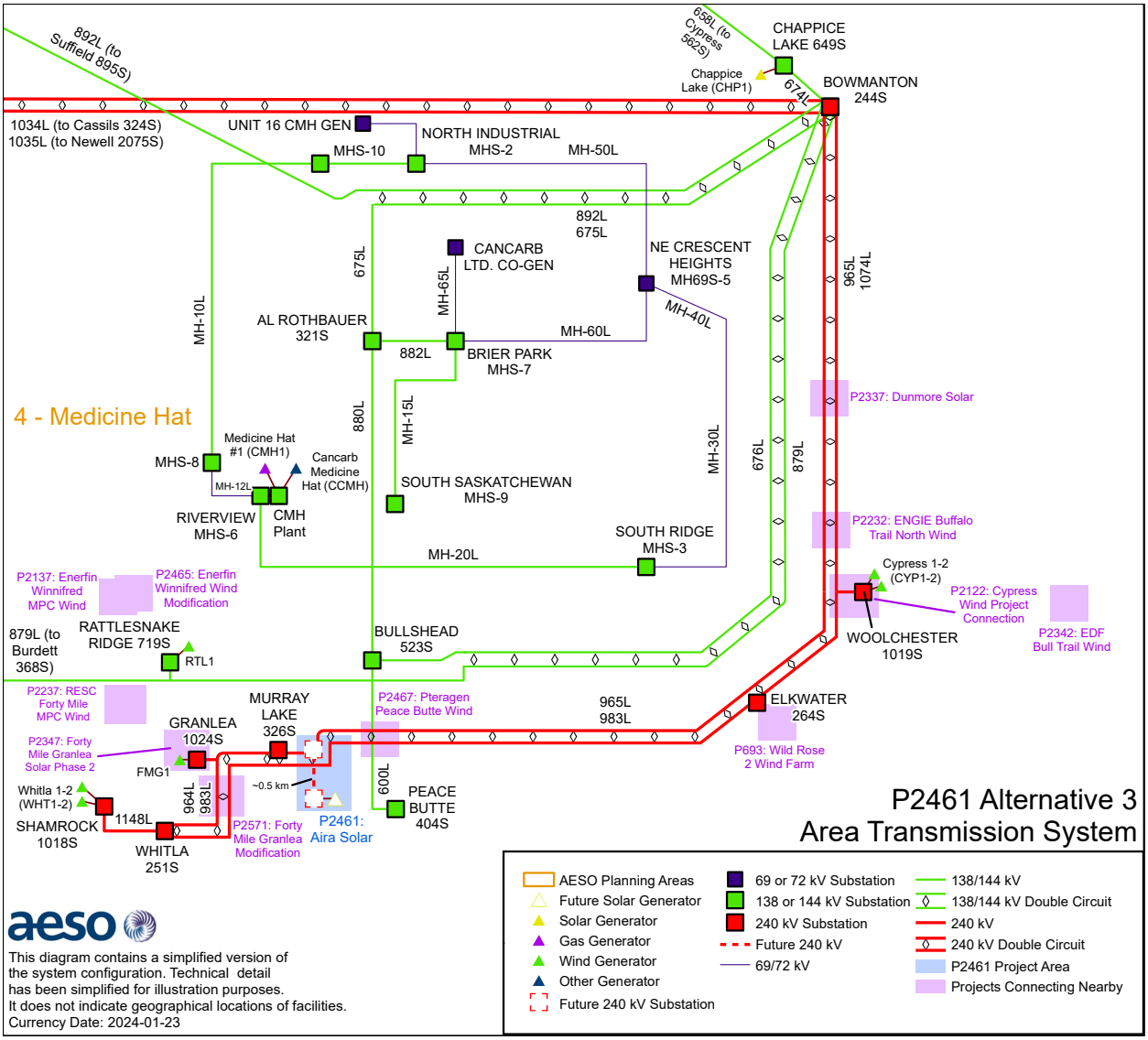
This alternative includes the following developments:

- Add a new 240 kV switching substation, including three 240 kV circuit breakers connected to the existing the 240 kV transmission line 964L (between the existing Granlea 1024S tap and the Bowmanton 244S substation) using an in-and-out configuration;
- Add one 240 kV circuit, approximately 0.5 km in length,[3] to connect the Facility to the proposed 240 kV substation. A line-crossing will be required to cross transmission line 983L; and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in **Error! Reference source not found.**.

[3] Exact line length to be determined by the TFO

Figure 3-3: Connection Alternative 3



Alternative 4 – Radial 240 kV connection to Whitla 251S substation

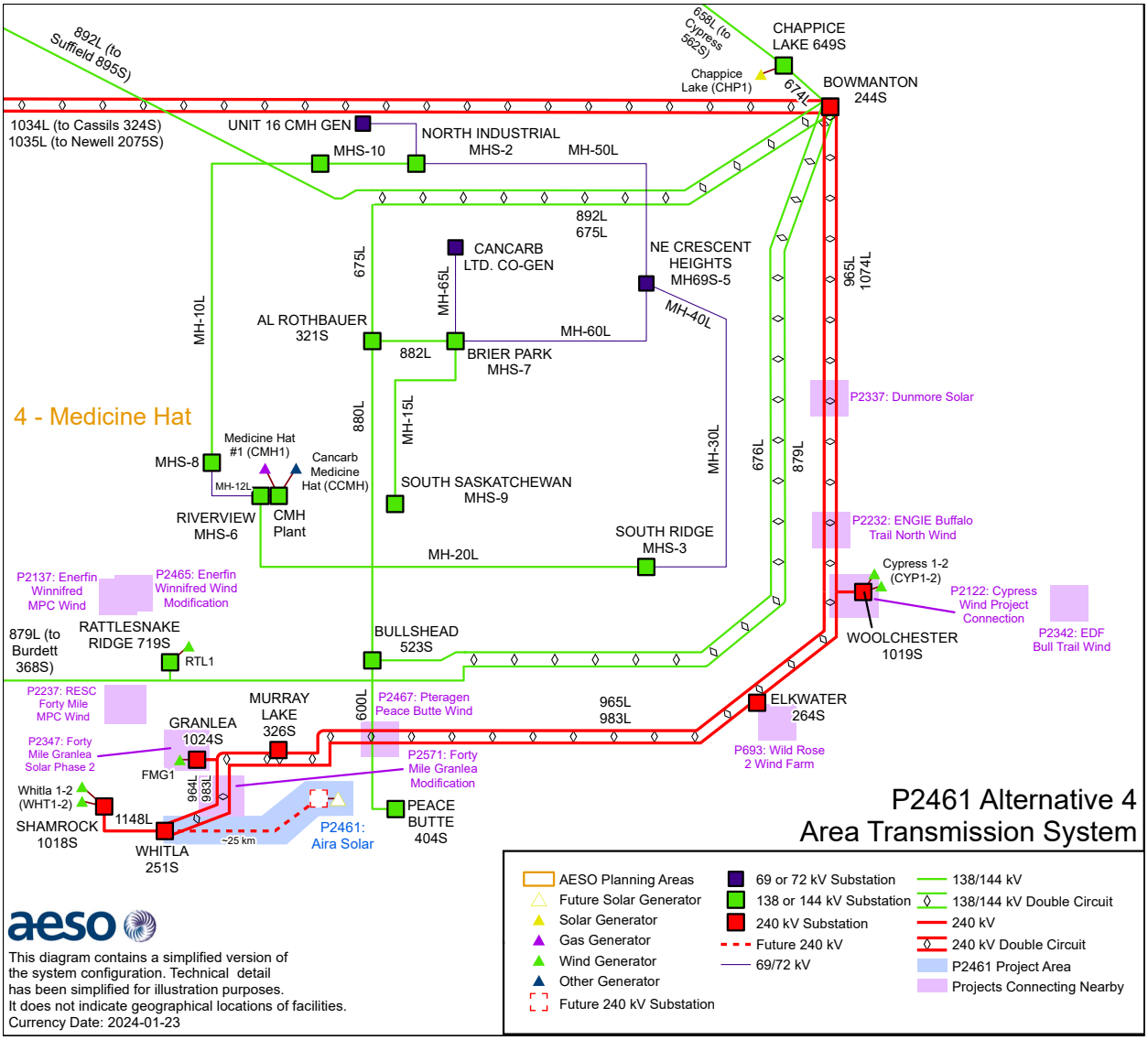
This alternative includes the following developments:

- Modify the existing Whitla 251S substation, including adding one 240 kV circuit breaker;
- Add one 240 kV circuit, approximately 25 km[4], to connect the Facility to the Whitla 251S substation using a radial configuration; and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 3-4.

[4] Exact line length to be determined by the TFO

Figure 3-4: Connection Alternative 4



Alternative 5 – In-and-out connection to the 240kV transmission lines 983L and 964L

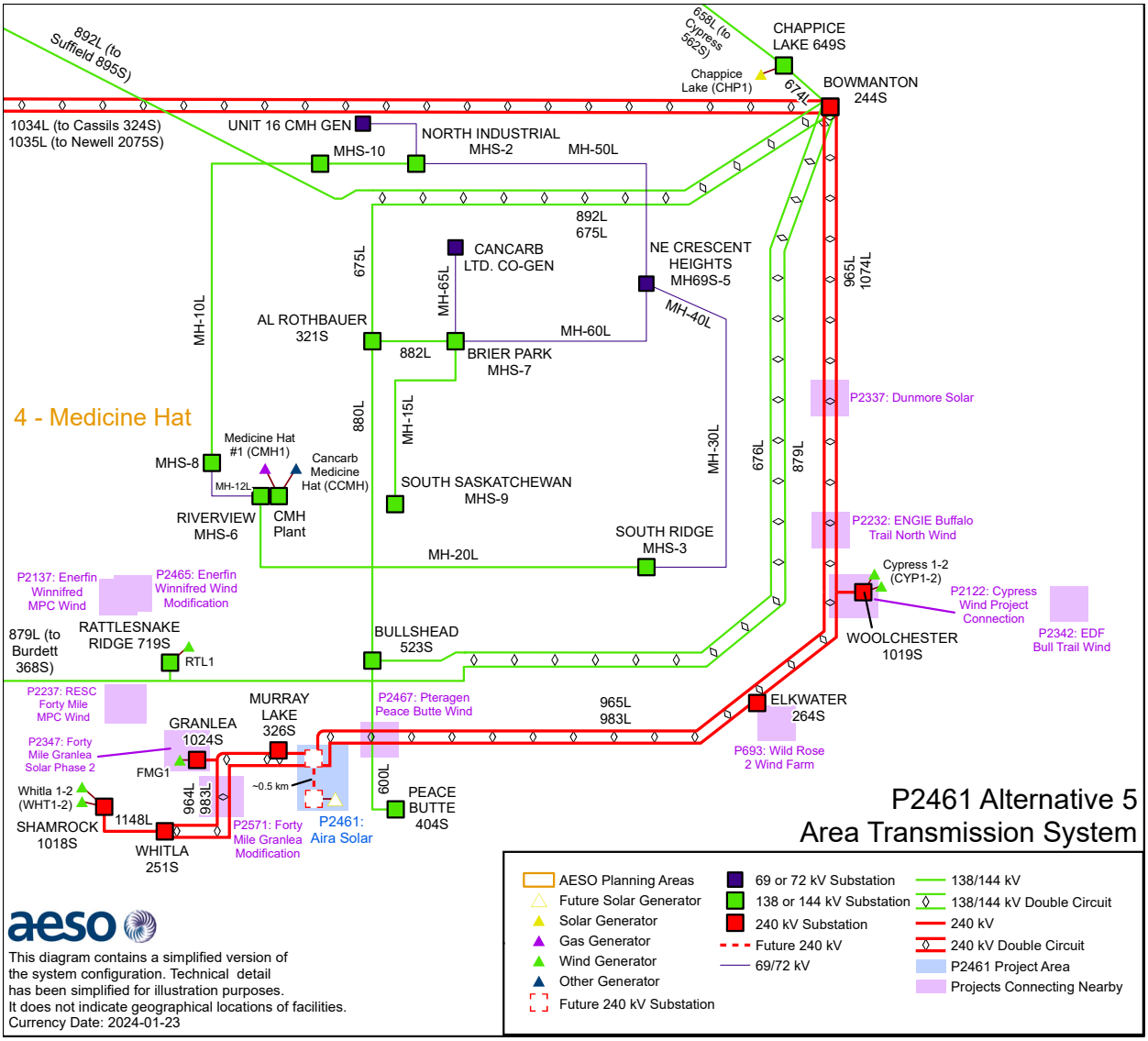
This alternative includes the following developments:

- Add a new 240 kV switching substation including five 240 kV circuit breakers connected to the existing transmission lines 983L (between the existing Whitla 251S and Elkwater 264S substations) and 964L (between the existing Granlea 1024S tap and the Bowmanton 244S substation) using an in-and-out configuration;
- Add one 240 kV circuit, approximately 0.5 km in length[5], to connect the Facility to the proposed 240 kV substation; and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 3-5.

[5] Exact line length to be determined by the TFO

Figure 3-5: Connection Alternative 5



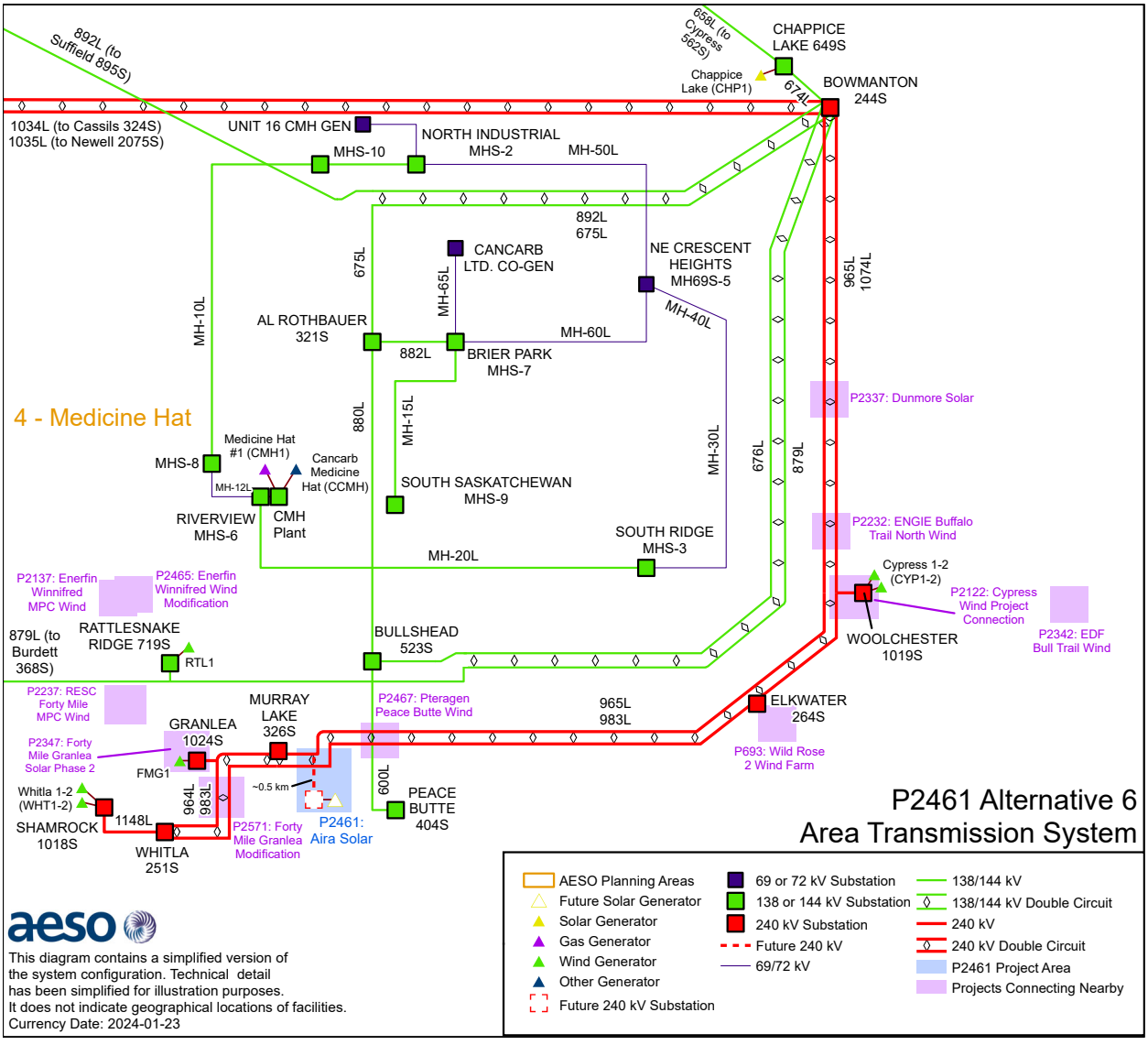
Alternative 6 – T-tap connection to the 240 kV Transmission line 964L

This alternative includes the following development:

- Add one 240kV circuit, approximately 0.5 km in length[6], to connect the Facility to the existing 240 kV transmission line 964L (between the existing Granlea 1024S tap and Bownmanton 244S substation) using a T-tap configuration. A line-crossing will be required to cross transmission line 983L; and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 3-6.

Figure 3-6: Connection Alternative 6



[6] Exact line length to be determined by the TFO

3.3 Connection Alternatives Selected for Further Study

Alternative 2 is considered technically feasible and was selected for further study.

3.4 Connection Alternatives Not Selected for Further Study

The approved generation projects proposing to connect[7] via T-tap on to the existing 240 kV transmission line 964L, including this Project would exceed the AESO's MSCC limit of 466 MW and therefore, Alternative 6 was not selected for further study.

Alternatives 3, 4 and 5 would involve increased transmission development and hence, increased cost, compared to Alternative 2. Therefore, Alternatives 3, 4 and 5 were not selected for further study.

Alternative 1 has similar system performance as Alternative 2, however Alternative 1 requires additional transmission development and was not considered further for studies.

[7] Approved generation projects to connect to the 240 kV transmission line 964L include: P1812 - *Suncor Forty Mile Wind Power Project 964L Connection*, STS contract capacity of 200 MW and P2347 - *Forty Mile Granlea Solar Phase 2*, STS contract capacity of 220 MW.

4 Assessment Approach

4.1 Standards, Criteria and Assumptions

A detailed description of the standards, criteria, and assumptions that were used for the connection assessment is provided in Attachment A (see Attachment A1).

4.2 Studies Performed

At the time of study, the scheduled ISD for the Project was December 20, 2024. Therefore, studies were performed using scenarios for 2025 summer peak (SP) and 2025 summer light (SL). During the course of the studies, the ISD of the Project was changed from December 20, 2024 to May 30, 2025. The AESO determined that the ISD change would not have a material impact on the connection alternative, the mitigation measures and the conclusions for the scenario studies conducted.

Short-circuit studies were performed using the 2025 SP pre-Project scenario, 2025 SP post-Project and 2031 WP post-Project scenarios.

Table 4-1 lists the study scenarios. Post-Project scenarios reflect the requested Rate STS contract capacity of 450 MW at the Moose Trail 1049S substation.

Table 4-1: Connection Study Scenarios

Scenario No.	Year/Season	System Generation Dispatch Conditions	Scenario Name	Project Load (MW)	Project Generation (MW)
Pre-Project					
1	2025 Summer Light (SL)	High Wind (HW)	2025 SL HW Pre-Project	0	0
2	2025 Summer Peak (SP)	High Wind (HW)	2025 SP HW Pre-Project	0	0
Post-Project					
3	2025 Summer Light (SL)	High Wind (HW)	2025 SL HW Post-Project	1	450
4	2025 Summer Peak (SP)	High Wind (HW)	2025 SP HW Post-Project	1	450
5	2031 Winter Peak (WP)	All Study Area Generators In-Service	2031 WP Post-Project	1	450

The AESO Planning Region load forecasts used for the connection studies were based on the AESO's *2021 Long-term Outlook* (2021 LTO).

4.2.1 Power Flow Studies

The purpose of the power flow studies is to identify and quantify any thermal and voltage criteria violations in the Study Area.

In addition, power flow studies are also used to identify point of delivery (POD) low voltage bus voltage deviations beyond the limits listed in Table 3-1 of Attachment A1.[8]

Power flow studies were performed for 2025 SL and 2025 SP pre-Project scenarios, and for 2025 SL and 2025 SP post-Project scenarios.

4.2.2 Transient Stability Studies

The purpose of the transient stability studies is to assess the post-Project stability of the transmission system after three-phase to ground faults are applied on select transmission lines in the Study Area.

Transient stability studies were performed for 2025 SL and 2025 SP pre-Project and post-Project scenarios.

4.2.3 Short-Circuit Current Level Studies

The purpose of short-circuit current level studies is to determine the expected system short-circuit current levels in the vicinity of the Project.

Short circuit studies were performed for the 2025 SP pre-Project scenario and for 2025 SP and 2031 WP post-Project scenarios.

4.3 Mitigation Measure Development and Evaluation

As explained in Section 6 of Attachment A1, mitigation measures were developed to address system performance issues that were identified in the post-Project scenarios. Studies performed to assess the effectiveness of mitigation measures are briefly outlined below.

4.3.1 Post-Mitigation Studies

Power flow and transient stability studies were performed to assess the impact of the Project on the performance of the AIES following implementation of the AESO's proposed mitigation measures.

4.3.2 Constraint Effective Factor Studies

Constraint effective factor studies were used to determine the generator and load constraint effective factors and to identify the most effective generators or loads to manage thermal criteria violations that were observed under Category B conditions.

[8] The AESO's desired post-contingency voltage deviations for low voltage busses represent guidelines rather than criteria. A POD bus voltage deviation that exceeds the desired limits shown in Table 3-1 of Attachment A1 does not represent a Reliability Criteria violation. Mitigation measures would not be developed to specifically address POD bus voltage deviations that exceed the desired values in Table 3-1 of Attachment A1.

5 Interpretation of Results

5.1 Results Overview

This section provides an assessment of the impact of the Project on the performance of the AIES. The Reliability Criteria violations observed during the connection assessment studies, and the proposed mitigation measures are summarized in Table 5-1.

- Section 5.2 includes an overview of the pre-Project studies results.
- Section 5.3 includes an overview of the post-Project studies results.
- Section 5.4 includes a description of the proposed mitigation measures to address observed Reliability Criteria violations.

Detailed study results are provided in Attachment A.

Table 5-1: Summary of Reliability Criteria Violations, Project Impact and Mitigation Measures

Scenario	Type of Reliability Criteria Violation		Contingency (System Element Lost)	Details of Violation	Project Impact	Pre-Project Mitigation Measures	Post-Project Mitigation Measures
	Pre-Project	Post-Project					
2025 Summer Light	None	Thermal - below emergency rating	System Normal (N-0)	924L (Langdon 102S – Milo 356)	New violation	None	Real-time Operating Practice (RTOP)
	None	Thermal - below emergency rating	System Normal (N-0)	927L (Langdon 102S - P2378 tap)	New violation	None	RTOP
	None	Thermal - below emergency rating	System Normal (N-0)	927L (Milo 356S - P2378 tap)	New violation	None	RTOP
	Thermal - below emergency rating	Thermal - below emergency rating	Suffield 895sT2	658L (Cypress 562s to Hilda Tap)	Marginally reduced violation	RTOP	RTOP
	None	Thermal - below emergency rating	1074L (Bowmanton 244s to P2122/Elkwater 264s)	965L (Bowmanton 244s to Murray Lake 326s)	New violation	None	RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	Materially increased violation	RTOP	Planned RAS 175 and RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	Materially increased violation	RTOP	Planned RAS 175 and RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	924L (Langdon 102s to Milo 356s)	927L (Milo 356s to Nova Tap)	Materially increased violation	RTOP	Planned RAS 175 and RTOP
	Thermal - below emergency rating	Thermal - below emergency rating	892L (Suffield 895s to Bowmanton 244s)	658L (Cypress 562s to Hilda Tap)	Marginally reduced violation	RTOP	RTOP
	None	Thermal - below emergency rating	965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122)	New violation	None	RTOP
	Thermal - above emergency rating	Thermal - below emergency rating	1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	Materially reduced violation	Planned RAS 197	RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	EATL HVDC	924L (Langdon 102s to Milo 356s)	Materially increased violation	RTOP	RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	EATL HVDC	927L (Milo 356s to Nova Tap)	Materially increased violation	RTOP	RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	EATL HVDC	927L (Langdon 102s to Nova Tap)	Materially increased violation	RTOP	RTOP
	None	Thermal - below emergency rating	EATL HVDC	923L (Newell A2075s to Milo 356s)	New violation	None	RTOP
	None	Voltage Collapse and transient stability	1035L (Bowmanton 244s to Newell A2075s)	Voltage Collapse and transient stability	New violation	None	Modified Planned RAS 164
	None	Voltage below emergency limit and transient stability	1074L (Bowmanton 244s to P2122/Elkwater 264s)	Low voltage at Bowmanton 244s and transient stability	New violations	None	Modified Planned RAS 164
	None	Transient stability	965L (Bowmanton 244s to Murray Lake 326s)	Transient Stability	New violation	None	Modified Planned RAS 164
	None	Voltage Collapse and transient stability	1034L (Cassils 324s to Bowmanton 244s)	Voltage Collapse and transient stability	New violation	None	Modified Planned RAS 164
2025 Summer Peak	Thermal - below emergency rating	Thermal - above emergency rating	System Normal (N-0)	924L (Langdon 102S – Milo 356)	Materially increased violation	RTOP	RTOP
	Thermal - below emergency rating	Thermal - above emergency rating	System Normal (N-0)	927L (Langdon 102S - P2378 tap)	Materially increased violation	RTOP	RTOP
	None	Thermal - below emergency rating	System Normal (N-0)	927L (Milo 356S - P2378 tap)	New violation	None	RTOP
	Thermal – below emergency rating	Thermal – above emergency rating	927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	Materially increased violation	RTOP	Planned RAS 175 and RTOP
	Thermal – below emergency rating	Thermal – above emergency rating	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	Materially increased violation	RTOP	Planned RAS 175 and RTOP
	Thermal – below emergency rating	Thermal – above emergency rating	924L (Langdon 102s to Milo 356s)	927L (Milo 356s to Nova Tap)	Materially increased violation	RTOP	Planned RAS 175 and RTOP
	None	Thermal – below emergency rating	965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122 Tap)	New violation	None	RTOP
	Thermal – above emergency rating	Thermal – above emergency rating	1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	Materially reduced violation	Planned RAS 197 and RTOP	Planned RAS 197 and RTOP
	Thermal – below emergency rating	Thermal – above emergency rating	EATL HVDC	924L (Langdon 102s to Milo 356s)	Materially increased violation	RTOP	RTOP
	Thermal – below emergency rating	Thermal – above emergency rating	EATL HVDC	927L (Milo 356s to Nova Tap)	Materially increased violation	RTOP	RTOP
	Thermal – below emergency rating	Thermal – above emergency rating	EATL HVDC	927L (Langdon 102s to Nova Tap)	Materially increased violation	RTOP	RTOP
	None	Thermal – below emergency rating	EATL HVDC	923L (Newell A2075s to Milo 356s)	New violation	None	RTOP
	None	Thermal – below emergency rating	EATL HVDC	935L (Cassils 324s to Milo 356s)	New violation	None	RTOP
	None	Voltage Collapse and transient stability	1035L (Bowmanton 244s to Newell A2075s)	Voltage Collapse and transient stability	New violation	None	Modified Planned RAS 164
	None	Voltage Collapse and transient stability	1034L (Cassils 324s to Bowmanton 244s)	Voltage Collapse and transient stability	New violation	None	Modified Planned RAS 164
	None	Voltage below emergency limit and transient stability	1074L (Bowmanton 244s to P2122/Elkwater 264s)	Low voltage at MHS-3 B63 South Ridge Substation and transient stability	New violation	None	Modified Planned RAS 164
	None	Voltage – below emergency limit	965L (Bowmanton 244s to Murray Lake 326s)	Low voltage ar MHS-3 B63 South Ridge Substatio	New violation	None	Modified Planned RAS 164

Notes:

- Marginally increased (or marginally decreased) refers to a percent loading/voltage difference (post-Project percent loading/voltage minus pre-Project percent loading/voltage) between 0% and 3% (or -3%).

- Materially increased (or materially decreased) refers to a percent loading/voltage difference (post-Project percent loading/voltage minus pre-Project percent loading/voltage) above or equal to 3% (or below or equal to -3%).
- RAS 175 was proposed for the existing Travers Solar Facilitiy, the approved P1927 – Brooks Solar Farm Connection, and P2247 - Buffalo Plains Wind Farm Connection. This RAS is referred to herein as “Planned RAS 175”. The project will not be added to RAS 175.
- RAS 197 was proposed for the approved P1927 – Brooks Solar Farm Connection. This RAS is referred to herein as “Planned RAS 197”.
- RAS 164 was proposed for numerous existing and planned renewable generating facilities connecting to the Cassils-Bowmanton-Whitla transmission path. This RAS is referred to herein as “Planned RAS 164”.
- In this table, “Modify” refers to adding the Project to the logic of the respective RAS

5.2 Pre-Project Study Results

5.2.1 Category A Conditions

With the inclusion of additional projects planning to connect in the South region, thermal reliability criteria violations under Category A conditions (i.e., all elements in service) were observed on the 240 kV transmission lines 924L and 927L in Summer Peak Pre-Project scenario.

A voltage collapse issue was found on the Cassils-Bowmanton-Whitla (CBW) transmission path (240 kV transmission lines 1034L/1035L and 964L/983L) under the Category A condition for the pre-Project scenarios. To mitigate the observed voltage criteria violation, the total generation connecting to the Cassils-Bowmanton-Whitla (CBW) transmission path were reduced to 666 MW for the pre-Project scenarios. Pre-project study results are provided in Table 5-1 with 666 MW of generation on the CBW transmission path.

The short-circuit fault levels were found to be within the typical capabilities of the nearby facilities.

5.2.2 Category B Conditions

The pre-Project power flow studies identified a number of thermal criteria violations under Category B conditions (i.e., loss of a single system element).

No voltage deviations were observed that were beyond the limits listed in Table 3-1 of Attachment A1 (hereafter referred to as point of delivery (POD) bus voltage deviations) under Category B conditions.

5.3 Post-Project Study Results

5.3.1 Category A Conditions

Following the connection of the Project, new thermal reliability criteria violations under Category A conditions were observed on the 240 kV transmission lines 924L and 927L in the Summer Light Post-Project scenario. The thermal reliability criteria violations observed on the 240 kV transmission lines 924L and 927L in the Summer Peak Post-Project scenario were materially increased following the connection of the Project, and a new thermal criteria violation was observed on the segment of 240 kV transmission line 927L (Milo 356S - P2378 Nova Solar Project Connection tap).

Similar to the pre-Project scenarios, a voltage collapse issue was found on the CBW path under the Category A condition for the post-Project scenarios. To mitigate the observed criteria violation, the total renewable generation connecting to the CBW transmission path were reduced to 1116 MW for the post-Project scenarios. Post-project study results are provided in Table 5-1 with 1116 MW generation on the CBW transmission path.

Post-Project short-circuit fault levels were not significantly higher than pre-Project levels. The long-term short circuit levels were found to be within the designed capabilities of the nearby facilities.

5.3.2 Category B Conditions

Post-Project power flow studies and transient stability studies identified a number of system performance issues under Category B conditions, namely: thermal criteria violations, new voltage stability criteria violations, and new transient stability criteria violations. Following the connection of the Project, most thermal criteria violations observed in the pre-Project scenarios were exacerbated, and new thermal criteria violations were observed.

No reliability criteria violations or POD bus voltage deviations were observed under Category B conditions.

5.4 Mitigation Measures

This section discusses the AESO's proposed mitigation measures to address the system performance issues that were identified in the pre-Project and post-Project scenarios.

5.4.1 Pre-Project

Under Category A conditions, the thermal reliability criteria violations observed on the 240 kV transmission lines 924L and 927L can be managed by applying real-time operational practices (RTOPs) to curtail generation as required until such a time that system developments or other mitigations are in place to alleviate congestion. If the AESO determines congestion is likely to occur, the AESO will file an application for an "exception" under Section 15(2) of the *Transmission Regulation.*

The approved Bowmanton 244S Substation Voltage Support Project[9] is expected to enhance the system reliability in the CBW area and reduce the risk of voltage collapse and transient stability concerns under Category A and B system conditions.

Prior to connection of the Project, some of the observed thermal criteria violations under Category B conditions can be managed by using real-time operational practices alone. The remaining thermal criteria violations can be mitigated by planned RAS 197, and real-time operational practices, alone or in combination, as appropriate.

5.4.2 Post-Project

Under Category A conditions, the thermal reliability criteria violations observed on the 240 kV transmission lines 924L and 927L can be managed by applying RTOPs to curtail generation as required until such a time that system developments, or other mitigations are in place to alleviate congestion. If the AESO determines congestion is likely to occur, the AESO will file an application for an "exception" under Section 15(2) of the *Transmission Regulation.*

The approved Bowmanton 244S Substation Voltage Support Project is expected to enhance the system reliability in the CBW area and reduce the risk of voltage collapse and transient stability concerns under Category A and B system conditions. In the longer term, the AESO has initiated system development projects in the the south-east and south-west planning regions to address system performance issues.[10]

After connection of the Project, most of the thermal criteria violations under Category B conditions can be mitigated by using real-time operational practices alone. The remaining thermal criteria violations can be mitigated by planned RASs 175, 197, and real-time operational practices, alone or in combination, as appropriate. The voltage and transient stability criteria violations under Category B conditions can be mitigated by the modification of planned RAS 164 by including the Project in the RAS logic.

5.4.3 Post-Project Mitigation Study Results

Under Category B conditions, all of the observed Reliability Criteria violations requiring RAS were mitigated.

[9] More information about the approved Bowmanton 244S Substation Voltage Support Project is available on the AESO website.

[10] More information about these projects was provided at AESO's Grid Reliablity Update presentation held on Nov 27, 2023; The presentation and materials are available on the AESO website.

The study results show that the amount of generation curtailed by the RAS 164 may exceed the current AESO MSSC limit of 466 MW to mitigate the observed voltage and transient stability criteria violations. If real-time output of all generation tied to RAS 164 exceeds the MSSC limit, the AESO will curtail area generation including the Project in the pre-contingency condition to avoid tripping more than 466 MW of generation by RAS.

6 Project Dependencies

The Project does not require the completion of any other AESO plans to expand or enhance the transmission system prior to connection.

7 Conclusions and Recommendations

Based on the study results, Alternative 2 is technically viable. The connection assessment identified a number of pre-Project and post-Project system performance issues. The connection assessment uses credible worst-case conditions to assess the impact of the Facility connecting on the Alberta interconnected electric system. Category A thermal reliability criteria violations and CBW path voltage collapse were observed under these credible worst-case load and generation forecast conditions. The probability of Category A thermal reliability criteria violations materializing is highly dependent upon the production profile of the Facility and other generation facilities in the area.

The identified system performance issues can be mitigated through the use of planned RASs 175, 197, modified planned RAS 164, and real-time operational practices, alone or in combination, as appropriate. The use of these mitigation measures may result in generation curtailment during the Category A condition. In the short term, the approved Bowmanton 244S Substation Voltage Support Project[11] is expected to enhance the system reliability in the CBW area and reduce the risk of voltage collapse and transient stability concerns under Category A and B system conditions. In the longer term, the AESO has initiated system development projects in the the south-east and south-west planning regions to address system performance issues.[12] With implementation of these mitigation measures, connecting the project with the preferred alternative does not adversely affect the performance of the AIES.

The total amount of generation tied to modified planned RAS 164 exceeds the MSSC limit of 466 MW. The post-Project studies indicate that in order to mitigate the voltage and transient stability criteria violations following certain contingencies, the actions of RAS 164 may result in generation curtailment in excess of the MSSC limit. Pre-contingency generation curtailment under the Category A condition may be required using real-time operational practices to prevent generation curtailment by RAS action above the MSSC level. The probability of pre-curtailment being required would be dependent on generation profiles and operating conditions.

Closer to the ISD, if the AESO determines that congestion will arise under Category A conditions, the AESO may make an application to the AUC to obtain approval for an “exception” under Section 15(2) of the *Transmission Regulation.*

The AESO recommends proceeding with the Project using Alternative 2 as the preferred alternative to respond to the Market Participant’s request for system access service. Real-time operational practices and the RASs mentioned above are recommended to mitigate the identified system performance issues.

Alternative 2 involves adding a 240 kV circuit, approximately 0.5 km in length, to connect the Facility to the existing 240 kV transmission line 983L (between the Whitla 251S and Elkwater 264S substations) using a T-tap configuration. The conductor used for the 240 kV circuit shall have a minimum thermal rating of 500 MVA to meet the Market Participant’s requested STS contract capacity which is based on the proposed MARP of the Facility.

[11] More information about the approved Bowmanton 244S Substation Voltage Support Project is available on the AESO website.

[12] More information about these projects was provided at AESO’s Grid Reliablity Update presentation held on Nov 27, 2023; The presentation and materials are available on the AESO website.

Attachment A:
Engineering Connection Assessment Results

Engineering Connection Assessment: Study Results

P2461 Aira Solar Facility

Aira Wind Power Inc.

Date: October 13, 2023

Version: V1Final

Classification: Public

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Attachment A7 Constraint Effective Factor

Attachment A8 Post-Mitigation Post-Project Transient Stability Diagrams

1 Introduction

This report presents the results of the engineering studies that were completed by AltaLink Management Ltd. (the Studies Consultant) to assess the impact of the Project (as defined in Attachment A1: AESO Engineering Connection Assessment Scope) on the performance of the Alberta interconnected electric system (AIES). The studies were performed in accordance with Attachment A1: AESO Engineering Connection Assessment: Study Scope, which was prepared by the AESO.

The power system network analysis tool that was used for the studies in this connection assessment was PSS/E version 34.

2 Pre-Project Study Results

This section describes the results of the pre-Project power flow studies.

2.1 Power Flow Studies

Power flow diagrams illustrating the pre-Project power flow studies results for Category A and Category B conditions are provided in Attachment A2.

As per the AESO's requirements, the total renewable generations downstream of Bowmanton 244s 240 kV should be 1116 MW. City of Medicine Hat outflow also needs to satisfy 57 MW in SL scenarios, 14 MW in SP scenarios. The renewable generators connected to 240kV CBW collector needs to be scaled down to 609 MW in SL post-project scenarios and 652 MW in SP post-project scenarios to meet 1116 MW requirement. The pre-project generation dispatches were set to be identical to post-project generation dispatches to create same study environment. The curtailment details can be found in the table below:

Table 2-1: Renewable generation dispatched under Bowmanton 244s and CMH generation curtailment details

Generator name	Generator buses	Generator capacity (MW)	Scenario 1 and Scenario 3		Scenario 2 and Scenario 4	
			Dispatch at CSS (MW)	Current dispatch (MW)	Dispatch at CSS (MW)	Current dispatch (MW)
Cypress 1 and 2 (CYP1, 2)	560003, 561003	241.9	222.5	109.6	205.6	98.6
Forty Mile Granlea (FMG1)	61994, 62994	200	184	90.7	170	81.5
Capital Power Whitla Wind Power Facility (WHT1)	60990	201.6	185.5	91.4	171.4	82.2
Capital Power Whitla Wind Power Facility Phase 2/3	61990, 64990	151	138.9	68.9	128.4	61.6
P693 - Wild Rose 2 Wind Farm	3462, 3463	192	176.6	87	163.2	78.3
P2137 - Enerfin Winnifred Wind	567034	90	82.8	40.8	76.5	36.7
P2237 - RESC Forty Mile MPC Wind	60608, 61608	266	244.7	120.6	226.1	108.5
P2337 - Dunmore Solar	560044	216	0	0	108	51.8
P2347 - Forty Mile Granlea Solar Phase 2	65994	220	0	0	110	52.8

Generator name	Generator buses	Generator capacity (MW)	Scenario 1 and Scenario 3		Scenario 2 and Scenario 4	
			Dispatch at CSS (MW)	Current dispatch (MW)	Dispatch at CSS (MW)	Current dispatch (MW)
Total renewable generations		1778.5	1235	609	1359.2	652
CMH	667, 683, 686, 687, 689, 712, 713, 1715	297	195	199.6[1] (57 MW outflow)	272	285.4[1] (14 MW outflow)

Note:
[1]CMH's net outflow should be the CMH generations minus the local loads, which is 57 MW in SL scenarios and 14 MW in SP scenarios according to Table 4-9 in the CSS.

2.1.1 Scenario 1: 2025 Summer Light High Wind Pre-Project

Category A Conditions

No Reliability Criteria (as defined in Section 3.1 of Attachment A1) violations were observed under Category A conditions. However, SL post-project scenario identified thermal violations on 924L and 927L. All effective generators were re-dispatched to mitigate the thermal violations. To maintain same study environment, SL pre-project generation dispatch was also tuned to be identical to the post-project generation dispatch. All Category B studies were performed with the new generation dispatch. The new dispatch for the effective generators can be found in the table below:

Table 2-2: Generators re-dispatch for Scenario 1

Project Name	Capacity	Bus Number	Scenario 1	
			Before curtailment	After curtailment
P2378 – Nova Solar	150	569070	0	0
P1927 – Solar Krafte Brooks	360	60434, 61434	0	0
P2247 – Buffalo Plains MPC Wind	466	560041, 560042	428.7	110
Travers Solar	465	560026, 561026, 562026	0	0
MATL (Net outflow)	320	80000	300	300
Total	**1761**	**-**	**728.7**	**410**
Curtailment	**-**	**-**	**318.7**	

Category B Conditions

Thermal Criteria Violations

Thermal criteria violations were observed under certain Category B conditions as shown in Table 2-3.

Table 2-3: Thermal Criteria Violations under Category B Conditions for Scenario 1

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[a] (MVA)	% Loading[b]
Suffield 895sT2	658L (Cypress 562s to Hilda Tap)	121	133	125.1	103.4%
927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	547	656	591.3	108.1%
924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	576	691	589.2	102.3%
	927L (Milo 356s to Nova Tap)	576	691	593.9	103.1%
892L (Suffield 895s to Bowmanton 244s)	658L (Cypress 562s to Hilda Tap)	121	133	125.1	103.4%

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[a] (MVA)	% Loading[b]
1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	547	656	702.3	128.4%
EATL HVDC	924L (Langdon 102s to Milo 356s)	547	656	647.6	118.4%
	927L (Langdon 102s to Nova Tap)	576	691	647.4	112.4%
	927L (Milo 356s to Nova Tap)	576	691	653.2	113.4%

Notes:

[a] Power flow (MVA) is current expressed as MVA (i.e., $S = \sqrt{3} \times V_{base} \times I_{actual}$)

[b] Reported as a percentage of the power flow (in MVA, i.e., $S = \sqrt{3} \times V_{base} \times I_{actual}$) relative to the transmission line's Normal Rating (also in MVA), as shown in Attachment A1.

Voltage Criteria Violations

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No voltage deviations beyond the limits listed in Table 3-1 of Attachment A1 (hereafter referred to as point of delivery (POD) bus voltage deviations) were observed.

2.1.2 Scenario 2: 2025 Summer Peak High Wind Pre-Project

Category A Conditions

Thermal criteria violations were observed under Category A condition as shown in the table below:

Table 2-4: Scenario 2 N-0 thermal violations

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results	
				Observed Power Flow (MVA)	% Loading
Category A	924L (Milo 356s to Langdon 102s)	547	656	585.3	107.0%
	927L (Nova Tap to Langdon 102s)	576	691	621.5	107.9%

Additional thermal violations were found on 927L (Nova Tap to Milo 356s) in the SP post-project scenario. All effective generators were re-dispatched to mitigate the thermal violations. To maintain same study environment, SP pre-project generation dispatch was also tuned to be identical to the post-project generation dispatch. All Category B studies were performed with the new generation dispatch. The new dispatch for the effective generators can be found in the table below:

Table 2-5: Generators re-dispatch for Scenario 2

Project Name	Capacity	Bus Number	Scenario 2	
			Before curtailment	After curtailment
P2378 – Nova Solar	150	569070	75	0
P1927 – Solar Krafte Brooks	360	60434, 61434	180	50
P2247 – Buffalo Plains MPC Wind	466	560041, 560042	396.1	0
Travers Solar	465	560026, 561026, 562026	232.5	185.1
MATL (Net outflow)	320	80000	300	300
Total	**1761**	**-**	**1183.6**	**535.1**
Curtailment	**-**	**-**	**648.5**	

No Reliability Criteria (as defined in Section 3.1 of Attachment A1) violations were observed under Category A conditions after generation re-dispatch. The loading conditions for 927L and 924L can be found in the table below:

Table 2-6: Scenario 2 N-0 loading conditions after curtailment

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Curtailment Results	
				Observed Power Flow (MVA)	% Loading
Category A	924L (Milo 356s to Langdon 102s)	547	656	420.6	76.9%
	927L (Nova Tap to Langdon 102s)	576	691	423.4	73.5%

Category B Conditions

Thermal Criteria Violations

Thermal criteria violations were observed under certain Category B conditions as shown in Table 2-7.

Table 2-7: Thermal Criteria Violations under Category B Conditions for Scenario 2

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[a] (MVA)	% Loading[b]
EATL HVDC	924L (Langdon 102s to Milo 356s)	547	656	645.5	118.0%
	927L (Langdon 102s to Nova Tap)	576	691	649.2	112.7%
	927L (Milo 356s to Nova Tap)	576	691	646.3	112.2%

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[a] (MVA)	% Loading[b]
927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	547	656	617.6	112.9%
924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	576	691	616.9	107.1%
	927L (Milo 356s to Nova Tap)	576	691	619.8	107.6%
1035L (Bowmanton 244s to Newell A2075s)	1087L (Cassils 324s to Newell A2075s)	547	656	548.6	100.3%
1088L (Cassils 324s to Newell A2075s)	1087L (Cassils 324s to Newell A2075s)	547	656	755.4	138.1%

Notes:

[a] Power flow (MVA) is current expressed as MVA (i.e., $S = \sqrt{3} \times V_{base} \times I_{actual}$)

[b] Reported as a percentage of the power flow (in MVA, i.e., $S = \sqrt{3} \times V_{base} \times I_{actual}$) relative to the transmission line's Normal Rating (also in MVA), as shown in Attachment A1.

Voltage Criteria Violations

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No voltage deviations beyond the limits listed in Table 3-1 of Attachment A1 (hereafter referred to as point of delivery (POD) bus voltage deviations) were observed.

3 Post-Project Study Results

This section describes the results of the post-Project power flow studies.

3.1 Power Flow Studies

Power flow diagrams illustrating the post-Project power flow studies results for Category A and Category B conditions are included in Attachment A3.

3.1.1 Scenario 3: 2025 Summer Light High Wind Post-Project

Category A Conditions

Thermal criteria violations were observed on 924L (Milo 356s to Langdon 102s), 927L (Nova Tap to Langdon 102s) and 927L (Nova Tap to Milo 356s) in post-project scenarios as shown in the table below:

Table 3-1: Scenario 3 N-0 thermal violations

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results	
				Observed Power Flow (MVA)	% Loading
Category A	924L (Milo 356s to Langdon 102s)	547	656	582.0	106.4%
	927L (Nova Tap to Langdon 102s)	576	691	582.3	101.1%
	927L (Nova Tap to Milo 356s)	576	691	586.9	101.9%

The most effective generator P2247 was re-dispatched to solve the thermal violations on 924L and 927L. To maintain same study environment, SL pre-project generation dispatch was also tuned to be identical to the post-project generation dispatch. All Category B studies were performed with the new generation dispatch. Detailed information can be found in the table below:

Table 3-2: Generators re-dispatch for Scenario 3

Project Name	Capacity	Bus Number	Scenario 3	
			Before curtailment	After curtailment
P2378 – Nova Solar	150	569070	0	0
P1927 – Solar Krafte Brooks	360	60434, 61434	0	0
P2247 – Buffalo Plains MPC Wind	466	560041, 560042	428.7	110
Travers Solar	465	560026, 561026, 562026	0	0
MATL (Net outflow)	320	80000	300	300

Project Name	Capacity	Bus Number	Scenario 3	
			Before curtailment	After curtailment
Total	**1761**	**-**	**728.7**	**410**
Curtailment	**-**	**-**	**318.7**	

No Reliability Criteria violations were observed under Category A conditions after the curtailment. The loading conditions for 927L and 924L can be found in the table below:

Table 3-3: Scenario 3 N-0 loading conditions after curtailment

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Curtailment Results	
				Observed Power Flow (MVA)	% Loading
Category A	924L (Milo 356s to Langdon 102s)	547	656	490.1	89.6%
	927L (Nova Tap to Langdon 102s)	576	691	494.2	85.8%
	927L (Nova Tap to Milo 356s)	576	691	489.0	84.9%

Category B Conditions

Thermal Criteria Violations

Thermal criteria violations were observed under certain Category B conditions as shown in Table 3-4.

Table 3-4: Thermal Criteria Violations under Category B Conditions for Scenario 3

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Pre-Project Results		Post-Project Results		% Loading Difference (Post-Pre)
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading	
Suffield 895sT2	658L (Cypress 562s to Hilda Tap)	121	133	125.1	103.4%	121.8	100.7%	-2.7%
1074L (Bowmanton 244s to P2122/Elkwater 264s)	965L (Bowmanton 244s to Murray Lake 326s)	976	1171	442.1	45.30%	984.8	100.9%	55.6%

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Pre-Project Results		Post-Project Results		% Loading Difference (Post-Pre)
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading	
927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	547	656	591.3	108.1%	722.0	132.0%	23.9%
924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	576	691	589.2	102.3%	721.2	125.2%	22.9%
	927L (Milo 356s to Nova Tap)	576	691	593.9	103.1%	725.2	125.9%	22.8%
892L (Suffield 895s to Bowmanton 244s)	658L (Cypress 562s to Hilda Tap)	121	133	125.1	103.4%	121.8	100.7%	-2.7%
965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122)	952	1142	531.2	55.8%	1041.5	109.4%	53.6%
1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	547	656	702.3	128.4%	652.0	119.2%	-9.2%
EATL HVDC	924L (Langdon 102s to Milo 356s)	547	656	647.6	118.4%	745.6	136.3%	17.9%
	927L (Milo 356s to Nova Tap)	576	691	653.2	113.4%	751.1	130.4%	17.0%
	927L (Langdon 102s to Nova Tap)	576	691	647.4	112.4%	745.3	129.4%	17.0%
	923L (Newell A2075s to Milo 356s)	547	656	439.2	80.3%	573.8	104.9%	24.6%
	935L (Cassils 324s to Milo 356s)	547	656	417.9	76.4%	538.8	98.5%	22.1%

Voltage Criteria Violations

Voltage criteria violations were observed under certain Category B conditions as shown in Table 3-5.

Table 3-5: Voltage Criteria Violations under Category B Conditions for Scenario 3

Contingency (System Element Lost)	Violation Location Details		Voltage Ratings (kV)			Pre-Project Results		Post-Project Results		Voltage Difference (kV)
	Substation Name and No.	Bus No.	Nominal Voltage	Emergency Minimum Voltage	Emergency Maximum Voltage	Initial Voltage (kV)	Post-contingency Steady State (kV)	Initial Voltage (kV)	Post-contingency Steady State (kV)	
1034L (Cassils 324s to Bowmanton 244s)	Voltage Collapse									
1035L (Bowmanton 244s to Newell A2075s)										
1074L (Bowmanton 244s to P2122/Elkwater 264s)	Bowmanton 244s	669	240	216	264	250.0	247.6	241.0	214.0	-33.6

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3.1.2 Scenario 4: 2025 Summer Peak High Wind Post-Project

Category A Conditions

Thermal criteria violations were observed on 924L and 927L (Milo 356s to Langdon 102s) in post-project scenarios as shown in the table below:

Table 3-6: Scenario 4 N-0 thermal violations

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results	
				Observed Power Flow (MVA)	% Loading
Category A	924L (Milo 356s to Langdon 102s)	547	656	682.7	124.8%
	927L (Nova Tap to Langdon 102s)	576	691	719.4	124.9%
	927L (Nova Tap to Milo 356s)	576	691	668.2	116.0%

The most effective generators P2378, P1927, P2247 and Travers Solar were re-dispatched/turned off to mitigate the thermal violations on 924L and 927L. To maintain same study environment, SP pre-project

generation dispatch was also tuned to be identical to the post-project generation dispatch. All Category B studies were performed with the new generation dispatch. Detailed information can be found in the table below:

Table 3-7: Generators re-dispatch for Scenario 4

Project Name	Capacity	Bus Number	Scenario 4	
			Before curtailment	After curtailment
P2378 – Nova Solar	150	569070	75	0
P1927 – Solar Krafte Brooks	360	60434, 61434	180	50
P2247 – Buffalo Plains MPC Wind	466	560041, 560042	396.1	0
Travers Solar	465	560026, 561026, 562026	232.5	185.1
MATL (Net outflow)	320	80000	300	300
Total	**1761**	**-**	**1183.6**	**535.1**
Curtailment	**-**	**-**	**648.5**	

No Reliability Criteria violations were observed under Category A conditions after the curtailment. The loading conditions for 927L and 924L can be found in the table below:

Table 3-8: Scenario 4 N-0 loading conditions after curtailment

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Curtailment Results	
				Observed Power Flow (MVA)	% Loading
Category A	924L (Milo 356s to Langdon 102s)	547	656	516.4	94.4%
	927L (Nova Tap to Langdon 102s)	576	691	520.1	90.3%
	927L (Nova Tap to Milo 356s)	576	691	516.1	89.6%

Category B Conditions

Thermal criteria violations:

Thermal criteria violations were observed under certain Category B conditions as shown in Table 3-9.

Table 3-9: Thermal Criteria Violations under Category B Conditions for Scenario 4

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Pre-Project Results		Post-Project Results		% Loading Difference (Post-Pre)
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading	
927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	547	656	617.6	112.9%	758.7	138.7%	25.8%
924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	576	691	616.9	107.1%	758.6	131.7%	24.6%
	927L (Milo 356s to Nova Tap)	576	691	619.8	107.6%	761.5	132.2%	24.6%
965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122 Tap)	952	1142	526.5	55.3%	1018.6	107.0%	51.7%
1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	547	656	755.4	138.1%	708.9	129.6%	-8.5%
EATL HVDC	924L (Langdon 102s to Milo 356s)	547	656	645.5	118.0%	759.2	138.8%	20.8%
	927L (Milo 356s to Nova Tap)	576	691	649.2	112.7%	764.4	132.7%	20.0%
	927L (Langdon 102s to Nova Tap)	576	691	646.3	112.2%	761.5	132.2%	20.0%
	923L (Newell A2075s to Milo 356s)	547	656	451.8	82.6%	584.2	106.8%	24.2%
	935L (Cassils 324s to Milo 356s)	547	656	430.5	78.7%	550.3	100.6%	21.9%

Voltage Criteria Violations

Voltage criteria violations were observed under certain Category B conditions as shown in Table 3-10.

Table 3-10: Voltage Criteria Violations under Category B Conditions for Scenario 4

Contingency (System Element Lost)	Violation Location Details		Voltage Ratings (kV)			Pre-Project Results		Post-Project Results		Voltage Difference (kV)
	Substation Name and No.	Bus No.	Nominal Voltage	Emergency Minimum Voltage	Emergency Maximum Voltage	Initial Voltage (kV)	Post-contingency Steady State (kV)	Initial Voltage (kV)	Post-contingency Steady State (kV)	
1034L (Cassils 324s to Bowmanton 244s)	Voltage Collapse									
1035L (Bowmanton 244s to Newell A2075s)										
1074L (Bowmanton 244s to P2342)	MHS-3 B63 South Ridge Substation	704	69	61	76	67.3	67.2	67.3	62.0	-5.2
	MHS-3 B63 South Ridge Substation	549016	138	124	151	127.9	127.7	126.9	118.5	-9.2
	MHS-3 B63 South Ridge Substation	549017	138	124	151	130.4	130.2	129.5	121.4	-8.8
965L (Bowmanton 244s to Murray Lake 326s)	MHS-3 B63 South Ridge Substation	549016	138	124	151	127.9	127.8	126.9	122.8	-5.0

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3.2 Transient Stability Studies

Transient stability studies were completed for Scenarios 3 and 4.

The results indicated a few transient stability concerns as shown in Table 3-13 and Table 3-14. As required in the Connection Study Scope, Pre-project dynamic studies for Scenarios 1 and 2 were then performed. The system showed acceptable dynamic response to all Category B conditions studied for Scenarios 1 and 2 as shown in Table 3-11 and Table 3-12. Post-Project transient stability plots are provided in Attachment A4. The dynamic data and assumptions of all equipment proposed for the Facility are provided in Attachment A5.

Table 3-11: Transient Stability Study Results under Category B Conditions for Scenario 3

Studied Contingency	Fault Description and Location	Results
964L (Whitla 251s to 964AL Tap/Murray Lake 326s)	3-phase fault at Whitla 251s	Stable
	3-phase fault at Murray Lake 326s	Stable
965L (Murray Lake 326s to Bowmanton 244s)	3-phase fault at Murray Lake 326s	Stable
	3-phase fault at Bowmanton 244s	Unstable
983L (Aira 1049s to Elkwater 264s)	3-phase fault at Aira 1049s	Stable
	3-phase fault at Elkwater 264s	Stable
984L (Aira 1049s to Whitla 251s)	3-phase fault at Aira 1049s	Stable
	3-phase fault at Whitla 251s	Stable
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	3-phase fault at Elkwater 264s	Unstable
	3-phase fault at Bowmanton 244s	Unstable
1034L (Cassils 324s to Bowmanton 244s)	3-phase fault at Cassils 324s	Unstable
	3-phase fault at Bowmanton 244s	Unstable
1035L (Newell 2075s to Bowmanton 244s)	3-phase fault at Newell 2075s	Unstable
	3-phase fault at Bowmanton 244s	Unstable
676L (Bullshead 523s to Bowmanton 244s)	3-phase fault at Bullshead 523s	Stable
	3-phase fault at Bowmanton 244s	Stable
600L (Peace Butte 404s to Bullshead 523s)	3-phase fault at Peace Butte 404s	Stable
	3-phase fault at Bullshead 523s	Stable
880L (Al Rothbauer 321s to Bullshead 523s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bullshead 523s	Stable
675L (Al Rothbauer 321s to Bowmanton 244s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bowmanton 244s	Stable

Table 3-12: Transient Stability Study Results under Category B Conditions for Scenario 4

Studied Contingency	Fault Description and Location	Results
964L (Whitla 251s to 964AL Tap/Murray Lake 326s)	3-phase fault at Whitla 251s	Stable
	3-phase fault at Murray Lake 326s	Stable
965L (Murray Lake 326s to Bowmanton 244s)	3-phase fault at Murray Lake 326s	Stable
	3-phase fault at Bowmanton 244s	Stable
983L (Aira 1049s to Elkwater 264s)	3-phase fault at Aira 1049s	Stable
	3-phase fault at Elkwater 264s	Stable
984L (Aira 1049s to Whitla 251s)	3-phase fault at Aira 1049s	Stable
	3-phase fault at Whitla 251s	Stable
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	3-phase fault at Elkwater 264s	Unstable
	3-phase fault at Bowmanton 244s	Unstable
1034L (Cassils 324s to Bowmanton 244s)	3-phase fault at Cassils 324s	Unstable
	3-phase fault at Bowmanton 244s	Unstable
1035L (Newell 2075s to Bowmanton 244s)	3-phase fault at Newell 2075s	Unstable
	3-phase fault at Bowmanton 244s	Unstable
676L (Bullshead 523s to Bowmanton 244s)	3-phase fault at Bullshead 523s	Stable
	3-phase fault at Bowmanton 244s	Stable
600L (Peace Butte 404s to Bullshead 523s)	3-phase fault at Peace Butte 404s	Stable
	3-phase fault at Bullshead 523s	Stable
880L (Al Rothbauer 321s to Bullshead 523s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bullshead 523s	Stable
675L (Al Rothbauer 321s to Bowmanton 244s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bowmanton 244s	Stable

Table 3-13: Transient Stability Study Results under Category B Conditions for Scenario 1

Studied Contingency	Fault Description and Location	Results
964L (Whitla 251s to 964AL Tap/Murray Lake 326s)	3-phase fault at Whitla 251s	Stable
	3-phase fault at Murray Lake 326s	Stable
965L (Murray Lake 326s to Bowmanton 244s)	3-phase fault at Murray Lake 326s	Stable
	3-phase fault at Bowmanton 244s	Stable
983L (Whitla 251s to Elkwater 264s)	3-phase fault at Whitla 251s	Stable
	3-phase fault at Elkwater 264s	Stable
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	3-phase fault at Elkwater 264s	Stable
	3-phase fault at Bowmanton 244s	Stable

Studied Contingency	Fault Description and Location	Results
1034L (Cassils 324s to Bowmanton 244s)	3-phase fault at Cassils 324s	Stable
	3-phase fault at Bowmanton 244s	Stable
1035L (Newell 2075s to Bowmanton 244s)	3-phase fault at Newell 2075s	Stable
	3-phase fault at Bowmanton 244s	Stable
676L (Bullshead 523s to Bowmanton 244s)	3-phase fault at Bullshead 523s	Stable
	3-phase fault at Bowmanton 244s	Stable
600L (Peace Butte 404s to Bullshead 523s)	3-phase fault at Peace Butte 404s	Stable
	3-phase fault at Bullshead 523s	Stable
880L (Al Rothbauer 321s to Bullshead 523s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bullshead 523s	Stable
675L (Al Rothbauer 321s to Bowmanton 244s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bowmanton 244s	Stable

Table 3-14: Transient Stability Study Results under Category B Conditions for Scenario 2

Studied Contingency	Fault Description and Location	Results
964L (Whitla 251s to 964AL Tap/Murray Lake 326s)	3-phase fault at Whitla 251s	Stable
	3-phase fault at Murray Lake 326s	Stable
965L (Murray Lake 326s to Bowmanton 244s)	3-phase fault at Murray Lake 326s	Stable
	3-phase fault at Bowmanton 244s	Stable
983L (Whitla 251s to Elkwater 264s)	3-phase fault at Whitla 251s	Stable
	3-phase fault at Elkwater 264s	Stable
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	3-phase fault at Elkwater 264s	Stable
	3-phase fault at Bowmanton 244s	Stable
1034L (Cassils 324s to Bowmanton 244s)	3-phase fault at Cassils 324s	Stable
	3-phase fault at Bowmanton 244s	Stable
1035L (Newell 2075s to Bowmanton 244s)	3-phase fault at Newell 2075s	Stable
	3-phase fault at Bowmanton 244s	Stable
676L (Bullshead 523s to Bowmanton 244s)	3-phase fault at Bullshead 523s	Stable
	3-phase fault at Bowmanton 244s	Stable
600L (Peace Butte 404s to Bullshead 523s)	3-phase fault at Peace Butte 404s	Stable
	3-phase fault at Bullshead 523s	Stable
880L (Al Rothbauer 321s to Bullshead 523s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bullshead 523s	Stable
675L (Al Rothbauer 321s to Bowmanton 244s)	3-phase fault at Al Rothbauer 321s	Stable
	3-phase fault at Bowmanton 244s	Stable

4 Short Circuit Studies

4.1 Pre-Project Results

4.1.1 Scenario 2: 2025 SP HW Pre-Project

Pre-Project short-circuit current levels are provided in Table 4-1[1].

Table 4-1: Pre-Project Short-Circuit Current Levels for Scenario 2

Substation Name and Number	Base Voltage (kV)	Pre-Fault Voltage (kV)	3-Φ Fault (kA)	Positive Sequence Thevenin Source Impedance (R1+jX1) (pu)	1-Φ Fault (kA)	Zero Sequence Thevenin Source Impedance (R0+jX0) (pu)
Bowmanton 244s	240	249.5	7.263	0.0044825+0.0381096j	7.461	0.0076607+0.0362749j
	138	141.8	8.965	0.0053538+0.051064j	8.679	0.0084742+0.054598j
Whitla 251s	240	251.0	5.283	0.0043622+0.0517756j	5.067	0.0109311+0.0606877j
Elkwater 264s	240	250.8	5.097	0.0053468+0.0544101j	6.91	0.0024394+0.0174736j
Al Rothbauer 321s	138	140.4	7.491	0.0079226+0.0581493j	7.242	0.0079117+0.060154j
Bullshead 523s	138	141.9	6.216	.0129471+0.0702044j	5.503	0.0188068+0.0884132j
Shamrock 1018s	240	250.8	4.618	0.0050165+0.0591854j	4.559	0.0095547+0.0637824j
Newell 2075s	240	249.1	13.536	0.004391+0.0212737j	12.855	0.0044776+0.0244889j

4.2 Post-Project Results

4.2.1 Scenario 4: 2025 SP HW Post-Project

Post-Project short-circuit current levels for Scenario 4 are provided in Table 4-2.

Table 4-2: Post-Project Short-Circuit Current Levels for Scenario 4

Substation Name and Number	Base Voltage (kV)	Pre-Fault Voltage (kV)	3-Φ Fault (kA)	Positive Sequence Thevenin Source Impedance (R1+jX1) (pu)	1-Φ Fault (kA)	Zero Sequence Thevenin Source Impedance (R0+jX0) (pu)
Bowmanton 244s	240	241.5	7.218	0.0039279+0.035083j	7.185	0.0076611+0.0362784j
	138	138.7	8.611	0.0048957+0.0490419j	8.205	0.0084741+0.0545996j
Whitla 251s	240	251.0	5.513	0.0034287+0.0452054j	4.99	0.0109471+0.060812j
Elkwater 264s	240	250.7	5.191	0.0043947+0.0484295j	6.88	0.0024402+0.0174789j
Al Rothbauer 321s	138	138.4	7.15	0.0076514+0.0569726j	6.862	0.007911+0.0601511j
Bullshead 523s	138	139.9	5.906	0.0126239+0.0689436j	5.191	0.0187977+0.0883967j

[1] Short-circuit current studies were based on modeling information provided to the AESO by third parties. The authenticity of the modeling information has not been validated. Fault levels could change as a result of system developments, new customer connections, or additional generation in the area. It is recommended that these changes be monitored and fault levels reviewed to ensure that the fault levels are within equipment operating limits. The information provided in this study should not be used as the sole source of information for electrical equipment specifications or for the design of safety-grounding systems.

Substation Name and Number	Base Voltage (kV)	Pre-Fault Voltage (kV)	3-Φ Fault (kA)	Positive Sequence Thevenin Source Impedance (R1+jX1) (pu)	1-Φ Fault (kA)	Zero Sequence Thevenin Source Impedance (R0+jX0) (pu)
Shamrock 1018s	240	250.8	4.706	0.0041697+0.0529944j	4.443	0.0095577+0.0638667j
Aira 1049s	240	251.5	5.305	0.0036598+0.046926j	4.882	0.0124975+0.061082j
Newell 2075s	240	243.2	13.17	0.0042973+0.0209483j	12.423	0.0044811+0.0245044j

4.2.2 Scenario 5: 2031 WP HW Post-Project

Post-Project short-circuit current levels for Scenario 5 are provided in Table 4-3.

Table 4-3: Post-Project Short-Circuit Current Levels for Scenario 5

Substation Name and Number	Base Voltage (kV)	Pre-Fault Voltage (kV)	3-Φ Fault (kA)	Positive Sequence Thevenin Source Impedance (R1+jX1) (pu)	1-Φ Fault (kA)	Zero Sequence Thevenin Source Impedance (R0+jX0) (pu)
Bowmanton 244s	240	250.2	7.707	0.0042444+0.034448j	8.14	0.0054007+0.0288557j
	138	138.9	11.409	0.0065345+0.0377899j	10.911	0.0061519+0.0432622j
Whitla 251s	240	248.0	5.09	0.0044029+0.0518673j	4.838	0.0106005+0.0595075j
Elkwater 264s	240	249.9	5.281	0.0049595+0.0504027j	6.774	0.0024012+0.0171196j
Al Rothbauer 321s	138	138.5	8.089	0.0074963+0.0522936j	7.631	0.0081151+0.0618546j
Bullshead 523s	138	139.1	6.205	0.0139072+0.0680118j	5.208	0.024298+0.106594j
Shamrock 1018s	240	246.9	4.428	0.0051125+0.0595934j	4.349	0.0092706+0.0625667j
Aira 1049s	240	251.3	5.11	0.0044591+0.0517498j	4.831	0.0122639+0.0600514j
Newell 2075s	240	251.7	13.698	0.0033941+0.0193274j	14.075	0.0027812+0.0181156j

5 Mitigation Measure Development and Evaluation

The Studies Consultant, in consultation with the AESO, developed mitigation measures to address the system performance issues that were identified in the post-Project scenarios. Existing remedial action schemes (RASs) are described in Section 1.2.2 of Attachment A1.

5.1 Pre-Project

Pre-Project mitigation measures are summarized in Table 5-1.

Table 5-1: Pre-Project Mitigation Measures

Mitigation Measure	Location of Observed Violation	Contingency
Planned RAS 197[a] and RTOP	1087L (Cassils 324s to Newell A2075s)	1088L (Cassils 324s to Newell A2075s)
Real time operational practices	658L (Cypress 562s to Hilda Tap)	Suffield 895sT2
	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap/Milo 356s)
	927L (Langdon 102s to Nova Tap)	924L (Langdon 102s to Milo 356s)
	927L (Milo 356s to Nova Tap)	
	658L (Cypress 562s to Hilda Tap)	892L (Suffield 895s to Bowmanton 244s)
	924L (Langdon 102s to Milo 356s)	EATL HVDC
	927L (Langdon 102s to Nova Tap)	
	927L (Milo 356s to Nova Tap)	
	1087L (Cassils 324s to Newell A2075s)	1035L (Bowmanton 244s to Newell A2075s)

Notes:

[a] Planned RAS 197 is a RAS proposed for P1927 – Solar Kraft Brooks.

5.2 Post-Project

Post-Project mitigation measures are summarized in Table 5-2.

Table 5-2: Post-Project Mitigation Measures

Mitigation Measure	Location of Observed Violation	Contingency
Planned RAS 175[a] and RTOP	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap/Milo 356s)

Mitigation Measure	Location of Observed Violation	Contingency
	927L (Langdon 102s to Nova Tap)	924L (Langdon 102s to Milo 356s)
	927L (Milo 356s to Nova Tap)	
Real time operational practices	924L (Langdon 102s to Milo 356s)	EATL HVDC
	927L (Milo 356s to Nova Tap)	
	927L (Langdon 102s to Nova Tap)	
	923L (Newell A2075s to Milo 356s)	
	935L (Cassils 324s to Milo 356s)	
Modified Planned RAS 164 Logic 2[b]	Voltage Collapse	1035L (Bowmanton 244s to Newell A2075s)
		1034L (Cassils 324s to Bowmanton 244s)
Modified Planned RAS 164 Logic 2 and Existing RAS 214[c]	Transient Instability	1035L (Bowmanton 244s to Newell A2075s)
		1034L (Cassils 324s to Bowmanton 244s)
Modified Planned RAS 164 Logic 3 [d] and Existing RAS 214		1074L (Bowmanton 244s to P2122/Elkwater 264s)
Modified Planned RAS 164 Logic 4[e] and Existing RAS 214		965L (Murray Lake 326s to Bowmanton 244s)
Modified Planned RAS 164 Logic 3 and Existing RAS 214	MHS-3 B63 South Ridge Substation	1074L (Bowmanton 244s to P2122/Elkwater 264s)
	MHS-3 B63 South Ridge Substation	
	MHS-3 B63 South Ridge Substation	
	Bowmanton 244s Substation	
Modified Planned RAS 164 Logic 4 and Existing RAS 214	MHS-3 B63 South Ridge Substation	965L (Bowmanton 244s to Murray Lake 326s)
Planned RAS 197[f] and RTOP	1087L (Cassils 324s to Newell 2075s)	1088L (Cassils 324s to Newell 2075s)
Real time operational practices	658L (Cypress 562s to Hilda Tap)	Suffield 895sT2
	965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122/Elkwater 264s)
	658L (Cypress 562s to Hilda Tap)	892L (Suffield 895s to Bowmanton 244s)
	1074L (Bowmanton 244s to P2122)	965L (Bowmanton 244s to Murray Lake 326s)

Notes:

[a] Planned RAS 175 is a RAS proposed for P2247 – Buffalo Plains MPC Wind, P1927 – Solar Kraft Brooks and P2341 – Greengate Travers Solar Phase 2. They are sequentially shut down until the overloads disappear.

[b] Modified Planned RAS 164 Logic 2 – Logic 1034L/1035L refers to adding P2461, the project, to the logic of the planned RAS 164 – Logic 1034L/1035L which is a RAS proposed for P0693, P2237, P2347, P1800 (Phase 2 and 3), P1812, P2122 and P2413.

[c] Existing RAS 214 is a RAS which turns on both reactor banks at Whitla 251s.

[d] Modified Planned RAS 164 Logic 3 – Logic 983L/1074L refers to adding P2461, the project, to the logic of the planned RAS 164 – Logic 983L/1074L which is a RAS proposed for P0693, P2347, P2122 and P2413.

[e] Modified Planned RAS 164 Logic 4 – Logic 965L refers to adding P2461, the project, to the logic of the planned RAS 164 – Logic 965L which is a RAS proposed for P2237.

[f] Planned RAS 197 is a RAS proposed for P1927 – Solar Kraft Brooks.

5.3 Evaluation of Mitigation Measures

This section describes the results of the power flow studies that were performed to assess the impact of the Project on the performance of the AIES following the implementation of proposed mitigation measures.

The post-mitigation measures studies were performed under Category B conditions for Scenarios 1, 2, 3 and 4 using the RASs described in the previous section.

The post-mitigation power flow diagrams for selected Category B conditions are provided in Attachment A6. Post-mitigation power flow diagrams present only those post-Project contingencies that result in thermal criteria violations that require RAS mitigation. Post-Project contingencies that result in thermal criteria violations that can be mitigated by real-time operational practices or TFO capital maintenance projects were not studied.

5.3.1 Scenario 1: 2025 SL HW Pre-Project

Category B Conditions

Thermal criteria violations observed under certain Category B conditions in the pre-Project studies were mitigated by RASs as shown in Table 5-4.

Table 5-3: Post-RAS Power Flow Study Results for Scenario 1

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading
1088L (Cassils 324s to Newell A2075s)	1087L (Cassils 324s to Newell A2075s)	547	656	702.3	128.4%	702.3	128.4% [a]

Notes:

[a] The remaining thermal overloads will be mitigated by Real Time Operation Practice (RTOP).

5.3.2 Scenario 2: 2025 SP HW Pre-Project

Category B Conditions

Thermal criteria violations observed under certain Category B conditions in the pre-Project studies were mitigated by RASs as shown in Table 5-4.

Table 5-4: Post-RAS Power Flow Study Results for Scenario 2

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading
1088L (Cassils 324s to Newell A2075s)	1087L (Cassils 324s to Newell A2075s)	547	656	755.4	138.1%	737.9	134.9% [a]

Notes:

[a] The remaining thermal overloads will be mitigated by Real Time Operation Practice (RTOP).

5.3.3 Scenario 3: 2025 SL HW Post-Project

Category B Conditions

Thermal, voltage and transient stability criteria violations observed under certain Category B conditions in the post-Project studies were mitigated by RASs as shown in Table 5-5, Table 5-6 and Table 5-7.

Table 5-5: Post-RAS Power Flow Study Results for Scenario 3

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading
927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	547	656	722.0	132.0%	681.6	124.6% [a]
924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	576	691	721.2	125.2%	679.1	117.9% [a]
	927L (Milo 356s to Nova Tap)	576	691	725.2	125.9%	684.9	118.9% [a]

Notes:

[a] The remaining thermal overloads will be mitigated by Real Time Operation Practice (RTOP).

Table 5-6: Post-RAS Voltage Results for Scenario 3

Contingency (System Element Lost)	Violation Location Details			Emergency Minimum Voltage (kV)	Emergency Maximum Voltage (kV)	Initial Voltage (kV)	Steady State Voltage (kV)	Post-Mitigation Steady State (kV)
	Substation Name and No.	Bus No.	Nominal kV					
1034L (Cassils 324s to Bowmanton 244s)	Voltage Recovers							
1035L (Bowmanton 244s to Newell A2075s)								
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	Bowmanton 244s	669	240	216	264	241.0	214.0	253.4[a]

Notes:

[a] Existing RAS 214 needs to be applied to mitigate potential over voltage at Bowmanton 244s after applying existing RAS 164 Logic 3.

Table 5-7: Post-RAS Transient Stability Study Results for Scenario 3

Studied Contingency	Fault Description and Location	Results	Mitigation	After RAS results
965L (Murray Lake 326s to Bowmanton 244s)	3-phase fault at Bowmanton 244s	Unstable	Modified Planned RAS 164 – Logic 4 [a] and RAS 214 [b]	Stable
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	3-phase fault at Elkwater 264s	Unstable	Modified Planned RAS 164 – Logic 3 [c] and RAS 214	Stable
	3-phase fault at Bowmanton 244s	Unstable		Stable
1034L (Cassils 324s - Bowmanton 244s)	3-phase fault at Cassils 324s	Unstable	Modified Planned RAS 164 – Logic 2 [d] and RAS 214	Stable
	3-phase fault at Bowmanton 244s	Unstable		Stable
1035L (Newell 2075s - Bowmanton 244s)	3-phase fault at Newell 2075s	Unstable	Modified Planned RAS 164 – Logic 2 [d] and RAS 214	Stable
	3-phase fault at Bowmanton 244s	Unstable		Stable

Notes:

[a] Modified Planned RAS 164 Logic 4 – Logic 965L trips P2461 and P2237.

[b] Existing RAS 214 is a RAS which turns on both reactor banks at Whitla 251s.

[c] Modified Planned RAS 164 Logic 3 – Logic 983L/1074L trips P2461, P0693, P2347, P2122 and P2413.

[d] Modified Planned RAS 164 Logic 2 – Logic 1034L/1035L trips P2461, P0693, P2237, P2347, P1800 Phase 2 and 3, P1812, P2122 and P2413.

5.3.4 Scenario 4: 2025 SP HW Post-Project

Category B Conditions

Thermal, voltage and transient criteria violations observed under certain Category B conditions in the post-Project studies were mitigated by RASs as shown in Table 5-8, Table 5-9 and Table 5-10.

Table 5-8: Post-RAS Power Flow Study Results for Scenario 4

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Normal Rating (MVA)	Emergency Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Observed Power Flow (MVA)	% Loading	Observed Power Flow (MVA)	% Loading
927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	547	656	758.7	138.7%	739.5	135.2% [a]
924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	576	691	758.6	131.7%	739.0	128.3% [a]
	927L (Milo 356s to Nova Tap)	576	691	761.5	132.2%	742.5	128.9% [a]
1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	547	656	708.9	129.6%	692.5	126.6% [a]

Notes:

[a] The remaining thermal overloads will be mitigated by Real Time Operation Practice (RTOP).

Table 5-9: Post-RAS Voltage Results for Scenario 4

Contingency (System Element Lost)	Violation Location Details			Emergency Minimum Voltage (kV)	Emergency Maximum Voltage (kV)	Initial Voltage (kV)	Steady State Voltage (kV)	Post-Mitigation Steady State (kV)
	Substation Name and No.	Bus No.	Nominal kV					
1034L (Cassils 324s to Bowmanton 244s)	Voltage Recovers							
1035L (Bowmanton 244s to Newell A2075s)								
1074L (Bowmanton 244s to P2342)	MHS-3 B63 South Ridge Substation	704	69	61	76	67.3	62.0	67.6
	MHS-3 B63 South Ridge Substation	549016	138	124	151	126.9	118.5	128.4
	MHS-3 B63 South Ridge Substation	549017	138	124	151	129.5	121.4	130.9
965L (Bowmanton 244s to Murray Lake 326s)	MHS-3 B63 South Ridge Substation	549016	138	124	151	126.9	122.8	128.0

Table 5-10: Post-RAS Transient Stability Study Results for Scenario 4

Studied Contingency	Fault Description and Location	Results	Mitigation	After RAS results
1074L (Elkwater 264s to P2122 Tap/Bowmanton 244s)	3-phase fault at Elkwater 264s	Unstable	Modified Planned RAS 164 – Logic 3 [b] and RAS 214 [a]	Stable
	3-phase fault at Bowmanton 244s	Unstable		Stable
1034L (Cassils 324s - Bowmanton 244s)	3-phase fault at Cassils 324s	Unstable	Modified Planned RAS 164 – Logic 2 and RAS 214	Stable
	3-phase fault at Bowmanton 244s	Unstable		Stable
1035L (Newell 2075s - Bowmanton 244s)	3-phase fault at Newell 2075s	Unstable	Modified Planned RAS 164 – Logic 2 [c] and RAS 214	Stable
	3-phase fault at Bowmanton 244s	Unstable		Stable

Notes:

[a] Existing RAS 214 is a RAS which turns on both reactor banks at Whitla 251s.

[b] Modified Planned RAS 164 Logic 3 – Logic 983L/1074L trips P2461, P0693, P2347, P2122 and P2413.

[c] Modified Planned RAS 164 Logic 2 – Logic 1034L/1035L trips P2461, P0693, P2237, P2347, P1800 Phase 2 and 3, P1812, P2122 and P2413.

5.4 Constraint Effective Factor Studies

Constraint effective factor studies were conducted for all post-Project scenarios. The constraint effective factors were calculated for all Category B conditions when the loadings of the monitored transmission elements in the Study Area exceeded 100% (i.e., for all of the contingencies that resulted in thermal criteria violations). The results of the constraint effective factor studies are provided in Attachment A7.

Attachment A1
Engineering Connection Assessment: Study Scope

Engineering Connection Assessment: Study Scope

P2461 Aira Solar Facility

Aira Wind Power Inc.

Date: January 11, 2023

Version: **Final**

Classification: Public

Company Name	Name and Credentials	Date	Signature
AltaLink (Study Consultant)	Ryan Cui	Jan. 11 2023	
AESO	Peyman Ahmadi, P. Eng	1/30/2023	
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Aira Wind Power Inc. (Market Participant)	Udo Schornstein	1/28/2023	DocuSigned by: Udo Schornstein 573A596CE283426...

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Attachment A: Transmission Planning Criteria – Basis and Assumptions

1 Introduction

This Study Scope provides an overview of the engineering studies to be completed by Power Grid Specialists Corp. (the Studies Consultant) to assess the impact of the Project (as defined in section 1.1) on the performance of the Alberta interconnected electric system (AIES). Technical criteria, assumptions and methods for performing these engineering studies are provided in this document.

1.1 Project Overview

Aria Wind Power Inc. (Market Participant) has submitted a request for system access service to the Alberta Electric System Operator (AESO) to connect its proposed Aira Solar (Facility) to the AIES.

The Market Participant's request includes: a request for a new system access service in the area, with a Rate STS, *Supply Transmission Service*, contract capacity of 450 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1 MW; and a request for transmission development (collectively, the Project).

The Project in-service date (ISD) used for the purpose of the studies is December 01, 2024.

Load and generation components of the Project are listed in Table 1-1.

Table 1-1: Project Load and Generation Details

Project Component		Description
Load	Existing Rate DTS, *Demand Transmission Service,* contract capacity	No existing contract
	Requested Rate DTS	1 MW
	Type	Station Service
	Motors (number and size)	Not Applicable
	Power factor	0.9 lagging
	Future load expansion plans	No
Generation	Generation type	Solar
	Existing Rate STS, *Supply Transmission Service,* contract capacity	No existing contract
	Requested Rate STS	450 MW
	Number and size of generating units	T100 x 5 MVA central inverters
	Maximum authorized real power (MARP)	450 MW
	Maximum capability (MC)	450 MW
	Reactive power capability	0.95 pf
		0.9 pf
	Future generation expansion plans	No

Project Component	Description

Note:

MARP and MC are defined in the AESO's *Consolidated Authoritative Document Glossary*, which can be found on the AESO's website.

1.2 Existing System Overview

1.2.1 Study Area

Geographically, the Project is located in the AESO planning area of Medicine Hat (Area 4).

The Study Area consists of the AESO planning areas of Medicine Hat (Area 4), and Brooks (Area 47), including the tie lines connecting these planning areas to the rest of the AIES.

The existing transmission system in the Study Area is shown in Figure 1-1.

1.2.2 Existing Constraints

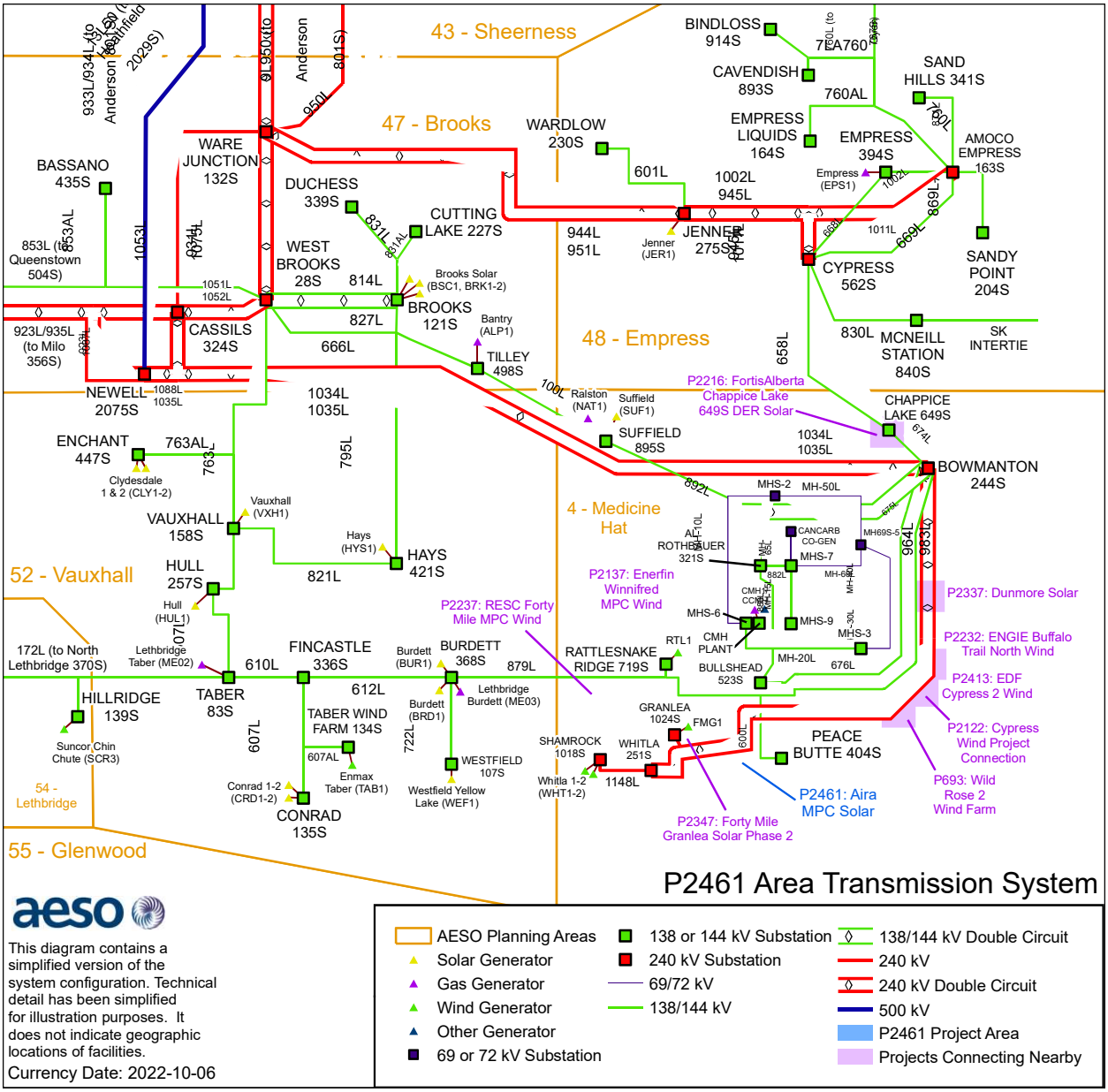
Existing constraints in the Study Area are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (TCM Rule).

There are a number of constraints in the Study Area that are mitigated by existing remedial action schemes (RASs) and/or other protection schemes.

The following existing RASs and/or other protection schemes are used to manage constraints in the area:

- RAS 141: Tilley 498S voltage instability mitigation
- RAS 164: CBW Area 240 kV Contingency Mitigation
- RAS 170: 1005L-356S Overload Mitigation
- RAS 173: 880L-321S Overload Mitigation Scheme
- RAS 180: 879L Overload Mitigation Scheme
- RAS 181: 610L Overload Mitigation Scheme
- RAS 182: 1005L Outage and 940L Contingency Mitigation Scheme
- RAS 616: CMH T11 and T71 Transformer Overload Mitigation Scheme
- RAS 2607: 28S - 1075L Overvoltage Line Trip

Figure 1-1: Transmission System in the Study Area



2 Connection Alternatives

The following alternative will be studied:

2.1 Alternative 1 – T-Tap connection to the existing 240 kV transmission line 983L

This alternative includes the following developments:

- Add a new 240 kV collector substation;
- Add a 240 kV circuit, approximately 0.5 kilometer[1] in length, to connect the collector substation to the existing 240 kV transmission line 983L (between Whitla 251S – Elkwater 264S) using a T-tap connection configuration;
- Add or modify associated equipment as required for the above transmission developments.

This Alternative is only available if:

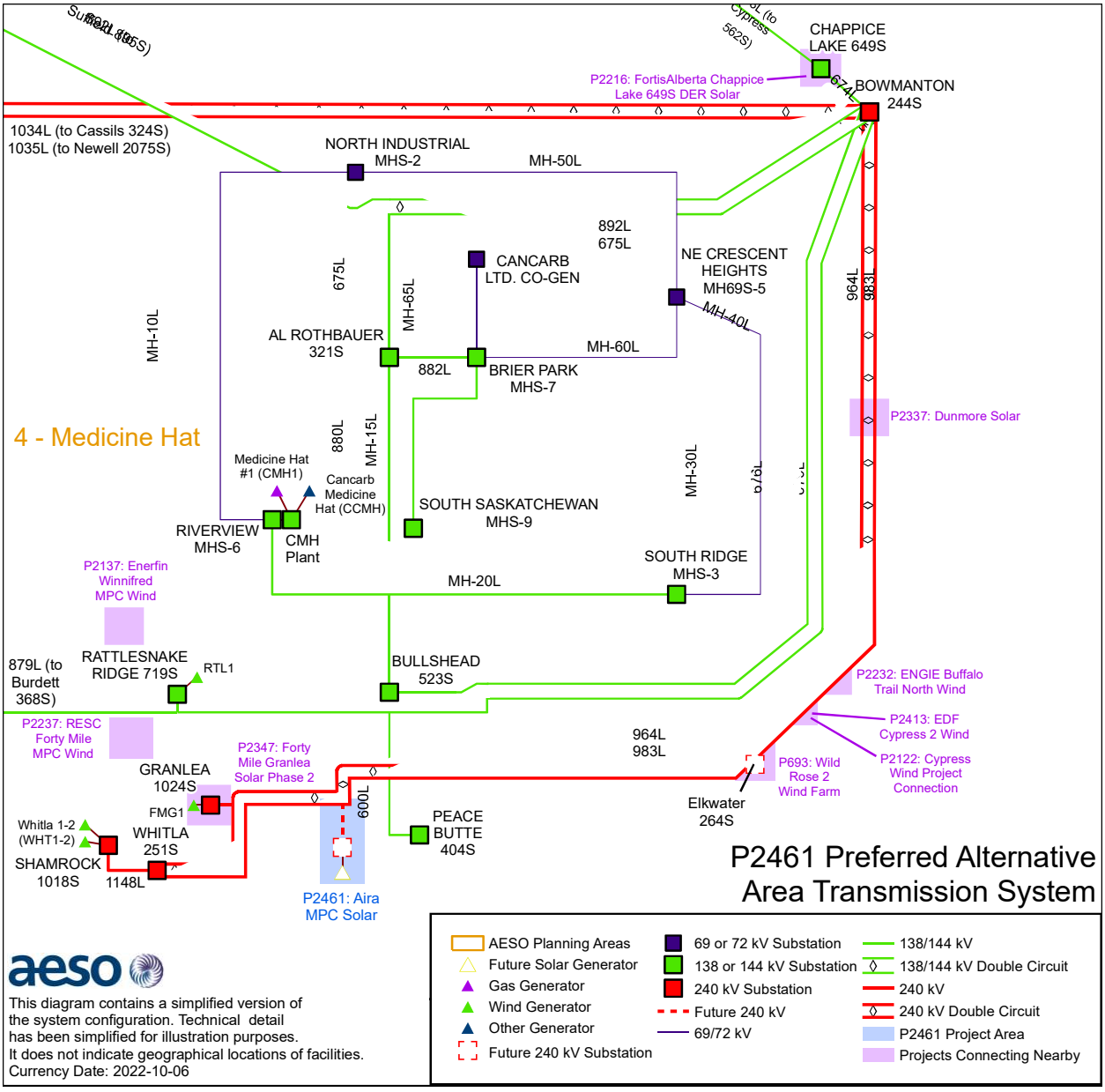
- P0693 Wild Rose 2 Wind Farm moves ahead of the Project and as a result new substation Elkwater 264S is built
- Total net generation capability on the tapped line does not exceed the most severe single contingency (MSSC) under normal transmission system configuration, as defined by the AESO.

If P0693 does not go ahead or net generation capability on the tapped line exceeds the most severe single contingency (MSSC), the T-tap option to 983L is not feasible and P2461 needs to connect to the system via In-and-Out connection to 983L.

The proposed connection configuration is shown in Figure 2-1.

[1] Exact line length to be determined by the MP

Figure 2-1: Connection Alternative 1



3 Criteria, Standards and Requirements

3.1 AESO Reliability Criteria

The Transmission Planning (TPL) Standards, which are included in the Alberta Reliability Standards, and *Transmission Planning Criteria – Basis and Assumptions (see Attachment A),* (collectively, the Reliability Criteria) will be applied to evaluate system performance under Category A system conditions (i.e., all elements in-service) and following Category B contingencies (i.e., single element outage), prior to and following the studied alternatives. Below is a summary of Category A and Category B system conditions.

Category A, often referred to as the N-0 condition, represents a normal system with no contingencies and all facilities in service. Under this condition, the system must be able to supply all firm load and firm transfers to other areas. All equipment must operate within its applicable rating, voltages must be within their applicable range, and the system must be stable with no cascading outages.

Category B events, often referred to as an N-1 or N-G-1 with the most critical generator out of service, result in the loss of any single specified system element under specified fault conditions with normal clearing. These elements are a generator, a transmission circuit, a transformer, or a single pole of a DC transmission line. The acceptable impact on the system is the same as Category A. Planned or controlled interruptions of electric supply to radial customers or some local network customers, connected to or supplied by the faulted element or by the affected area, may occur in certain areas without impacting the overall reliability of the interconnected transmission systems. To prepare for the next contingency, system adjustments are permitted, including curtailments of contracted firm (non-recallable reserved) transmission service electric power transfers.

The TPL standards, TPL-001-AB-0, TPL-002-AB1-0, have referenced Applicable Ratings when specifying the required system performance under Category A and Category B events. For the purpose of applying the TPL standards to the studies documented in this report, Applicable Ratings are defined as follows:

- Normal thermal rating of the line's loading limits for each season;
- The highest specified loading limits for transformers;
- For Category A conditions: Voltage range under normal operating condition per AESO Information Document #2010-007RS, *General Operating Practices – Voltage Control* (ID #2010-007RS). For the busses not listed in ID #2010-007RS, Table 2-1 in the *Transmission Planning Criteria – Basis and Assumptions* applies;
- For Category B condition: The extreme voltage range values per Table 2-1 in the *Transmission Planning Criteria – Basis and Assumptions; and*
- Desired post-contingency voltage deviation limits for three defined post-event timeframes as provided in Table 3-1.

Table 3-1: Post-Contingency Voltage Deviation Guidelines for Low Voltage Busses

Parameter and reference point	Time Period		
	Post Transient (up to 30 sec)	Post Auto Control (30 sec to 5 min)	Post Manual Control (Steady State)
Voltage deviation from steady state at point of delivery (POD) low voltage bus.	±10%	±7%	±5%

3.2 ISO Rules and Information Documents

ID #2010-007RS will be used to establish system normal (i.e., pre-contingency) voltage profiles for the Study Area.

The TCM Rule will be followed to set up the study scenarios and assess the impact of the Project. In addition, due regard will be given to the following:

- The AESO's *Connection Study Requirements*;
- Section 502.1 of the ISO rules, *Aggregated Generating Facilities Technical Requirements*;
- Section 502.16 of the ISO rules, *Aggregated Generating Facilities Operating Requirements*;

4 Scenarios and Assumptions

4.1 Scenarios

The following section describes the scenarios to be studied and the assumptions to be used in the studies.

Connection scenarios must be studied as outlined in Table 4-1.

Table 4-1: Connection Study Scenarios

Scenario No.	Year/Season	System Generation Dispatch Conditions	Scenario Name	Project Load (MW)	Project Generation (MW)
Pre-Project					
1	2025 Summer Light (SL)	High Wind (HW)	2025 SL HW Pre-Project	0	0
2	2025 Summer Peak (SP)	High Wind (HW)	2025 SP HW Pre-Project	0	0
Post-Project					
3	2025 Summer Light (SL)	High Wind (HW)	2025 SL HW Post-Project	0	450
4	2025 Summer Peak (SP)	High Wind (HW)	2025 SP HW Post-Project	0	450
5	2031 Winter Peak (WP)	All Study Area Generators In-Service	2031 WP Post-Project	0	450

Note:

The 138 kV bus-tie breaker and switch at the Bowmanton 244S substation are assumed to be open for all of the above scenarios.

The City of Medicine Hat thermal and voltage violations should be included in the study results.

4.2 Assumptions

4.2.1 System Project Assumptions

The pre-Project and post-Project connection assessment will not include any system transmission projects because there are no planned system transmission developments in the Study Area that are expected to be in service before the scheduled Project ISD.

4.2.2 Connection Project Assumptions

Table 4-2 summarizes the connection projects in the Study Area, which met the inclusion criteria.

Table 4-2: Planned Connection Projects Included in the Study Area[2]

AESO Project No.	AESO Project Name	AESO Planning Area No.	Generation (MW)	Load (MW)	Scheduled ISD
P1927	Solar Krafte Brooks	47-Brooks	360	1	Dec 01, 2023
P2247	Buffalo Plains MPC Wind	47-Brooks	466	2	April 27, 2023
P0693	Wild Rose 2 Wind Farm	4 – Medicine Hat	192	4	June 30, 2023
P1800	Capital Power Whitla Wind Power Facility	4 – Medicine Hat	298.8	1.75	Sep 15, 2021
P1812	Suncor Forty Mile Granlea WAGF	4 – Medicine Hat	200	0.25	Aug 17, 2022
P2122	Cypress Wind Project Connection	4 – Medicine Hat	195.9	2.2	Aug 31, 2022
P2212	RESC Rattlesnake Ridge MPC Wind	4 – Medicine Hat	114	1	Dec 08, 2021
P1838	Fortis 895S Suffield DG PV	4 – Medicine Hat	23	0	June 30, 2020
P2239	CMH Unit 17 Gas	4 – Medicine Hat	44	0	April 19, 2022
P2337	Dunmore Solar	4 – Medicine Hat	216	0.5	Dec 1, 2024
P2338	Capital Power Whitla Wind Phase 3	4 – Medicine Hat	54	0	Sep 15, 2021
P2347	Forty Mile Granlea Solar Phase 2	4 – Medicine Hat	220	0.5	Nov 01, 2023
P2413	EDF Cypress 2 Wind	4 – Medicine Hat	45.78	0.62	August 31, 2022
P2237	RESC Forty Mile MPC Wind	4 – Medicine Hat	266	10	Sep 15, 2023
P2137	Enerfin Winnifred MPC Wind	4 – Medicine Hat	90	1	Oct 01, 2024

4.2.3 Load Assumptions

The load forecast to be used for the studies is shown in Table 4-3 and is a forecast for the AESO South Planning Region peak based on the AESO 2021 Long-term Outlook (2021 LTO)[3] with modifications to incorporate the latest forecast intelligence. For the post-Project studies, when the Study Area loads are

[2]This table may change based on the updated connection project list.

[3] The 2021 LTO is available on the AESO website.

modified to align with the regional load forecast, the active power to reactive power ratio in the base case scenarios shall be maintained.

Table 4-3: Forecast Load (at AESO South Planning Region Peak)

AESO Planning Region Name	Forecast Peak Load by Year/Season (MW)	
	2025 SL	2025 SP
Area 4	172	321
South Planning Region[1]	891	1614

Note:
[1] The South Region comprises the following AESO planning areas: 4, 43 ,44 ,45 ,46 ,47, 48, 49, 52,53 ,54, and 55

IDEV files contain non-motor loads in zones 34, 36, and 351. These loads are not accounted for in the forecasted peak loads shown above and should not be considered when scaling load. The AESO engineer will provide guidance to load scaling procedures as required.

4.2.4 Generation Assumptions

The generation forecast to be used for the studies is based on the 2021 LTO with modifications to incorporate the latest forecast intelligence. The generation assumptions for the studies will assume high wind dispatch condition. Additional studies may be required in the event of changes to the AESO's corporate forecast.

The existing generation (excluding wind and solar) dispatch conditions for the study scenarios are described in Table 4-4.

Table 4-4: Existing Generation (excluding Wind and Solar) Dispatch Conditions

Facility Name	Unit No.	Bus No.	MC (MW)	AESO Planning Area No.	Unit Net Generation[a] (MW) by Scenario	
					2025 SL	2025 SP
Altagas Bantry (ALP1)	1	4275	7	47	0	5
Ralston (NAT1)	G1,G2,G3, G4,G5,G6, G7,G8,G9, GX	3270	25	4	0	17
Medicine Hat #1 (CMH1)		667, 683, 686, 687, 689, 712, 713, 1715	297	4	195	272

Notes:
[a] "Unit Net Generation" refers to gross generating unit output (MW) less unit service load.

The wind and solar generation facilities will be dispatched to yield the credible worst-case power flow conditions for the Study Area. Pre-Project dispatch levels for the existing, under-construction and contracted wind and solar generation facilities, as well as planned projects are shown in Table 4-5, Table 4-6, Table 4-7 and Table 4-8.

Table 4-5: Dispatch Conditions for Existing and Under Construction Wind Generation Facilities

Facility Name and Code	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)	
				SL HW	SP HW
Ardenville Wind (ARD1)	4735, 4740	53	68	62.6	57.8
Fortis Bull Creek Phases 1 and 2 (BUL1 & BUL2)	550003, 550004	37	29	26.7	24.7
Blackspring Ridge (BSR1)	61736, 61737	49	300	276.0	255.0
Blue Trail Wind (BTR1)	66328, 67328	53	66	60.7	56.1
Castle River #1 (CR1)	2234, 3234	53	39	35.9	33.2
Castle Rock Ridge 2 (CRR2)	567221	53	30.6	28.2	26.0
Castle Rock Wind Farm (CRR1)	67221	53	77	70.8	65.5
Cowley Ridge (CRE3)	4264	53	20	18.4	17.0
Cypress 1 (CYP1)	560003, 561003	4	195.9	180.2	166.5
Cypress 2 (CYP2)	560003, 561003	4	46	42.3	39.1
Enmax Taber (TAB1)	15343, 16343	52	81	74.5	68.9
Forty Mile Granlea (FMG1)	61994, 62994	4	200	184.0	170.0
Ghost Pine (NEP1)	2621, 2622, 2623, 2624, 2625	42	82	75.4	69.7
Halkirk (HAL1)	66435, 67435	42	150	138.0	127.5
Hand Hills (HHW1)	560045	42	145	133.4	123.3
Hilda Wind (HLD1)	567004	48	100	92.0	85.0
Kettles Hill (KHW1)	2402, 3402	53	63	58.0	53.6
Lanfine Wind (LAN1)	60996	42	145	133.4	123.3
McBride Lake Windfarm (AKE1)	2901, 3901, 4901	53	73	67.2	62.1
Old Man River Wind (OWF1)	61543	53	46	42.3	39.1
Rattlesnake Ridge Wind (RTL1)	60873	4	130	119.6	110.5
Riverview Wind (RIV1)	69221	53	115	105.8	97.8
Soderglen Wind (GWW1)	12358, 13358	53	71	65.3	60.4
Summerview 1 (IEW1)	2338, 3338	53	66	60.7	56.1
Summerview 2 (IEW2)	4339, 5337	53	66	60.7	56.1
Suncor Chin Chute (SCR3)	2389	54	30	27.6	25.5

Suncor Magrath (SCR2)	11002	53	30	27.6	25.5
Wheatland Wind (WHE1)	61632, 60632	43	120	110.4	102.0
Capital Power Whitla Wind Power Facility Phase 1 (WHT1)	60990	4	201.6	185.5	171.4
Capital Power Whitla Wind Power Facility Phase 2 & 3 (WHT2)	61990	4	151	138.9	128.4
TransAlta Windrise (WRW1)	567031	53	207	190.4	176.0
Suncor Wintering Hills (SCR4)	60789, 60791, 60793, 60846, 60848, 60850	43	88	81.0	74.8

Note:

[a] "Unit Net Generation" refers to gross generating unit output (MW) less unit service load.

*: Although these projects have met the inclusion criteria and are considered for dispatch in the studies, Category A generation curtailment is already required. Therefore, these generations will be assumed to be curtailed in the studies

Table 4-6: Dispatch Conditions for Existing Solar Generation Projects

Facility Name and Code	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)	
				SL HW	SP HW
Burdett (BRD1)	2269	52	10.5	0	5.25
Burdett (BUR1)	557269	52	20	0	10
Brooks Solar (BSC1)	553257	47	15	0	7.5
Brooks Solar 1 (BRK1)	553256	47	13	0	6.5
Brooks Solar 2 (BRK2)	554257	47	14	0	7
Coaldale Solar (COL1)	554691	54	22	0	11
Claresholm 1 (CLR1)	60894	49	58	0	29
Claresholm 2 (CLR2)	61894	49	75	0	37.5
Clydesdale 1 (CLY1)	993287, 993289	52	41	0	20.5
Clydesdale 2 (CLY2)	994287, 994289	52	34	0	17
Conrad 1 (CRD1)	554291	52	23	0	11.5
Conrad 2 (CRD2)	553291	52	18	0	9
East Strathmore Namaka (NMK1)	553340	45	20	0	10
Hays (HYS1)	554401	52	24	0	12
Hull (HUL1)	2401	52	24.5	0	12.25
Innisfail (INF1)	557120	39	22	0	11
Jenner (JER1)	554986	48	21	0	10.5

Kneehill Solar (TRH1)	552433	42	25	0	12.5
Michichi Solar (MIC1)	554448	42	25	0	12.5
Monarch (MON1)	554400	54	24	0	12
Strathmore 1 (STR1)	557259	45	18	0	9
Strathmore 2 (STR2)	558259	45	23	0	11.5
Suffield (SUF1)	3270	52	23	0	11.5
Travers (TVS1)	560026, 561026, 562026	49	465	0	232.5
Vauxhall Solar (VXH1)	4274	52	22	0	11
Vulcan (VCN1)	4244	49	22	0	11
Westfield Yellow Lake (WEF1)	557277	52	19	0	9.5
Kisikaw-pisim 1&2 (KKP1& KKP2)	995214, 995220	60	14	0	7

Note:
[a] "Unit Net Generation" refers to gross generating unit output (MW) less unit service load.

Table 4-7: Dispatch Conditions for Planned Wind Generation Projects

Project Number	Project Name	Planned ISD	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)	
						SL HW	SP HW
P0693	Wild Rose 2 Wind Farm	15-Aug-2022	3462, 3463	4	192	176.6	163.2
P1250	Wild Run Grizzly Bear Wind	1-Oct-2022	67308	13	120	110.4	102.0
P1533	Joss MPC WAGF	30-Jun-2022	60798, 60799	47	122.4	112.6	104.0
P1567	EDPR Sharp Hills Wind Farm	16-Dec-2022	60831, 60832	42	248.4	228.5	211.1
P1698	Joss Jenner WAGF - Phase 2	30-Jun-2022	61798	47	71.4	65.7	60.7
P1704	Paintearth Wind Power	1-Jul-2023	61418	42	150	138.0	127.5
P1719	Stirling WAGF Project	30-Jun-2023	61630	54	113	104.0	96.1
P1853	Fortis Buffalo Atlee Cluster 1 WAGF	1-Sep-2022	553260	47	17.25	15.9	14.7
P1892	Fortis Buffalo Atlee Cluster 3 WAGF	1-Sep-2022	552260	47	17.25	15.9	14.7
P1909	TransAlta Garden Plain Wind	30-Jun-2022	565002	42	130	119.6	110.5
P2065	Wild Run Grizzly Bear Wind Phase 2	1-Oct-2022	67308	13	32	29.4	27.2
P2137	Enerfin Winnifred Wind	1-Oct-2024	567034	4	90	82.8	76.5
P2199	Buffalo Atlee Wind Farm 2	1-Sep-2022	557261	47	13.8	12.7	11.7
P2234	Joss Jenner WAGF - Phase 3	30-Jun-2022	61799	47	111.2	102.3	94.5

P2237	RESC Forty Mile MPC Wind	15-Sep-2023	60608, 61608	4	266	244.7	226.1
P2247	Buffalo Plains MPC Wind	17-Apr-2023	560041, 560042	47	466	428.7	396.1
P2412	Fortis Buffalo Atlee Cluster 4 WAGF	1-Sep-2022	Idv provided	47	11	10.1	9.4

Note:

[a] "Unit Net Generation" refers to gross generating unit output (MW) less unit service load.

*: Although these projects have met the inclusion criteria and are considered for dispatch in the studies, Category A generation curtailment is already required. Therefore, these generations will be assumed to be curtailed in the studies

Table 4-8: Dispatch Conditions for Planned Solar Generation Projects

Project Number	Project Name	Planned ISD	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)	
						SL HW	SP HW
P1862	Fortis Spring Coulee 385S Solar DG	15-Oct-2021	553246, 554246	55	29.5	0.0	14.8
P1870	Fortis Stavely 349S DER Solar	24-May-2021	2004	49	16.5	0.0	8.3
P1927	Solar Krafte Brooks	1-Feb-2023	60434, 61434	47	360	0.0	180.0
P1978	ATCO Michichi DER Solar	1-Nov-2022	552448, 553448, 552450	42	75	0.0	37.5
P2059	ATCO Three Hills 770S DER Solar	1-May-2022	552433	42	25	0.0	12.5
P2194	FortisAlberta East Crossifield 64S DER Solar	1-Apr-2022	994312	57	5.65	0.0	2.8
P2195	FortisAlberta Bassano 435S DER Solar	1-Feb-2023	557399	47	9.25	0.0	4.6
P2216	FortisAlberta Chappice Lake 649S DER Solar	15-Dec-2022	557320	4	15	0.0	7.5
P2249	FortisAlberta Empress 394S DER Solar 1	1-May-2022	557316	48	22.5	0.0	11.3
P2250	FortisAlberta Empress 394S DER Solar 2	1-May-2022	557016	48	16	0.0	8.0
P2300	RESC Enterprise MPC Solar	1-Apr-2022	563070	49	65	0.0	32.5
P2334	TCE Saddlebrook Solar Storage	1-Jun-2023	562240, 563240	46	81	0.0	40.5
P2335	FortisAlberta Vulcan 255S DER Solar	1-May-2022	990003	52	15	0.0	7.5
P2337	Dunmore Solar	1-Apr-2023	560044	4	216	0.0	108.0
P2347	Forty Mile Granlea Solar Phase 2	17-Nov-2023	65994	4	220	0.0	110.0
P2348	BluEarth Wheatcrest Solar	15-Mar-2023	557051	52	50	0.0	25.0
P2361	ATCO Youngtown 772S DER Solar	1-Apr-2023	Idv provided	42	6	0.0	3.0
P2378	Nova Solar	31-Dec-2022	569070	45	150	0.0	75.0
P2424	ATCO Oyen 767S DER Solar	1-Dec-2022	88888	42	15	0.0	7.5
P2459	ENMAX Barlow Park DER Solar	8-Dec-2022	4590	6	27	0.0	13.5

P2475	EPC SS-24 DER Solar	22-Dec-2022	4590, 3590	6	37	0.0	18.5

Note:
[a] "Unit Net Generation" refers to gross generating unit output (MW) less unit service load.

*: Although these projects have met the inclusion criteria and are considered for dispatch in the studies, Category A generation curtailment is already required. Therefore, these generations will be assumed to be curtailed in the studies

The post-Project scenario wind and solar generation dispatch levels were identical to the pre-Project scenario dispatch levels. The Facility was dispatched to 450 MW in all post-Project scenarios. Area 40 generators will be turn down 450 MW.

4.2.5 Intertie Flow Assumptions

The intertie flow assumptions for the Alberta-British Columbia (AB-BC), Alberta-Saskatchewan (AB-SK), and Alberta-Montana (MATL) interties are shown in Table 4-9. Generation in Area 25 and 40 need to be scaled to maintain the intertie flows as indicated

For the 2031 Winter Peak scenario, the intertie flow values should be set to the AESO planning base cases.

Table 4-9: Intertie Flows for by Scenario

Scenario Number	Scenario Name	Import (-) / Export (+) (MW) by Intertie			
		AB-BC	AB-SK	MATL	City Of Medicine Hat
1	2025 SL HW Pre-Project	-602	0	-300	57
2	2025 SP HW Pre-Project	-181	0	-300	14
3	2025 SL HW Post-Project	-602	0	-300	57
4	2025 SP HW Post-Project	-181	0	-300	14

Note:

City of Medicine Hat export to AIES is '+', import from AIES is '-'.

4.2.6 HVDC Power Order Assumptions

The Western Alberta Transmission Line (WATL) and the Eastern Alberta Transmission Line (EATL) are high-voltage direct current (HVDC) transmission lines. The HVDC power order assumptions for the studies will be set to minimize losses for the pre-Project and post-Project study scenarios.

For the 2031 Winter Peak scenario, the HVDC power order should be as per the AESO base cases and will not be adjusted.

The reactive power limits of the MVAr exchanges between the HVDC terminals (WATL and EATL) and the connected alternating current (AC) transmission systems are shown in Table 4-10. These limits must be maintained when performing the studies.

Table 4-10: HVDC to Adjacent AC System MVAr Exchange Limits

HVDC Facility	North Terminal Reactive Power Limit (MVAr)	South Terminal Reactive Power Limit (MVAr)
EATL	-85 to 75	-35 to 35
WATL	-75 to 75	-35 to 35

4.2.7 Transmission Facility Ratings

The legal owner of transmission facilities (TFO) provided the thermal ratings assumptions for the existing transmission lines in the Study Area. Table 4-11 shows the normal ratings and emergency ratings for the key transmission lines in the Study Area, which will be used to perform the engineering studies.

Table 4-11: Thermal Rating Assumptions for Key Transmission Lines in the Study Area

Line ID	Line Description	Voltage Class (kV)	Normal Rating (MVA)		Emergency Rating (MVA)	
			Summer	Winter	Summer	Winter
964L	Bowmanton 244S – 964AL tap - Whitla 251S	240	952M	1142M	1047M	1238M
983L	Bowmanton 244S - Whitla 251S	240	952M	1142M	1047M	1238M
1034L	Bowmanton 244S - Cassils 324S	240	931M	1117M	1024M	1210M
1035L	Bowmanton 244S - Newell 2075S	240	952M	1142M	1047M	1238M
1087L	Cassils 324S - Newell 2075S	240	547	676	656	811
1088L	Cassils 324S - Newell 2075S	240	931M	1117M	1024M	1210M

Note:
"CT" indicates that the transmission line is limited by current transformer.

"M" indicates that the transmission line rating is limited for reasons other than protection equipment, transformer, current transformer, line, ganged switch, circuit breaker, or regulator.

The TFO provided the details of the substation transformers in the Study Area. The key transformers in the Study Area are shown in Table 4-12.

Table 4-12: Summary of Key Transformer Ratings in the Study Area

Substation Name and Number	Transformer ID	Transformer Voltages (kV)	Transformer Rating (MVA)
Westbrooks 28S	T1	240/138 kV	400
	T2	240/138 kV	400
Bowmanton 244S	T1	240/138 kV	200
	T2	240/138 kV	200
Amoco Empress 163S	T5	240/138 kV	191.2
	T1	240/138 kV	200

Substation Name and Number	Transformer ID	Transformer Voltages (kV)	Transformer Rating (MVA)
Cypress 562S	T2	240/138 kV	200

The TFO provided the details of the shunt elements in the Study Area. The key shunt elements in the Study Area are shown in Table 4-13.

Table 4-13: Summary of Key Shunt Elements in the Study Area

Substation Name and Number	Voltage Class (kV)	Capacitors		Reactors	
		Number of Switched Shunt Blocks	Total at Nominal Voltage (MVAr)	Number of Switched Shunt Blocks	Total at Nominal Voltage (MVAr)
Taber 83S	138	1	24.46	-	-
		1	27.2		
Hays 421S	138	1	22.96	-	-
Burdett 368S	138	1	24.46	-	-
		1	22.96		
Tilley 498S	138	1	27.17	-	-
West Brooks 28S	240	-	-	1	50
Whitla 251S	240	-	-	2	150
McNeil 840S	138	2	49.6	-	-
Bullshead 523S	138	1	18.3	-	-
Amoco Empress 163S	138	2	48.7		

4.2.8 Protection Fault Clearing Times

The transient stability studies will be performed using the actual fault clearing times for the selected contingencies, as provided by the TFO and as shown in Table 4-14. Only those contingencies shown in Table 4-14 will be studied for transient stability studies. If the TFO did not specify the fault clearing times (e.g. for new transmission lines) for a selected contingency, then the studies for that contingency will be performed using the standard fault clearing times that are specified in Table 2-3 of the AESO's *Transmission Planning Criteria – Basis and Assumptions*.

Table 4-14: Protection Fault Clearing Times

Contingency (System Element Lost)	Fault Location	Clearing Times (Cycles)	
		Near End	Far End
964L (Whitla 251S – 964AL tap - Bowmanton 244S)	Whitla 251S	4	5
	Bowmanton 244S	4	5
983L (Whitla 251S – Elkwater 264)	Whitla 251S	5	6
	Elkwater 264S	5	6
1074L (Elkwater 264S – P2122 tap - Bowmanton 244S)	Elkwater 264S	5	6
	Bowmanton 244S	5	6
1034L (Cassils 324S – Bowmanton 244S)	Cassils 324S	4	5
	Bowmanton 244S	4	5
1035L (Newell 2075S – Bowmanton 244S)	Newell 2075S	4	5
	Bowmanton 244S	4	5
676L (Bullshead 523S – P2337 tap - Bowmanton 244S)	Bullshead 523S	6	27
	Bowmanton 244S	6	27
600L (Peace Butte 404S – Bullshead 523S)	Peace Butte 404S	6	27
	Bullshead 523S	6	27
880L (Al Rothbauer 321S – Bullshead 523S)	Al Rothbauer 321S	7	7
	Bullshead 523S	7	7
675L (Al Rothbauer 321S – Bowmanton 244S)	Al Rothbauer 321S	6	7
	Bowmanton 244S	6	7

4.2.9 Project Dynamic Data

Dynamic data for the Project will be based on the Stage 1 Project Data Update Package (PDUP-1).

4.2.10 Voltage Profile Assumption

ID #2010-007RS will be used to establish system normal (i.e., pre-contingency) voltage profiles for key area busses prior to commencing any studies. Table 2-1 of the *Transmission Planning Criteria – Basis and Assumptions* applies for the busses not included in ID #2010-007RS. These voltages will be used to set the voltage profile for the study base cases prior to the power flow studies.

5 Study Methodology

The studies to be performed for this connection assessment are identified in Table 5-1.

Table 5-1: Summary of the Studies to be Performed

Scenario No. and Name		Power Flow		Voltage Stability		Transient Stability		Motor Starting		Short Circuit
		Category		Category		Category		Category		Category A
		A	B	A	B	A	B	A	B	
Pre-Project										
1	2025 SL HW Pre-project	X	X			X*	X*			
2	2025 SP HW Pre-project	X	X			X*	X*			X
Post-Project										
3	2025 SL HW Post-project	X	X			X	X			
4	2025 SP HW Post-project	X	X			X	X			X
5	2031 WP Post-project									X

Notes:

*Only required if post-Project studies show potential transient stability issues.

For the engineering studies, all transmission facilities 69 kV and above, within the Study Area and the transmission lines connecting these planning areas to neighbouring planning areas will be studied and monitored to assess the impact of the Project on the performance of the AIES, including any violations of the Reliability Criteria (as defined in Section 3.1).

5.1 Study Case Validation

The study will be conducted on the AIES system model using the AESO's planning base cases. The seasonal light/peak scenarios will be studied as required. The base cases will be modified by the AESO to include the corresponding load and generation forecast information. The resulting cases, or seed cases, along with the project IDEVs, will be provided by the AESO to the Studies Consultant. These cases are provided in PSS/E v34 and/or v33 format. Upon request, the AESO can provide RAW and SEQ files. Software used by the Studies Consultant must be able to read and write these file types. Manual adjustments may be required to ensure full alignment with the details outlined in this Study Scope, as described in the process outlined below. The AESO will provide guidance to the Studies Consultant with regard to the setup of the study cases should any questions arise.

The expected process for the creation of acceptable study cases is as follows:

1. The AESO provides seed cases and the appropriate incremental IDEVs to use and any other applicable information required to the Studies Consultant.

2. The Studies Consultant applies the identified IDEVs to the seed cases to create the study cases. The Studies Consultant verifies and makes adjustments as required to ensure the study cases represent the assumptions outlined within the Study Scope.
3. Upon creating the study cases, all the study cases are forwarded to the AESO for approval.
4. The Studies Consultant proceeds with the required engineering studies only after the study cases are approved by the AESO.

5.2 Power Flow Studies

Power flow studies will be performed to identify thermal and voltage criteria violations as per the Reliability Criteria, and any deviations from the limits listed in Table 3-1.

For information purposes, the Studies Consultant must also provide, as a separate file, a list of any transmission elements where the thermal loading exceeds 95% of the element's normal rating under Category A and Category B conditions.

For the Category B power flow studies, the transformer taps and switched shunt reactive compensating devices such as shunt capacitors and reactors will be locked and continuous shunt devices will be enabled.

Voltage deviations at point-of-delivery (POD) low voltage busses will also be assessed for both the pre-Project and post-Project networks by first locking all tap changers and area shunt reactive compensating devices to identify any post-transient voltage deviations above 10%. Second, tap changers will be allowed to move while shunt reactive compensating devices remained locked to determine if any voltage deviations above 7% would occur in the area. Third, all the taps and shunt reactive compensating devices will be allowed to adjust, and voltage deviations above 5% will be reported.

The scenarios to be studied are shown in Table 5-1.

5.2.1 Contingencies to be Studied

Power flow studies will be performed for the Category A and all Category B contingencies.

5.3 Transient Stability Studies

The Genesee generating unit 3 in Wabamun (Area 40) will be used as the reference for the studies.

The report presenting the results of the transient stability studies must provide response plots for several variables, including rotor angle, and active and reactive power output for the study area generation units. The results report must also provide the 500 kV, 240 kV and 138 kV bus voltage levels for substations near the point of connection. Other busses will be monitored and will be reported as determined by the results. The results report must also provide the key branch active and reactive power flow surrounding the Facility.

Transient stability studies will be performed for the post-Project scenarios as shown in Table 5-1. If any transient stability issues are observed, transient stability analysis will be performed for the corresponding pre-Project scenarios.

5.3.1 Contingencies to be Studied

Transient stability studies will be performed for the contingencies shown in Table 4-14.

5.4 Short-Circuit Current Level Studies

A maximum fault level must be provided for the substations in the vicinity of the Project assuming normal system operation with all transmission elements in service and generation dispatched. Three-phase faults and single line-to-ground faults will be simulated. Polar coordinates and per-unit values will be used for reporting the results.

2025 Summer Peak and 2031 Winter Peak scenarios will be used for the short-circuit studies.

Estimated maximum three-phase faults and single line-to-ground short-circuit current levels will be reported for the following substations at their high voltage bus (138 kV and/or 240 kV):

- Bowmanton 244S
- Whitla 251S
- Elkwater 264S
- AL Rothbauer 321S
- Bullshead 523S
- Shamrock 1018S
- P2461 collector substation (including in post-Project studies only)
- Newell 2075S

Further sensitivity studies, in consultation with the TFO, may be required if the primary short-circuit analysis indicates a potential to exceed or approach the existing fault rating of the transmission facilities.

The scenarios to be studied are as shown in Table 5-1.

6 Mitigation Measures

6.1 Development

Mitigation measures may be required if the post-Project study results identify system performance issues. Mitigation measures for the Project may involve modifying or adding real-time operational practices and/or remedial action schemes (RASs).

The Study Consultant must notify the AESO of any system performance issues in a timely manner, following which the AESO Studies Engineer may instruct the Studies Consultant as follows:

- Develop tables showing the constraint effective factors[4] for generation or load based on thermal criteria violations that are observed.
- Collaborate with the AESO to propose changes, if any, to the connection alternatives that could remove the requirement for a RAS.
- Collaborate with the AESO to study modifications to existing and/or planned RASs, proposed by the AESO, to ensure the coordination of existing protection schemes with the addition of any proposed protection schemes.
- Collaborate with the AESO to identify and study new RASs, if any, that may be required to ensure system reliability is maintained after connecting the Project to the AIES.

The AESO Studies Engineer will work closely with the Studies Consultant and guide the development and/or modifications of the proposed mitigation measures to ensure system reliability, security and compliance with AESO ID #2018-018T, *Provision of System Access Service and the Connection Process*.

6.2 Evaluation

6.2.1 Post-Mitigation Studies

Studies to evaluate the effectiveness of mitigation measures, if required, will be performed in accordance with the technical criteria, assumptions, and methods provided in this Study Scope and in accordance with further instructions from the AESO.

6.2.2 Constraint Effective Factor Studies

Constraint effective factor analysis are used to determine the generator constraint effective factors and to identify the most effective generators to manage the thermal criteria violations, if any, that are observed under Category B conditions.

[4] Constraint effective factor studies are performed to determine the generator constraint effective factors. Constraint effective factors are used to estimate the ability of generators to manage transmission constraints. A generator's constraint effective factor is defined as the change in power flow over a specific transmission line following a change in the generator's energy production. The greater the constraint effective factor, the more effective a generator can be in managing a thermal criteria violation on the specific transmission line.

7 Changes to Study Assumptions

This study will utilize the AESO's planning base cases, which are based on the AESO's current corporate forecast (2021 LTO) with modifications to incorporate the latest forecast intelligence. Sensitivity studies or restudy may be required in the event of revisions to the AESO's corporate forecast, forecast intelligence, or other study assumptions. Additional engineering studies may also be required to assess new connection alternatives, changes to project ISD, or delays in proposed system developments. Any additional or revised study requirements shall be captured in a signed Study Scope Amendment document.

Attachment A: Transmission Planning Criteria – Basis and Assumptions

Transmission Planning Criteria – Basis and Assumptions

Date: July 9, 2019

Version: V1.2

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1. Introduction

This document presents the reliability standards, criteria, and assumptions to be used as the basis for planning the Alberta Transmission System. The criteria, standards and assumptions identified in this document supersede those previously established.

2. Transmission Reliability Standards and Criteria[1]

The AESO applies the following Alberta Reliability Standards to ensure that the transmission system is planned to meet applicable performance requirements under a defined set of system conditions and contingencies. A brief description of each of these standards is given below:

1. **TPL-001-AB-0: System Performance Under Normal Conditions**

   Category A represents a normal system condition with all elements in service (N-0). All equipment must be within its applicable rating, voltages must be within their applicable ratings and the system must be stable with no cascading outages. Under Category A, electric supply to load cannot be interrupted and generating units cannot be removed from service.

2. **TPL-002-AB1-0: System Performance Following Loss of a Single BES Element**

   Category B events result in the loss of any single element (N-1) under specified fault conditions with normal clearing. The specified elements are a generating unit, a transmission circuit, a transformer or a single pole of a direct current transmission line. The acceptable impact on the system is the same as Category A with the exception that radial customers or some local network customers, including loads or generating units, are allowed to be disconnected from the system if they are connected through the faulted element. The loss of opportunity load or opportunity interchanges is allowed. No cascading can occur.

3. **TPL-003-AB-0: System Performance Following Loss of Two or More BES Elements**

   Category C events result in the loss of two or more bulk electric system elements (sequential, N-1-1 or concurrent, N-2) under specified fault conditions and include both normal and delayed fault clearing. All of the system limits for Category A and B events apply with the exception that planned and controlled loss of firm load, firm transfers and/or generation is acceptable provided there is no cascading.

4. **TPL-004-AB-0: System Performance Following Extreme BES Events**

   Category D represents a wide variety of extreme, rare and unpredictable events, which may result in the loss of load and generation in widespread areas. The system may not be able to reach a new stable steady state, which means a blackout is a possible outcome. The AESO needs to evaluate these events, at its discretion, for risks and consequences prior to creating mitigation plans.

5. **FAC-014-AB1-2: Establishing and Communicating System Operating Limits**

   The AESO is required to establish system operating limits where a contingency is not mitigated through construction of transmission facilities

[1] A complete description of the *Alberta Reliability Standards* can be found on the AESO's website: https://www.aeso.ca/rules-standards-and-tariff/alberta-reliability-standards/

2.1 Thermal Loading Criteria

The AESO Thermal Loading Criteria require that the continuous thermal rating of any transmission element is not exceeded under normal and post-contingency operating conditions. Thermal limits are assumed to be 100% of the respective normal summer and winter ratings. Emergency limits are not considered in the planning evaluations.

2.2 Voltage Range and Voltage Stability Criteria

The normal minimum and maximum voltage limits as specified in the following table are used to identify Category A system voltage violations, while the extreme minimum and maximum limits are used to identify Category B and C system violations. Table 2-1 presents the acceptable steady state and contingency state voltage ranges for the AIES. Table 2-2 provides voltage stability criteria used to test the system performance.

Table 2-1: Acceptable Range of Steady State Voltage (kV)

Nominal Voltage	Extreme Minimum	Normal Minimum	Normal Maximum	Extreme Maximum
500	475	500	525	550
240	216	234	252	264
260 (Northeast & Northwest)*	234	247	266	275
144	130	137	151	155
138	124	135	145	150
72	65	68.5	75.5	79
69	62	65.5	72.5	76

Table 2-2: Voltage Stability Criteria

Performance Level	Disturbance (1)(2)(3)(4) Initiated by: Fault of No Fault DC Disturbance	MW Margin (P-V method) (5)(6)(7)	MVAr Margin (V-Q method) (6)(7)
A	Any element such as: One Generator One Circuit One Transformer One Reactive Power Source One DC Monopole	≥5%	Worst Case Scenario(8)
B	Bus Section	≥5%	50% of Margin Requirement in Level A
C	Any combination of two elements such as: A Line and a Generator A Line and a Reactive Power Source Two Generators Two Circuits Two Transformers Two Reactive Power Sources DC Bipole	≥2.5%	50% of Margin Requirement in Level A
D	Any combination of three or more elements such as: Three or More Circuits on ROW Entire Substation Entire Plant Including Switchyard	> 0	> 0

2.3 Transient Stability Analysis Assumptions

Standard fault clearing times as shown in Table 2-3 are used for the new facilities or when the actual clearing times are not available for the existing facilities. Double line-to-ground faults are applied for the Category C5 events with normal clearing times. Single line-to-ground faults are applied for Category C6 to C9 events with delayed clearing times as depicted in Table 2-4 and Table 2-5.

Table 2-3: Fault Clearing Times

Nominal (kV)	Near End (Cycles)	Far End (Cycles)
500	4	5
240	5	6
144/138 with telecommunications	6	8
144/138 without telecommunications	6	30

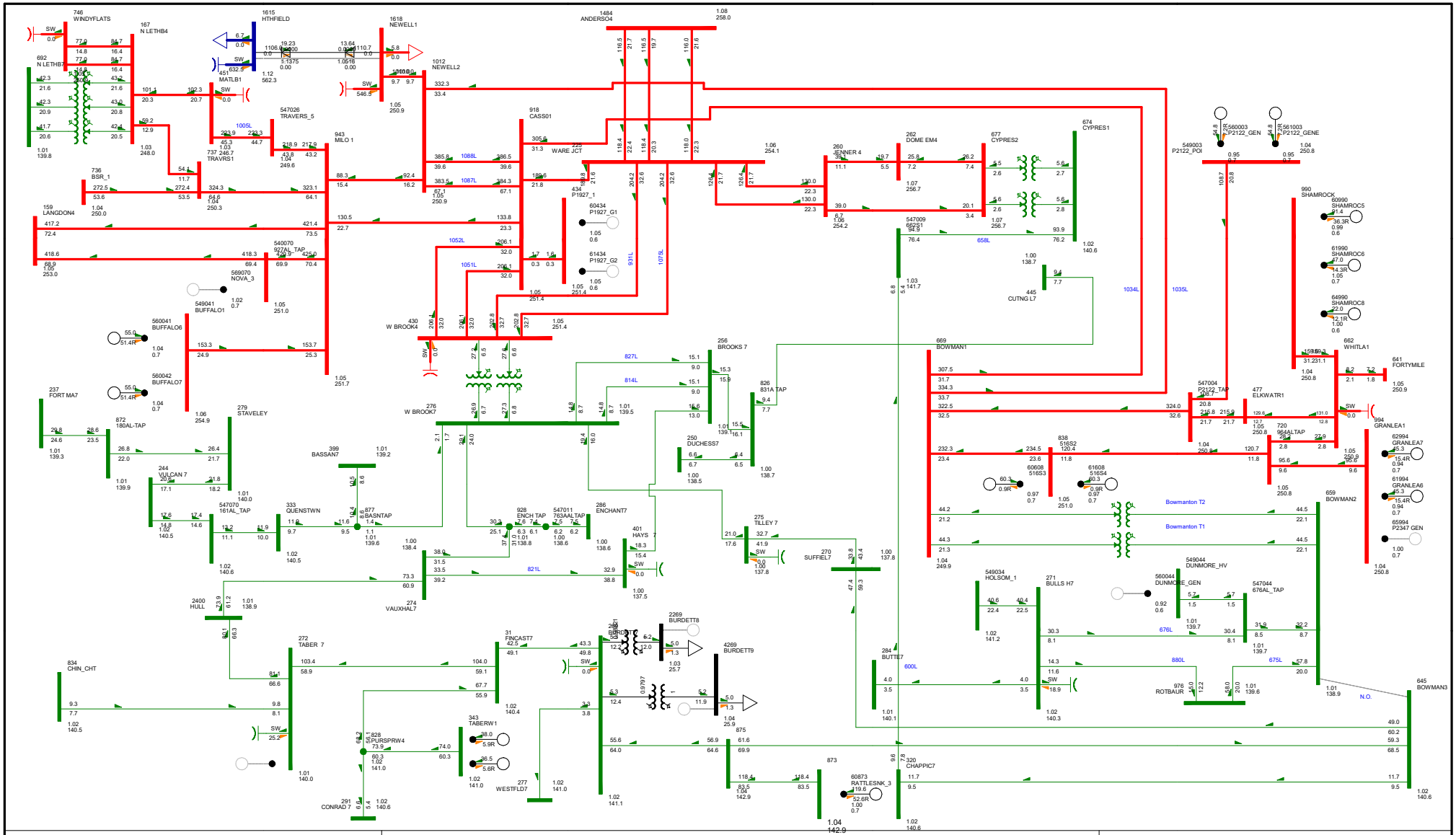
Table 2-4: Stuck Breaker Clearing Times for Lines

Voltage (kV)	Fault Clearing Times (Cycles)		
	Near End	Far End	2nd Ckt (C5 and C7 only)
138/144	15	24	24
240	12	6	14
500	9	5	11

Table 2-5: Stuck Breaker Clearing Times for Transformers

Voltage (kV)	Fault Location	Fault Clearing Times (Cycles)		
		High Side	Low Side	2nd Ckt (breaker fail)
240/138	240 kV side	12	6	14
	138 kV side	5	15	24
500/240	500 kV side	9	5	11
	240 kV side	4	12	14

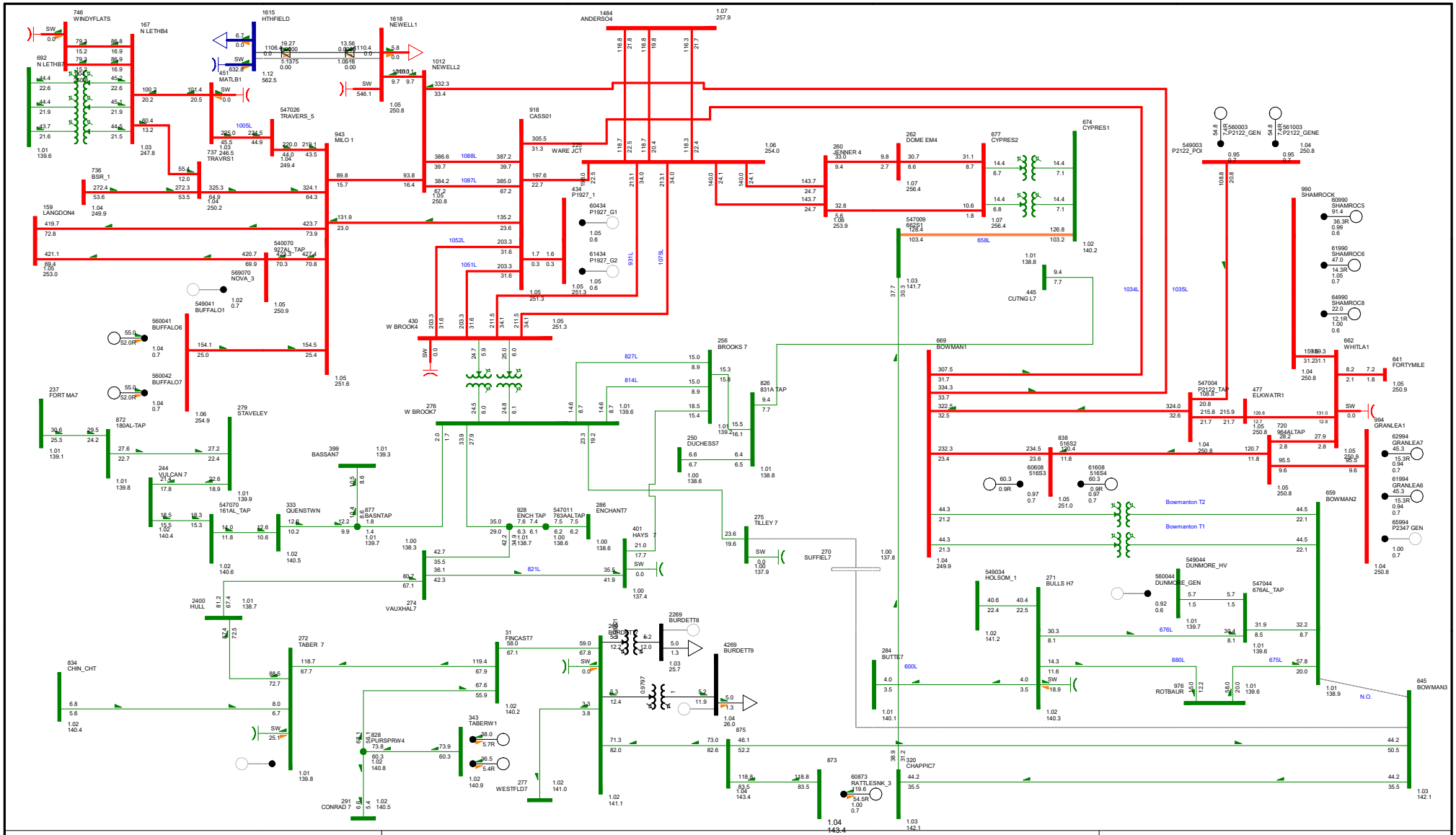
Attachment A2
Pre-Project Power Flow Diagrams



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FIGURE A-1-1: 2025-SCN1-SL-PRE.SAV
CATEGORY A - NO CONTINGENCY
FRI, SEP 01 2023 0:22

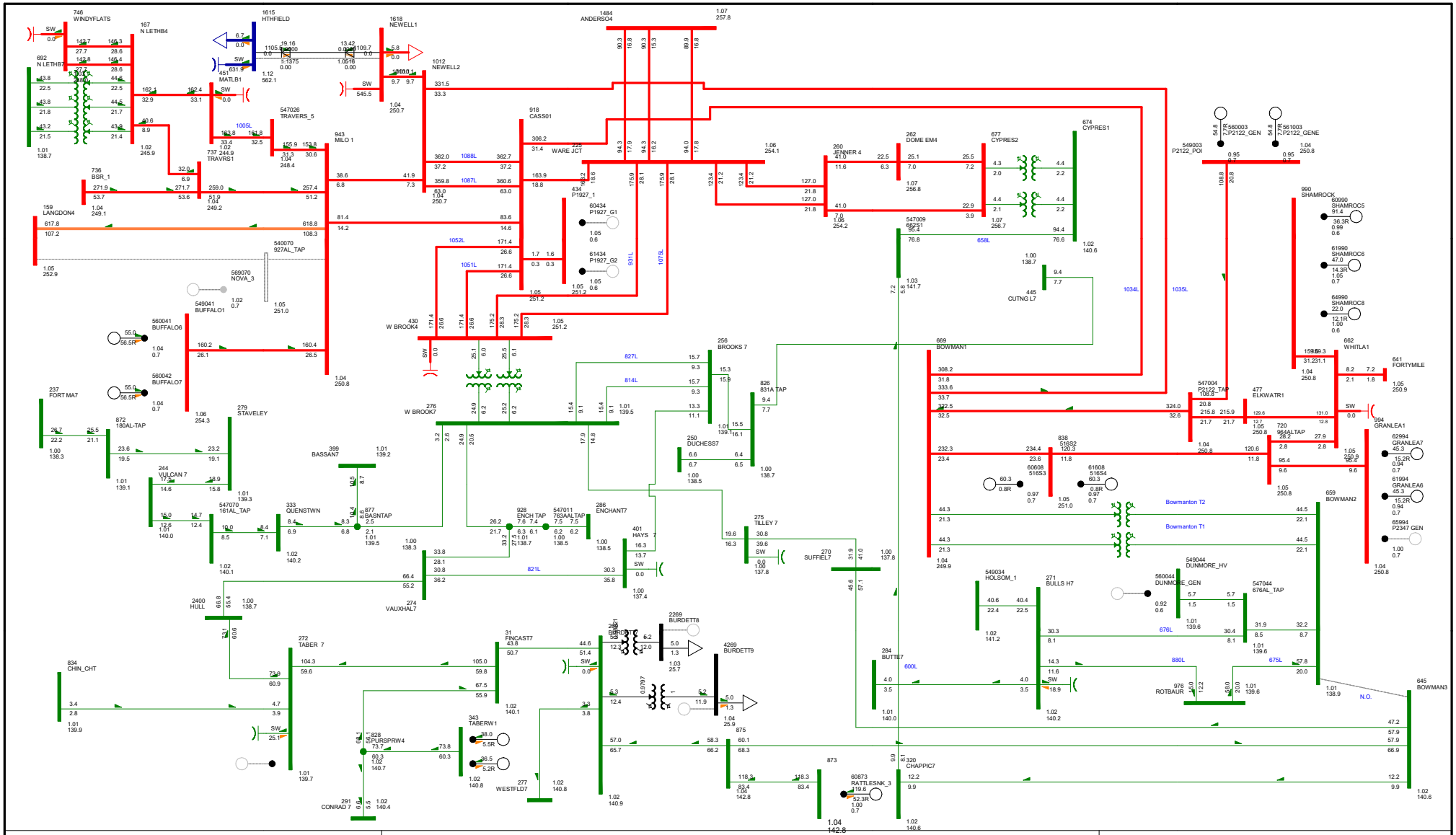
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-1-1: 2025-SCN1-SL-PRE.SAV
CATEGORY B - SUFFIELD 895ST2
FRI, SEP 01 2023 0:23

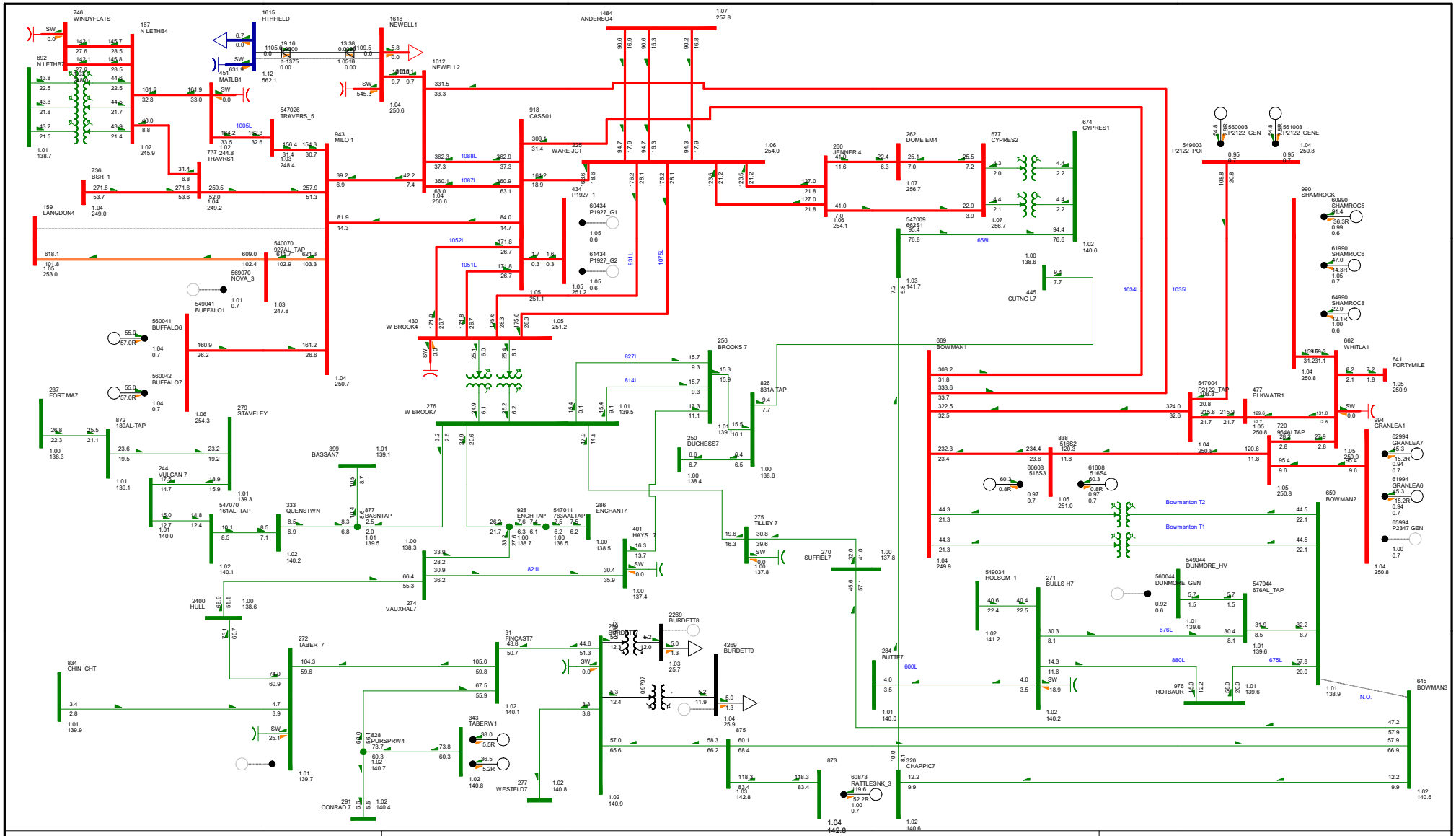
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-1-2: 2025-SCN1-SL-PRE.SAV
CATEGORY B - 927L (LANGDON 102S TO NOVA TAP/MILO 356S)
FRI, SEP 01 2023 0:24

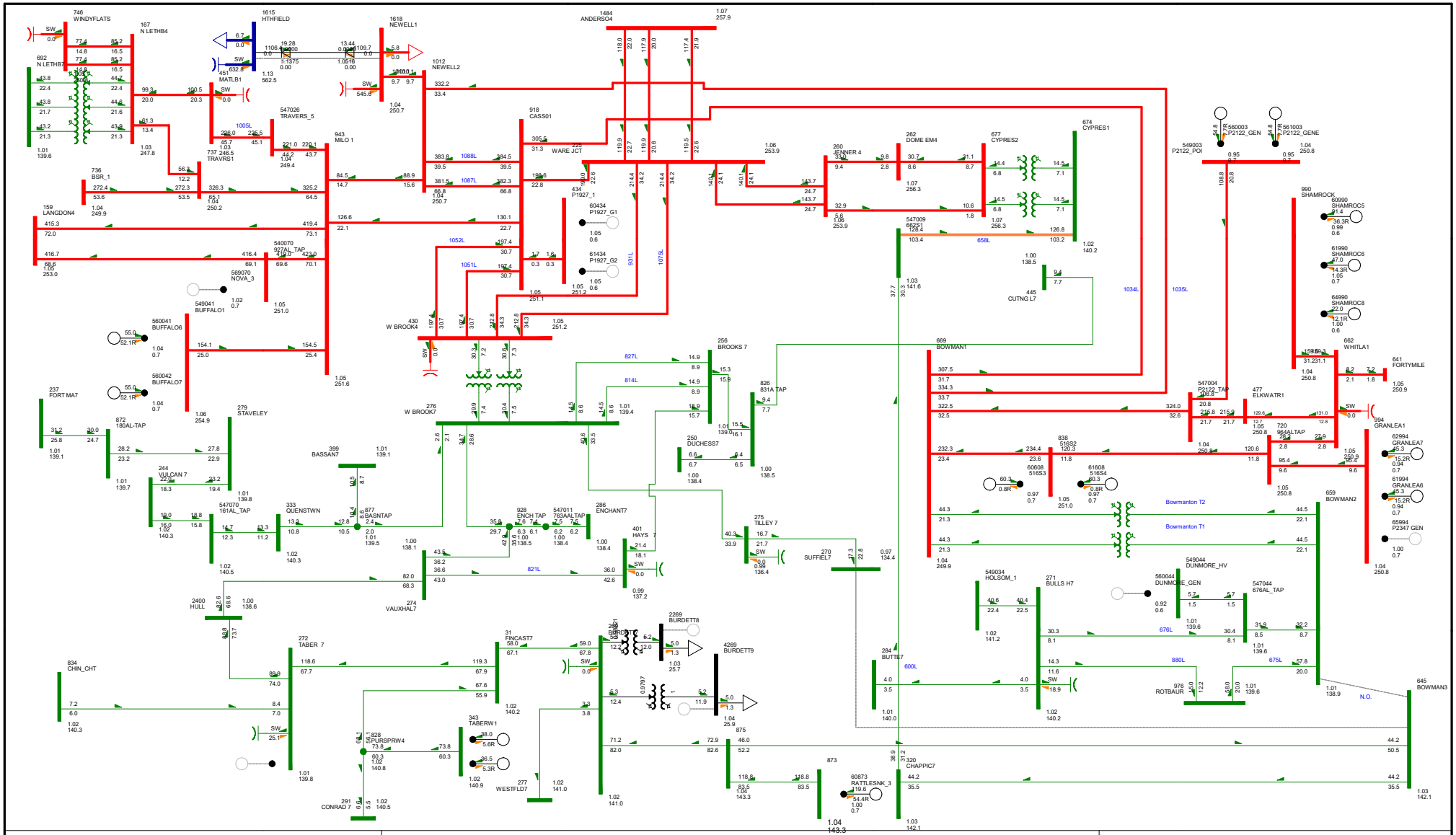
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2461 - Aira Solar Facility

FIGURE B-1-3: 2025-SCN1-SL-PRE.SAV
CATEGORY B - 924L (LANGDON 102S TO MILO 356S)
FRI, SEP 01 2023 0:24

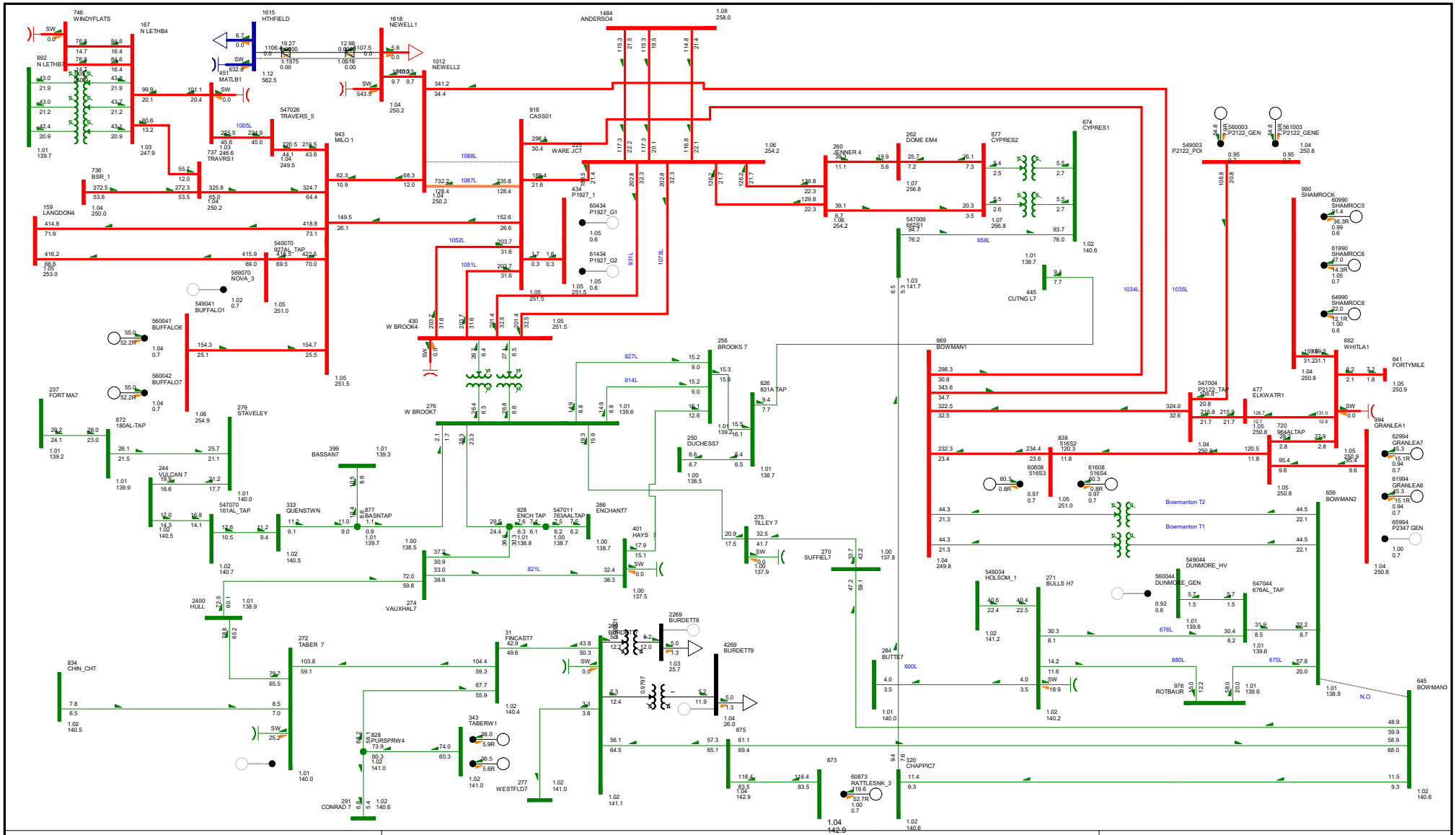
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-1-4: 2025-SCN1-SL-PRE.SAV
CATEGORY B - 892L (SUFFIELD 895S TO BOWMANTON 244S)
FRI, SEP 01 2023 0:25

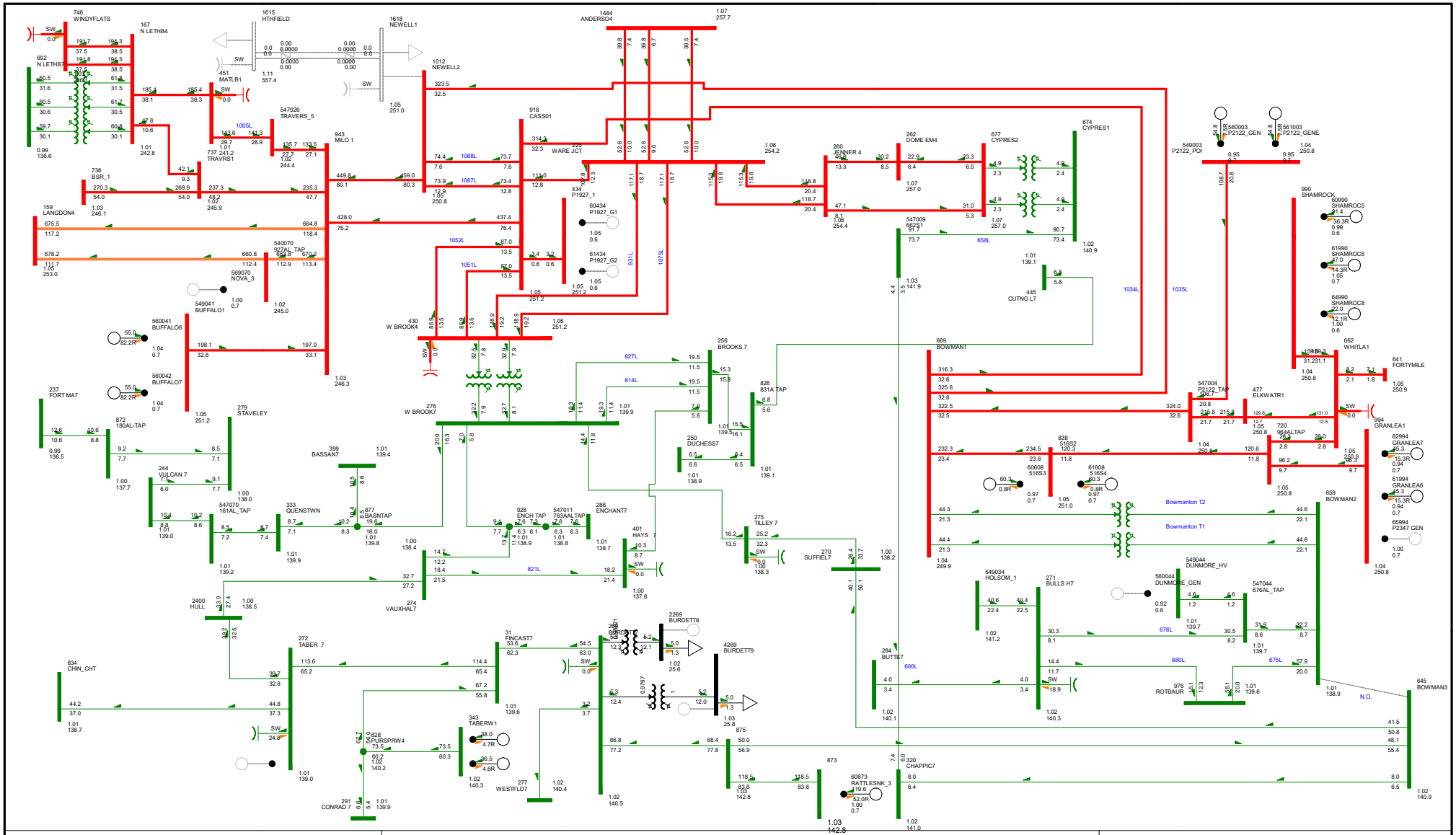
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-1-5: 2025-SCN1-SL-PRE.SAV
CATEGORY B - 1088L (CASSILS 324S TO NEWELL 2075S)
FRI, SEP 01 2023 0:25

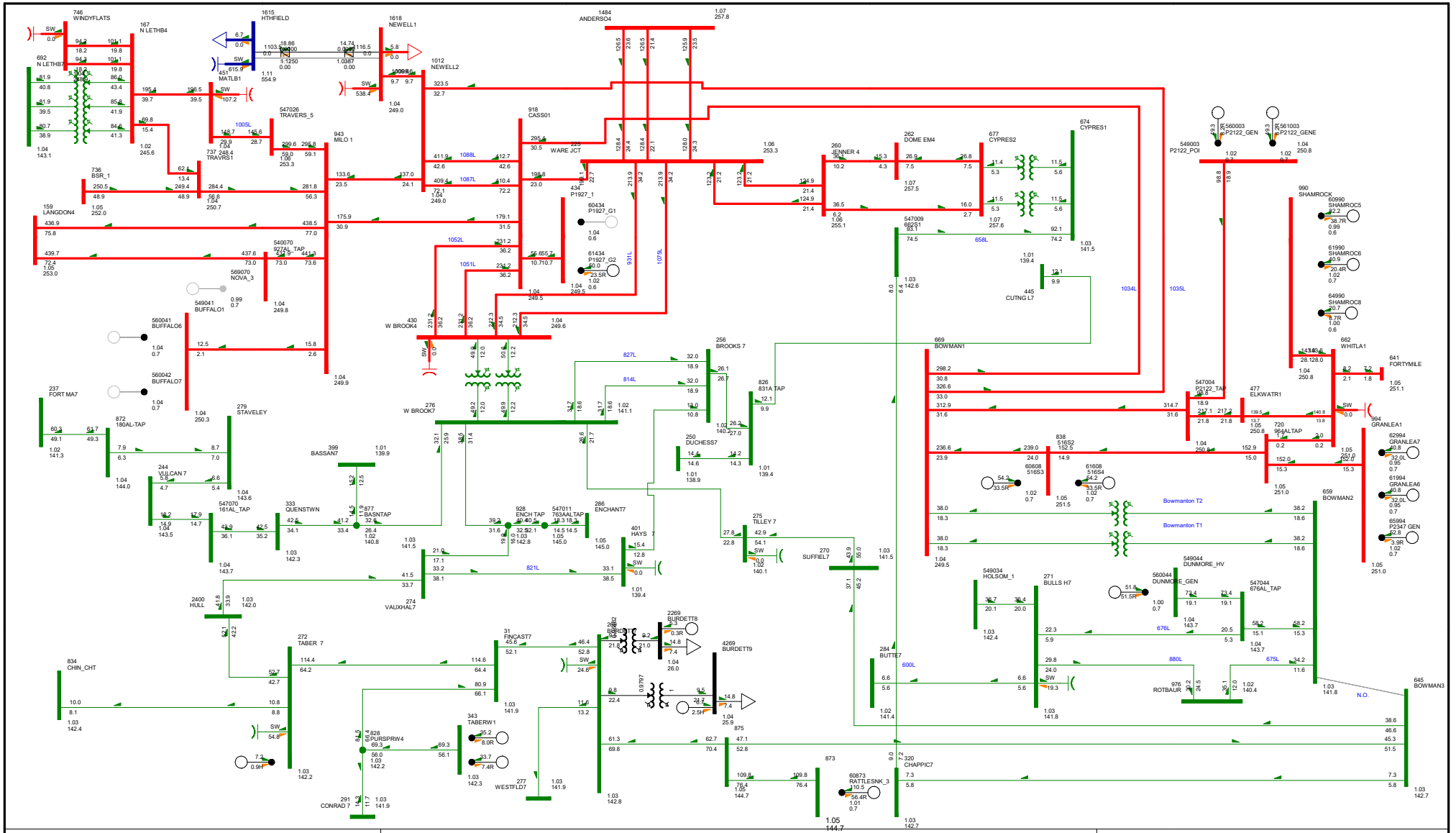
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-1-6: 2025-SCN1-SL-PRE.SAV
CATEGORY B - EATL HVDC
FRI, SEP 01 2023 19:48

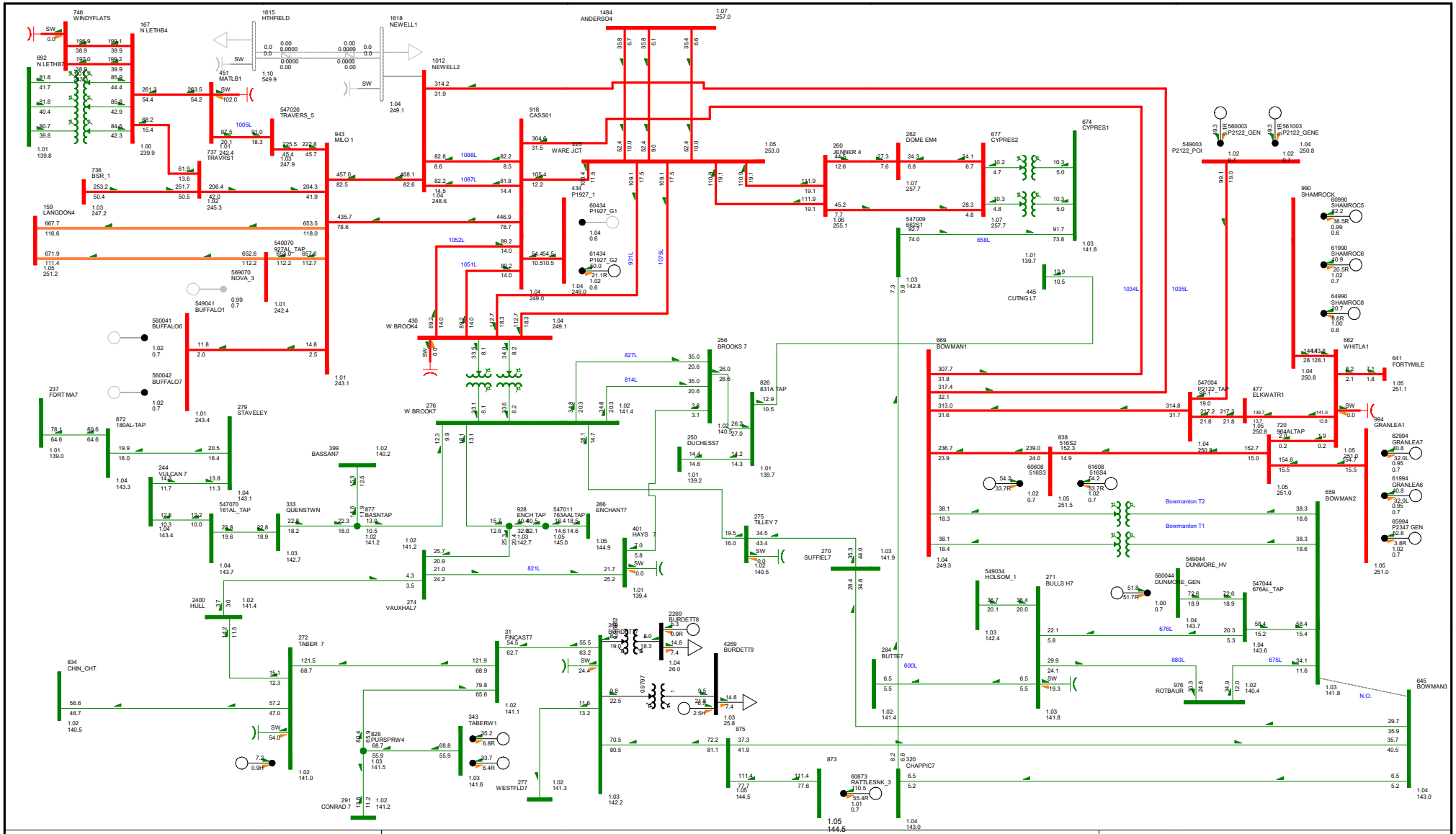
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE A-2-1: 2025-SCN2-SP-PRE.SAV
CATEGORY A - NO CONTINGENCY
FRI, SEP 01 2023 0:28

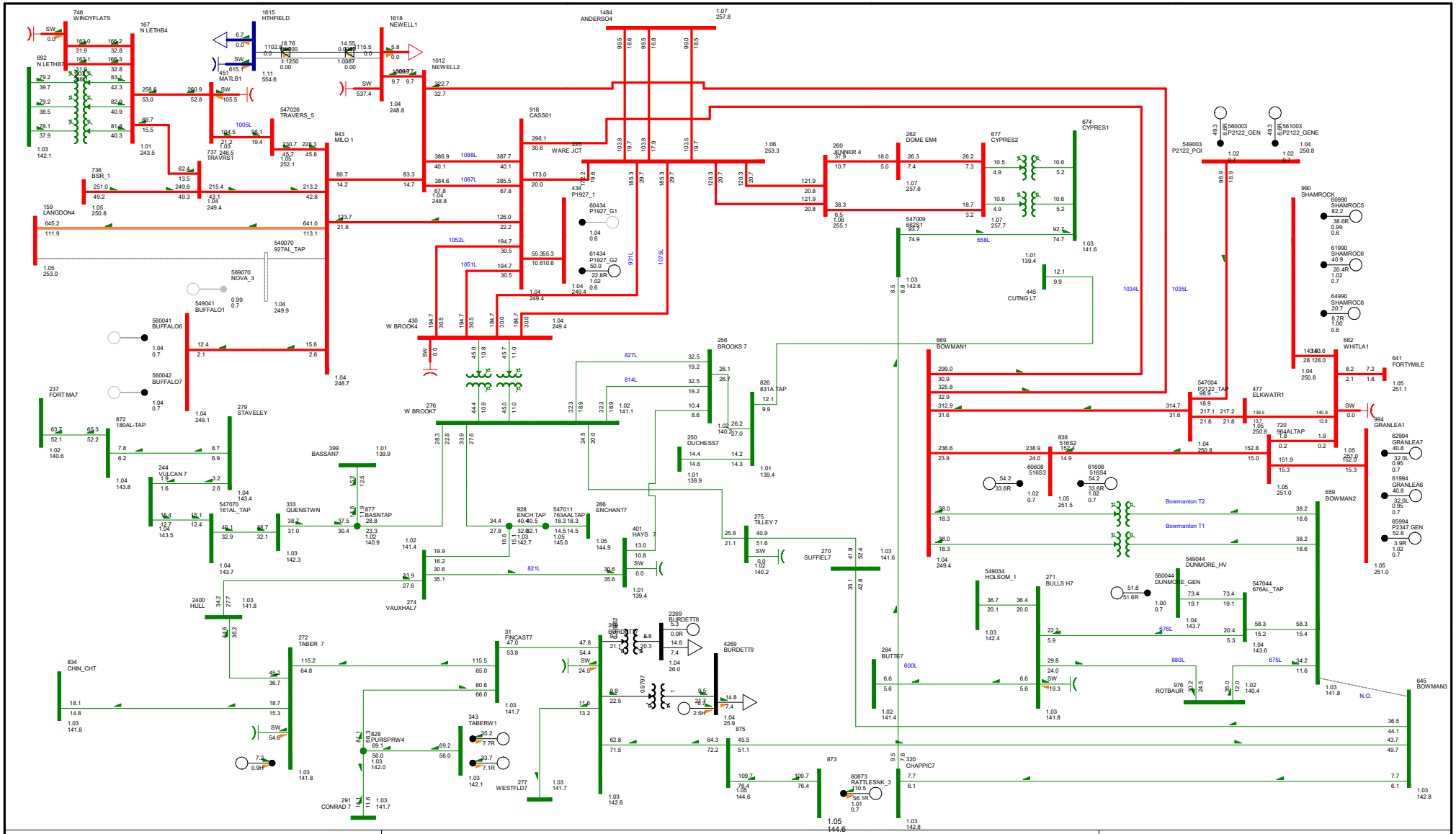
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-2-1: 2025-SCN2-SP-PRE.SAV
CATEGORY B - EATL HVDC
FRI, SEP 01 2023 21:55

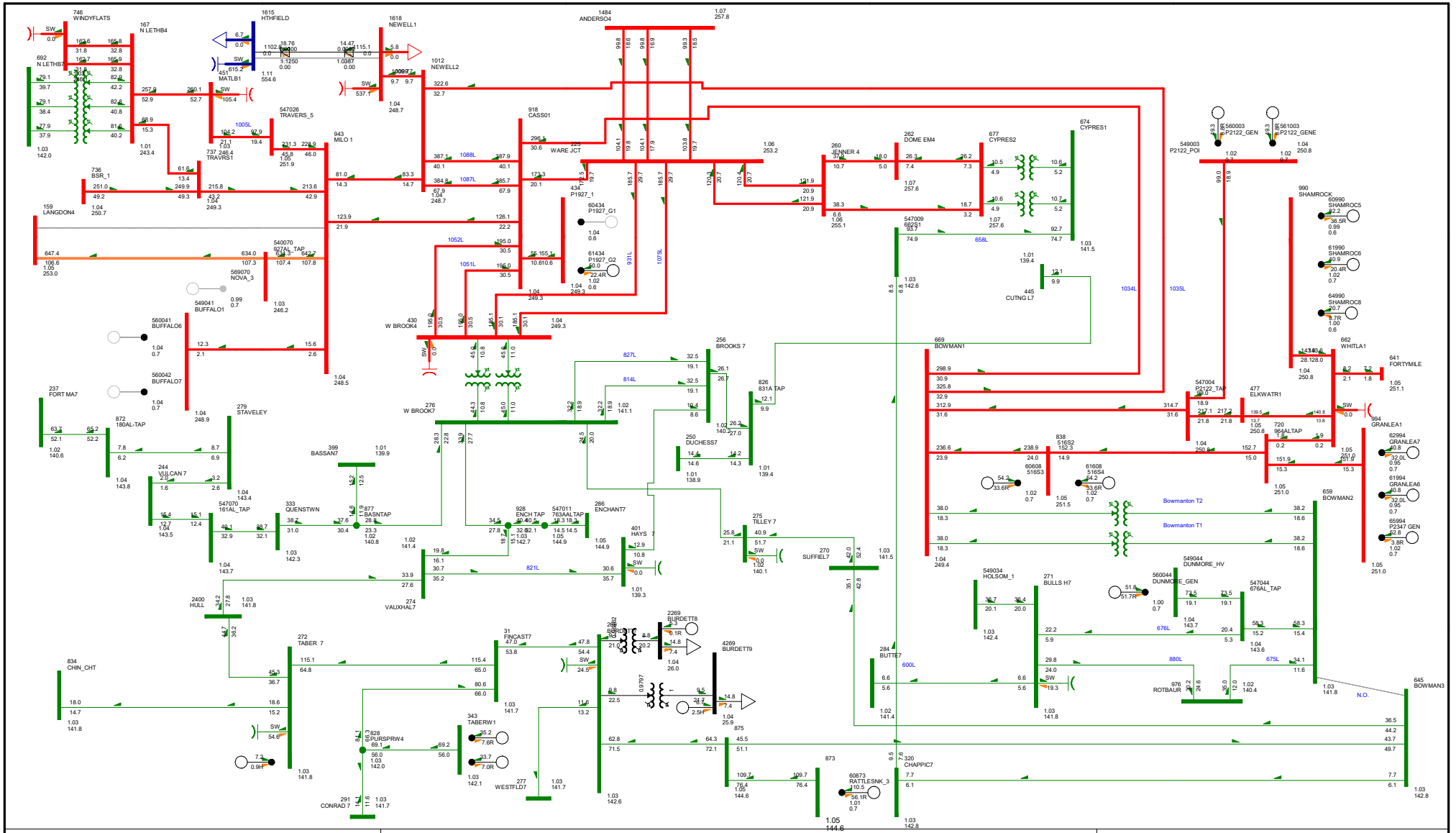
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-2-2: 2025-SCN2-SP-PRE.SAV
CATEGORY B - 927L (LANGDON 102S TO NOVA TAP/MILO 356S)
FRI, SEP 01 2023 20:43

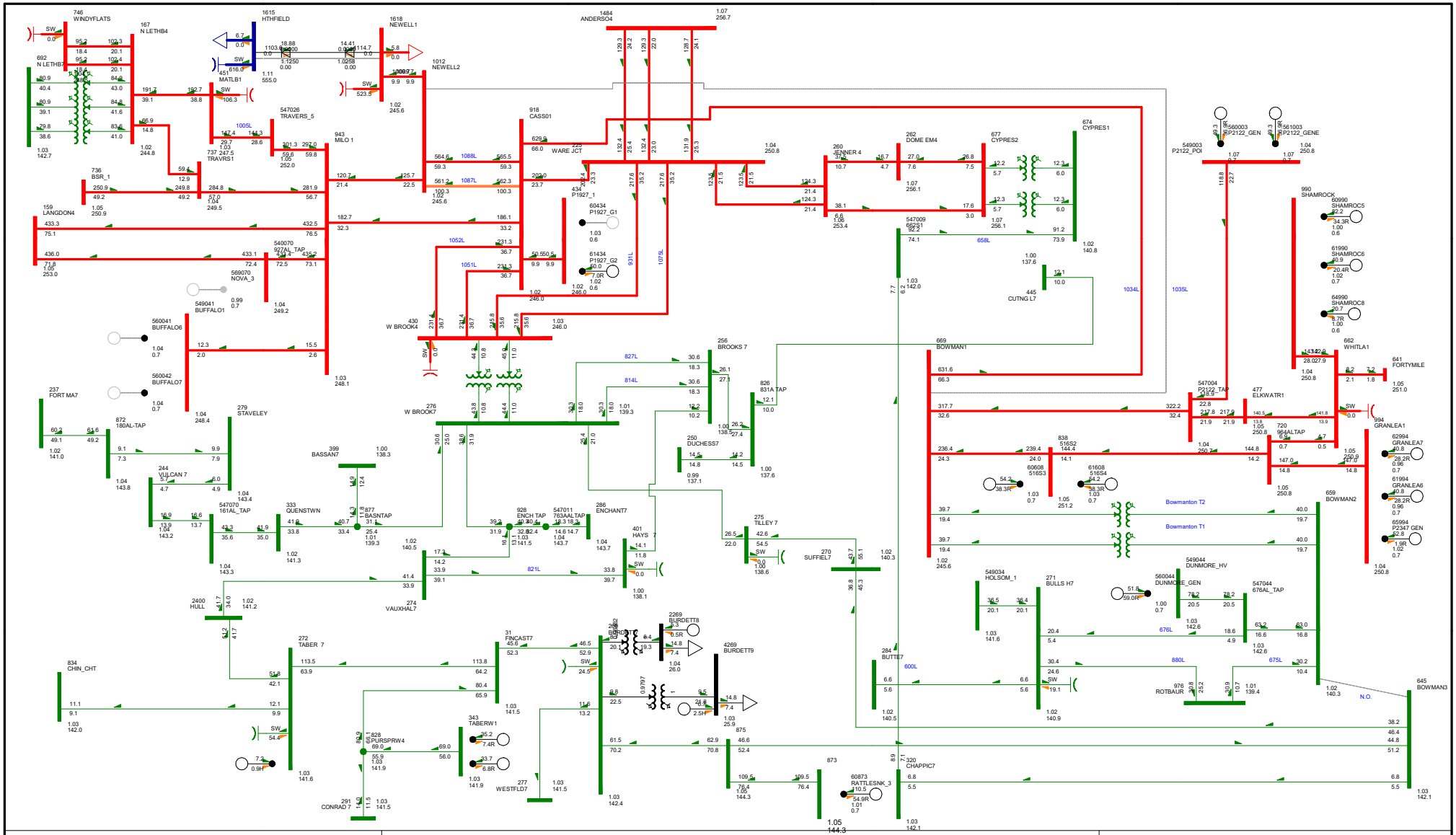
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

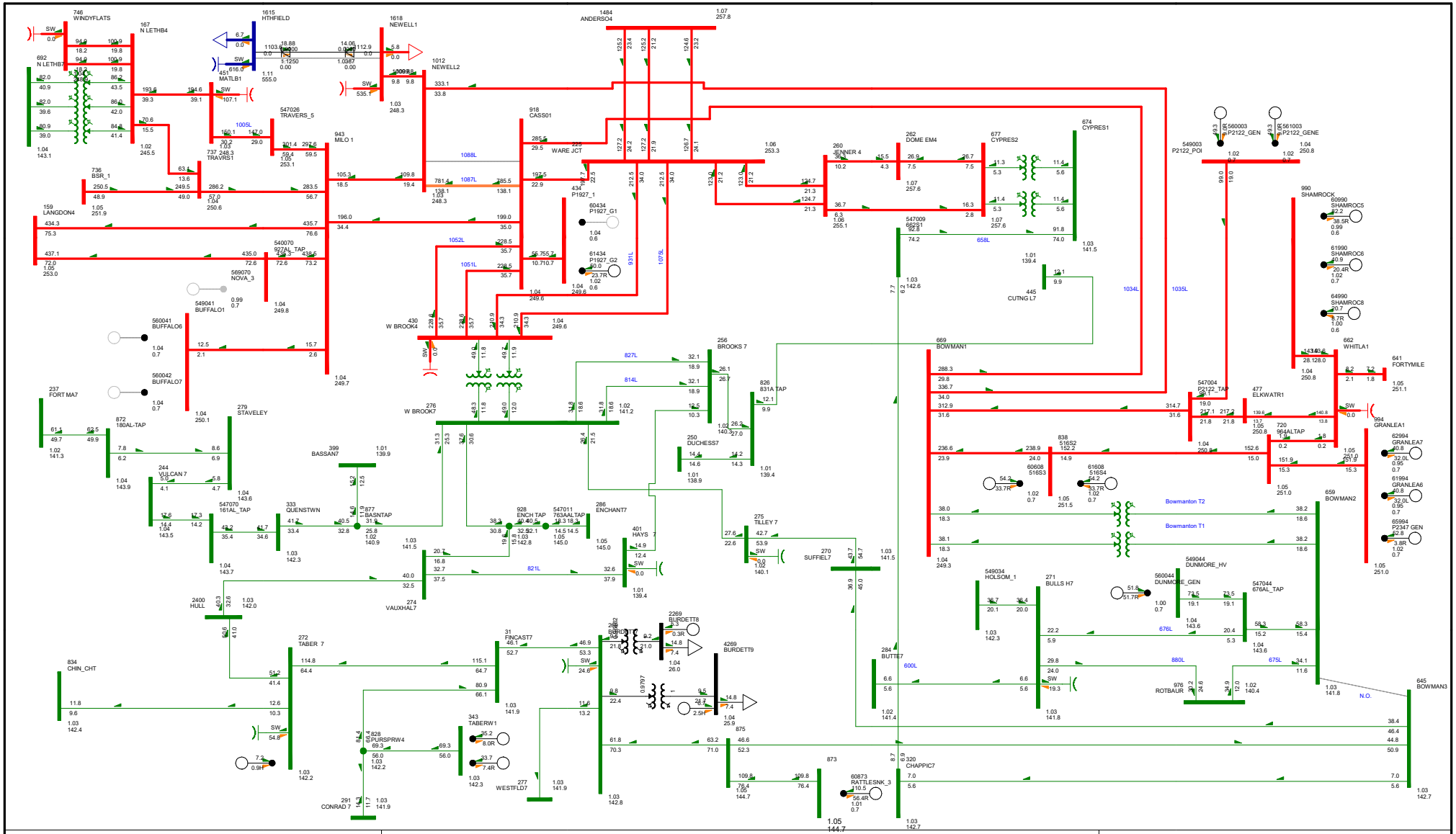


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FIGURE B-2-3: 2025-SCN2-SP-PRE.SAV
CATEGORY B - 924L (LANGDON 102S TO MILO 356S)
FRI, SEP 01 2023 0:31

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000


P2461 - Aira Solar Facility
FIGURE B-2-4: 2025-SCN2-SP-PRE.SAV
CATEGORY B - 1035L (BOWMANTON 244S TO NEWELL A2075S)
FRI, SEP 01 2023 0:32
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

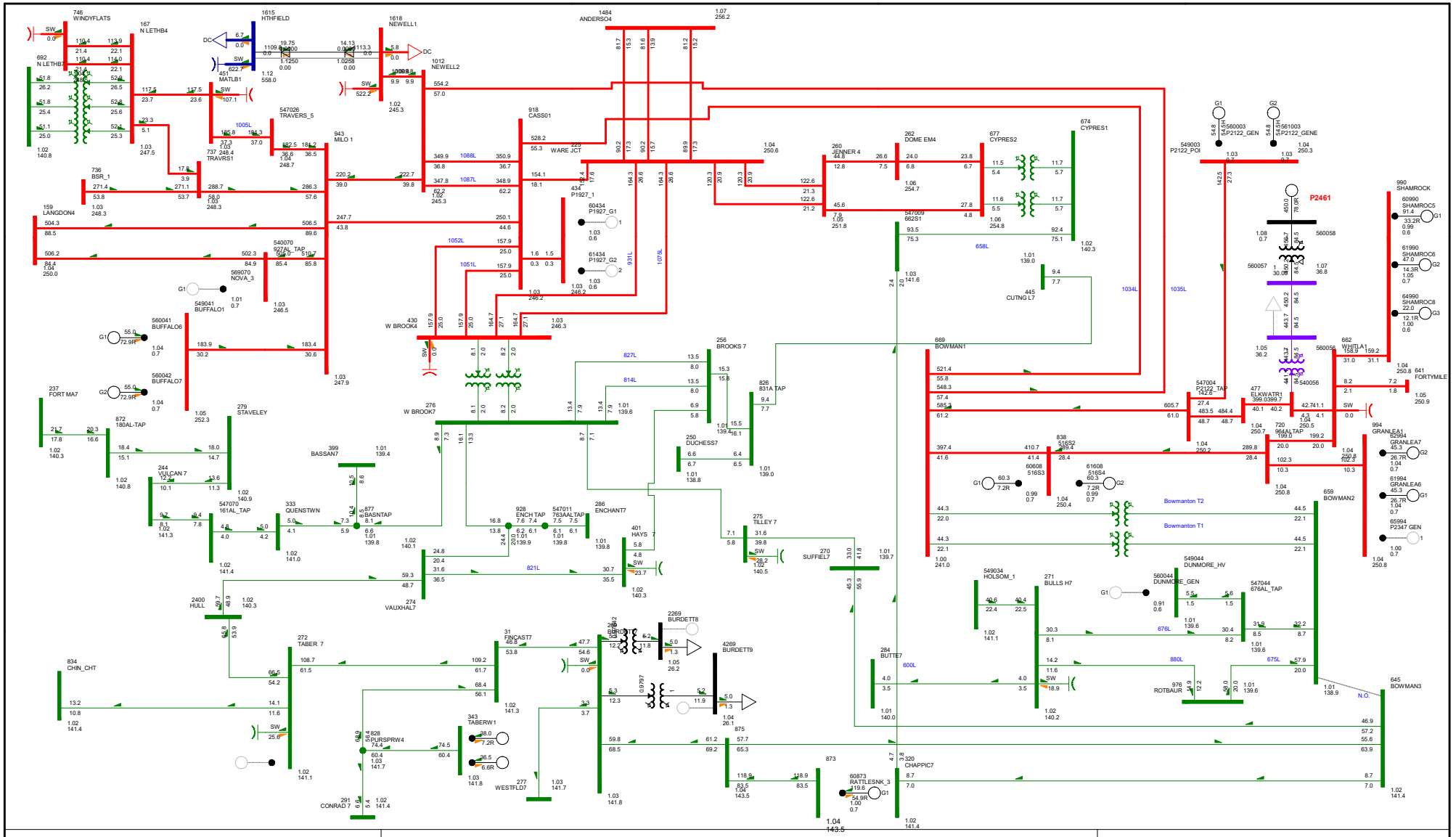


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FIGURE B-2-5: 2025-SCN2-SP-PRE.SAV
CATEGORY B - 1088L (CASSILS 324S TO NEWELL 2075S)
FRI, SEP 01 2023 0:32

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

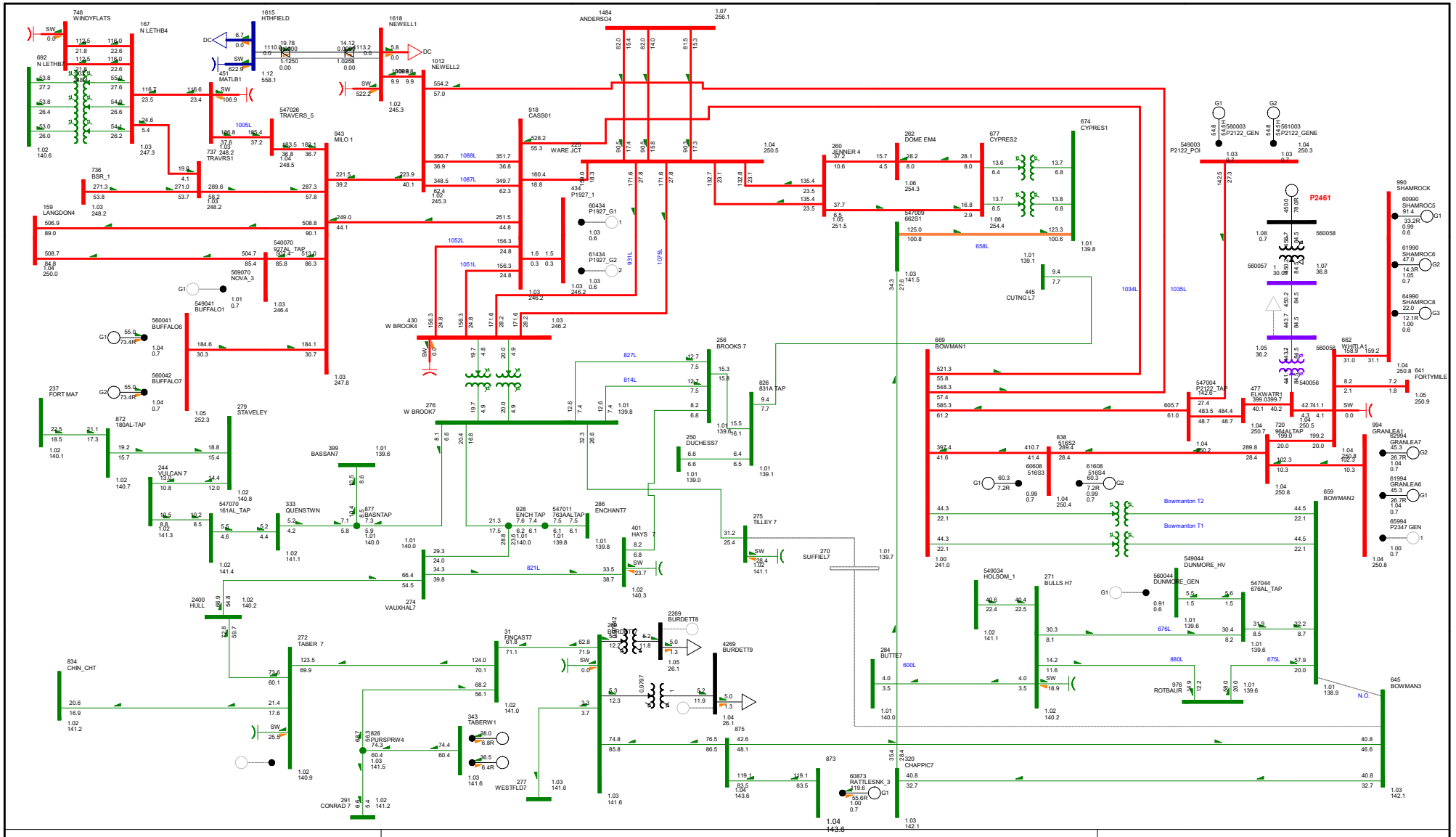
Attachment A3
Post-Project Power Flow Diagrams

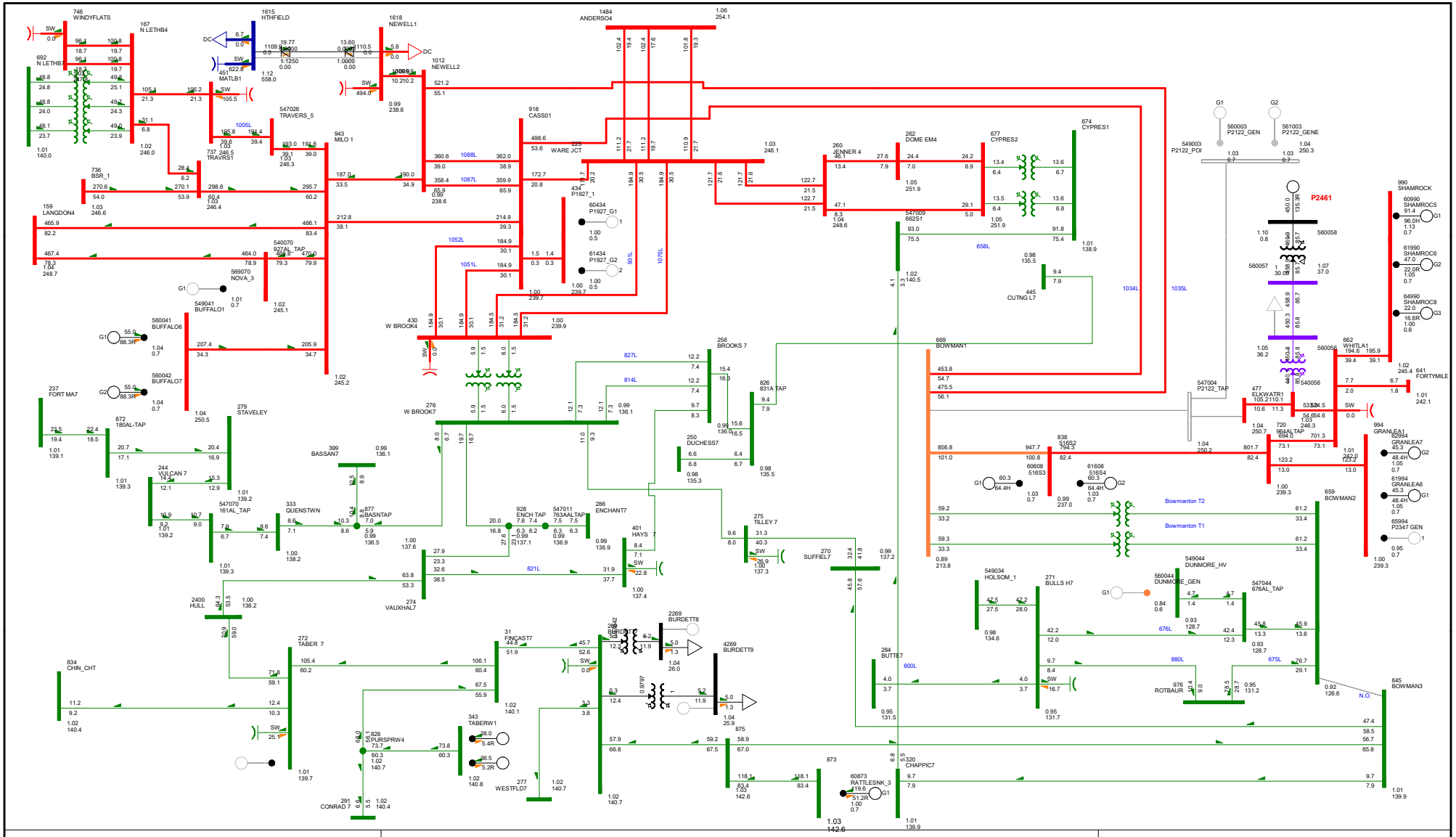


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FIGURE A-3-1: 2025-SCN3-SL-POST.SAV
CATEGORY A - NO CONTINGENCY
FRI, SEP 01 2023 0:34

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

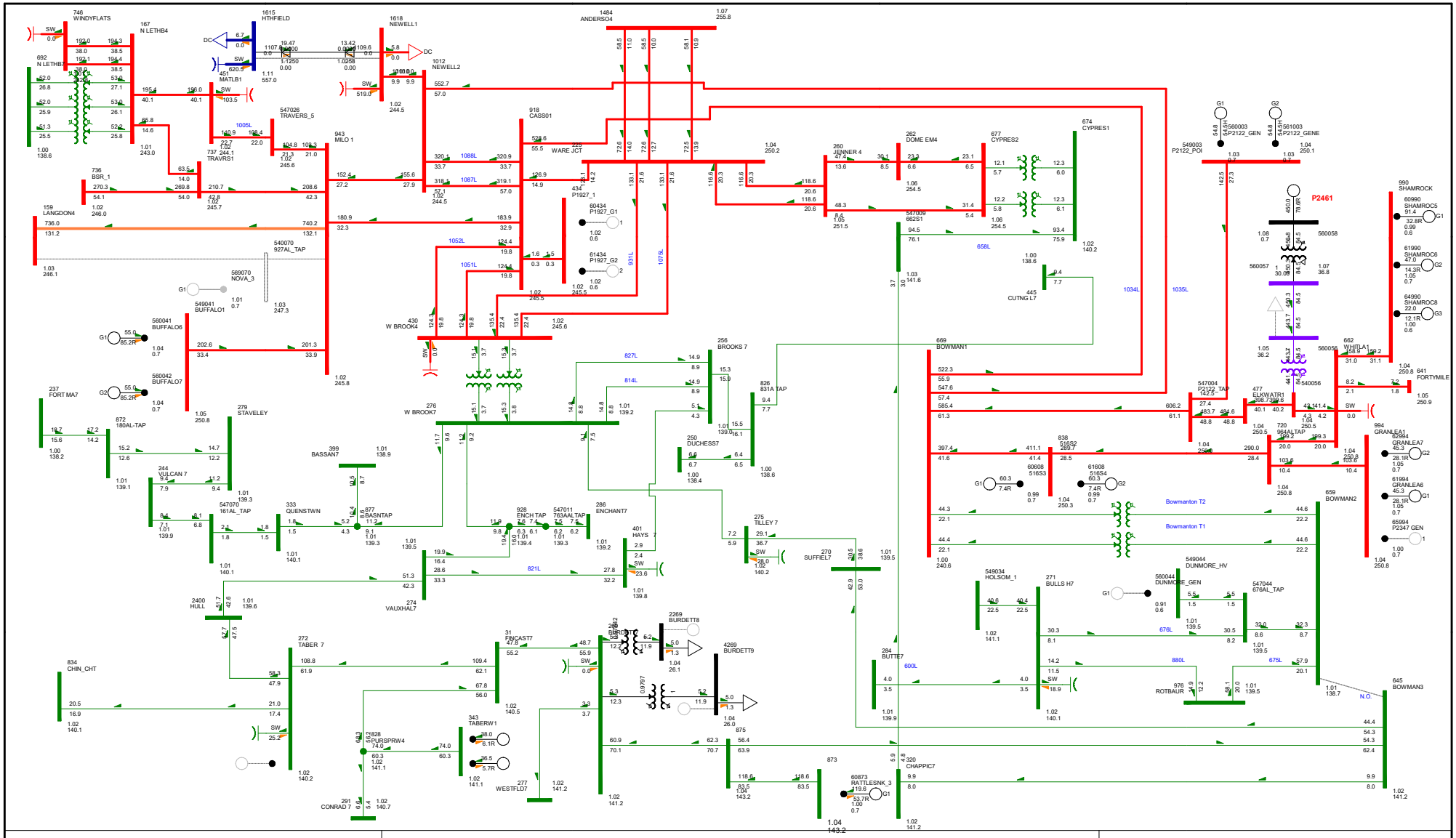

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FIGURE B-3-1: 2025-SCN3-SL-POST.SAV
CATEGORY B - SUFFIELD 895ST2
FRI, SEP 01 2023 0:35
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

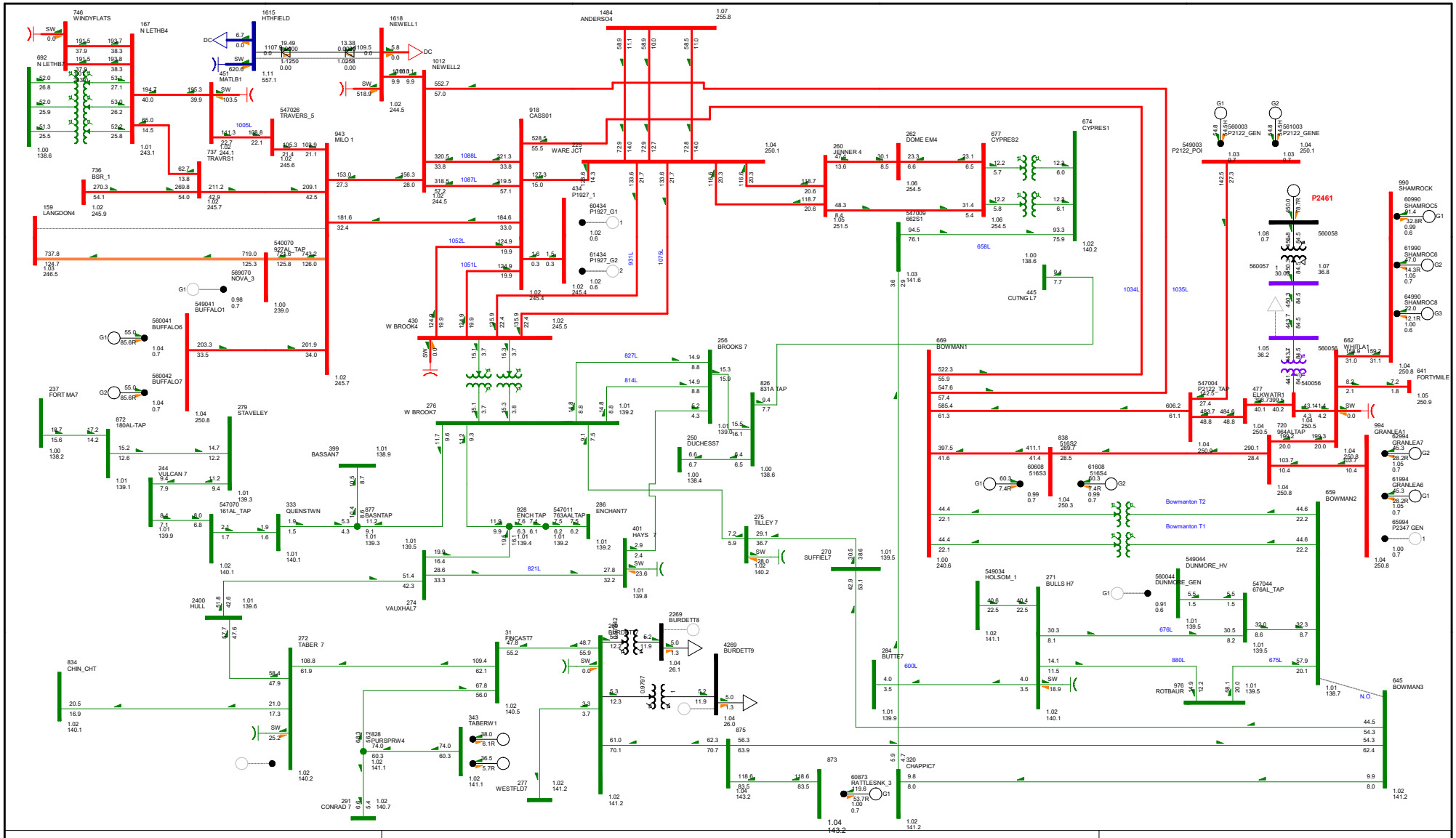


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FIGURE B-3-2: 2025-SCN3-SL-POST.SAV
CATEGORY B - 1074L (BOWMANTON 244S TO P2122/ELKWATER 264S)
FRI, SEP 01 2023 0:36

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

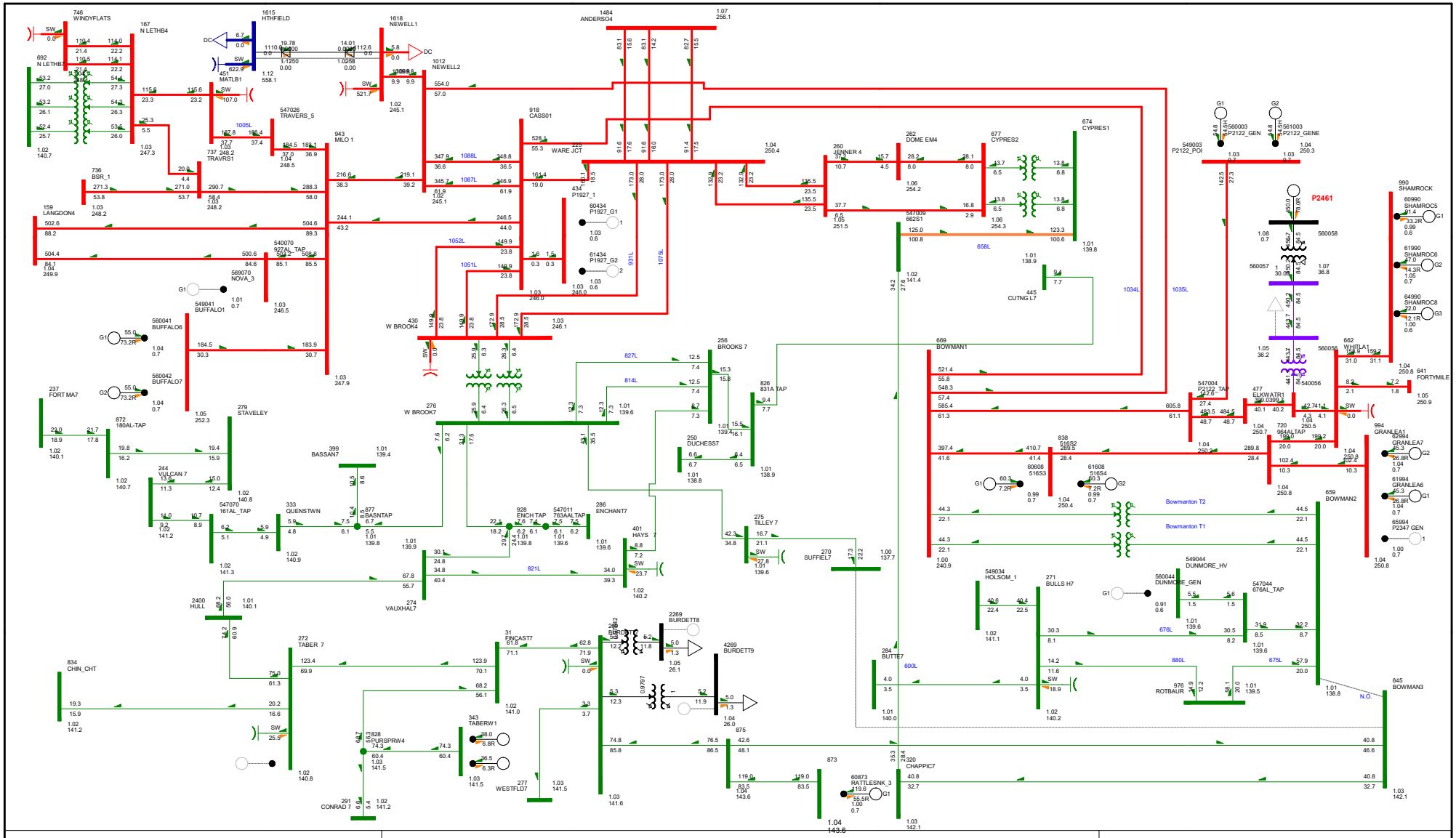

P2461
Bowmanton T2
Bowmanton T1
1034L
1035L
658L
1088L
1087L
1052L
1051L
931L
1078L
827L
814L
821L
1005L
600L
676L
880L
675L
746 WINDYFLATS
167 N LETHB4
692 N LETHB
1615 HTHFIELD
451 MATLB1
1618 NEWELL1
1012 NEWELL2
1484 ANDERSO4
547026 TRAVERS_5
TRAVRS1
943 MILO 1
736 BSR_1
159 LANGDON4
540070 927AL_TAP
569070 NOVA_3
549041 BUFFALO1
560041 BUFFALO6
560042 BUFFALO7
237 FORT MA7
872 180AL-TAP
279 STAVELEY
244 VULCAN 7
547070 161AL_TAP
333 QUENSTWN
399 BASSAN7
877 BASNTAP
928 ENCH TAP
547011 763AALTAP
286 ENCHANT7
401 HAYS 7
275 TILLEY 7
270 SUFFIEL7
274 VAUXHAL7
2400 HULL
834 CHIN_CHT
272 TABER 7
31 FINCAST7
2269 BURDETT8
4269 BURDETT9
343 TABERW1
277 WESTFLD7
291 CONRAD 7
873 RATTLESNK_3
320 CHAPPIC7
645 BOWMAN3
659 BOWMAN2
284 BUTTE7
271 BULLS H7
549034 HOLSOM_1
549044 DUNMORE_HV
547044 676AL_TAP
560044 DUNMORE_GEN
976 ROTBAUR
256 BROOKS 7
250 DUCHESS7
826 831A TAP
276 W BROOK7
430 W BROOK4
669 BOWMAN1
547004 P2122_TAP
549003 P2122_POI
560003 SP2122_GEN
561003 SP2122_GENE
560057
560058
560056
990 SHAMROCK
60990 SHAMROC5
61990 SHAMROC6
64990 SHAMROC8
662 WHITLA1
641 FORTYMILE
994 GRANLEA1
62994 GRANLEA7
61994 GRANLEA6
65994 P2347 GEN
477 ELKWATR1
838 516S2
60608 516S3
61608 516S4
60434 P1927_G1
61434 P1927_G2
547009 662S1
674 CYPRES1
677 CYPRES2
262 DOME EM4
260 JENNER 4
918 CASS01
WARE JCT
434 P1927_1
445 CUTNG L7
G1
G2
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FIGURE B-3-3: 2025-SCN3-SL-POST.SAV
CATEGORY B - 927L (LANGDON 102S TO NOVA TAP/MILO 356S)
FRI, SEP 01 2023 20:09
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-4: 2025-SCN3-SL-POST.SAV
CATEGORY B - 924L (LANGDON 102S TO MILO 356S)
FRI, SEP 01 2023 0:37

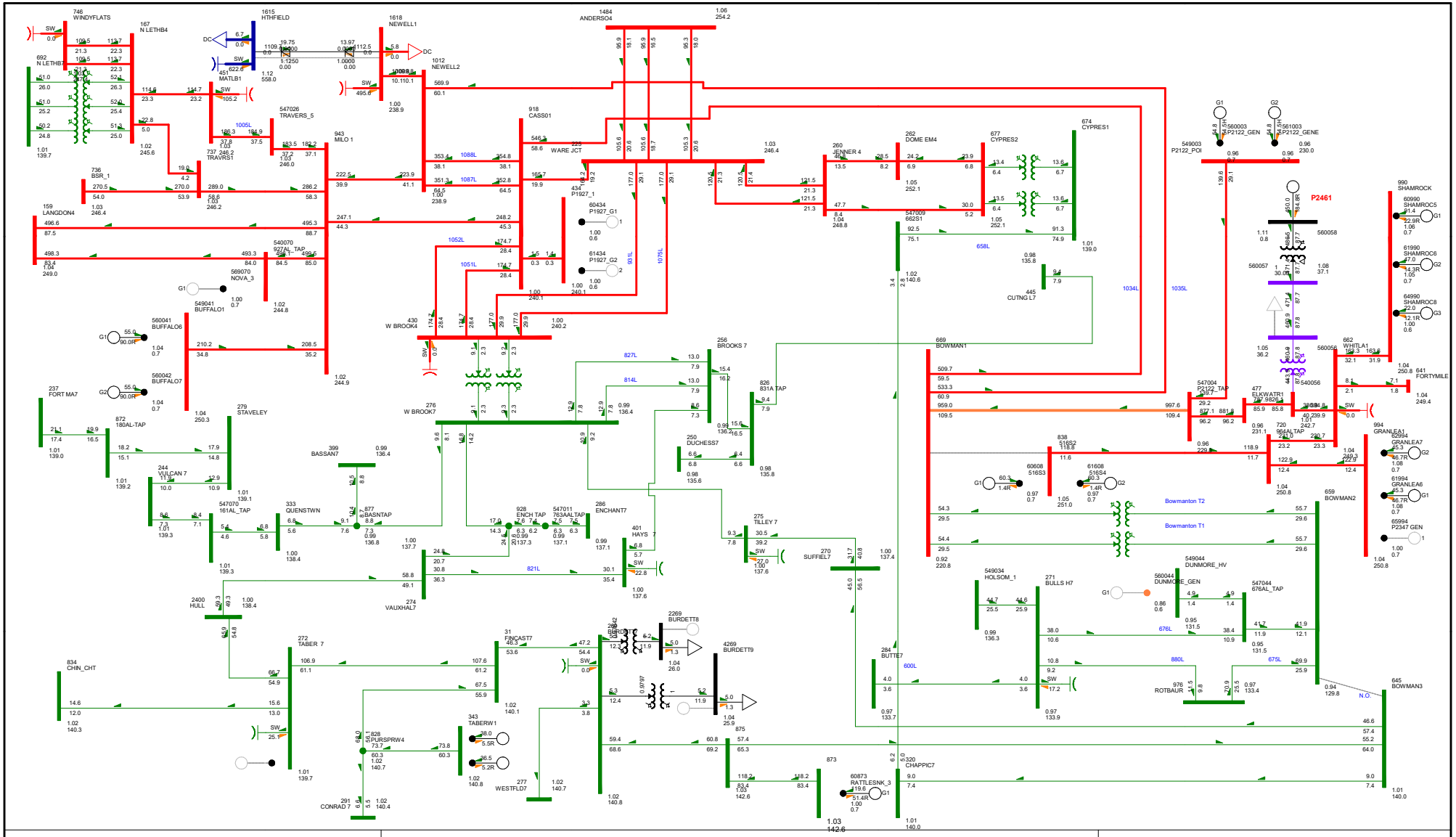
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-5: 2025-SCN3-SL-POST.SAV
CATEGORY B - 892L (SUFFIELD 895S TO BOWMANTON 244S)
FRI, SEP 01 2023 0:38

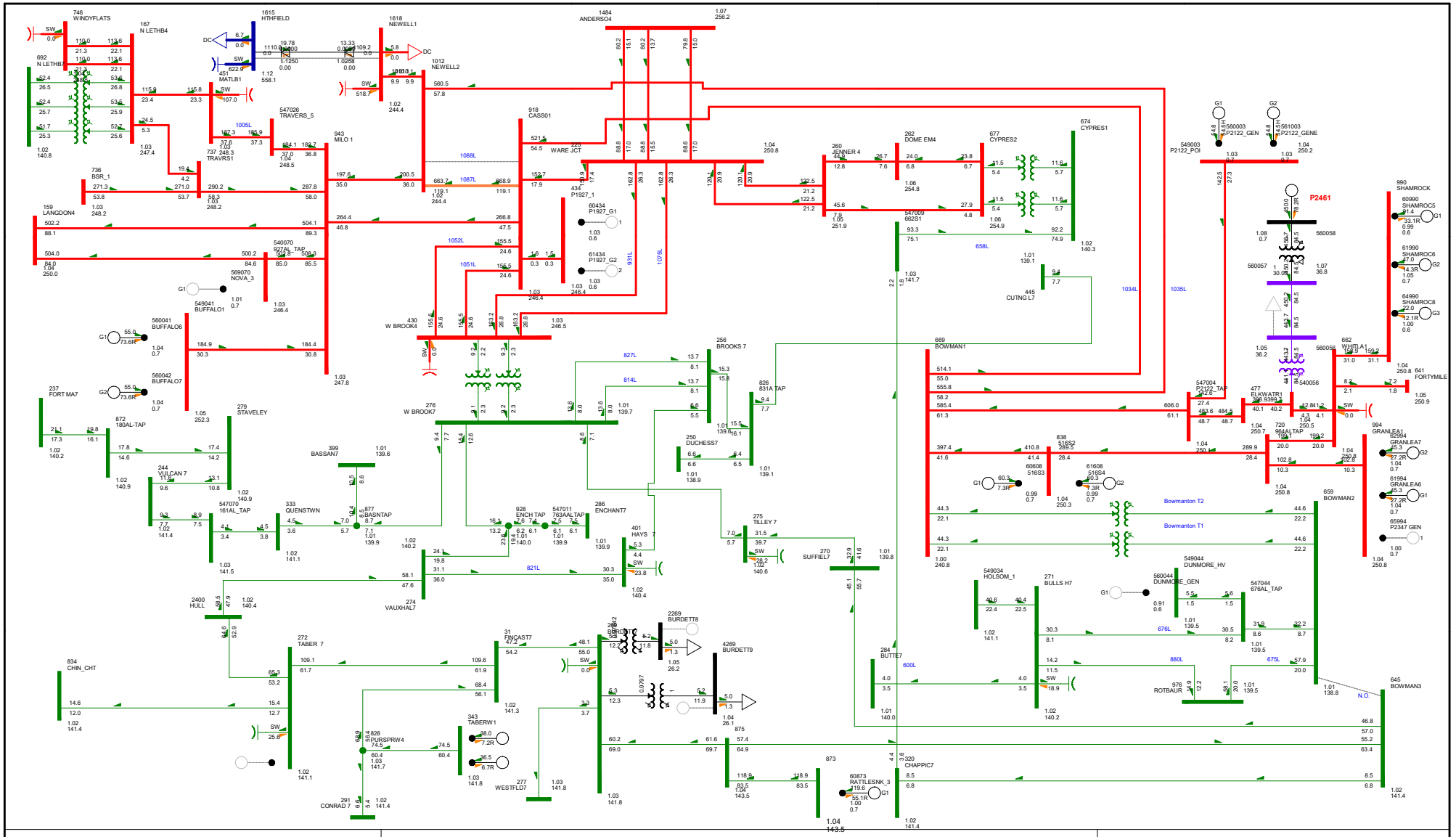
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-6: 2025-SCN3-SL-POST.SAV
CATEGORY B - 965L (BOWMANTON 244S TO MURRAY LAKE 326S)
FRI, SEP 01 2023 0:38

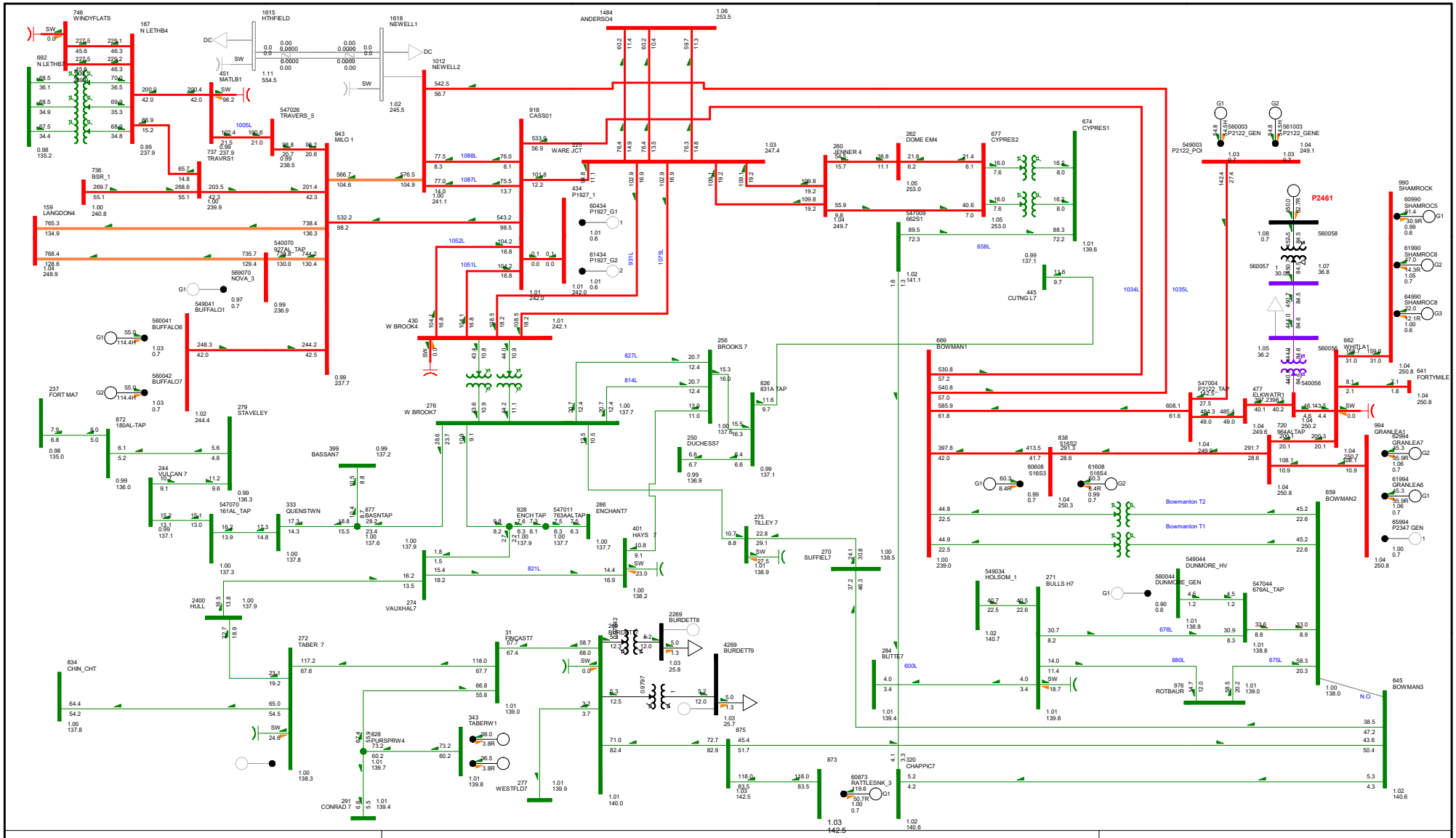
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-7: 2025-SCN3-SL-POST.SAV
CATEGORY B - 1088L (CASSILS 324S TO NEWELL 2075S)
FRI, SEP 01 2023 0:39

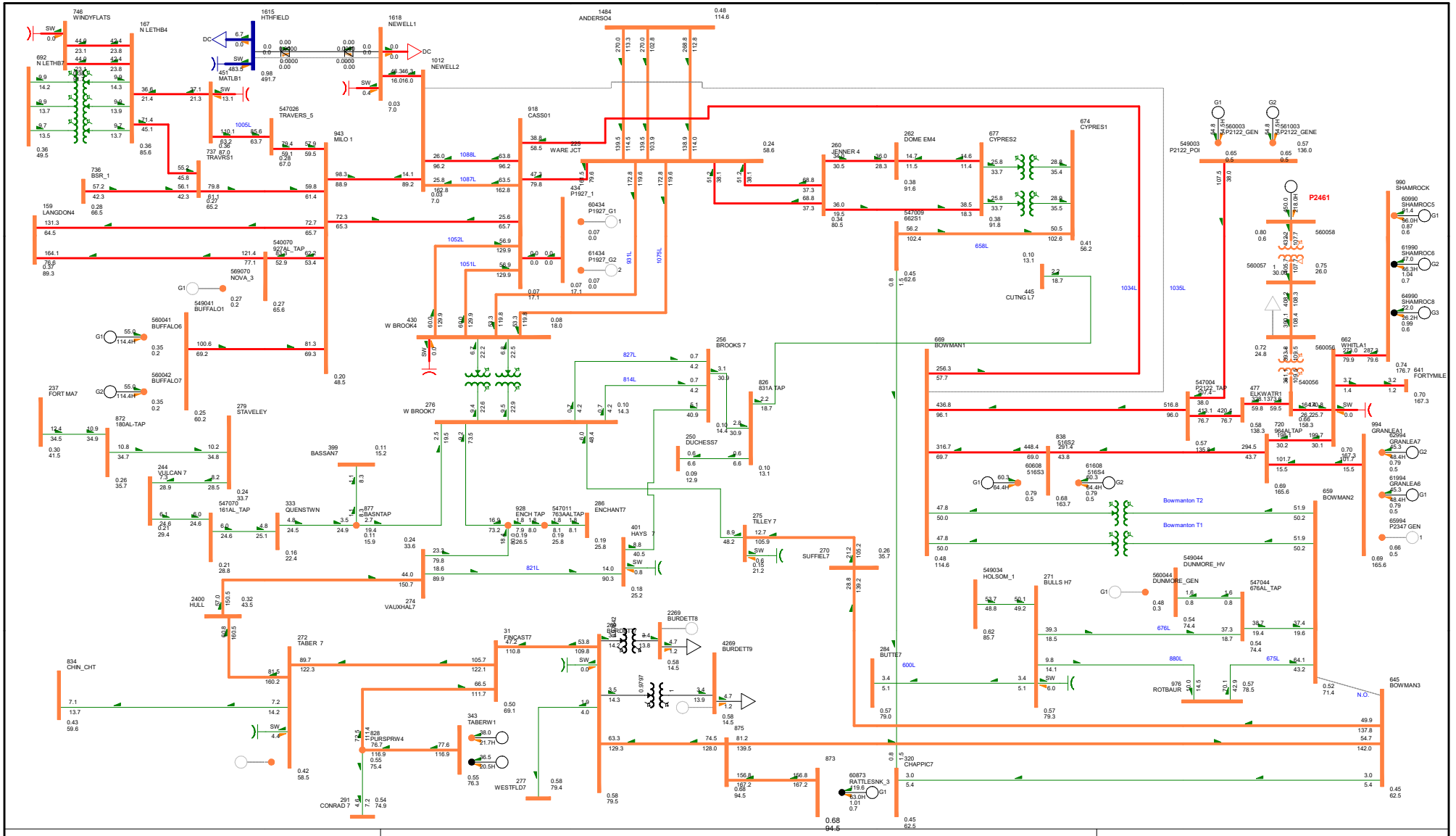
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-8: 2025-SCN3-SL-POST.SAV
CATEGORY B - EATL HVDC
FRI, SEP 01 2023 19:54

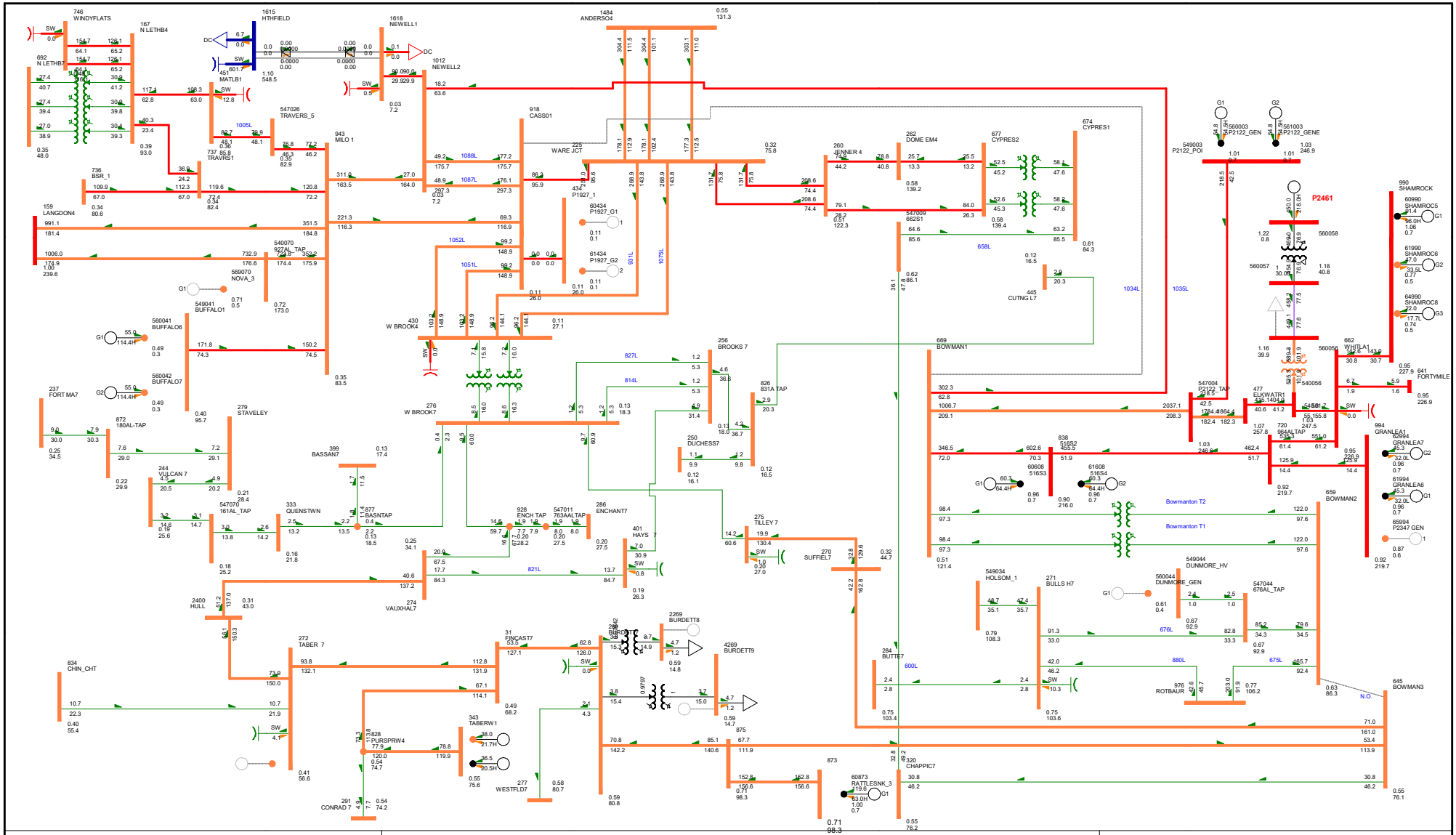
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-9: 2025-SCN3-SL-POST.SAV
CATEGORY B - 1035L (BOWMANTON 244S TO NEWELL A2075S)
FRI, SEP 01 2023 0:41

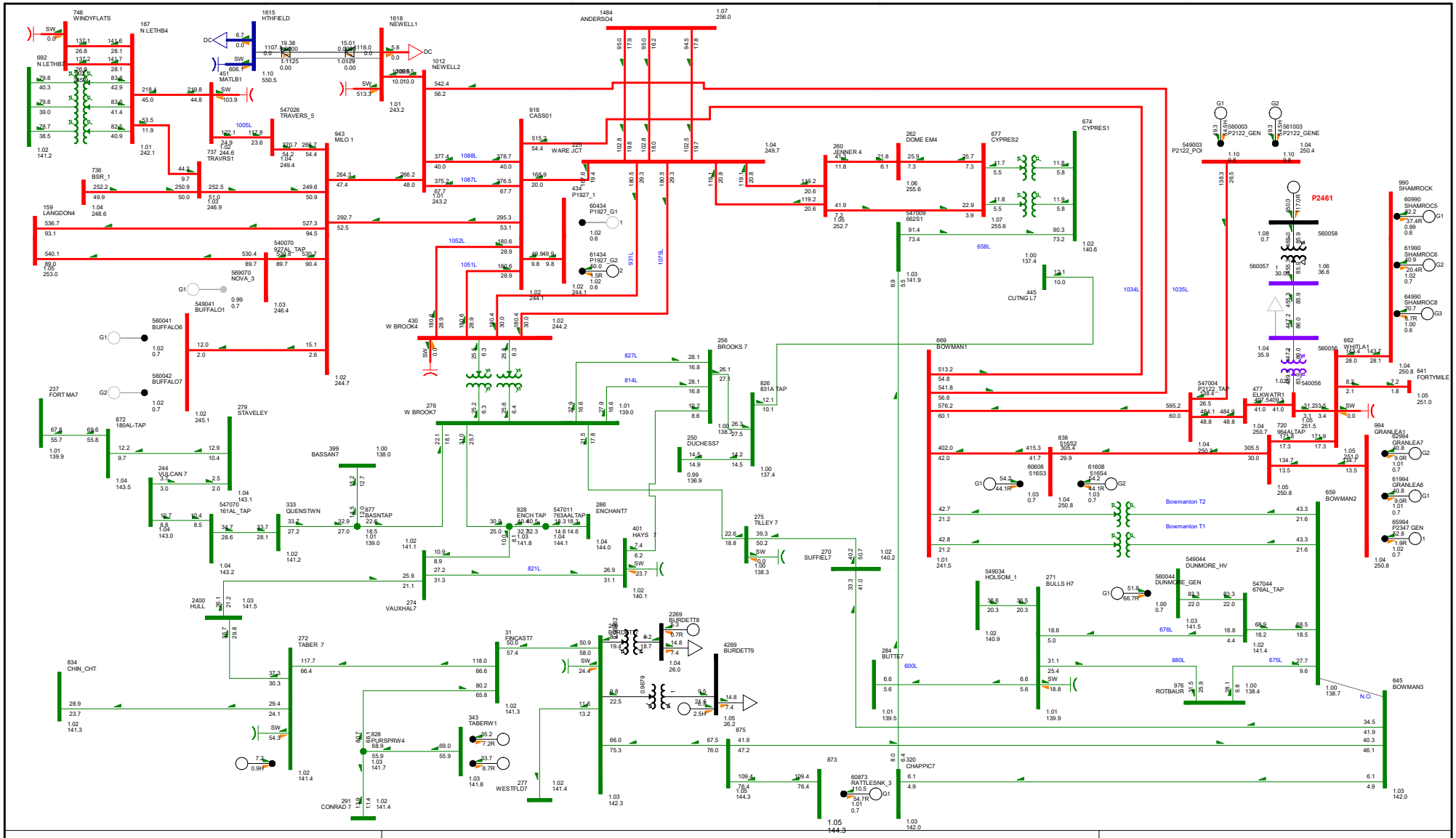
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

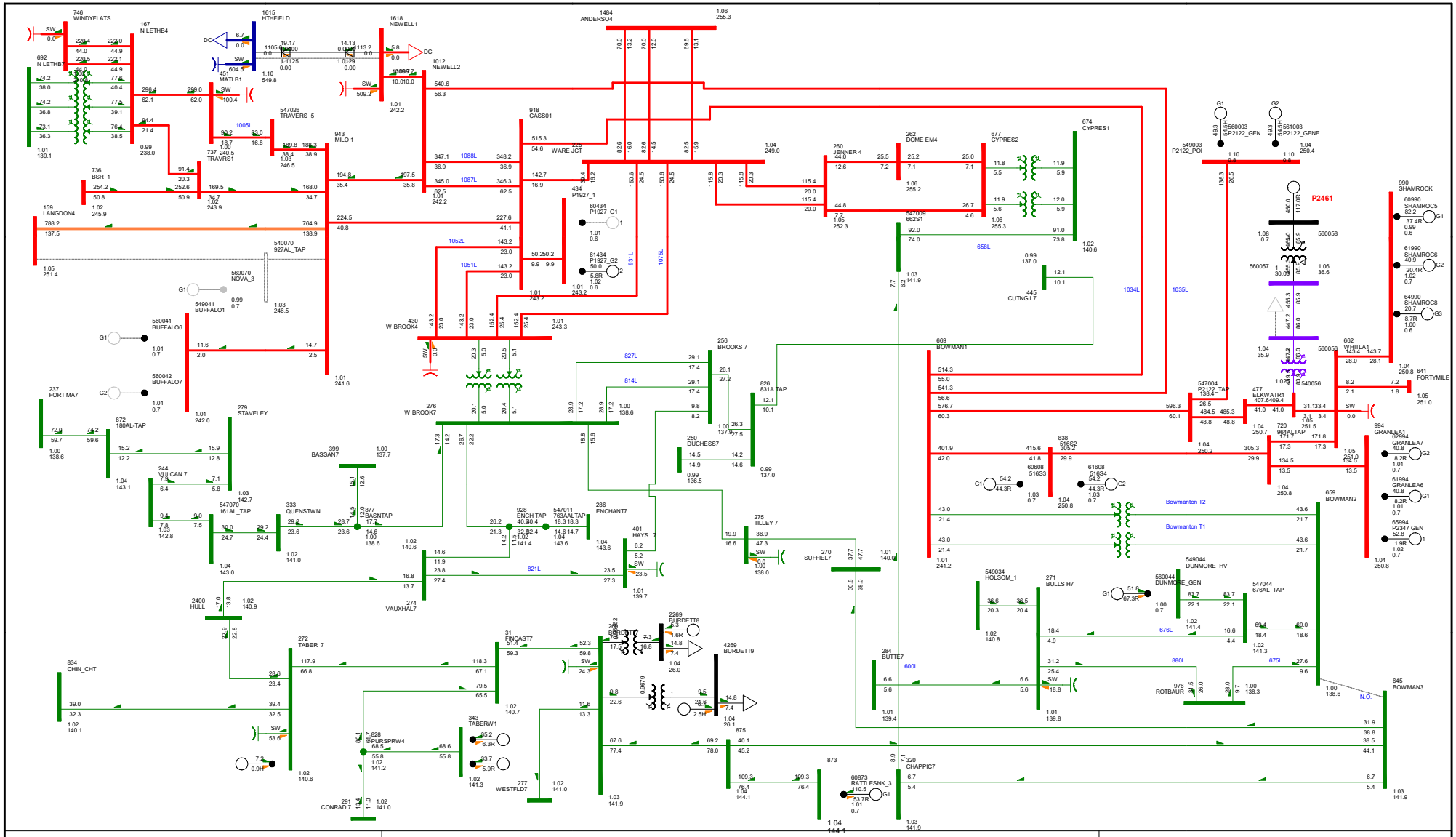


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FIGURE B-3-10: 2025-SCN3-SL-POST.SAV
CATEGORY B - 1034L (CASSILS 324S TO BOWMANTON 244S)
FRI, SEP 01 2023 0:42

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

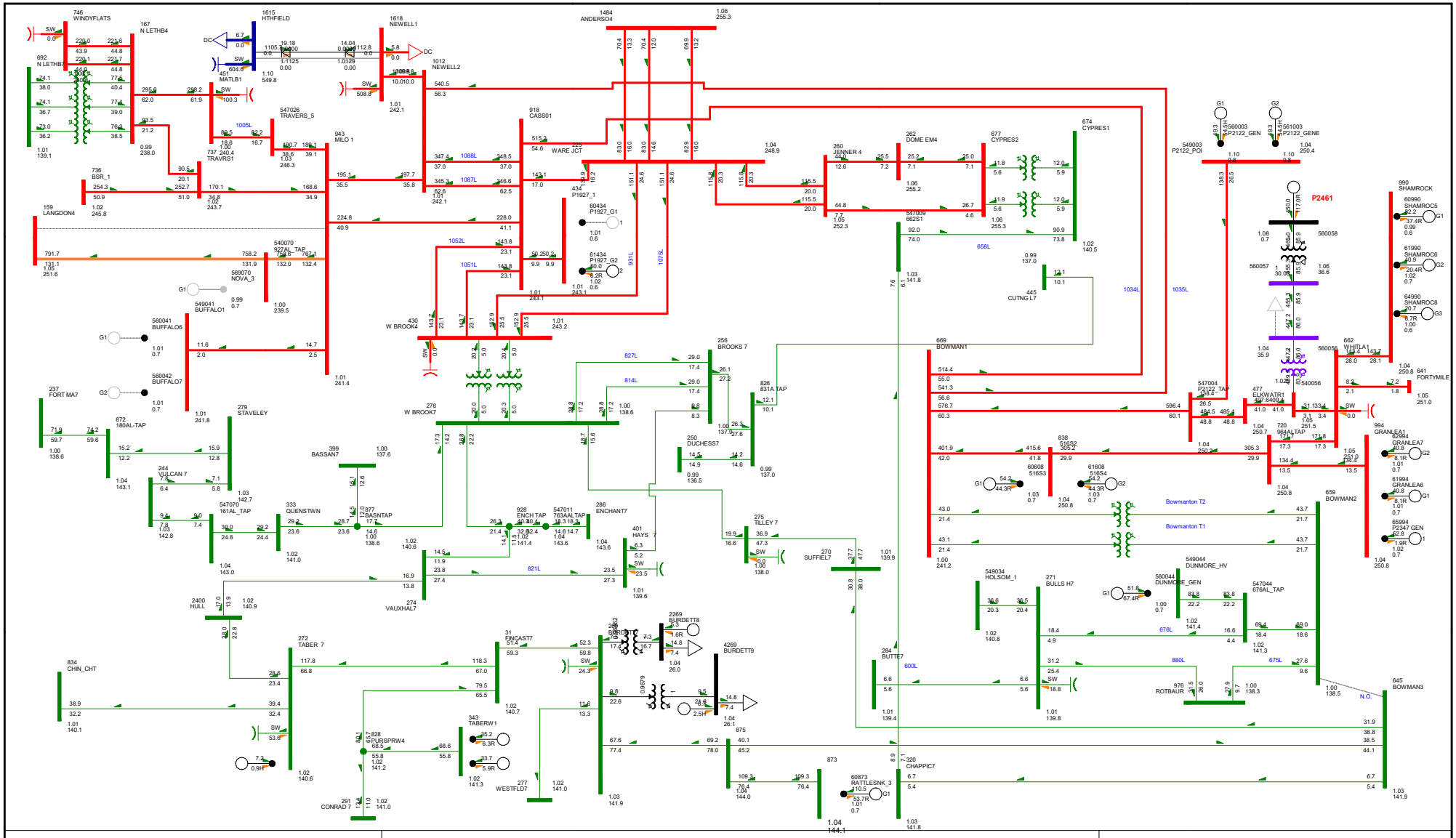

P2461 - Aira Solar Facility
FIGURE A-4-1: 2025-SCN4-SP-POST.SAV
CATEGORY A - NO CONTINGENCY
FRI, SEP 01 2023 0:44
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2461 - Aira Solar Facility

FIGURE B-4-1: 2025-SCN4-SP-POST.SAV
CATEGORY B - 927L (LANGDON 102S TO NOVA TAP/MILO 356S)
FRI, SEP 01 2023 22:06

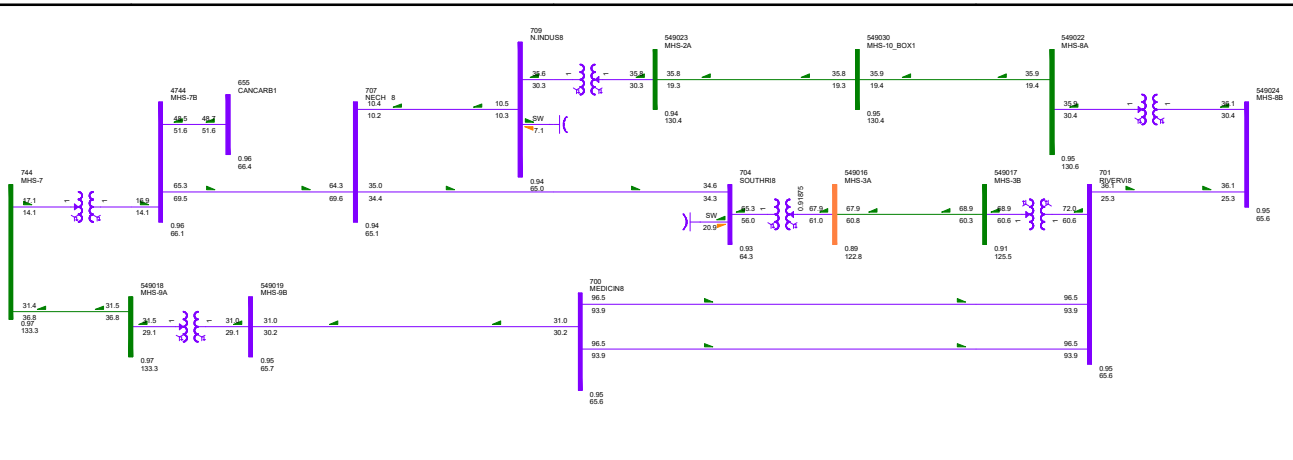
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



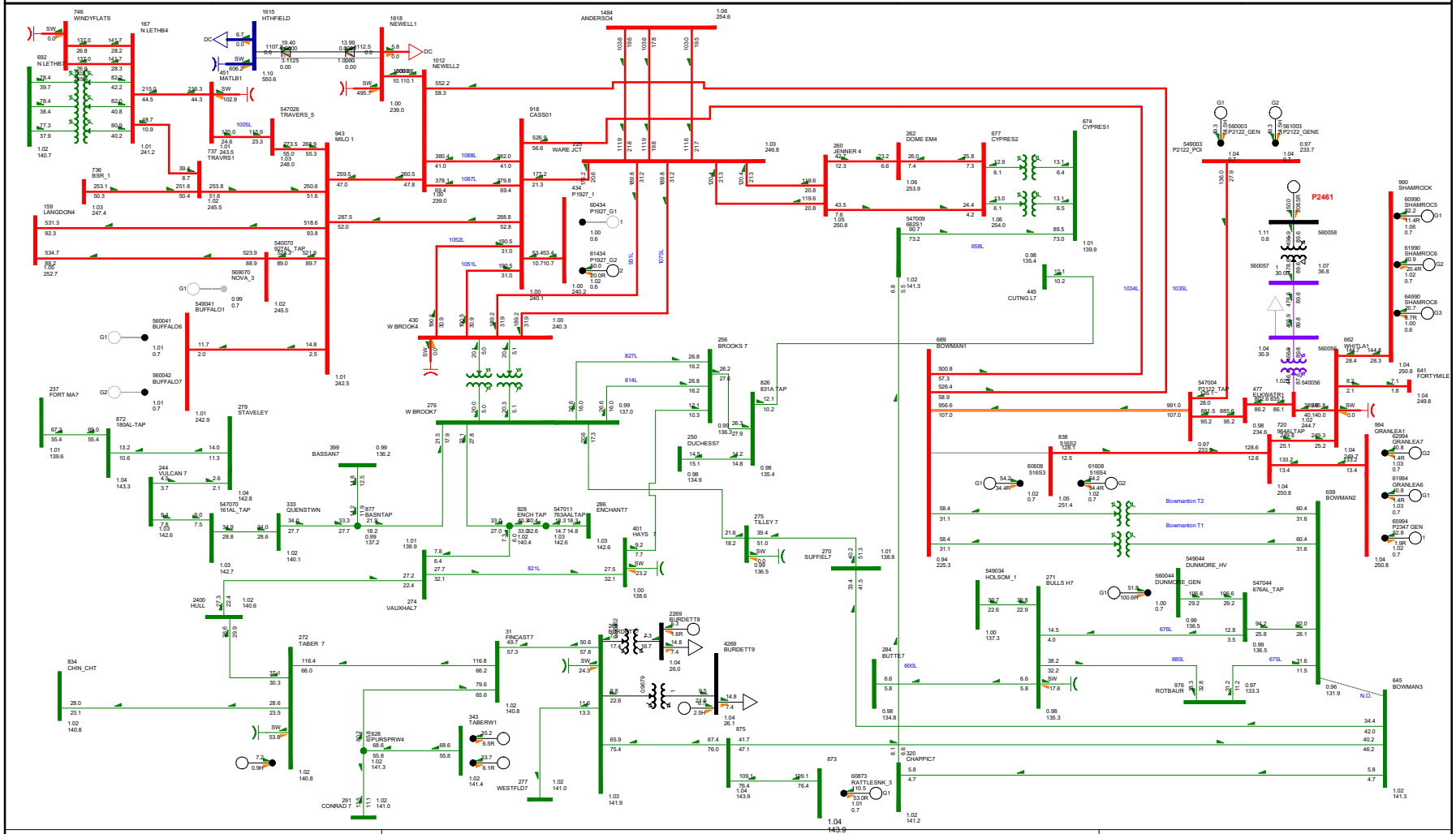
P2461 - Aira Solar Facility

FIGURE B-4-2: 2025-SCN4-SP-POST.SAV
CATEGORY B - 924L (LANGDON 102S TO MILO 356S)
FRI, SEP 01 2023 0:45

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



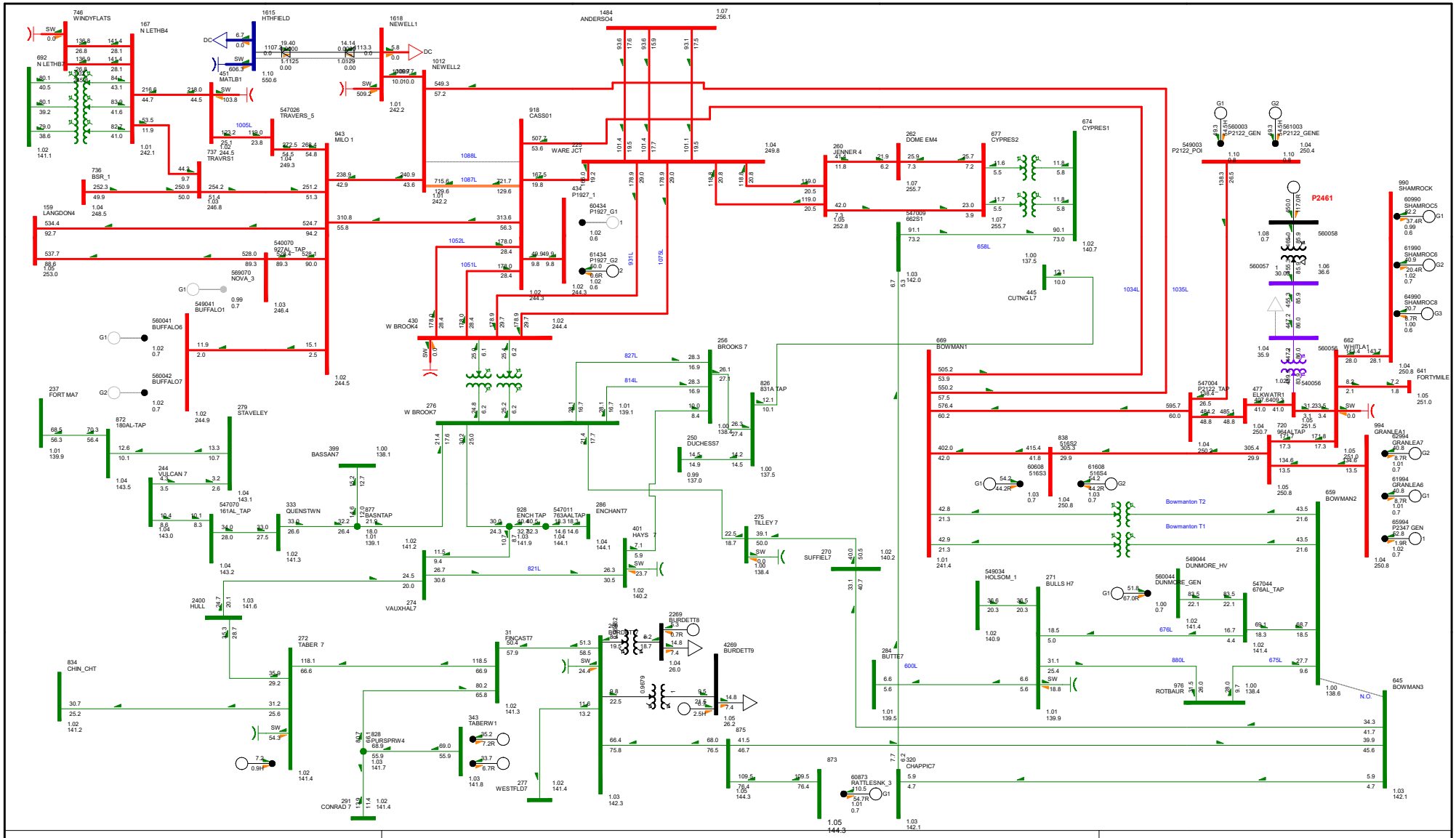
CMH



P2461 - Aira Solar Facility

FIGURE B-4-3: 2025-SCN4-SP-POST.SAV
CATEGORY B - 965L (BOWMANTON 244S TO MURRAY LAKE 326S)
FRI, SEP 01 2023 0:50

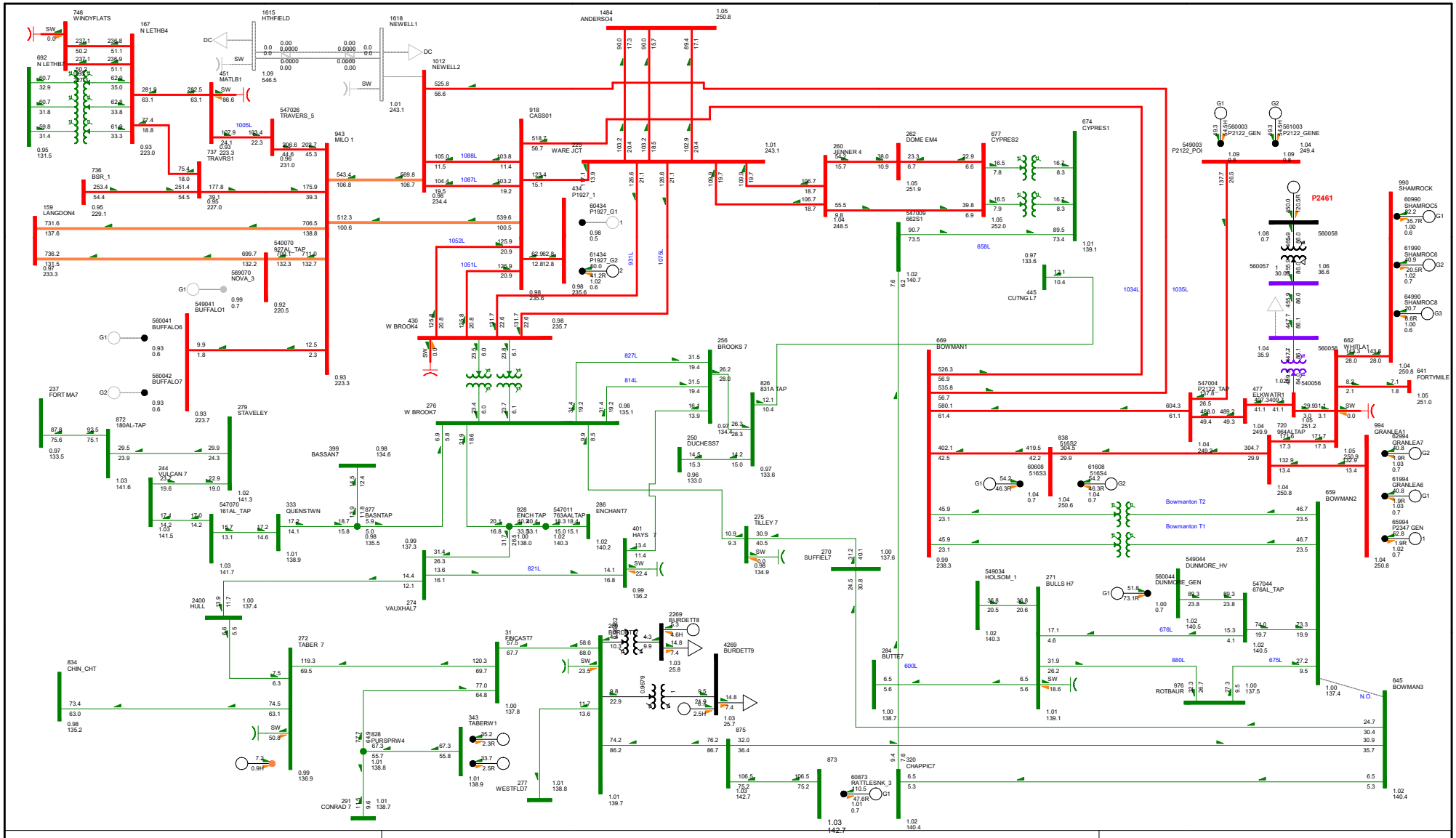
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

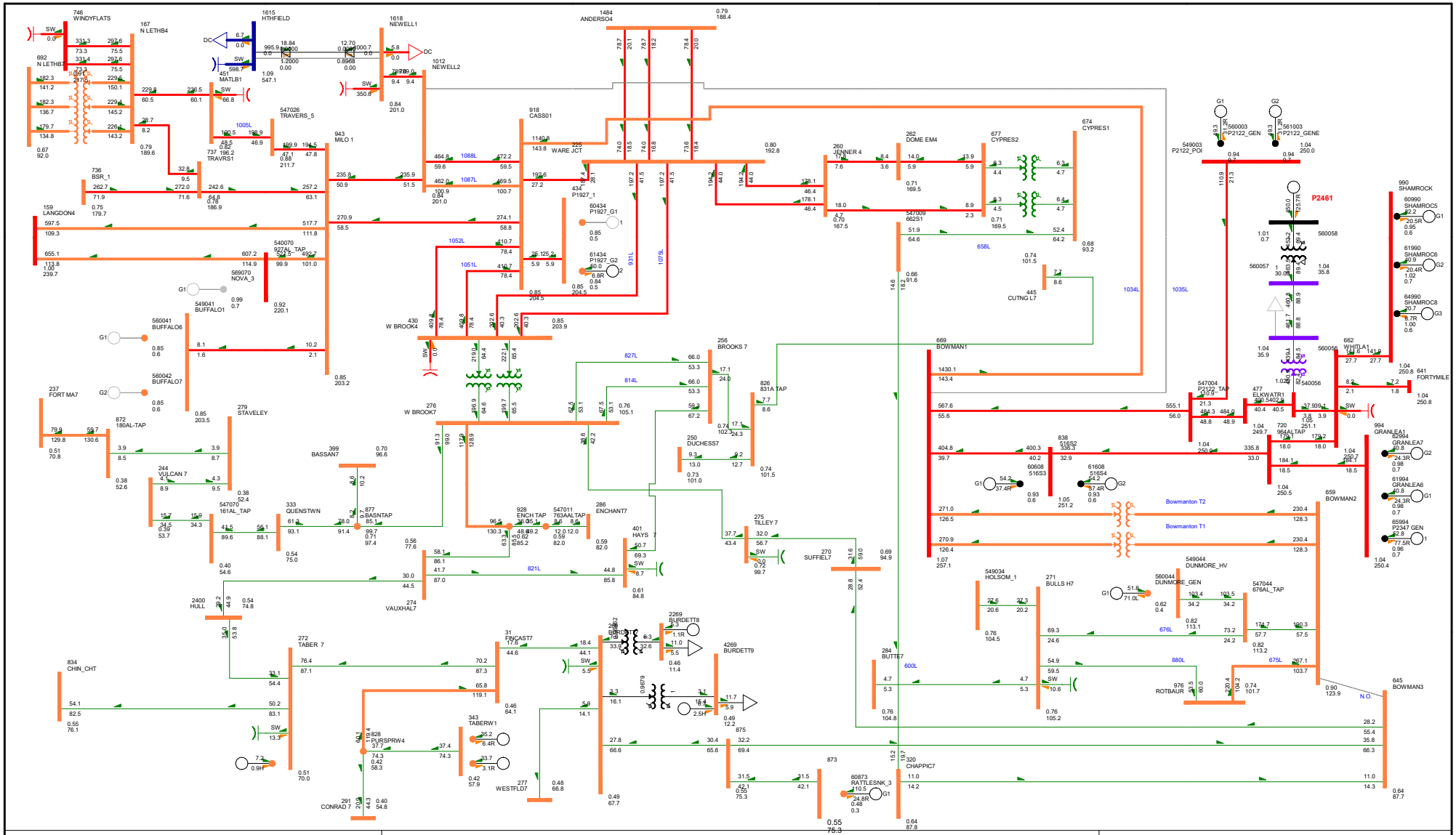


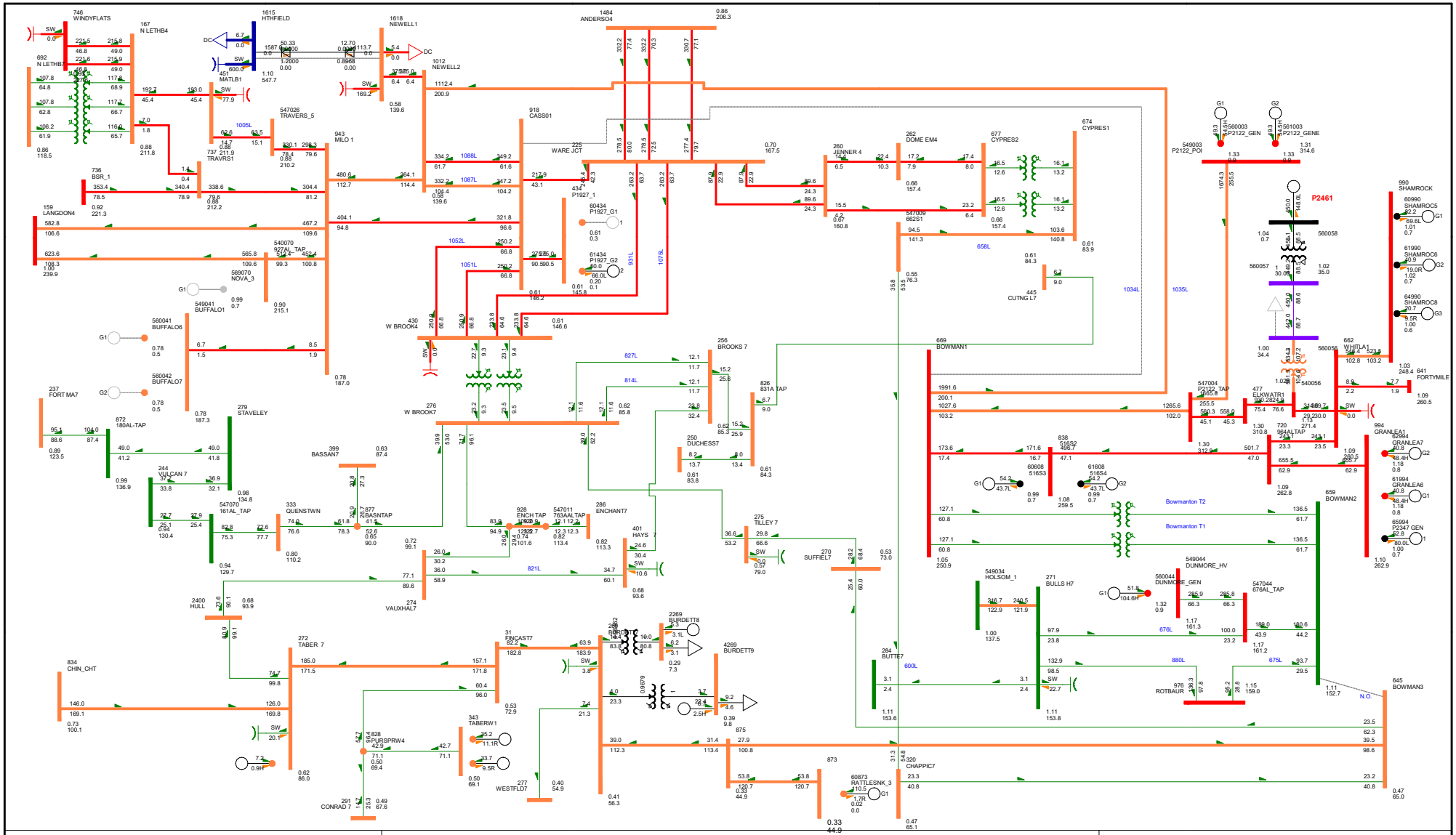
P2461 - Aira Solar Facility

FIGURE B-4-4: 2025-SCN4-SP-POST.SAV
CATEGORY B - 1088L (CASSILS 324S TO NEWELL 2075S)
FRI, SEP 01 2023 0:47

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000


P2461 - Aira Solar Facility
FIGURE B-4-5: 2025-SCN4-SP-POST.SAV
CATEGORY B - EATL HVDC
FRI, SEP 01 2023 19:55
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

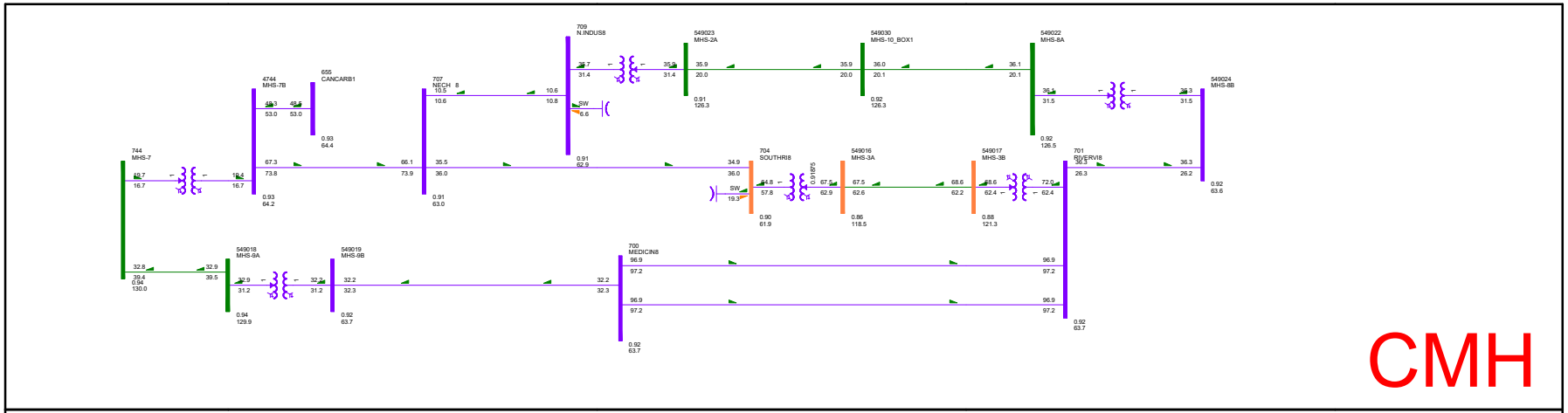

P2461 - Aira Solar Facility
FIGURE B-4-6: 2025-SCN4-SP-POST.SAV
CATEGORY B - 1035L (BOWMANTON 244S TO NEWELL A2075S)
FRI, SEP 01 2023 0:48
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



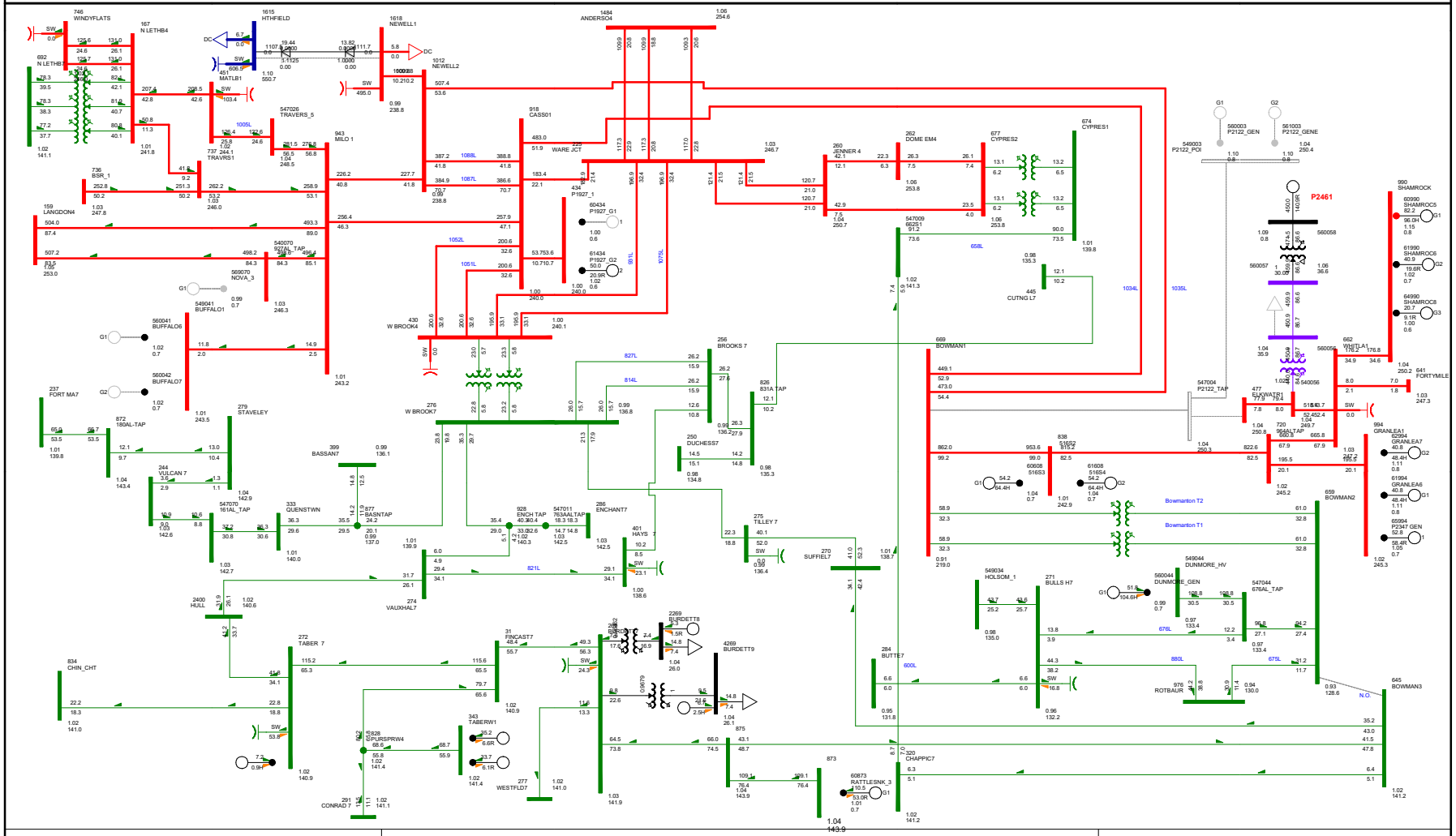
P2461 - Aira Solar Facility

FIGURE B-4-7: 2025-SCN4-SP-POST.SAV
CATEGORY B - 1034L (CASSILS 324S TO BOWMANTON 244S)
FRI, SEP 01 2023 0:49

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



CMH

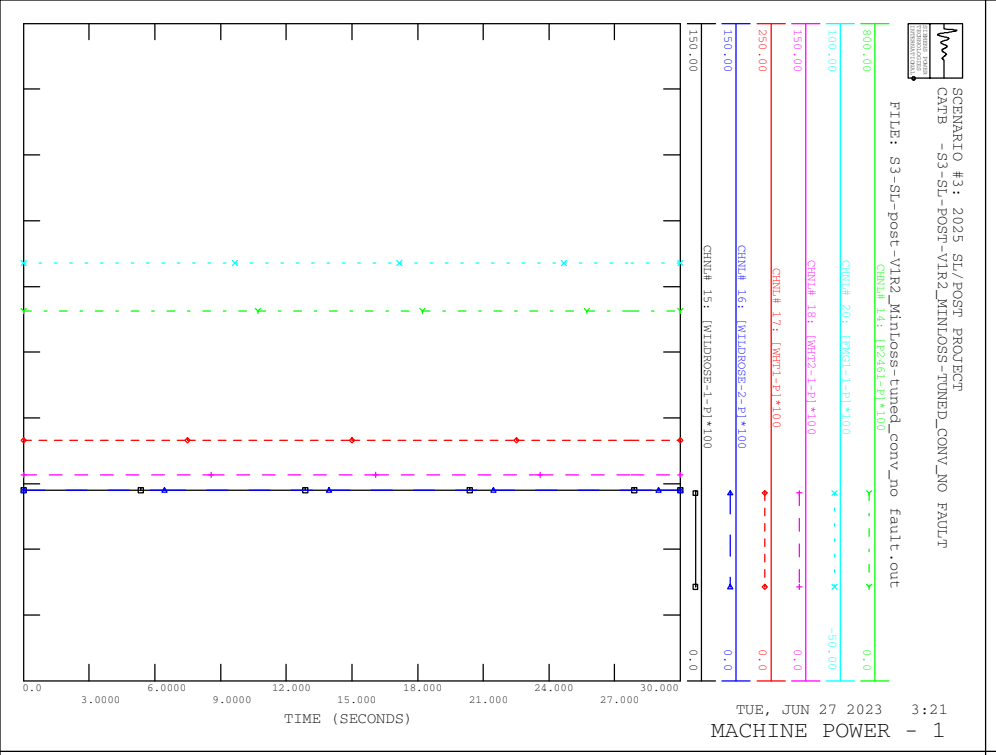


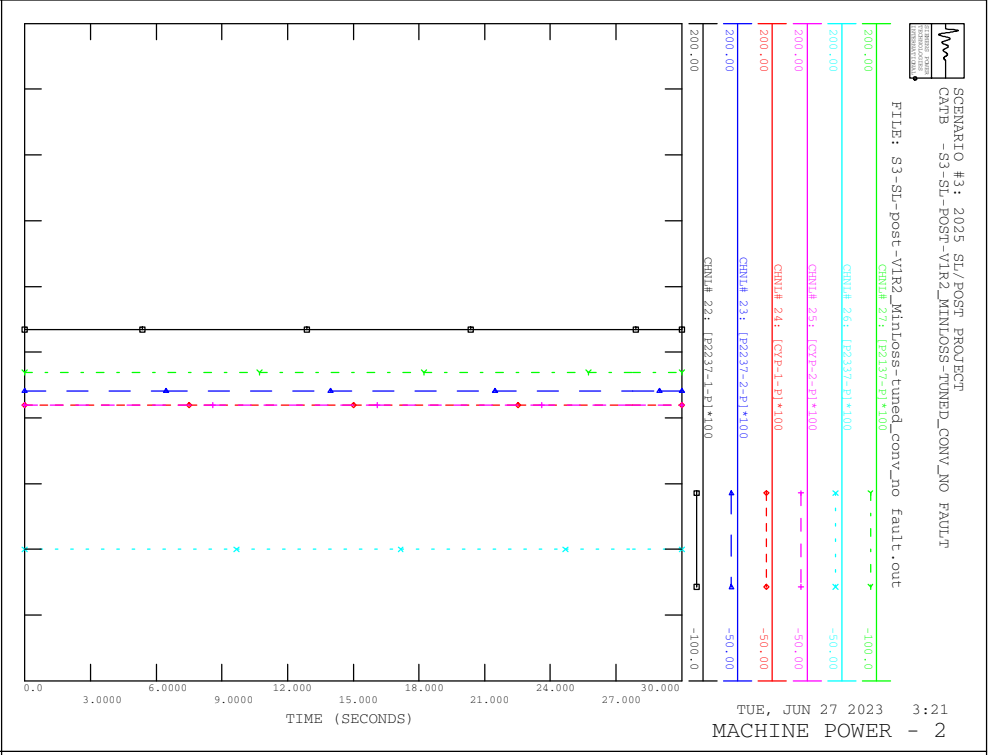
P2461 - Aira Solar Facility

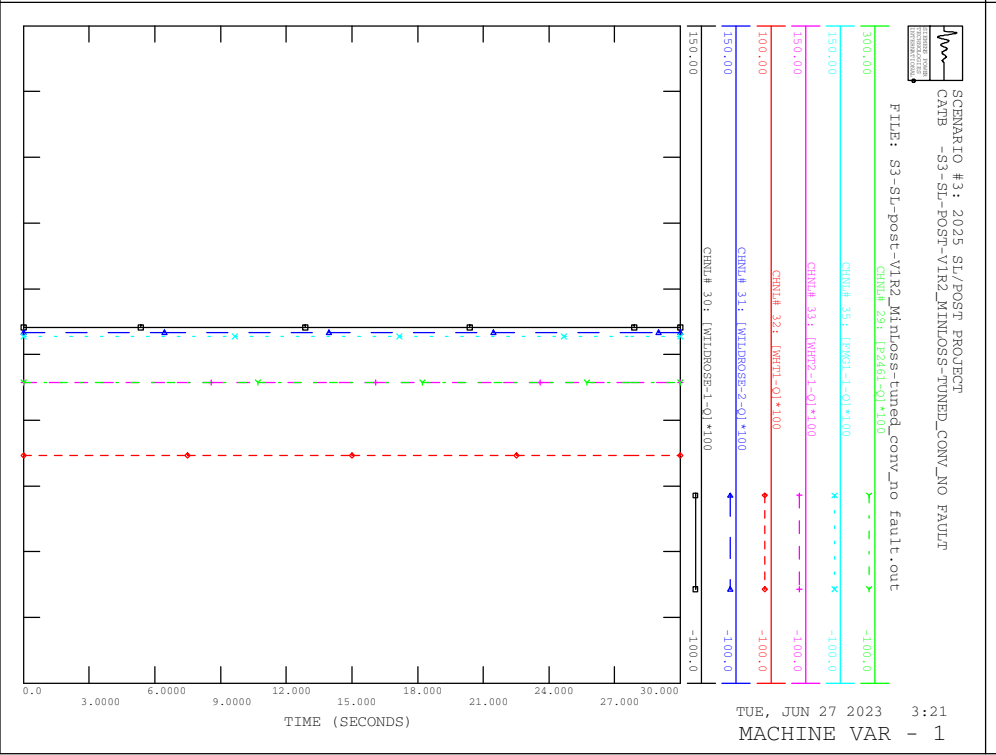
FIGURE B-4-8: 2025-SCN4-SP-POST.SAV
CATEGORY B - 1074L (BOWMANTON 244S TO P2122/ELKWATER 264S)
FRI, SEP 01 2023 0:51

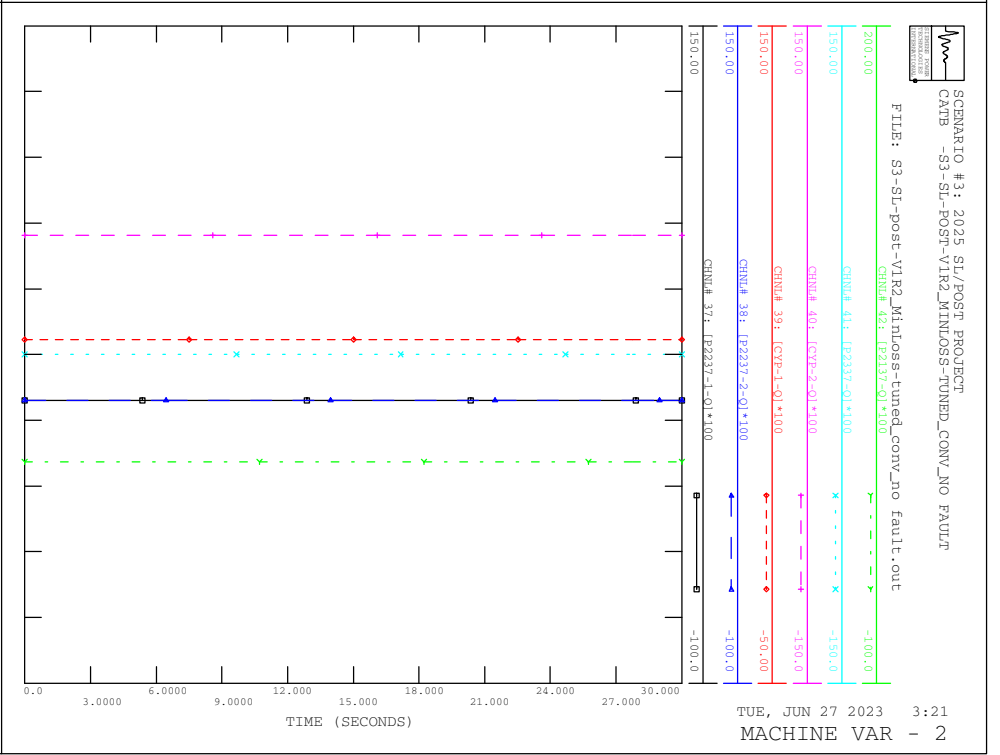
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

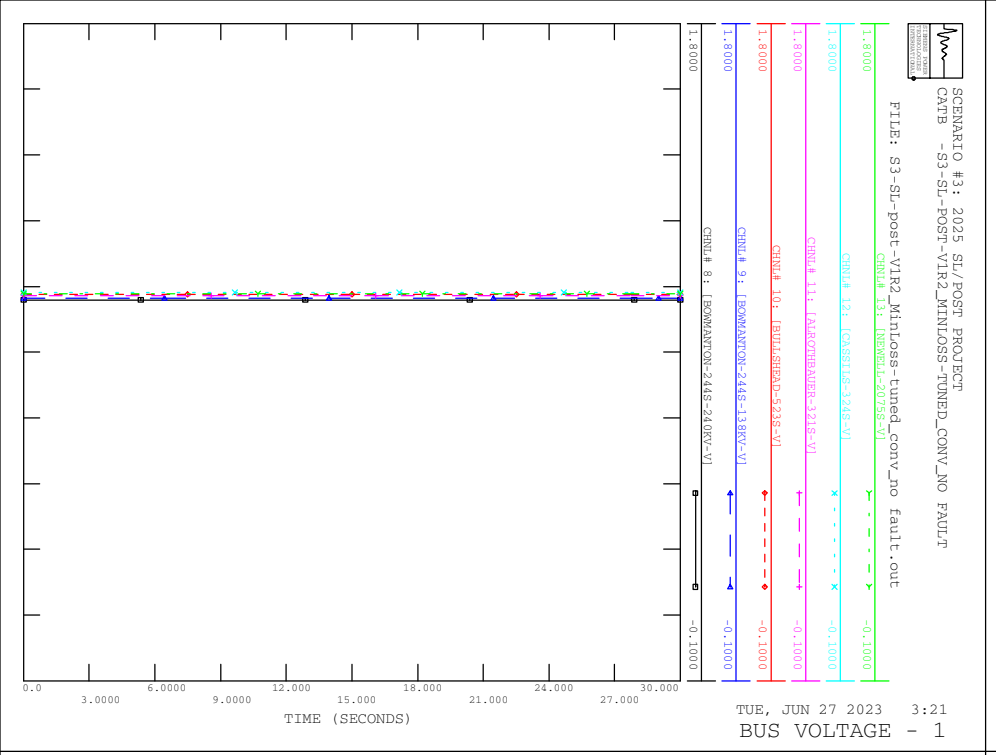
Attachment A4
Post-Project Transient Stability Diagrams

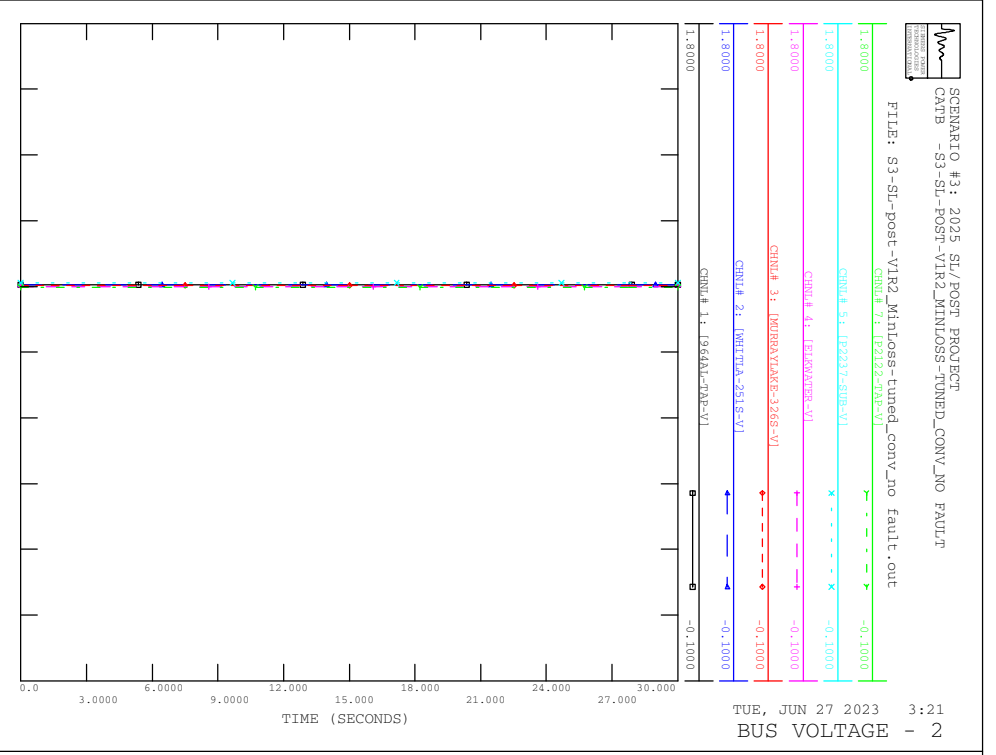

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 14: [P2461-P]*100
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

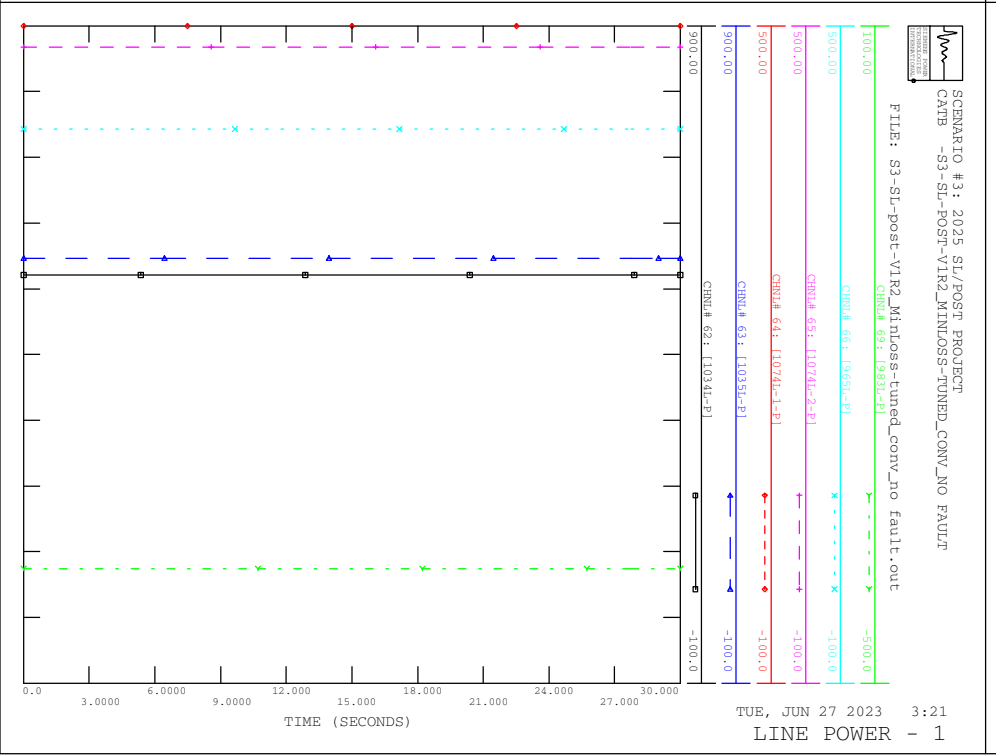

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

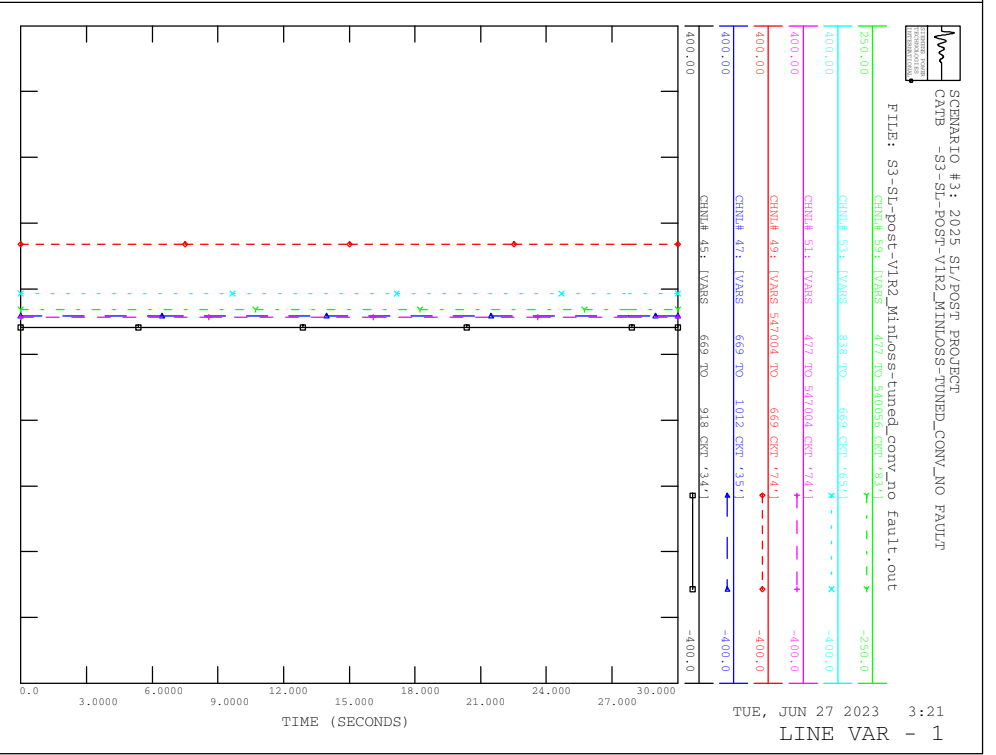

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 29: [P2461-Q]*100
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

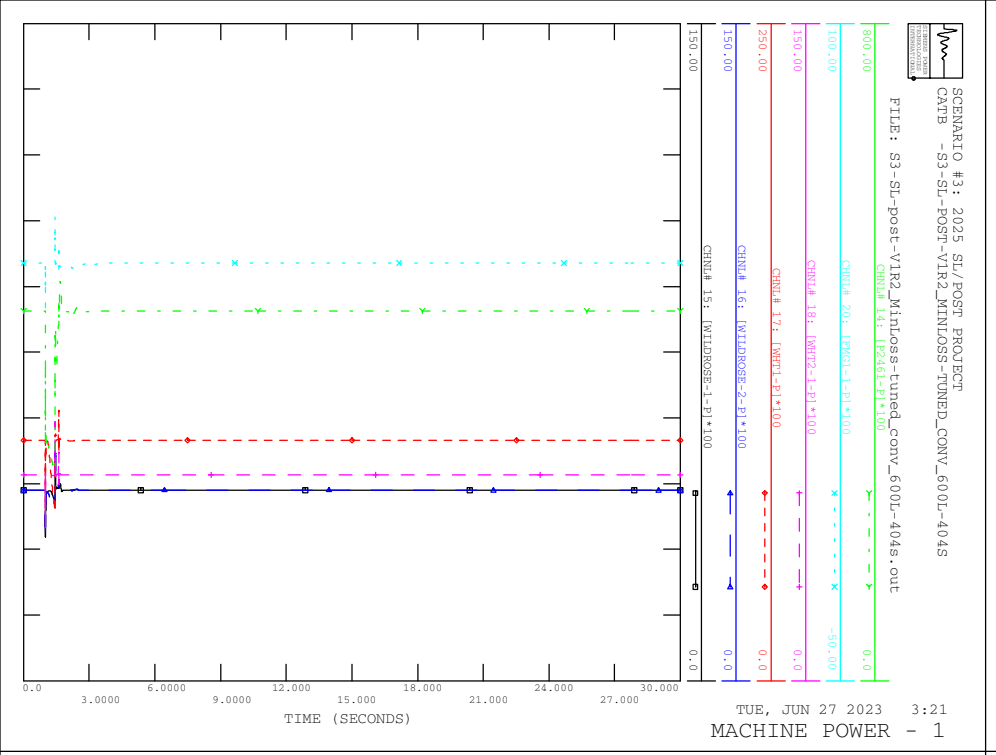

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

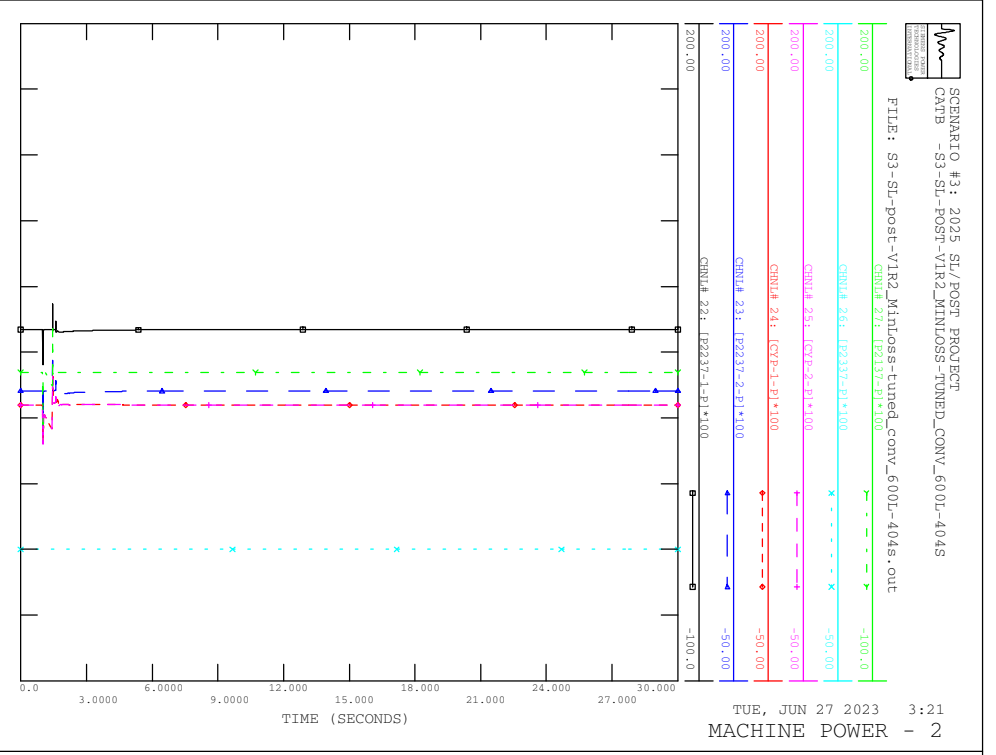

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWGLE-2075S-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

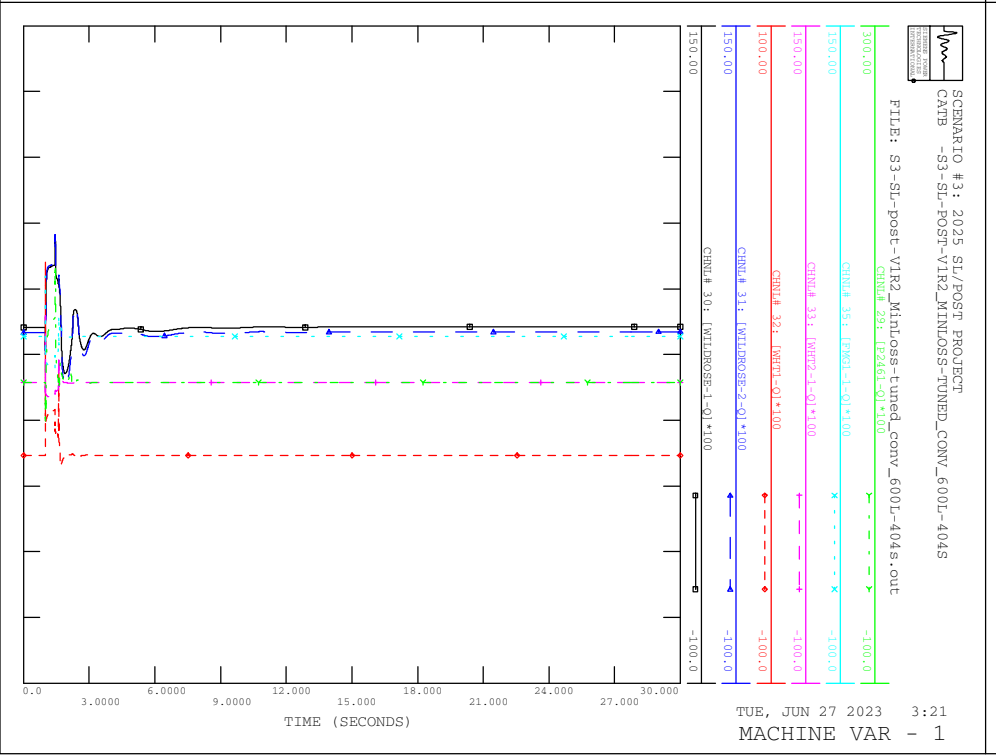

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

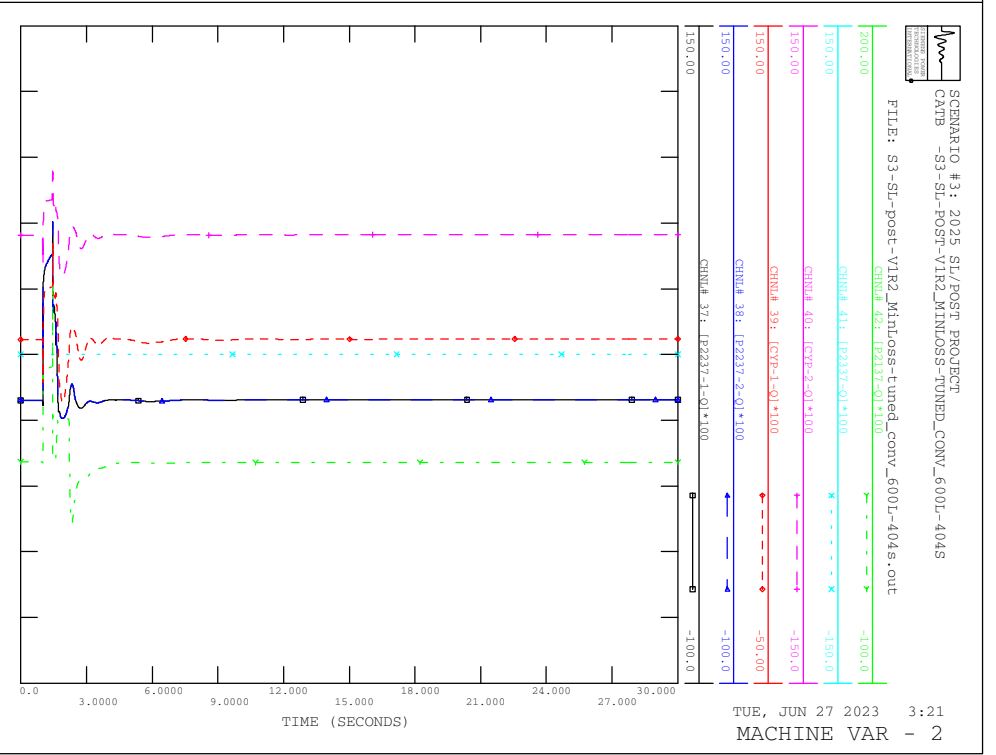

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [985L-P]
900.00
-100.0
500.00
100.00
-500.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

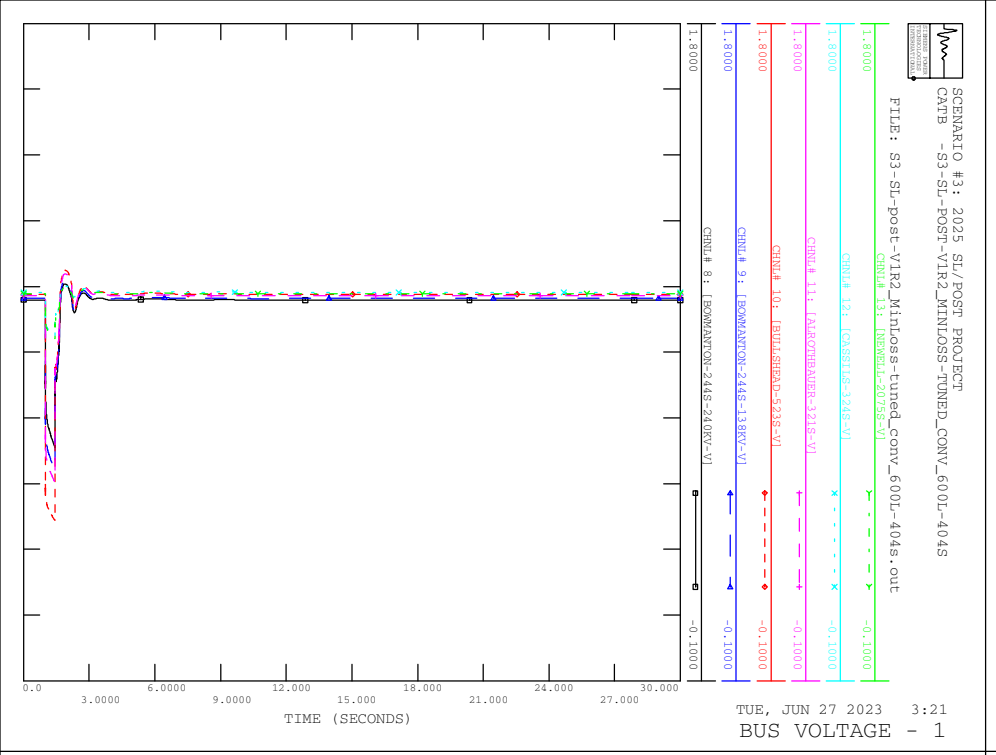

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_NO FAULT
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_no fault.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
400.00
-400.0
250.00
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

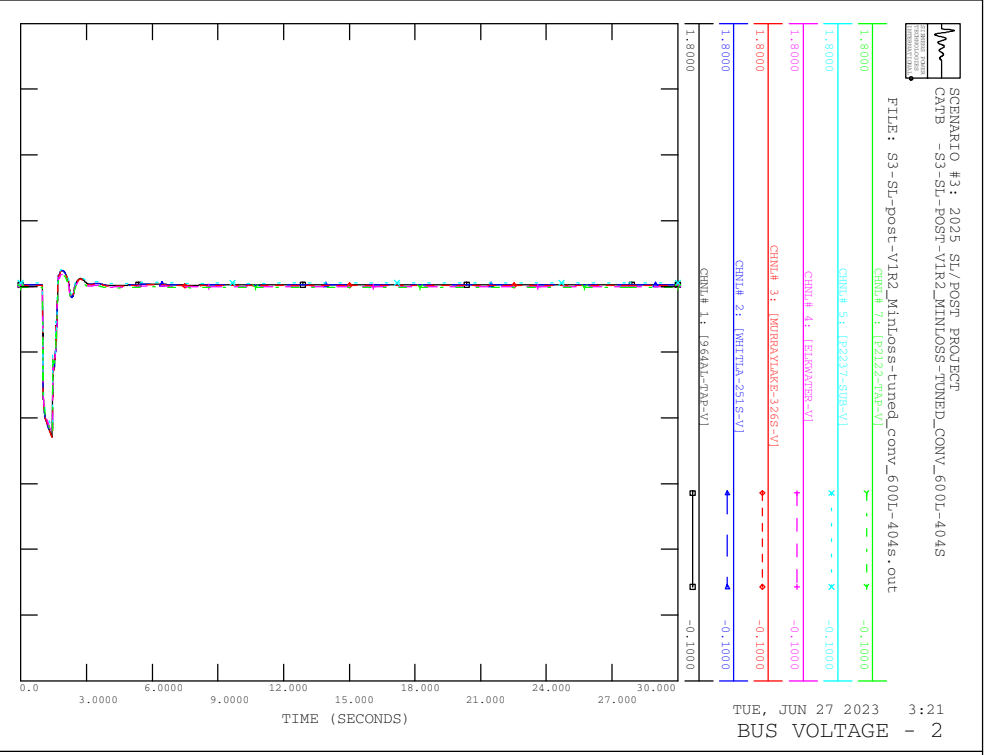

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PNG1-1-P]*100
CHNL# 24: [PZ461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

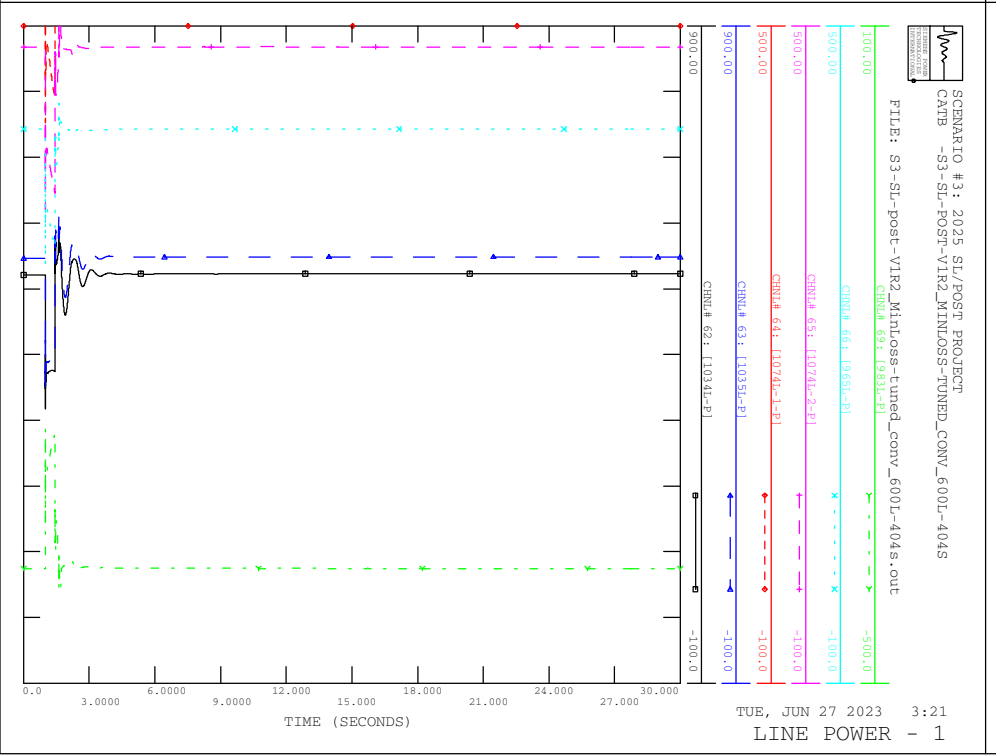

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 22: [PZ237-1-P]*100
CHNL# 23: [PZ237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [PZ137-P]*100
CHNL# 27: [PZ137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

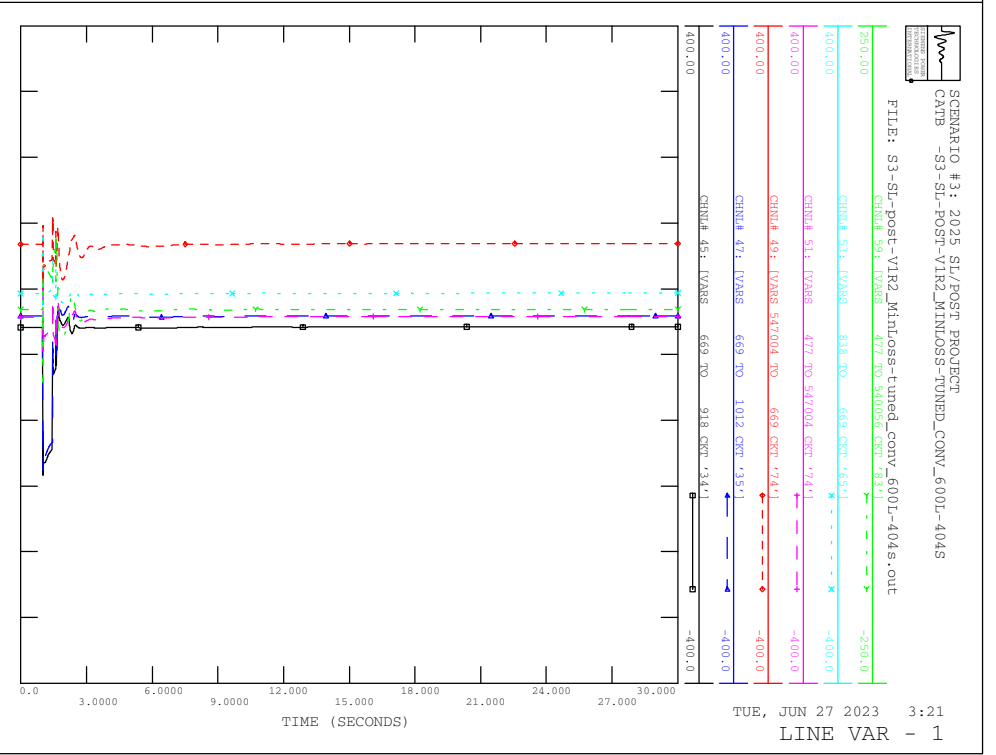

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PNG1-1-Q]*100
CHNL# 39: [PZ461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

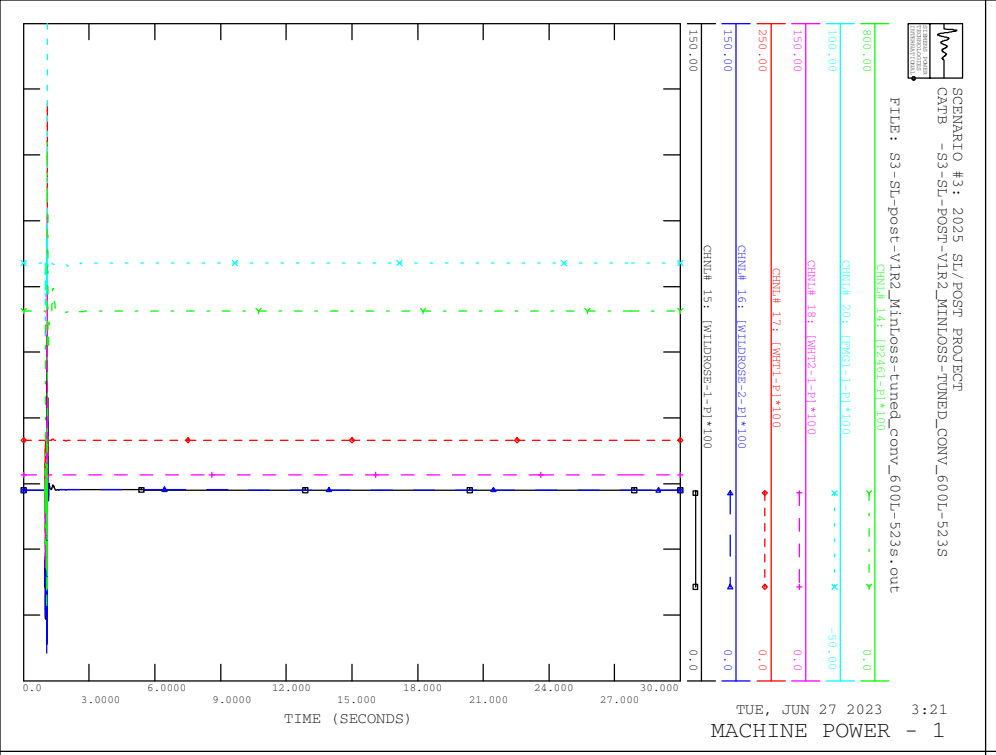

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 37: [PZ237-1-Q]*100
CHNL# 38: [PZ237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [PZ237-Q]*100
CHNL# 42: [PZ137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

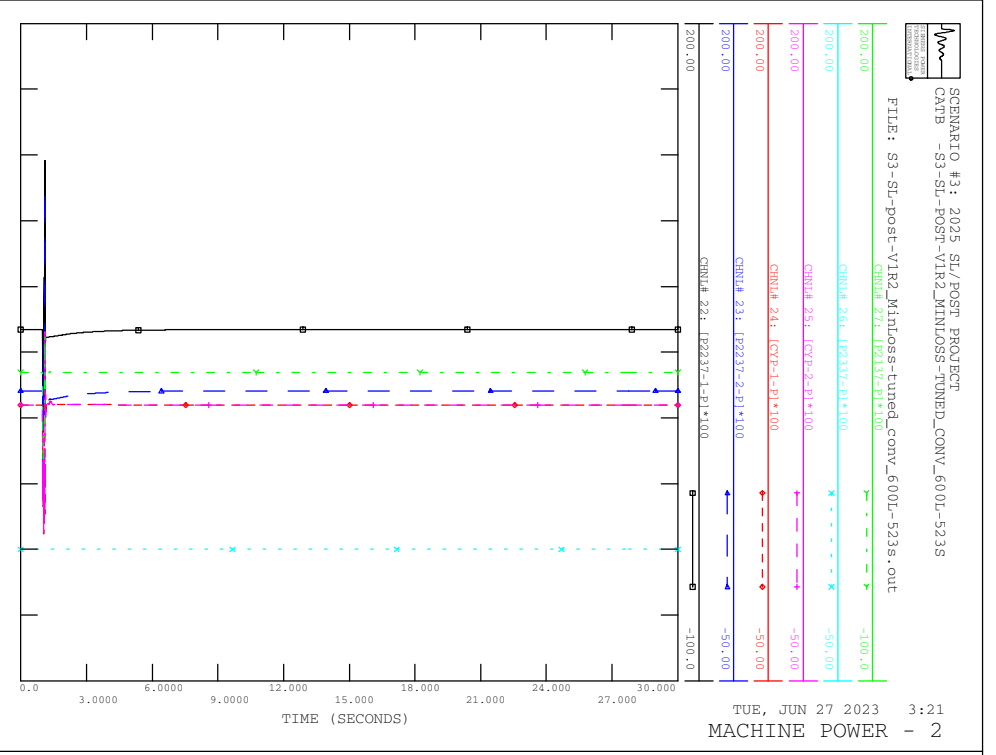

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NENANA-207S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

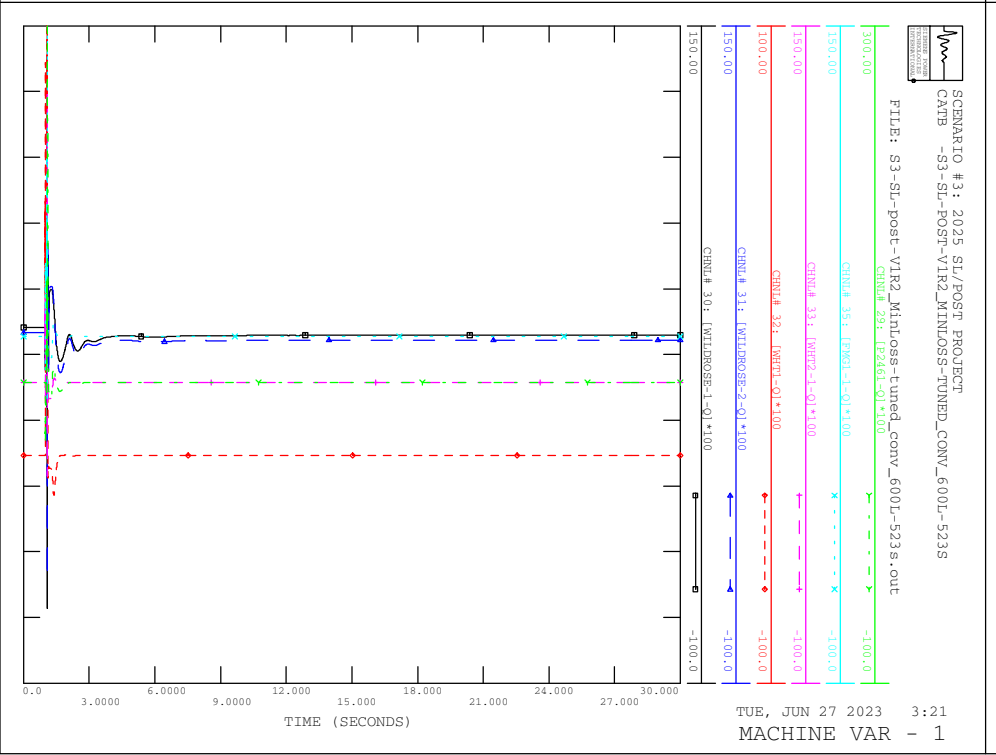

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 1: [964AA-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELEWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

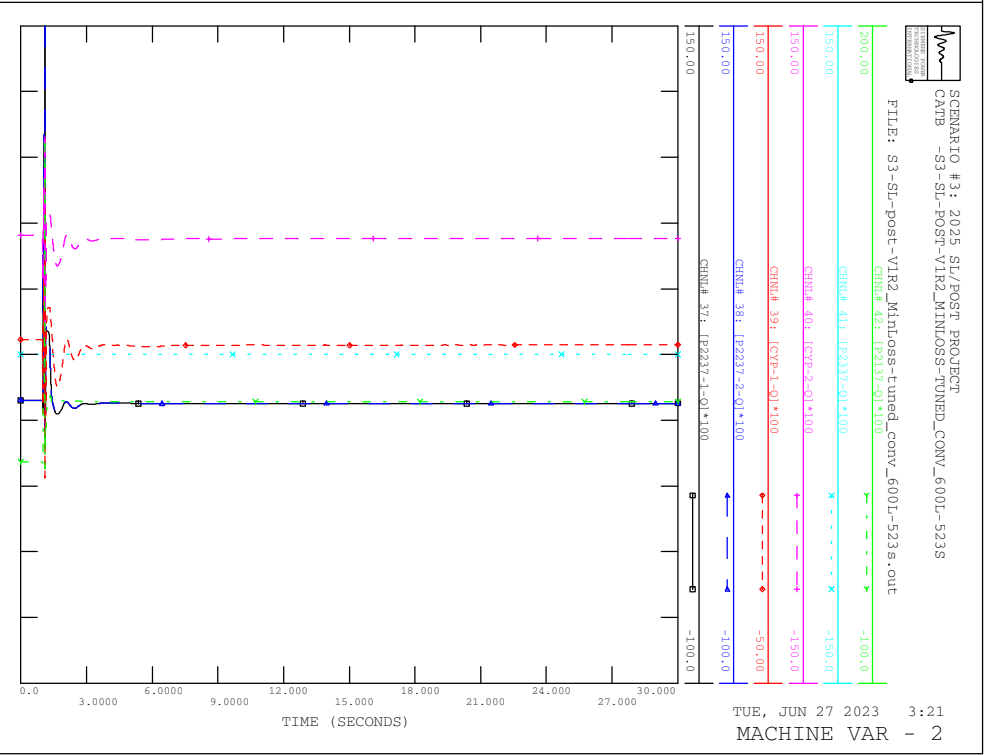

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

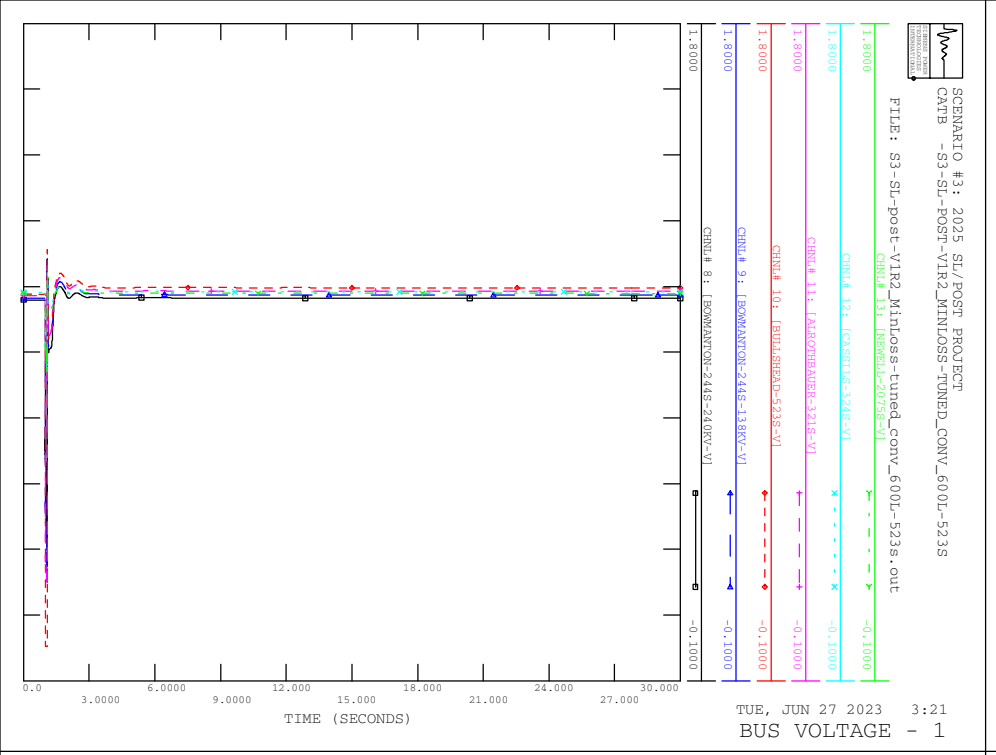

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-404S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-404s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

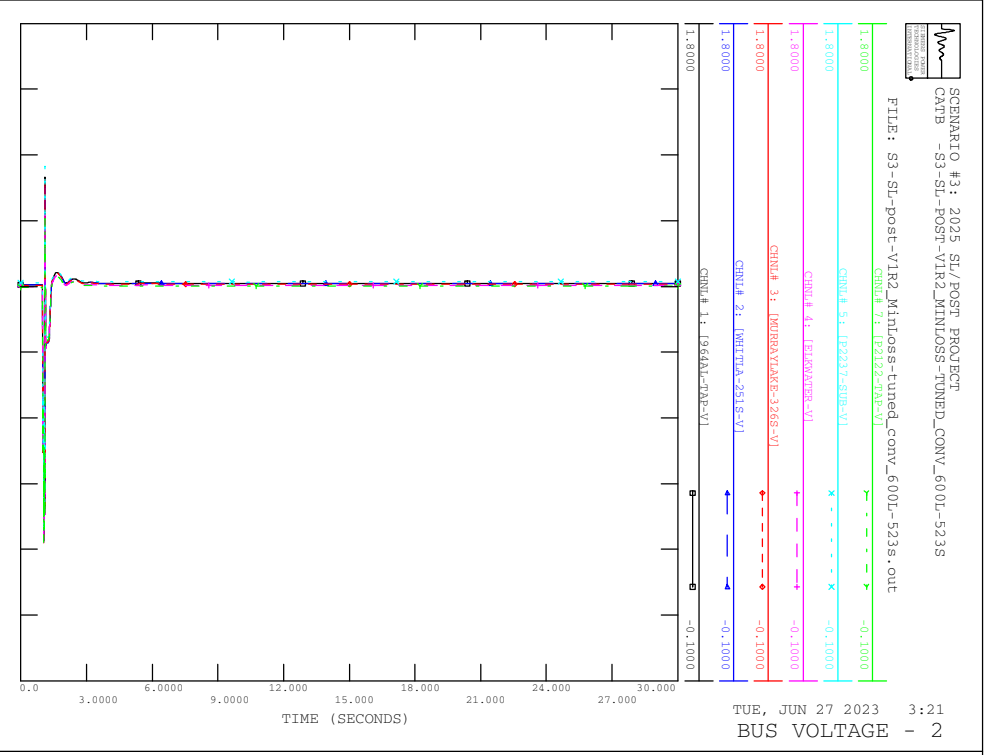

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_600L-523s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHFT1-P]*100
CHNL# 18: [NHFT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

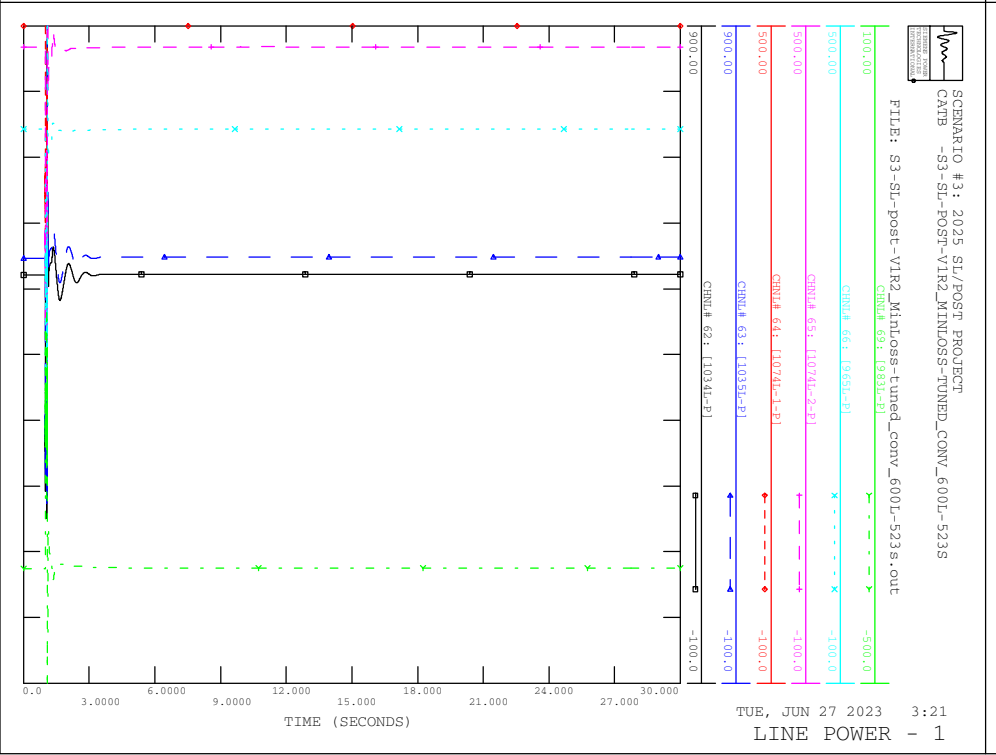

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_600L-523s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

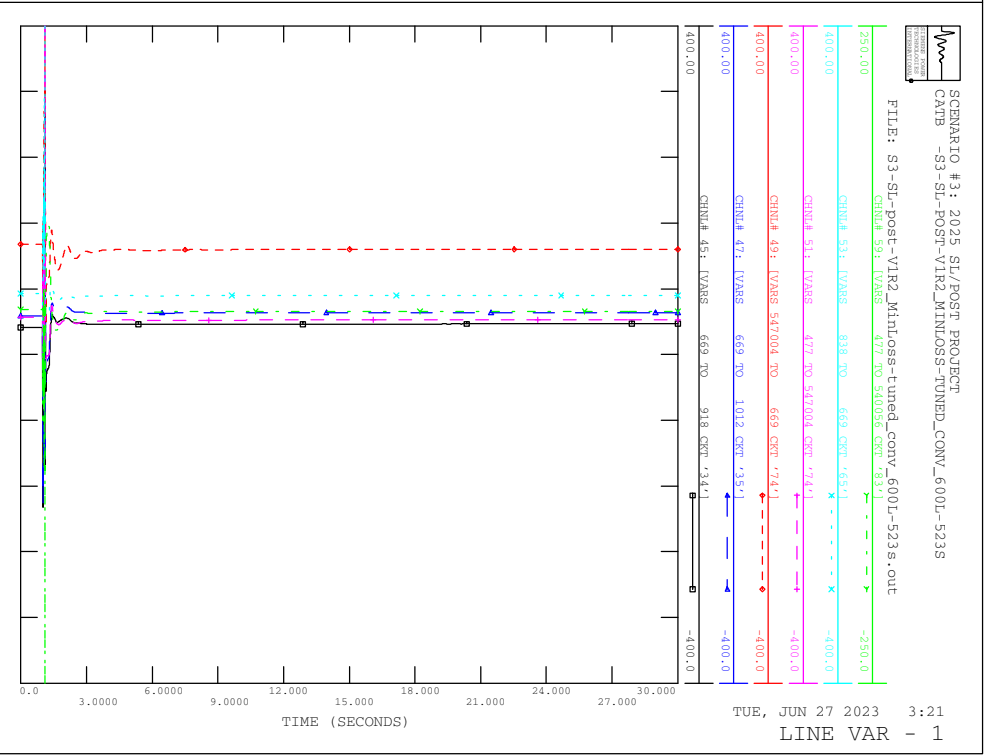

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_600L-523s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHFT1-Q]*100
CHNL# 33: [NHFT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

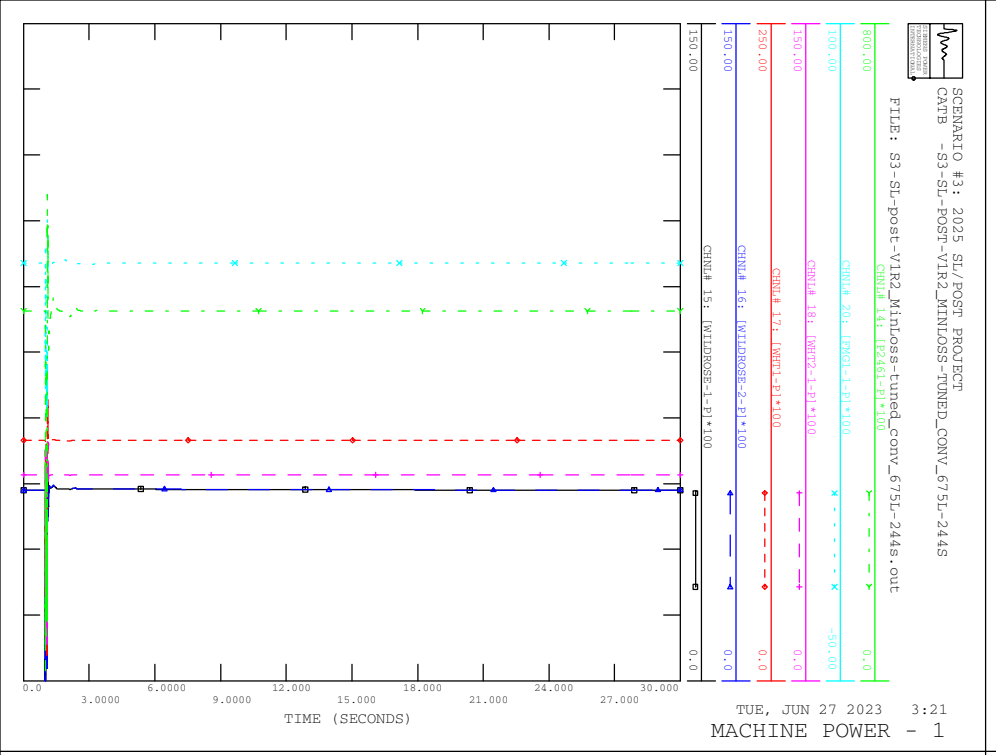

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_600L-523s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

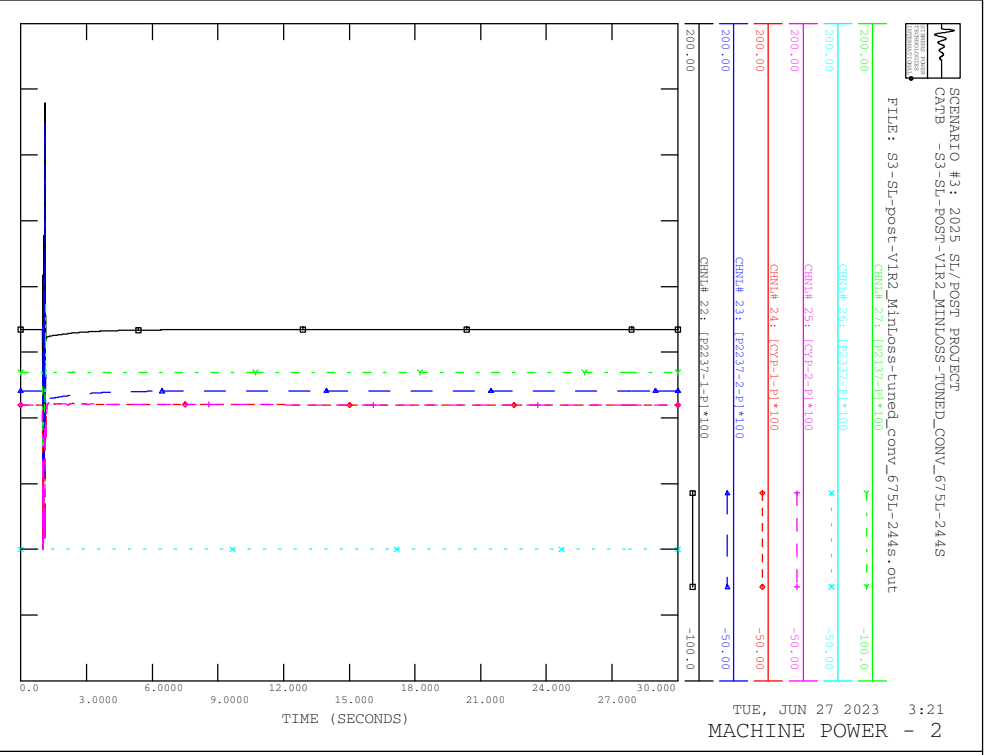

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-523s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NENANA-207S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

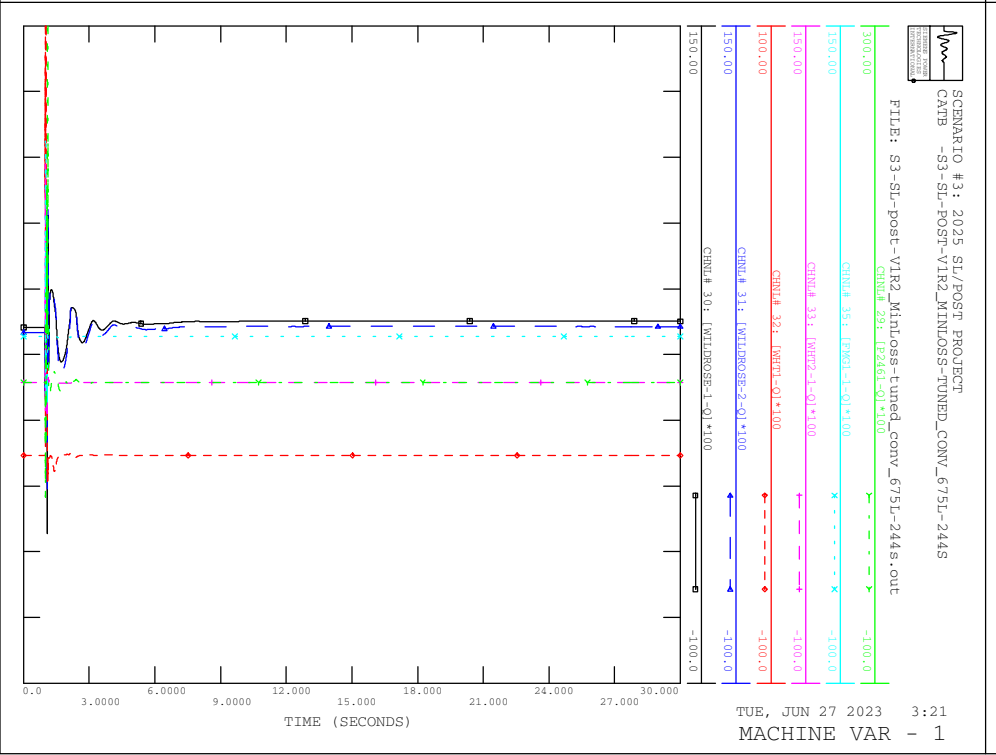

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-523s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELEWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

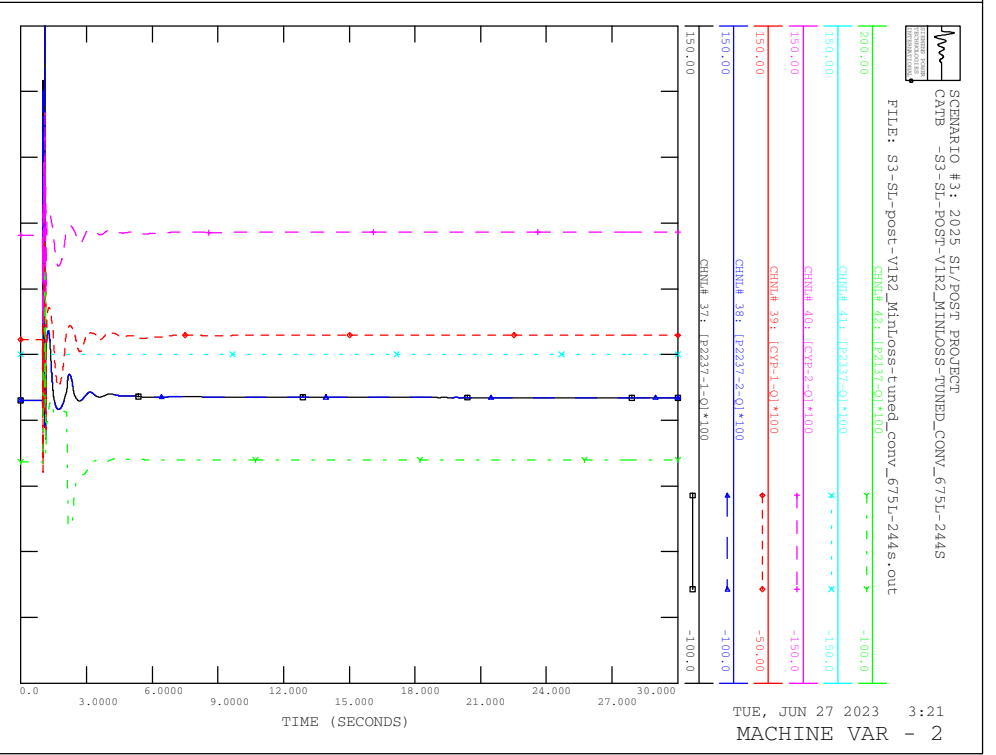

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-523s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

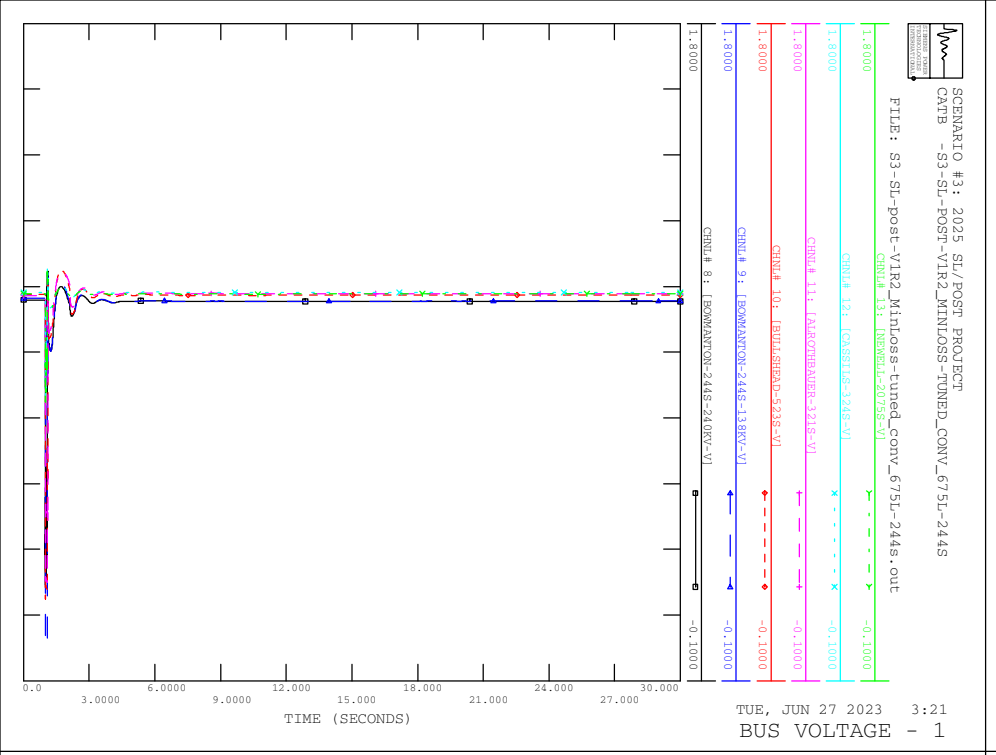

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_600L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_600L-523s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

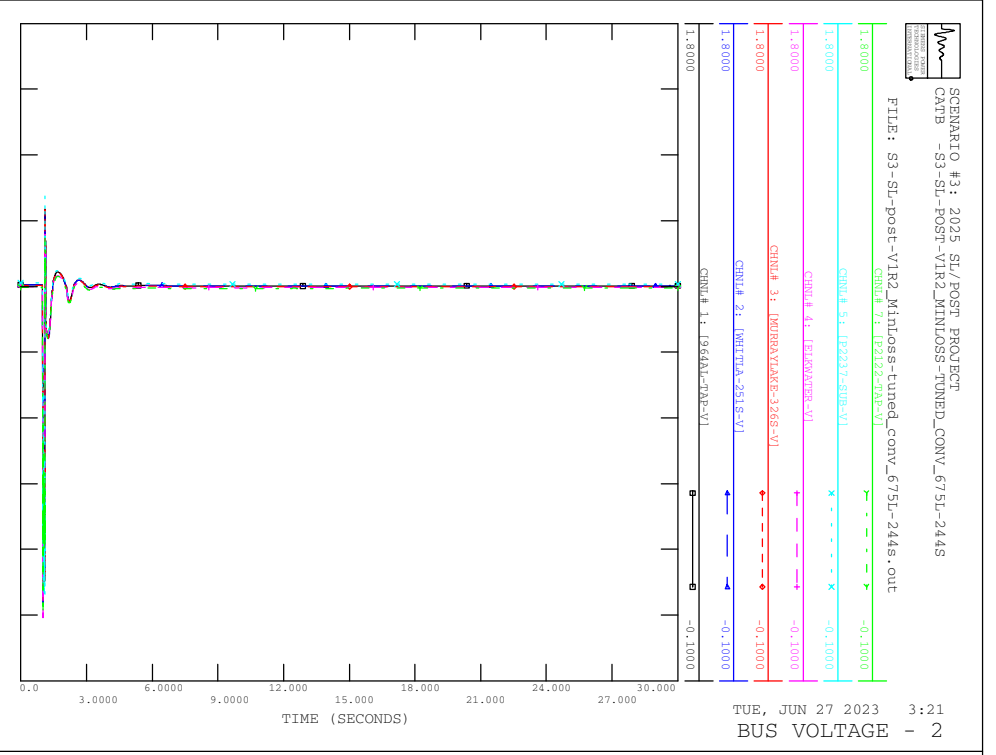

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 24: [PWG1-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

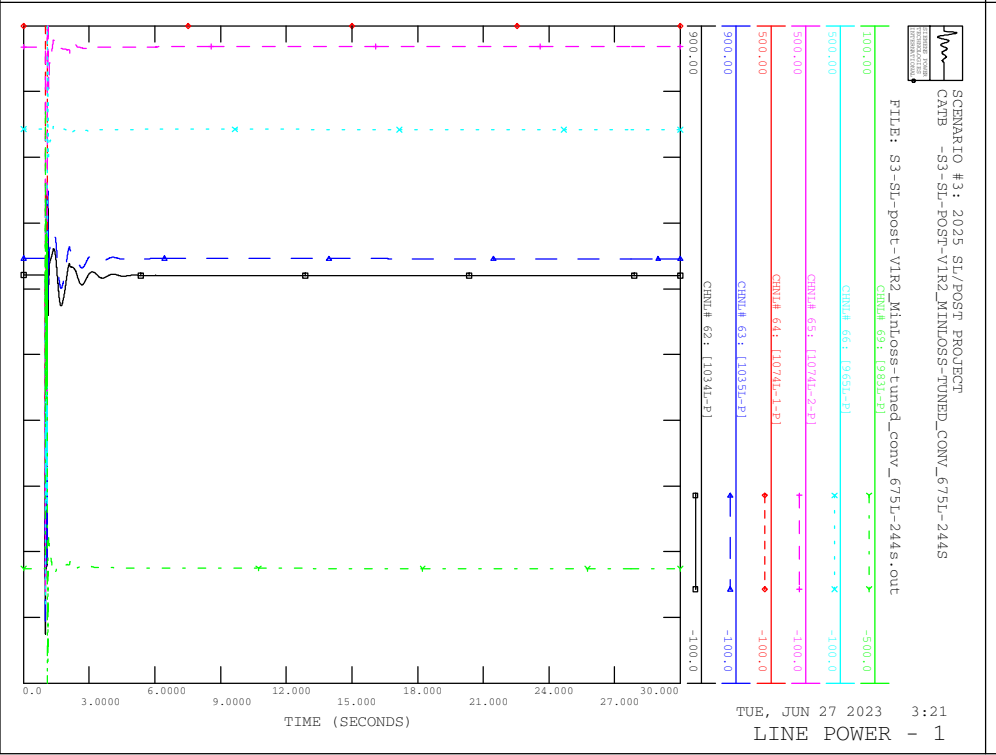

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

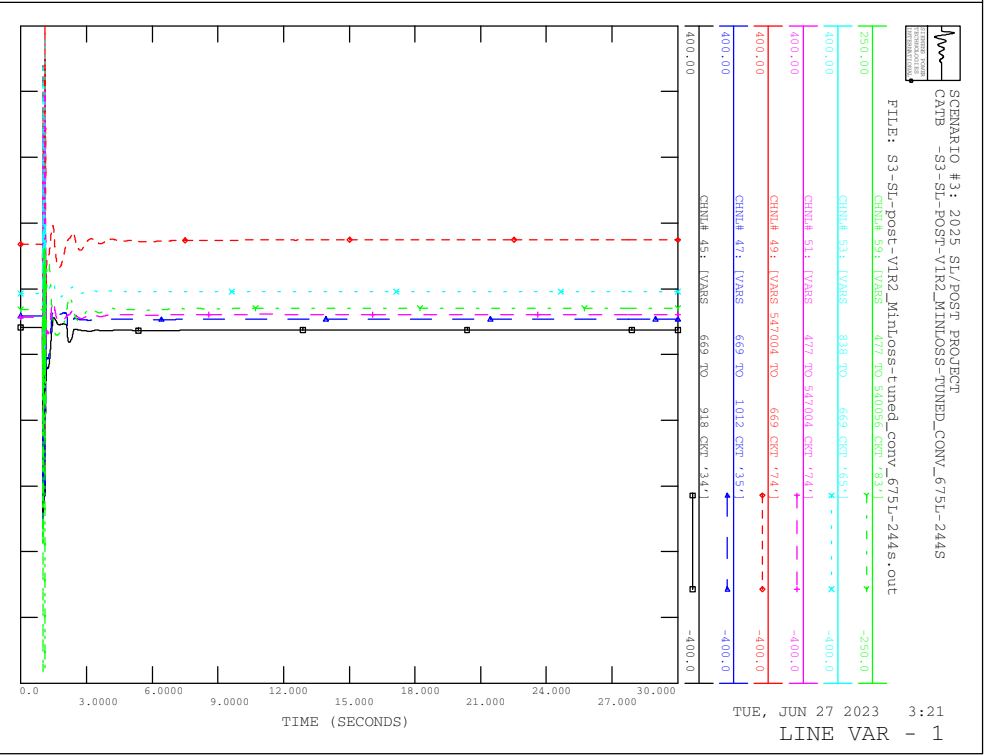

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 39: [PWG1-1-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

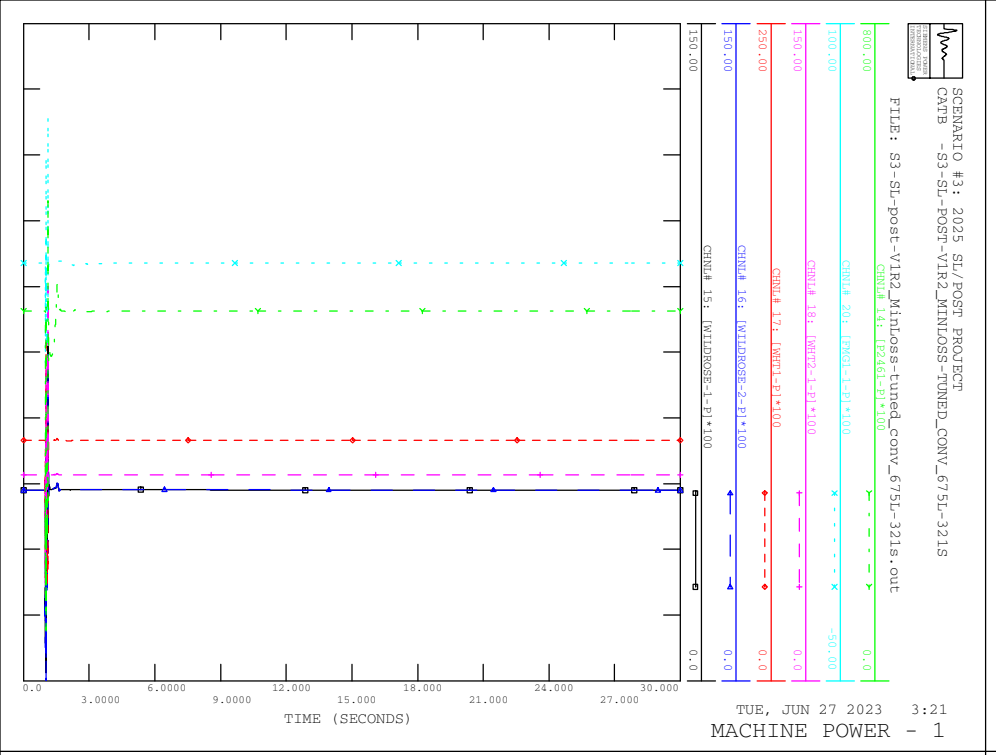

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

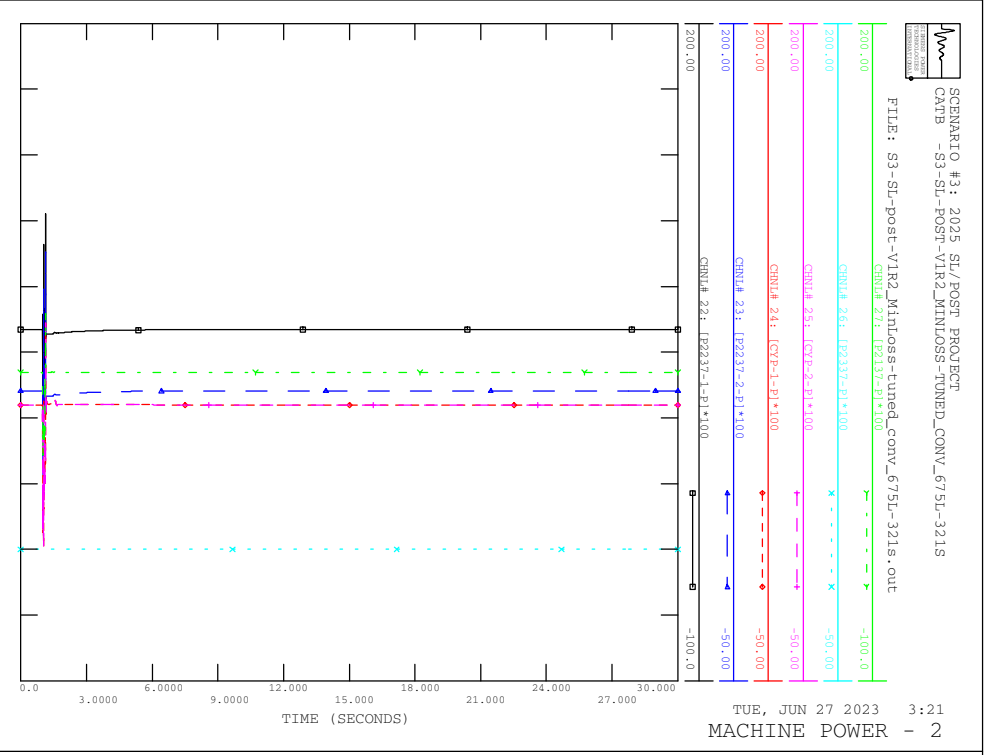

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NENANA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

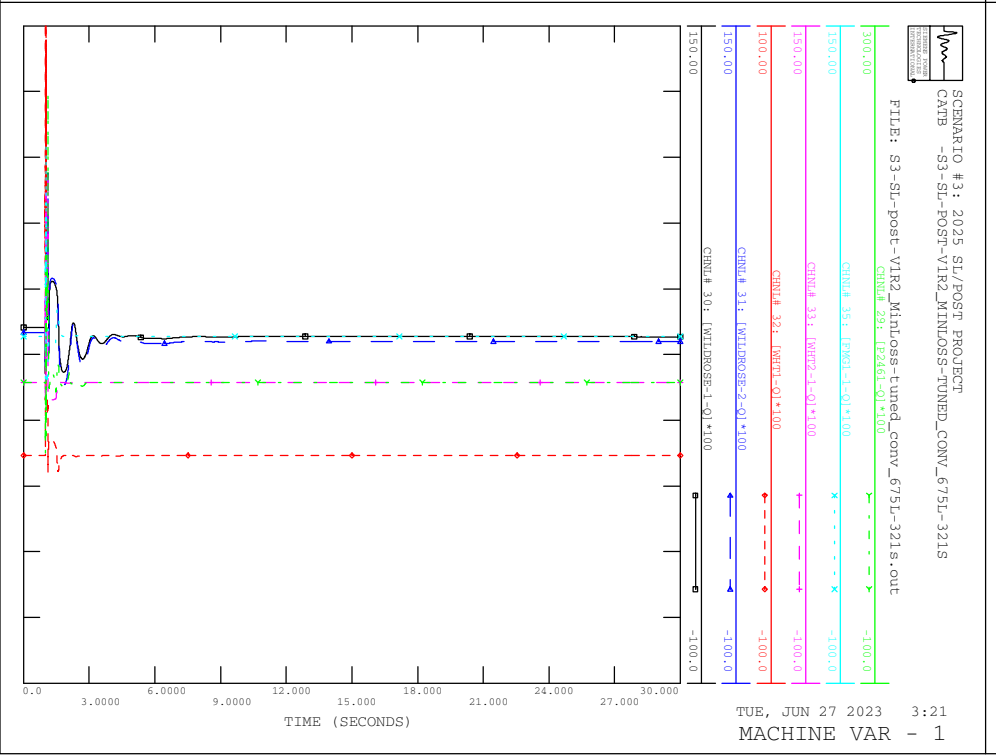

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 1: [964AA-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELEWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

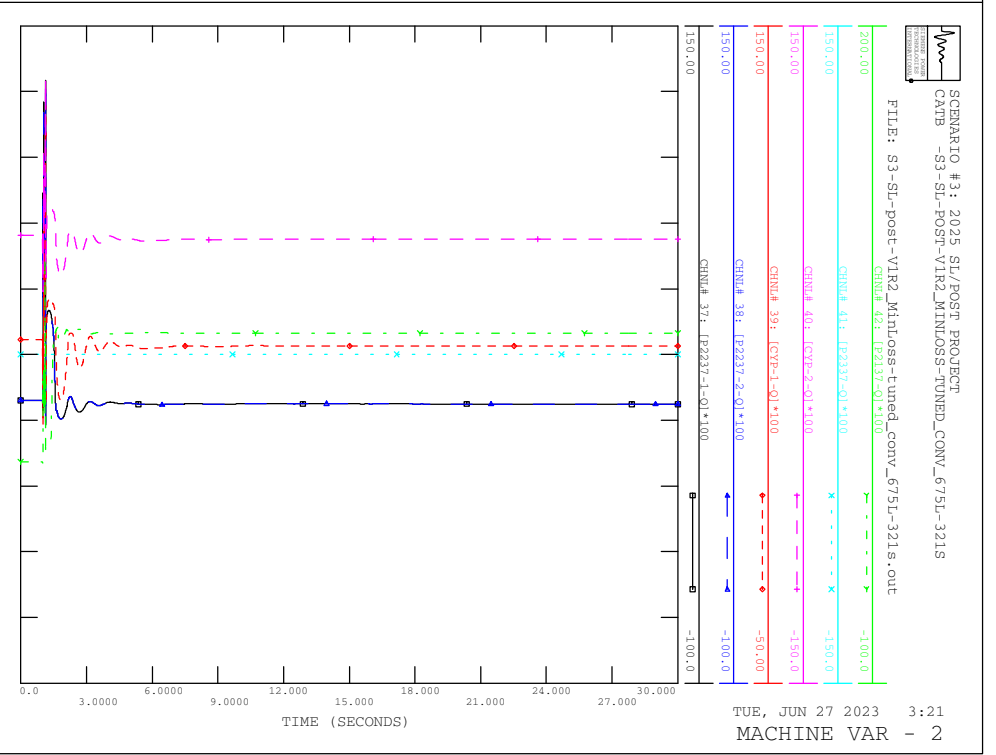

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

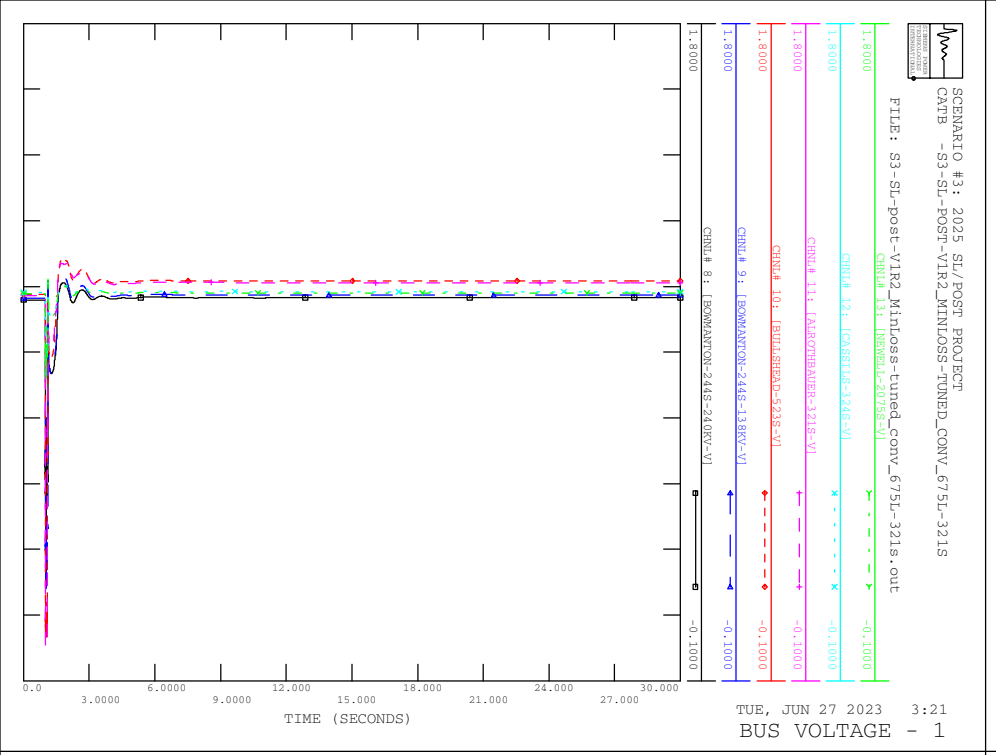

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

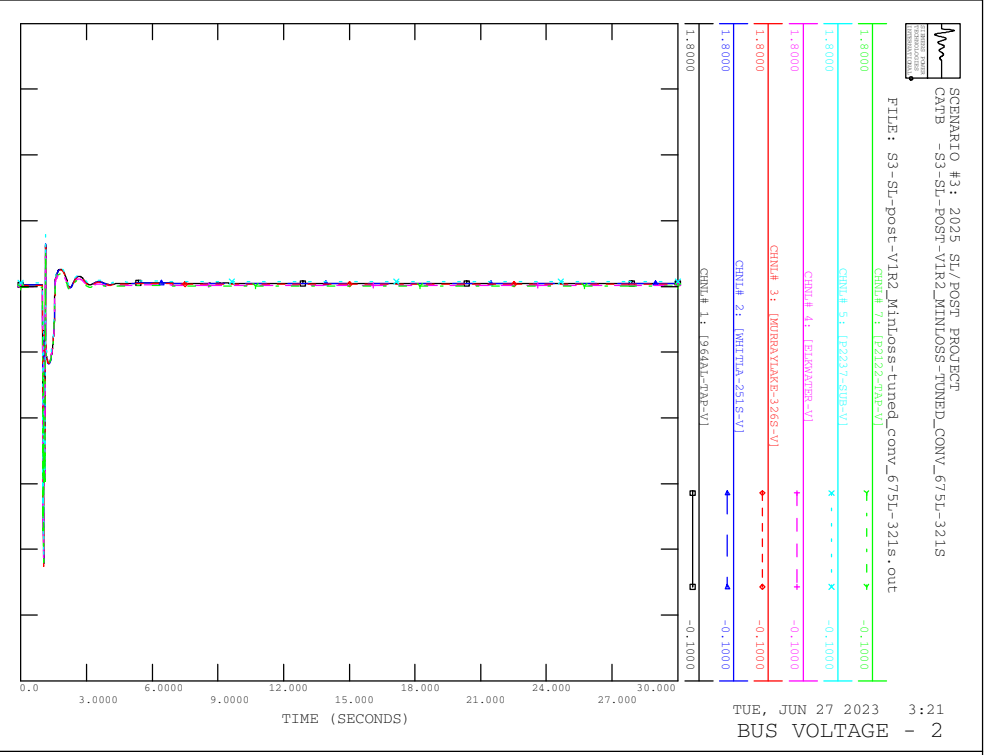

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-321s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

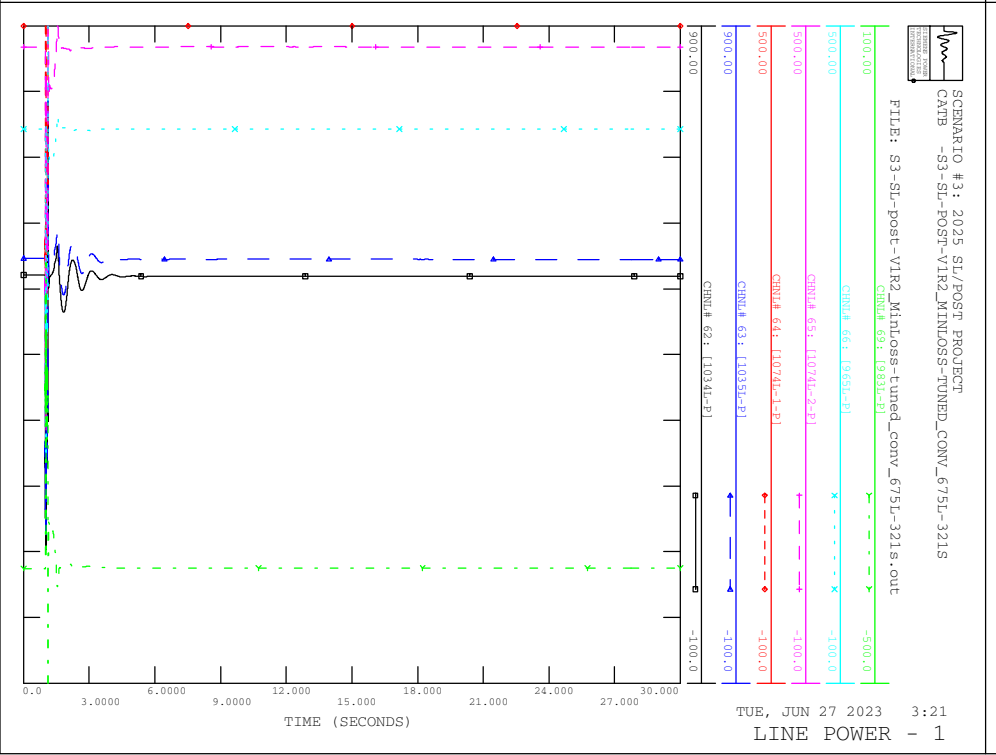

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-321s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

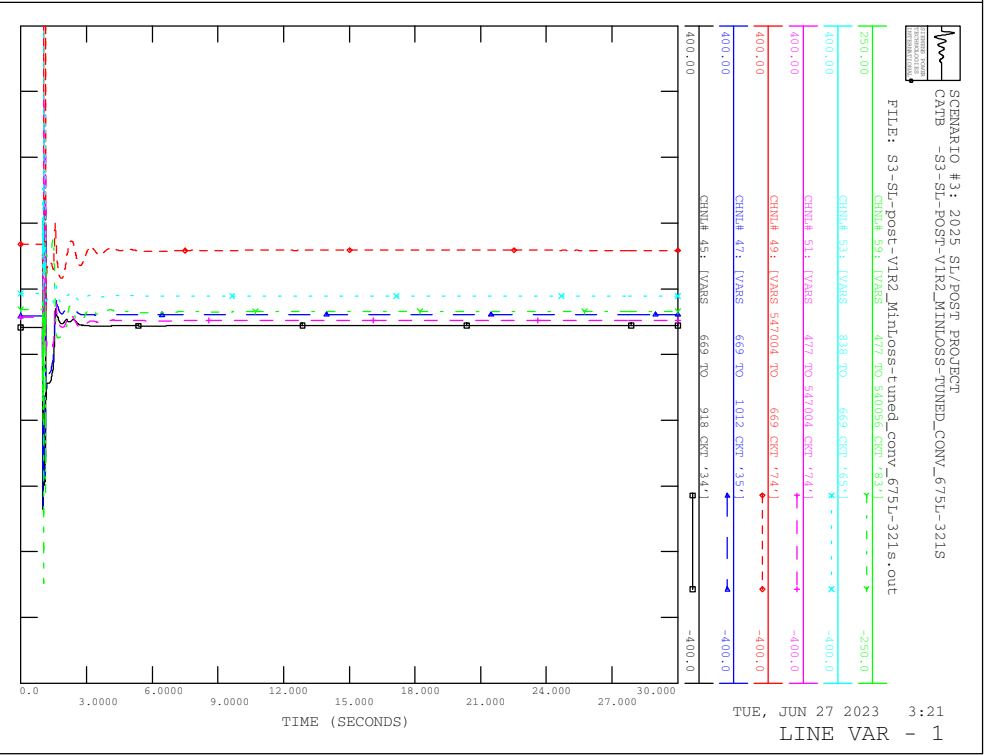

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-321s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

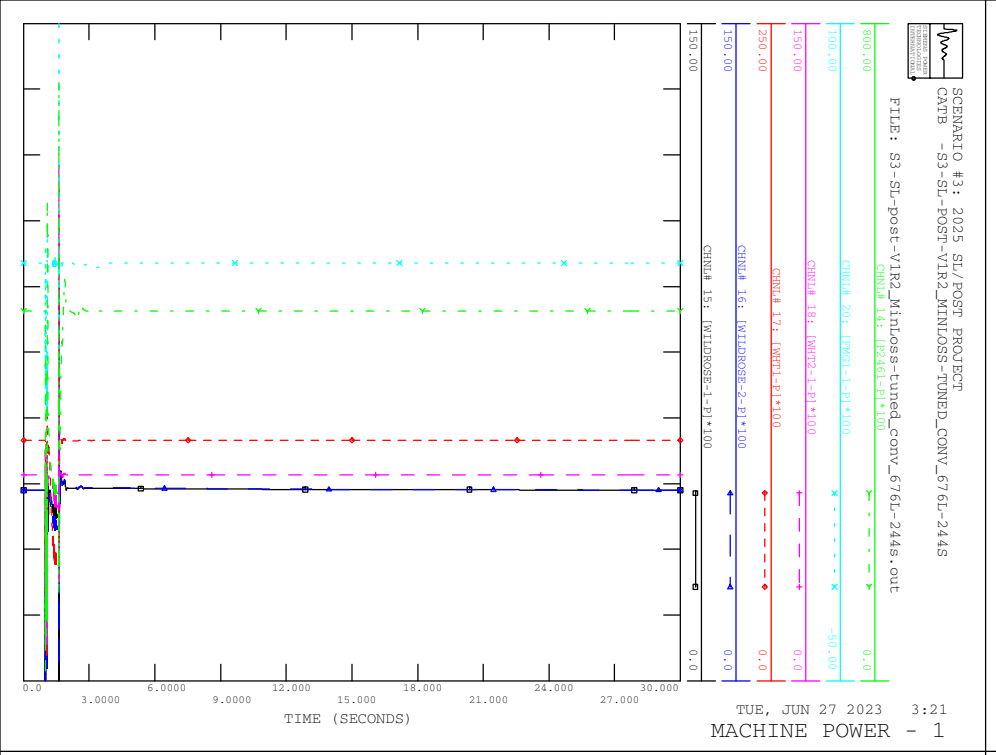

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_675L-321s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

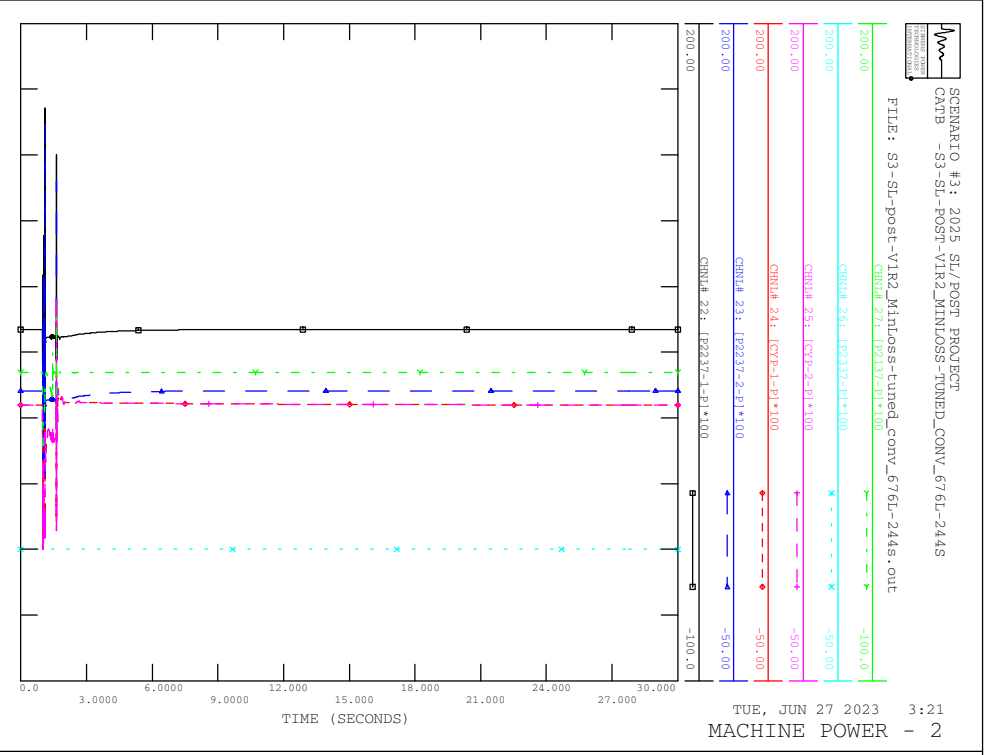

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_675L-321s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSIS-324S-V]
CHNL# 13: [NENANA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

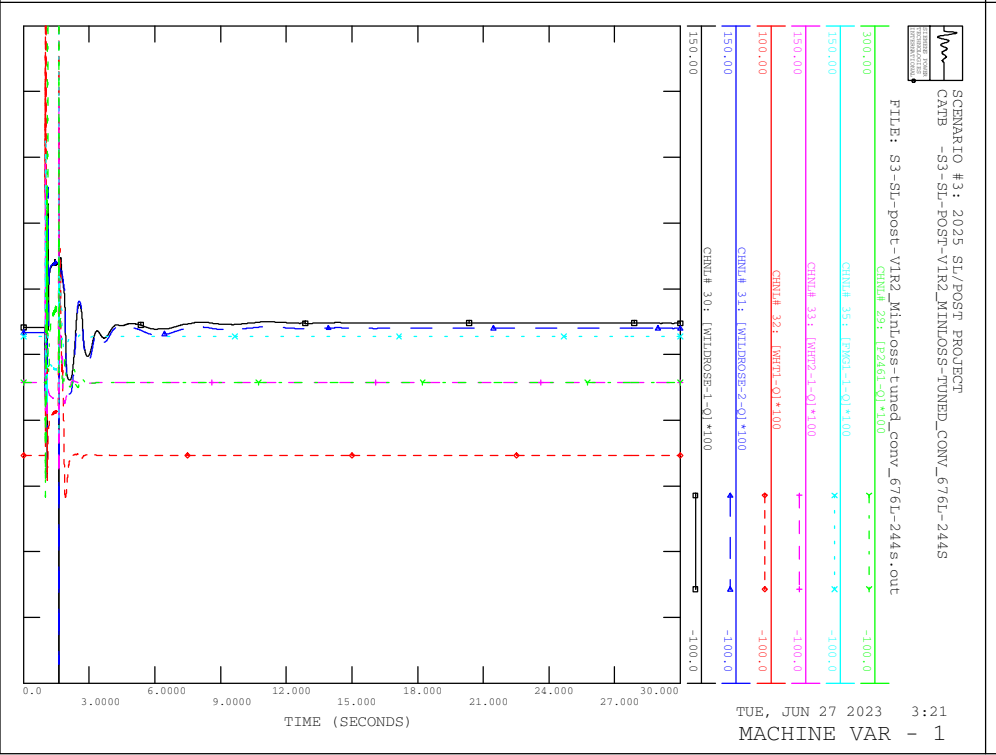

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_675L-321s.out
CHNL# 1: [964AA-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELEWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

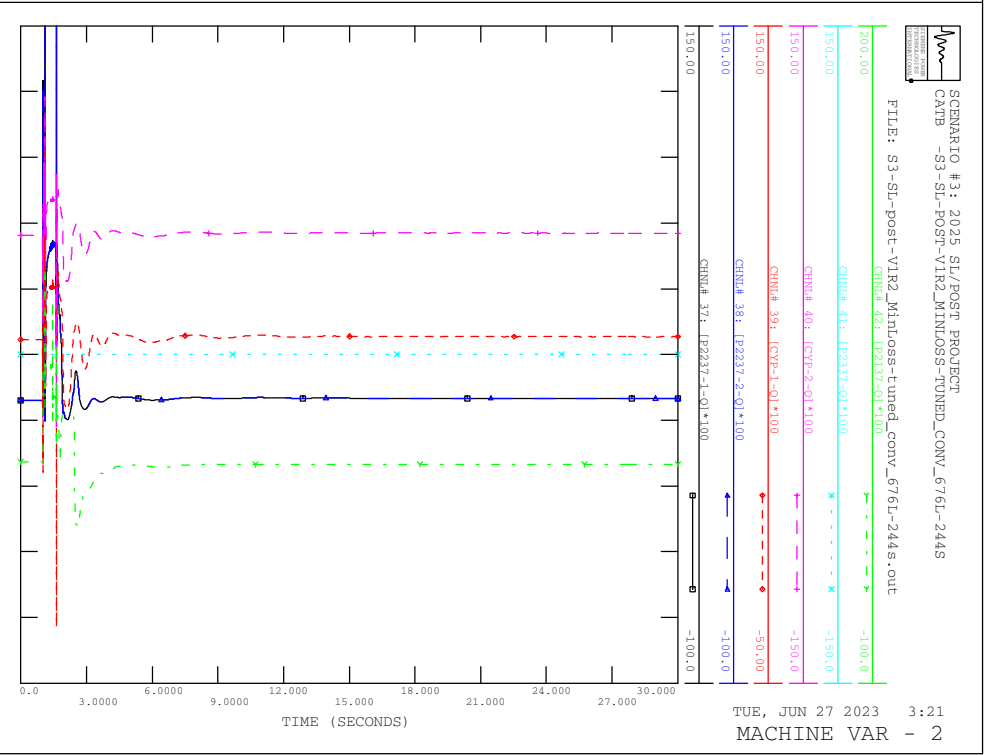

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_675L-321s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1065L-P]
CHNL# 69: [1055L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

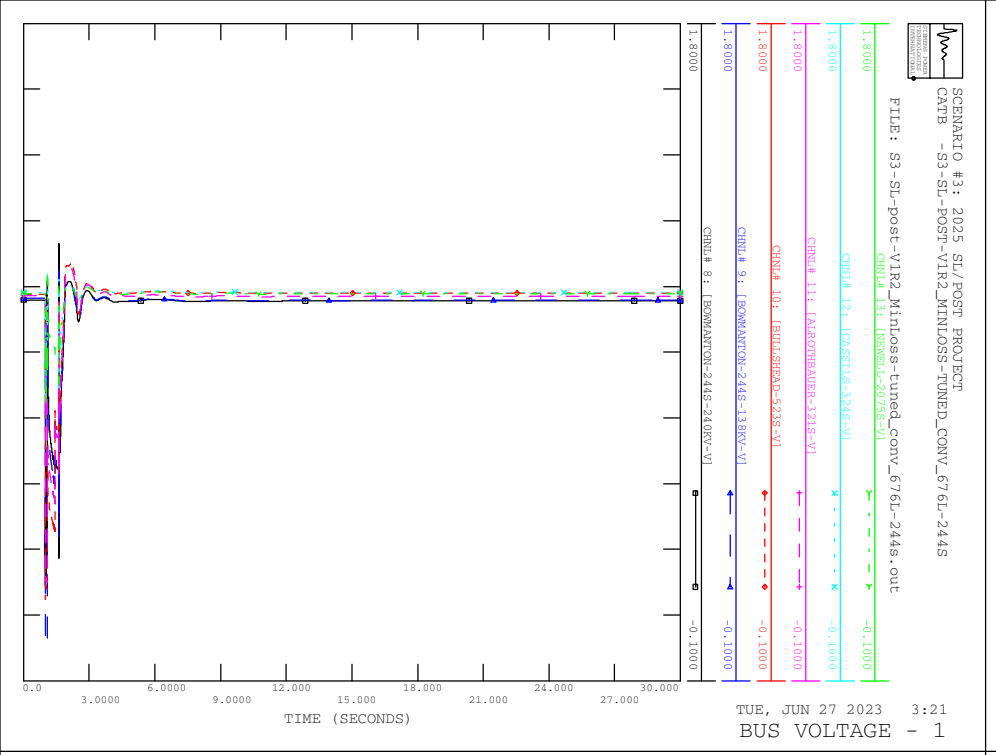

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_675L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_675L-321s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

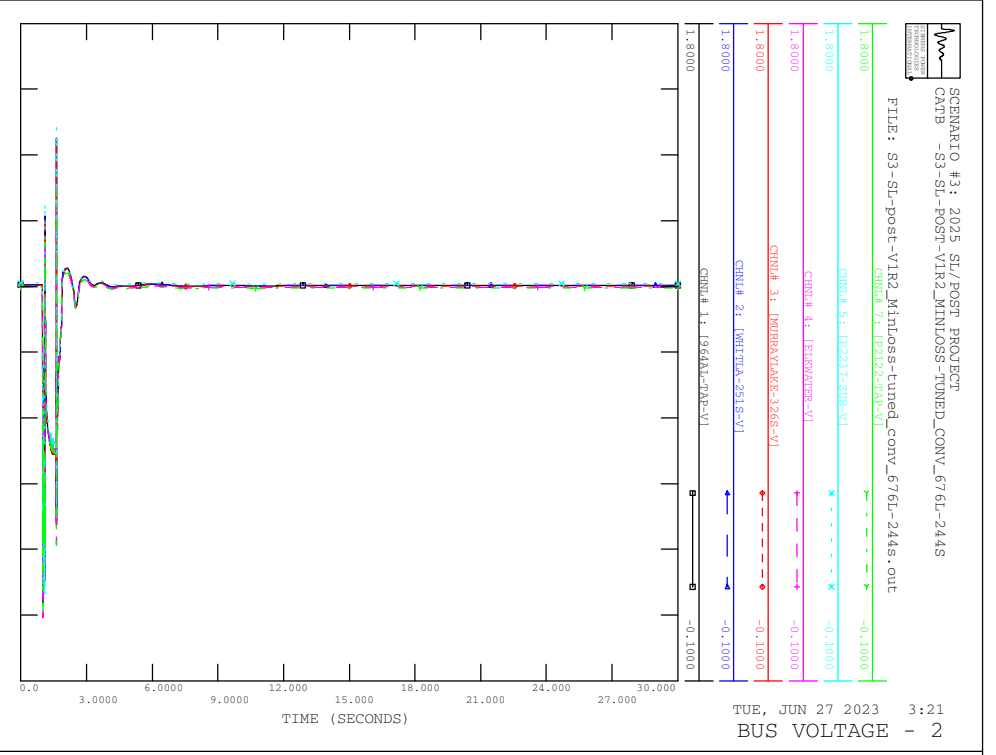

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PNG1-1-P]*100
CHNL# 24: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

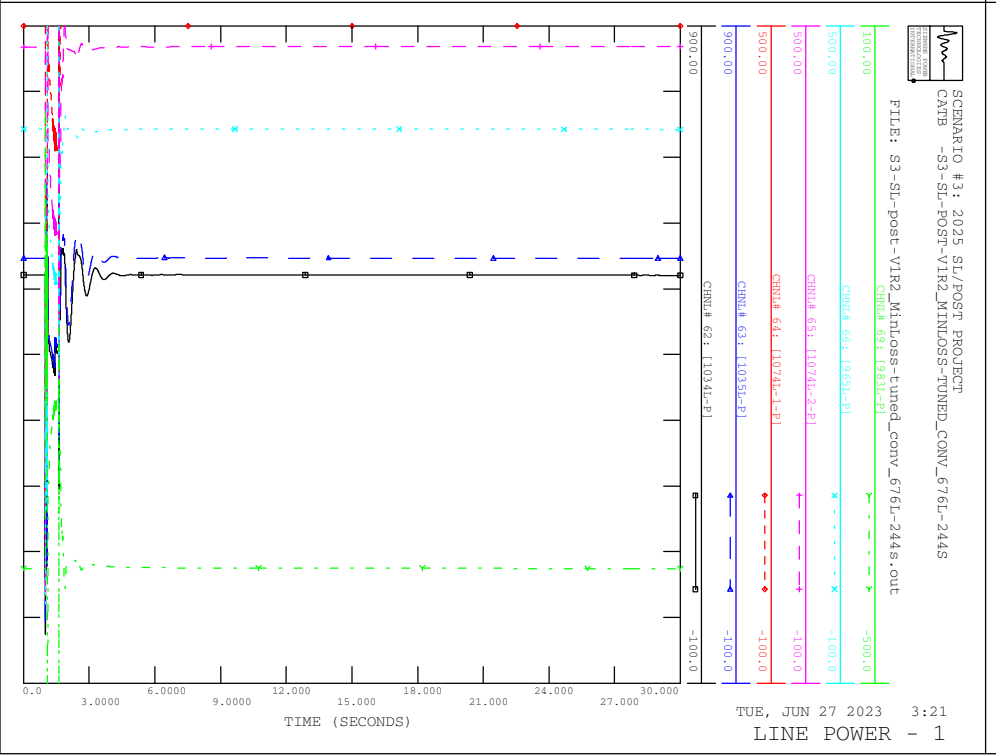

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

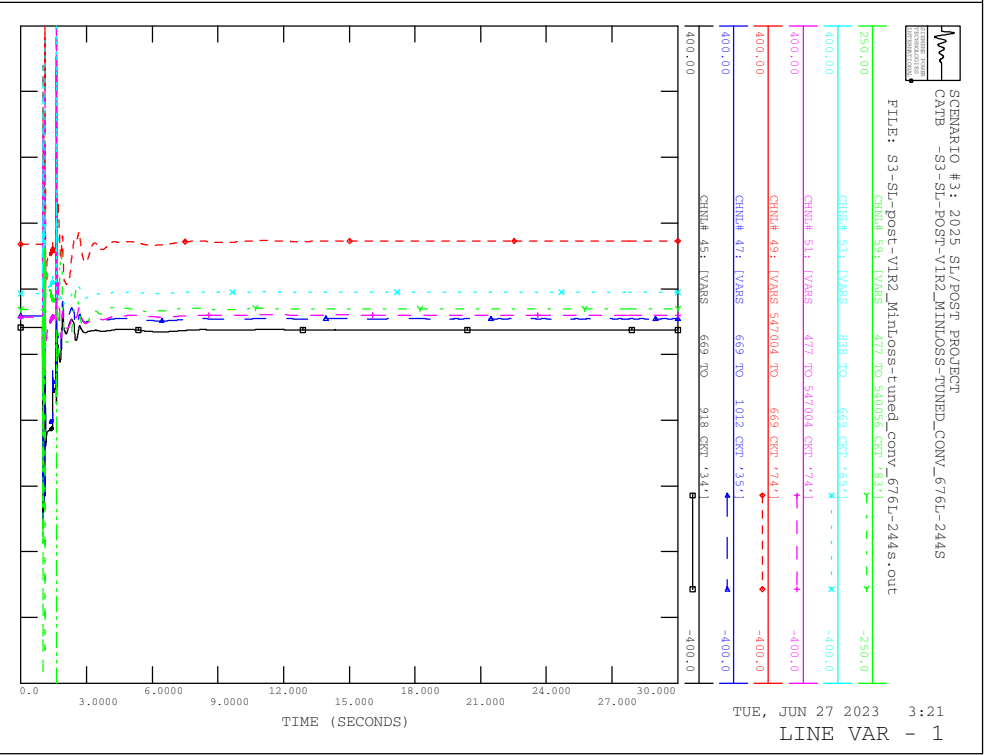

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PNG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

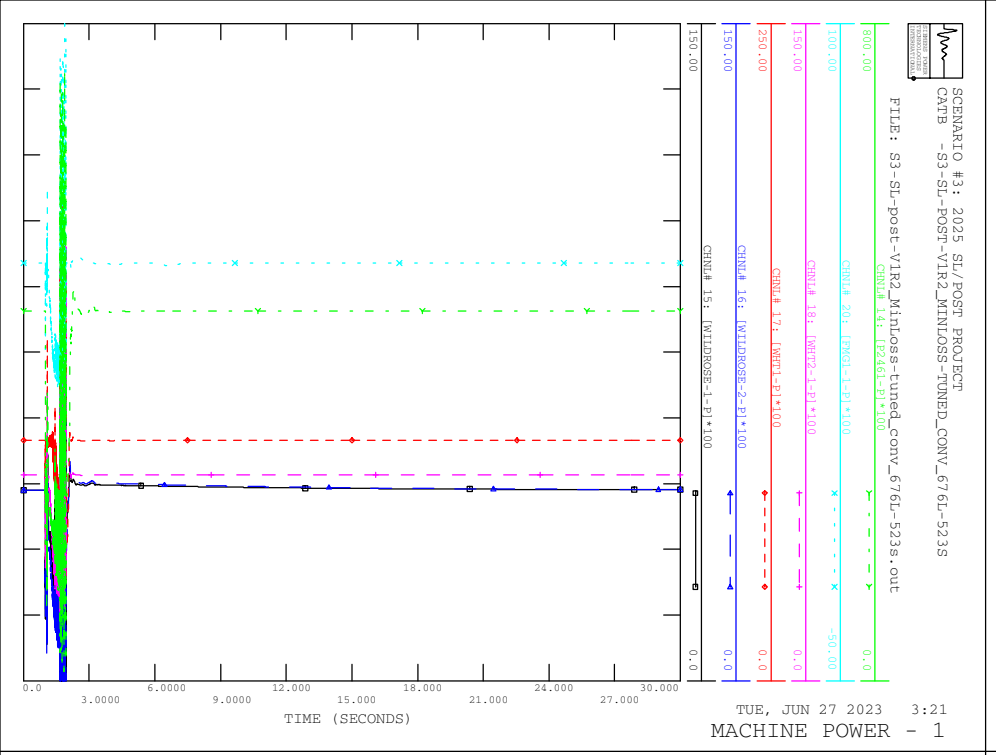

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

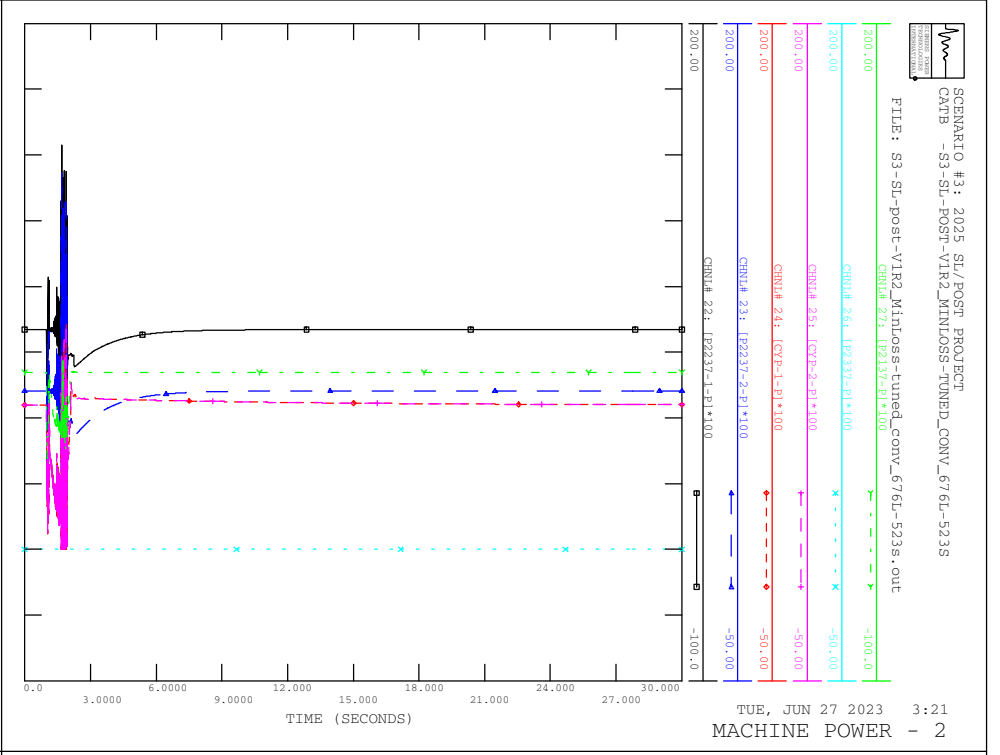

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLS-324S-V]
CHNL# 13: [NEWMDL-2075S-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

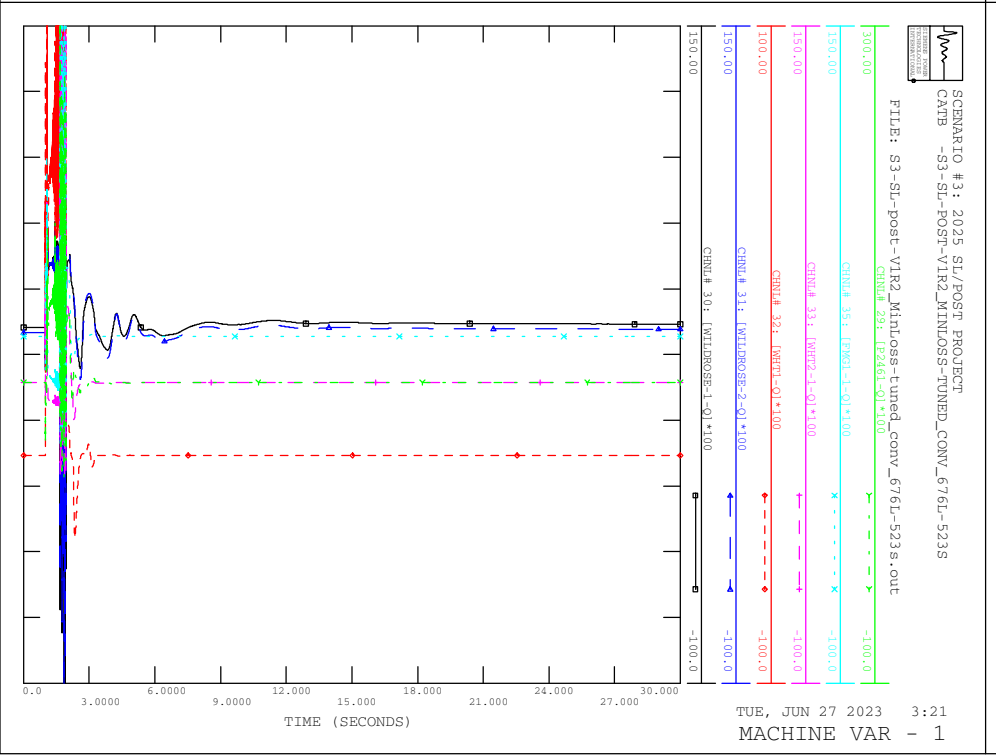

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

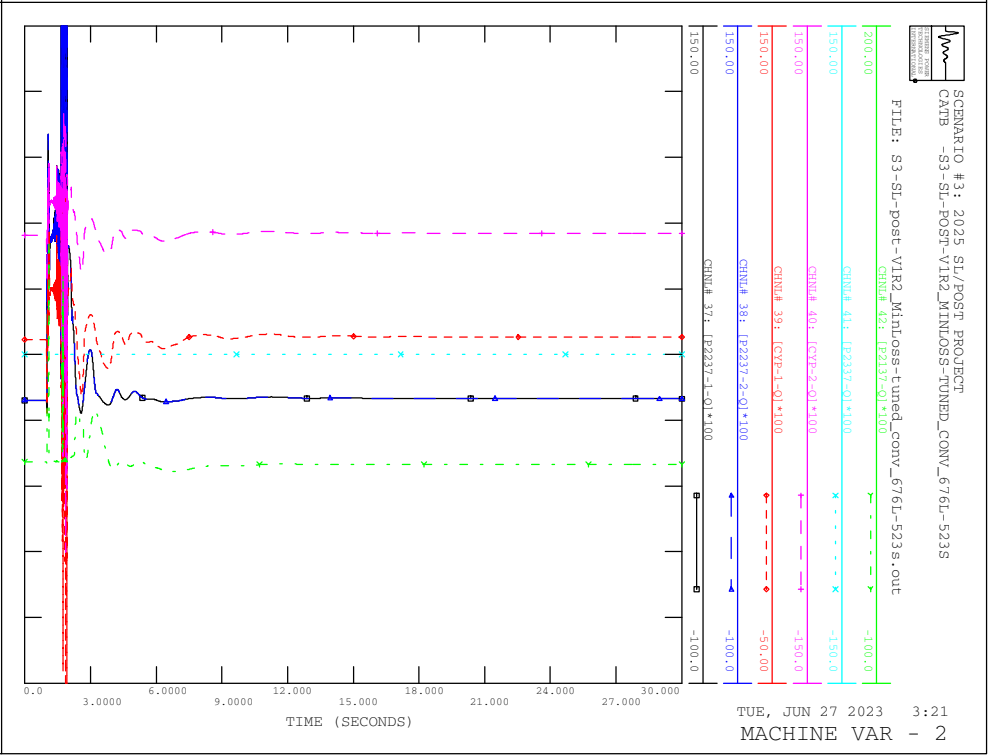

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
900.00
500.00
100.00
-100.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

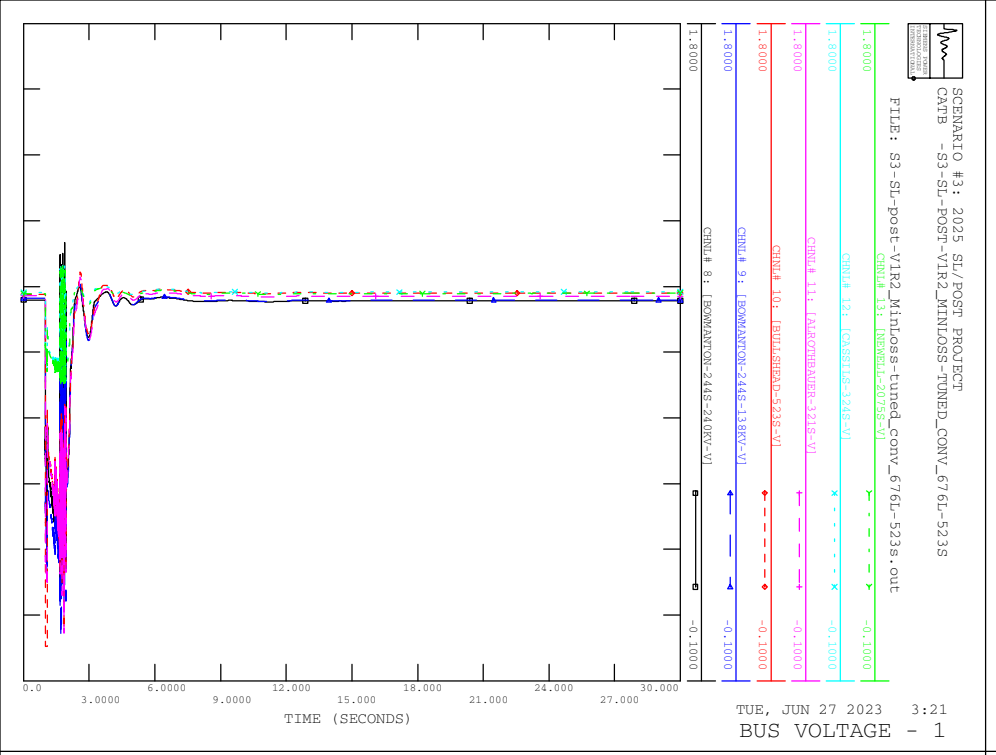

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
400.00
250.00
-400.0
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

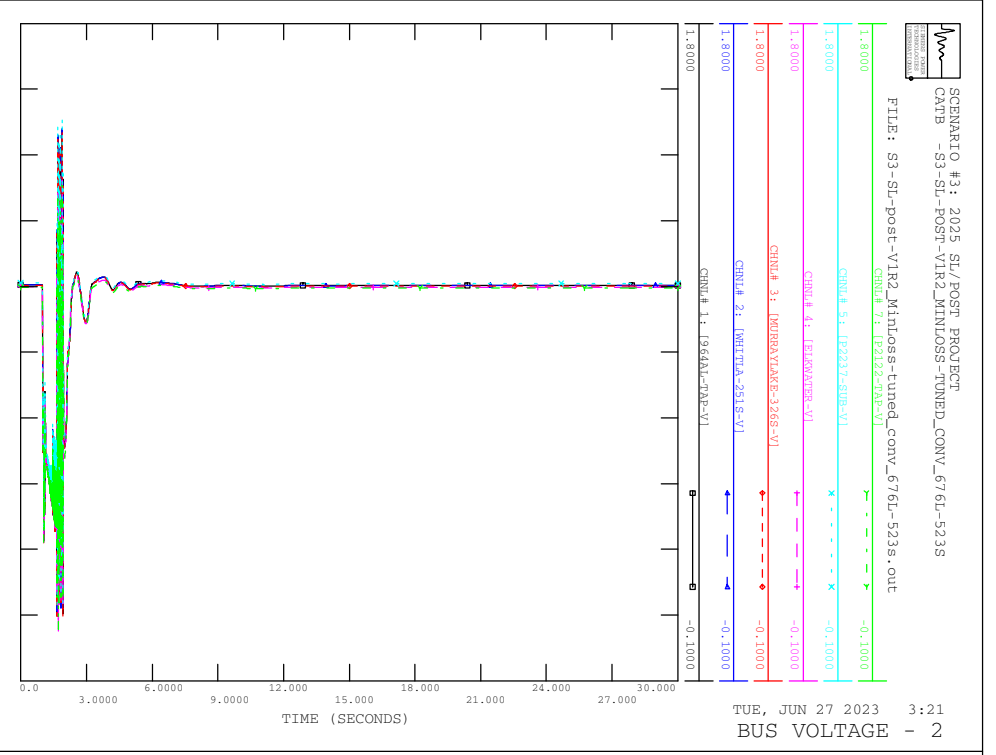

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-523s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
CHNL# 19: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

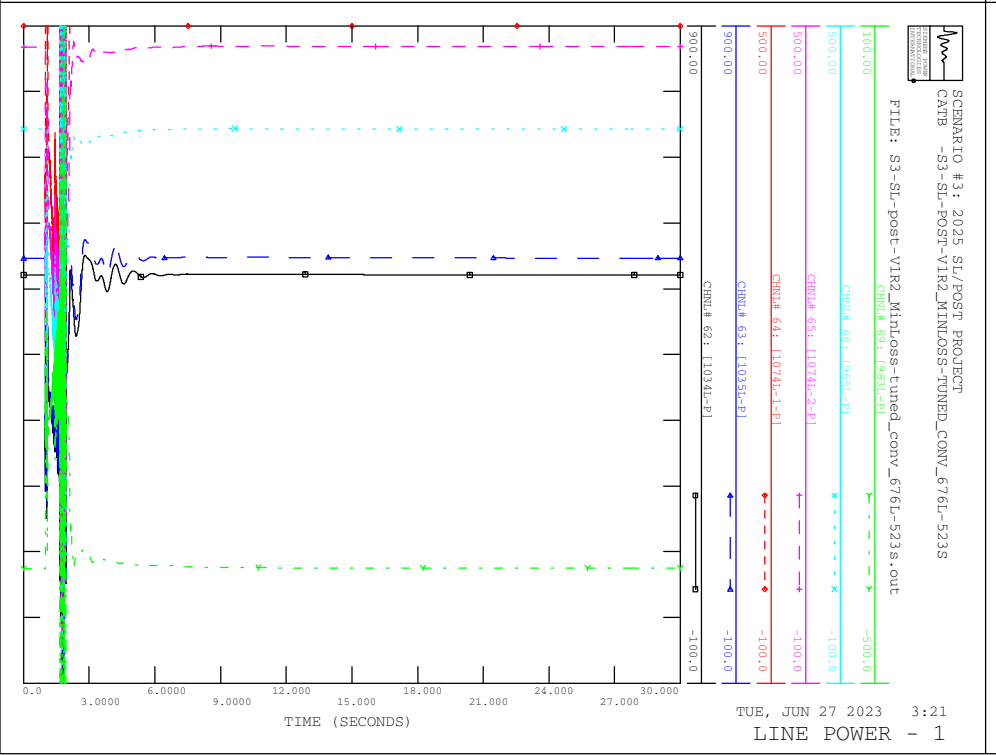

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-523s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

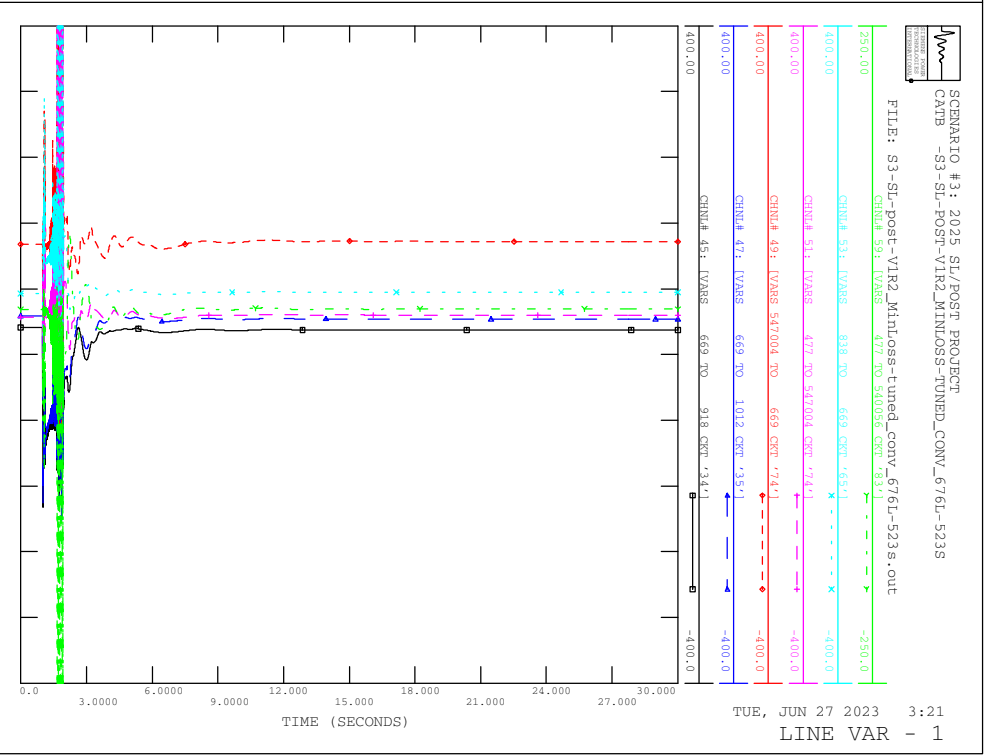

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-523s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

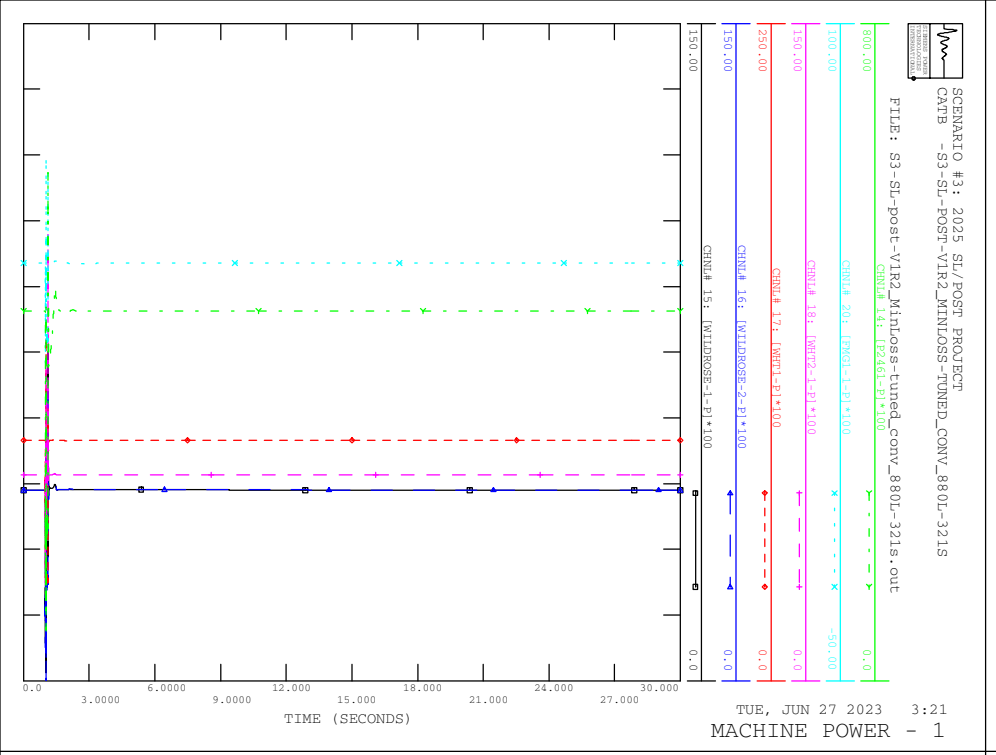

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_676L-523s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

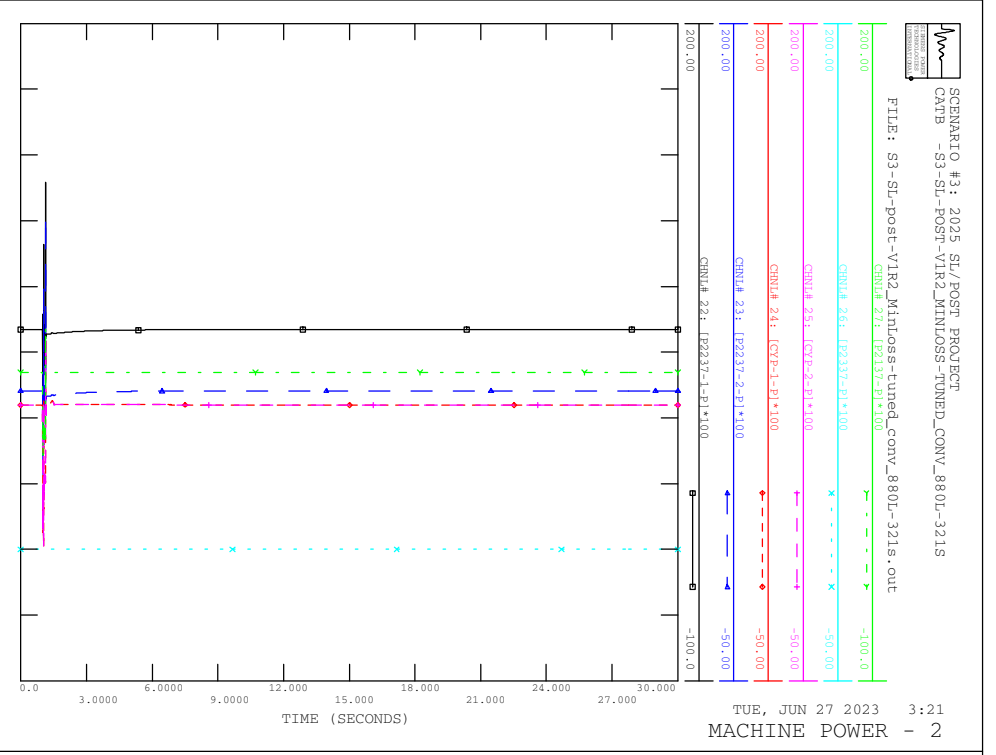

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_676L-523s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWMILN-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

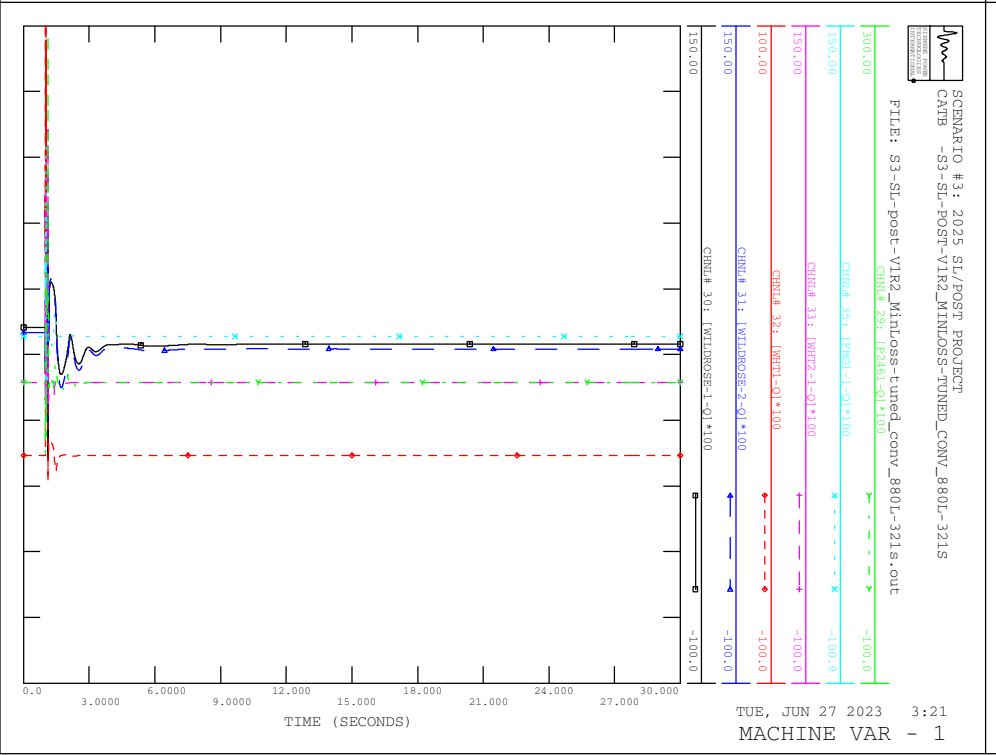

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_676L-523s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

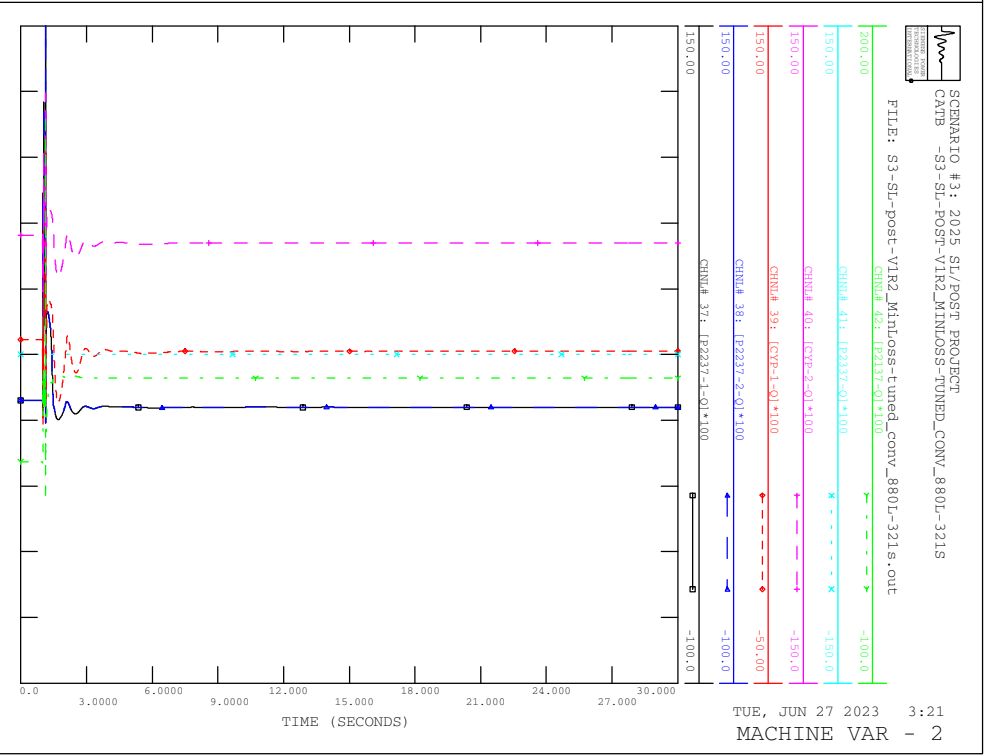

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_676L-523s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1955L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

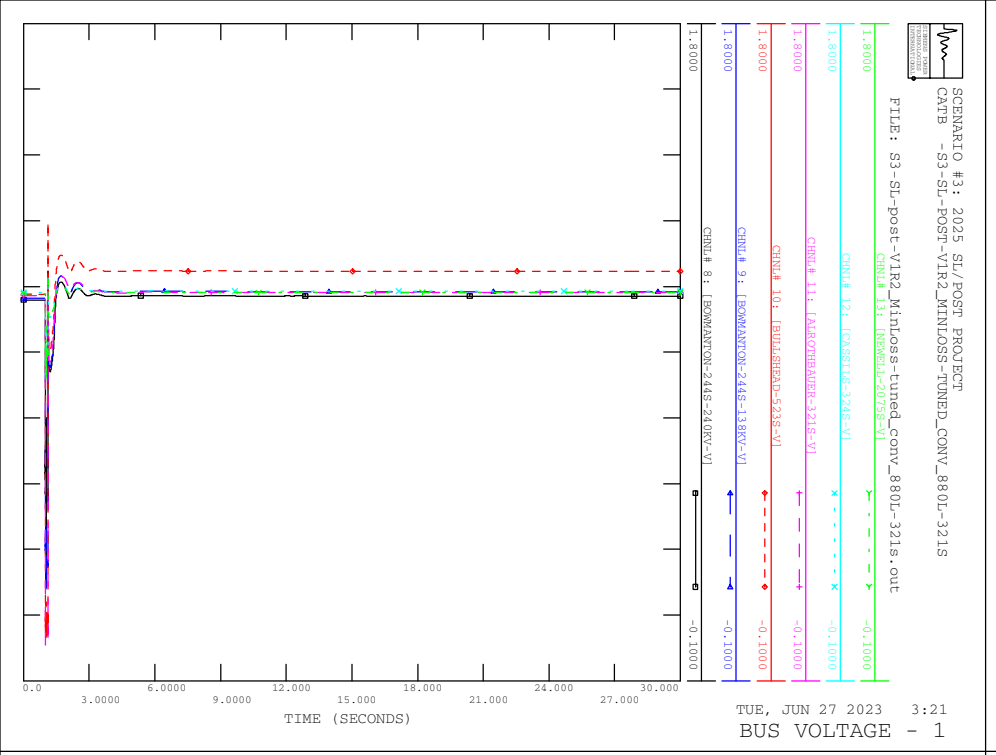

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_676L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_676L-523s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

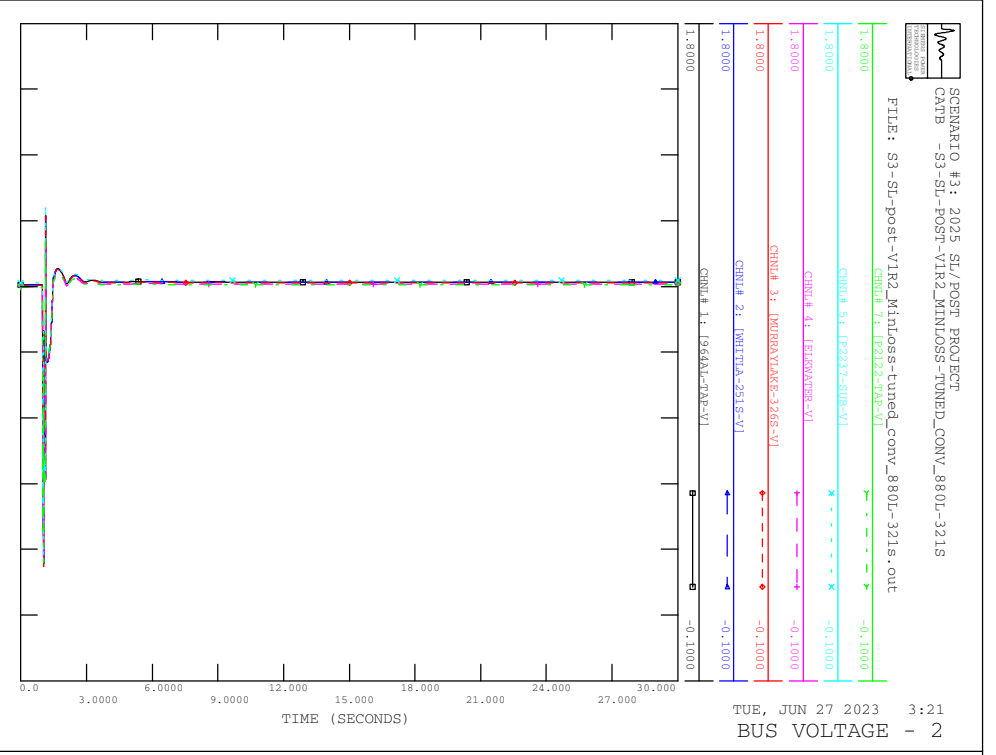

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-321s.out
CHNL# 14: [P2461-P]*100
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

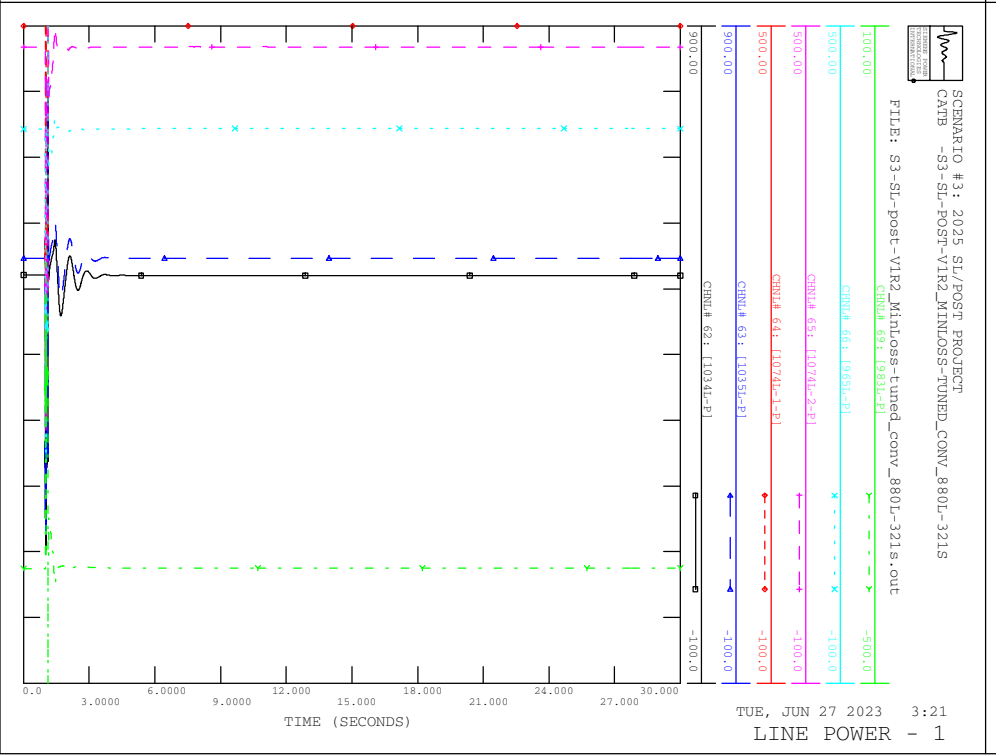

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-321s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

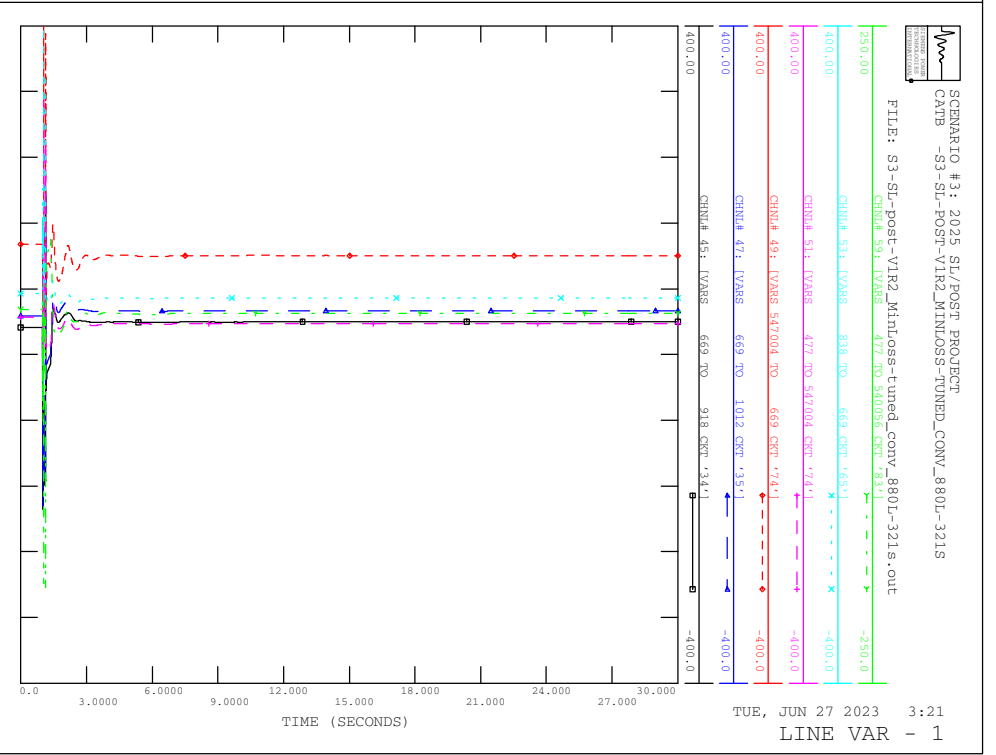

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-321s.out
CHNL# 29: [P2461-Q]*100
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

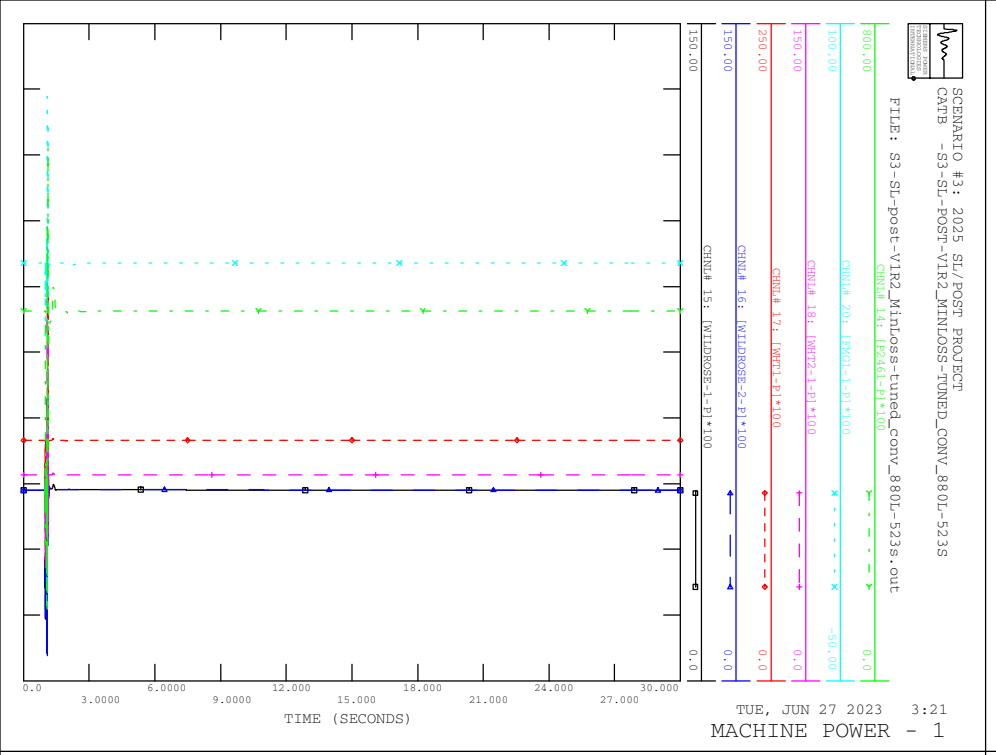

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-321s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

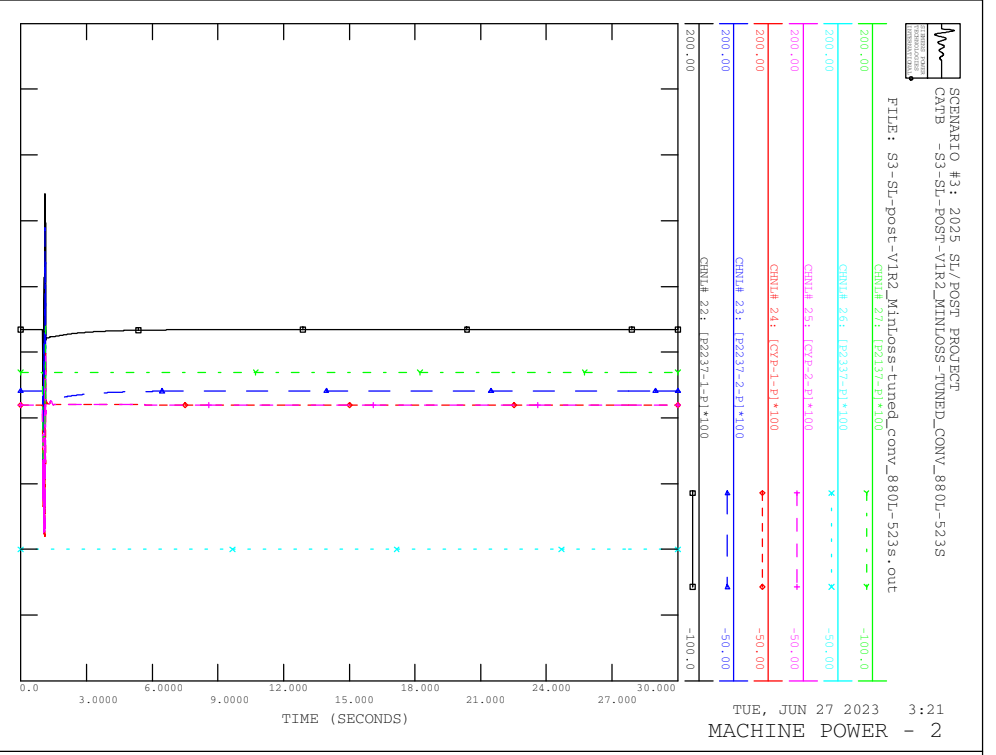

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-321s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSIS-324S-V]
CHNL# 13: [NENNELU-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

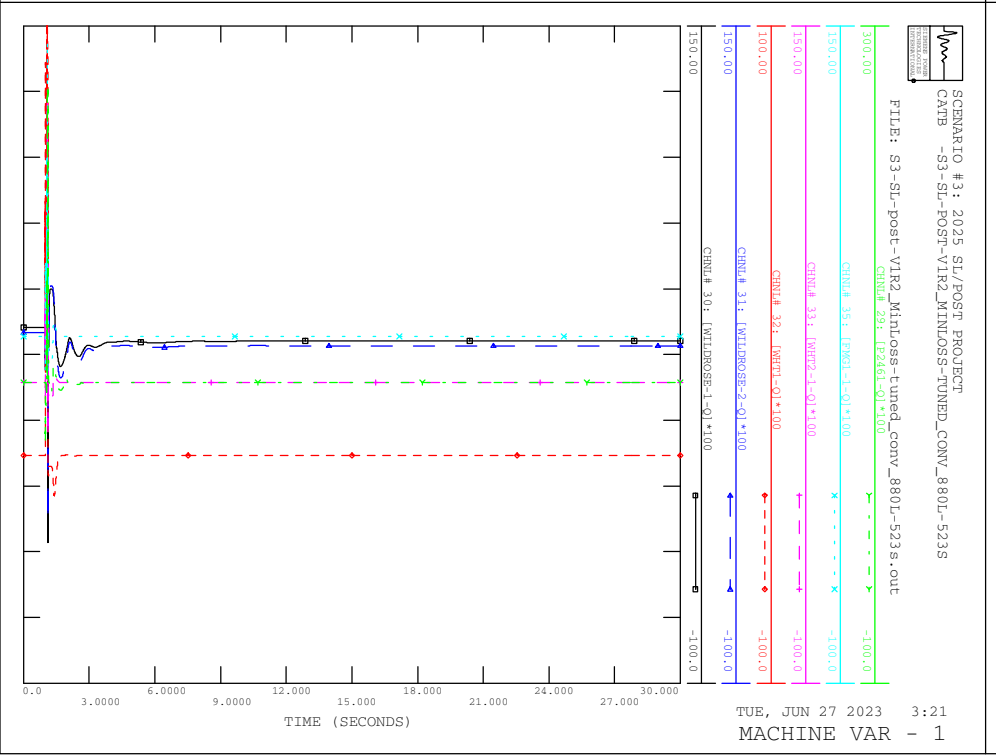

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-321s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

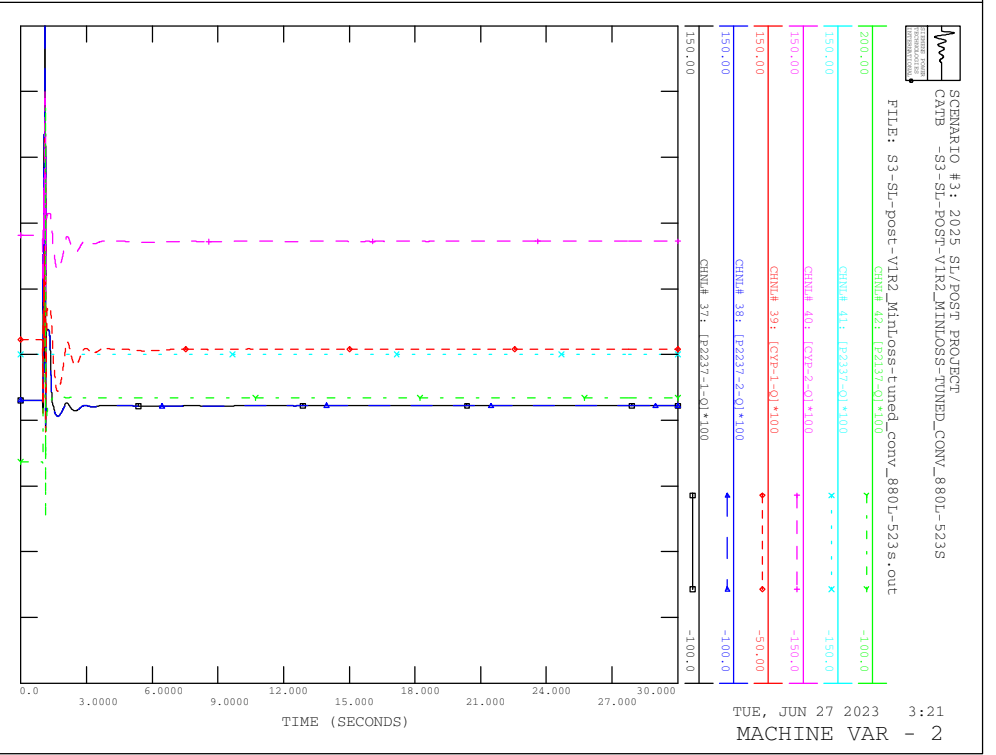

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-321s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

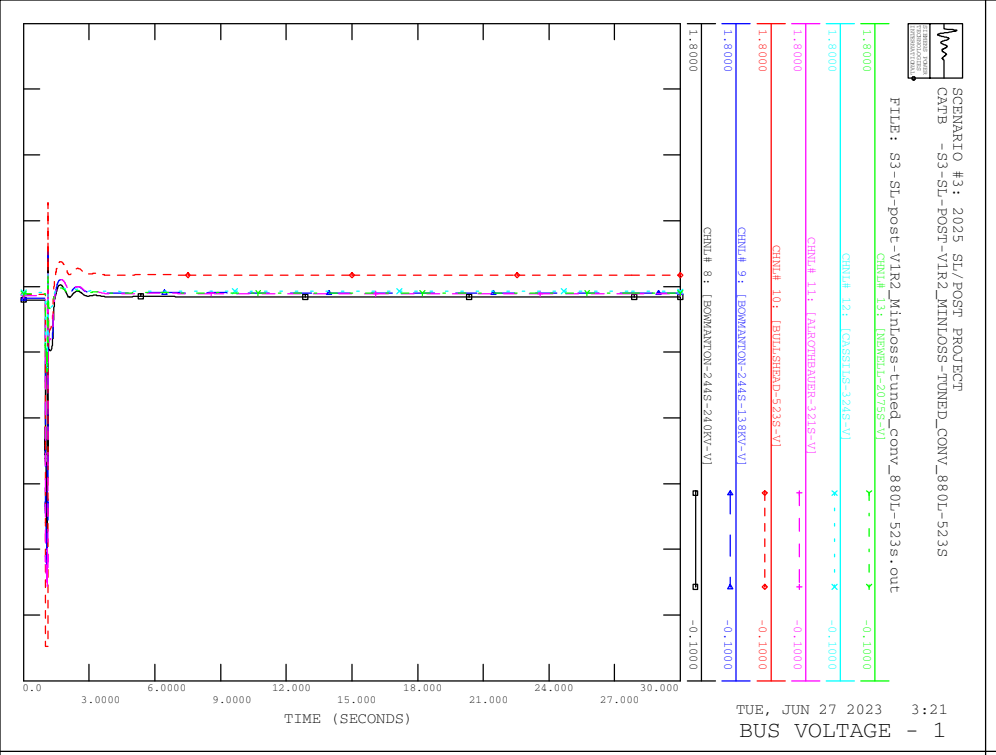

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-321S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-321s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

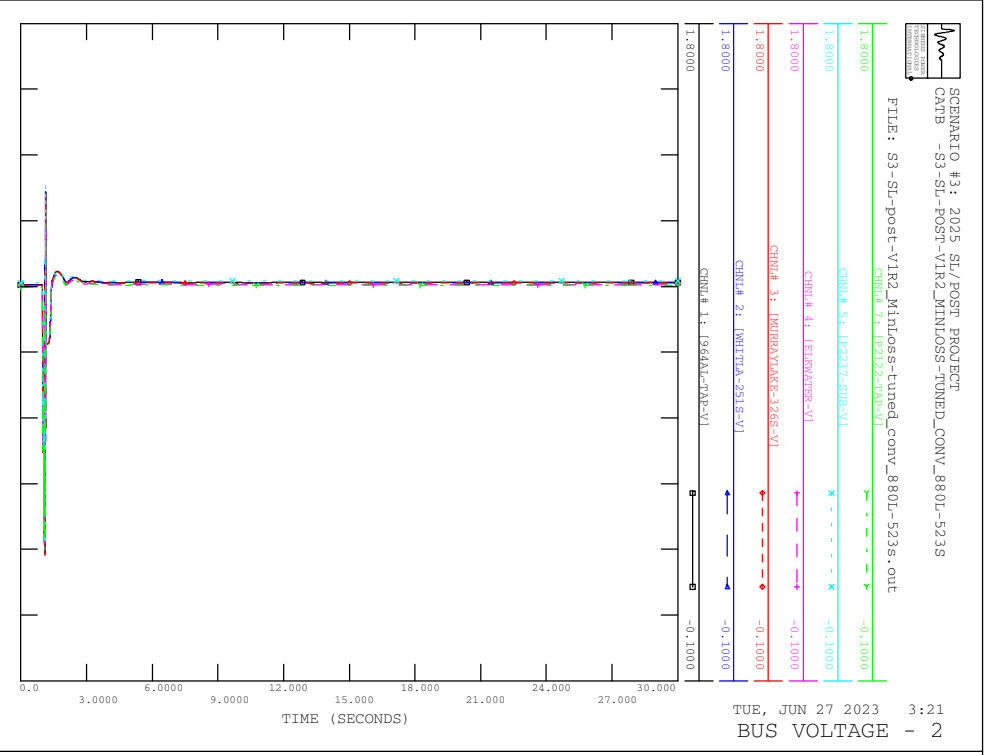

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-523s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

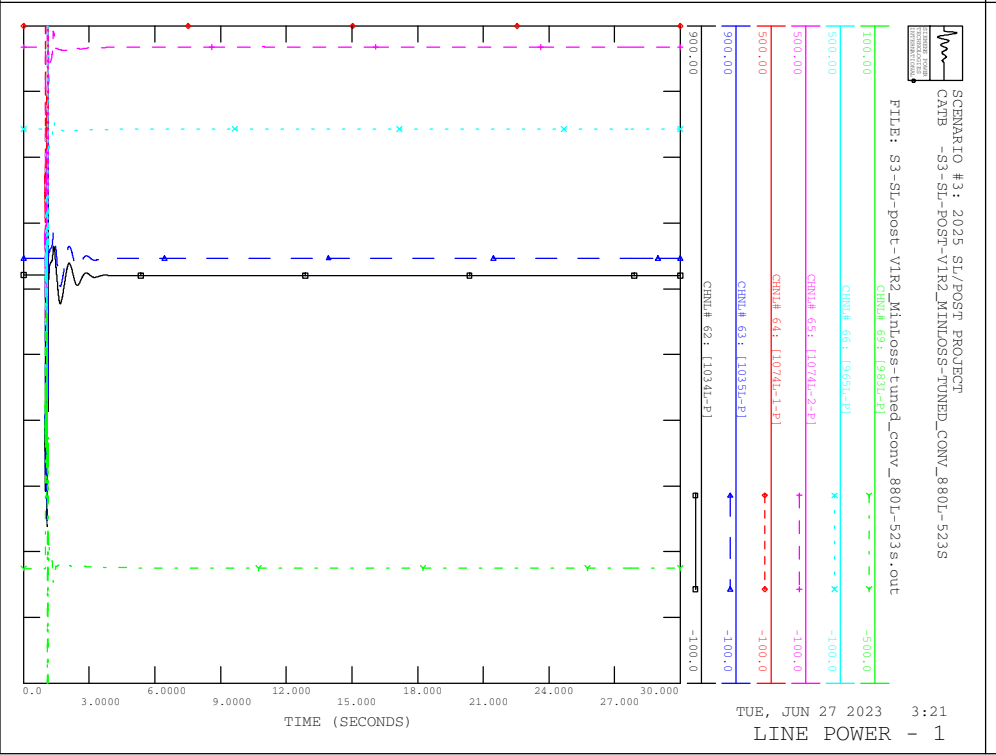

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-523s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

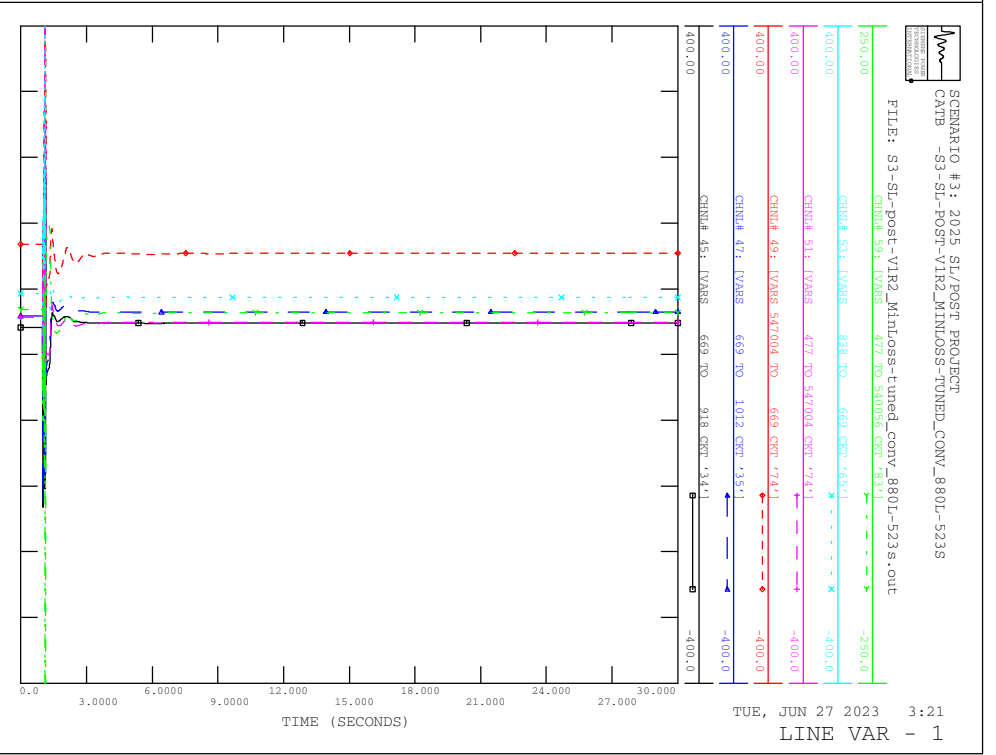

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-523s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

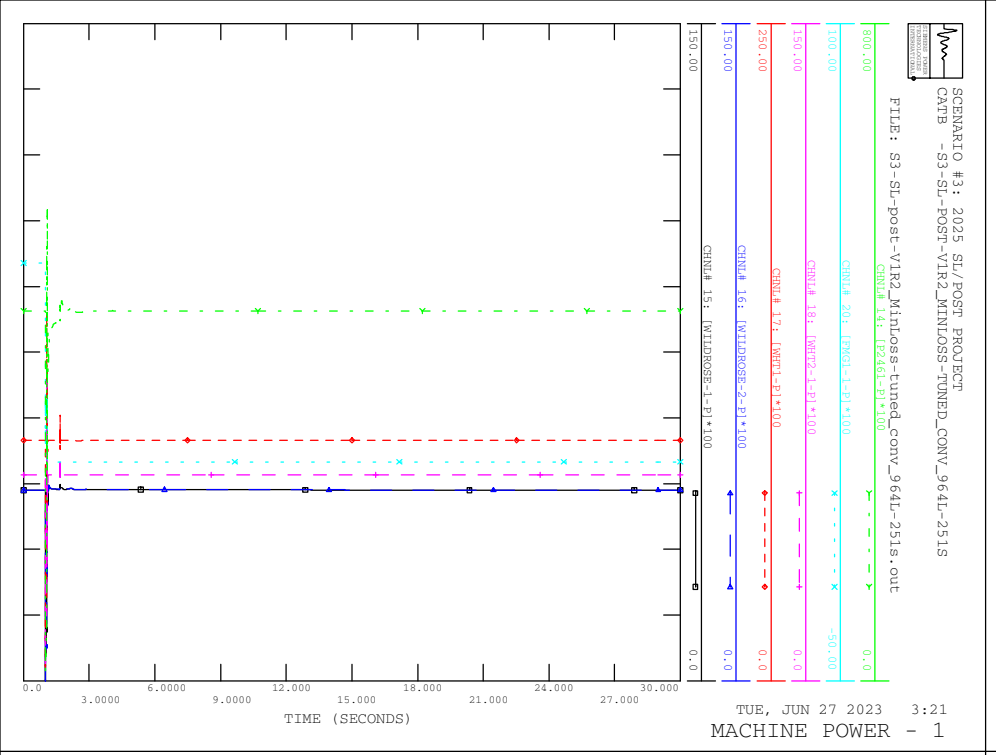

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_880L-523s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

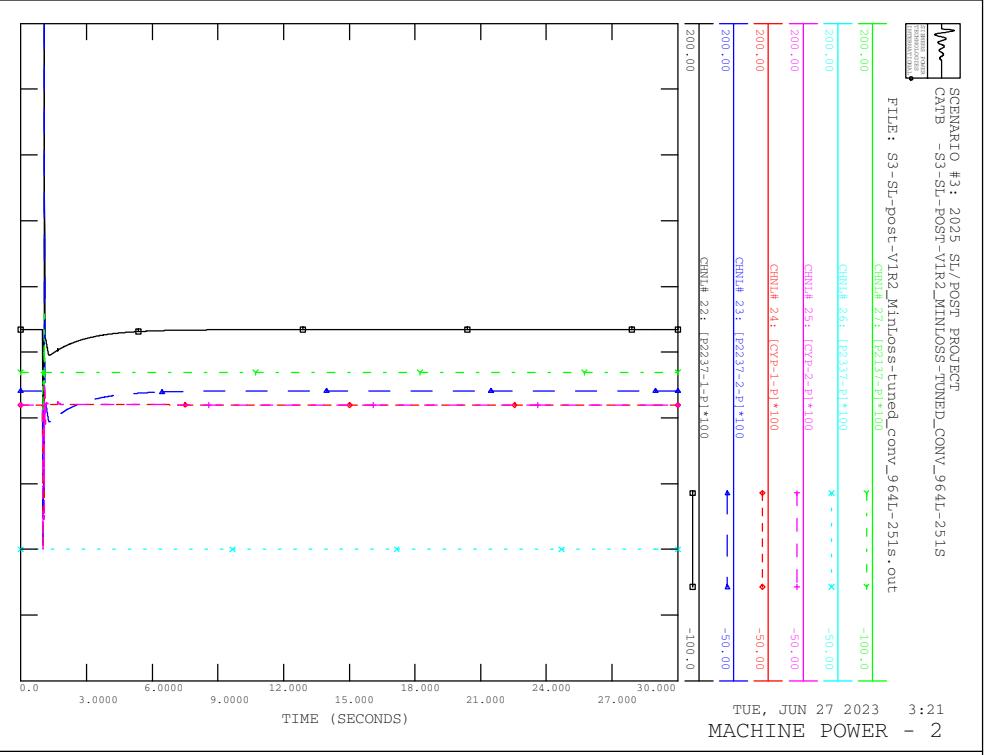

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-523s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLS-324S-V]
CHNL# 13: [NEWMEL-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

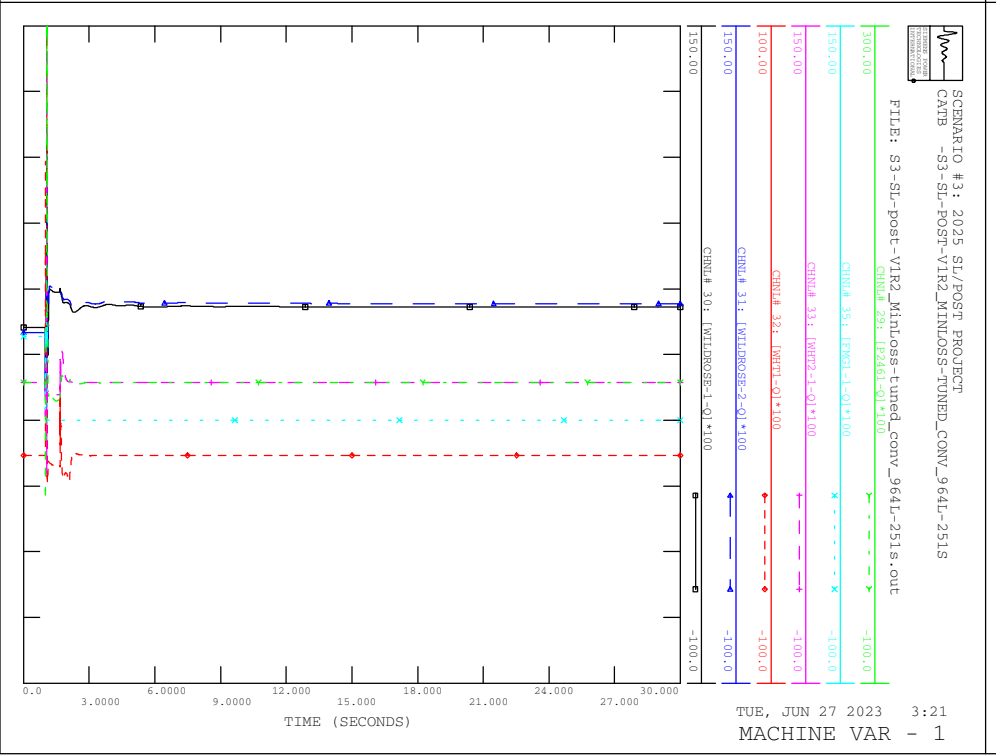

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-523s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 2

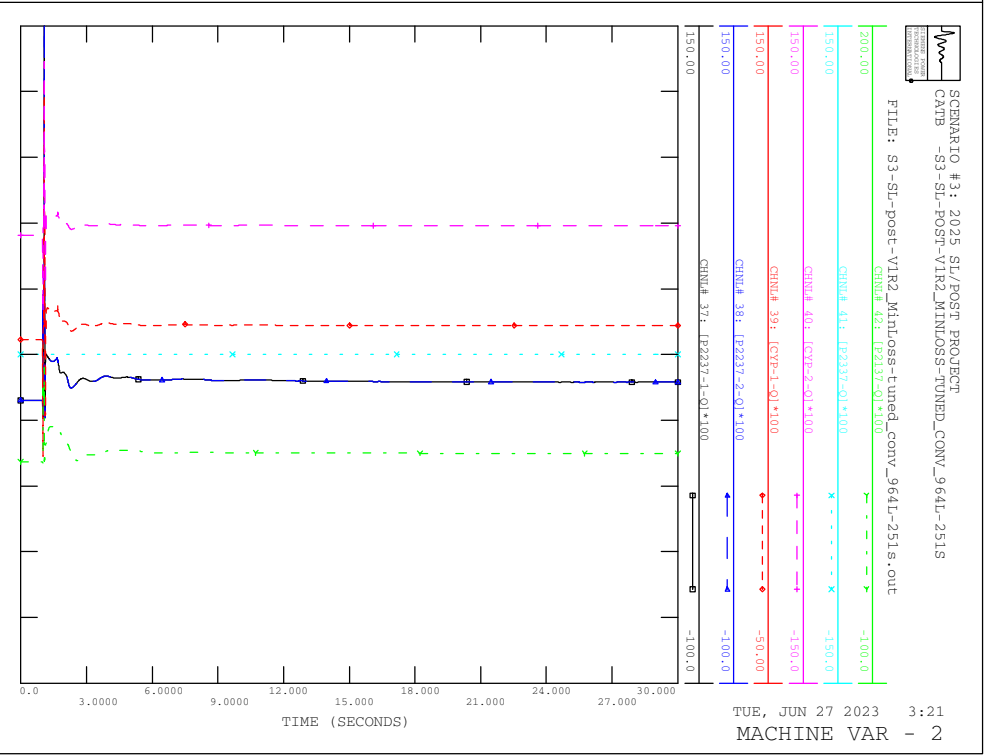

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-523s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1965L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE POWER - 1

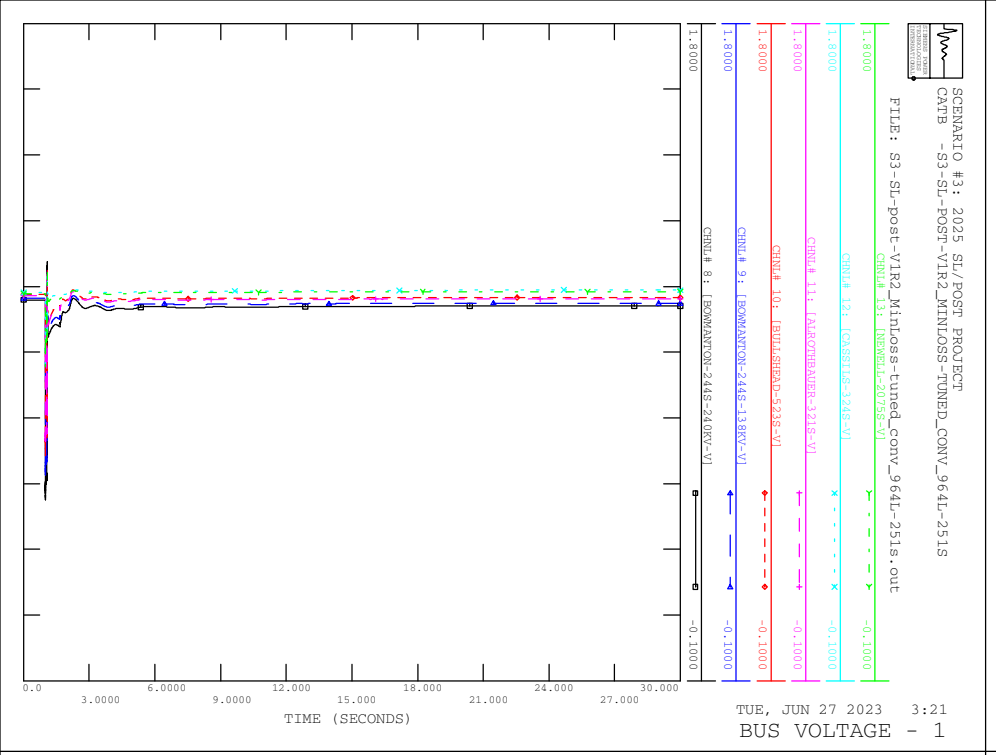

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_880L-523S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_880L-523s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:21
LINE VAR - 1

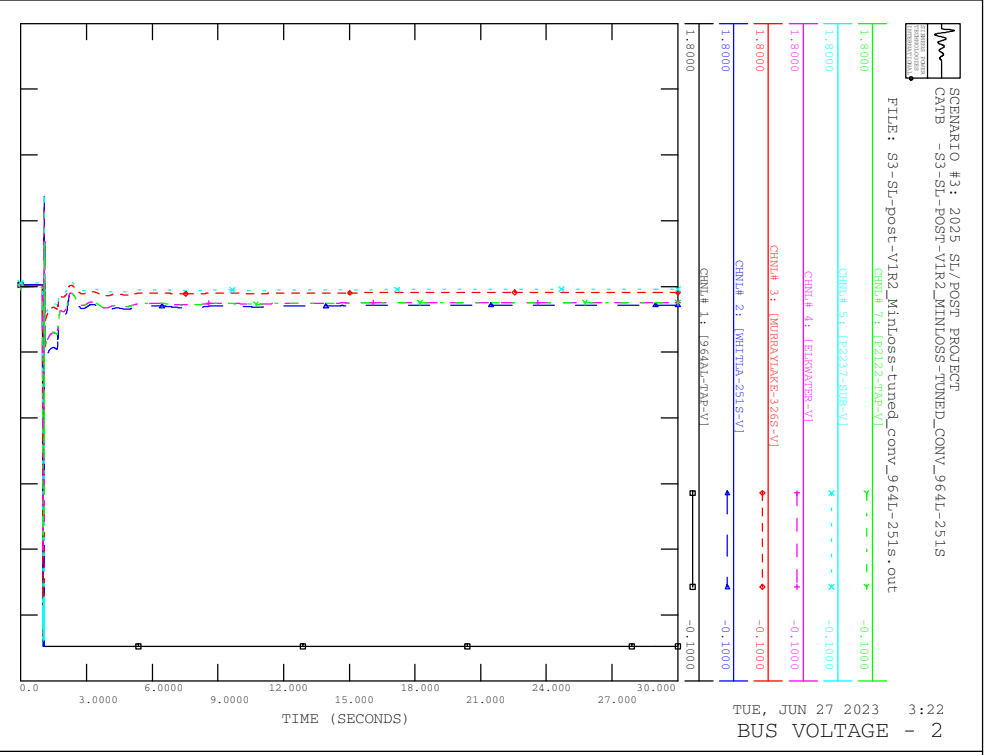

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-251s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 1

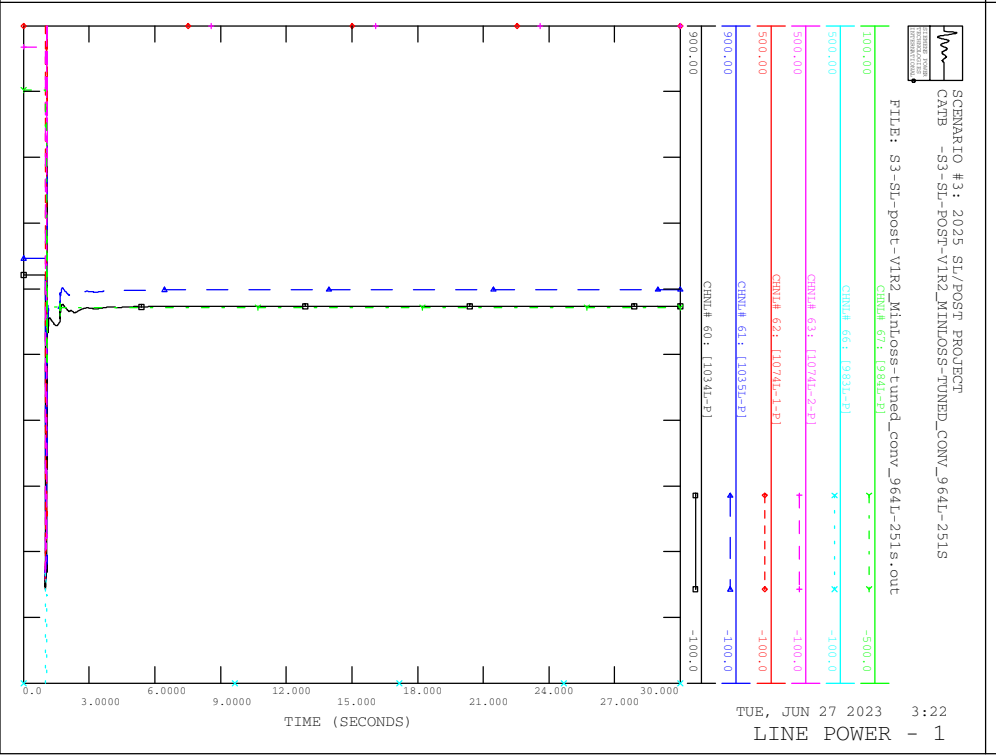

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-251s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE POWER - 2

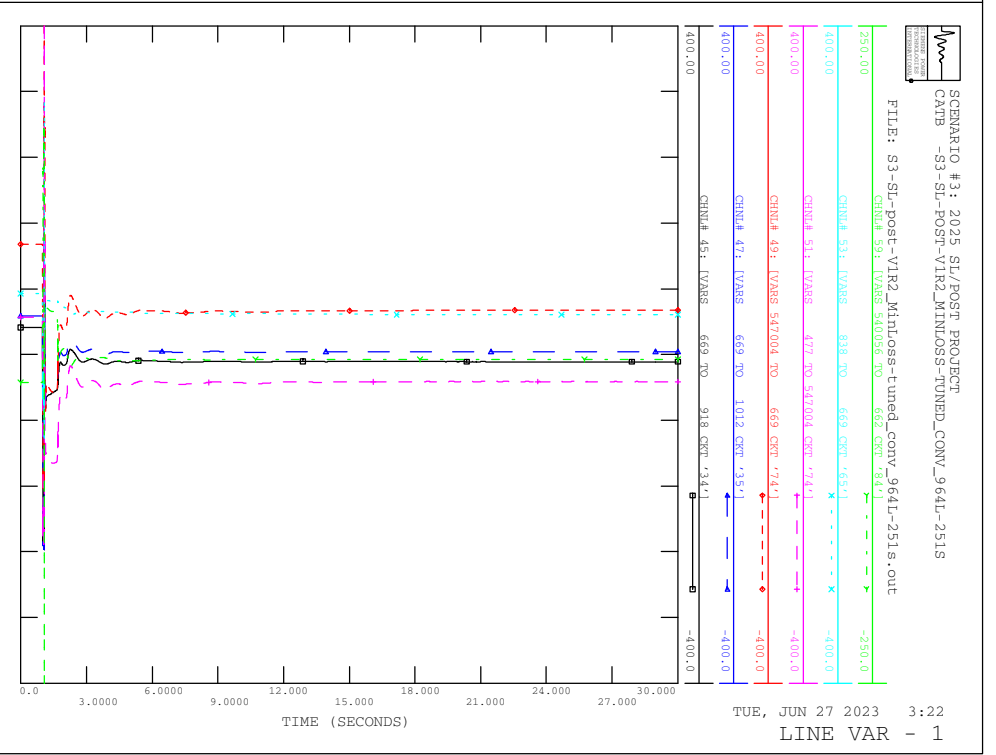

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-251s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 1

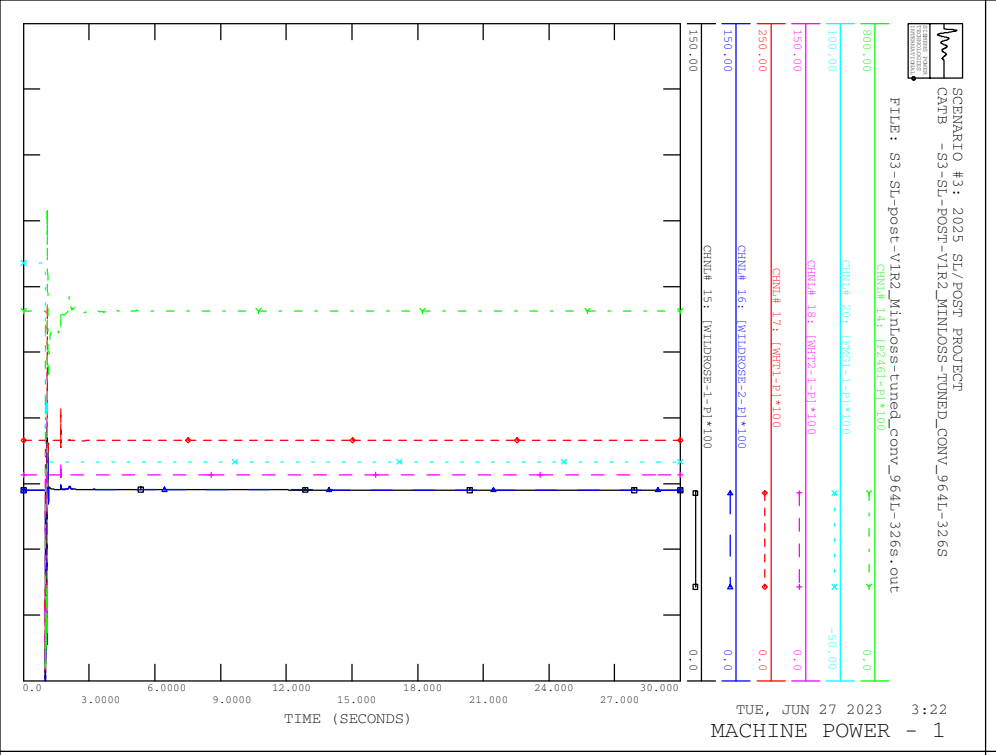

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-251s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:21
MACHINE VAR - 2

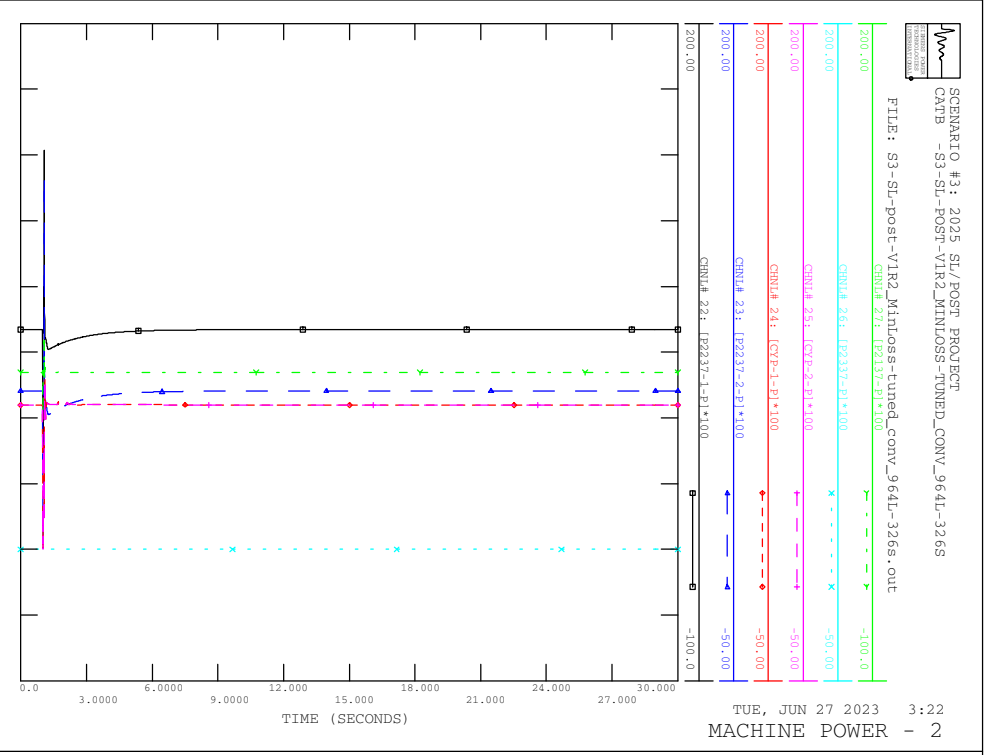

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-251s.out
CHNL# 7: [P2122-TAP-V]
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWOLD-2075S-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:21
BUS VOLTAGE - 1

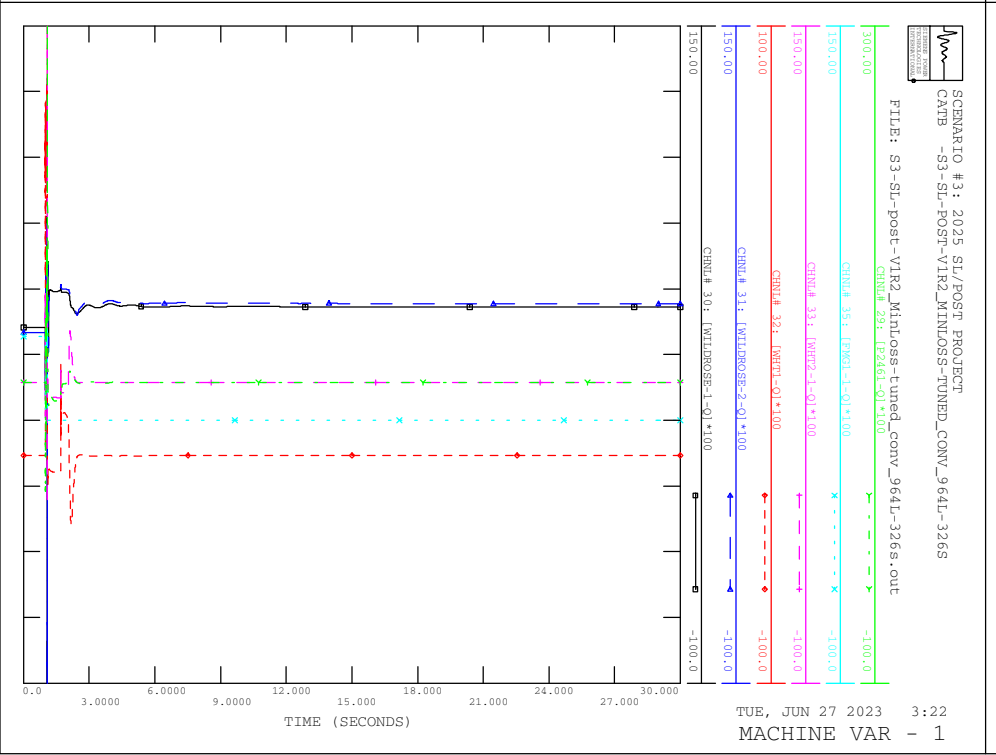

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-251s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

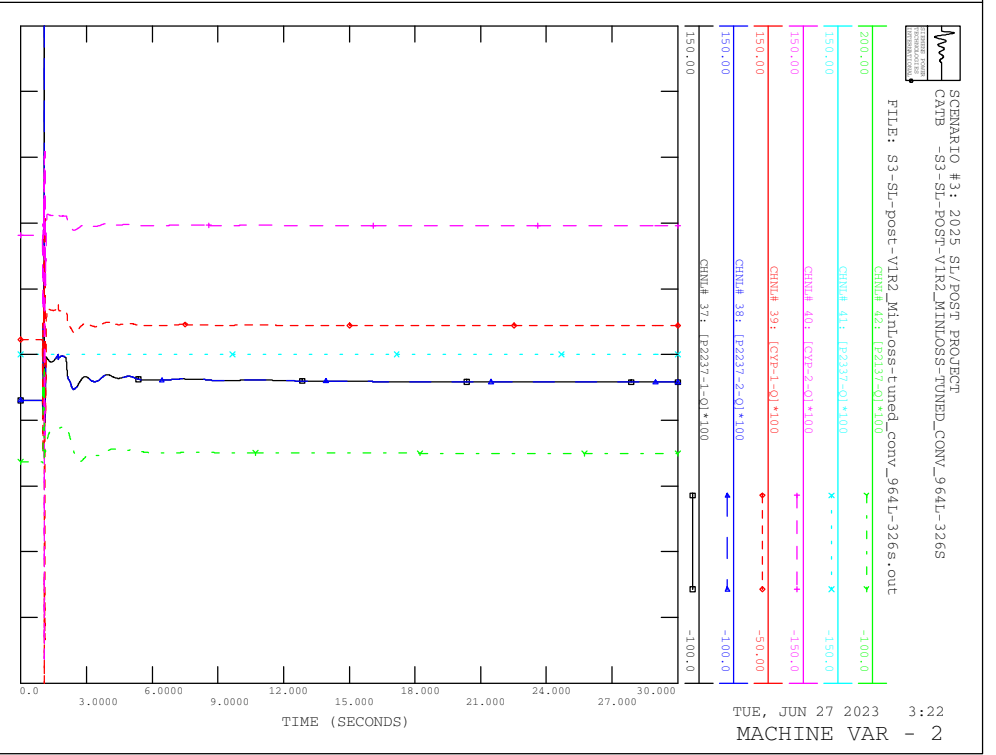

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-251s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
900.00
-100.00
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

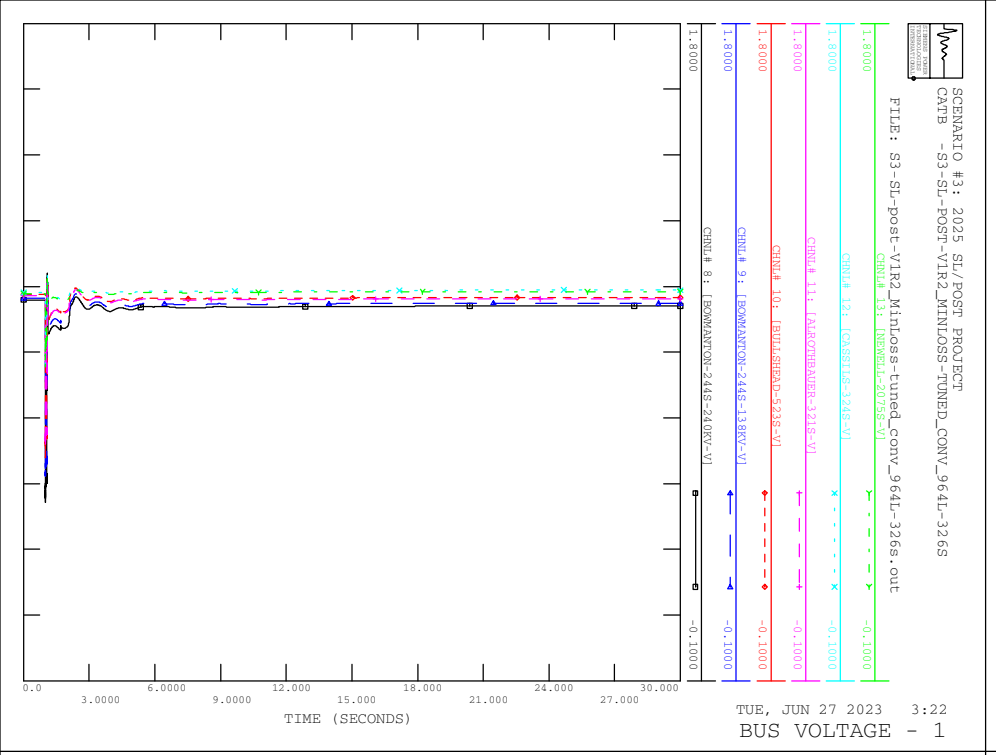

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-251s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.00
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

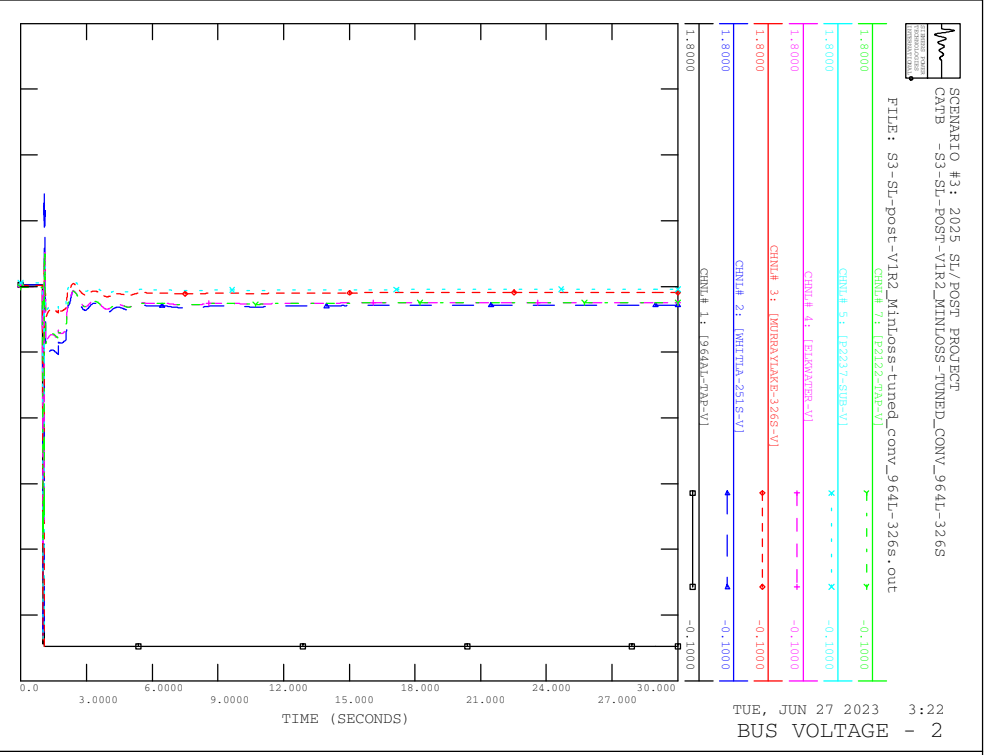

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-326s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 24: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

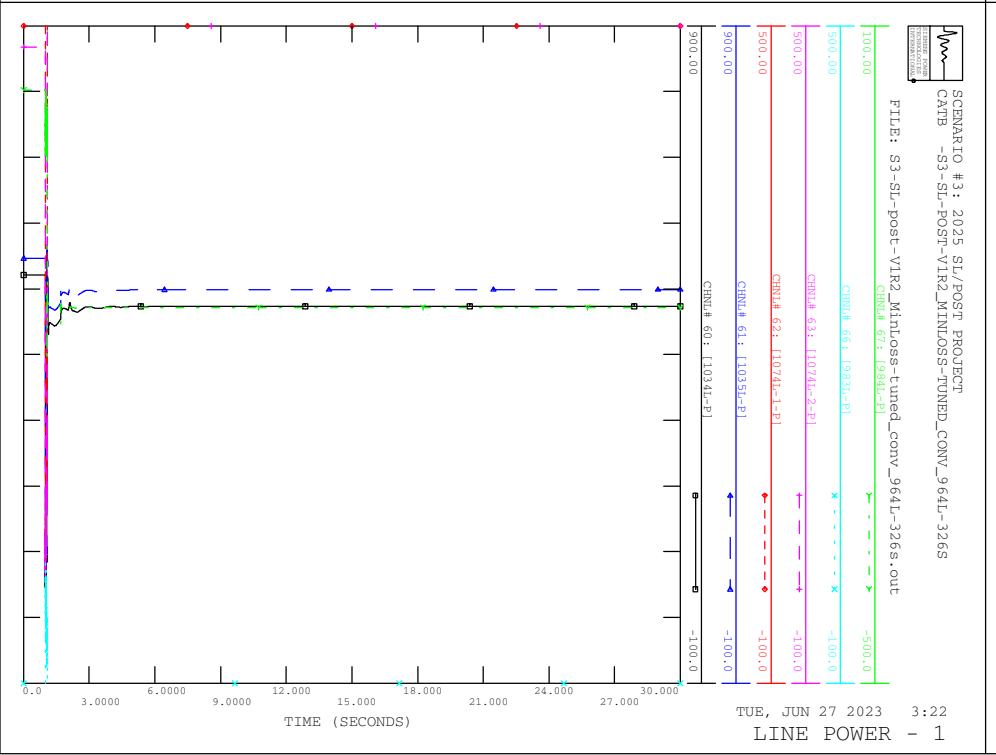

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-326s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

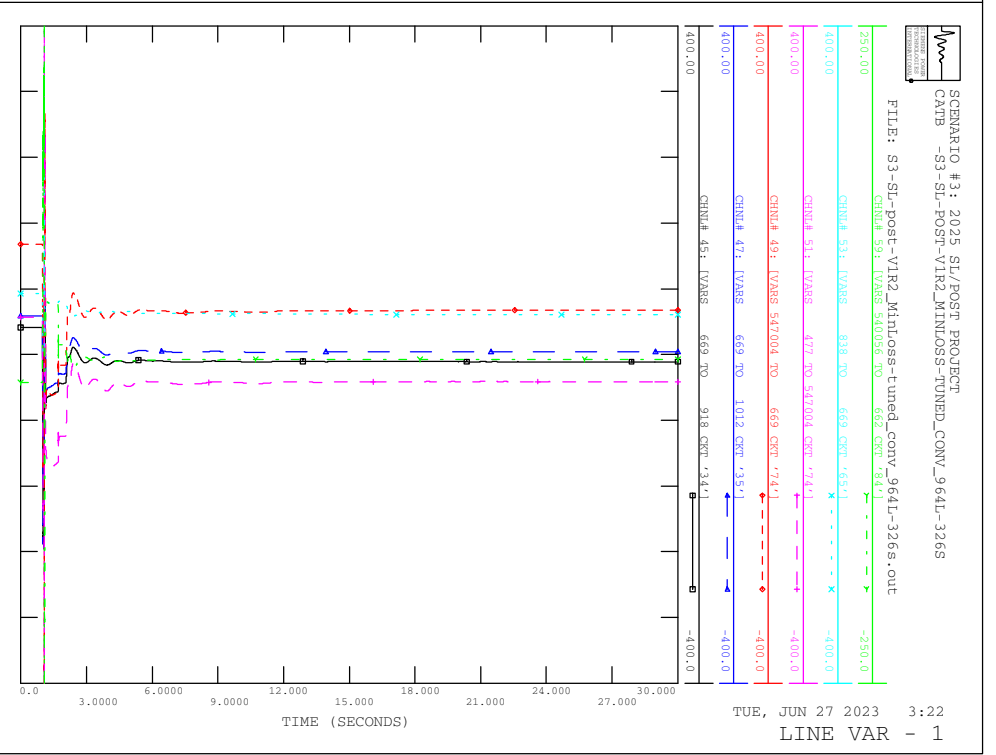

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-326s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 39: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

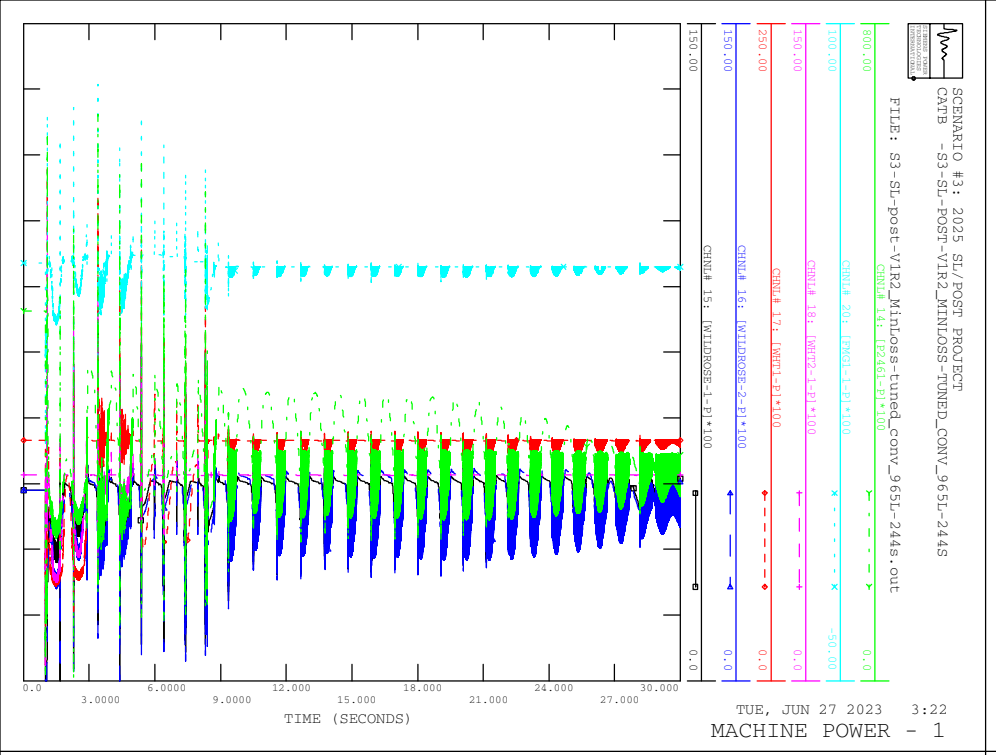

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_964L-326s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

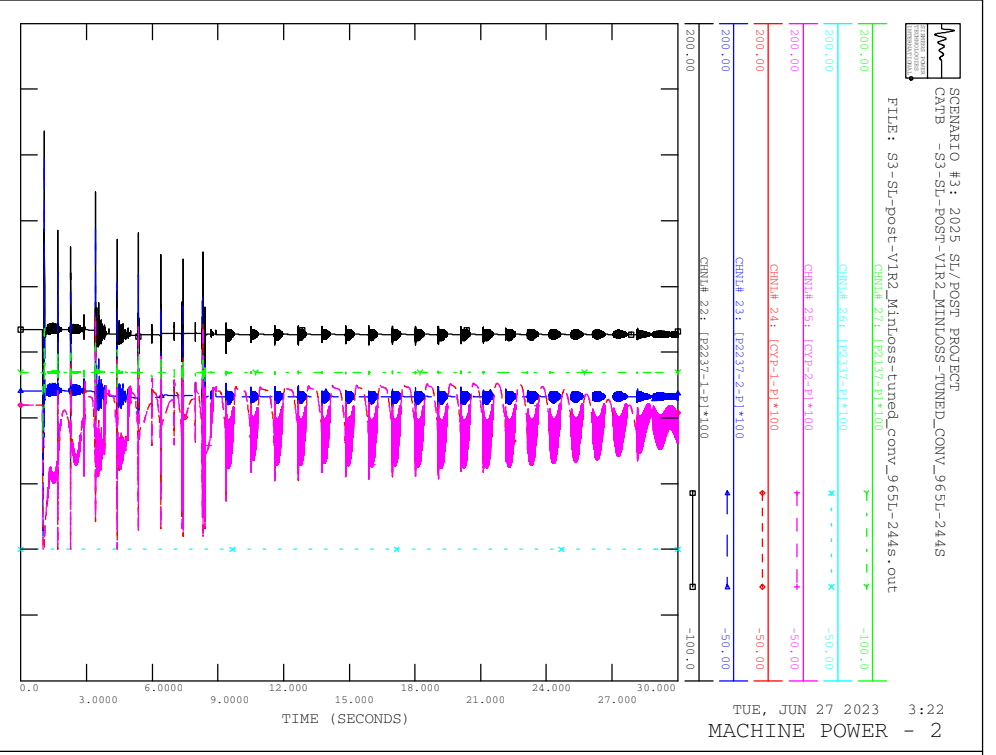

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-326s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWDALE-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

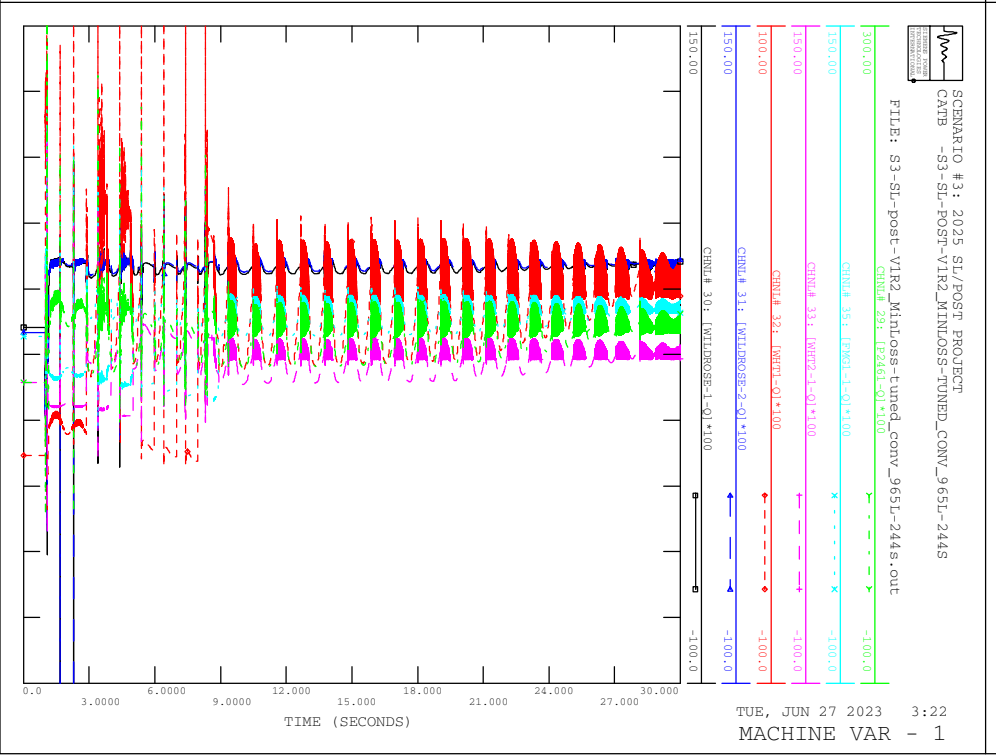

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-326s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

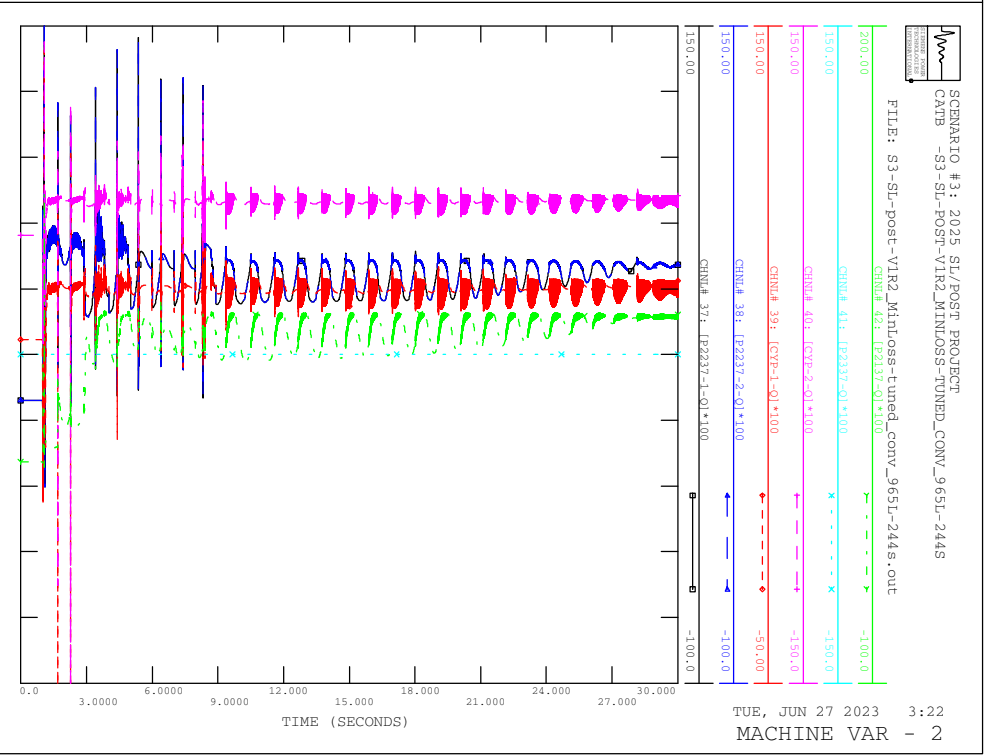

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-326s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

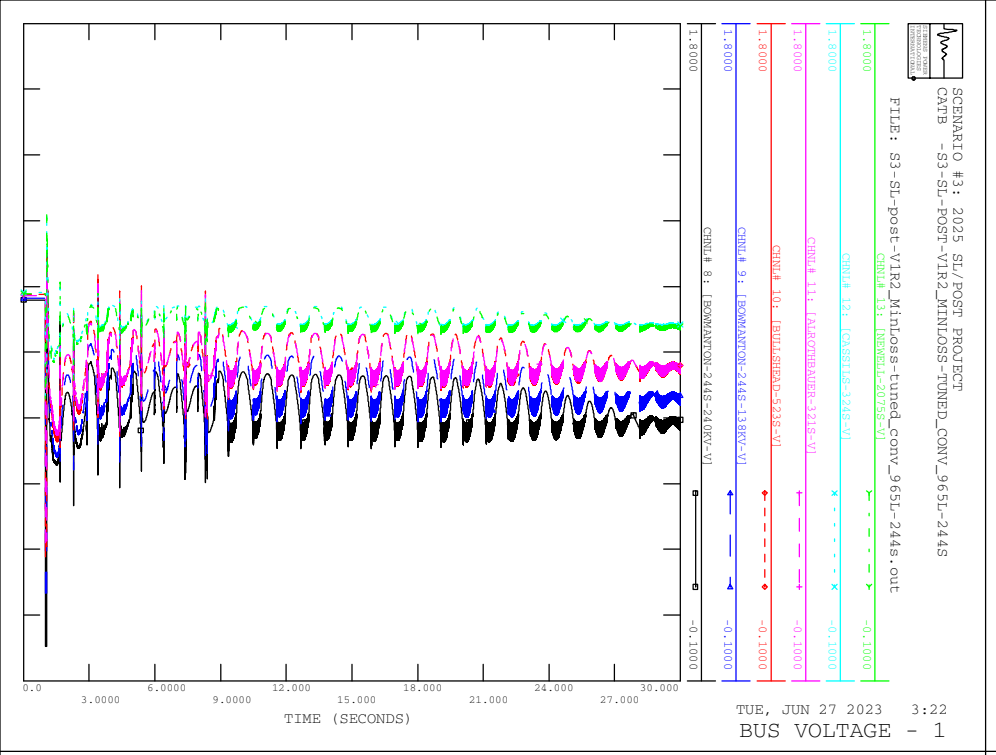

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_964L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_964L-326s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

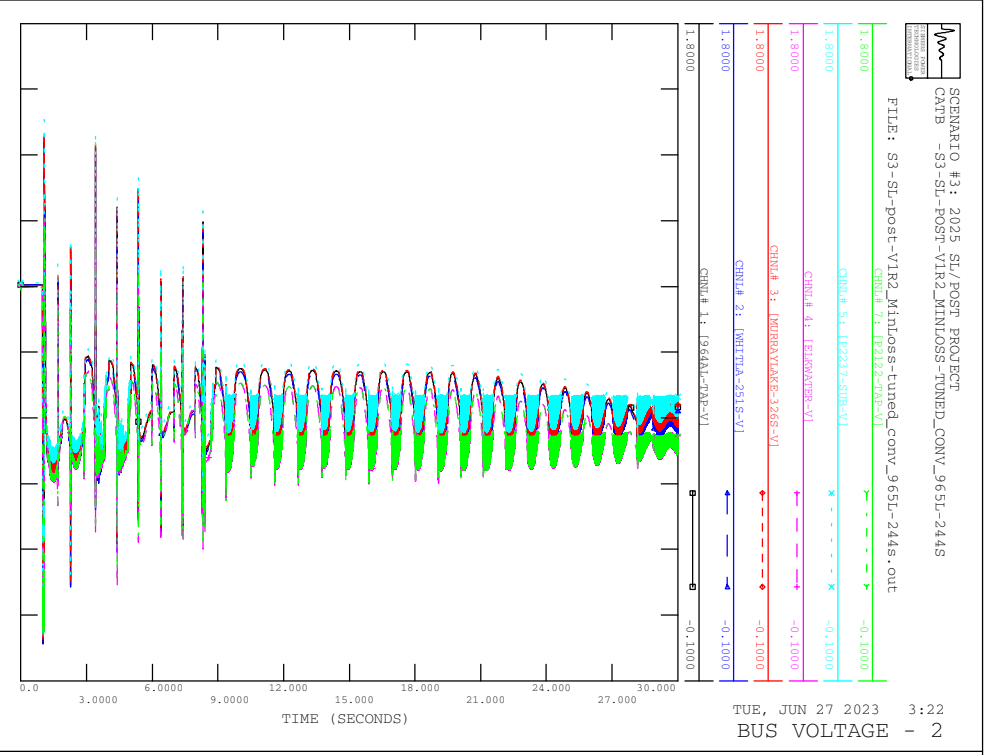

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

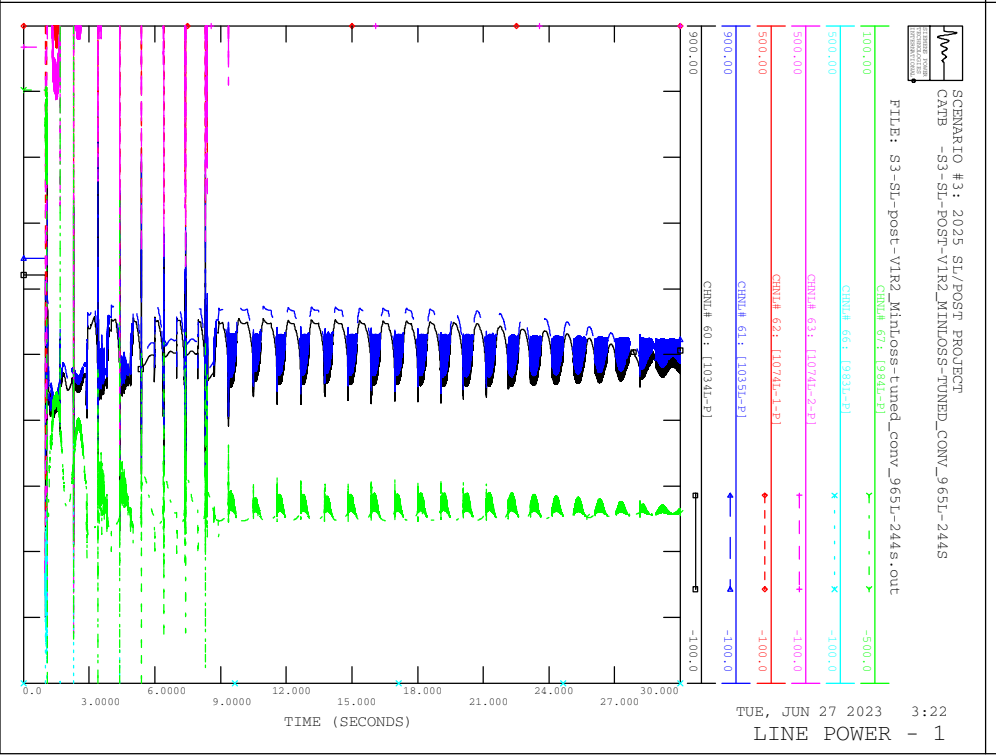

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

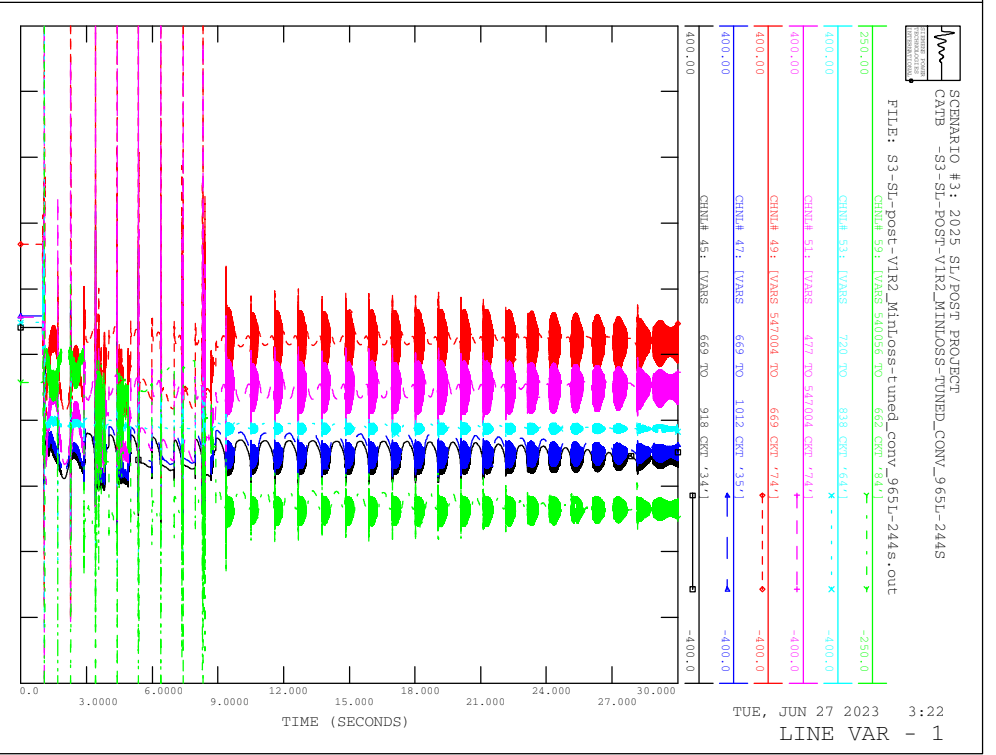

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

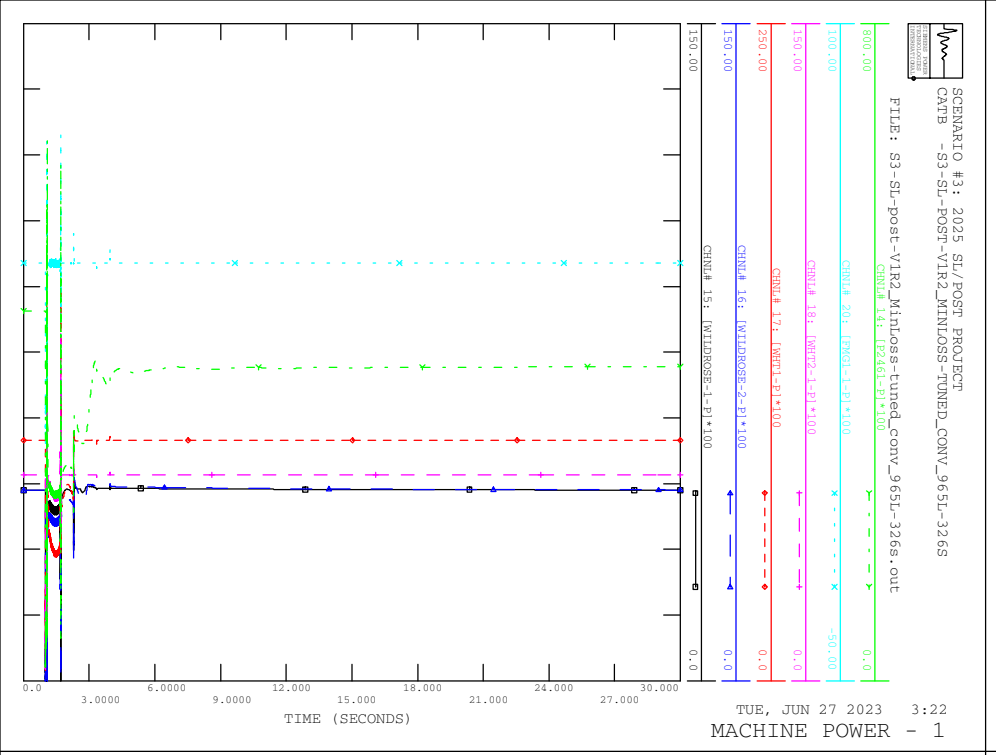

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

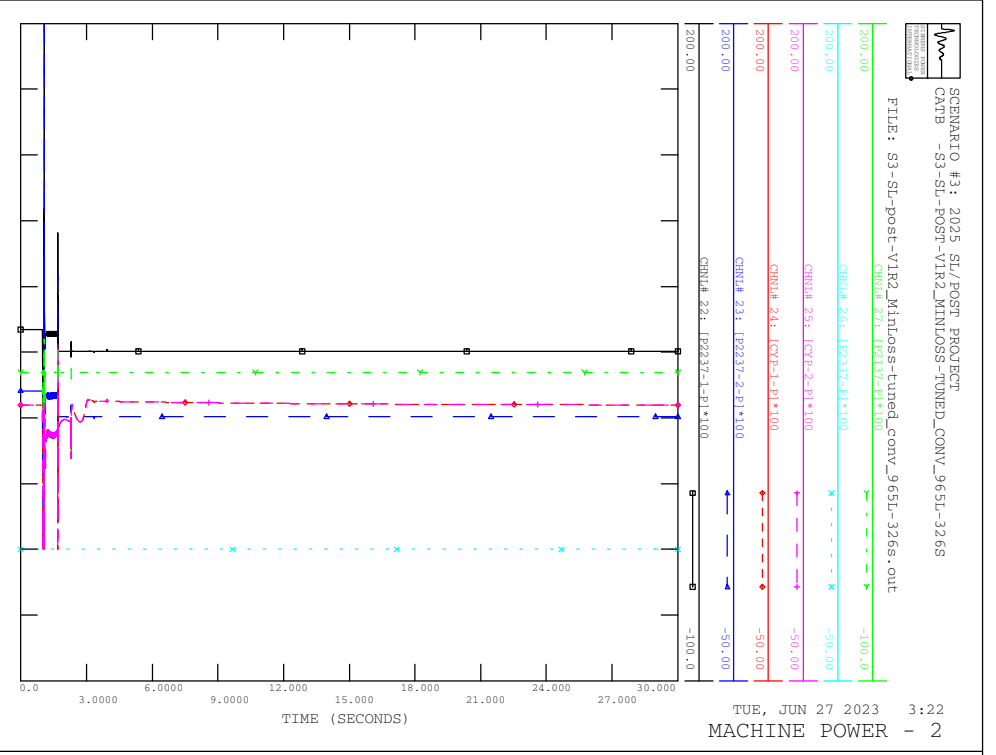

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [KENDALL-207S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

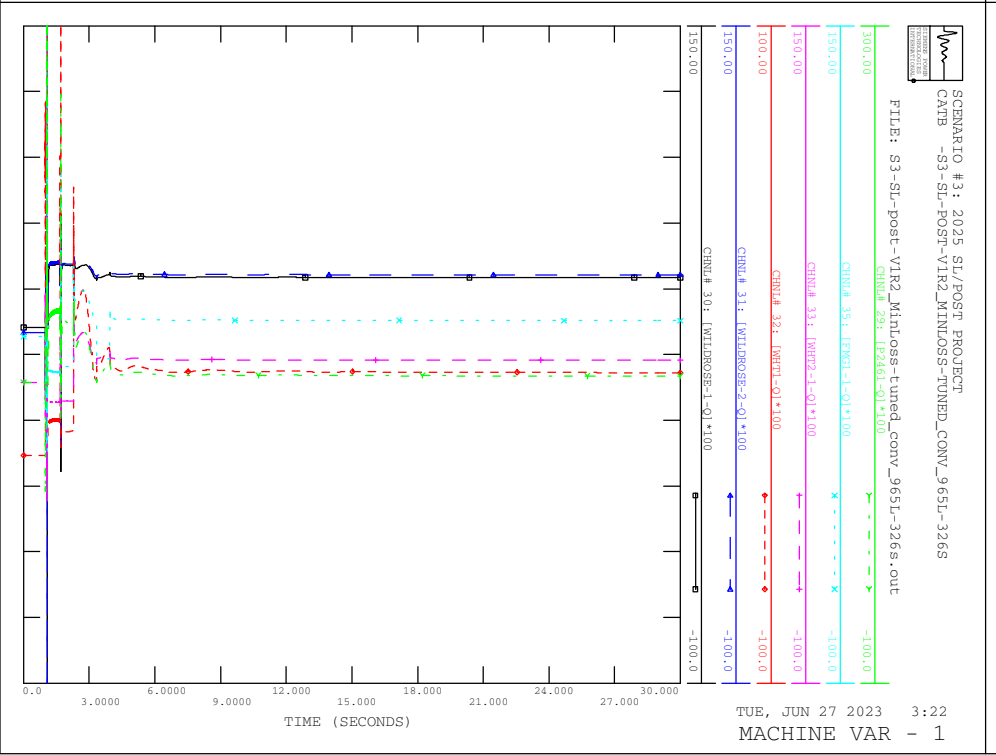

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

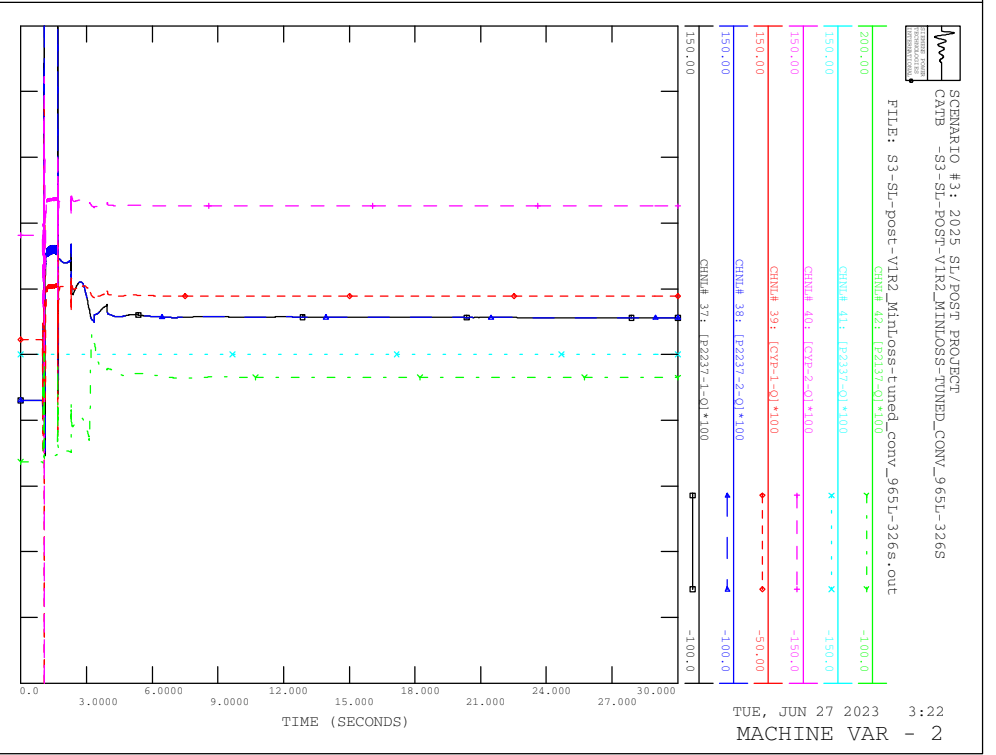

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

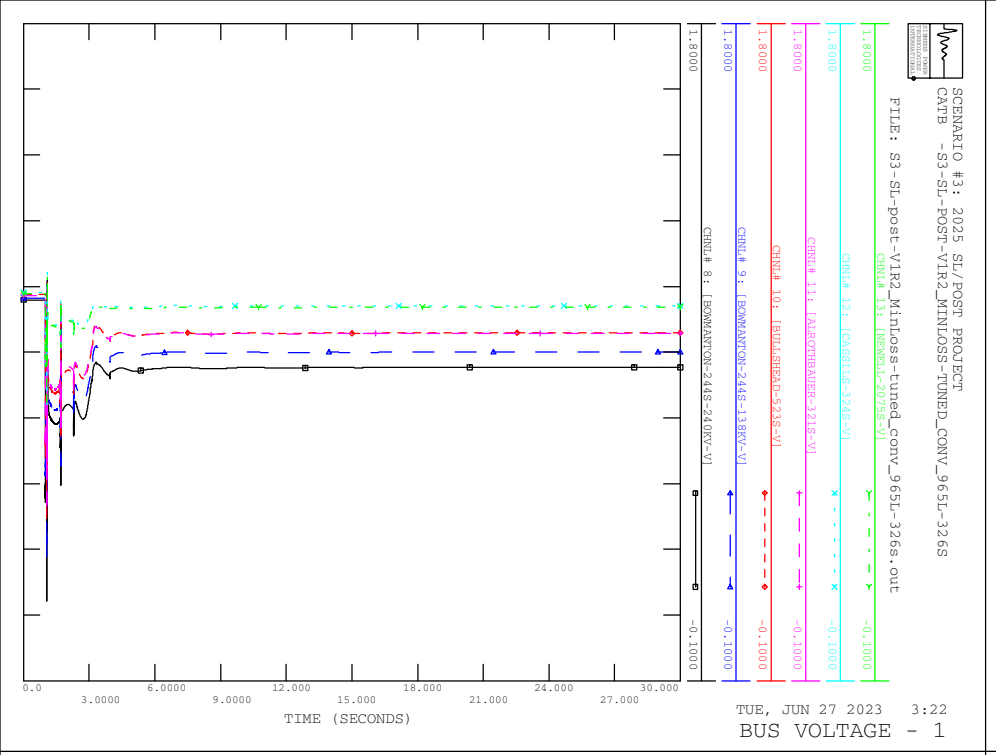

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

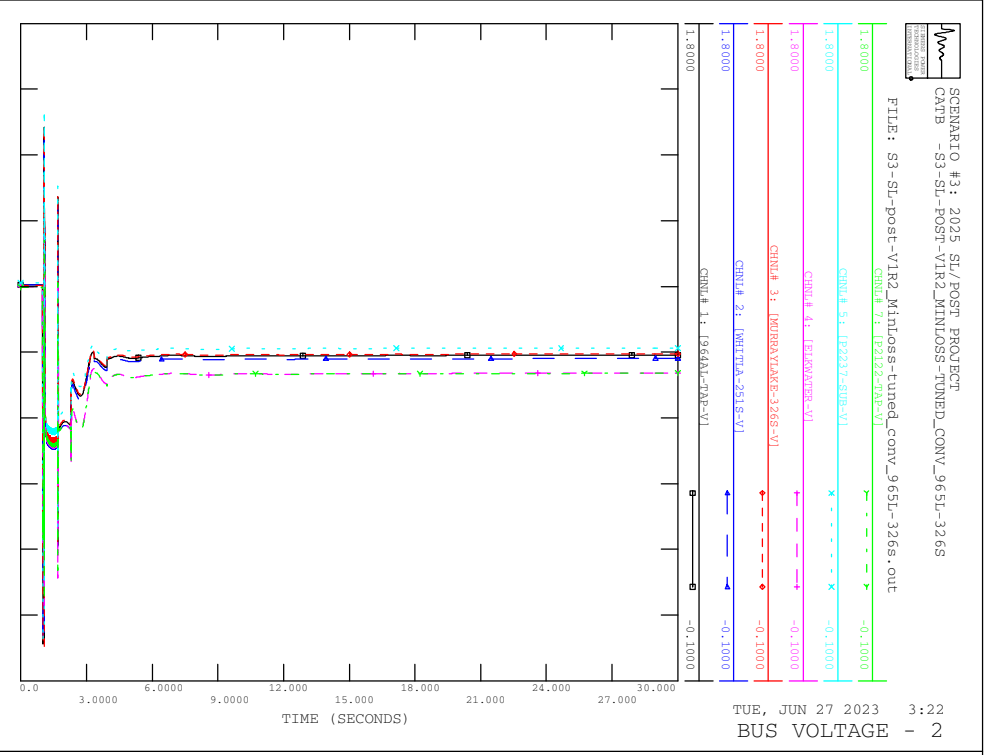

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-326s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

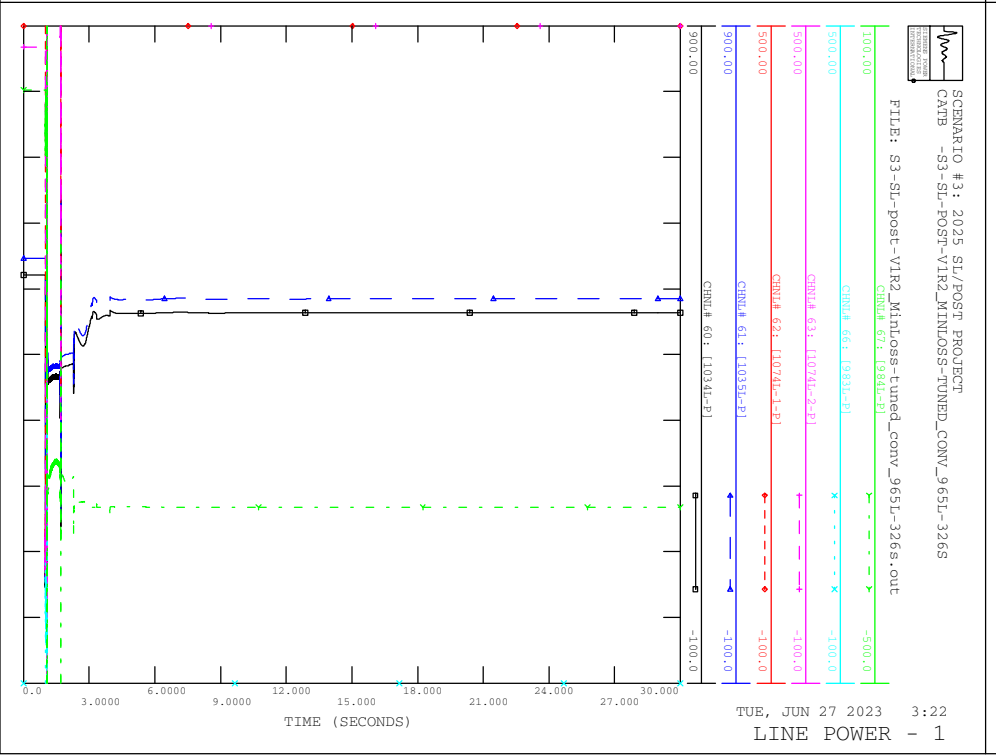

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-326s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

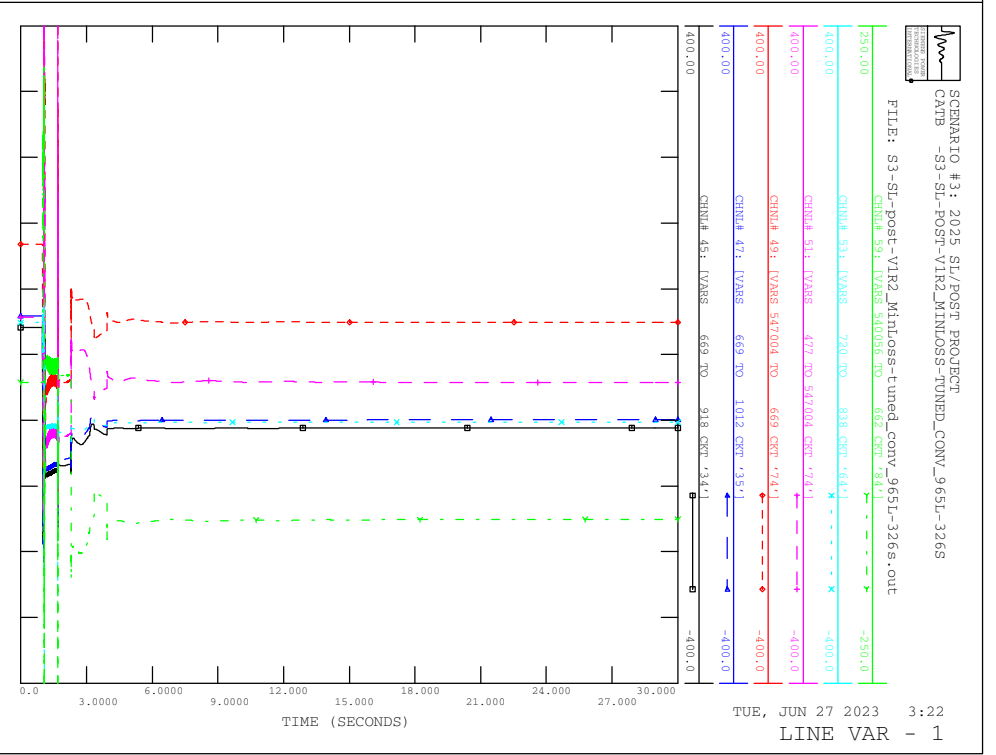

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-326s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

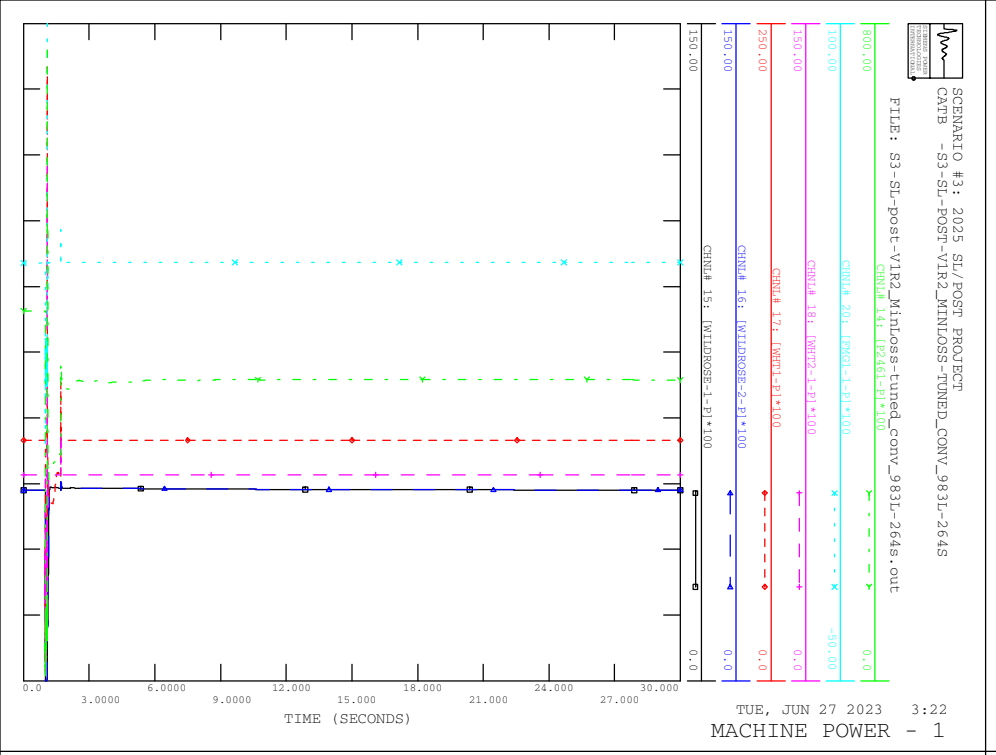

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-326s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

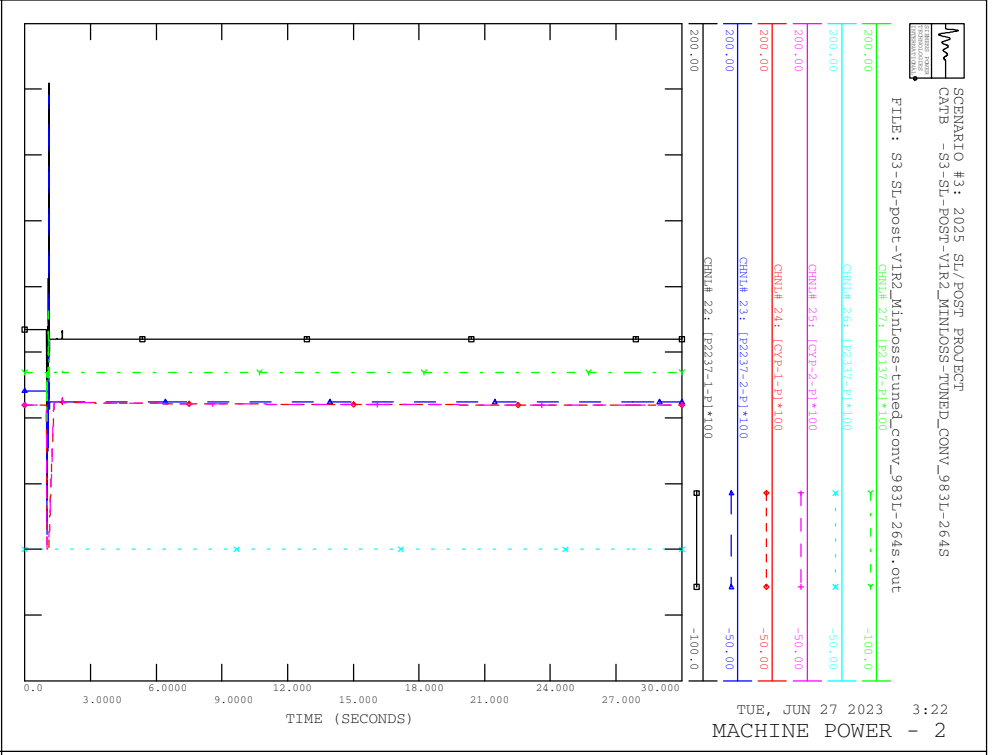

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-326s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [DENWOLF-207SS-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

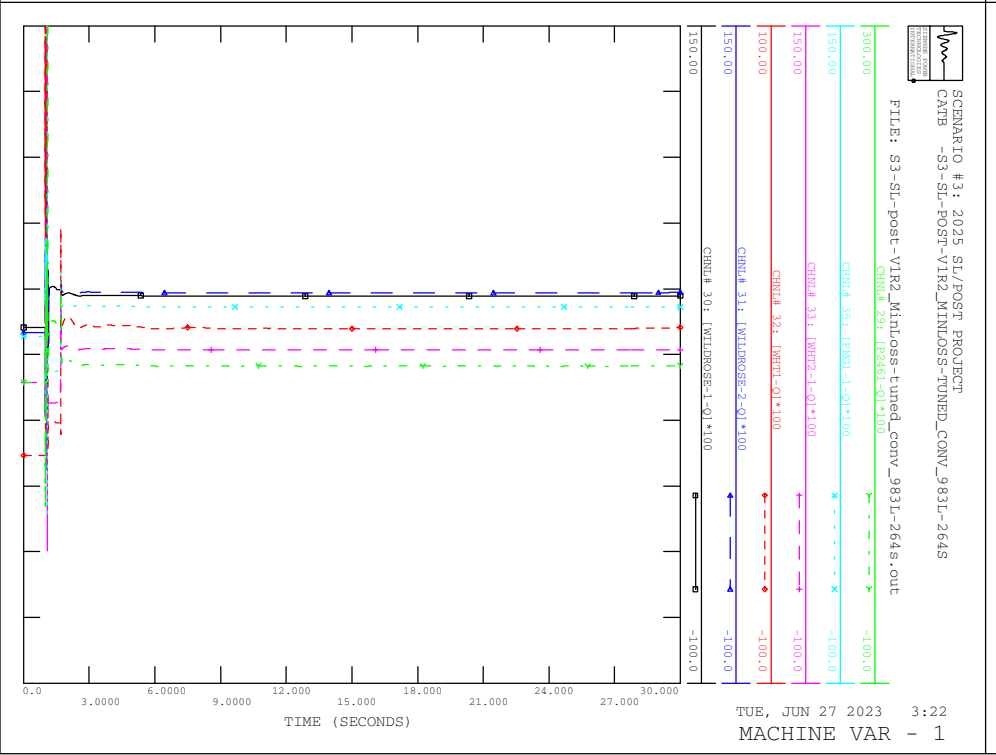

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-326s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WETTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

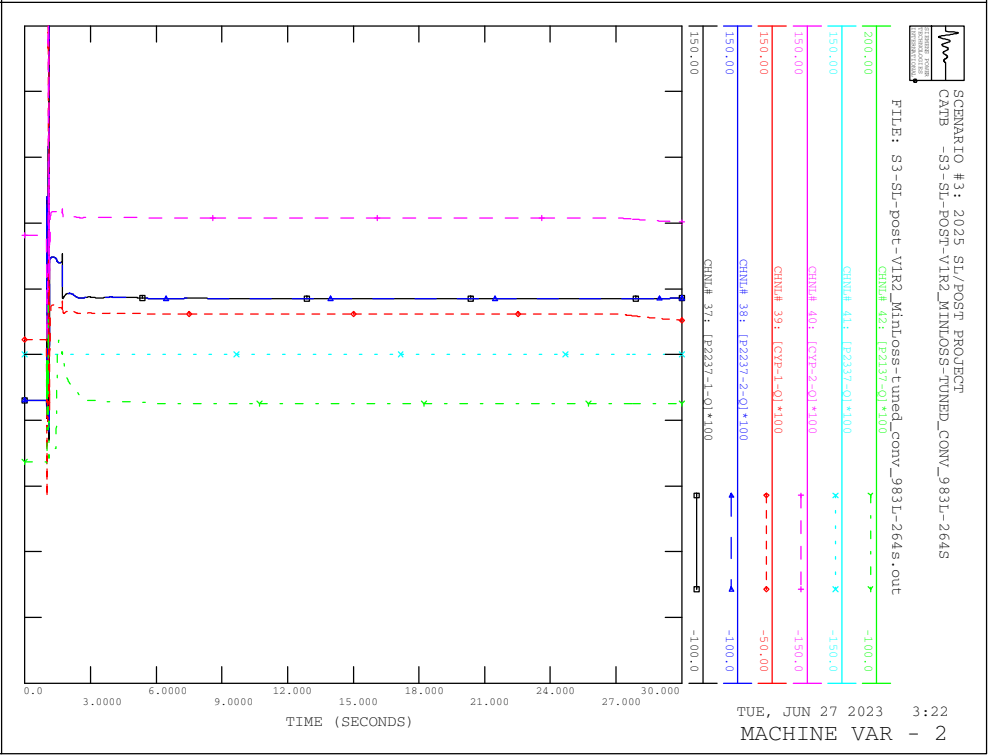

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-326s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
900.00
500.00
100.00
-100.0
-500.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

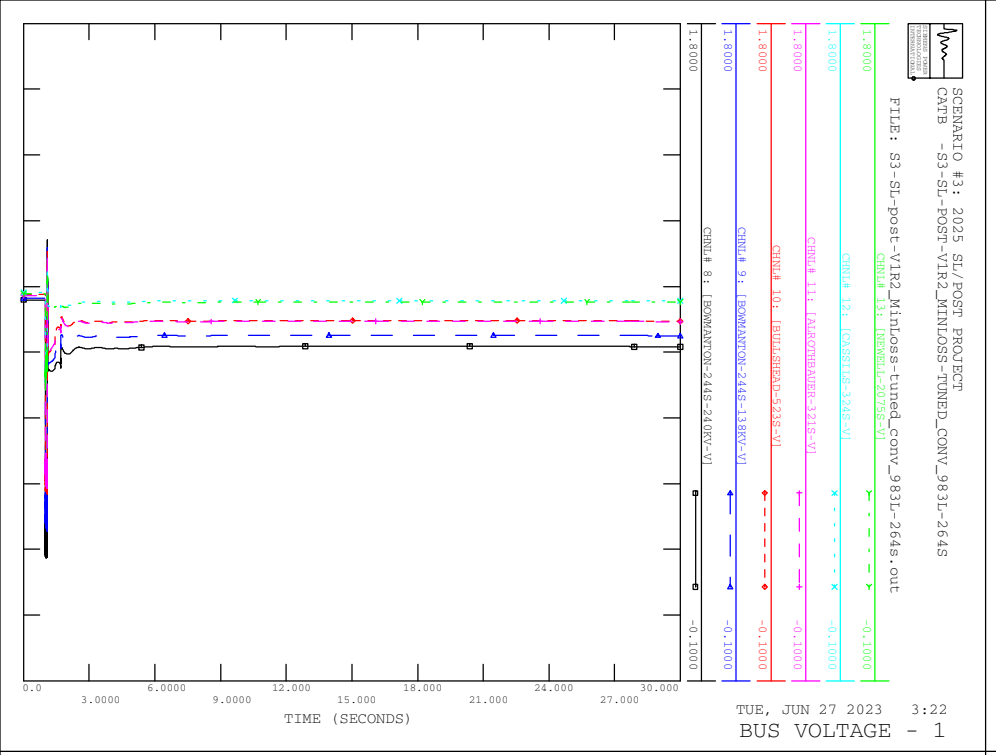

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-326S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-326s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
250.0
-400.0
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

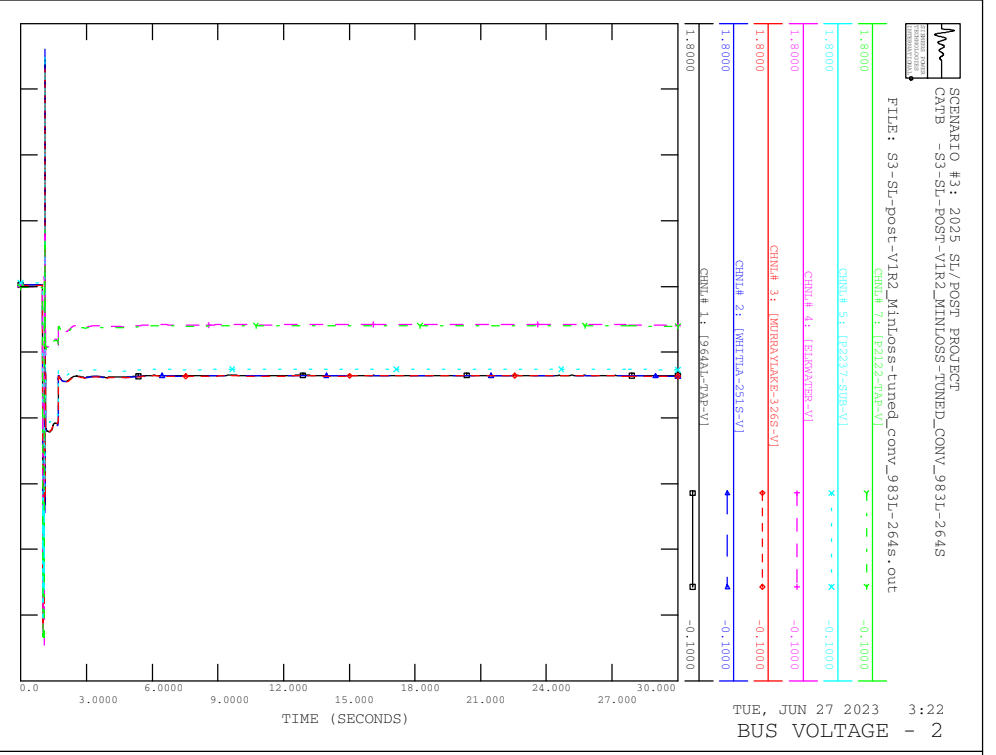

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 14: [P2461-P]*100
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

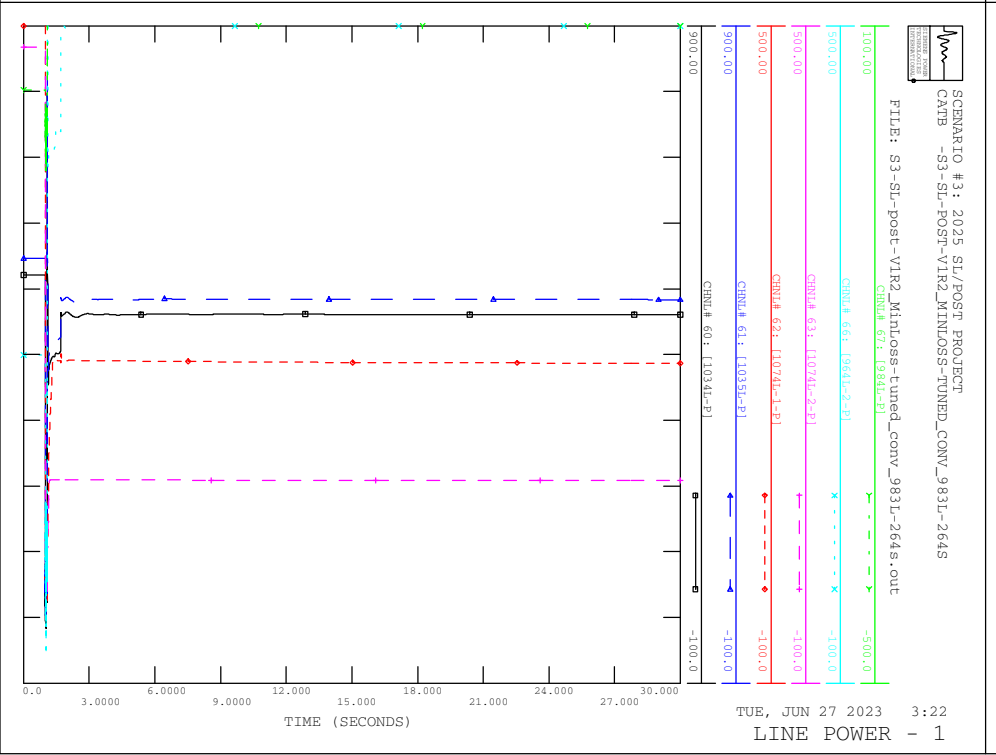

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

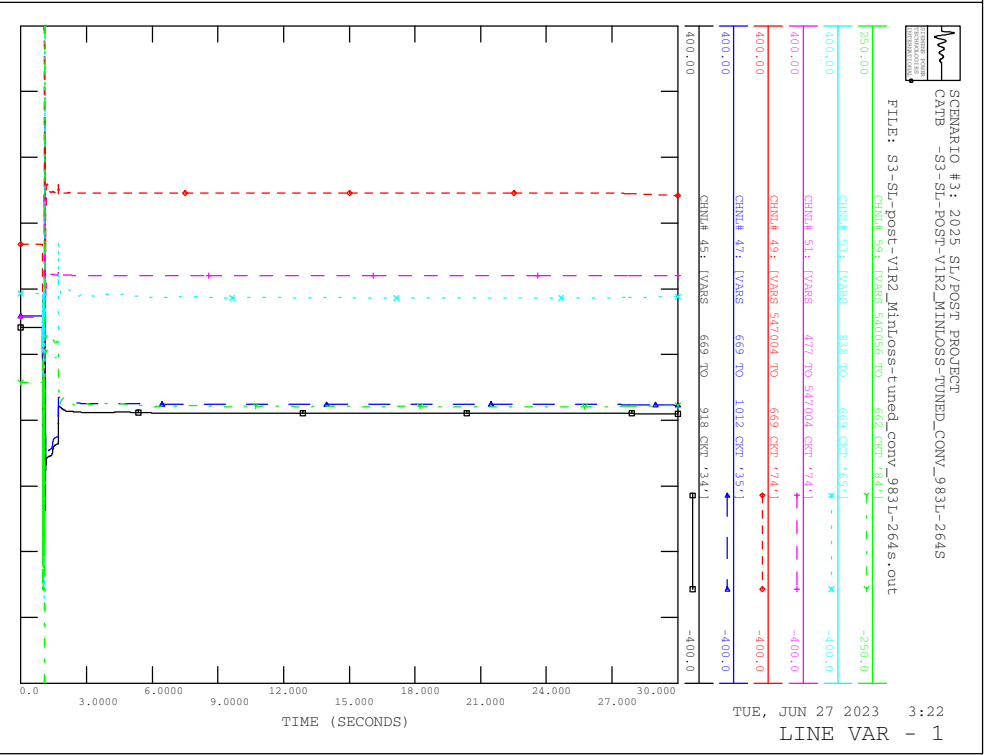

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 29: [P2461-Q]*100
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

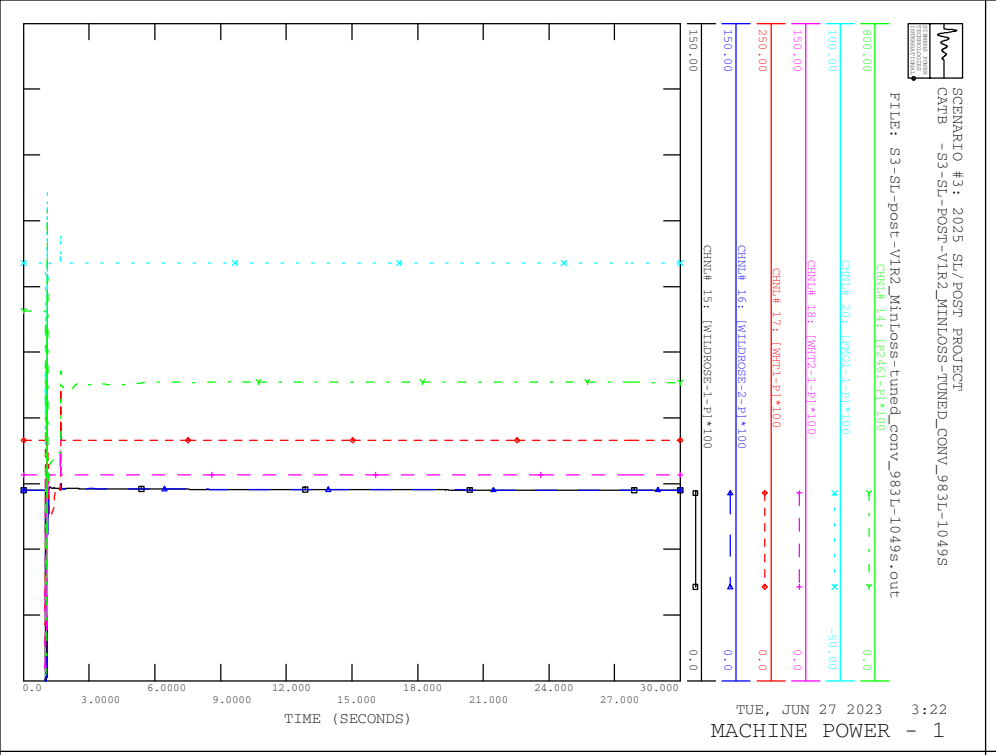

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

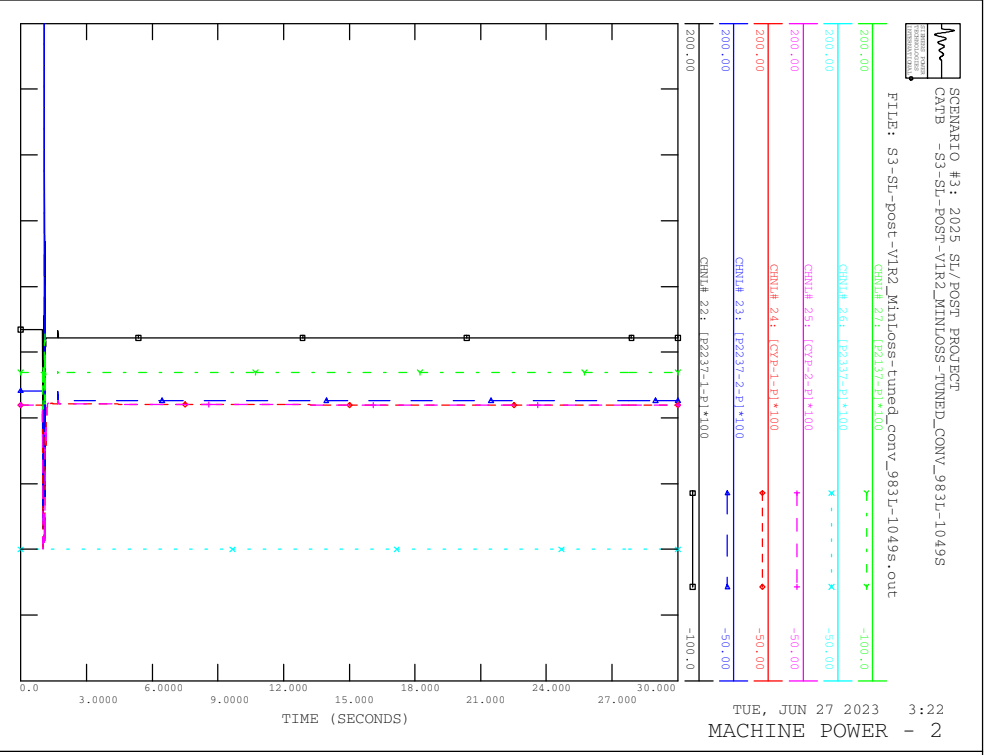

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [DENWOLD-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

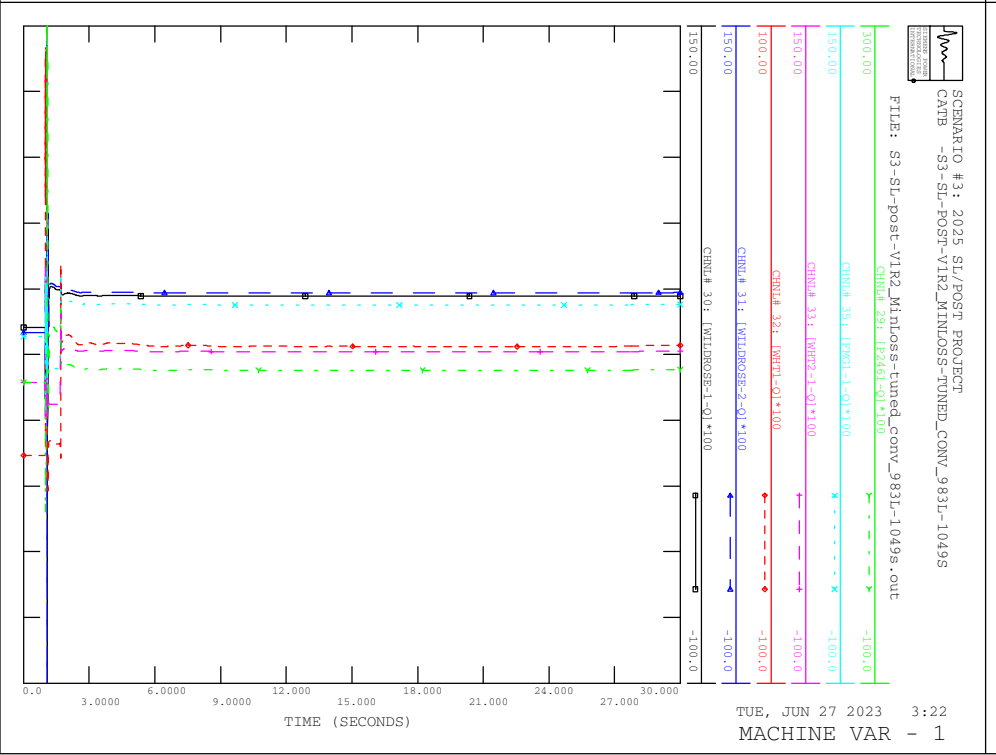

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WETTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

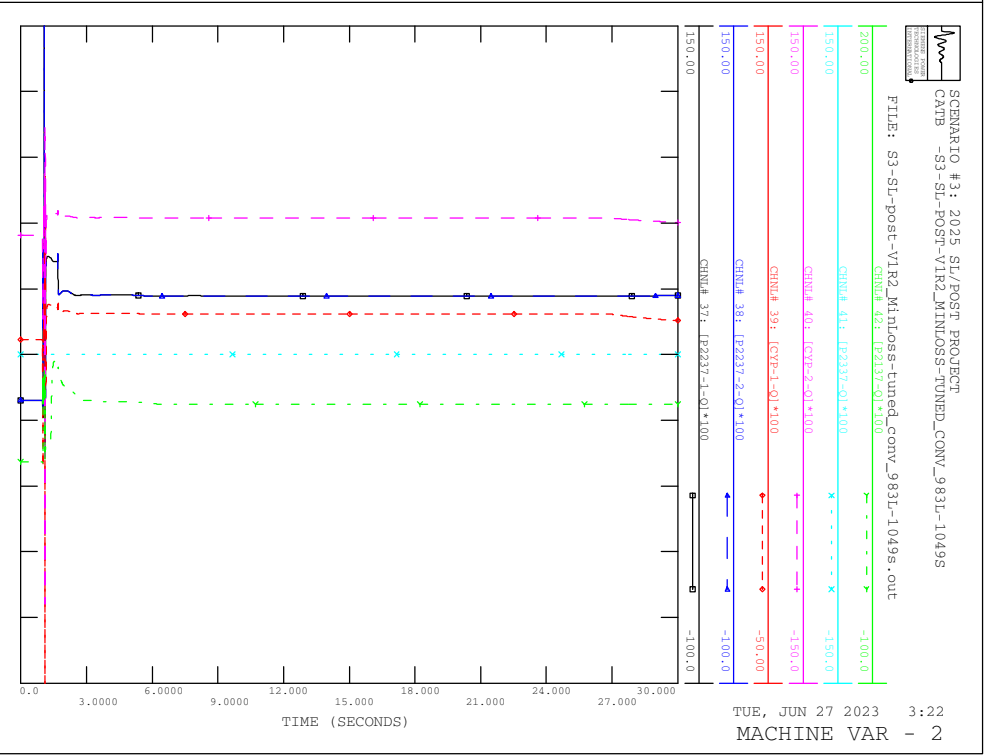

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [964L-2-P]
CHNL# 67: [964L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

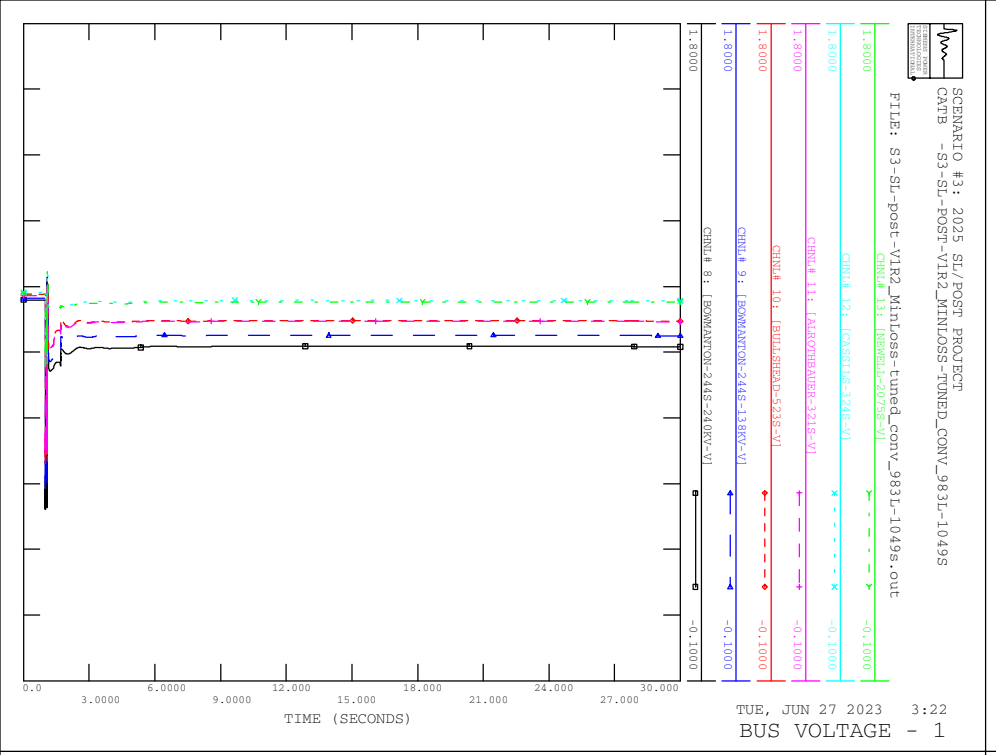

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_983L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_983L-264s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

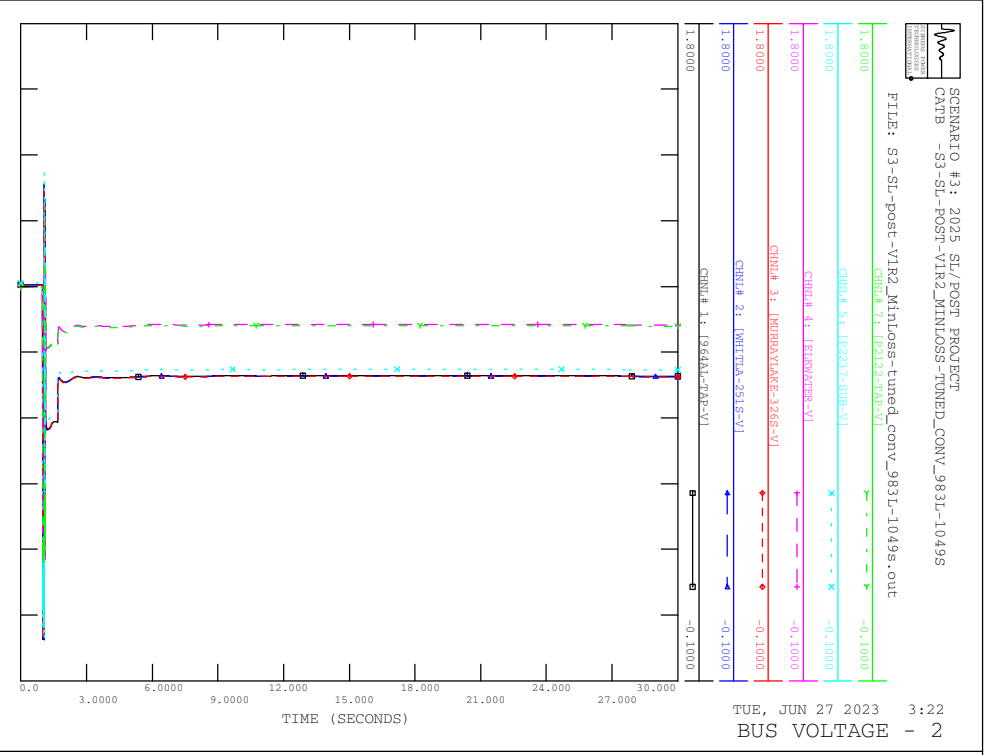

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 14: [P2461-P]*100
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

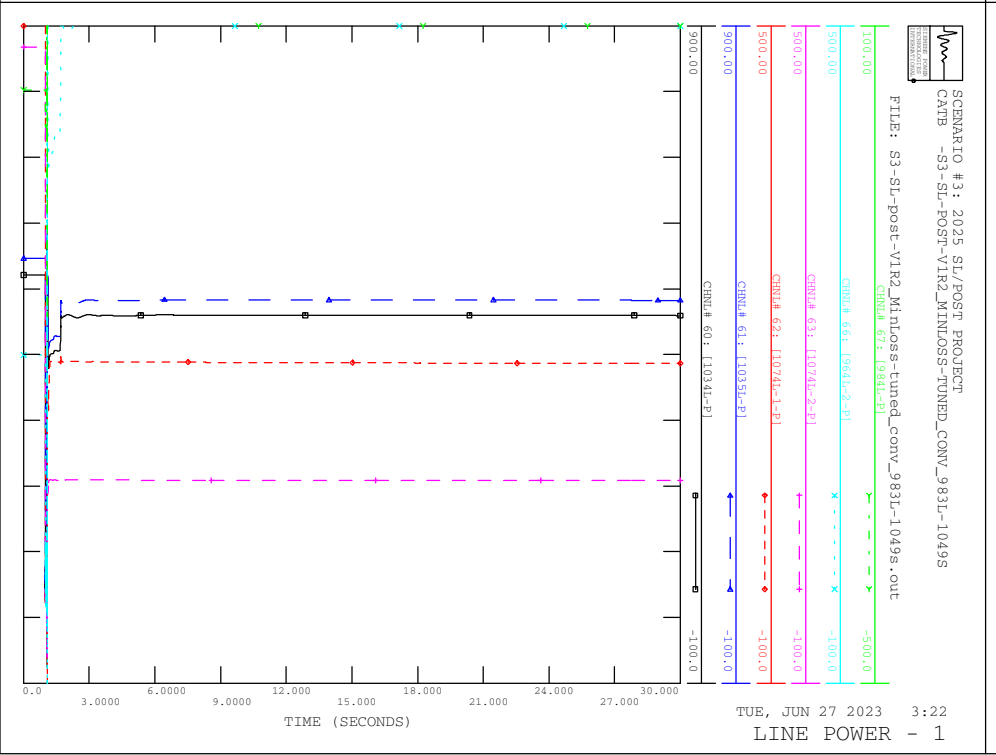

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

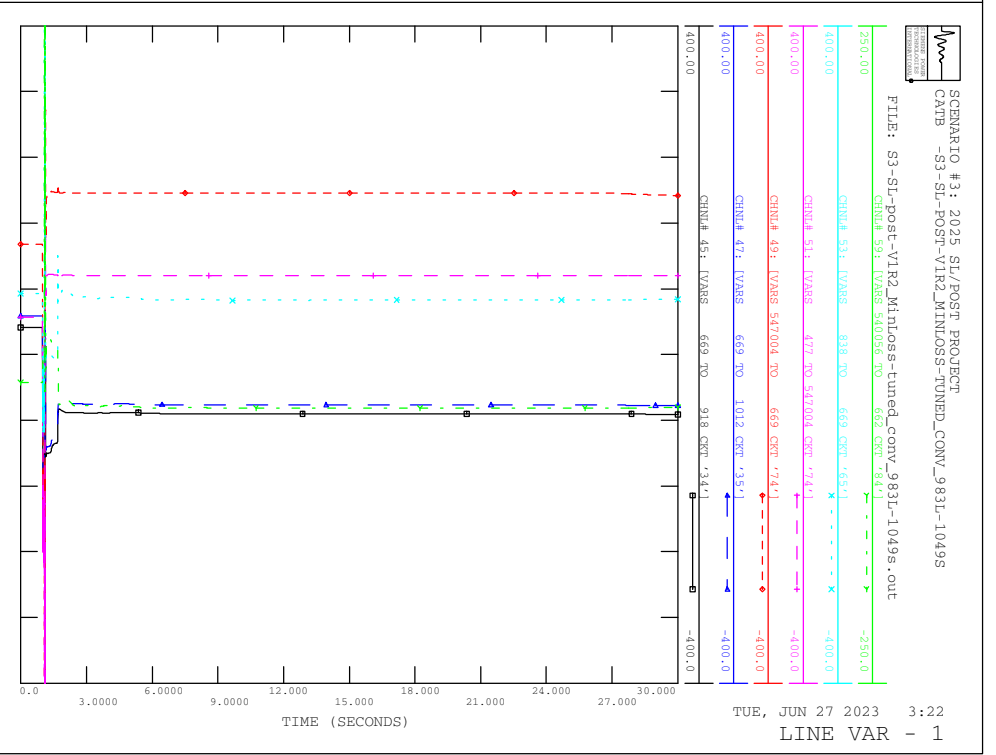

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 29: [P2461-Q]*100
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

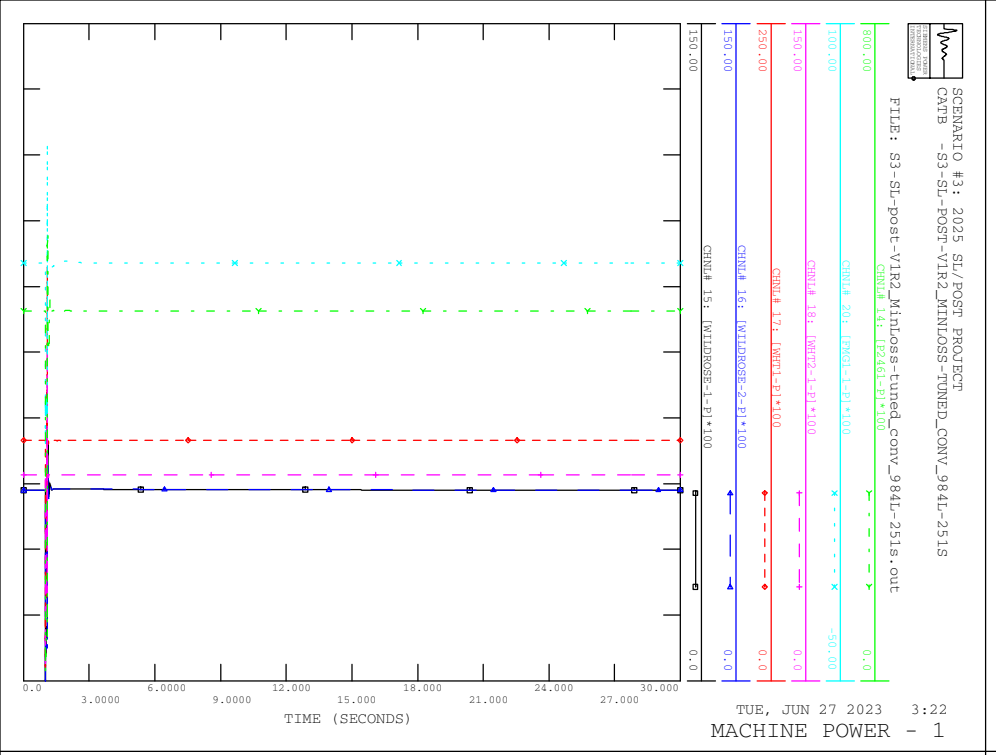

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

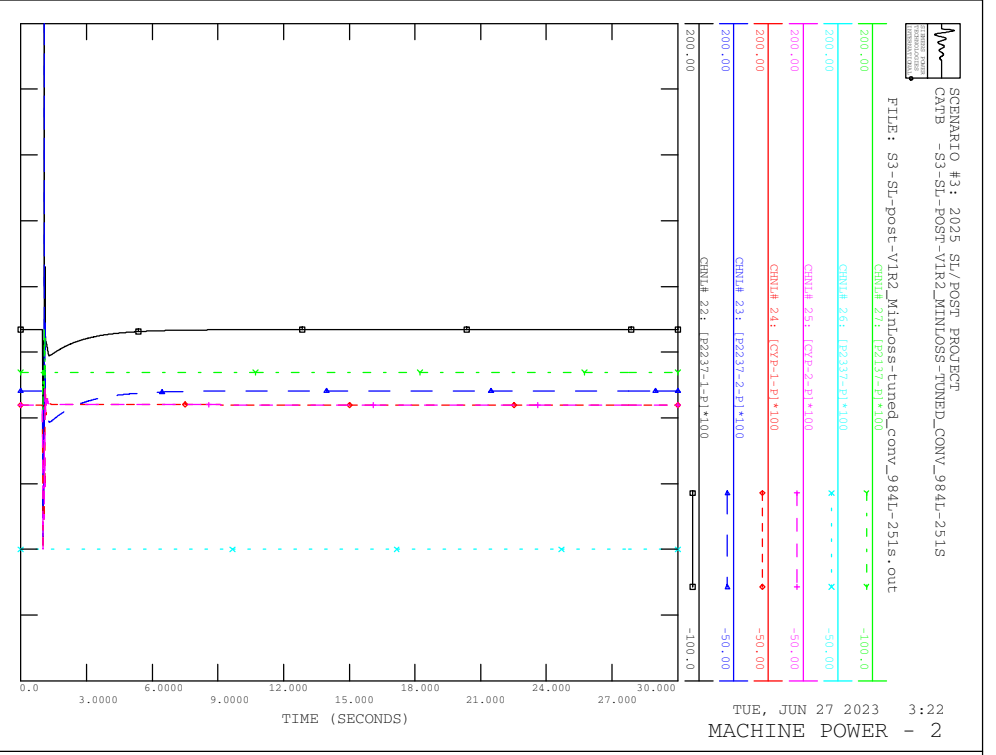

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 1: [964A1-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWGLE-2075S-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

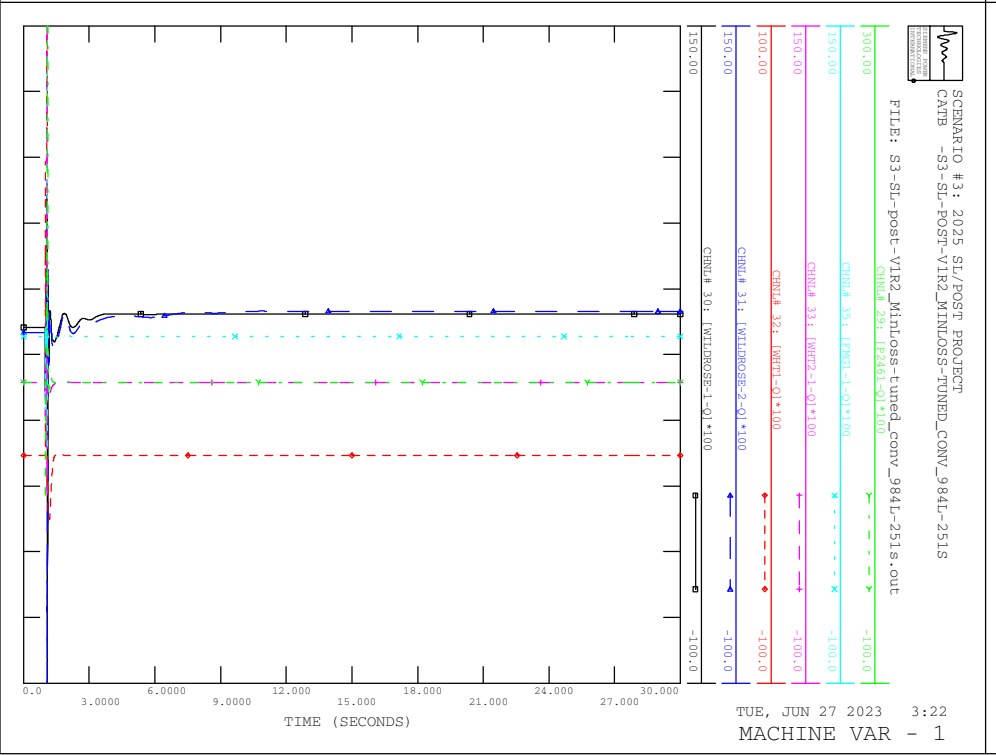

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 1: [964A1-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

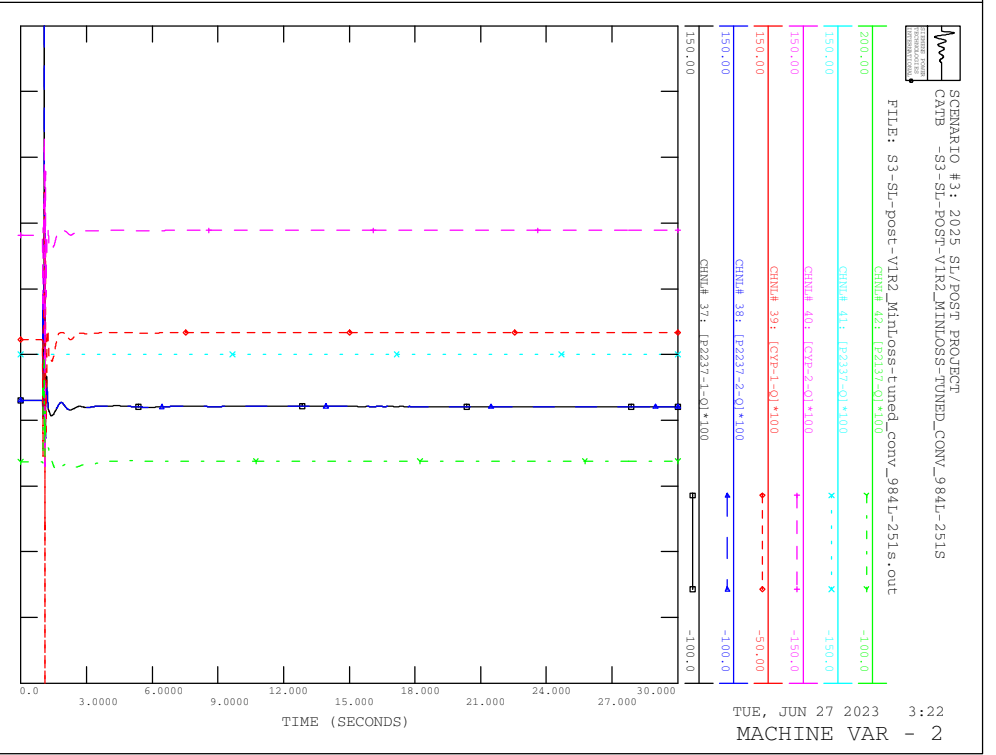

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [964A-2-P]
CHNL# 67: [1986L-P]
900.00
500.00
100.00
-100.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

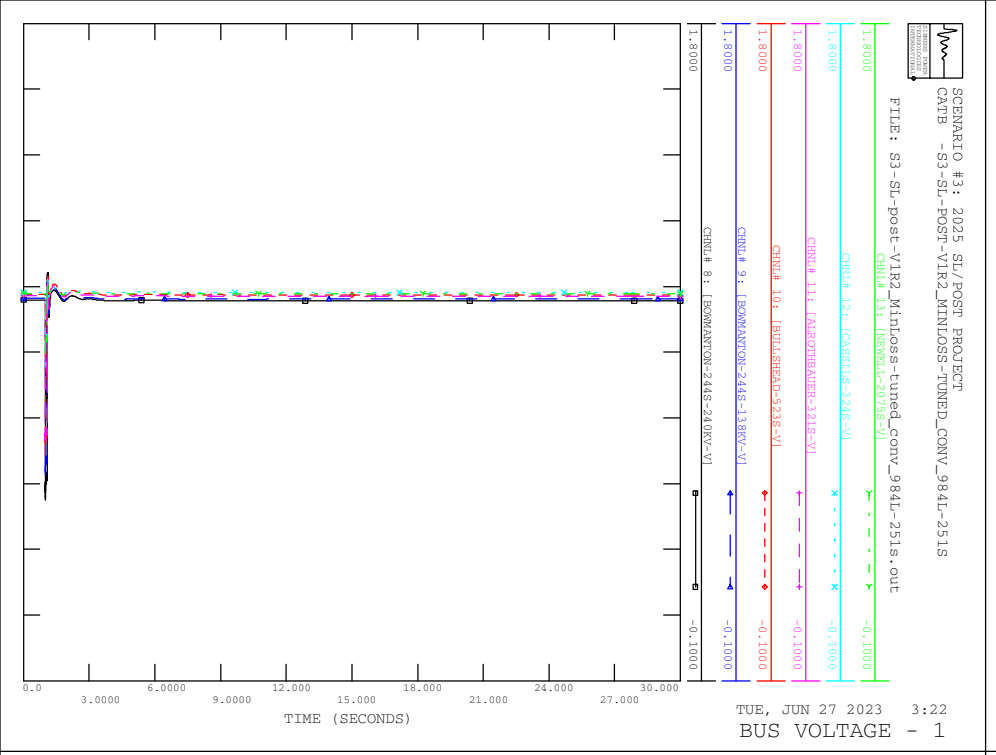

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_983L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_983L-1049s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
250.00
-400.0
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

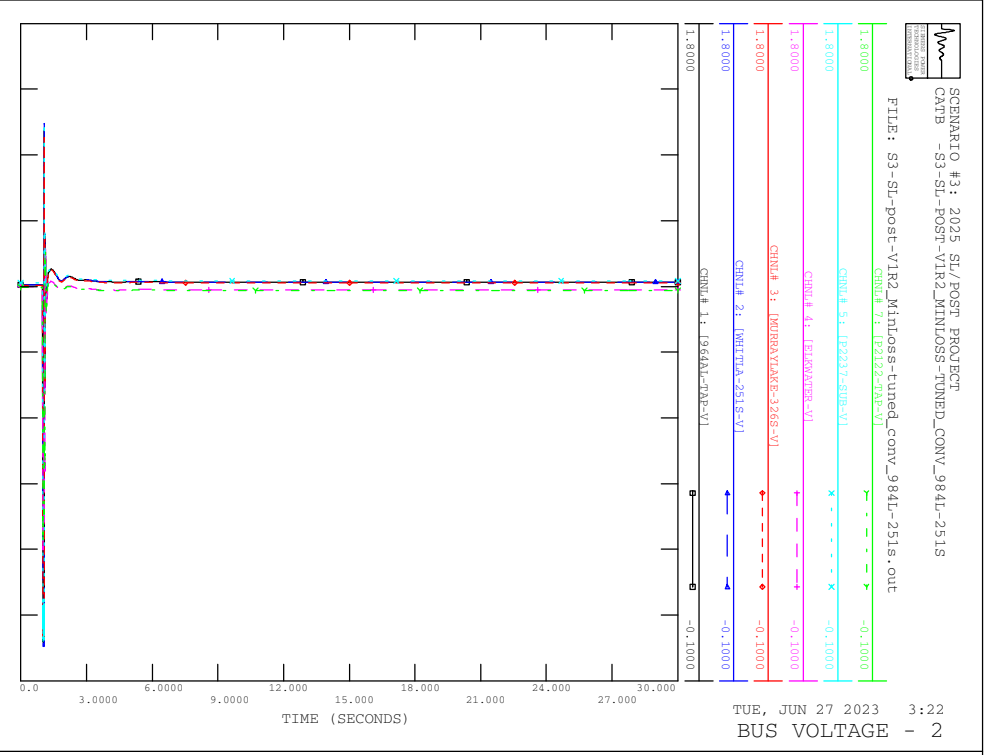

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

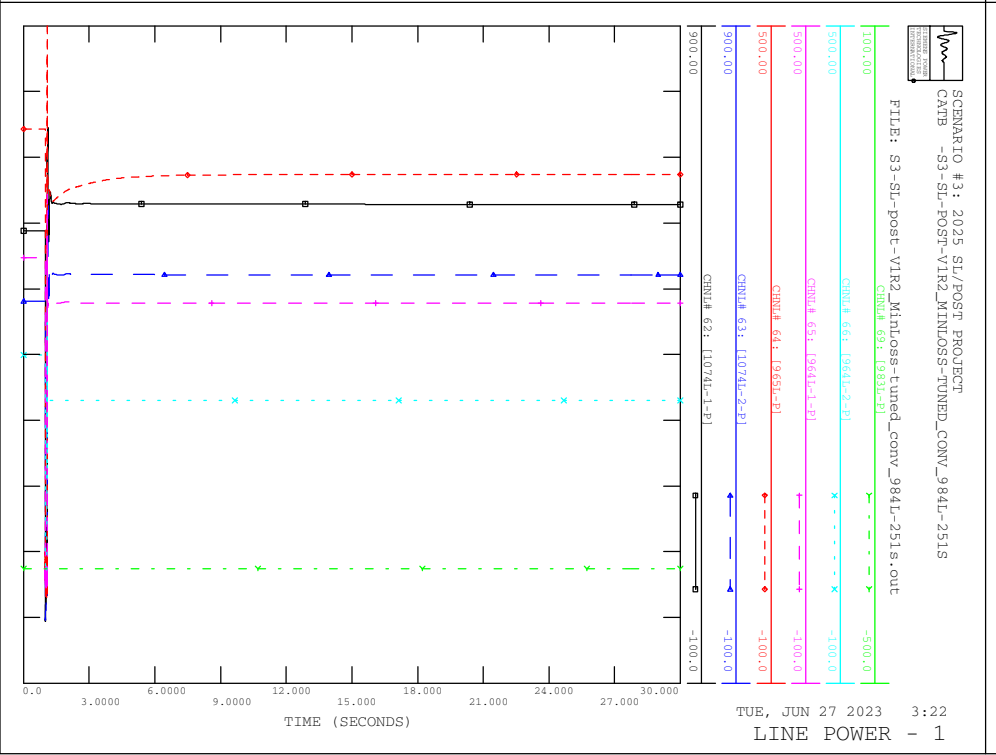

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

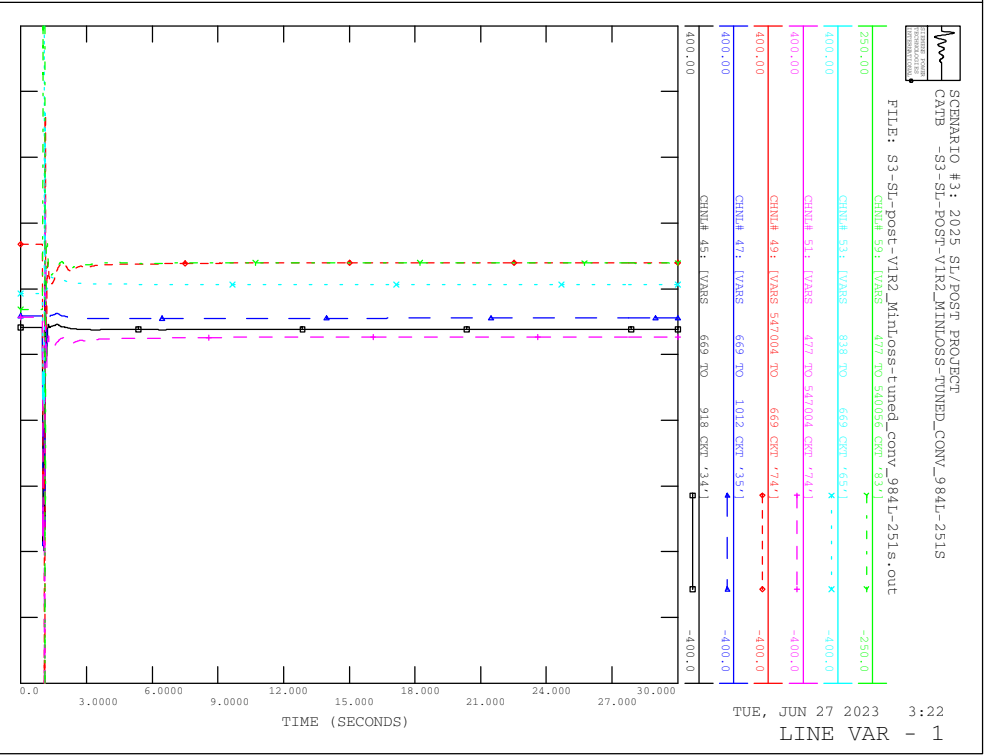

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

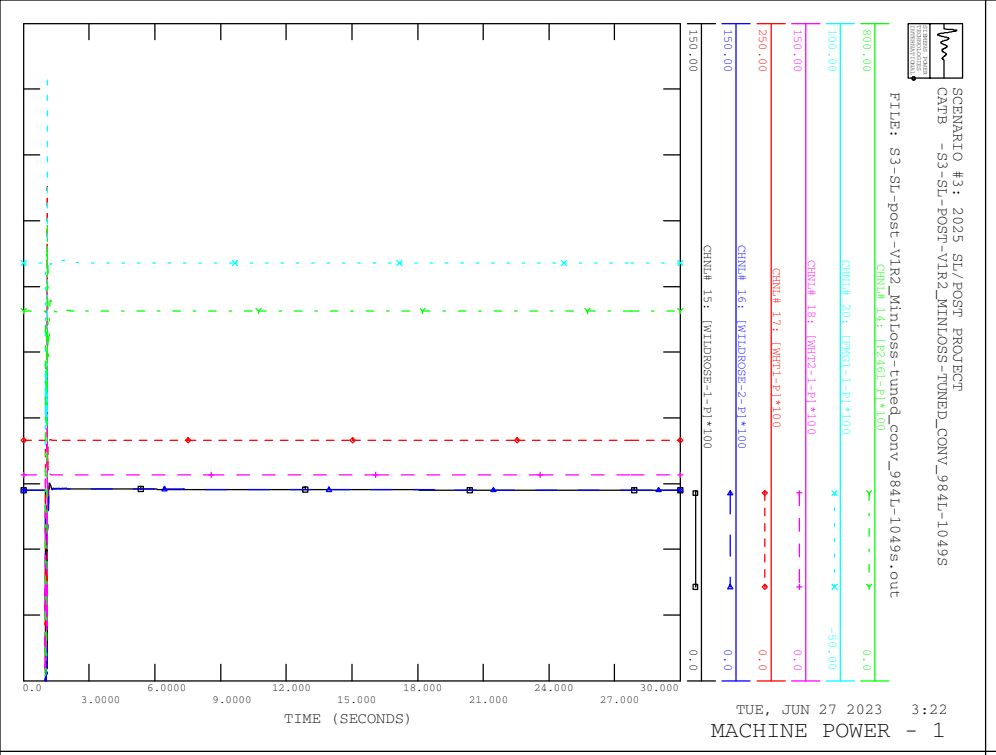

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

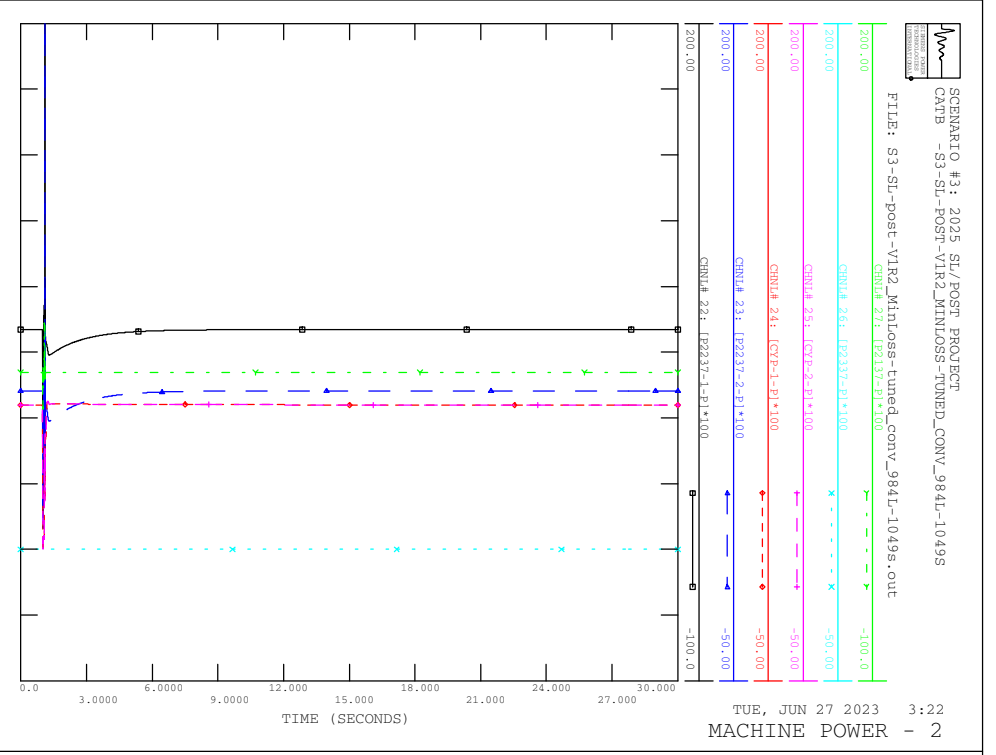

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWMEL-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

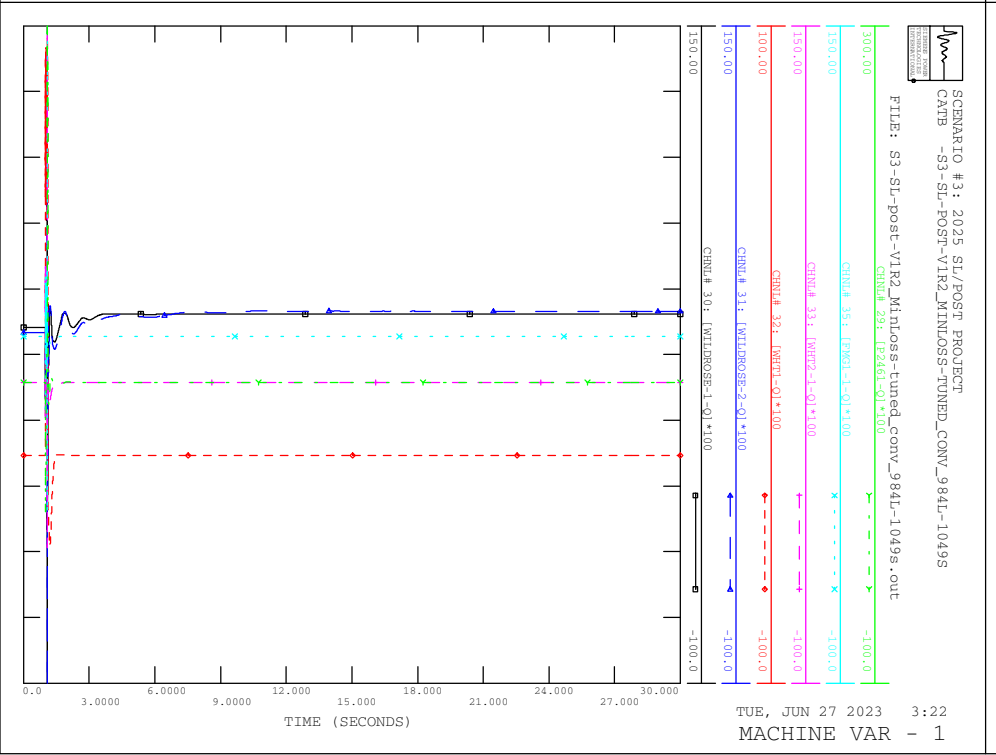

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

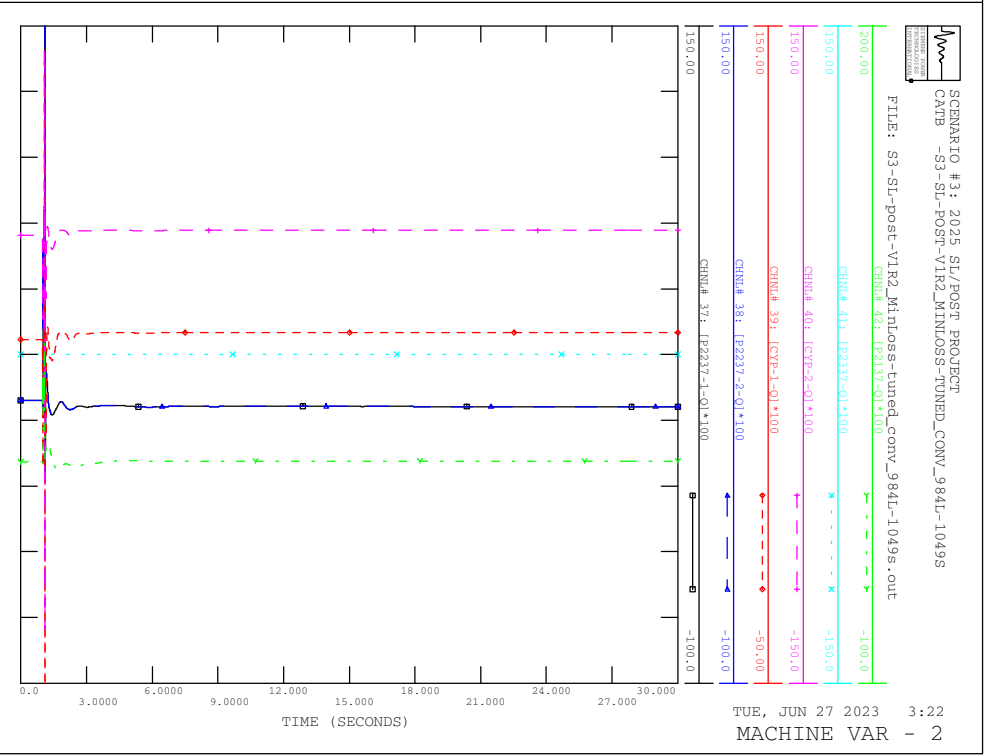

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 64: [965L-P]
CHNL# 65: [964L-1-P]
CHNL# 66: [964L-2-P]
CHNL# 69: [985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

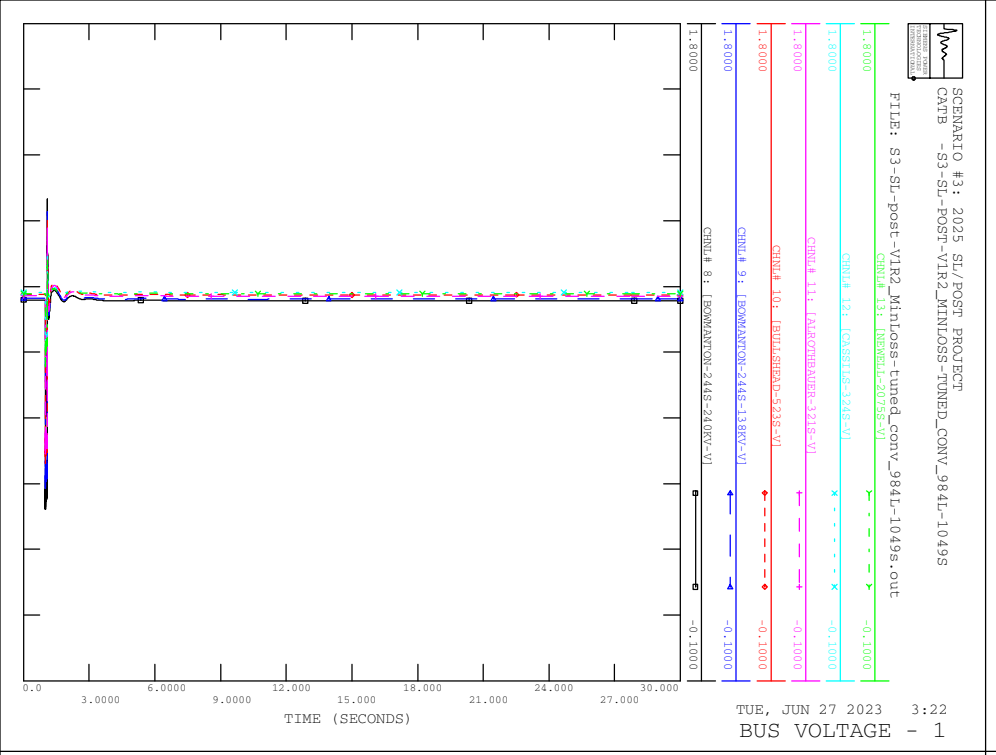

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-251S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-251s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

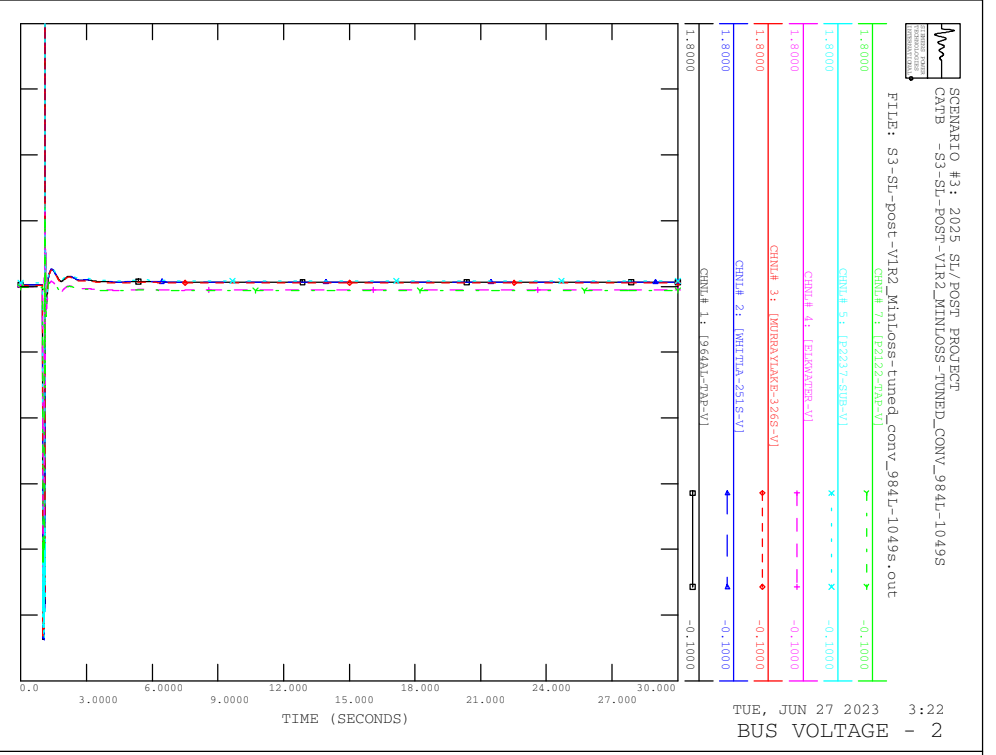

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

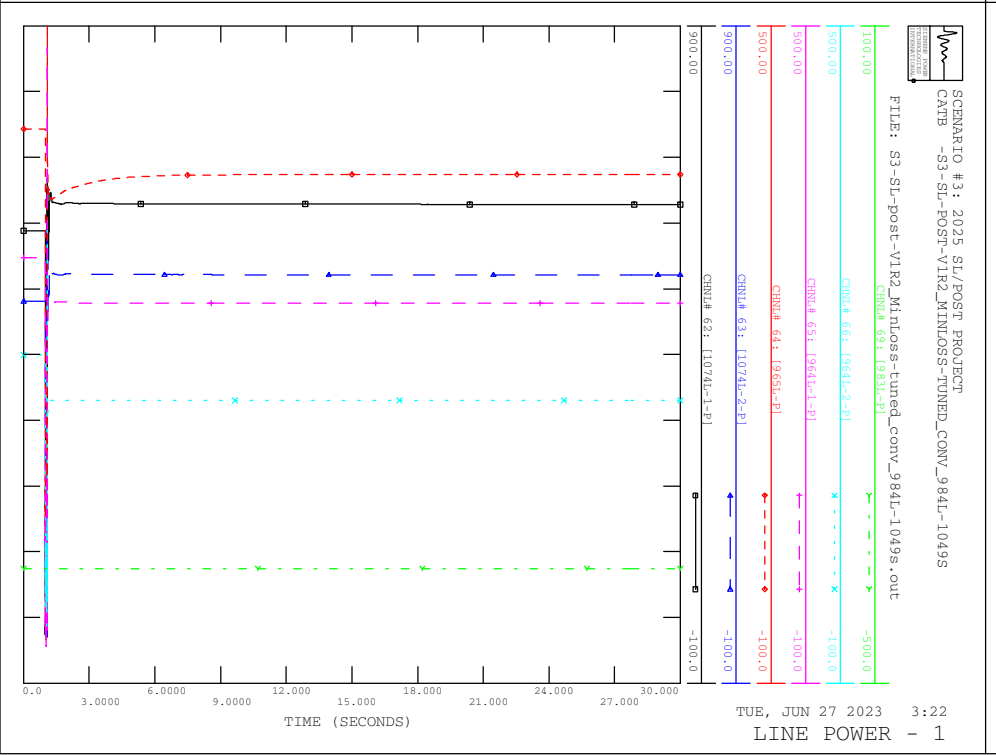

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

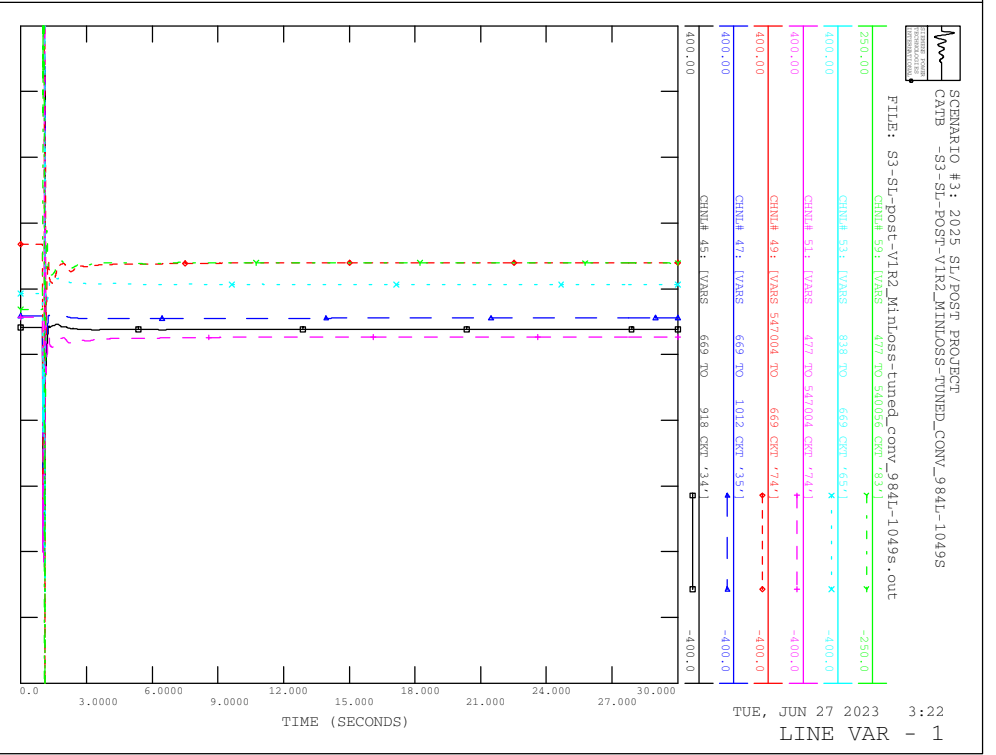

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

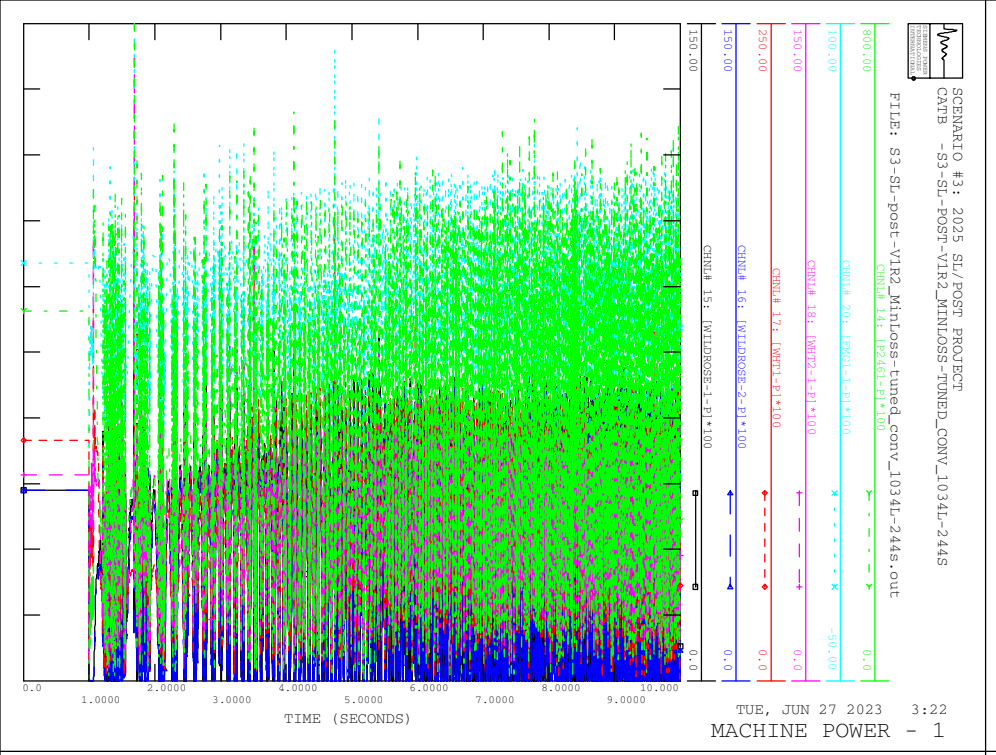

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

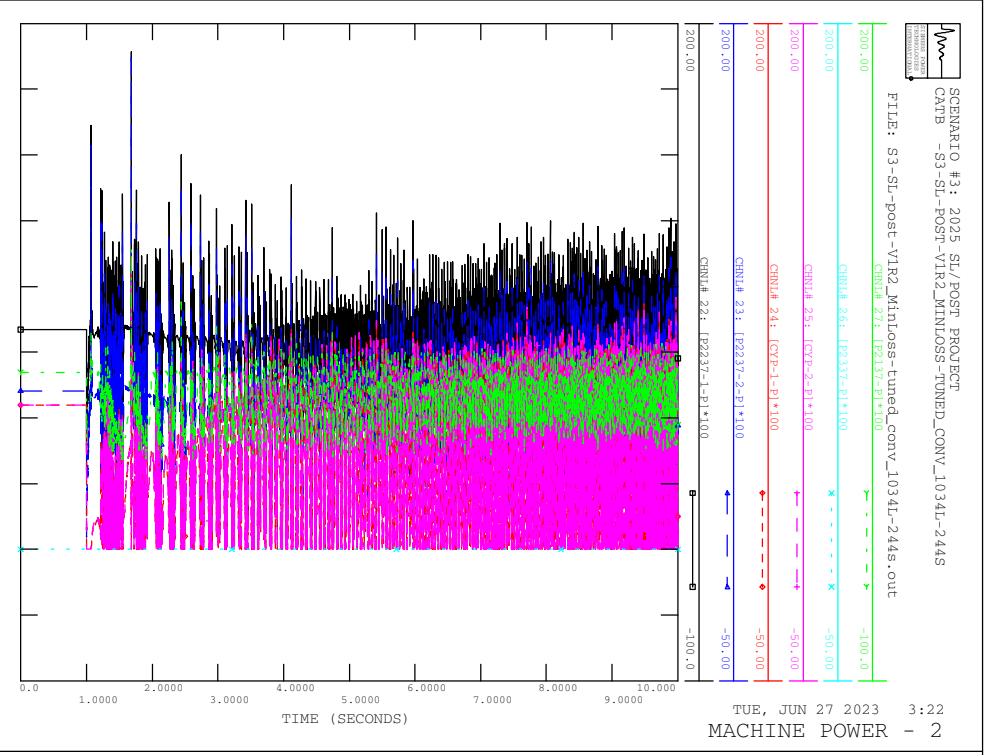

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-325S-V]
CHNL# 13: [NEWDALE-2075S-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

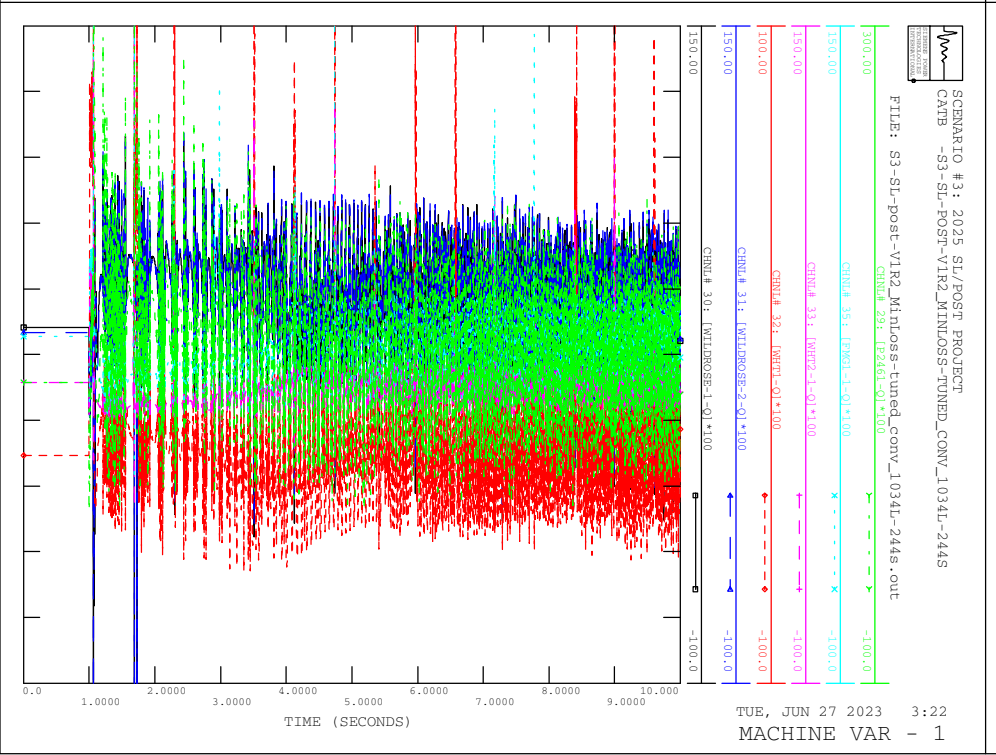

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

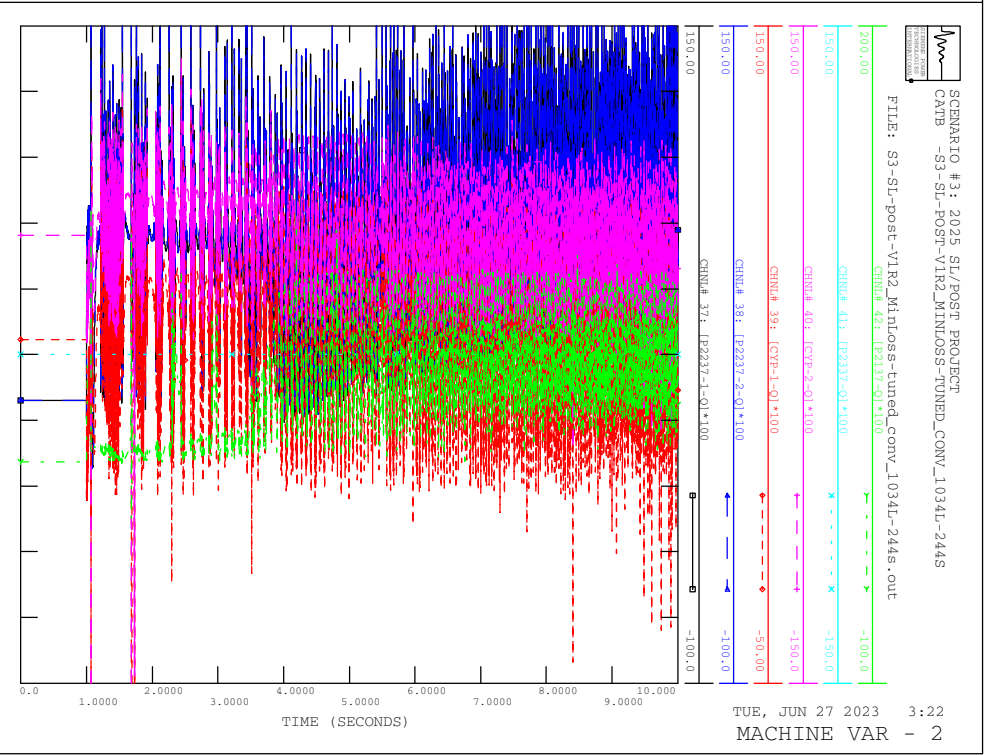

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 64: [965L-P]
CHNL# 65: [964L-1-P]
CHNL# 66: [964L-2-P]
CHNL# 69: [985L-P]
900.00
-100.00
500.00
-500.00
100.00
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

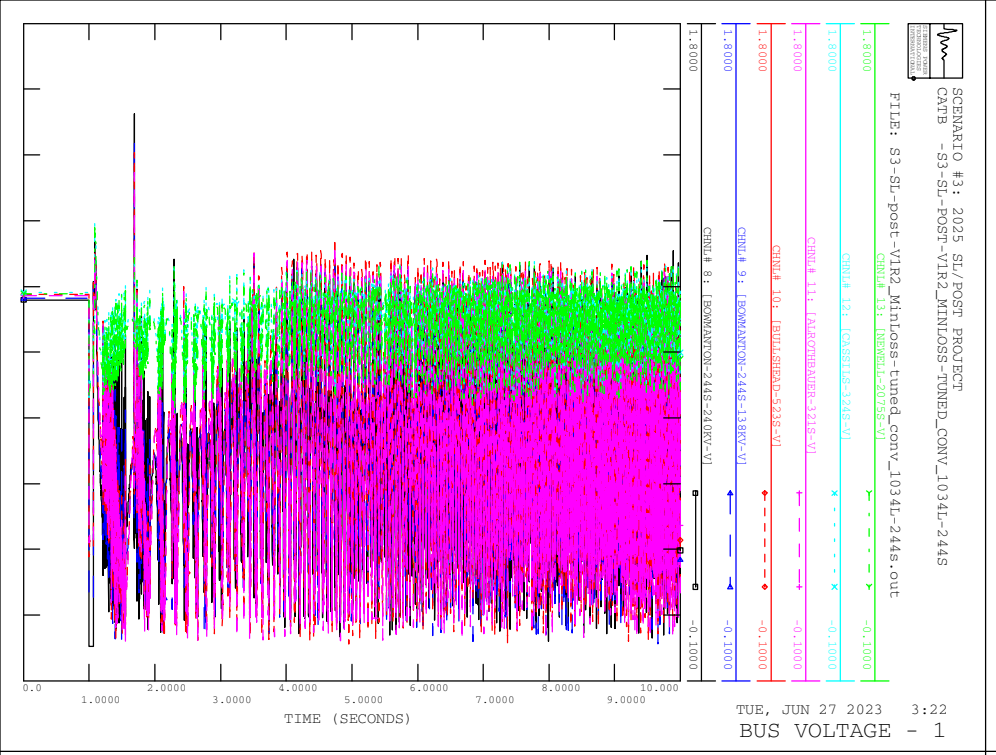

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_984L-1049S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_984L-1049s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
400.00
-400.0
250.00
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

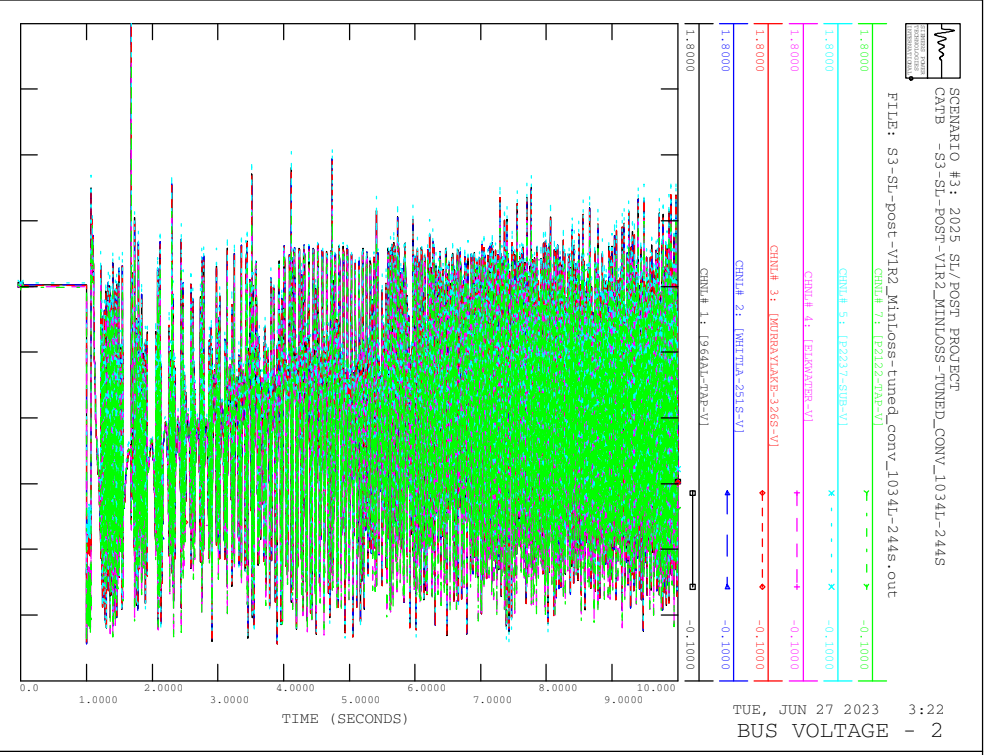

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 19: [PWGS-1-P]*100
CHNL# 20: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

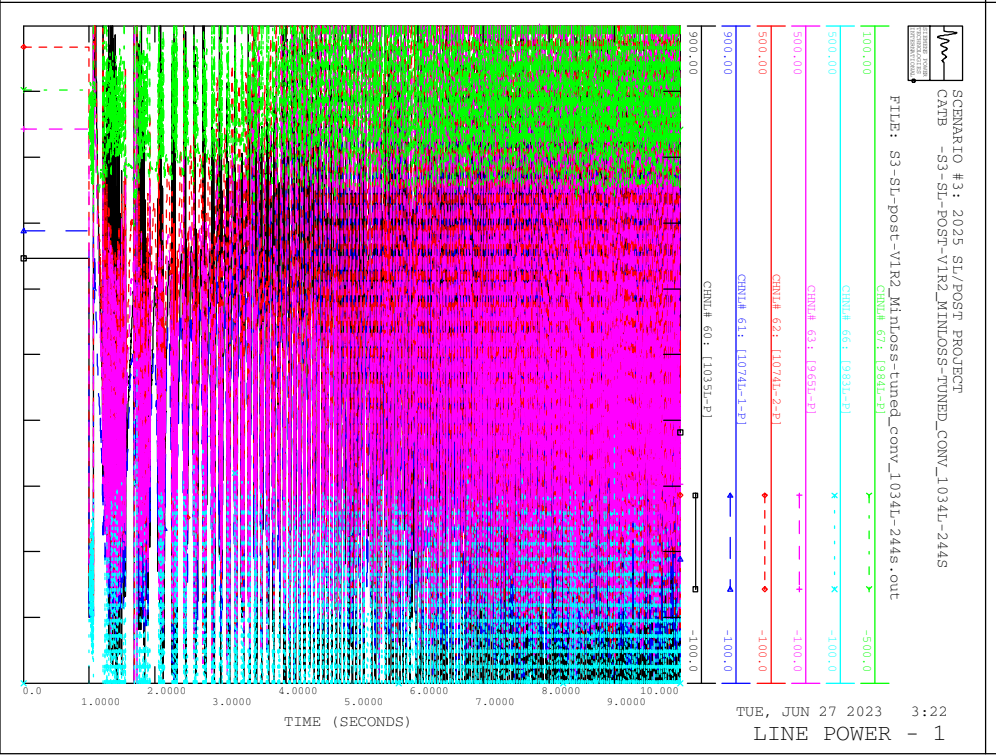

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

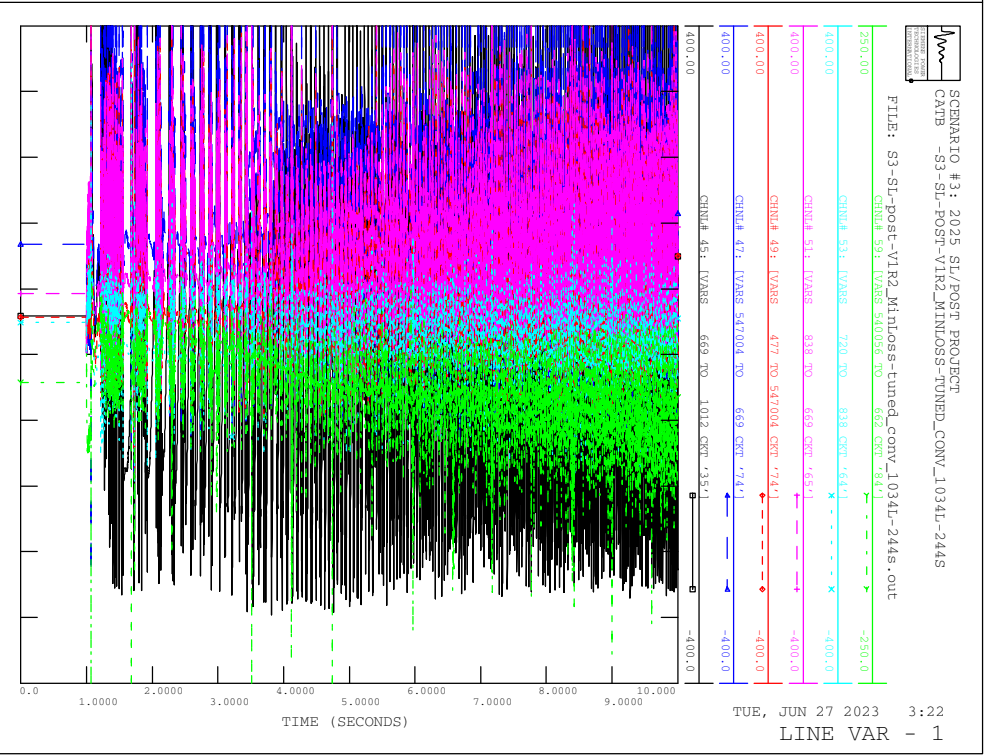

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 34: [PWGS-1-Q]*100
CHNL# 35: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

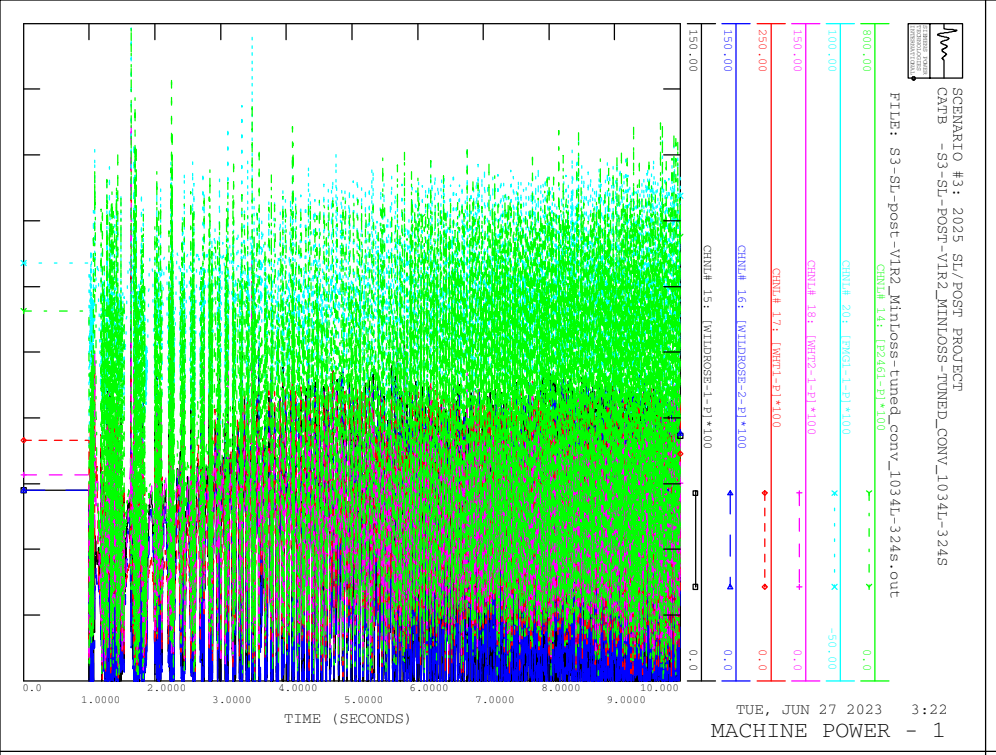

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

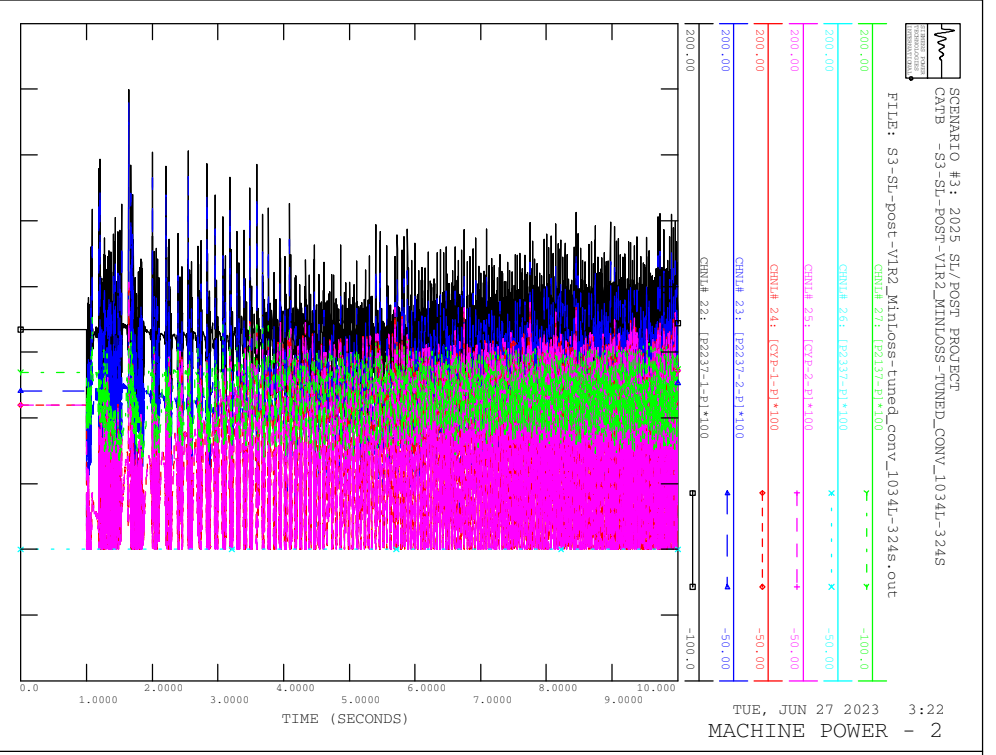

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [KENDALL-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

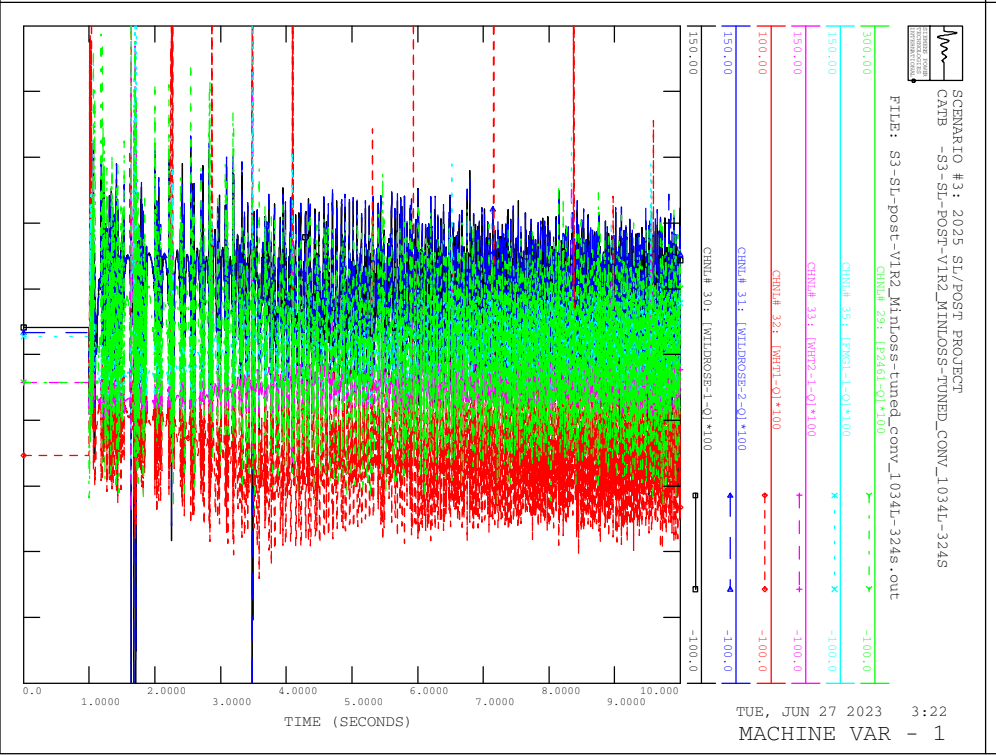

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

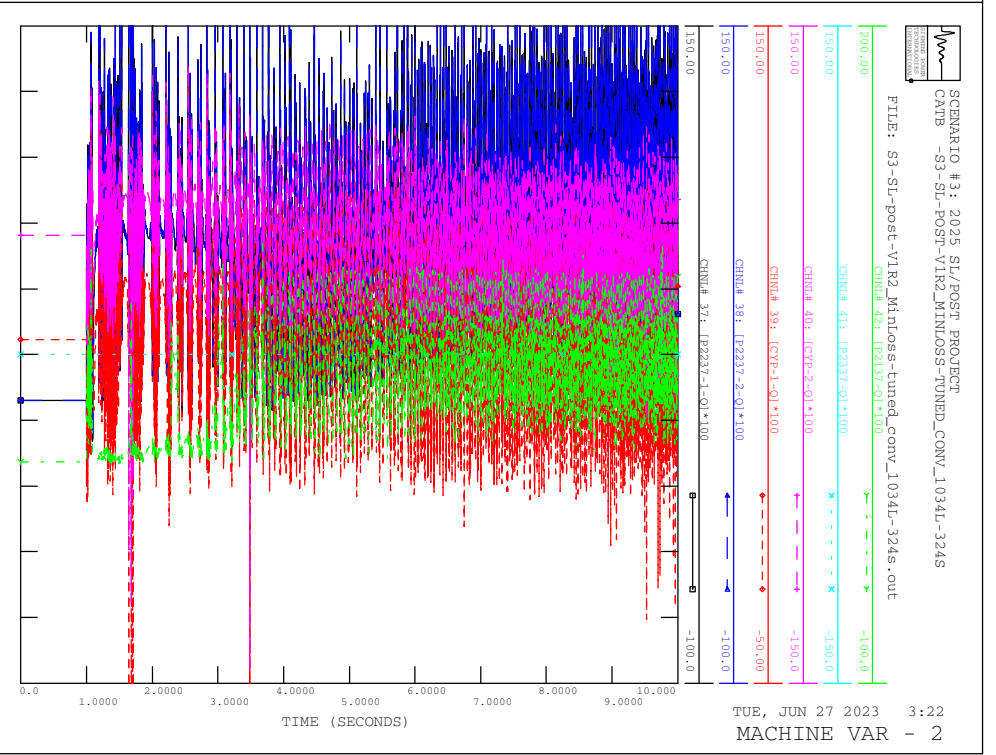

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 60: [1035L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [938L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

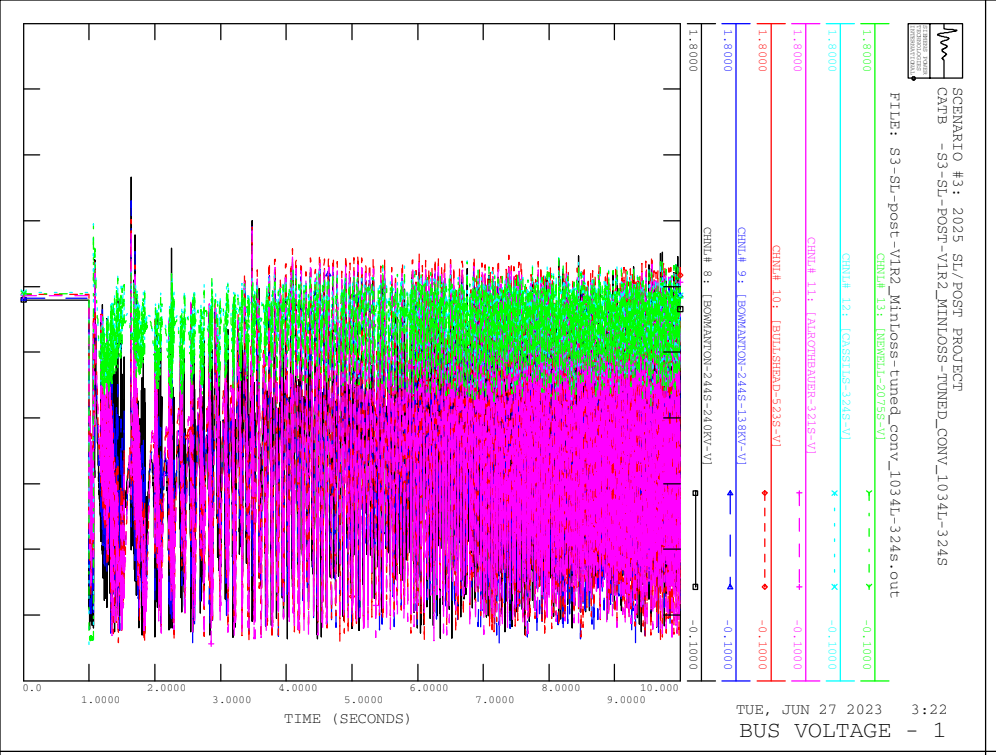

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

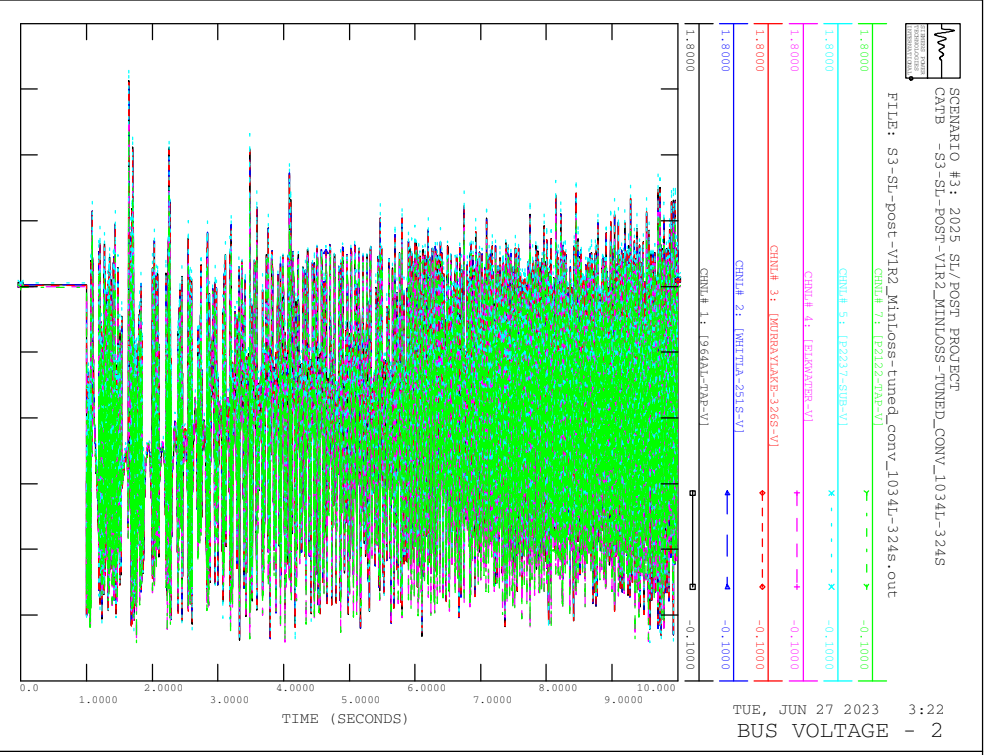

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMGS-1-P]*100
CHNL# 14: [P2461-P]*100
CHNL# 19: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

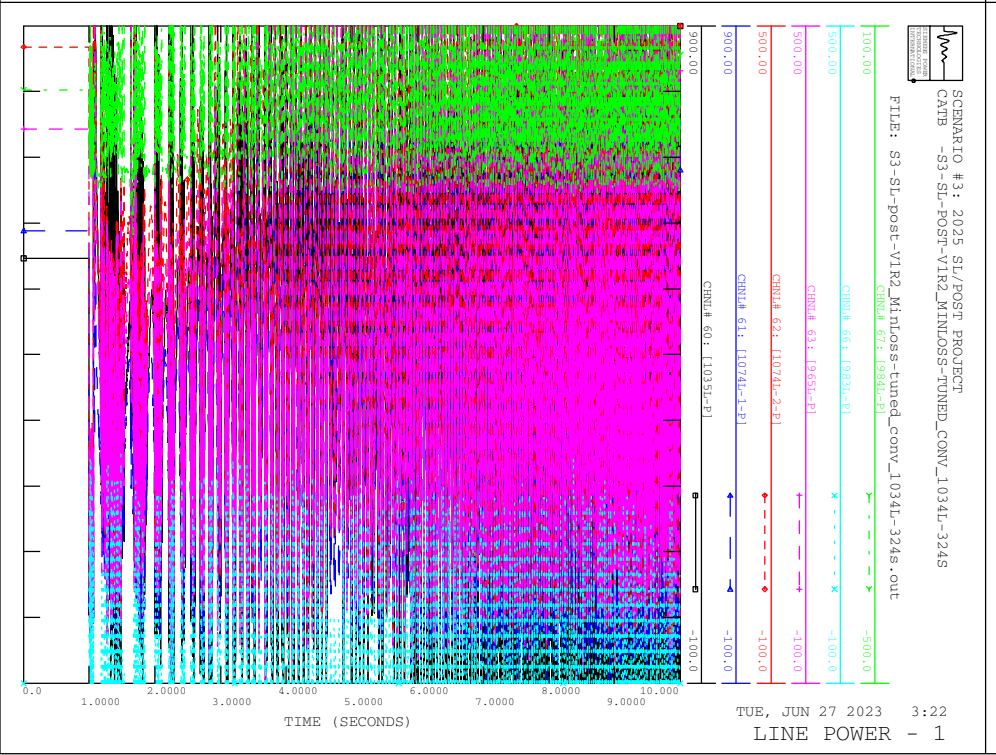

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

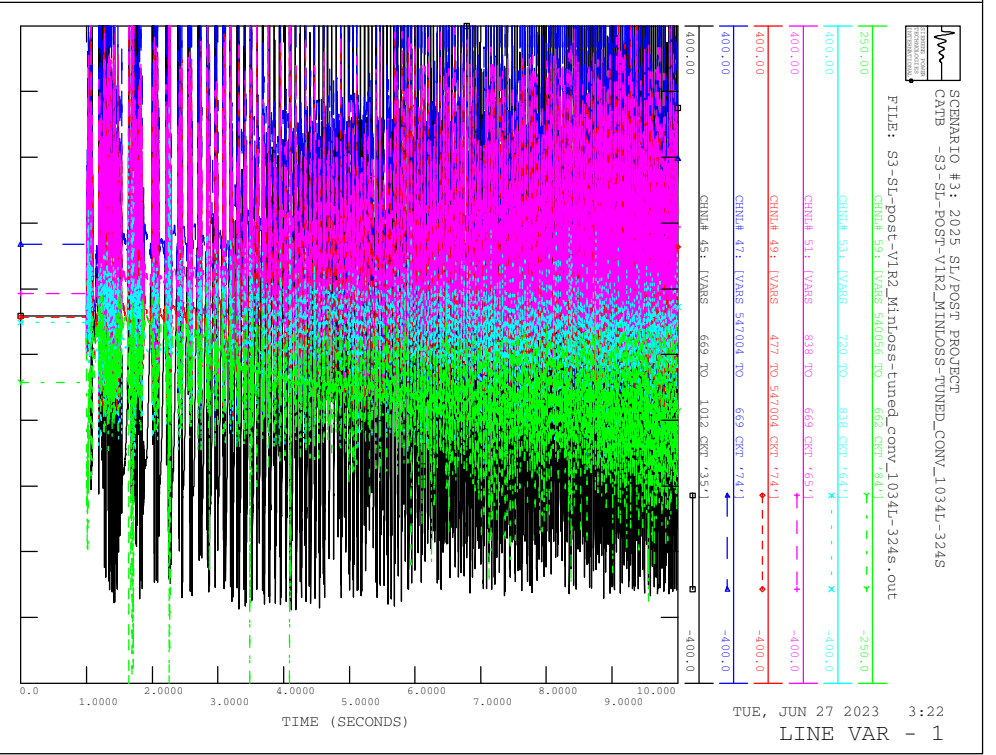

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMGS-1-Q]*100
CHNL# 29: [P2461-Q]*100
CHNL# 34: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

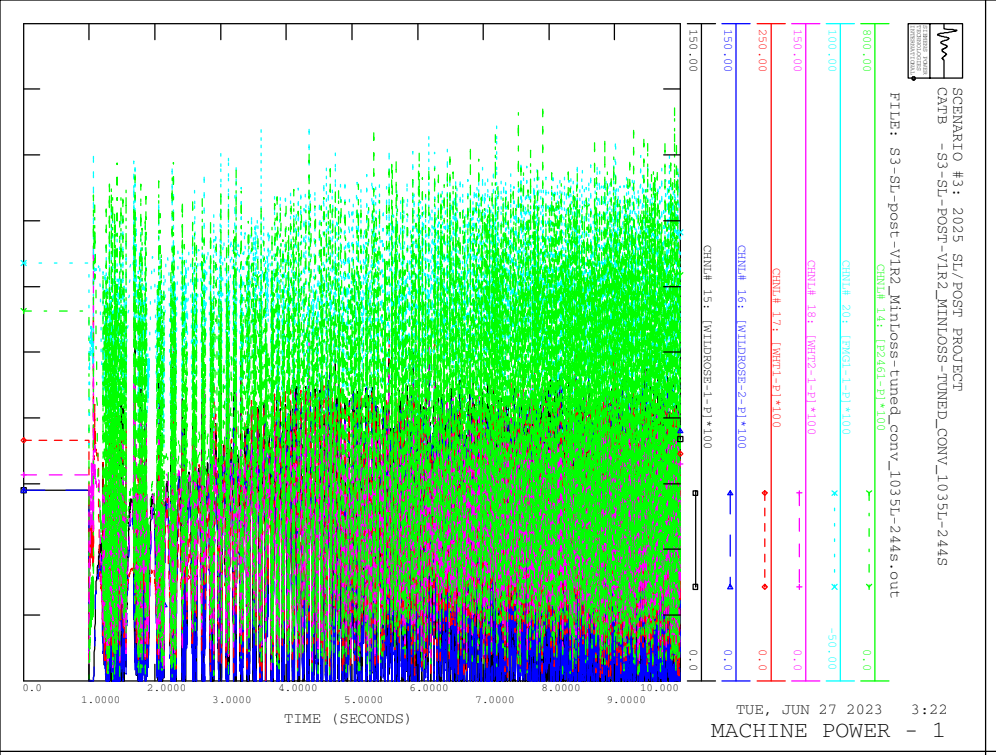

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

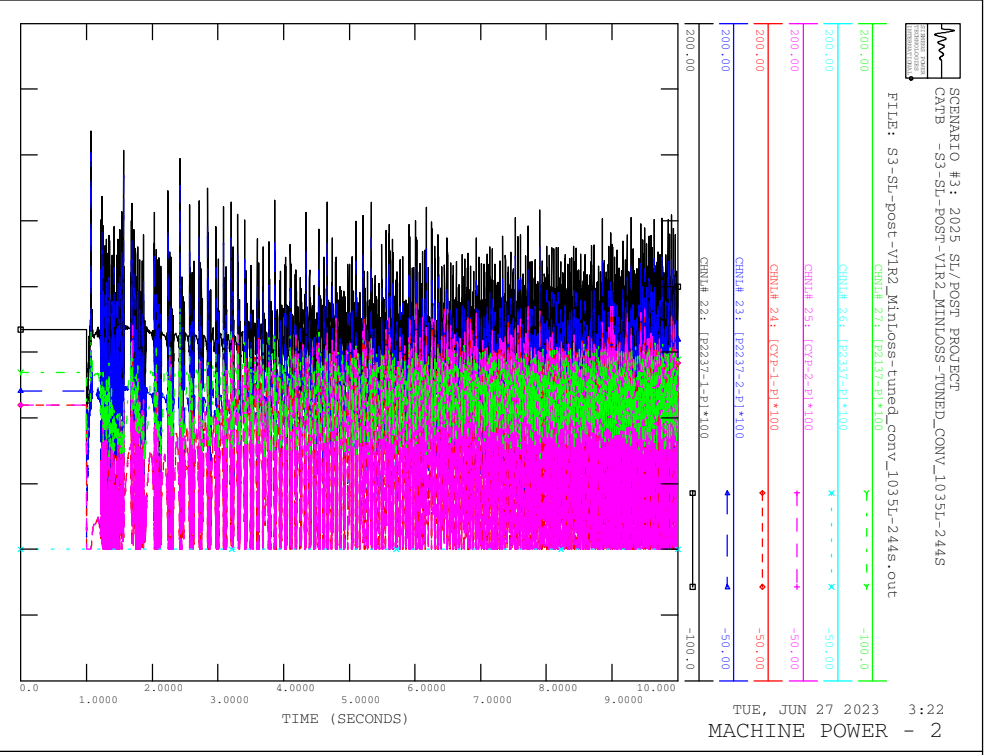

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

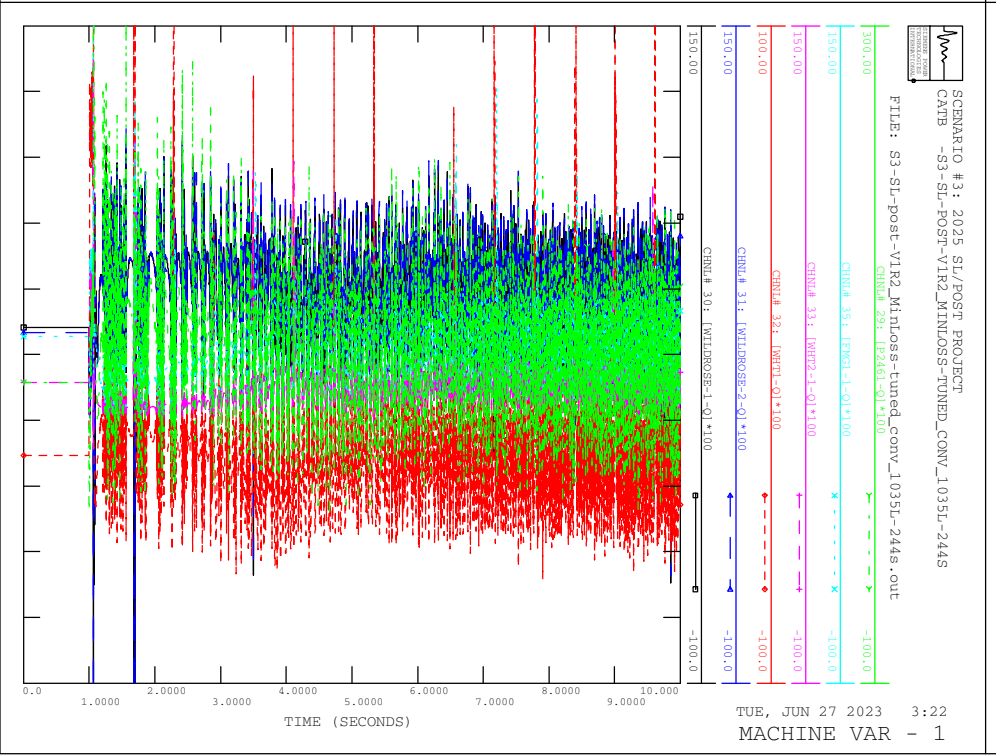

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

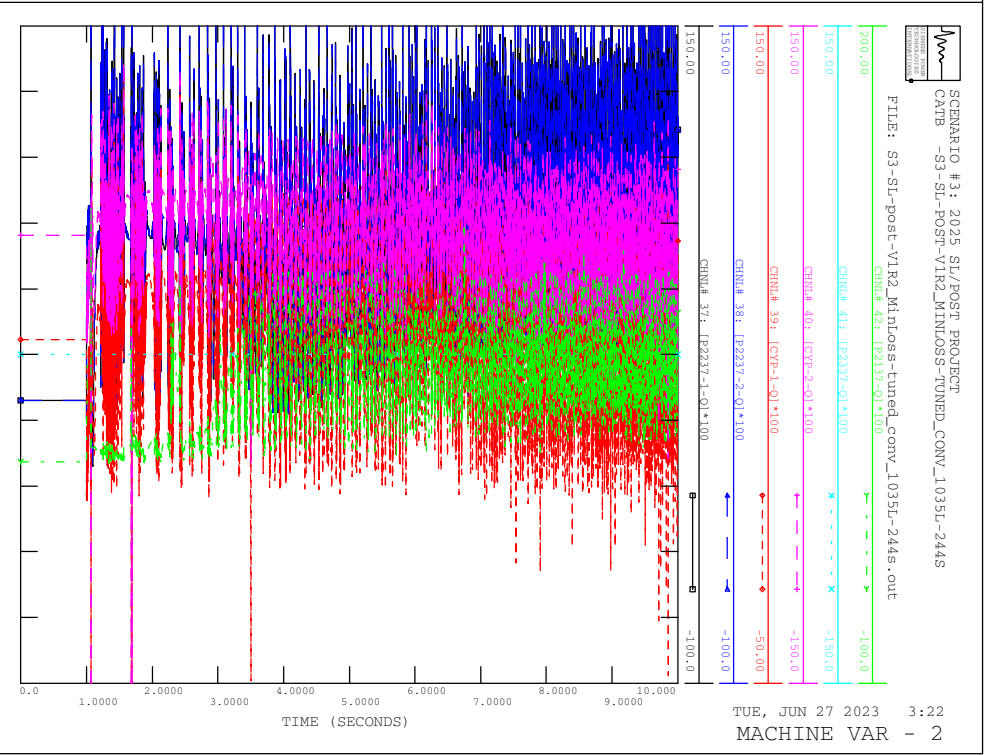

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

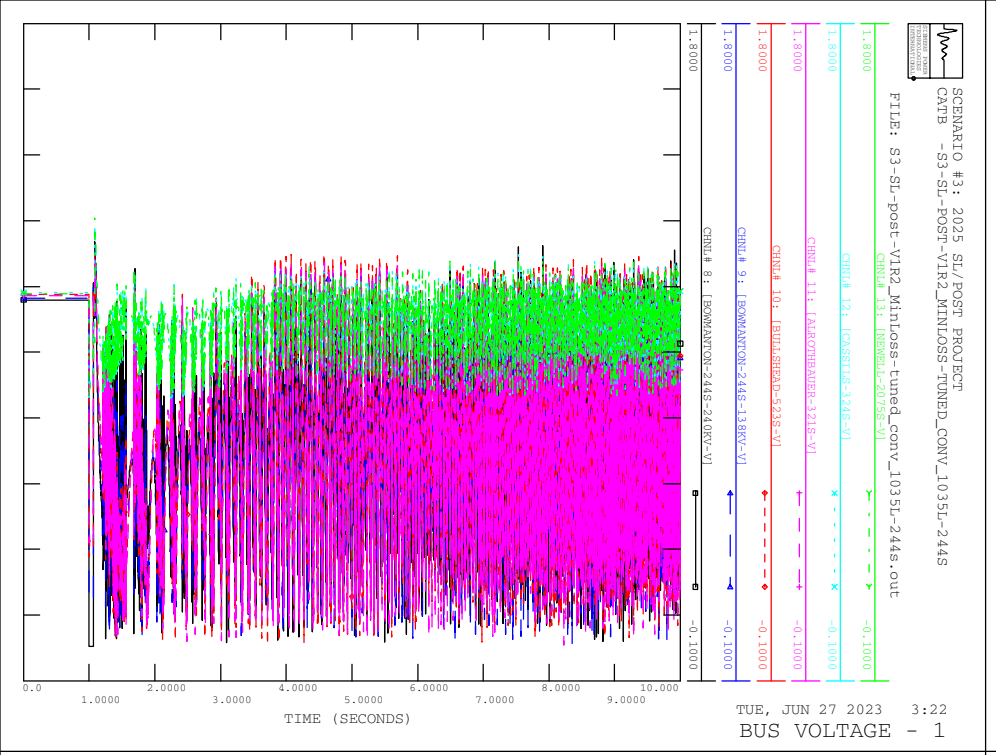

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1034L-324s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

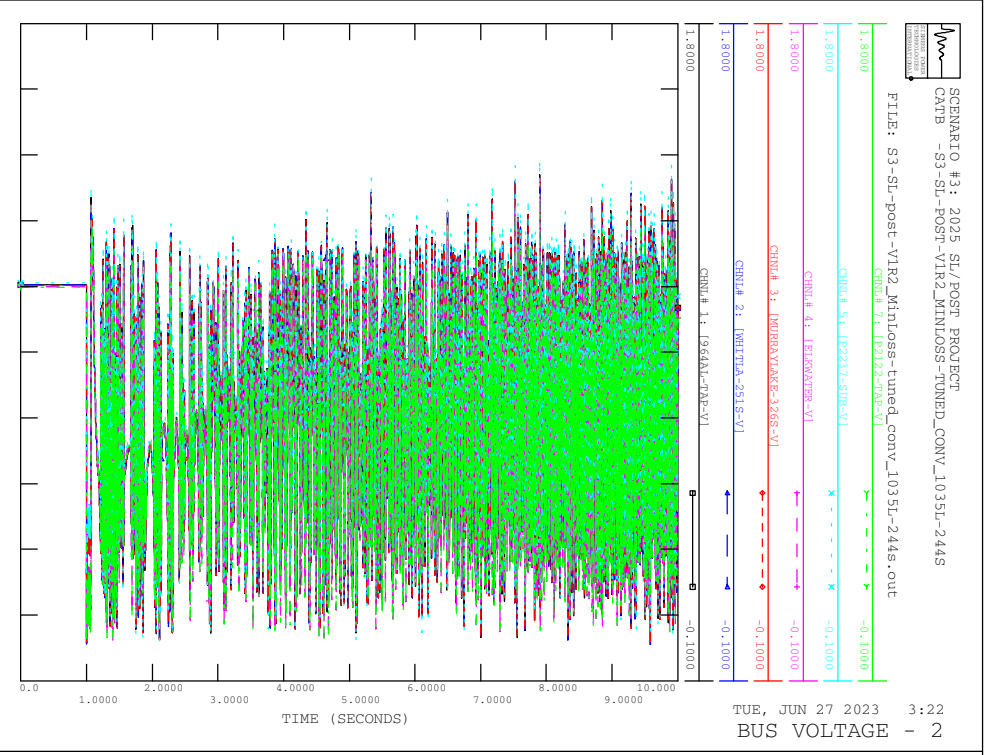

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

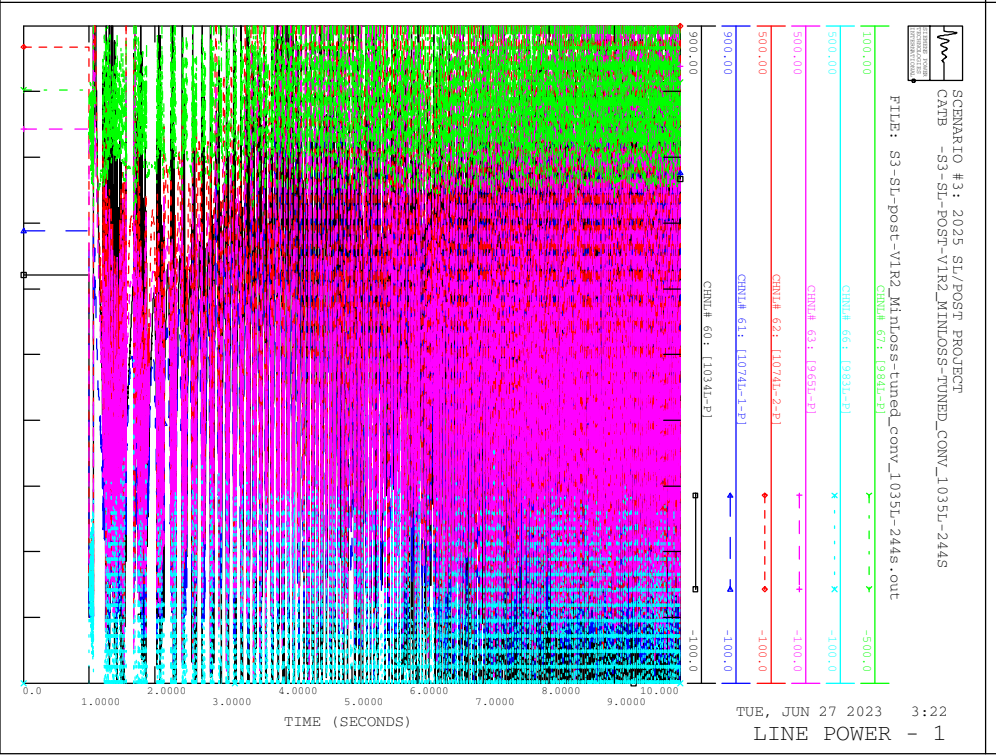

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

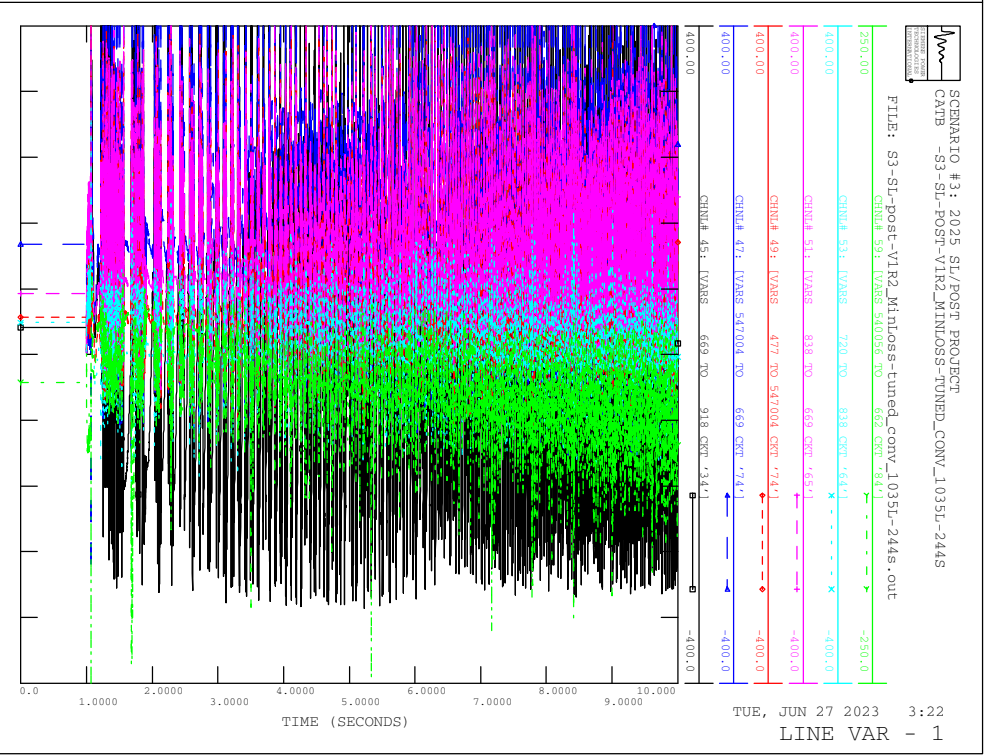

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

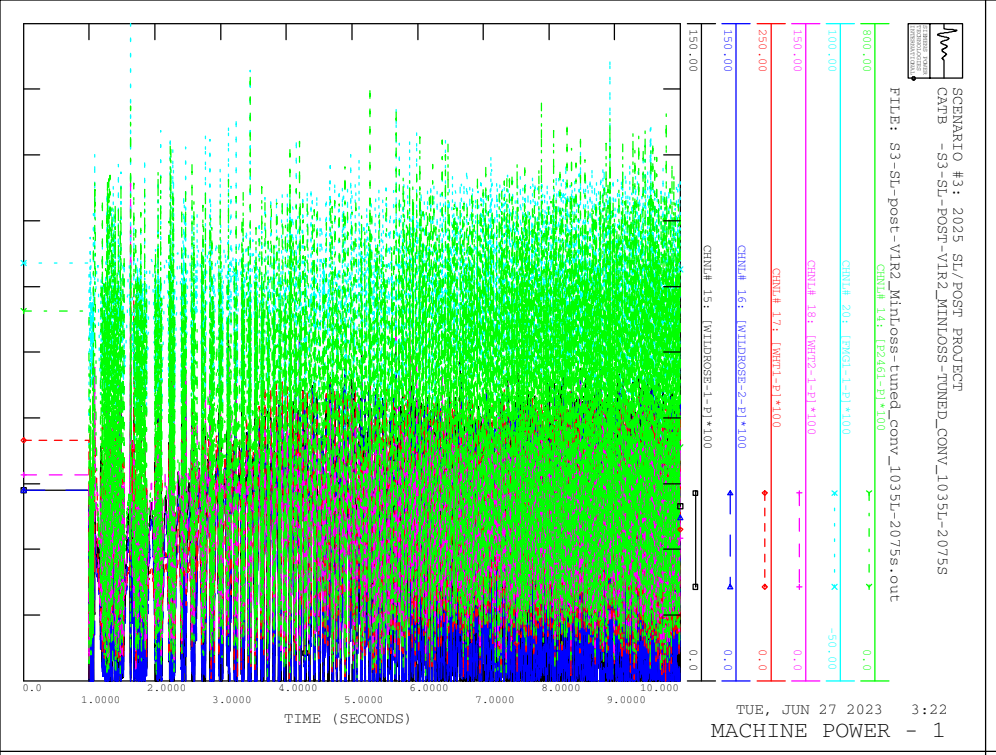

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

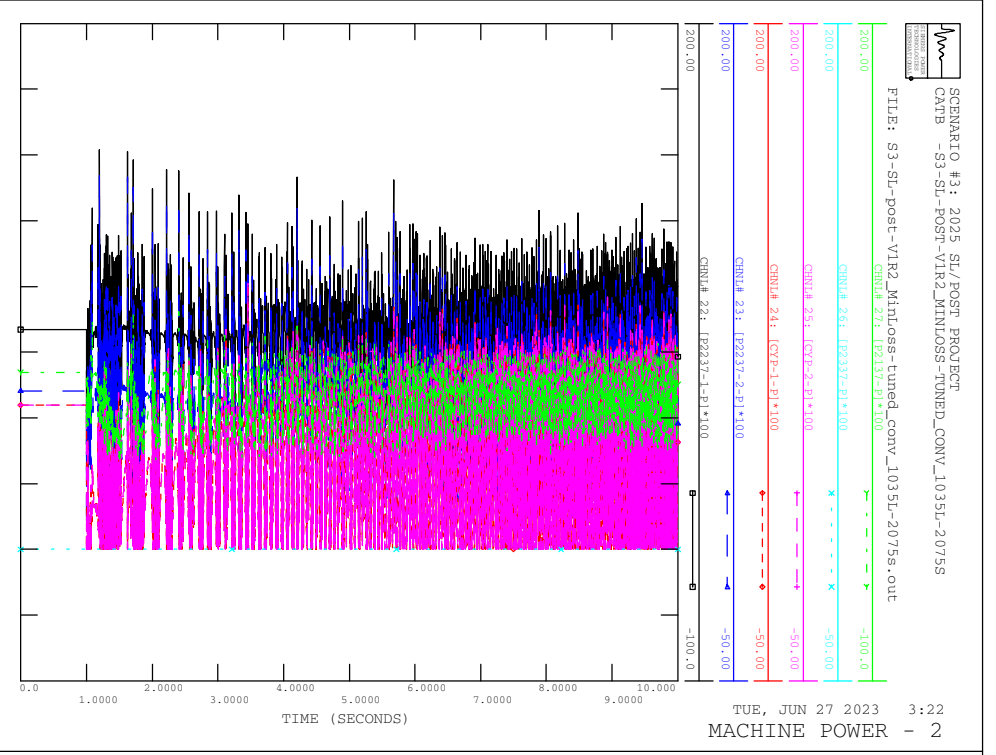

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [KENDALL-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

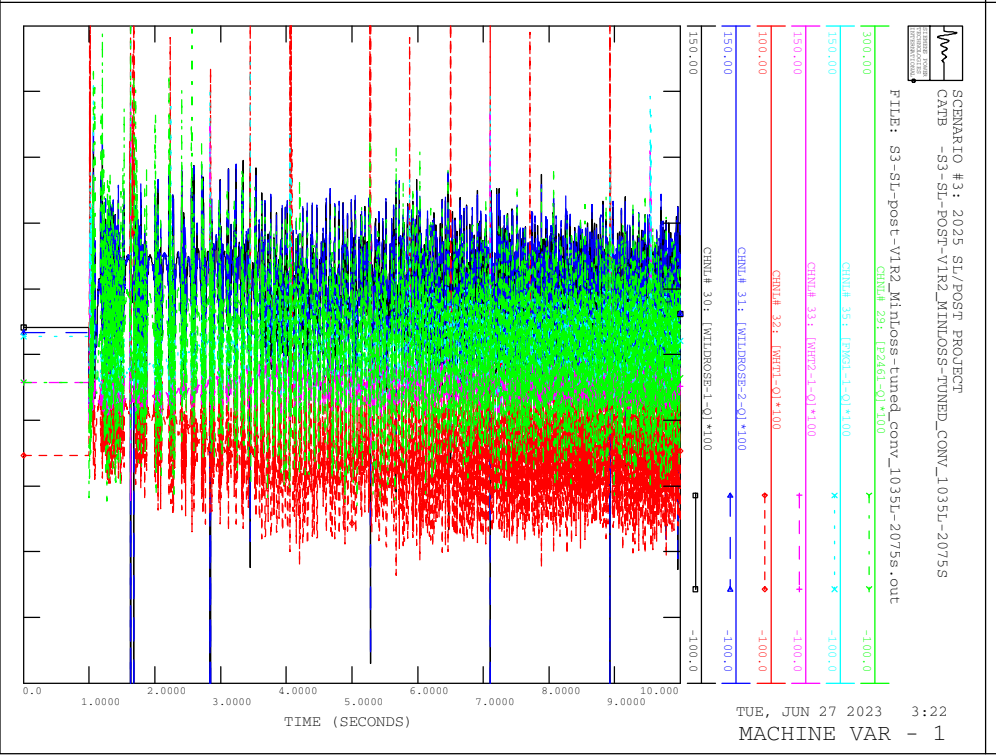

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

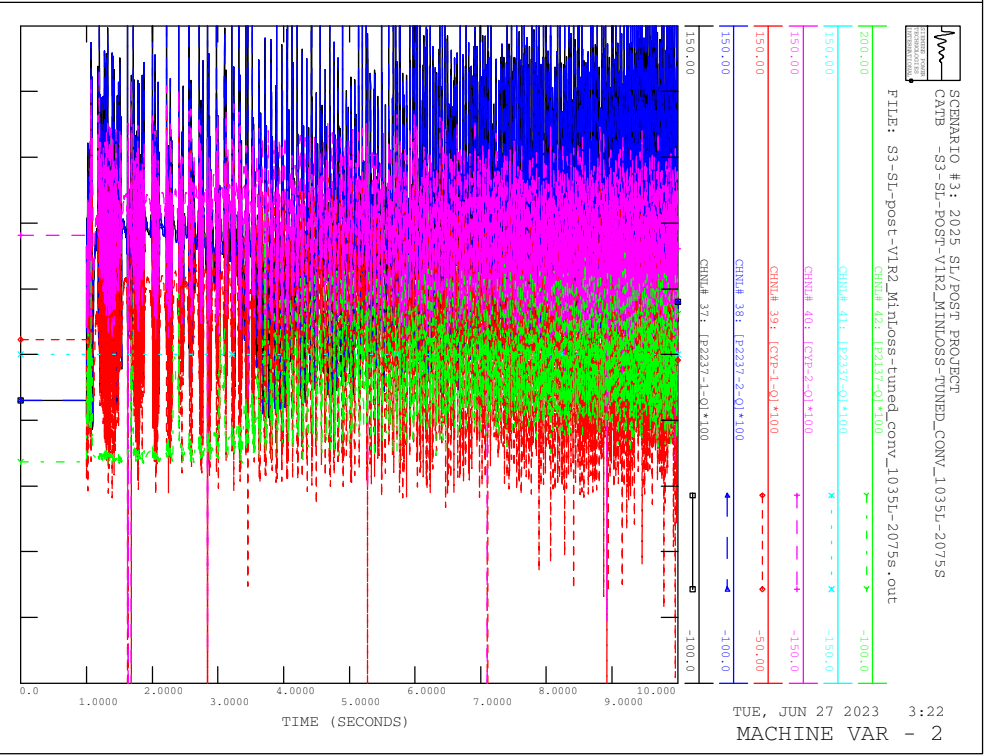

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1386L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

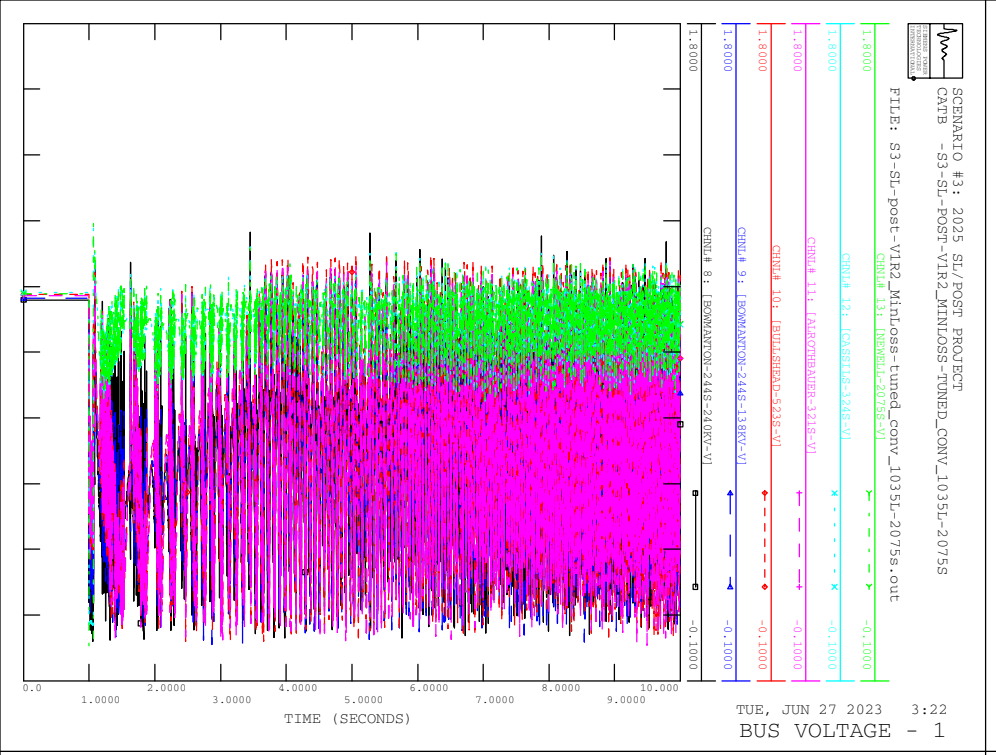

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

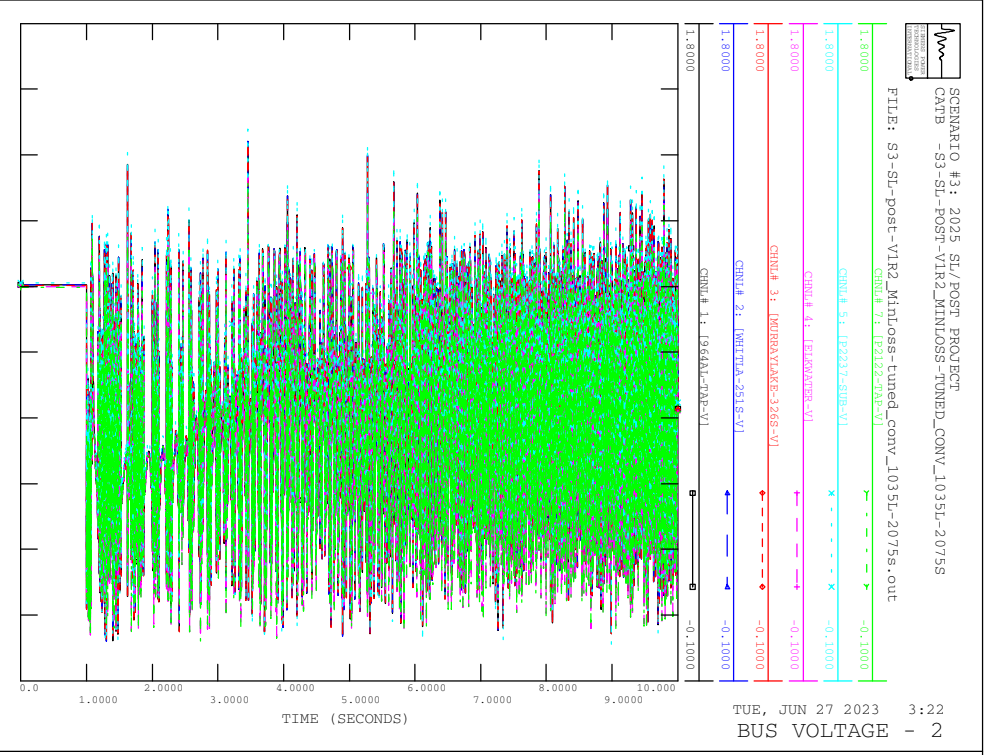

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_Minloss-tuned_conv_1035L-2075s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHTP2-1-P]*100
CHNL# 20: [PWGL-1-P]*100
CHNL# 14: [P2461-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

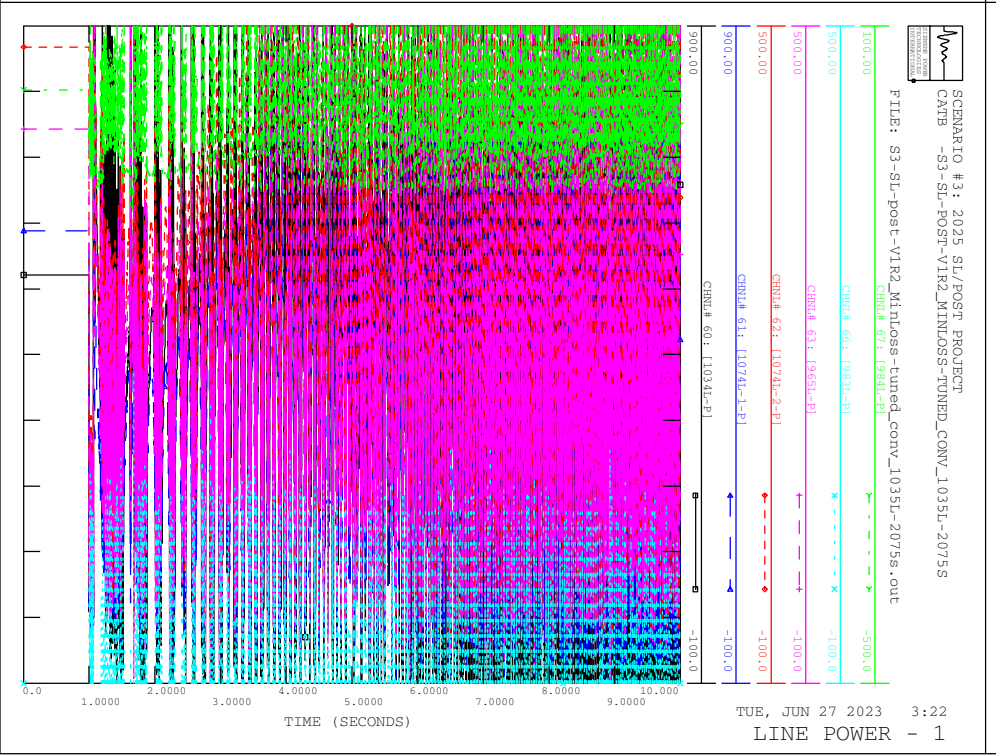

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_Minloss-tuned_conv_1035L-2075s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

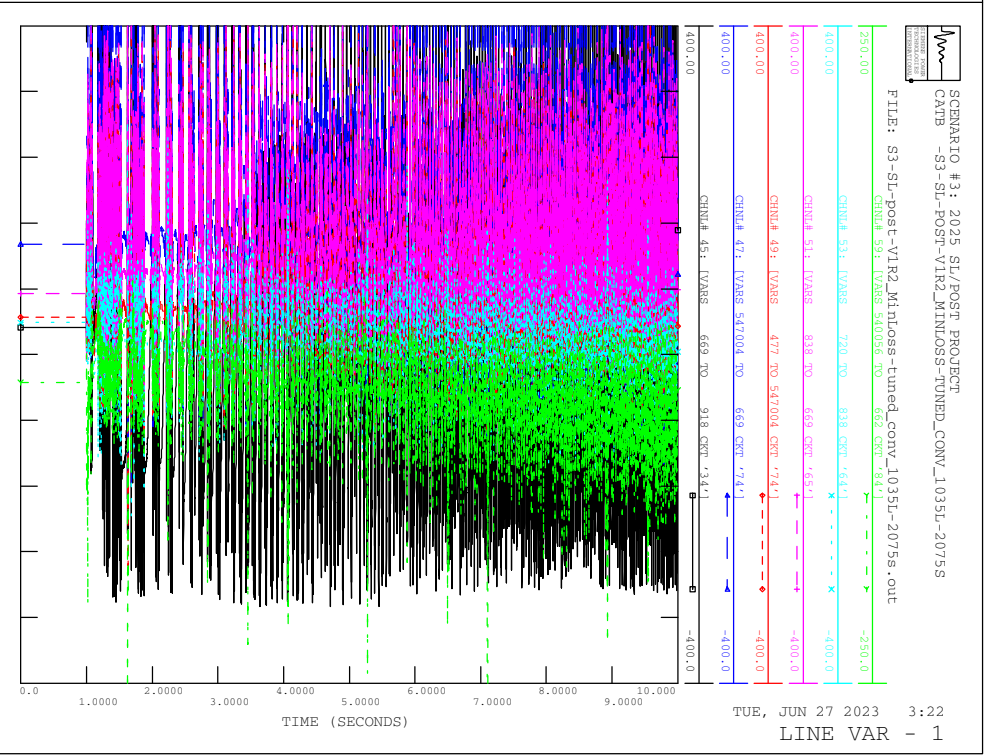

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_Minloss-tuned_conv_1035L-2075s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHTP2-1-Q]*100
CHNL# 35: [PWGL-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

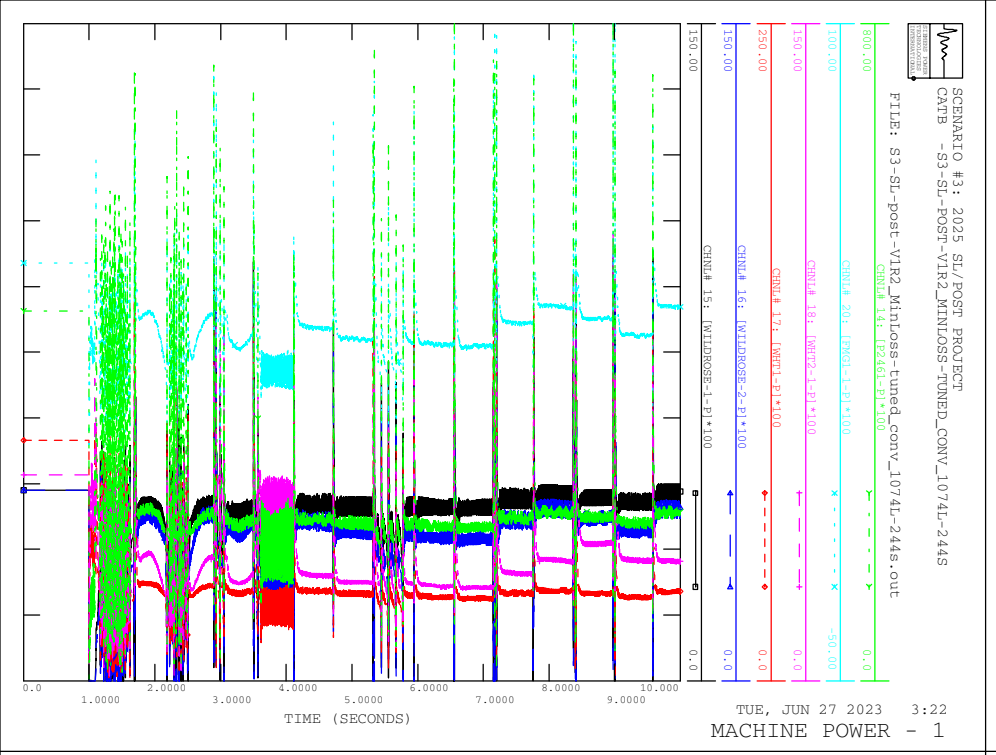

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_Minloss-tuned_conv_1035L-2075s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

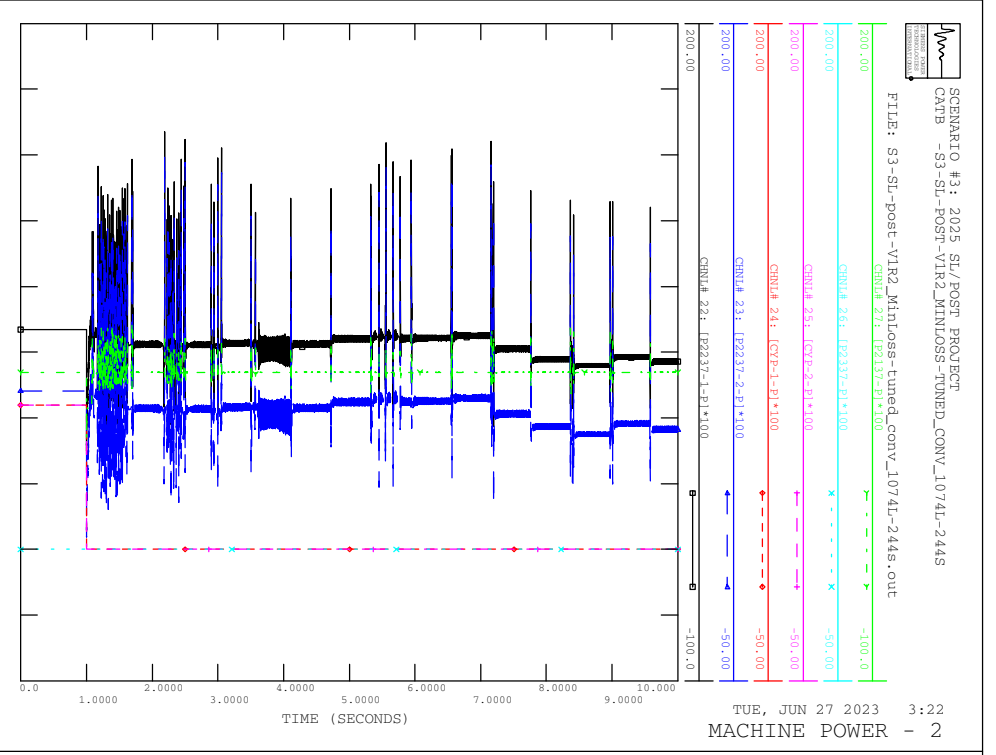

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBANER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NENNEL-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

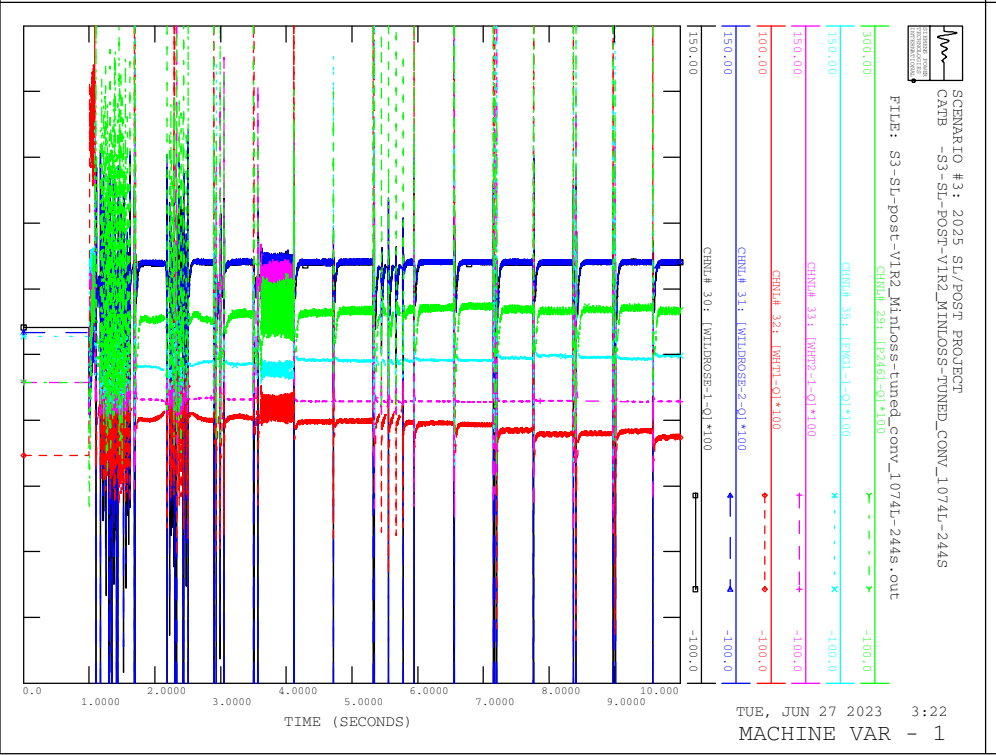

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELEVATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

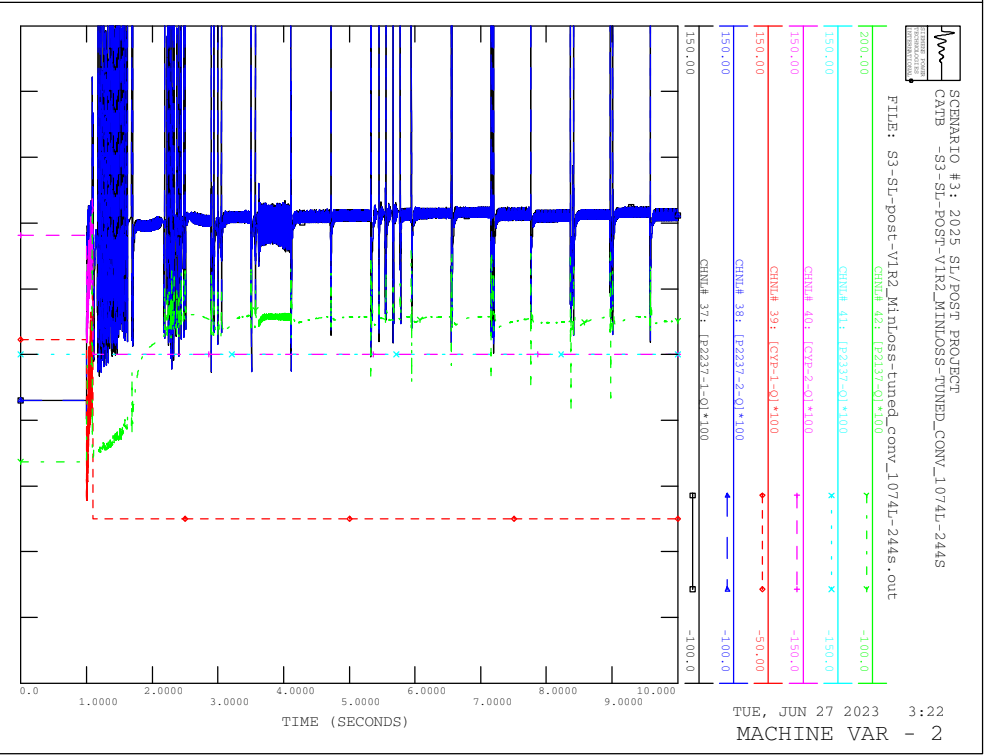

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

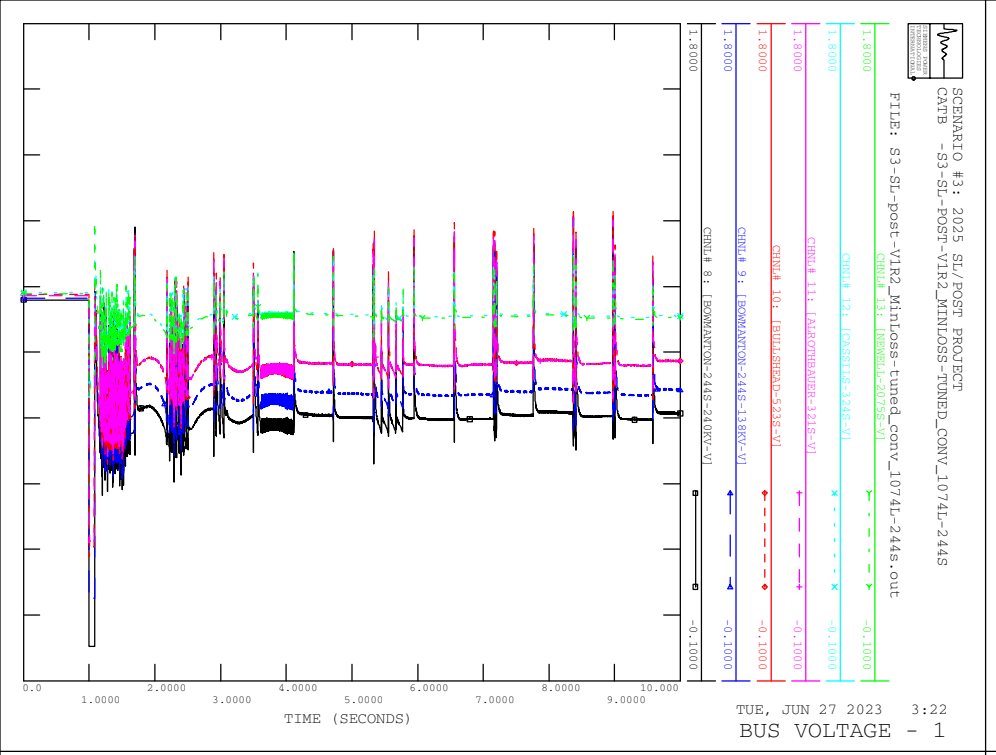

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

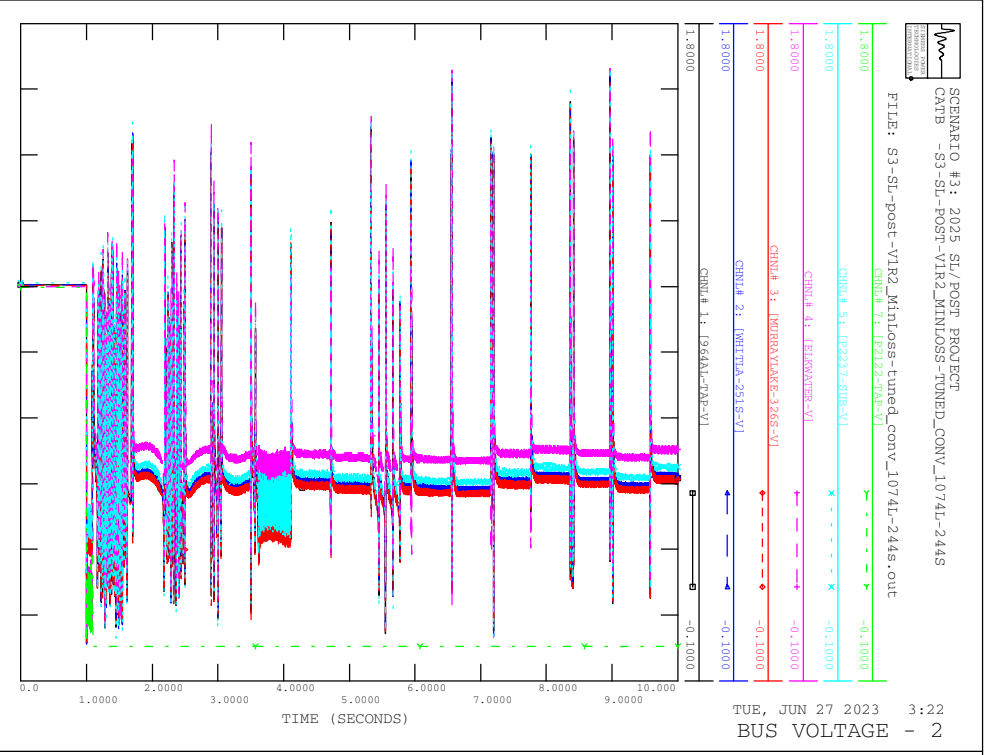

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VLR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VLR2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWGS-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

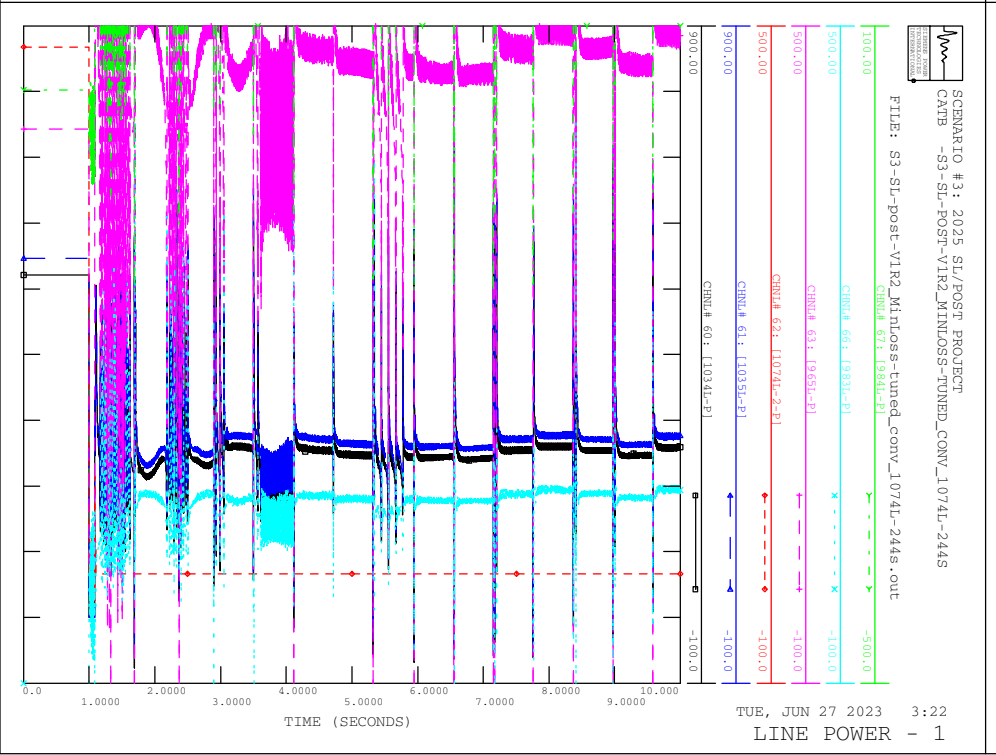

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VLR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VLR2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

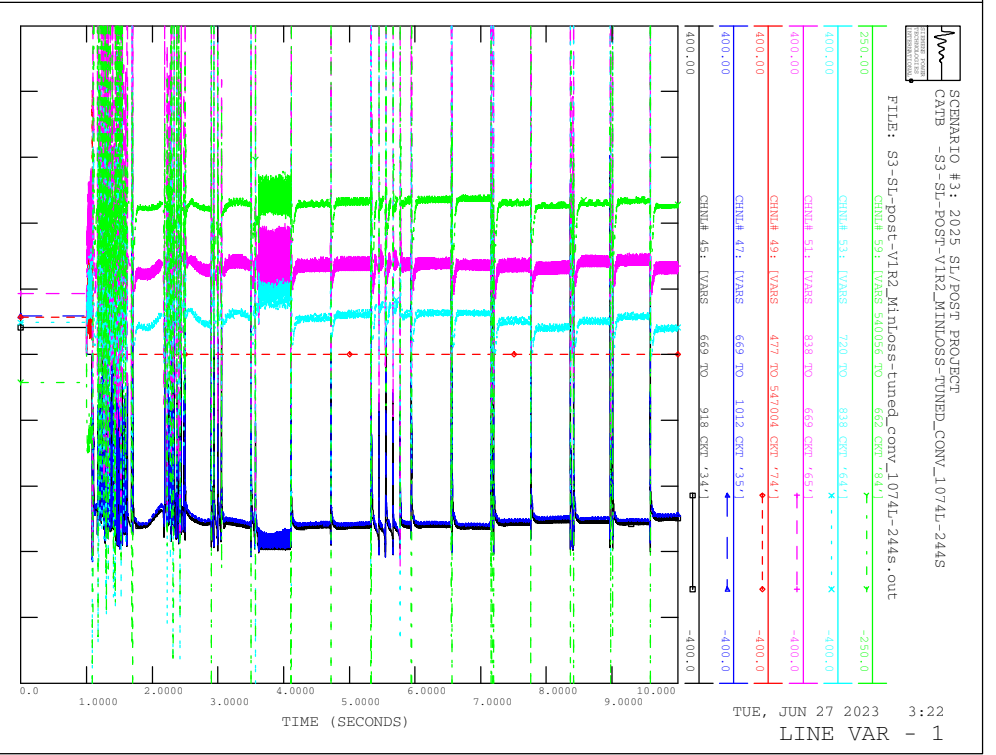

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VLR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VLR2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWGS-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1

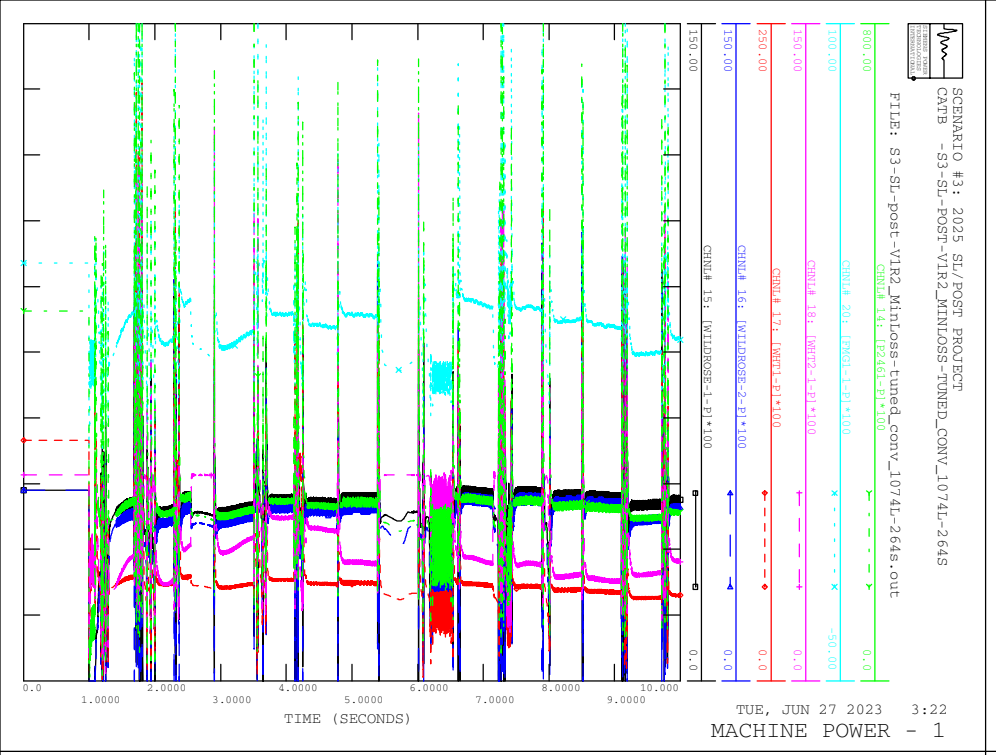

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VLR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VLR2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2

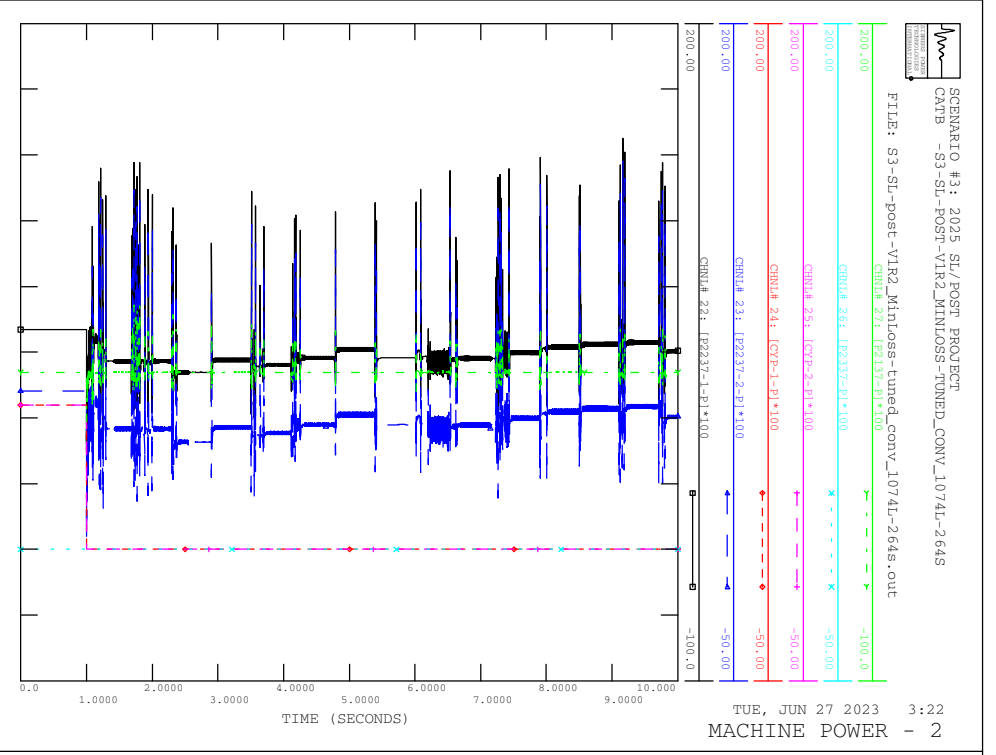

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-244s.out
CHNL # 8: [BOWMANTON-244S-240KV-V]
CHNL # 9: [BOWMANTON-244S-138KV-V]
CHNL # 10: [BULLSHEAD-523S-V]
CHNL # 11: [AIROTHBAUER-321S-V]
CHNL # 12: [CASSILS-324S-V]
CHNL # 13: [KENNEDY-207S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

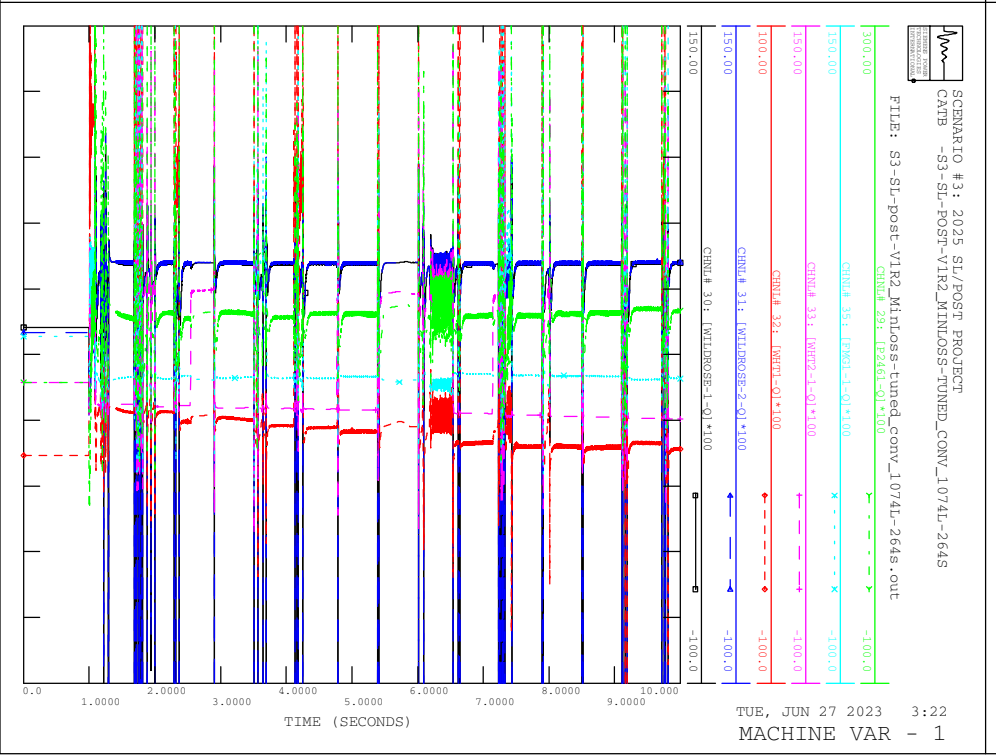

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-244s.out
CHNL # 1: [964AL-TAP-V]
CHNL # 2: [WHITLA-251S-V]
CHNL # 3: [MURRAYLAKE-326S-V]
CHNL # 4: [ELEVATER-V]
CHNL # 5: [P2237-SUB-V]
CHNL # 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2

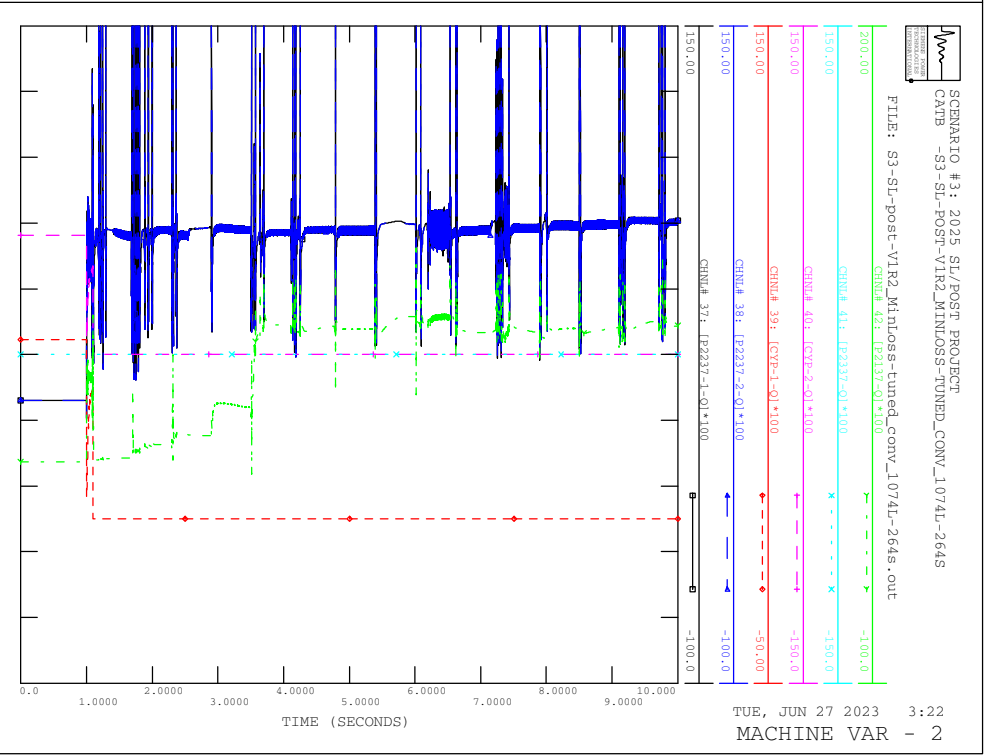

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-244s.out
CHNL # 60: [1034L-P]
CHNL # 61: [1035L-P]
CHNL # 62: [1074L-2-P]
CHNL # 63: [965L-P]
CHNL # 66: [983L-P]
CHNL # 67: [1386L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1

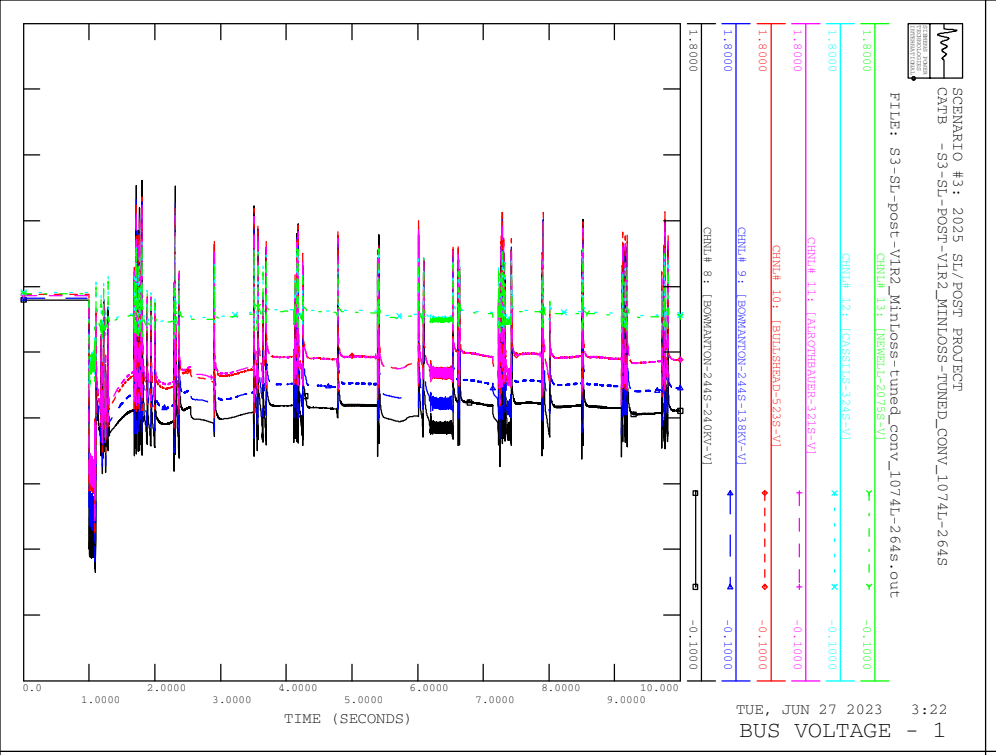

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-244s.out
CHNL # 45: [VARS 669 TO 918 CKT '34']
CHNL # 47: [VARS 669 TO 1012 CKT '35']
CHNL # 49: [VARS 477 TO 547004 CKT '74']
CHNL # 51: [VARS 838 TO 669 CKT '65']
CHNL # 53: [VARS 720 TO 838 CKT '64']
CHNL # 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

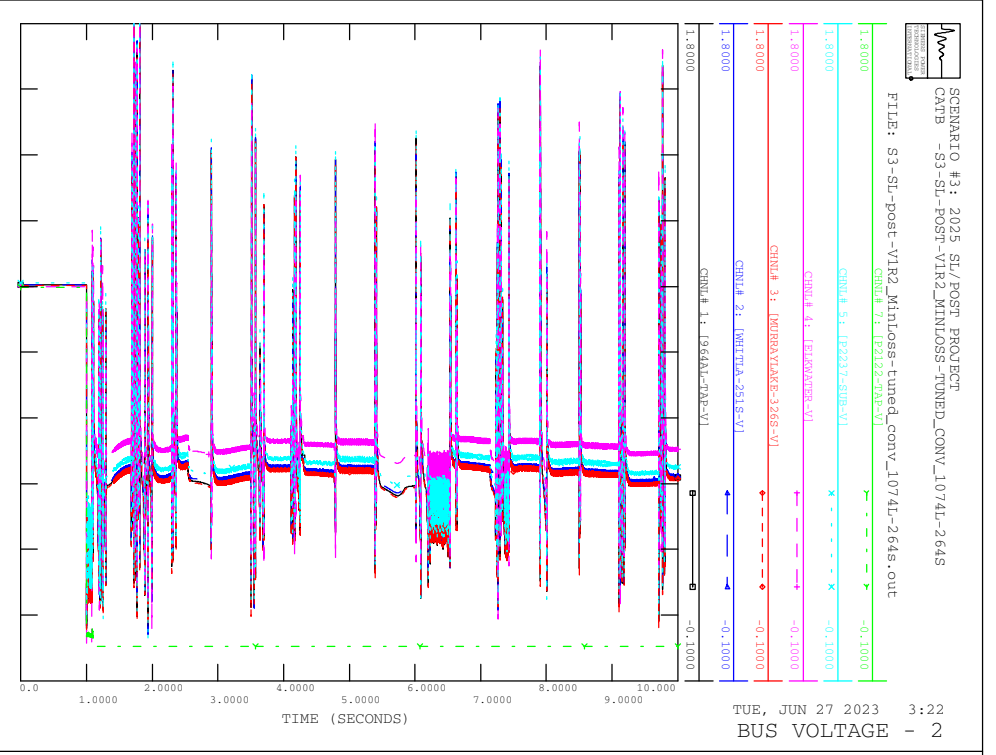

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWGL-1-P]*100
CHNL# 14: [P2461-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 1

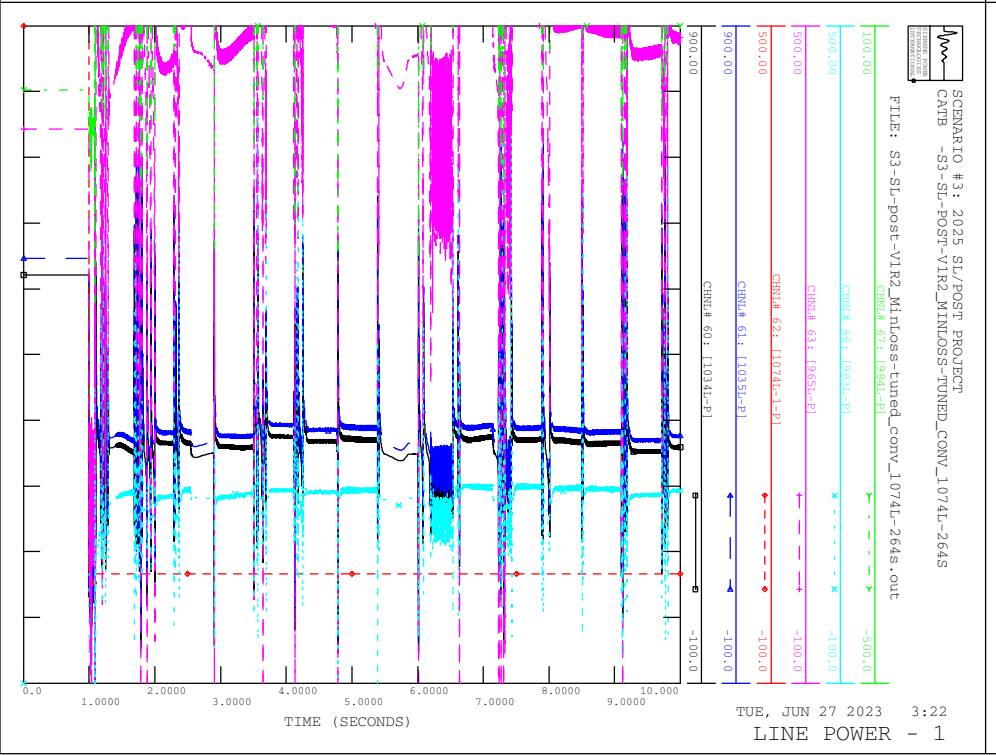

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE POWER - 2

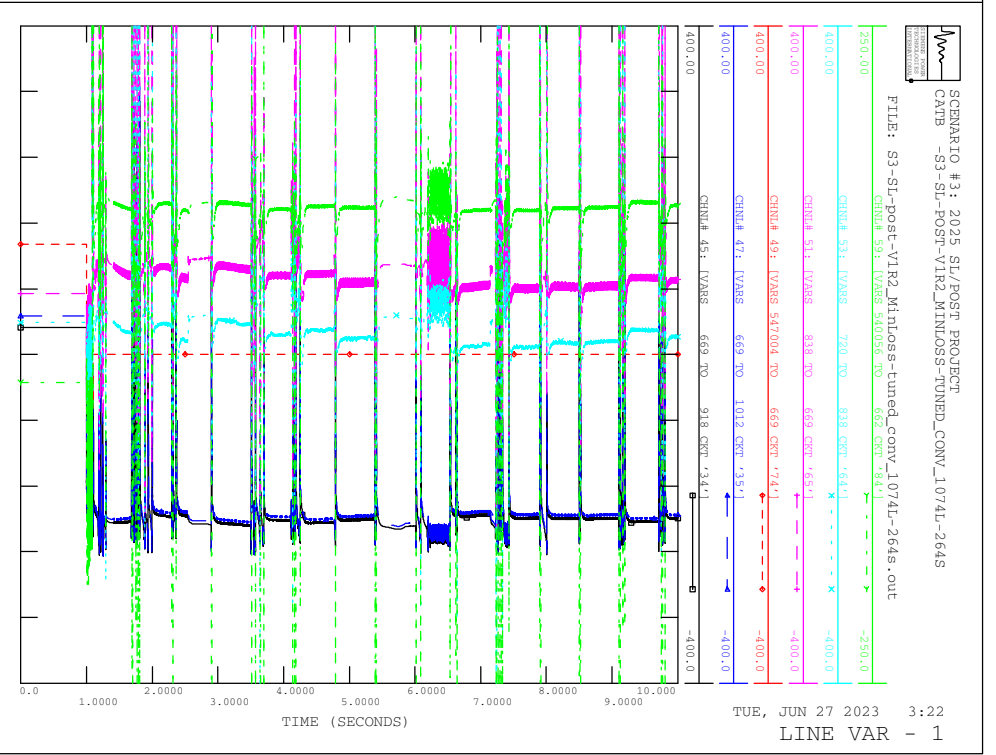

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWGL-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 1


SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:22
MACHINE VAR - 2


SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 1

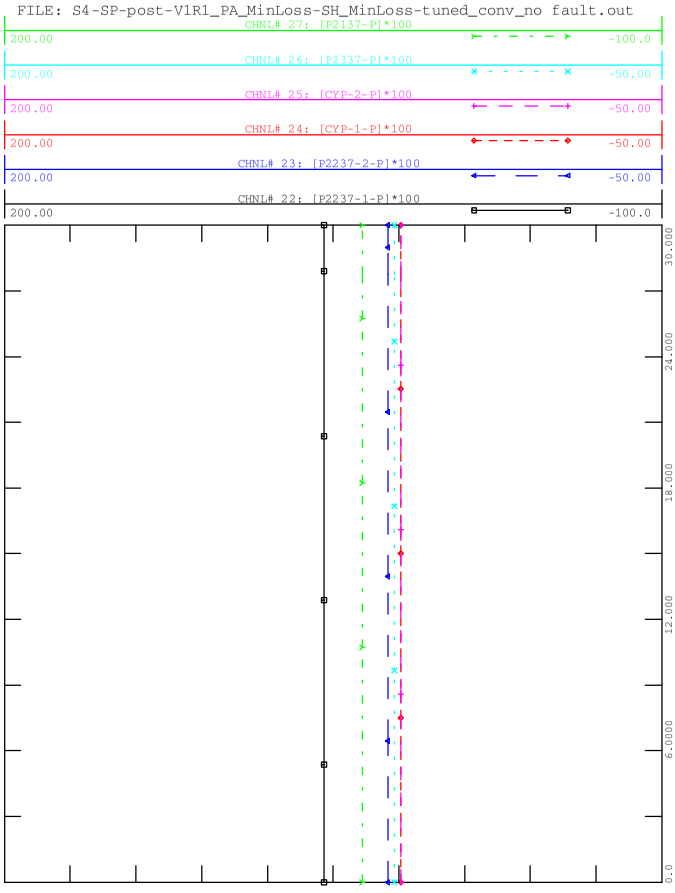

SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
BUS VOLTAGE - 2


SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE POWER - 1


SCENARIO #3: 2025 SL/POST PROJECT
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:22
LINE VAR - 1

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F

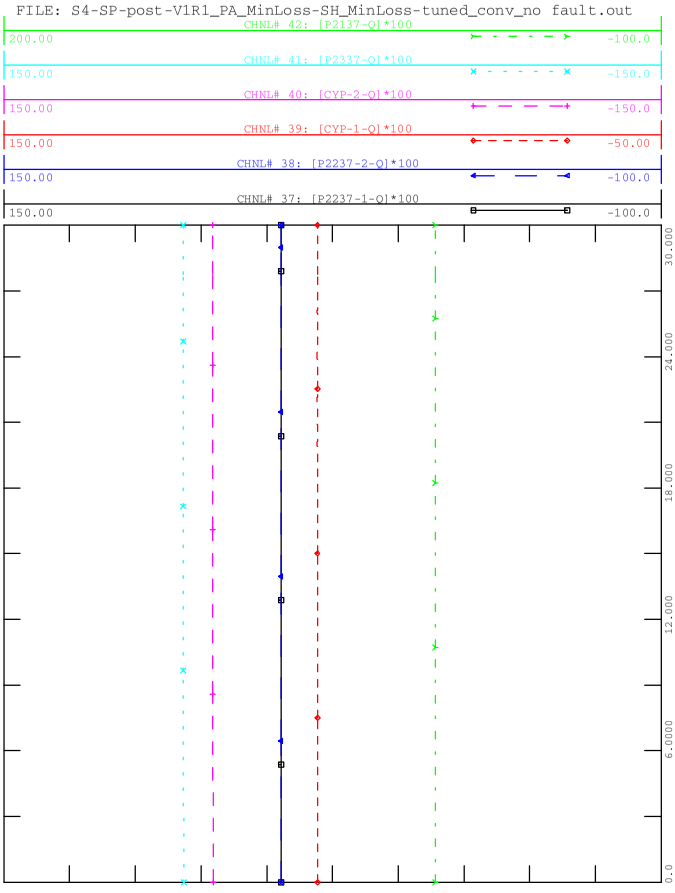
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out



TUE, JUN 27 2023 3:28
MACHINE POWER - 2

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F

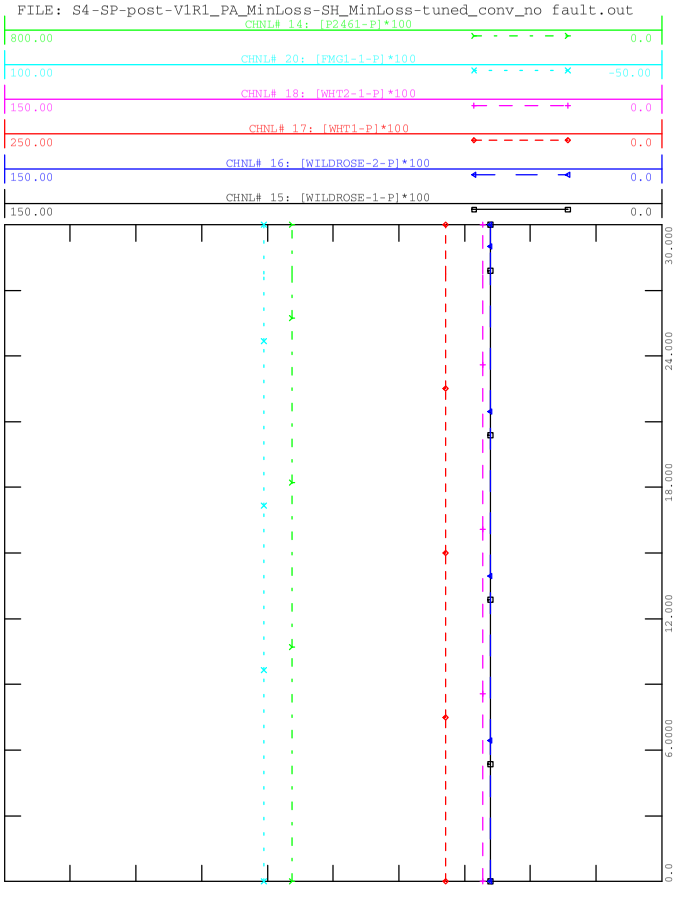
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out



TUE, JUN 27 2023 3:28
MACHINE VAR - 2

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F

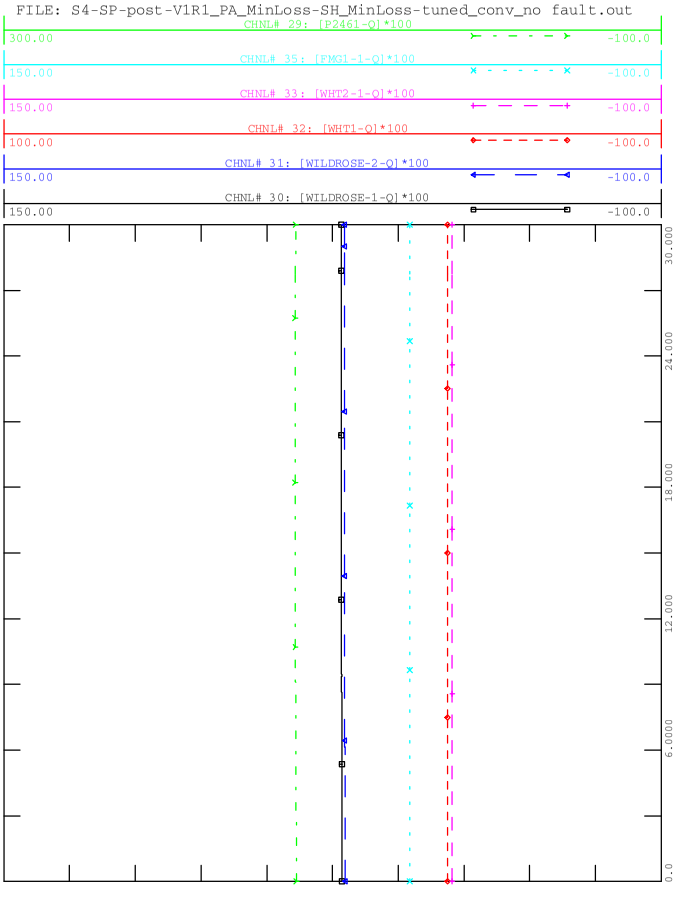
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out



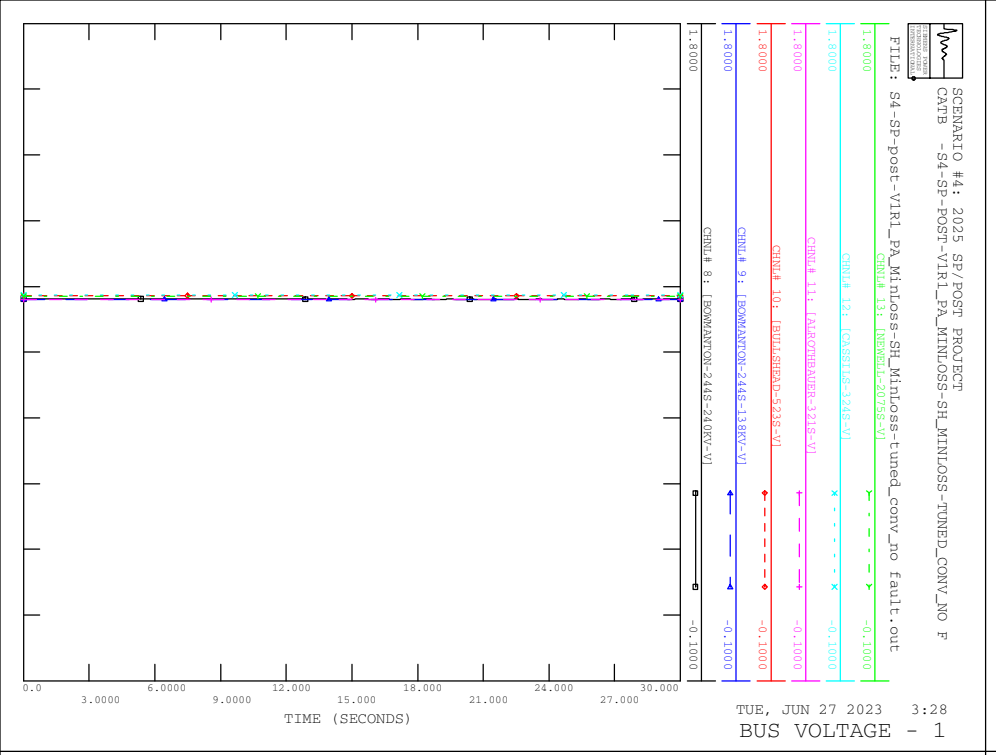
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

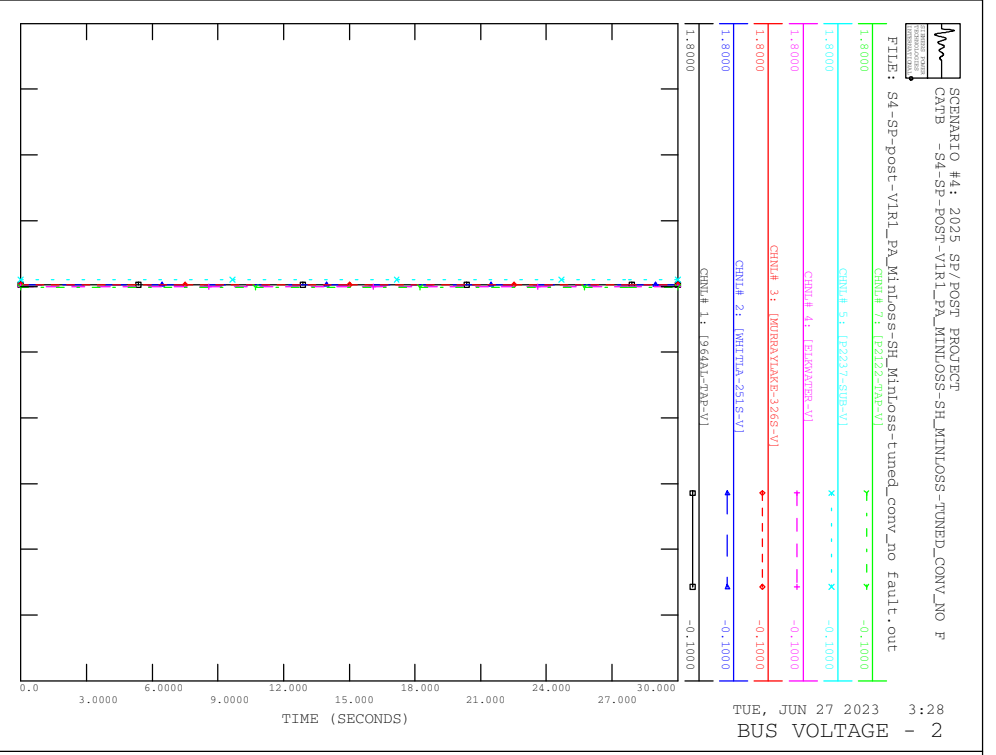
SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F

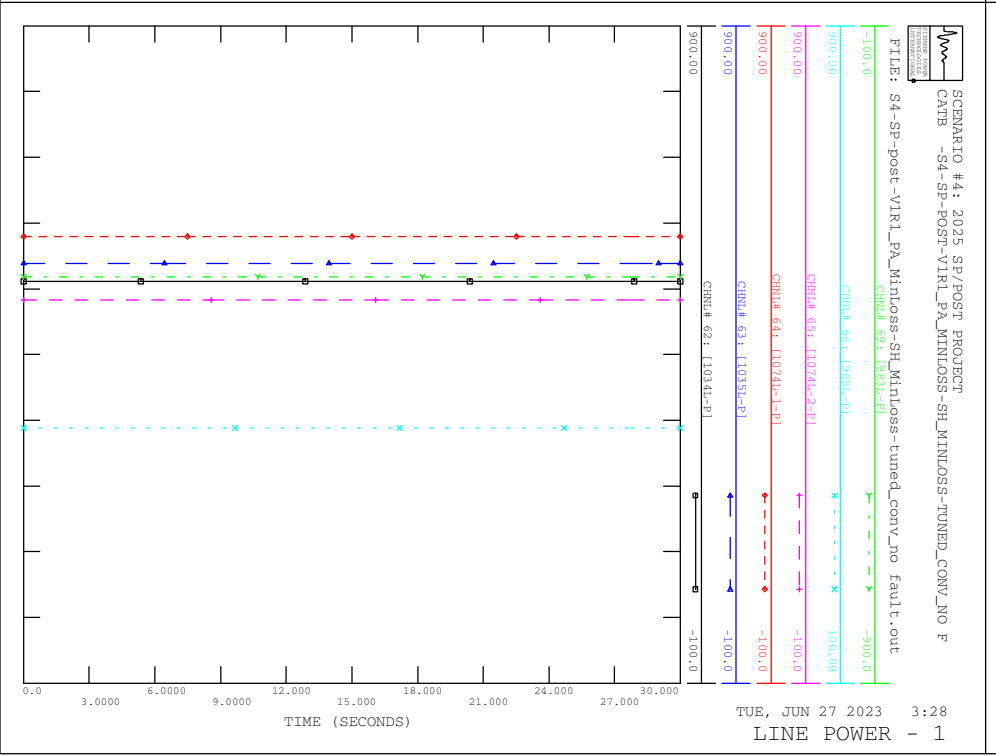
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out

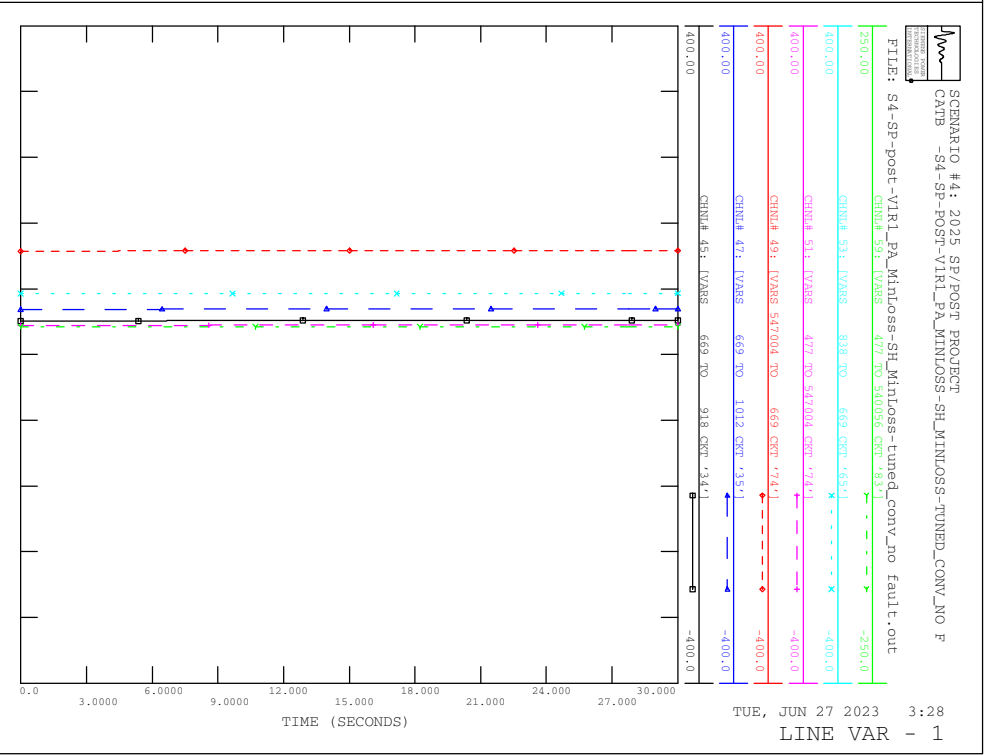


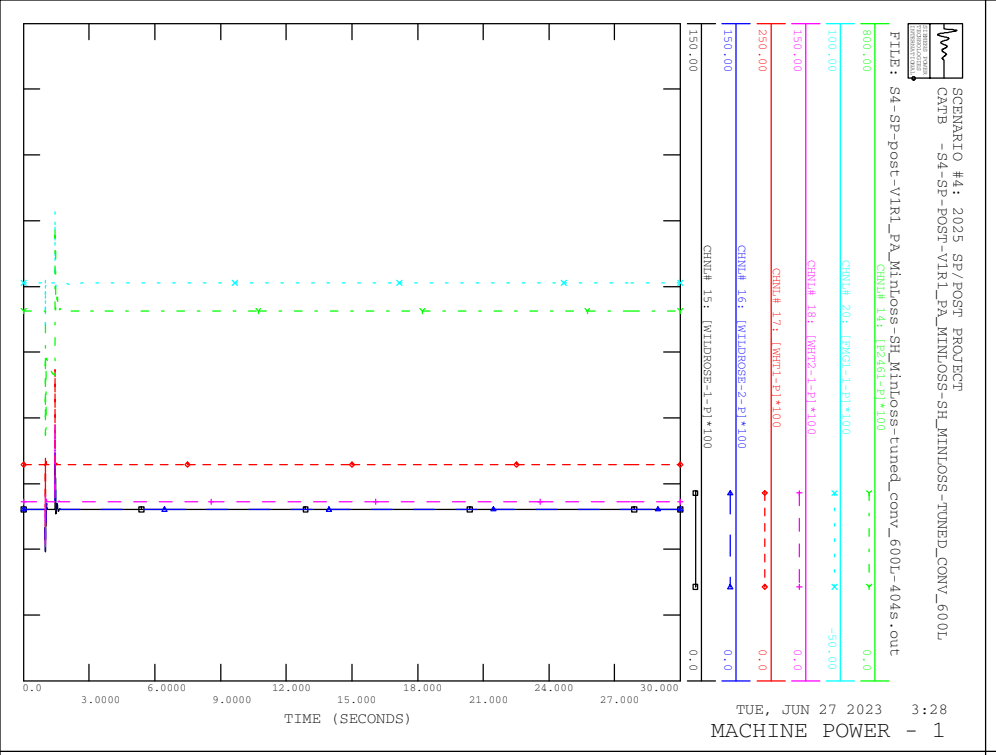
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

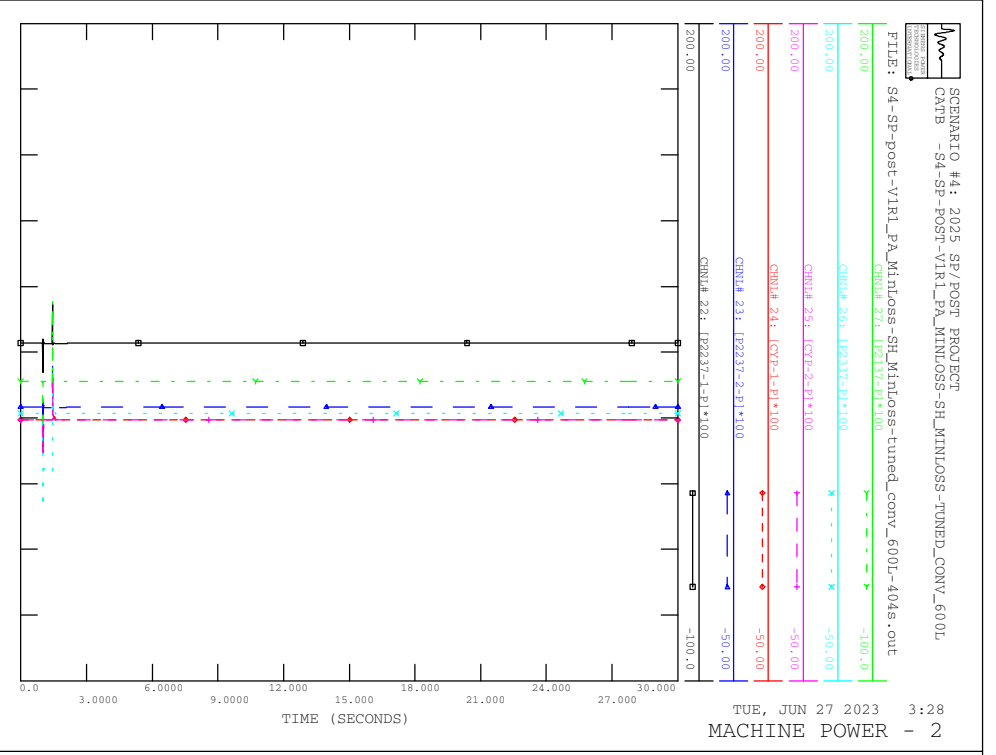

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-2075S-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

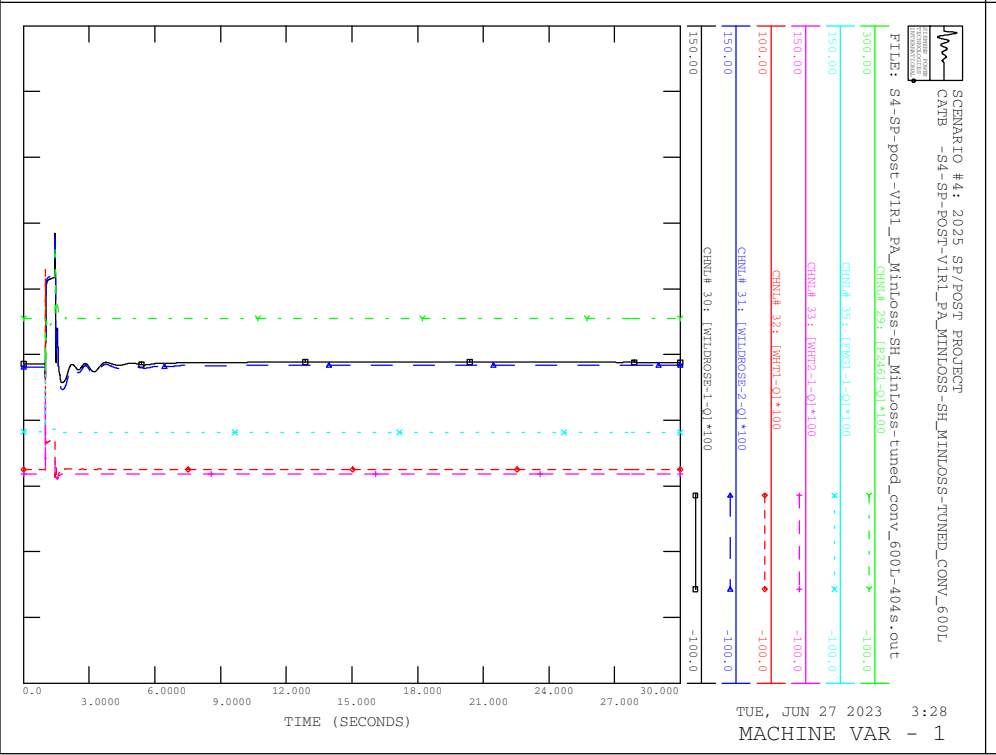

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

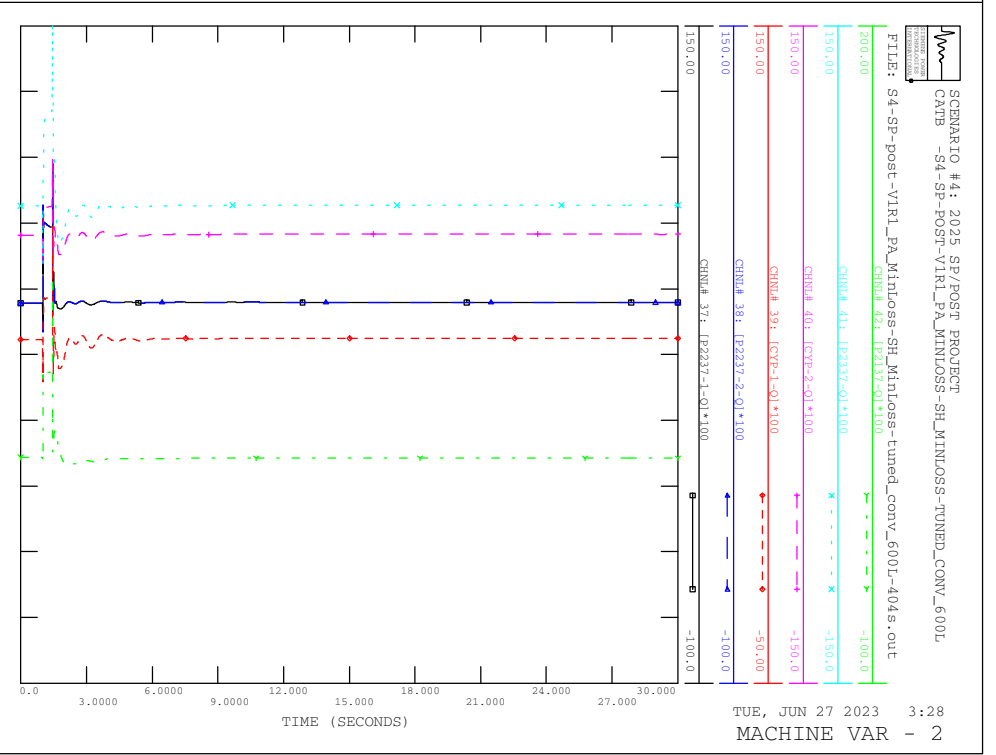

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
900.00
-100.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

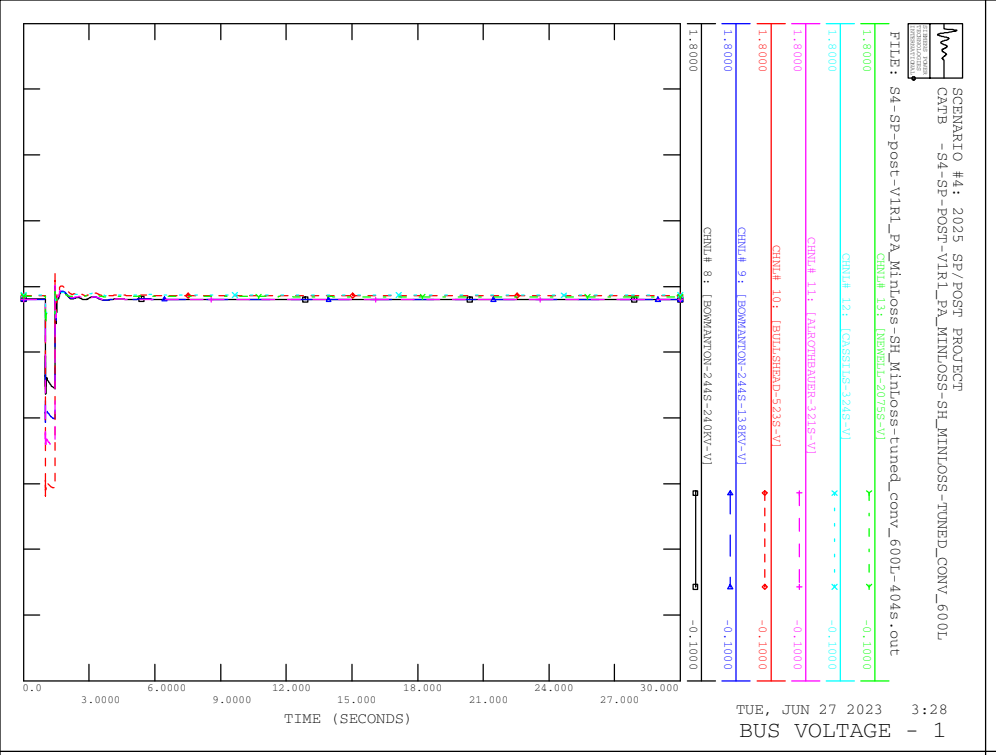

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_NO F
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_no fault.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '69']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
400.00
-400.0
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

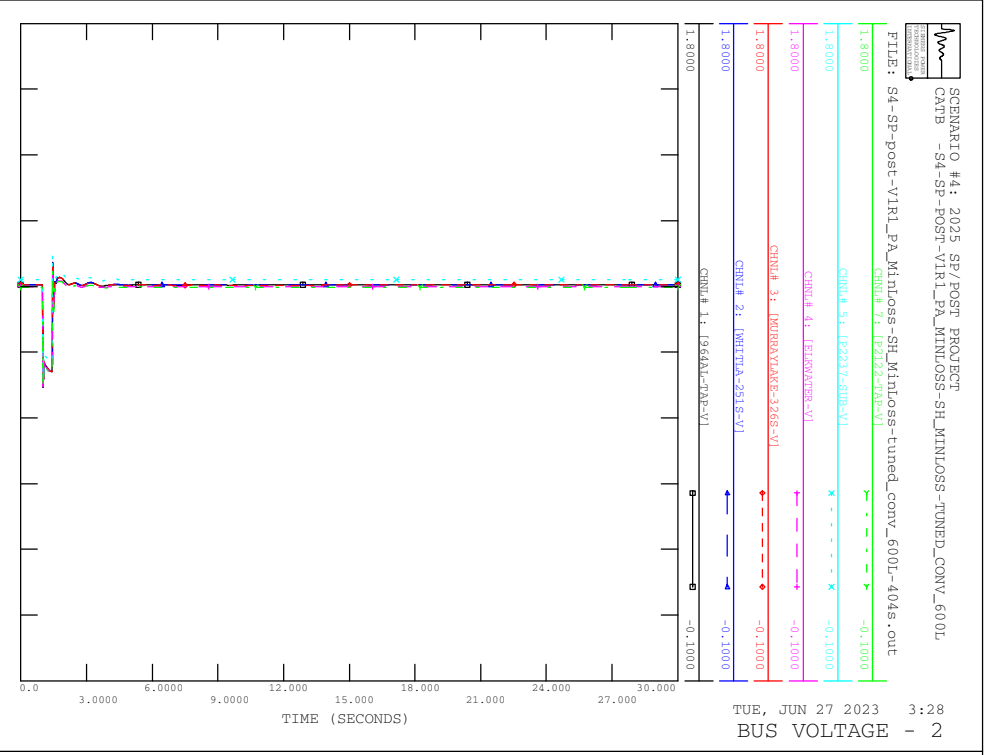

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMGI-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

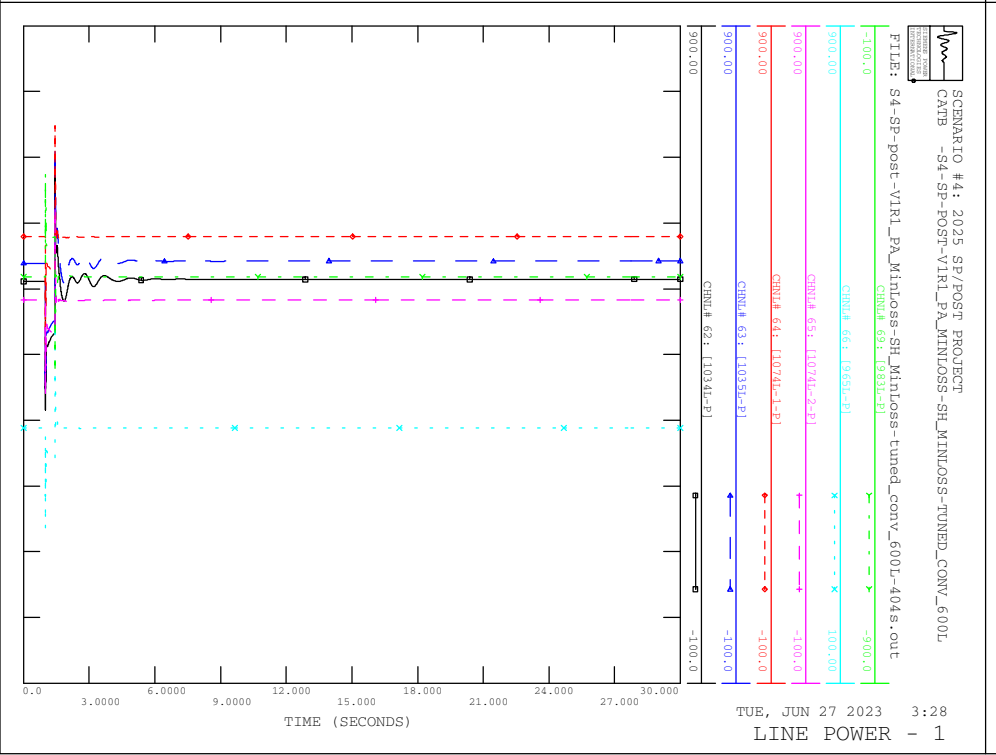

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

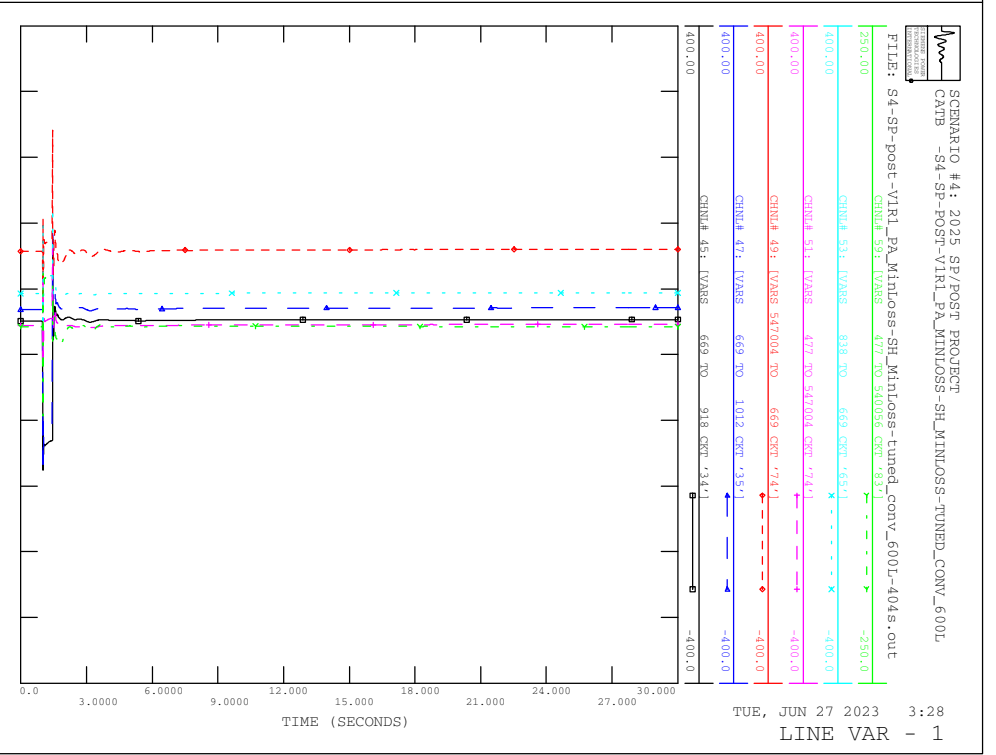

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMGI-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

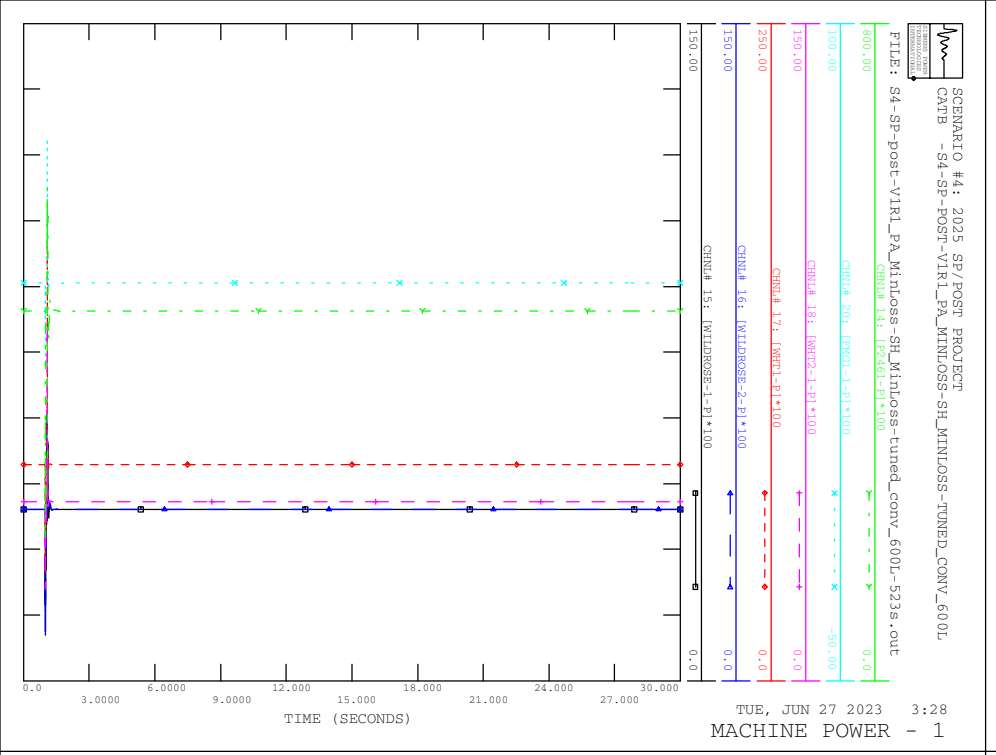

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

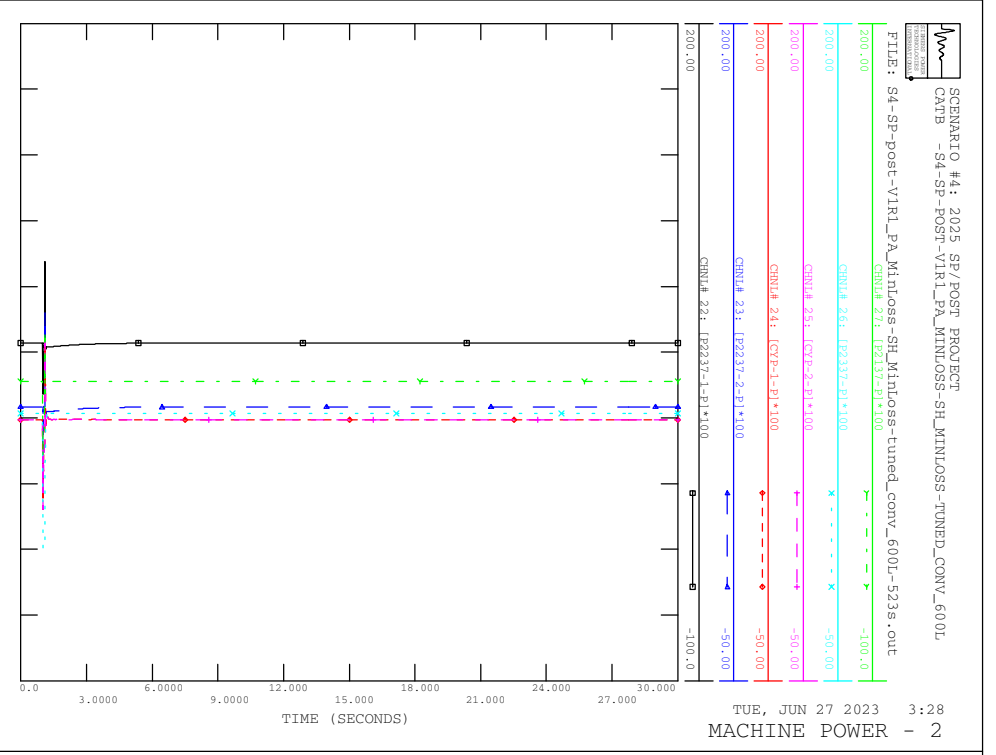

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

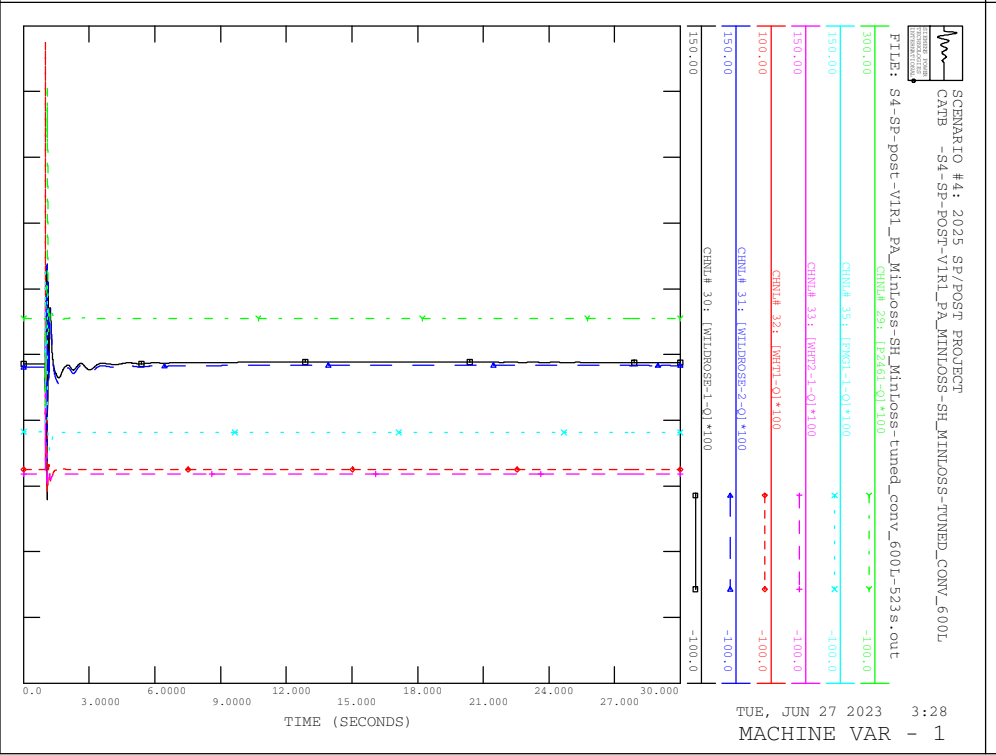

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

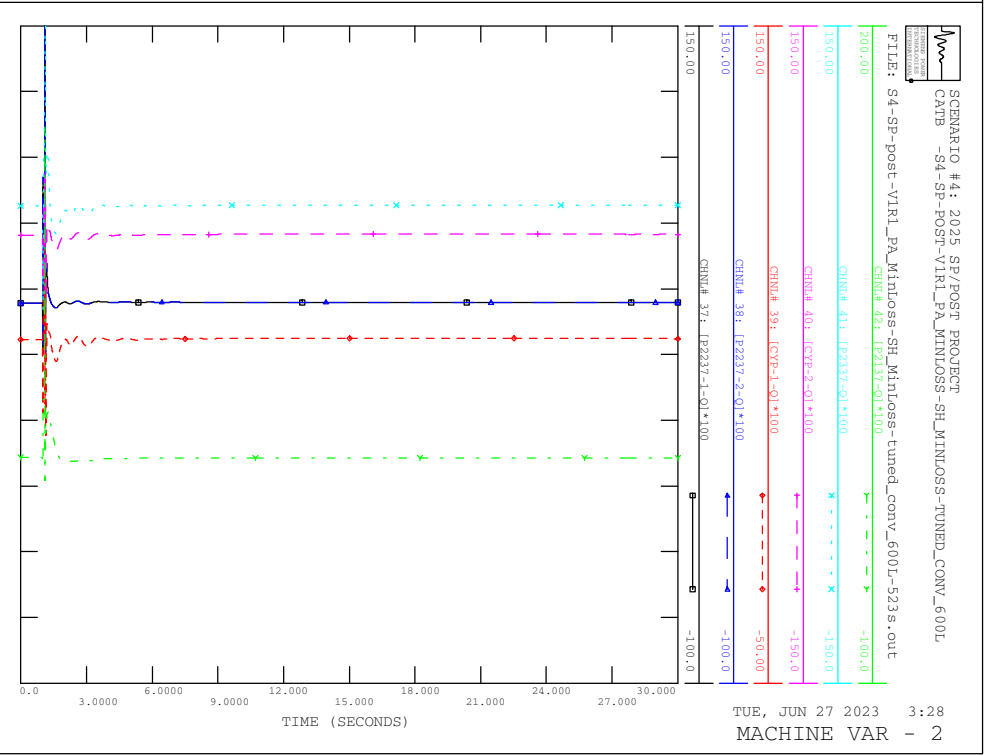

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

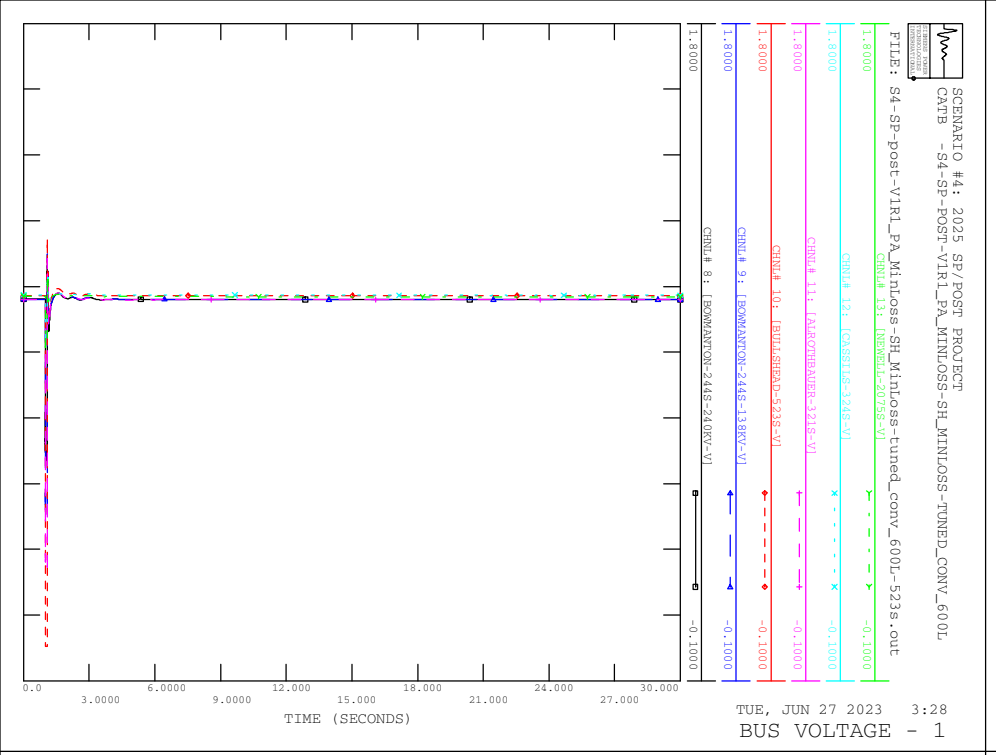

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-404s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

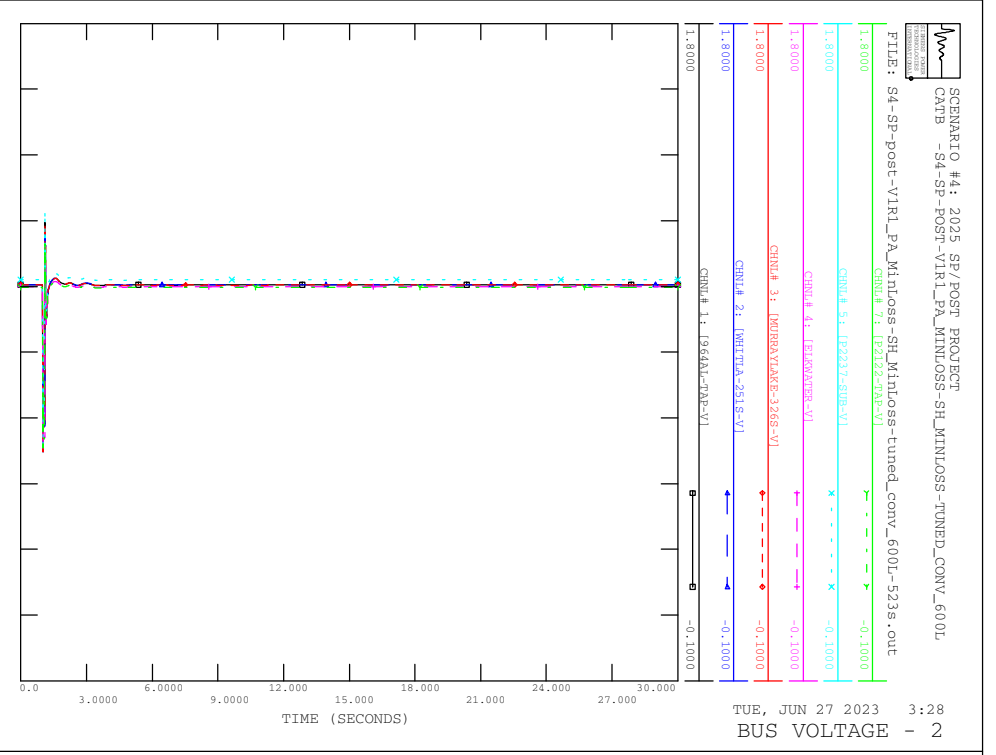

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

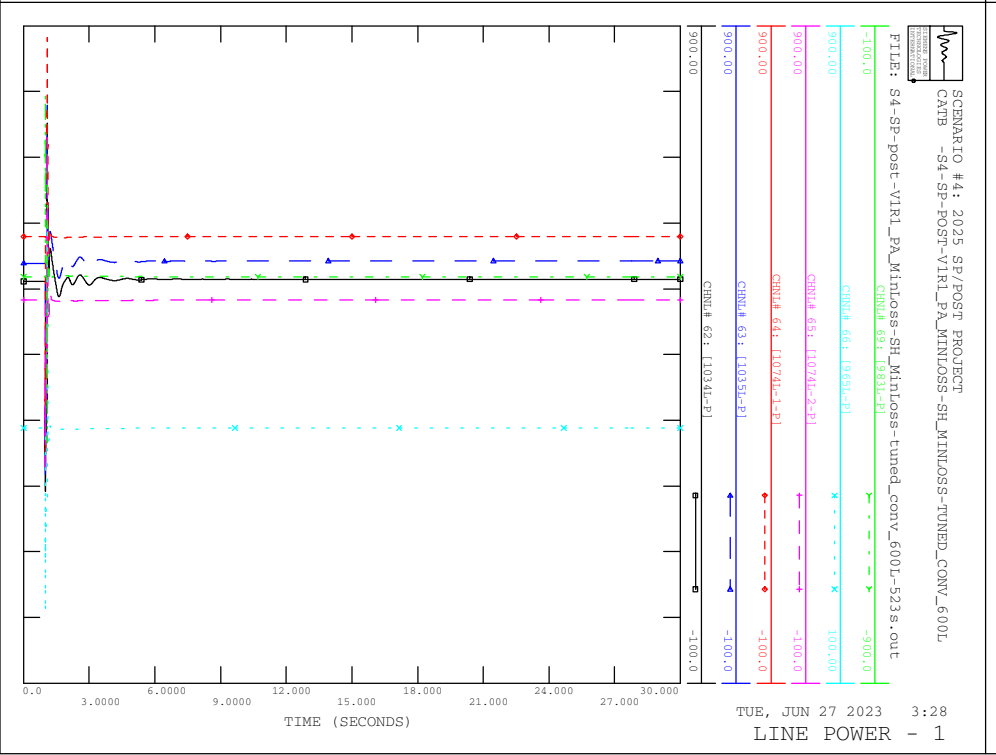

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

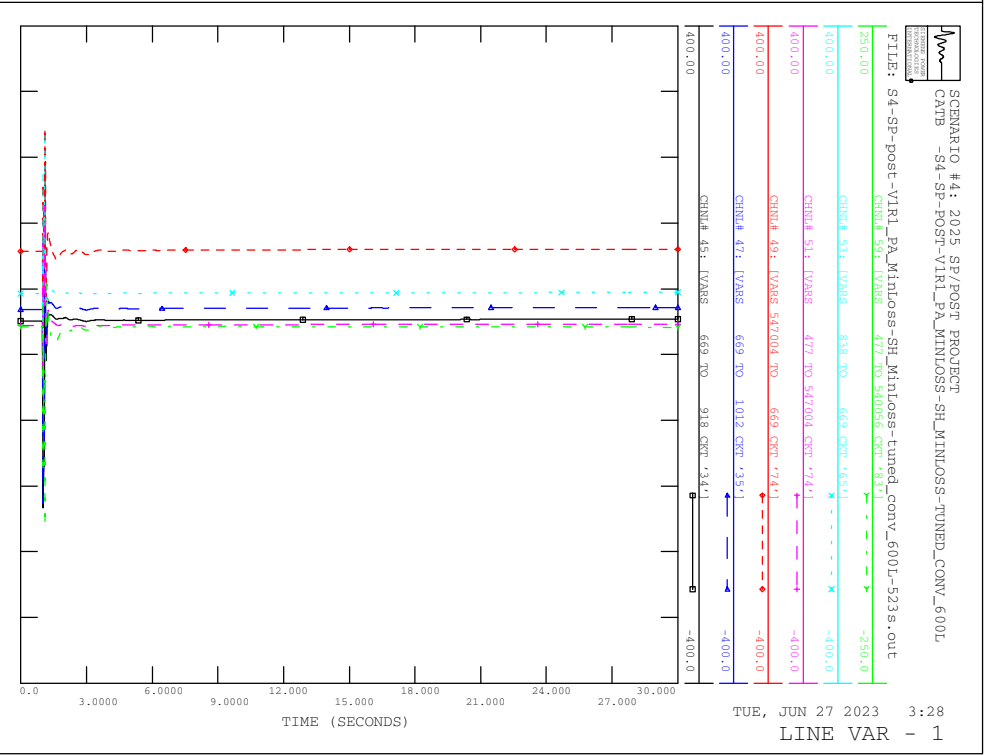

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

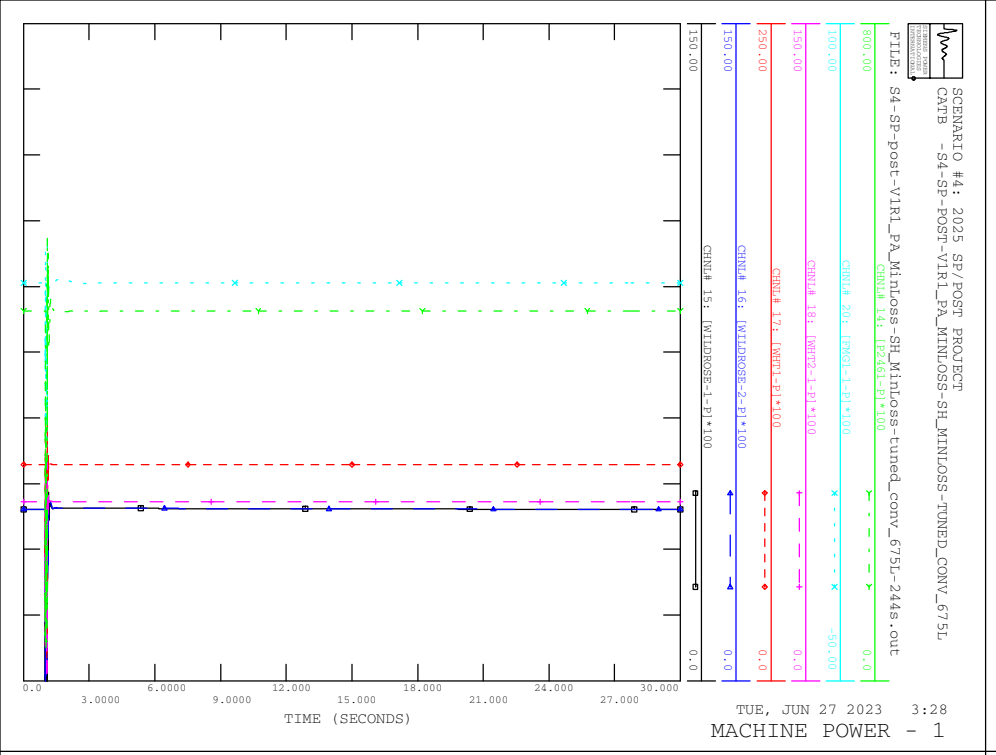

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

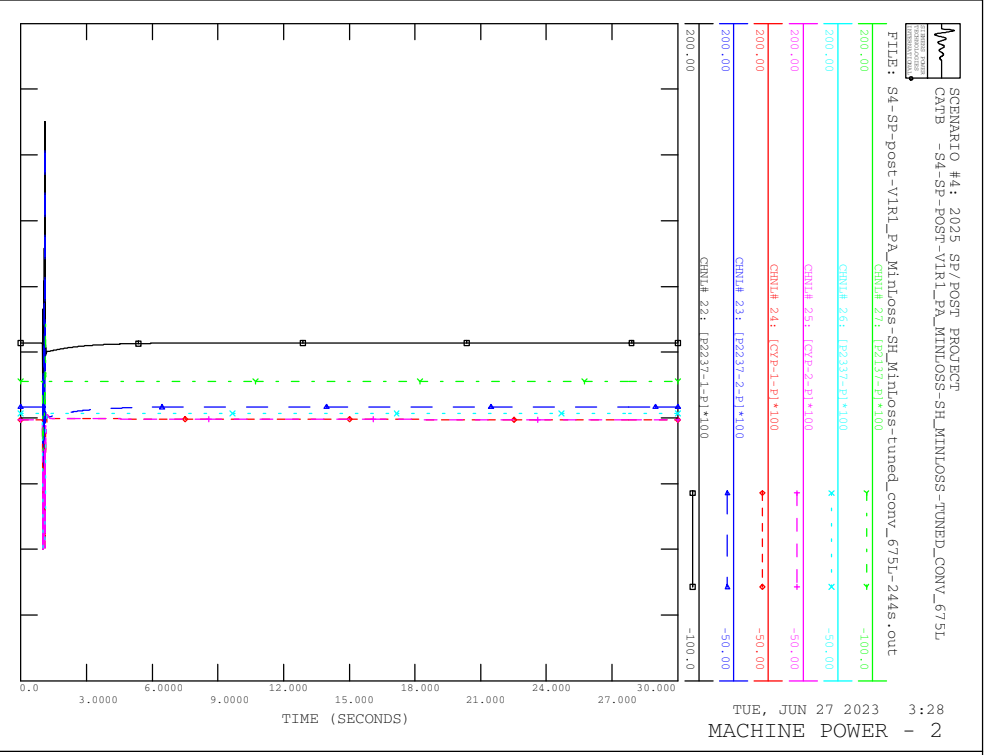

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWGLN-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

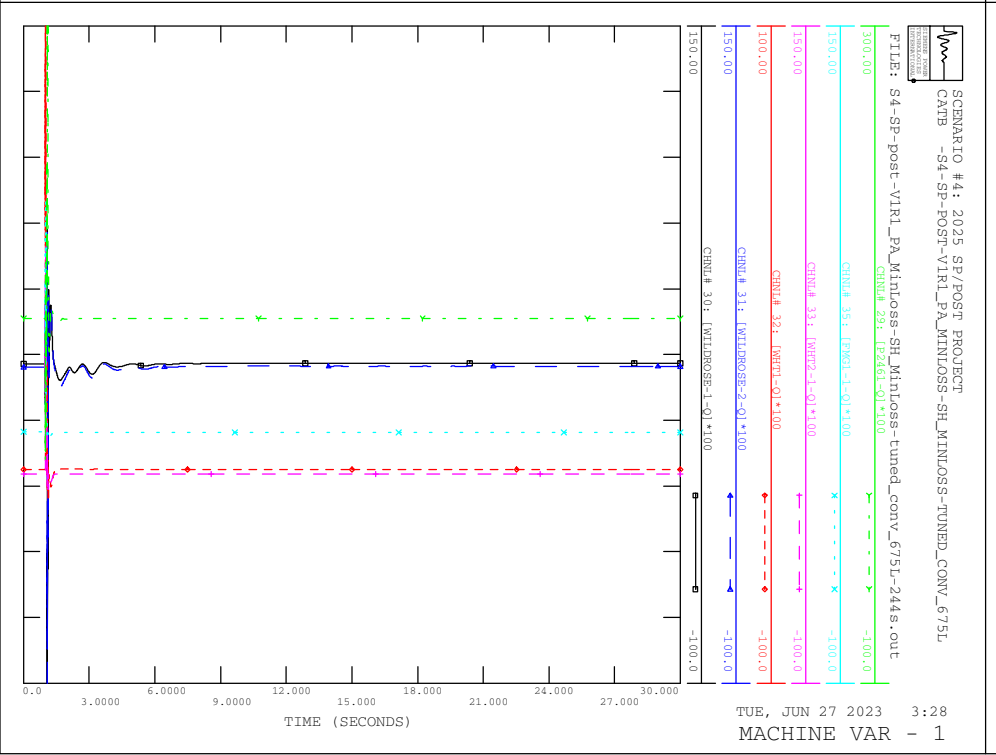

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

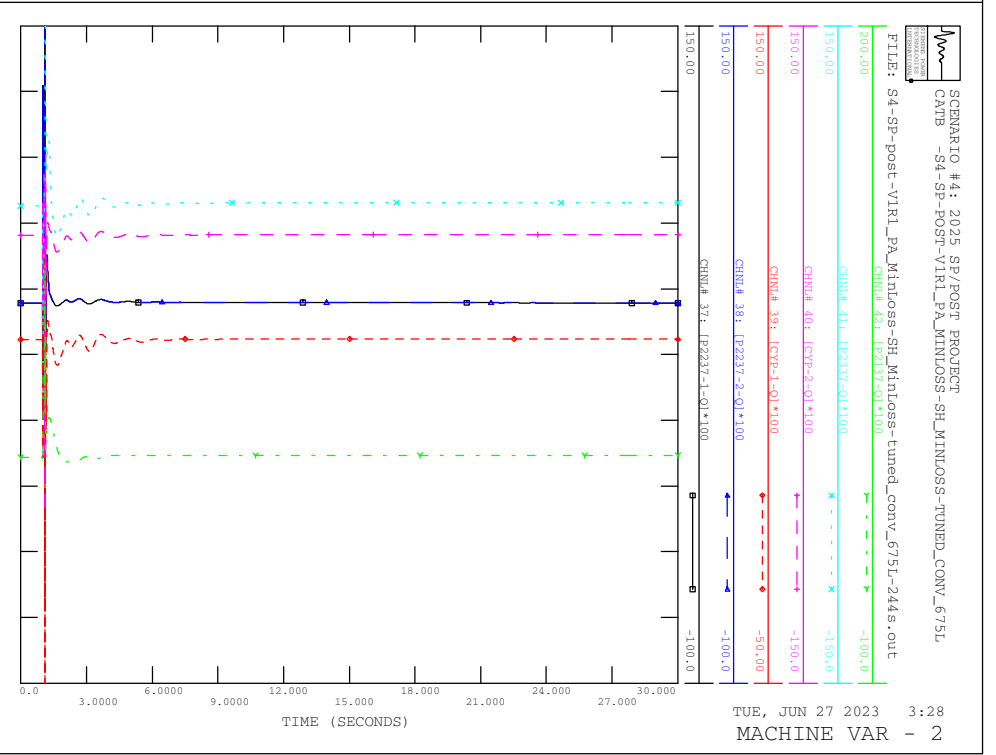

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

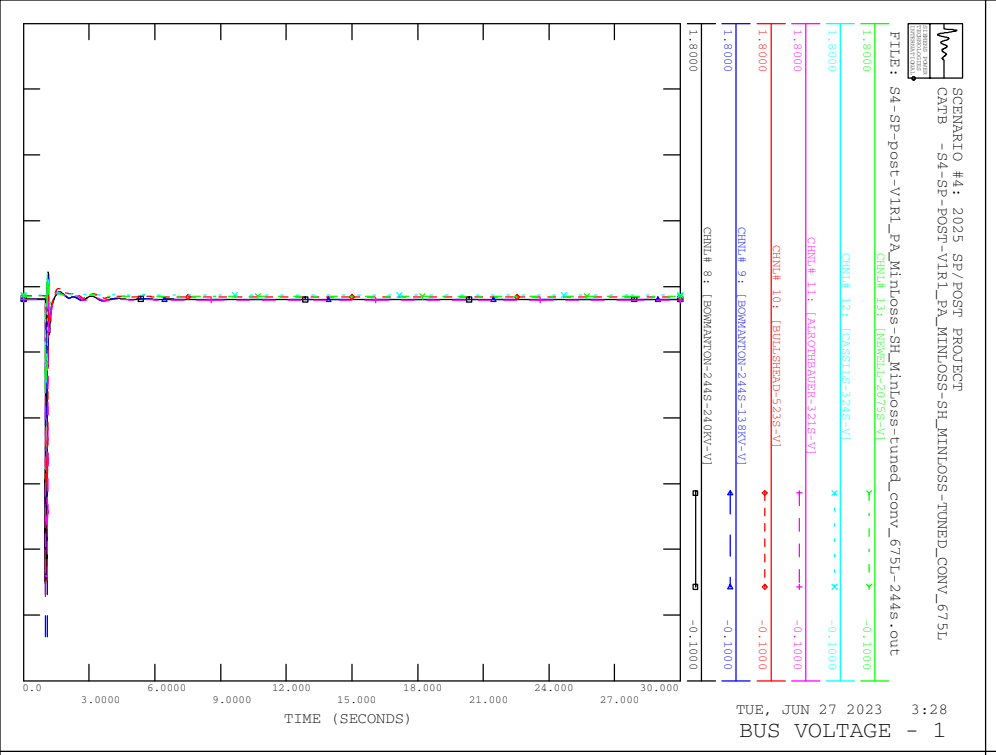

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_600L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_600L-523s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

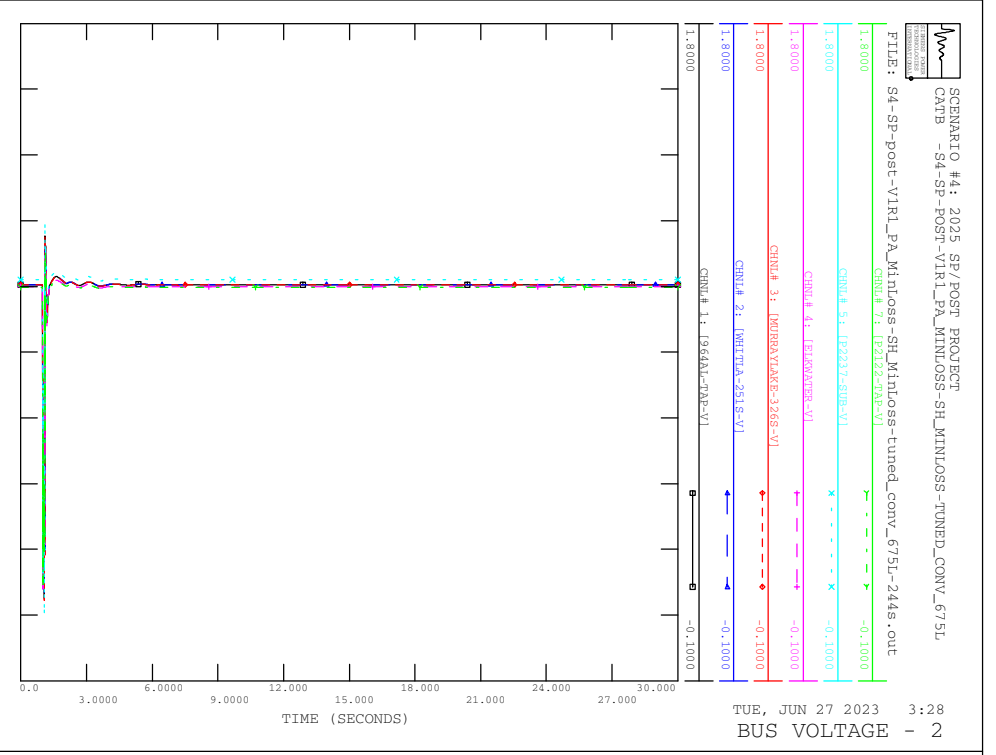

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMGS1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

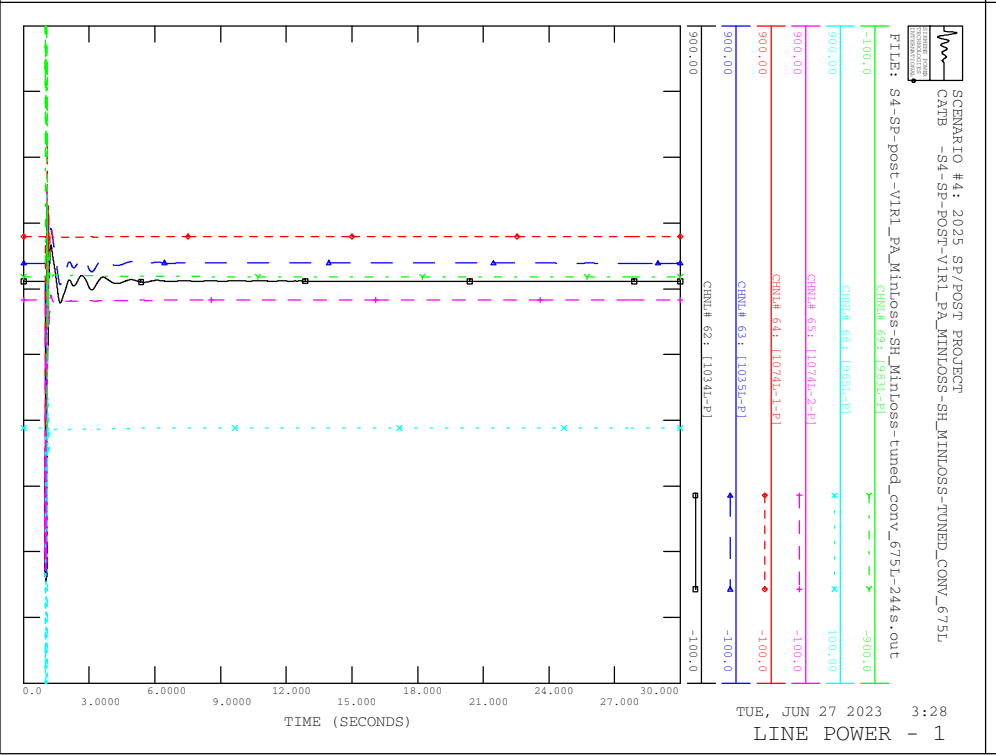

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

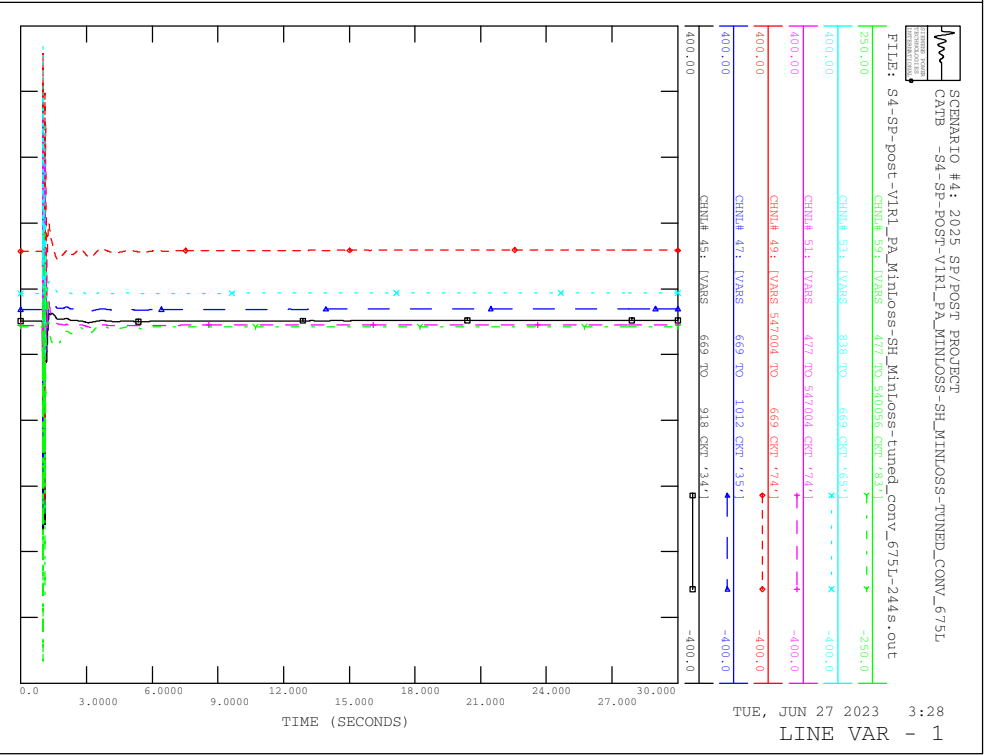

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMGS1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

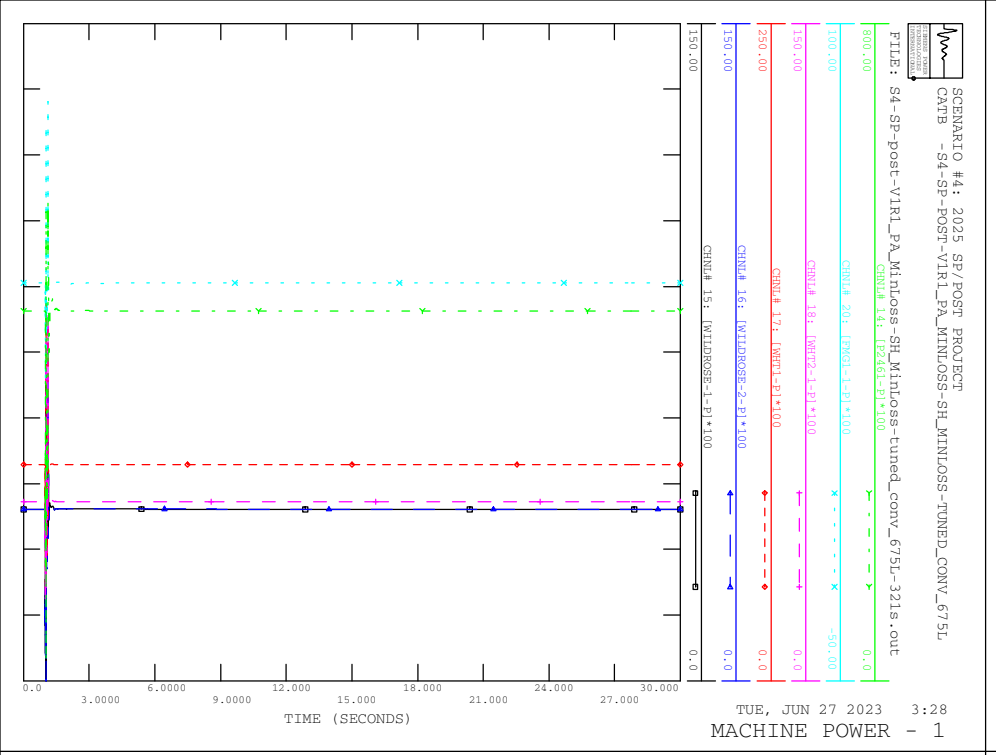

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

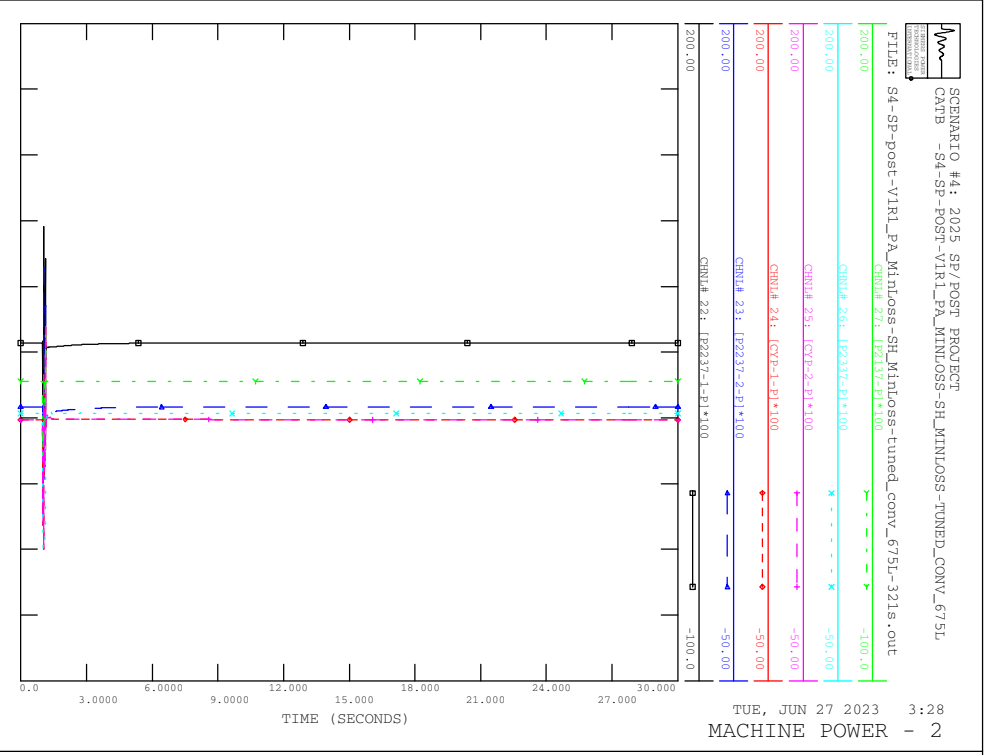

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

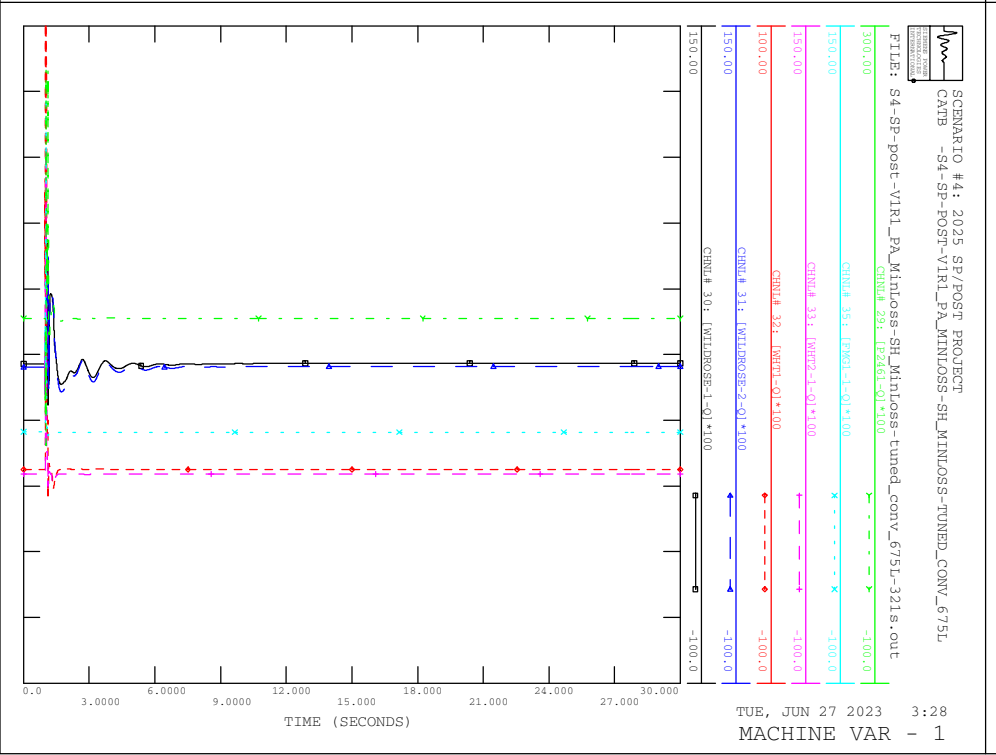

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

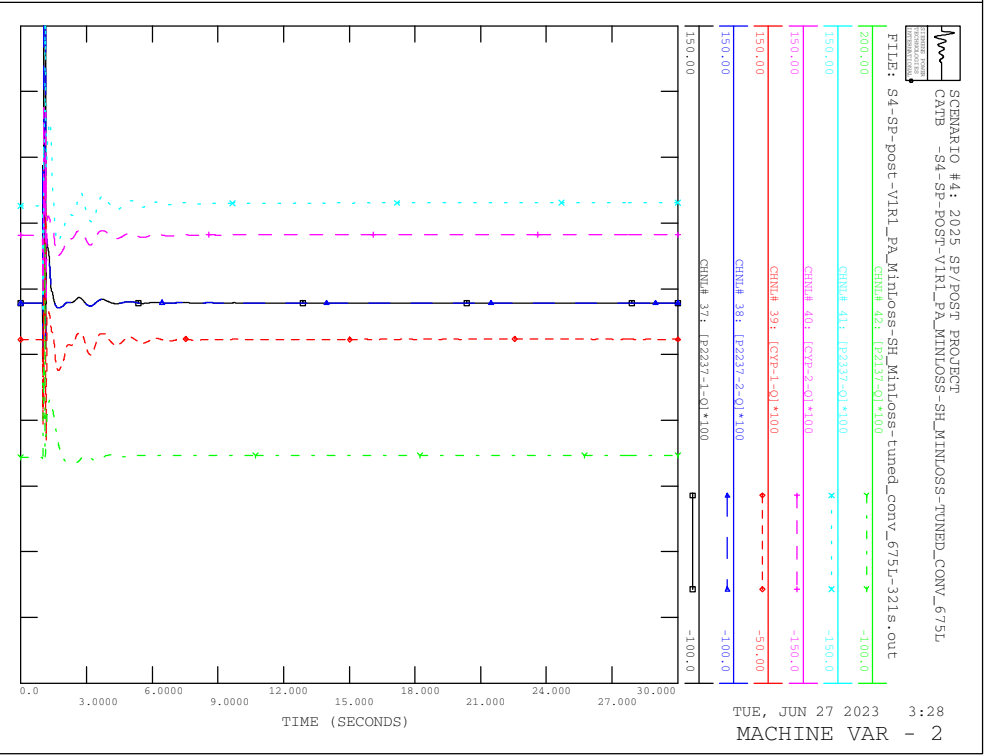

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

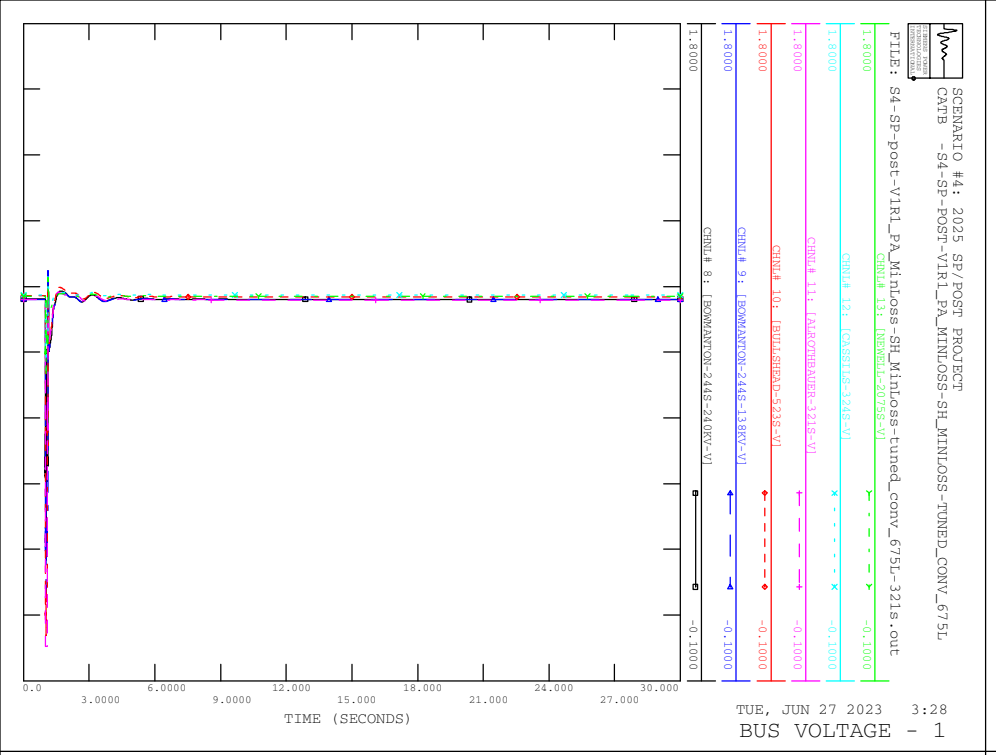

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

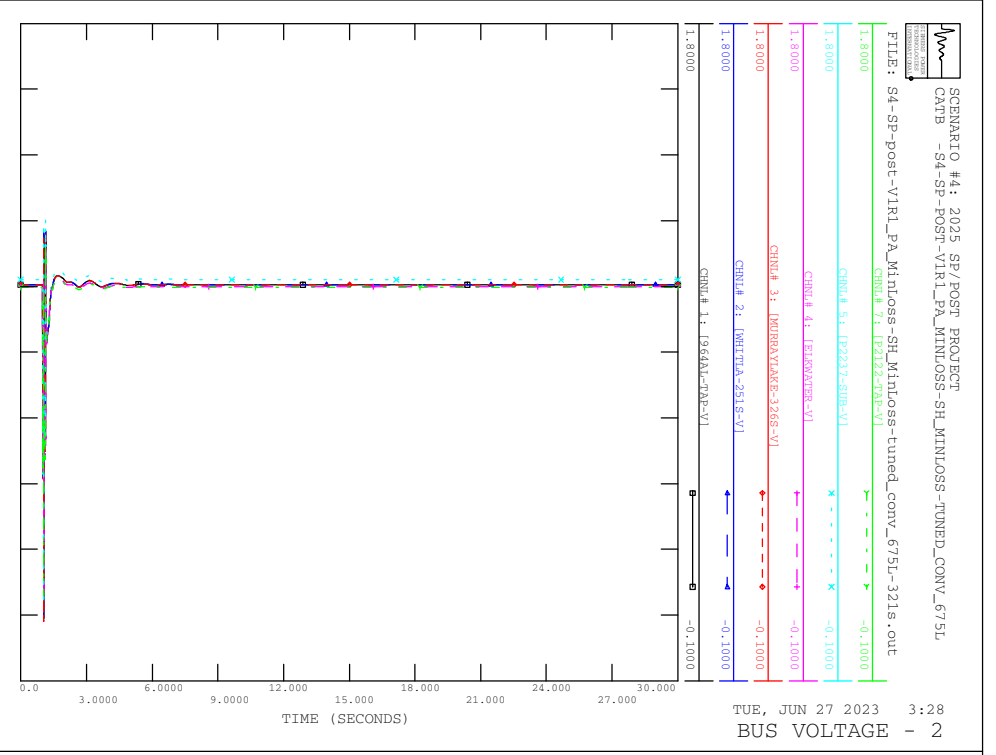

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [WHT1-P]*100
CHNL# 18: [WHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

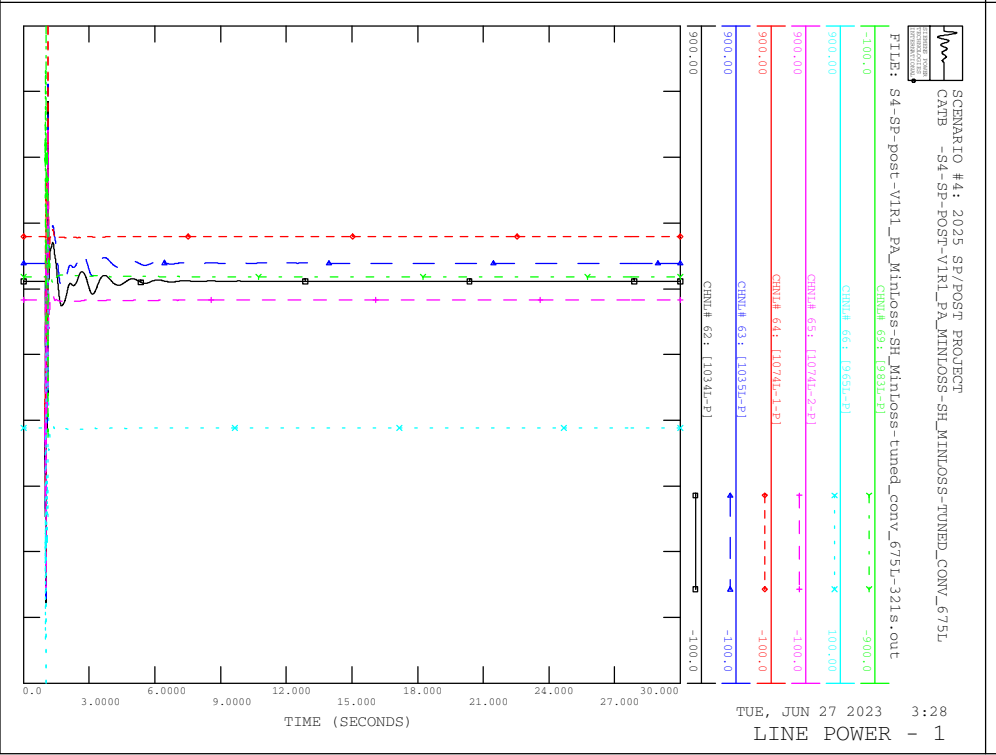

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

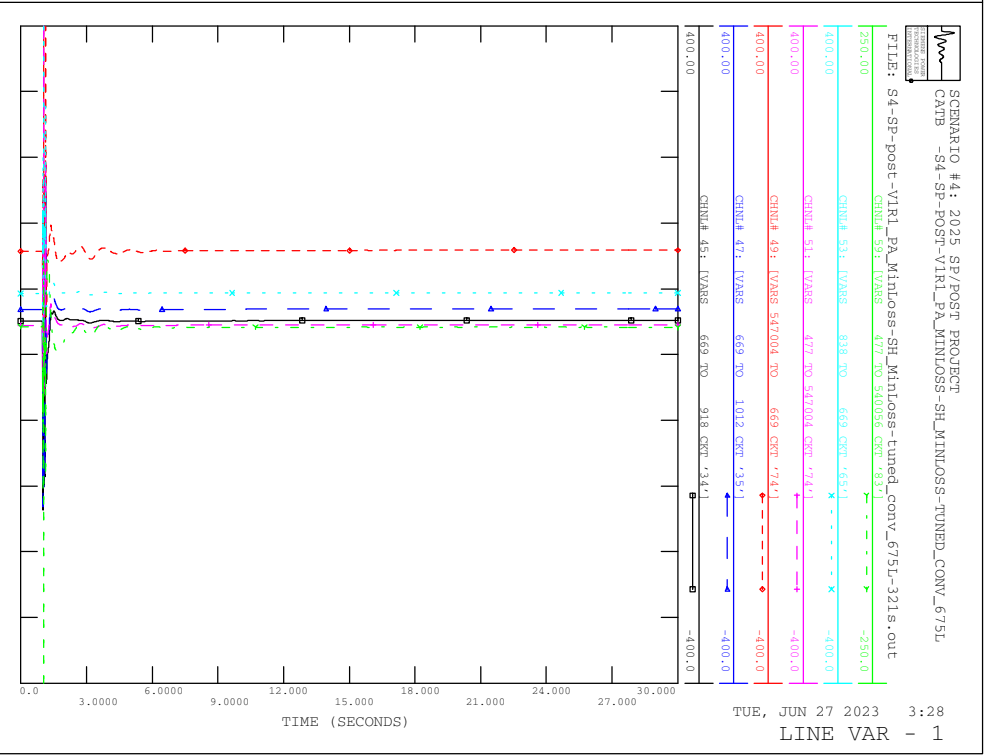

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [WHT1-Q]*100
CHNL# 33: [WHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

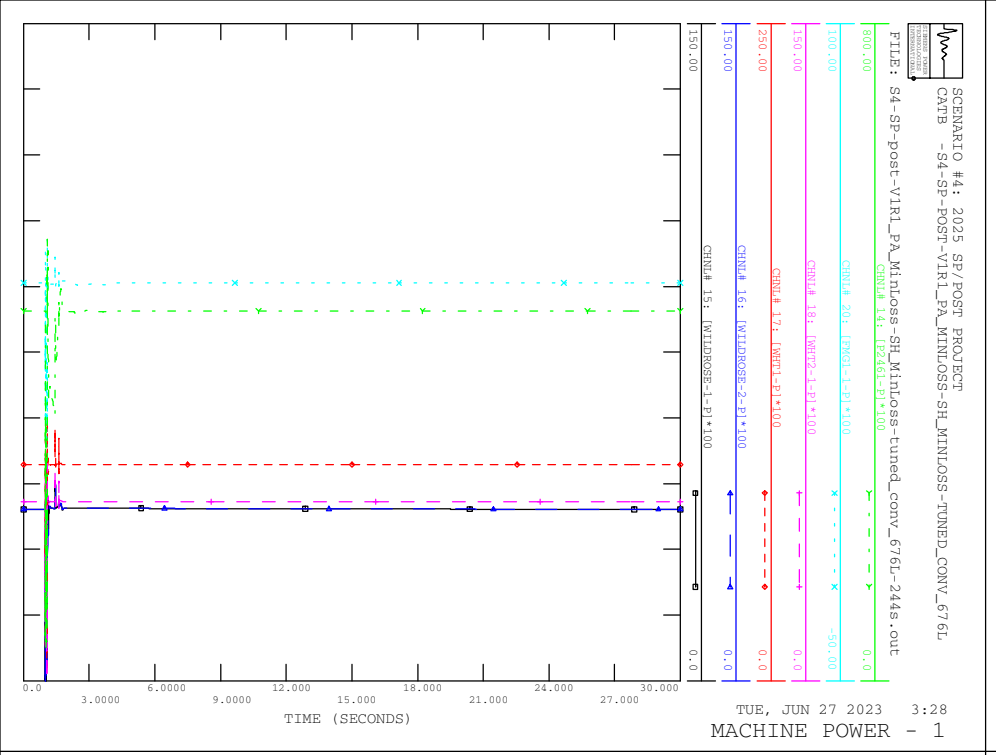

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

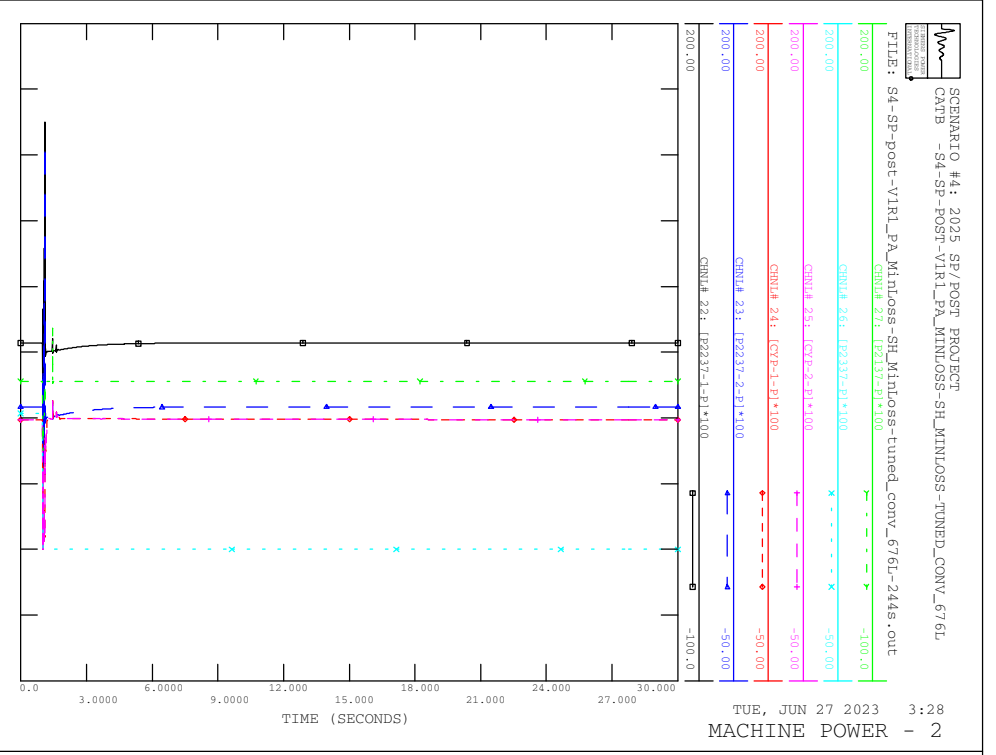

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-20735-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

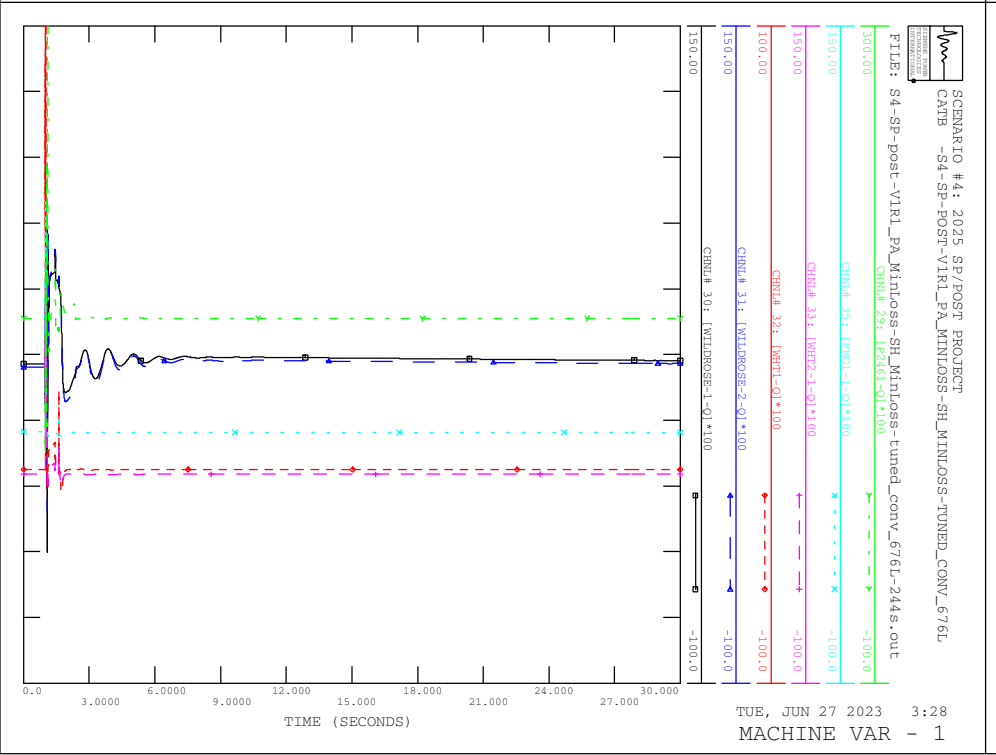

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

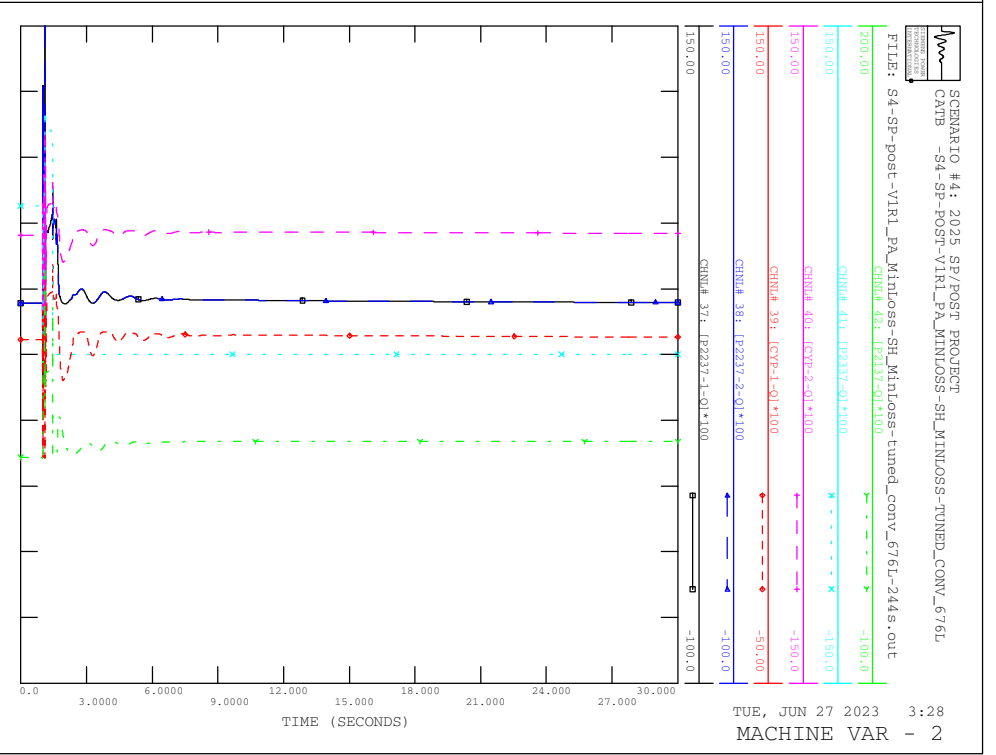

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [985L-P]
900.00
-100.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

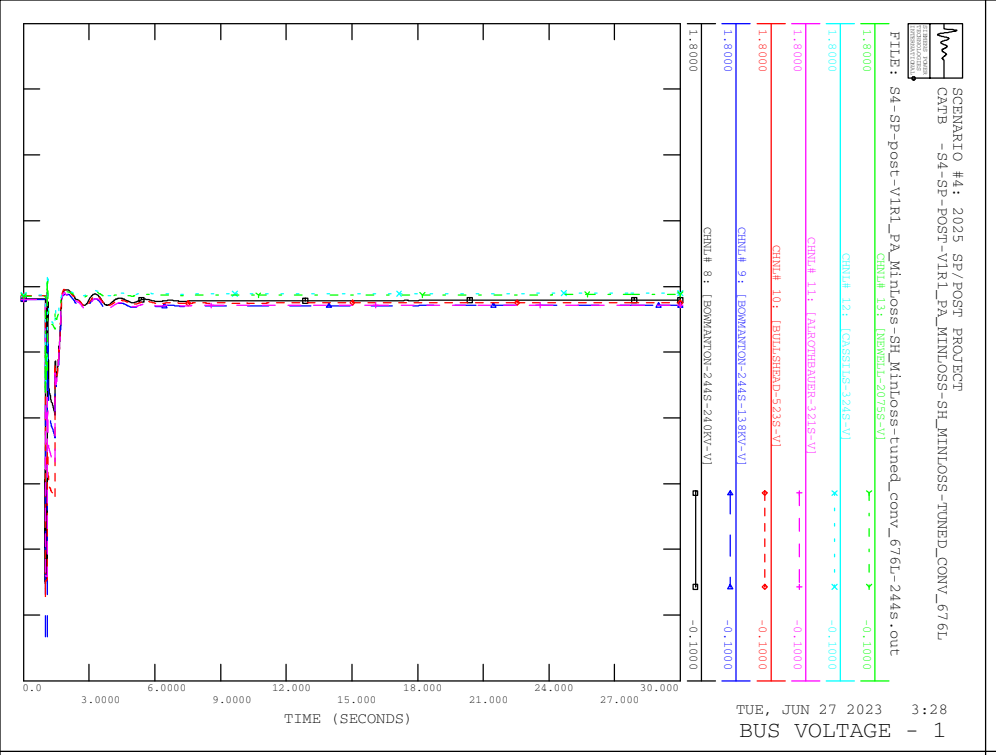

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_675L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_675L-321s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '69']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
400.00
-400.0
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

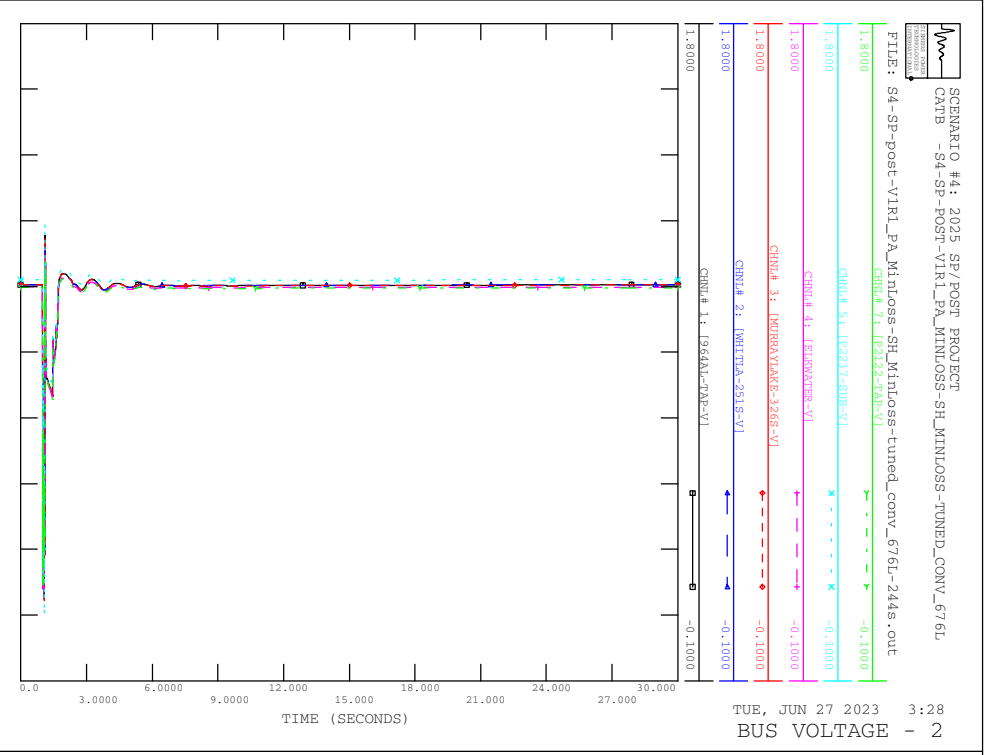

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PNG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

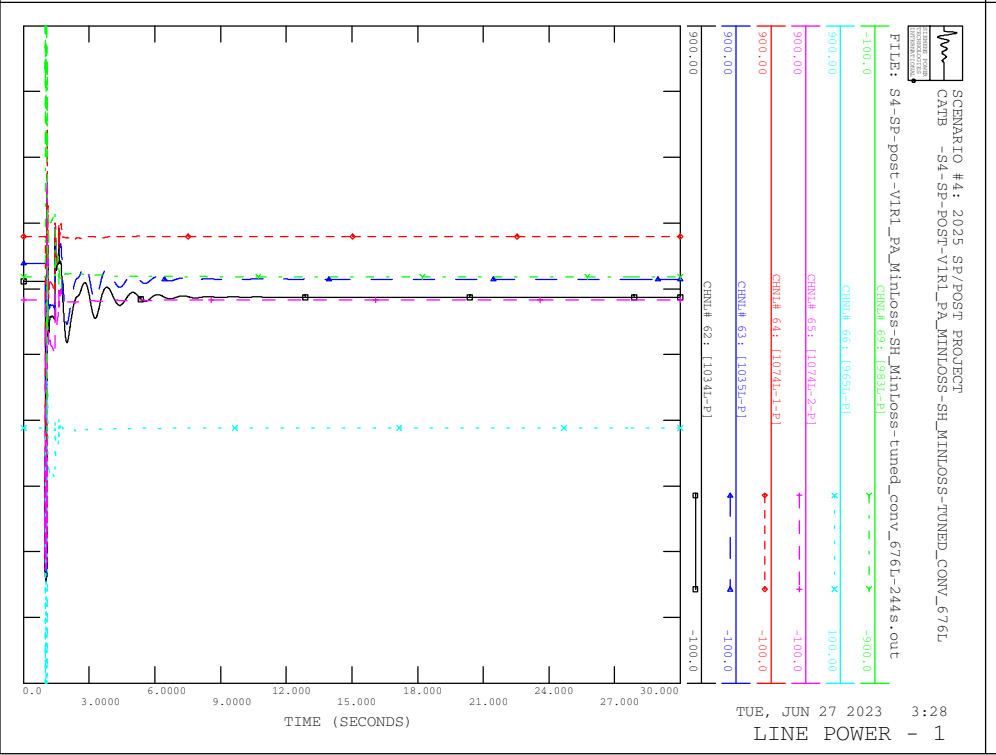

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

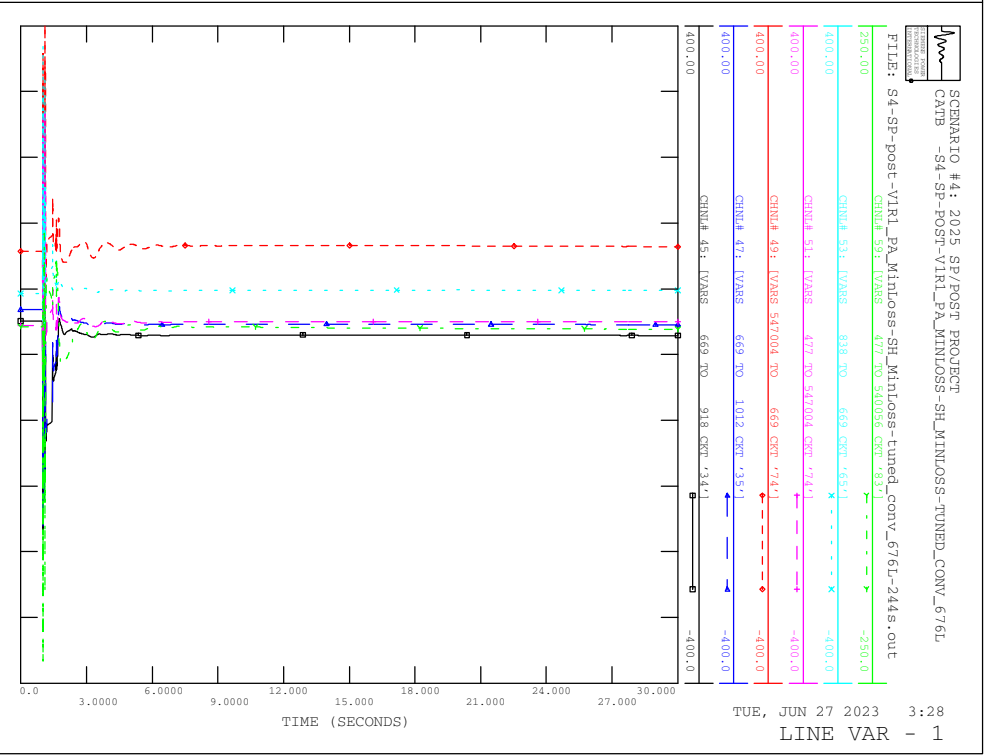

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PNG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

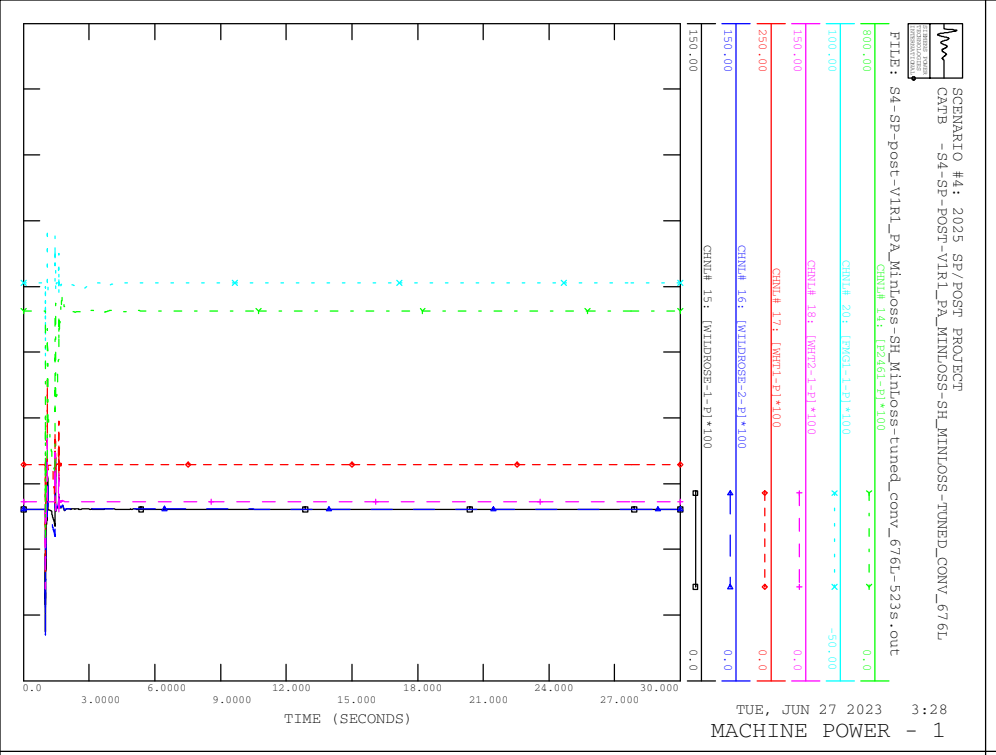

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

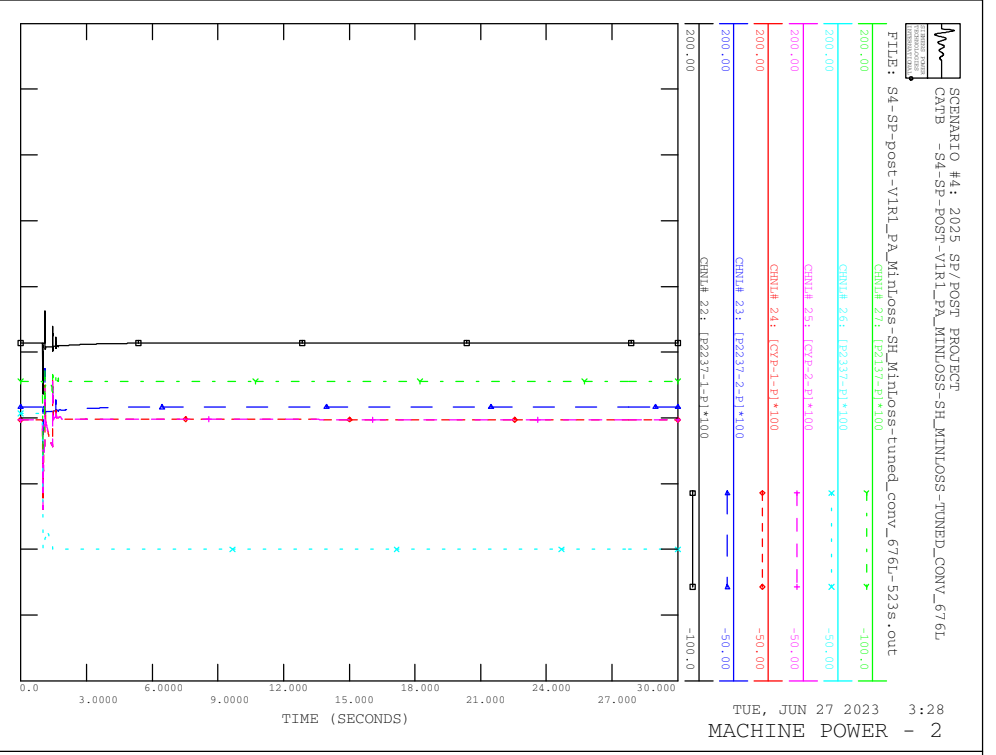

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

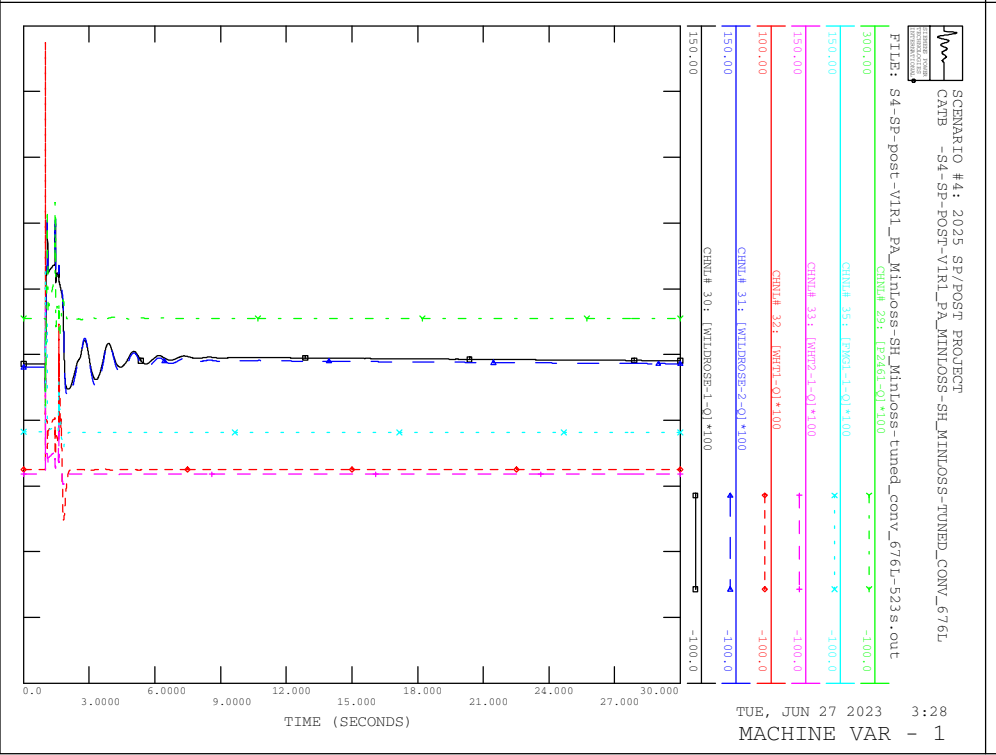

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

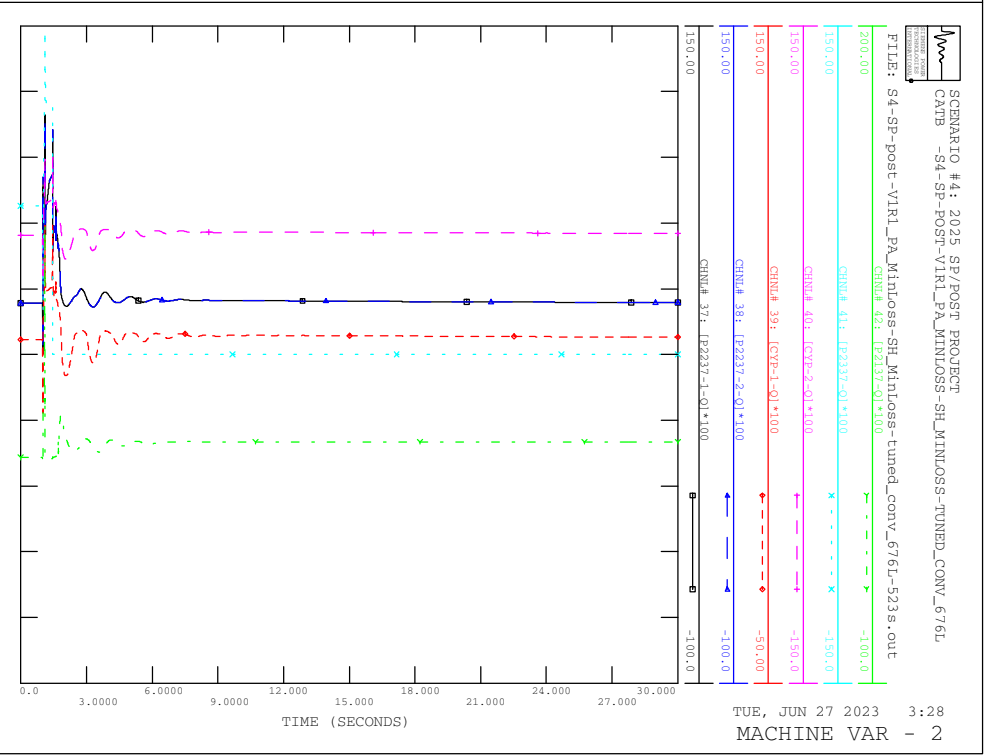

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

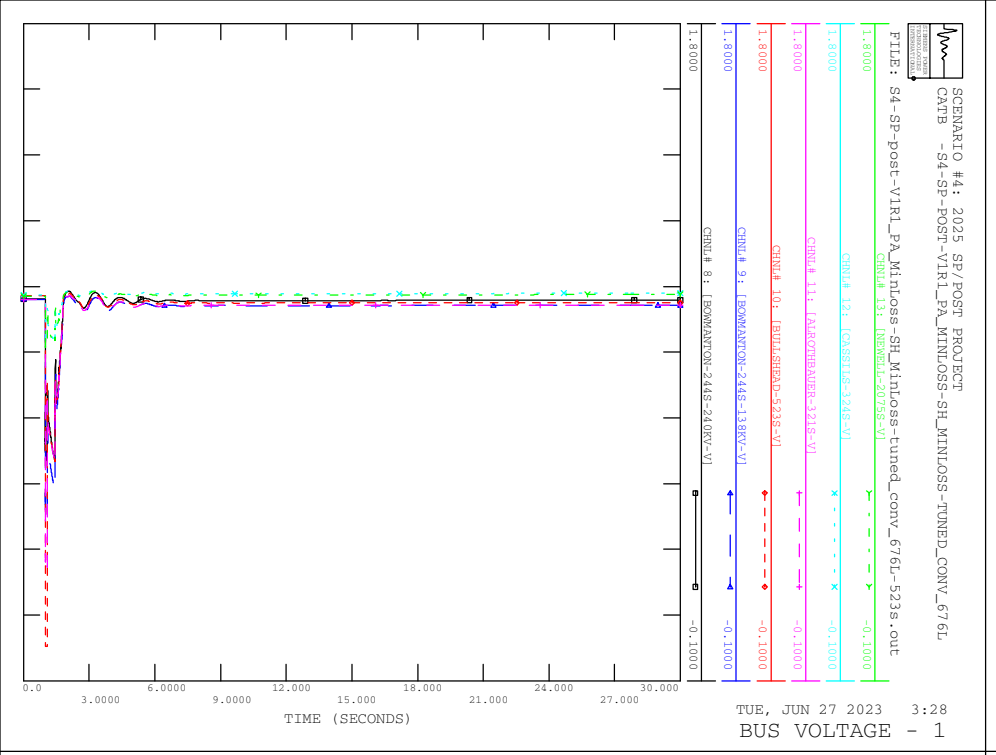

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '69']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

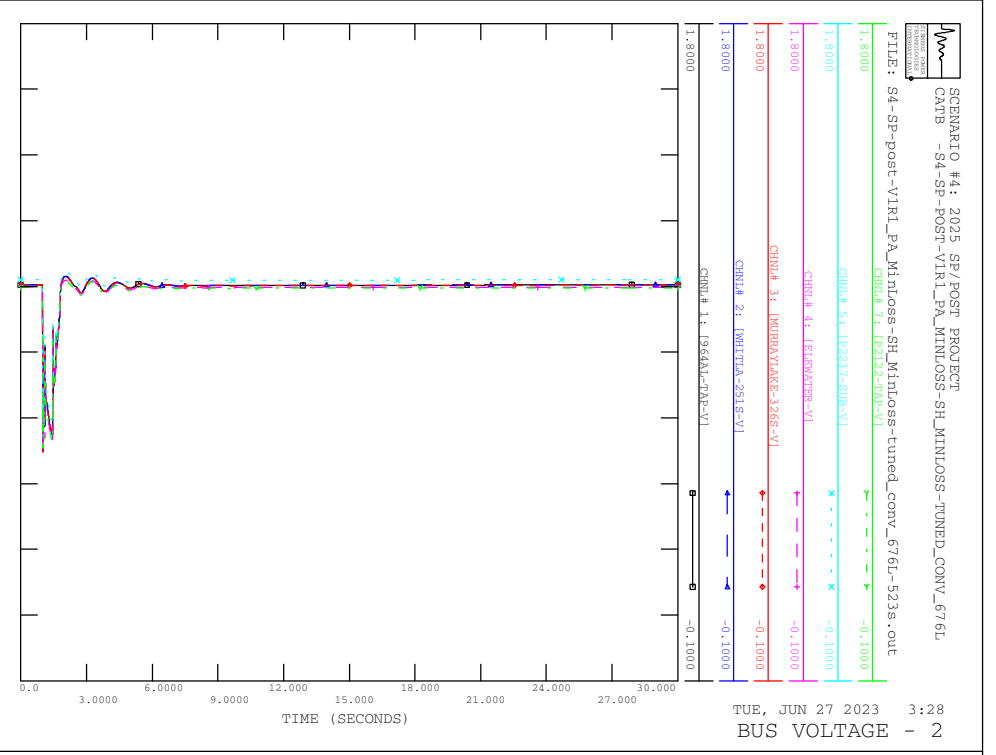

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

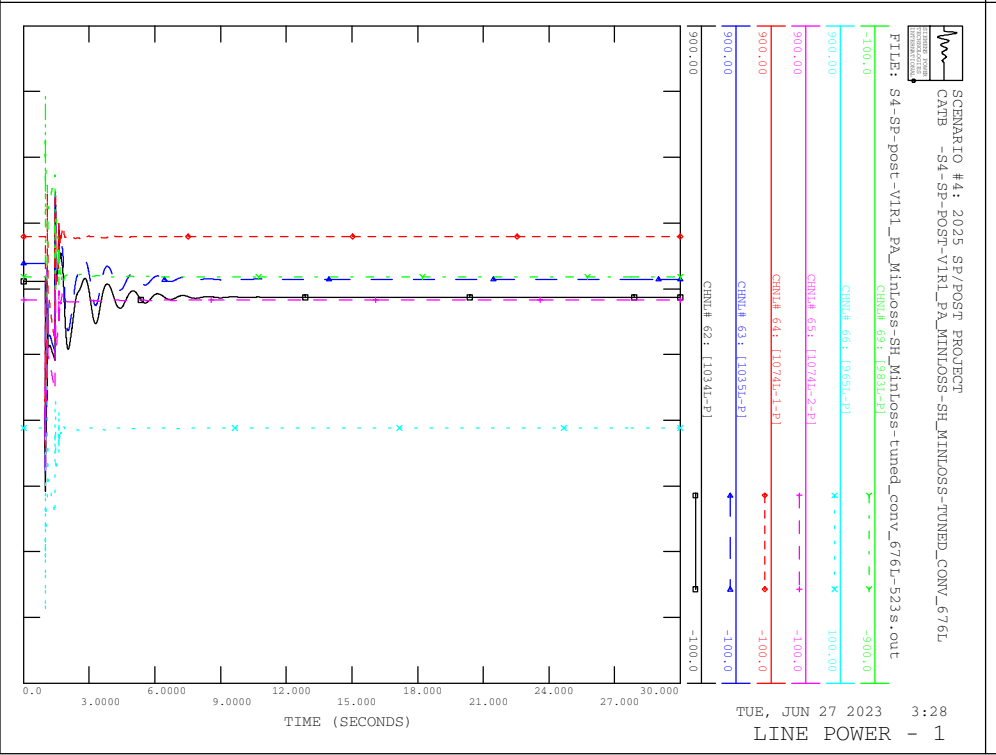

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

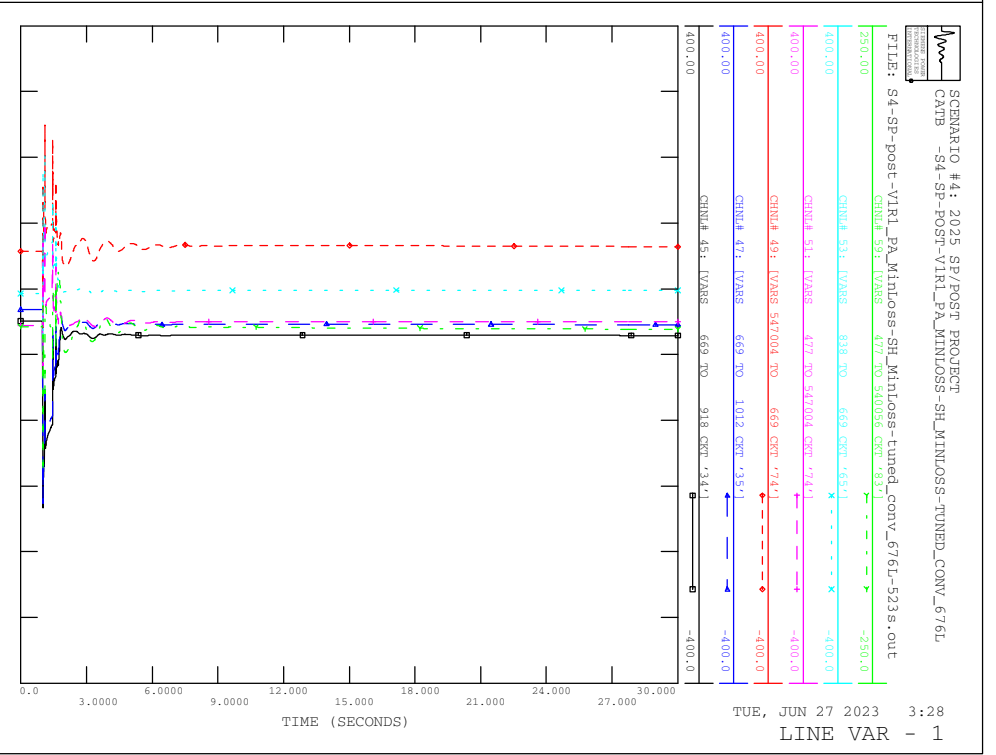

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

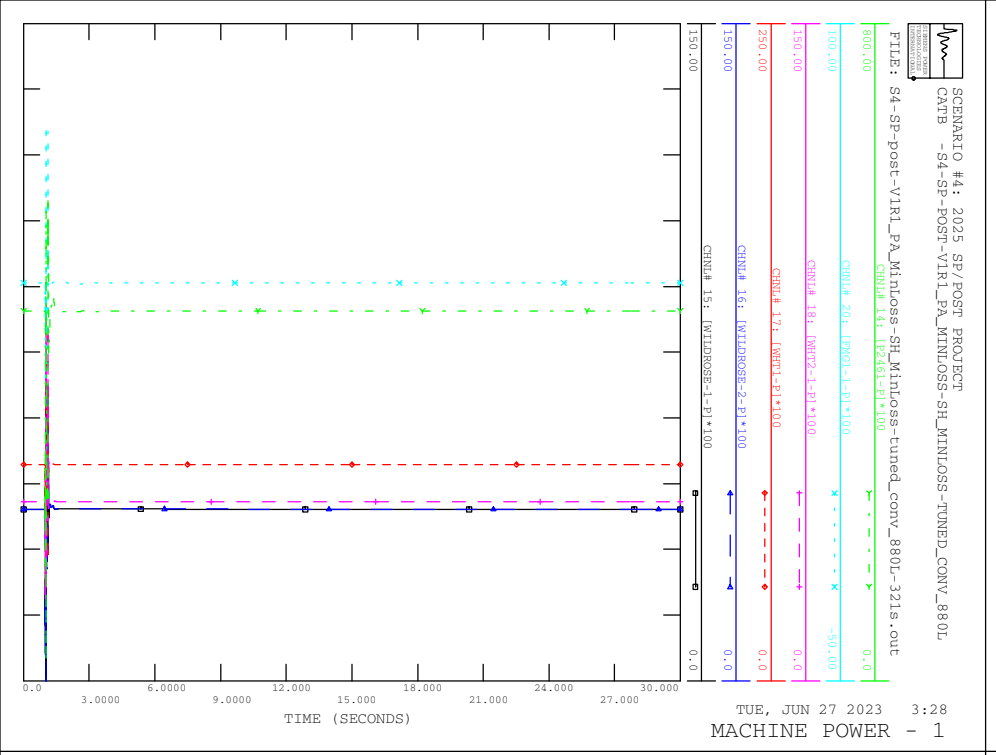

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

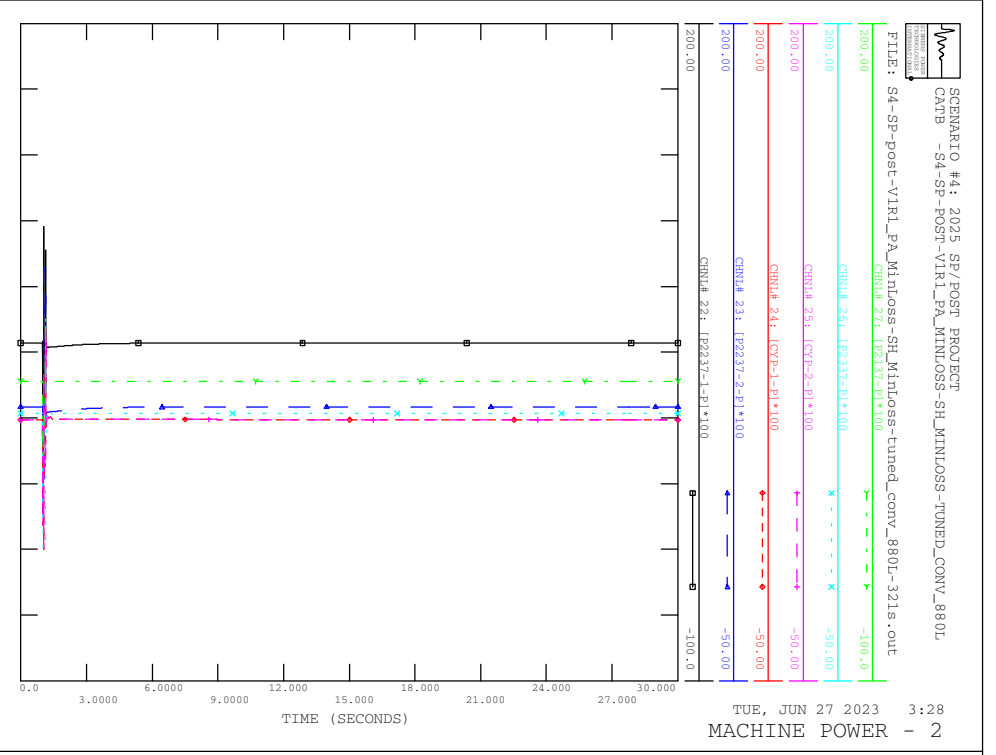

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

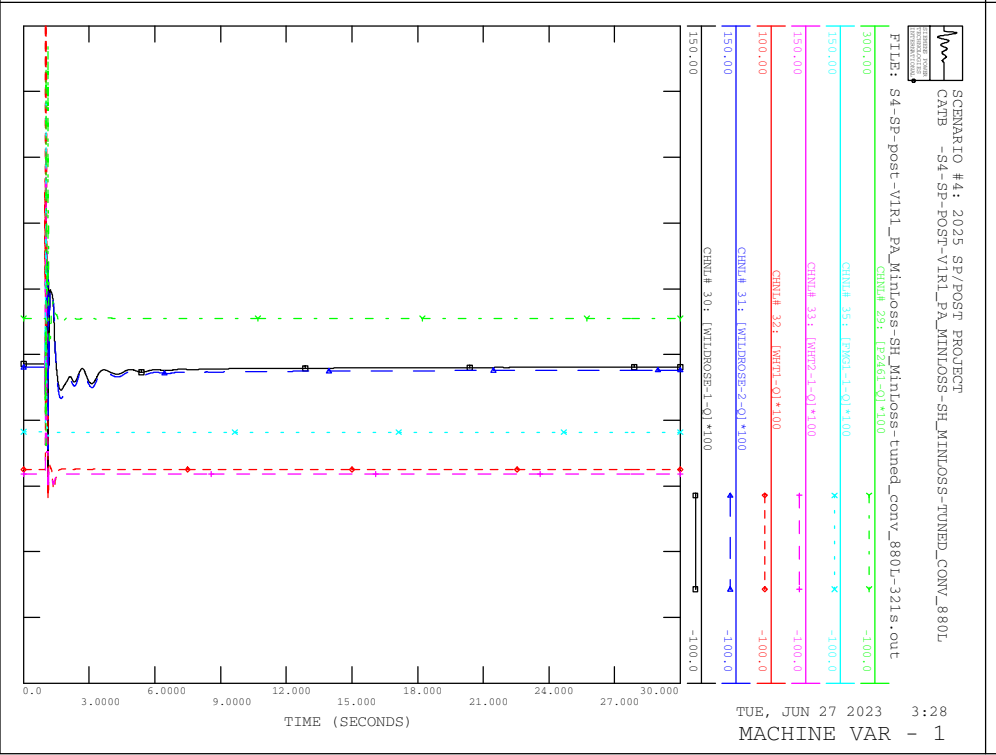

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

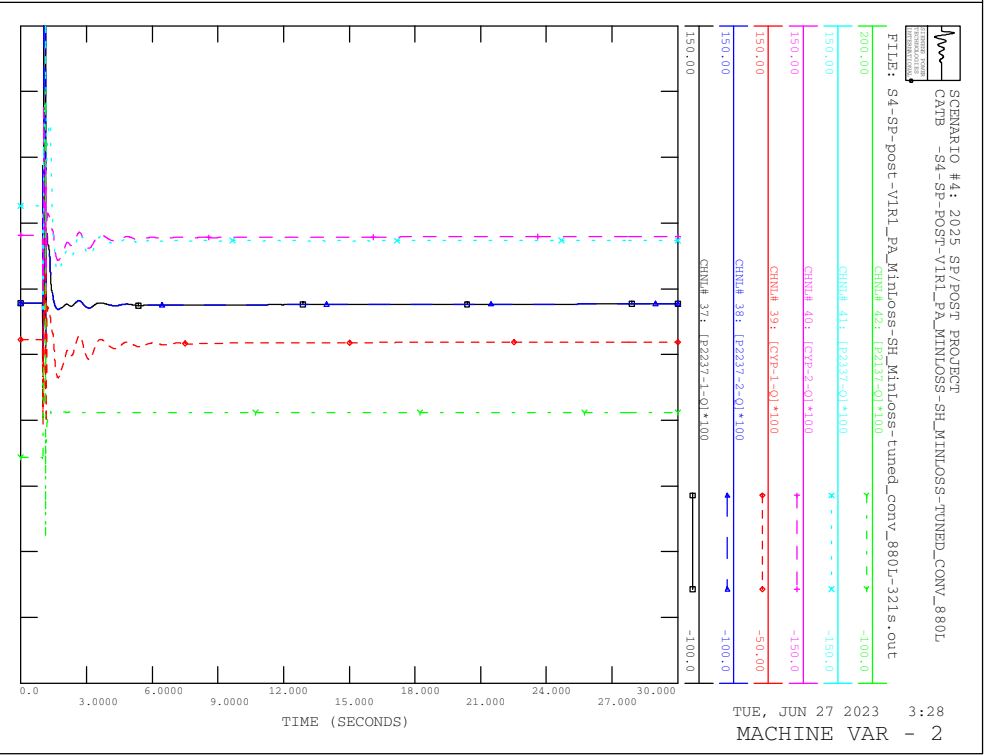

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [1965L-P]
CHNL# 69: [1985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

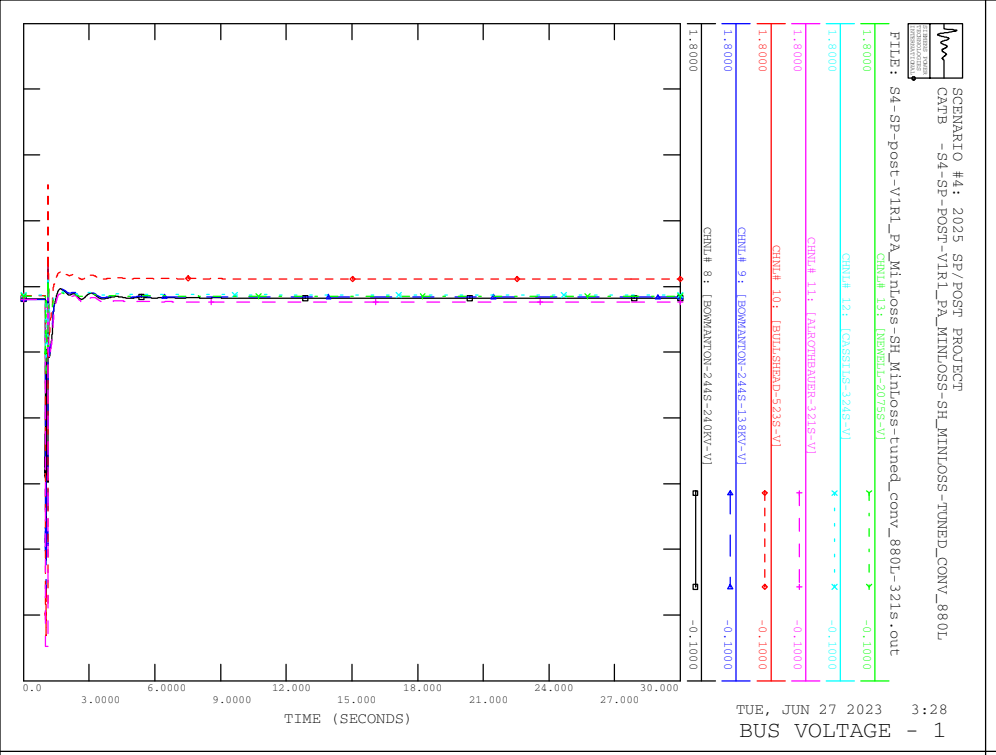

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_676L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_676L-523s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

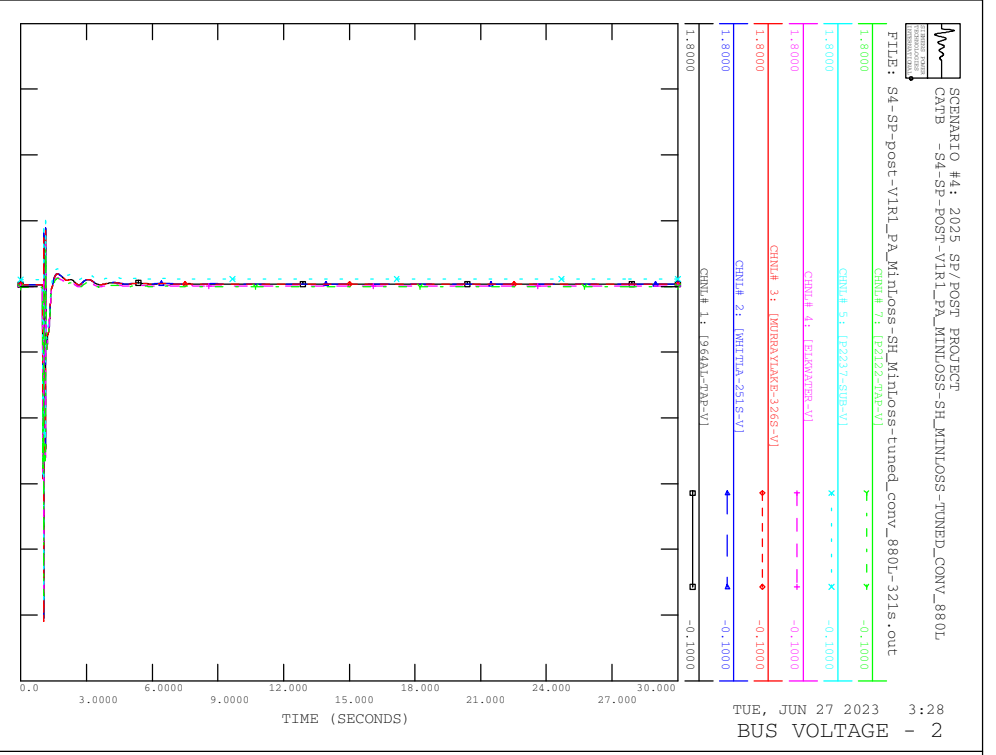

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

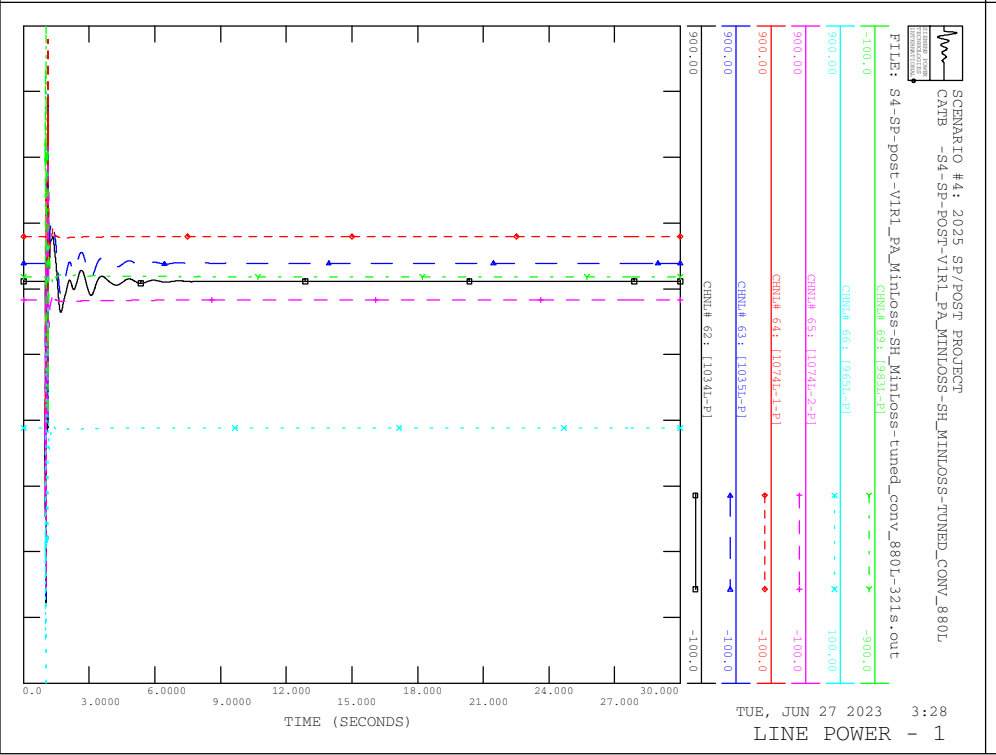

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

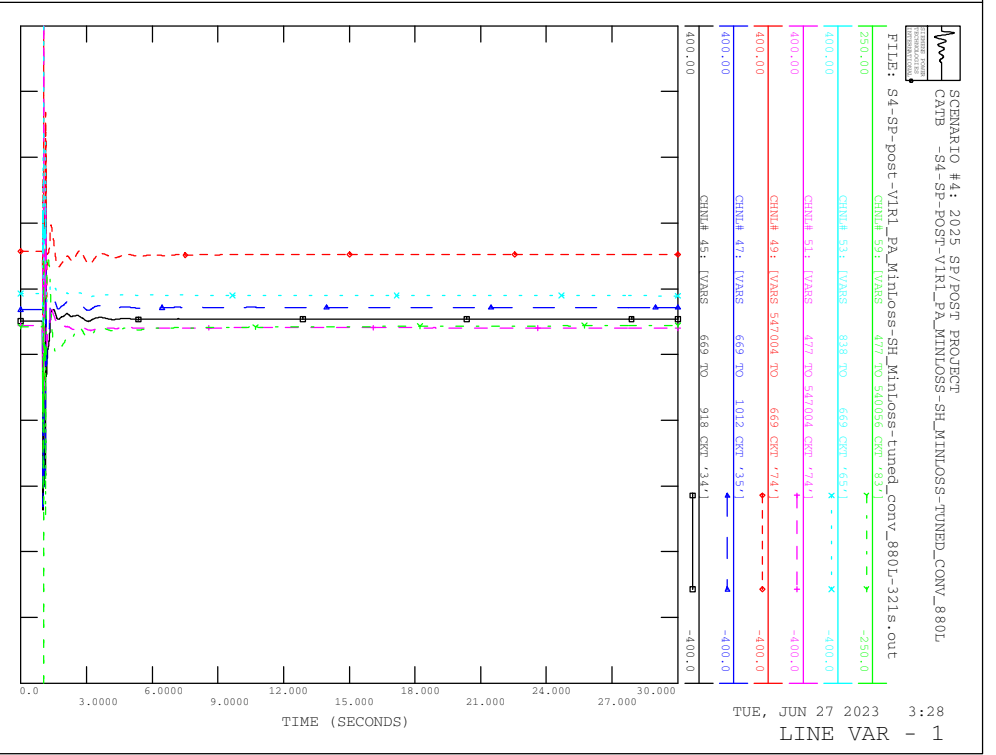

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

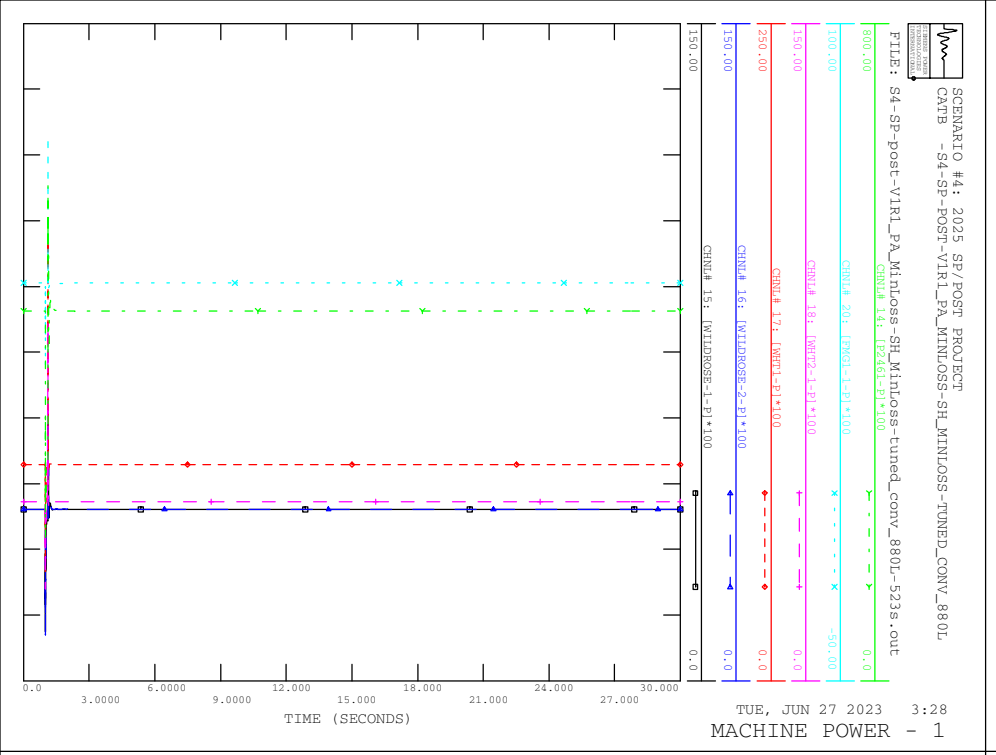

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

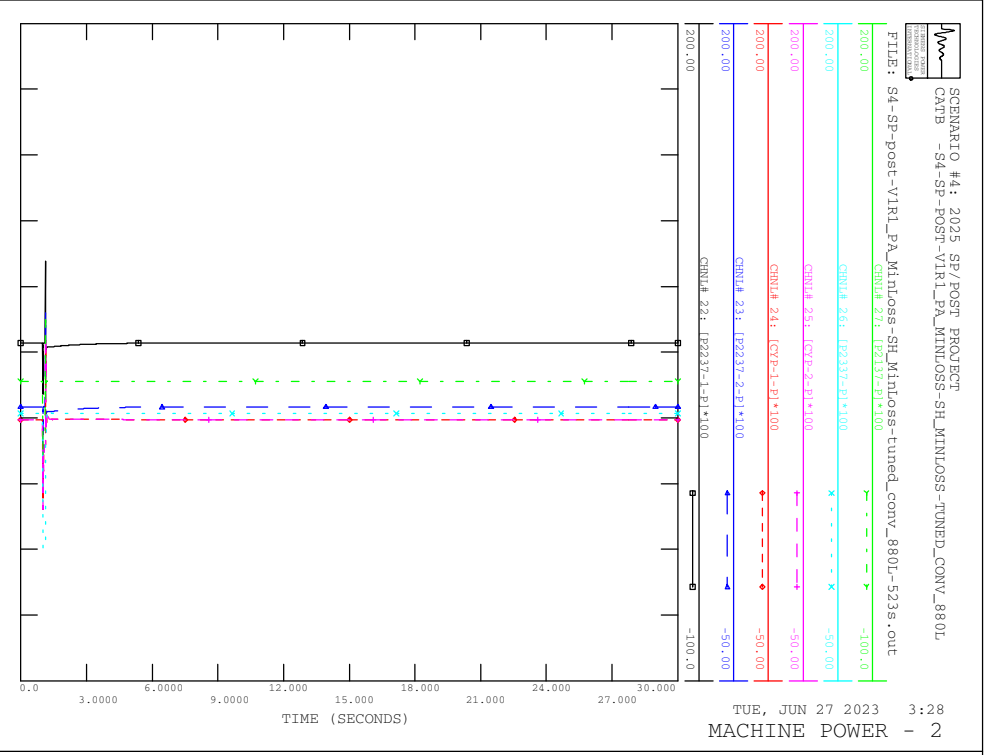

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLD-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

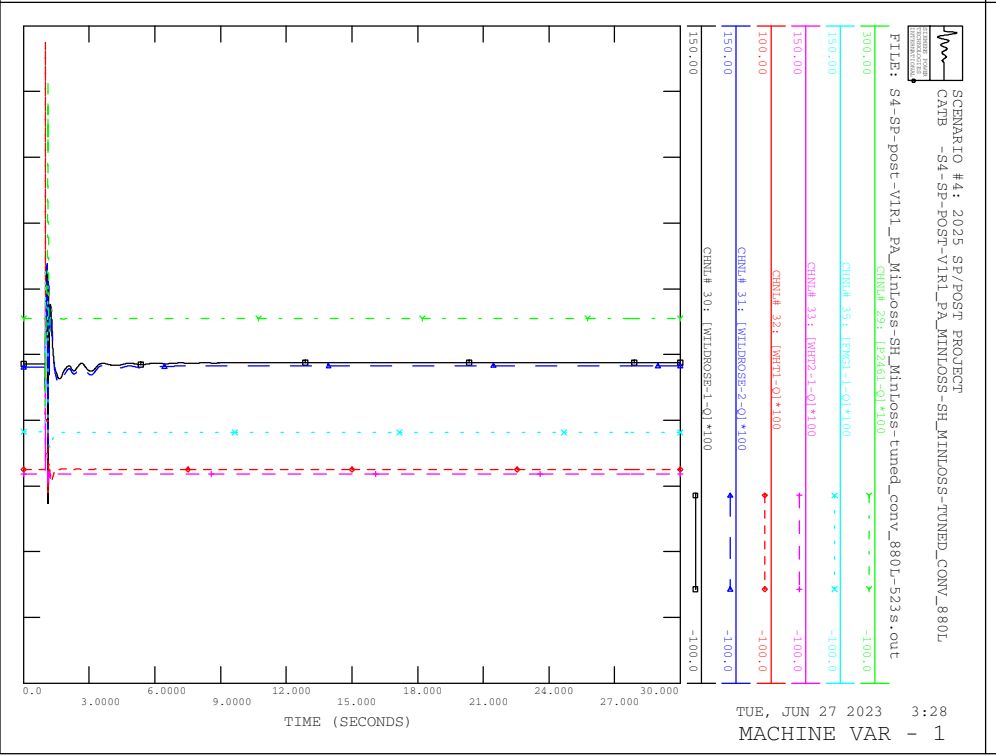

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

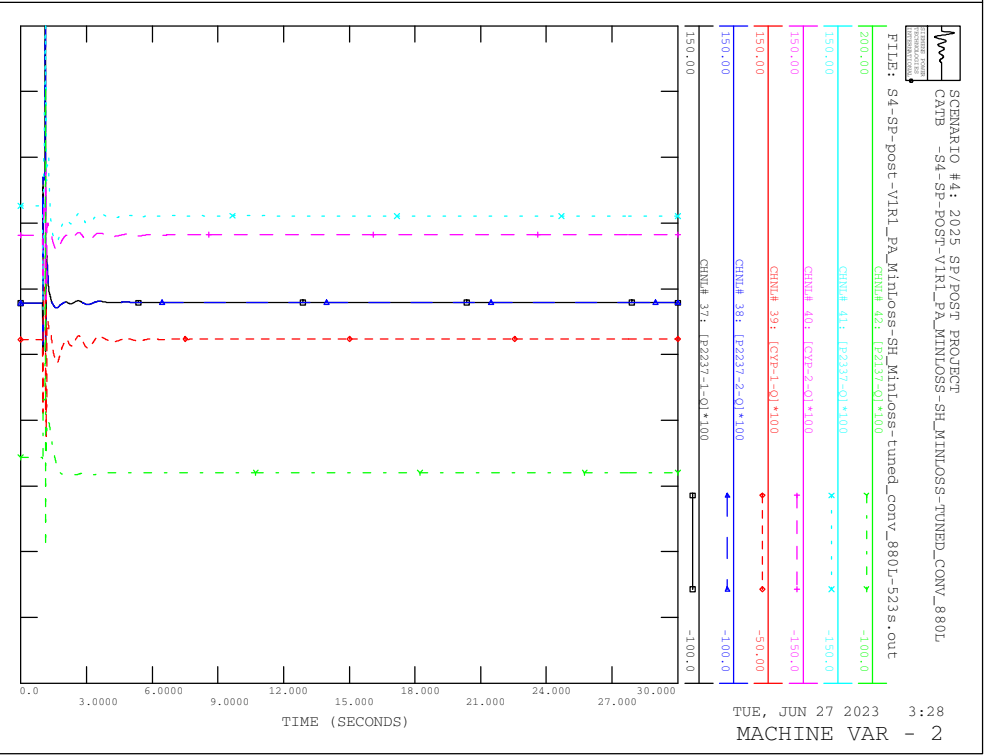

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

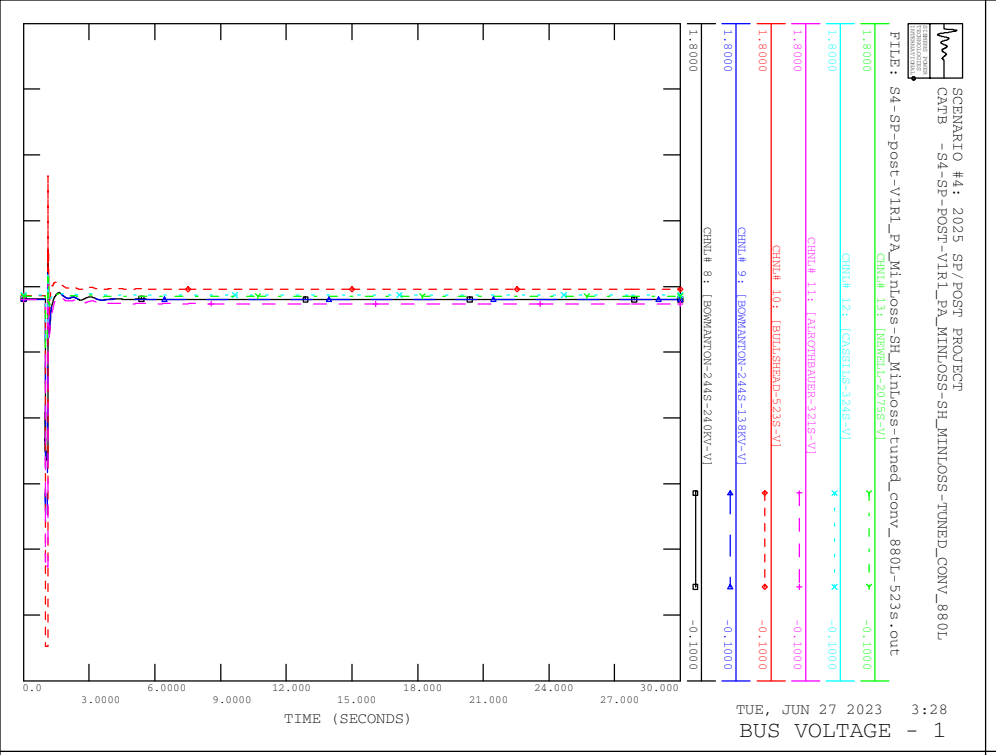

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-321s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

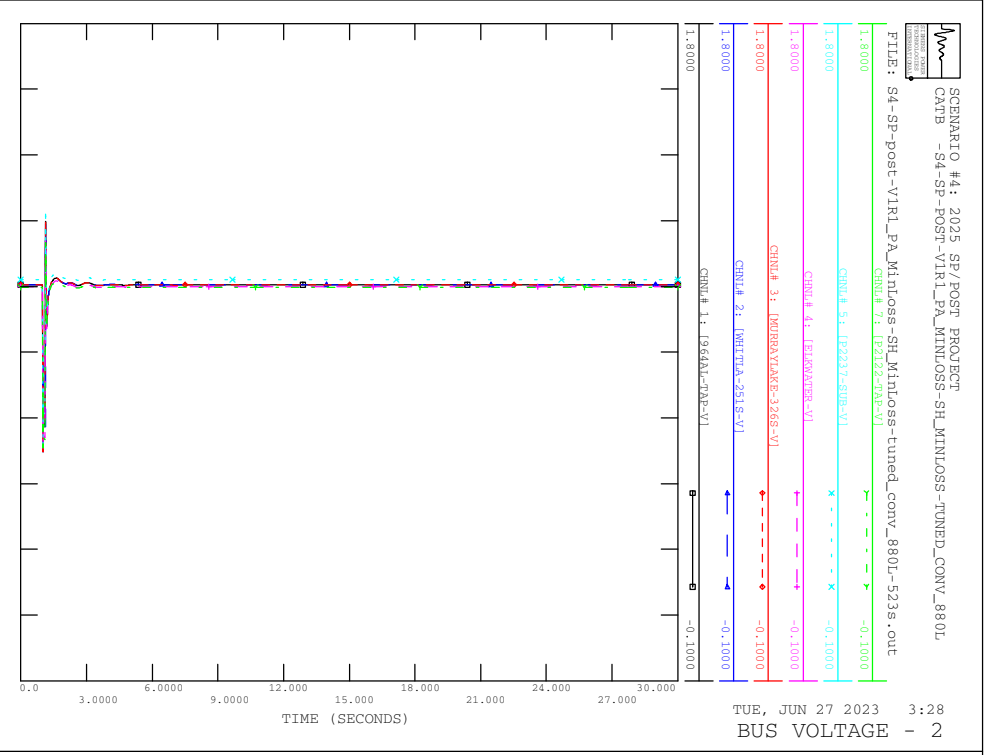

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [WHT1-P]*100
CHNL# 18: [WHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 1

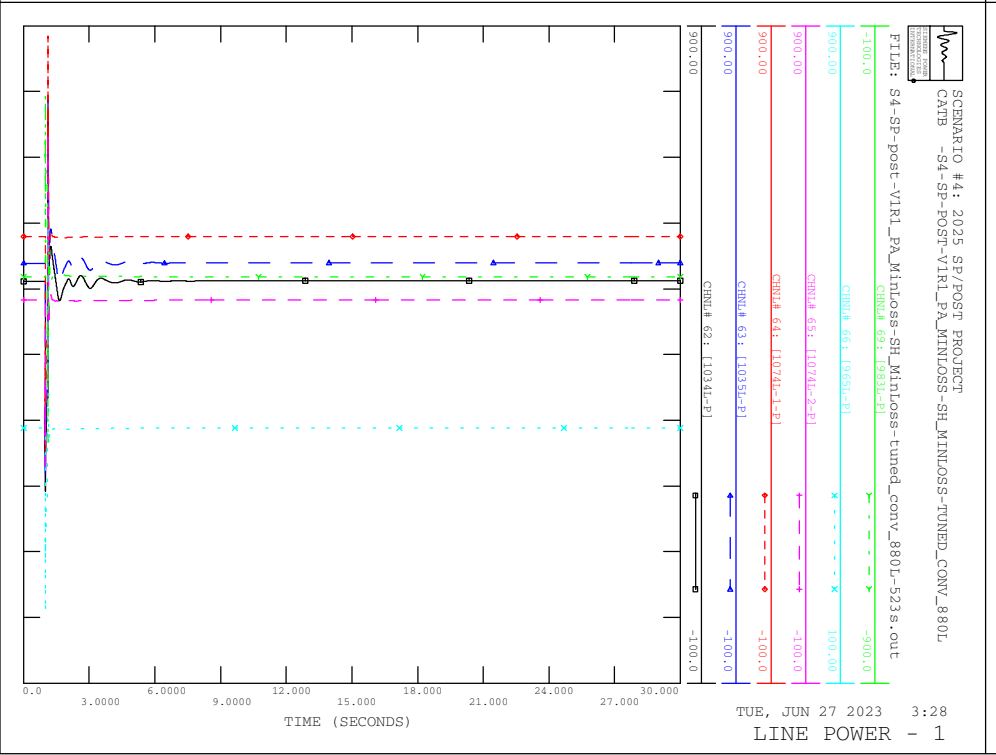

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE POWER - 2

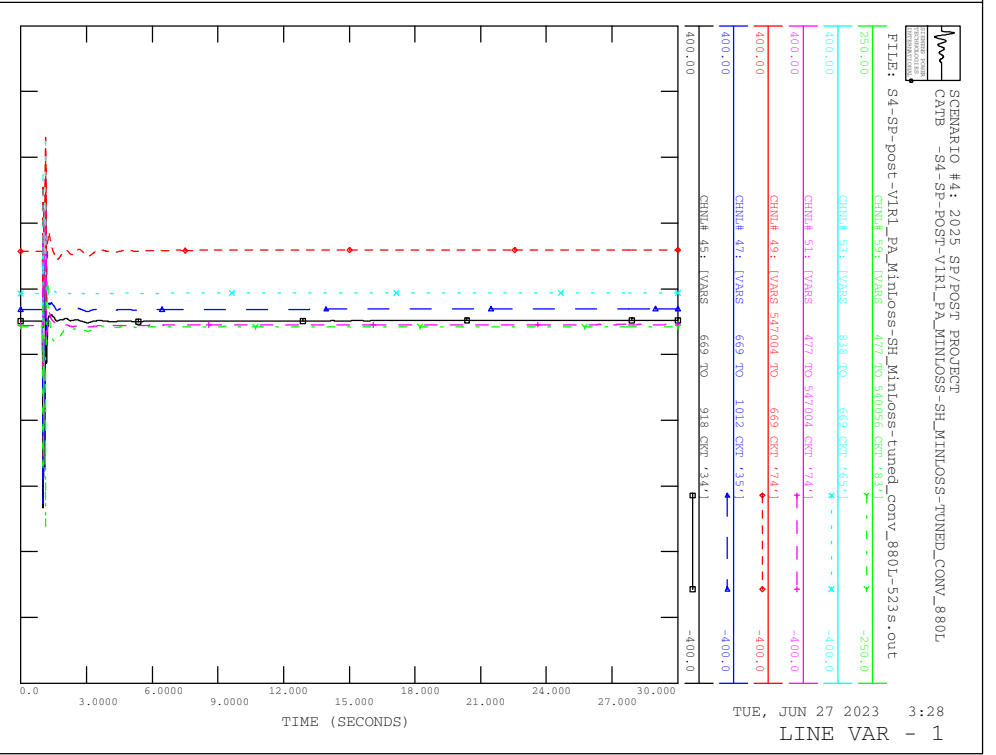

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [WHT1-Q]*100
CHNL# 33: [WHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 1

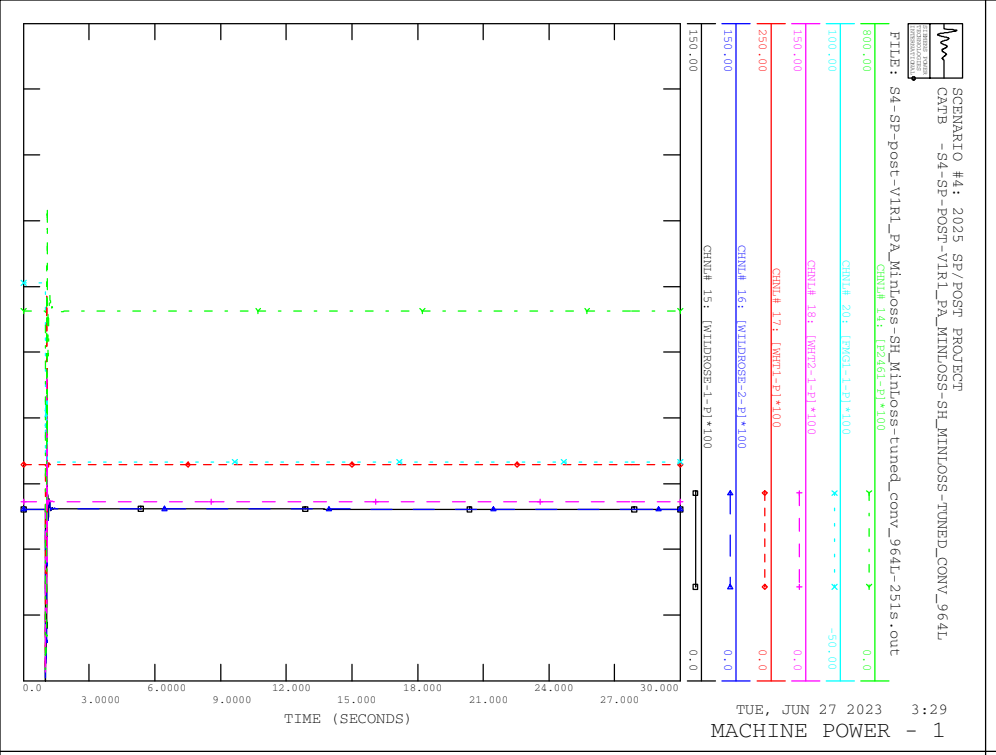

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:28
MACHINE VAR - 2

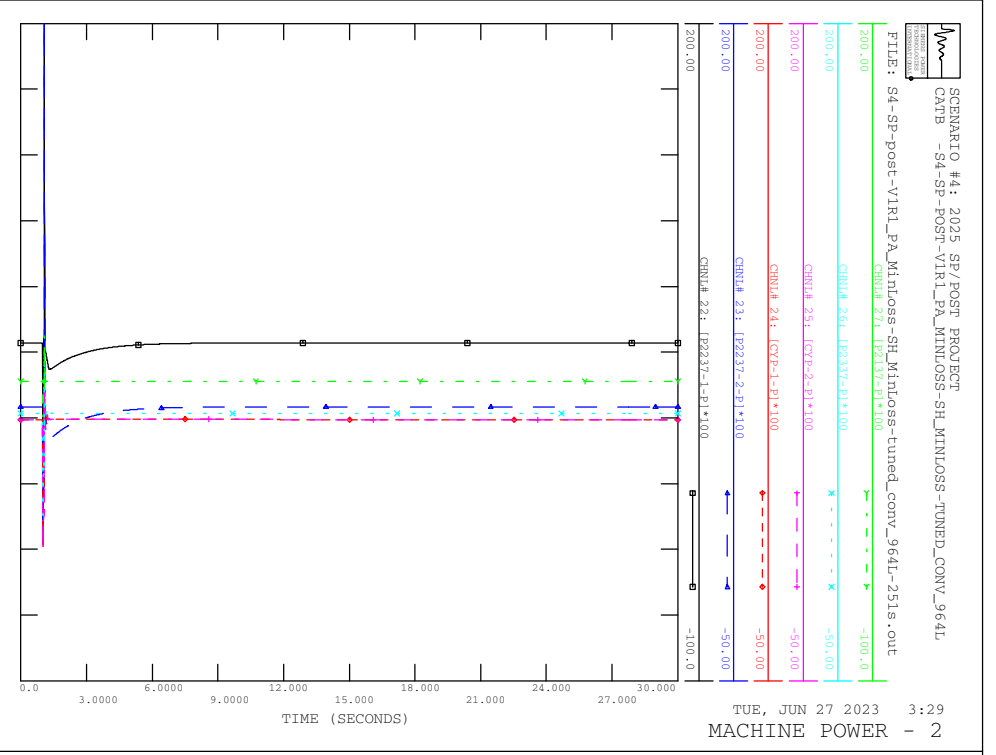

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHRAUER-321S-V]
CHNL# 12: [CASTLS-324S-V]
CHNL# 13: [NEWGLN-20735-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 1

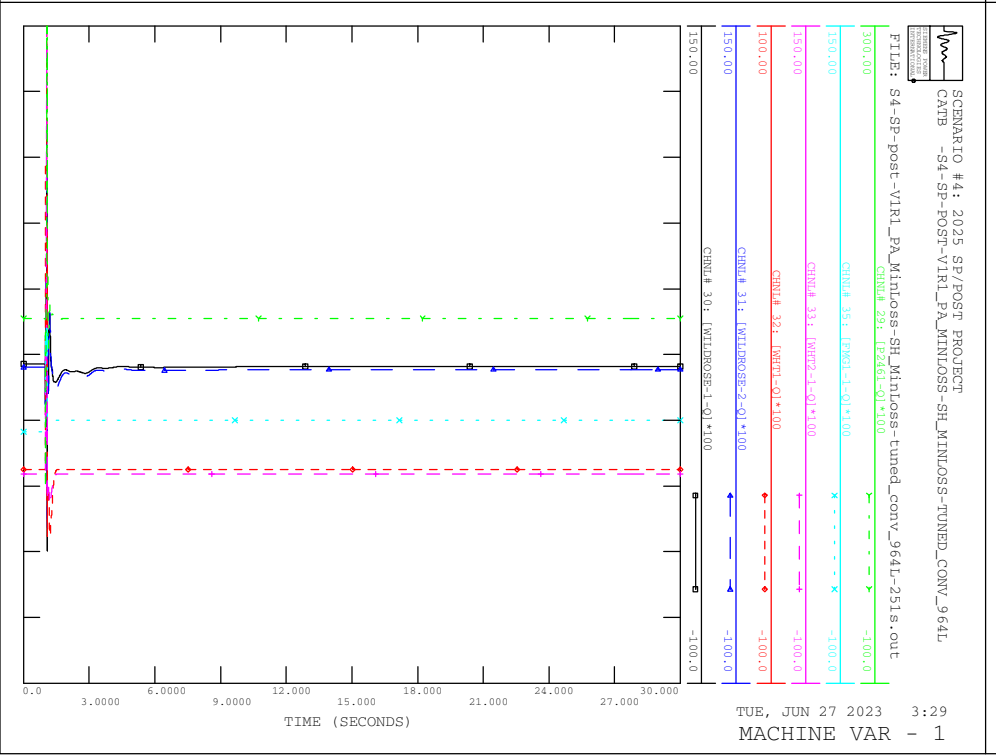

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
BUS VOLTAGE - 2

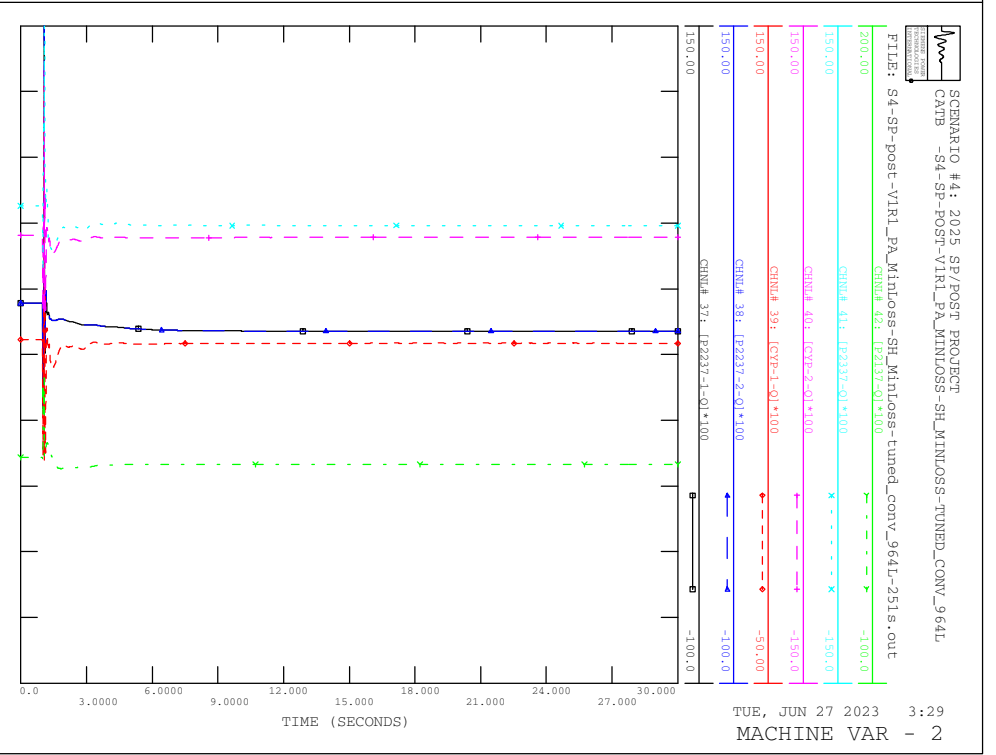

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 62: [1034L-P]
CHNL# 63: [1035L-P]
CHNL# 64: [1074L-1-P]
CHNL# 65: [1074L-2-P]
CHNL# 66: [965L-P]
CHNL# 69: [985L-P]
900.00
-100.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE POWER - 1

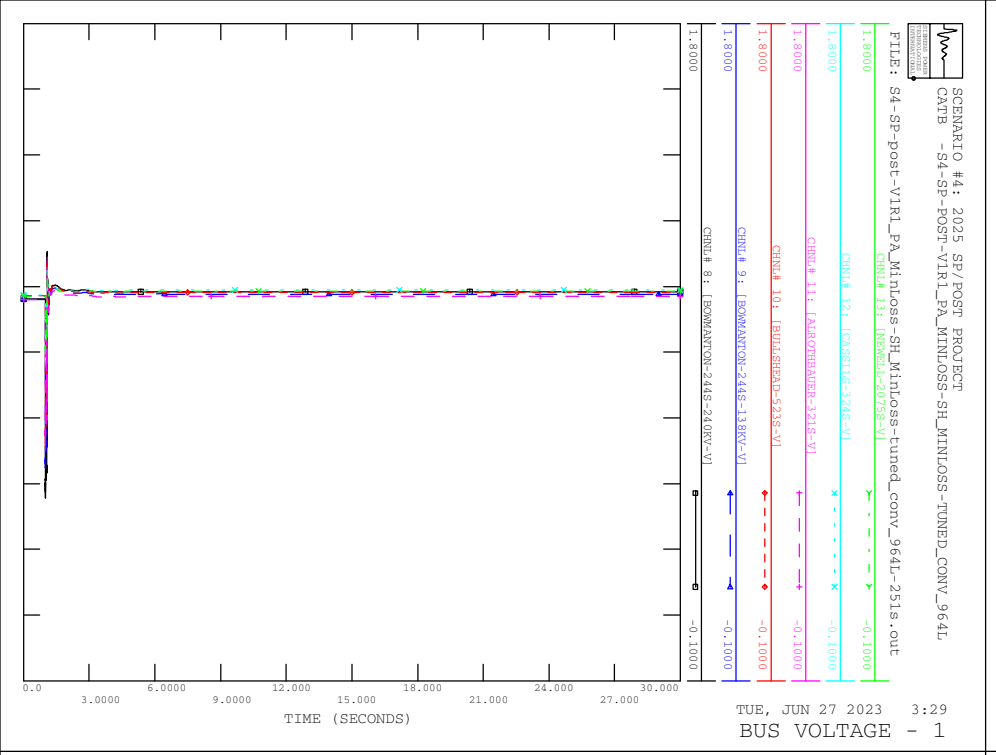

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_880L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_880L-523s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
400.00
-400.0
250.00
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:28
LINE VAR - 1

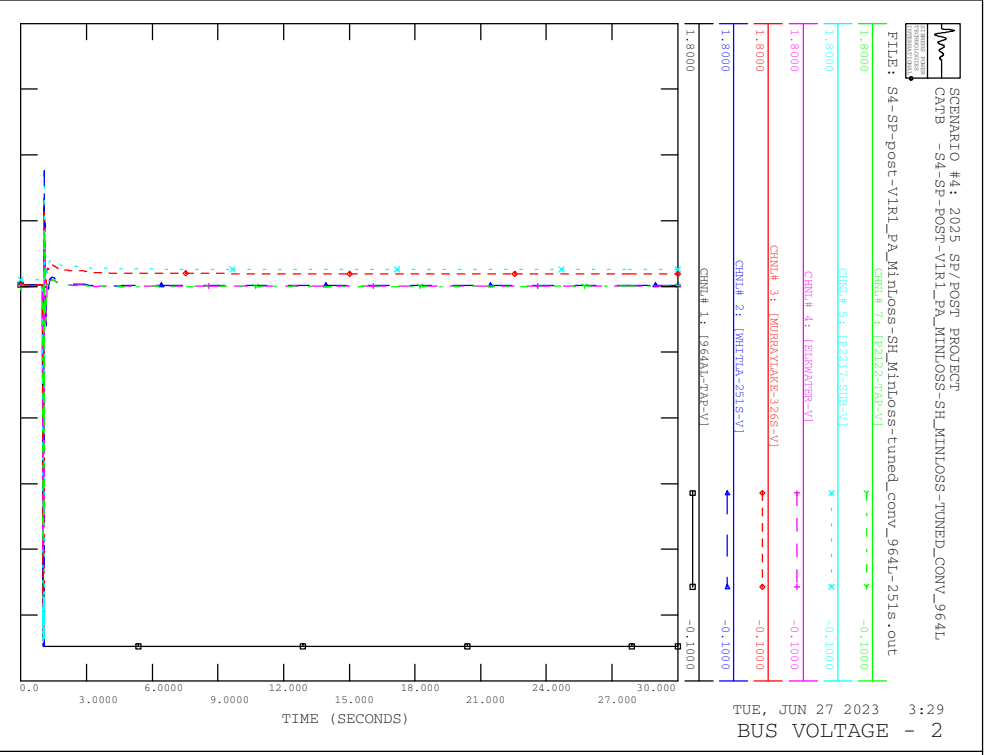

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMGS-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

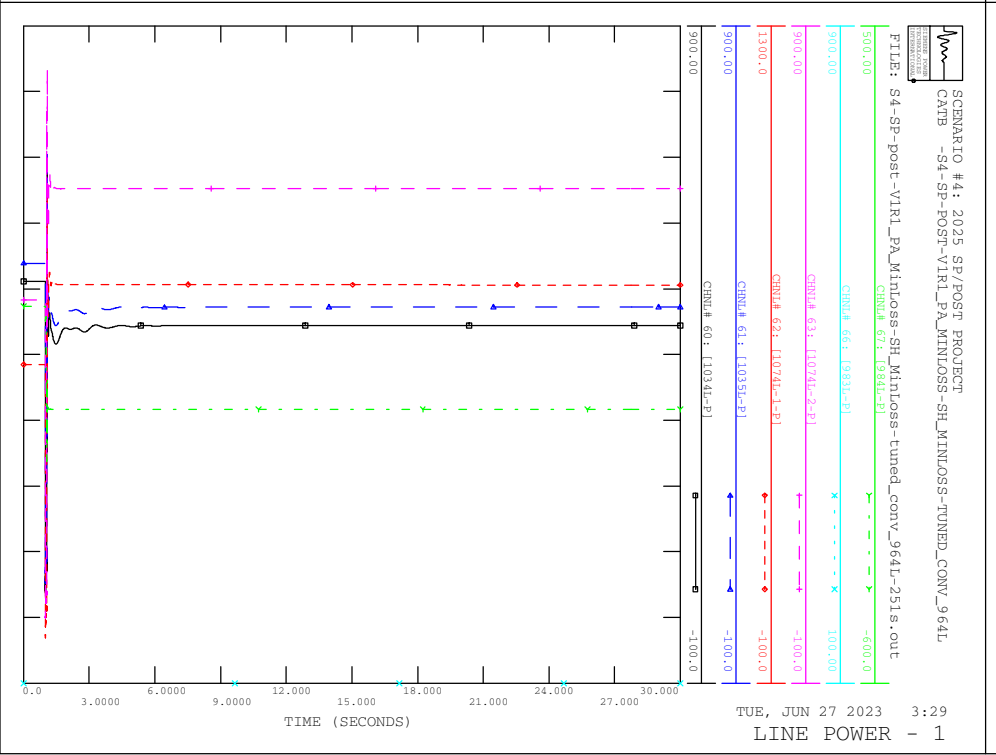

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

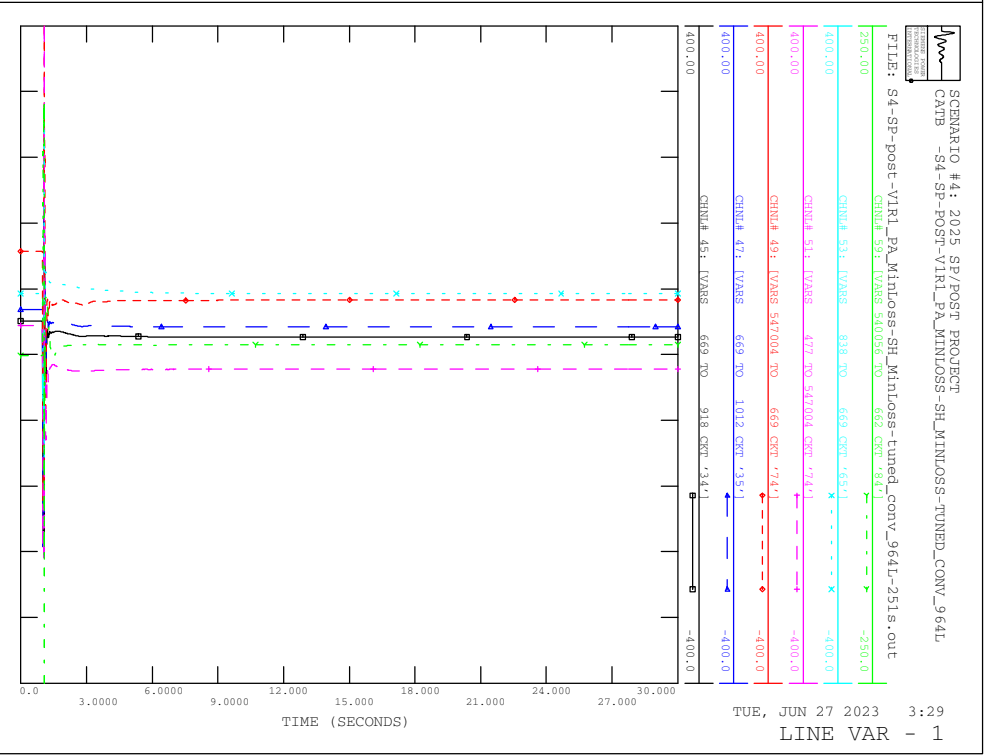

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMGS-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

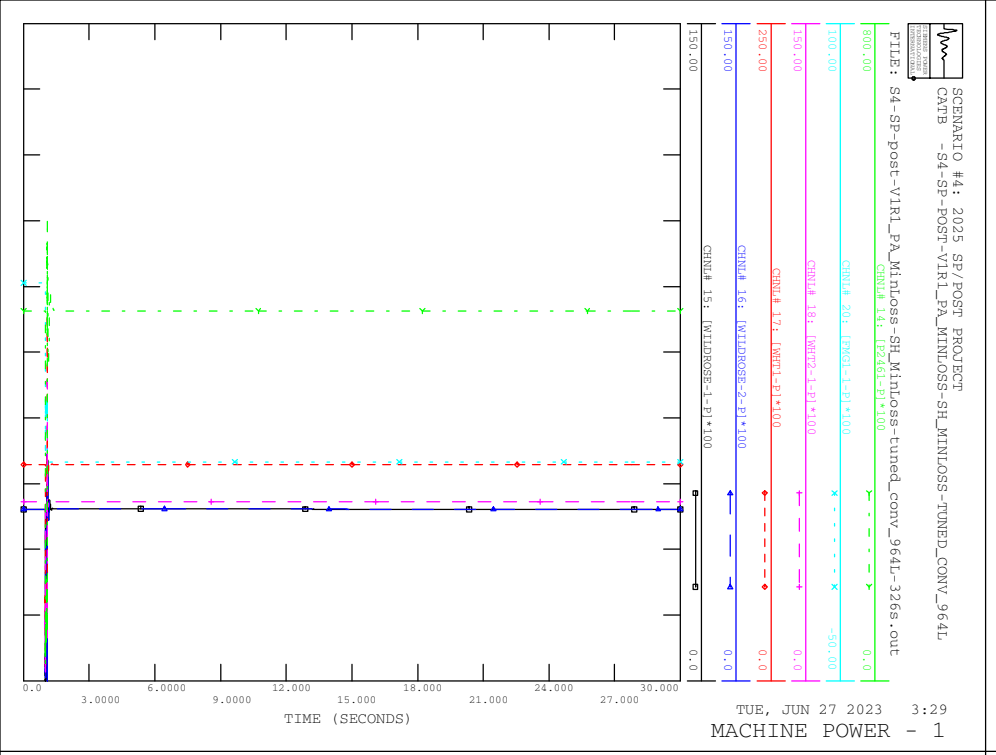

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

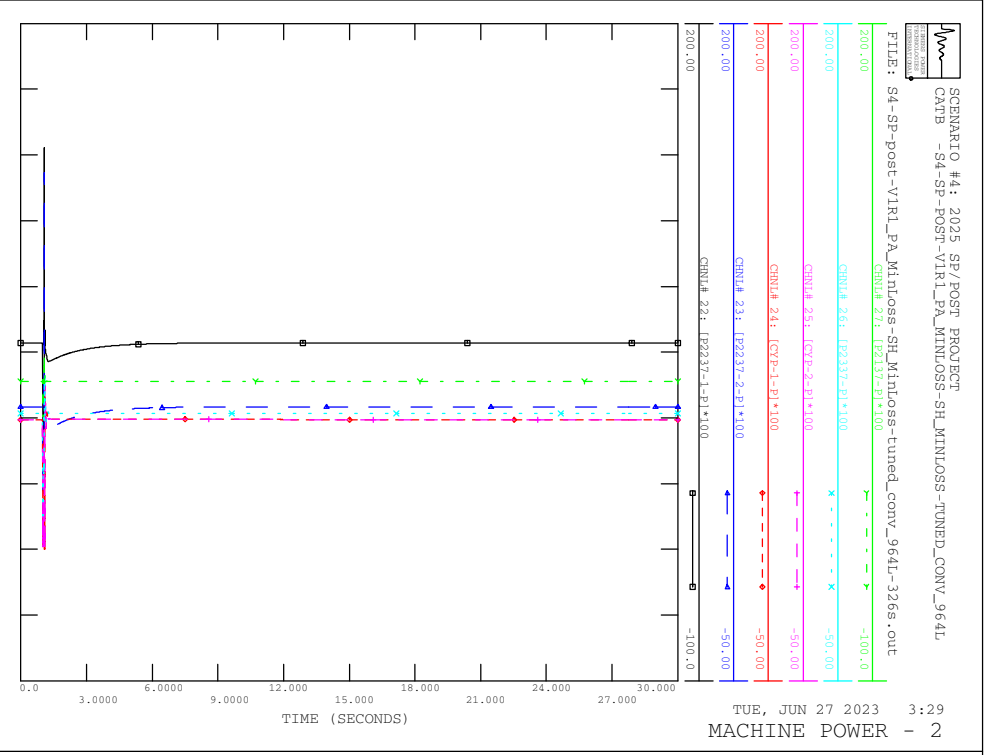

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ARROTHRAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLD-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

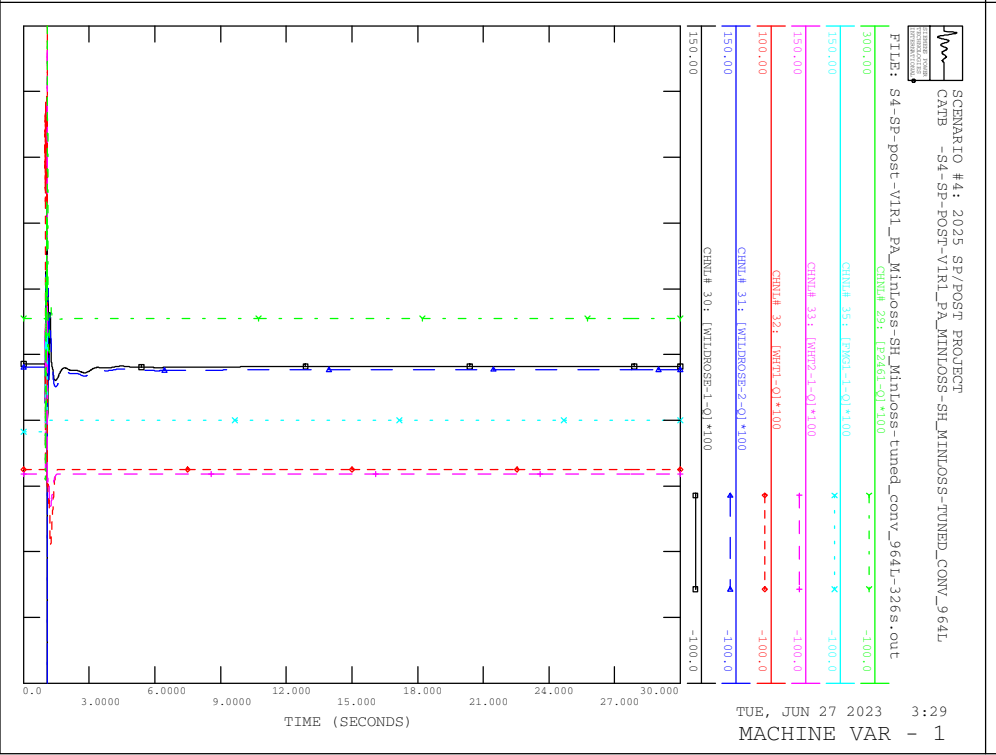

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

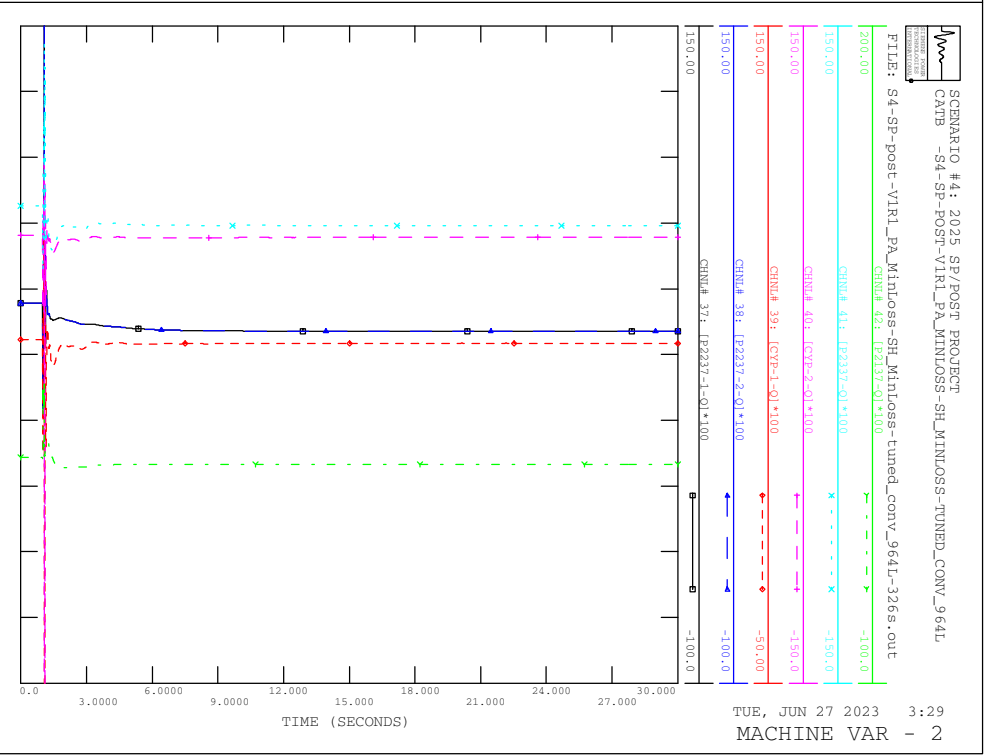

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

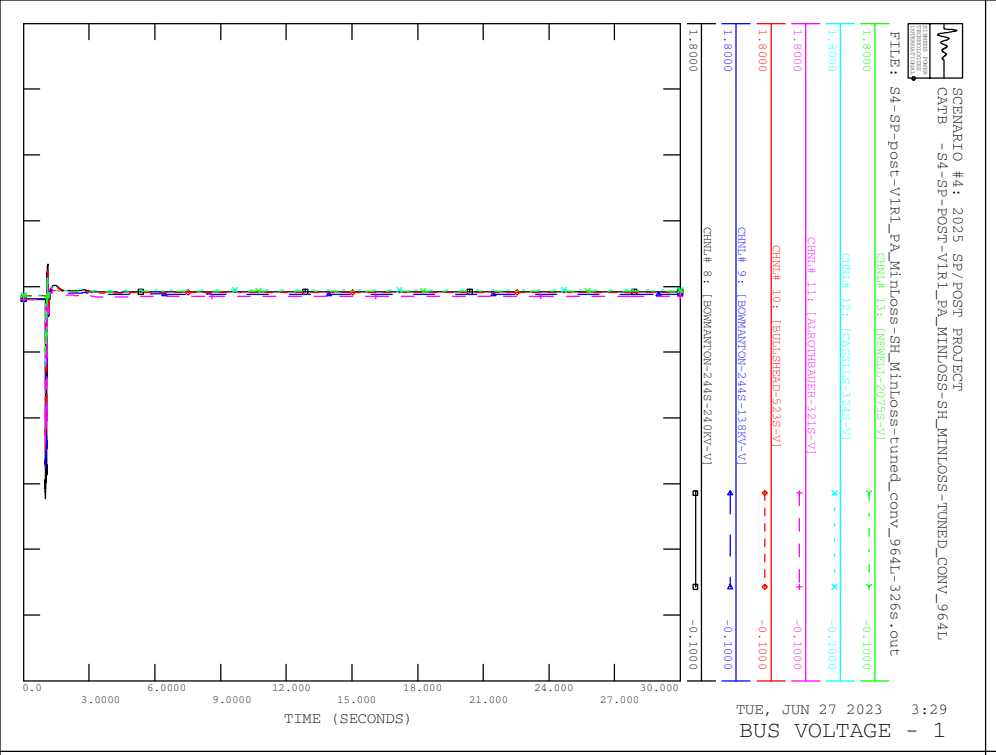

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-251s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

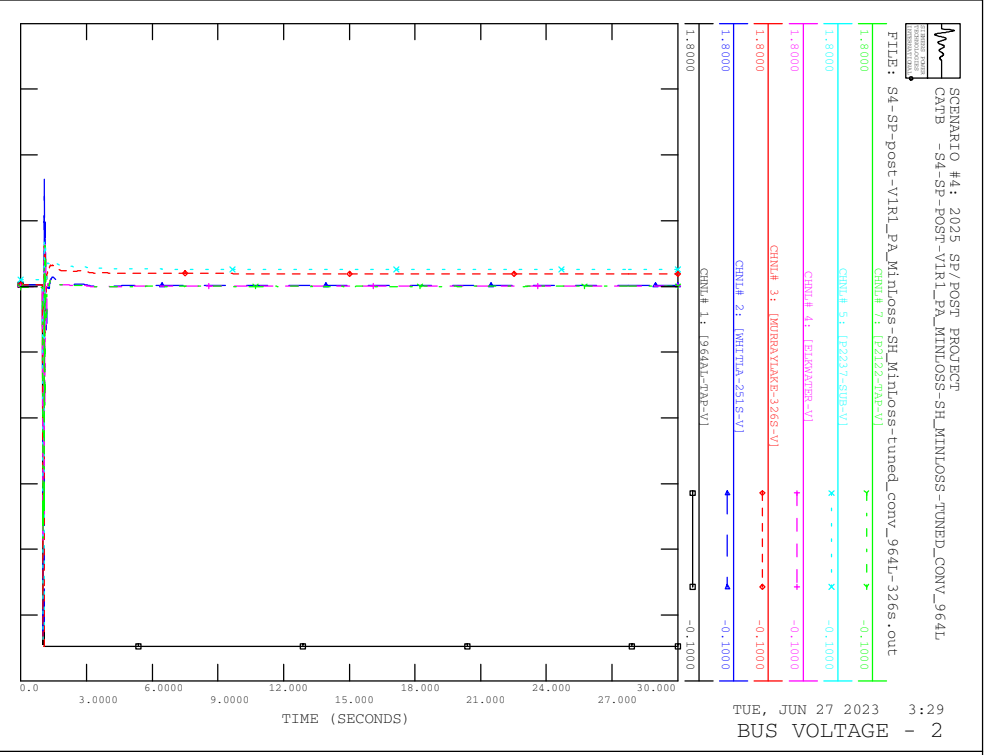

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMGS-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

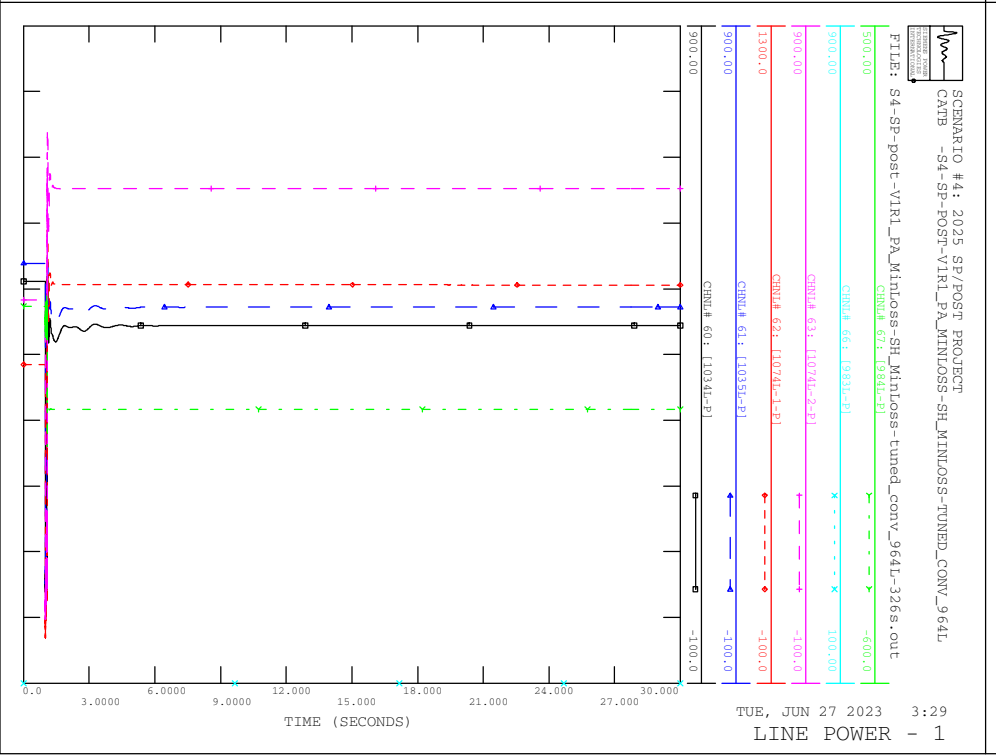

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

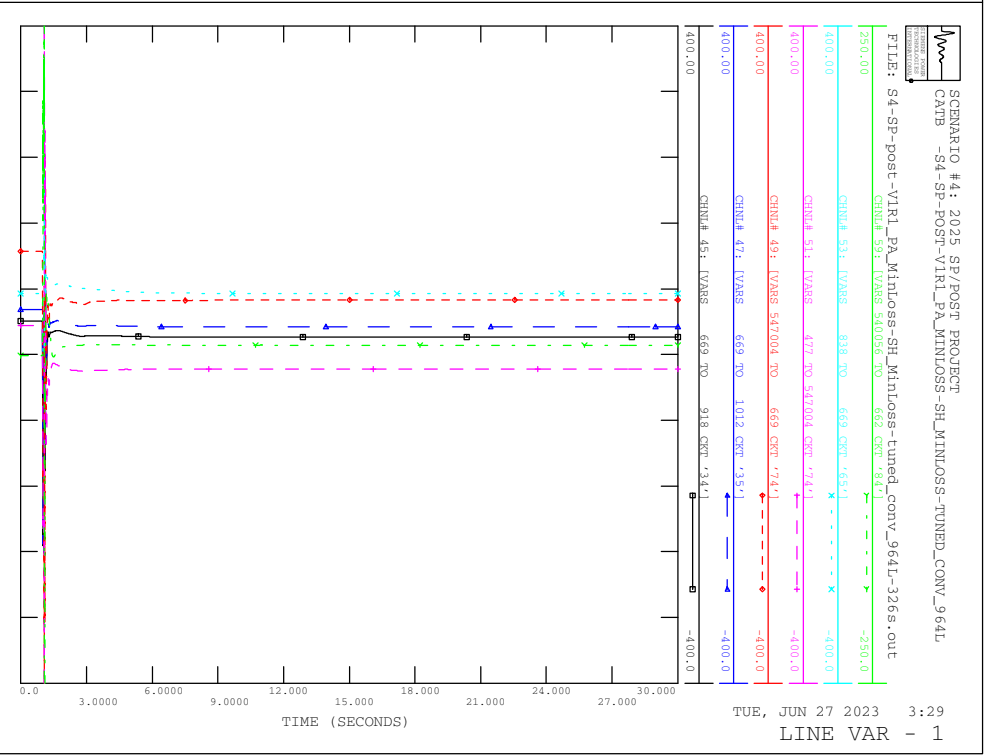

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMGS-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

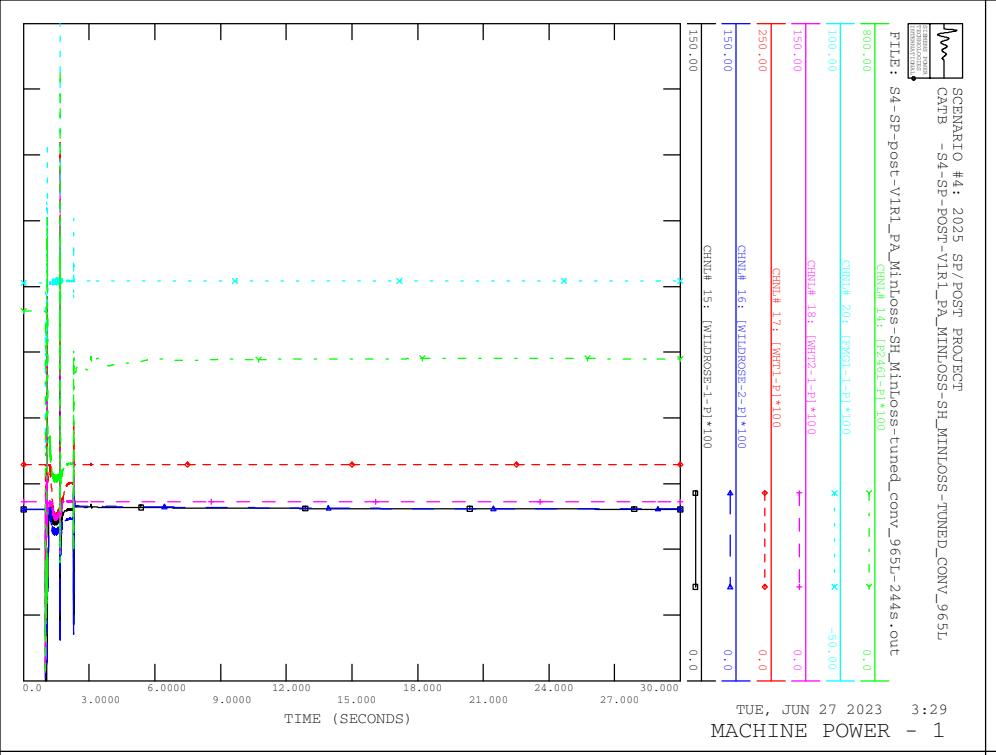

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

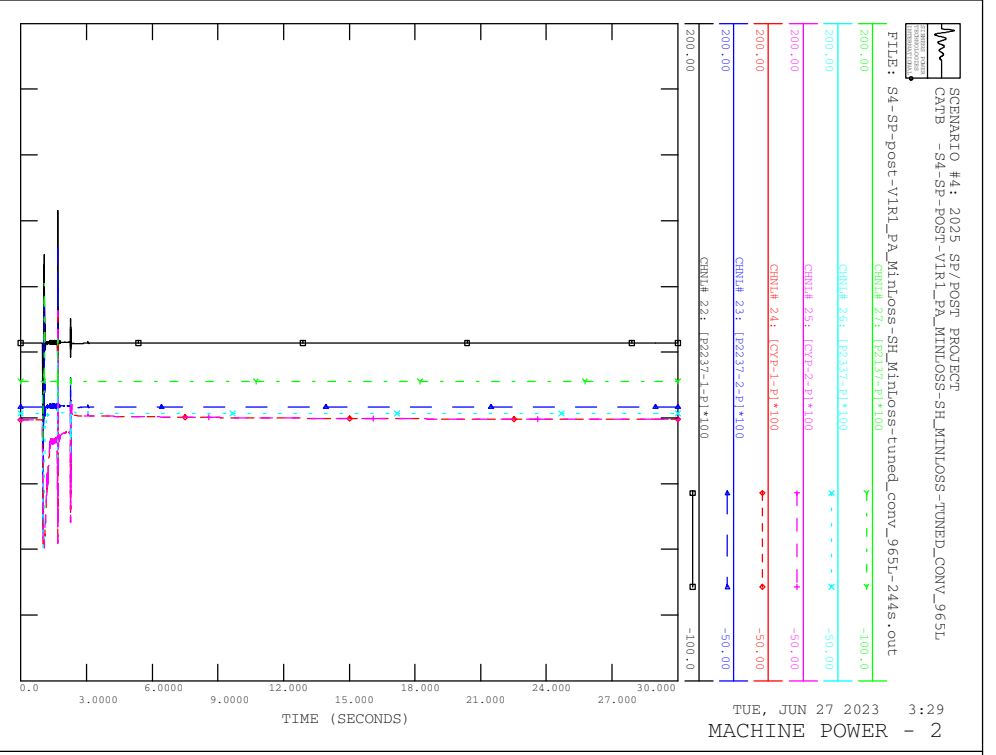

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIRPORTBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLD-20735-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

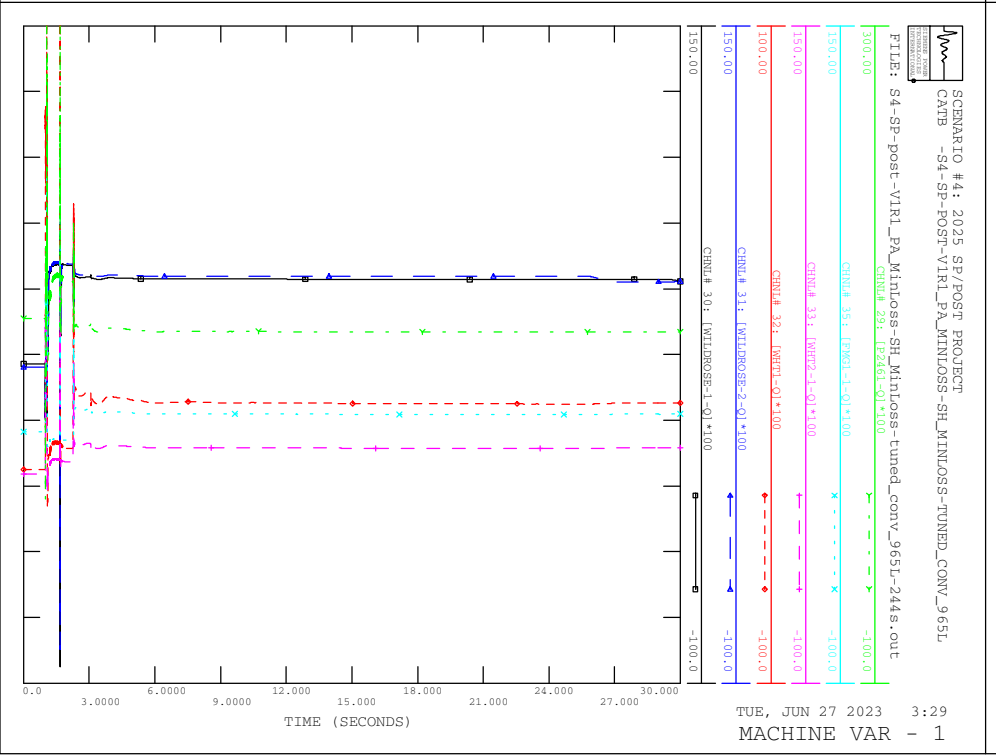

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2232-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

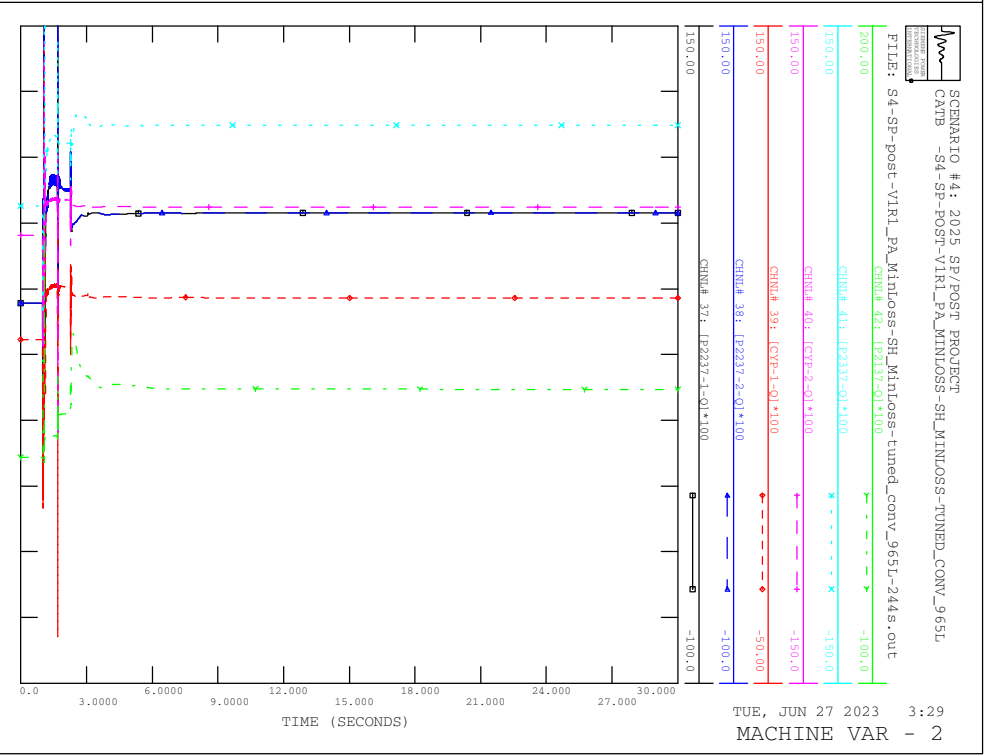

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
900.00
1300.0
500.00
600.0
100.00
-100.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

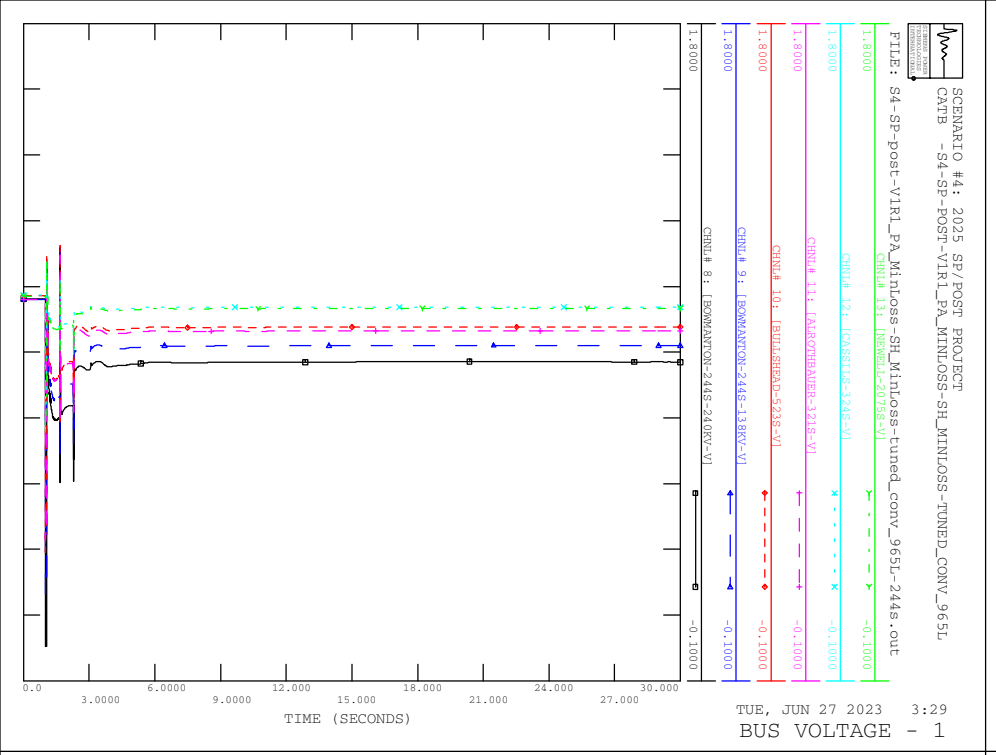

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_964L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_964L-326s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
250.00
-250.0
0.0
3.0000
6.0000
9.0000
12.000
15.000
18.000
21.000
24.000
27.000
30.000
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

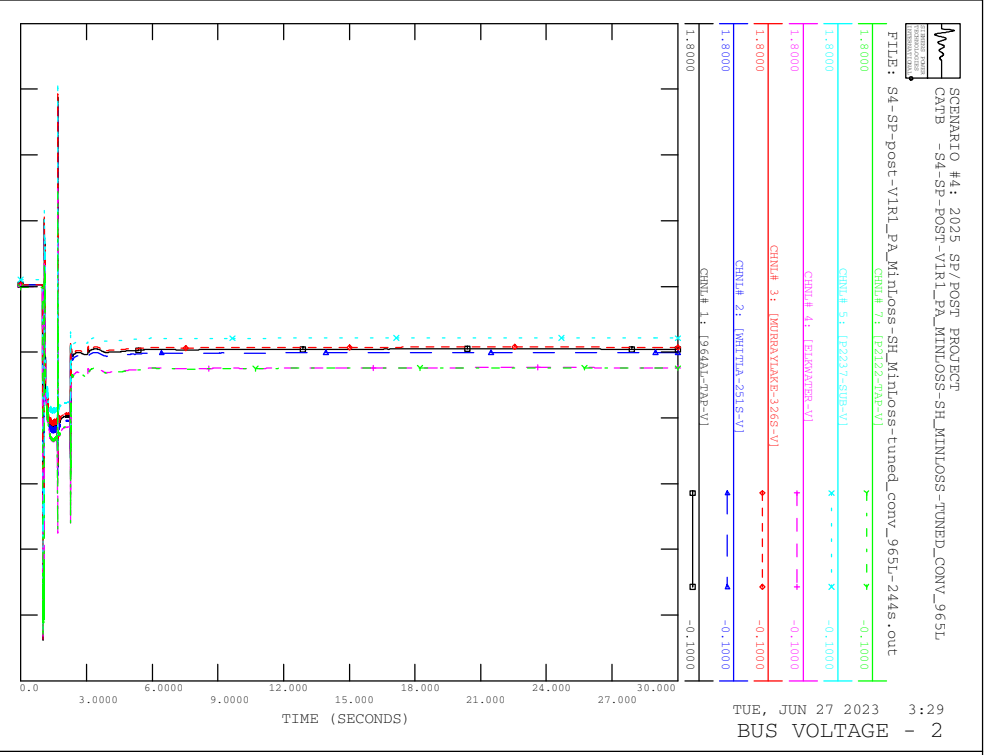

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

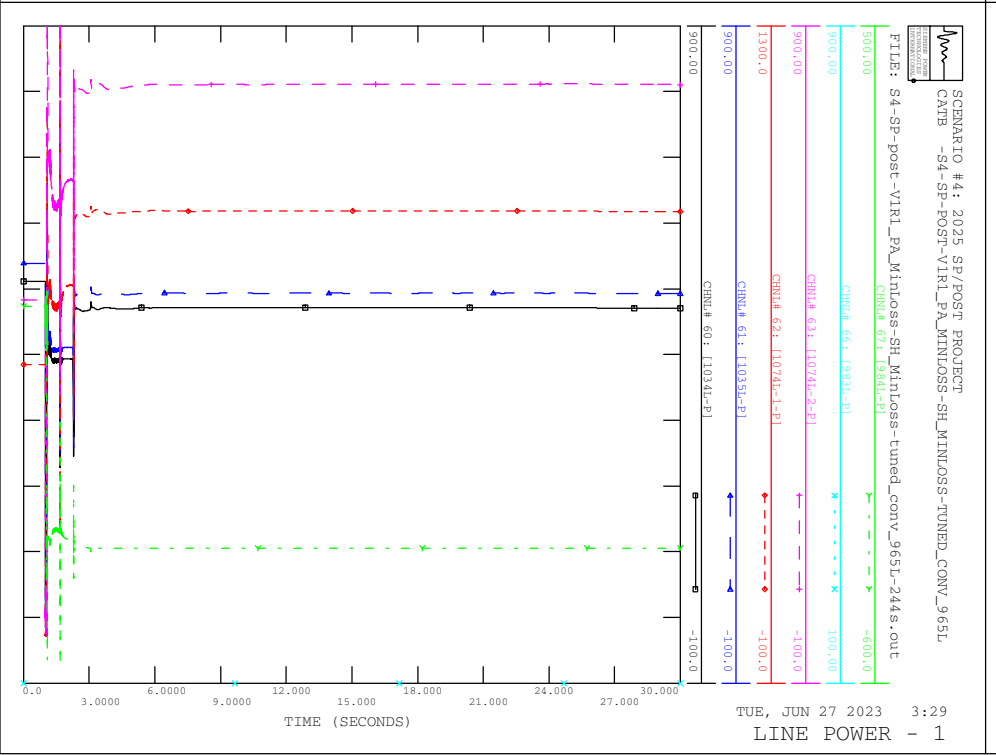

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

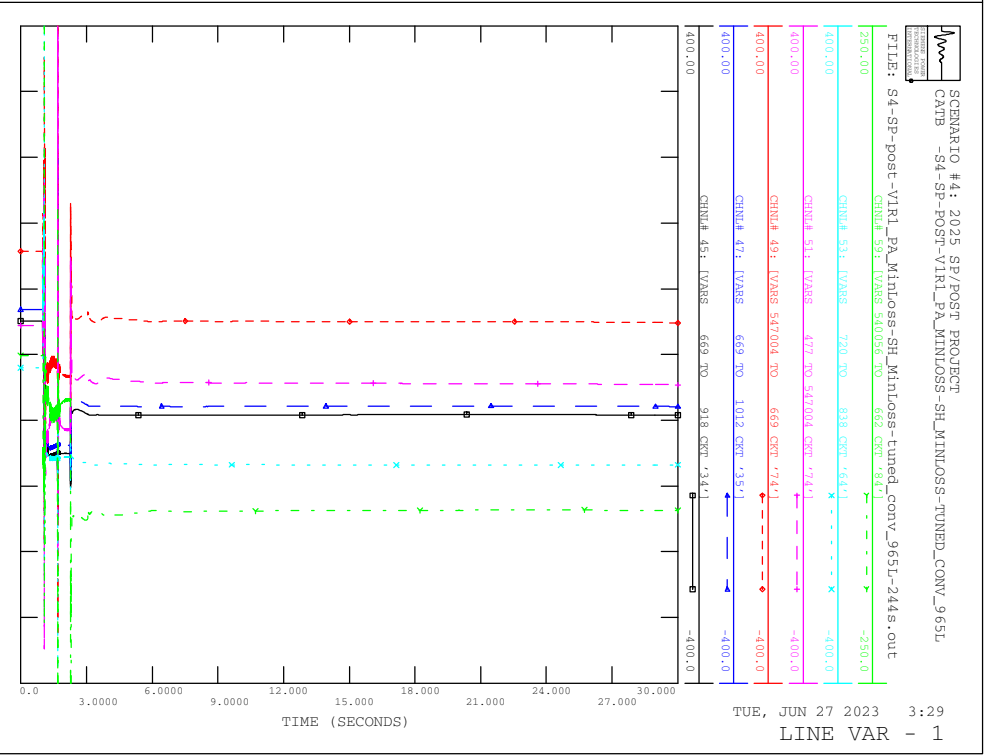

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

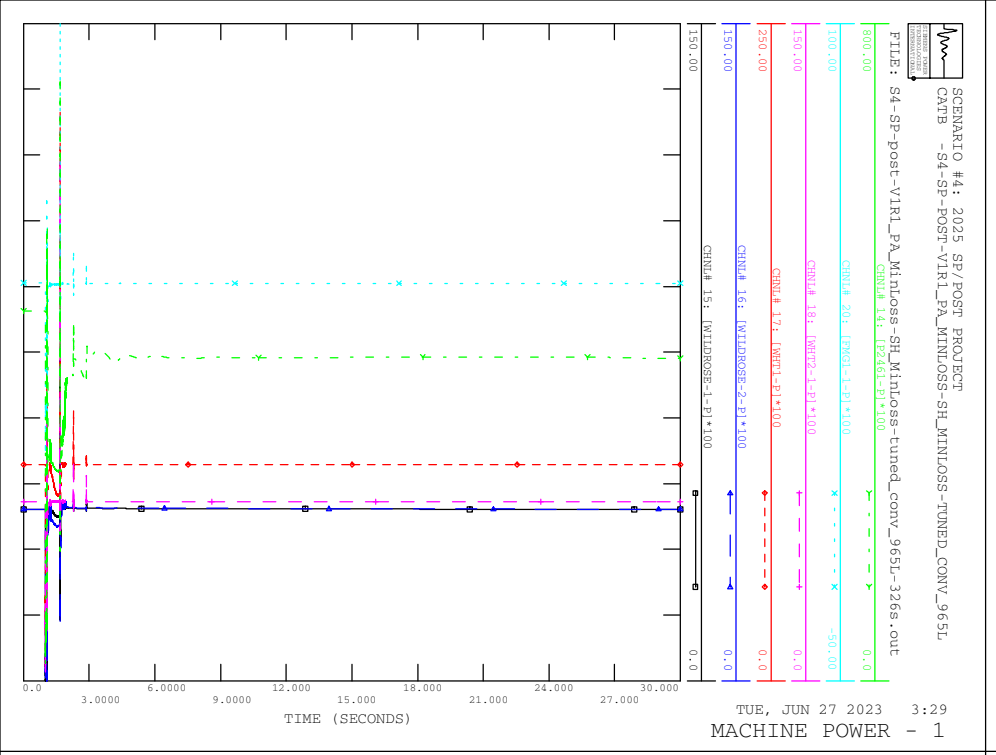

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

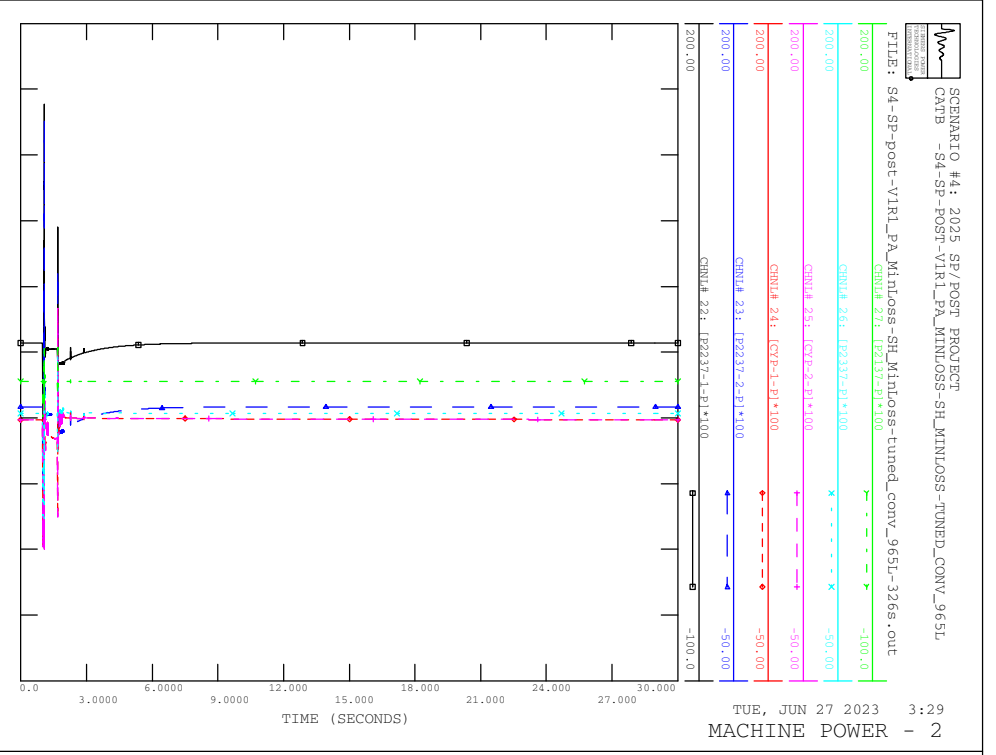

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIRPORTBAKER-321S-V]
CHNL# 12: [CASSIA-324S-V]
CHNL# 13: [NEWHOLM-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

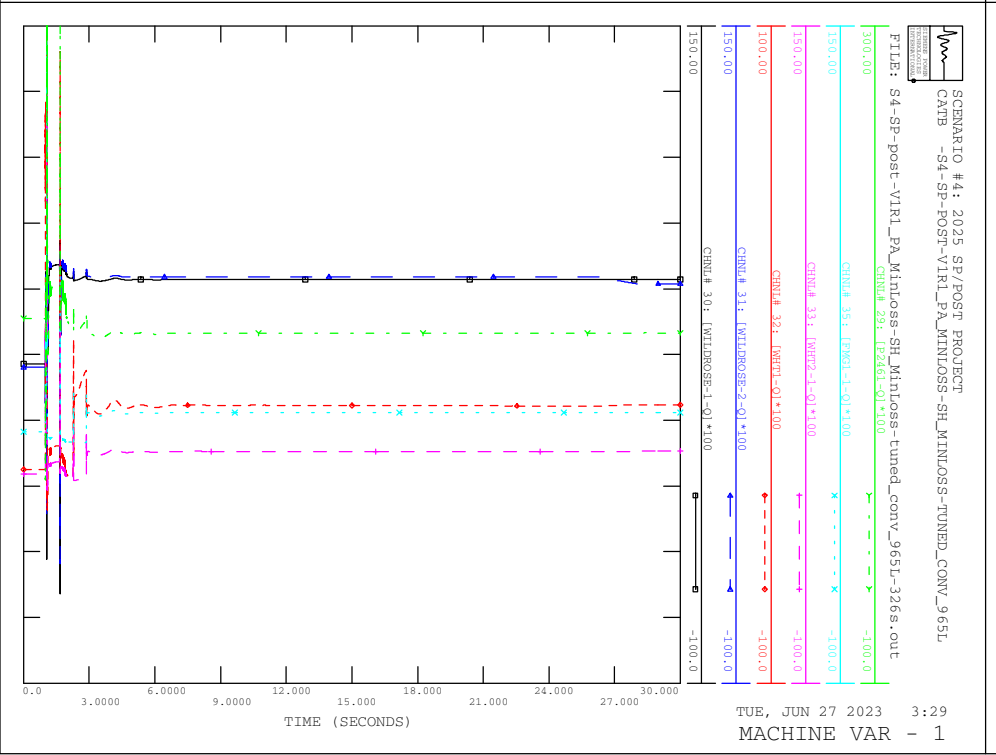

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 1: [964A1-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

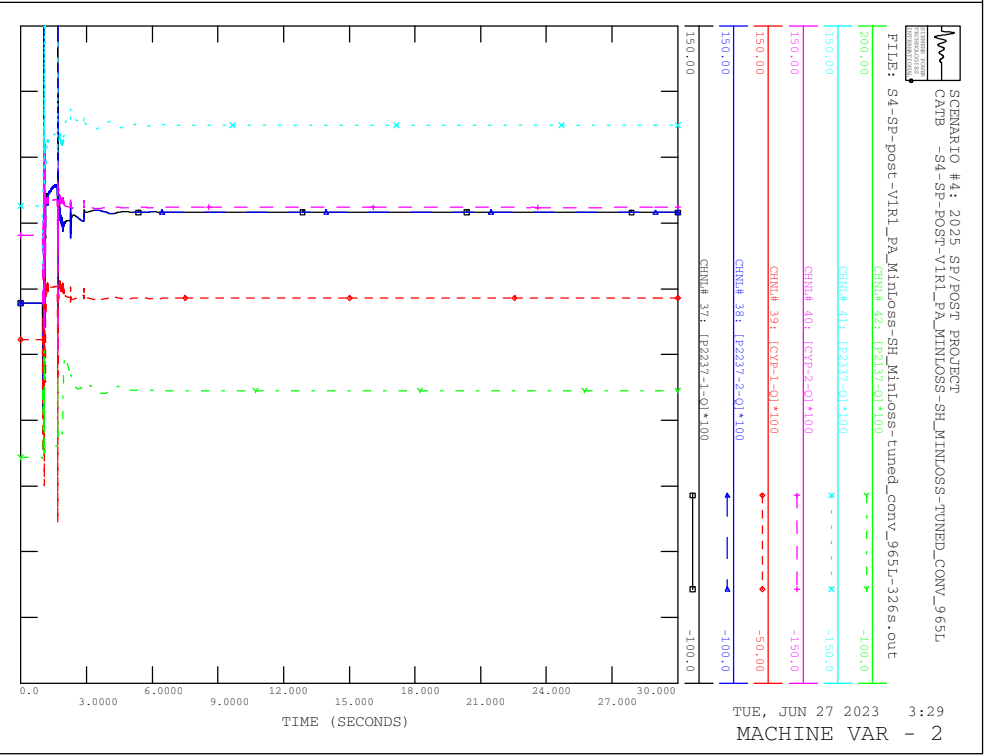

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [1984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

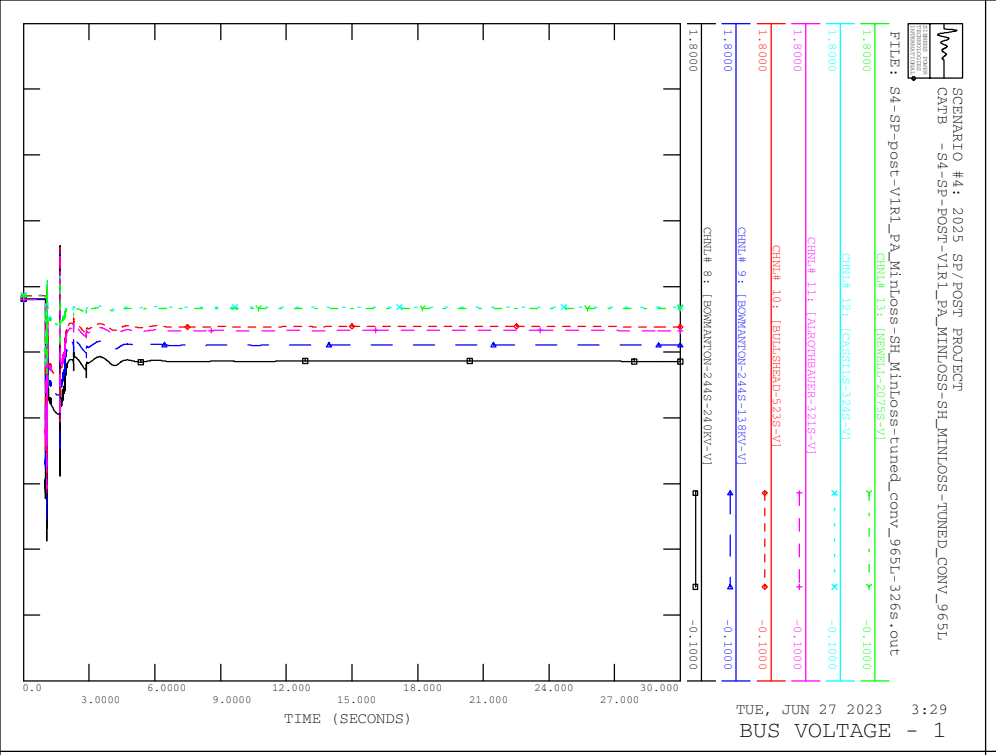

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

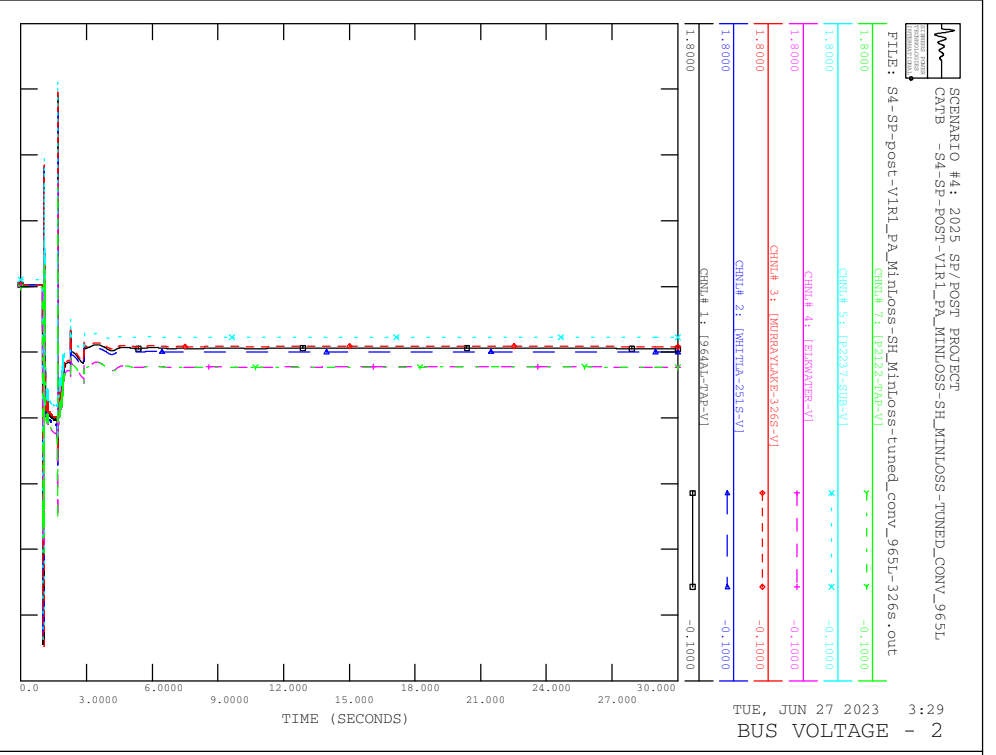

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [WHT1-P]*100
CHNL# 18: [WHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

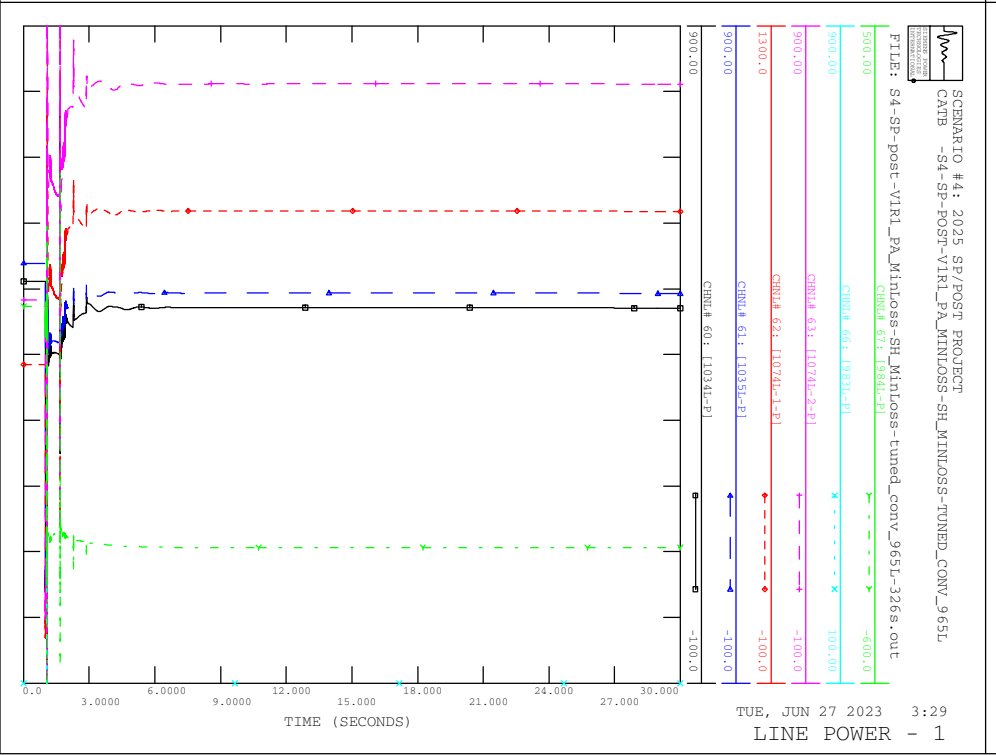

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

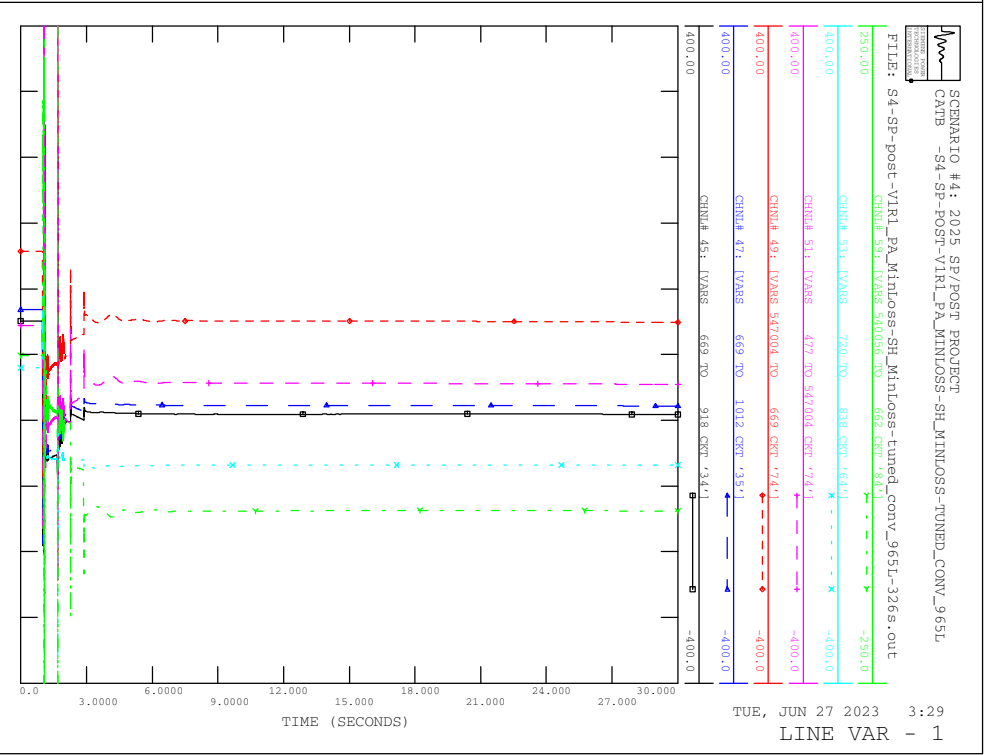

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [WHT1-Q]*100
CHNL# 33: [WHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

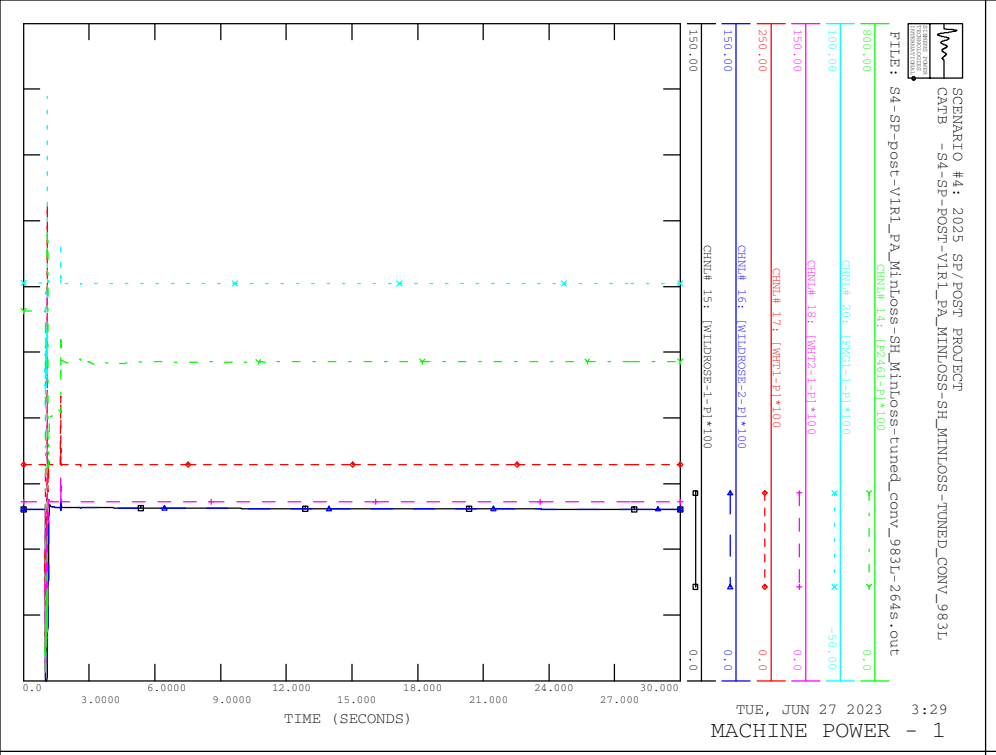

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

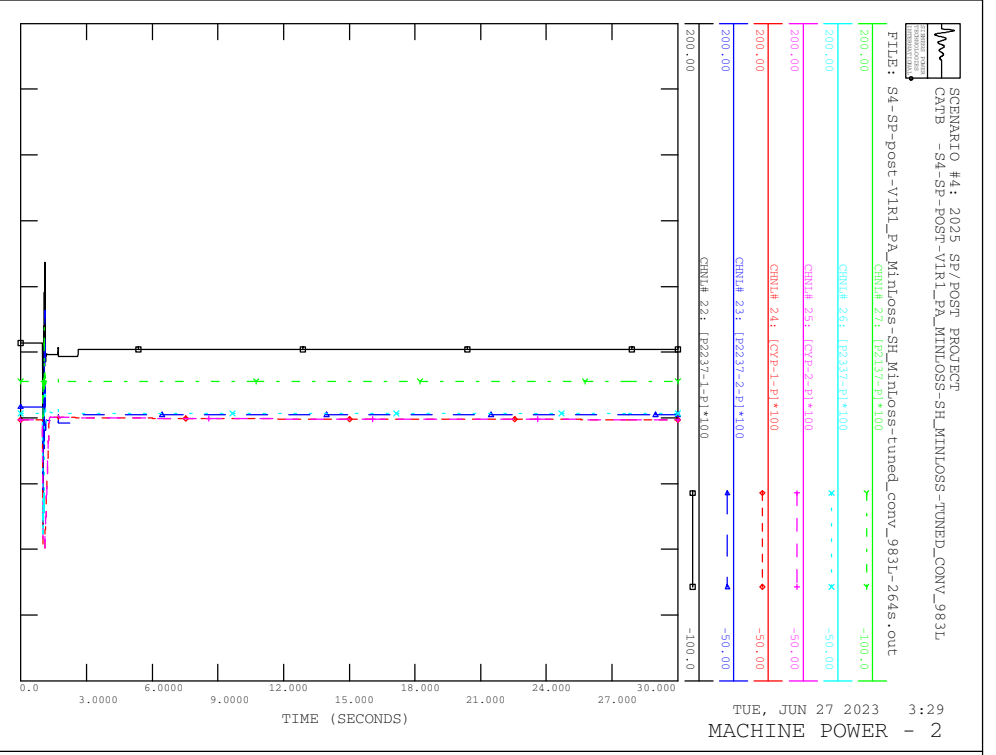

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIRPORTBAKER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLD-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

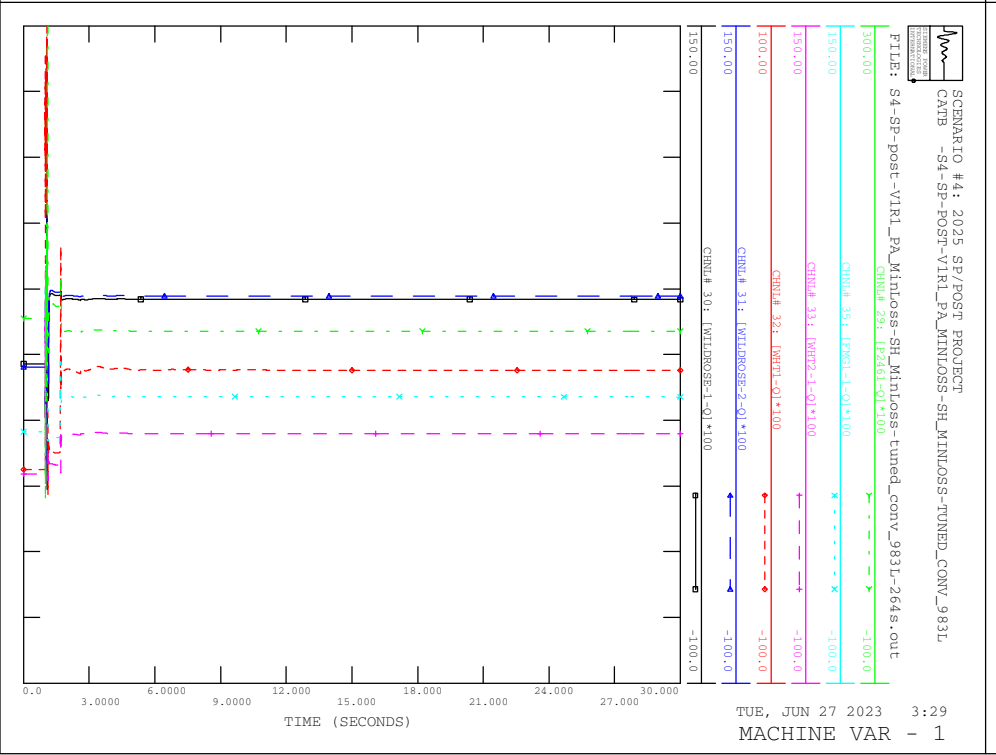

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

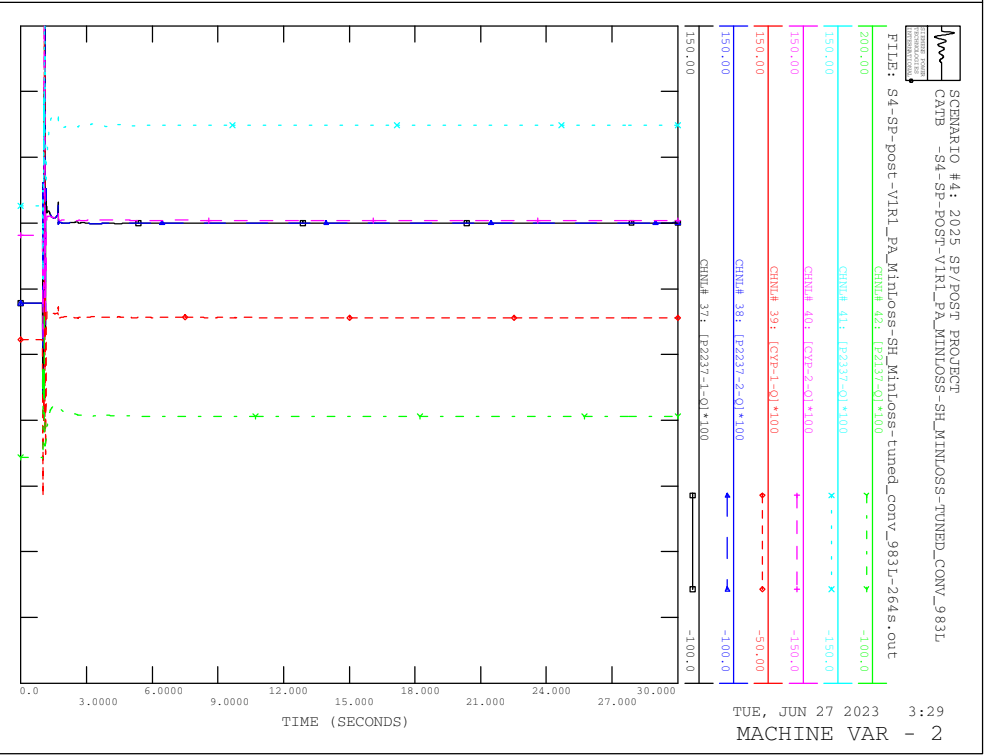

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [1986L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

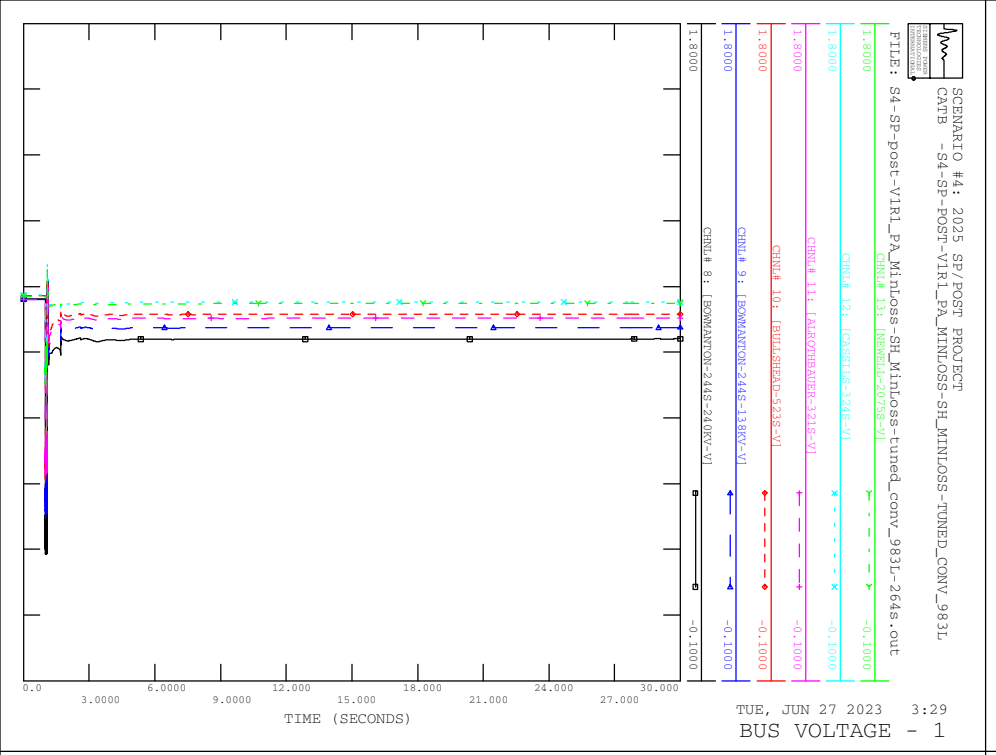

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_965L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_965L-326s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

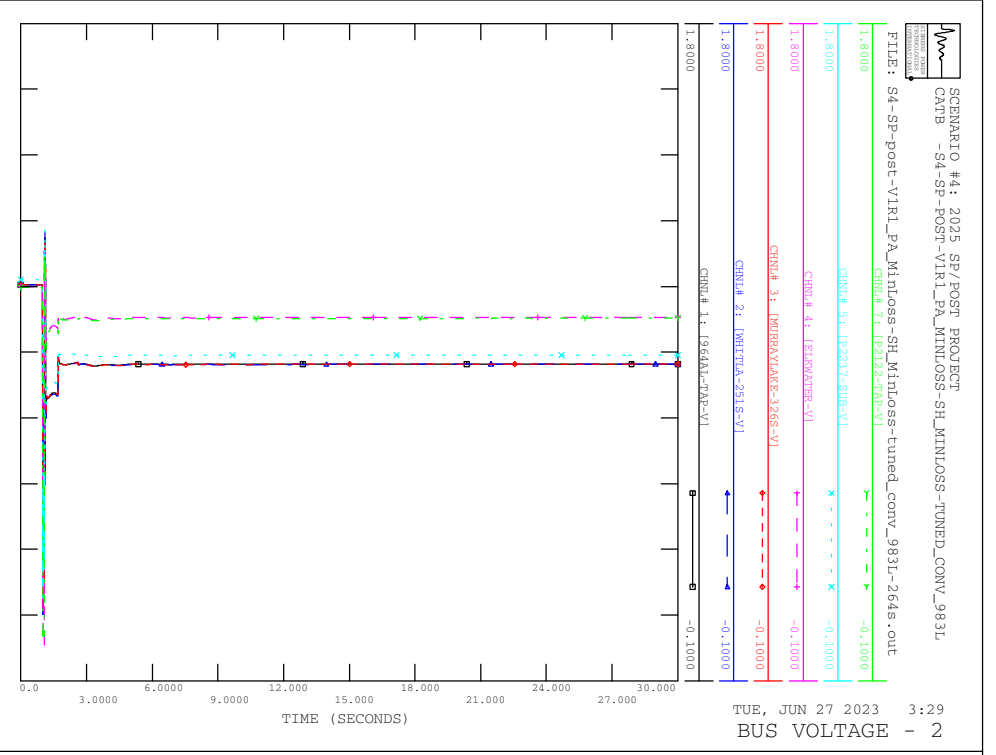

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [WHT1-P]*100
CHNL# 18: [WHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

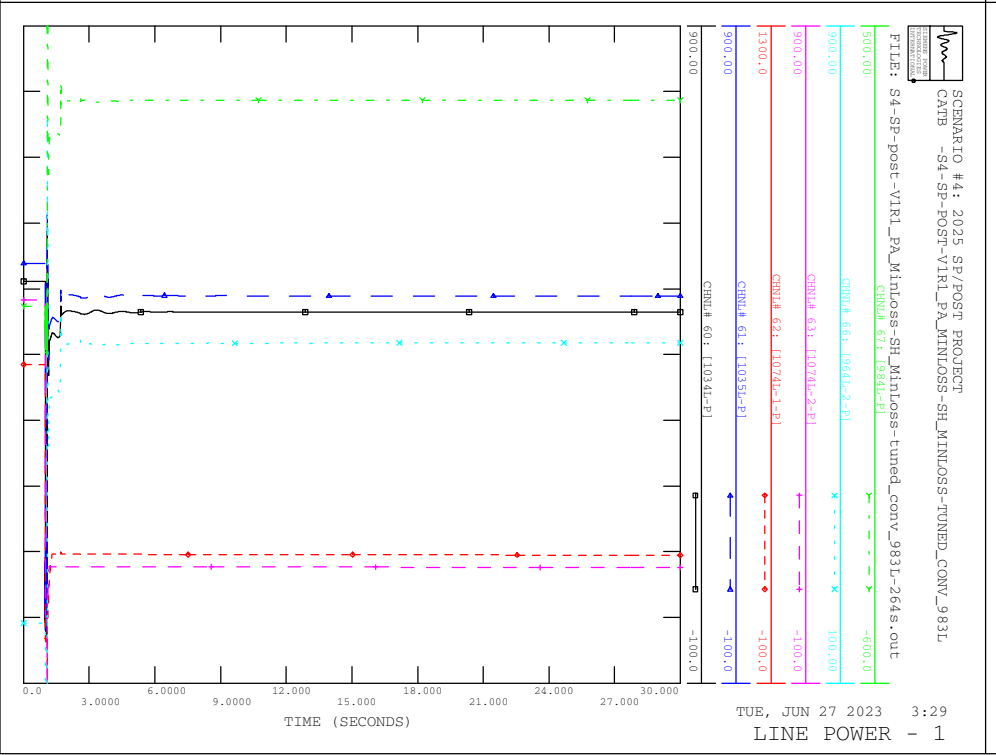

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

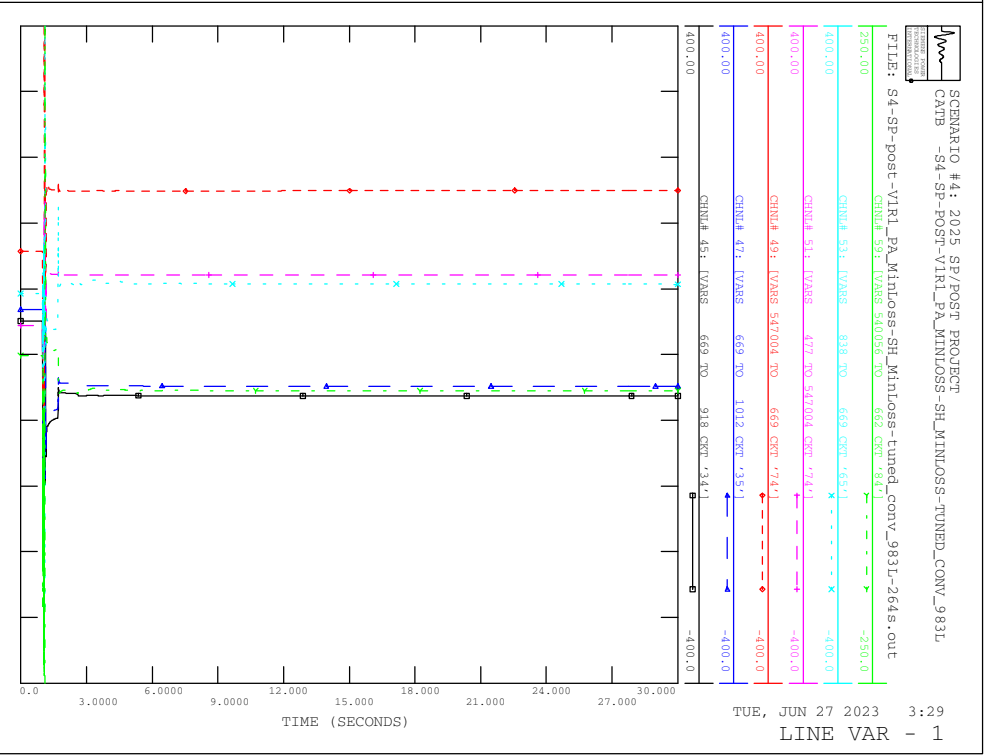

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [WHT1-Q]*100
CHNL# 33: [WHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

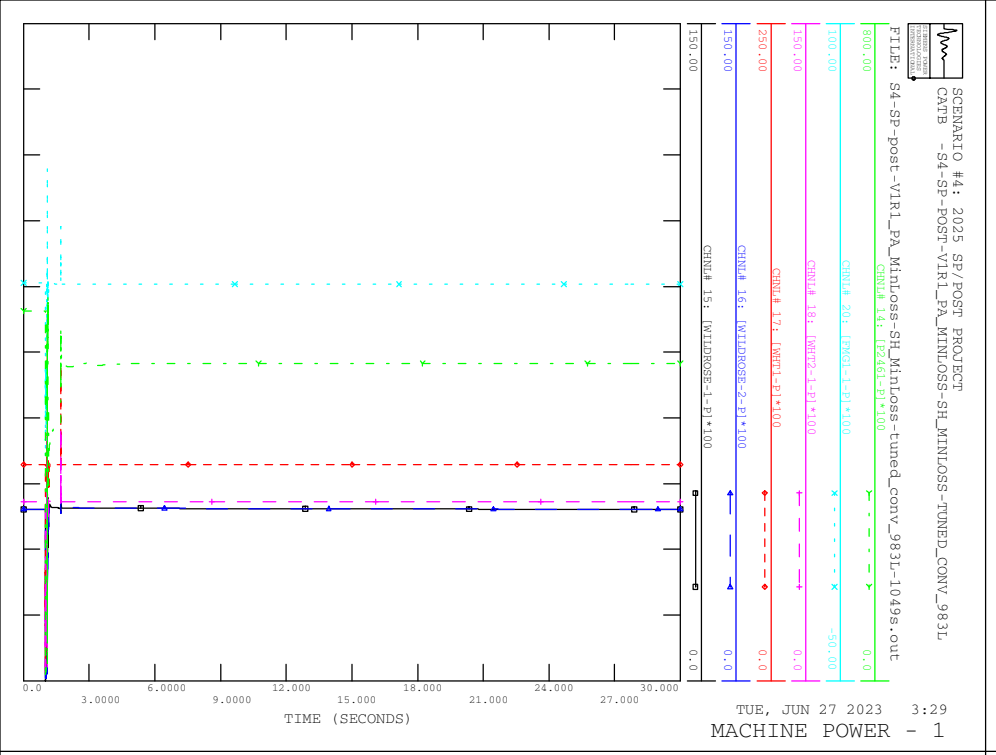

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

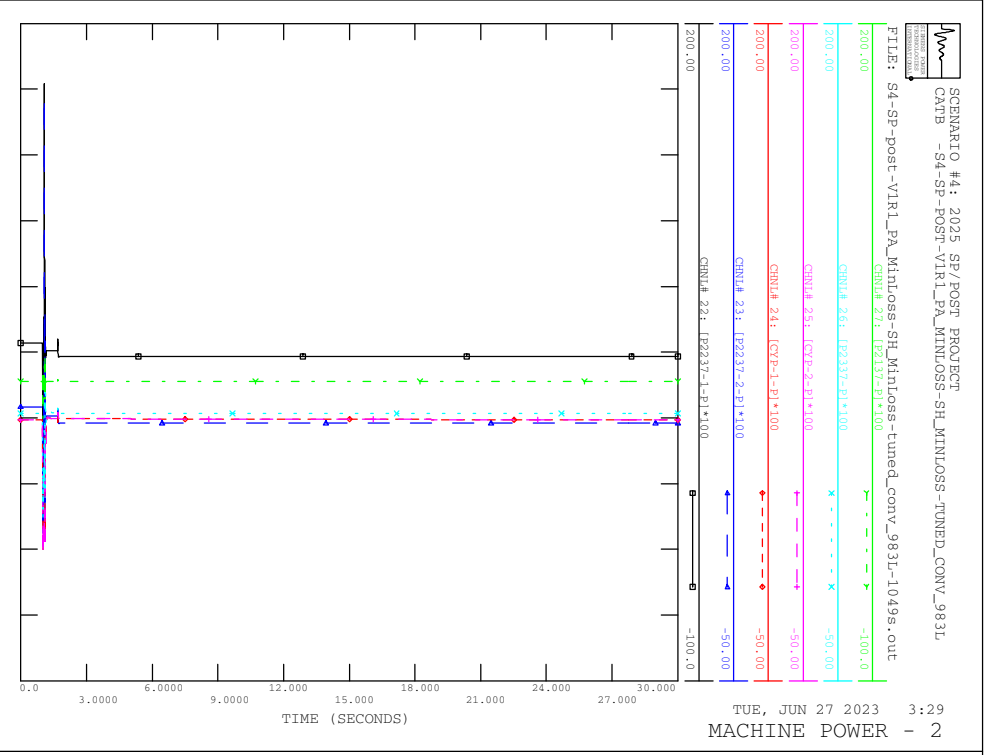

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHRAVER-321S-V]
CHNL# 12: [CASTLS-324S-V]
CHNL# 13: [NEWGLD-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

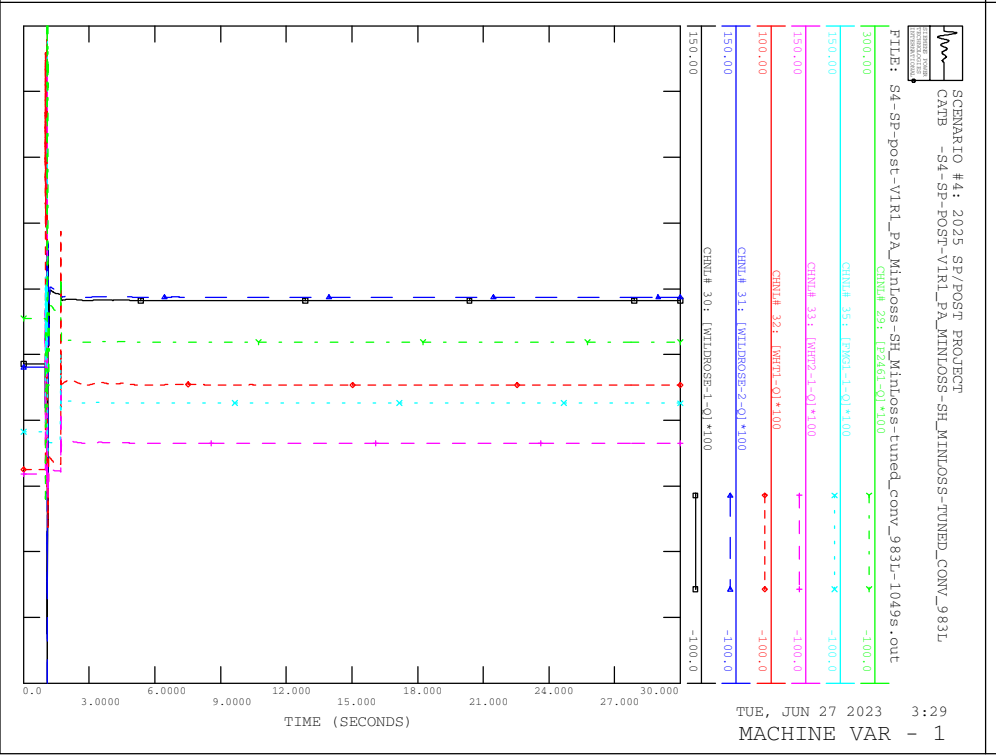

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

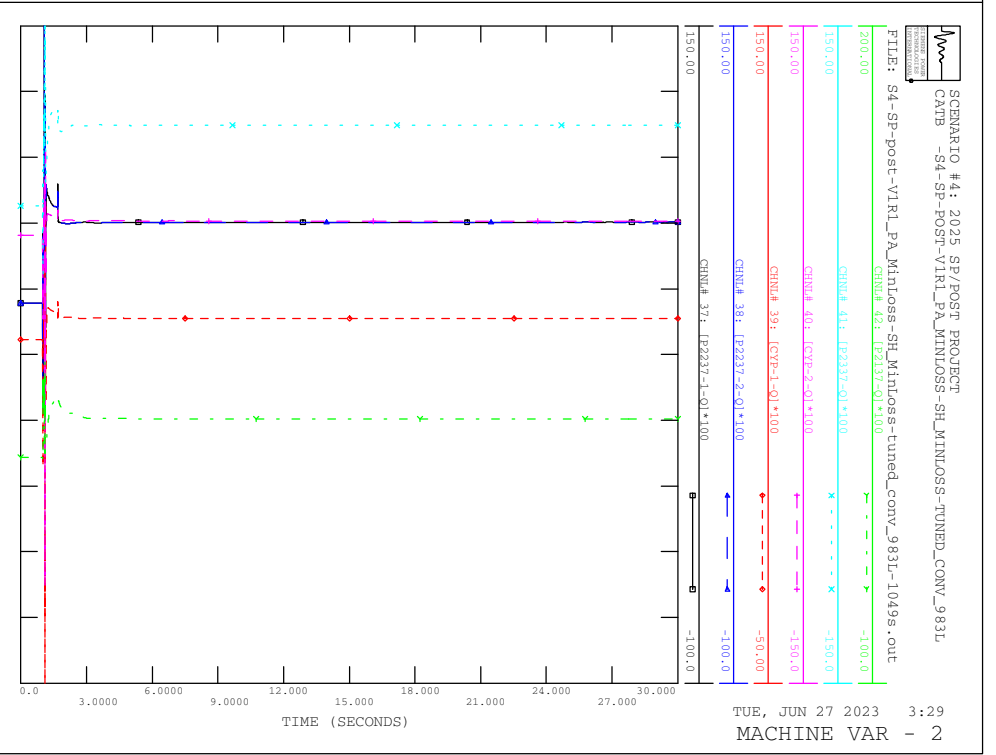

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [964L-2-P]
CHNL# 67: [986L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

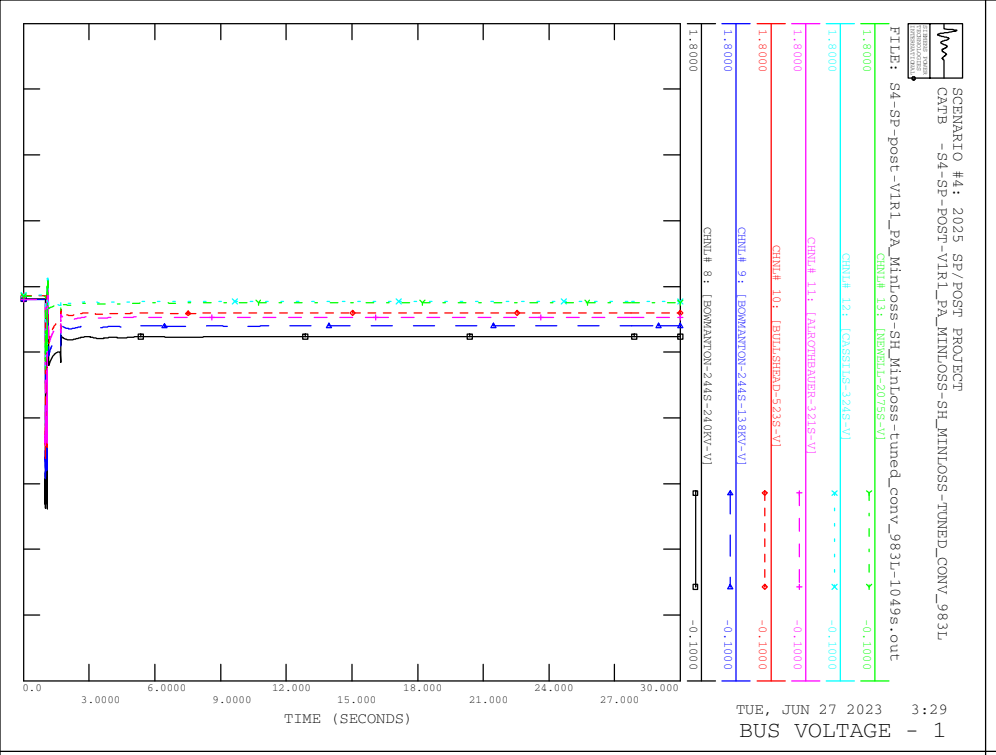

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_983L-264s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

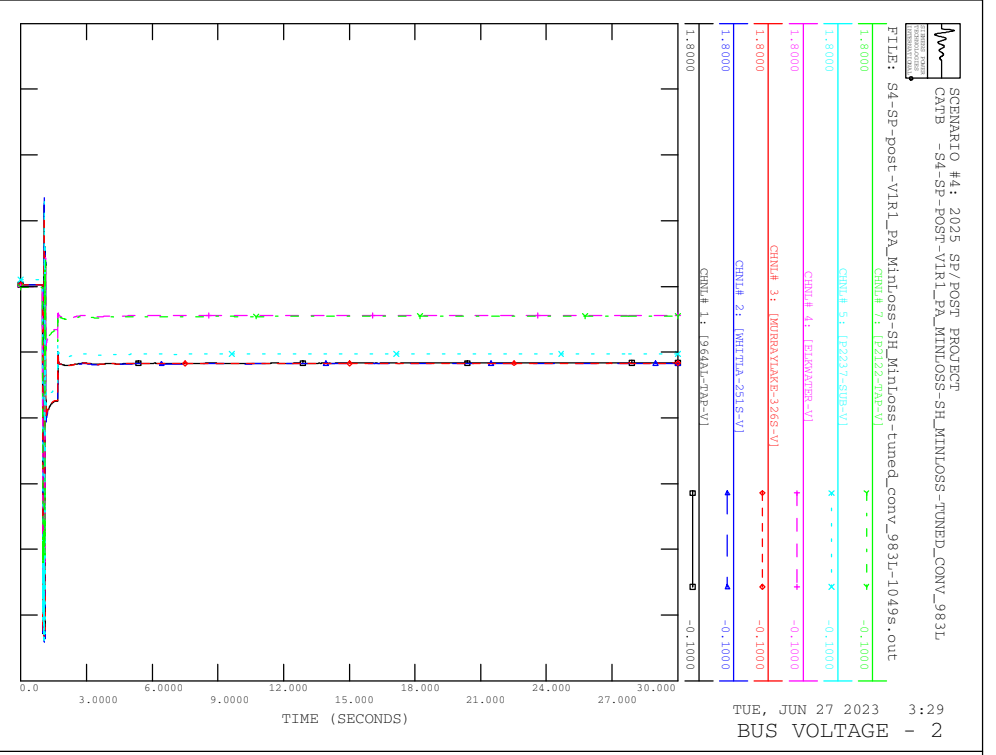

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

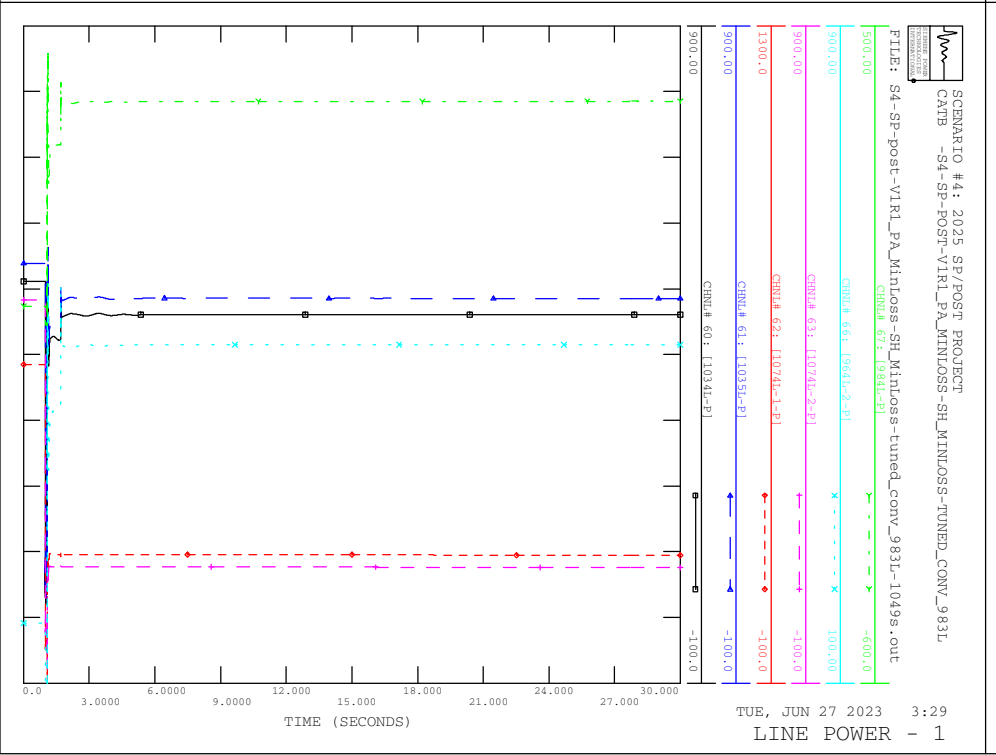

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

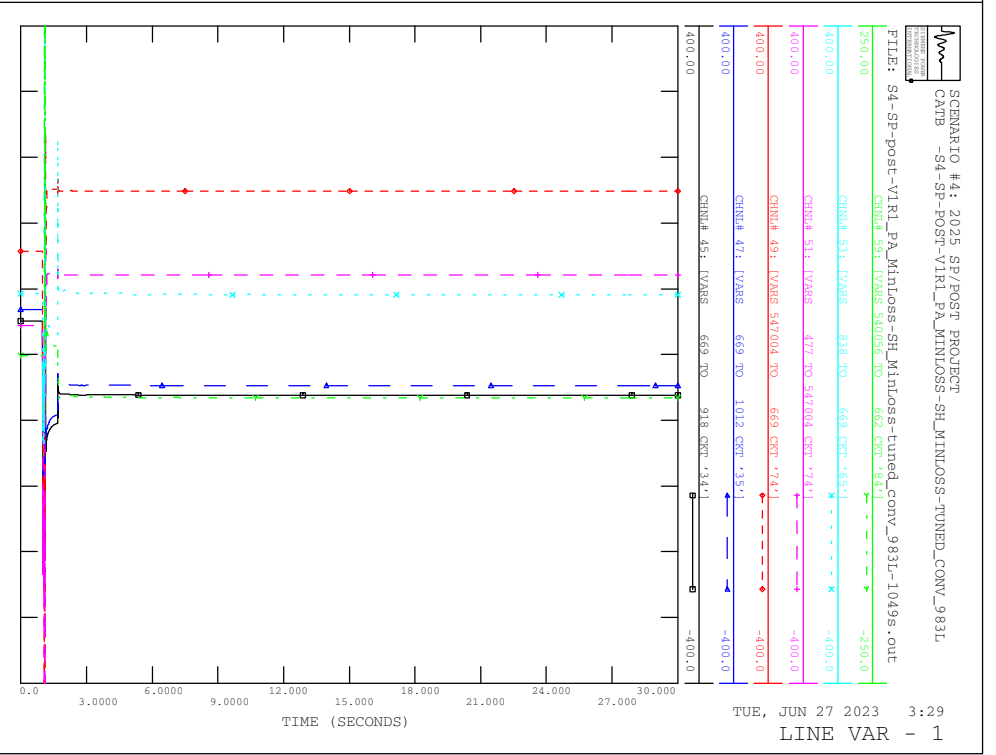

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

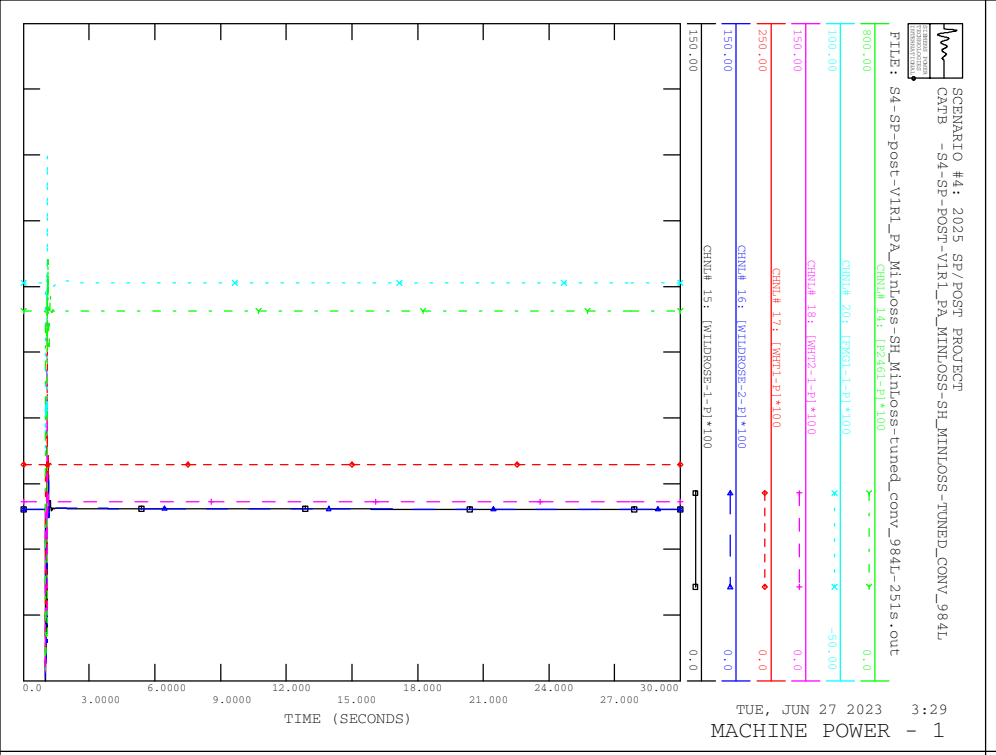

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

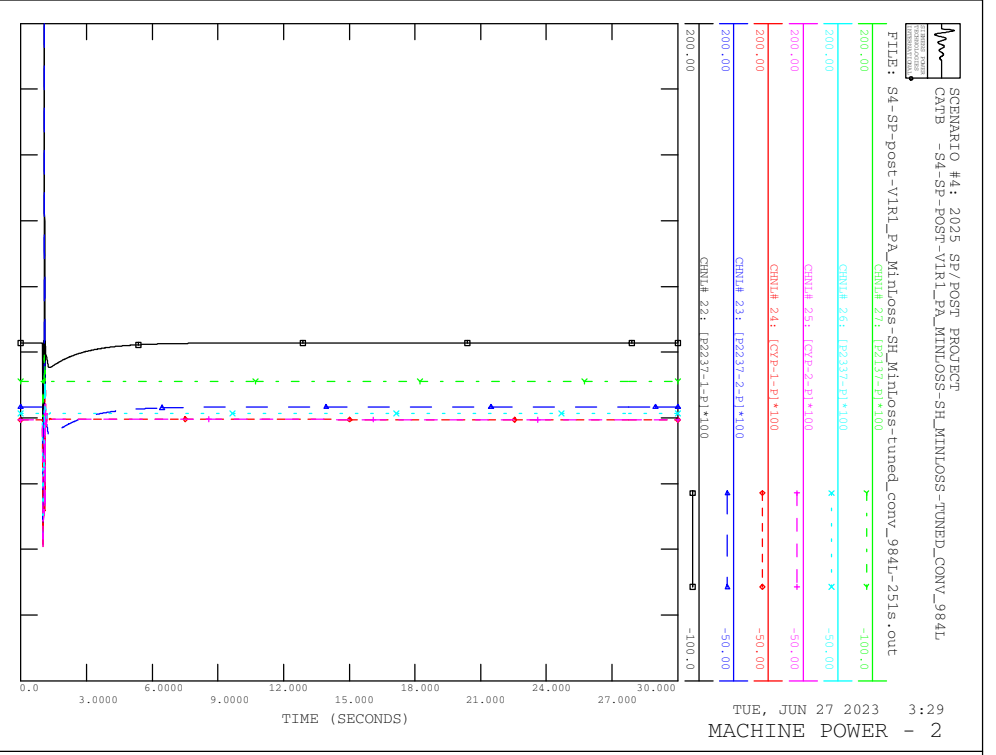

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLS-324S-V]
CHNL# 13: [NEWVLY-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

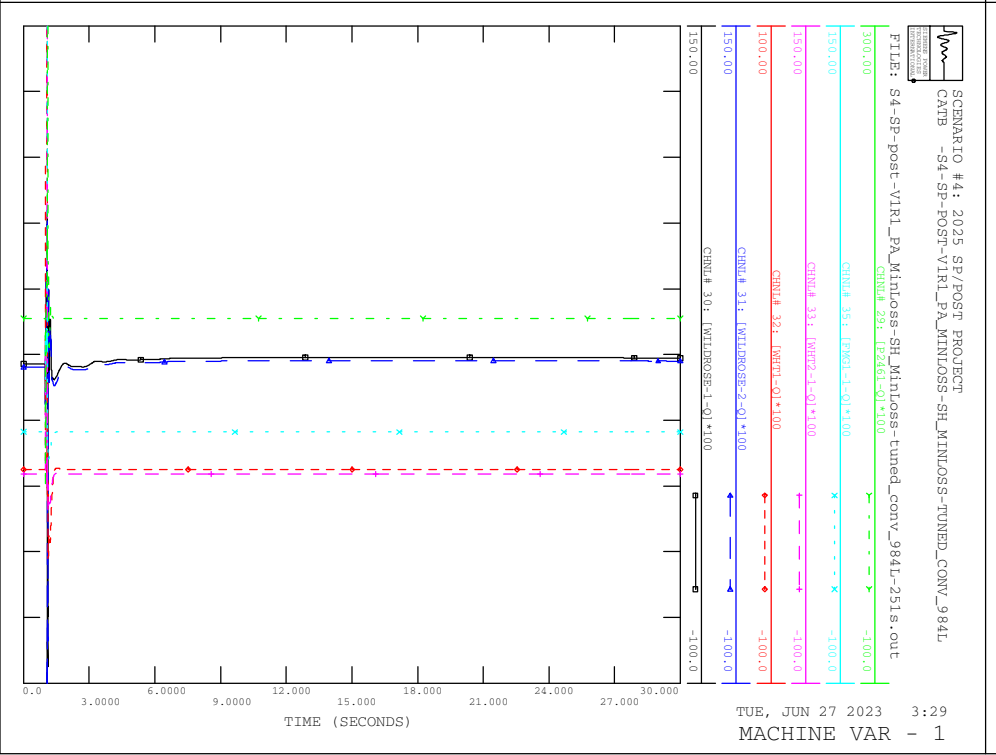

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 1: [964A1-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

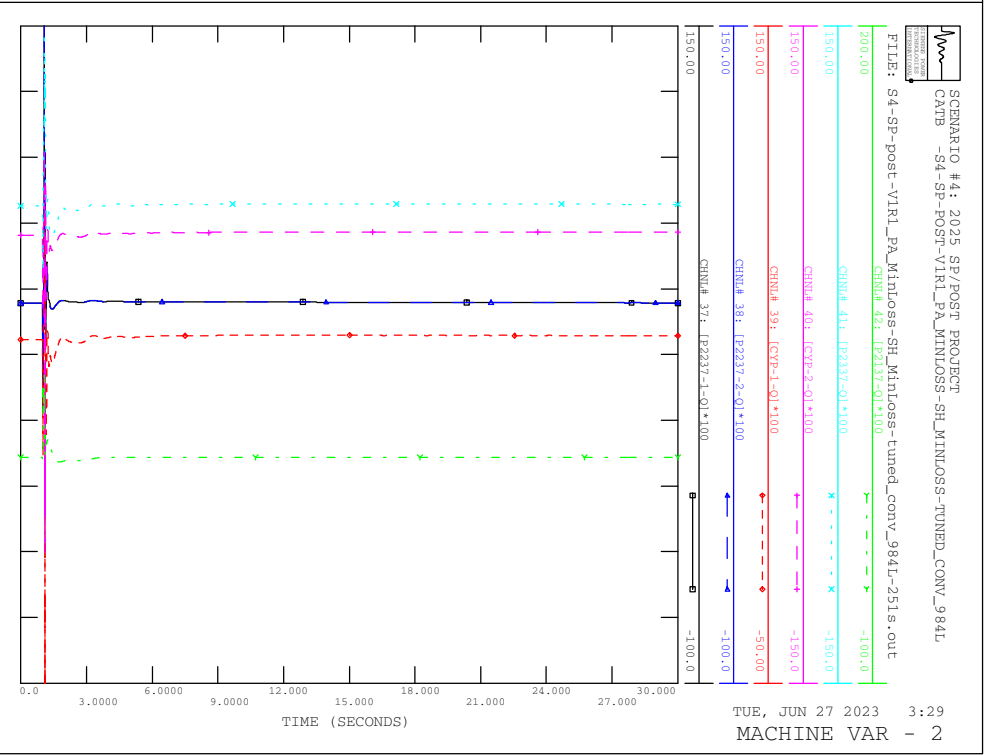

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [964A-2-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

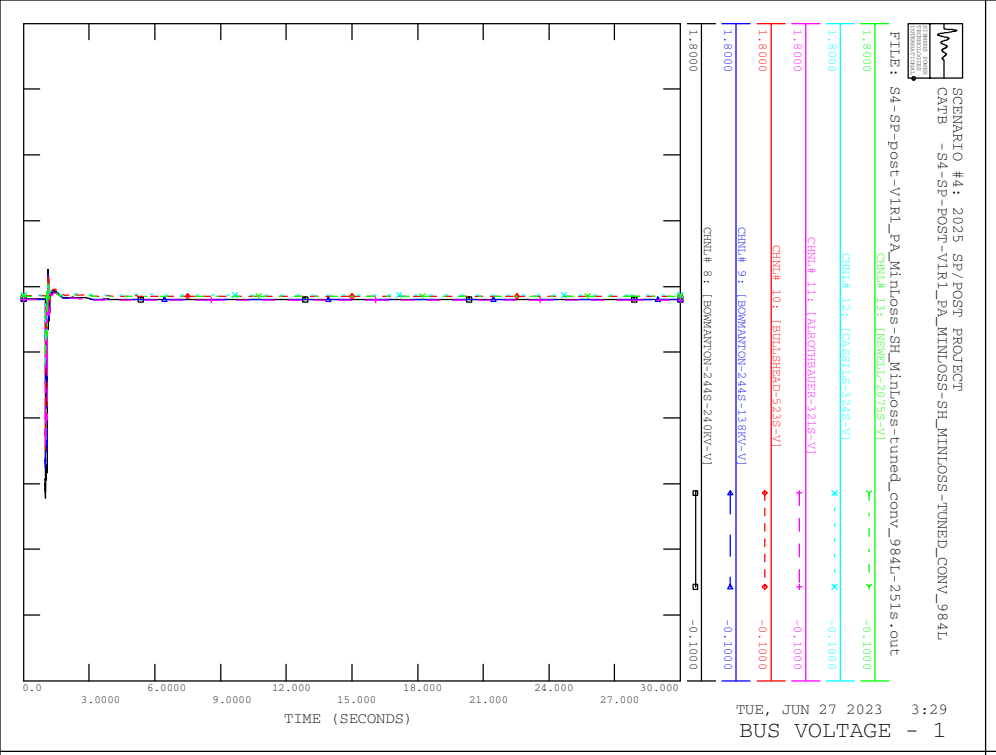

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_983L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_983L-1049s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

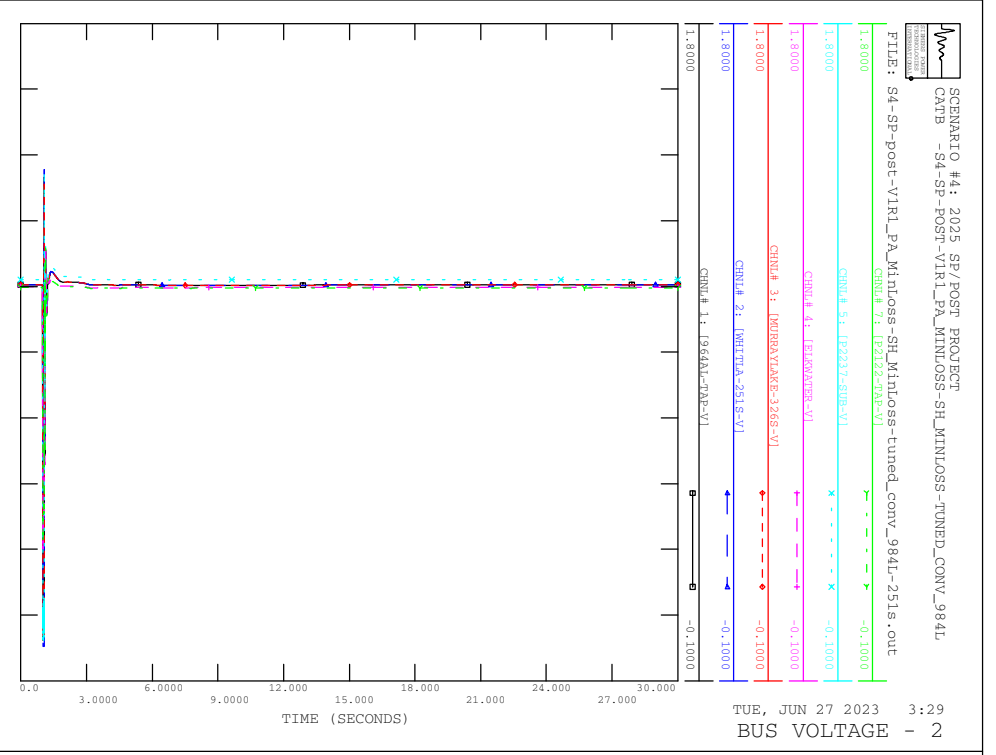

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

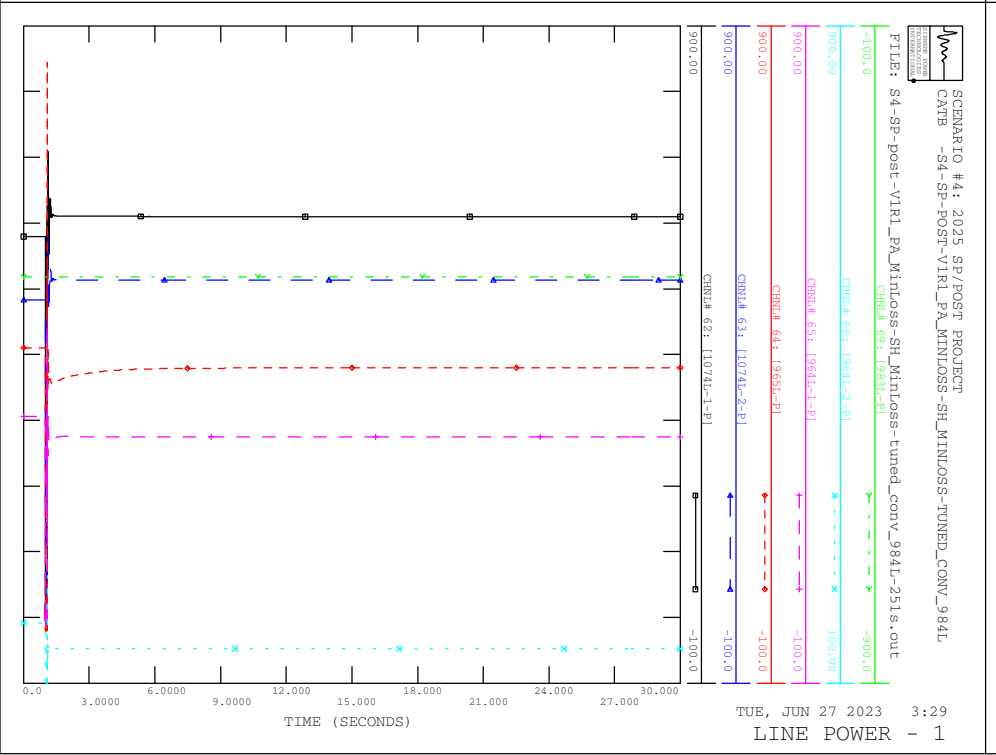

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

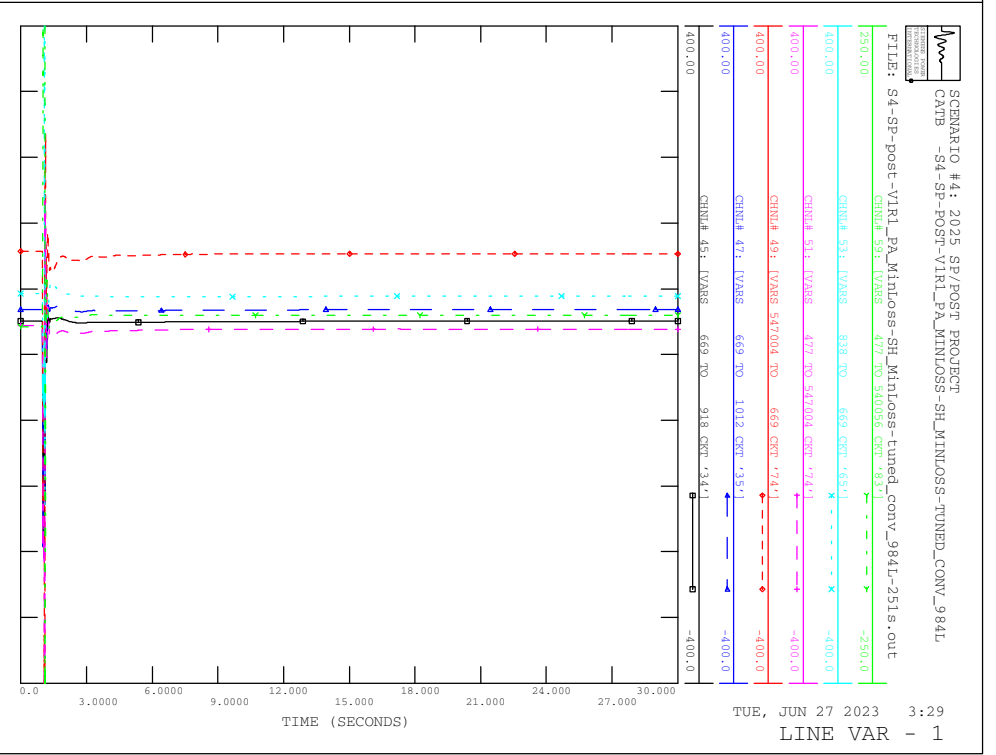

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

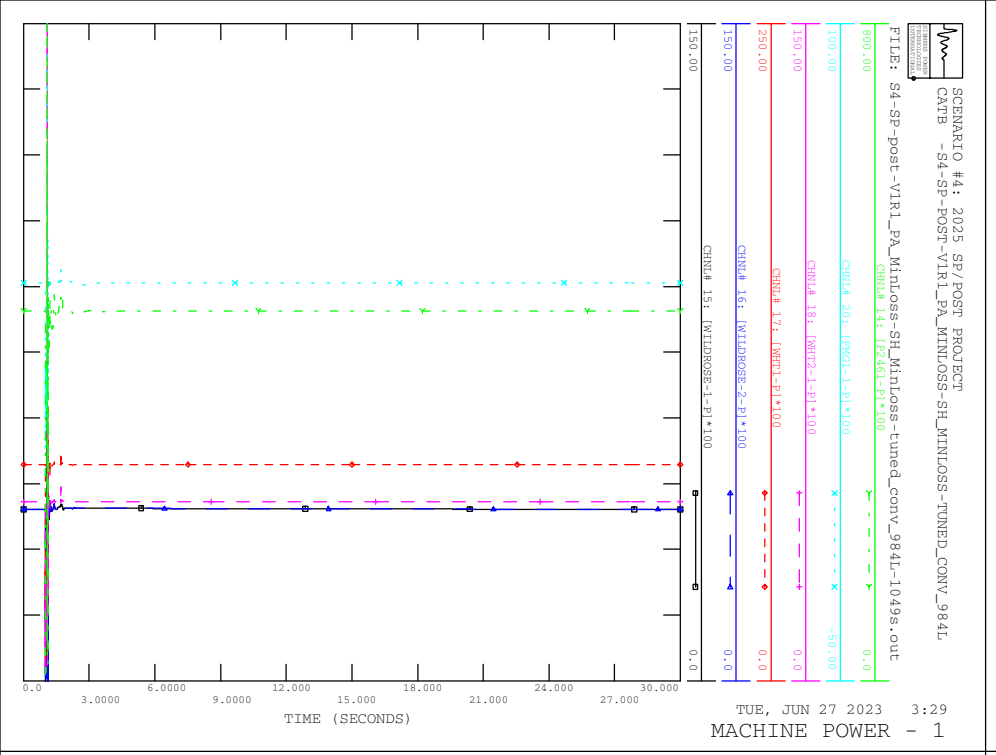

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

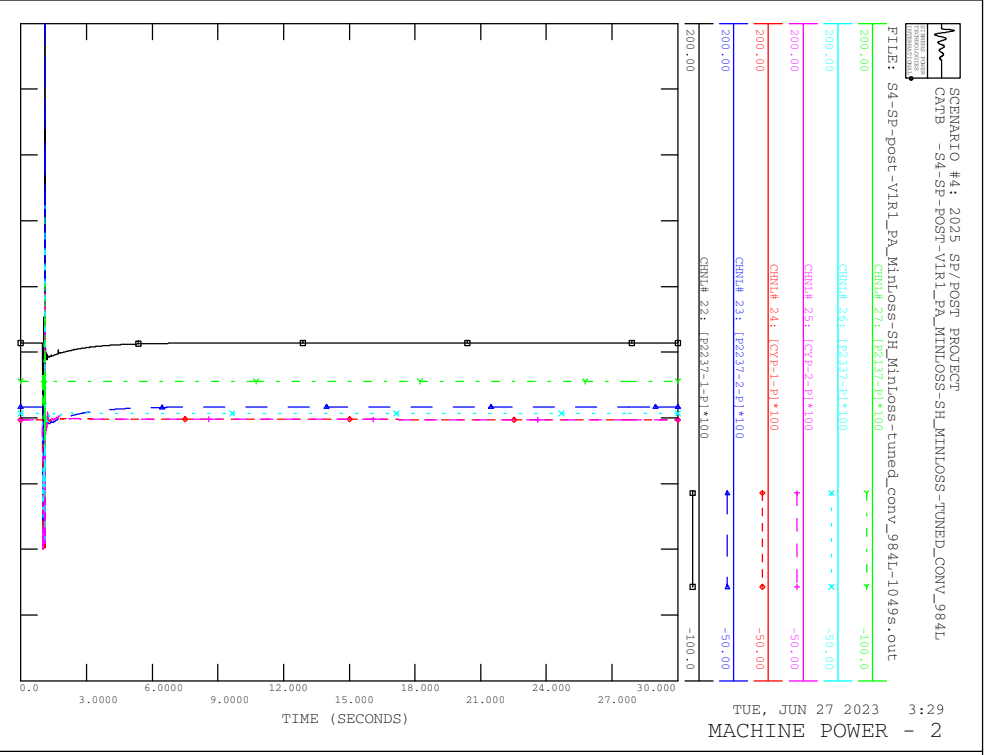

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL # 8: [BOWMANTON-244S-240KV-V]
CHNL # 9: [BOWMANTON-244S-138KV-V]
CHNL # 10: [BULLSHEAD-523S-V]
CHNL # 11: [AIROTHBAUER-321S-V]
CHNL # 12: [CASSILS-324S-V]
CHNL # 13: [NEWGLA-20735-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

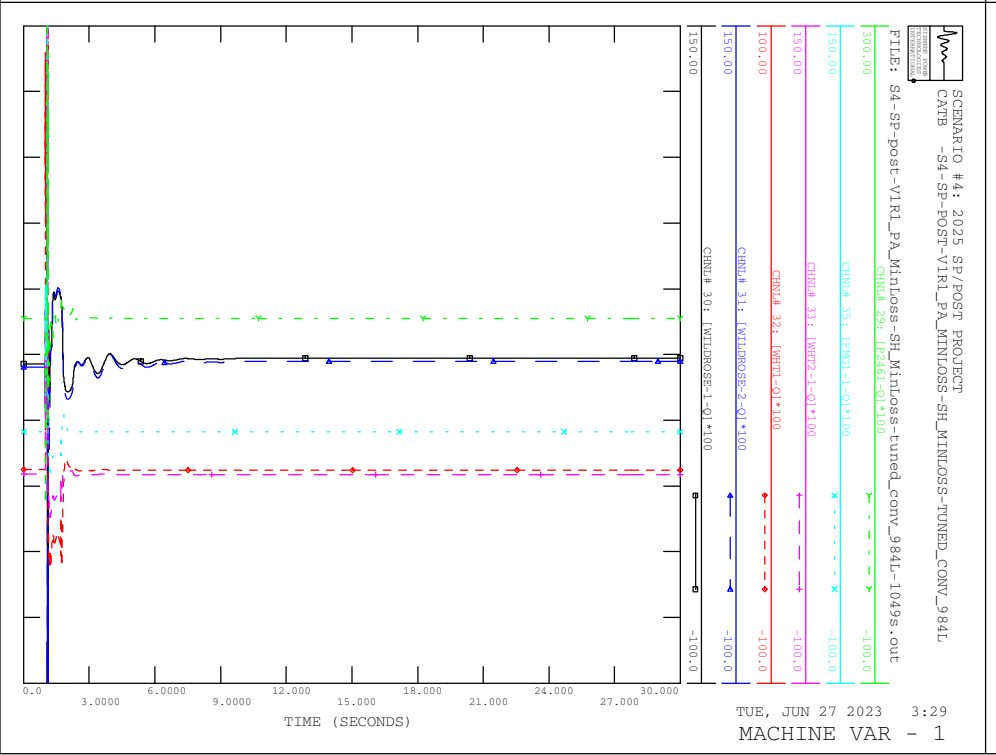

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL # 1: [964AL-TAP-V]
CHNL # 2: [WHITLA-251S-V]
CHNL # 3: [MURRAYLAKE-326S-V]
CHNL # 4: [ELKWATER-V]
CHNL # 5: [P2237-SUB-V]
CHNL # 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

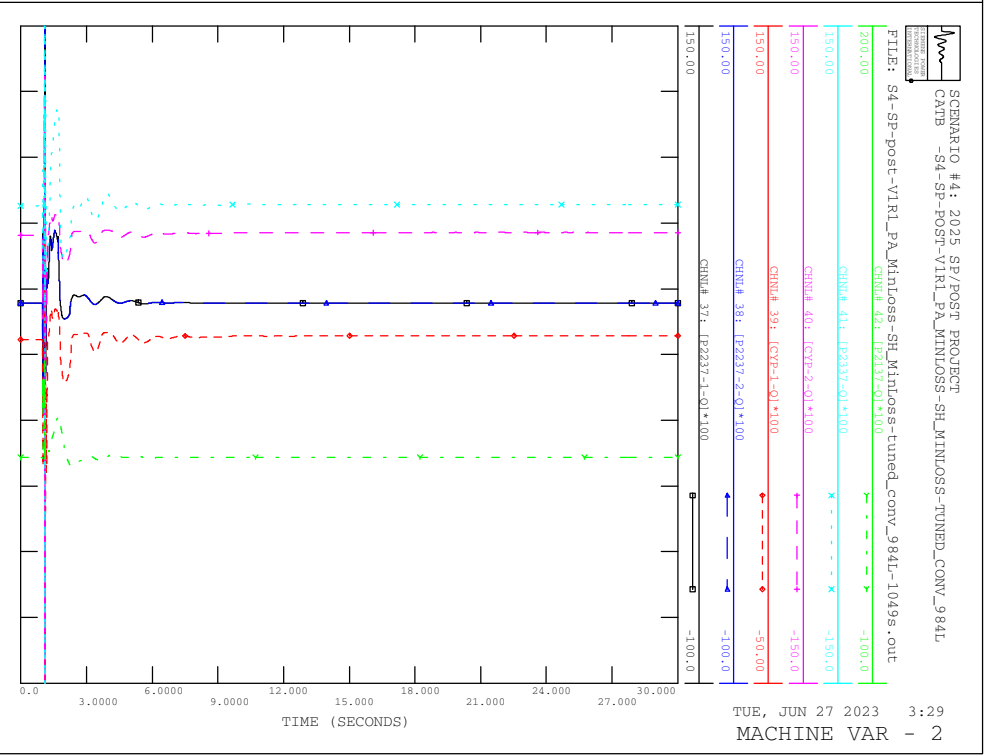

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL # 62: [1074L-1-P]
CHNL # 63: [1074L-2-P]
CHNL # 64: [965L-P]
CHNL # 65: [964L-1-P]
CHNL # 66: [964L-2-P]
CHNL # 69: [985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

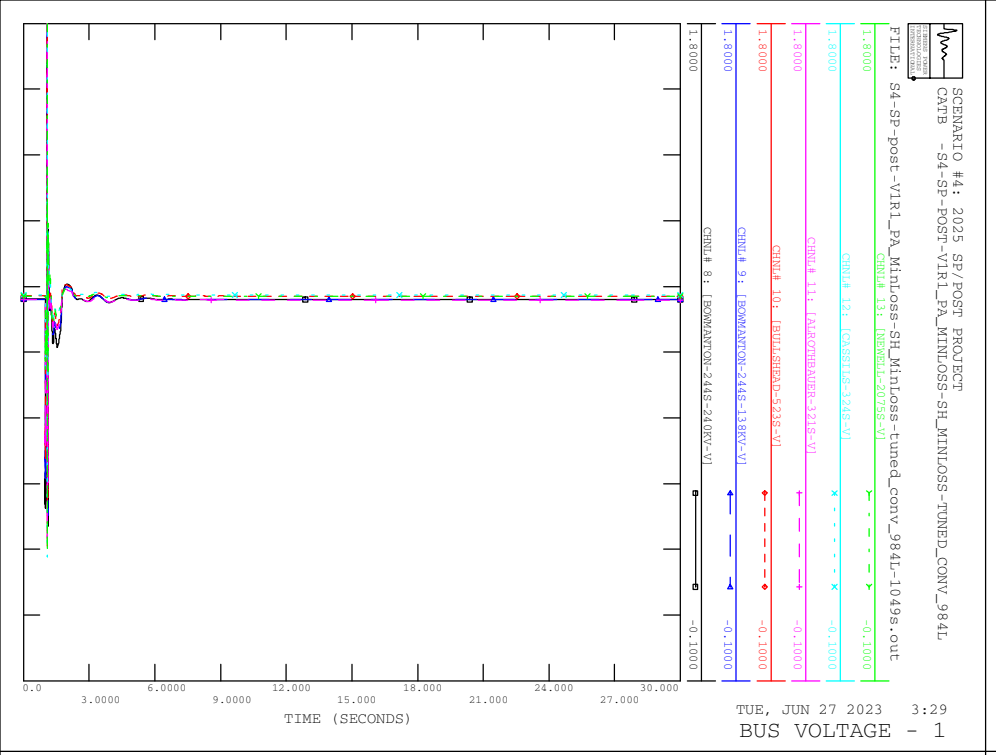

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-251s.out
CHNL # 45: [VARS 669 TO 918 CKT '34']
CHNL # 47: [VARS 669 TO 1012 CKT '35']
CHNL # 49: [VARS 547004 TO 669 CKT '74']
CHNL # 51: [VARS 477 TO 547004 CKT '74']
CHNL # 53: [VARS 838 TO 669 CKT '65']
CHNL # 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

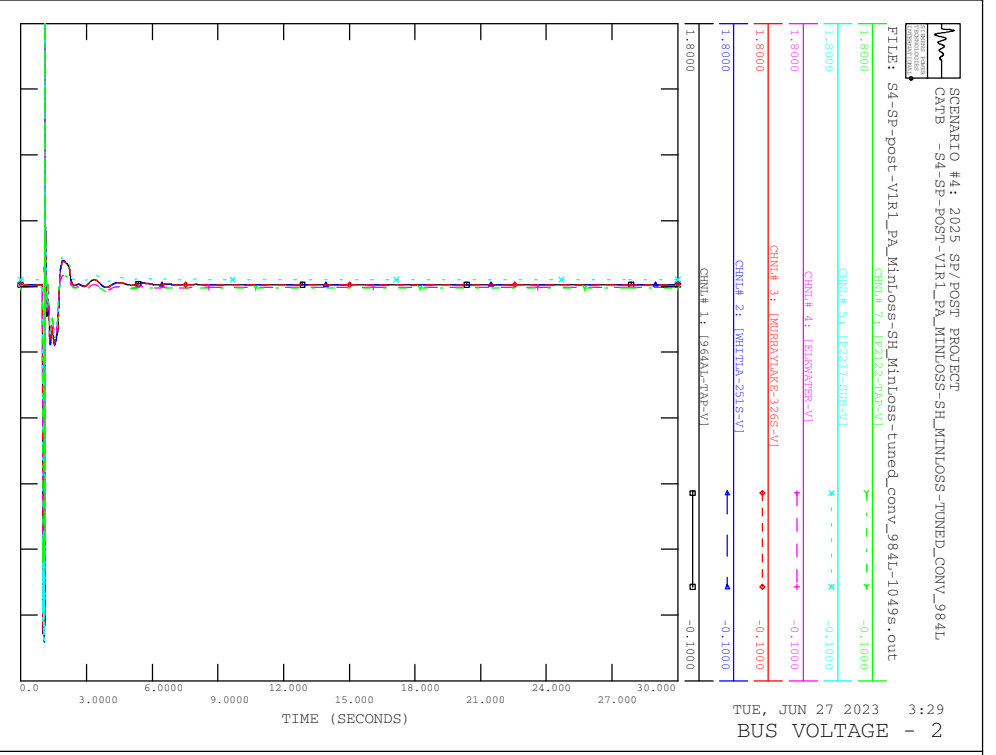

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_984L-1049s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

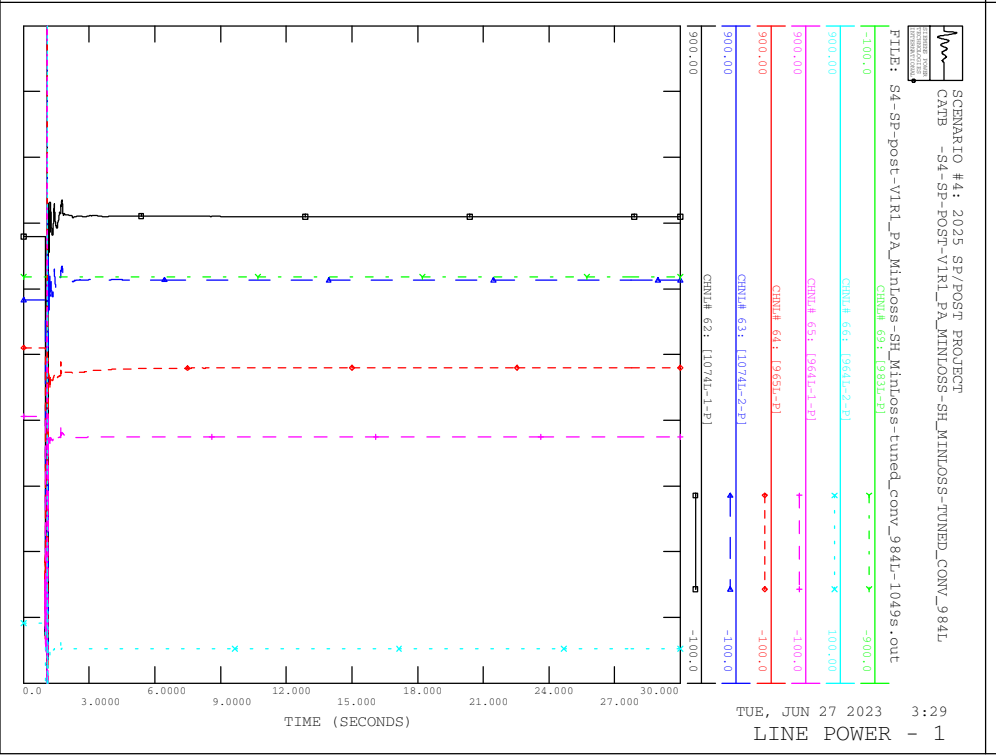

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_984L-1049s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

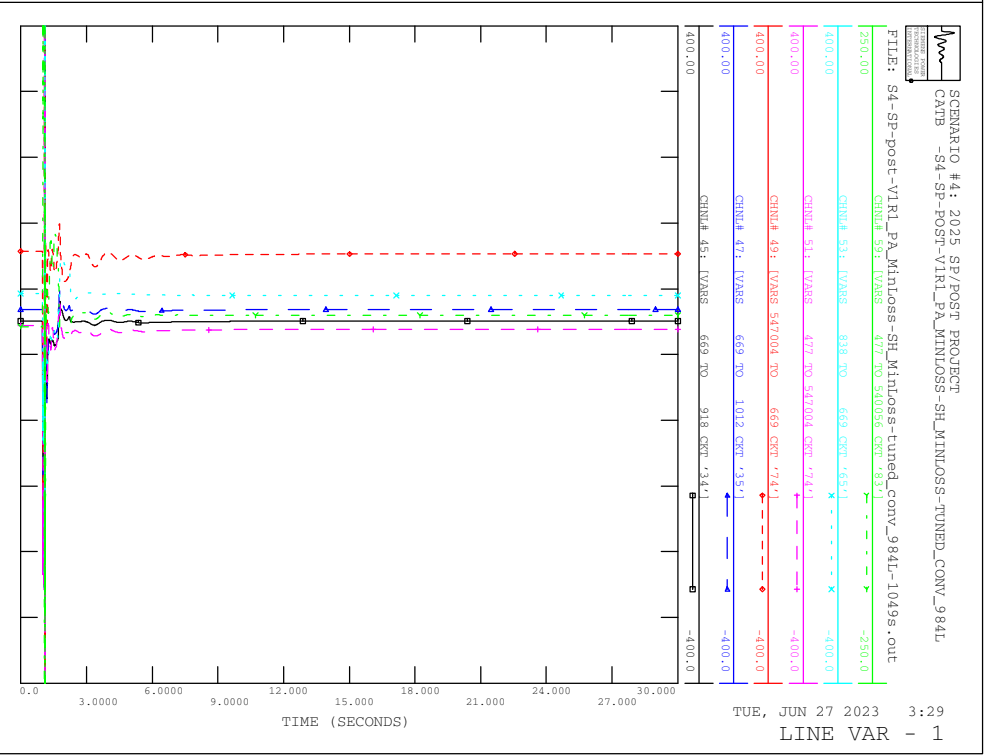

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_984L-1049s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

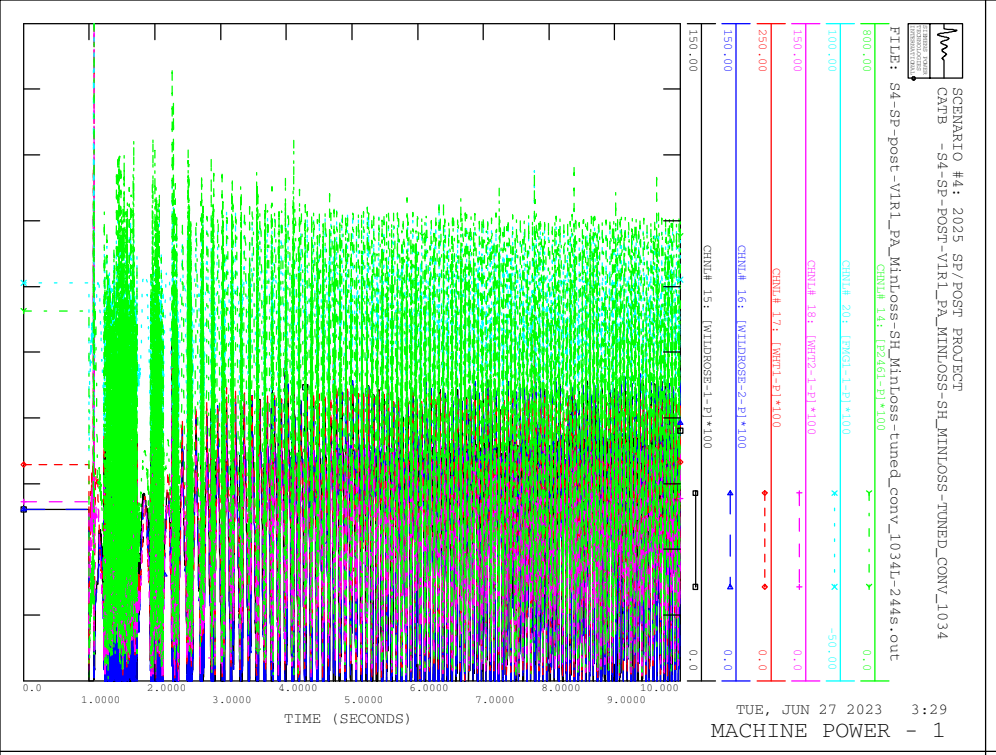

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_984L-1049s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

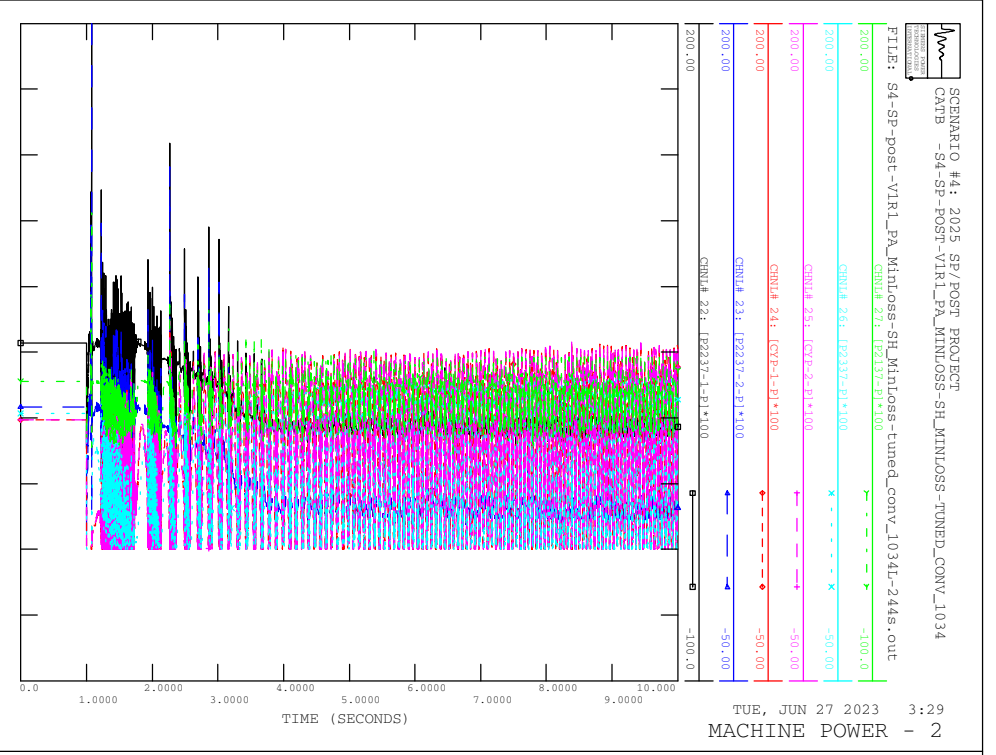

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-1049s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLD-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

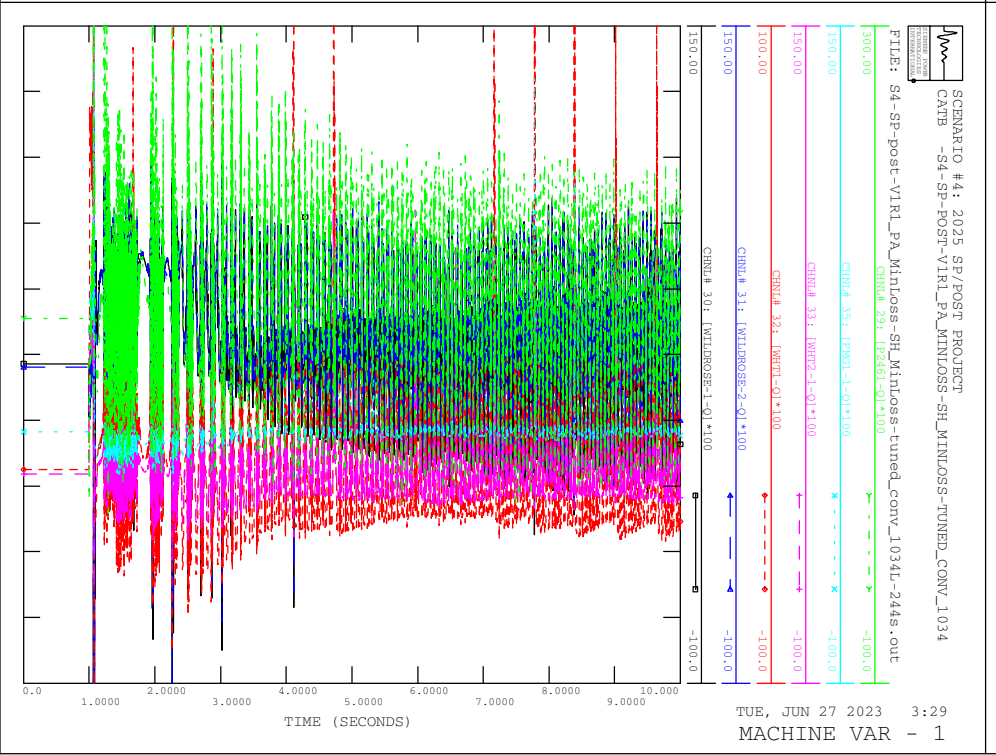

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-1049s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WETTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

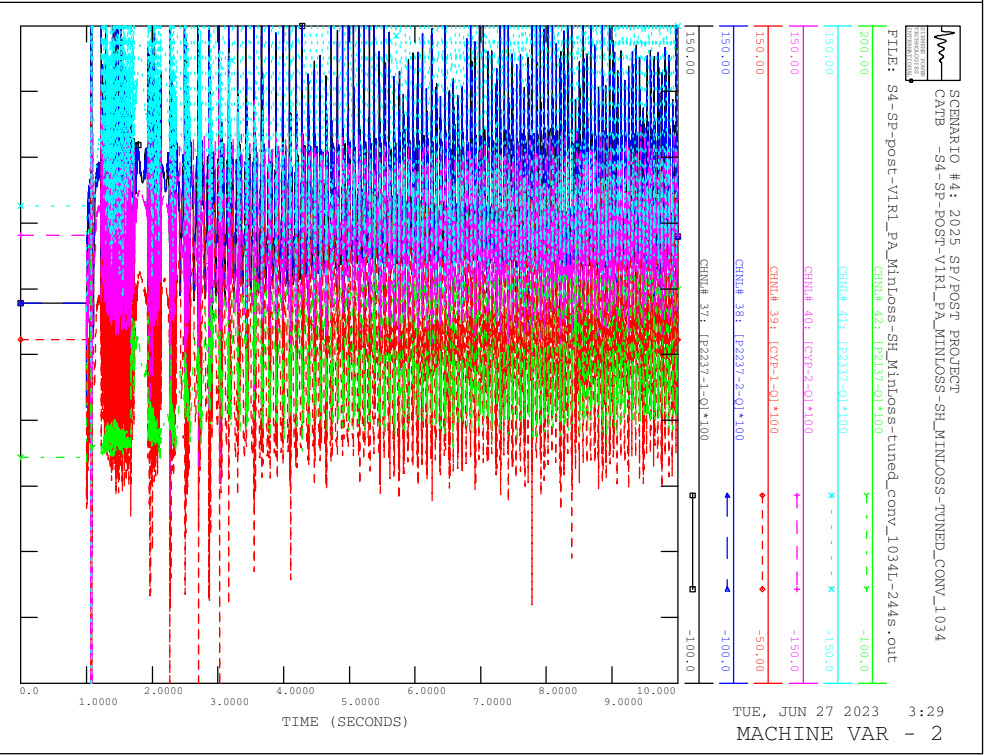

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-1049s.out
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 64: [965L-P]
CHNL# 65: [964L-1-P]
CHNL# 66: [964L-2-P]
CHNL# 69: [985L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

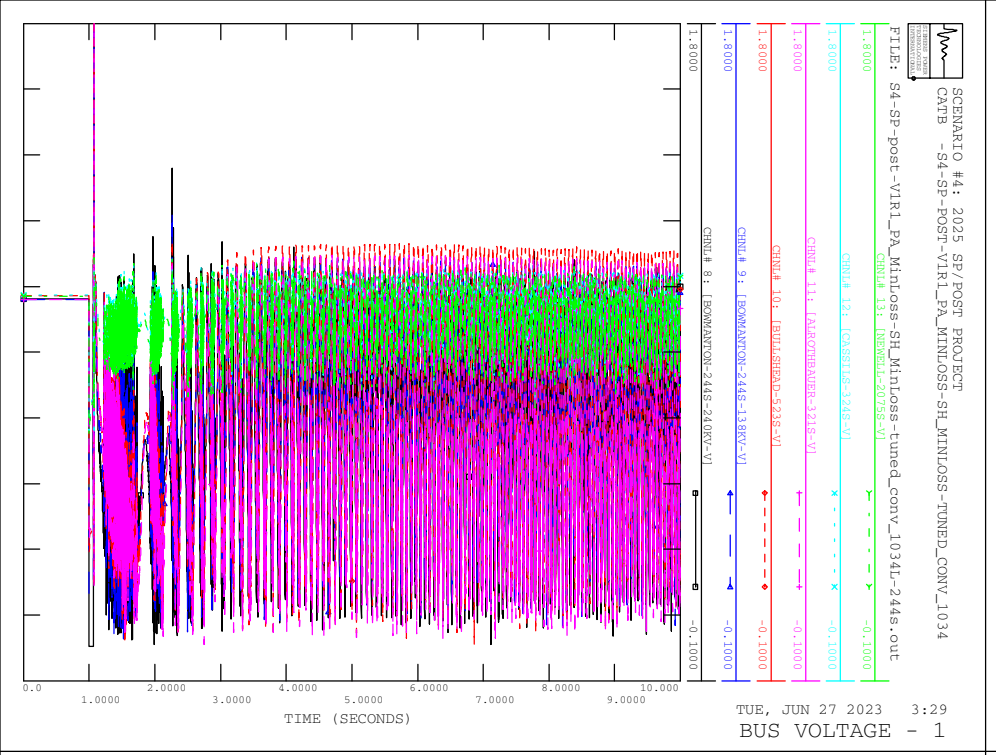

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_984L
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_984L-1049s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 838 TO 669 CKT '65']
CHNL# 59: [VARS 477 TO 540056 CKT '83']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

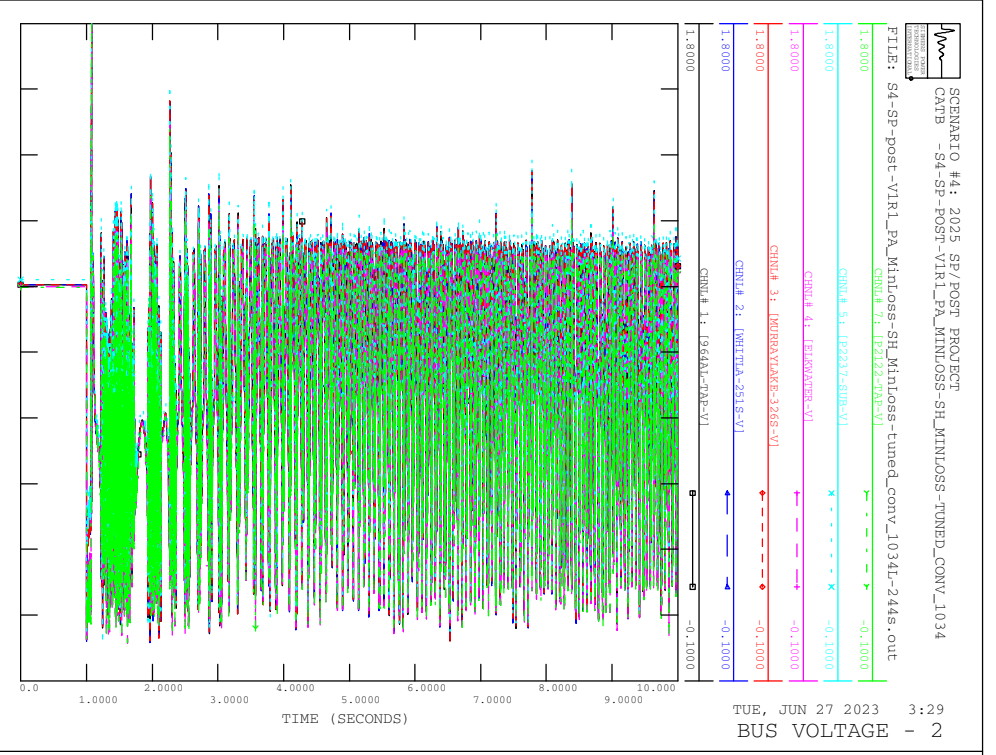

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHTP2-1-P]*100
CHNL# 20: [PMGI-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

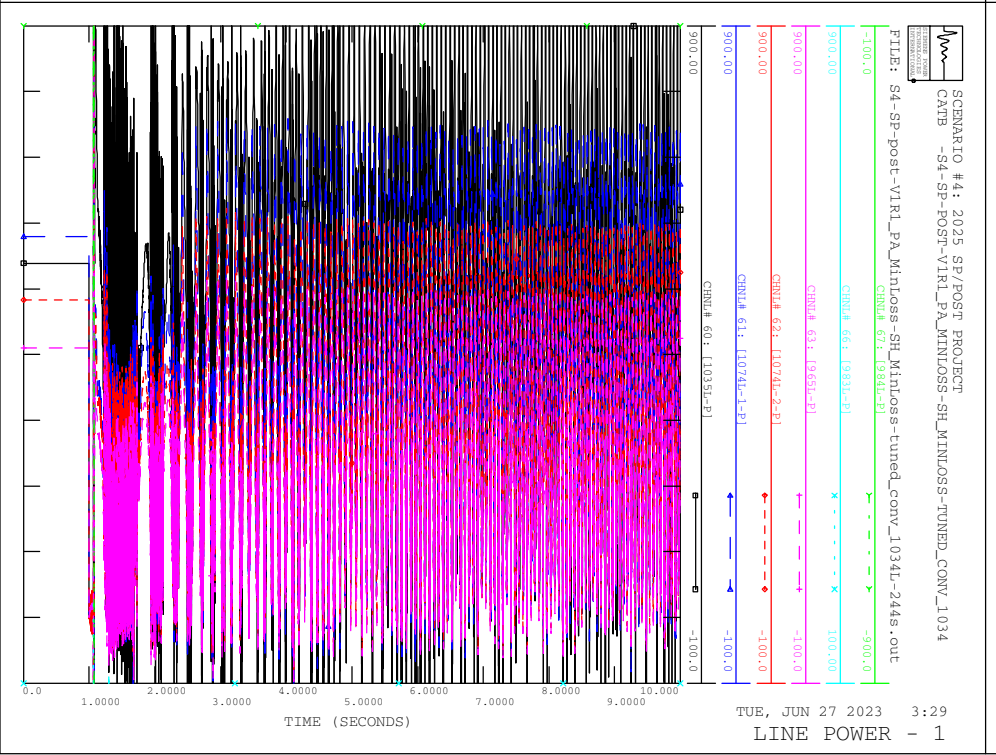

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

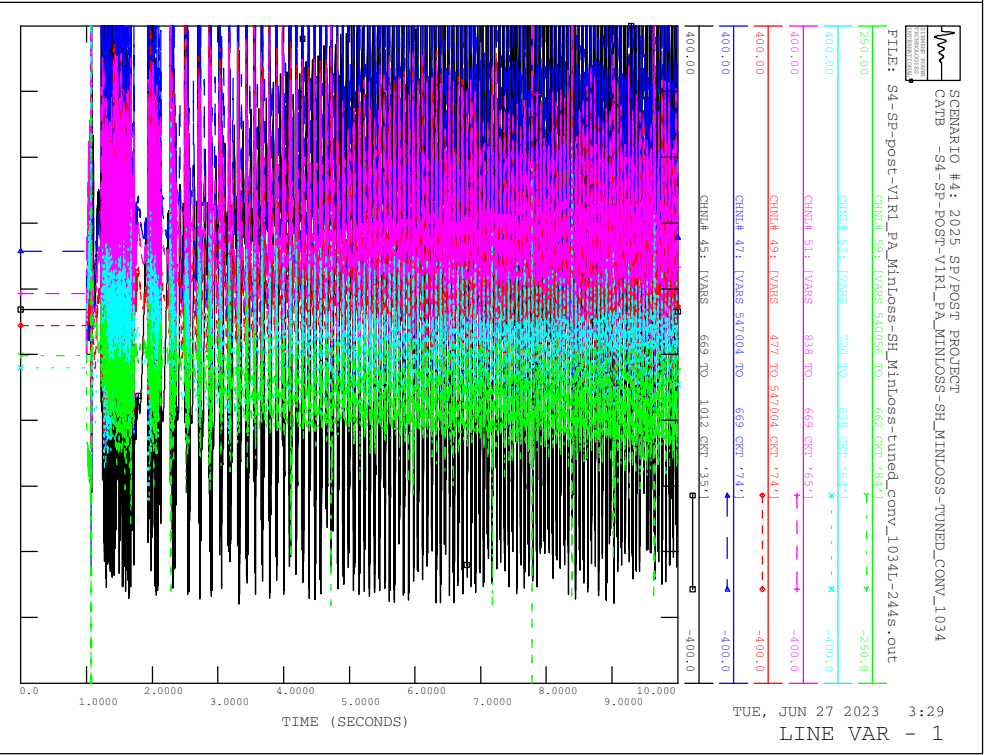

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHTP2-1-Q]*100
CHNL# 35: [PMGI-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

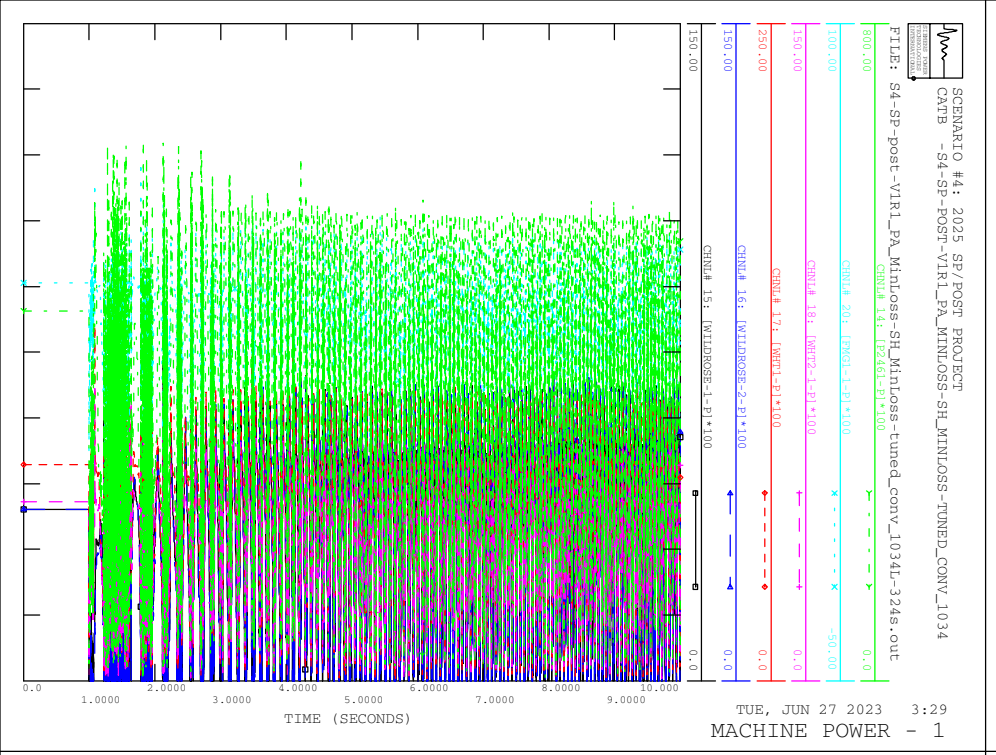

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

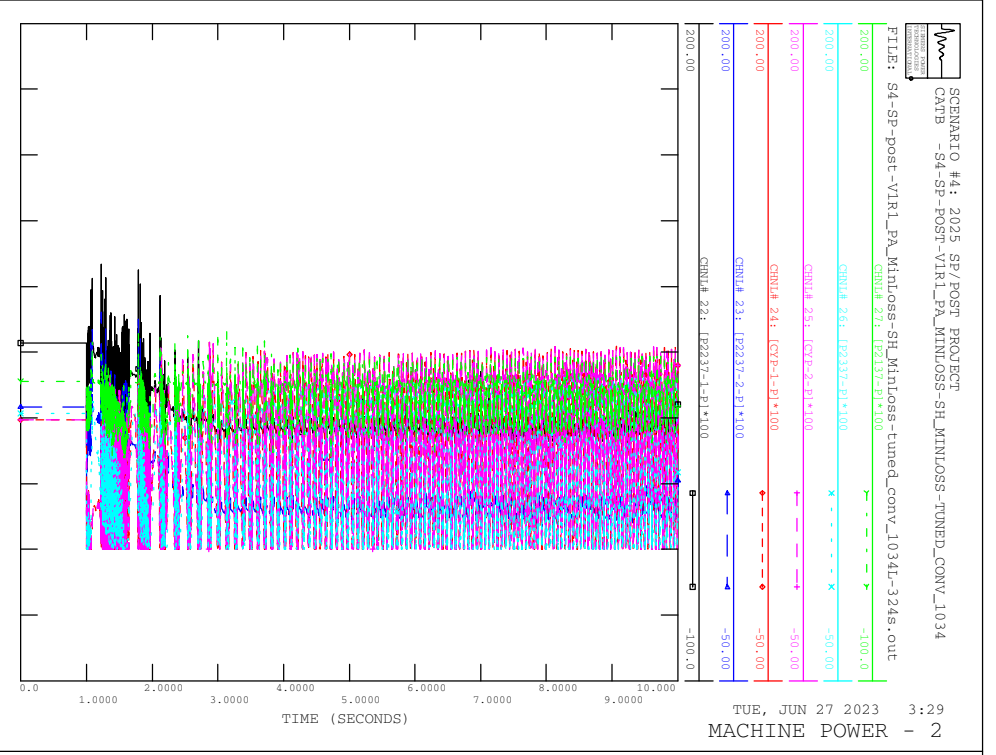

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLE-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

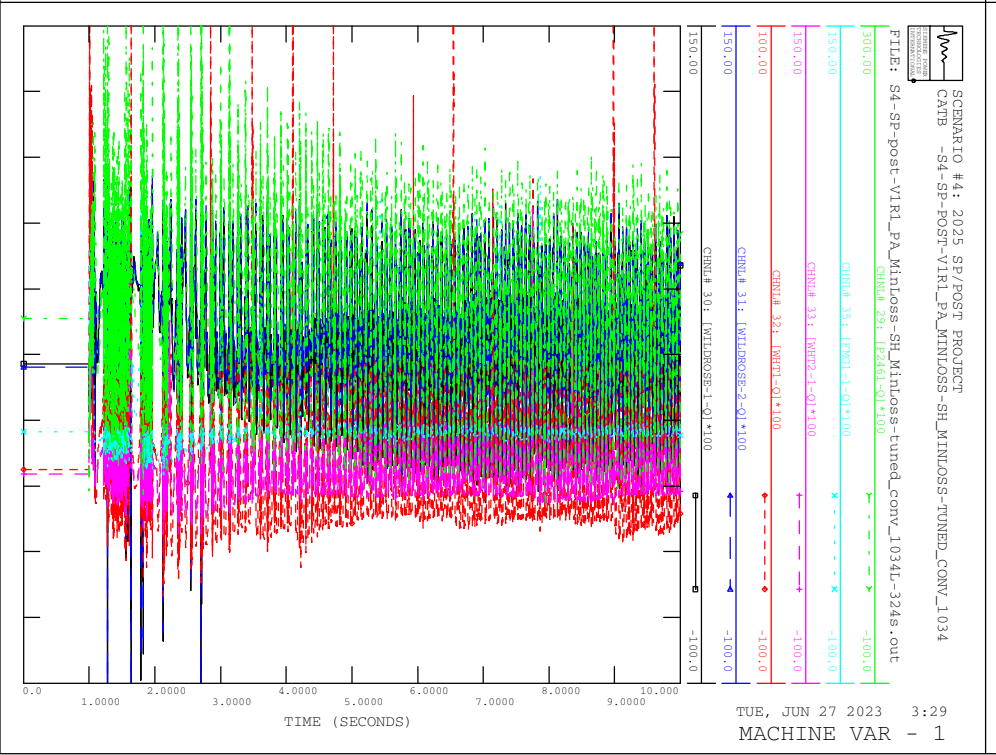

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

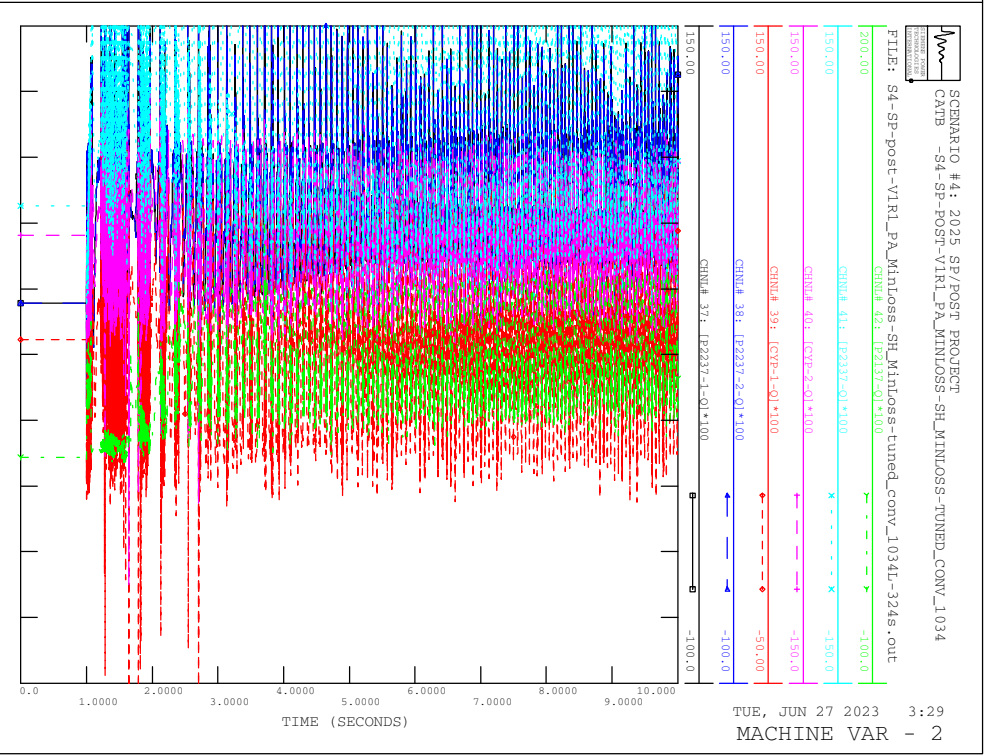

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 60: [1035L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1386L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

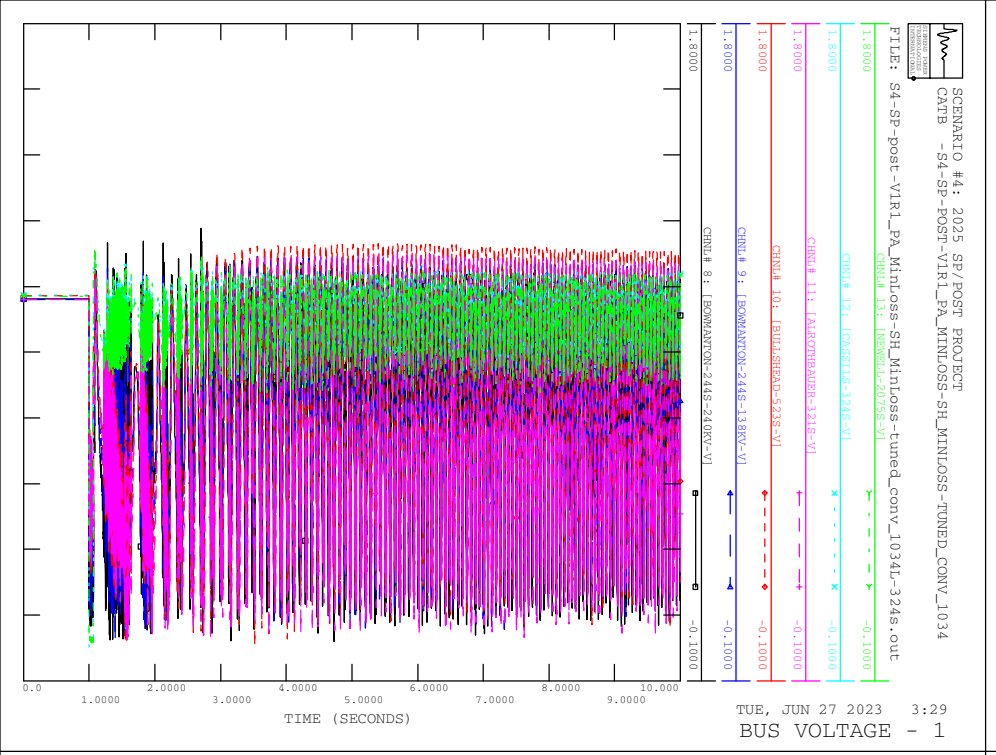

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

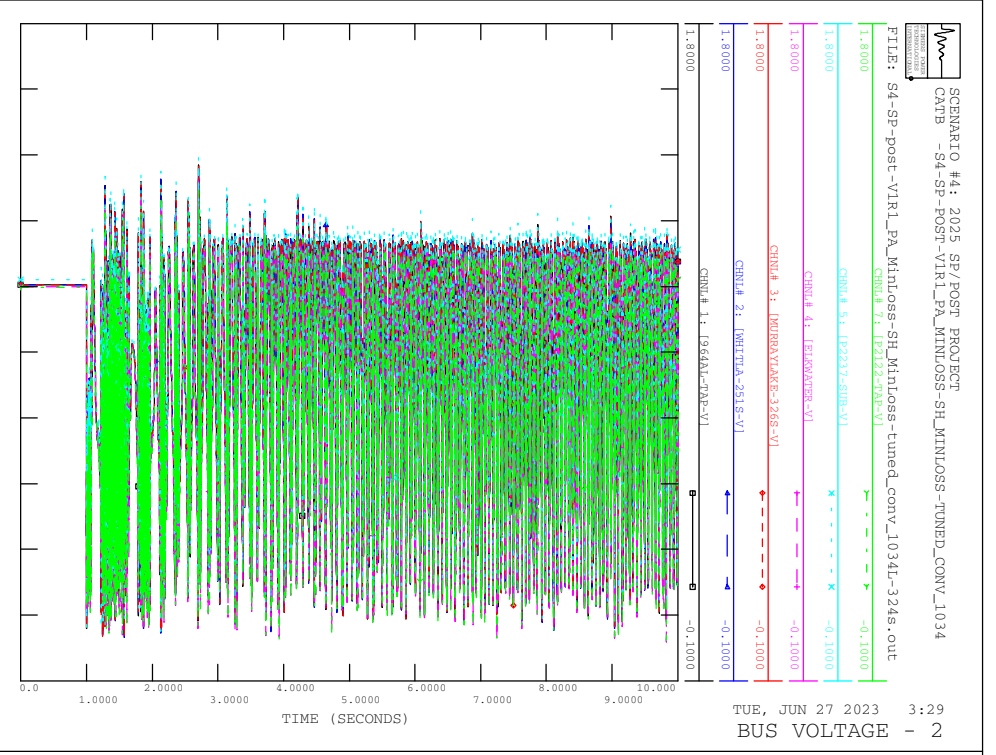

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHTP2-1-P]*100
CHNL# 20: [PMGI-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

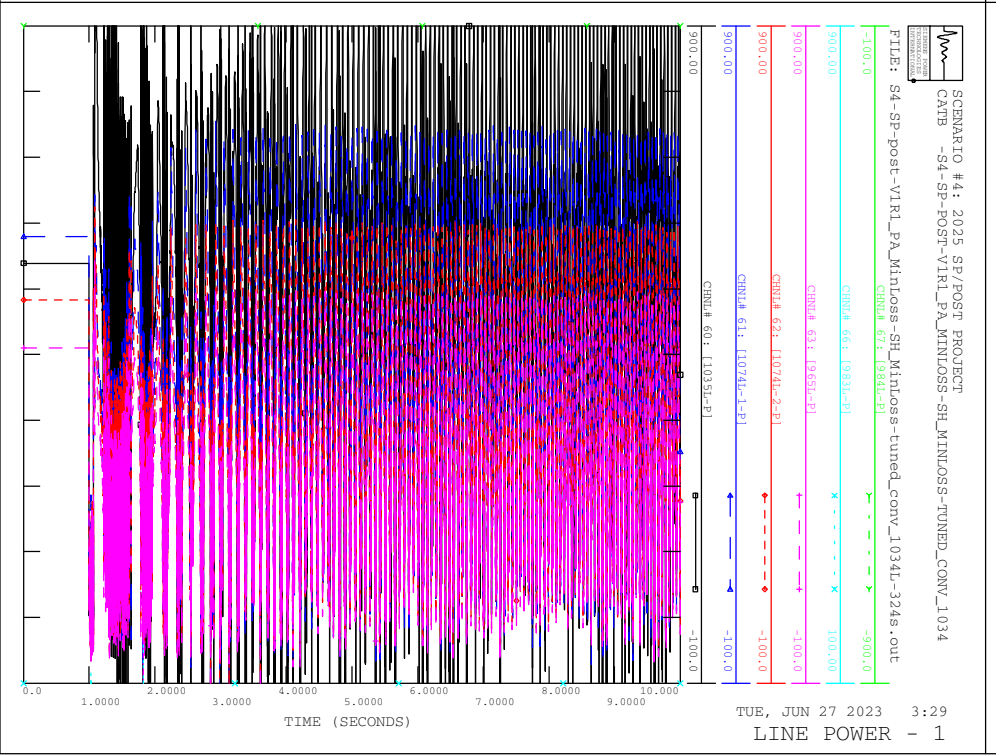

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 2

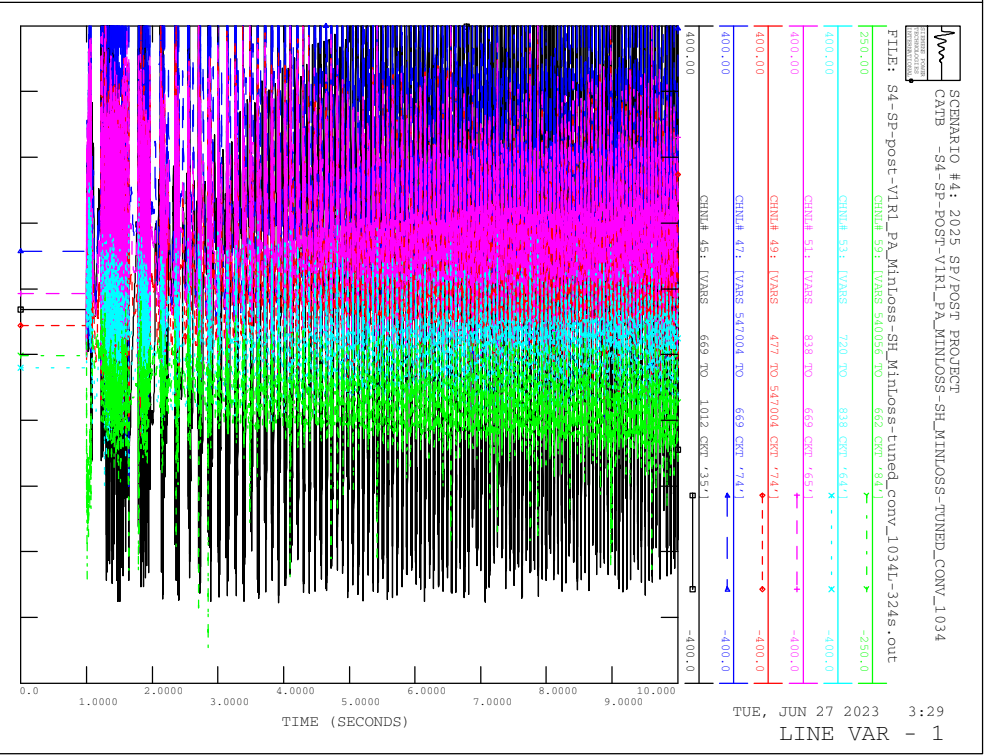

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHTP2-1-Q]*100
CHNL# 35: [PMGI-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 1

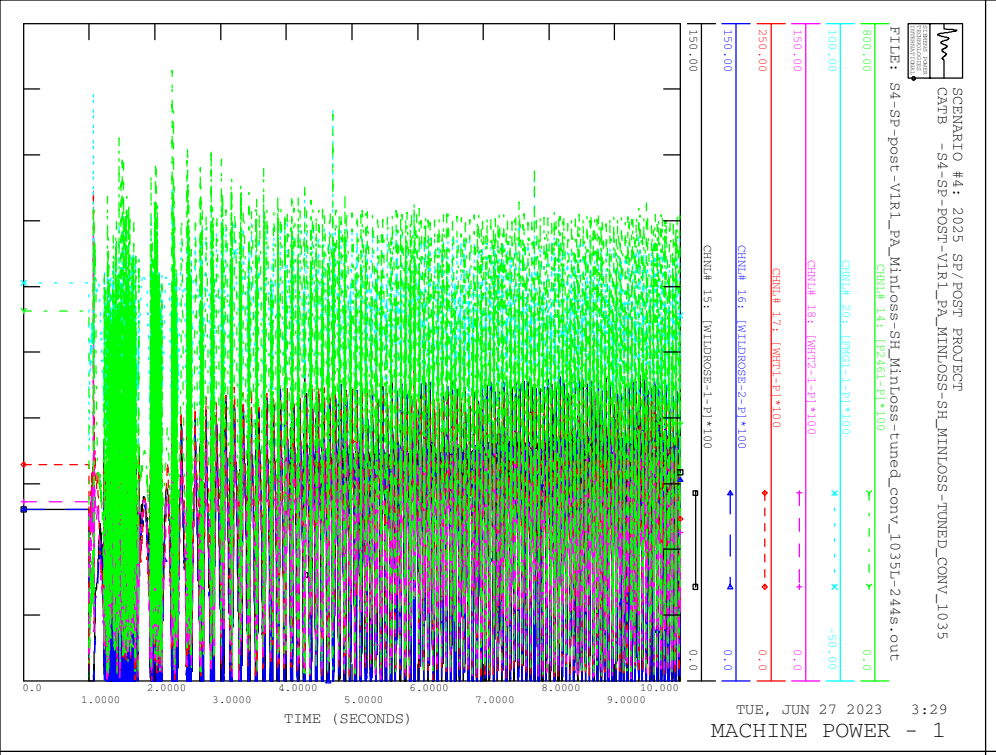

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE VAR - 2

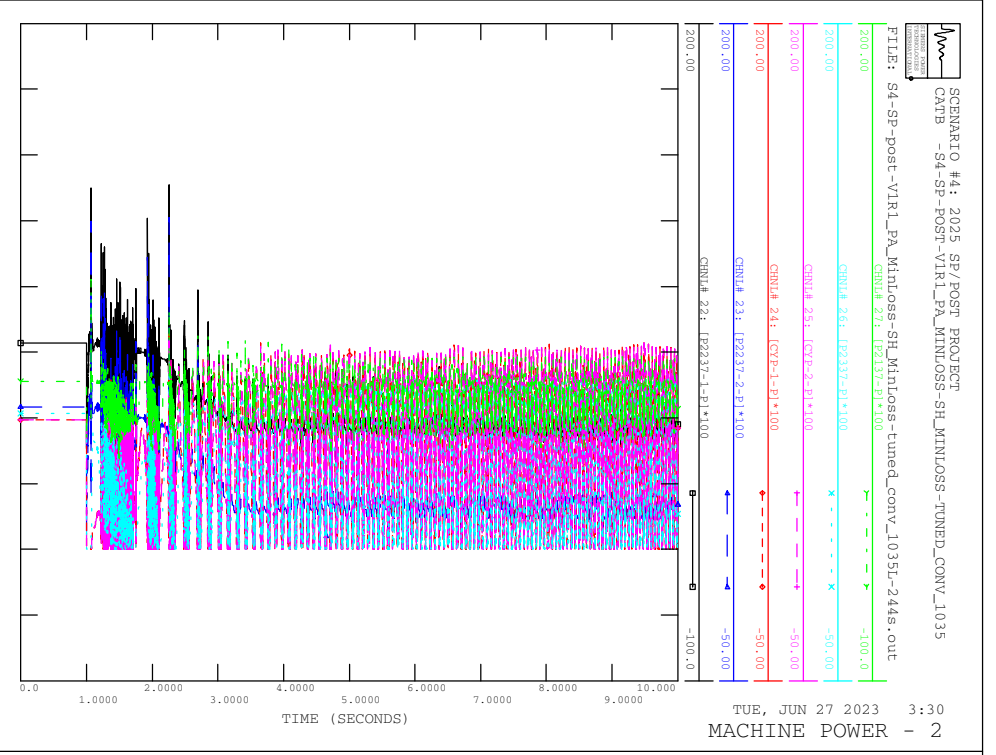

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLE-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 1

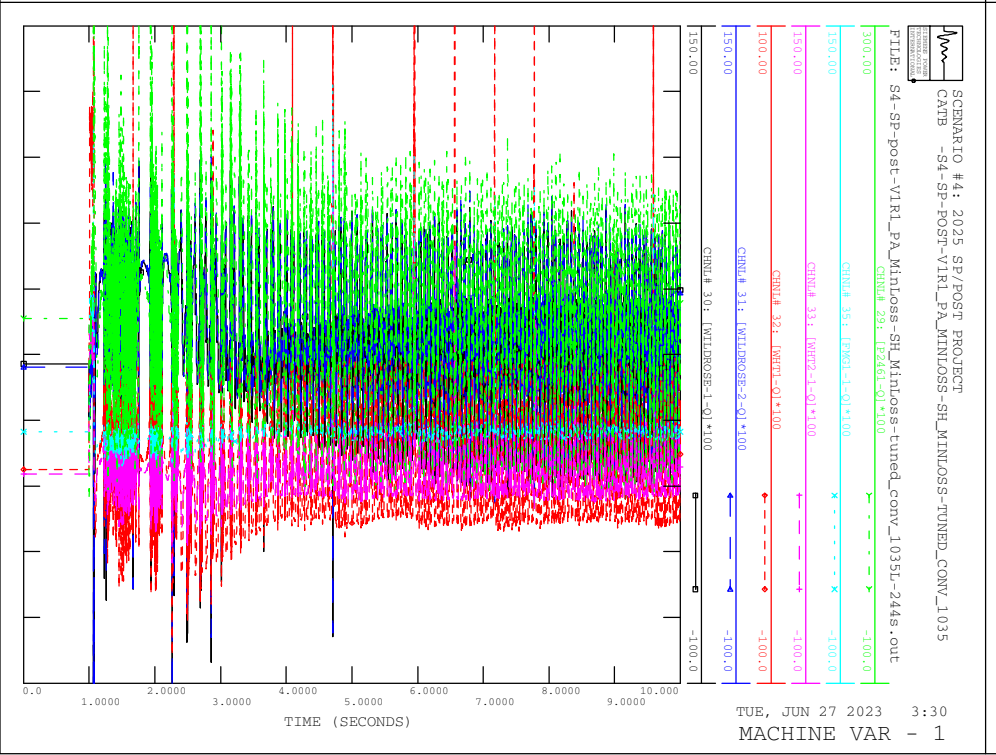

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
BUS VOLTAGE - 2

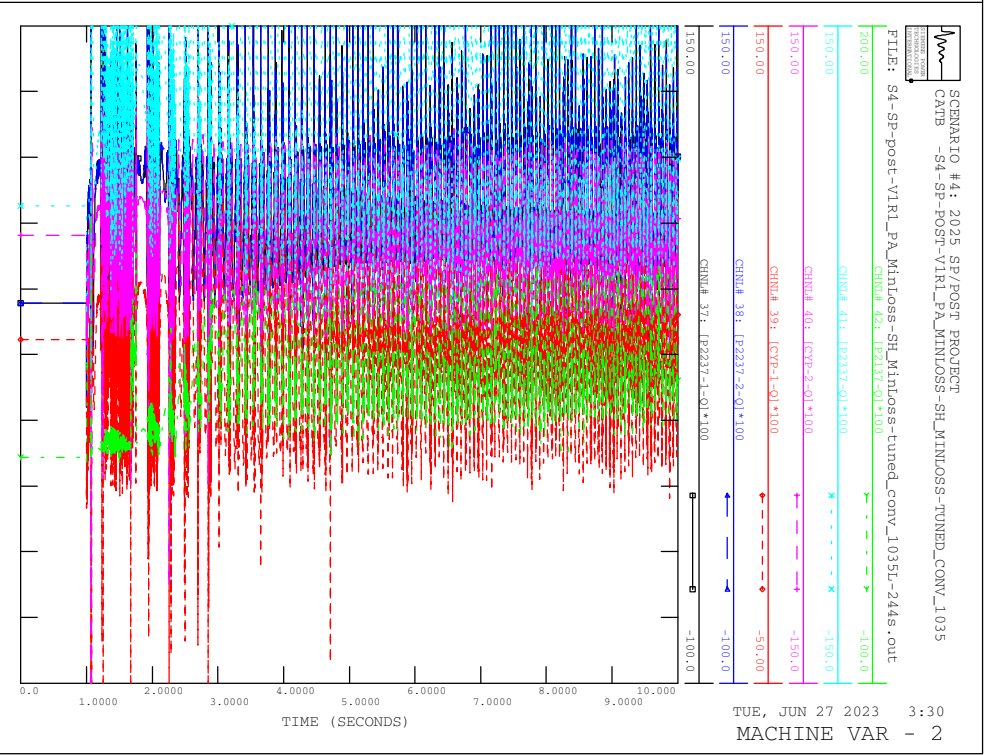

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 60: [1035L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1086L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE POWER - 1

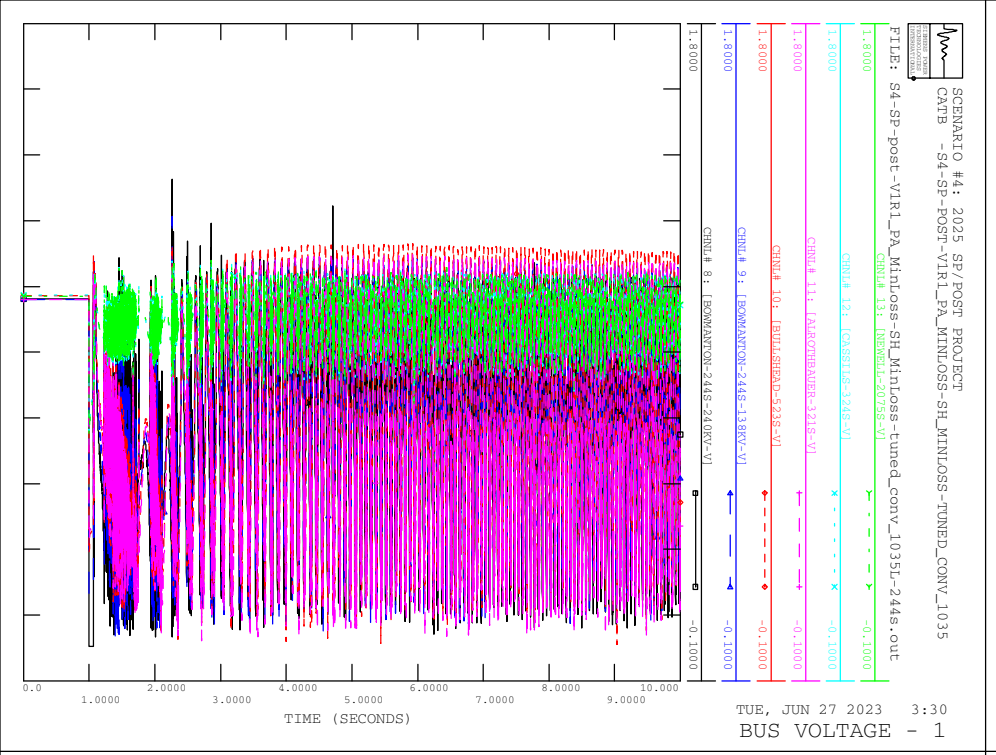

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:29
LINE VAR - 1

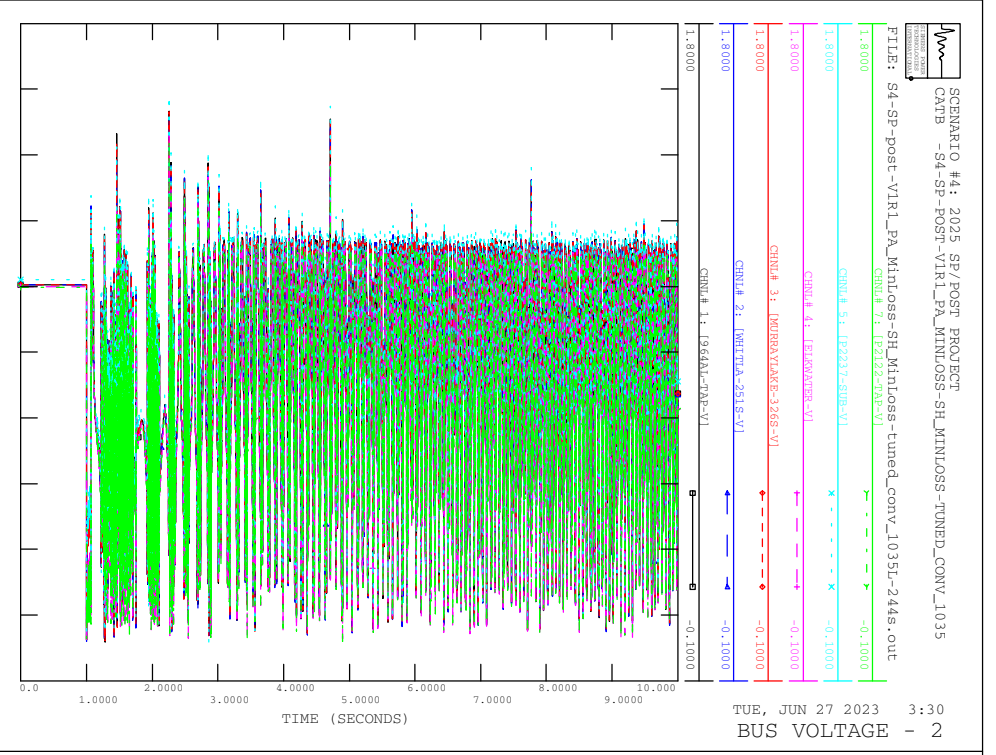

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:29
MACHINE POWER - 1

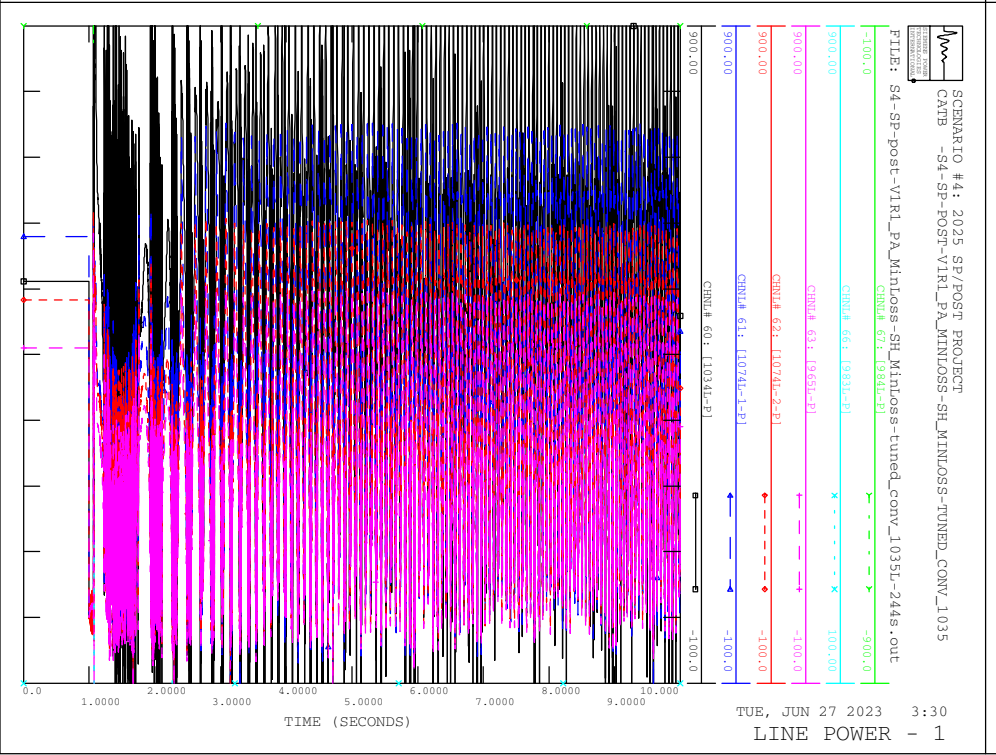

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 2

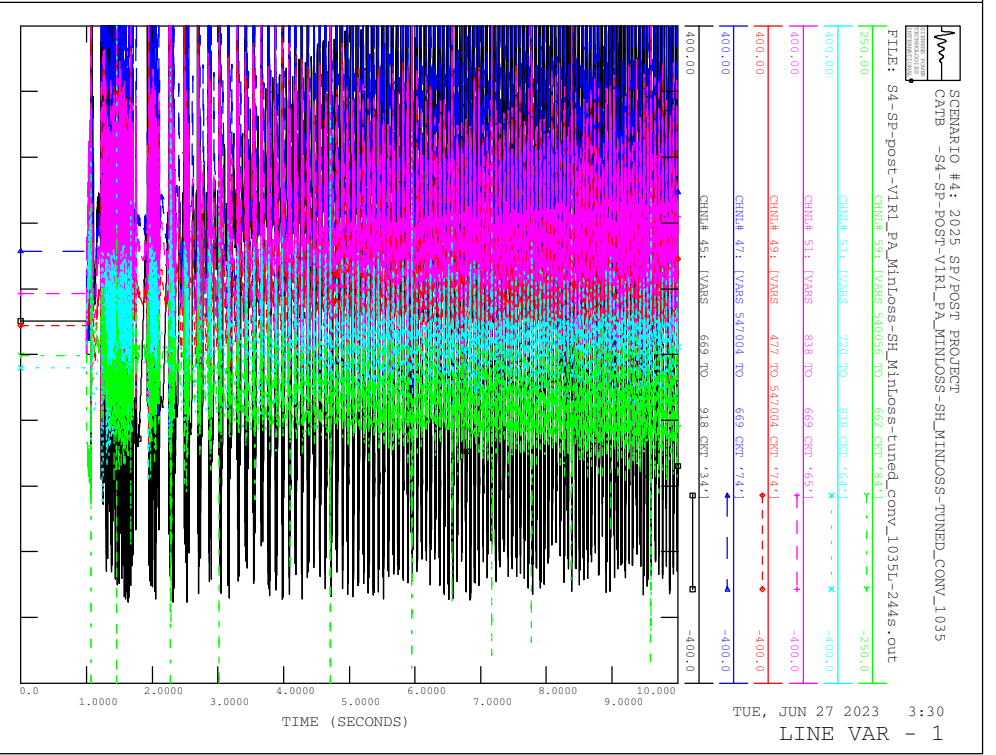

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 1

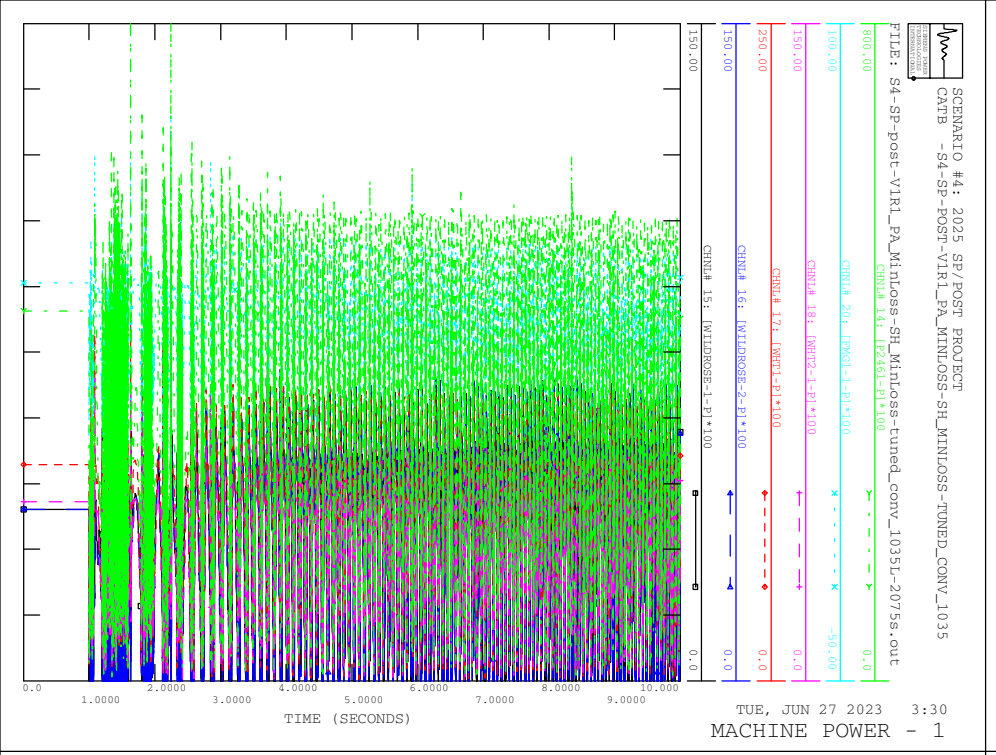

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 2

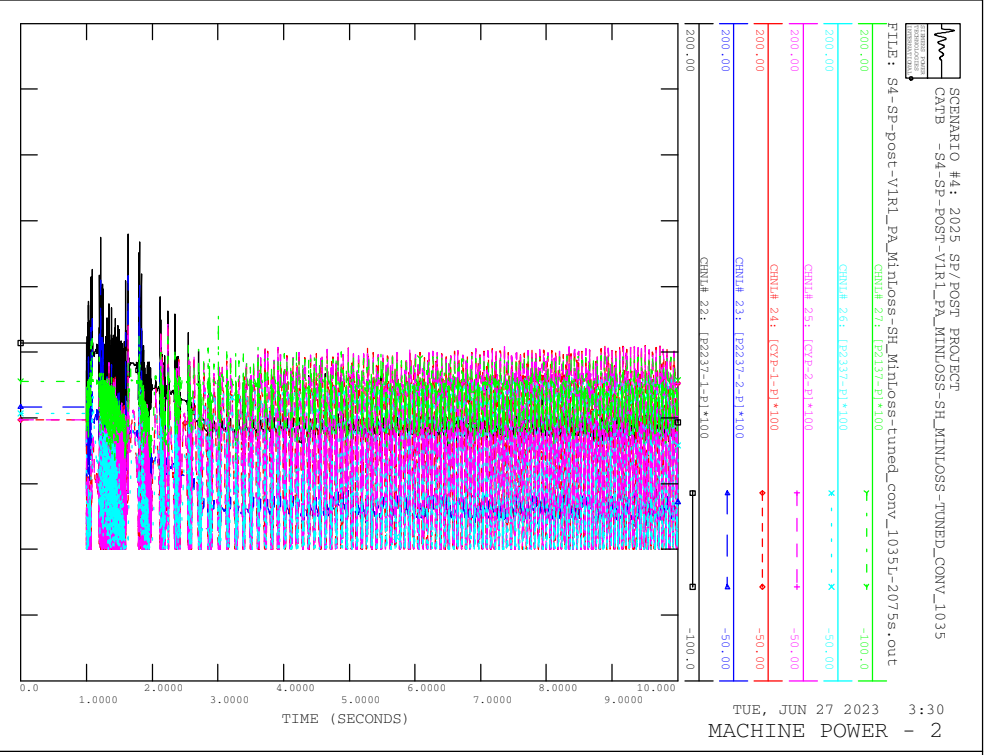

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ALROTHBAUER-321S-V]
CHNL# 12: [CASSIS-324S-V]
CHNL# 13: [NEWGLE-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 1

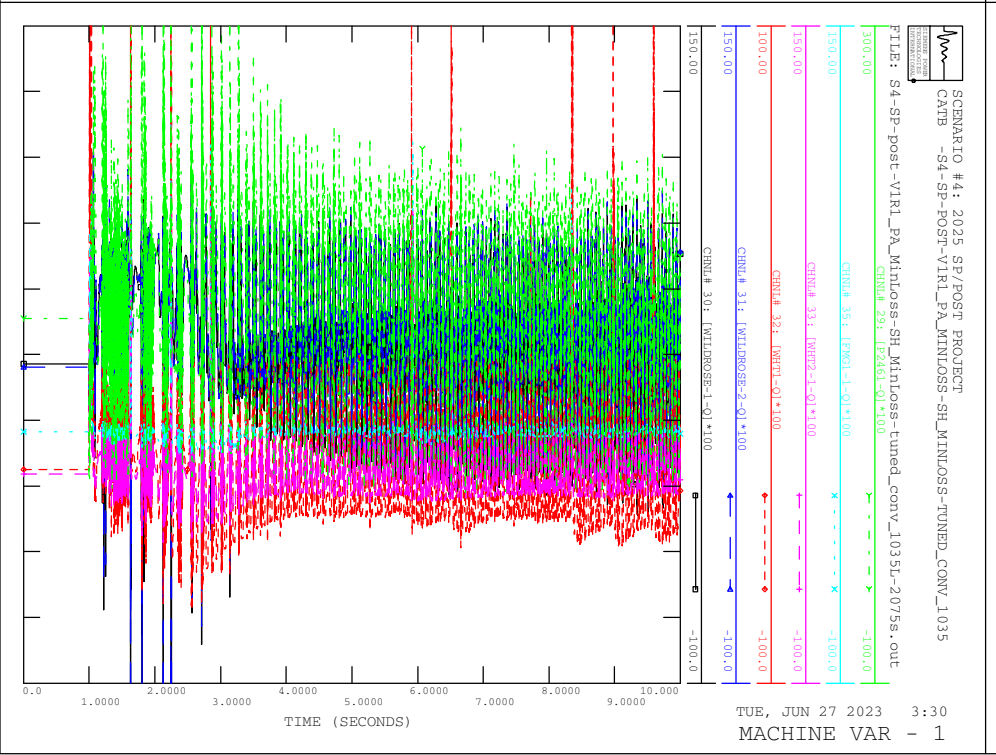

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 2

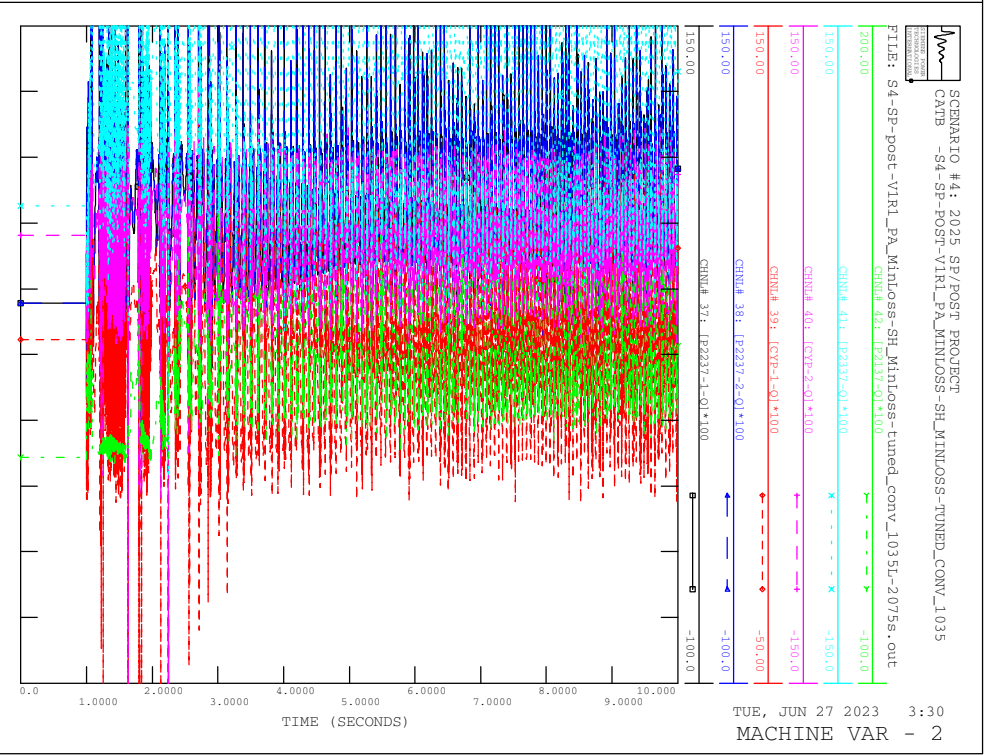

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1086L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE POWER - 1

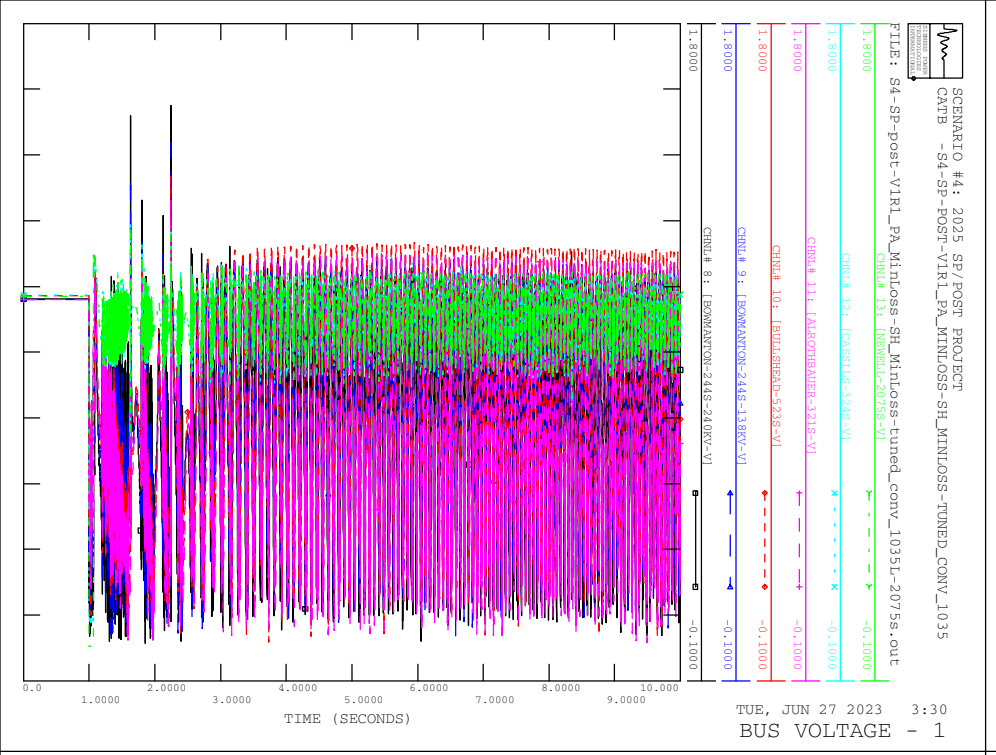

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE VAR - 1

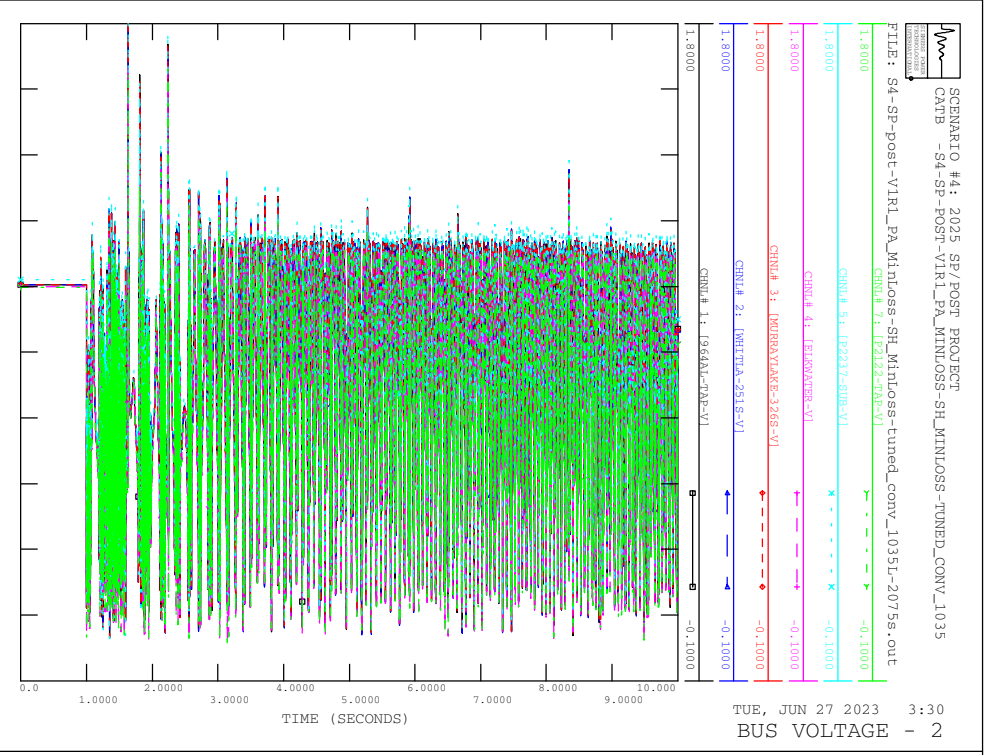

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMGI-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 1

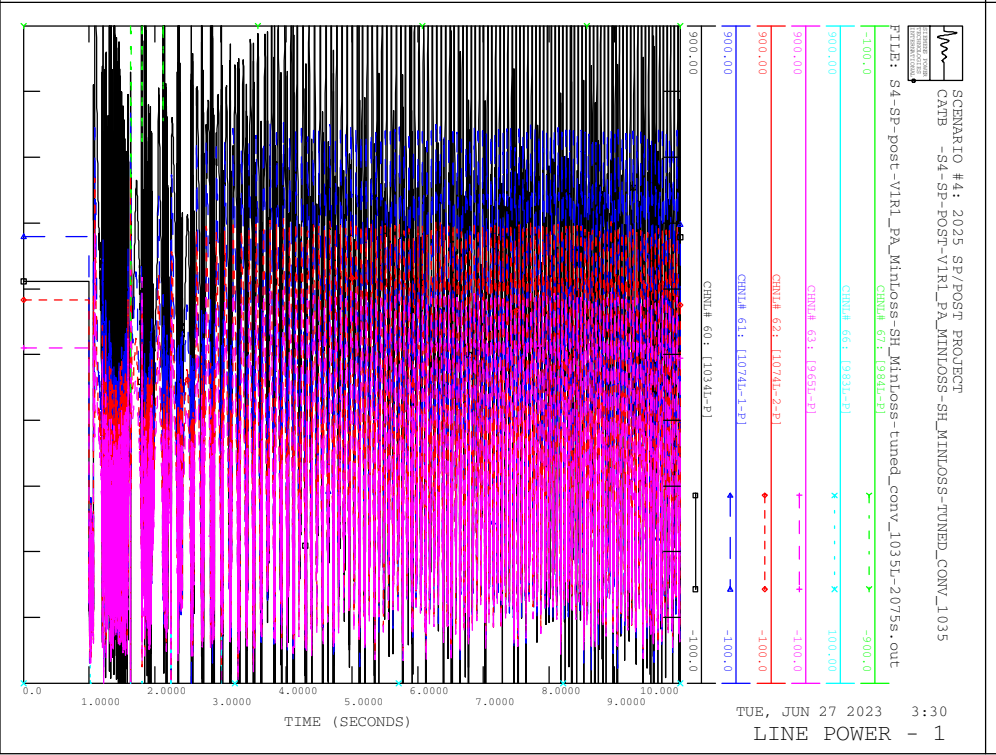

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 2

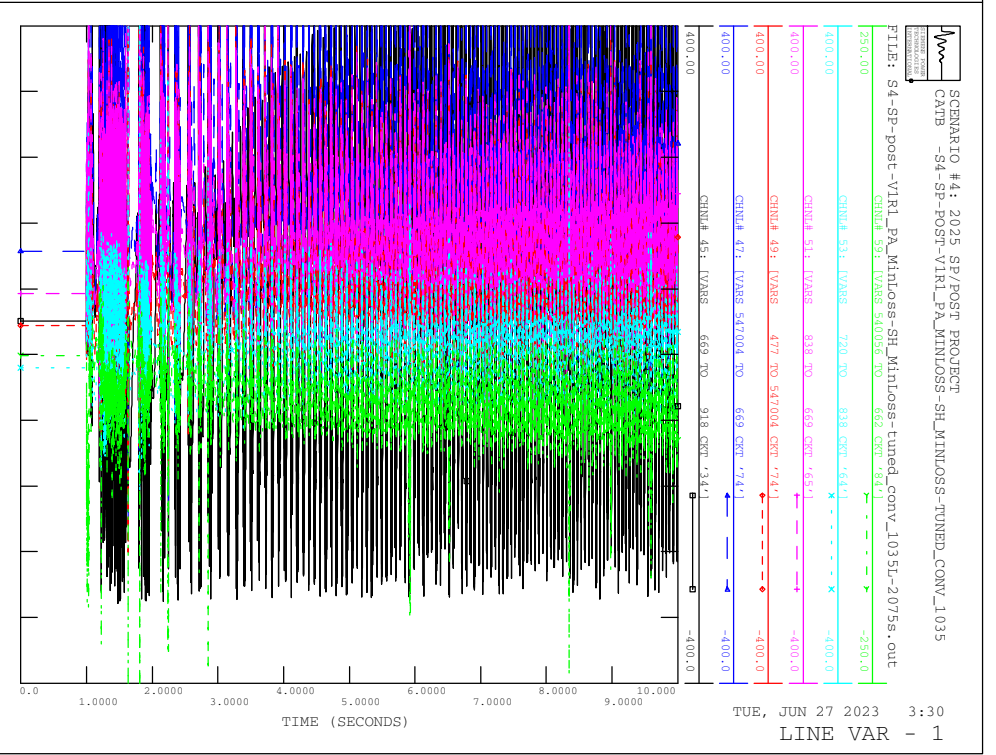

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMGI-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 1

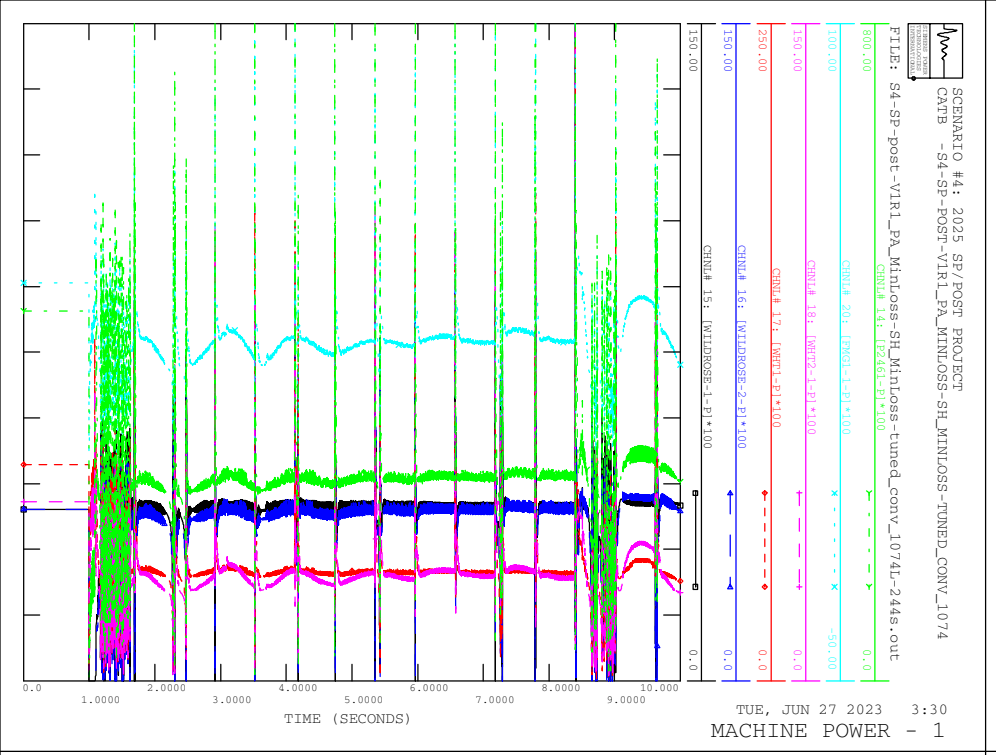

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 2

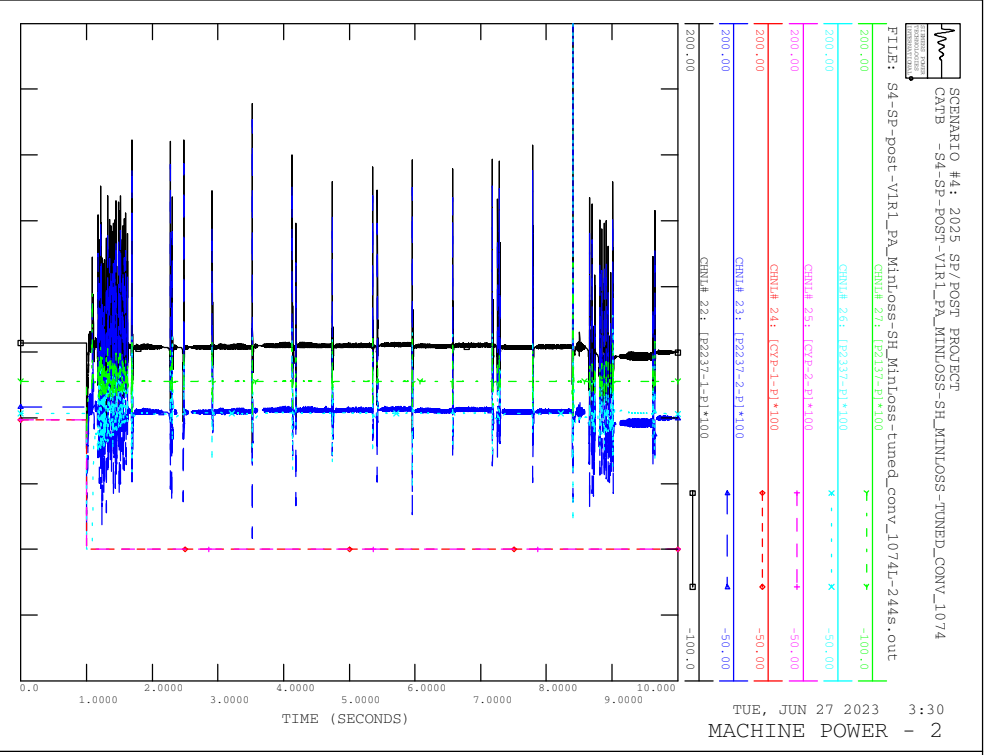

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 1

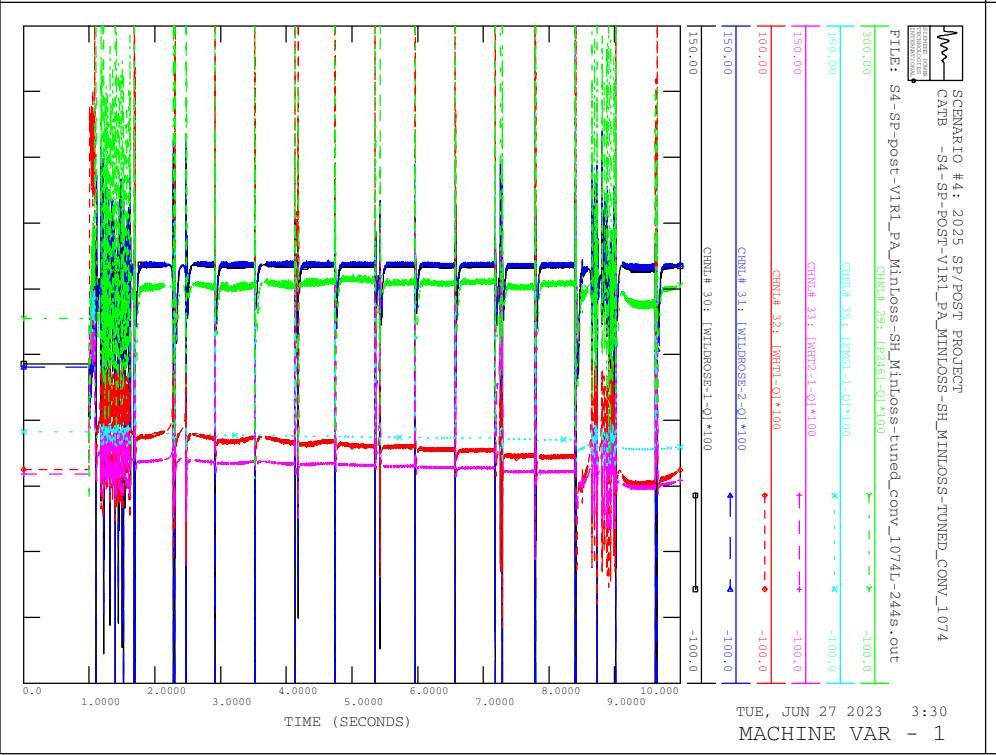

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 2

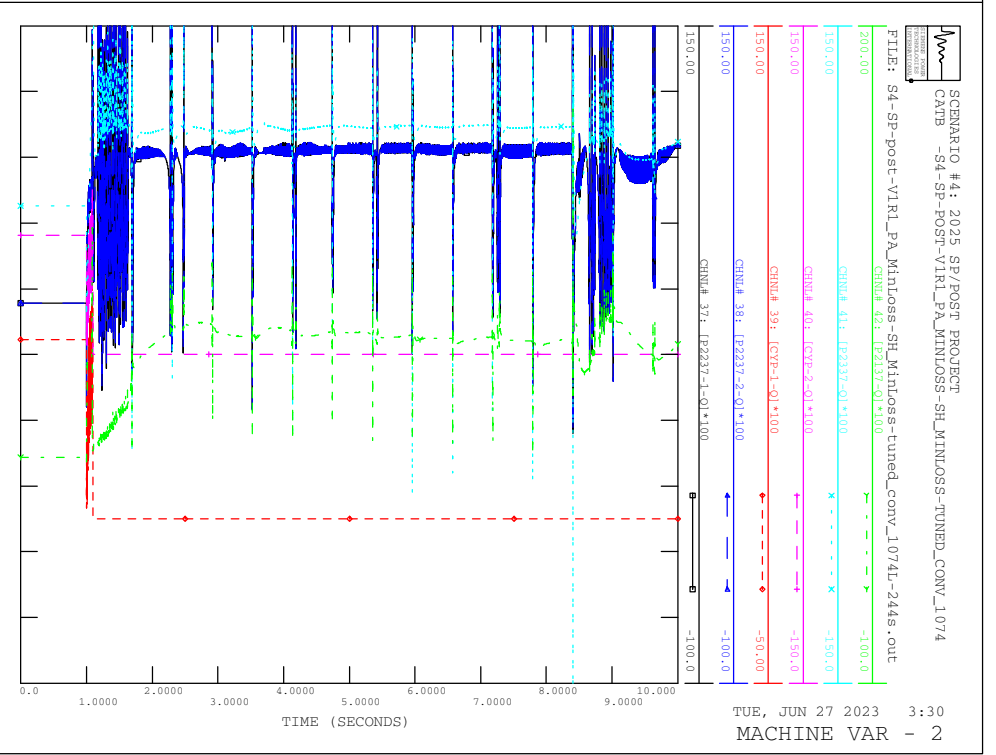

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE POWER - 1

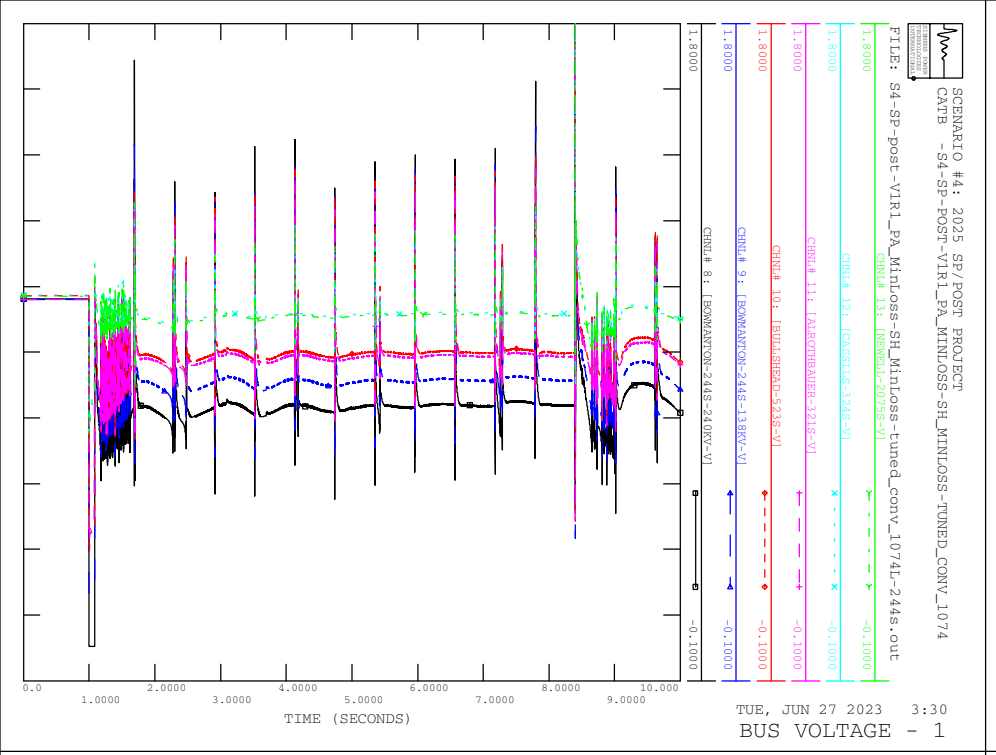

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE VAR - 1

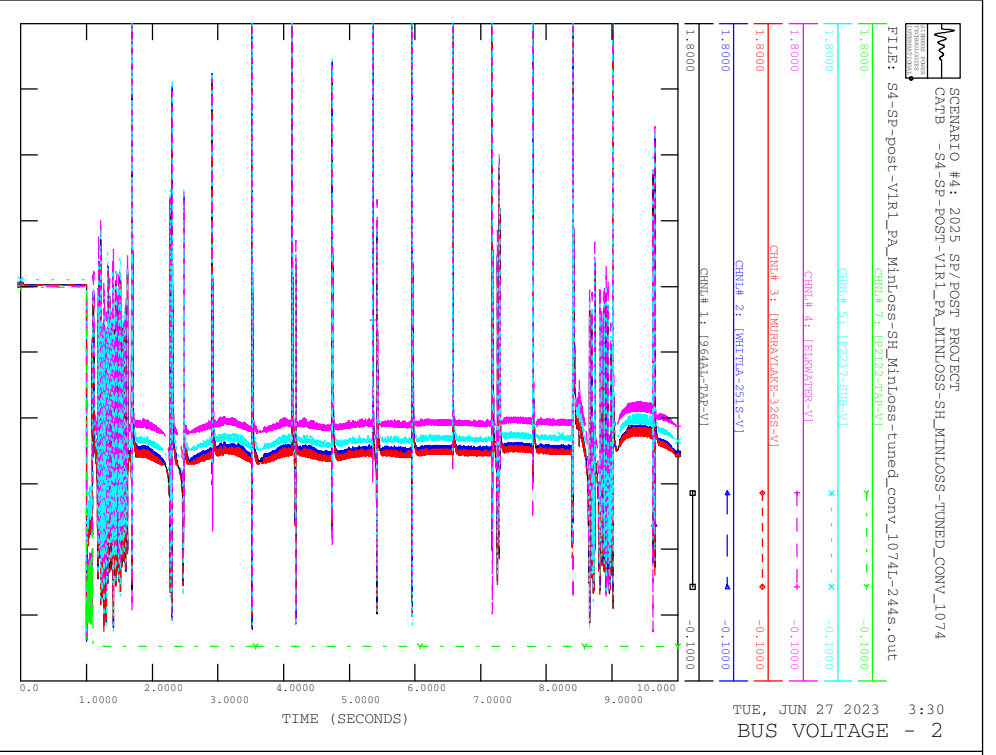

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHTP2-1-P]*100
CHNL# 20: [PWGS-1-P]*100
CHNL# 21: [P2461-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 1

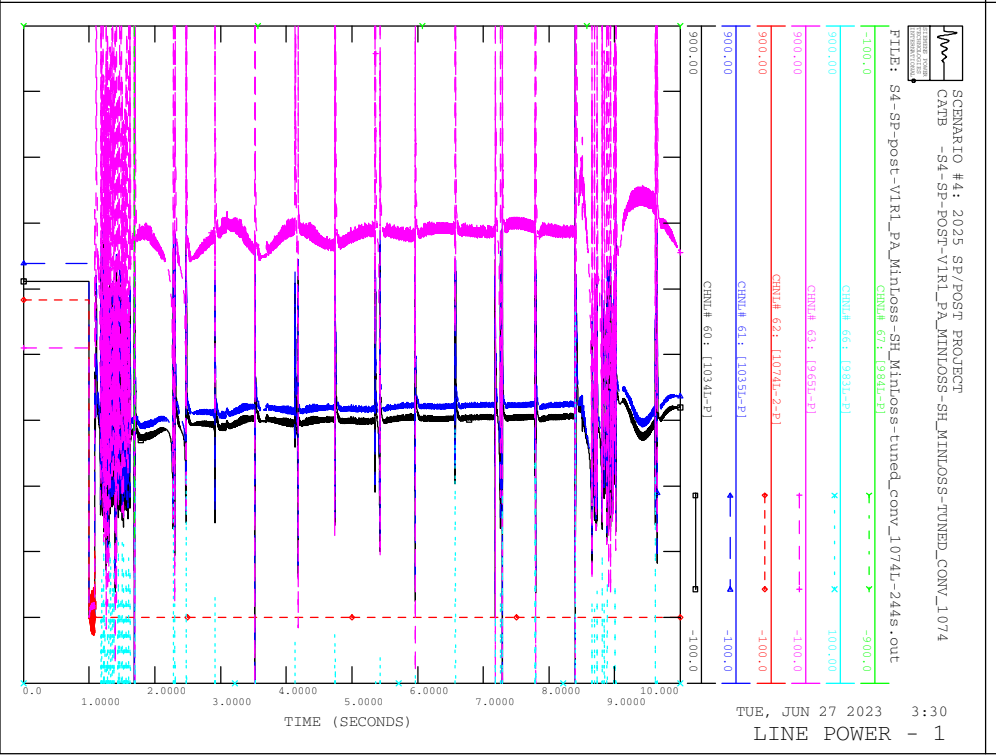

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 2

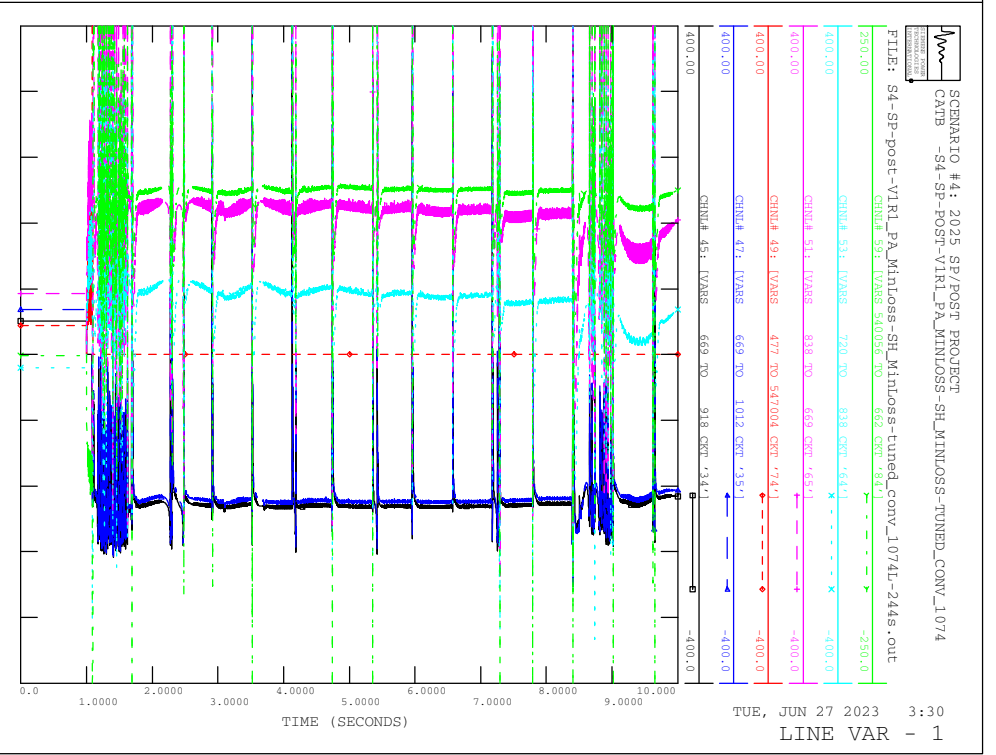

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHTP2-1-Q]*100
CHNL# 35: [PWGS-1-Q]*100
CHNL# 291: [P2461-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 1

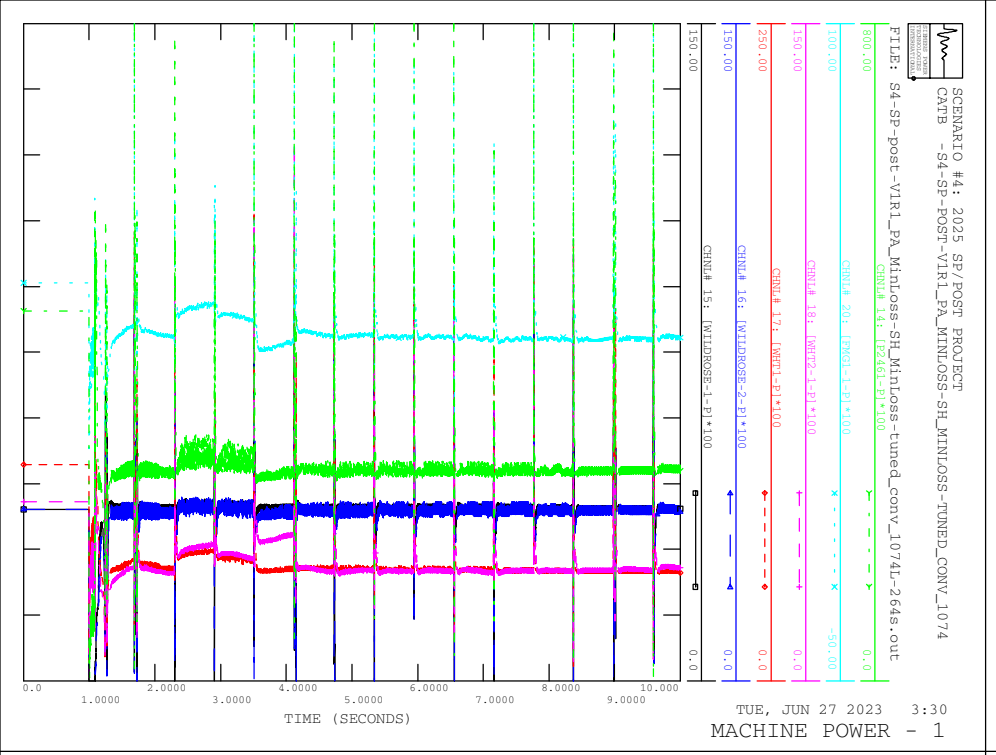

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 2

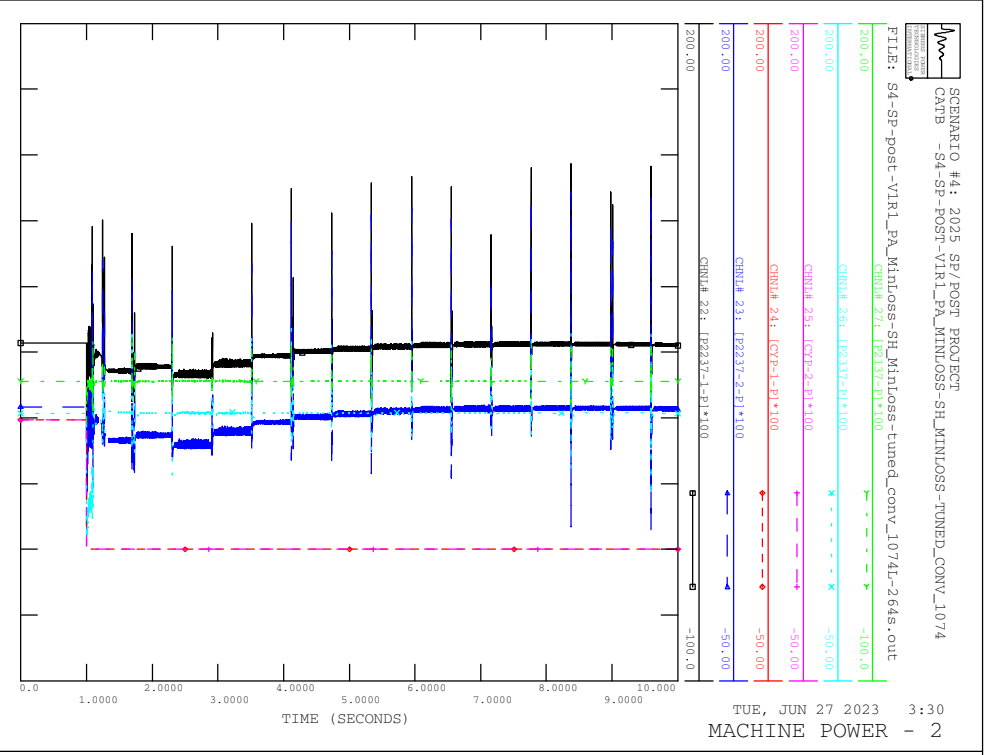

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [FAIROTHERWATER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLF-207SS-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 1

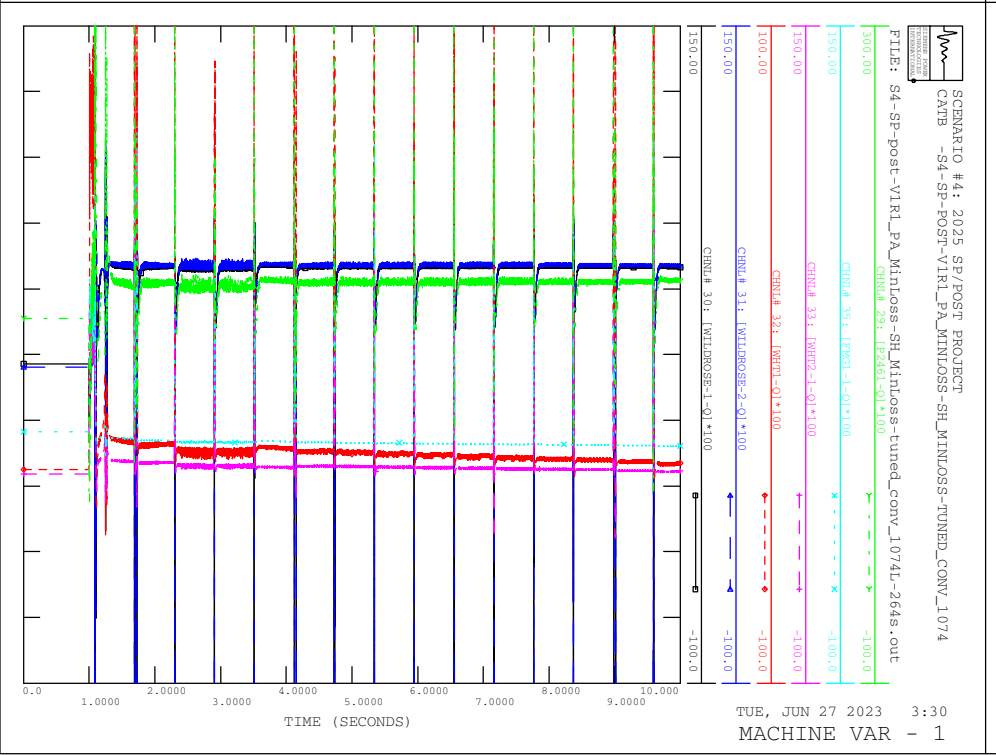

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELDWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 2

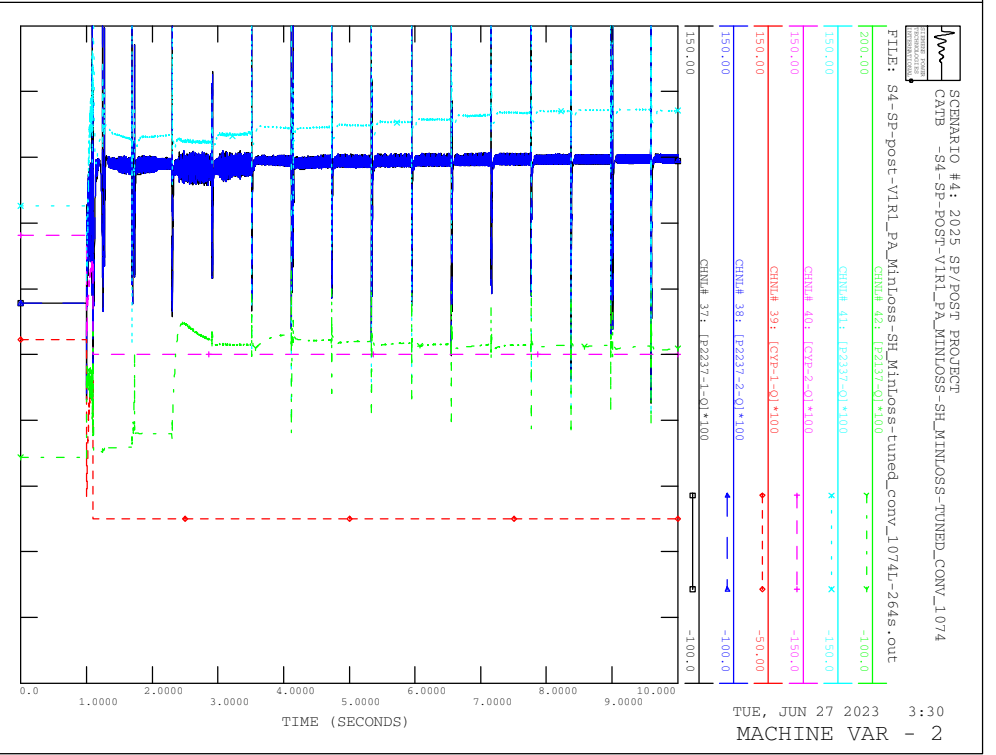

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE POWER - 1

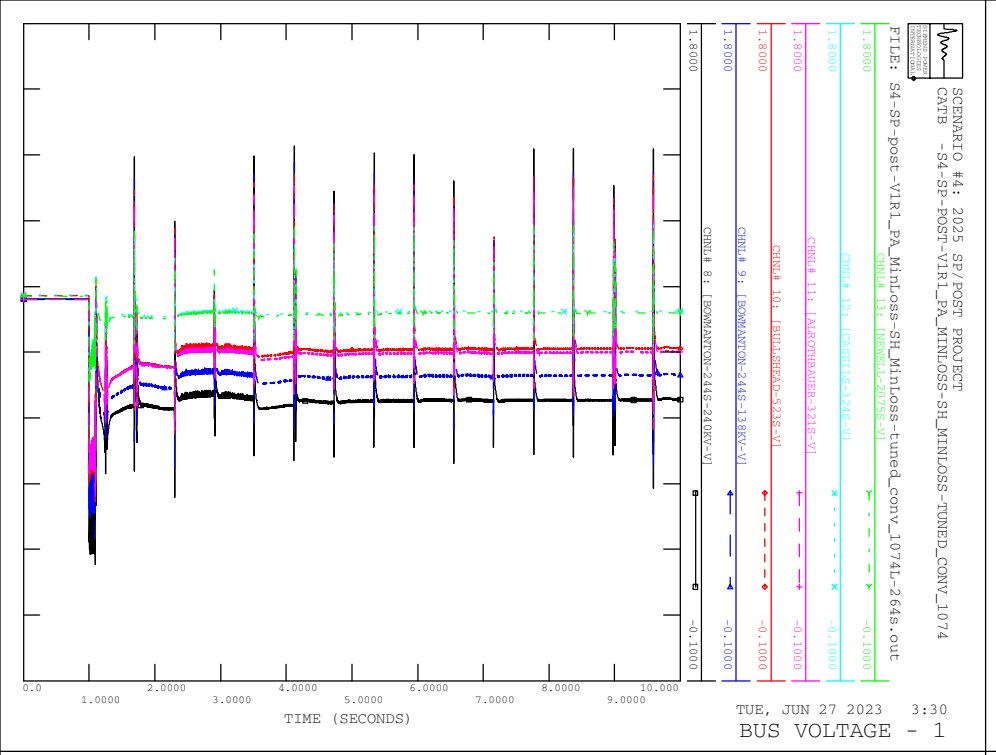

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE VAR - 1

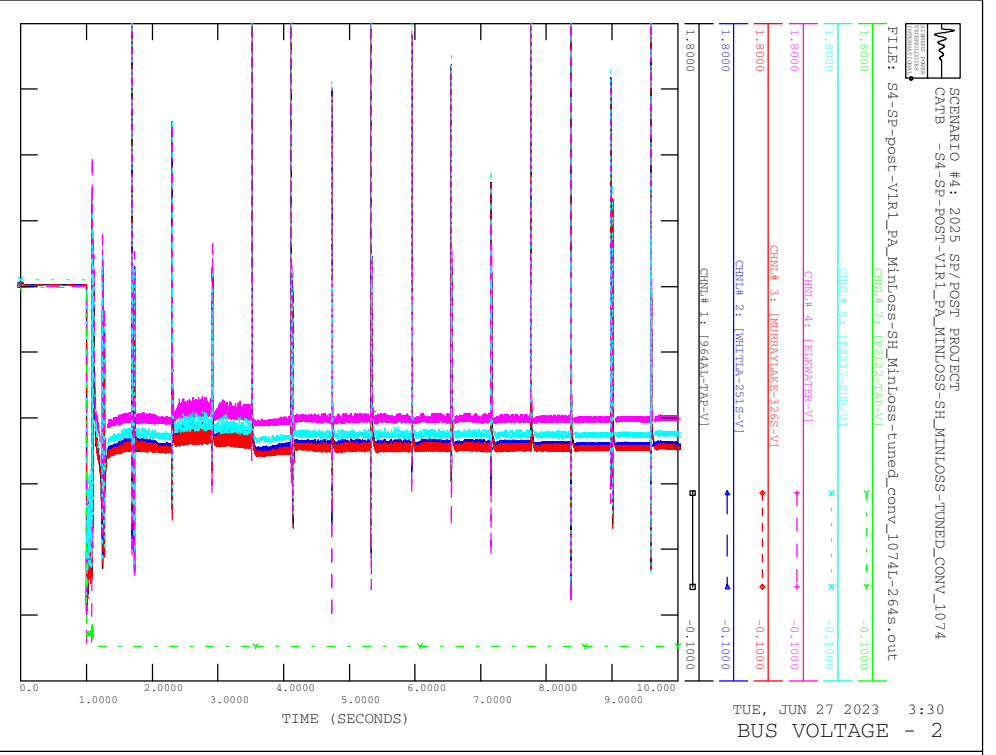

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 1

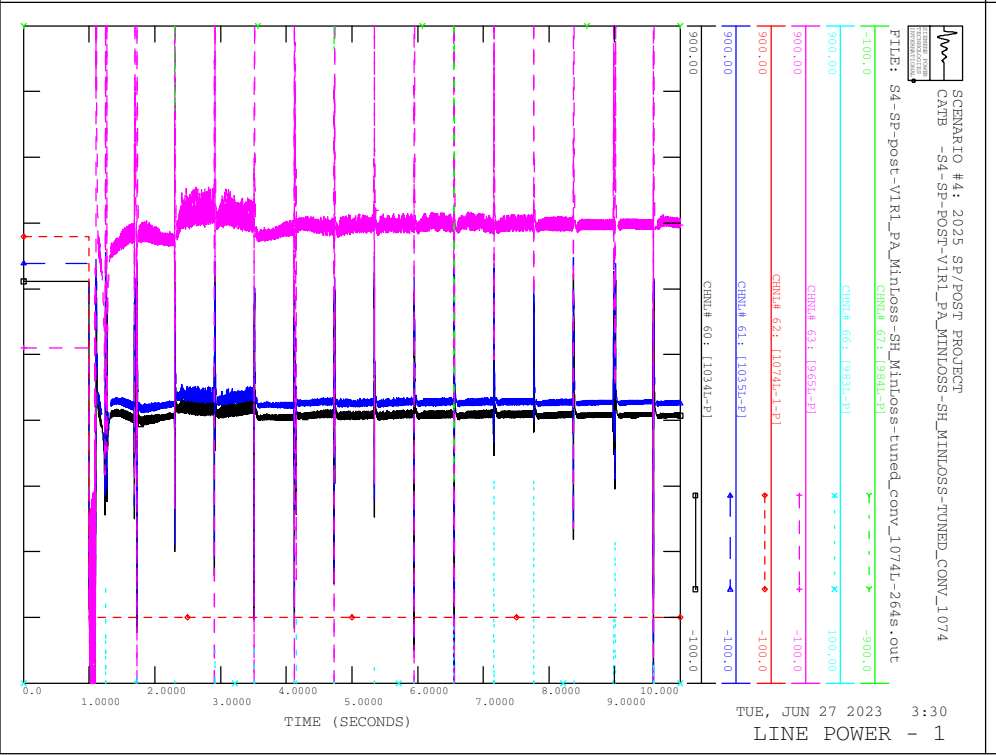

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE POWER - 2

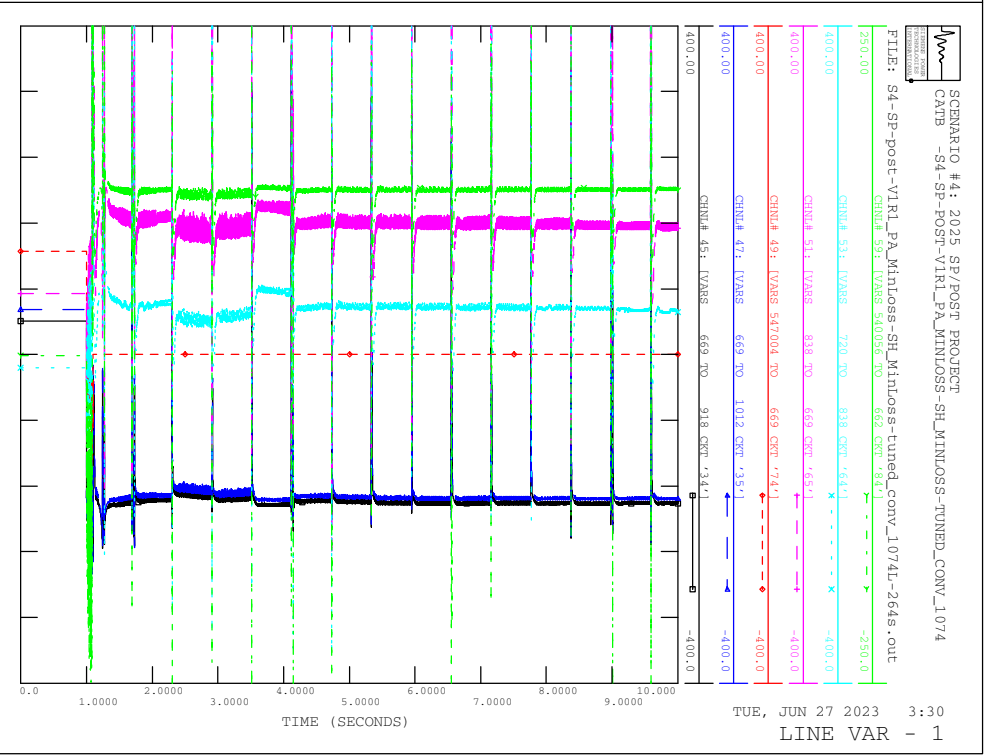

SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 1


SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
TIME (SECONDS)
TUE, JUN 27 2023 3:30
MACHINE VAR - 2


SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHRAHER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLE-2075S-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 1


SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
BUS VOLTAGE - 2


SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE POWER - 1


SCENARIO #4: 2025 SP/POST PROJECT
CATB -S4-SP-POST-VIR1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-VIR1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
TUE, JUN 27 2023 3:30
LINE VAR - 1

Attachment A5
Dynamic Data and Assumptions

Study Area load representation assumed for the transient studies is shown in Table A5-1

Table A5-1: Transient Stability Analysis Load Representation

Planning Areas	% of load specified as Large Motors	% of load specified as Small Motors	The Remainder of the Load (excluding Motor loads)	
			Active Power	Reactive Power
			Constant Current	Constant Impedance
Areas in South regions	*40%*	*30%*	*100%*	*100%*
Areas in other regions	*10%*	*10%*	*100%*	*100%*

Table A5-2: Generator Dynamic

Generator Dynamic Data (REGCA1 model)											
Tg	**Rrpwr**	**Brkpt**	**Zerox**	**Lvpl1**	**Volim**	**Lvpnt1**	**Lvpnt0**	**Lolin**	**Tfltr**	**Khv**	**Iqrmax**
0.0200	10.000	0.9000	0.5000	1.1000	1.1000	0.9000	0.0000	-1.0000	0.0100	0.0000	99.0000
Iqrmin	**Accel**										
-99.0000	1.0000										
LVPL											
0											

Table A5-3: Electrical Dynamic Data

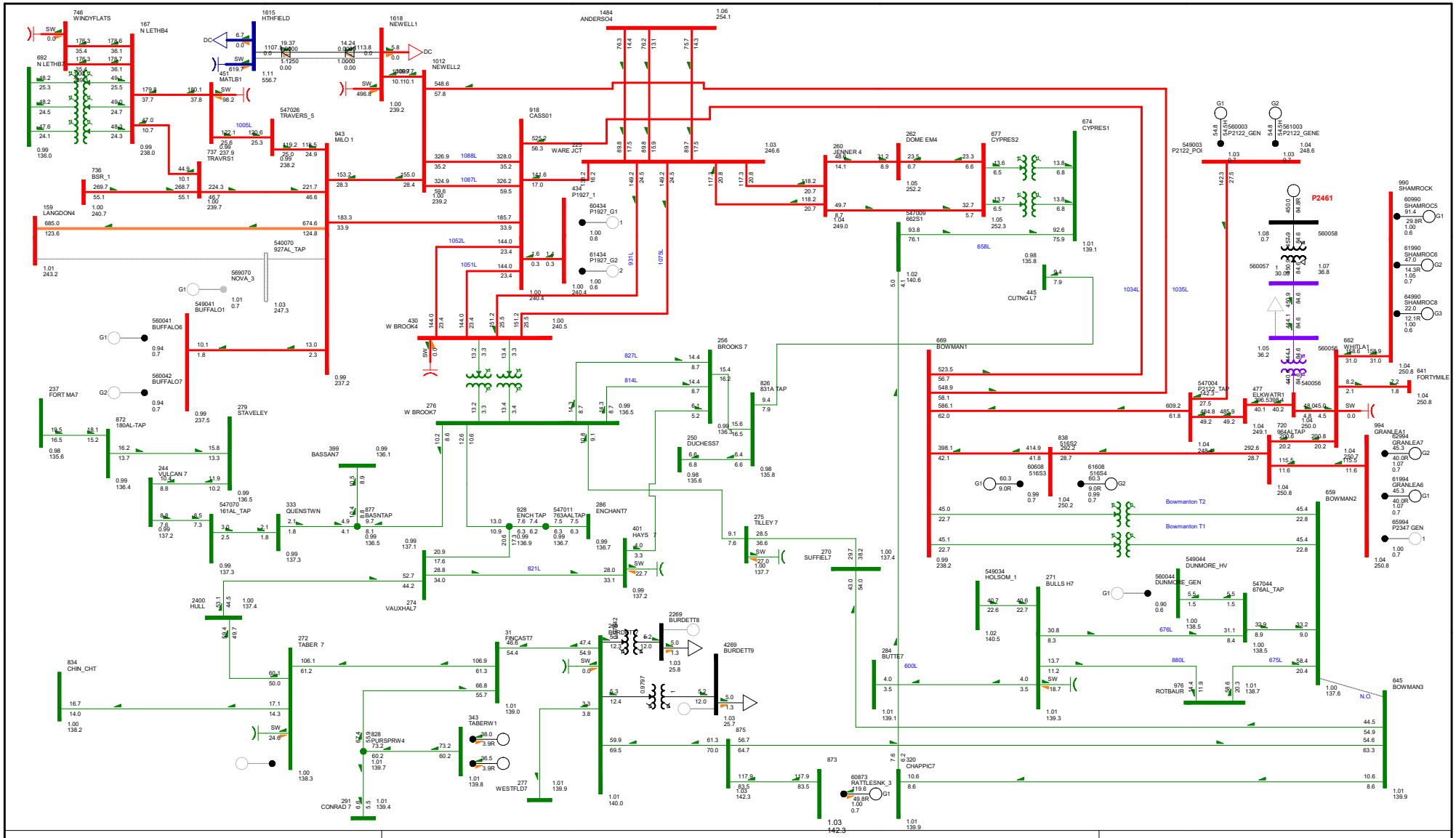
Electrical Dynamic Data (REECA1 model)											
Vdip	**Vup**	**Trv**	**Dbd1**	**Dbd2**	**Kqv**	**Lqhl**	**Lqll**	**Vref0**	**Lqfrz**	**Thld**	**Thld2**
0.9000	1.1000	0.0100	-0.1000	0.1000	1.0000	1.0000	-1.0000	1.0000	0.0000	0.0000	0.0000
Tp	**QMax**	**QMin**	**VMAX**	**VMIN**	**Kqp**	**Kqi**	**Kvp**	**Kvi**	**Vbias**	**Tiq**	**dPmax**
0.0100	0.6000	-0.6000	1.1000	0.9000	0.3000	5.0000	0.5000	0.0000	0.0000	0.0100	99.0000
dPmin	**PMAX**	**PMIN**	**Imax**	**Tpord**	**Vq1**	**Iq1**	**Vq2**	**Iq2**	**Vq3**	**Iq3**	**Vq4**
-99.0000	1.0000	0.0000	1.0000	0.0100	0.0000	0.0100	0.4900	0.0100	0.5000	1.0000	1.2000
Iq4	**Vp1**	**Ip1**	**Vp2**	**Ip2**	**Vp3**	**Ip3**	**Vp4**	**Ip4**			
1.0000	0.0000	0.0100	0.4900	0.0100	0.5000	1.0000	1.2000	1.0000			
Input this as 0, For remote bus control use the plant controller model							**PFFLAG**	**VFLAG**	**QFLAG**	**PFLAG**	**PQFLAG**

Electrical Dynamic Data (REECA1 model)					
0	1	0	0	0	0

Table A5-4: Auxiliary Dynamic Data

Auxiliary Dynamic Data (REPCA1 model)											
Tfltr	**Kp**	**Ki**	**Tft**	**Tfv**	**Vfrz**	**Rc**	**Xc**	**Kc**	**Emax**	**Emin**	**Dbd1**
0.0500	0.5000	3.0000	0.0000	0.0500	0.9000	0.0000	0.0000	0.0000	0.0500	-0.0500	0.0000
Dbd2	**Qmax**	**Qmin**	**Kpg**	**Kig**	**Tp**	**Fdbd1**	**Fdbd2**	**Femax**	**Femin**	**Pmax**	**Pmin**
0.0000	0.6000	-0.6000	0.5000	0.2500	0.2500	-0.0006	0.0006	999.0000	-999.0000	1.0000	0.0000
Tg	**Ddn**	**Dup**									
0.5000	20.0000	20.0000									
Remote bus number	**Monitored branch FROM bus**		**Monitored branch TO bus**			**Monitored branch ID**			**VCFlag**	**RefFlag**	**Fflag**
560056	560057		560056			‘L1’			*0*	*1*	*0*

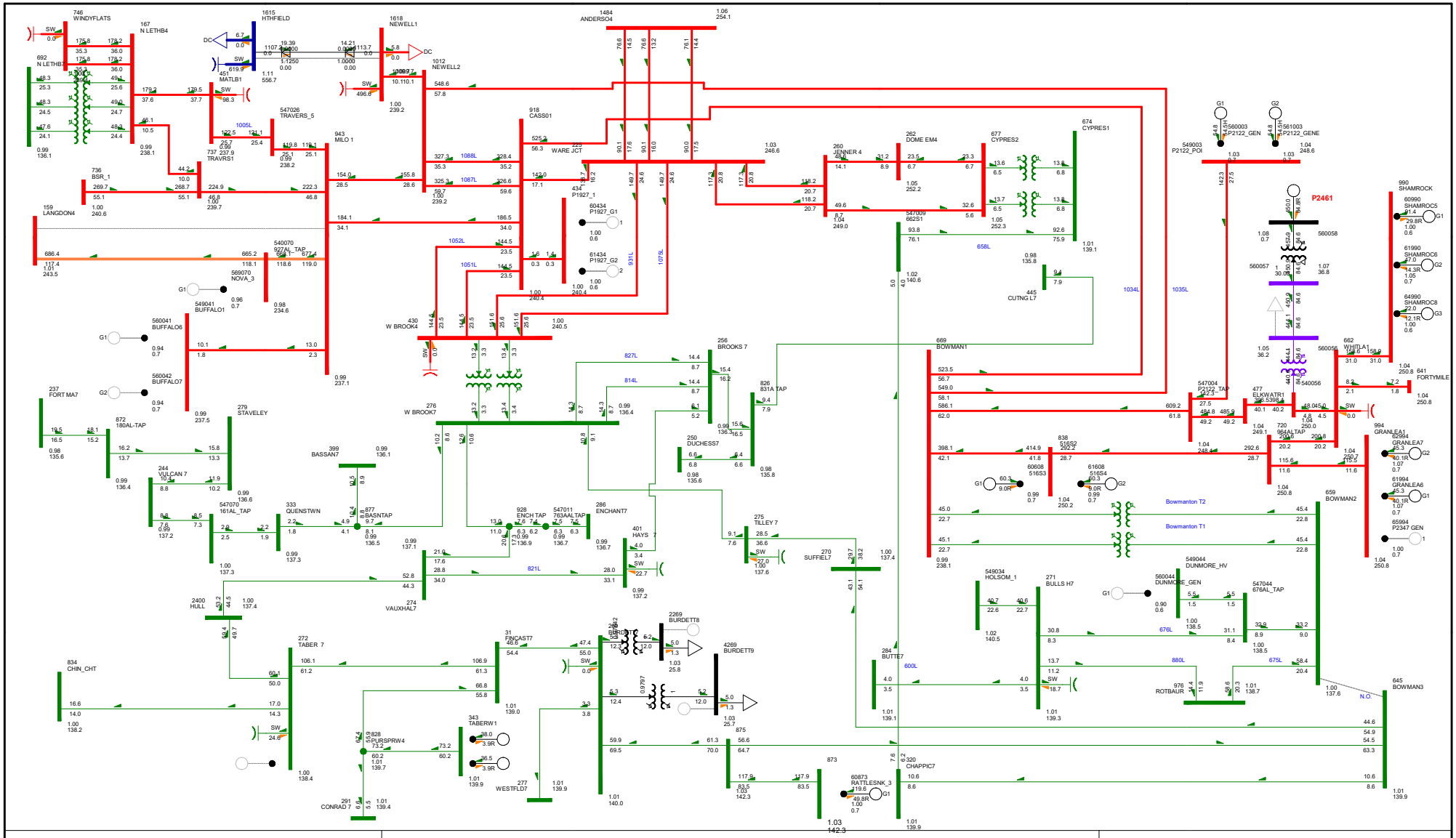
Attachment A6
Post-Mitigation Power Flow Diagrams



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FIGURE B-3-1: 2025-SCN3-SL-POST-POSTRAS.SAV
CATEGORY B - 927L (LANGDON 102S TO NOVA TAP/MILO 356S)
FRI, SEP 01 2023 20:15

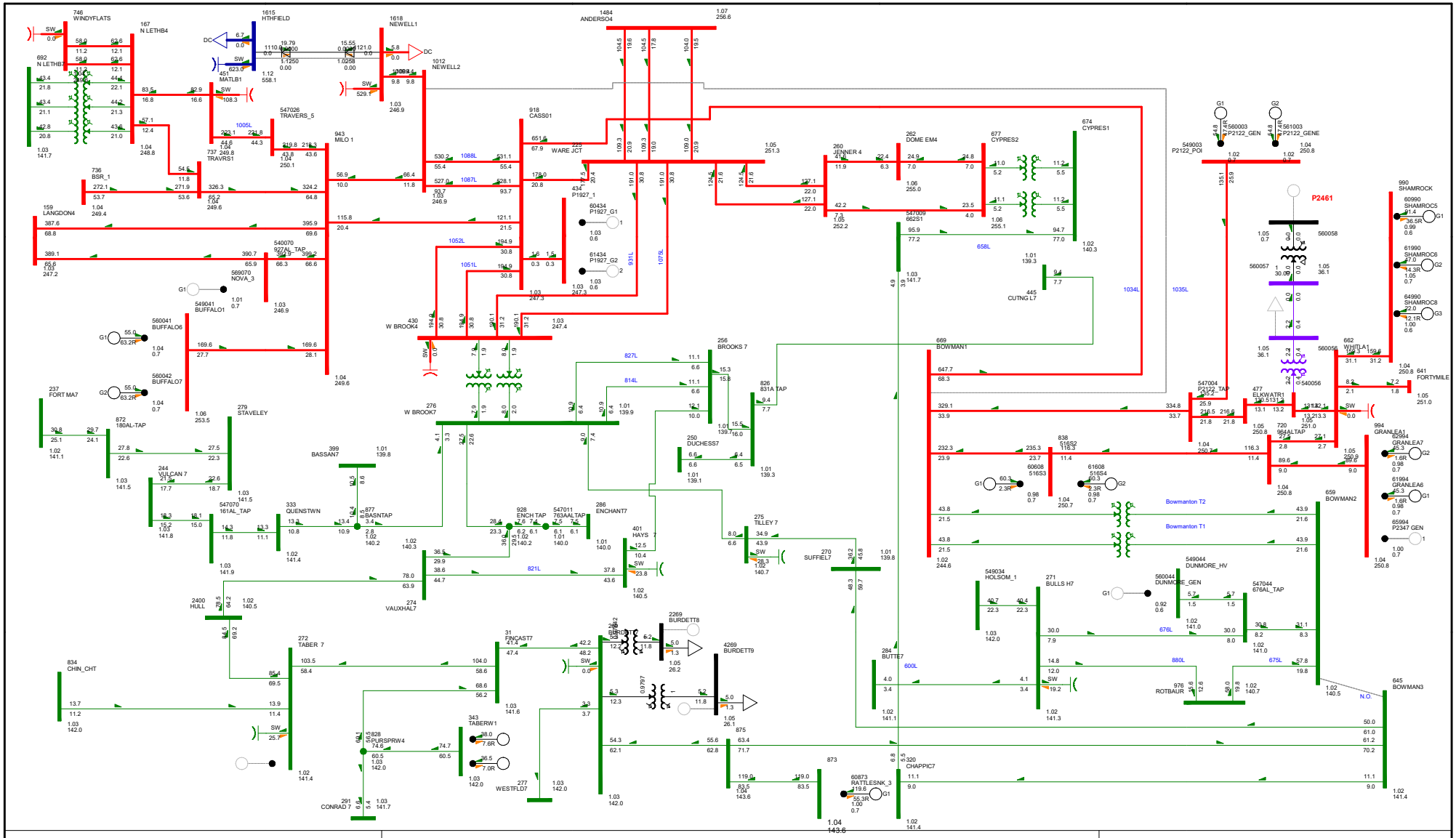
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-2: 2025-SCN3-SL-POST-POSTRAS.SAV
CATEGORY B - 924L (LANGDON 102S TO MILO 356S)
FRI, SEP 01 2023 20:17

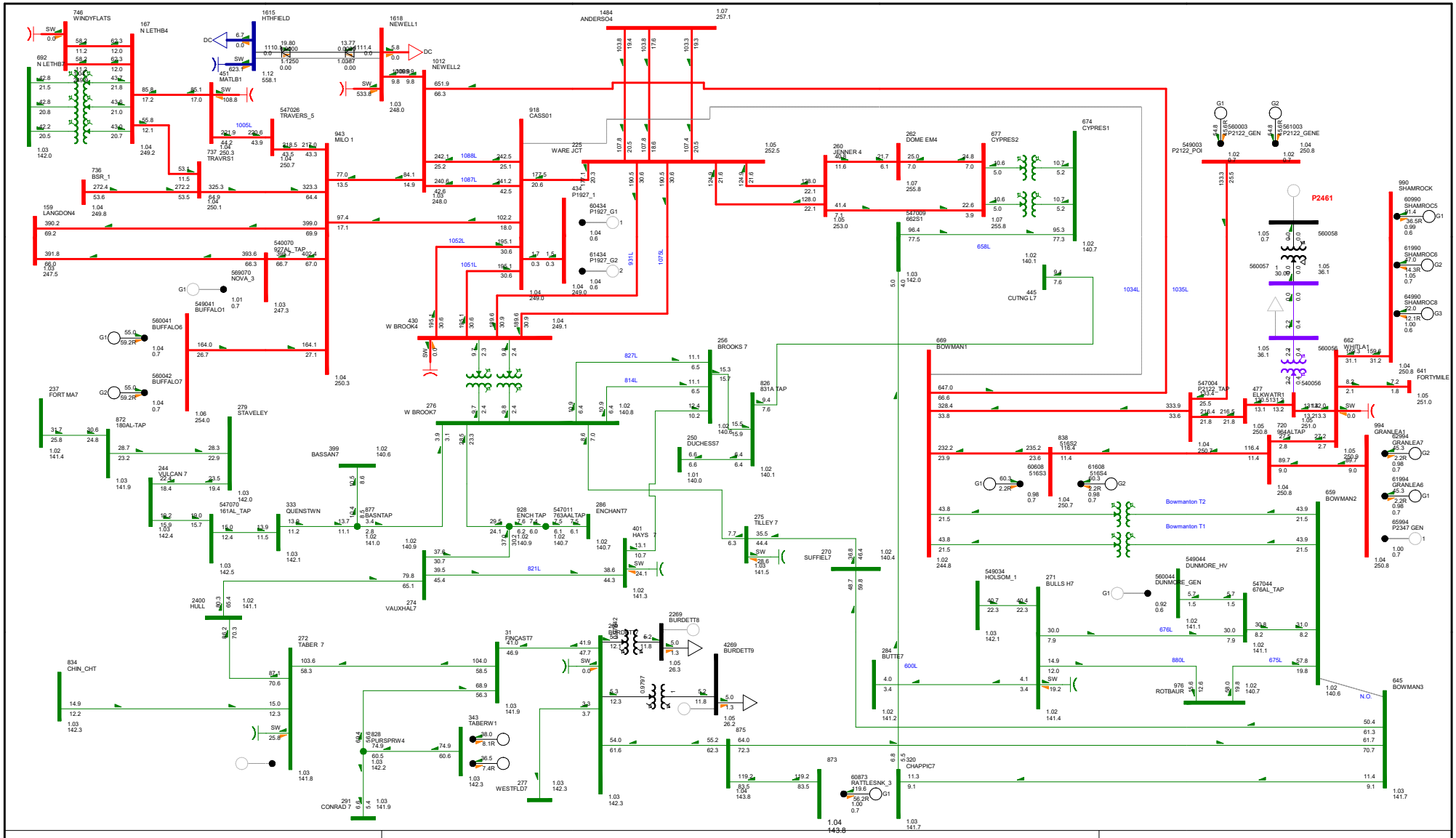
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-3: 2025-SCN3-SL-POST-POSTRAS.SAV
CATEGORY B - 1035L (BOWMANTON 244S TO NEWELL A2075S)
FRI, SEP 01 2023 0:53

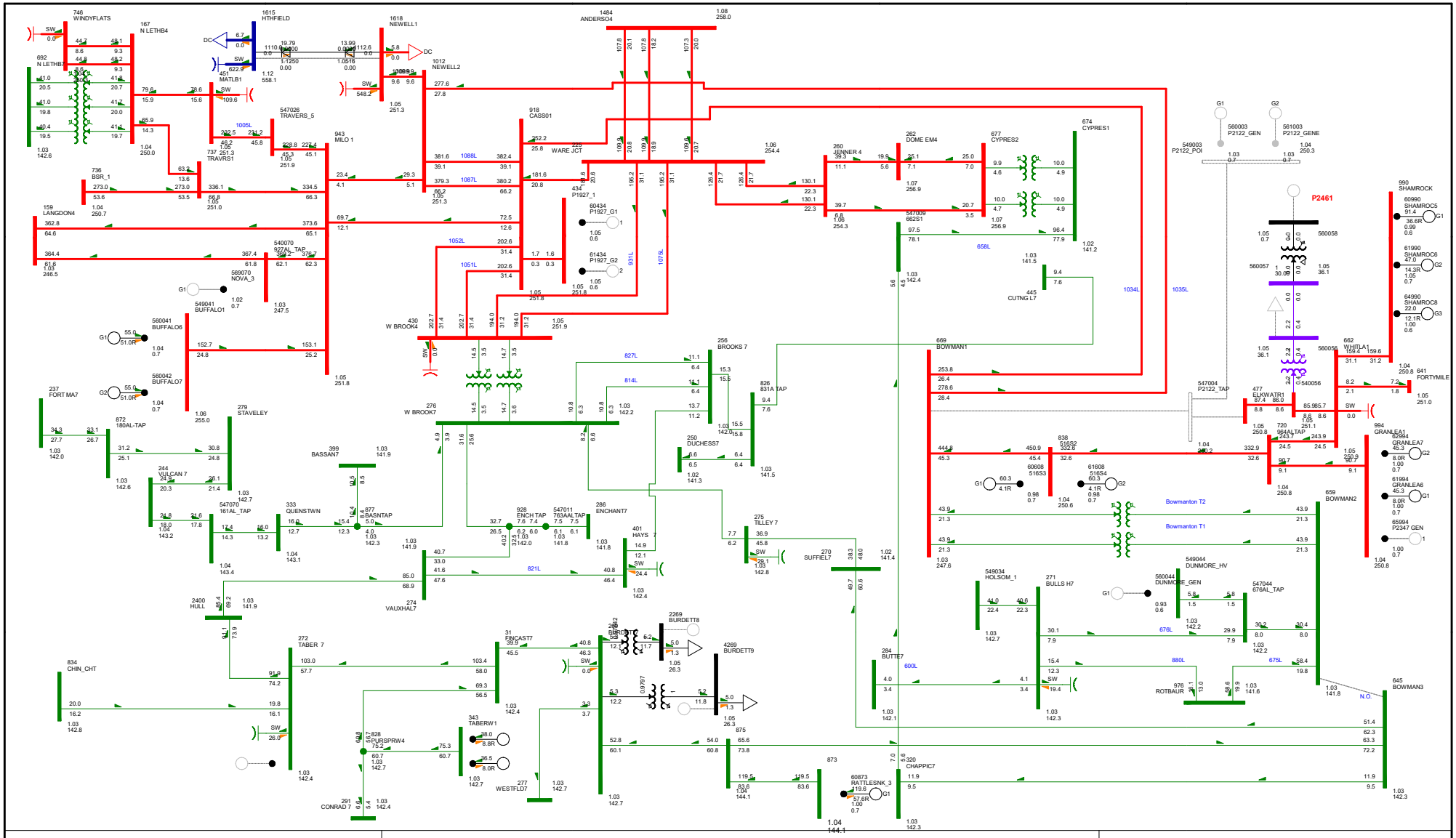
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-4: 2025-SCN3-SL-POST-POSTRAS.SAV
CATEGORY B - 1034L (CASSILS 324S TO BOWMANTON 244S)
FRI, SEP 01 2023 0:54

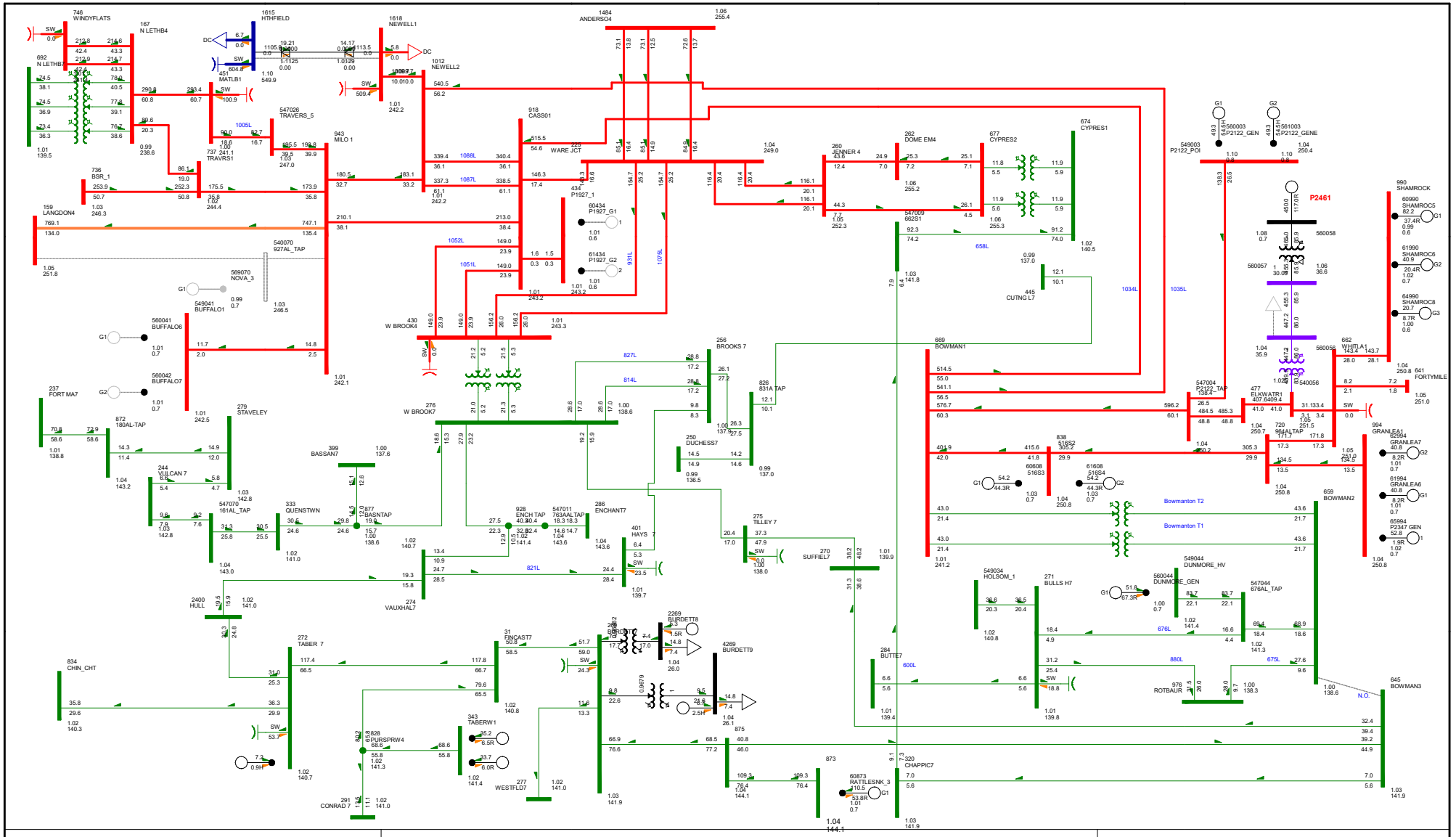
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



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FIGURE B-3-5: 2025-SCN3-SL-POST-POSTRAS.SAV
CATEGORY B - 1074L (BOWMANTON 244S TO P2122/ELKWATER 264S)
FRI, SEP 01 2023 0:57

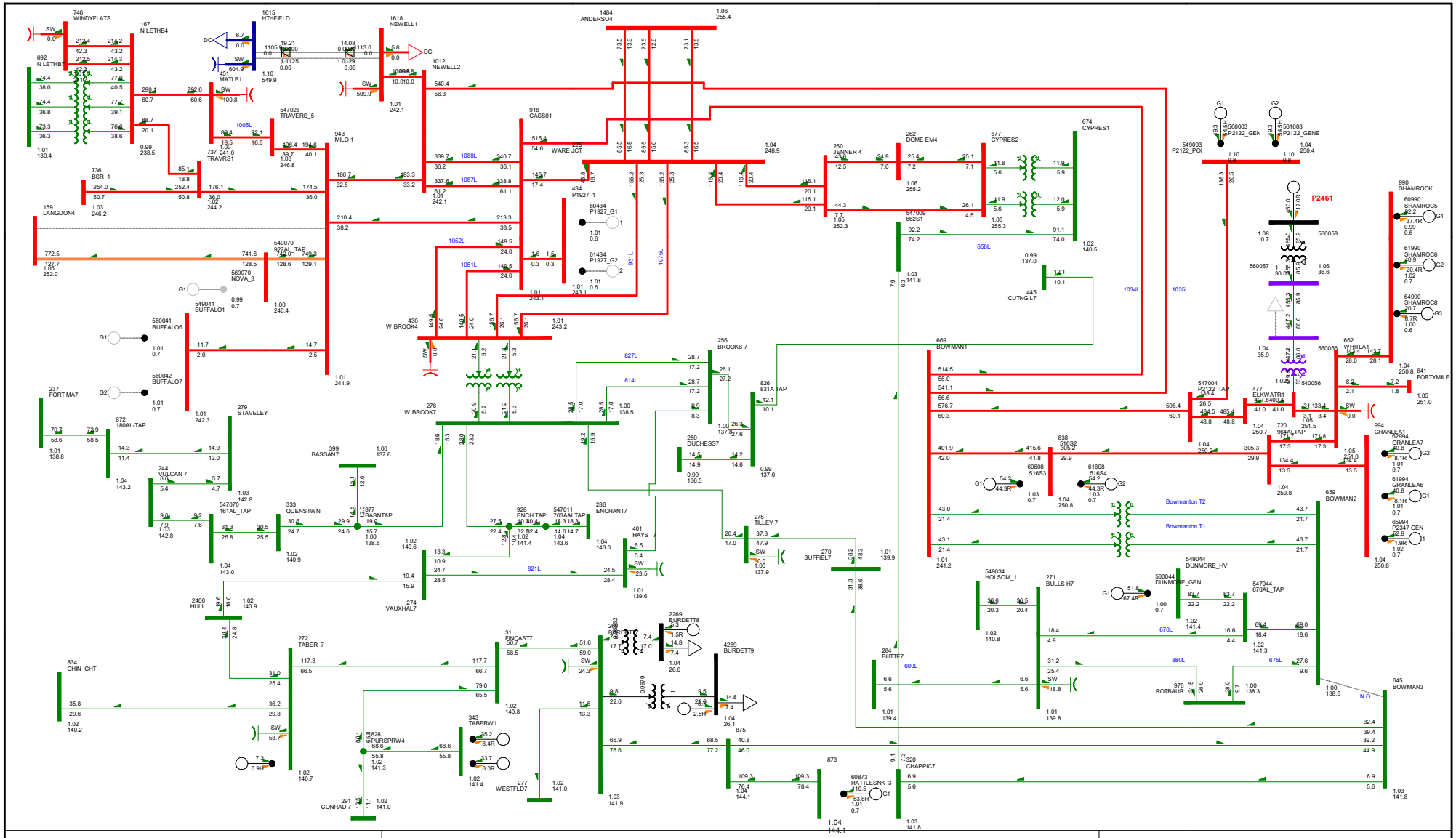
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

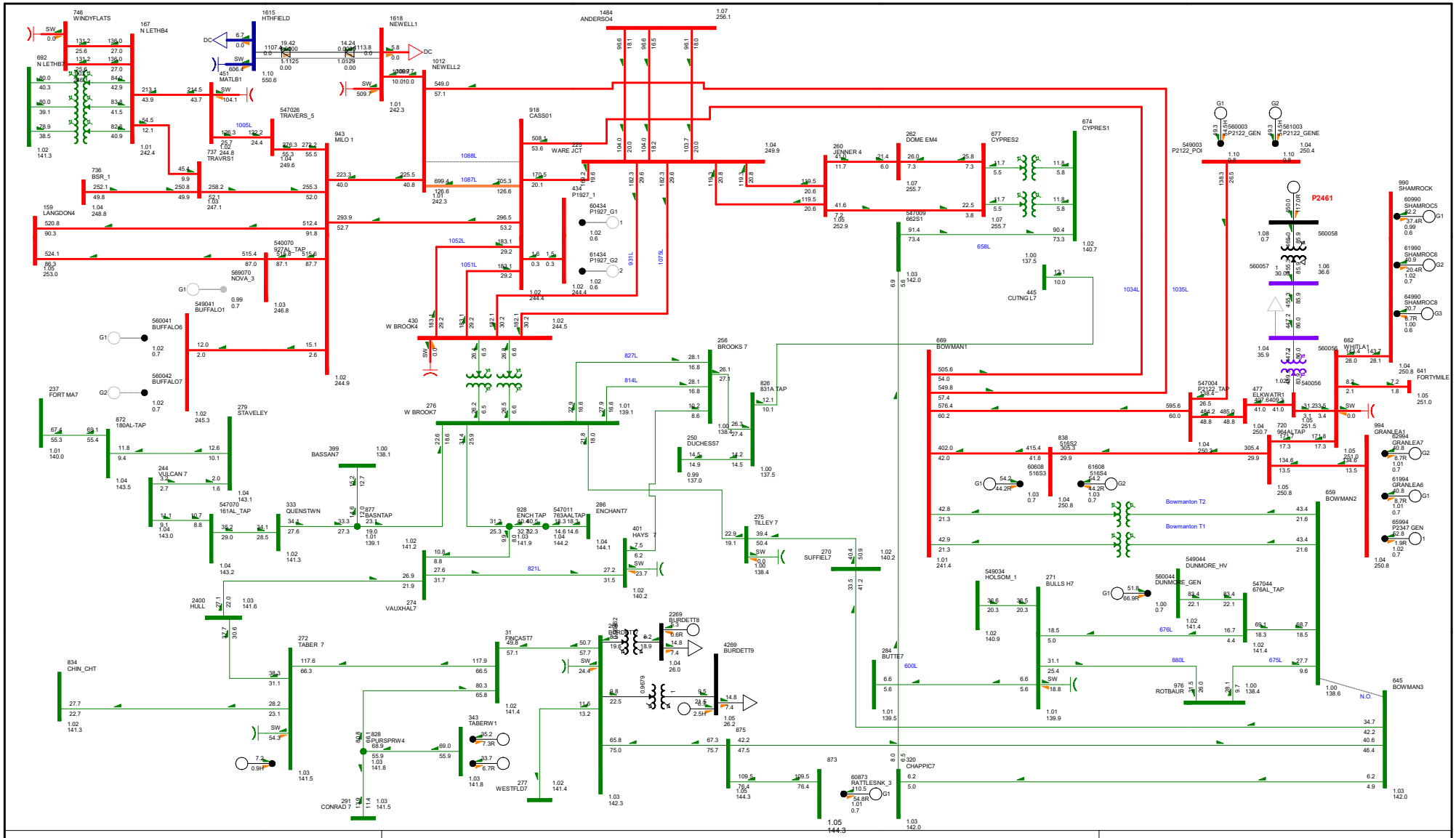


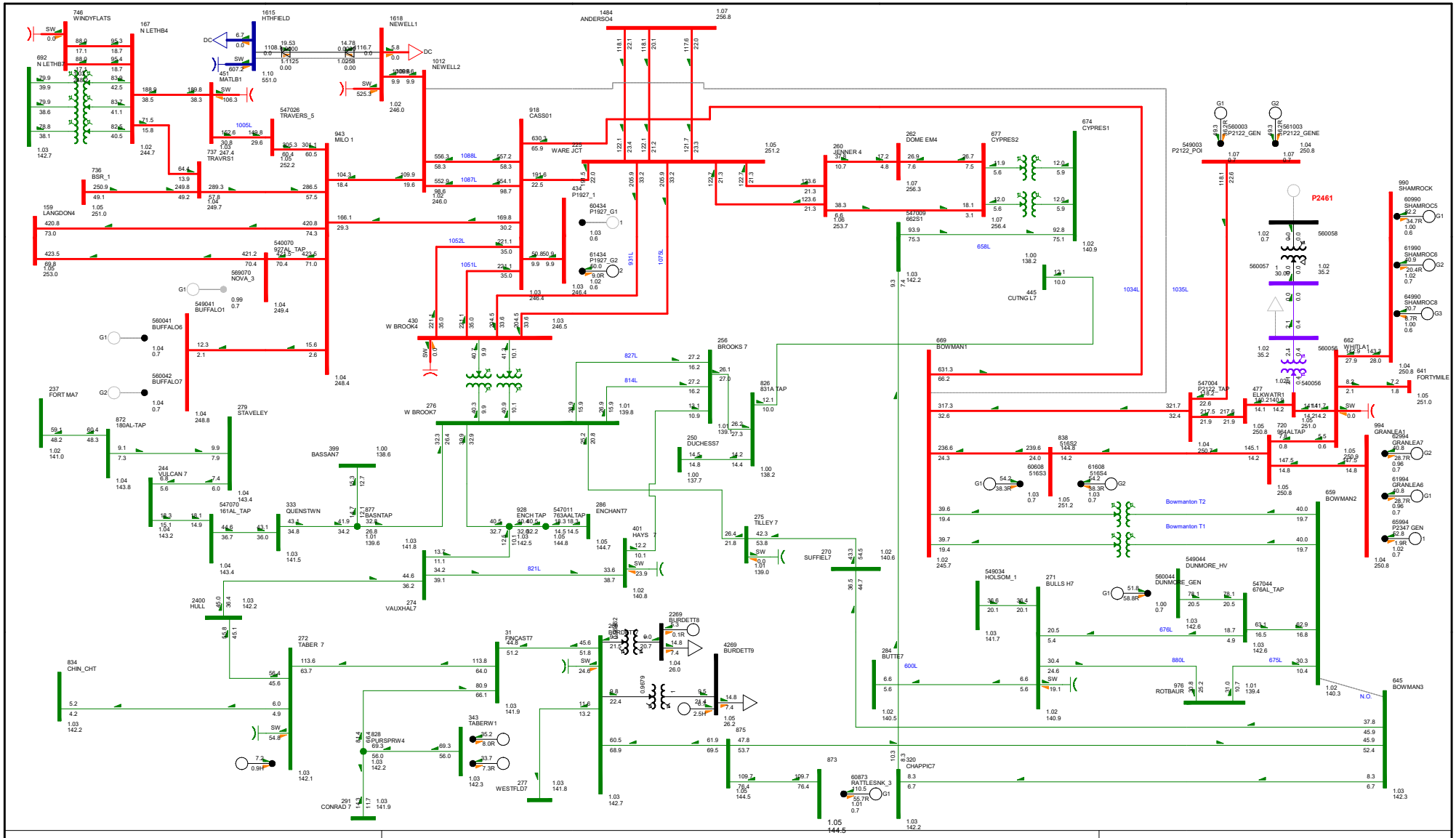
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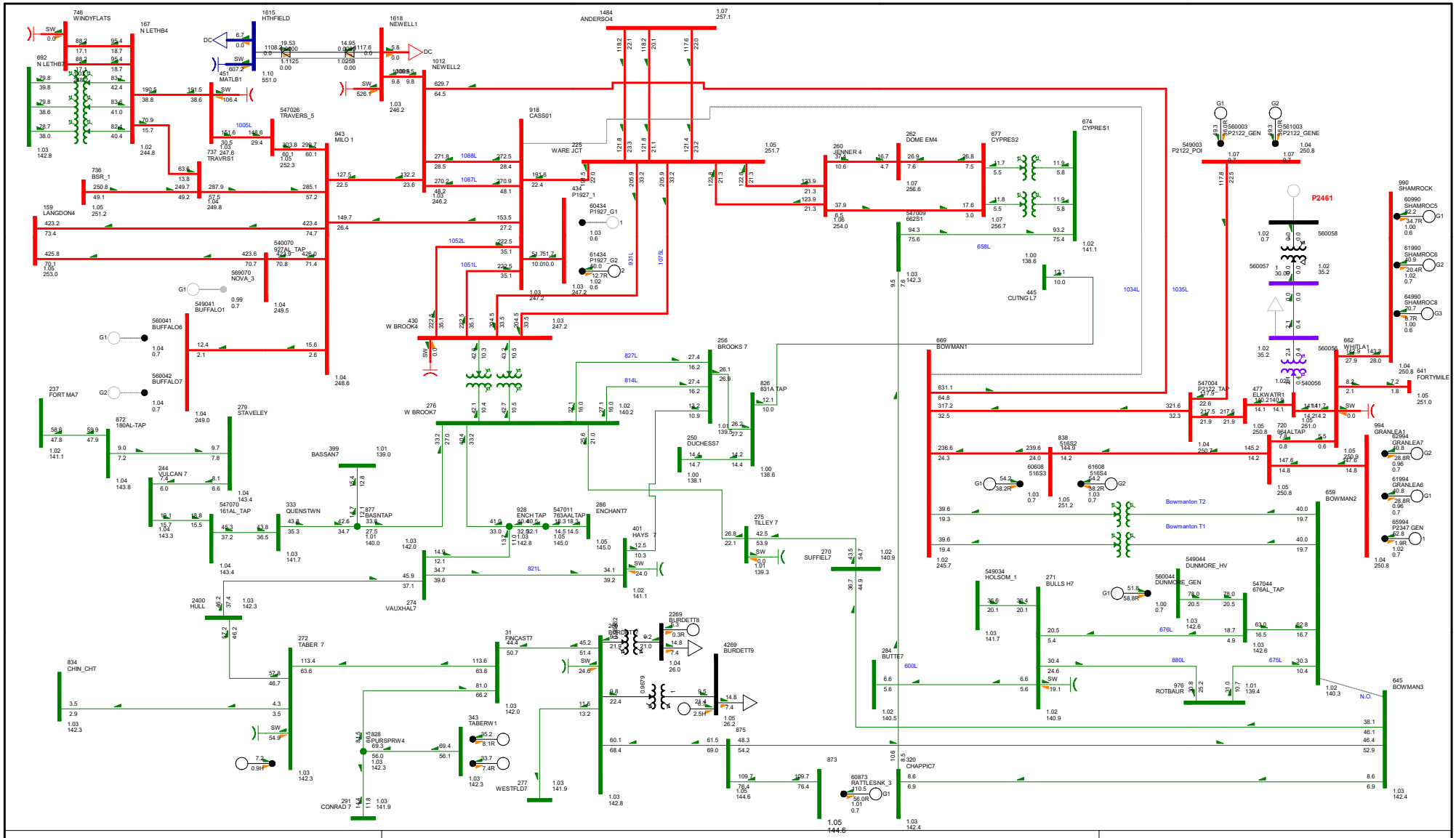
FIGURE B-4-1: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 927L (LANGDON 102S TO NOVA TAP/MILO 356S)
FRI, SEP 01 2023 20:27

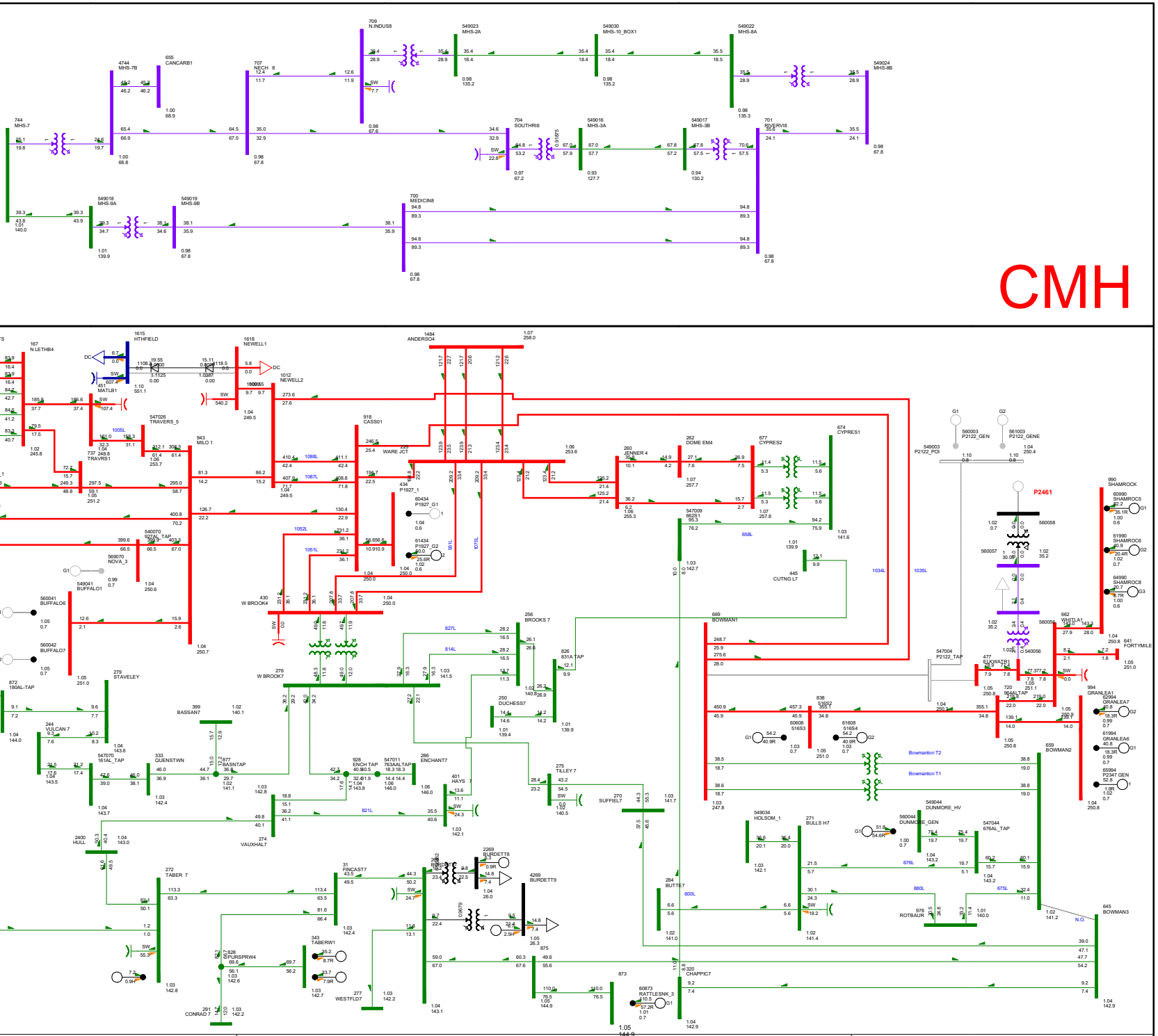
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000


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FIGURE B-4-2: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 924L (LANGDON 102S TO MILO 356S)
FRI, SEP 01 2023 20:28
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000


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FIGURE B-4-3: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 1088L (CASSILS 324S TO NEWELL 2075S)
FRI, SEP 01 2023 1:00
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000


P2461 - Aira Solar Facility
FIGURE B-4-4: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 1035L (BOWMANTON 244S TO NEWELL A2075S)
FRI, SEP 01 2023 1:05
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

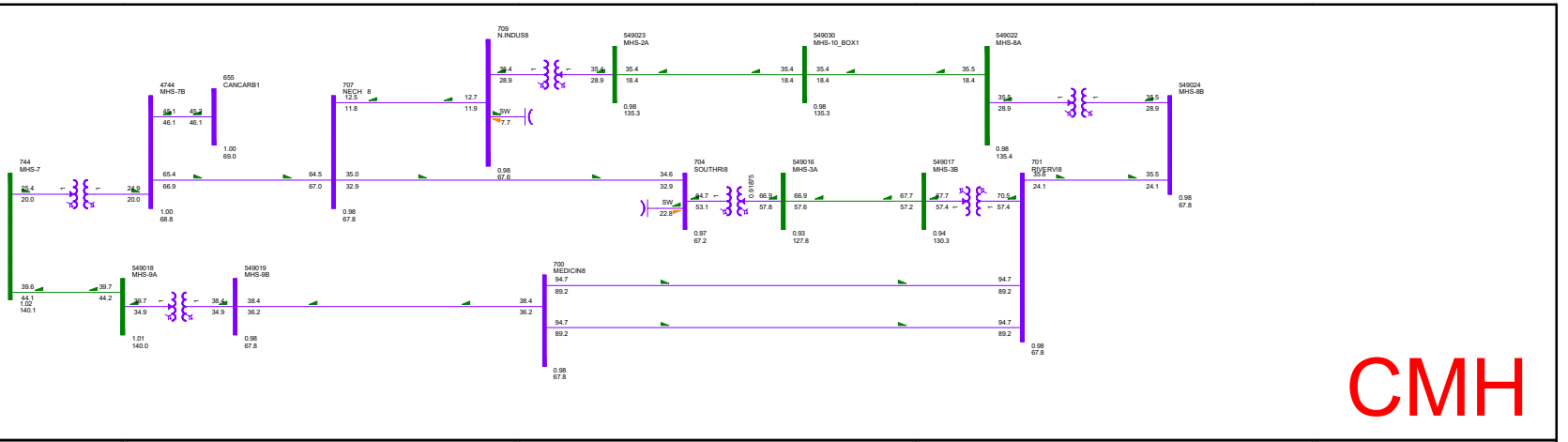

P2461 - Aira Solar Facility
FIGURE B-4-5: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 1034L (CASSILS 324S TO BOWMANTON 244S)
FRI, SEP 01 2023 1:05
Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



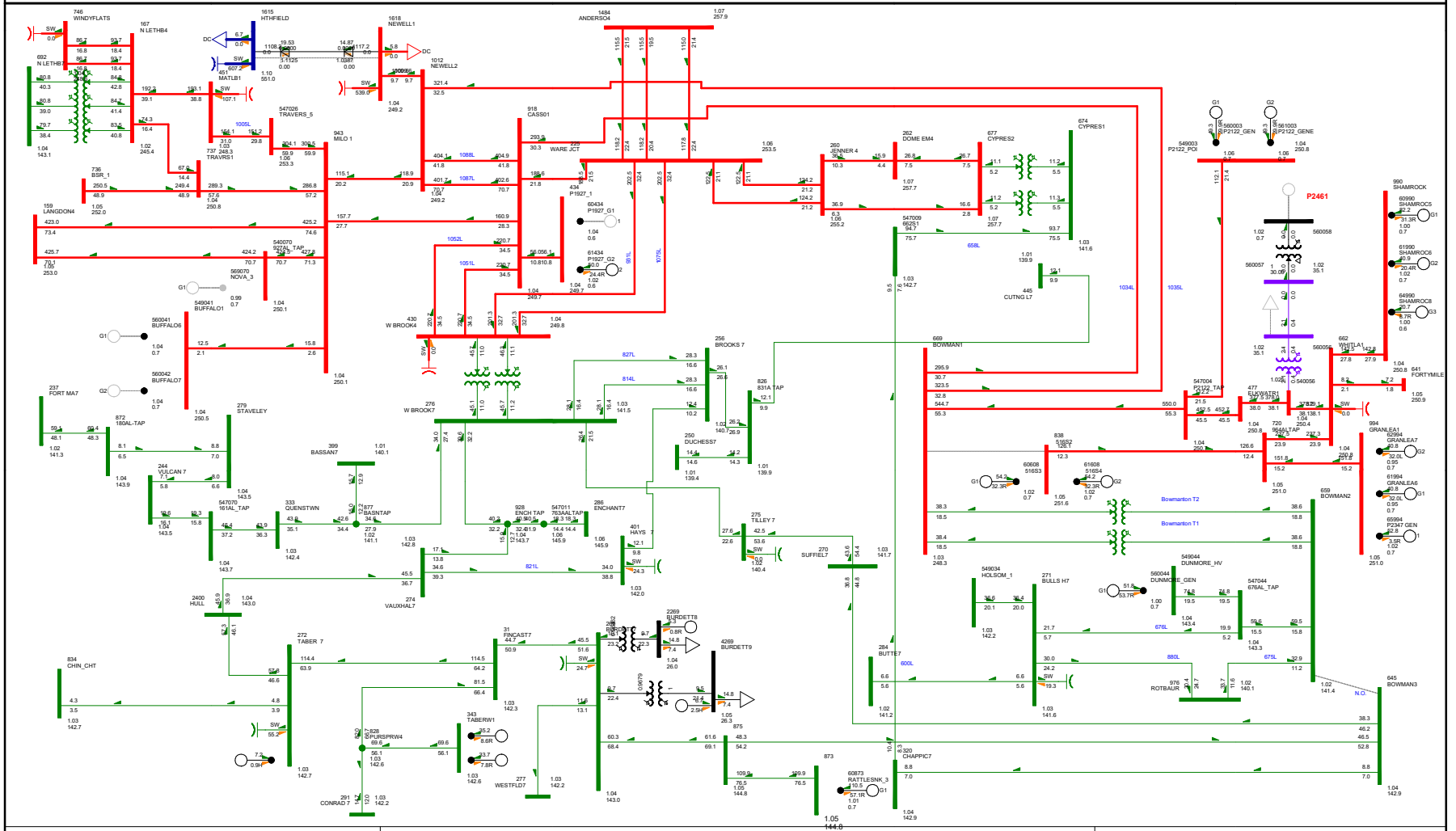
P2461 - Aira Solar Facility

FIGURE B-4-6: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 1074L (BOWMANTON 244S TO P2122/ELKWATER 264S)
FRI, SEP 01 2023 1:07

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



CMH



P2461 - Aira Solar Facility

FIGURE B-4-7: 2025-SCN4-SP-POST-POSTRAS.SAV
CATEGORY B - 965L (BOWMANTON 244S TO MURRAY LAKE 326S)
FRI, SEP 01 2023 1:08

Bus - Voltage (kV/pu)
Branch - MVA/% Rate A
Equipment - MW/Mvar
100.0%Rate A
1.146OV 0.899UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

Attachment A7
Constraint Effective Factor

Table F-1: Scenario 1 and 2 –SL/SP pre-project GEF

Scenario and Case Name	Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Generating Facility Name and Unit Number																		
			P2337	Cypress 1 and 2		Wildrose		Capital Power Whitla			Forty Mile Granlea			Rattlesnake	P2237		BSR		P1927		P2247	
			(Bus 560044 ID: G1)	**(Bus 560003 ID: G1)**	**(Bus 561003 ID: G2)**	**(Bus 3462 ID: 1)**	**(Bus 3463 ID: 1)**	**(Bus 60990 ID: G1)**	**(Bus 61990 ID: G2)**	**(Bus 64990 ID: G3)**	**(Bus 61994 ID: G1)**	**(Bus 62994 ID: G2)**	**(Bus 65994 ID: 1)**	**(Bus 60873 ID: G1)**	**(Bus 60608 ID: G1)**	**(Bus 61608 ID: G2)**	**(Bus 61736 ID: 1)**	**(Bus 61737 ID: 2)**	**(Bus 60434 ID: 1)**	**(Bus 61434 ID: 2)**	**(Bus 560041 ID: G1)**	**(Bus 560042 ID: G2)**
Scenario 1 – 2025 SL HW Pre-Project	Suffield 895sT2	658L (Cypress 562s to Hilda Tap)	-1.0%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-1.0%	36.4%	-0.9%	-0.9%	0.4%	0.4%	-1.0%	-1.0%	-0.2%	-0.2%
	927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	36.9%	35.7%	35.7%	35.5%	35.8%	35.3%	35.2%	35.6%	35.3%	35.3%	36.1%	27.1%	35.5%	35.5%	35.1%	34.9%	38.9%	38.9%	44.7%	44.7%
	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	33.6%	32.6%	32.6%	32.4%	32.6%	32.2%	32.1%	32.4%	32.1%	32.1%	32.9%	24.6%	32.3%	32.3%	31.9%	31.8%	35.5%	35.5%	40.8%	40.8%
		927L (Milo 356s to Nova Tap)	37.0%	35.8%	35.8%	35.6%	35.9%	35.4%	35.3%	35.7%	35.4%	35.4%	36.2%	27.1%	35.5%	35.5%	35.2%	35.0%	39.0%	39.0%	44.8%	44.8%
	892L (Suffield 895s to Bowmanton 244s)	658L (Cypress 562s to Hilda Tap)	-1.0%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-1.0%	36.4%	-0.9%	-0.9%	0.4%	0.4%	-1.0%	-1.0%	-0.2%	-0.2%
	1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	-12.0%	-11.6%	-11.6%	-11.6%	-11.7%	-11.5%	-11.5%	-11.6%	-11.5%	-11.5%	-11.8%	16.6%	-11.5%	-11.5%	-4.5%	-4.5%	33.5%	33.5%	-7.1%	-7.1%
	EATL HVDC	924L (Langdon 102s to Milo 356s)	23.7%	22.9%	22.9%	22.8%	23.0%	22.6%	22.5%	22.8%	22.6%	22.6%	23.2%	17.8%	22.7%	22.7%	24.2%	24.1%	25.7%	25.7%	31.3%	31.3%
		927L (Langdon 102s to Nova Tap)	21.4%	20.7%	20.7%	20.6%	20.7%	20.4%	20.3%	20.6%	20.3%	20.3%	20.9%	15.9%	20.4%	20.4%	21.9%	21.7%	23.4%	23.4%	28.6%	28.6%
		927L (Milo 356s to Nova Tap)	23.9%	23.2%	23.2%	23.0%	23.2%	22.8%	22.7%	23.0%	22.8%	22.8%	23.4%	17.9%	22.9%	22.9%	24.4%	24.3%	26.0%	26.0%	31.5%	31.5%
Scenario 2 – 2025 SP HW Pre-Project	EATL HVDC	924L (Langdon 102s to Milo 356s)	20.8%	20.4%	20.4%	20.3%	20.4%	20.1%	20.0%	20.3%	20.1%	20.1%	20.3%	16.3%	20.2%	20.2%	22.2%	22.1%	23.0%	22.6%	29.8%	29.8%
		927L (Langdon 102s to Nova Tap)	20.9%	20.5%	20.5%	20.4%	20.5%	20.2%	20.1%	20.4%	20.2%	20.2%	20.4%	16.4%	20.3%	20.3%	22.3%	22.2%	23.1%	22.8%	29.9%	29.9%
		927L (Milo 356s to Nova Tap)	18.2%	17.9%	17.9%	17.8%	17.9%	17.6%	17.5%	17.7%	17.6%	17.6%	17.8%	14.3%	17.7%	17.7%	19.6%	19.5%	20.4%	20.0%	26.7%	26.7%
	927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	35.5%	35.0%	35.0%	34.7%	35.0%	34.4%	34.3%	34.7%	34.4%	34.4%	34.8%	27.1%	34.6%	34.6%	35.0%	34.9%	38.1%	37.8%	45.2%	45.2%

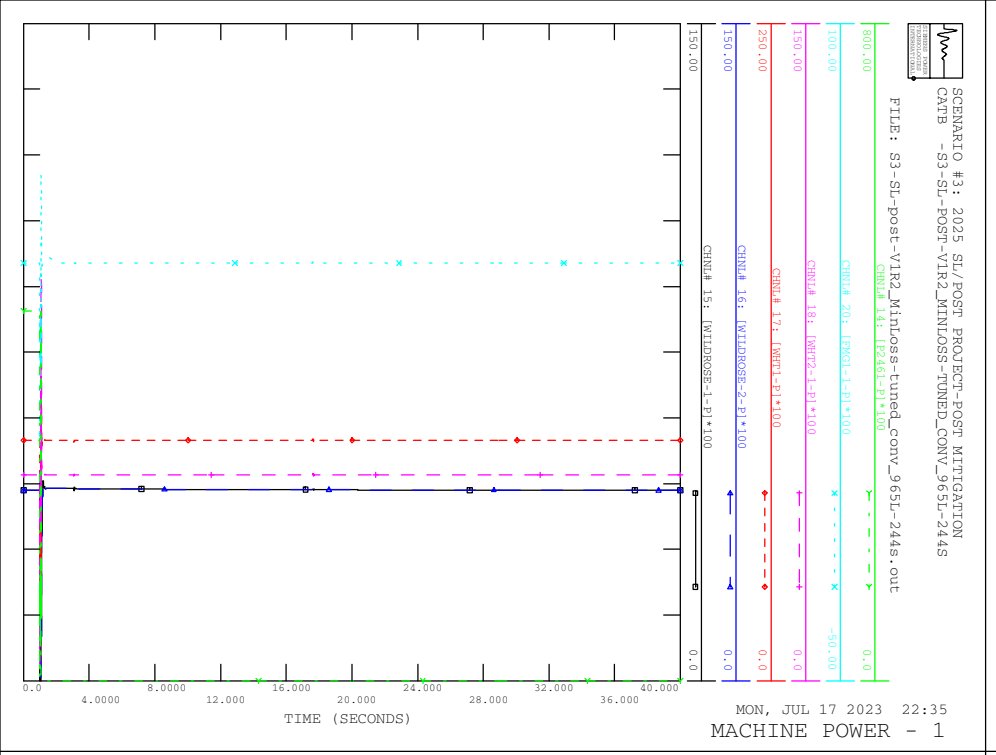
Scenario and Case Name	Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Generating Facility Name and Unit Number																		
			P2337	Cypress 1 and 2		Wildrose		Capital Power Whitla			Forty Mile Granlea			Rattlesnake	P2237		BSR		P1927		P2247	
			(Bus 560044 ID: G1)	**(Bus 560003 ID: G1)**	**(Bus 561003 ID: G2)**	**(Bus 3462 ID: 1)**	**(Bus 3463 ID: 1)**	**(Bus 60990 ID: G1)**	**(Bus 61990 ID: G2)**	**(Bus 64990 ID: G3)**	**(Bus 61994 ID: G1)**	**(Bus 62994 ID: G2)**	**(Bus 65994 ID: 1)**	**(Bus 60873 ID: G1)**	**(Bus 60608 ID: G1)**	**(Bus 61608 ID: G2)**	**(Bus 61736 ID: 1)**	**(Bus 61737 ID: 2)**	**(Bus 60434 ID: 1)**	**(Bus 61434 ID: 2)**	**(Bus 560041 ID: G1)**	**(Bus 560042 ID: G2)**
	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	35.6%	35.0%	35.0%	34.8%	35.0%	34.5%	34.3%	34.7%	34.4%	34.4%	34.9%	27.1%	34.6%	34.6%	35.1%	34.9%	38.2%	37.8%	45.3%	45.3%
		927L (Milo 356s to Nova Tap)	32.1%	31.6%	31.6%	31.4%	31.6%	31.1%	31.0%	31.3%	31.1%	31.1%	31.5%	24.4%	31.2%	31.2%	31.6%	31.5%	34.5%	34.2%	41.1%	41.1%
	1035L (Bowmanton 244s to Newell A2075s)	1087L (Cassils 324s to Newell A2075s)	-6.2%	-6.1%	-6.1%	-6.1%	-6.1%	-6.0%	-6.0%	-6.1%	-6.0%	-6.0%	-6.1%	8.7%	-6.1%	-6.1%	-2.4%	-2.4%	17.4%	17.3%	-3.7%	-3.7%
	1088L (Cassils 324s to Newell A2075s)	1087L (Cassils 324s to Newell A2075s)	-12.1%	-12.0%	-12.0%	-11.9%	-12.0%	-11.8%	-11.7%	-11.9%	-11.8%	-11.8%	-11.9%	17.0%	-11.8%	-11.8%	-4.6%	-4.6%	33.3%	33.0%	-7.2%	-7.2%

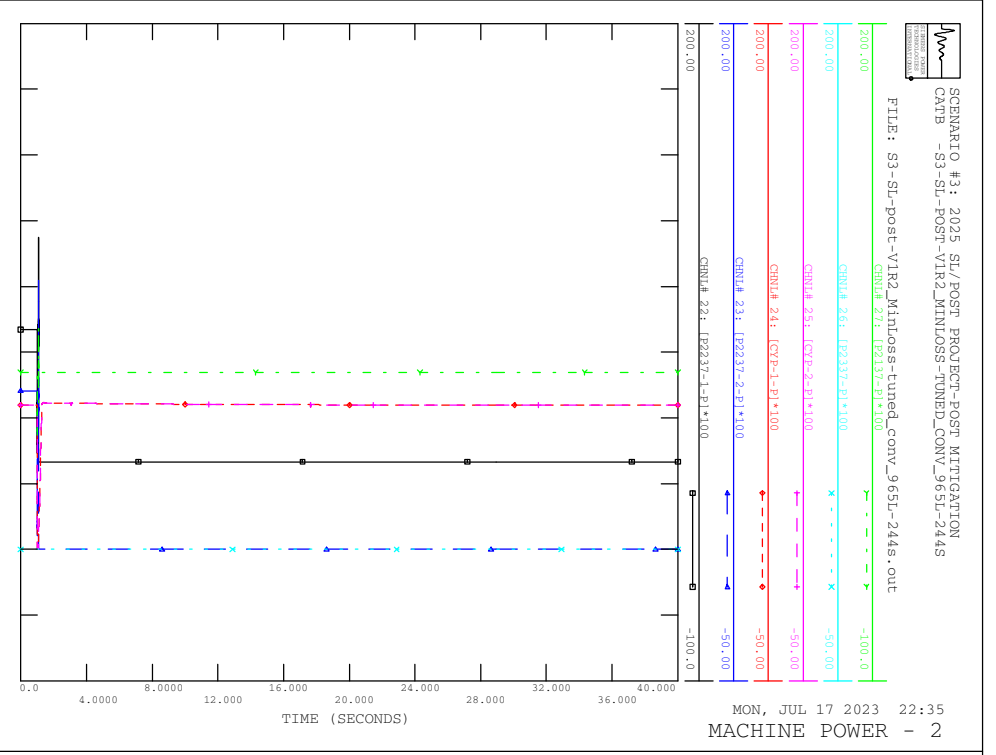
Table F-2: Scenario 3 and 4 –SL/SP post-project GEF

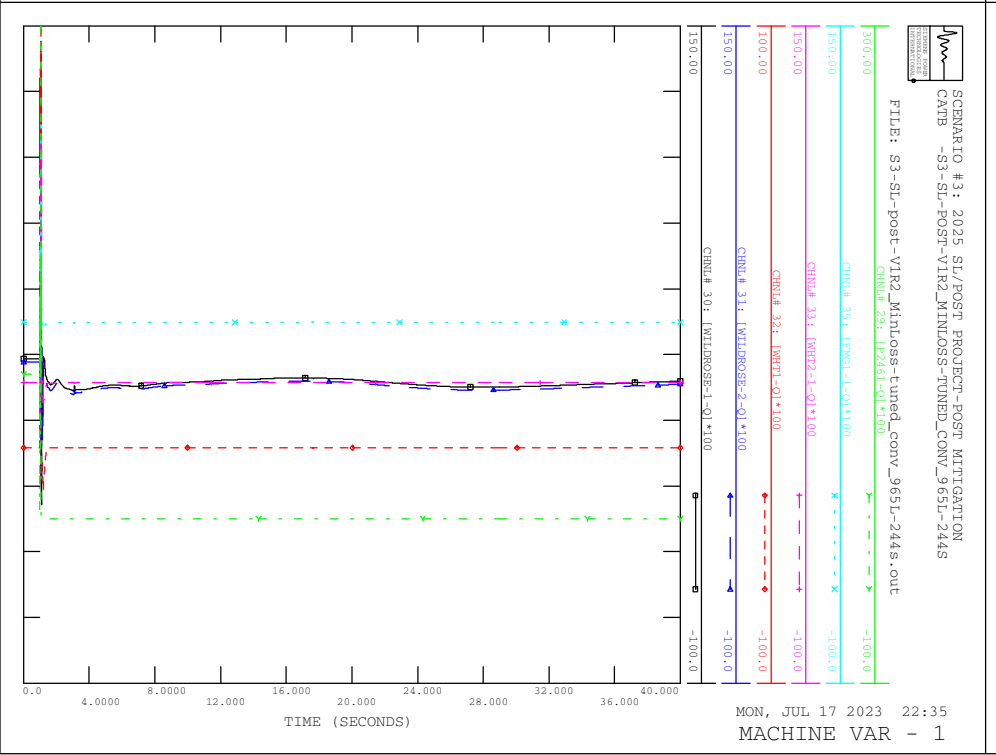
Scenario and Case Name	Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Generating Facility Name and Unit Number																			
			P2461	P2337	Cypress 1 and 2		Wildrose		Capital Power Whitla			Forty Mile Granlea			Rattlesnake	P2237		BSR		P1927		P2247	
			(Bus 560058 ID: G1)	(Bus 560044 ID: G1)	(Bus 560003 ID: G1)	(Bus 561003 ID: G2)	(Bus 3462 ID: 1)	(Bus 3463 ID: 1)	(Bus 60990 ID: G1)	(Bus 61990 ID: G2)	(Bus 64990 ID: G3)	(Bus 61994 ID: G1)	(Bus 62994 ID: G2)	(Bus 65994 ID: 1)	(Bus 60873 ID: G1)	(Bus 60608 ID: G1)	(Bus 61608 ID: G2)	(Bus 61736 ID: 1)	(Bus 61737 ID: 2)	(Bus 60434 ID: 1)	(Bus 61434 ID: 2)	(Bus 560041 ID: G1)	(Bus 560042 ID: G2)
Scenario 3 – 2025 SL HW Post-Project	Suffield 895sT2	658L (Cypress 562s to Hilda Tap)	-0.9%	-1.0%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	36.4%	-0.9%	-0.9%	0.4%	0.4%	-1.0%	-1.0%	-0.2%	-0.2%
	1074L (Bowmanton 244s to P2122/Elkwater 264s)	965L (Bowmanton 244s to Murray Lake 326s)	-34.8%	0.8%	-17.0%	-17.0%	-18.6%	-18.7%	-46.2%	-46.0%	-46.5%	-49.7%	-49.7%	-50.9%	0.1%	-52.0%	-52.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
	927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	28.7%	31.8%	30.1%	30.1%	30.0%	30.2%	29.4%	29.3%	29.6%	29.4%	29.4%	30.2%	25.7%	29.6%	29.6%	33.9%	33.7%	36.8%	36.8%	43.2%	43.2%
	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	28.8%	31.9%	30.3%	30.3%	30.1%	30.3%	29.5%	29.4%	29.7%	29.6%	29.6%	30.3%	25.8%	29.7%	29.7%	34.0%	33.8%	37.0%	37.0%	43.4%	43.4%
		927L (Milo 356s to Nova Tap)	25.2%	27.9%	26.4%	26.4%	26.3%	26.5%	25.7%	25.7%	26.0%	25.8%	25.8%	26.5%	22.6%	25.9%	25.9%	29.9%	29.7%	32.7%	32.7%	38.4%	38.4%
	892L (Suffield 895s to Bowmanton 244s)	658L (Cypress 562s to Hilda Tap)	-0.9%	-1.0%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	-0.9%	36.4%	-0.9%	-0.9%	0.4%	0.4%	-1.0%	-1.0%	-0.2%	-0.2%
	965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122)	-0.7%	-0.7%	-0.8%	-0.8%	-0.8%	-0.8%	-0.7%	-0.7%	-0.7%	-0.7%	-0.7%	-0.8%	26.8%	-0.7%	-0.7%	0.5%	0.5%	-0.5%	-0.5%	0.0%	0.0%
	1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	-11.1%	-12.1%	-11.6%	-11.6%	-11.5%	-11.6%	-11.3%	-11.3%	-11.4%	-11.4%	-11.4%	-11.6%	16.4%	-11.4%	-11.4%	-4.9%	-4.9%	33.1%	33.1%	-7.4%	-7.4%
	EATL HVDC	924L (Langdon 102s to Milo 356s)	15.5%	18.2%	16.6%	16.6%	16.4%	16.7%	16.1%	15.9%	16.2%	16.2%	16.2%	16.6%	16.3%	16.4%	16.5%	23.2%	23.1%	23.5%	23.5%	30.3%	30.3%
		927L (Milo 356s to Nova Tap)	12.5%	15.1%	13.5%	13.5%	13.3%	13.7%	13.1%	12.9%	13.2%	13.2%	13.1%	13.5%	13.9%	13.5%	13.5%	20.3%	20.2%	20.6%	20.6%	27.0%	27.0%
		927L (Langdon 102s to Nova Tap)	15.7%	18.4%	16.7%	16.7%	16.6%	16.9%	16.3%	16.1%	16.4%	16.4%	16.3%	16.8%	16.5%	16.6%	16.6%	23.4%	23.3%	23.7%	23.7%	30.5%	30.5%
		923L (Newell A2075s to Milo 356s)	27.2%	30.9%	28.8%	28.8%	28.6%	29.0%	28.1%	27.8%	28.3%	28.2%	28.1%	28.9%	17.7%	28.5%	28.5%	-5.7%	-5.7%	35.1%	35.1%	-7.3%	-7.3%
		935L (Cassils 324s to Milo 356s)	25.2%	28.6%	26.7%	26.7%	26.5%	26.8%	26.0%	25.7%	26.1%	26.1%	26.0%	26.7%	17.7%	26.4%	26.4%	-5.6%	-5.5%	35.2%	35.2%	-7.2%	-7.3%

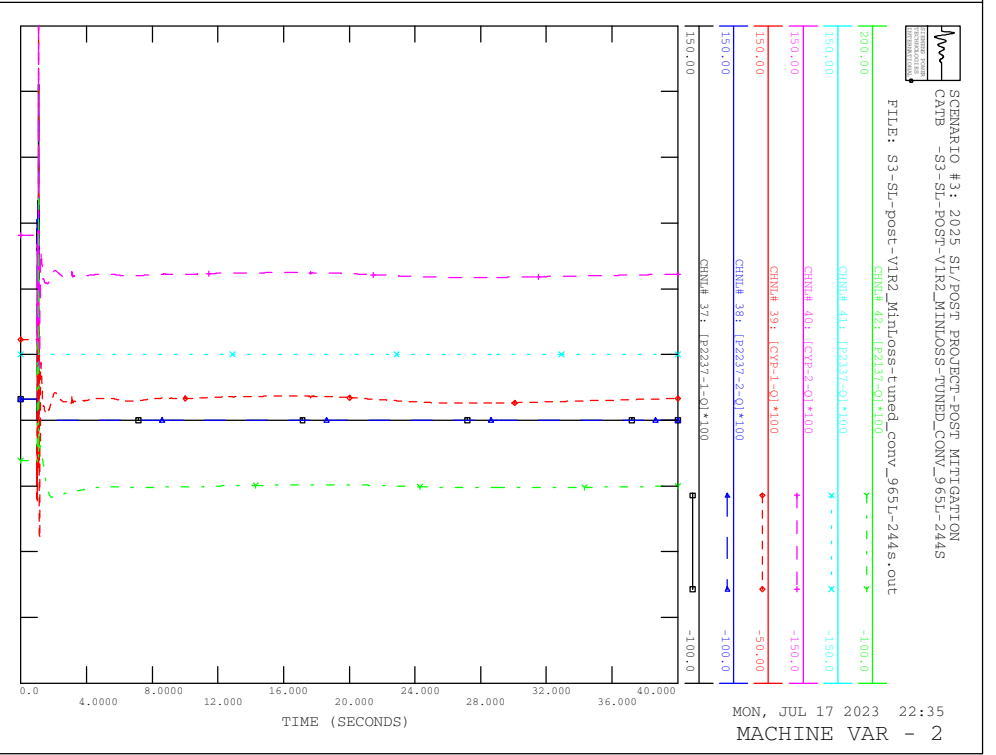
Scenario and Case Name	Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Generating Facility Name and Unit Number																			
			P2461	P2337	Cypress 1 and 2		Wildrose		Capital Power Whitla			Forty Mile Granlea			Rattlesnake	P2237		BSR		P1927		P2247	
			(Bus 560058 ID: G1)	(Bus 560044 ID: G1)	(Bus 560003 ID: G1)	(Bus 561003 ID: G2)	(Bus 3462 ID: 1)	(Bus 3463 ID: 1)	(Bus 60990 ID: G1)	(Bus 61990 ID: G2)	(Bus 64990 ID: G3)	(Bus 61994 ID: G1)	(Bus 62994 ID: G2)	(Bus 65994 ID: 1)	(Bus 60873 ID: G1)	(Bus 60608 ID: G1)	(Bus 61608 ID: G2)	(Bus 61736 ID: 1)	(Bus 61737 ID: 2)	(Bus 60434 ID: 1)	(Bus 61434 ID: 2)	(Bus 560041 ID: G1)	(Bus 560042 ID: G2)
Scenario 4 – 2025 SP HW Post-Project	927L (Langdon 102s to Nova Tap/Milo 356s)	924L (Langdon 102s to Milo 356s)	27.4%	29.8%	28.9%	28.9%	28.7%	28.8%	28.1%	28.0%	28.4%	28.2%	28.2%	28.5%	25.0%	28.3%	28.3%	33.1%	32.9%	35.2%	34.7%	43.5%	43.5%
	924L (Langdon 102s to Milo 356s)	927L (Langdon 102s to Nova Tap)	27.4%	29.9%	28.9%	28.9%	28.7%	28.9%	28.2%	28.1%	28.4%	28.2%	28.2%	28.5%	25.0%	28.4%	28.4%	33.1%	32.9%	35.2%	34.8%	43.5%	43.5%
		927L (Milo 356s to Nova Tap)	23.5%	25.6%	24.8%	24.8%	24.6%	24.8%	24.2%	24.1%	24.3%	24.2%	24.2%	24.5%	21.5%	24.3%	24.3%	28.6%	28.5%	30.7%	30.2%	38.2%	38.2%
	965L (Bowmanton 244s to Murray Lake 326s)	1074L (Bowmanton 244s to P2122 Tap)	89.4%	-1.0%	96.7%	96.7%	95.8%	96.4%	91.1%	90.6%	91.7%	91.1%	91.1%	91.9%	-0.1%	91.2%	91.2%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%
	1088L (Cassils 324s to Newell 2075s)	1087L (Cassils 324s to Newell 2075s)	-11.2%	-12.1%	-11.8%	-11.8%	-11.7%	-11.8%	-11.5%	-11.5%	-11.6%	-11.6%	-11.6%	-11.7%	16.9%	-11.6%	-11.6%	-4.9%	-4.9%	32.9%	32.6%	-7.4%	-7.4%
	EATL HVDC	924L (Langdon 102s to Milo 356s)	12.3%	13.8%	13.1%	13.1%	13.0%	13.1%	12.7%	12.6%	12.8%	12.7%	12.7%	12.8%	13.4%	12.8%	12.8%	18.7%	18.6%	19.5%	19.0%	28.2%	28.2%
		927L (Milo 356s to Nova Tap)	12.4%	13.8%	13.1%	13.1%	13.1%	13.1%	12.7%	12.7%	12.9%	12.8%	12.8%	12.9%	13.4%	12.8%	12.8%	18.7%	18.7%	19.5%	19.0%	28.2%	28.2%
		927L (Langdon 102s to Nova Tap)	9.3%	10.5%	9.8%	9.8%	9.8%	9.8%	9.5%	9.5%	9.6%	9.6%	9.6%	9.7%	10.7%	9.6%	9.6%	15.1%	15.0%	16.1%	15.6%	24.3%	24.3%
		923L (Newell A2075s to Milo 356s)	23.1%	25.3%	24.4%	24.4%	24.2%	24.3%	23.7%	23.6%	23.9%	23.8%	23.8%	24.0%	14.2%	23.8%	23.8%	-10.7%	-10.7%	30.2%	29.8%	-10.6%	-10.6%
		935L (Cassils 324s to Milo 356s)	21.2%	23.3%	22.4%	22.4%	22.2%	22.4%	21.8%	21.7%	21.9%	21.8%	21.8%	22.0%	14.4%	21.9%	21.9%	-10.4%	-10.4%	30.5%	30.0%	-10.5%	-10.5%

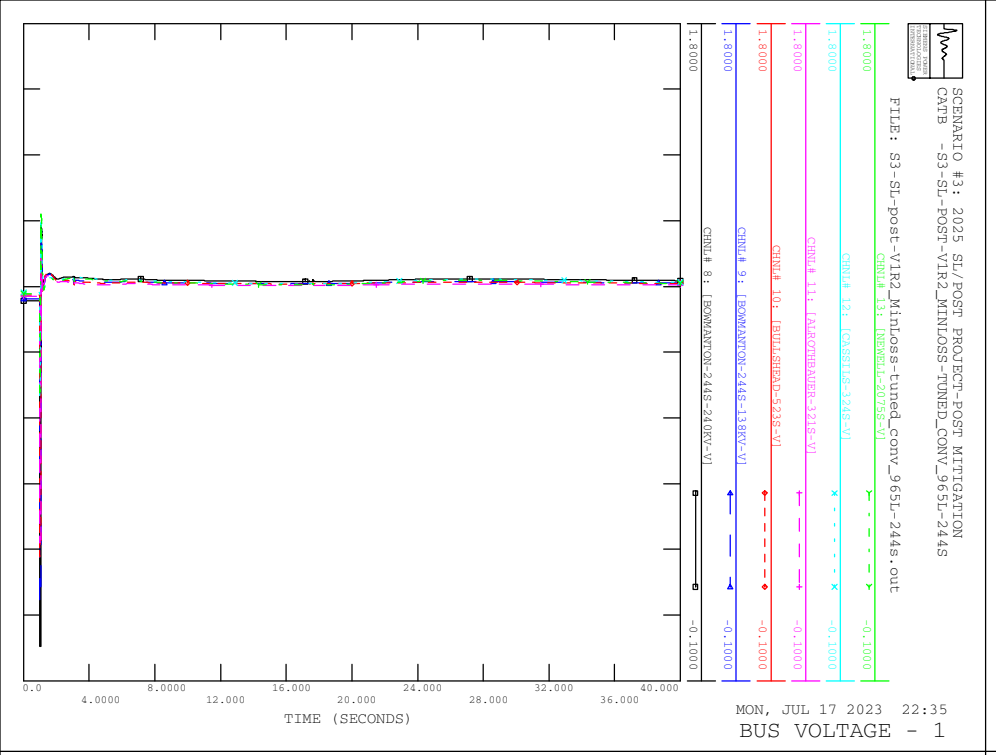
Attachment A8
Post-Mitigation Post-Project Transient Stability Diagrams

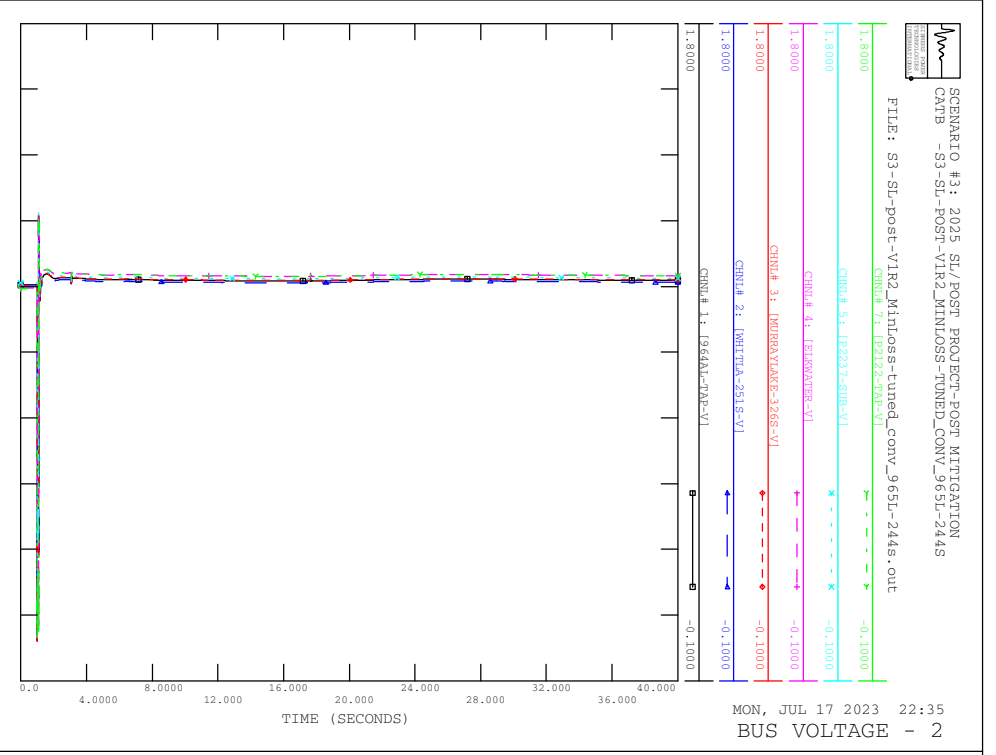

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 1

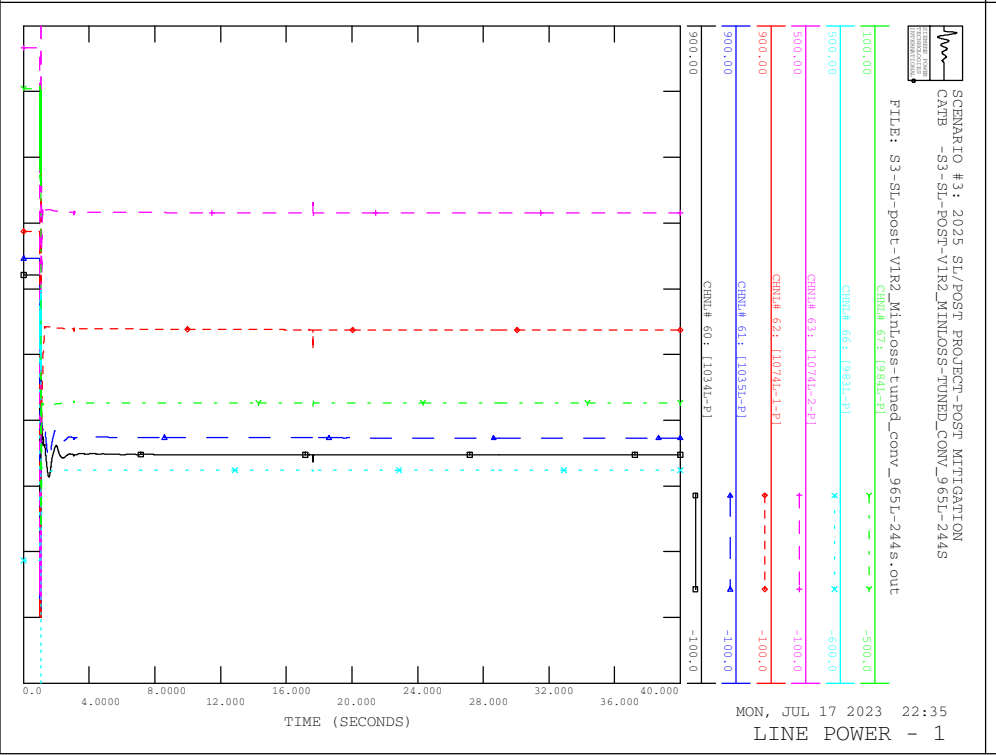

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 2

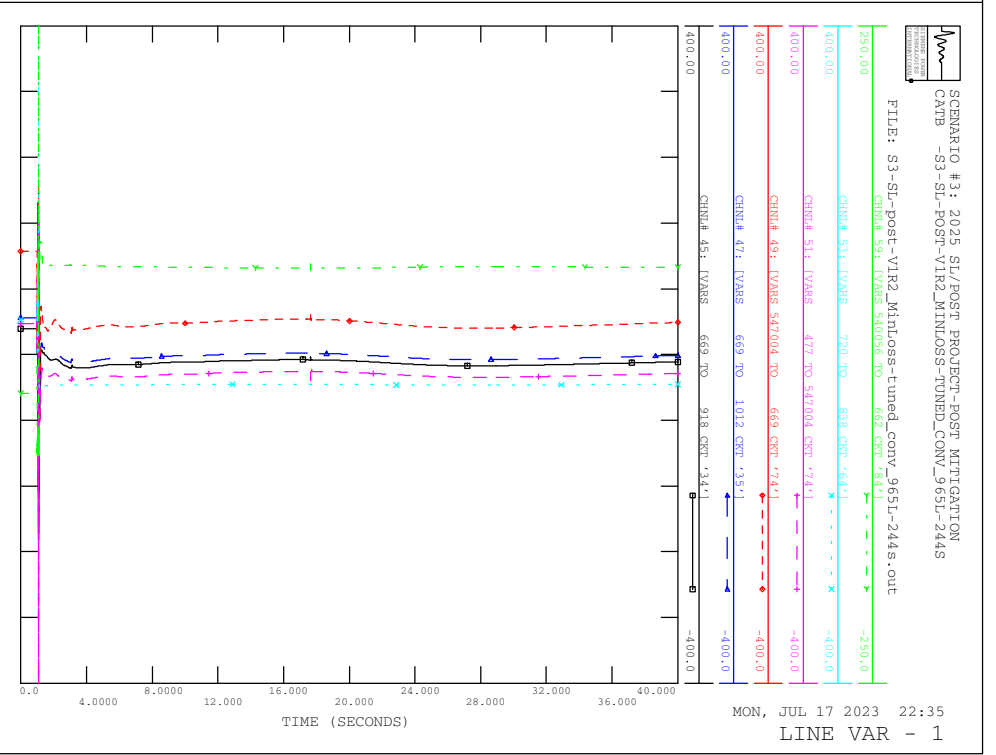

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 1

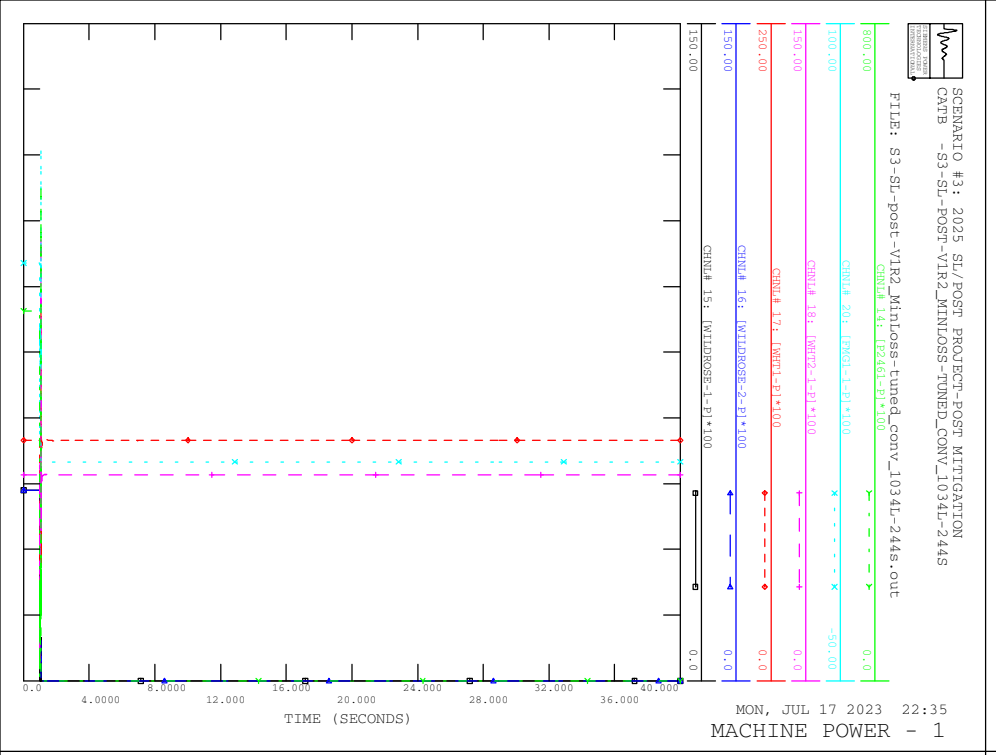

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-VIR2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-VIR2_MinLoss-tuned_conv_965L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 2

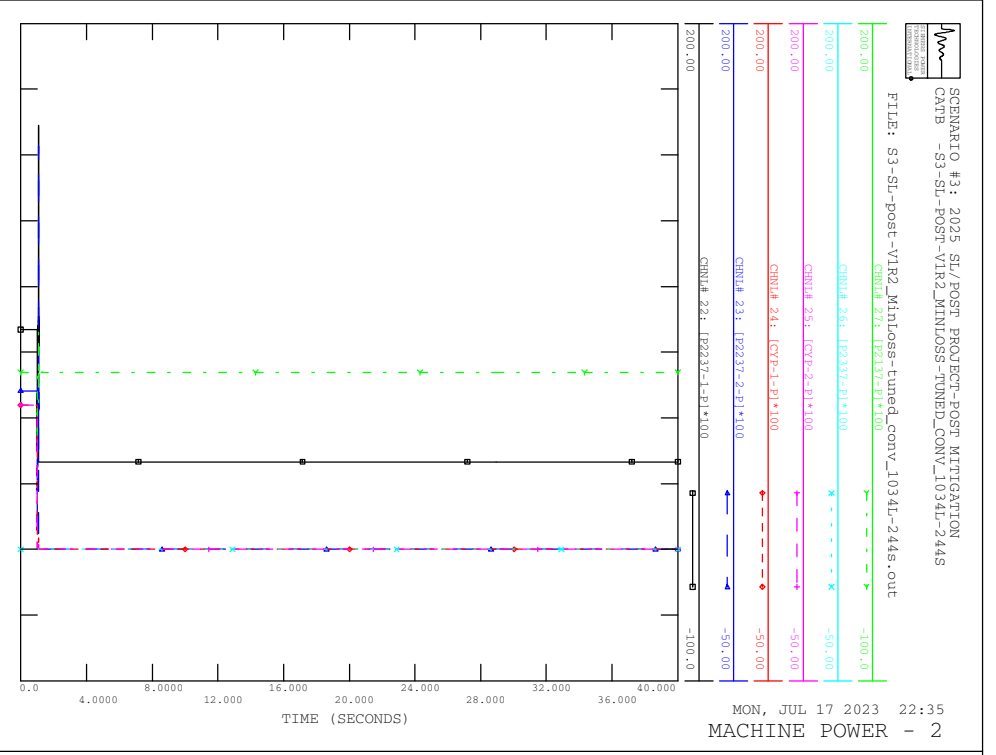

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [DENWOLD-207SS-V]
TIME (SECONDS)
MON, JUL 17 2023 22:35
BUS VOLTAGE - 1

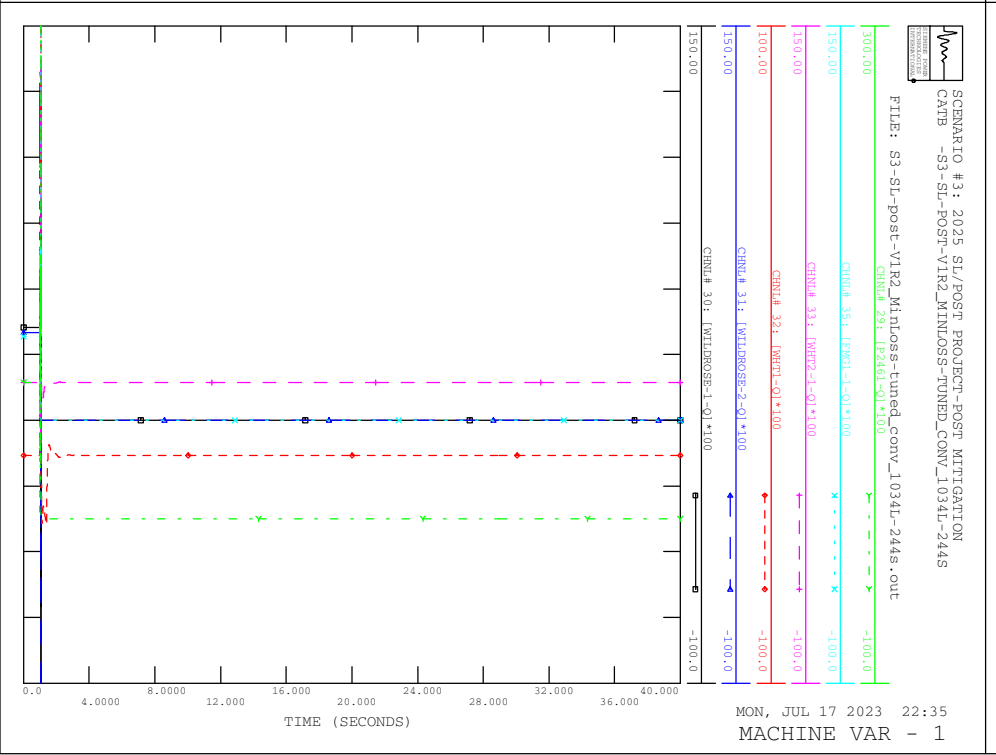

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
MON, JUL 17 2023 22:35
BUS VOLTAGE - 2

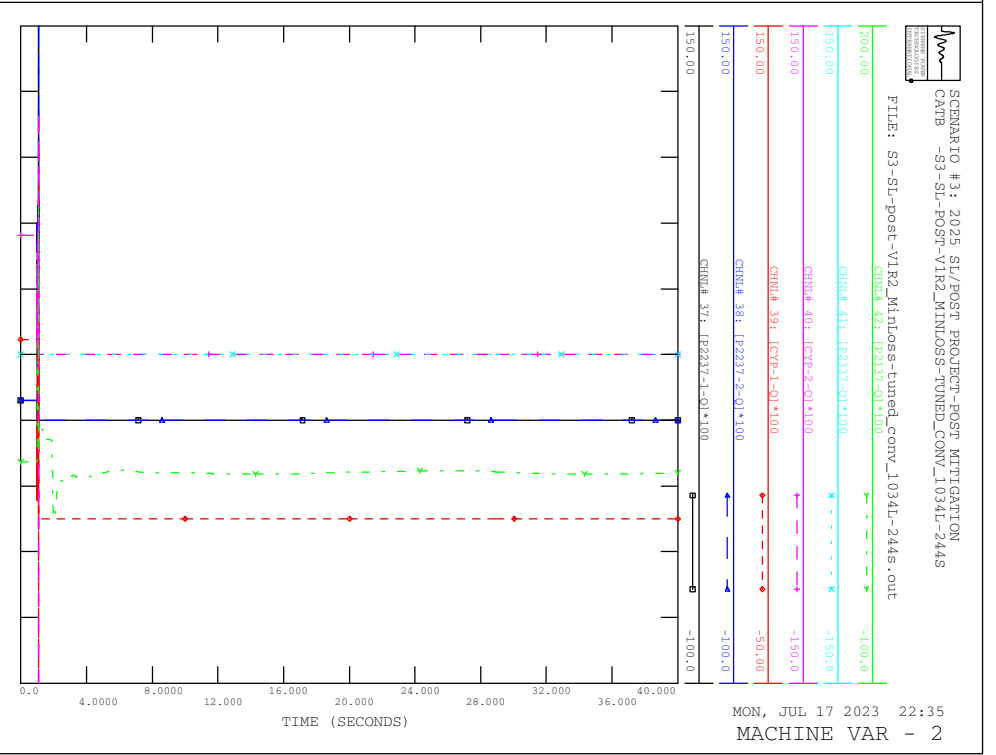

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [1074L-2-P]
CHNL# 66: [983L-P]
CHNL# 67: [1986L-P]
TIME (SECONDS)
MON, JUL 17 2023 22:35
LINE POWER - 1

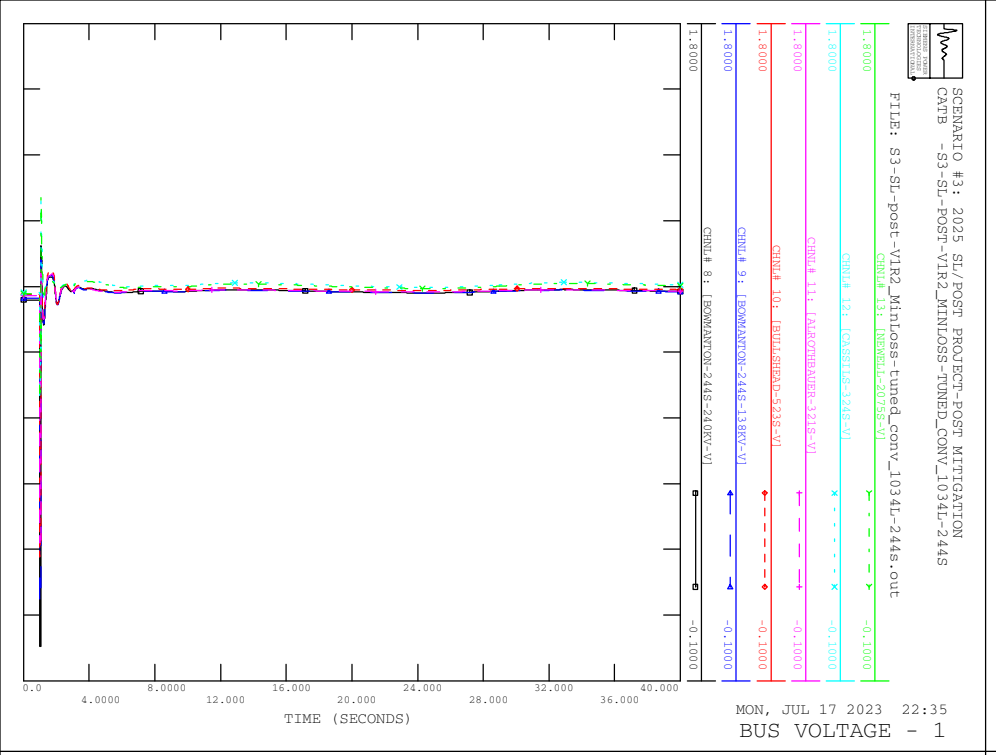

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_965L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_965L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 477 TO 547004 CKT '74']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
MON, JUL 17 2023 22:35
LINE VAR - 1

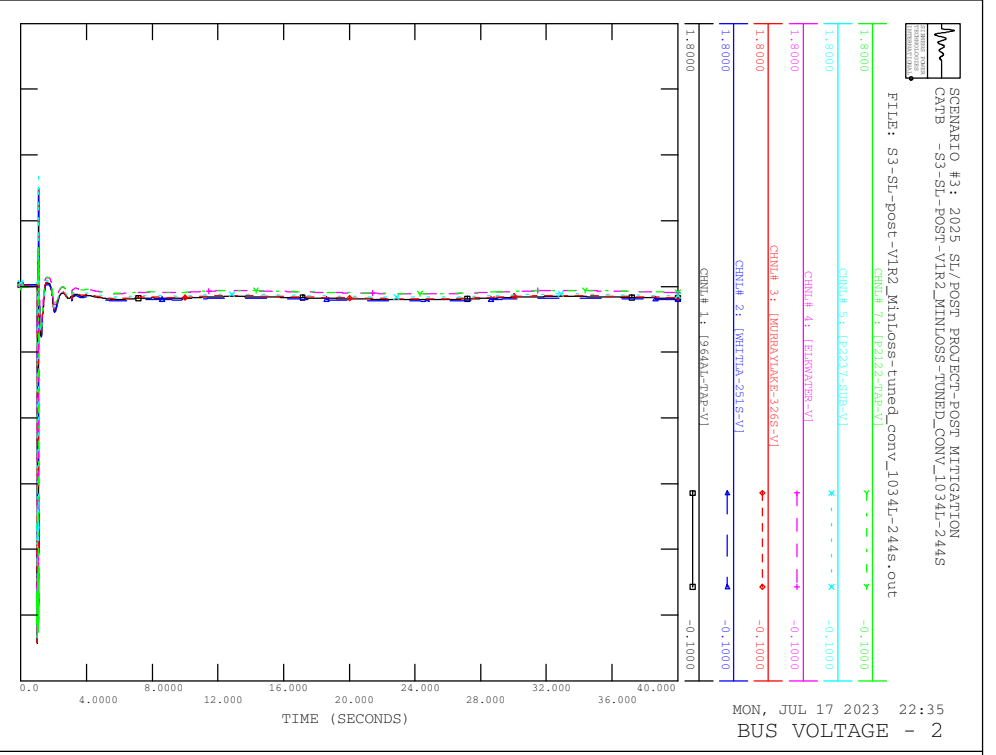

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 14: [P2461-P]*100
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 1

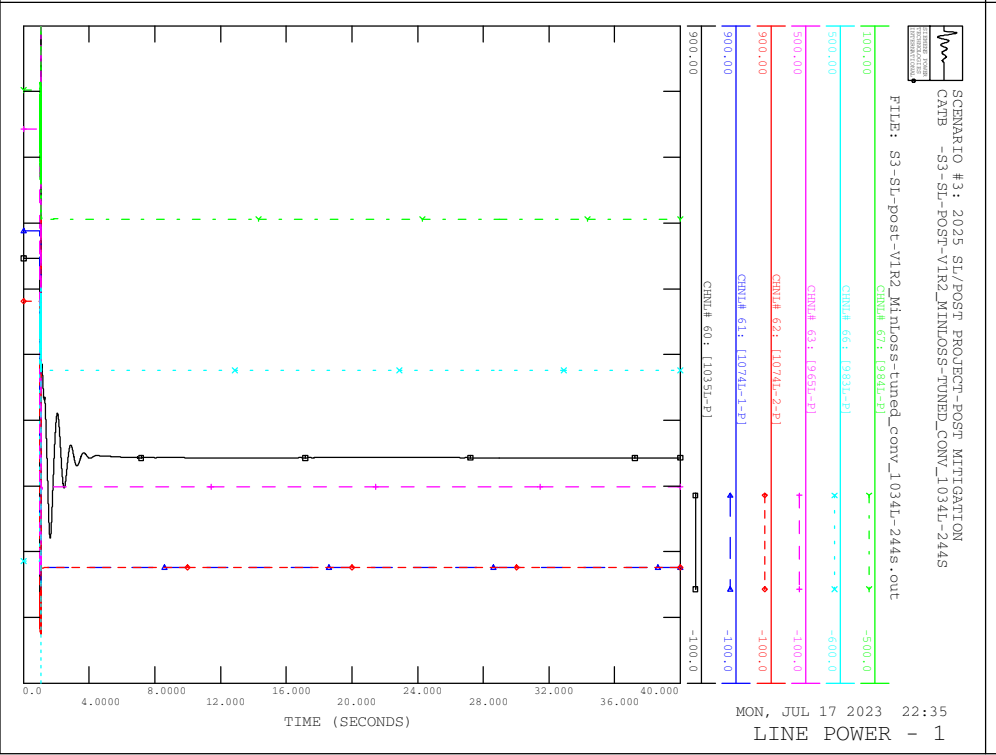

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 2

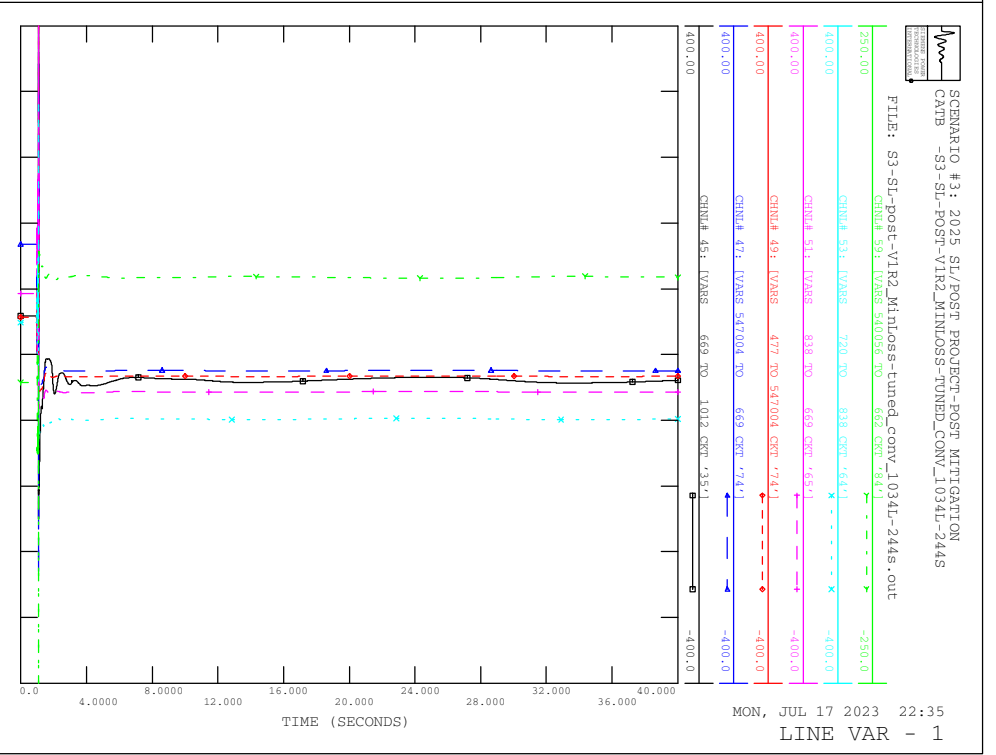

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 29: [P2461-Q]*100
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 1

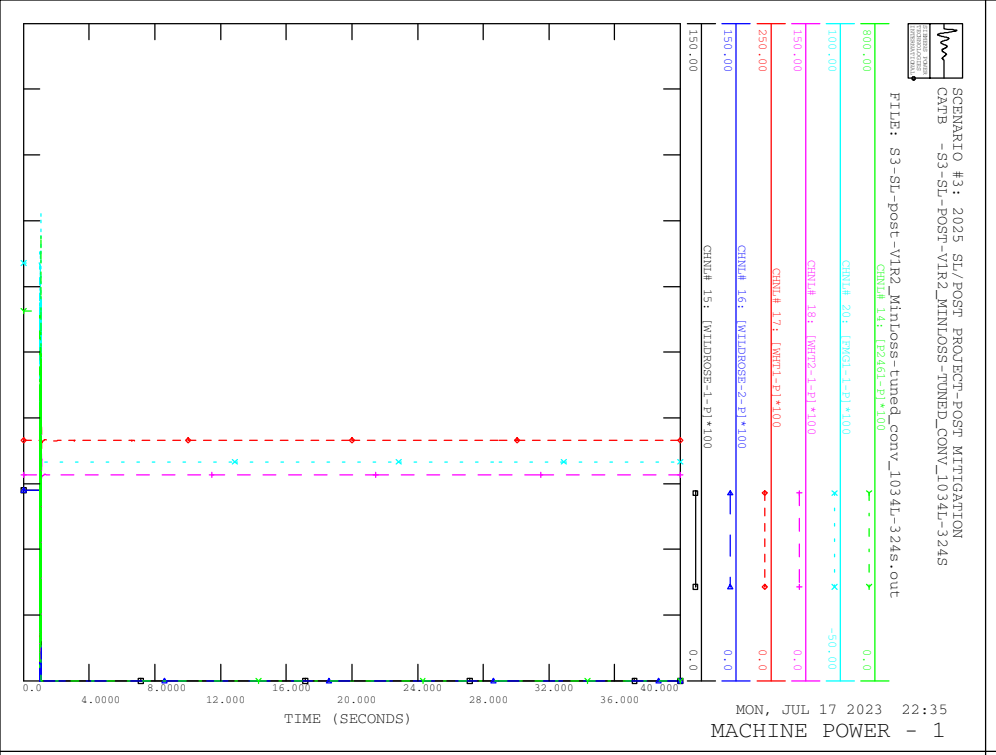

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 2

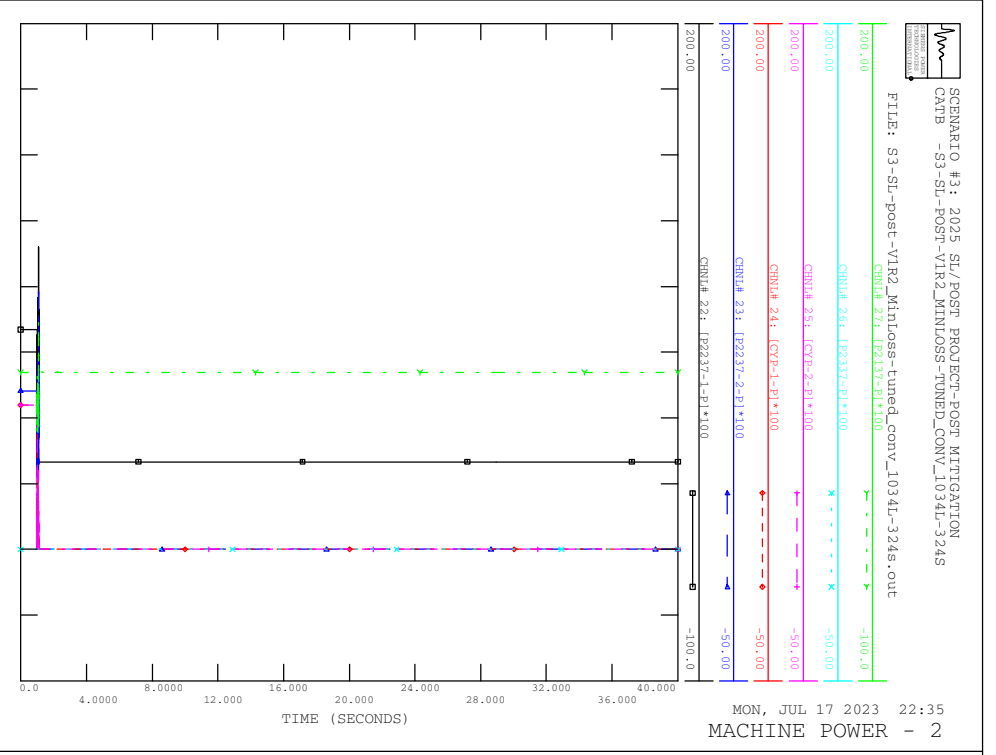

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWDALE-2075S-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
BUS VOLTAGE - 1

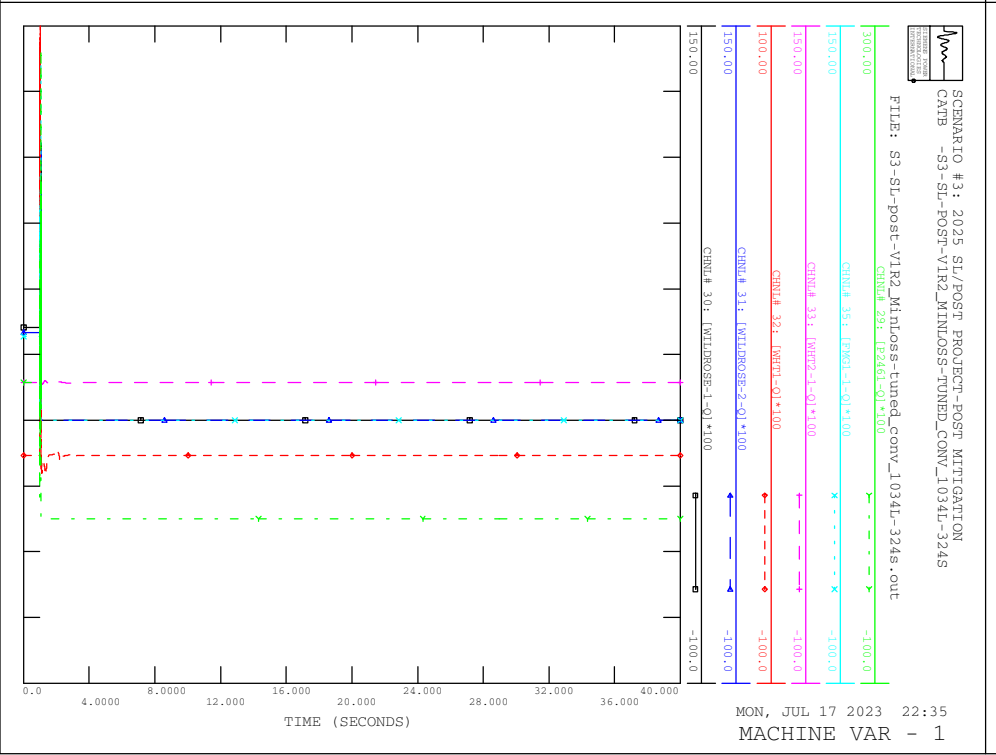

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [METTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
BUS VOLTAGE - 2

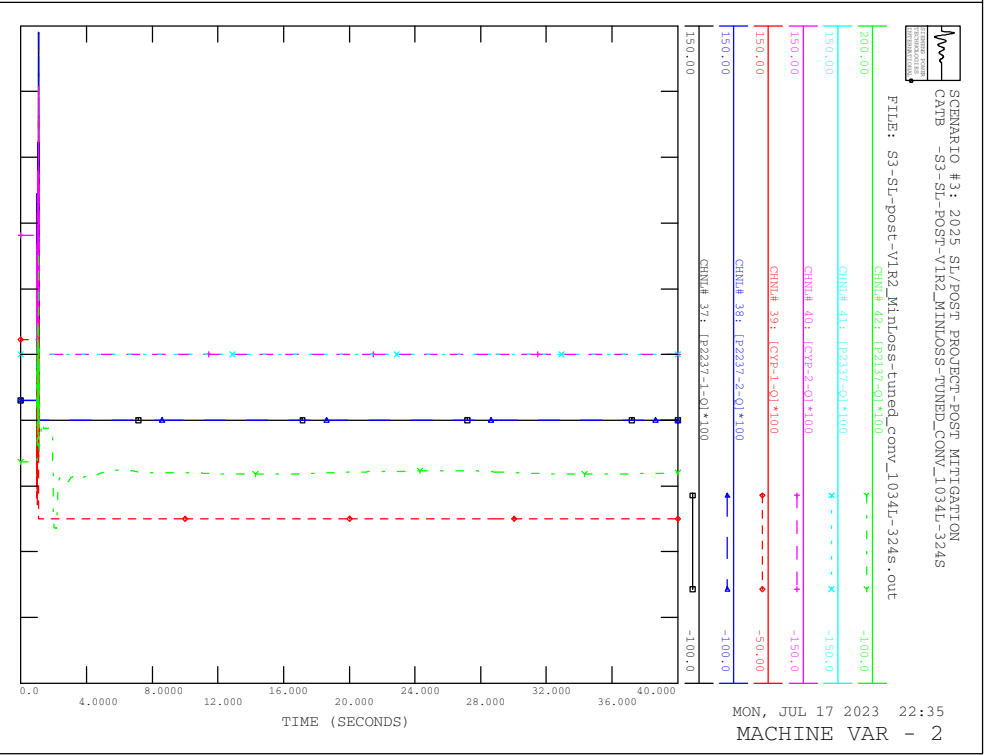

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 60: [1035L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1386L-P]
900.00
-100.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
LINE POWER - 1

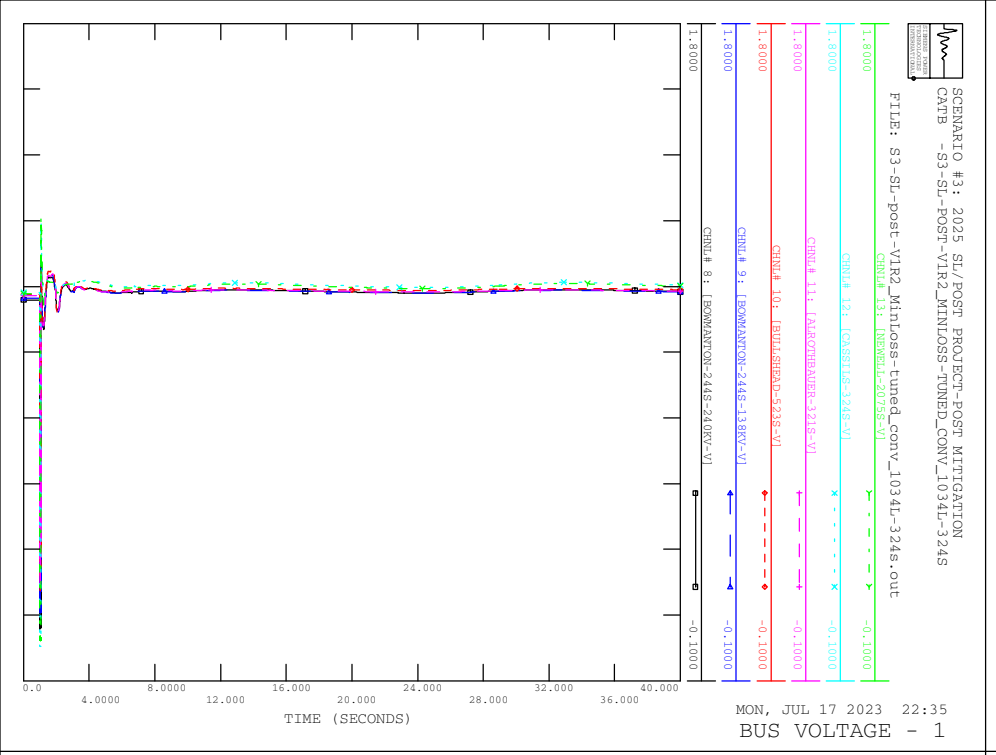

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-244s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
LINE VAR - 1

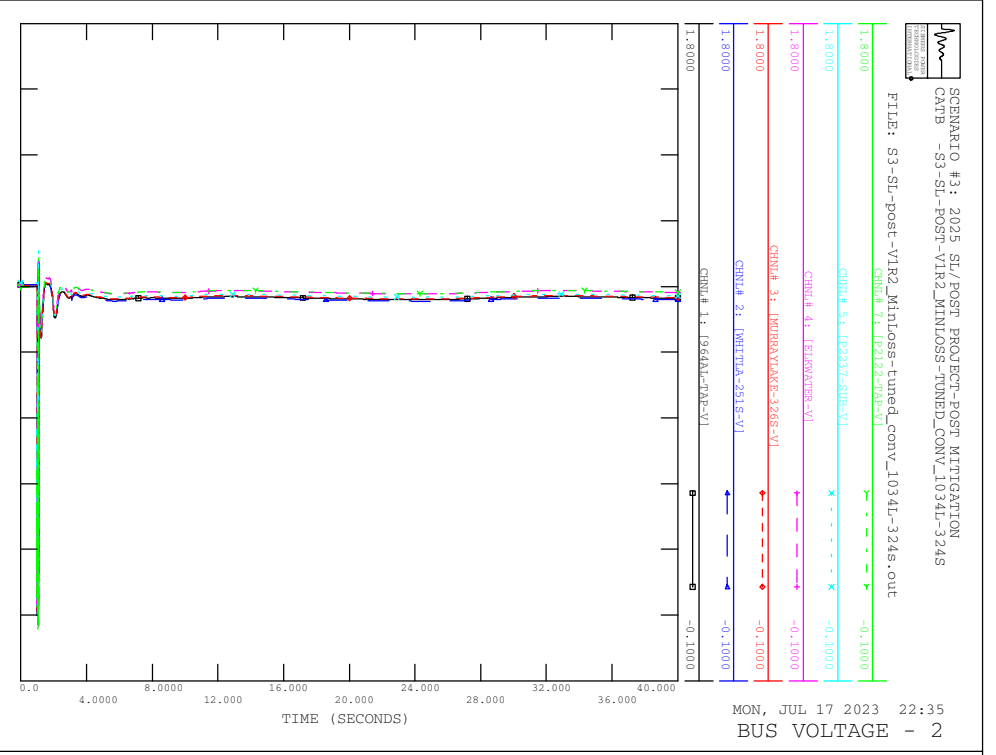

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 1

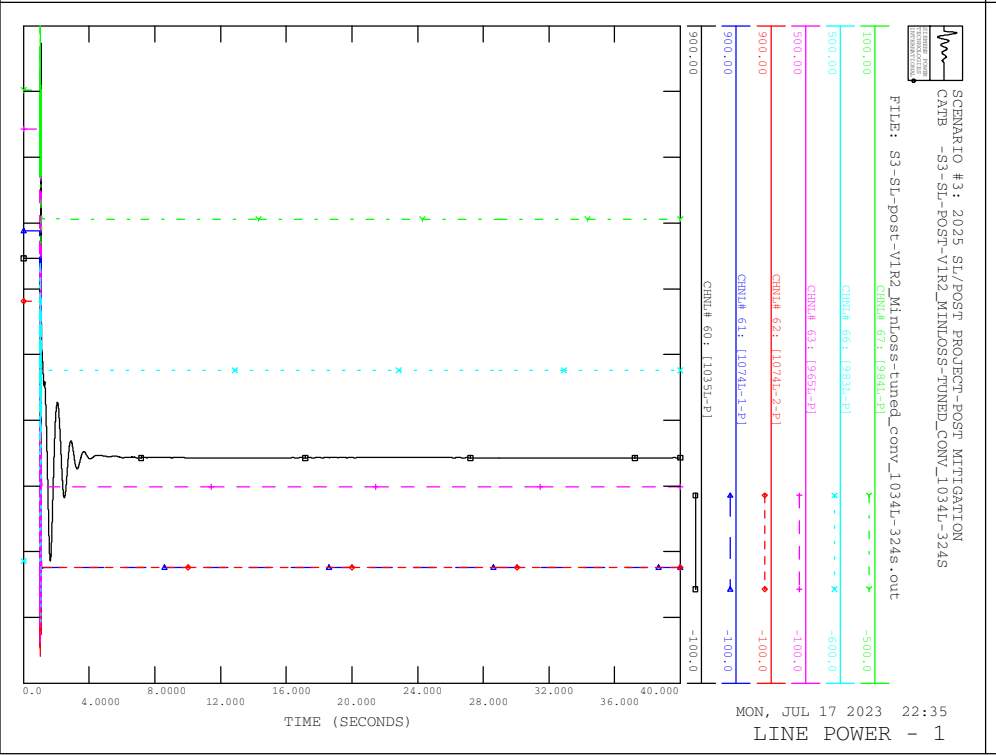

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 2

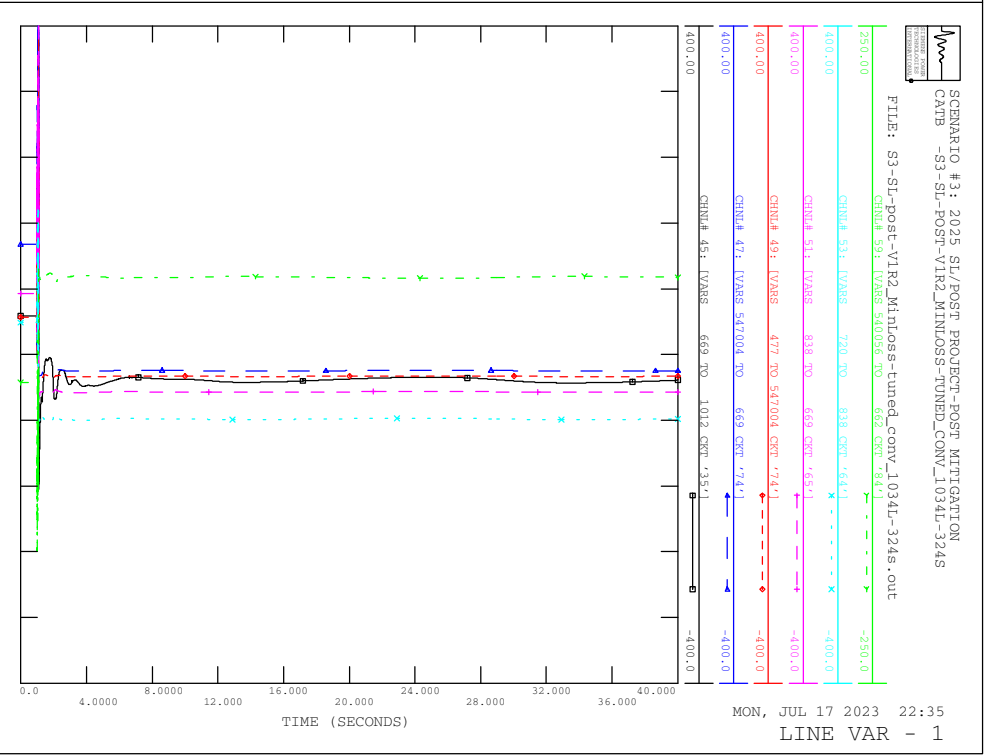

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 1

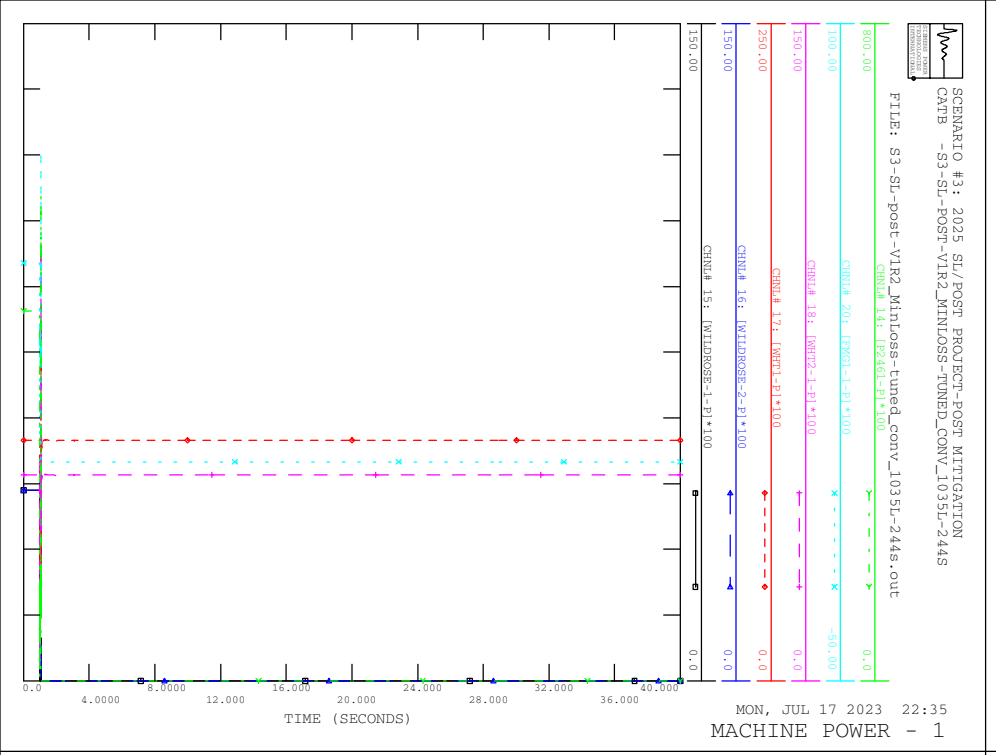

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 2

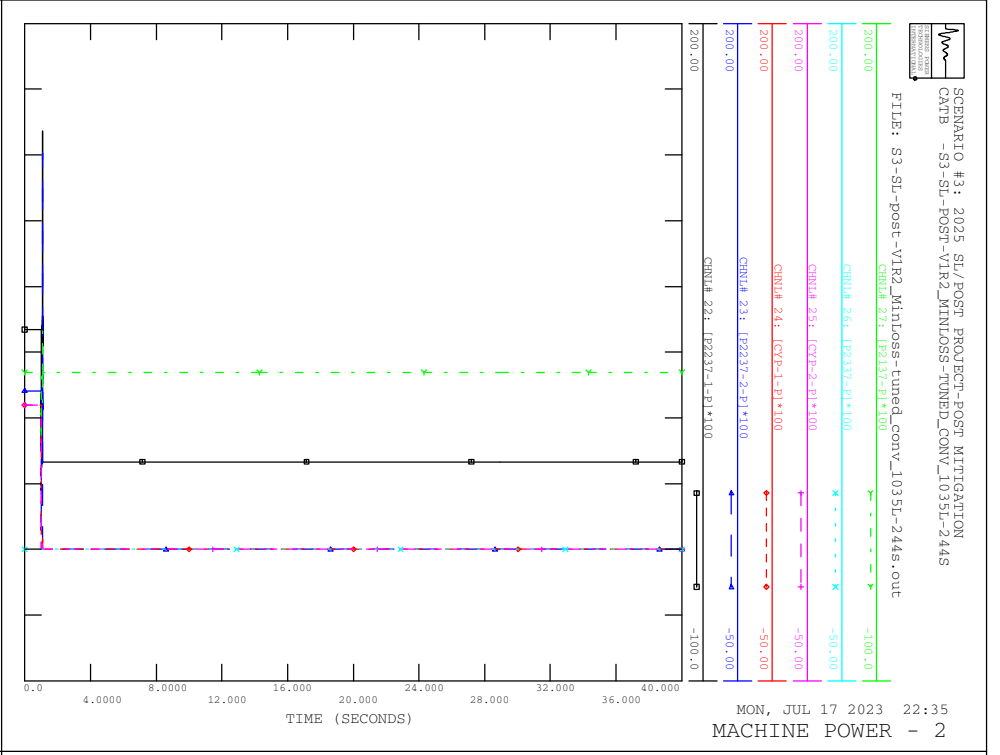

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWDLE-2075S-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
BUS VOLTAGE - 1

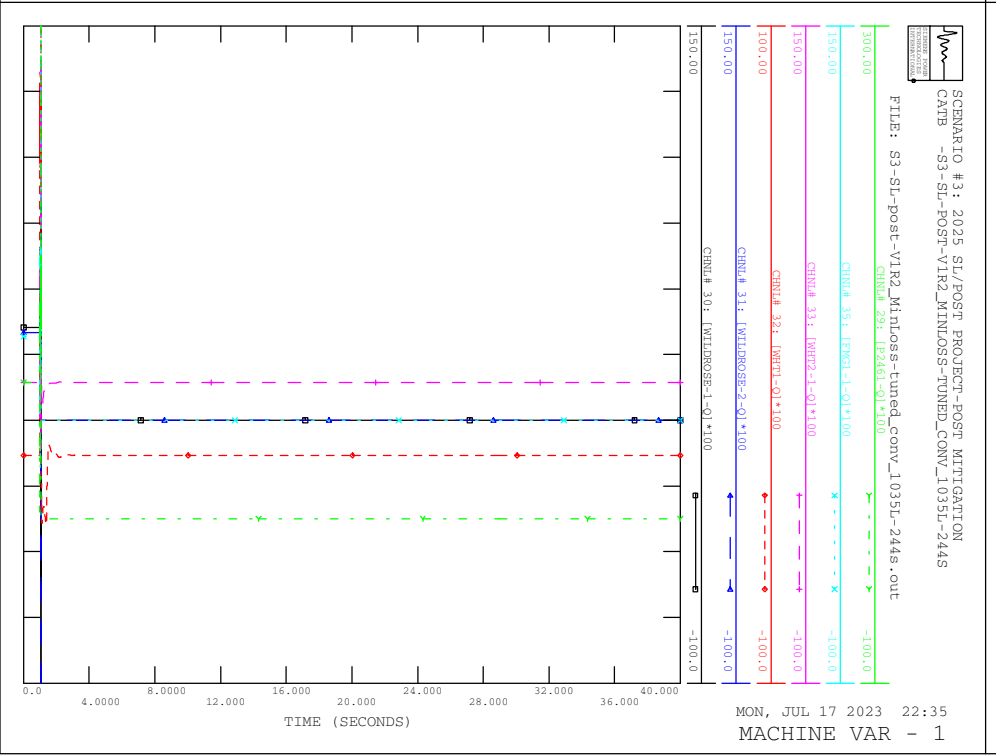

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [MITTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
BUS VOLTAGE - 2

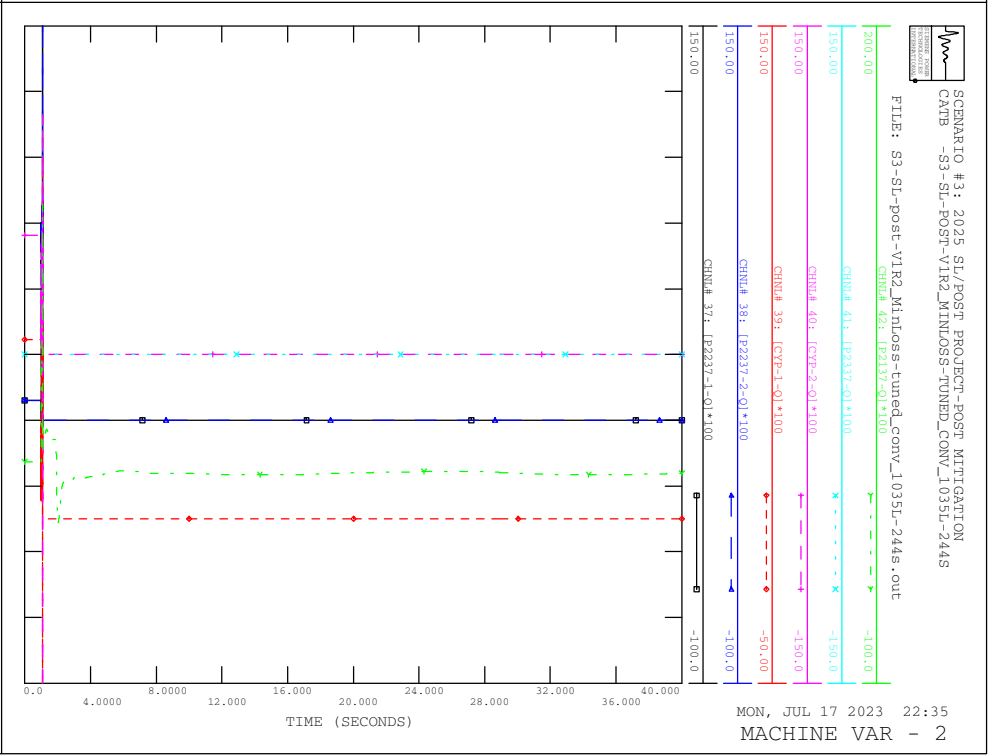

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 60: [1035L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1384L-P]
900.00
-100.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
LINE POWER - 1

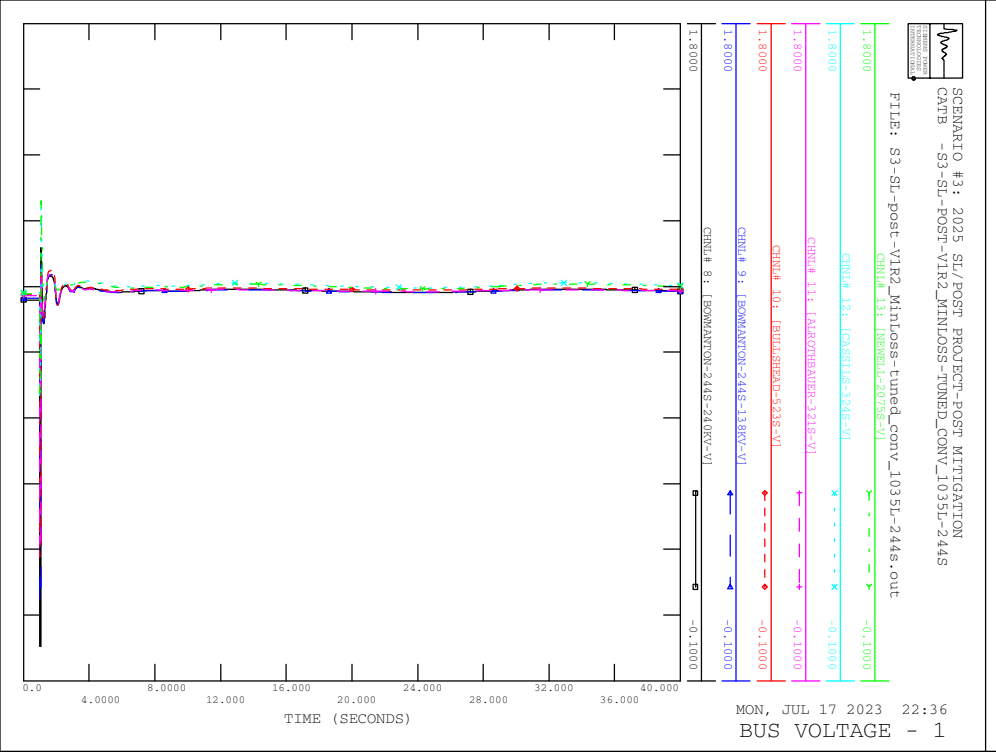

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1034L-324S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1034L-324s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:35
LINE VAR - 1

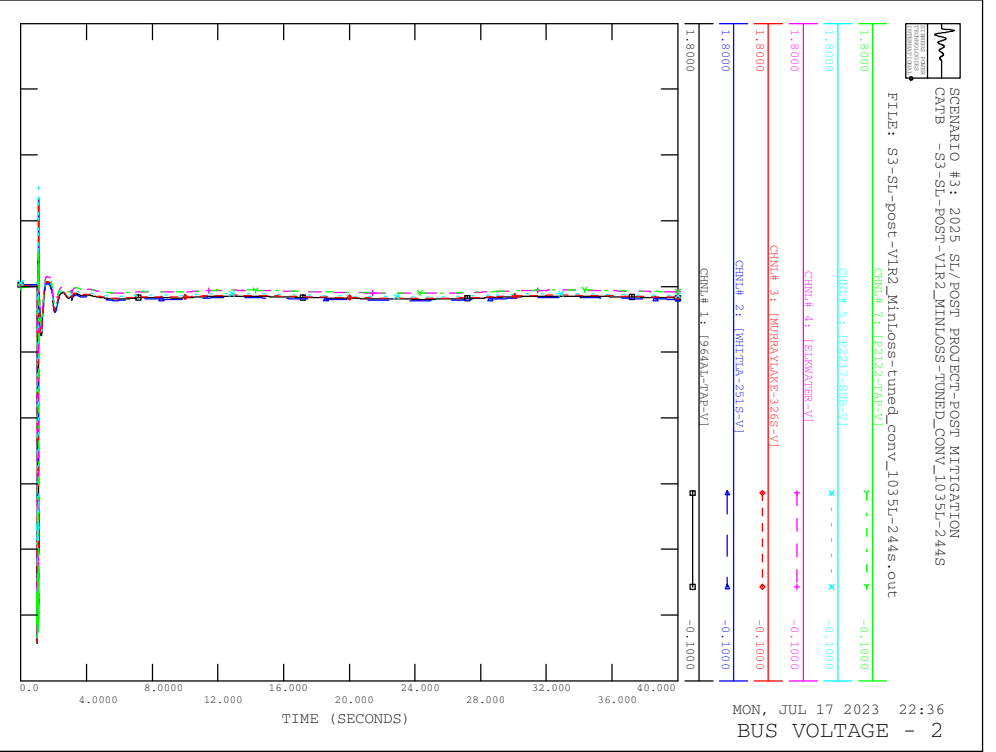

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 1

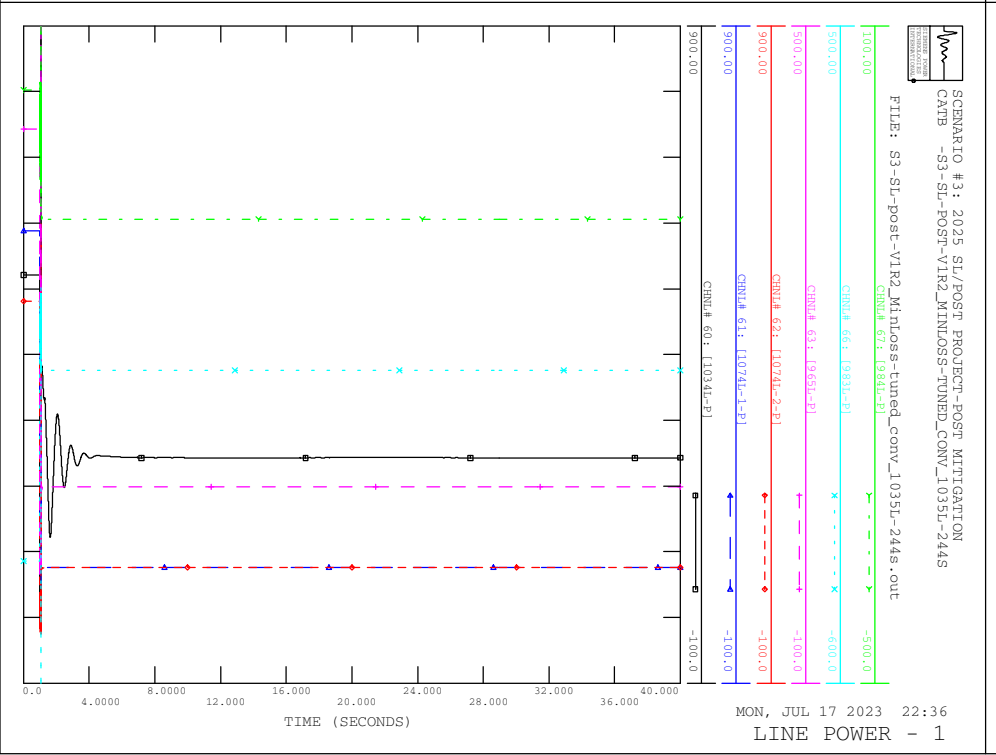

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE POWER - 2

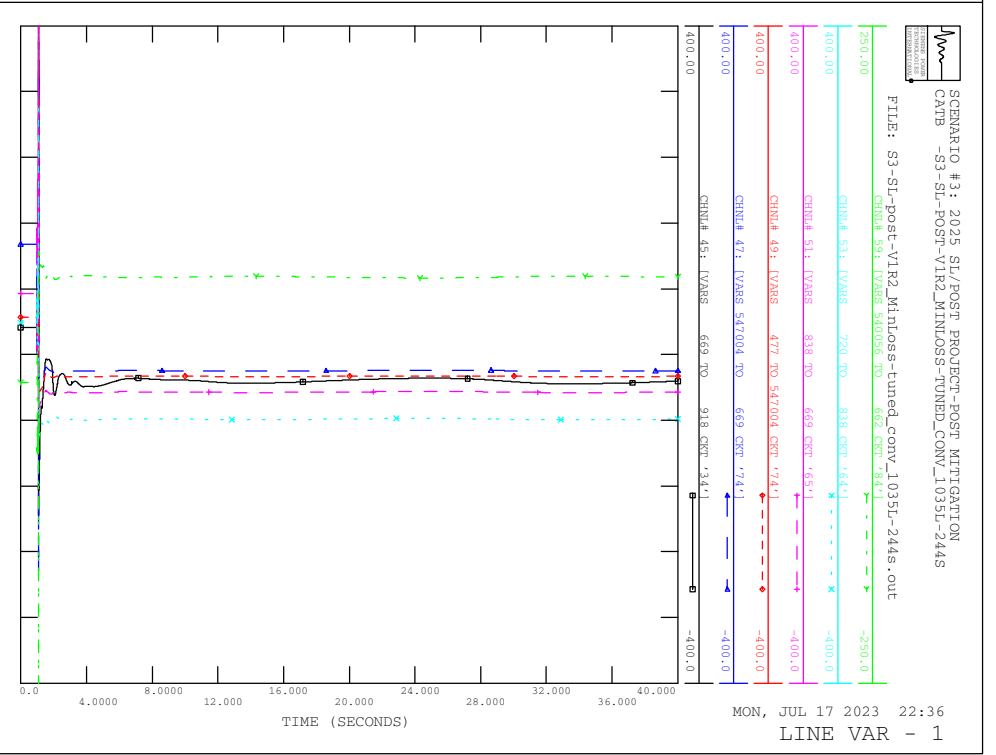

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 1

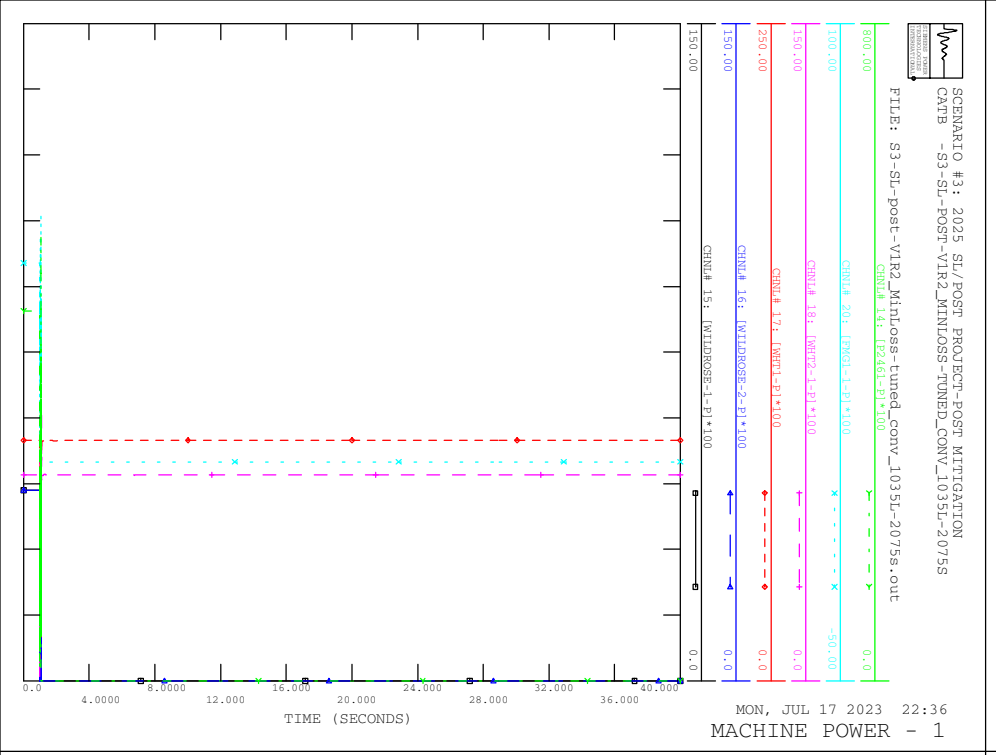

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:35
MACHINE VAR - 2

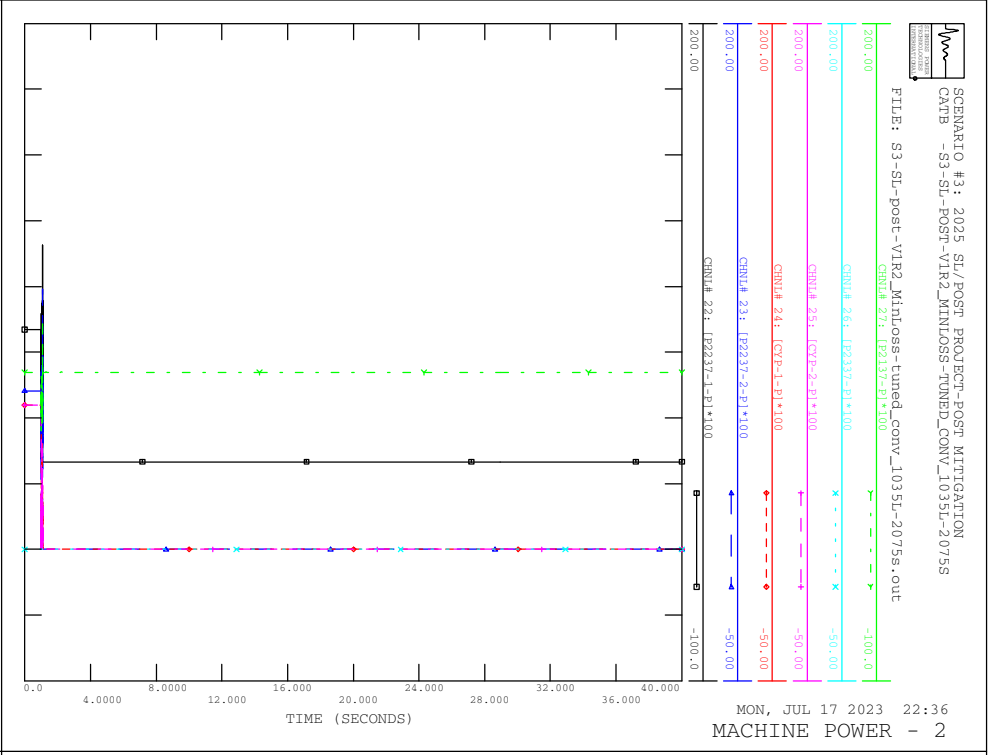

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWDALE-2075S-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 1

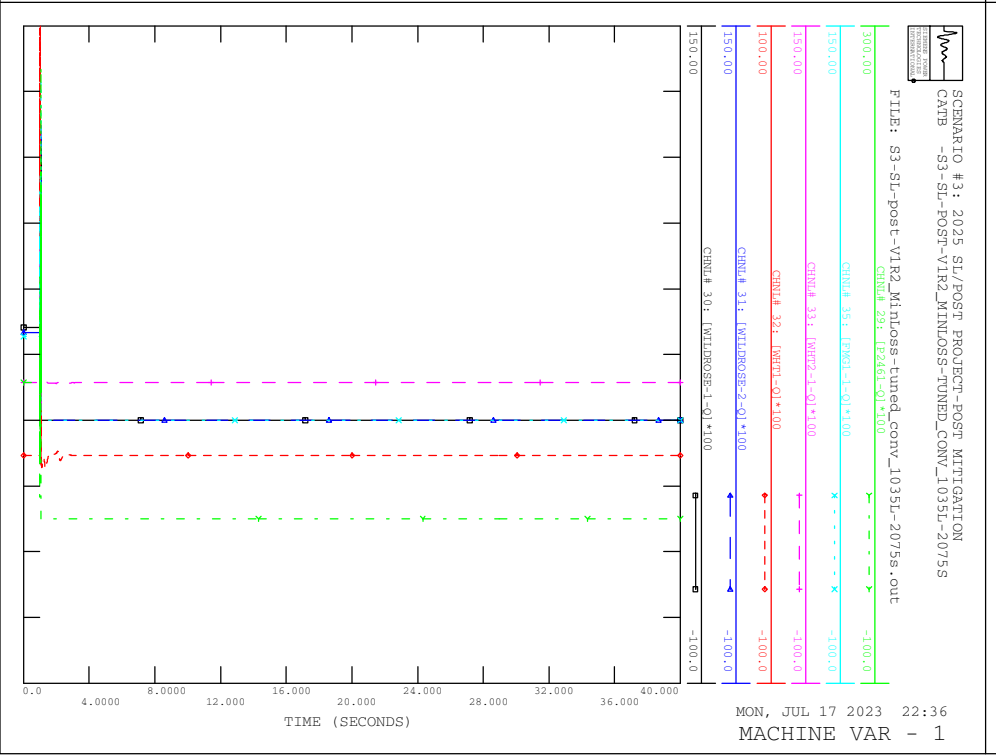

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [MITTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 2

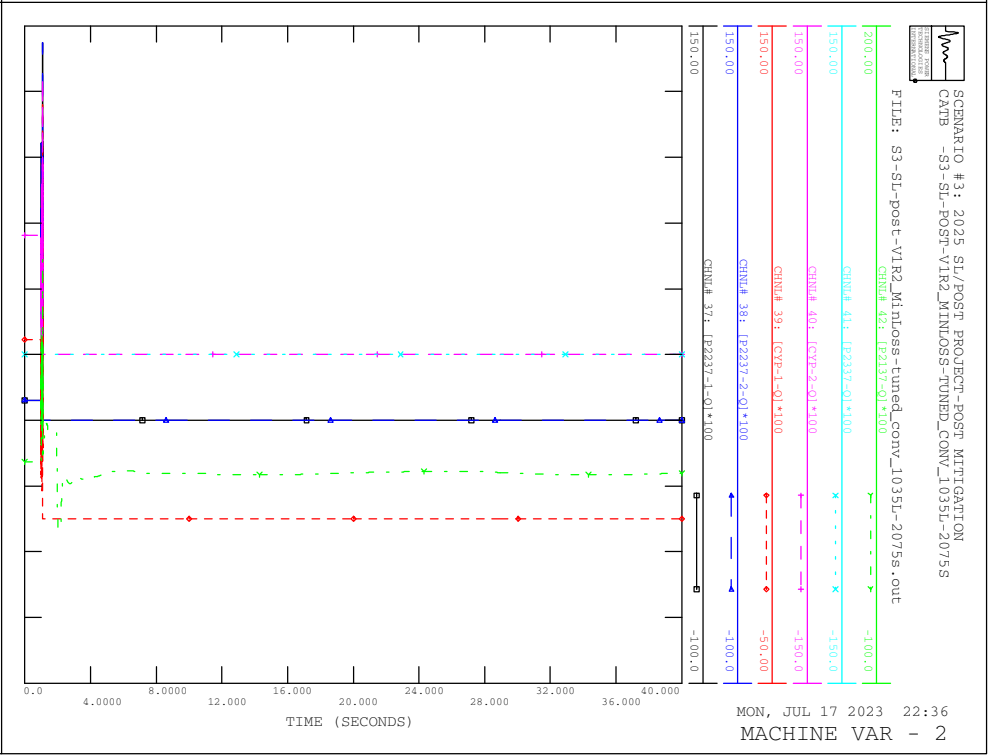

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1384L-P]
900.00
-100.0
500.00
-500.0
100.00
-100.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE POWER - 1

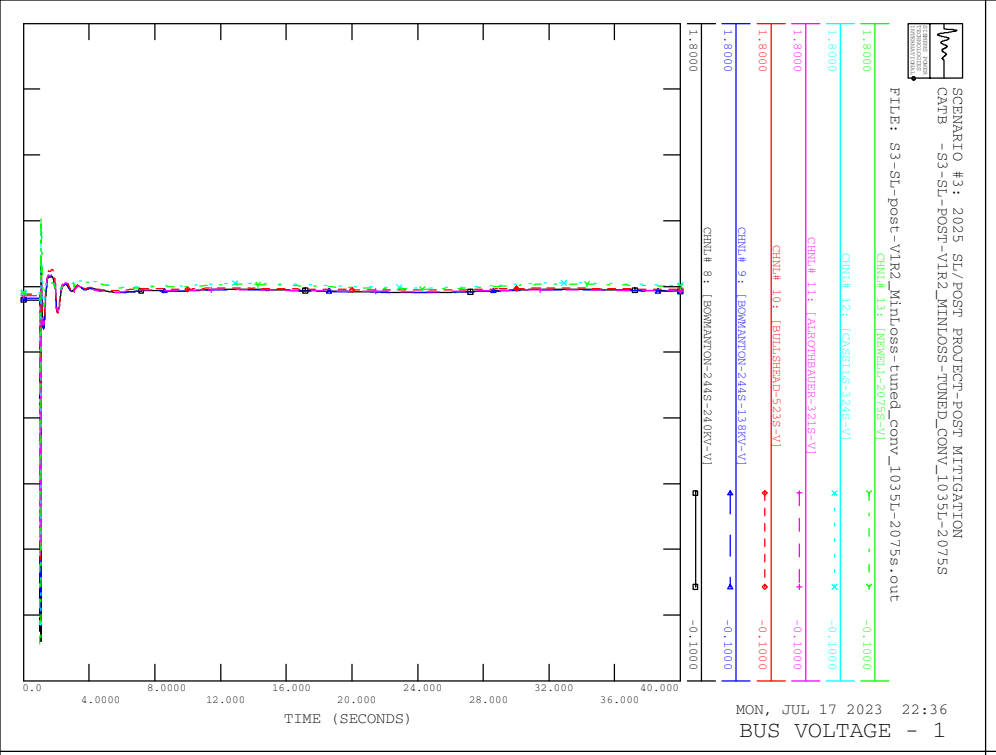

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
250.00
-250.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE VAR - 1

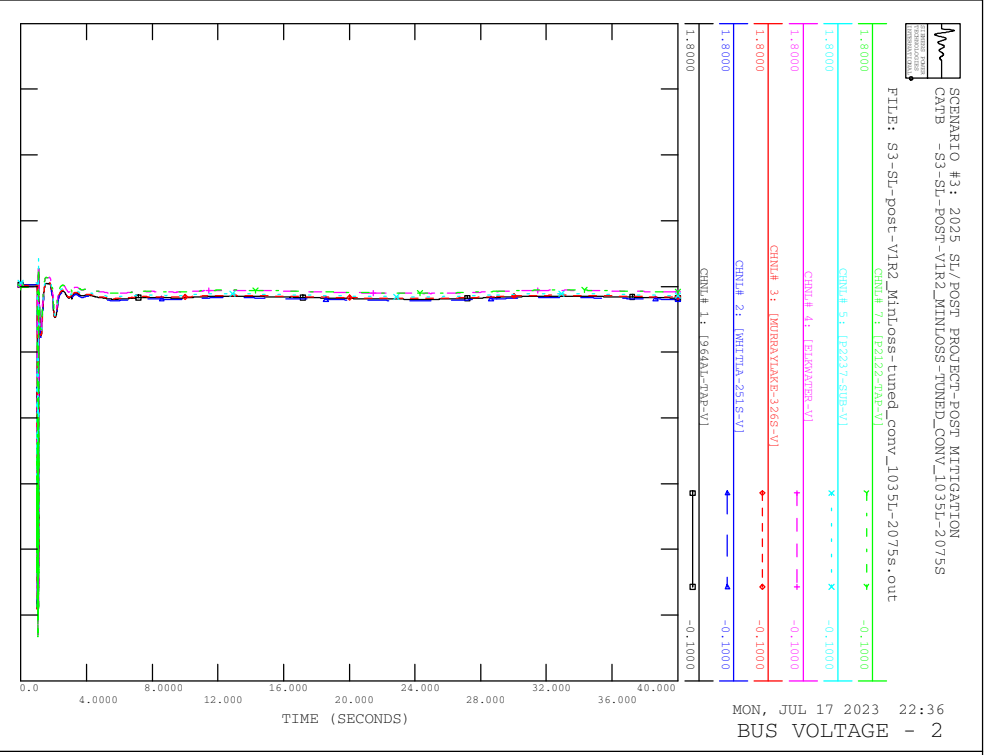

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PNG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE POWER - 1

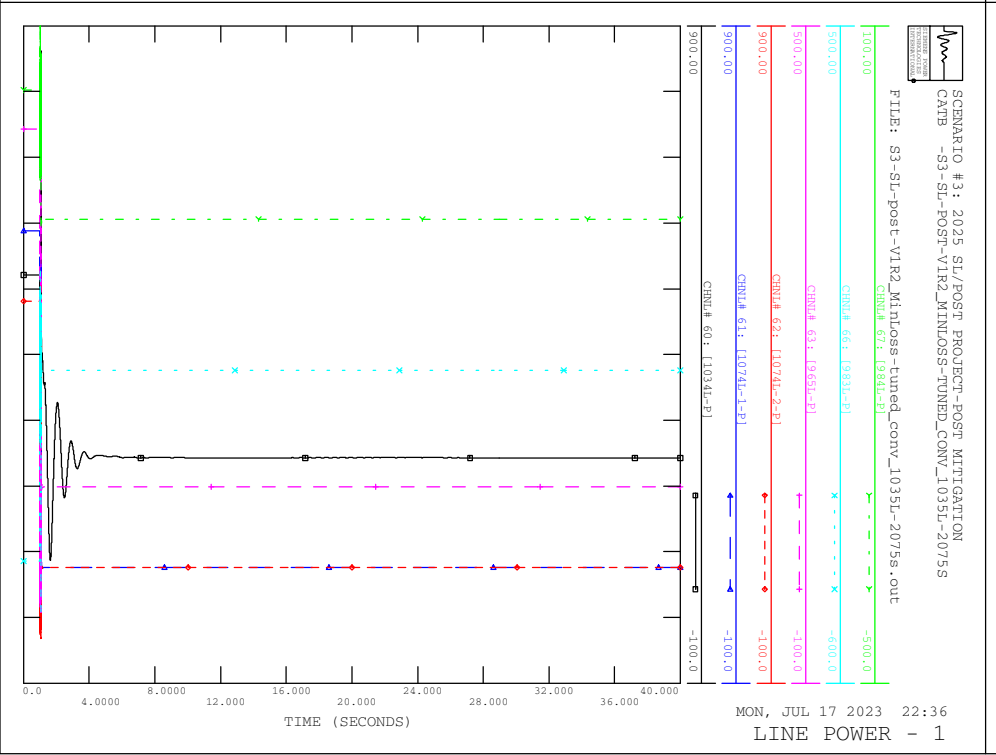

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE POWER - 2

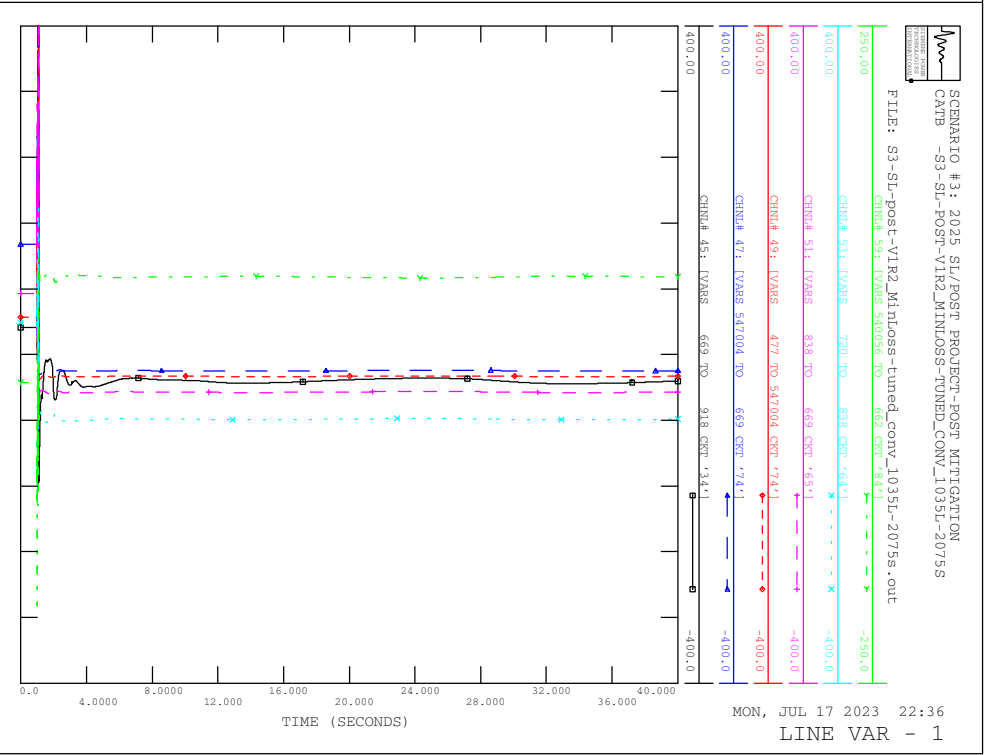

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PNG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE VAR - 1

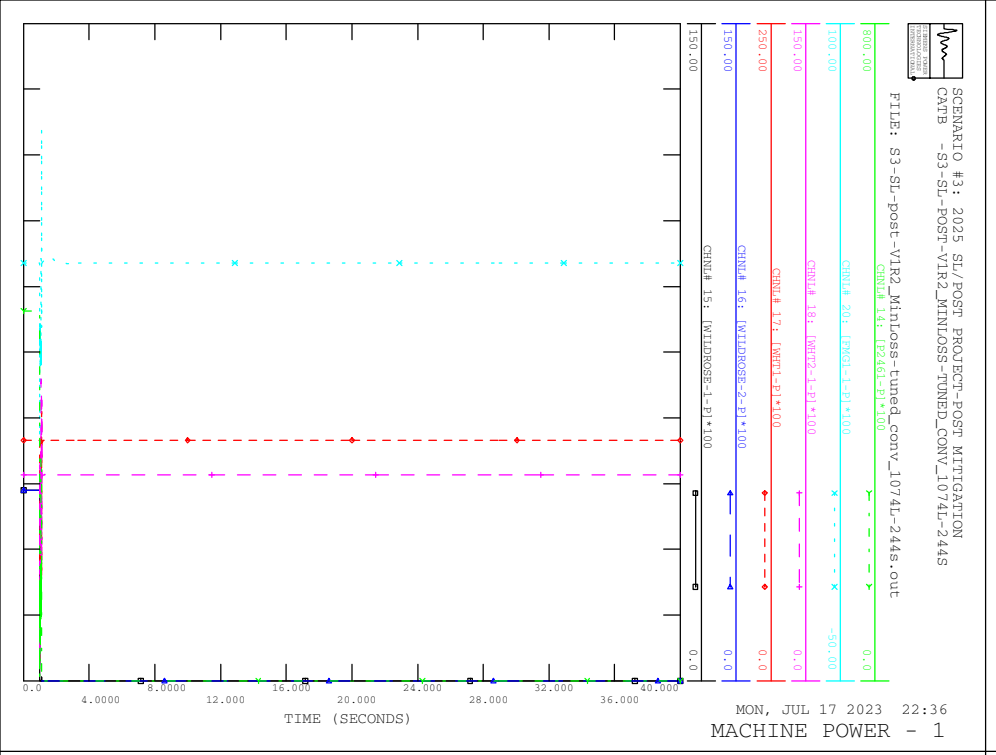

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE VAR - 2

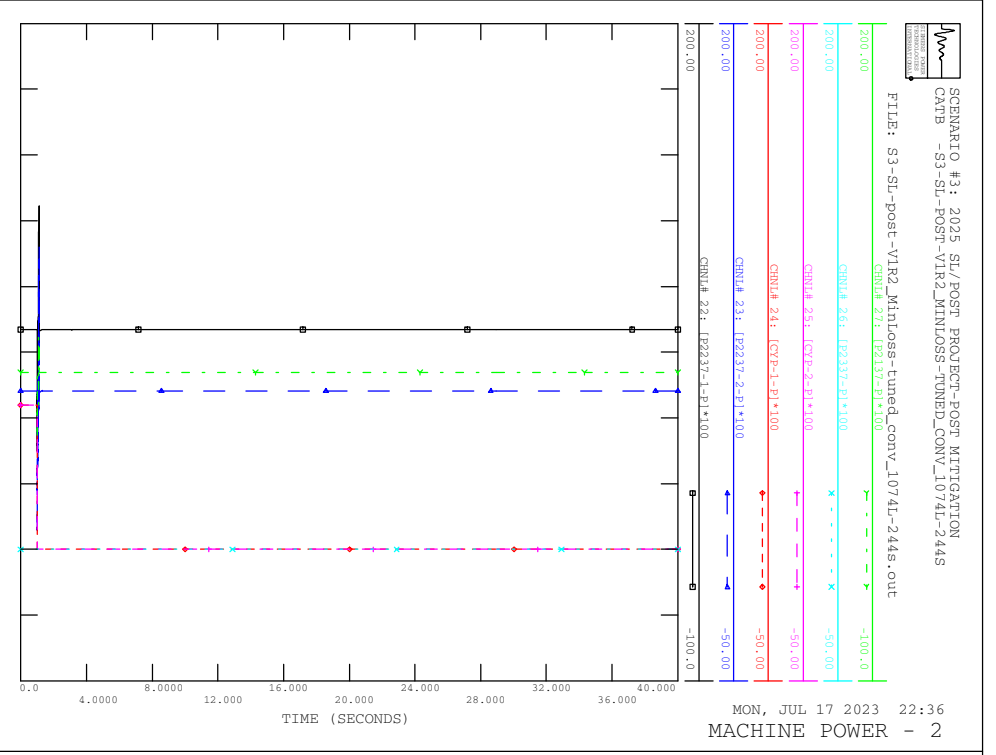

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLA-2075S-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 1

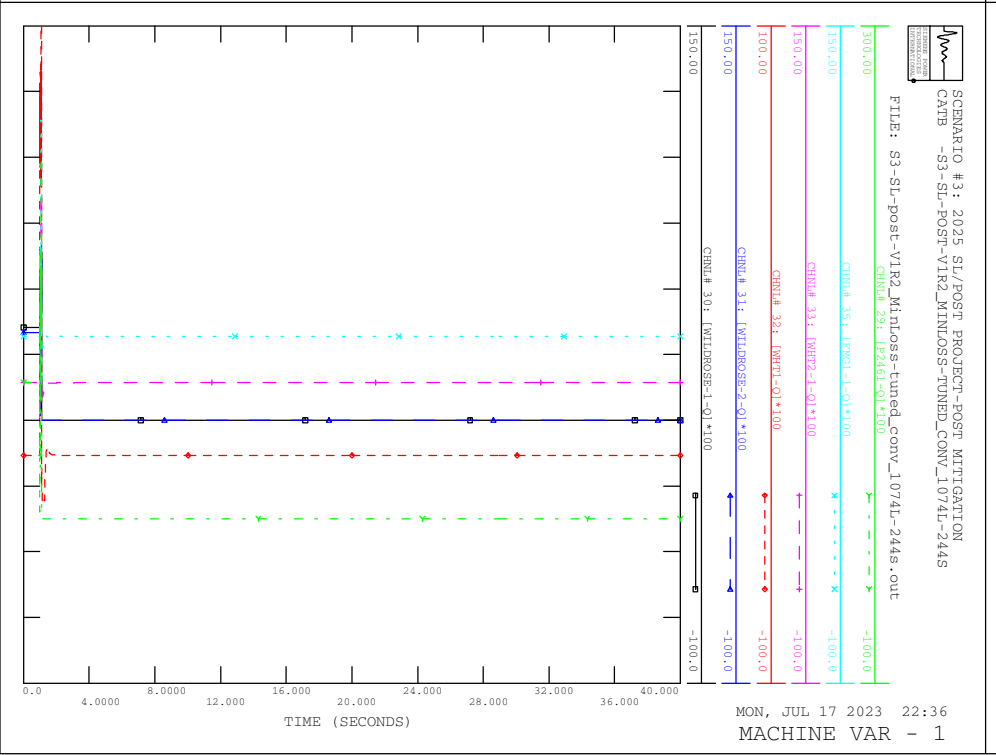

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 2

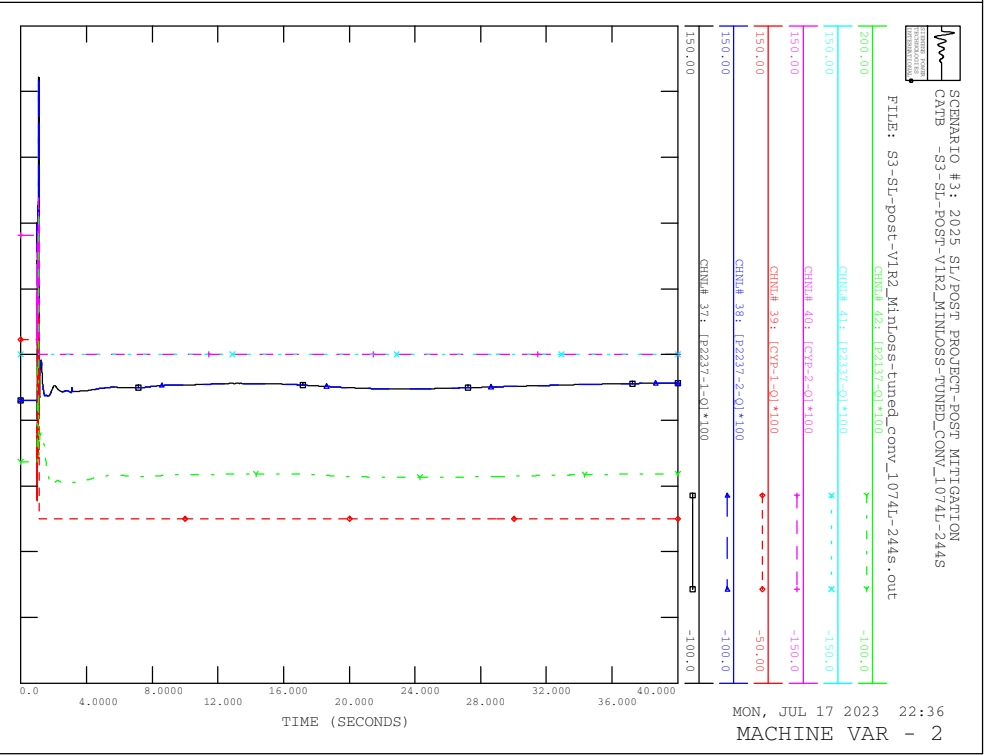

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
900.00
-100.0
500.00
-600.0
100.00
-500.0
0.0
4.0000
8.0000
12.000
16.000
20.000
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28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE POWER - 1

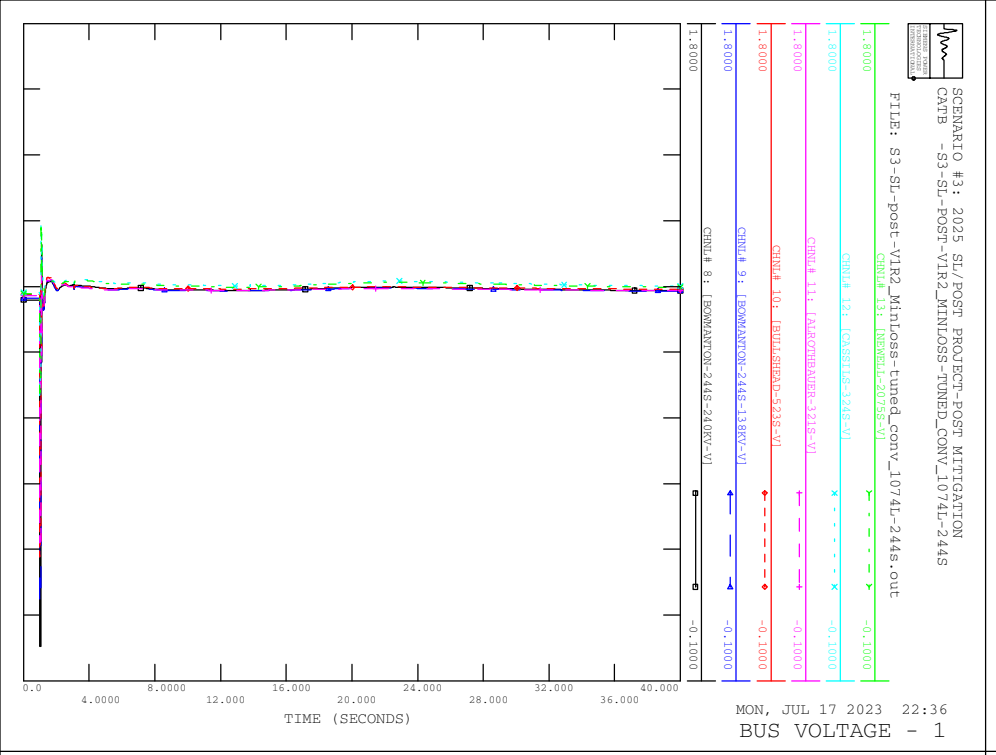

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1035L-2075S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
250.00
-250.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
40.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE VAR - 1

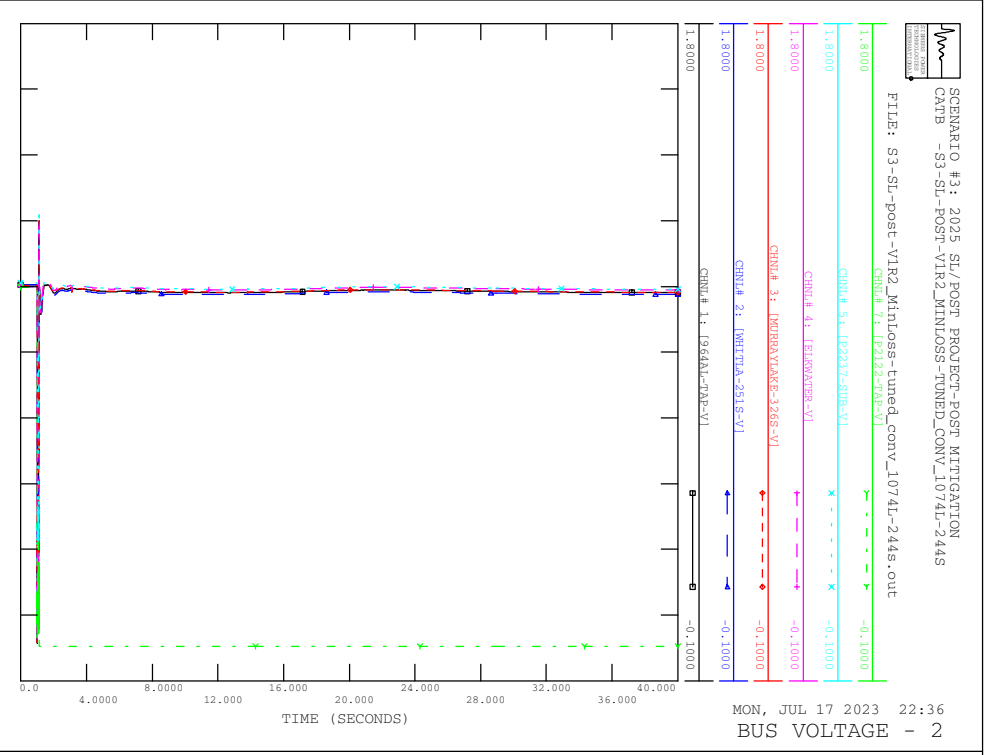

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PNG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE POWER - 1

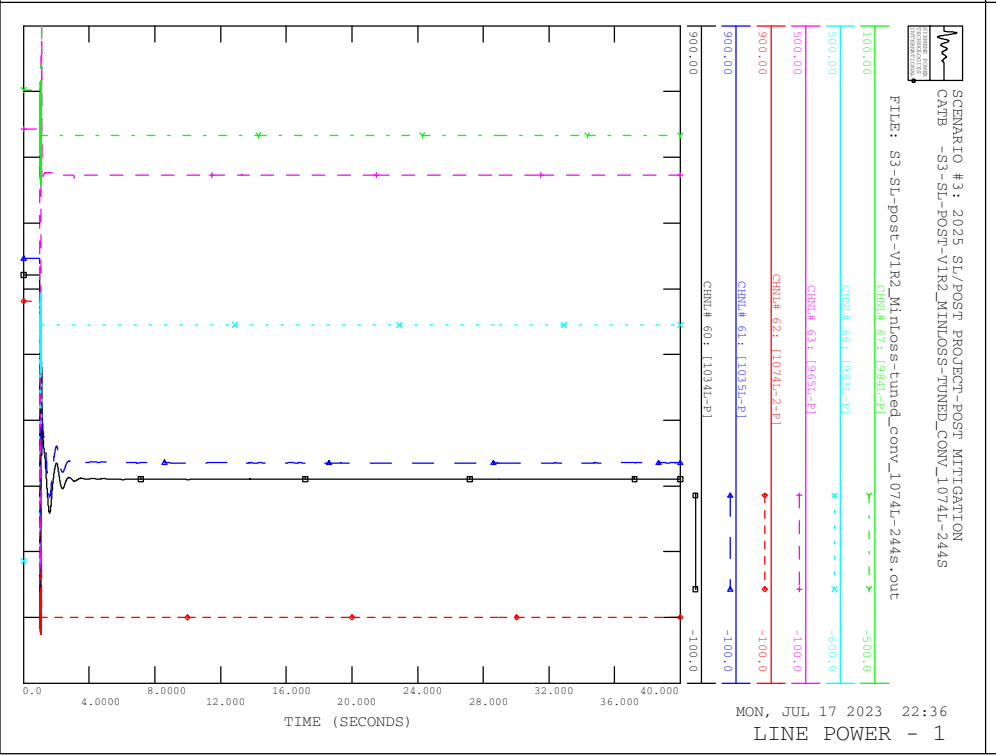

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE POWER - 2

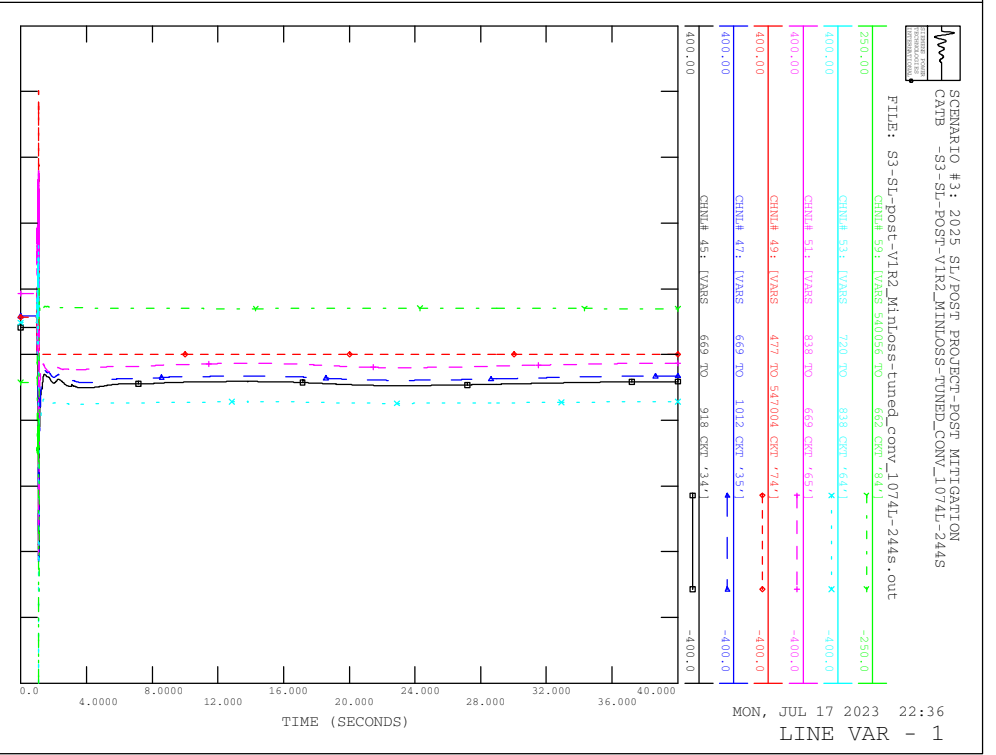

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PNG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE VAR - 1

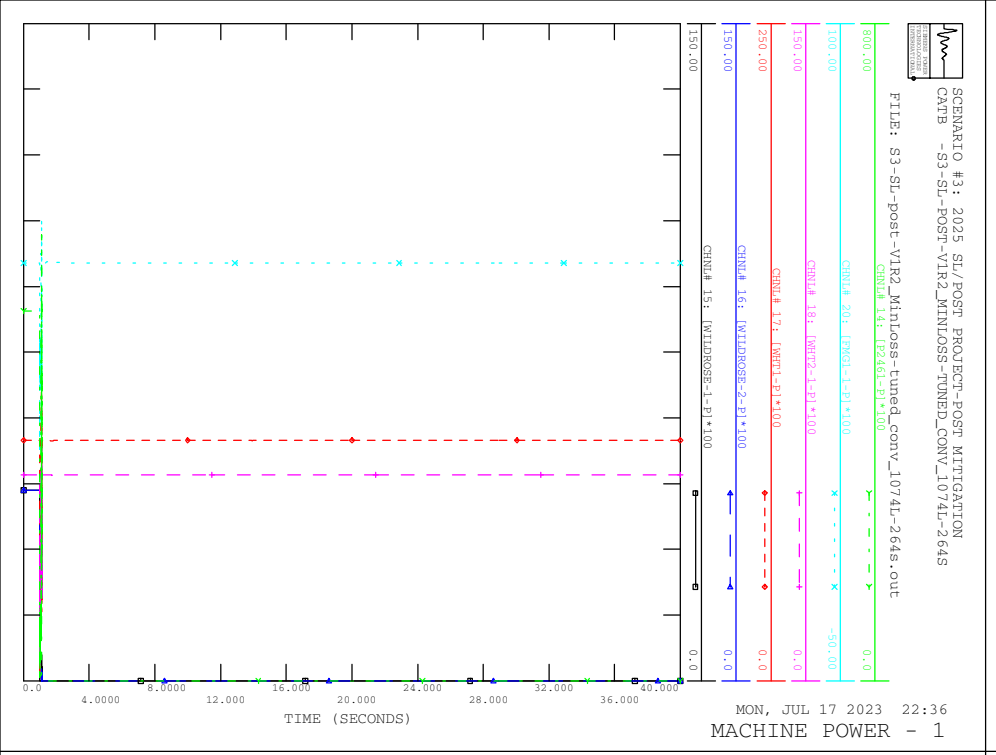

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE VAR - 2

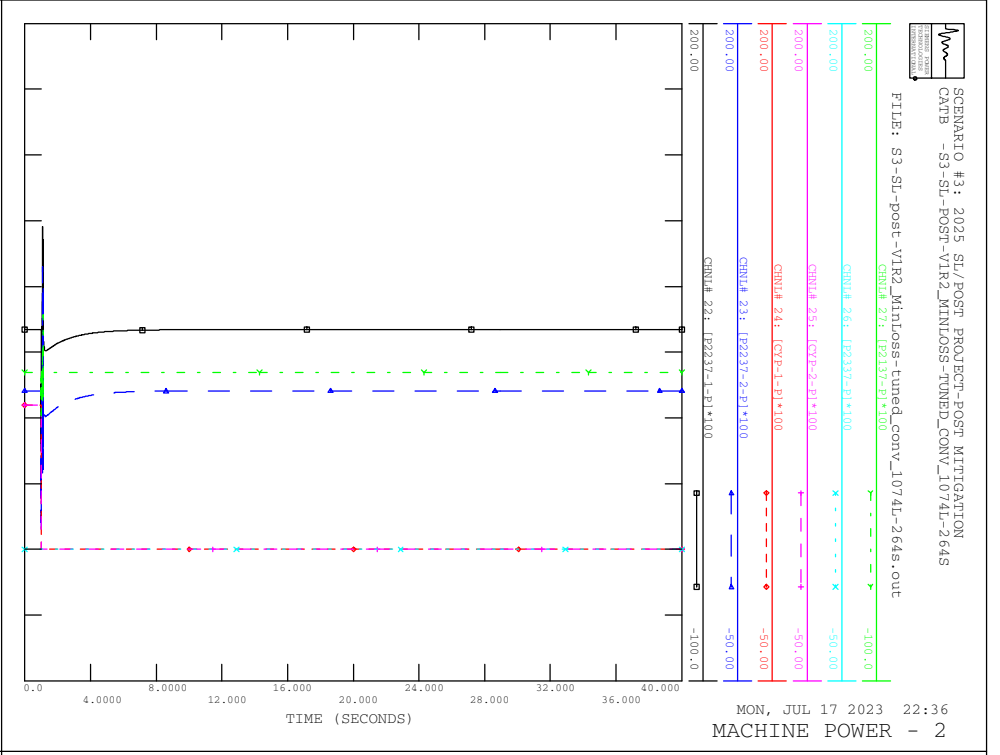

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWGLD-2075S-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 1

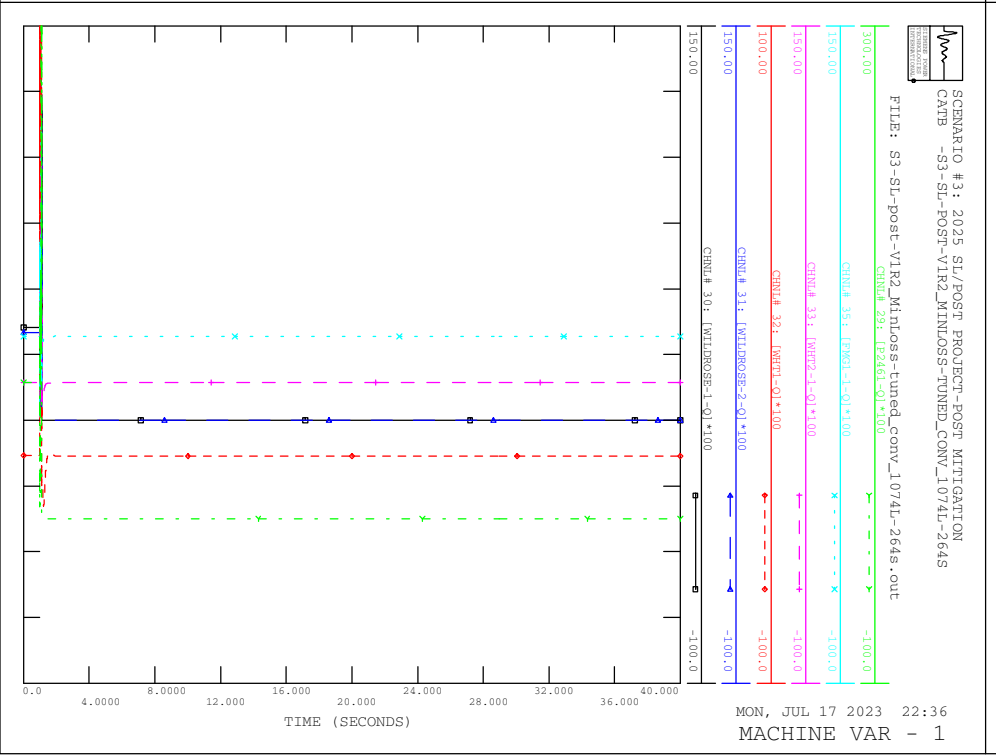

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 2

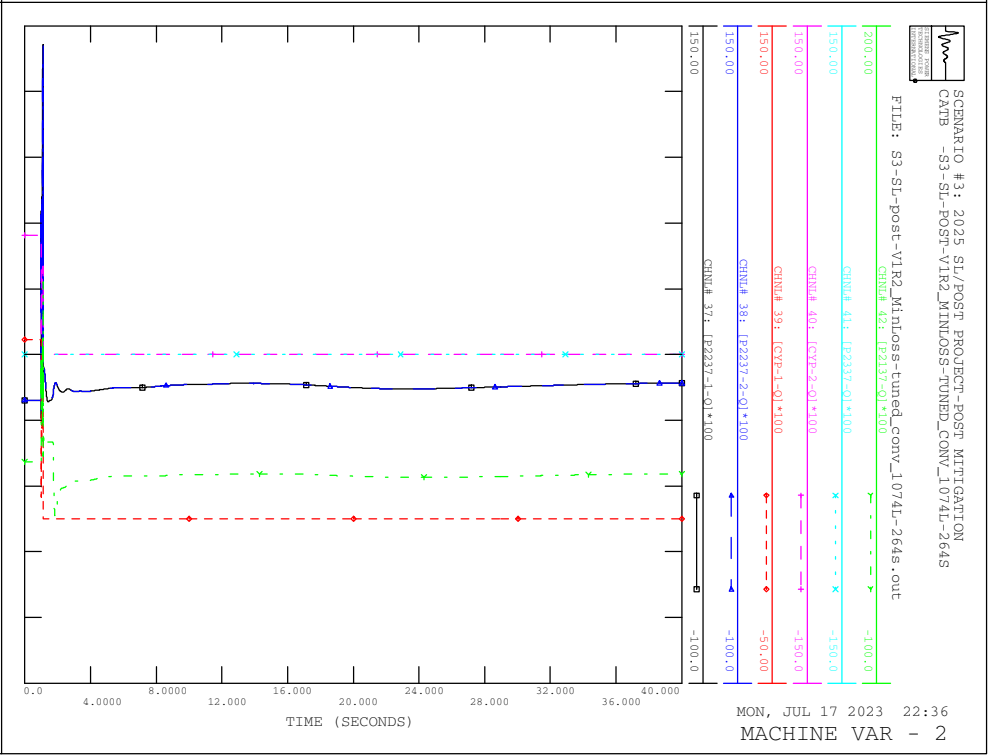

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
900.00
-100.0
500.00
-500.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE POWER - 1

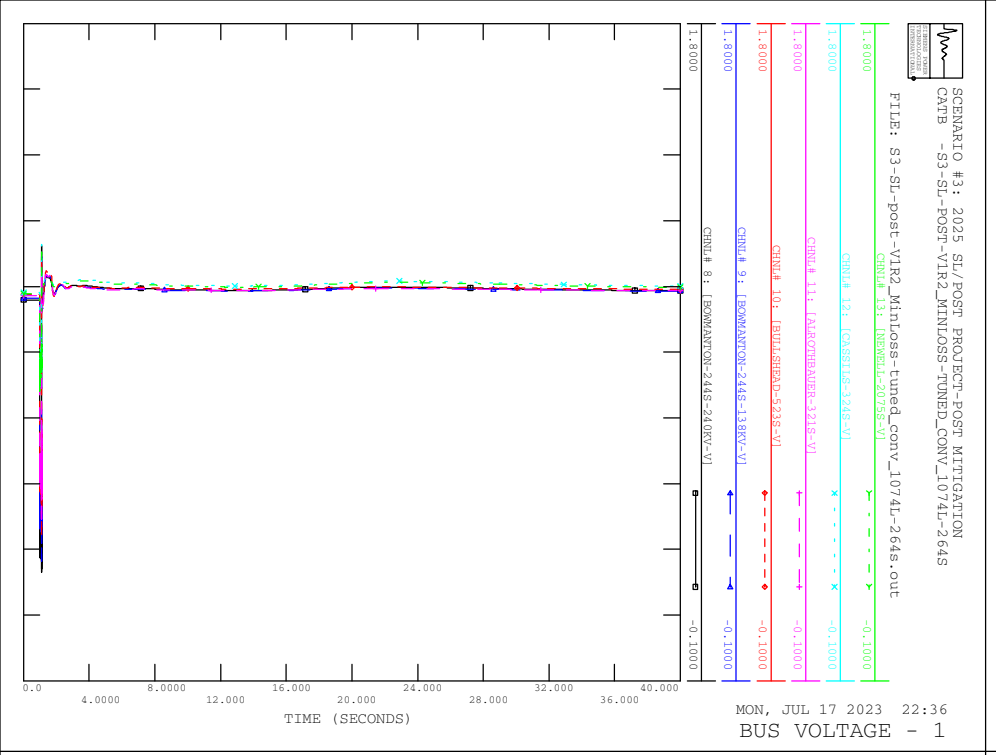

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-244S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
250.0
-250.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE VAR - 1

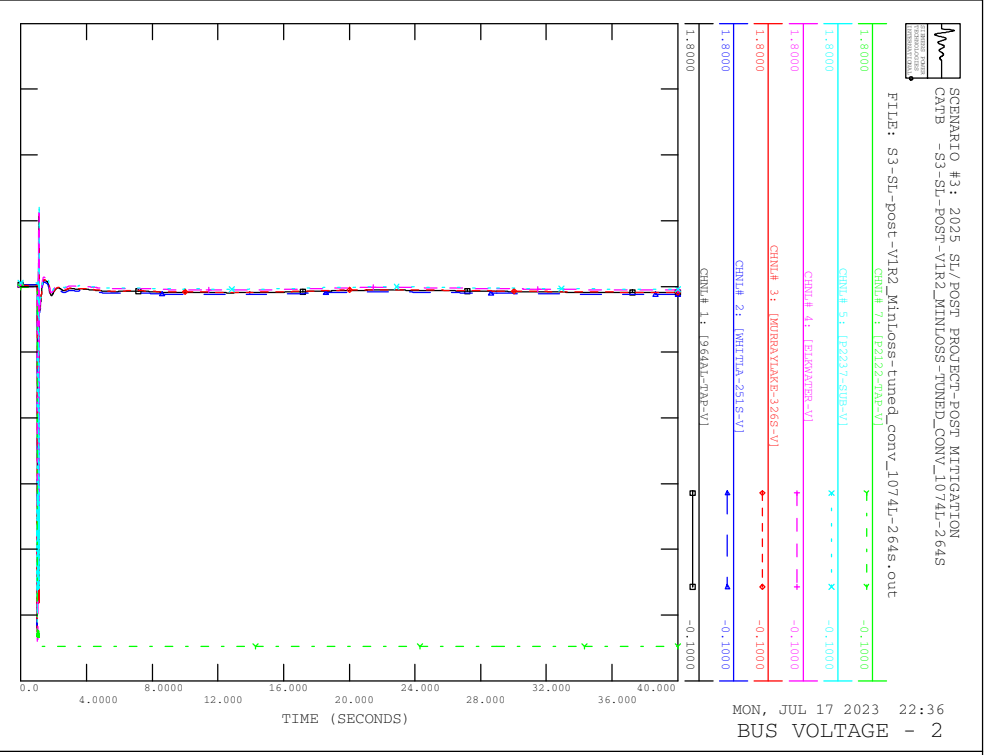

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 14: [P2461-P]*100
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [FMG1-1-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE POWER - 1

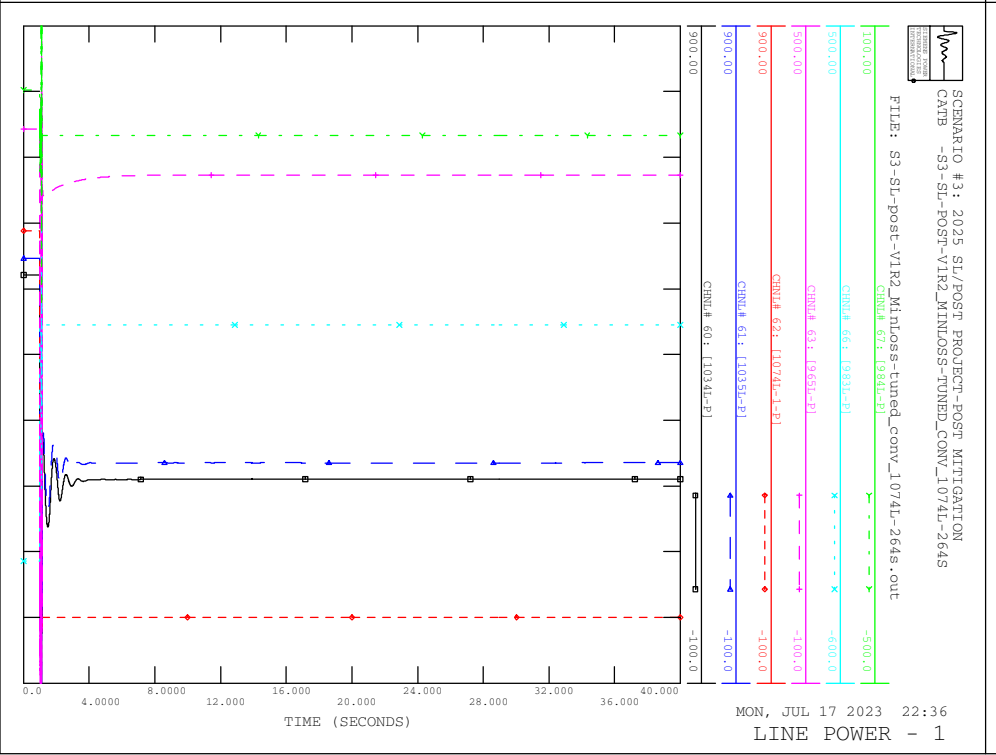

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE POWER - 2

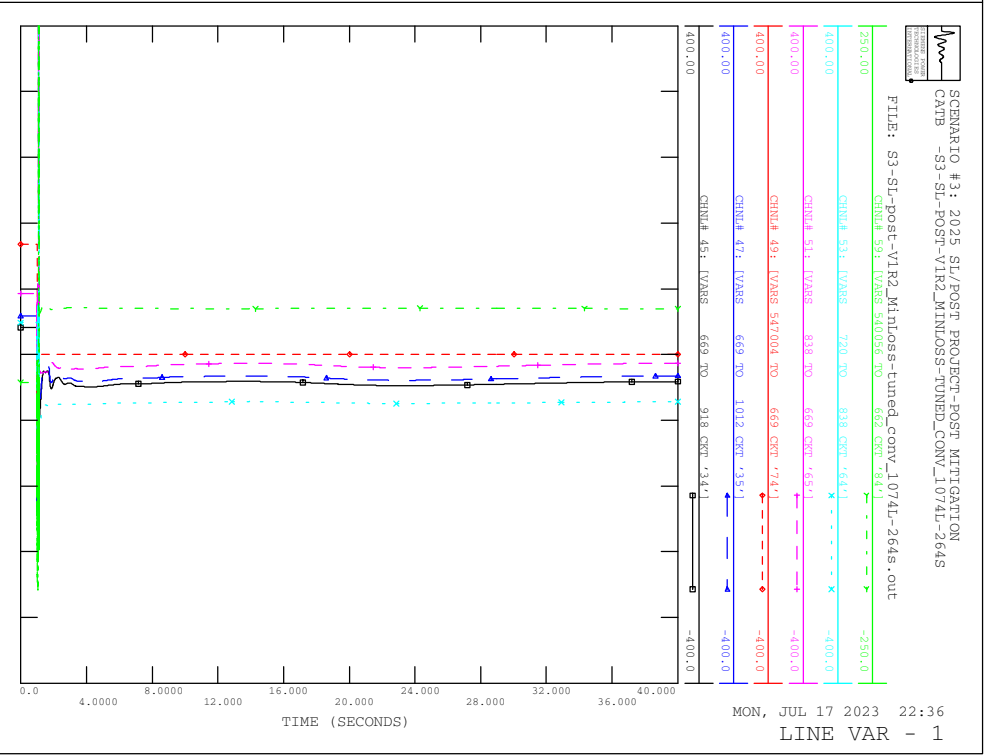

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 29: [P2461-Q]*100
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [FMG1-1-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE VAR - 1


SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
MON, JUL 17 2023 22:36
MACHINE VAR - 2


SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSILS-325S-V]
CHNL# 13: [NEWDLE-2075S-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 1

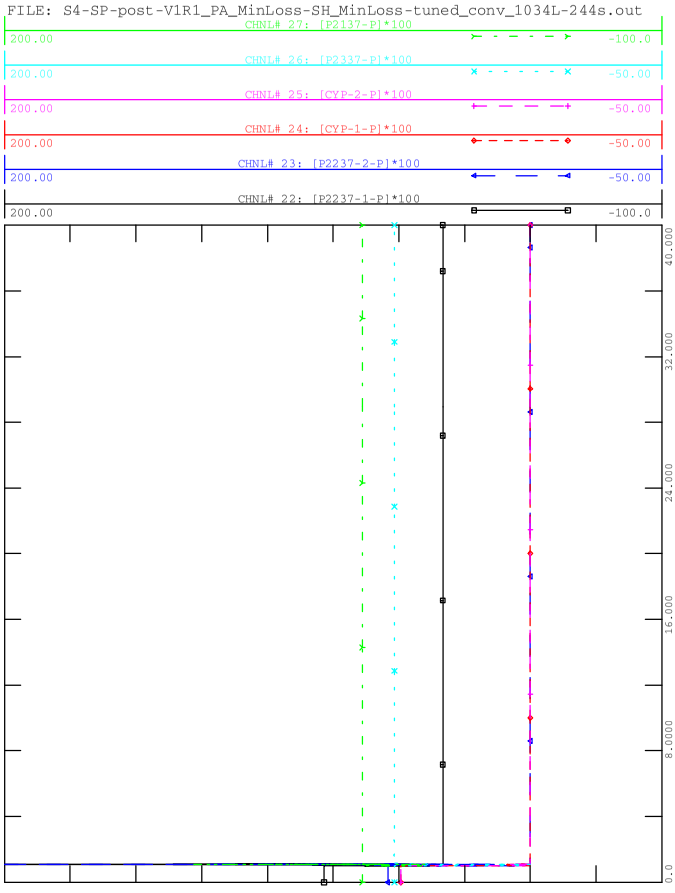

SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [MITTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
1.8000
-0.1000
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
BUS VOLTAGE - 2


SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1384L-P]
900.00
-100.0
500.00
-600.0
100.00
-500.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE POWER - 1


SCENARIO #3: 2025 SL/POST PROJECT-POST MITIGATION
CATB -S3-SL-POST-V1R2_MINLOSS-TUNED_CONV_1074L-264S
FILE: S3-SL-post-V1R2_MinLoss-tuned_conv_1074L-264s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
400.00
-400.0
250.00
-250.0
0.0
4.0000
8.0000
12.000
16.000
20.000
24.000
28.000
32.000
36.000
TIME (SECONDS)
MON, JUL 17 2023 22:36
LINE VAR - 1

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034

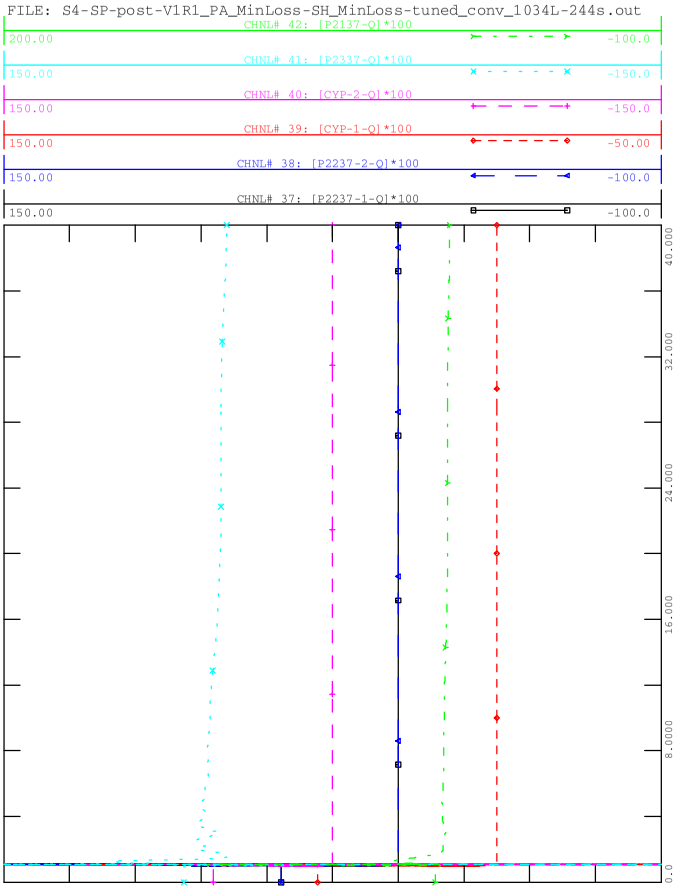
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out



THU, AUG 31 2023 23:15
MACHINE POWER - 2

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034

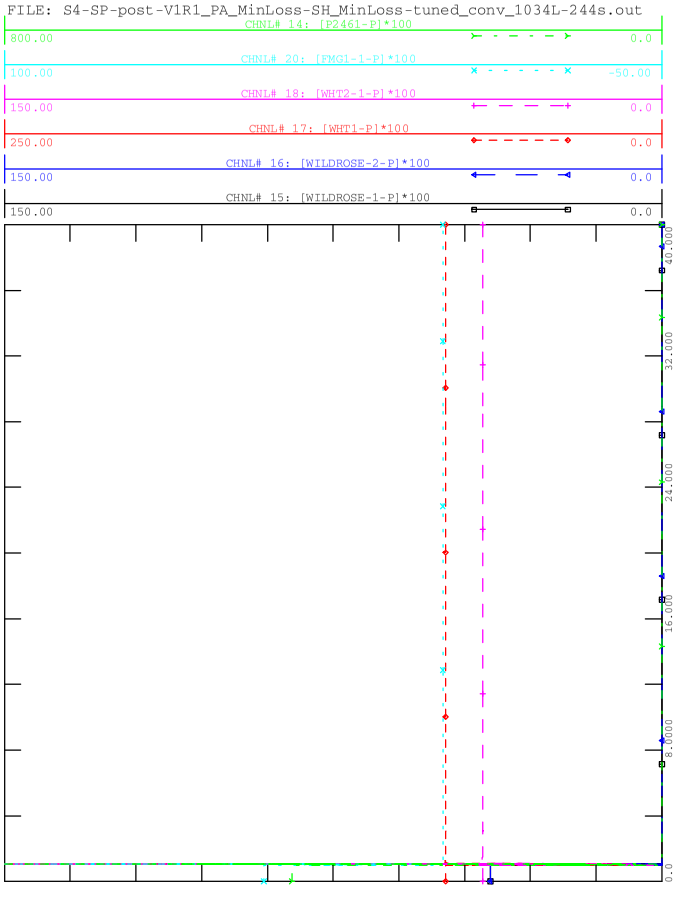
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out



THU, AUG 31 2023 23:15
MACHINE VAR - 2

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034

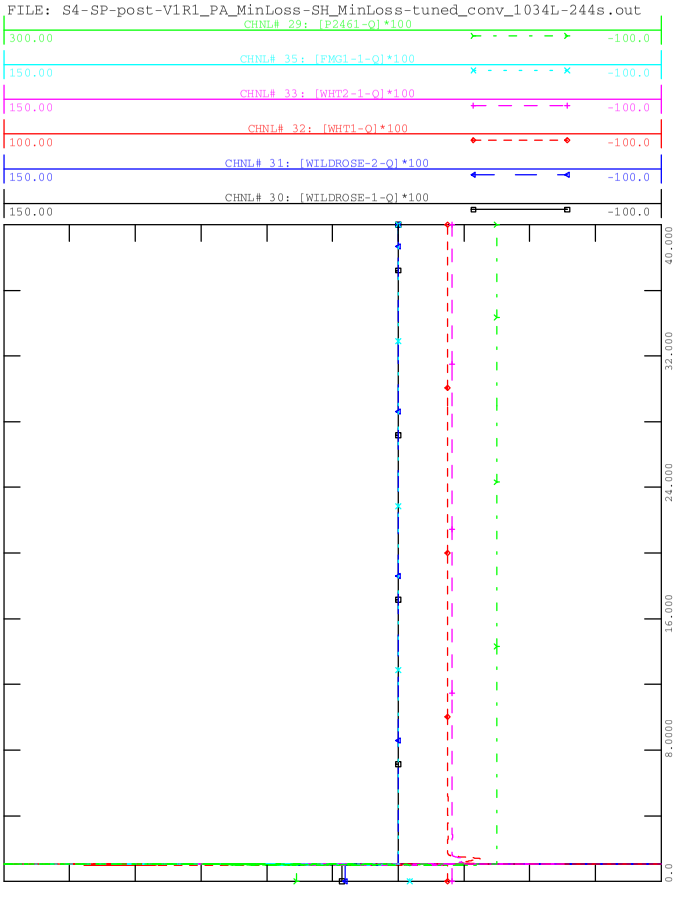
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out



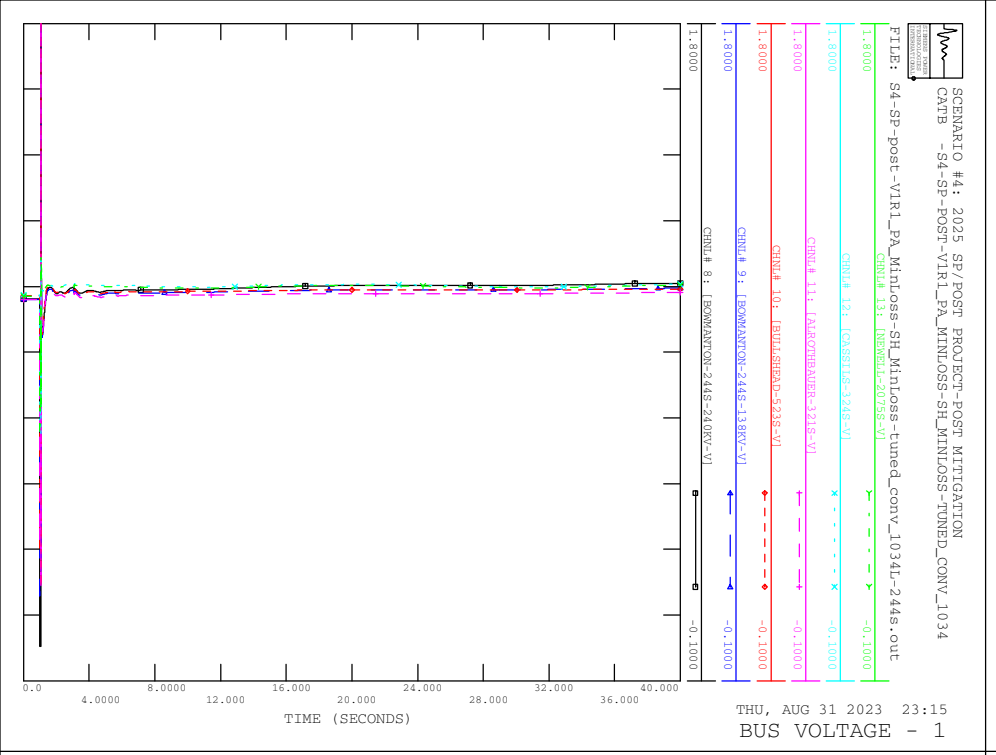
THU, AUG 31 2023 23:14
MACHINE POWER - 1

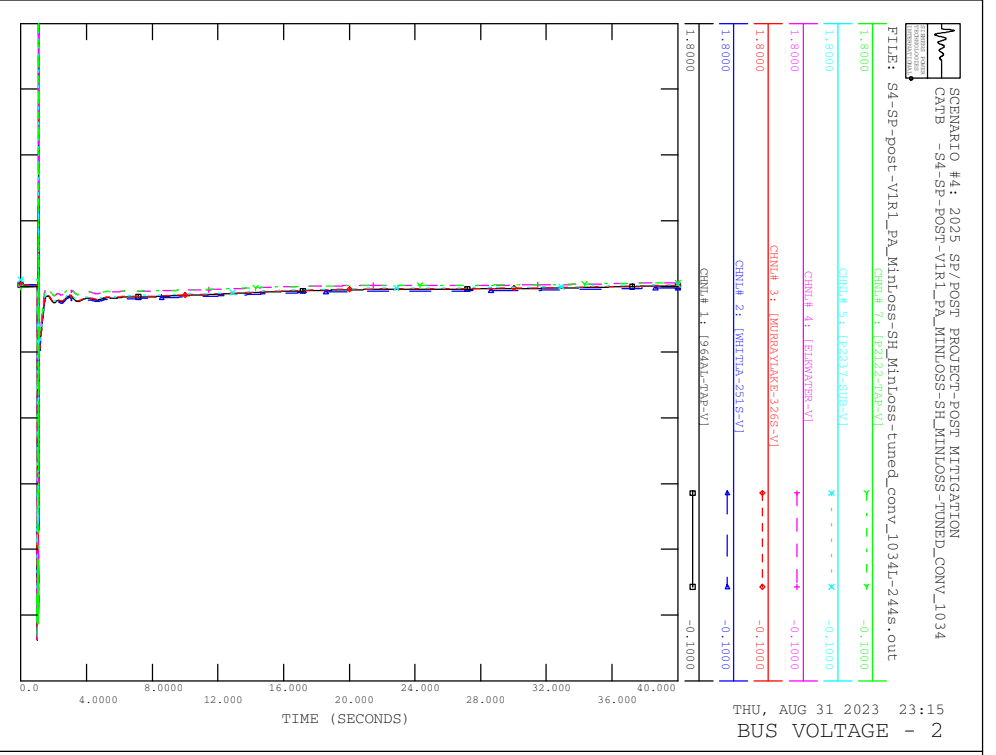
SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034

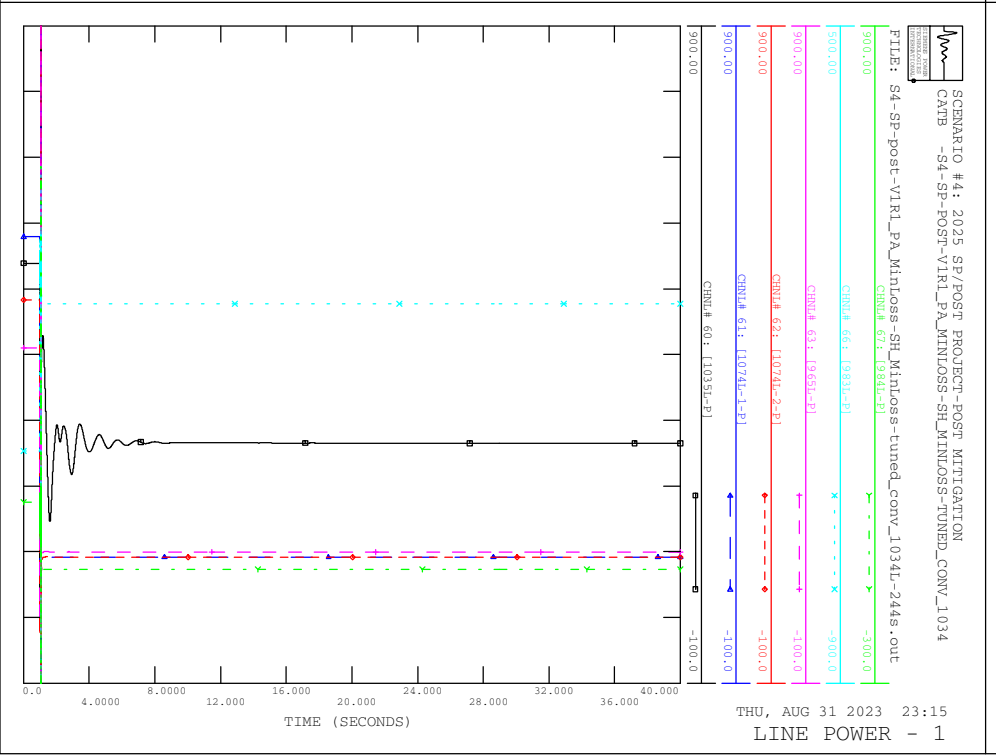
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out

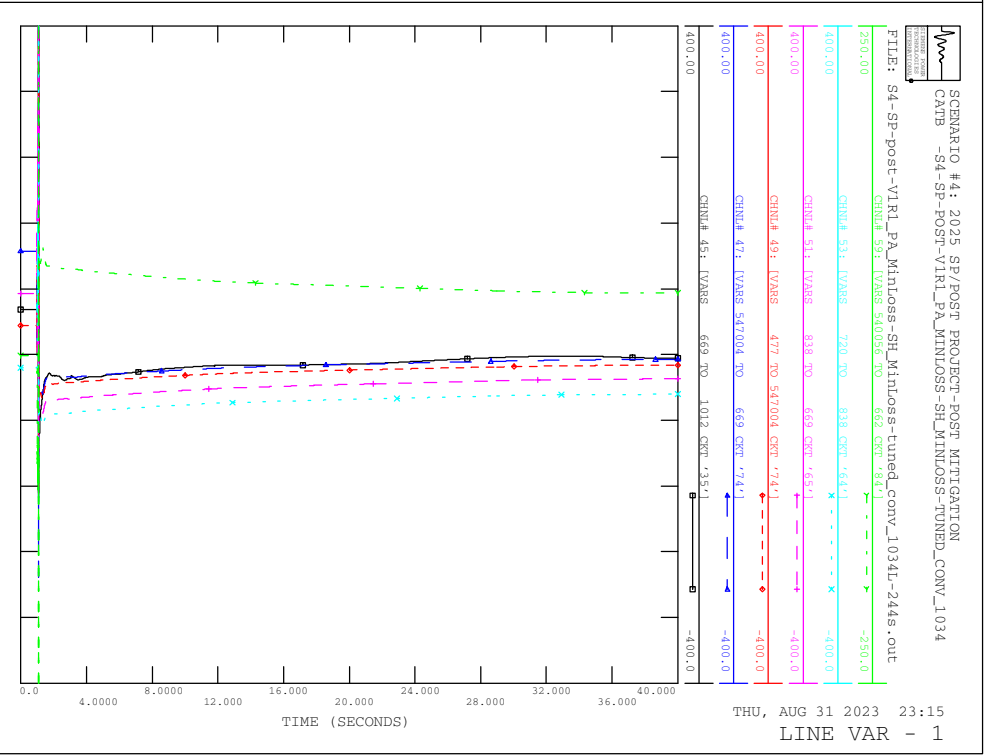


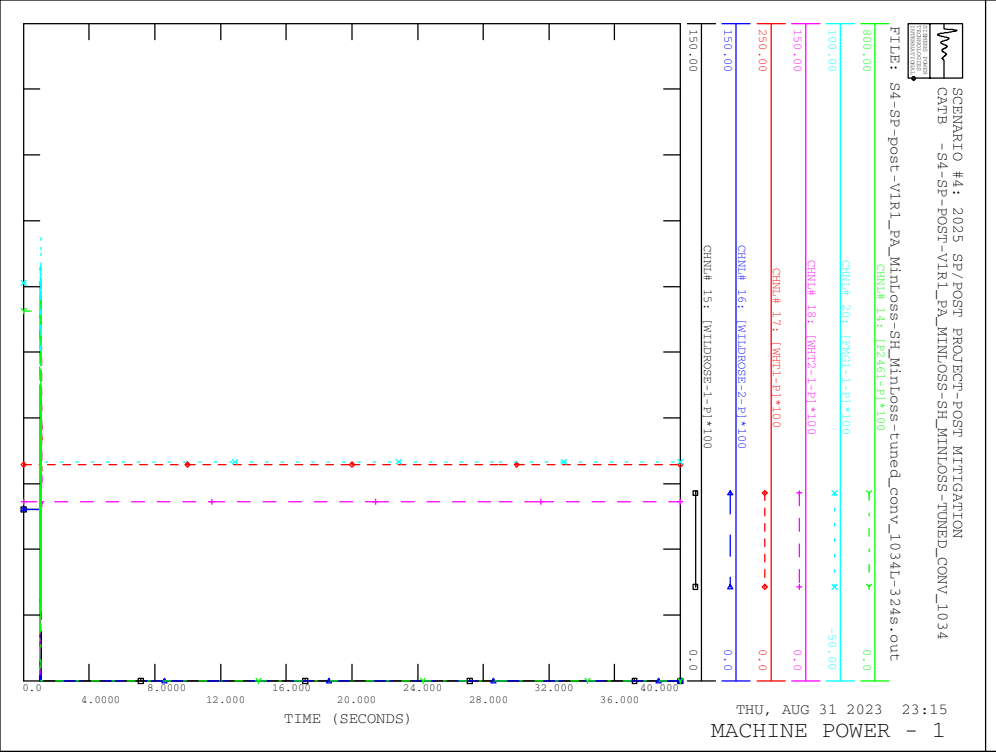
THU, AUG 31 2023 23:15
MACHINE VAR - 1

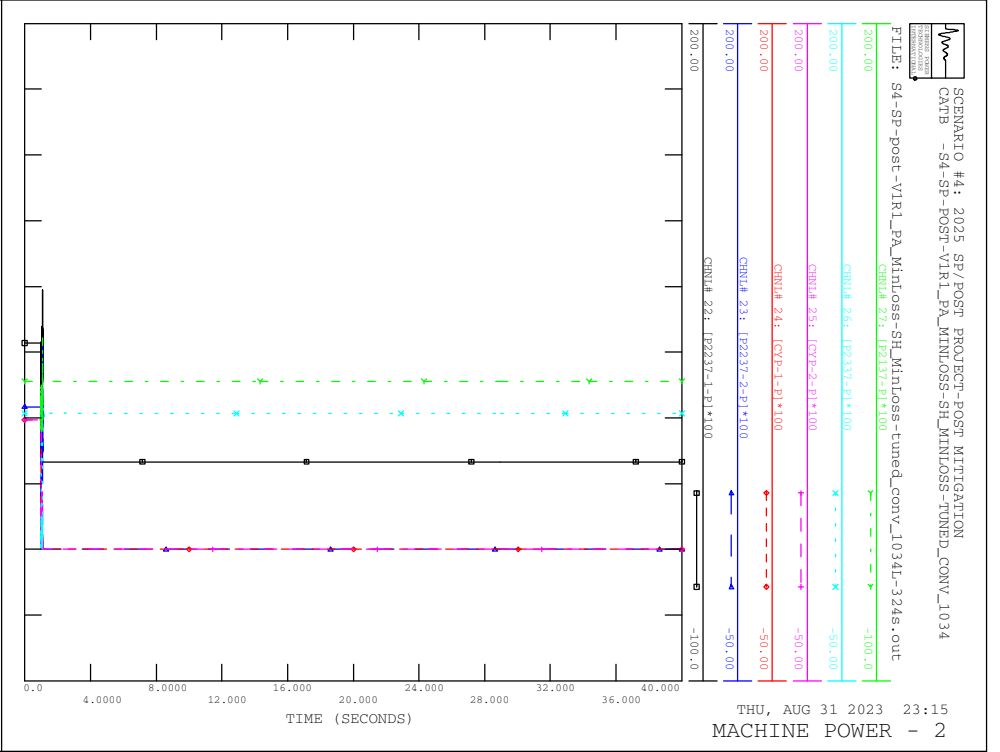

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWVLY-2075S-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 1

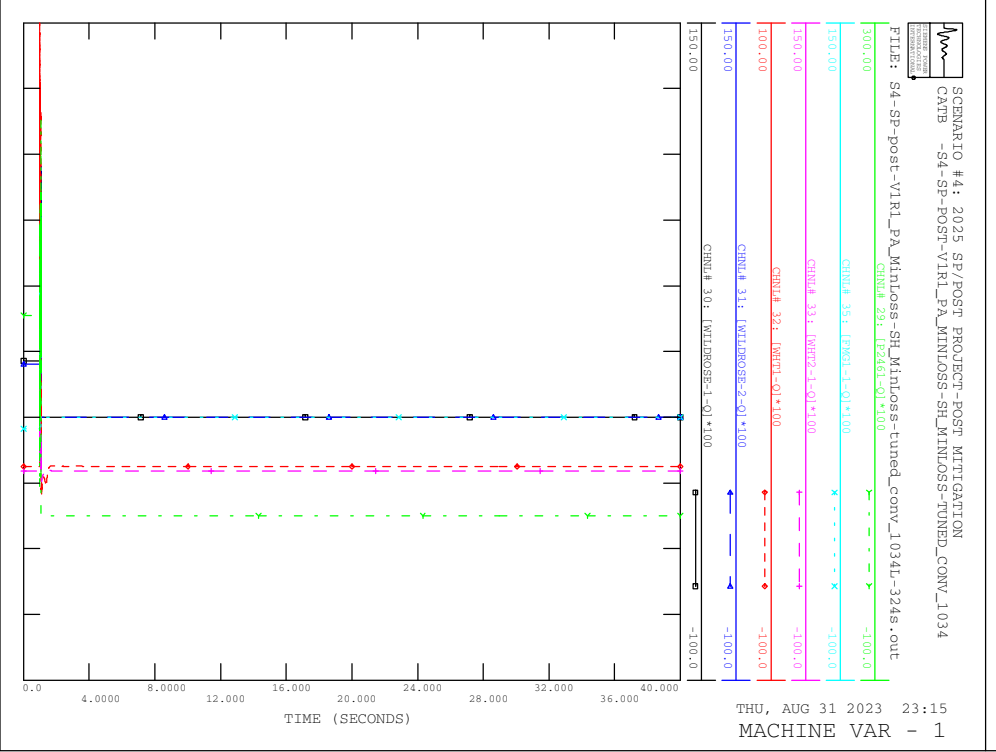

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WETTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 2

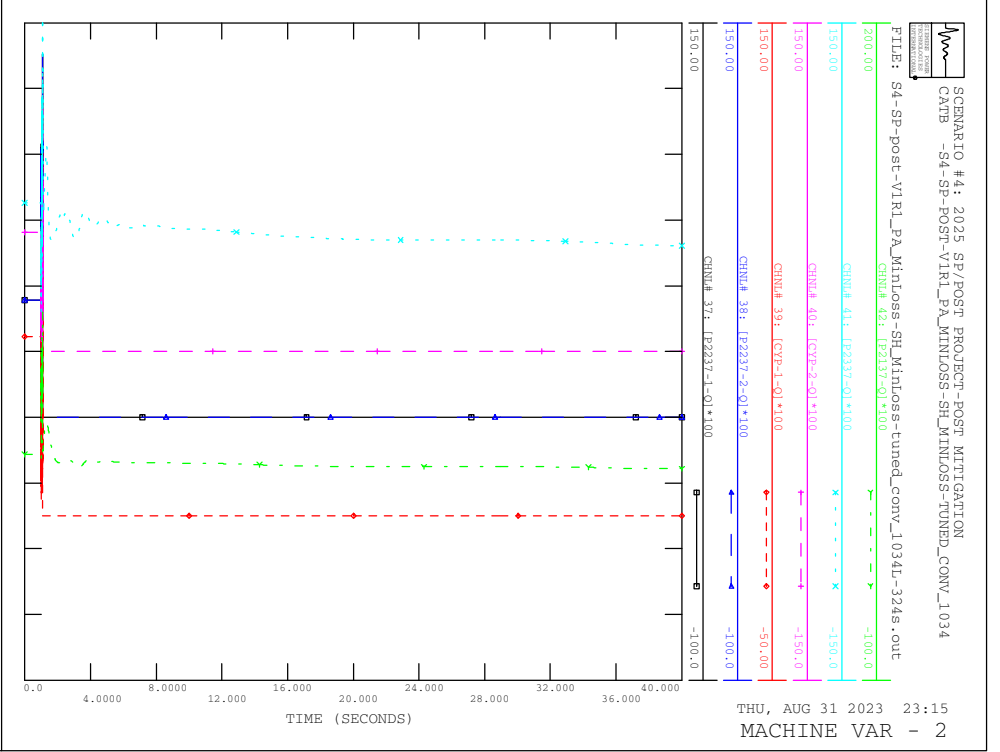

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 60: [1035L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1384L-P]
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE POWER - 1

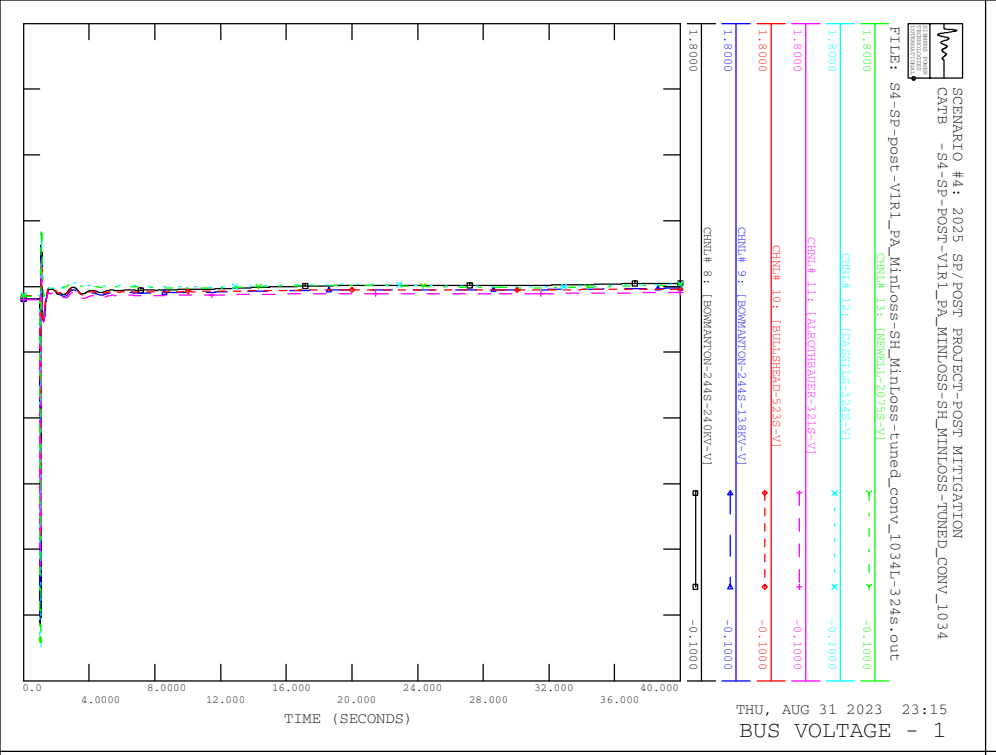

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-244s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE VAR - 1

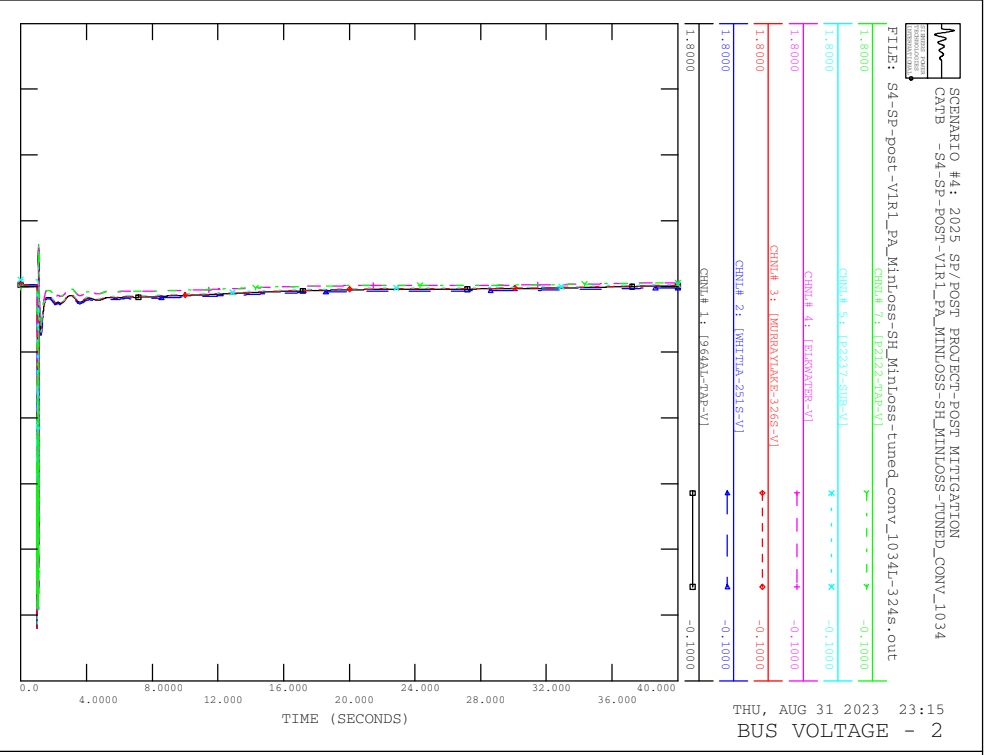

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-324s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 1

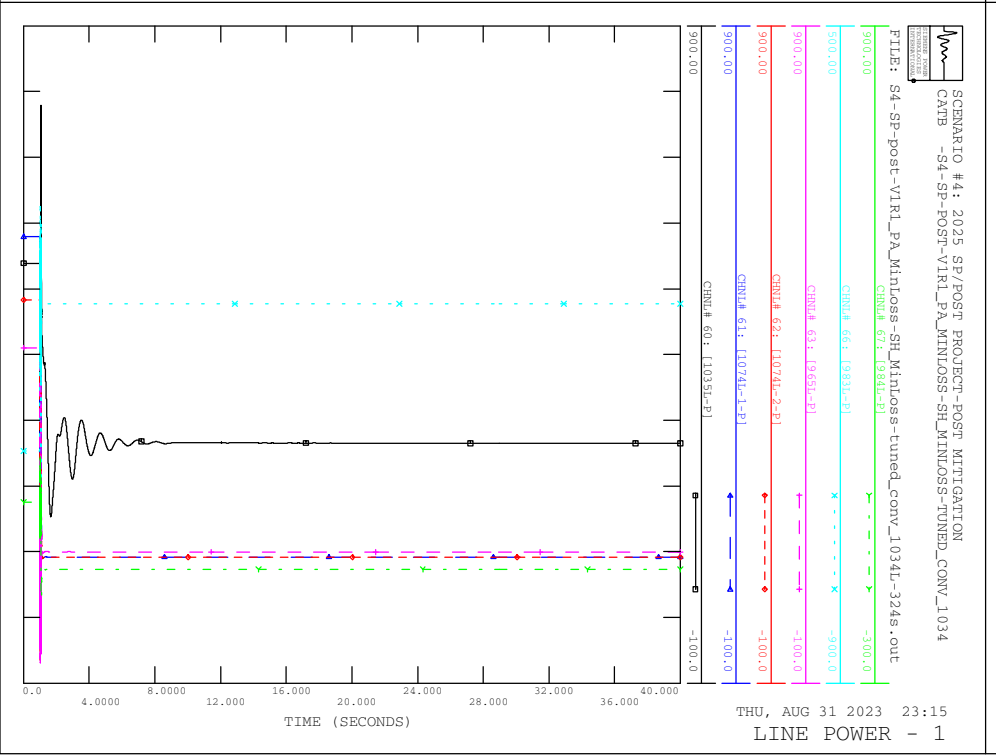

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-324s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2237-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 2

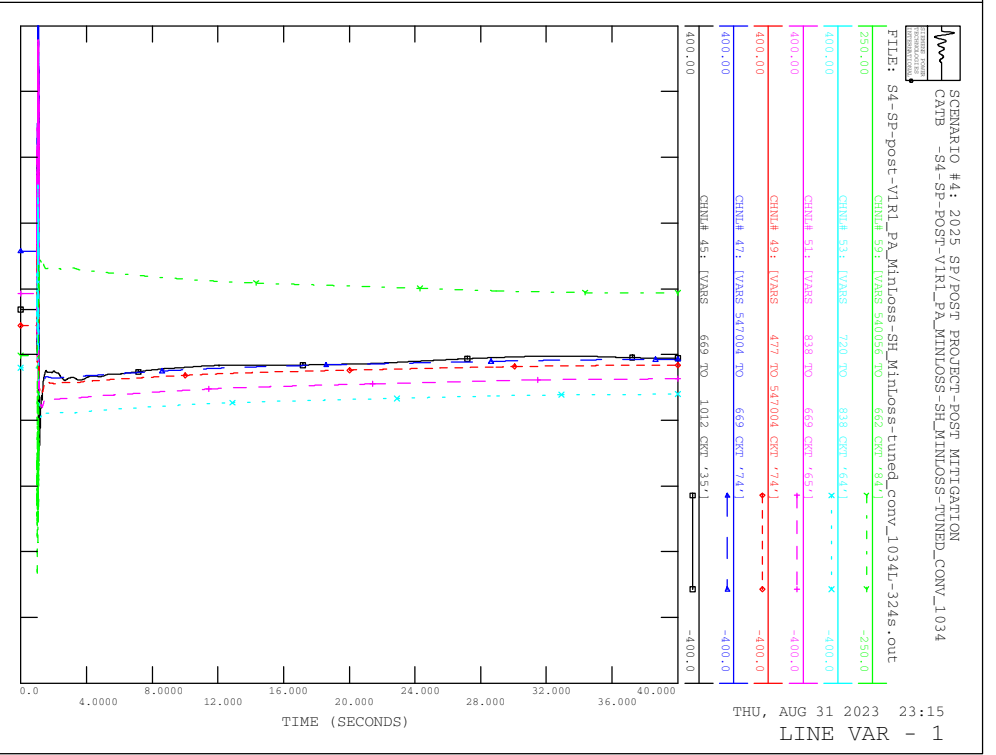

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-324s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 1

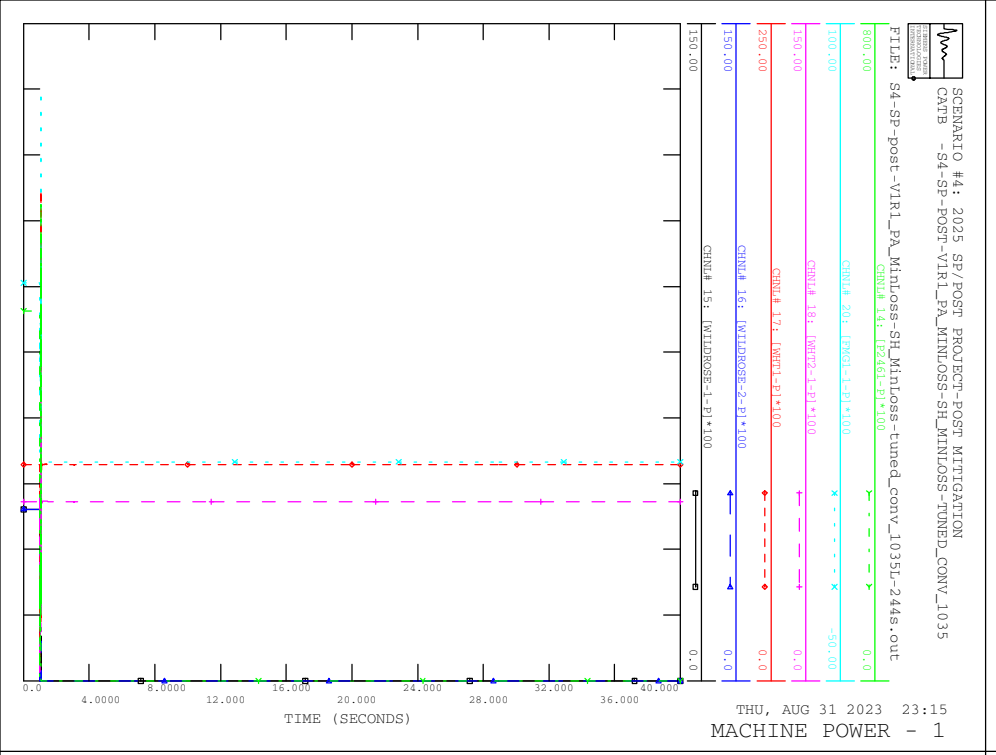

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1034L-324s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 2

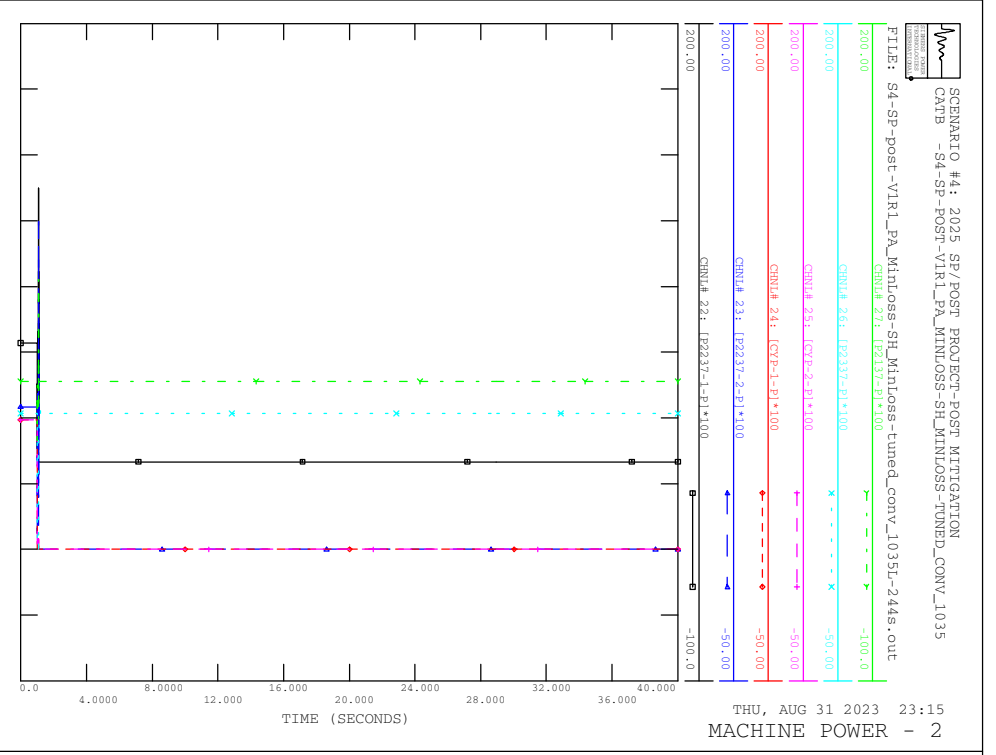

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWELL-2075S-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 1

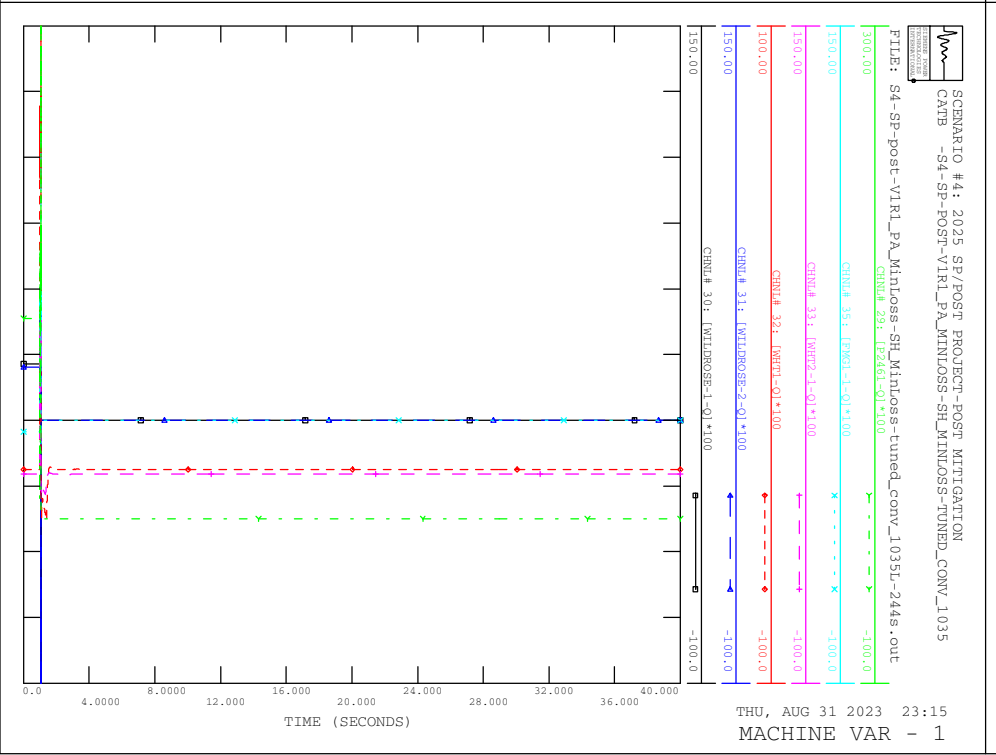

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 2

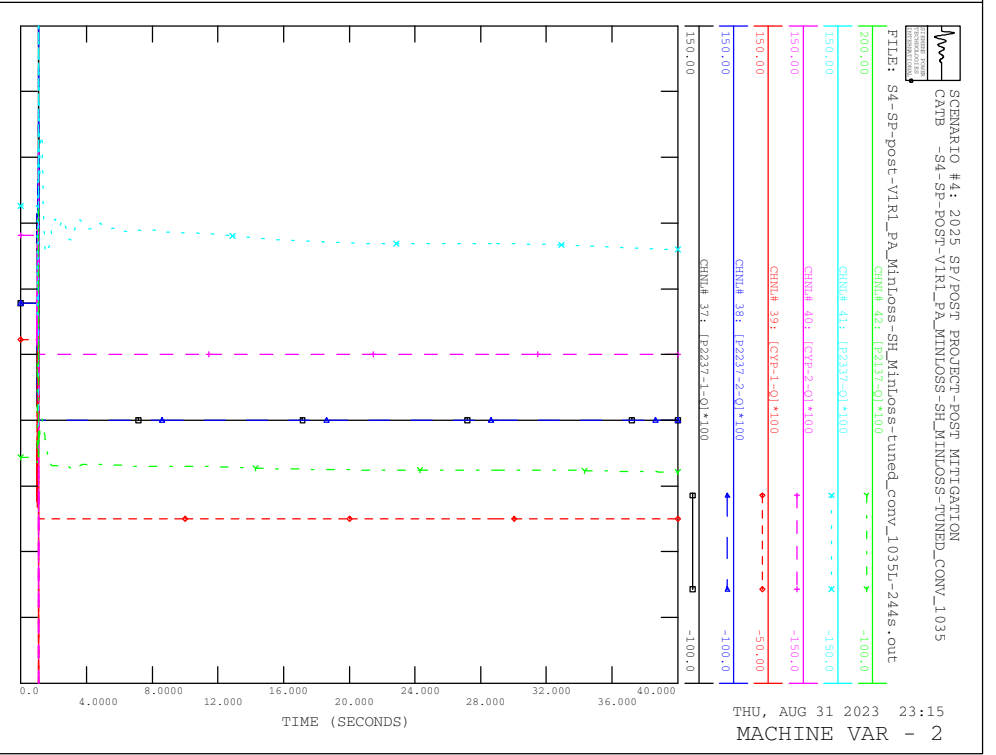

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 60: [103Su-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE POWER - 1

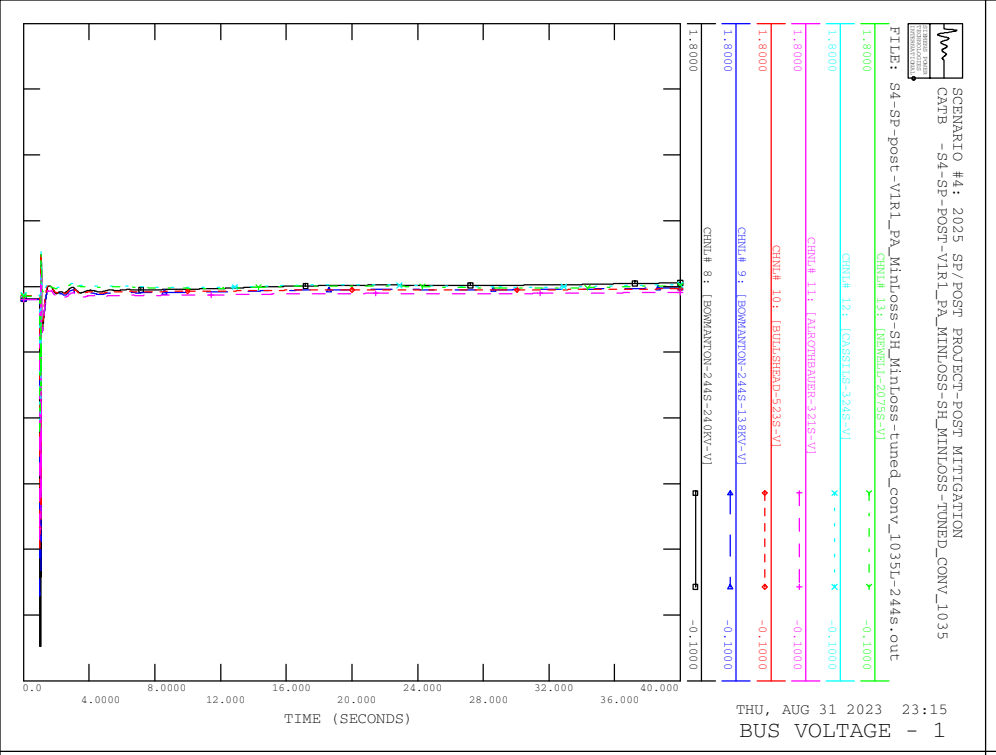

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1034
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1034L-324s.out
CHNL# 45: [VARS 669 TO 1012 CKT '35']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE VAR - 1

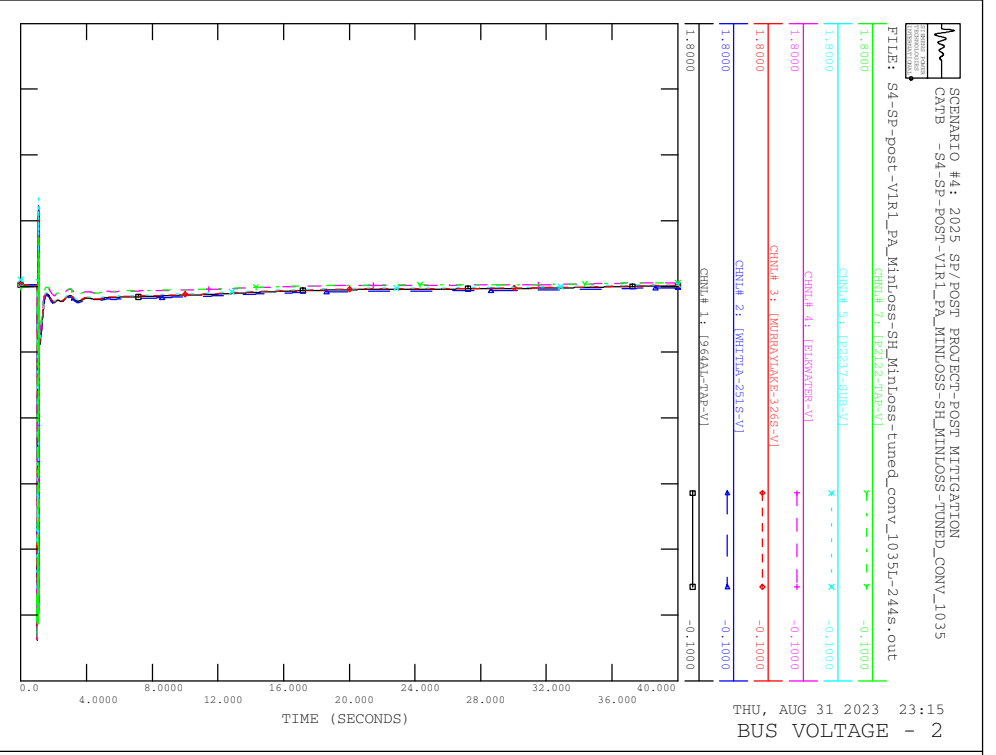

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [WHT1-P]*100
CHNL# 18: [WHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 1

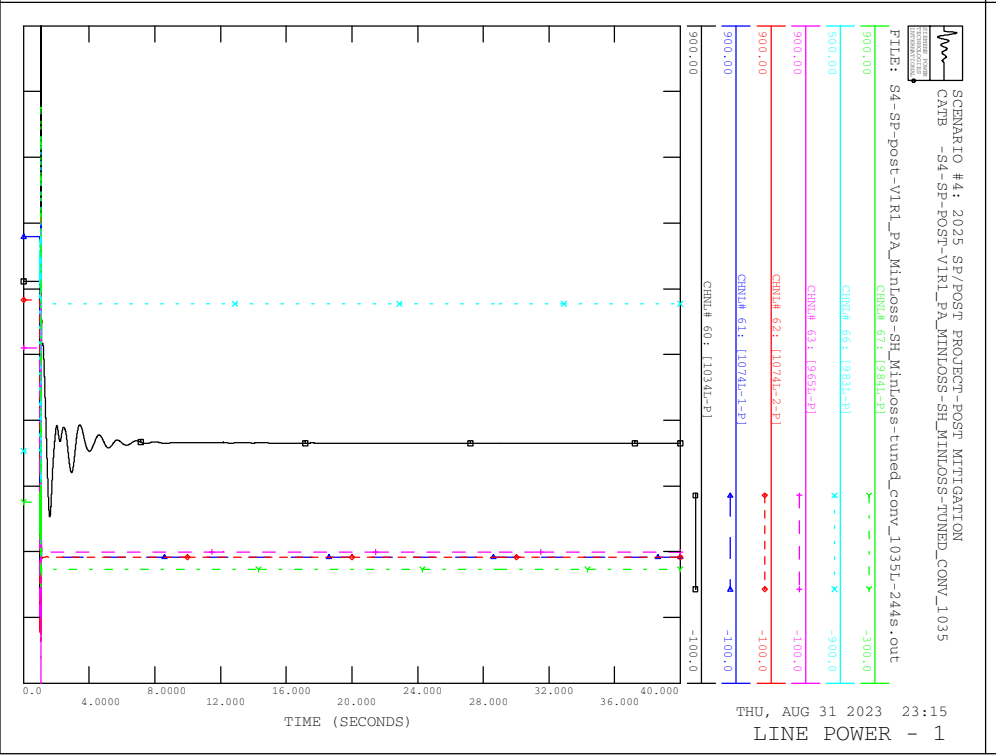

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 2

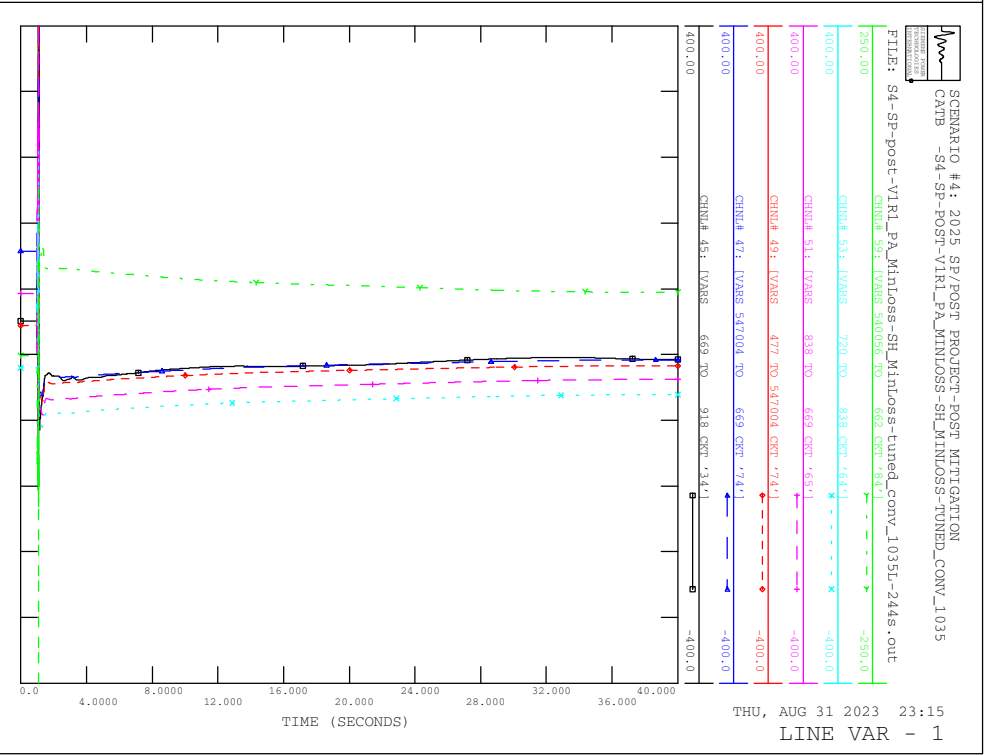

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [WHT1-Q]*100
CHNL# 33: [WHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 1

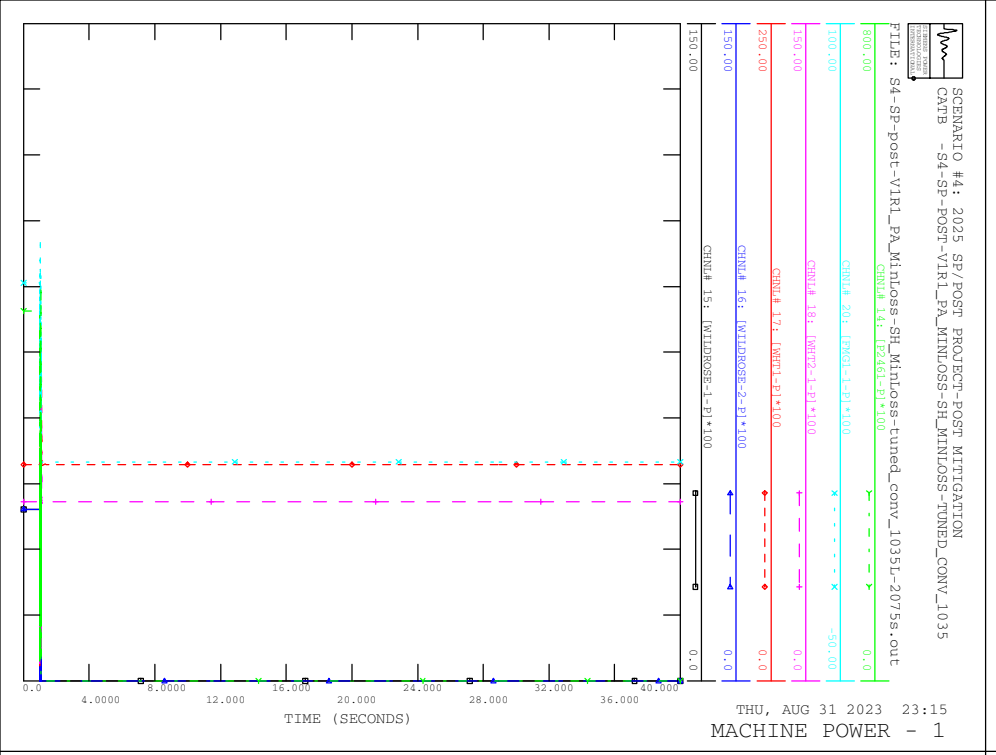

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1035L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 2

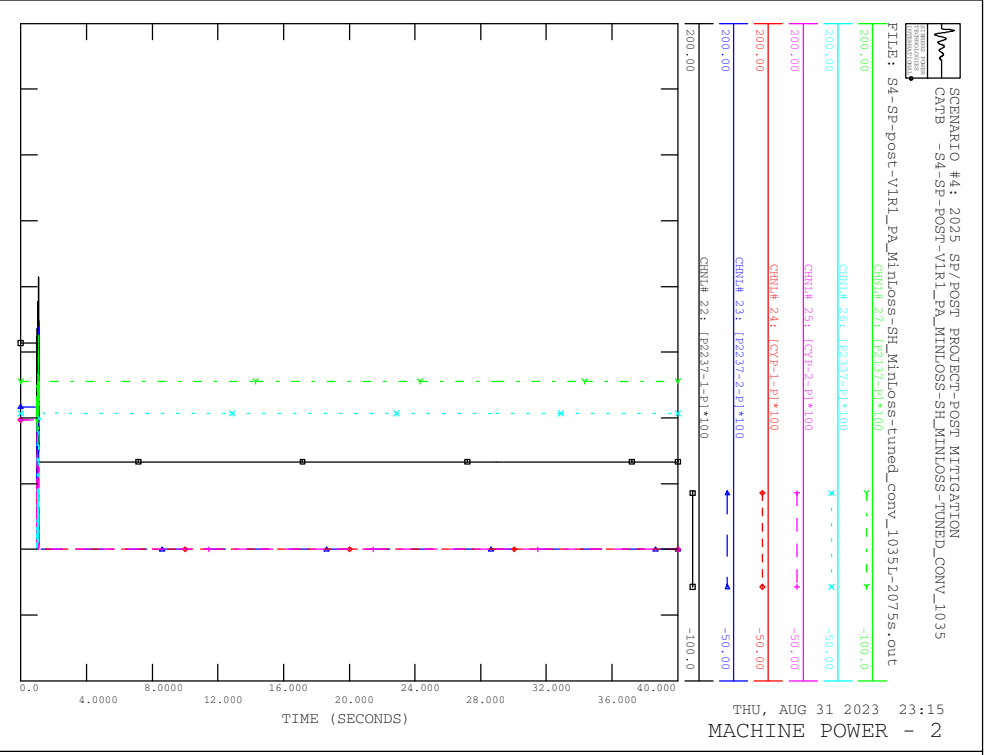

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [ARROTHBAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWELL-2075S-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 1

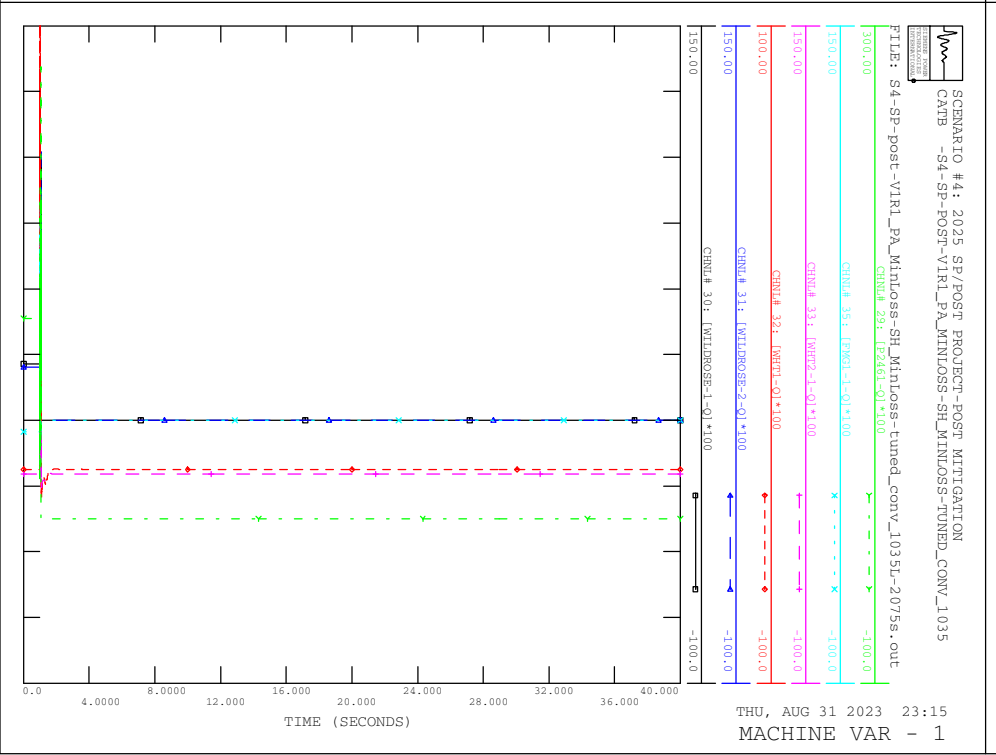

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [MITTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 2

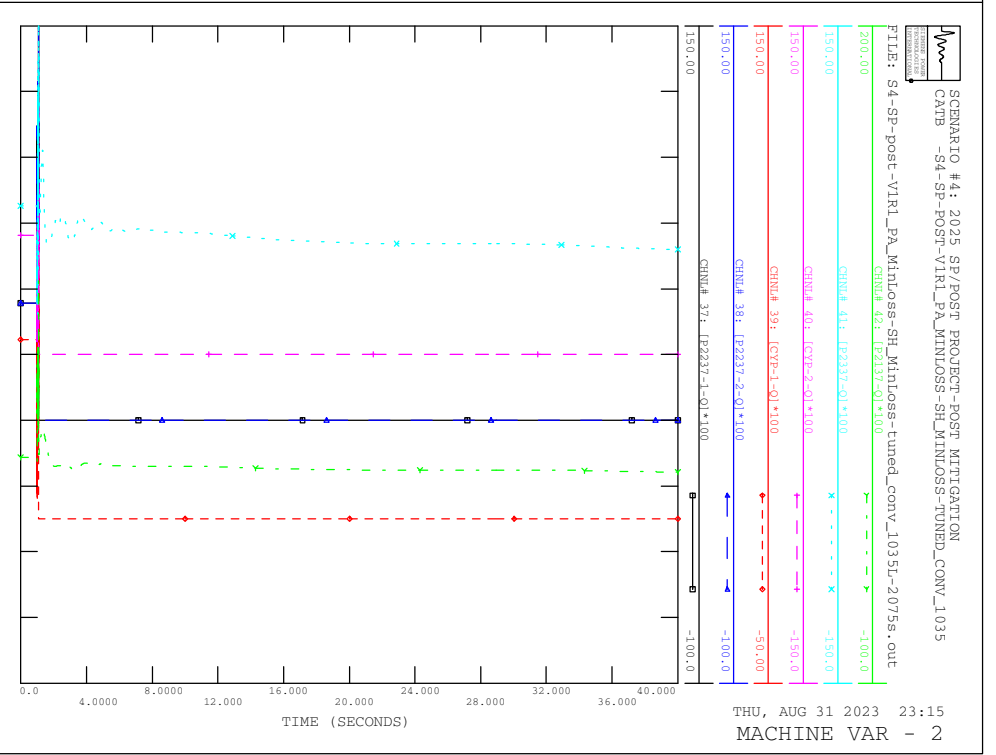

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1384L-P]
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE POWER - 1

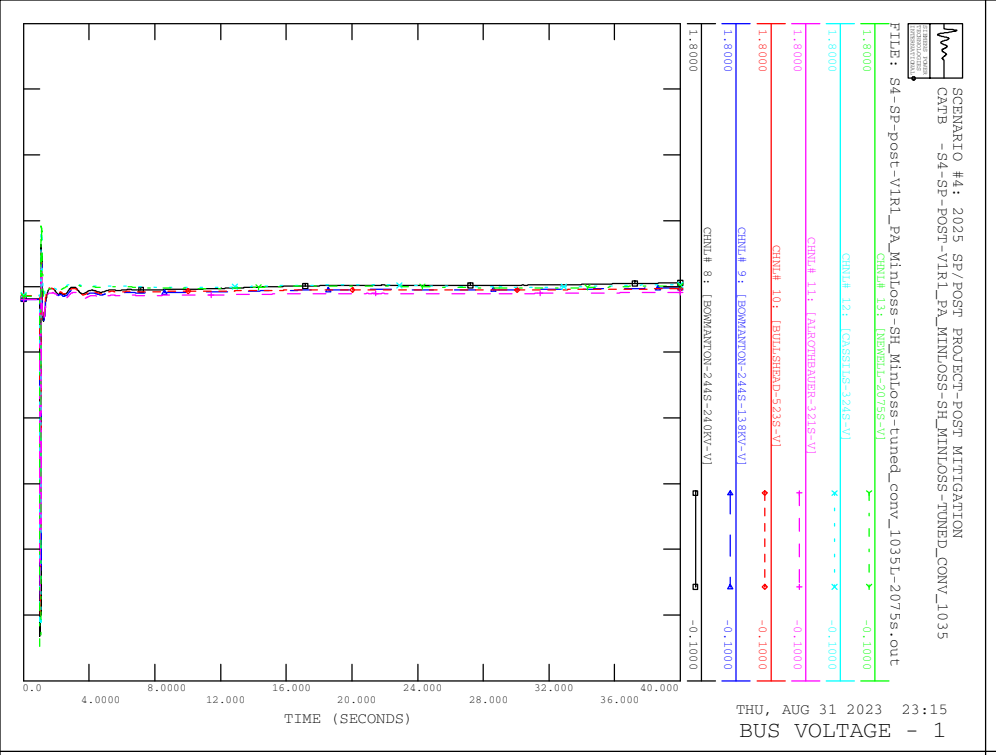

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE VAR - 1

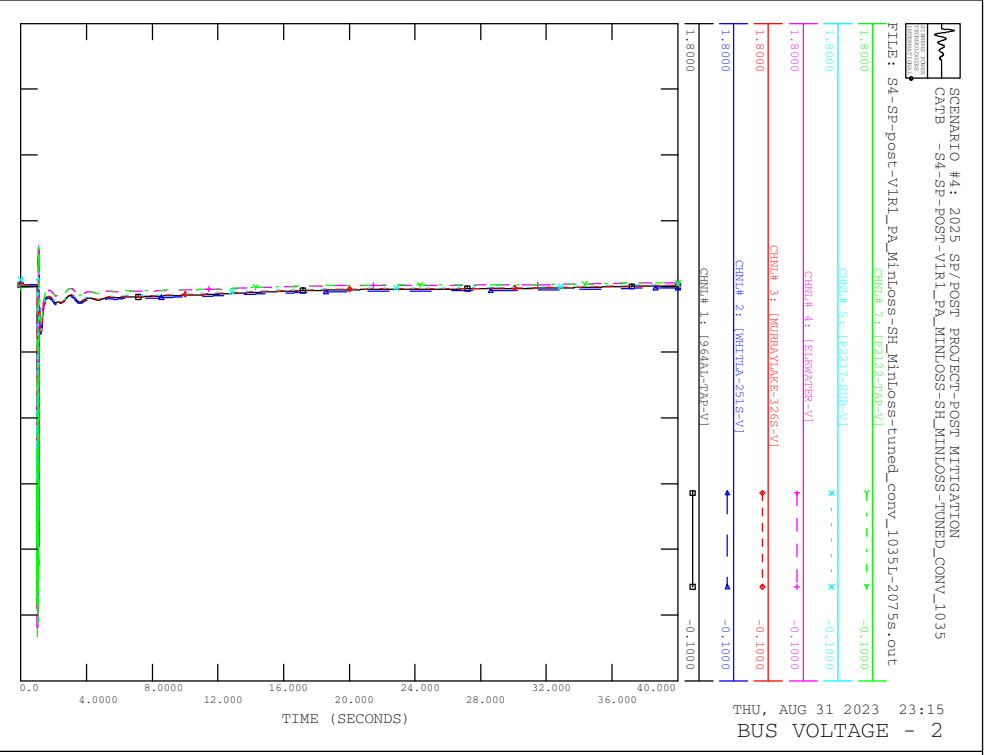

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PWG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 1

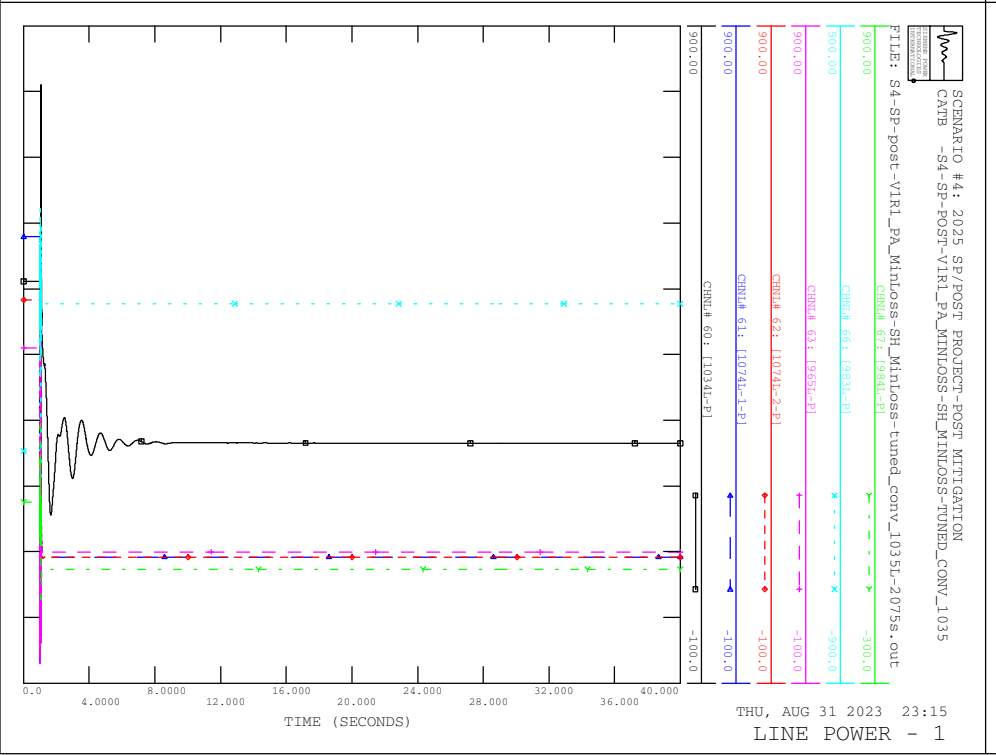

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 2

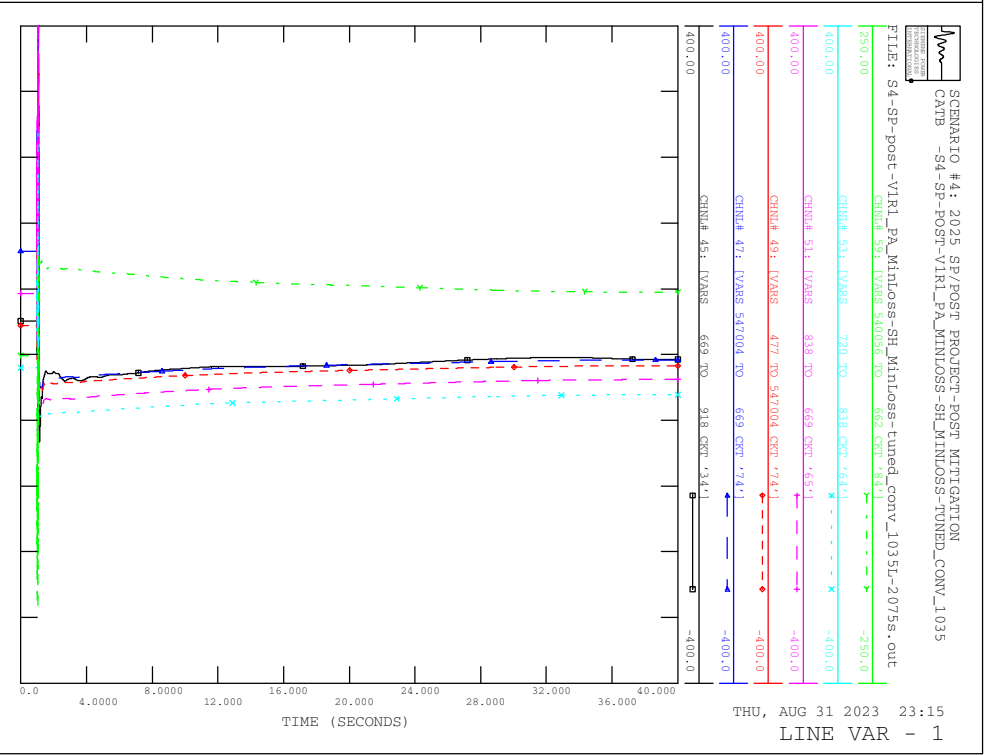

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PWG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 1

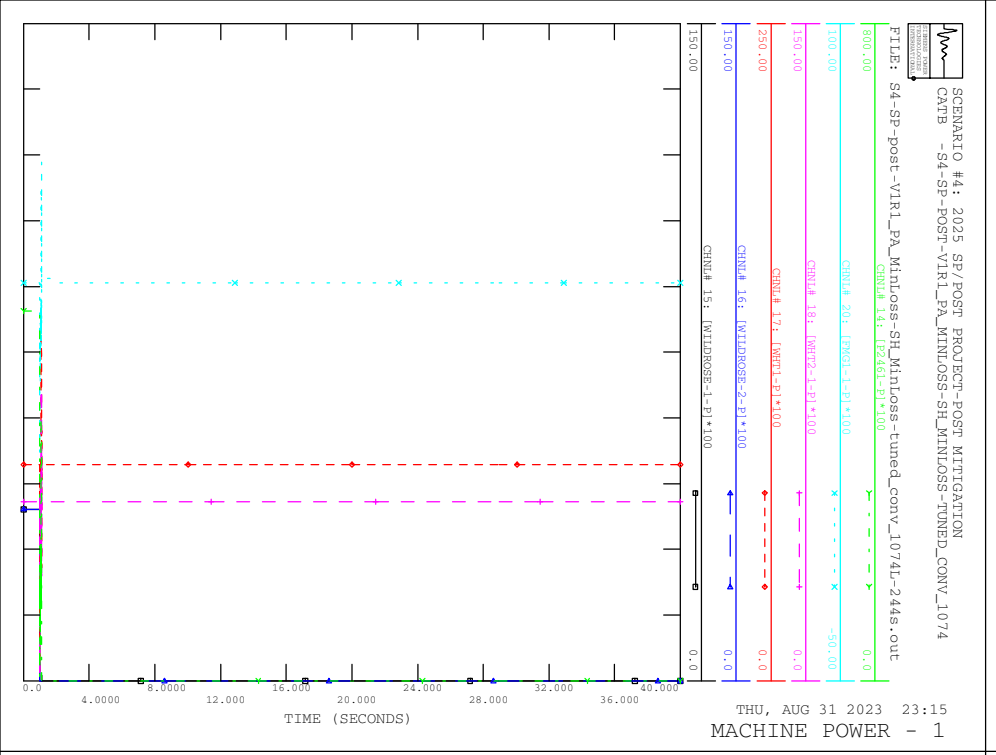

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 2

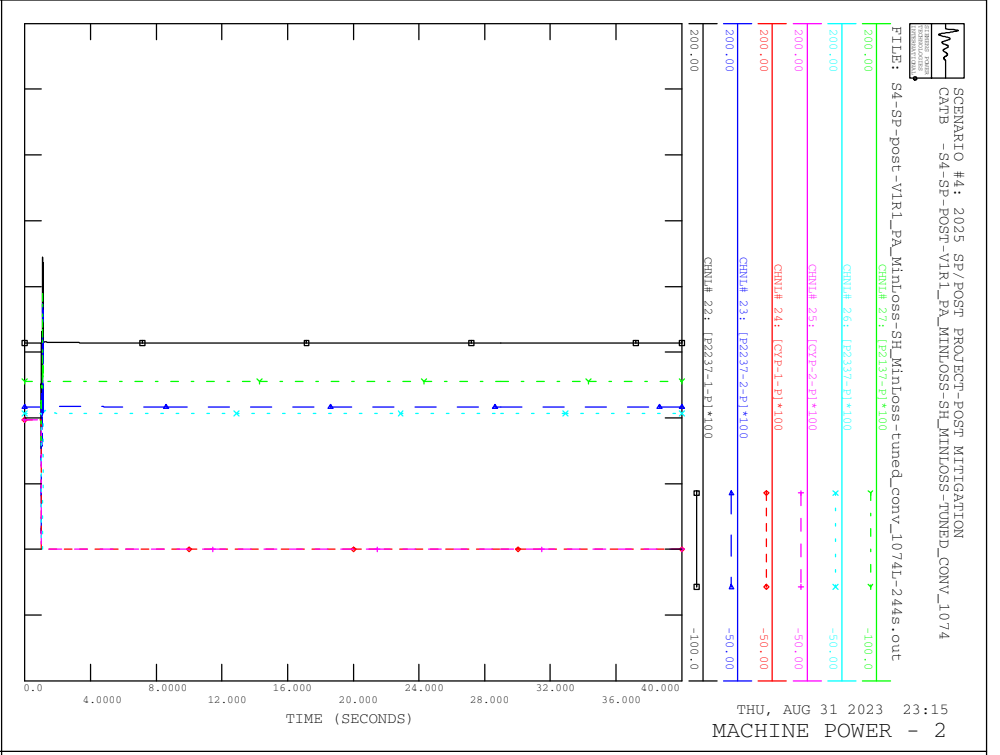

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIRFORTRAUER-321S-V]
CHNL# 12: [CASSILS-324S-V]
CHNL# 13: [NEWDALE-2075S-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 1

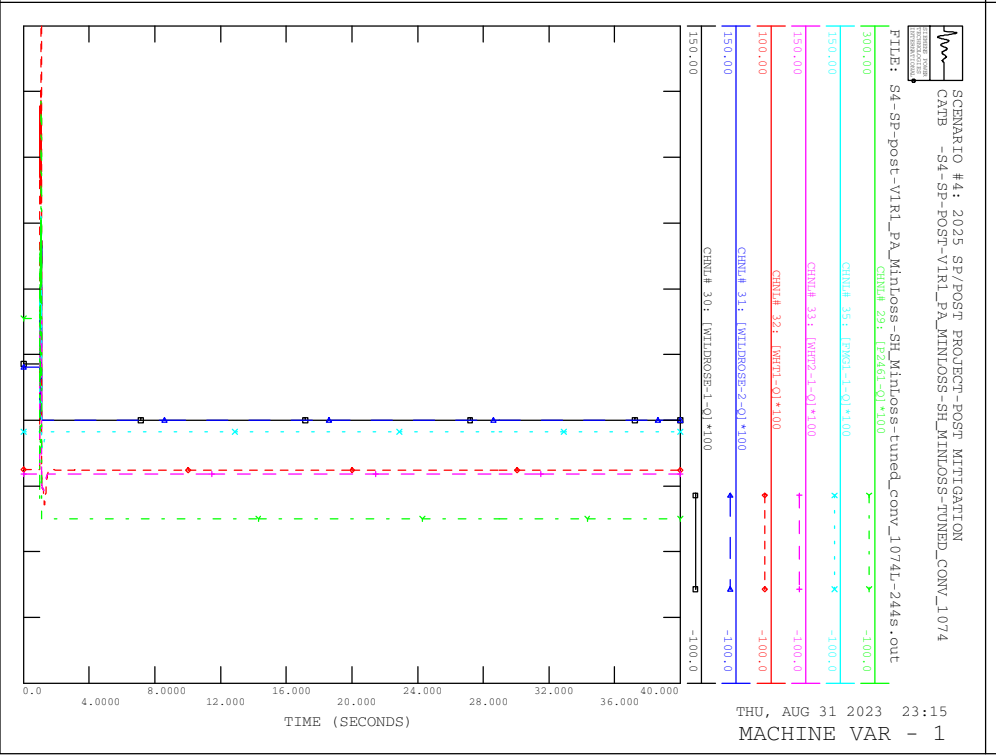

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 2

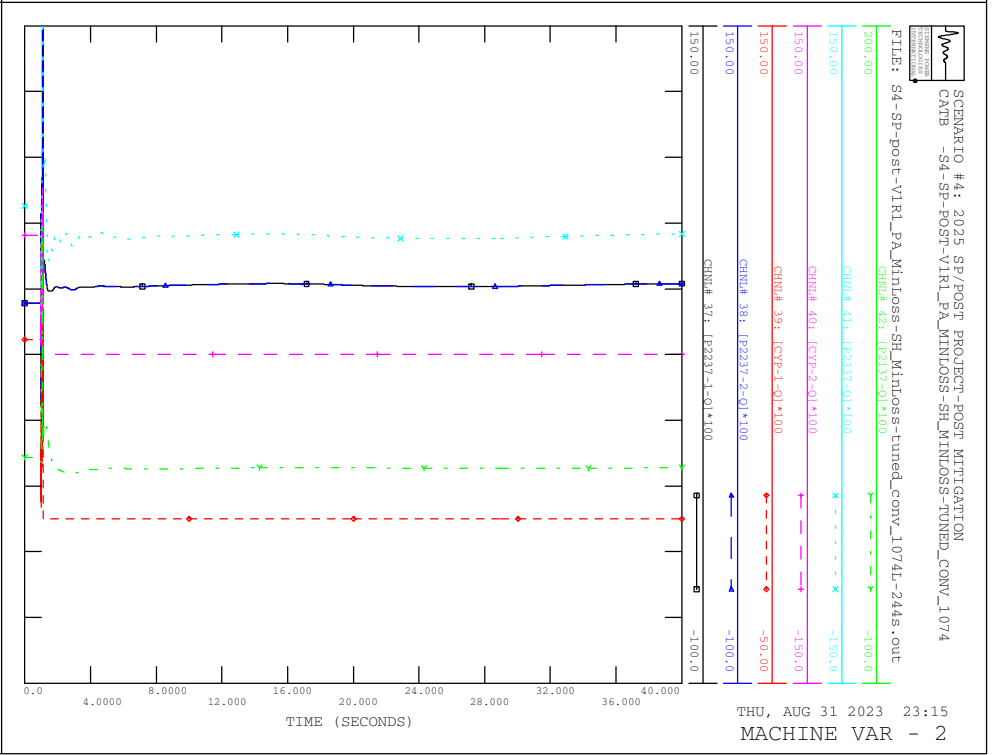

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1074L-1-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [984L-P]
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE POWER - 1

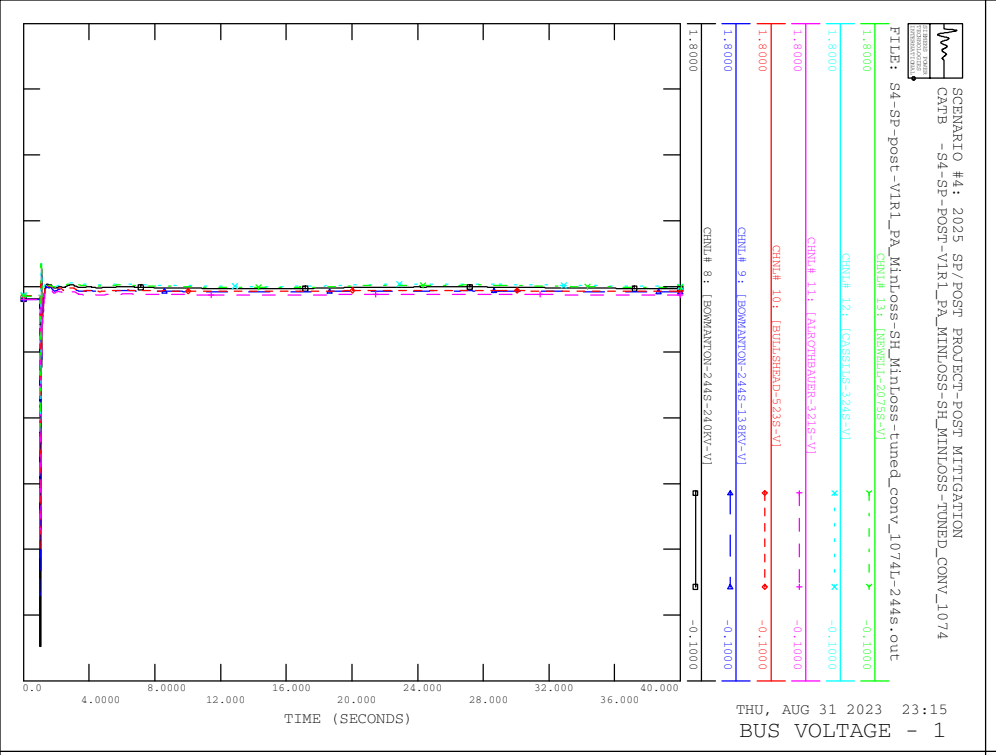

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1035
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1035L-2075s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 547004 TO 669 CKT '74']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE VAR - 1

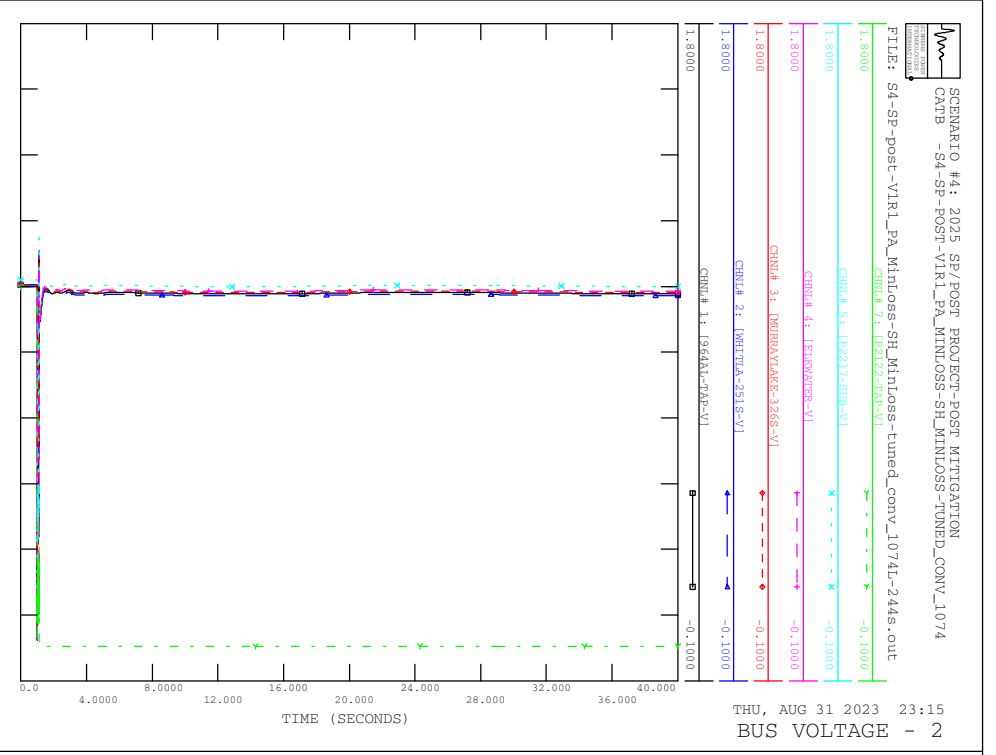

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PMG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 1

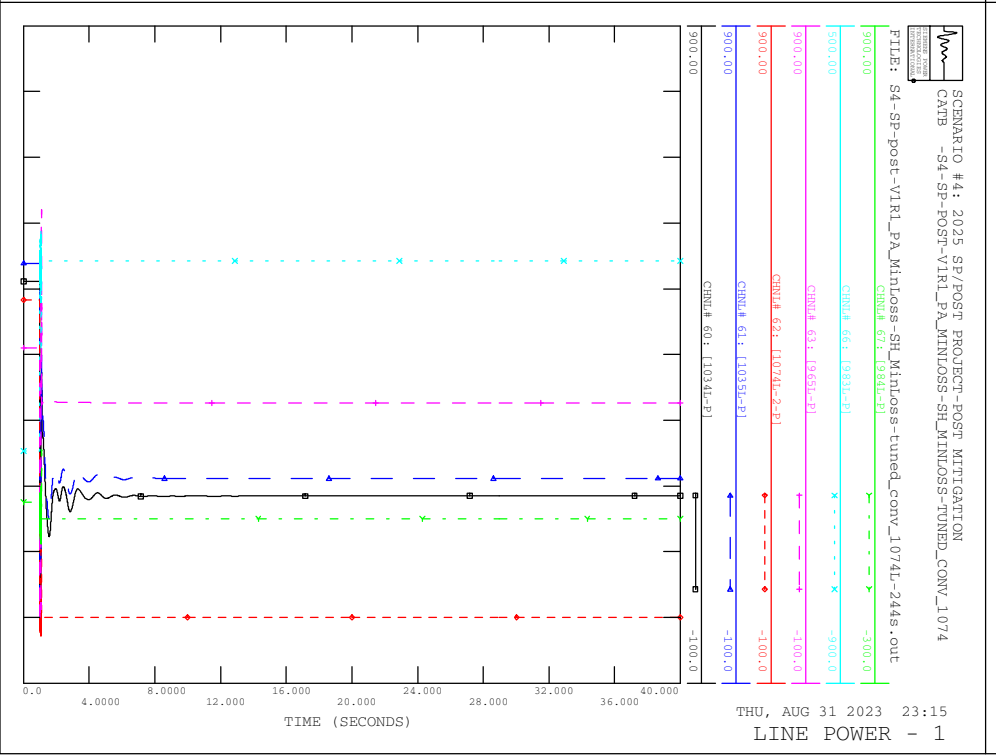

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 2

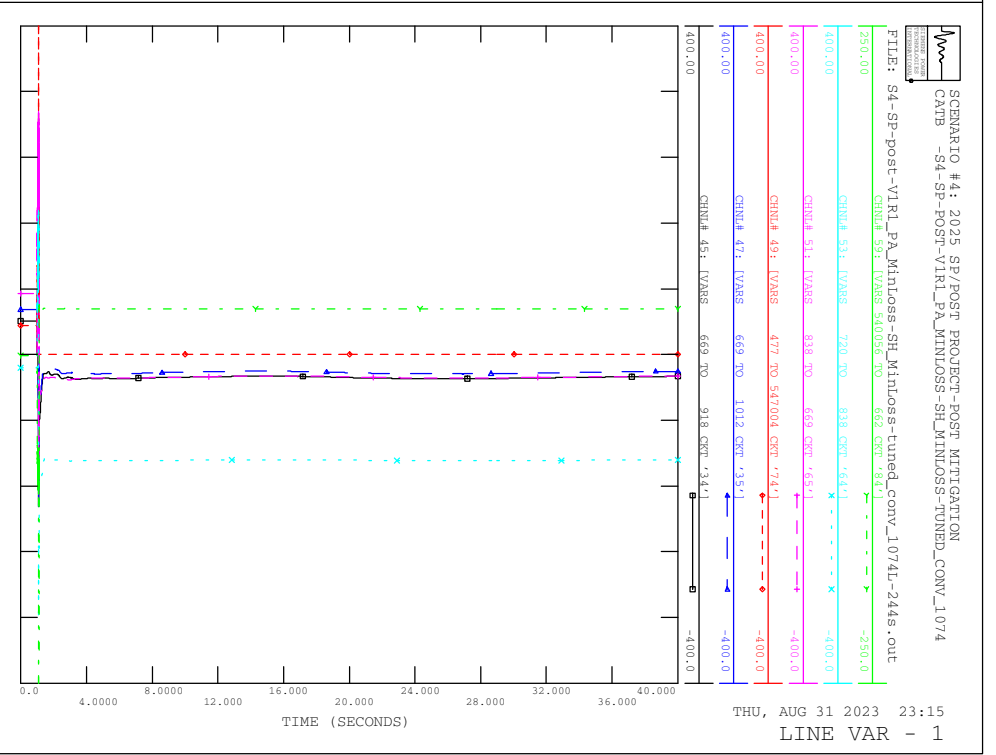

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PMG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 1

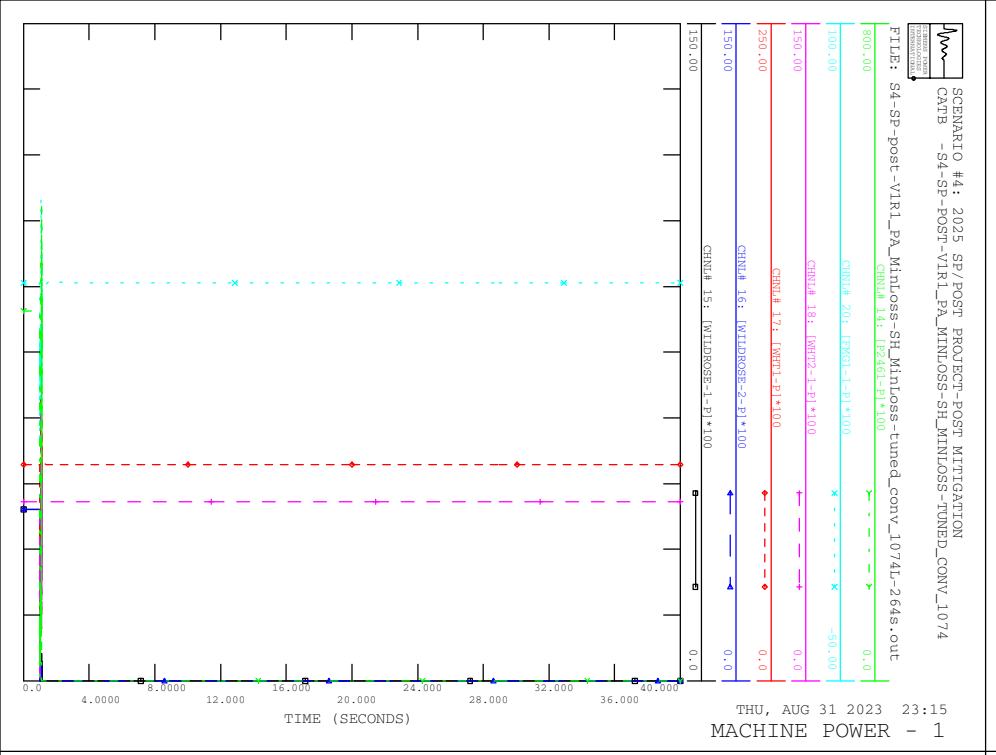

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-244s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2137-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 2

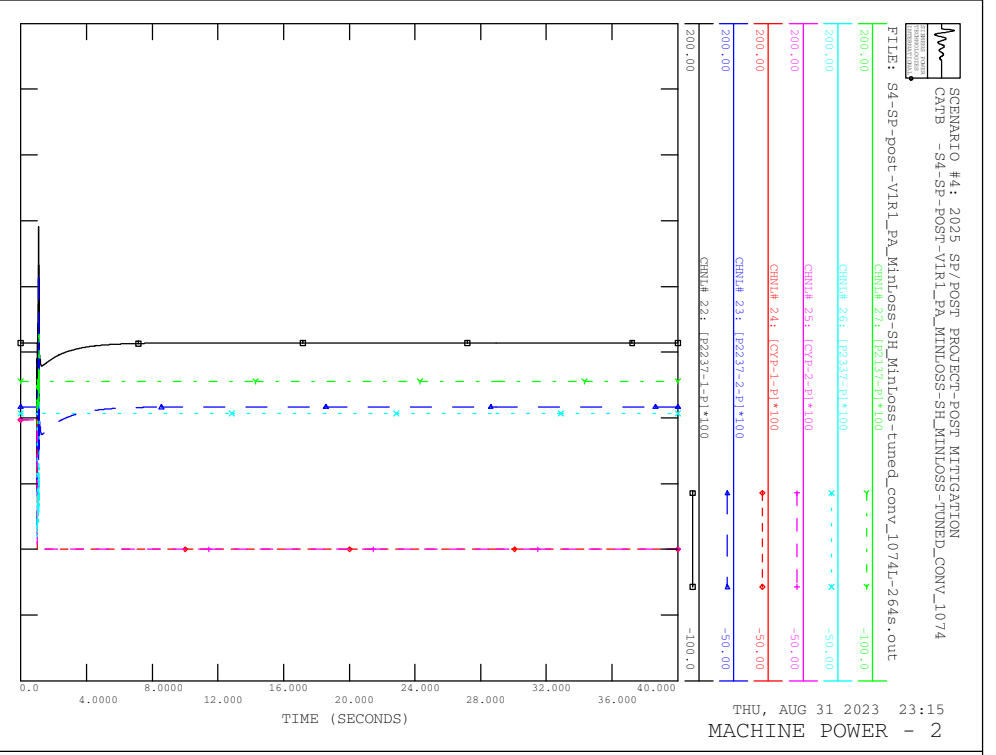

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-244s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASTLE-324S-V]
CHNL# 13: [NEWELL-2075S-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 1

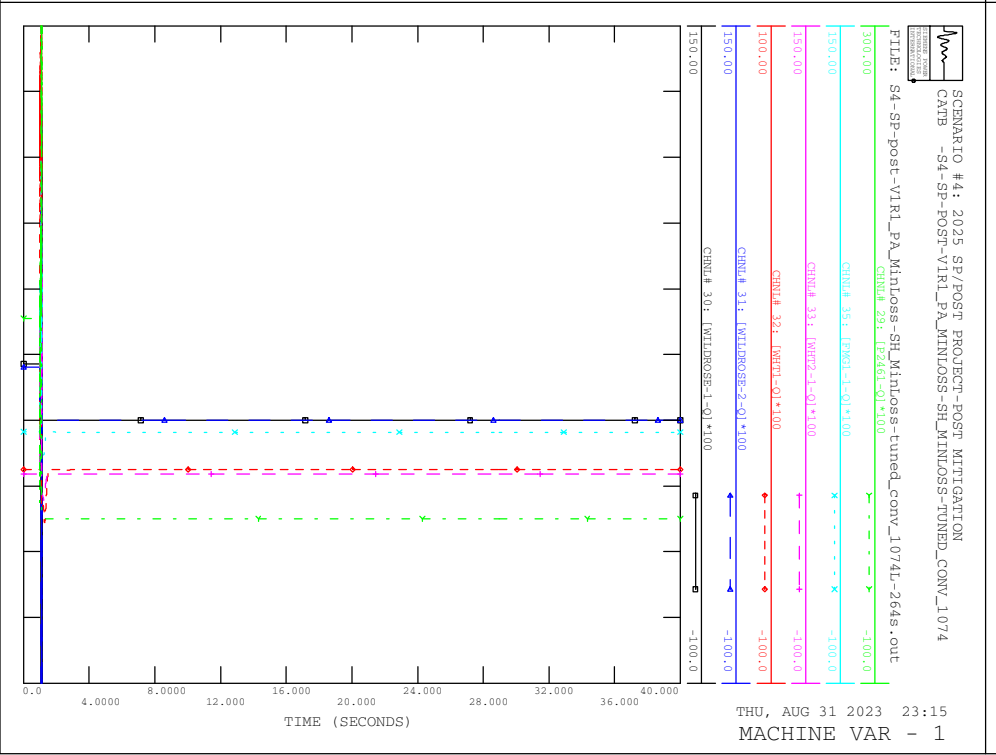

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-244s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WHITLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 2

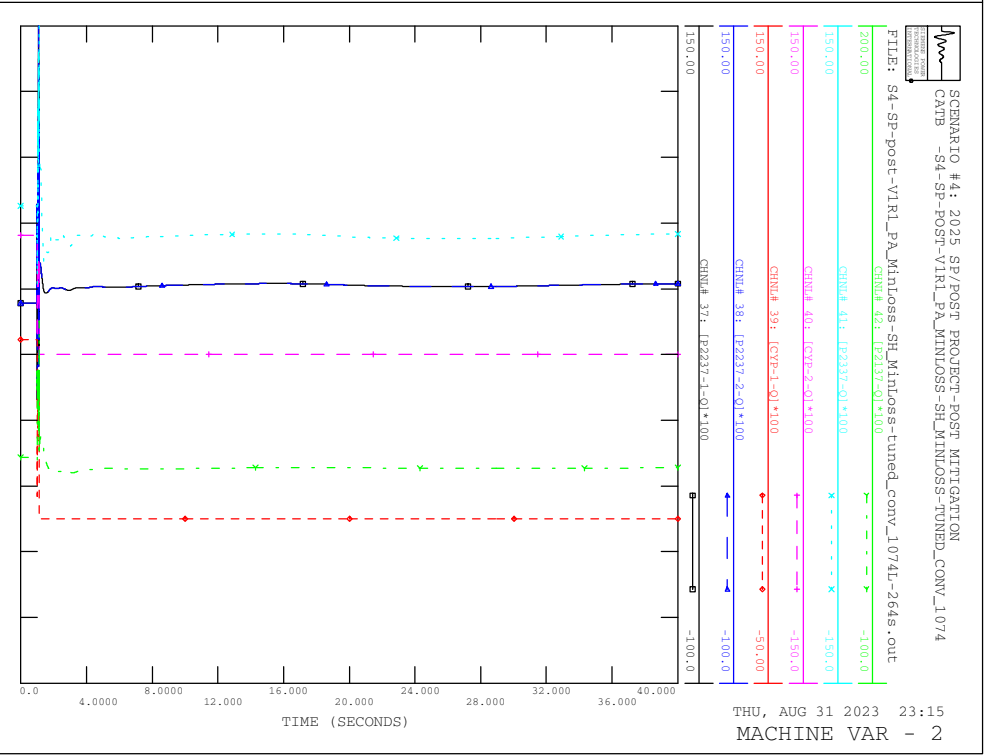

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-244s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-2-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1986L-P]
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE POWER - 1

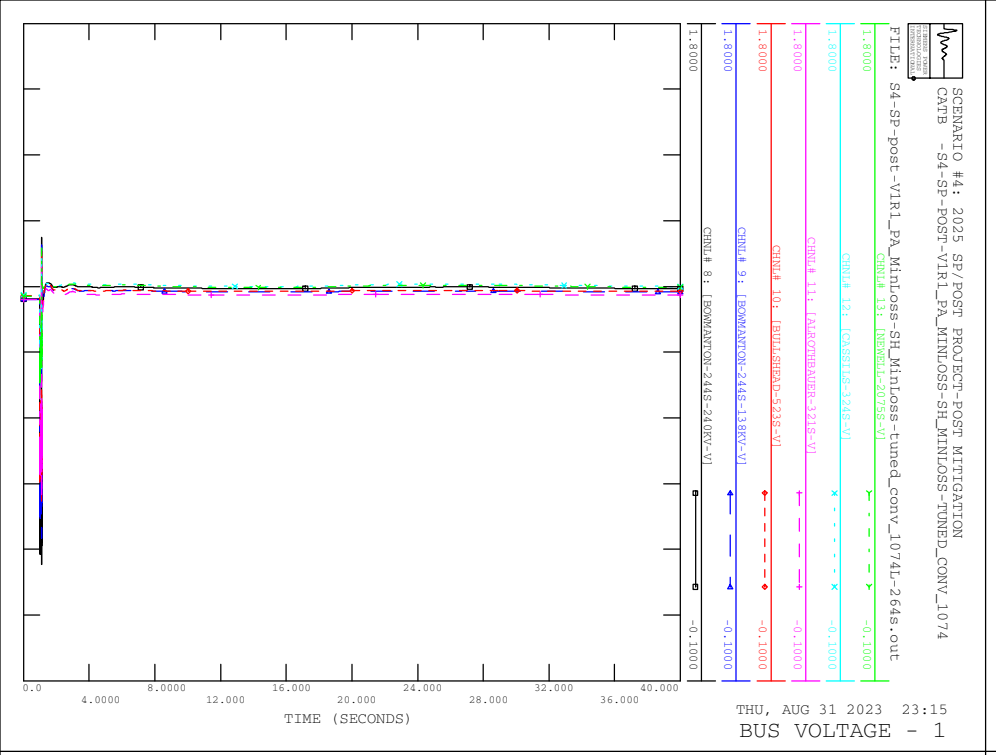

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-244s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 477 TO 547004 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE VAR - 1

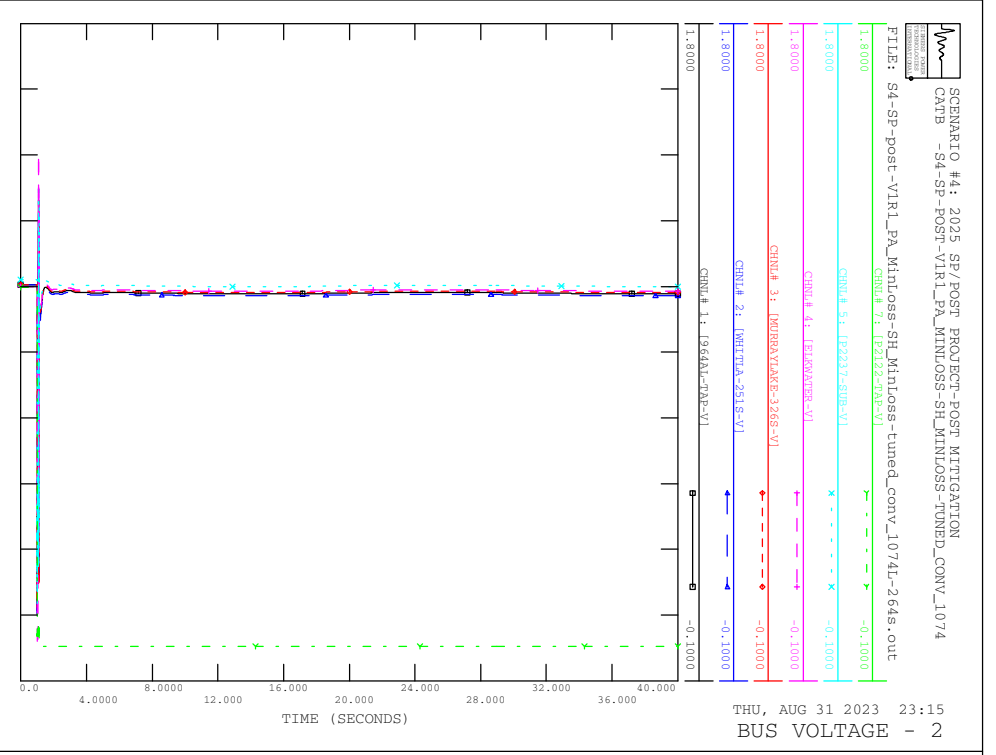

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-264s.out
CHNL# 15: [WILDROSE-1-P]*100
CHNL# 16: [WILDROSE-2-P]*100
CHNL# 17: [NHT1-P]*100
CHNL# 18: [NHT2-1-P]*100
CHNL# 20: [PNG1-1-P]*100
CHNL# 14: [P2461-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 1

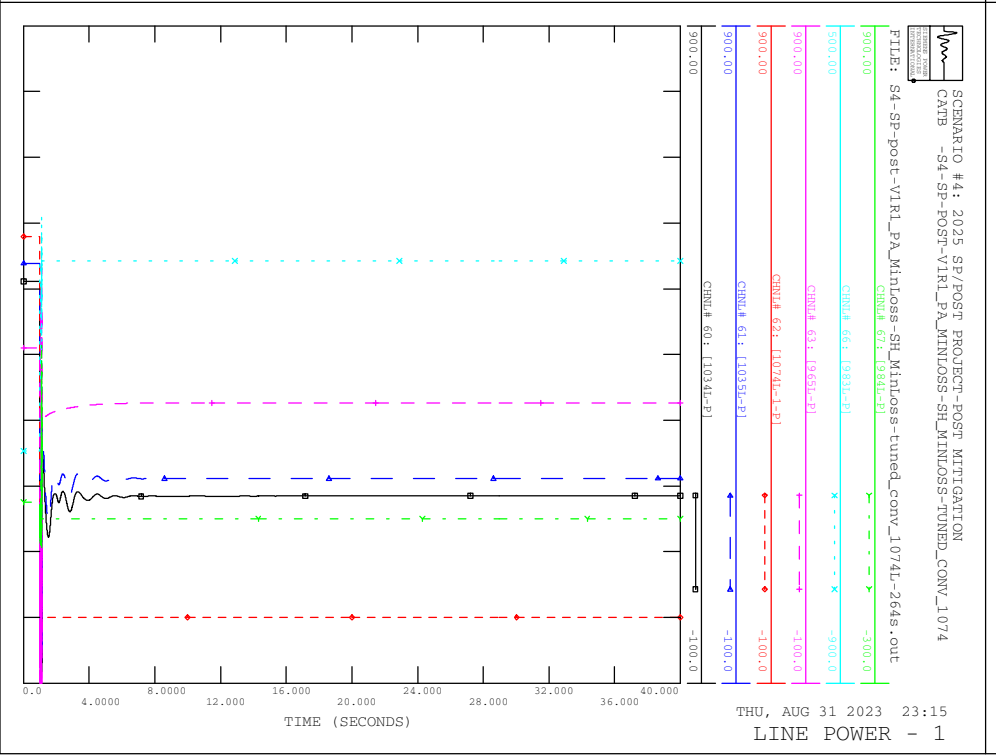

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-264s.out
CHNL# 22: [P2237-1-P]*100
CHNL# 23: [P2237-2-P]*100
CHNL# 24: [CYP-1-P]*100
CHNL# 25: [CYP-2-P]*100
CHNL# 26: [P2137-P]*100
CHNL# 27: [P2137-P]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE POWER - 2

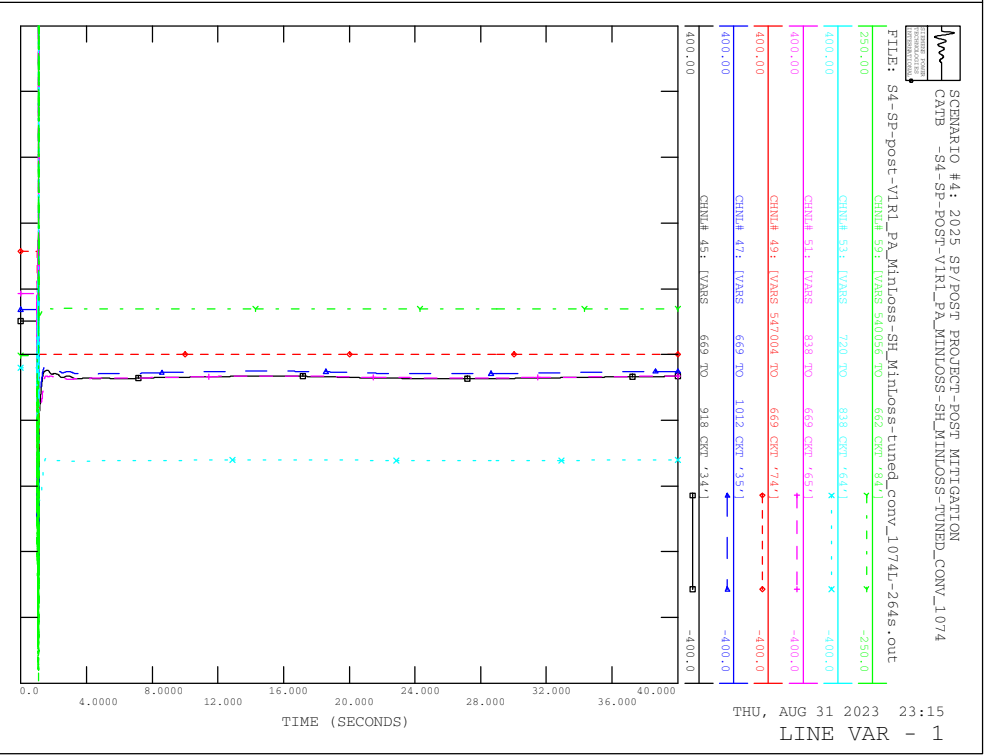

SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-264s.out
CHNL# 30: [WILDROSE-1-Q]*100
CHNL# 31: [WILDROSE-2-Q]*100
CHNL# 32: [NHT1-Q]*100
CHNL# 33: [NHT2-1-Q]*100
CHNL# 35: [PNG1-1-Q]*100
CHNL# 29: [P2461-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 1


SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_MinLoss-tuned_conv_1074L-264s.out
CHNL# 37: [P2237-1-Q]*100
CHNL# 38: [P2237-2-Q]*100
CHNL# 39: [CYP-1-Q]*100
CHNL# 40: [CYP-2-Q]*100
CHNL# 41: [P2237-Q]*100
CHNL# 42: [P2137-Q]*100
TIME (SECONDS)
THU, AUG 31 2023 23:15
MACHINE VAR - 2


SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 8: [BOWMANTON-244S-240KV-V]
CHNL# 9: [BOWMANTON-244S-138KV-V]
CHNL# 10: [BULLSHEAD-523S-V]
CHNL# 11: [AIROTHBAUER-321S-V]
CHNL# 12: [CASSIS-324S-V]
CHNL# 13: [NENNELU-2075S-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 1


SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 1: [964AL-TAP-V]
CHNL# 2: [WETTLA-251S-V]
CHNL# 3: [MURRAYLAKE-326S-V]
CHNL# 4: [ELKWATER-V]
CHNL# 5: [P2237-SUB-V]
CHNL# 7: [P2122-TAP-V]
TIME (SECONDS)
THU, AUG 31 2023 23:15
BUS VOLTAGE - 2


SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 60: [1034L-P]
CHNL# 61: [1035L-P]
CHNL# 62: [1074L-1-P]
CHNL# 63: [965L-P]
CHNL# 66: [983L-P]
CHNL# 67: [1986L-P]
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE POWER - 1


SCENARIO #4: 2025 SP/POST PROJECT-POST MITIGATION
CATB -S4-SP-POST-V1R1_PA_MINLOSS-SH_MINLOSS-TUNED_CONV_1074
FILE: S4-SP-post-V1R1_PA_MinLoss-SH_Minloss-tuned_conv_1074L-264s.out
CHNL# 45: [VARS 669 TO 918 CKT '34']
CHNL# 47: [VARS 669 TO 1012 CKT '35']
CHNL# 49: [VARS 547004 TO 669 CKT '74']
CHNL# 51: [VARS 838 TO 669 CKT '65']
CHNL# 53: [VARS 720 TO 838 CKT '64']
CHNL# 59: [VARS 540056 TO 662 CKT '84']
TIME (SECONDS)
THU, AUG 31 2023 23:15
LINE VAR - 1