Engineering Connection Assessment

P2418 Estuary Solar Project Connection

Greencells Indygen Alberta Ltd.

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NOTE:

The conclusions and recommendations in this report are based on the results presented in *Attachment B: 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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Attachment B: 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 B) and the scope and methodology used to perform the studies (see Attachment B1 to Attachment B). 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

Greencells Indygen Alberta Ltd. (Market Participant) has submitted a request for system access service to the Alberta Electric System Operator (AESO) to connect its approved Estuary Solar Power Project (Facility) to the AIES. The Facility includes an approved collector substation, to be designated the Estuary 1006S 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 200 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1.5 MW; and a request for transmission development (collectively, the Project).

The scheduled in-service date (ISD) for the Project is June 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 of Empress (Area 48), which is part of the AESO South planning region. The Empress area (Area 48) is surrounded by the neighboring planning areas of Brooks (Area 47), Medicine Hat (Area 4), and Hanna (Area 42).

From a transmission system perspective, the Empress area (Area 48) consists of 138 kV and 240 kV transmission systems. The Empress area (Area 48) is connected to the Brooks area (Area 47) with two 240 kV transmission lines, the Medicine Hat area (Area 4) with one 138 kV transmission line, and the Hanna area (Area 42) with one 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 consists of the AESO planning areas of Empress (Area 48), Brooks (Area 47), and Hanna (Area 42), 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 B1).

3 Connection Alternatives

3.1 Overview

The AESO, in consultation with the TFO in the Study Area and the Market Participant, examined five 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.

Alternative 1 – T-tap connection to the 138 kV transmission line 760L

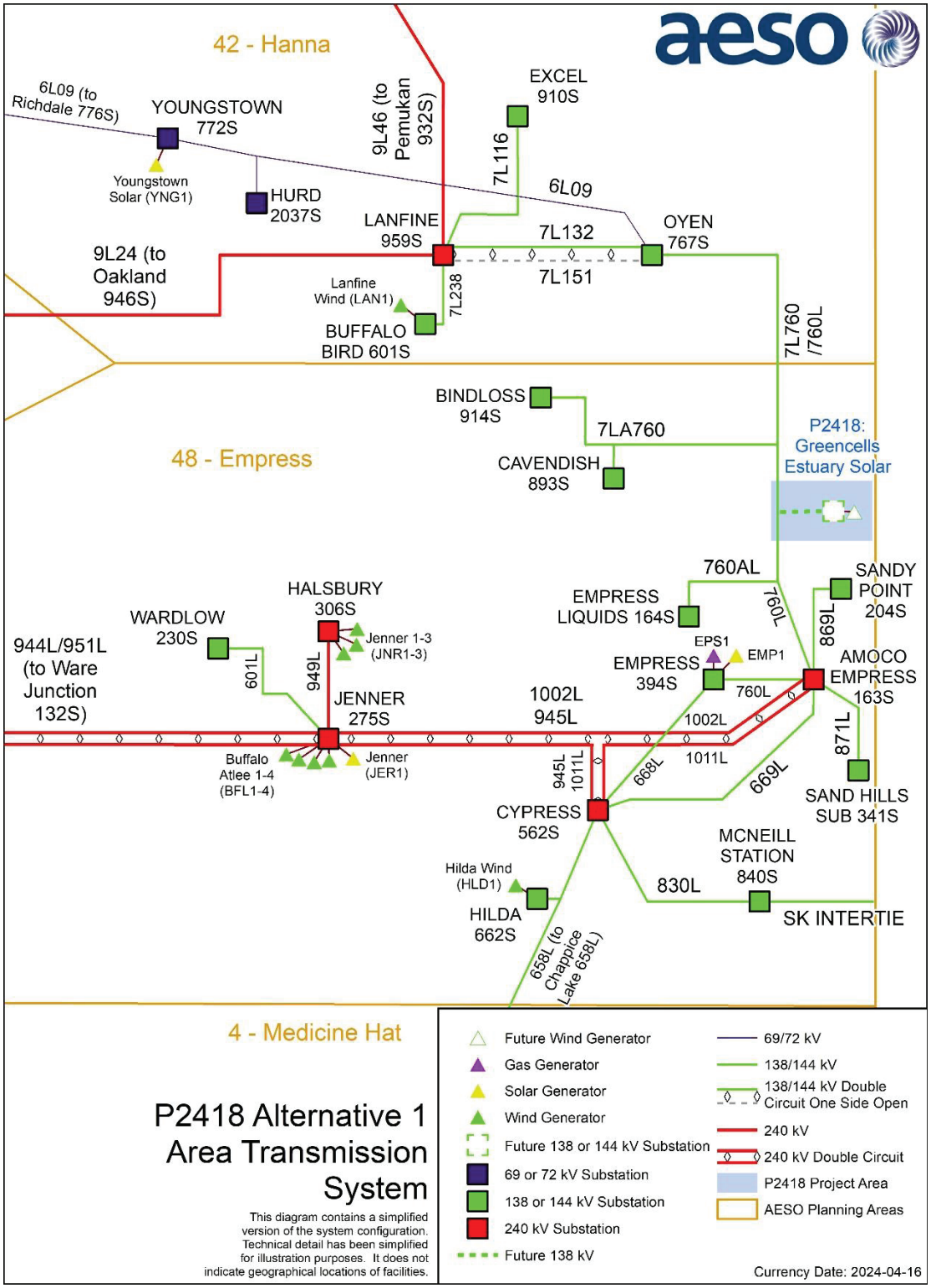
This alternative includes the following developments:

- Add one 138 kV circuit, approximately 1.5 km[1] in length, to connect the Facility to the existing 138 kV transmission line 760L using a T-tap connection configuration;
- Increase the capacity of the existing 138 kV transmission line 760L (between Oyen 767S and Amoco Empress 163S); 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 – In-and-out connection to 138 kV transmission line 760L

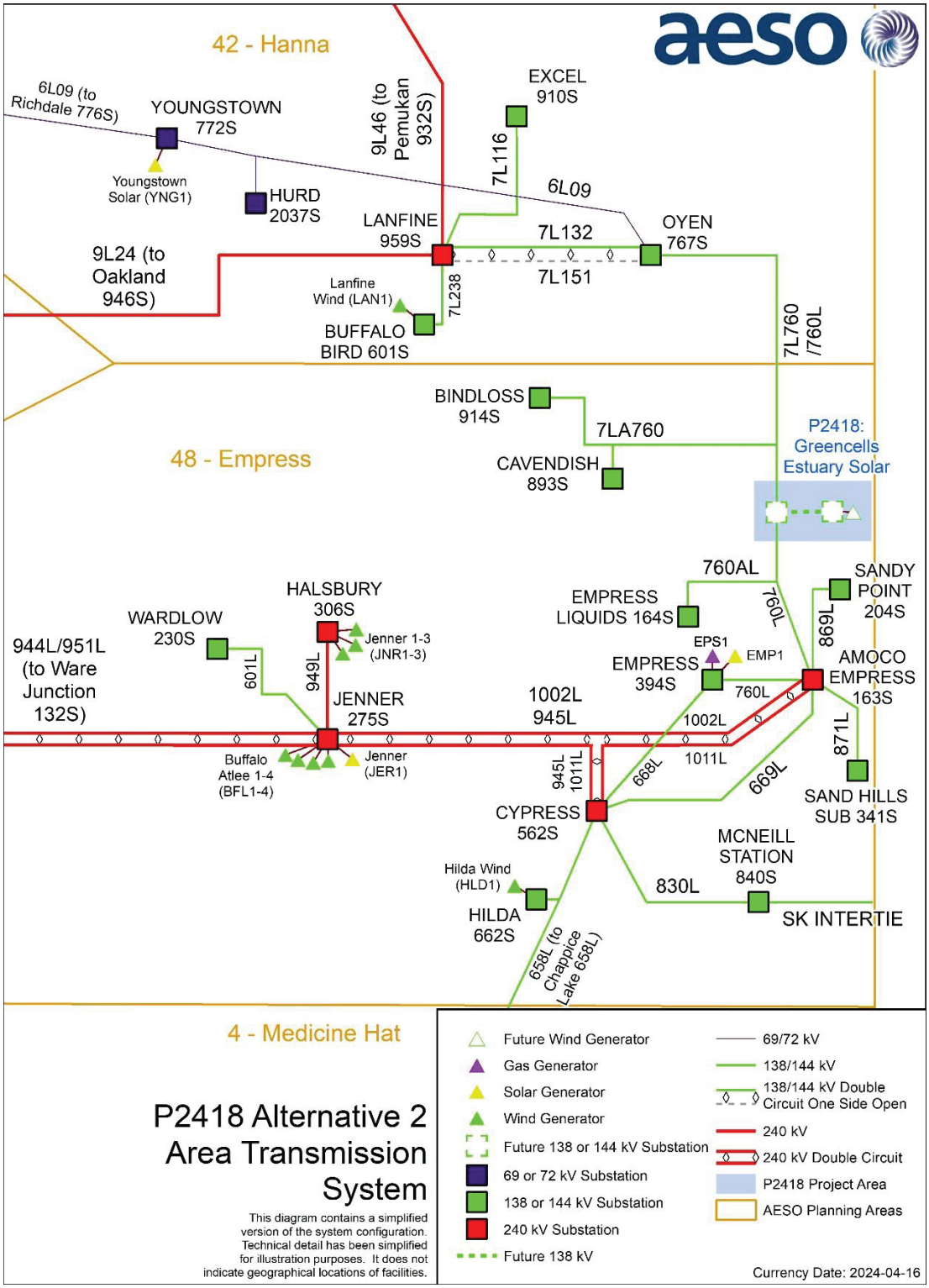
This alternative includes the following developments:

- Add a substation, including three 138 kV circuit breakers, connected to the existing 138 kV transmission line 760L using an in-and-out configuration;
- Add one 138 kV circuit, approximately 1.5 km[2] in length, to connect the Facility to the approved substation;
- Increase the capacity of the existing 138 kV transmission line 760L (between Oyen 767S and Amoco Empress 163S); and
- Add or modify associated equipment as required for the above transmission developments.

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

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

Figure 3-2: Connection Alternative 2



Alternative 3 – Radial 138 kV connection to Amoco Empress 163S substation

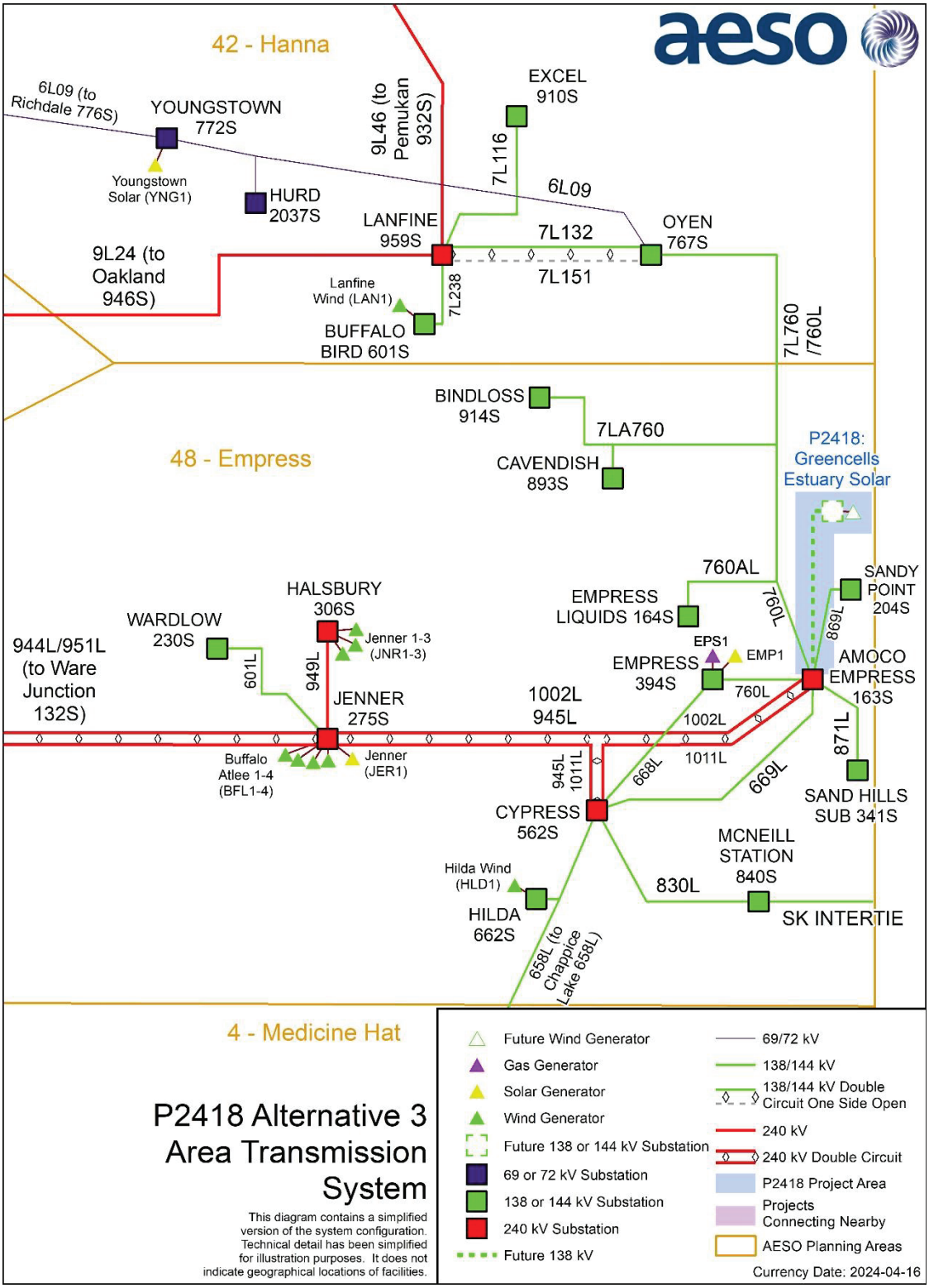
This alternative includes the following developments:

- Add one 138 kV circuit, approximately 4 km[3] in length, to connect the Facility to the existing Amoco Empress 163S substation using a radial configuration;
- Modify Amoco Empress 163S substation, including adding one 138 kV circuit breaker; and
- Add or modify associated equipment as required for the above transmission developments.

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

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

Figure 3-3: Connection Alternative 3



Alternative 4 – Radial 138 kV connection to Empress 394S substation

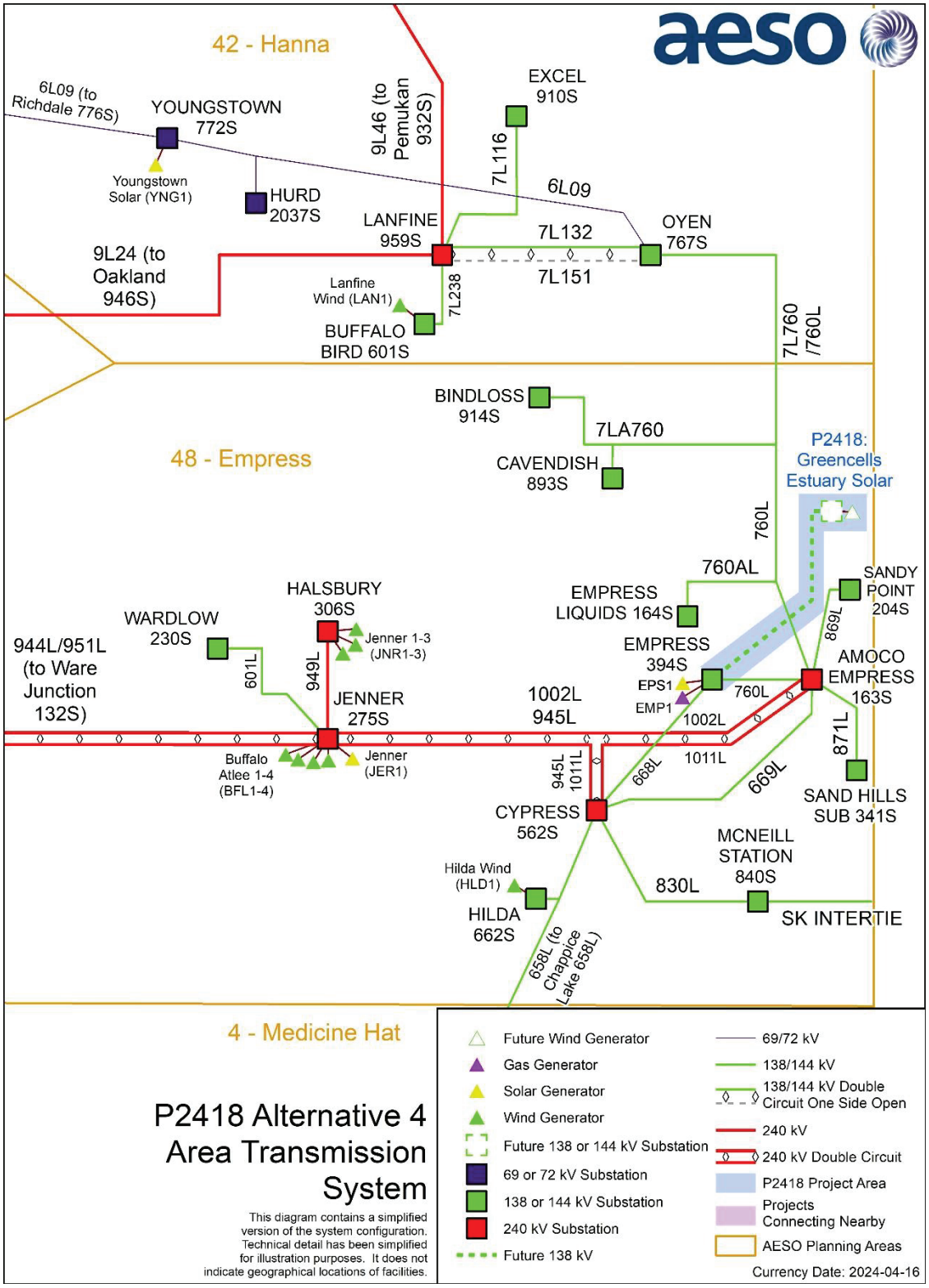
This alternative includes the following developments:

- Add one 138 kV circuit, approximately 4 km[4] in length, to connect the Facility to the existing Empress 394S substation using a radial configuration, which would require crossing the 138 kV transmission line 760L;
- Modify Empress 394S substation, including adding one 138 kV circuit breaker;
- Increase the capacity of the existing 138 kV transmission line 760L (between Empress 394S and Amoco Empress 163S substations); 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 – Radial 240 kV connection to Cypress 562S substation

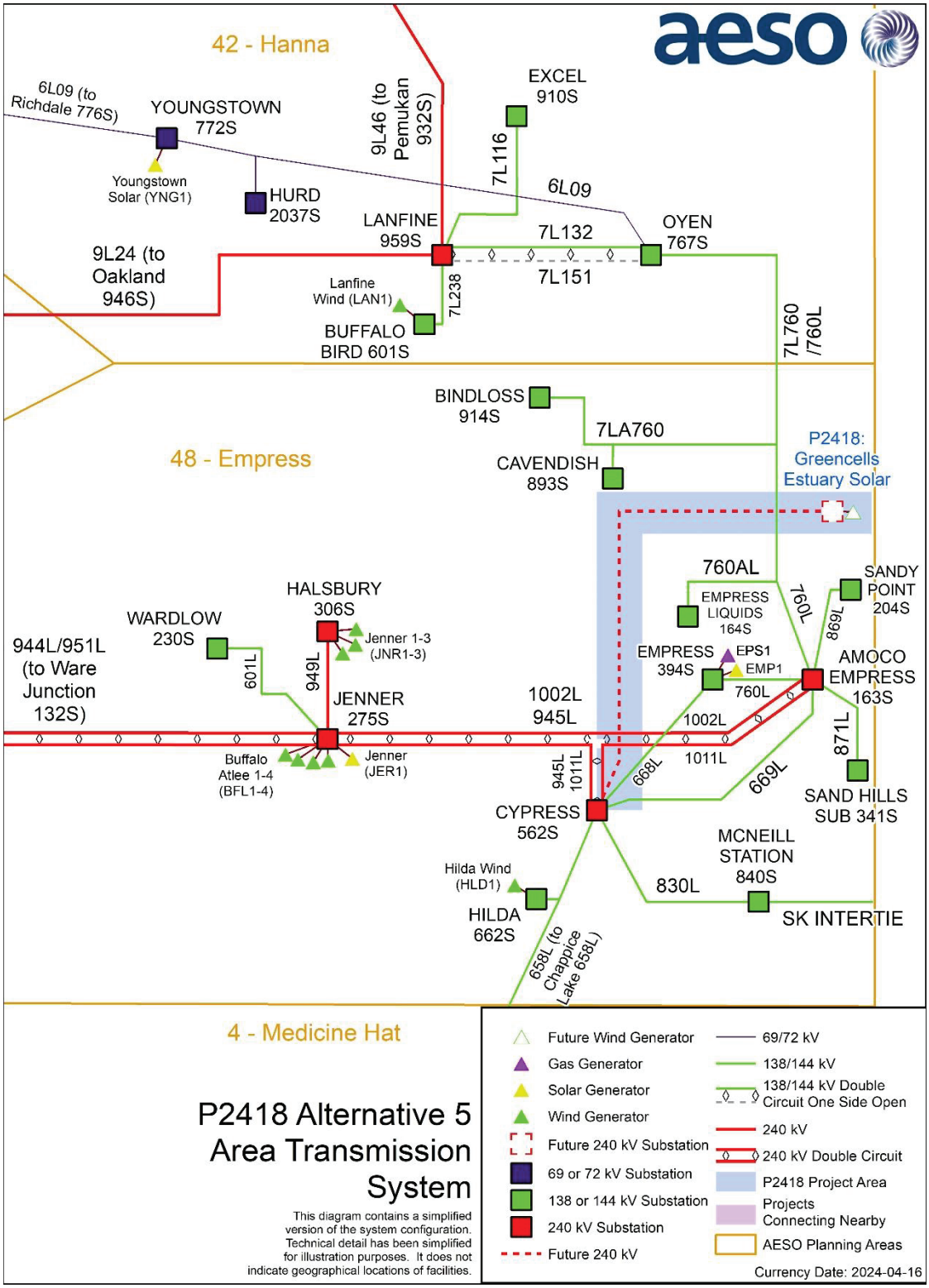
This alternative includes the following developments:

- Add one 240 kV circuit, approximately 7 km[5] in length, to connect the Facility to the existing Cypress 562S substation using a radial configuration, which would require crossing the 138 kV transmission line 760L and the 240 kV transmission lines 1002L and 1011L;
- Modify the Cypress 562S substation, including adding one 240 kV circuit breaker; 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



3.3 Connection Alternatives Selected for Further Study

Alternative 4 is considered technically feasible and was selected for further study.

3.4 Connection Alternatives Not Selected for Further Study

Alternatives 1 and 2 were ruled out due to protection coordination issues.

Alternative 3 is ruled out because the TFO has advised that expansion of Amoco Empress 163S substation is limited due to space restrictions, and the substation cannot accommodate a new breaker addition. Therefore, Alternative 3 was not selected for further study. A 240 kV connection to Amoco Empress 163S was considered but also ruled out as expansion of the 240kV ring bus is also limited due to space restrictions.

Alternative 5 involves increased transmission development, and hence increased cost, compared with Alternative 4. Therefore, Alternative 5 was ruled out.

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 B (see Attachment B1).

4.2 Studies Performed

The scheduled ISD for the Project is June 30, 2025; therefore, studies were performed using scenarios for 2028 Summer Light (SL) and Summer Peak (SP). Also, transient studies for 2025 SP and 2025 SL were performed.

Short-circuit studies were performed using the 2033 Winter Peak (WP) scenario.

Table 4-1 lists the study scenarios. Post-Project scenarios reflect the requested Rate STS contract capacity of 200 MW at the Estuary 1006S substation.

Table 4-1: Connection Study Scenarios

Scenario No.	Year/Season	System Generation Dispatch Conditions	Scenario Name	Project Generation (MW)	Load (MW)
Pre-Project					
1	2028 Summer Peak (2028 SP)	High South generation, high solar generation	2028 SP Pre-Project	0	0
2	2028 Summer Light (2028 SL)		2028 SL Pre-Project	0	0
Post-Project					
3	2028 SP	High South generation, high solar generation	2028 SP Post-Project	200	0
4	2028 SL		2028 SL Post-Project	200	0
5	2033 Winter Peak (WP)	All study area generation in-service	2033 WP Post-Project	200	0
6	2025 SP*	High South generation, high solar generation	2025 SP Post-Project	200	0
7	2025 SL*		2025 SL Post-Project	200	0

Table note: *For transient stability study only.

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.[6]

Power flow studies were performed for the 2028 Summer Light and 2028 Summer Peak pre-Project scenarios, and for 2028 Summer Light and 2028 Summer Peak 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 the 2025 Summer Light and 2025 Summer Peak 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 2028 Summer Peak pre-Project scenario and for the 2028 Summer Peak and 2033 Winter Peak post-Project scenarios.

4.3 Mitigation Measure Development and Evaluation

As explained in Section 6 of Attachment B1, 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, transient stability, and short-circuit current level 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.

[6] 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 for Category A, and the proposed mitigation measures are summarized in Table 5-1. Reliability Criteria violations observed during the connection assessment studies for Category B and the proposed mitigation measures are summarized in Attachment A.

- 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 B.

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

Scenario	Type of Reliability Criteria Violation Pre-Project	Type of Reliability Criteria Violation Post-Project	Details of Violation	Project Impact	Pre-Project Mitigation Measures	Post-Project Mitigation Measures
2028 Summer Peak	None	Thermal - above emergency rating	760L (Empress 394S to Amoco Empress 163S)	New violation	None	Increase the capacity of 760L (between Empress 394S and Amoco Empress 163S substations);
	Thermal - above normal rating	Thermal - above normal rating	7L159 (Heatburg 948S to 7LA159 Tap)	Materially increased violation	Real-time operational practices (RTOP)	RTOP
	None	Thermal - above normal rating	7L16 (Nevis 766S to Heatburg 948S)	New violation	None	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating	924L (Milo 356S to Langdon 102S)	Materially increased violation	RTOP	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating	927L (Milo 356s to Langdon 102S)	Materially increased violation	RTOP	RTOP
	Thermal - above normal rating	Thermal - above normal rating	935L (Milo 356S to 935AL Tap)	Materially increased violation	RTOP	RTOP
	None	Thermal - above normal rating	923L (Milo to 923AL Tap)	New violation	None	RTOP
	Thermal - above normal rating	Thermal - above normal rating	912L (Nevis 766S to Red Deer 63S)	Materially increased violation	RTOP and Central East Transfer-out Transmission Development (CETO)	RTOP and CETO
	Thermal - above normal rating	Thermal - above normal rating	9L20 (Nevis 766S to Cordel 755S)	Materially increased violation	RTOP and CETO	RTOP and CETO
2028 Summer Light	None	Thermal - above emergency rating	760L (Empress 394S to Amoco Empress 163S)	New violation	None	Increase the capacity of 760L (between Empress 394S and Amoco Empress 163S substations)
	None	Thermal - above normal rating	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating	7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation	RTOP	RTOP
	None	Thermal - above normal rating	935L (Milo 356S to 935AL Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	923L (Milo 356S to 923AL Tap)	New violation	None	RTOP

Notes:

- Marginally increased (or marginally decreased) refers to a percent loading difference (post-Project percent loading minus pre-Project percent loading) between 0% and 3% (or -3%).
- Materially increased (or materially decreased) refers to a percent loading difference (post-Project percent loading minus pre-Project percent loading) above or equal to 3% (or below or equal to -3%)

5.2 Pre-Project Study Results

5.2.1 Category A Conditions

As shown in table 5-1, with the inclusion of additional projects planning to connect in the South region the pre-Project power flow studies identified several thermal criteria violations under the Category A condition (i.e. all elements in service). As study assumptions did not account for the CETO Transmission Development,[7] pre-Project Category A thermal criteria violations were observed on the 240 kV transmission lines 912L and 9L20. Category A thermal criterial violations were also observed on the 138/144 kV transmission lines 7L159, 7L171, and 240 kV transmission lines 924L, 927L, and 935L. 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 several thermal and voltage criteria violations under Category B conditions (i.e., loss of a single system element); see Attachment A for details.

5.3 Post-Project Study Results

5.3.1 Category A Conditions

Following the connection of the Project, power flow studies identified a number of thermal criteria violations under the Category A condition. All of the Category A thermal criteria violations observed in the pre-Project scenarios, including violations on the 138/144 kV transmission lines 7L159 and 7L171 and 240 kV transmission lines 912L, 9L20, 924L, 927L, and 935L, were exacerbated, and new thermal criteria violations were observed, including violations on the 138/144 kV transmission lines 760L, 7L16, 7L760, and 240kV transmission line 923L.

A summary of thermal criteria violations observed under N-0 system conditions in the Summer Peak scenarios are shown in Table 5-2 and the Summer Light scenarios are shown in Table 5-3.

Table 5-2: Thermal Criteria violations under N-0 Condition in the SP scenarios

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	
760L (Empress 394S to Amoco Empress 163S)	119.0	131.0	5.13	4.3	124.1	104.3	100
7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	109.9	102.4	116.0	108.1	5.7
7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	107.0	99.7	113.1	105.4	5.7

[7] Decision 25469-D01-2021, Alberta Electric System Operator, Needs Identification Document Application, Central East Transfer-out Transmission Development.

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	
924L (Milo 356S to Langdon 102S)	547.0	656.0	733.5	134.1	764.7	139.8	5.7
927L (Milo 356s to Langdon 102S)	576.0	691.0	735.6	127.7	766.7	133.1	5.4
935L (Milo 356S to 935AL Tap)	547.0	656.0	560.7	102.5	601.2	109.9	7.4
923L (Milo to 923AL Tap)	547.0	656.0	538.7	98.5	579.3	105.9	7.4
912L (Nevis 766S to Red Deer 63S)	507.0	608.0	536.9	105.9	587.1	115.8	9.9
9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	444.0	103.5	485.2	113.1	9.6

Table 5-3: Thermal Criteria violations under N-0 Condition in the SL scenarios

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	
760L (Empress 394S to Amoco Empress 163S)	119.0	131.0	27.5	23.1	156.7	131.7	108.6
7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	91.1	82.7	120.0	108.9	26.2
7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	126.1	117.5	127.4	118.7	1.2
935L (Milo 356S to 935AL Tap)	547.0	656.0	519.1	94.9	570.5	104.3	9.4
923L (Milo 356S to 923AL Tap)	547.0	656.0	509.3	93.1	560.1	102.4	9.3

Tables 5-2 and 5-3 indicate that the project has material impacts on N-0 thermal criteria violations in the Study Area following the inclusion of the Project and additional projects planning to connect in the south region.

Post-Project short-circuit fault levels were not significantly higher than pre-Project levels and were found to be within the typical capabilities of the nearby facilities.

5.3.2 Category B Conditions

Post-Project studies identified a number of thermal and voltage criteria violations under Category B conditions. Following the connection of the Project, most of the thermal criteria violations observed in the pre-Project scenarios were exacerbated, and new thermal criteria violations were observed. The voltage criteria violations observed in the pre-Project scenarios were also observed post-Project.

The results did not indicate any transient stability concerns, and the system showed acceptable dynamic response to all Category B conditions studied.

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

The Category A thermal reliability criteria violations observed on the 138 / 144 kV transmission lines 7L159 and 7L171, and 240 kV transmission lines 924L, 927L, and 935L can be managed by applying Section 302.1 of the ISO rules, *Real-Time Transmission Constraint Management* (TCM Rule) to curtail generation until such a time that system developments are in place to alleviate congestion. If necessary, the AESO will file an application for an "exception" under Section 15(2) of the *Transmission Regulation* (TReg).

The approved CETO Transmission Development will address Category A thermal criteria violations on transmission lines 912L and 9L20 and is expected to be fully energized by 2026.

Prior to connection of the Project, most of the observed Category B thermal criteria violations can be managed using real-time operational practices (RTOPs). In some cases, this could include applying the TCM Rule to dispatch down effective generation, and re-dispatching HVDC power levels. The remaining voltage and thermal criteria violations can be mitigated by the existing RASs 164, 175, 201, 134, 202, and Planned RAS 204.

5.4.2 Post-Project

Category A thermal criteria violations on the 138/144 kV transmission lines 7L159, 7L171, 7L16, 7L760, and 240 kV transmission lines 924L, 927L, 935L, and 923L can be managed by applying the TCM Rule to curtail generation as required until such a time that system developments or other mitigations are in place to alleviate congestion. If necessary, the AESO will file an application for an "exception" under Section 15(2) of the TReg.

The approved CETO Transmission Development[8] will address congestion on transmission lines 912L and 9L20 and is expected to be fully energized by 2026. Currently, the planned ISD of the Project is prior to the ISD of CETO. After the Project connection, and until CETO energizes, the AESO may determine that mitigation is required to address Category A thermal criteria violations. In that case, the AESO will develop operational procedures or other mitigation measures closer to the ISD of the Project. The AESO is

[8] Decision 25469-D01-2021, Alberta Electric System Operator, Needs Identification Document Application, Central East Transfer-out Transmission Development.

developing system plans to address thermal criteria violations on the 240 kV transmission lines in the South region, and the 138/144 kV system in the Hanna and Sheerness areas.[9]

The post-connection assessment identified an additional Category A violation on the 138 / 144 kV transmission line 760L and will be mitigated by increasing the line rating of 760L (between Empress 394S substation and Amoco Empress 163S substation) to a minimum rating of 240 MVA. This rating also accounts for other planned projects in the area. This line rating increase will be completed as part of the Project and has an ISD of June 30, 2025.

After connection of the Project, the observed voltage violations and most of the thermal criteria violations observed under Category B conditions can be mitigated by using RTOPs, existing RASs 164, 175, 201, 134, 202, and Planned RAS 204. In some cases, using RTOPs could include applying the TCM Rule to dispatch down effective generation, and re-dispatching HVDC power levels. Two new RASs are required to mitigate the observed new thermal criteria violations under Category B conditions. The new RASs, hereafter referred to as RAS 607 and 7L760 RAS, are required to mitigate thermal criteria violations on the 138 / 144 kV transmission lines 668L, 7L760/760L and 7L132 under certain Category B conditions with the Project included 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.

The study results show that the amount of generation curtailed by the new 7L760 RAS 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 the new 7L760 RAS 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.

[9] More information about this plan was provided at the Grid Reliability Update Stakeholder Session held on November 23, 2023; session materials are available on the AESO website

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 4 is technically viable. The connection assessment identified 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 AIES. Category A thermal criteria violations were observed under these credible worst-case load and generation forecast conditions. The probability of Category A thermal criteria violations materializing is highly dependent upon the production profile of the Facility and other generation facilities in the area.

The Category A violation on 760L can be mitigated by increasing the line rating of 760L to a minimum of 240 MVA. The upgrade of 760L will address the Category A violations on this line that occur following the connection of the Project, and provide capacity for future connections in the area. In addition, the observed Category A violations on the 240 kV transmission lines 912L and 9L20 can be mitigated by the approved CETO Transmission Development. Furthermore, the AESO is developing system plans to address thermal criteria violations on the 138/144 kV system in the Hanna and Sheerness areas.

The remaining Category A violations will be mitigated through the use of real-time operational practices, which include applying the TCM Rule to curtail generation as required. The AESO will continue to monitor the pace of generation development and will notify Market Participants if it determines that it is necessary to obtain approval for a Section 15(2) exception.

The thermal criteria and voltage violations observed under Category B conditions can be mitigated through the use of existing RASs 164, 175, 201, 134, 202, planned RAS 204, new RAS 607, a new RAS for 7L760, and real-time operational practices, alone or in combination, as appropriate. With implementation of these mitigation measures, connecting the project with the preferred alternative does not adversely affect the performance of the AIES.

The AESO recommends proceeding with the Project using Alternative 4 as the preferred alternative to respond to the Market Participant's request for system access service. Alternative 4 involves adding one 138 kV circuit to connect the Facility to the existing Empress 394S substation in a radial configuration, modifying the Empress 394S substation including adding one 138 kV circuit breaker, and increasing the line rating of 760L between Empress 394S and Amoco Empress 163S substations to 240 MVA.

The new 138 kV circuit connecting the Facility to Empress 394S substation should have a minimum rating of 223 MVA to meet the Market Participant's requested STS contract capacity.

Attachment A:
Table A-1: Summary of Category B Reliability Criteria Violations, Project Impact and Mitigation Measures- All Scenarios

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					
2028 Summer Peak	None	Thermal - above emergency rating	760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	New violation	None	New RAS 607
	Thermal - above emergency rating	Thermal - above emergency rating	1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newell 2075S)	Materially increased violation	RTOP	RTOP
	Thermal - above normal rating	Thermal - above normal rating	7L16 (Nevis 766S to Heatburg 948S)	7L128 (Coyote Lake 963S to 7LA128 Tap)	Marginally decreased violation	RTOP	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating	9L29 (Oakland 946S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	Materially increased violation	RAS 134	RAS 134
	Thermal - above emergency rating	Thermal - above emergency rating		7L16 (Nevis 766S to Heatburg 948S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L137 (Three Hills 770S to Rowley 768S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L25 (Rowley 768S to Michichi Creek 802S)	Materially increased violation		
	None	Thermal - above normal rating	924L (Milo 356S to Langdon 102S)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RAS 175	RAS 175 and RTOP
	Thermal - above emergency rating	Thermal - above emergency rating		927L (Milo 356s to 927AL Tap)	Materially increased violation		
	None	Thermal - above normal rating		912L (Nevis 766S to Red Deer 63S)	New violation		
	None	Thermal - above normal rating		9L20 (Nevis 766S to Cordel 755S)	New violation		
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	None	Thermal - above normal rating	9L966 (Pemukan 932S to Hansman Lake 650S)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RAS 201	RAS 201
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	Thermal - above emergency rating	Thermal - above emergency rating		7L224 (Hansman Lake 650S to Monitor 774S)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		7L127 (Pemukan 932S to Monitor 774S)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating	963S T1 (Coyote Lake 963S Transformer T1)	7L159 (Heatburg 948S to 7LA159 Tap)	Materially increased violation	RAS 134	RAS 134
	Thermal - above emergency rating	Thermal - above emergency rating		7L16 (Nevis 766S to Heatburg 948S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L137 (Three Hills 770S to Rowley 768S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L25 (Rowley 768S to Michichi Creek 802S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating	912L (Nevis 766S to Red Deer 63S)	935L (Cassils 324S to 935AL Tap)	Materially increased violation	RTOP	RTOP
	Thermal - above normal rating	Thermal - above normal rating		924L (Milo 356S to 924AL Tap)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		927L (Milo 356s to 927AL Tap)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		935L (Milo 356S to 935AL Tap)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		923L (Milo 356S to 923AL Tap)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		923L (Newell 2075S to 923AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating	9L20 (Nevis 766S to Cordel 755S)	7L159 (Heatburg 948S to 7LA159 Tap)	Materially increased violation	RAS 134	RAS 134
	None	Thermal - above normal rating		7L159 (Three Hills 770S to 7LA159 Tap)	New violation		
	None	Thermal - above normal rating		935L (Cassils 324S to 935AL Tap)	New violation		
	Thermal - above normal rating	Thermal - above normal rating		924L (Milo 356S to 924AL Tap)	Materially increased violation		
	None	Thermal - above normal rating		927L (Milo 356s to 927AL Tap)	New violation		
	None	Thermal - above normal rating		935L (Milo 356S to 935AL Tap)	New violation		
	None	Thermal - above normal rating		923L (Milo 356S to 923AL Tap)	New violation		
	None	Thermal - above normal rating		923L (Newell 2075S to 923AL Tap)	New violation		
	Thermal - above emergency rating	Thermal - above emergency rating		7L16 (Nevis 766S to Heatburg 948S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above emergency rating		7L137 (Three Hills 770S to Rowley 768S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above emergency rating		7L25 (Rowley 768S to Michichi Creek 802S)	Materially increased violation		
	None	Thermal - above normal rating	Three Hills 770S Transformer 3T	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RTOP	RTOP
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	Thermal - above normal rating	Thermal - above normal rating	Lanfine 959S Transformer T1	760L/7L760 (7LA760 Tap to 760AL Tap)	Materially decreased violation	Planned RAS 204	Planned RAS 204
	Thermal - above normal rating	None		760L (760AL Tap to Amoco Empress 163S)	Removed violation		
	Thermal - above normal rating	None		7L132 (Oyen 767S to Lanfine 959S)	Removed violation		
	Thermal - above emergency rating	Thermal - above normal rating		7L760 (Oyen 767S to 7LA760 Tap)	Materially decreased violation		
	None	Thermal - above emergency rating		6L09 (Hanna 763S to Richdale 776S)	New violation		
	None	Thermal - above emergency rating		6L09 (Oyen 767S to Hanna 763S)	New violation		
	None	Thermal - above emergency rating		Oyen 767S Transformer T1	New violation		
	None	Thermal - above emergency rating		6L09 (Richdale 776S to Youngstown 772S)	New violation		
	None	Thermal - above normal rating	9L46 (Lanfine 959S to Pemukan 932S)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RTOP	RTOP
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	None	Thermal - above normal rating	7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RTOP	RTOP
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	Thermal - above normal rating	Thermal - above normal rating	9L59 (Anderson 801S to Tinchebray 972S)	7L159 (Heatburg 948S to 7LA159 Tap)	Materially increased violation	RTOP	RTOP

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					
	None	Thermal - above normal rating		924L (Milo 356S to 924AL Tap)	New violation		
	Thermal - above normal rating	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating	Tilley 498S Transformer T1/T2	100L (Suffield 895S to 100AL Tap)	Materially decreased violation	RTOP	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating	EATL	7L159 (Heatburg 948S to 7LA159 Tap)	Materially increased violation	RAS 134, RTOP	RAS 134, RTOP (
	Thermal - above emergency rating	Thermal - above emergency rating		935L (Cassils 324S to 935AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		924L (Milo 356S to 924AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		927L (Milo 356s to 927AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		935L (Milo 356S to 935AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		923L (Milo 356S to 923AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		923L (Newell 2075S to 923AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		912L (Nevis 766S to Red Deer 63S)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		9L20 (Nevis 766S to Cordel 755S)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		7L16 (Nevis 766S to Heatburg 948S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L137 (Three Hills 770S to Rowley 768S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L25 (Rowley 768S to Michichi Creek 802S)	Materially increased violation		
	None	Thermal - above normal rating	927L (Milo 356s to Langdon 102s)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RAS 175 and RTOP	RAS 175 and RTOP
	Thermal - above emergency rating	Thermal - above emergency rating		924L (Milo 356S to 924AL Tap)	Materially increased violation		
	None	Thermal - above normal rating		912L (Nevis 766S to Red Deer 63S)	New violation		
	None	Thermal - above normal rating		9L20 (Nevis 766S to Cordel 755S)	New violation		
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	None	Thermal - above normal rating	935L (Milo 356S to Cassils 324S)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RTOP	RTOP
	Thermal - above normal rating	Thermal - above normal rating		1087L (Cassils 324S to Newwell 2075S)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		923L (Milo 356S to 923AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		923L (Newell 2075S to 923AL Tap)	Materially increased violation		
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	None	Thermal - above normal rating	923L (Milo 356S to Newell 2075S)	7L159 (Heatburg 948S to 7LA159 Tap)	New violation	RTOP	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating		935L (Cassils 324S to 935AL Tap)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		935L (Milo 356S to 935AL Tap)	Materially increased violation		
	None	Thermal - above normal rating		7L16 (Nevis 766S to Heatburg 948S)	New violation		
	None	Thermal - above emergency rating	Amoco Empress 163S Transformer T5	668L (Empress 394S to Cypress 562S)	New violation	None	New RAS 607
	Voltage Collapse	Voltage Collapse	1034L (Cassils 324S to Bowmanton 244S)	Voltage Collapse	Violation remains	RAS 164	RAS 164
	Voltage Collapse	Voltage Collapse	1035L (Newell 1075S to Bowmanton 244S)	Voltage Collapse	Violation remains	RAS 164	RAS 164
2028 Summer Light	None	Thermal - above normal rating	871L (Amoco Empress 163S to Sand Hills 341S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	951L (Jenner 275S to Ware Junction 132S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	945L (Jenner 275S to Cypress 562S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above emergency rating	760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	New violation	None	New RAS 607
	None	Thermal - above normal rating	666L (Tilley 498S to West Brooks 28S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	Cypress 562S Transformer T1	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating		7L760 (Oyen 394S to P2421 Tap)	New violation		
	None	Thermal - above normal rating	1097L (Milo 356S to Amber 611S)	923L (Milo 356S to 923AL Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	6L56 (Michichi Creek A802S to Hanna A763S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating	9L29 (Oakland 946S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation	RAS 202	RAS 202 and RTOP
	None	Thermal - above normal rating	341ST1 (Sand Hills 341S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	933L (Ware Junction 132S to Anderson A801S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	934L (Ware Junction 132S to Anderson 801S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	980L (Ware Junction 132S to Anderson A801S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	163ST1 (Amoco Empress 163S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	163ST2 (Amoco Empress 163S Transformer T2)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	Thermal - above normal rating	Thermal - above emergency rating	924L (Milo 356S to Langdon 102S)	927L (Milo 356s to 927AL Tap)	Materially increased violation	RAS 175	RAS 175
	None	Thermal - above normal rating		7L760 (Oyen 394S to P2421 Tap)	New violation		
	None	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	New violation		

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					
	Thermal - above emergency rating	Thermal - above emergency rating	9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	Materially increased violation	RTOP	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating		7L127 (Pemukan 932S to Monitor 774S)	Materially increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating	Coyote Lake 963S Transformer T1	7L171 (Michichi Creek 802S to Wintering Hills 804S)	Materially increased violation	RAS 202	RAS 202 and RTOP
	None	Thermal - above normal rating	912L (Nevis 766S to Red Deer 63S)	924L (Milo 356S to 924AL Tap)	New violation	RTOP	RTOP
	Thermal - above normal rating	Thermal - above normal rating		935L (Milo 356S to 935AL Tap)	New violation		
	Thermal - above normal rating	Thermal - above normal rating		923L (Milo 356S to 923AL Tap)	New violation		
	None	Thermal - above normal rating	9L20 (Nevis 766S to Cordel 755S)	935L (Milo 356S to 935AL Tap)	New violation	RAS 202 and RTOP	RAS 202 and RTOP
	None	Thermal - above normal rating		923L (Milo 356S to 923AL Tap)	New violation		
	Thermal - above normal rating	Thermal - above emergency rating		7L137 (Three Hills 770S to Rowley 768S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above emergency rating		7L25 (Rowley 768S to Michichi Creek 802S)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation		
	None	Thermal - above normal rating	Michichi Creek 802S Transformer T1	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	7L238 (Lanfine 959S to Buffalo Bird 601S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	None	Thermal - above normal rating	9L46 (Lanfine 959S to Pemukan 932S)	935L (Milo 356S to 935AL Tap)	New violation	RTOP	RTOP
	None	Thermal - above normal rating		923L (Milo 356S to 923AL Tap)	New violation		
	None	Thermal - above emergency rating		6L15 (Sullivan Lake 775S to Hanna 763S)	New violation		
	None	Thermal - above normal rating		7L137 (Three Hills 770S to Rowley 768S)	New violation		
	None	Thermal - above normal rating		7L25 (Rowley 768S to Michichi Creek 802S)	New violation		
	Thermal - above normal rating	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation		
	Thermal - above emergency rating	Thermal - above emergency rating		9L59 (Tinchebray 972S to 9LA59)	Materially increased violation		
	None	Thermal - above emergency rating		9L59 (Anderson 840S to 9LA59)	Materially increased violation		
	Thermal - above normal rating	Thermal - above normal rating	7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	Materially increased violation	RTOP	RTOP
	None	Thermal - above normal rating	9L59 (Anderson 801S to Tinchebray 972S)	935L (Milo 356S to 935AL Tap)	New violation	RTOP	New 7L760 RAS and RTOP
	None	Thermal - above normal rating		923L (Milo 356S to 923AL Tap)	New violation		
	None	Thermal - above normal rating		7L760 (Oyen 394S to P2421 Tap)	New violation		
	Thermal - above normal rating	Thermal - above normal rating		7L137 (Three Hills 770S to Rowley 768S)	Marginally increased violation		
	Thermal - above normal rating	Thermal - above emergency rating		7L25 (Rowley 768S to Michichi Creek 802S)	Marginally increased violation		
	Thermal - above normal rating	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation		
	None	Thermal - above normal rating		7L132 (Oyen 767S to Lanfine 959S)	New violation		
	None	Thermal - above emergency rating	9L24 (Oakland 946s - Lanfine 959s)	760L (Amoco Empress 163S to 760AL Tap)	New violation	RTOP	New 7L760 RAS and RTOP
	Thermal - above normal rating	Thermal - above emergency rating		760L/7L760 (7LA760 Tap to 760AL Tap)	Materially increased violation		
	None	Thermal - above emergency rating		7L760 (Oyen 767S to 7LA760 Tap)	New violation		
	Thermal - above emergency rating	Thermal - above emergency rating		7L760 (Oyen 394S to P2421 Tap)	Materially increased violation		
	None	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	New violation		
	Thermal - above normal rating	Thermal - above emergency rating		7L132 (Oyen 767S to Lanfine 959S)	Materially increased violation		
	None	Thermal - above emergency rating		9L59 (Tinchebray 972S to 9LA59)	New violation		
	None	Thermal - above normal rating	Tilley 498S Transformer T1/T2	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	Thermal - above normal rating	Thermal - above normal rating	927L (Milo 356s to Langdon 102s)	924L (Milo 356S to 924AL Tap)	Materially increased violation	RTOP	RAS 175
	None	Thermal - above emergency rating		7L760 (Oyen 394S to P2421 Tap)	New violation		
	None	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	New violation		
	Thermal - above emergency rating	Thermal - above emergency rating	935L (Milo 356S to Cassils 324S)	923L (Milo 356S to 923AL Tap)	Materially increased violation	RTOP	RTOP
	Thermal - above normal rating	Thermal - above normal rating		923L (Newell 2075S to 923AL Tap)	Materially increased violation		
	None	Thermal - above normal rating		7L760 (Oyen 394S to P2421 Tap)	New violation		
	Thermal - above normal rating	Thermal - above emergency rating	923L (Milo 356S to Newell 2075S)	935L (Cassils 324S to 935AL Tap)	Materially increased violation	RTOP	RTOP
	Thermal - above emergency rating	Thermal - above emergency rating		935L (Milo 356S to 935AL Tap)	Materially increased violation		
	None	Thermal - above emergency rating	Amoco Empress 163S Transformer	668L (Empress 394S to Cypress 562S)	New violation	None	New RAS 607
	None	Thermal - above normal rating	944L (Jenner 275S to Ware Junction 132S)	7L760 (Oyen 394S to P2421 Tap)	New violation	None	RTOP
	Voltage Collapse	Voltage Collapse	1034L (Cassils 324S to Bowmanton 244S)	Voltage Collapse	Violation remains	RAS 164	RAS 164
	Voltage Collapse	Voltage Collapse	1035L (Newell 1075S to Bowmanton 244S)	Voltage Collapse	Violation remains	RAS 164	RAS 164
	Voltage Collapse	Voltage Collapse	EATL	Voltage Collapse	Violation remains	RTOP	RTOP

Notes:

- Marginally increased (or marginally decreased) refers to a percent loading difference (post-Project percent loading minus pre-Project percent loading) between 0% and 3% (or -3%).
- Materially increased (or materially decreased) refers to a percent loading difference (post-Project percent loading minus pre-Project percent loading) above or equal to 3% (or below or equal to -3%).
- Planned RAS 204 was proposed for P2421 Renewable Energy Systems Canada Inc. project in the *RESC Big Sky Solar Connection NID*. This RAS is referred herein as "Planned RAS 204."
- New RAS 607 is a new proposed RAS for P2418 to mitigate overload on 668L (Empress 394S to Cypress 562S)
- New 7L760 RAS is a new proposed RAS for P2418 to mitigate overload on 7L760/760L (163S Amoco Empress substation to 767S Oyen substation) and 7L132 (767S Oyen substation to 959S Lanfine substation)

Attachment B:
Engineering Connection Assessment Results

Engineering Connection Assessment: Study Results

P2418 Greencells Estuary Solar

Greencells Indygen Alberta Ltd.

Date: April 12, 2024

Version: V2

Role	Name	Date	Signature
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The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

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Attachment A2 Pre-Project Power Flow Diagrams
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Attachment A7 Constraint Effective Factors Table

1 Introduction

This report presents the results of the engineering studies that were completed by AltaLink 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 33.

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.

2.1.1 Scenario 1: 2028 Summer Peak (SP) High Generation Pre-Project

Category A Conditions

Thermal criteria violations were observed under Category A conditions. Thermal criteria violations under Category A Conditions prior to generation curtailment for Scenario 1 are shown in the table below:

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

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Pre-contingency Curtailment)	
				Power Flow (MVA)	% Loading
Base Case	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	109.9	102.4
Base Case	924L (Milo 356S to Langdon 102S)	547.0	656.0	733.5	134.1
Base Case	927L (Milo 356s to Langdon 102S)	576.0	691.0	735.6	127.7
Base Case	935L (Milo 356S to 935AL Tap)	547.0	656.0	560.7	102.5
Base Case	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	536.9	105.9
Base Case	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	444.0	103.5

Category B Conditions

Thermal criteria violations were observed under Category A conditions. Hence, Category A curtailments were conducted prior to commencing Category B studies. The most effective generators were scaled down to mitigate Category A overloads. The generation adjustments for this scenario were performed based on the post-project Category A violations.

Updated generation dispatch values for Scenario 1 are shown in the table below:

Table 2-2: Generation Curtailment for Scenario 1

Generator Name	Bus Number	CSS (MW)	Dispatch (MW)
HAL1	2621, 2622, 2623, 2624, 2625	73.2	0.0
P2247	560041, 560042	277.5	0.0

Generator Name	Bus Number	CSS (MW)	Dispatch (MW)
P1927	60434, 61434	84.5	0.0
P1987	60919, 61919	105.6	0.0
P2447	560122, 560123	109.2	0.0
P2506	560135, 560139, 560143	109.2	0.0
BSR1	61736, 61737	178.6	78.6

Thermal criteria violations under Category A Conditions prior to and after generation curtailment for Scenario 1 are shown in the table below:

Table 2-3: Thermal Loading under Category A Conditions for Scenario 1

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Pre-contingency Curtailment)		Pre-Project Results (Post-Curtailment)	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
Base Case	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	109.9	102.4	97.0	90.4
Base Case	924L (Milo 356S to Langdon 102S)	547.0	656.0	733.5	134.1	504.9	92.3
Base Case	927L (Milo 356s to Langdon 102S)	576.0	691.0	735.6	127.7	505.9	87.8
Base Case	935L (Milo 356S to 935AL Tap)	547.0	656.0	560.7	102.5	444.0	81.2
Base Case	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	536.9	105.9	403.6	79.6
Base Case	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	444.0	103.5	326.3	76.1

Thermal Criteria Violations

Thermal criteria violations were observed under certain Category B conditions as shown in Table 2-4.

Table 2-4: Thermal Criteria Violations under Category B Conditions for Scenario 1

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings[a] (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[b] (MVA)	% Loading[c]
1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newwell 2075S)	547.0	656.0	804.1	147.0
7L16 (Nevis 766S to Heatburg 948S)	7L128 (Coyote Lake 963S to 7LA128 Tap)	162.9	180.2	167.8	103.0
9L29 (Oakland 946S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	131.4	122.5
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	128.4	119.7
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	112.8	104.2

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings[a] (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[b] (MVA)	% Loading[c]
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	115.2	105.5
924L (Milo 356S to Langdon 102S)	927L (Milo 356s to 927AL Tap)	576.0	691.0	740.7	128.6
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	108.3	123.0	163.4	150.9
	7L127 (Pemukan 932S to Monitor 774S)	144.7	126.5	185.8	128.4
963S T1 (Coyote Lake 963S Transformer T1)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	131.4	122.5
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	128.4	119.7
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	112.8	104.2
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	115.2	105.5
912L (Nevis 766S to Red Deer 63S)	935L (Cassils 324S to 935AL Tap)	547.1	656.0	581.6	106.3
	924L (Milo 356S to 924AL Tap)	547.0	656.0	602.8	110.2
	927L (Milo 356s to 927AL Tap)	576.0	691.0	604.2	104.9
	935L (Milo 356S to 935AL Tap)	547.0	656.0	577.6	105.6
	923L (Milo 356S to 923AL Tap)	547.0	656.0	553.6	101.2
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	557.4	101.9
9L20 (Nevis 766S to Cordel 755S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	132.2	123.2
	924L (Milo 356S to 924AL Tap)	547.0	656.0	564.5	103.2
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	129.2	120.4
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	113.6	104.9
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	116.0	106.2
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	120.0	132.0	122.9	102.4
	760L/7L760 (7LA760 Tap to 760AL Tap)	110.2	132.0	123.4	112.0
	7L760 (Oyen 767S to 7LA760 Tap)	110.2	123.6	127.9	116.1
	7L132 (Oyen 767S to Lanfine 959S)	112.1	138.0	113.6	101.3
9L59 (Anderson 801S to Tinchebray 972S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	110.9	103.4
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	108.1	100.7
498ST1T2 (Tilley 498S Transformer T1/T2)	100L (Suffield 895S to 100AL Tap)	78.0	86.0	81.0	103.9
EATL	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	128.8	120.0
	935L (Cassils 324S to 935AL Tap)	547.1	656.0	707.4	129.3
	924L (Milo 356S to 924AL Tap)	547.0	656.0	723.7	132.3
	927L (Milo 356s to 927AL Tap)	576.0	691.0	725.8	126.0
	935L (Milo 356S to 935AL Tap)	547.0	656.0	706.7	129.2
	923L (Milo 356S to 923AL Tap)	547.0	656.0	744.5	136.1
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	745.6	136.3

Contingency (System Element Lost)	Violation Location Details	Thermal Ratings[a] (MVA)		Pre-Project Results	
		Normal Rating	Emergency Rating	Power Flow[b] (MVA)	% Loading[c]
	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	620.6	122.4
	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	507.1	118.2
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	125.8	117.2
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	110.1	101.7
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	112.5	103.0
927L (Milo 356s to Langdon 102s)	924L (Milo 356S to 924AL Tap)	547.0	656.0	739.5	135.2
935L (Milo 356S to Cassils 324S)	1087L (Cassils 324S to Newwell 2075S)	547.0	656.0	585.8	107.1
	923L (Milo 356S to 923AL Tap)	547.0	656.0	752.1	137.5
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	756.0	138.2
923L (Milo 356S to Newell 2075S)	935L (Cassils 324S to 935AL Tap)	547.1	656.0	761.0	139.1
	935L (Milo 356S to 935AL Tap)	547.1	656.0	761.0	139.1

Notes:

[a] The facility ratings shown in Attachment A1 have been adjusted from a [72/144] kV voltage base to a [69/138] kV voltage base, as is used by the power system network analysis tool.

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

[c] 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

Voltage collapse was observed under loss of 1034L (Cassils 324S to Bowmanton 244S) and 1035L (Newell 1075S to Bowmanton 244S).

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: 2028 Summer Light (SL) High Generation Pre-Project

Category A Conditions

Thermal criteria violations were observed under Category A conditions. Thermal criteria violations under Category A Conditions prior to generation curtailment for Scenario 2 are shown in the table below:

Table 2-5: Thermal Criteria Violations under Category A Conditions for Scenario 2

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Pre-contingency Curtailment)	
				Power Flow (MVA)	% Loading
Base Case	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	126.1	117.5

Category B Conditions

Thermal criteria violations were observed under Category A conditions. Hence, Category A curtailments were conducted prior to commencing Category B studies. The most effective generators were scaled down to mitigate Category A overloads. The generation adjustments for this scenario were performed based on the post-project Category A violations.

Updated generation dispatch values for Scenario 2 are shown in the table below:

Table 2-6: Generation Curtailment for Scenario 2

Generator Name	Bus Number	CSS (MW)	Dispatch (MW)
P1718	60632, 61632	108.8	62.8
P2447	560122, 560123	216.8	116.8
P2421	560051	65.3	45.3

Thermal criteria violations under Category A Conditions prior to and after generation curtailment for Scenario 1 are shown in the table below:

Table 2-7: Thermal Loading under Category A Conditions for Scenario 2

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Pre-contingency Curtailment)		Pre-Project Results (Post-Curtailment)	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
Base Case	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	126.1	117.5	103.2	96.1

Thermal Criteria Violations

Thermal criteria violations were observed under certain Category B conditions as shown in Table 2-8.

Table 2-8: 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 (MVA)	% Loading
9L29 (Oakland 946S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	124.7	116.2
924L (Milo 356S to Langdon 102S)	927L (Milo 356s to 927AL Tap)	576.0	691.0	651.5	113.1
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	108.3	123.0	152.1	140.4
	7L127 (Pemukan 932S to Monitor 774S)	144.7	126.5	174.2	120.4
963S T1 (Coyote Lake 963S Transformer T1)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	124.6	116.1
912L (Nevis 766S to Red Deer 63S)	935L (Milo 356S to 935AL Tap)	547.0	656.0	557.4	101.9
	923L (Milo 356S to 923AL Tap)	547.0	656.0	577.6	105.6
9L20 (Nevis 766S to Cordel 755S)	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	116.4	107.5
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	118.6	108.6
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	110.9	103.4
9L46 (Lanfine 959S to Pemukan 932S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	108.4	101.0
	9L59 (Tinchebray 972S to 9LA59)	499.0	499.0	583.3	116.9
7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	119.9	111.7
9L59 (Anderson 801S to Tinchebray 972S)	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	115.6	106.7
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	117.8	107.9
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	115.1	107.3
9L24 (Oakland 946s - Lanfine 959s)	760L/7L760 (7LA760 Tap to 760AL Tap)	110.2	132.0	118.7	107.7
	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	143.6	130.3
	7L132 (Oyen 767S to Lanfine 959S)	112.1	138.0	137.7	122.8
927L (Milo 356s to Langdon 102s)	924L (Milo 356S to 924AL Tap)	547.0	656.0	649.8	118.8
935L (Milo 356S to Cassils 324S)	923L (Milo 356S to 923AL Tap)	547.0	656.0	752.1	137.5
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	564.5	103.2
923L (Milo 356S to Newell 2075S)	935L (Cassils 324S to 935AL Tap)	547.1	656.0	611.1	111.7
	935L (Milo 356S to 935AL Tap)	547.0	656.0	680.5	124.4

Voltage Criteria Violations

Voltage collapse was observed under loss of 1034L (Cassils 324S to Bowmanton 244S), 1035L (Newell 2075S to Bowmanton 244S), and ETAL (Newell 2075S to Heathfield 2029S).

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3 Post-Project Study Results

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

As described in Section 2 of Attachment A1, the post-Project studies were performed using Alternative 4.

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: 2028 Summer Peak (SP) High Generation Post-Project

Category A Conditions

Thermal criteria violations were observed under Category A conditions. Thermal criteria violations under Category A Conditions prior to generation curtailment for Scenario 3 are shown in the table below:

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

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Pre-contingency Curtailment)		Post-Project Results (Pre-contingency Curtailment)		% Loading Difference (Post-Pre)
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
Base Case	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	109.9	102.4	116.0	108.1	5.7
Base Case	924L (Milo 356S to Langdon 102S)	547.0	656.0	733.5	134.1	764.7	139.8	5.7
Base Case	927L (Milo 356s to Langdon 102S)	576.0	691.0	735.6	127.7	766.7	133.1	5.4
Base Case	935L (Milo 356S to 935AL Tap)	547.0	656.0	560.7	102.5	601.2	109.9	7.4
Base Case	923L (Milo to 923AL Tap)	547.0	656.0	538.7	98.5	579.3	105.9	7.4
Base Case	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	536.9	105.9	587.1	115.8	9.9
Base Case	760L (Empress 394S to	119.0	131.0	5.13	4.3	124.1	104.3	100.0

	Amoco Empress 163S)							
Base Case	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	444.0	103.5	485.2	113.1	9.6
Base Case	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	107.0	99.7	113.1	105.4	5.7

Category B Conditions

Thermal criteria violations were observed under Category A conditions. Hence, Category A curtailments were conducted prior to commencing Category B studies. The most effective generators were scaled down to mitigate Category A overloads. The generation adjustments for this scenario were performed based on the post-project Category A violations.

Updated generation dispatch values for Scenario 3 are shown in the table below:

Table 3-2: Generation Curtailments for Scenario 3

Generator Name	Bus Number	CSS (MW)	Dispatch (MW)
HAL1	2621, 2622, 2623, 2624, 2625	73.2	0.0
P2247	560041, 560042	277.5	0.0
P1927	60434, 61434	84.5	0.0
P1987	60919, 61919	105.6	0.0
P2447	560122, 560123	109.2	0.0
P2506	560135, 560139, 560143	109.2	0.0
BSR1	61736, 61737	178.6	78.6

Thermal criteria violations under Category A Conditions prior to and after generation curtailment for Scenario 3 are shown in the table below. Thermal overloading is still observed on the 138 kV transmission line 760L, which will be upgraded together with this project.

Table 3-3: Thermal Loading under Category A Conditions for Scenario 3

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Post-Curtailment)		Post-Project Results (Post-Curtailment)		% Loading Difference (Post-Pre)
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
Base Case	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	97.0	90.4	103.9	96.8	6.4
Base Case	924L (Milo356S to Langdon 102S)	547.0	656.0	504.9	92.3	533.9	97.6	5.3

Base Case	927L (Milo 356s to Langdon 102S)	576.0	691.0	505.9	87.8	534.9	92.9	5.1
Base Case	935L (Milo 356S to 935AL Tap)	547.0	656.0	444.0	81.2	480.4	87.8	6.6
Base Case	923L (Milo 356S to 923AL Tap)	547.0	656.0	420.5	76.9	456.9	83.5	6.6
Base Case	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	403.6	79.6	447.8	88.3	8.7
Base Case	760L (Empress 394S to Amoco Empress 163S)	240.0	264.0	3.8	1.6	122.0	50.8	49.2
Base Case	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	326.3	76.1	363.7	84.8	8.7
Base Case	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	94.2	87.8	101.0	94.1	6.3

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	
760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	121.0	133.0	1.4	1.2	194.9	161.1	159.9
1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newell 2075S)	547.0	656.0	804.1	147.0	835.3	152.7	5.7
7L16 (Nevis 766S to Heatburg 948S)	7L128 (Coyote Lake 963S to 7LA128 Tap)	162.9	180.2	167.8	103.0	167.1	102.6	-0.4
9L29 (Oakland 946S to	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	131.4	122.5	136.3	127.0	4.5

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	
Coyote Lake 963S)	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	128.4	119.7	133.3	124.2	4.5
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	112.8	104.2	118.4	109.3	5.1
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	115.2	105.5	120.7	110.5	5.0
924L (Milo 356S to Langdon 102S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	107.1	99.7	114.5	106.7	7.0
	927L (Milo 356s to 927AL Tap)	576.0	691.0	740.7	128.6	784.5	136.2	7.6
	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	481.8	95.0	530.8	104.7	9.7
	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	392.2	91.4	433.7	101.1	9.7
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	104.1	97.0	111.6	104.0	7.0
9L966 (Pemukan 932S to Hansman Lake 650S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	102.8	95.8	110.3	102.8	7.0
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	99.9	93.1	107.4	100.1	7.1
	7L224 (Hansman Lake 650S to Monitor 774S)	108.3	123.0	163.4	150.9	181.4	167.5	16.6
	7L127 (Pemukan 932S to Monitor 774S)	144.7	126.5	185.8	128.4	205.0	141.7	13.3
963S T1 (Coyote Lake 963S Transformer T1)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	131.4	122.5	136.3	127.0	4.5
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	128.4	119.7	133.3	124.2	4.5
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	112.8	104.2	118.3	109.2	5.0
	7L25 (Rowley 768S to	109.2	122.7	115.2	105.5	120.7	110.5	5.0

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	
	Michichi Creek 802S)							
912L (Nevis 766S to Red Deer 63S)	935L (Cassils 324S to 935AL Tap)	547.1	656.0	581.6	106.3	634.6	116.0	9.7
	924L (Milo 356S to 924AL Tap)	547.0	656.0	602.8	110.2	644.4	117.8	7.6
	927L (Milo 356s to 927AL Tap)	576.0	691.0	604.2	104.9	645.7	112.1	7.2
	935L (Milo 356S to 935AL Tap)	547.0	656.0	577.6	105.6	631.8	115.5	9.9
	923L (Milo 356S to 923AL Tap)	547.0	656.0	553.6	101.2	607.7	111.1	9.9
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	557.4	101.9	611.0	111.7	9.8
9L20 (Nevis 766S to Cordel 755S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	132.2	123.2	143.0	133.3	10.1
	7L159 (Three Hills 770S to 7LA159 Tap)	107.3	123.6	99.7	92.9	111.7	104.1	11.2
	935L (Cassils 324S to 935AL Tap)	547.1	656.0	529.5	96.8	576.1	105.3	8.5
	924L (Milo 356S to 924AL Tap)	547.0	656.0	564.5	103.2	601.7	110.0	6.8
	927L (Milo 356s to 927AL Tap)	576.0	691.0	565.9	98.2	603.1	104.7	6.5
	935L (Milo 356S to 935AL Tap)	547.0	656.0	524.9	96.0	572.7	104.7	8.7
	923L (Milo 356S to 923AL Tap)	547.0	656.0	501.1	91.6	549.2	100.4	8.8
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	505.4	92.4	552.5	101.0	8.6
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	129.2	120.4	140.0	130.5	10.1
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	113.6	104.9	125.8	116.2	11.3
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	116.0	106.2	128.1	117.3	11.1

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	
Three Hills 770S Transformer 3T	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	105.7	98.5	112.6	104.9	6.4
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	102.8	95.8	109.7	102.2	6.4
A959ST1 (Lanfine 959S Transformer T1)	760L/7L760 (7LA760 Tap to 760AL Tap)	110.2	132.0	123.4	112.0	117.5	106.6	-5.4
	7L760 (Oyen 767S to 7LA760 Tap)	110.2	123.6	127.9	116.1	122.0	110.7	-5.4
	6L09 (Hanna 763S to Richdale 776S)	23.0	24.0	19.4	84.4	24.0	104.4	20.0
	6L09 (Oyen 767S to Hanna 763S)	23.0	23.0	20.6	89.8	25.2	109.4	19.6
	767ST1 (Oyen 767S Transformer T1 – W2)	25.0	26.0	16.4	65.4	27.9	111.6	46.2
	6L09 (Richdale 776S to Youngstown 772S)	24.0	24.0	19.9	82.8	24.5	101.9	19.1
9L46 (Lanfine 959S to Pemukan 932S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	104.7	97.6	113.3	105.6	8.0
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	101.8	94.9	110.3	102.8	8.0
7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	105.4	98.2	110.3	102.8	4.6
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	102.5	95.5	107.4	100.1	4.6
9L59 (Anderson 801S to Tinchebray 972S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	110.9	103.4	120.9	112.7	9.3
	924L (Milo 356S to 924AL Tap)	547.0	656.0	517.7	94.7	552.5	101.0	6.3
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	108.1	100.7	118.0	110.0	9.3

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	
498ST1T2 (Tilley 498S Transformer T1/T2)	100L (Suffield 895S to 100AL Tap)	78.0	86.0	81.0	103.9	78.7	100.9	-3.0
EATL	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	128.8	120.0	135.8	126.6	6.6
	935L (Cassils 324S to 935AL Tap)	547.1	656.0	707.4	129.3	745.2	136.2	6.9
	924L (Milo 356S to 924AL Tap)	547.0	656.0	723.7	132.3	753.8	137.8	5.5
	927L (Milo 356s to 927AL Tap)	576.0	691.0	725.8	126.0	755.7	131.2	5.2
	935L (Milo 356S to 935AL Tap)	547.0	656.0	706.7	129.2	745.0	136.2	7.0
	923L (Milo 356S to 923AL Tap)	547.0	656.0	744.5	136.1	782.8	143.1	7.0
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	745.6	136.3	782.8	143.1	6.8
	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	620.6	122.4	668.2	131.8	9.4
	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	507.1	118.2	548.3	127.8	9.6
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	125.8	117.2	132.8	123.8	6.6
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	110.1	101.7	117.9	108.9	7.2
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	112.5	103.0	120.2	110.1	7.1
927L (Milo 356s to Langdon 102s)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	107.1	99.8	114.5	106.7	6.9
	924L (Milo 356S to 924AL Tap)	547.0	656.0	739.5	135.2	782.8	143.1	7.9
	912L (Nevis 766S to Red Deer 63S)	507.0	608.0	482.1	95.1	531.3	104.8	9.7
	9L20 (Nevis 766S to Cordel 755S)	429.0	501.0	392.5	91.5	434.1	101.2	9.7

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	
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	104.2	97.0	111.6	104.0	7.0
935L (Milo 356S to Cassils 324S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	103.9	96.8	111.4	103.8	7.0
	1087L (Cassils 324S to Newwell 2075S)	547.0	656.0	585.8	107.1	616.5	112.7	5.6
	923L (Milo 356S to 923AL Tap)	547.0	656.0	752.1	137.5	817.2	149.4	11.9
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	756.0	138.2	820.5	150.0	11.8
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	101.0	94.1	108.4	101.0	6.9
923L (Milo 356S to Newell 2075S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	103.5	96.5	110.9	103.4	7.0
	935L (Cassils 324S to 935AL Tap)	547.1	656.0	761.0	139.1	825.6	150.9	11.8
	935L (Milo 356S to 935AL Tap)	547.0	656.0	756.1	138.2	821.6	150.2	12.0
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	100.6	93.7	108.1	100.7	7.0
163ST5 (Amoco Empress 163S Transformer T5)	668L (Empress 394S to Cypress 562S)	121.0	133.0	1.4	1.2	194.8	161.0	159.8

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 the Scenario 3

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Voltage Ratings (kV)	Pre-Project Results	Post-Project Results	% Voltage Difference (kV)

	Substation Name and Number	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)						Blown up		Blown up		
1035L (Newell 1075S to Bowmanton 244S)						Blown up		Blown up		

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3.1.2 Scenario 4: 2028 Summer Light (SL) High Generation Post-Project

Category A Conditions

Thermal criteria violations were observed under Category A conditions. Thermal criteria violations under Category A Conditions prior to generation curtailment for Scenario 4 are shown in the table below:

Table 3-6: Thermal Criteria Violations under Category A Conditions for Scenario 4

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results (Pre-contingency Curtailment)		Post-Project Results (Pre-contingency Curtailment)		% Loading Difference (Post-Pre)
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
Base Case	935L (Milo 356S to 935AL Tap)	547.0	656.0	519.1	94.9	570.5	104.3	9.4
Base Case	923L (Milo 356S to 923AL Tap)	547.0	656.0	509.3	93.1	560.1	102.4	9.3
Base Case	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	91.1	82.7	120.0	108.9	26.2
Base Case	760L (Empress 394S to Amoco Empress 163S)	119.0	131.0	27.5	23.1	156.7	131.7	108.6
Base Case	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	126.1	117.5	127.4	118.7	1.2

Category B Conditions

Thermal criteria violations were observed under Category A conditions. Hence, Category A curtailments were conducted prior to commencing Category B studies. The most effective generators were scaled down to mitigate Category A overloads. The generation adjustments for this scenario were performed based on the post-project Category A violations.

Updated generation dispatch values for Scenario 4 are shown in the table below:

Table 3-7: Generation Curtailments for Scenario 4

Generator Name	Bus Number	CSS (MW)	Dispatch (MW)
P1718	60632, 61632	108.8	62.8
P2447	560122, 560123	216.8	116.8
P2421	560051	65.3	45.3

Thermal criteria violations under Category A Conditions prior to and after generation curtailment for Scenario 4 are shown in the table below. Thermal overloading is still observed on the 138 kV transmission line 760L, which will be upgraded together with this project.

Table 3-8: Thermal Loading under Category A Conditions for Scenario 4

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Pre-Project Results (Post-Curtailment)		Post-Project Results (Post-Curtailment)		% Loading Difference (Post-Pre)
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
Base Case	935L (Milo 356S to 935AL Tap)	547.0	656.0	452.9	82.8	504.7	92.3	9.5
Base Case	923L (Milo 356S to 923AL Tap)	547.0	656.0	473.7	86.6	524.6	95.9	9.3
Base Case	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	80.1	72.7	108.7	98.6	25.9
Base Case	760L (Empress 394S to Amoco Empress 163S)	240.0	264.0	29.8	12.4	159.91	66.6	54.2
Base Case	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	103.2	96.1	104.7	97.5	1.4

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	
871L (Amoco Empress 163S to Sand Hills 341S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	81.8	74.2	110.3	100.1	25.9
951L (Jenner 275S to Ware Junction 132S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	88.0	79.9	122.0	110.7	30.8
945L (Jenner 275S to Cypress 562S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	80.6	73.1	115.6	104.9	31.8
760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	121.0	133.0	14.3	11.8	210.9	174.3	162.5
666L (Tilley 498S to West Brooks 28S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	84.4	76.6	114.4	103.8	27.2
562ST1 (Cypress 562S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	80.7	73.2	111.6	101.3	28.1
1097L (Milo 356S to Amber 611S)	923L (Milo 356S to 923AL Tap)	547.0	656.0	500.6	91.5	554.7	101.4	9.9
6L56 (Michichi Creek A802S to Hanna A763S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	81.7	74.1	110.2	100.0	25.9
9L29 (Oakland 946S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	124.7	116.2	127.8	119.1	2.9
341ST1 (Sand Hills 341S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	81.8	74.2	110.3	100.1	25.9
933L (Ware Junction 132S to Anderson A801S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	82.4	74.8	111.2	100.9	26.1
934L (Ware Junction 132S to Anderson 801S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	82.4	74.8	111.2	100.9	26.1
950L (Ware Junction 132S to Anderson A801S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	82.4	74.8	111.2	100.9	26.1
163ST1 (Amoco Empress 163S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	84.1	76.3	112.6	102.2	25.9
163ST2 (Amoco Empress 163S Transformer T2)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	84.3	76.5	112.8	102.4	25.9
924L (Milo 356S to Langdon 102S)	927L (Milo 356s to 927AL Tap)	576.0	691.0	651.5	113.1	707.9	122.9	9.8
	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	86.7	78.7	115.9	105.2	26.5
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	106.4	99.1	108.1	100.7	1.6
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	108.3	123.0	152.1	140.4	163.0	150.5	10.1
	7L127 (Pemukan 932S to Monitor 774S)	144.7	126.5	174.2	120.4	185.8	128.4	8.0
963S T1 (Coyote Lake 963S Transformer T1)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	124.6	116.1	127.8	119.1	3.0
912L (Nevis 766S to Red Deer 63S)	924L (Milo 356S to 924AL Tap)	547.0	656.0	522.6	95.6	568.9	104.0	8.5
	935L (Milo 356S to 935AL Tap)	547.0	656.0	557.4	101.9	620.8	113.5	11.6

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	
	923L (Milo 356S to 923AL Tap)	547.0	656.0	577.6	105.6	640.5	117.1	11.5
9L20 (Nevis 766S to Cordel 755S)	935L (Milo 356S to 935AL Tap)	547.0	656.0	521.4	95.3	580.4	106.1	10.8
	923L (Milo 356S to 923AL Tap)	547.0	656.0	541.7	99.0	600.6	109.8	10.8
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	116.4	107.5	124.4	114.9	7.4
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	118.6	108.6	126.6	115.9	7.3
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	110.9	103.4	113.2	105.5	2.1
Michichi Creek A802S Transformer T1	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	81.7	74.2	110.3	100.1	25.9
7L238 (Lanfine 959S to Buffalo Bird 601S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	86.9	78.9	115.3	104.6	25.7
9L46 (Lanfine 959S to Pemukan 932S)	935L (Milo 356S to 935AL Tap)	547.0	656.0	495.8	90.6	550.8	100.7	10.1
	923L (Milo 356S to 923AL Tap)	547.0	656.0	516.4	94.4	571.1	104.4	10.0
	6L15 (Sullivan Lake 775S to Hanna 763S)	28.8	28.8	28.6	99.4	30.3	105.1	5.7
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	103.2	95.3	109.2	100.8	5.6
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	105.5	96.6	111.5	102.1	5.5
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	108.4	101.0	110.2	102.7	1.7
	9L59 (Tinchebray 972S to 9LA59)	499.0	499.0	583.3	116.9	614.3	123.1	6.2
	9L59 (Anderson 840S to 9LA59)	499.0	499.0	494.5	99.1	524.9	105.2	6.1
7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	119.9	111.7	123.1	114.7	3.0
9L59 (Anderson 801S to Tinchebray 972S)	935L (Milo 356S to 935AL Tap)	547.0	656.0	506.2	92.5	562.9	102.9	10.4
	923L (Milo 356S to 923AL Tap)	547.0	656.0	526.3	96.2	582.6	106.5	10.3
	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	98.7	89.6	127.7	115.9	26.3
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	115.6	106.7	121.6	112.3	5.6
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	117.8	107.9	123.9	113.5	5.6
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	115.1	107.3	117.1	109.1	1.8
	7L132 (Oyen 767S to Lanfine 959S)	112.1	138.0	84.5	75.4	112.4	100.3	24.9
9L24 (Oakland 946s – Lanfine 959s)	760L (Amoco Empress 163S to 760AL Tap)	120.0	132.0	118.9	99.1	149.0	124.2	25.2

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	
	760L/7L760 (7LA760 Tap to 760AL Tap)	110.2	132.0	118.7	107.7	149.0	135.2	27.5
	7L760 (Oyen 767S to 7LA760 Tap)	110.2	123.6	109.6	99.4	139.5	126.6	27.2
	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	143.6	130.3	170.7	154.9	24.6
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	106.1	98.8	107.5	100.2	1.4
	7L132 (Oyen 767S to Lanfine 959S)	112.1	138.0	137.7	122.8	163.8	146.1	23.3
	9L59 (Tinchebray 972S to 9LA59)	499.0	499.0	484.4	97.1	503.0	100.8	3.7
498ST1T2 (Tilley 498S Transformer T1/T2)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	85.5	77.6	115.4	104.7	27.2
927L (Milo 356s to Langdon 102s)	924L (Milo 356S to 924AL Tap)	547.0	656.0	649.8	118.8	706.2	129.1	10.3
	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	86.8	78.7	115.9	105.2	26.5
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	106.4	99.1	108.1	100.7	1.6
935L (Milo 356S to Cassils 324S)	923L (Milo 356S to 923AL Tap)	547.0	656.0	752.1	137.5	841.3	153.8	16.3
	923L (Newell 2075S to 923AL Tap)	547.0	656.0	564.5	103.2	647.1	118.3	15.1
	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	82.9	75.2	112.0	101.6	26.4
923L (Milo 356S to Newell 2075S)	935L (Cassils 324S to 935AL Tap)	547.1	656.0	611.1	111.7	689.3	126.0	14.3
	935L (Milo 356S to 935AL Tap)	547.0	656.0	680.5	124.4	770.7	140.9	16.5
163ST5 (Amoco Empress 163S Transformer T5)	668L (Empress 394S to Cypress 562S)	121.0	133.0	14.2	11.8	210.9	174.3	162.5
944L (Jenner 275S to Ware Junction 132S)	7L760 (Oyen 394S to P2421 Tap)	110.2	131.0	80.3	72.8	114.3	103.7	30.9

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 the Scenario 4

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Voltage Ratings (kV)	Pre-Project Results	Post-Project Results	% Voltage Difference (kV)

	Substation Name and Number	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)						Blown up		Blown up		
1035L (Newell 1075S to Bowmanton 244S)						Blown up		Blown up		
EATL						Blown up		Blown up		

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

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3.2 Transient Stability Studies

Transient stability studies were completed for SP Post-Project and SL Post-Project Scenarios.

The results did not indicate any transient stability concerns, and the system showed acceptable dynamic response to all Category B conditions studied, as shown in Table 3-11 and Table 3-12. The 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 SP Post-Project Scenario

Studied Contingency	Fault Description and Location	Results
945L (Jenner 275S – Cypress 562S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Cypress 562S	Stable
1002L (Jenner 275S – Amoco Empress 163S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Amoco Empress 163S	Stable
1011L (Cypress 562S – Amoco Empress 163S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at Amoco Empress 163S	Stable
668L (Empress 394S – Cypress 562S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Cypress 562S	Stable
669L (Amoco Empress 163S – Cypress 562S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Cypress 562S	Stable
830L (Cypress 562S – McNeill 840S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at McNeill 840S	Stable
892L (Suffield 895S – Bowmanton 244S)	3-phase fault at Suffield 895S	Stable
	3-phase fault at Bowmanton 244S	Stable
658L (Chappice Lake 649S – Cypress 562S) or 674L (Chappice Lake 649S – Bowmanton 244S)	3-phase fault at Bowmanton 244S	Stable
	3-phase fault at Cypress 562S	Stable
760L (Amoco Empress 163S – Oyen 767S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Oyen 767S	Stable

Table 3-12: Transient Stability Study Results under Category B Conditions for SL Post-Project Scenario

Studied Contingency	Fault Description and Location	Results
945L (Jenner 275S – Cypress 562S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Cypress 562S	Stable
1002L (Jenner 275S – Amoco Empress 163S)	3-phase fault at Jenner 275S	Stable

	3-phase fault at Amoco Empress 163S	Stable
1011L (Cypress 562S – Amoco Empress 163S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at Amoco Empress 163S	Stable
668L (Empress 394S – Cypress 562S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Cypress 562S	Stable
669L (Amoco Empress 163S – Cypress 562S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Cypress 562S	Stable
830L (Cypress 562S – McNeill 840S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at McNeill 840S	Stable
892L (Suffield 895S – Bowmanton 244S)	3-phase fault at Suffield 895S	Stable
	3-phase fault at Bowmanton 244S	Stable
658L (Chappice Lake 649S – Cypress 562S) or 674L (Chappice Lake 649S – Bowmanton 244S)	3-phase fault at Bowmanton 244S	Stable
	3-phase fault at Cypress 562S	Stable
760L (Amoco Empress 163S – Oyen 767S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Oyen 767S	Stable

4 Short Circuit Studies

4.1 Pre-Project Results

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

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

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)
Amoco Empress 163S	240	260.1	7.37	0.006171+ j0.038207	6.20	0.009443+ j0.055131
	138	141.2	11.13	0.006544+ j0.041256	9.25	0.010301+ j0.061427
Cypress 562S	240	260.0	7.33	0.006274+ j0.038408	6.36	0.008013+ j0.051389
	138	141.2	11.26	0.006425+ j0.040864	9.70	0.008052+ j0.055460
Empress 394S	138	141.2	11.01	0.006763+ j0.041665	9.16	0.010632+ j0.061877
Chappice Lake 649S	138	145.1	4.31	0.042322+ j0.104986	2.94	0.073356+ j0.254588
Bowmanton 244S	240	252.0	9.42	0.002940+ j0.030017	11.04	0.001879+ j0.015673
	138	141.5	10.85	0.003546+ j0.043417	11.12	0.003975+ j0.037706
McNeill 840S	138	145.2	4.30	0.042380+ j0.105032	2.94	0.073257+ j0.254677
Oyen 767S	138	141.3	7.31	0.012108+ j0.062550	5.29	0.025123+ j0.128709

4.2 Post-Project Results

4.2.1 Scenario 3: 2028 SP HG Post-Project

Post-Project short-circuit current levels for Scenario 3 are provided in Table 4-2.

Table 4-2: Post-Project Short-Circuit Current Levels for Scenario 3

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)
Amoco Empress 163S	240	260.5	7.37	0.006261+ j0.038452	6.22	0.009411+ j0.055037
	138	141.8	11.11	0.006678+ j0.041729	9.25	0.010377+ j0.061859

[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.

Cypress 562S	240	260.5	7.34	0.006360+ j0.038638	6.39	0.007982+ j0.051284
	138	141.8	11.23	0.006569+ j0.041354	9.69	0.008127+ j0.055897
Empress 394S	138	141.9	11.00	0.006897+ j0.042139	9.17	0.010709+ j0.062312
Chappice Lake 649S	138	144.3	4.29	0.042609+ j0.105413	2.93	0.073542+ j0.255077
Bowmanton 244S	240	256.1	9.36	0.003098+ j0.030701	11.03	0.001879+ j0.015682
	138	143.0	10.88	0.003660+ j0.043841	11.17	0.003976+ j0.037713
McNeill 840S	138	144.4	4.28	0.042668+ j0.105460	2.93	0.073447+ j0.255171
Oyen 767S	138	141.8	7.32	0.012252+ j0.063041	5.32	0.025199+ j0.129147
P2418	138	146.1	6.16	0.015688+ j0.075496	6.52	0.017602+ j0.057508

4.2.2 Scenario 5: 2033 WP HG 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)
Amoco Empress 163S	240	261.5	6.87	0.004952+ j0.038924	5.83	0.009614+ j0.055485
	138	143.1	10.40	0.004550+ j0.042637	8.70	0.010604+ j0.062591
Cypress 562S	240	261.3	6.85	0.004993+ j0.039059	5.99	0.008114+ j0.051498
	138	143.4	10.49	0.004194+ j0.042391	9.10	0.008376+ j0.056724
Empress 394S	138	143.3	10.30	0.004738+ j0.043068	8.63	0.010938+ j0.063066
Chappice Lake 649S	138	144.4	4.00	0.041428+ j0.105172	2.76	0.071617+ j0.251639
Bowmanton 244S	240	262.6	8.10	0.003246+ j0.033564	9.73	0.001890+ j0.015774
	138	138.9	9.79	0.003654+ j0.044240	10.19	0.003814+ j0.036414
McNeill 840S	138	144.5	4.00	0.041487+ j0.105220	2.76	0.071486+ j0.251680
Oyen 767S	138	144.5	6.87	0.006687+ j0.065225	5.04	0.025465+ j0.129983
P2418	138	142.6	5.76	0.015201+ j0.074914	6.14	0.017580+ j0.057475

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
Existing RAS 134	7L159 (Heatburg 948S - 7LA159 Tap)	9L29 (Oakland 946S – Coyote Lake 963S) EATL[c]
	7L16 (Nevis 766S - Heatburg 948S)	963ST1 (Coyote Lake 963S Transformer T1)
	7L137 (Three Hills 770S to Rowley 768S)	9L20 (Nevis 766S – Cordel 755S)
	7L25 (Rowley 768S to Michichi Creek 802S)	
Existing RAS 202	7L171 (Michichi Creek 802S – Wintering Hills 804S)	9L29 (Oakland 946S – Coyote Lake 963S)
		963ST1 (Coyote Lake 963S Transformer T1)
Existing RAS 164	Voltage collapse	1034L (Cassils 324S – Bowmanton 244S)
		1035L (Newell 2075S – Bowmanton 244S)
Planned RAS 175[a]	927L (Milo 356S to 927AL Tap)	924L (Milo 356S to 924AL Tap)
	924L (Milo 356S to 924AL Tap)	927L (Milo 356S to Langdon 102S)
Planned RAS 201[b]	7L224 (Hansman Lake 650S – Monitor 774S)	9L966 (Pemukan 932S – Hansman Lake 650S)
	7L127 (Pemukan 932S – Monitor 774S)	
Planned RAS 204[b]	7L760 (Oyen 767S – 7LA760 Tap) 760L (Empress 163S to 760AL Tap)	A959ST1 (Lanfine 959S Transformer T1)
Real time operational practices	1087L(Cassils 324S - Newell 2075S)	1088L (Cassils 324S – Newell 2075S)[c]
	7L128 (Coyote Lake 963S – 7LA128 Tap)	7L16 (Nevis 766S – Heatburg 948S)
	Cass_Luna (918_547150)	912L (Nevis 766S – Red Deer 63S)
	924L (Milo 356S to 924AL Tap)	
	927L (Milo 356S to 927AL Tap)	
	935L (Milo 356S to Luna)	
	923L (Milo 356S to Luna)	
	923L (Newell 2075S to 923AL Tap)	
	7L159 (Heatburg 948S – 7LA159 Tap)	770S3T (Three Hills 770S Transformer 3T) 9L46 (Lanfine 959S – Pemukan 932S)

Mitigation Measure	Location of Observed Violation	Contingency
	7L16 (Nevis 767S – Heatburg 948S)	7L128 (Michichi Creek 802S – Coyote Lake 963S) 9L59 (Anderson 801S – Tinchebray 972S)
	100L (Suffield 895S – 100AL Tap)	498ST1T2 (Tilley 498S Transformer T1/T2)
	7L760 (Oyen 394S to P2421 Tap)	9L24 (Oakland 946S – Lanfine 959S) A959ST1 (Lanfine 959S Transformer T1)
	7L159 (Heatburg 948S to 7LA159 Tap)	EATL[c]
	935L (Cassils 324S to 935AL Tap)	
	924L (Milo 356S to 924AL Tap)	
	927L (Milo 356s to 927AL Tap)	
	935L (Milo 356S to 935AL Tap)	
	923L (Milo 356S to 923AL Tap)	
	923L (Newell 2075S to 923AL Tap)	
	912L (Nevis 766S to Red Deer 63S)	
	9L20 (Nevis 766S to Cordel 755S)	
	7L16 (Nevis 766S to Heatburg 948S)	
	7L137 (Three Hills 770S to Rowley 768S)	
	7L25 (Rowley 768S to Michichi Creek 802S)	
	1087L (Cassils 324S to Newwell 2075S)	935L (Milo 356S – Cassils 324S)[c]
	923L (Milo 356S to 923AL Tap)	
	923L (Newell 2075S to 923AL Tap)	
	935L (Cassils 324S to 935AL Tap)	923L (Milo 356S – Newell 2075S)[c]
	935L (Milo 356S to 935AL Tap)	
	7L171 (Michichi Creek 802S – Wintering Hills 804S)	7L128 (Michichi Creek 802S – Coyote Lake 963S)

Notes:

[a] RAS 175 is an existing RAS. Modifications to RAS 175 are proposed for the planned P1927 and P2247]. This modified version of RAS 175 is referred to hereafter as “planned RAS 175”.

[b] Planned RAS 201 and Planned RAS 204 are RASs proposed for the planned P1567 and P2421, respectively.

[c] Real time operation measure includes curtailment.

5.2 Post-Project

Post-Project mitigation measures are summarized in Table 5-2. In addition to the mitigation measures below, the Project also requires upgrading the 138 kV line 760L (Empress 394S – Amoco Empress 163S) to 240 MVA (summer).

Table 5-2: Post-Project Mitigation Measures

Mitigation Measure	Location of Observed Violation	Contingency
Existing RAS 134	7L159 (Heatburg 948S - 7LA159 Tap)	9L29 (Oakland 946S – Coyote Lake 963S) EATL[c]
	7L16 (Nevis 766S - Heatburg 948S)	963ST1 (Coyote Lake 963S Transformer T1)
	7L159 (Heatburg 948S to 7LA159 Tap)	9L20 (Nevis 766S – Cordel 755S)
	7L159 (Three Hills 770S to 7LA159 Tap)	
	935L (Cassils 324S to 935AL Tap)	
	924L (Milo 356S to 924AL Tap)	
	927L (Milo 356s to 927AL Tap)	
	935L (Milo 356S to 935AL Tap)	
	923L (Milo 356S to 923AL Tap)	
	923L (Newell 2075S to 923AL Tap)	
	7L16 (Nevis 766S to Heatburg 948S)	
	7L137 (Three Hills 770S to Rowley 768S)	
	7L25 (Rowley 768S to Michichi Creek 802S)	
Existing RAS 164	Voltage collapse	1034L (Cassils 324S – Bowmanton 244S)
		1035L (Newell 2075S – Bowmanton 244S)
Planned RAS 175	927L (Milo 356S to 927AL Tap)	924L (Milo 356S to 924AL Tap) 927L (Milo 356S to Langdon 102S)
	7L159 (Heatburg 948S - 7LA159 Tap)	
	912L (Nevis 766S – Red Deer 63S)	
	9L20 (Nevis 766S – Cordel 755S)	
	7L16 (Nevis 766S – Heatburg 948S)	
	924L (Milo 356S to 924AL Tap)	
New 7L760 RAS	935L (Milo 356S to 935AL Tap)	9L59 (Anderson 801S – Tinchebray 972S)
	923L (Milo 356S to 923AL Tap)	
	7L760 (Oyen 767S to 7LA760 Tap)	
	7L760 (Oyen 767S to 7LA760 Tap)	9L24 (Oakland 946S – Lanfine 959S)
	7L137 (Three Hills 770S to Rowley 768S)	
	7L25 (Rowley 768S to Michichi Creek 802S)	
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	
	7L132 (Oyen 767S to Lanfine 959S)	
	760L/7L760 (7LA760 Tap to 760AL Tap)	
	7L760 (Oyen 767S to 7LA760 Tap)	

Mitigation Measure	Location of Observed Violation	Contingency
	7L760 (Oyen 394S to P2421 Tap)	
	9L59 (Tinchebray 972S to 9LA59)	
Planned RAS 607[a]	668L (Empress 394S – Cypress 562S)	760L (Amoco Empress 163S – Empress 394S)
		163ST5 (Amoco Empress 163S Transformer T5)
Planned RAS 201	7L159 (Heatburg 948S to 7LA159 Tap)	9L966 (Pemukan 932S - Hansman Lake 650S)
	7L16 (Nevis 766S to Heatburg 948S)	
	7L224 (Hansman Lake 650S to Monitor 774S)	
	7L127 (Pemukan 932S to Monitor 774S)	
Existing RAS 202	7L171 (Michichi Creek 802S – Wintering Hills 804S)	9L29 (Oakland 946S – Coyote Lake 963S)
		963ST1 (Coyote Lake 963S Transformer T1)
	935L (Milo 356S to 935AL Tap)	9L20 (Nevis 766S – Cordel 755S)
	923L (Milo 356S to 923AL Tap)	
	7L137 (Three Hills 770S to Rowley 768S)	
	7L25 (Rowley 768S to Michichi Creek 802S)	
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	
Planned RAS 204	760L/7L760 (7LA760 Tap to 760AL Tap)	A959ST1 (Lanfine 959S Transformer T1)
	7L760 (Oyen 767S to 7LA760 Tap)	
	6L09 (Hanna 763S to Richdale 776S)	
	6L09 (Oyen 767S to Hanna 763S)	
	767ST1 (Oyen 767S Transformer T1 - W2)	
	6L09 (Richdale 776S to Youngstown 772S)	
Real time operational practices	1087L(Cassils 324S - Newell 2075S)	1088L (Cassils 324S – Newell 2075S)[c]
	7L128 (Coyote Lake 963S – 7LA128 Tap)	7L16 (Nevis 766S – Heatburg 948S)
	935L (Cassils 324S to 935AL Tap)	912L (Nevis 766S – Red Deer 63S)
	924L (Milo 356S to 924AL Tap)	
	927L (Milo 356S to 927AL Tap)	
	935L (Milo 356S to Luna)	
	923L (Milo 356S to Luna)	
	923L (Newell 2075S to 923AL Tap)	
	7L159 (Heatburg 948S – 7LA159 Tap)	770S3T (Three Hills 770S Transformer 3T) 9L46 (Lanfine 959S – Pemukan 932S)[c]
	7L16 (Nevis 767S – Heatburg 948S)	
	924L (Milo 356S to 924AL Tap)	

Mitigation Measure	Location of Observed Violation	Contingency
		7L128 (Michichi Creek 802S – Coyote Lake 963S) 9L59 (Anderson 801S – Tinchebray 972S)[c]
	100L (Suffield 895S – 100AL Tap)	498ST1T2 (Tilley 498S Transformer T1/T2)
	7L159 (Heatburg 948S to 7LA159 Tap)	EATL[c]
	935L (Cassils 324S to 935AL Tap)	
	924L (Milo 356S to 924AL Tap)	
	927L (Milo 356s to 927AL Tap)	
	935L (Milo 356S to 935AL Tap)	
	923L (Milo 356S to 923AL Tap)	
	923L (Newell 2075S to 923AL Tap)	
	912L (Nevis 766S to Red Deer 63S)	
	9L20 (Nevis 766S to Cordel 755S)	
	7L16 (Nevis 766S to Heatburg 948S)	
	7L137 (Three Hills 770S to Rowley 768S)	
	7L25 (Rowley 768S to Michichi Creek 802S)	
	7L159 (Heatburg 948S to 7LA159 Tap)	935L (Milo 356S – Cassils 324S)[c]
	1087L (Cassils 324S to Newwell 2075S)	
	923L (Milo 356S to 923AL Tap)	
	923L (Newell 2075S to 923AL Tap)	
	7L16 (Nevis 766S to Heatburg 948S)	
	7L159 (Heatburg 948S to 7LA159 Tap)	923L (Milo 356S – Newell 2075S)[c]
	935L (Cassils 324S to 935AL Tap)	
	935L (Milo 356S to 935AL Tap)	
	7L16 (Nevis 766S to Heatburg 948S)	
	7L760 (Oyen 394S – P2421 Tap)	871L (Amoco Empress 163S to Sand Hills 341S) 951L (Jenner 275S – Ware Junction 132S) 945L (Jenner 275S – Cypress 562S) 6L56 (Michichi Creek A802S – Hanna A763S)
		341ST1 (Sand Hills 341S Transformer T1)
		933L (Ware Junction 132S to Anderson A801S)
		934L (Ware Junction 132S to Anderson 801S)
		980L (Ware Junction 132S to Anderson A801S)

Mitigation Measure	Location of Observed Violation	Contingency
		163ST1 (Amoco Empress 163S Transformer T1)
		163ST2 (Amoco Empress 163S Transformer T2)
		Michichi Creek A802S Transformer T1
		7L238 (Lanfine 959S to Buffalo Bird 601S)
		944L (Jenner 275S – Ware Junction 132S)
	7L760 (Oyen 394S to P2421 Tap)	666L (Tilley 498S – West Brooks 28S) 562ST1 (Cypress 562S Transformer T1) 498ST1T2 (Tilley 498S Transformer T1/T2)
	923L (Milo 356S to 923AL Tap)	1097L (Milo 356S to Amber 611S)
	7L171 (Michichi Creek 802S – Wintering Hills 804S)	7L128 (Michichi Creek 802S – Coyote Lake 963S)

Notes:

[a] Planned RAS 607 is a RASs proposed for the Project.

[c] Real time operation measure includes curtailment.

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 3 and 4 using Alternative 4 and 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 3: 2028 SP HG Scenario

Category B Conditions

Thermal and voltage criteria violations observed under certain Category B conditions in the post-Project studies were mitigated by RASs as shown in Table 5-3 and Table 5-4.

After RAS actions were complete, real-time operational practices are required to fully alleviate certain thermal criteria violations observed on 240 kV transmission line 924L and 927L and Oyen 767S Transformer T1.

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

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	121	133	194.9	161.1	7.6	6.3
9L29 (Oakland 946S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	136.3	127.0	95.1	88.6
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	133.3	124.2	92.2	86.0
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	118.4	109.3	70.0	64.6
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	120.7	110.5	72.3	66.3
924L (Milo 356S to 924AL Tap)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	114.5	106.7	106.8	99.5
	927L (Milo 356s to 927AL Tap)	576	691	784.5	136.2	604.8	105.0[a]
	912L (Nevis 766S to Red Deer 63S)	507	608	530.8	104.7	470.4	92.8
	9L20 (Nevis 766S to Cordel 755S)	429	501	433.7	101.1	382.8	89.2
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	111.6	104.0	103.9	96.8
9L966 (Pemukan 932S to Hansman Lake 650S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	110.3	102.8	100.5	93.7
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	107.4	100.1	97.6	91.0
	7L224 (Hansman Lake 650S to Monitor 774S)	108.3	123	181.4	167.5	102.4	94.6

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
	7L127 (Pemukan 932S to Monitor 774S)	144.7	126.5	205.0	141.7	119.4	82.5
963S T1 (Coyote Lake 963S Transformer T1)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	136.3	127.0	95.1	88.7
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	133.3	124.2	92.2	86.0
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	118.3	109.2	70.0	64.6
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	120.7	110.5	72.3	66.2
9L20 (Nevis 766S to Cordel 755S)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	143.0	133.3	98.0	91.4
	7L159 (Three Hills 770S to 7LA159 Tap)	107.3	123.6	111.7	104.1	59.9	55.8
	935L (Cassils 324S to 935AL Tap)	547.1	656	576.1	105.3	380.4	69.5
	924L (Milo 356S to 924AL Tap)	547	656	601.7	110.0	454.3	83.1
	927L (Milo 356s to 927AL Tap)	576	691	603.1	104.7	455.2	79.0
	935L (Milo 356S to 935AL Tap)	547	656	572.7	104.7	375.0	68.6
	923L (Milo 356S to 923AL Tap)	547	656	549.2	100.4	351.4	64.3
	923L (Newell 2075S to 923AL Tap)	547	656	552.5	101.0	356.6	65.2
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	140.0	130.5	95.1	88.7
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	125.8	116.2	73.8	68.1

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	128.1	117.3	76.1	69.7
A959ST1 (Lanfine 959S Transformer T1)	760L/7L760 (7LA760 Tap to 760AL Tap)	110.2	132	117.5	106.6	89.3	81.0
	7L760 (Oyen 767S to 7LA760 Tap)	110.2	123.6	122.0	110.7	93.8	85.1
	6L09 (Hanna 763S to Richdale 776S)	23	24	24.0	104.4	21.7	94.5
	6L09 (Oyen 767S to Hanna 763S)	23	23	25.2	109.4	22.9	99.8
	767ST1 (Oyen 767S Transformer T1 - W2)	25	26	27.9	111.6	25.4	101.4[a]
	6L09 (Richdale 776S to Youngstown 772S)	24	24	24.5	101.9	22.2	92.5
927L (Milo 356s to Langdon 102s)	7L159 (Heatburg 948S to 7LA159 Tap)	107.3	123.6	114.5	106.7	106.8	99.5
	924L (Milo 356S to 924AL Tap)	547	656	782.8	143.1	603.9	110.4[a]
	912L (Nevis 766S to Red Deer 63S)	507	608	531.3	104.8	470.4	92.8
	9L20 (Nevis 766S to Cordel 755S)	429	501	434.1	101.2	382.8	89.2
	7L16 (Nevis 766S to Heatburg 948S)	107.3	123.6	111.6	104.0	103.9	96.8
163ST5 (Amoco Empress 163S Transformer T5)	668L (Empress 394S to Cypress 562S)	121	133	194.8	161.0	7.0	5.8

Notes:

[a] Thermal overload is remained after RAS actions were complete, and real-time operational practices will mitigate the overload.

Table 5-4: Voltage Range Violations under Category B Conditions for Scenario 3

Contingency (System Element Lost)	Substation Name and Number	Bus Number	Nominal kV	Emergency Minimum Voltage (kV)	Emergency Maximum Voltage (kV)	Initial Voltage (kV)	Steady State Voltage (kV)	Post-Mitigation Steady State (kV)
1034L	No voltage collapse violation							
1035L	No voltage collapse violation							

5.3.2 Scenario 4: 2028 SL HG Scenario

Category B Conditions

The thermal and voltage criteria violations observed under certain Category B conditions in the post-Project studies were mitigated by RASs as shown in Table 5-5 and Table 5-6.

After RAS actions were complete, real-time operational practices are required to fully alleviate certain thermal criteria violations observed on 144 kV transmission lines 7L171, 7L224, 7L137, 7L760, and 7L25, and 240 kV transmission lines 935L and 923L.

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

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	121	133	210.9	174.3	14.3	11.8
9L29 (Oakland 946S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	127.8	119.1	108.9	101.5[a]
924L (Milo 356S to 924AL Tap)	927L (Milo 356s to 927AL Tap)	576	691	707.9	122.9	470.9	81.8
	7L760 (Oyen 394S to P2421 Tap)	110.2	131	115.9	105.2	107.7	97.7
	7L171 (Michichi Creek 802S to	107.3	123.6	108.1	100.7	103.9	96.9

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
	Wintering Hills 804S)						
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	108.3	123	163.0	150.5	113.1	104.5[a]
	7L127 (Pemukan 932S to Monitor 774S)	144.7	126.5	185.8	128.4	132.5	91.6
963S T1 (Coyote Lake 963S Transformer T1)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	127.8	119.1	108.8	101.4[a]
9L20 (Nevis 766S to Cordel 755S)	935L (Milo 356S to 935AL Tap)	547	656	580.4	106.1	562.4	102.8[a]
	923L (Milo 356S to 923AL Tap)	547	656	600.6	109.8	582.2	106.4[a]
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	124.4	114.9	115.2	106.4[a]
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	126.6	115.9	117.4	107.5[a]
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	113.2	105.5	83.8	78.1
9L59 (Anderson 801S to Tinchebray 972S)	935L (Milo 356S to 935AL Tap)	547	656	562.9	102.9	504.6	92.3
	923L (Milo 356S to 923AL Tap)	547	656	582.6	106.5	524.2	95.8
	7L760 (Oyen 394S to P2421 Tap)	110.2	131	127.7	115.9	97.8	88.8
	7L137 (Three Hills 770S to Rowley 768S)	108.3	123.6	121.6	112.3	115.2	106.4[a]
	7L25 (Rowley 768S to Michichi Creek 802S)	109.2	122.7	123.9	113.5	117.5	107.6[a]
	7L171 (Michichi Creek 802S to	107.3	123.6	117.1	109.1	115.0	107.2[a]

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
	Wintering Hills 804S)						
	7L132 (Oyen 767S to Lanfine 959S)	112.1	138	112.4	100.3	83.6	74.6
9L24 (Oakland 946s - Lanfine 959s)	760L (Amoco Empress 163S to 760AL Tap)	120	132	149.0	124.2	116.2	96.9
	760L (Amoco Empress 163S to 760AL Tap)	120	132	149.0	124.2	126.5	105.4[a]
	7L760 (Oyen 767S to 7LA760 Tap)	110.2	123.6	139.5	126.6	106.4	96.6
	7L760 (Oyen 394S to P2421 Tap)	110.2	131	170.7	154.9	105.0	95.3
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	107.5	100.2	104.6	97.5
	7L132 (Oyen 767S to Lanfine 959S)	112.1	138	163.8	146.1	100.9	90.0
	9L59 (Tinchebray 972S to 9LA59)	499	499	503.0	100.8	455.2	91.2
927L (Milo 356s to Langdon 102s)	924L (Milo 356S to 924AL Tap)	547	656	706.2	129.1	469.9	85.9
	7L760 (Oyen 394S to P2421 Tap)	110.2	131	115.9	105.2	107.7	97.8
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	107.3	123.6	108.1	100.7	104.0	96.9
935L (Milo 356S to Cassils 324S)	923L (Milo 356S to 923AL Tap)	547	656	841.3	153.8	548.4	100.3[a]
	923L (Newell 2075S to 923AL Tap)	547	656	647.1	118.3	360.6	65.9

Contingency (System Element Lost)	Details of Violation (Violation Observed On)	Seasonal Continuous Rating (MVA)	Short-term (Emergency) Rating (MVA)	Post-Project Results		Post-RAS Action Results	
				Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading
	7L760 (Oyen 394S to P2421 Tap)	110.2	131	112.0	101.6	77.4	70.3
923L (Milo 356S to Newell 2075S)	935L (Cassils 324S to 935AL Tap)	547.1	656	689.3	126.0	462.7	84.6
	935L (Milo 356S to 935AL Tap)	547	656	770.7	140.9	556.0	101.7[a]
163ST5 (Amoco Empress 163S Transformer T5)	668L (Empress 394S to Cypress 562S)	121	133	210.9	174.3	14.2	11.8

Notes:
[a] Thermal overload is remained after RAS actions were complete, and real-time operational practices will mitigate the overload.

Table 5-6: Voltage Range Violations under Category B Conditions for Scenario 4

Contingency (System Element Lost)	Substation Name and Number	Bus Number	Nominal kV	Emergency Minimum Voltage (kV)	Emergency Maximum Voltage (kV)	Initial Voltage (kV)	Steady State Voltage (kV)	Post-Mitigation Steady State (kV)
1034L	No voltage collapse violation							
1035L	No voltage collapse violation							
EATL	No voltage collapse violation							

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

P2418 Greencells Estuary Solar

Greencells Indygen Alberta Ltd.

Date: March 4, 2024

Version: V3

Classification: Public

Company Name	Name and Credentials	Date	Signature
AltaLink Ltd.	Carl Wang, P. Eng.	March 14, 2024	
AESO	Omid Ghoreishi, P. Eng.	March 11, 2024	
Greencells Indygen Alberta Ltd. (Market Participant/Generation Facility Owner)	David Ashton	21 march 24	

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Attachments

Attachment A: Transmission Planning Criteria – Basis and Assumptions

1 Introduction

This Study Scope provides an overview of the engineering studies to be completed by AltaLink Ltd. (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

Project overview is provided in Table 1-1.

Table 1-1: Project Overview

Market Participant	Type of Project	In-service Date (ISD)
Greencells Indygen Alberta Ltd.	Connection	June 6, 2025

Load and generation components of the Project are listed in Table 1-2.

Table 1-2: Project Load and Generation Details

Project Component		Description
Load	Existing Rate DTS, *Demand Transmission Service,* contract capacity	No existing contract
	Requested Rate DTS	1.5 MW
	Type	Station service
	Motors (number and size)	N/A
	Power factor	0.9 pf
	Future load expansion plans	No
Generation	Generation type	Solar
	Existing Rate STS, *Supply Transmission Service,* contract capacity	No existing contract
	Requested Rate STS	200 MW
	Number and size of generating units	TBD
	Maximum authorized real power (MARP)	200 MW
	Maximum capability (MC)	200 MW
	Reactive power capability	65.74 MVAr (0.95 pf absorbing)
		96.86 MVAr (0.9 pf producing)

Project Component		Description
	Future generation expansion plans	No

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 Empress (Area 48).

The Study Area consists of the AESO planning areas of Empress (Area 48), Brooks (Area 47) and Hanna (Area 42), 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

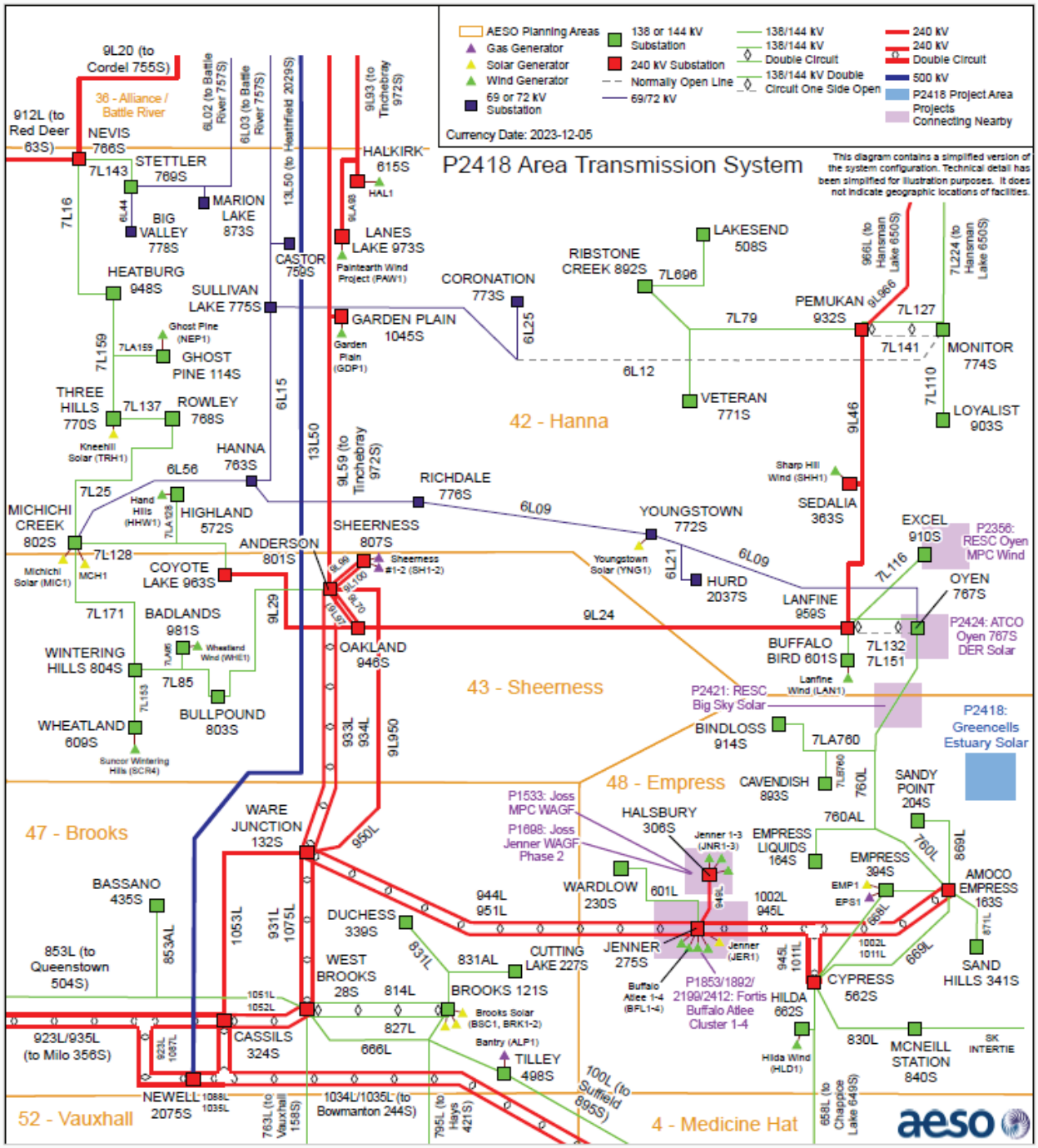
Existing constraints in the Study Area are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (TCM Rule).

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:

- APS #27: 562S Cypress McNeil Power and Undervoltage Scheme
- APS #28: 163S Amoco Empress Reverse Power and Undervoltage Scheme
- APS #29: McNeil (840S) Under Voltage Runback Scheme
- APS #33: Cypress (T562S) Reverse Power and Undervoltage Scheme

Figure 1-1: Transmission System in the Study Area



2 Connection Alternative to Be Studied

The following alternative will be studied:

2.1 Alternative 4 – Radial 138 kV connection to 394S Empress

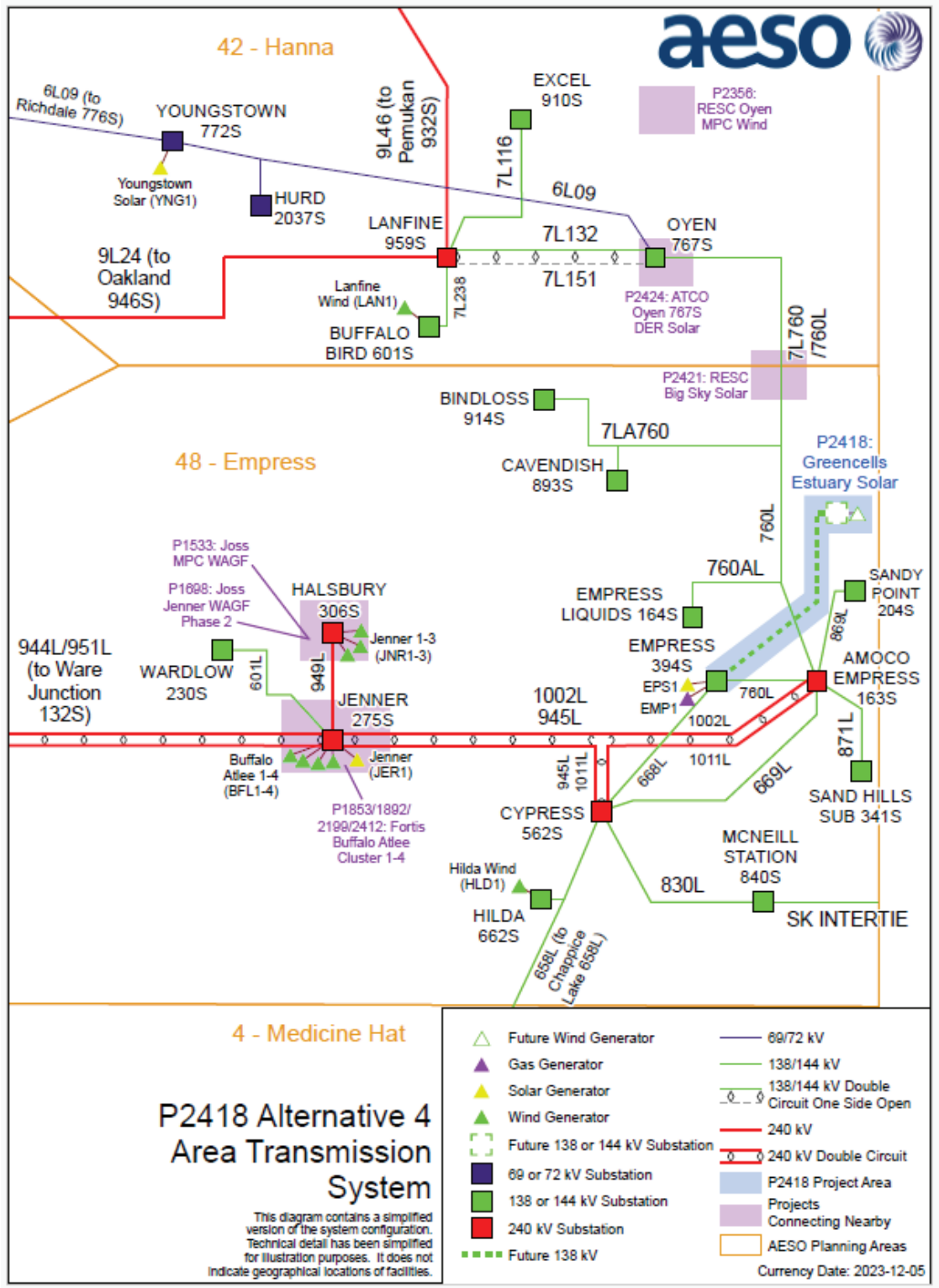
This alternative includes the following developments:

- Add one 138 kV circuit, approximately 4km in length[1], to connect the Facility to 394S Empress; and
- Expand 394S Empress substation, including adding one 138 kV circuit breaker; and
- Add or modify associated equipment as required for the above transmission developments.

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

[1] Exact line length to be determined by the Market Participant

Figure 2-1: Connection Alternative 4



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 and 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 conditions: 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*;
- Section 502.5 of the ISO rules *Generating Unit Technical Requirements*;
- Section 502.6 of the ISO rules *Generating Unit 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 Generation (MW)	Load (MW)
Pre-Project					
1	2028 Summer Peak (2028 SP)	High South generation, high solar generation	2028 SP Pre-Project	0	0
2	2028 Summer Light (2028 SL)		2028 SL Pre-Project	0	0
Post-Project					
3	2028 SP	High South generation, high solar generation	2028 SP Post -Project	200	0
4	2028 SL		2028 SL Post -Project	200	0
5	2033 WP	All study area generation in-service	2033 WP Post-Project	200	0
6	2025 SP*	High South generation, high solar generation	2025 SP Post -Project	200	0
7	2025 SL*		2025 SL Post -Project	200	0

*For transient stability study only.

4.2 Assumptions

4.2.1 System Project Assumptions

Table 4-2 lists the system transmission projects that will be included in the studies.

Table 4-2: Planned System Transmission Projects to be Included in the Studies

AESO Project No.	Project Name/Description	Scheduled ISD	AUC NID Decision No.
7083	Bowmanton 244S Substation Voltage Support Project	Q4 2024	ANAP Approval

AESO Project No.	Project Name/Description	Scheduled ISD	AUC NID Decision No.
7075	Vauxhall Area Transmission Development	Jul 1, 2024	27776-D01-2023

4.2.2 Load Assumptions

Load forecast to be used for the studies is shown in Table 4-3 and is a forecast for the AESO Southeast Cluster[2] based on the AESO's 2023 Long-term Outlook (2023 LTO).

Table 4-3: Forecast Load in South East Cluster

AESO Planning Region Name	Forecast Peak Load by Year/Season (MW)	
	2028 SL	2028 SP
South East Cluster	714	1,015
AIES	9,518	11,596

4.2.3 Generation Assumptions

The generation forecast to be used for the studies is based on the 2023 LTO with modifications to incorporate the latest forecast intelligence. The generation assumptions for the studies will assume High Renewable for Summer Light and Summer Peak load conditions.

The existing generation (excluding wind and solar) dispatch conditions for the study scenarios are described in **Error! Reference source not found.**.

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

Facility Name	MC (MW)	AESO Planning Area No.	Unit Net Generation[a] (MW) by Scenario	
			2028 SL	2028 SP
ALP1	7	47	0	0

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

Wind and solar generation facilities will be dispatched to yield the credible worst-case generation dispatches for the Southeast Cluster. Pre- and post-Project dispatch levels for the existing and planned[3] wind and solar generation facilities for the Southeast Cluster are shown in Table 4-5 and Table 4-6.

[2] The AESO Southeast cluster consists of AESO planning areas 4 (Medicine Hat), 48 (Empress), 43 (Sheerness), 47 (Brooks), 52 (Vauxhall), and 54 (Lethbridge), as well as the tielines from these areas.

[3] Planned generation refers to the projects which met have met the AESO's project inclusion criteria.

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

Facility Name and Code	Bus No.	MC (MW)	AESO Planning Area No.	Unit Net Generation[a] (MW) by Scenario	
				2028 SL	2028 SP
HLD1	567004	100	48	35	70
JNR1	60798	122	48	43	86
JNR3	61799	109	48	39	76
GDP1	565002	130	42	98	93
HAL1	66435, 67435	150	42	0	73
HHW1	560045	145	42	0	81
LAN1	60996	151	42	21	128
NEP1	2621, 2622, 2623, 2624, 2625	82	42	0	49
P1698	61798, 61799	71	48	25	50
P1853	553260	18	48	11	15
P1892	552260	17	48	10	15
P2199	557261	14	48	8	12
P2247	560041, 560042	466	47	423	277
P1567	60831, 60832	289	42	0	256
P1704	61418	150	42	0	97
P2562	61418, 62418	40	42	0	26

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

Table 4-6: Dispatch Conditions for Existing and Planned Solar Generation Facilities

Facility Name and Code	Bus No.	MC (MW)	AESO Planning Area No.	Unit Net Generation[a] (MW) by Scenario	
				2028 SL	2028 SP
BRK1	554257	13	47	6	3
BRK2	553256	14	47	7	3

Facility Name and Code	Bus No.	MC (MW)	AESO Planning Area No.	Unit Net Generation[a] (MW) by Scenario	
				2028 SL	2028 SP
BSC1	553257	15	47	6	3
EMP1	4266, 4366	39	48	18	9
JER1	554986	23	48	11	5
MCH1	557448	14	42	0	11
MIC1	554448	25	42	10	21
YNG1	19476	6	42	0	5
P1927	60434, 61434	360	47	168	85
P1987	60919, 61919	450	47	210	106
P2091	560028	150	48	70	35
P2195	557399	9	47	4	2
P2218	60870	90	47	42	21
P2411	567072, 568072	220	48	103	52
P2421	560051	140	48	65	33
P2446	4275	24	47	11	6
P2447	560122, 560123	465	47	217	109
P2506	560135, 560139, 560143	465	47	217	109
P2537	4250	20	47	9	5
P1978	552448, 553448, 552450	75	42	0	62
P2424	19474	15	42	0	12

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

4.2.4 Intertie Flow Assumptions

The Alberta-British Columbia (AB-BC) intertie point is deemed to be too far away from the Southeast to have any material impact on the connection assessment. Therefore, the initial intertie flow value shall be set to the starting value from the seed case, and may be adjusted in the studies depending on the total generation integrated.

The intertie flow assumptions for the Alberta-Saskatchewan (AB-SK), and Alberta-Montana (MATL) interties are shown in Table 4-7.

Table 4-7: Intertie Flows for all Study Scenarios

Scenario Name	Import (-) / Export (+) (MW) by Intertie	
	AB-SK	MATL
2028 SL	0	300
2028 SP	0	183

4.2.5 HVDC Power Order Assumptions

The Wstern 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.

4.2.6 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(s) and as shown in Table 4-. Only those contingencies shown in Table 4- will be studied for transient stability studies. If the TFO(s) 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 4-8: Protection Fault Clearing Times

Contingency (System Element Lost)	Fault Location	Clearing Times (Cycles)	
		Near End	Far End
945L (JENNER 275S – CYPRESS 562S)	JENNER 275S	5	6
	CYPRESS 562S	5	6
1002L (JENNER 275S – AMOCO EMPRESS 163S)	JENNER 275S	4	5
	AMOCO EMPRESS 163S	4	5
1011L (CYPRESS 562S – AMOCO EMPRESS 163S)	CYPRESS 562S	7	6
	AMOCO EMPRESS 163S	6	7
668L (EMPRESS 394S – CYPRESS 562S)	EMPRESS 394S	7	7
	CYPRESS 562S	7	7
669L (AMOCO EMPRESS 163S – CYPRESS 562S)	AMOCO EMPRESS 163S	7	7
	CYPRESS 562S	7	7
830L (CYPRESS 562S – MCNEILL STATION 840S)	CYPRESS 562S	6	30

Contingency (System Element Lost)	Fault Location	Clearing Times (Cycles)	
		Near End	Far End
	MCNEILL STATION 840S	9	27
892L (SUFFIELD 895S – BOWMANTON 244S)	SUFFIELD 895S	6	27
	CHAPPICE LAKE 649S	6	27
658L (CHAPPICE LAKE 649S – CYPRESS 562S) or 674L (CHAPPICE LAKE 649S – BOWMANTON 244S)	BOWMANTON 244S	6	27
	CYPRESS 562S	6	27
760L (AMOCO EMPRESS 163S – OYEN 767S)	AMOCO EMPRESS 163S	6	8
	OYEN 767S	6	7

4.2.7 Project Dynamic Data

Dynamic data for the Project can be found in Attachment A7.

4.2.8 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	2028 SP Pre-Project	X	X							X
2	2028 SL Pre-Project	X	X							
Post-Project										
3	2028 SP Post -Project	X	X							X
4	2028 SL Post -Project	X	X							
5	2033 WP Post-Project									X
6	2025 SP Post-Project					X	X			
7	2025 SL Post-Project					X	X			

For the engineering studies, all transmission facilities 69 kV and above, within the Study Area and the transmission lines connecting these planning areas to neighboring 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, will be provided by the AESO to the Studies Consultant. These cases are provided in PSS/E v34. 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 any other applicable information required to the Studies Consultant.
2. If the cases show N-0 violations, AESO will work with the Studies Consultants to address the issues. 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 conditions in the Study Area.

5.3 Transient Stability Studies

The Genesee 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 as applicable, including rotor angle, and active and reactive power output for the Sheerness Power Plant, Medicine Hat and Cancarb Medicine Hat units and other generators in the vicinity of the Project. 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. 4-8.

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.

Winter peak scenarios will be used for the short-circuit studies because winter peak scenarios generally produce higher short-circuit current levels than summer peak scenarios.

Estimated maximum three-phase faults and single line-to-ground short-circuit current levels will be reported for the following substations:

- Amoco Empress 163S 240 kV and 138 kV buses
- Cypress 562S 240 kV and 138 kV buses
- Empress 394S 138 kV bus
- Chappice Lake 649S 138 kV bus
- Bowmanton 244S 240 kV and 138 kV buses
- McNeill Station 840S 138 kV bus
- Oyen 767S 138kV bus

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 Studies 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- and load- constraint effective factors and to identify the most effective generators or loads 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- and load- constraint effective factors. Constraint effective factors are used to estimate the ability of generators and loads to manage transmission constraints. A generator's or load'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 or in the load's energy consumption. The greater the constraint effective factor, the more effective a generator or load 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 (2023 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

Version 1.0

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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-AB-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-AB-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.

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

[1] A complete description of these standards are given in: AESO. *Alberta Reliability Standards*. Available from http://www.aeso.ca/rulesprocedures/17004.html

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	152
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 or 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

Performance Level	Disturbance (1)(2)(3)(4) Initiated by: Fault or No fault DC Disturbance	MW Margin (P-V method) (5)(6)(7)	MVAr Margin (V-Q method) (6)(7)
D	Any combination of three or more elements. i.e.: 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	Near End	Far End
kV	**Cycles**	**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

Fault Clearing Time			Fault Clearing Time			Fault Clearing Time		
138/144 kV			240 kV			500 kV		
Near End	Far End	2nd Ckt (for C5 and C7 Only)	Near End	Far End	2nd Ckt (for C5 and C7 Only)	Near End	Far End	2nd Ckt (for C5 and C7 Only)
15	24	24	12	6	14	9	5	11

Table 2-5: Stuck Breaker Clearing Times for Transformers

Fault Clearing Time (Cycles)						Fault Clearing Time (Cycles)					
240/138 kV						500/240 kV					
Fault on 240 kV Side			Fault on 138 kV Side			Fault on 500 kV Side			Fault on 240 kV Side		
240 kV Side	138 kV Side	2nd Ckt (for Breaker Fail)	138 kV Side	240 kV Side	2nd Ckt (for Breaker Fail)	500 kV Side	240 kV Side	2nd Ckt (for Breaker Fail)	240 kV Side	500 kV Side	2nd Ckt (for Breaker Fail)
12	6	14	15	5	24	9	5	11	12	4	14

Attachment A2
Pre-Project Power Flow Diagrams

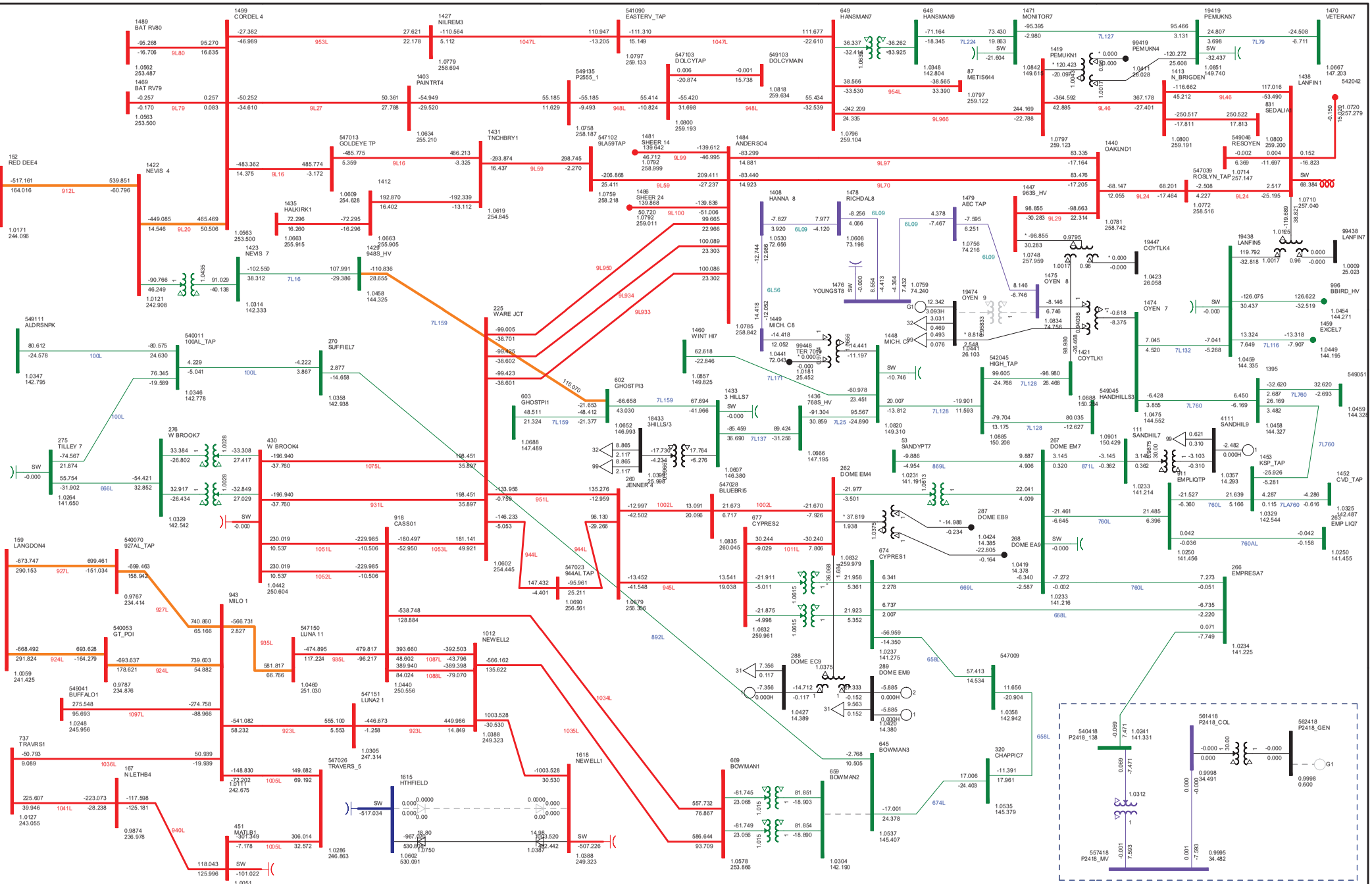

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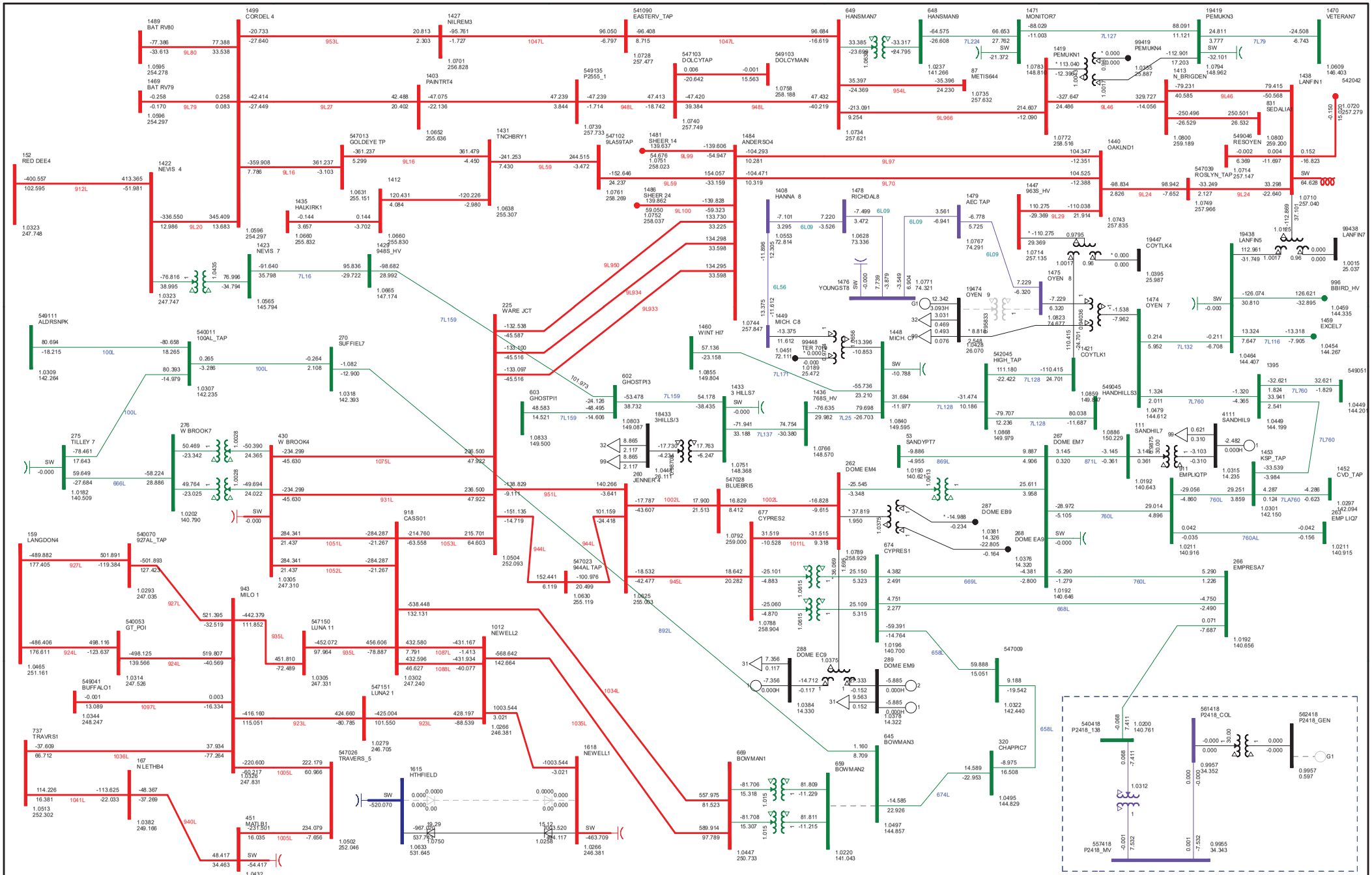
FIGURE A2-1-0-N-0: NORMAL OPERATION
2028 SUMMER PEAK (PRE-CONNECTION) - PRE-CURTAILMENT
PRINTED ON WEDNESDAY 27. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A2-1-1-N-0: NORMAL OPERATION
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

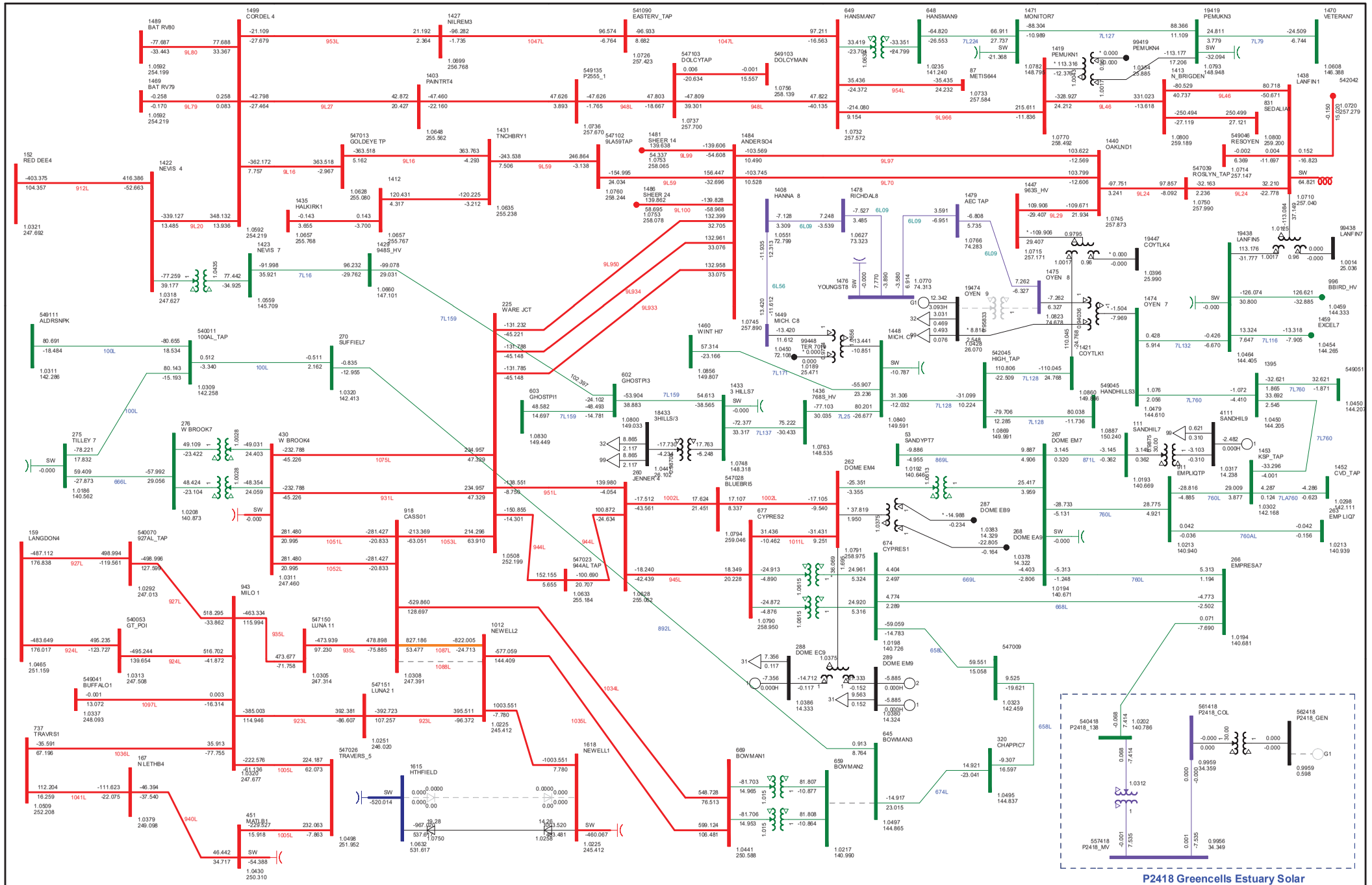


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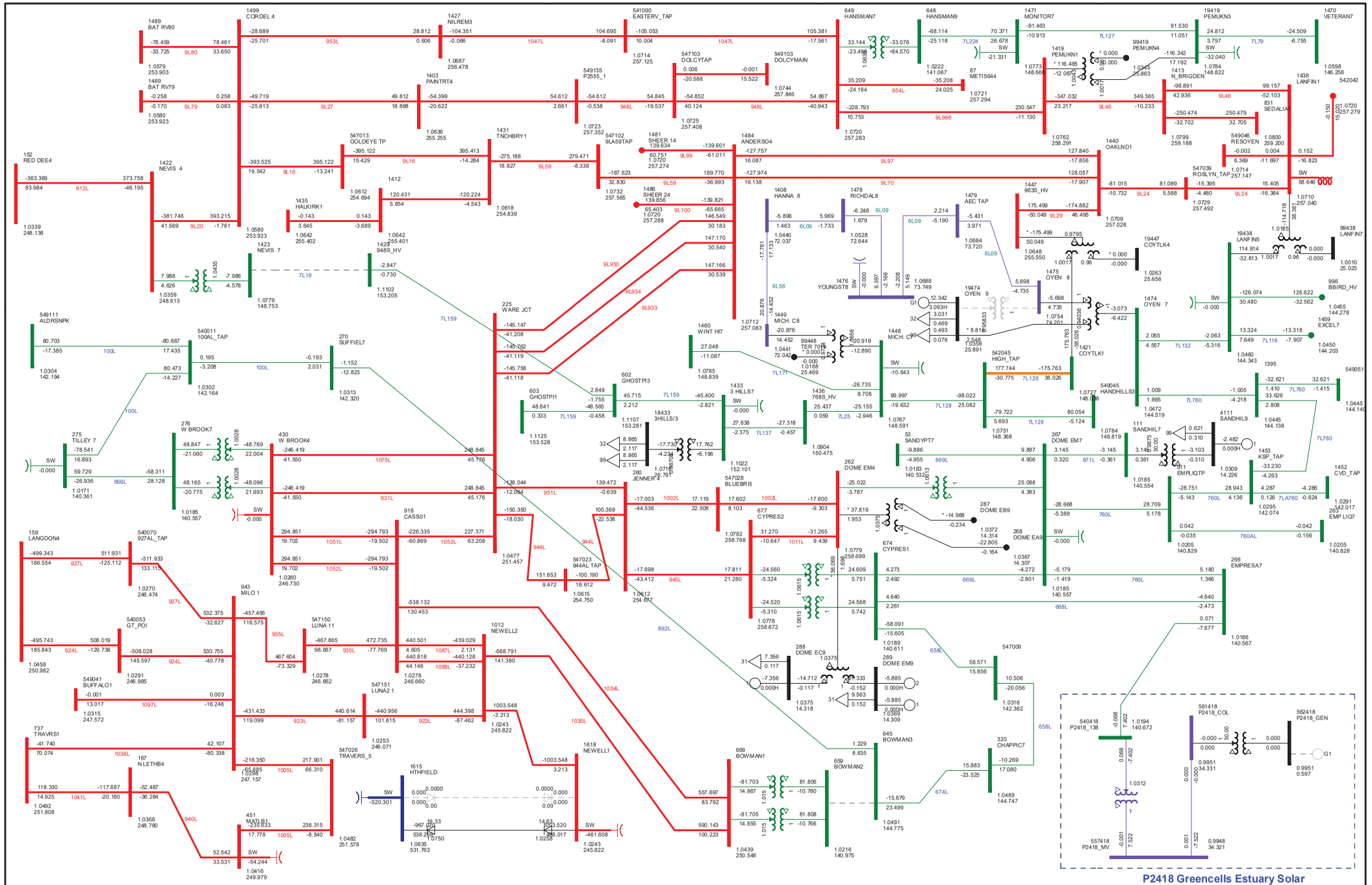
FIGURE A2-1-2 N-1: 1088L (CASSILS 324S TO NEWELL 2075S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLUTION A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A2-1-3 N-1: 7L16 (NEVIS 766S TO HEATBURG 948S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

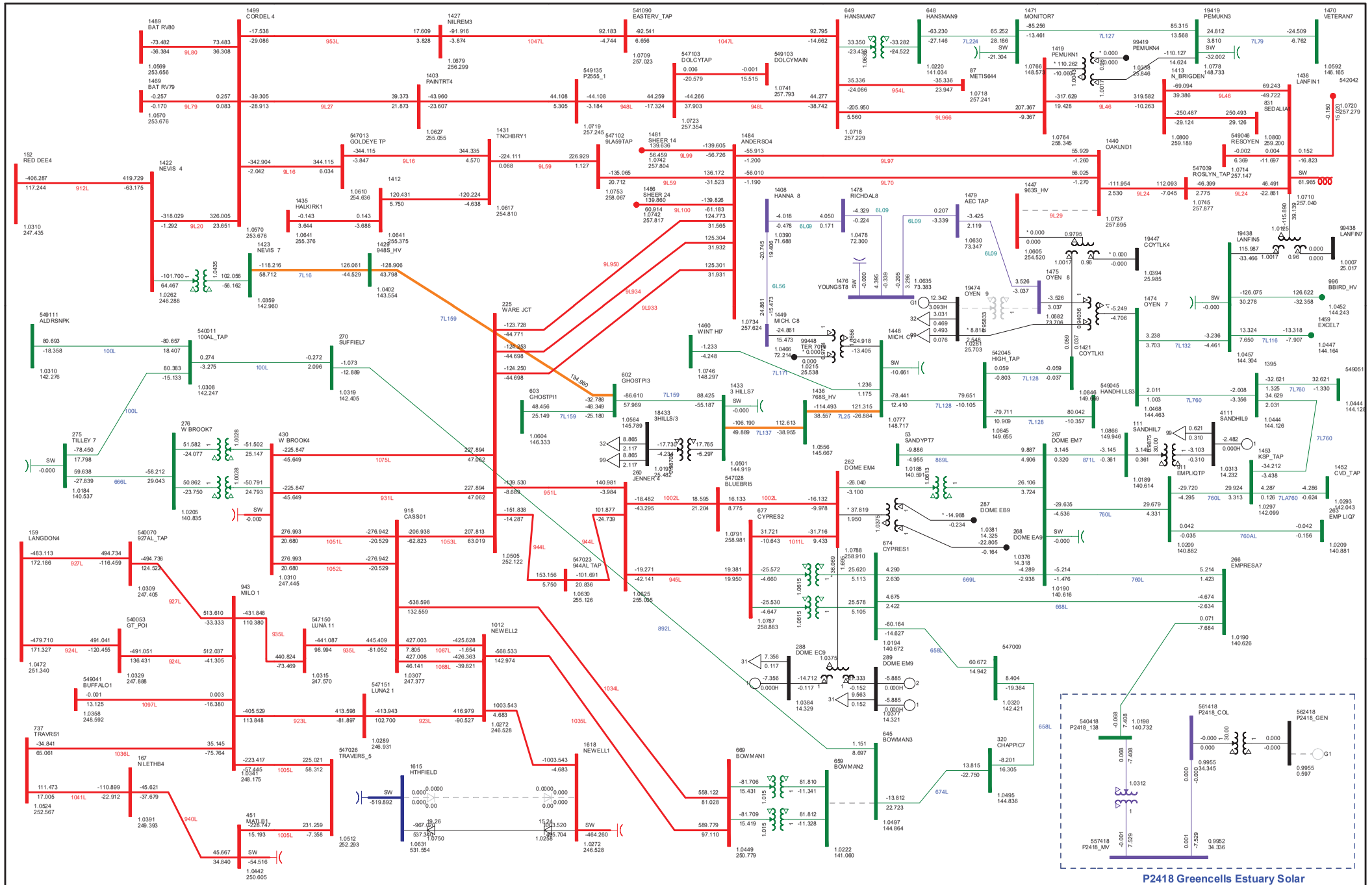


FIGURE A2-1-4 N-1: 9L29 (OAKLAND 946S TO COYOTE LAKE 963S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

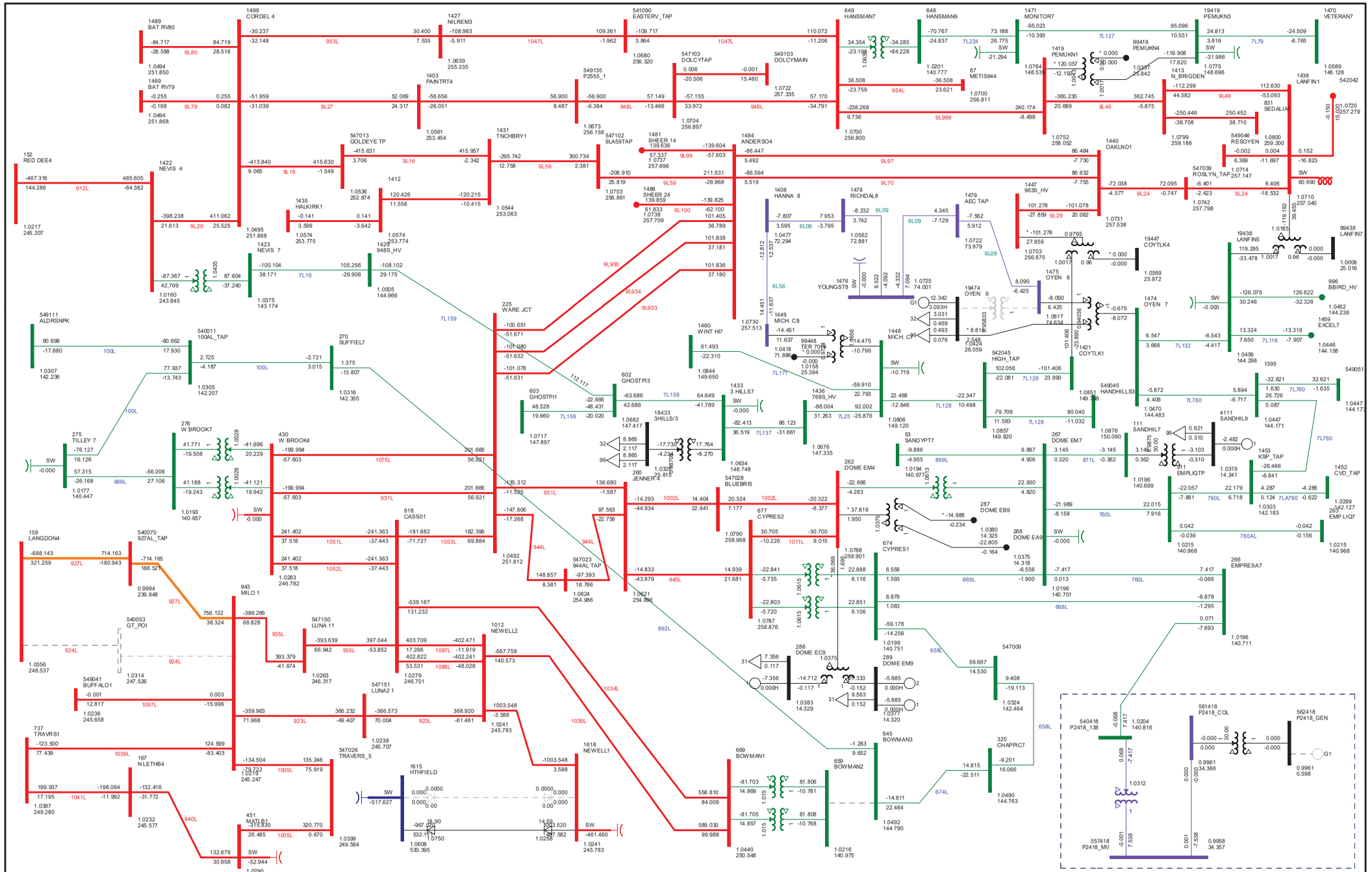


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FIGURE A2-1-5 N-1: 924L (MILO 356S TO LANGDON 102S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

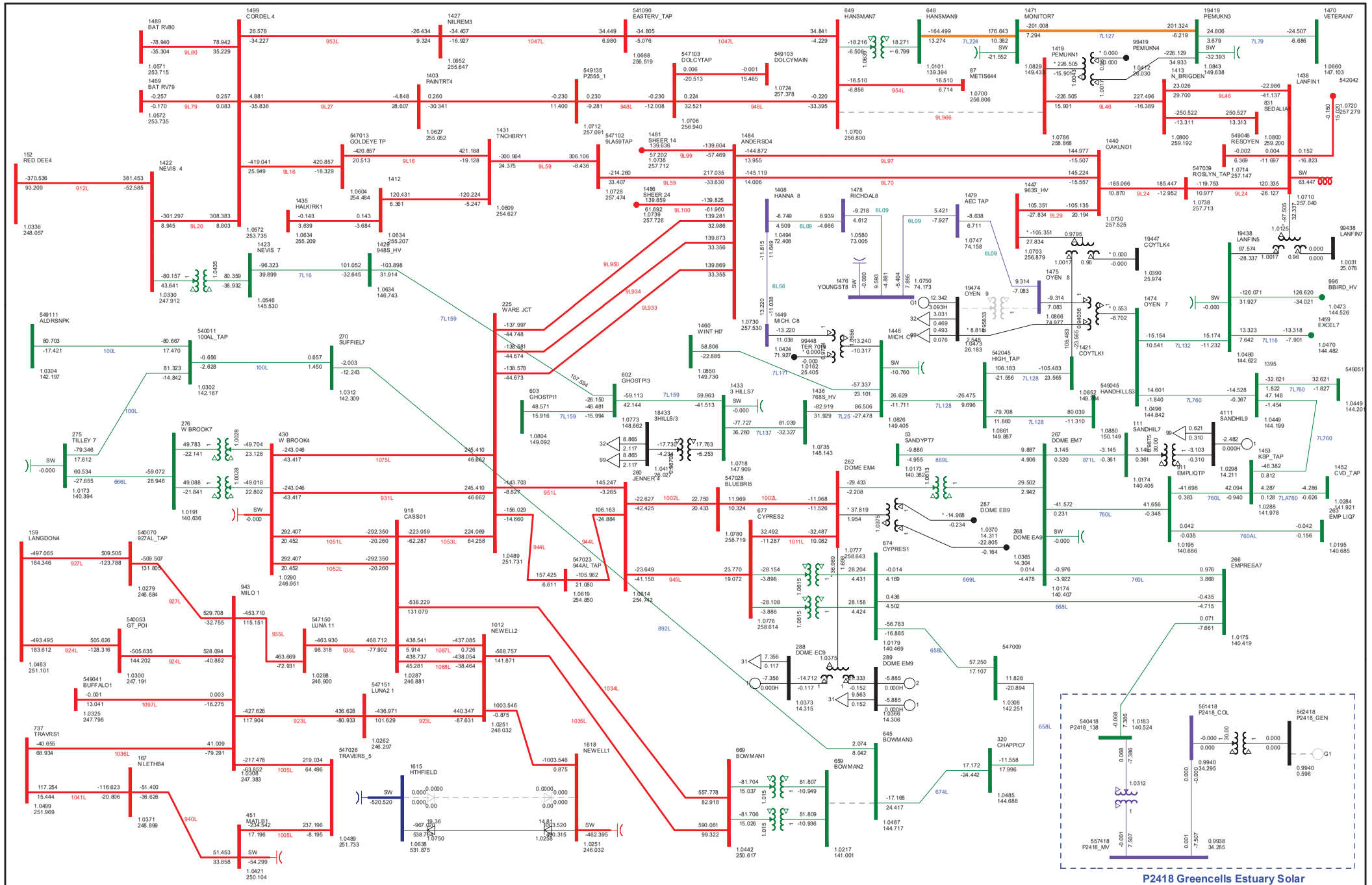

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FIGURE A2-1-6 N-1: 9L966 (PEMUKAN 932S TO HANSMAN LAKE 650S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

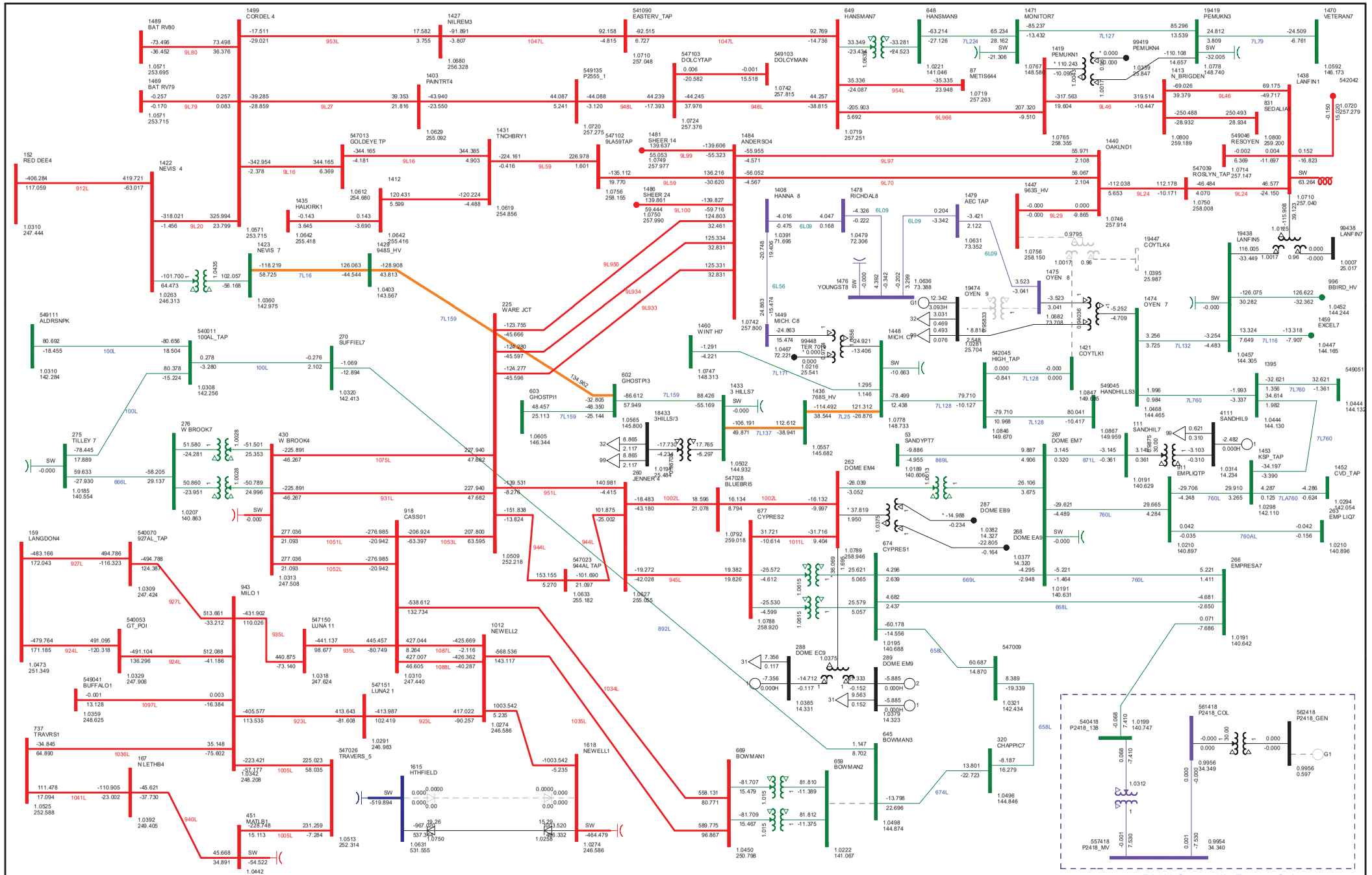

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FIGURE A2-1-7 N-1: 963S T1 (COYOTE LAKE 963S TRANSFORMER T1)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

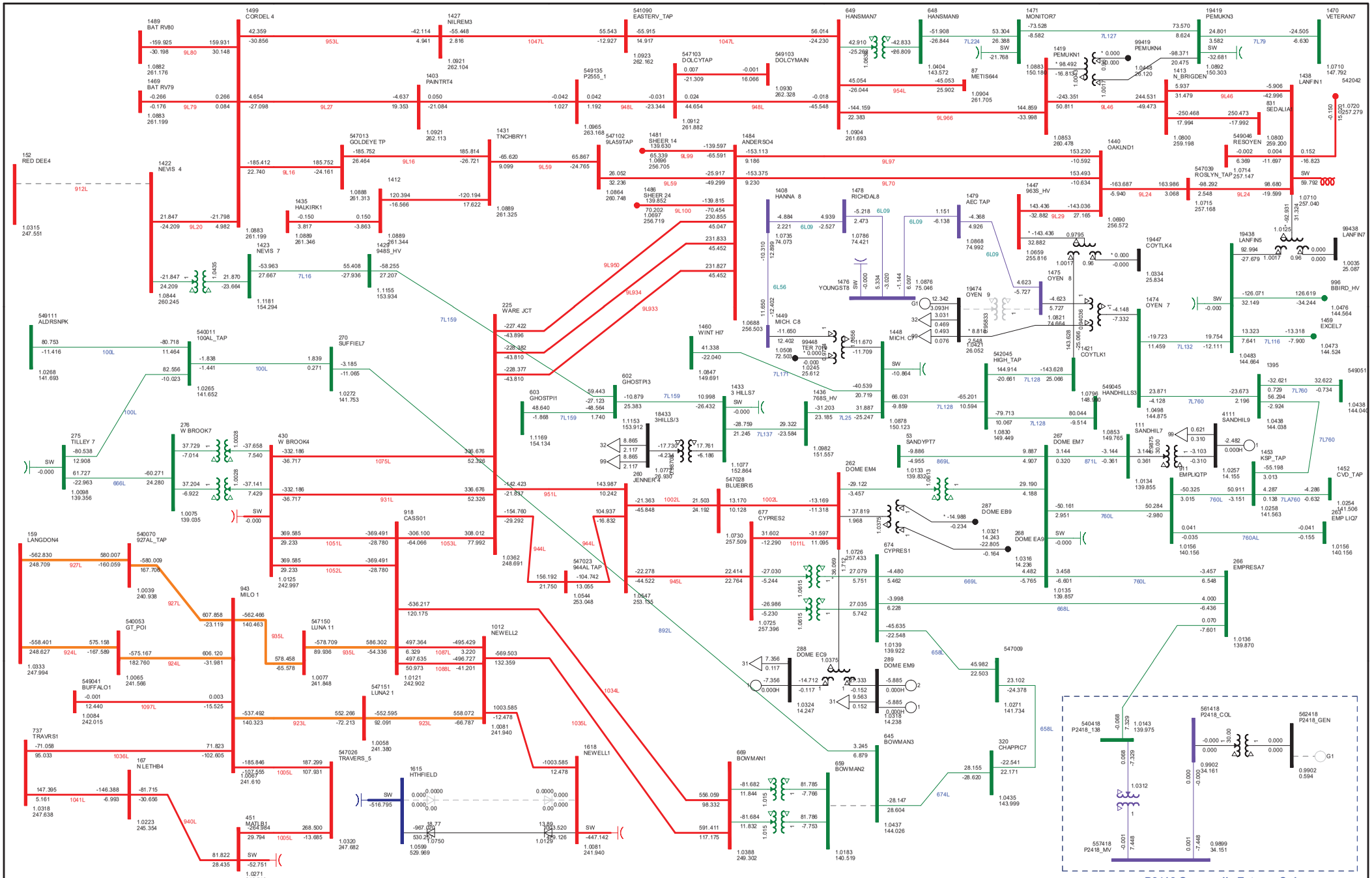

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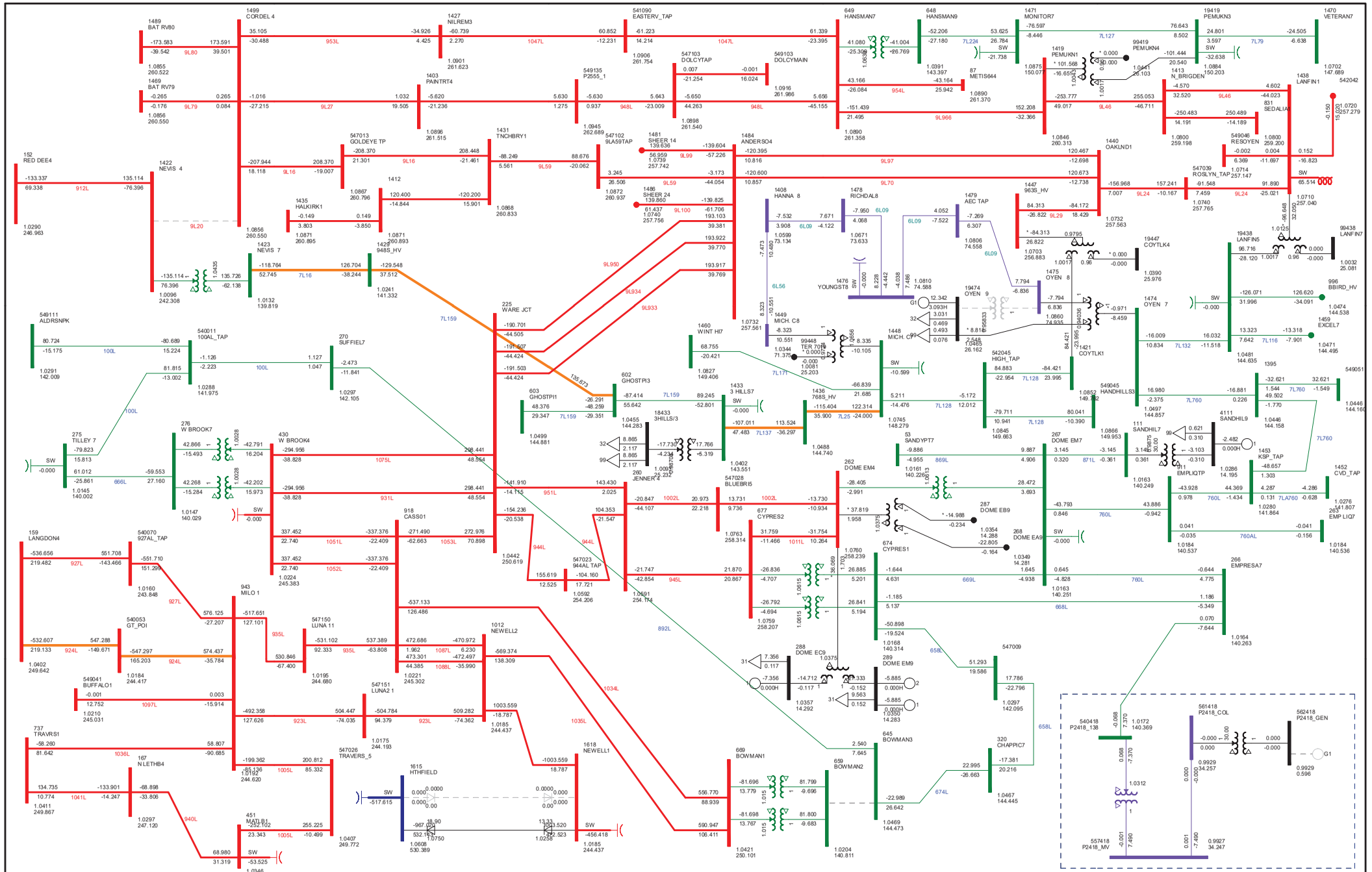
FIGURE A2-1-8 N-1: 912L (NEVIS 766S TO RED DEER 63S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024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541090 EASTERV_TAP
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1489 BAT RV80
1469 BAT RV79
1403 PAINTRT4
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1440 OAKLND1
549046 RESQYEN
547039 ROSLYN_TAP
1435 HALKIRK1
1412
1423 NEVIS 7
1429 948S_HV
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
19438 LANFIN5
99438 LANFIN7
1486 SHEER 24
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
19447 COYTLK4
1474 OYEN 7
996 BBIRD_HV
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
542045 HIGH_TAP
1421 COYTLK1
1395
549051
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
1436 768S_HV
549045 HANDHILLS3
1459 EXCEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
18433 3HILLS/3
260 JENNER 4
547028 BLUEBRI5
262 DOME EM4
53 SANDYPT7
267 DOME EM7
111 SANDHIL7
4111 SANDHIL9
1453 KSP_TAP
1452 CVD_TAP
911 EMPLIQTP
159 LANGDON4
540070 927AL_TAP
918 CASS01
677 CYPRES2
674 CYPRES1
287 DOME EB9
268 DOME EA9
266 EMPRESA7
943 MILO 1
540053 GT_POI
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1012 NEWELL2
547023 944AL TAP
549041 BUFFALO1
547151 LUNA2 1
288 DOME EC9
289 DOME EM9
547009
737 TRAVRS1
167 N LETHB4
547026 TRAVERS_5
1615 HTHFIELD
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
451 MATLB1
561418 P2418_COL
562418 P2418_GEN
540418 P2418_138
557418 P2418_MV
P2418 Greencells Estuary Solar

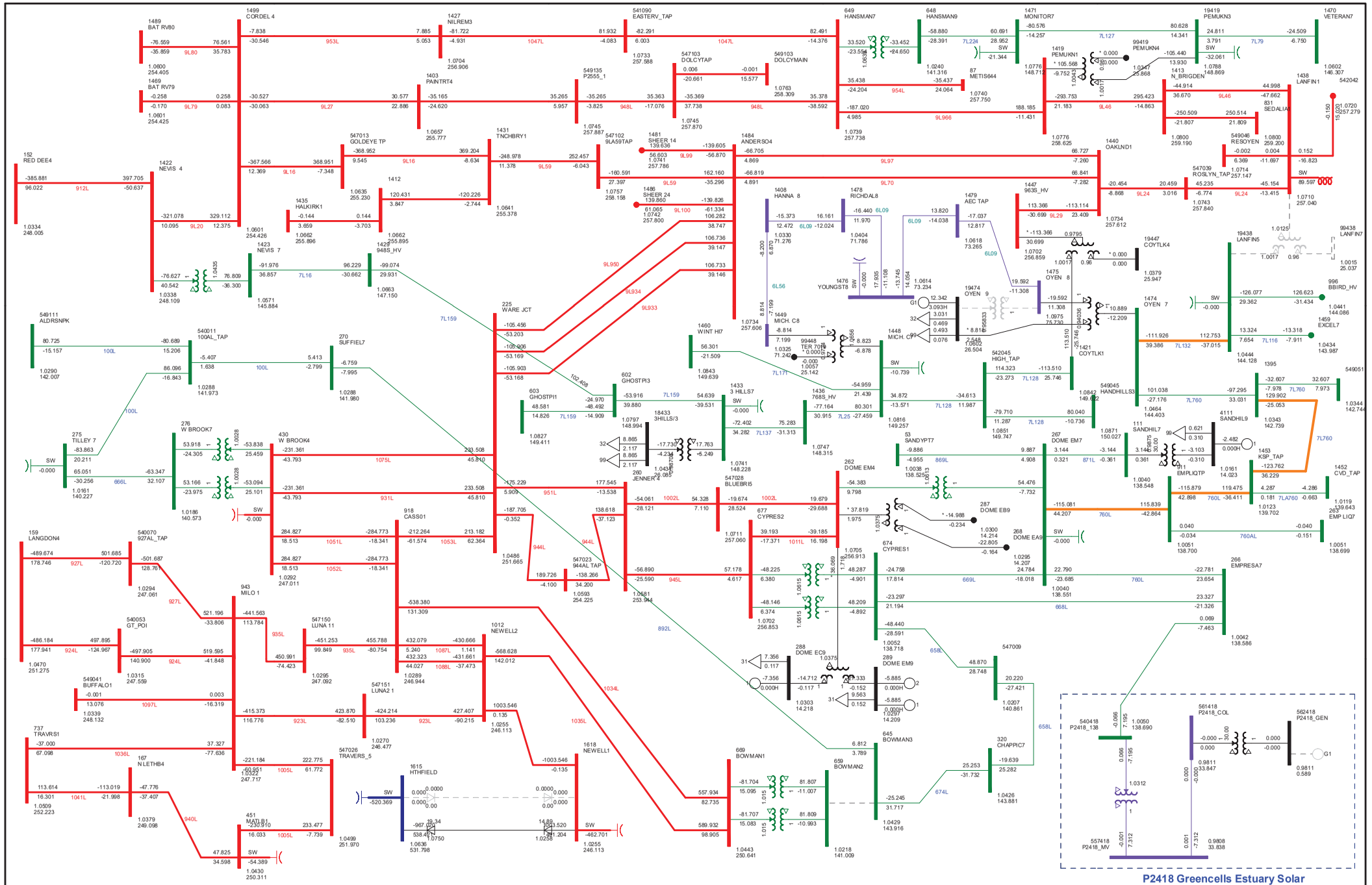

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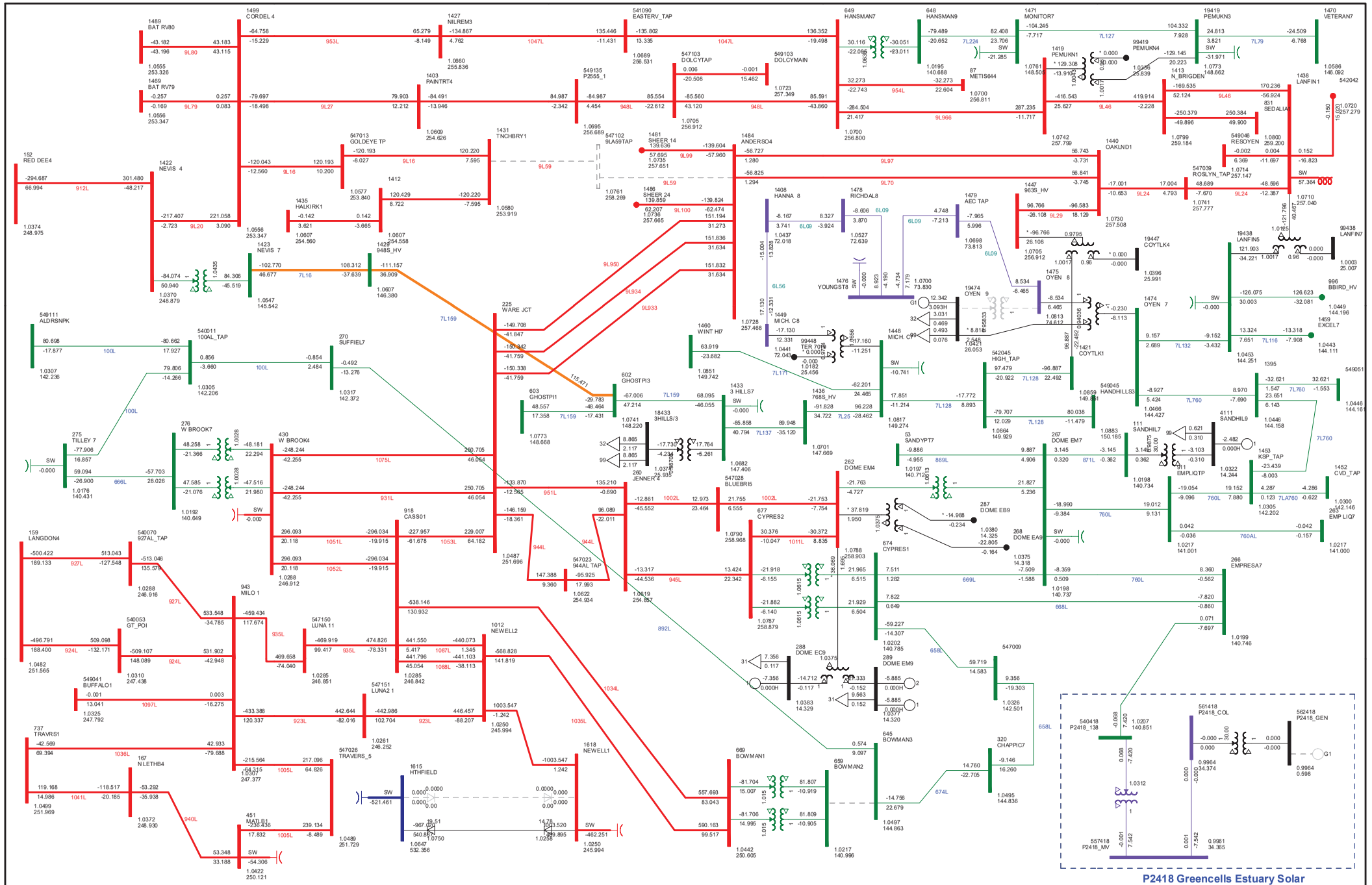
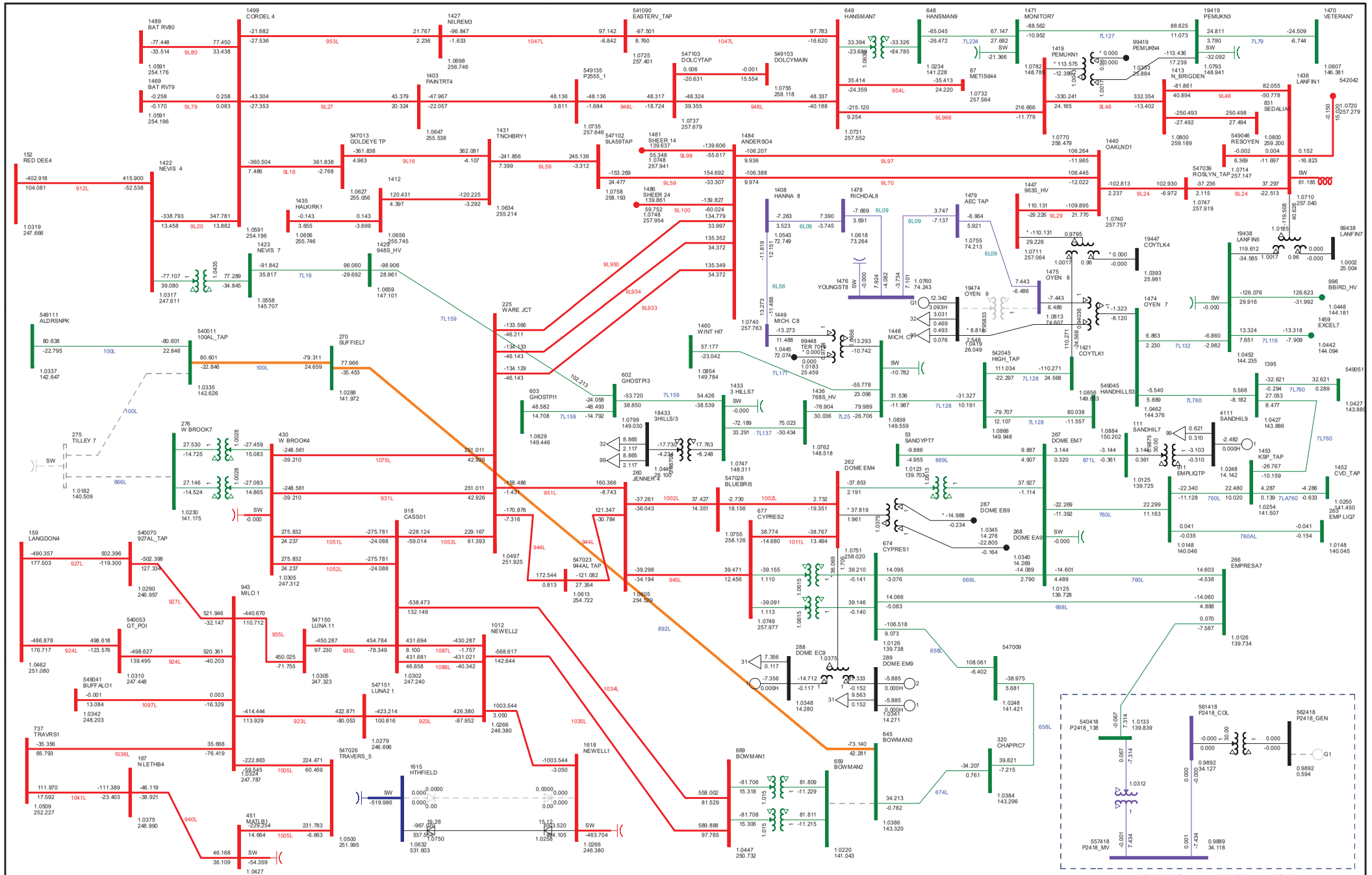
FIGURE A2-1-10 N-1: A959ST1 (LANFINE 959S TRANSFORMER T1)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A2-1-11 N-1: 9L59 (ANDERSON 801S TO TINCHEBRAY 972S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A2-1-12 N-1: 498ST1T2 (TILLEY 498S TRANSFORMER T1/T2)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

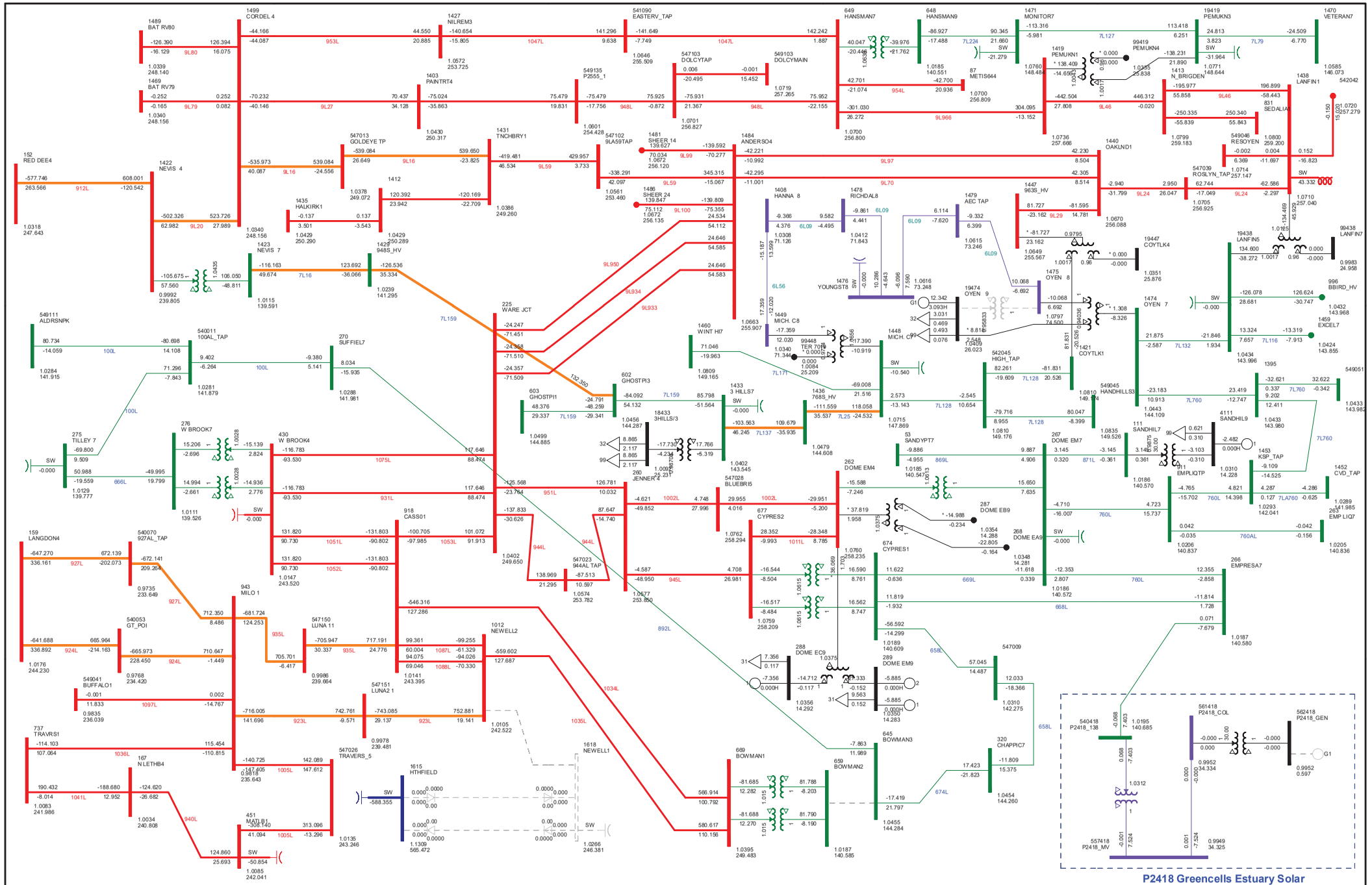


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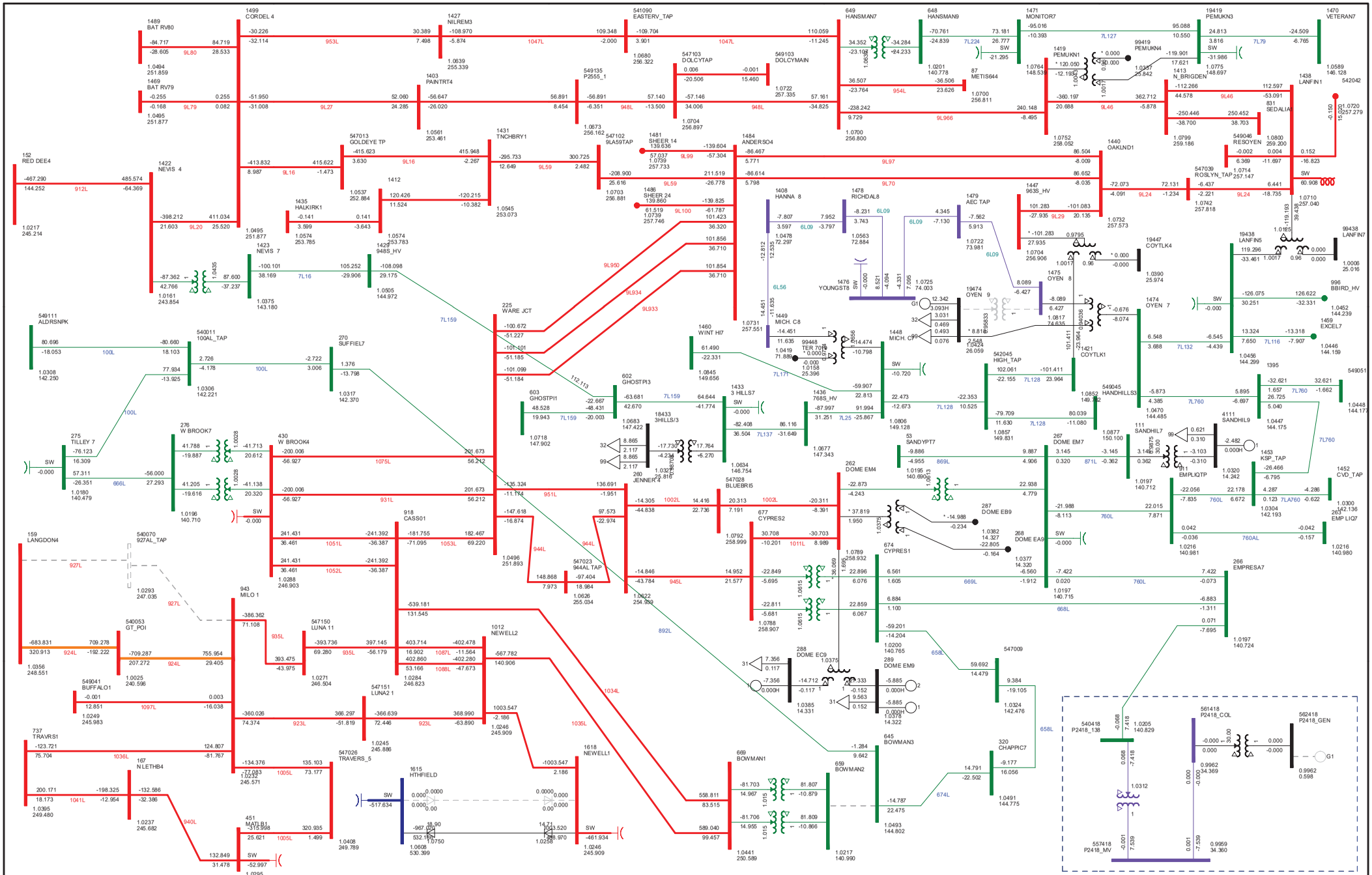
FIGURE A2-1-13 N-1: EATL
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024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549103 DOLCYMAIN
549135 P2555_1
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
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549046 RESOYEN
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1440 OAKLND1
1447 963S_HV
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1412
1435 HALKIRK1
1423 NEVIS 7
1425 948S_HV
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
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275 TILLEY 7
276 W BROOK7
430 W BROOK4
225 WARE JCT
1460 WINT HI7
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1448 MICH. C9
542045 HIGH_TAP
549045 HANDHILLS3
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
53 SANDYPT7
267 DOME EM7
262 DOME EM4
260 JENNER 4
547028 BLUEBRI5
677 CYPRES2
674 CYPRES1
287 DOME EB9
268 DOME EA9
266 EMPRESA7
1452 CVD_TAP
1453 KSP_TAP
EMP LIQ7
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737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
1012 NEWELL2
1618 NEWELL1
1615 HTHFIELD
918 CASS01
547023 944AL_TAP
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
288 DOME EC9
289 DOME EM9
451 MATLB1
927L
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1408 HANNA 8 -7.807 3.597 6L09 7.952 -3.797 1.0478 72.297
1478 RICHDAL8 -8.231 3.743 6L09 4.345 -7.130 1.0563 72.884
1479 AEC TAP -7.562 5.913 1.0722 73.981
1476 YOUNGST8 -0.000 6.521 -4.694 -4.331 7.095 1.0725 74.033
1475 OYEN 8 -8.089 6.427 1.0817 74.635
19474 OYEN 9 12.342 3.093H 3.031 0.469 0.493 0.076 1.0924 26.059
1474 OYEN 7 -0.676 -8.074 6.548 7L132 -6.545 -4.439 3.688 1.0470 144.485
1421 COYTLK1 -23.964 101.411
19447 COYTLK4 1.0390 25.974
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99438 LANFIN7 1.0008 25.016
996 BBIRD_HV 1.0452 144.239
1459 EXCEL7 1.0446 144.159
1395 -32.621 32.621 1.657 7L760 -1.662 26.725 5.040 1.0447 144.175
549051 1.0448 144.177
1471 MONITOR7 -95.016 -10.393 7L127 95.088 10.550 1.0764 148.539
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99419 PEMUKN4 -119.901 17.621 1.0337 25.842
19419 PEMUKN3 24.813 3.816 SW -31.986 7L79 1.0775 148.697 -24.509 -6.765 1.0589 146.128
1413 N_BRIGDEN -112.266 44.578 9L46 112.597 -53.091 -250.446 -38.700 250.452 38.703 -5.878 362.712 -360.197 20.688 9L46 1.0799 259.186
1438 LANFIN1 0.004 6.369 -11.697 0.152 -16.823 SW 60.908 -0.150 15.000 Q1.0720 257.279
831 SEDALIA 0.800 259.200
549046 RESOYEN -0.002
547039 ROSLYN_TAP -6.437 -2.221 1.0742 257.818 6.441 -18.735 1.0714 257.147
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1.0742 257.818
1.0714 257.147
1.0732 257.573
1.0799 259.186
1.0800 259.200
1.0752 258.052
1.0700 256.800
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1.0703 256.881
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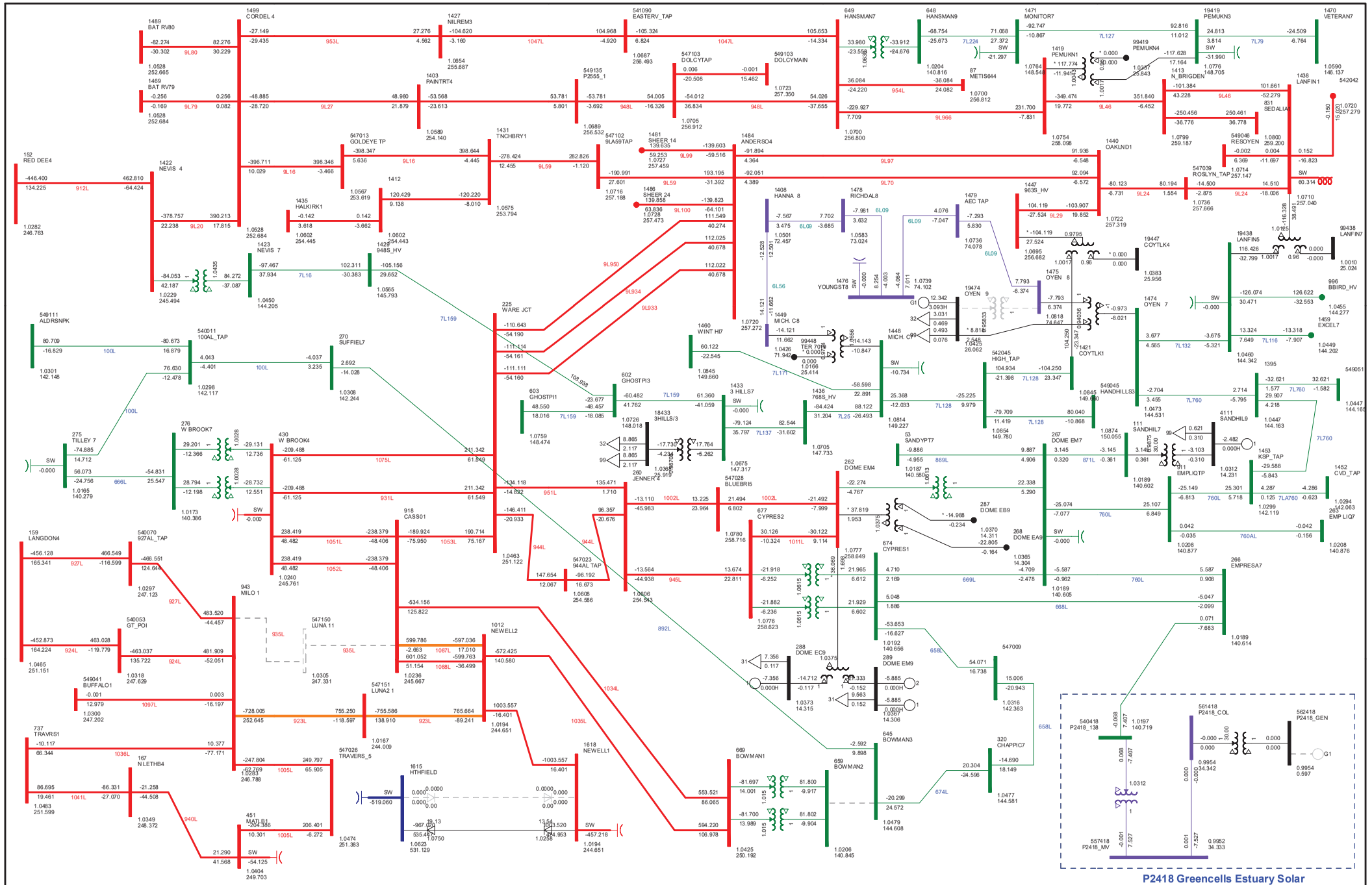
P2418 Greencells Estuary Solar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649 HANSMAN7
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19419 PEMUKN3
1470 VETERAN7
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1423 NEVIS 7
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1431 TNCHBRY1
547013 GOLDEYE TP
547102 9LA59TAP
1481 SHEER_14
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
1475 OYEN 8
1474 OYEN 7
19474 OYEN 9
1476 YOUNGST8
1449 MICH. C8
1448 MICH. C9
19447 COYTLK4
1421 COYTLK1
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
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540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
225 WARE JCT
1460 WINT HI7
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 7685_HV
542045 HIGH_TAP
549045 HANDHILLS3
53 SANDYPT7
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
262 DOME EM4
267 DOME EM7
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
260 JENNER 4
1452 CVD_TAP
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266 EMPRESA7
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943 MILO 1
540053 GT_POI
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167 N LETHB4
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547151 LUNA2 1
547026 TRAVERS_5
451 MATLB1
1615 HTHFIELD
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1012 NEWELL2
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
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P2418 Greencells Estuary Solar

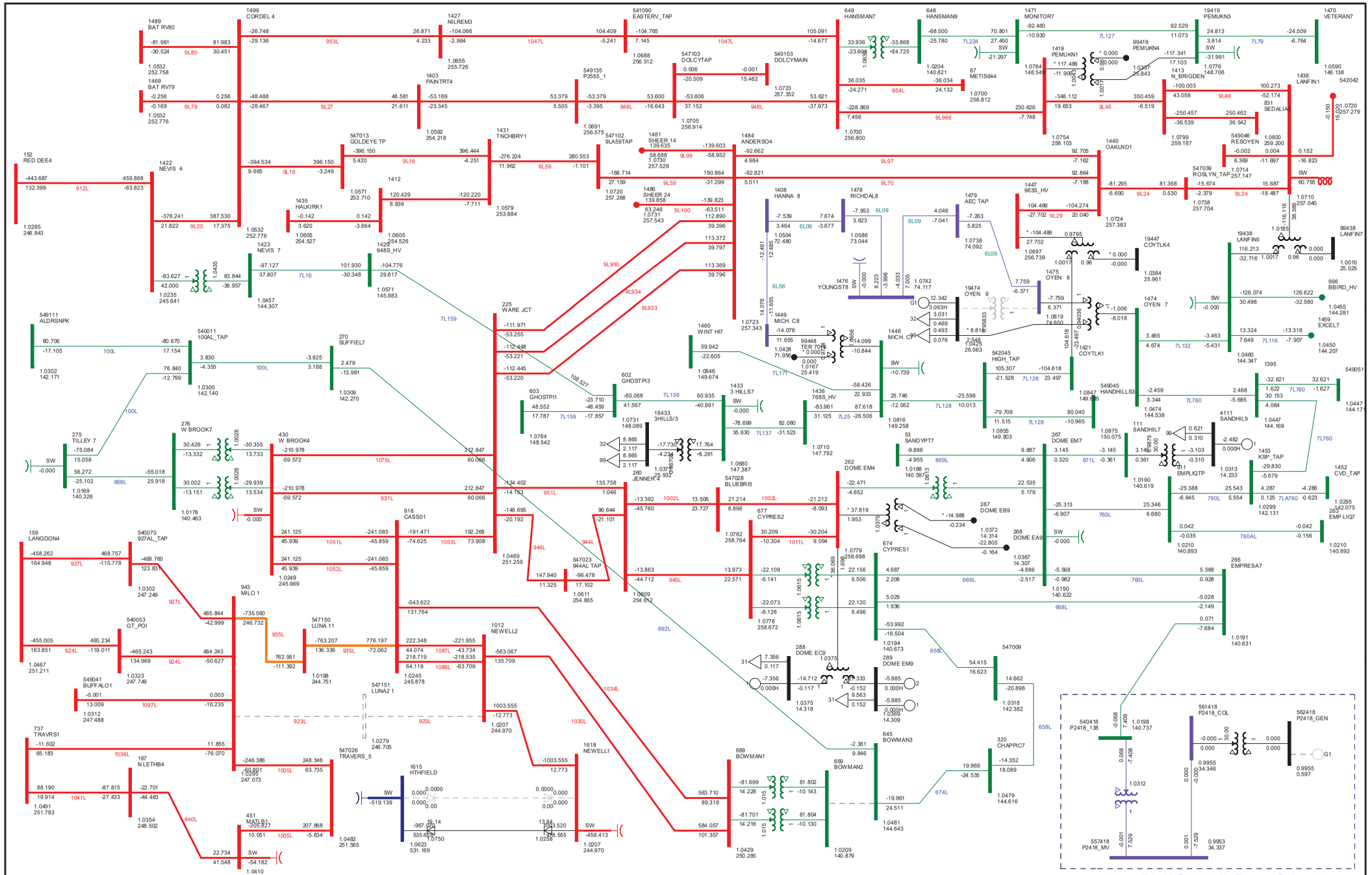

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FIGURE A2-1-16 N-1: 923L (MILO 356S TO NEWELL 2075S)
2028 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

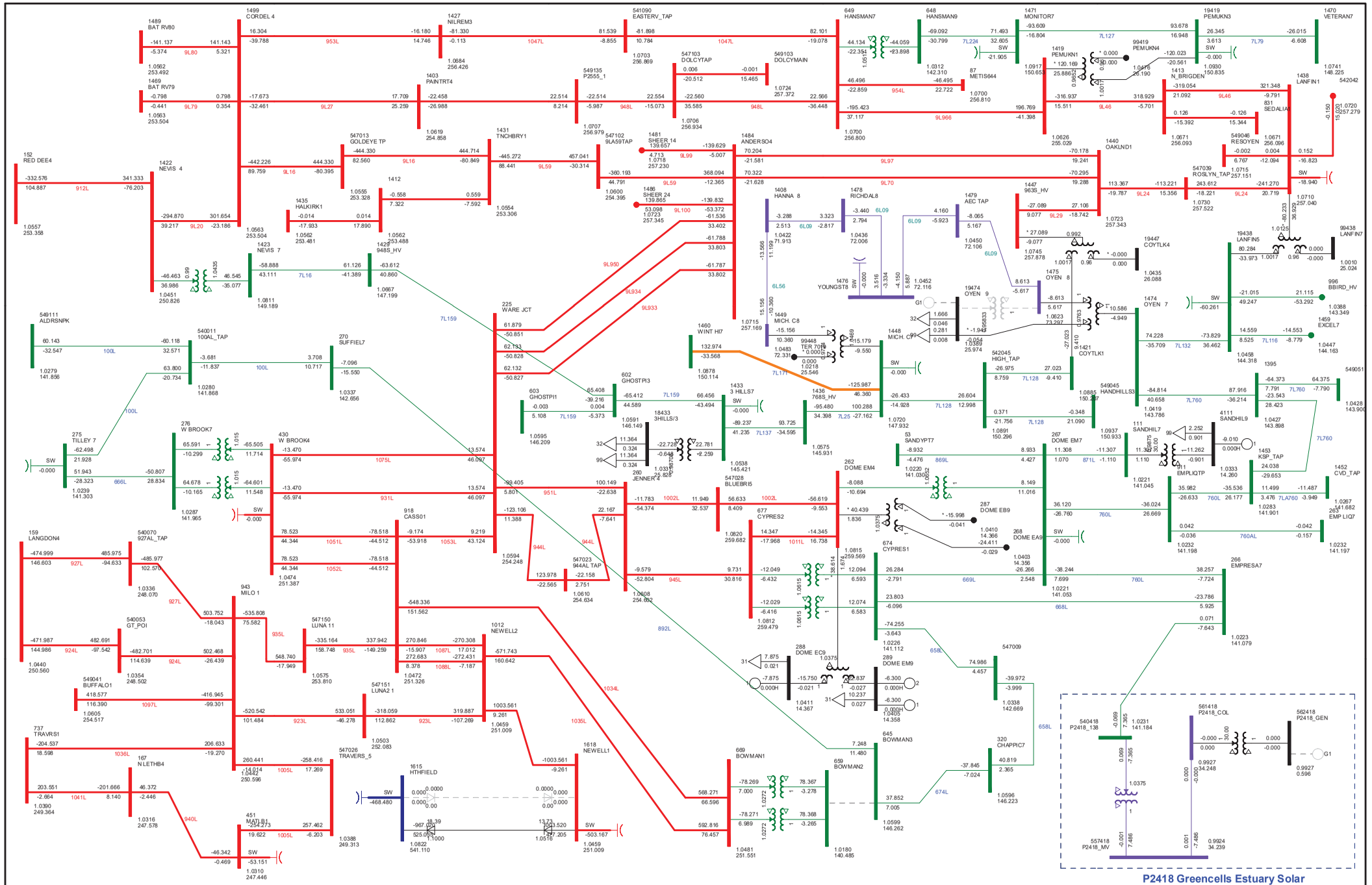

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FIGURE A2-2-0-N-0: NORMAL OPERATION
2028 SUMMER LIGHT (PRE-CONNECTION) - PRE-CURTAILMENT
PRINTED ON WEDNESDAY 27. MARCH 2024

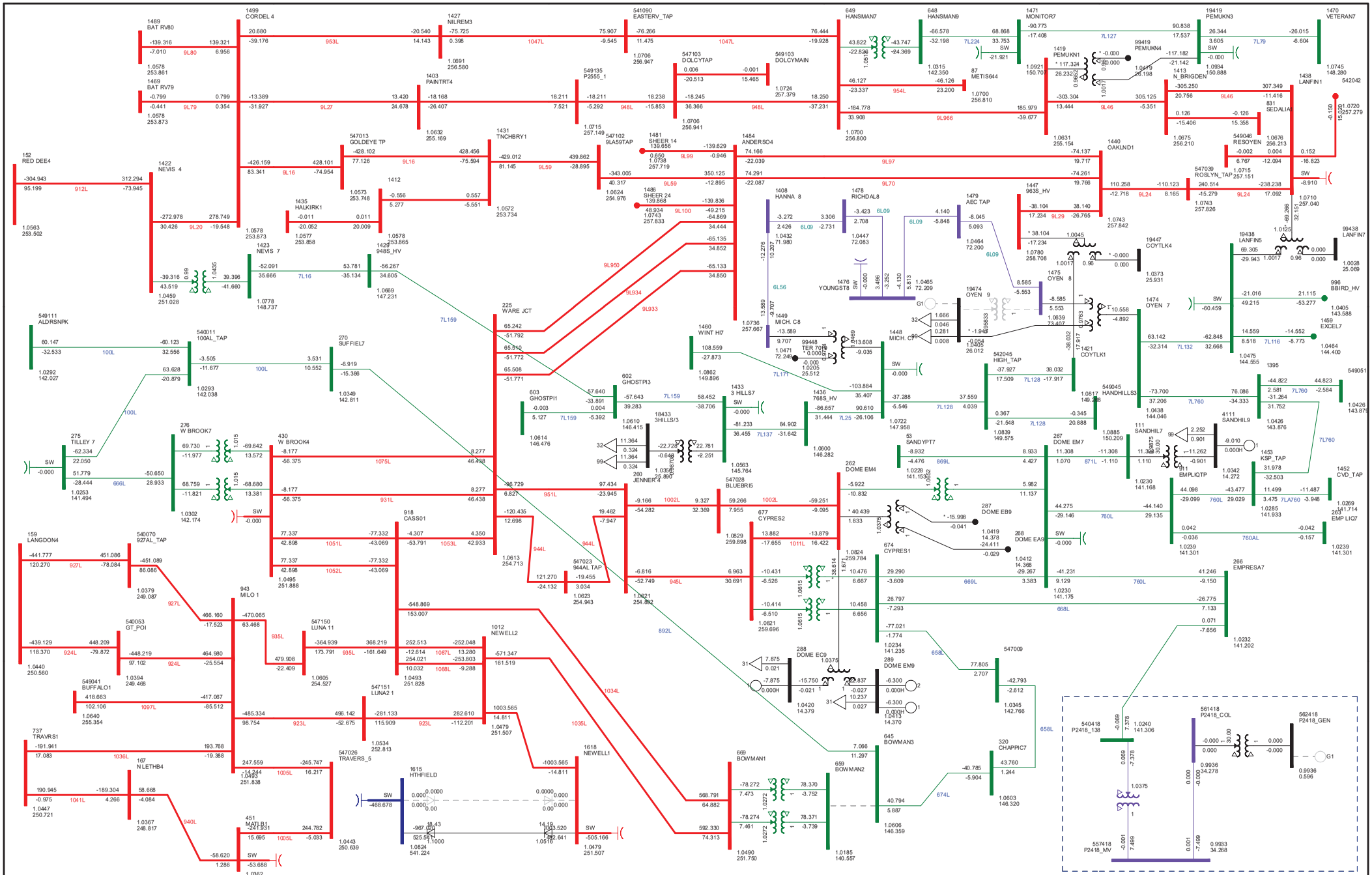

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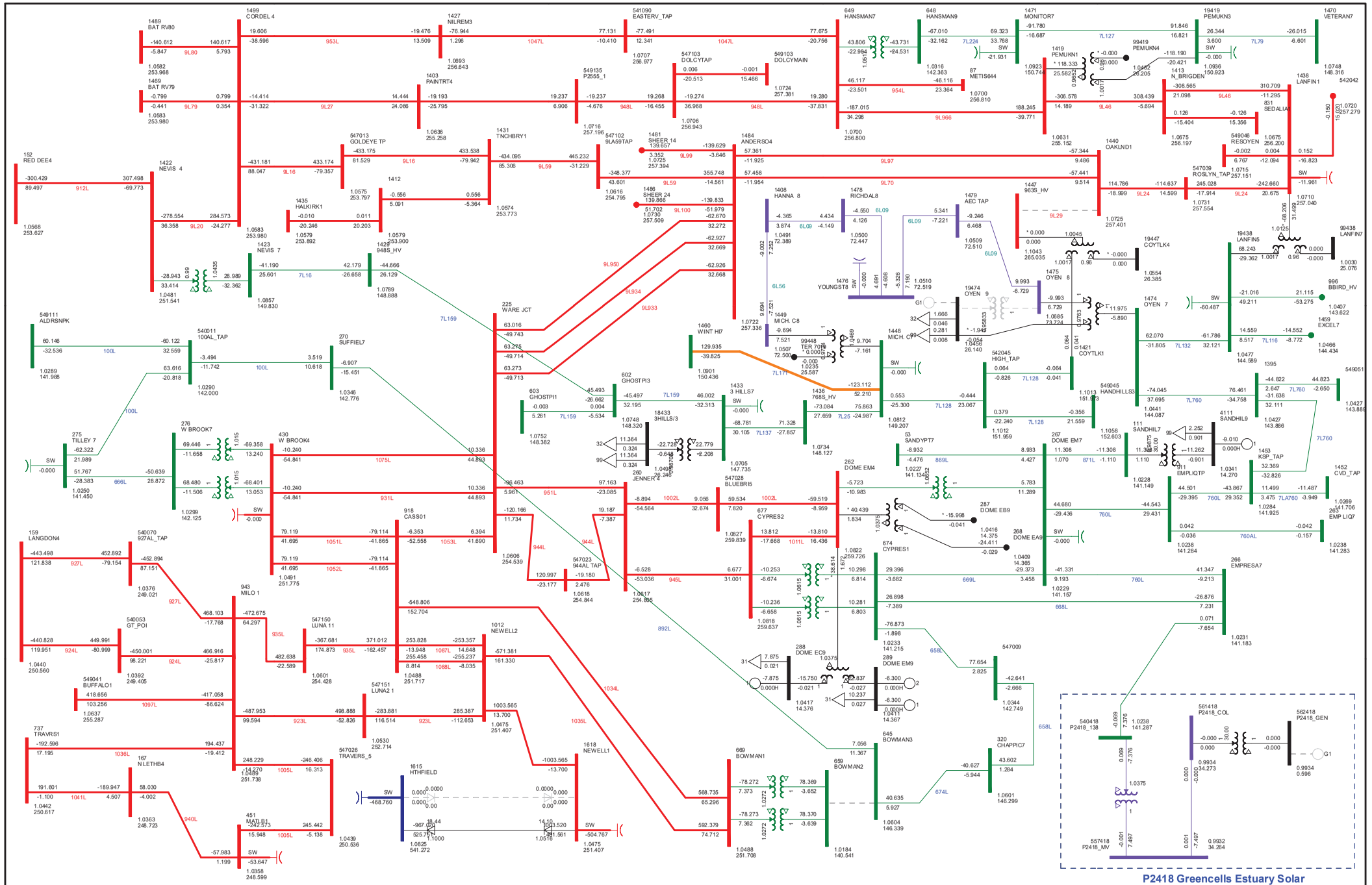
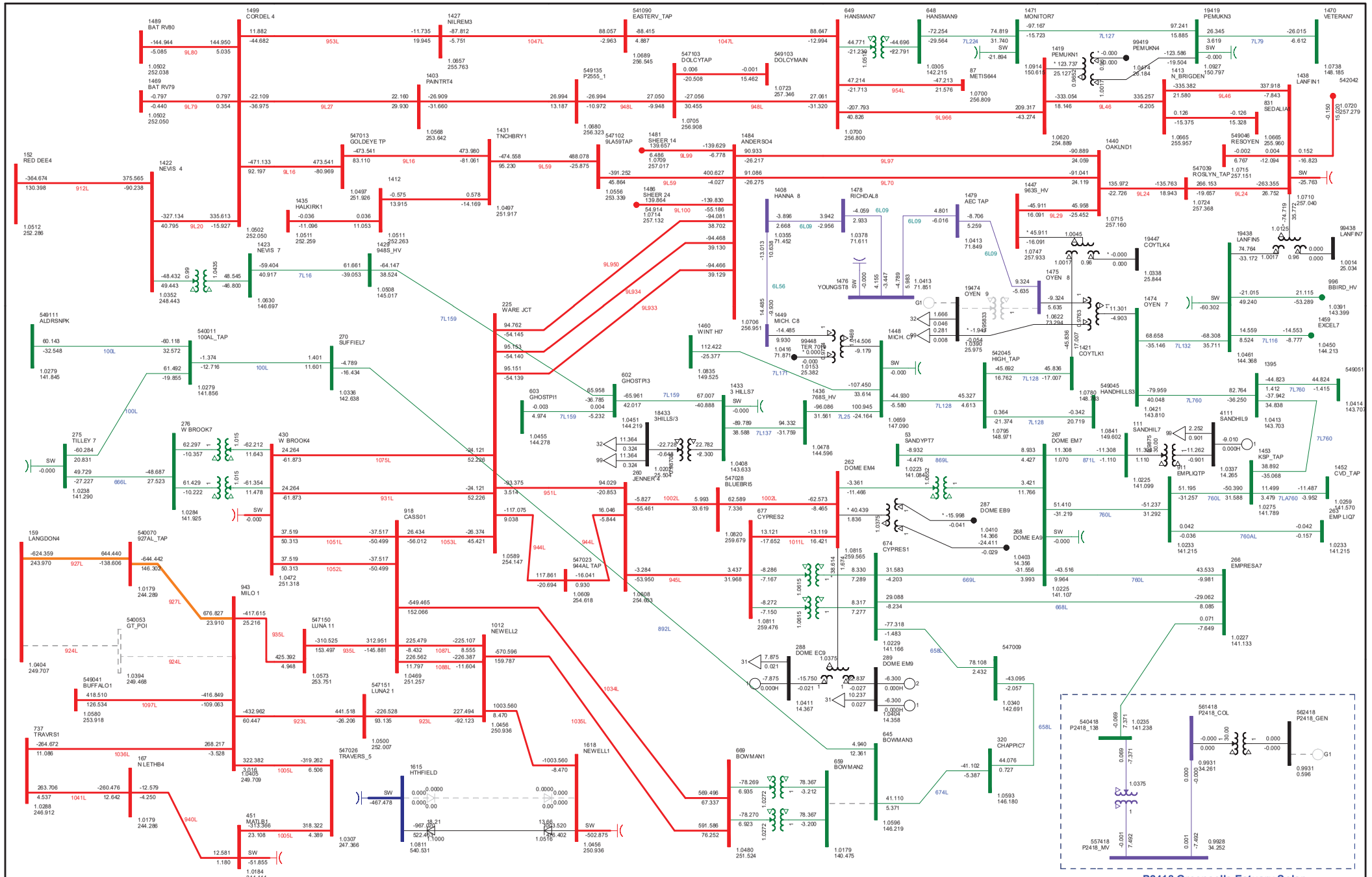
FIGURE A2-2-1-N-0: NORMAL OPERATION
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A2-2-2 N-1: 9L29 (OAKLAND 946S TO COYOTE LAKE 963S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A2-2-3 N-1: 924L (MILO 356S TO LANGDON 102S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

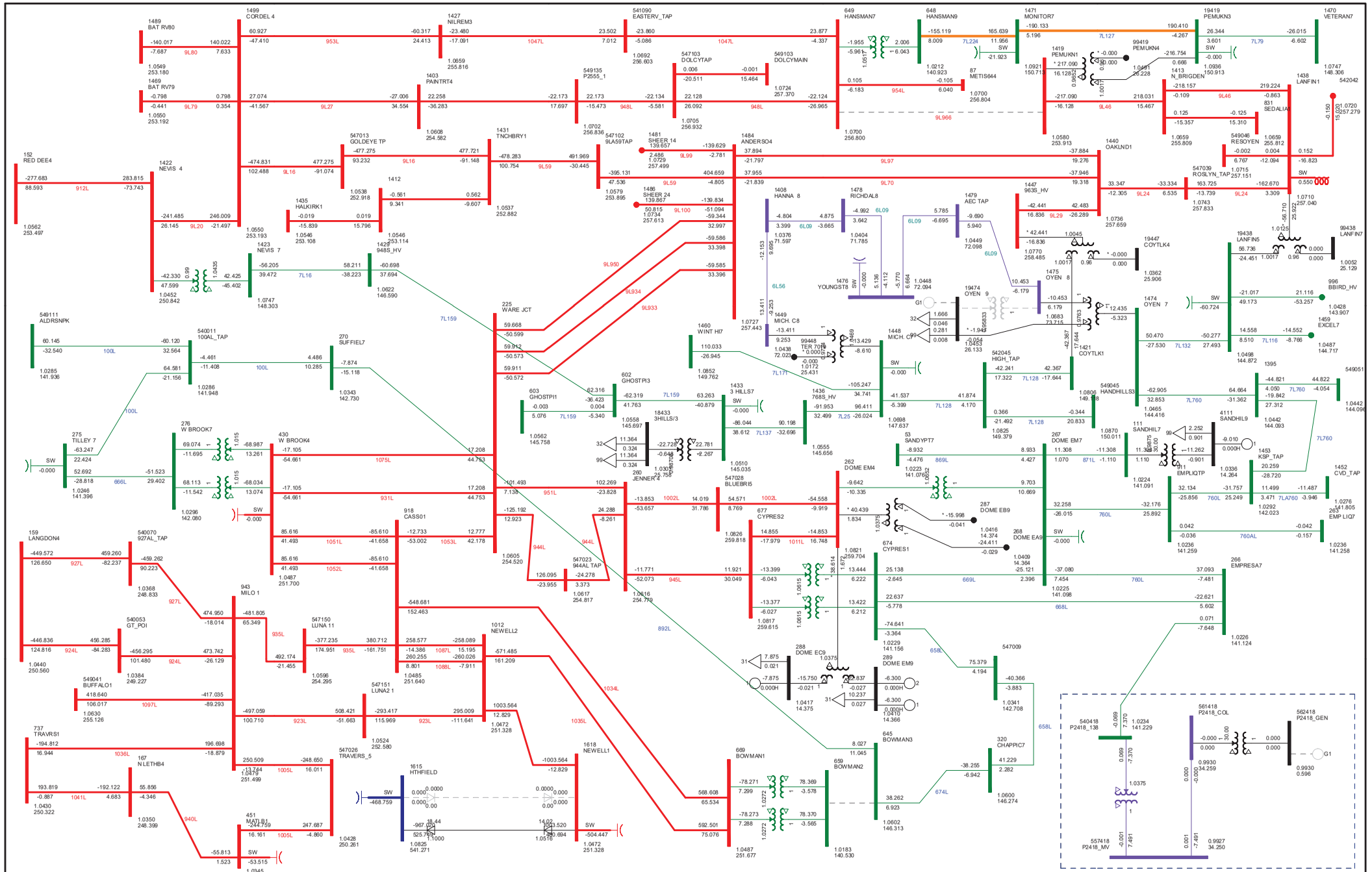


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FIGURE A2-2-4 N-1: 9L966 (PEMUKAN 932S TO HANSMAN LAKE 650S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

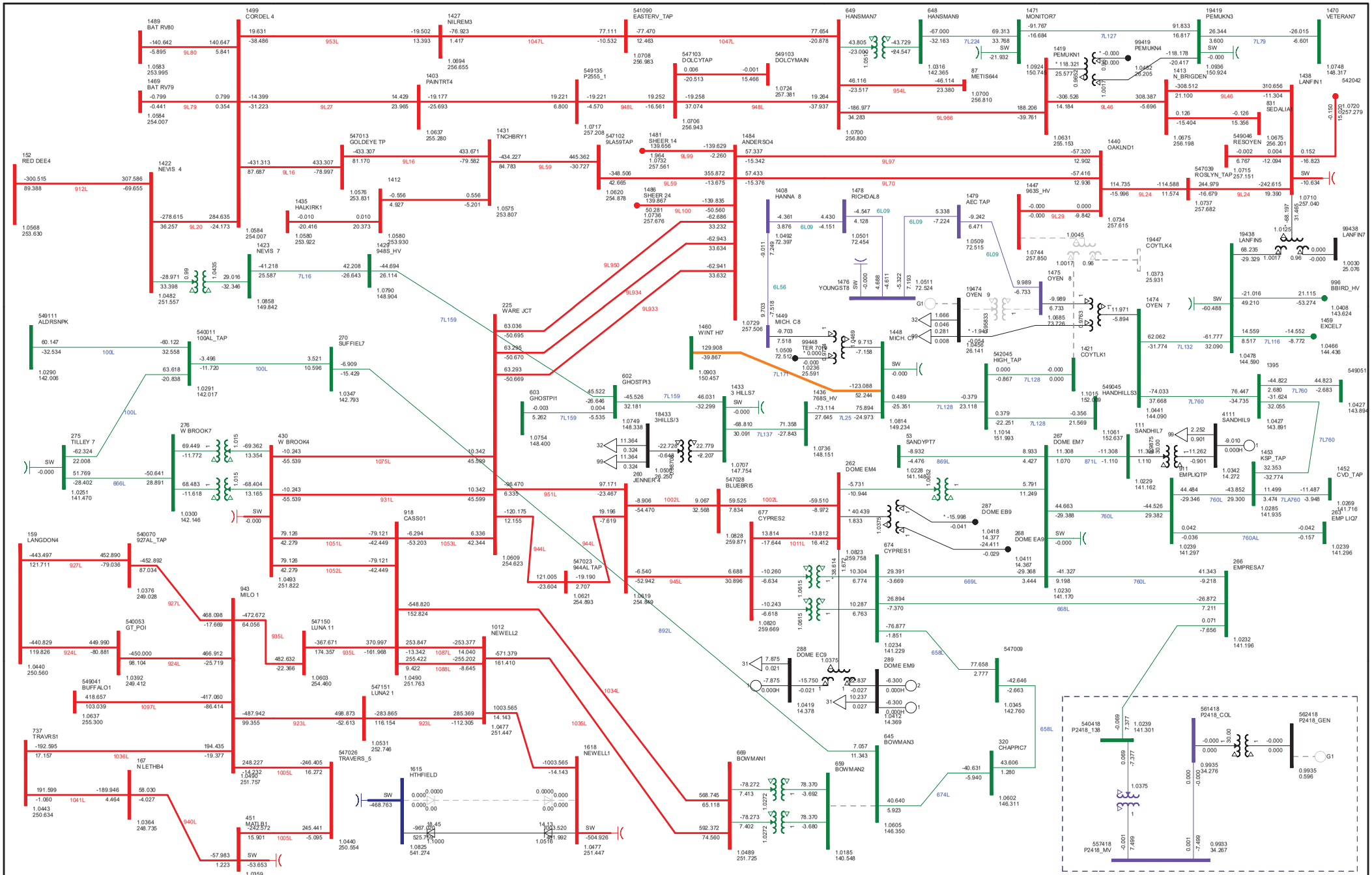

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FIGURE A2-2-5 N-1: 963S T1 (COYOTE LAKE 963S TRANSFORMER T1)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

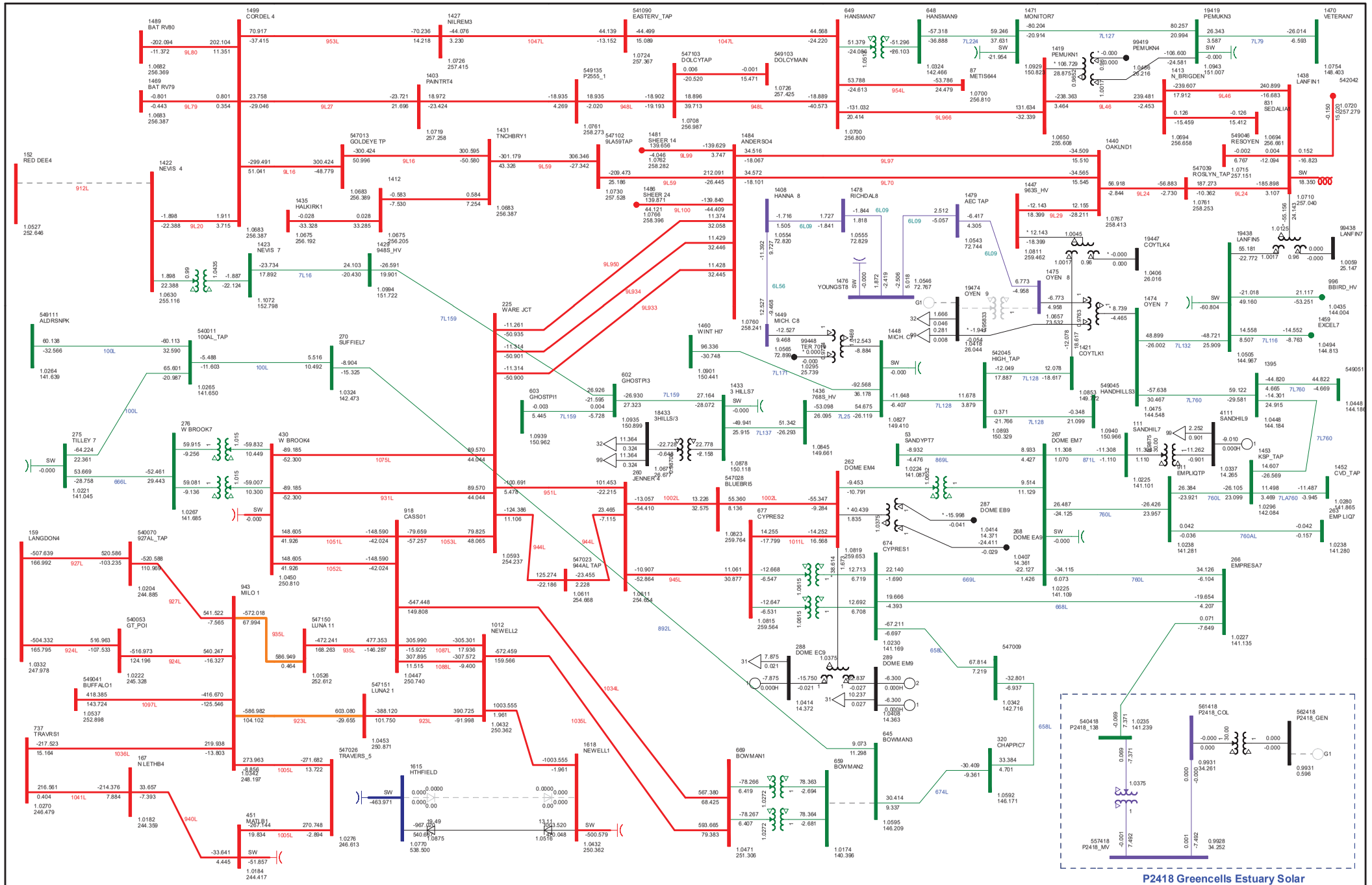

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FIGURE A2-2-6 N-1: 912L (NEVIS 766S TO RED DEER 63S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

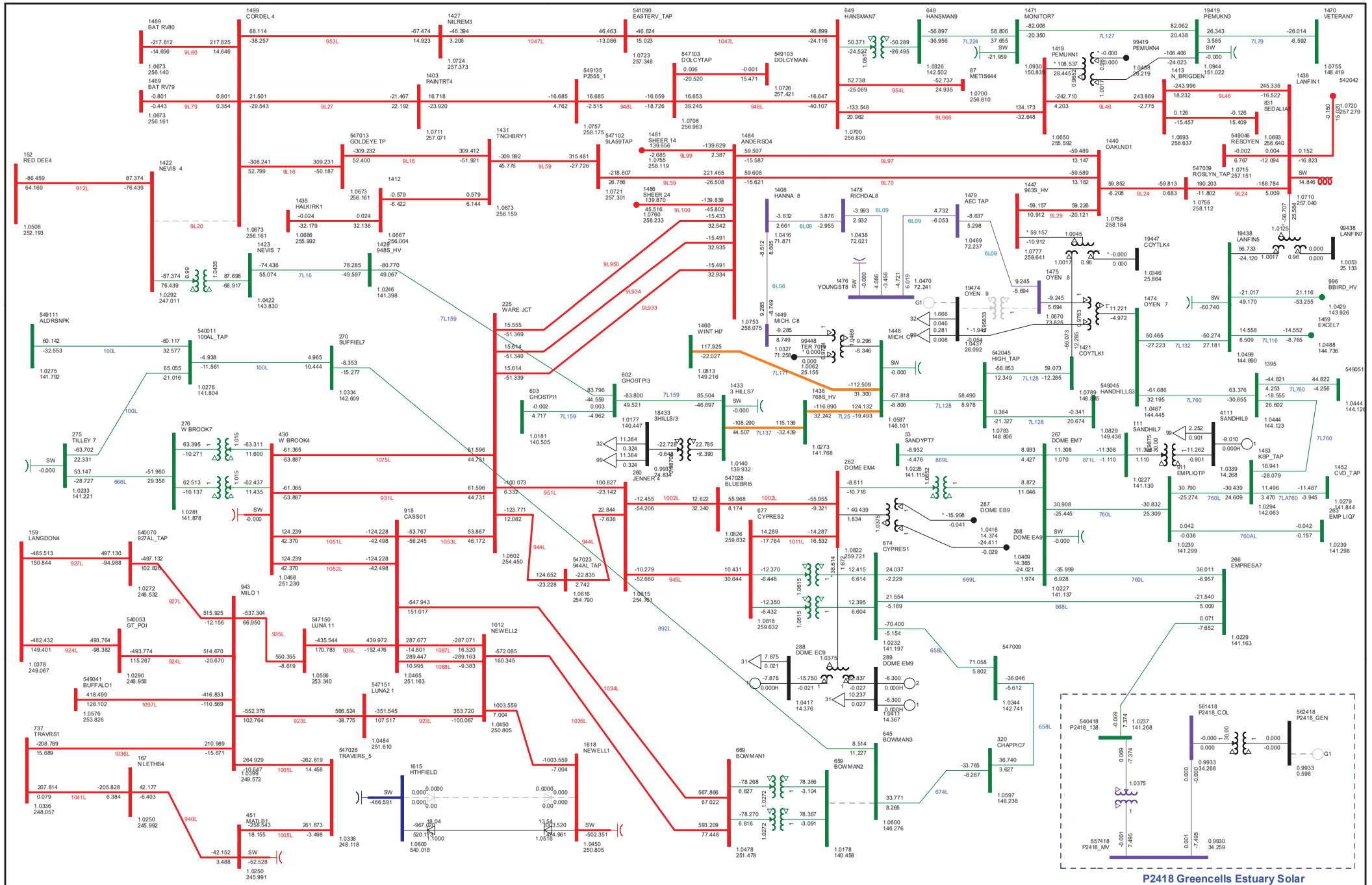

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FIGURE A2-2-7 N-1: 9L20 (NEVIS 766S TO CORDEL 755S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

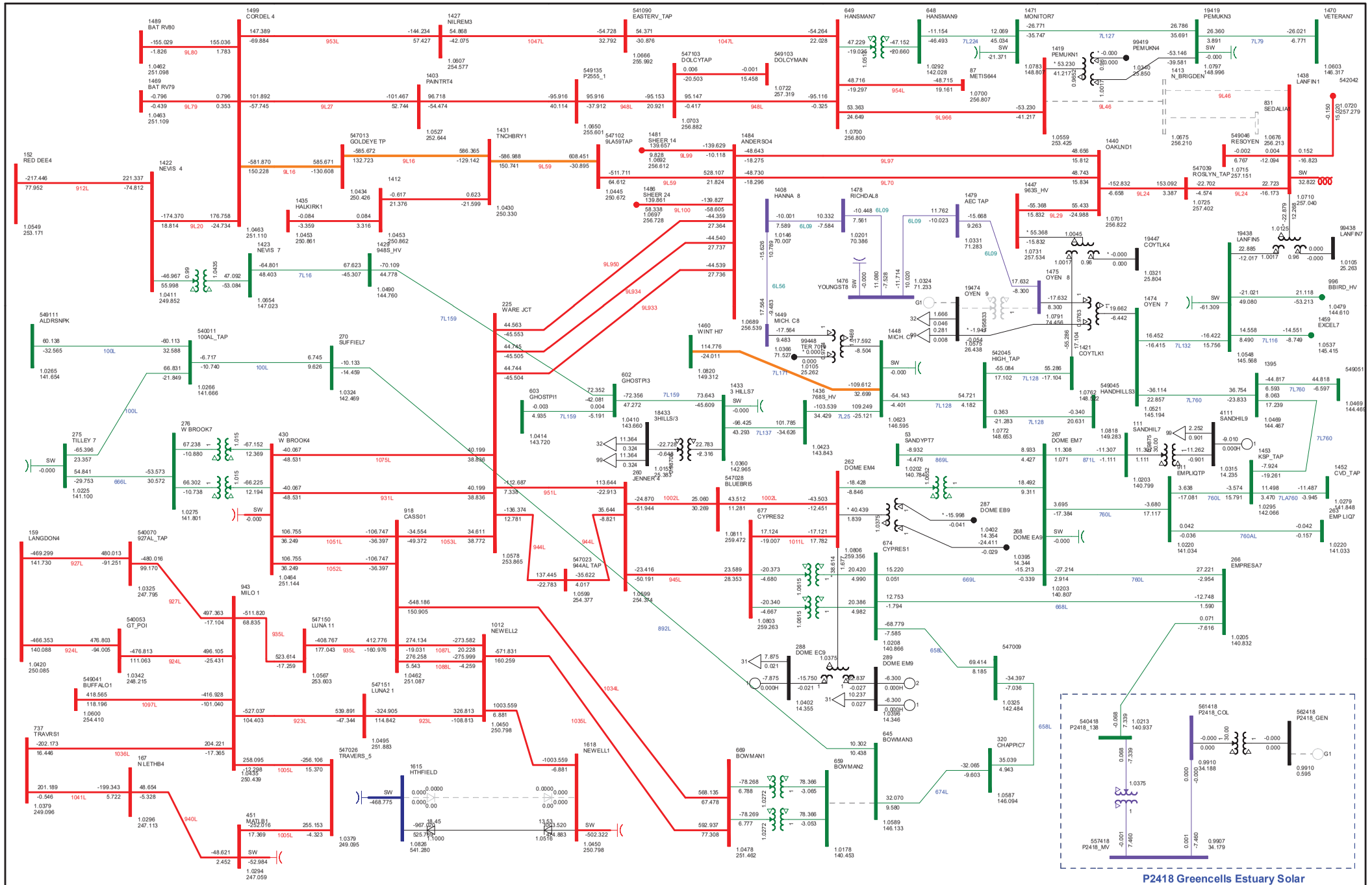

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FIGURE A2-2-8 N-1: 9L46 (LANFINE 959S TO PEMUKAN 932S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTA Rev A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

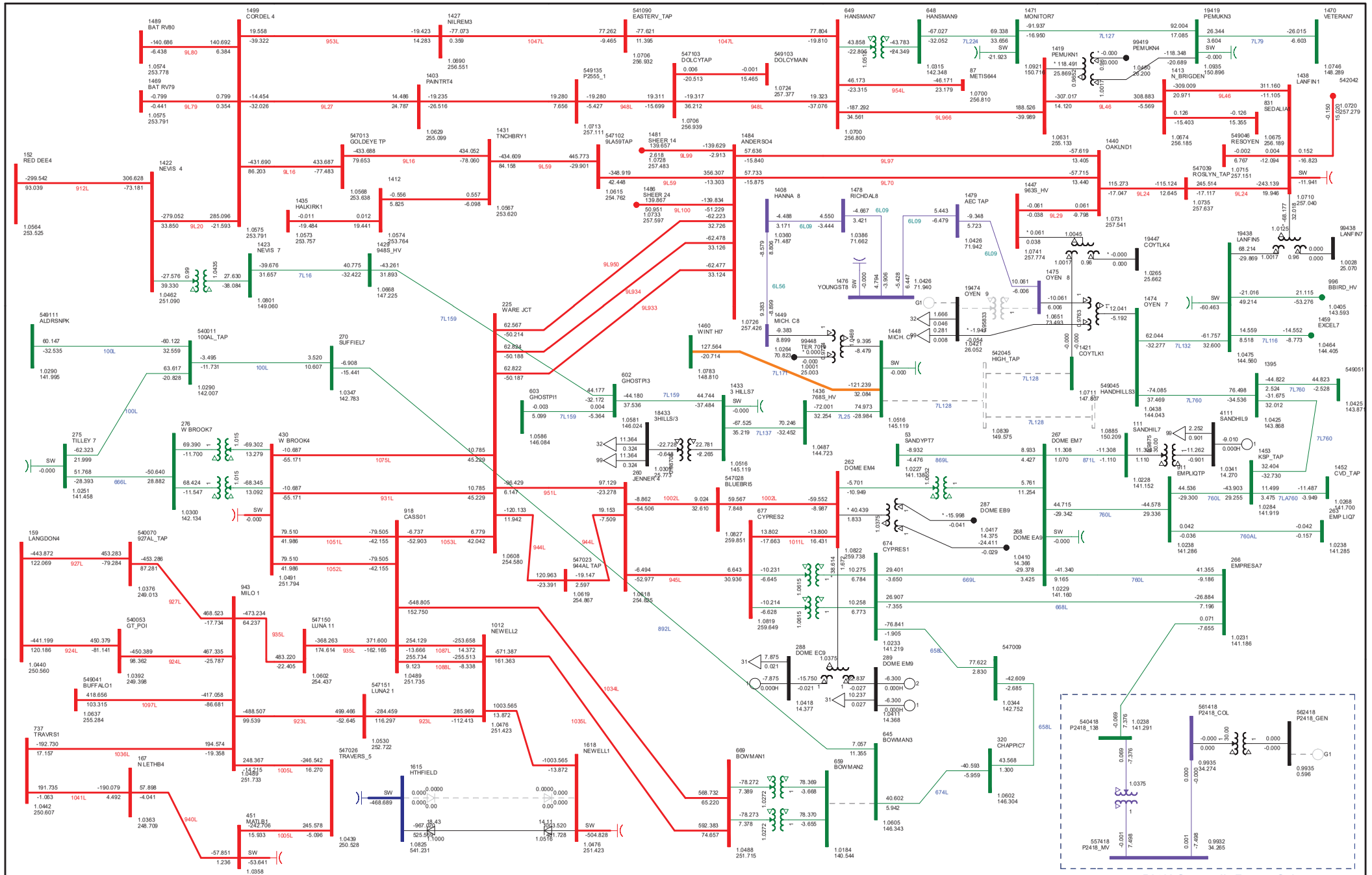

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FIGURE A2-2-9 N-1: 7L128 (MICHICHI CREEK 802S TO COYOTE LAKE 963S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

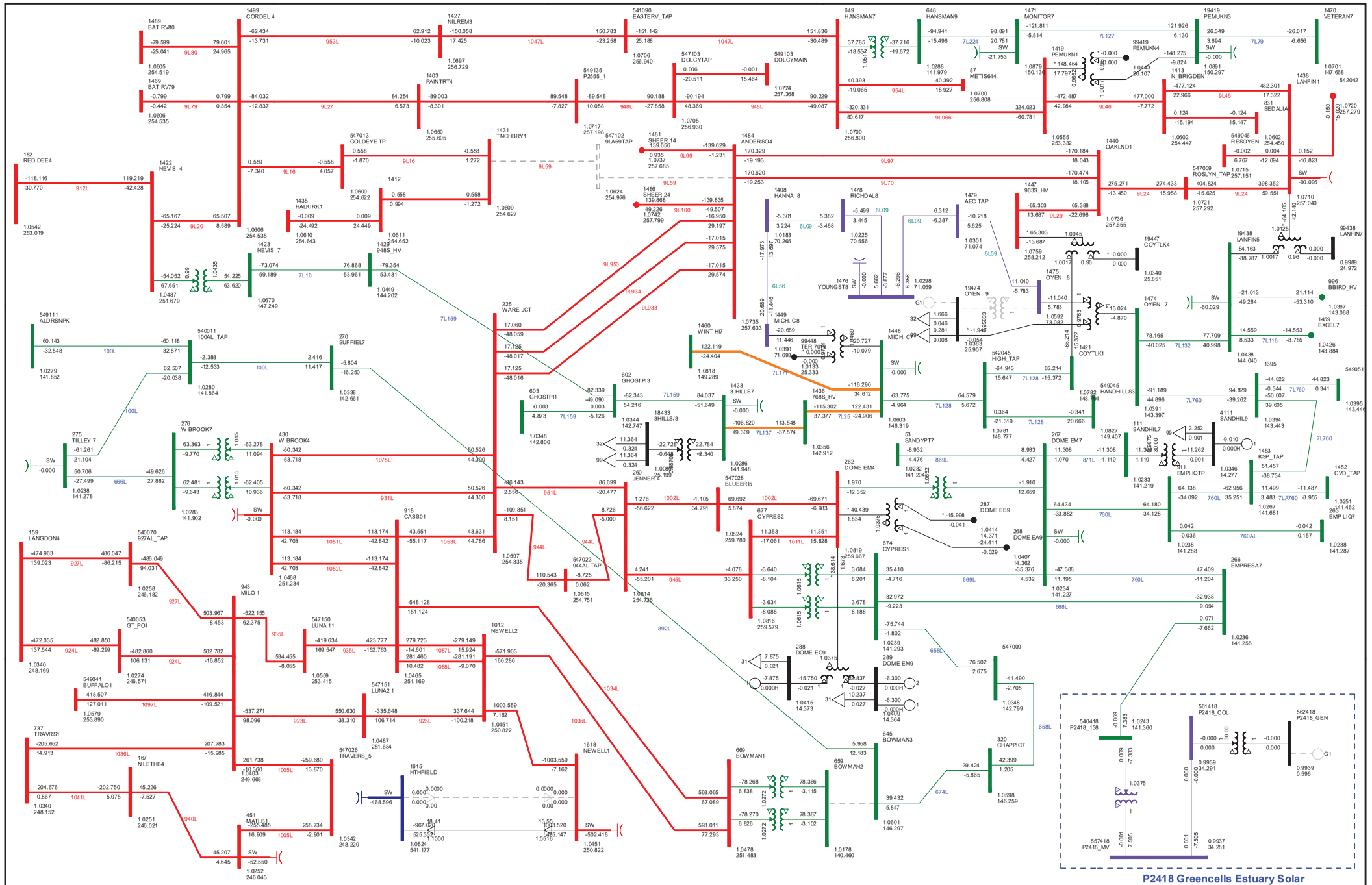

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FIGURE A2-2-10 N-1: 9L59 (ANDERSON 801S TO TINCHEBRAY 972S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

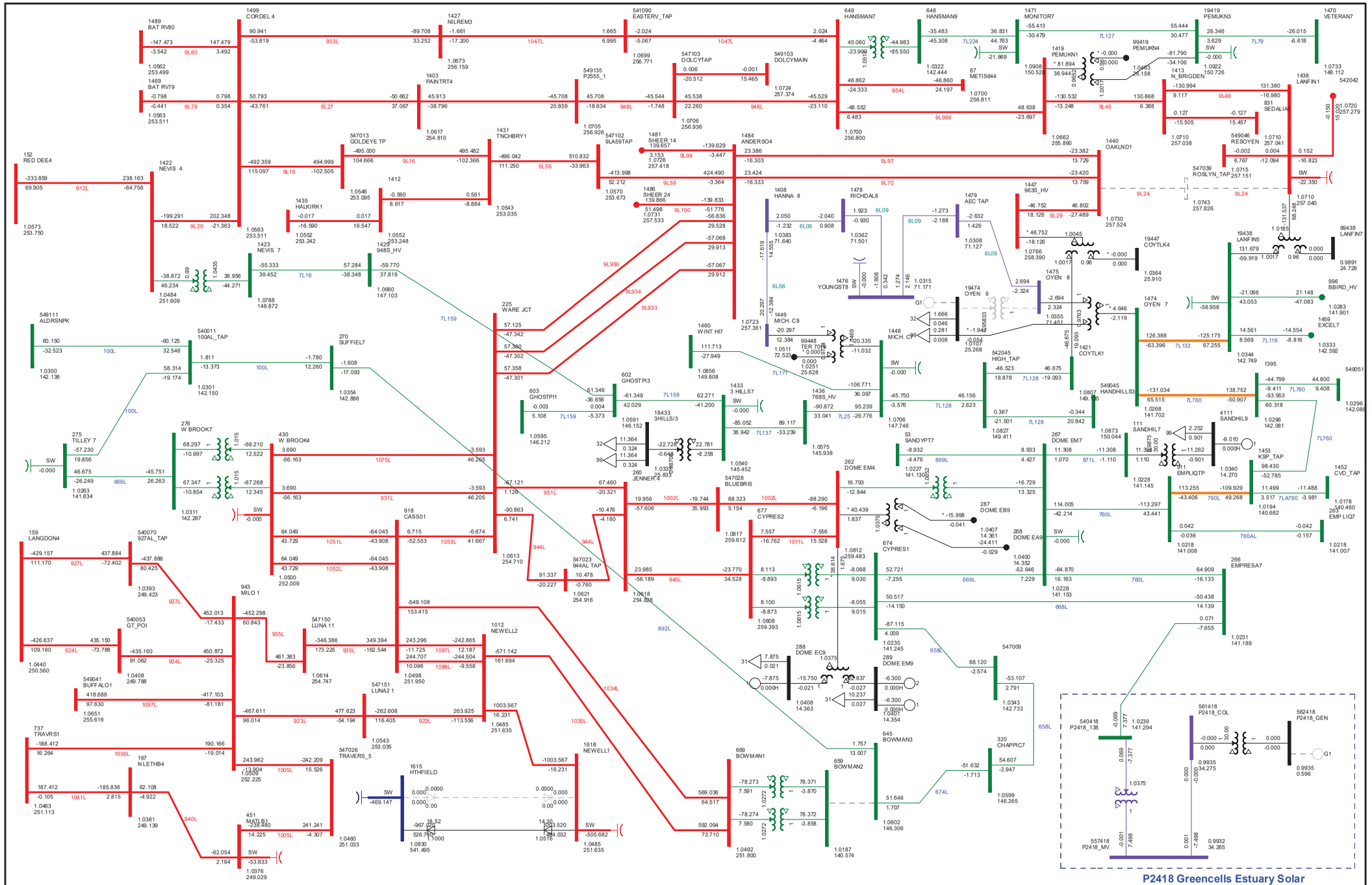

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FIGURE A2-2-11 N-1: 9L24 (OAKLAND 946S – LANFINE 959S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

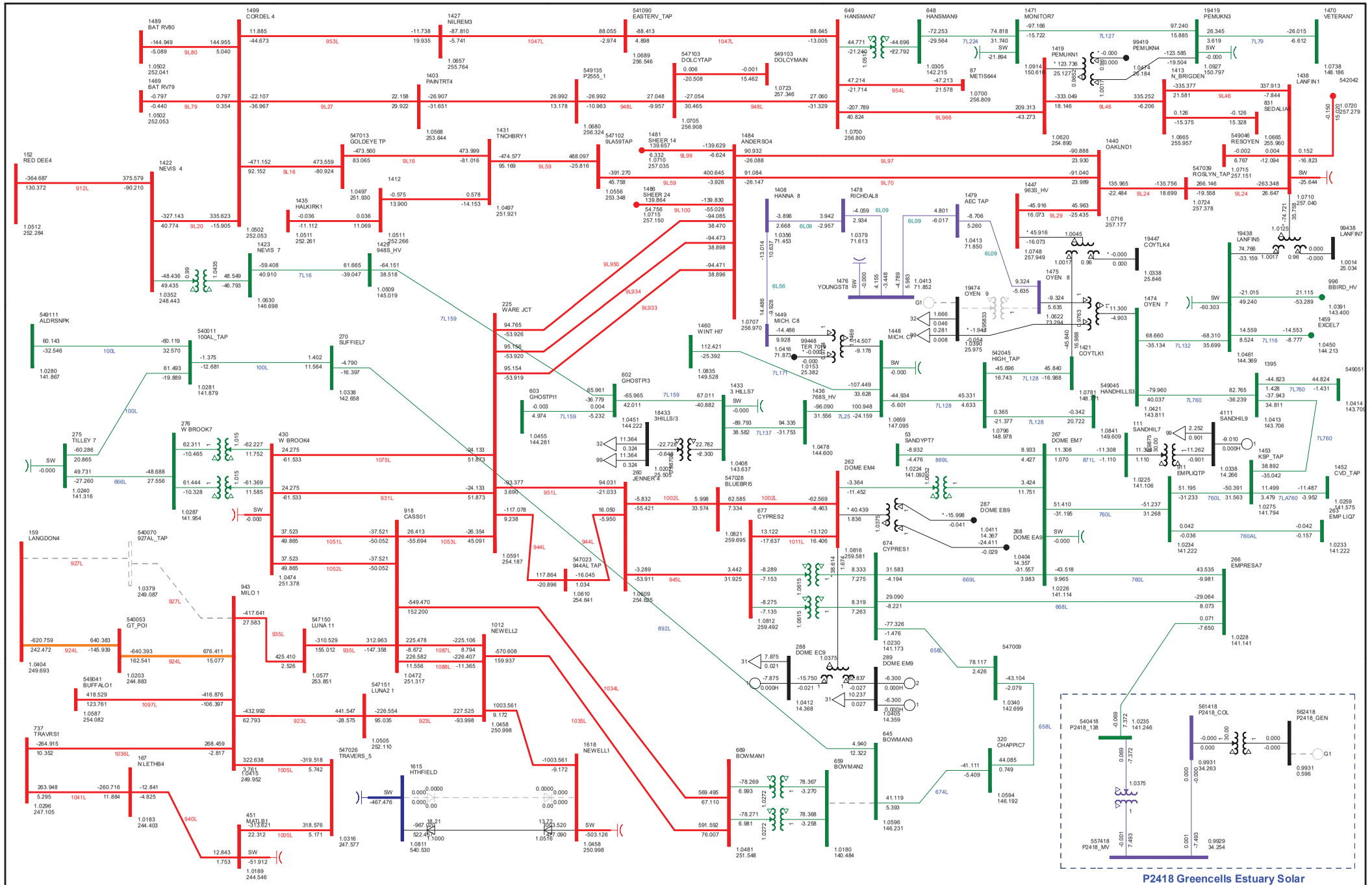

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FIGURE A2-2-12 N-1: 927L (MILO 356S TO LANGDON 102S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

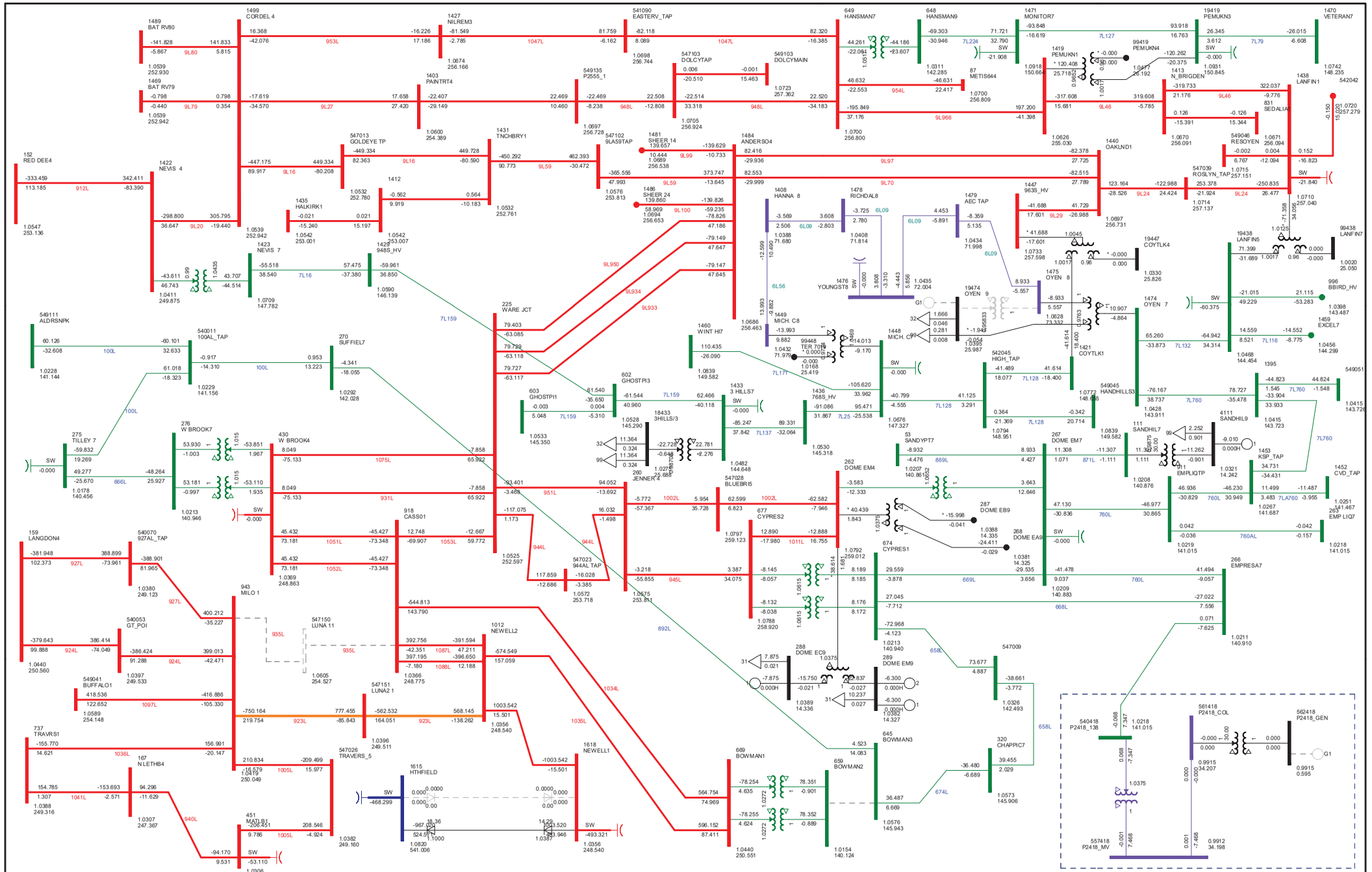

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FIGURE A2-2-13 N-1: 935L (MILO 356S TO CASSILS 324S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

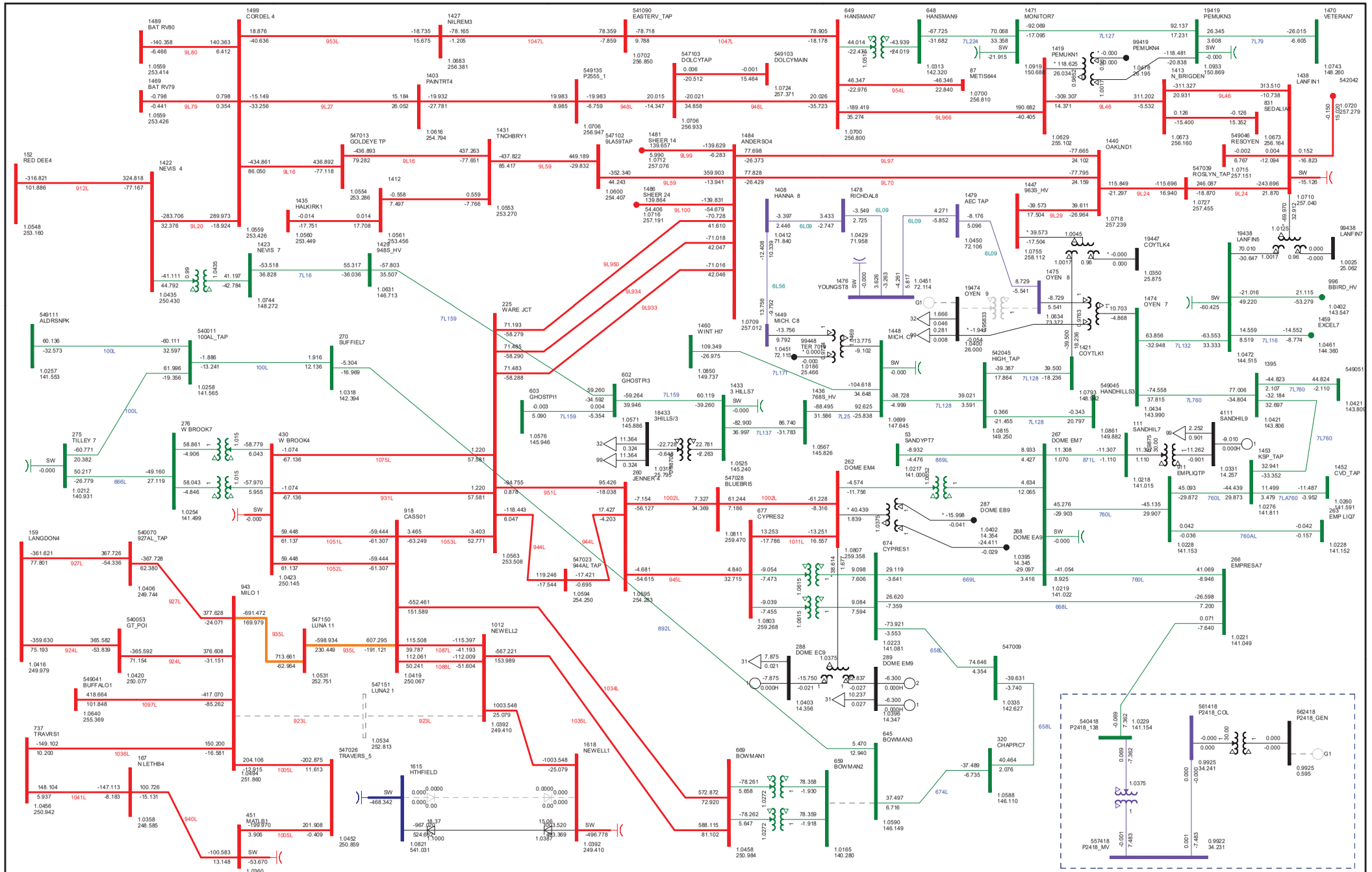

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FIGURE A2-2-14 N-1: 923L (MILO 356S TO NEWELL 2075S)
2028 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

Attachment A3
Post-Project Power Flow Diagrams

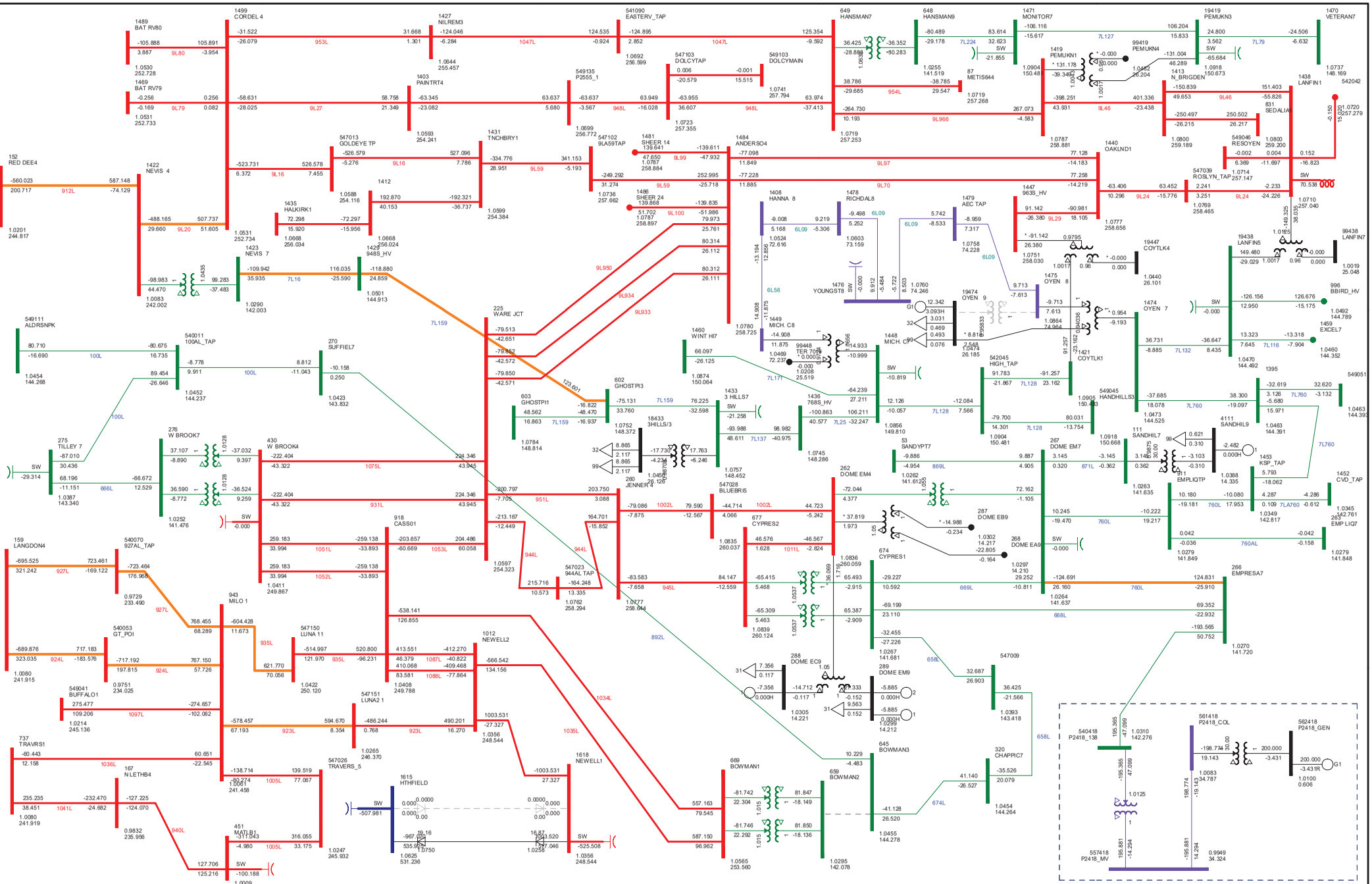

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FIGURE A3-1-0-N-0: NORMAL OPERATION
2028 SUMMER PEAK (POST-CONNECTION) - PRE-CURTAILMENT
PRINTED ON WEDNESDAY 27. MARCH 2024

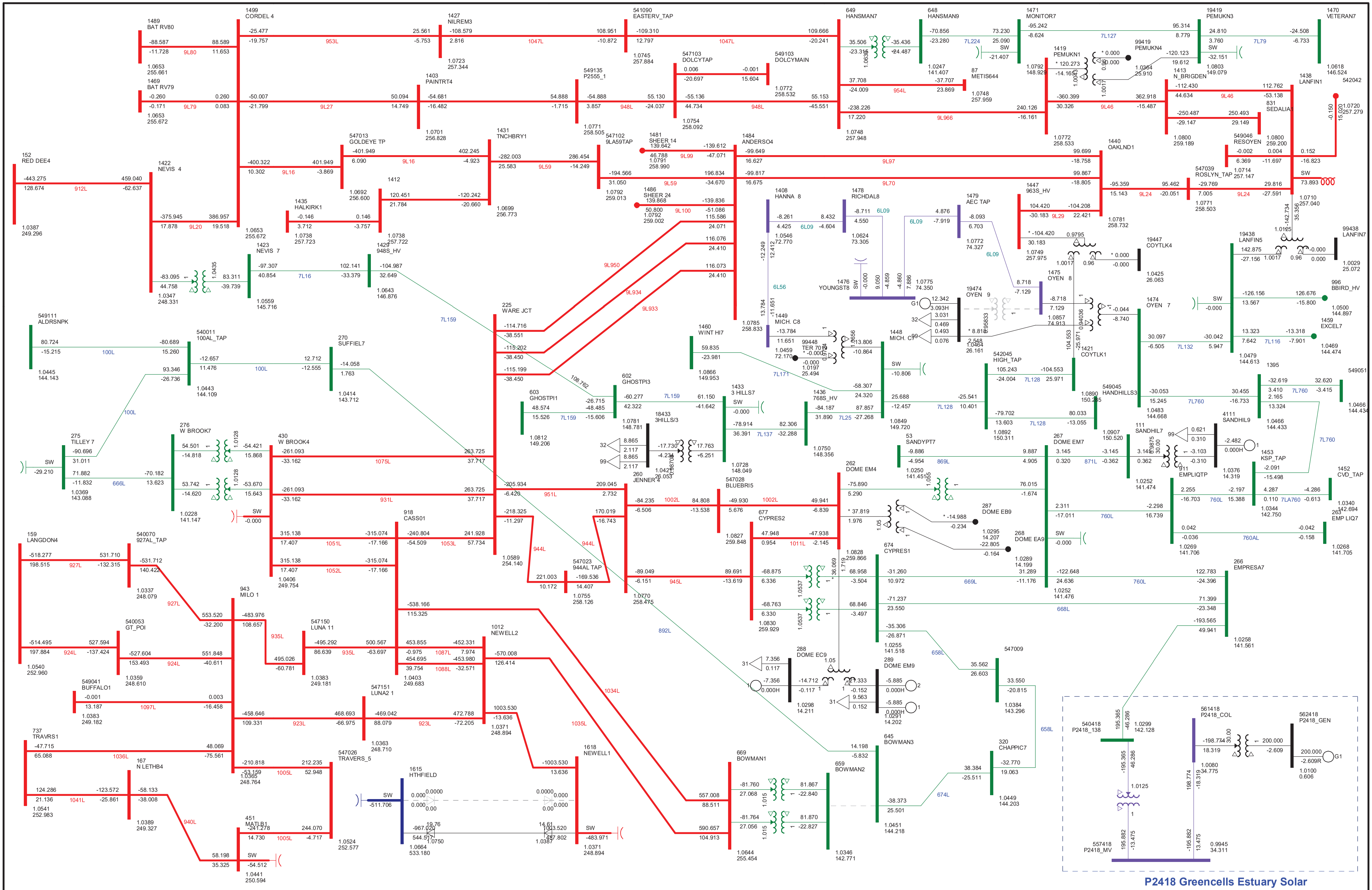

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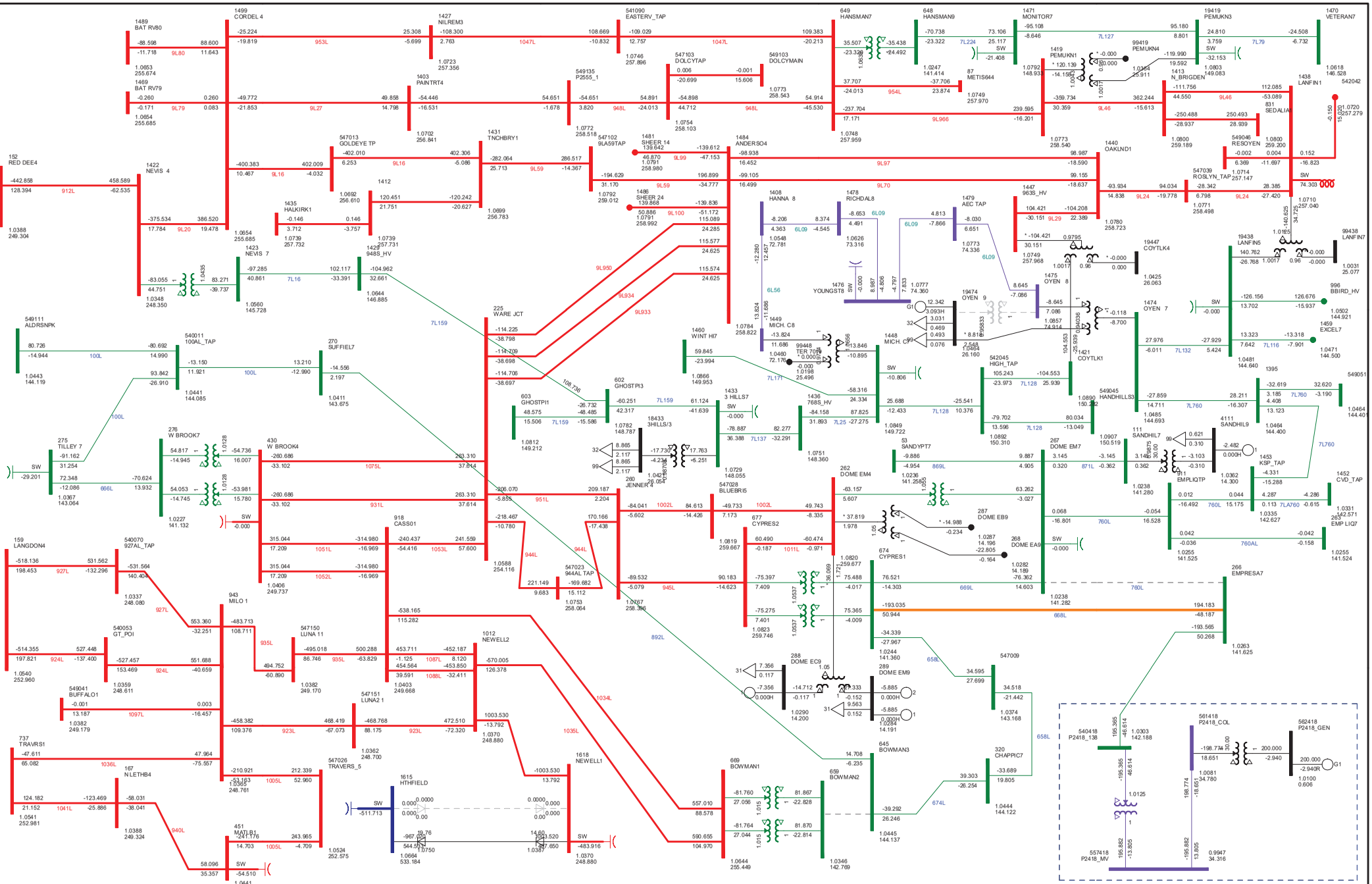
FIGURE A3-1-1-N-0: NORMAL OPERATION
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024


1499 CORDEL 4
1489 BAT RV80
1469 BAT RV79
1427 NILREM3
541090 EASTERV_TAP
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549103 DOLCYMAIN
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1403 PAINTRT4
549135 P2555_1
547013 GOLDEYE TP
1431 TNCHBRY1
1412
1435 HALKIRK1
1423 NEVS 7
1422 NEVS 4
152 RED DEE4
547102 9LA59TAP
1481 SHEER_14
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
19447 COYTLK4
1421 COYTLK1
1476 YOUNGST8
1449 MICH. C8
1448 MICH. C9
99448 TER 701
99449 TER 702
542045 HIGH_TAP
549045 HANDHILLS3
1395
549051
1459 EXCEL7
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1471 963S_HV
1423 948S_HV
225 WARE JCT
1460 WINT HI7
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
53 SANDYPT7
262 DOME EM4
260 JENNER 4
547028 BLUEBRI5
677 CYPRES2
674 CYPRES1
287 DOME EB9
268 DOME EA9
267 DOME EM7
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
1331 EMP LIQ7
266 EMPRESA7
549111 ALDRSNPK
540011 100AL_TAP
275 TILLEY 7
276 W BROOK7
430 W BROOK4
270 SUFFIEL7
540070 927AL_TAP
159 LANGDON4
540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
451 MATLB1
1012 NEWELL2
1618 NEWELL1
1615 HTHFIELD
547023 944AL TAP
918 CASS01
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
547009
288 DOME EC9
289 DOME EM9
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar
P2418 Greencells Estuary Solar
FIGURE A3-1-2 N-1: 760L (AMOCO EMPRESS 163S TO EMPRESS 394S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024
Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

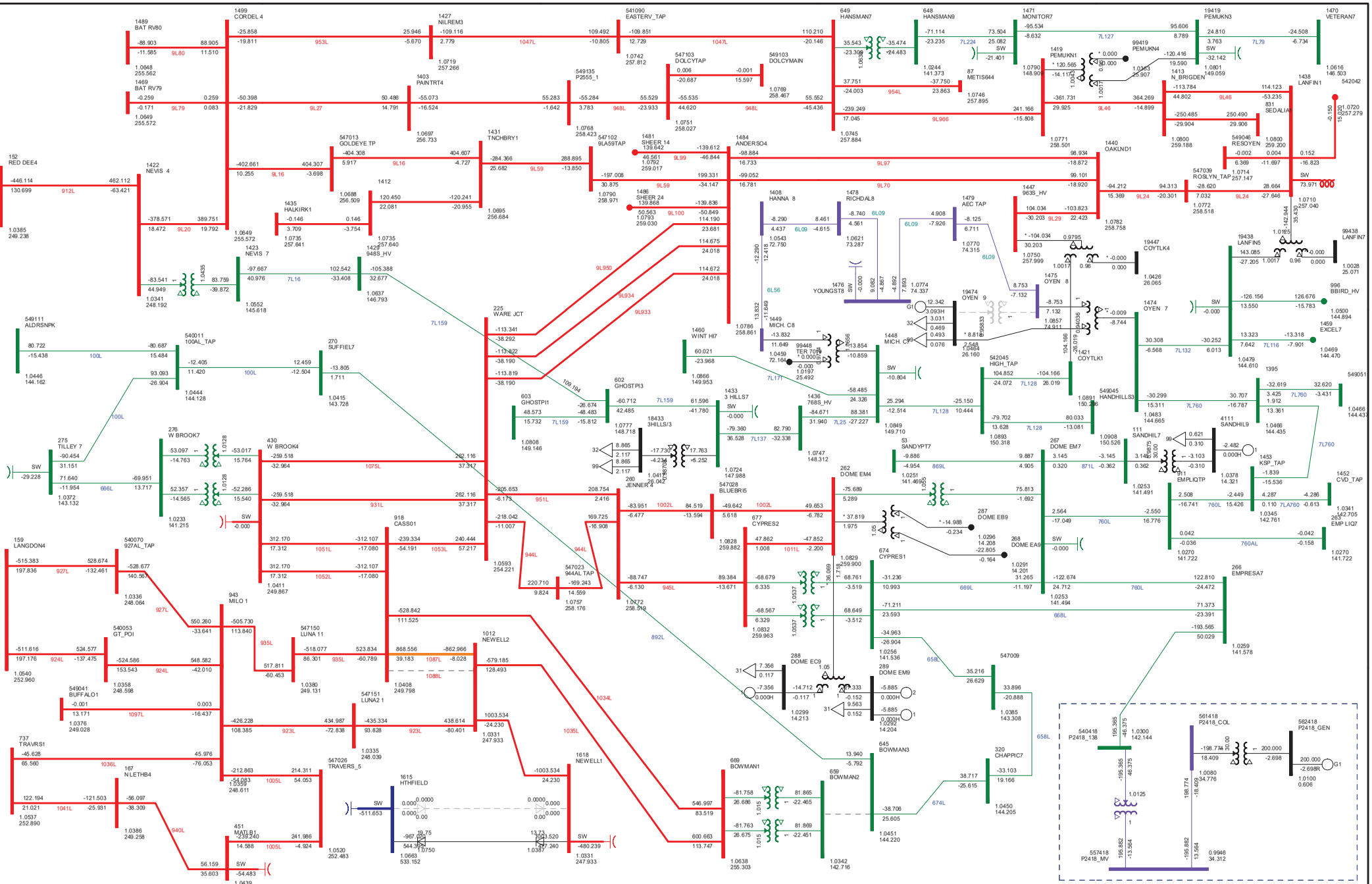

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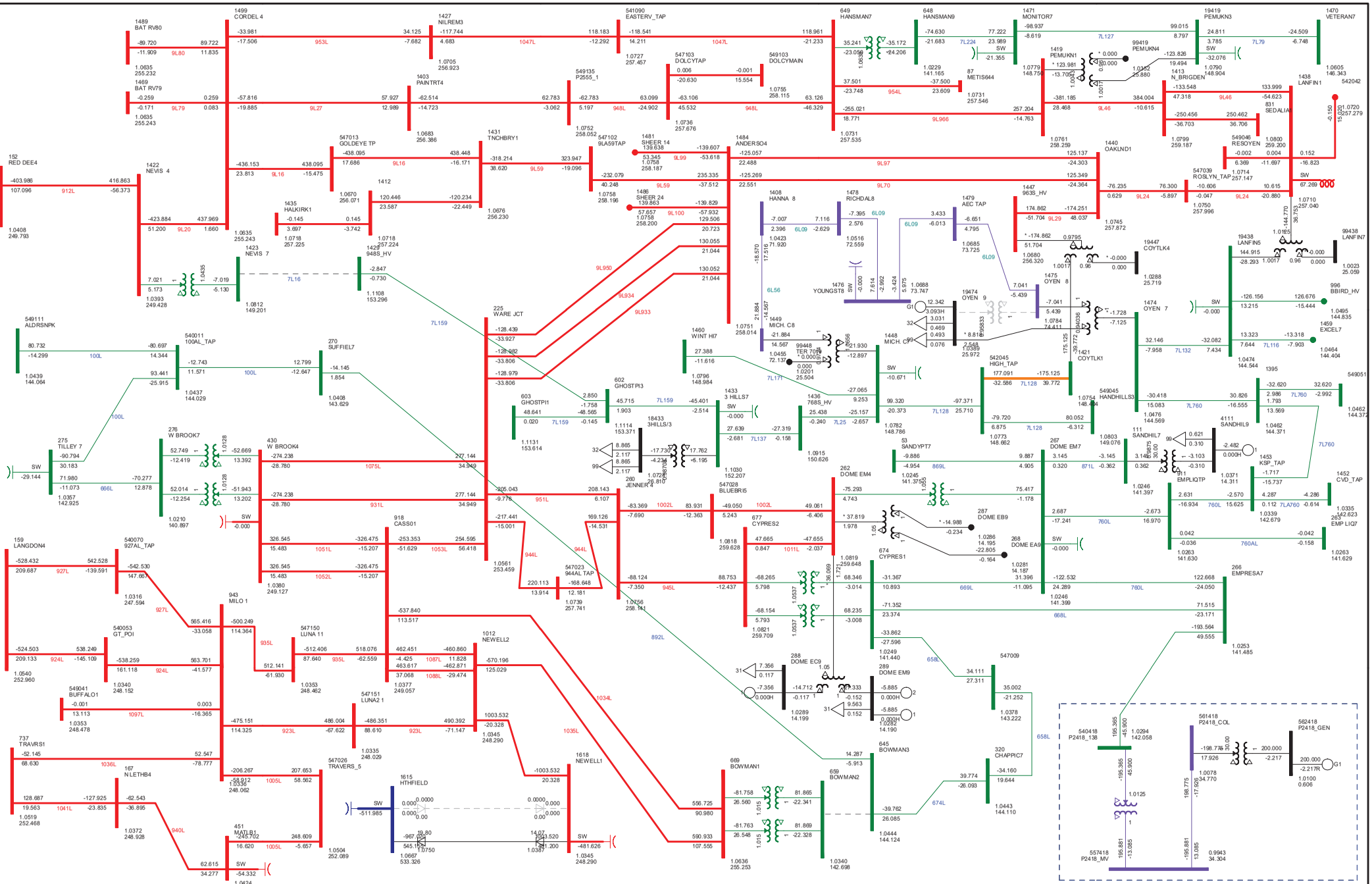
FIGURE A3-1-3 N-1: 1088L (CASSILS 324S TO NEWELL 2075S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLUTION A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A3-1-4 N-1: 7L16 (NEVIS 766S TO HEATBURG 948S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLVED Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

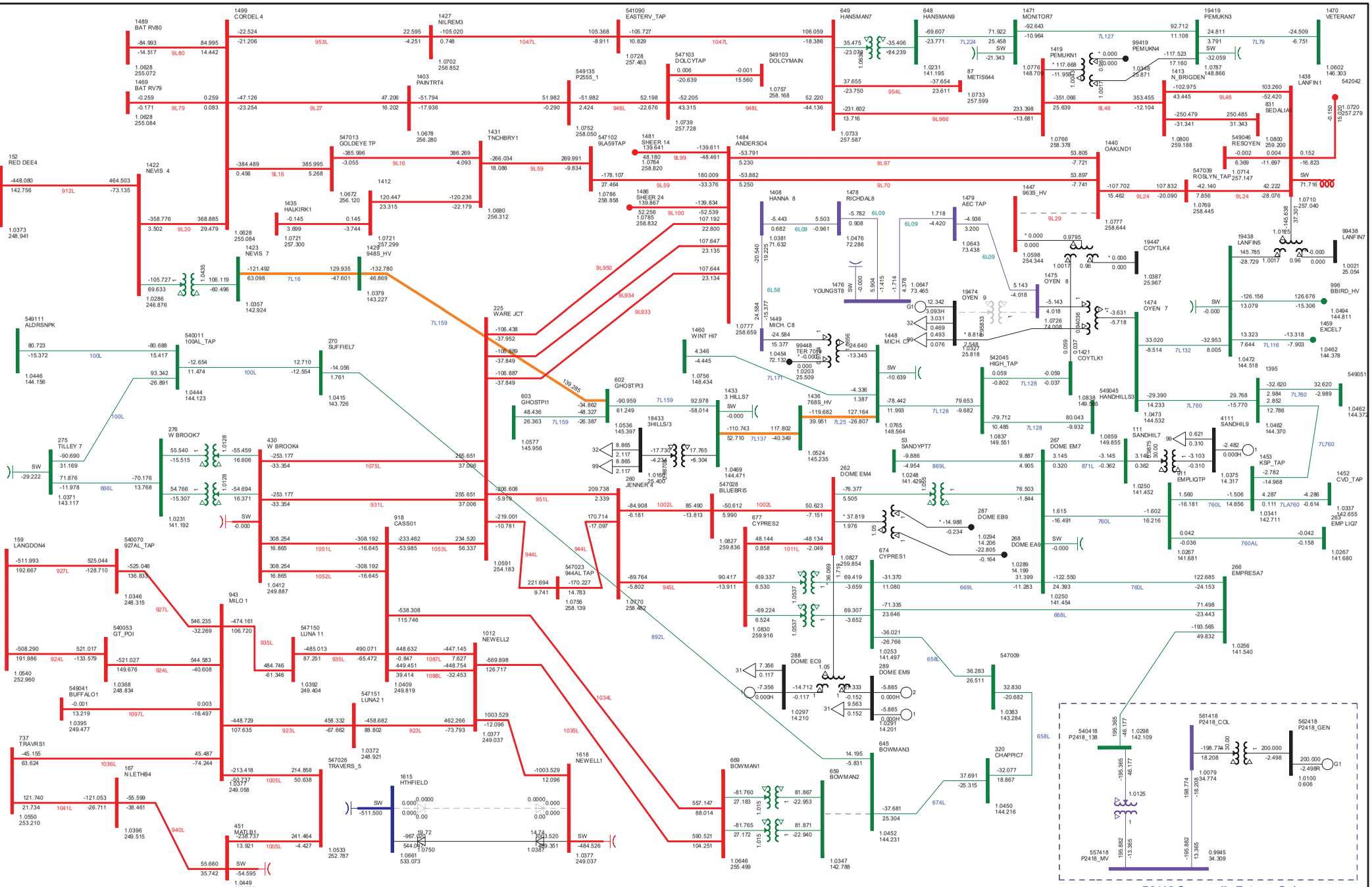


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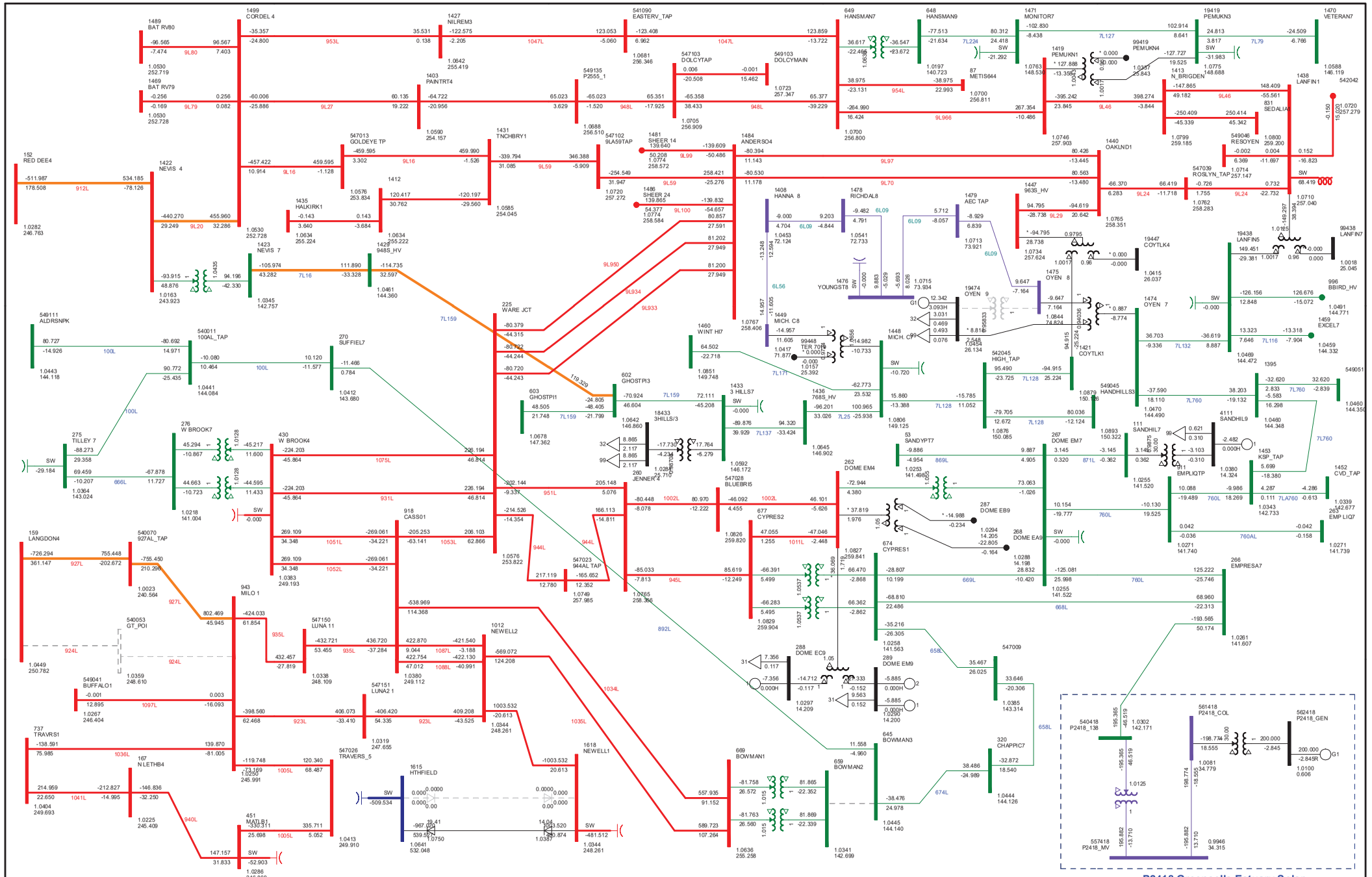
FIGURE A3-1-5 N-1: 9L29 (OAKLAND 946S TO COYOTE LAKE 963S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000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648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1489 BAT RV80
1469 BAT RV79
1403 PAINTRT4
549135 P2555_1
547103 DOLCYTAP
549103 DOLCYMAIN
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1412
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1435 HALKIRK1
1423 NEVIS 7
1429 948S_HV
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
1475 OYEN 8
1474 OYEN 7
19474 OYEN 9
19447 COYTLK4
1421 COYTLK1
19438 LANFIN5
99438 LANFIN7
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1395
549051
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1476 YOUNGST8
1448 MICH. C9
542045 HIGH_TAP
549045 HANDHILLS3
275 TILLEY 7
276 W BROOK7
430 W BROOK4
603 GHOSTPI1
602 GHOSTPI3
18433 3HILLS/3
1433 3 HILLS7
1436 768S_HV
53 SANDYPT7
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
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267 DOME EM7
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
260 JENNER 4
159 LANGDON4
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540053 GT_POI
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737 TRAVRS1
167 N LETHB4
943 MILO 1
918 CASS01
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
1012 NEWELL2
1618 NEWELL1
1615 HTHFIELD
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547009
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669 BOWMAN1
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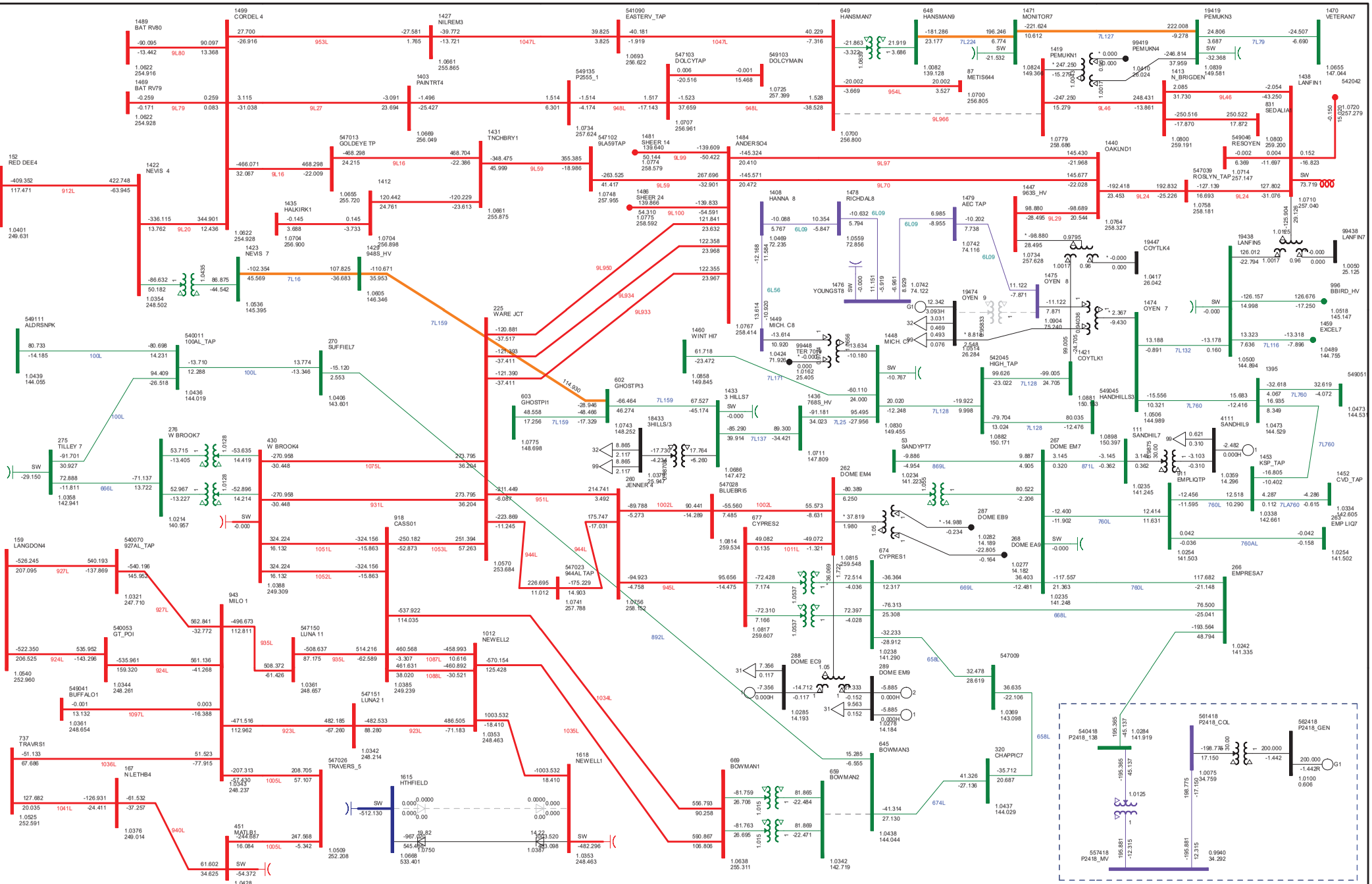
P2418 Greencells Estuary Solar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99419 PEMUKN4
1413 N_BRIGDEN
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1412
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1435 HALKIRK1
1423 NEVIS 7
1424 948S_HV
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
1440 OAKLND1
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1475 OYEN 8
19474 OYEN 9
1476 YOUNGST8
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
542045 HIGH_TAP
19447 COYTLK4
1474 OYEN 7
1421 COYTLK1
549045 HANDHILLS3
1395
549051
275 TILLEY 7
276 W BROOK7
430 W BROOK4
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
53 SANDYPT7
267 DOME EM7
111 SANDHIL7
4111 SANDHIL9
1453 KSP_TAP
1452 CVD_TAP
262 DOME EM4
260 JENNER 4
547028 BLUEBRI5
287 DOME EB9
268 DOME EA9
911 EMPLIQTP
1266 EMP LIQ7
159 LANGDON4
540070 927AL_TAP
918 CASS01
677 CYPRES2
674 CYPRES1
266 EMPRESA7
540053 GT_POI
943 MILO 1
547150 LUNA 11
1012 NEWELL2
549041 BUFFALO1
547151 LUNA2 1
547023 944AL TAP
288 DOME EC9
289 DOME EM9
547009
737 TRAVRS1
167 N LETHB4
547026 TRAVERS_5
1615 HTHFIELD
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
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P2418 Greencells Estuary Solar

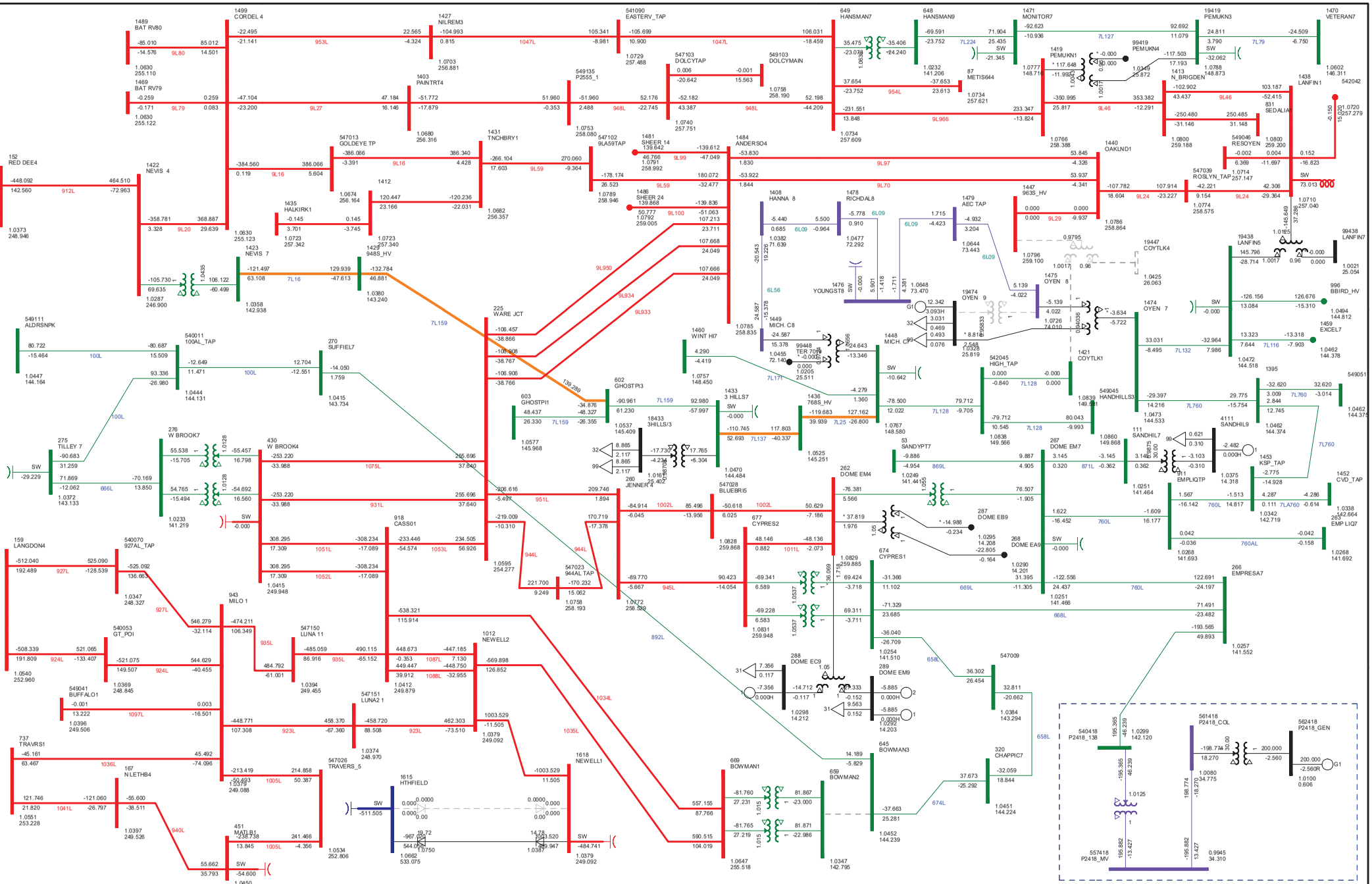

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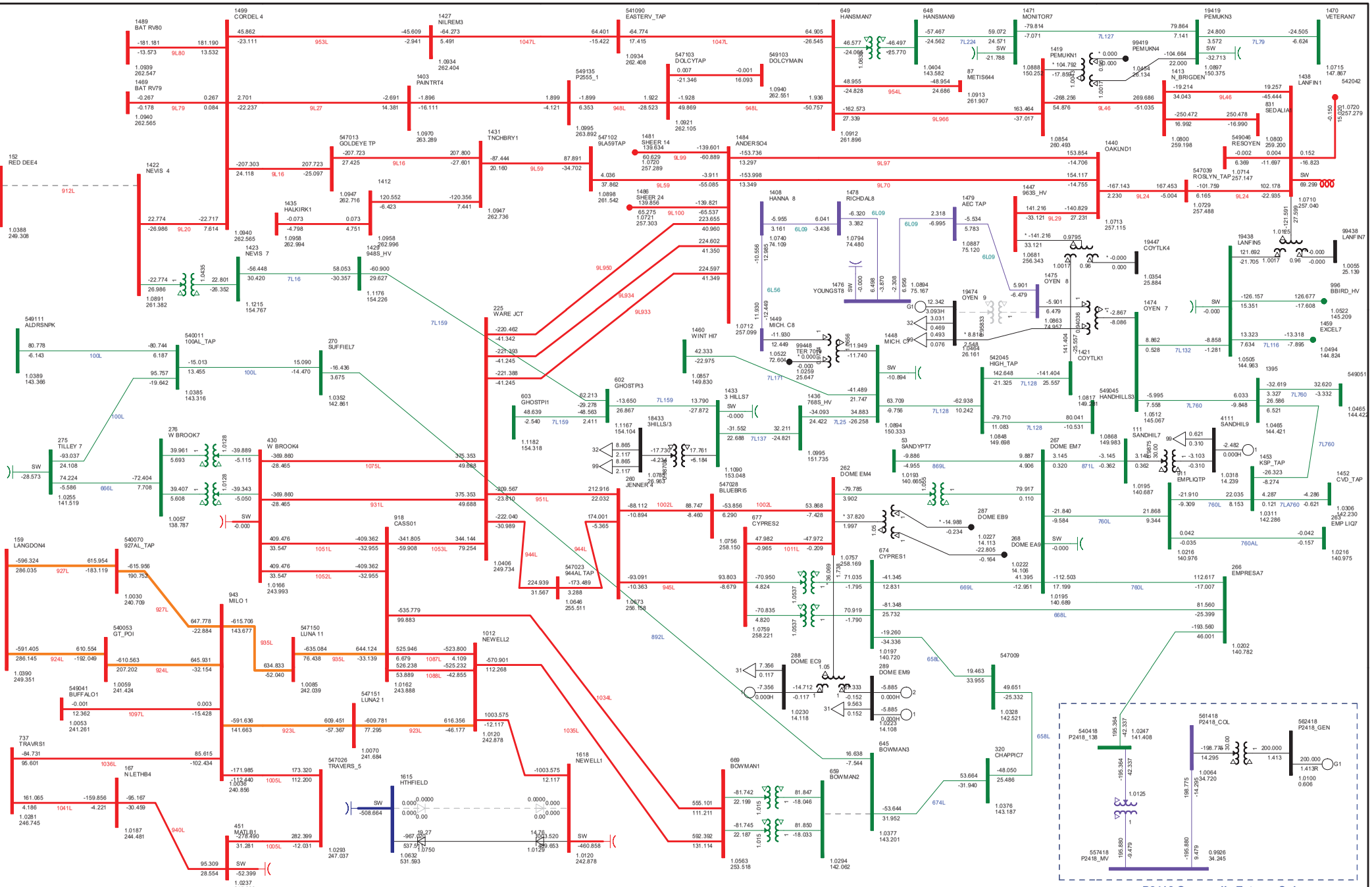
FIGURE A3-1-8 N-1: 963S T1 (COYOTE LAKE 963S TRANSFORMER T1)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000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1469 BAT RV79
1427 NILREM3
541090 EASTERV_TAP
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
99419 PEMUKN4
1419 PEMUKN1
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
1403 PAINTRT4
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
87 METIS644
547013 GOLDEYE TP
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1431 TNCHBRY1
1435 HALKIRK1
1412
1423 NEVIS 7
1422 NEVIS 4
152 RED DEE4
912L
1423 948S_HV
1486 SHEER 24
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
1449 MICH. C8
1448 MICH. C9
99448 TER 701
1460 WINT HI7
225 WARE JCT
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
602 GHOSTPI3
603 GHOSTPI1
18433 3HILLS/3
1433 3 HILLS7
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4111 SANDHIL9
911 EMPLIQTP
53 SANDYPT7
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260 JENNER 4
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677 CYPRES2
674 CYPRES1
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547151 LUNA2 1
547026 TRAVERS_5
451 MATL91
1615 HTHFIELD
918 CASS01
547023 944AL TAP
1012 NEWELL2
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
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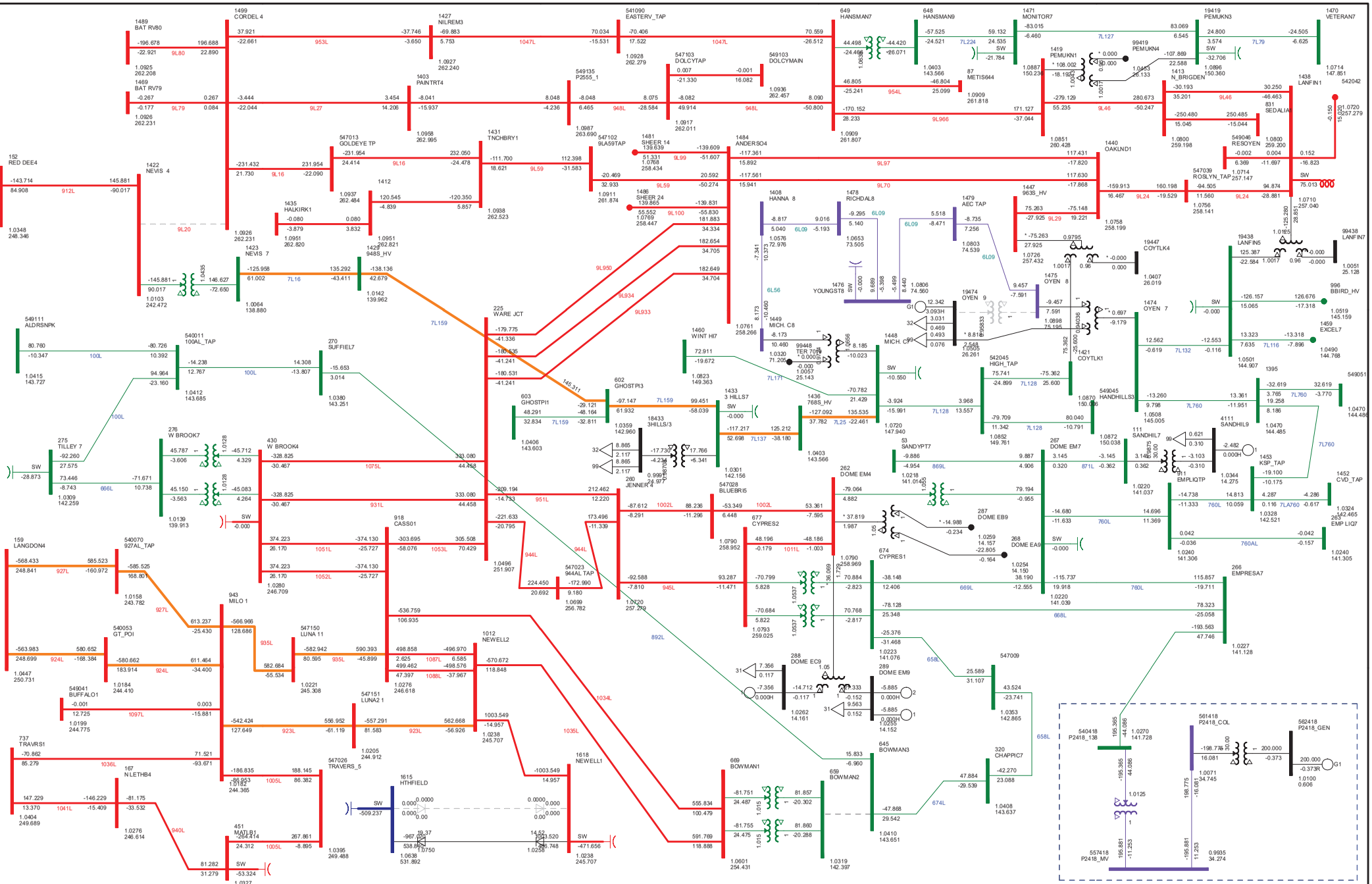
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar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1469 BAT RV79
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1431 TNCHBRY1
1412
1435 HALKIRK1
1423 NEVIS 7
1422 NEVIS 4
152 RED DEE4
547013 GOLDEYE TP
1425 948S_HV
541090 EASTERV_TAP
549135 P2555_1
547103 DOLCYTAP
549103 DOLCYMAIN
1403
1481 SHEER 14
1486 SHEER 24
547102 9LA59TAP
1484 ANDERSO4
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
1395
549051
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
542045 HIGH_TAP
549045 HANDHILLS3
111 SANDHIL7
4111 SANDHIL9
53 SANDYPT7
267 DOME EM7
1453 KSP_TAP
1452 CVD_TAP
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
225 WARE JCT
603 GHOSTPI1
602 GHOSTPI3
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
260 JENNER 4
547028 BLUEBRI5
262 DOME EM4
677 CYPRES2
674 CYPRES1
287 DOME EB9
268 DOME EA9
266 EMPRESA7
1452
1453
EMP LIQ7
159 LANGDON4
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540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
451 MATL91
918 CASS01
547023 944AL_TAP
1012 NEWELL2
1618 NEWELL1
1615 HTHFIELD
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
540418 P2418_138
557418 P2418_MV
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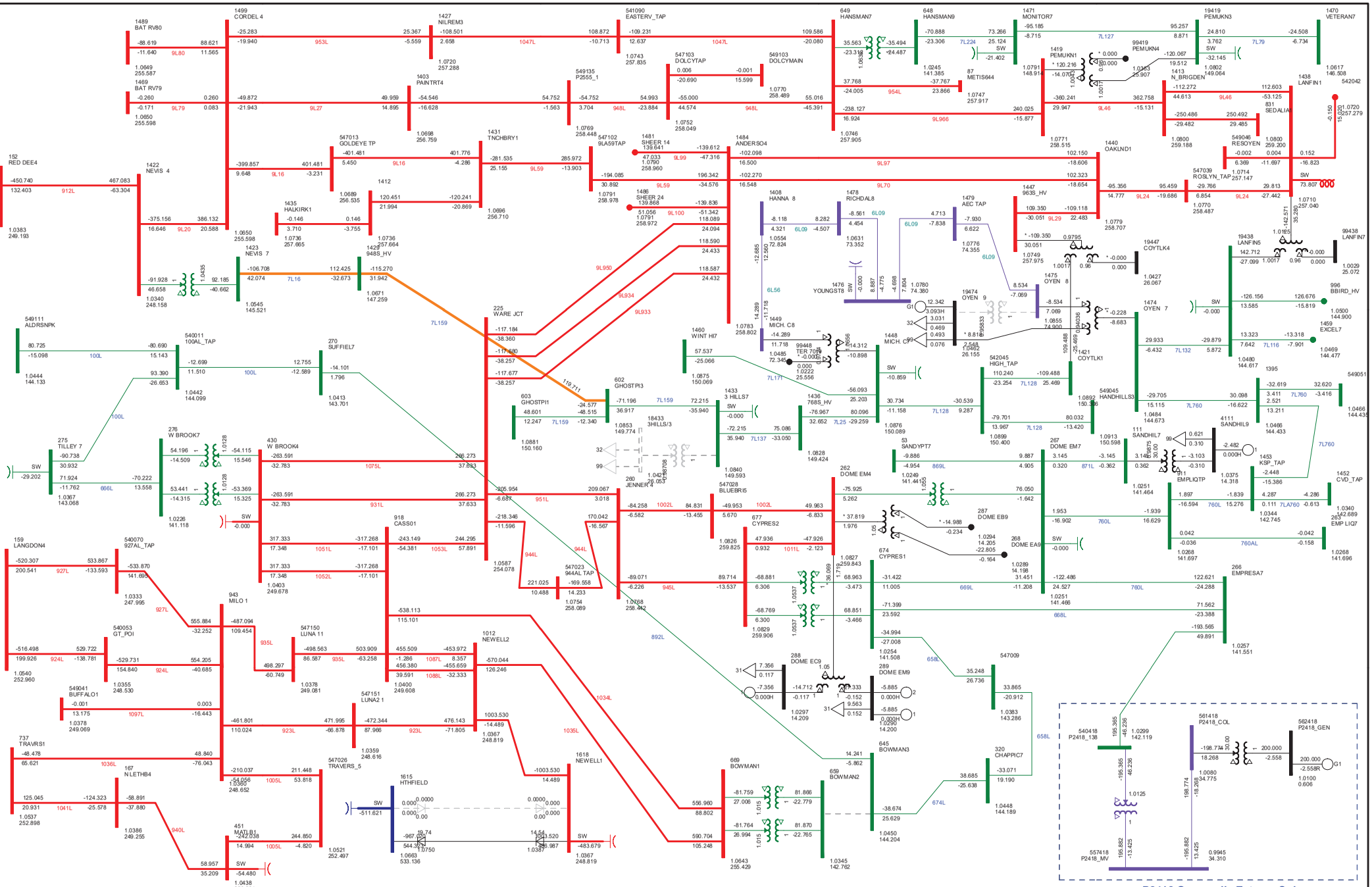
562418 P2418_GEN
P2418 Greencells Estuary Solar
P2418 Greencells Estuary Solar
FIGURE A3-1-10 N-1: 9L20 (NEVIS 766S TO CORDEL 755S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024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547103 DOLCYTAP
549103 DOLCYMAIN
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1403 PAINTRT4
549135 P2555_1
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1412
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1440 OAKLND1
1447 963S_HV
1435 HALKIRK1
1423 NEVIS 7
1423 948S_HV
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
19447 COYTLK4
1474 OYEN 7
1421 COYTLK1
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
549111 ALDRSNPK
540011 100AL_TAP
225 WARE JCT
270 SUFFIEL7
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
542045 HIGH_TAP
549045 HANDHILLS3
1395
549051
275 TILLEY 7
276 W BROOK7
430 W BROOK4
602 GHOSTPI3
603 GHOSTPI1
18433 3HILLS/3
1433 3 HILLS7
1436 768S_HV
53 SANDYPT7
111 SANDHIL7
4111 SANDHIL9
1453 KSP_TAP
1452 CVD_TAP
1466 144.435
159 LANGDON4
540070 927AL_TAP
943 MILO 1
918 CASS01
547028 BLUEBRI5
262 DOME EM4
267 DOME EM7
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
266 EMPRESA7
1452 CVD_TAP
1040 142.689
EMP LIQ7
540053 GT_POI
549041 BUFFALO1
547150 LUNA 11
547151 LUNA2 1
1012 NEWELL2
547023 944AL TAP
737 TRAVRS1
167 N LETHB4
547026 TRAVERS_5
1615 HTHFIELD
1618 NEWELL1
451 MATLB1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
547009
288 DOME EC9
289 DOME EM9
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar
P2418 Greencells Estuary Solar
FIGURE A3-1-11 N-1: THREE HILLS 770S TRANSFORMER 3T
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024
Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

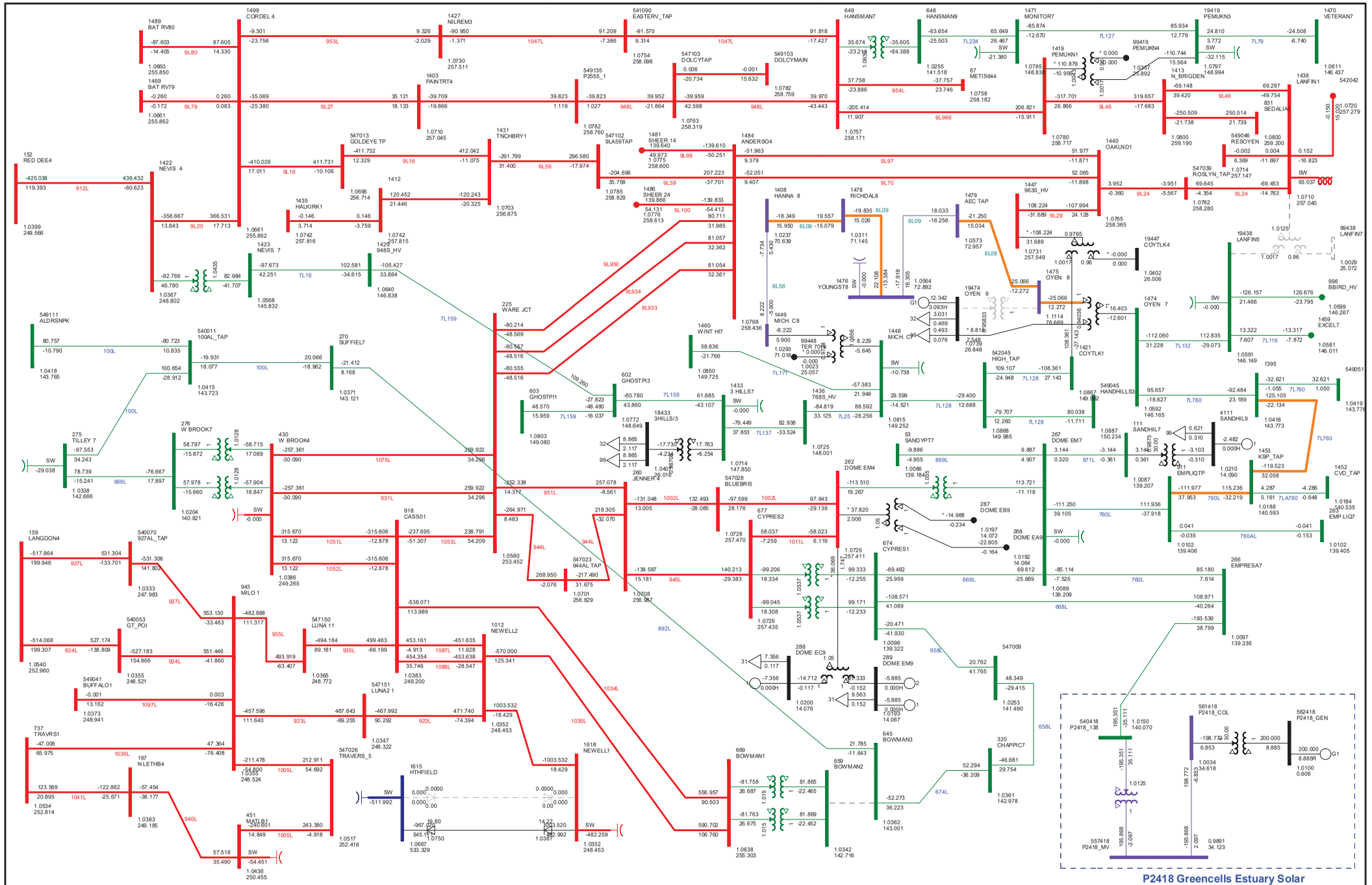

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FIGURE A3-1-12 N-1: A959ST1 (LANFINE 959S TRANSFORMER T1)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

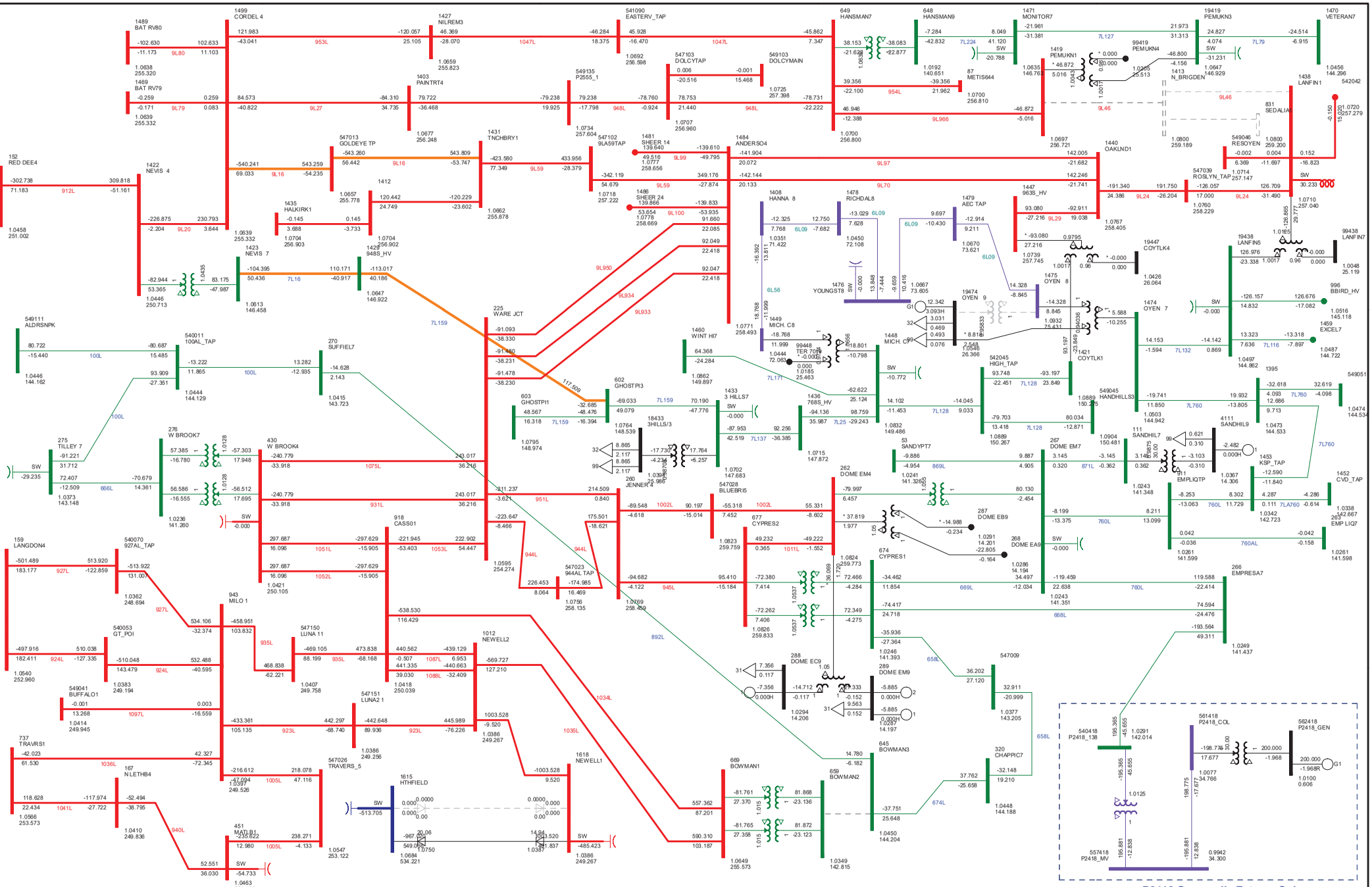
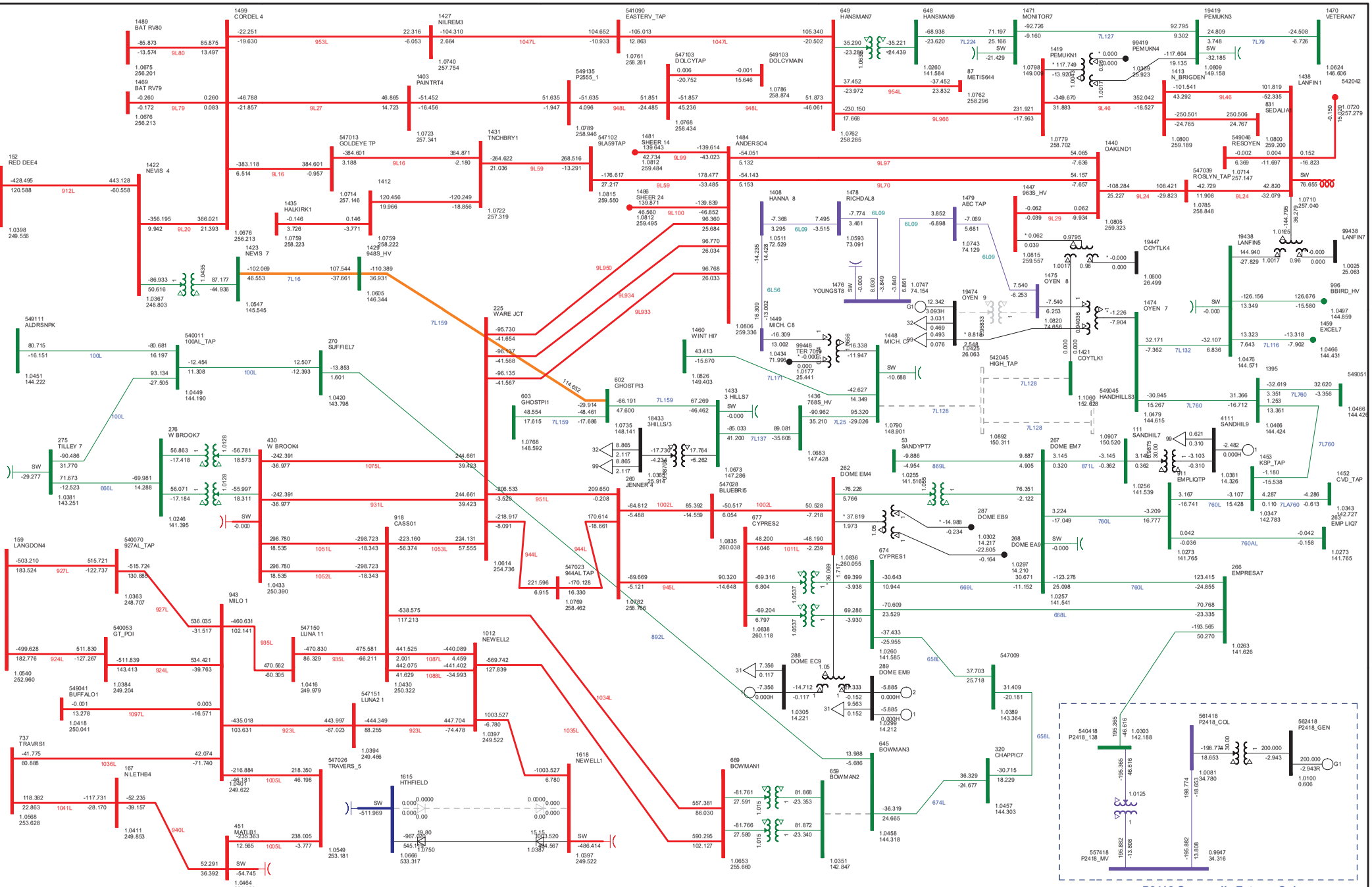


FIGURE A3-1-13 N-1: 9L46 (LANFINE 959S TO PEMUKAN 932S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000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1469 BAT RV79
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541090 EASTERV_TAP
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
649 HANSMAN7
648 HANSMAN9
87 METIS644
1471 MONITOR7
1419 PEMUKN1
99419 PEMUKN4
19419 PEMUKN3
1413 N_BRIGDEN
1470 VETERAN7
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
152 RED DEE4
1422 NEVIS 4
1435 HALKIRK1
547013 GOLDEYE TP
1431 TNCHBRY1
1412
1423 NEVIS 7
1422 948S_HV
1481 SHEER 14
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
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1448 MICH. C9
1449 MICH. C8
1460 WINT HI7
225 WARE JCT
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
260 JENNER 4
547028 BLUEBRI5
677 CYPRES2
674 CYPRES1
262 DOME EM4
287 DOME EB9
268 DOME EA9
53 SANDYPT7
267 DOME EM7
549045 HANDHILLS3
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
1459 EXCEL7
1466 144.431
996 BBIRD_HV
99438 LANFIN7
19438 LANFIN5
1395
549051
1466 144.426
159 LANGDON4
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540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
451 MATLB1
918 CASS01
547023 944AL TAP
1012 NEWELL2
1618 NEWELL1
1615 HTHFIELD
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
266 EMPRESA7
1452 CVD_TAP
1453 KSP_TAP
1459 EXCEL7
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1263 142.727 EMP LIQ7
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557418 P2418_MV
P2418 Greencells Estuary Solar

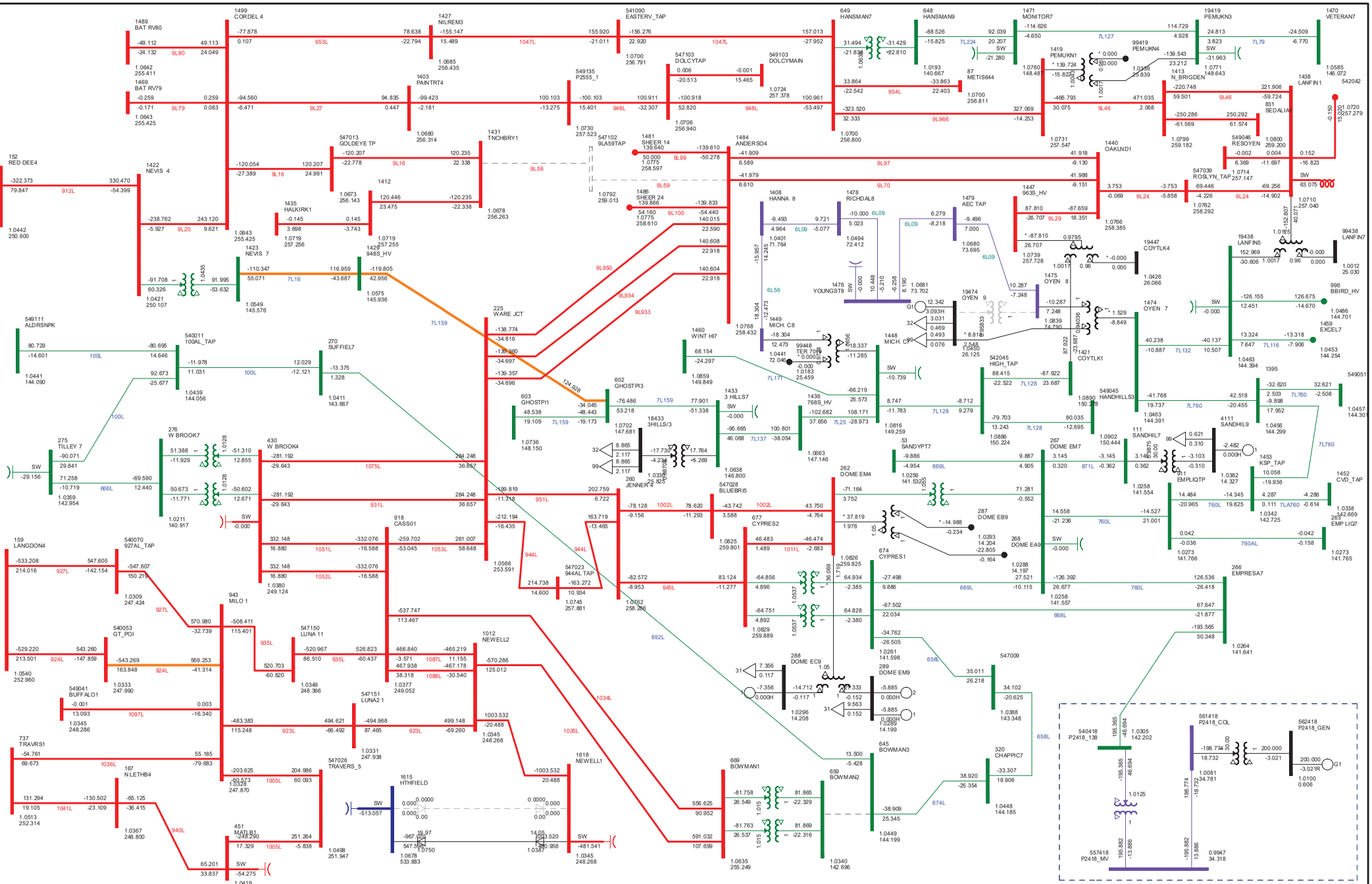

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FIGURE A3-1-15 N-1: 9L59 (ANDERSON 801S TO TINCHEBRAY 972S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

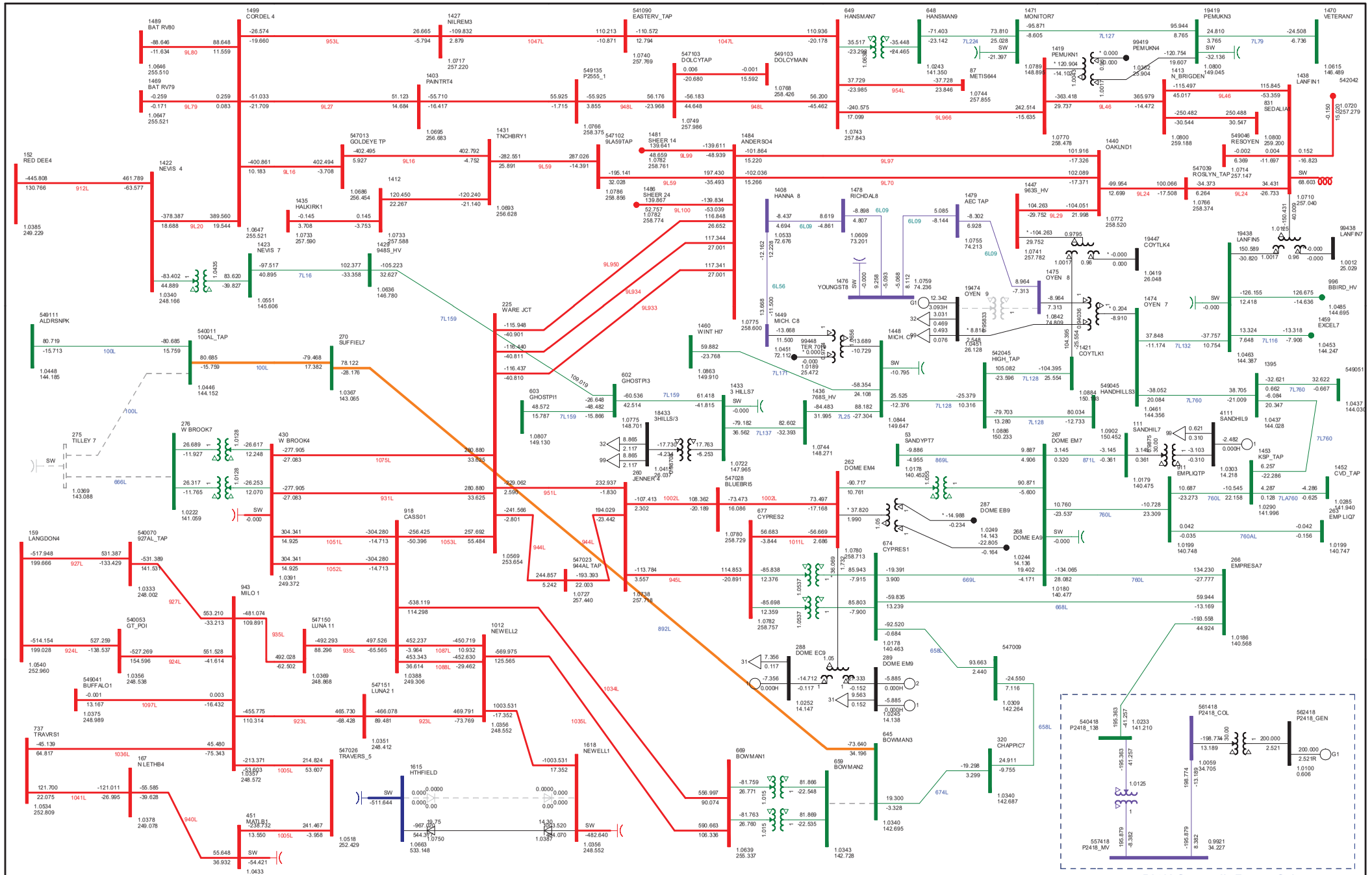

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FIGURE A3-1-16 N-1: 498ST1T2 (TILLEY 498S TRANSFORMER T1/T2)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

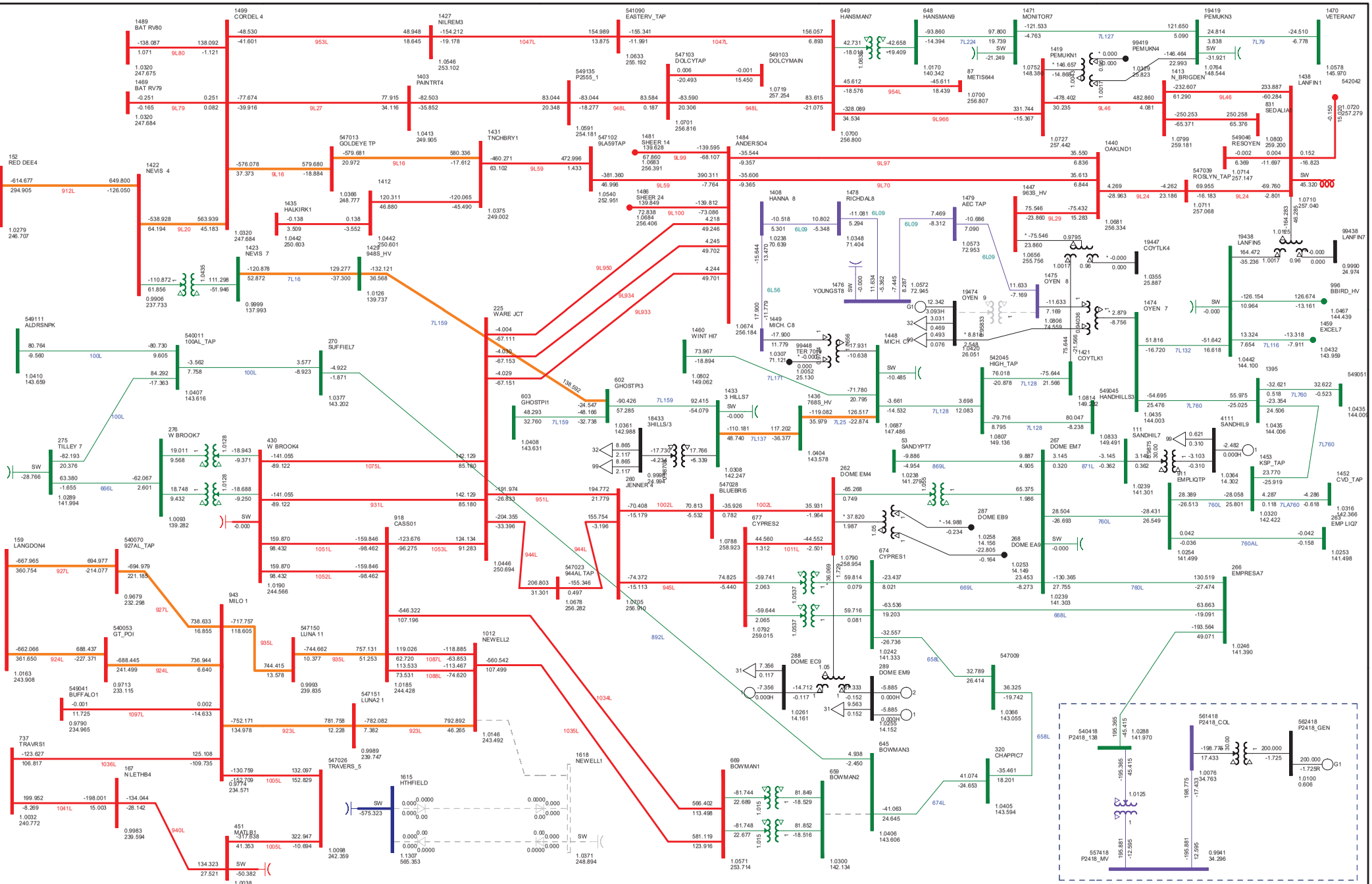

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FIGURE A3-1-17 N-1: EATL
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

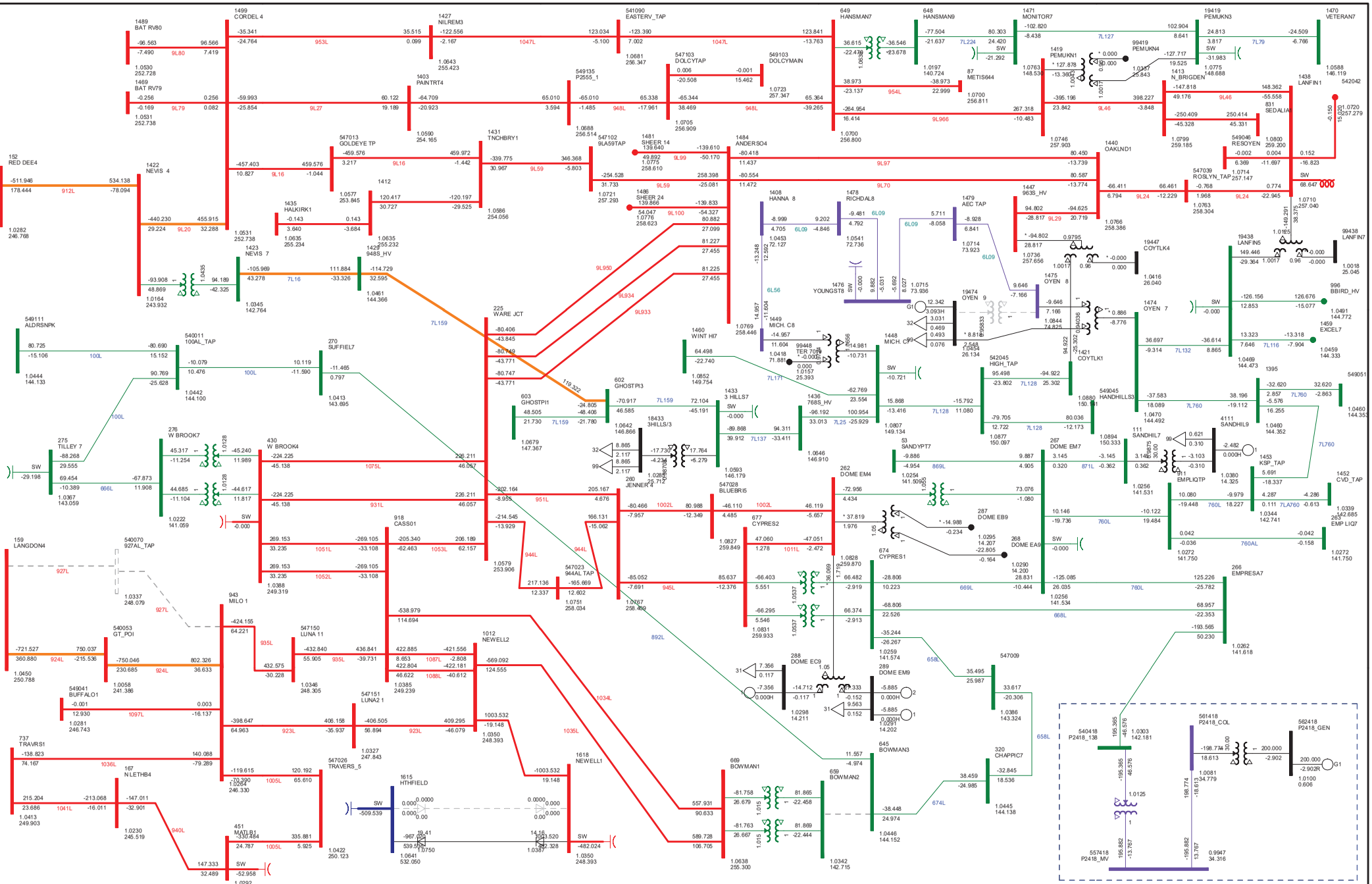

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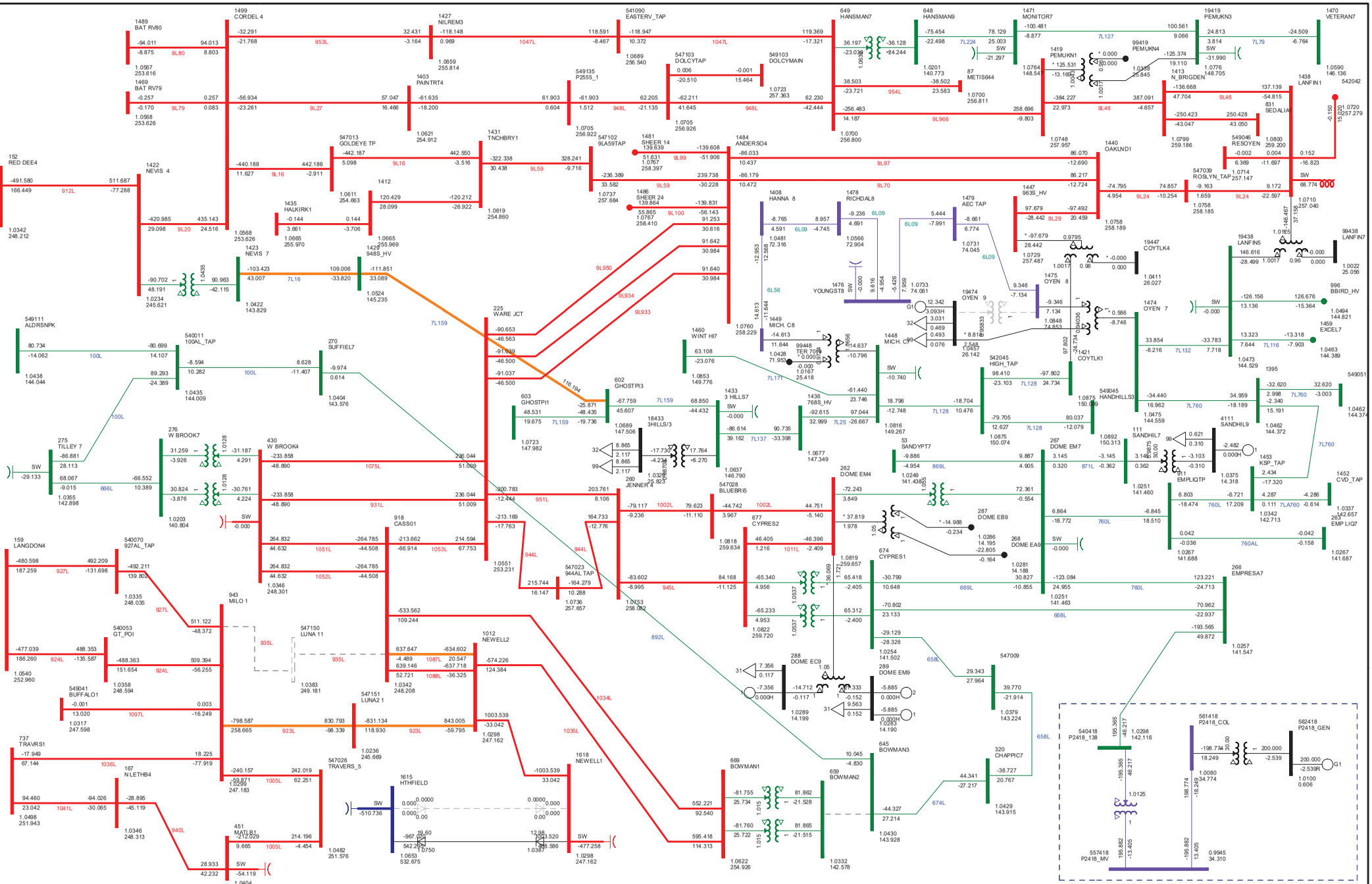
FIGURE A3-1-18 N-1: 927L (MILO 356S TO LANGDON 102S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024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648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
152 RED DEE4
1422 NEVIS 4
1403 PAINTRT4
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
547013 GOLDEYE TP
1431 TNCHBRY1
1481 SHEER 14
547102 9LA59TAP
1484 ANDERSO4
1412
1435 HALKIRK1
1423 NEVIS 7
1425 948S_HV
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
1486 SHEER 24
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
1395
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
542045 HIGH_TAP
549045 HANDHILLS3
549051
275 TILLEY 7
276 W BROOK7
430 W BROOK4
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
53 SANDYPT7
267 DOME EM7
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
262 DOME EM4
260 JENNER 4
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677 CYPRES2
674 CYPRES1
287 DOME EB9
268 DOME EA9
266 EMPRESA7
159 LANGDON4
540070 927AL_TAP
540053 GT_POI
549041 BUFFALO1
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
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918 CASS01
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1012 NEWELL2
1618 NEWELL1
737 TRAVRS1
167 N LETHB4
451 MATLB1
1615 HTHFIELD
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
288 DOME EC9
289 DOME EM9
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar
P2418 Greencells Estuary Solar
FIGURE A3-1-19 N-1: 935L (MILO 356S TO CASSILS 324S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024
Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

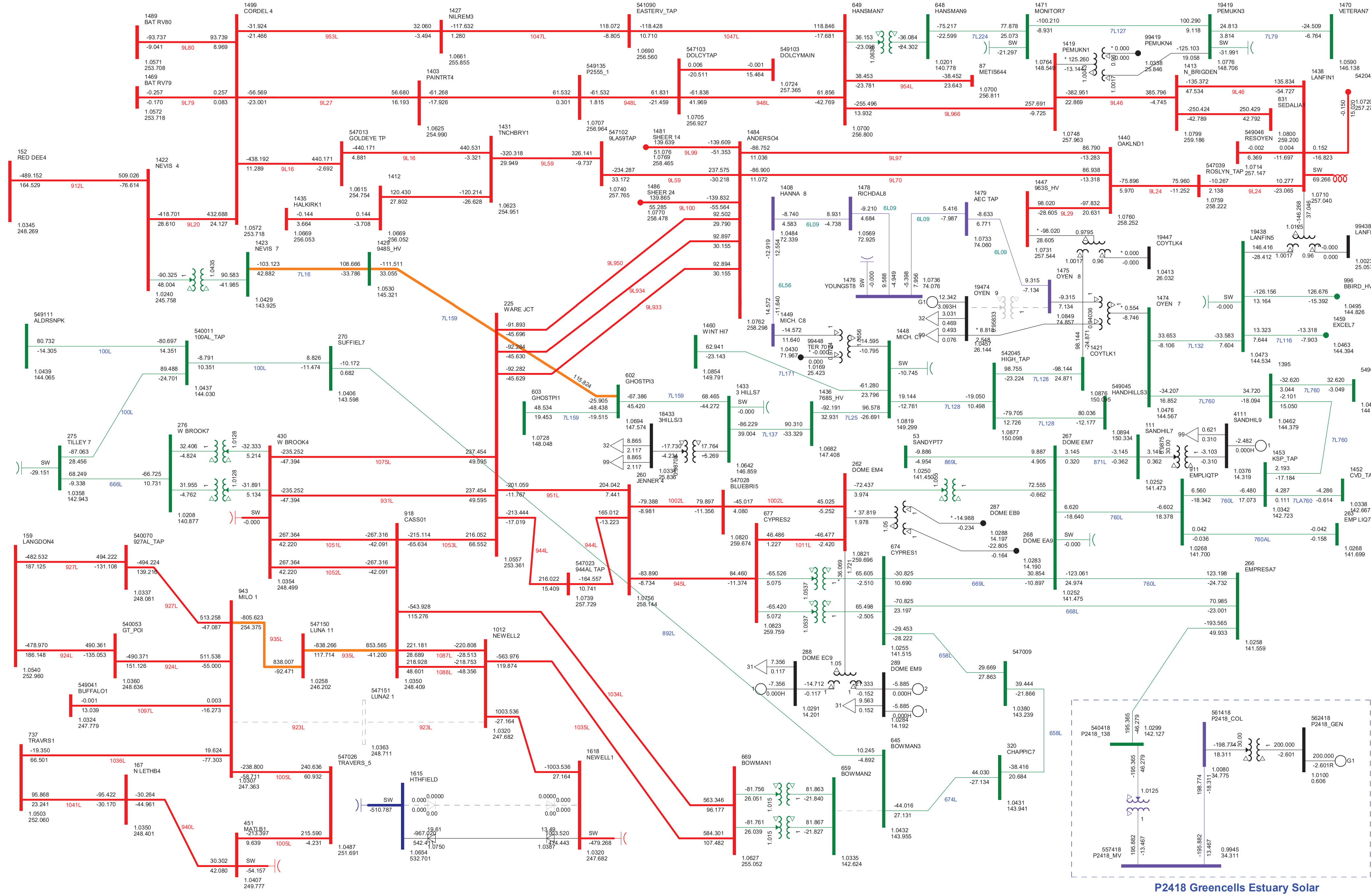

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FIGURE A3-1-20 N-1: 923L (MILO 356S TO NEWELL 2075S)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

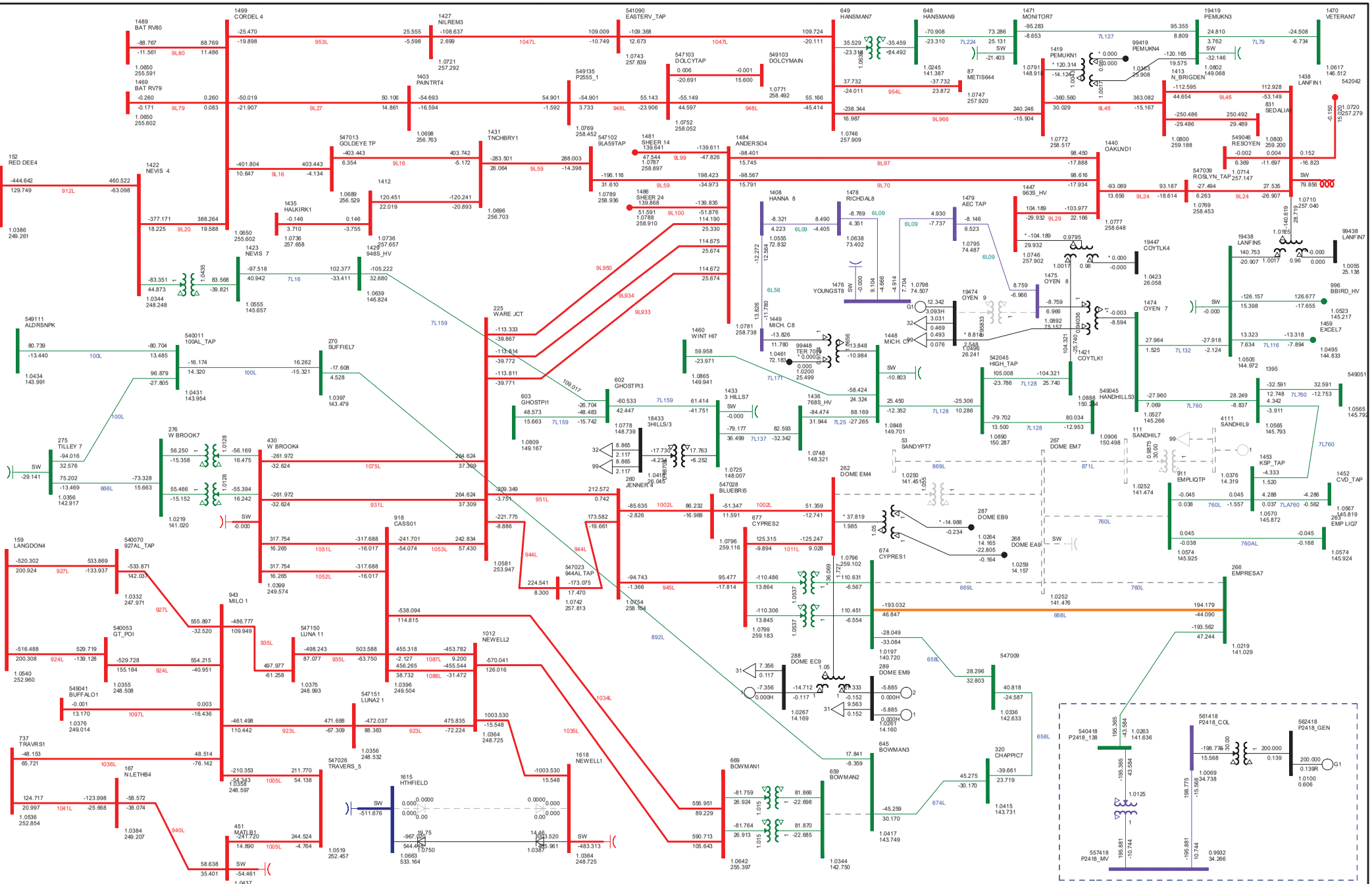

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FIGURE A3-1-21 N-1: 163ST5 (AMOCO EMPRESS 163S TRANSFORMER T5)
2028 SUMMER PEAK (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLUTION A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

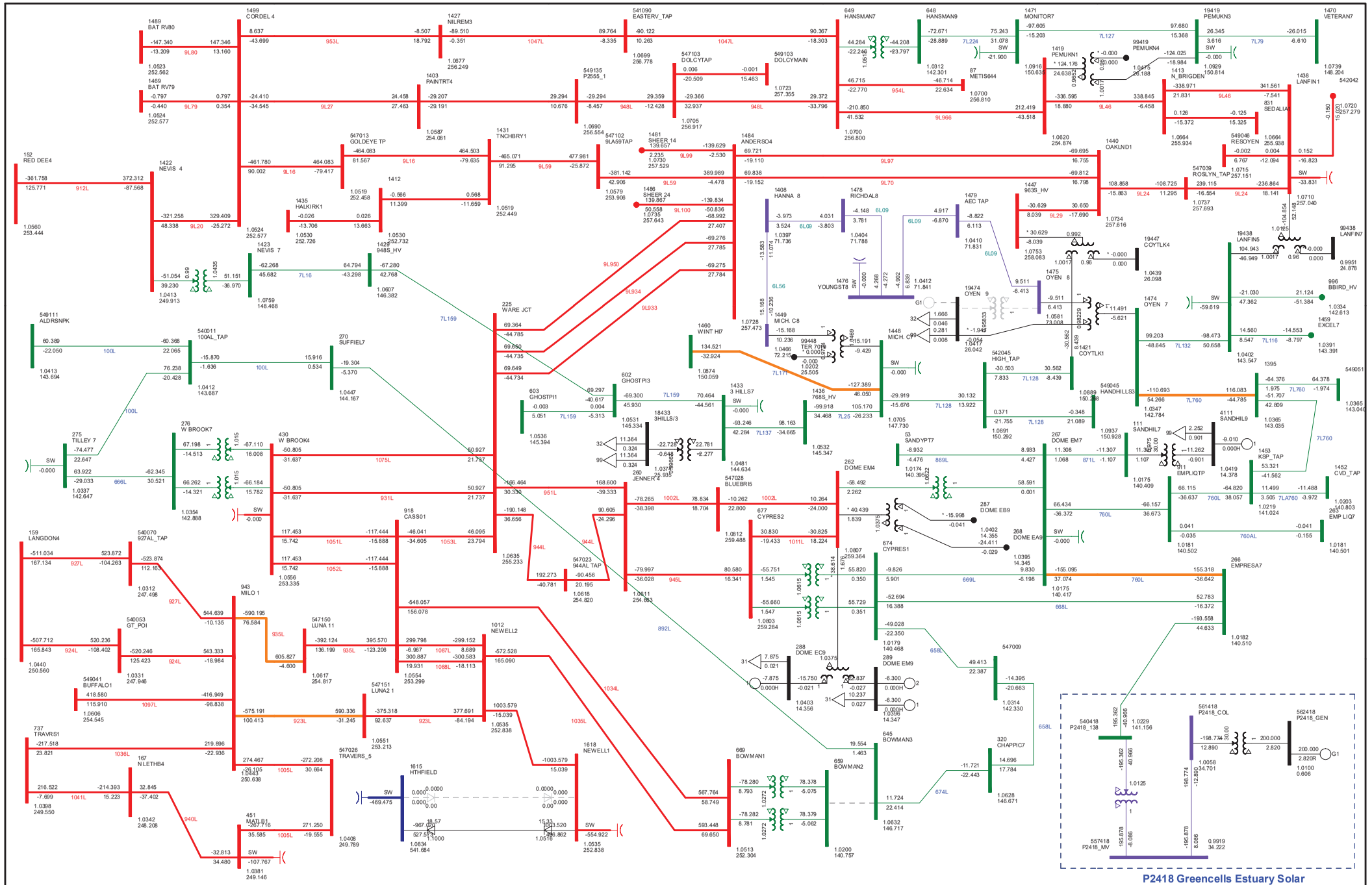

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FIGURE A3-2-0-N-0: NORMAL OPERATION
2028 SUMMER LIGHT (POST-CONNECTION) - PRE-CURTAILMENT
PRINTED ON WEDNESDAY 27. MARCH 2024

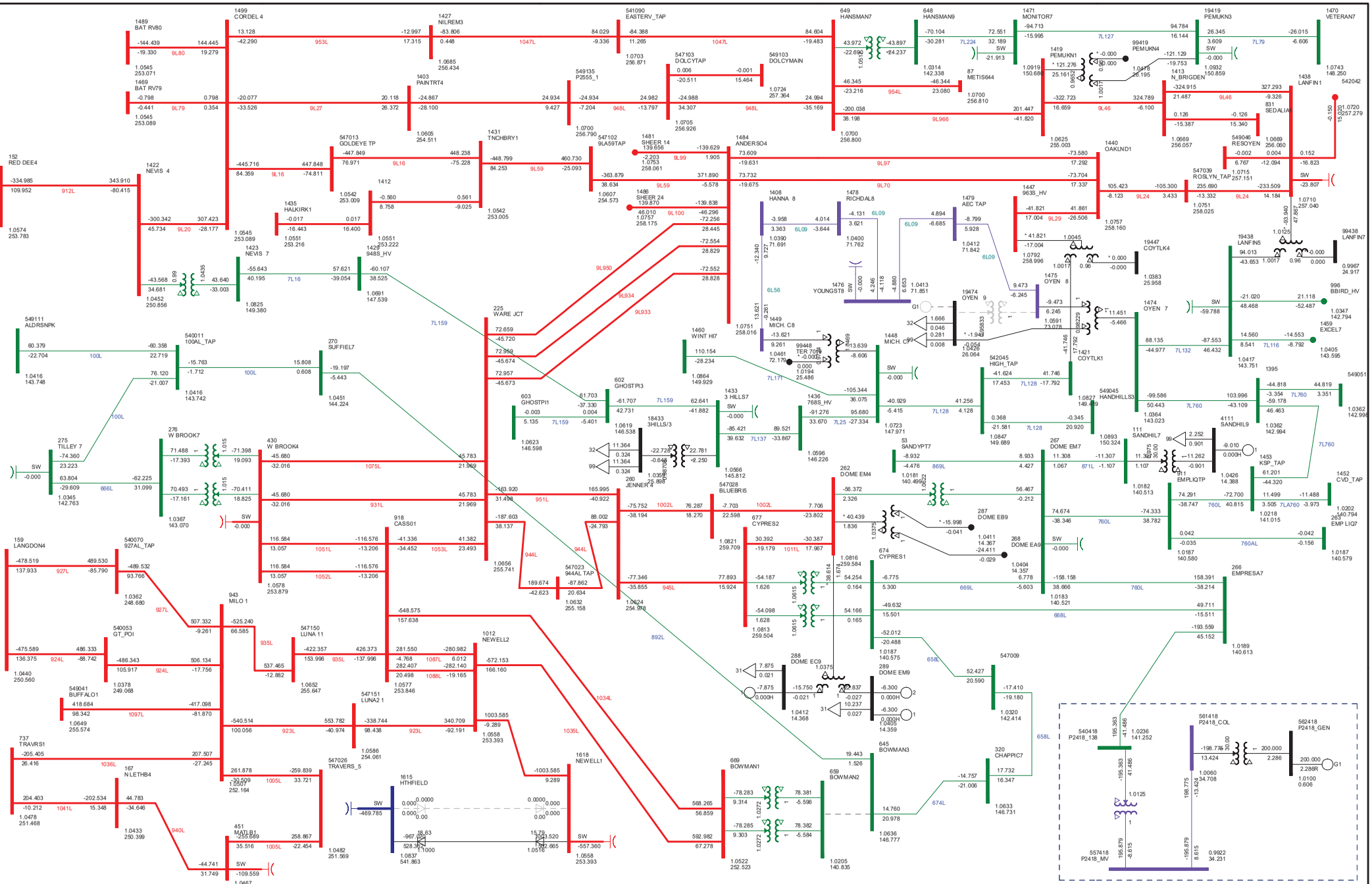

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FIGURE A3-2-1-N-0: NORMAL OPERATION
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

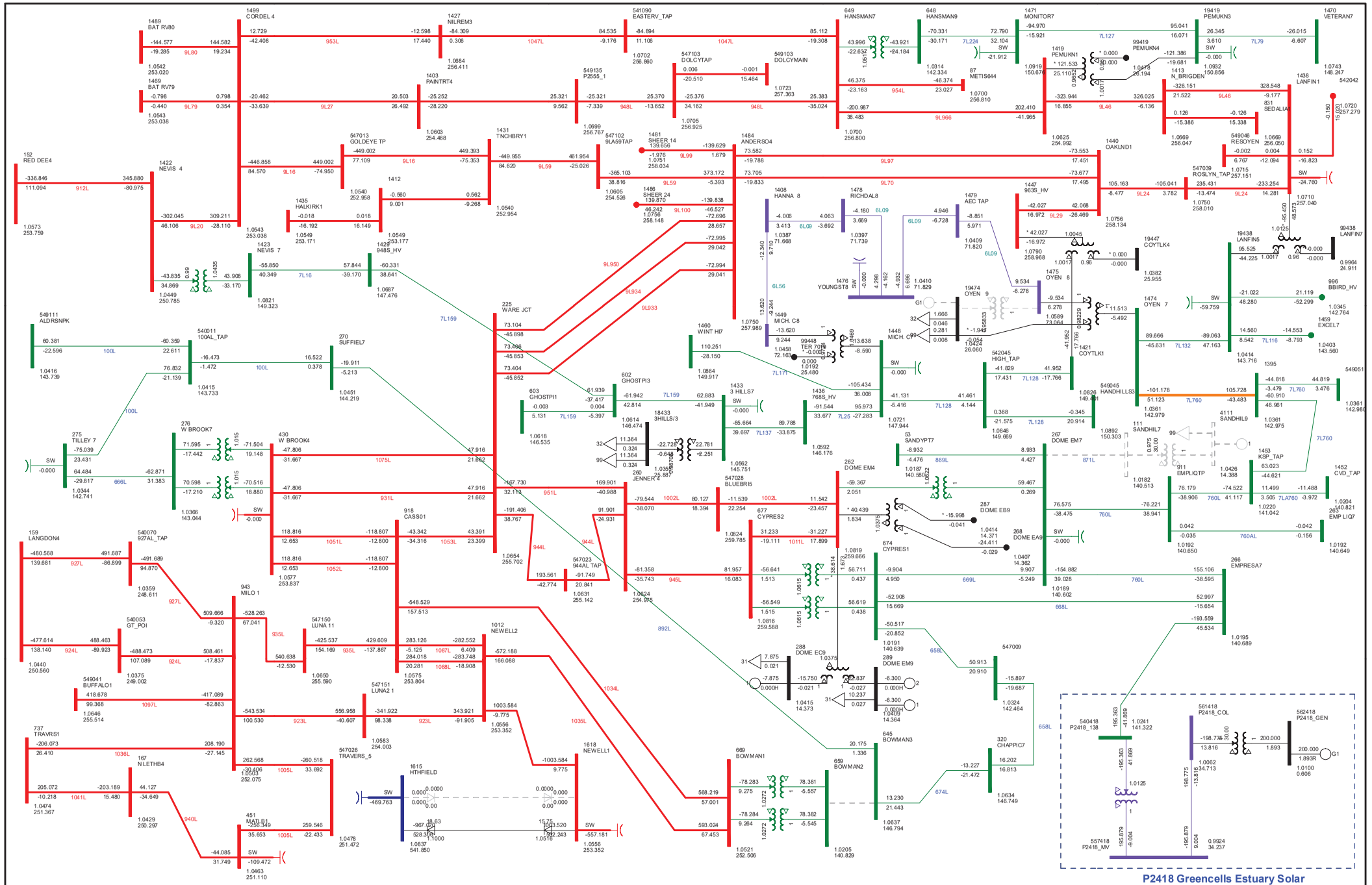

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FIGURE A3-2-2 N-1: 871L (AMOCO EMPRESS 163S TO SAND HILLS 341S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

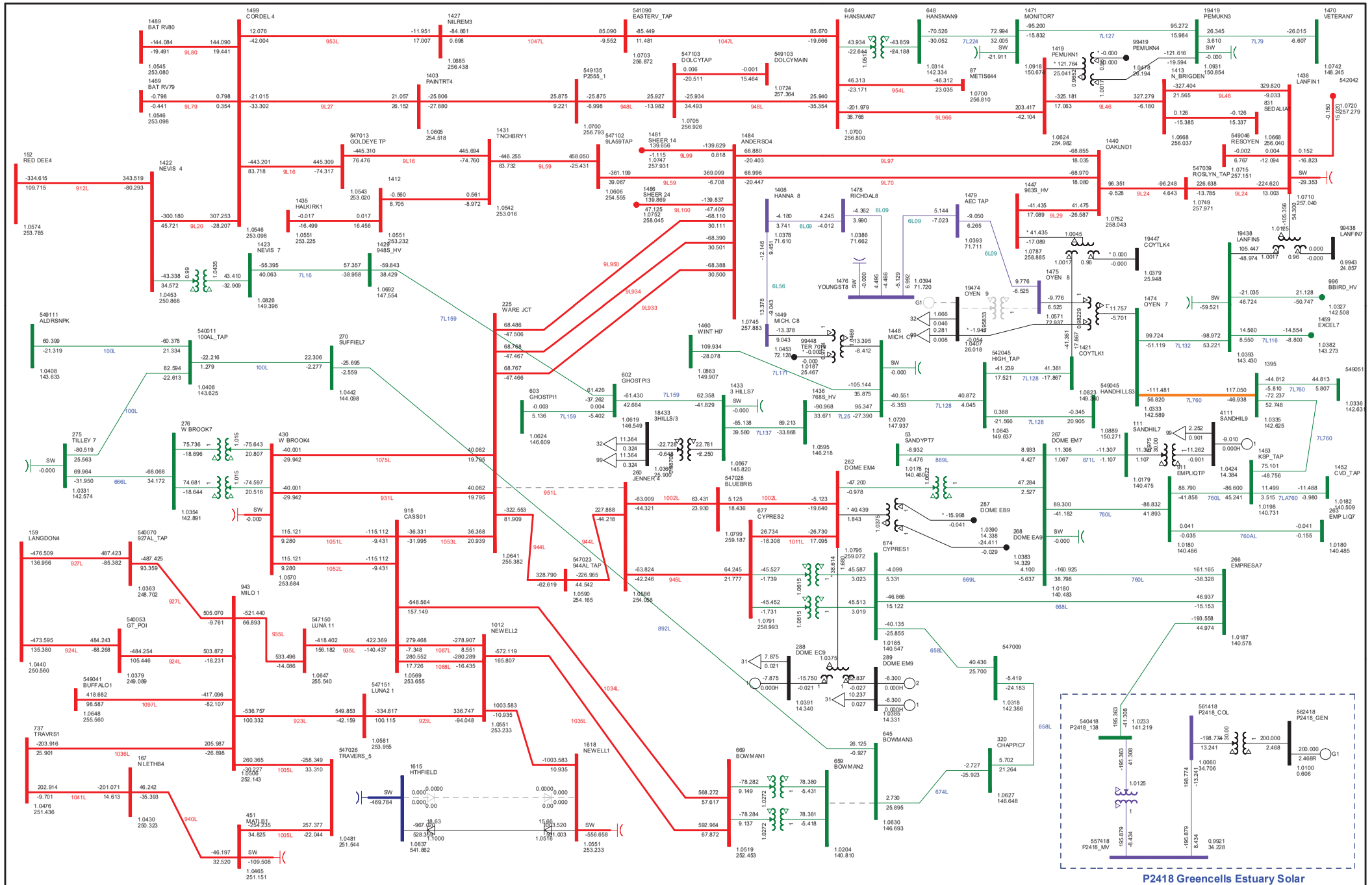

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FIGURE A3-2-3 N-1: 951L (JENNER 275S TO WARE JUNCTION 132S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

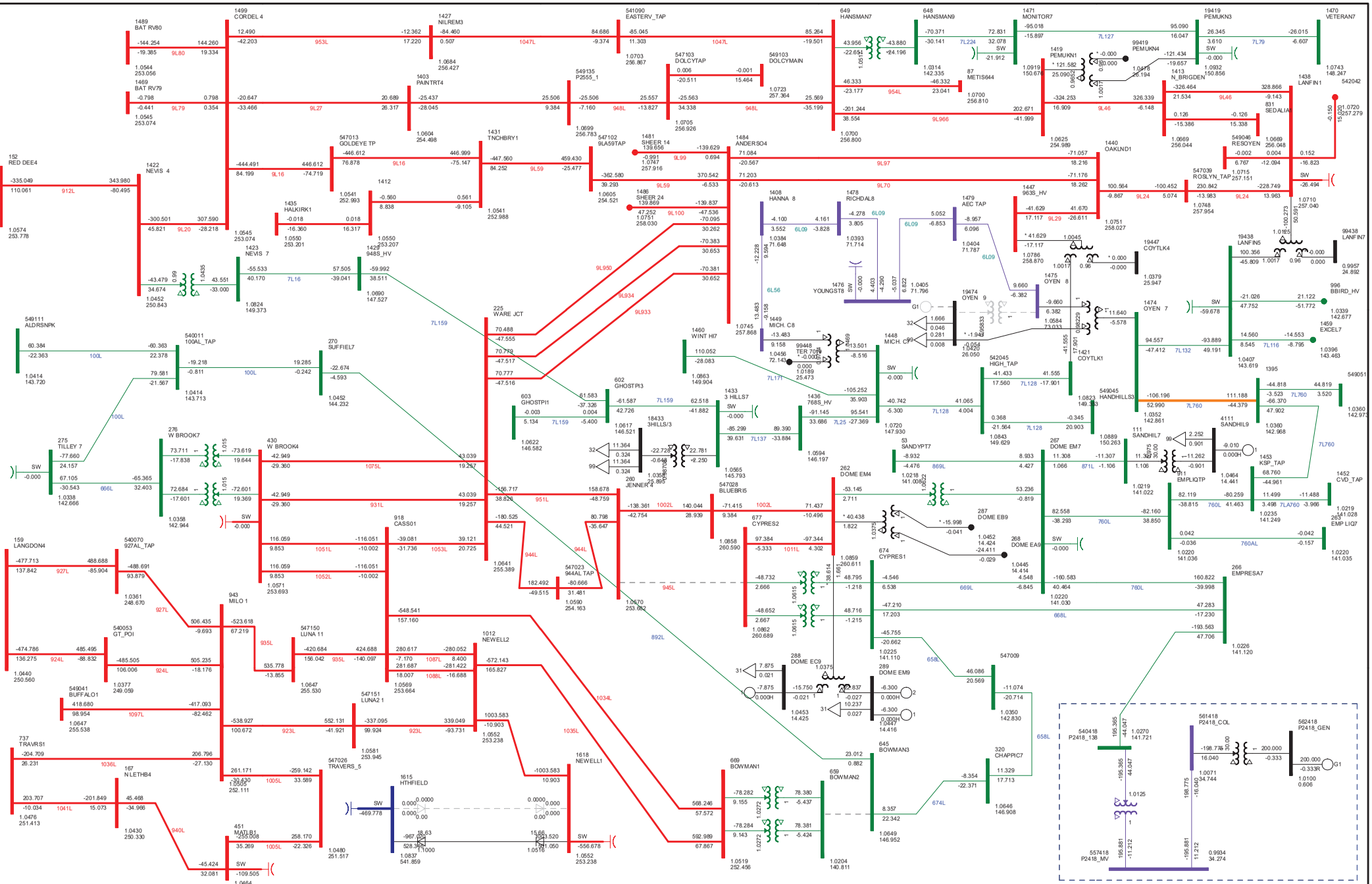

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FIGURE A3-2-4 N-1: 945L (JENNER 275S TO CYPRESS 562S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

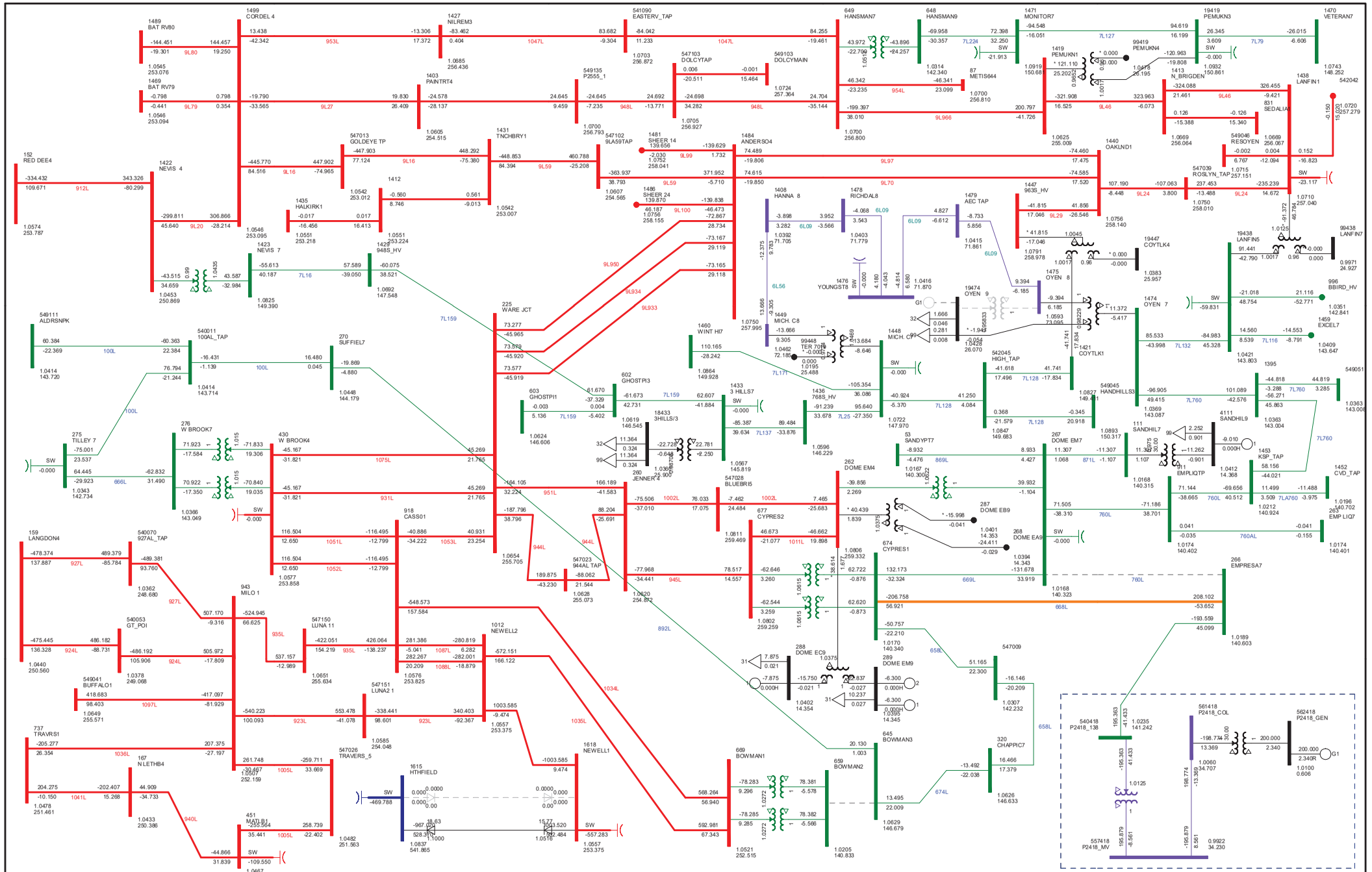

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FIGURE A3-2-5 N-1: 760L (AMOCO EMPRESS 163S TO EMPRESS 394S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

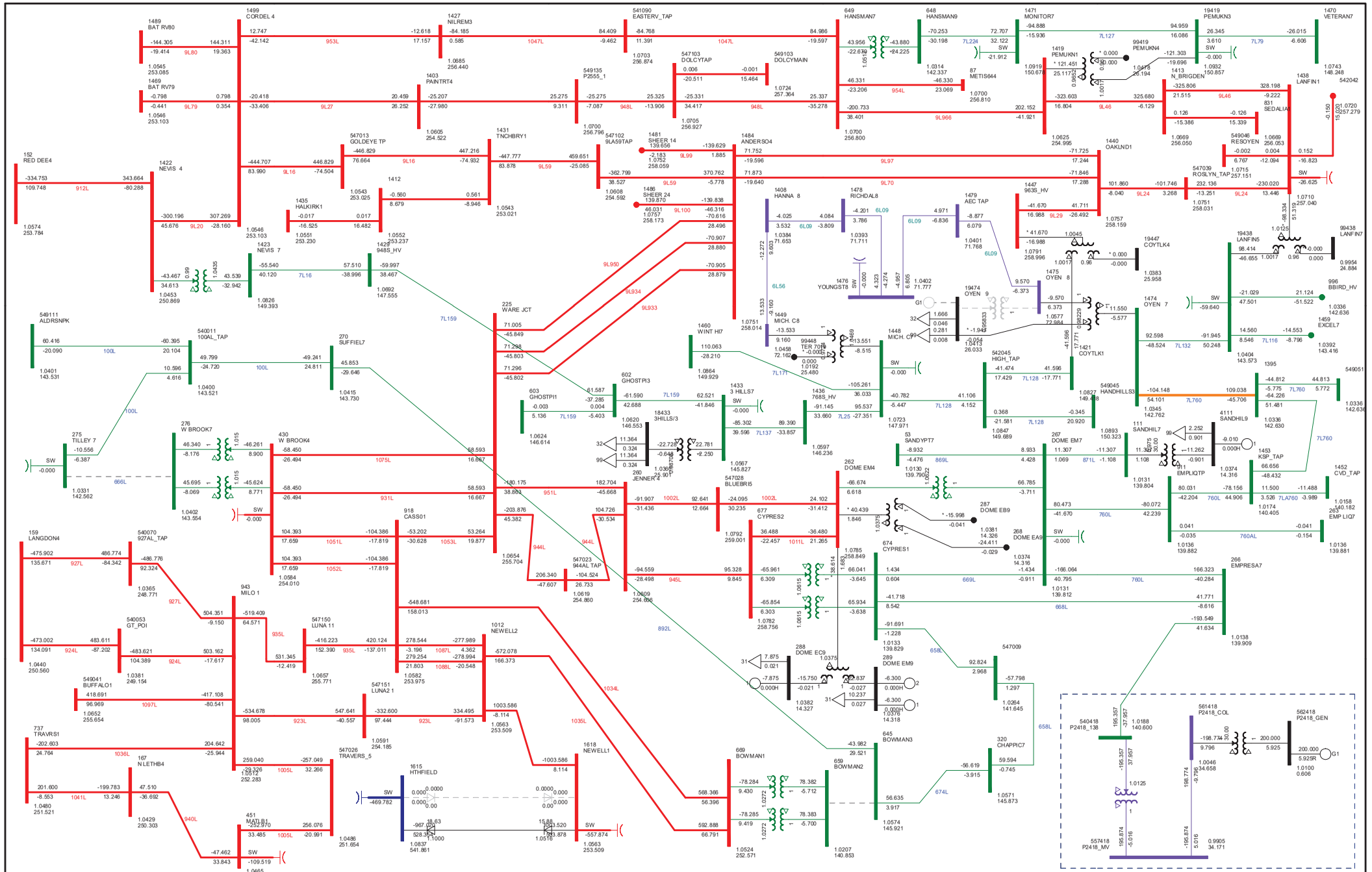

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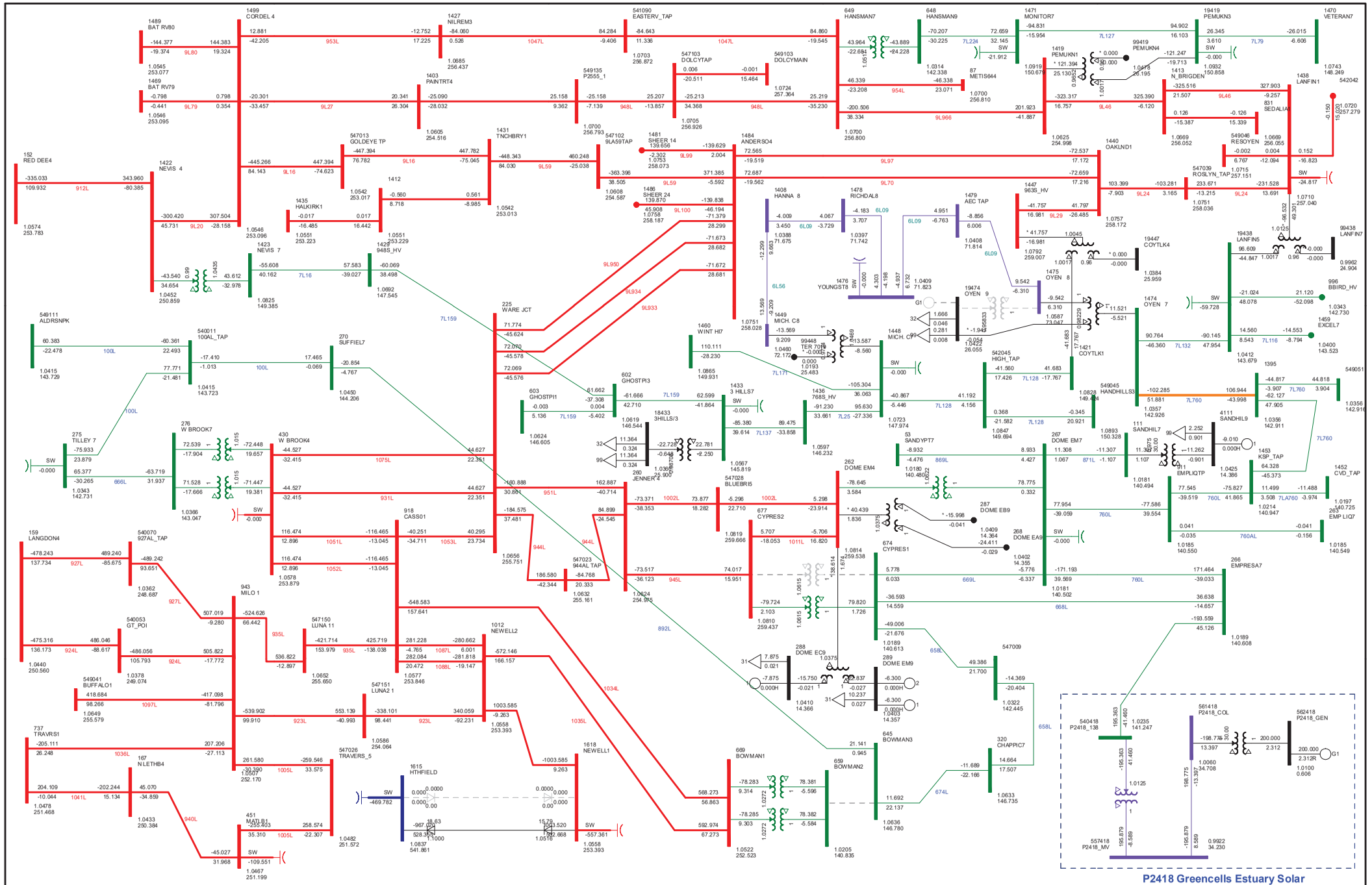
FIGURE A3-2-6 N-1: 666L (TILLEY 498S TO WEST BROOKS 28S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A3-2-7 N-1: 562ST1 (CYPRESS 562S TRANSFORMER T1)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

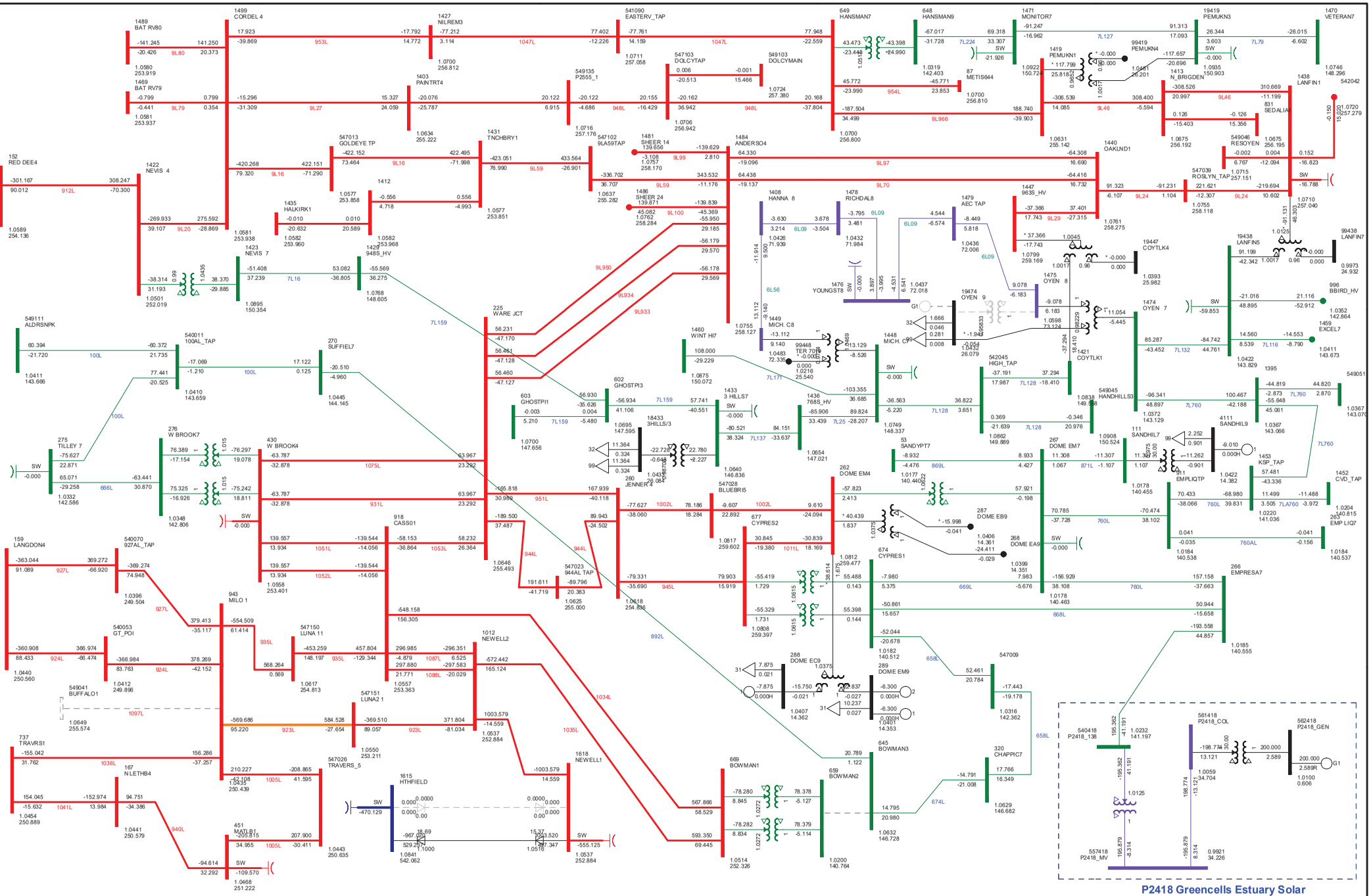


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FIGURE A3-2-8 N-1: 1097L (MILO 356S TO AMBER 611S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

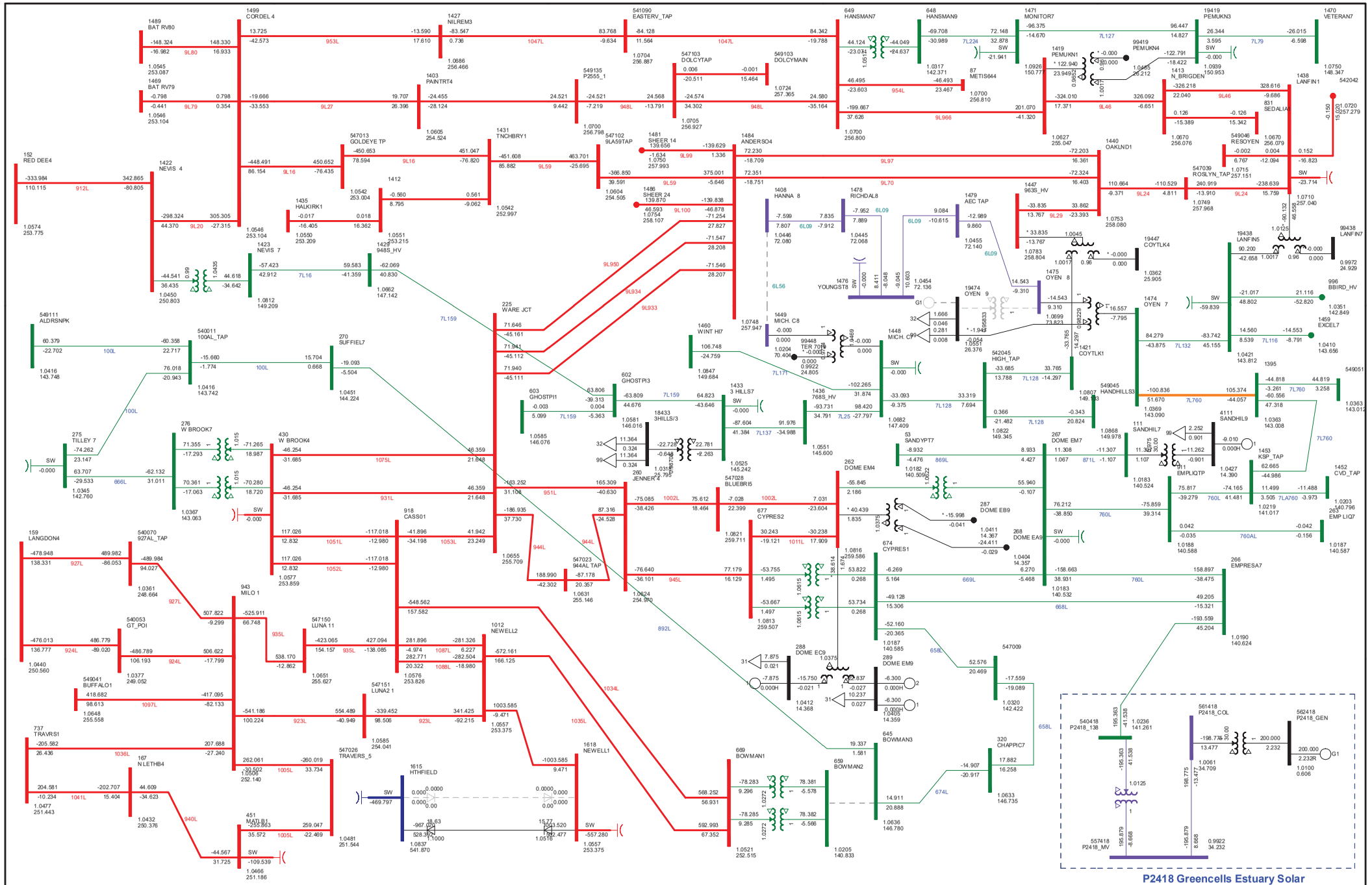

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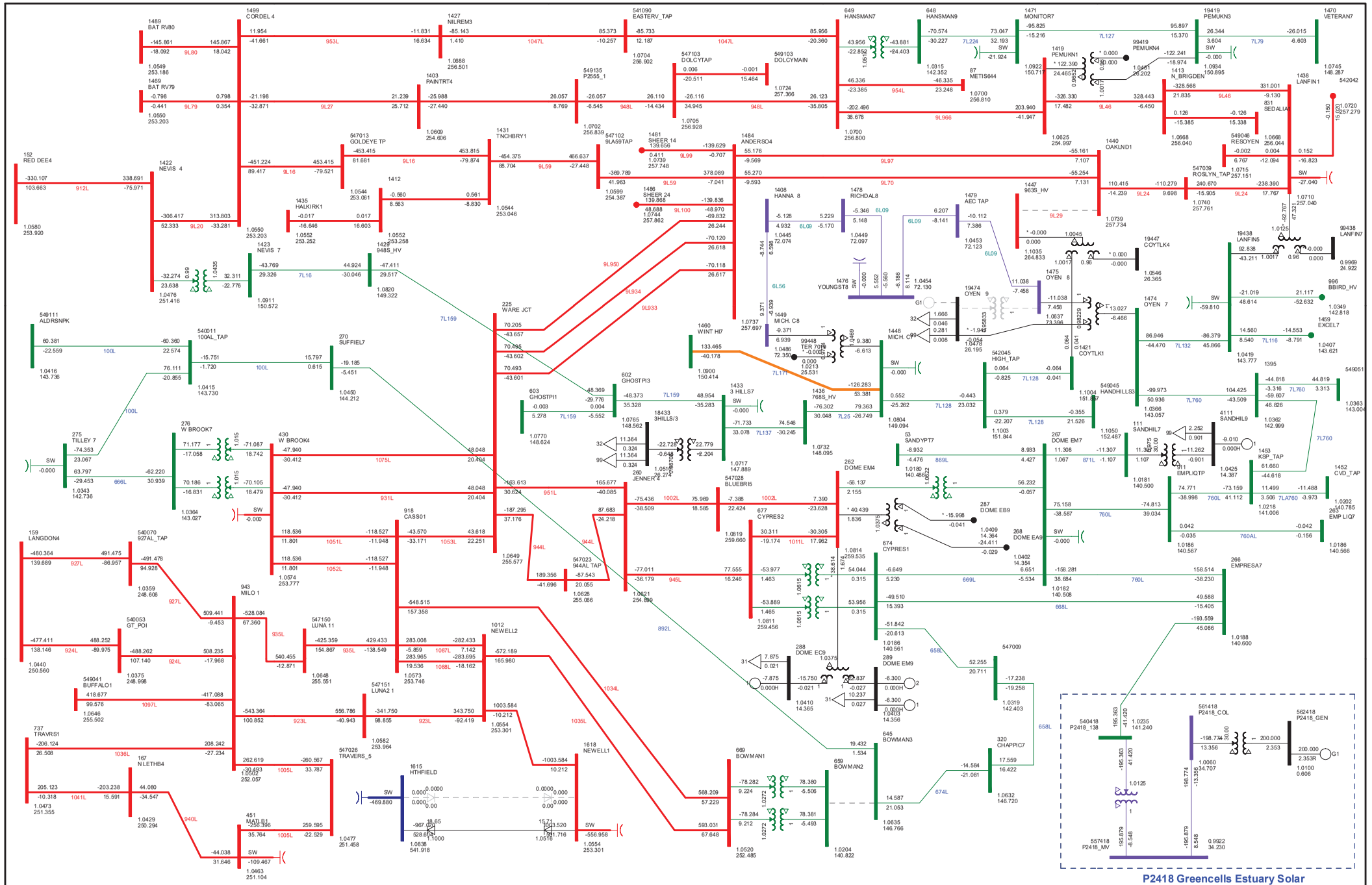
FIGURE A3-2-9 N-1: 6L56 (MICHICHI CREEK A802S TO HANNA A763S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000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1489 BAT RV80
1469 BAT RV79
1427 NILREM3
1403 PAINTRT4
541090 EASTERV_TAP
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1412
1435 HALKIRK1
1423 NEVIS 7
1422 948S_HV
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER_14
1486 SHEER 24
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
19447 COYTLK4
1421 COYTLK1
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
99448 TER 7076
602 GHOSTPI3
603 GHOSTPI1
18433 3HILLS/3
1433 3 HILLS7
1436 7685_HV
542045 HIGH_TAP
549045 HANDHILLS3
53 SANDYPT7
262 DOME EM4
260 JENNER 4
547028 BLUEBRI5
677 CYPRES2
674 CYPRES1
267 DOME EM7
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
287 DOME EB9
268 DOME EA9
266 EMPRESA7
159 LANGDON4
540070 927AL_TAP
540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
451 MATLB1
1615 HTHFIELD
918 CASS01
547023 944AL TAP
1012 NEWELL2
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
547009
288 DOME EC9
289 DOME EM9
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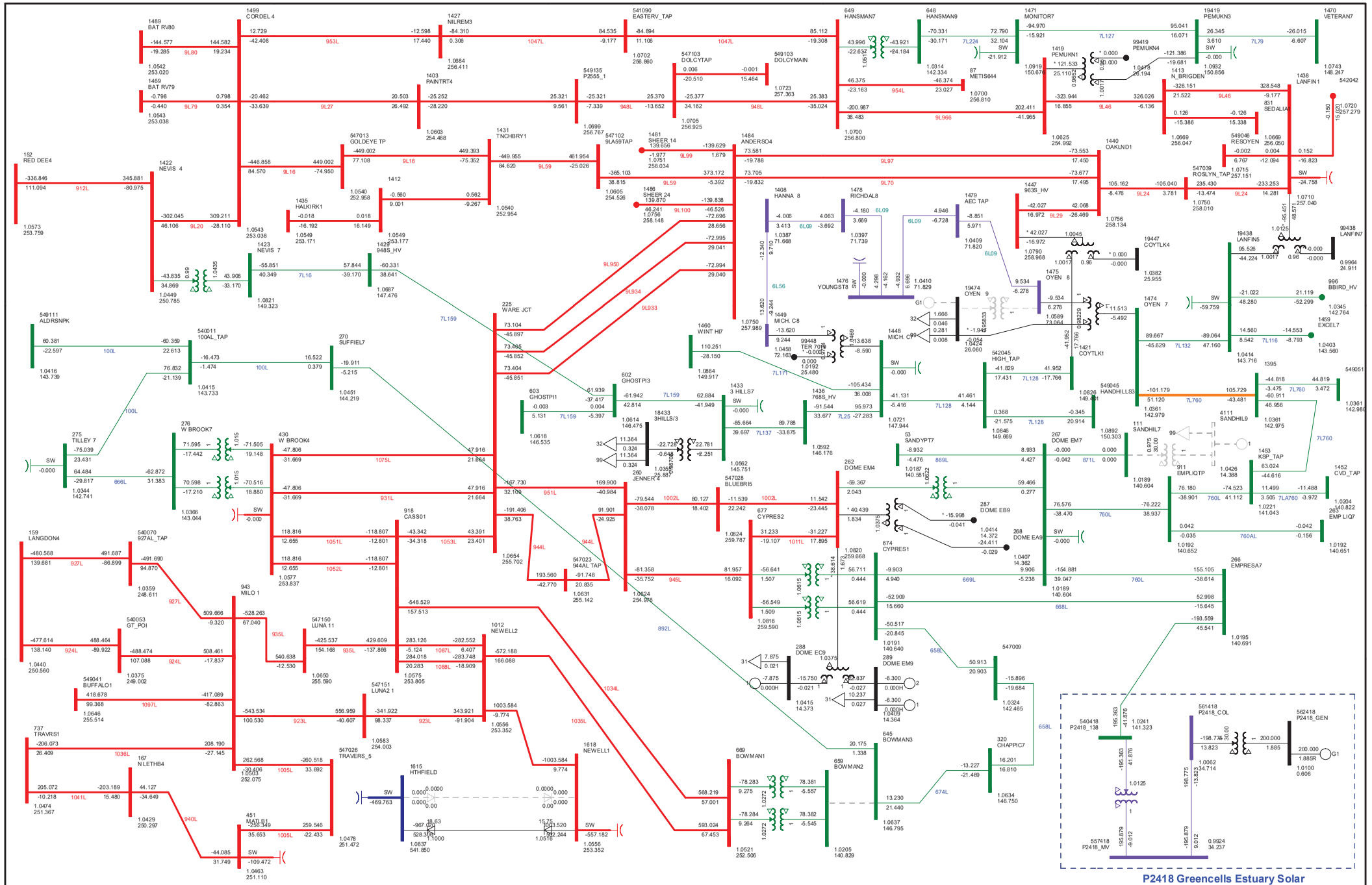
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar



P2418 Greencells Estuary Solar

FIGURE A3-2-11 N-1: 341ST1 (SAND HILLS 341S TRANSFORMER T1)
2028 SUMMER LIGHT (POST-CONNECTION)
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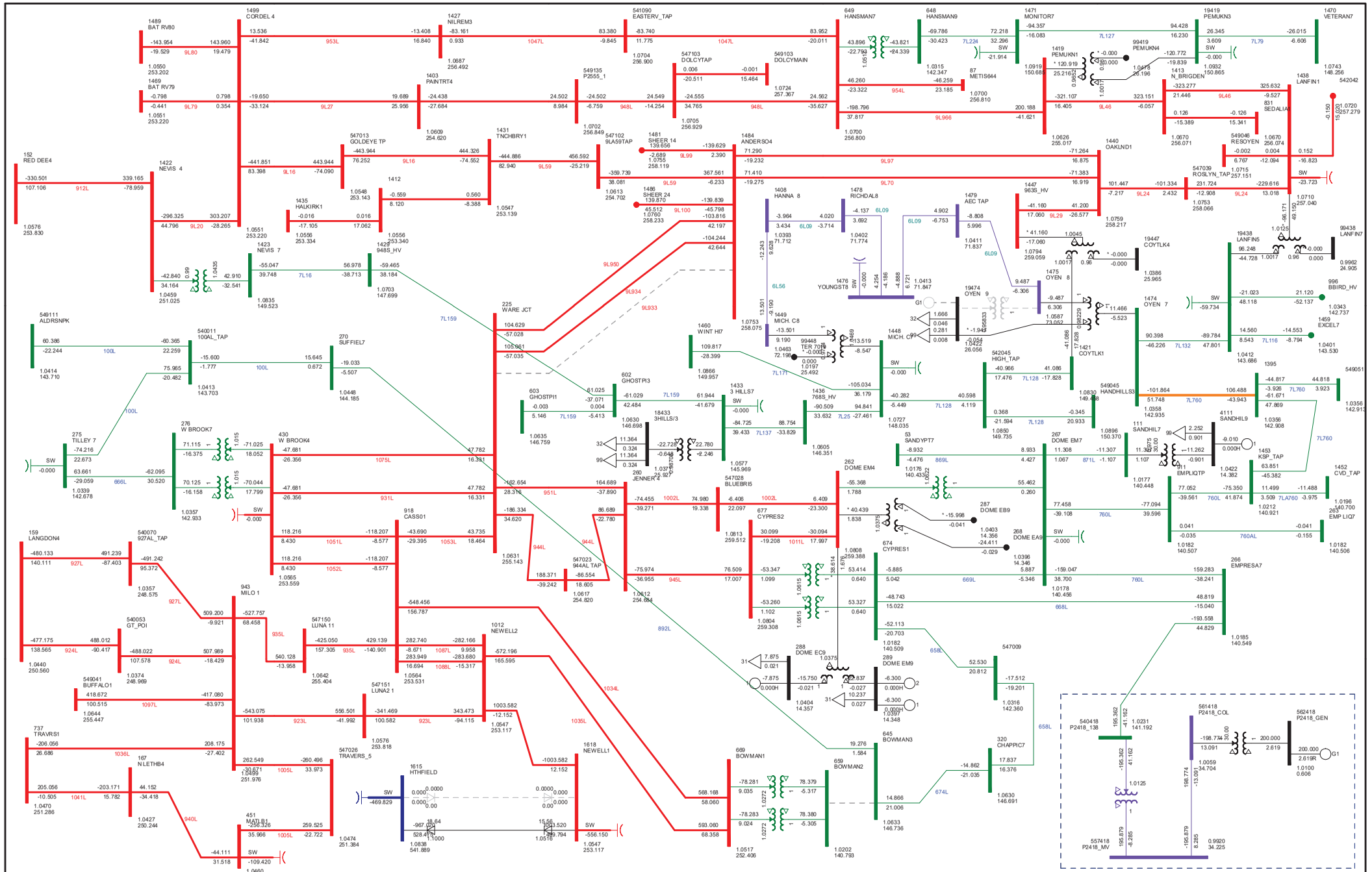
1499 CORDEL 4
1427 NILREM3
541090 EASTERV_TAP
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1489 BAT RV80
1469 BAT RV79
1403 PAINTRT4
549135 P2555_1
547103 DOLCYTAP
549103 DOLCYMAIN
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1431 TNCHBRY1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1440 OAKLND1
549046 RESQYEN
547039 ROSLYN_TAP
1435 HALKIRK1
1412
1423 NEVIS 7
1422 948S_HV
1496 SHEER 24
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
1476 YOUNGST8
19474 OYEN 9
1475 OYEN 8
1474 OYEN 7
19447 COYTLK4
1421 COYTLK1
1459 EXCEL7
1395
549051
275 TILLEY 7
276 W BROOK7
430 W BROOK4
602 GHOSTPI3
603 GHOSTPI1
18433 3HILLS/3
1433 3 HILLS7
1436 7685_HV
542045 HIGH_TAP
549045 HANDHILLS3
111 SANDHIL7
4111 SANDHIL9
1453 KSP_TAP
1452 CVD_TAP
260 JENNER 4
547028 BLUEBRI5
262 DOME EM4
53 SANDYPT7
267 DOME EM7
911 EMPLIQTP
159 LANGDON4
540070 927AL_TAP
918 CASS01
943 MILO 1
677 CYPRES2
674 CYPRES1
287 DOME EB9
268 DOME EA9
266 EMPRESA7
540053 GT_POI
547150 LUNA 11
1012 NEWELL2
549041 BUFFALO1
547151 LUNA2 1
547023 944AL TAP
288 DOME EC9
289 DOME EM9
547009
737 TRAVRS1
167 N LETHB4
547026 TRAVERS_5
1615 HTHFIELD
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
451 MATLB1
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar

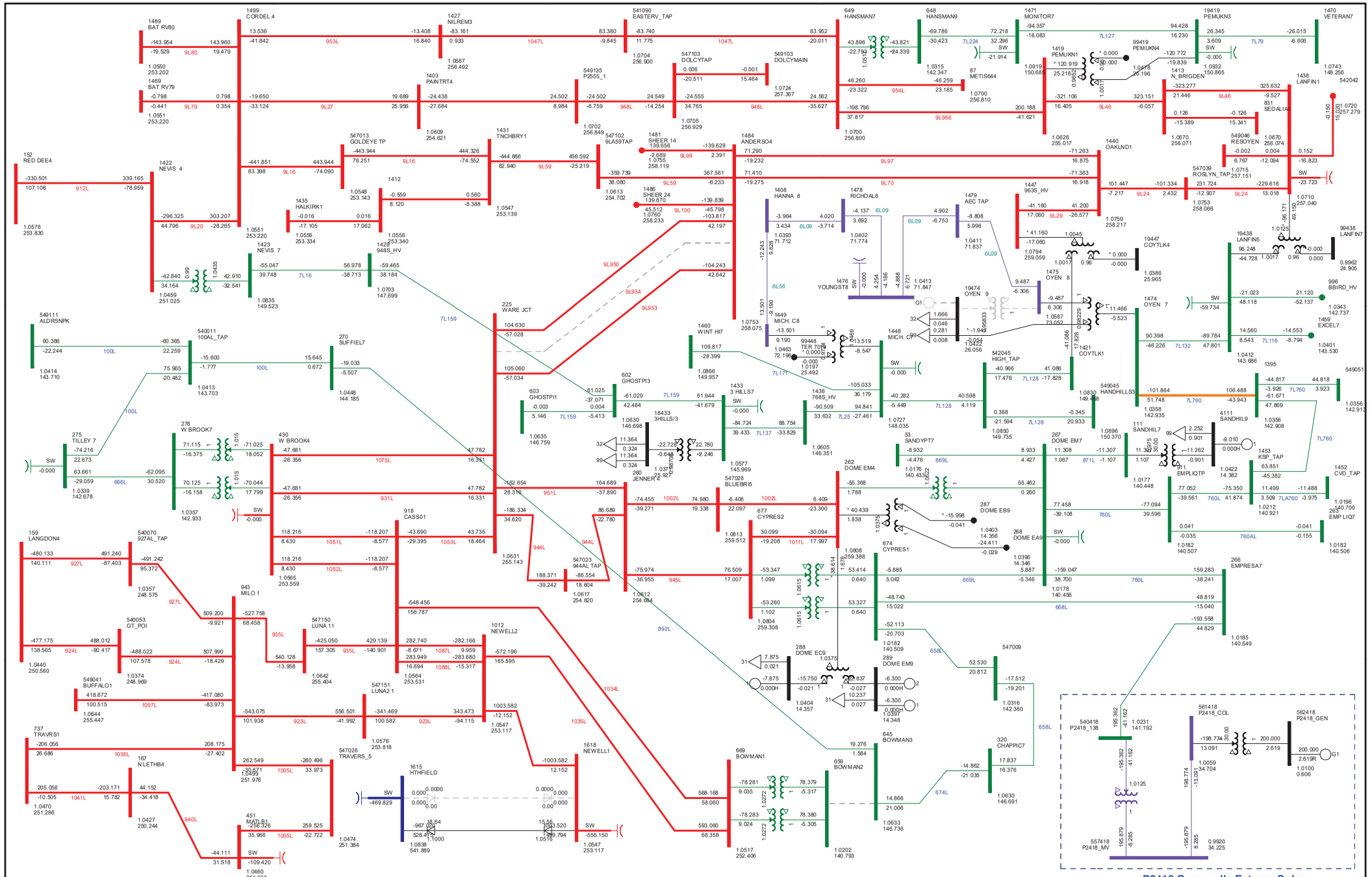

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FIGURE A3-2-13 N-1: 934L (WARE JUNCTION 132S TO ANDERSON A801S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

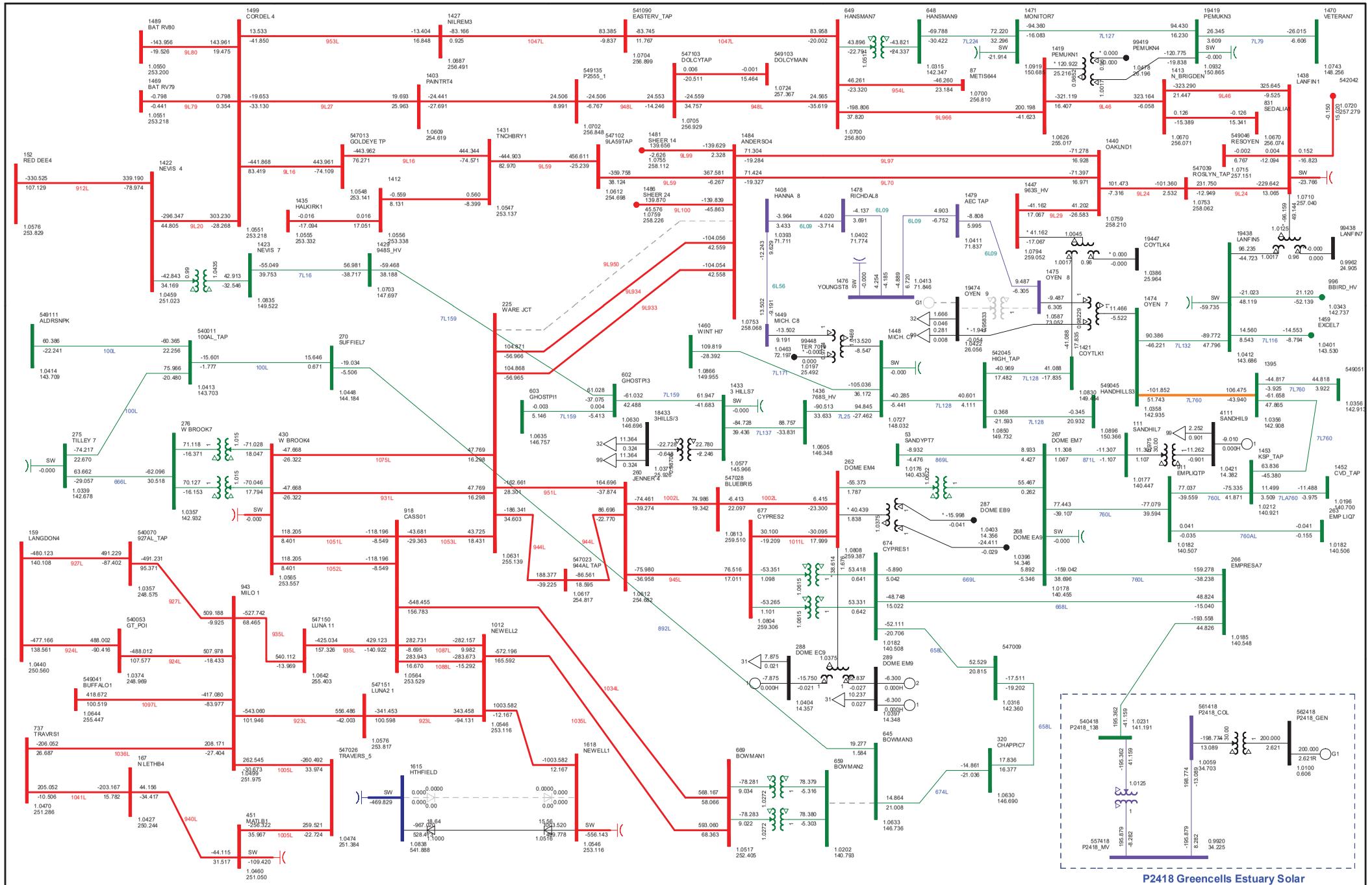

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FIGURE A3-2-14 N-1: 950L (WARE JUNCTION 132S TO ANDERSON A801S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

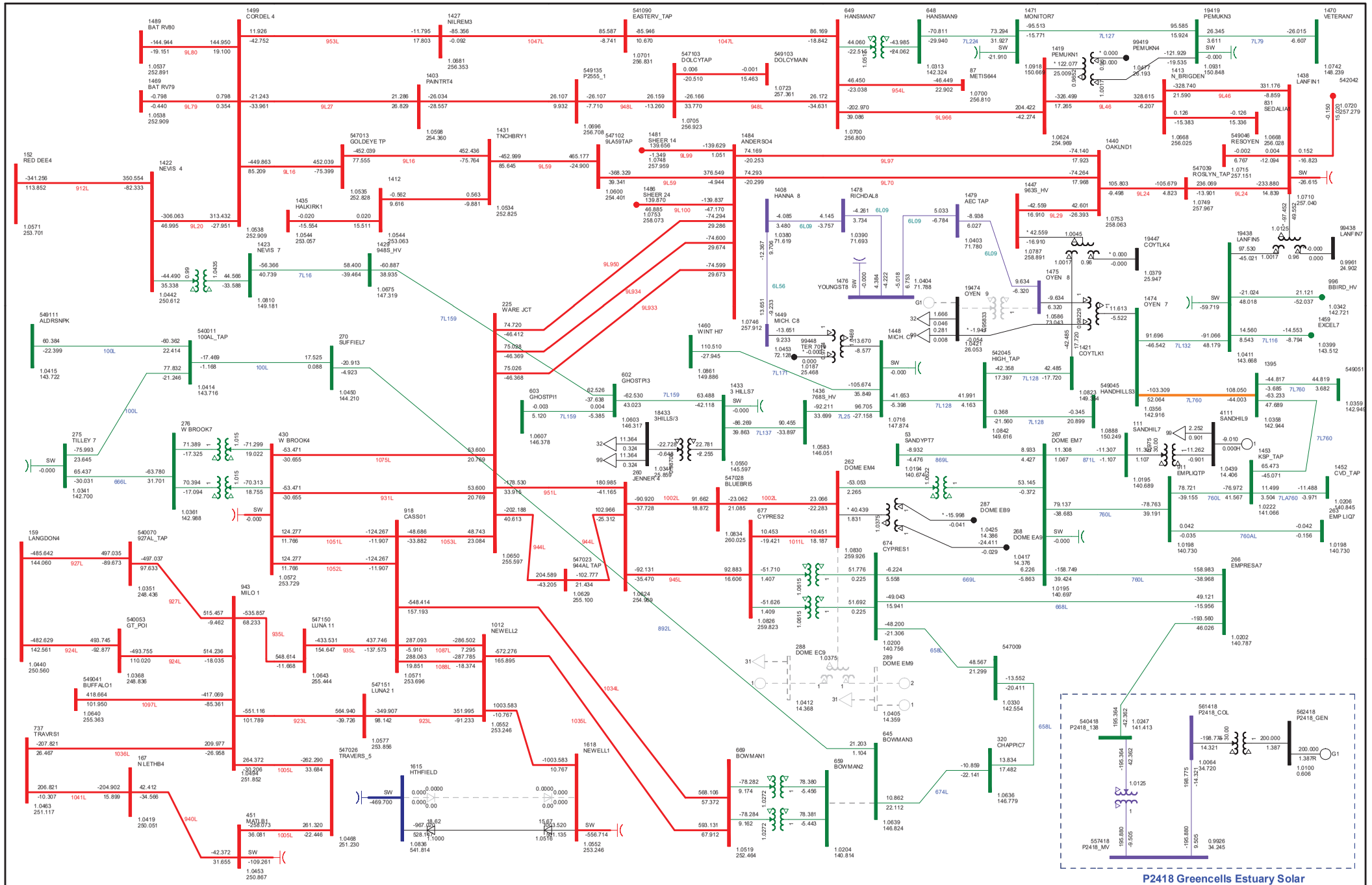

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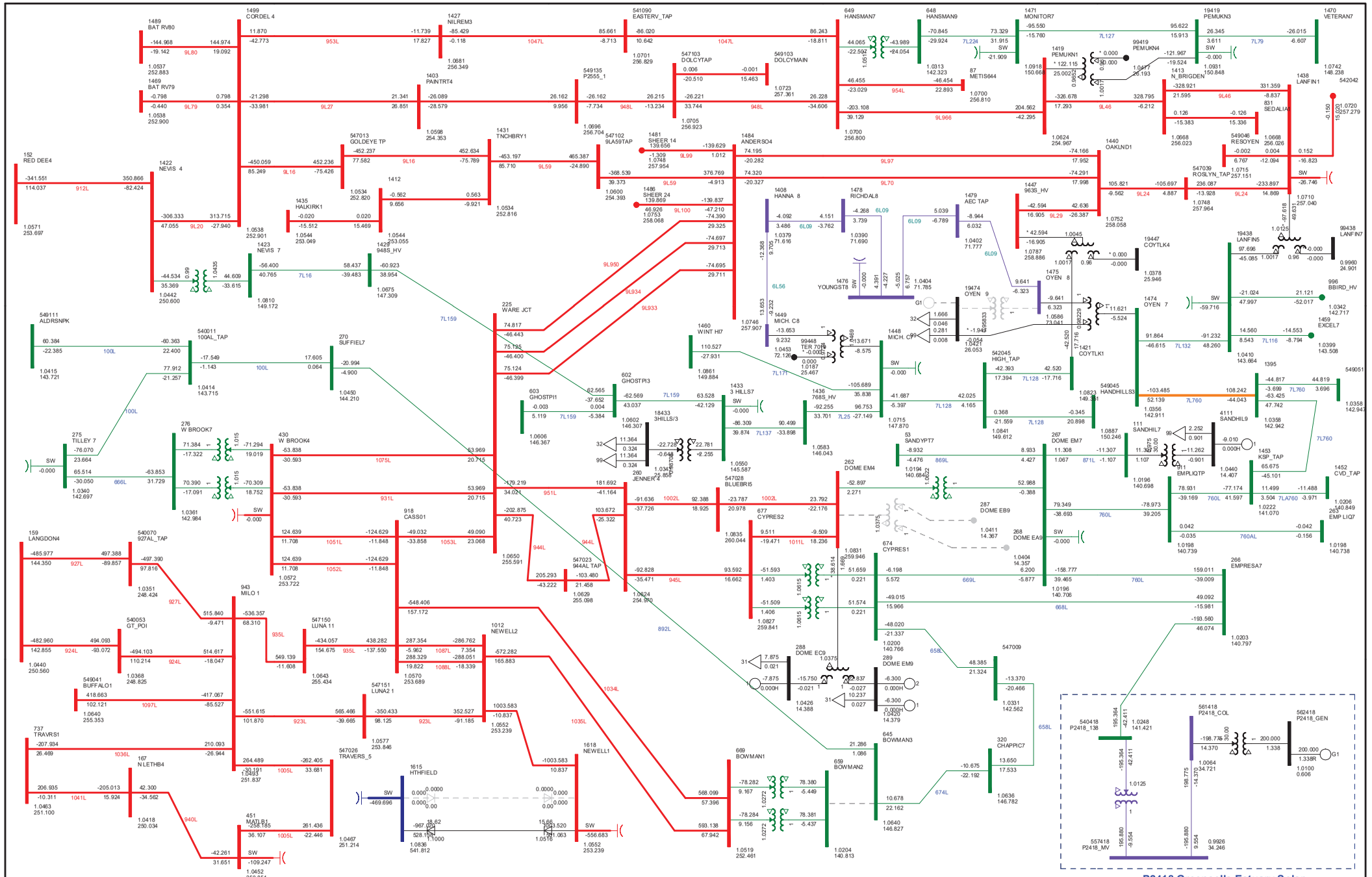
FIGURE A3-2-15 N-1: 163ST1 (AMOCO EMPRESS 163S TRANSFORMER T1)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000


1499 CORDEL 4
1489 BAT RV80
1469 BAT RV79
1427 NILREM3
1403 PAINTRT4
541090 EASTERV_TAP
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
649 HANSMAN7
648 HANSMAN9
87 METIS644
1471 MONITOR7
1419 PEMUKN1
99419 PEMUKN4
19419 PEMUKN3
1413 N_BRIGDEN
1470 VETERAN7
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
1475 OYEN 8
19474 OYEN 9
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
1459 EXCEL7
996 BBIRD_HV
99438 LANFIN7
1395
549051
1452 CVD_TAP
1453 KSP_TAP
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
549045 HANDHILLS3
542045 HIGH_TAP
53 SANDYPT7
267 DOME EM7
262 DOME EM4
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
1460 WINT HI7
1448 MICH. C9
1449 MICH. C8
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1484 ANDERSO4
1481 SHEER 14
1496 SHEER 24
547102 9LA59TAP
1431 TNCHBRY1
1435 HALKIRK1
1412
1422 NEVIS 4
1423 NEVIS 7
1425 948S_HV
547013 GOLDEYE TP
152 RED DEE4
549111 ALDRSNPK
540011 100AL_TAP
275 TILLEY 7
276 W BROOK7
430 W BROOK4
270 SUFFIEL7
225 WARE JCT
603 GHOSTPI1
602 GHOSTPI3
1433 3 HILLS7
18433 3HILLS/3
1436 7685_HV
260 JENNER 4
159 LANGDON4
540070 927AL_TAP
540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
451 MATLP1
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
1615 HTHFIELD
918 CASS01
547023 944AL TAP
1012 NEWELL2
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
266 EMPRESA7
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar

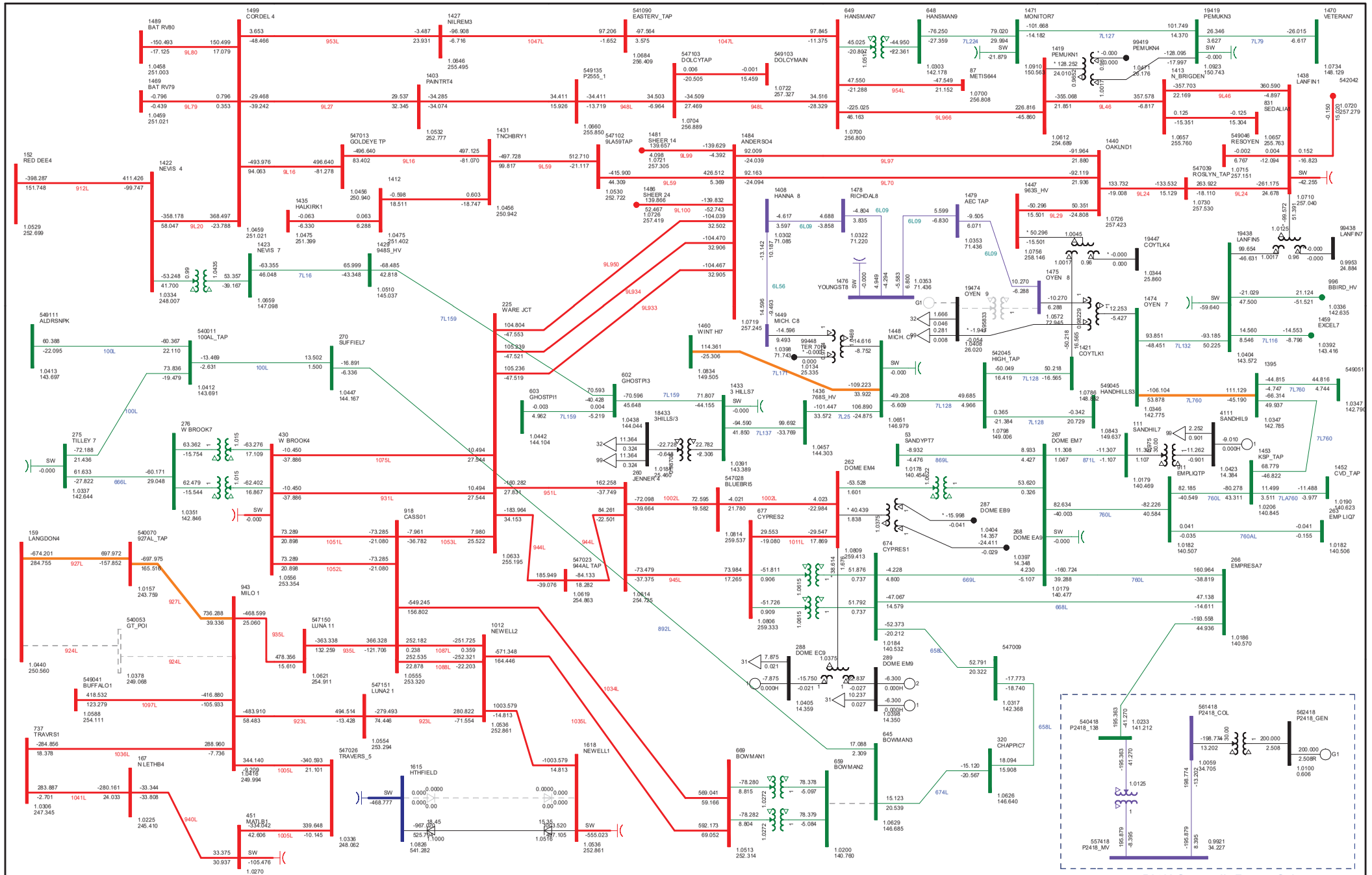


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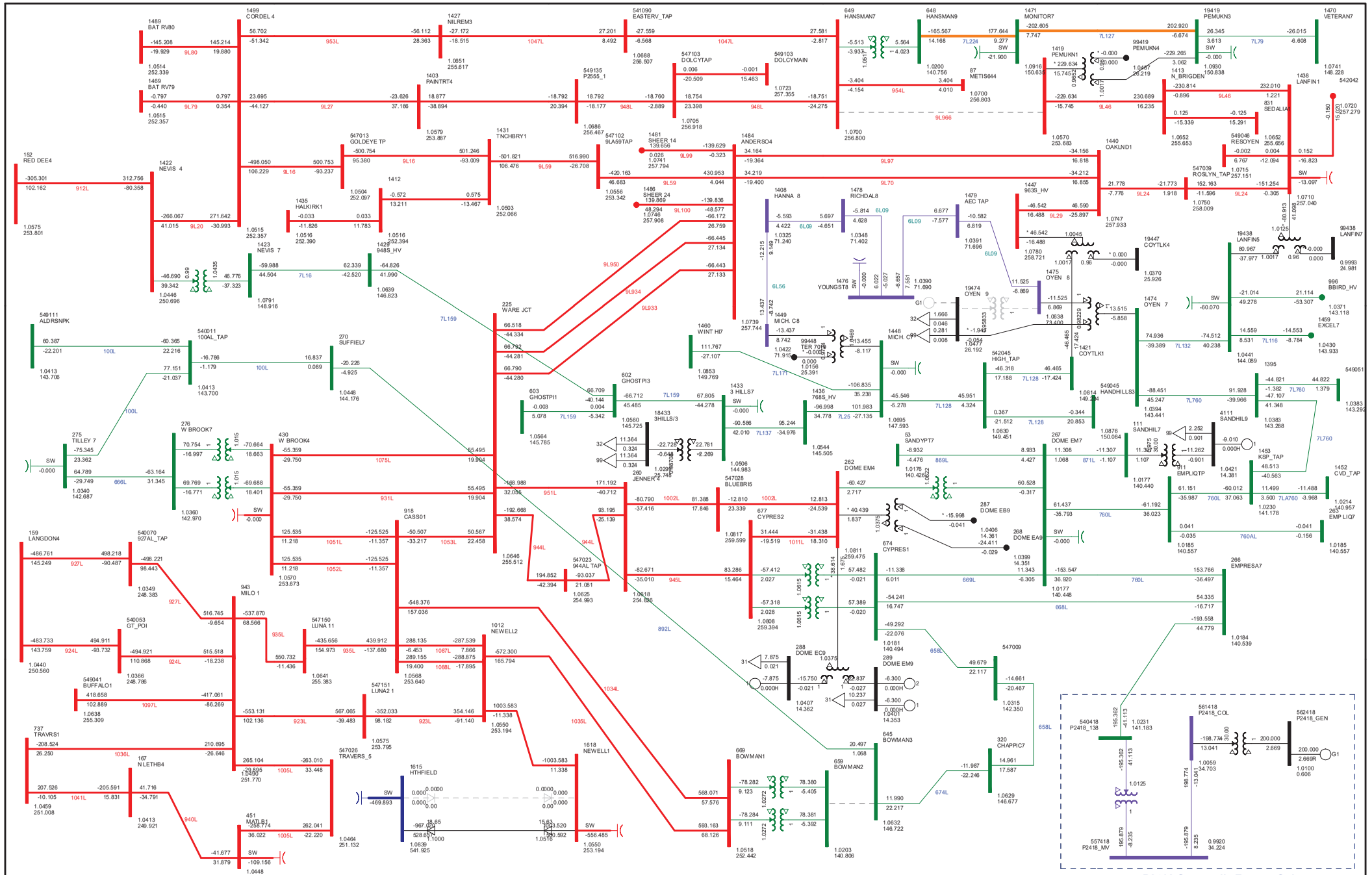
FIGURE A3-2-17 N-1: 924L (MILO 356S TO LANGDON 102S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024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1469 BAT RV79
1427 NILREM3
1403 PAINTRT4
1431 TNCHBRY1
1435 HALKIRK1
1412
547013 GOLDEYE TP
1422 NEVIS 4
1423 NEVIS 7
1425 948S_HV
152 RED DEE4
912L
9L80
9L79
9L27
9L16
9L20
7L16
1047L
953L
954L
948L
9L59
9L99
9L100
9L950
9L934
9L933
7L159
9L966
541090 EASTERV_TAP
547103 DOLCYTAP
549103 DOLCYMAIN
549135 P2555_1
547102 9LA59TAP
1481 SHEER 14
1486 SHEER 24
1484 ANDERSO4
649 HANSMAN7
648 HANSMAN9
7L224
1471 MONITOR7
7L127
1419 PEMUKN1
99419 PEMUKN4
19419 PEMUKN3
1413 N_BRIGDEN
87 METIS644
1470 VETERAN7
542042
1438 LANFIN1
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
9L29
9L24
9L70
9L97
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGST8
1475 OYEN 8
19474 OYEN 9
1477
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
1395
549051
1452 CVD_TAP
1453 KSP_TAP
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
549045 HANDHILLS3
542045 HIGH_TAP
7L132
7L760
7L128
7L171
7L116
7L25
7L137
1460 WINT HI7
1448 MICH. C9
1449 MICH. C8
1433 3 HILLS7
18433 3HILLS/3
1436 7685_HV
602 GHOSTPI3
603 GHOSTPI1
225 WARE JCT
1422 TER 7076
99448
53 SANDYPT7
262 DOME EM4
267 DOME EM7
871L
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
260 JENNER 4
547023 944AL TAP
944L
892L
1034L
1035L
1012 NEWELL2
1618 NEWELL1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
547009
288 DOME EC9
289 DOME EM9
1615 HTHFIELD
547026 TRAVERS_5
547150 LUNA 11
547151 LUNA2 1
918 CASS01
943 MILO 1
540070 927AL_TAP
927L
540053 GT_POI
549041 BUFFALO1
1097L
1088L
1087L
1051L
1052L
1053L
1036L
1041L
940L
737 TRAVRS1
167 N LETHB4
451 MATL B1
1005L
923L
935L
1007L
924L
666L
100L
276 W BROOK7
430 W BROOK4
1075L
931L
275 TILLEY 7
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
159 LANGDON4
927L
1266 EMPRESA7
760L
760AL
669L
668L
658L
674L
7L760
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561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar

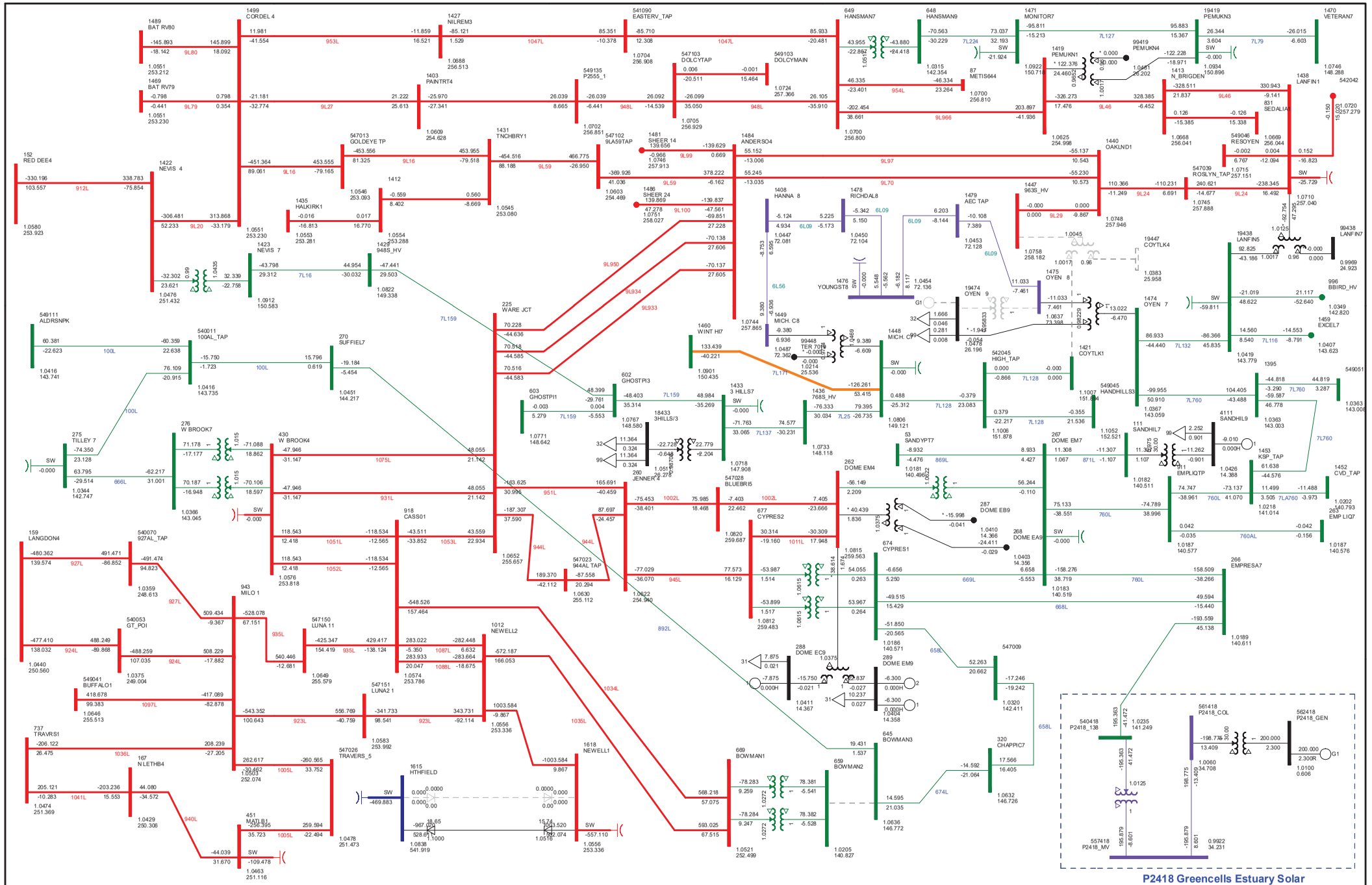

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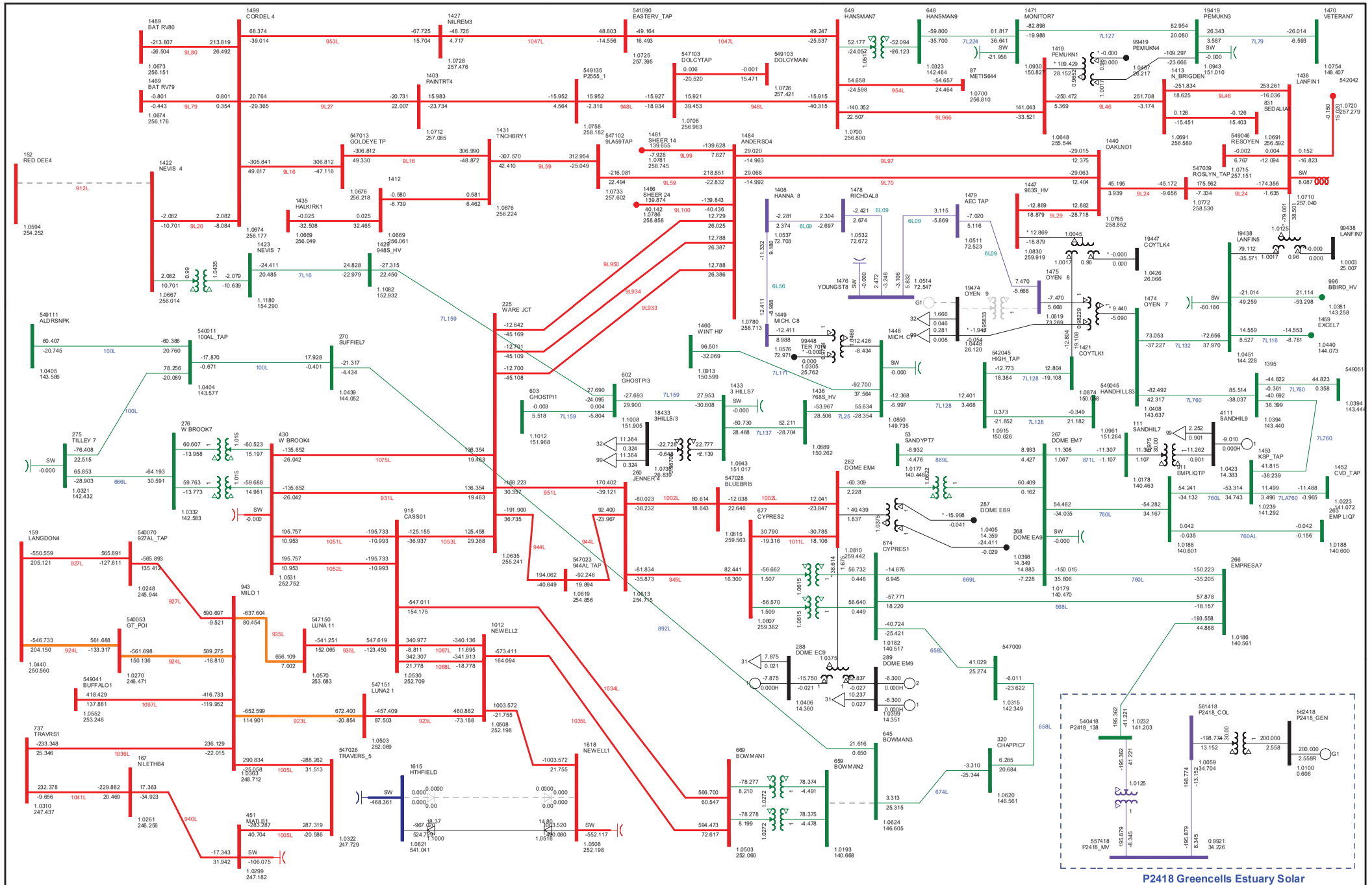
FIGURE A3-2-19 N-1: 963S T1 (COYOTE LAKE 963S TRANSFORMER T1)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024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1489 BAT RV80
1469 BAT RV79
1427 NILREM3
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541090 EASTERV_TAP
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547103 DOLCYTAP
549103 DOLCYMAIN
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESQYEN
547039 ROSLYN_TAP
1440 OAKLND1
1447 963S_HV
152 RED DEE4
912L
1422 NEVIS 4
1423 NEVIS 7
1435 HALKIRK1
547013 GOLDEYE TP
1412
1431 TNCHBRY1
1423 948S_HV
547102 9LA59TAP
1481 SHEER_14
1486 SHEER 24
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1476 YOUNGSTR
1449 MICH. C8
1448 MICH. C9
99448 TER 707S
19474 OYEN 9
1475 OYEN 8
1474 OYEN 7
1421 COYTLK1
19447 COYTLK4
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
225 WARE JCT
1460 WINT HI7
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
542045 HIGH_TAP
549045 HANDHILLS3
1395
549051
53 SANDYPT7
111 SANDHIL7
4111 SANDHIL9
911 EMPLIQTP
1453 KSP_TAP
1452 CVD_TAP
262 DOME EM4
267 DOME EM7
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
260 JENNER 4
159 LANGDON4
540070 927AL_TAP
540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
918 CASS01
944AL TAP
547023 944AL TAP
1012 NEWELL2
1618 NEWELL1
547026 TRAVERS_5
1615 HTHFIELD
451 MATL B1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
547009
320 CHAPPIC7
266 EMPRESA7
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar

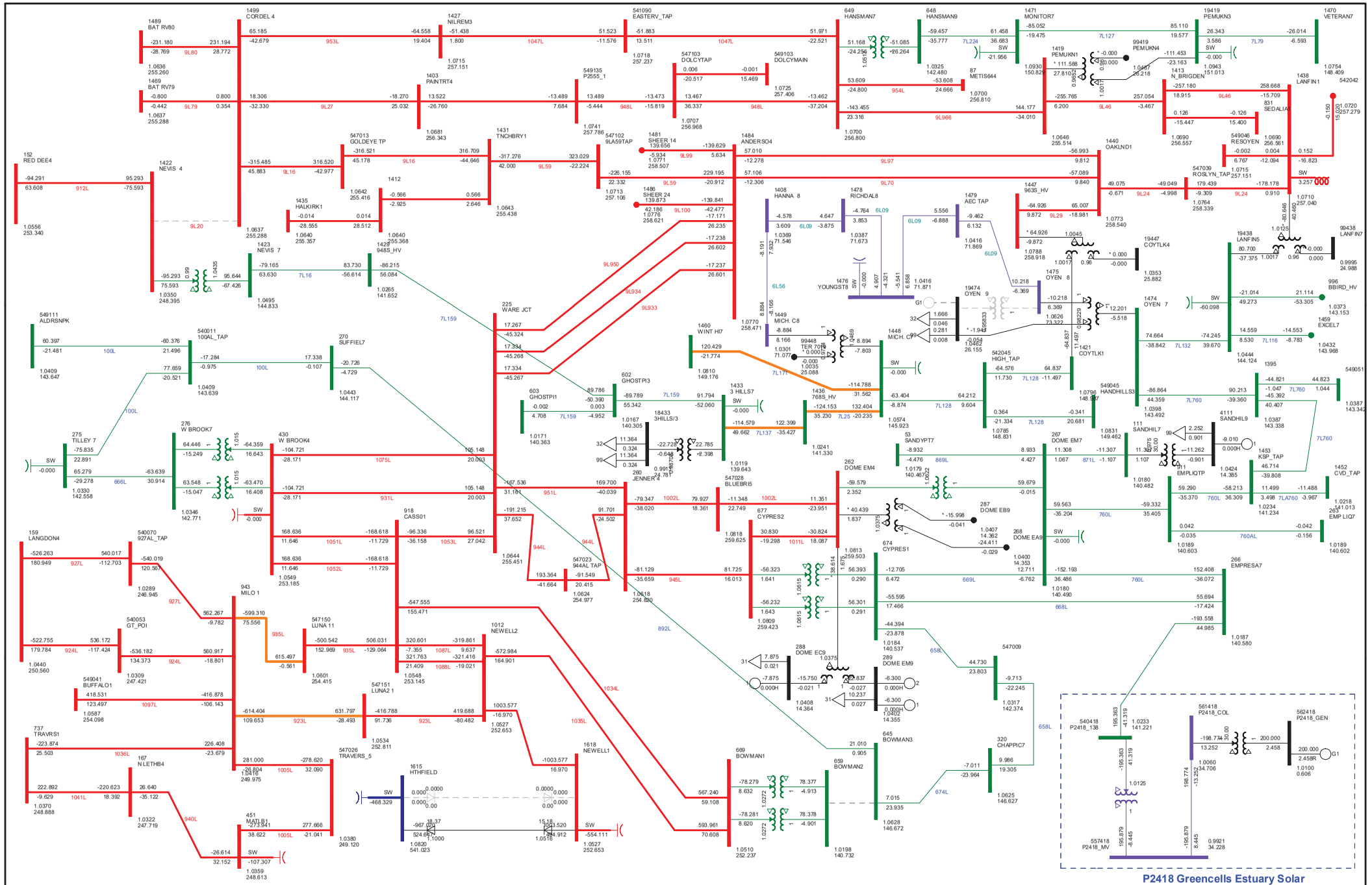

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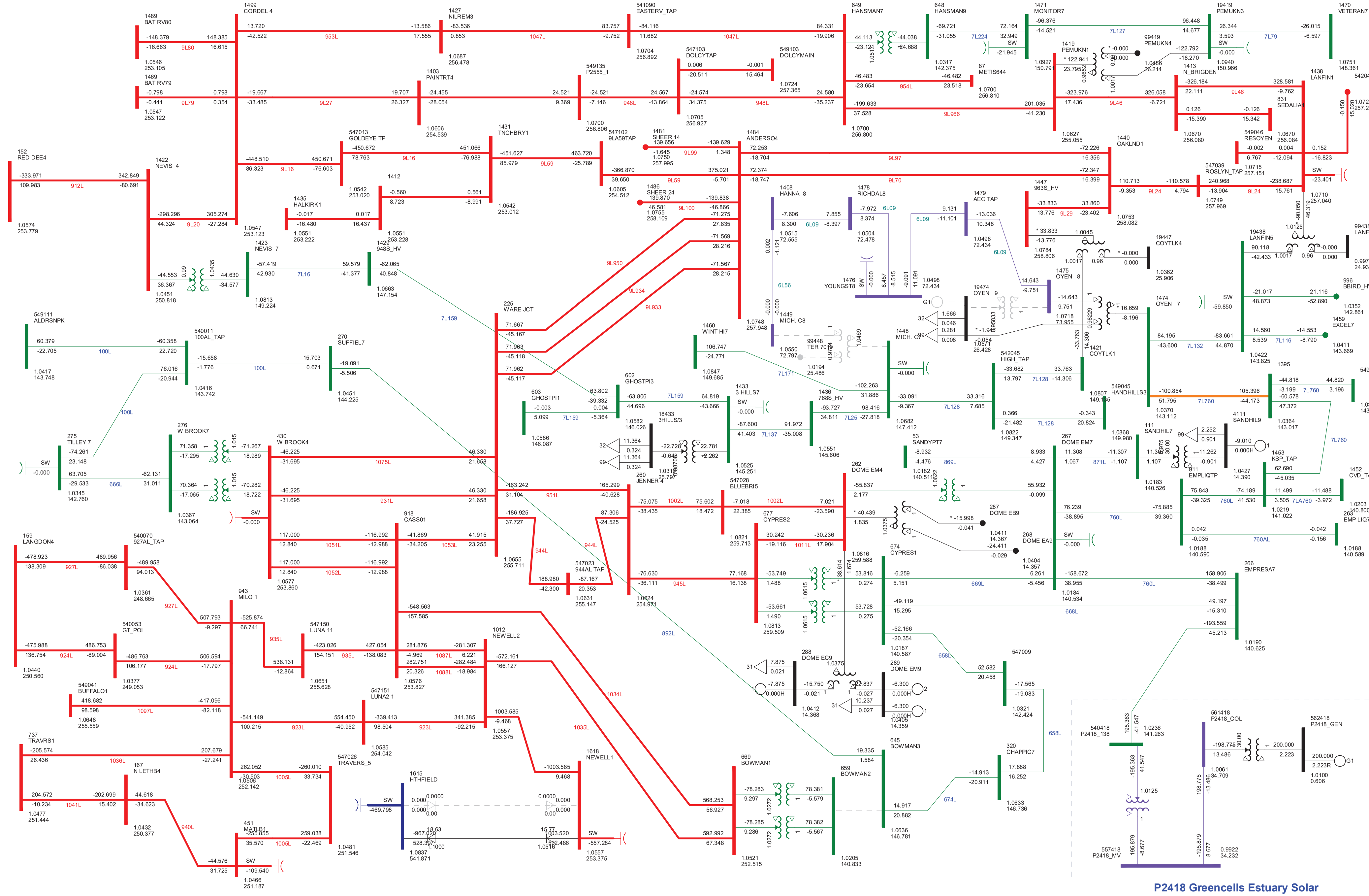
FIGURE A3-2-21 N-1: 9L20 (NEVIS 766S TO CORDEL 755S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

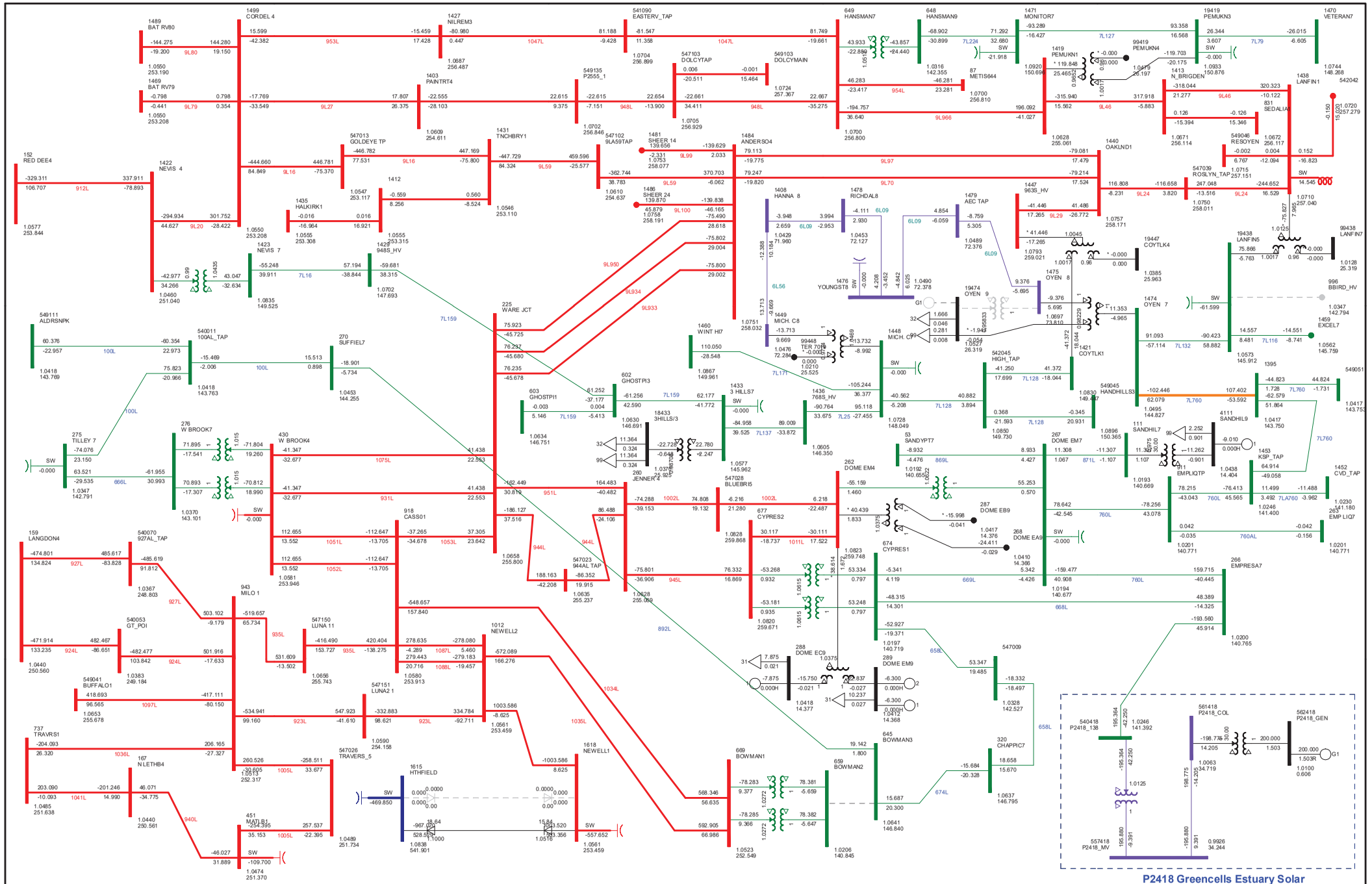
Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

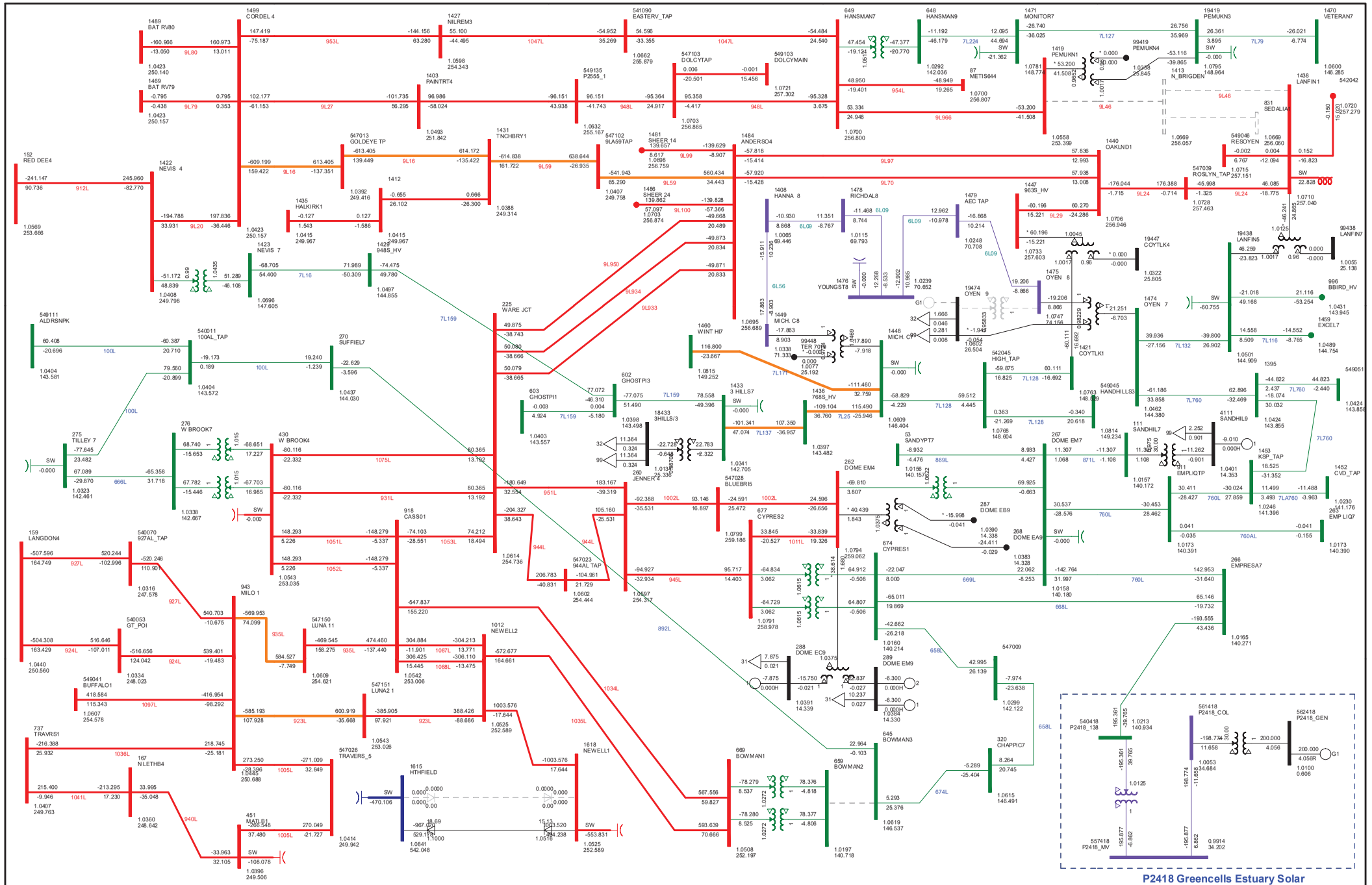
FIGURE A3-2-22 N-1: MICHICHI CREEK A802S TRANSFORMER T1
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

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



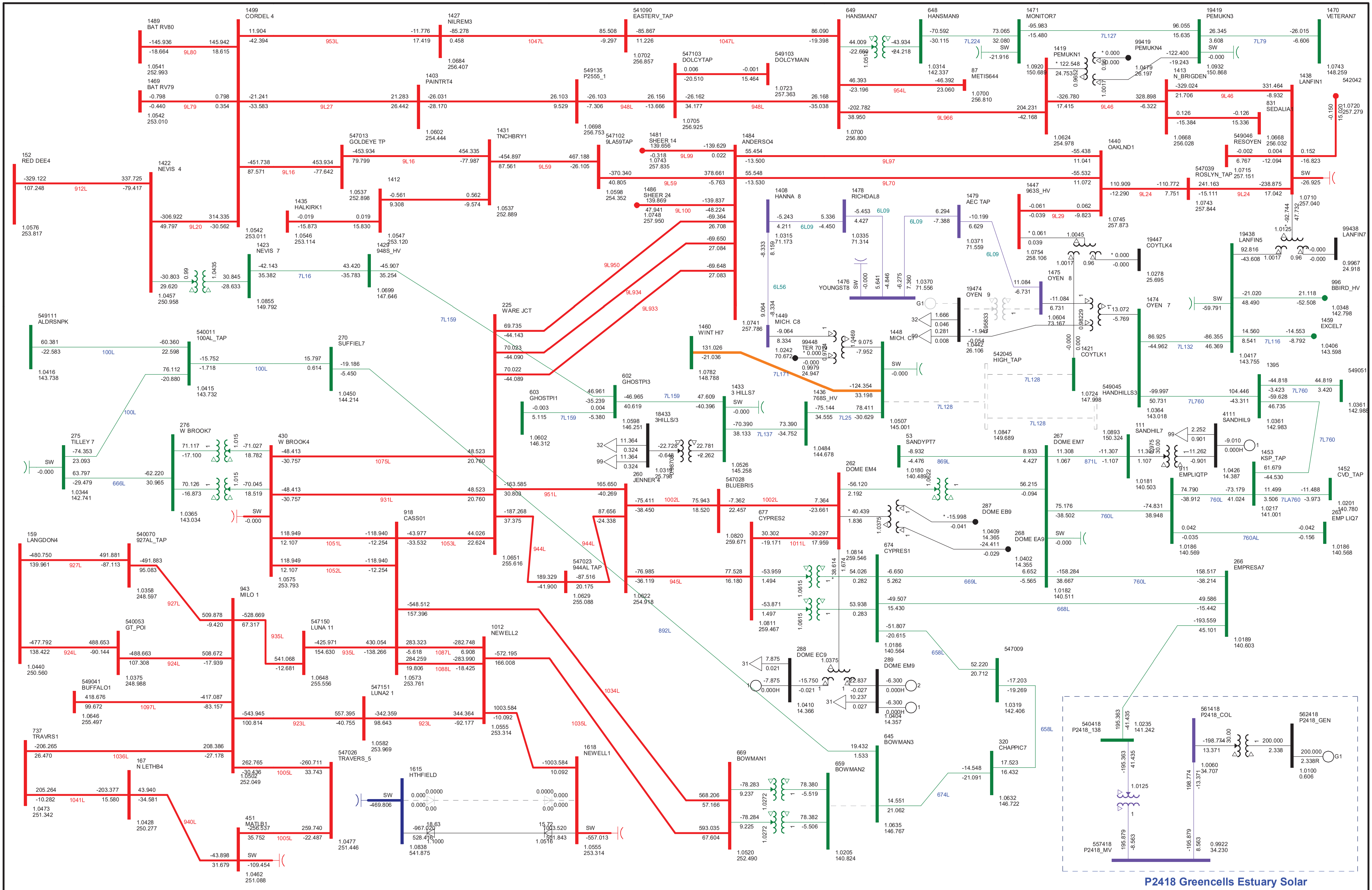
P2418 Greencells Estuary Solar

FIGURE A3-2-23 N-1: 7L238 (LANFINE 959S TO BUFFALO BIRD 601S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



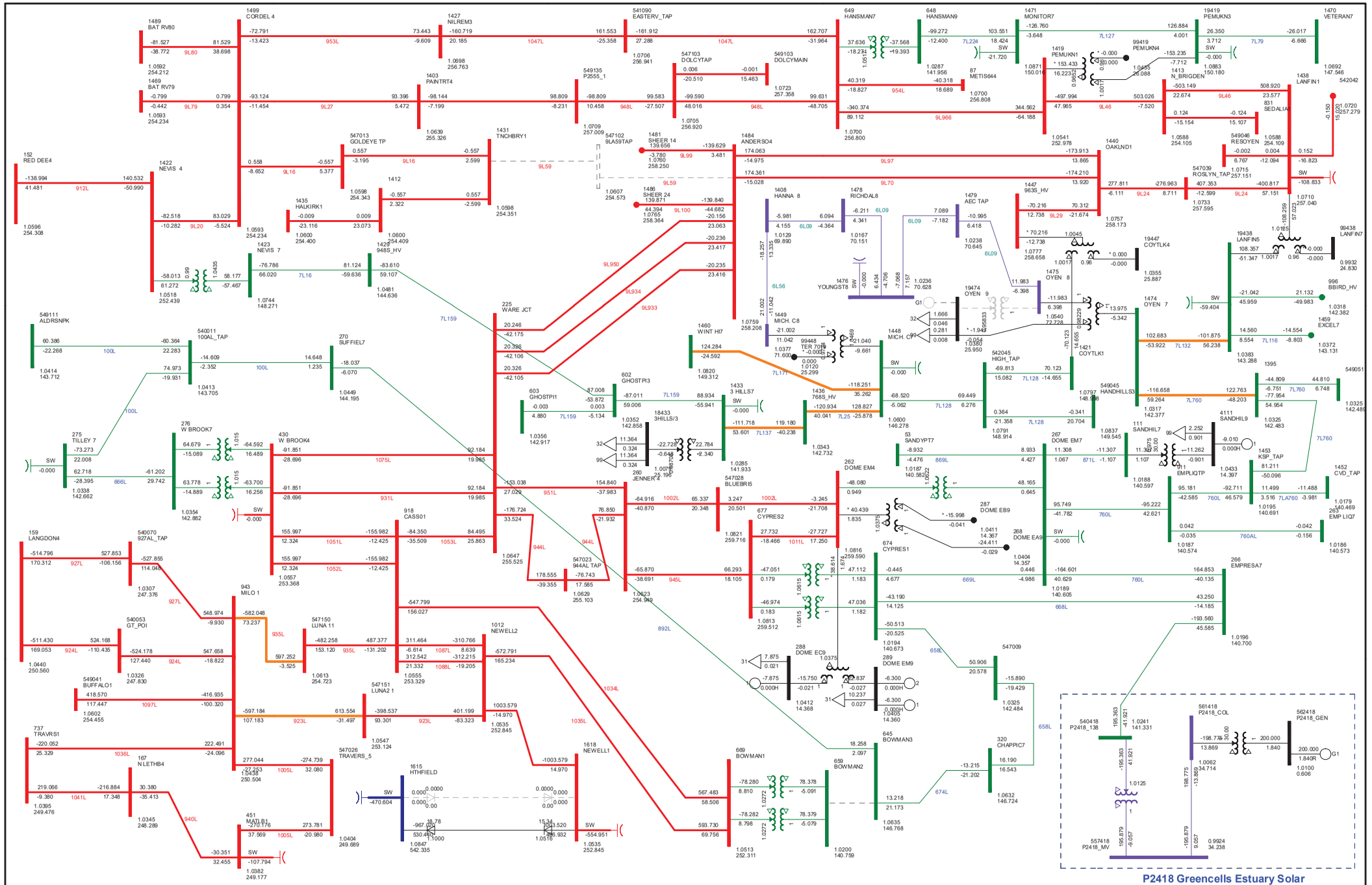
P2418 Greencells Estuary Solar

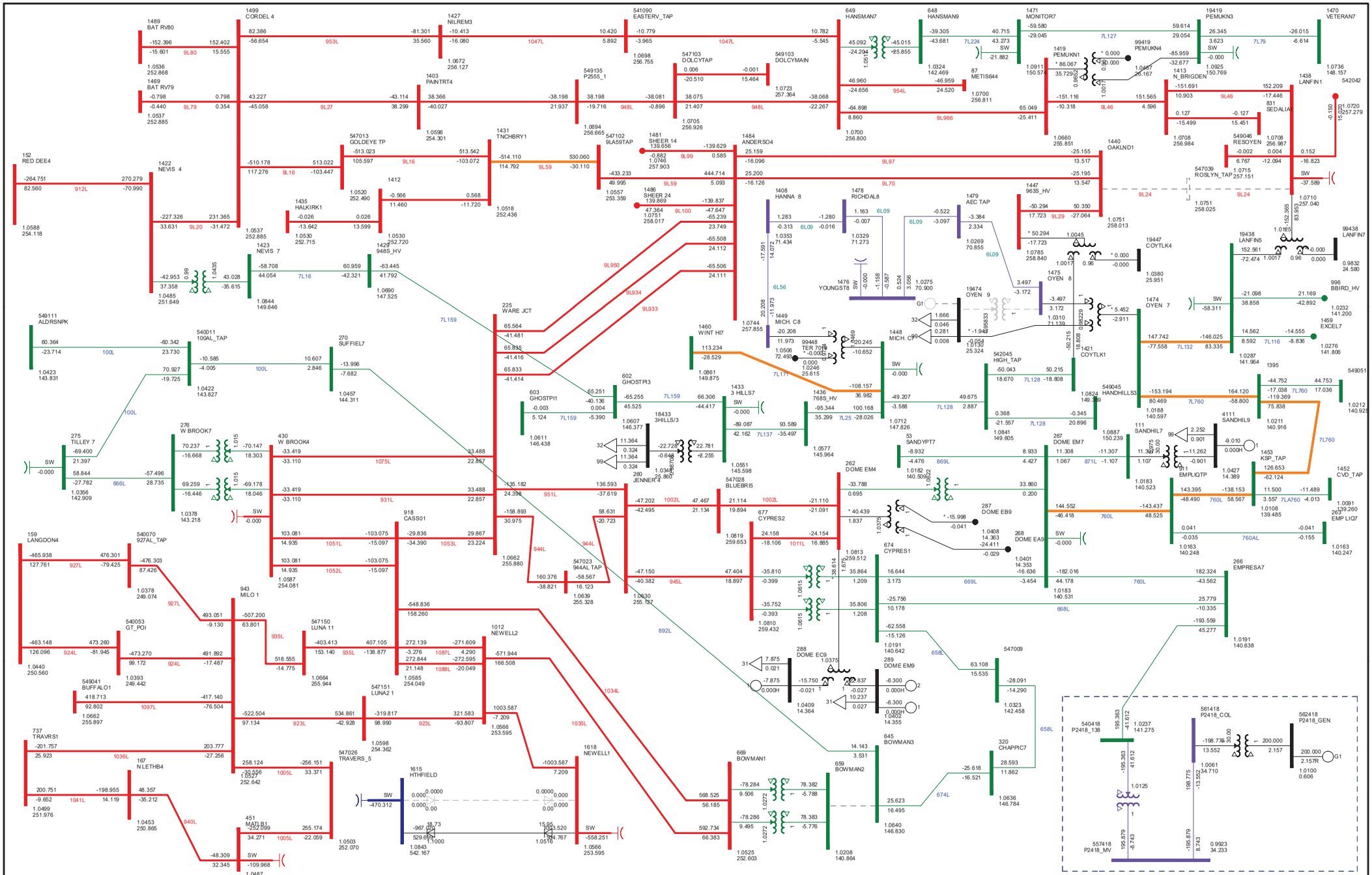
FIGURE A3-2-24 N-1: 9L46 (LANFINE 959S TO PEMUKAN 932S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A3-2-25 N-1: 7L128 (MICHICHI CREEK 802S TO COYOTE LAKE 963S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

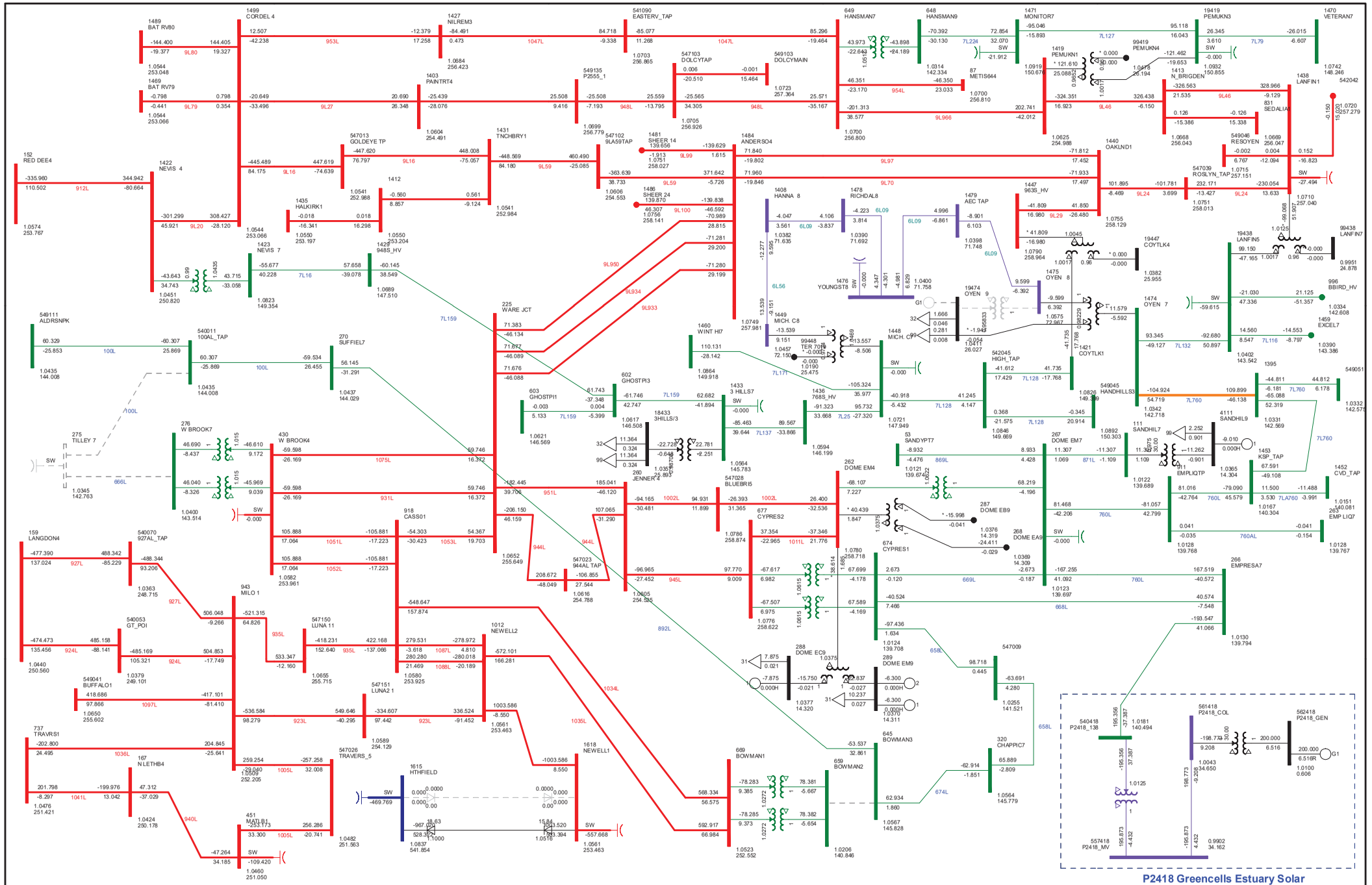

1499 CORDEL 4
1427 NILREM3
541090 EASTERV_TAP
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1489 BAT RV80
1469 BAT RV79
1403 PAINTRT4
549135 P2555_1
547103 DOLCYTAP
549103 DOLCYMAIN
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1431 TNCHBRY1
1412
1435 HALKIRK1
547102 9LA59TAP
1481 SHEER 14
1484 ANDERSO4
1440 OAKLND1
549046 RESQYEN
547039 ROSLYN_TAP
1423 NEVIS 7
1422 948S_HV
1486 SHEER 24
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
19438 LANFIN5
99438 LANFIN7
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
225 WARE JCT
1460 WINT HI7
1449 MICH. C8
1448 MICH. C9
1476 YOUNGST8
19474 OYEN 9
1475 OYEN 8
19447 COYTLK4
1474 OYEN 7
1421 COYTLK1
996 BBIRD_HV
1459 EXCEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
602 GHOSTPI3
603 GHOSTPI1
1433 3 HILLS7
18433 3HILLS/3
1436 768S_HV
542045 HIGH_TAP
549045 HANDHILLS3
111 SANDHIL7
4111 SANDHIL9
1453 KSP_TAP
1452 CVD_TAP
1395
549051
53 SANDYPT7
262 DOME EM4
267 DOME EM7
287 DOME EB9
268 DOME EA9
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
260 JENNER 4
1395
159 LANGDON4
540070 927AL_TAP
918 CASS01
943 MILO 1
540053 GT_POI
547150 LUNA 11
1012 NEWELL2
547151 LUNA2 1
547023 944AL TAP
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
547026 TRAVERS_5
1615 HTHFIELD
1618 NEWELL1
451 MATLB1
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
547009
288 DOME EC9
289 DOME EM9
266 EMPRESA7
1452 CVD_TAP
261 EMP LIQ7
911 EMPLIQTP
540418 P2418_138
561418 P2418_COL
562418 P2418_GEN
557418 P2418_MV
P2418 Greencells Estuary Solar



P2418 Greencells Estuary Solar

FIGURE A3-2-27 N-1: 9L24 (OAKLAND 946S – LANFINE 959S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

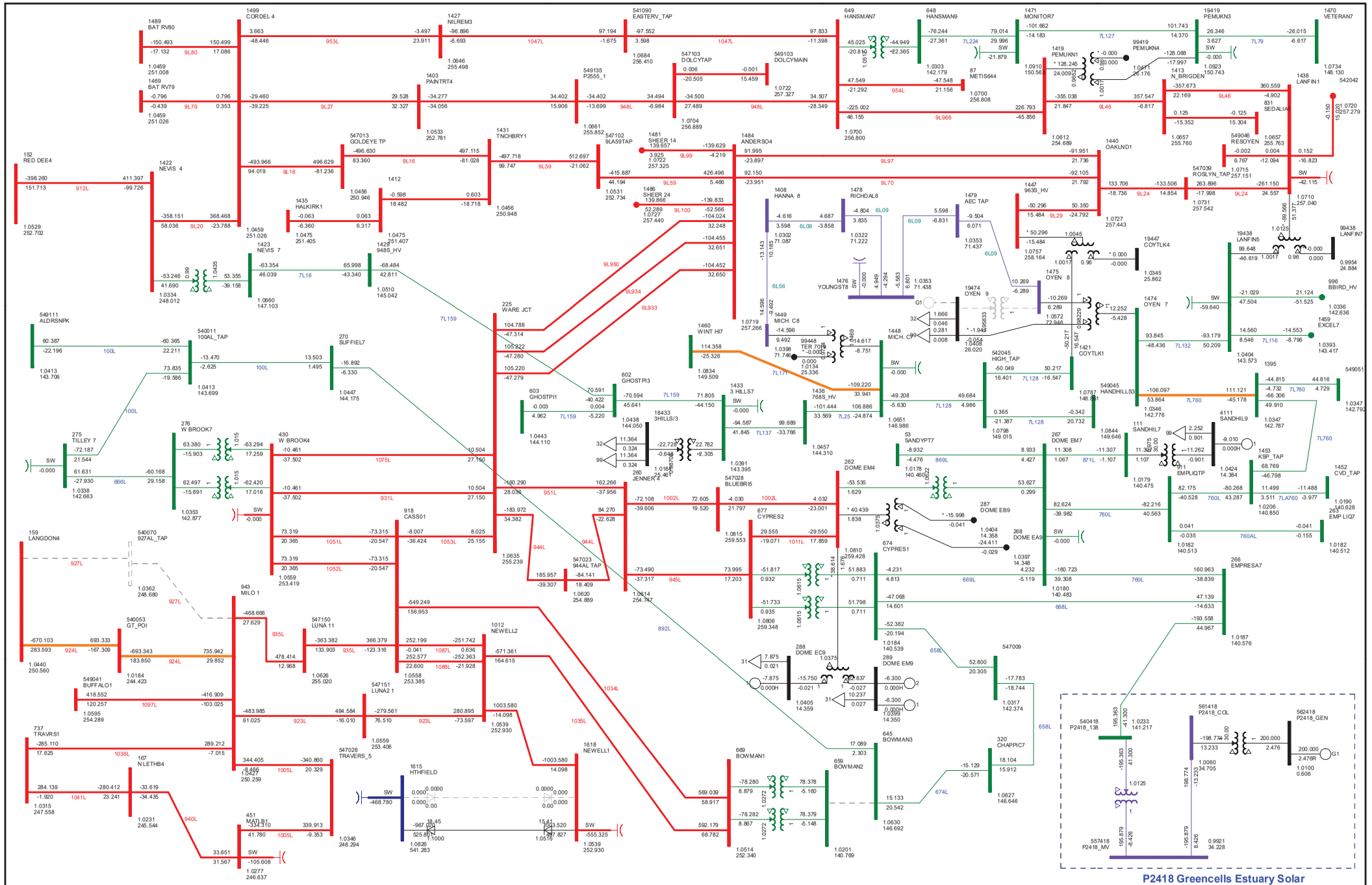
Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

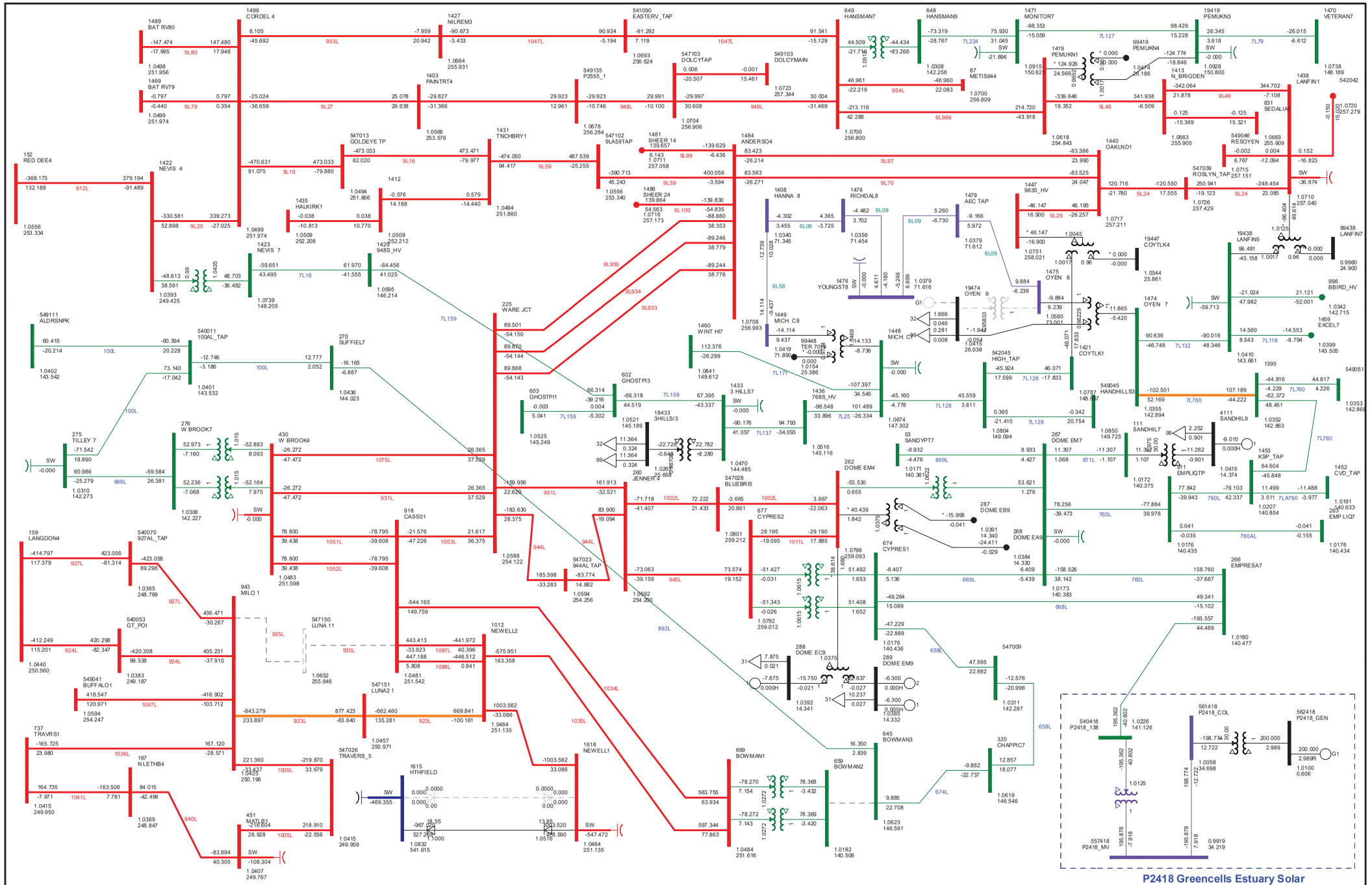
FIGURE A3-2-28 N-1: 498ST1T2 (TILLEY 498S TRANSFORMER T1/T2)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

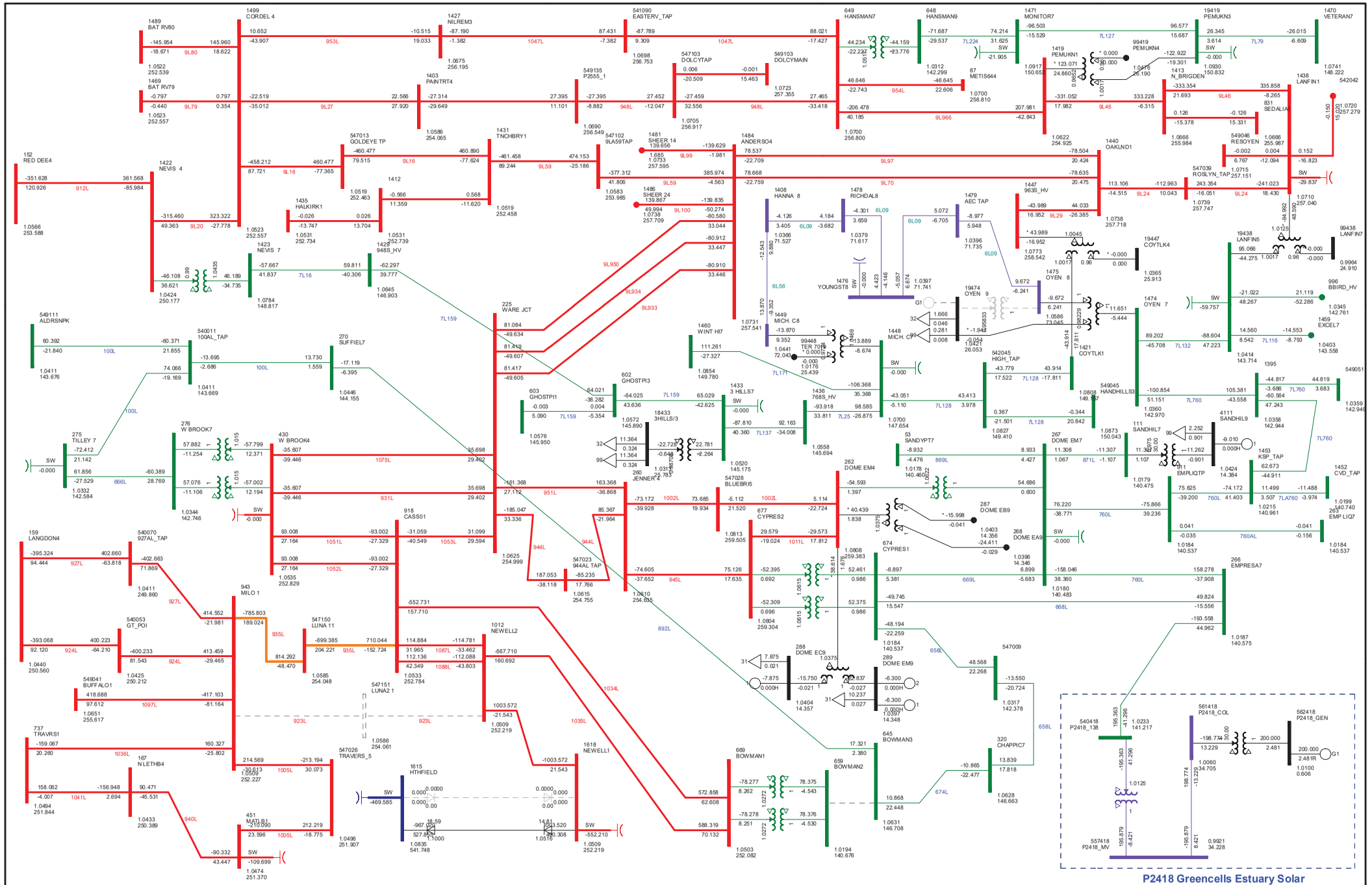
FIGURE A3-2-29 N-1: 927L (MILO 356S TO LANGDON 102S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

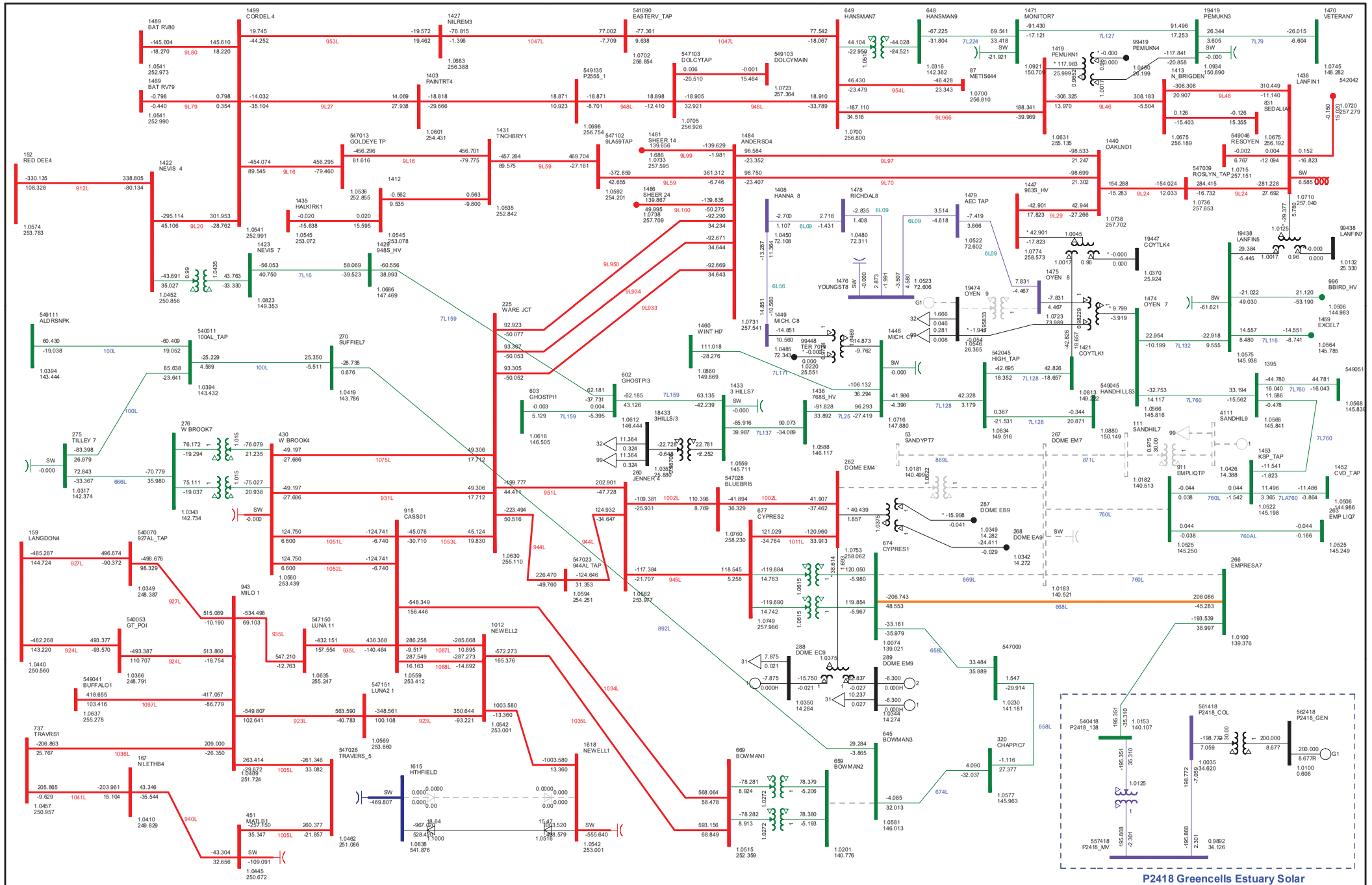
FIGURE A3-2-30 N-1: 935L (MILO 356S TO CASSILS 324S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



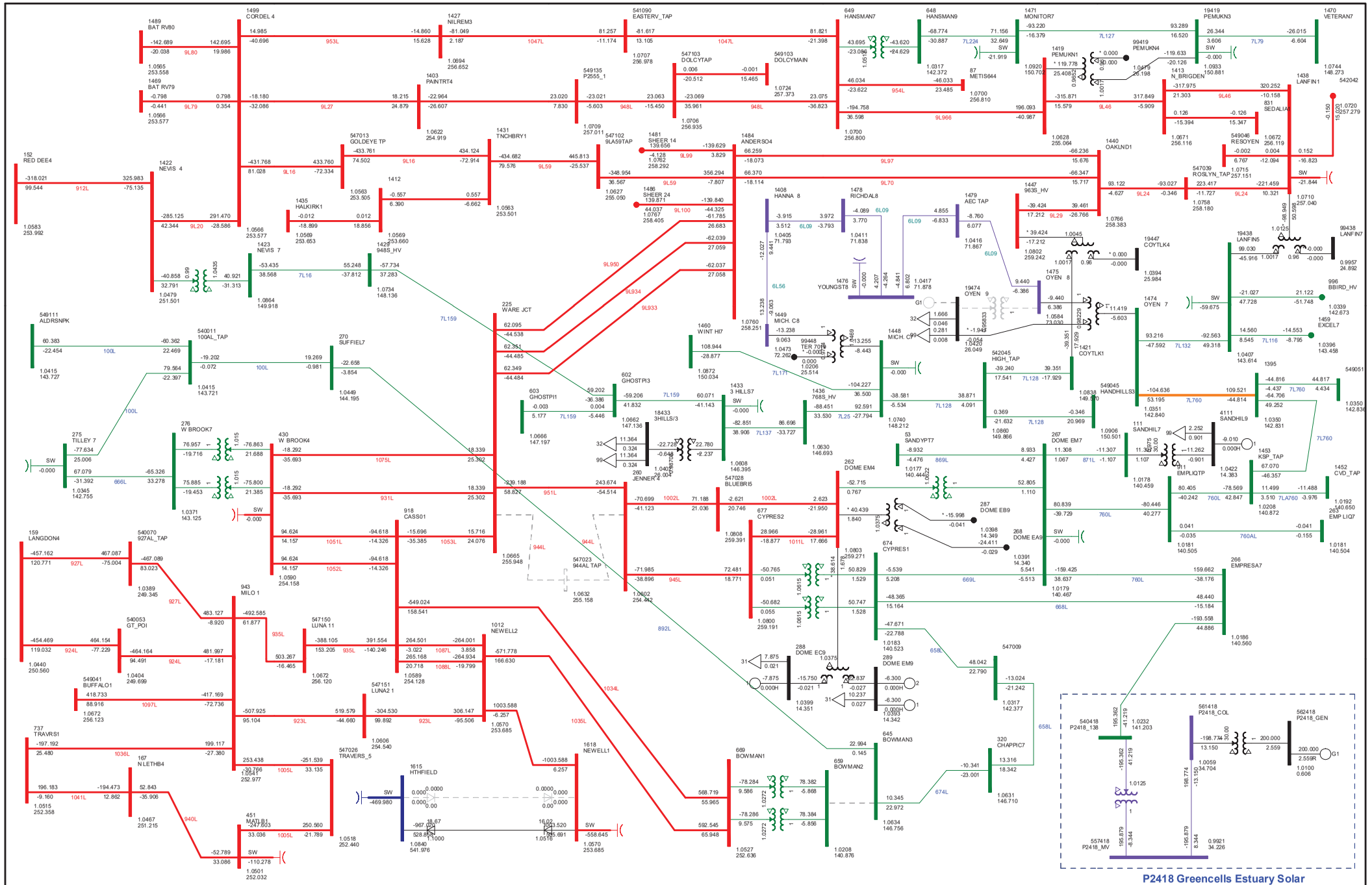
P2418 Greencells Estuary Solar

FIGURE A3-2-31 N-1: 923L (MILO 356S TO NEWELL 2075S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A3-2-32 N-1: 163ST5 (AMOCO EMPRESS 163S TRANSFORMER T5)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A3-2-33 N-1: 944L (JENNER 275S TO WARE JUNCTION 132S)
2028 SUMMER LIGHT (POST-CONNECTION)
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
2023 STUDY AREA
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

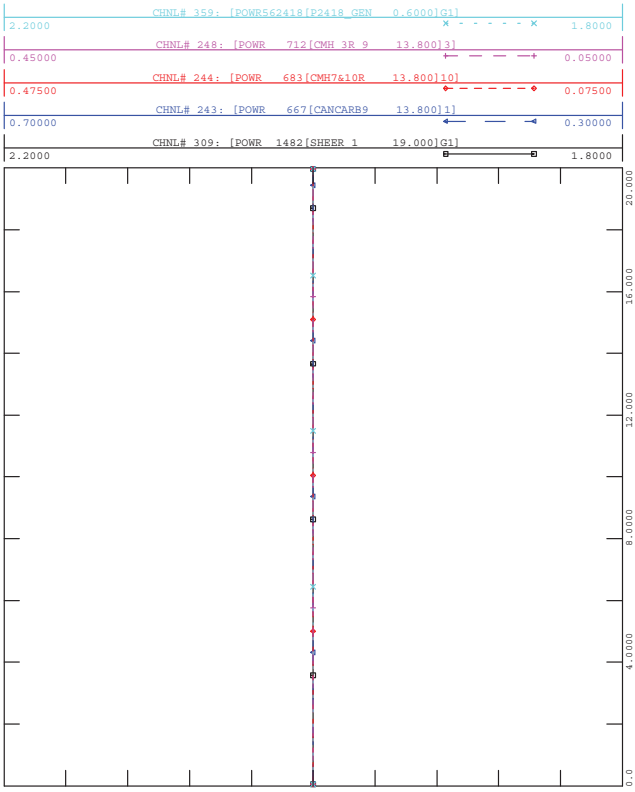
Attachment A4
Post-Project Transient Stability Diagrams

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

FILE: Scn3_SP_00_nofault.out

MON, FEB 05 2024 12:12

ACTIVE POWER



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

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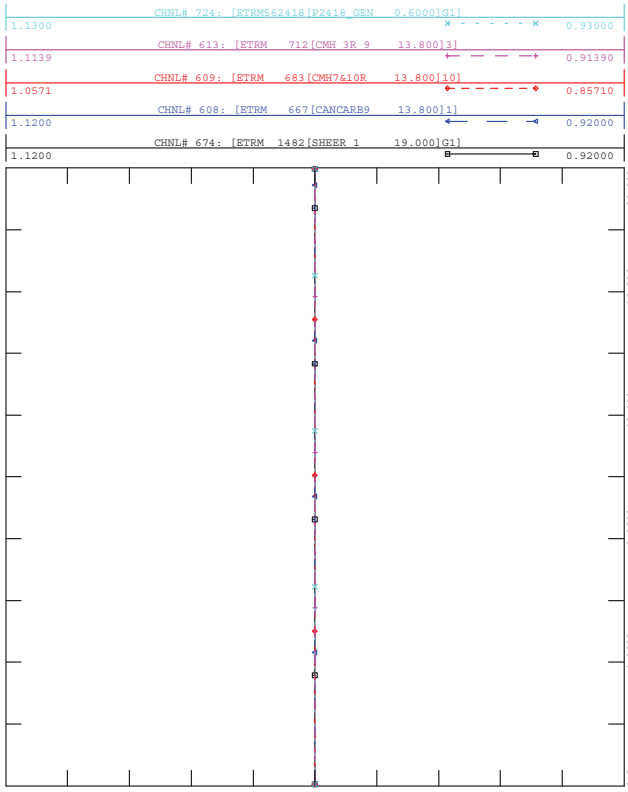
MON, FEB 05 2024 12:12

TERMINAL VOLTAGE



SCENARIO: P2520 SYSTEM IMPACT STUDY
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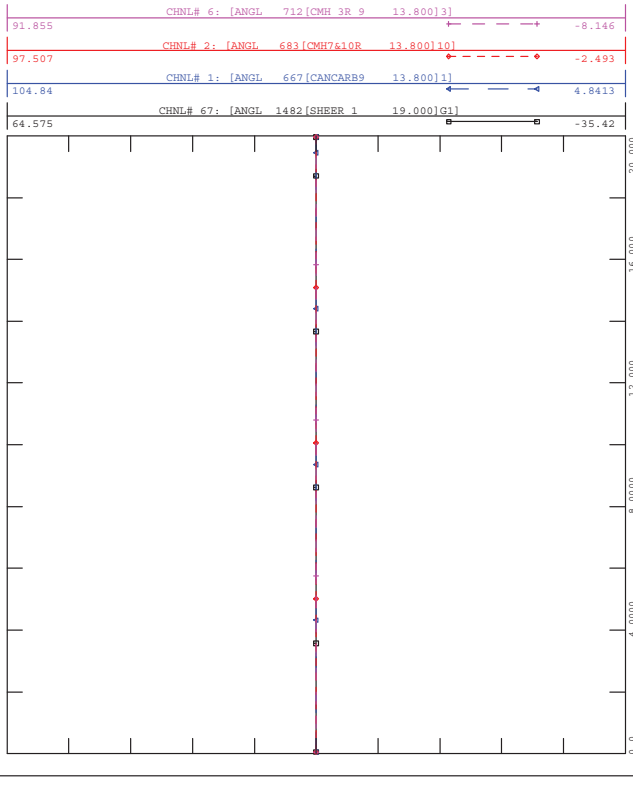
MON, FEB 05 2024 12:12

ROTOR ANGLE



SCENARIO: P2520 SYSTEM IMPACT STUDY
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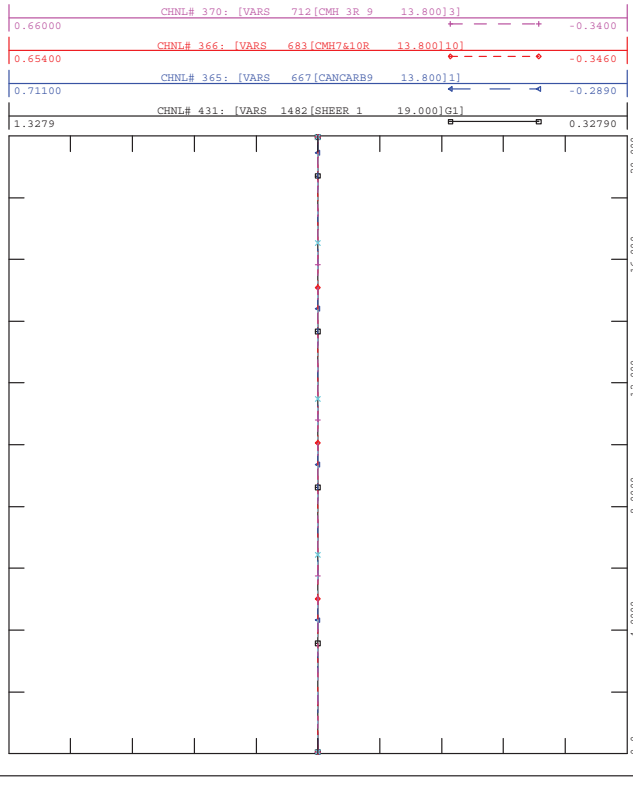
MON, FEB 05 2024 12:12

REACTIVE POWER



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

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MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.1291 0.92910
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1223 0.92230
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.1661 0.96610

0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

FILE: Scn3_SP_00_nofault.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q]
65.745 -14.26
CHNL# 763: [669L Q]
46.124 -33.88
CHNL# 761: [668L Q]
55.359 -24.64
CHNL# 759: [830L Q]
39.354 -40.65
CHNL# 757: [1002L Q]
21.598 -58.40
CHNL# 755: [945L Q]
22.580 -57.42

0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

FILE: Scn3_SP_00_nofault.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.0983 0.89830
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.1499 0.94990
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.1497 0.94970
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1222 0.92220
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1228 0.92280
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.1662 0.96620

0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

FILE: Scn3_SP_00_nofault.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P]
19.628 -60.37
CHNL# 762: [669L P]
17.265 -62.74
CHNL# 760: [668L P]
-18.65 -98.65
CHNL# 758: [830L P]
40.000 -40.00
CHNL# 756: [1002L P]
-30.78 -110.8
CHNL# 754: [945L P]
-36.59 -116.6

0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

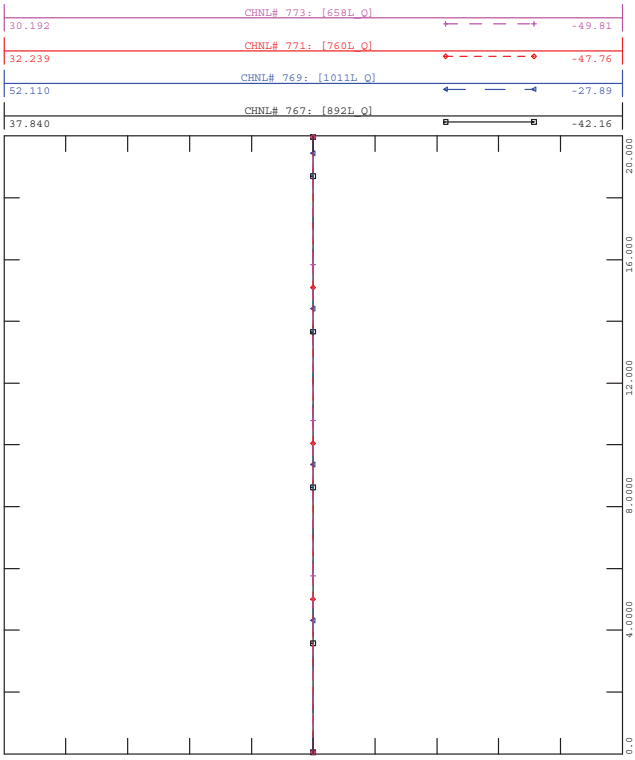
TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

FILE: Scn3_SP_00_nofault.out

BRANCH Q

MON, FEB 05 2024 12:12

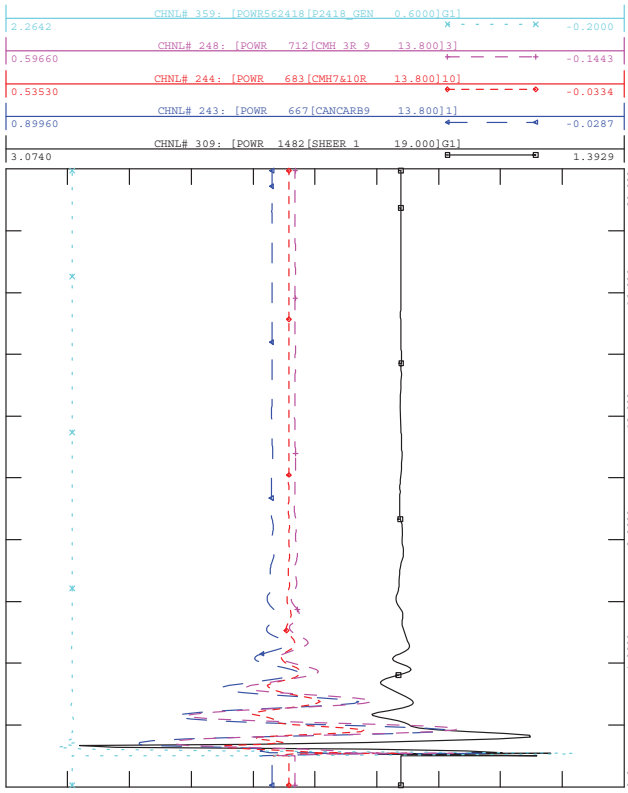


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L

FILE: Scn3_SP_01_945L.out

ACTIVE POWER

MON, FEB 05 2024 12:12

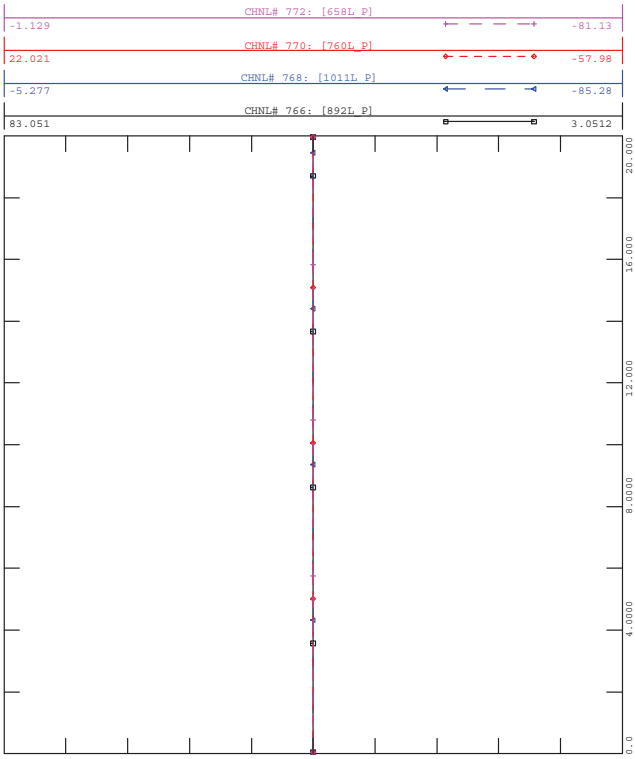


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_00_NOFAULT

FILE: Scn3_SP_00_nofault.out

BRANCH P

MON, FEB 05 2024 12:12

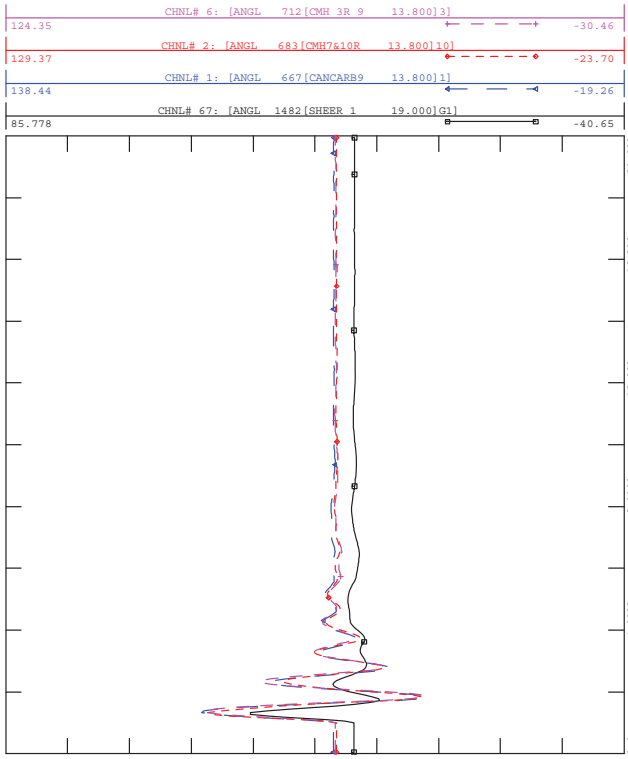


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L

FILE: Scn3_SP_01_945L.out

ROTOR ANGLE

MON, FEB 05 2024 12:12

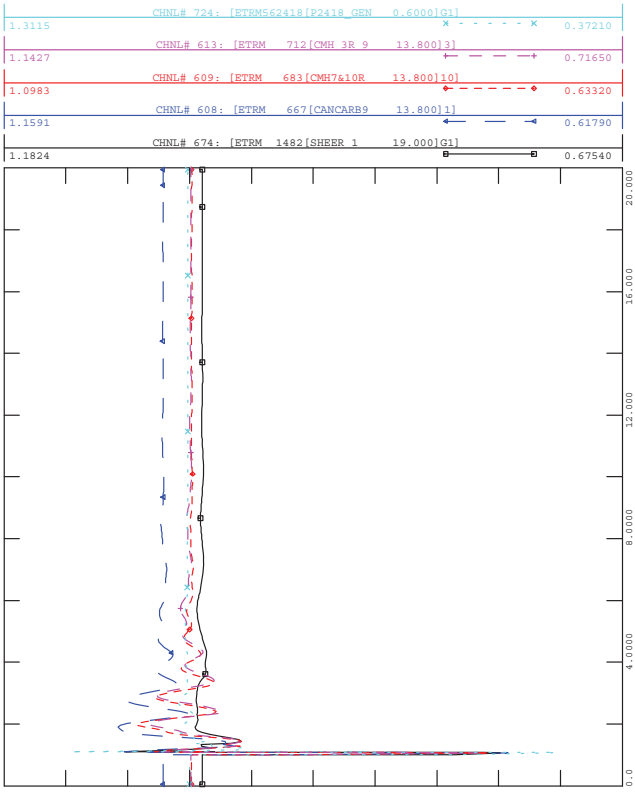


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L

FILE: Scn3_SP_01_945L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

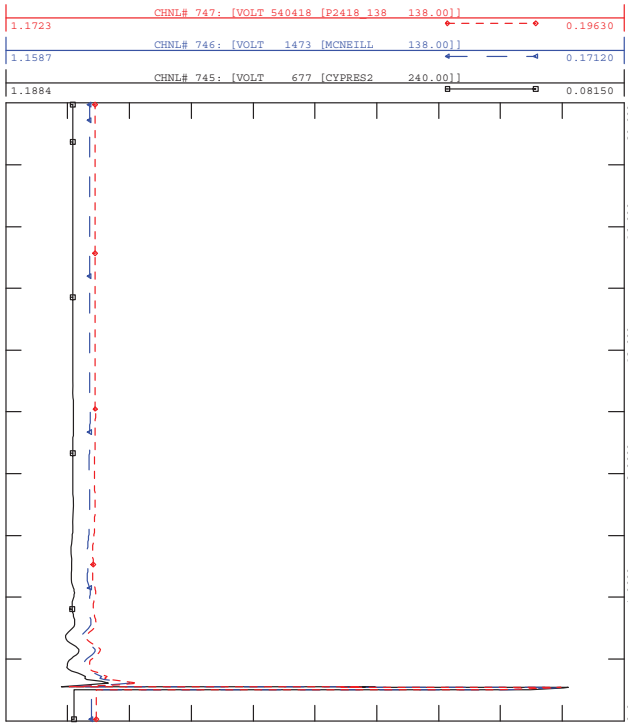


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L

FILE: Scn3_SP_01_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

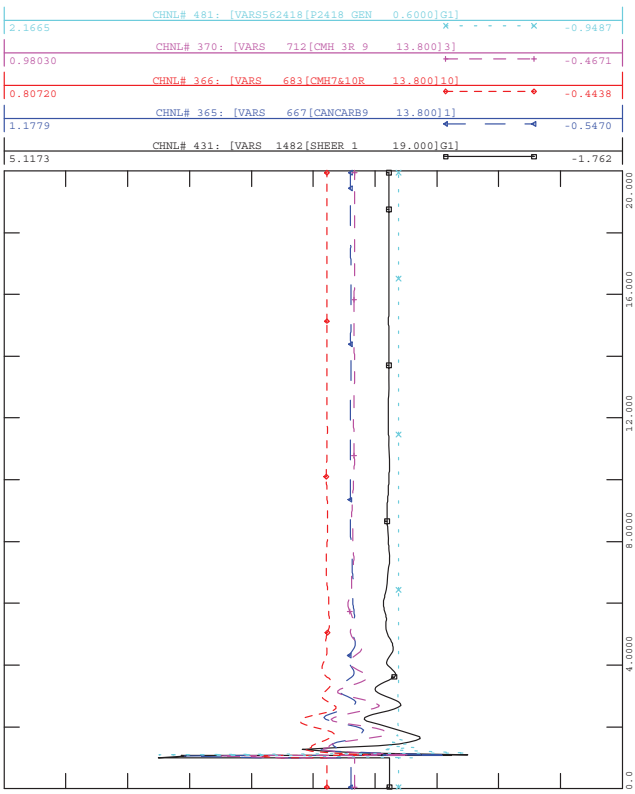


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L

FILE: Scn3_SP_01_945L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

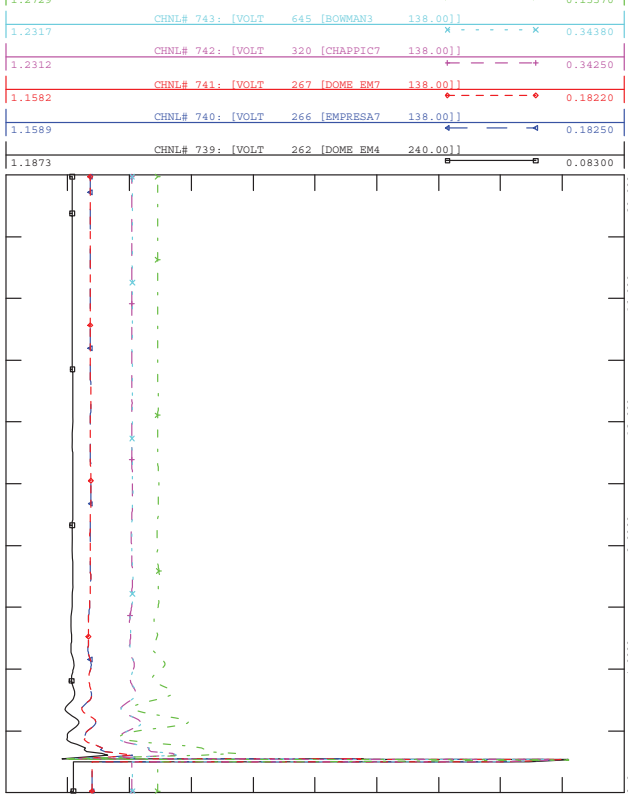


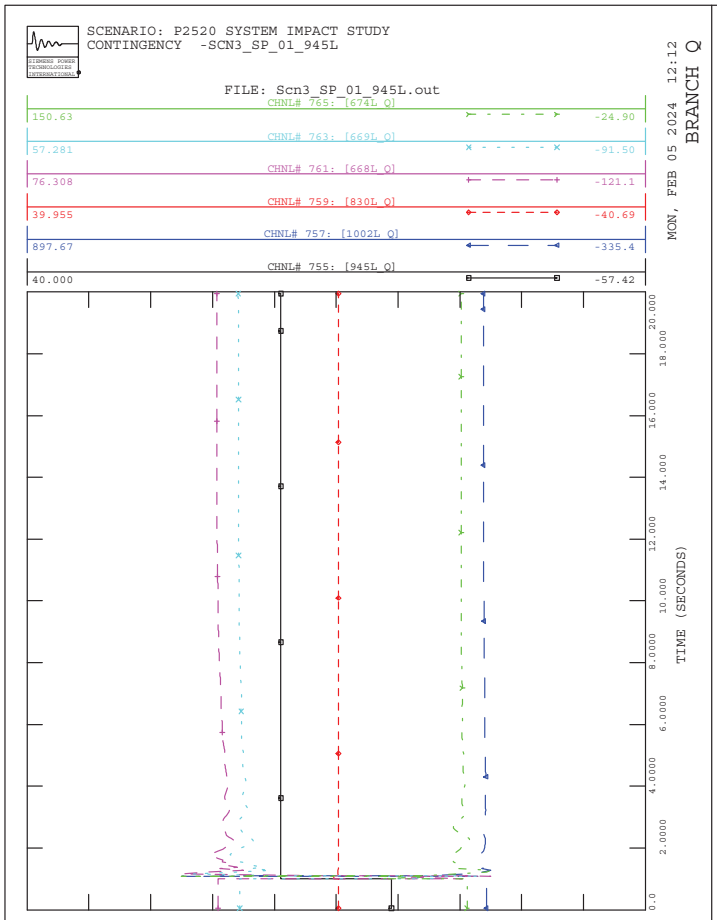
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L

FILE: Scn3_SP_01_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

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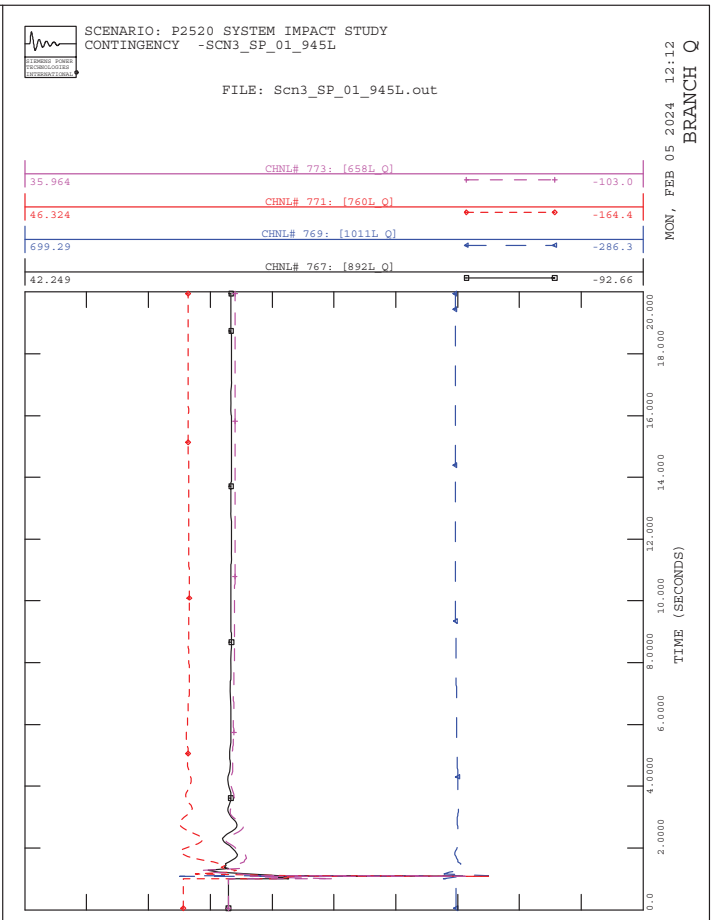
CHNL# 765: [674L Q]
150.63
-24.90
CHNL# 763: [669L Q]
57.281
-91.50
CHNL# 761: [668L Q]
76.308
-121.1
CHNL# 759: [830L Q]
39.955
-40.69
CHNL# 757: [1002L Q]
897.67
-335.4
CHNL# 755: [945L Q]
40.000
-57.42
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000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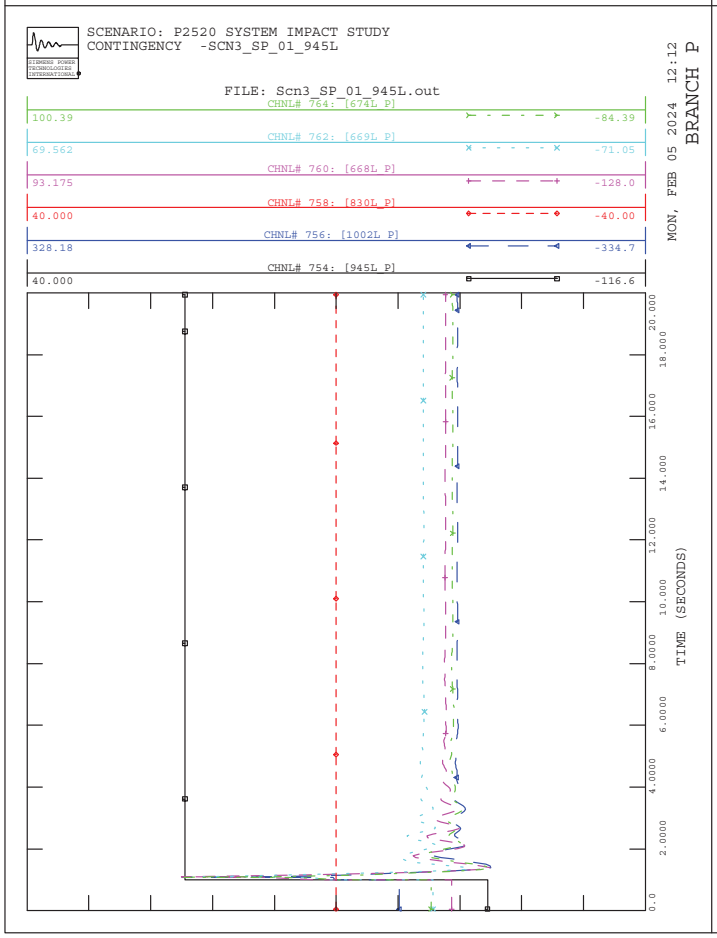
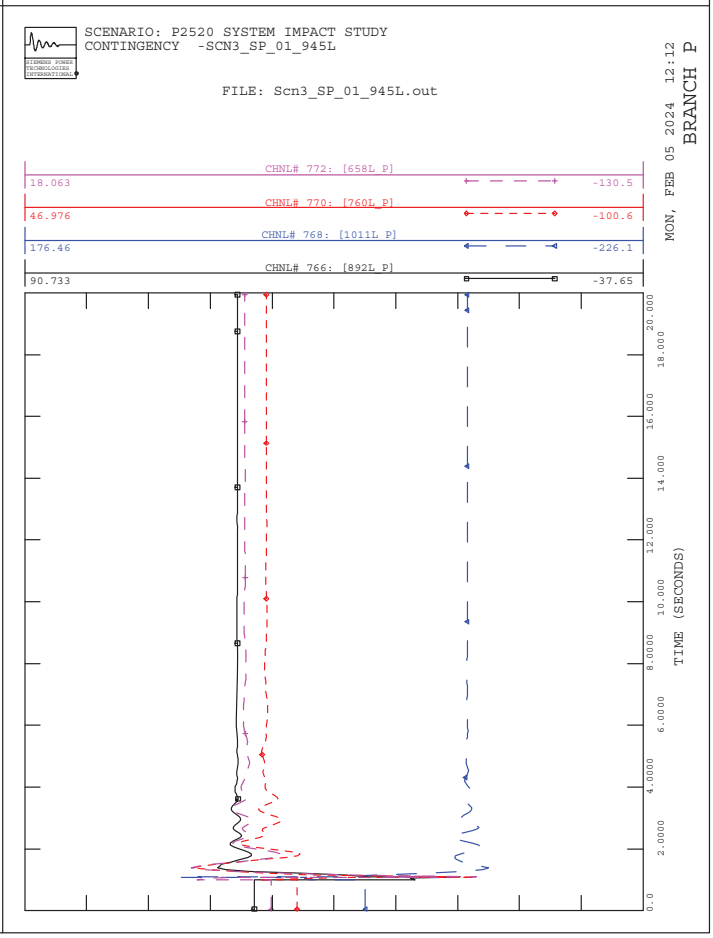
FILE: Scn3_SP_01_945L.out
CHNL# 773: [658L Q]
35.964
-103.0
CHNL# 771: [760L Q]
46.324
-164.4
CHNL# 769: [1011L Q]
699.29
-286.3
CHNL# 767: [892L Q]
42.249
-92.66
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L
FILE: Scn3_SP_01_945L.out
CHNL# 764: [674L P]
100.39
-84.39
CHNL# 762: [669L P]
69.562
-71.05
CHNL# 760: [668L P]
93.175
-128.0
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
328.18
-334.7
CHNL# 754: [945L P]
40.000
-116.6
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_01_945L
FILE: Scn3_SP_01_945L.out
CHNL# 772: [658L P]
18.063
-130.5
CHNL# 770: [760L P]
46.976
-100.6
CHNL# 768: [1011L P]
176.46
-226.1
CHNL# 766: [892L P]
90.733
-37.65
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

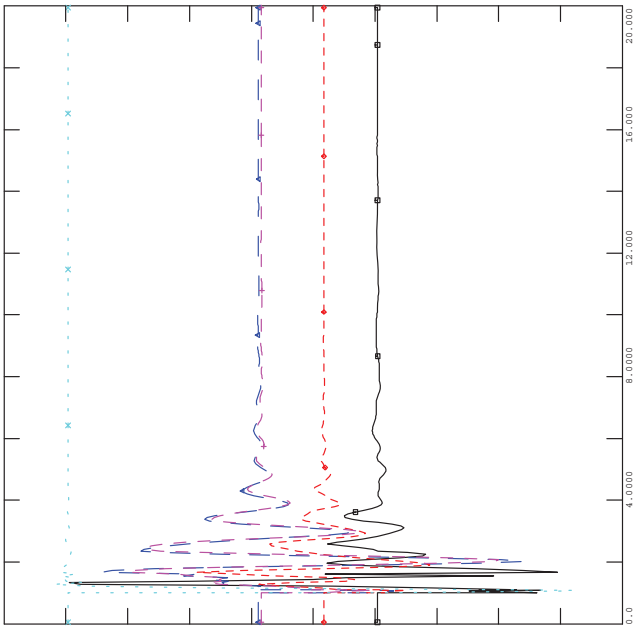
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.2544 -0.2000

CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.66520 -0.3329

CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.60650 -0.0346

CHNL# 243: [POWR 667[CANCARB9 13.800]1]
1.0200 -0.2441

CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
3.1486 1.2458



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

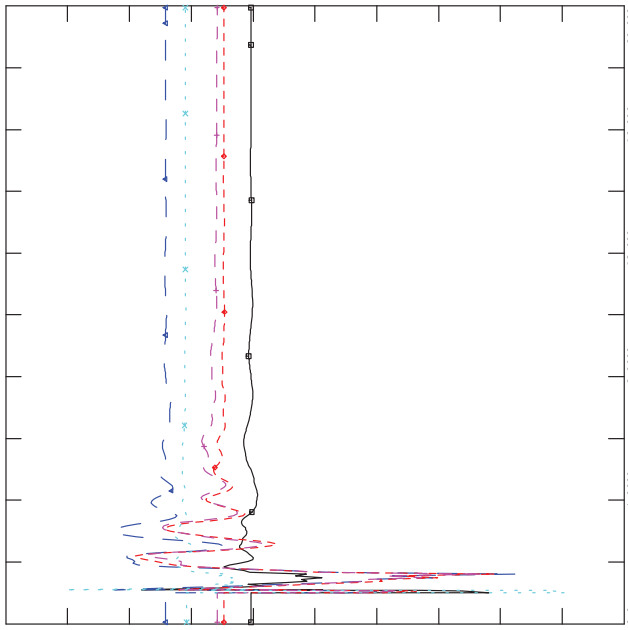
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.3400 0.28100

CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1640 0.72450

CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1260 0.64720

CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1678 0.59600

CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.2009 0.74440



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

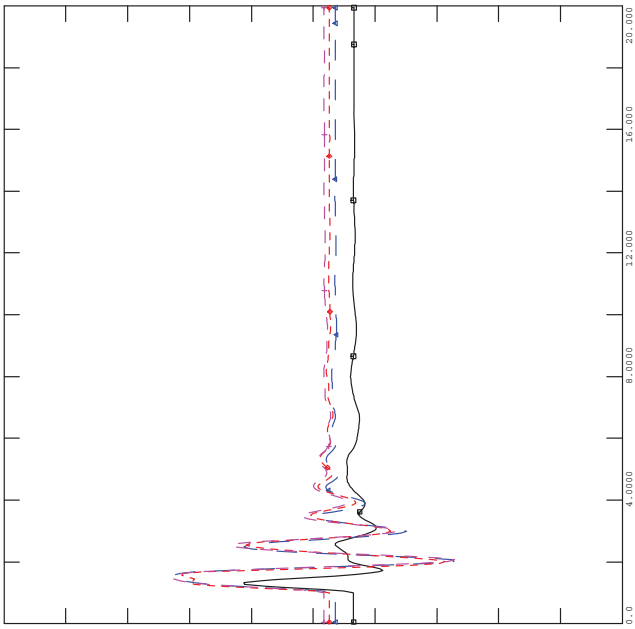
ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
137.15 -47.13

CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
139.03 -34.97

CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
153.23 -30.46

CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
87.497 -41.48



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

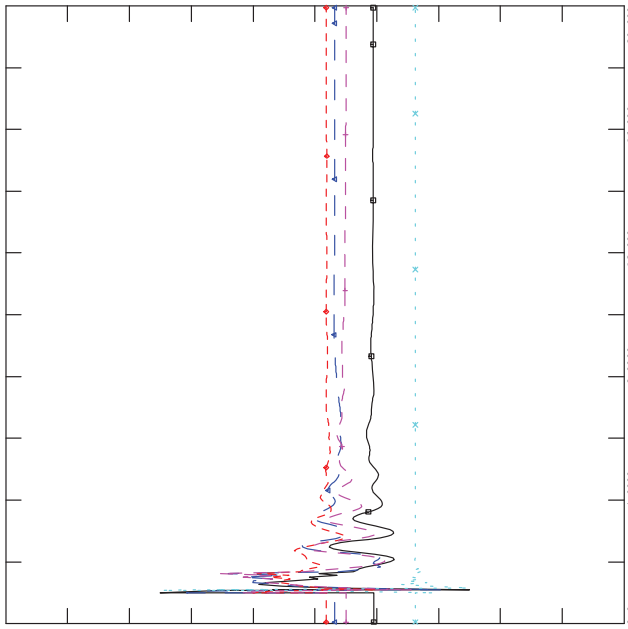
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
2.5906 -1.049

CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.95820 -0.4915

CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.80370 -0.4493

CHNL# 365: [VARS 667[CANCARB9 13.800]1]
1.1209 -0.5902

CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
4.7670 -1.851



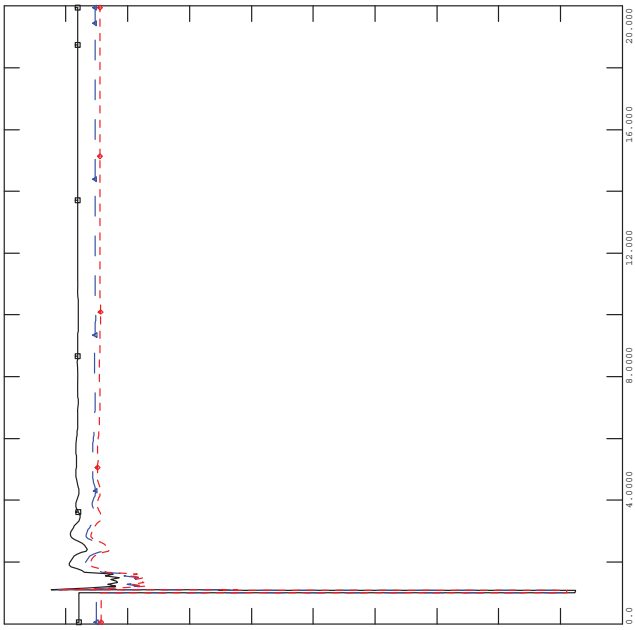
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2060 0.08230
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1929 0.05120
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2254 -0.0923



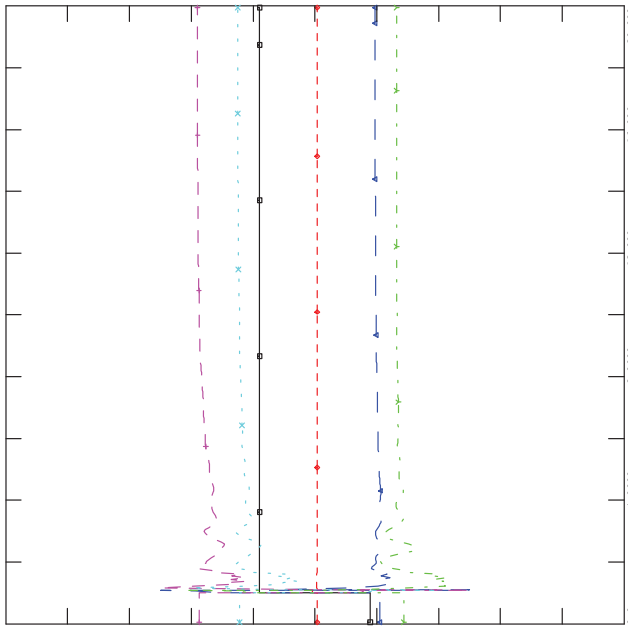
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 115.38 -23.89
CHNL# 763: [669L Q] 56.502 -76.82
CHNL# 761: [668L Q] 69.978 -104.8
CHNL# 759: [830L Q] 39.986 -40.74
CHNL# 757: [1002L Q] 473.80 -339.8
CHNL# 755: [945L Q] 40.000 -57.42



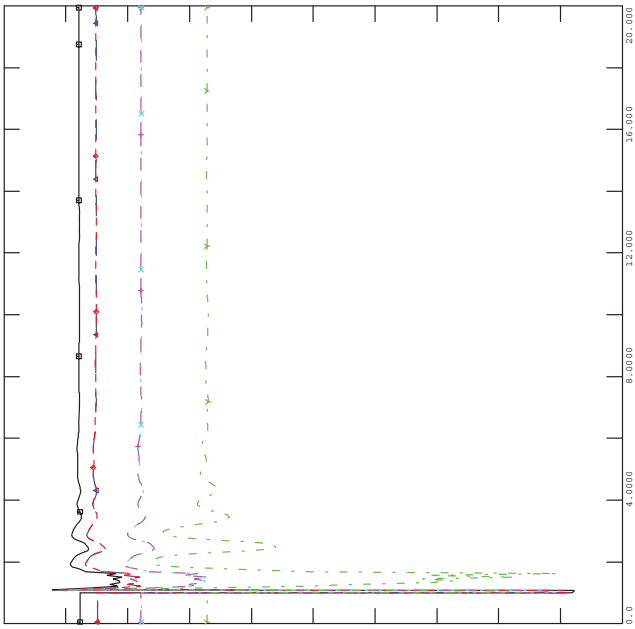
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.3148 0.35010
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2625 0.30650
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2620 0.30440
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1922 0.06480
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1930 0.06600
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2244 -0.0622



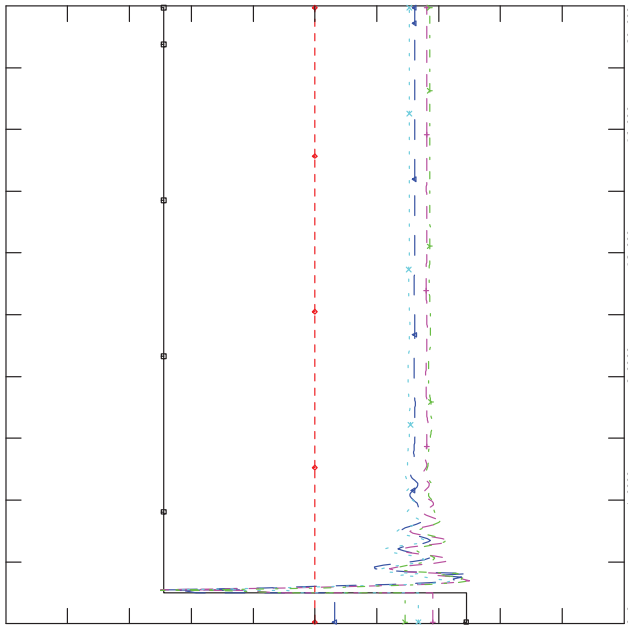
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P] 82.902 -77.02
CHNL# 762: [669L P] 72.796 -70.36
CHNL# 760: [668L P] 99.324 -129.6
CHNL# 758: [830L P] 40.000 -40.00
CHNL# 756: [1002L P] 185.72 -296.4
CHNL# 754: [945L P] 40.000 -116.6

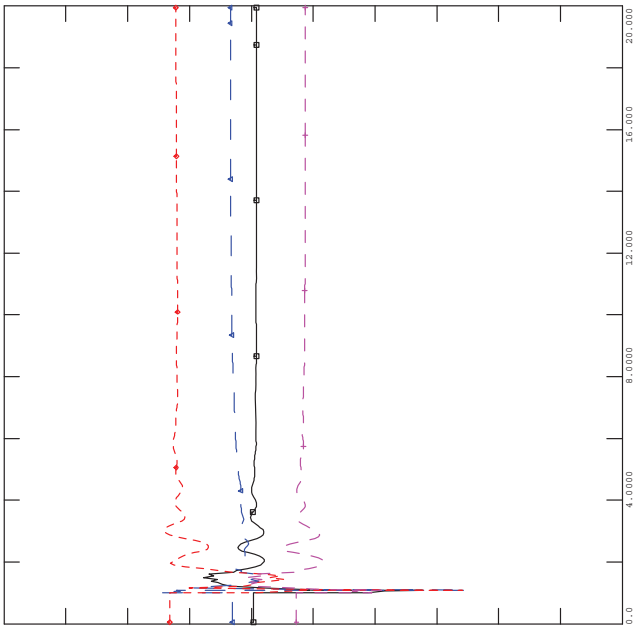


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

BRANCH Q

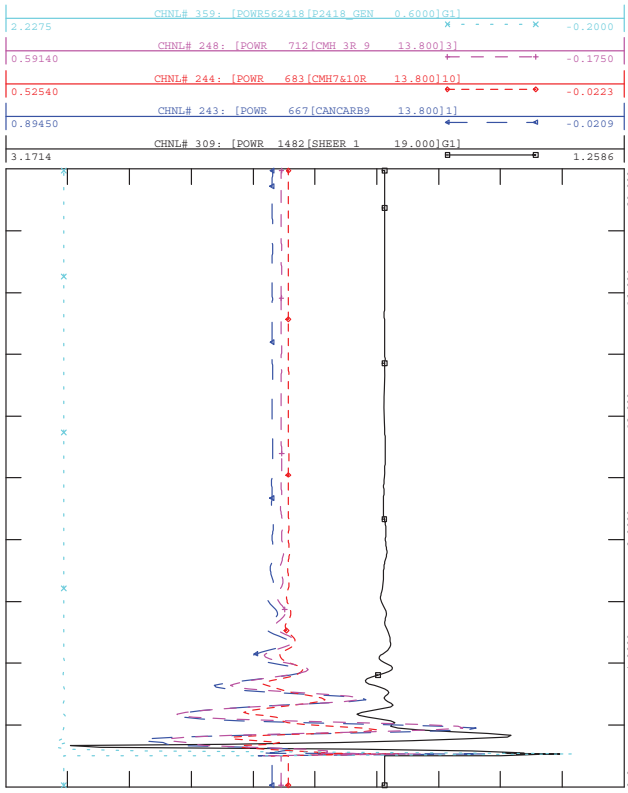


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L

FILE: Scn3_SP_03_1002L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

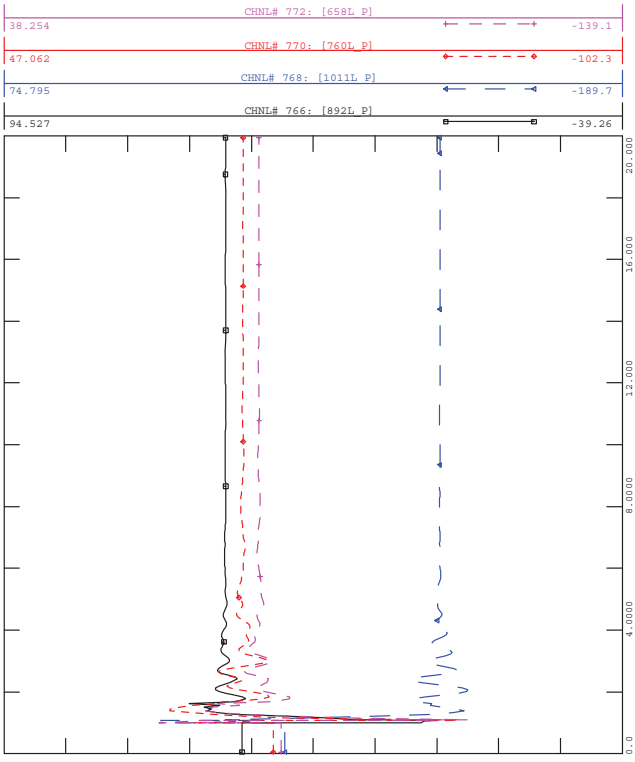


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_02_945L

FILE: Scn3_SP_02_945L.out

MON, FEB 05 2024 12:12

BRANCH P

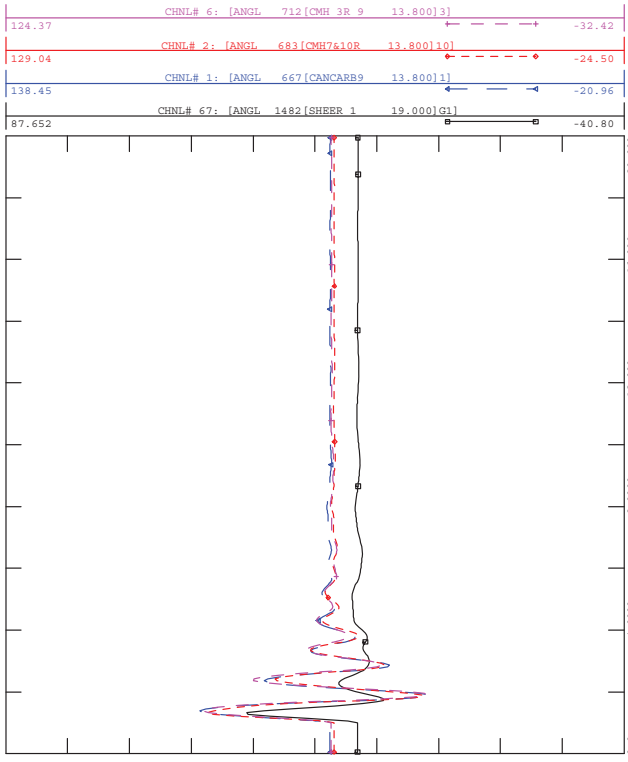


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L

FILE: Scn3_SP_03_1002L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L

FILE: Scn3_SP_03_1002L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3280 0.38220
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1489 0.78250
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1069 0.70810
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1673 0.72400
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1851 0.68830

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L

FILE: Scn3_SP_03_1002L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1900 0.20420
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1765 0.17860
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2120 0.08730

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L

FILE: Scn3_SP_03_1002L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 2.1721 -0.9317
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.86480 -0.4812
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.76090 -0.4539
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 1.0336 -0.5640
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 5.1904 -1.994

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L

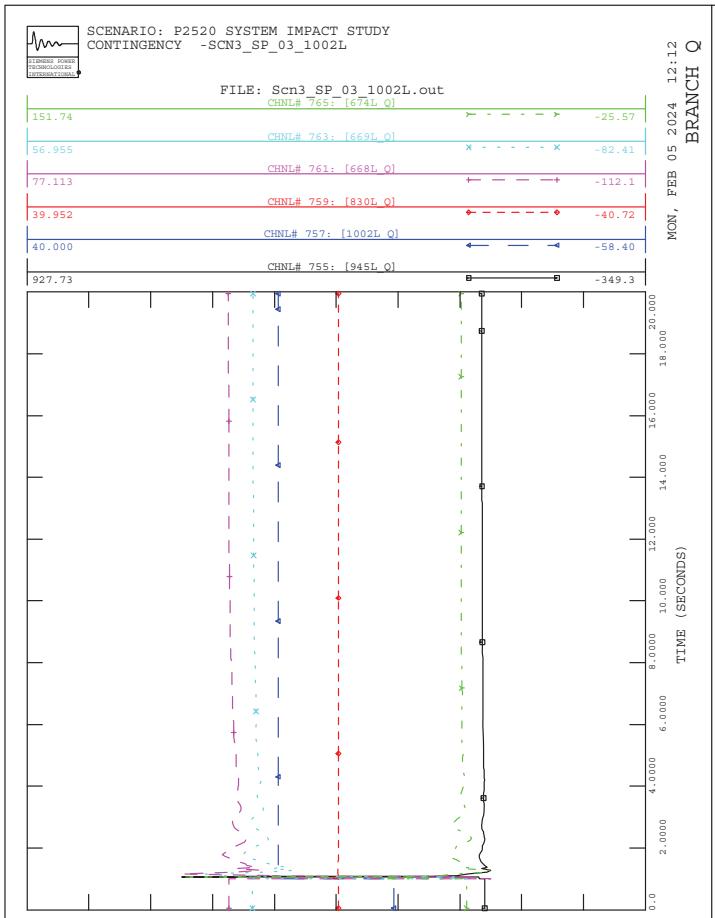
FILE: Scn3_SP_03_1002L.out

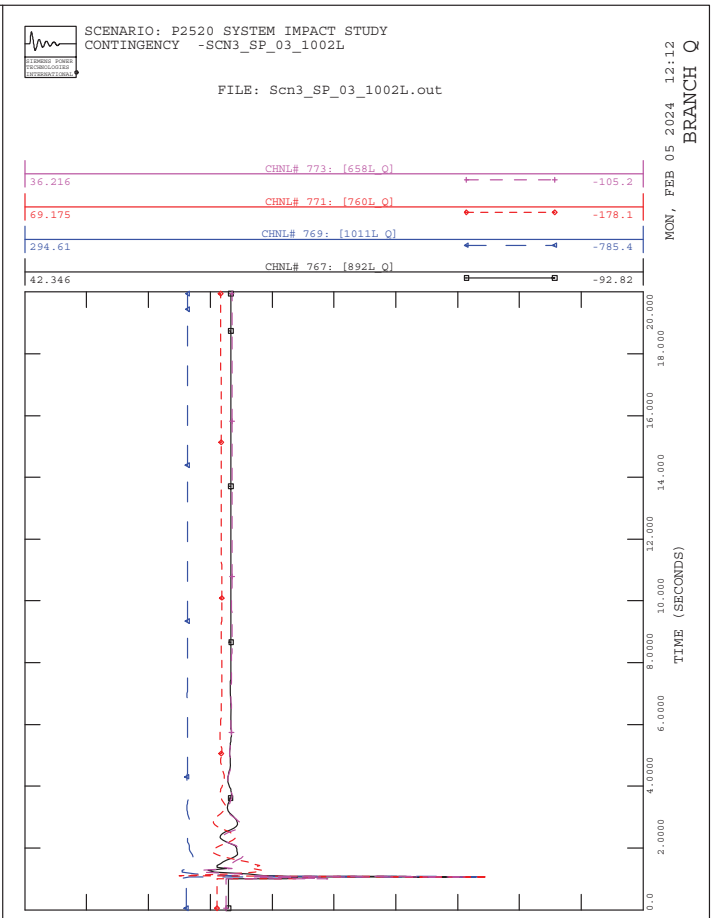
MON, FEB 05 2024 12:12

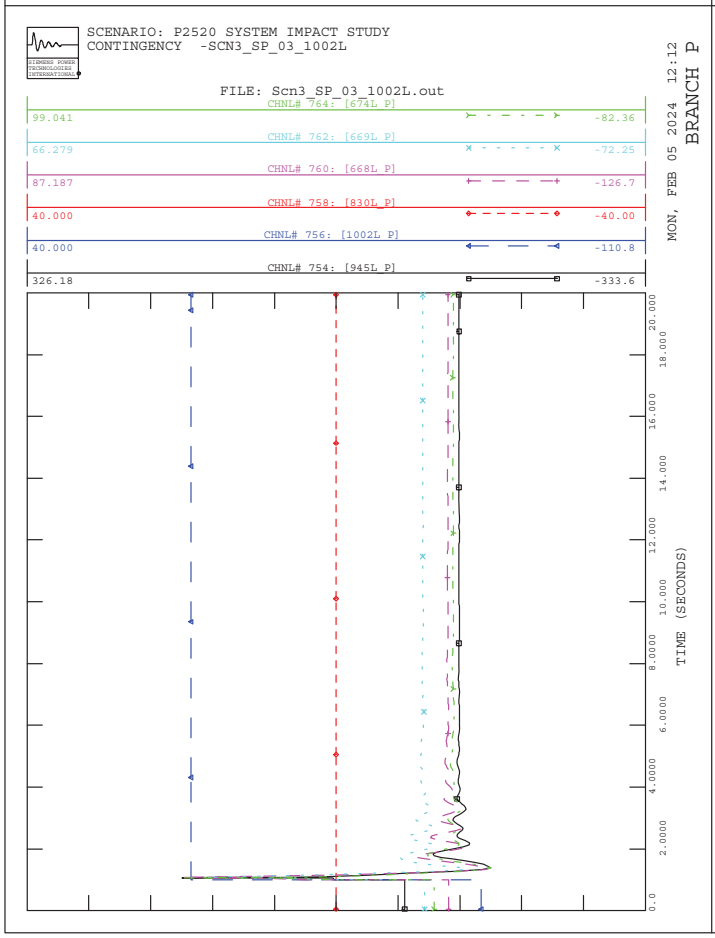
BUS VOLTAGE

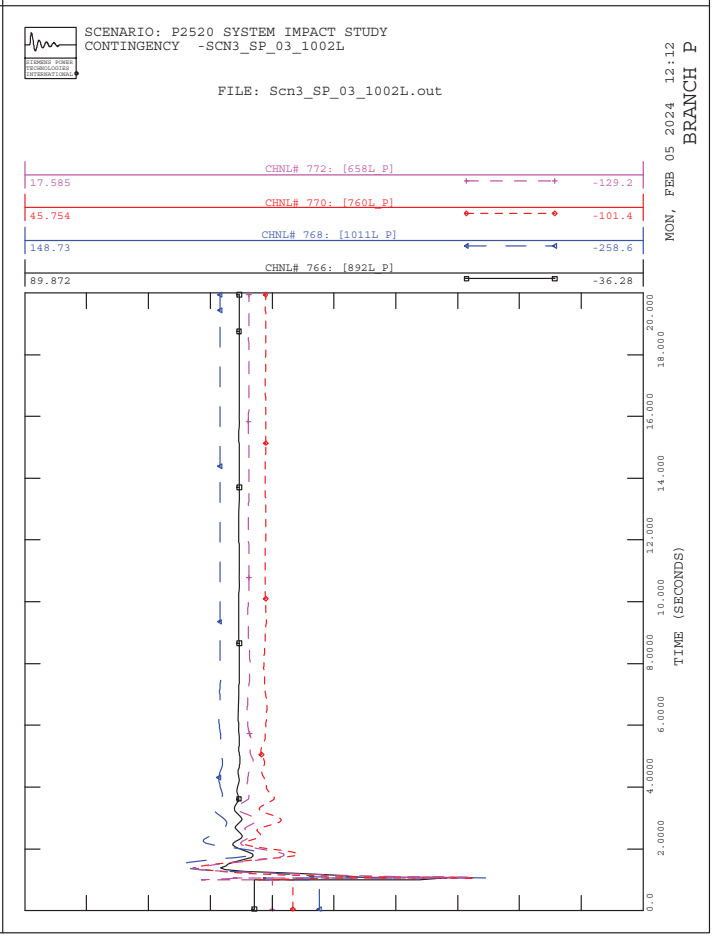
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.3000 0.42600
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2503 0.35450
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2498 0.35310
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1758 0.18990
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1766 0.19030
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2099 0.08810

TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L
FILE: Scn3_SP_03_1002L.out
CHNL# 765: [674L Q]
151.74
-25.57
CHNL# 763: [669L Q]
56.955
-82.41
CHNL# 761: [668L Q]
77.113
-112.1
CHNL# 759: [830L Q]
39.952
-40.72
CHNL# 757: [1002L Q]
40.000
-58.40
CHNL# 755: [945L Q]
927.73
-349.3
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L
FILE: Scn3_SP_03_1002L.out
CHNL# 773: [658L Q]
36.216
-105.2
CHNL# 771: [760L Q]
69.175
-178.1
CHNL# 769: [1011L Q]
294.61
-785.4
CHNL# 767: [892L Q]
42.346
-92.82
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L
FILE: Scn3_SP_03_1002L.out
CHNL# 764: [674L P]
99.041
-82.36
CHNL# 762: [669L P]
66.279
-72.25
CHNL# 760: [668L P]
87.187
-126.7
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
40.000
-110.8
CHNL# 754: [945L P]
326.18
-333.6
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_03_1002L
FILE: Scn3_SP_03_1002L.out
CHNL# 772: [658L P]
17.585
-129.2
CHNL# 770: [760L P]
45.754
-101.4
CHNL# 768: [1011L P]
148.73
-258.6
CHNL# 766: [892L P]
89.872
-36.28
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L

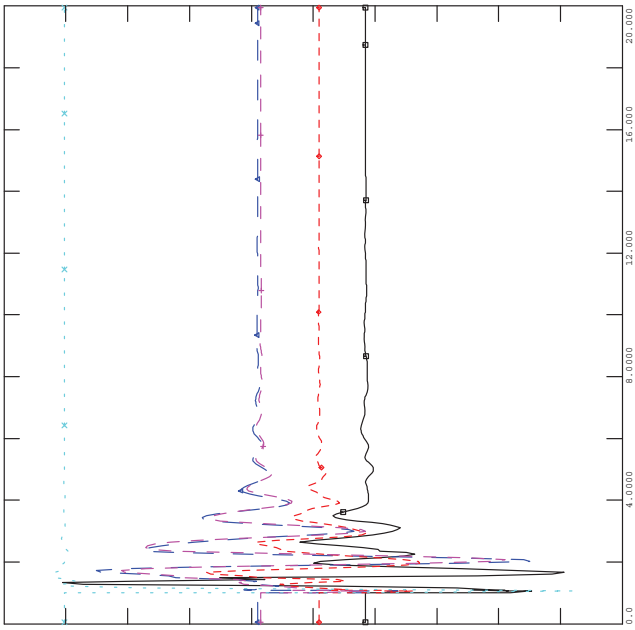
FILE: Scn3_SP_04_1002L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2375 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.68750 -0.3663
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.58580 -0.0246
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 1.0480 -0.2891
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 3.2368 1.1205

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L

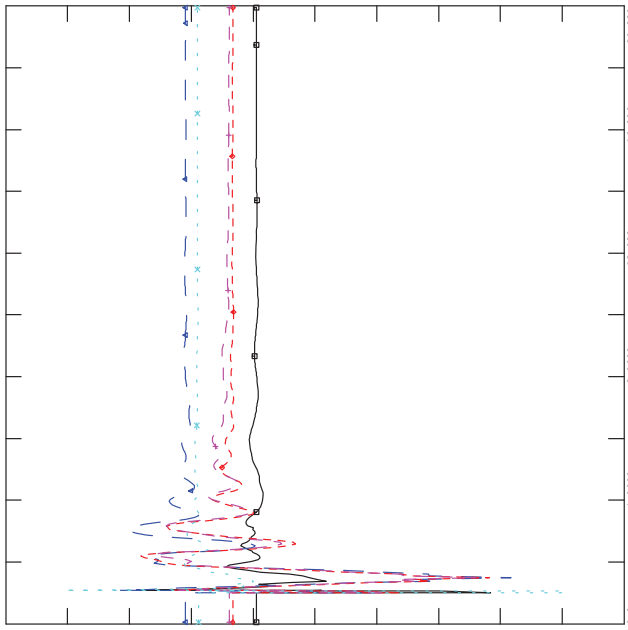
FILE: Scn3_SP_04_1002L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3614 0.29850
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1649 0.74710
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1252 0.66710
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1793 0.63130
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.2077 0.74450

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L

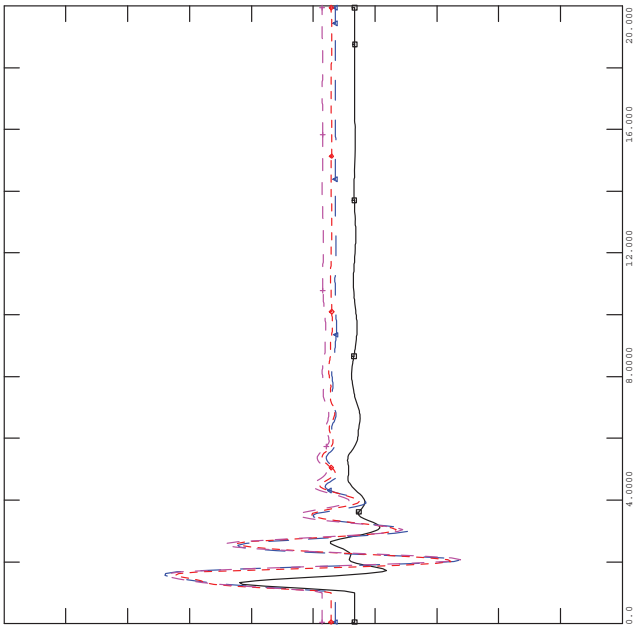
FILE: Scn3_SP_04_1002L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 140.03 -50.85
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 143.07 -37.48
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 157.62 -34.18
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 88.848 -42.26

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L

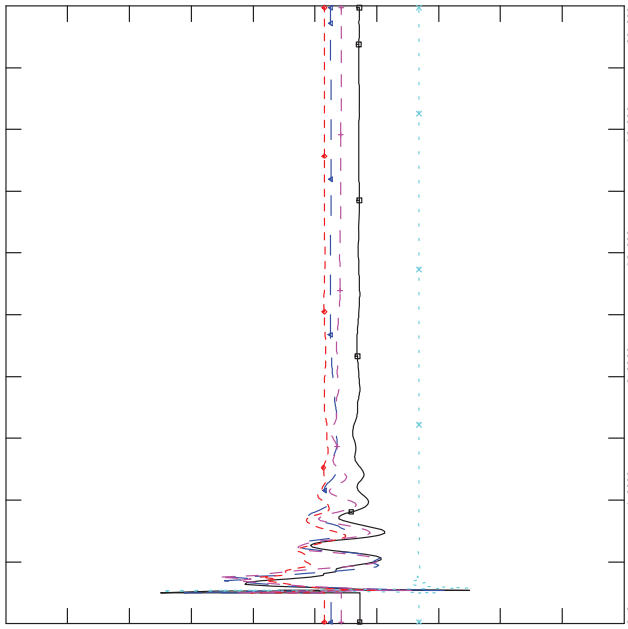
FILE: Scn3_SP_04_1002L.out

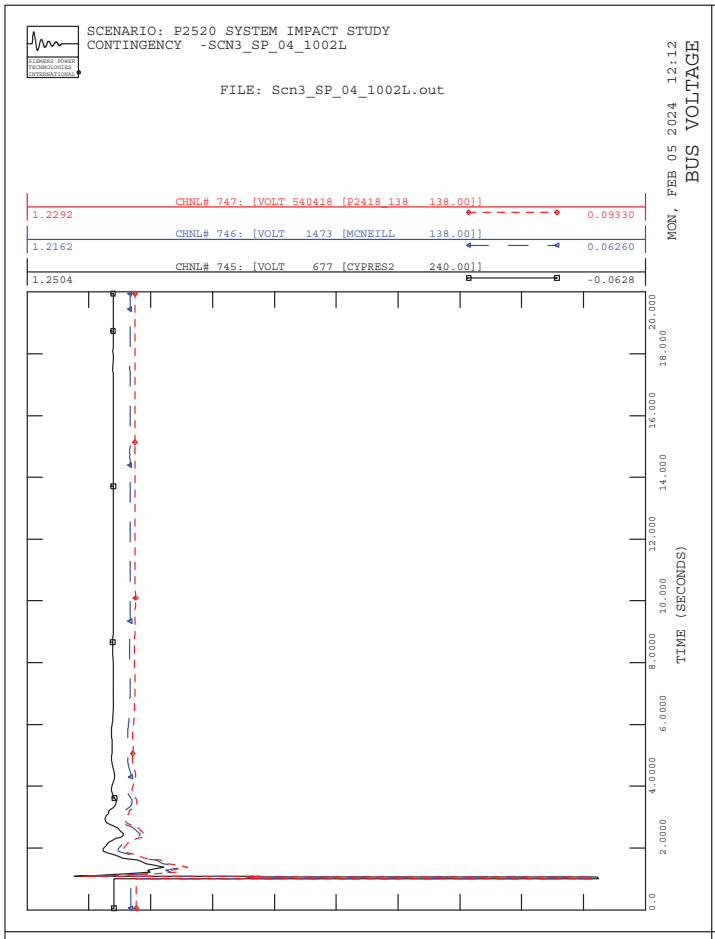
MON, FEB 05 2024 12:12

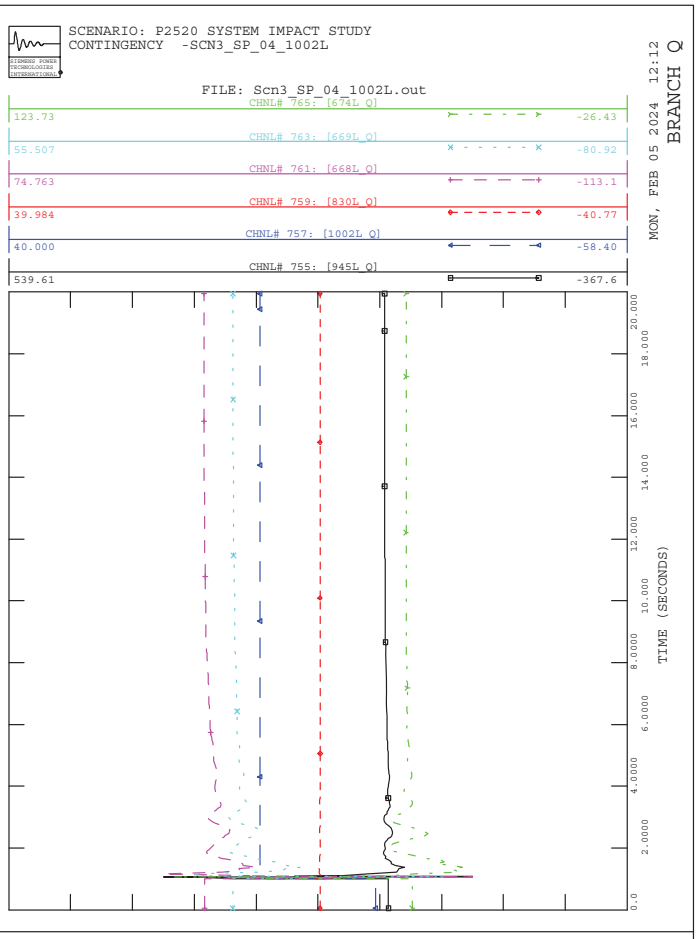
REACTIVE POWER

CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1] 2.6444 -1.045
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.95090 -0.5059
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.80400 -0.4577
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 1.1215 -0.6111
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.8848 -2.205

TIME (SECONDS)




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L
FILE: Scn3_SP_04_1002L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.2292
0.09330
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.2162
0.06260
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2504
-0.0628
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L
FILE: Scn3_SP_04_1002L.out
MON, FEB 05 2024 12:12
BRANCH Q
CHNL# 765: [674L Q]
123.73
-26.43
CHNL# 763: [669L Q]
55.507
-80.92
CHNL# 761: [668L Q]
74.763
-113.1
CHNL# 759: [830L Q]
39.984
-40.77
CHNL# 757: [1002L Q]
40.000
-58.40
CHNL# 755: [945L Q]
539.61
-367.6
TIME (SECONDS)
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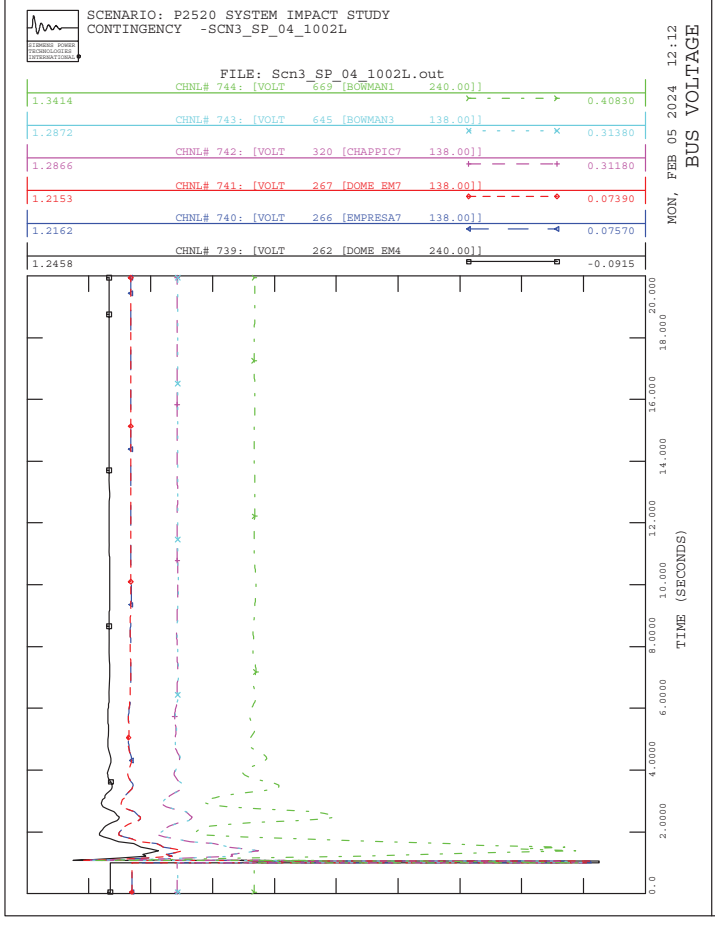
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L
FILE: Scn3_SP_04_1002L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.3414
0.40830
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2872
0.31380
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2866
0.31180
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2153
0.07390
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2162
0.07570
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2458
-0.0915
TIME (SECONDS)
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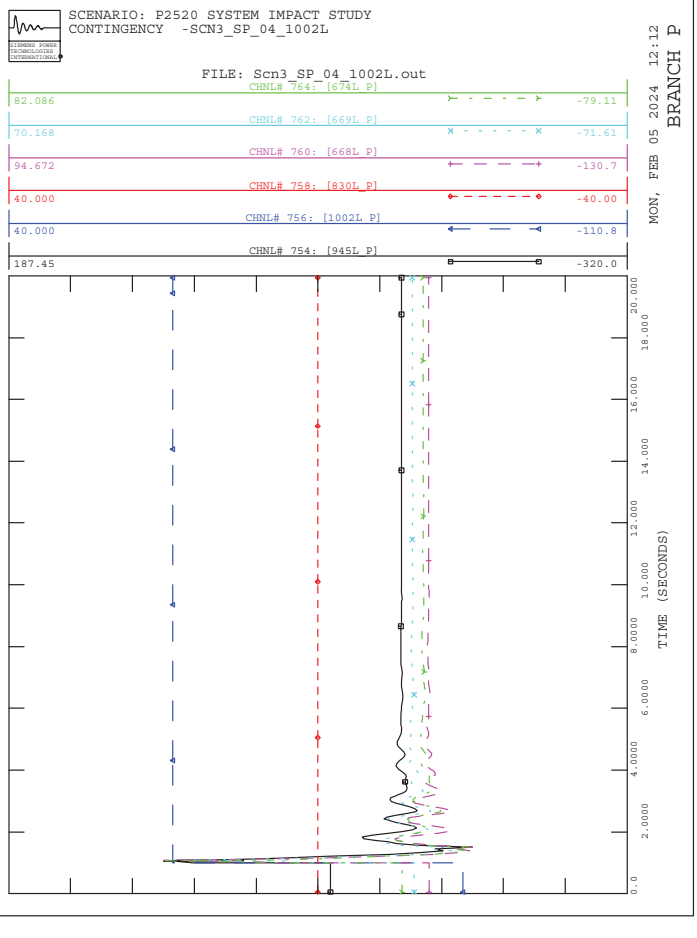
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

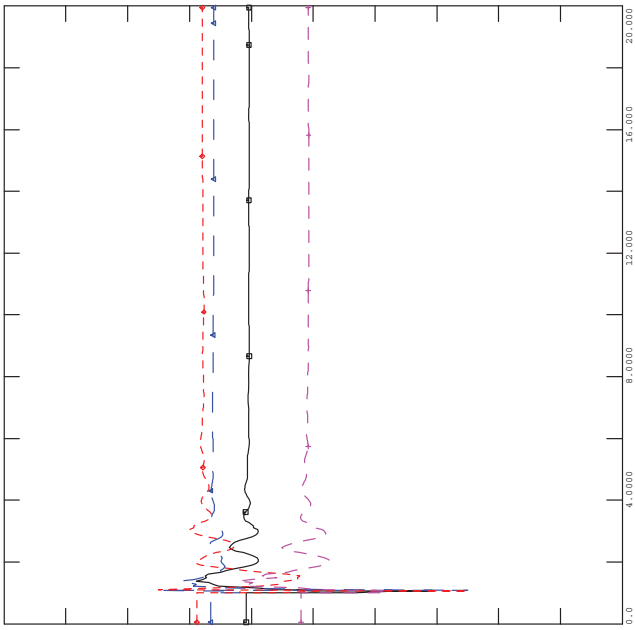

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L
FILE: Scn3_SP_04_1002L.out
MON, FEB 05 2024 12:12
BRANCH P
CHNL# 764: [674L P]
82.086
-79.11
CHNL# 762: [669L P]
70.168
-71.61
CHNL# 760: [668L P]
94.672
-130.7
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
40.000
-110.8
CHNL# 754: [945L P]
187.45
-320.0
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L

FILE: Scn3_SP_04_1002L.out

MON, FEB 05 2024 12:12

BRANCH Q

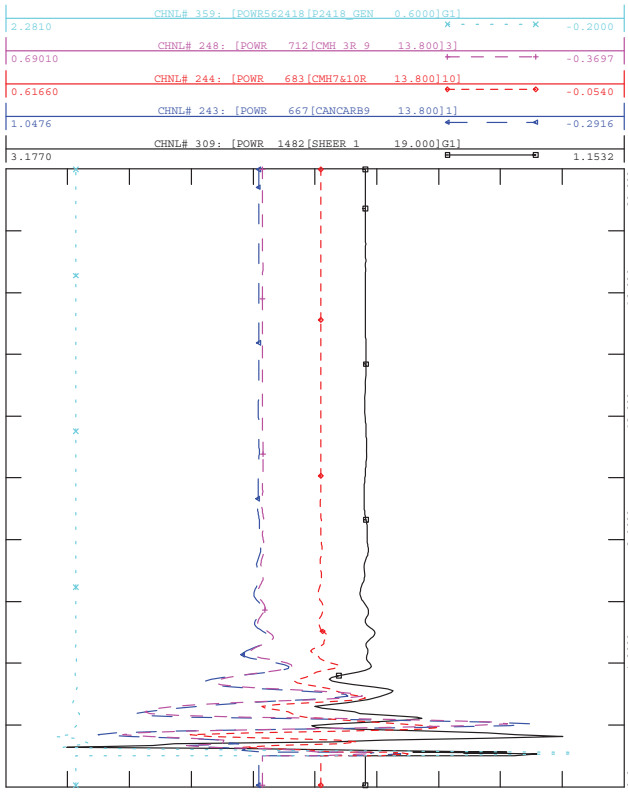


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L

FILE: Scn3_SP_05_1011L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

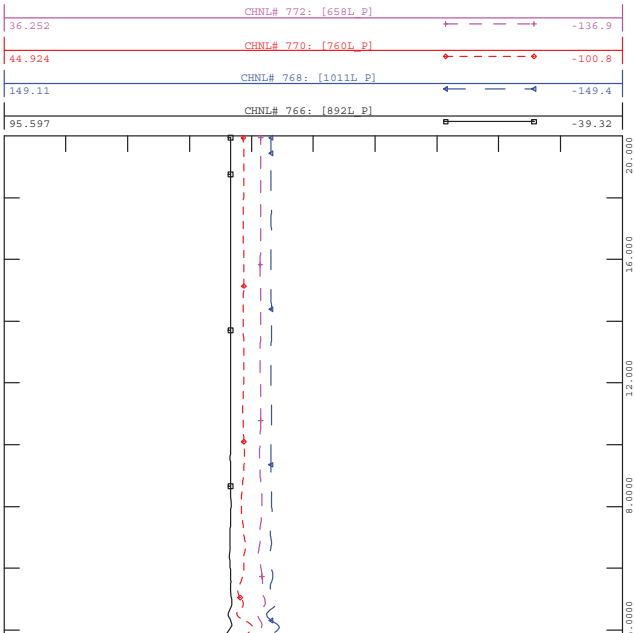


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_04_1002L

FILE: Scn3_SP_04_1002L.out

MON, FEB 05 2024 12:12

BRANCH P

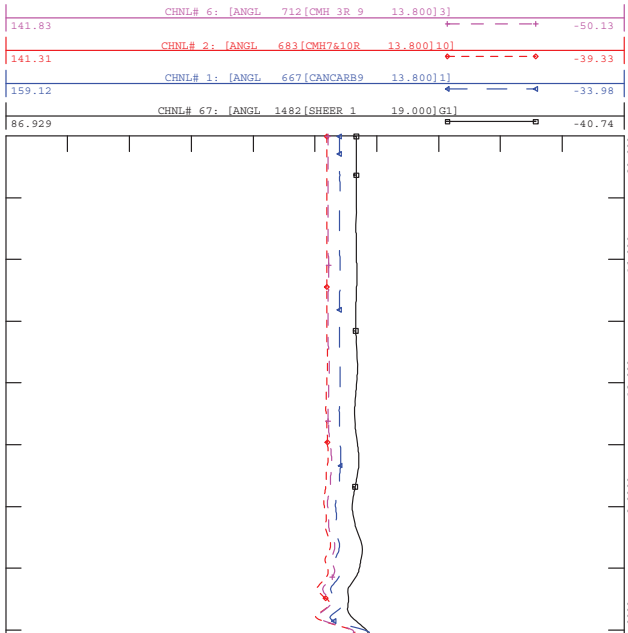


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L

FILE: Scn3_SP_05_1011L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L

FILE: Scn3_SP_05_1011L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.4041 0.26070
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1673 0.76170
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1296 0.68550
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1758 0.65500
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.2104 0.74340

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L

FILE: Scn3_SP_05_1011L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2224 0.06910
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.2098 0.04030
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2668 -0.0997

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L

FILE: Scn3_SP_05_1011L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 2.9847 -1.178
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.93420 -0.5288
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.80450 -0.4881
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 1.1230 -0.6725
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.8891 -2.179

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L

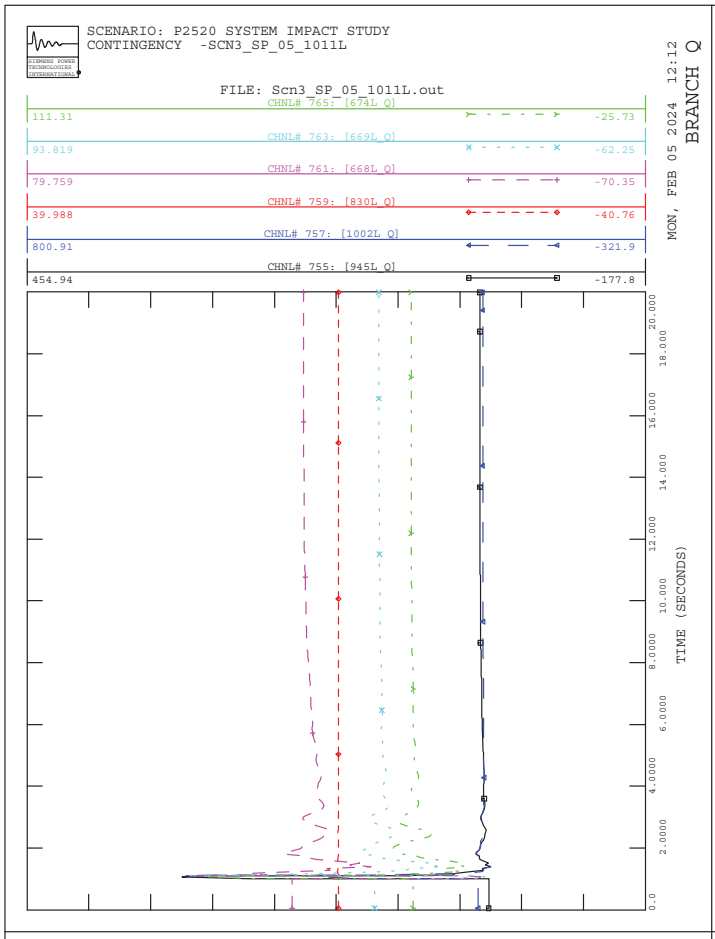
FILE: Scn3_SP_05_1011L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.3687 0.35100
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2815 0.29830
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2810 0.29620
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2048 0.05330
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2062 0.05430
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.1906 -0.0704

TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L
FILE: Scn3_SP_05_1011L.out
CHNL# 765: [674L Q]
111.31
-25.73
CHNL# 763: [669L Q]
93.819
-62.25
CHNL# 761: [668L Q]
79.759
-70.35
CHNL# 759: [830L Q]
39.988
-40.76
CHNL# 757: [1002L Q]
800.91
-321.9
CHNL# 755: [945L Q]
454.94
-177.8
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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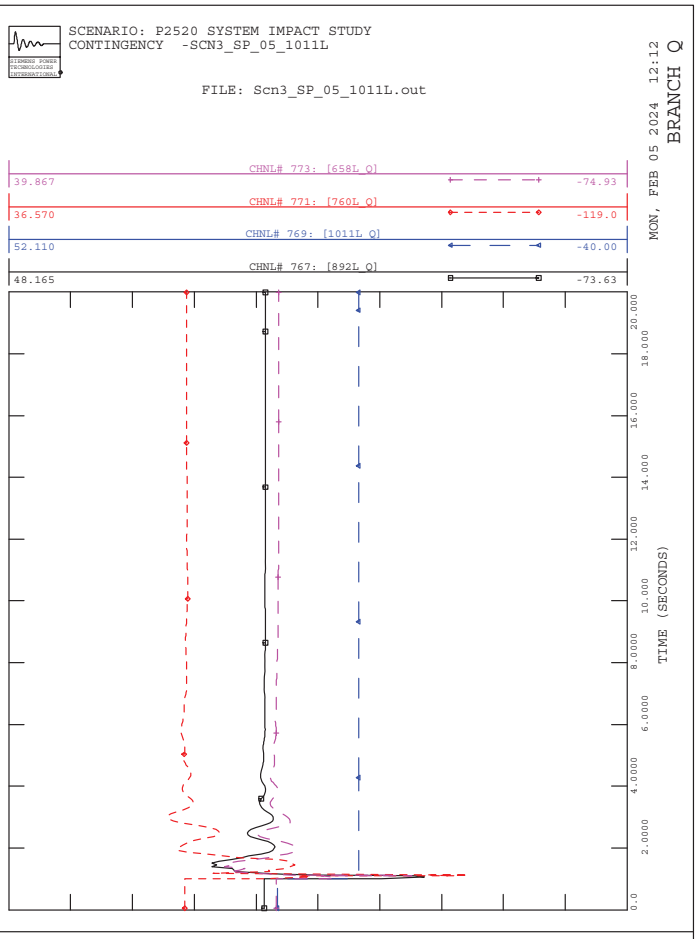
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L
FILE: Scn3_SP_05_1011L.out
CHNL# 773: [658L Q]
39.867
-74.93
CHNL# 771: [760L Q]
36.570
-119.0
CHNL# 769: [1011L Q]
52.110
-40.00
CHNL# 767: [892L Q]
48.165
-73.63
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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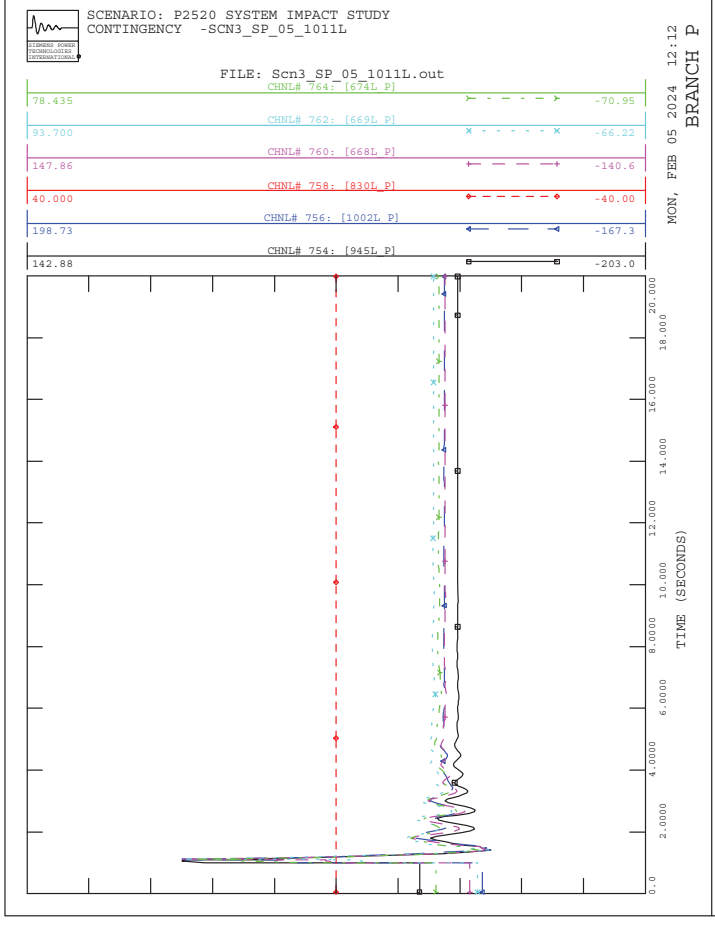
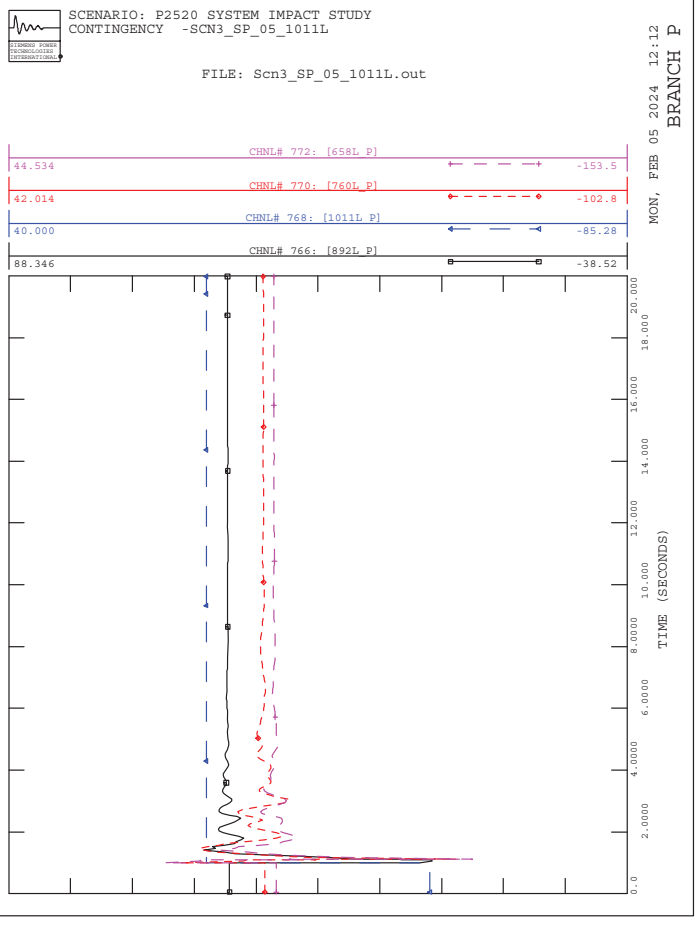
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L
FILE: Scn3_SP_05_1011L.out
CHNL# 764: [674L P]
78.435
-70.95
CHNL# 762: [669L P]
93.700
-66.22
CHNL# 760: [668L P]
147.86
-140.6
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
198.73
-167.3
CHNL# 754: [945L P]
142.88
-203.0
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_05_1011L
FILE: Scn3_SP_05_1011L.out
CHNL# 772: [658L P]
44.534
-153.5
CHNL# 770: [760L P]
42.014
-102.8
CHNL# 768: [1011L P]
40.000
-85.28
CHNL# 766: [892L P]
88.346
-38.52
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L

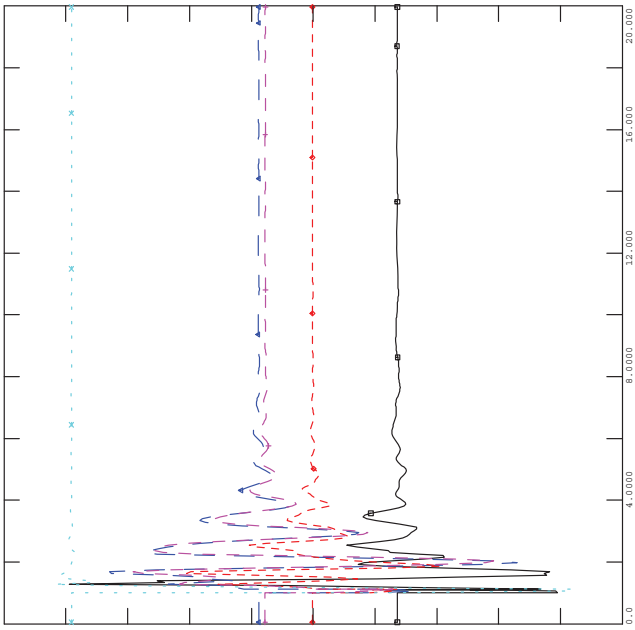
FILE: Scn3_SP_06_1011L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2688 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.65540 -0.3046
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.61300 -0.0643
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.98330 -0.1907
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 3.2057 1.3089

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L

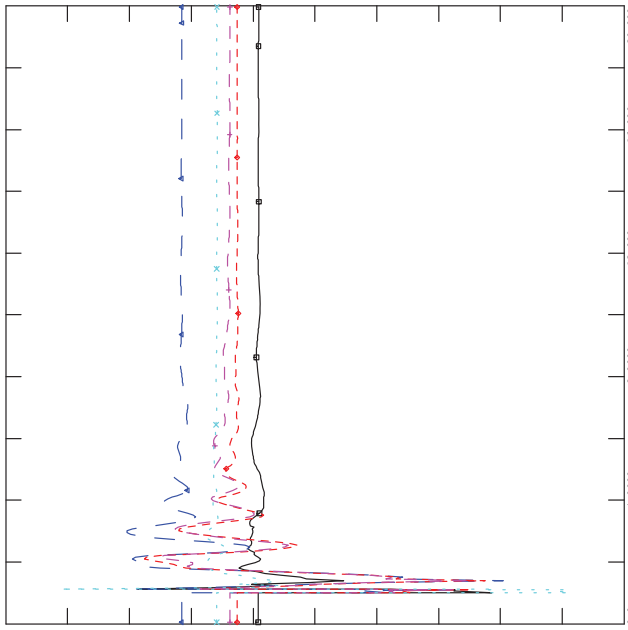
FILE: Scn3_SP_06_1011L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.4200 0.27560
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1603 0.75630
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1238 0.67870
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1654 0.65420
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.2111 0.74330

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L

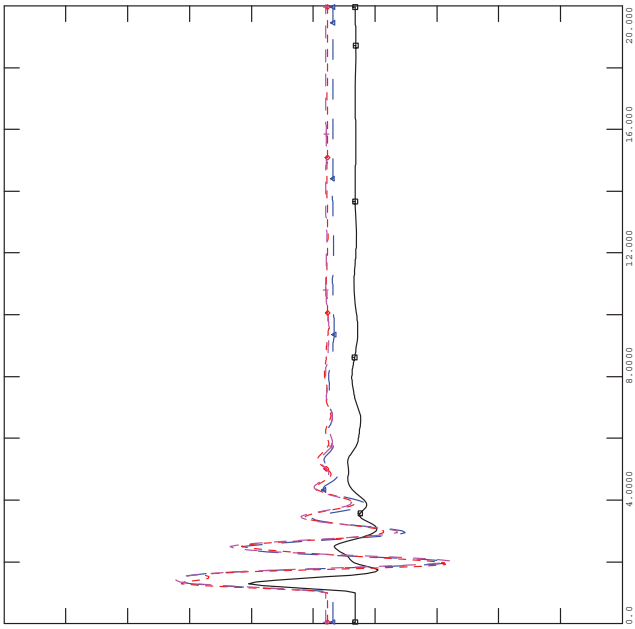
FILE: Scn3_SP_06_1011L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 135.39 -44.49
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 138.76 -35.79
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 150.29 -29.11
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 86.395 -39.99

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L

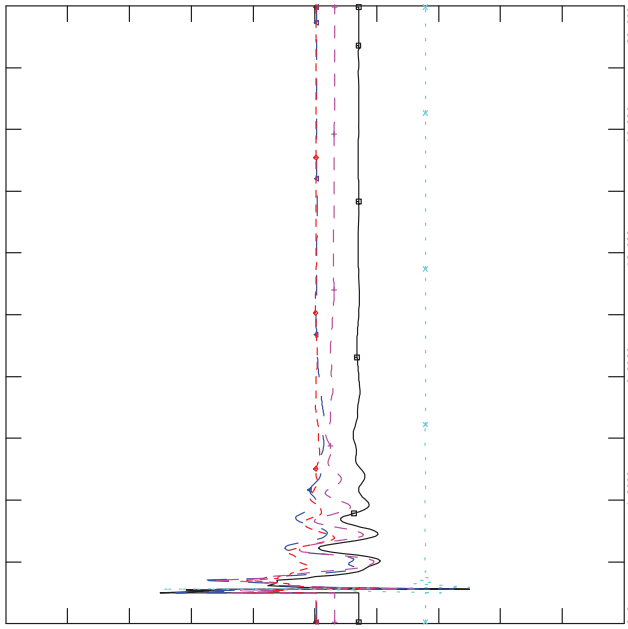
FILE: Scn3_SP_06_1011L.out

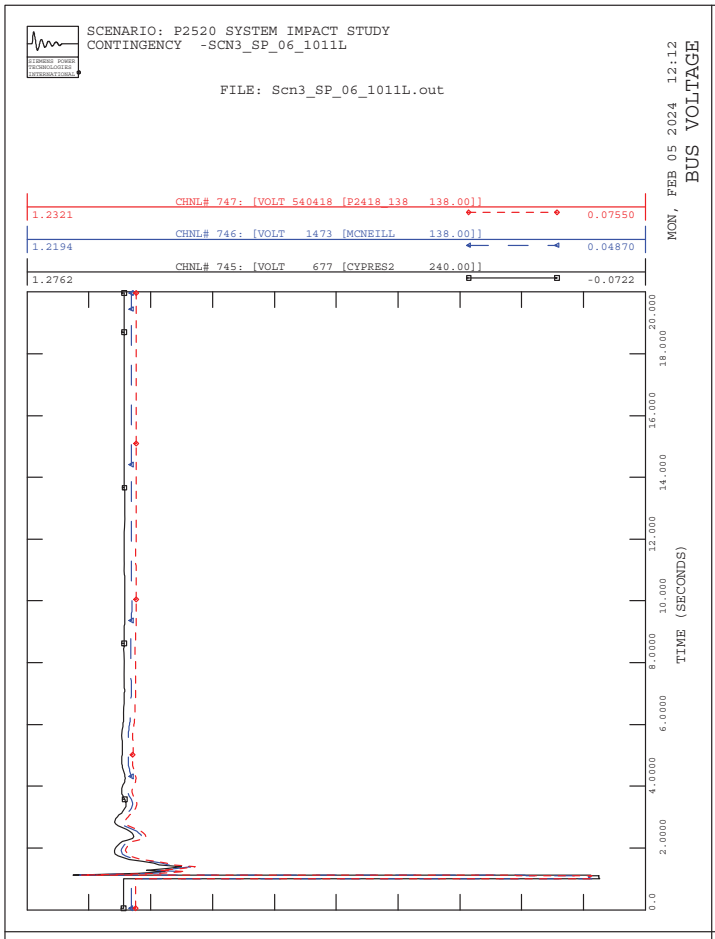
MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1] 3.1546 -1.230
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.94380 -0.5302
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.80490 -0.4933
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 1.1241 -0.6927
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.9157 -2.250

TIME (SECONDS)




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L
FILE: Scn3_SP_06_1011L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 747: [VOLT 540418 [P2418_138 138.00]]
1.2321
0.07550
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.2194
0.04870
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2762
-0.0722
TIME (SECONDS)
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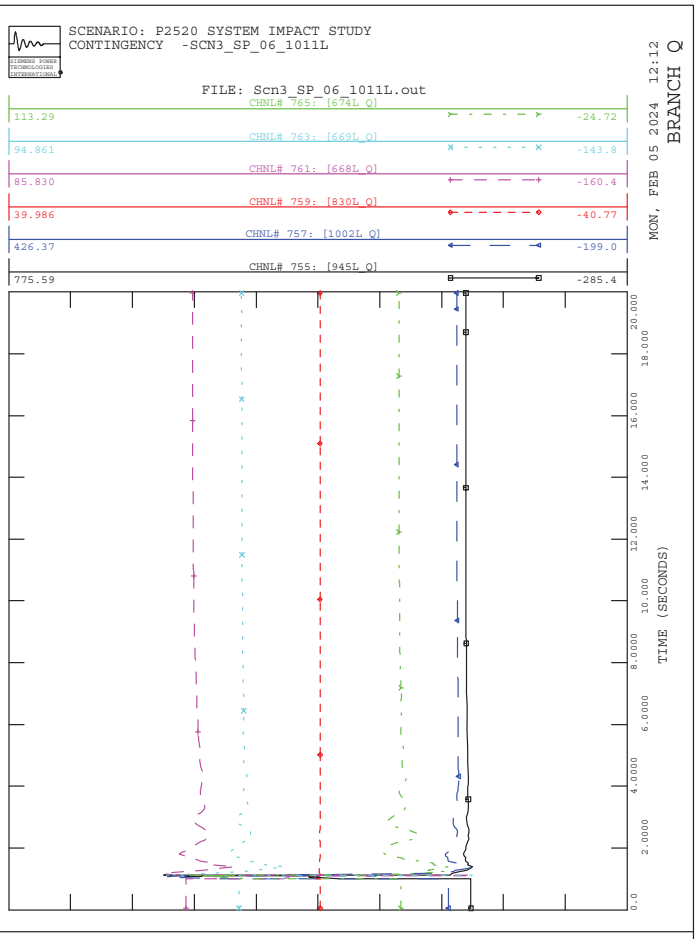
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L
FILE: Scn3_SP_06_1011L.out
MON, FEB 05 2024 12:12
BRANCH Q
CHNL# 765: [674L Q]
113.29
-24.72
CHNL# 763: [669L Q]
94.861
-143.8
CHNL# 761: [668L Q]
85.830
-160.4
CHNL# 759: [830L Q]
39.986
-40.77
CHNL# 757: [1002L Q]
426.37
-199.0
CHNL# 755: [945L Q]
775.59
-285.4
TIME (SECONDS)
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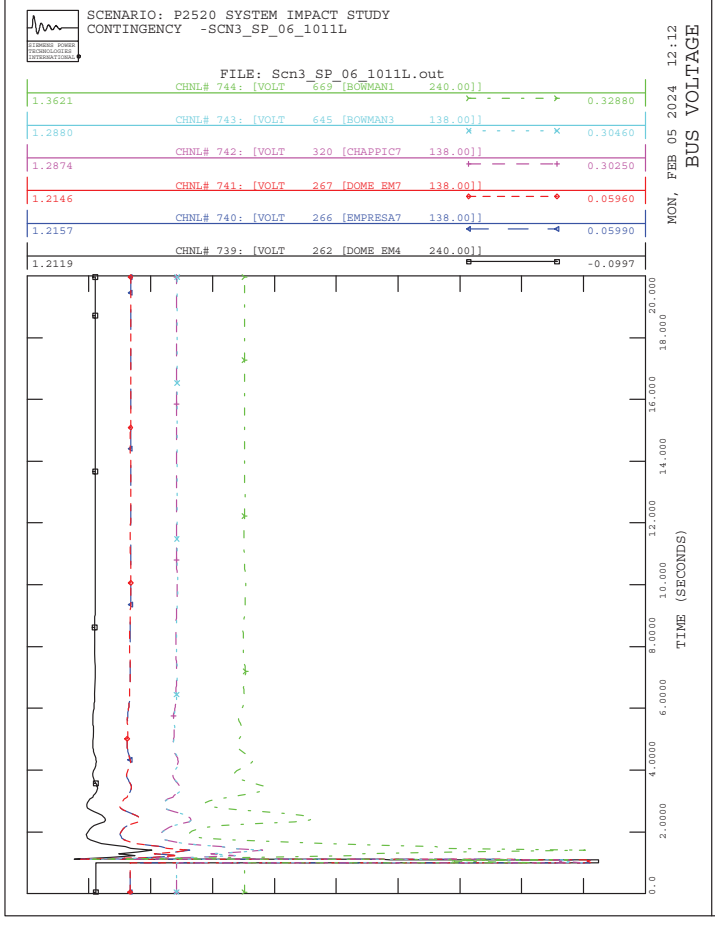
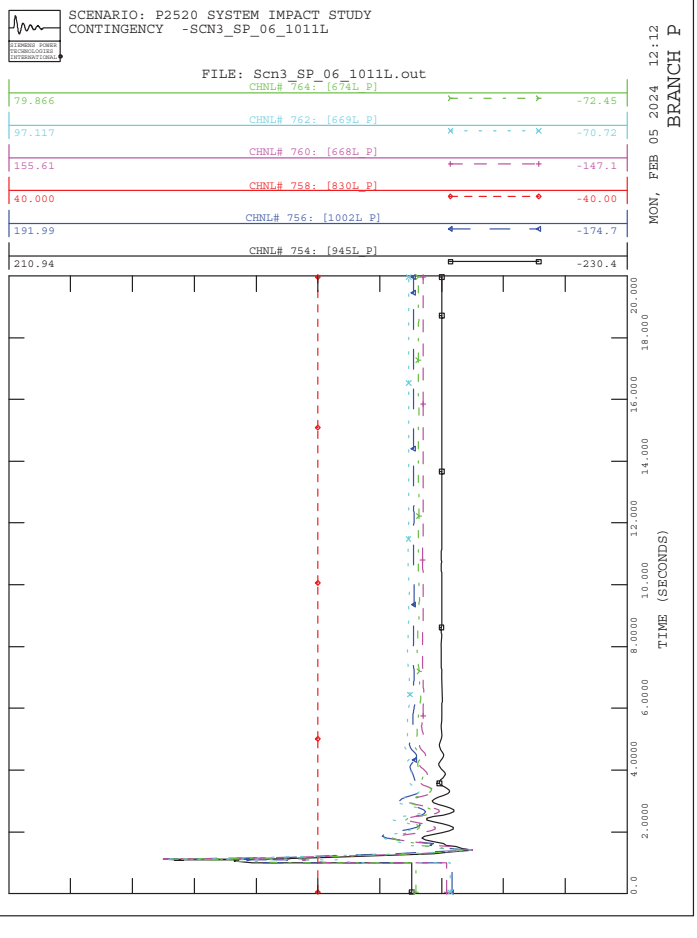
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L
FILE: Scn3_SP_06_1011L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.3621
0.32880
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2880
0.30460
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2874
0.30250
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2146
0.05960
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2157
0.05990
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2119
-0.0997
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

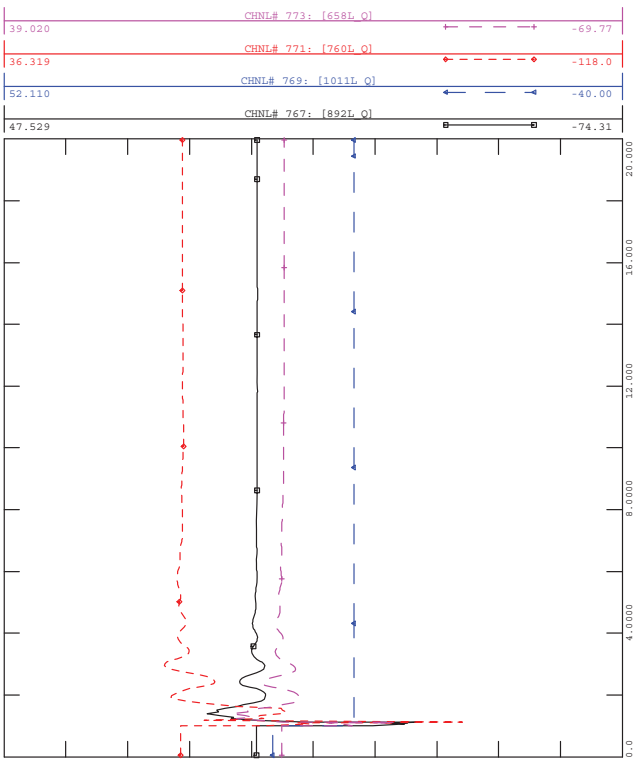

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L
FILE: Scn3_SP_06_1011L.out
MON, FEB 05 2024 12:12
BRANCH P
CHNL# 764: [674L P]
79.866
-72.45
CHNL# 762: [669L P]
97.117
-70.72
CHNL# 760: [668L P]
155.61
-147.1
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
191.99
-174.7
CHNL# 754: [945L P]
210.94
-230.4
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L

FILE: Scn3_SP_06_1011L.out

MON, FEB 05 2024 12:12

BRANCH Q

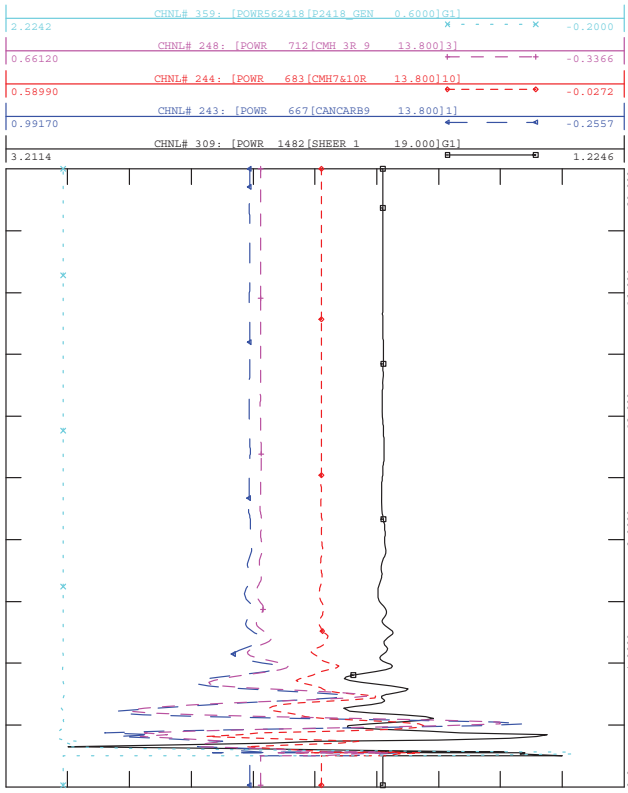


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L

FILE: Scn3_SP_07_668L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

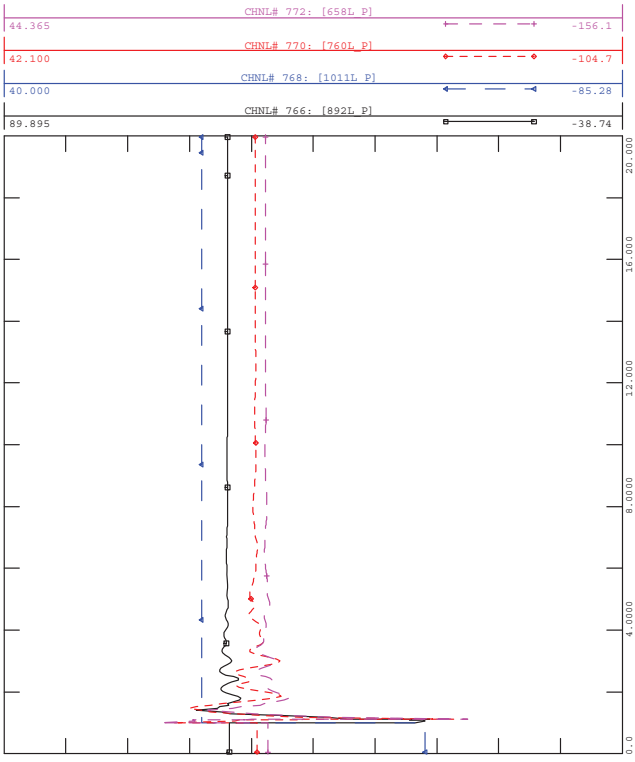


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_06_1011L

FILE: Scn3_SP_06_1011L.out

MON, FEB 05 2024 12:12

BRANCH P

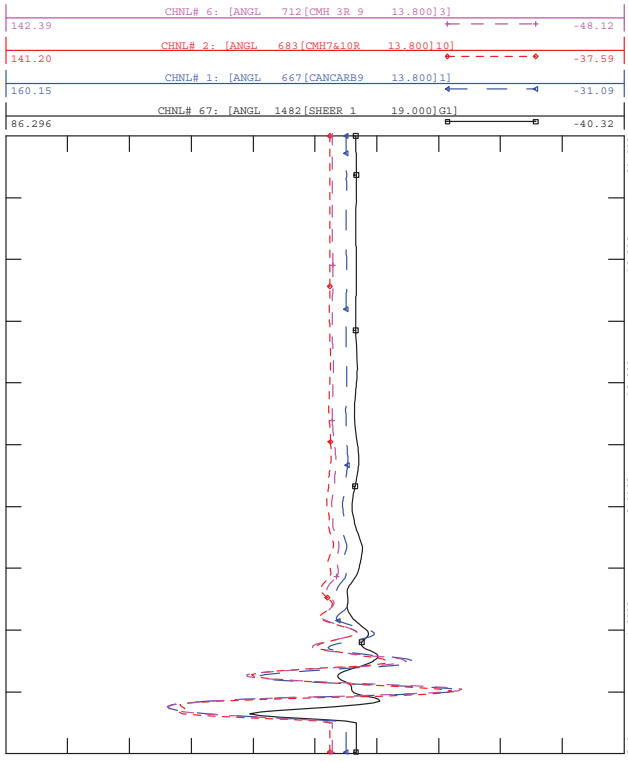


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L

FILE: Scn3_SP_07_668L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

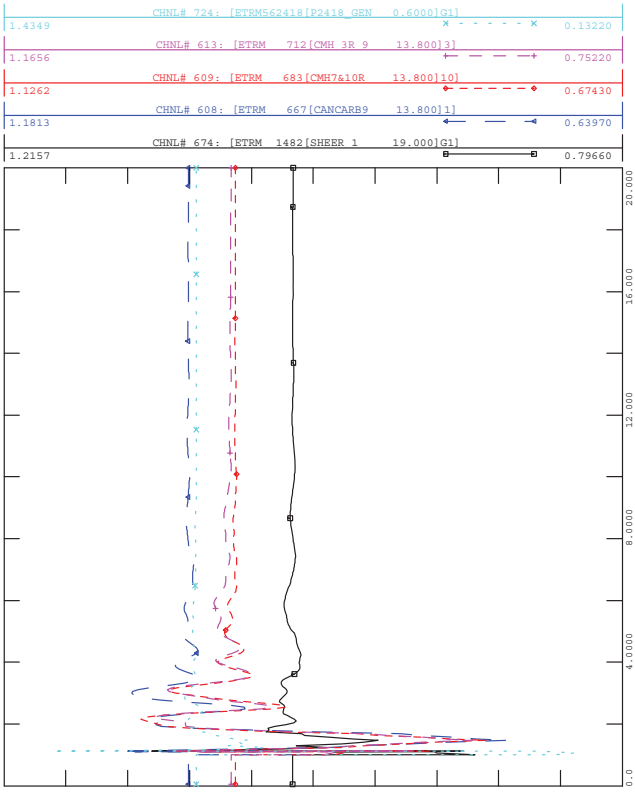


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L

FILE: Scn3_SP_07_668L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

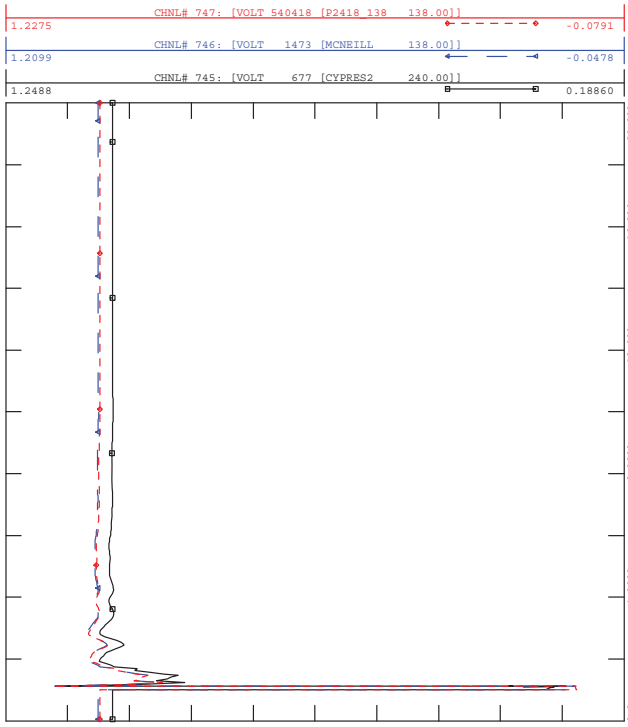


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L

FILE: Scn3_SP_07_668L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

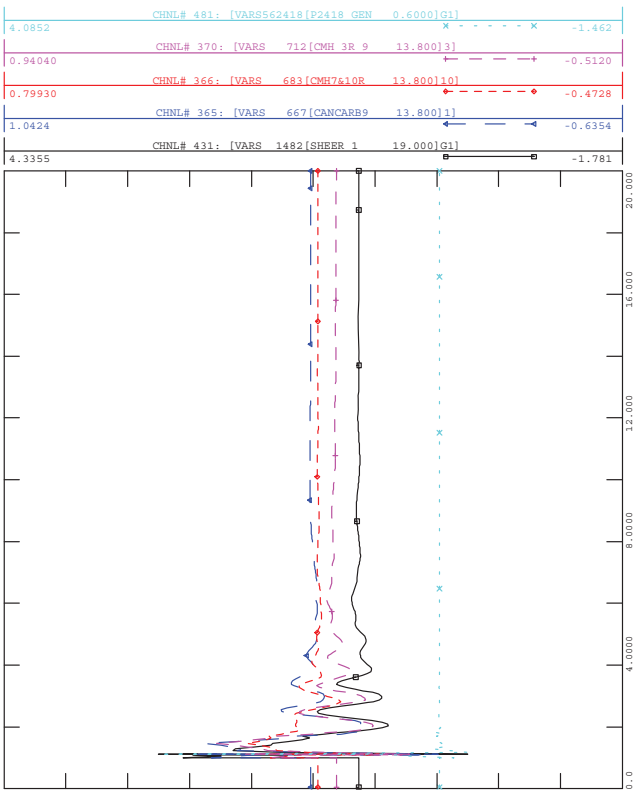


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L

FILE: Scn3_SP_07_668L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

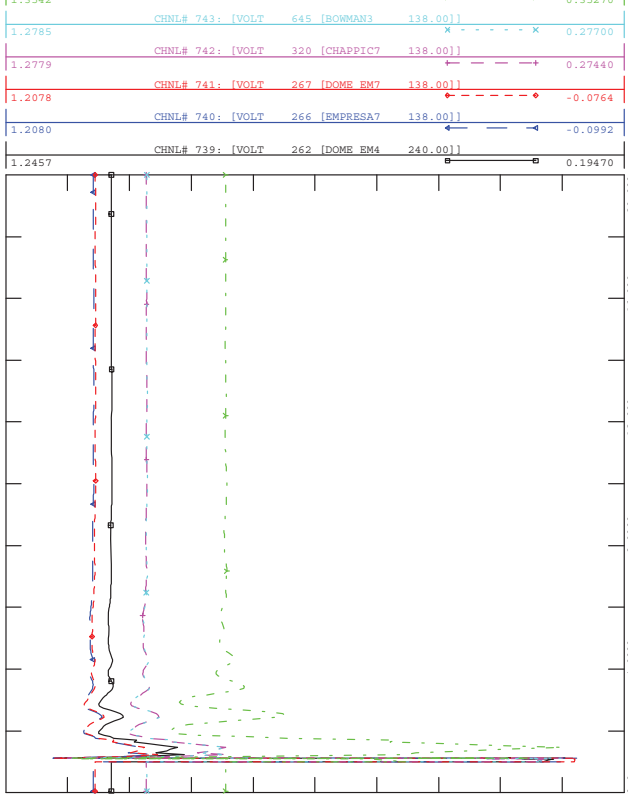


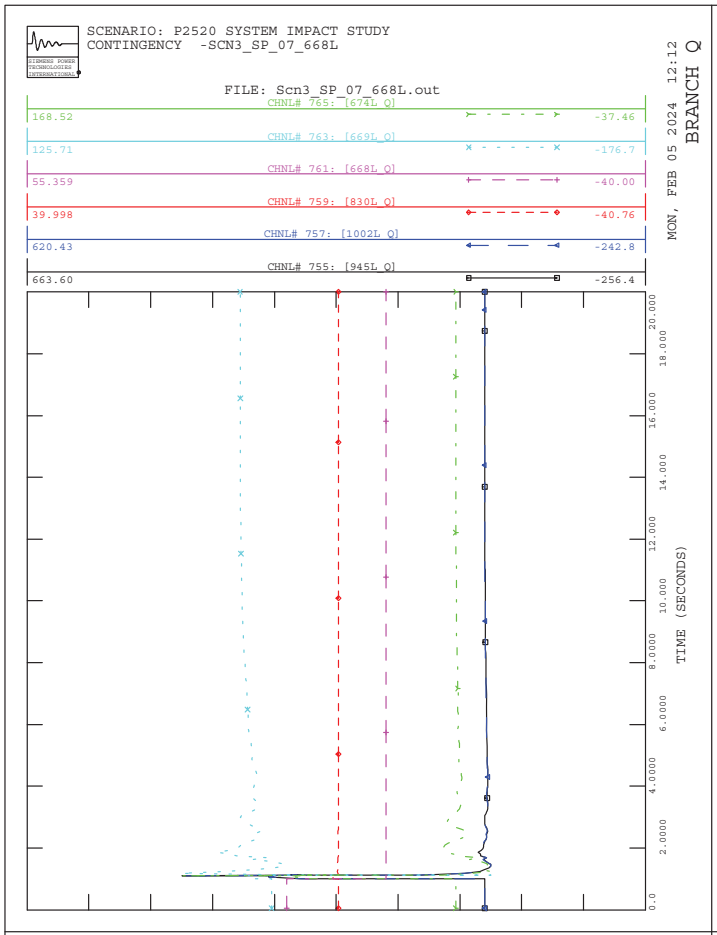
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L

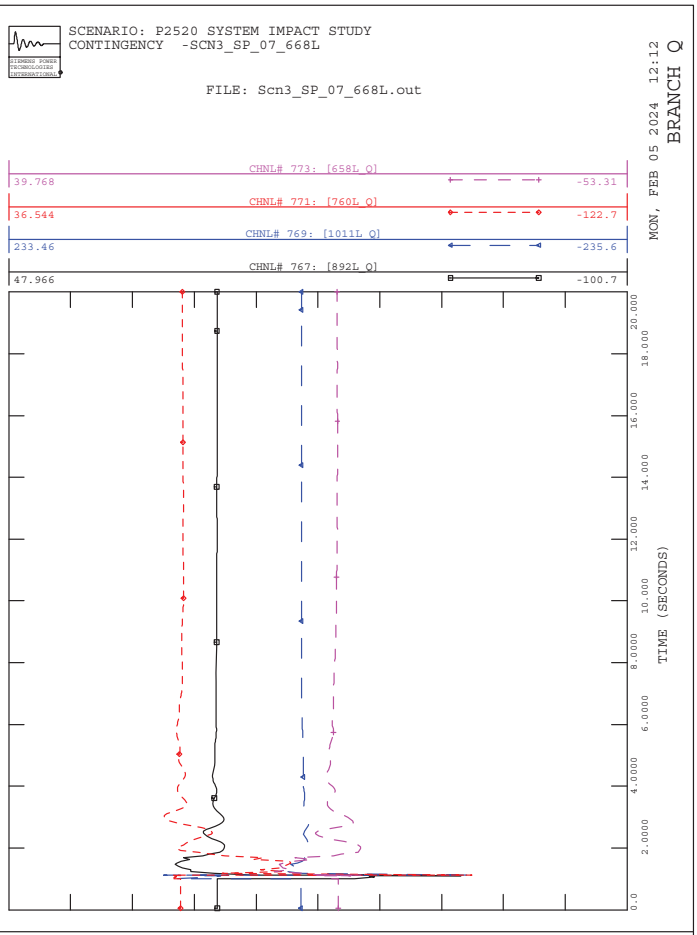
FILE: Scn3_SP_07_668L.out

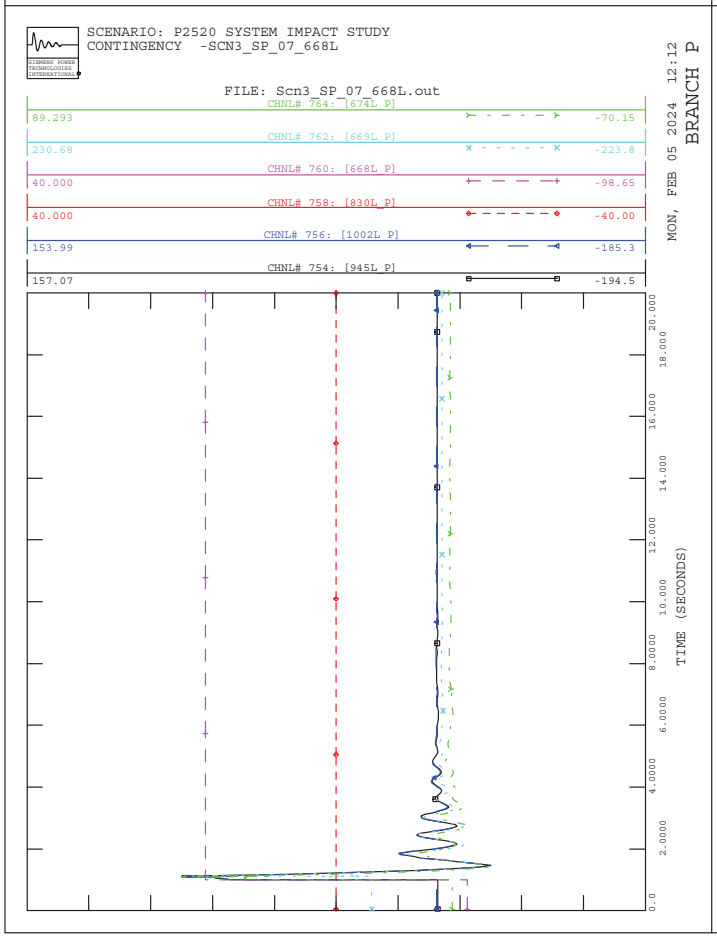
MON, FEB 05 2024 12:12

BUS VOLTAGE




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L
FILE: Scn3_SP_07_668L.out
CHNL# 765: [674L Q]
168.52
-37.46
CHNL# 763: [669L Q]
125.71
-176.7
CHNL# 761: [668L Q]
55.359
-40.00
CHNL# 759: [830L Q]
39.998
-40.76
CHNL# 757: [1002L Q]
620.43
-242.8
CHNL# 755: [945L Q]
663.60
-256.4
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L
FILE: Scn3_SP_07_668L.out
CHNL# 773: [658L Q]
39.768
-53.31
CHNL# 771: [760L Q]
36.544
-122.7
CHNL# 769: [1011L Q]
233.46
-235.6
CHNL# 767: [892L Q]
47.966
-100.7
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L
FILE: Scn3_SP_07_668L.out
CHNL# 764: [674L P]
89.293
-70.15
CHNL# 762: [669L P]
230.68
-223.8
CHNL# 760: [668L P]
40.000
-98.65
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
153.99
-185.3
CHNL# 754: [945L P]
157.07
-194.5
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
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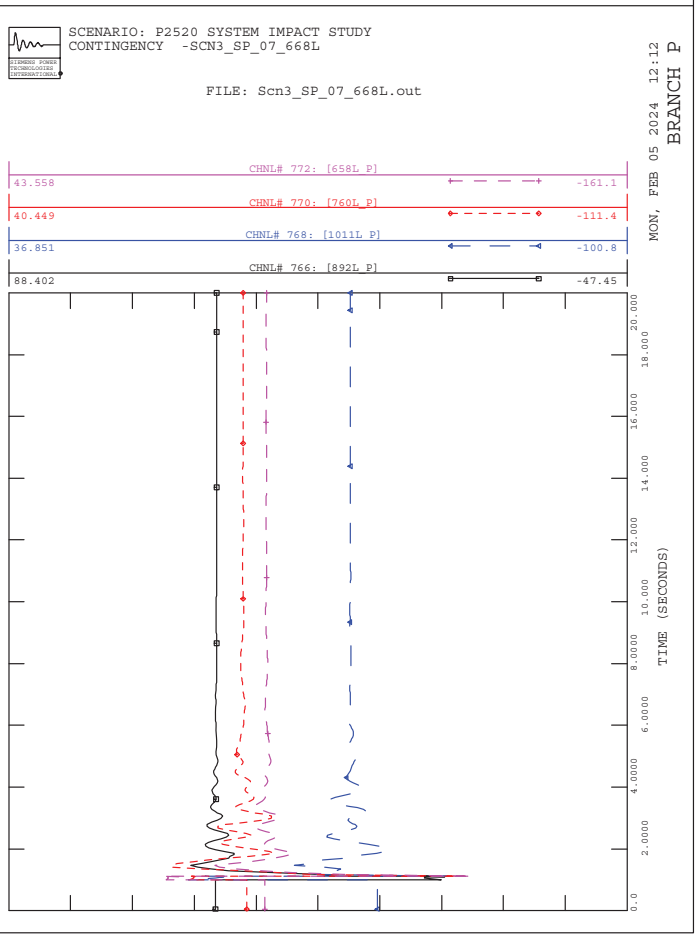
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_07_668L
FILE: Scn3_SP_07_668L.out
CHNL# 772: [658L P]
43.558
-161.1
CHNL# 770: [760L P]
40.449
-111.4
CHNL# 768: [1011L P]
36.851
-100.8
CHNL# 766: [892L P]
88.402
-47.45
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L

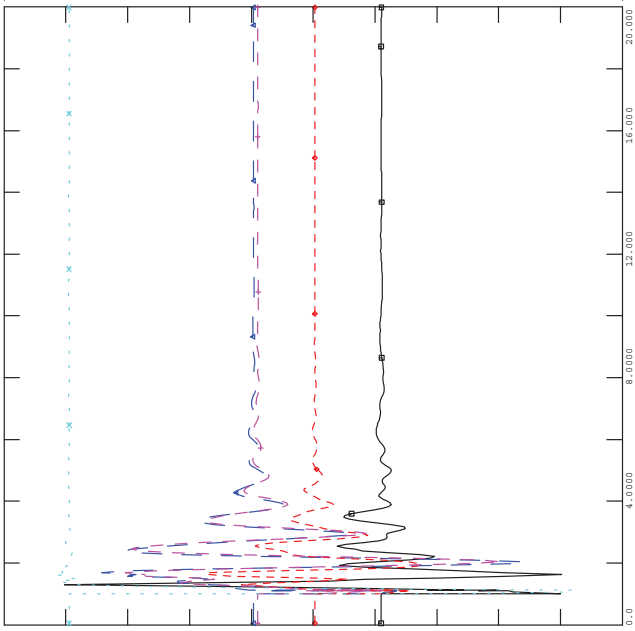
FILE: Scn3_SP_08_668L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2580 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.66910 -0.3522
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.58300 -0.0296
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 1.0116 -0.2563
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 3.2465 1.2031

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L

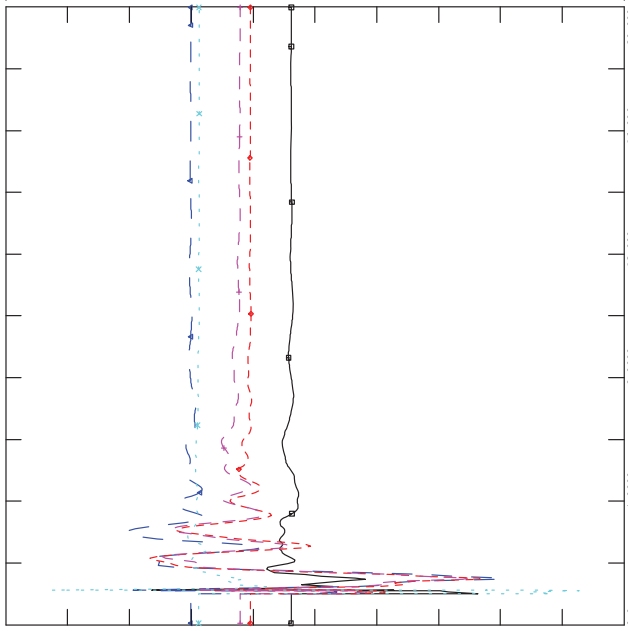
FILE: Scn3_SP_08_668L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.4581 0.08690
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1637 0.76830
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1268 0.69760
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1722 0.66300
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.2152 0.79200

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L

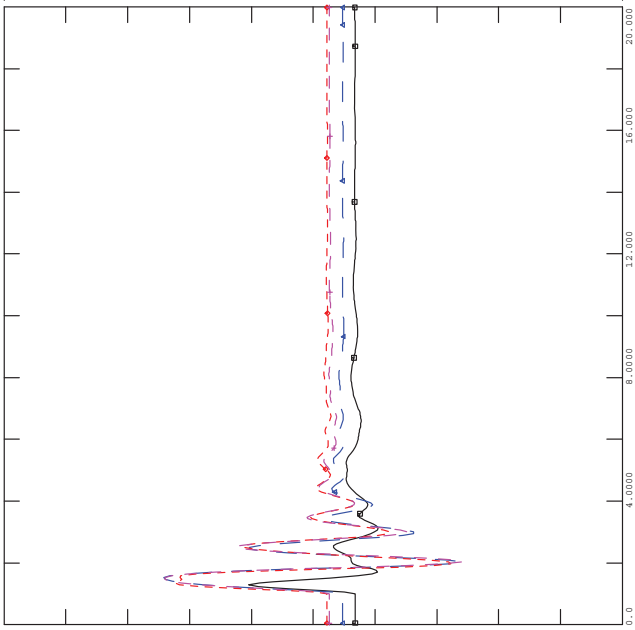
FILE: Scn3_SP_08_668L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 142.92 -49.28
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 141.74 -38.67
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 160.75 -32.57
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 86.377 -40.15

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L

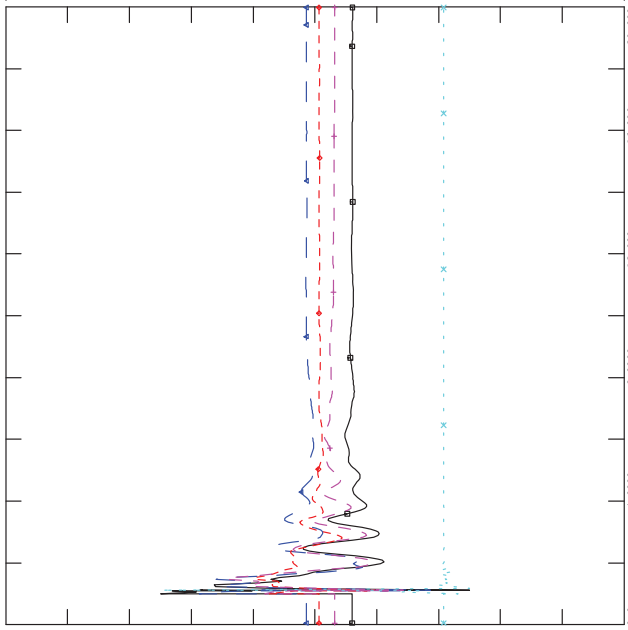
FILE: Scn3_SP_08_668L.out

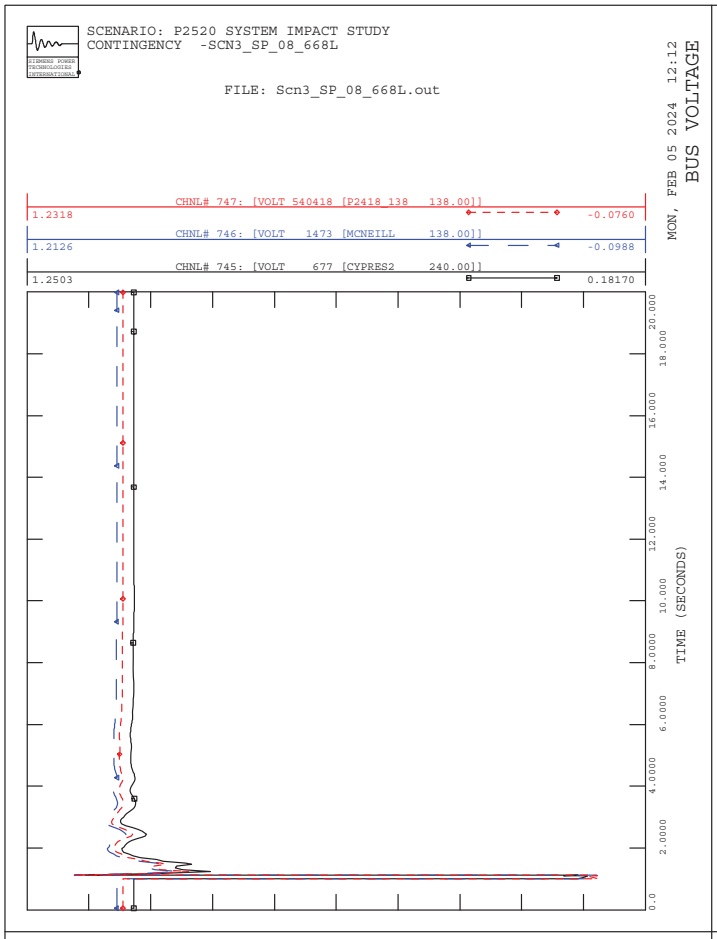
MON, FEB 05 2024 12:12

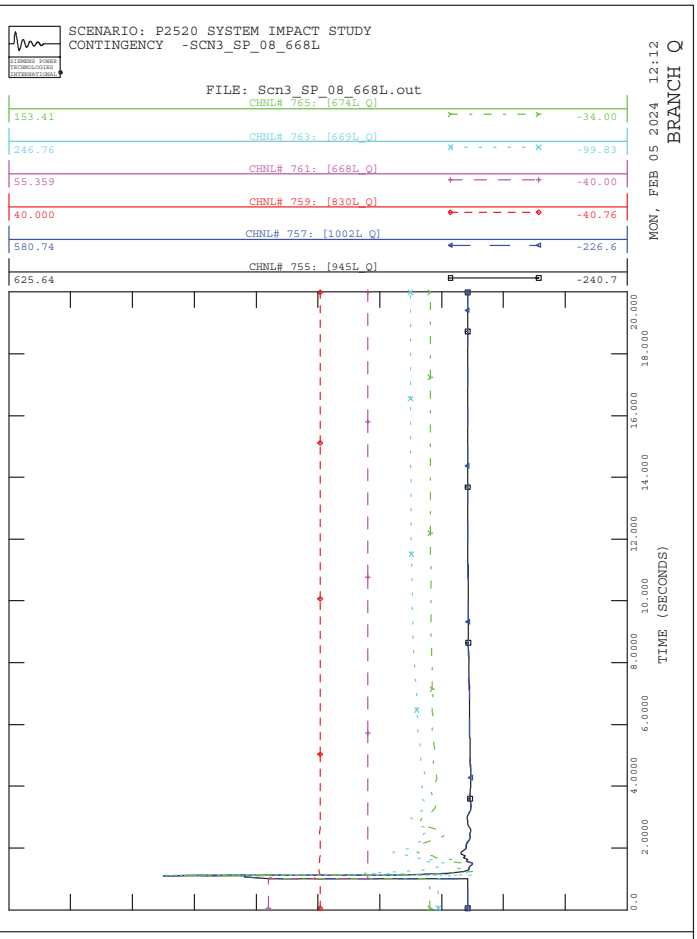
REACTIVE POWER

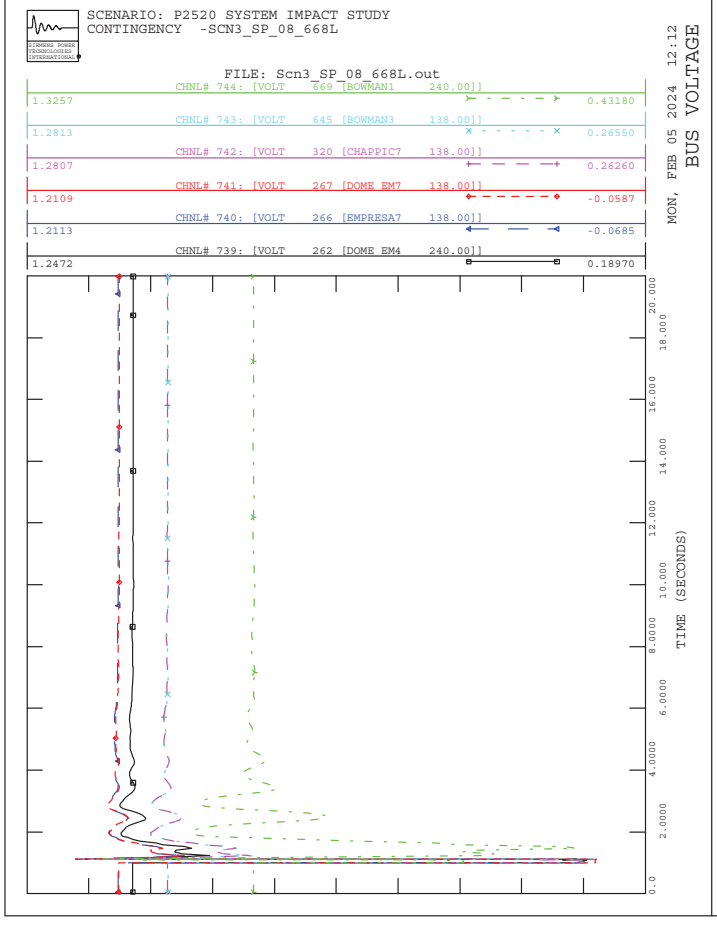
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1] 4.4007 -1.557
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.90420 -0.4949
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.78350 -0.4586
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.98780 -0.6098
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.0605 -1.710

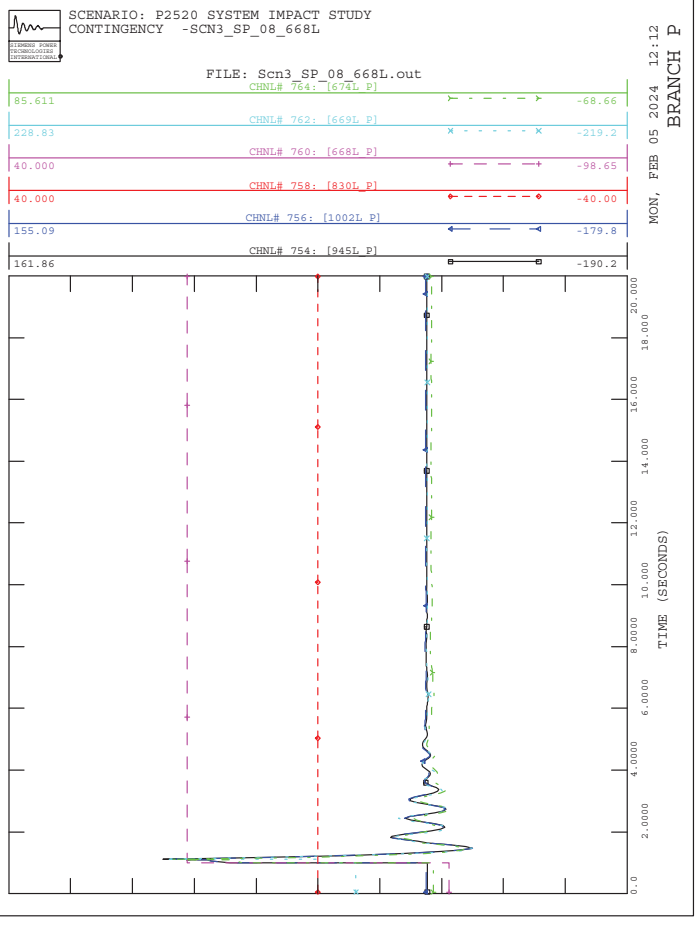
TIME (SECONDS)




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L
FILE: Scn3_SP_08_668L.out
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.2318
-0.0760
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.2126
-0.0988
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2503
0.18170
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L
FILE: Scn3_SP_08_668L.out
CHNL# 765: [674L Q]
153.41
-34.00
CHNL# 763: [669L Q]
246.76
-99.83
CHNL# 761: [668L Q]
55.359
-40.00
CHNL# 759: [830L Q]
40.000
-40.76
CHNL# 757: [1002L Q]
580.74
-226.6
CHNL# 755: [945L Q]
625.64
-240.7
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L
FILE: Scn3_SP_08_668L.out
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.3257
0.43180
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2813
0.26550
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2807
0.26260
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2109
-0.0587
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2113
-0.0685
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2472
0.18970
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

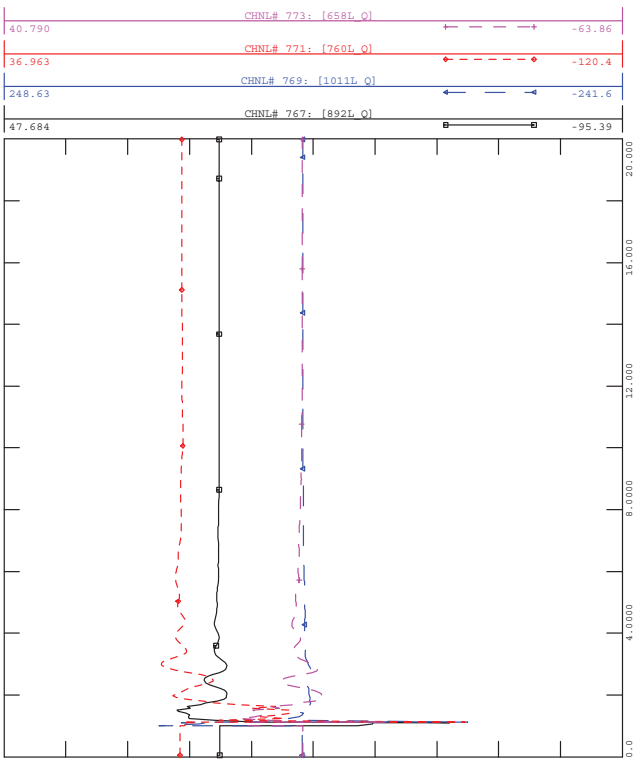

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L
FILE: Scn3_SP_08_668L.out
CHNL# 764: [674L P]
85.611
-68.66
CHNL# 762: [669L P]
228.83
-219.2
CHNL# 760: [668L P]
40.000
-98.65
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
155.09
-179.8
CHNL# 754: [945L P]
161.86
-190.2
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L

FILE: Scn3_SP_08_668L.out

MON, FEB 05 2024 12:12

BRANCH Q

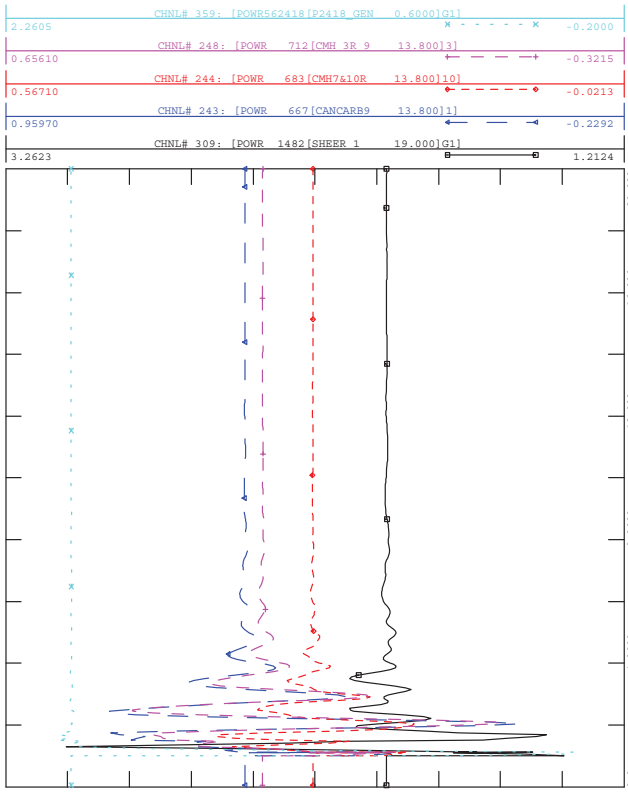


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L

FILE: Scn3_SP_09_669L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

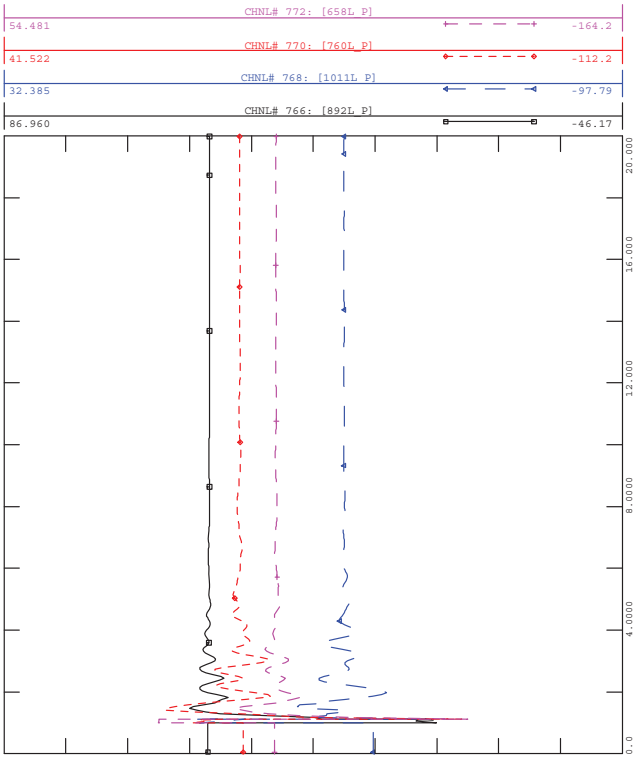


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_08_668L

FILE: Scn3_SP_08_668L.out

MON, FEB 05 2024 12:12

BRANCH P

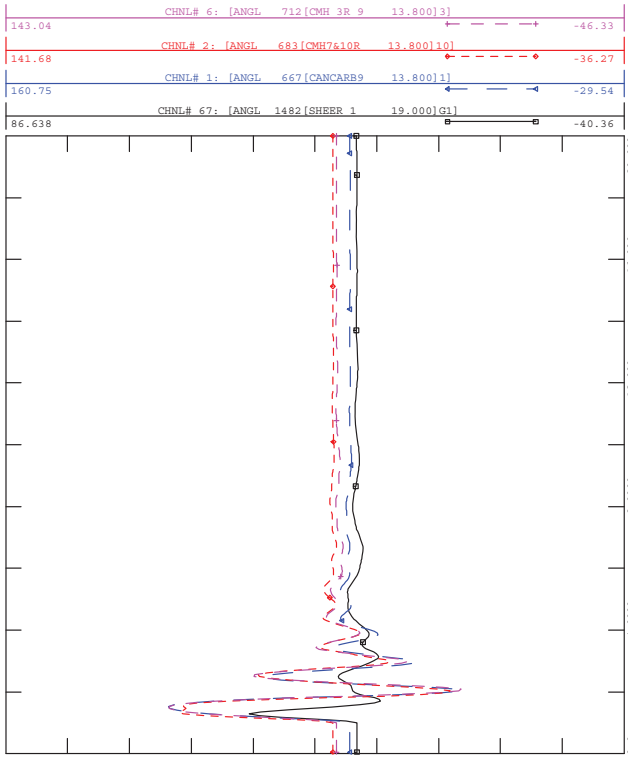


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L

FILE: Scn3_SP_09_669L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

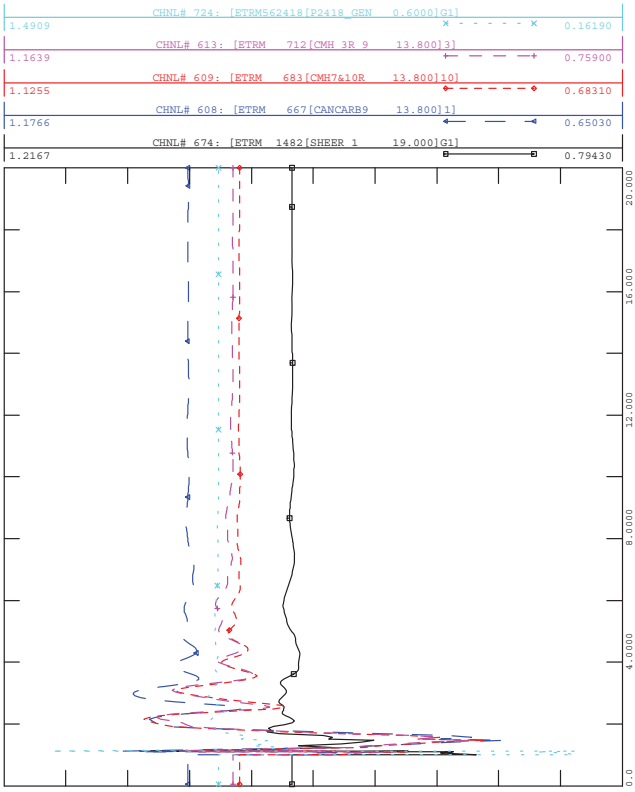


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L

FILE: Scn3_SP_09_669L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

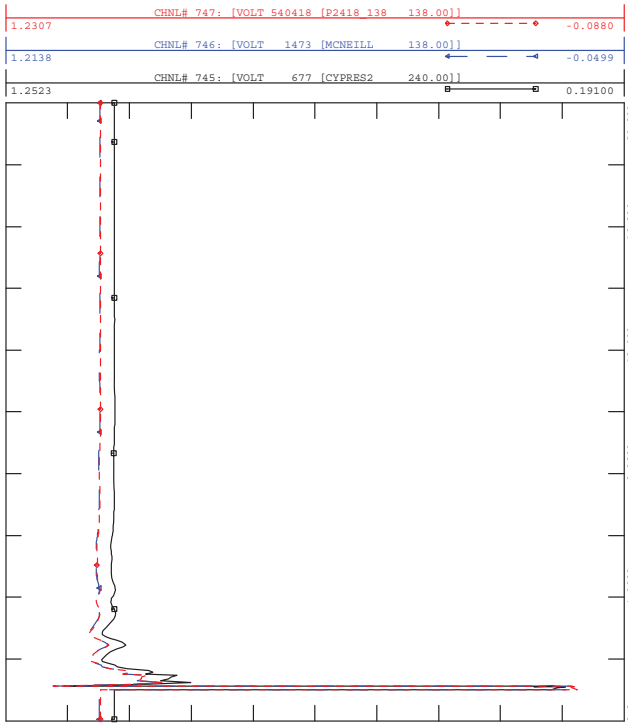


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L

FILE: Scn3_SP_09_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

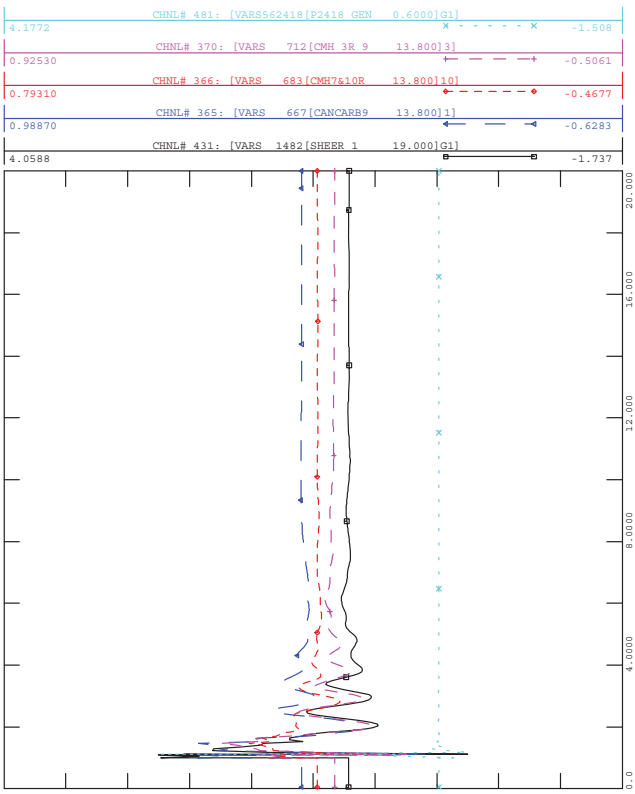


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L

FILE: Scn3_SP_09_669L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

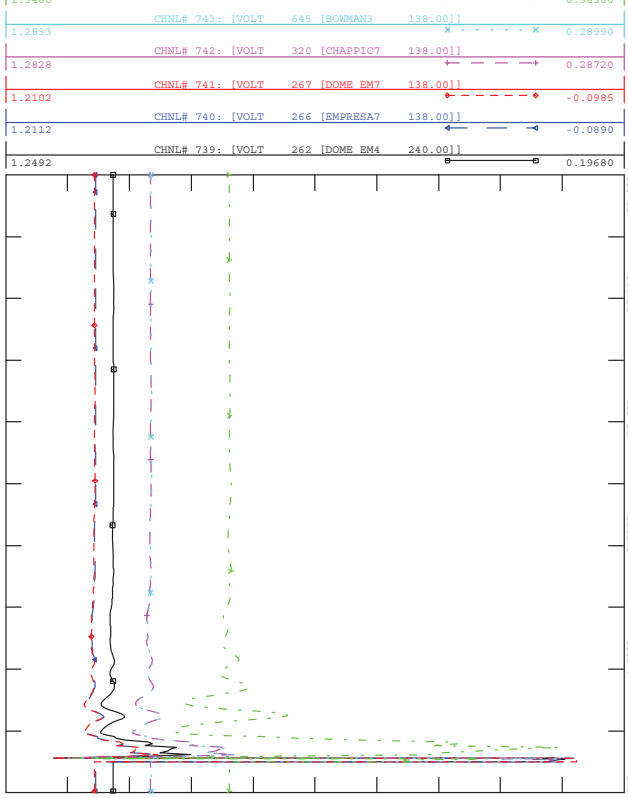


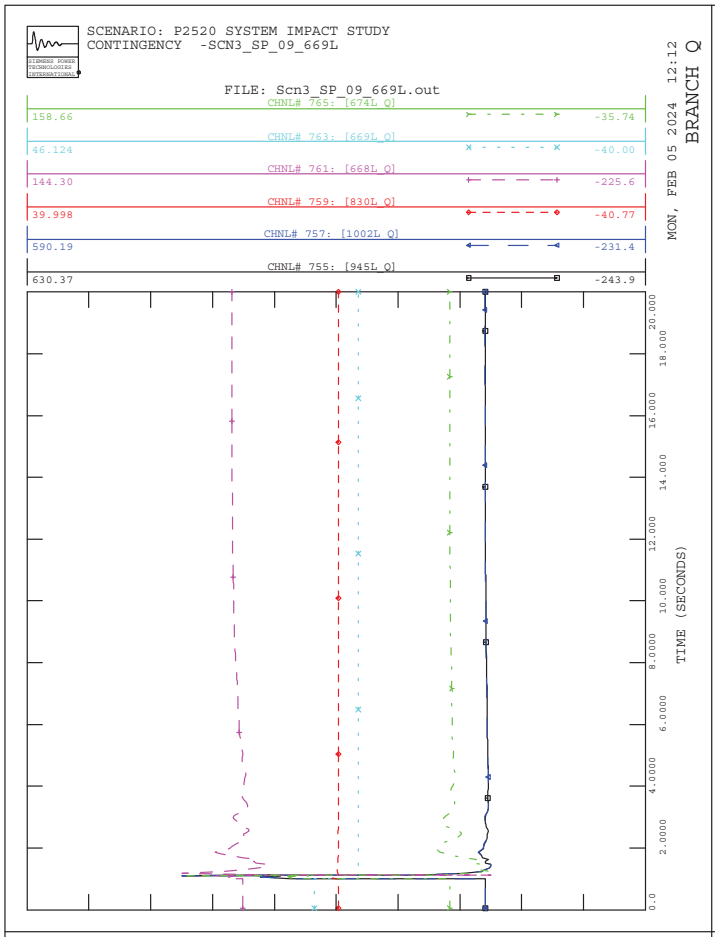
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L

FILE: Scn3_SP_09_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L
FILE: Scn3_SP_09_669L.out
CHNL# 765: [674L Q]
158.66
-35.74
CHNL# 763: [669L Q]
46.124
-40.00
CHNL# 761: [668L Q]
144.30
-225.6
CHNL# 759: [830L Q]
39.998
-40.77
CHNL# 757: [1002L Q]
590.19
-231.4
CHNL# 755: [945L Q]
630.37
-243.9
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
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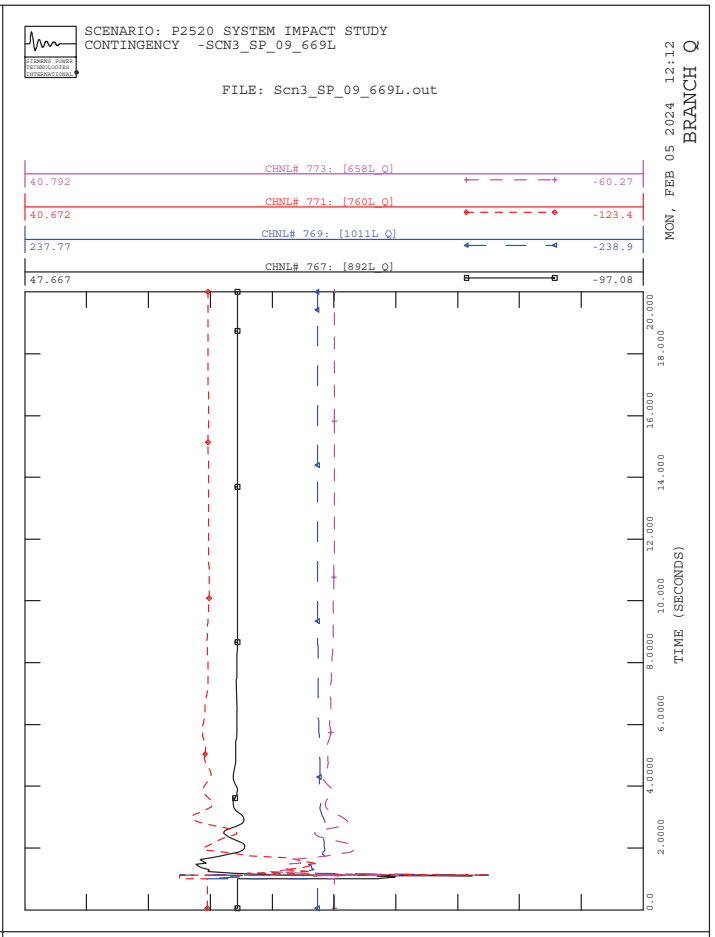
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L
FILE: Scn3_SP_09_669L.out
CHNL# 773: [658L Q]
40.792
-60.27
CHNL# 771: [760L Q]
40.672
-123.4
CHNL# 769: [1011L Q]
237.77
-238.9
CHNL# 767: [892L Q]
47.667
-97.08
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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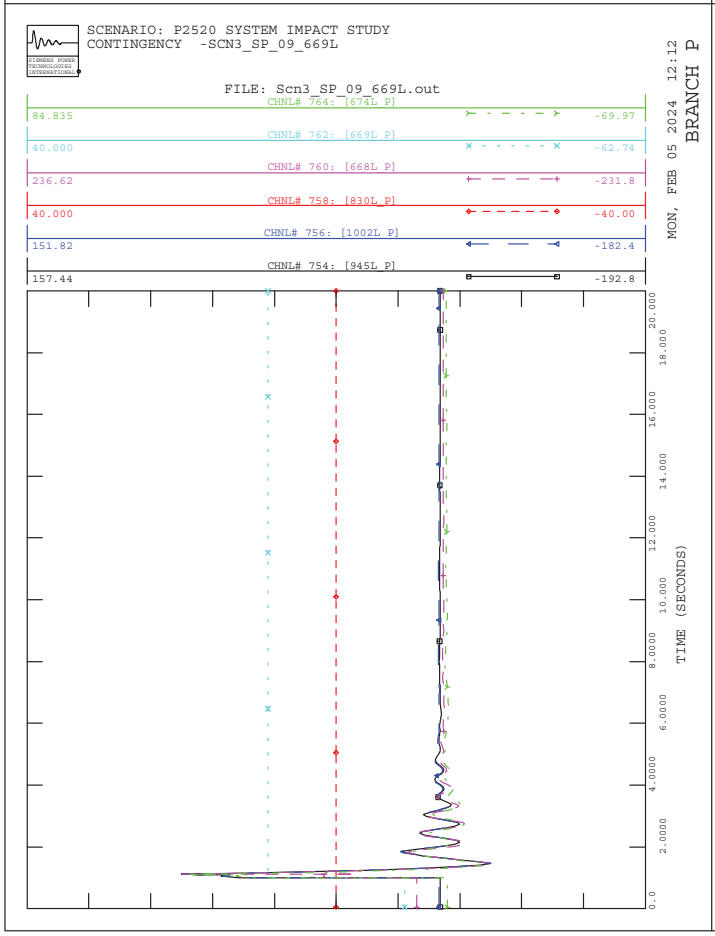
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L
FILE: Scn3_SP_09_669L.out
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-69.97
CHNL# 762: [669L P]
40.000
-62.74
CHNL# 760: [668L P]
236.62
-231.8
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
151.82
-182.4
CHNL# 754: [945L P]
157.44
-192.8
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
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12.000
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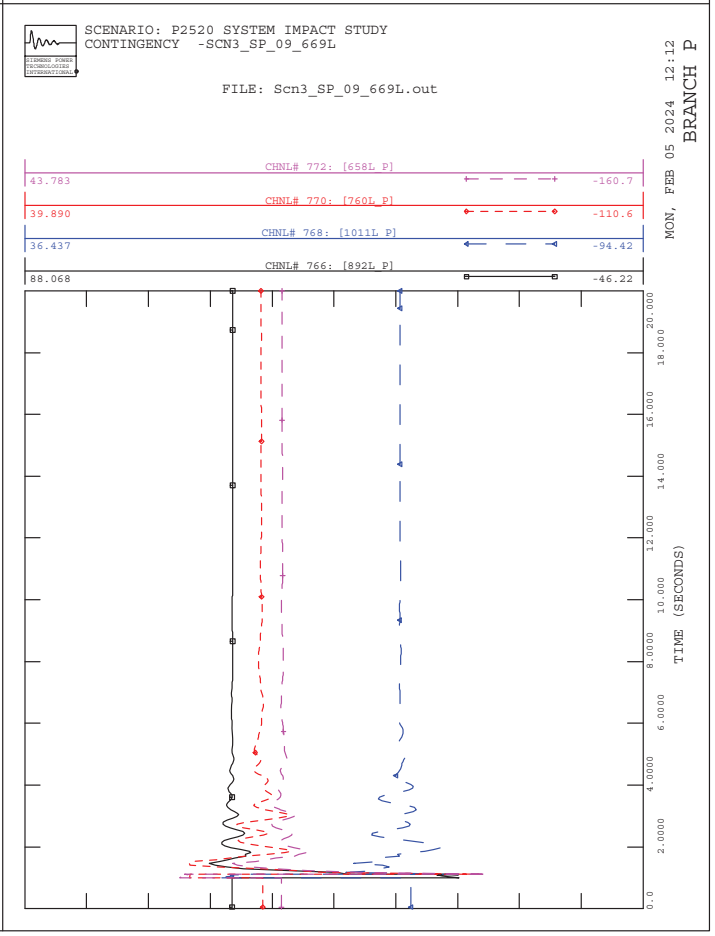
20.000

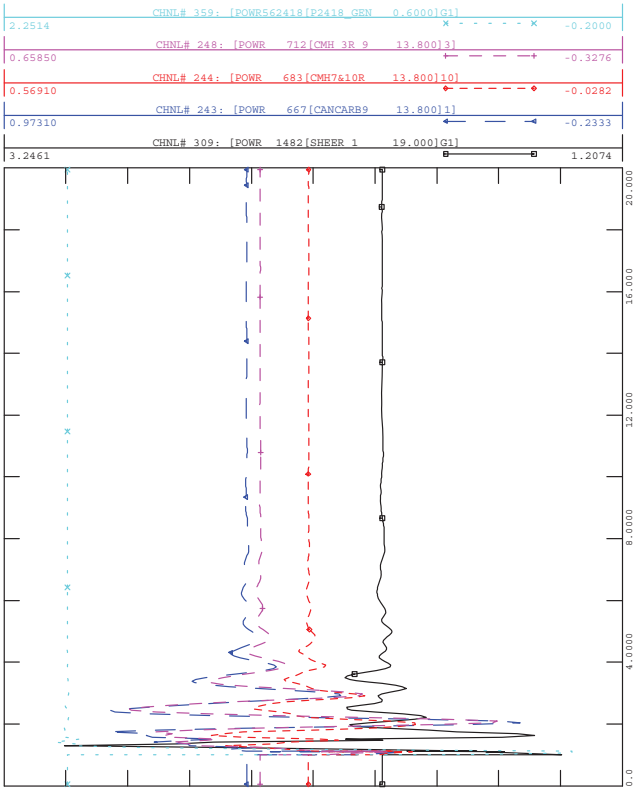

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_09_669L
FILE: Scn3_SP_09_669L.out
CHNL# 772: [658L P]
43.783
-160.7
CHNL# 770: [760L P]
39.890
-110.6
CHNL# 768: [1011L P]
36.437
-94.42
CHNL# 766: [892L P]
88.068
-46.22
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

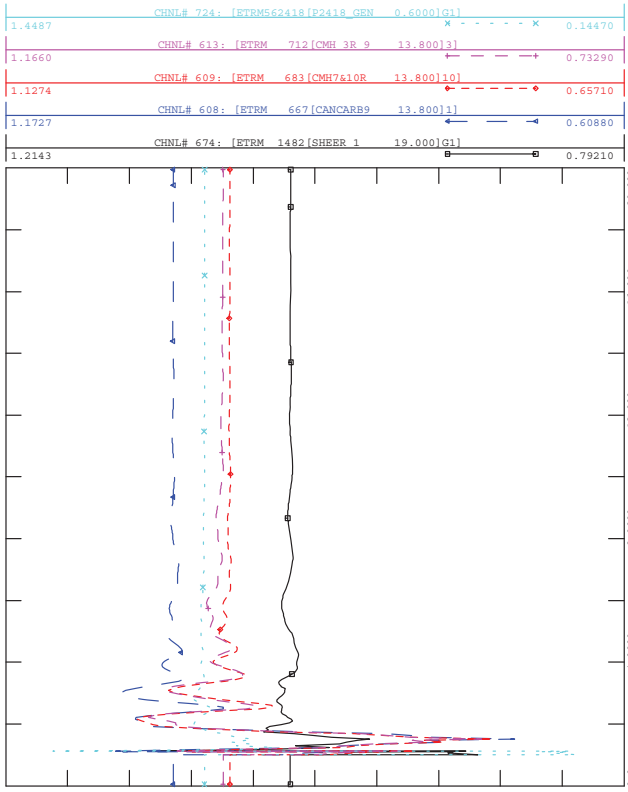


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

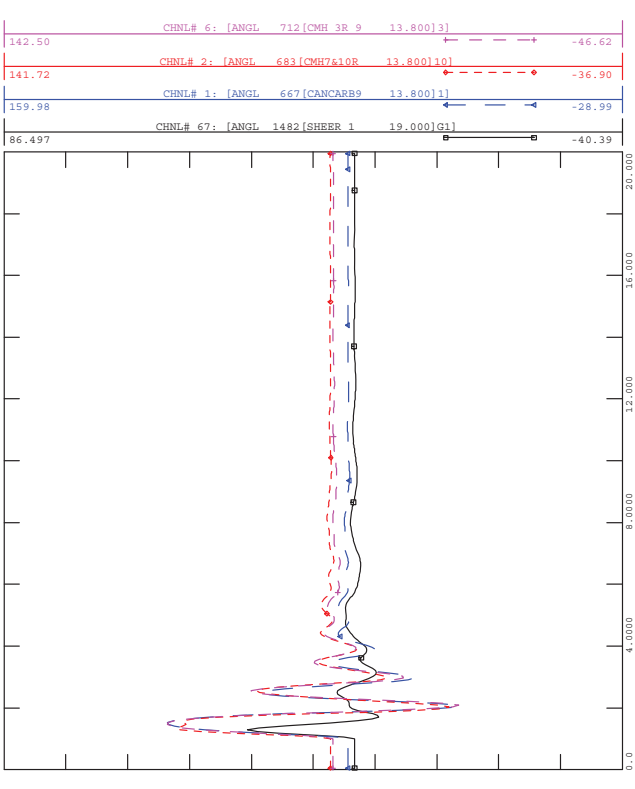


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

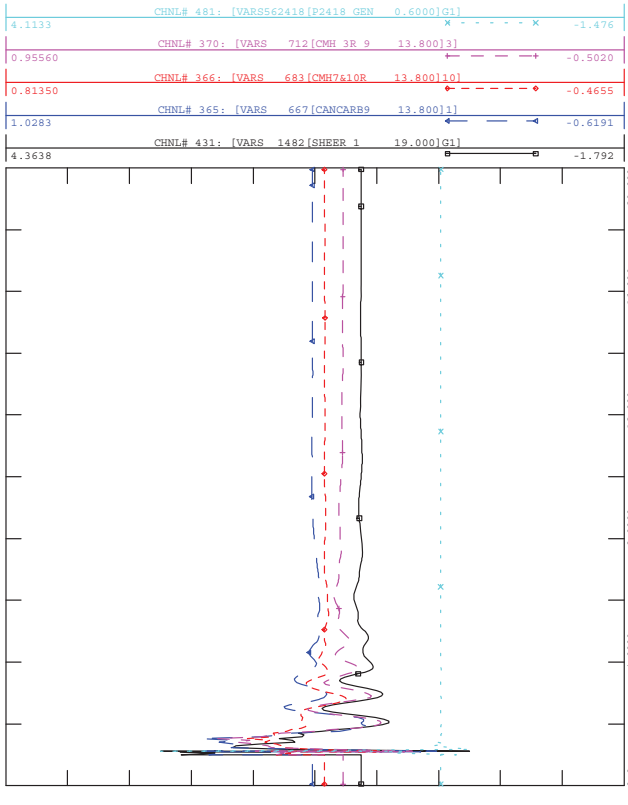


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

REACTIVE POWER



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

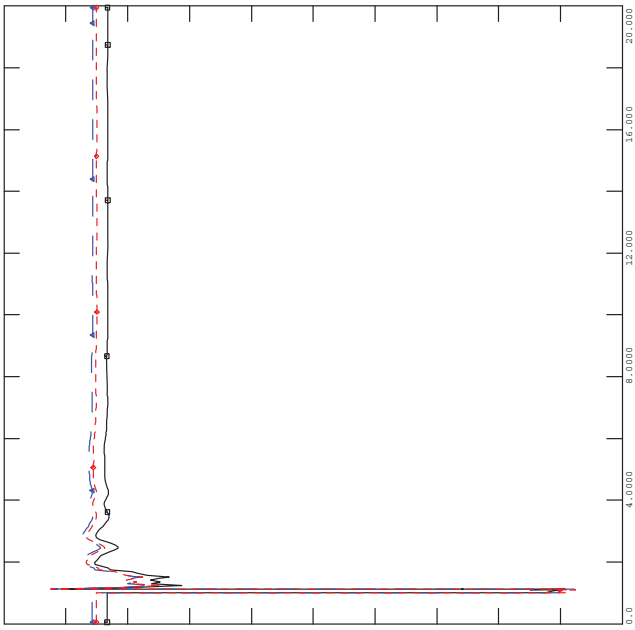
FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2269 -0.0954
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.2091 -0.0986
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2471 0.16430

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

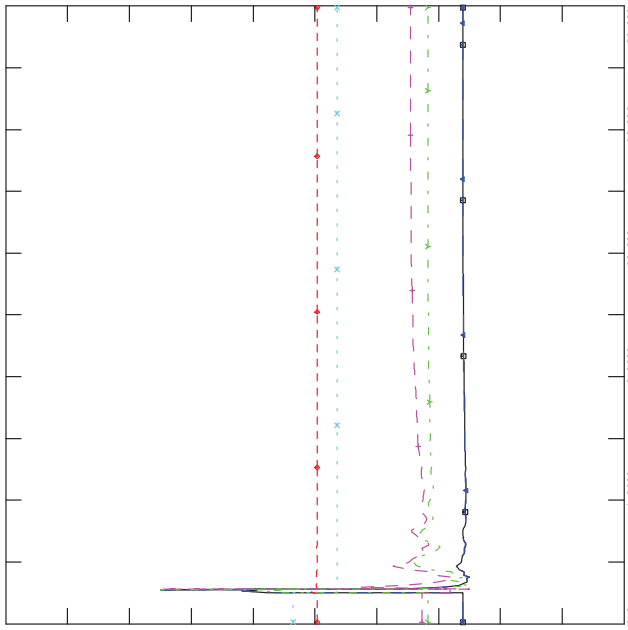
FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 153.71 -33.83
CHNL# 763: [669L Q] 46.124 -40.00
CHNL# 761: [668L Q] 253.43 -100.3
CHNL# 759: [830L Q] 40.000 -40.76
CHNL# 757: [1002L Q] 585.34 -231.8
CHNL# 755: [945L Q] 630.75 -246.0

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

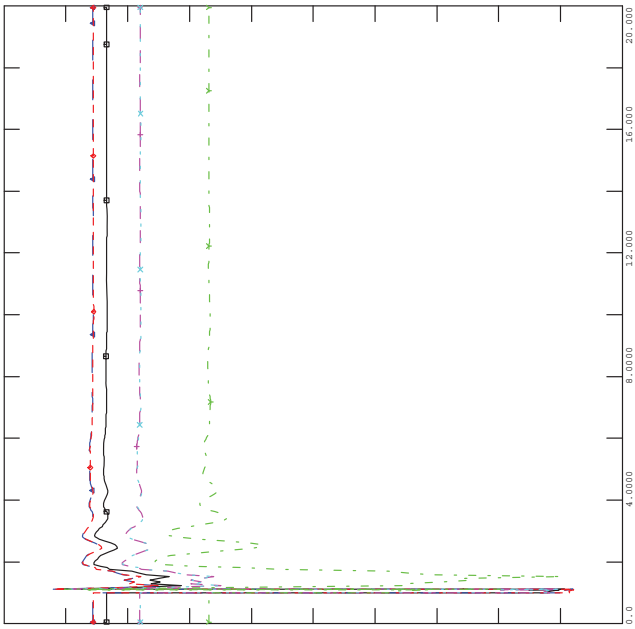
FILE: Scn3_SP_10_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.3363 0.31630
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2781 0.24370
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2775 0.24090
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2057 -0.0645
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2067 -0.0741
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2440 0.17210

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L

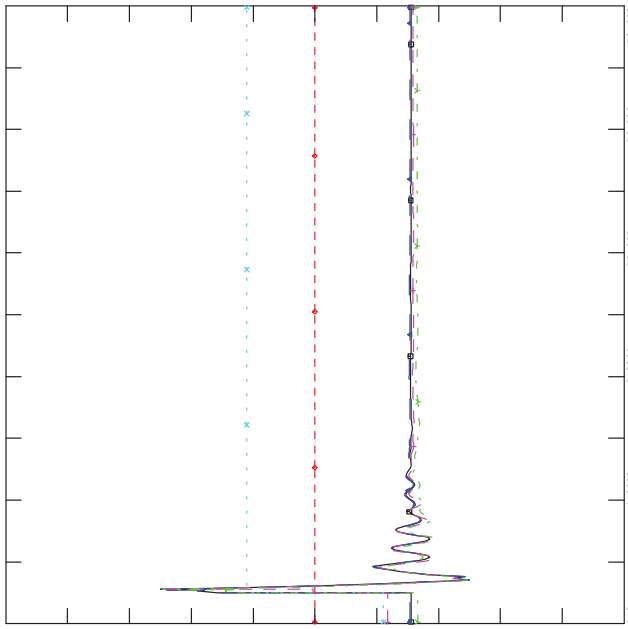
FILE: Scn3_SP_10_669L.out

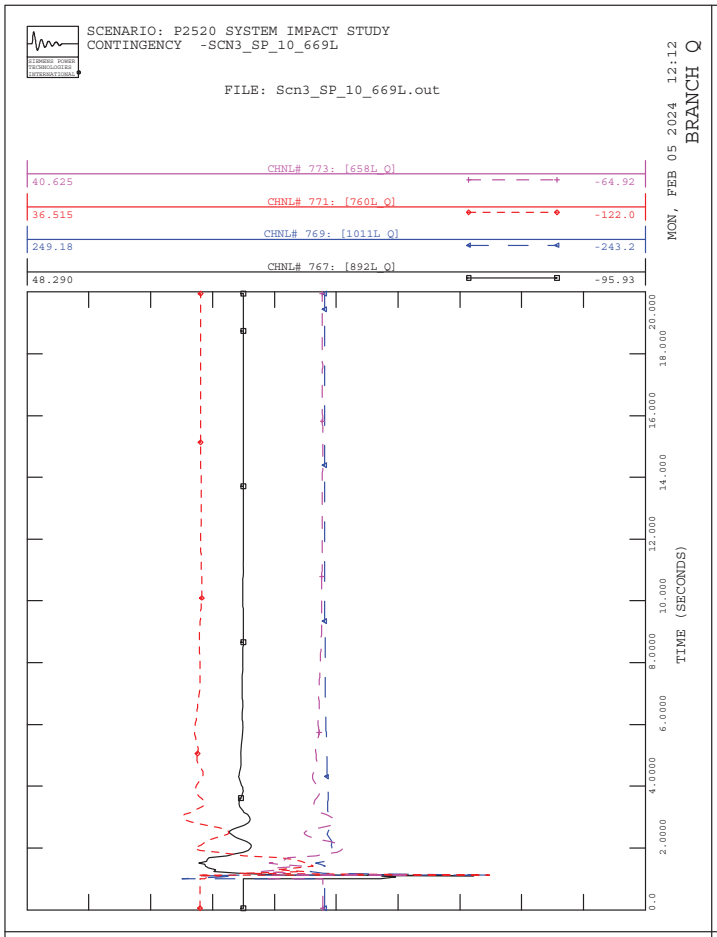
MON, FEB 05 2024 12:12

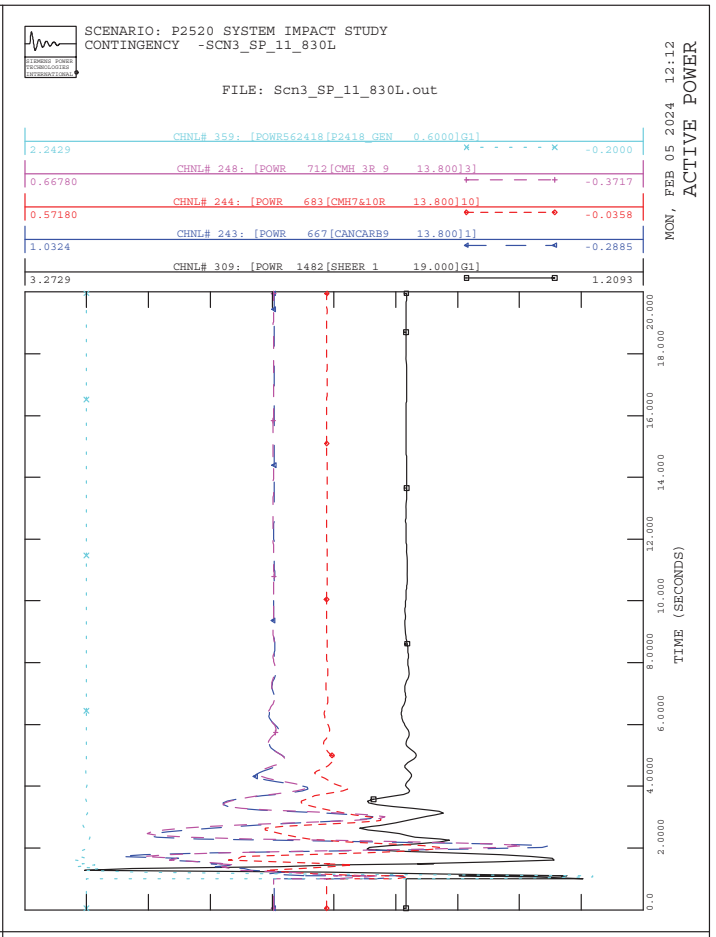
BRANCH P

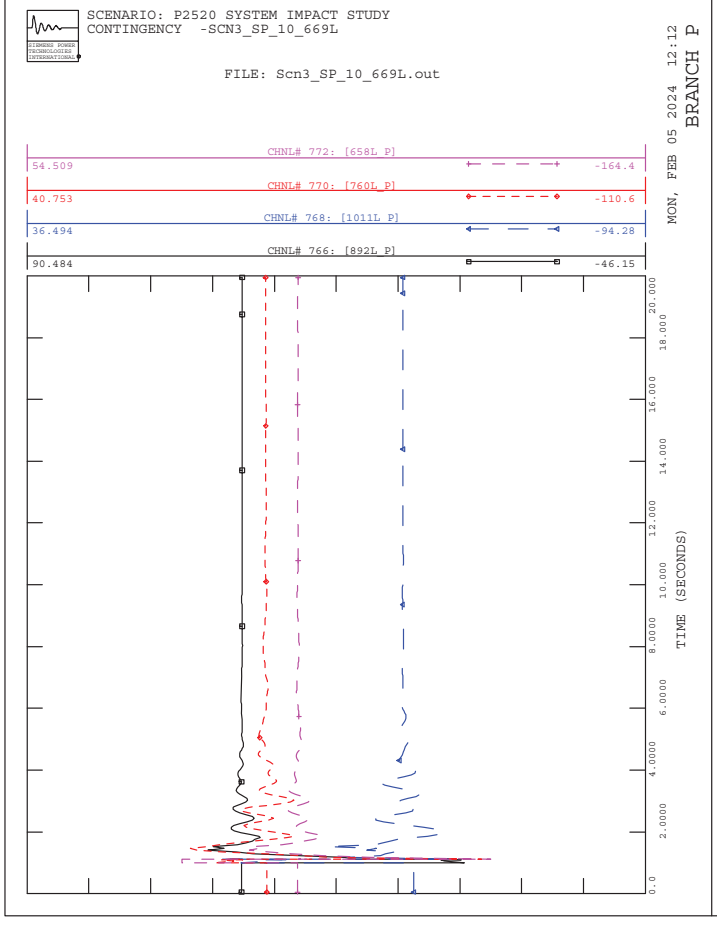
CHNL# 764: [674L P] 84.974 -73.07
CHNL# 762: [669L P] 40.000 -62.74
CHNL# 760: [668L P] 241.53 -244.6
CHNL# 758: [830L P] 40.000 -40.00
CHNL# 756: [1002L P] 151.08 -188.6
CHNL# 754: [945L P] 158.28 -200.0

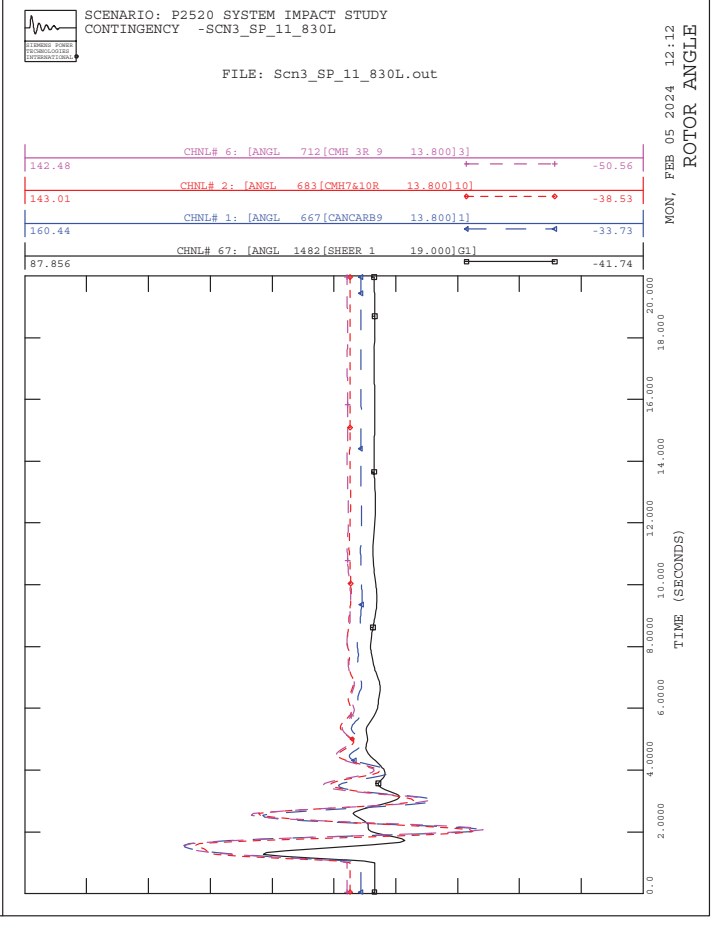
TIME (SECONDS)

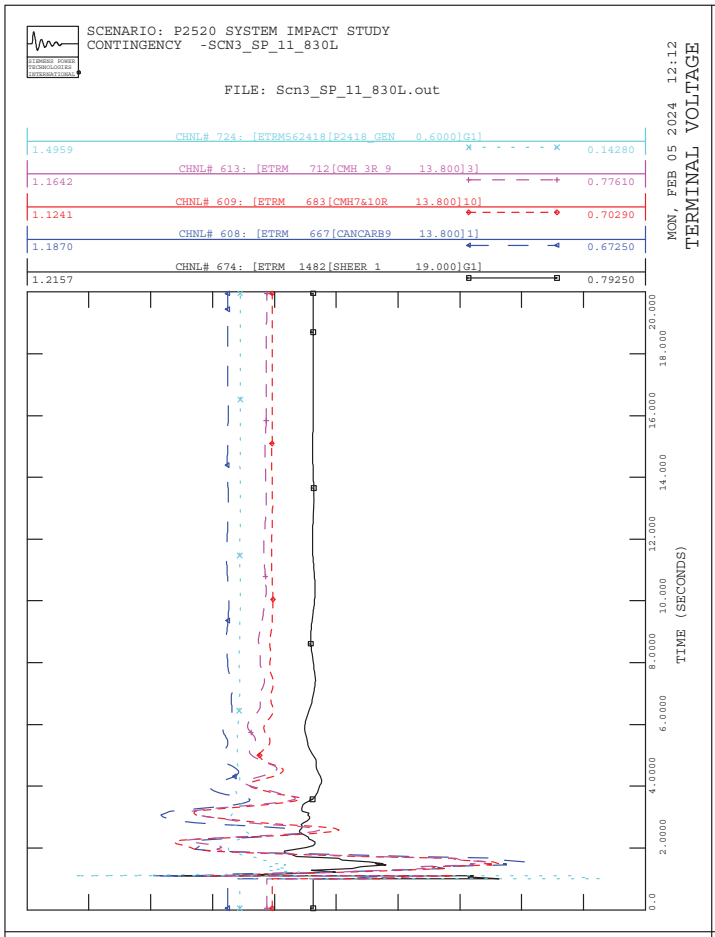



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L
FILE: Scn3_SP_10_669L.out
MON, FEB 05 2024 12:12
BRANCH Q
CHNL# 773: [658L Q] 40.625 -64.92
CHNL# 771: [760L Q] 36.515 -122.0
CHNL# 769: [1011L Q] 249.18 -243.2
CHNL# 767: [892L Q] 48.290 -95.93
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
MON, FEB 05 2024 12:12
ACTIVE POWER
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2429 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.66780 -0.3717
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.57180 -0.0358
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 1.0324 -0.2885
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 3.2729 1.2093
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_10_669L
FILE: Scn3_SP_10_669L.out
MON, FEB 05 2024 12:12
BRANCH P
CHNL# 772: [658L P] 54.509 -164.4
CHNL# 770: [760L P] 40.753 -110.6
CHNL# 768: [1011L P] 36.494 -94.28
CHNL# 766: [892L P] 90.484 -46.15
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
MON, FEB 05 2024 12:12
ROTOR ANGLE
CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 142.48 -50.56
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 143.01 -38.53
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 160.44 -33.73
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 87.856 -41.74
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.4959
0.14280
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1642
0.77610
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1241
0.70290
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1870
0.67250
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.2157
0.79250
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
TIME (SECONDS)
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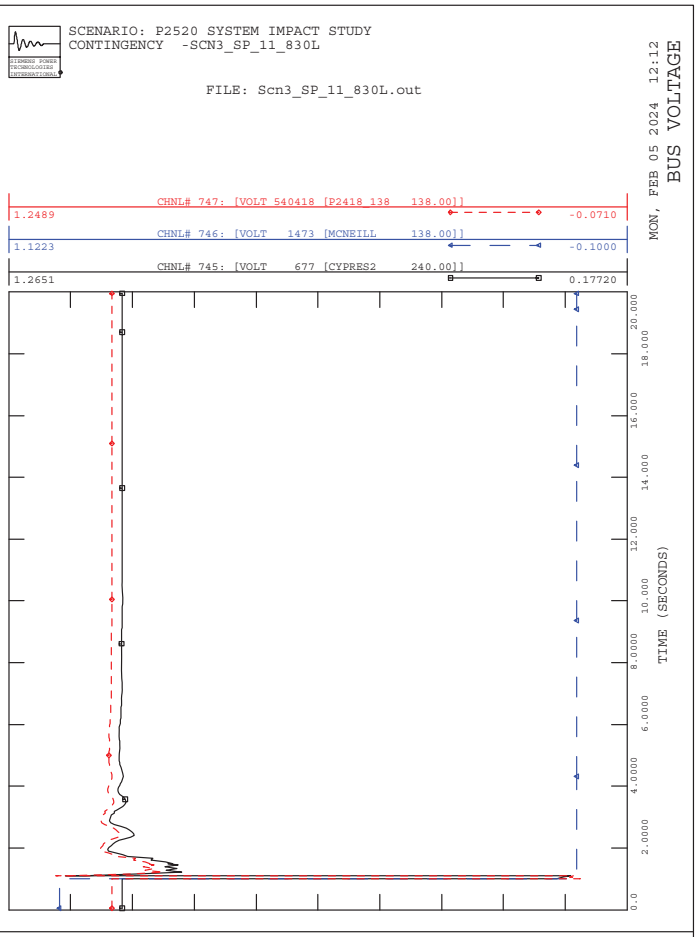
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.2489
-0.0710
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1223
-0.1000
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2651
0.17720
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
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4.0000
6.0000
8.0000
10.000
12.000
14.000
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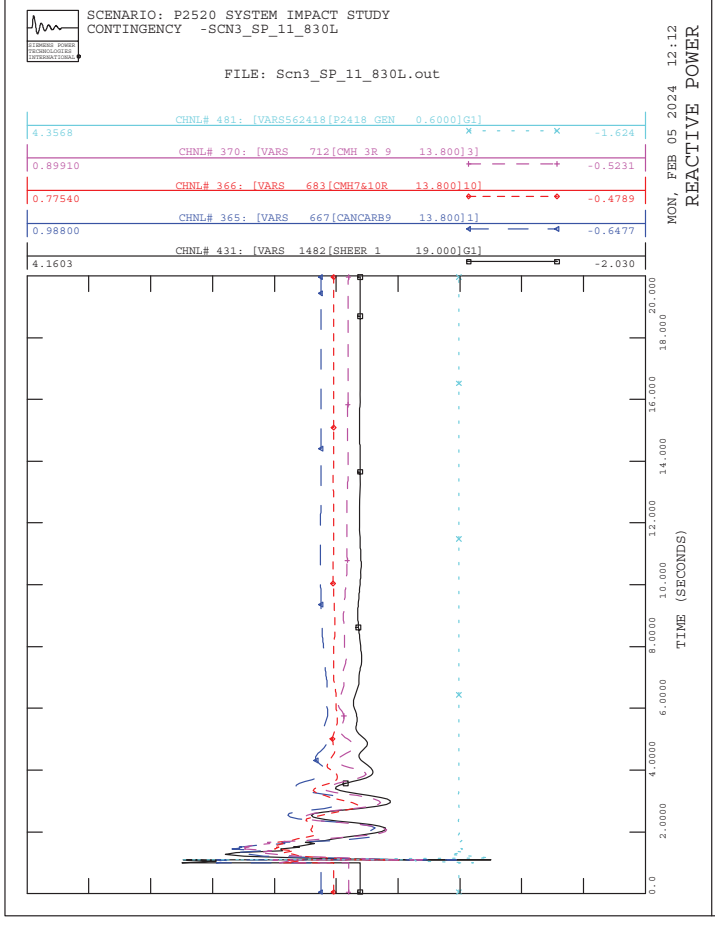
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1]
4.3568
-1.624
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.89910
-0.5231
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.77540
-0.4789
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.98800
-0.6477
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
4.1603
-2.030
MON, FEB 05 2024 12:12
REACTIVE POWER
TIME (SECONDS)
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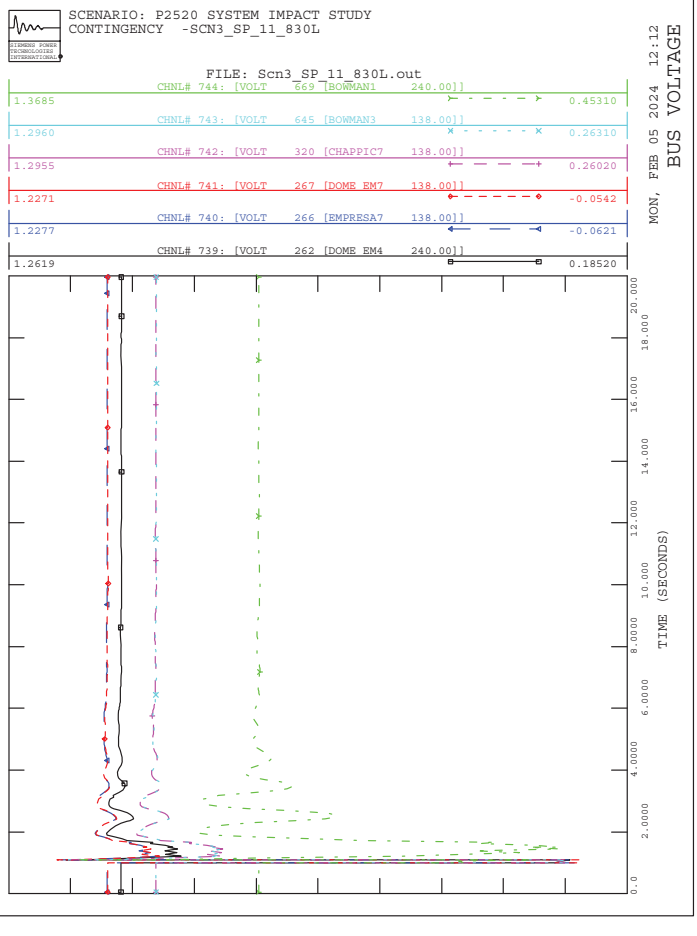
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.3685
0.45310
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2960
0.26310
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2955
0.26020
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2271
-0.0542
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2277
-0.0621
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2619
0.18520
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
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4.0000
6.0000
8.0000
10.000
12.000
14.000
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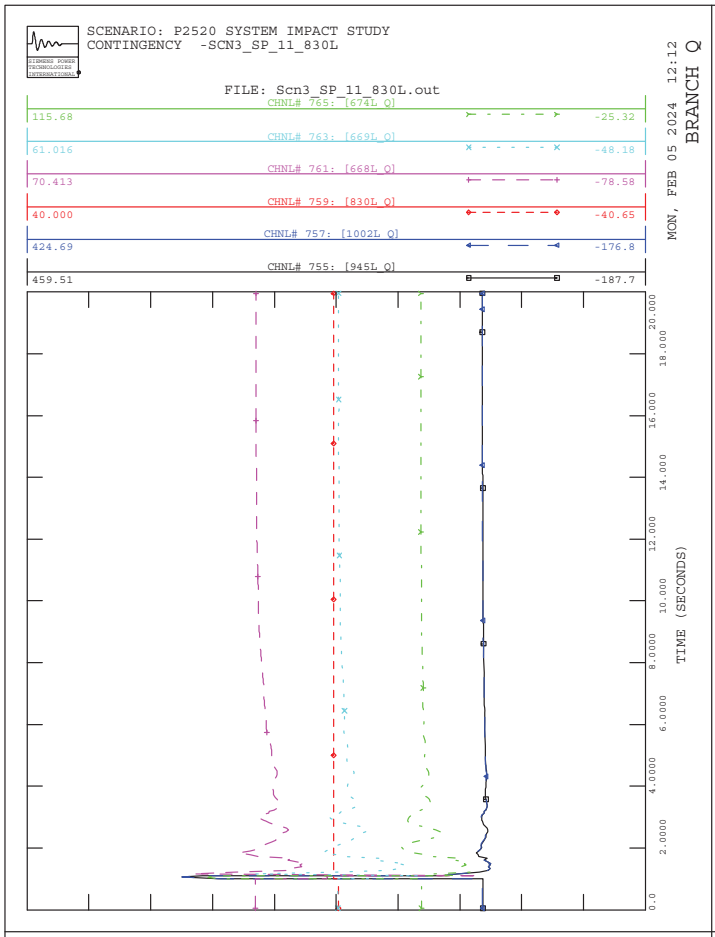
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 765: [674L Q]
115.68
-25.32
CHNL# 763: [669L Q]
61.016
-48.18
CHNL# 761: [668L Q]
70.413
-78.58
CHNL# 759: [830L Q]
40.000
-40.65
CHNL# 757: [1002L Q]
424.69
-176.8
CHNL# 755: [945L Q]
459.51
-187.7
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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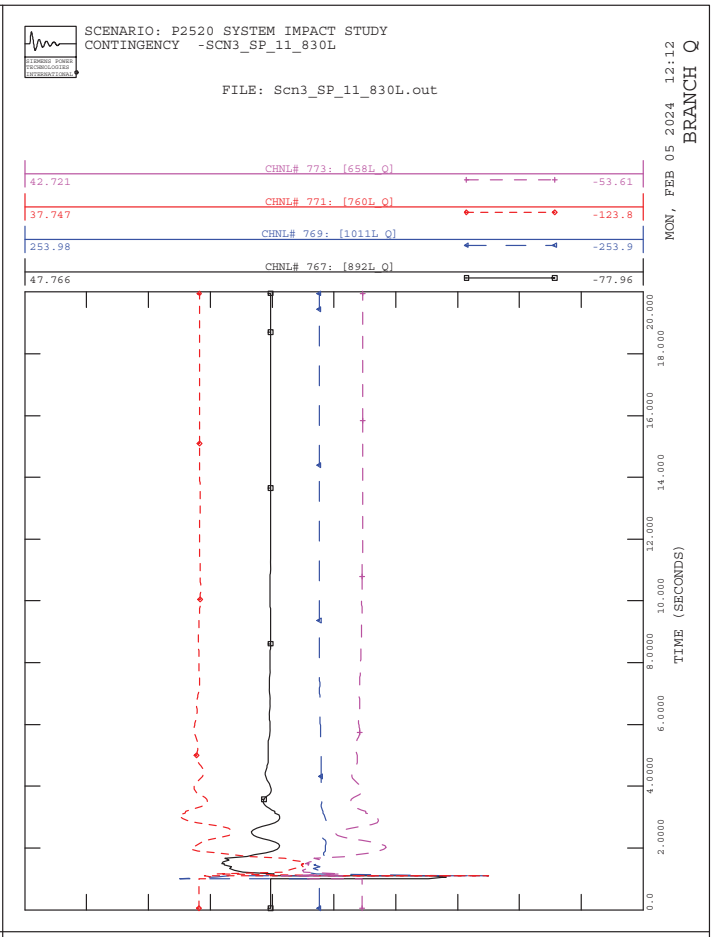
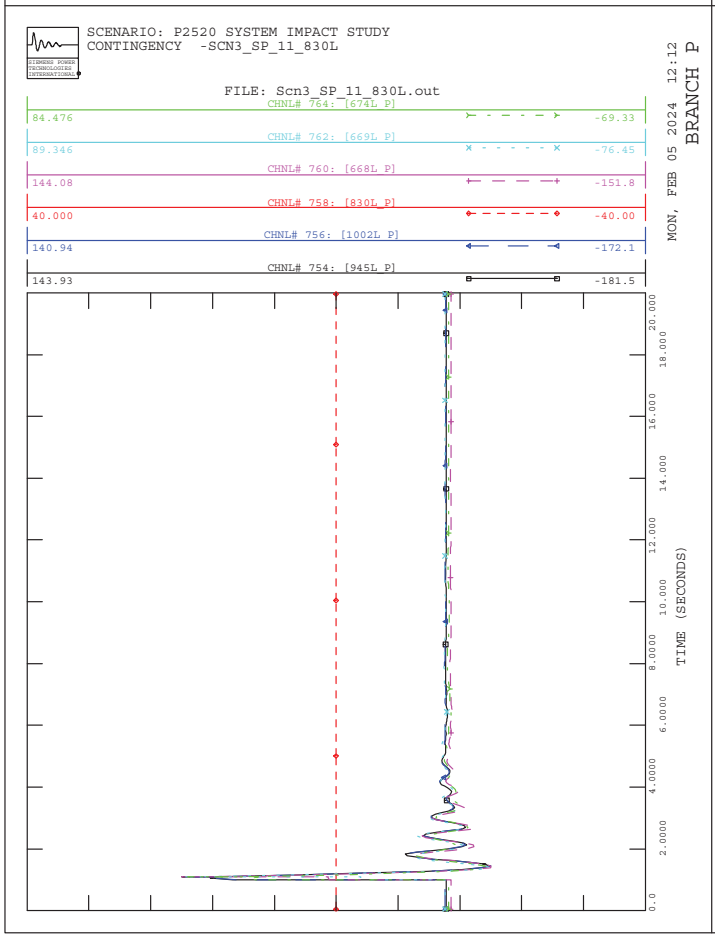
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 773: [658L Q]
42.721
-53.61
CHNL# 771: [760L Q]
37.747
-123.8
CHNL# 769: [1011L Q]
253.98
-253.9
CHNL# 767: [892L Q]
47.766
-77.96
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 764: [674L P]
84.476
-69.33
CHNL# 762: [669L P]
89.346
-76.45
CHNL# 760: [668L P]
144.08
-151.8
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
140.94
-172.1
CHNL# 754: [945L P]
143.93
-181.5
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
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2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
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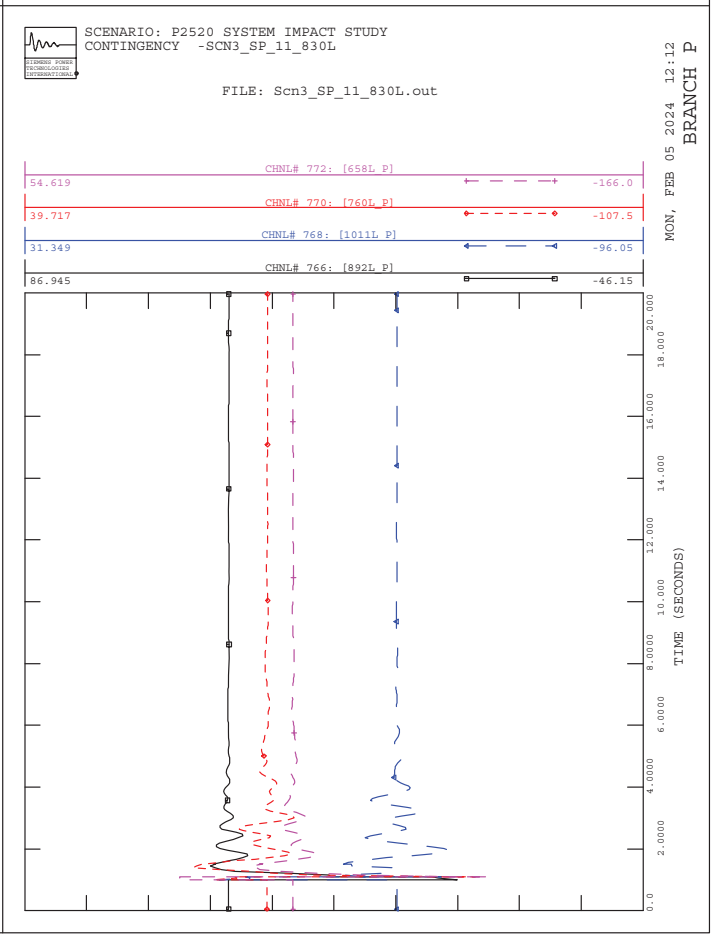
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_11_830L
FILE: Scn3_SP_11_830L.out
CHNL# 772: [658L P]
54.619
-166.0
CHNL# 770: [760L P]
39.717
-107.5
CHNL# 768: [1011L P]
31.349
-96.05
CHNL# 766: [892L P]
86.945
-46.15
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
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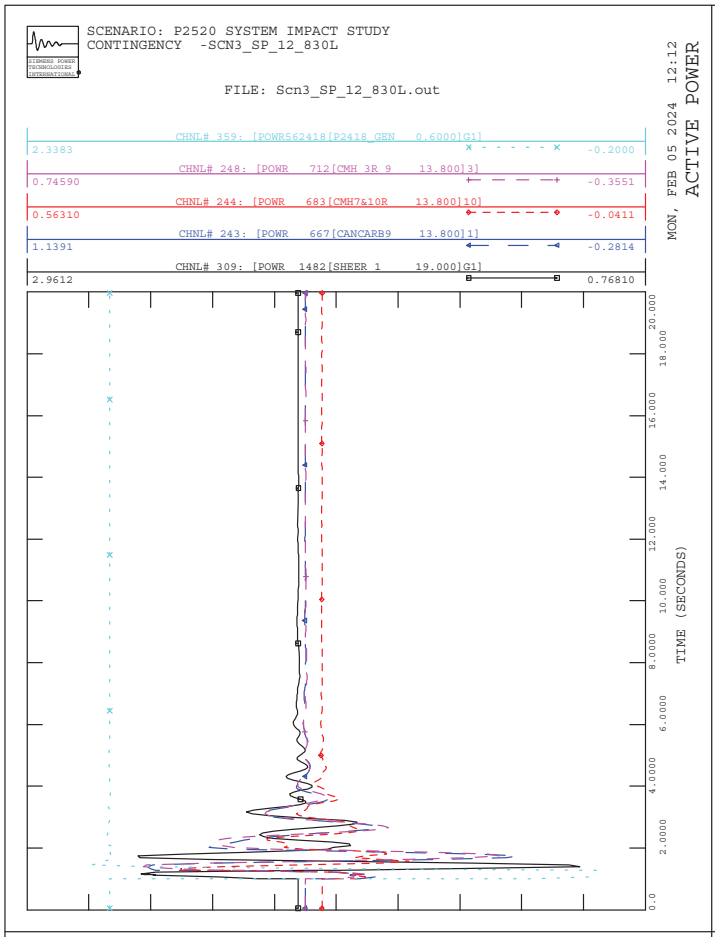
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L
FILE: Scn3_SP_12_830L.out
MON, FEB 05 2024 12:12
ACTIVE POWER
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.3383 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.74590 -0.3551
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.56310 -0.0411
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
1.1391 -0.2814
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
2.9612 0.76810
TIME (SECONDS)
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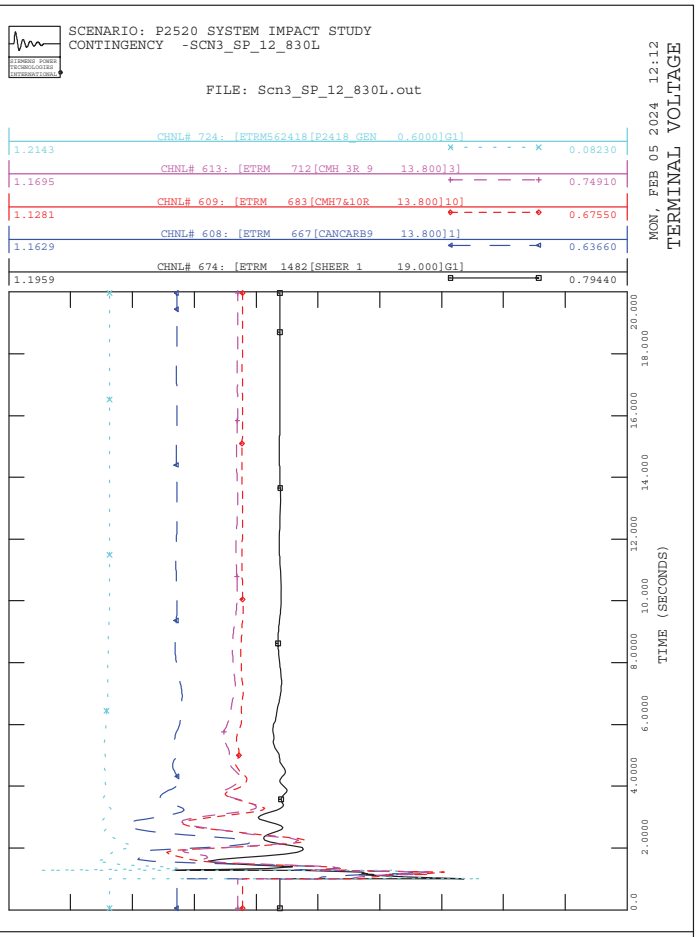
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L
FILE: Scn3_SP_12_830L.out
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.2143 0.08230
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1695 0.74910
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1281 0.67550
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1629 0.63660
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.1959 0.79440
TIME (SECONDS)
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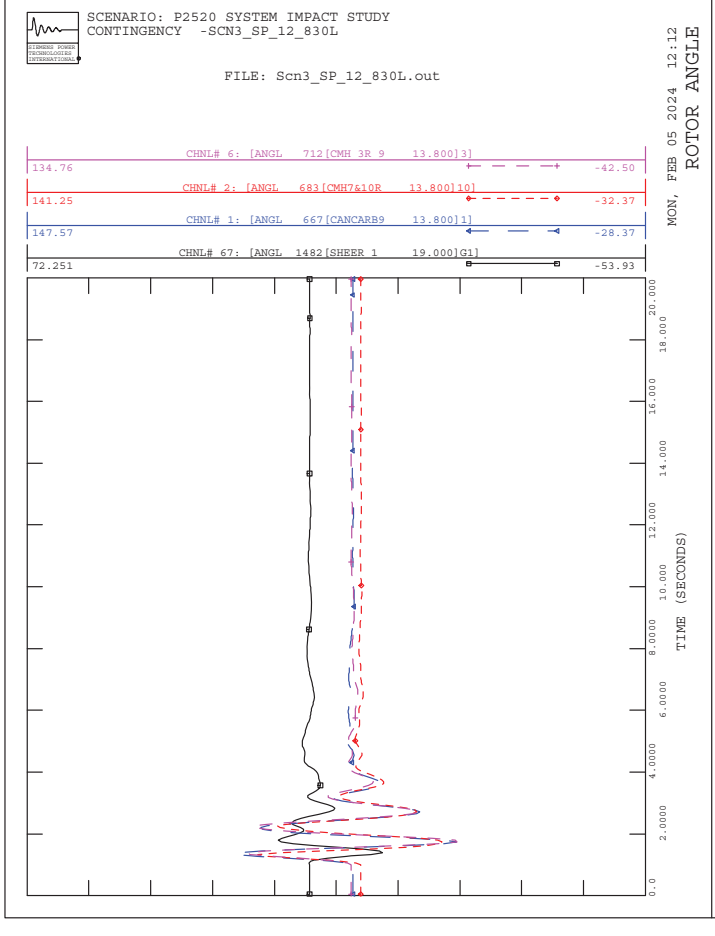
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L
FILE: Scn3_SP_12_830L.out
MON, FEB 05 2024 12:12
ROTOR ANGLE
CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
134.76 -42.50
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
141.25 -32.37
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
147.57 -28.37
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
72.251 -53.93
TIME (SECONDS)
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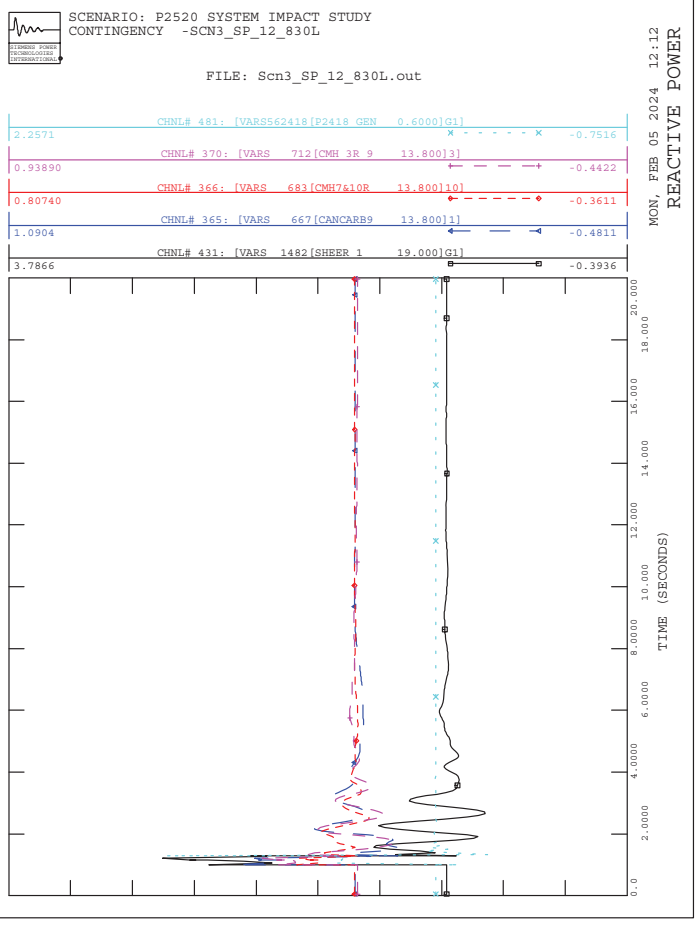
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L
FILE: Scn3_SP_12_830L.out
MON, FEB 05 2024 12:12
REACTIVE POWER
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
2.2571 -0.7516
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.93890 -0.4422
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.80740 -0.3611
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
1.0904 -0.4811
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
3.7866 -0.3936
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

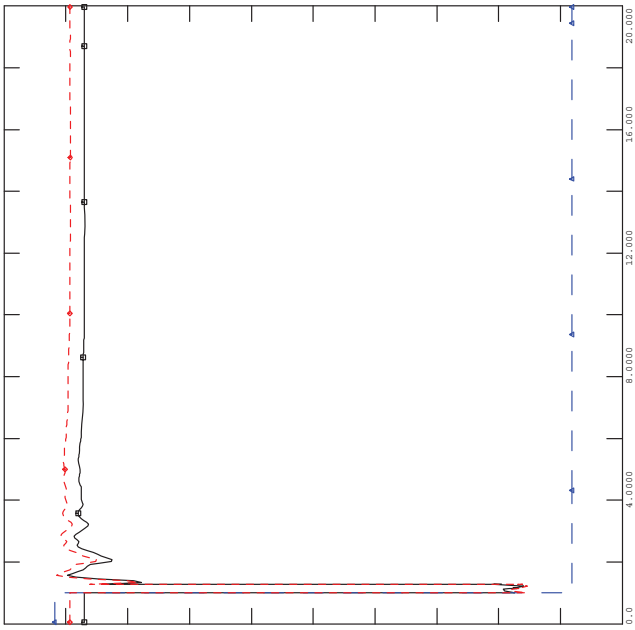
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L

FILE: Scn3_SP_12_830L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418_138 138.00]] 1.1291 0.19050
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1223 -0.1000
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.1702 0.36670



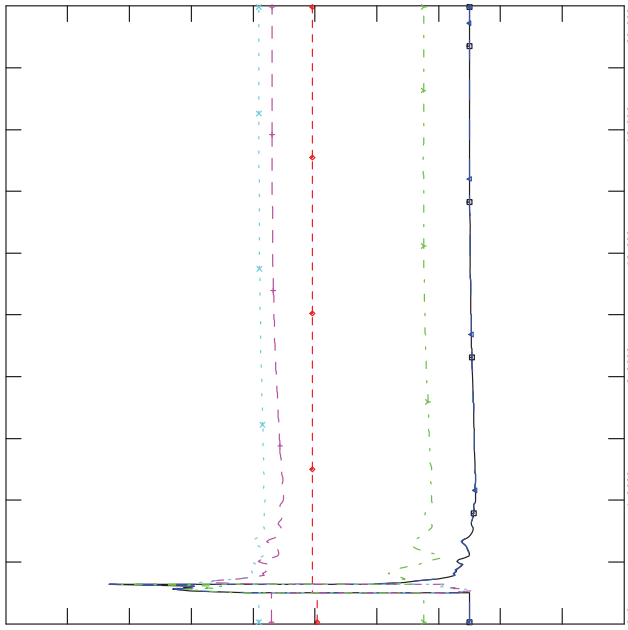
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L

FILE: Scn3_SP_12_830L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 117.56 -18.23
CHNL# 763: [669L Q] 136.35 -182.1
CHNL# 761: [668L Q] 191.07 -217.6
CHNL# 759: [830L Q] 40.000 -40.65
CHNL# 757: [1002L Q] 368.97 -147.5
CHNL# 755: [945L Q] 398.53 -156.1



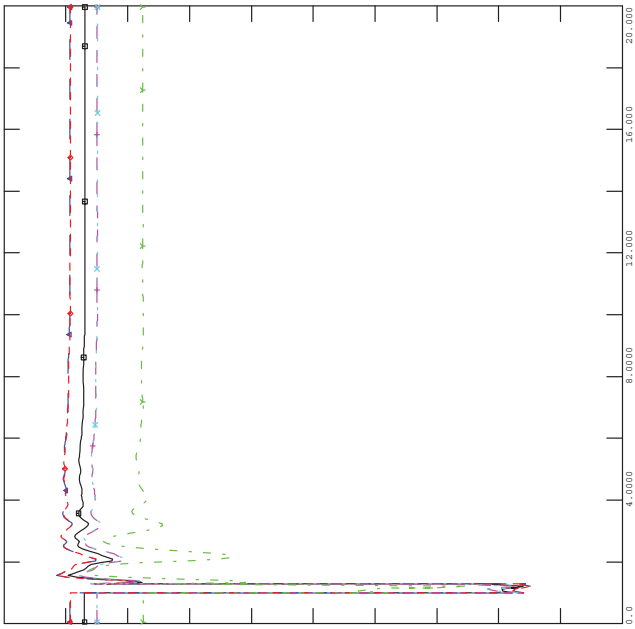
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L

FILE: Scn3_SP_12_830L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.1975 0.31170
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.1618 0.41890
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.1615 0.41700
CHNL# 741: [VOLT 267 [DOME_EM7 138.00]] 1.1222 0.18690
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1228 0.18200
CHNL# 739: [VOLT 262 [DOME_EM4 240.00]] 1.1701 0.37240



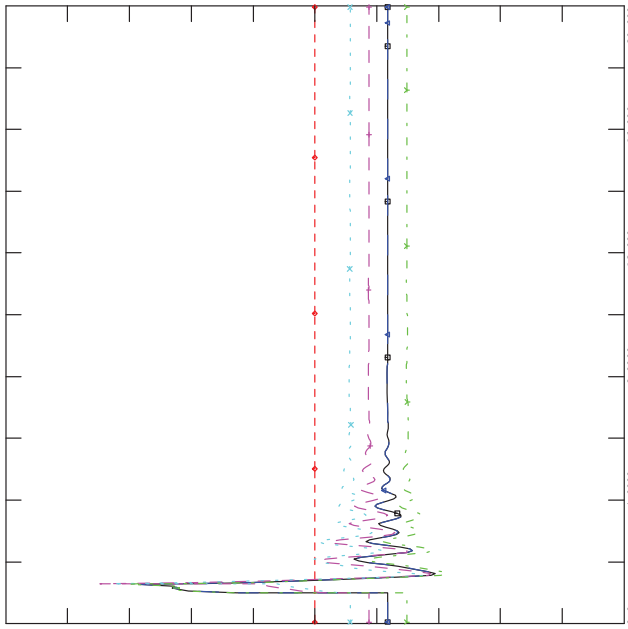
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L

FILE: Scn3_SP_12_830L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P] 83.968 -76.89
CHNL# 762: [669L P] 77.305 -102.4
CHNL# 760: [668L P] 115.94 -181.5
CHNL# 758: [830L P] 40.000 -40.00
CHNL# 756: [1002L P] 156.41 -211.5
CHNL# 754: [945L P] 163.73 -225.5

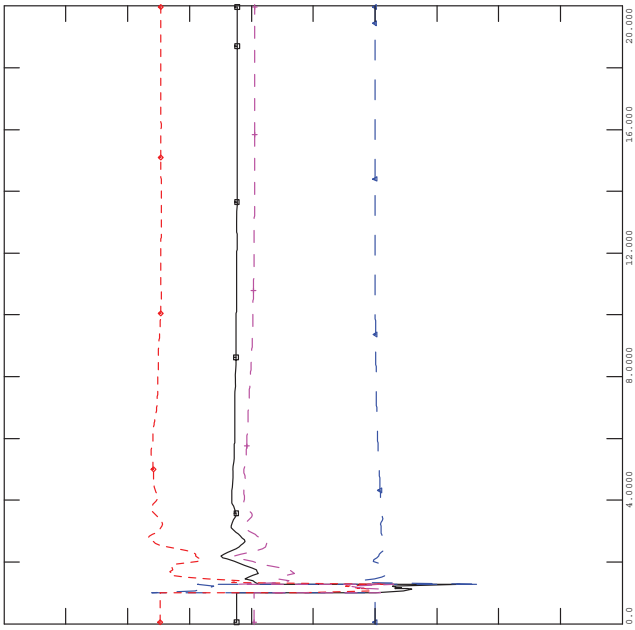


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L

FILE: Scn3_SP_12_830L.out

MON, FEB 05 2024 12:12

BRANCH Q

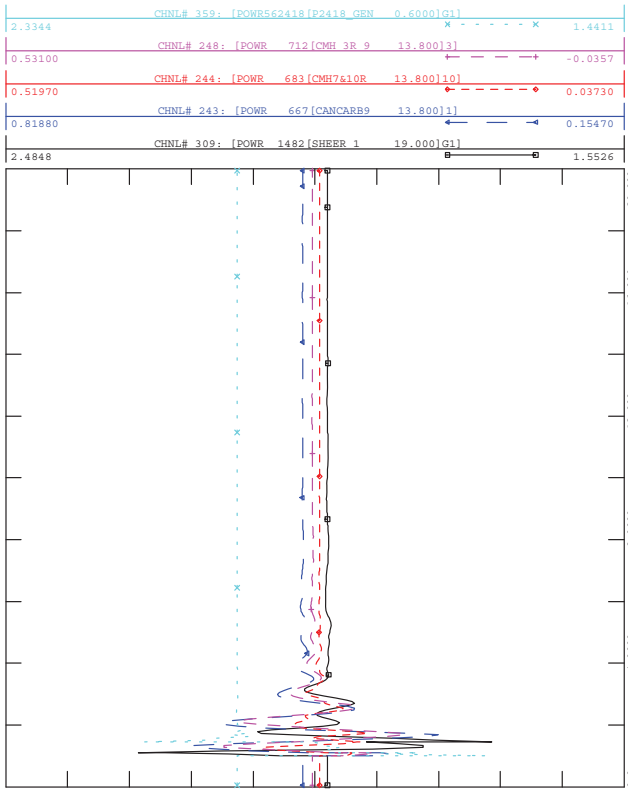


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L

FILE: Scn3_SP_13_892L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

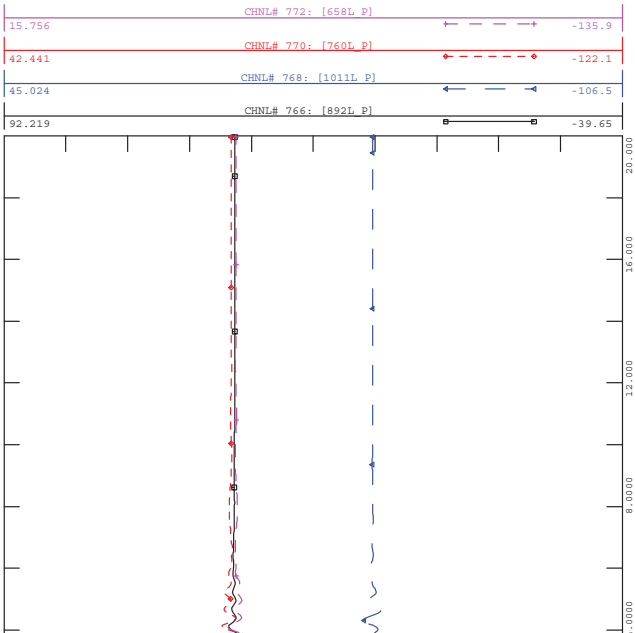


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_12_830L

FILE: Scn3_SP_12_830L.out

MON, FEB 05 2024 12:12

BRANCH P

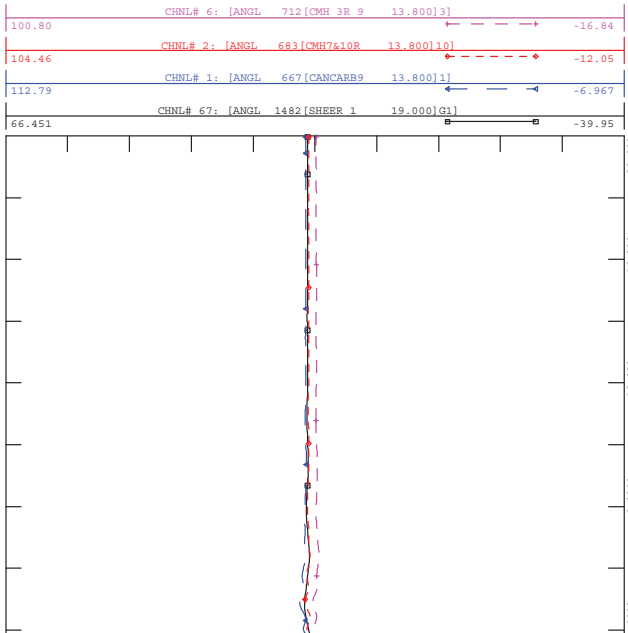


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L

FILE: Scn3_SP_13_892L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

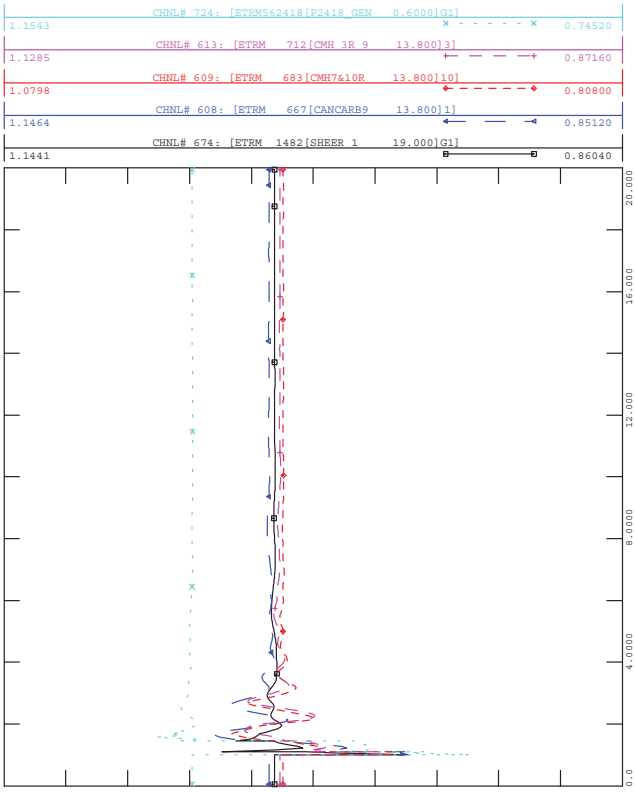


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L

FILE: Scn3_SP_13_892L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

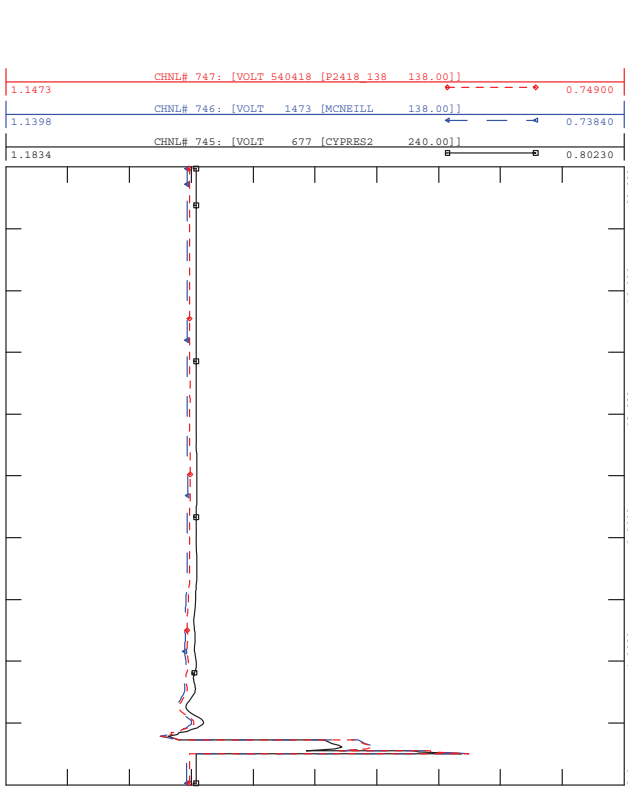


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L

FILE: Scn3_SP_13_892L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

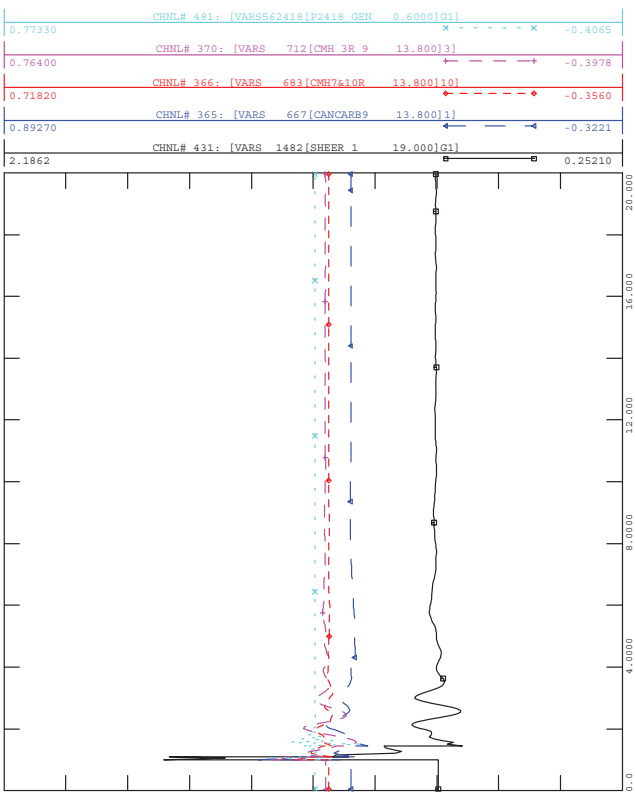


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L

FILE: Scn3_SP_13_892L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

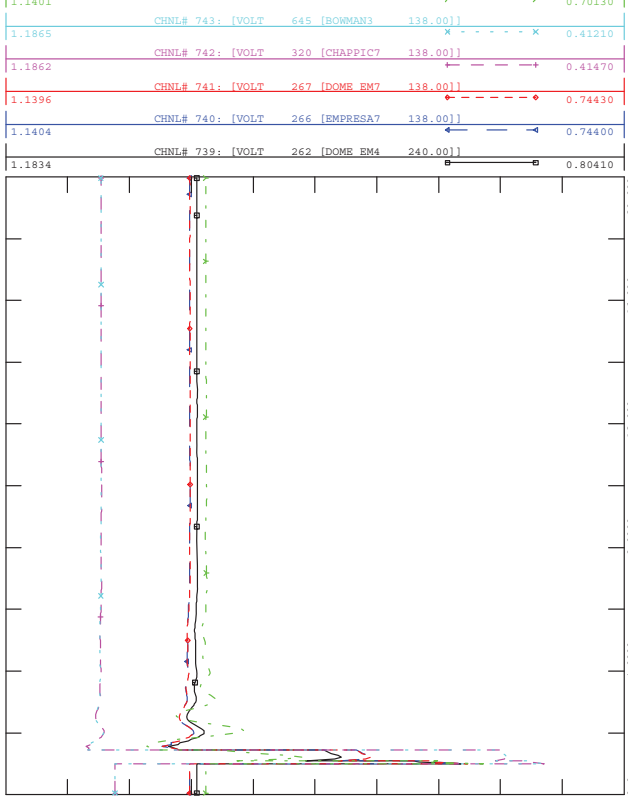


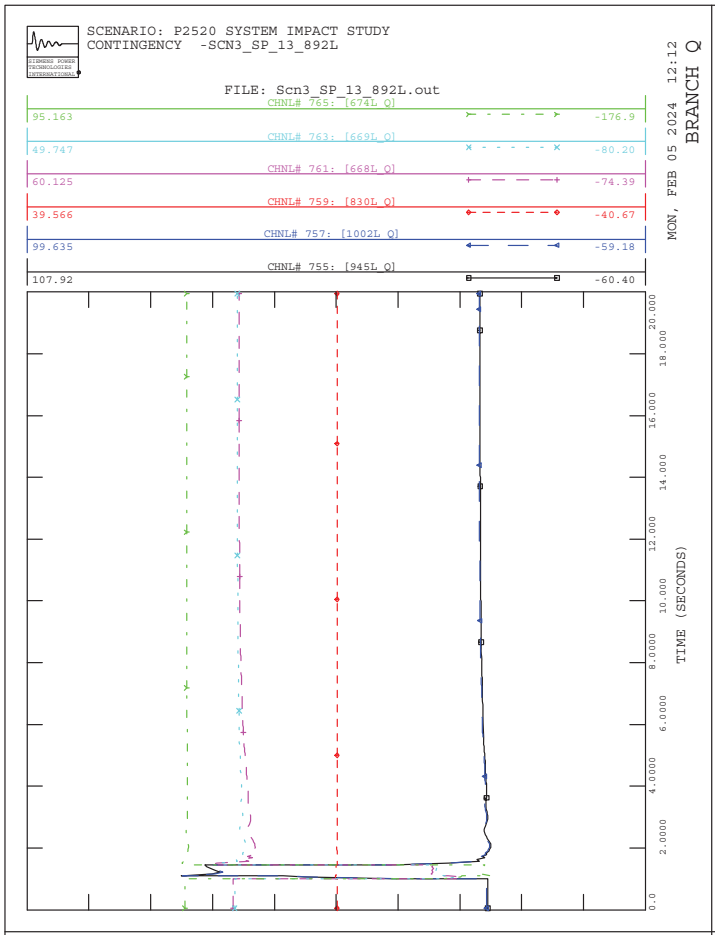
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L

FILE: Scn3_SP_13_892L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L
FILE: Scn3_SP_13_892L.out
CHNL# 765: [674L Q]
95.163
-176.9
CHNL# 763: [669L Q]
49.747
-80.20
CHNL# 761: [668L Q]
60.125
-74.39
CHNL# 759: [830L Q]
39.566
-40.67
CHNL# 757: [1002L Q]
99.635
-59.18
CHNL# 755: [945L Q]
107.92
-60.40
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
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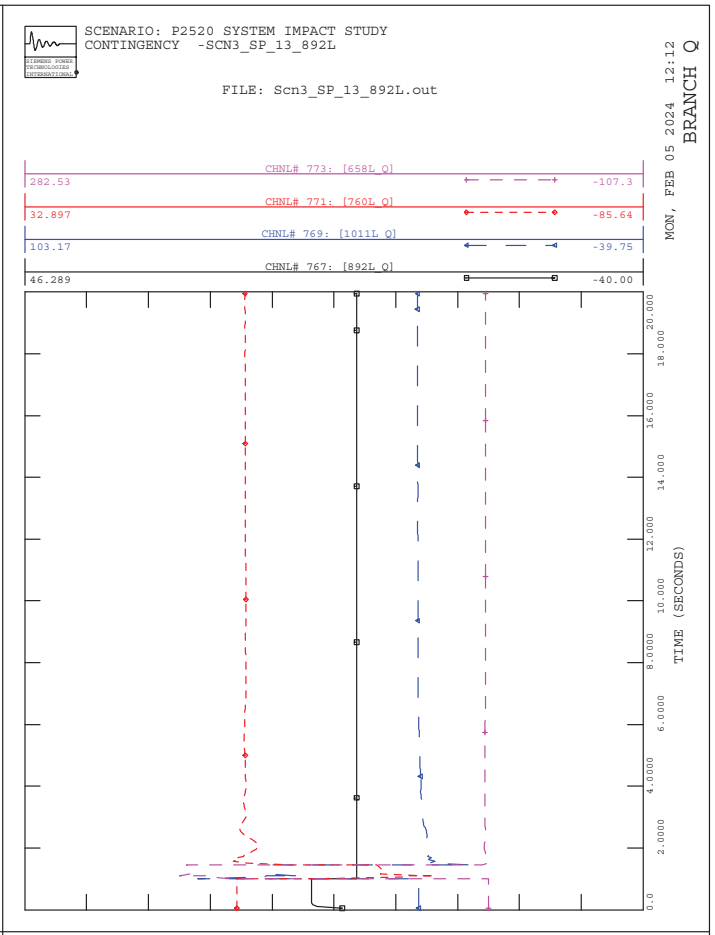
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L
FILE: Scn3_SP_13_892L.out
CHNL# 773: [658L Q]
282.53
-107.3
CHNL# 771: [760L Q]
32.897
-85.64
CHNL# 769: [1011L Q]
103.17
-39.75
CHNL# 767: [892L Q]
46.289
-40.00
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
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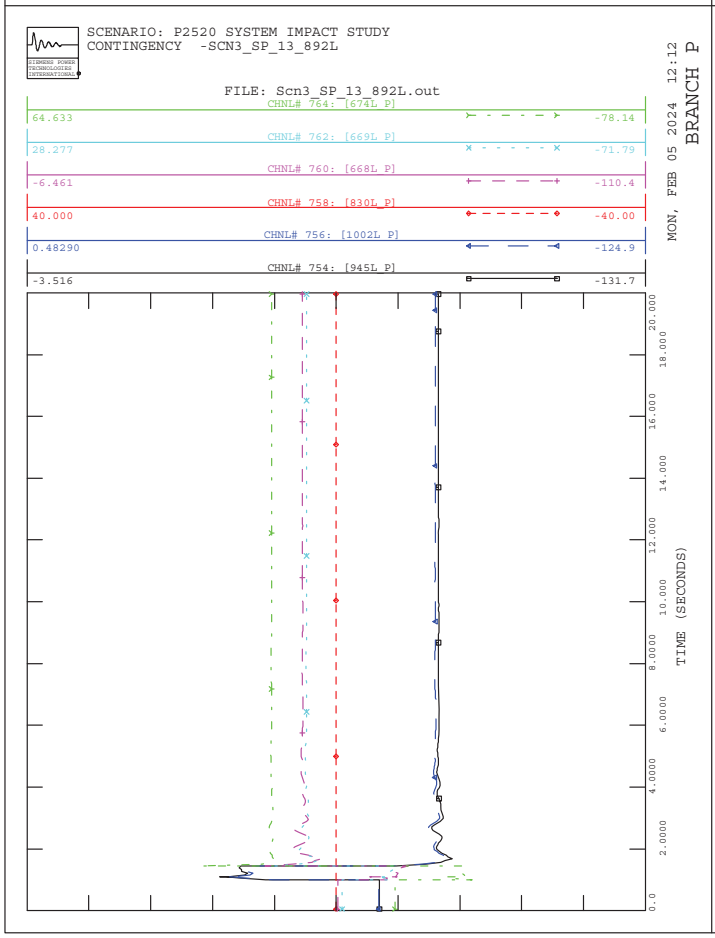
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L
FILE: Scn3_SP_13_892L.out
CHNL# 764: [674L P]
64.633
-78.14
CHNL# 762: [669L P]
28.277
-71.79
CHNL# 760: [668L P]
-6.461
-110.4
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
0.48290
-124.9
CHNL# 754: [945L P]
-3.516
-131.7
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
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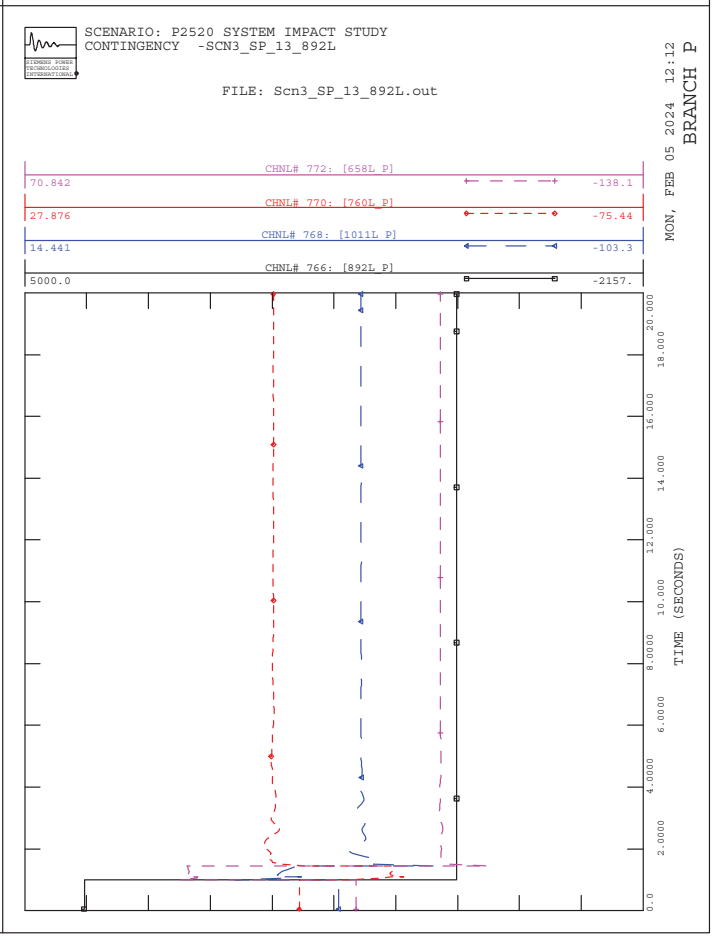
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_13_892L
FILE: Scn3_SP_13_892L.out
CHNL# 772: [658L P]
70.842
-138.1
CHNL# 770: [760L P]
27.876
-75.44
CHNL# 768: [1011L P]
14.441
-103.3
CHNL# 766: [892L P]
5000.0
-2157.
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
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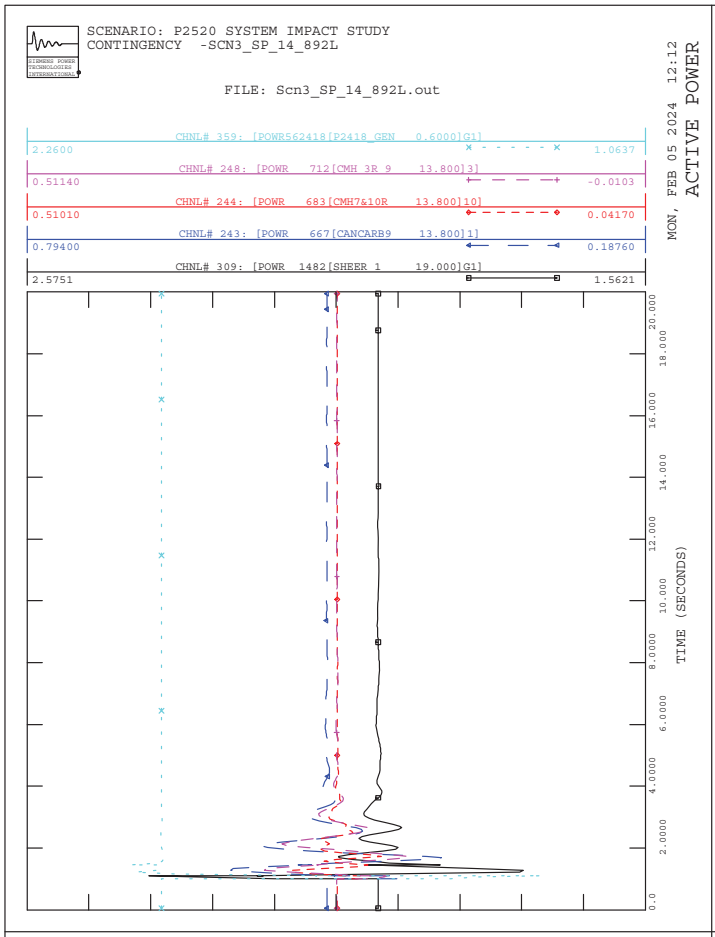
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L
FILE: Scn3_SP_14_892L.out
MON, FEB 05 2024 12:12
ACTIVE POWER
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.2600
1.0637
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.51140
-0.0103
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.51010
0.04170
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
0.79400
0.18760
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
2.5751
1.5621
TIME (SECONDS)
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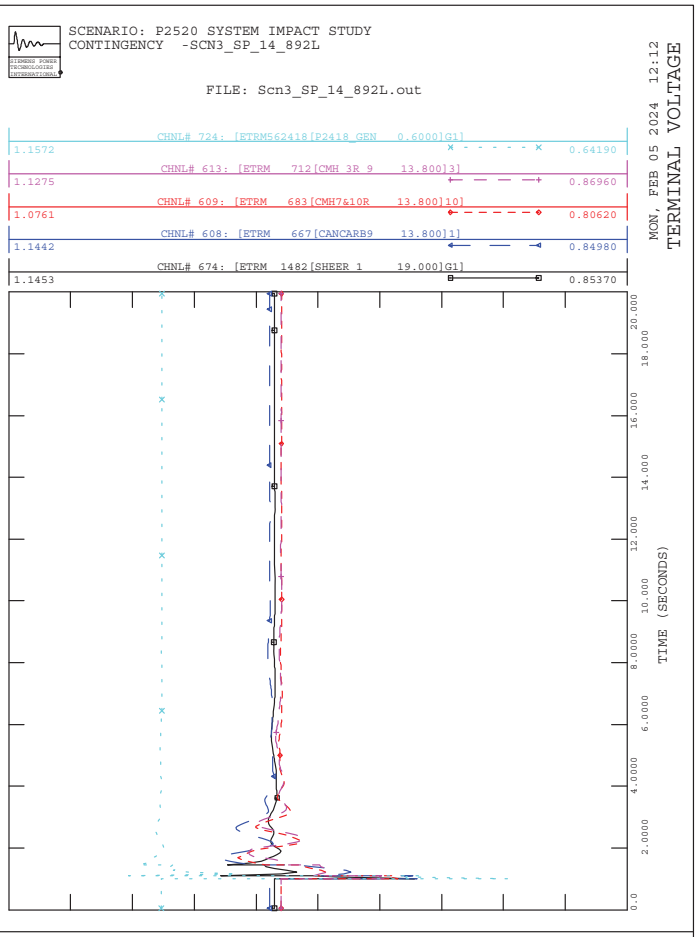
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L
FILE: Scn3_SP_14_892L.out
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.1572
0.64190
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1275
0.86960
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.0761
0.80620
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1442
0.84980
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.1453
0.85370
TIME (SECONDS)
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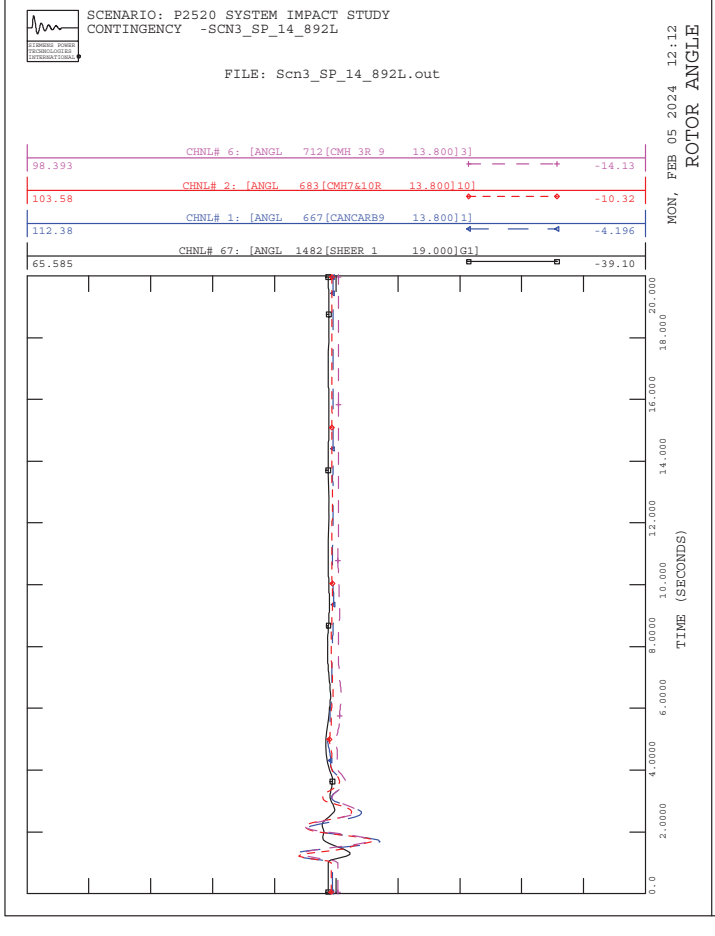
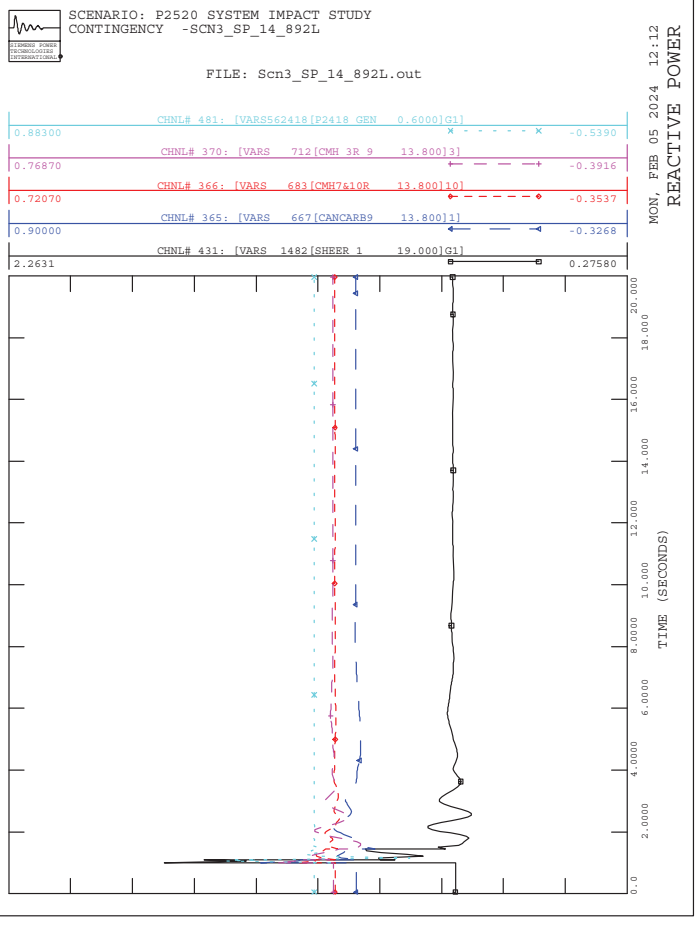
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L
FILE: Scn3_SP_14_892L.out
MON, FEB 05 2024 12:12
ROTOR ANGLE
CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
98.393
-14.13
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
103.58
-10.32
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
112.38
-4.196
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
65.585
-39.10
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L
FILE: Scn3_SP_14_892L.out
MON, FEB 05 2024 12:12
REACTIVE POWER
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
0.88300
-0.5390
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.76870
-0.3916
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.72070
-0.3537
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.90000
-0.3268
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
2.2631
0.27580
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L

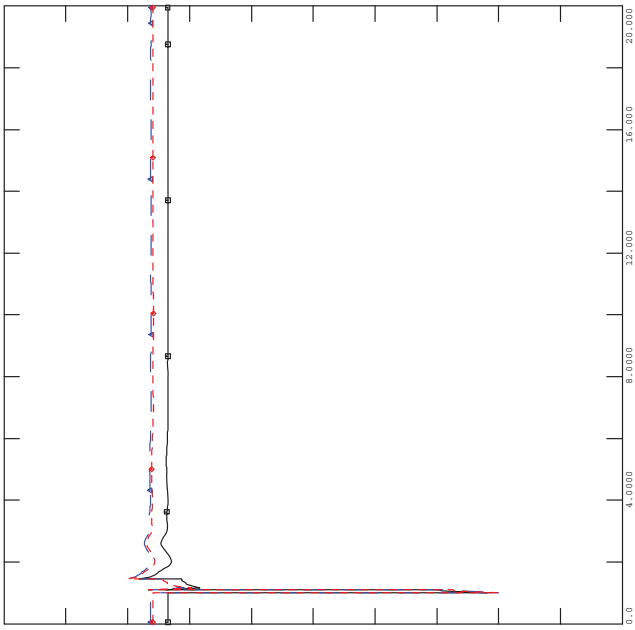
FILE: Scn3_SP_14_892L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1492 0.64990
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1424 0.63570
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.1872 0.72980

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L

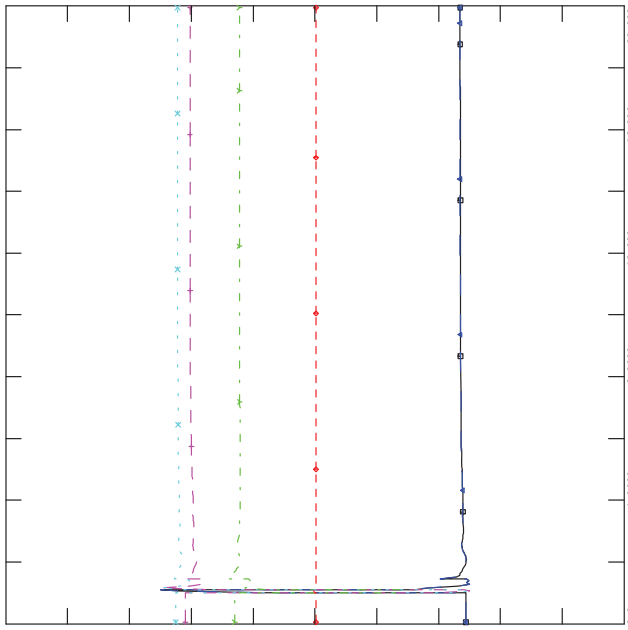
FILE: Scn3_SP_14_892L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 67.136 -44.60
CHNL# 763: [669L Q] 53.143 -118.2
CHNL# 761: [668L Q] 72.575 -124.2
CHNL# 759: [830L Q] 39.666 -40.67
CHNL# 757: [1002L Q] 138.07 -72.35
CHNL# 755: [945L Q] 151.40 -75.59

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L

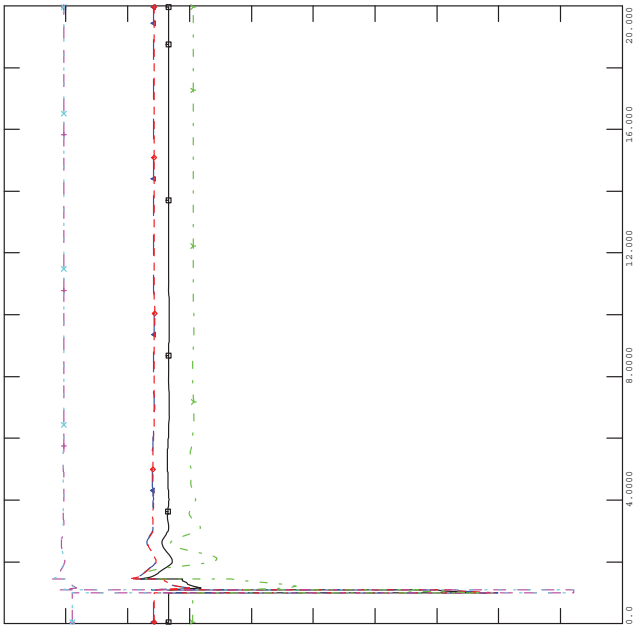
FILE: Scn3_SP_14_892L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.1328 0.69240
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.1909 -0.0891
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.1906 -0.0833
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1421 0.64720
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1428 0.64590
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.1871 0.73290

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L

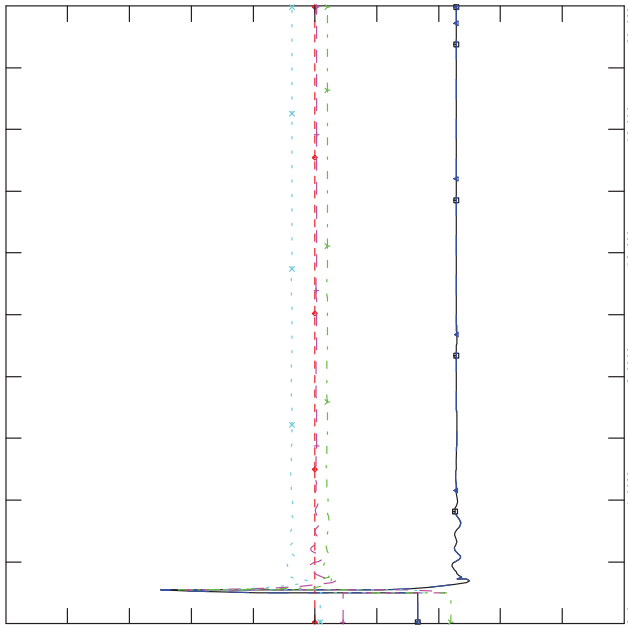
FILE: Scn3_SP_14_892L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P] 82.400 -60.37
CHNL# 762: [669L P] 40.639 -83.91
CHNL# 760: [668L P] 16.514 -121.4
CHNL# 758: [830L P] 40.000 -40.00
CHNL# 756: [1002L P] 52.144 -132.3
CHNL# 754: [945L P] 54.702 -142.3

TIME (SECONDS)

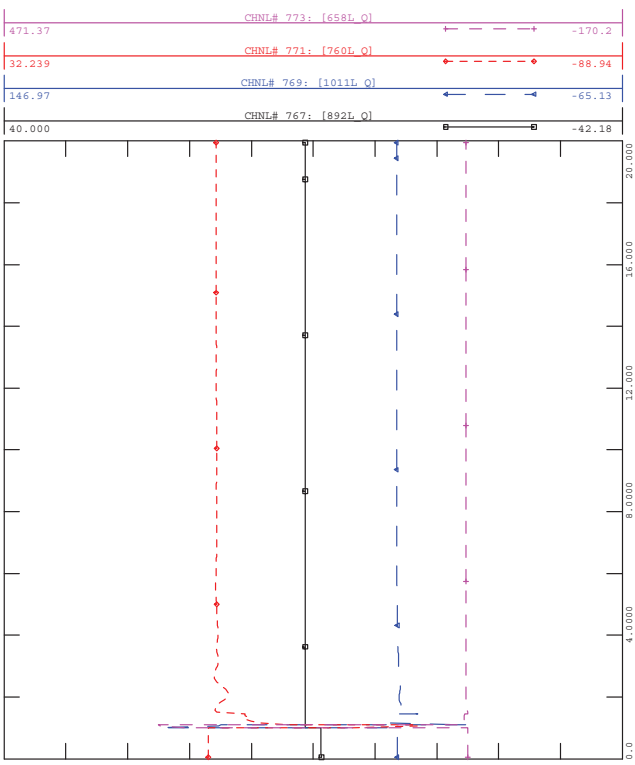


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L

FILE: Scn3_SP_14_892L.out

MON, FEB 05 2024 12:12

BRANCH Q

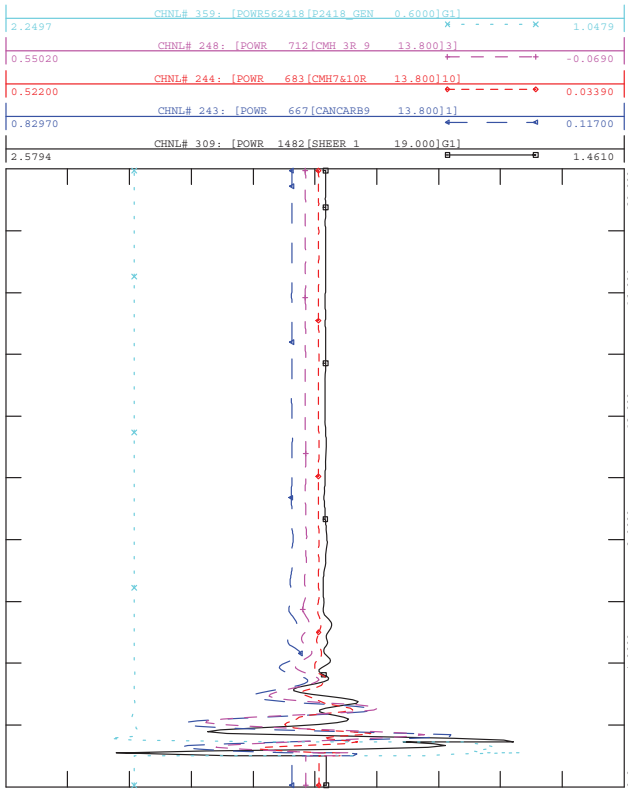


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L

FILE: Scn3_SP_15_658L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

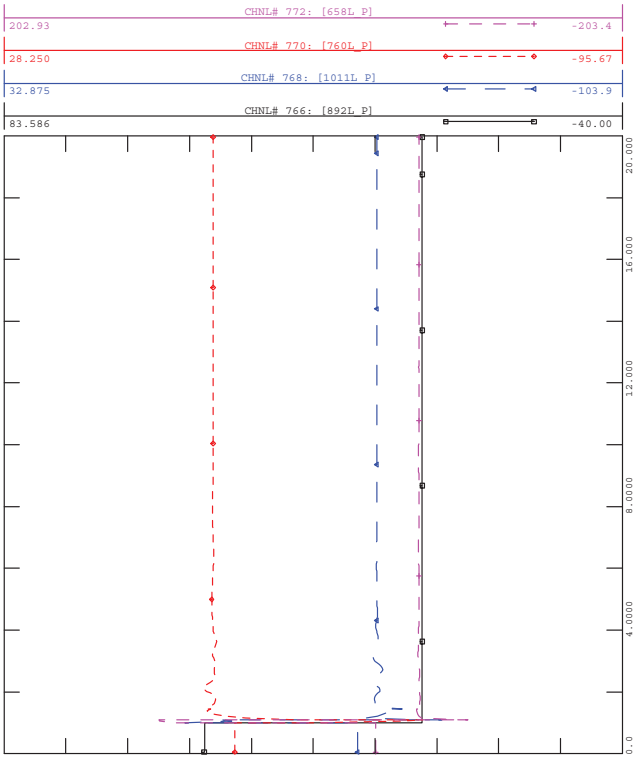


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_14_892L

FILE: Scn3_SP_14_892L.out

MON, FEB 05 2024 12:12

BRANCH P

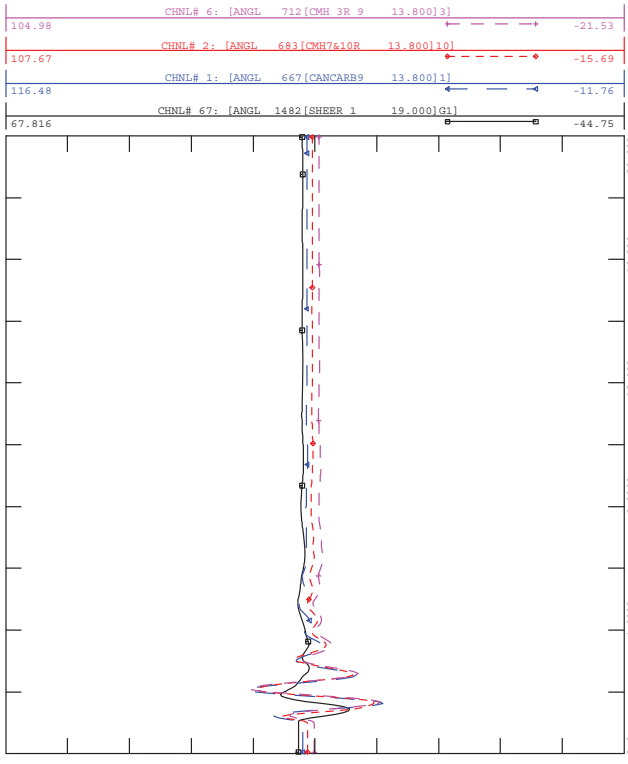


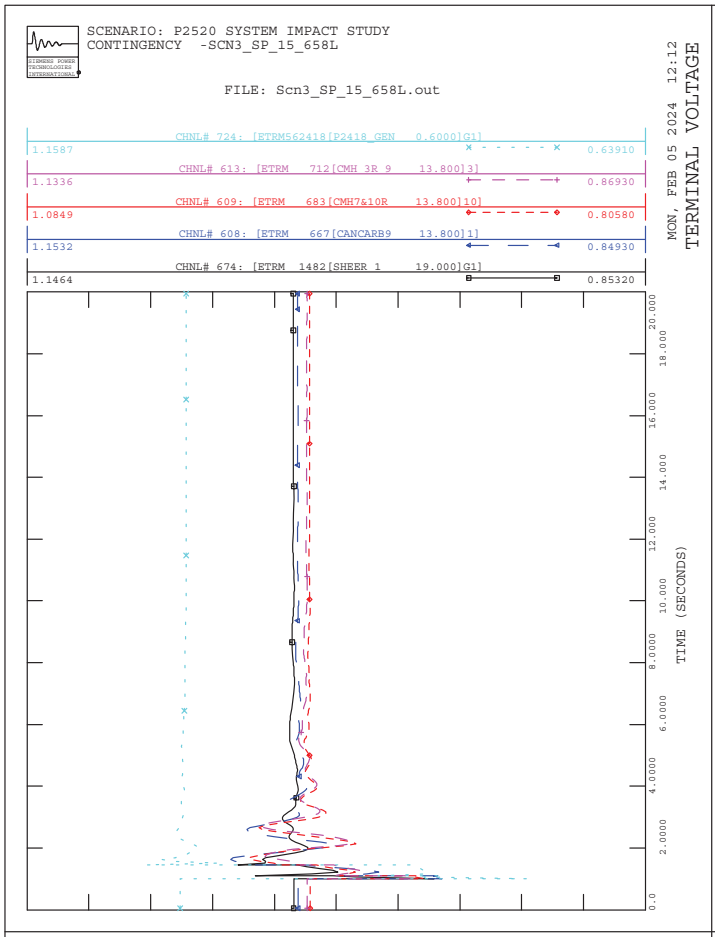
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L

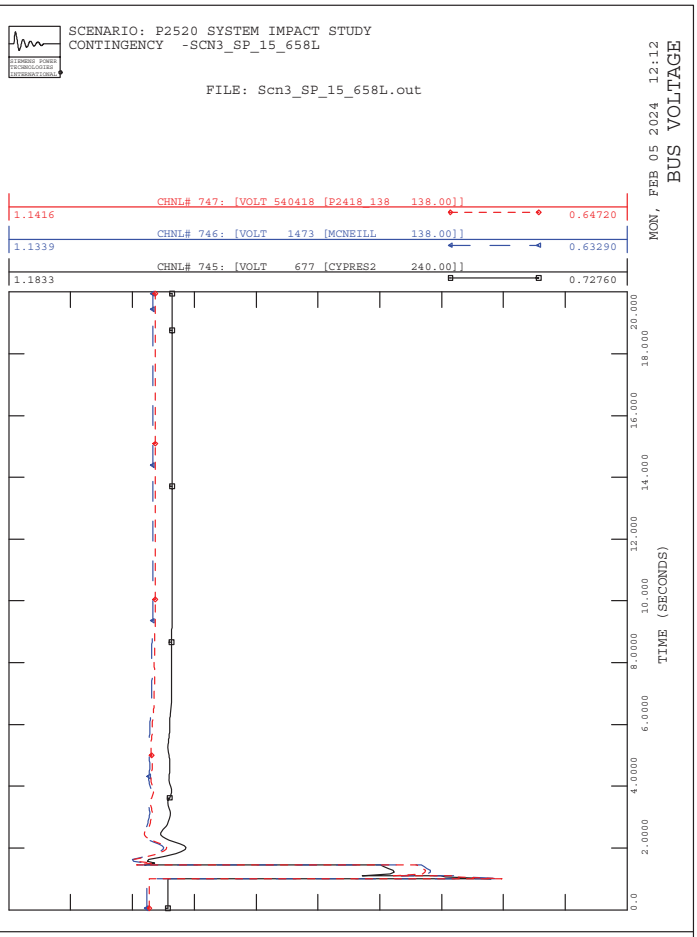
FILE: Scn3_SP_15_658L.out

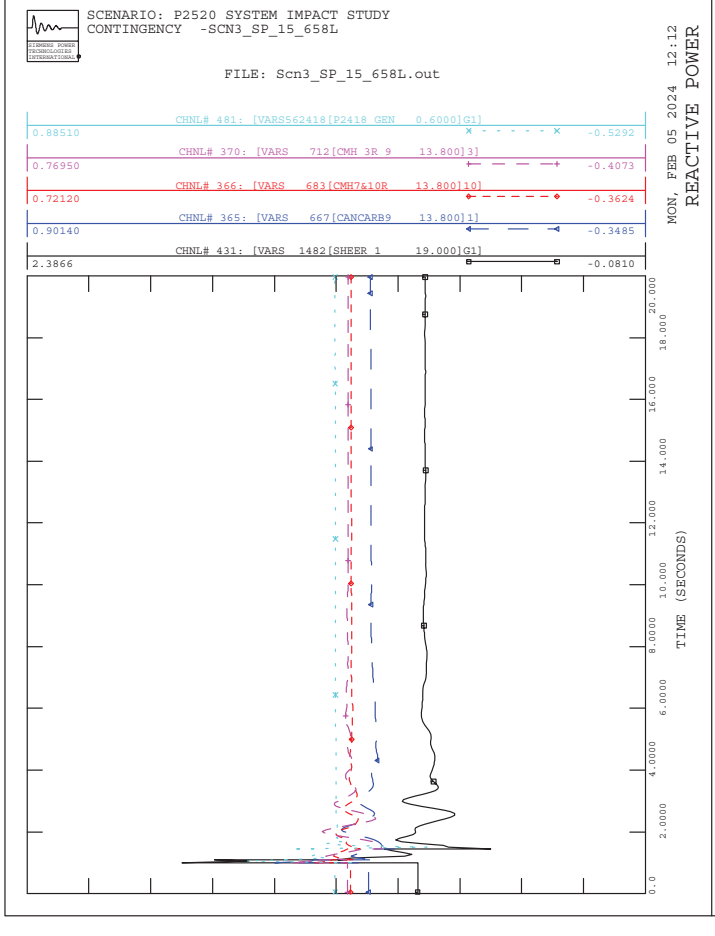
MON, FEB 05 2024 12:12

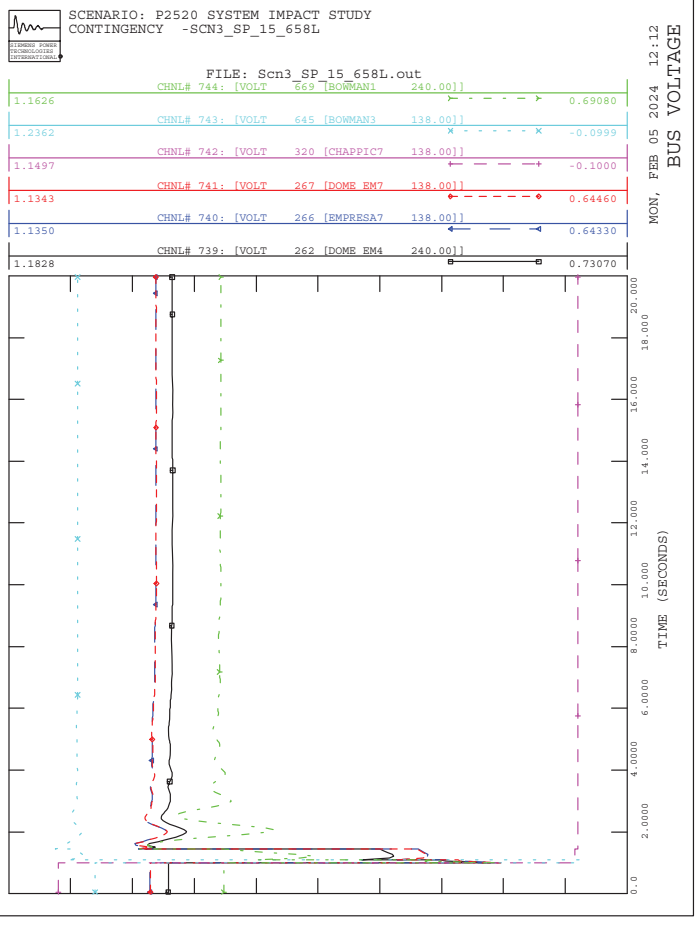
ROTOR ANGLE

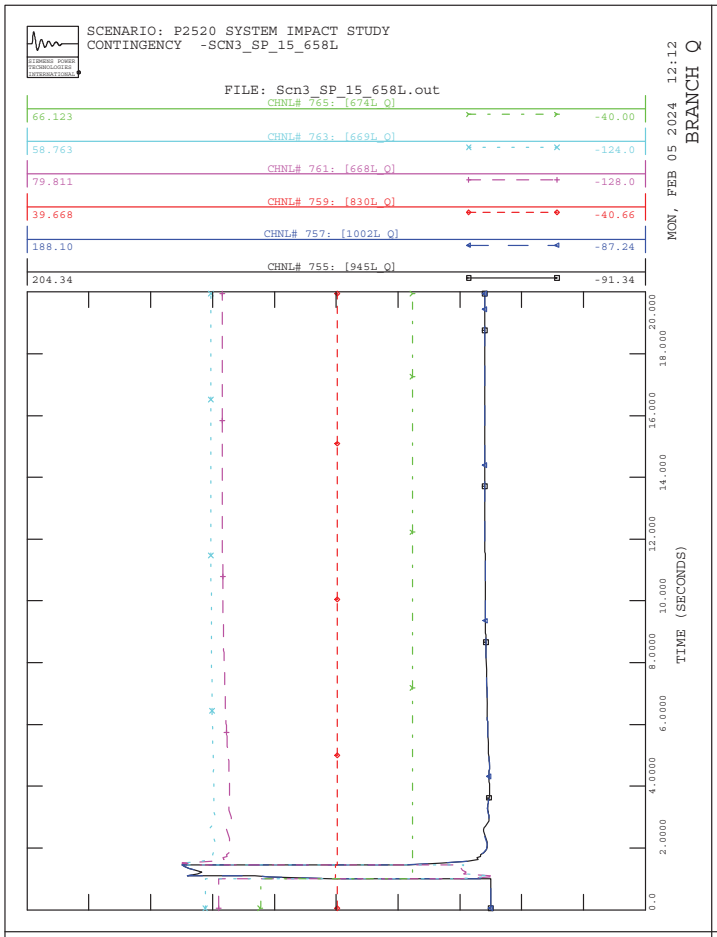


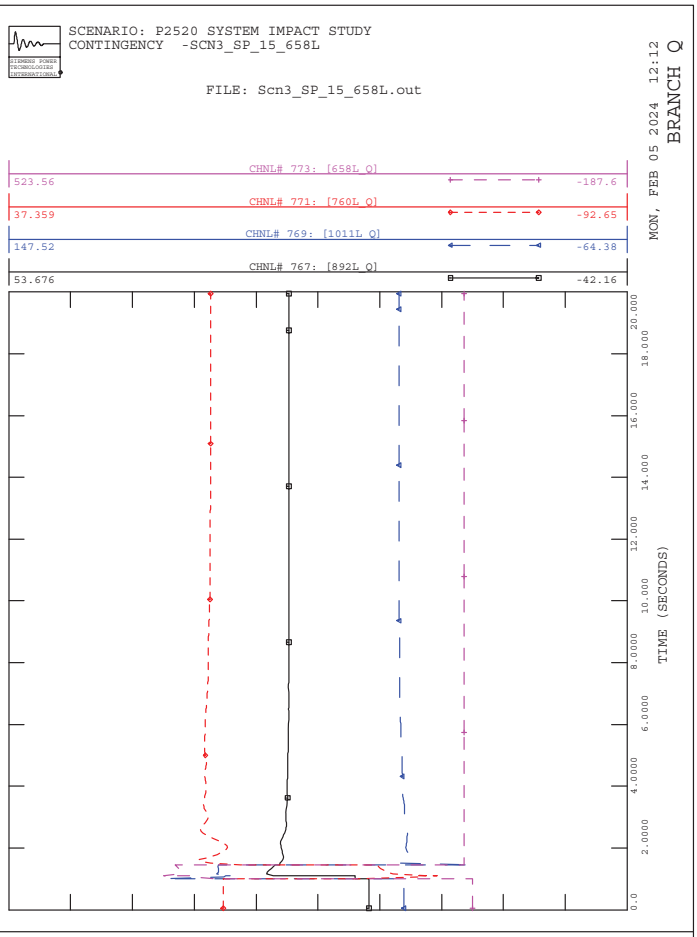

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.1587
0.63910
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1336
0.86930
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.0849
0.80580
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1532
0.84930
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.1464
0.85320
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

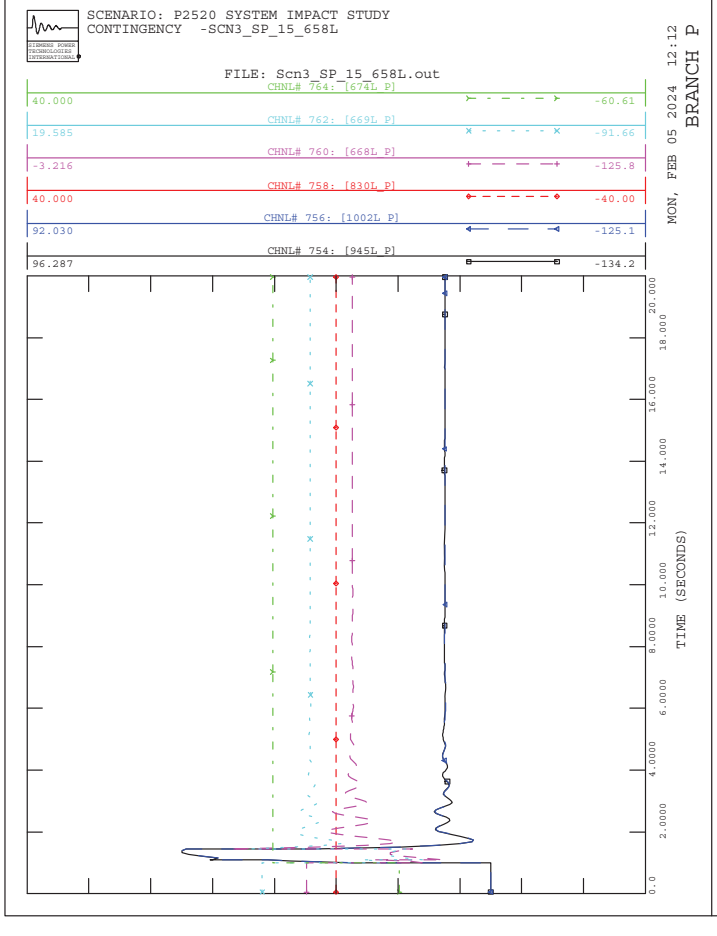

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.1416
0.64720
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1339
0.63290
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.1833
0.72760
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

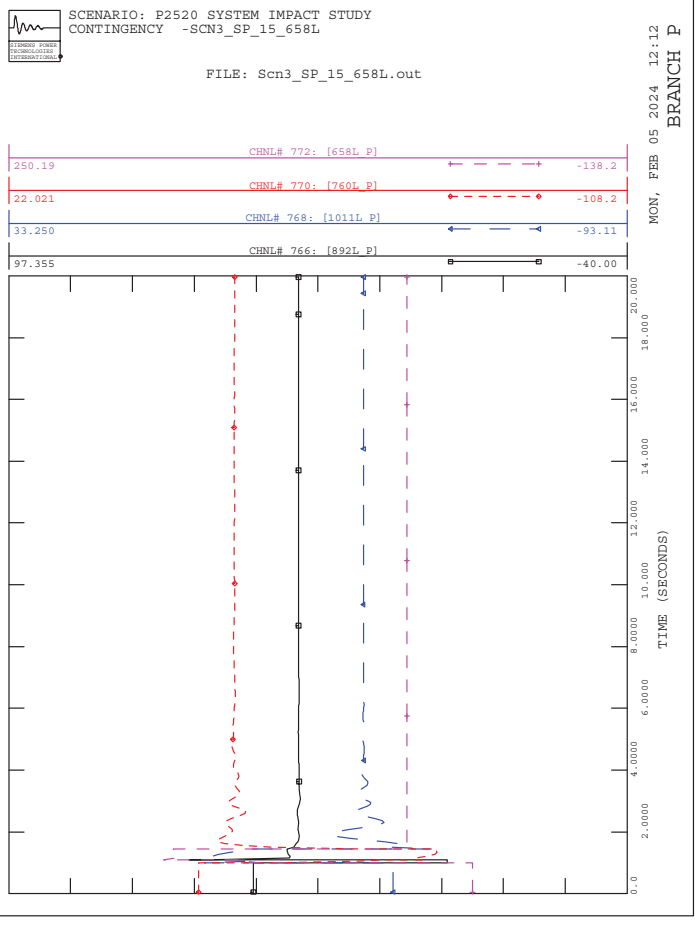

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1]
0.88510
-0.5292
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.76950
-0.4073
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.72120
-0.3624
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.90140
-0.3485
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
2.3866
-0.0810
MON, FEB 05 2024 12:12
REACTIVE POWER
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.1626
0.69080
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2362
-0.0999
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.1497
-0.1000
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1343
0.64460
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1350
0.64330
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.1828
0.73070
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 765: [674L Q]
66.123
-40.00
CHNL# 763: [669L Q]
58.763
-124.0
CHNL# 761: [668L Q]
79.811
-128.0
CHNL# 759: [830L Q]
39.668
-40.66
CHNL# 757: [1002L Q]
188.10
-87.24
CHNL# 755: [945L Q]
204.34
-91.34
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 773: [658L Q]
523.56
-187.6
CHNL# 771: [760L Q]
37.359
-92.65
CHNL# 769: [1011L Q]
147.52
-64.38
CHNL# 767: [892L Q]
53.676
-42.16
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 764: [674L P]
40.000
-60.61
CHNL# 762: [669L P]
19.585
-91.66
CHNL# 760: [668L P]
-3.216
-125.8
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
92.030
-125.1
CHNL# 754: [945L P]
96.287
-134.2
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_15_658L
FILE: Scn3_SP_15_658L.out
CHNL# 772: [658L P]
250.19
-138.2
CHNL# 770: [760L P]
22.021
-108.2
CHNL# 768: [1011L P]
33.250
-93.11
CHNL# 766: [892L P]
97.355
-40.00
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.2718 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.66120 -0.3260
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.57290 -0.0240
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
0.96960 -0.2132
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
3.2766 1.2121

TIME (SECONDS)
0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.4635 0.14030
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1621 0.76770
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1211 0.69640
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1786 0.66430
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.2004 0.79300

TIME (SECONDS)
0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
138.91 -46.79
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
139.12 -35.90
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
155.91 -29.85
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
86.993 -42.67

TIME (SECONDS)
0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
4.1801 -1.563
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.88940 -0.5096
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.76940 -0.4721
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
1.0088 -0.6207
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
4.0595 -1.660

TIME (SECONDS)
0.0 2.0000 4.0000 6.0000 8.0000 10.000 12.000 14.000 16.000 18.000 20.000

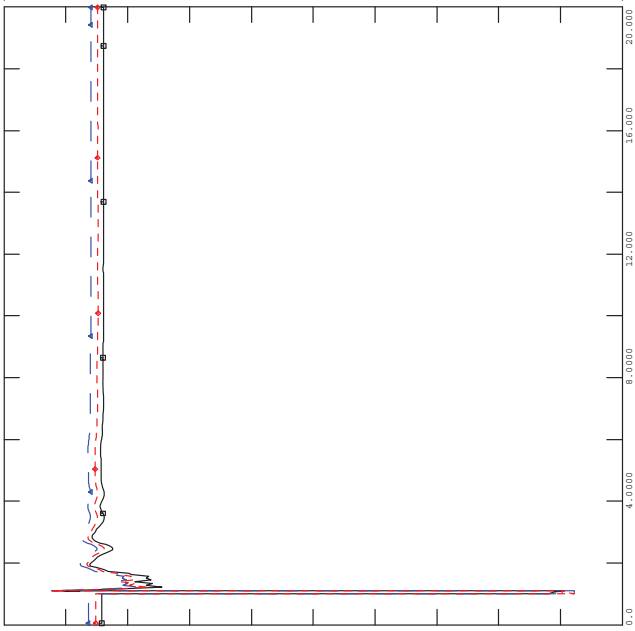
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.2195 -0.0674
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1982 -0.0925
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2325 0.17670



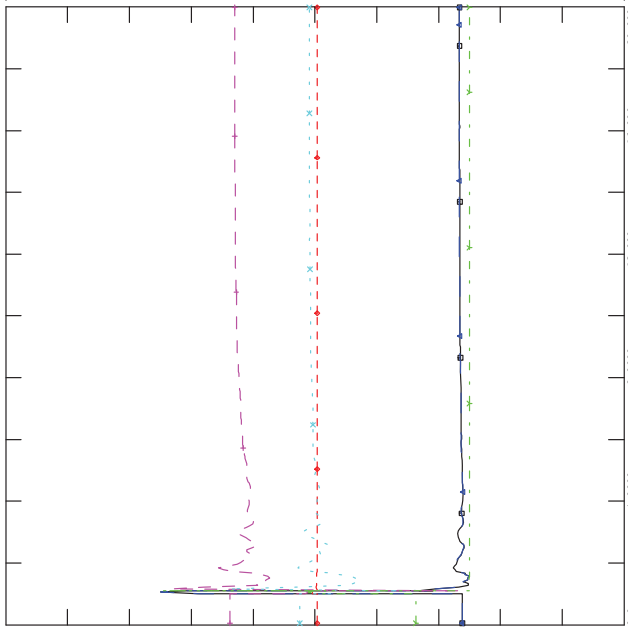
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q]
217.40 -71.72
CHNL# 763: [669L Q]
58.842 -52.08
CHNL# 761: [668L Q]
69.434 -79.79
CHNL# 759: [830L Q]
40.000 -40.74
CHNL# 757: [1002L Q]
425.68 -176.1
CHNL# 755: [945L Q]
460.64 -187.0



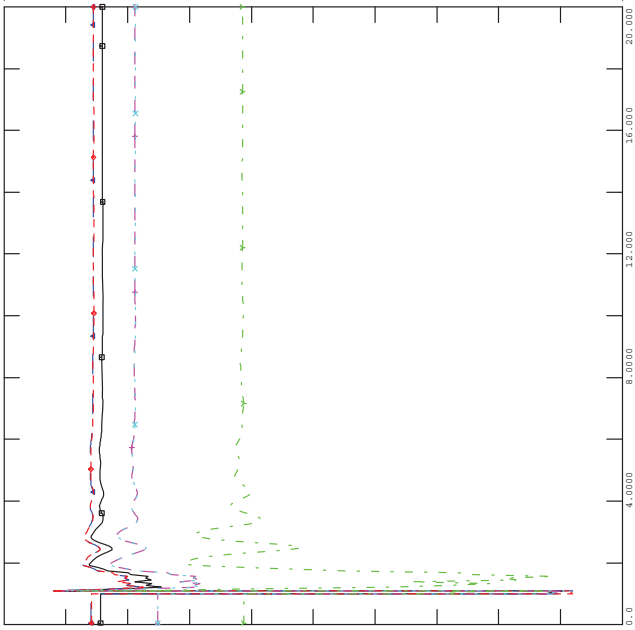
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.3443 0.45280
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.3127 0.25550
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.3127 0.25270
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1982 -0.0488
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1993 -0.0570
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2296 0.18480



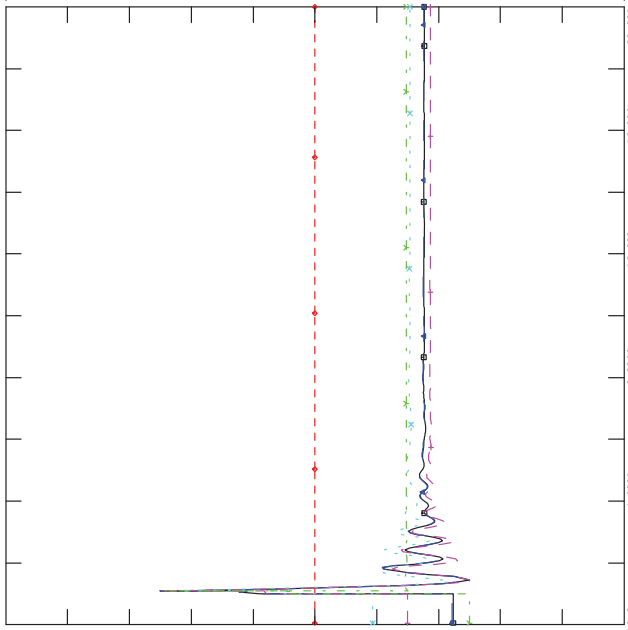
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P]
102.37 -61.31
CHNL# 762: [669L P]
61.724 -80.77
CHNL# 760: [668L P]
103.20 -145.8
CHNL# 758: [830L P]
40.000 -40.00
CHNL# 756: [1002L P]
179.45 -167.1
CHNL# 754: [945L P]
186.37 -177.0

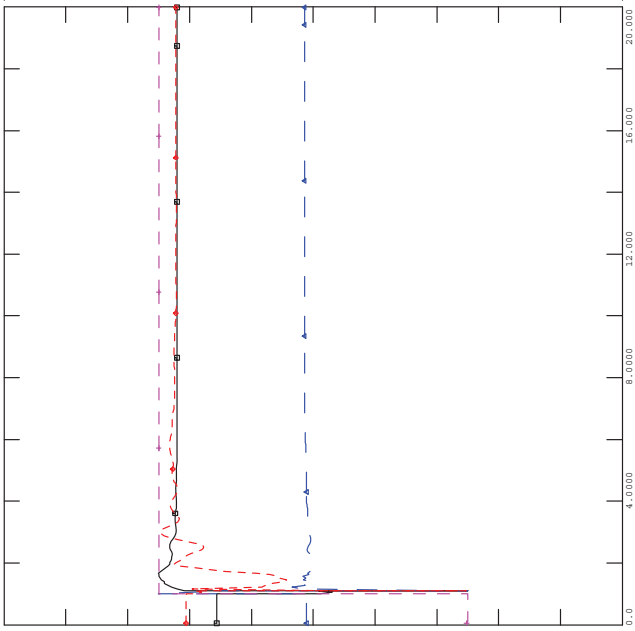


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

BRANCH Q

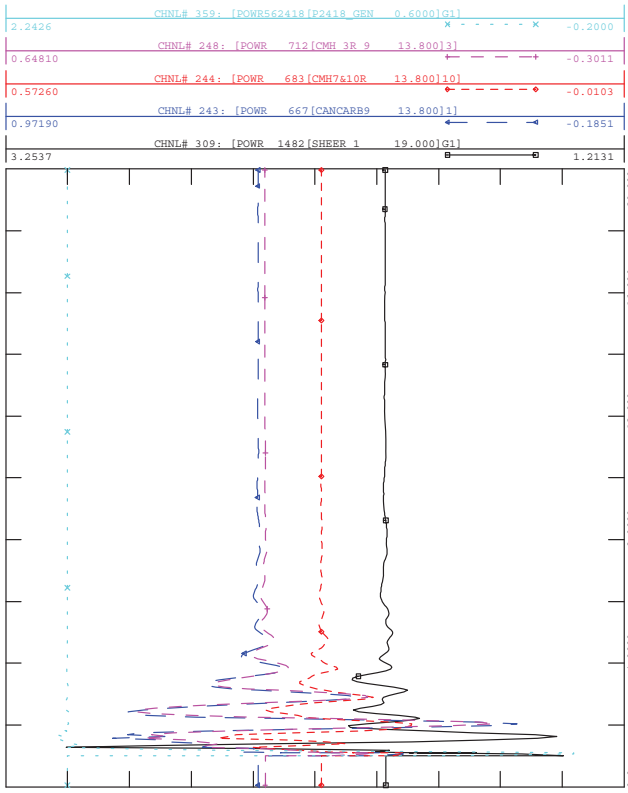


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L

FILE: Scn3_SP_17_760L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

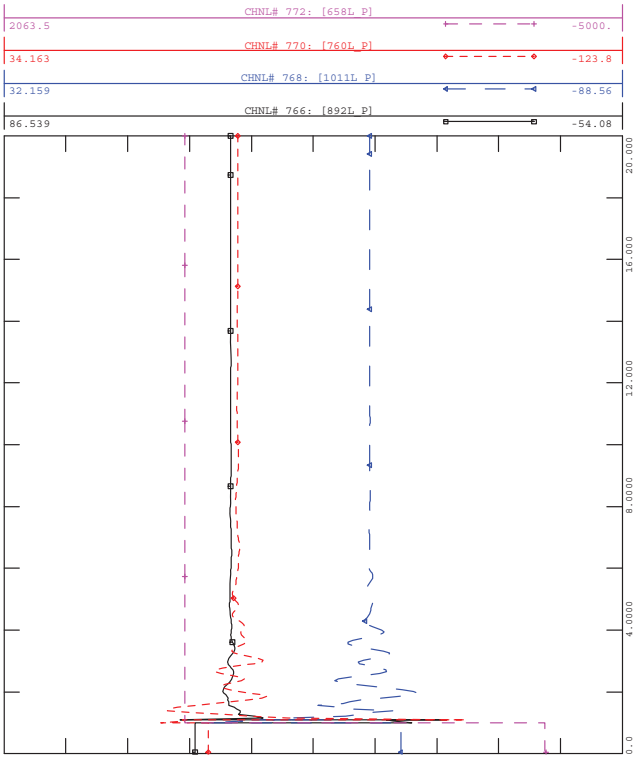


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_16_658L

FILE: Scn3_SP_16_658L.out

MON, FEB 05 2024 12:12

BRANCH P

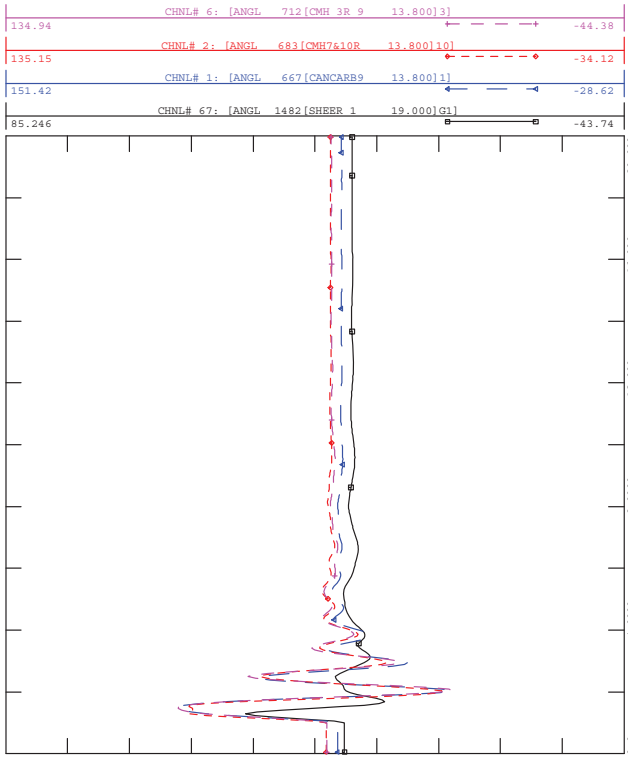


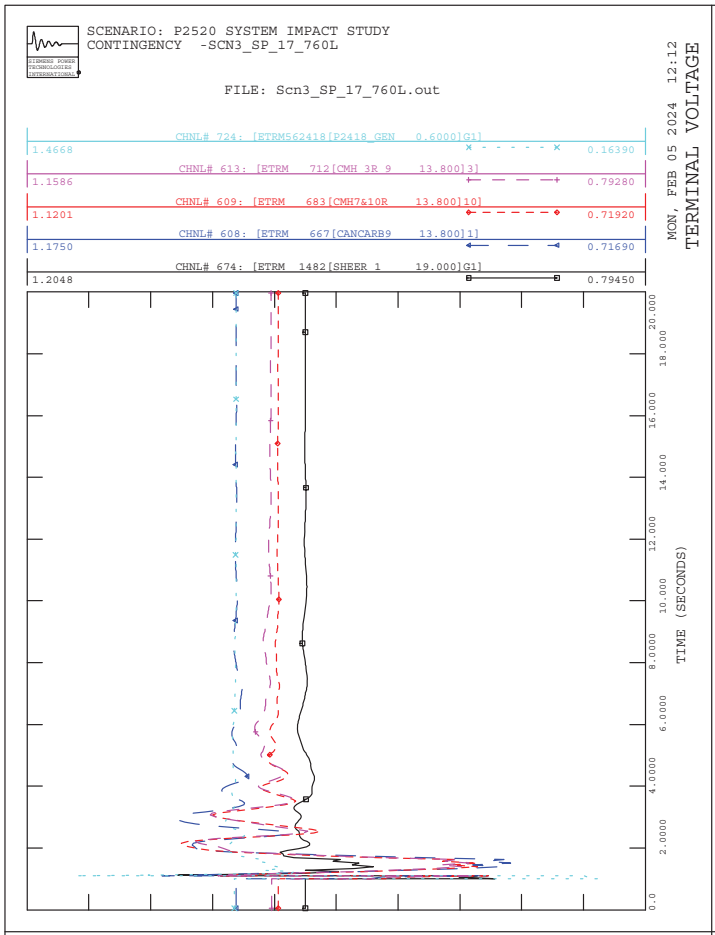
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L

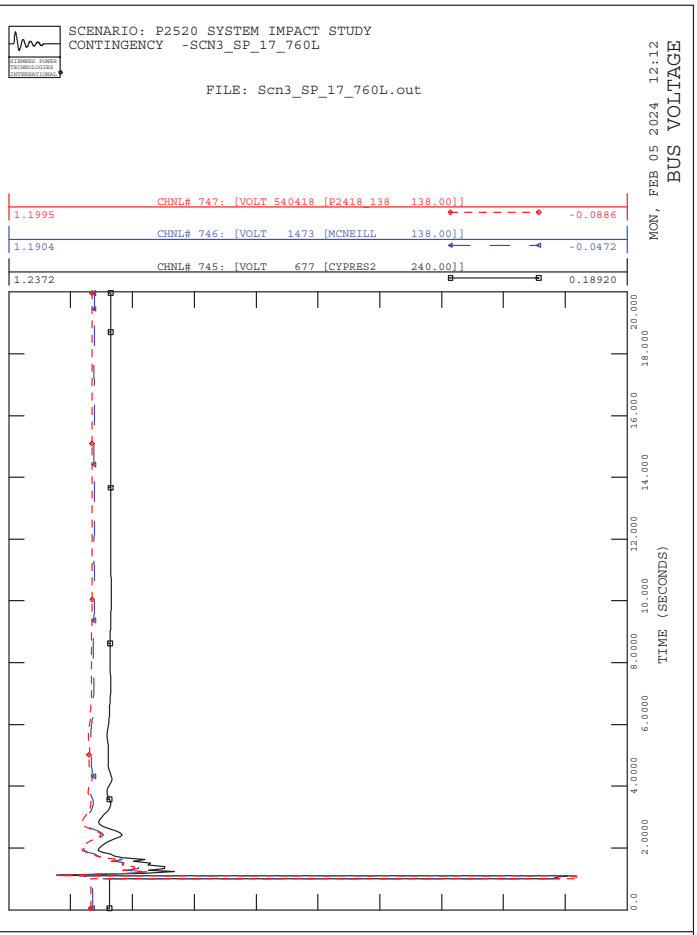
FILE: Scn3_SP_17_760L.out

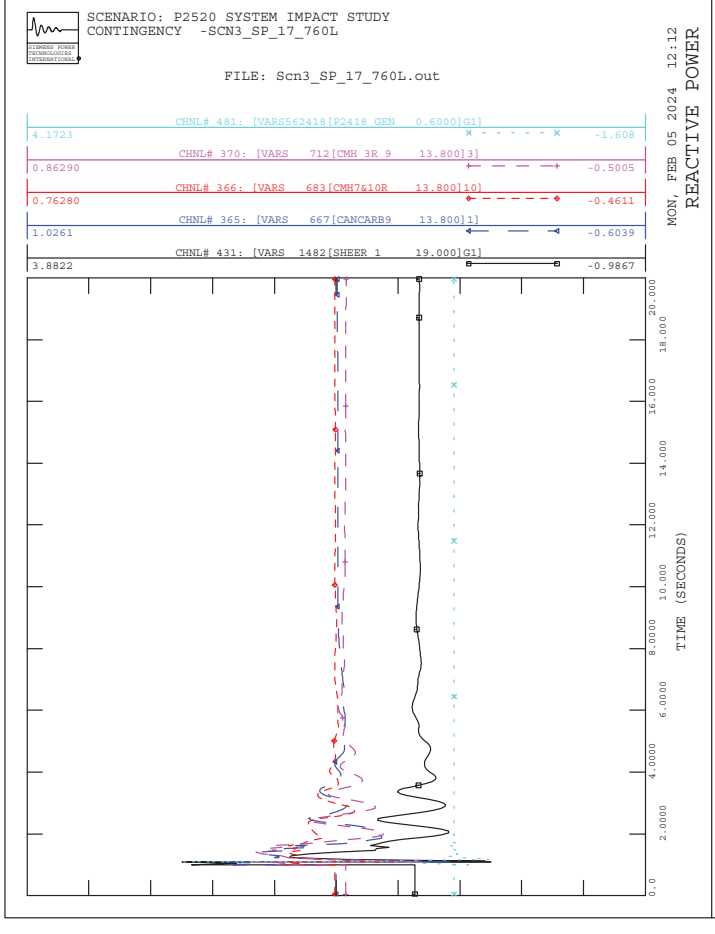
MON, FEB 05 2024 12:12

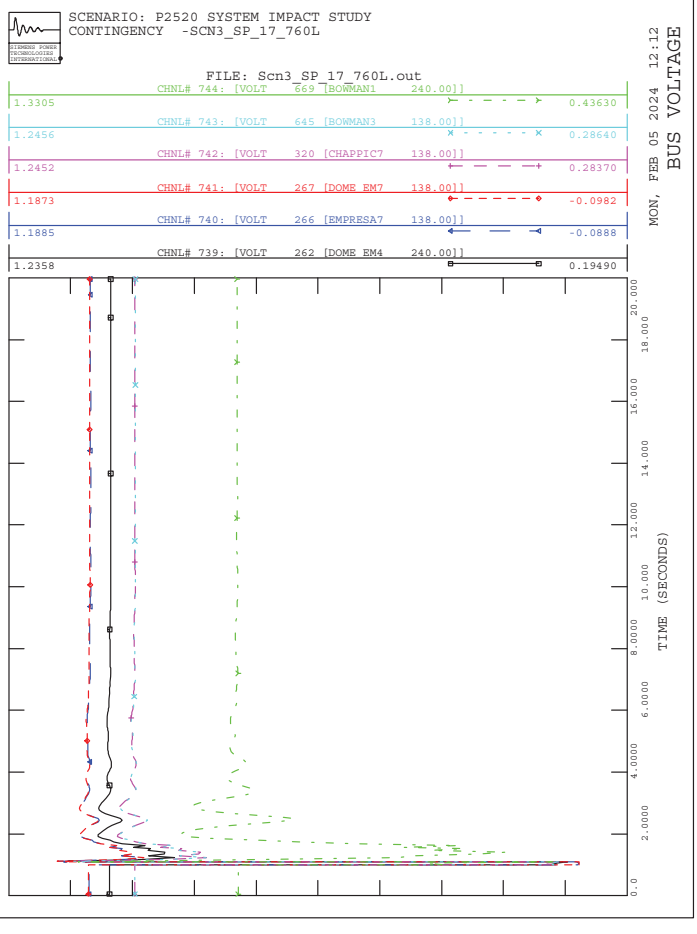
ROTOR ANGLE

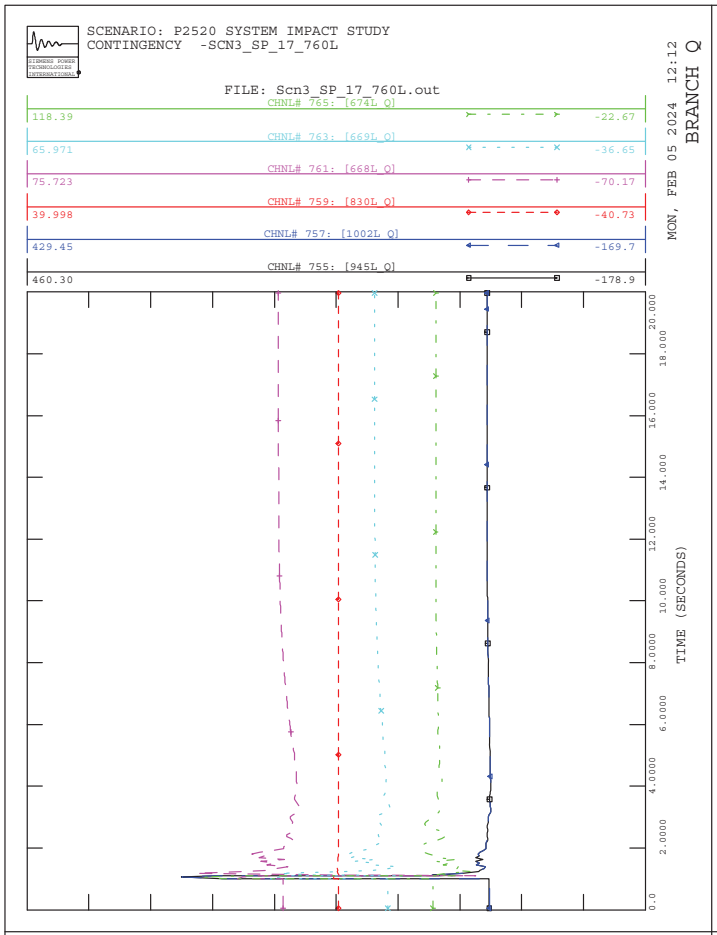


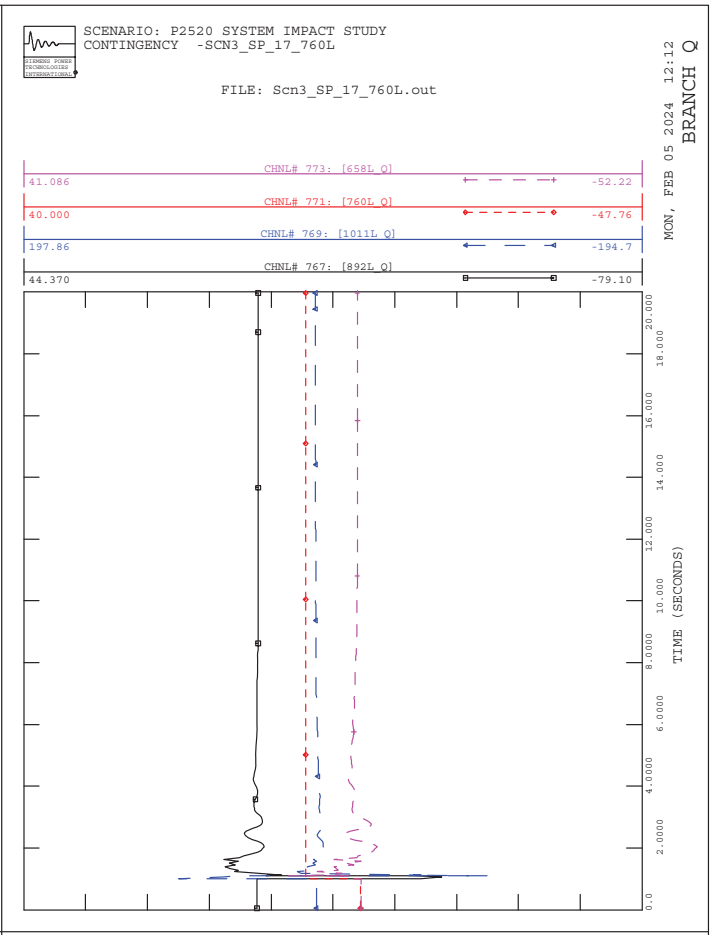

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.4668
0.16390
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1586
0.79280
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1201
0.71920
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1750
0.71690
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.2048
0.79450
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000
TIME (SECONDS)

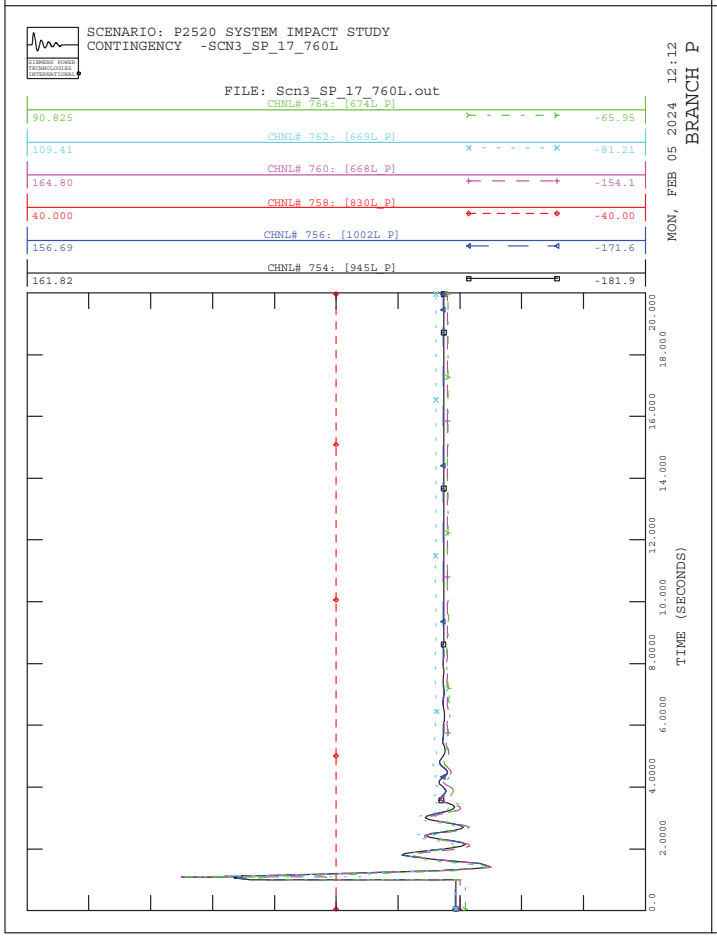

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.1995
-0.0886
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1904
-0.0472
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2372
0.18920
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000
TIME (SECONDS)

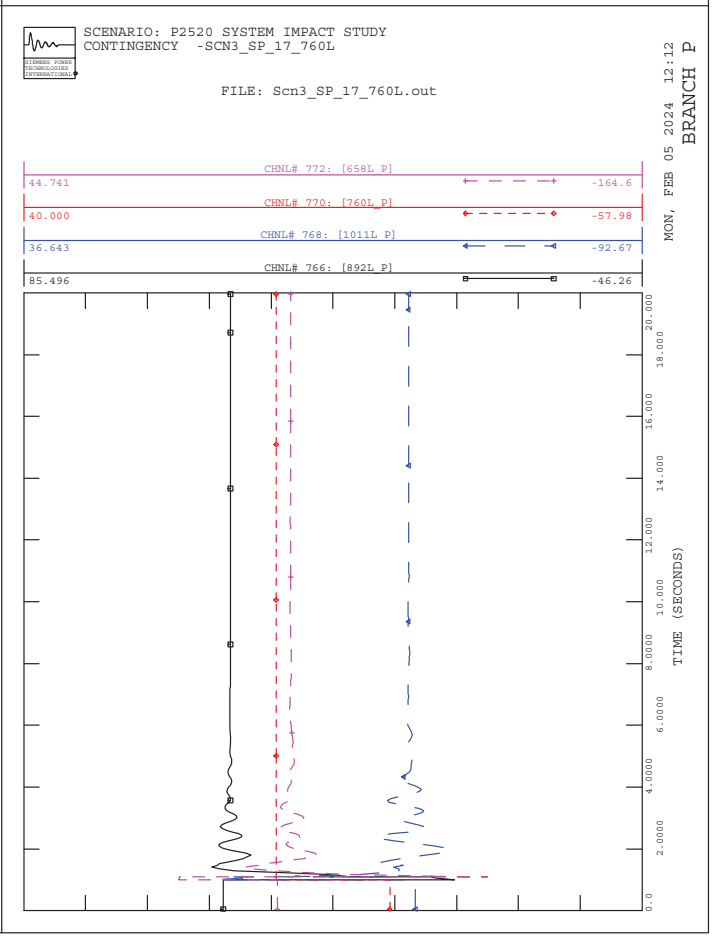

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
MON, FEB 05 2024 12:12
REACTIVE POWER
CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1]
4.1723
-1.608
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.86290
-0.5005
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.76280
-0.4611
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
1.0261
-0.6039
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
3.8822
-0.9867
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.3305
0.43630
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2456
0.28640
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2452
0.28370
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1873
-0.0982
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1885
-0.0888
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2358
0.19490
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
CHNL# 765: [674L Q]
118.39
-22.67
CHNL# 763: [669L Q]
65.971
-36.65
CHNL# 761: [668L Q]
75.723
-70.17
CHNL# 759: [830L Q]
39.998
-40.73
CHNL# 757: [1002L Q]
429.45
-169.7
CHNL# 755: [945L Q]
460.30
-178.9
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
CHNL# 773: [658L Q]
41.086
-52.22
CHNL# 771: [760L Q]
40.000
-47.76
CHNL# 769: [1011L Q]
197.86
-194.7
CHNL# 767: [892L Q]
44.370
-79.10
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
CHNL# 764: [674L P]
90.825
-65.95
CHNL# 762: [669L P]
109.41
-81.21
CHNL# 760: [668L P]
164.80
-154.1
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
156.69
-171.6
CHNL# 754: [945L P]
161.82
-181.9
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

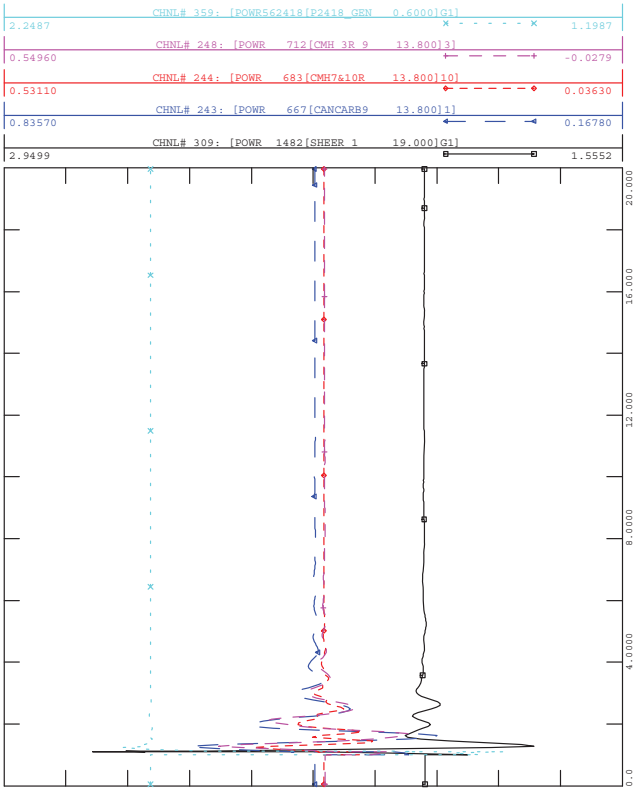

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_17_760L
FILE: Scn3_SP_17_760L.out
CHNL# 772: [658L P]
44.741
-164.6
CHNL# 770: [760L P]
40.000
-57.98
CHNL# 768: [1011L P]
36.643
-92.67
CHNL# 766: [892L P]
85.496
-46.26
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L

FILE: Scn3_SP_18_760L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

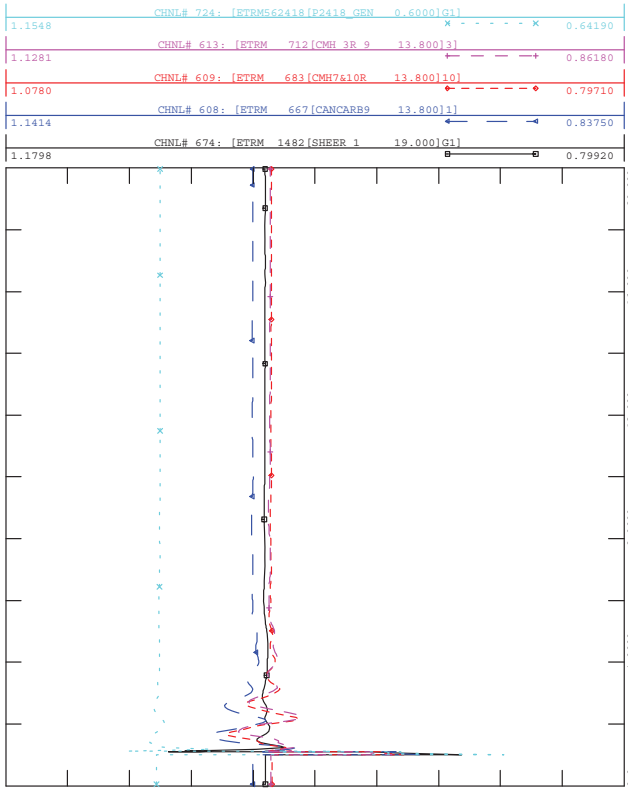


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L

FILE: Scn3_SP_18_760L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

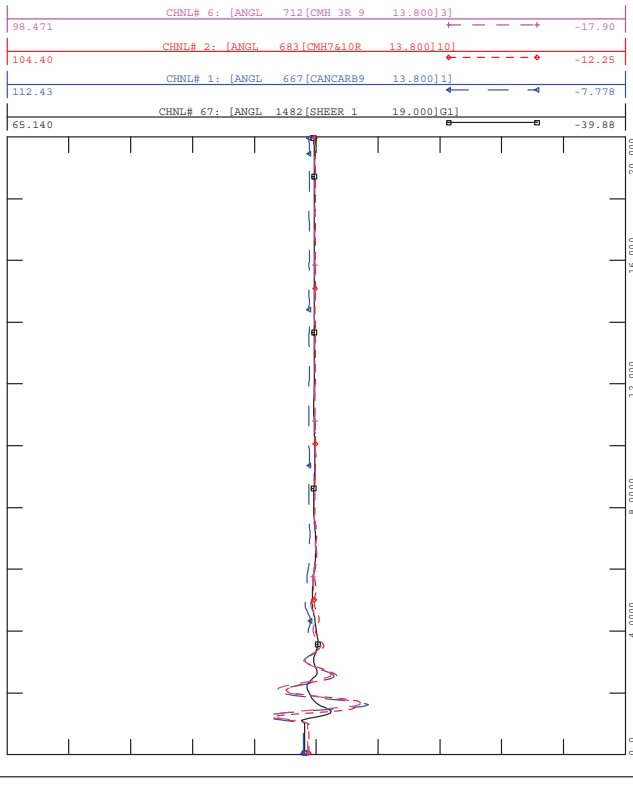


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L

FILE: Scn3_SP_18_760L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

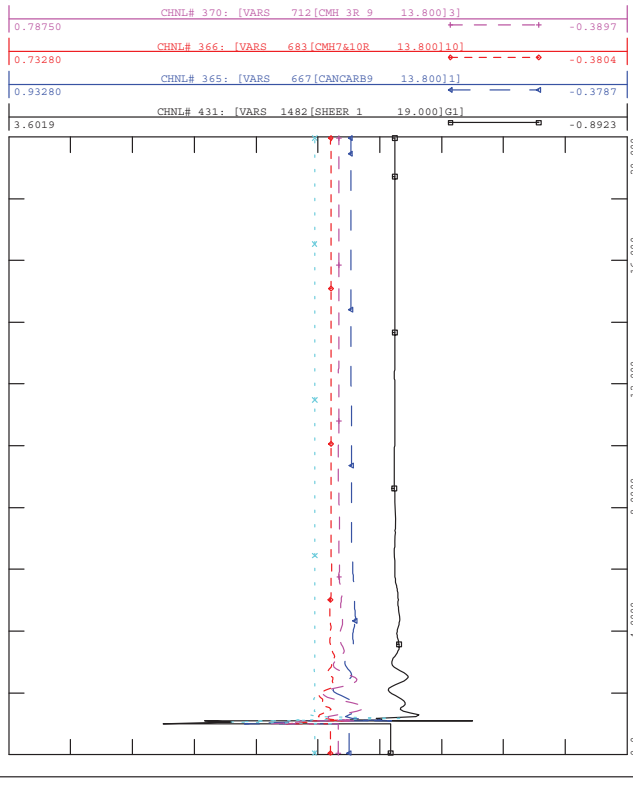


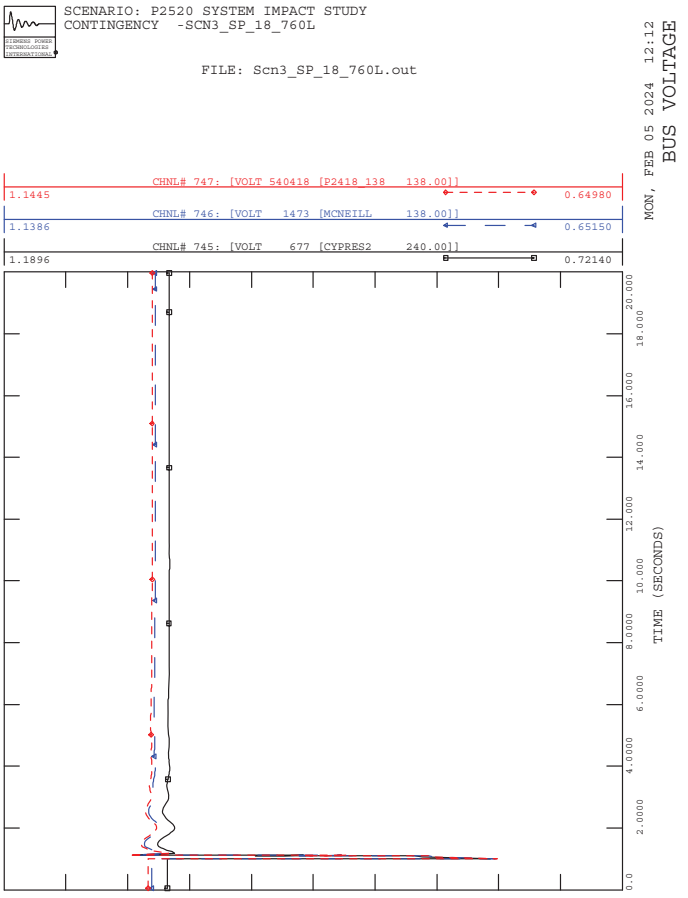
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L

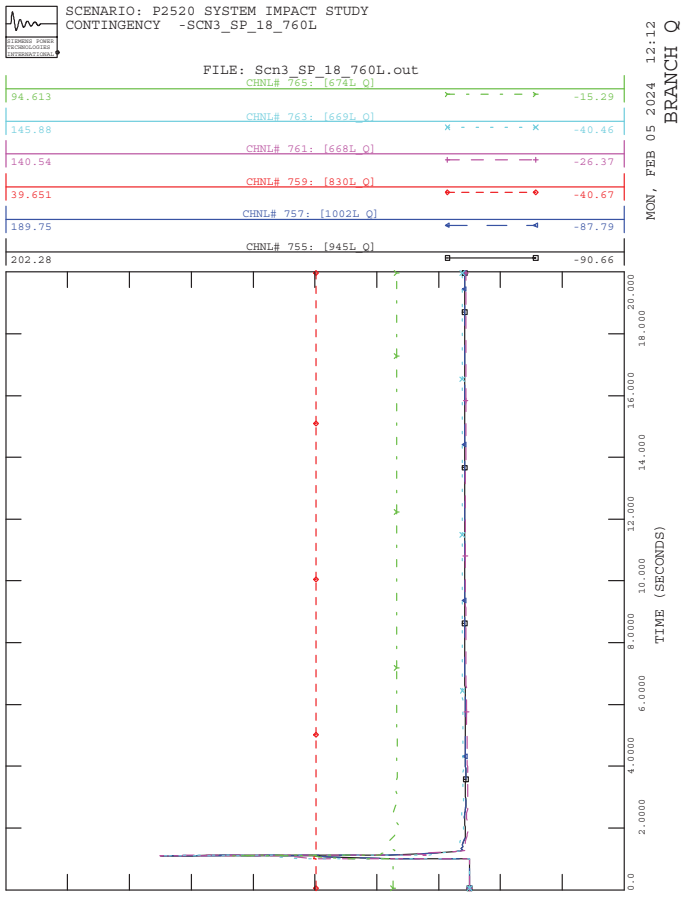
FILE: Scn3_SP_18_760L.out

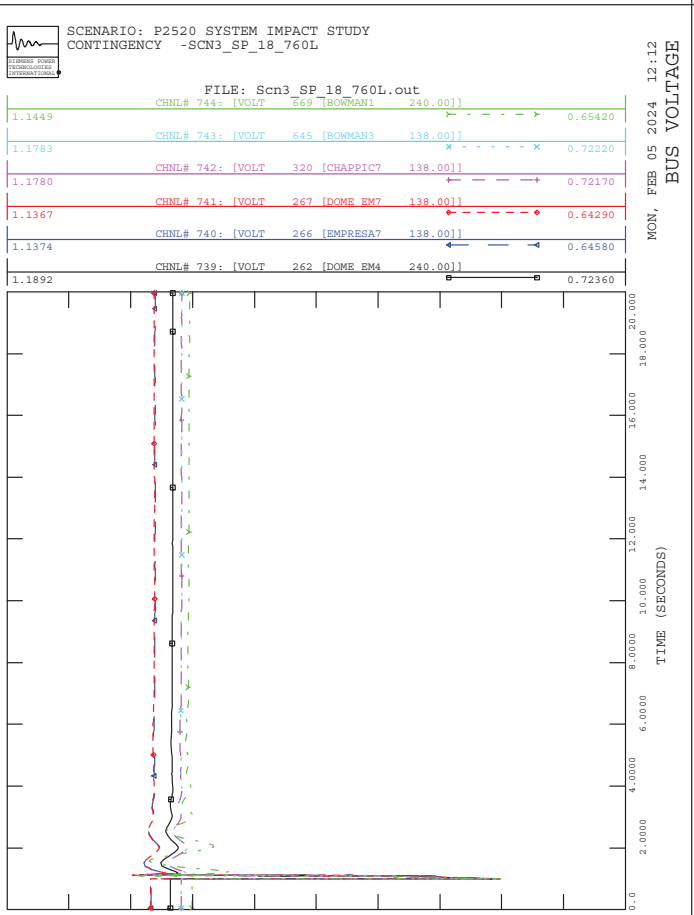
MON, FEB 05 2024 12:12

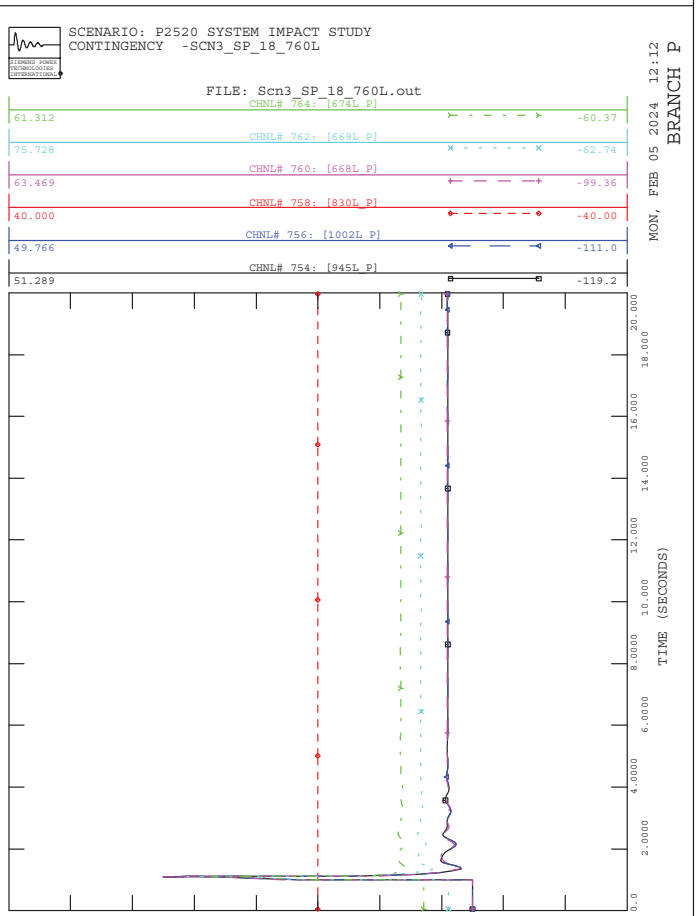
REACTIVE POWER




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L
FILE: Scn3_SP_18_760L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.1445
0.64980
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1386
0.65150
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.1896
0.72140
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L
FILE: Scn3_SP_18_760L.out
MON, FEB 05 2024 12:12
BRANCH Q
CHNL# 765: [674L Q]
94.613
-15.29
CHNL# 763: [669L Q]
145.88
-40.46
CHNL# 761: [668L Q]
140.54
-26.37
CHNL# 759: [830L Q]
39.651
-40.67
CHNL# 757: [1002L Q]
189.75
-87.79
CHNL# 755: [945L Q]
202.28
-90.66
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L
FILE: Scn3_SP_18_760L.out
MON, FEB 05 2024 12:12
BUS VOLTAGE
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.1449
0.65420
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.1783
0.72220
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.1780
0.72170
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1367
0.64290
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1374
0.64580
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.1892
0.72360
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

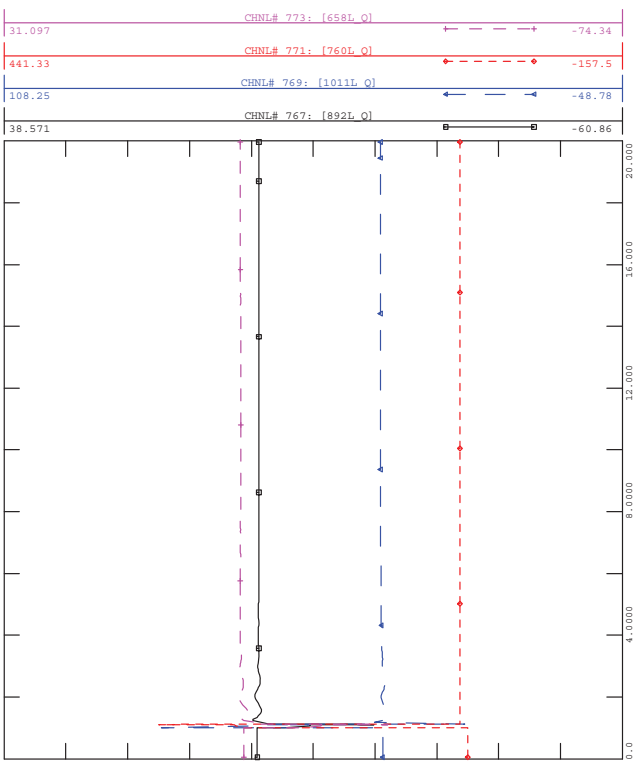

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L
FILE: Scn3_SP_18_760L.out
MON, FEB 05 2024 12:12
BRANCH P
CHNL# 764: [674L P]
61.312
-60.37
CHNL# 762: [669L P]
75.728
-62.74
CHNL# 760: [668L P]
63.469
-99.36
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
49.766
-111.0
CHNL# 754: [945L P]
51.289
-119.2
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L

FILE: Scn3_SP_18_760L.out

MON, FEB 05 2024 12:12

BRANCH Q

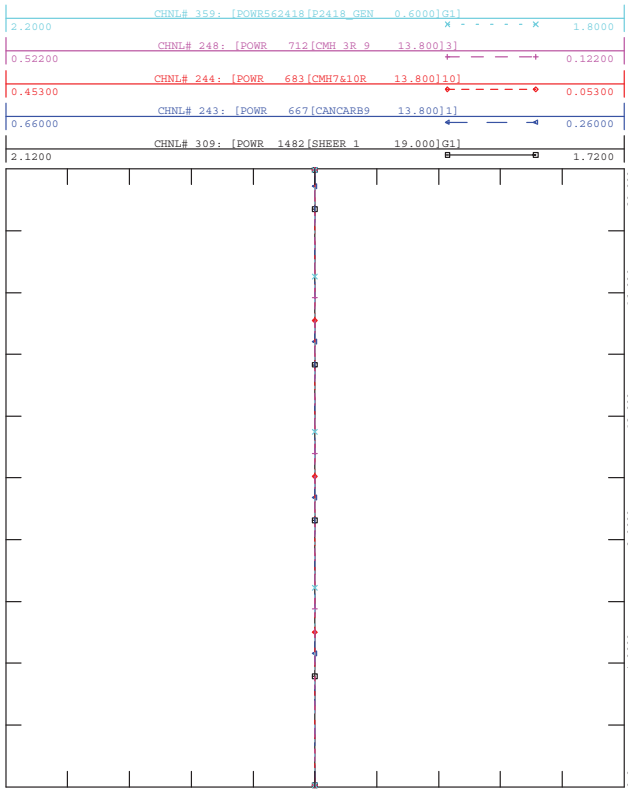


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out

MON, FEB 05 2024 12:12

ACTIVE POWER

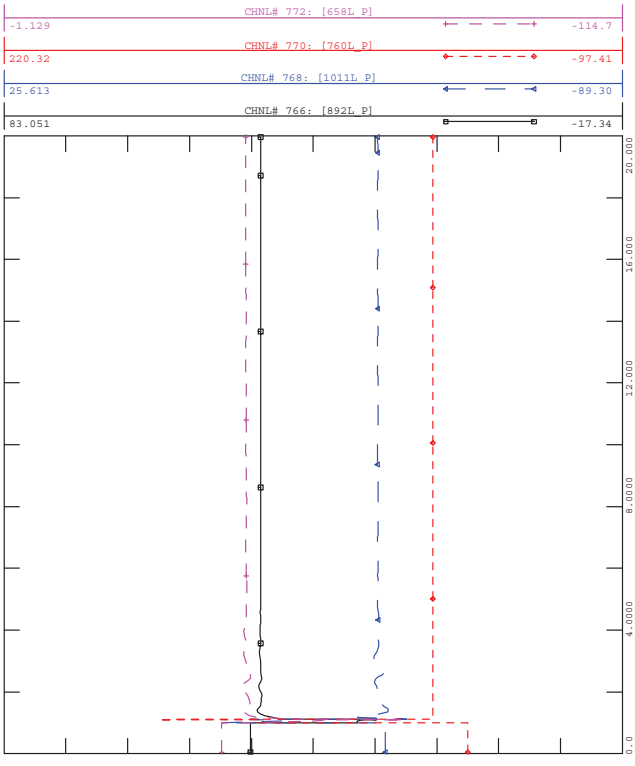


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN3_SP_18_760L

FILE: Scn3_SP_18_760L.out

MON, FEB 05 2024 12:12

BRANCH P

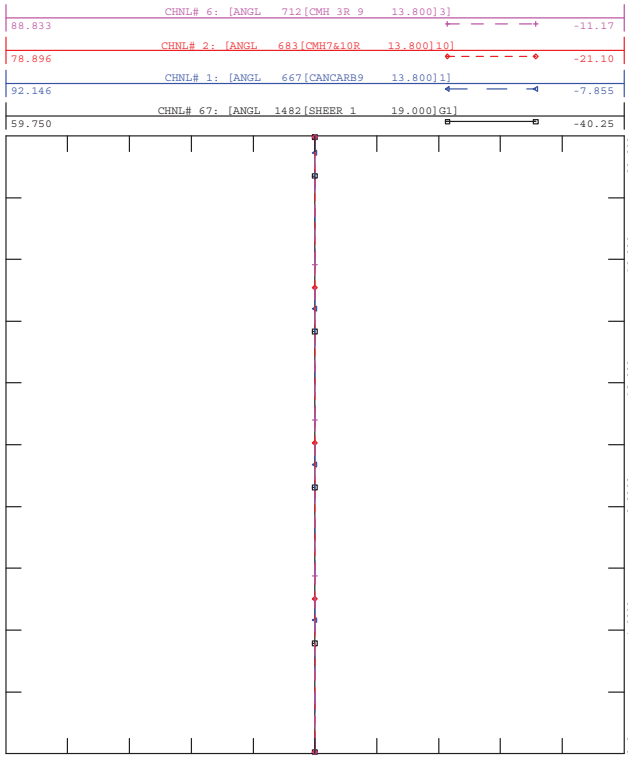


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

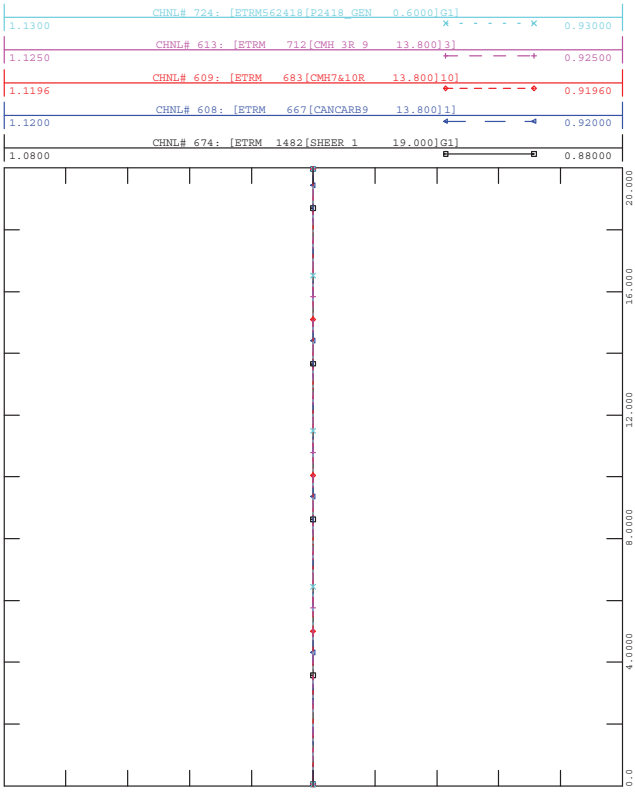


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

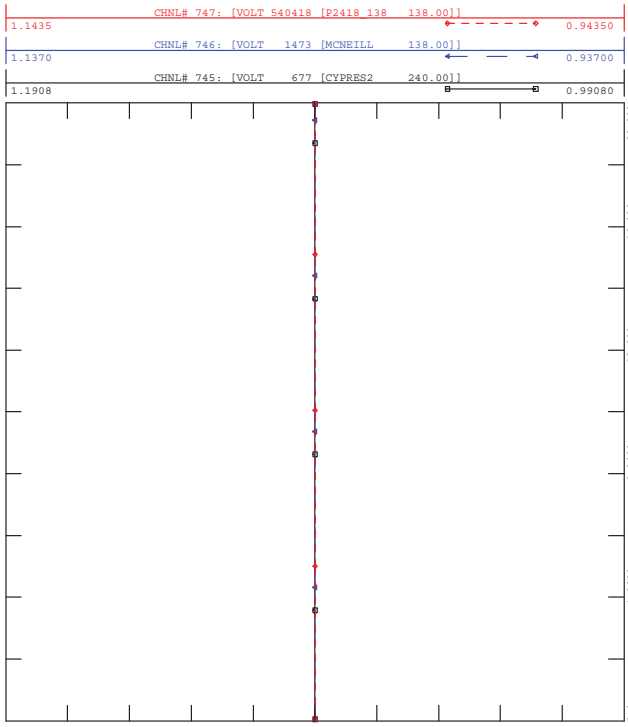


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

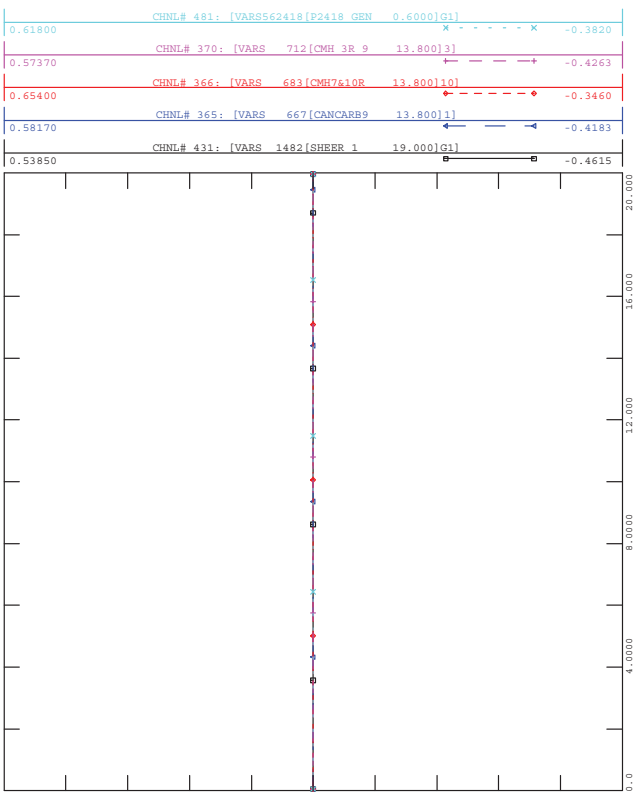


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out

MON, FEB 05 2024 12:12

REACTIVE POWER

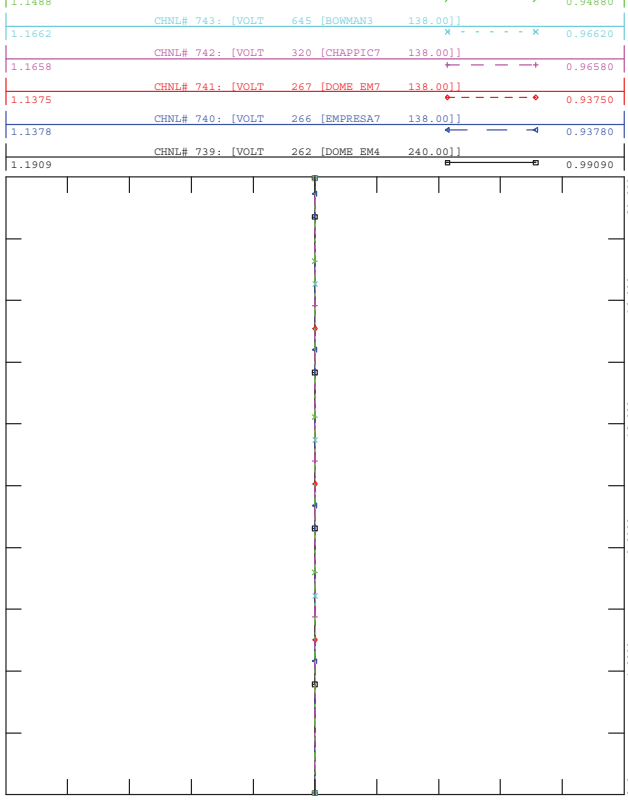


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out

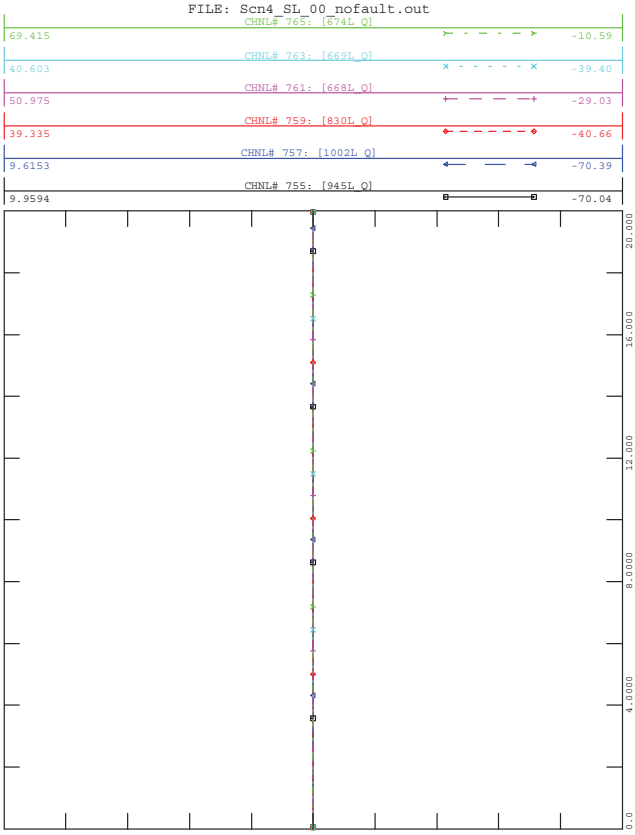
MON, FEB 05 2024 12:12

BUS VOLTAGE



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

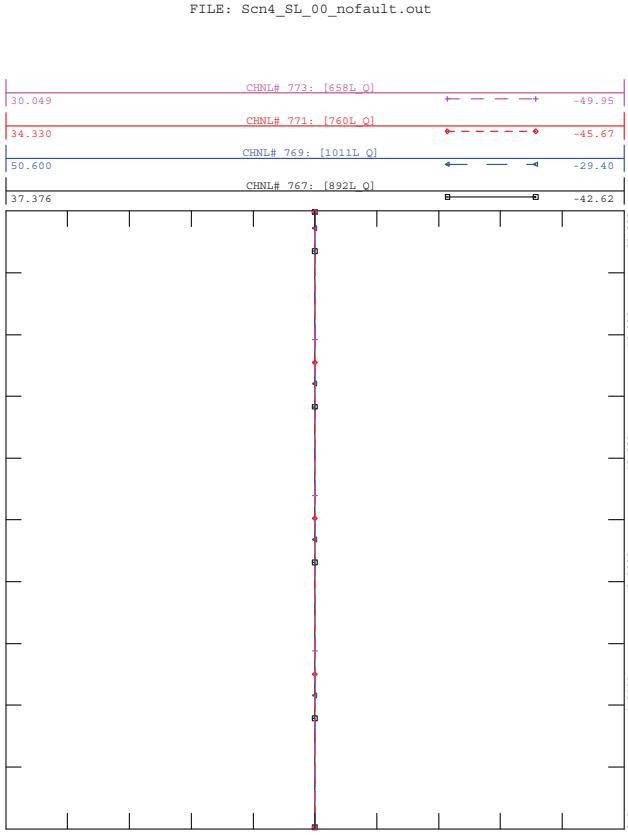
FILE: Scn4_SL_00_nofault.out



MON, FEB 05 2024 12:12
BRANCH Q

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

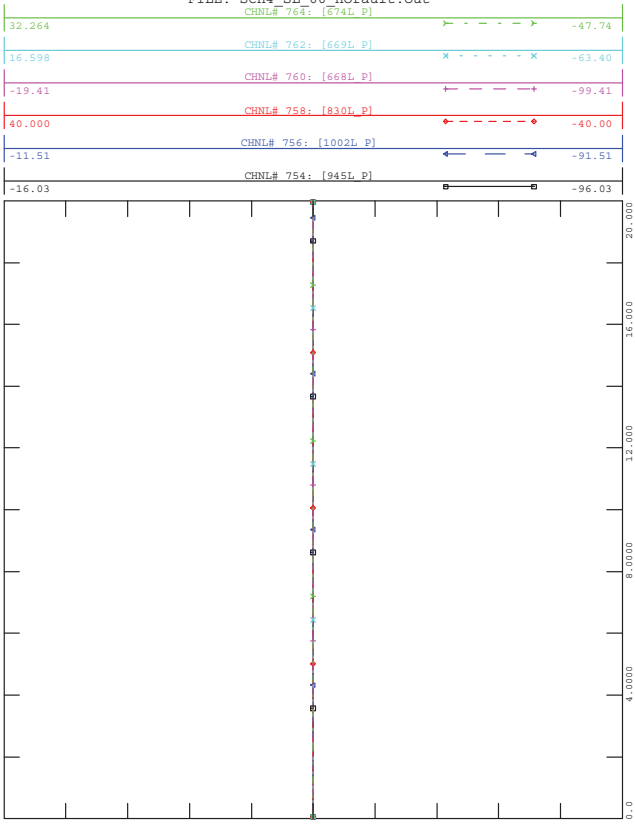
FILE: Scn4_SL_00_nofault.out



MON, FEB 05 2024 12:12
BRANCH Q

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

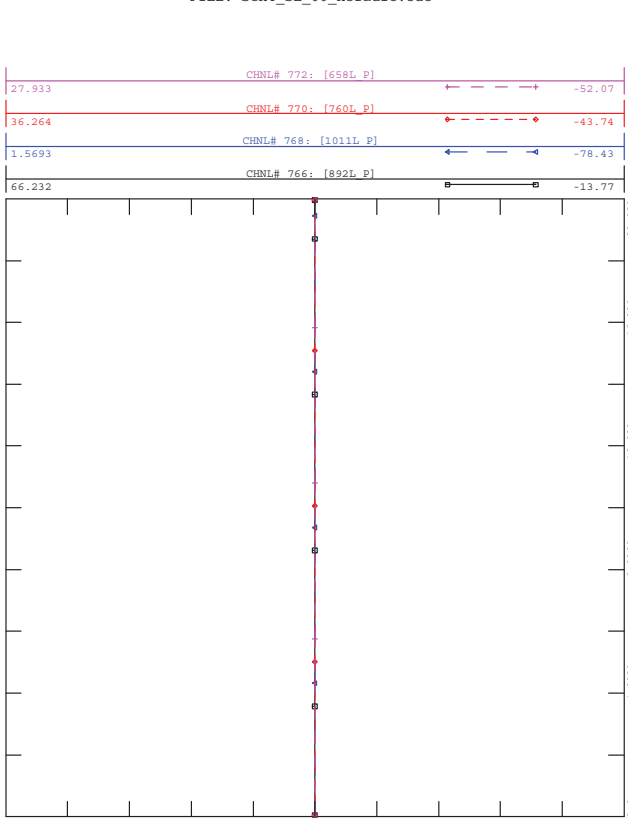
FILE: Scn4_SL_00_nofault.out



MON, FEB 05 2024 12:12
BRANCH P

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_00_NOFAULT

FILE: Scn4_SL_00_nofault.out



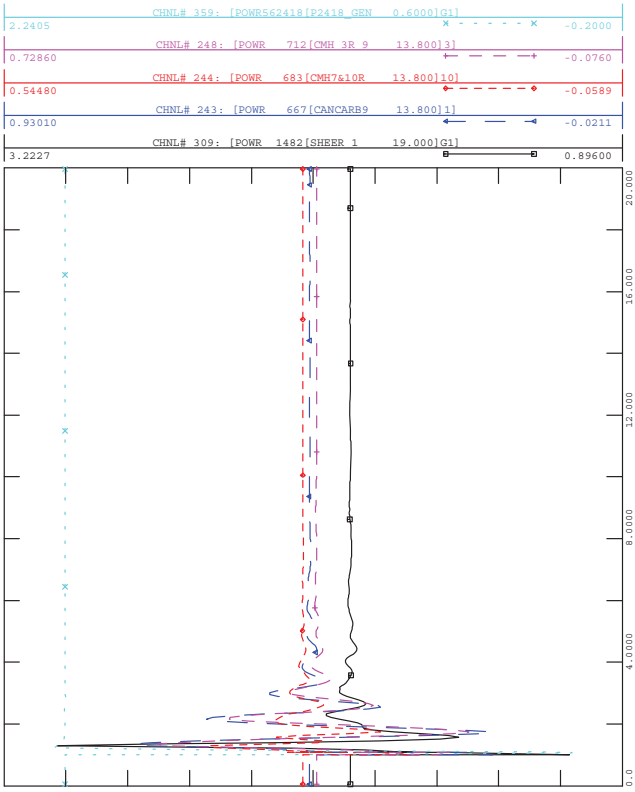
MON, FEB 05 2024 12:12
BRANCH P

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

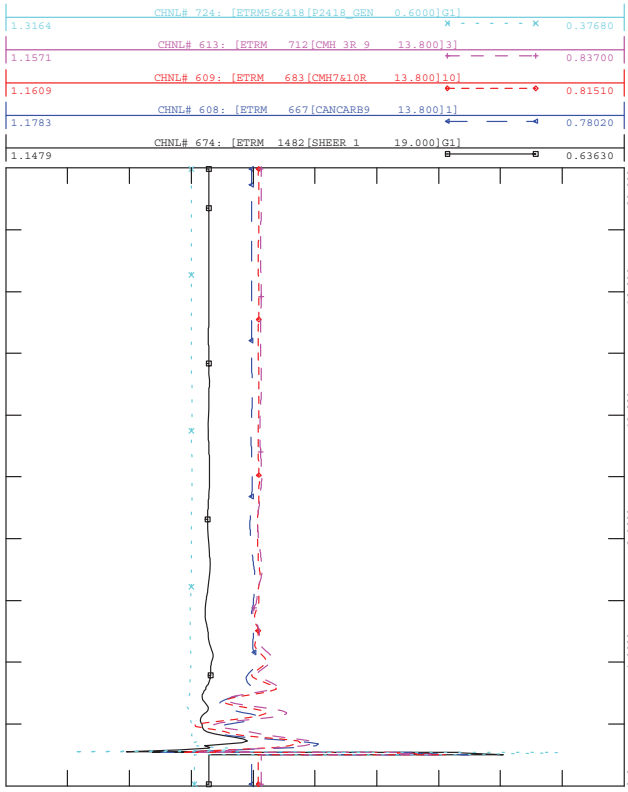


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

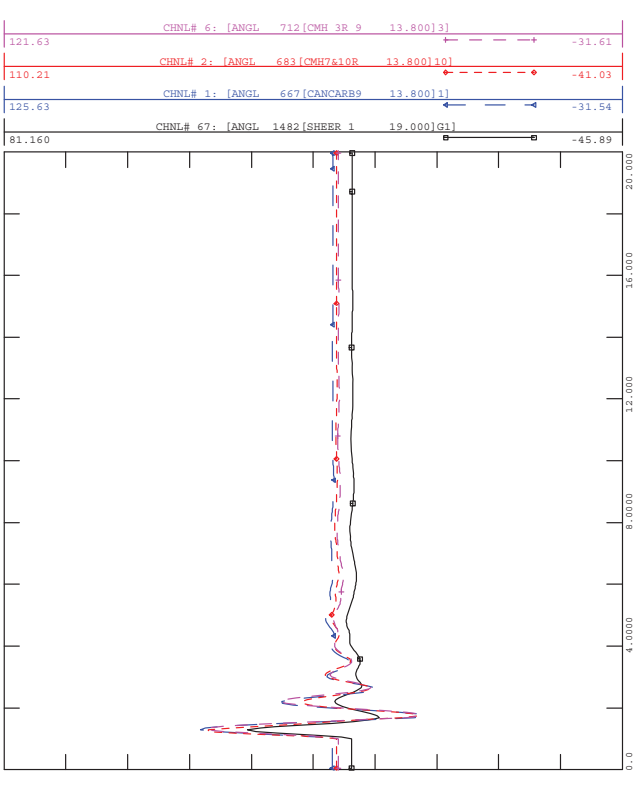


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

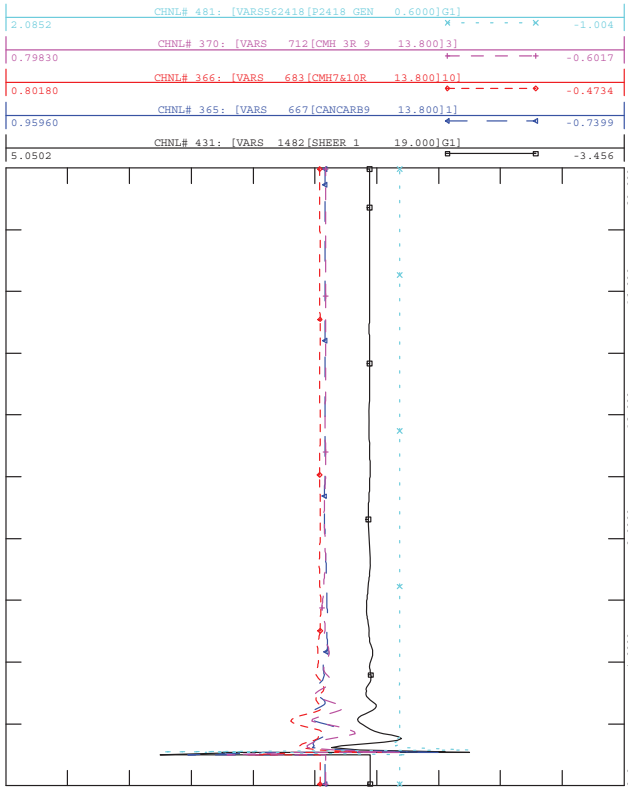


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

REACTIVE POWER



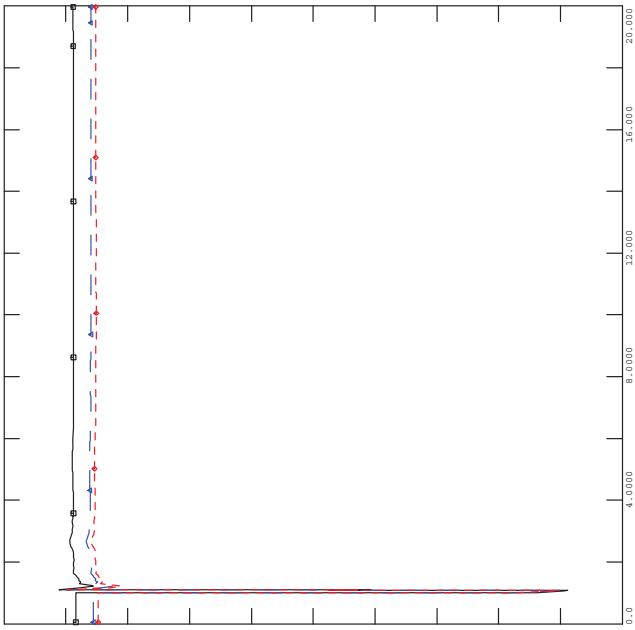
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1930 0.21330
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1800 0.18920
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2217 0.09300



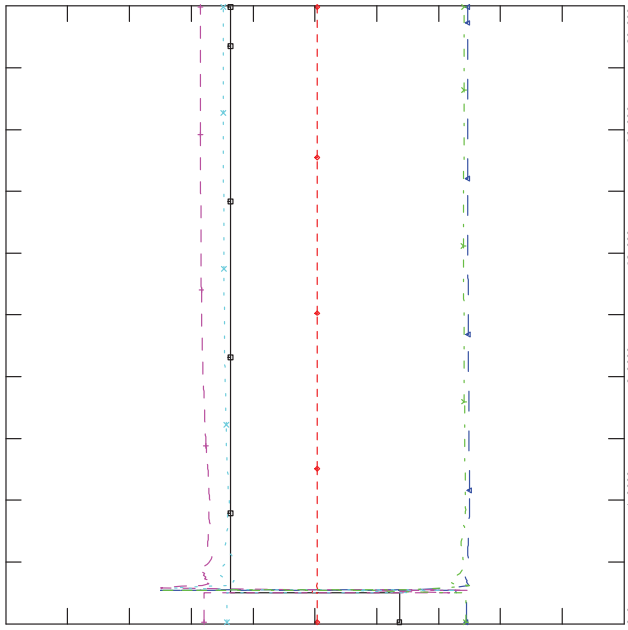
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 181.07 -22.78
CHNL# 763: [669L Q] 53.899 -95.32
CHNL# 761: [668L Q] 74.309 -123.3
CHNL# 759: [830L Q] 39.948 -40.72
CHNL# 757: [1002L Q] 1086.1 -413.1
CHNL# 755: [945L Q] 40.000 -70.04



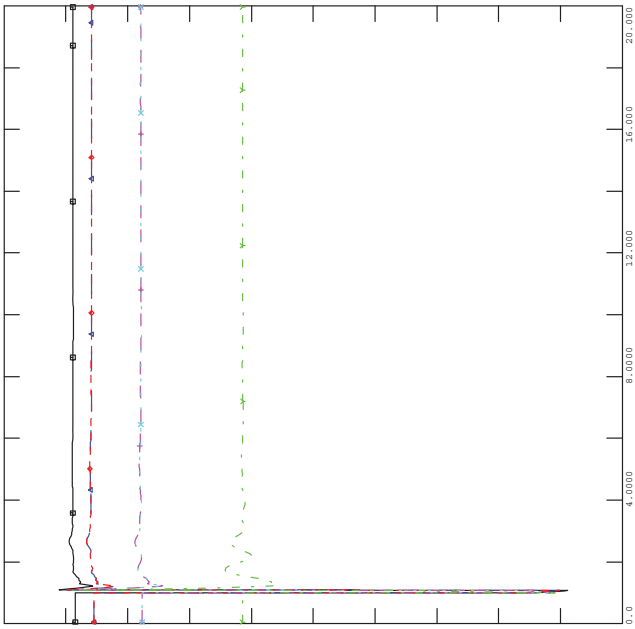
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.4036 0.48300
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2597 0.39330
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2590 0.39220
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1798 0.20010
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1803 0.20040
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2205 0.09440



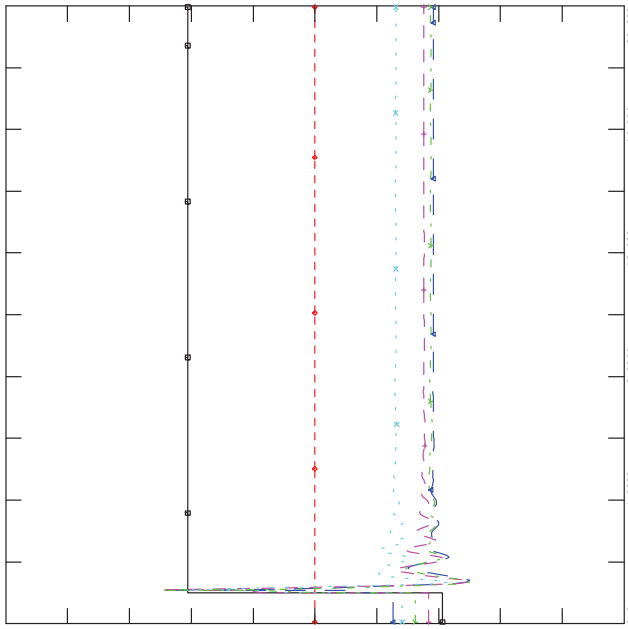
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P] 116.74 -71.23
CHNL# 762: [669L P] 66.563 -73.74
CHNL# 760: [668L P] 90.352 -128.8
CHNL# 758: [830L P] 40.000 -40.00
CHNL# 756: [1002L P] 387.81 -313.7
CHNL# 754: [945L P] 40.000 -96.03



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 773: [658L Q] 30.310 -119.9
CHNL# 771: [760L Q] 55.605 -180.9
CHNL# 769: [1011L Q] 807.04 -332.8
CHNL# 767: [892L Q] 39.326 -102.1

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L

FILE: Scn4_SL_02_945L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2597 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.63040 0.01840
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.51260 -0.0171
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.79660 0.07780
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 2.6387 1.4388

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_01_945L

FILE: Scn4_SL_01_945L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 772: [658L P] 44.954 -106.7
CHNL# 770: [760L P] 59.479 -108.0
CHNL# 768: [1011L P] 204.15 -204.9
CHNL# 766: [892L P] 73.626 -59.36

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L

FILE: Scn4_SL_02_945L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 97.242 -17.21
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 87.407 -26.95
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 100.74 -16.68
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 60.672 -42.67

TIME (SECONDS)

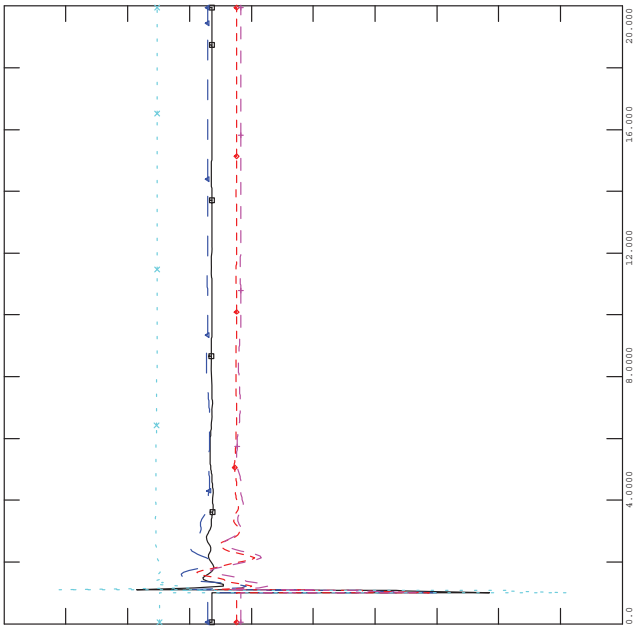
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L

FILE: Scn4_SL_02_945L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3131 0.18630
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1397 0.84030
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1400 0.81950
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1348 0.78600
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1364 0.67060



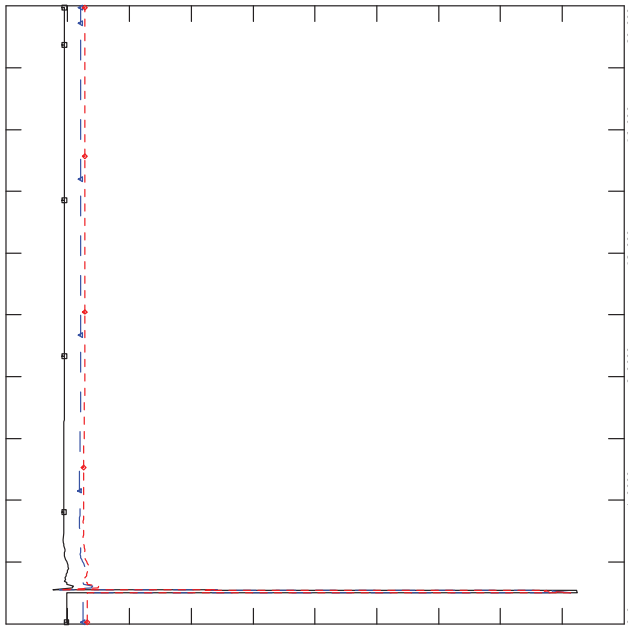
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L

FILE: Scn4_SL_02_945L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1947 0.04430
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1810 0.02810
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2195 -0.0922



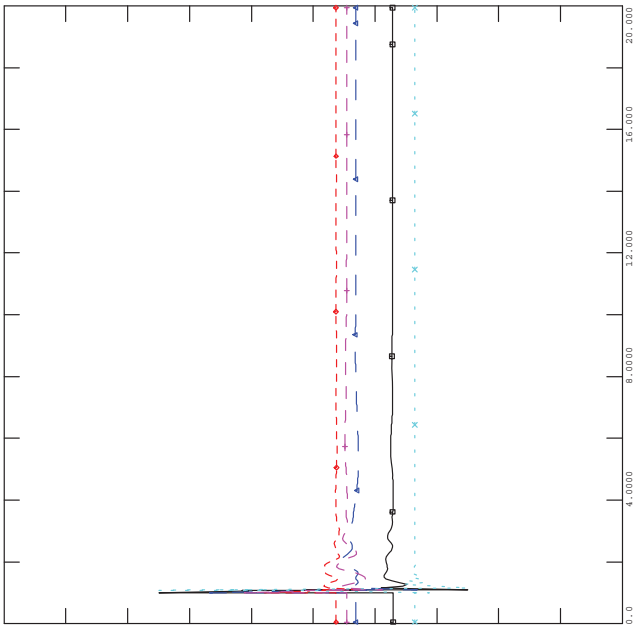
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L

FILE: Scn4_SL_02_945L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 2.5100 -1.091
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.78720 -0.4997
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.79260 -0.3963
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.93910 -0.5678
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.2506 -2.440



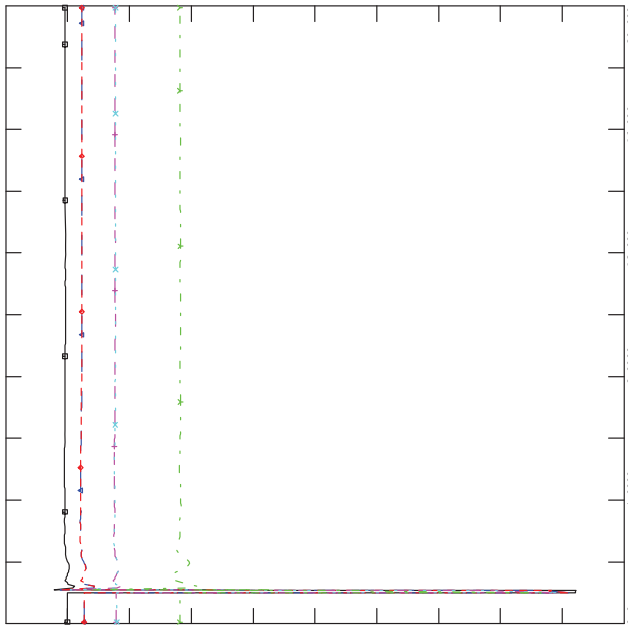
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L

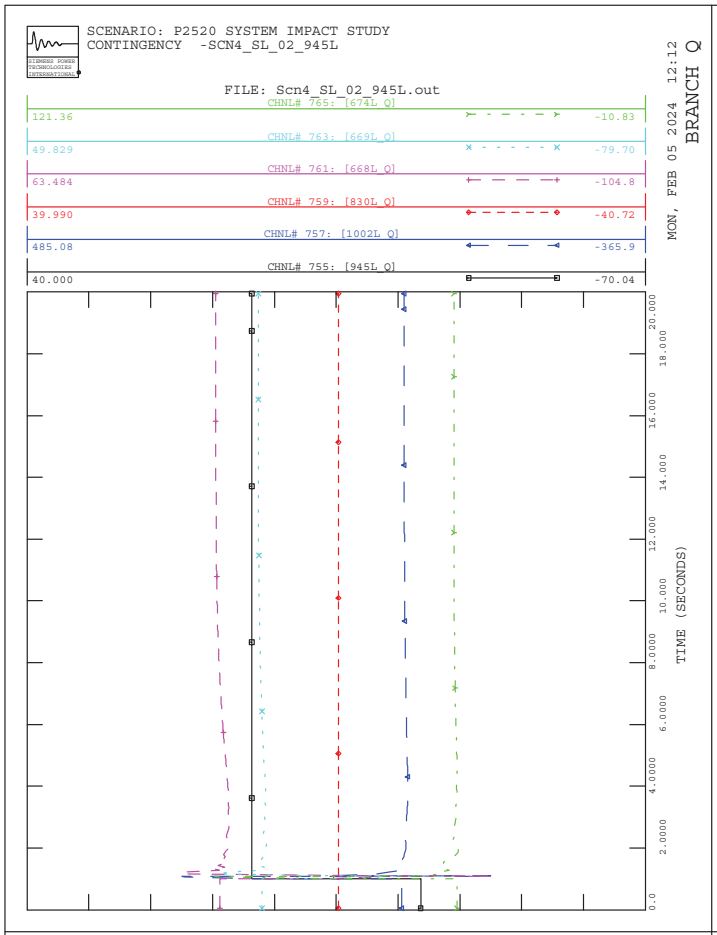
FILE: Scn4_SL_02_945L.out

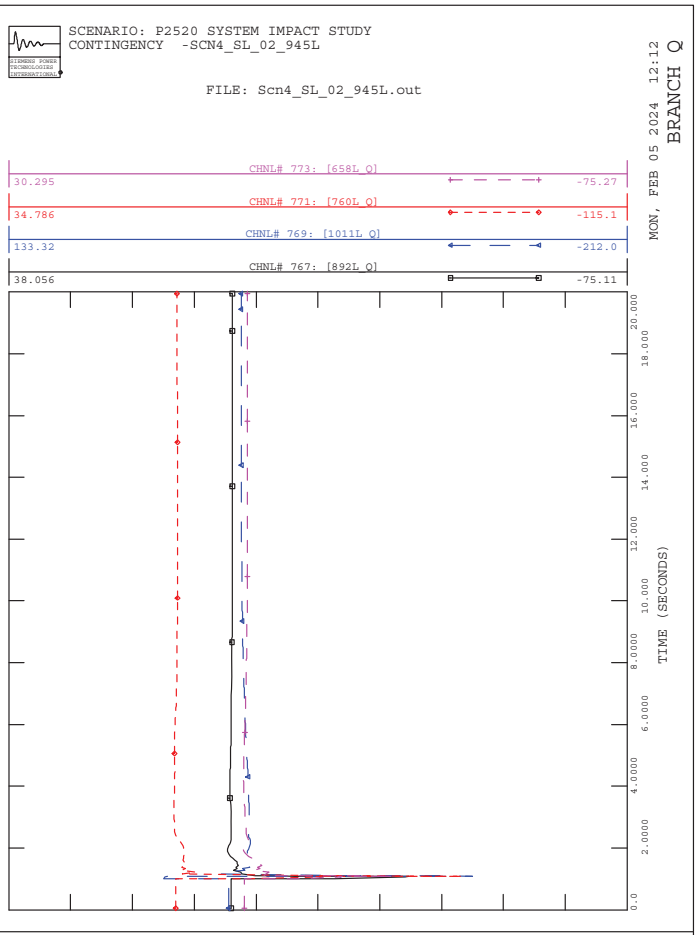
MON, FEB 05 2024 12:12

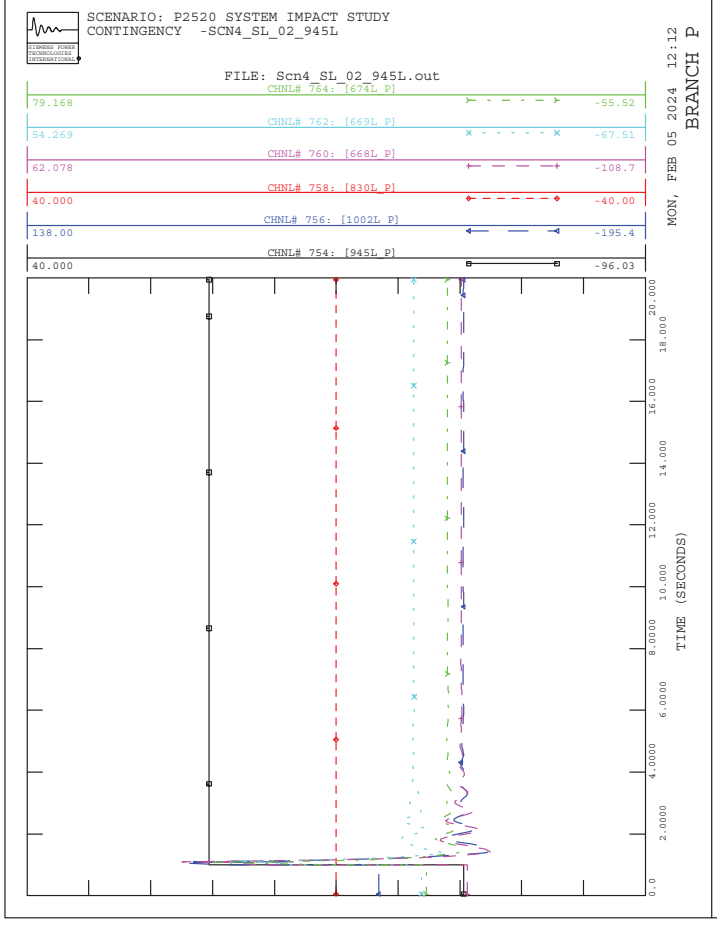
BUS VOLTAGE

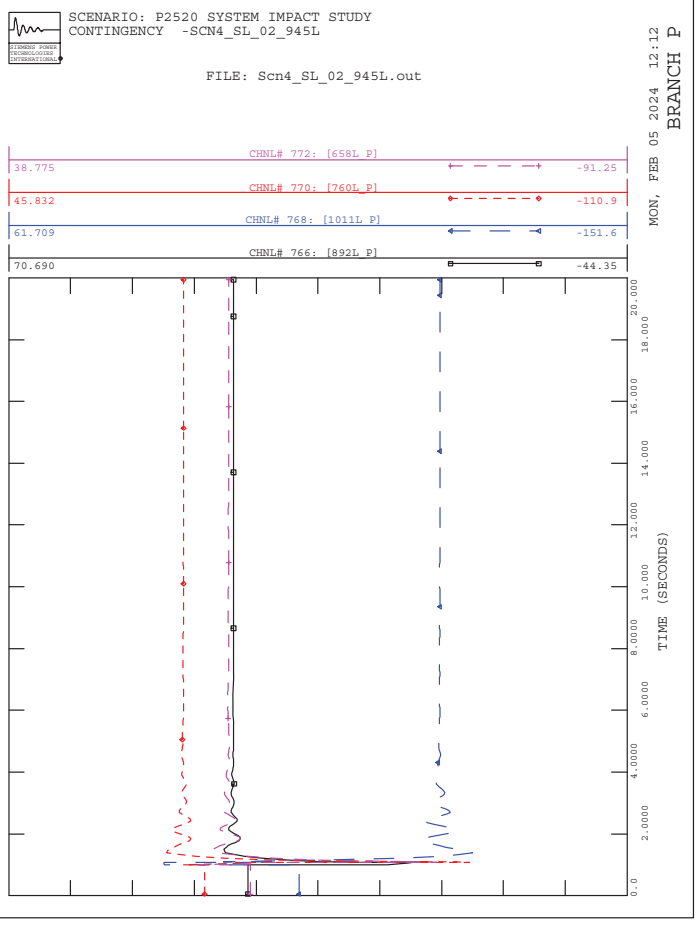
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2592 0.51290
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2378 0.27970
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2373 0.27770
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1820 0.03950
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1826 0.03940
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2180 -0.0601




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L
FILE: Scn4_SL_02_945L.out
CHNL# 765: [674L Q]
121.36
-10.83
CHNL# 763: [669L Q]
49.829
-79.70
CHNL# 761: [668L Q]
63.484
-104.8
CHNL# 759: [830L Q]
39.990
-40.72
CHNL# 757: [1002L Q]
485.08
-365.9
CHNL# 755: [945L Q]
40.000
-70.04
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L
FILE: Scn4_SL_02_945L.out
CHNL# 773: [658L Q]
30.295
-75.27
CHNL# 771: [760L Q]
34.786
-115.1
CHNL# 769: [1011L Q]
133.32
-212.0
CHNL# 767: [892L Q]
38.056
-75.11
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L
FILE: Scn4_SL_02_945L.out
CHNL# 764: [674L P]
79.168
-55.52
CHNL# 762: [669L P]
54.269
-67.51
CHNL# 760: [668L P]
62.078
-108.7
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
138.00
-195.4
CHNL# 754: [945L P]
40.000
-96.03
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_02_945L
FILE: Scn4_SL_02_945L.out
CHNL# 772: [658L P]
38.775
-91.25
CHNL# 770: [760L P]
45.832
-110.9
CHNL# 768: [1011L P]
61.709
-151.6
CHNL# 766: [892L P]
70.690
-44.35
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

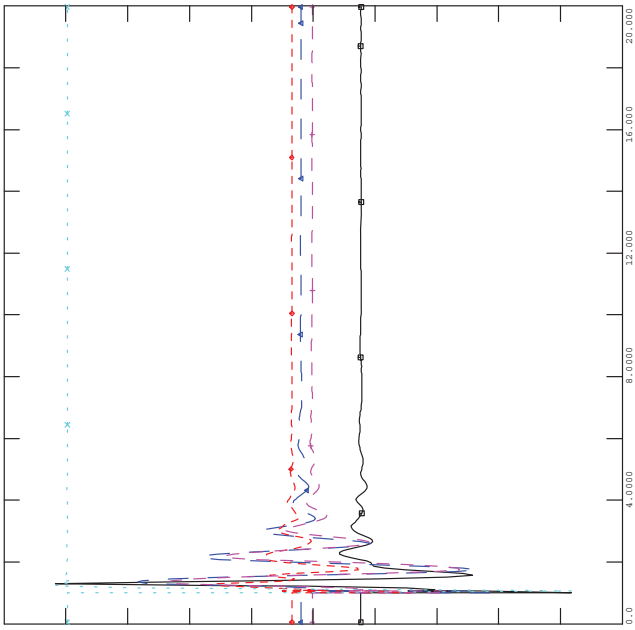
FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2501 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.69980 -0.0584
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.52430 -0.0588
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.90390 -0.0208
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 3.3107 0.90070

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

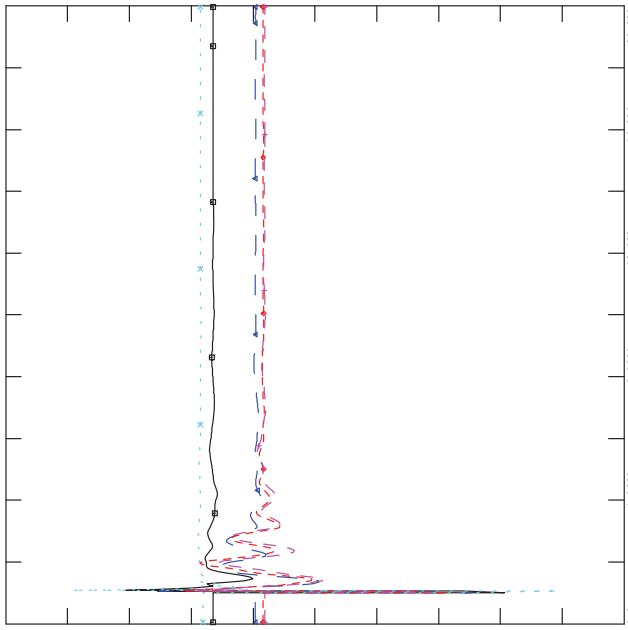
FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3317 0.38440
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1604 0.83700
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1654 0.81510
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1824 0.78020
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1533 0.63640

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

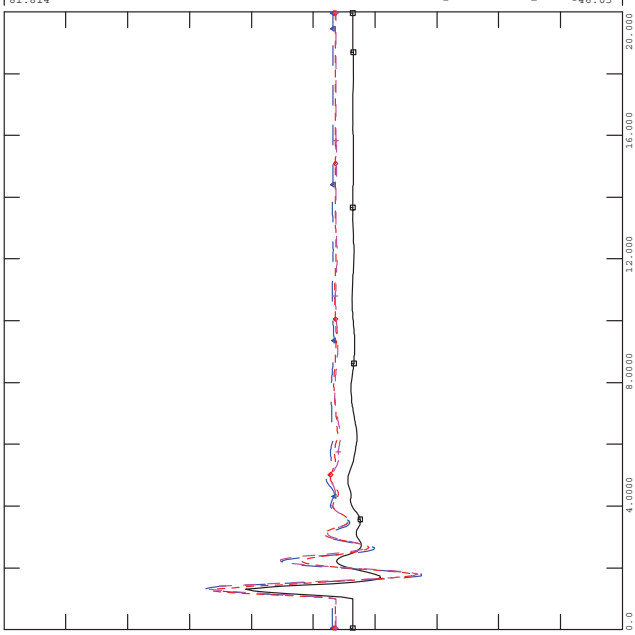
FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 119.90 -31.17
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 108.39 -39.96
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 123.97 -30.03
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 81.814 -46.05

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

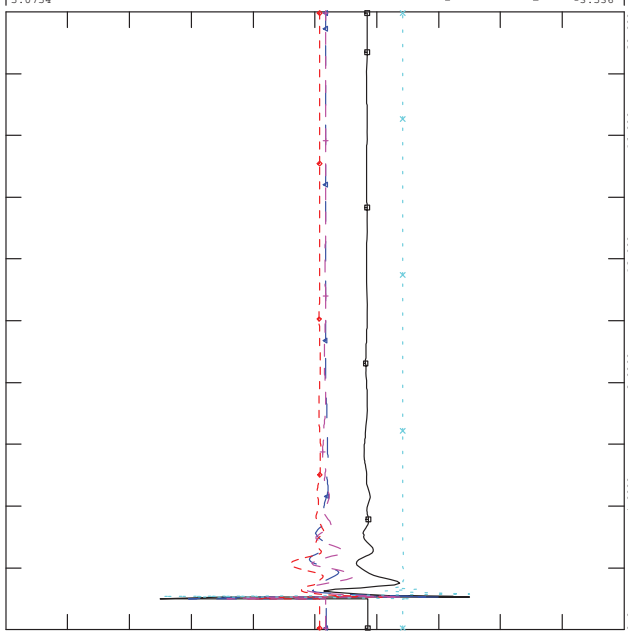
FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1] 2.0514 -0.9595
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.79830 -0.6018
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.80170 -0.4747
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.95950 -0.7354
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 5.0754 -3.536

TIME (SECONDS)



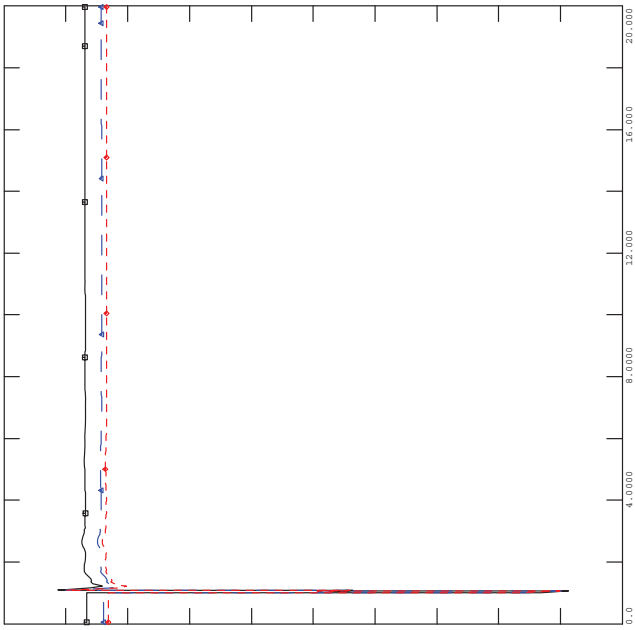
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418_138 138.00]]
1.2111 0.21950
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1983 0.19510
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2444 0.09800



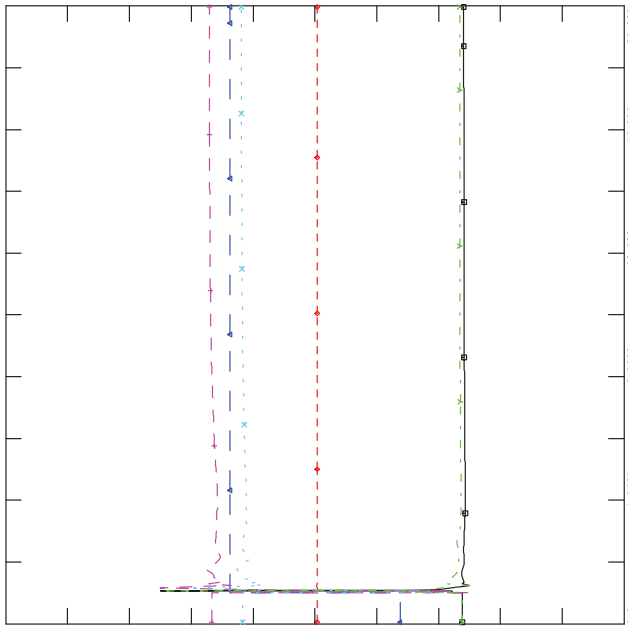
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q]
175.52 -22.53
CHNL# 763: [669L Q]
52.652 -83.31
CHNL# 761: [668L Q]
72.999 -113.4
CHNL# 759: [830L Q]
39.946 -40.75
CHNL# 757: [1002L Q]
40.000 -70.39
CHNL# 755: [945L Q]
1084.8 -425.1



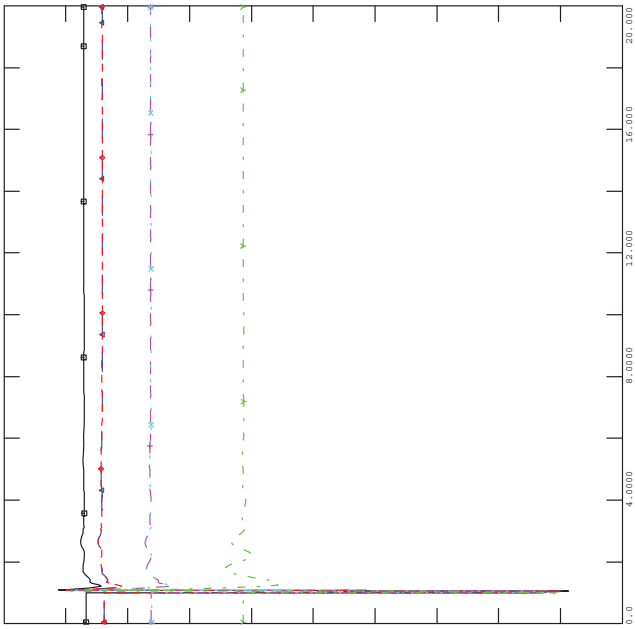
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.4052 0.48310
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2777 0.39200
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2770 0.39080
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1980 0.20620
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1986 0.20650
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2423 0.09870



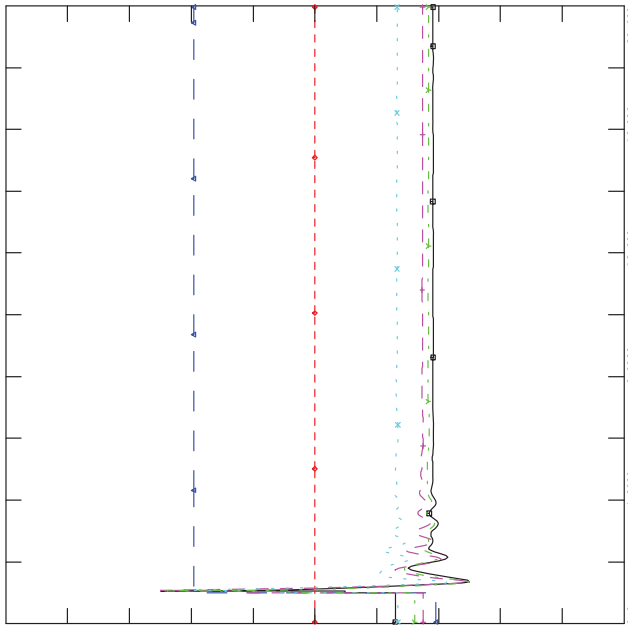
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P]
113.84 -70.06
CHNL# 762: [669L P]
65.002 -74.37
CHNL# 760: [668L P]
87.140 -130.1
CHNL# 758: [830L P]
40.000 -40.00
CHNL# 756: [1002L P]
40.000 -91.51
CHNL# 754: [945L P]
381.42 -313.3

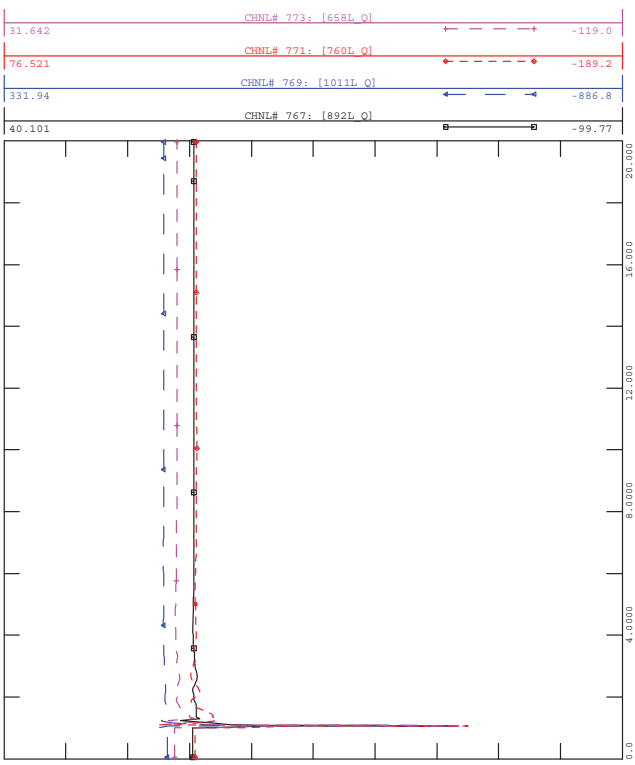


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

BRANCH Q

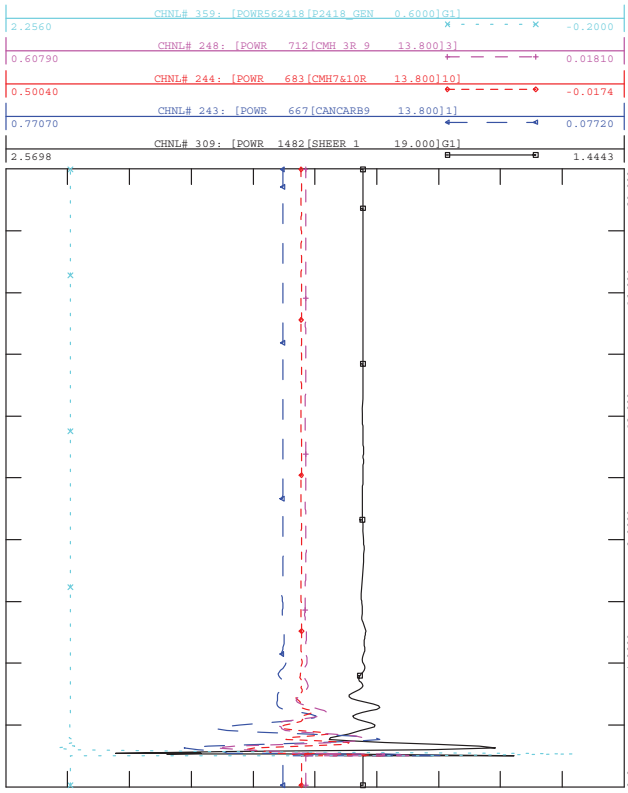


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L

FILE: Scn4_SL_04_1002L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

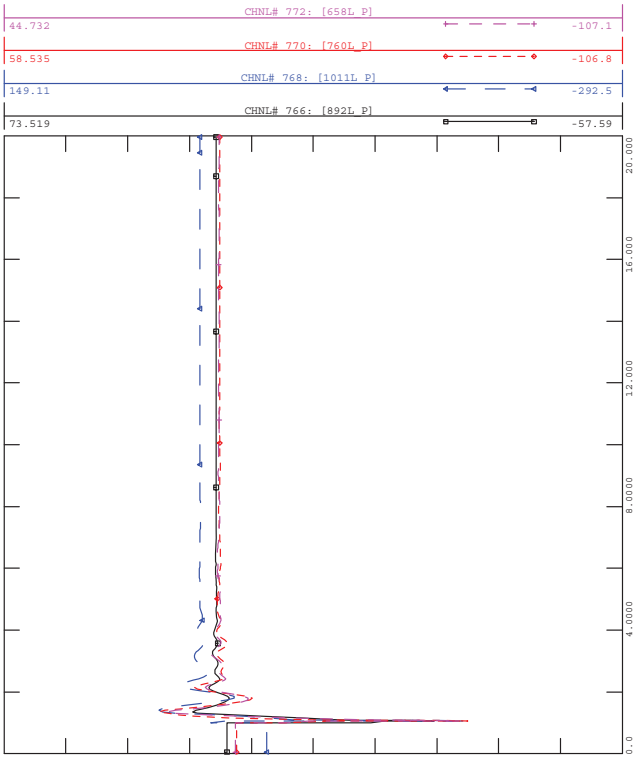


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_03_1002L

FILE: Scn4_SL_03_1002L.out

MON, FEB 05 2024 12:12

BRANCH P

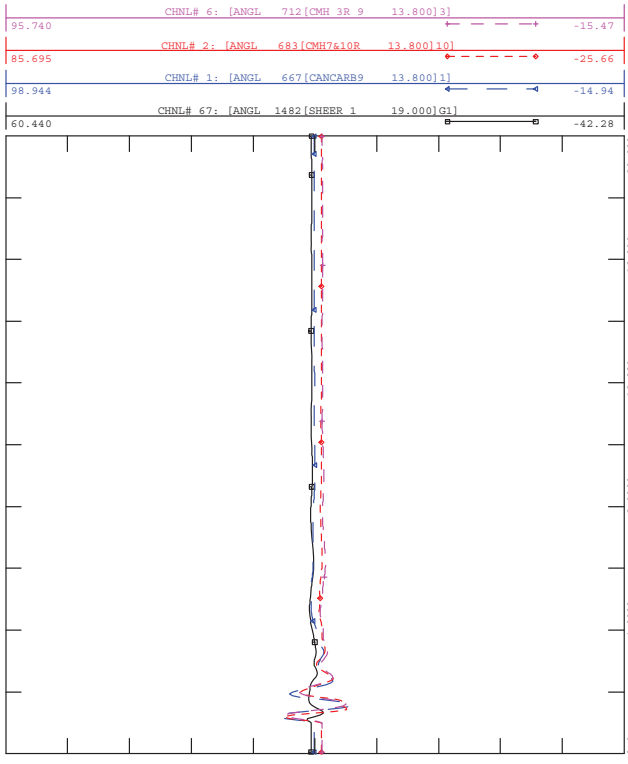


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L

FILE: Scn4_SL_04_1002L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L

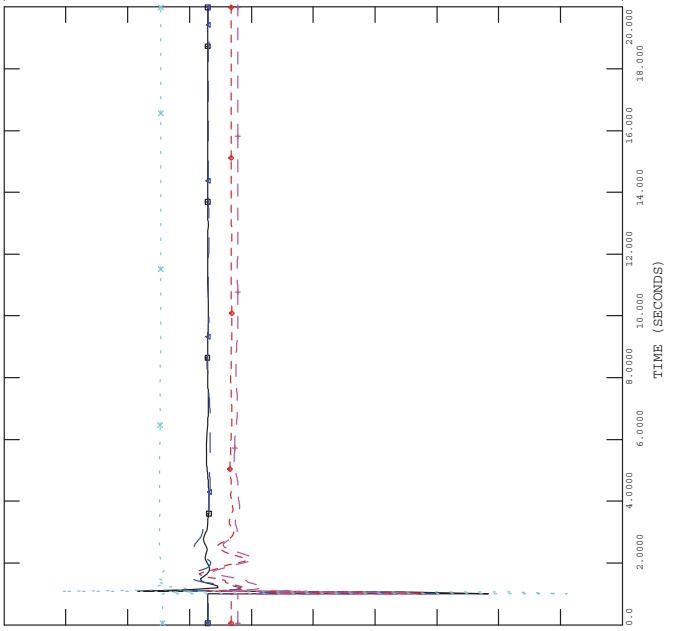
FILE: Scn4_SL_04_1002L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3157 0.20060
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1373 0.84030
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1359 0.81950
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1356 0.78600
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1321 0.67050

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L

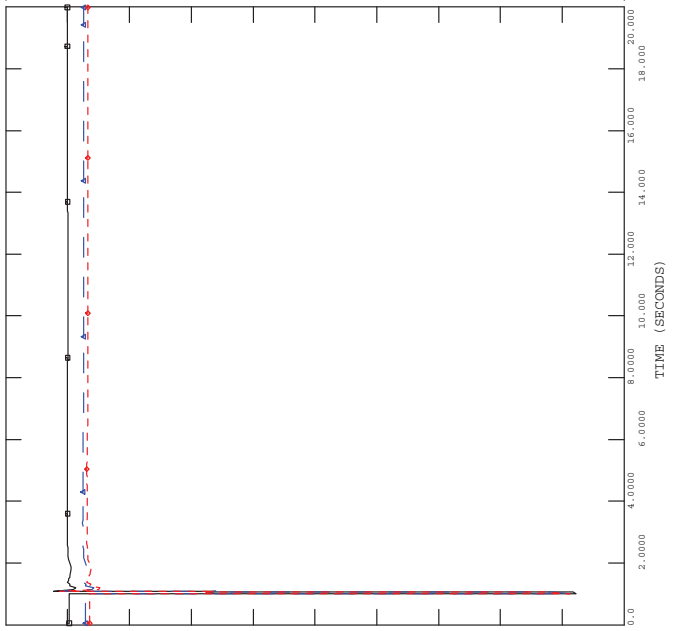
FILE: Scn4_SL_04_1002L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1989 0.05370
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1850 0.03720
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2234 -0.0665

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L

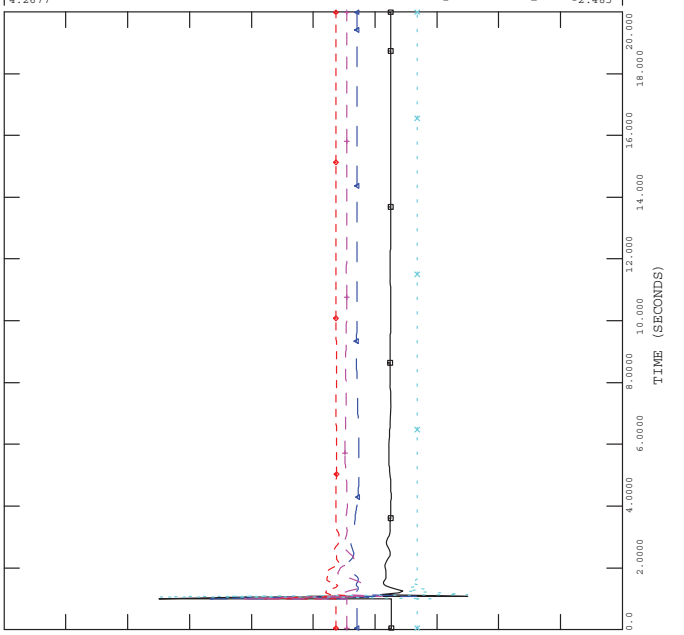
FILE: Scn4_SL_04_1002L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 2.5641 -1.098
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.78730 -0.5001
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.79270 -0.3965
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.93930 -0.5629
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.2677 -2.485

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L

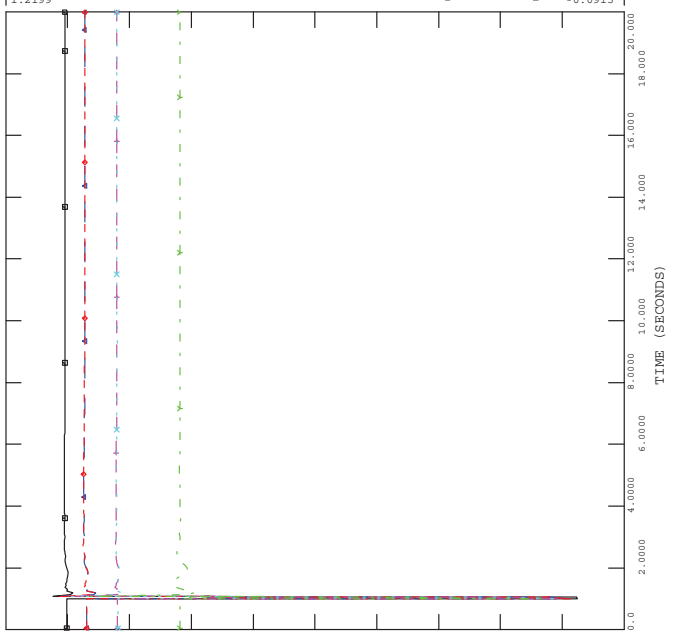
FILE: Scn4_SL_04_1002L.out

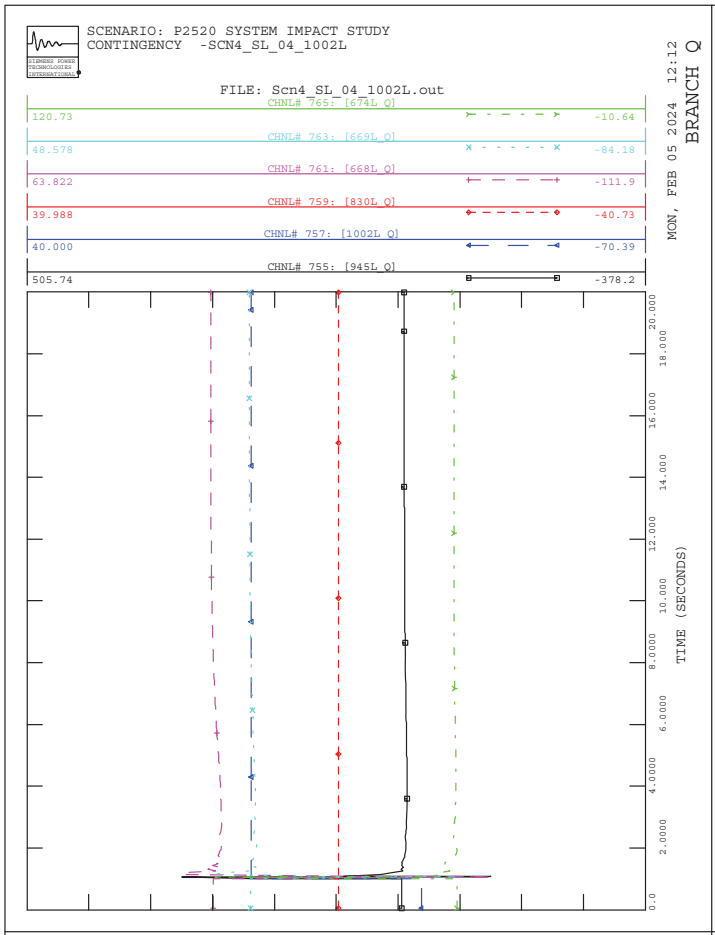
MON, FEB 05 2024 12:12

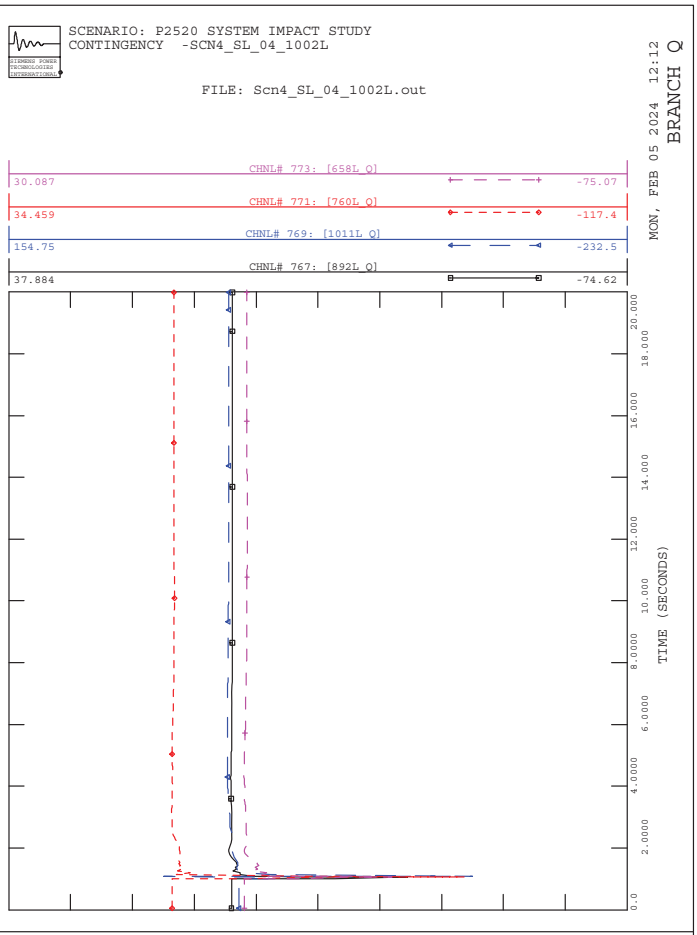
BUS VOLTAGE

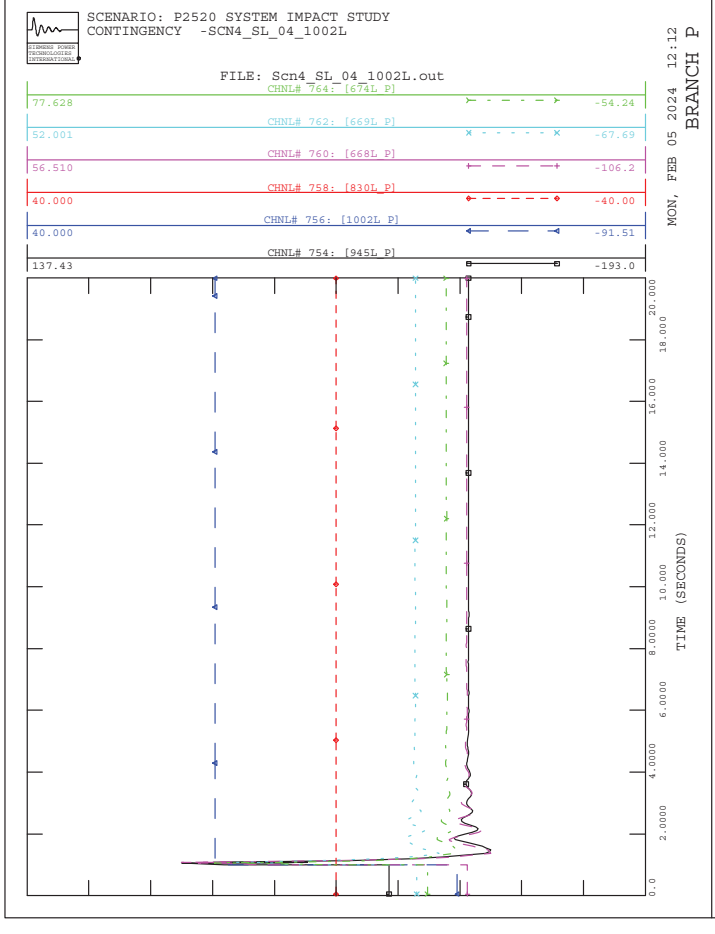
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2587 0.51270
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2390 0.28490
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2385 0.28290
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1861 0.04650
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1867 0.04710
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2199 -0.0915

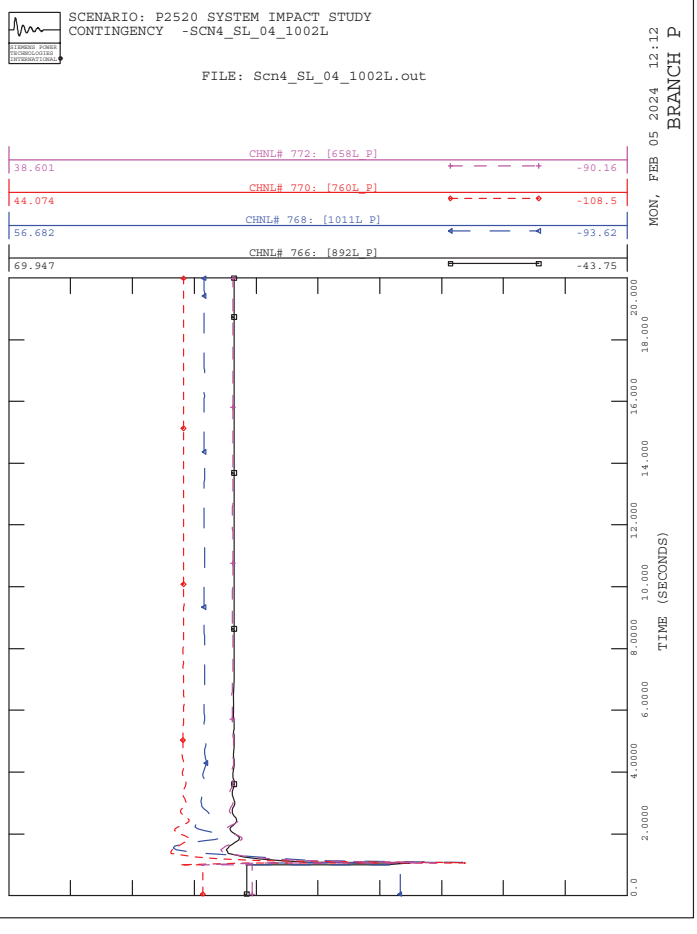
TIME (SECONDS)




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L
FILE: Scn4_SL_04_1002L.out
CHNL# 765: [674L Q]
120.73
-10.64
CHNL# 763: [669L Q]
48.578
-84.18
CHNL# 761: [668L Q]
63.822
-111.9
CHNL# 759: [830L Q]
39.988
-40.73
CHNL# 757: [1002L Q]
40.000
-70.39
CHNL# 755: [945L Q]
505.74
-378.2
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L
FILE: Scn4_SL_04_1002L.out
CHNL# 773: [658L Q]
30.087
-75.07
CHNL# 771: [760L Q]
34.459
-117.4
CHNL# 769: [1011L Q]
154.75
-232.5
CHNL# 767: [892L Q]
37.884
-74.62
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L
FILE: Scn4_SL_04_1002L.out
CHNL# 764: [674L P]
77.628
-54.24
CHNL# 762: [669L P]
52.001
-67.69
CHNL# 760: [668L P]
56.510
-106.2
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
40.000
-91.51
CHNL# 754: [945L P]
137.43
-193.0
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_04_1002L
FILE: Scn4_SL_04_1002L.out
CHNL# 772: [658L P]
38.601
-90.16
CHNL# 770: [760L P]
44.074
-108.5
CHNL# 768: [1011L P]
56.682
-93.62
CHNL# 766: [892L P]
69.947
-43.75
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2651 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.65810 0.01820
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.52550 -0.0173
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.82600 0.07740
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 2.7589 1.3922

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3712 0.16930
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1424 0.83990
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1445 0.81910
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1387 0.78550
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1455 0.66980

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 98.907 -19.81
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 89.378 -28.45
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 102.84 -18.97
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 60.945 -43.22

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1] 2.7708 -1.202
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.78800 -0.5051
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.79310 -0.4024
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.94040 -0.5852
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.3234 -2.631

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

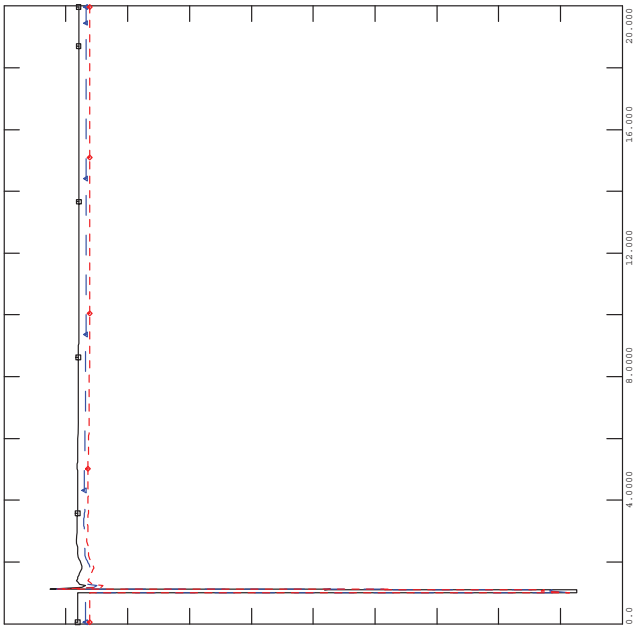
FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418_138 138.00]] 1.2057 0.03160
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1919 0.01840
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2518 -0.0997

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

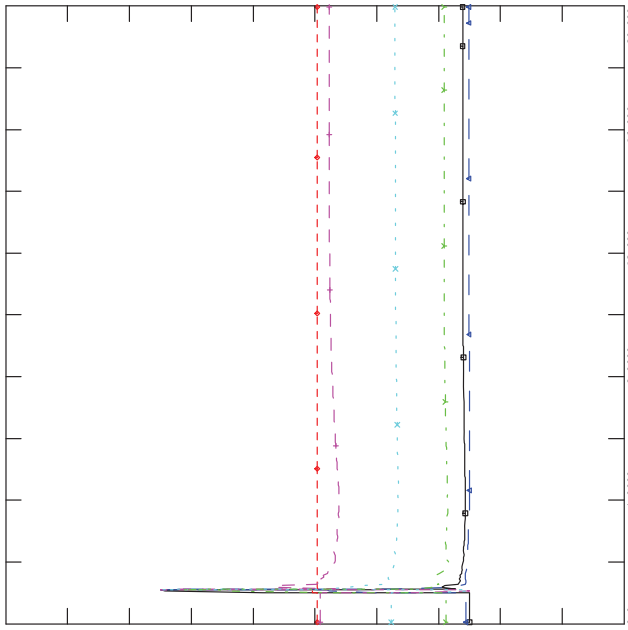
FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 130.10 -11.42
CHNL# 763: [669L Q] 116.91 -69.59
CHNL# 761: [668L Q] 99.737 -74.83
CHNL# 759: [830L Q] 39.991 -40.74
CHNL# 757: [1002L Q] 989.87 -381.4
CHNL# 755: [945L Q] 489.30 -203.2

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

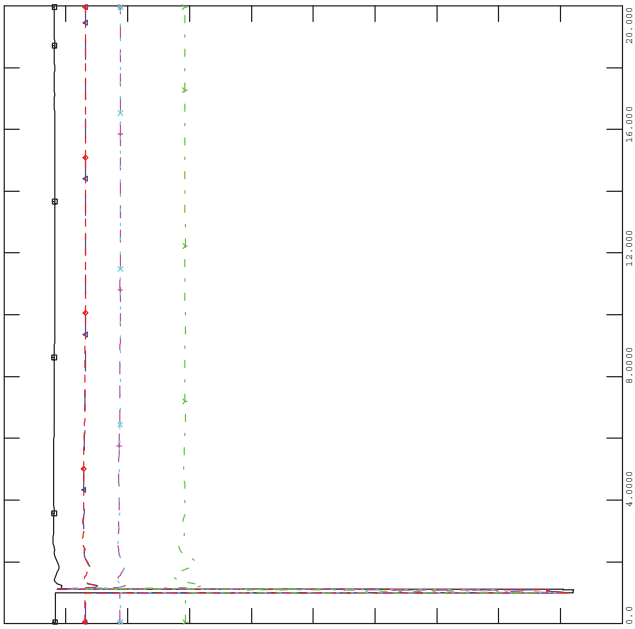
FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2715 0.51120
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2496 0.27350
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2490 0.27140
CHNL# 741: [VOLT 267 [DOME_EM7 138.00]] 1.1892 0.02940
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1904 0.02900
CHNL# 739: [VOLT 262 [DOME_EM4 240.00]] 1.1952 -0.0683

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

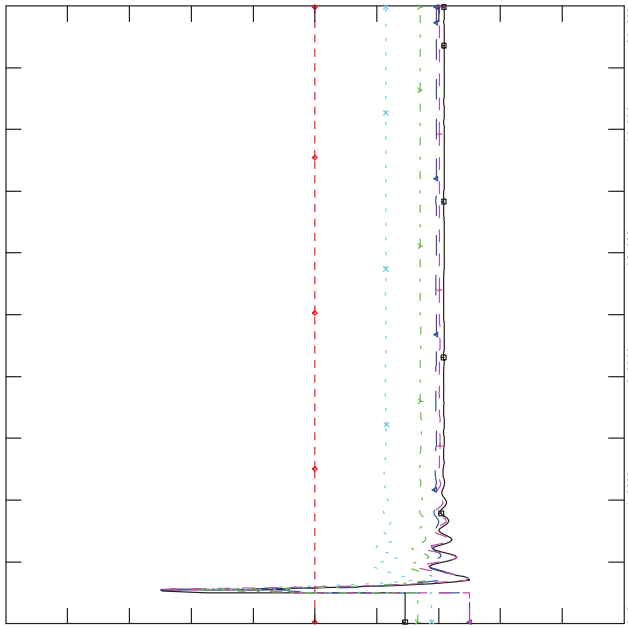
FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P] 78.592 -51.08
CHNL# 762: [669L P] 65.123 -63.40
CHNL# 760: [668L P] 90.729 -109.5
CHNL# 758: [830L_P] 40.000 -40.00
CHNL# 756: [1002L P] 218.27 -141.4
CHNL# 754: [945L P] 133.17 -159.8

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 773: [658L Q] 30.632 -94.21
CHNL# 771: [760L Q] 35.366 -121.4
CHNL# 769: [1011L Q] 50.600 -40.00
CHNL# 767: [892L Q] 38.232 -77.77

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L

FILE: Scn4_SL_06_1011L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2648 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.65960 0.01770
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.52590 -0.0176
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.82680 0.07660
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 2.7504 1.3871

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_05_1011L

FILE: Scn4_SL_05_1011L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 772: [658L P] 38.986 -89.48
CHNL# 770: [760L P] 41.578 -111.4
CHNL# 768: [1011L P] 40.000 -78.43
CHNL# 766: [892L P] 68.239 -44.80

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L

FILE: Scn4_SL_06_1011L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 98.952 -19.97
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 89.443 -28.50
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 102.90 -19.04
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 60.964 -43.27

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L

FILE: Scn4_SL_06_1011L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.3960 0.18050
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1427 0.83980
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1448 0.81890
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1389 0.78530
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1501 0.66950

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L

FILE: Scn4_SL_06_1011L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2222 0.03960
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.2083 0.02630
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2686 -0.0752

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L

FILE: Scn4_SL_06_1011L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 2.9672 -1.258
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.78830 -0.5134
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.79330 -0.4088
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.94080 -0.6004
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 4.3845 -2.802

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L

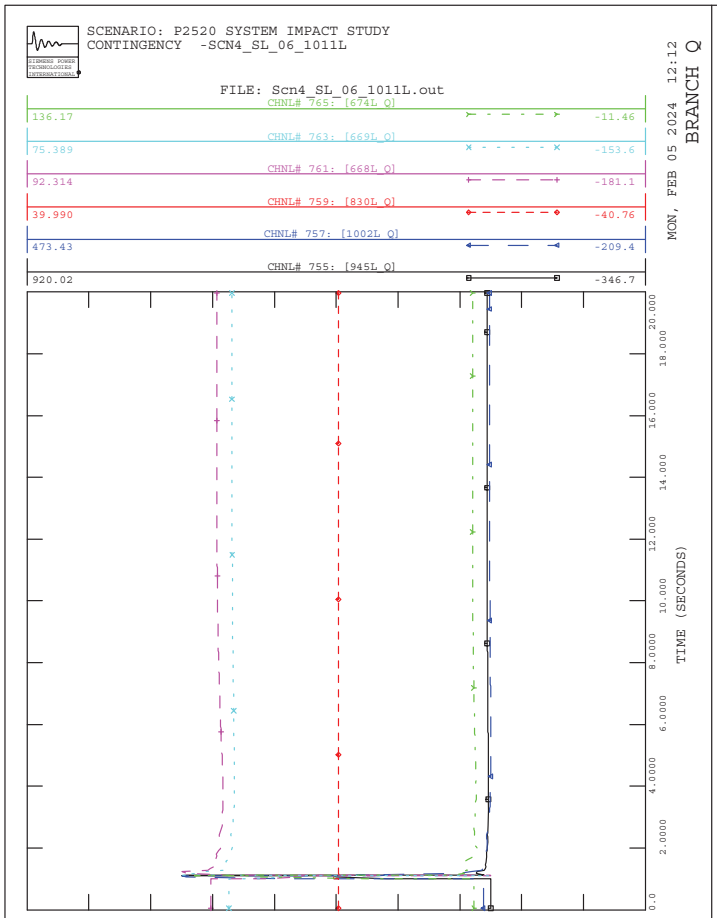
FILE: Scn4_SL_06_1011L.out

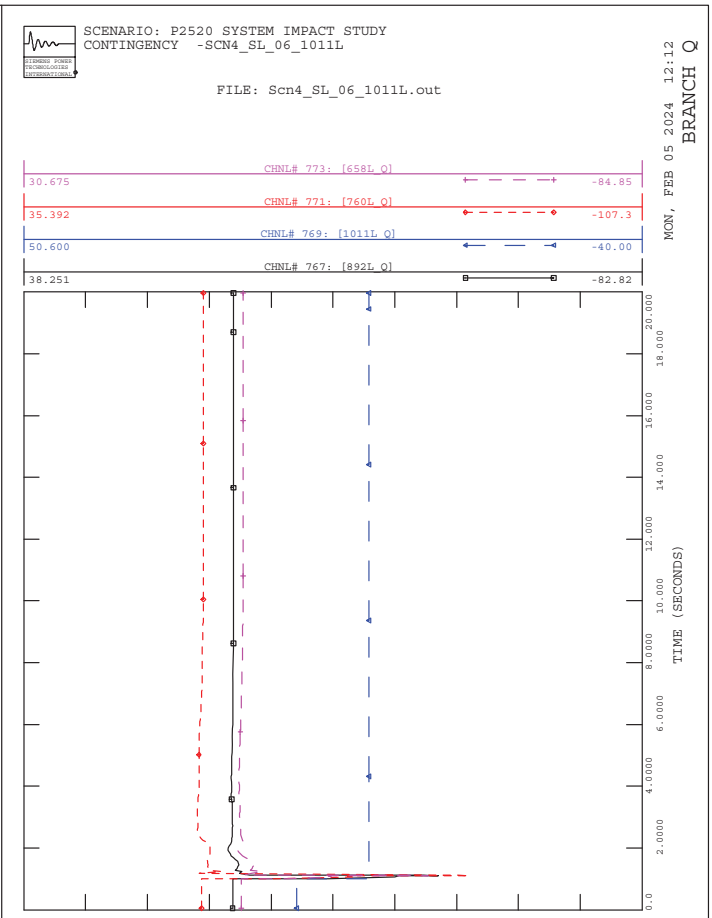
MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2853 0.51060
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2637 0.27770
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2632 0.27570
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2058 0.03510
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2067 0.03540
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2087 -0.0996

TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L
FILE: Scn4_SL_06_1011L.out
CHNL# 765: [674L Q]
136.17
-11.46
CHNL# 763: [669L Q]
75.389
-153.6
CHNL# 761: [668L Q]
92.314
-181.1
CHNL# 759: [830L Q]
39.990
-40.76
CHNL# 757: [1002L Q]
473.43
-209.4
CHNL# 755: [945L Q]
920.02
-346.7
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L
FILE: Scn4_SL_06_1011L.out
CHNL# 773: [658L Q]
30.675
-84.85
CHNL# 771: [760L Q]
35.392
-107.3
CHNL# 769: [1011L Q]
50.600
-40.00
CHNL# 767: [892L Q]
38.251
-82.82
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
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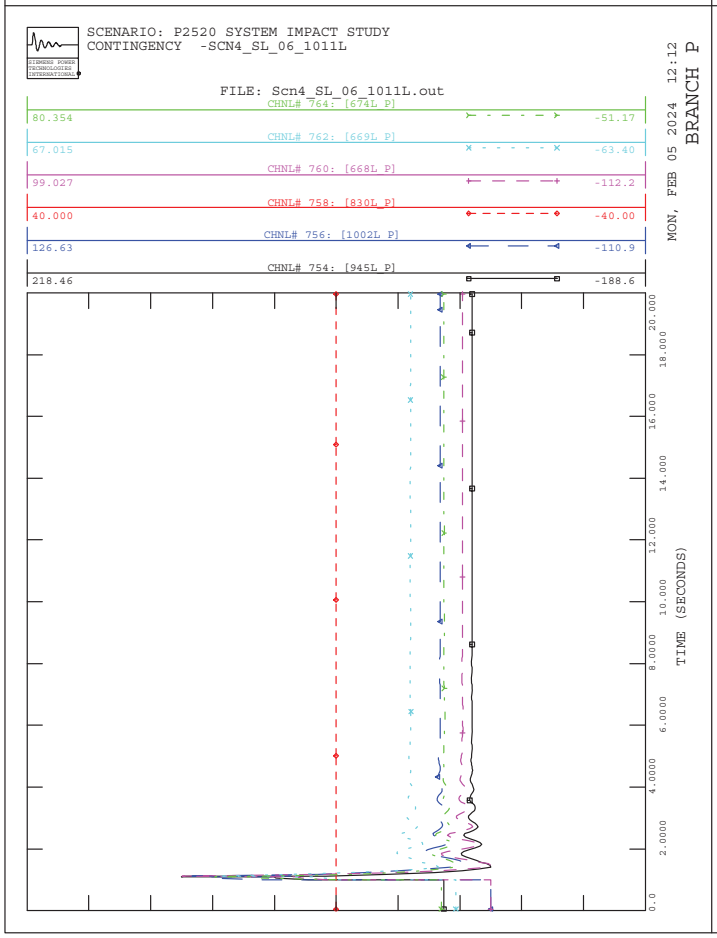
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L
FILE: Scn4_SL_06_1011L.out
CHNL# 764: [674L P]
80.354
-51.17
CHNL# 762: [669L P]
67.015
-63.40
CHNL# 760: [668L P]
99.027
-112.2
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
126.63
-110.9
CHNL# 754: [945L P]
218.46
-188.6
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
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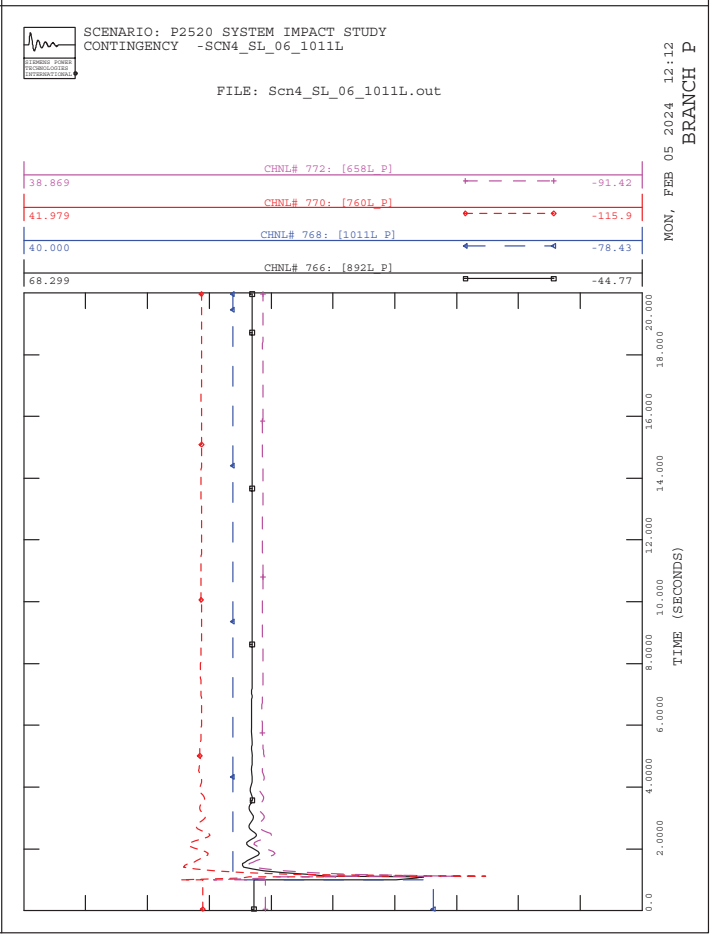
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_06_1011L
FILE: Scn4_SL_06_1011L.out
CHNL# 772: [658L P]
38.869
-91.42
CHNL# 770: [760L P]
41.979
-115.9
CHNL# 768: [1011L P]
40.000
-78.43
CHNL# 766: [892L P]
68.299
-44.77
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
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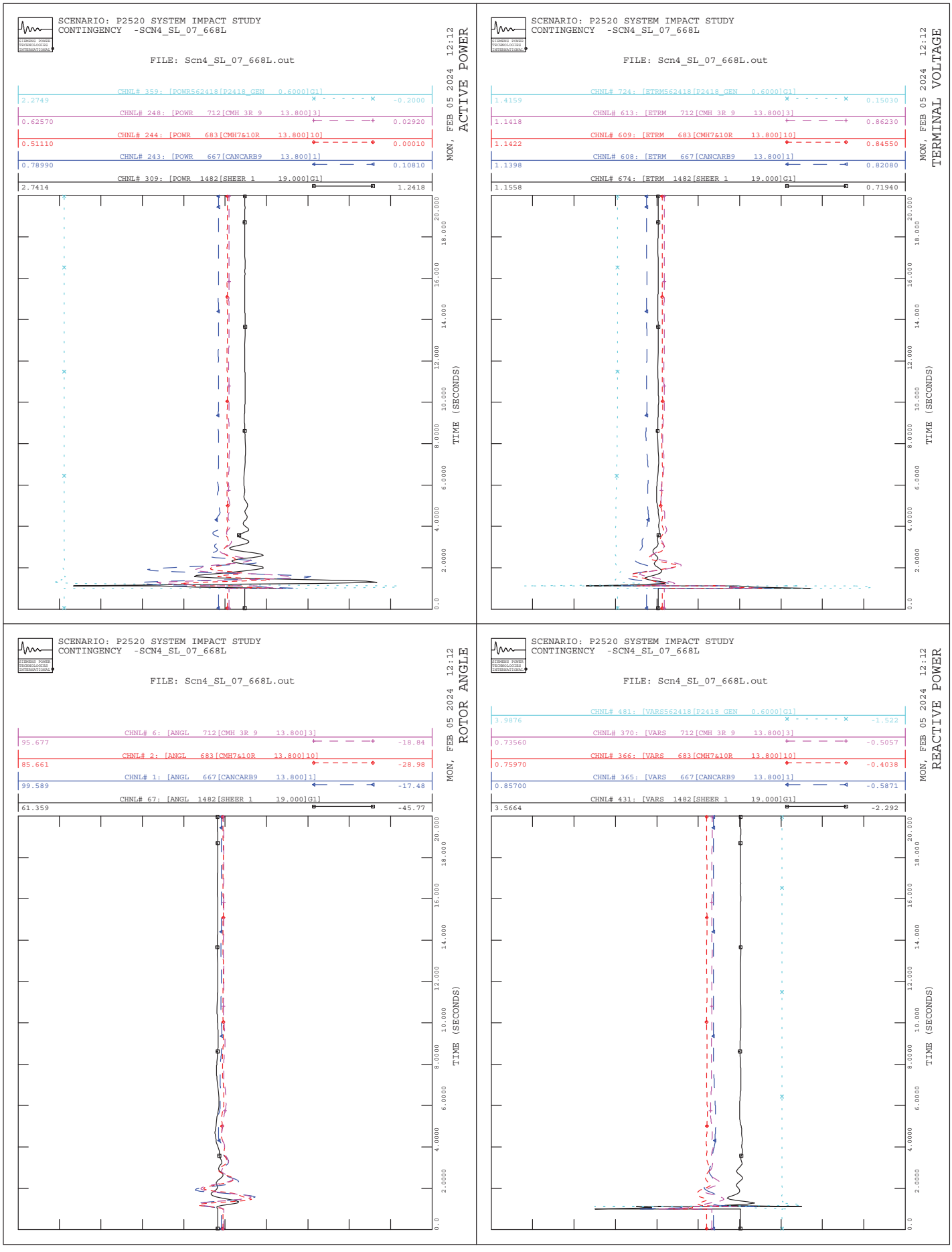
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L
FILE: Scn4_SL_07_668L.out
MON, FEB 05 2024 12:12
ACTIVE POWER
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.2749
-0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.62570
0.02920
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.51110
0.00010
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
0.78990
0.10810
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
2.7414
1.2418
TIME (SECONDS)
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L
FILE: Scn4_SL_07_668L.out
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.4159
0.15030
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1418
0.86230
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1422
0.84550
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1398
0.82080
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.1558
0.71940
TIME (SECONDS)
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L
FILE: Scn4_SL_07_668L.out
MON, FEB 05 2024 12:12
ROTOR ANGLE
CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
95.677
-18.84
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
85.661
-28.98
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
99.589
-17.48
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
61.359
-45.77
TIME (SECONDS)
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L
FILE: Scn4_SL_07_668L.out
MON, FEB 05 2024 12:12
REACTIVE POWER
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
3.9876
-1.522
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.73560
-0.5057
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.75970
-0.4038
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.85700
-0.5871
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
3.5664
-2.292
TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L

FILE: Scn4_SL_07_668L.out

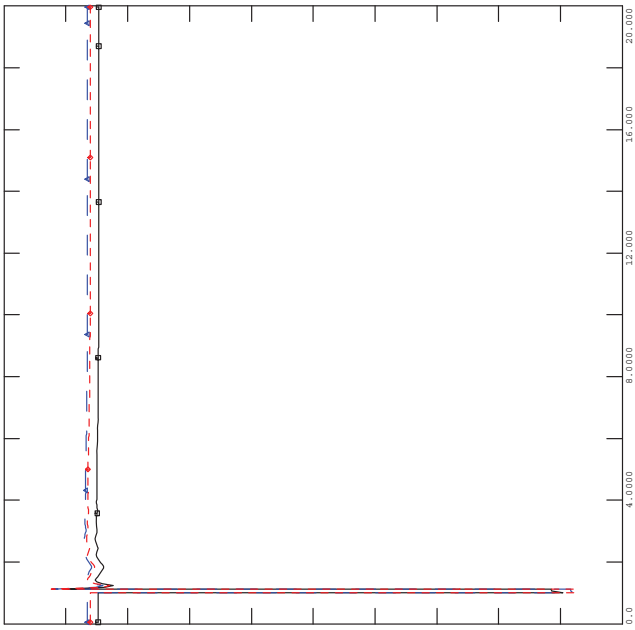
MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418_138 138.00]]
1.2252 -0.0790

CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.2050 -0.0430

CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2485 0.21430



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L

FILE: Scn4_SL_07_668L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q]
138.98 -11.93

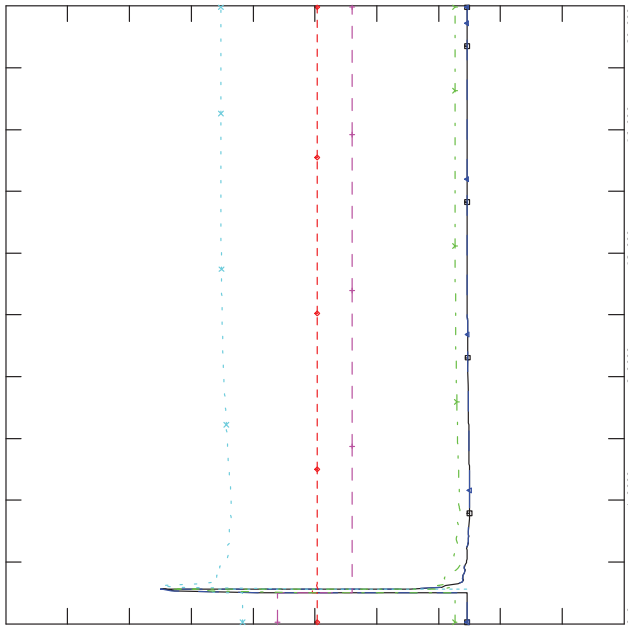
CHNL# 763: [669L Q]
127.33 -203.8

CHNL# 761: [668L Q]
50.975 -40.00

CHNL# 759: [830L Q]
39.998 -40.75

CHNL# 757: [1002L Q]
482.75 -205.0

CHNL# 755: [945L Q]
523.52 -218.4



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L

FILE: Scn4_SL_07_668L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.2792 0.62590

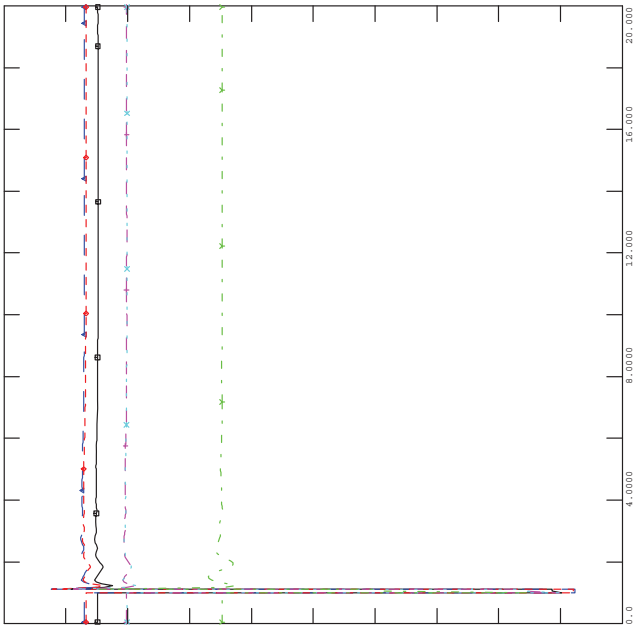
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2599 0.28490

CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2594 0.28230

CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2069 -0.0741

CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2076 -0.0990

CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2457 0.22330



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L

FILE: Scn4_SL_07_668L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P]
93.058 -51.53

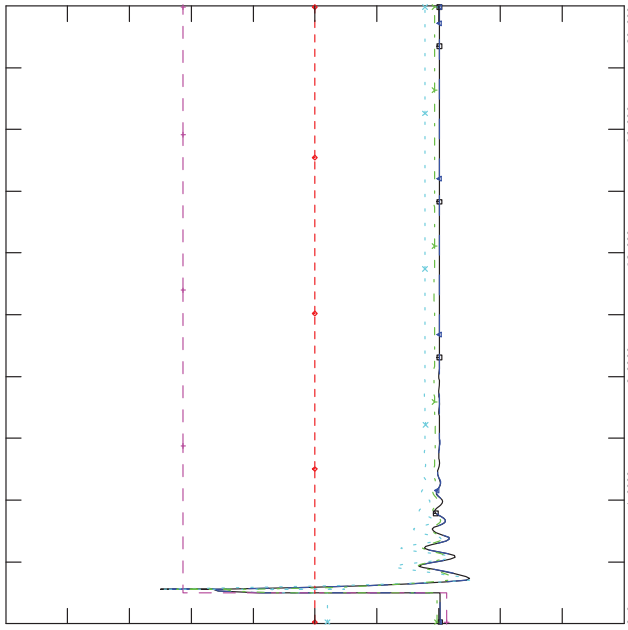
CHNL# 762: [669L P]
149.65 -182.9

CHNL# 760: [668L P]
40.000 -99.41

CHNL# 758: [830L P]
40.000 -40.00

CHNL# 756: [1002L P]
141.79 -133.6

CHNL# 754: [945L P]
148.84 -142.7



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L

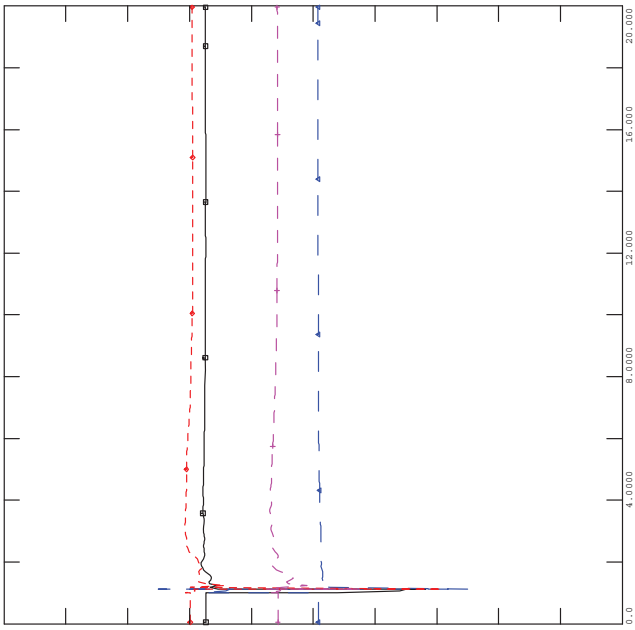
FILE: Scn4_SL_07_668L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 773: [658L Q] 31.983 -62.73
CHNL# 771: [760L Q] 35.570 -101.2
CHNL# 769: [1011L Q] 265.36 -236.1
CHNL# 767: [892L Q] 38.347 -87.23

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L

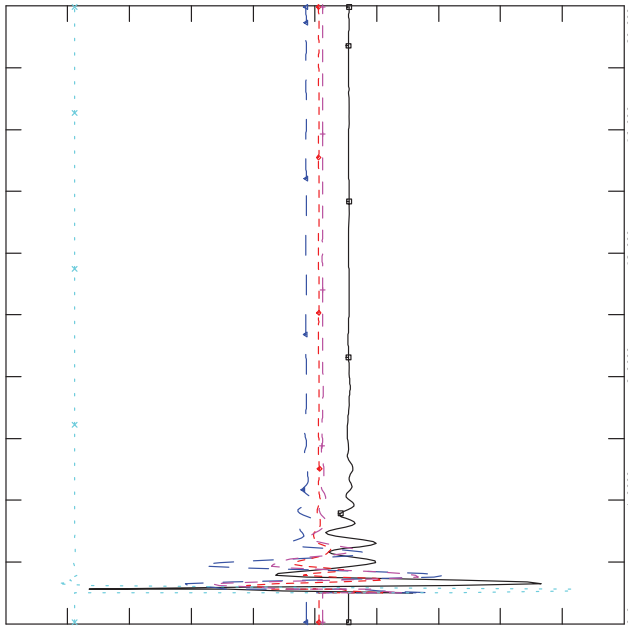
FILE: Scn4_SL_08_668L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2756 -0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.62970 0.02900
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.51280 -0.0006
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.79410 0.10610
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 2.7468 1.2561

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_07_668L

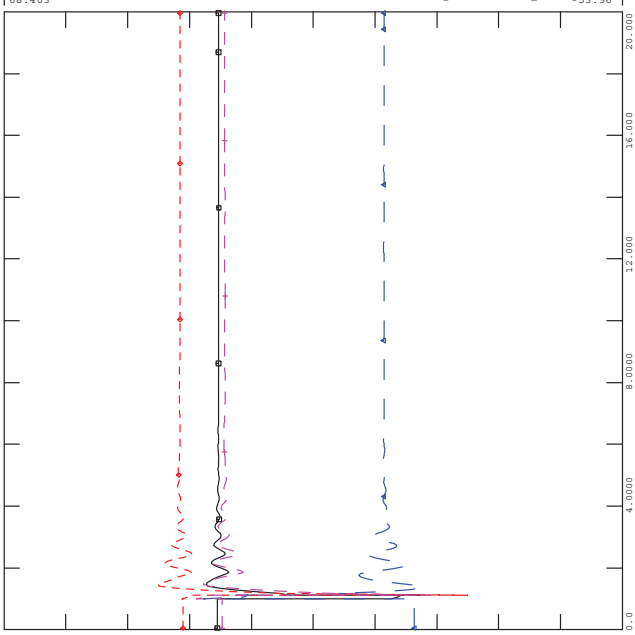
FILE: Scn4_SL_07_668L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 772: [658L P] 33.257 -95.34
CHNL# 770: [760L P] 49.156 -133.4
CHNL# 768: [1011L P] 43.762 -80.17
CHNL# 766: [892L P] 68.403 -53.96

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L

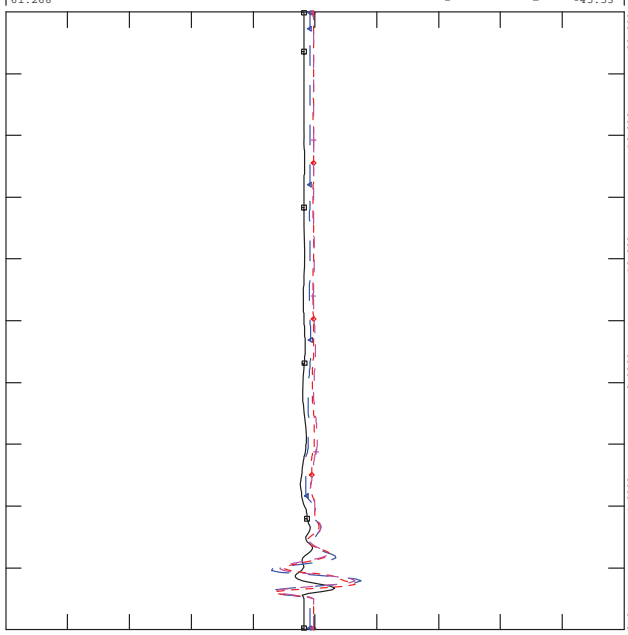
FILE: Scn4_SL_08_668L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 96.086 -18.94
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 86.057 -28.89
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 100.00 -17.67
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 61.268 -45.53

TIME (SECONDS)



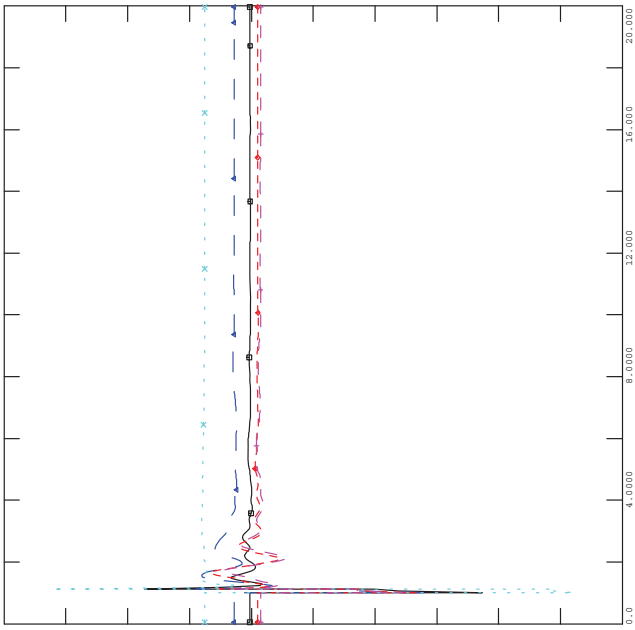
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L

FILE: Scn4_SL_08_668L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.4537 0.14850
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1419 0.86010
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1425 0.84290
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1400 0.81740
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1552 0.71480



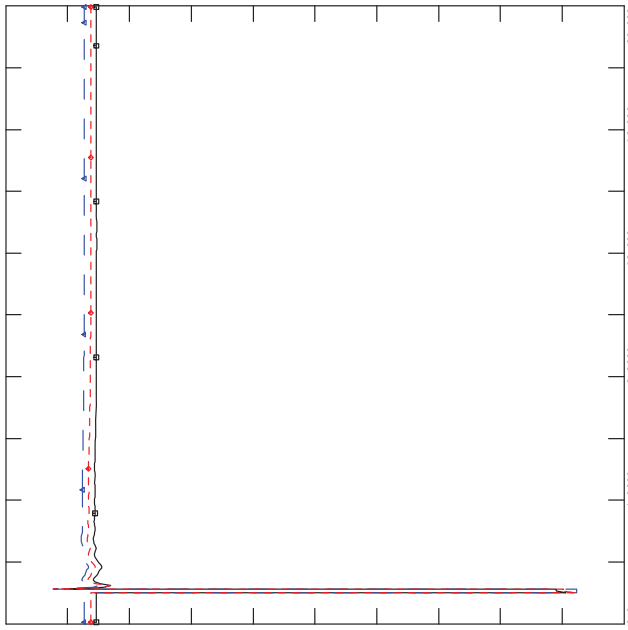
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L

FILE: Scn4_SL_08_668L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2234 -0.0864
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.2014 -0.0988
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2453 0.18930



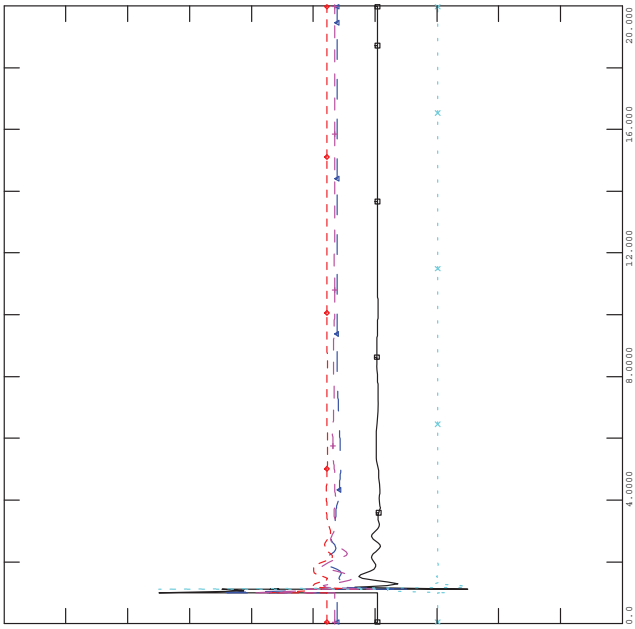
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L

FILE: Scn4_SL_08_668L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 3.9962 -1.533
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.74080 -0.5068
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.76310 -0.4039
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.86550 -0.5893
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 3.6422 -2.325



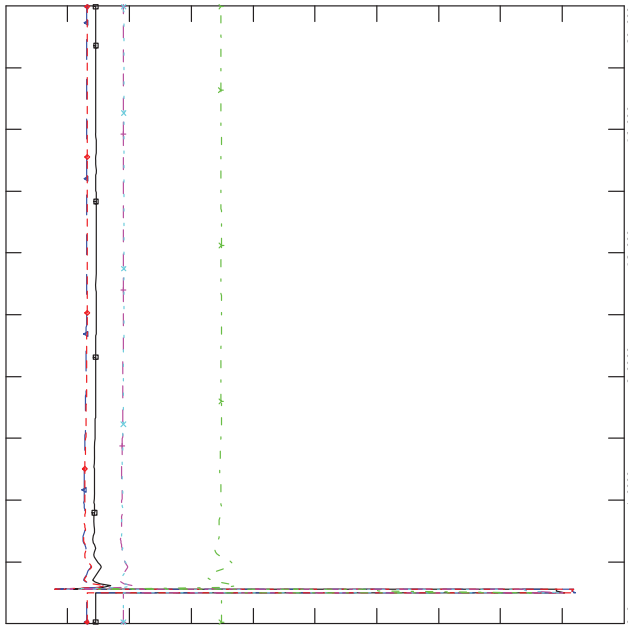
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L

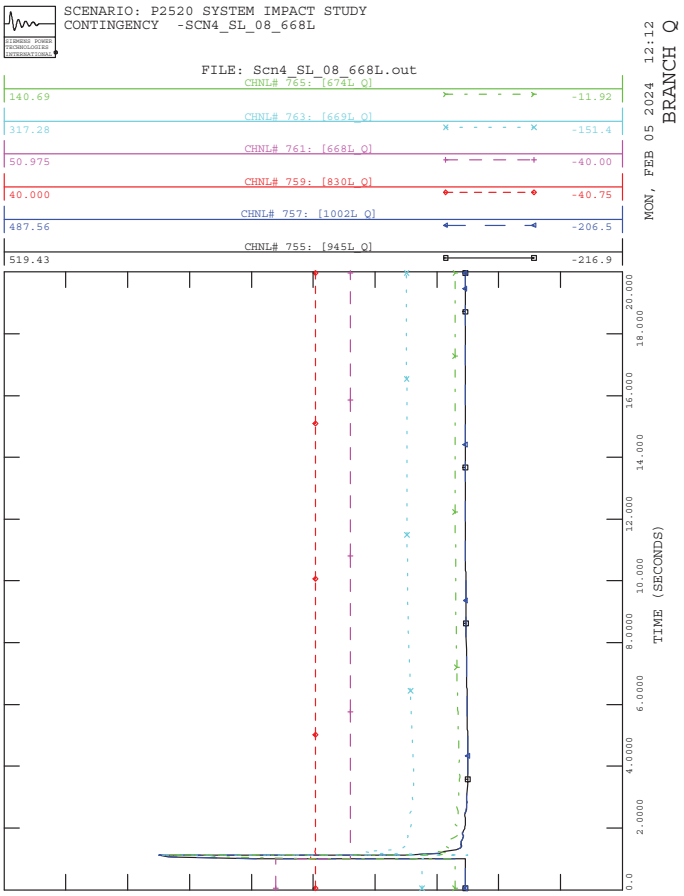
FILE: Scn4_SL_08_668L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2810 0.61460
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2584 0.24890
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2579 0.24610
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2029 -0.0575
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2035 -0.0666
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2425 0.20040




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L
FILE: Scn4_SL_08_668L.out
CHNL# 765: [674L Q]
140.69
-11.92
CHNL# 763: [669L Q]
317.28
-151.4
CHNL# 761: [668L Q]
50.975
-40.00
CHNL# 759: [830L Q]
40.000
-40.75
CHNL# 757: [1002L Q]
487.56
-206.5
CHNL# 755: [945L Q]
519.43
-216.9
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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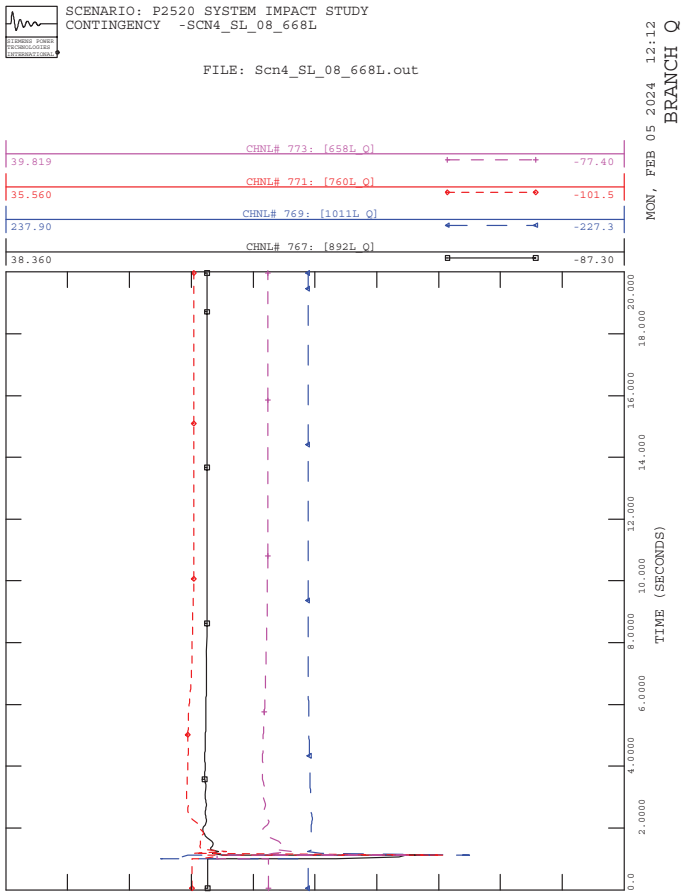
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L
FILE: Scn4_SL_08_668L.out
CHNL# 773: [658L Q]
39.819
-77.40
CHNL# 771: [760L Q]
35.560
-101.5
CHNL# 769: [1011L Q]
237.90
-227.3
CHNL# 767: [892L Q]
38.360
-87.30
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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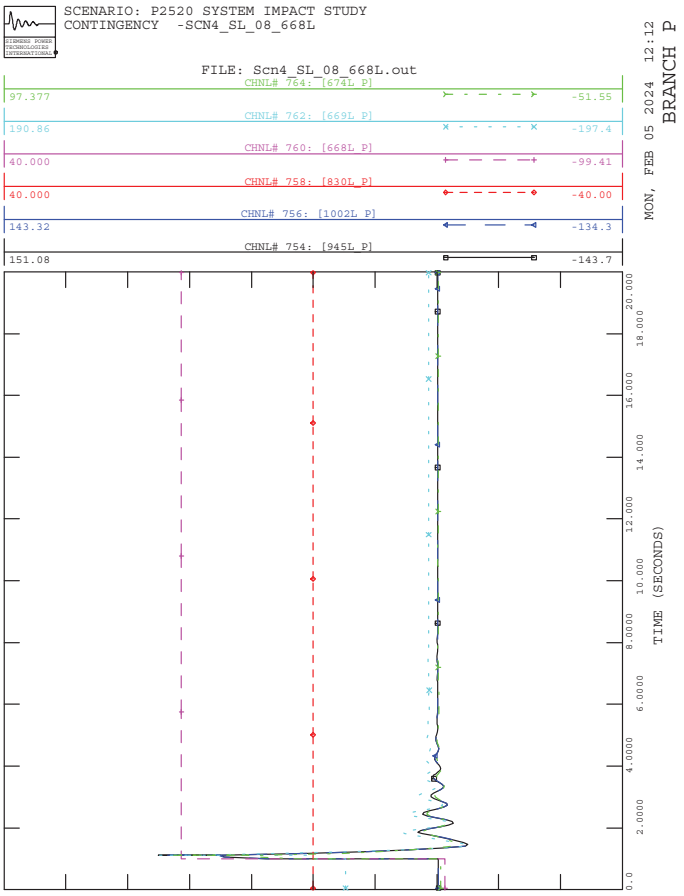
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L
FILE: Scn4_SL_08_668L.out
CHNL# 764: [674L P]
97.377
-51.55
CHNL# 762: [669L P]
190.86
-197.4
CHNL# 760: [668L P]
40.000
-99.41
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
143.32
-134.3
CHNL# 754: [945L P]
151.08
-143.7
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
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12.000
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16.000
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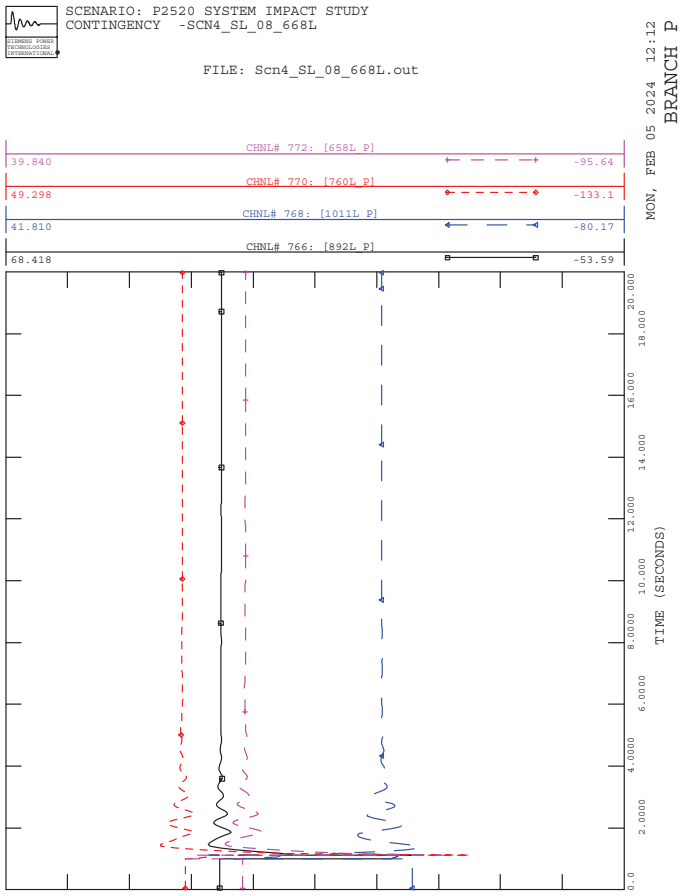
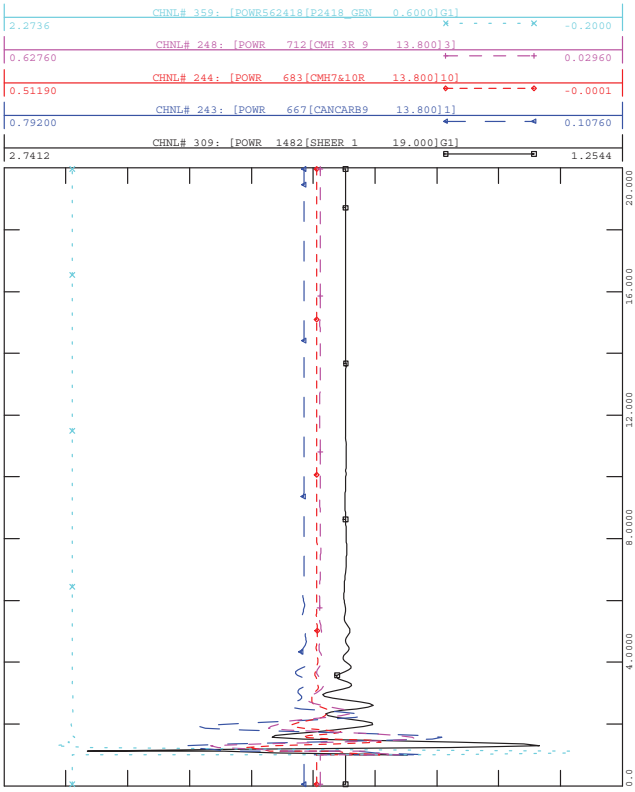

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_08_668L
FILE: Scn4_SL_08_668L.out
CHNL# 772: [658L P]
39.840
-95.64
CHNL# 770: [760L P]
49.298
-133.1
CHNL# 768: [1011L P]
41.810
-80.17
CHNL# 766: [892L P]
68.418
-53.59
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

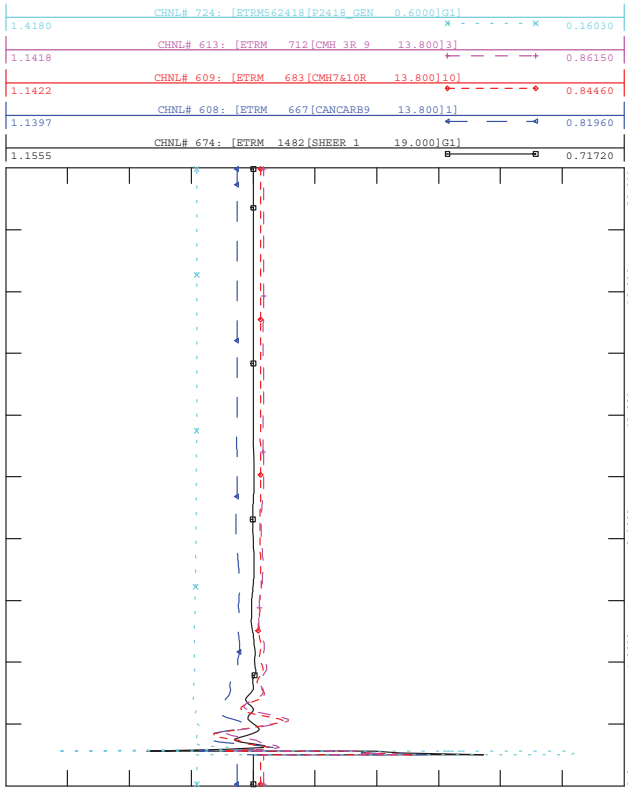


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

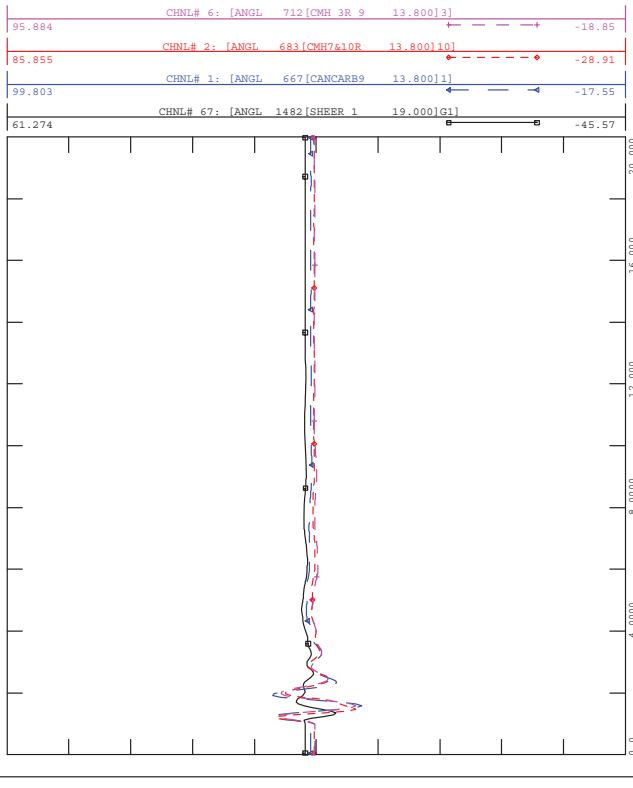


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

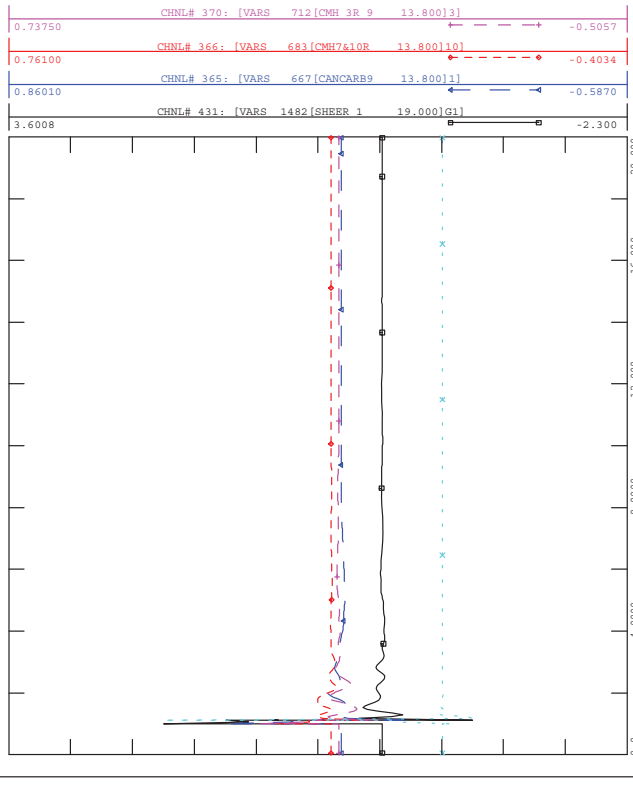


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

REACTIVE POWER



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

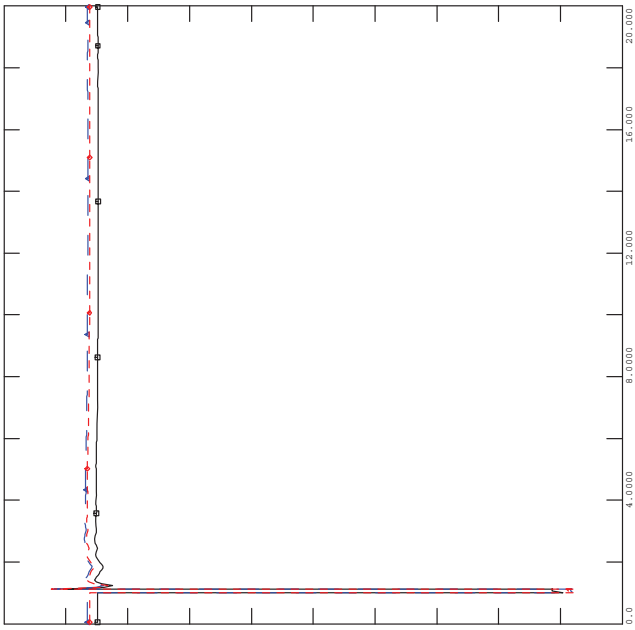
MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.2248 -0.0874

CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.2059 -0.0476

CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2487 0.20620



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q]
142.57 -11.79

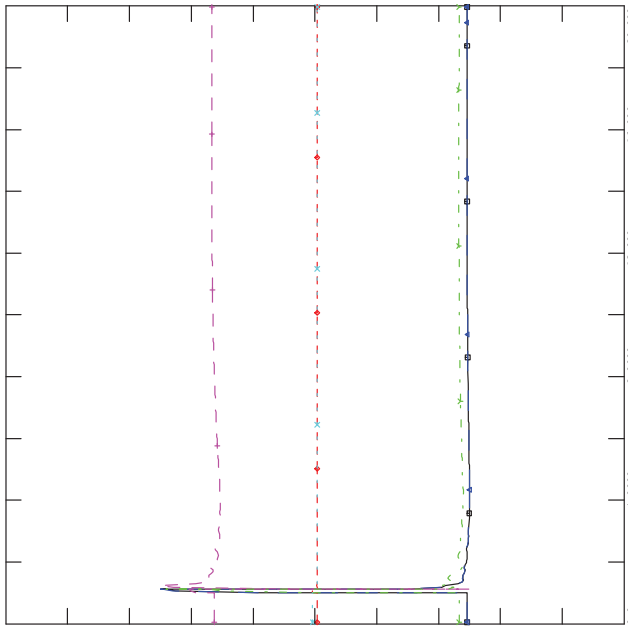
CHNL# 763: [669L Q]
40.603 -40.00

CHNL# 761: [668L Q]
145.91 -254.5

CHNL# 759: [830L Q]
39.998 -40.76

CHNL# 757: [1002L Q]
485.30 -206.0

CHNL# 755: [945L Q]
525.35 -219.2



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.2790 0.62170

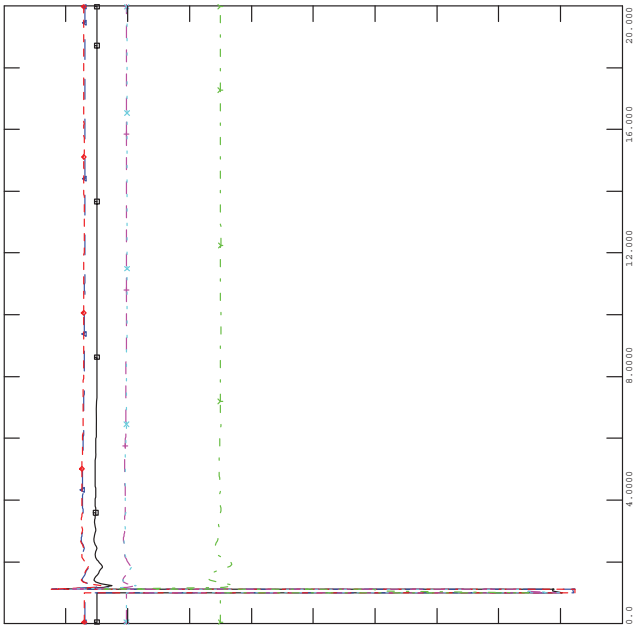
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2604 0.28070

CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2599 0.27810

CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2063 -0.0986

CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2069 -0.0901

CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2458 0.21480



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P]
92.250 -51.87

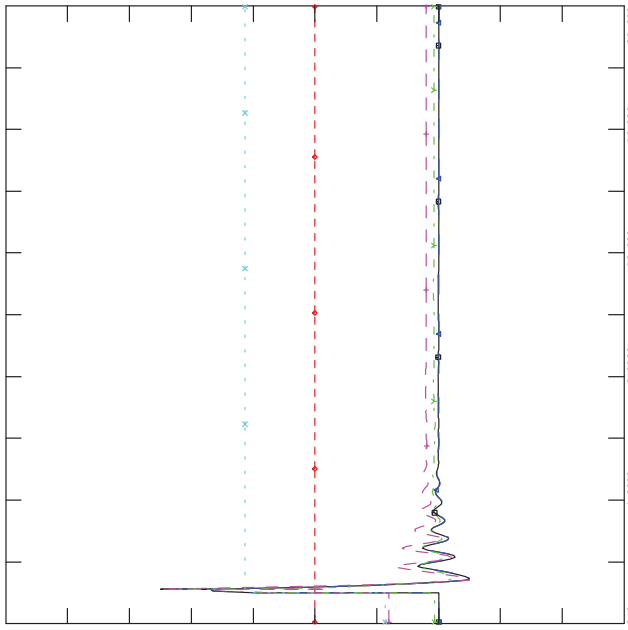
CHNL# 762: [669L P]
40.000 -63.40

CHNL# 760: [668L P]
154.51 -190.9

CHNL# 758: [830L P]
40.000 -40.00

CHNL# 756: [1002L P]
134.23 -130.9

CHNL# 754: [945L P]
140.47 -140.1

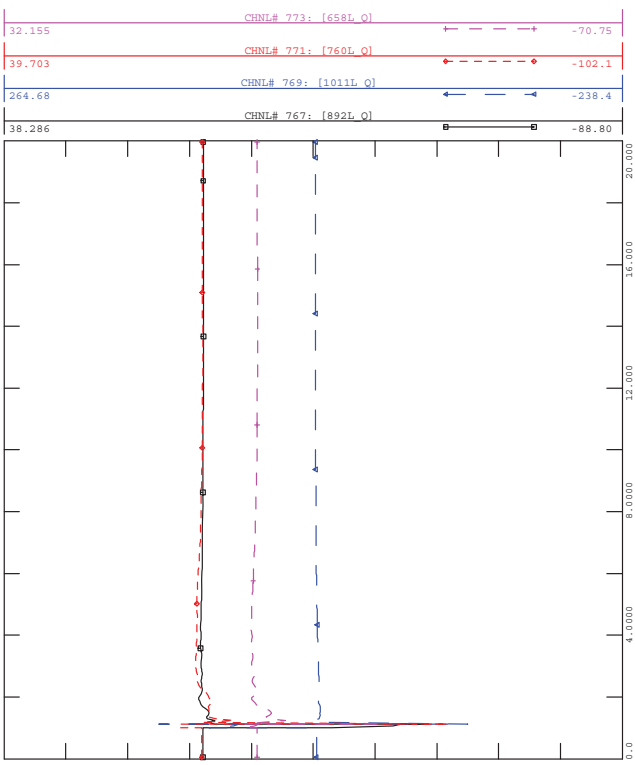


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

BRANCH Q

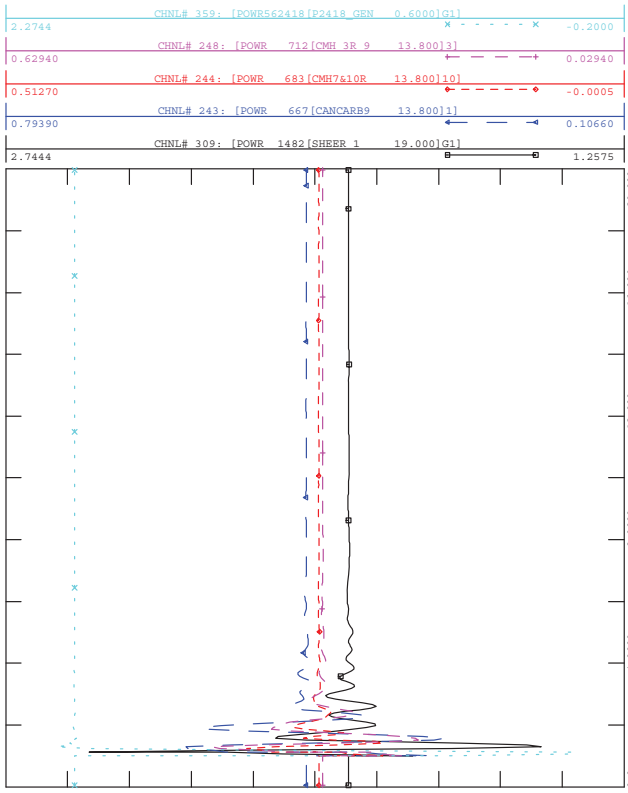


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L

FILE: Scn4_SL_10_669L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

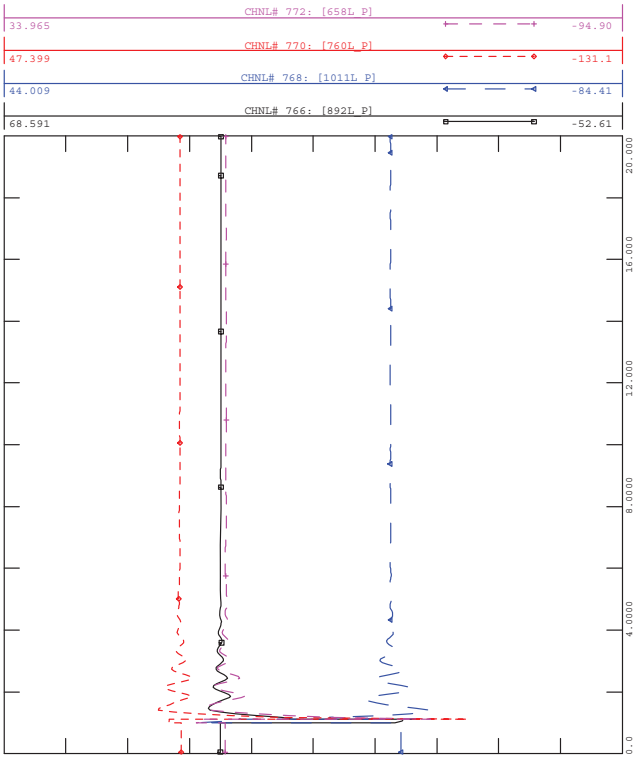


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_09_669L

FILE: Scn4_SL_09_669L.out

MON, FEB 05 2024 12:12

BRANCH P

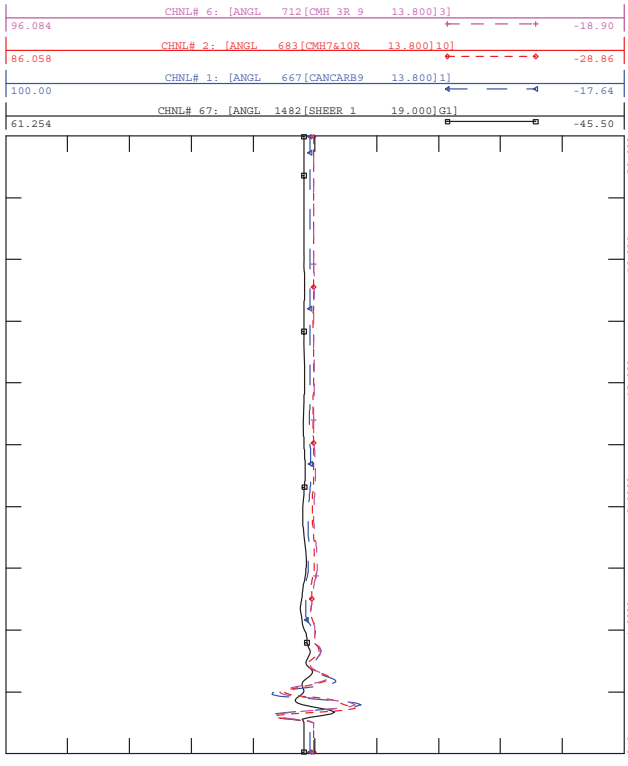


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L

FILE: Scn4_SL_10_669L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L

FILE: Scn4_SL_10_669L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.4528 0.14780
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1419 0.86010
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1424 0.84300
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1400 0.81740
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1553 0.71490

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L

FILE: Scn4_SL_10_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2238 -0.0861
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.2033 -0.0984
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2465 0.18960

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L

FILE: Scn4_SL_10_669L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 3.9693 -1.534
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.74080 -0.5068
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.76310 -0.4038
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.86540 -0.5892
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 3.6403 -2.322

TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L

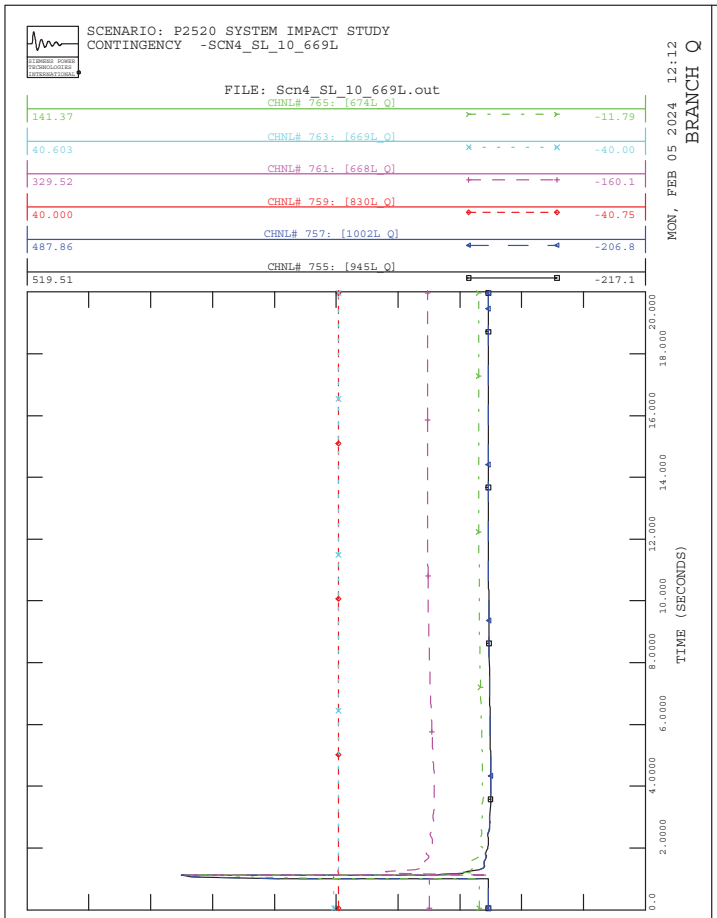
FILE: Scn4_SL_10_669L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2809 0.61470
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2595 0.24920
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2590 0.24640
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2035 -0.0573
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2040 -0.0661
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2436 0.20070

TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L
FILE: Scn4_SL_10_669L.out
CHNL# 765: [674L Q]
141.37
-11.79
CHNL# 763: [669L Q]
40.603
-40.00
CHNL# 761: [668L Q]
329.52
-160.1
CHNL# 759: [830L Q]
40.000
-40.75
CHNL# 757: [1002L Q]
487.86
-206.8
CHNL# 755: [945L Q]
519.51
-217.1
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
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2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
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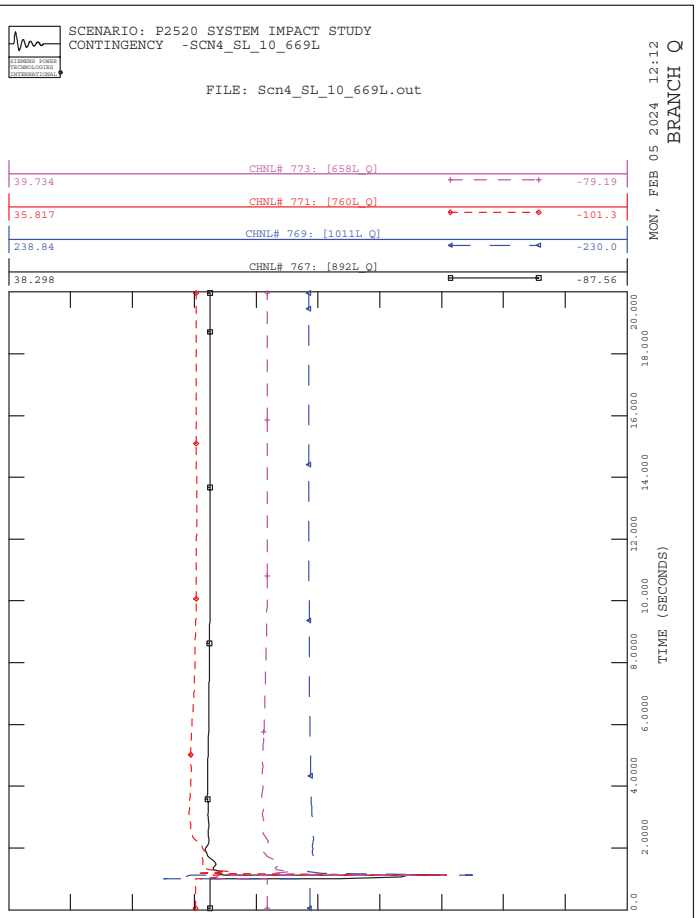
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L
FILE: Scn4_SL_10_669L.out
CHNL# 773: [658L Q]
39.734
-79.19
CHNL# 771: [760L Q]
35.817
-101.3
CHNL# 769: [1011L Q]
238.84
-230.0
CHNL# 767: [892L Q]
38.298
-87.56
BRANCH Q
MON, FEB 05 2024 12:12
TIME (SECONDS)
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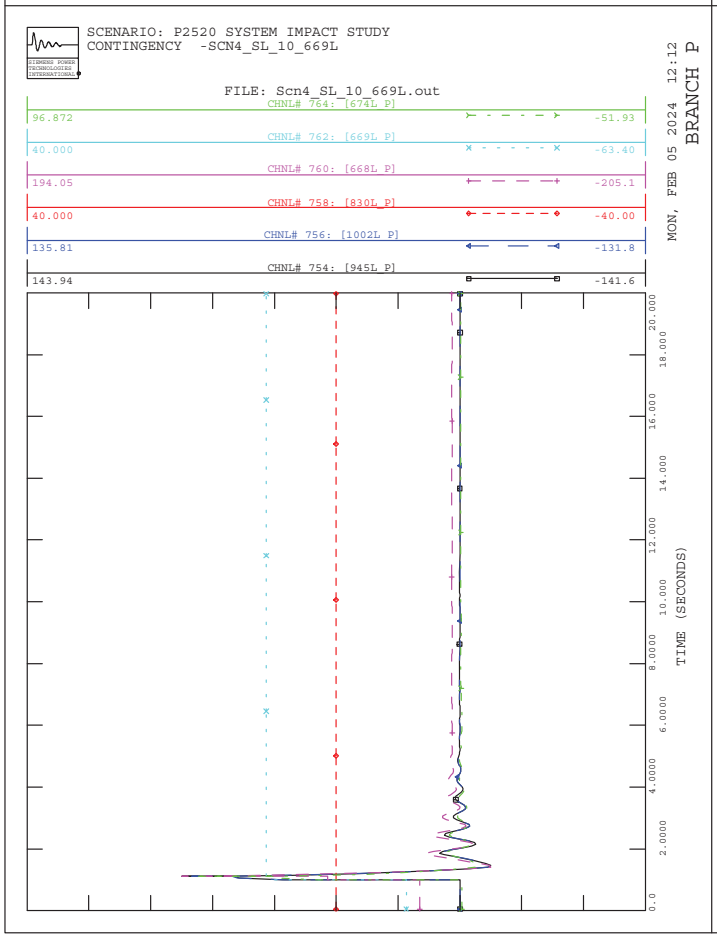
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L
FILE: Scn4_SL_10_669L.out
CHNL# 764: [674L P]
96.872
-51.93
CHNL# 762: [669L P]
40.000
-63.40
CHNL# 760: [668L P]
194.05
-205.1
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
135.81
-131.8
CHNL# 754: [945L P]
143.94
-141.6
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
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4.0000
6.0000
8.0000
10.000
12.000
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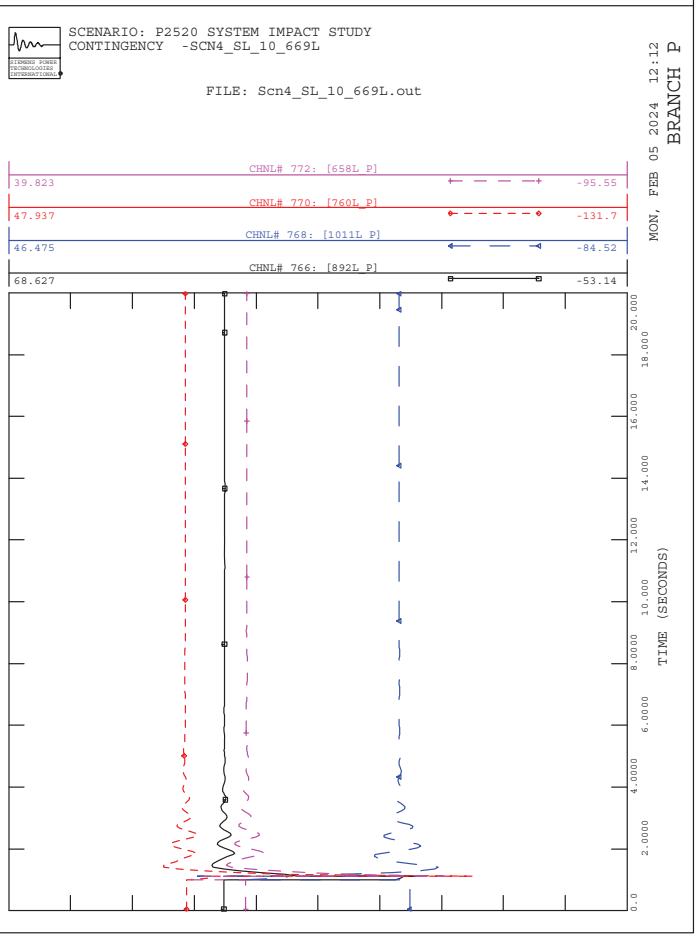
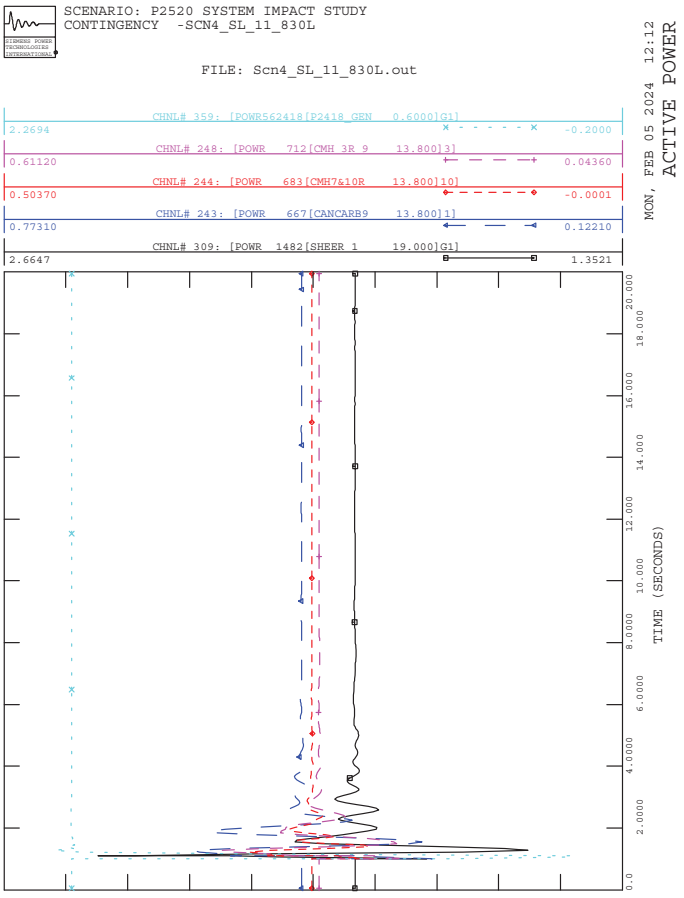
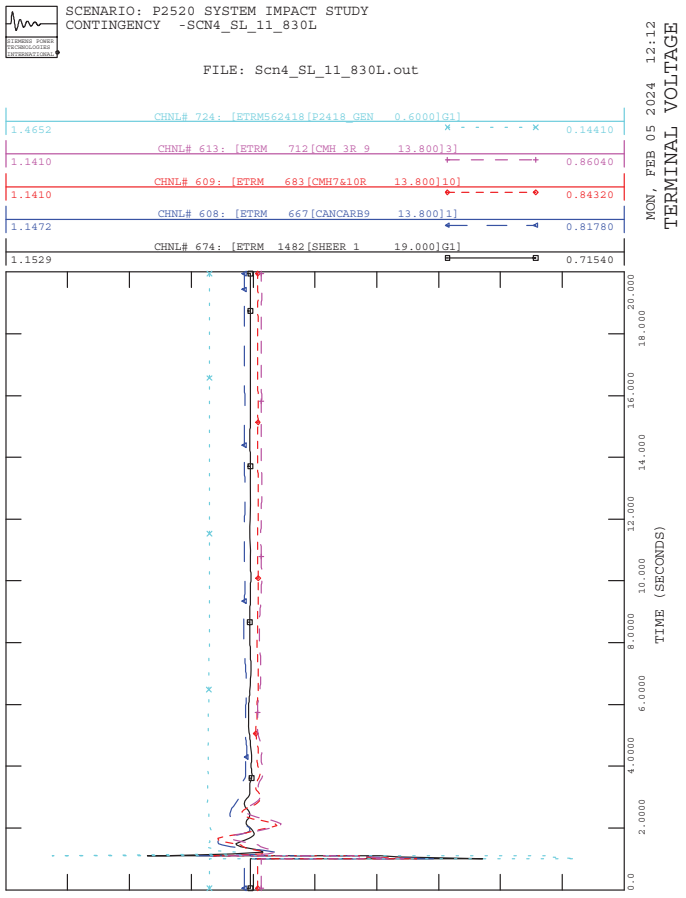
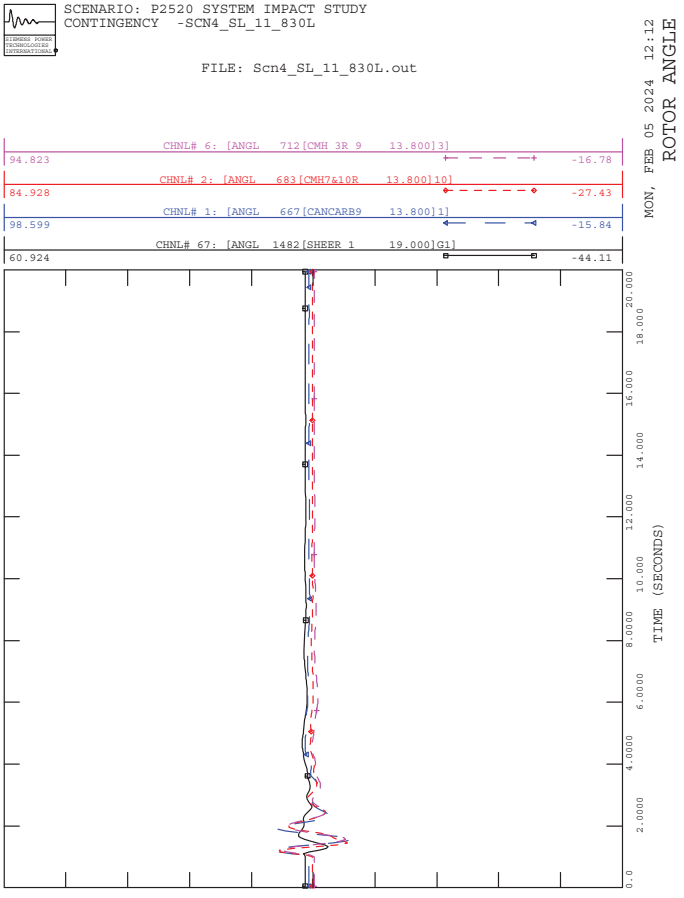
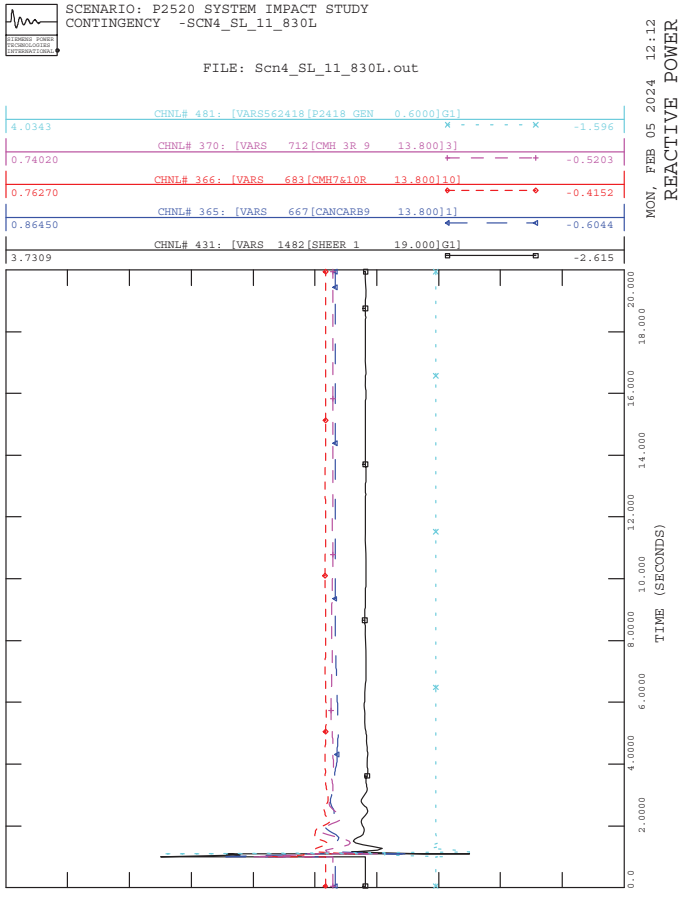
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_10_669L
FILE: Scn4_SL_10_669L.out
CHNL# 772: [658L P]
39.823
-95.55
CHNL# 770: [760L P]
47.937
-131.7
CHNL# 768: [1011L P]
46.475
-84.52
CHNL# 766: [892L P]
68.627
-53.14
BRANCH P
MON, FEB 05 2024 12:12
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L
FILE: Scn4_SL_11_830L.out
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.2694
-0.2000
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.61120
0.04360
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.50370
-0.0001
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
0.77310
0.12210
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
2.6647
1.3521
MON, FEB 05 2024 12:12
ACTIVE POWER
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L
FILE: Scn4_SL_11_830L.out
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.4652
0.14410
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1410
0.86040
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1410
0.84320
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1472
0.81780
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.1529
0.71540
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L
FILE: Scn4_SL_11_830L.out
CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
94.823
-16.78
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
84.928
-27.43
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
98.599
-15.84
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
60.924
-44.11
MON, FEB 05 2024 12:12
ROTOR ANGLE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L
FILE: Scn4_SL_11_830L.out
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
4.0343
-1.596
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.74020
-0.5203
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.76270
-0.4152
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.86450
-0.6044
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
3.7309
-2.615
MON, FEB 05 2024 12:12
REACTIVE POWER
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

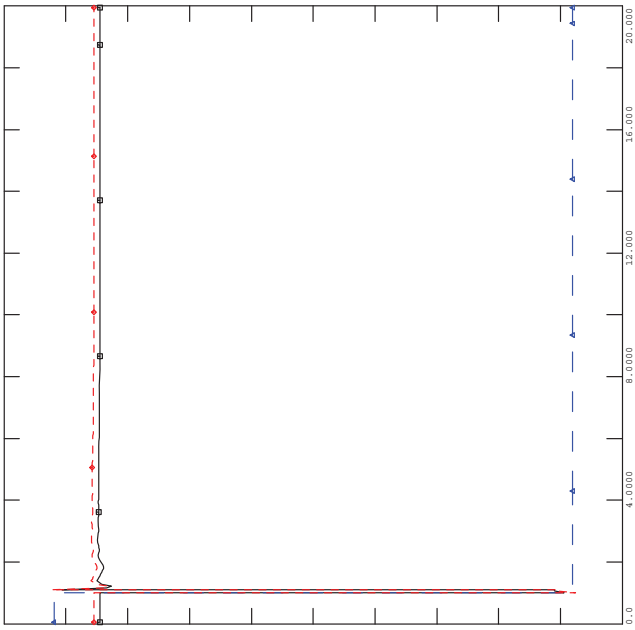
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L

FILE: Scn4_SL_11_830L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2350 -0.0839
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1370 -0.1000
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2555 0.19170



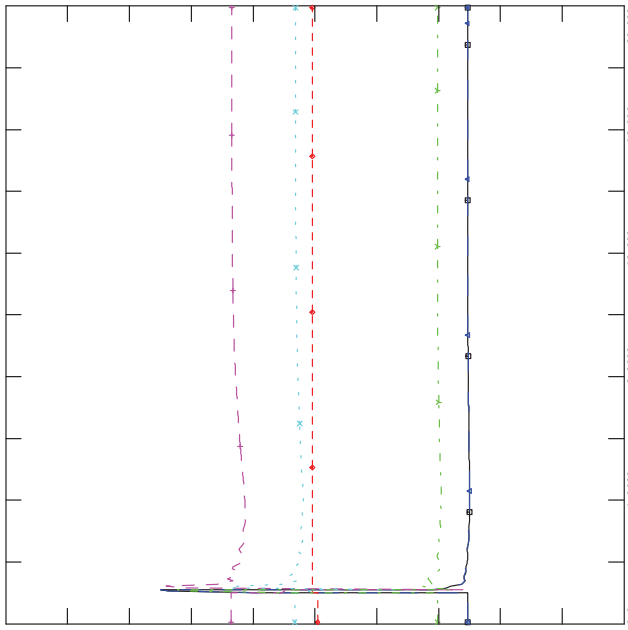
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L

FILE: Scn4_SL_11_830L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q] 130.11 -14.03
CHNL# 763: [669L Q] 52.395 -58.48
CHNL# 761: [668L Q] 67.135 -86.98
CHNL# 759: [830L Q] 40.000 -40.66
CHNL# 757: [1002L Q] 476.69 -202.3
CHNL# 755: [945L Q] 515.14 -214.8



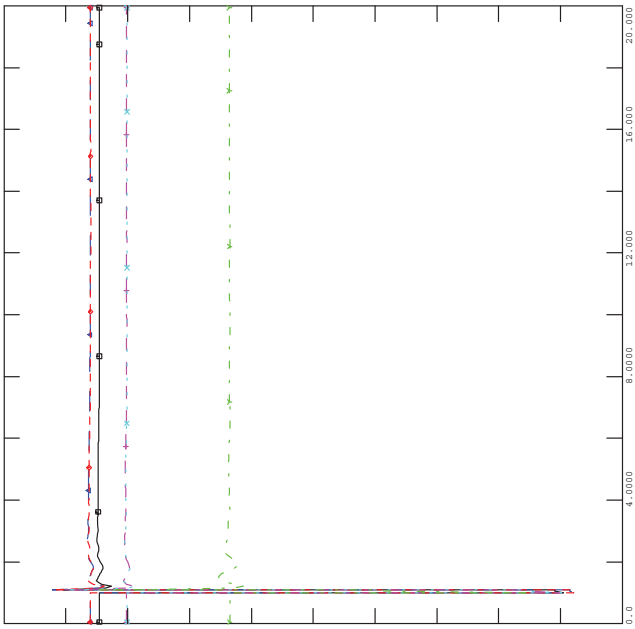
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L

FILE: Scn4_SL_11_830L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2975 0.61590
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.2685 0.25100
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.2679 0.24820
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2148 -0.0541
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2159 -0.0630
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2525 0.20280



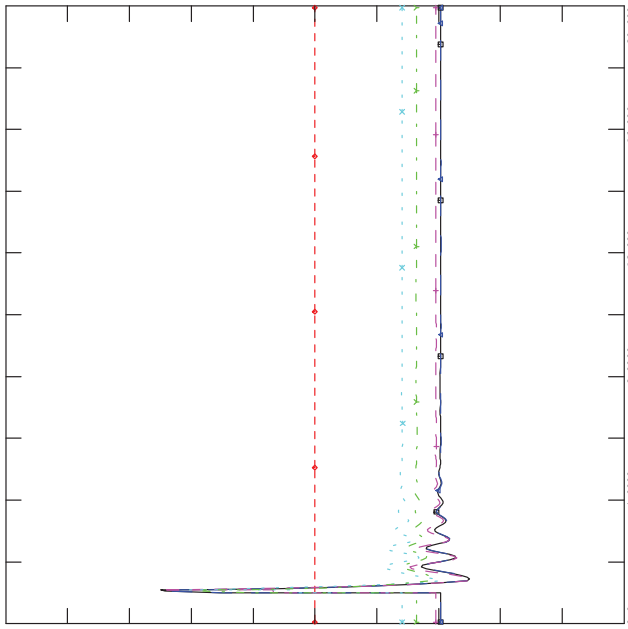
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L

FILE: Scn4_SL_11_830L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P] 77.999 -51.12
CHNL# 762: [669L P] 63.027 -71.78
CHNL# 760: [668L P] 96.719 -127.7
CHNL# 758: [830L P] 40.000 -40.00
CHNL# 756: [1002L P] 101.41 -116.0
CHNL# 754: [945L P] 105.94 -124.5

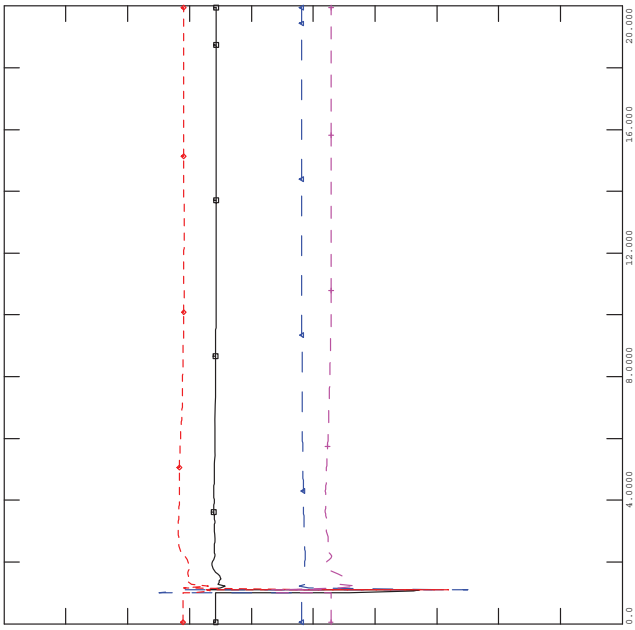


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L

FILE: Scn4_SL_11_830L.out

MON, FEB 05 2024 12:12

BRANCH Q

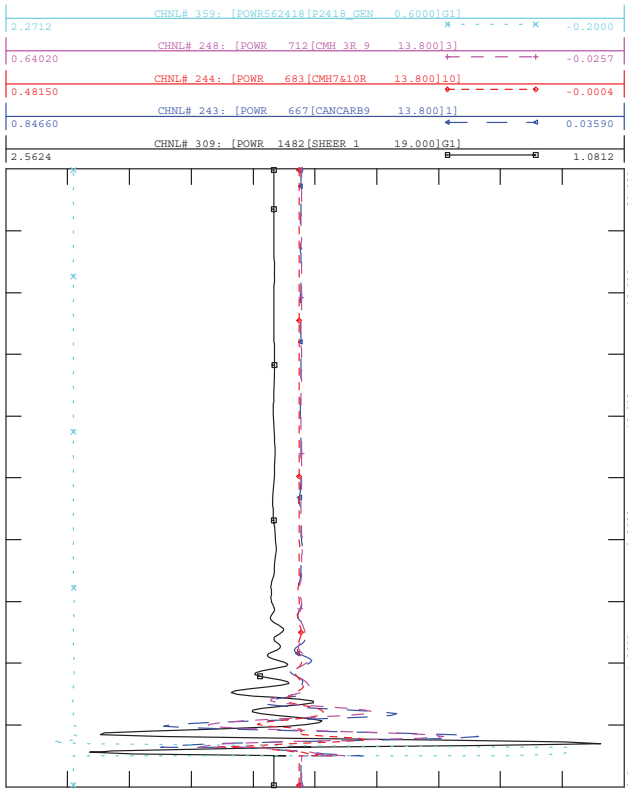


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L

FILE: Scn4_SL_12_830L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

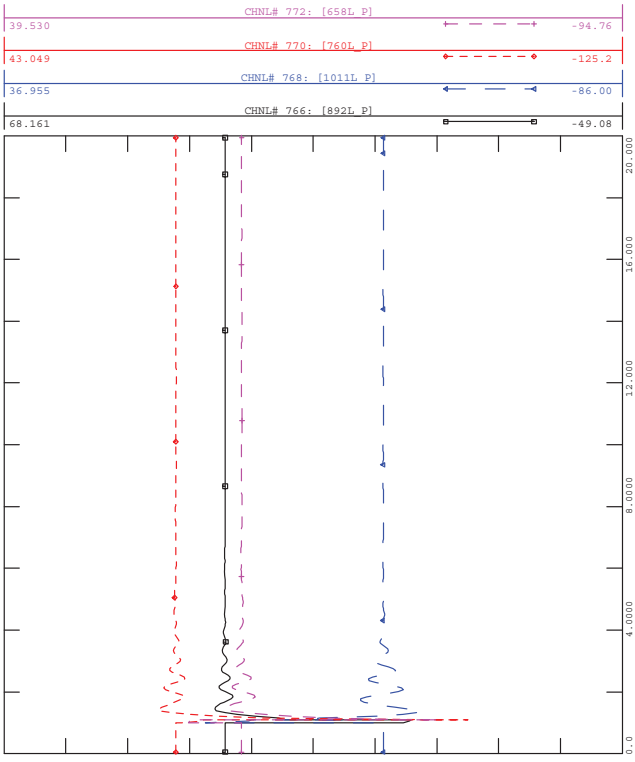


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_11_830L

FILE: Scn4_SL_11_830L.out

MON, FEB 05 2024 12:12

BRANCH P

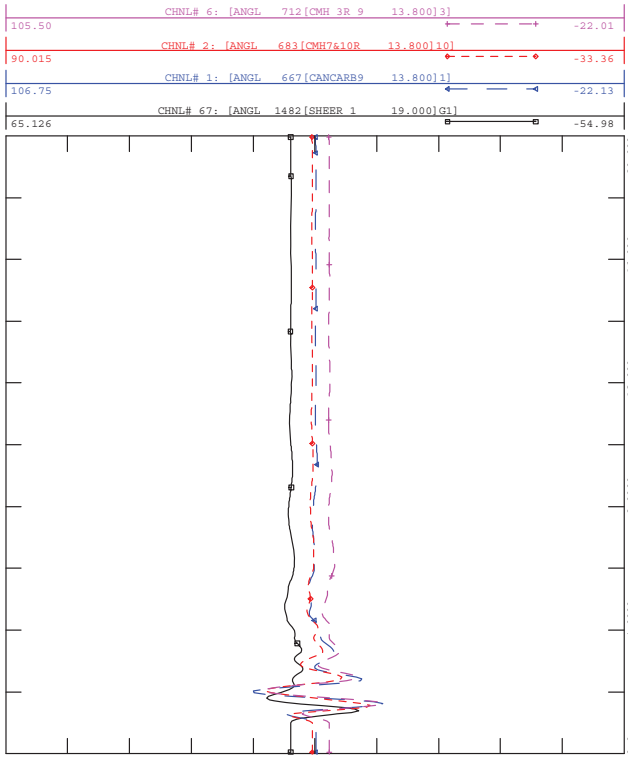


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L

FILE: Scn4_SL_12_830L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



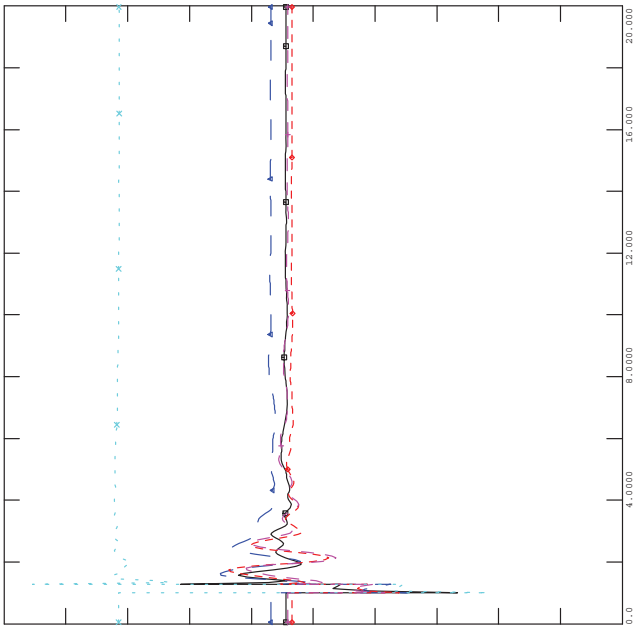
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L

FILE: Scn4_SL_12_830L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.2393 0.11120
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1460 0.88210
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1508 0.86890
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1472 0.85220
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1574 0.76790



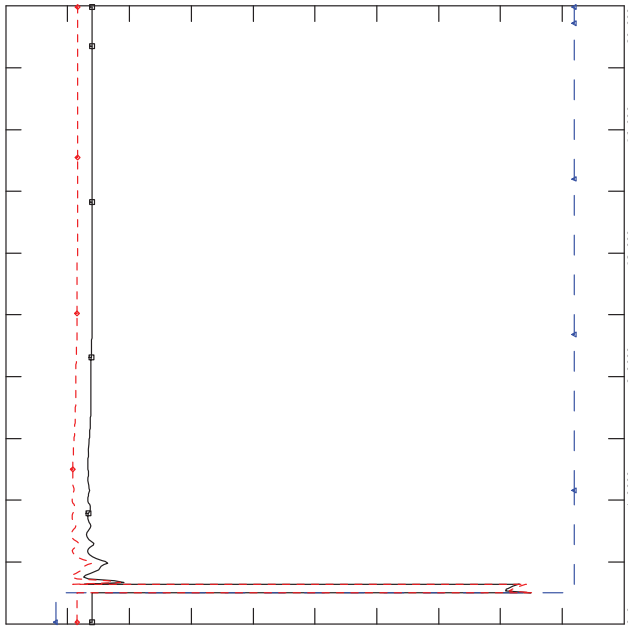
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L

FILE: Scn4_SL_12_830L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1521 0.21250
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1370 -0.1000
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.1988 0.42290



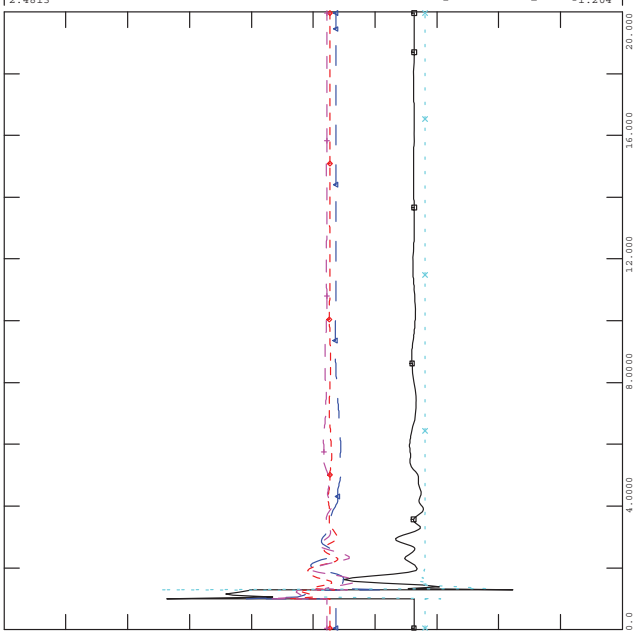
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L

FILE: Scn4_SL_12_830L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 2.1669 -0.8445
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.68670 -0.4880
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.72810 -0.3618
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.77620 -0.5180
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 2.4813 -1.204



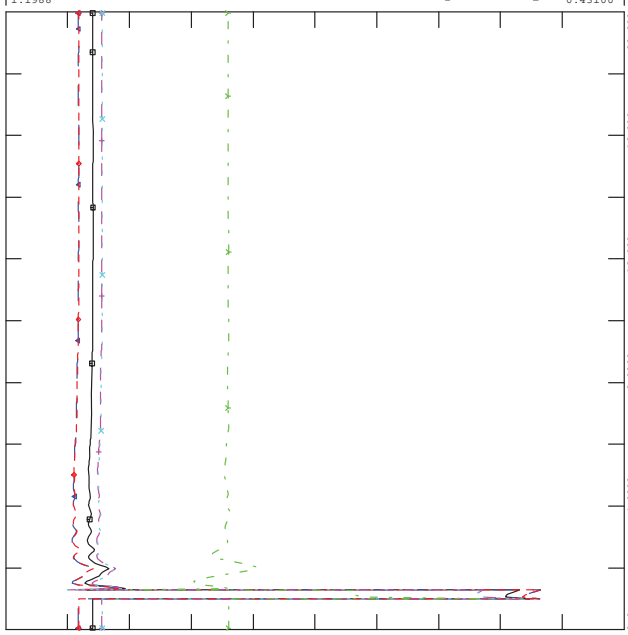
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L

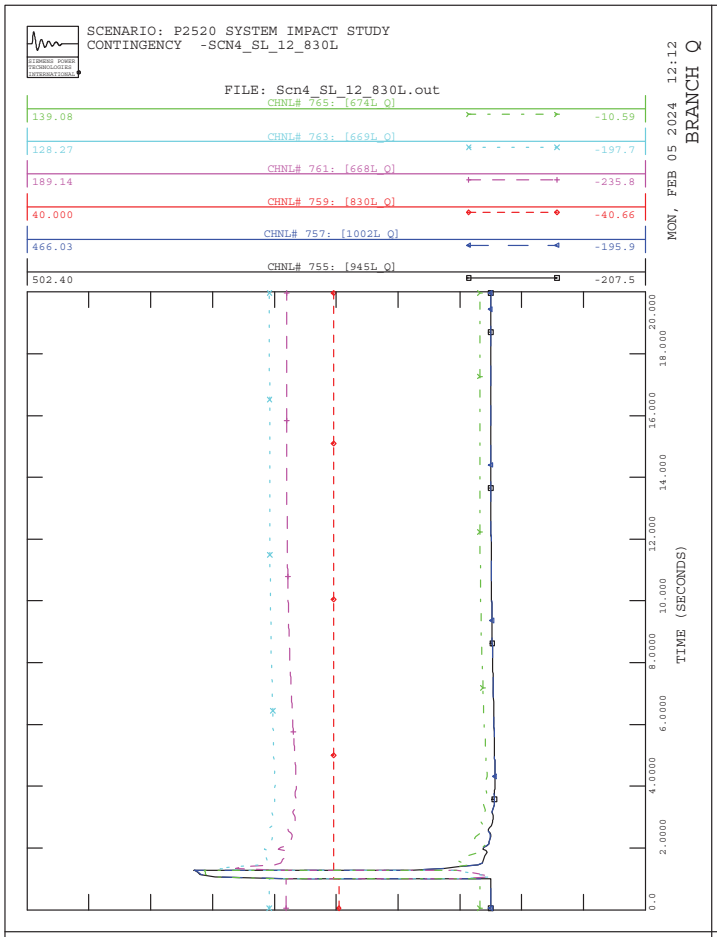
FILE: Scn4_SL_12_830L.out

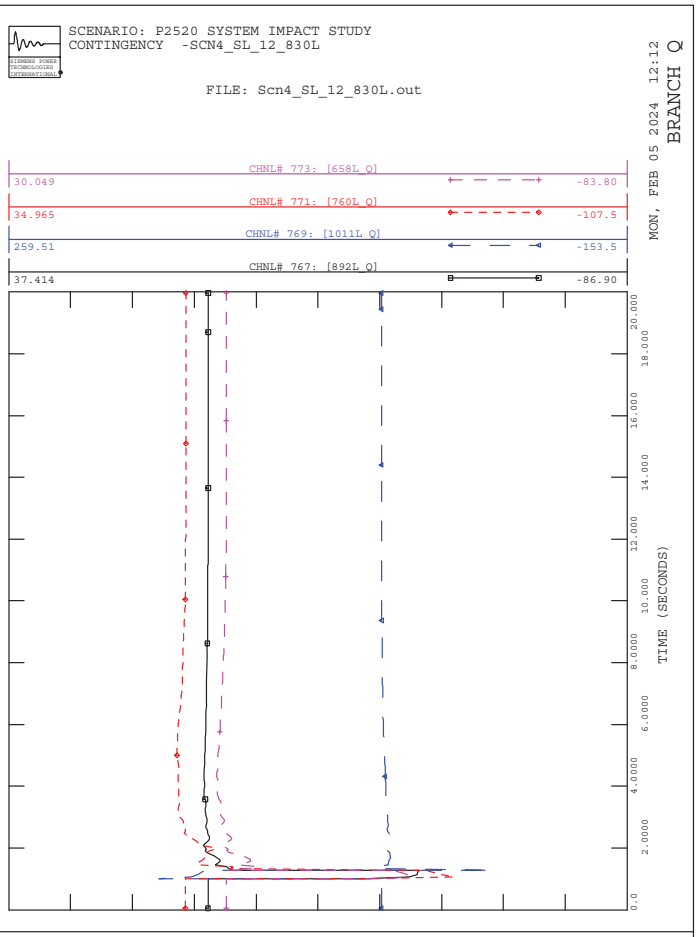
MON, FEB 05 2024 12:12

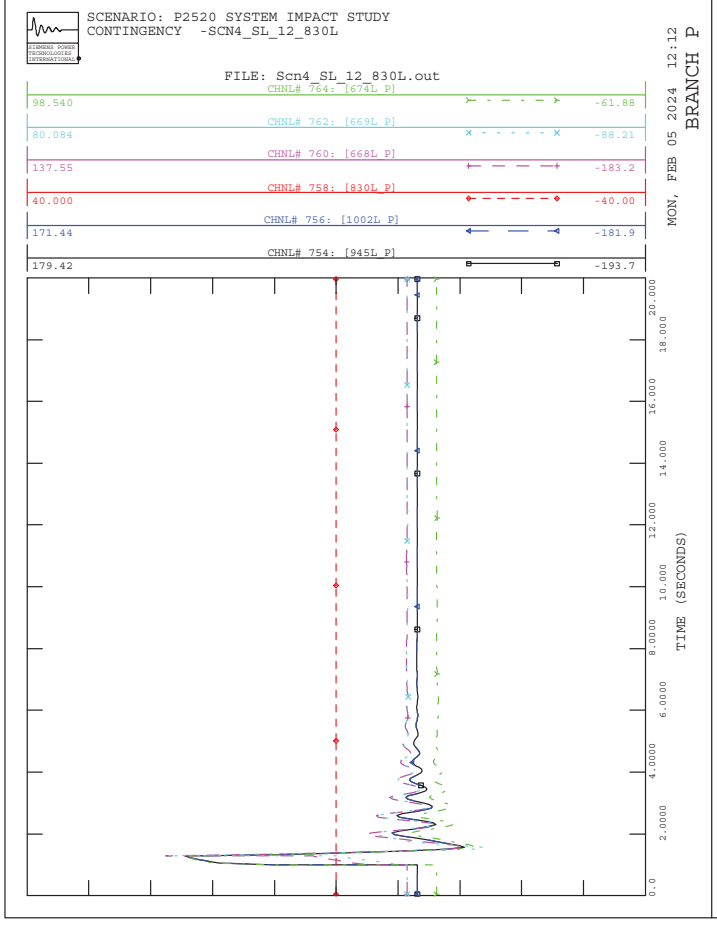
BUS VOLTAGE

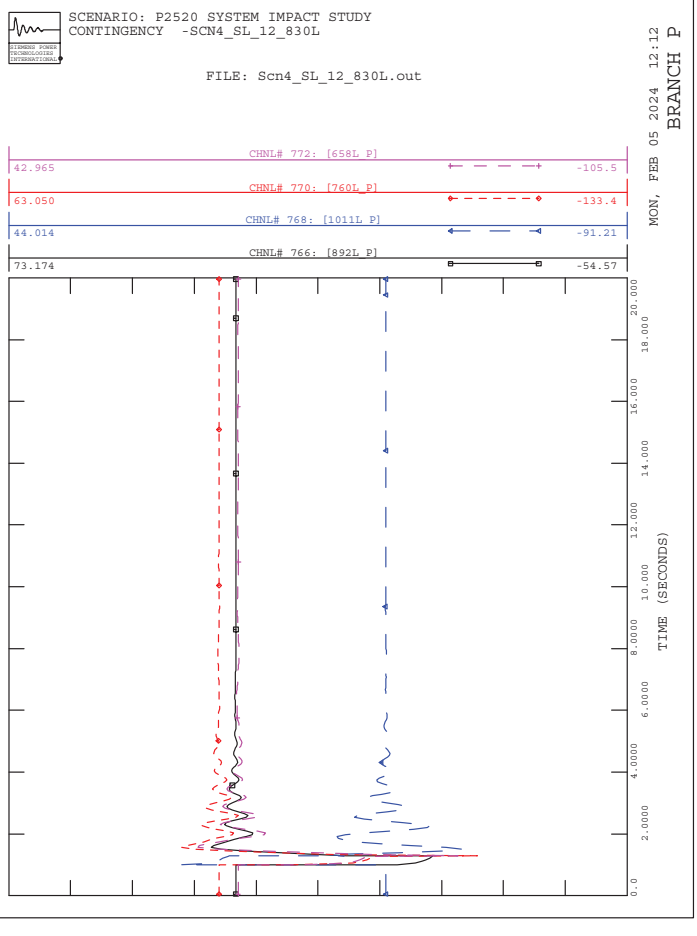
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2290 0.72850
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.1778 0.46190
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.1770 0.45980
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1454 0.22890
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1461 0.22290
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.1988 0.43100




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L
FILE: Scn4_SL_12_830L.out
CHNL# 765: [674L Q]
139.08
-10.59
CHNL# 763: [669L Q]
128.27
-197.7
CHNL# 761: [668L Q]
189.14
-235.8
CHNL# 759: [830L Q]
40.000
-40.66
CHNL# 757: [1002L Q]
466.03
-195.9
CHNL# 755: [945L Q]
502.40
-207.5
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L
FILE: Scn4_SL_12_830L.out
CHNL# 773: [658L Q]
30.049
-83.80
CHNL# 771: [760L Q]
34.965
-107.5
CHNL# 769: [1011L Q]
259.51
-153.5
CHNL# 767: [892L Q]
37.414
-86.90
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L
FILE: Scn4_SL_12_830L.out
CHNL# 764: [674L P]
98.540
-61.88
CHNL# 762: [669L P]
80.084
-88.21
CHNL# 760: [668L P]
137.55
-183.2
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
171.44
-181.9
CHNL# 754: [945L P]
179.42
-193.7
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_12_830L
FILE: Scn4_SL_12_830L.out
CHNL# 772: [658L P]
42.965
-105.5
CHNL# 770: [760L P]
63.050
-133.4
CHNL# 768: [1011L P]
44.014
-91.21
CHNL# 766: [892L P]
73.174
-54.57
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

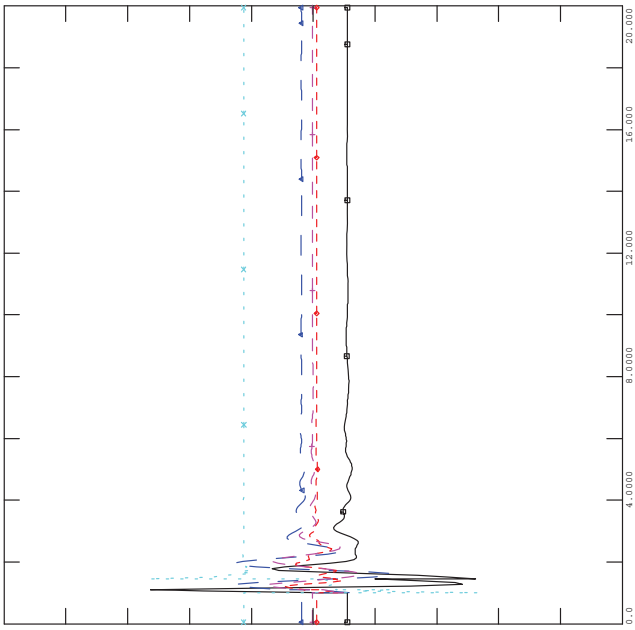
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L

FILE: Scn4_SL_13_892L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.3320 1.4748
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.55750 0.08540
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.47620 0.03450
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
0.71880 0.18050
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
2.3880 1.5446



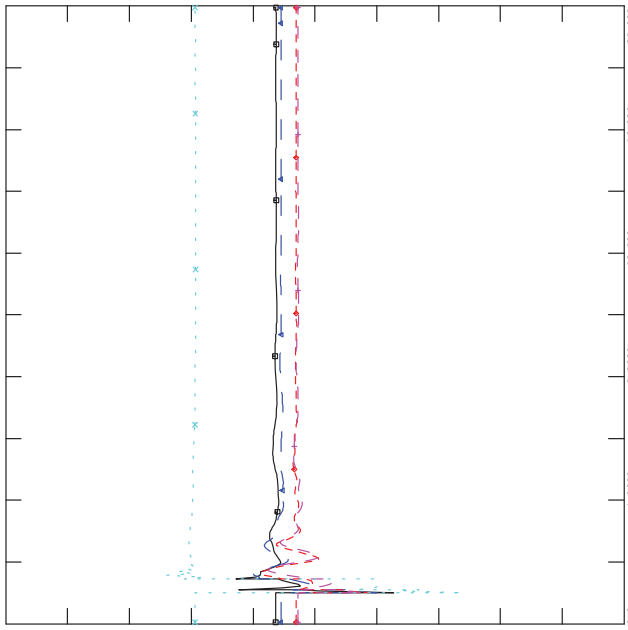
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L

FILE: Scn4_SL_13_892L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.1480 0.76250
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1365 0.90050
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1335 0.89070
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1312 0.88130
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.0972 0.82890



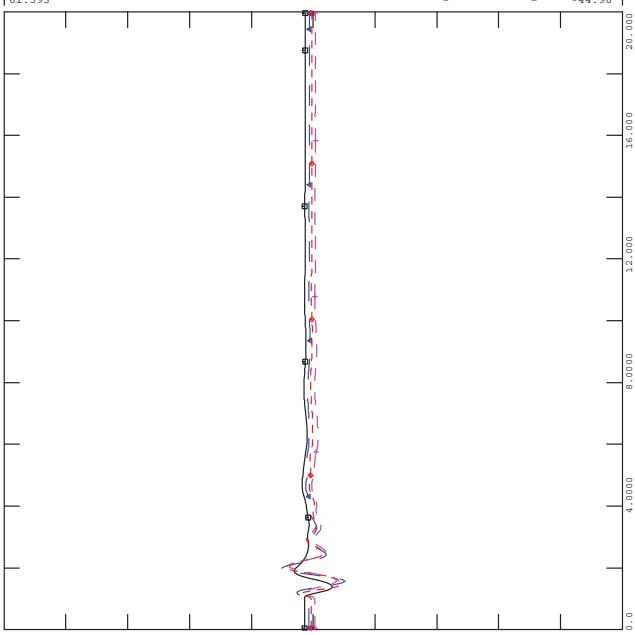
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L

FILE: Scn4_SL_13_892L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
93.236 -15.01
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
83.439 -26.29
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
97.035 -14.35
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
61.593 -44.98



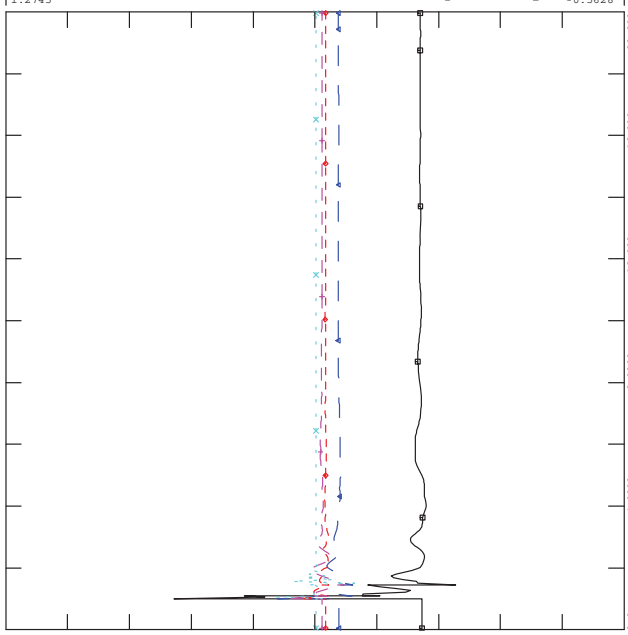
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L

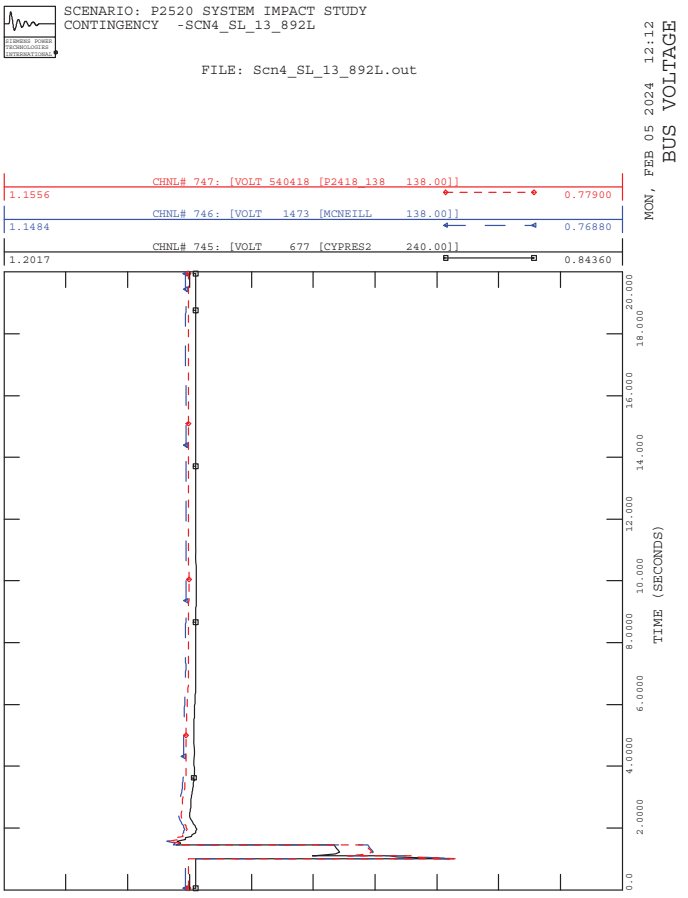
FILE: Scn4_SL_13_892L.out

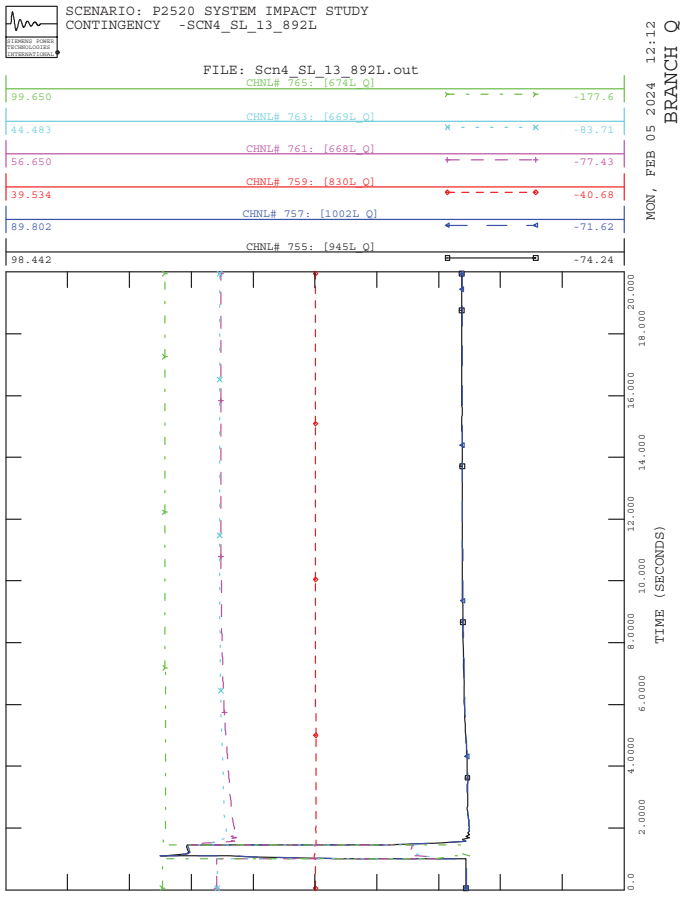
MON, FEB 05 2024 12:12

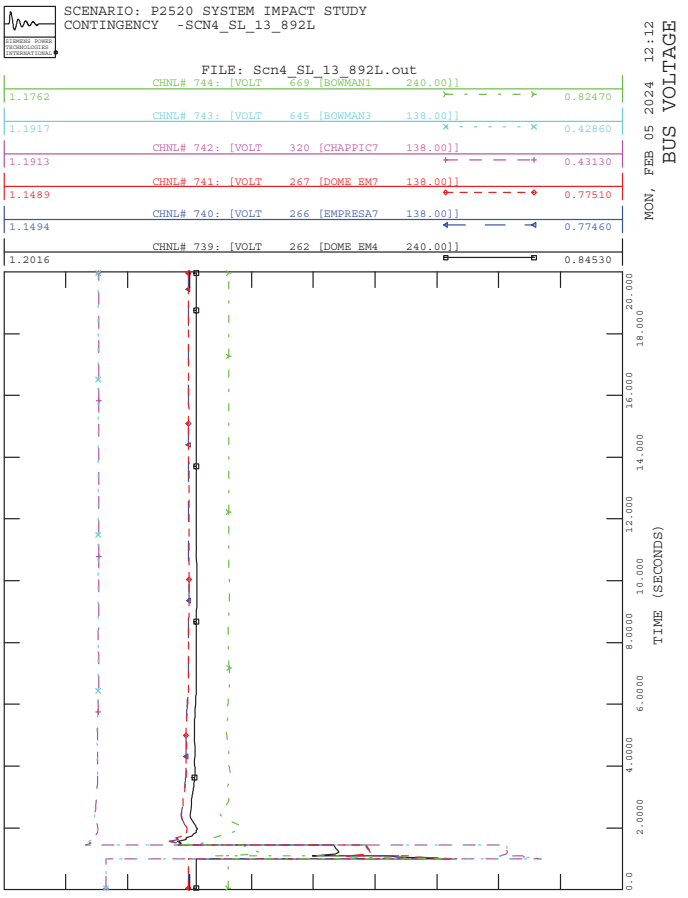
REACTIVE POWER

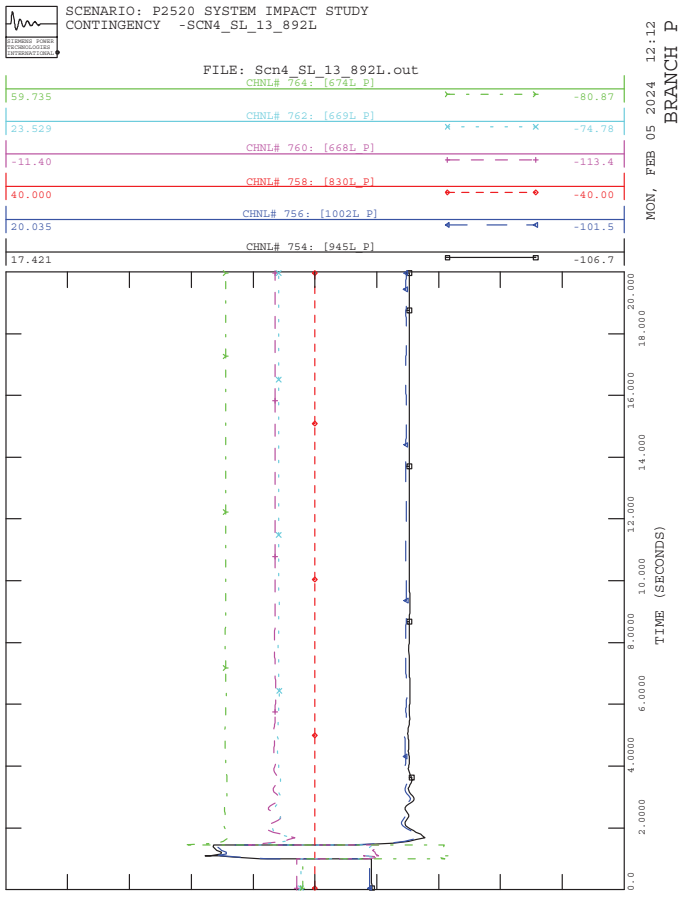
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
0.69290 -0.4539
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.63910 -0.4665
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.69690 -0.3530
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.69510 -0.4439
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
1.2745 -0.5628




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L
FILE: Scn4_SL_13_892L.out
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.1556
0.77900
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1484
0.76880
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2017
0.84360
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L
FILE: Scn4_SL_13_892L.out
CHNL# 765: [674L Q]
99.650
-177.6
CHNL# 763: [669L Q]
44.483
-83.71
CHNL# 761: [668L Q]
56.650
-77.43
CHNL# 759: [830L Q]
39.534
-40.68
CHNL# 757: [1002L Q]
89.802
-71.62
CHNL# 755: [945L Q]
98.442
-74.24
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L
FILE: Scn4_SL_13_892L.out
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.1762
0.82470
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.1917
0.42860
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.1913
0.43130
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1489
0.77510
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1494
0.77460
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2016
0.84530
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)

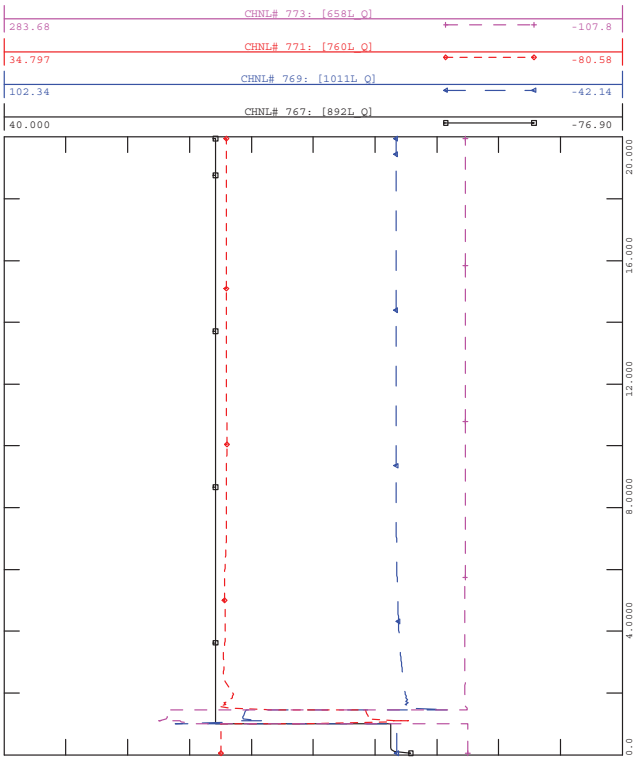

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L
FILE: Scn4_SL_13_892L.out
CHNL# 764: [674L P]
59.735
-80.87
CHNL# 762: [669L P]
23.529
-74.78
CHNL# 760: [668L P]
-11.40
-113.4
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
20.035
-101.5
CHNL# 754: [945L P]
17.421
-106.7
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L

FILE: Scn4_SL_13_892L.out

MON, FEB 05 2024 12:12

BRANCH Q

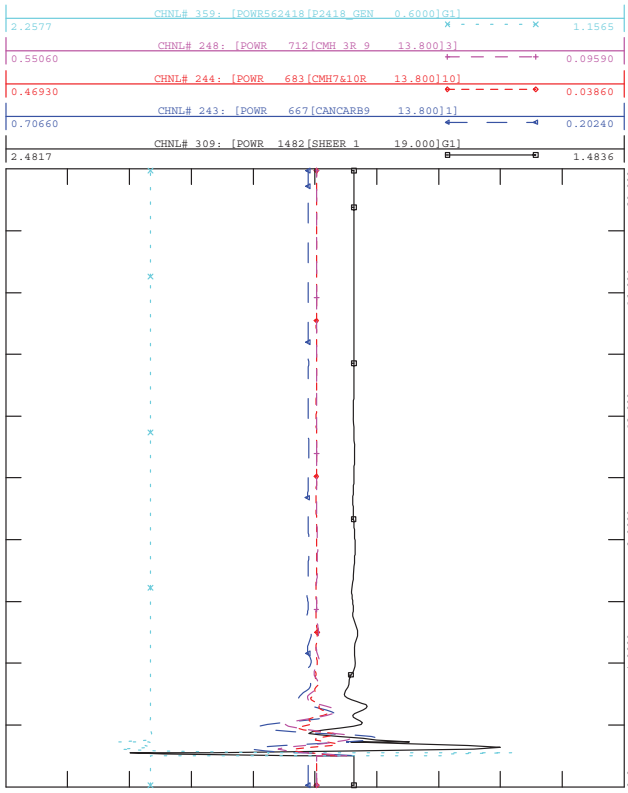


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L

FILE: Scn4_SL_14_892L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

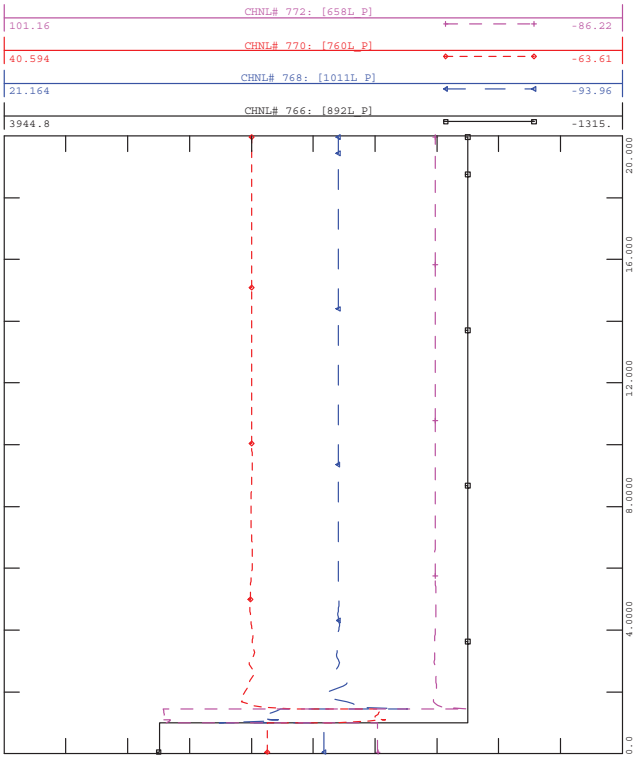


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_13_892L

FILE: Scn4_SL_13_892L.out

MON, FEB 05 2024 12:12

BRANCH P



SCENARIO: P2520 SYSTEM IMPACT STUDY
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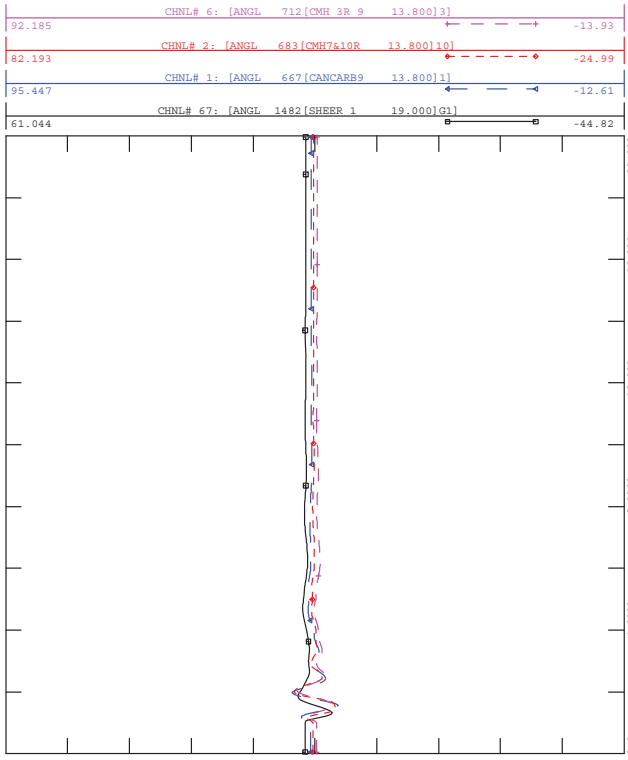
FILE: Scn4_SL_14_892L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



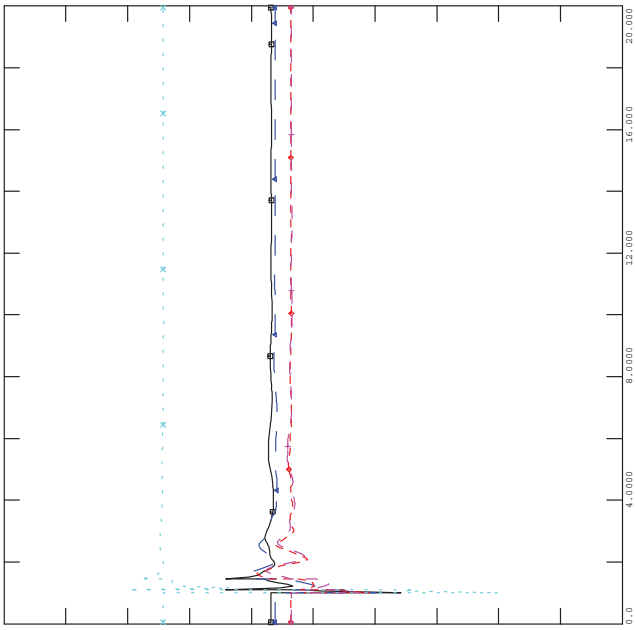
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L

FILE: Scn4_SL_14_892L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.1596 0.65570
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1346 0.89880
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1328 0.88870
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1302 0.87870
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1006 0.82140



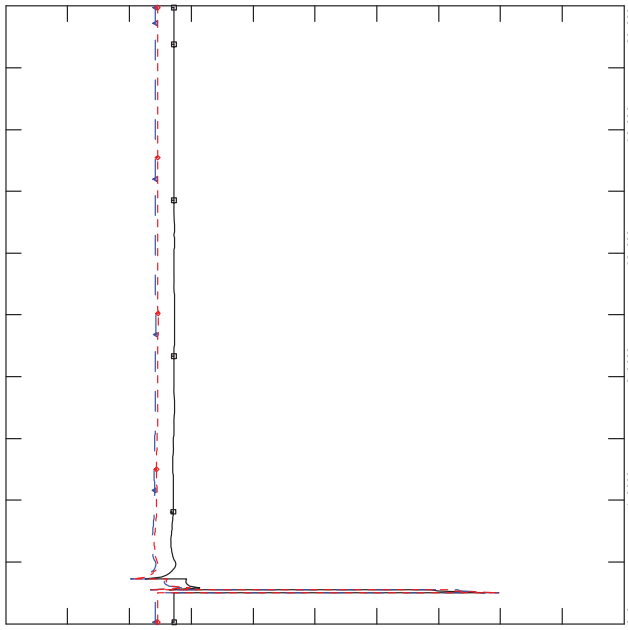
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L

FILE: Scn4_SL_14_892L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.1632 0.67560
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.1567 0.66160
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2118 0.76740



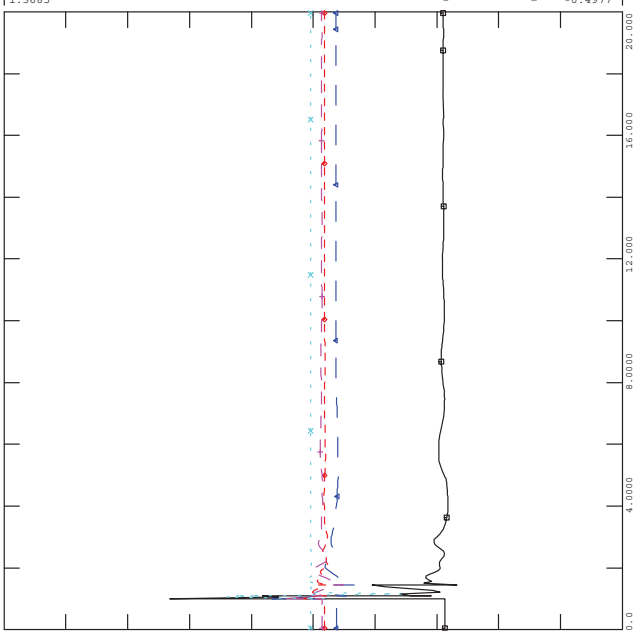
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L

FILE: Scn4_SL_14_892L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 0.81240 -0.5872
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.64310 -0.4648
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.69930 -0.3522
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.70140 -0.4521
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 1.3685 -0.4977



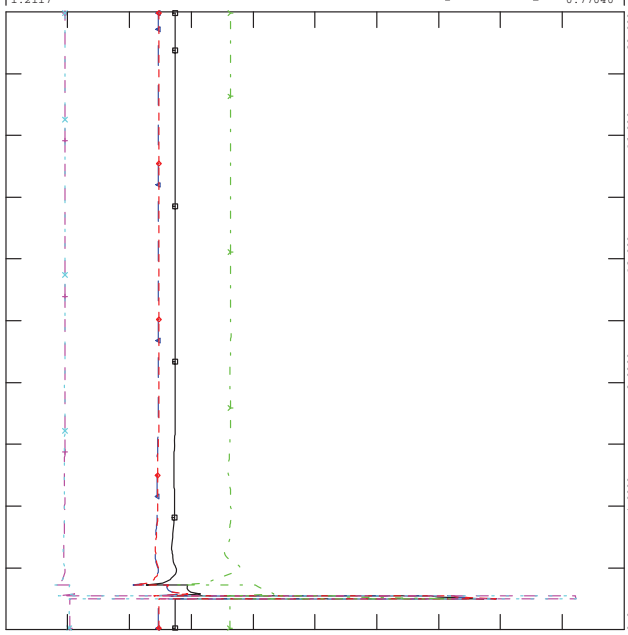
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L

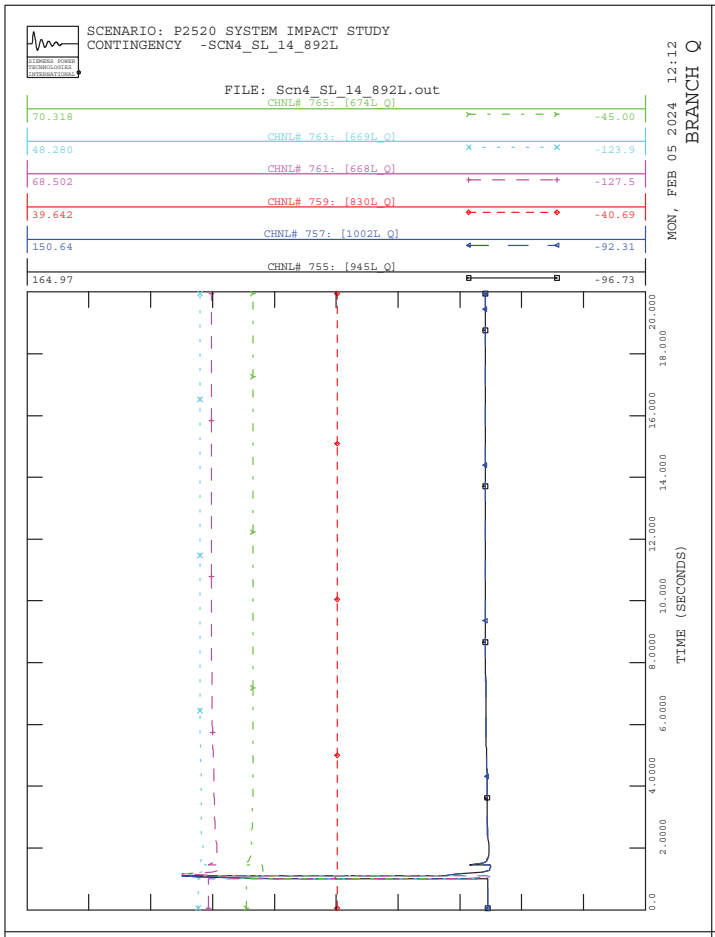
FILE: Scn4_SL_14_892L.out

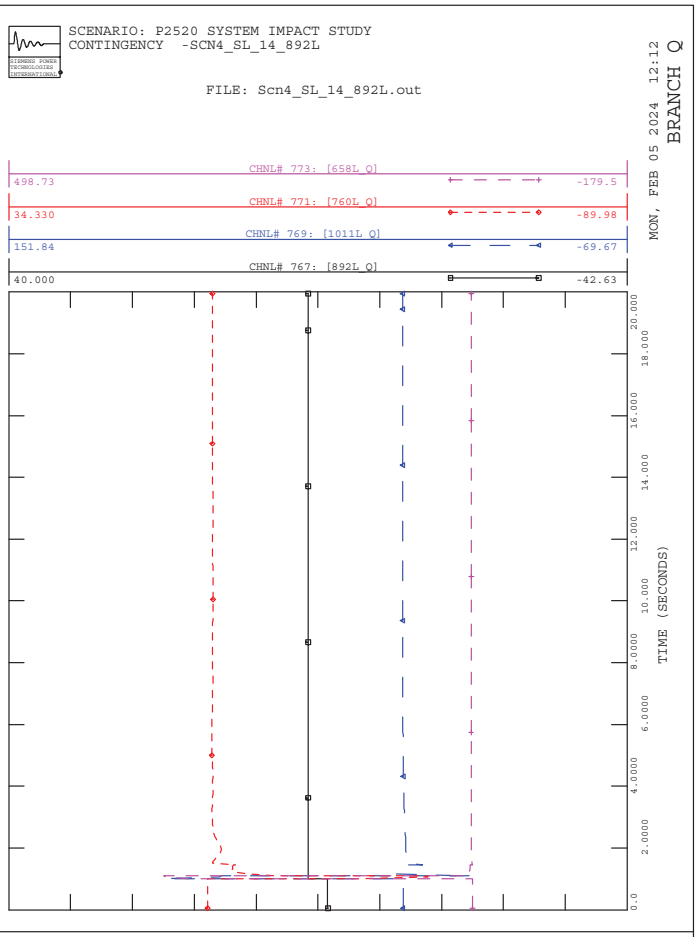
MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.1801 0.81800
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.1983 -0.0887
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.1979 -0.0827
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.1570 0.67360
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.1574 0.67210
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2117 0.77040




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L
FILE: Scn4_SL_14_892L.out
CHNL# 765: [674L Q]
70.318
-45.00
CHNL# 763: [669L Q]
48.280
-123.9
CHNL# 761: [668L Q]
68.502
-127.5
CHNL# 759: [830L Q]
39.642
-40.69
CHNL# 757: [1002L Q]
150.64
-92.31
CHNL# 755: [945L Q]
164.97
-96.73
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L
FILE: Scn4_SL_14_892L.out
CHNL# 773: [658L Q]
498.73
-179.5
CHNL# 771: [760L Q]
34.330
-89.98
CHNL# 769: [1011L Q]
151.84
-69.67
CHNL# 767: [892L Q]
40.000
-42.63
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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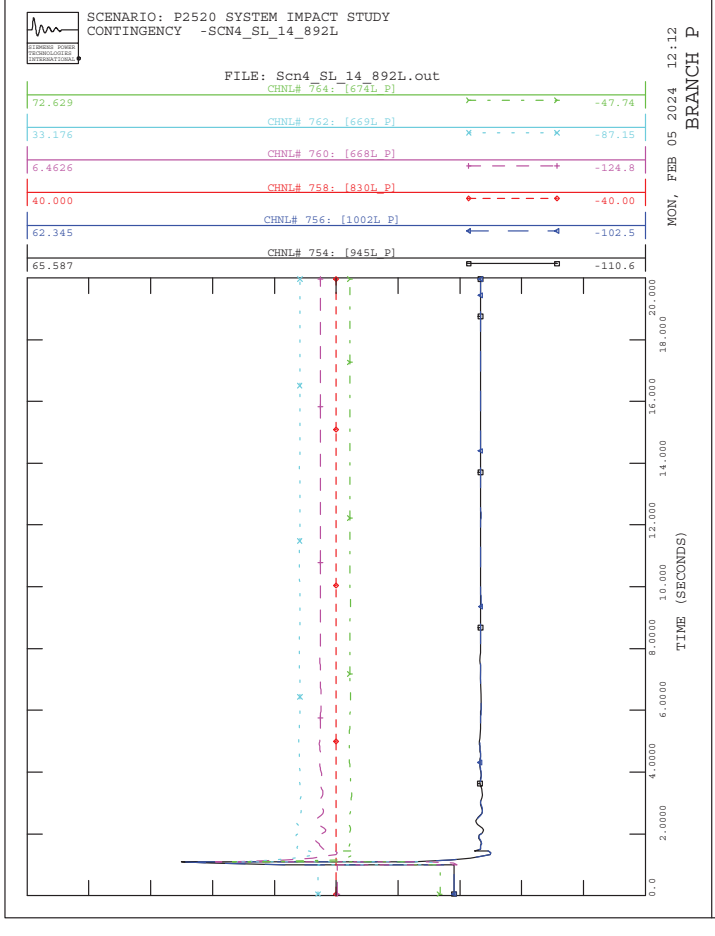
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L
FILE: Scn4_SL_14_892L.out
CHNL# 764: [674L P]
72.629
-47.74
CHNL# 762: [669L P]
33.176
-87.15
CHNL# 760: [668L P]
6.4626
-124.8
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
62.345
-102.5
CHNL# 754: [945L P]
65.587
-110.6
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
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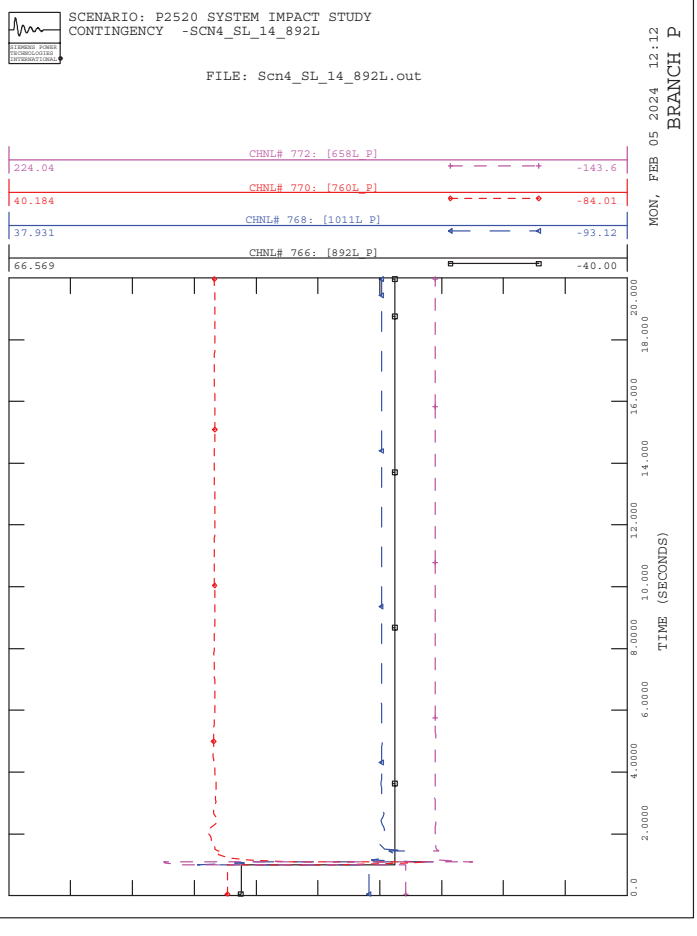
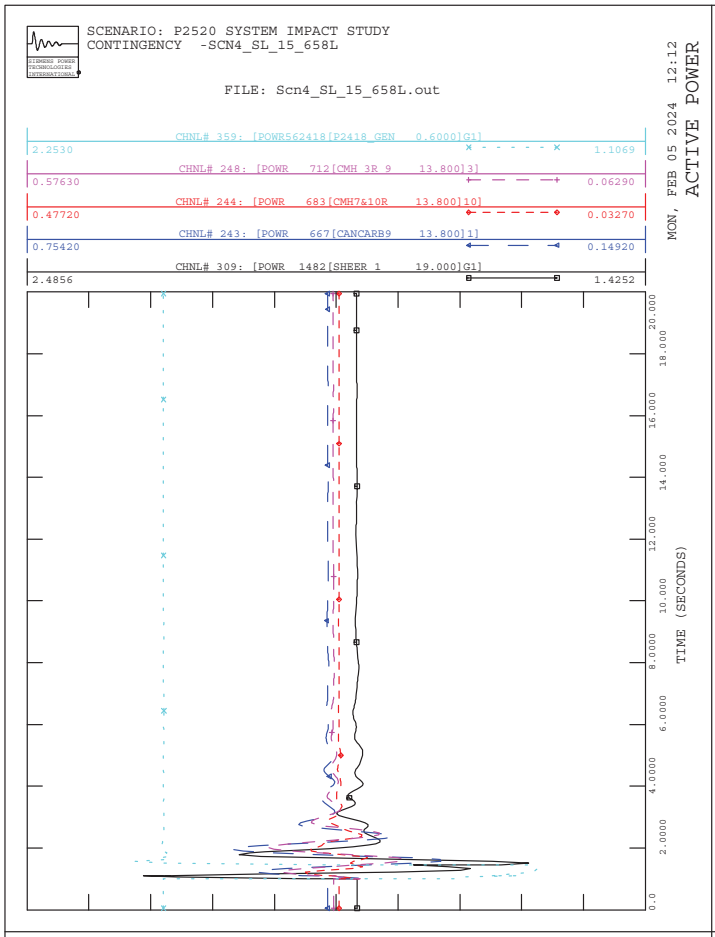
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_14_892L
FILE: Scn4_SL_14_892L.out
CHNL# 772: [658L P]
224.04
-143.6
CHNL# 770: [760L P]
40.184
-84.01
CHNL# 768: [1011L P]
37.931
-93.12
CHNL# 766: [892L P]
66.569
-40.00
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L
FILE: Scn4_SL_15_658L.out
CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1]
2.2530
1.1069
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3]
0.57630
0.06290
CHNL# 244: [POWR 683[CMH7&10R 13.800]10]
0.47720
0.03270
CHNL# 243: [POWR 667[CANCARB9 13.800]1]
0.75420
0.14920
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1]
2.4856
1.4252
MON, FEB 05 2024 12:12
ACTIVE POWER
TIME (SECONDS)
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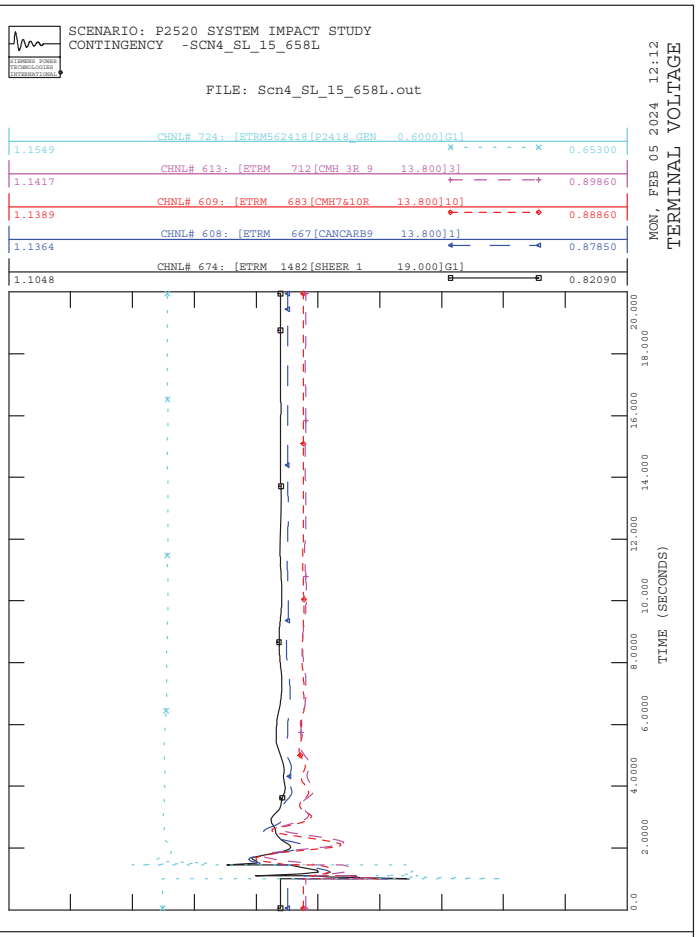
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L
FILE: Scn4_SL_15_658L.out
CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1]
1.1549
0.65300
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3]
1.1417
0.89860
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10]
1.1389
0.88860
CHNL# 608: [ETRM 667[CANCARB9 13.800]1]
1.1364
0.87850
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1]
1.1048
0.82090
MON, FEB 05 2024 12:12
TERMINAL VOLTAGE
TIME (SECONDS)
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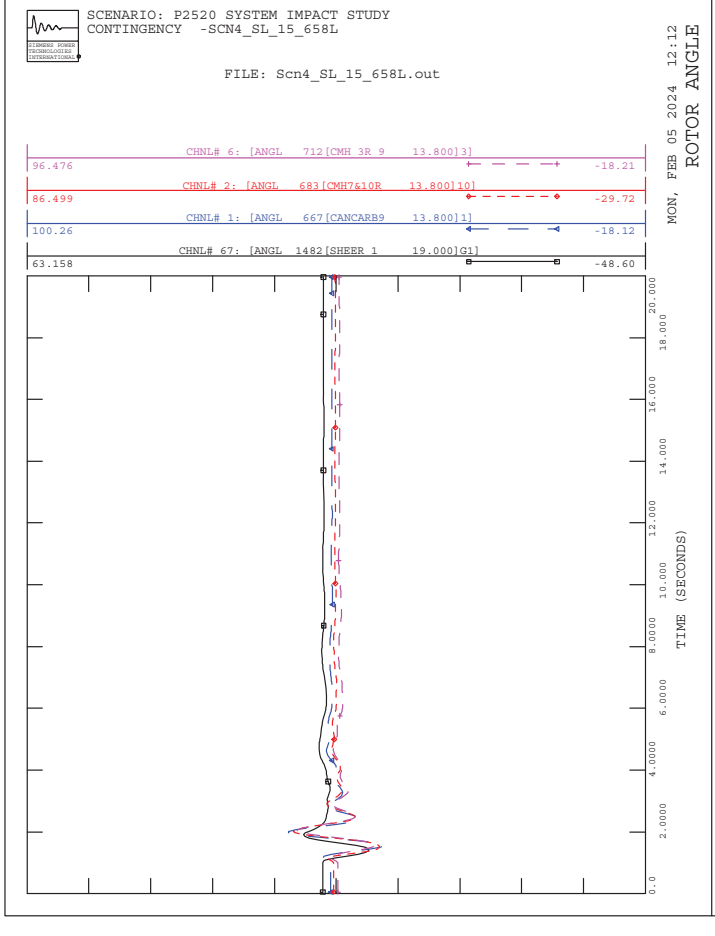
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L
FILE: Scn4_SL_15_658L.out
CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3]
96.476
-18.21
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10]
86.499
-29.72
CHNL# 1: [ANGL 667[CANCARB9 13.800]1]
100.26
-18.12
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1]
63.158
-48.60
MON, FEB 05 2024 12:12
ROTOR ANGLE
TIME (SECONDS)
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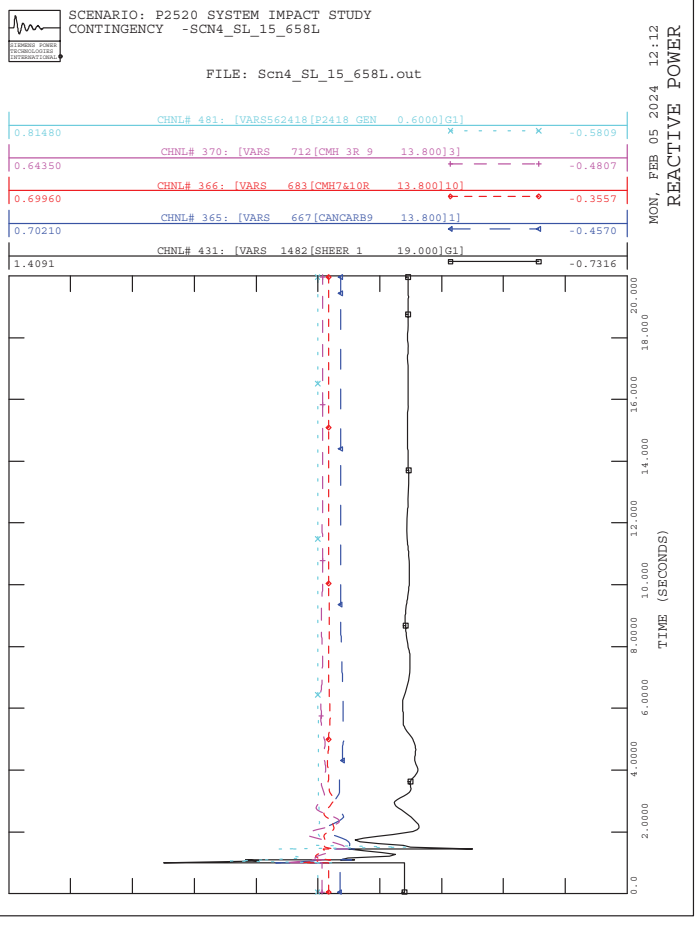
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L
FILE: Scn4_SL_15_658L.out
CHNL# 481: [VARS562418[P2418_GEN 0.6000]G1]
0.81480
-0.5809
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3]
0.64350
-0.4807
CHNL# 366: [VARS 683[CMH7&10R 13.800]10]
0.69960
-0.3557
CHNL# 365: [VARS 667[CANCARB9 13.800]1]
0.70210
-0.4570
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1]
1.4091
-0.7316
MON, FEB 05 2024 12:12
REACTIVE POWER
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

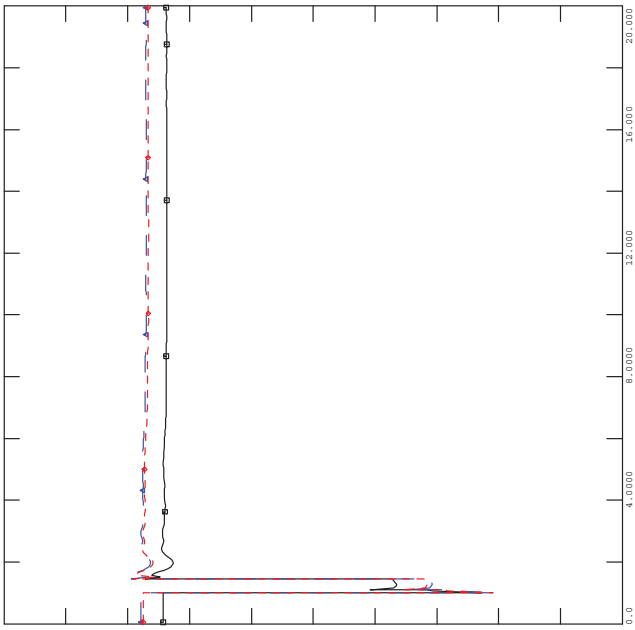
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L

FILE: Scn4_SL_15_658L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.1512 0.67300
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.1444 0.65890
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2034 0.76530



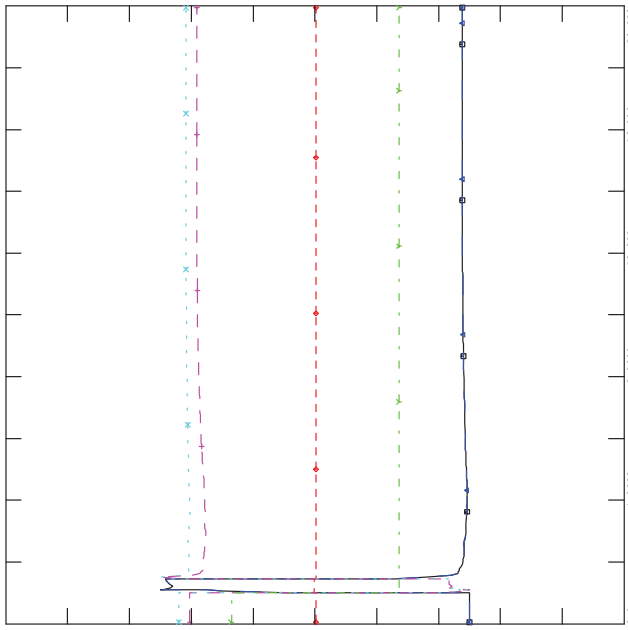
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L

FILE: Scn4_SL_15_658L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 765: [674L Q]
69.844 -40.00
CHNL# 763: [669L Q]
50.617 -128.0
CHNL# 761: [668L Q]
70.870 -130.3
CHNL# 759: [830L Q]
39.644 -40.67
CHNL# 757: [1002L Q]
184.41 -102.0
CHNL# 755: [945L Q]
200.37 -106.8



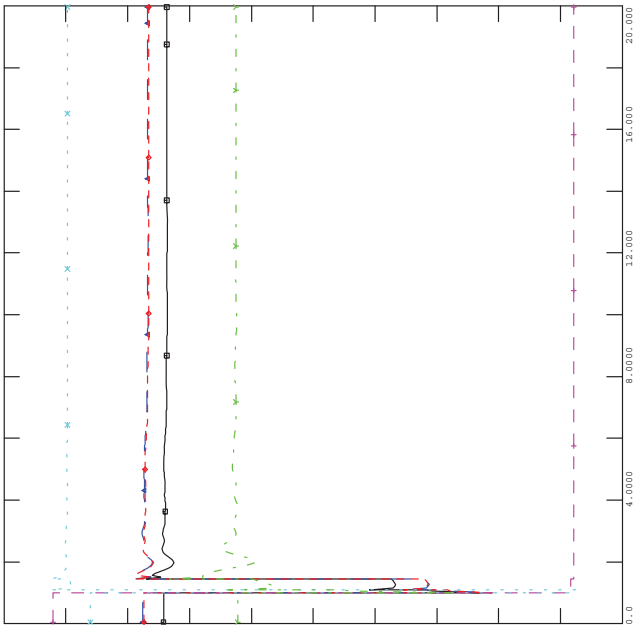
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L

FILE: Scn4_SL_15_658L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.1896 0.81710
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2552 -0.0999
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.1658 -0.1000
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.1444 0.67110
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.1444 0.66950
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2029 0.76840



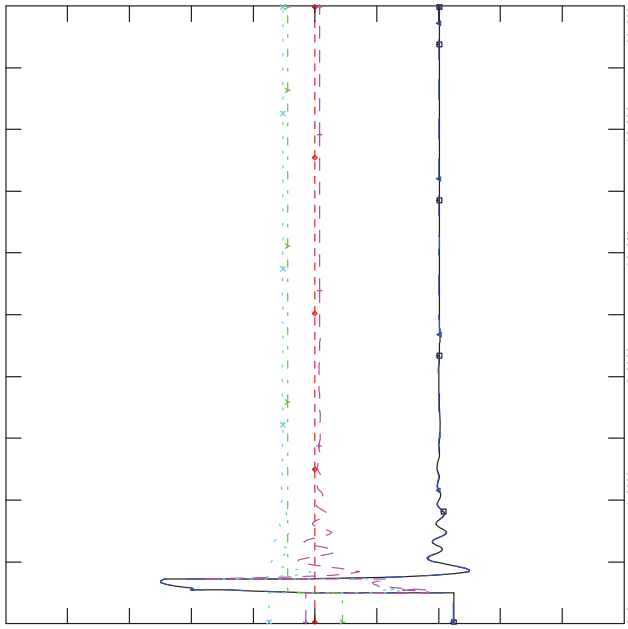
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L

FILE: Scn4_SL_15_658L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 764: [674L P]
40.000 -47.81
CHNL# 762: [669L P]
25.066 -88.77
CHNL# 760: [668L P]
2.4440 -125.0
CHNL# 758: [830L P]
40.000 -40.00
CHNL# 756: [1002L P]
95.658 -107.8
CHNL# 754: [945L P]
100.14 -115.5

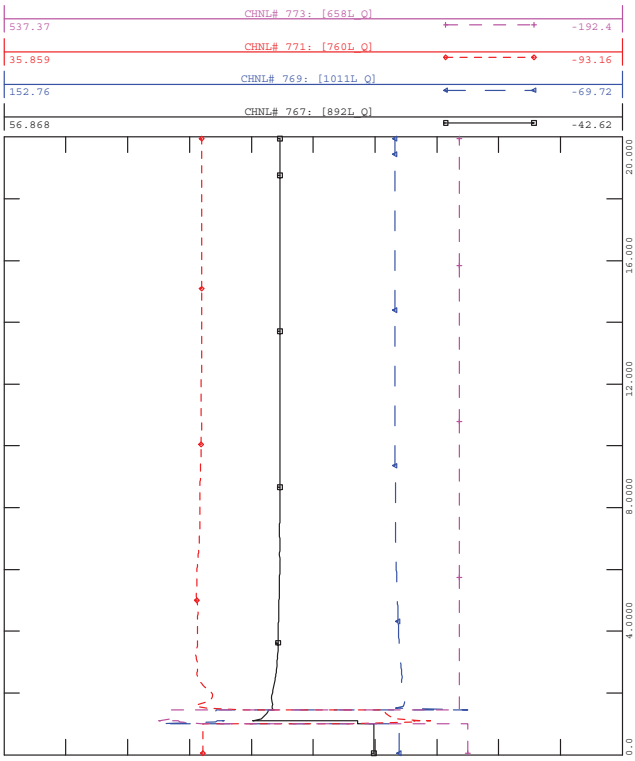


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L

FILE: Scn4_SL_15_658L.out

MON, FEB 05 2024 12:12

BRANCH Q

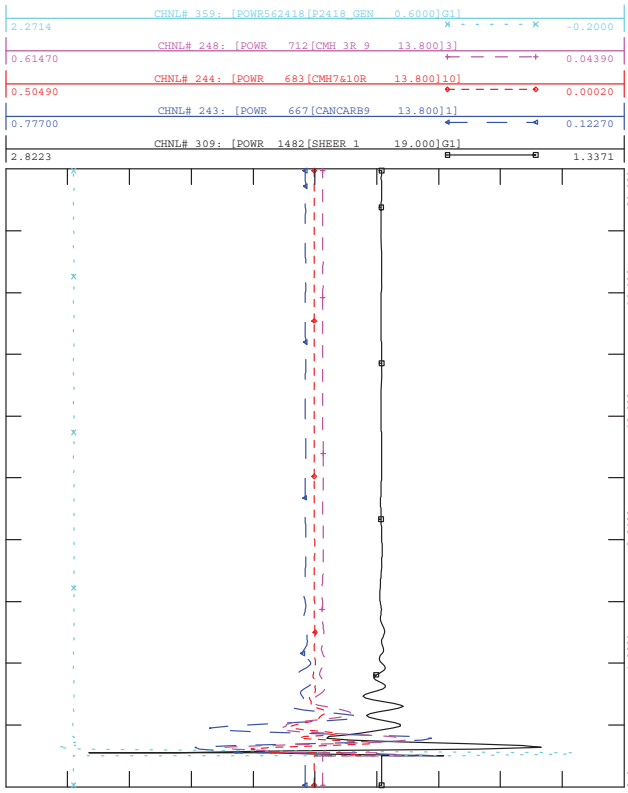


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L

FILE: Scn4_SL_16_658L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

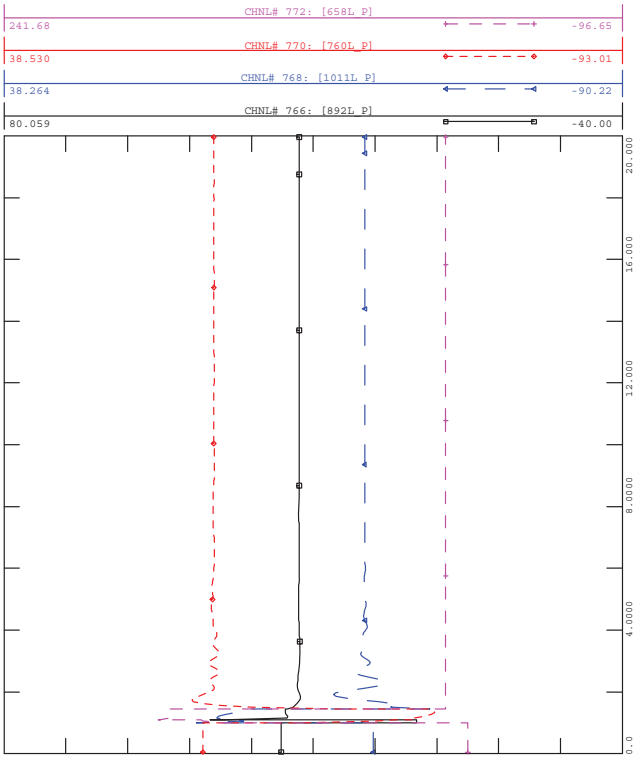


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_15_658L

FILE: Scn4_SL_15_658L.out

MON, FEB 05 2024 12:12

BRANCH P

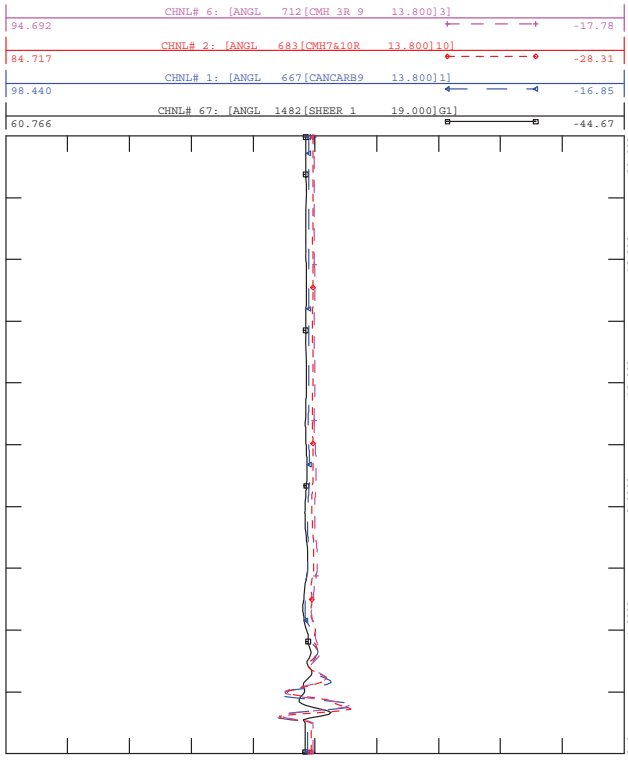


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L

FILE: Scn4_SL_16_658L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE



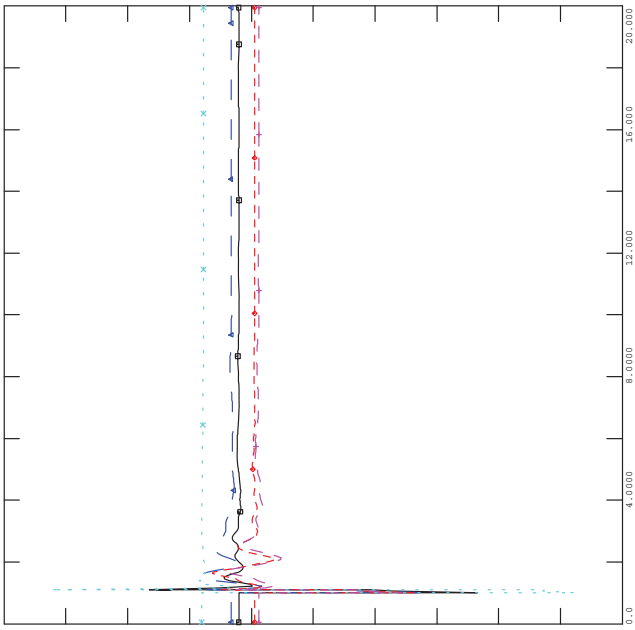
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L

FILE: Scn4_SL_16_658L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

CHNL# 724: [ETRM562418[P2418_GEN 0.6000]G1] 1.4479 0.14070
CHNL# 613: [ETRM 712[CMH 3R 9 13.800]3] 1.1405 0.86050
CHNL# 609: [ETRM 683[CMH7&10R 13.800]10] 1.1398 0.84340
CHNL# 608: [ETRM 667[CANCARB9 13.800]1] 1.1374 0.81800
CHNL# 674: [ETRM 1482[SHEER 1 19.000]G1] 1.1416 0.71580



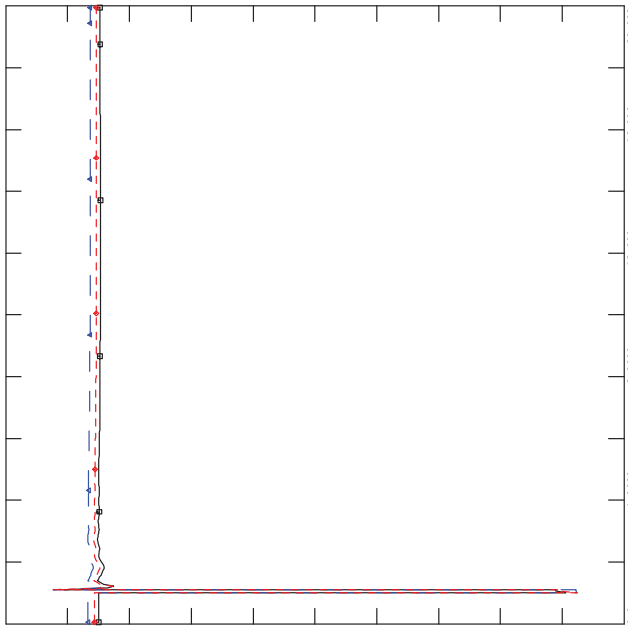
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L

FILE: Scn4_SL_16_658L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 747: [VOLT 540418 [P2418 138 138.00]] 1.2320 -0.0812
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]] 1.2105 -0.0925
CHNL# 745: [VOLT 677 [CYPRES2 240.00]] 1.2494 0.19390



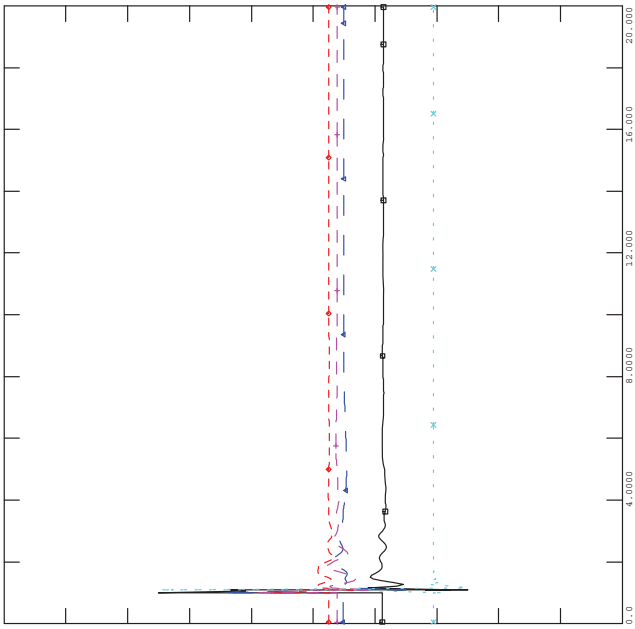
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L

FILE: Scn4_SL_16_658L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

CHNL# 481: [VARS562418[P2418 GEN 0.6000]G1] 3.9125 -1.553
CHNL# 370: [VARS 712[CMH 3R 9 13.800]3] 0.73990 -0.4970
CHNL# 366: [VARS 683[CMH7&10R 13.800]10] 0.76250 -0.3970
CHNL# 365: [VARS 667[CANCARB9 13.800]1] 0.86400 -0.5631
CHNL# 431: [VARS 1482[SHEER 1 19.000]G1] 3.5932 -2.220



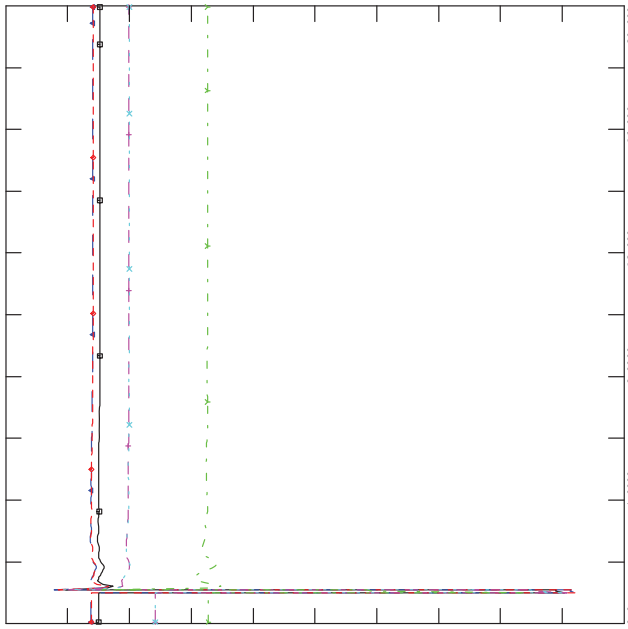
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L

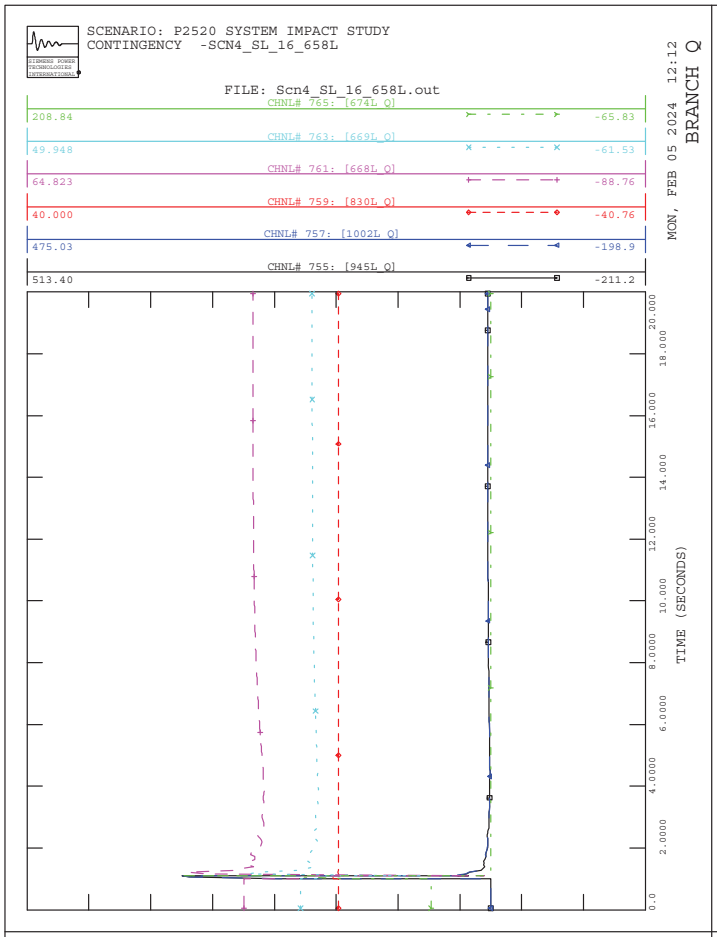
FILE: Scn4_SL_16_658L.out

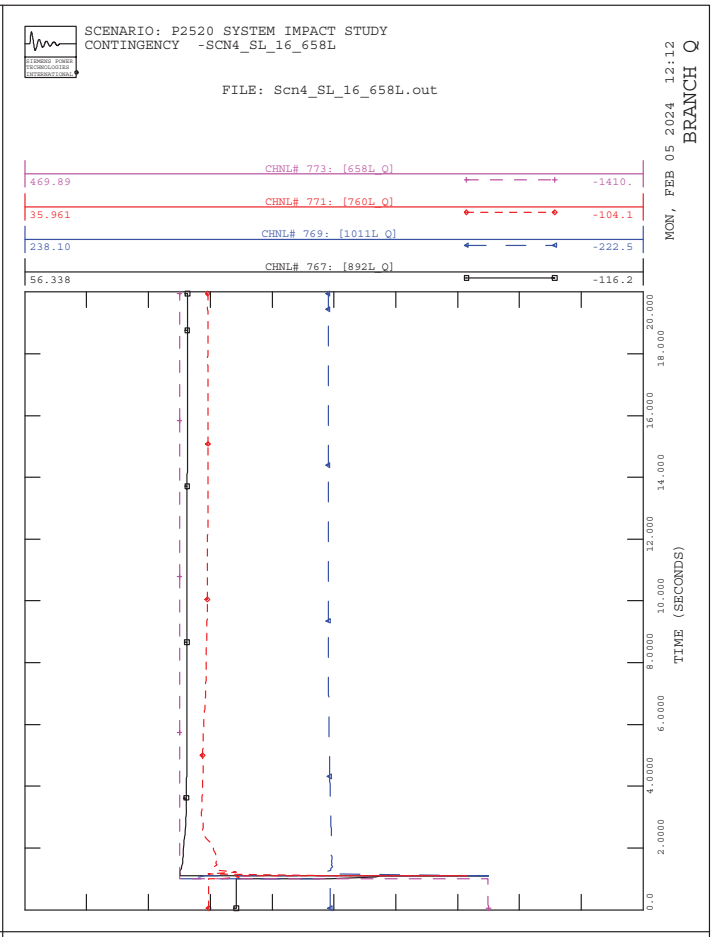
MON, FEB 05 2024 12:12

BUS VOLTAGE

CHNL# 744: [VOLT 669 [BOWMAN1 240.00]] 1.2596 0.61660
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]] 1.3270 0.24840
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]] 1.3270 0.24560
CHNL# 741: [VOLT 267 [DOME EM7 138.00]] 1.2120 -0.0510
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]] 1.2130 -0.0599
CHNL# 739: [VOLT 262 [DOME EM4 240.00]] 1.2470 0.20490




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L
FILE: Scn4_SL_16_658L.out
CHNL# 765: [674L Q]
208.84
-65.83
CHNL# 763: [669L Q]
49.948
-61.53
CHNL# 761: [668L Q]
64.823
-88.76
CHNL# 759: [830L Q]
40.000
-40.76
CHNL# 757: [1002L Q]
475.03
-198.9
CHNL# 755: [945L Q]
513.40
-211.2
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L
FILE: Scn4_SL_16_658L.out
CHNL# 773: [658L Q]
469.89
-1410.
CHNL# 771: [760L Q]
35.961
-104.1
CHNL# 769: [1011L Q]
238.10
-222.5
CHNL# 767: [892L Q]
56.338
-116.2
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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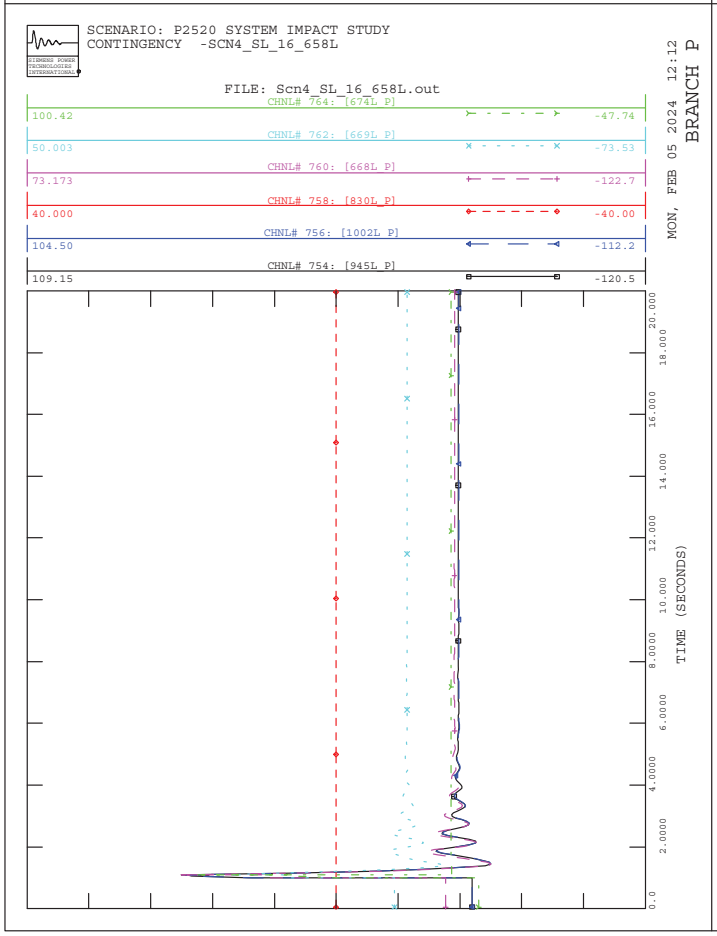
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L
FILE: Scn4_SL_16_658L.out
CHNL# 764: [674L P]
100.42
-47.74
CHNL# 762: [669L P]
50.003
-73.53
CHNL# 760: [668L P]
73.173
-122.7
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
104.50
-112.2
CHNL# 754: [945L P]
109.15
-120.5
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
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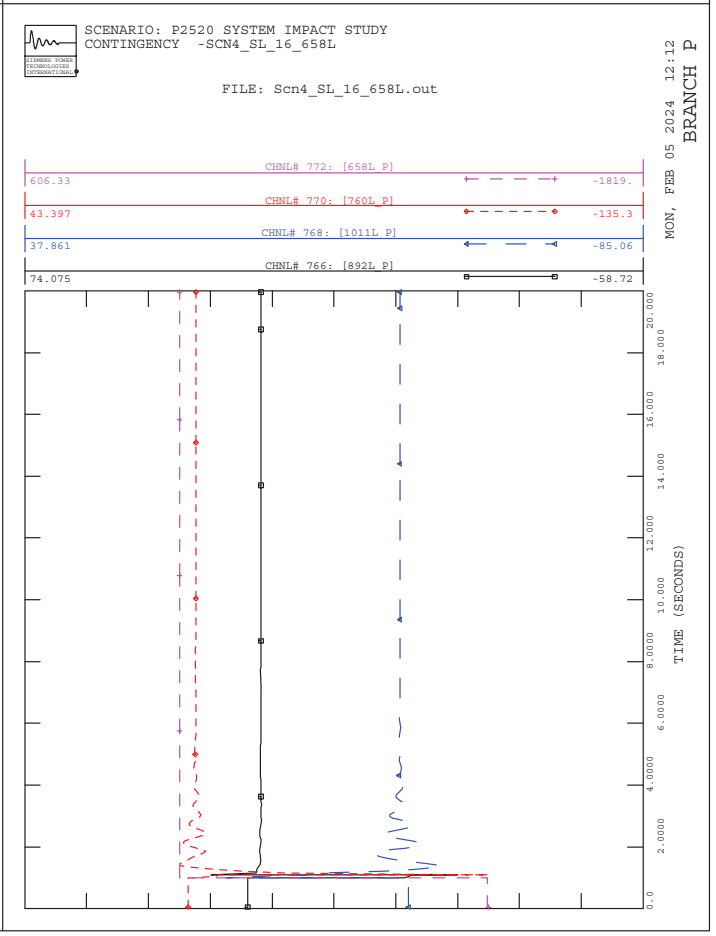
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

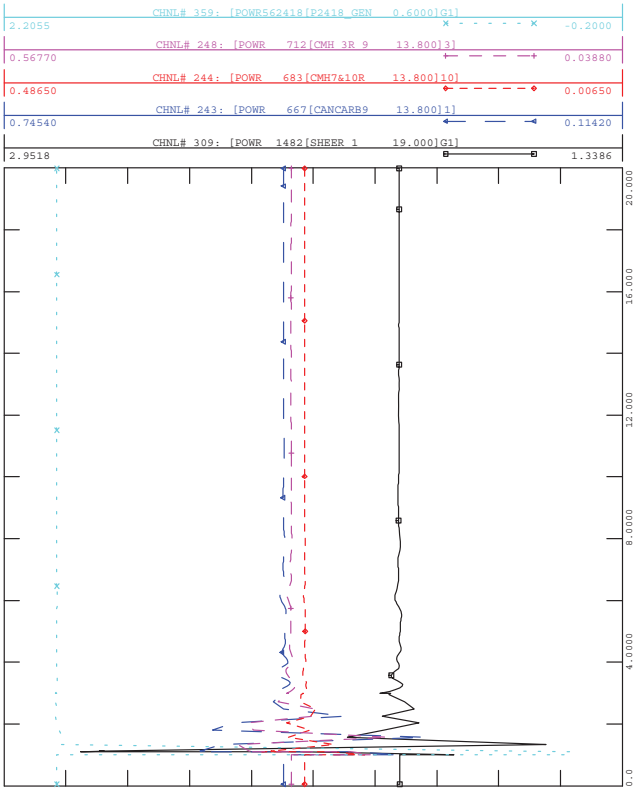

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_16_658L
FILE: Scn4_SL_16_658L.out
CHNL# 772: [658L P]
606.33
-1819.
CHNL# 770: [760L P]
43.397
-135.3
CHNL# 768: [1011L P]
37.861
-85.06
CHNL# 766: [892L P]
74.075
-58.72
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L

FILE: Scn4_SL_17_760L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

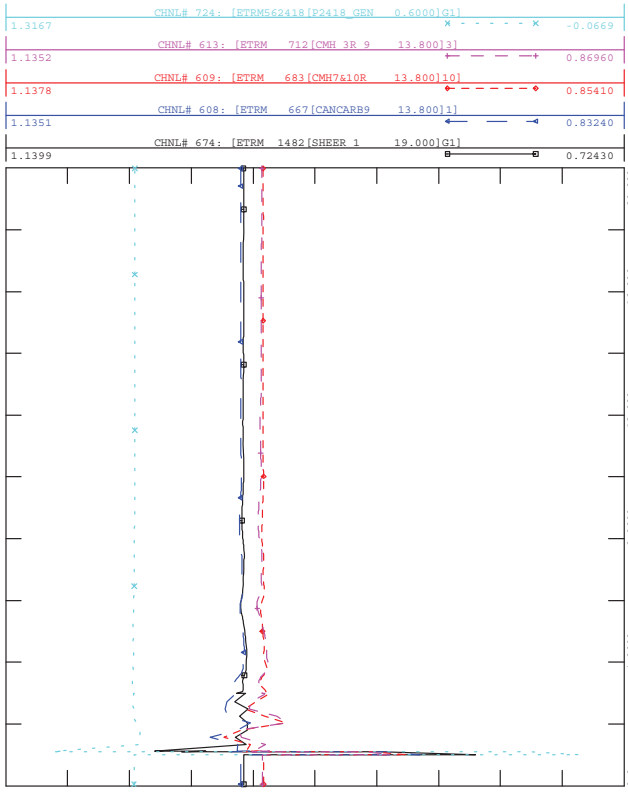


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L

FILE: Scn4_SL_17_760L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

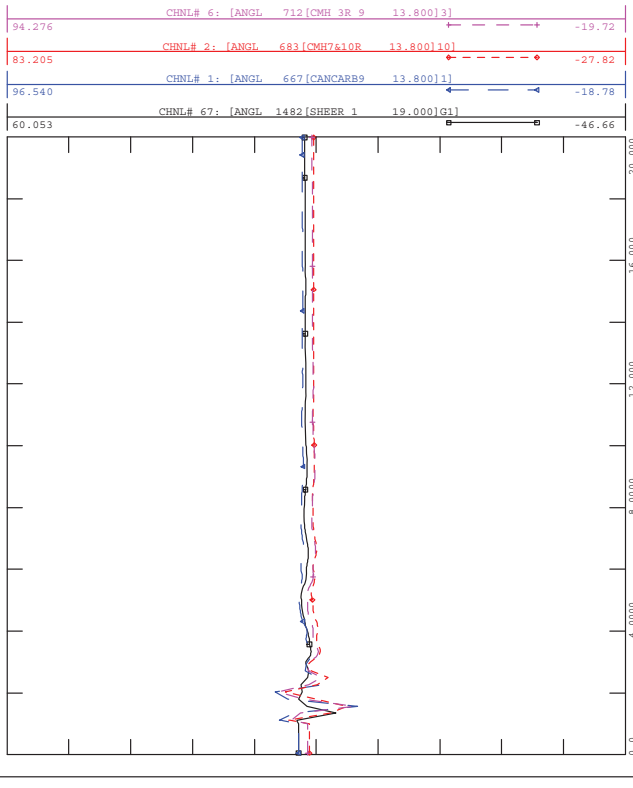


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L

FILE: Scn4_SL_17_760L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

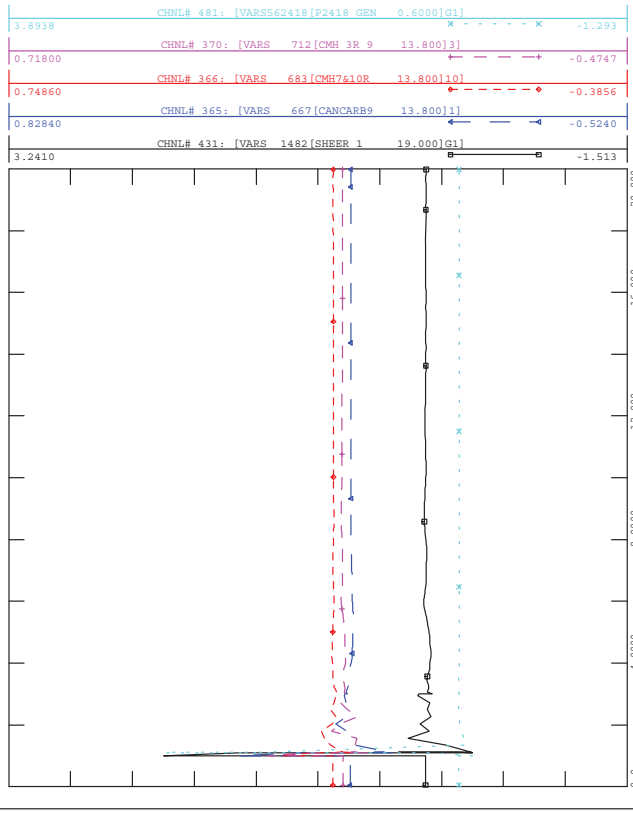


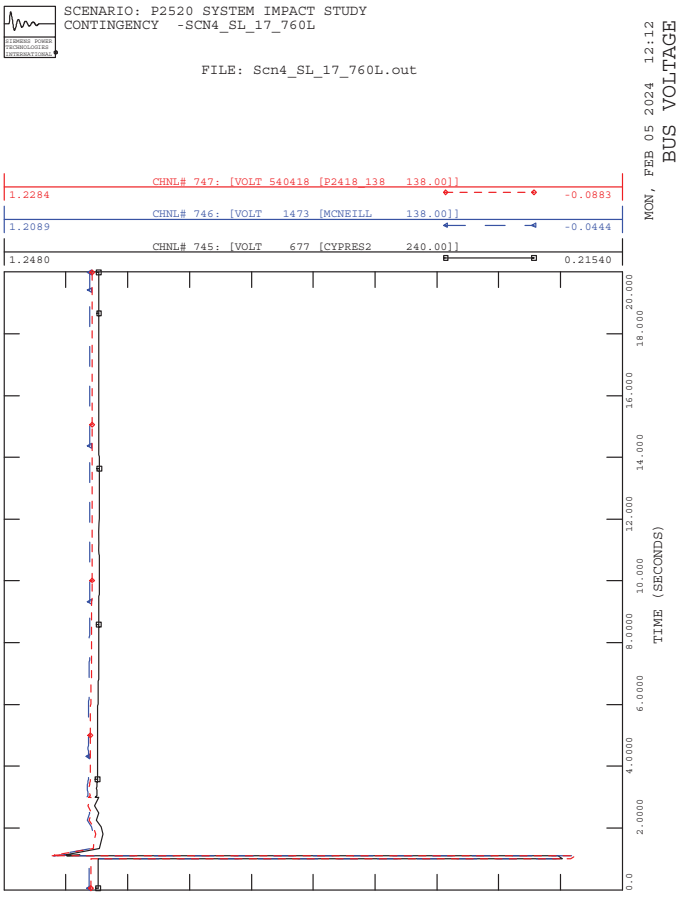
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L

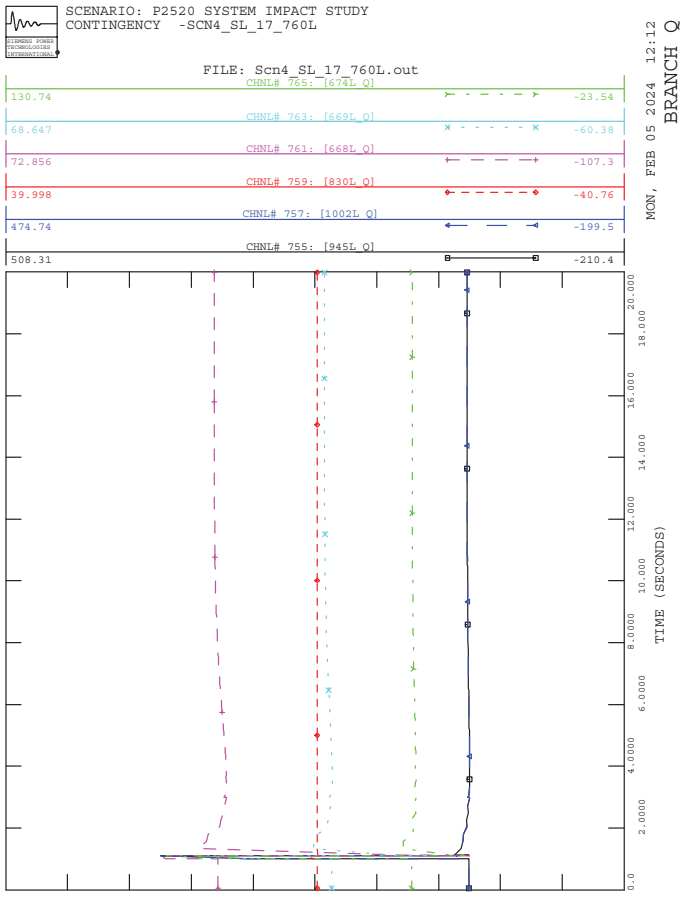
FILE: Scn4_SL_17_760L.out

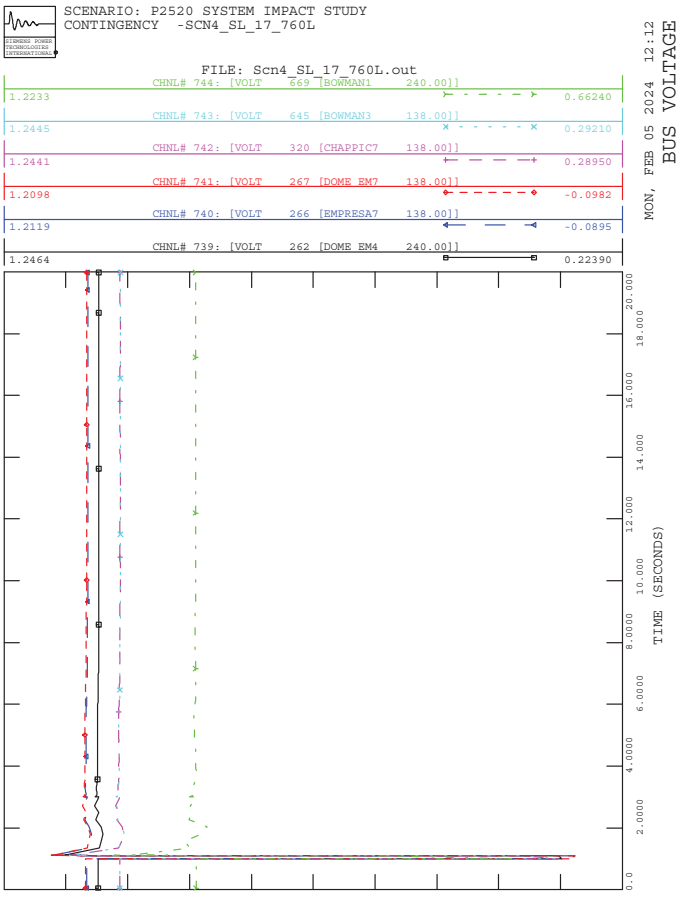
MON, FEB 05 2024 12:12

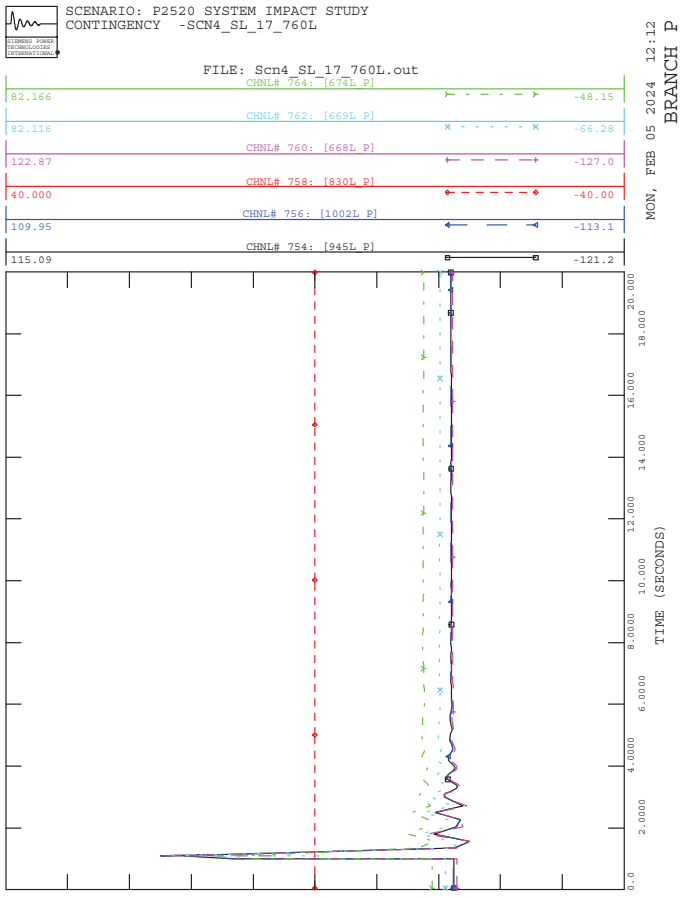
REACTIVE POWER




SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L
FILE: Scn4_SL_17_760L.out
CHNL# 747: [VOLT 540418 [P2418 138 138.00]]
1.2284
-0.0883
CHNL# 746: [VOLT 1473 [MCNEILL 138.00]]
1.2089
-0.0444
CHNL# 745: [VOLT 677 [CYPRES2 240.00]]
1.2480
0.21540
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L
FILE: Scn4_SL_17_760L.out
CHNL# 765: [674L Q]
130.74
-23.54
CHNL# 763: [669L Q]
68.647
-60.38
CHNL# 761: [668L Q]
72.856
-107.3
CHNL# 759: [830L Q]
39.998
-40.76
CHNL# 757: [1002L Q]
474.74
-199.5
CHNL# 755: [945L Q]
508.31
-210.4
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L
FILE: Scn4_SL_17_760L.out
CHNL# 744: [VOLT 669 [BOWMAN1 240.00]]
1.2233
0.66240
CHNL# 743: [VOLT 645 [BOWMAN3 138.00]]
1.2445
0.29210
CHNL# 742: [VOLT 320 [CHAPPIC7 138.00]]
1.2441
0.28950
CHNL# 741: [VOLT 267 [DOME EM7 138.00]]
1.2098
-0.0982
CHNL# 740: [VOLT 266 [EMPRESA7 138.00]]
1.2119
-0.0895
CHNL# 739: [VOLT 262 [DOME EM4 240.00]]
1.2464
0.22390
MON, FEB 05 2024 12:12
BUS VOLTAGE
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L
FILE: Scn4_SL_17_760L.out
CHNL# 764: [674L P]
82.166
-48.15
CHNL# 762: [669L P]
82.116
-66.28
CHNL# 760: [668L P]
122.87
-127.0
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
109.95
-113.1
CHNL# 754: [945L P]
115.09
-121.2
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L

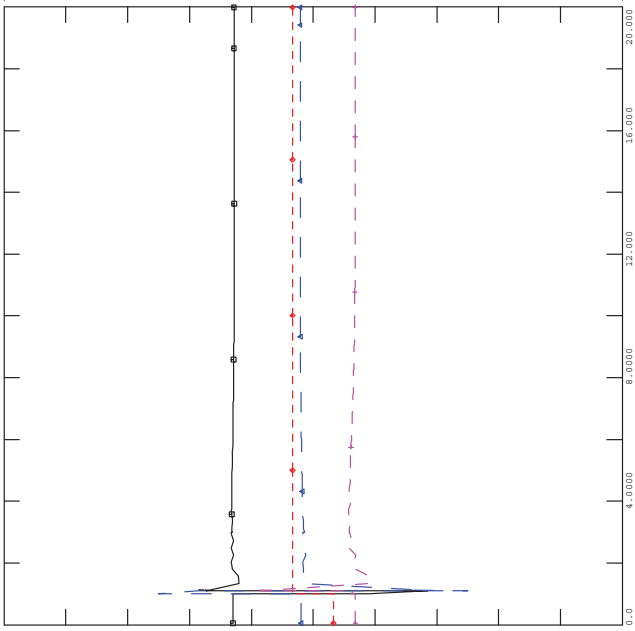
FILE: Scn4_SL_17_760L.out

MON, FEB 05 2024 12:12

BRANCH Q

CHNL# 773: [658L Q] 45.625 -52.17
CHNL# 771: [760L Q] 40.000 -45.67
CHNL# 769: [1011L Q] 196.12 -190.1
CHNL# 767: [892L Q] 44.396 -82.67

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L

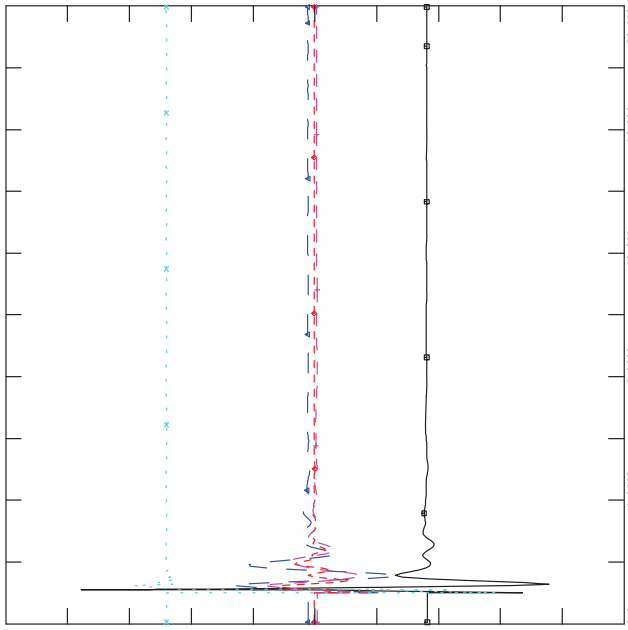
FILE: Scn4_SL_18_760L.out

MON, FEB 05 2024 12:12

ACTIVE POWER

CHNL# 359: [POWR562418[P2418_GEN 0.6000]G1] 2.2522 1.2812
CHNL# 248: [POWR 712[CMH 3R 9 13.800]3] 0.56400 0.08310
CHNL# 244: [POWR 683[CMH7&10R 13.800]10] 0.47880 0.02640
CHNL# 243: [POWR 667[CANCARB9 13.800]1] 0.72570 0.18180
CHNL# 309: [POWR 1482[SHEER 1 19.000]G1] 3.0372 1.3981

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_17_760L

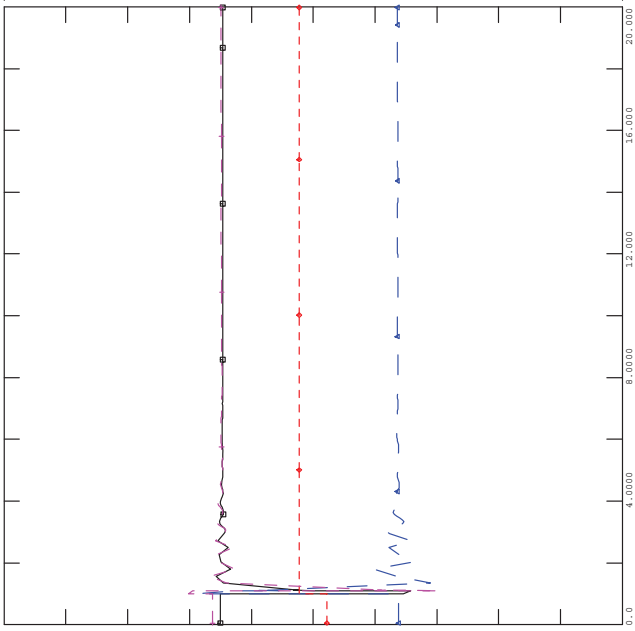
FILE: Scn4_SL_17_760L.out

MON, FEB 05 2024 12:12

BRANCH P

CHNL# 772: [658L P] 33.224 -101.0
CHNL# 770: [760L P] 40.000 -43.74
CHNL# 768: [1011L P] 43.675 -85.03
CHNL# 766: [892L P] 67.036 -49.65

TIME (SECONDS)



SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L

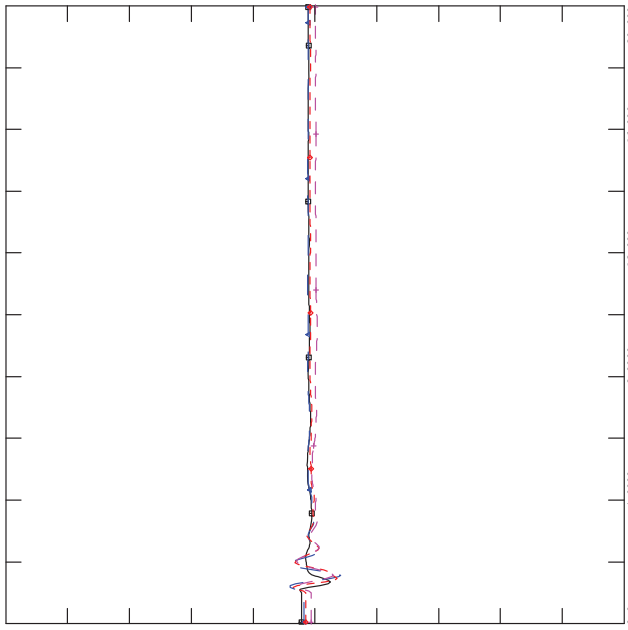
FILE: Scn4_SL_18_760L.out

MON, FEB 05 2024 12:12

ROTOR ANGLE

CHNL# 6: [ANGL 712[CMH 3R 9 13.800]3] 91.288 -15.02
CHNL# 2: [ANGL 683[CMH7&10R 13.800]10] 81.178 -26.51
CHNL# 1: [ANGL 667[CANCARB9 13.800]1] 94.752 -14.25
CHNL# 67: [ANGL 1482[SHEER 1 19.000]G1] 60.136 -45.14

TIME (SECONDS)

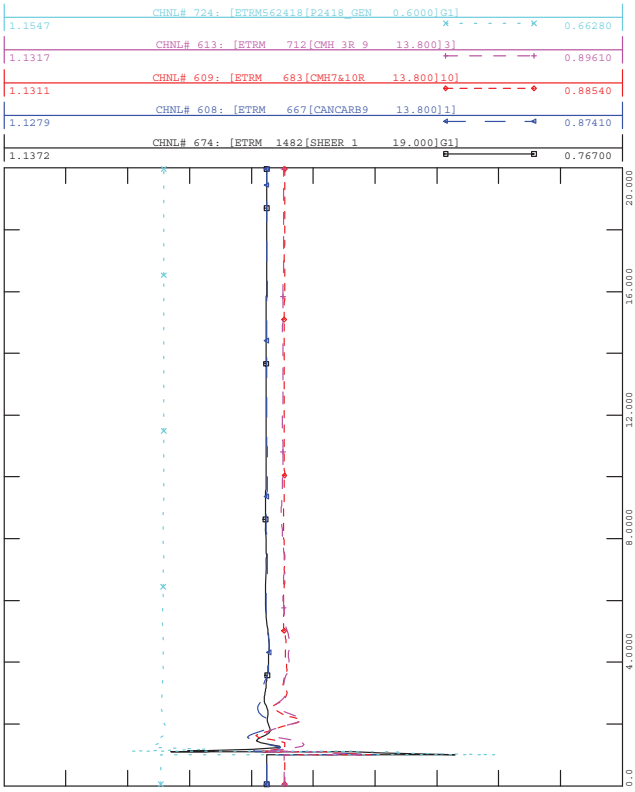


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L

FILE: Scn4_SL_18_760L.out

MON, FEB 05 2024 12:12

TERMINAL VOLTAGE

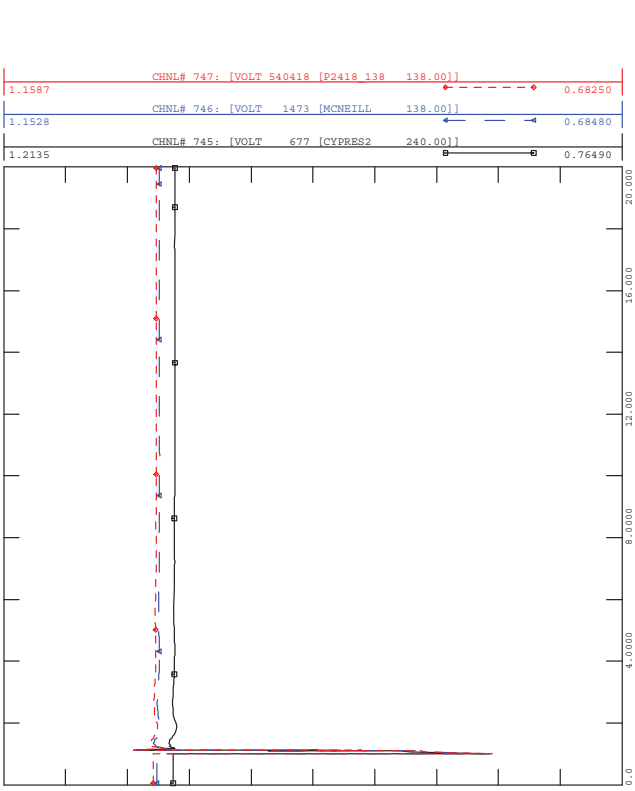


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L

FILE: Scn4_SL_18_760L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

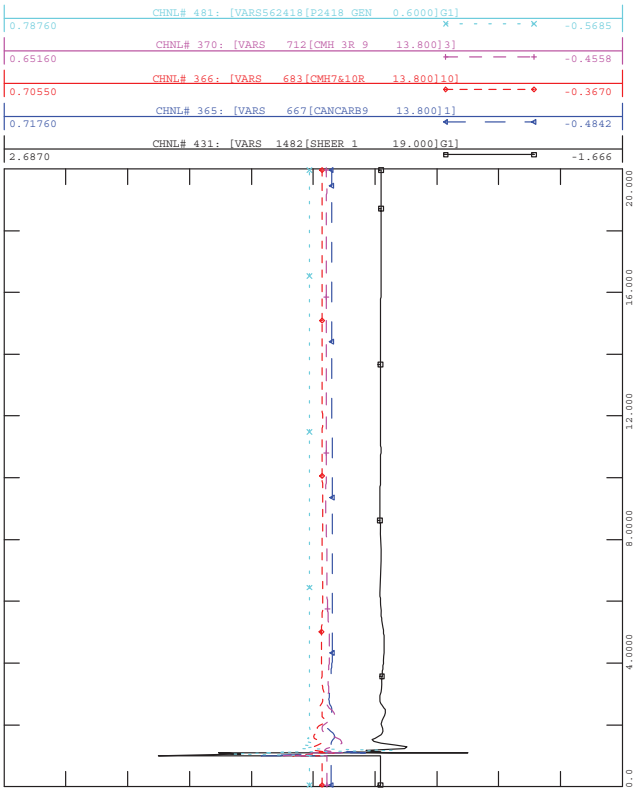


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L

FILE: Scn4_SL_18_760L.out

MON, FEB 05 2024 12:12

REACTIVE POWER

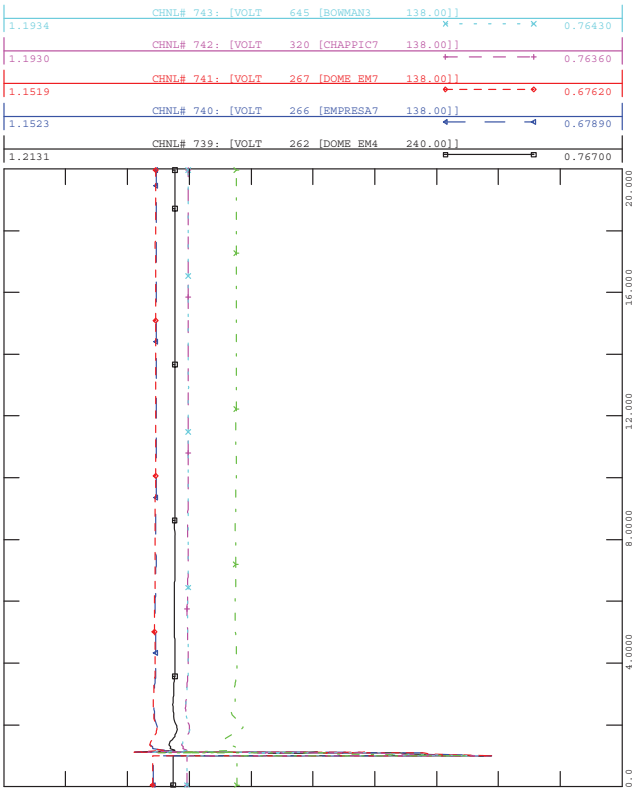


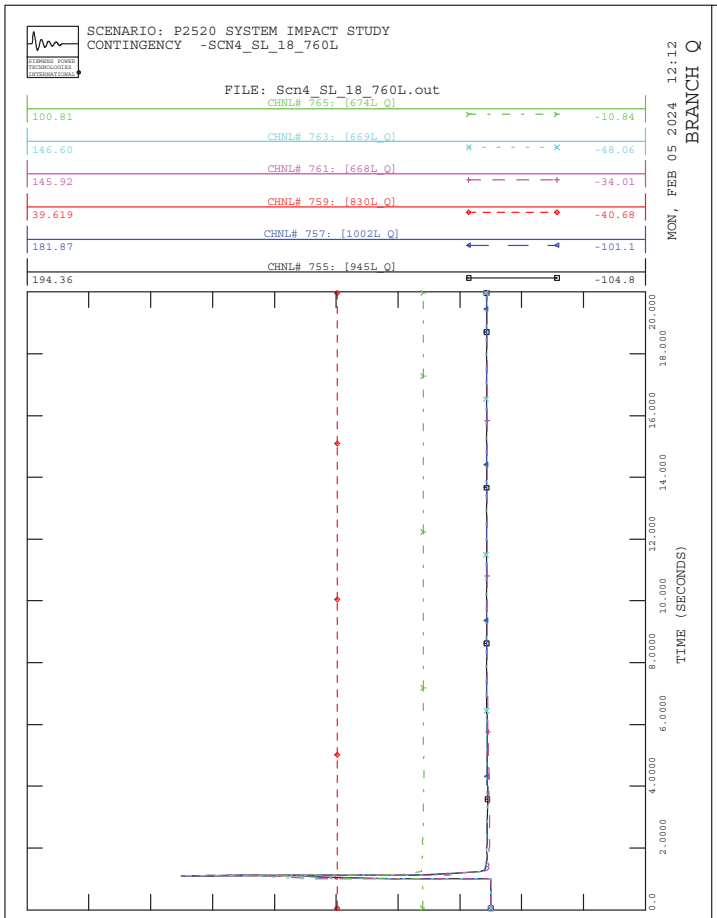
SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L

FILE: Scn4_SL_18_760L.out

MON, FEB 05 2024 12:12

BUS VOLTAGE

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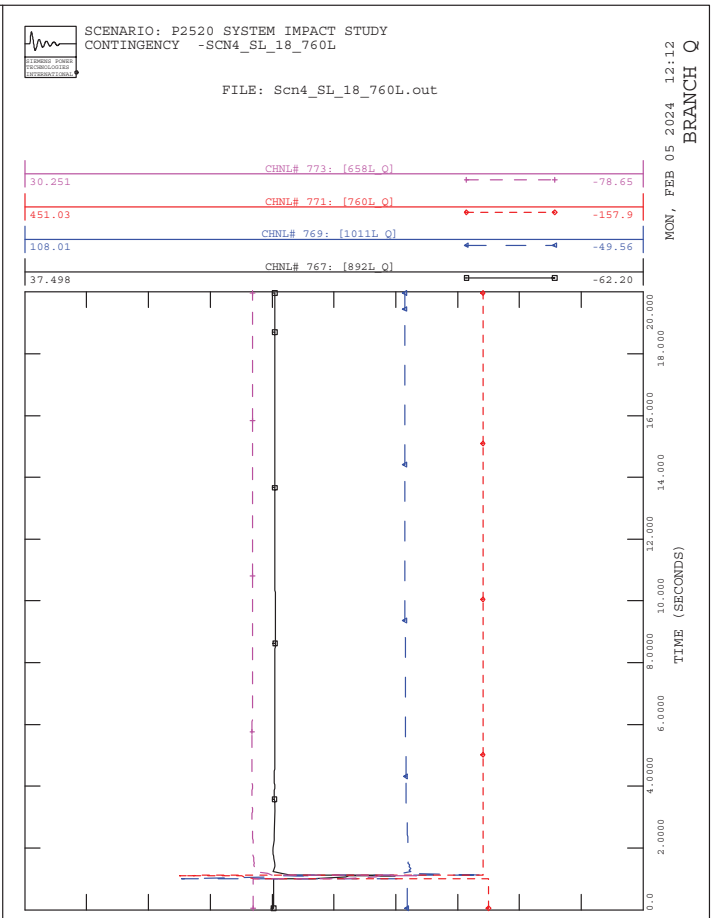
CONTINGENCY -SCN4_SL_18_760L
FILE: Scn4_SL_18_760L.out
CHNL# 765: [674L Q]
100.81
-10.84
CHNL# 763: [669L Q]
146.60
-48.06
CHNL# 761: [668L Q]
145.92
-34.01
CHNL# 759: [830L Q]
39.619
-40.68
CHNL# 757: [1002L Q]
181.87
-101.1
CHNL# 755: [945L Q]
194.36
-104.8
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L
FILE: Scn4_SL_18_760L.out
CHNL# 773: [658L Q]
30.251
-78.65
CHNL# 771: [760L Q]
451.03
-157.9
CHNL# 769: [1011L Q]
108.01
-49.56
CHNL# 767: [892L Q]
37.498
-62.20
MON, FEB 05 2024 12:12
BRANCH Q
TIME (SECONDS)
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6.0000
8.0000
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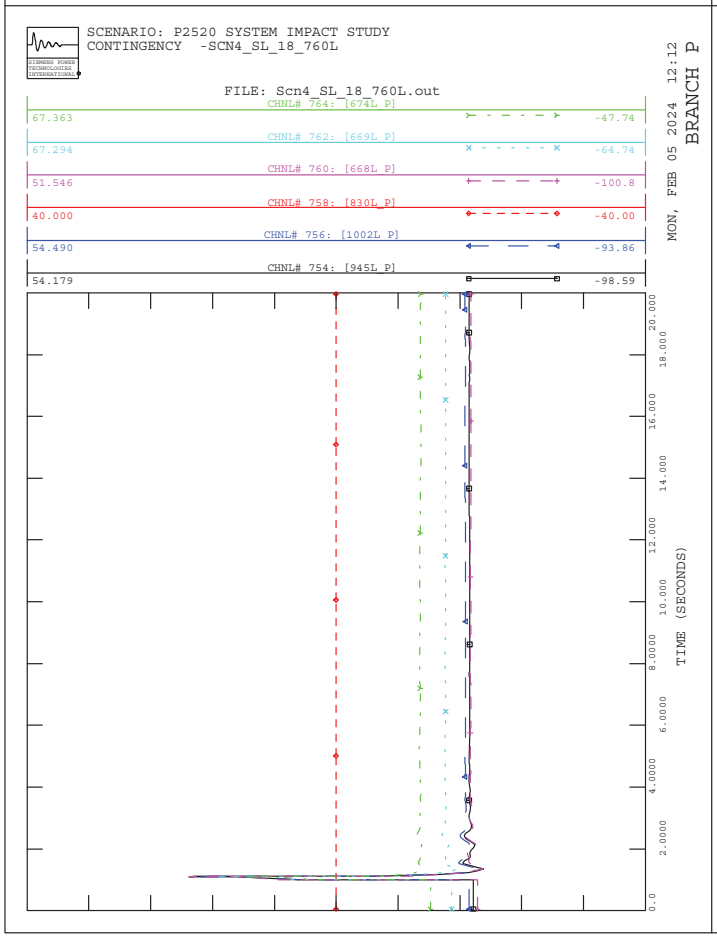
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L
FILE: Scn4_SL_18_760L.out
CHNL# 764: [674L P]
67.363
-47.74
CHNL# 762: [669L P]
67.294
-64.74
CHNL# 760: [668L P]
51.546
-100.8
CHNL# 758: [830L P]
40.000
-40.00
CHNL# 756: [1002L P]
54.490
-93.86
CHNL# 754: [945L P]
54.179
-98.59
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
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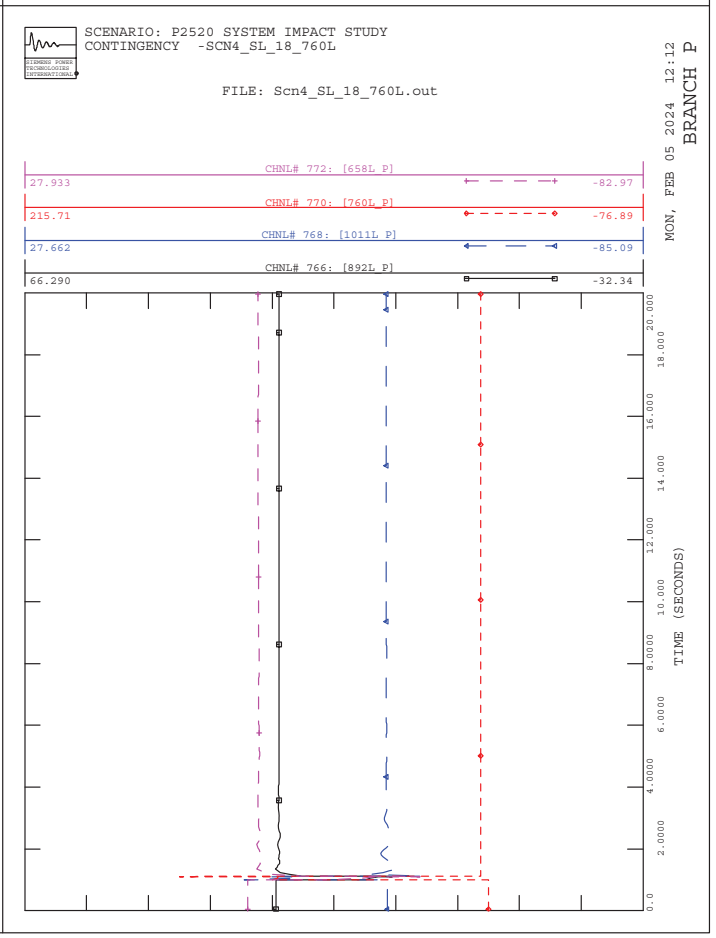
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000


SCENARIO: P2520 SYSTEM IMPACT STUDY
CONTINGENCY -SCN4_SL_18_760L
FILE: Scn4_SL_18_760L.out
CHNL# 772: [658L P]
27.933
-82.97
CHNL# 770: [760L P]
215.71
-76.89
CHNL# 768: [1011L P]
27.662
-85.09
CHNL# 766: [892L P]
66.290
-32.34
MON, FEB 05 2024 12:12
BRANCH P
TIME (SECONDS)
0.0
2.0000
4.0000
6.0000
8.0000
10.000
12.000
14.000
16.000
18.000
20.000

Attachment A5
Dynamic Data and Assumptions

```
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/P2418 Dynamic Model Data
/
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     1
          0.20000E-01 10.000 0.90000 0.50000 1.2200 1.2000 0.80000 0.40000
          -1.3000 0.20000E-01 0.70000 30.0 -30.0 0.7000 /
562418 'USRMDL' G1 'REECAU1' 102 0 6 45 6 9
    0   0   1   0   0   0
    0.9000      1.1000      0.0200   -0.100         0.1000
    0.50000      1.0        -1.0       1.0000         0.0
    0.0         0.0         0.02      1.0           -1.0
    1.500       0.800       0.5       5.0            1.0
    10.00       0.0         0.02      10.0          -10.0
    1.0         0.0         1.0       0.02           0.0
    1.0         2.0         1.0       0.0            0.0
    0.0         0.0         0.2       0.0            0.75
    0.23        0.85        0.85      1.0            1.0 /
562418 'USRMDL' G1 'REPCAU1' 107 0 7 27 7 9
     0 0 0 '0' 1 1 1
     0.20000E-01 18.000 5.0000 0.0000 0.75000E-01 0.0000 0.0000
          0.0000 0.20000E-01 0.10000 -0.10000 0.0000 0.0000 0.43600 -0.4360
          0.10000 0.50000E-01 0.25000 0.0000 0.0000 999.00 -999.00
          999.00 -999.00 0.10000 20.000 0.0000 /
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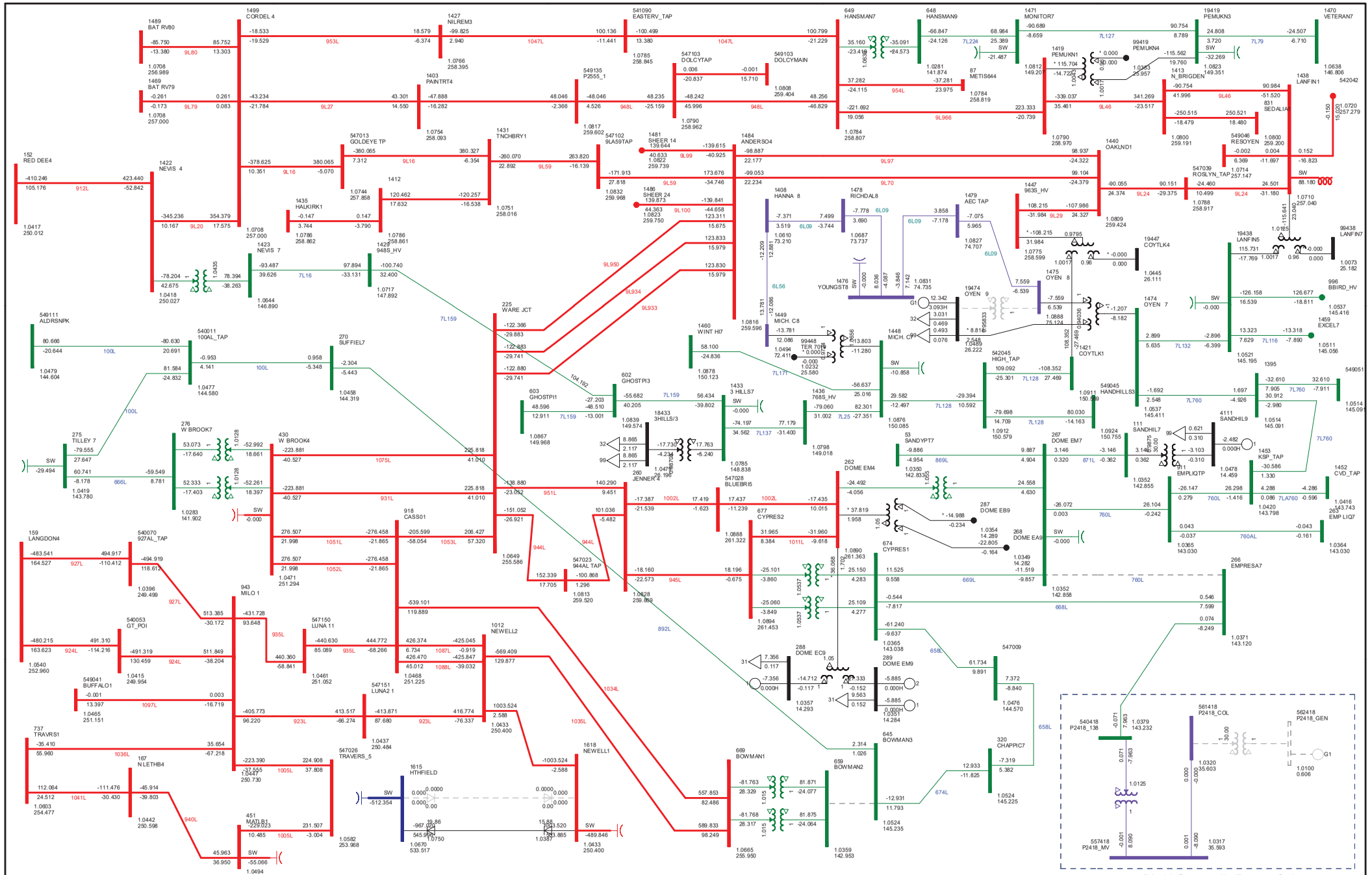
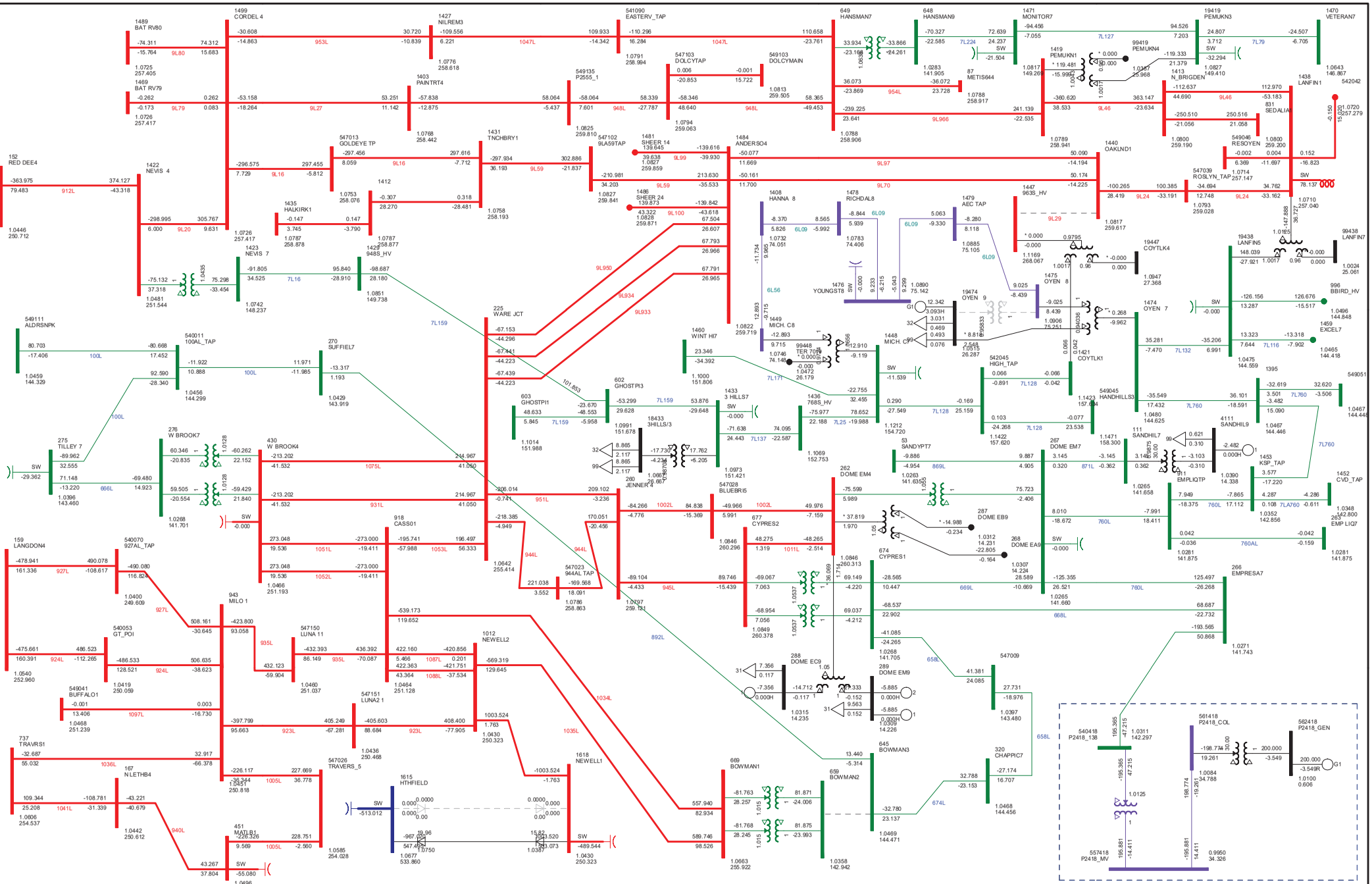
Attachment A6
Post-Mitigation Power Flow Diagrams



P2418 Greencells Estuary Solar

FIGURE A6-1-1 N-1: 760L (AMOCO EMPRESS 163S TO EMPRESS 394S)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A6-1-2 N-1: 9L29 (OAKLAND 946S TO COYOTE LAKE 963S)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/MVar
Equipment - MW/MVar
SOLSTICE A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

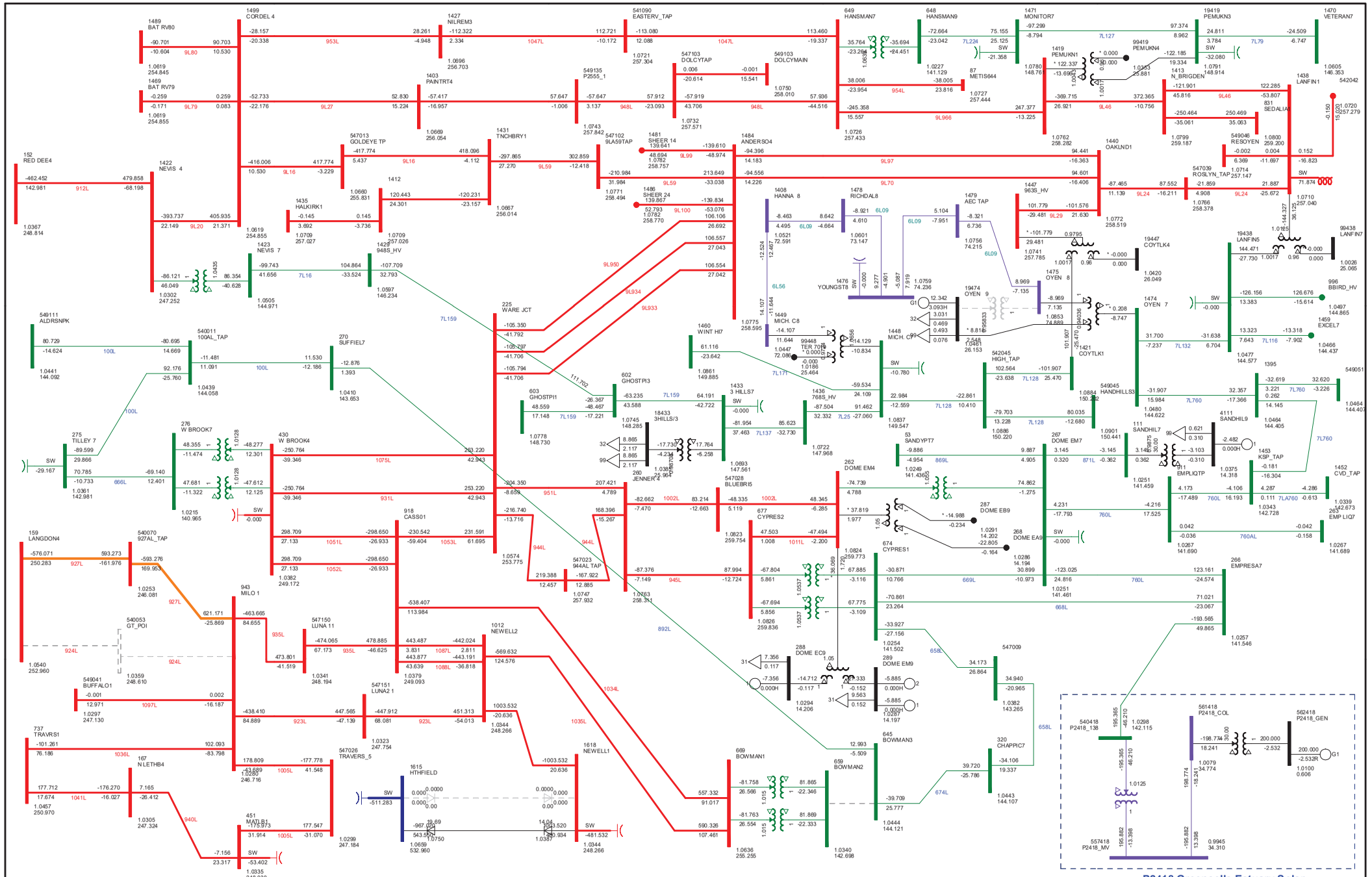


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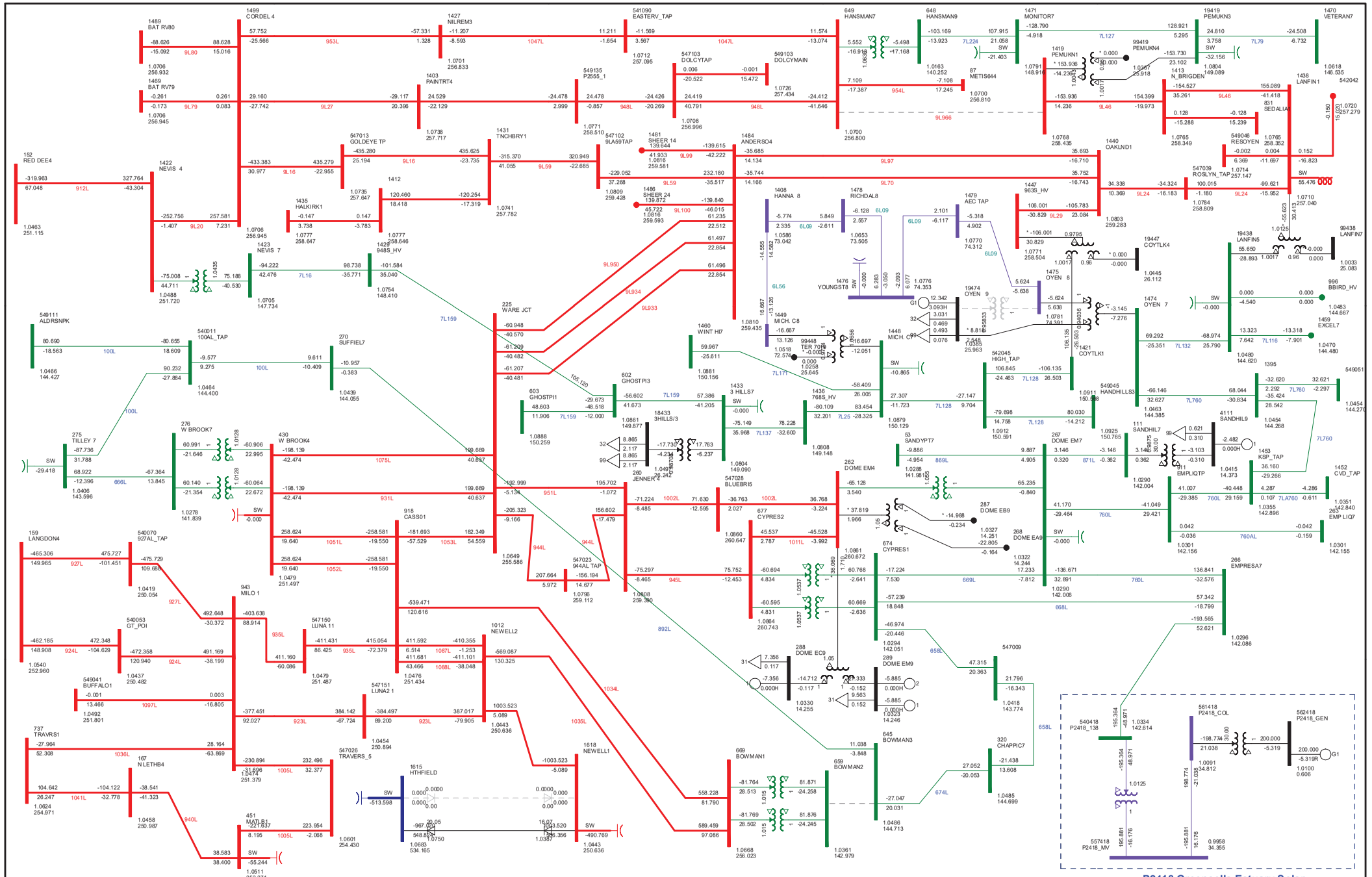
FIGURE A6-1-3 N-1: 924L (MILO 356S TO LANGDON 102S)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

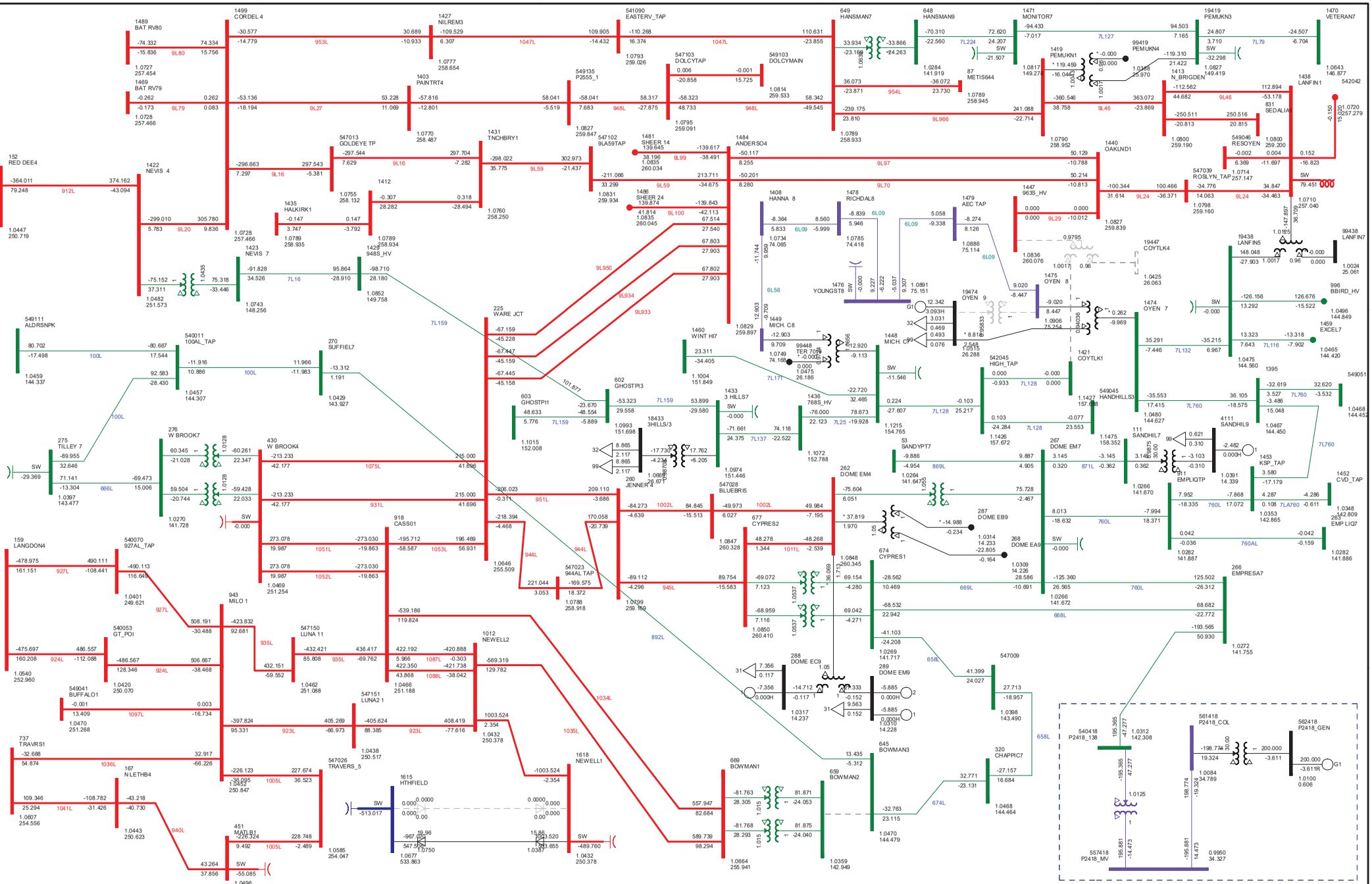
Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLUTION Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-1-4 N-1: 9L966 (PEMUKAN 932S TO HANSMAN LAKE 650S)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-1-5 N-1: 963S T1 (COYOTE LAKE 963S TRANSFORMER T1)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

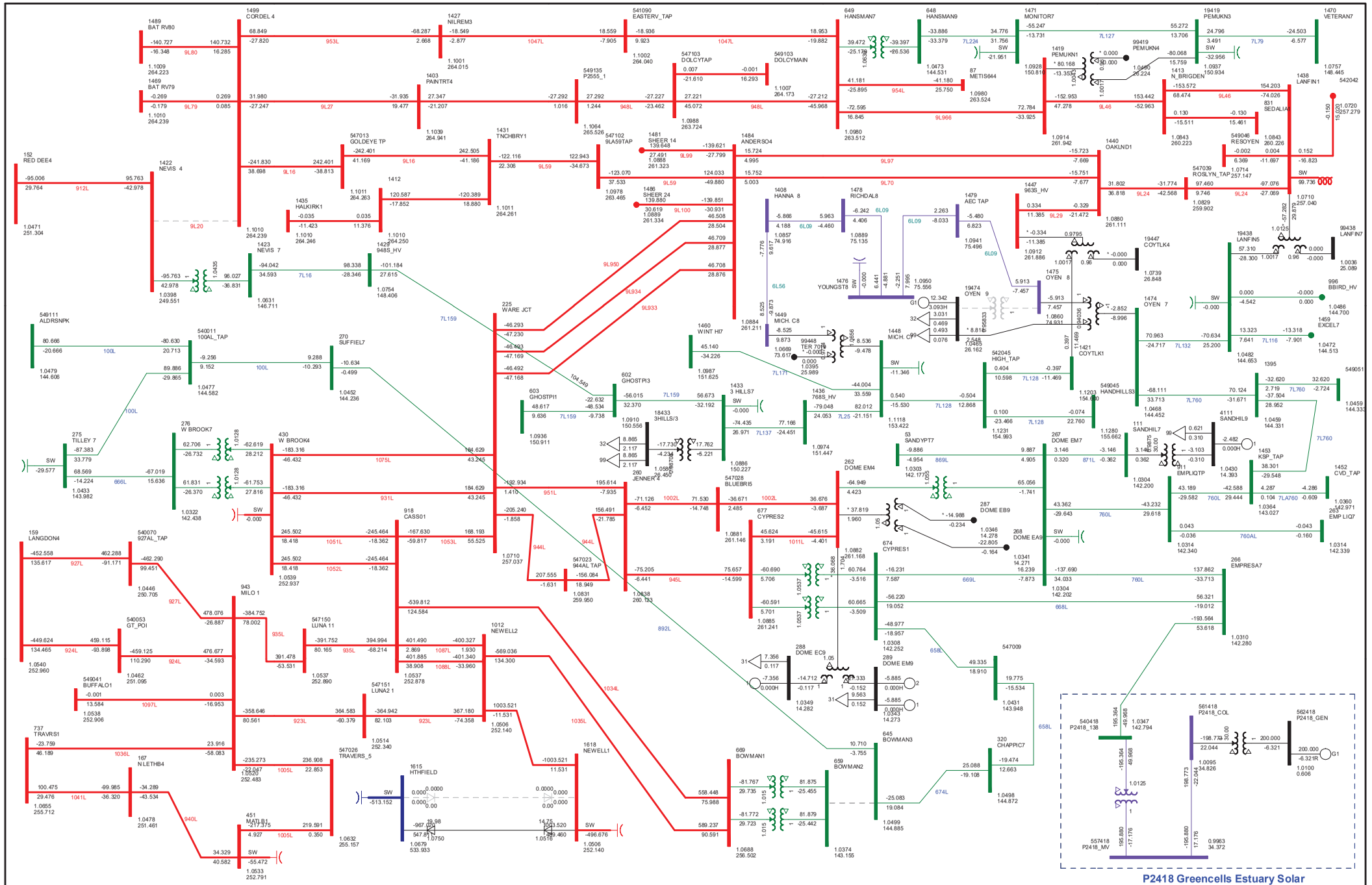


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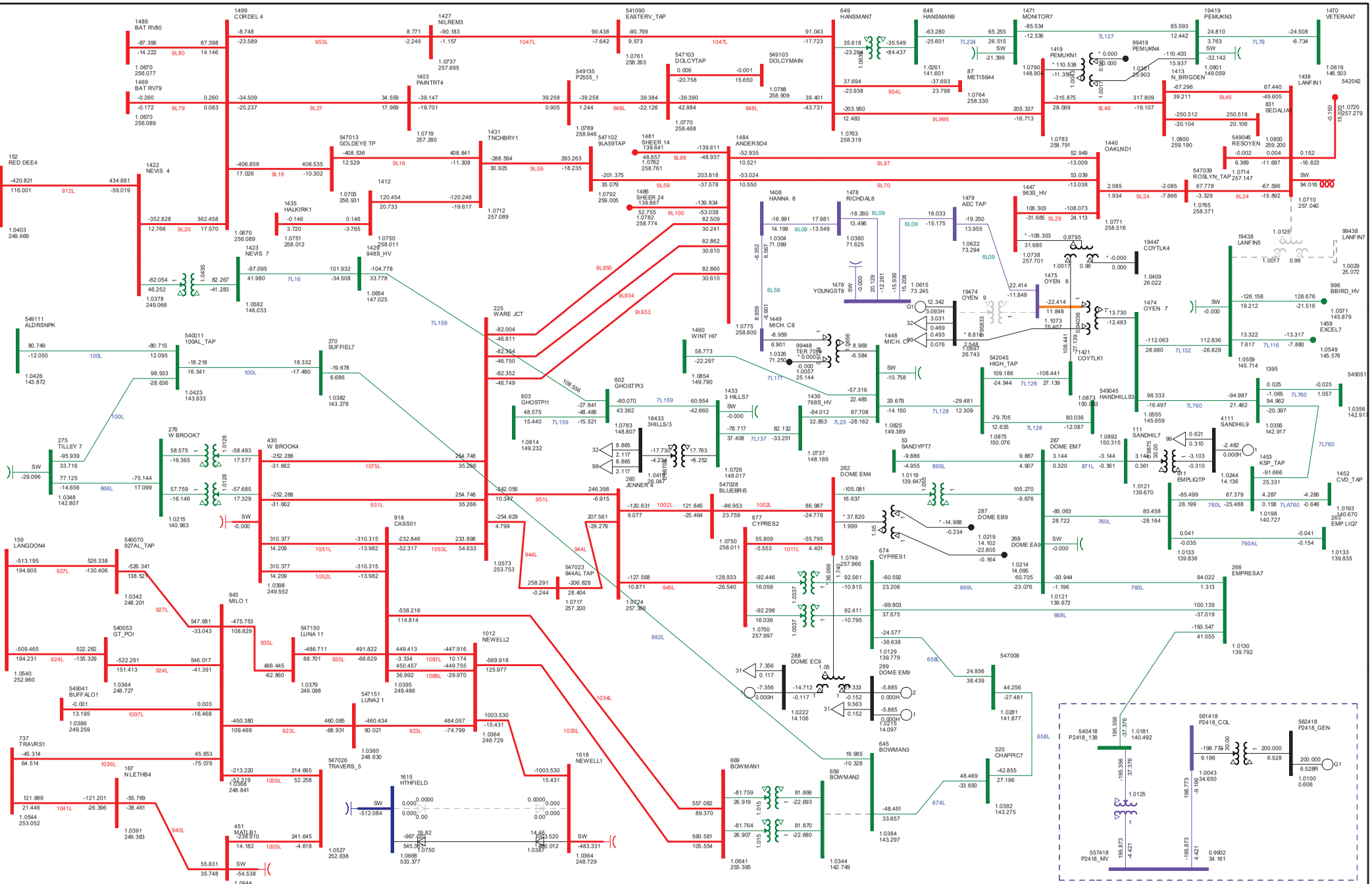
FIGURE A6-1-6 N-1: 9L20 (NEVIS 766S TO CORDEL 755S)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

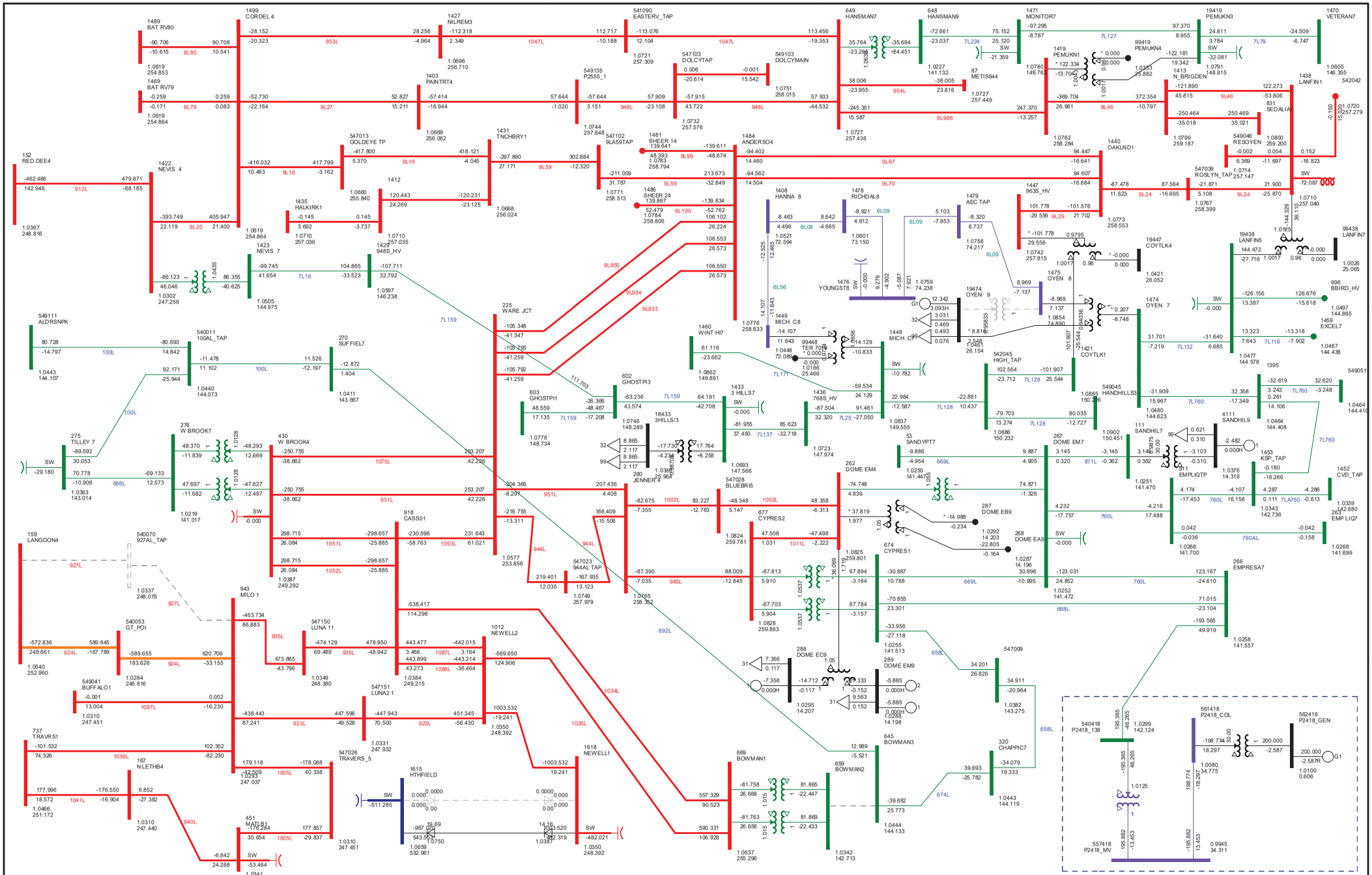
Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

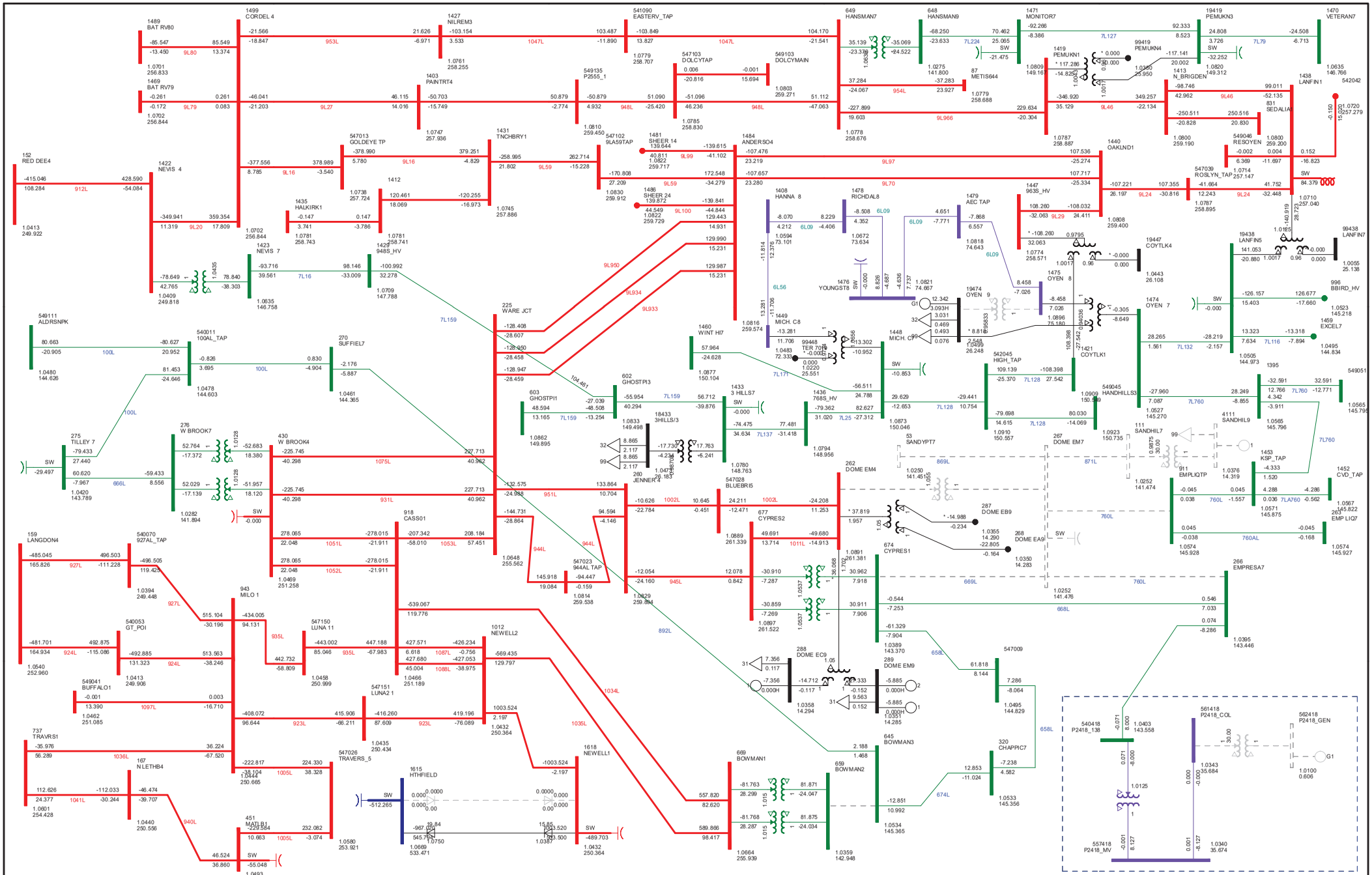
FIGURE A6-1-7 N-1: A959ST1 (LANFINE 959S TRANSFORMER T1)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-1-8 N-1: 927L (MILO 356S TO LANGDON 102S)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

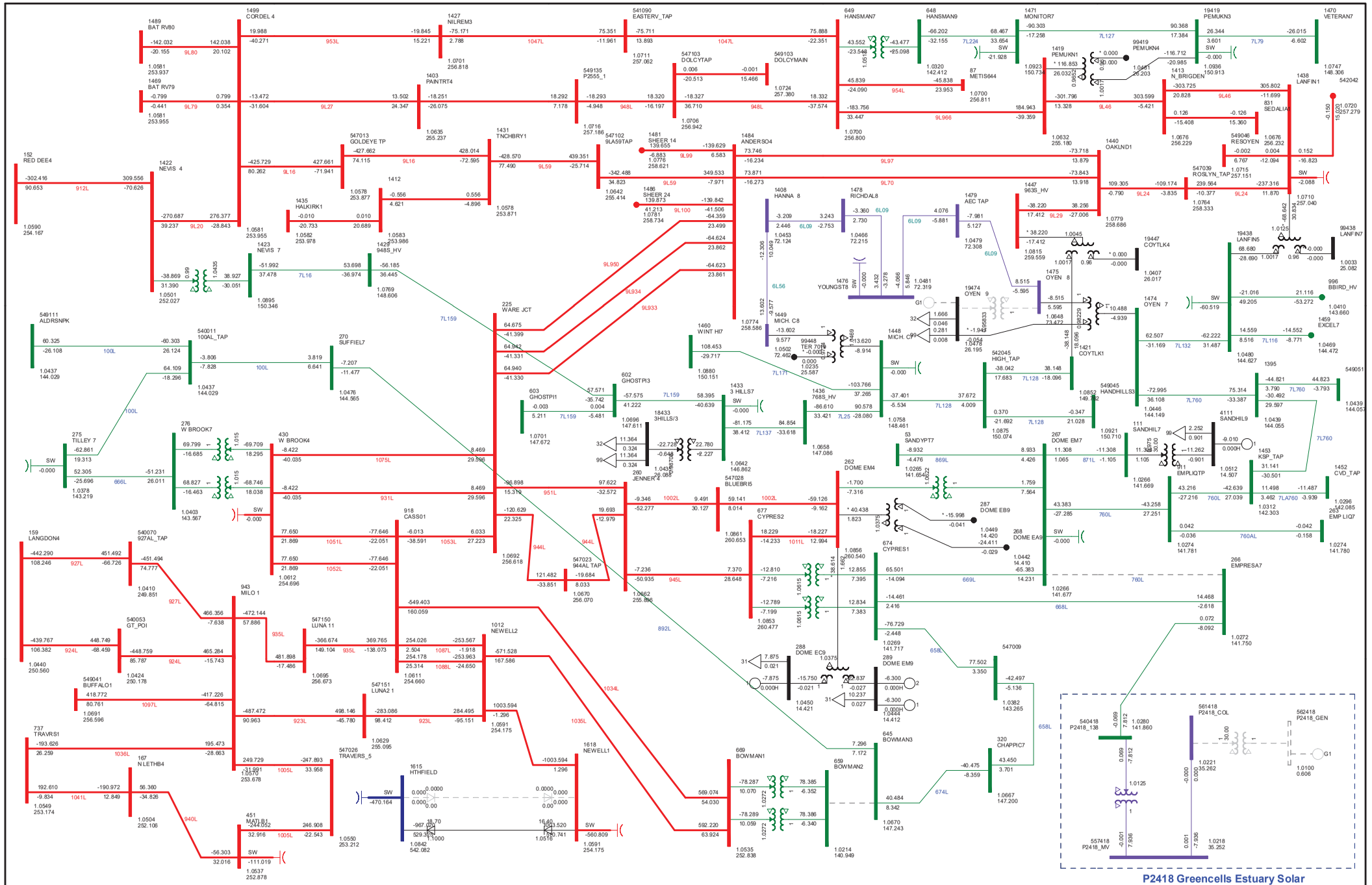


P2418 Greencells Estuary Solar

FIGURE A6-1-9 N-1: 163ST5 (AMOCO EMPRESS 163S TRANSFORMER T5)
2028 SUMMER PEAK (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/MVar
Equipment - MW/MVar
SOLSTICE A

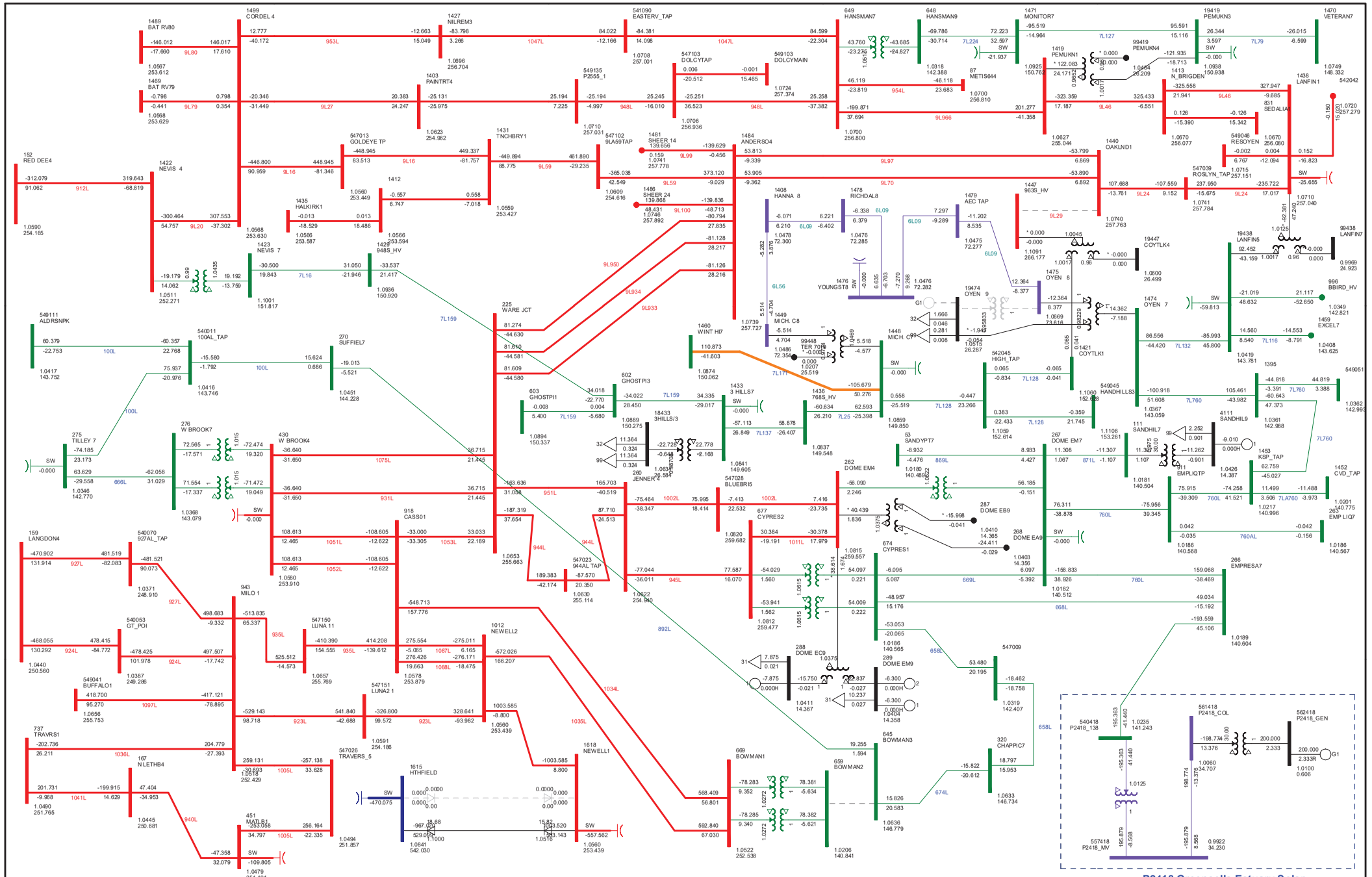
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-2-1 N-1: 760L (AMOCO EMPRESS 163S TO EMPRESS 394S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

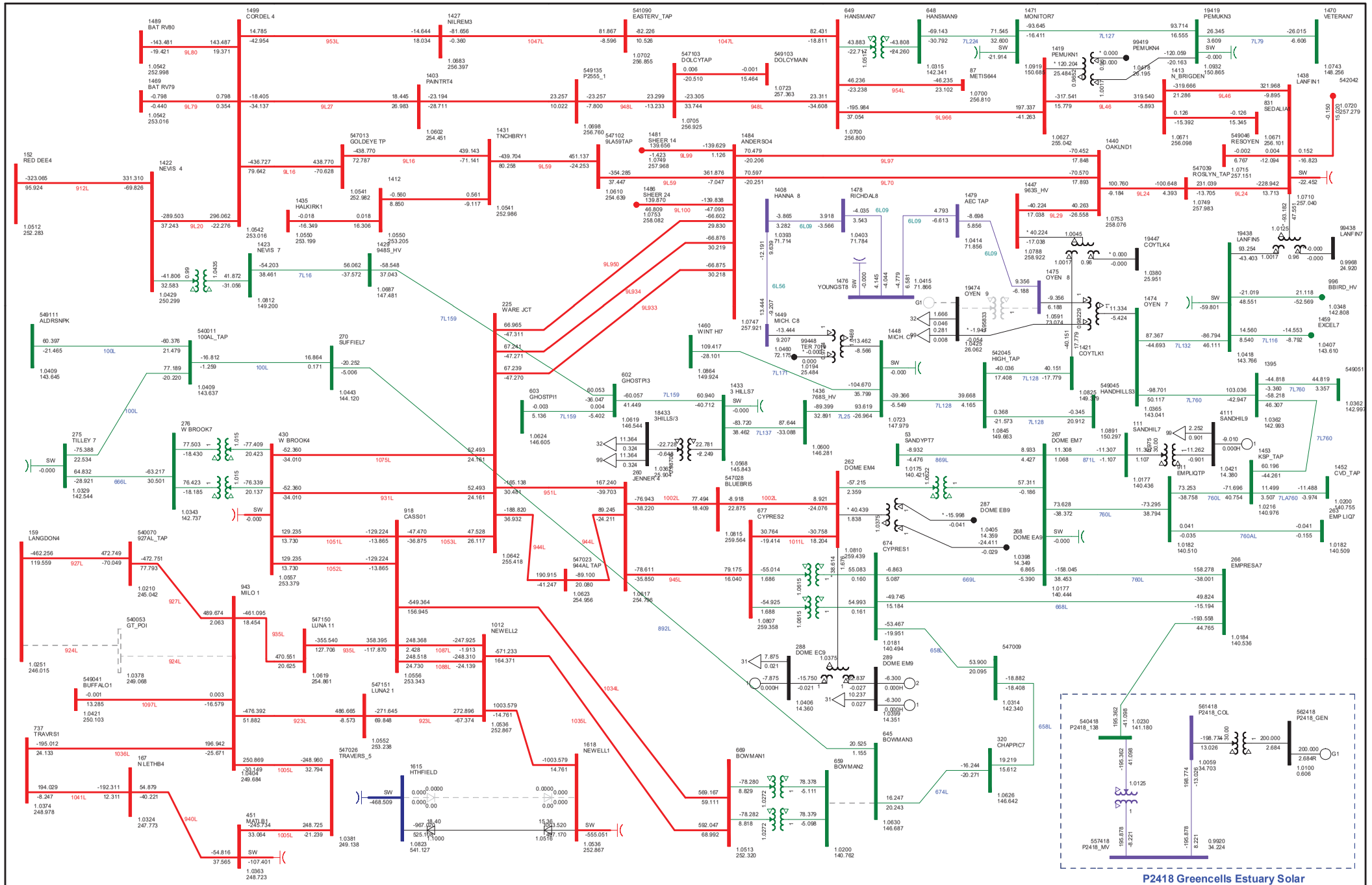
Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-2-2 N-1: 9L29 (OAKLAND 946S TO COYOTE LAKE 963S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

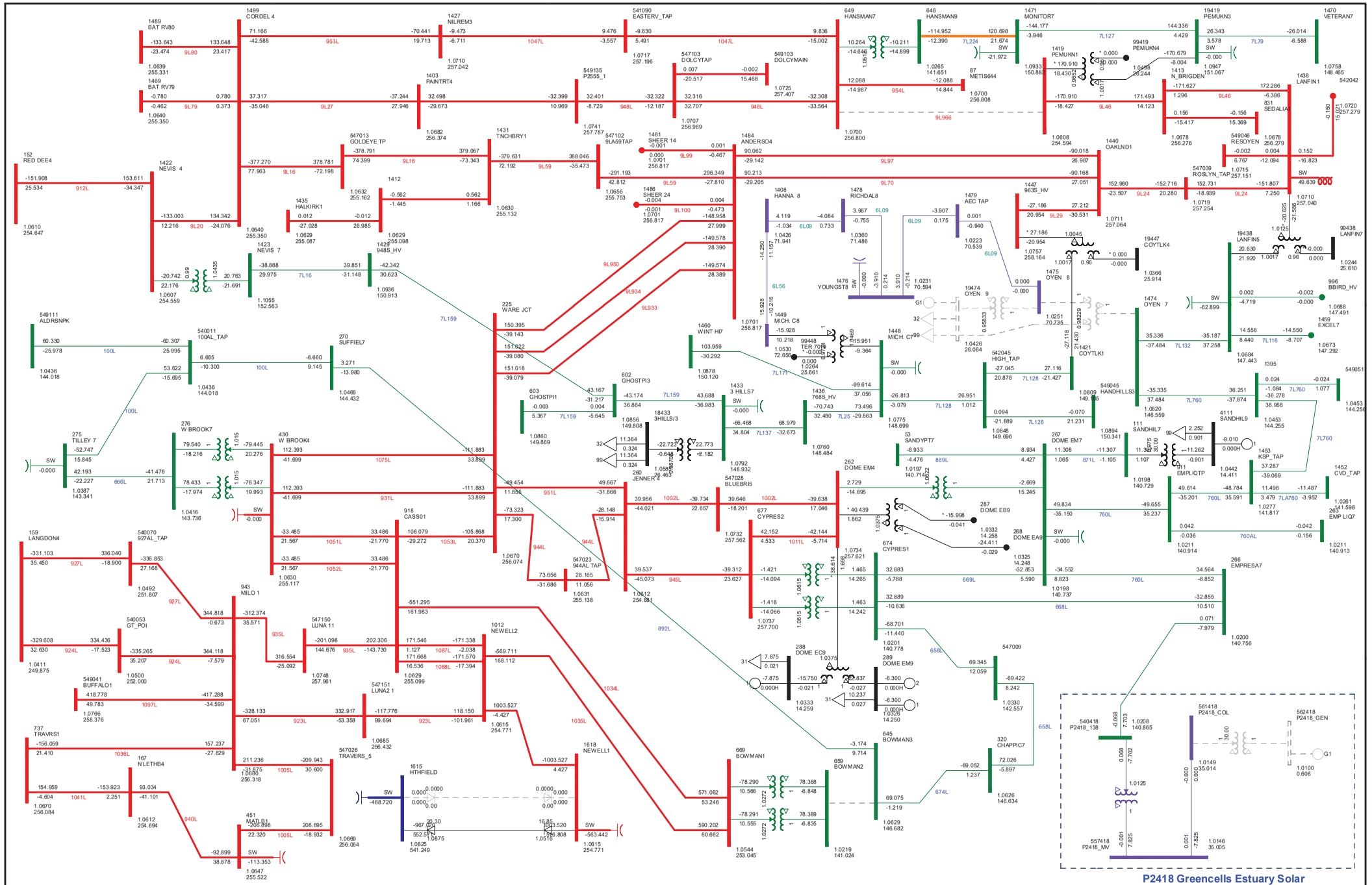
Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-2-3 N-1: 924L (MILO 356S TO LANGDON 102S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500 kV Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000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1489 BAT RV80
1469 BAT RV79
1427 NILREM3
1403 PAINTRT4
541090 EASTERV_TAP
547103 DOLCYTAP
549103 DOLCYMAIN
649 HANSMAN7
648 HANSMAN9
1471 MONITOR7
19419 PEMUKN3
1470 VETERAN7
1419 PEMUKN1
99419 PEMUKN4
1413 N_BRIGDEN
1438 LANFIN1
542042
831 SEDALIA
549046 RESOYEN
547039 ROSLYN_TAP
1440 OAKLND1
152 RED DEE4
1422 NEVIS 4
547013 GOLDEYE TP
1431 TNCHBRY1
1435 HALKIRK1
1412
1423 NEVIS 7
1429 948S_HV
549135 P255S_1
547102 9LA59TAP
1481 SHEER 14
1486 SHEER 24
1484 ANDERSO4
1408 HANNA 8
1478 RICHDAL8
1479 AEC TAP
1447 963S_HV
1475 OYEN 8
19474 OYEN 9
1476 YOUNGST8
1474 OYEN 7
19447 COYTLK4
1421 COYTLK1
542045 HIGH_TAP
549045 HANDHILLS3
111 SANDHIL7
4111 SANDHIL9
1453 KSP_TAP
1452 CVD_TAP
19438 LANFIN5
99438 LANFIN7
996 BBIRD_HV
1459 EXCEL7
1395
549051
549111 ALDRSNPK
540011 100AL_TAP
270 SUFFIEL7
275 TILLEY 7
276 W BROOK7
430 W BROOK4
225 WARE JCT
1460 WINT HI7
602 GHOSTPI3
603 GHOSTPI1
18433 3HILLS/3
1433 3 HILLS7
1436 768S_HV
1448 MICH. C7
1449 MICH. C8
99448 TER 70S
53 SANDYPT7
262 DOME EM4
287 DOME EB9
268 DOME EA9
267 DOME EM7
674 CYPRES1
677 CYPRES2
547028 BLUEBRI5
260 JENNER 4
159 LANGDON4
540070 927AL_TAP
540053 GT_POI
549041 BUFFALO1
737 TRAVRS1
167 N LETHB4
943 MILO 1
547150 LUNA 11
547151 LUNA2 1
547026 TRAVERS_5
451 MATLB1
1615 HTHFIELD
1012 NEWELL2
1618 NEWELL1
547023 944AL TAP
918 CASS01
669 BOWMAN1
659 BOWMAN2
645 BOWMAN3
320 CHAPPIC7
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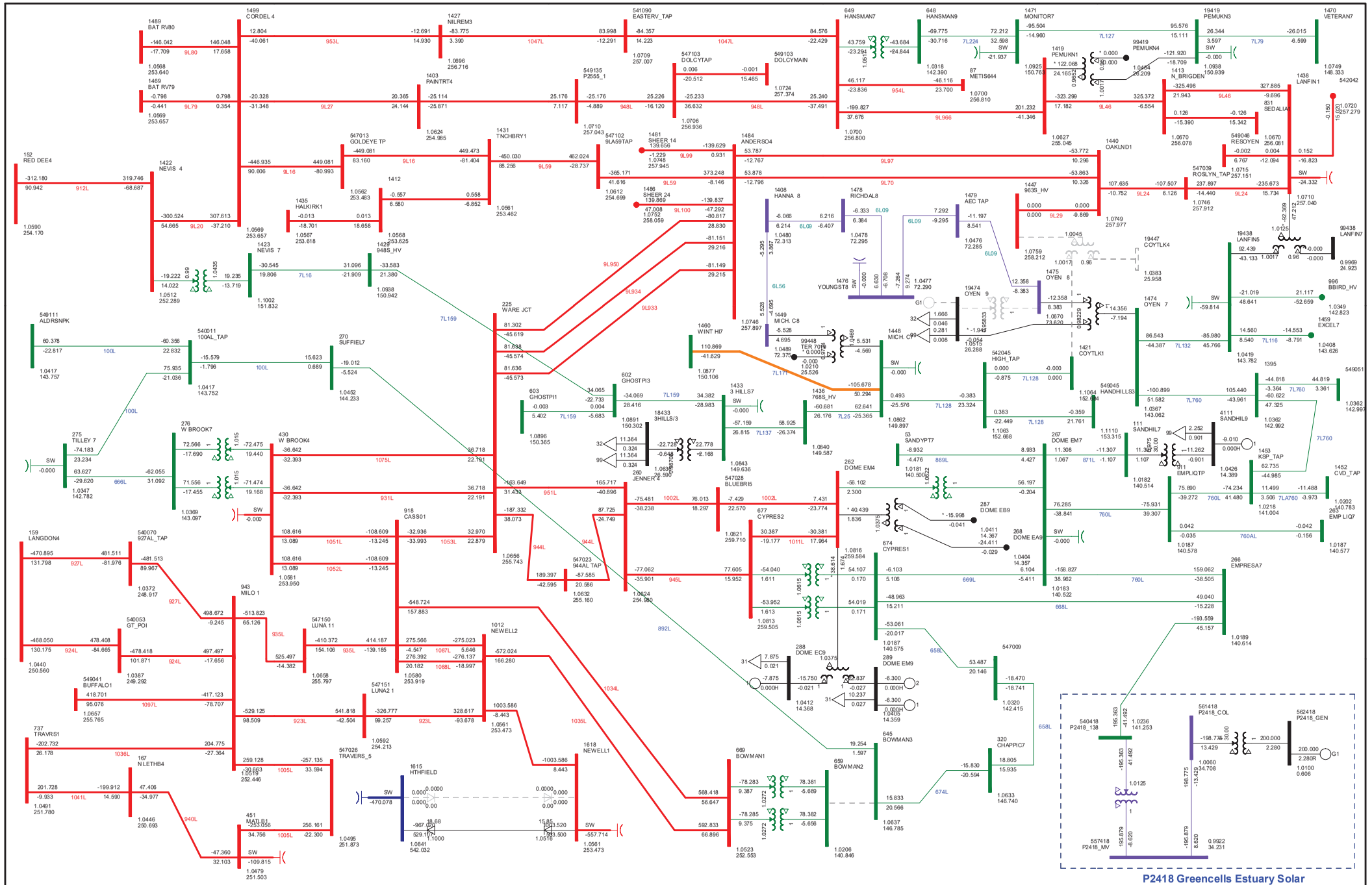
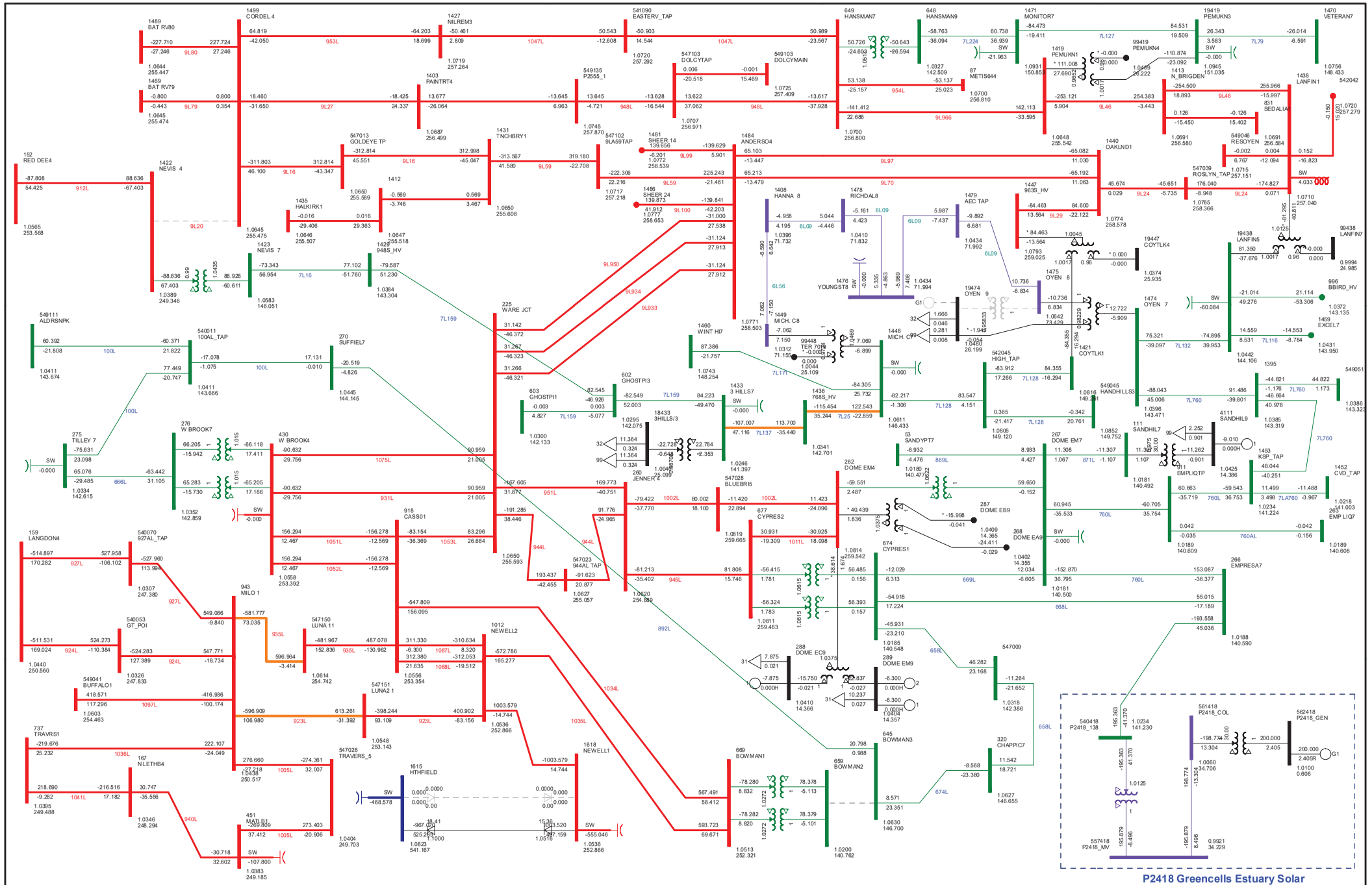
P2418 Greencells Estuary Solar



P2418 Greencells Estuary Solar

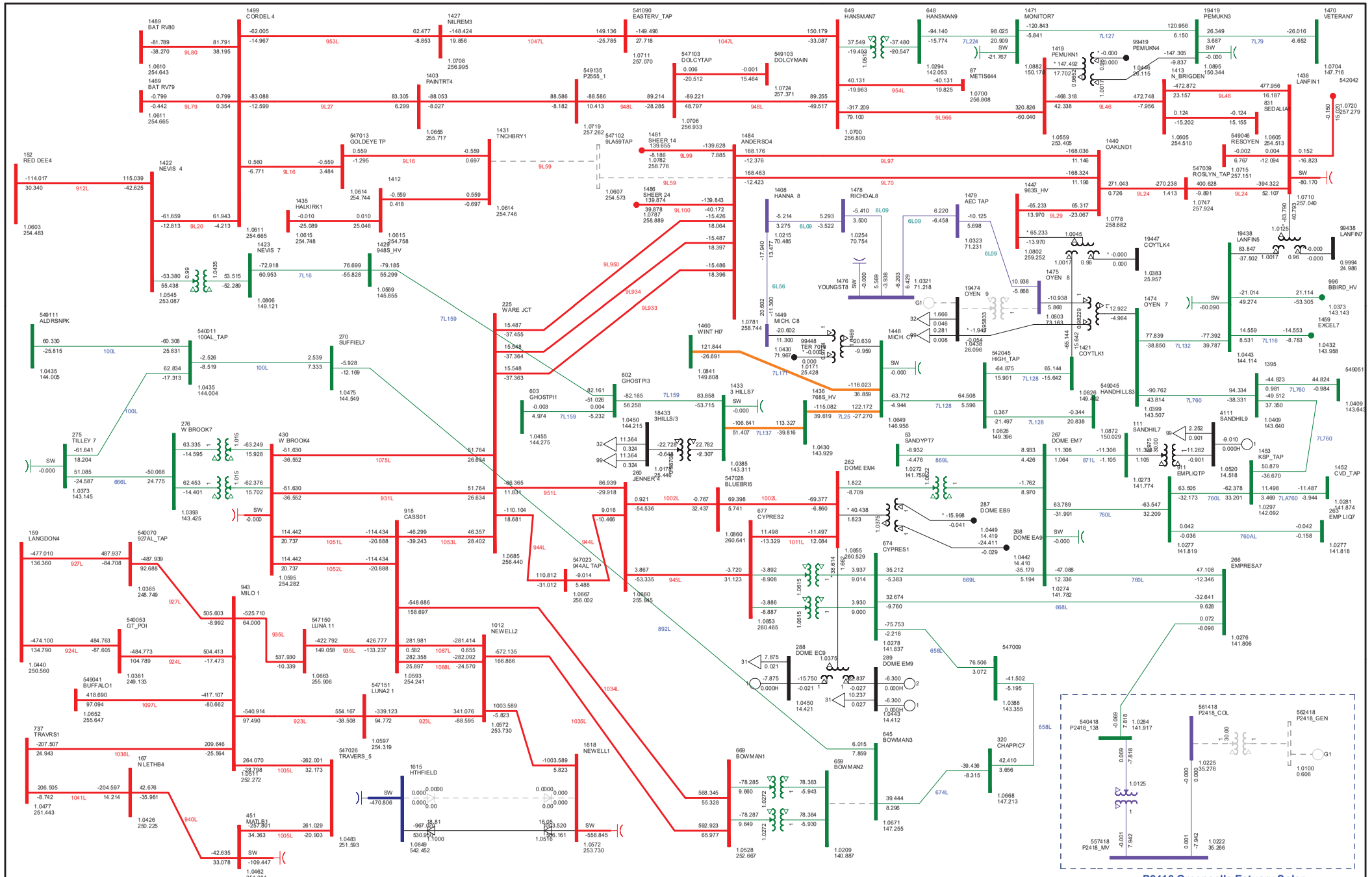
FIGURE A6-2-5 N-1: 963S T1 (COYOTE LAKE 963S TRANSFORMER T1)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0 % Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



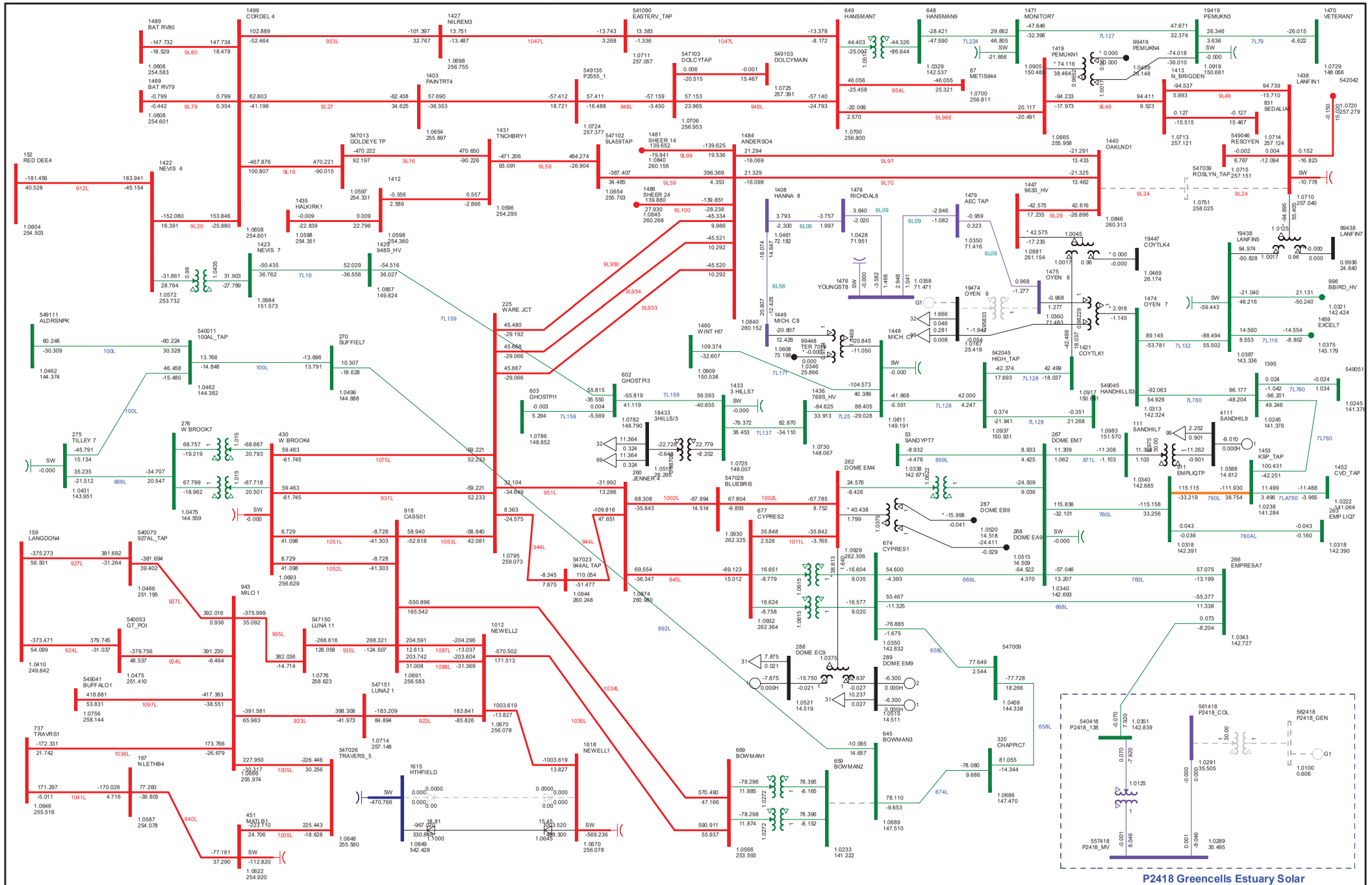
P2418 Greencells Estuary Solar

FIGURE A6-2-6 N-1: 9L20 (NEVIS 766S TO CORDEL 755S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A6-2-7 N-1: 9L59 (ANDERSON 801S TO TINCHEBRAY 972S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

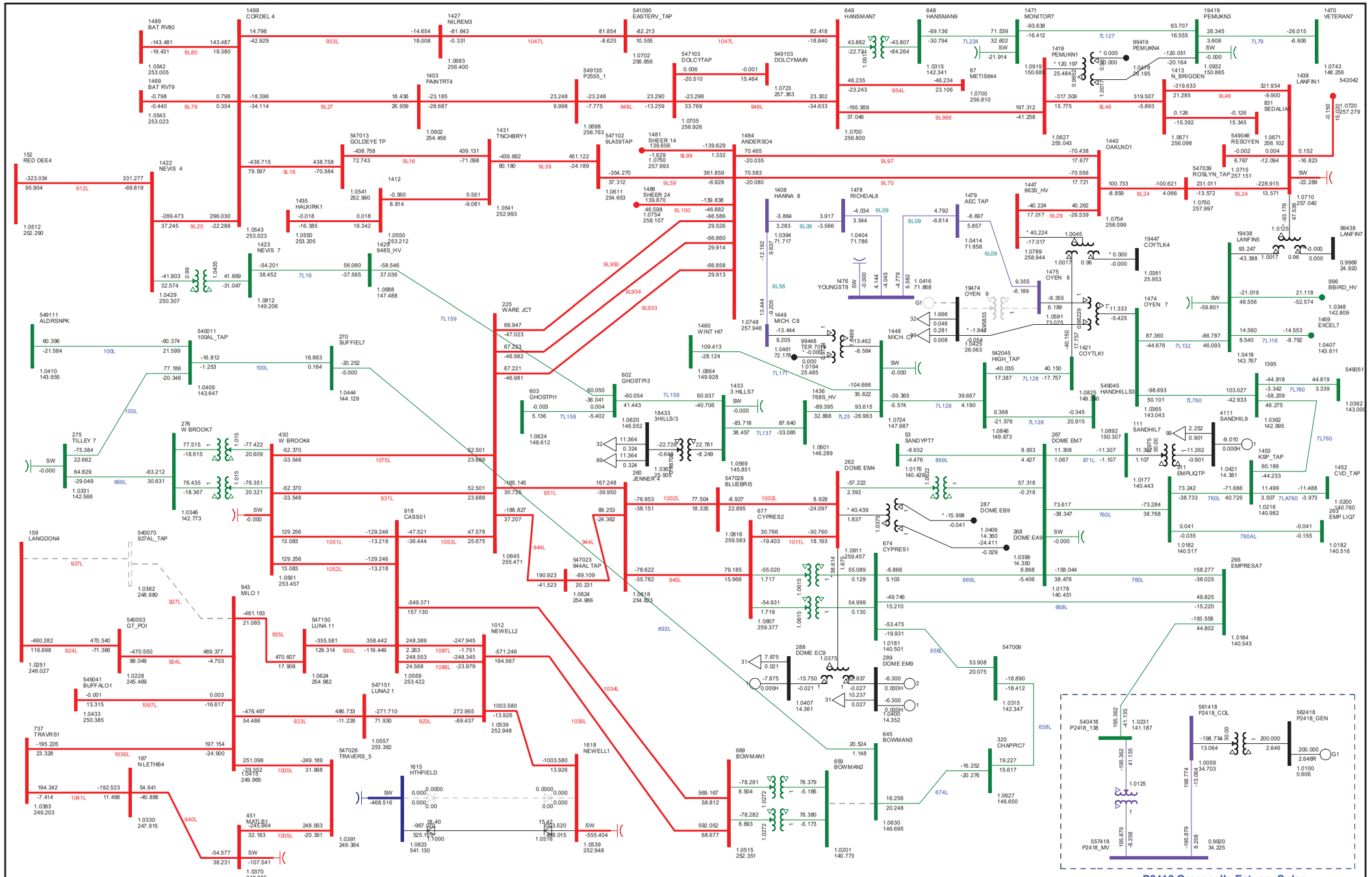


P2418 Greencells Estuary Solar

FIGURE A6-2-8 N-1: 9L24 (OAKLAND 946S – LANFINE 959S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

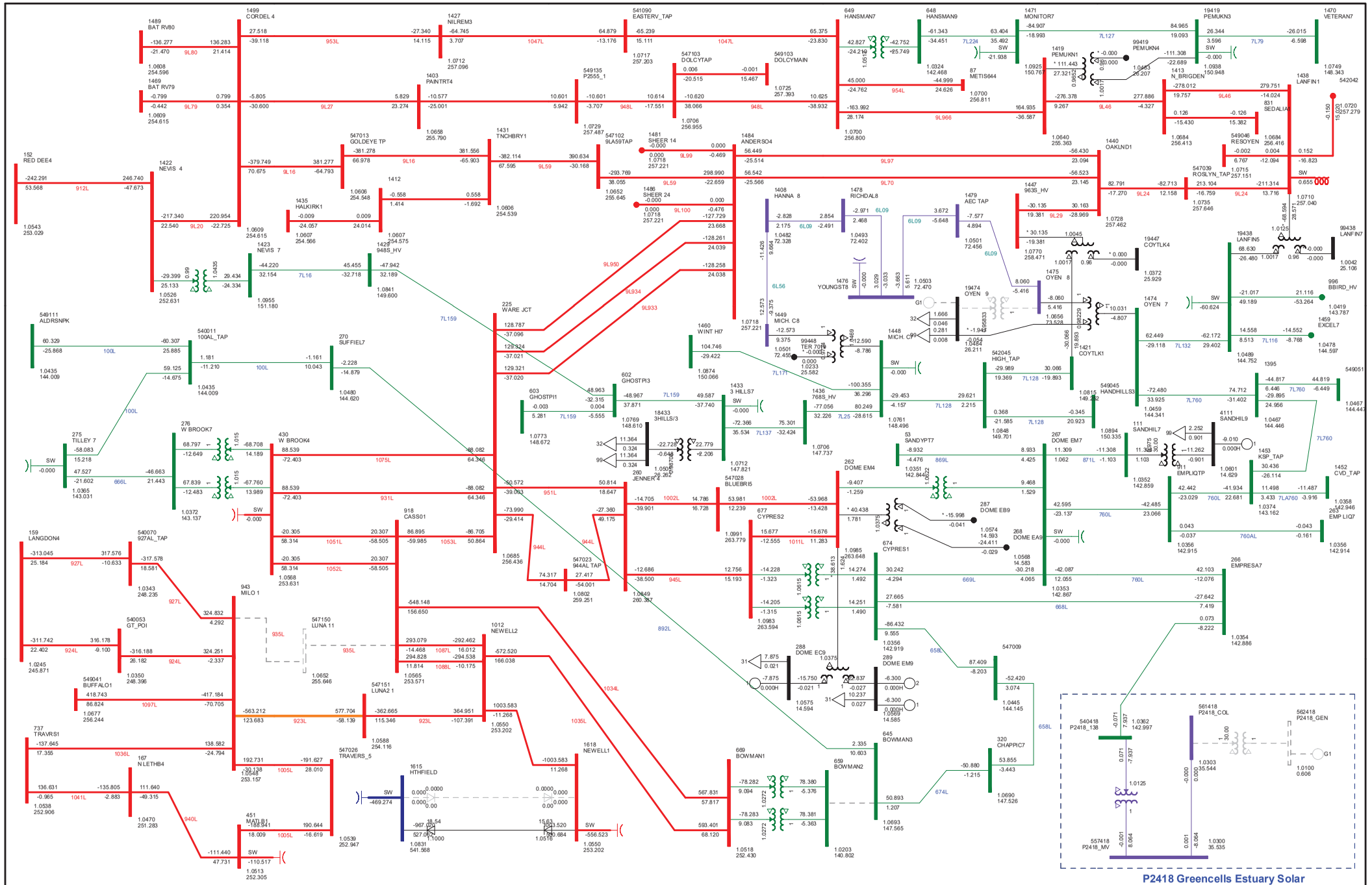
Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A

kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



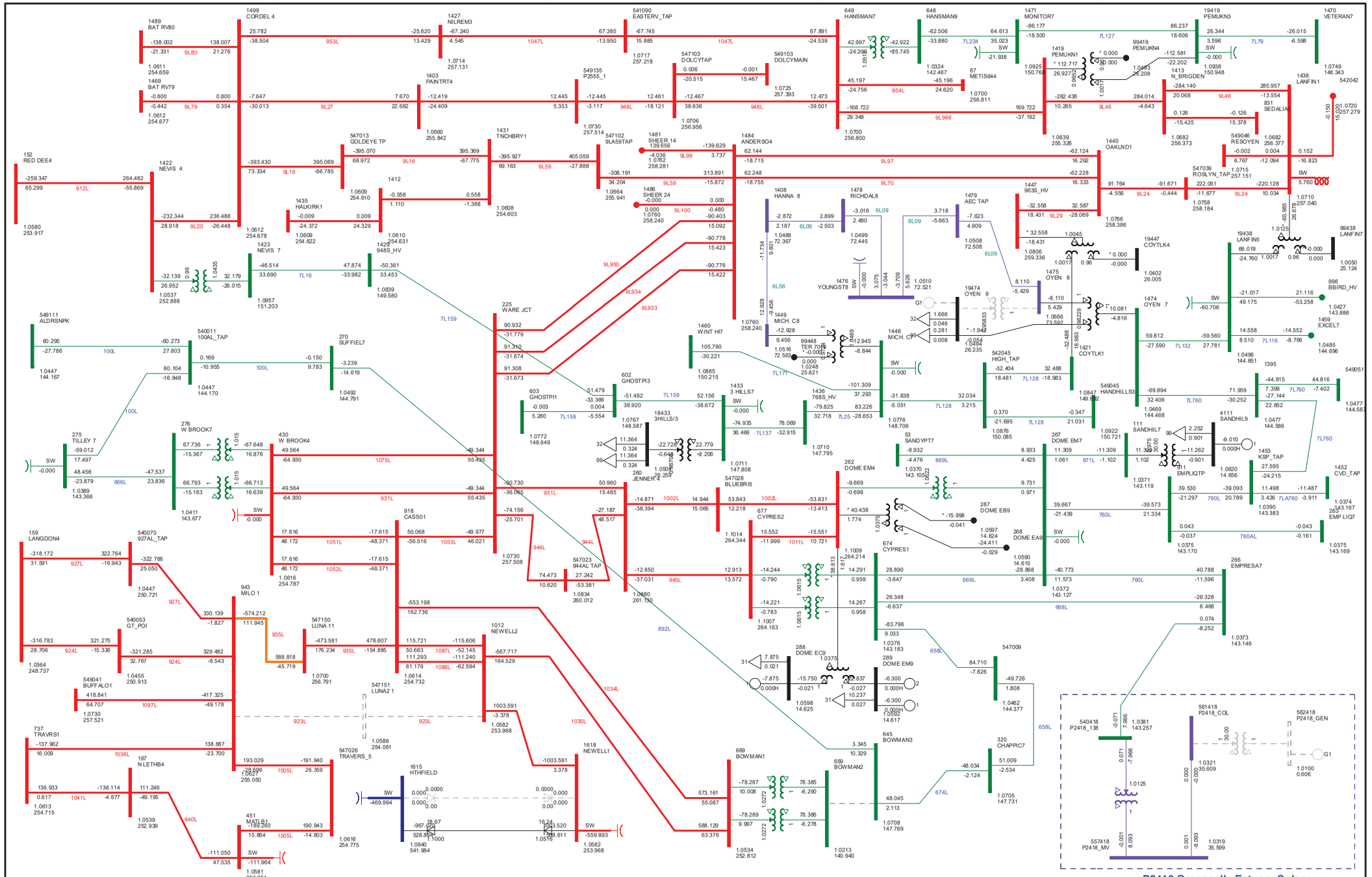
P2418 Greencells Estuary Solar

FIGURE A6-2-9 N-1: 927L (MILO 356S TO LANGDON 102S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

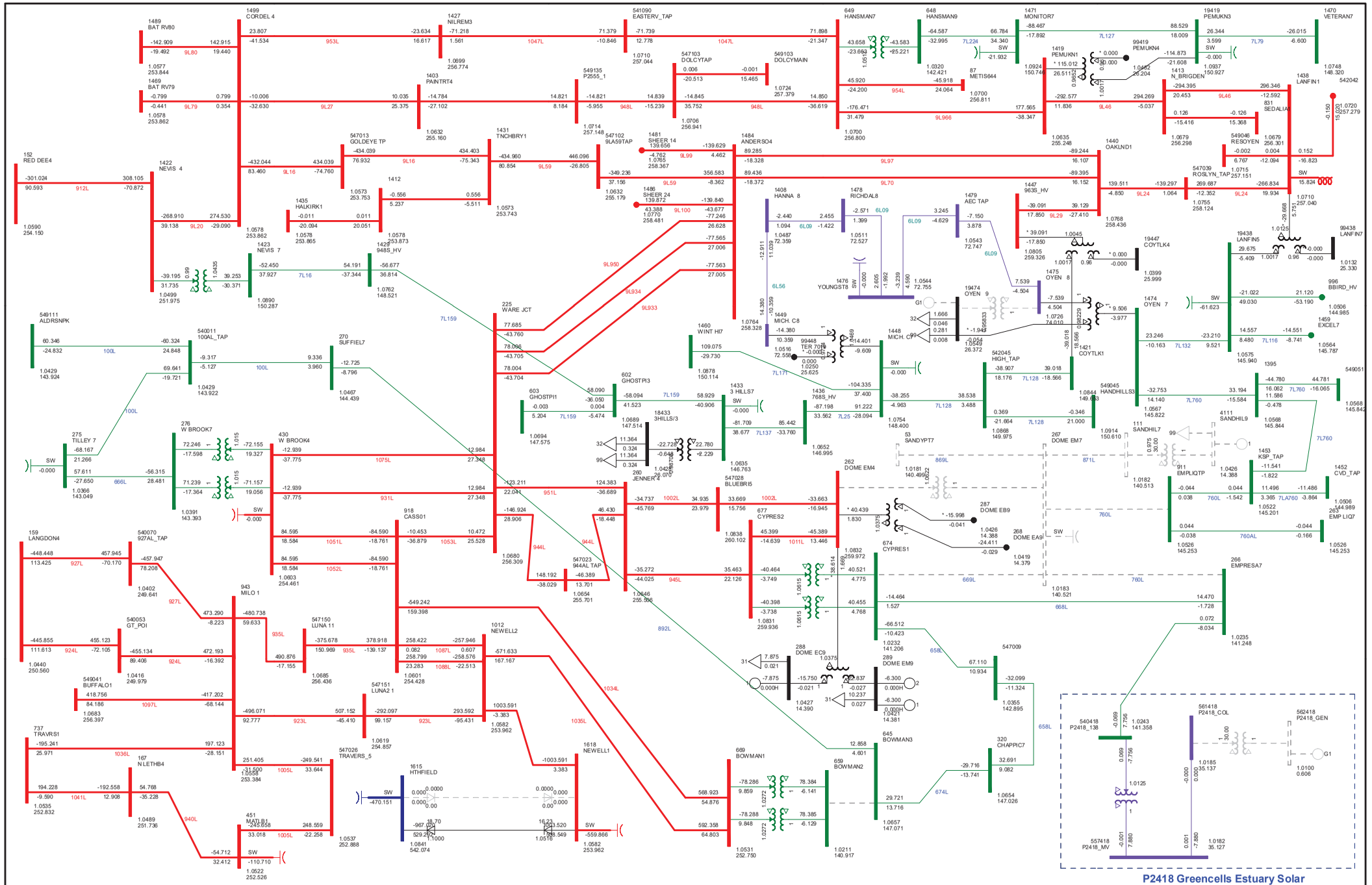
FIGURE A6-2-10 N-1: 935L (MILO 356S TO CASSILS 324S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024



P2418 Greencells Estuary Solar

FIGURE A6-2-11 N-1: 923L (MILO 356S TO NEWELL 2075S)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
SOLSTICE A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000



P2418 Greencells Estuary Solar

FIGURE A6-2-12 N-1: 163ST5 (AMOCO EMPRESS 163S TRANSFORMER T5)
2028 SUMMER LIGHT (POST-CONNECTION) WITH RAS
PRINTED ON THURSDAY 28. MARCH 2024

Bus - Voltage (kVpu)
Branch - MW/Mvar
Equipment - MW/Mvar
500.0% Rate A
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

Attachment A7
Constraint Effective Factors Table

A7 Constraint Effective Factors Table

Scn3_2028SP_Post_P2418.sav																																														
ctg	brn	%loading	HLD1	JNR1	JNR3	GDP1	HAL1	HHW1	LAN1	NEP1	P1698	P1853	P1892	P2199	P2247	P1567	P1704	P2562	BRK1	BRK2	BSC1	EMP1	JER1	MCH1	MIC1	YNG1	P1927	P1987	P2091	P2195	P2218	P2411	P2421	P2446	P2447	P2506	P2537	P1978	P2424	P2356	P2418	P1718	BSR1	SH1	SH2	P2464
760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	161.1	-1%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	98%	0%	0%	0%	0%	0%
1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newwell 2075S)	152.7	20%	23%	23%	18%	14%	19%	19%	13%	23%	22%	22%	23%	-12%	17%	14%	14%	25%	26%	26%	22%	24%	17%	15%	18%	29%	-63%	22%	22%	25%	24%	20%	24%	16%	-49%	26%	17%	18%	19%	20%	18%	-10%	22%	22%	21%
7L16 (Nevis 766S to Heatburg 948S)	7L128 (Coyote Lake 963S to 7LA128 Tap)	102.6	-1%	-1%	-1%	0%	0%	80%	0%	59%	-1%	-1%	-1%	-1%	0%	0%	0%	0%	-1%	0%	0%	-1%	-1%	60%	58%	15%	0%	0%	-1%	-1%	-1%	-1%	0%	-1%	0%	0%	-1%	61%	6%	0%	-1%	40%	0%	-1%	-1%	-1%
9L29 (Oakland 946S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	127.0	2%	2%	2%	1%	0%	29%	2%	71%	2%	2%	2%	2%	1%	1%	0%	0%	2%	2%	2%	2%	2%	28%	24%	9%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	29%	4%	2%	2%	20%	1%	2%	2%	2%
9L29 (Oakland 946S to Coyote Lake 963S)	7L16 (Nevis 766S to Heatburg 948S)	124.2	2%	2%	2%	1%	0%	29%	2%	67%	2%	2%	2%	2%	1%	1%	0%	0%	2%	2%	2%	2%	2%	29%	26%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	30%	4%	2%	2%	20%	1%	2%	2%	2%
9L29 (Oakland 946S to Coyote Lake 963S)	7L137 (Three Hills 770S to Rowley 768S)	109.3	2%	2%	2%	2%	0%	34%	2%	-32%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%	2%	2%	34%	33%	10%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	34%	5%	2%	2%	24%	1%	3%	3%	3%
9L29 (Oakland 946S to Coyote Lake 963S)	7L25 (Rowley 768S to Michichi Creek 802S)	110.5	2%	2%	2%	2%	0%	34%	2%	-31%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%	2%	3%	34%	32%	10%	2%	2%	2%	2%	2%	3%	3%	2%	2%	2%	2%	35%	5%	2%	2%	24%	2%	3%	3%	3%
924L (Milo 356S to 924AL Tap)	7L159 (Heatburg 948S to 7LA159 Tap)	106.7	3%	3%	3%	2%	0%	11%	3%	64%	3%	3%	3%	3%	3%	2%	0%	0%	3%	3%	3%	3%	3%	17%	13%	6%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	3%	17%	4%	3%	3%	12%	2%	4%	4%	4%
924L (Milo 356S to 924AL Tap)	927L (Milo 356s to 927AL Tap)	136.2	21%	23%	23%	18%	14%	19%	19%	13%	23%	22%	21%	23%	38%	17%	14%	14%	26%	27%	28%	22%	23%	17%	15%	18%	29%	29%	22%	24%	27%	24%	20%	25%	32%	32%	27%	17%	18%	19%	20%	18%	31%	22%	22%	21%
924L (Milo 356S to 924AL Tap)	912L (Nevis 766S to Red Deer 63S)	104.7	23%	24%	24%	37%	48%	29%	31%	50%	24%	23%	23%	24%	17%	34%	46%	47%	21%	22%	22%	24%	24%	30%	26%	34%	22%	22%	24%	21%	21%	24%	28%	21%	20%	20%	22%	31%	30%	33%	23%	28%	15%	28%	28%	30%
924L (Milo 356S to 924AL Tap)	9L20 (Nevis 766S to Cordel 755S)	101.1	19%	20%	20%	33%	45%	19%	27%	-4%	20%	19%	19%	20%	14%	30%	43%	44%	18%	18%	18%	20%	20%	15%	15%	25%	18%	18%	20%	17%	18%	20%	24%	18%	17%	17%	18%	15%	25%	29%	19%	18%	13%	24%	24%	25%
924L (Milo 356S to 924AL Tap)	7L16 (Nevis 766S to Heatburg 948S)	104.0	3%	3%	3%	2%	0%	10%	3%	59%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	16%	14%	6%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	17%	3%	3%	3%	11%	2%	4%	4%	4%
9L966 (Pemukan 932S to Hansman Lake 650S)	7L159 (Heatburg 948S to 7LA159 Tap)	102.8	3%	3%	3%	2%	0%	11%	4%	63%	3%	3%	3%	3%	2%	3%	0%	0%	3%	3%	3%	3%	3%	17%	14%	7%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	3%	18%	4%	4%	3%	12%	2%	4%	4%	4%
9L966 (Pemukan 932S to Hansman Lake 650S)	7L16 (Nevis 766S to Heatburg 948S)	100.1	3%	3%	3%	2%	0%	11%	3%	60%	3%	3%	3%	3%	2%	3%	0%	0%	3%	3%	3%	3%	3%	17%	14%	6%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	17%	4%	3%	3%	12%	2%	4%	4%	4%
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	167.5	9%	8%	8%	2%	-4%	8%	20%	2%	8%	8%	8%	8%	5%	27%	-4%	-4%	7%	7%	7%	9%	8%	7%	7%	13%	7%	7%	9%	7%	7%	8%	15%	7%	6%	6%	7%	7%	17%	22%	9%	7%	5%	8%	8%	12%
9L966 (Pemukan 932S to Hansman Lake 650S)	7L127 (Pemukan 932S to Monitor 774S)	141.7	9%	8%	8%	2%	-4%	8%	20%	2%	8%	8%	8%	8%	5%	29%	-4%	-4%	7%	7%	7%	10%	8%	6%	6%	7%	7%	7%	9%	7%	7%	8%	16%	7%	6%	6%	7%	6%	16%	23%	9%	7%	5%	9%	9%	12%
963S T1 (Coyote Lake 963S Transformer T1)	7L159 (Heatburg 948S to 7LA159 Tap)	127.0	2%	2%	2%	1%	0%	29%	2%	71%	2%	2%	2%	2%	1%	1%	0%	0%	2%	2%	2%	2%	2%	28%	24%	9%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	29%	4%	2%	2%	20%	1%	2%	2%	2%
963S T1 (Coyote Lake 963S Transformer T1)	7L16 (Nevis 766S to Heatburg 948S)	124.2	2%	2%	2%	1%	0%	29%	2%	67%	2%	2%	2%	2%	1%	1%	0%	0%	2%	2%	2%	2%	2%	29%	26%	8%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	30%	4%	2%	2%	20%	1%	2%	2%	2%
963S T1 (Coyote Lake 963S Transformer T1)	7L137 (Three Hills 770S to Rowley 768S)	109.2	2%	2%	2%	2%	0%	34%	2%	-32%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%	2%	2%	34%	33%	10%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	34%	5%	2%	2%	24%	1%	3%	3%	3%
963S T1 (Coyote Lake 963S Transformer T1)	7L25 (Rowley 768S to Michichi Creek 802S)	110.5	2%	2%	2%	2%	0%	34%	2%	-31%	2%	2%	2%	2%	2%	2%	0%	0%	2%	2%	2%	2%	3%	34%	32%	10%	2%	2%	2%	2%	2%	3%	3%	2%	2%	2%	2%	35%	5%	2%	2%	24%	2%	3%	3%	3%
912L (Nevis 766S to Red Deer 63S)	935L (Cassils 324S to 935AL Tap)	116.0	26%	29%	28%	27%	26%	27%	26%	25%	28%	28%	27%	29%	-9%	25%	25%	26%	30%	31%	31%	28%	30%	24%	22%	26%	34%	31%	28%	28%	31%	30%	26%	29%	-48%	21%	31%	25%	26%	27%	26%	25%	-7%	29%	29%	29%
912L (Nevis 766S to Red Deer 63S)	924L (Milo 356S to 924AL Tap)	117.8	17%	18%	18%	17%	16%	17%	17%	16%	18%	18%	17%	18%	28%	16%	16%	16%	20%	21%	21%	18%	19%	15%	14%	17%	22%	23%	18%	19%	21%	19%	17%	20%	24%	24%	21%	16%	16%	17%	17%	16%	23%	19%	19%	18%
912L (Nevis 766S to Red Deer 63S)	927L (Milo 356s to 927AL Tap)	112.1	17%	18%	18%	17%	16%	17%	17%	16%	18%	18%	17%	19%	28%	16%	16%	16%	20%	21%	21%	18%	19%	15%	14%	17%	22%	23%	18%	19%	21%	19%	17%	20%	24%	24%	21%	16%	17%	17%	17%	16%	23%	19%	19%	18%
912L (Nevis 766S to Red Deer 63S)	935L (Milo 356S to 935AL Tap)	115.5	25%	27%	27%	26%	24%	26%	25%	24%	27%	26%	26%	27%	-10%	24%	24%	24%	28%	29%	29%	26%	28%	23%	21%	25%	32%	29%	27%	26%	28%	28%	25%	27%	50%	18%	29%	24%	25%	26%	25%	24%	-8%	28%	28%	27%
912L (Nevis 766S to Red Deer 63S)	923L (Milo 356S to 923AL Tap)	111.1	25%	27%	27%	26%	24%	26%	25%	24%	27%	27%	26%	28%	-10%	24%	24%	24%	28%	29%	29%	27%	28%	23%	21%	25%	32%	35%	27%	26%	29%	28%	25%	27%	18%	50%	29%	24%	25%	26%	25%	24%	-8%	28%	28%	27%
912L (Nevis 766S to Red Deer 63S)	923L (Newell 2075S to 923AL Tap)	111.7	26%	28%	28%	27%	25%	27%	26%	25%	28%	28%	27%	29%	-9%	25%	25%	25%	30%	31%	31%	28%	29%	24%	22%	26%	34%	38%	28%	27%	30%	30%	26%	29%	20%	-48%	31%	25%	26%	27%	26%	25%	-7%	29%	29%	28%
9L20 (Nevis 766S to Cordel 755S)	7L159 (Heatburg 948S to 7LA159 Tap)	133.3	4%	5%	5%	5%	5%	11%	5%	64%	5%	5%	5%	5%	3%	5%	4%	5%	4%	4%	4%	5%	5%	16%	11%	8%	4%	4%	5%	4%	4%	5%	5%	4%	4%	4%	4%	16%	5%	5%	4%	11%	3%	6%	6%	6%
9L20 (Nevis 766S to Cordel 755S)	7L159 (Three Hills 770S to 7LA159 Tap)	104.1	5%	6%	6%	6%	5%	13%	6%	-44%	6%	6%	6%	6%	4%	6%	5%	5%	5%	5%	5%	6%	6%	19%	19%	9%	5%	5%	6%	5%	5%	6%	6%	5%	5%	5%	5%	20%	7%	6%	5%	15%	3%	7%	7%	7%
9L20 (Nevis 766S to Cordel 755S)	935L (Cassils 324S to 935AL Tap)	105.3	24%	27%	27%	25%	23%	24%	24%	13%	27%	26%	26%	27%	-11%	23%	23%	23%	28%	29%	29%	26%	28%	20%	19%	23%	32%	30%	26%	26%	29%	28%	24%	27%	-49%	19%	29%	21%	23%	25%	24%	22%	-9%	27%	27%	26%
9L20 (Nevis 766S to Cordel 755S)	924L (Milo 356S to 924AL Tap)	110.0	17%	18%	18%	16%	15%	15%	16%	8%	18%	17%	17%	18%	28%	15%	15%	15%	20%	21%	21%	18%	18%	13%	12%	15%	22%	22%	17%	19%	20%	19%	16%	19%	23%	23%	21%	14%	15%	16%	16%	14%	23%	18%	18%	17%
9L20 (Nevis 766S to Cordel 755S)	927L (Milo 356s to 927AL Tap)	104.7	17%	18%	18%	16%	15%	15%	16%	8%	18%	17%	17%	18%	28%	15%	15%	15%	20%	21%	21%	18%	18%	13%	12%	15%	22%	22%	18%	19%	20%	19%	16%	20%	24%	24%	21%	14%	15%	16%	16%	14%	23%	18%	18%	17%
9L20 (Nevis 766S to Cordel 755S)	935L (Milo 356S to 935AL Tap)	104.7	24%	26%	26%	24%	22%	23%	23%	12%	26%	25%	25%	26%	-11%	22%	22%	22%	27%	28%	28%	25%	27%	20%	18%	22%	30%	28%	26%	25%	27%	27%	24%	26%	49%	17%	28%	20%	23%	24%	23%	21%	-9%	26%	26%	26%
9L20 (Nevis 766S to Cordel 755S)	923L (Milo 356S to 923AL Tap)	100.4	24%	26%	26%	24%	22%	23%	24%	12%	26%	25%	25%	26%	-11%	22%	22%	22%	27%	28%	28%	25%	27%	20%	19%	22%	31%	34%	26%	25%	28%	27%	24%	26%	17%	49%	28%	20%	23%	24%	23%	21%	-9%	26%	26%	26%
9L20 (Nevis 766S to Cordel 755S)	923L (Newell 2075S to 923AL Tap)	101.0	24%	27%	27%	24%	23%	24%	24%	13%	27%	26%	26%	27%	-11%	23%	22%	23%	28%	29%	29%	26%	28%	20%	19%	23%	32%	36%	26%	26%	29%	28%	24%	27%	18%	-49%	29%	21%	23%	25%	24%	22%	-9%	27%	27%	26%
9L20 (Nevis 766S to Cordel 755S)	7L16 (Nevis 766S to Heatburg 948S)	130.5	4%	5%	4%	5%	4%	11%	5%	59%	4%	4%	4%	5%	3%	5%	4%	4%	4%	4%	4%	5%	5%	16%	12%	7%	4%	4%	5%	4%	4%	5%	5%	4%	4%	4%	4%	16%	5%	5%	4%	12%	3%	6%	6%	6%
9L20 (Nevis 766S to Cordel 755S)	7L137 (Three Hills 770S to Rowley 768S)	116.2	5%	6%	6%	6%	5%	13%	6%	-42%	6%	5%	5%	6%	3%	6%	5%	5%	5%	5%	5%	6%	6%	19%	17%	9%	5%	5%	6%	5%	5%	6%	6%	5%	5%	5%	5%	20%	7%	6%	5%	14%	3%	7%	7%	7%
9L20 (Nevis 766S to Cordel 755S)	7L25 (Rowley 768S to Michichi Creek 802S)	117.3	5%	6%	6%	6%	6%	13%	6%	-41%	6%	6%	6%	6%	4%	6%	6%	6%	5%	5%	5%	6%	6%	19%	17%	9%	5%	5%	6%	5%	5%	6%	6%	5%	5%	5%	5%	20%	7%	6%	5%	15%	3%	7%	7%	7%
Three Hills 770S Transformer 3T	7L159 (Heatburg 948S to 7LA159 Tap)	104.9	3%	3%	3%	2%	0%	11%	3%	63%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	17%	14%	6%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	18%	4%	3%	3%	12%	2%	4%	4%	4%
Three Hills 770S Transformer 3T	7L16 (Nevis 766S to Heatburg 948S)	102.2	3%	3%	3%	2%	0%	11%	3%	59%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	17%	15%	6%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	17%	4%	3%	3%	12%	2%	4%	4%	4%
A959ST1 (Lanfine 959S Transformer T1)	760L/7L760 (7LA760 Tap to 760AL Tap)	106.6	-3%	-1%	-1%	0%	0%	1%	79%	1%	-1%	-1%	-1%	-1%	0%	0%	0%	0%	-1%	-1%	-1%	-3%	-1%	1%	1%	42%	-1%	0%	-2%	-1%	-1%	-1%	88%	-1%	0%	0%	-1%	1%	66%	0%	-4%	1%	0%	0%	0%	0%
A959ST1 (Lanfine 959S Transformer T1)	7L760 (P2421 Tap to 7LA760 Tap)	110.7	-3%	-1%	-1%	0%	0%	1%	82%	1%	-1%	-1%	-1%	-1%	0%	0%	0%	0%	-1%	-1%	-1%	-3%	-1%	1%	1%	44%	-1%	-1%	-2%	-1%	-1%	-1%	92%	-1%	0%	0%	-1%	1%	69%	0%	-3%	1%	0%	0%	0%	0%
A959ST1 (Lanfine 959S Transformer T1)	6L09 (Hanna 763S to Richdale 776S)	104.4	**2%**	**1%**	**1%**	**0%**	**0%**	**-1%**	**9%**	**-1%**	**1%**	**1%**	**1%**	**1%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**2%**	**1%**	**-2%**	**-2%**	**49%**	**0%**	**0%**	**2%**	**0%**	**0%**	**1%**	**7%**	**1%**	**0%**	**0%**	**0%**	**-2%**	**22%**	**0%**	**2%**	**-1%**	**0%**	**0%**	**0%**	**0%**
A959ST1 (Lanfine 959S Transformer T1)	6L09 (Oyen 767S to Hanna 763S)	109.4	2%	1%	1%	0%	0%	-1%	10%	-1%	1%	1%	1%	1%	0%	0%	0%	0%	1%	1%	1%	3%	1%	-2%	-2%	-38%	0%	0%	2%	1%	1%	1%	8%	1%	0%	0%	1%	-2%	26%	0%	2%	-1%	0%	0%	0%	0%
A959ST1 (Lanfine 959S Transformer T1)	767ST1 (Oyen 767S Transformer T1 - W2)	111.6	2%	1%	1%	0%	0%	-1%	10%	-1%	1%	1%	1%	1%	0%	0%	0%	0%	1%	1%	1%	3%	1%	-2%	-2%	-38%	0%	0%	2%	1%	1%	1%	8%	1%	0%	0%	1%	-2%	26%	0%	2%	-1%	0%	0%	0%	0%
A959ST1 (Lanfine 959S Transformer T1)	6L09 (Richdale 776S to Youngstown 772S)	101.9	2%	1%	1%	0%	0%	-1%	9%	-1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	2%	1%	-2%	-2%	57%	0%	0%	2%	0%	0%	1%	7%	1%	0%	0%	0%	-2%	23%	0%	2%	-1%	0%	0%	0%	0%
9L46 (Lanfine 959S to Pemukan 932S)	7L159 (Heatburg 948S to 7LA159 Tap)	105.6	4%	4%	4%	2%	0%	11%	5%	64%	4%	4%	4%	4%	3%	0%	0%	0%	3%	3%	3%	4%	4%	17%	14%	7%	3%	3%	4%	3%	3%	4%	4%	3%	3%	3%	3%	18%	5%	5%	4%	12%	2%	5%	5%	5%
9L46 (Lanfine 959S to Pemukan 932S)	7L16 (Nevis 766S to Heatburg 948S)	102.8	4%	4%	4%	2%	0%	11%	4%	60%	4%	4%	4%	4%	2%	0%	0%	0%	3%	3%	3%	4%	4%	17%	15%	7%	3%	3%	4%	3%	3%	4%	4%	3%	3%	3%	3%	18%	5%	5%	4%	12%	2%	4%	4%	5%
7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L159 (Heatburg 948S to 7LA159 Tap)	102.8	2%	2%	2%	1%	0%	0%	2%	72%	2%	2%	2%	2%	1%	2%	0%	0%	2%	2%	2%	2%	2%	32%	28%	10%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	33%	4%	2%	2%	22%	1%	3%	3%	2%
7L128 (Michichi Creek 802S to Coyote Lake 963S)	7L16 (Nevis 766S to Heatburg 948S)	100.1	2%	2%	2%	1%	0%	0%	2%	68%	2%	2%	2%	2%	1%	1%	0%	0%	2%	2%	2%	2%	2%	32%	29%	9%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	33%	4%	2%	2%	22%	1%	2%	2%	2%
9L59 (Anderson 801S to Tinchebray 972S)	7L159 (Heatburg 948S to 7LA159 Tap)	112.7	4%	5%	5%	0%	-1%	12%	4%	64%	5%	4%	4%	5%	3%	2%	-2%	-2%	4%	4%	4%	4%	5%	18%	14%	7%	4%	4%	4%	4%	4%	5%	4%	4%	4%	4%	4%	18%	4%	4%	4%	13%	3%	6%	6%	5%
9L59 (Anderson 801S to Tinchebray 972S)	924L (Milo 356S to 924AL Tap)	101.0	17%	18%	18%	0%	6%	16%	15%	9%	18%	18%	17%	18%	28%	12%	6%	6%	20%	21%	21%	18%	19%	13%	12%	13%	22%	22%	18%	19%	21%	19%	16%	20%	24%	24%	21%	14%	14%	15%	16%	15%	23%	18%	18%	17%
9L59 (Anderson 801S to Tinchebray 972S)	7L16 (Nevis 766S to Heatburg 948S)	110.0	4%	4%	4%	0%	-2%	12%	4%	60%	4%	4%	4%	4%	3%	2%	-2%	-2%	4%	4%	4%	4%	5%	18%	15%	6%	4%	4%	4%	4%	4%	5%	4%	4%	4%	4%	4%	18%	4%	3%	4%	13%	3%	6%	6%	5%
498ST1T2 (Tilley 498S Transformer T1/T2)	100L (Suffield 895S to 100AL Tap)	100.9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EATL	7L159 (Heatburg 948S to 7LA159 Tap)	126.6	3%	3%	3%	2%	0%	9%	3%	64%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	15%	10%	6%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%	3%	15%	3%	3%	3%	10%	2%	4%	4%	3%
EATL	935L (Cassils 324S to 935AL Tap)	136.2	19%	22%	21%	18%	14%	19%	19%	14%	21%	21%	20%	22%	-15%	17%	14%	14%	23%	24%	25%	21%	22%	17%	15%	18%	27%	25%	21%	21%	24%	23%	19%	23%	-55%	15%	24%	17%	18%	19%	19%	18%	-12%	22%	22%	21%
EATL	924L (Milo 356S to 924AL Tap)	137.8	11%	12%	12%	10%	7%	10%	10%	7%	12%	11%	11%	12%	24%	9%	8%	8%	14%	15%	15%	12%	12%	9%	8%	9%	15%	16%	11%	13%	14%	12%	10%	13%	18%	18%	14%	9%	10%	10%	10%	9%	19%	12%	12%	11%
EATL	927L (Milo 356s to 927AL Tap)	131.2	11%	12%	12%	10%	8%	10%	10%	7%	12%	11%	11%	12%	25%	9%	8%	8%	14%	15%	15%	12%	12%	9%	8%	10%	15%	16%	12%	13%	14%	12%	10%	13%	18%	18%	14%	9%	10%	10%	10%	9%	20%	12%	12%	12%
EATL	935L (Milo 356S to 935AL Tap)	136.2	16%	18%	18%	15%	11%	16%	16%	11%	18%	18%	18%	19%	-16%	14%	12%	12%	20%	20%	20%	18%	19%	14%	13%	15%	23%	20%	18%	18%	20%	19%	16%	19%	42%	11%	20%	14%	15%	16%	16%	15%	-13%	18%	18%	18%
EATL	923L (Milo 356S to 923AL Tap)	143.1	16%	18%	18%	15%	11%	16%	16%	11%	18%	18%	17%	18%	-16%	14%	12%	12%	19%	20%	20%	17%	19%	14%	13%	15%	23%	26%	18%	17%	20%	19%	16%	19%	10%	41%	20%	14%	15%	16%	16%	15%	-14%	18%	18%	18%
EATL	923L (Newell 2075S to 923AL Tap)	143.1	19%	21%	21%	18%	14%	19%	19%	13%	21%	21%	20%	22%	-15%	17%	14%	14%	23%	24%	24%	20%	22%	16%	15%	17%	27%	31%	21%	21%	24%	22%	19%	22%	14%	-55%	24%	17%	18%	19%	19%	17%	-12%	22%	22%	21%
EATL	912L (Nevis 766S to Red Deer 63S)	131.8	19%	20%	20%	33%	44%	25%	27%	46%	20%	19%	19%	20%	12%	30%	42%	43%	17%	17%	17%	20%	20%	25%	21%	30%	18%	18%	20%	17%	18%	20%	24%	17%	16%	16%	18%	26%	26%	29%	19%	24%	11%	24%	24%	25%
EATL	9L20 (Nevis 766S to Cordel 755S)	127.8	16%	17%	17%	30%	43%	16%	24%	-7%	17%	16%	16%	17%	10%	27%	40%	42%	15%	15%	15%	17%	17%	12%	12%	22%	15%	15%	17%	14%	15%	17%	21%	15%	14%	14%	15%	13%	22%	25%	16%	15%	9%	20%	20%	22%
EATL	7L16 (Nevis 766S to Heatburg 948S)	123.8	2%	2%	2%	1%	0%	9%	2%	59%	2%	2%	2%	2%	2%	1%	-1%	-1%	2%	2%	2%	2%	2%	14%	11%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	15%	2%	2%	2%	10%	1%	3%	3%	3%
EATL	7L137 (Three Hills 770S to Rowley 768S)	108.9	3%	4%	4%	2%	0%	11%	3%	-41%	4%	3%	3%	4%	2%	2%	0%	0%	3%	3%	3%	3%	4%	18%	16%	6%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	3%	18%	4%	3%	3%	13%	2%	4%	4%	4%
EATL	7L25 (Rowley 768S to Michichi Creek 802S)	110.1	4%	4%	4%	3%	1%	12%	3%	-41%	4%	4%	4%	4%	2%	3%	1%	1%	3%	3%	3%	4%	4%	18%	15%	7%	3%	3%	4%	3%	3%	4%	4%	3%	3%	3%	3%	19%	4%	3%	3%	13%	2%	5%	5%	4%
927L (Milo 356s to Langdon 102s)	7L159 (Heatburg 948S to 7LA159 Tap)	106.7	3%	3%	3%	2%	0%	11%	3%	64%	3%	3%	3%	3%	3%	2%	0%	0%	3%	3%	3%	3%	3%	17%	13%	6%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	3%	17%	4%	3%	3%	12%	2%	4%	4%	4%
927L (Milo 356s to Langdon 102s)	924L (Milo 356S to 924AL Tap)	143.1	21%	23%	22%	18%	14%	19%	19%	13%	22%	22%	21%	23%	38%	17%	14%	14%	26%	27%	28%	22%	23%	17%	15%	18%	29%	29%	22%	24%	27%	24%	20%	25%	31%	31%	27%	17%	18%	19%	20%	18%	31%	22%	22%	21%
927L (Milo 356s to Langdon 102s)	912L (Nevis 766S to Red Deer 63S)	104.8	23%	24%	24%	37%	48%	29%	31%	49%	24%	23%	23%	24%	17%	34%	46%	47%	21%	22%	22%	24%	24%	30%	26%	34%	22%	22%	24%	21%	21%	24%	28%	21%	20%	20%	22%	31%	30%	33%	23%	28%	15%	28%	28%	30%
927L (Milo 356s to Langdon 102s)	9L20 (Nevis 766S to Cordel 755S)	101.2	19%	20%	20%	33%	45%	19%	27%	-4%	20%	19%	19%	20%	14%	30%	43%	44%	18%	18%	18%	20%	20%	15%	15%	25%	18%	18%	20%	17%	18%	20%	24%	18%	17%	17%	18%	15%	25%	29%	19%	18%	13%	24%	24%	25%
927L (Milo 356s to Langdon 102s)	7L16 (Nevis 766S to Heatburg 948S)	104.0	3%	3%	3%	2%	0%	10%	3%	59%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	16%	14%	6%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	17%	3%	3%	3%	11%	2%	4%	4%	4%
935L (Milo 356S to Cassils 324S)	7L159 (Heatburg 948S to 7LA159 Tap)	103.8	3%	3%	3%	2%	1%	11%	3%	64%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	4%	17%	14%	6%	3%	3%	3%	3%	3%	4%	3%	3%	0%	3%	3%	18%	4%	3%	3%	12%	2%	4%	4%	4%
935L (Milo 356S to Cassils 324S)	1087L (Cassils 324S to Newwell 2075S)	112.7	18%	20%	20%	16%	12%	18%	17%	12%	20%	20%	19%	21%	-11%	15%	12%	13%	22%	23%	23%	20%	21%	15%	14%	16%	26%	-23%	20%	20%	23%	21%	18%	21%	0%	-20%	23%	16%	16%	17%	18%	16%	-9%	20%	20%	19%
935L (Milo 356S to Cassils 324S)	923L (Milo 356S to 923AL Tap)	149.4	36%	39%	39%	31%	24%	34%	33%	23%	39%	38%	38%	40%	-23%	29%	24%	24%	42%	43%	43%	38%	41%	29%	27%	31%	47%	49%	39%	38%	42%	41%	34%	40%	0%	56%	43%	30%	32%	33%	35%	32%	-20%	39%	39%	37%
935L (Milo 356S to Cassils 324S)	923L (Newell 2075S to 923AL Tap)	150.0	36%	40%	40%	32%	24%	34%	33%	23%	40%	39%	38%	40%	-22%	30%	24%	24%	43%	45%	45%	38%	41%	29%	27%	31%	50%	52%	39%	39%	44%	42%	35%	42%	0%	-41%	45%	31%	32%	34%	35%	32%	-18%	39%	39%	38%
935L (Milo 356S to Cassils 324S)	7L16 (Nevis 766S to Heatburg 948S)	101.0	3%	3%	3%	2%	0%	11%	3%	60%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	17%	14%	6%	3%	3%	3%	3%	3%	3%	3%	3%	0%	3%	3%	17%	4%	3%	3%	12%	2%	4%	4%	4%
923L (Milo 356S to Newell 2075S)	7L159 (Heatburg 948S to 7LA159 Tap)	103.4	3%	3%	3%	2%	1%	11%	3%	64%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	4%	17%	14%	6%	3%	3%	3%	3%	3%	4%	3%	3%	3%	0%	3%	18%	4%	3%	3%	12%	2%	4%	4%	4%
923L (Milo 356S to Newell 2075S)	935L (Cassils 324S to 935AL Tap)	150.9	36%	40%	40%	32%	24%	35%	34%	23%	40%	39%	38%	41%	-22%	30%	25%	25%	44%	45%	46%	39%	42%	30%	27%	31%	50%	50%	39%	40%	44%	42%	35%	42%	-41%	0%	45%	31%	33%	34%	35%	32%	-18%	40%	40%	38%
923L (Milo 356S to Newell 2075S)	935L (Milo 356S to 935AL Tap)	150.2	36%	39%	39%	31%	24%	34%	33%	22%	39%	38%	38%	40%	-23%	29%	24%	24%	42%	43%	43%	38%	41%	29%	27%	30%	47%	47%	39%	38%	42%	41%	34%	40%	56%	0%	43%	30%	32%	33%	35%	32%	-20%	39%	39%	37%
923L (Milo 356S to Newell 2075S)	7L16 (Nevis 766S to Heatburg 948S)	100.7	3%	3%	3%	2%	0%	11%	3%	60%	3%	3%	3%	3%	2%	2%	0%	0%	3%	3%	3%	3%	3%	17%	14%	6%	3%	3%	3%	3%	3%	3%	3%	3%	3%	0%	3%	17%	4%	3%	3%	12%	2%	4%	4%	4%
163ST5 (Amoco Empress 163S Transformer T5)	668L (Empress 394S to Cypress 562S)	161.0	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	0%	0%	0%	0%	0%

Scn4_2028SL_Post_P2418.sav																																														
ctg	brn	%loading	HLD1	JNR1	JNR3	GDP1	HAL1	HHW1	LAN1	NEP1	P1698	P1853	P1892	P2199	P2247	P1567	P1704	P2562	BRK1	BRK2	BSC1	EMP1	JER1	MCH1	MIC1	YNG1	P1927	P1987	P2091	P2195	P2218	P2411	P2421	P2446	P2447	P2506	P2537	P1978	P2424	P2356	P2418	P1718	BSR1	SH1	SH2	P2464
871L (Amoco Empress 163S to Sand Hills 341S)	7L760 (Oyen 394S to P2421 Tap)	100.1	13%	6%	6%	-1%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	3%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	1%	-1%	-1%	-3%
951L (Jenner 275S to Ware Junction 132S)	7L760 (Oyen 394S to P2421 Tap)	110.7	15%	9%	9%	-2%	-2%	-1%	-18%	-1%	9%	9%	9%	9%	1%	-7%	-2%	-2%	2%	2%	2%	18%	9%	-1%	-2%	-10%	2%	2%	13%	2%	2%	8%	56%	4%	2%	2%	2%	-1%	-16%	-9%	16%	-1%	1%	-1%	-1%	-3%
945L (Jenner 275S to Cypress 562S)	7L760 (Oyen 394S to P2421 Tap)	104.9	16%	5%	5%	-2%	-2%	-1%	-18%	-1%	5%	5%	5%	6%	1%	-7%	-2%	-2%	2%	2%	2%	18%	6%	-1%	-2%	-11%	2%	2%	13%	2%	2%	5%	57%	4%	2%	2%	2%	-1%	-16%	-9%	17%	-1%	1%	-1%	-1%	-3%
760L (Amoco Empress 163S to Empress 394S)	668L (Empress 394S to Cypress 562S)	174.3	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	98%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	0%	0%	0%	0%	0%	0%	0%	98%	0%	0%	0%	0%	0%
666L (Tilley 498S to West Brooks 28S)	7L760 (Oyen 394S to P2421 Tap)	103.8	14%	6%	6%	-1%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	16%	6%	-1%	-1%	-11%	2%	2%	11%	2%	2%	5%	55%	9%	2%	2%	2%	-1%	-16%	-9%	14%	-1%	1%	-1%	-1%	-3%
562ST1 (Cypress 562S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	101.3	14%	6%	6%	-2%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	16%	6%	-1%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	4%	2%	2%	2%	-1%	-16%	-9%	15%	-1%	1%	-1%	-1%	-3%
1097L (Milo 356S to Amber 611S)	923L (Milo 356S to 923AL Tap)	101.4	19%	22%	22%	17%	12%	20%	20%	12%	22%	21%	21%	22%	0%	17%	12%	12%	21%	23%	23%	20%	22%	18%	17%	18%	26%	29%	20%	19%	22%	22%	19%	21%	13%	44%	23%	18%	18%	19%	18%	18%	-11%	21%	21%	21%
6L56 (Michichi Creek A802S to Hanna A763S)	7L760 (Oyen 394S to P2421 Tap)	100.0	13%	6%	6%	-1%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-12%	2%	2%	10%	2%	2%	5%	55%	4%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	1%	-1%	-1%	-3%
9L29 (Oakland 946S to Coyote Lake 963S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	119.1	2%	2%	2%	1%	0%	-40%	1%	-16%	2%	2%	2%	2%	2%	1%	0%	0%	2%	2%	2%	2%	2%	-36%	-44%	-9%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	-36%	-5%	1%	2%	31%	1%	3%	3%	3%
341ST1 (Sand Hills 341S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	100.1	13%	6%	6%	-1%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	3%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	1%	-1%	-1%	-3%
933L (Ware Junction 132S to Anderson A801S)	7L760 (Oyen 394S to P2421 Tap)	100.9	13%	6%	6%	-2%	-2%	-2%	-19%	-2%	6%	6%	6%	6%	2%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-2%	-2%	-11%	2%	2%	11%	2%	2%	5%	55%	4%	2%	2%	2%	-2%	-17%	-9%	14%	-2%	2%	-1%	-1%	-4%
934L (Ware Junction 132S to Anderson 801S)	7L760 (Oyen 394S to P2421 Tap)	100.9	13%	6%	6%	-2%	-2%	-2%	-19%	-2%	6%	6%	6%	6%	2%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-2%	-2%	-11%	2%	2%	11%	2%	2%	5%	55%	4%	2%	2%	2%	-2%	-17%	-9%	14%	-2%	2%	-1%	-1%	-4%
980L (Ware Junction 132S to Anderson A801S)	7L760 (Oyen 394S to P2421 Tap)	100.9	13%	6%	6%	-2%	-2%	-2%	-19%	-2%	6%	6%	6%	6%	2%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-2%	-2%	-11%	2%	2%	11%	2%	2%	5%	55%	4%	2%	2%	2%	-2%	-17%	-9%	14%	-2%	2%	-1%	-1%	-4%
163ST1 (Amoco Empress 163S Transformer T1)	7L760 (Oyen 394S to P2421 Tap)	102.2	13%	6%	6%	-2%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	3%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	1%	-1%	-1%	-3%
163ST2 (Amoco Empress 163S Transformer T2)	7L760 (Oyen 394S to P2421 Tap)	102.4	13%	6%	6%	-2%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	3%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	1%	-1%	-1%	-3%
924L (Milo 356S to 924AL Tap)	927L (Milo 356s to 927AL Tap)	122.9	23%	25%	25%	20%	14%	23%	23%	14%	25%	24%	24%	25%	36%	20%	14%	14%	26%	28%	28%	24%	25%	21%	20%	21%	29%	29%	24%	25%	27%	26%	23%	26%	31%	31%	27%	21%	21%	22%	22%	21%	32%	25%	25%	24%
924L (Milo 356S to 924AL Tap)	7L760 (Oyen 394S to P2421 Tap)	105.2	13%	6%	6%	-1%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	2%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	4%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	2%	-1%	-1%	-3%
924L (Milo 356S to 924AL Tap)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	100.7	1%	1%	1%	1%	0%	-10%	0%	-8%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	1%	-19%	-22%	-5%	1%	1%	1%	1%	1%	1%	0%	1%	1%	1%	1%	-19%	-2%	0%	1%	49%	1%	1%	1%	1%
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	150.5	7.6%	7.3%	7.3%	2.1%	-3.7%	7.8%	20.7%	2.0%	7.2%	7.1%	7.1%	7.2%	5.0%	31.0%	-3.7%	-3.7%	6.1%	6.3%	6.3%	8.1%	7.3%	6.8%	6.6%	15.6%	6.4%	6.3%	7.5%	5.9%	6.2%	7.2%	13.4%	6.3%	6.0%	6.0%	6.2%	6.8%	18.4%	23.0%	7.4%	6.9%	4.6%	8.1%	8.1%	11.5%
9L966 (Pemukan 932S to Hansman Lake 650S)	7L127 (Pemukan 932S to Monitor 774S)	128.4	7.8%	7.5%	7.5%	1.9%	-3.8%	7.5%	21.5%	1.5%	7.4%	7.3%	7.3%	7.4%	5.1%	32.3%	-3.8%	-3.8%	6.2%	6.4%	6.4%	8.4%	7.5%	6.0%	5.9%	8.9%	6.5%	6.4%	7.8%	6.1%	6.3%	7.4%	14.1%	6.5%	6.1%	6.1%	6.4%	6.0%	17.0%	23.9%	7.7%	6.6%	4.7%	8.2%	8.2%	11.8%
963S T1 (Coyote Lake 963S Transformer T1)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	119.1	2%	2%	2%	1%	0%	-40%	1%	-16%	2%	2%	2%	2%	2%	1%	0%	0%	2%	2%	2%	2%	2%	-36%	-44%	-9%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%	-36%	-5%	1%	2%	31%	1%	3%	3%	3%
912L (Nevis 766S to Red Deer 63S)	924L (Milo 356S to 924AL Tap)	104.0	20%	21%	21%	20%	19%	21%	21%	20%	21%	20%	20%	21%	27%	20%	19%	19%	21%	22%	22%	20%	21%	21%	20%	21%	23%	23%	20%	20%	21%	21%	20%	21%	24%	24%	22%	21%	20%	21%	19%	19%	24%	21%	21%	21%
912L (Nevis 766S to Red Deer 63S)	935L (Milo 356S to 935AL Tap)	113.5	26%	28%	28%	28%	26%	29%	29%	28%	28%	28%	27%	29%	-11%	27%	26%	26%	27%	29%	29%	27%	29%	28%	27%	28%	32%	29%	27%	25%	28%	29%	28%	27%	50%	18%	29%	28%	28%	28%	25%	27%	-8%	30%	30%	29%
912L (Nevis 766S to Red Deer 63S)	923L (Milo 356S to 923AL Tap)	117.1	26%	28%	28%	28%	26%	29%	28%	27%	28%	27%	27%	28%	-12%	27%	26%	26%	27%	28%	29%	27%	29%	28%	27%	28%	31%	35%	27%	25%	27%	29%	27%	27%	18%	49%	28%	28%	27%	28%	25%	27%	-8%	29%	29%	29%
9L20 (Nevis 766S to Cordel 755S)	935L (Milo 356S to 935AL Tap)	106.1	24%	26%	26%	25%	23%	24%	26%	11%	26%	26%	25%	26%	-13%	24%	23%	23%	25%	27%	27%	25%	27%	22%	21%	24%	30%	27%	25%	23%	26%	27%	25%	26%	48%	17%	27%	22%	24%	25%	23%	23%	-9%	27%	27%	26%
9L20 (Nevis 766S to Cordel 755S)	923L (Milo 356S to 923AL Tap)	109.8	24%	26%	26%	25%	22%	24%	26%	11%	26%	25%	25%	26%	-13%	24%	22%	22%	25%	27%	27%	25%	26%	21%	21%	23%	29%	33%	25%	23%	26%	27%	25%	25%	16%	47%	26%	21%	24%	25%	23%	22%	-9%	27%	27%	26%
9L20 (Nevis 766S to Cordel 755S)	7L137 (Three Hills 770S to Rowley 768S)	114.9	4%	4%	4%	5%	5%	13%	5%	-28%	4%	4%	4%	4%	3%	5%	5%	5%	4%	4%	4%	4%	5%	21%	18%	9%	4%	4%	4%	4%	4%	5%	5%	4%	4%	4%	4%	21%	6%	5%	4%	12%	3%	6%	6%	6%
9L20 (Nevis 766S to Cordel 755S)	7L25 (Rowley 768S to Michichi Creek 802S)	115.9	5%	5%	5%	5%	5%	14%	6%	-30%	5%	5%	5%	5%	3%	6%	5%	5%	4%	4%	4%	5%	5%	22%	20%	9%	4%	4%	5%	4%	4%	5%	5%	4%	4%	4%	4%	22%	6%	6%	5%	13%	3%	6%	6%	6%
9L20 (Nevis 766S to Cordel 755S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	105.5	1%	1%	1%	1%	1%	-10%	1%	-8%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	-19%	-22%	-4%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	-19%	-2%	1%	1%	49%	1%	2%	2%	1%
Michichi Creek A802S Transformer T1	7L760 (Oyen 394S to P2421 Tap)	100.1	13%	6%	6%	-1%	-2%	-1%	-19%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	15%	6%	-1%	-1%	-12%	2%	2%	10%	2%	2%	5%	55%	4%	2%	2%	2%	-1%	-17%	-9%	14%	-1%	1%	-1%	-1%	-3%
7L238 (Lanfine 959S to Buffalo Bird 601S)	7L760 (Oyen 394S to P2421 Tap)	104.6	12%	5%	5%	-2%	-2%	-2%	0%	-1%	5%	5%	5%	5%	1%	-7%	-2%	-2%	2%	2%	2%	14%	5%	-2%	-2%	-10%	1%	1%	10%	2%	2%	4%	52%	3%	1%	1%	2%	-2%	-15%	-9%	13%	-2%	1%	-1%	-1%	-3%
9L46 (Lanfine 959S to Pemukan 932S)	935L (Milo 356S to 935AL Tap)	100.7	22%	25%	25%	19%	12%	23%	24%	13%	25%	24%	24%	25%	-13%	0%	12%	12%	24%	26%	26%	24%	25%	20%	20%	20%	29%	26%	24%	22%	25%	25%	23%	24%	47%	16%	25%	20%	22%	24%	22%	21%	-9%	25%	25%	25%
9L46 (Lanfine 959S to Pemukan 932S)	923L (Milo 356S to 923AL Tap)	104.4	22%	25%	25%	19%	11%	22%	24%	13%	25%	24%	24%	25%	-14%	0%	11%	11%	24%	25%	26%	23%	25%	20%	20%	20%	28%	32%	24%	22%	25%	25%	23%	24%	15%	46%	25%	20%	21%	24%	22%	21%	-10%	24%	24%	24%
9L46 (Lanfine 959S to Pemukan 932S)	6L15 (Sullivan Lake 775S to Hanna 763S)	105.1	1%	1%	1%	0%	0%	2%	2%	1%	1%	1%	1%	1%	0%	0%	0%	0%	1%	1%	1%	1%	1%	3%	3%	22%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	3%	9%	1%	1%	2%	0%	1%	1%	1%
9L46 (Lanfine 959S to Pemukan 932S)	7L137 (Three Hills 770S to Rowley 768S)	100.8	3%	3%	3%	2%	0%	12%	4%	-29%	3%	3%	3%	3%	2%	0%	0%	0%	3%	3%	3%	3%	3%	20%	18%	7%	3%	3%	3%	3%	3%	3%	4%	3%	3%	3%	3%	20%	5%	4%	3%	12%	2%	4%	4%	4%
9L46 (Lanfine 959S to Pemukan 932S)	7L25 (Rowley 768S to Michichi Creek 802S)	102.1	4%	4%	4%	2%	0%	13%	5%	-30%	4%	4%	4%	4%	2%	0%	0%	0%	3%	3%	3%	4%	4%	22%	19%	8%	3%	3%	4%	3%	3%	4%	4%	3%	3%	3%	3%	22%	5%	5%	3%	13%	2%	5%	5%	5%

A7 Constraint Effective Factors Table

9L46 (Lanfine 9395 to Pemukan 9325)	7L171 (Michichi Creek 8025 to Wintering Hills 8045)	102.7	1%	1%	3%	1%	0%	-10%	1%	-8%	3%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	3%	-19%	-22%	-5%	1%	1%	3%	1%	1%	1%	1%	1%	3%	1%	1%	1%	-19%	-2%	1%	3%	49%	1%	1%	1%	3%
9L46 (Lanfine 9395 to Pemukan 9325)	9L59 (Tinchebray 9725 to 9LA59)	123.1	22%	22%	22%	48%	-26%	24%	26%	3%	22%	22%	22%	22%	16%	0%	-26%	-26%	20%	20%	30%	22%	23%	19%	19%	13%	21%	21%	22%	19%	20%	23%	34%	30%	19%	19%	20%	19%	21%	27%	23%	21%	15%	28%	28%	27%
9L46 (Lanfine 9395 to Pemukan 9325)	9L59 (Anderson 9405 to 9LA59)	105.2	22%	23%	23%	-52%	-26%	23%	26%	2%	23%	22%	22%	23%	16%	0%	-26%	-26%	20%	20%	21%	22%	23%	19%	18%	13%	21%	21%	22%	19%	20%	23%	34%	30%	20%	20%	20%	19%	30%	27%	23%	21%	15%	28%	28%	27%
7L128 (Michichi Creek 8025 to Coyote Lake 9635)	7L171 (Michichi Creek 8025 to Wintering Hills 8045)	114.7	2%	2%	2%	2%	0%	0%	1%	-18%	2%	2%	2%	2%	2%	1%	0%	0%	2%	2%	2%	2%	2%	-40%	-45%	-10%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	-40%	-4%	2%	2%	32%	2%	3%	3%	3%
9L59 (Anderson 8015 to Tinchebray 9725)	9L59 (Mlb 3565 to 9LA59)	102.9	24%	27%	27%	0%	7%	25%	24%	13%	27%	26%	26%	27%	-12%	19%	7%	7%	26%	28%	28%	25%	27%	22%	22%	20%	31%	28%	26%	24%	27%	27%	24%	26%	49%	17%	27%	22%	21%	22%	23%	23%	-6%	28%	28%	26%
9L59 (Anderson 8015 to Tinchebray 9725)	9L59 (Mlb 3565 to 9LA59)	102.9	24%	27%	27%	0%	7%	25%	24%	13%	27%	26%	26%	27%	-12%	19%	7%	7%	26%	28%	28%	25%	27%	22%	22%	20%	31%	28%	26%	24%	27%	27%	24%	26%	49%	17%	27%	22%	21%	22%	23%	23%	-6%	28%	28%	26%
9L59 (Anderson 8015 to Tinchebray 9725)	9L59 (Anderson 9405 to 9LA59)	105.2	22%	23%	23%	-52%	-26%	23%	26%	2%	23%	22%	22%	23%	16%	0%	-26%	-26%	20%	20%	21%	22%	23%	19%	18%	13%	21%	21%	22%	19%	20%	23%	34%	30%	20%	20%	20%	19%	30%	27%	23%	21%	15%	28%	28%	27%
9L59 (Anderson 8015 to Tinchebray 9725)	9L59 (Mlb 3565 to 9LA59)	102.9	24%	27%	27%	0%	7%	25%	24%	13%	27%	26%	26%	27%	-12%	19%	7%	7%	26%	28%	28%	25%	27%	22%	22%	20%	31%	28%	26%	24%	27%	27%	24%	26%	49%	17%	27%	22%	21%	22%	23%	23%	-6%	28%	28%	26%
9L59 (Anderson 8015 to Tinchebray 9725)	9L59 (Mlb 3565 to 9LA59)	102.9	24%	27%	27%	0%	7%	25%	24%	13%	27%	26%	26%	27%	-12%	19%	7%	7%	26%	28%	28%	25%	27%	22%	22%	20%	31%	28%	26%	24%	27%	27%	24%	26%	49%	17%	27%	22%	21%	22%	23%	23%	-6%	28%	28%	26%
9L59 (Anderson 8015 to Tinchebray 9725)	7L160 (Oyen 3945 to P2421 Tap)	115.9	13%	6%	6%	0%	-1%	-1%	-39%	-1%	6%	6%	6%	6%	1%	-7%	-1%	-1%	2%	2%	2%	1%	6%	-2%	-2%	-11%	2%	2%	10%	2%	2%	5%	55%	3%	2%	2%	2%	-1%	-17%	-9%	13%	-1%	1%	-1%	-1%	-3%
9L59 (Anderson 8015 to Tinchebray 9725)	7L137 (Three Hills 7705 to Rowley 7685)	112.3	4%	4%	4%	0%	-1%	12%	3%	-2%	4%	4%	4%	4%	3%	2%	-1%	-1%	3%	4%	4%	4%	4%	21%	19%	7%	4%	4%	4%	3%	4%	4%	3%	4%	3%	3%	4%	21%	4%	3%	4%	12%	2%	5%	5%	5%
9L59 (Anderson 8015 to Tinchebray 9725)	7L25 (Rowley 7685 to Michichi Creek 8025)	113.5	4%	4%	4%	0%	-1%	13%	4%	-29%	4%	4%	4%	4%	3%	3%	-1%	-1%	4%	4%	4%	4%	4%	22%	20%	7%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	22%	5%	4%	4%	13%	3%	5%	5%	5%
9L59 (Anderson 8015 to Tinchebray 9725)	7L171 (Michichi Creek 8025 to Wintering Hills 8045)	109.3	1%	1%	1%	3%	0%	0%	-10%	0%	-7%	3%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	3%	-18%	-21%	-4%	1%	1%	3%	1%	1%	1%	1%	1%	3%	1%	1%	-18%	-2%	1%	3%	49%	1%	2%	2%	3%
9L59 (Anderson 8015 to Tinchebray 9725)	7L132 (Oyen 7675 to Lanfine 9395)	100.3	12%	5%	5%	0%	-1%	-1%	-22%	0%	5%	5%	5%	5%	1%	-8%	-1%	-1%	1%	1%	1%	1%	1%	9%	0%	-1%	27%	1%	1%	9%	1%	1%	4%	51%	3%	1%	1%	1%	0%	45%	-30%	1%	-1%	1%	-1%	-1%	-4%
9L24 (Oakland 946s - Lanfine 959s)	7L60, (Amoco Empress 1635 to 7L60AL Tap)	124.2	15%	9%	9%	0%	-4%	3%	-34%	0%	9%	9%	9%	9%	4%	-20%	-4%	-4%	5%	6%	6%	17%	9%	2%	2%	-20%	5%	5%	13%	5%	5%	9%	-56%	7%	5%	5%	6%	2%	-30%	-25%	17%	3%	4%	4%	4%	0%
9L24 (Oakland 946s - Lanfine 959s)	7L60, (7L160 (TLA 360 Tap to 7L60AL Tap)	131.2	15%	9%	9%	0%	-4%	3%	-34%	0%	9%	9%	9%	9%	4%	-20%	-4%	-4%	5%	5%	5%	17%	9%	2%	2%	-20%	5%	5%	13%	5%	5%	8%	-55%	7%	5%	5%	5%	2%	-30%	-25%	16%	3%	4%	4%	4%	0%
9L24 (Oakland 946s - Lanfine 959s)	7L760 (P2421 Tap to 7LA760 Tap)	126.6	15%	9%	9%	0%	-3%	3%	-33%	-1%	9%	9%	9%	9%	4%	-19%	-3%	-3%	5%	5%	5%	16%	9%	2%	2%	-19%	5%	5%	12%	5%	5%	8%	-55%	6%	5%	5%	5%	2%	-28%	-23%	16%	3%	4%	4%	4%	0%
9L24 (Oakland 946s - Lanfine 959s)	7L760 (Oyen 3945 to P2421 Tap)	134.9	12%	7%	7%	0%	-3%	2%	-30%	-1%	7%	7%	7%	7%	3%	-16%	-3%	-3%	4%	4%	4%	14%	7%	1%	1%	-16%	4%	4%	10%	4%	4%	7%	48%	5%	4%	4%	4%	1%	-24%	-20%	13%	2%	3%	3%	3%	0%
9L24 (Oakland 946s - Lanfine 959s)	7L171 (Michichi Creek 8025 to Wintering Hills 8045)	100.2	1%	1%	3%	1%	0%	-10%	0%	-8%	3%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	3%	-18%	-21%	-4%	1%	1%	3%	1%	1%	1%	0%	1%	3%	1%	1%	-18%	-3%	0%	3%	50%	1%	1%	1%	0%
9L24 (Oakland 946s - Lanfine 959s)	7L132 (Oyen 7675 to Lanfine 9395)	146.1	11%	7%	7%	-1%	-3%	3%	-34%	0%	7%	7%	7%	7%	3%	-17%	-3%	-3%	4%	4%	4%	13%	7%	2%	2%	25%	4%	4%	10%	4%	4%	6%	42%	5%	3%	3%	4%	2%	40%	-22%	13%	2%	3%	3%	3%	0%
9L24 (Oakland 946s - Lanfine 959s)	9L59 (Tinchebray 9725 to 9LA59)	100.8	17%	20%	20%	50%	-26%	24%	-9%	3%	20%	20%	20%	20%	15%	-13%	-26%	-26%	19%	30%	30%	17%	23%	19%	19%	-2%	30%	30%	18%	19%	19%	21%	2%	19%	19%	19%	20%	19%	-4%	-13%	18%	22%	14%	28%	28%	0%
4985T1T2 (Tilley 4985 Transformer T1/T2)	7L760 (Oyen 3945 to P2421 Tap)	104.7	34%	6%	6%	-1%	-2%	-1%	-39%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-2%	2%	2%	2%	1%	6%	-2%	-2%	-11%	2%	2%	13%	2%	2%	5%	55%	0%	2%	2%	2%	-1%	-36%	-9%	14%	-1%	1%	-1%	-1%	-3%
927L (Mlb 356s to Langdon 302s)	9Z4L (Mlb 3565 to 924AL Tap)	129.3	23%	25%	23%	20%	14%	23%	23%	14%	23%	24%	24%	25%	36%	20%	14%	14%	26%	27%	28%	24%	23%	21%	20%	21%	29%	29%	24%	24%	27%	25%	23%	26%	33%	31%	27%	21%	21%	22%	22%	21%	32%	25%	25%	24%
927L (Mlb 356s to Langdon 302s)	7L760 (Oyen 3945 to P2421 Tap)	105.2	13%	6%	6%	-3%	2%	-1%	-39%	-1%	6%	6%	6%	6%	2%	-7%	-2%	-3%	2%	2%	2%	15%	6%	-3%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	4%	2%	2%	2%	-1%	-37%	-9%	14%	-1%	2%	-1%	-1%	-3%
927L (Mlb 356s to Langdon 302s)	7L171 (Michichi Creek 8025 to Wintering Hills 8045)	100.7	1%	1%	1%	1%	0%	-10%	0%	-8%	3%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%	1%	3%	-19%	-22%	-5%	1%	1%	3%	1%	1%	1%	0%	1%	3%	1%	1%	-19%	-2%	0%	3%	49%	1%	1%	1%	1%
93LL (Mlb 3565 to Cascils 3245)	923L (Mlb 3565 to 923AL Tap)	153.8	35%	40%	39%	32%	22%	36%	36%	22%	40%	38%	38%	40%	-27%	33%	22%	22%	39%	41%	41%	37%	40%	32%	31%	32%	46%	46%	38%	35%	40%	40%	36%	39%	0%	55%	41%	32%	33%	34%	34%	33%	-19%	39%	39%	38%
93LL (Mlb 3565 to Cascils 3245)	923L (Newell 2075S to 923AL Tap)	118.3	37%	41%	43%	33%	23%	37%	37%	23%	43%	40%	40%	41%	-25%	32%	23%	23%	40%	43%	43%	38%	42%	34%	33%	33%	48%	49%	39%	37%	41%	42%	37%	41%	0%	-45%	42%	34%	34%	35%	33%	34%	-18%	40%	40%	39%
93LL (Mlb 3565 to Cascils 3245)	7L760 (Oyen 3945 to P2421 Tap)	101.6	13%	6%	6%	-1%	-2%	-1%	-39%	-1%	6%	6%	6%	6%	1%	-7%	-2%	-3%	2%	2%	2%	15%	6%	-3%	-1%	-11%	2%	2%	10%	2%	2%	5%	55%	4%	0%	2%	2%	-1%	-37%	-9%	14%	-1%	1%	-1%	-1%	-3%
923L (Mlb 3565 to Newell 2075S)	93LL (Cascils 3245 to 935AL Tap)	126.6	37%	41%	43%	33%	23%	37%	37%	22%	43%	40%	40%	41%	-25%	32%	23%	23%	41%	43%	43%	38%	42%	33%	32%	33%	48%	48%	39%	37%	41%	42%	37%	40%	-44%	0%	42%	33%	34%	35%	33%	34%	-18%	40%	40%	39%
923L (Mlb 3565 to Newell 2075S)	93SL (Mlb 3565 to 935AL Tap)	140.9	35%	40%	40%	32%	23%	36%	36%	22%	40%	39%	38%	40%	-26%	33%	22%	22%	39%	41%	42%	37%	40%	33%	31%	32%	46%	46%	38%	35%	40%	41%	36%	39%	55%	0%	41%	33%	33%	34%	34%	33%	-19%	39%	39%	38%
1635TS (Amoco Empress 1635 Transformer TS)	668L (Empress 3945 to Cypress 562S)	174.3	-1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	98%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	97%	0%	0%	0%	0%
94AL (Jenner 2755 to Ware Junction 1325)	7L760 (Oyen 3945 to P2421 Tap)	103.7	35%	9%	9%	-1%	-2%	-1%	-38%	-3%	9%	9%	9%	9%	1%	-7%	-2%	-2%	2%	2%	2%	18%	9%	-3%	-1%	-11%	2%	2%	13%	2%	2%	6%	56%	4%	2%	2%	2%	-1%	-36%	-9%	17%	-1%	1%	-1%	-1%	-3%