

ENGINEERING CONNECTION ASSESSMENT

Engineering Connection Assessment



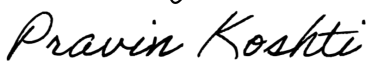
P2421 RESC Big Sky Solar Connection

Renewable Energy Systems Canada Inc.

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Engineering Connection Assessment

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V1 FINAL



NOTE:

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

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

Contents

1	Introduction	1
1.1	Project Overview	1
2	Assessment Scope	2
2.1	Objectives	2
2.2	Existing System	2
2.3	Study Area	2
3	Connection Alternatives	4
3.1	Overview	4
3.2	Connection Alternatives Examined	4
3.3	Connection Alternatives Selected for Further Study	12
3.4	Connection Alternatives Not Selected for Further Study	12
4	Assessment Approach	13
4.1	Standards, Criteria and Assumptions	13
4.2	Studies Performed	13
4.2.1	<i>Power Flow Studies</i>	14
4.2.2	<i>Transient Stability Studies</i>	14
4.2.3	<i>Short-Circuit Current Level Studies</i>	14
4.3	Mitigation Measure Development and Evaluation	14
4.3.1	<i>Post-Mitigation Studies</i>	14
4.3.2	<i>Constraint Effective Factor Studies</i>	14
5	Interpretation of Results	15
5.1	Results Overview	15
5.2	Pre-Project Study Results	17
5.2.1	<i>Category A Conditions</i>	17
5.2.2	<i>Category B Conditions</i>	17
5.3	Post-Project Study Results	17
5.3.1	<i>Category A Conditions</i>	17
5.3.2	<i>Category B Conditions</i>	17
5.4	Mitigation Measures	17
5.4.1	<i>Pre-Project</i>	17
5.4.2	<i>Post-Project</i>	17
5.4.3	<i>Post-Project Mitigation Study Results</i>	18
6	Project Dependencies	19
7	Conclusions and Recommendations	20

Tables

Table 4-1: Connection Study Scenarios.....	13
Table 5-1: Summary of Reliability Criteria Violations, Project Impact and Mitigation Measures	16

Figures

Figure 1-1: Transmission System in the Study Area.....	3
Figure 2 - 1: Connection Alternative 1.....	5
Figure 2 - 2: Connection Alternative 2.....	7
Figure 2 - 3: Connection Alternative 3.....	9
Figure 2 - 4: Connection Alternative 4.....	11

Attachments

Attachment A: Engineering Connection Assessment Results

1 Introduction

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

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

1.1 Project Overview

Renewable Energy Systems Canada Inc. (RESC, the Market Participant) has submitted a request for system access service to the Alberta Electric System Operator (AESO) to connect its approved Big Sky Solar Project (Facility) to the AIES.

The Facility includes an approved collector substation, to be designated the Bullseye 1004S 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 140 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1 MW; and a request for transmission development (collectively, the Project). Originally, the Market Participant requested a Rate STS of 180 MW, however in the Stage 2 studies, it was identified that to avoid Category A thermal criteria violations, the Project size would need to be reduced to 140 MW.

The Project in-service date (ISD) used for the purpose of the studies is June 30, 2023. The current ISD is January 1, 2024.

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. Empress (Area 48) is surrounded by the planning areas of Medicine Hat (Area 4), Vauxhall (Area 52), Brooks (Area 47), Sheerness (Area 43), and Hanna (Area 42).

From a transmission system perspective, Empress (Area 48) consists primarily of a 240 kV and 138 kV transmission system. Empress (Area 48) is connected to Hanna (Area 42) with a 138 kV transmission line, Brooks (Area 47) with two 240 kV transmission lines, and Medicine Hat (Area 4) with a 138 kV transmission line.

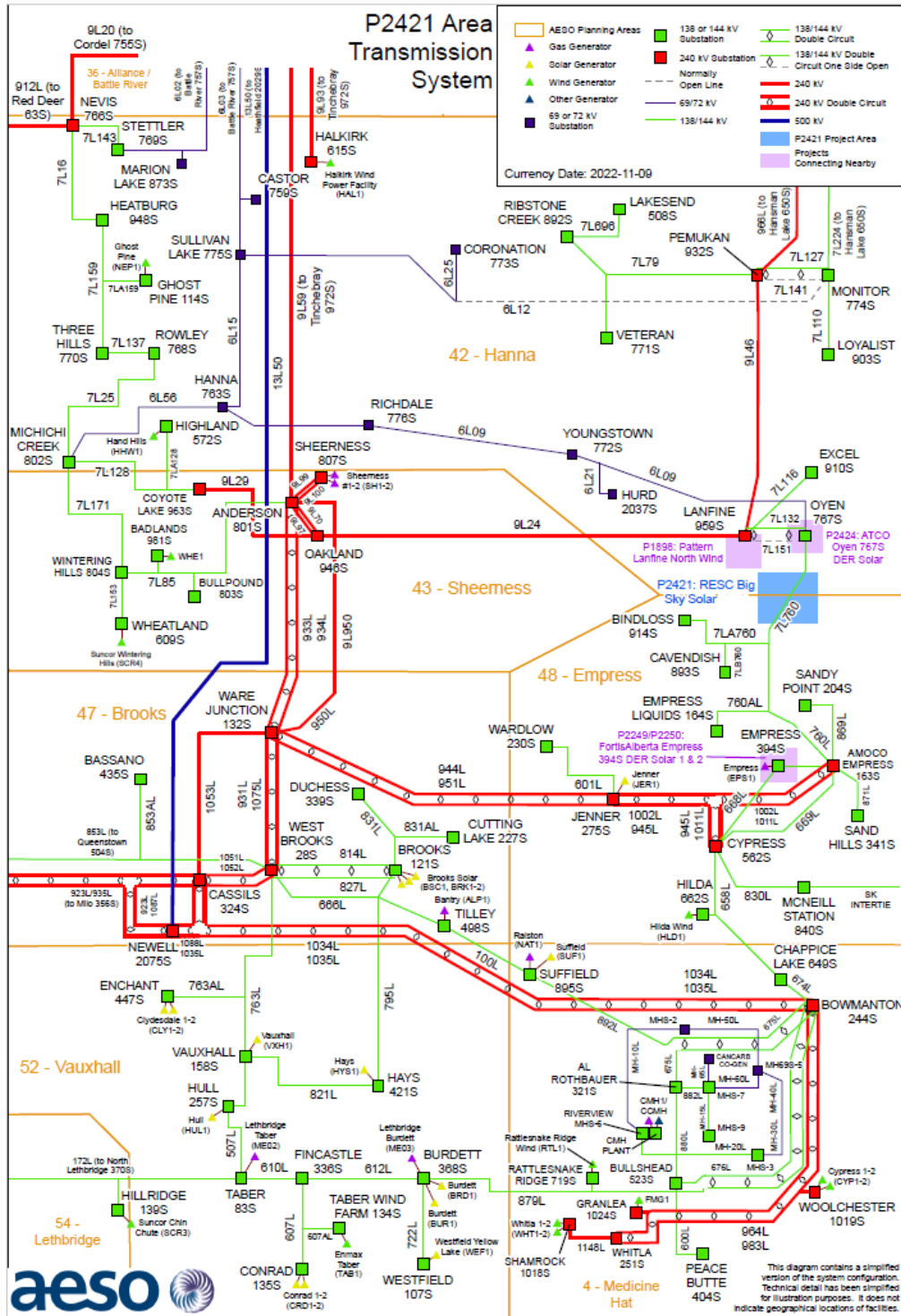
Existing constraints in the South Planning Region are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (TCM Rule).

2.3 Study Area

The Study Area for the Project consists of the AESO planning areas of 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 A1). In addition, 174L (North Holden 395S – Bardo 197S) will be included in the monitored elements.

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

Figure 1-1: Transmission System in the Study Area



3 Connection Alternatives

3.1 Overview

The AESO, in consultation with the TFO in the Study Area and the Market Participant, examined 2 transmission alternatives to meet the Market Participant's request for system access service, as detailed in Section 3.2.

3.2 Connection Alternatives Examined

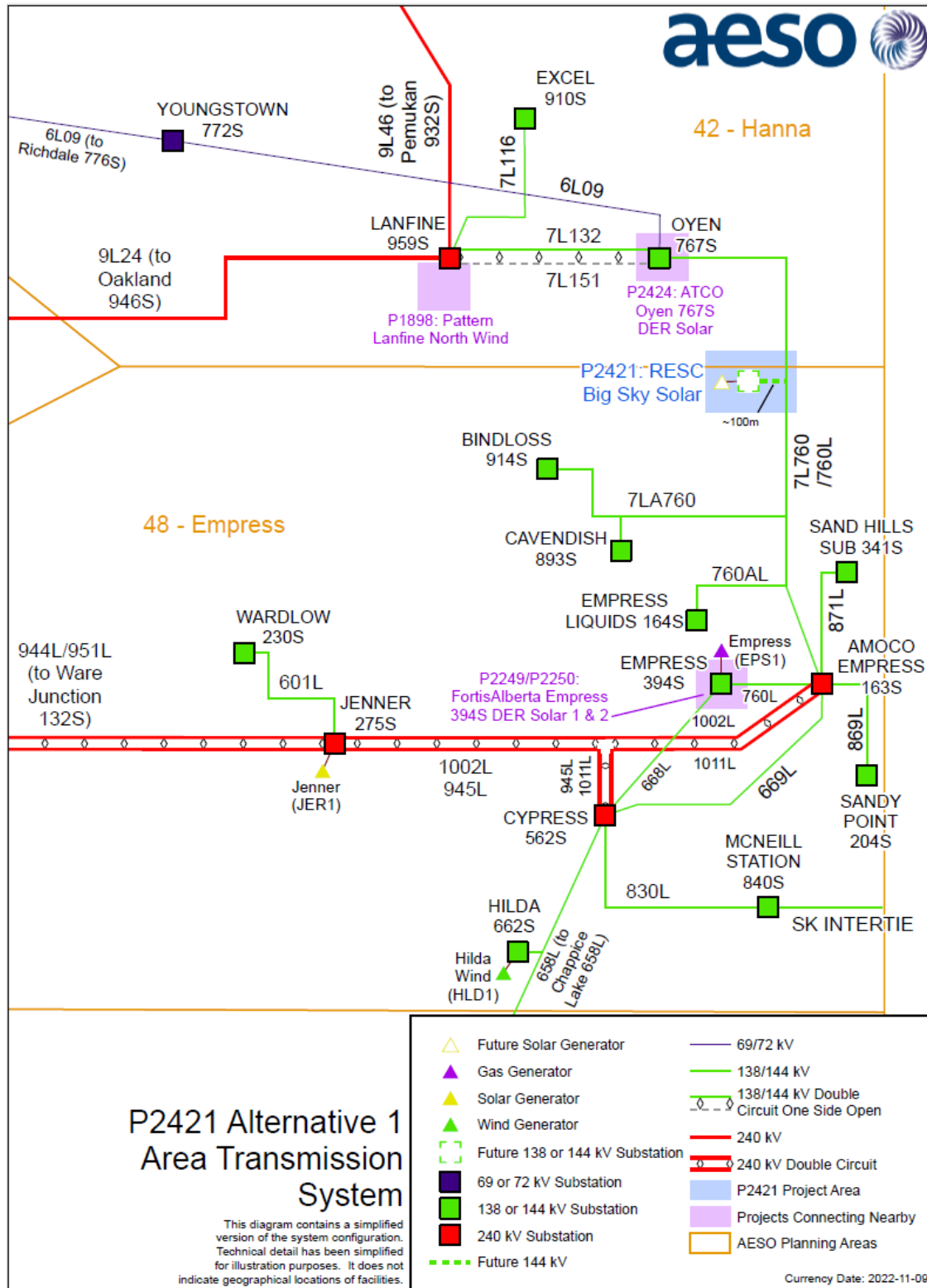
Alternative 1 – T-tap 144 kV connection to 7L760

This alternative includes the following developments:

- Add one 144 kV circuit, approximately 100 m in length, to connect the Facility to the 144 kV transmission line 7L760 (between Oyen 767S substation and Bindloss 914S substation tap point), using a T-tap configuration; and
- Add or modify associated equipment as required for the above transmission developments.

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

Figure 2 - 1: Connection Alternative 1



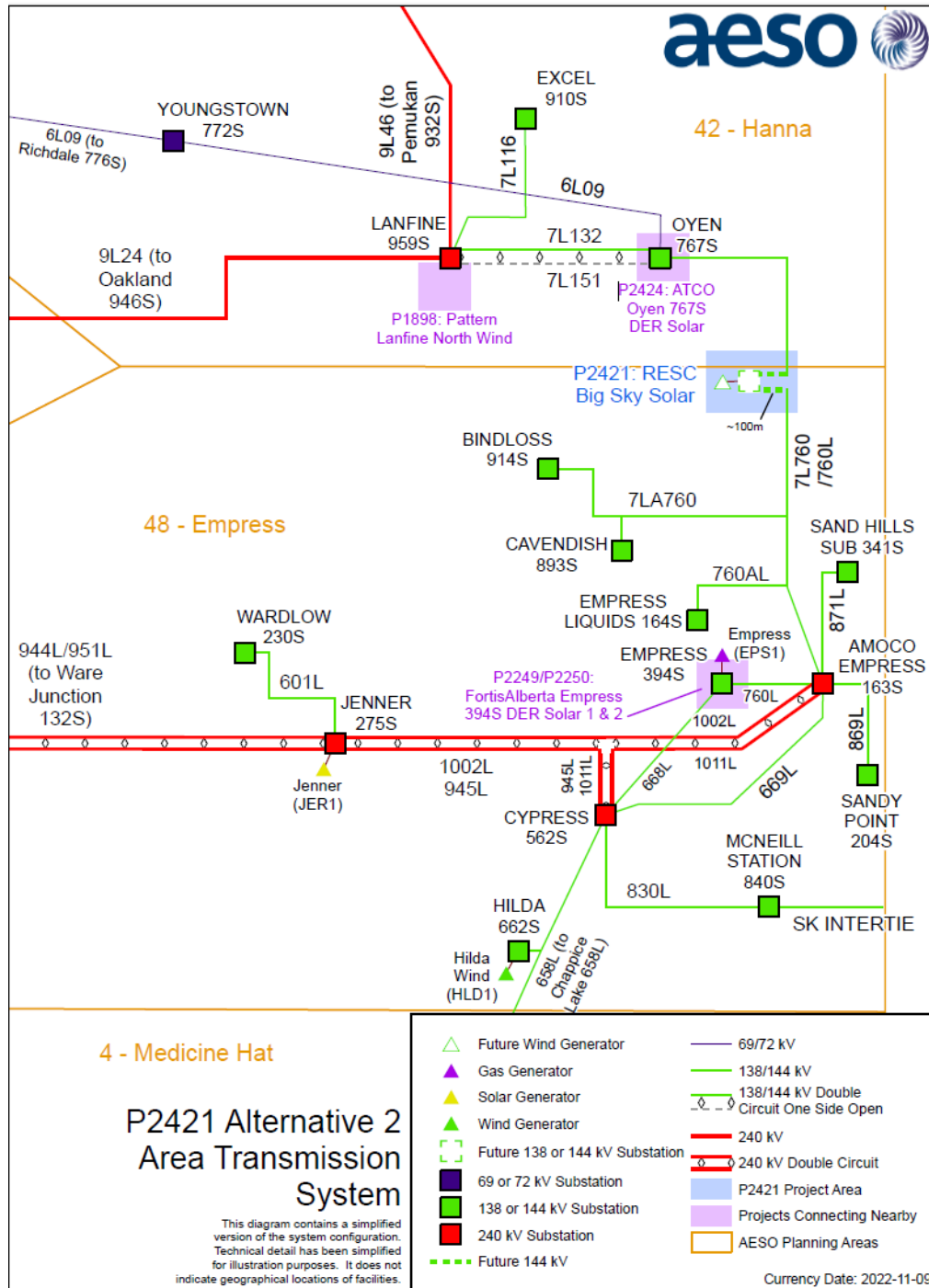
Alternative 2 – In-and-Out 144 kV connection to 7L760

This alternative includes the following developments:

- Add a switching station, including three 144 kV circuit breakers;
- Connect the switching station to the existing 144 kV transmission line 7L760 (between Oyen 767S substation and Bindloss 914S substation tap point), using an in-and-out configuration;
- Add one 144 kV circuit, approximately 100 m in length, to connect the Facility to the new switching station; and
- Add or modify associated equipment as required for the above transmission developments.

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

Figure 2 - 2: Connection Alternative 2



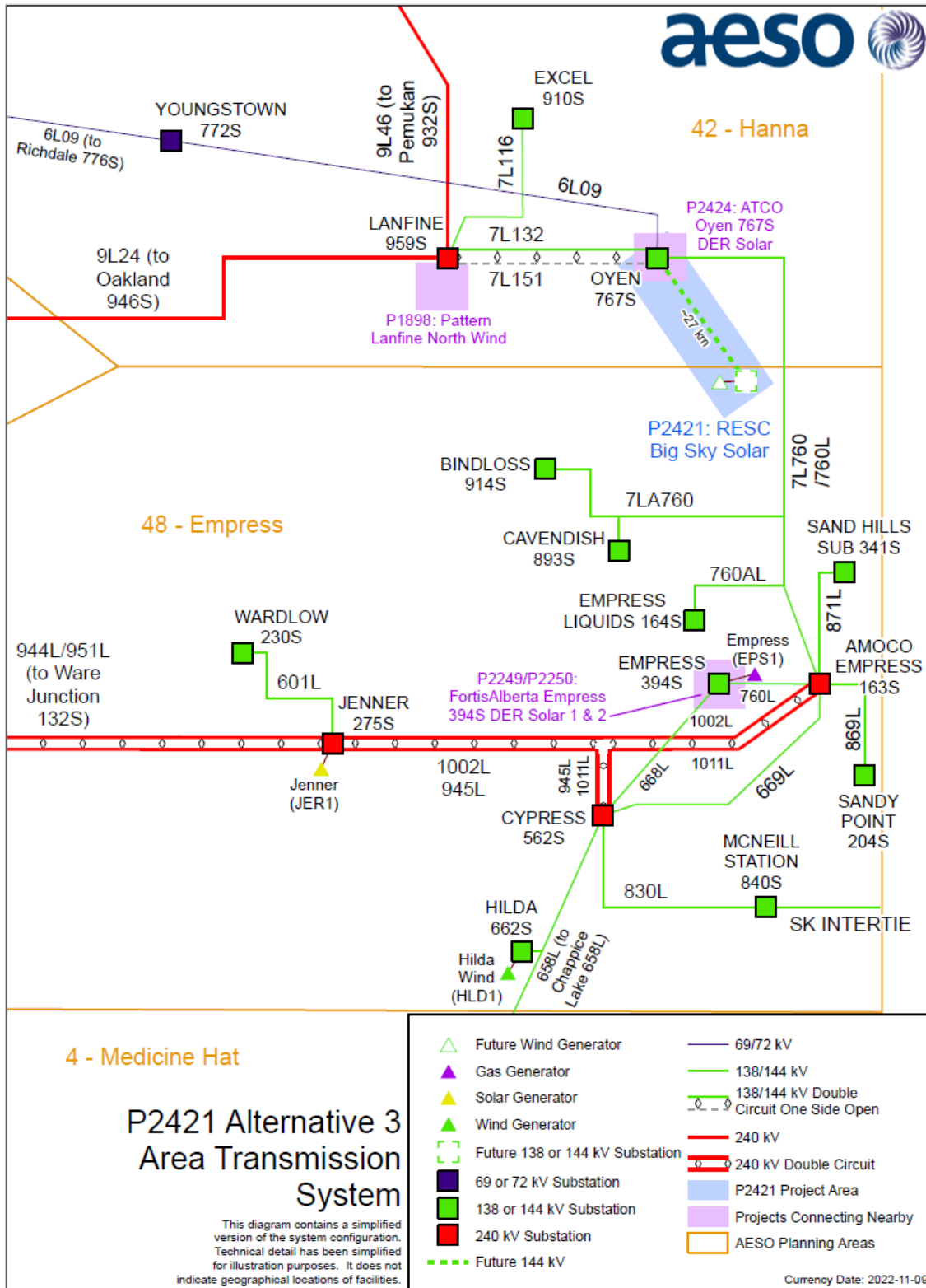
Alternative 3 – Radial 144 kV connection to Oyen 767S substation

This alternative includes the following developments:

- Add a new 144 kV circuit breaker at Oyen 767S substation,
- Add one new 144 kV circuit, approximately 27 km in length, to connect the Facility to Oyen 767S substation, and
- Add or modify associated equipment as required for the above transmission developments.

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

Figure 2 - 3: Connection Alternative 3



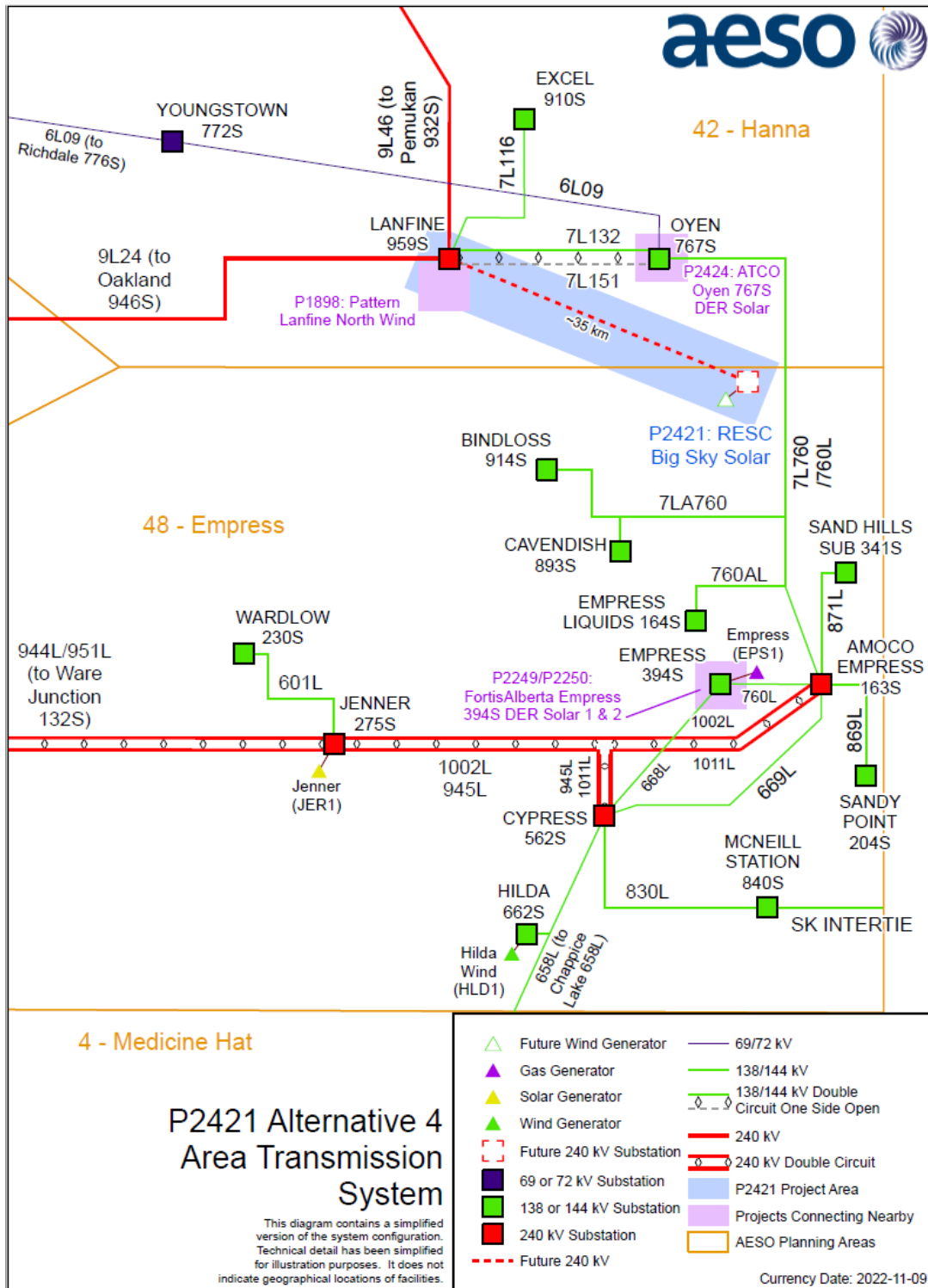
Alternative 4 – Radial 240 kV connection to Lanfine 959S substation

This alternative includes the following developments:

- Add a new 240 kV circuit breaker at Lanfine 959S substation,
- Add one new 240 kV circuit, approximately 35 km in length, to connect the Facility to Lanfine 959S substation, and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 2-4.

Figure 2 - 4: Connection Alternative 4



3.3 Connection Alternatives Selected for Further Study

Alternative 1 is considered technically feasible and was selected for further study.

3.4 Connection Alternatives Not Selected for Further Study

Alternative 2 is considered technically similar to Alternative 1. Alternative 2 would require greater scope of transmission development, and hence, overall higher cost compared to Alternative 1. Therefore, Alternative 2 was not selected for further study.

Alternatives 3 and 4 involve significant increased transmission developments compared to Alternative 1 and Alternative 2. Therefore, Alternative 3 and 4 were not selected for further study.

4 Assessment Approach

4.1 Standards, Criteria and Assumptions

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

4.2 Studies Performed

The scheduled ISD for the Project is June 30, 2023; therefore, studies were performed using scenarios for 2023 Summer Peak (SP), and 2023 Summer light (SL) for both High Solar and High Wind.

Short-circuit studies were performed using the 2023 SP HS pre-Project scenario, 2023 SP HS and 2029 WP post-Project scenarios.

Table 4-1 lists the study scenarios. Post-Project scenarios reflect the requested Rate STS contract capacity of 140 MW at the Bullseye 1004S substation.

Table 4-1: Connection Study Scenarios

Scenario No.	Year/Season	System Generation Dispatch Conditions	Scenario Name	Project Load (MW)	Project Generation (MW)
Pre-Project					
1	2023 Summer Light (SL)	High Solar (HS)	2023 SL HS Pre-Project	0	0
2	2023 Summer Peak (SP)	HS	2023 SP HS Pre-Project	0	0
3	2023 SP	High Wind (HW)	2023 SP HW Pre-Project	0	0
Post-Project					
4	2023 SL	HS	2023 SL HS Post-Project	0	140
5	2023 SP	HS	2023 SP HS Post-Project	0	140
6	2023 SP	HW	2023 SP HW Post-Project	0	140
7	2029 Winter Peak (WP)	All Generators in the Study Area in service	2029 WP Post-Project	0	140

The AESO Planning Region load forecasts used for the connection studies were based on *2019 Long Term Outlook* (2019 LTO). A comparison has been conducted for 2019 LTO versus 2021 LTO, using the 2019 LTO does not materially change the conclusions.

Additionally, after the completion of the studies, the ISD was changed to January 2024. The AESO reviewed the ISD change and determined it also would not materially change the conclusions.

Projects that have recently met the AESO’s project inclusion criteria as of September 2022 in the South Planning Region and Central East Region are not included in the studies since these projects will not materially change the conclusions.

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 A1.¹

Power flow studies were performed for 2023 SL HS, 2023 SP HS, and 2023 SP HW pre-Project scenarios, and for the 2023 SL HS, 2023 SP HS, and 2023 SP HW 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 2023 SL HS, 2023 SP HS, and 2023 SP HW 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 2023 SP HS pre-Project scenario and for 2023 SP HS and 2029 WP post-Project scenarios.

4.3 Mitigation Measure Development and Evaluation

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

4.3.1 Post-Mitigation Studies

Power flow 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.

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

5 Interpretation of Results

5.1 Results Overview

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

- Section 5.2 includes an overview of the pre-Project studies results.
- Section 5.3 includes an overview of the post-Project studies results.
- Section 5.4 includes a description of the proposed mitigation measures to address observed Reliability Criteria violations.
- Section 5.5 includes an overview of the post-mitigation studies results.

Detailed study results are provided in Attachment A.

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



Scenario	Type of Reliability Criteria Violation		Contingency (System Element Lost)	Violation Location Details	Project Impact	Pre-Project Mitigation Measures	Post-Project Mitigation Measures
	Pre-Project	Post-Project					
2023 SL HS	Thermal - above normal rating	Thermal - above normal rating	763L (West Brooks 28S to Vauxhall 158S)	1005L (Milo 356S to P2009 Tap)	Marginally increased violation	Planned RAS 170	Planned RAS 170
	No violation	Thermal - above normal rating	959ST1 (Lanfine 959S Transformer T1)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above normal rating	163ST5 (Amoco Empress 163S Transformer T5)	7L760 (Oyen 767S to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating	959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		760L/7L760 (7LA760 Tap to 760AL Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		767ST1 (Oyen 767S Transformer T1 – W3)	New violation	N/A	New RAS 204
	Thermal - above emergency rating	Thermal - above emergency rating		1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	Marginally decreased violation	Planned RAS 170
	Thermal - above normal rating	Thermal - above emergency rating	9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	Materially increased violation	Planned RAS 201	Modified Planned RAS 201
	Thermal - above normal rating	Thermal - above normal rating	853L (Queenstown 504S to West Brooks 28S)	1005L (Milo 356S to P2009 Tap)	Marginally decreased violation	Planned RAS 170	Planned RAS 170
	No violation	Thermal - above normal rating	EATL	174L (Bardo 197S to North Holden 395S)	New violation	Planned RAS 134	Modified Planned RAS 134
	No violation	Thermal - above normal rating	163ST5 (Amoco Empress 163S Transformer T5)	7L760 (Oyen 767S to P2421 Tap)	New violation	N/A	New RAS 204
2023 SP HW	No violation	Thermal - above normal rating	1002L (Jenner 275S to Amoco Empress 163S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above normal rating	945L (Jenner 275S to Cypress 562S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above normal rating	949L (Jenner 275S to Cypress 562S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above normal rating	1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newell 2075S)	New violation	N/A	Real time operational practices
	No violation	Thermal - above normal rating	9L46 (Lanfine 959S to Pemukan 932S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above normal rating	9L24 (Oakland 946S to Lanfine A959S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating	A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		760L/7L760 (7LA760 Tap to 760AL Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		767ST1 (Oyen 767S Transformer T1 – W3)	New violation	N/A	New RAS 204
	No violation	Thermal - above emergency rating		767ST1 (Oyen 767S Transformer T1 – W2)	New violation	N/A	New RAS 204
	Thermal - above normal rating	Thermal - above normal rating	1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	Marginally decreased violation	Planned RAS 170	Planned RAS 170
	No violation	Thermal - above normal rating	9L966 (Pemukan 932S to Hansman Lake 650S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	Thermal - above emergency rating	Thermal - above emergency rating		7L224 (Hansman Lake 650S to Monitor 774S)	Materially increased violation	Planned RAS 201	Modified Planned RAS 201
	No violation	Thermal - above normal rating	912L (Nevis 766S to Red Deer 63S)	174L (Bardo 197S to North Holden 395S)	New violation	Planned RAS 134	Modified Planned RAS 134
	No violation	Thermal - above normal rating		7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	Thermal - above normal rating	Thermal - above normal rating	9L20 (Nevis 766S to Cordel 755S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation	Real time operational practices	Real time operational practices
	No violation	Thermal - above normal rating		7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204
	Thermal - above normal rating	Thermal - above emergency rating		174L (Bardo 197S to North Holden 395S)	Materially increased violation	Planned RAS 134	Modified Planned RAS 134
	Thermal - above normal rating	Thermal - above normal rating	EATL	701L (North Holden 395S to Strome 223S)	Materially increased violation	Planned RAS 134	Modified Planned RAS 134
Thermal - above normal rating	Thermal - above normal rating		7L171 (Michichi Creek 802S to Wintering Hills 804S)	Marginally increased violation	Real time operational practices	Real time operational practices	
No violation	Thermal - above normal rating	163ST5 (Amoco Empress 163S Transformer T5)	7L760 (Oyen 767S to P2421 Tap)	New violation	N/A	New RAS 204	
No violation	Thermal - above normal rating	658L/674L (Cypress 562S to Bowmanton 244S)	7L760 (7LA760 Tap to P2421 Tap)	New violation	N/A	New RAS 204	

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%).
- In this table, "Modify" refers to adding the Project to the logic of the respective RAS

5.2 Pre-Project Study Results

5.2.1 Category A Conditions

No Reliability Criteria violations were observed under the Category A conditions (i.e., all elements in service) for any of the pre-Project scenarios. The short-circuit fault levels were found to be within the typical capabilities of the nearby facilities.

5.2.2 Category B Conditions

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

5.3 Post-Project Study Results

5.3.1 Category A Conditions

No Reliability Criteria violations were observed under Category A conditions for any post-Project scenarios. Post-Project short-circuit fault levels were not significantly higher than pre-Project levels.

The long term short circuit levels were found to be within the designed capabilities of the nearby facilities.

5.3.2 Category B Conditions

Post-Project power flow studies identified a number of system performance issues under Category B conditions. In particular, thermal criteria violations were observed on 138 kV/144 kV transmission lines 174L, 701L, 7L224, 7L171, 760L, 7L760, the 240 kV transmission lines 1005L and 1087L, and the Oyen 767S substation Transformer T1 .

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

Prior to connection of the Project, some of the observed thermal criteria violations can be managed by using real-time operational practices. The remaining thermal criteria violations can be mitigated with planned RAS 134, planned RAS 170 and planned RAS 201.

5.4.2 Post-Project

After connection of the Project, some of the thermal criteria violations observed can be mitigated by using real-time operational practices.

The remaining thermal criteria violations can be mitigated by modified planned RAS 134, planned RAS 170, modified planned RAS 201, and new RAS 204.

5.4.3 Post-Project Mitigation Study Results

Under Category B conditions, all the observed Reliability Criteria violations requiring RAS were mitigated, however, numerous contingencies, including EATL, may involve generation curtailment exceeding the current Most Severe Single Contingency (MSSC) limit of 466 MW. As a result, real-time operational procedures may be required to fully alleviate the thermal criteria violations observed on the 138 kV transmission line 174L or Nevis transformer 766S901T under certain Category B conditions. This may include the AESO having to curtail area generation, including the Project, in the pre-contingency condition to avoid tripping more than 466 MW of generation by RAS.

If the AESO determines that pre-contingency curtailment is likely to result in congestion, then the AESO will file an application for an “exception” under Section 15(2) of the *Transmission Regulation*. In the longer term, the energization of the approved Provost to Edgerton and Nilrem to Vermilion (PENV) and Central East Transfer-Out (CETO) system projects would significantly reduce the thermal overloads observed on 174L, 701L, 7L171, and related transmission facilities along those transfer paths.

The Project is effective on the observed 144 kV transmission line 7L224 thermal criteria violations; therefore, this project is added to planned RAS 201. The modified planned RAS 201 effectively mitigates these thermal criteria violations.

New thermal criteria violations were observed on 144 kV transmission lines 7L760 and 760L following the connection of the Project. The new RAS 204 effectively mitigates these thermal criteria violations.

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 1 is technically viable. The connection assessment identified a number of pre-Project and post-Project system performance issues under certain Category B conditions.

The identified system performance issues can be mitigated through the use of modified planned RAS 134, planned RAS 170, modified planned RAS 201, and new RAS 204, 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 total amount of generation tied to planned RAS 134 and RAS 201 exceeds the MSSC limit of 466 MW. The post-Project studies indicate that in order to mitigate the thermal violations following contingency, the actions of modified planned RAS 134 and modified planned RAS 201 may result in generation curtailment in excess of the MSSC limit; therefore, pre-contingency curtailment of projects assigned to the RASs may be required under the Category A condition, to prevent generation curtailment above the MSSC limit during Category B conditions. The probability of pre-curtailment being required would be dependent on generation profiles and operating conditions. Closer to the ISD, if the AESO determines that congestion will arise under Category A conditions, the AESO will make an application to the AUC to obtain approval for an “exception” under Section 15(2) of the *Transmission Regulation*.

The AESO recommends proceeding with the Project using Alternative 1 as the preferred alternative to respond to the Market Participant’s request for system access service. Real-time operational practices and the RASs mentioned above are recommended to mitigate the identified system performance issues.

Alternative 1 involves adding one 144 kV circuit to connect the Facility to the 144 kV transmission line 7L760, using a T-tap configuration. The conductor used for the 144 kV circuit should have a minimum capacity of 155 MVA to meet the Market Participant’s requested STS contract capacity.

Attachment A: Engineering Connection Assessment Results

Engineering Connection Assessment: Study Results

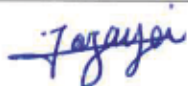


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Contents

1	Introduction	3
2	Pre-Project Study Results	4
2.1	Power Flow Studies	4
2.1.1	Scenario 1: 2023 Summer Light High Solar Pre-Project	4
2.1.2	Scenario 2: 2023 Summer Peak High Solar Pre-Project	4
2.1.3	Scenario 3: 2023 Summer Peak High Wind Pre-Project	5
3	Post-Project Study Results	7
3.1	Power Flow Studies	7
3.1.1	Scenario 4: 2023 Summer Light High Solar Post-Project Alternative 1	7
3.1.2	Scenario 5: 2023 Summer Peak High Solar Post-Project Alternative 1	7
3.1.3	Scenario 6: 2023 Summer Peak High Wind Post-Project Alternative 1	8
3.2	Transient Stability Studies	11
3.2.1	Scenario 4: 2023 Summer Light High Solar Post-Project Alternative 1	11
3.2.2	Scenario 5: 2023 Summer Peak High Solar Post-Project Alternative 1	11
3.2.3	Scenario 6: 2023 Summer Peak High Wind Post-Project Alternative 1	12
4	Short Circuit Studies.....	14
4.1	Pre-Project Results	14
4.2	Post-Project Results	14
4.2.1	Scenario 5: 2023 SP HS Post-Project Alternative 1	14
4.2.2	Scenario 7: 2029 WP Pre-Project	15
5	Mitigation Measure Development and Evaluation	16
5.1	Pre-Project	16
5.2	Post-Project	17
5.3	Evaluation of Mitigation Measures	17
5.3.1	Scenario 5: 2023 SP HS Post-Project Alternative 1	18
5.3.2	Scenario 6: 2023 SP HW Post-Project Alternative 1	18
5.4	Constraint Effective Factor Studies	20

Tables

Table 2-1: Thermal Criteria Violations under Category B Conditions for Scenario 2	4
Table 2-2: Thermal Criteria Violations under Category B Conditions for Scenario 3	6
Table 3-1: Thermal Criteria Violations under Category B Conditions for Scenario 4 Alternative 1	7
Table 3-2: Thermal Criteria Violations under Category B Conditions for Scenario 5 Alternative 1	8
Table 3-3: Thermal Criteria Violations under Category B Conditions for Scenario 6 Alternative 1	9
Table 3-4: Transient Stability Study Results under Category B Conditions for Scenario 4 Alternative 1... 11	11
Table 3-5: Transient Stability Study Results under Category B Conditions for Scenario 5 Alternative 1... 12	12
Table 3-6: Transient Stability Study Results under Category B Conditions for Scenario 6 Alternative 1... 12	12
Table 4-1: Pre-Project Short-Circuit Current Levels for Scenario 2.....	14
Table 4-2: Post-Project Short-Circuit Current Levels for Scenario 5 Alternative 1	14
Table 4-3: Post-Project Short-Circuit Current Levels for Scenario 7 Alternative 1	15
Table 5-1: Pre-Project Mitigation Measures.....	16
Table 5-2: Post-Project Mitigation Measures	17
Table 5-3: Post-RAS Power Flow Study Results for Scenario 5 - Alternative 1	18
Table 5-4: Post-RAS Power Flow Study Results for Scenario 6 - Alternative 1	19

Attachments

- Attachment A1 Engineering Connection Assessment: Study Scope**
- Attachment A2 Pre-Project Power Flow Diagrams (Scenarios 1 to 3)**
- Attachment A3 Post-Project Power Flow Diagrams Alternative 1 (Scenarios 4 to 6)**
- Attachment A4 Post-Project Transient Stability Diagrams Alternative 1 (Scenarios 4 to 6)**
- Attachment A5 Dynamic Data and Assumptions**
- Attachment A6 Post-Mitigation Power Flow Diagrams**
- Attachment A7 Constraint Effective Factors Table**

1 Introduction

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

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

2 Pre-Project Study Results

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

2.1 Power Flow Studies

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

2.1.1 Scenario 1: 2023 Summer Light High Solar Pre-Project

Category A Conditions

No Reliability Criteria (as defined in Section 3.1 of Attachment A1) violations were observed under Category A conditions.

Category B Conditions

No Reliability Criteria violations were observed under Category B conditions.

2.1.2 Scenario 2: 2023 Summer Peak High Solar Pre-Project

Category A Conditions

No Reliability Criteria (as defined in Section 3.1 of Attachment A1) violations were observed under Category A conditions.

Category B Conditions

Thermal Criteria Violations

Thermal criteria violations were observed under certain Category B conditions as shown in Table 2-1.

Table 2-1: Thermal Criteria Violations under Category B Conditions for Scenario 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
949L (Jenner 275S to Halsbury 306S)	1005L (Milo 356S to P2009 Tap)	481	588	486.8	101.2
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	481	588	618.6	128.6
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	109	123	110.3	101.2
7L238 (Lanfine 959S to Buffalo Bird 601S)	1005L (Milo 356S to P2009 Tap)	481	588	483.4	100.5
853L (Queenstown 504S to West Brooks 28S)	1005L (Milo 356S to P2009 Tap)	481	588	493.0	102.5

Engineering Connection Assessment: Study Results

P2421 RESC Big Sky MPC Solar

V1 Final

763L (West Brooks 28S to Vauxhall 158S)	1005L (Milo 356S to P2009 Tap)	481	588	485.8	101.0
658L/647L (Cypress 562S to Bowmanton 244S)	1005L (Milo 356S to P2009 Tap)	481	588	484.4	100.7

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., $S = \sqrt{3} \times V_{\text{base}} \times I_{\text{actual}}$)

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

Voltage Criteria Violations

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No voltage deviations beyond the limits listed in Table 3-1 of the AESO's Study Scope (hereafter referred to as point of delivery (POD) bus voltage deviations) were observed.

2.1.3 Scenario 3: 2023 Summer Peak High Wind Pre-Project

Category A Conditions

No Reliability Criteria (as defined in Section 3.1 of Attachment A1) violations were observed under Category A conditions.

Category B Conditions

Thermal Criteria Violations

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

Table 2-2: Thermal Criteria Violations under Category B Conditions for Scenario 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
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	481	728	534.9	111.2
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	109	142	127.6	117.1
9L20 (Nevis 766S to Cordel 755S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	109.2	150.5	110.2	100.9
EATL	174L (Bardo 197S to North Holden 395S)	85	99	93.7	110.2
EATL	701L (North Hoden 395S to Strome 223S)	119	161	121.1	101.8
EATL	7L171 (Michichi Creek 802S to Wintering Hills 804S)	109.2	150.5	116.2	106.4

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

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No voltage deviations beyond the limits listed in Table 3-1 of the AESO's Study Scope (hereafter referred to as point of delivery (POD) bus voltage deviations) were observed.

3 Post-Project Study Results

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

As described in Section 2 of Attachment A1, the post-Project studies were performed using Alternative 1.

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 4: 2023 Summer Light High Solar Post-Project Alternative 1

Category A Conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B Conditions

Thermal criteria violations were observed under certain Category B conditions as shown in Table 3-1.

Table 3-1: Thermal Criteria Violations under Category B Conditions for Scenario 4 Alternative 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	
959ST1 (Lanfine 959S Transformer T1)	7L760 (7LA760 Tap to P2421 Tap)	115	128	9.2	8.5	125.7	109.3	100.8
163ST5 (Amoco Empress 163S Transformer T5)	7L760 (Oyen 767S to P2421 Tap)	115	128	7.6	6.6	119.3	103.7	97.1

Voltage Criteria Violations

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3.1.2 Scenario 5: 2023 Summer Peak High Solar Post-Project Alternative 1

Category A Conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B Conditions

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

Table 3-2: Thermal Criteria Violations under Category B Conditions for Scenario 5 Alternative 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	
959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	120	132	52.3	43.6	167.5	139.6	96.0
	760L/7L760 (7LA760 Tap to 760AL Tap)	120	132	52.9	44.1	167.9	139.9	95.8
	7L760 (7LA760 Tap to P2421 Tap)	115	128	62.9	54.7	177.7	154.5	99.8
	767ST1 (Oyen 767S Transformer T1 – W3)	12.5	12.5	6.0	48.4	26.1	104.3	55.9
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	481	588	618.6	128.6	609.4	126.7	-1.9
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	109	123	110.3	101.2	129.8	119.1	17.9
853L (Queenstown 504S to West Brooks 28S)	1005L (Milo 356S to P2009 Tap)	481	588	493.0	102.5	486.3	101.1	-1.4
EATL	174L (Bardo 197S to North Holden 395S)	85	94	77.2	90.9	85.2	100.2	9.3
163ST5 (Amoco Empress 163S Transformer T5)	7L760 (Oyen 767S to P2421 Tap)	115	128	10.7	9.3	115.5	100.4	91.1

Voltage Criteria Violations

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3.1.3 Scenario 6: 2023 Summer Peak High Wind Post-Project Alternative 1

Category A Conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B Conditions

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

Table 3-3: Thermal Criteria Violations under Category B Conditions for Scenario 6 Alternative 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	
1002L (Jenner 275S to Amoco Empress 163S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	61.4	53.4	117.1	101.8	48.4
945L (Jenner 275S to Cypress 562S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	62.3	54.2	117.8	102.4	48.2
949L (Jenner 275S to Cypress 562S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	62.7	54.5	120.3	104.6	50.1
1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newell 2075S)	547	656	543.5	99.4	570.5	104.3	4.9
9L46 (Lanfine 959S to Pemukan 932S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	55.0	47.8	117.2	101.9	54.1
9L24 (Oakland 946S to Lanfina A959S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	53.7	46.7	120.1	104.4	57.7
A959ST1 (Lanfina 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	120	132	76.9	64.0	192.5	160.4	96.4
	760L/7L760 (7LA760 Tap to 760AL Tap)	120	132	77.1	64.3	192.8	160.7	96.4
	7L760 (7LA760 Tap to P2421 Tap)	115	128	87.2	75.8	202.7	176.3	100.5
A959ST1 (Lanfina 959S Transformer T1)	767ST1 (Oyen 767S Transformer T1 - W3)	25	12.5	6.0	48.4	30.0	120.1	71.7
	767ST1 (Oyen 767S Transformer T1 - W2)	25	25	14.4	57.6	25.5	101.9	44.3
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	481	588	534.9	111.2	526.2	109.4	-1.8
9L966 (Pemukan 932S to Hansman Lake 650S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	62.1	54.0	121.3	105.5	51.6
	7L224 (Hansman Lake 650S to Monitor 774S)	109	123	127.6	117.1	147.5	135.3	18.2
912L (Nevis 766S to Red Deer 63S)	174L (Bardo 197S to North Holden 395S)	85	94	75.7	89.0	88.7	104.4	15.4
	7L760 (7LA760 Tap to P2421 Tap)	115	128	63.2	54.9	122.5	106.5	51.6

Engineering Connection Assessment: Study Results
P2421 RESC Big Sky MPC Solar
V1 Final

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	
9L20 (Nevis 766S to Cordel 755S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	109.2	123.6	110.2	100.9	112.1	102.7	1.8
	7L760 (7LA760 Tap to P2421 Tap)	115	128	60.8	52.9	119.6	104.0	51.1
EATL	174L (Bardo 197S to North Holden 395S)	85	94	93.7	110.2	102.2	120.2	10.0
	701L (North Holden 395S to Strome 223S)	119	131	121.1	101.8	130.3	109.5	7.7
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	109.2	123.6	116.2	106.4	117.5	107.6	1.2
163ST5 (Amoco Empress 163S Transformer T5)	7L760 (Oyen 767S to P2421 Tap)	115	128	10.6	9.2	115.1	100.1	90.9
658L/674L (Cypress 562S to Bowmanton 244S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	61.0	53.0	117.1	101.8	48.8

Voltage Criteria Violations

No voltage criteria violations were observed under Category B conditions.

POD Bus Voltage Deviations

No POD bus voltage deviations were observed.

3.2 Transient Stability Studies

3.2.1 Scenario 4: 2023 Summer Light High Solar Post-Project Alternative 1

Transient stability studies were completed for Scenario 4 - 2023 SL HS Post-Project.

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 3-4. 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 3-4: Transient Stability Study Results under Category B Conditions for Scenario 4 Alternative 1

Studied Contingency	Fault Description and Location	Results
944L (Jenner 275S – Ware Junction 132S)	3-phase fault at Ware Junction 132S	Stable
	3-phase fault at Jenner 275S	Stable
945L (Jenner 275S – Cypress 562S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Cypress 562S	Stable
951L (Jenner 275S – Ware Junction 132S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Ware Junction 132S	Stable
1002L (Jenner 275S – Amoco Empress 163S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Amoco Empress 163S	Stable
688L (Empress 394S – Cypress 562S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Cypress 562S	Stable
1011L (Cypress 562S – Amoco Empress 163S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at Amoco Empress 163S	Stable
669L (Amoco Empress 163S – Cypress 562S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Cypress 562S	Stable
760L (Empress 394S – Amoco Empress 163S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Amoco Empress 163S	Stable
760L/7L760 (Amoco Empress 163S – Oyen 767S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Oyen 767S	Stable
830L (Cypress 562S – McNeil Station 840S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at McNeil Station 840S	Stable

3.2.2 Scenario 5: 2023 Summer Peak High Solar Post-Project Alternative 1

Transient stability studies were completed for Scenario 5 - 2023 SP HS Post-Project.

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 3-5. 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 3-5: Transient Stability Study Results under Category B Conditions for Scenario 5
Alternative 1**

Studied Contingency	Fault Description and Location	Results
944L (Jenner 275S – Ware Junction 132S)	3-phase fault at Ware Junction 132S	Stable
	3-phase fault at Jenner 275S	Stable
945L (Jenner 275S – Cypress 562S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Cypress 562S	Stable
951L (Jenner 275S – Ware Junction 132S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Ware Junction 132S	Stable
1002L (Jenner 275S – Amoco Empress 163S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Amoco Empress 163S	Stable
688L (Empress 394S – Cypress 562S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Cypress 562S	Stable
1011L (Cypress 562S – Amoco Empress 163S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at Amoco Empress 163S	Stable
669L (Amoco Empress 163S – Cypress 562S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Cypress 562S	Stable
760L (Empress 394S – Amoco Empress 163S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Amoco Empress 163S	Stable
760L/7L760 (Amoco Empress 163S – Oyen 767S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Oyen 767S	Stable
830L (Cypress 562S – McNeil Station 840S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at McNeil Station 840S	Stable

3.2.3 Scenario 6: 2023 Summer Peak High Wind Post-Project Alternative 1

Transient stability studies were completed for Scenario 6 - 2023 SP HW Post-Project.

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 3-6. 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 3-6: Transient Stability Study Results under Category B Conditions for Scenario 6
Alternative 1**

Studied Contingency	Fault Description and Location	Results
944L (Jenner 275S – Ware Junction 132S)	3-phase fault at Ware Junction 132S	Stable

Engineering Connection Assessment: Study Results

P2421 RESC Big Sky MPC Solar

V1 Final

	3-phase fault at Jenner 275S	Stable
945L (Jenner 275S – Cypress 562S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Cypress 562S	Stable
951L (Jenner 275S – Ware Junction 132S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Ware Junction 132S	Stable
1002L (Jenner 275S – Amoco Empress 163S)	3-phase fault at Jenner 275S	Stable
	3-phase fault at Amoco Empress 163S	Stable
688L (Empress 394S – Cypress 562S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Cypress 562S	Stable
1011L (Cypress 562S – Amoco Empress 163S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at Amoco Empress 163S	Stable
669L (Amoco Empress 163S – Cypress 562S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Cypress 562S	Stable
760L (Empress 394S – Amoco Empress 163S)	3-phase fault at Empress 394S	Stable
	3-phase fault at Amoco Empress 163S	Stable
760L/7L760 (Amoco Empress 163S – Oyen 767S)	3-phase fault at Amoco Empress 163S	Stable
	3-phase fault at Oyen 767S	Stable
830L (Cypress 562S – McNeil Station 840S)	3-phase fault at Cypress 562S	Stable
	3-phase fault at McNeil Station 840S	Stable

4 Short Circuit Studies

4.1 Pre-Project Results

Pre-Project short-circuit current levels are provided in Table 4-1¹.

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

Substation Name and Number	Base Voltage (kV)	Pre-Fault Voltage (kV)	3-Φ Fault (kA)	Positive Sequence Thevenin Source Impedance (R1+jX1) (pu)	1-Φ Fault (kA)	Zero Sequence Thevenin Source Impedance (R0+jX0) (pu)
Amoco Empress 163S	240	253.1	6.93	0.007879+j0.038175	4.59	0.014209+j0.097224
	138	142.9	9.87	0.010551+j0.045370	6.81	0.015878+j0.107955
Cypress 562S	240	252.7	6.90	0.008034+j0.038299	4.8	0.011771+j0.089644
	138	143.1	9.95	0.010768+j0.045041	7.06	0.013381+j0.102903
Empress 394S	138	142.9	9.75	0.010867+j0.045864	6.76	0.016017+j0.108392
Anderson 801S	240	260.8	14.35	0.002950+j0.019302	15.51	0.001622+j0.015609
	138	150.5	4.97	0.010682+j0.097816	5.35	0.004354+j0.077670
Lanfine 959S	240	257.0	7.12	0.005403+j0.037477	6.65	0.004540+j0.041373
	138	147.2	8.14	0.007489+j0.056644	11.90	-0.00030+j0.000402
Oyen 767S	138	146.9	6.50	0.014023+j0.070192	6.55	0.020144+j0.064653
	69	74.0	2.10	0.098061+j0.435442	2.07	0.052776+j0.465109

4.2 Post-Project Results

4.2.1 Scenario 5: 2023 SP HS Post-Project Alternative 1

Post-Project short-circuit current levels for Scenario 5 are provided in Table 4-2.

Table 4-2: Post-Project Short-Circuit Current Levels for Scenario 5 Alternative 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	253.8	6.97	0.007832+j0.038165	4.78	0.013152+j0.091385
	138	142.7	9.97	0.010368+j0.044972	7.16	0.014546+j0.099300

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	253.5	6.94	0.007980+j0.038272	4.98	0.011020+j0.084447
	138	142.9	10.01	0.010622+j0.044708	7.33	0.012619+j0.095904
Empress 394S	138	142.7	9.85	0.010694+j0.045480	7.08	0.014825+j0.100188
Anderson 801S	240	261.0	14.37	0.002948+j0.019303	15.53	0.001623+j0.015604
	138	150.6	4.97	0.010680+j0.097811	5.36	0.004355+j0.077667
Lanfine 959S	240	257.0	7.14	0.005376+j0.037388	6.68	0.004528+j0.041125
	138	147.4	8.18	0.007453+j0.056548	11.97	-0.00031+j0.000395
Oyen 767S	138	147.9	6.57	0.013964+j0.070068	6.83	0.017705+j0.058521
	69	74.0	2.12	0.096694+j0.432130	2.09	0.050010+j0.458133
Bullseye	138	150.5	4.79	0.032257+j0.095128	5.38	0.007640+j0.066599

4.2.2 Scenario 7: 2029 WP Pre-Project

Post-Project short-circuit current levels for Scenario 7 are provided in Table 4-3.

Table 4-3: Post-Project Short-Circuit Current Levels for Scenario 7 Alternative 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	255.1	6.81	0.006031+j0.037319	4.77	0.012545+j0.085271
	138	141.7	10.01	0.007350+j0.042593	7.26	0.013995+j0.090780
Cypress 562S	240	255.1	6.77	0.006155+j0.037514	4.95	0.010542+j0.078915
	138	141.8	10.16	0.007212+j0.041981	7.53	0.011805+j0.085988
Empress 394S	138	141.7	9.89	0.007610+j0.043035	7.19	0.014239+j0.091355
Anderson 801S	240	259.1	13.54	0.002883+j0.019093	15.03	0.001434+j0.013973
	138	149.4	4.63	0.010594+j0.097739	5.01	0.004198+j0.076686
Lanfine 959S	240	257.0	6.20	0.007267+j0.041178	6.21	0.003825+j0.036176
	138	145.3	6.24	0.011597+j0.070045	9.10	-0.00033+0.000070
Oyen 767S	138	144.6	5.3	0.017771+j0.081295	5.74	0.017650+j0.058038
	69	73.7	1.97	0.107657+j0.443001	1.96	0.050386+j0.459722
Bullseye	138	144.8	4.18	0.033236+j0.100224	4.87	0.006398+j0.058968

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.

As part of this Project, mitigation measures will not be specifically developed for the POD bus voltage deviations observed under certain Category B conditions during pre-Project and post-Project scenarios.²

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 ^a	174L (Bardo 197S - North Holden 395S)	EATL
Existing RAS 170 ^b	1005L (Milo 356S - P2009 Tap)	1036L (Milo 356S – Travers 554S)
Real time operational practices	7L224 (Hansman Lake 650S to Monitor 774S)	9L966 (Pemukan 932S to Hansman Lake 650S)
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	9L20 (Nevis 766S to Cordel 755S)
	701L (North Holden 395S to Strome 223S)	EATL

Notes:

^a RAS 134 is an existing RAS (see Section 1.2.2 of Attachment A1).

^b RAS 170 is introduced for P2009 and P2341.

² 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.

5.2 Post-Project

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

Table 5-2: Post-Project Mitigation Measures

Mitigation Measure	Location of Observed Violation	Contingency
Modified Existing RAS 134 ^a	174L (Bardo 197S - North Holden 395S)	EATL
Existing RAS 170	1005L (Milo 356S - P2009 Tap)	1036L (Milo 356S – Travers 554S)
New planned RAS 204	7L760 (Oyen 767S to 7LA760 Tap)	A959ST1 (Lanfine 959S Transformer T1)
Modified New Planned RAS 201 (part of project P1898)	7L224 (Hansman Lake 650S to Monitor 774S)	9L966 (Pemukan 932S to Hansman Lake 650S)
Real time operational practices	760L (Amoco Empress 163S to 760AL Tap)	944L_951L (Jenner 275S to Ware Junction 132S)
	658L (Cypress 562S to Chappice Lake 649S)	
	760L/7L760 (7LA760 Tap to 760AL Tap)	
	7L760 (Oyen 767S to 7LA760 Tap)	
	7L132 (Oyen 767S to Lanfine 959S)	
	7L224 (Hansman Lake 650S to Monitor 774S)	9L966 (Pemukan 932S to Hansman Lake 650S)
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	9L20 (Nevis 766S to Cordel 755S)
	701L (North Holden 395S to Strome 223S)	EATL

Notes:

^a "Modify" refers to adding the Project to the logic of the existing RAS 134.

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 5 and 6 using Alternative 1 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 5: 2023 SP HS Post-Project Alternative 1

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.

After RAS actions were complete, real-time operational practices are required to fully alleviate certain thermal criteria violations observed on 144kV transmission line 7L224.

Table 5-3: Post-RAS Power Flow Study Results for Scenario 5 - Alternative 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
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	120	132	167.5	139.6	52.3	43.6
	760L/7L760 (7LA760 Tap to 760AL Tap)	120	132	167.9	139.9	52.9	44.1
	7L760 (7LA760 Tap to P2421 Tap)	115	128	177.7	154.5	62.9	54.7
	767ST1 (Oyen 767S Transformer T1 – W3)	12.5	12.5	26.1	104.3	6.1	48.4
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	481	588	609.4	126.7	354.0	73.6
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	109	123	129.8	119.1	110.3	101.2 ^a

Notes:

^aReal-time operational practice will mitigate the overload after RAS actions were complete.

5.3.2 Scenario 6: 2023 SP HW Post-Project Alternative 1

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 5-4.

After RAS actions were complete, real-time operational practices are required to fully alleviate certain thermal criteria violations observed on 138 kV transmission line 174L, 701L, and 144k kV transmission line 7L171.

Table 5-4: Post-RAS Power Flow Study Results for Scenario 6 - Alternative 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
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	120	132	160.4	96.4	76.8	64.0
	760L/7L760 (7LA760 Tap to 760AL Tap)	120	132	160.7	96.4	77.1	64.3
	7L760 (7LA760 Tap to P2421 Tap)	115	128	176.3	100.5	87.2	75.8
	767ST1 (Oyen 767S Transformer T1 - W3)	12.5	12.5	120.1	71.7	12.1	48.4
	767ST1 (Oyen 767S Transformer T1 - W2)	25	25	101.9	44.3	14.4	57.6
9L966 (Pemukan 932S to Hansman Lake 650S)	7L760 (7LA760 Tap to P2421 Tap)	115	128	121.3	105.5	98.2	85.4
	7L224 (Hansman Lake 650S to Monitor 774S)	109	123	147.5	135.3	0.0	0.0
EATL	174L (Bardo 197S to North Holden 395S)	85	94	102.2	120.2	93.7	110.2 ^a
	701L (North Holden 395S to Strome 223S)	116	131	130.3	109.5	121.1	101.8 ^a
	7L171 (Michichi Creek 802S to Wintering Hills 804S)	109.2	123.6	117.5	107.6	116.2	106.4 ^a

Notes:

^aReal-time operational practices will mitigate the overload after RAS actions were complete.

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

Study Scope

RESC Big Sky MPC Solar


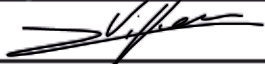
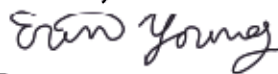

Renewable Energy Systems Canada Inc.

AESO Project Number: P2421

Date: May 5, 2021

Version: V1

Classification: Public

Company Name	Name and Credentials	Date	Signature
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Contents

1	Introduction	1
1.1	Project Overview	1
1.2	Existing System Overview	2
1.2.1	Study Area	2
1.2.2	Existing Constraints	2
2	Connection Alternatives	4
2.1	Alternative 1 – T-tap 144 kV connection to 7L760.....	4
2.2	Alternative 2 – In-and-Out 144 kV connection to 7L760.....	6
2.3	Alternative 3 – Radial 144 kV connection to Oyen 767S substation	8
2.4	Alternative 4 – Radial 240 kV connection to Lanfine 959S substation	10
2.5	Connection alternatives considered for further studies	12
3	Criteria, Standards and Requirements	13
3.1	AESO Reliability Criteria	13
3.2	ISO Rules and Information Documents	14
4	Scenarios and Assumptions	15
4.1	Scenarios	15
4.2	Assumptions	15
4.2.1	System Project Assumptions	15
4.2.2	Connection Project Assumptions	15
4.2.3	Load Assumptions	16
4.2.4	Generation Assumptions	17
4.2.5	Intertie Flow Assumptions.....	21
4.2.6	HVDC Power Order Assumptions.....	21
4.2.7	Transmission Facility Ratings	22
4.2.8	Protection Fault Clearing Times.....	24
4.2.9	Project Dynamic Data	26
4.2.10	Voltage Profile Assumption.....	26
5	Study Methodology	27
5.1	Study Case Validation	27
5.2	Power Flow Studies	28
5.2.1	Contingencies to be Studied	28
5.3	Transient Stability Studies	28
5.3.1	Contingencies to be Studied	29
5.4	Short-Circuit Current Level Studies	29
5.5	Sub-Synchronous Interaction (SSI) Studies	30
6	Mitigation Measures	31
6.1	Development	31
6.2	Evaluation	31
6.2.1	Post-Mitigation Studies	31

6.2.2	<i>Constraint Effective Factor Studies</i>	31
7	Changes to Study Assumptions	32

Tables

Table 1-1:	Project Load and Generation Details.....	1
Table 3-1:	Post-Contingency Voltage Deviation Guidelines for Low Voltage Busses.....	14
Table 4-1:	Connection Study Scenarios.....	15
Table 4-2:	Planned System Transmission Projects to be Included in the Studies.....	15
Table 4-3:	Planned Connection Projects Included in the Studies.....	16
Table 4-4:	Forecast Load (at AESO Central Planning Region Peak).....	17
Table 4-5:	Existing Generation (excluding Wind and Solar) Dispatch Conditions.....	17
Table 4-6:	Dispatch Conditions for Existing Wind Generation Facilities.....	18
Table 4-7:	Dispatch Conditions for Existing and Under Construction Solar Generation Facilities.....	18
Table 4-8:	Dispatch Conditions for Planned Wind Generation Projects.....	19
Table 4-9:	Dispatch Conditions for Planned Solar Generation Projects.....	20
Table 4-10:	Intertie Flows by Scenario.....	21
Table 4-11:	HVDC to Adjacent AC System MVar Exchange Limits.....	22
Table 4-12:	Thermal Rating Assumptions for Key Transmission Lines in the Study Area.....	22
Table 4-13:	Summary of Key Transformer Ratings in the Study Area.....	23
Table 4-14:	Summary of Key Shunt Elements in the Study Area.....	24
Table 4-15:	Protection Fault Clearing Times.....	25
Table 5-1:	Summary of the Studies to be Performed.....	27

Figures

<i>Figure 1-1: Transmission System in the Study Area</i>	3
<i>Figure 2-1: Connection Alternative 1</i>	5
<i>Figure 2-2: Connection Alternative 2</i>	7
<i>Figure 2-3: Connection Alternative 3</i>	9
<i>Figure 2-4: Connection Alternative 4</i>	11

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 Hardline Engineering 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

Renewable Energy Systems Canada, Inc. (RESC, the Market Participant) has submitted a request for system access service to the Alberta Electric System Operator (AESO) to connect its proposed Big Sky solar facility (Facility) to the AIES.

The Facility includes a proposed collector substation, to be designated the Bullseye 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 180 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1 MW; and a request for transmission development (collectively, the Project).

The Project in-service date (ISD) used for the purpose of the studies is June 30, 2023.

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

Table 1-1: Project Load and Generation Details

Project Component		Description
Load	Existing Rate DTS, <i>Demand Transmission Service</i> , contract capacity	No existing contract
	Requested Rate DTS	1 MW
	Type	station service
	Motors (number and size)	None
	Power factor	Not applicable
	Future load expansion plans	No
Generation	Generation type	Solar
	Existing Rate STS, <i>Supply Transmission Service</i> , contract capacity	No existing contract
	Requested Rate STS	180 MW
	Number and size of generating units	Approx. 333,333, 535-545 W modules
	Maximum authorized real power (MARP)	180 MW
	Maximum capability (MC)	180 MW
	Reactive power capability	0.95 pf absorbing

Project Component		Description
		0.9 pf producing
	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

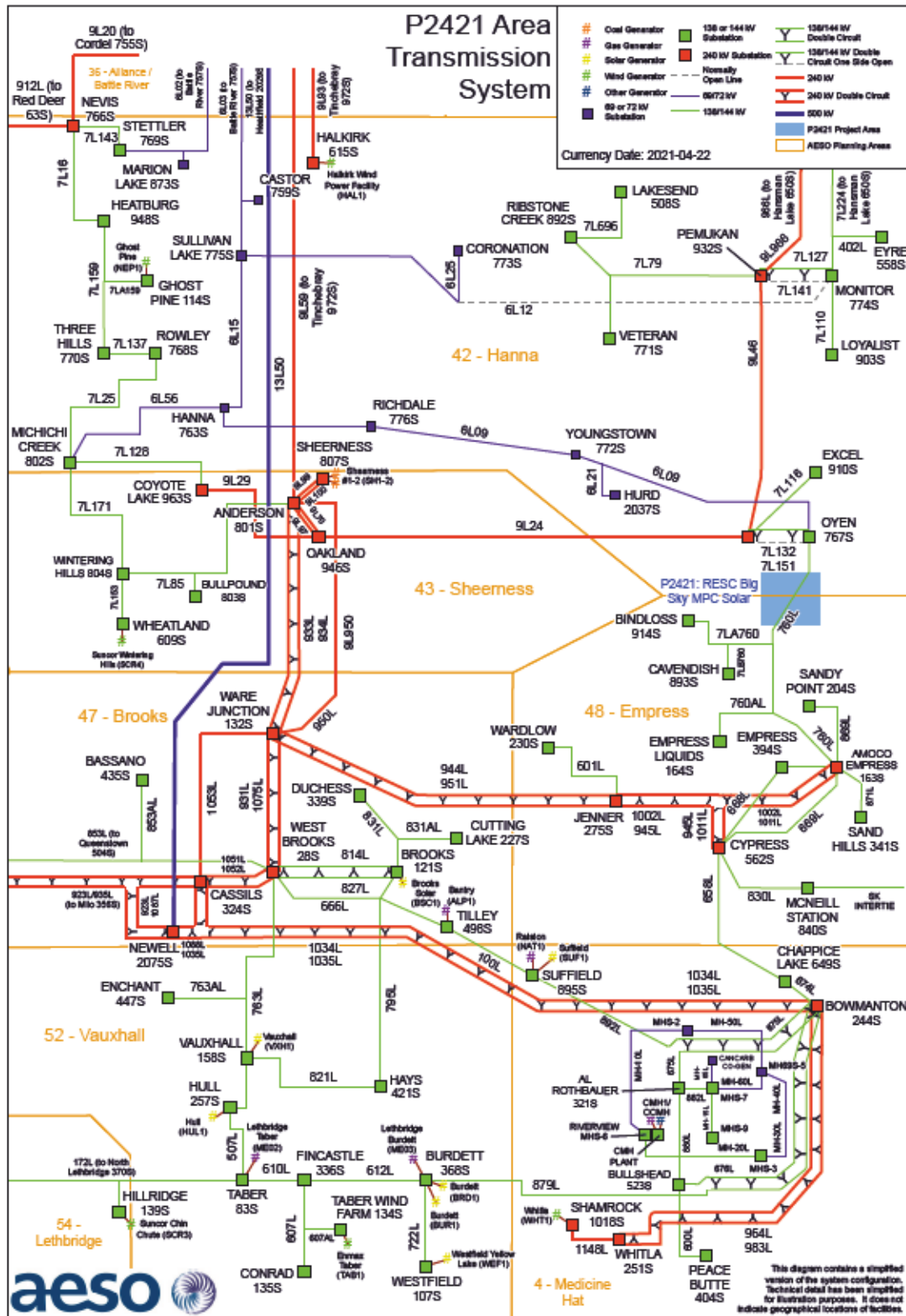
Existing constraints in the Study Area are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management (TCM Rule)*.

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

The following existing RASs are used to manage constraints in the Study Area:

- RAS #27: 526S Cypress McNeil Power and Undervoltage Scheme
- RAS #28: 163S Amoco Empress Reverse Power and Undervoltage Scheme
- RAS #29: 840S McNeil undervoltage runback scheme
- RAS #33: 562S Cypress Reverse Power and Undervoltage scheme

Figure 1-1: Transmission System in the Study Area



2 Connection Alternatives

The following alternatives will be considered

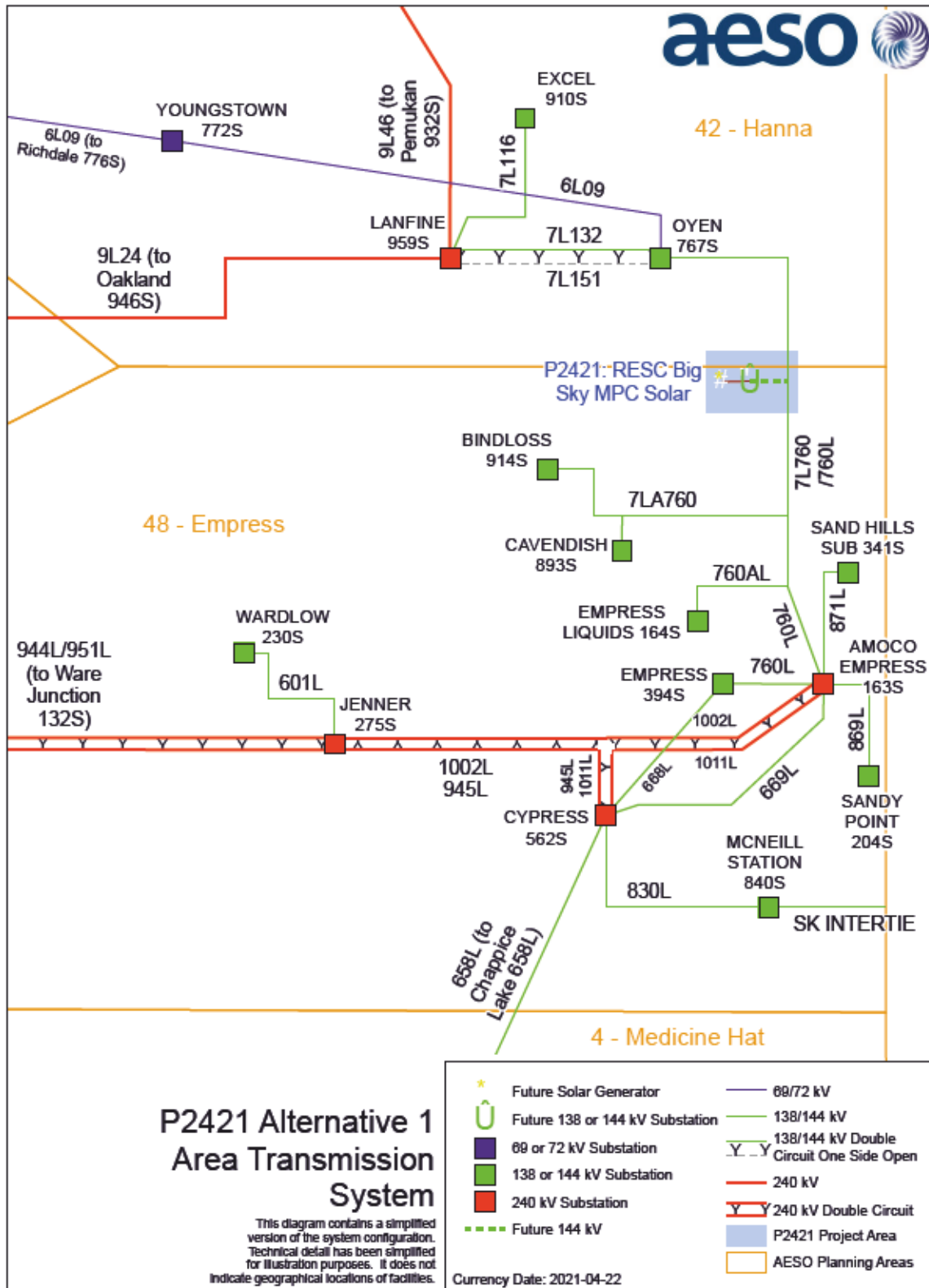
2.1 Alternative 1 – T-tap 144 kV connection to 7L760

This alternative includes the following developments:

- Add one new 144 kV circuit, approximately 100 m in length, to connect the Facility to the transmission line 7L760 between Oyen 767S substation and Bindloss 914S substation tap point, using a T-tap configuration, and
- Add or modify associated equipment as required for the above transmission developments.

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

Figure 2-1: Connection Alternative 1



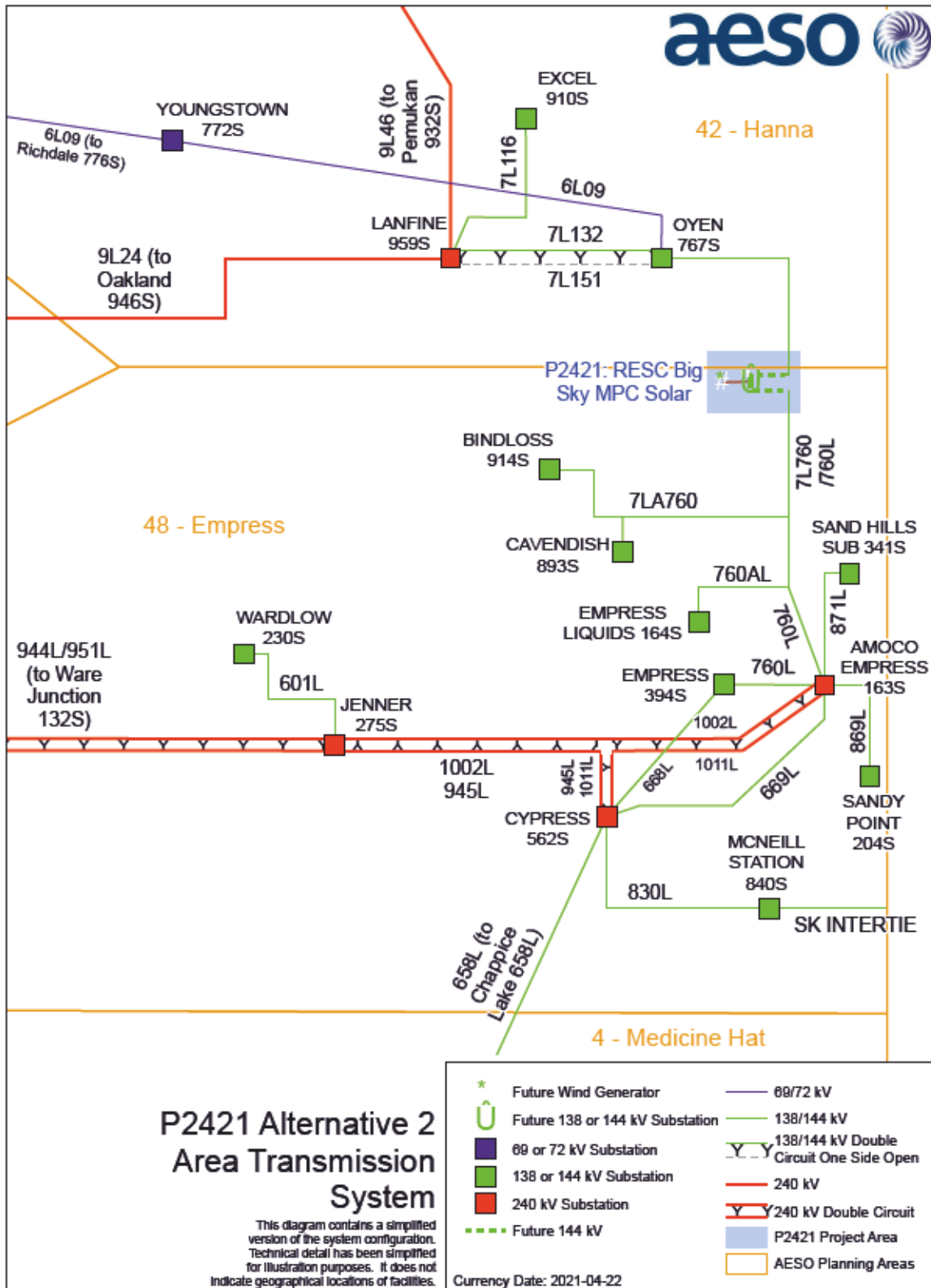
2.2 Alternative 2 – In-and-Out 144 kV connection to 7L760

This alternative includes the following developments:

- Add a switching station, with three 144 kV circuit breakers,
- Add two 144 kV circuits to connect the new switching station to the existing transmission line 7L760 (between Oyen 767S substation and Bindloss 914S substation tap point), using an in-and-out configuration;
- Add one new 144 kV circuit to connect the Facility to the new switching station or connect the new switching substation to the Market Participant collector substation with buswork, if the substations can be co-located adjacent to each other, and
- Add or modify associated equipment as required for the above transmission developments.

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

Figure 2-2: Connection Alternative 2



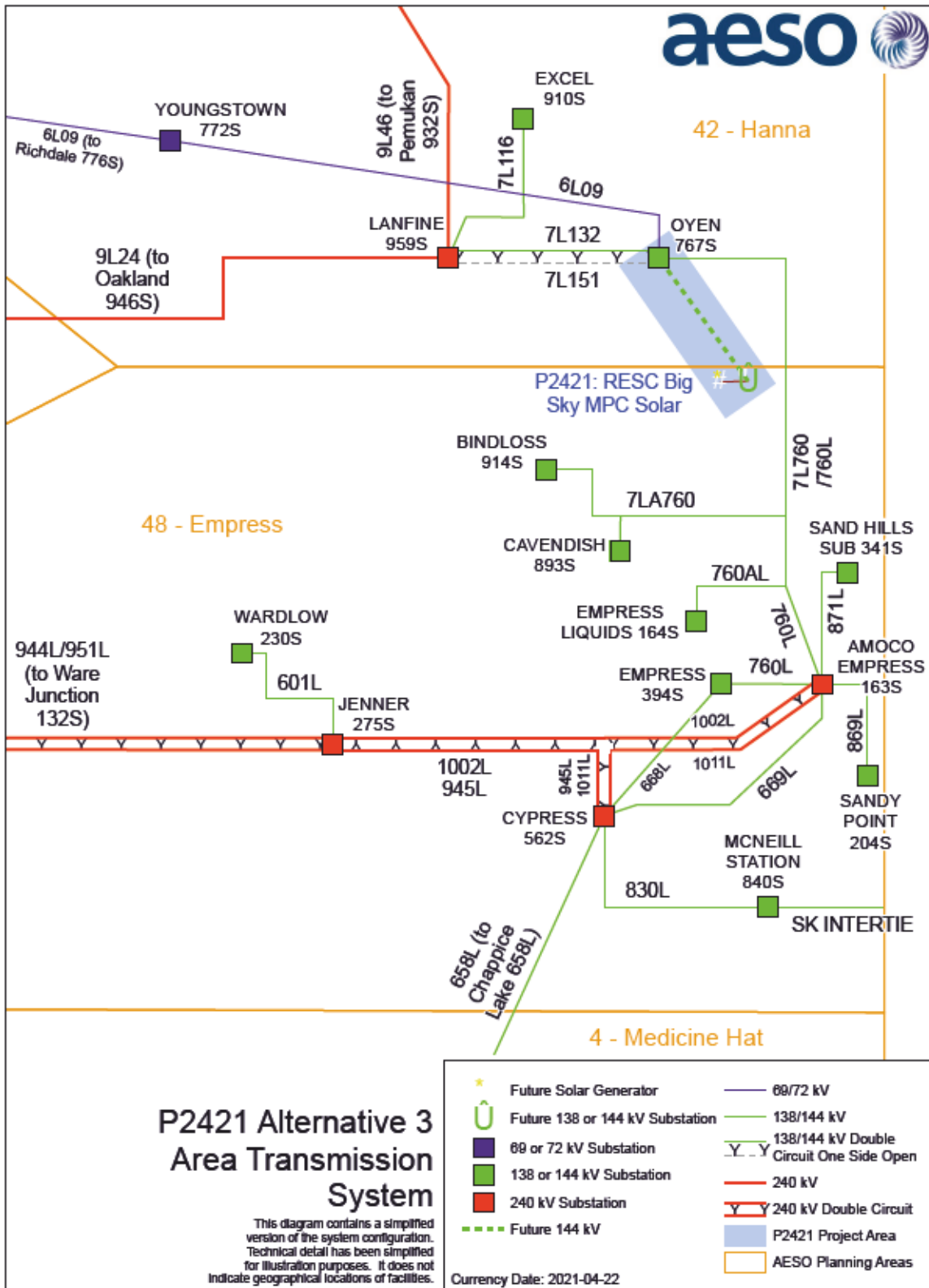
2.3 Alternative 3 – Radial 144 kV connection to Oyen 767S substation

This alternative includes the following developments:

- Add a new 144 kV circuit breaker at Oyen 767S substation,
- Add one new 144 kV circuit, approximately 27 km in length, to connect the Facility to Oyen 767S substation, and
- Add or modify associated equipment as required for the above transmission developments.

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

Figure 2-3: Connection Alternative 3



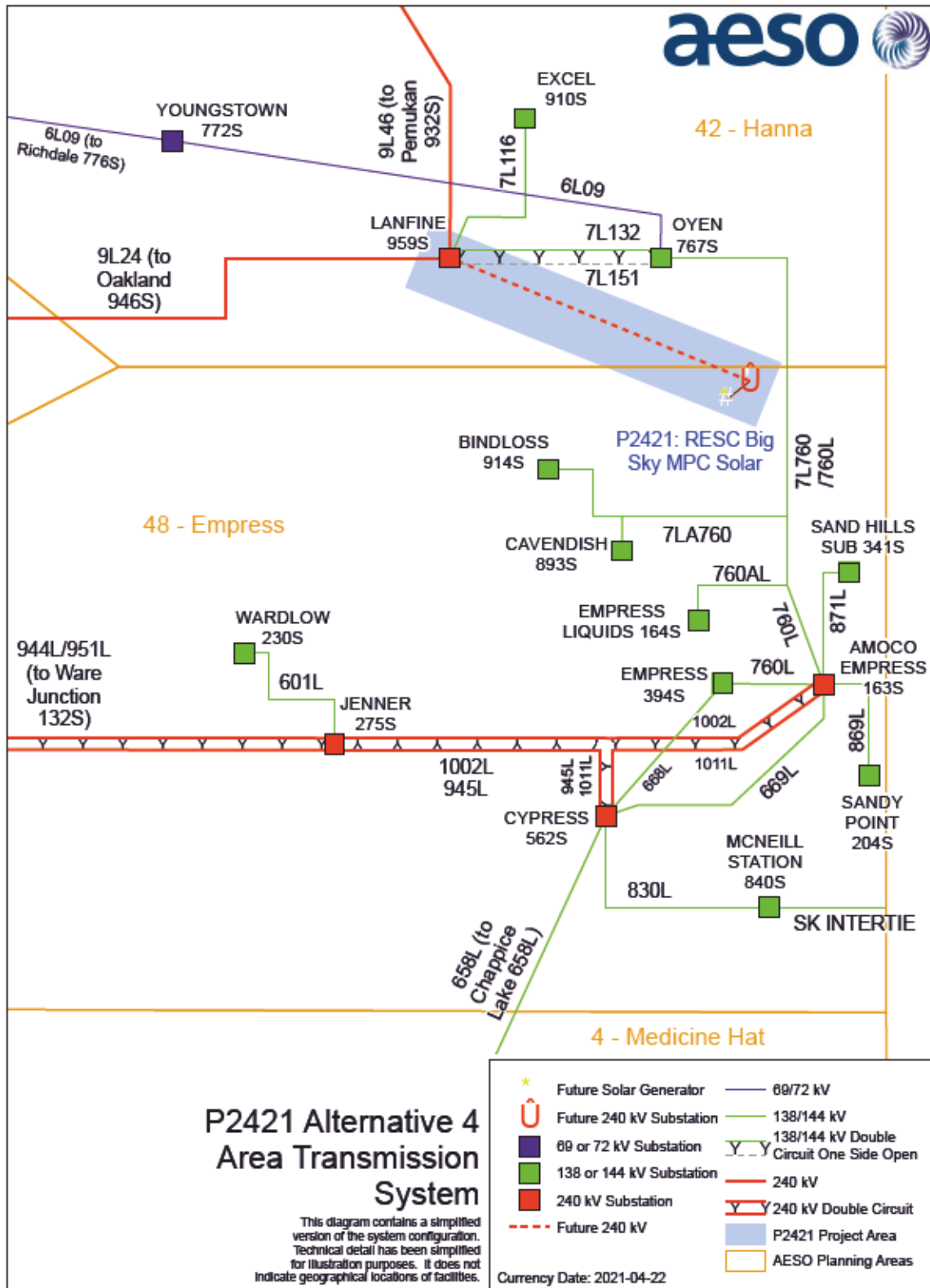
2.4 Alternative 4 – Radial 240 kV connection to Lanfine 959S substation

This alternative includes the following developments:

- Add a new 240 kV circuit breaker at Lanfine 959S substation,
- Add one new 240 kV circuit, approximately 35 km in length, to connect the Facility to Lanfine 959S substation, and
- Add or modify associated equipment as required for the above transmission developments.

The proposed connection configuration is shown in Figure 2-4.

Figure 2-4: Connection Alternative 4



2.5 Connection alternatives considered for further studies

Alternative 1 and Alternative 2 will be studied.

Alternatives 3 and 4 involve significant increased transmission developments compared to Alternative 1 and Alternative 2. These alternatives will be considered if Alternative 1 and Alternative 2 are not technically feasible.

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.

Category C5 events results in loss of two circuits of a multiple circuit tower. 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. For Category C5, the controlled interruption of electric supply to customers (load shedding), the planned removal from service of certain generators, and/or the curtailment of contracted firm (non-recallable reserved) transmission service electric power transfers may be necessary to maintain the overall reliability of the interconnected transmission systems.

The TPL standards, TPL-001-AB-0, TPL-002-AB1-0, and TPL-003-AB-0, have referenced Applicable Ratings when specifying the required system performance under Category A, Category B, and Category C5 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 and Category C5 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*.

4 Scenarios and Assumptions

4.1 Scenarios

The following section describes the scenarios to be studied and the assumptions to be used in the studies. Connection scenarios must be studied as outlined in Table 4-1.

Table 4-1: Connection Study Scenarios

Scenario No.	Year/Season	System Generation Dispatch Conditions	Scenario Name	Project Load (MW)	Project Generation (MW)
Pre-Project					
1	2023 Summer Light (SL)	High Solar (HS)	2023 SL HS Pre-Project	0	0
2	2023 Summer Peak (SP)	HS	2023 SP HS Pre-Project	0	0
3	2023 SP	High Wind (HW)	2023 SP HW Pre-Project	0	0
Post-Project					
4	2023 SL	HS	2023 SL HS Post-Project	0	180
5	2023 SP	HS	2023 SP HS Post-Project	0	180
6	2023 SP	HW	2023 SP HW Post-Project	0	180
7	2029 Winter Peak (WP)	All Generators in the Study Area in service	2029 WP Post-Project	0	180

4.2 Assumptions

4.2.1 System Project Assumptions

The pre-Project and post-Project connection assessment will not include any of the system transmission projects shown in **Error! Reference source not found.** P1781 may be included as a sensitivity study if any N-0 violations are identified in the area.

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.
P1781	Provost to Edgerton & Nilrem to Vermilion Transmission Development	Dec. 31, 2022 (Stage 1)	23429-D01-2019
P7001	Central East Transfer-out Transmission Development	2023 (Stage 1)	N/A

4.2.2 Connection Project Assumptions

Table 4-3 summarizes the connection projects in the Study Area that should be included in the studies.

Table 4-3: Planned Connection Projects Included in the Studies

AESO Project No.	AESO Project Name	AESO Planning Area No.	Generation (MW)	Load (MW)	Scheduled ISD
P1898 ¹	Pattern Lanfine North Wind	42	145	2	Sep 30, 2022
P0863	TransCanada Keystone KXL Pumpstation #3-Current	42	0	15	Nov 1, 2021
P0864	TransCanada Keystone KXL Pumpstation #4-Armitage	42	0	13	Nov 1, 2021
P1533	Joss MPC WAGF	48	122	1	Aug 31, 2022
P1567	EDPR Sharp Hills Wind Farm	42	248	1	April 15, 2022
P1698	Joss Jenner WAGF - Phase 2	48	71	1	Aug 31, 2022
P1853	Fortis Buffalo Atlee Cluster 1 WAGF	48	18	0	Dec 1, 2021
P1892	Fortis Buffalo Atlee Cluster 3 WAGF DER	48	17	0	Dec 1, 2021
P2199	FortisAlberta Buffalo Atlee Cluster 2	48	14	0	Dec 1, 2021
P2418 ²	Greencells Estuary Solar	48	200	2	Dec 1, 2021

4.2.3 Load Assumptions

The load forecast to be used for the studies is shown in Table 4-4 and is a forecast for the AESO Central Planning Region peak based on the AESO's 2019 Long-term Outlook (2019 LTO)³ with modifications to incorporate the latest forecast intelligence. For the post-Project studies, when the Study Area loads are modified to align with the regional load forecast, the active power to reactive power ratio in the base case scenarios shall be maintained.

¹ P1898 is currently under AUC approval process and may meet the AESO's project inclusion criteria during the Stage 2 studies. Therefore, P1898 will be included in the study.

² P2418 is located in the Empress planning area and may significantly reduce the capacity available for the Project.

³ The 2019 LTO is available on the AESO website.

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

AESO Planning Region Name	Forecast Peak Load by Year/Season (MW)	
	2023 SL	2023 SP
Central Planning Region ¹	1644	2114
South Planning Region ²	922	1499

Note:

¹ The Central Region comprises the following AESO planning areas: Lloydminster (Area 13), Cold Lake (Area 28), Hinton/Edson (Area 29), Drayton Valley (Area 30), Wainwright (Area 32), Abraham Lake (Area 34), Red Deer (Area 35), Alliance/Battle River (Area 36), Provost (Area 37), Caroline (Area 38), Didsbury (Area 39), Hanna (Area 42) and Vegreville (Area 56).

² The South Region comprises the following AESO planning areas: Seebee, (Area 44), High River (Area 46), Fort Macleod (Area 53), Strathmore / Blackie (Area 45), Stavely (Area 49), Lethbridge (Area 54), Glenwood (Area 55), Sheerness (Area 43), Brooks (Area 47), Vauxhall (Area 52), Empress (Area 48), and Medicine Hat (Area 4)

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

4.2.4 Generation Assumptions

The generation forecast to be used for the studies is based on the 2019 LTO with modifications to incorporate the latest forecast intelligence. The generation assumptions for the studies will assume high solar and high wind dispatch conditions, and economic dispatch for conventional generation. Additional studies may be required in the event of changes to the AESO's corporate forecast.

The existing generation (excluding wind and solar) dispatch conditions for the study scenarios are described in Table 4-5.

Table 4-5: Existing Generation (excluding Wind and Solar) Dispatch Conditions

Facility Name	Unit No.	Bus No.	MC (MW)	AESO Planning Area No.	Unit Net Generation ^a (MW) by Scenario		
					2022 SL HS	2022 SP HS	2022 SP HW
Battle River	3	1495	149	36	Offline	Offline	Offline
Battle River	4	1496	155	36	0	80	80
Battle River	5	70001	385	36	0	151	151
Sheerness	1	70008	400	43	192	200	200
Sheerness	2	70009	390	43	200	150	150

Notes:

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

Pre-Project dispatch levels for the existing wind and solar generation facilities are shown in Table 4-6 and Table 4-7, respectively.

Table 4-6: Dispatch Conditions for Existing Wind Generation Facilities

Facility Name and Code	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)		
				2023 SL HS	2023 SP HS	2023 SP HW
Ardenville Wind (ARD1)	4735, 4740	53	68	13.6	40.8	57.8
Blue Trail Wind (BTR1)	66328, 67328	53	66	13.2	39.6	56.1
Castle River #1 (CR1)	2234, 3234	53	39	7.8	23.4	33.2
Castle Rock Wind Farm (CRR1)	67221	53	77	15.4	46.2	65.5
Cowley Ridge (CRE3)	4264	53	20	4.0	12.0	17.0
Enmax Taber (TAB1)	15343, 16343	52	81	16.2	48.6	68.9
Kettles Hill (KHW1)	2402, 3402	53	63	12.6	37.8	53.6
McBride Lake Windfarm (AKE1)	2901, 3901, 4901	53	73	14.6	43.8	62.1
Soderglen Wind (GWW1)	12358, 13358	53	71	14.2	42.6	60.4
Summerview 1 (IEW1)	2338, 3338	53	66	13.2	39.6	56.1
Summerview 2 (IEW2)	4339, 5337	53	66	13.2	39.6	56.1
Suncor Chin Chute (SCR3)	2389	54	30	6.0	18.0	25.5
Suncor Magrath (SCR2)	11002	53	30	6.0	18.0	25.5
Suncor Wintering Hills (SCR4)	60789, 60791, 60793, 60846, 60848, 60850	43	88	17.6	52.8	74.8
Old Man River(OWF1)	61543	53	46	9.2	27.6	39.1
Blackspring Ridge(BSR1)	61736, 61737	49	300	60.0	180.0	255.0
Castle Rock Ridge 2 (CRR2)	567221	53	30.6	6.1	18.4	26.0
Enel Riverview Wind Farm (RIV1)	69221	53	115	23.0	69.0	97.8
Capital Power Whittla Wind Power Facility (WHT1)	60990	4	201.6	40.3	121.0	171.4
Subtotal (Southern Alberta)			1531.2	306.2	918.7	1301.5
Ghost Pine (NEP1)	2621, 2622, 2623, 2624, 2625	42	82	16.4	49.2	69.7
Halkirk (HAL1)	66435, 67435	42	150	30.0	90.0	127.5
Fortis Bull Creek Phases 1 and 2(Bul1 & BUL2)	550003, 550004	37	29	5.8	17.4	24.7
Subtotal (Central Alberta)			261	52.2	156.6	221.9
Total			1792.2	358.4	1075.3	221.9

Note:

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

Table 4-7: Dispatch Conditions for Existing and Under Construction Solar Generation Facilities

Facility Name and Code	Bus No.	MC (MW)	Unit Net Generation Dispatch (MW)
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		AESO Planning Area No.		2022 SL HS	2022 SP HS	2022 SP HW
Brooks Solar (BSC1)	553257	47	15	10.5	14.3	7.5
Hull DER Solar (HUL1)	552402	52	24.5	17.2	23.3	12.3
Vauxhall Solar (VXH1)	554273	52	22	15.4	20.9	11.0
Claresholm 1 (CLR1)	60894	49	58	40.6	55.1	29.0
Claresholm 2 (CLR2)	61894	49	75	52.5	71.3	37.5
Suffield (SUF1)	557270	52	23	16.1	21.9	11.5
Burdett (BRD1)	992692	52	10.5	7.4	10.0	5.3
Burdett (BUR1)	558269	52	20	14.0	19.0	10.0
Westfield Yellow Lake (WEF1)	557277	52	19	13.3	18.1	9.5
Subtotal (Southern Alberta)			267	186.9	253.7	133.5
Innisfail Solar (INF1)	557120	39	22	15.4	20.9	11.0
Subtotal (Central Alberta)			22	15.4	20.9	11.0
Total			289	202.3	274.6	144.5

Table 4-8 and Table 4-9 list the pre-Project dispatch levels for the planned wind and solar generation projects in the AESO South and Central planning regions that are included in the study scenarios.

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

Project Number	Project Name	Planned ISD	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)		
						2023 SL HS	2023 SP HS	2023 SP HW
P1892	Fortis Buffalo Atlee Cluster 3 WAGF	Sept. 1, 2020	552260	47	17.25	3.5	10.4	14.7
P1853	Fortis Buffalo Atlee Cluster 1 WAGF	Sept. 1, 2020	553260	47	17.25	3.5	10.4	14.7
P2199	Buffalo Atlee Wind Farm 2	Sept. 1, 2020	557261	47	13.8	2.8	8.3	11.7
P1719	Stirling WAGF Project	44337	61630	54	113	22.6	67.8	96.1
P2122	EDF Cypress Wind	Nov. 1, 2021	560003	4	201.6	40.3	121.0	171.4
P1533	Joss MPC WAGF	May 31, 2021	60798, 60799	47	122.4	24.5	73.4	104.0
P1698	Joss Jenner WAGF - Phase 2	May 31, 2021	61798, 61799	47	71.4	14.3	42.8	60.7
P2041	TransAlta Windrise MPC Wind	Dec. 17, 2020	56703	53	207	41.4	124.2	176.0

P1812	Suncor Forty Mile Granlea WAGF	Nov. 16, 2020	61994, 62994	4	200	40.0	120.0	170.0
P1800	Capital Power Whittle Wind Power Facility	Dec. 1, 2020	61990	4	97.2	19.4	58.3	82.6
P2212	RESC Rattlesnake Ridge MPC Wind	Jul. 30 2021	60873	4	115.9	23.2	69.5	98.5
P1718	Wheatland WAGF	Sep. 30, 2022	61632, 60632	43	120	24.0	72.0	102.0
Subtotal (Southern Alberta)					1296.8	259.4	778.1	1102.3
P1567	EDPR Sharp Hills Wind Farm	Nov. 15, 2020	60831, 60832	42	248.4	49.7	149.0	211.1
P1898	Pattern Lanfine North Wind	Sep. 30, 2022	60996	42	145	29	87	123.3
Subtotal (Central Alberta)					393.4	78.7	236	334.4
Total Planned					1690.2	338.1	1014.1	1436.7
Total Planned and Existing					3482.4	696.5	2089.4	2960.1

Table 4-9: Dispatch Conditions for Planned Solar Generation Projects

Project Number	Project Name	Planned ISD	Bus No.	AESO Planning Area No.	MC (MW)	Unit Net Generation Dispatch (MW)		
						2023 SL HS	2023 SP HS	2023 SP HW
P2009 & P2341	Greengate Travers MPC Solar & Travers Solar Phase 2	Aug 1, 2021 & Apr 1, 2022	560026, 561026, 562026	49	465	325.5	441.8	232.5
P1839	Fortis 421S Hays DG PV	Feb 15, 2021	554401	52	23	16.1	21.9	11.5
P1831	Fortis 255S Vulcan Faribault Farms DG PV	24-May-21	4244	49	22	15.4	20.9	11.0
P1850	Fortis Coaldale 254S DER Solar 3	24-May-21	554691	54	22	15.4	20.9	11.0
P1851	Fortis Monarch 492S DER Solar	24-May-21	2005	54	23.6	16.5	22.4	11.8
P1862	Fortis Spring Coulee 385S Solar DG	Oct. 15, 2021	553246, 554246	55	29.5	20.7	28.0	14.8
P1870	Fortis Stavely 349S DER Solar	44340	2004	49	16.5	11.6	15.7	8.3
P1918	FortisAlberta Conrad DER Solar 1	Aug. 15, 2021	554291	52	23.4	16.4	22.2	11.7
P1959	FortisAlberta Conrad DER Solar 2	Aug. 15, 2021	553291	52	22.5	15.8	21.4	11.3
P2029	FortisAlberta Strathmore 151S DER Solar 1	Aug. 15, 2021	557259	45	18	12.6	17.1	9.0
P2030	FortisAlberta Strathmore 151S DER Solar 2	Aug. 15, 2021	558259	45	22.5	15.8	21.4	11.3

P1932	FortisAlberta Namaka DER Solar	Jul. 15, 2021	552340	45	20.1	14.07	19.1	10.1
Subtotal (Southern Alberta)					708.1	495.7	672.7	354.1
Subtotal (Central Alberta)					0.0	0.0	0.0	0.0
Total Planned					708.1	495.7	672.7	354.1
Total Planned, Existing and Under Construction					997.1	698.0	947.3	498.6

The Facility will be dispatched to 180 MW in all post-Project scenarios.

4.2.5 Intertie Flow Assumptions

The intertie flow assumptions for the Alberta-British Columbia (AB-BC), Alberta-Saskatchewan (AB-SK), and Alberta-Montana (MATL) interties are shown in Table 4-10.

For the 2029 WP scenario, the intertie flow values should be set to the AESO planning base cases.

Table 4-10: Intertie Flows by Scenario

Scenario Number	Scenario Name	Import (-) / Export (+) (MW) by Intertie		
		AB-BC	AB-SK	MATL
1	2023 SL HS Pre-Project	-359	-150	-300
2	2023 SP HS Pre-Project	-155	-150	-300
3	2023 SP HW Pre-Project	-39	-150	-300
4	2023 SL HS Post-Project	-359	-150	-300
5	2023 SP HS Post-Project	-155	-150	-300
6	2023 SP HW Post-Project	-39	-150	-300

4.2.6 HVDC Power Order Assumptions

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

For the 2029 WP scenario, the HVDC power order should be as per the AESO base cases and will not be adjusted.

The reactive power limits of the MVAR exchanges between the HVDC terminals (WATL and EATL) and the connected alternating current (AC) transmission systems are shown in Table 4-11. These limits must be maintained when performing the studies.

Table 4-11: HVDC to Adjacent AC System MVAR Exchange Limits

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

4.2.7 Transmission Facility Ratings

The legal owners of transmission facilities (TFOs) provided the thermal ratings assumptions for the existing transmission lines in the Study Area. Table 4-12 shows the normal ratings and emergency ratings for the key transmission lines in the Study Area, which will be used to perform the engineering studies.

Table 4-12: Thermal Rating Assumptions for Key Transmission Lines in the Study Area

Line ID	Line Description	Voltage Class (kV)	Normal Rating (MVA)		Emergency Rating (MVA)	
			Summer	Winter	Summer	Winter
950L/9L950	Ware Junction 132S –	240	519	663	592	716
933L	Anderson 801S – Ware	240	592	726	710	871
934L	Anderson 801S – Ware	240	584	705	654	773
944L	Jenner 275S – Ware	240	550	679	660	815
951L	Jenner 275S – Ware	240	550	679	654	773
1053L	Cassils 324S – Ware	240	831	831	1047	1238
931L	West Brooks 28S – Ware Junction 132S	240	592	665	654	773
1075L	West Brooks 28S – Ware Junction 132S	240	592	665	654	773
1002L	Jenner 275S – Amoco	240	333	333	499	499
945L	Jenner 275S – Cypress	240	550	679	660	815
1011L	Cypress 562S – Amoco	240	333	333	499	499
9L46	Lanfine 959S – Pemukan	240	755	831CT	831CT	831CT
9L24	Lanfine 959S – Oakland	240	740	831 GS	831 GS	831 GS
7L116	Lanfine 959S – Excel	144	99CT	99CT	99CT	99CT
760AL	Empress Liquids 164S – 760AL tap point	138	99	133	109	146
7LA760	Bindloss 914S – 7LA760	144	114L	145L	129L	157L
871L	Sand Hills 341S – Amoco Empress 163S	138	120	120	179	179
869L	Amoco Empress 163S – Sandy Point 204S	138	48	48	72	72
760L	Empress 394S – Amoco	138	120	142	132	156

Line ID	Line Description	Voltage Class (kV)	Normal Rating (MVA)		Emergency Rating (MVA)	
			Summer	Winter	Summer	Winter
669L	Amoco Empress 163S –	138	177	191	195	239
668L	Empress 394S – Cypress	138	121	149	133	164
830L	Cypress 562S – McNeill	138	177	217	195	239
658L	Cypress 562S –	138	81	100	89	110
674L	Chappice Lake 649S – Bowmanton 244S	138	81	100	89	110
760L/7L760	7LA760 tap point –	138	120	142	132	156
760L	Amoco Empress 163S – 760AL tap point	138	120	148	132	163
7L760	7LA760 tap point – Oyen	144	115	153	128	175
7L132	Oyen 767S – Lanfine	144	117	147	144	179
7L50**	Battle River 757S –	144	114	150 GS	122	150 GS
174L**	North Holden 395S –	138	85	90	94	99
701L**	North Holden 395S –	138	119	146	131	161

Note:

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

"L" indicates that the transmission line rating is limited by the line

**This line is outside of the Study Area, but it needs to be monitored in the studies

The TFOs provided the details of the substation transformers in the Study Area. The key transformers in the Study Area are shown in Table 4-13.

Table 4-13: Summary of Key Transformer Ratings in the Study Area

Substation Name and Number	Transformer ID	Transformer Voltages (kV)	Transformer Rating (MVA)
Jenner 275S	T1	240/25	79.7/79.7/79.7
	T2	240/25	79.7/79.7/79.7
	T3	138/25	25/25/25
Amoco Empress 163S	T1	240/13.8	131.9/150/145.1
	T2	240/13.8	131.9/150/145.1
	T5	240/138	191.2/191.2/200
Cypress 562S	T1	240/138	200/200/200
	T2	240/138	200/200/200

The TFOs provided the details of the shunt elements in the Study Area. The key shunt elements in the Study Area are shown in Table 4-14.

Table 4-14: Summary of Key Shunt Elements in the Study Area

Substation Name and Number	Voltage Class (kV)	Capacitors		Reactors	
		Number of Switched Shunt Blocks	Total at Nominal Voltage (MVar)	Number of Switched Shunt Blocks	Total at Nominal Voltage (MVar)
McNeill 840S	138	2	49.6		
Amoco Empress 163S	138	2	48.7		
Cypress	240	2	104		
West Brooks 28S	138			1X-50	-50
Lanfine 959S	138	2	55.1		
	34.5(SVC)	1	200	1X-100	-100

4.2.8 Protection Fault Clearing Times

The transient stability studies will be performed using the actual fault clearing times for the selected contingencies, as provided by the TFOs and as shown in Table 4-15. Only those contingencies shown in Table 4-15 will be studied for transient stability studies. If the TFOs 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 4-15: Protection Fault Clearing Times

Contingency (System Element Lost)	Fault Location	Clearing Times(Cycles)	
		Near End	Far End
944L (Jenner 275S – Ware Junction 132S)	Ware Junction 132S	6.25	7.25
	Jenner 275S	6.25	7.25
945L (Jenner 275S – Cypress 562S)	Jenner 275S	5.5	6.5
	Cypress 562S	5.5	6.5
951L (Jenner 275S – Ware Junction 132S)	Jenner 275S	5	6
	Ware Junction 132S	5	6
1002L (Jenner 275S – Amoco Empress 163S)	Jenner 275S	5	6
	Amoco Empress 163S	5	6
668L (Empress 394S – Cypress 562S)	Empress 394S	9	30
	Cypress 562S	9	30
1011L (Cypress 562S – Amoco Empress 163S)	Cypress 562S	6	6
	Amoco Empress 163S	6	6
669L (Amoco Empress 163S – Cypress 562S)	Amoco Empress 163S	9	30
	Cypress 562S	9	30
760L (Empress 394S – Amoco Empress 163S)	Empress 394S	9	30
	Amoco Empress 163S	9	30
760L/7L760 (Amoco Empress 163S – Oyen 767S)	Amoco Empress 163S	9	30/60
	Oyen 767S	9	30/60
830L (Cypress 562S – McNeill Station 840S)	Cypress 562S	9	30
	McNeill Station 840S	9	30
C5: 933L/934L (Ware Junction 132S – Anderson 801S)	Anderson 801S	5	6
C5: 931L/1075L (Ware Junction 132S – West Brooks 28S)	Ware Junction 132S	6.25	7.25
C5: 944L/951L (Ware Junction 132S – Jenner 275S)	Jenner 275S	6.25	7.25
C5: 1002L/945L (Jenner 275S – Amoco Empress 163S / Cypress 562S)	Jenner 275S	5.5	6.5
C5: 1002L/1011L (Amoco Empress 163S – Jenner 275S / Cypress 562S)	Amoco Empress 163S	6	6

4.2.9 Project Dynamic Data

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

4.2.10 Voltage Profile Assumption

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

5 Study Methodology

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

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

Scenario No. and Name		Power Flow			Voltage Stability			Transient Stability			Motor Starting		Short Circuit
		Category			Category			Category			Category		Category A
		A	B	C5	A	B	C5	A	B	C5	A	B	
Pre-Project													
1	2023 SL HS Pre-Project	x	x	x									
2	2023 SP HS Pre-Project	x	x	x									x
3	2023 SP HW Pre-Project	x	x	x									
Post-Project													
4	2023 SL HS Post-Project	x	x	x				x	x	x			
5	2023 SP HS Post-Project	x	x	x				x	x	x			x
6	2023 SP HW Post-Project	x	x	x				x	x	x			
7	2029 WP Post-Project												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 neighbouring planning areas will be studied and monitored to assess the impact of the Project on the performance of the AIES⁴, including any violations of the Reliability Criteria (as defined in Section 3.1).

5.1 Study Case Validation

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

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

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

⁴ 7L50, 174L and 701L need to be monitored in the power flow studies.

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

5.2 Power Flow Studies

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

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

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

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

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

5.2.1 Contingencies to be Studied

Power flow studies will be performed for the Category A and all Category B and Category C5 conditions in the Study Area.

5.3 Transient Stability Studies

The Keephills generating unit #3 in the AESO planning area Wabamum (Area 40) will be used as the reference for the studies.

The report presenting the results of the transient stability studies must provide response plots for several variables, including rotor angle, and active and reactive power output for the following generating units:

- Sheerness units
- Battle River units
- P1567 – Sharp Hills Wind generation units
- Other nearby renewable energy generation projects, as appropriate

The transient response voltages shall be monitored at the following key 240 kV and 138 kV buses:

- Amoco Empress 163S 240 kV bus

- Cypress 562S 240 kV bus
- Empress 394S 138 kV bus
- Anderson 801S 240 kV bus
- Lanfine 959S 240 kV bus
- The Project POS substation

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 4-15

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
- Cypress 562S
- Empress 394S
- Anderson 801S
- Lanfine 959S
- Oyen 767S
- The Project POS substation (included in post-Project studies only)

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.

5.5 Sub-Synchronous Interaction (SSI) Studies

Due to the location of the project being electrically far from any HVDC converter station or line with series capacitor compensation, SSI studies are not required for this Project.

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 factors⁵ 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 AES.

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.

⁵ 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 (2019 LTO) with modifications to incorporate the latest forecast intelligence. Sensitivity studies or restudy may be required in the event of revisions to the AESO's corporate forecast, forecast intelligence, or other study assumptions. Additional engineering studies may also be required to assess new connection alternatives, changes to project ISD, or delays in proposed system developments. Any additional or revised study requirements shall be captured in a signed Study Scope Amendment document.

Attachment A: Transmission Planning Criteria – Basis and Assumptions

Transmission Planning Criteria – Basis and Assumptions

Date: July 9, 2019

Version: V1.2

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 Criteria¹

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

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

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

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

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

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

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

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

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

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

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

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

2.1 Thermal Loading Criteria

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

2.2 Voltage Range and Voltage Stability Criteria

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

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

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

Table 2-2: Voltage Stability Criteria

Performance Level	Disturbance (1)(2)(3)(4) Initiated by: Fault 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	$\geq 5\%$	Worst Case Scenario(8)
B	Bus Section	$\geq 5\%$	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	$\geq 2.5\%$	50% of Margin Requirement in Level A
D	Any combination of three or more elements such as: Three or More Circuits on ROW Entire Substation Entire Plant Including Switchyard	> 0	> 0

2.3 Transient Stability Analysis Assumptions

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

Table 2-3: Fault Clearing Times

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

Table 2-4: Stuck Breaker Clearing Times for Lines

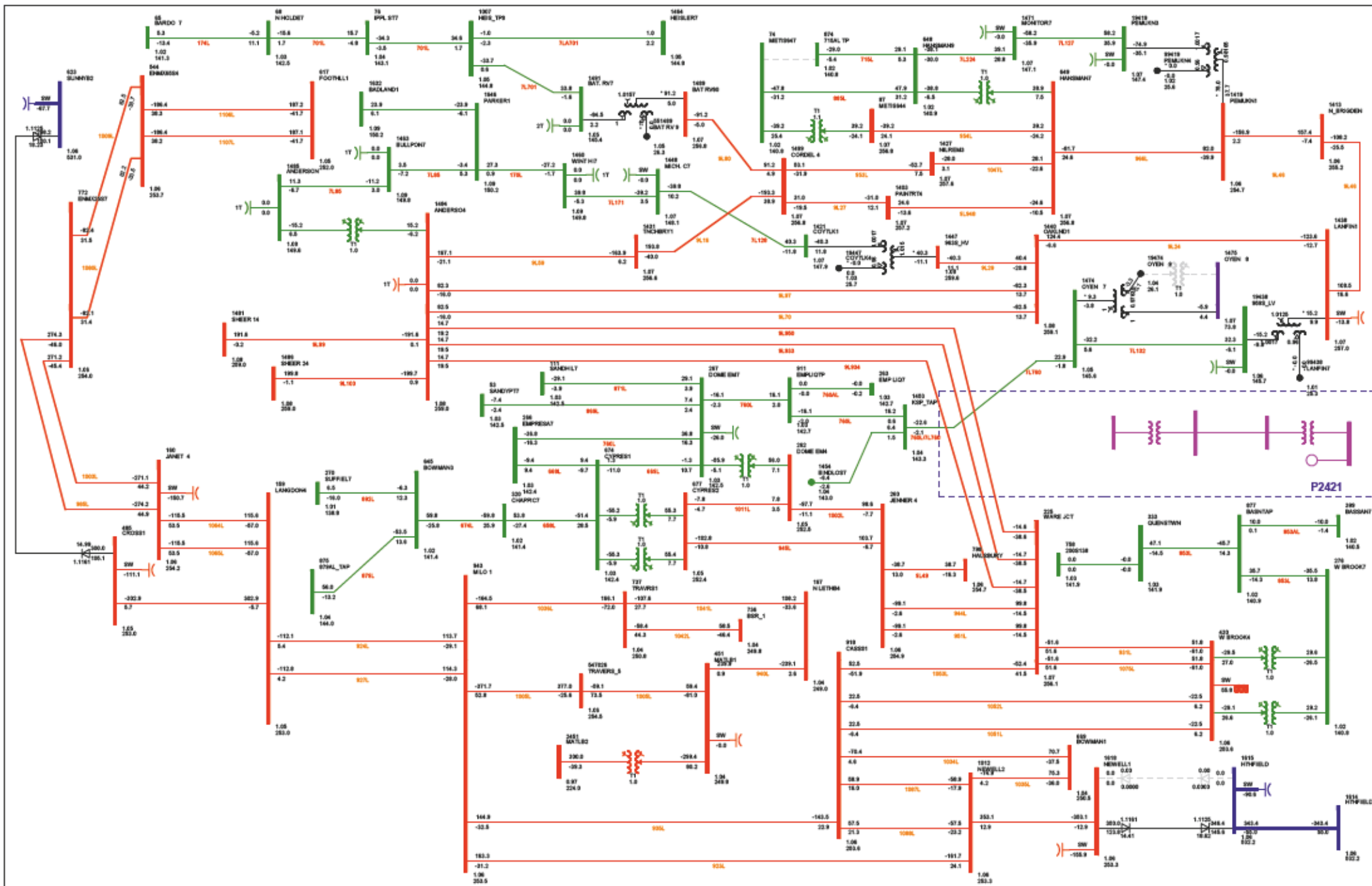
Voltage (kV)	Fault Clearing Times (Cycles)		
	Near End	Far End	2 nd Ckt (C5 and C7 only)
138/144	15	24	24
240	12	6	14
500	9	5	11

Table 2-5: Stuck Breaker Clearing Times for Transformers

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

Attachment A2

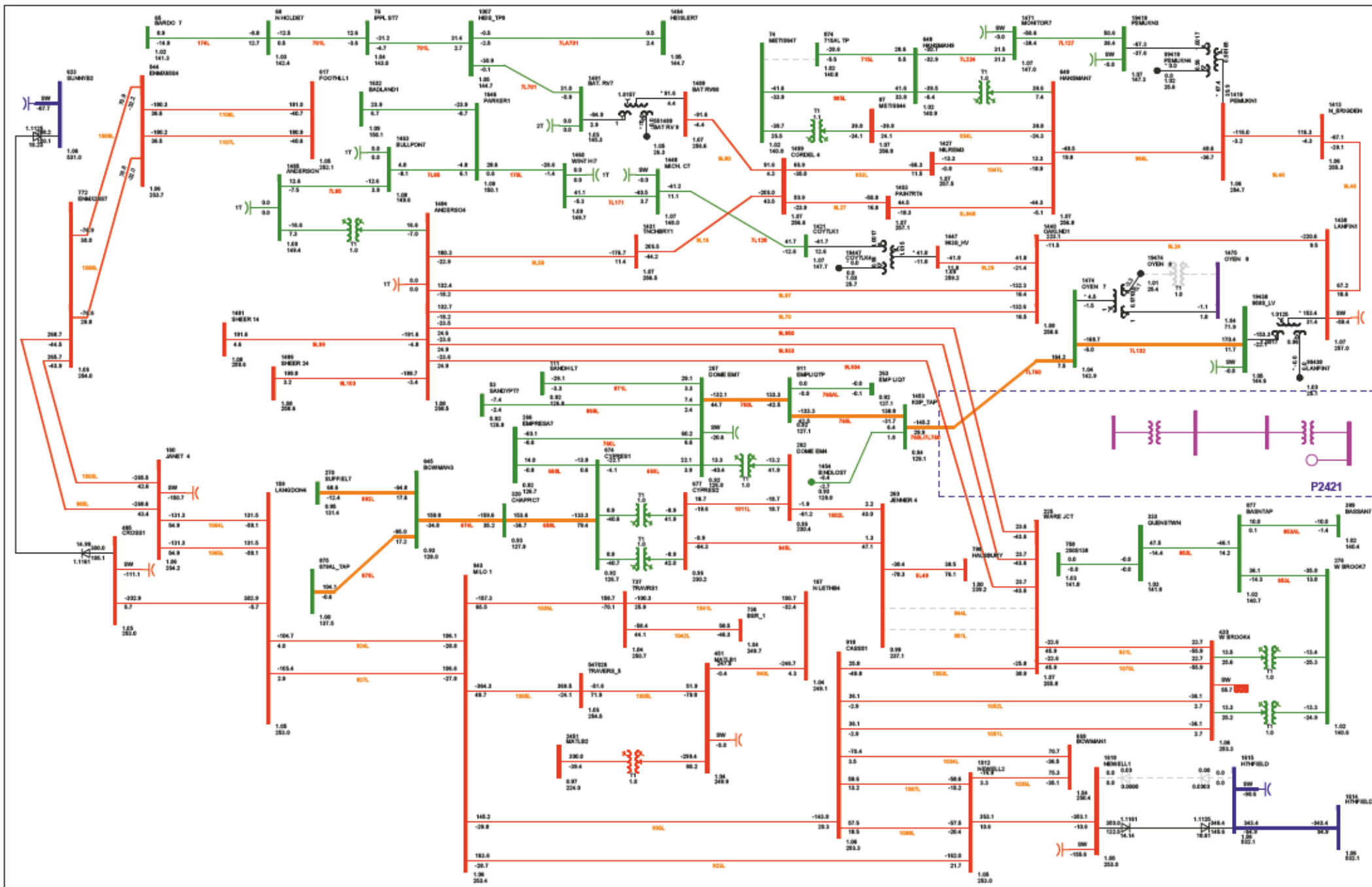
Pre-Project Power Flow Diagrams (Scenarios 1 to 3)



P2421 RESC Big Sky MPC Solar
 DC Input=650.0 MW Gask Input=150.0 MW MATL Input=300.0 MW
 MH Input= 16.3 MW

FIGURE B1-1-1-N-0: NORMAL OPERATION
2023 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/10/2021
 Project: P2421
 Location: Big Sky
 Scale: 1:1000
 Date: 08. OCTOBER 2021

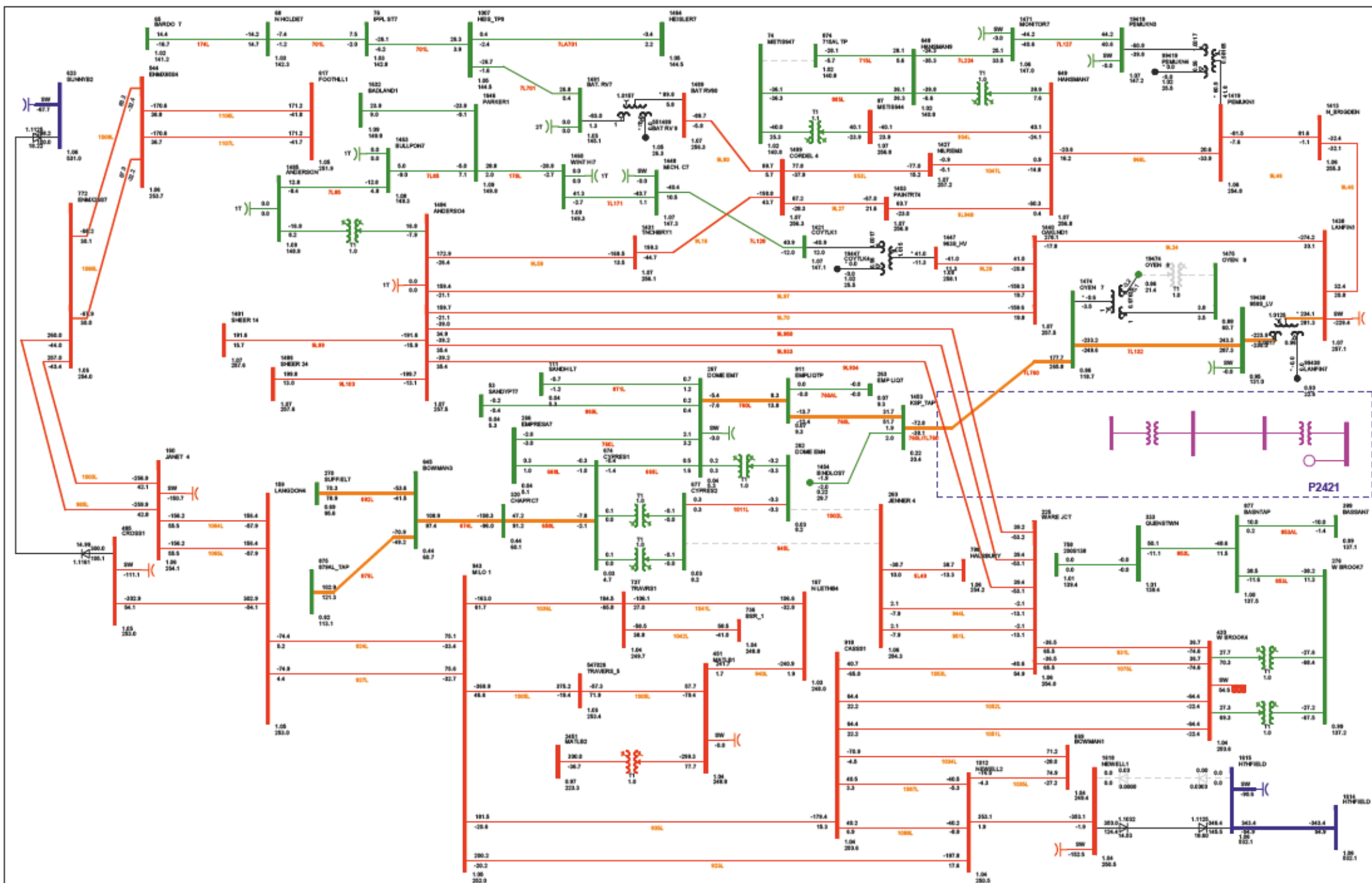


P2421 RESC Big Sky MPC Solar

DC Input: 723.9 MW Gask Input: 150.0 MW MATL Input: 300.0 MW
 MH Input: 16.3 MW

FIGURE B1-1-2 N-1: 944L_961L (JENNER 2768 TO WARE JUNCTION 1326)
 2023 SUMMER LIGHT (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

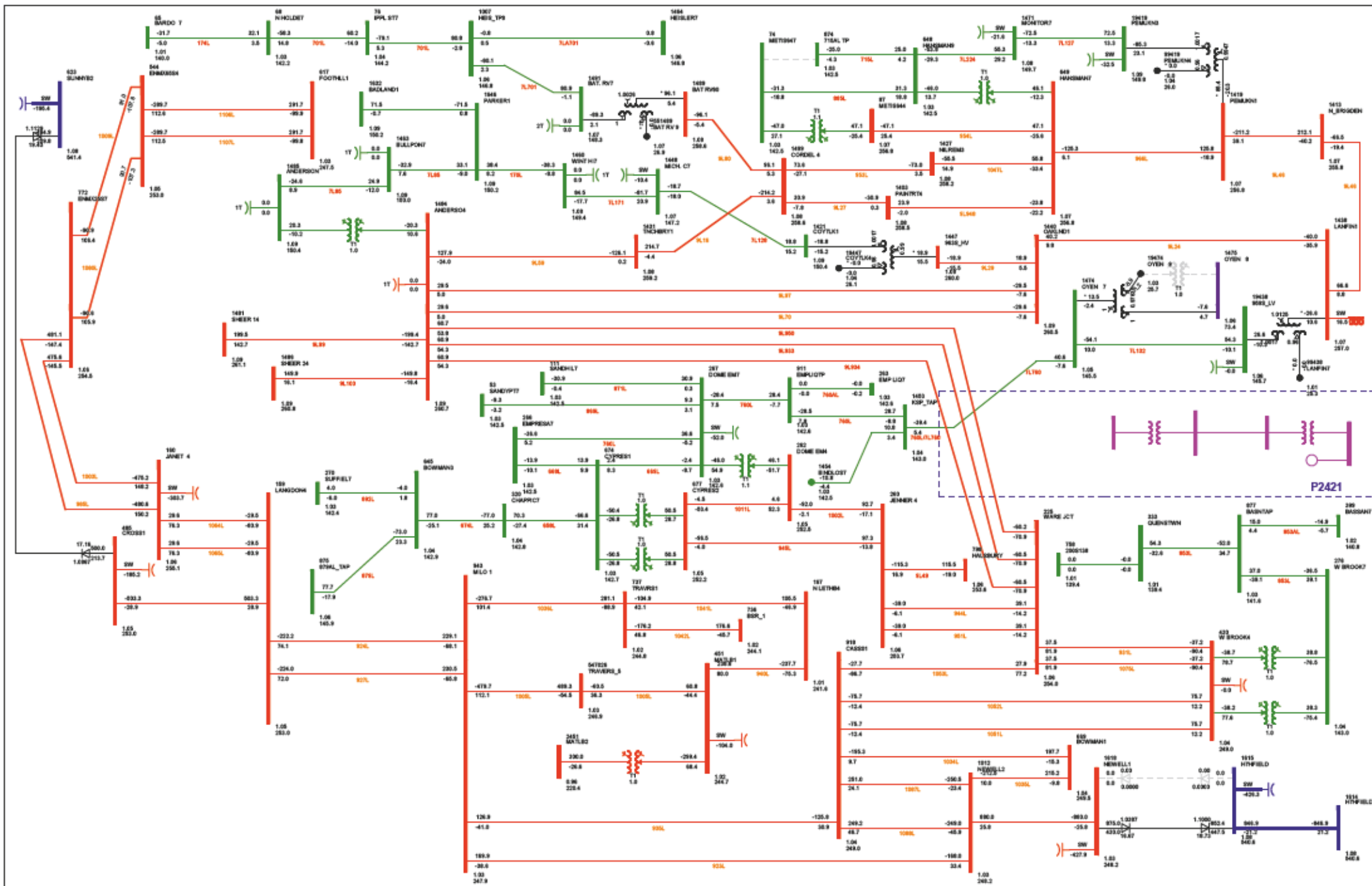
Rev: 1/10/2021
 Project: 1450L
 1450L_961L
 1450L_961L_1450L_961L_1450L_961L



P2421 RESC Big Sky MPC Solar
 DC Input: 001.0 MW Gask Input: 0.3 MW MATL Input: 300.0 MW
 MH Input: 10.3 MW

FIGURE B1-1-3 N-2: 1002L_846L (JENNER 2765 TO AMOCO EMPRES3 1835 TO CYPRES3 6823)(BLOW UP)
2023 SUMMER LIGHT (PRE-CONNECTION)
PRINTED ON SATURDAY 08. OCTOBER 2021

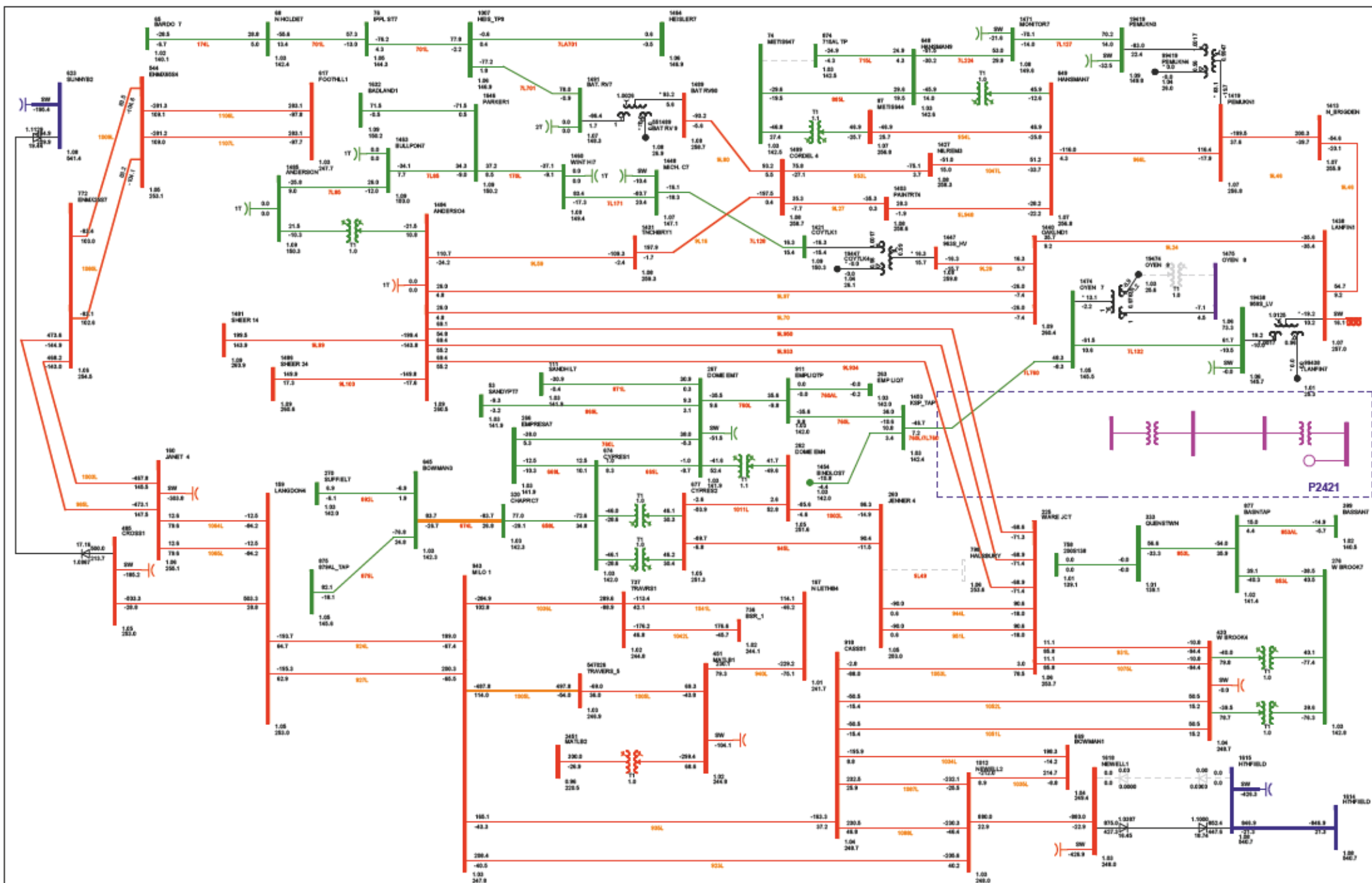
Rev: 1/10/2021
 Project: P2421
 Drawn: [Name]
 Checked: [Name]
 Approved: [Name]



P2421 RESC Big Sky MPC Solar
 DC Input=455.2 MW Gask Input=150.0 MW MATL Input=300.0 MW
 MH Input= 21.3 MW

FIGURE B2-1-1-N-0: NORMAL OPERATION
2023 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON SATURDAY 08. OCTOBER 2021

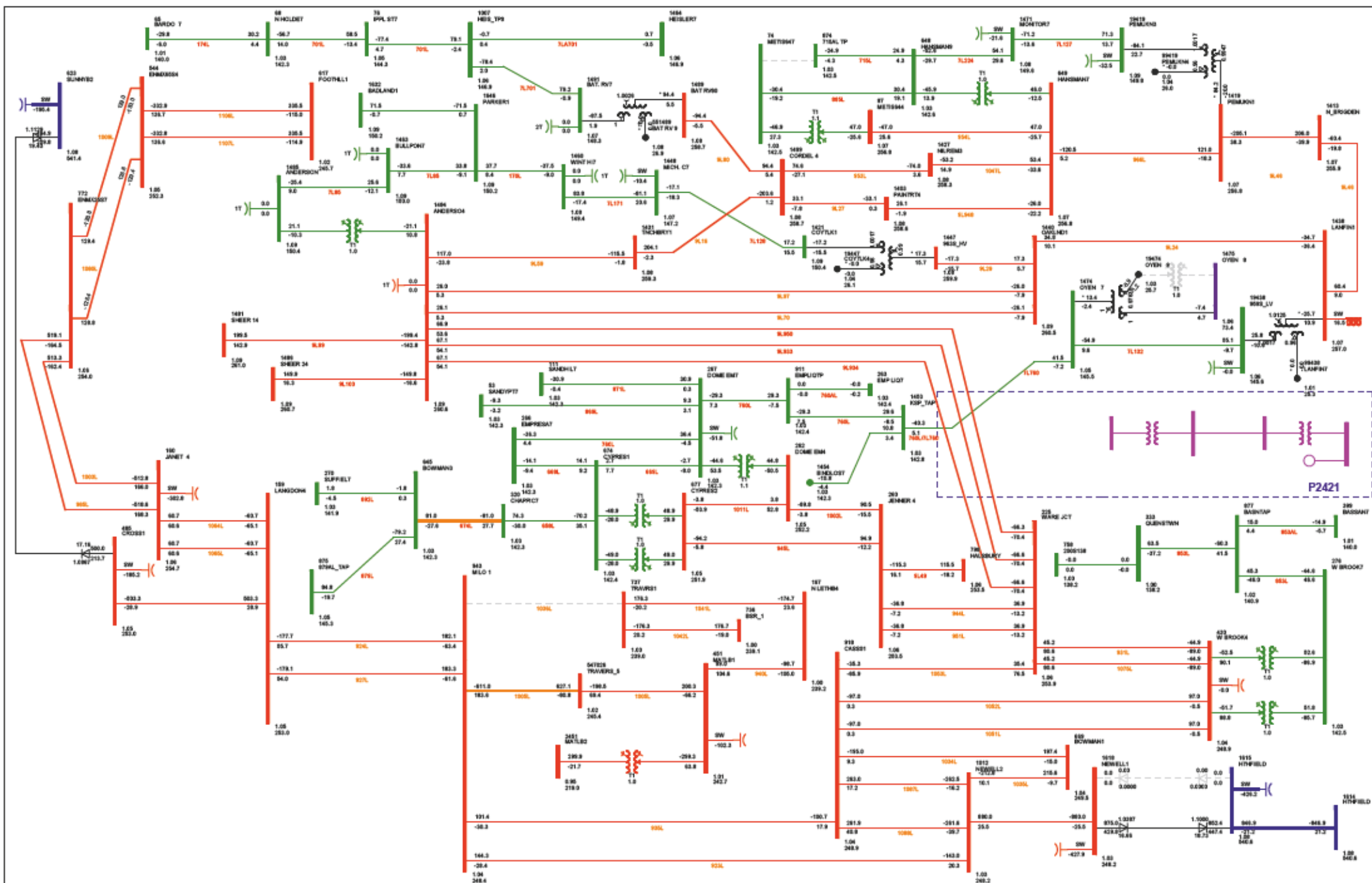
Rev: 1/19/2021
 Project: P2421
 1/19/2021 10:00:00 AM - 10/18/2021 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input: 599.8 MW Gask Input: 150.0 MW MATL Input: 300.0 MW
 MH Input: 21.3 MW

FIGURE B2-1-2 N-1: 948L (JENNER 2768 TO HALSBURY 3088)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/19/2021
 Project: 948L
 1/19/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM

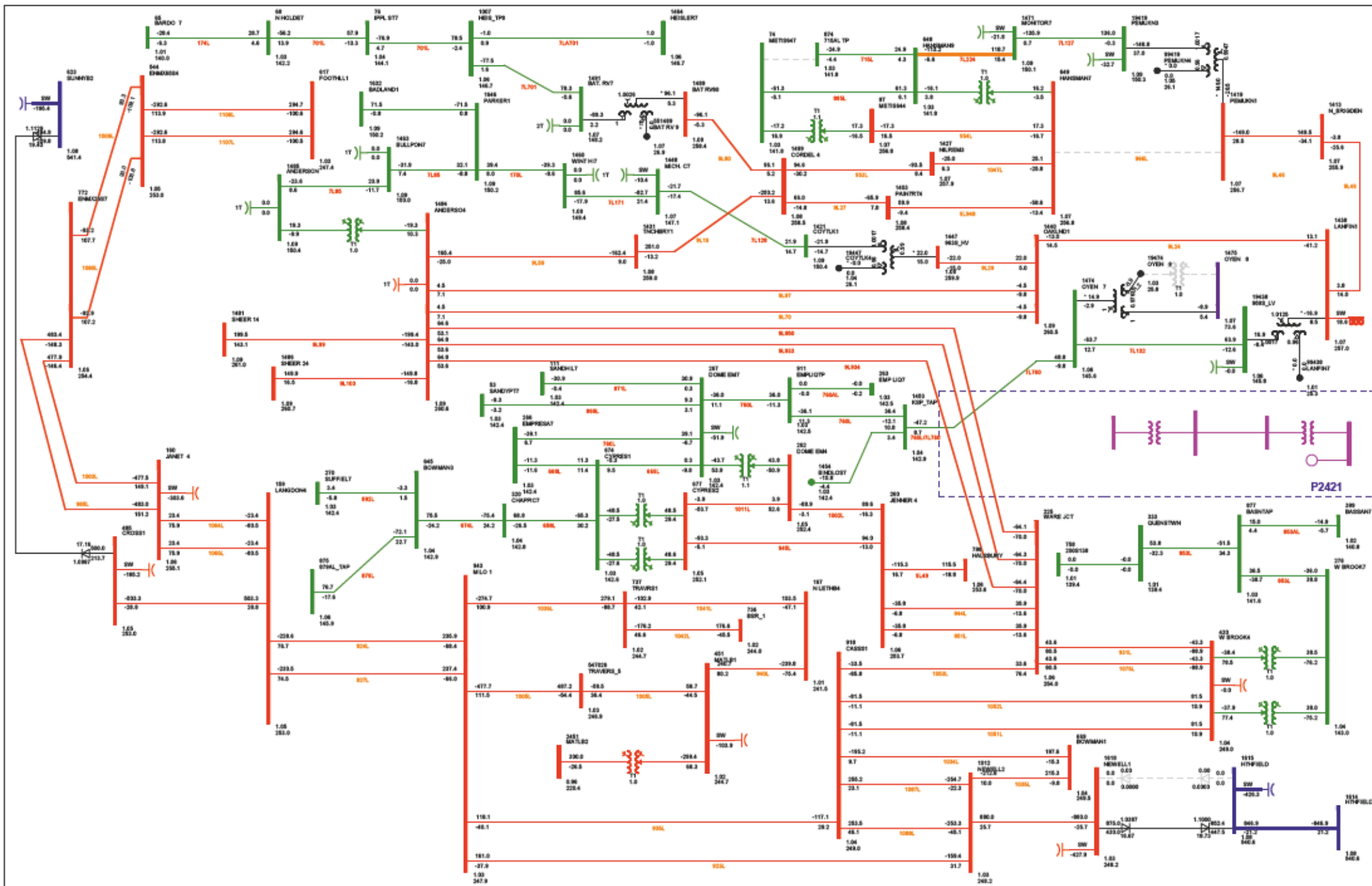


P2421 RESC Big Sky MPC Solar

DC Input=407.6 MW Gask Input=150.0 MW MATL Input=289.9 MW
 MH Input=21.3 MW

FIGURE B2-1-3 N-1: 1038L (MILO 3688 TO TRAVERS 6548)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/15/2021
 Project: P2421
 Location: Big Sky
 Scale: 1:1000
 Author: J. Smith
 Date: 10/08/2021



P2421 RESC Big Sky MPC Solar

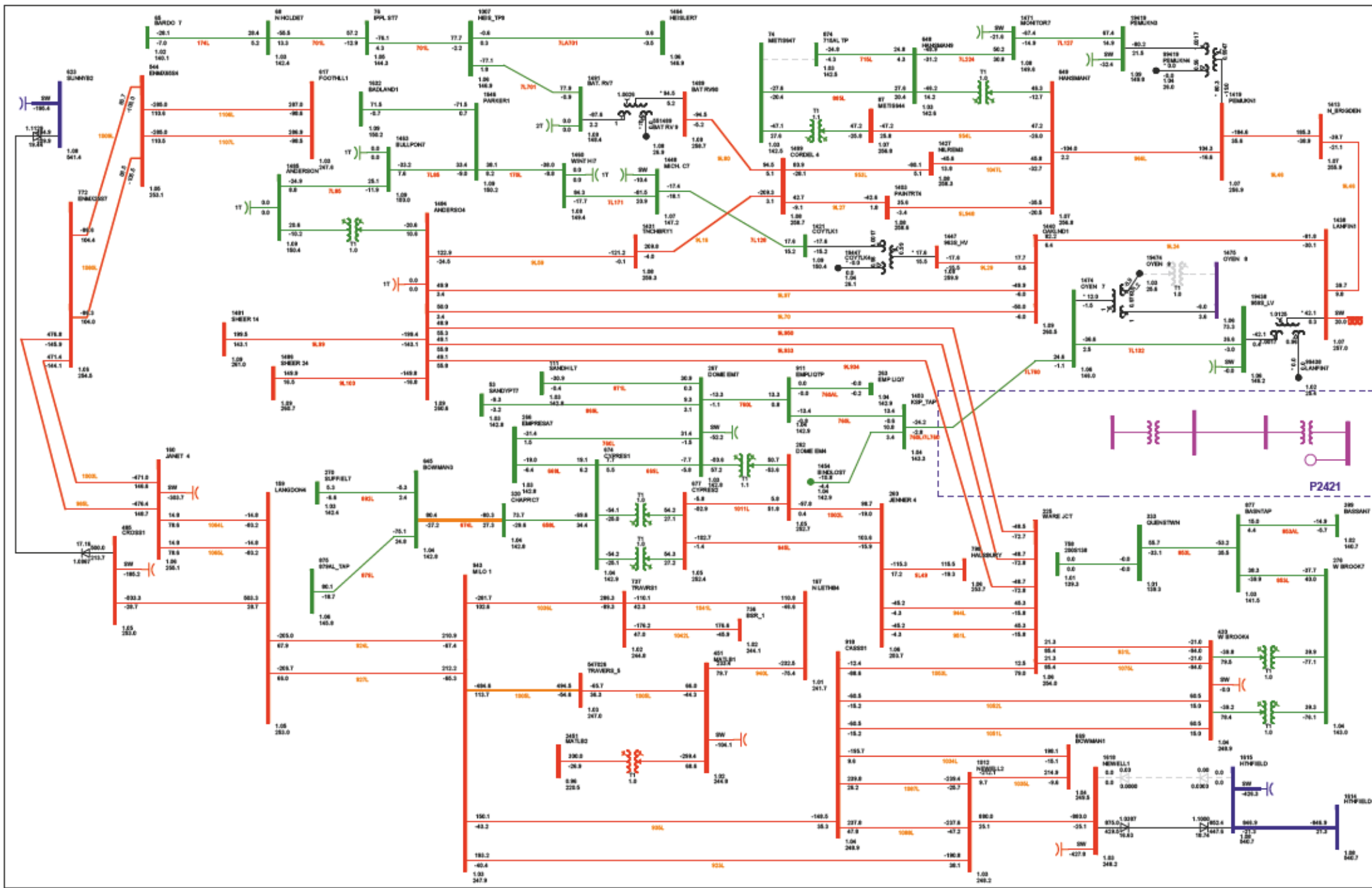
DC Input: 401.4 MW Gask Input: 150.0 MW MATL Input: 300.0 MW
 MH Input: 23.3 MW

FIGURE B2-1-4 N-1: 8L888 (PEMUKAN 8328 TO HANSMAN LAKE 8508)

2023 SUMMER PEAK (PRE-CONNECTION)

PRINTED ON SATURDAY 08. OCTOBER 2021

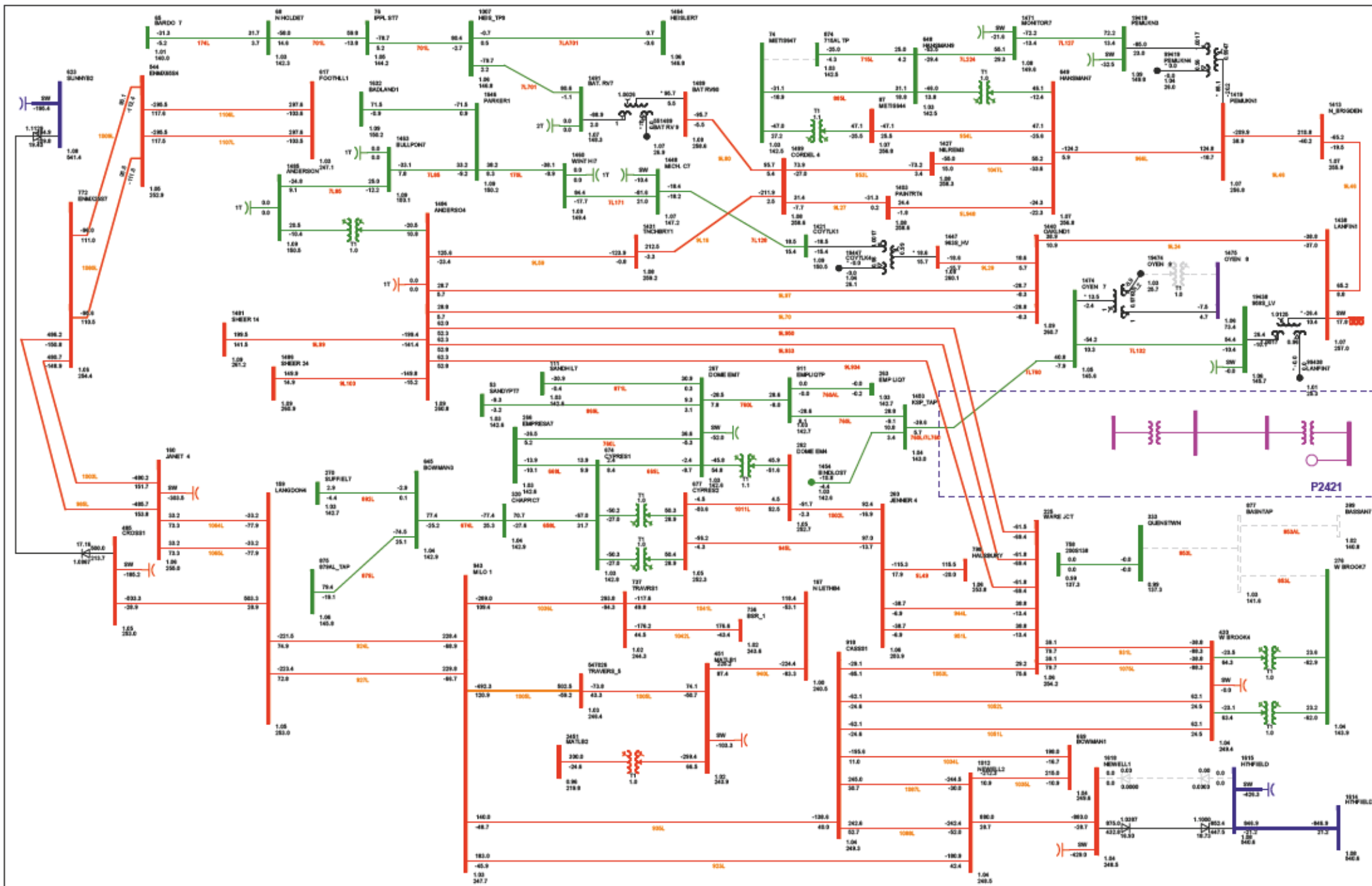
Rev: 1/10/2021
 Project: 8L888
 Location: 8L888
 Date: 08-08-2021



P2421 RESC Big Sky MPC Solar
 DC Input=326.7 MW Sdk Input=150.0 MW MATL Input=300.0 MW
 MH Input= 23.3 MW

FIGURE B2-1-5 N-1: 7L238 (LANFNE 9688 TO BUFFALO BIRD 8018)
2023 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON SATURDAY 08. OCTOBER 2021

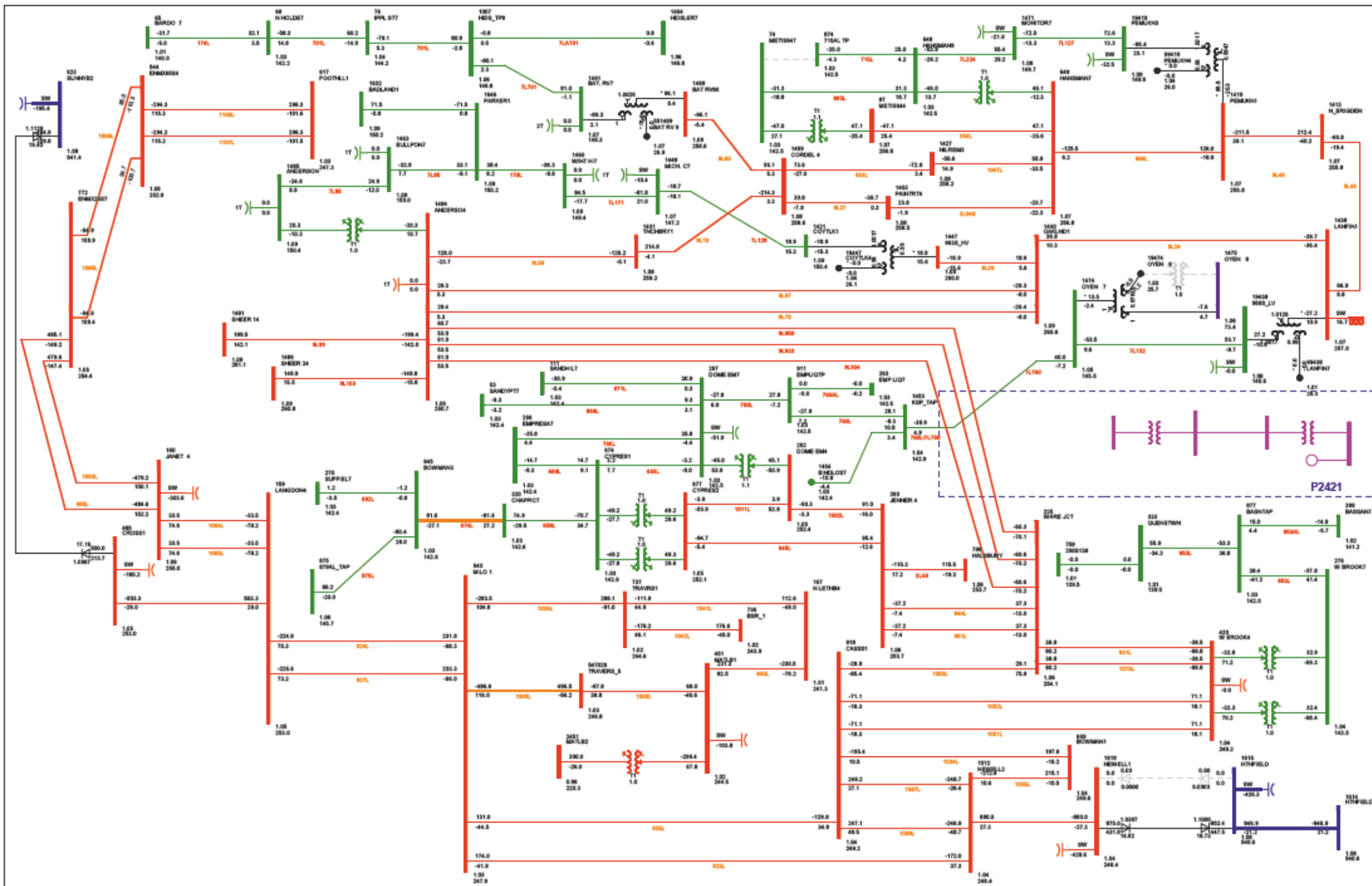
En: 7/19/2021
 Project: P2421
 User: J. L. H. / 10/08/2021 10:00:00 AM
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P2421 RESC Big Sky MPC Solar
 DC Input: 447.0 MW Gask Input: 150.0 MW MATL Input: 300.0 MW
 MH Input: 21.3 MW

FIGURE B2-1-8 N-1: 863L (QUEENSTOWN 604S TO WEST BROOKS 28S)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

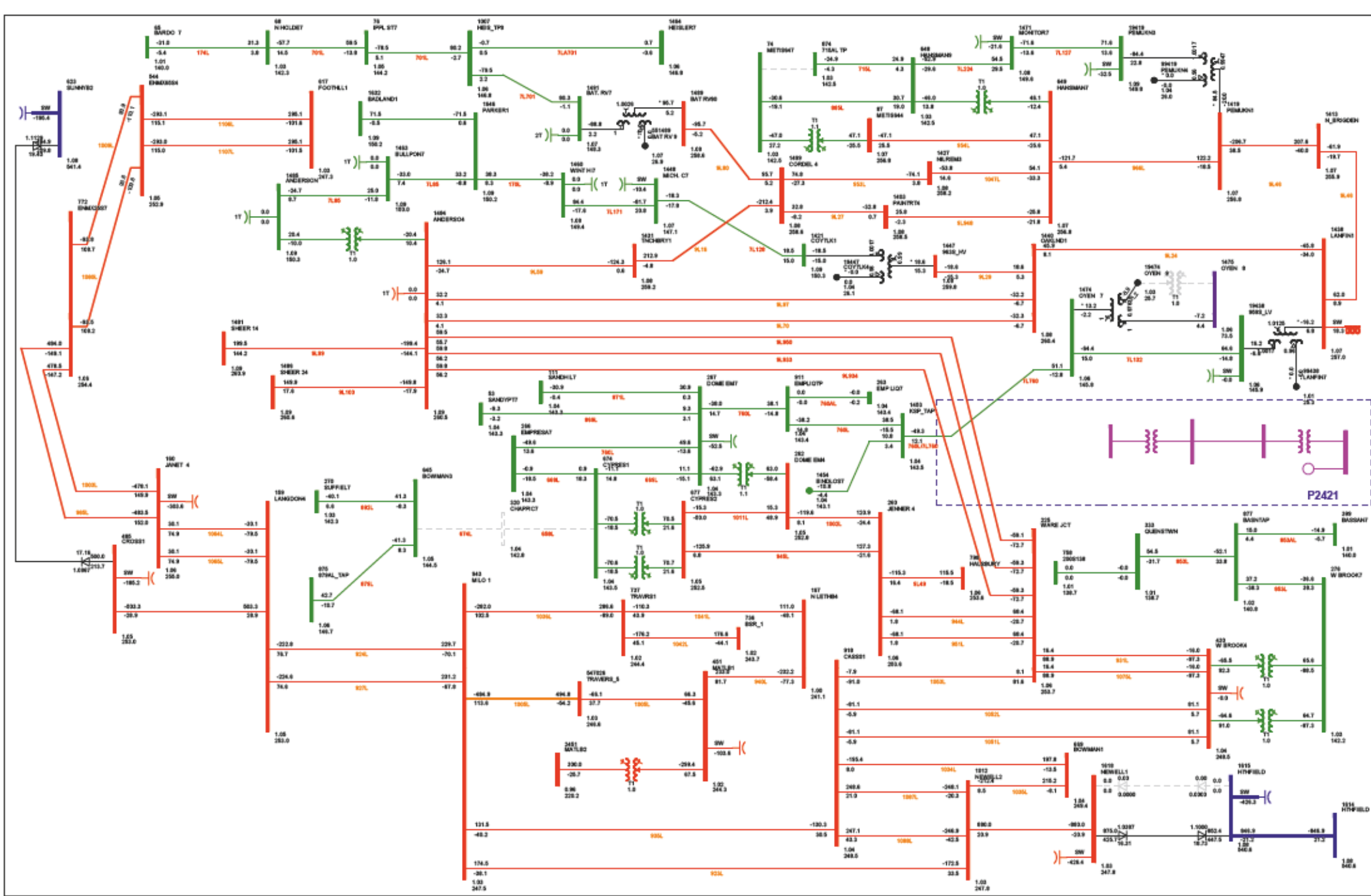
Rev: 1/10/2021
 Project: P2421
 1/10/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input=30.4 MW Gas Input=150.0 MW MATL Input=300.0 MW
 MH Input= 21.3 MW

FIGURE B2-1-7 N-1: 783L (WEST BROOKS 288 TO VAUXHALL 1658)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

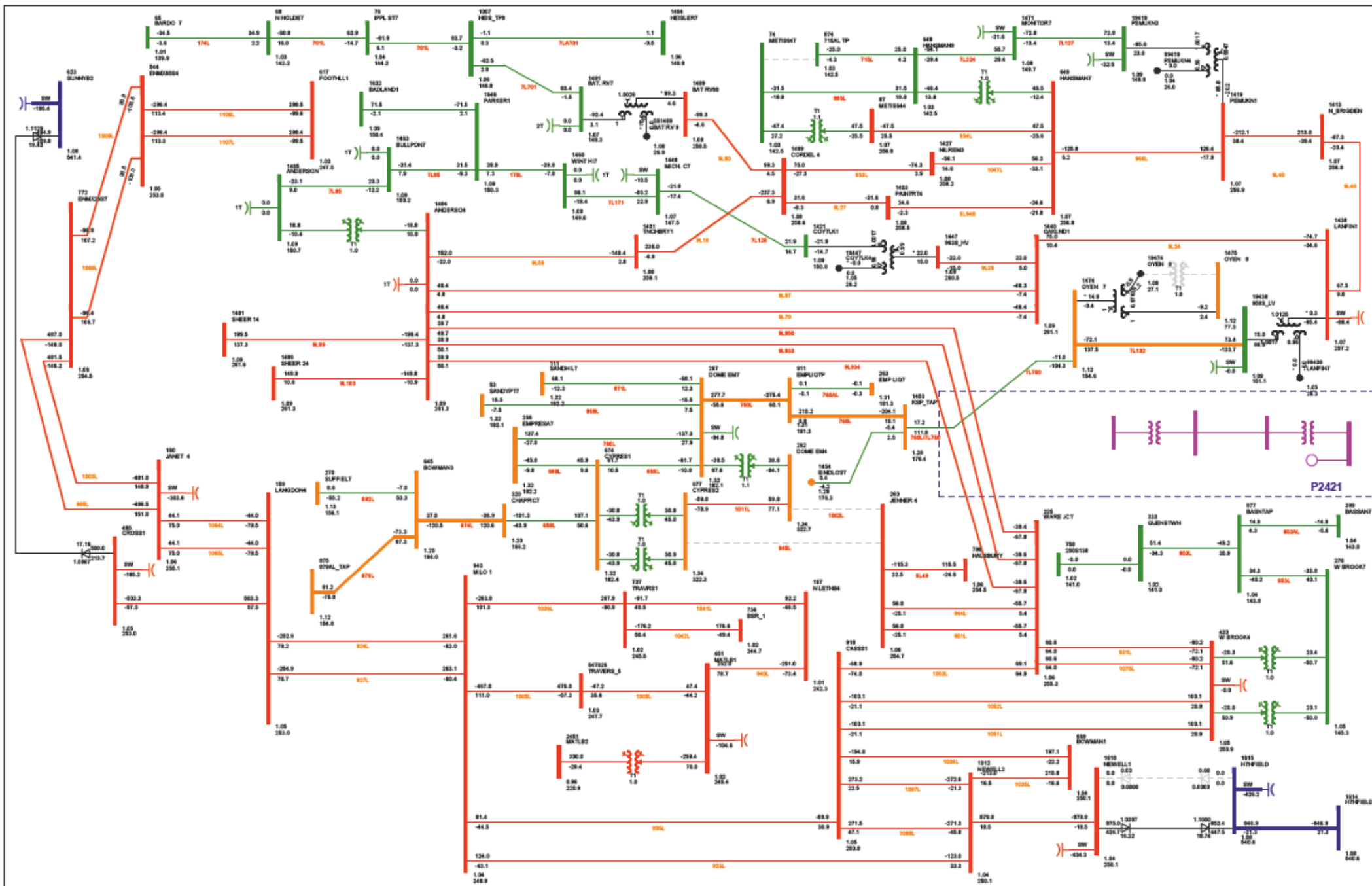
Rev: 1/10/2021
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Author: [Name]
 Date: 08/10/2021



P2421 RESC Big Sky MPC Solar
 DC Input=453.2 MW Gask Input=150.0 MW MATL Input=300.0 MW
 MH Input= 21.3 MW

FIGURE B2-1-8 N-1: 68L/874L (CYPRES 8 6825 TO BOWMANTON 2445)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

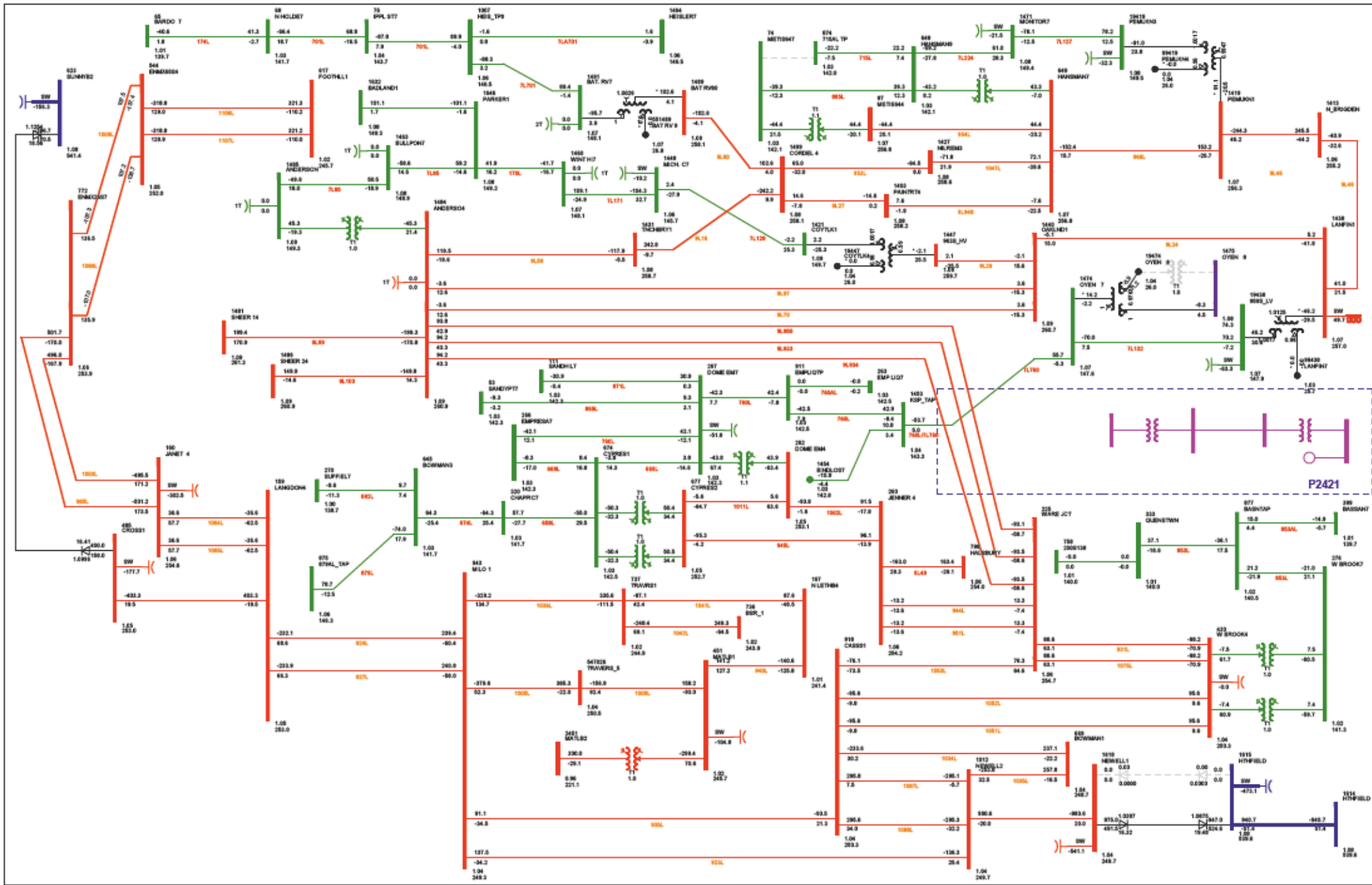
Rev: 1/19/2021
 Prepared by: [unreadable]
 Checked by: [unreadable]
 Approved by: [unreadable]



P2421 RESC Big Sky MPC Solar
 DC Input: 340.0 MW Gas Input: 300.0 MW MATL Input: 300.0 MW
 MH Input: 22.4 MW

FIGURE B2-1-9 N-2: 1002L_846L (JENNER 2763 TO AMOCO EMPRES3 1833 TO CYPRE33 6823)(BLOW UP)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

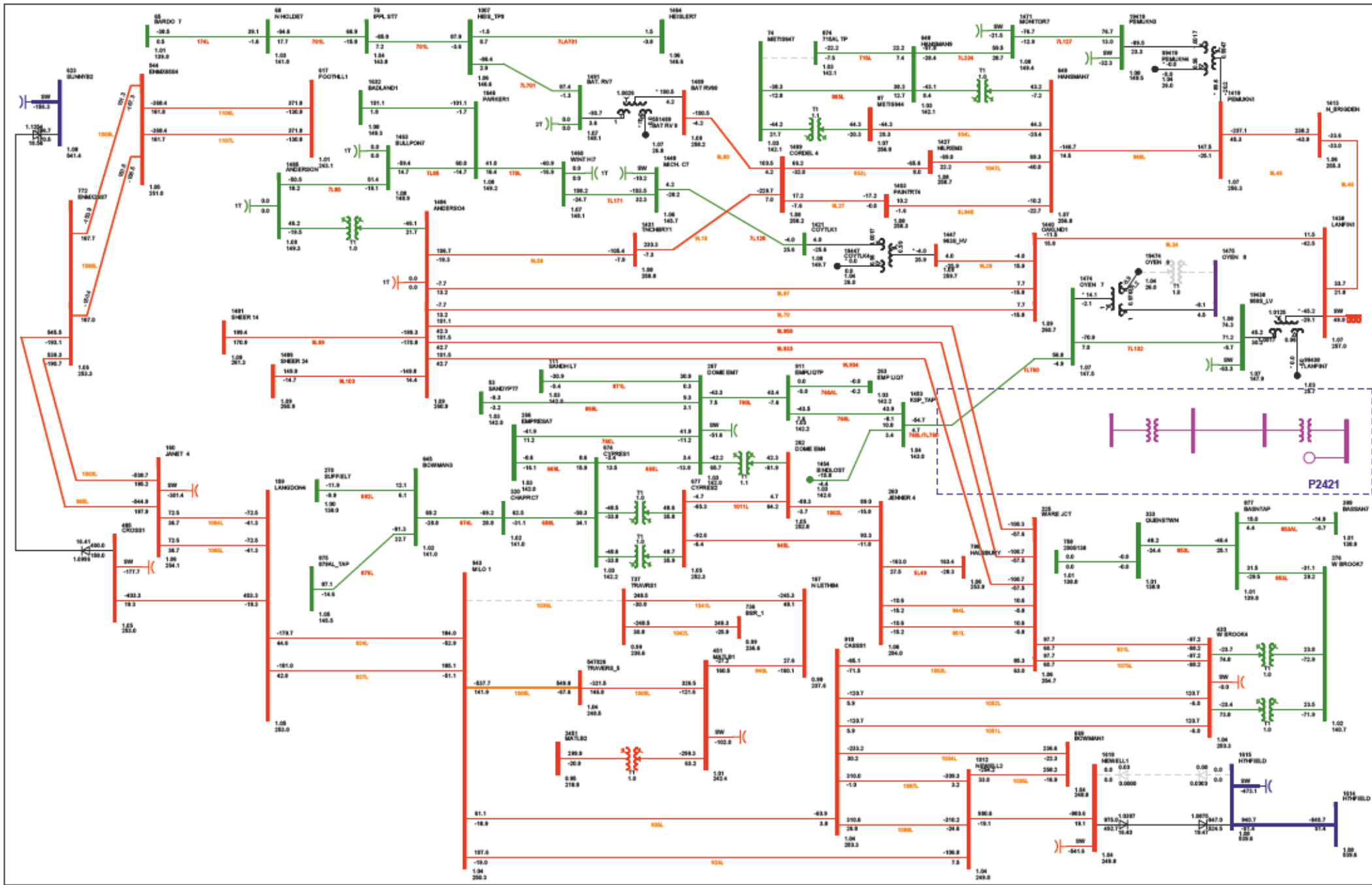
Rev: 1/10/2021
 Project: 1002L_846L
 1002L_846L (JENNER 2763 TO AMOCO EMPRES3 1833 TO CYPRE33 6823)
 1002L_846L (JENNER 2763 TO AMOCO EMPRES3 1833 TO CYPRE33 6823)



P2421 RESC Big Sky MPC Solar
 DC Input=329.5 MW Gask Input=150.0 MW MATL Input=320.0 MW
 MH Input=42.9 MW

FIGURE BS-1-1-N-0: NORMAL OPERATION
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

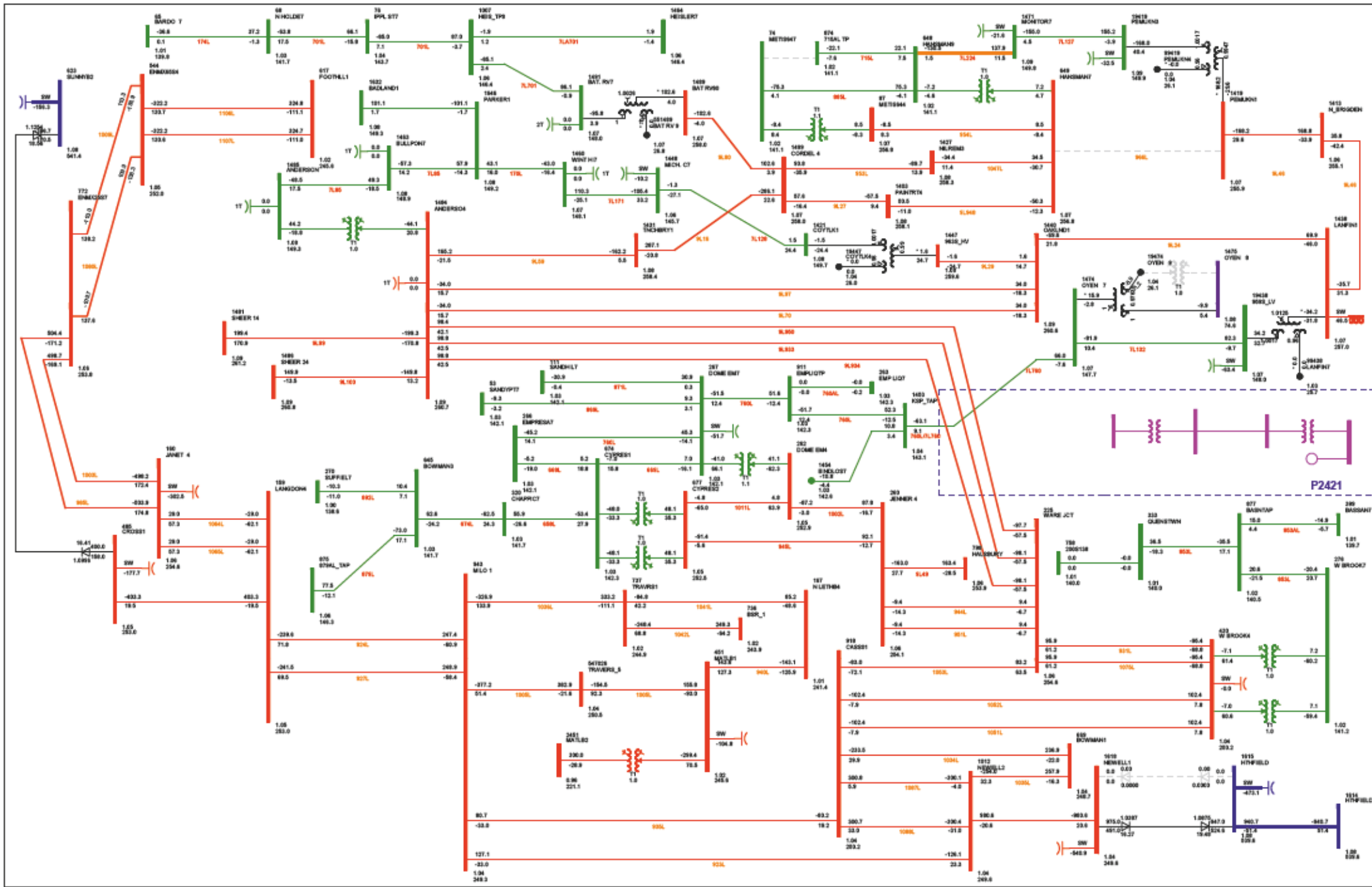
BS-1-1-1-N-0
 10/8/21 10:00 AM
 10/8/21 10:00 AM
 10/8/21 10:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input: 356.0 MW Gask Input: 150.0 MW MATL Input: 289.9 MW
 MH Input: 42.9 MW

FIGURE BS-1-2 N-1: 1038L (MILO 3688 TO TRAVERS 6548)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

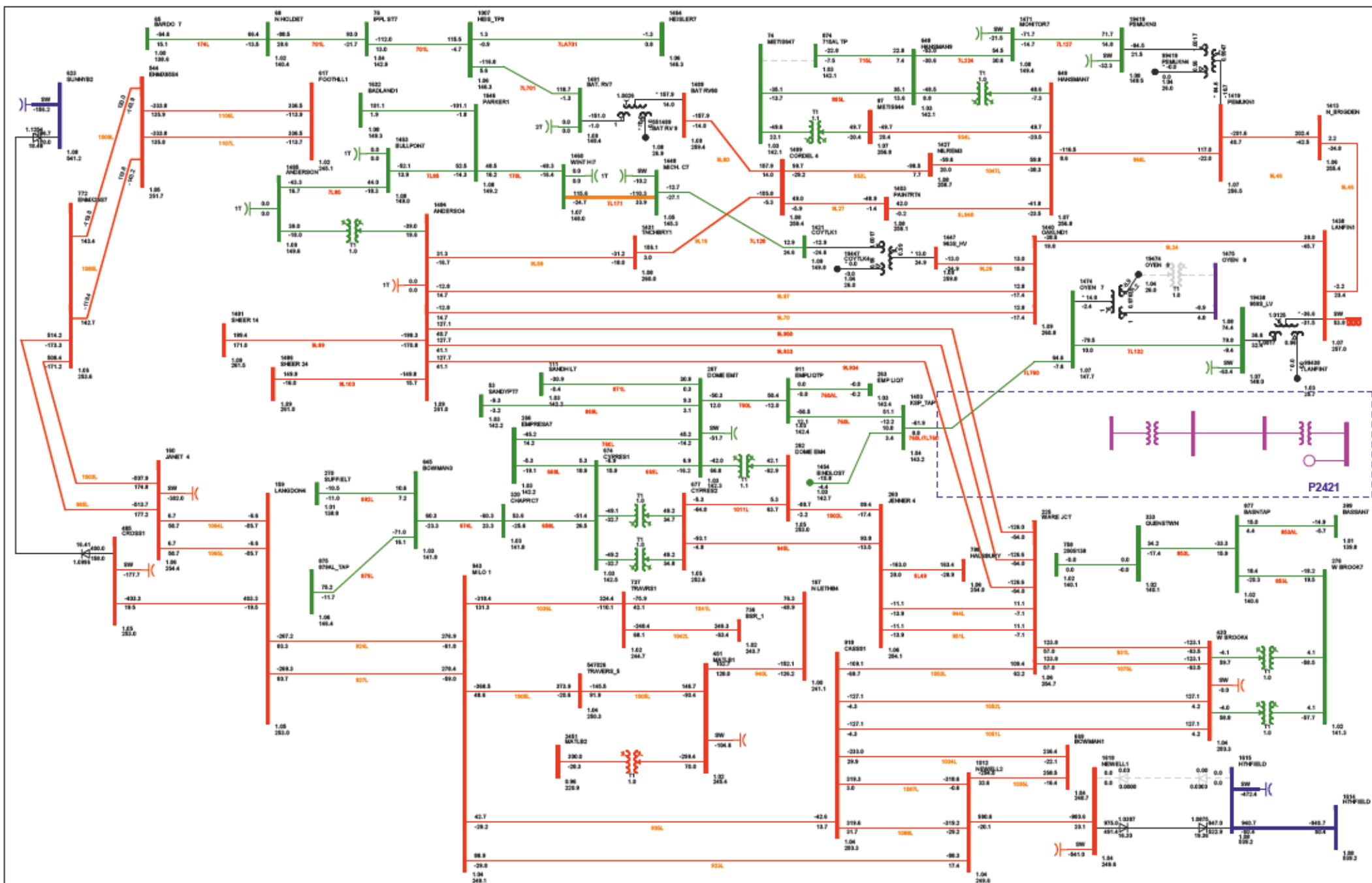
Rev: 1/10/2021
 Project: RESC
 1038L (MILO 3688 TO TRAVERS 6548)



P2421 RESC Big Sky MPC Solar
 DC Input=348.0 MW Sack Input=150.0 MW MATL Input=300.0 MW
 MH Input=42.9 MW

FIGURE BS-1-3 N-1: 8L886 (PEMUKAN 8328 TO HANSMAN LAKE 8508)
2023 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON SATURDAY 08. OCTOBER 2021

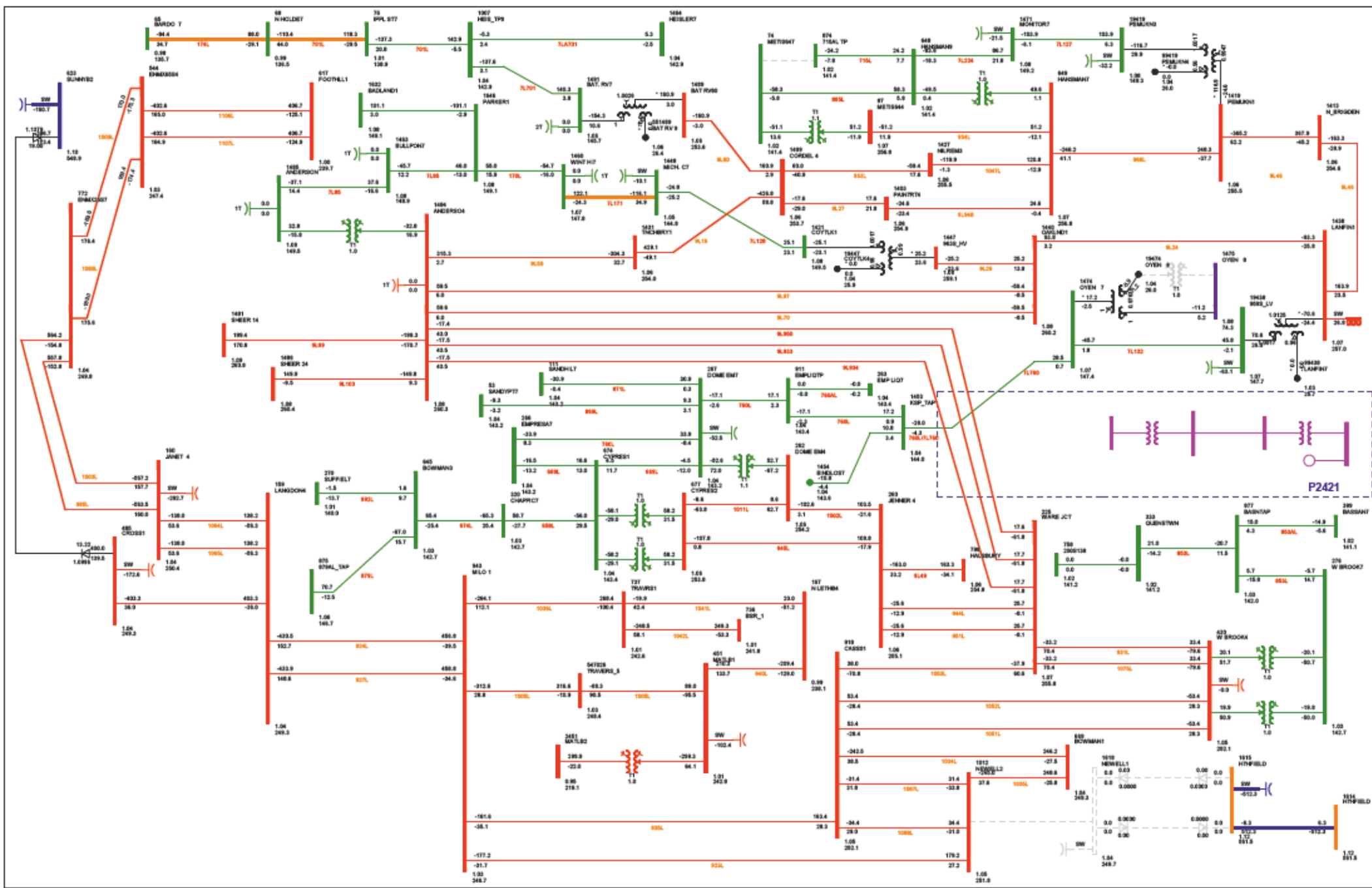
Rev: 1/10/2021
 Project: 8L886
 1/10/2021 10:00:00 AM - 10/10/2021 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input: 357.5 MW Gask Input: 150.0 MW MATL Input: 300.0 MW
 MH Input: 42.9 MW

FIGURE BS-1-4 N-1: 8L20 (NEVIS 7888 TO CORDEL 7658)
 2023 SUMMER PEAK (PRE-CONNECTION)
 PRINTED ON SATURDAY 08. OCTOBER 2021

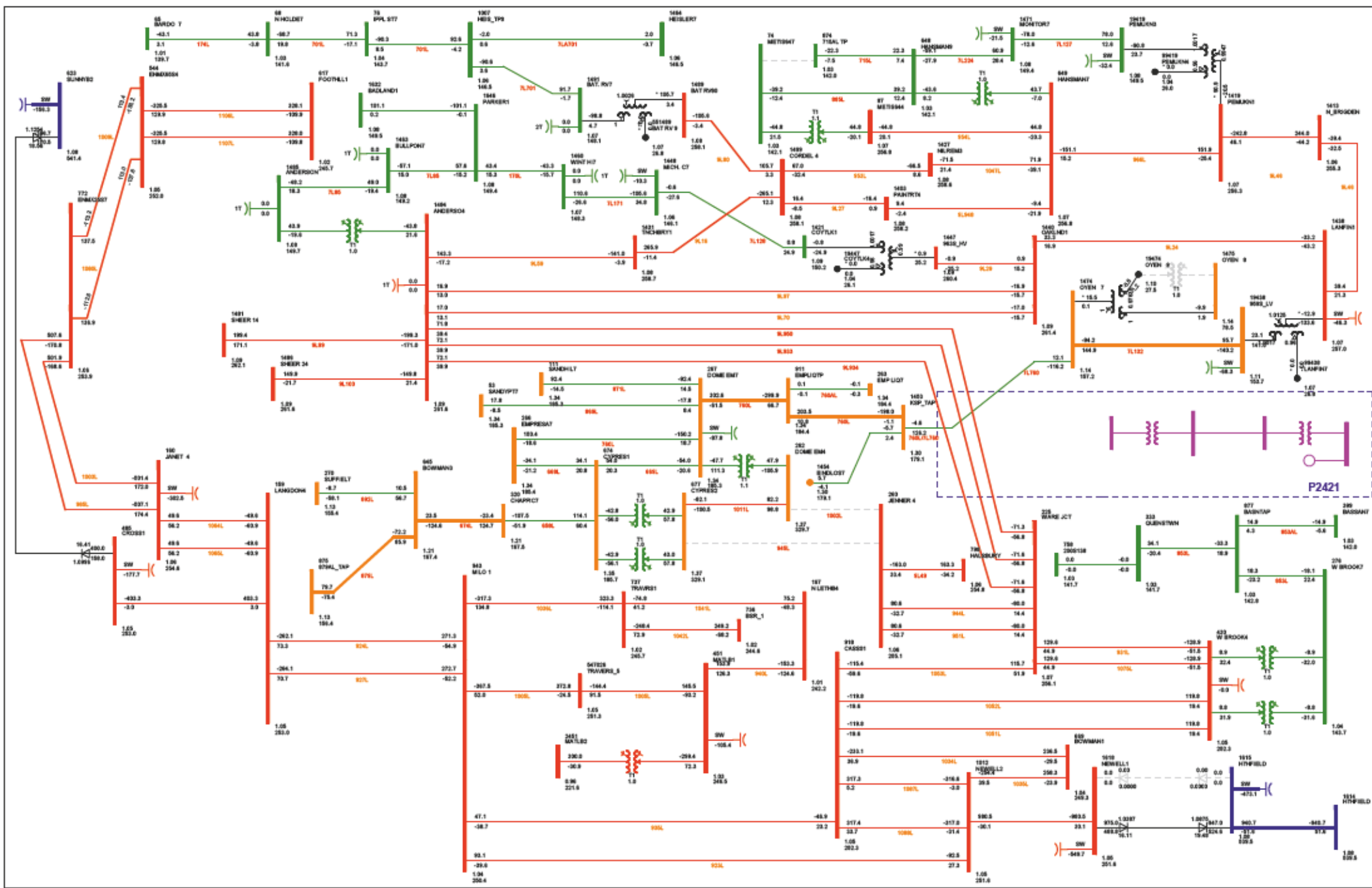
BS-1-4-4-1
 Project: RESC
 Date: 10/08/21
 10/08/21 10:00:00 - 10/08/21 10:00:00



P2421 RESC Big Sky MPC Solar
 DC Input-623.5 MW Sdk Input-150.0 MW MATL Input-289.9 MW
 MH Input-42.9 MW

FIGURE BS-1-5 N-1: EATL
2023 SUMMER PEAK (PRE-CONNECTION)
PRINTED ON SATURDAY 08. OCTOBER 2023

Rev: 1/10/2024
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Author: [Name]
 Date: 08.10.2023



P2421 RESC Big Sky MPC Solar

DC Input: 232.3 MW Gas Input: 294.7 MW MATL Input: 302.0 MW
 MH Input: 42.9 MW

FIGURE BS-1-8 N-2: 1002L_846L (JENNER 2763 TO AMOCO EMPRES 1833 TO CYPRES 6823)(BLOW UP)

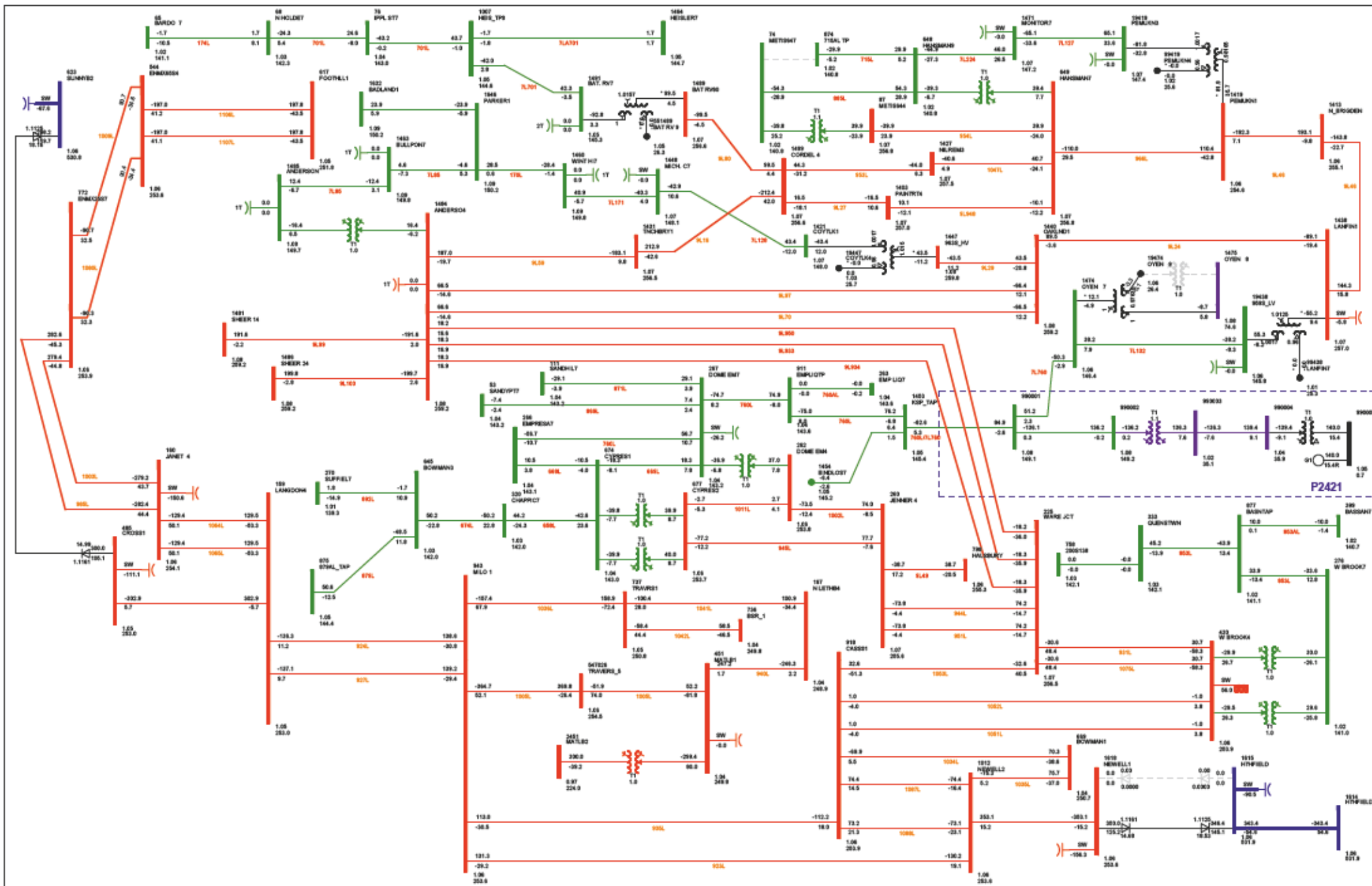
2023 SUMMER PEAK (PRE-CONNECTION)

PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/10/2021
 Project: 1002L_846L
 1002L_846L_001-1002L_01000-488.00-00.00

Attachment A3

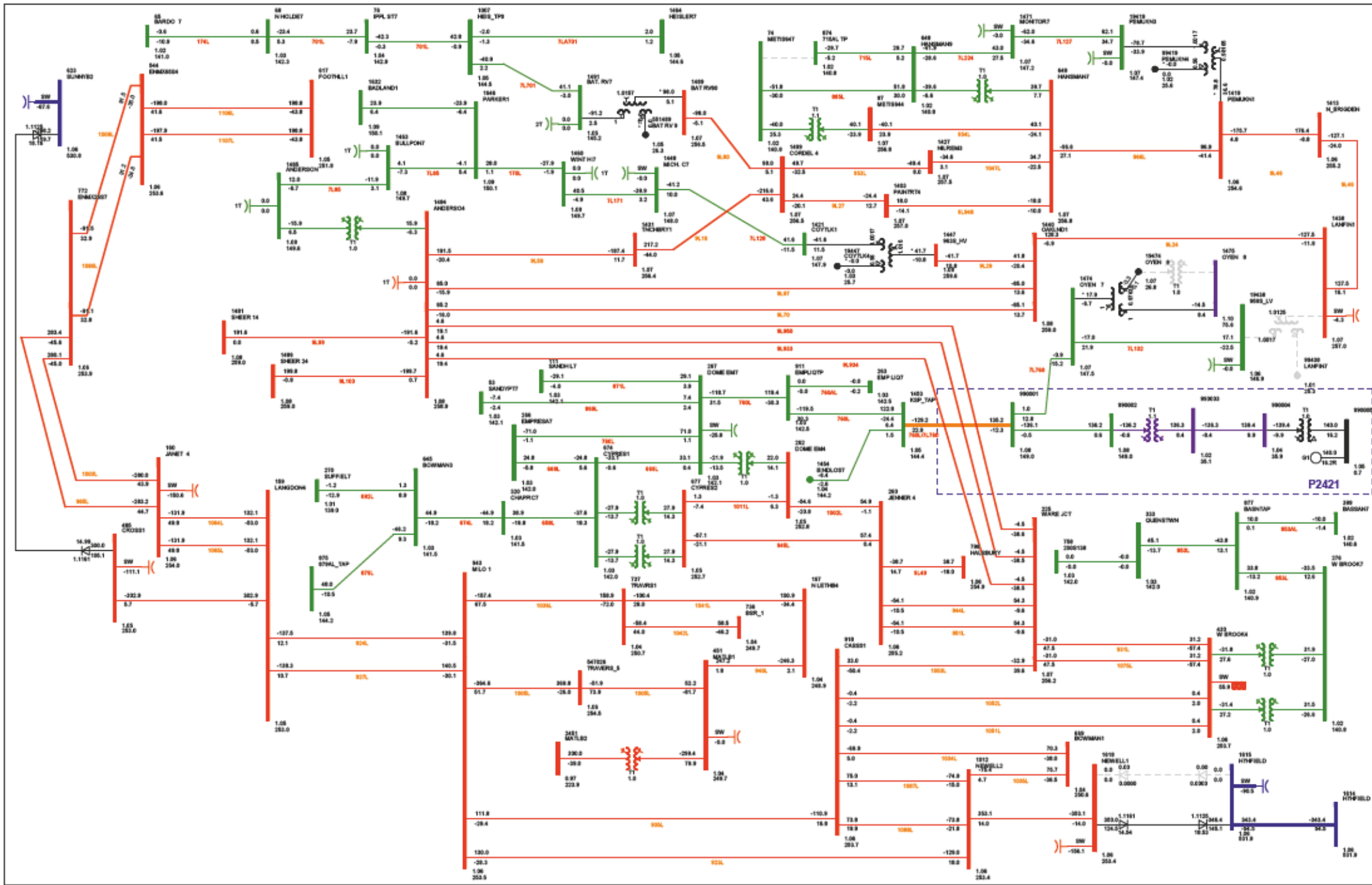
Post-Project Power Flow Diagrams Alternative 1 (Scenarios 4 to 6)



P2421 RESC Big Sky MPC Solar
 DC Invert-658.4 MW Sack Invert-150.0 MW MATL Invert-300.0 MW
 MH Invert-16.3 MW

FIGURE C1-1-1-N-0: NORMAL OPERATION
 2023 SUMMER LIGHT (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

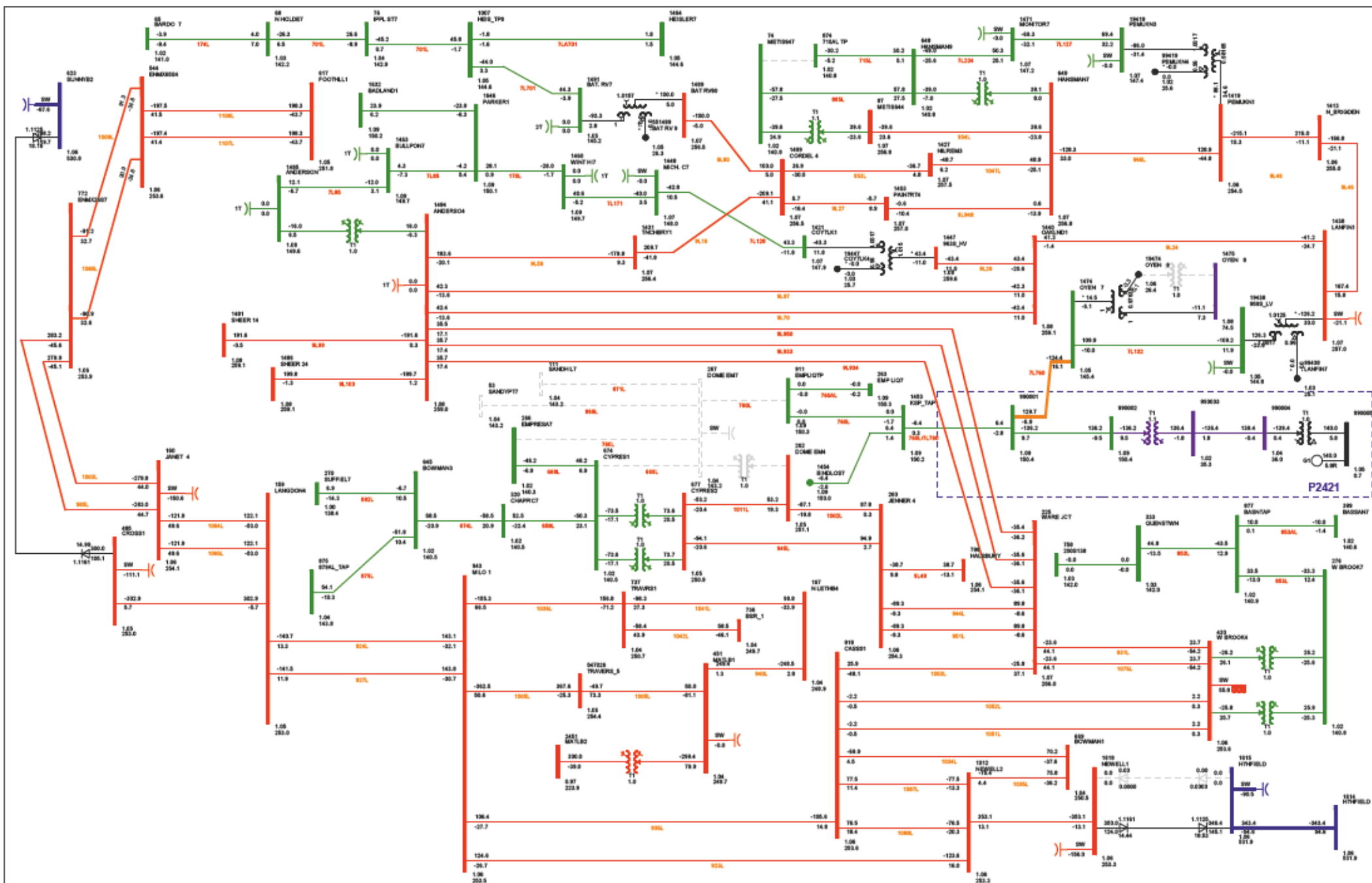
Rev: 1/10/2021
 Project: P2421
 1/10/2021 10:00:00 AM - 10/10/2021 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Inport: 664.1 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 16.3 MW

FIGURE C1-1-2 N-1: A868ST1 (LANFNE 9688 TRANSFORMER T1)
2023 SUMMER LIGHT (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

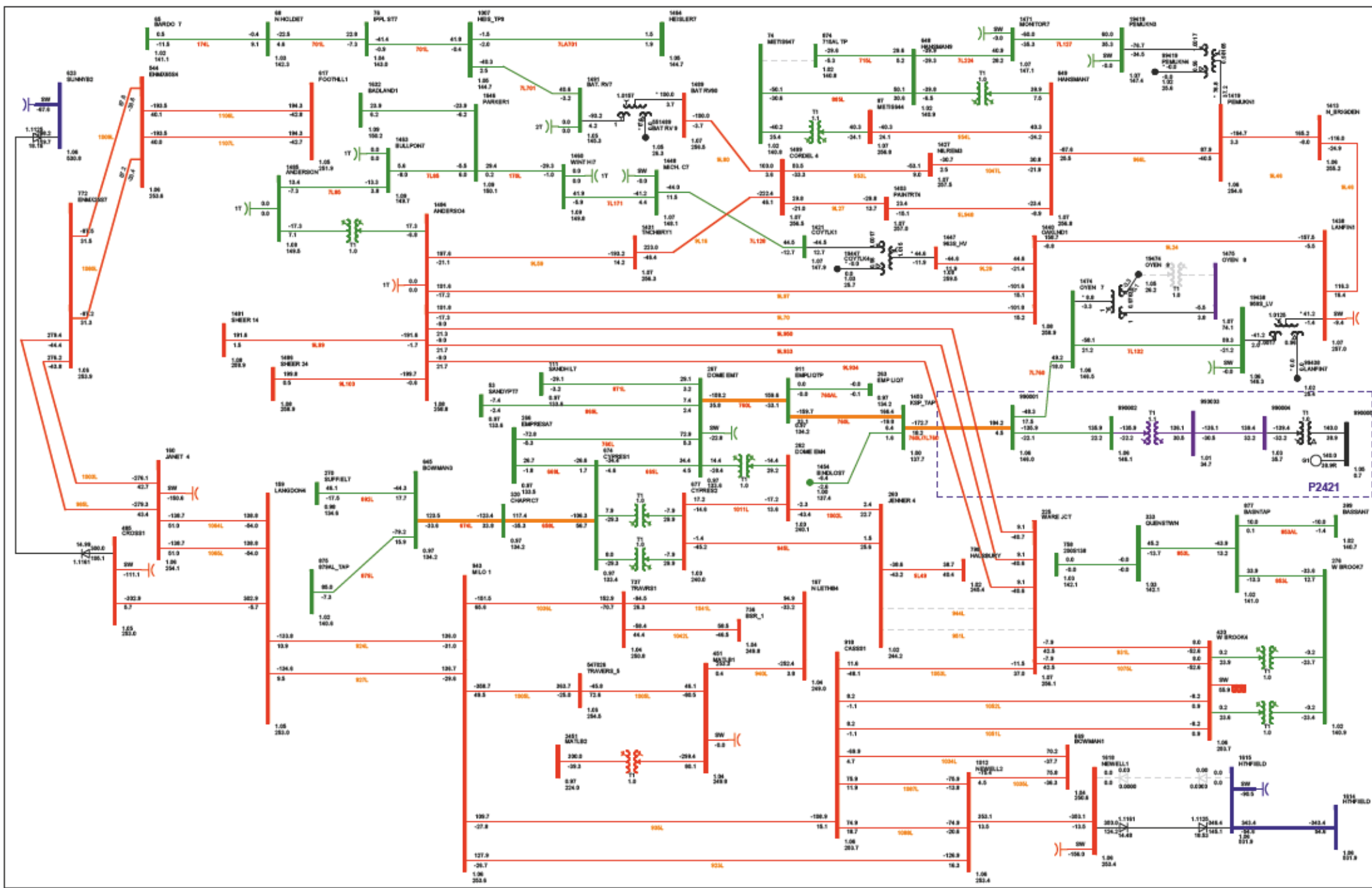
Rev: 1/10/2021
 Project: P2421
 Location: Big Sky
 Date: 10/08/2021



P2421 RESC Big Sky MPC Solar
 DC Input=425.1 MW Sack Input=150.0 MW MATL Input=300.0 MW
 MH Input= 16.3 MW

FIGURE C1-1-3 N-1: 1838T6 (AMOCO EMPRESS 1838 TRANSFORMER T6)
 2023 SUMMER LIGHT (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/18/2021
 Project: 1838T6
 1838T6 (AMOCO EMPRESS 1838 TRANSFORMER T6)
 1838T6 (AMOCO EMPRESS 1838 TRANSFORMER T6)
 1838T6 (AMOCO EMPRESS 1838 TRANSFORMER T6)

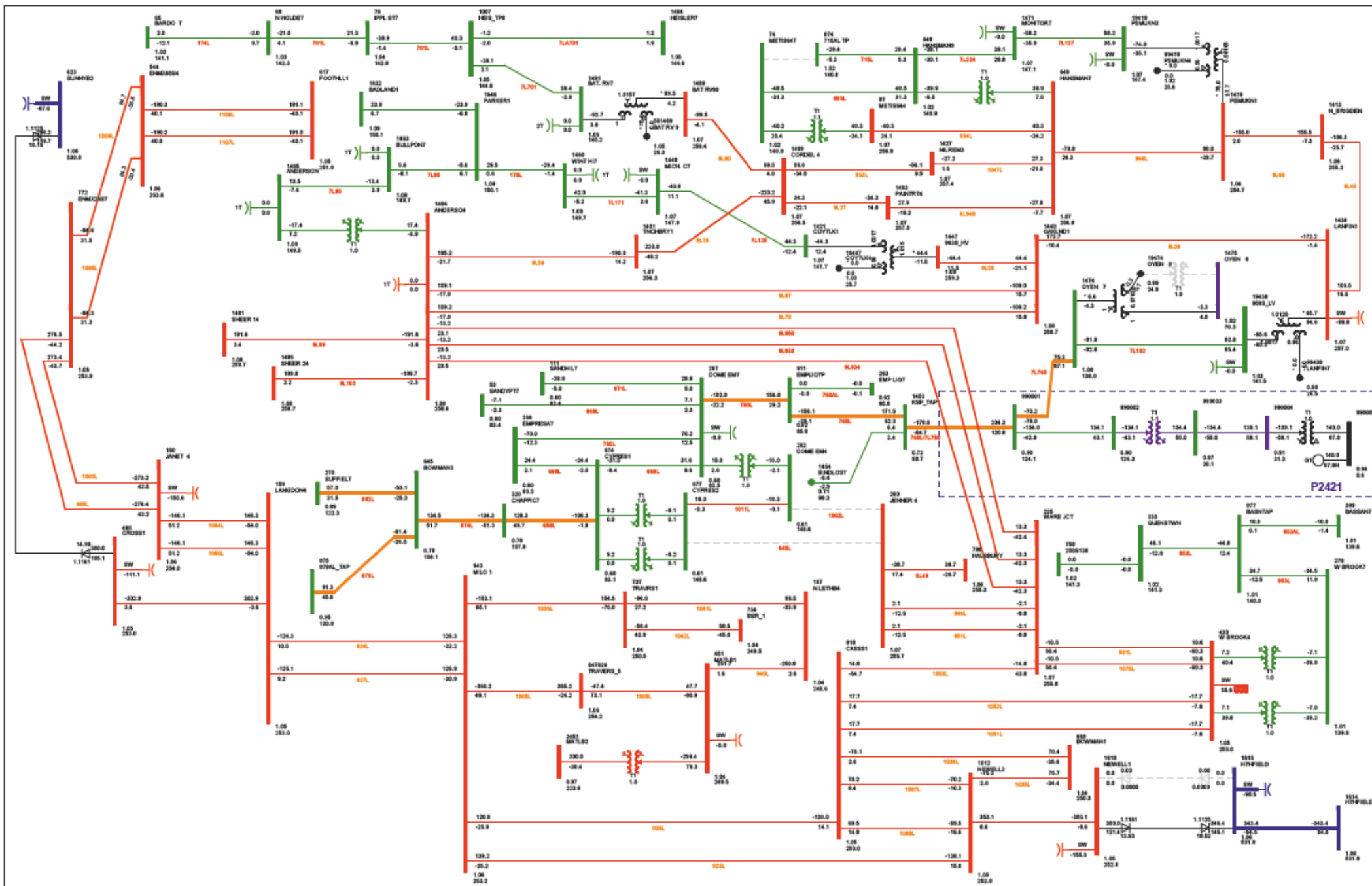


P2421 RESC Big Sky MPC Solar

DC Inpt:-902.4 MW Sack Inpt:-150.0 MW MATL Inpt:-300.0 MW
 MH Inpt: 16.3 MW

FIGURE C1-1-4 N-1: 844L_861L (JENNER 2765 TO WARE JUNCTION 1325)
2023 SUMMER LIGHT (POST-A1)
PRINTED ON SATURDAY 08. OCTOBER 2021

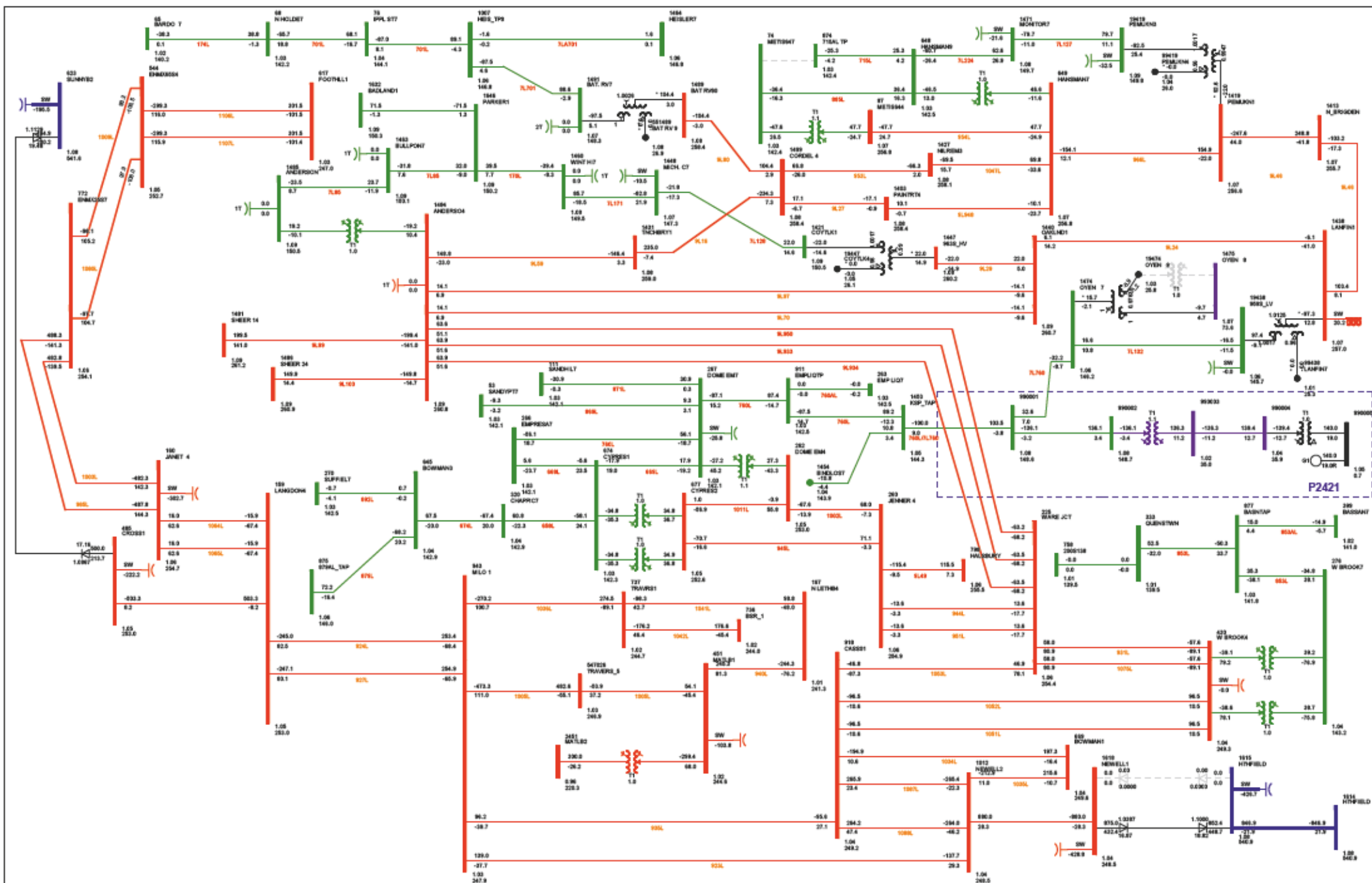
Rev: 1/15/2021
 Project: 844L_861L
 1/15/2021 10:00 AM - 10:00 AM - 10:00 AM - 10:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input=756.2 MW Sack Input=140.8 MW MATL Input=300.0 MW
 MH Input= 76.3 MW

FIGURE C1-1-5-N-2: 1002L_846L (JENNER 2768 TO AMOCO EMPRES 1838 TO CYPRES 6828)
 2023 SUMMER LIGHT (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

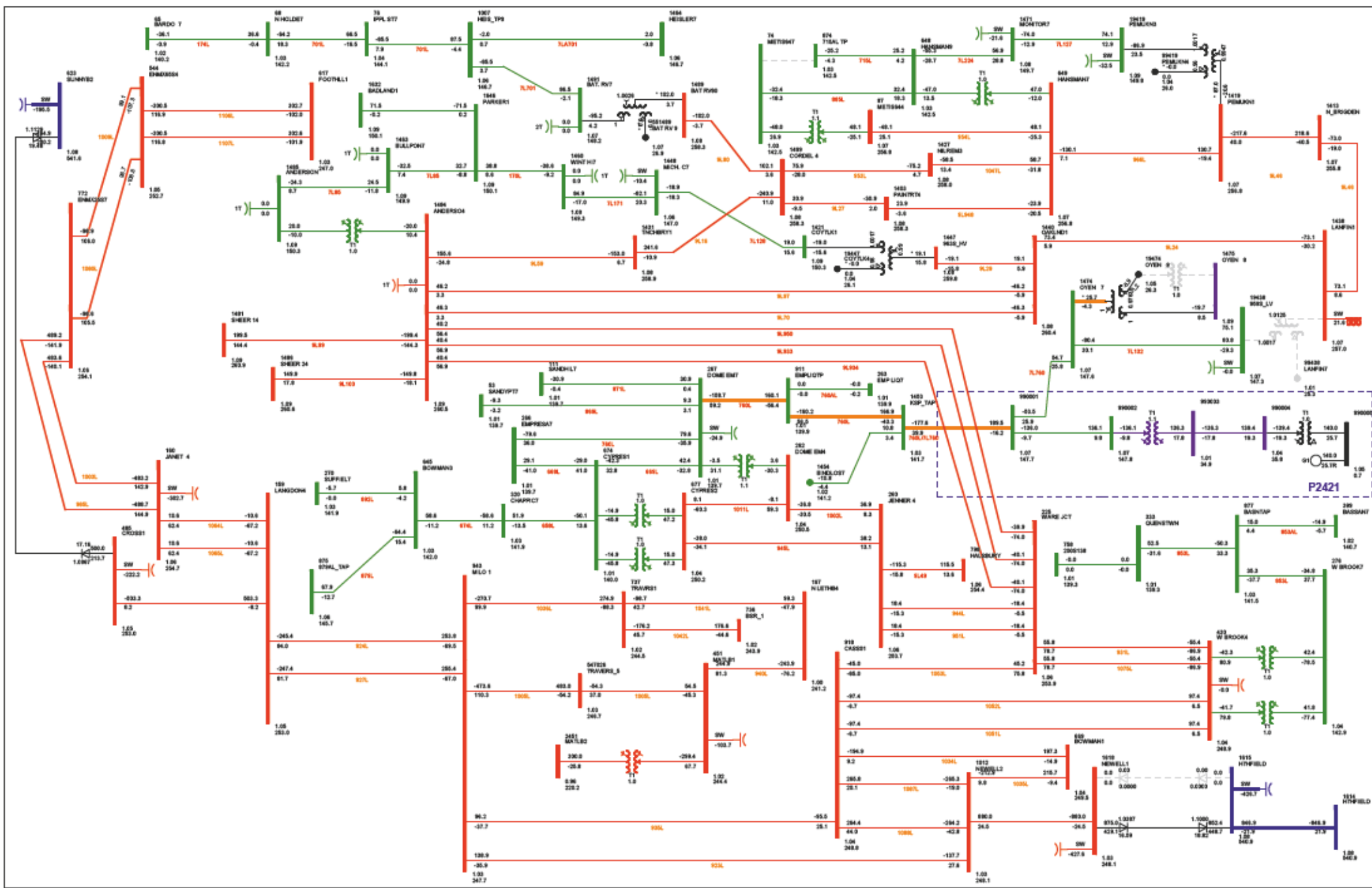
Rev: 1/10/2021
 Project: P2421
 1002L_846L
 1002L_846L-1002L-1002L-1002L-1002L-1002L



P2421 RESC Big Sky MPC Solar
 DC Input:-455.3 MW Sack Input:-150.0 MW MATL Input:-300.0 MW
 MH Input: 23.3 MW

FIGURE C2-1-1-N-0: NORMAL OPERATION
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

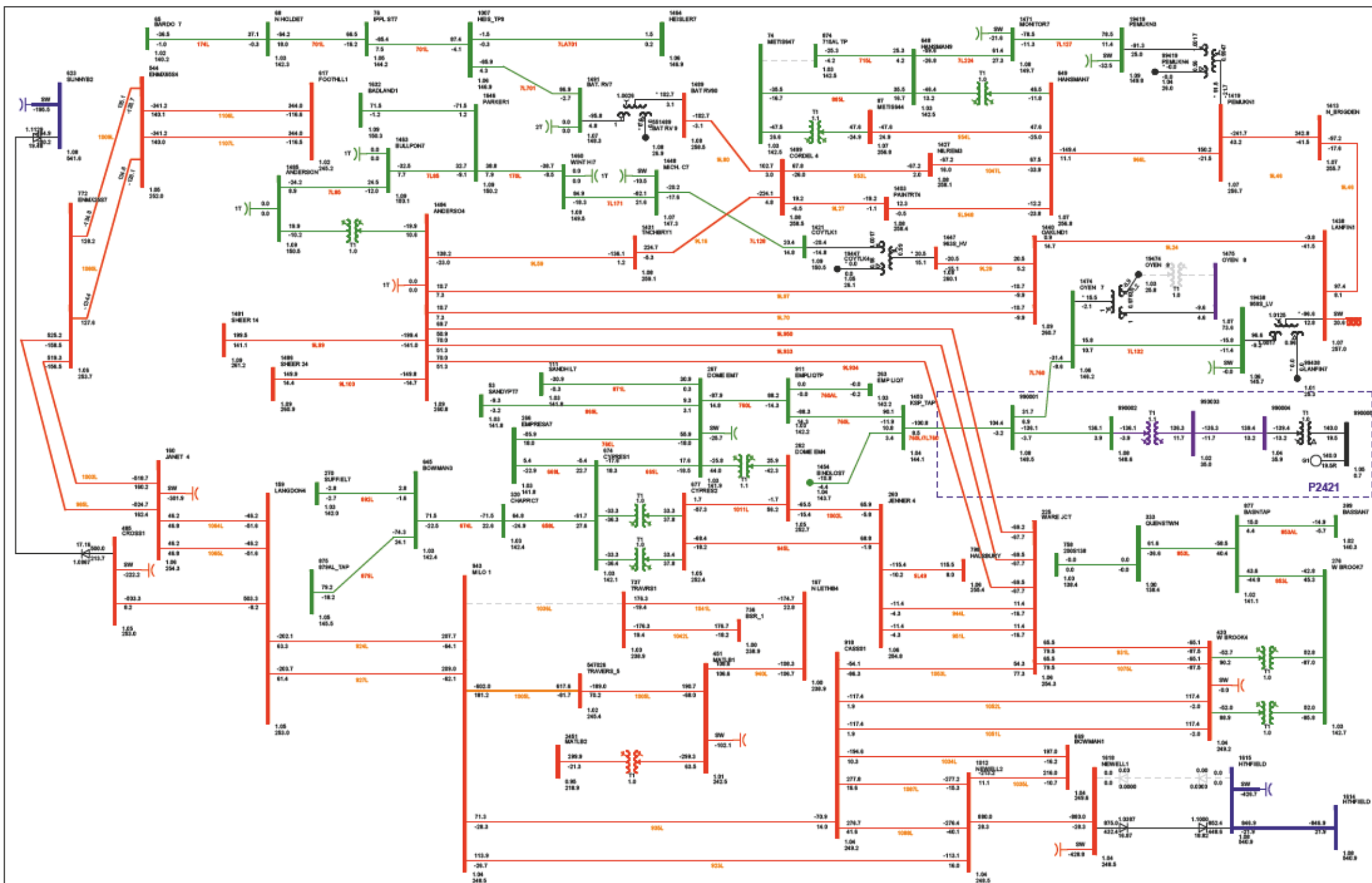
Rev: 1/10/2021
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Author: [Name]
 Date: 08/10/2021



P2421 RESC Big Sky MPC Solar
 DC Inpt:-471.8 MW Sack Inpt:-150.0 MW MATL Inpt:-300.0 MW
 MH Inpt: 23.3 MW

FIGURE C2-1-2 N-1: A868ST1 (LANFNE 9688 TRANSFORMER T1)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

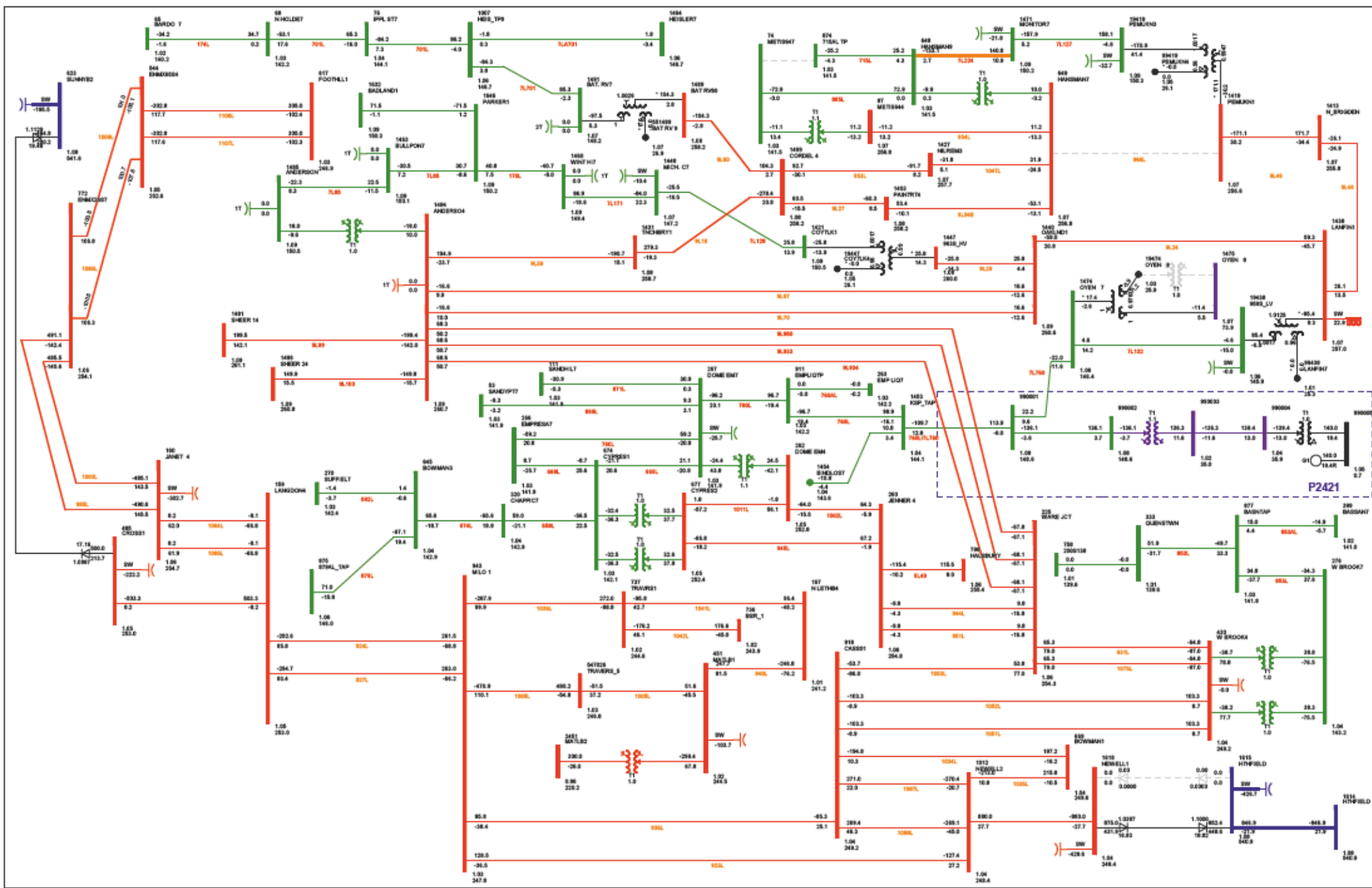
Rev: 1/10/2021
 Project: RESC
 Location: Big Sky MPC
 Scale: 1:1000
 Author: [Name]
 Date: 08/10/2021



P2421 RESC Big Sky MPC Solar
 DC Input=405.5 MW Sack Input=150.0 MW MATL Input=299.9 MW
 MH Input=21.3 MW

FIGURE C2-1-3 N-1: 1038L (MILO 3688 TO TRAVERS 6548)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/10/2021
 Project: RESC
 1038L (MILO 3688 TO TRAVERS 6548)
 1038L (MILO 3688 TO TRAVERS 6548)



P2421 RESC Big Sky MPC Solar

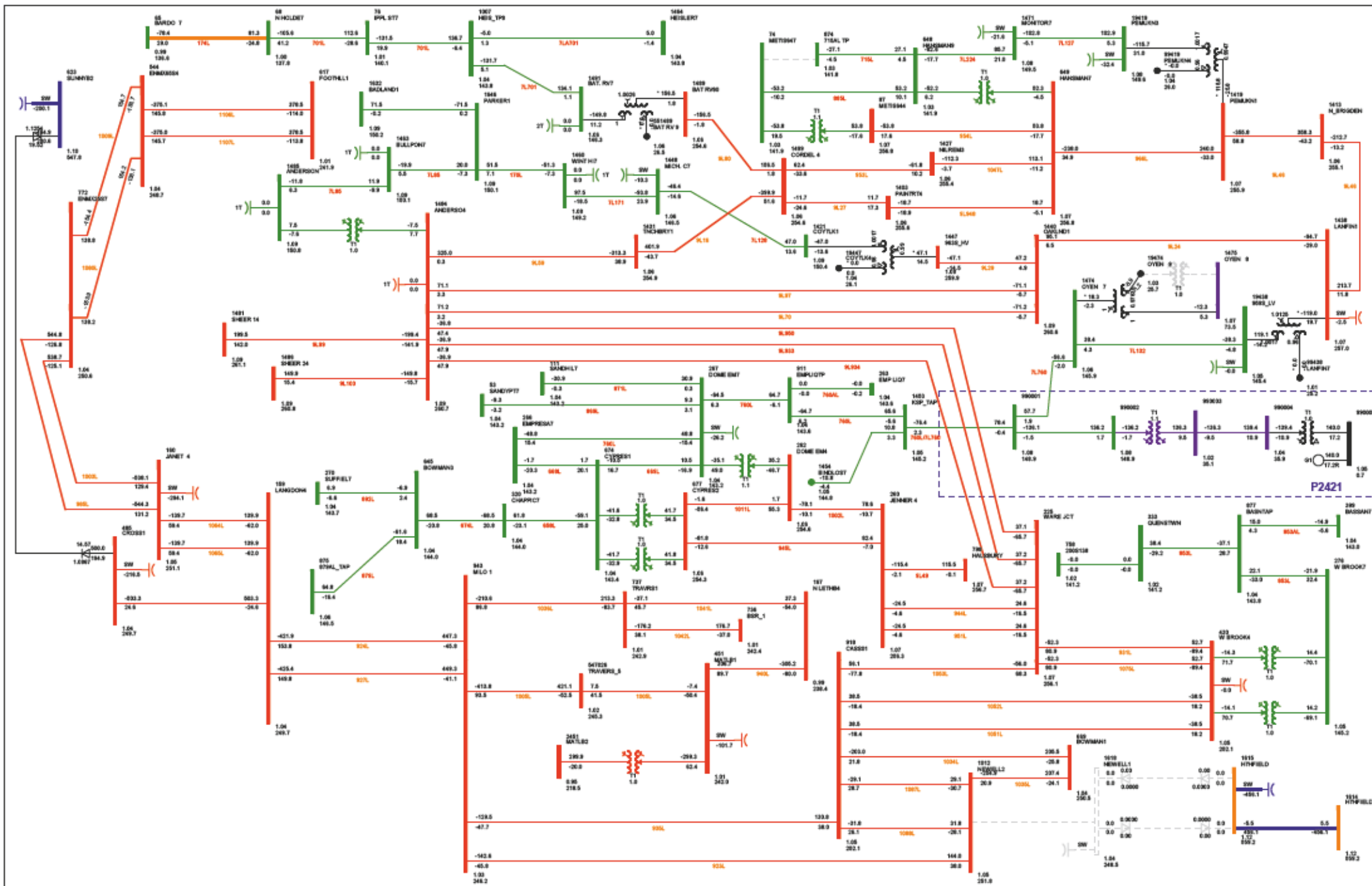
DC Inport: 404.5 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 22.3 MW

FIGURE C2-1-4 N-1: 8L888 (PEMUKAN 8328 TO HANSMAN LAKE 8508)

2023 SUMMER PEAK (POST-A1)

PRINTED ON SATURDAY 08. OCTOBER 2021

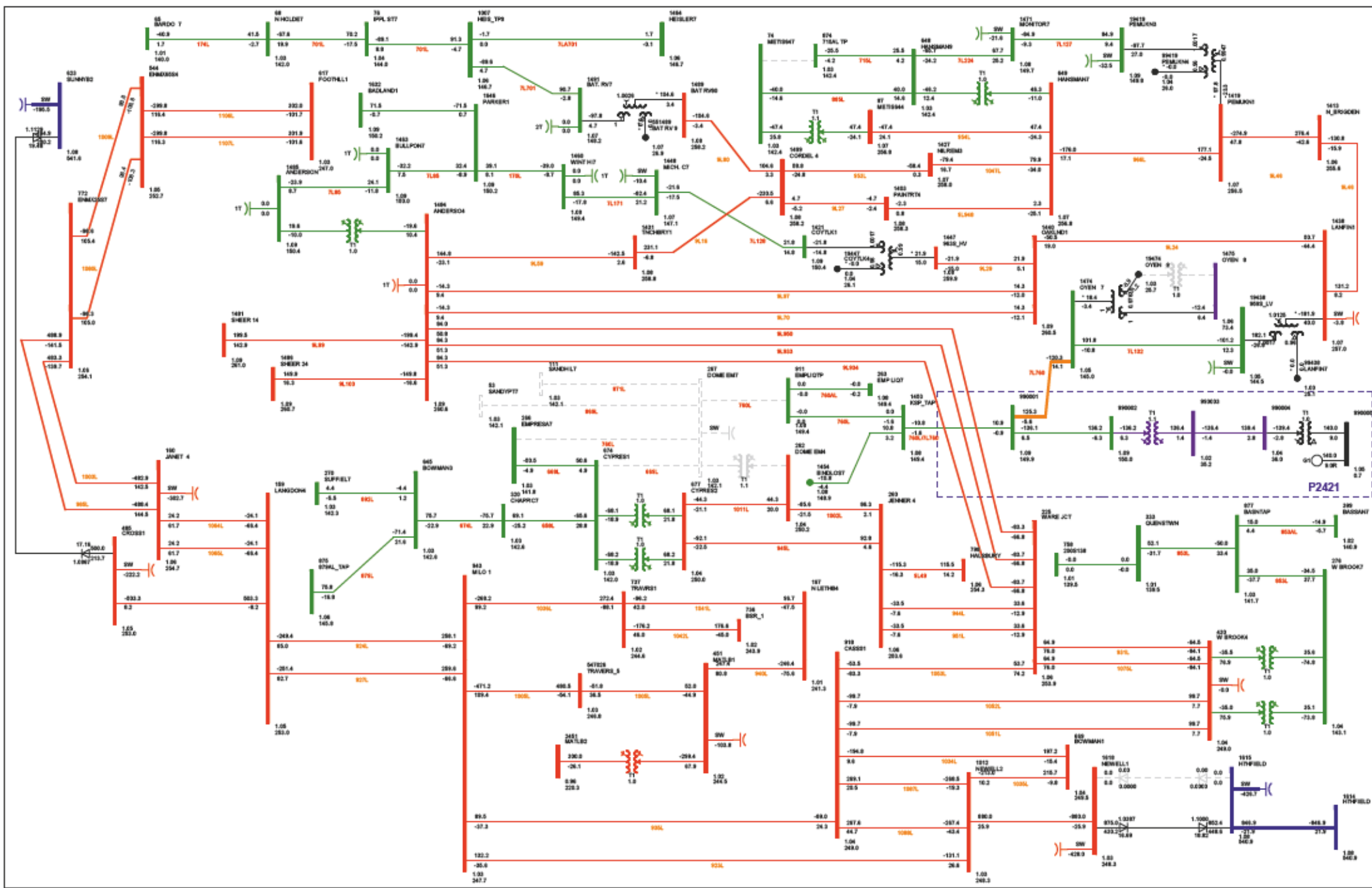
Rev: 1/10/2021
 Project: 8L888
 Location: 8L888
 Scale: 1:1000
 Date: 08. OCTOBER 2021



P2421 RESC Big Sky MPC Solar
 BC Inport-422.7 MW Sack Inport-150.0 MW MATL Inport-299.9 MW
 MH Inport-22.4 MW

FIGURE C2-1-8 N-1: EATL
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

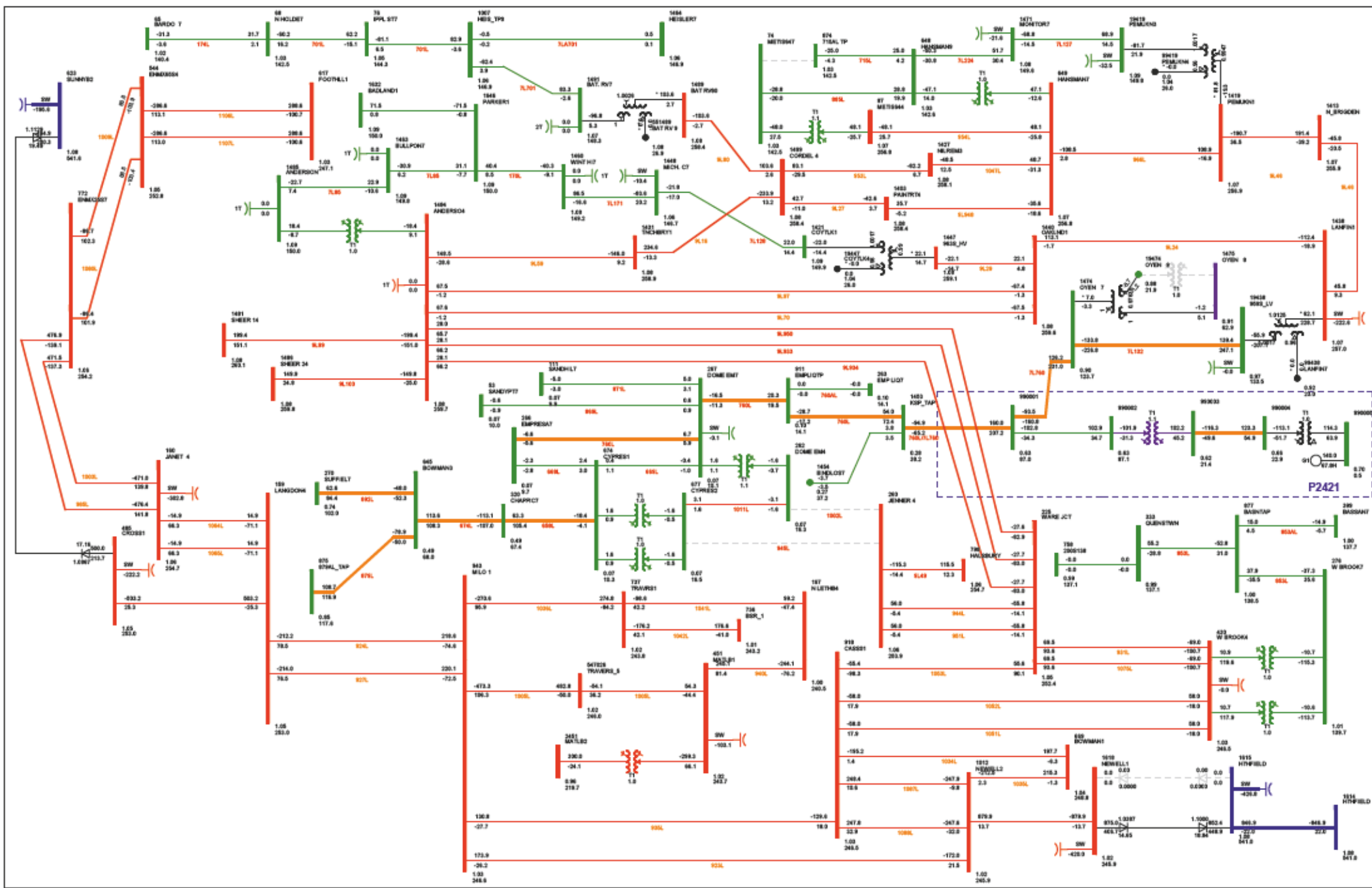
Rev: 1/16/2021
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Date: 08/08/2021



P2421 RESC Big Sky MPC Solar
 DC Inport=419.9 MW Sack Inport=150.0 MW MATL Inport=300.0 MW
 MH Inport=21.3 MW

FIGURE C2-1-7 N-1: 1838T6 (AMOCO EMPRESS 1838 TRANSFORMER T6)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

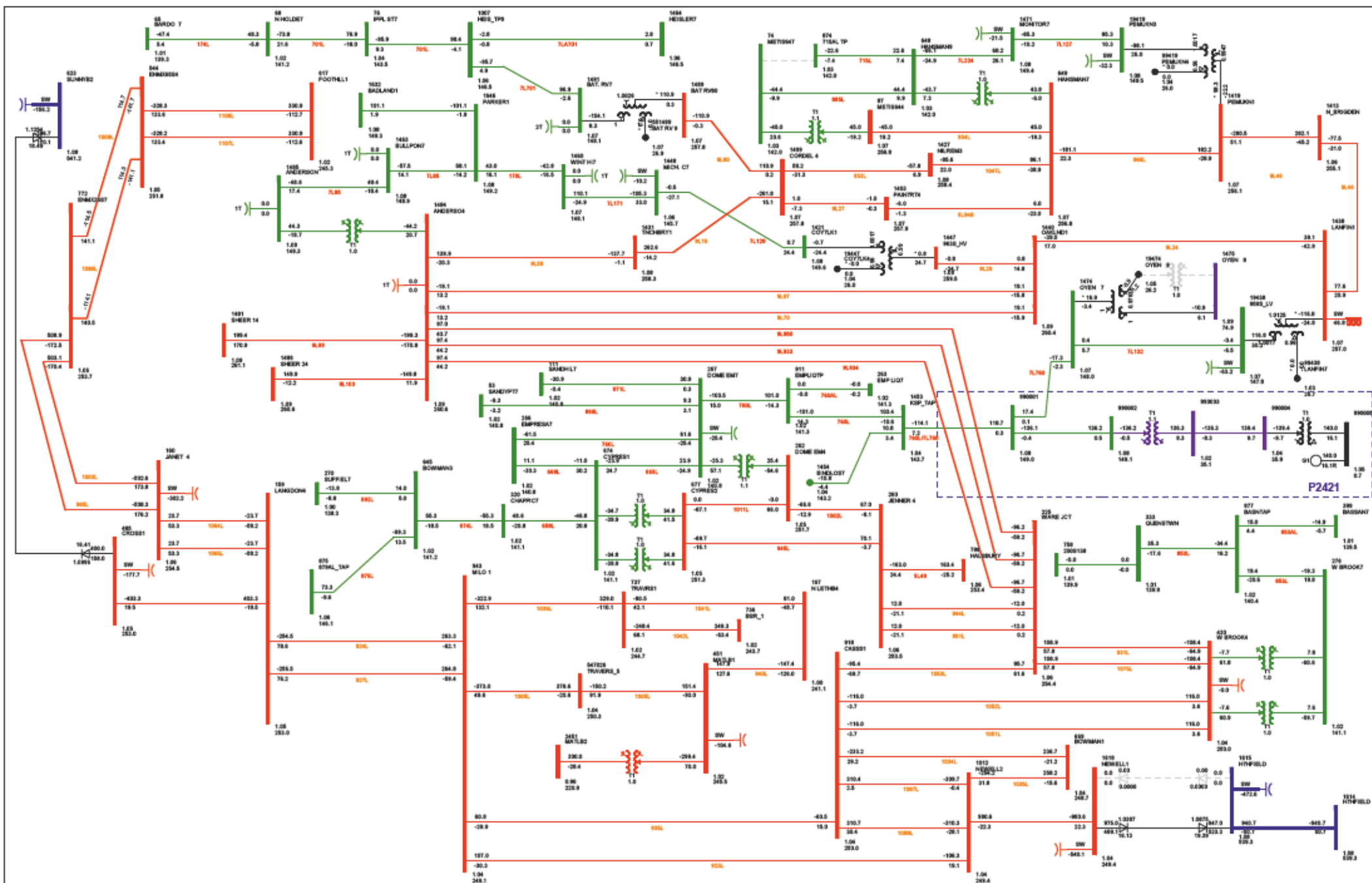
Rev: 1/15/2021
 Project: P2421
 1/15/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input: 019.0 MW Sack Input: 0.8 MW MATL Input: 300.0 MW
 MH Input: 21.3 MW

FIGURE C2-1-B-N-2: 1002L_846L (JENNER 2763 TO AMOCO EMPRES3 1833 TO CYPRES3 6823)(BLOW UP)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

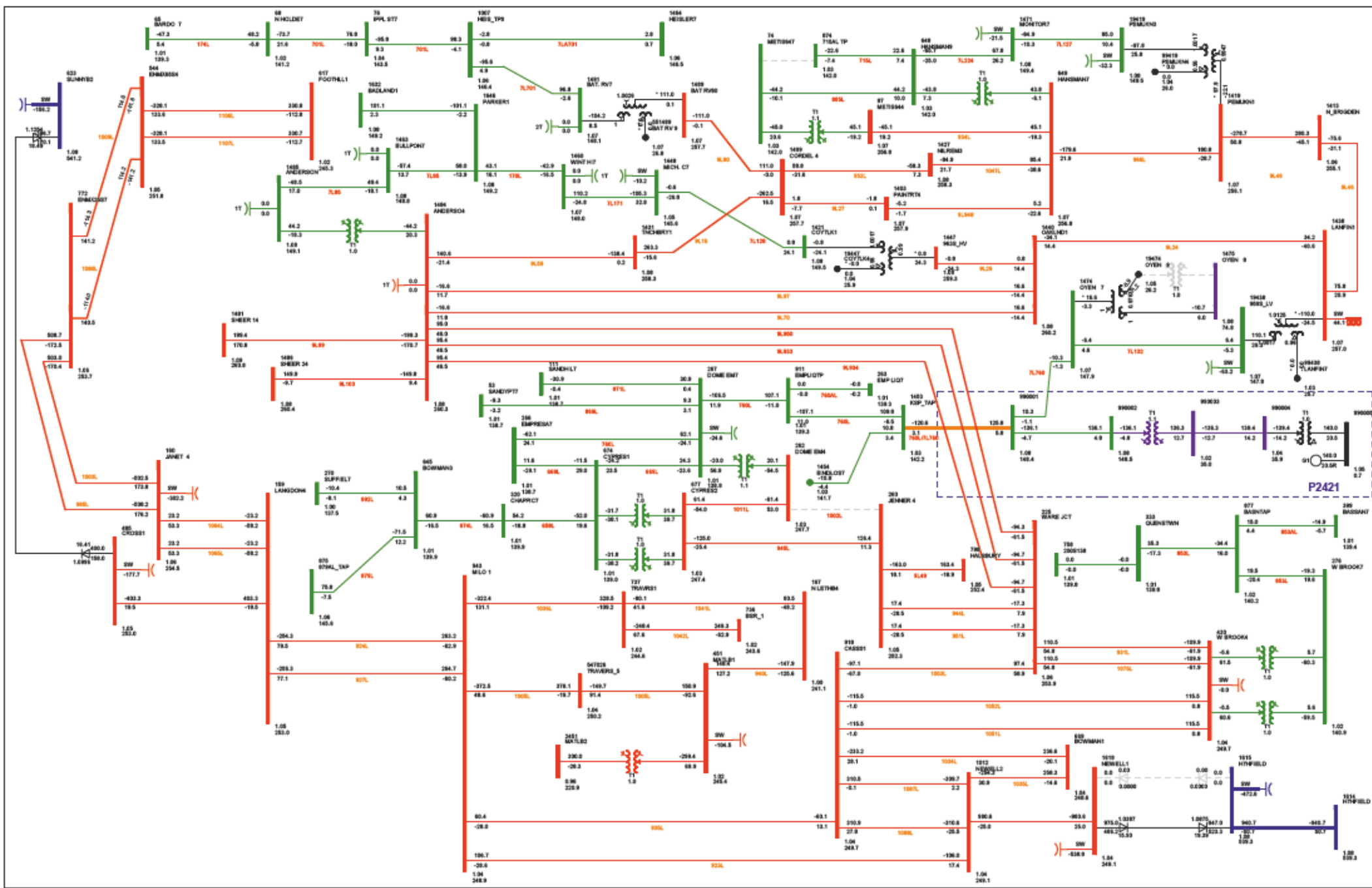
Rev: 1/10/2021
 Project: P2421
 1002L_846L
 1002L_846L (JENNER 2763 TO AMOCO EMPRES3 1833 TO CYPRES3 6823)



P2421 RESC Big Sky MPC Solar
 BC Inport: 329.3 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 42.9 MW

FIGURE CS-1-1-N-0: NORMAL OPERATION
2023 SUMMER PEAK (POST-A1)
PRINTED ON SATURDAY 08. OCTOBER 2023

Rev: 1/20/2024
 Project: RESC
 Location: Big Sky
 Scale: 1:1000
 Date: 08.10.2023



P2421 RESC Big Sky MPC Solar

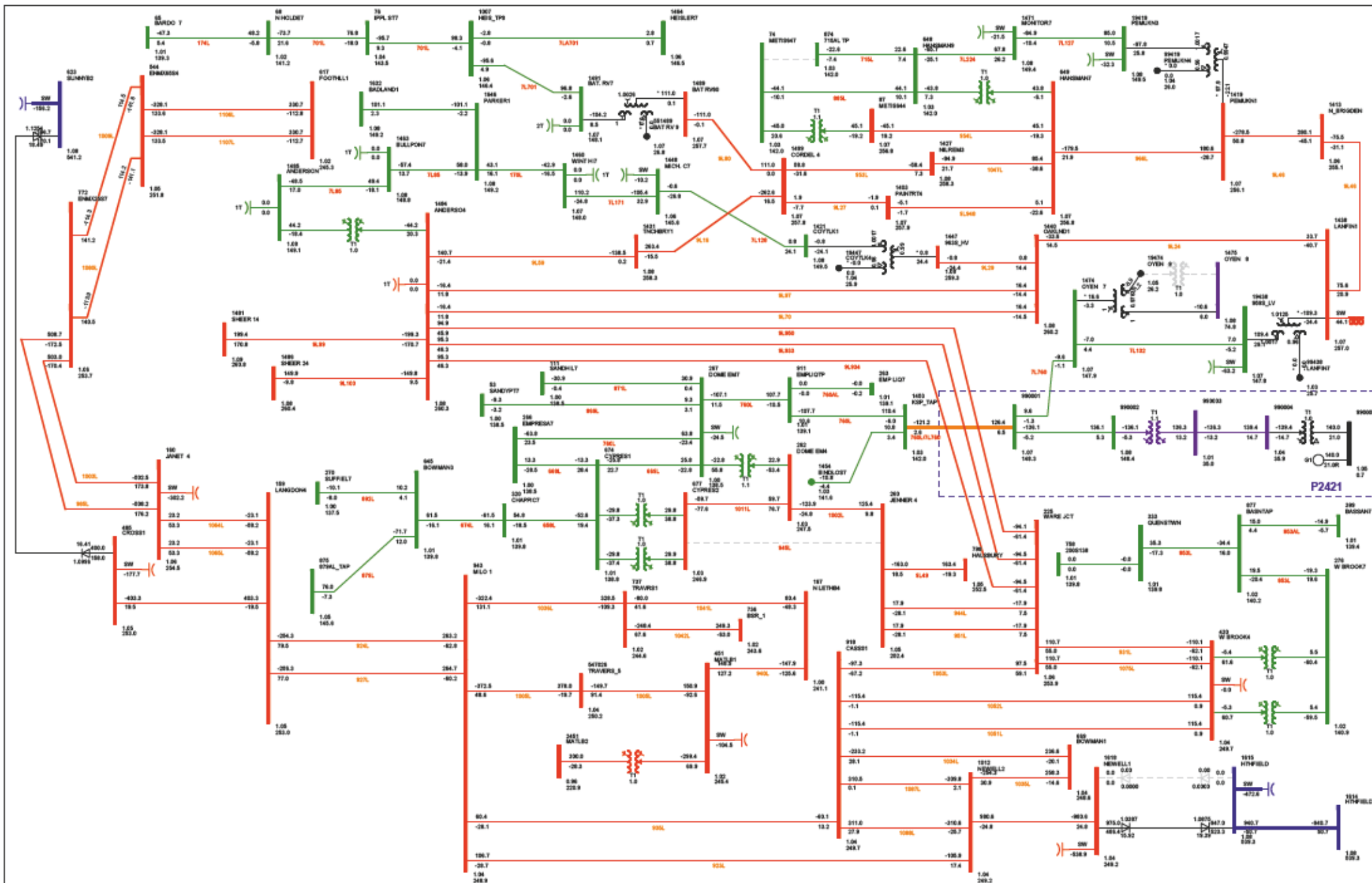
DC Inpt=341.1 MW Sack Inpt=150.0 MW MATL Inpt=300.0 MW
 MH Inpt=42.9 MW

FIGURE CS-1-2 N-1: 1002L (JENNER 2765 TO AMOCO EMPRESS 1858)

2023 SUMMER PEAK (POST-A1)

PRINTED ON SATURDAY 08. OCTOBER 2021

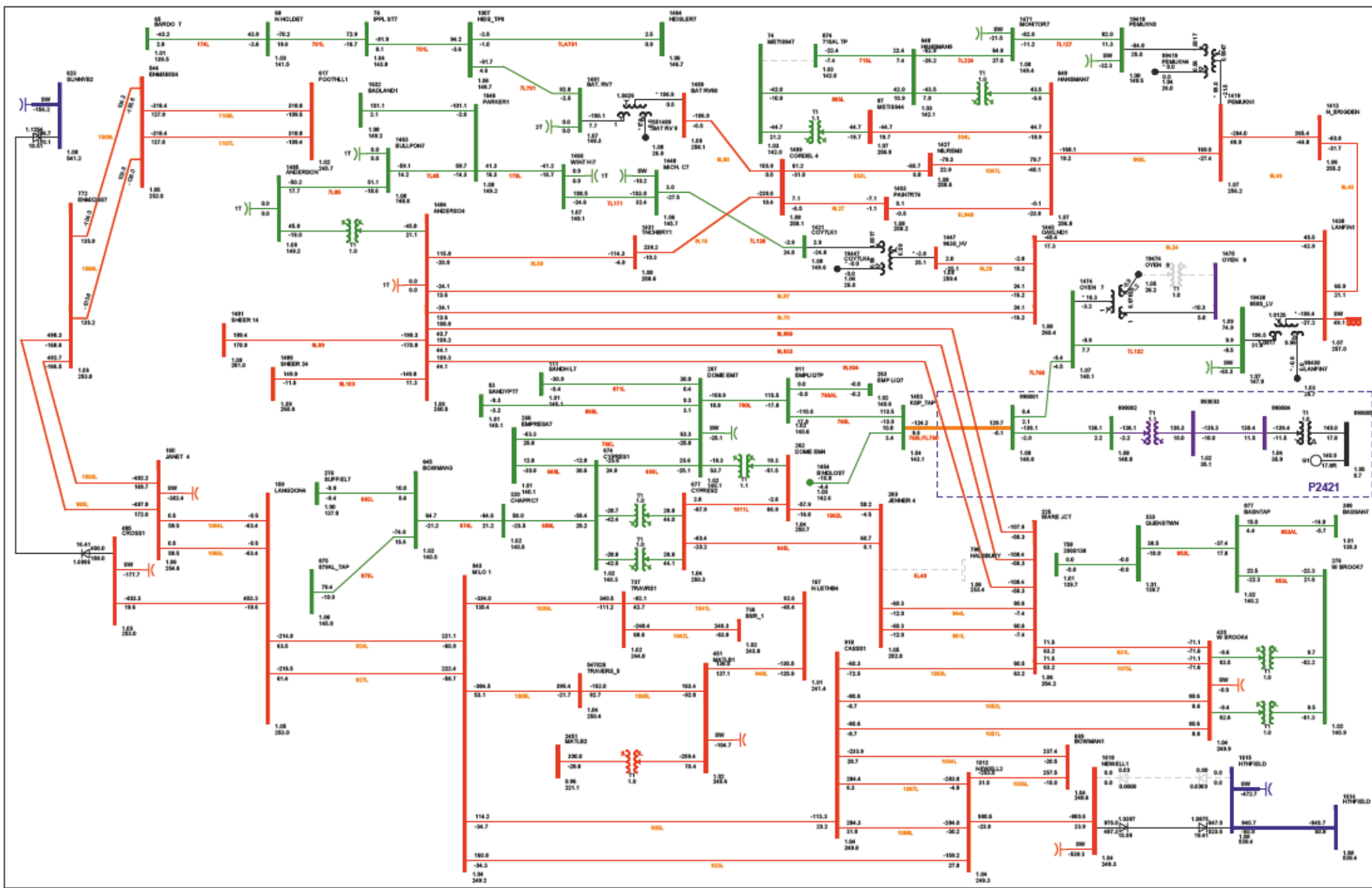
Rev: 1/10/2021
 Project: RESC
 1002L (JENNER 2765 TO AMOCO EMPRESS 1858)
 08. OCTOBER 2021



P2421 RESC Big Sky MPC Solar
 DC Inport: 341.3 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 42.9 MW

FIGURE CS-1-3 N-1: 946L (JENNER 2768 TO CYPRE85 6628)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

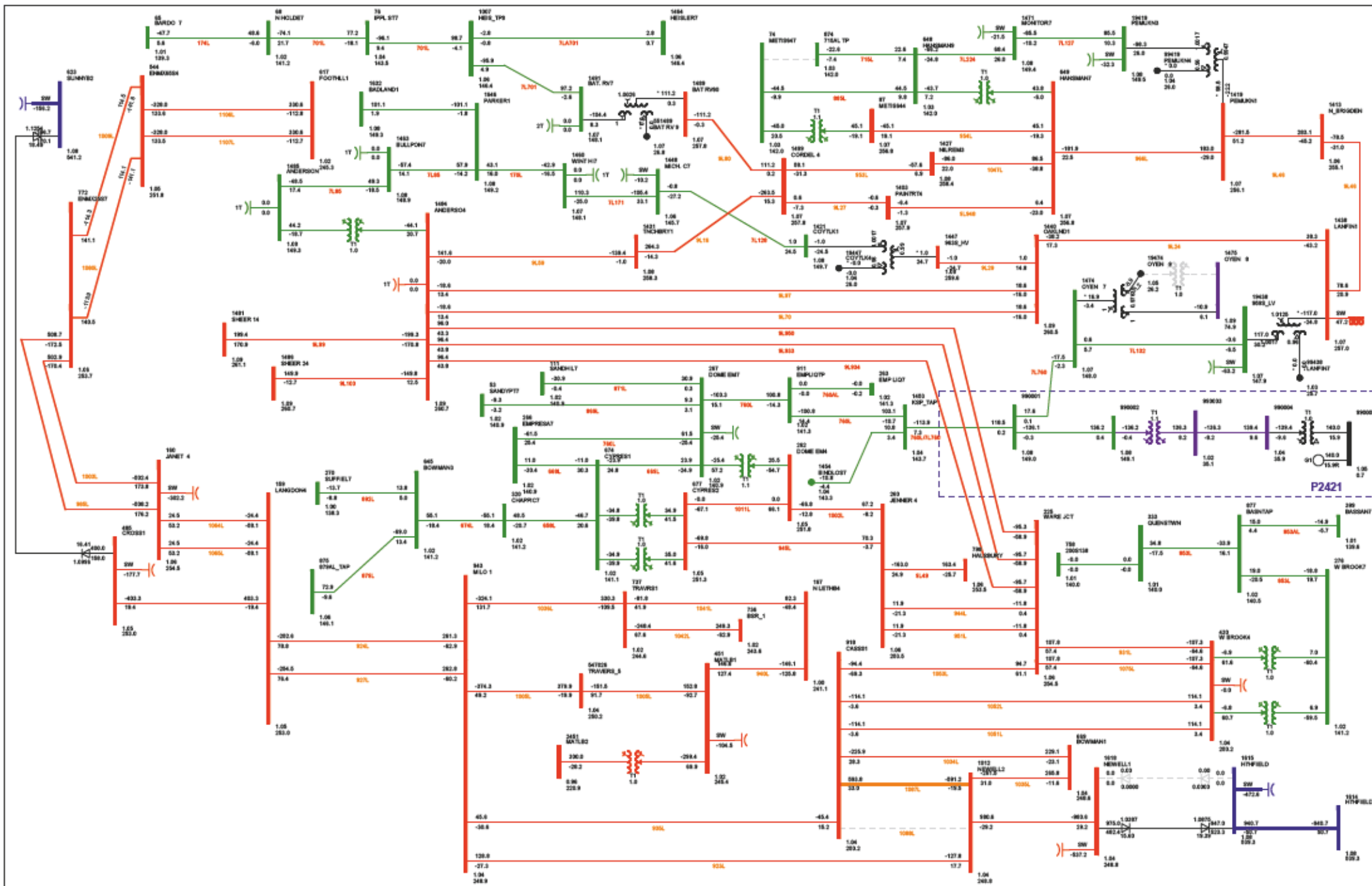
Rev: 1/10/2021
 Project: 946L
 1/10/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Inpt:-496.4 MW Sack Inpt:-150.0 MW MATL Inpt:-300.0 MW
 MH Inpt:-42.9 MW

FIGURE CS-1-4 N-1: 948L (JENNER 2765 TO HALSBURY 3085)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

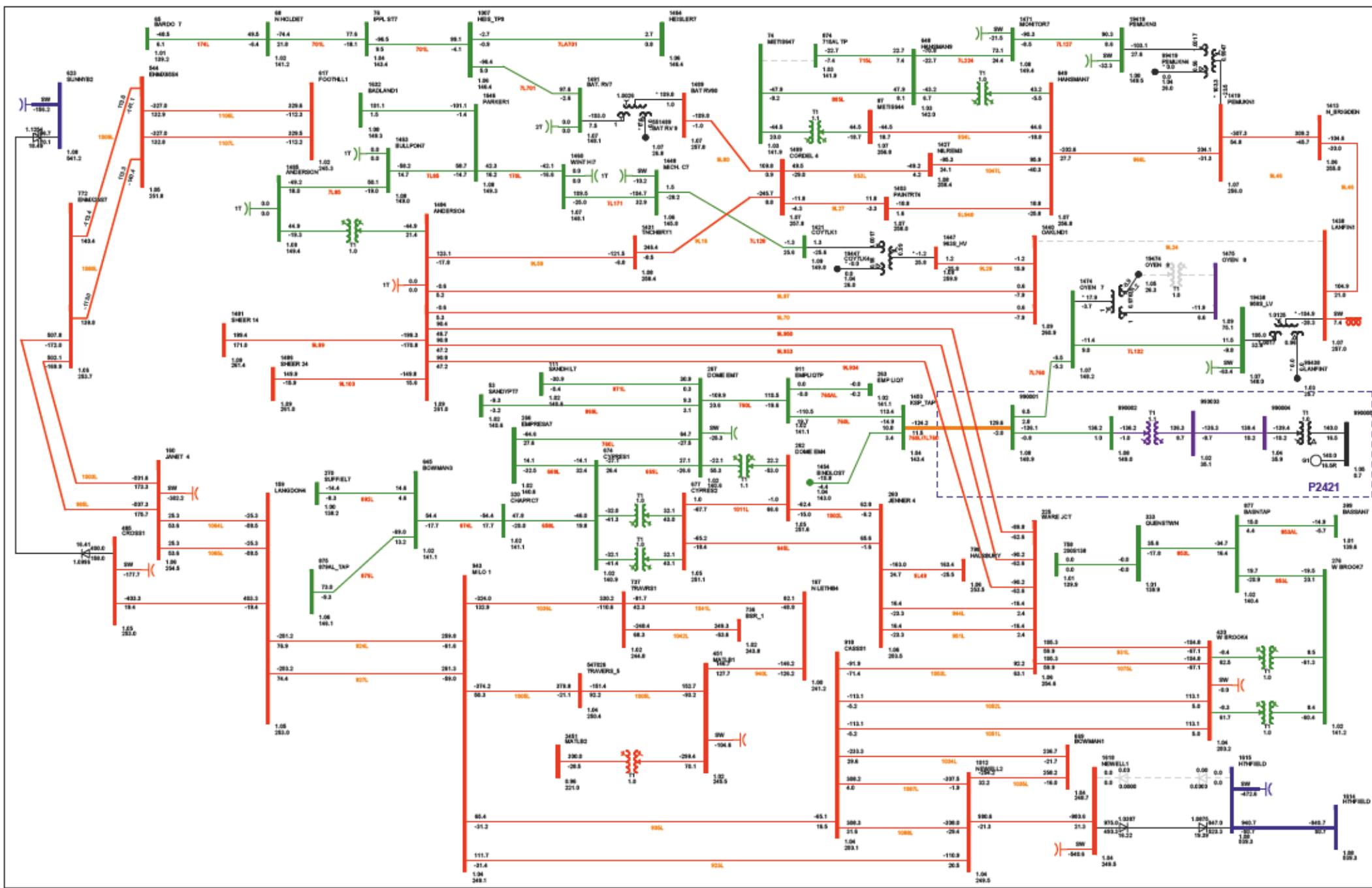
Rev: 1/10/2021
 Project: 948L
 1/10/2021 10:00:00 AM - 10/10/2021 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 BC Inport-341.0 MW Sask Inport-150.0 MW MATL Inport-300.0 MW
 MH Inport-42.9 MW

FIGURE CS-1-5 N-1: 1088L (CASSEL'S 3245 TO NEWELL 20765)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

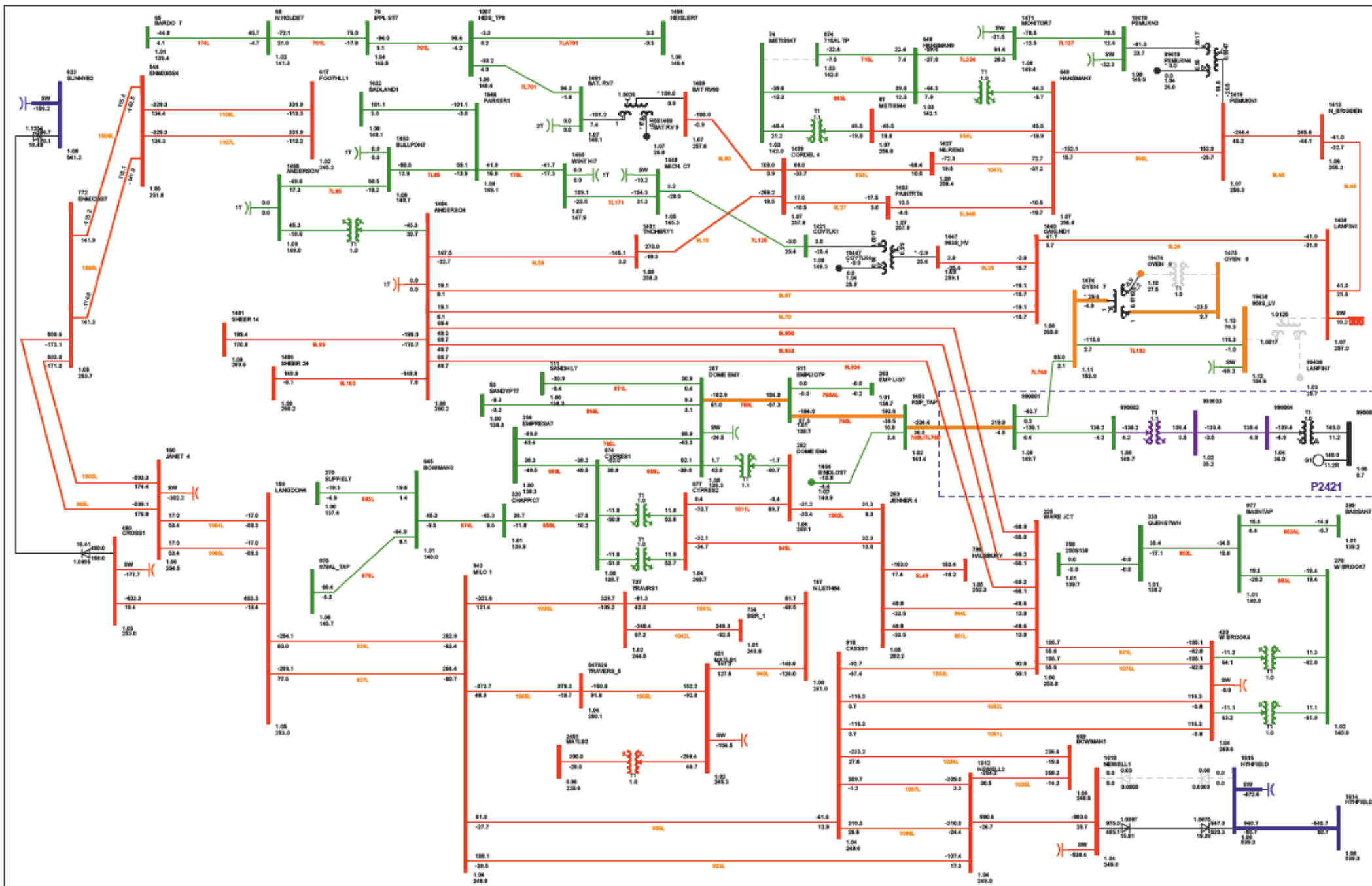
Rev: 1/10/2021
 Project: P2421
 1088L (CASSEL'S 3245 TO NEWELL 20765)
 1088L (CASSEL'S 3245 TO NEWELL 20765) - 1088L (CASSEL'S 3245 TO NEWELL 20765)



P2421 RESC Big Sky MPC Solar
 BC Inport-340.0 MW Sack Inport-150.0 MW MATL Inport-300.0 MW
 MH Inport-42.9 MW

FIGURE CS-1-8 N-1: 8L24 (OAKLAND 9488 TO LANFIRE 8658)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

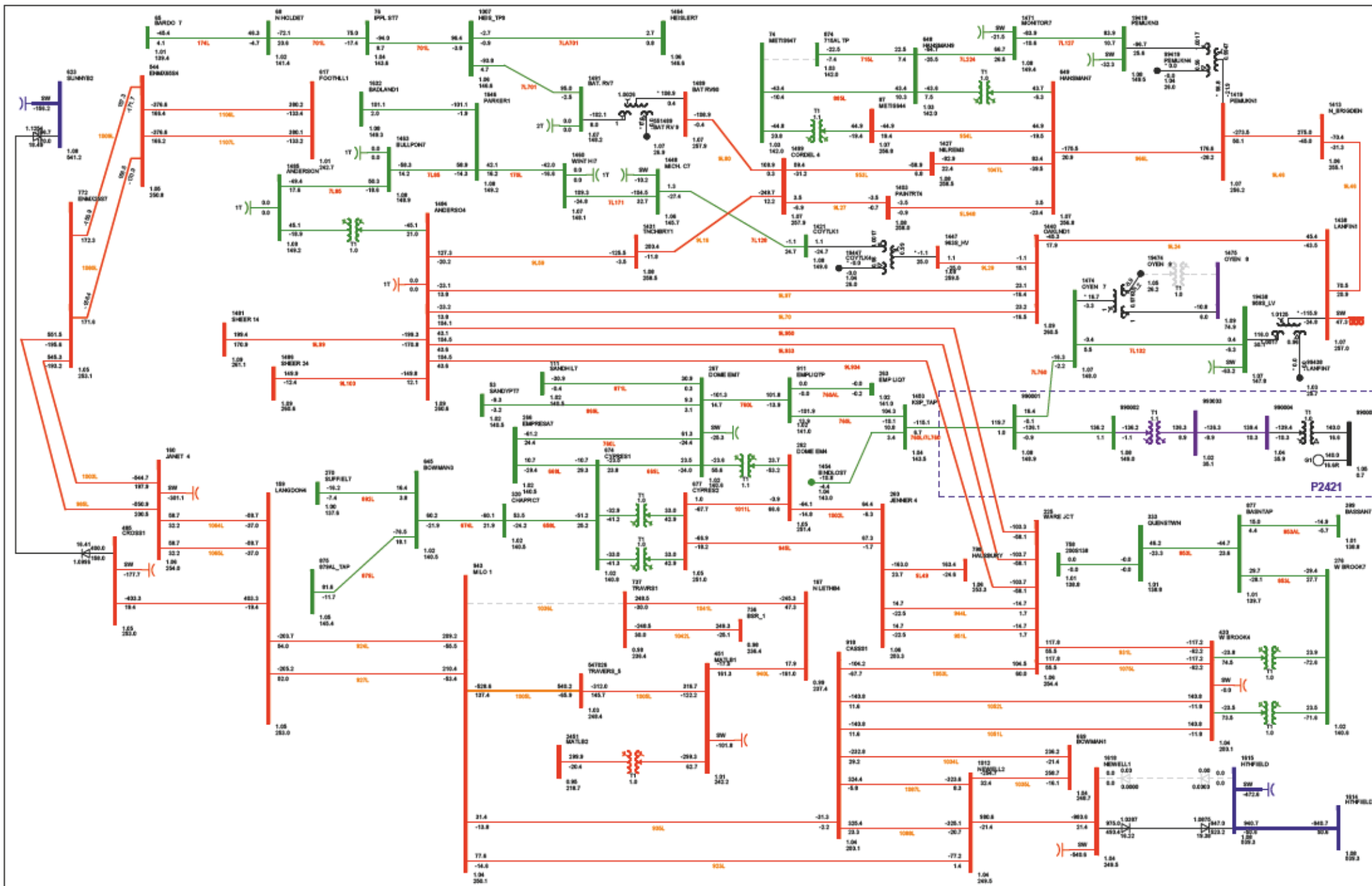
Rev: 1/15/2021
 Project: P2421
 10/08/2021 10:00:00 AM - 10/08/2021 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Inport: 361.5 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 42.9 MW

FIGURE CS-1-7 N-1: A868T1 (LANFNE 9688 TRANSFORMER T1)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

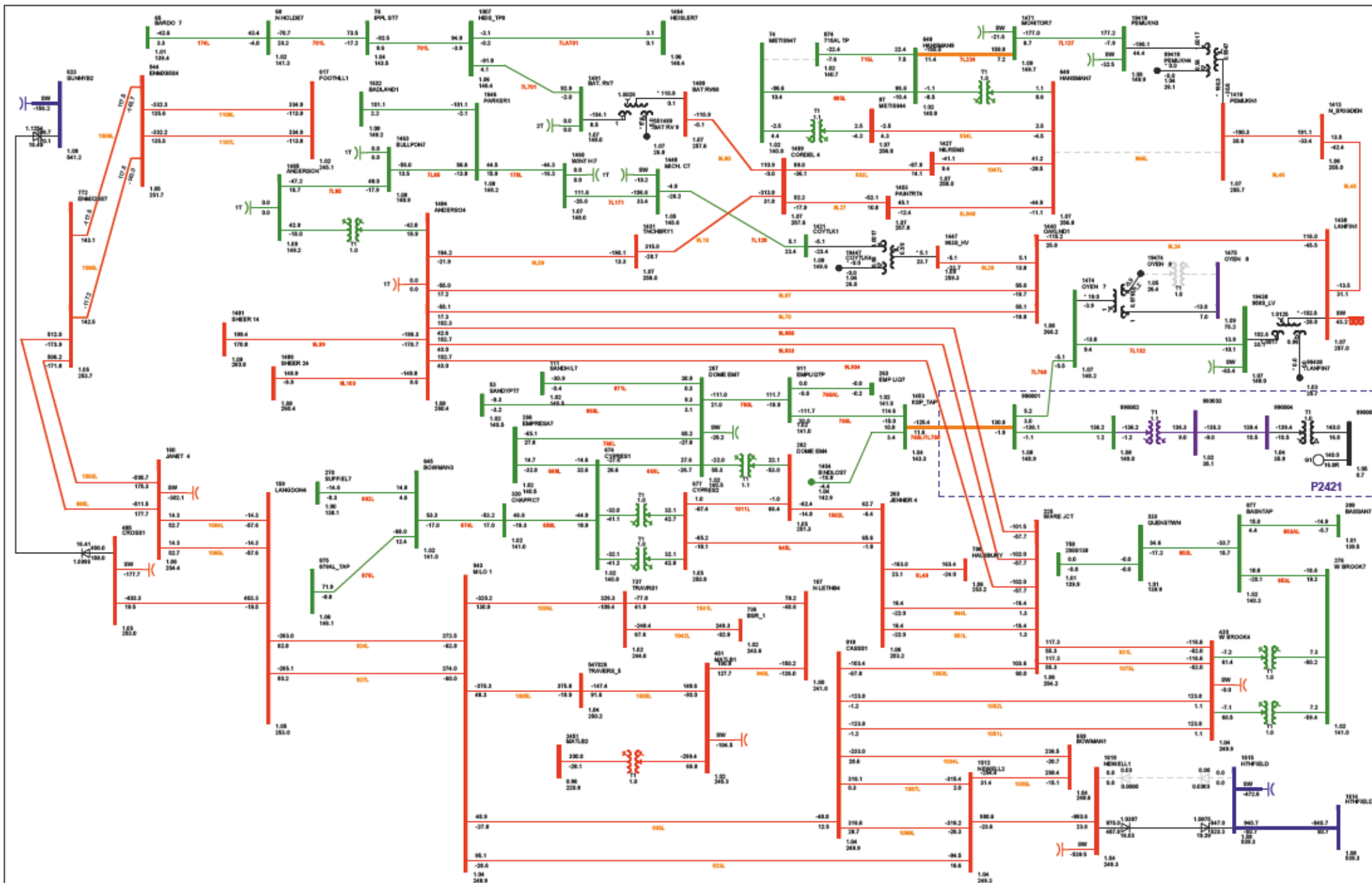
Rev: 1/10/2021
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Author: [Name]
 Date: 08/08/2021



P2421 RESC Big Sky MPC Solar
 DC Inport: 354.6 MW Sack Inport: 150.0 MW MATL Inport: 299.9 MW
 MH Inport: 42.9 MW

FIGURE CS-1-8 N-1: 1038L (MILO 3688 TO TRAVERS 6548)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

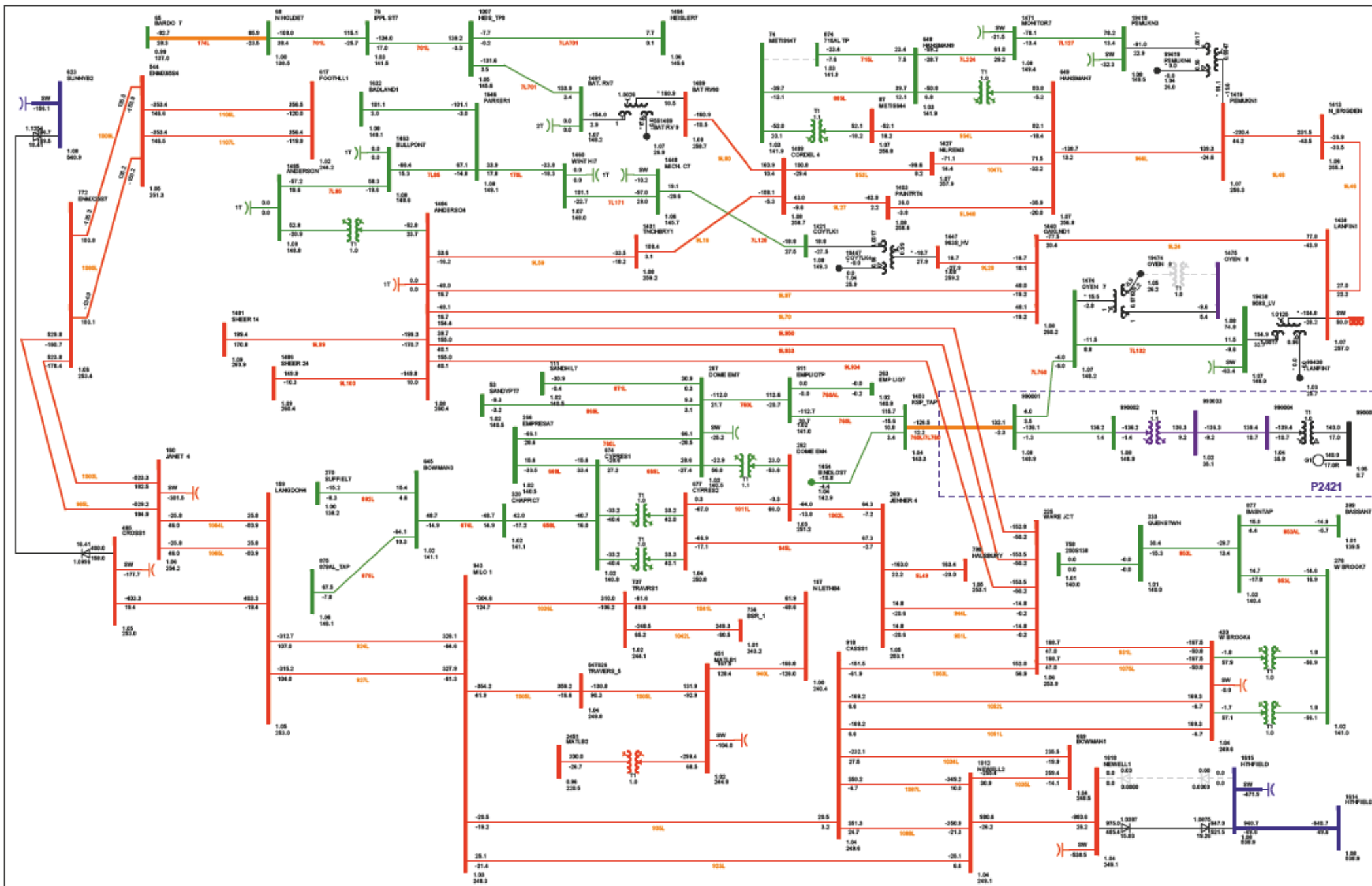
Rev: 1/10/2021
 Project: P2421
 1038L (MILO 3688 TO TRAVERS 6548)
 1038L (MILO 3688 TO TRAVERS 6548)



P2421 RESC Big Sky MPC Solar
 DC Inpt=351.3 MW Sack Inpt=150.0 MW MATL Inpt=300.0 MW
 MH Inpt=42.9 MW

FIGURE CS-1-9 N-1: 8L888 (PEMUKAN 8328 TO HANSMAN LAKE 8508)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

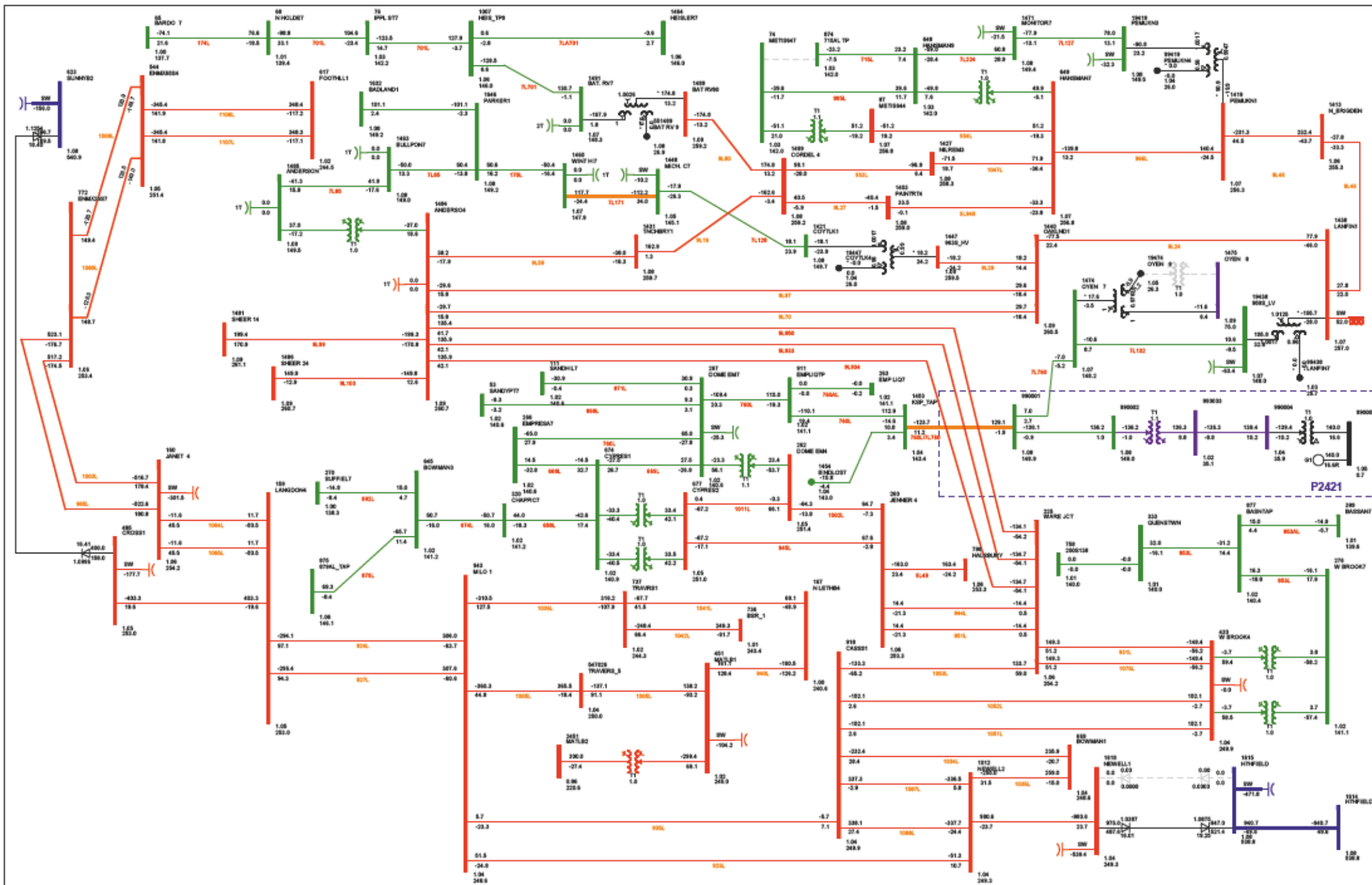
Rev: 1/19/2021
 Project: P2421
 1/19/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input: 360.0 MW Sack Input: 150.0 MW MATL Input: 300.0 MW
 MH Input: 42.9 MW

FIGURE CS-1-10 N-1: 912L (NEVIS 7985 TO RED DEER 858)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/10/2021
 Project: P2421
 Location: Big Sky, MT
 Scale: 1:10000
 Date: 08/08/2021



P2421 RESC Big Sky MPC Solar

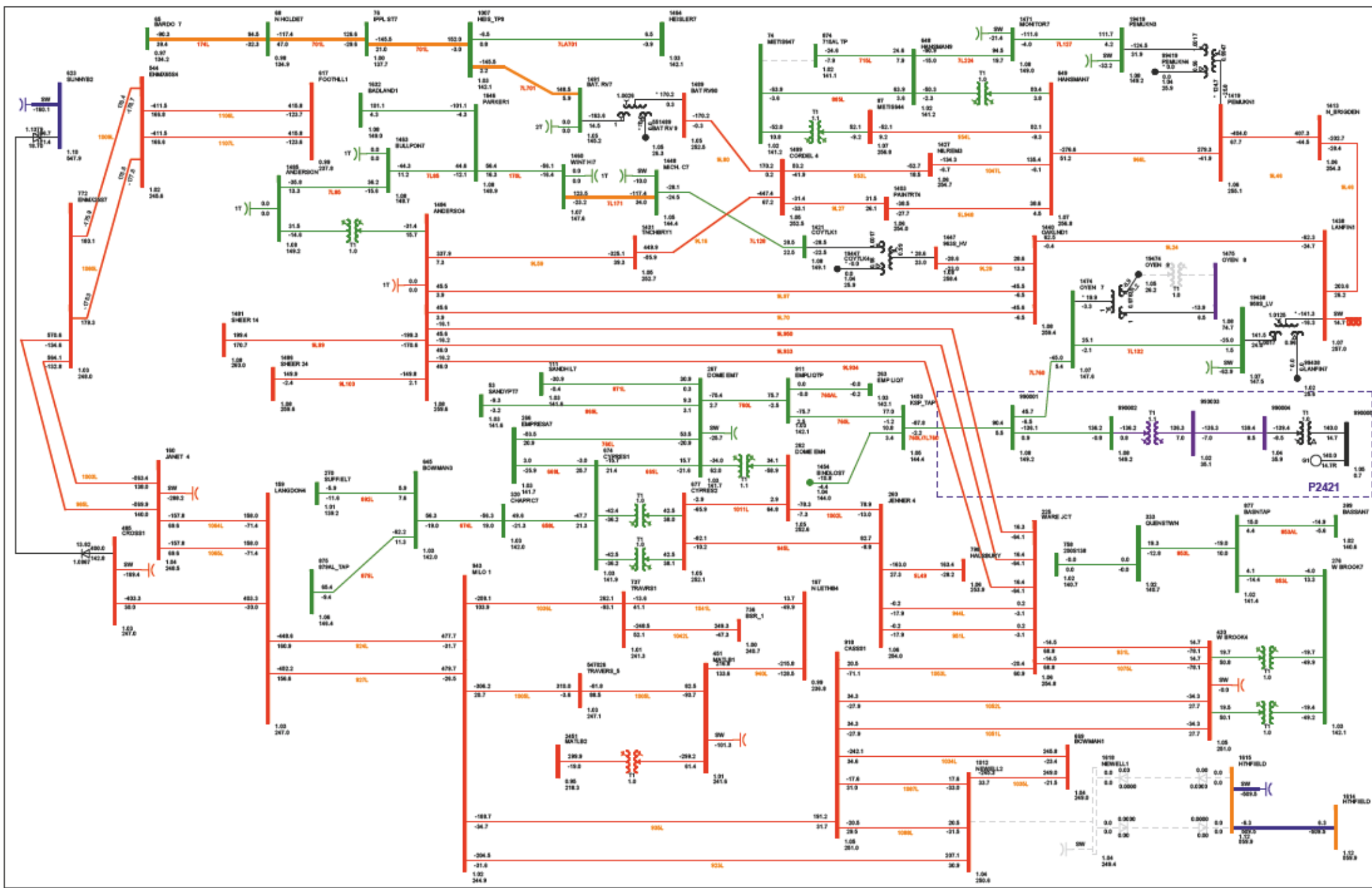
DC Inport: 364.5 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 42.9 MW

FIGURE CS-1-11 N-1: 9L20 (NEVIS 7685 TO CORDEL 7656)

2023 SUMMER PEAK (POST-A1)

PRINTED ON SATURDAY 08. OCTOBER 2021

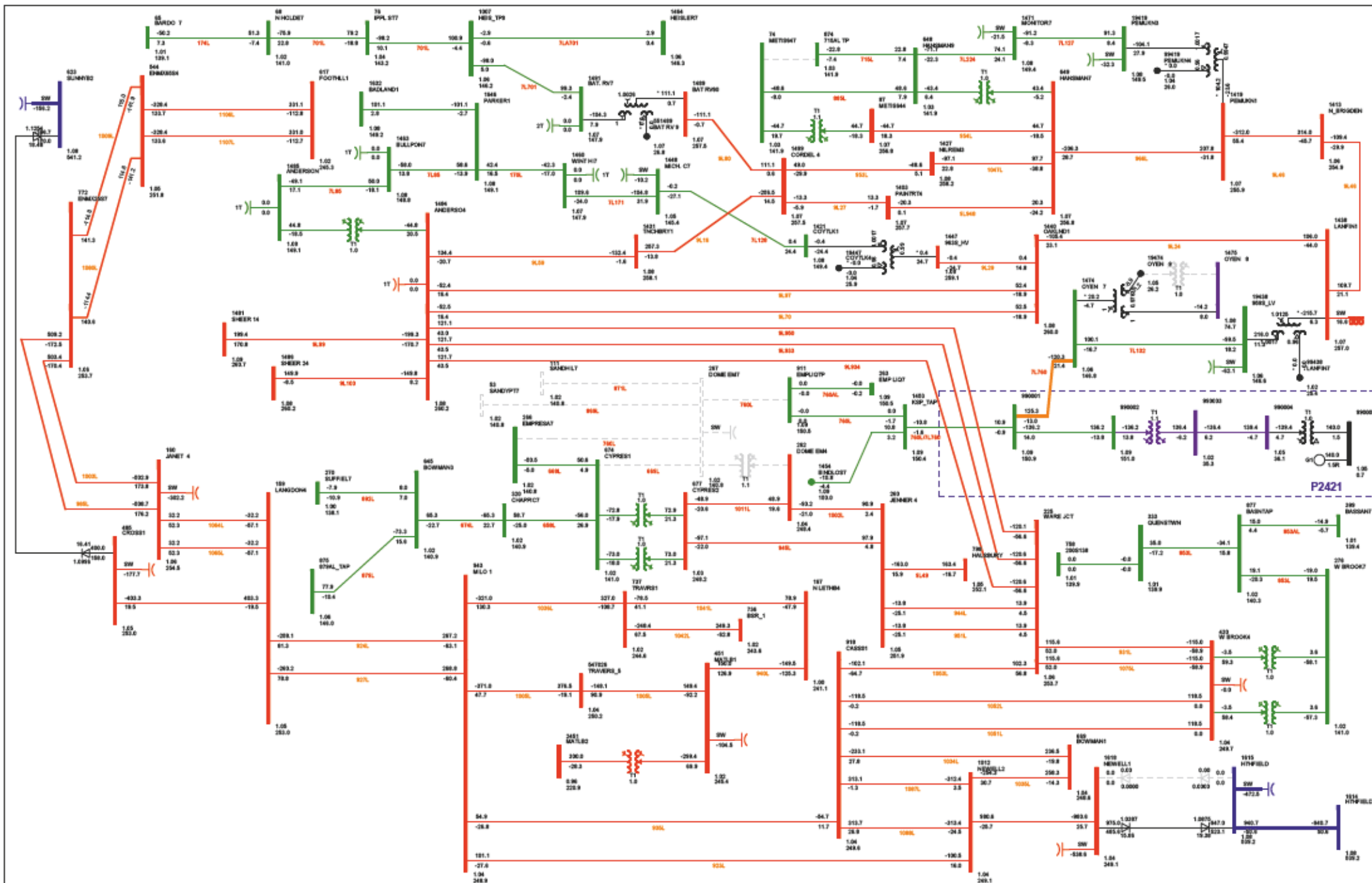
Rev: 11/20/2021
 Project: RESC
 Location: P2421
 Scale: 1:100000
 Date: 08/08/2021



P2421 RESC Big Sky MPC Solar
 DC Inpt=553.8 MW Sack Inpt=150.0 MW MATL Inpt=299.9 MW
 MH Inpt=42.9 MW

FIGURE CS-1-13 N-1: EATL
2023 SUMMER PEAK (POST-A1)
PRINTED ON SATURDAY 08. OCTOBER 2023

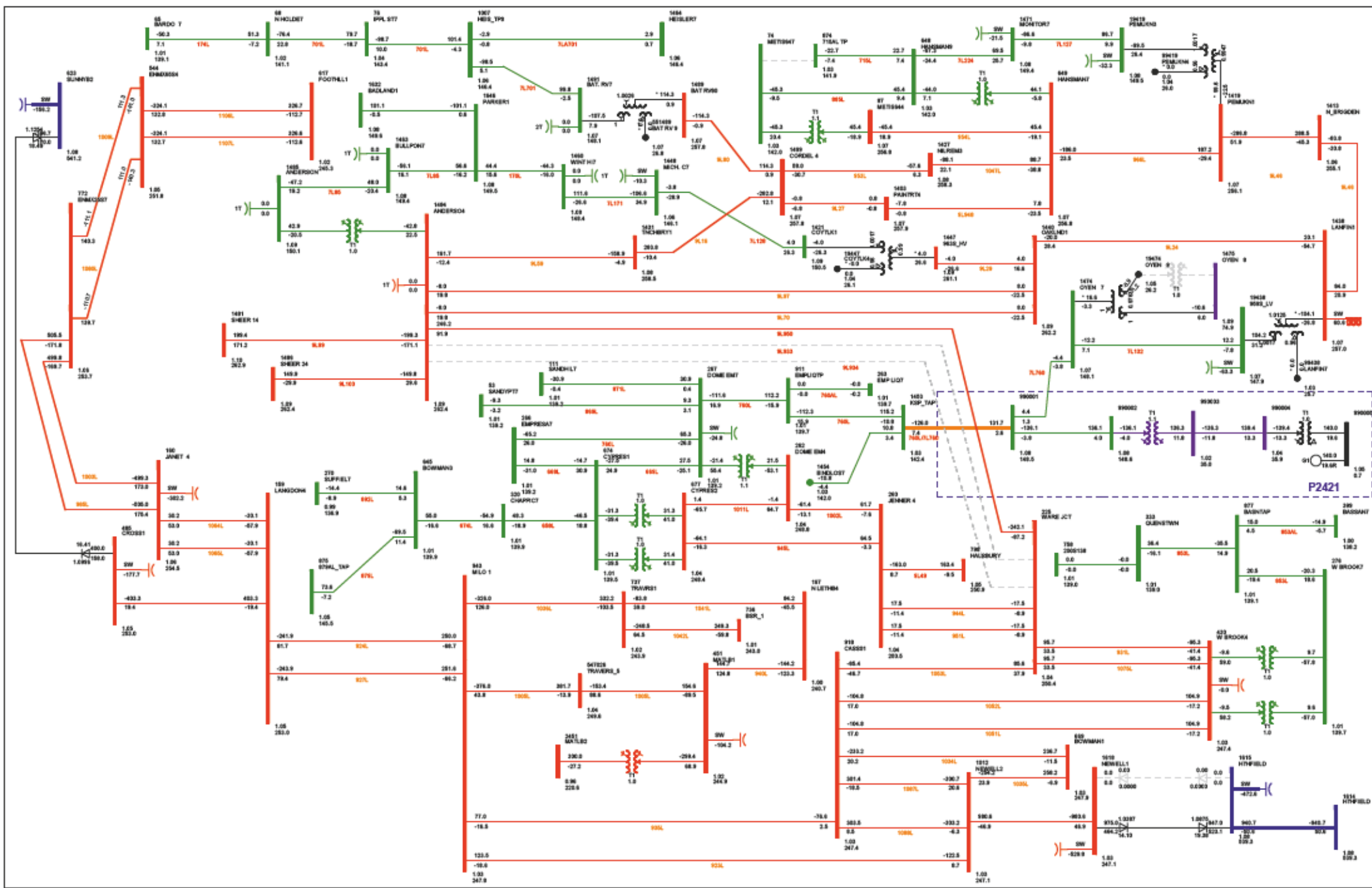
Rev: 1/16/2024
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Date: 08. OCTOBER 2023



P2421 RESC Big Sky MPC Solar
 DC Inpt=304.6 MW Sack Inpt=150.0 MW MATL Inpt=300.0 MW
 MH Inpt=42.9 MW

FIGURE CS-1-14 N-1: 1833T5 (AMOCO EMPRES8 1833 TRANSFORMER T5)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/15/2021
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:10000
 Date: 08. OCTOBER 2021



P2421 RESC Big Sky MPC Solar
 DC Inpt=345.5 MW Sack Inpt=150.0 MW MATL Inpt=300.0 MW
 MH Inpt=42.9 MW

FIGURE CS-1-18 N-1: 93SL_894L ANDERSON 8018 TO WARE JUNCTION 1328
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/18/2021
 Project: 2421-1
 1/18/2021 10:00:00 AM
 1/18/2021 10:00:00 AM
 1/18/2021 10:00:00 AM

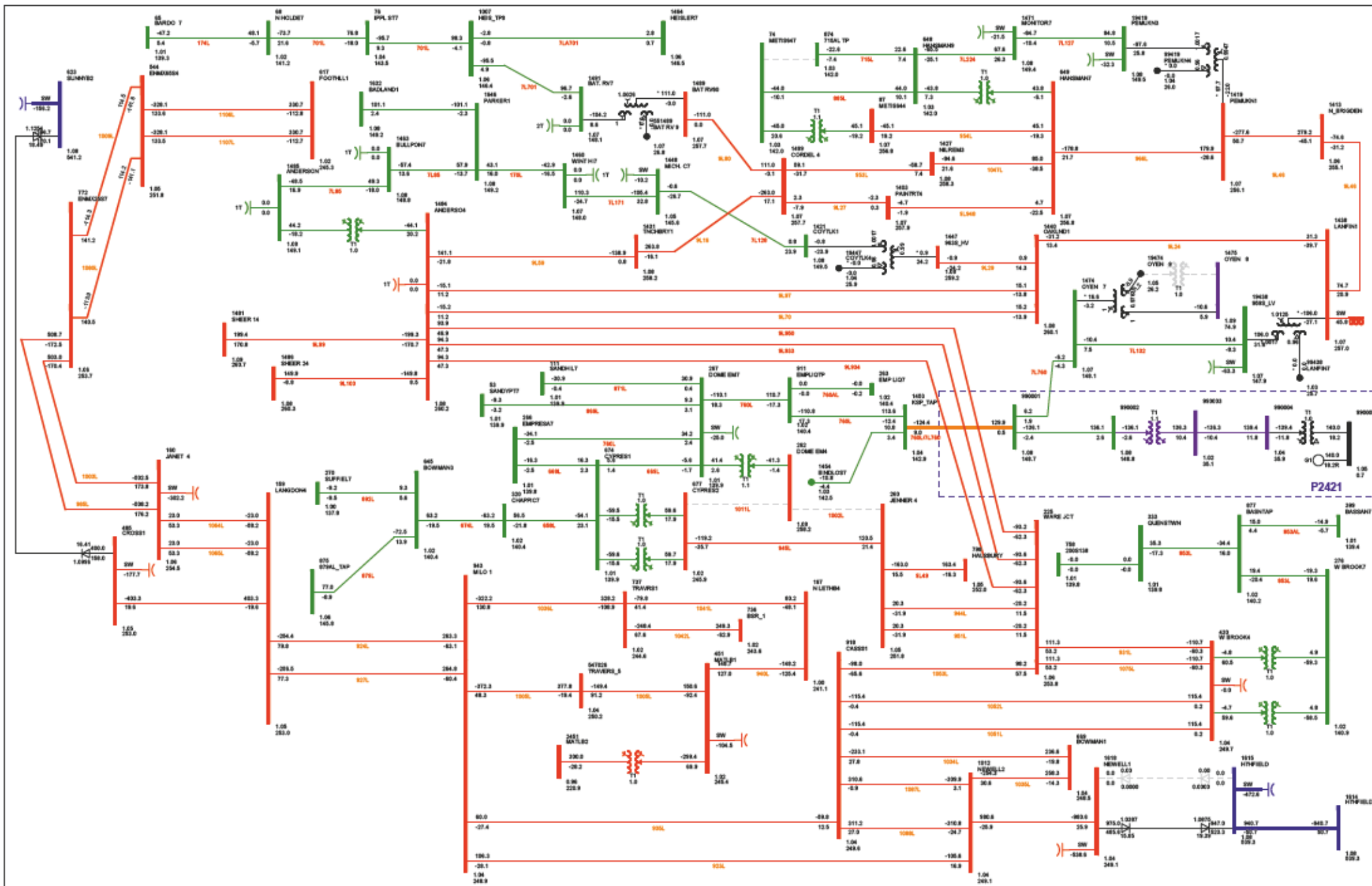
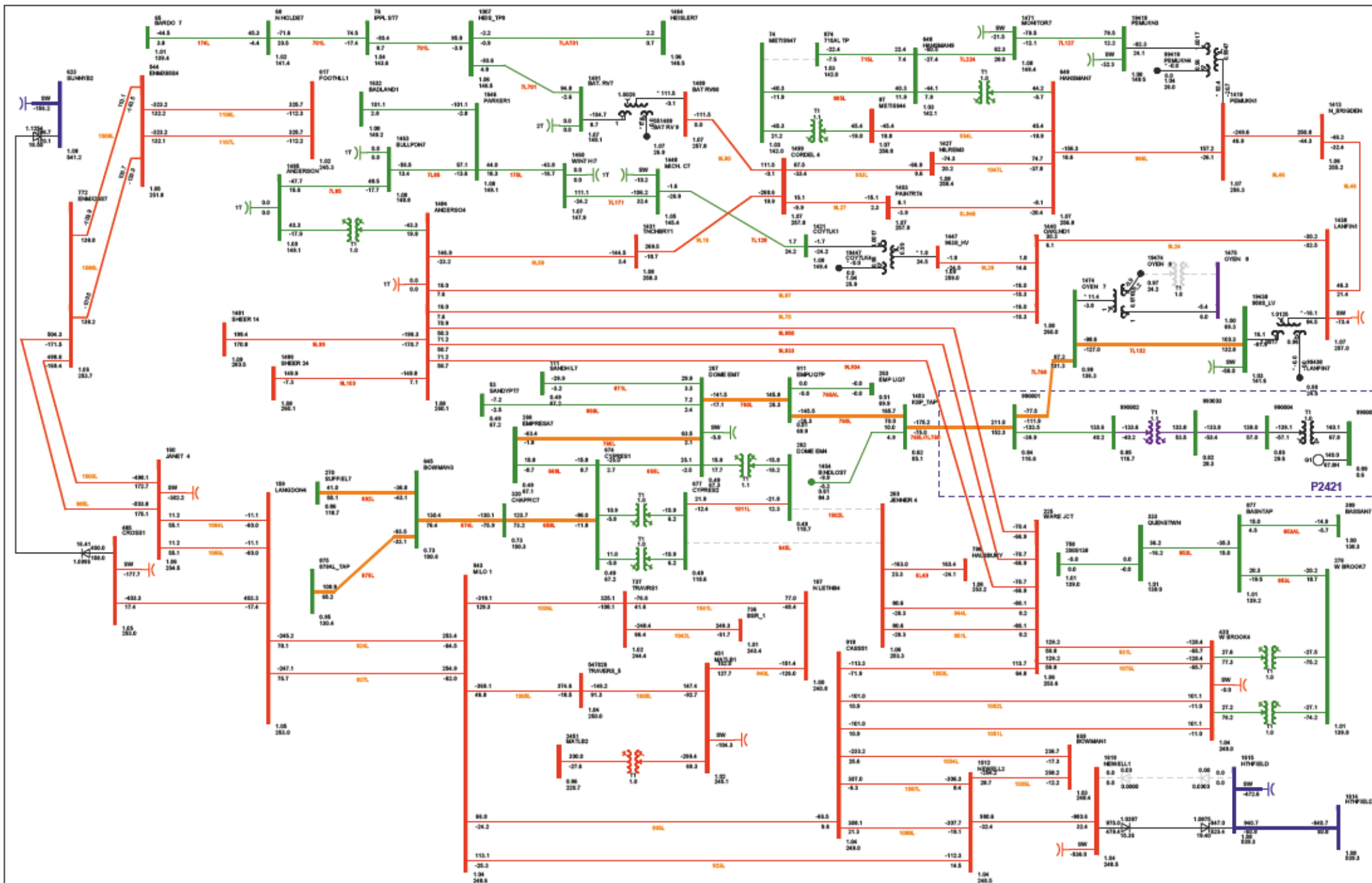


FIGURE CS-1-17 N-1: 100L/101L (AMOCO EMPRESS 1638 TO CYPRESS 6828 TO JENNER 2765)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/10/2021
 Project: P2421
 100L/101L (AMOCO EMPRESS 1638 TO CYPRESS 6828 TO JENNER 2765)
 100L/101L (AMOCO EMPRESS 1638 TO CYPRESS 6828 TO JENNER 2765)



P2421 RESC Big Sky MPC Solar
 DC Inpnt:-307.6 MW Sack Inpnt:-112.2 MW MATL Inpnt:-300.0 MW
 MH Inpnt:-42.9 MW

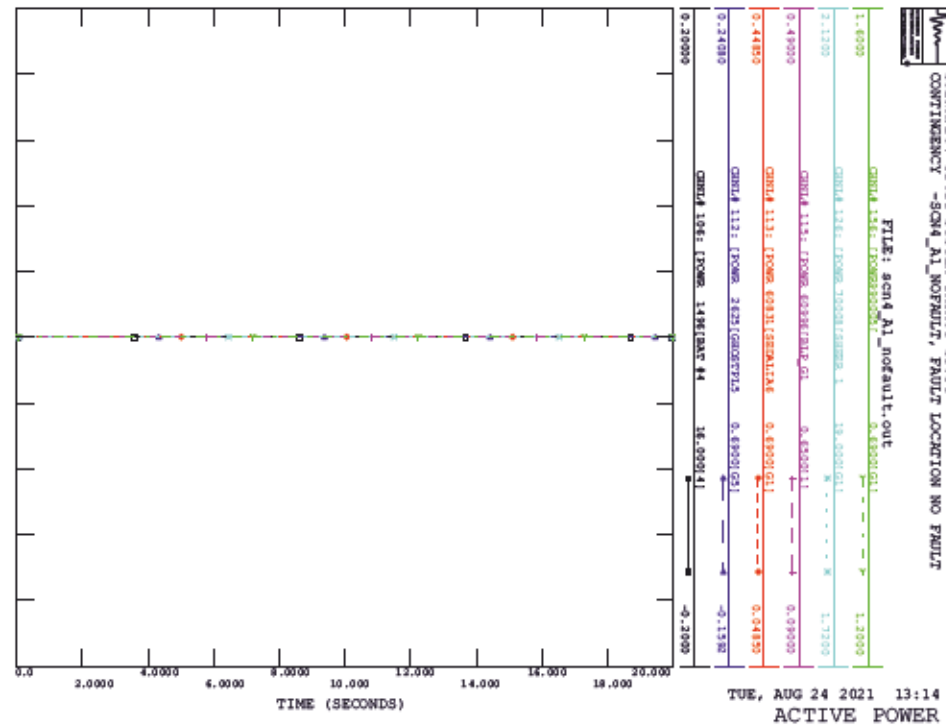
FIGURE CS-1-18 N-Z: 1002L_846L (JENNER 2765 TO AMOCO EMPRESS 1838 TO CYPRESS 6825)
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON SATURDAY 08. OCTOBER 2021

Rev: 1/18/2021
 Project: P2421
 1002L_846L
 1002L_846L (JENNER 2765 TO AMOCO EMPRESS 1838 TO CYPRESS 6825)

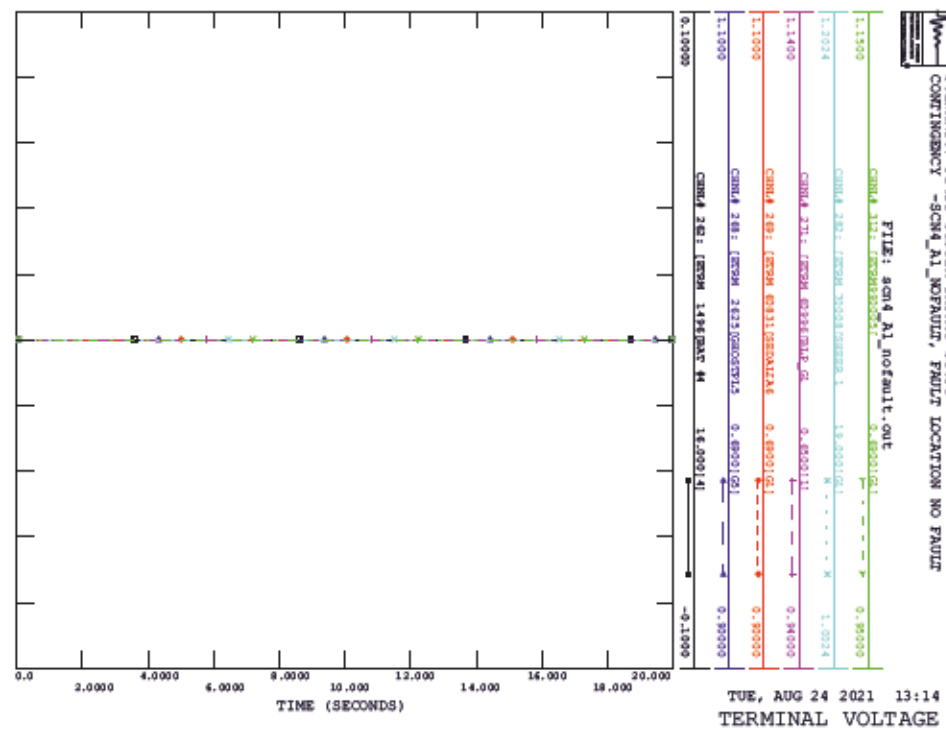
Attachment A4

Post-Project Transient Stability Diagrams Alternative 1 (Scenarios 4 to 6)

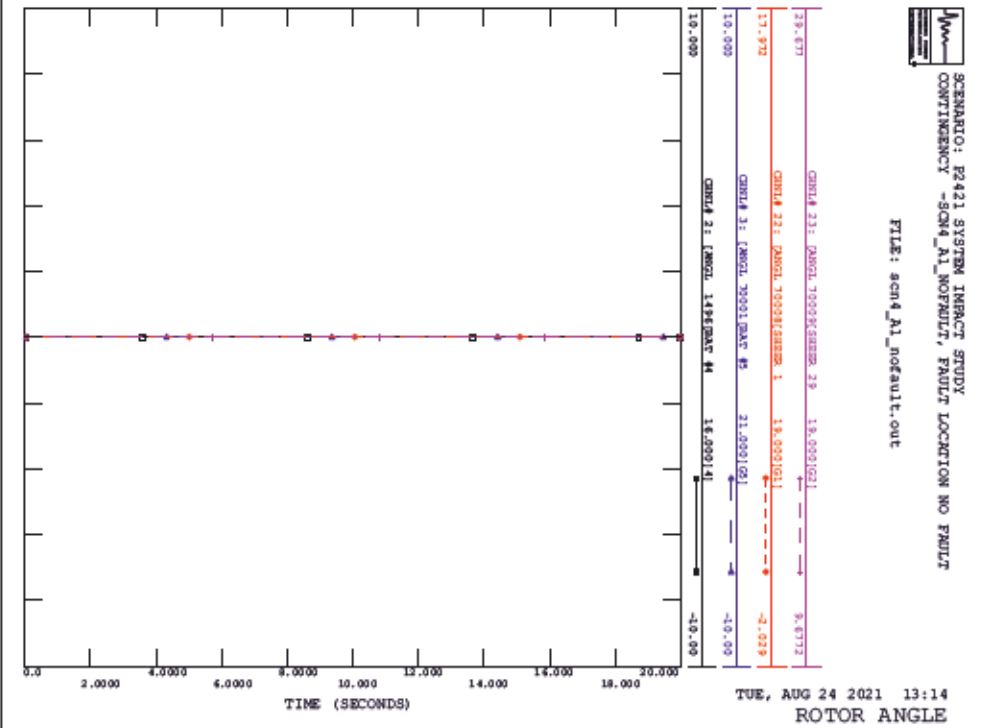
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT



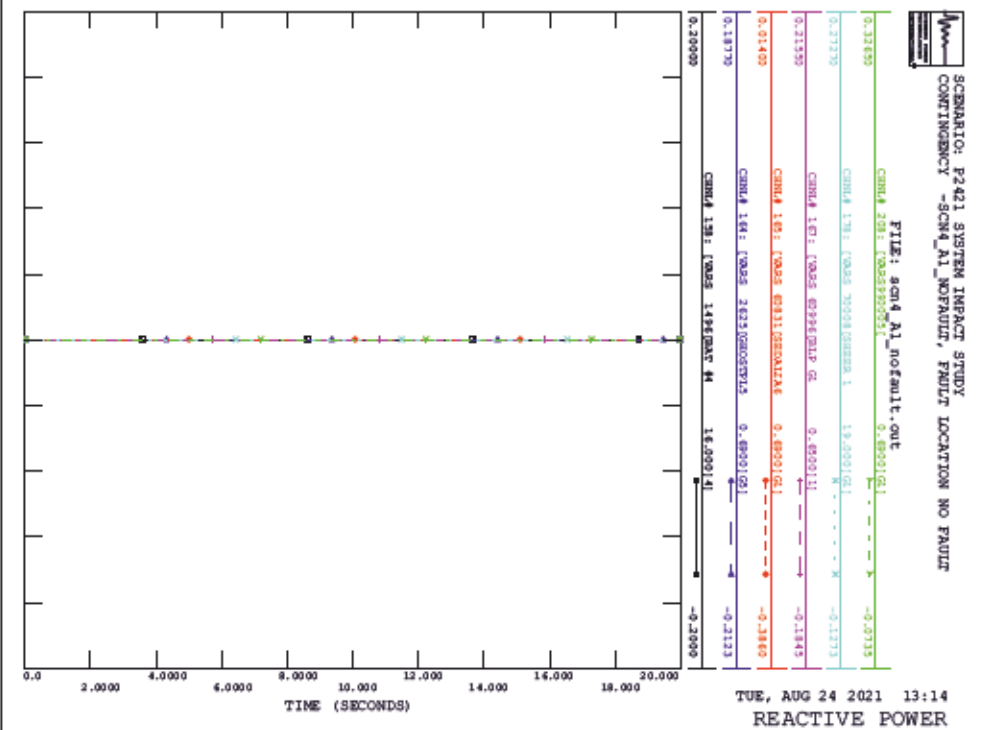
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT



SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT

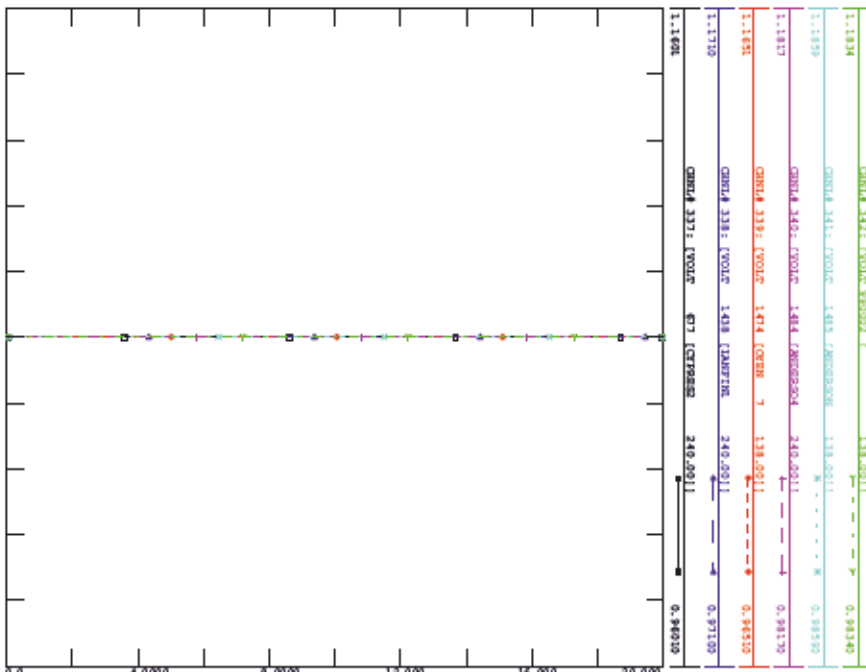


SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT



SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT

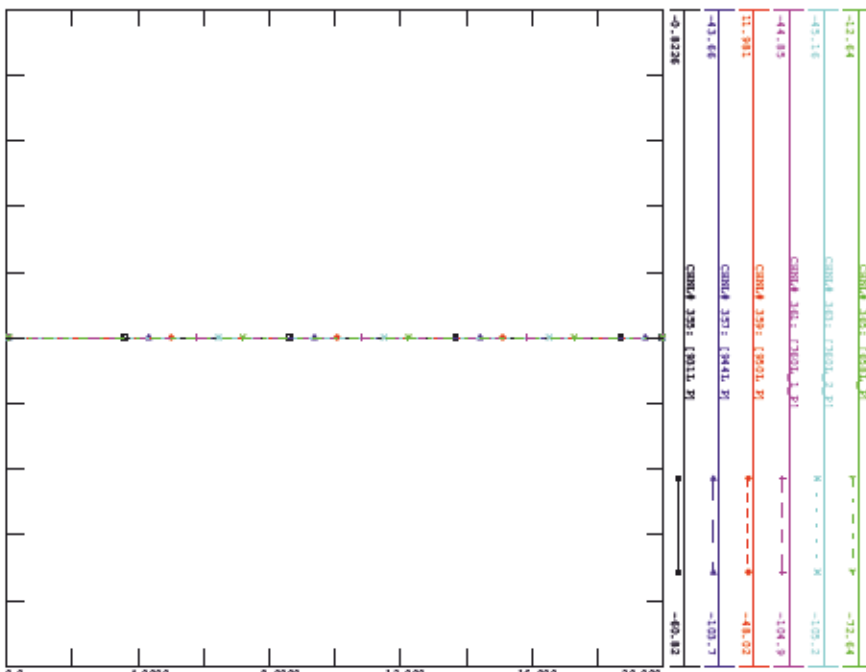
FILE: scm4_A1_nofault.out



TUE, AUG 24 2021 13:14
BUS VOLTAGE (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT

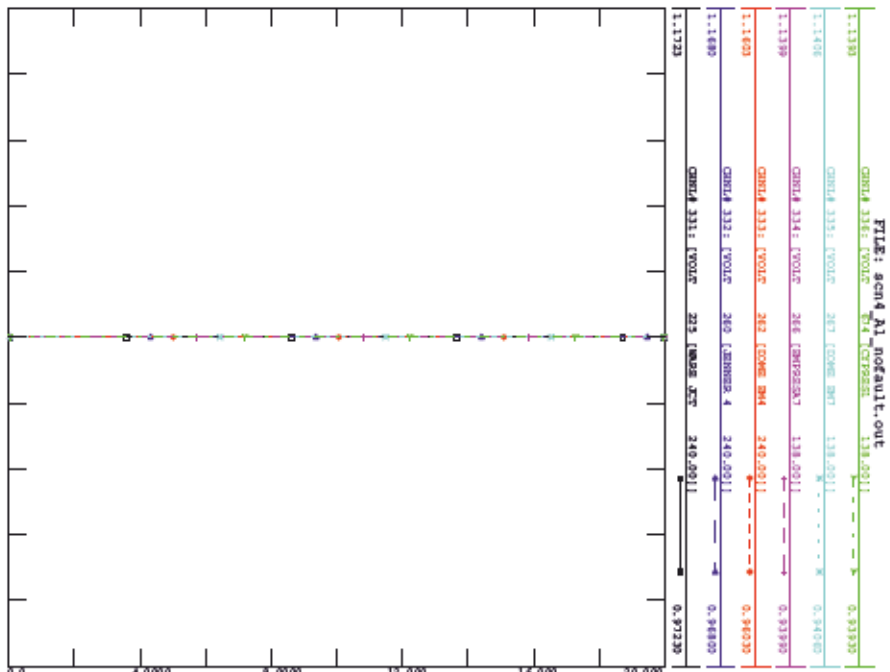
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TUE, AUG 24 2021 13:14
BRANCH P (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT

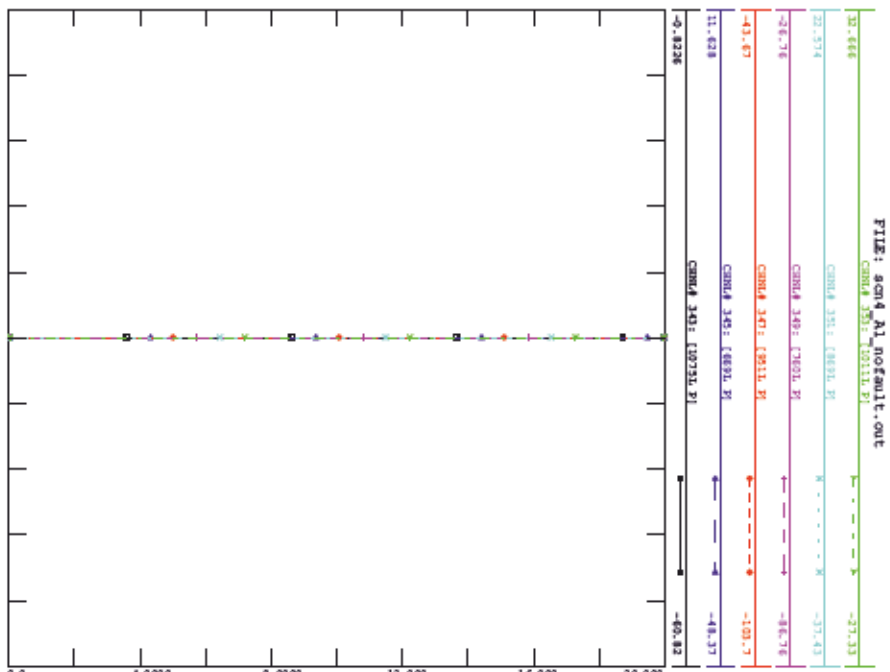
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TUE, AUG 24 2021 13:14
BUS VOLTAGE (1)

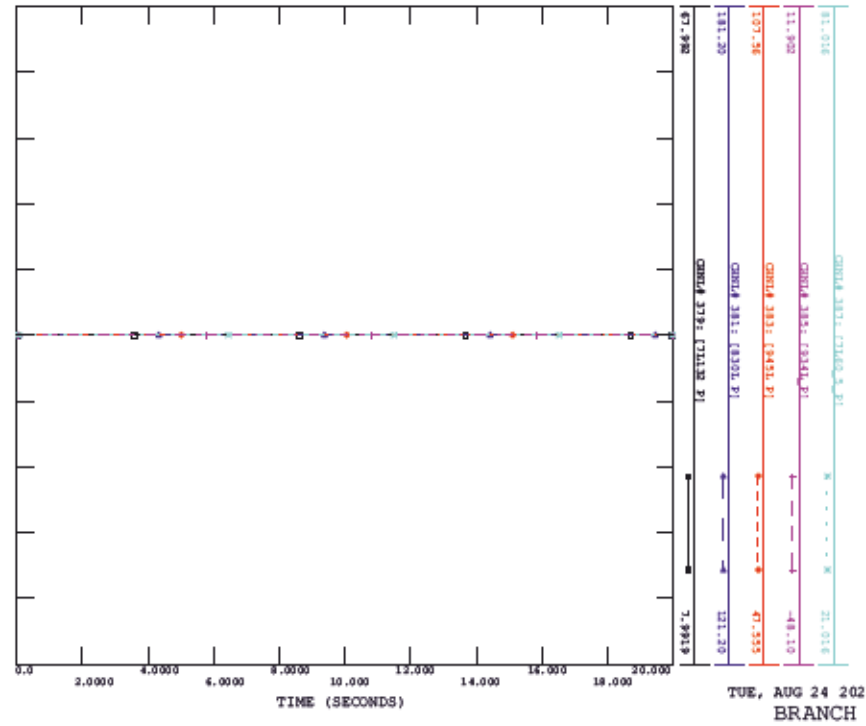
SCENARIO: P2421 SYSTEM INTERACT STUDY
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FILE: scm4_A1_nofault.out



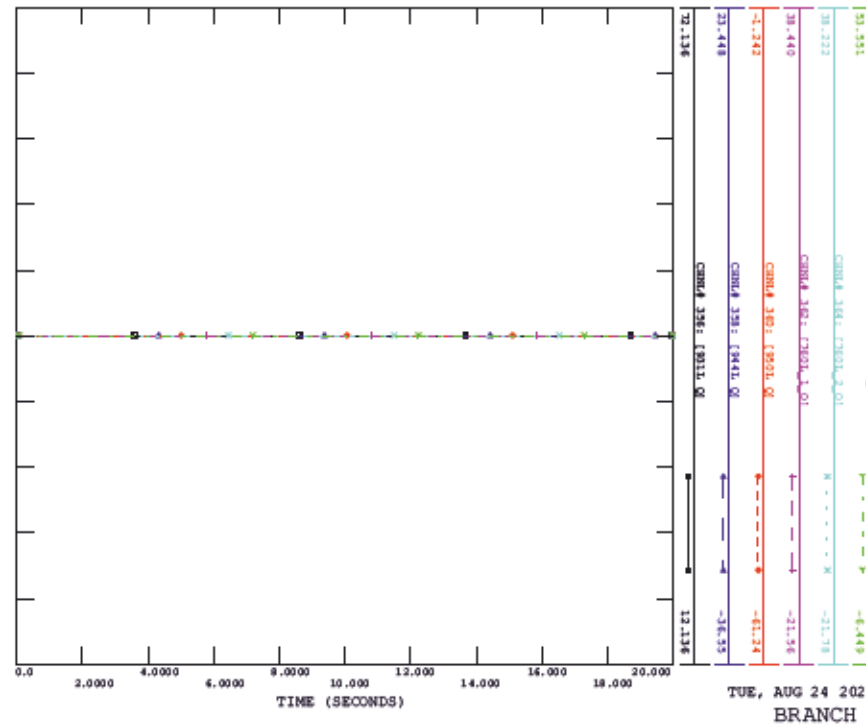
TUE, AUG 24 2021 13:14
BRANCH P (1)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT
FILE: scm4_A1_nofault.out



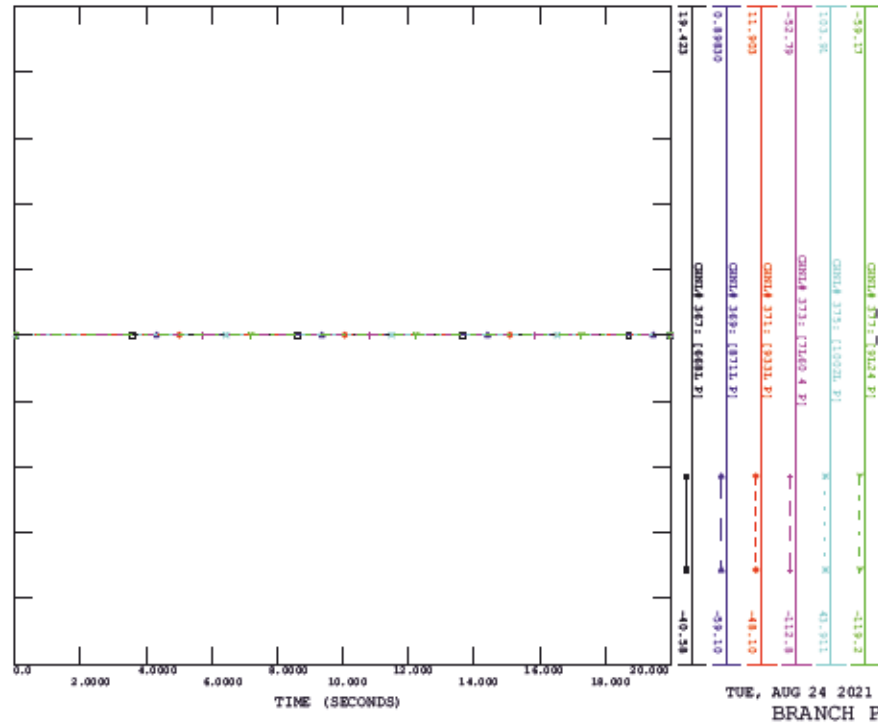
TUE, AUG 24 2021 13:14
BRANCH P (4)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT
FILE: scm4_A1_nofault.out



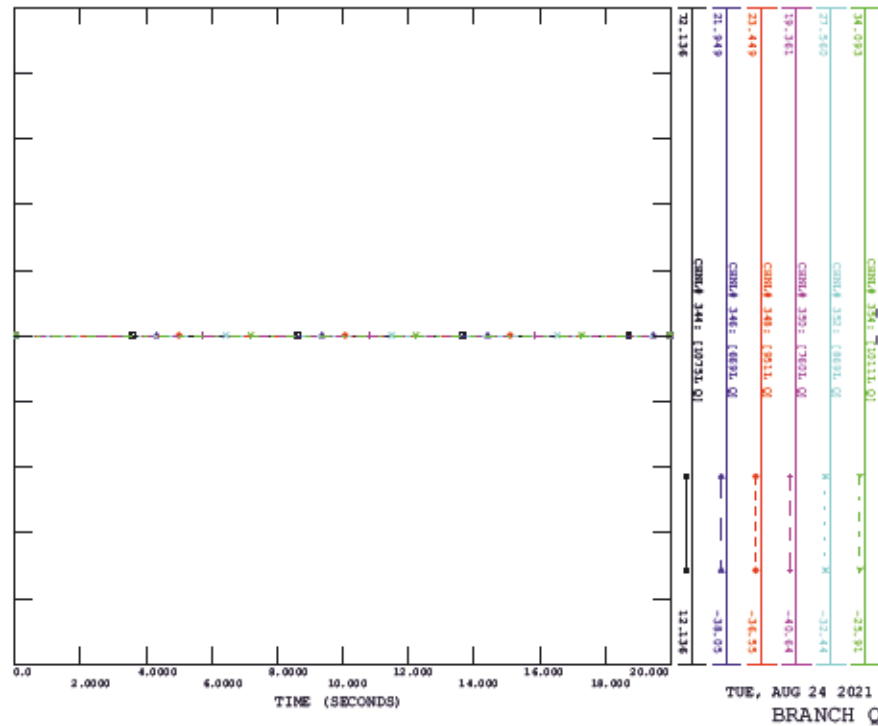
TUE, AUG 24 2021 13:14
BRANCH Q (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT
FILE: scm4_A1_nofault.out



TUE, AUG 24 2021 13:14
BRANCH P (3)

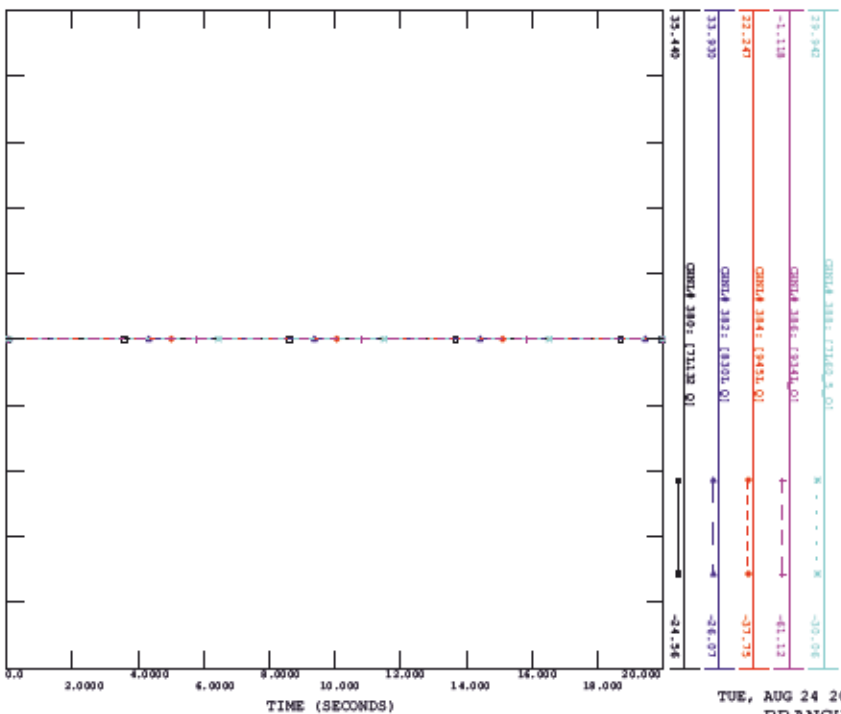
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT
FILE: scm4_A1_nofault.out



TUE, AUG 24 2021 13:14
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT

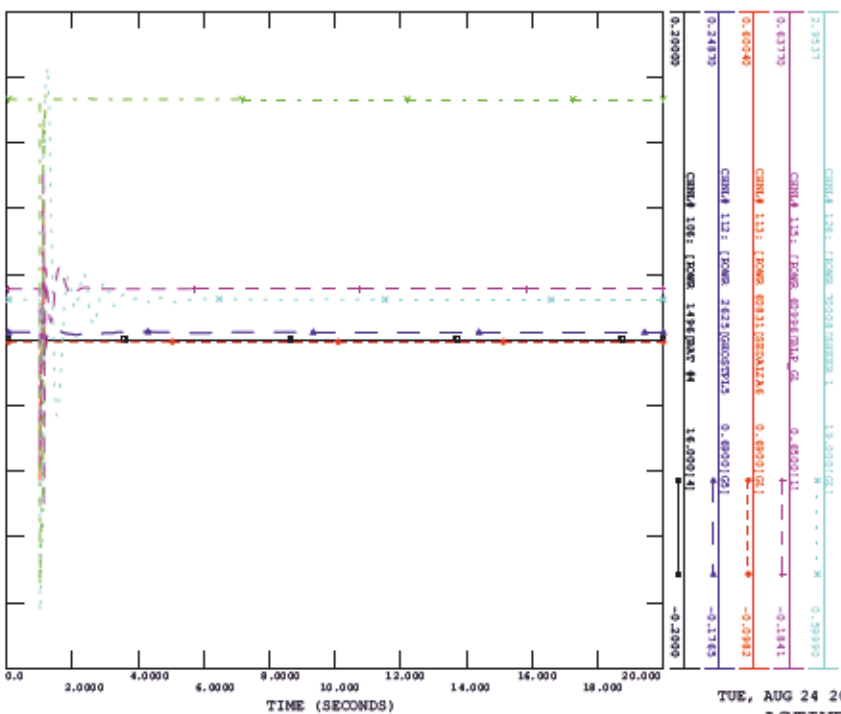
FILE: scm4_A1_nofault.out



TUE, AUG 24 2021 13:14
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_01_944L, FAULT LOCATION WARE JUNCTION

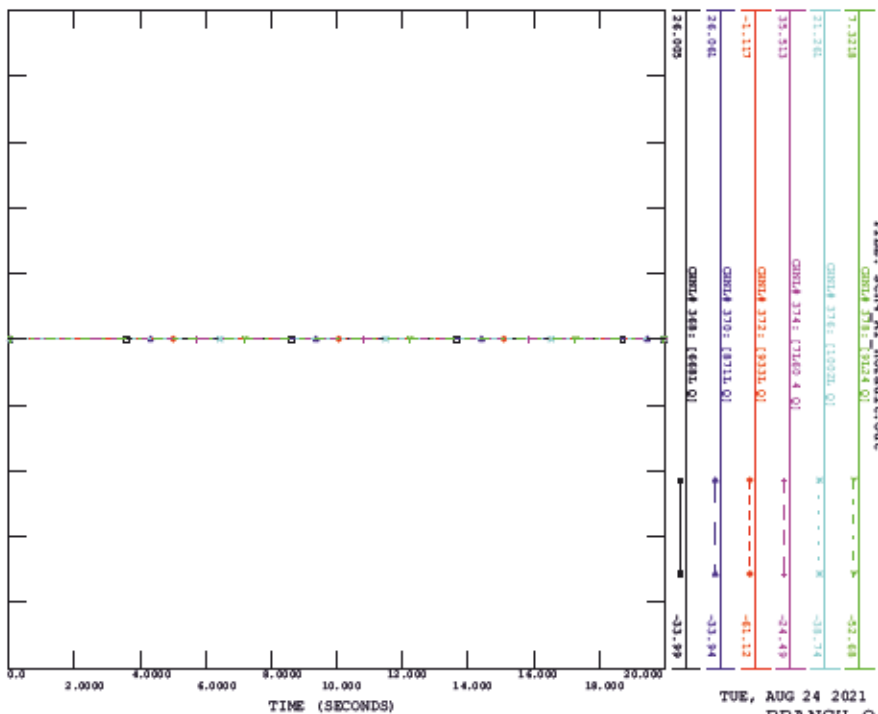
FILE: scm4_A1_01_944L.out



TUE, AUG 24 2021 13:14
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_NOFAULT, FAULT LOCATION NO FAULT

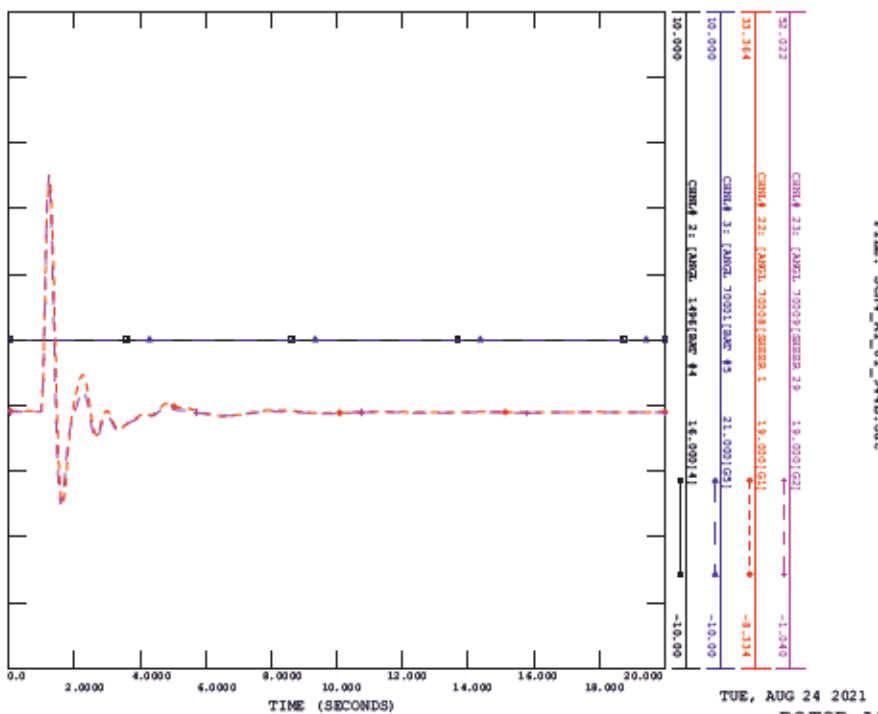
FILE: scm4_A1_nofault.out



TUE, AUG 24 2021 13:14
BRANCH Q (3)

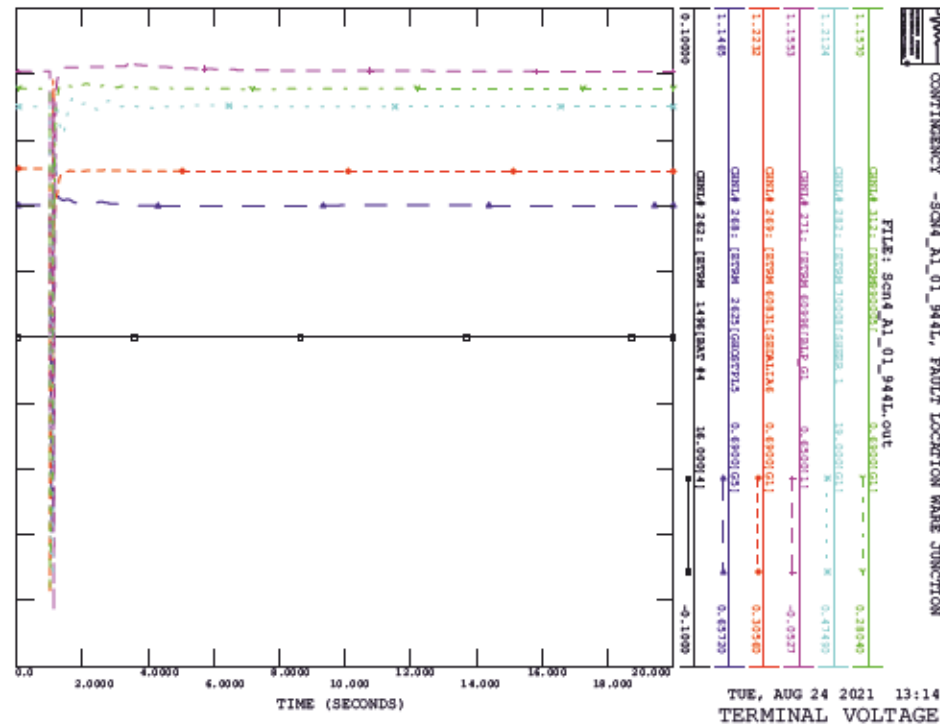
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_01_944L, FAULT LOCATION WARE JUNCTION

FILE: scm4_A1_01_944L.out

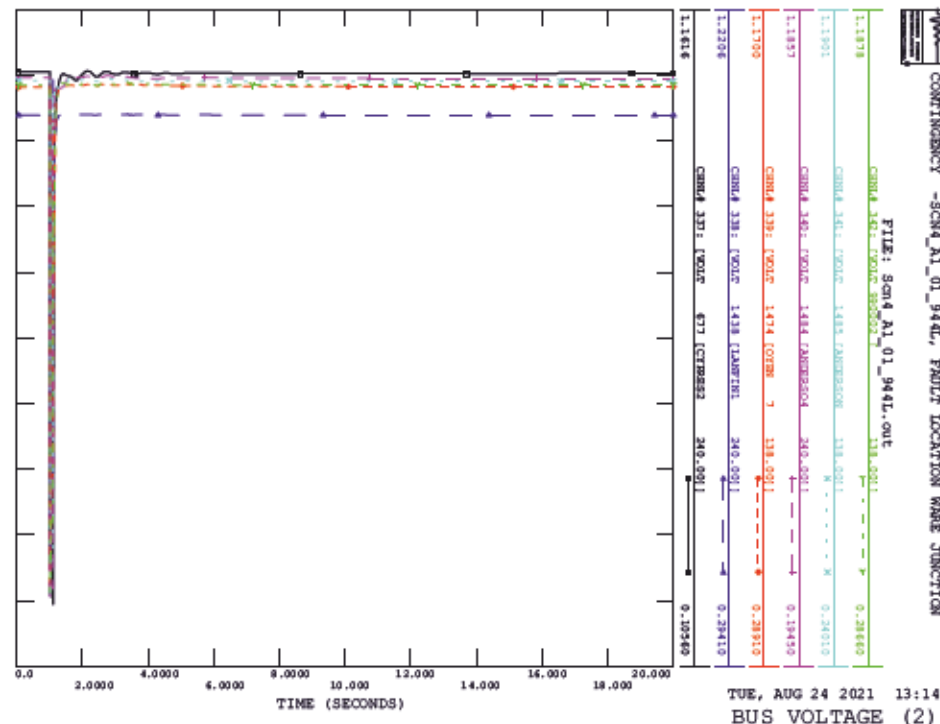


TUE, AUG 24 2021 13:14
ROTOR ANGLE

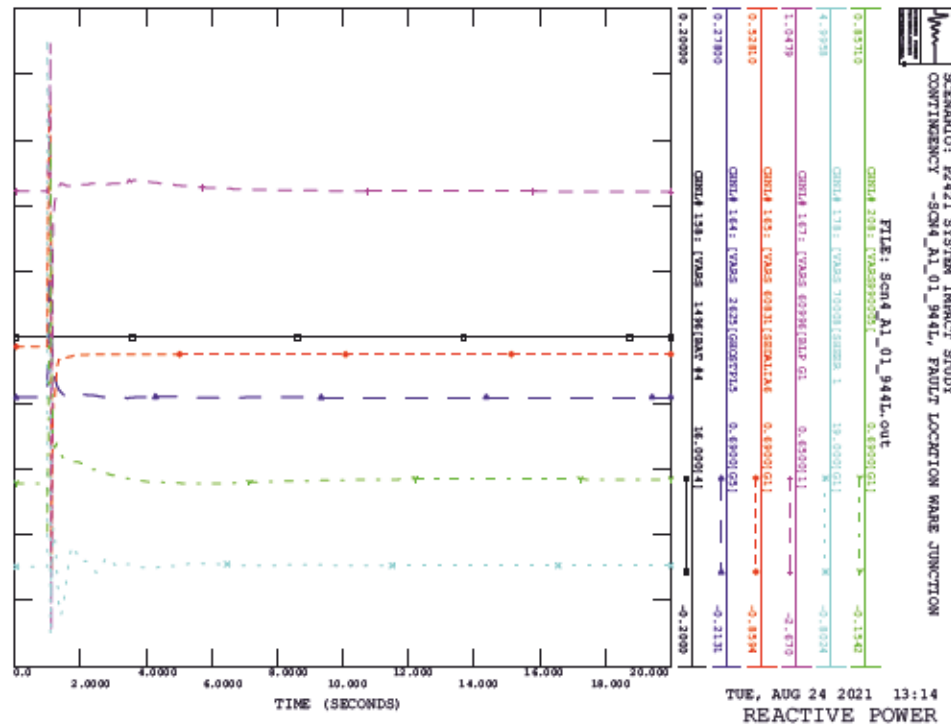
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_A1_01_944L, FAULT LOCATION WARE JUNCTION



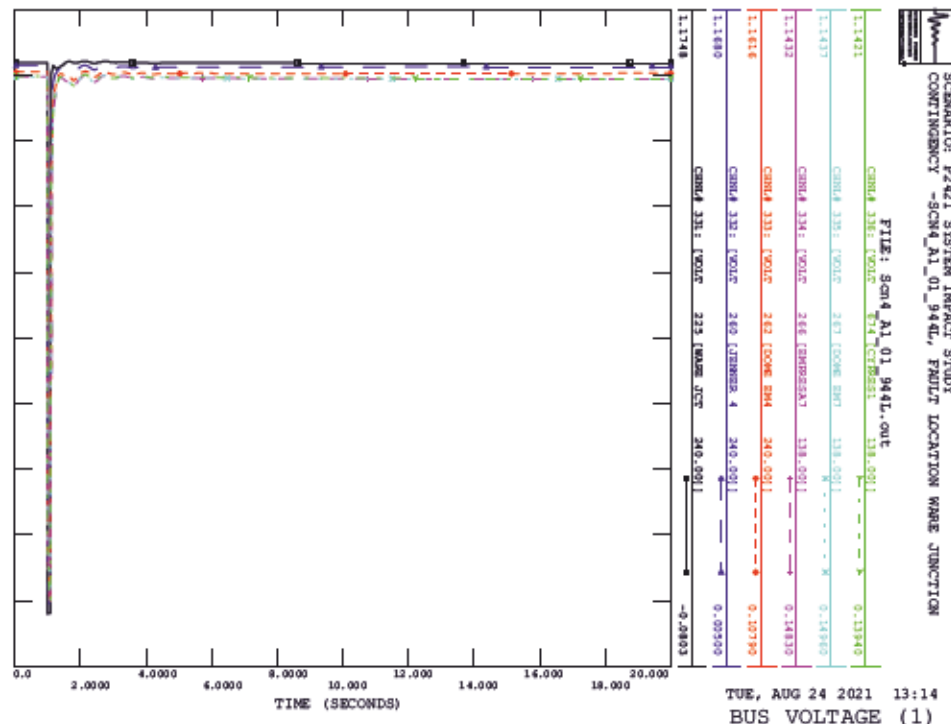
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_A1_01_944L, FAULT LOCATION WARE JUNCTION



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_A1_01_944L, FAULT LOCATION WARE JUNCTION

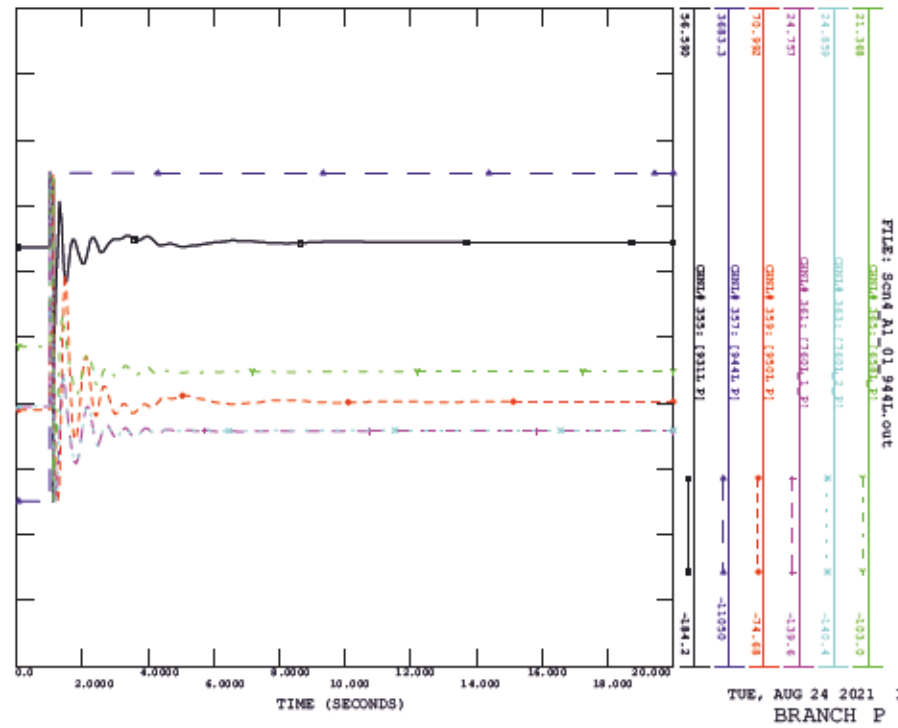


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_A1_01_944L, FAULT LOCATION WARE JUNCTION



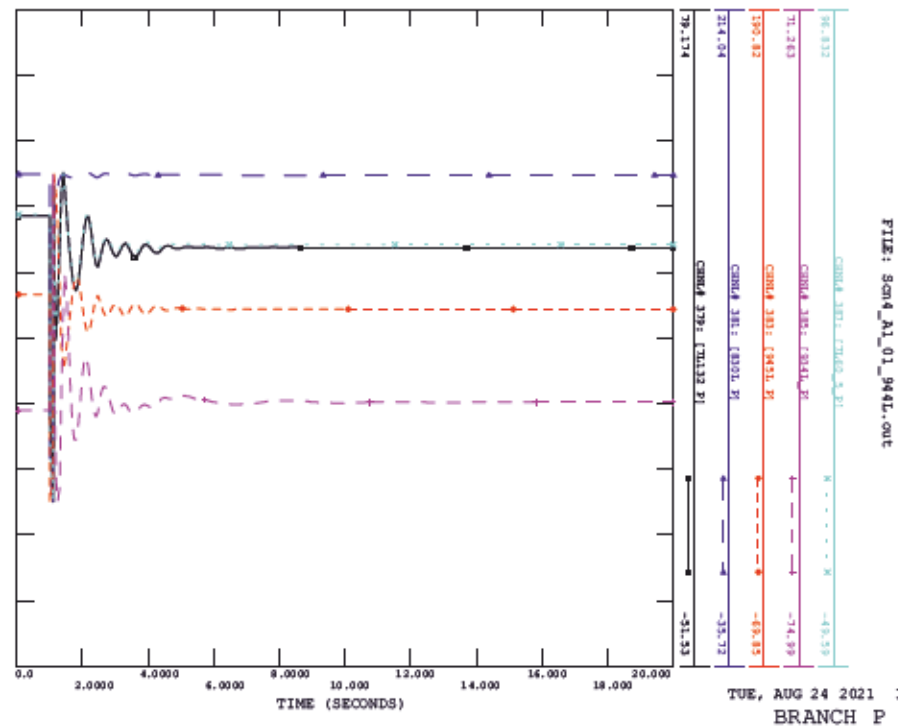
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



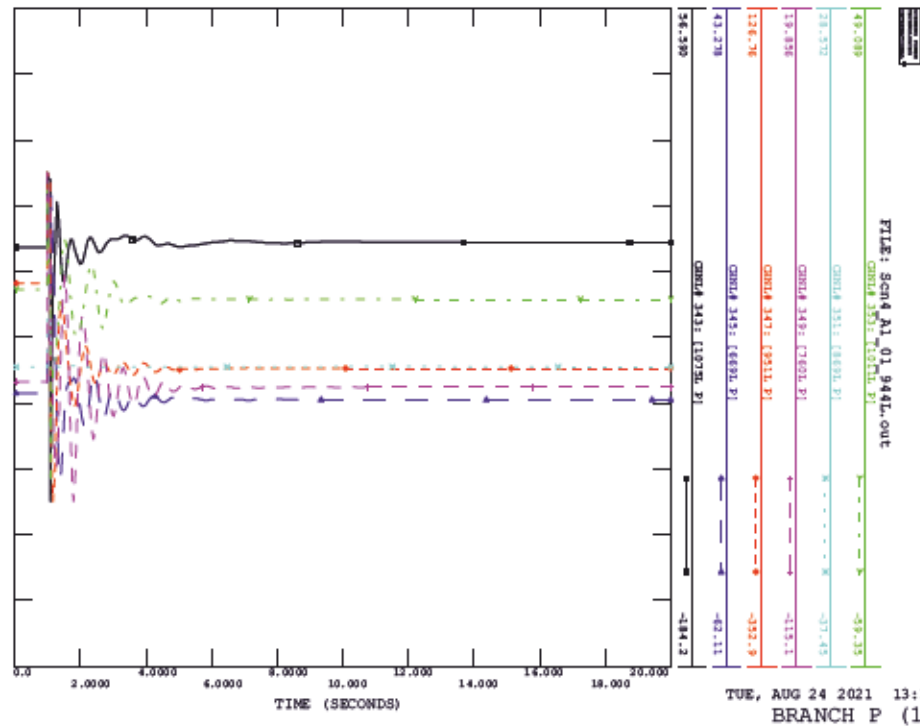
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



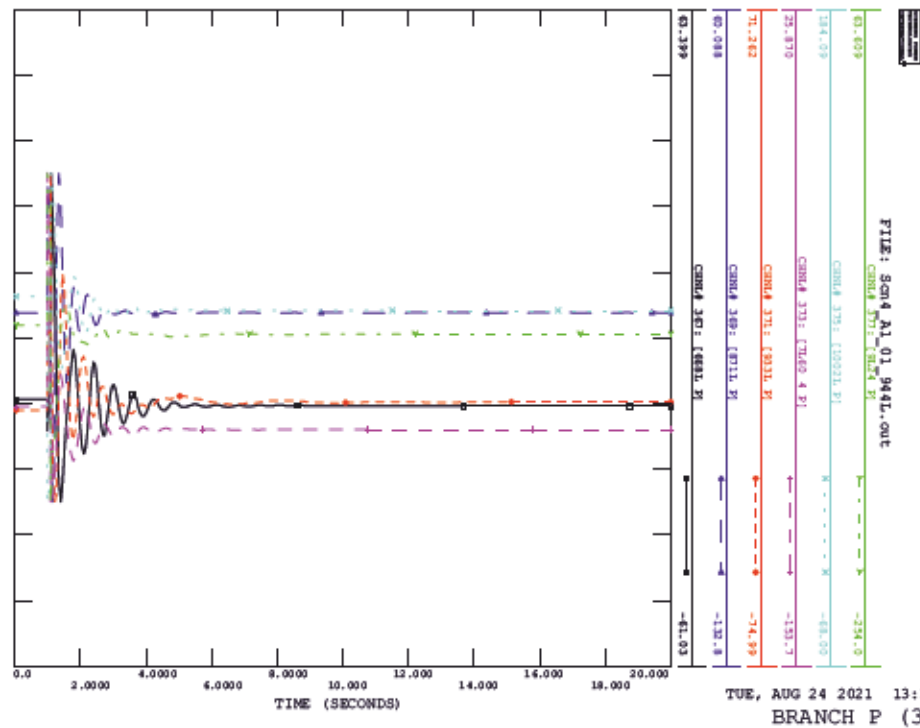
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CONTINGENCY - SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



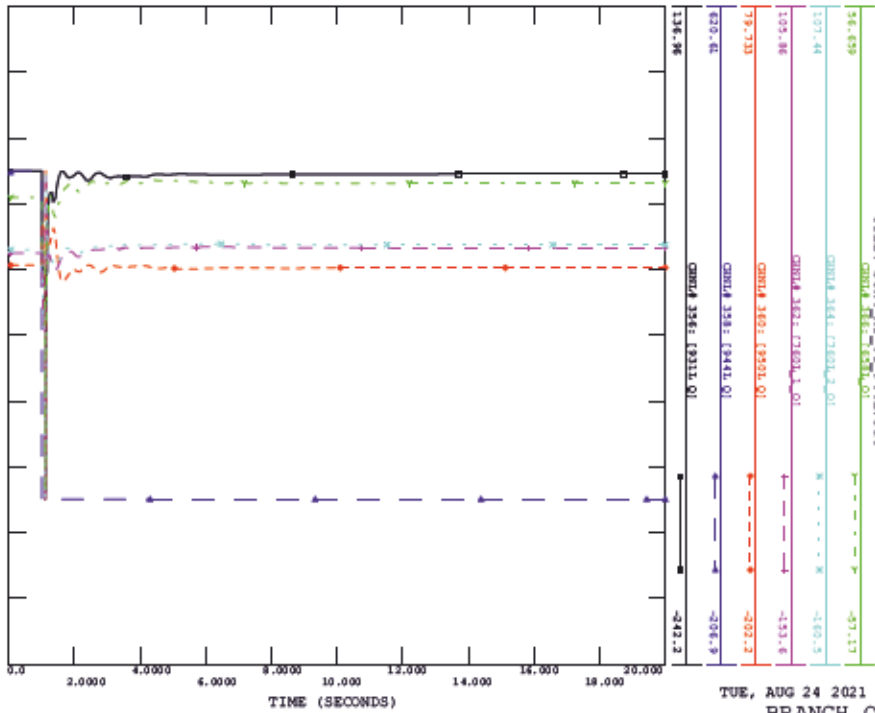
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CONTINGENCY - SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



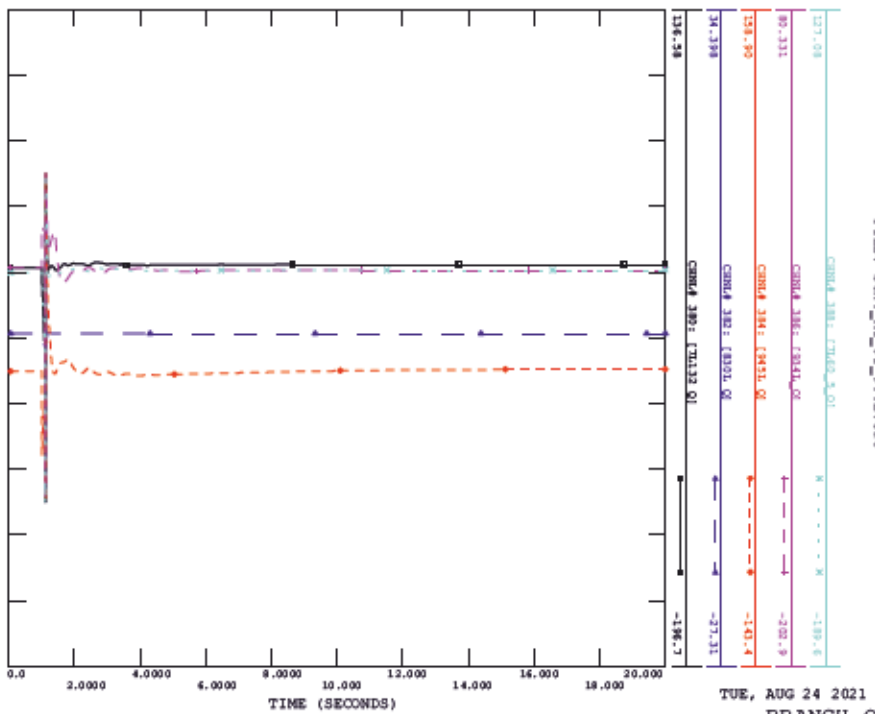
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CONTINGENCY -SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



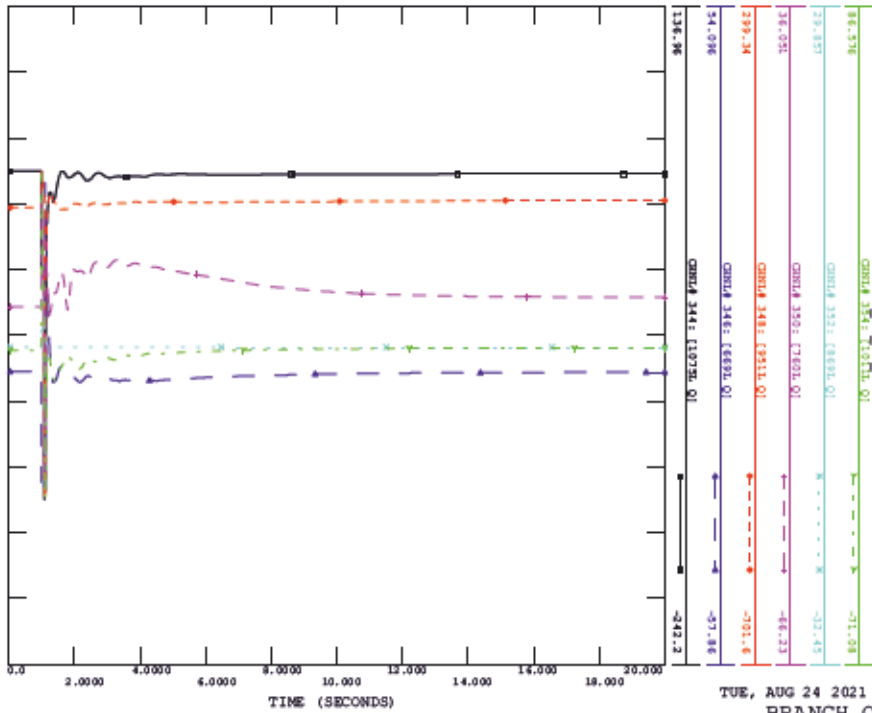
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



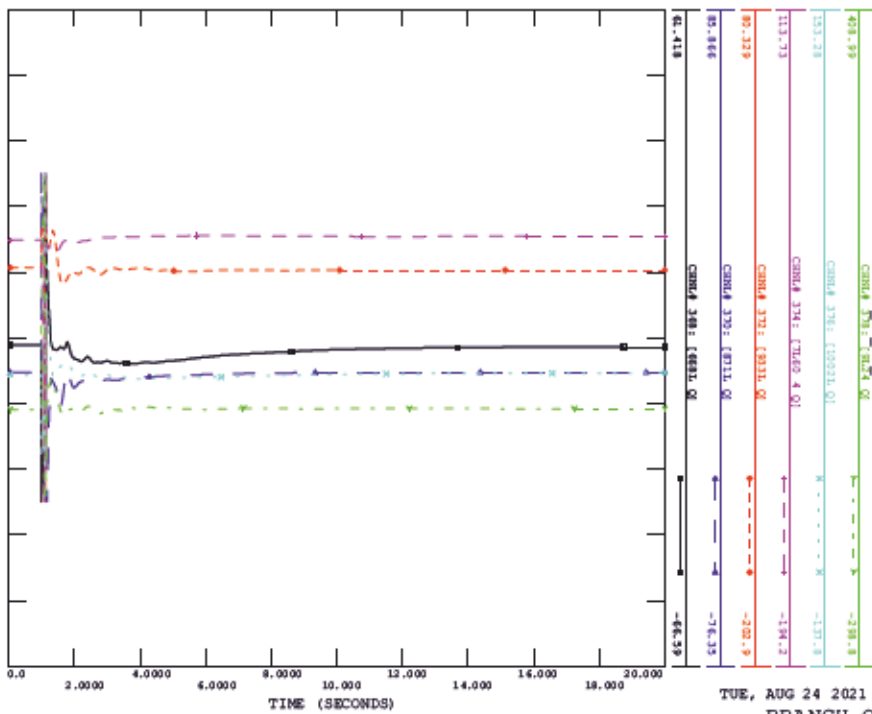
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CONTINGENCY -SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



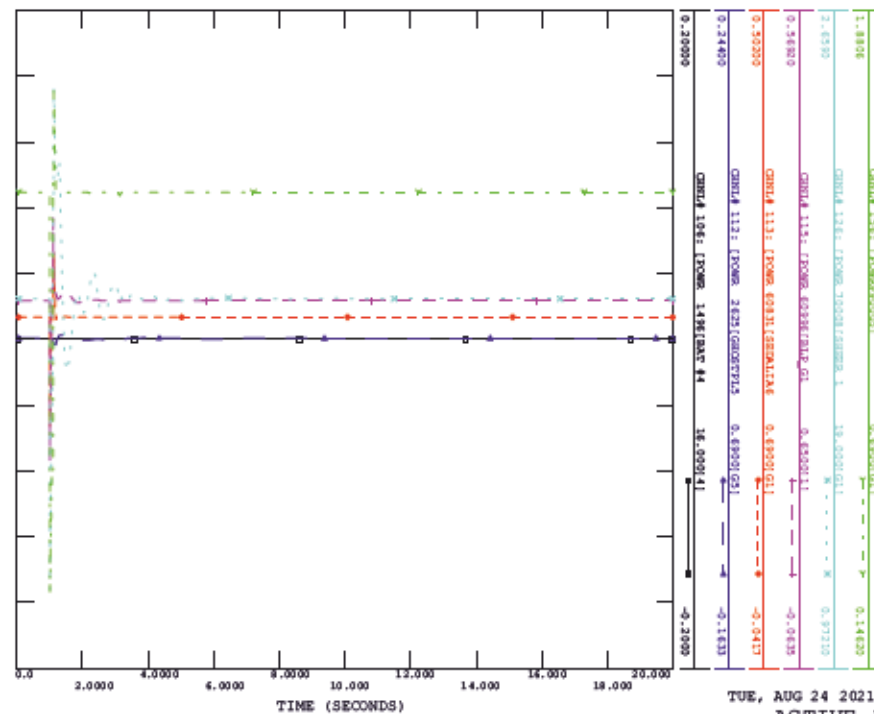
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_01_944L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_01_944L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_02_944L, FAULT LOCATION JENNER 2755

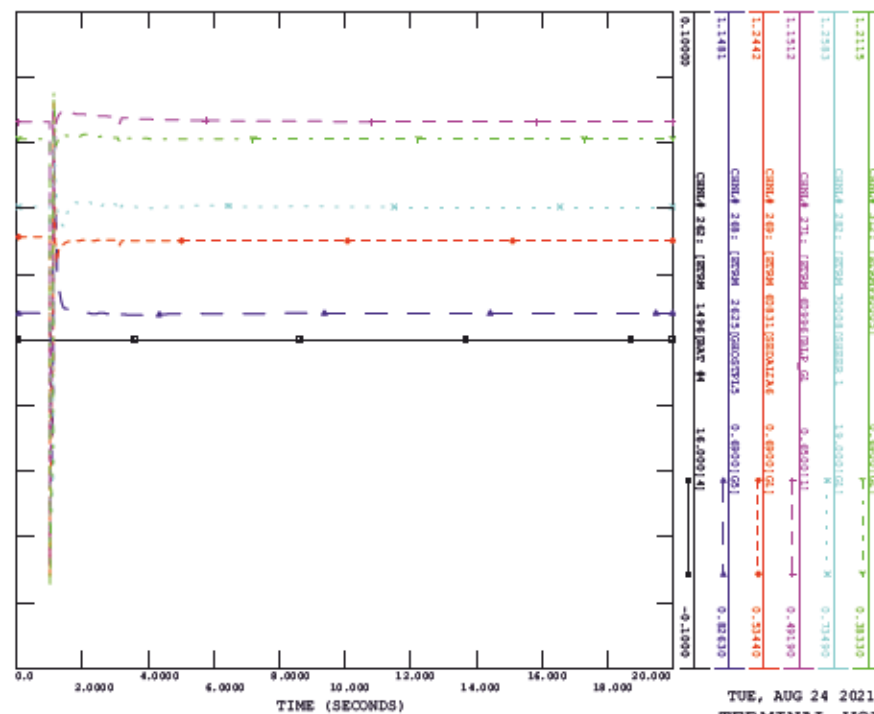
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TUE, AUG 24 2021 13:14
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_02_944L, FAULT LOCATION JENNER 2755

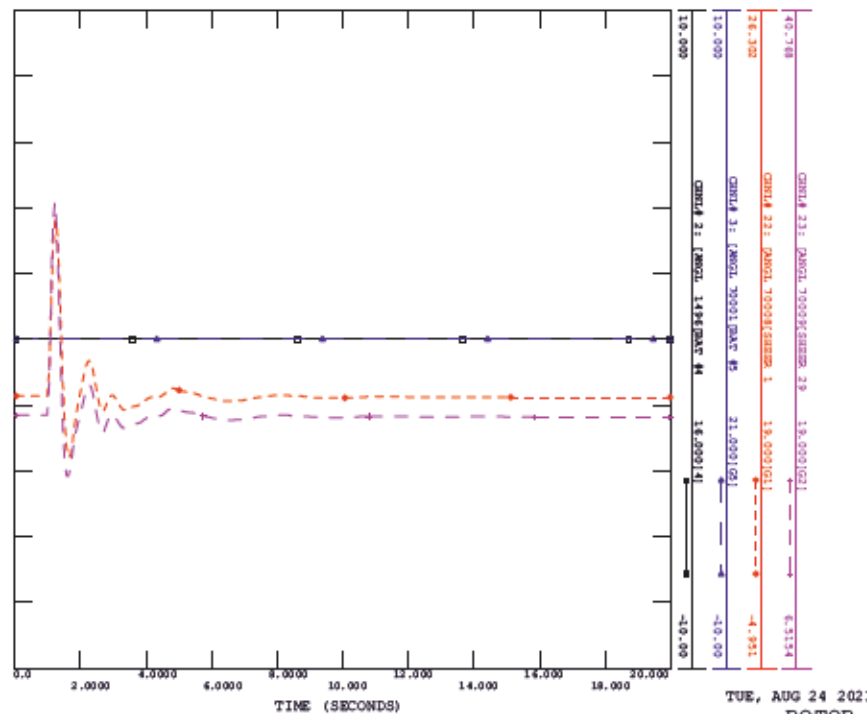
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TUE, AUG 24 2021 13:14
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_02_944L, FAULT LOCATION JENNER 2755

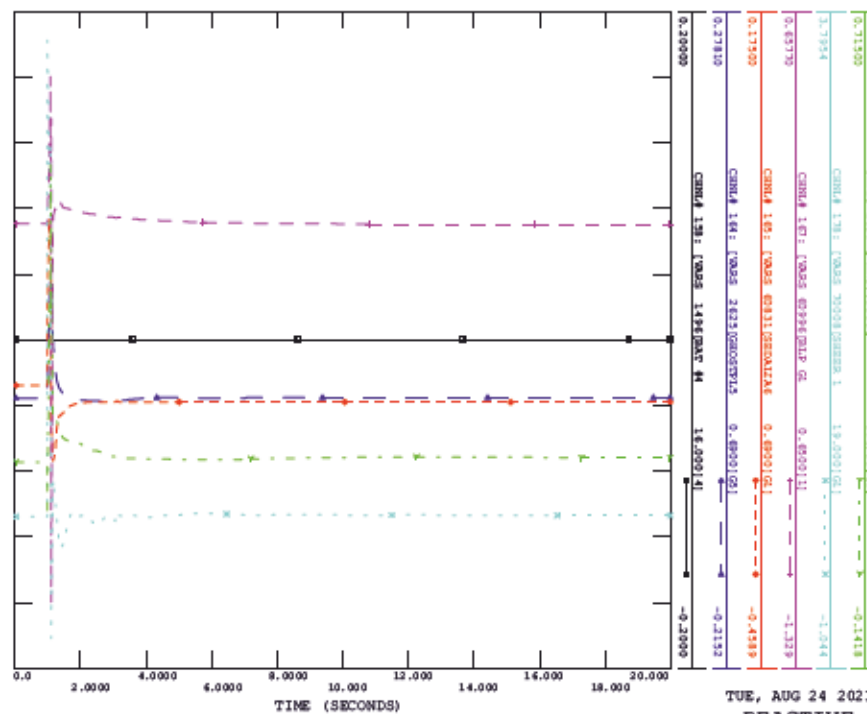
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TUE, AUG 24 2021 13:14
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_02_944L, FAULT LOCATION JENNER 2755

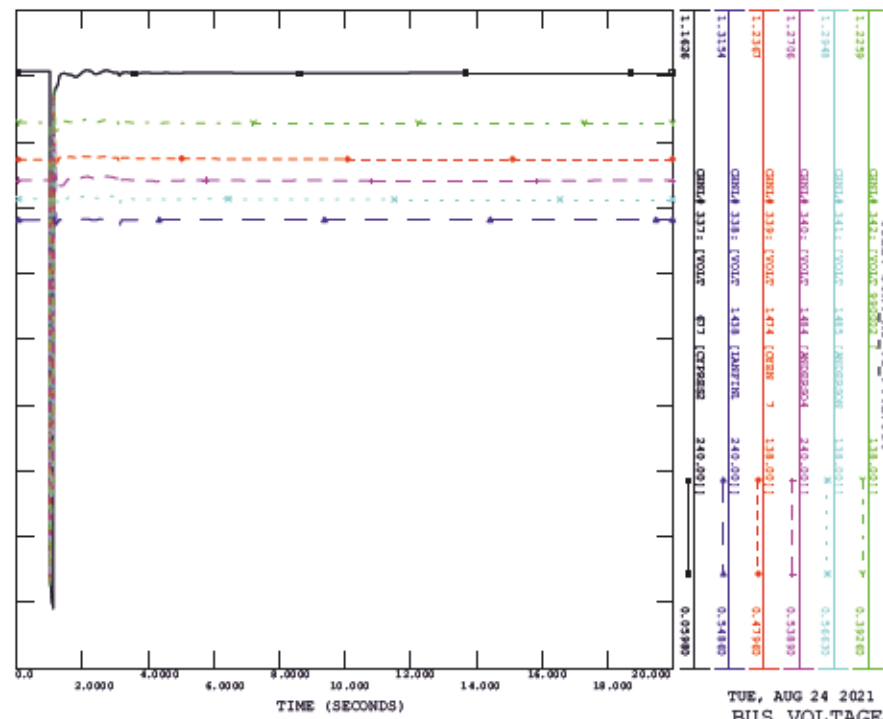
FILE: Scm4_A1_02_944L.out



TUE, AUG 24 2021 13:14
REACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2755

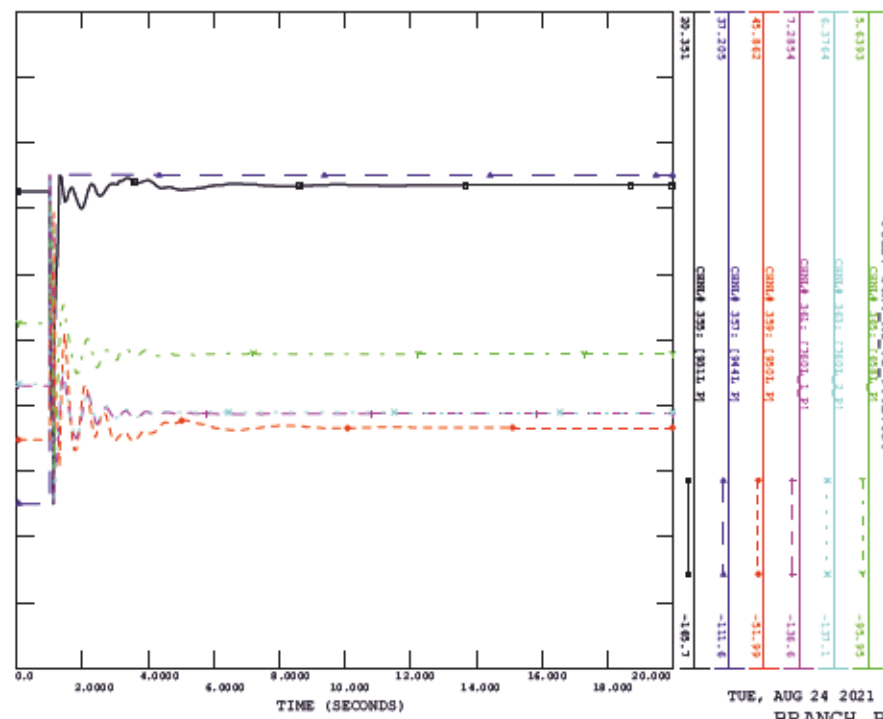
FILE: Scm4 AI_02_944L.out



TUE, AUG 24 2021 13:14
BUS VOLTAGE (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2755

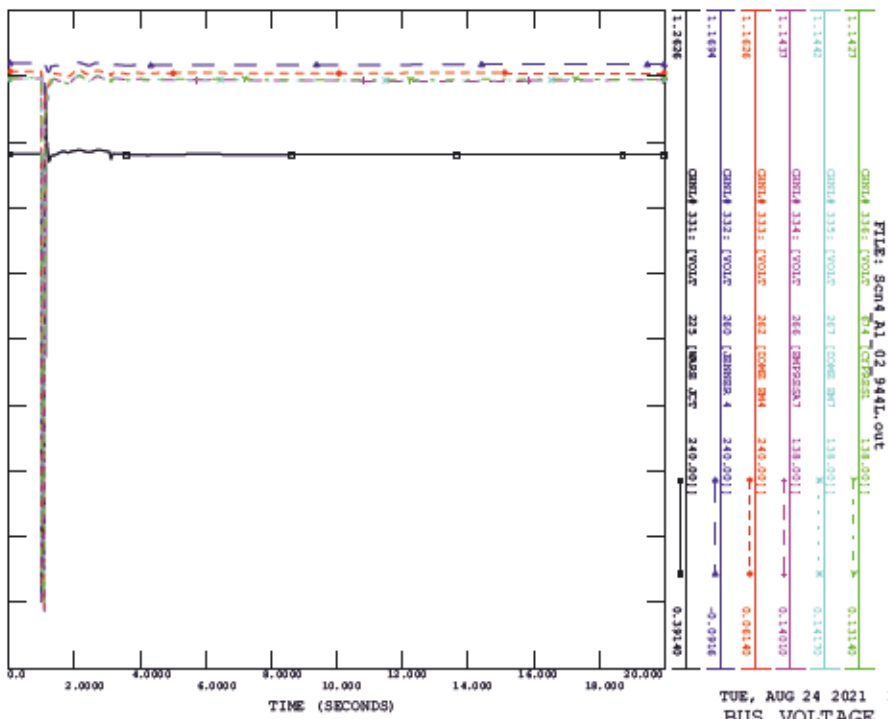
FILE: Scm4 AI_02_944L.out



TUE, AUG 24 2021 13:15
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2755

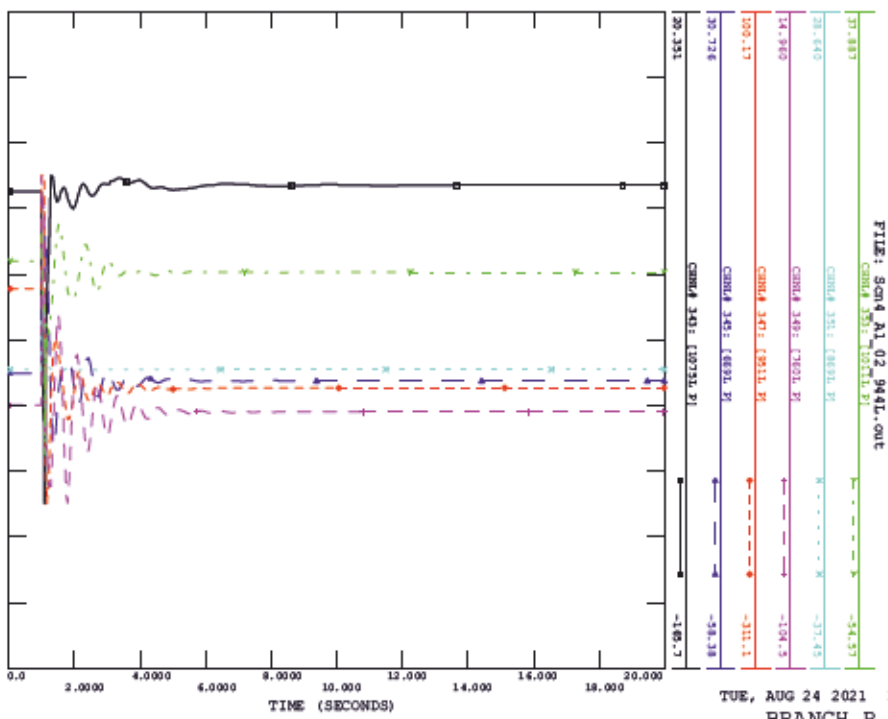
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TUE, AUG 24 2021 13:14
BUS VOLTAGE (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2755

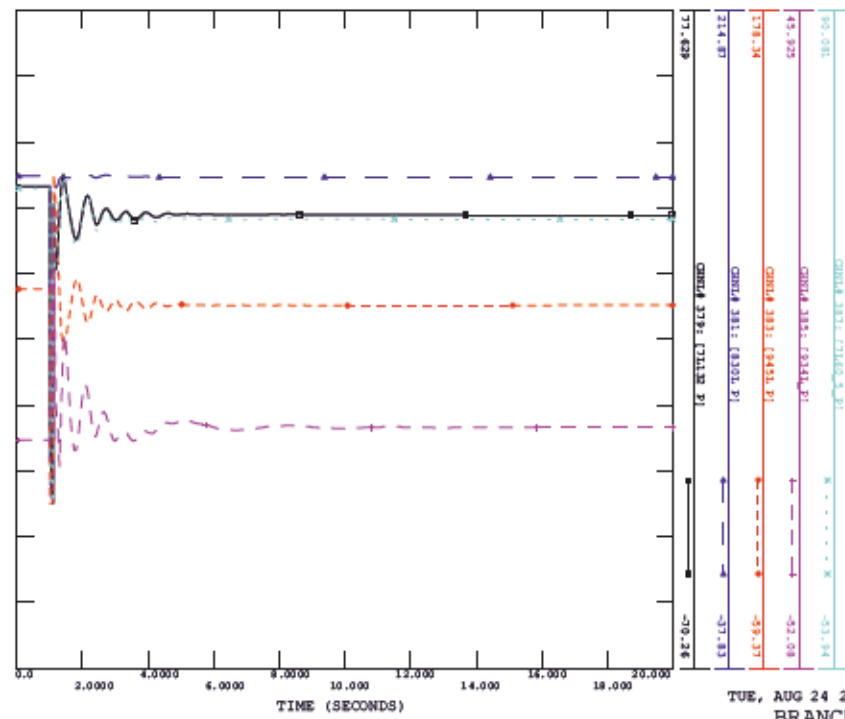
FILE: Scm4 AI_02_944L.out



TUE, AUG 24 2021 13:15
BRANCH P (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2155

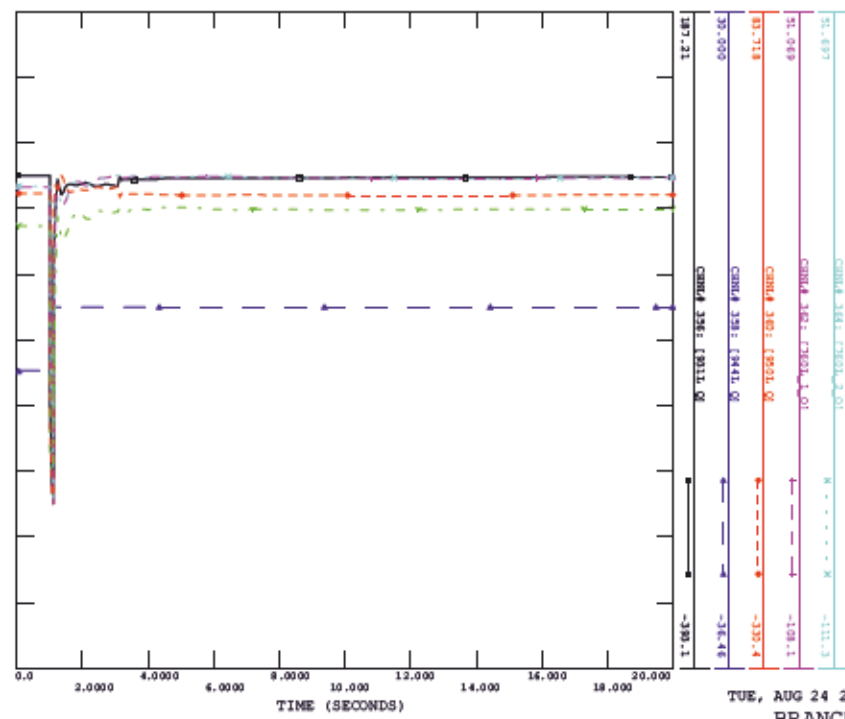
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TUE, AUG 24 2021 13:15
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2155

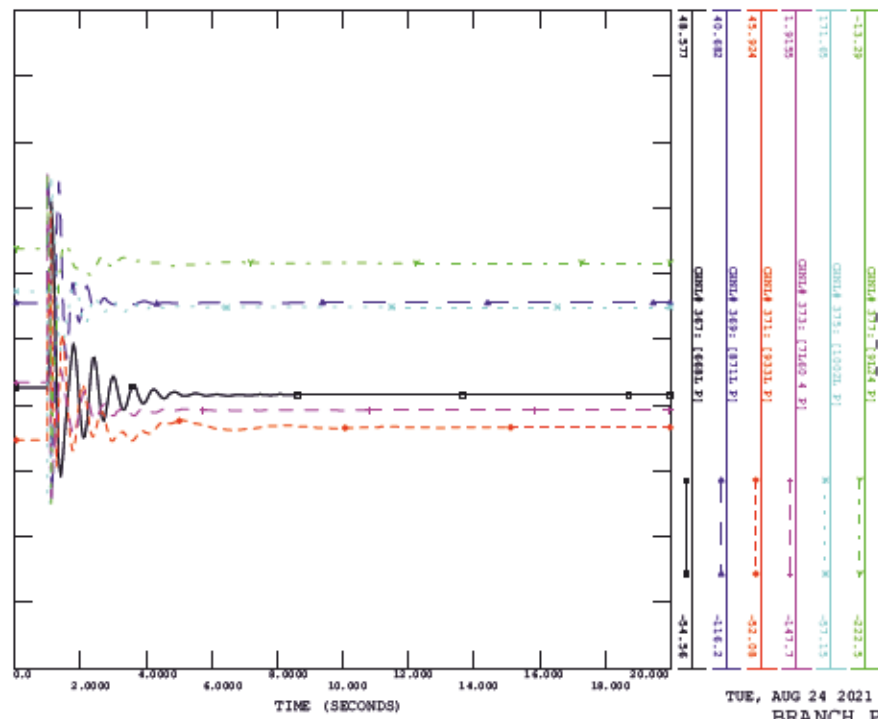
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TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2155

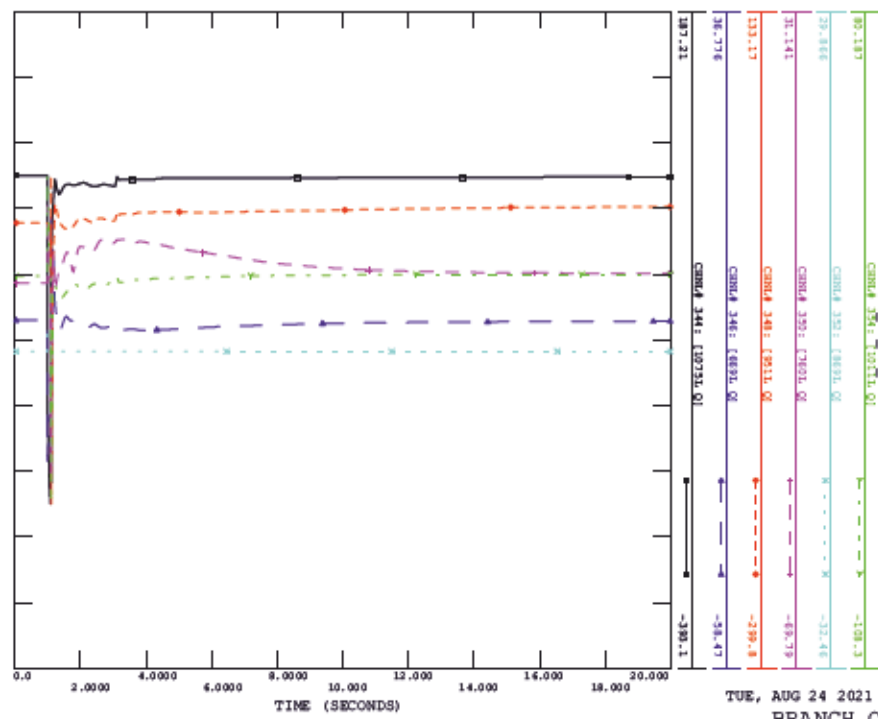
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TUE, AUG 24 2021 13:15
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_02_944L, FAULT LOCATION JENNER 2155

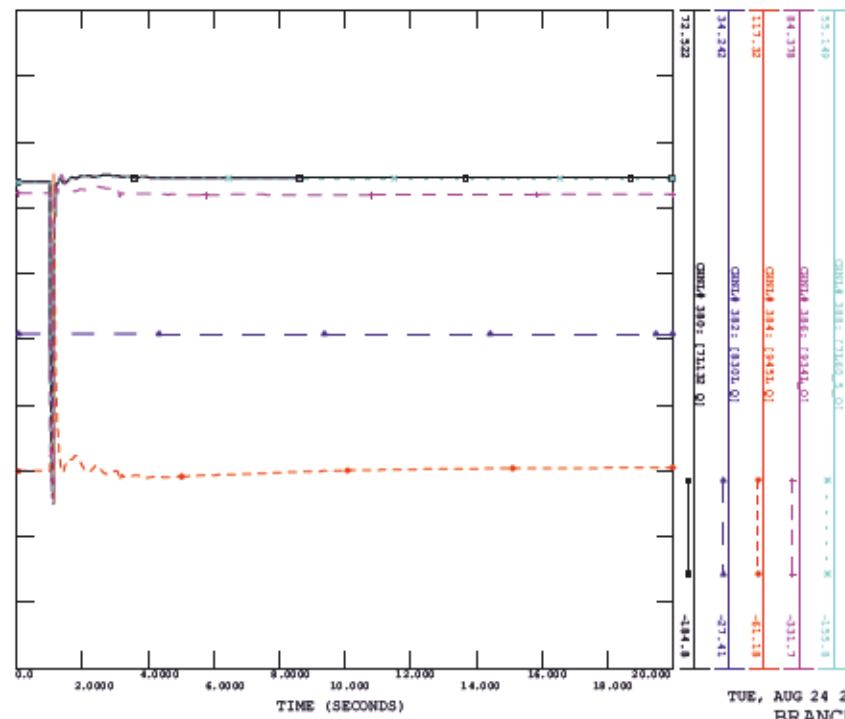
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM4_A1_02_944L, FAULT LOCATION JENNER 2755

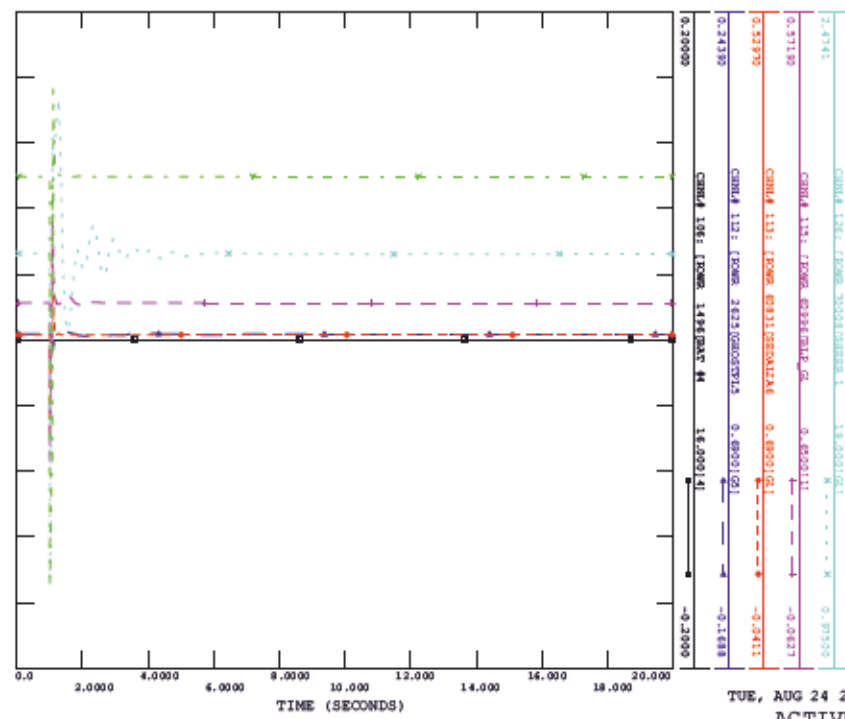
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TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM4_A1_03_945L, FAULT LOCATION JENNER 2755

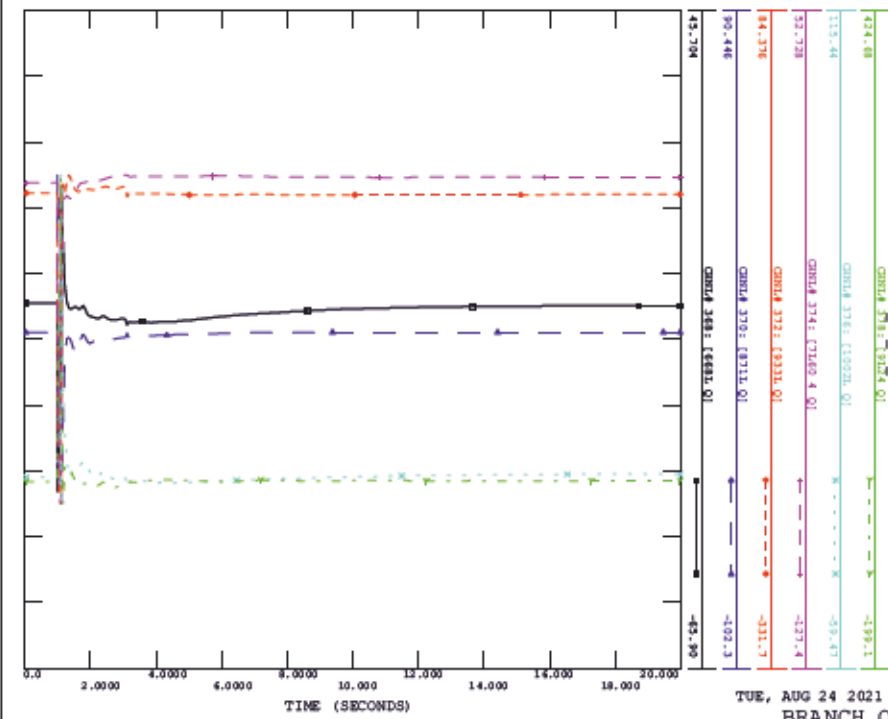
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TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM4_A1_02_944L, FAULT LOCATION JENNER 2755

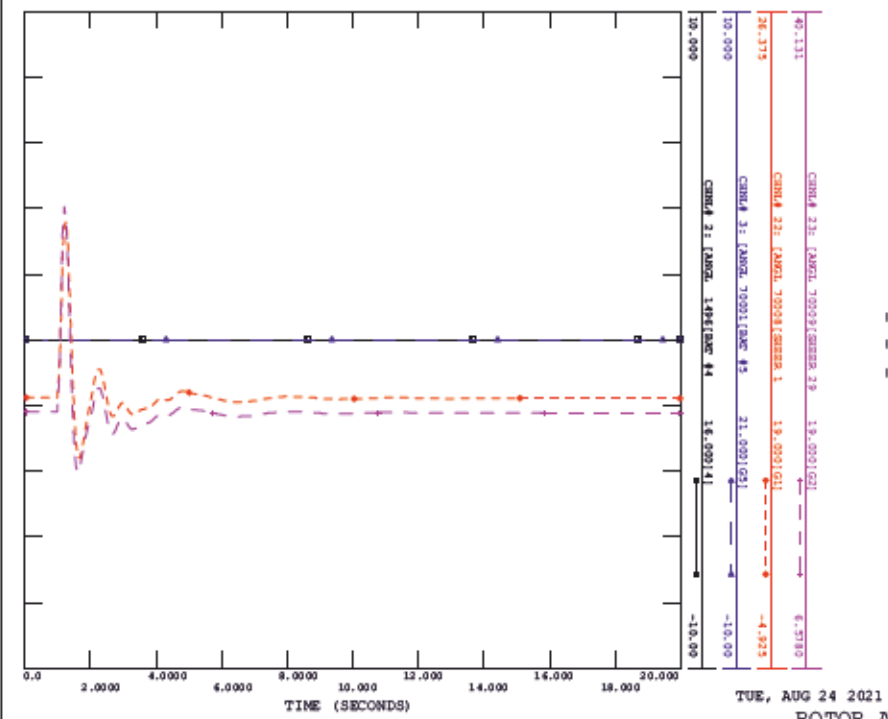
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TUE, AUG 24 2021 13:15
BRANCH Q (3)

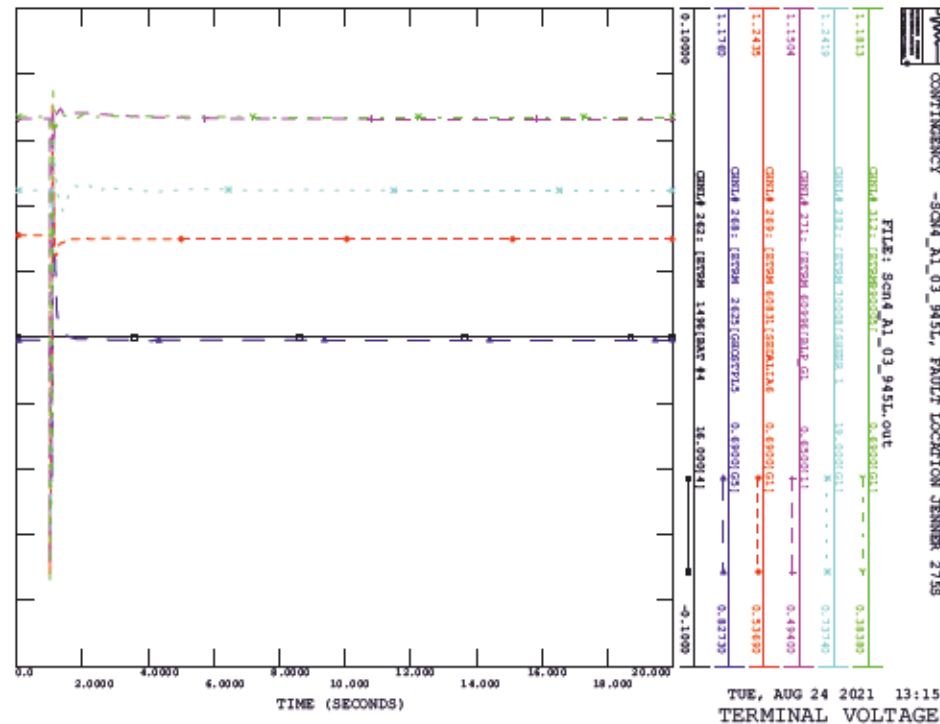
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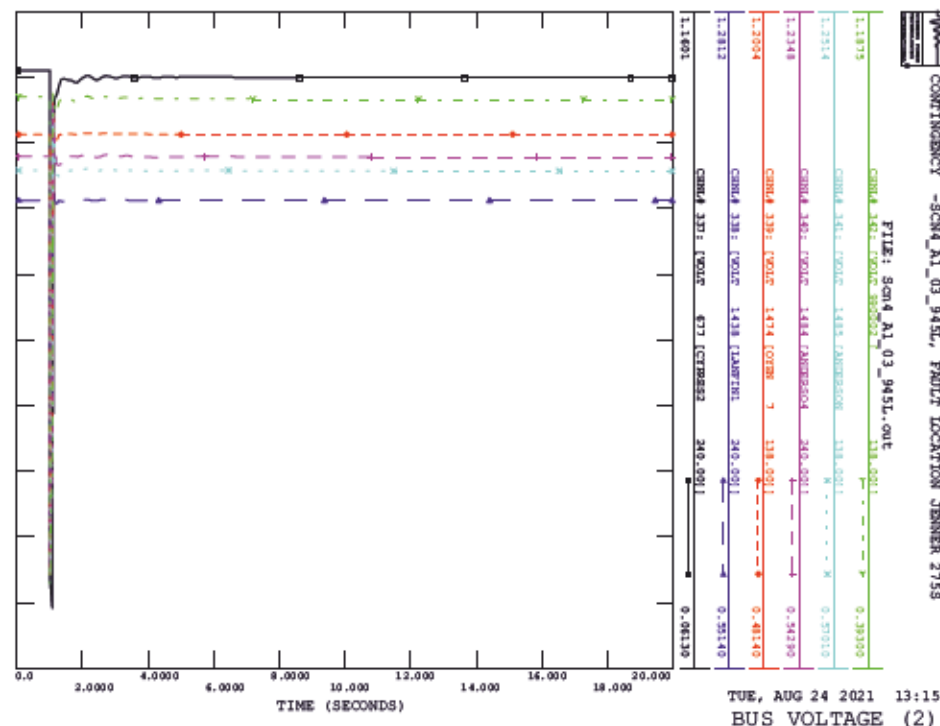


TUE, AUG 24 2021 13:15
ROTOR ANGLE

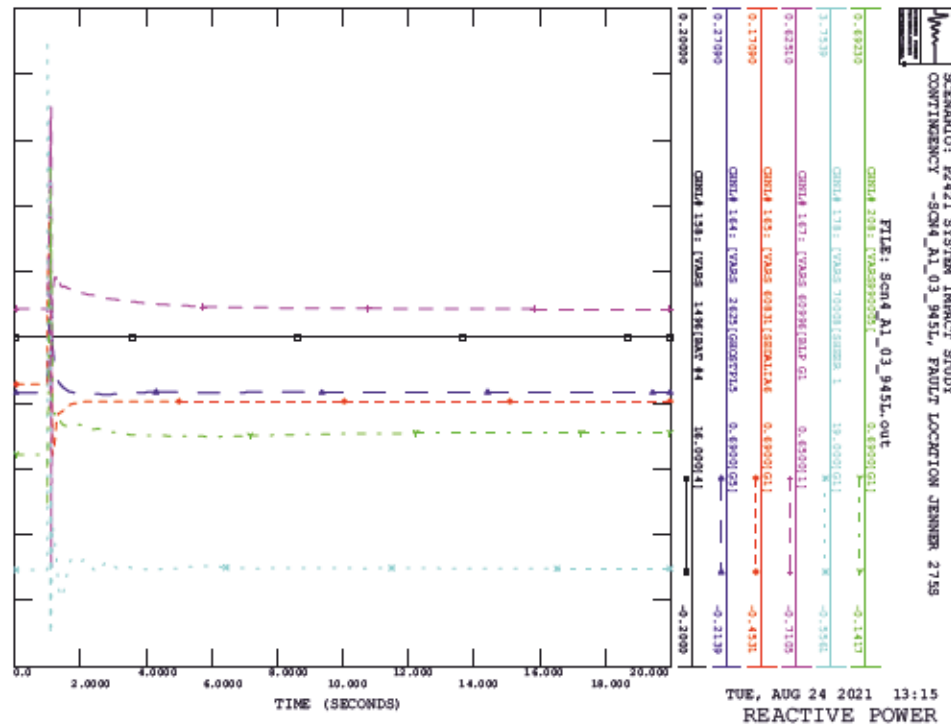
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CONTINGENCY -SCM4_A1_03_945L, FAULT LOCATION JENNER 2755



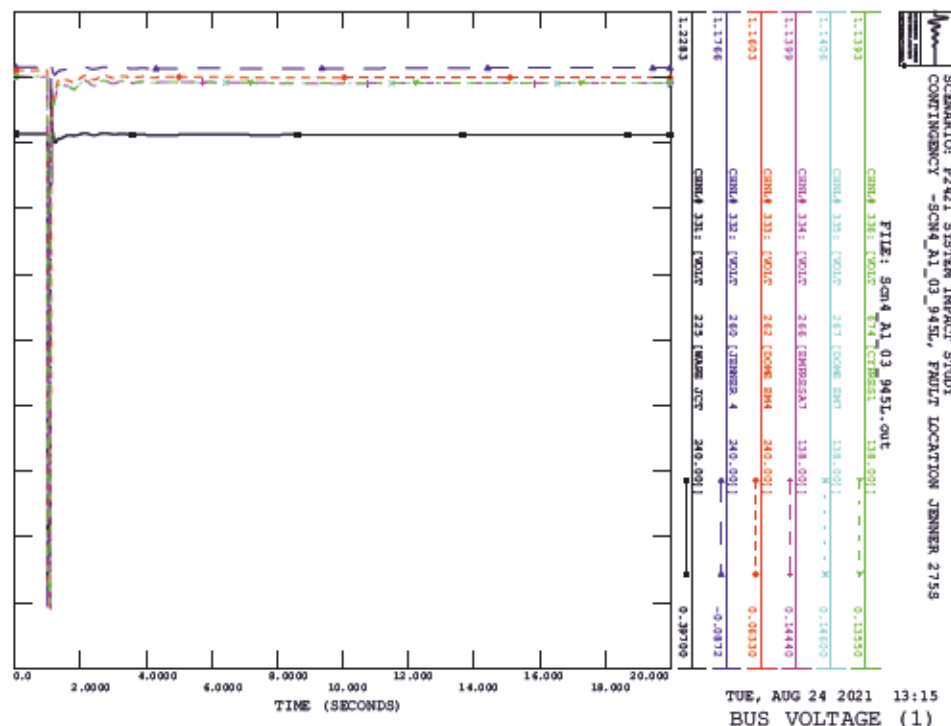
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_03_945L, FAULT LOCATION JENNER 2755



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_03_945L, FAULT LOCATION JENNER 2755

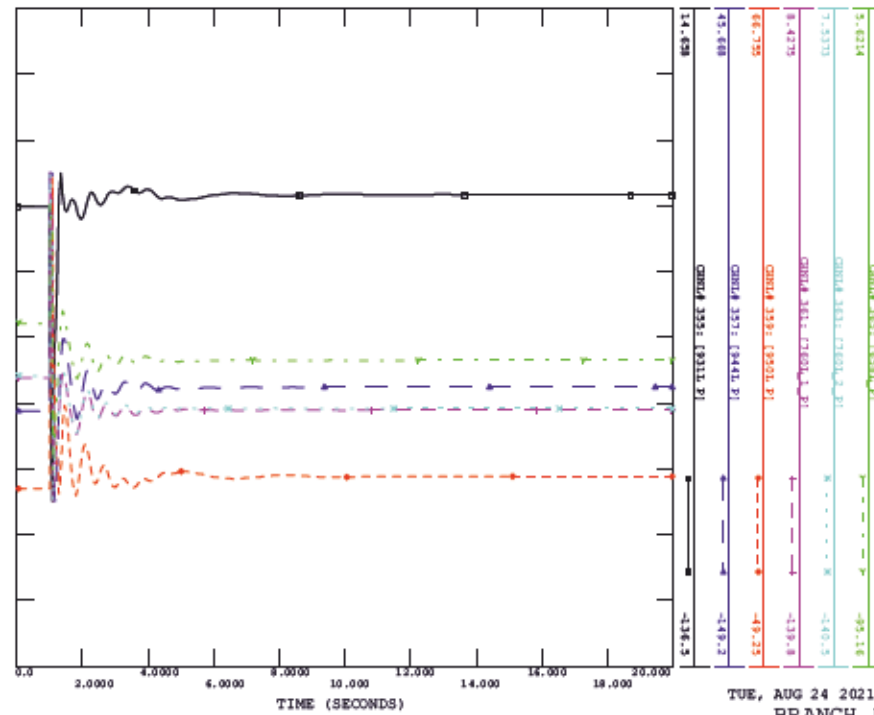


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_03_945L, FAULT LOCATION JENNER 2755



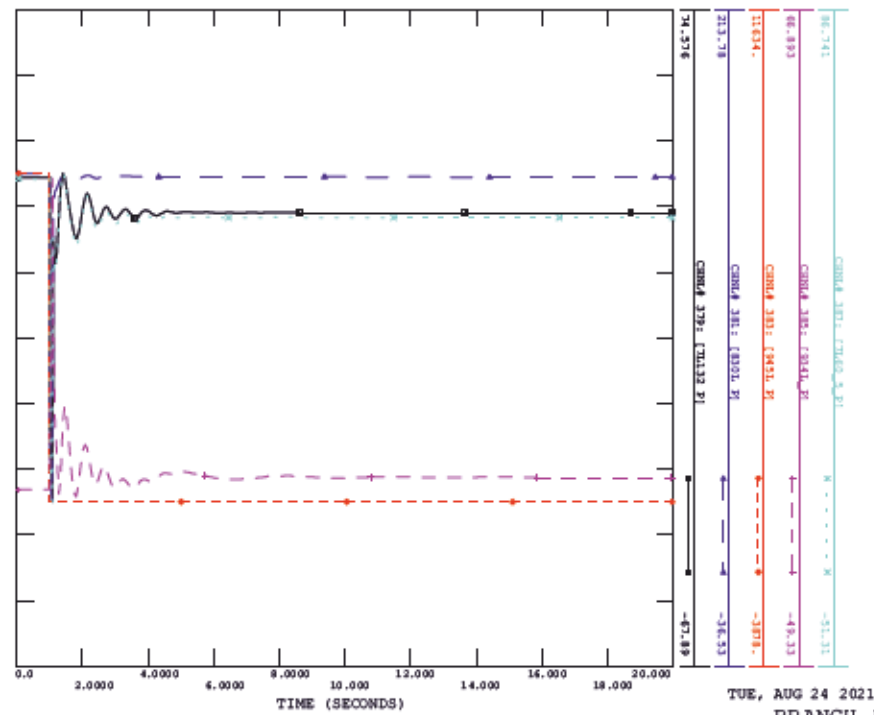
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FILE: SCM4_AI_03_945L.out



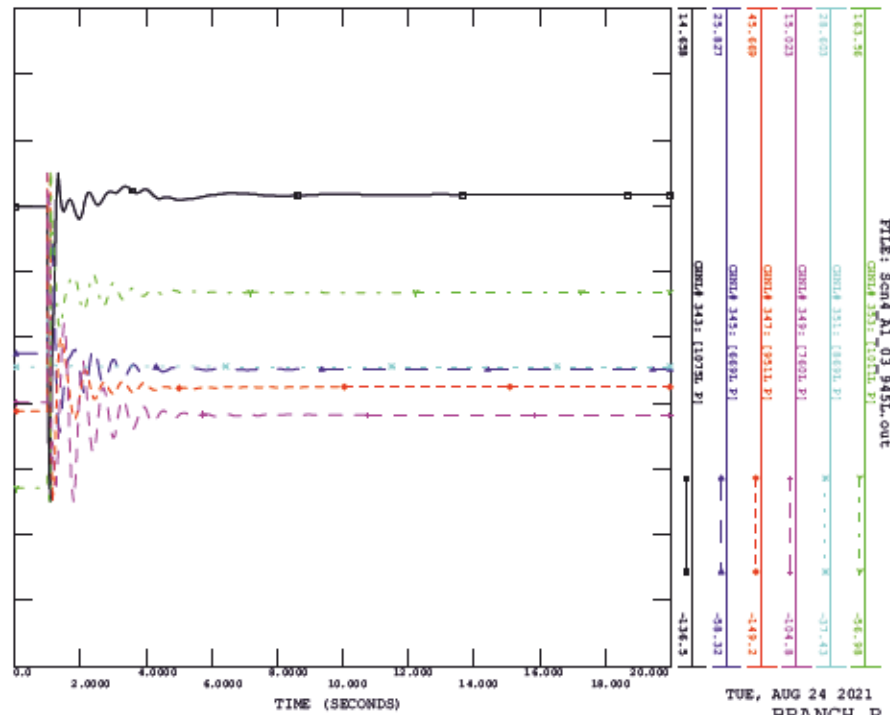
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CONTINGENCY -SCM4_AI_03_945L, FAULT LOCATION JENNER 275S

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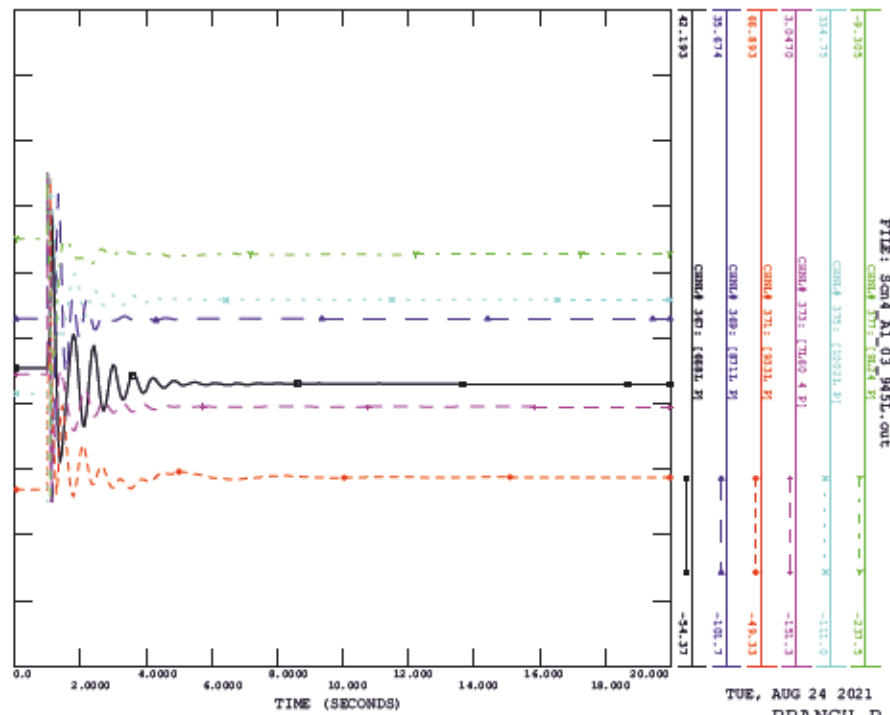
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CONTINGENCY -SCM4_AI_03_945L, FAULT LOCATION JENNER 275S

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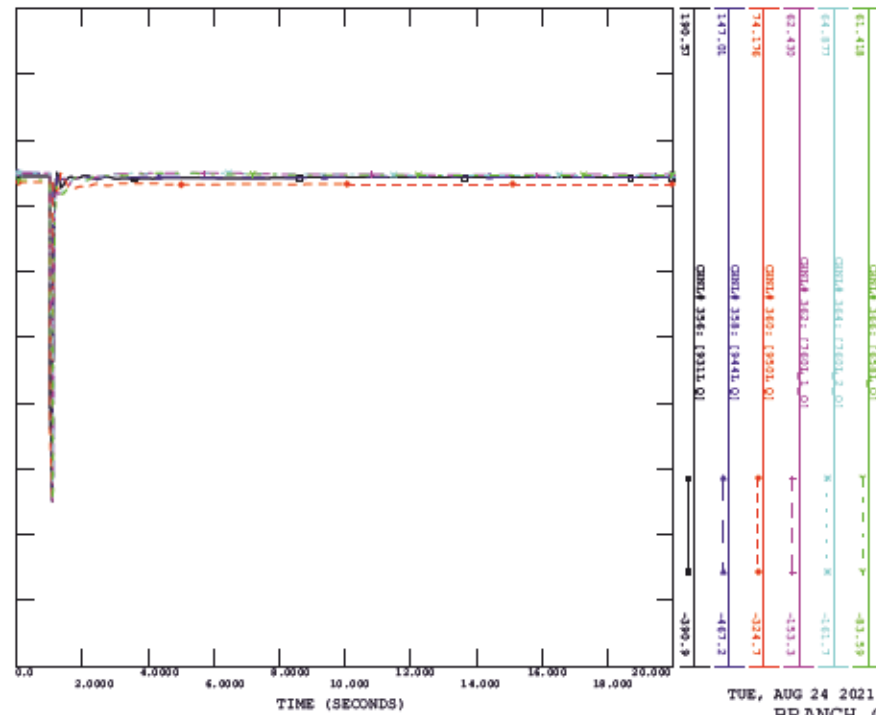
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CONTINGENCY -SCM4_AI_03_945L, FAULT LOCATION JENNER 275S

FILE: SCM4_AI_03_945L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_03_945L, FAULT LOCATION JENNER 2755

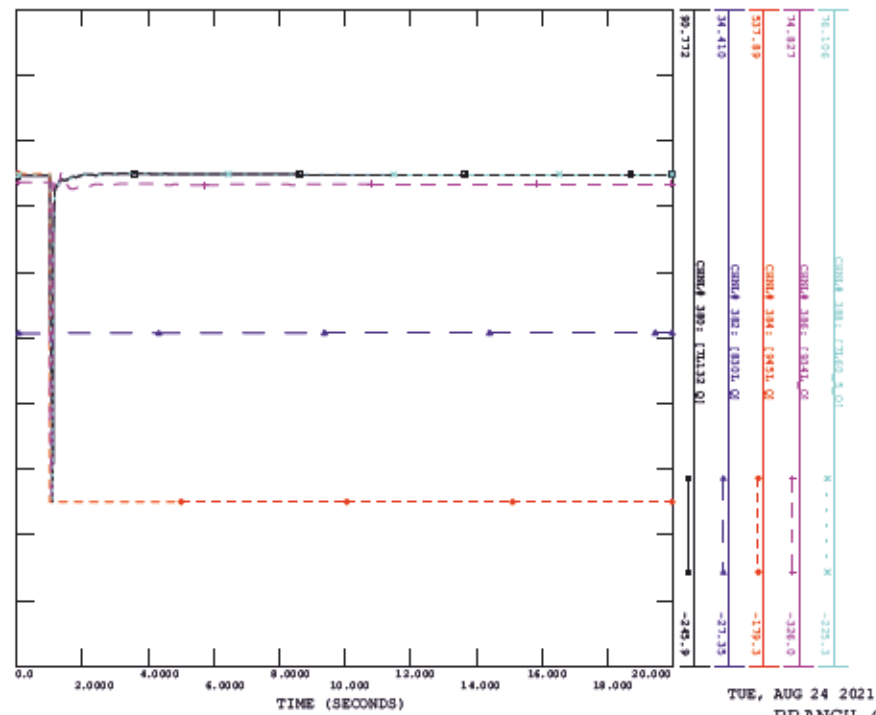
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TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_03_945L, FAULT LOCATION JENNER 2755

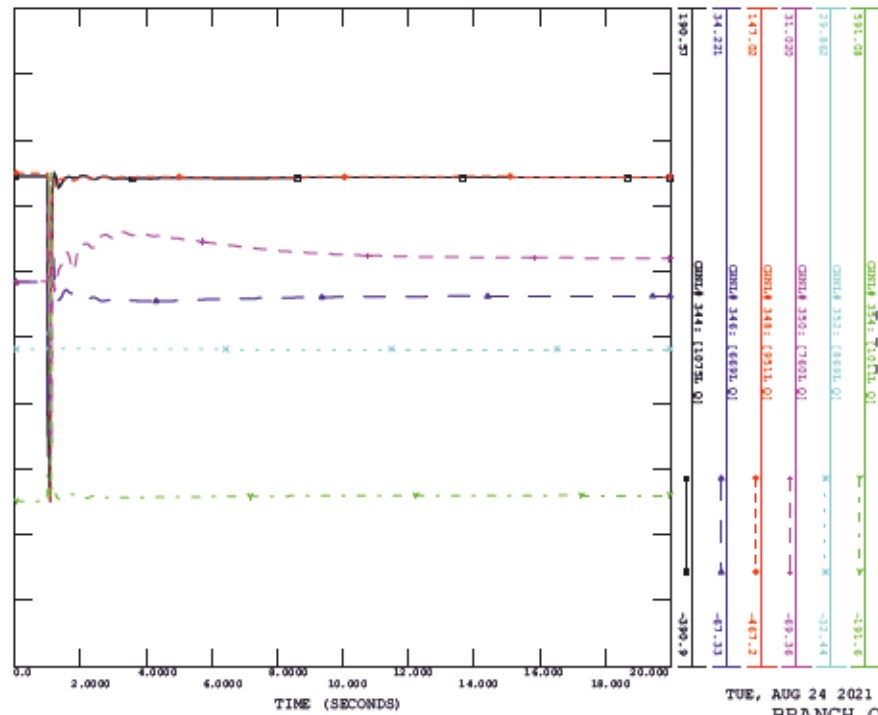
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TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_03_945L, FAULT LOCATION JENNER 2755

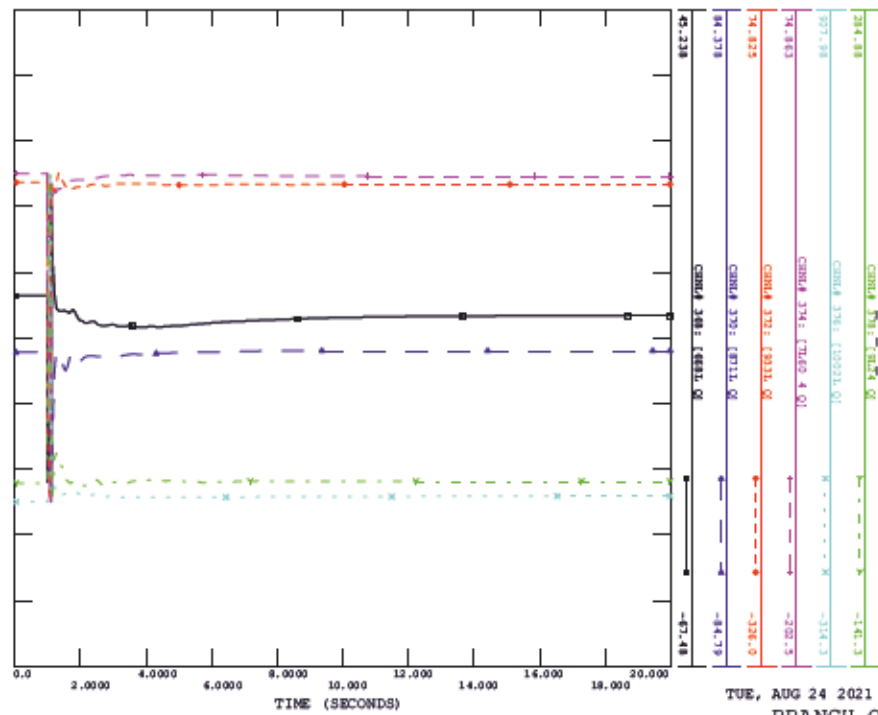
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_03_945L, FAULT LOCATION JENNER 2755

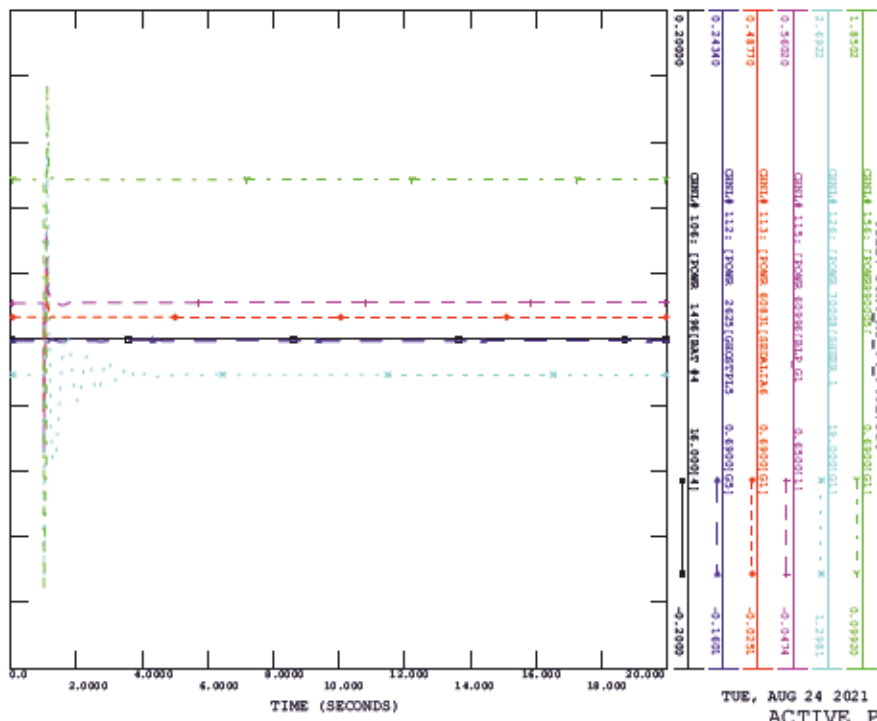
FILE: SCH4_AI_03_945L.out



TUE, AUG 24 2021 13:15
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_04_945L, FAULT LOCATION CYPRESS 5629

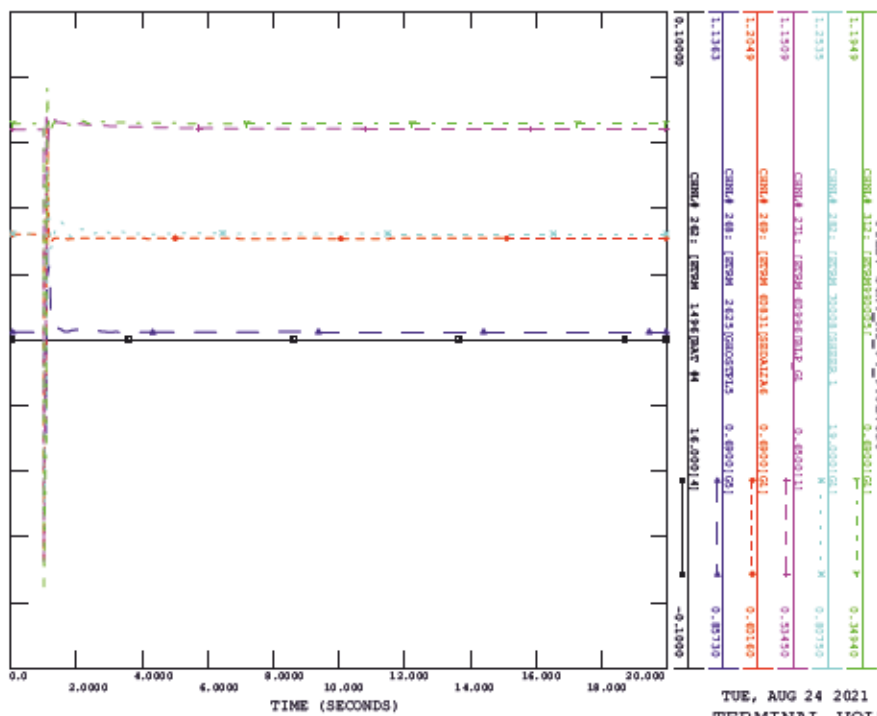
FILE: Scm4_A1_04_945L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_04_945L, FAULT LOCATION CYPRESS 5629

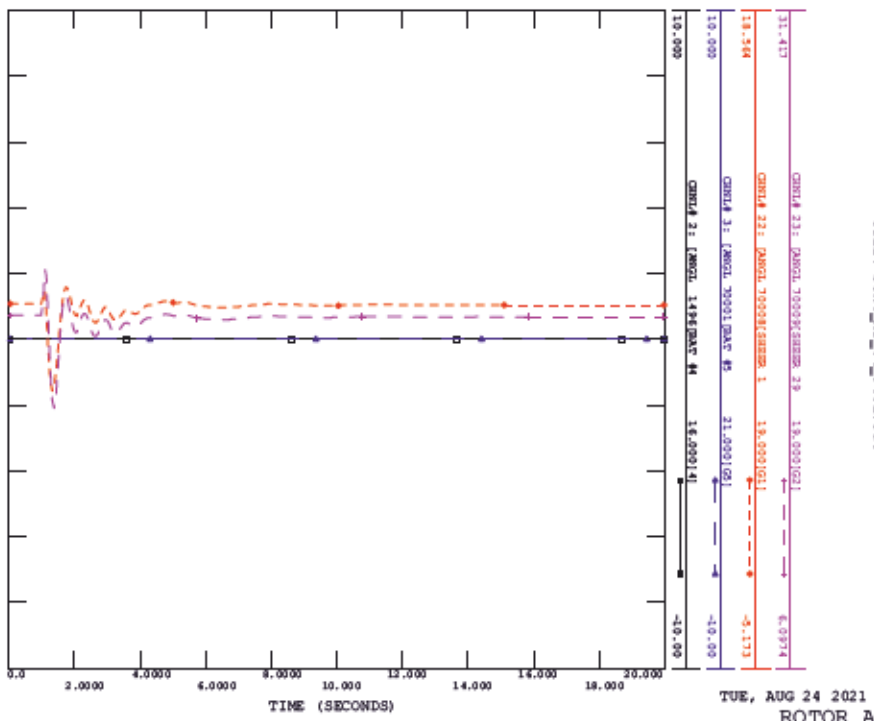
FILE: Scm4_A1_04_945L.out



TUE, AUG 24 2021 13:15
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_04_945L, FAULT LOCATION CYPRESS 5629

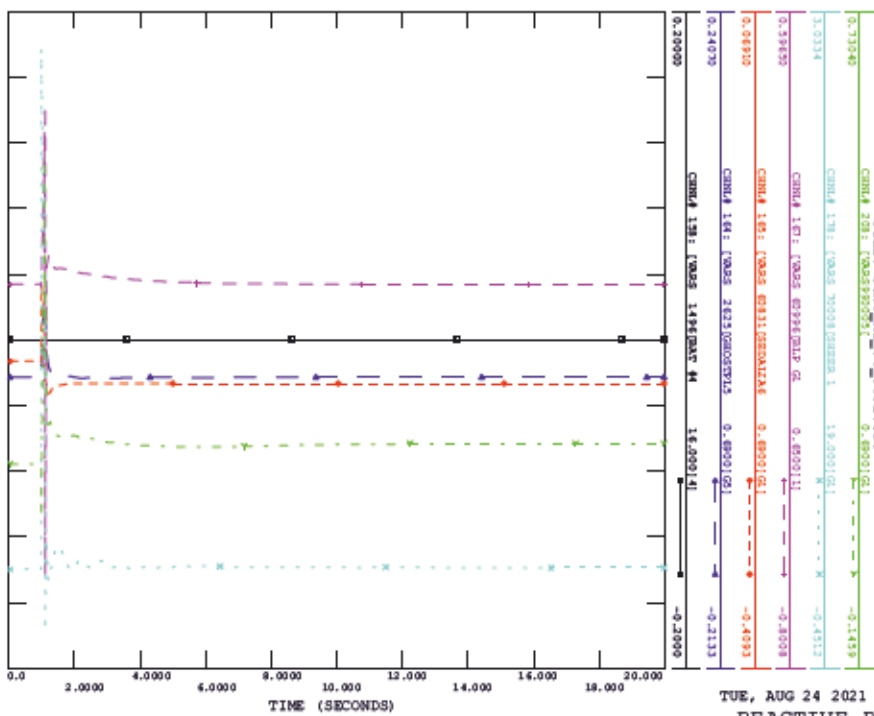
FILE: Scm4_A1_04_945L.out



TUE, AUG 24 2021 13:15
ROTOR ANGLE

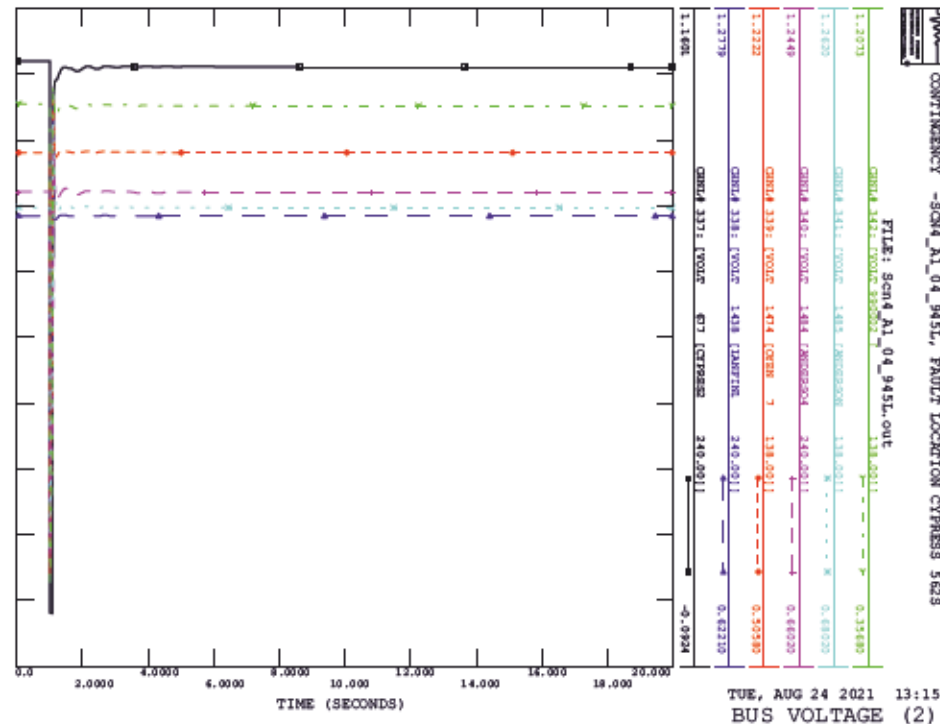
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_04_945L, FAULT LOCATION CYPRESS 5629

FILE: Scm4_A1_04_945L.out

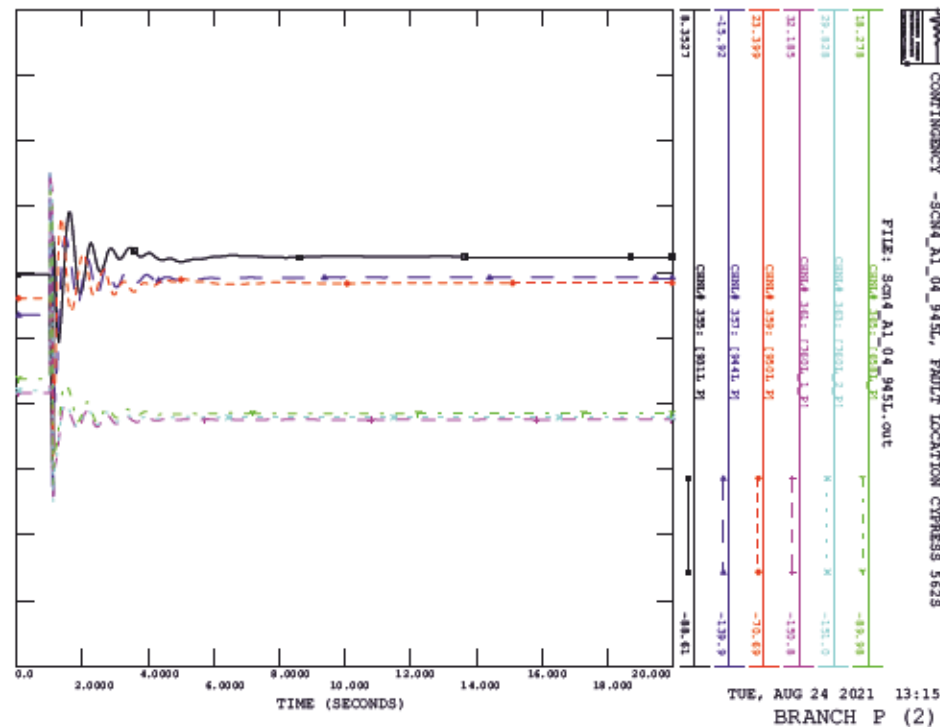


TUE, AUG 24 2021 13:15
REACTIVE POWER

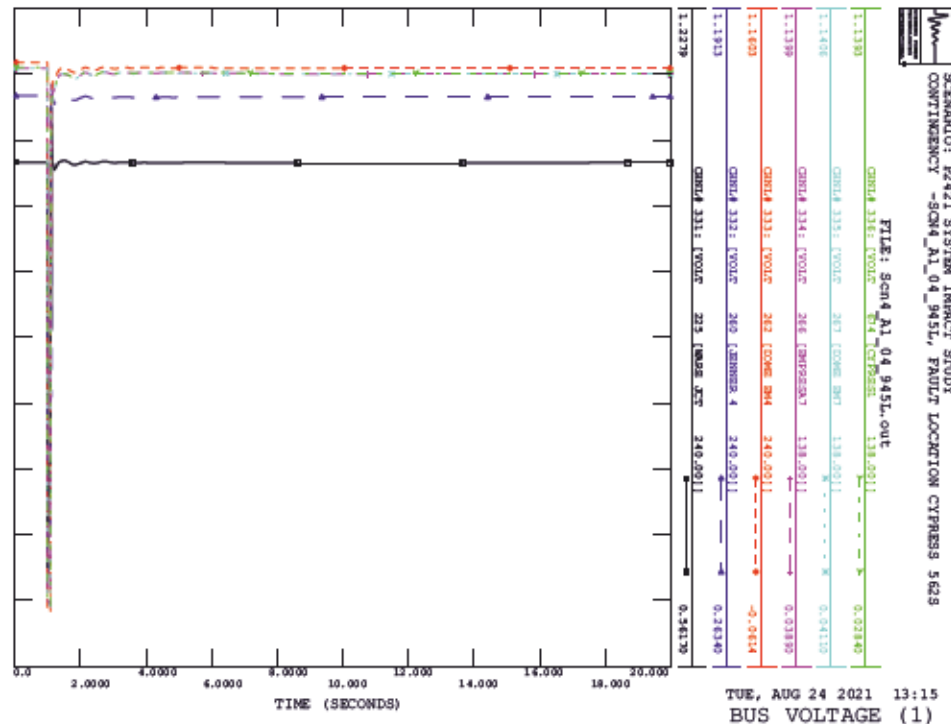
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CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629



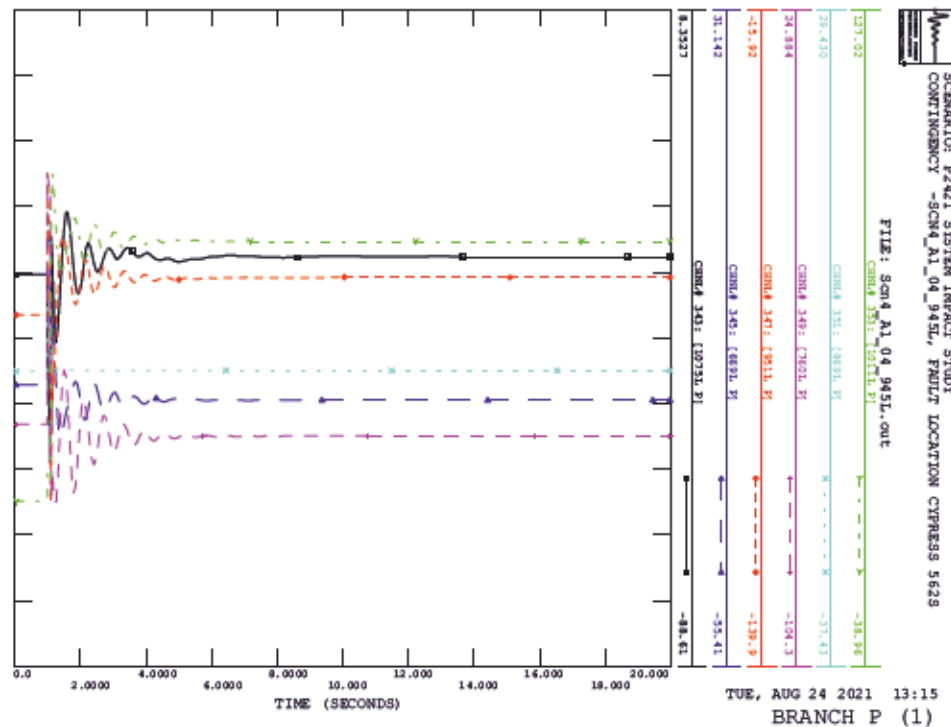
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629

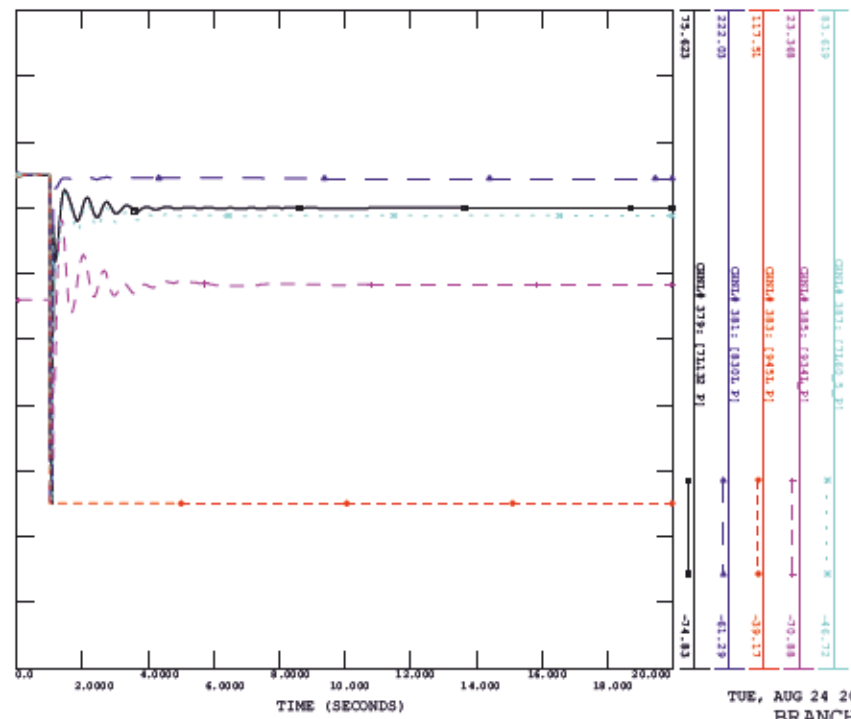


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629

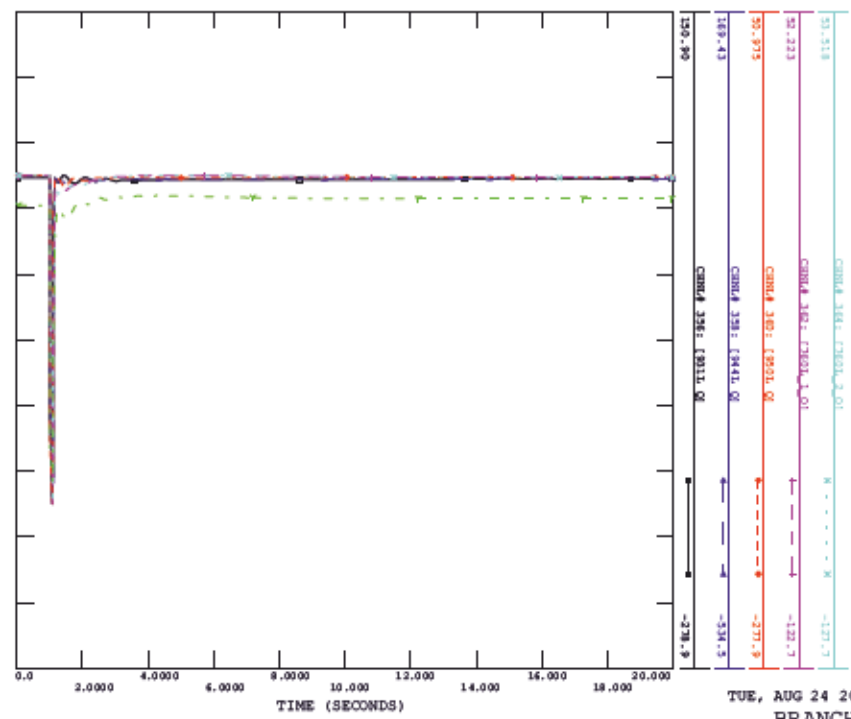
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TUE, AUG 24 2021 13:15
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629

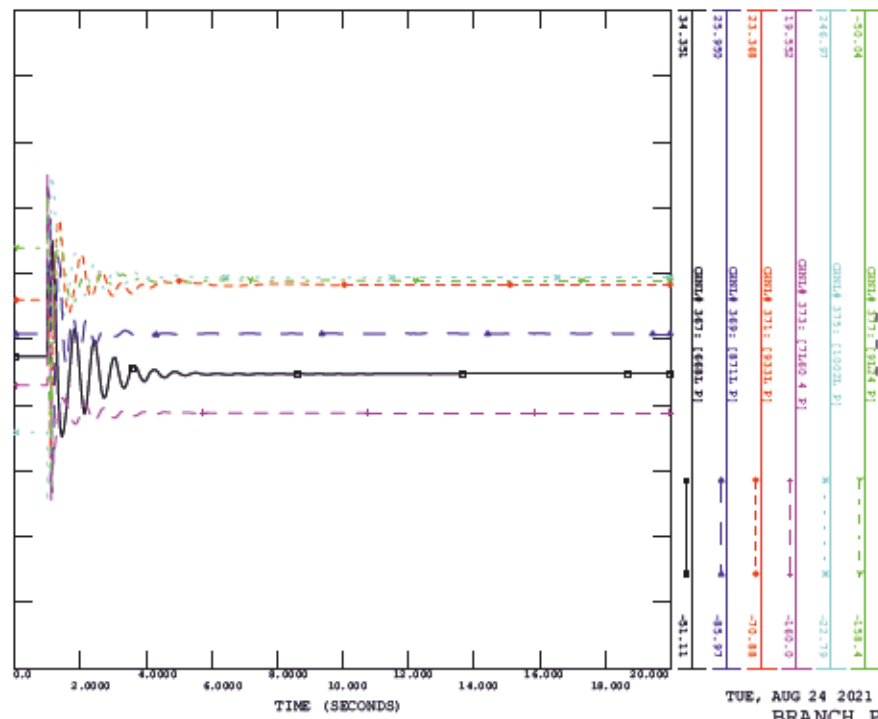
FILE: Scm4_AI_04_945L.out



TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629

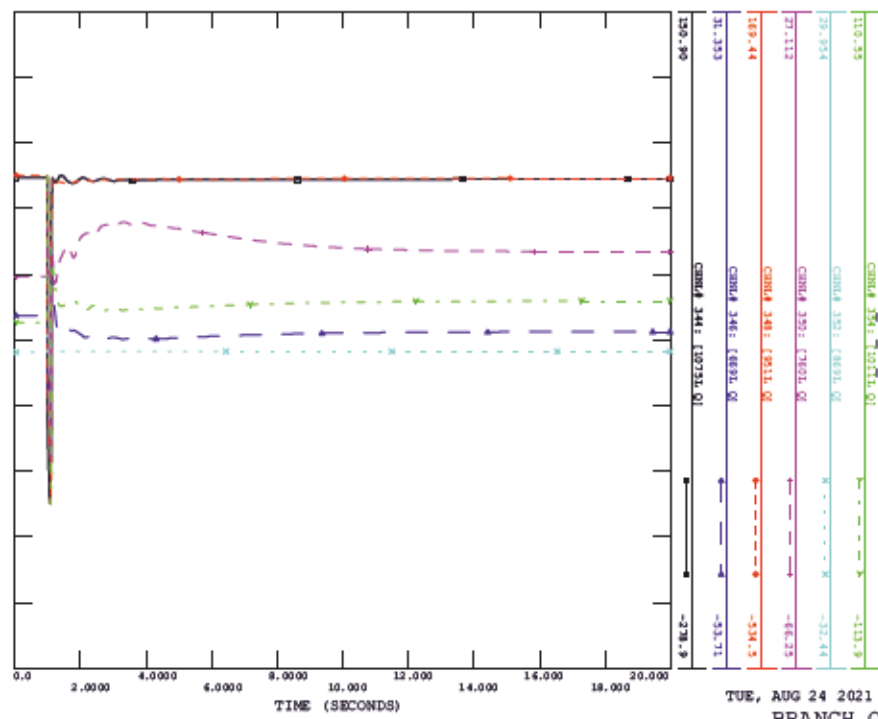
FILE: Scm4_AI_04_945L.out



TUE, AUG 24 2021 13:15
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_04_945L, FAULT LOCATION CYPRESS 5629

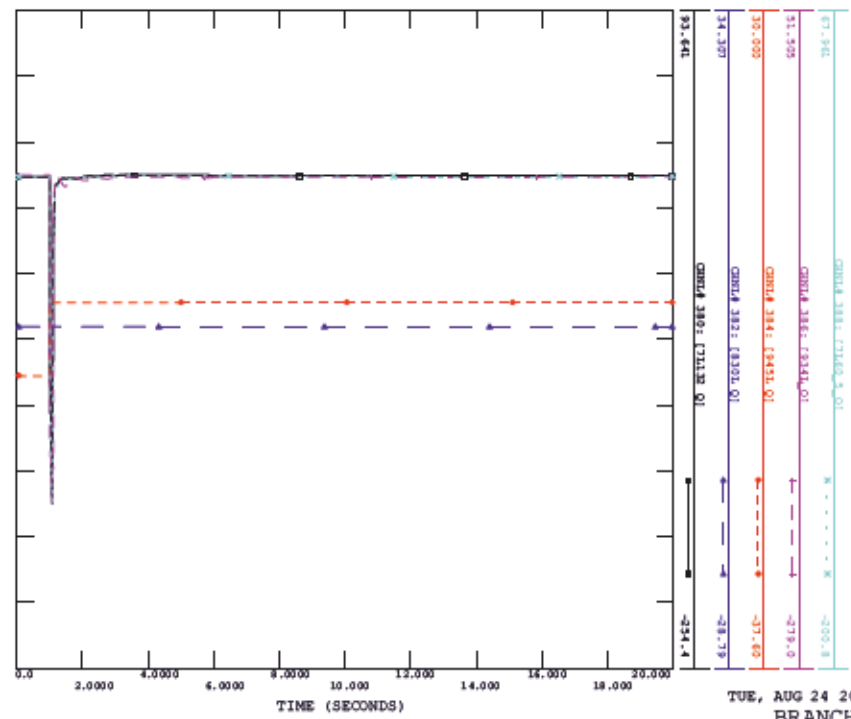
FILE: Scm4_AI_04_945L.out



TUE, AUG 24 2021 13:15
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_04_945L, FAULT LOCATION CYPRESS 5629

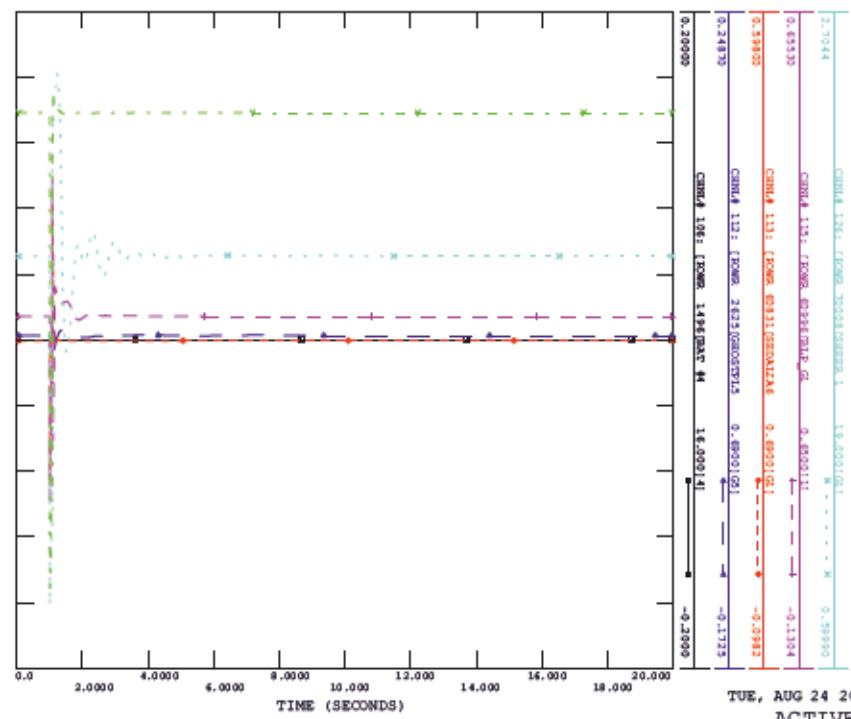
FILE: Scm4_A1_04_945L.out



TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_05_951L, FAULT LOCATION WARE JUNCTION

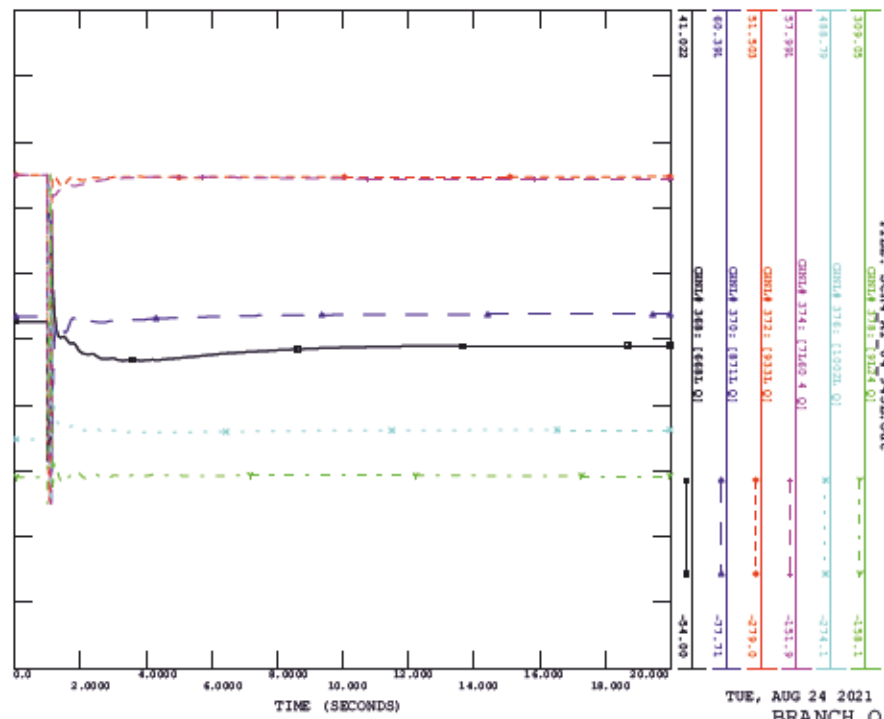
FILE: Scm4_A1_05_951L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_04_945L, FAULT LOCATION CYPRESS 5629

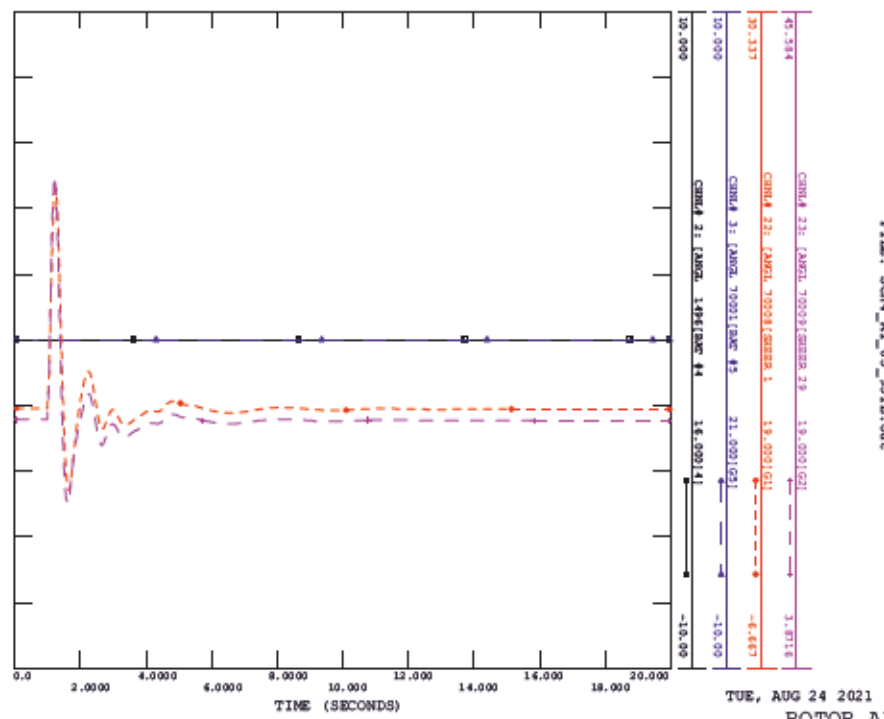
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TUE, AUG 24 2021 13:15
BRANCH Q (3)

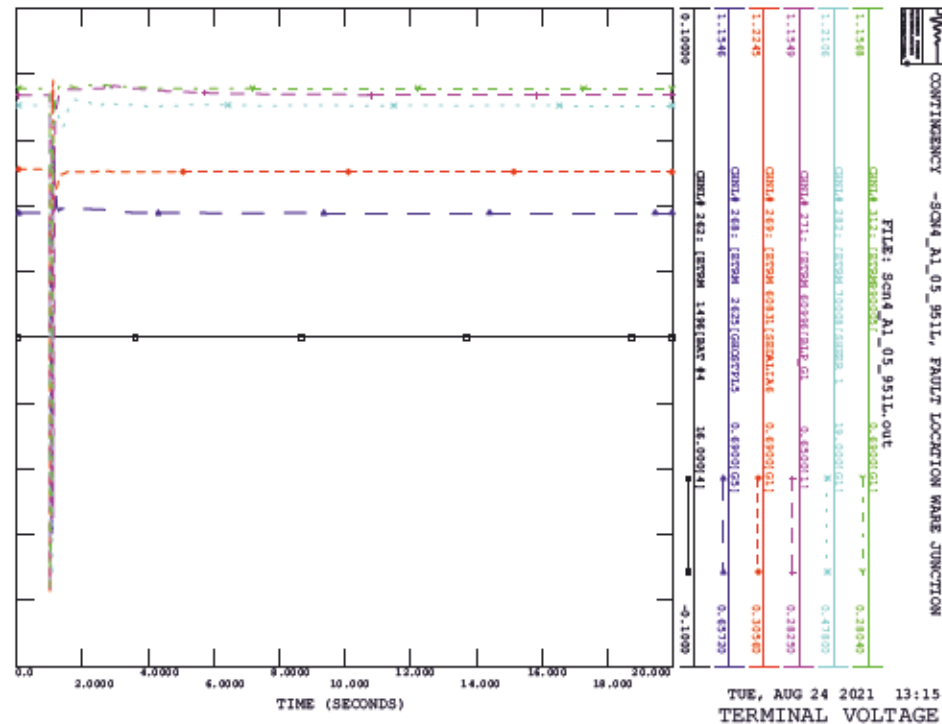
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_05_951L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_A1_05_951L.out

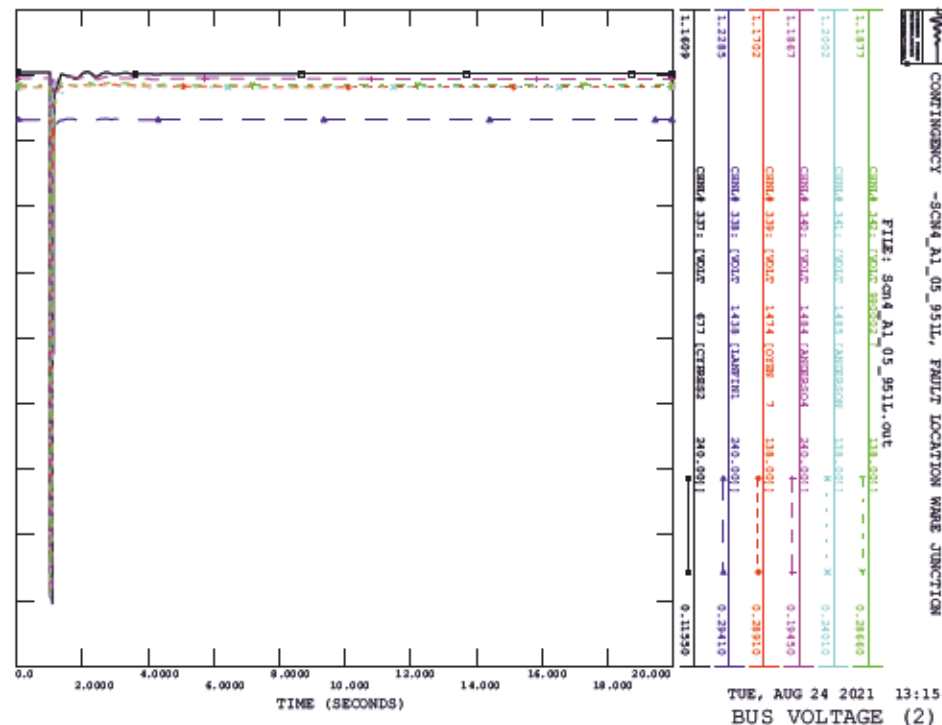


TUE, AUG 24 2021 13:15
ROTOR ANGLE

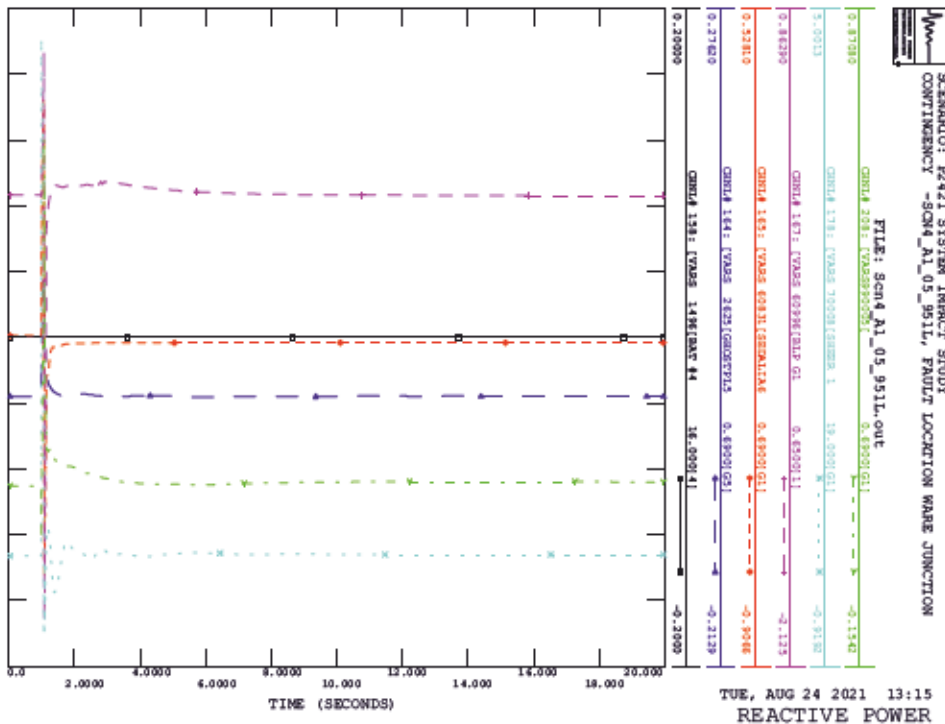
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION



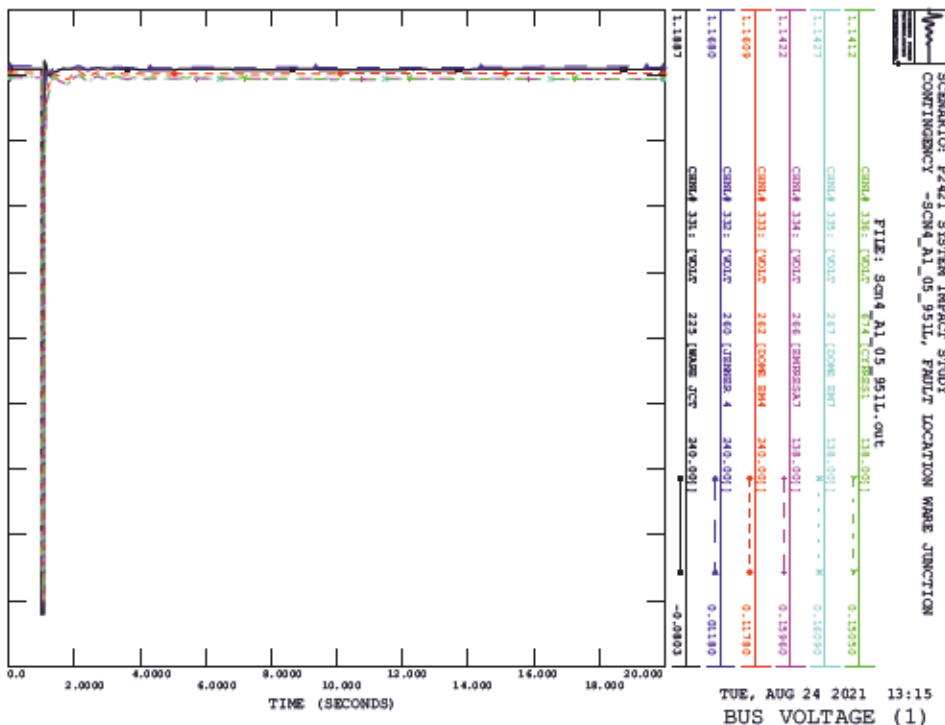
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION

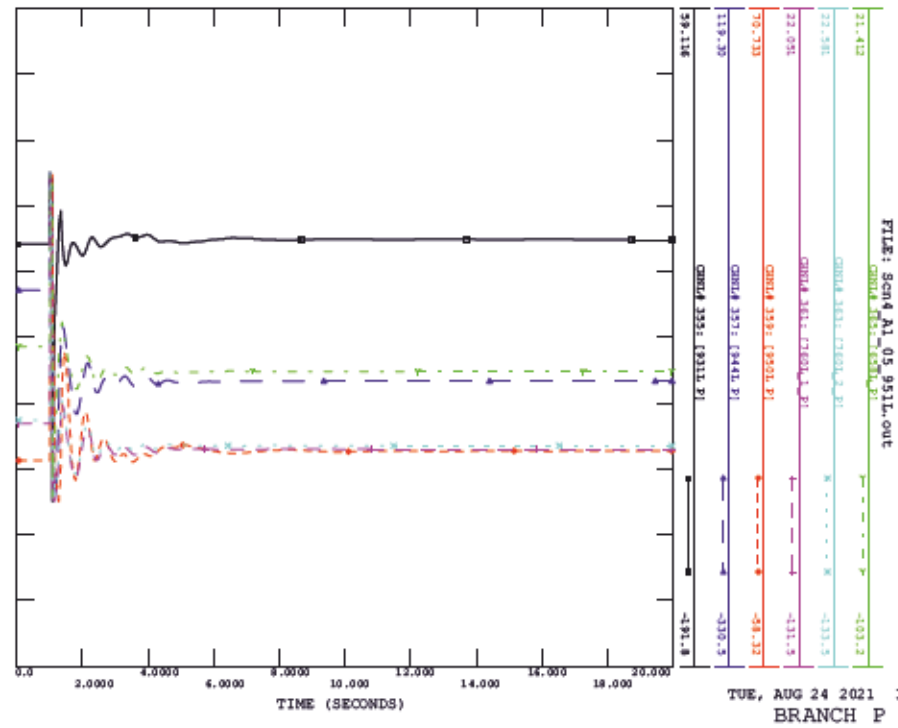


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION



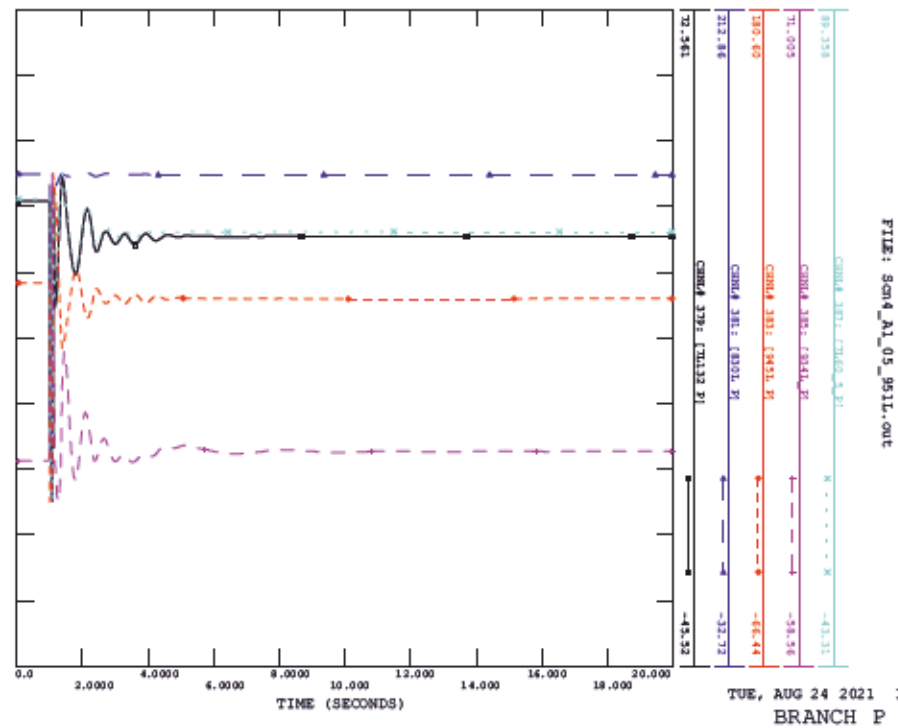
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_05_951L.out



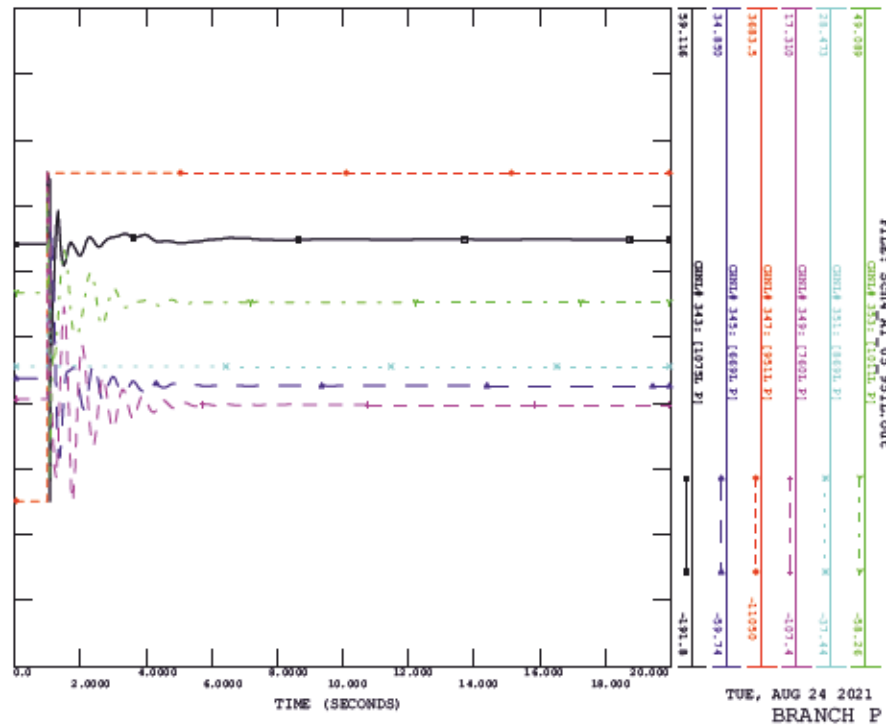
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_05_951L.out



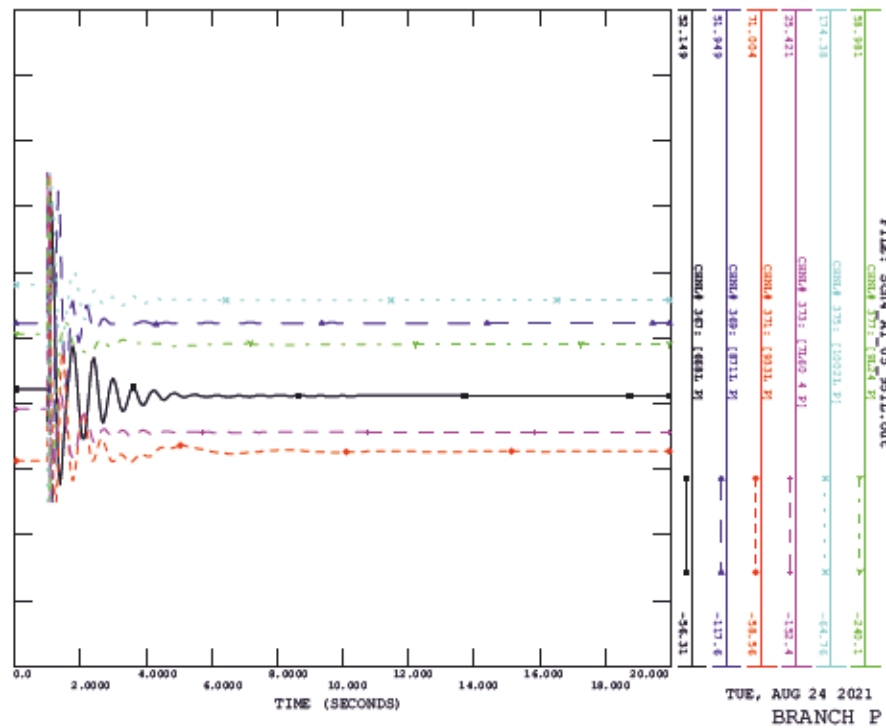
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION

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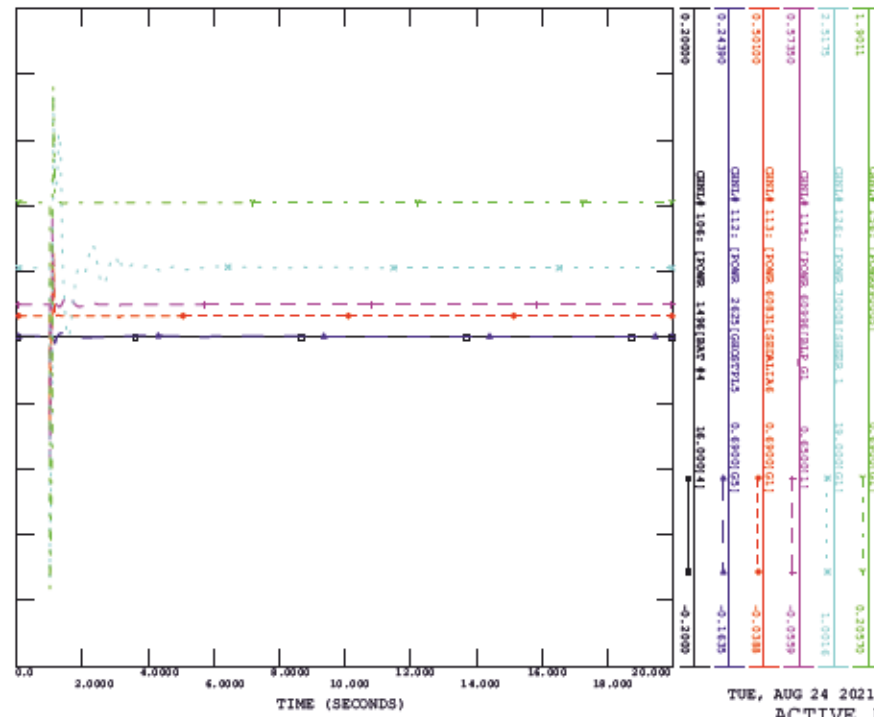
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CONTINGENCY -SCM4_AI_05_951L, FAULT LOCATION WARE JUNCTION

FILE: Scm4_AI_05_951L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_06_951L, FAULT LOCATION JENNER 275S

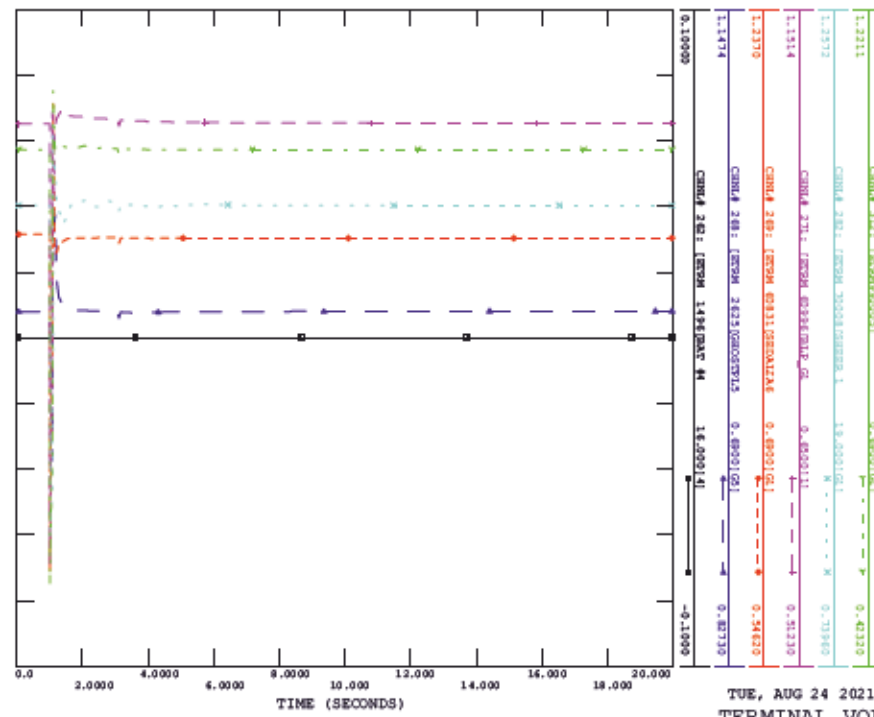
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TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_06_951L, FAULT LOCATION JENNER 275S

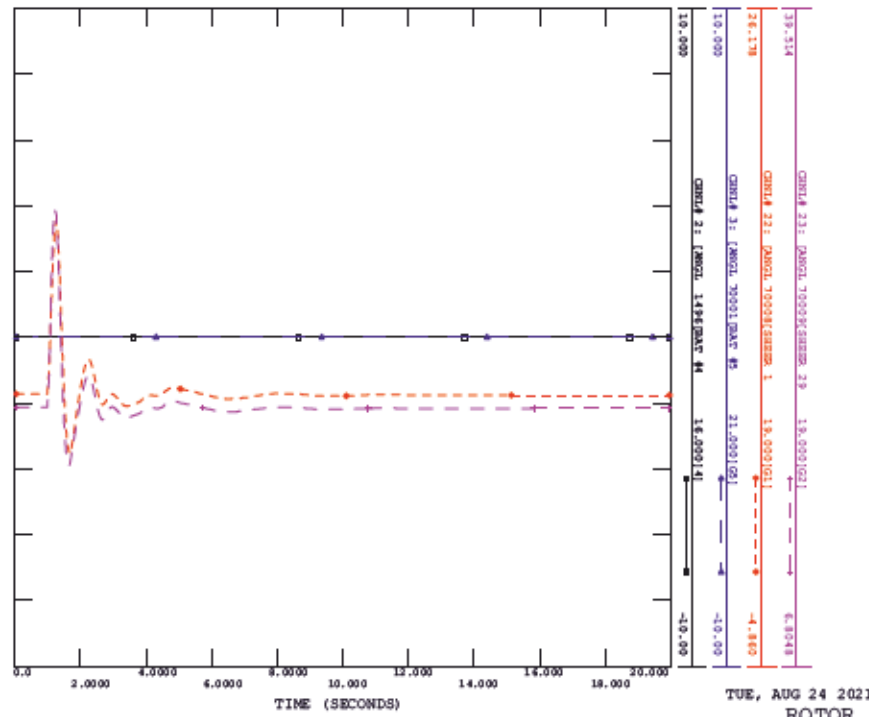
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TUE, AUG 24 2021 13:15
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_06_951L, FAULT LOCATION JENNER 275S

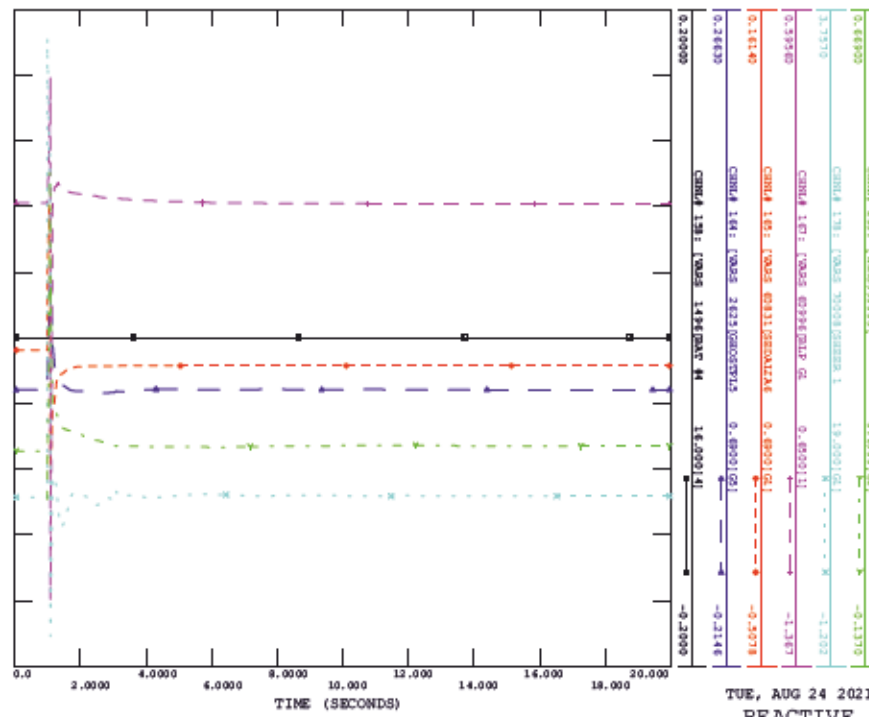
FILE: Scm4_A1_06_951L.out



TUE, AUG 24 2021 13:15
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_06_951L, FAULT LOCATION JENNER 275S

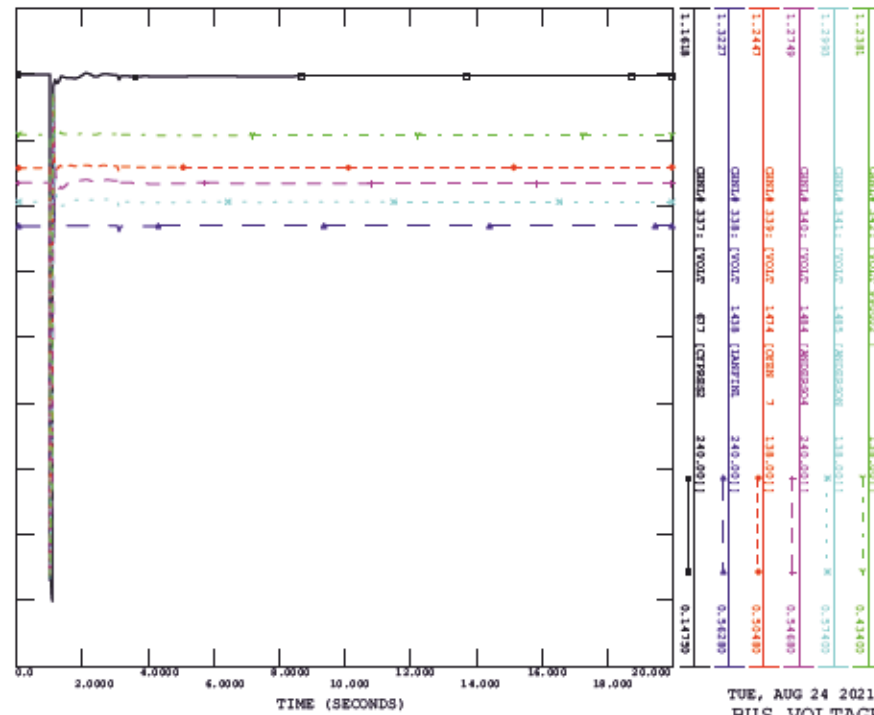
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TUE, AUG 24 2021 13:15
REACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

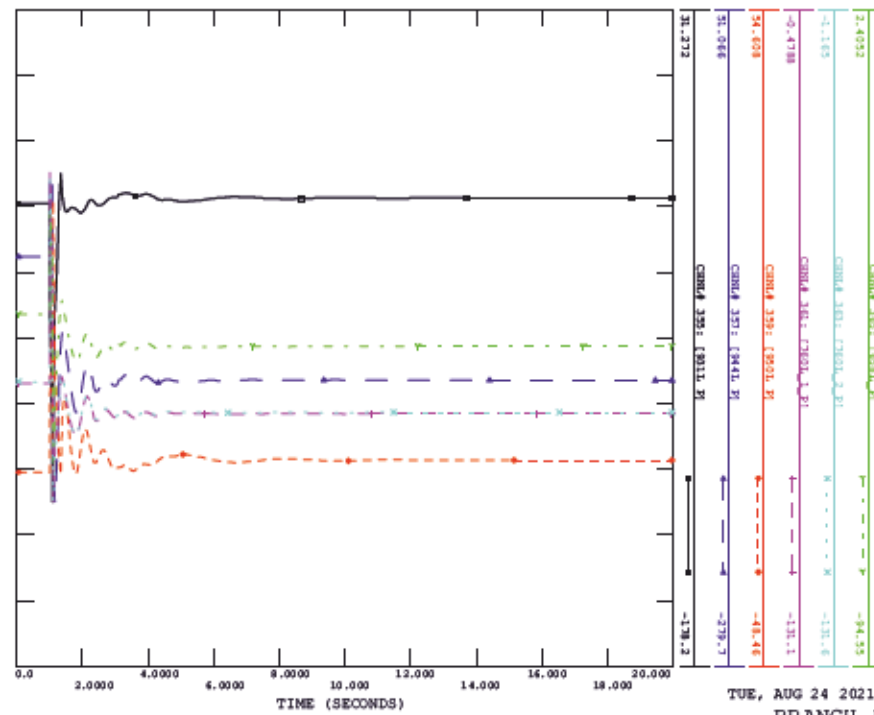
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TUE, AUG 24 2021 13:15
BUS VOLTAGE (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

FILE: SCM4_AI_06_951L.out



TUE, AUG 24 2021 13:15
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

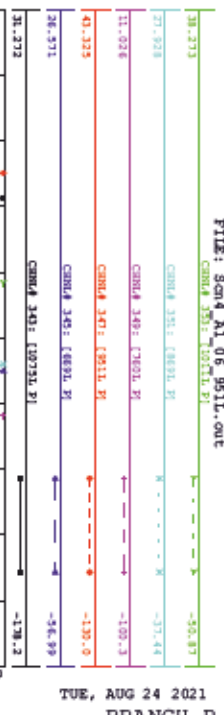
FILE: SCM4_AI_06_951L.out



TUE, AUG 24 2021 13:15
BUS VOLTAGE (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

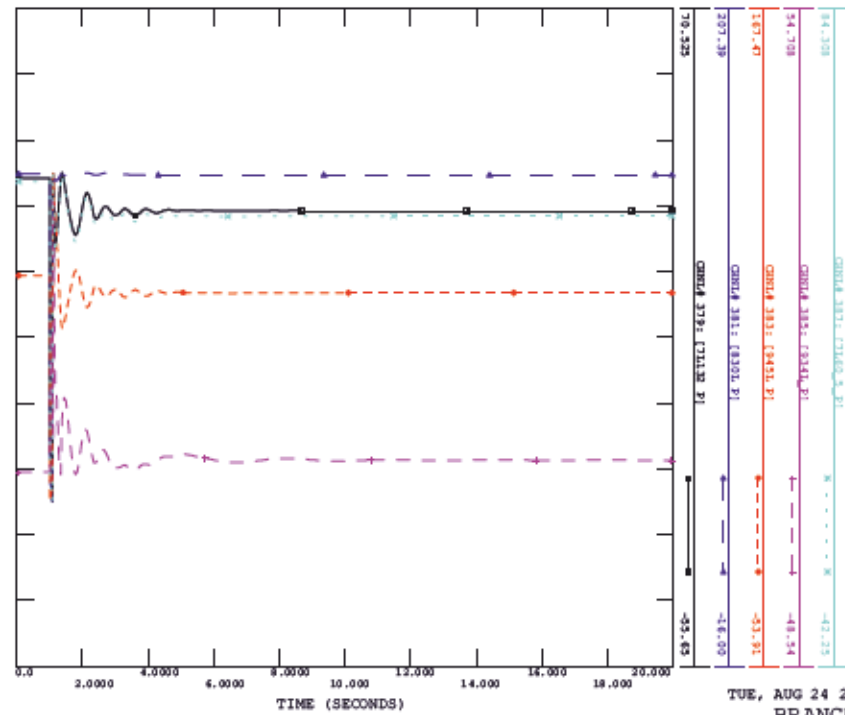
FILE: SCM4_AI_06_951L.out



TUE, AUG 24 2021 13:15
BRANCH P (1)

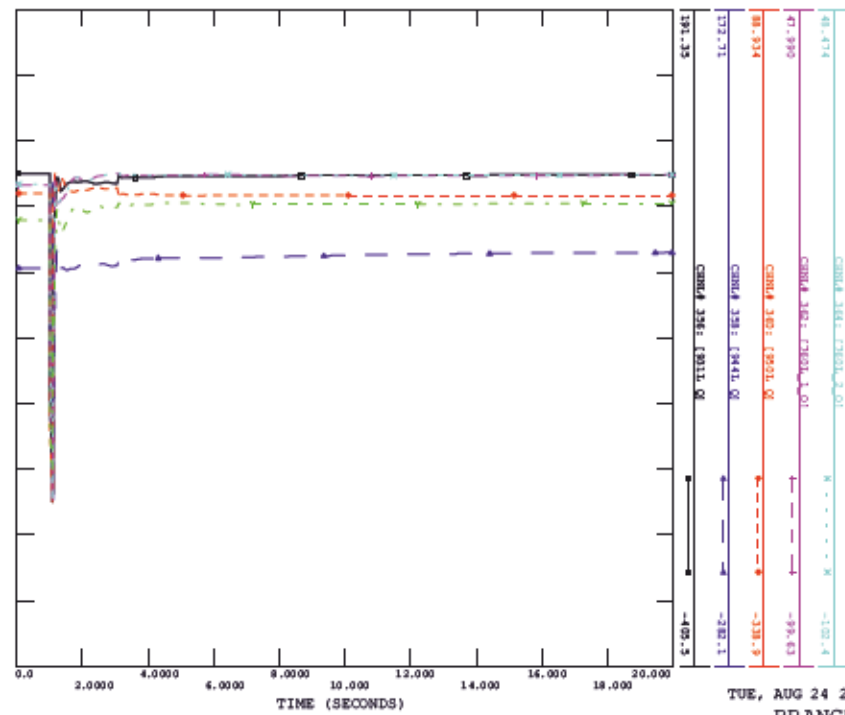
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

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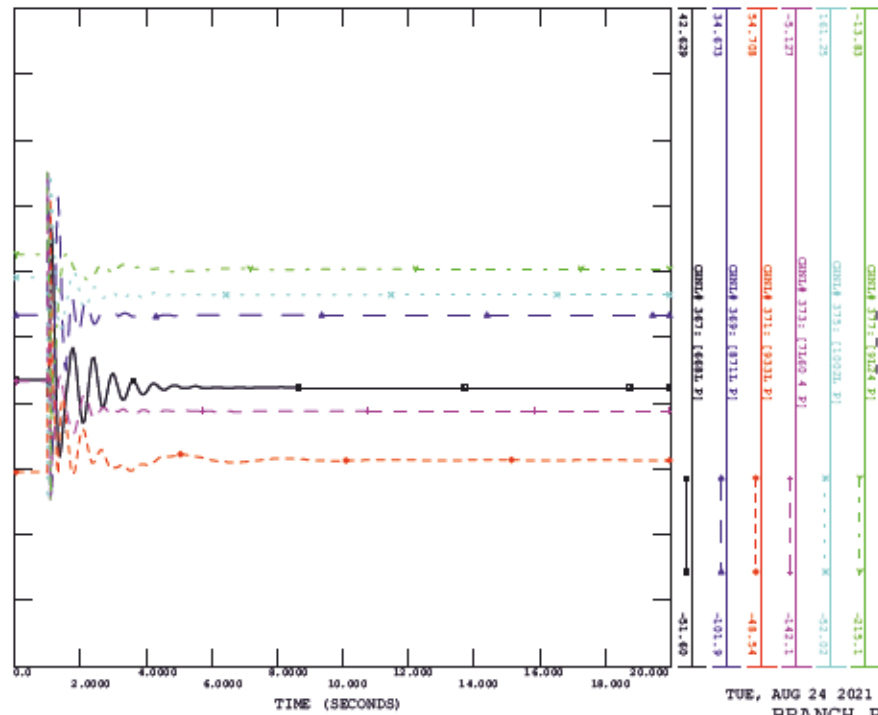
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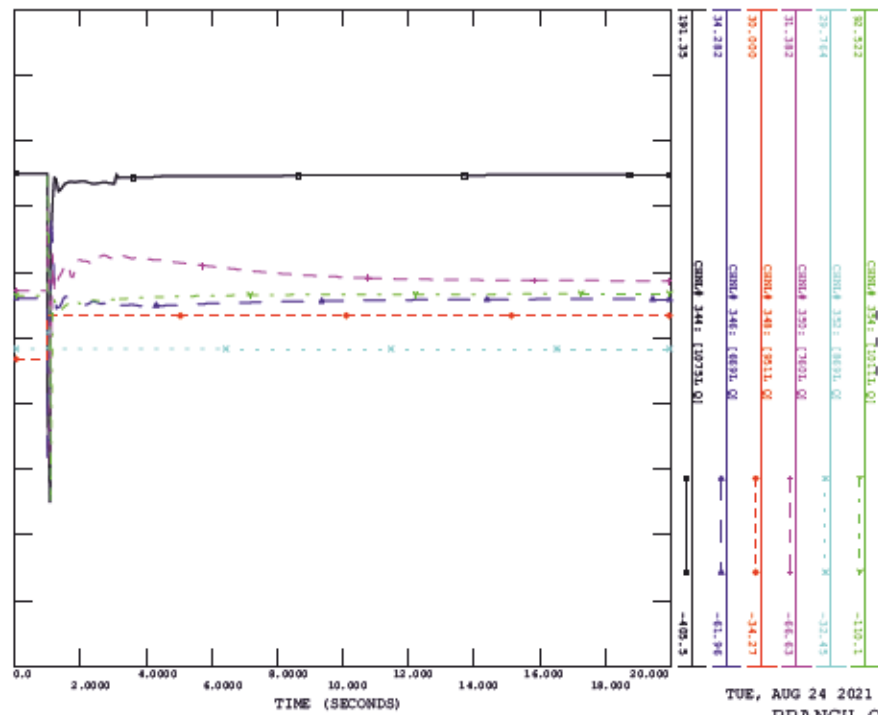
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

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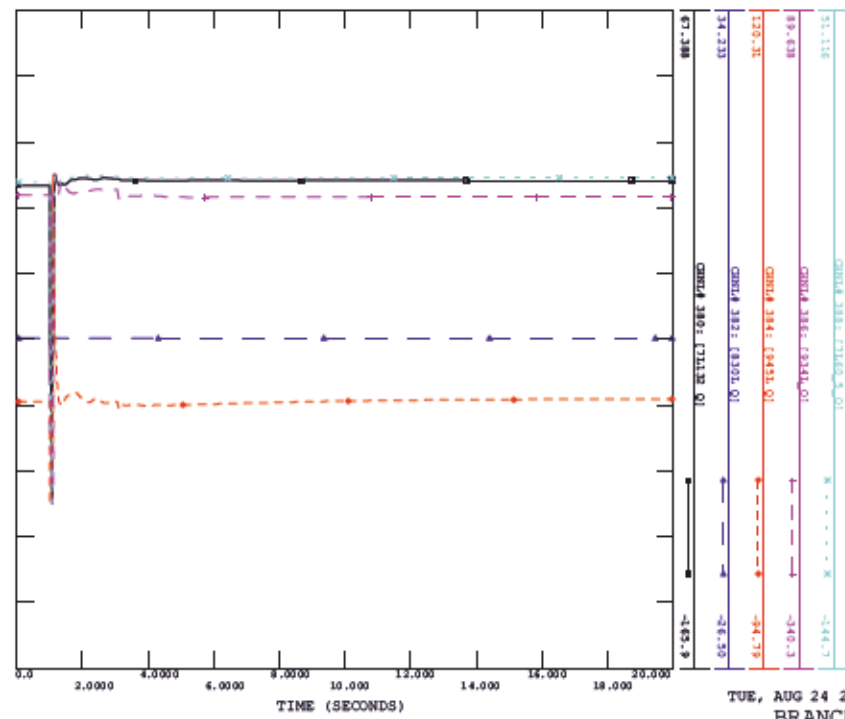
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 2755

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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 275S

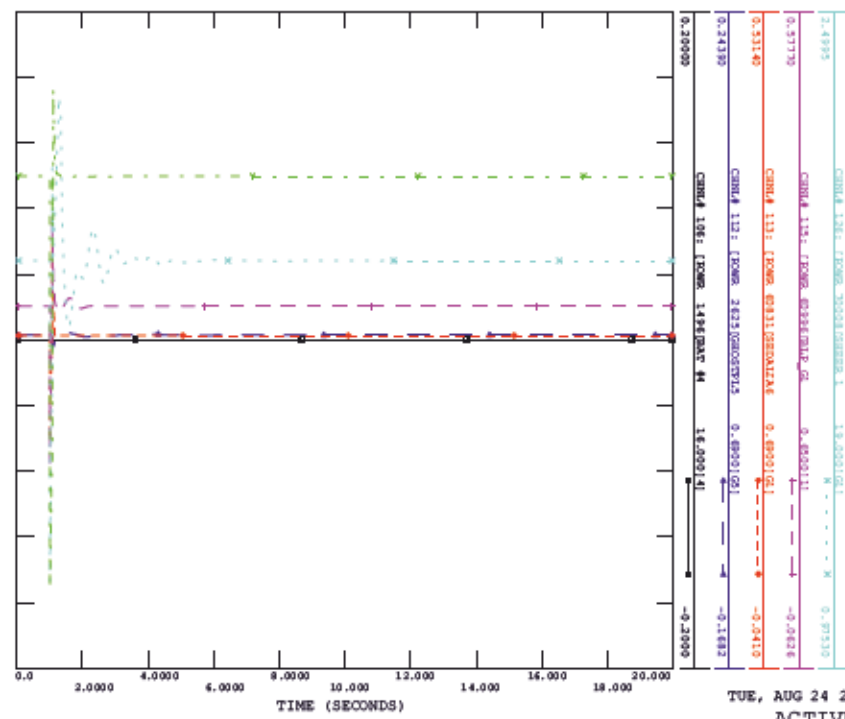
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TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_1002L, FAULT LOCATION JENNER 275S

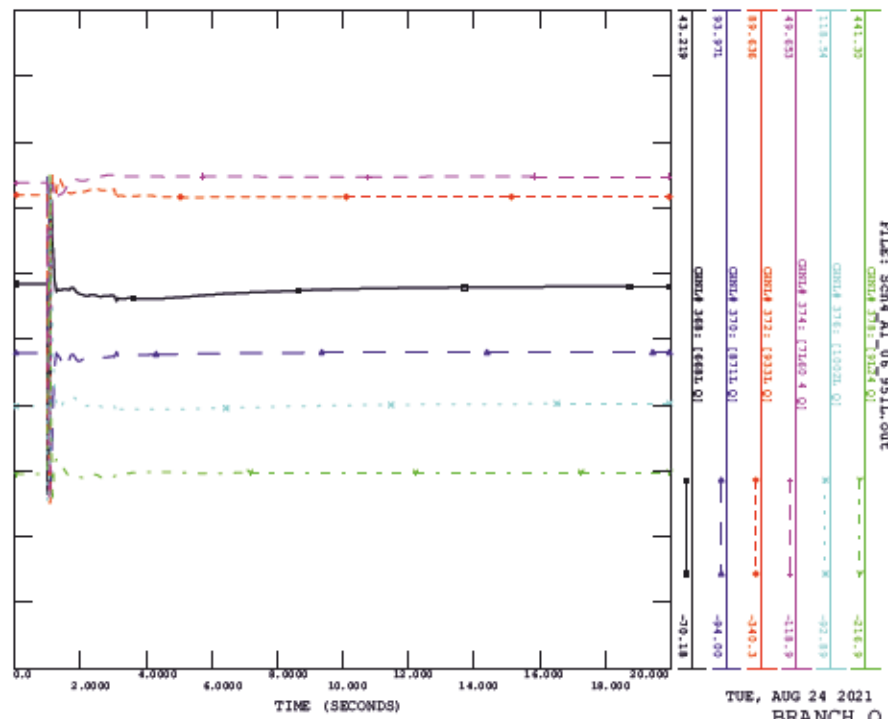
FILE: Scm4_AI_07_1002L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_06_951L, FAULT LOCATION JENNER 275S

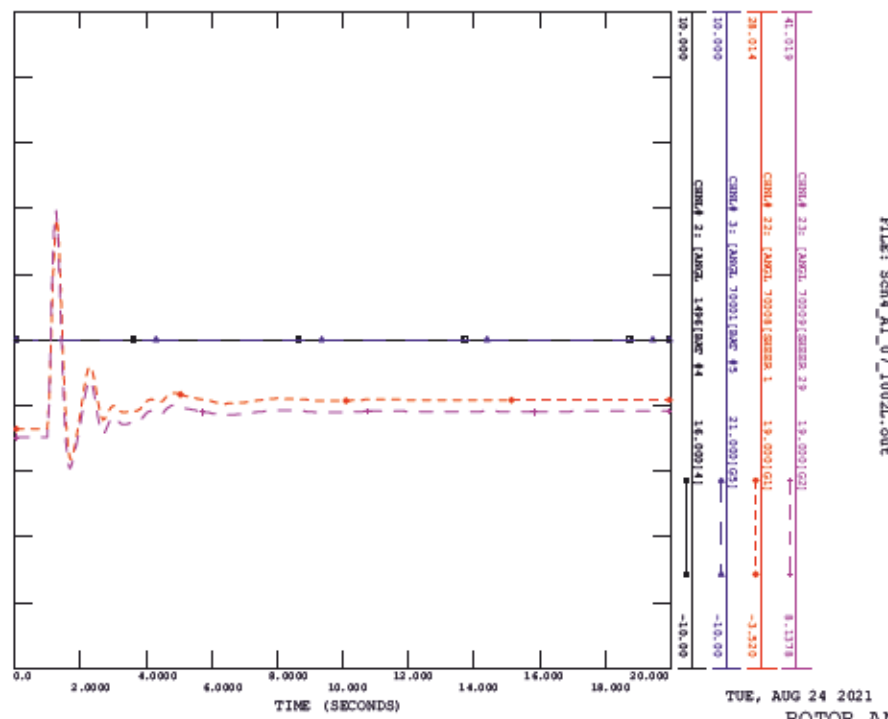
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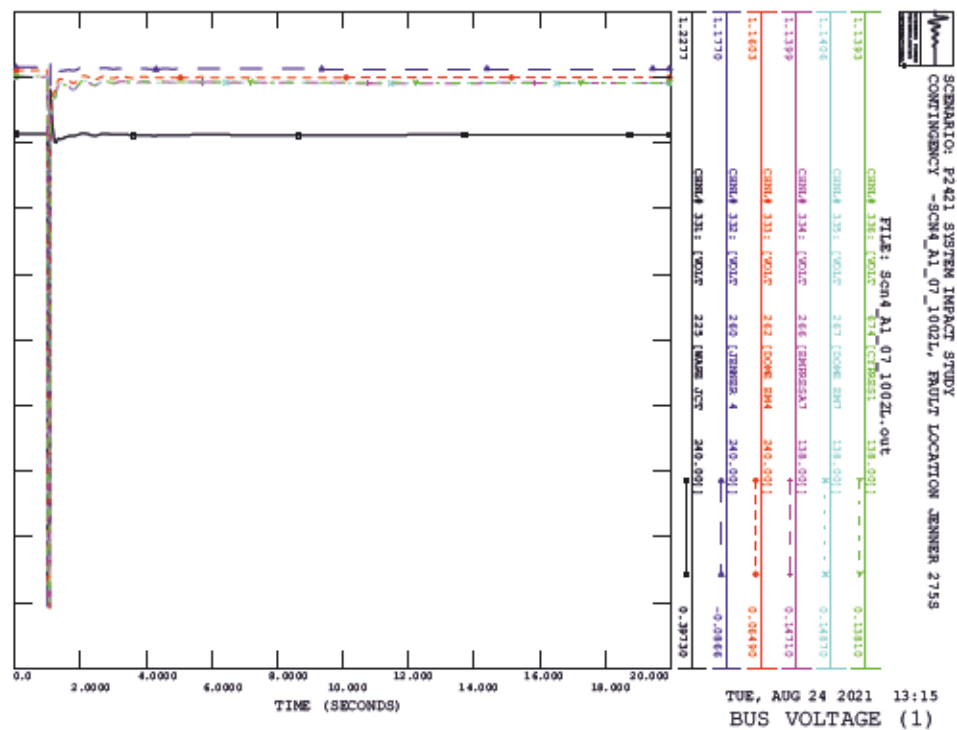
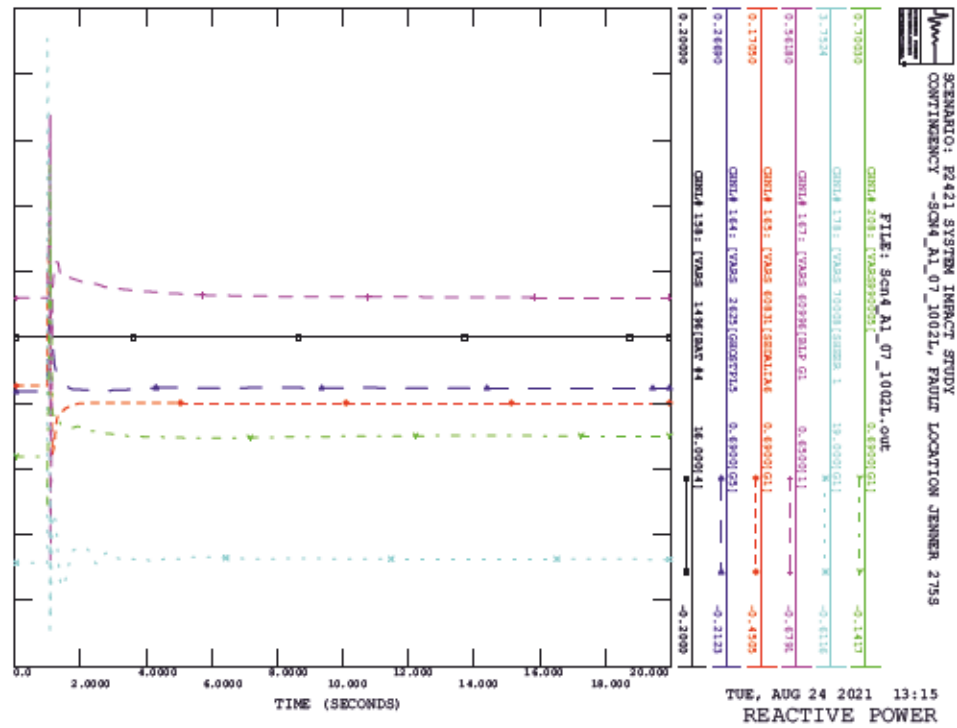
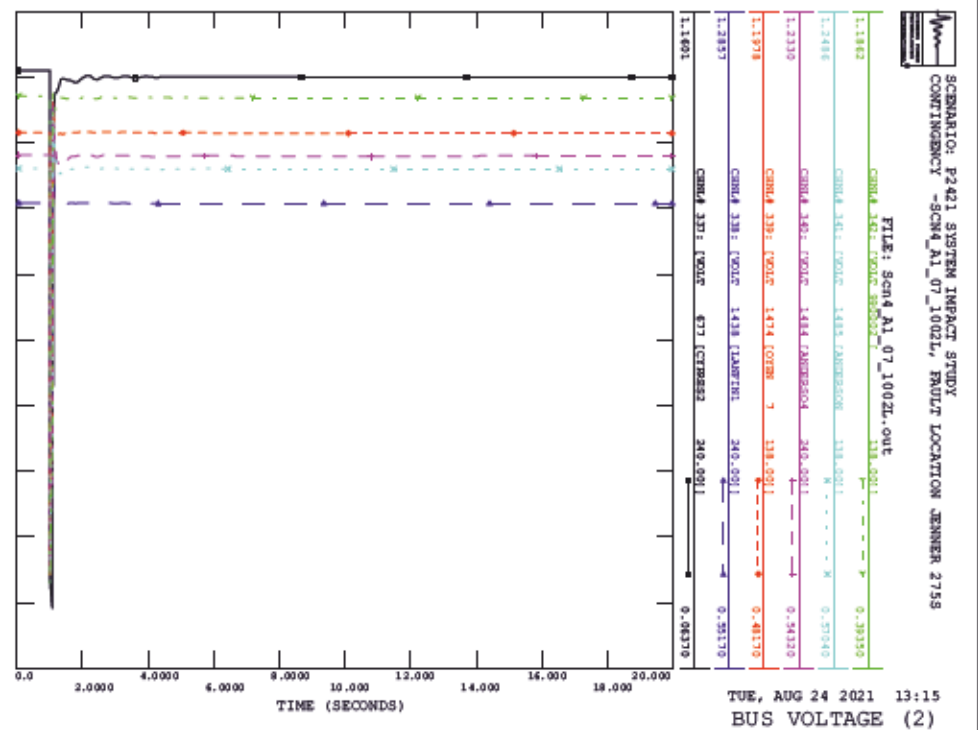
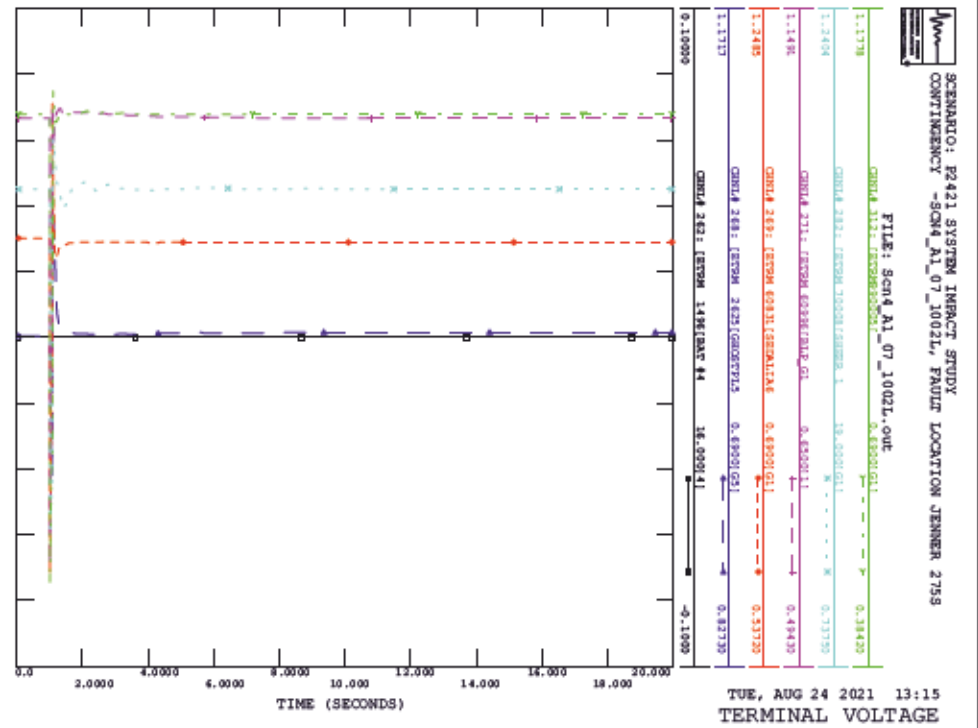
TUE, AUG 24 2021 13:15
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_1002L, FAULT LOCATION JENNER 275S

FILE: Scm4_AI_07_1002L.out

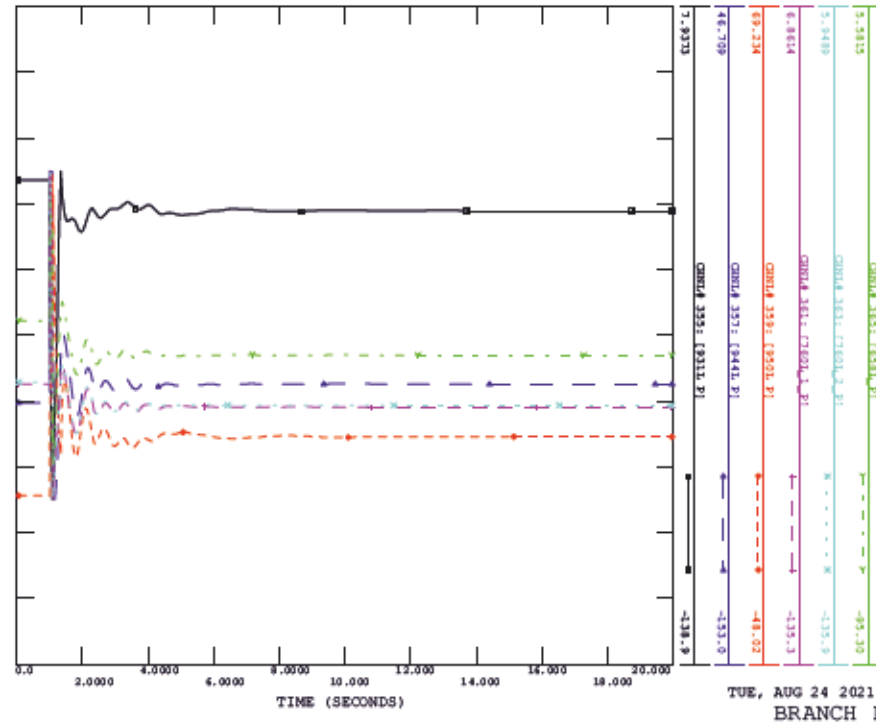


TUE, AUG 24 2021 13:15
ROTOR ANGLE



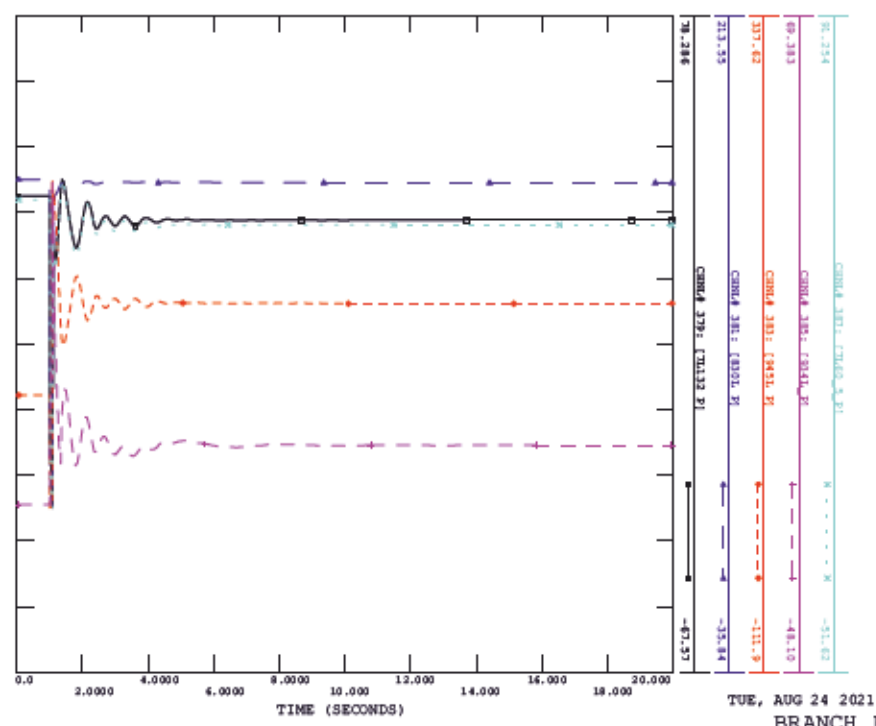
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_100ZL, FAULT LOCATION JENNER 2755

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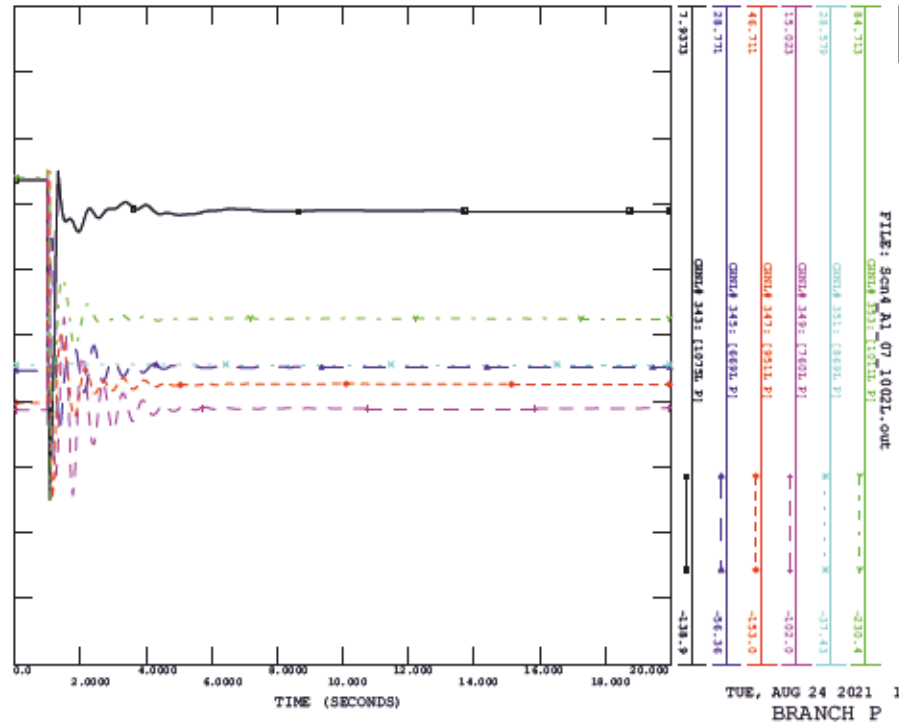
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_100ZL, FAULT LOCATION JENNER 2755

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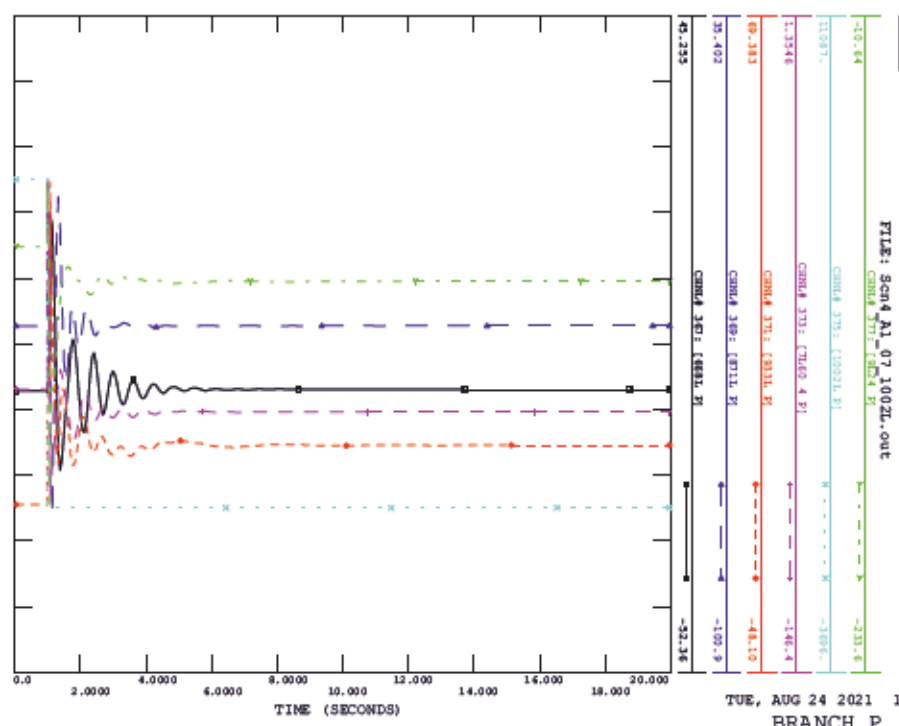
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_100ZL, FAULT LOCATION JENNER 2755

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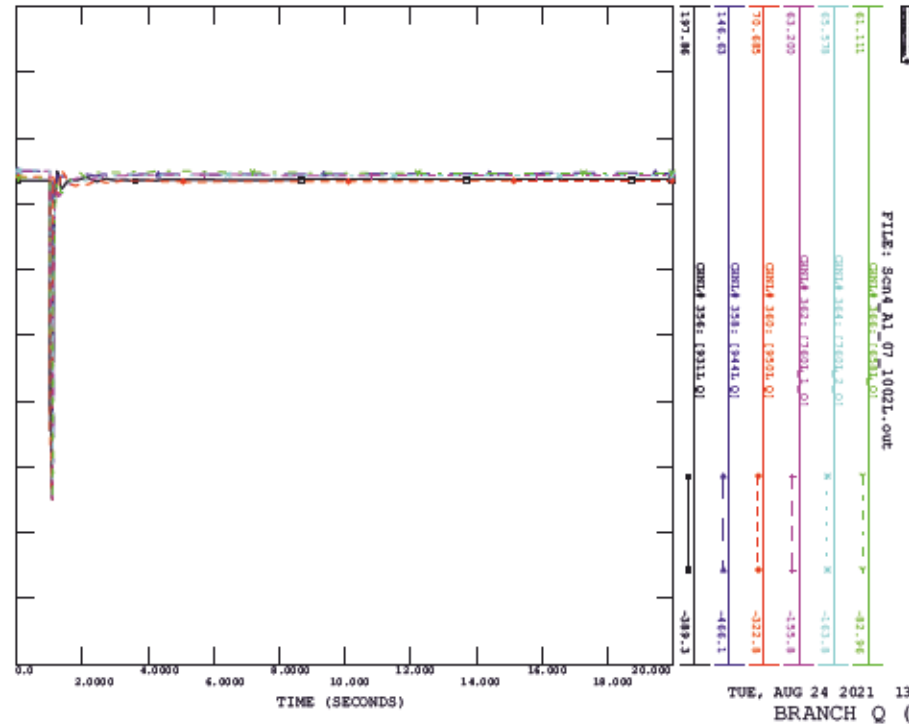


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_100ZL, FAULT LOCATION JENNER 2755

FILE: scm4_AI_07_100ZL.out

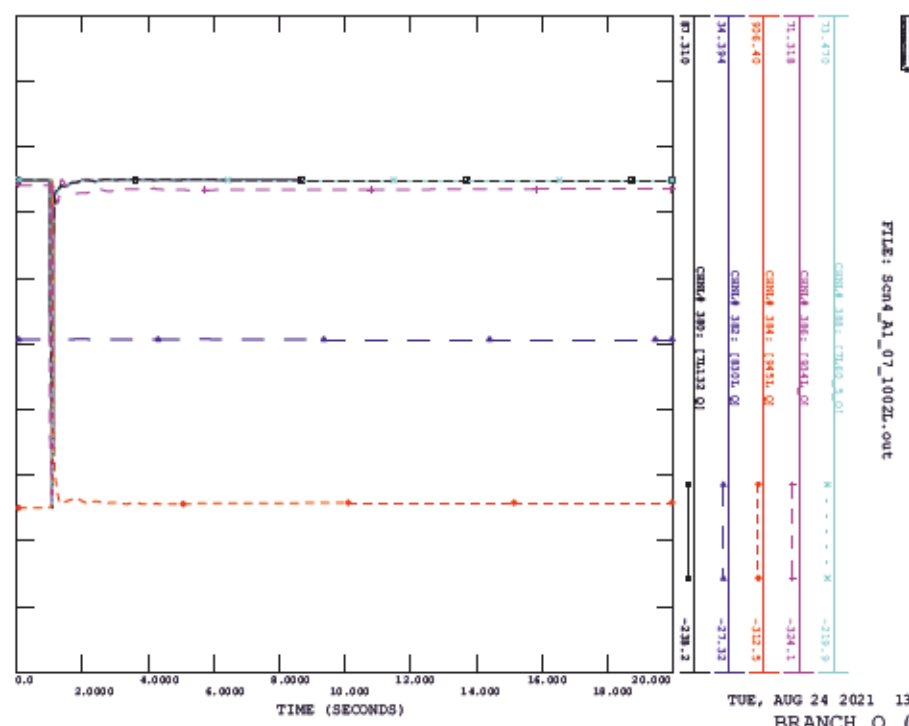


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_1002L, FAULT LOCATION JENNER 2755



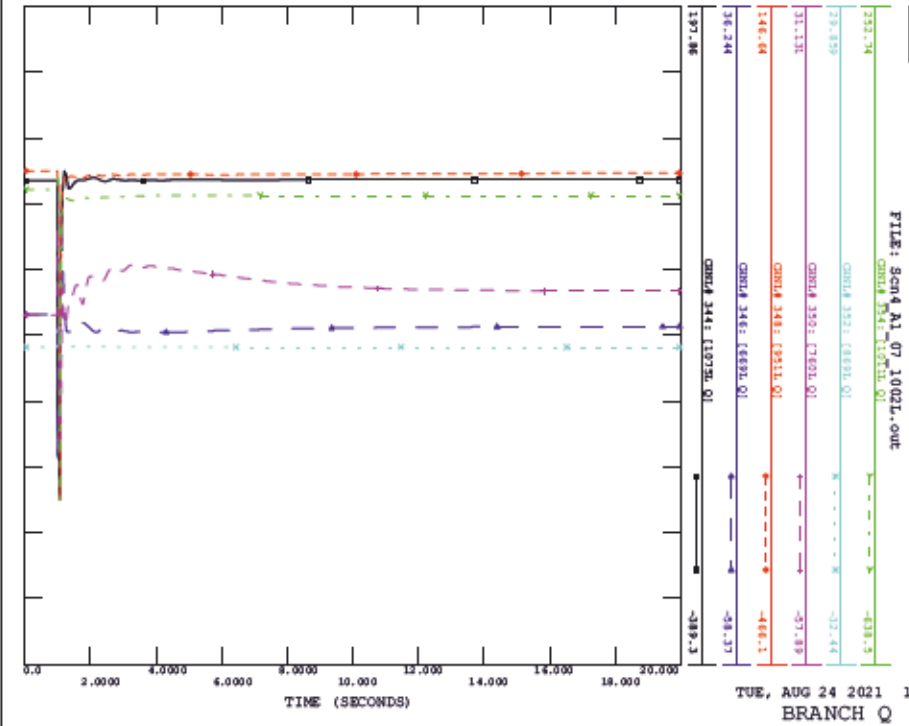
TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_1002L, FAULT LOCATION JENNER 2755



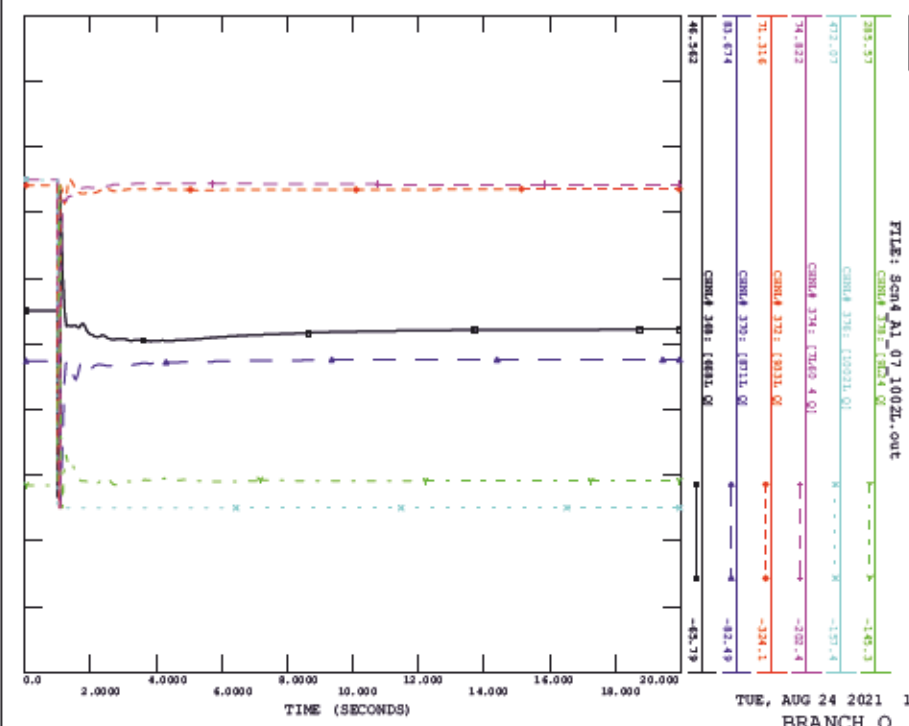
TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_1002L, FAULT LOCATION JENNER 2755



TUE, AUG 24 2021 13:15
BRANCH Q (1)

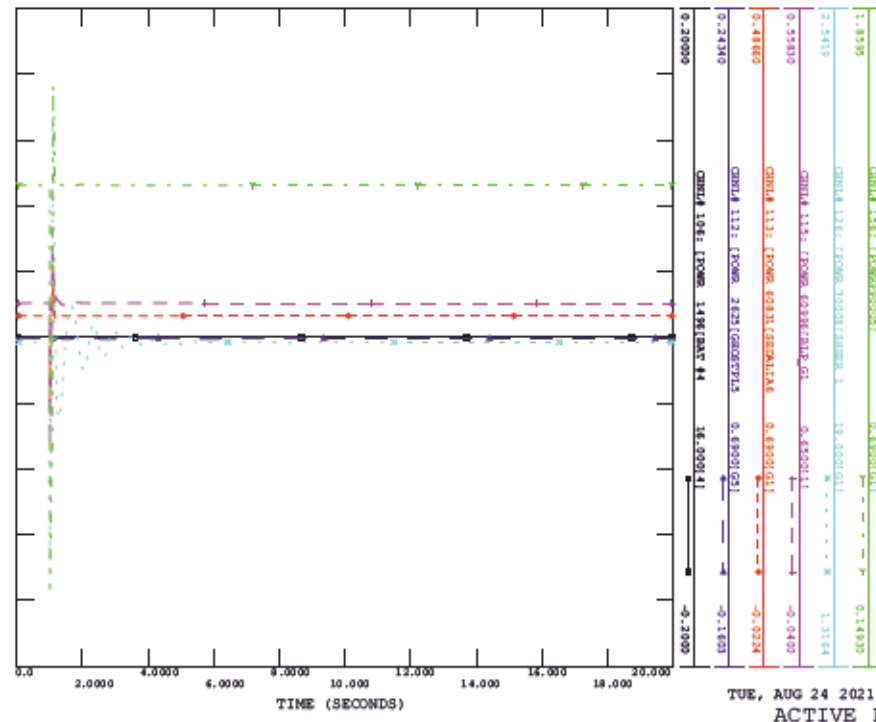
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_07_1002L, FAULT LOCATION JENNER 2755



TUE, AUG 24 2021 13:15
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_08_100ZL, FAULT LOCATION AMOCO EXPRESS

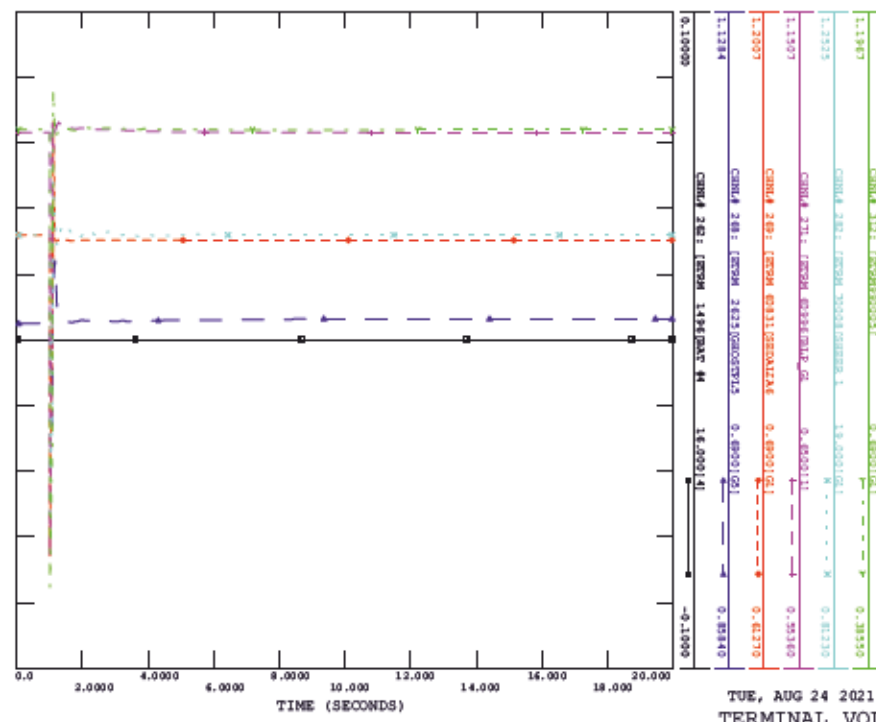
FILE: Scm4_A1_08_100ZL.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_08_100ZL, FAULT LOCATION AMOCO EXPRESS

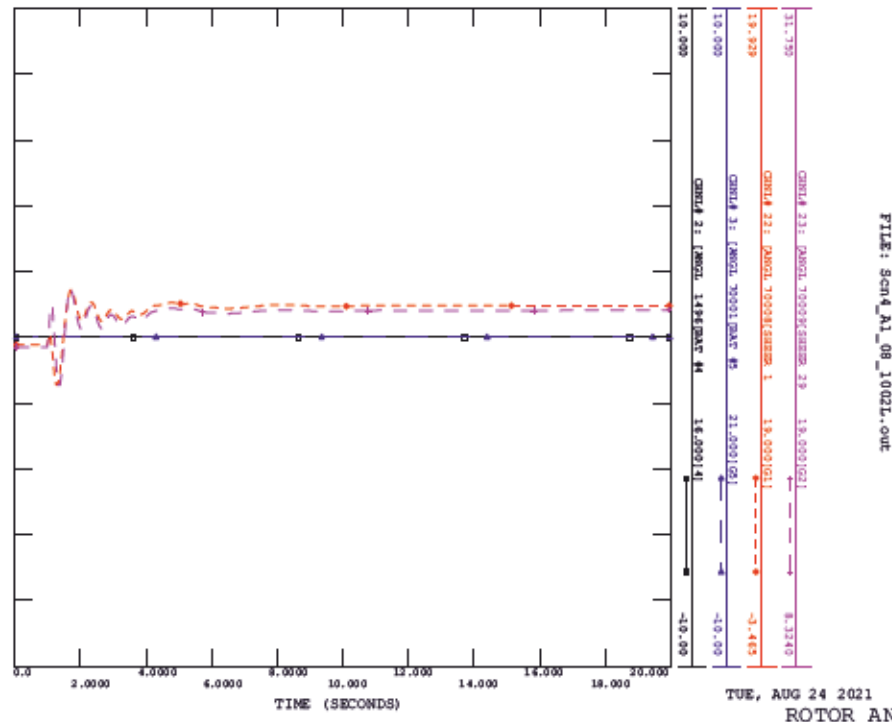
FILE: Scm4_A1_08_100ZL.out



TUE, AUG 24 2021 13:15
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_08_100ZL, FAULT LOCATION AMOCO EXPRESS

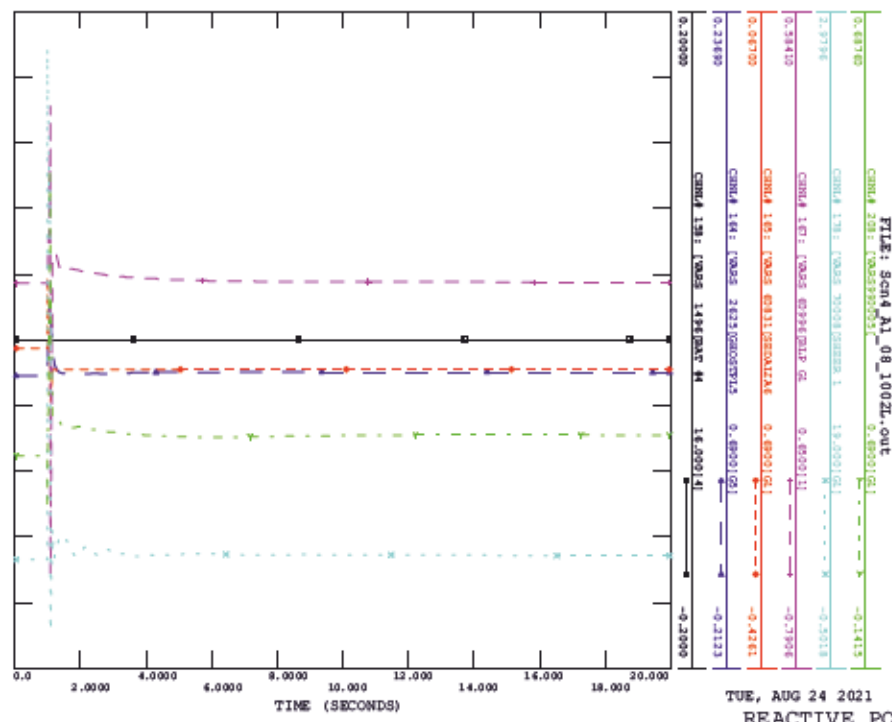
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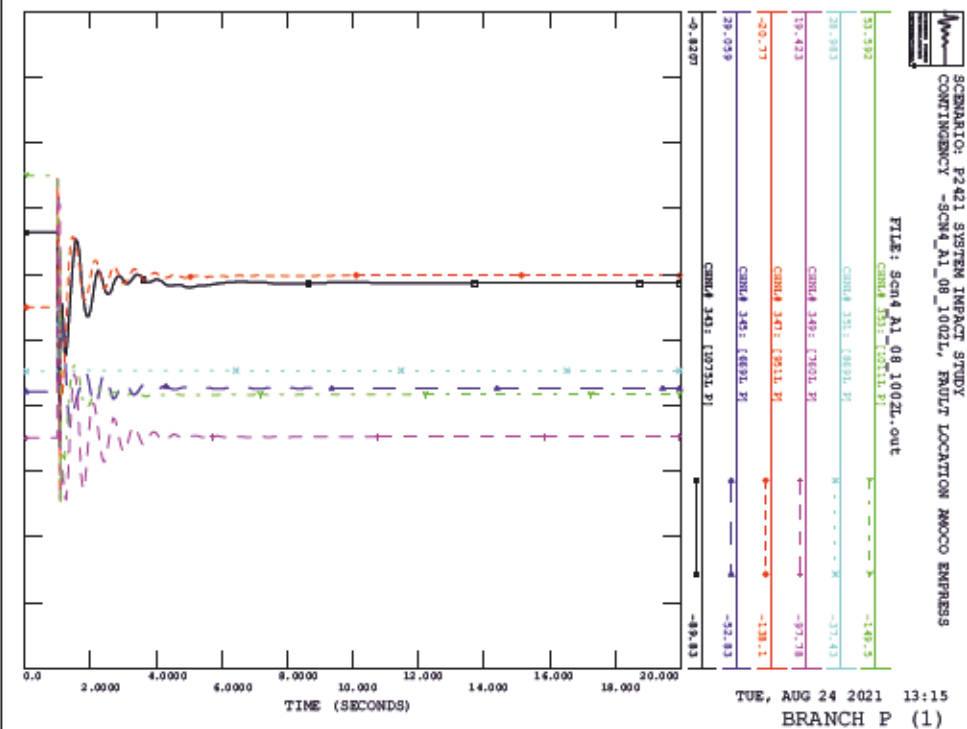
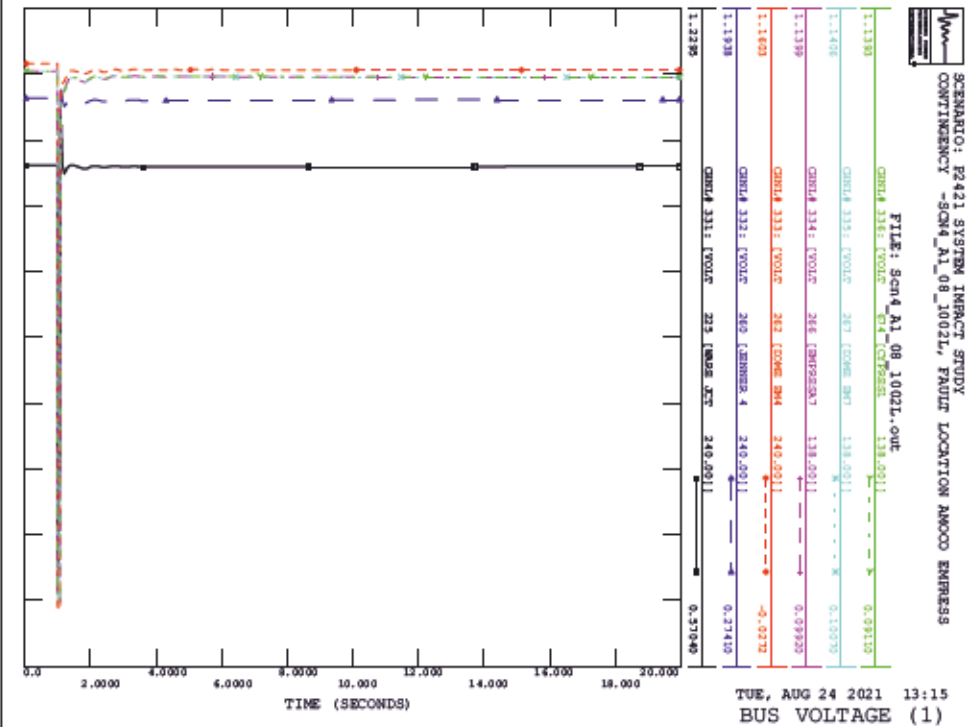
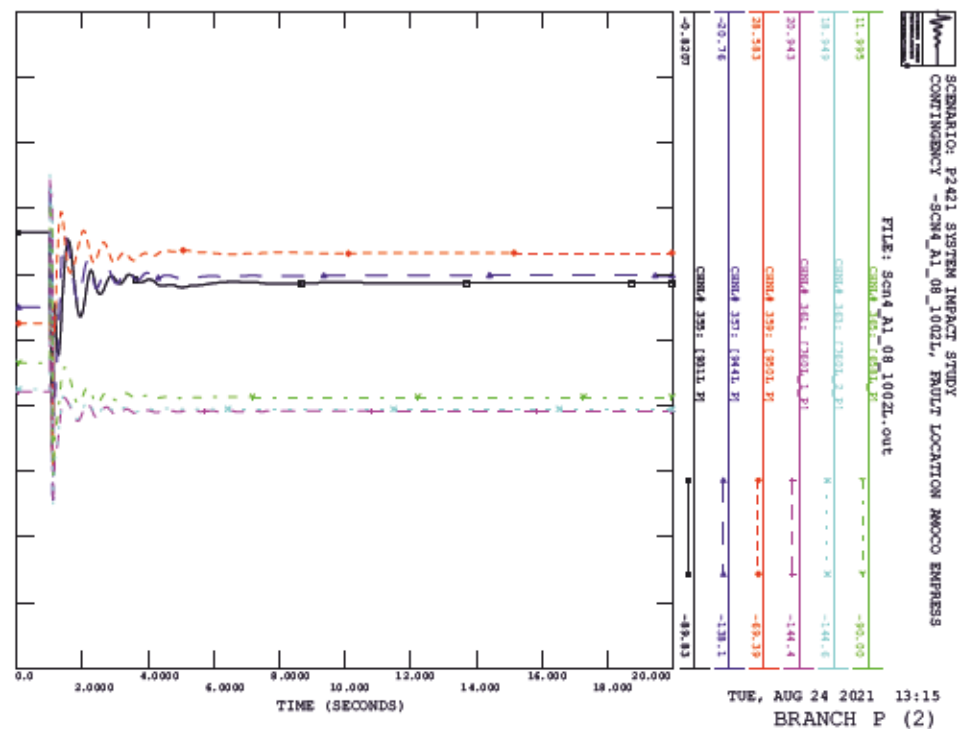
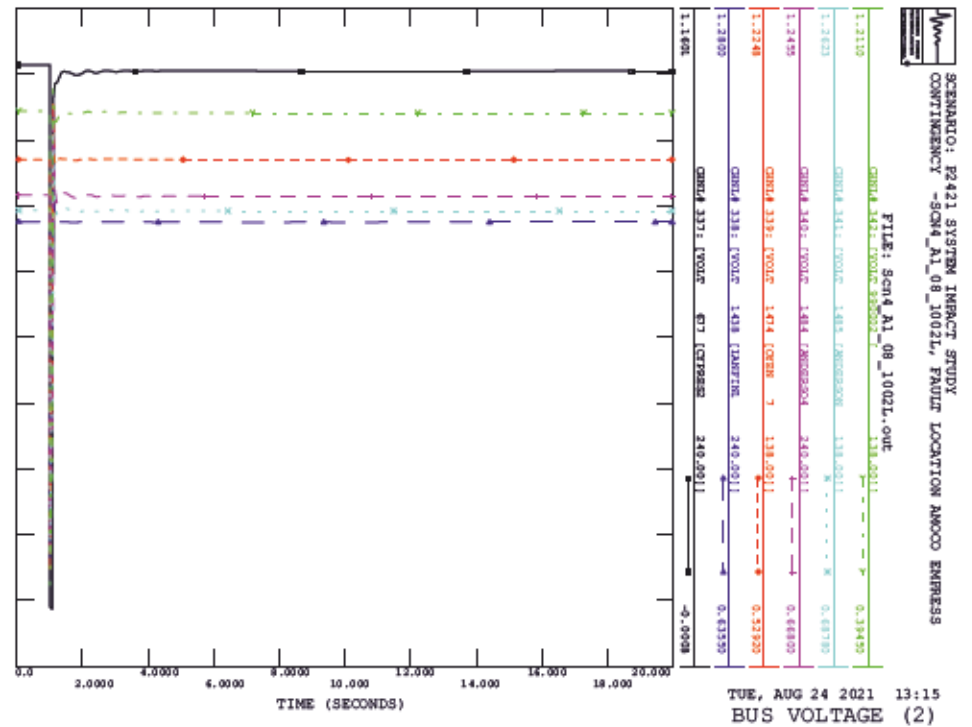
TUE, AUG 24 2021 13:15
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_08_100ZL, FAULT LOCATION AMOCO EXPRESS

FILE: Scm4_A1_08_100ZL.out

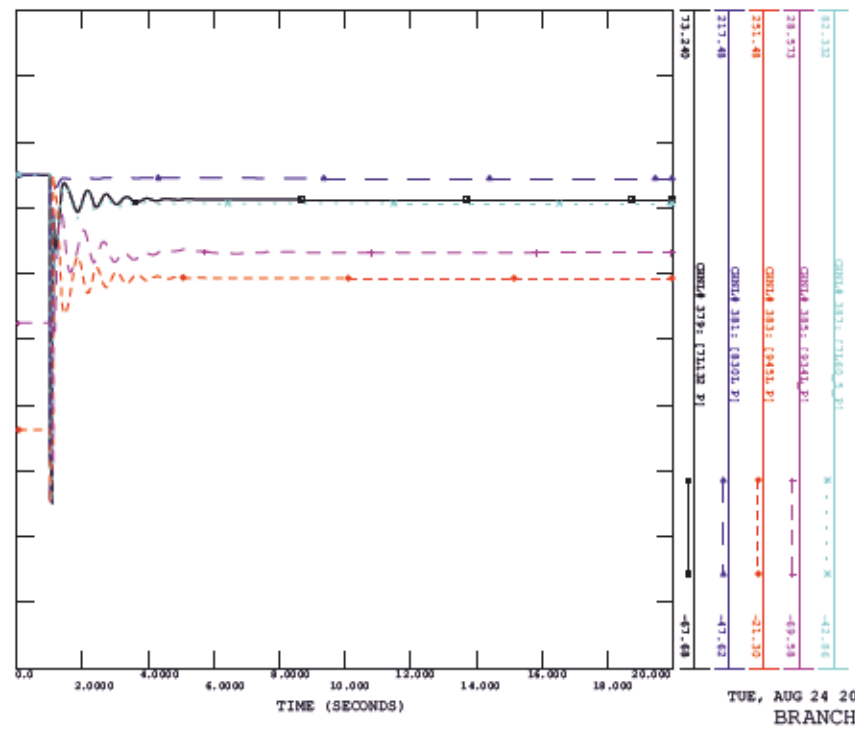


TUE, AUG 24 2021 13:15
REACTIVE POWER



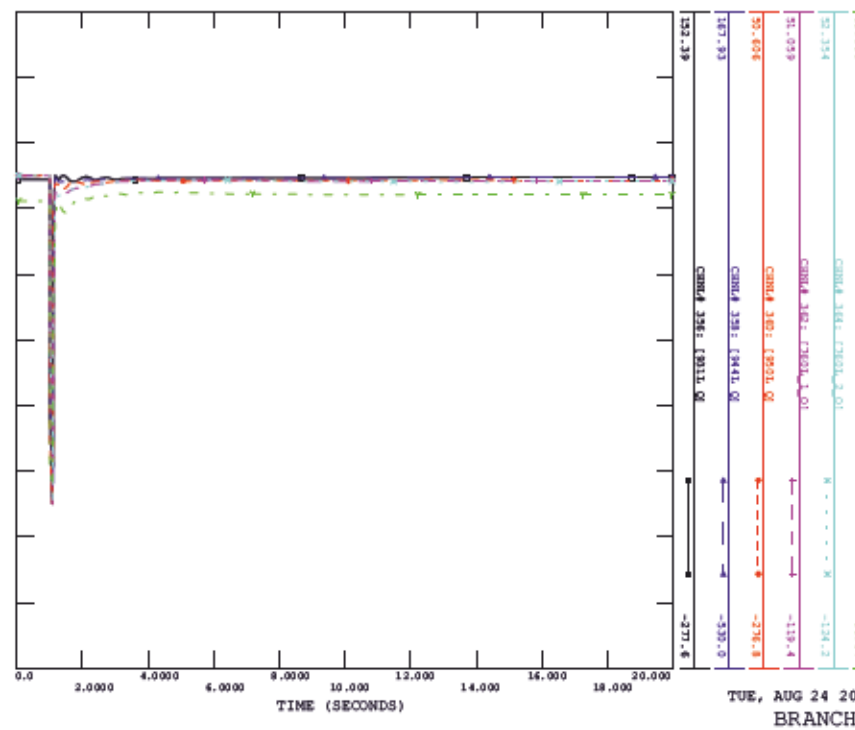
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_08_1002L, FAULT LOCATION AMOCO EXPRESS

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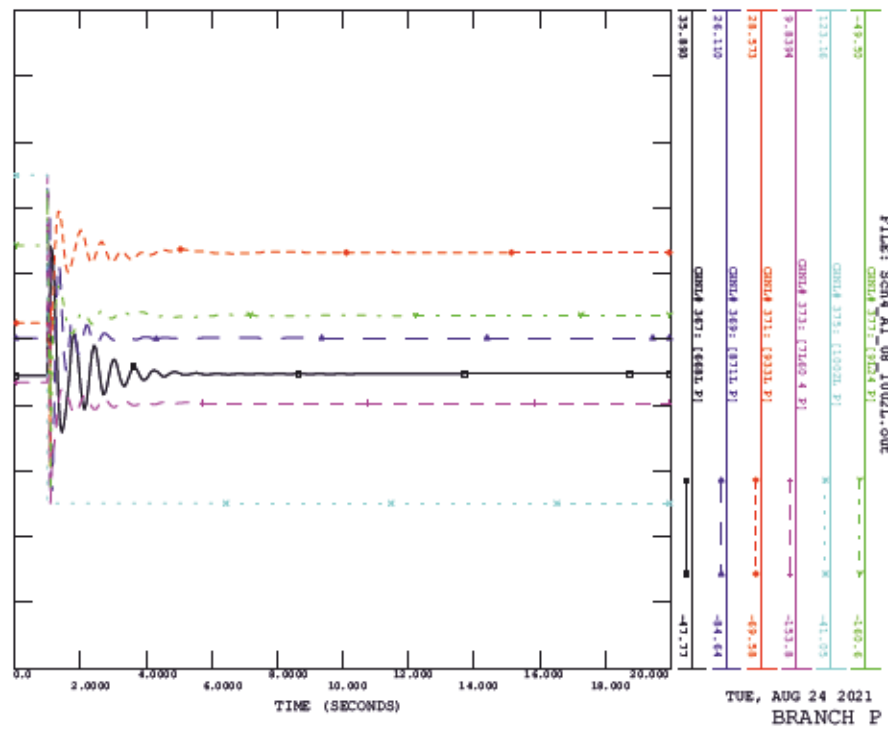
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_08_1002L, FAULT LOCATION AMOCO EXPRESS

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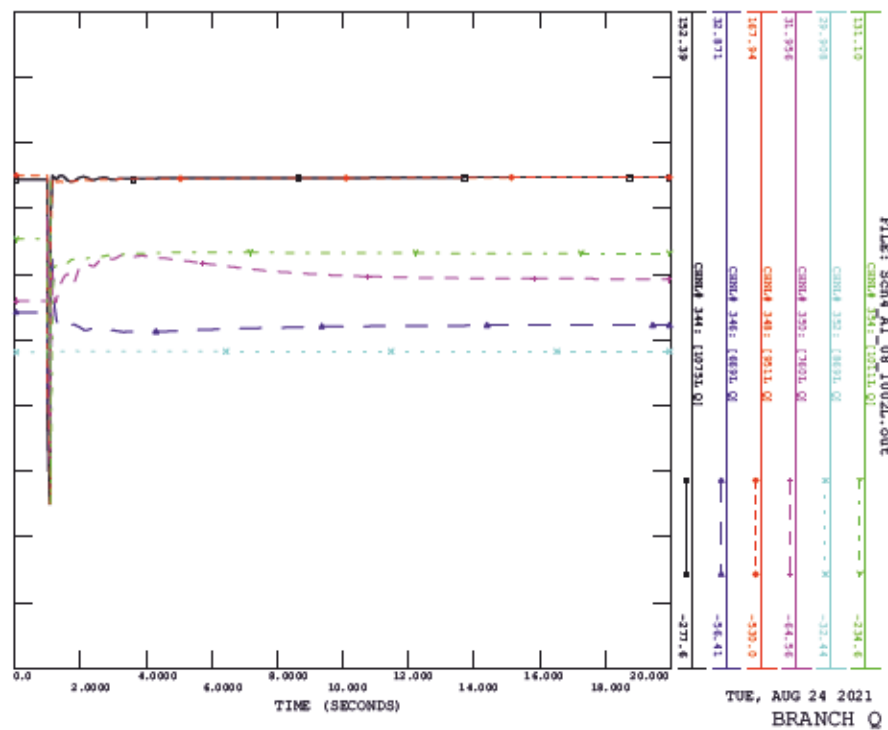
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CONTINGENCY -SCM4_AI_08_1002L, FAULT LOCATION AMOCO EXPRESS

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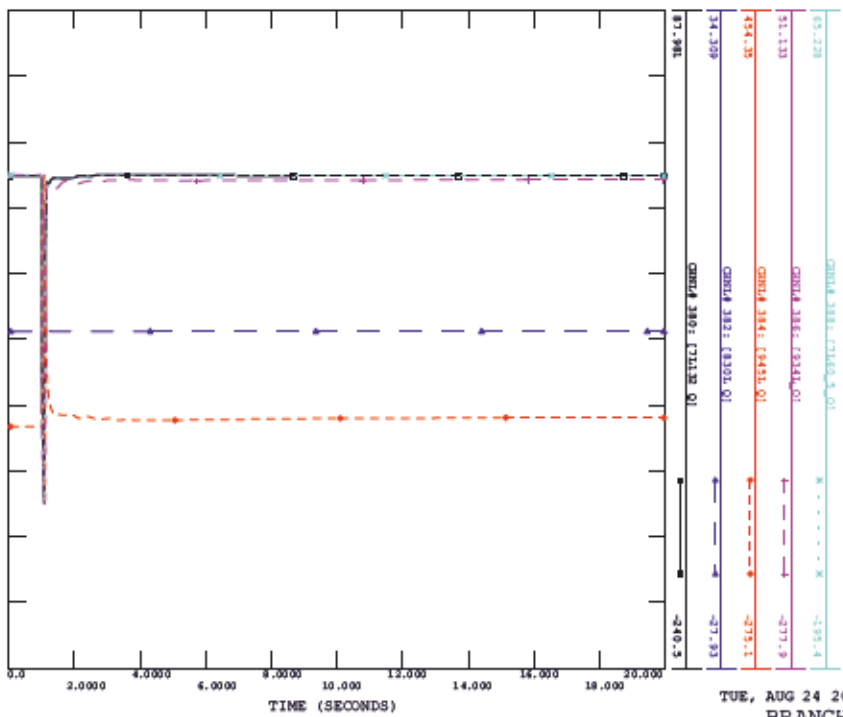
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CONTINGENCY -SCM4_AI_08_1002L, FAULT LOCATION AMOCO EXPRESS

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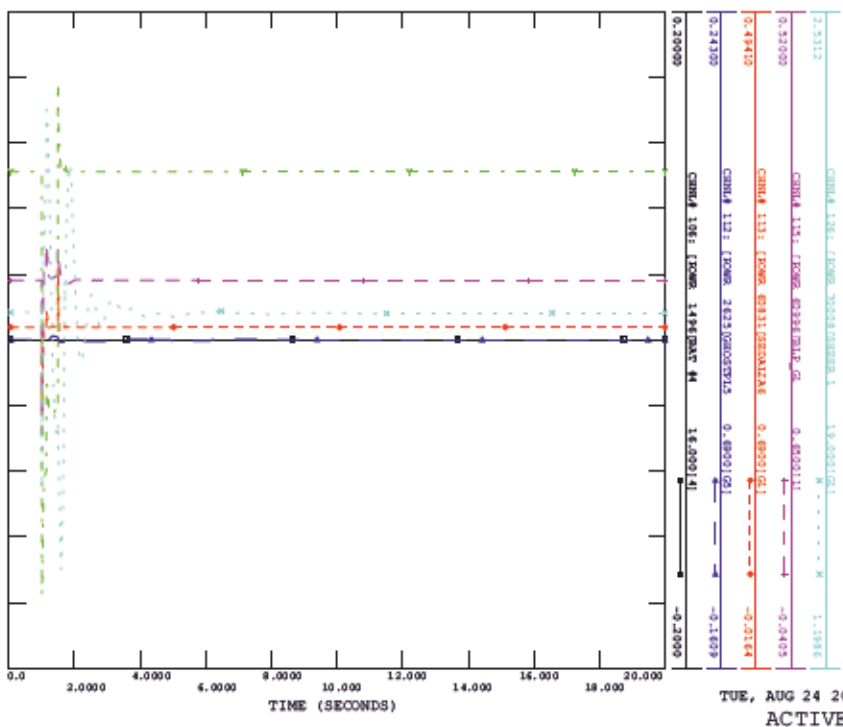
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CONTINGENCY -SCM4_A1_08_1002L, FAULT LOCATION AMOOD EXPRESS

FILE: scm4_A1_08_1002L.out



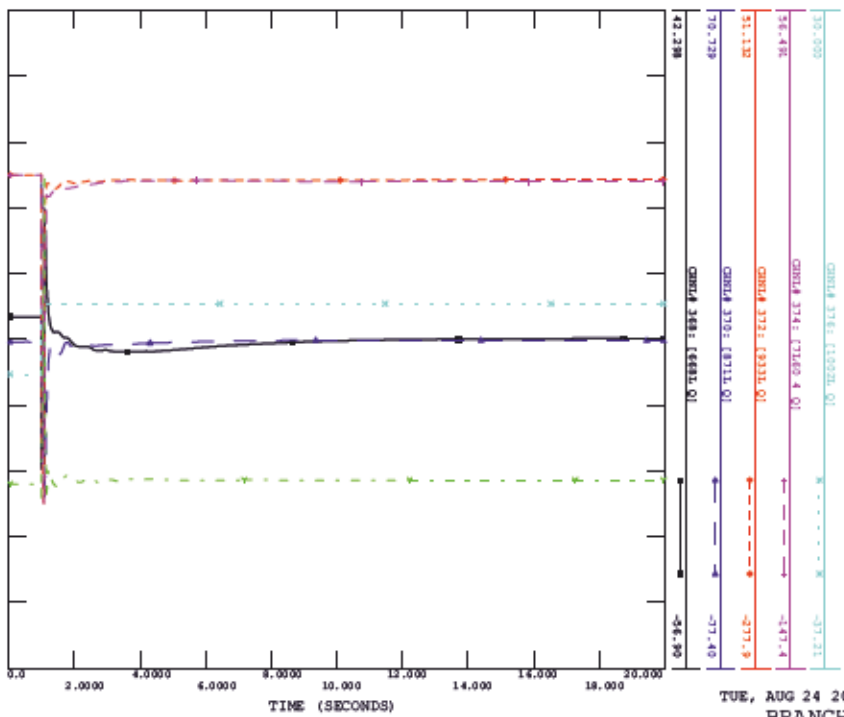
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_09_668L, FAULT LOCATION EXPRESS 394S

FILE: scm4_A1_09_668L.out



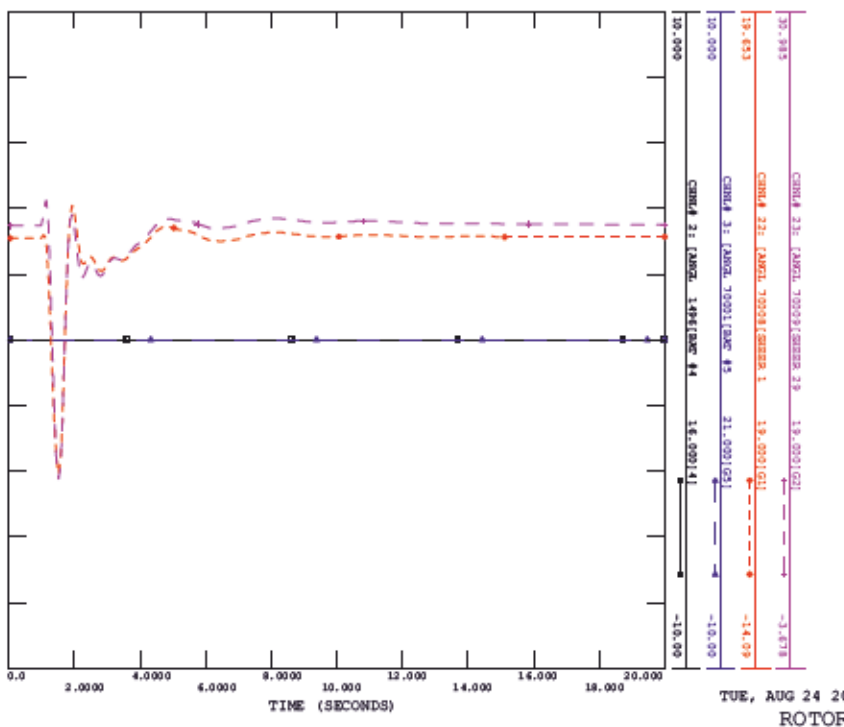
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CONTINGENCY -SCM4_A1_08_1002L, FAULT LOCATION AMOOD EXPRESS

FILE: scm4_A1_08_1002L.out

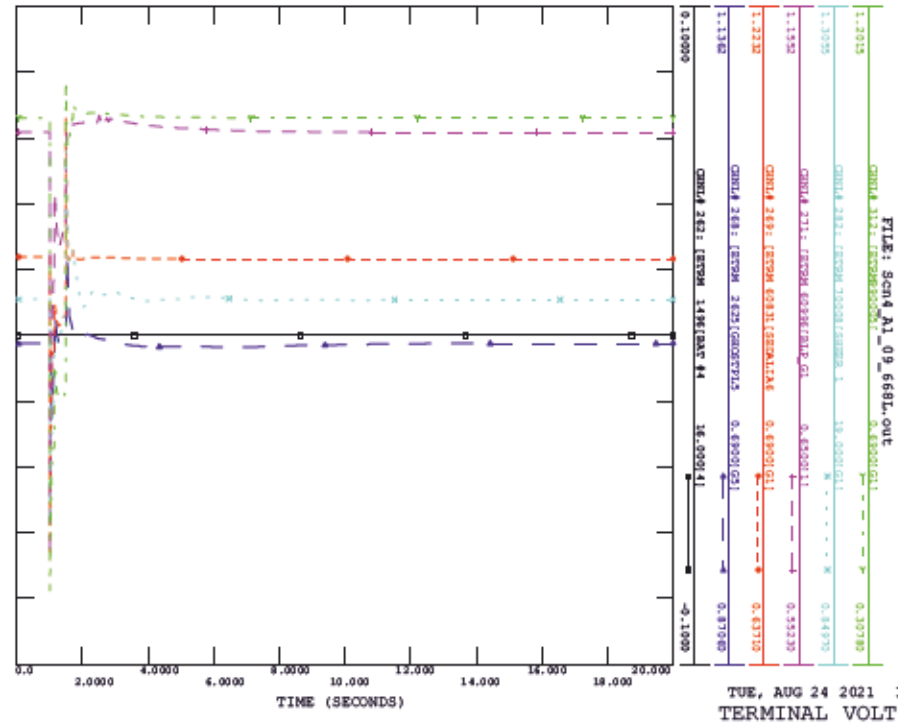


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_09_668L, FAULT LOCATION EXPRESS 394S

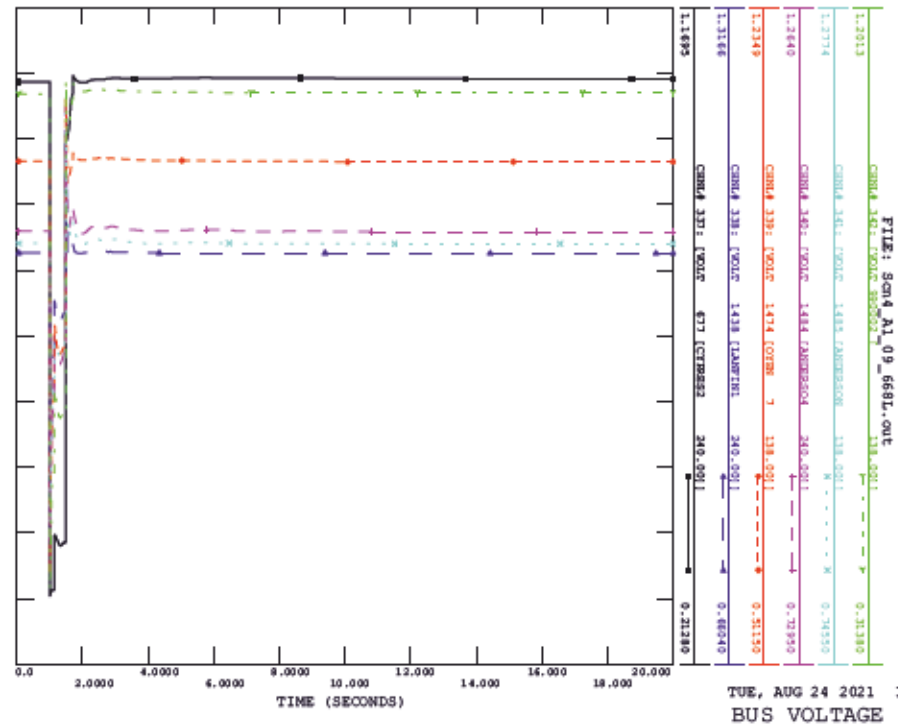
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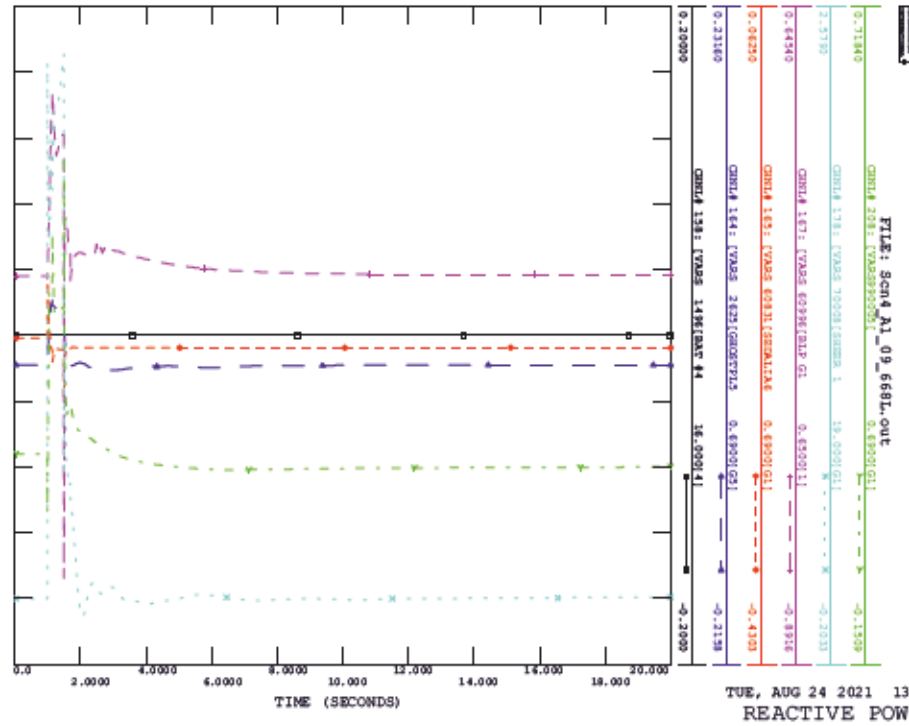
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CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945



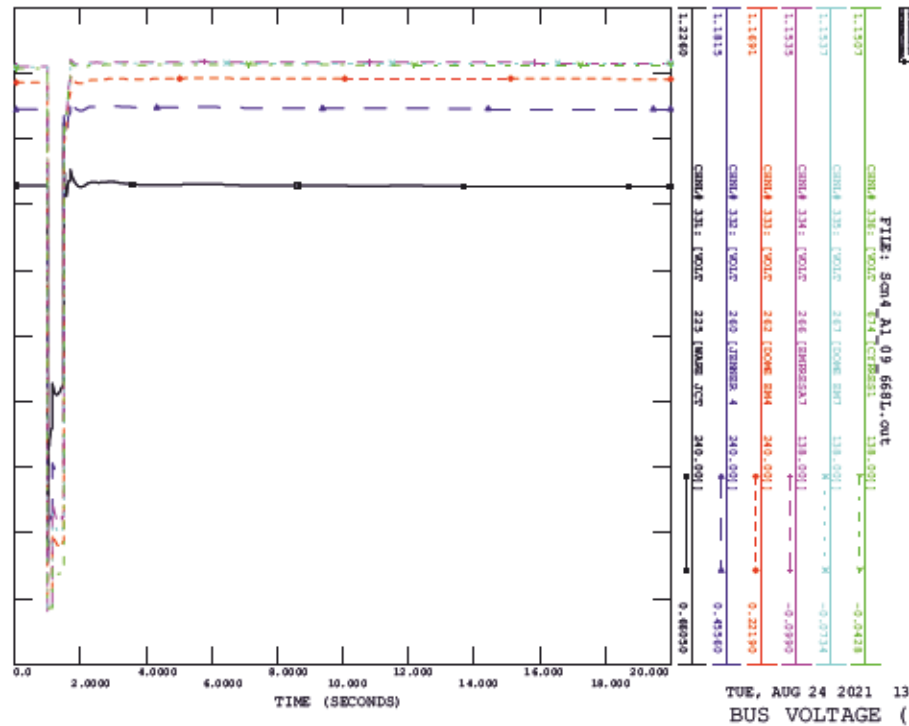
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945



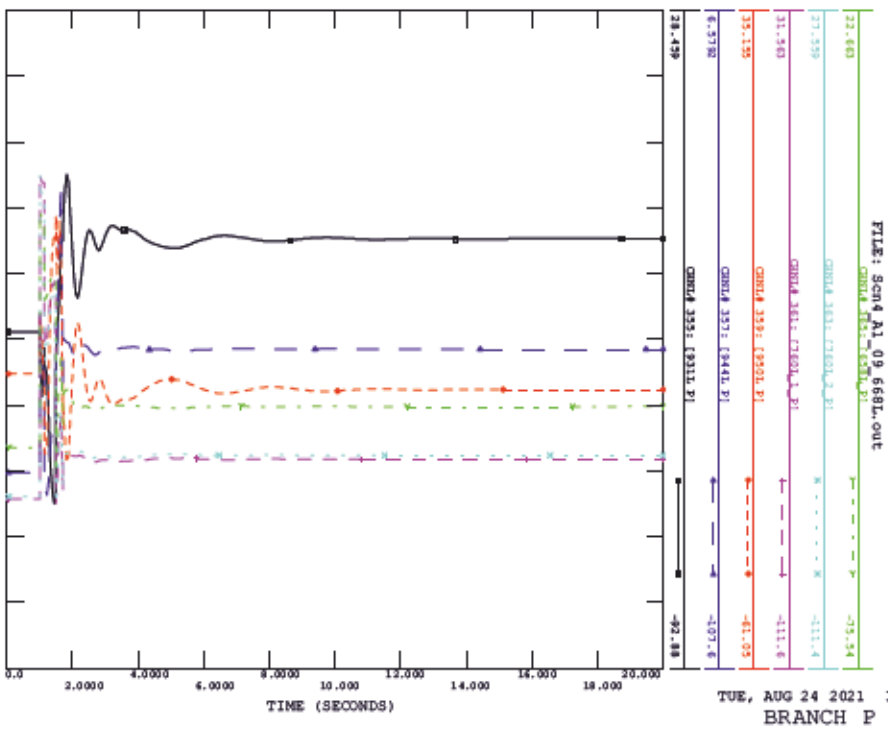
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945



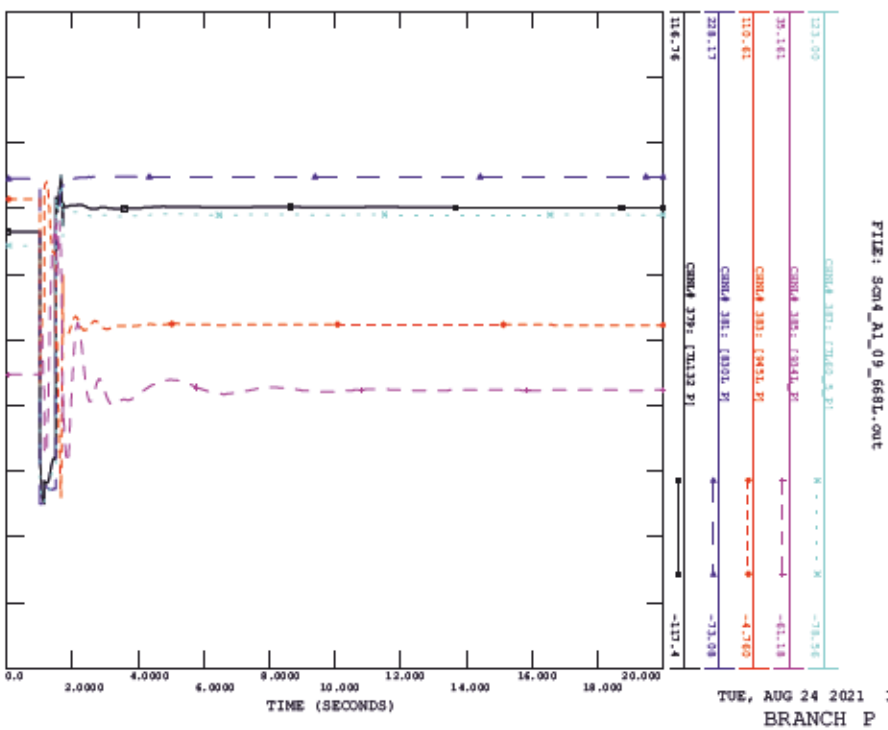
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945



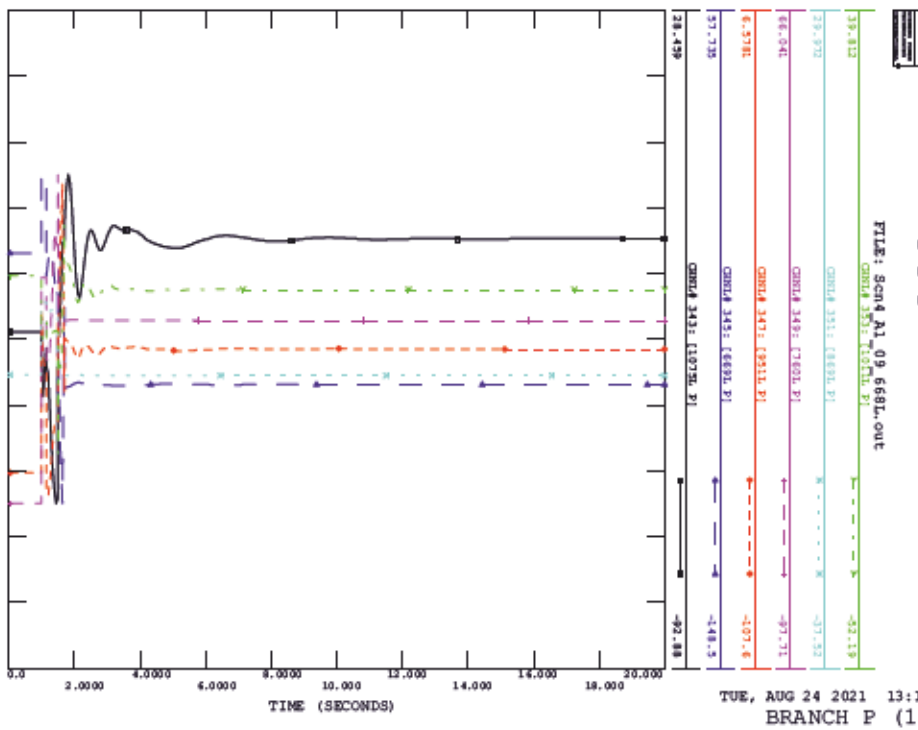
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 394S



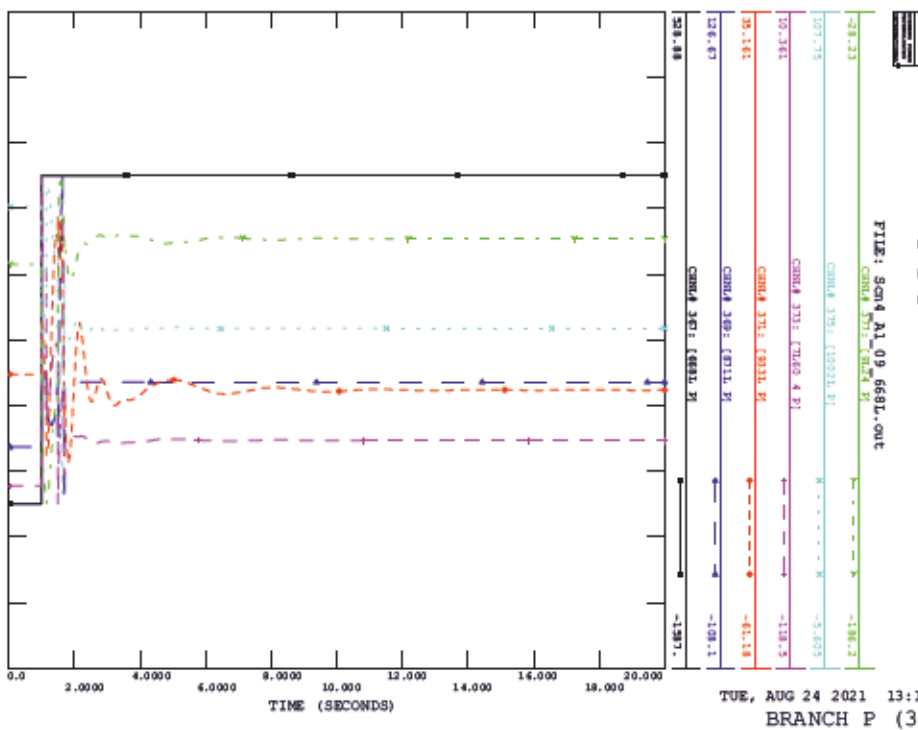
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 394S



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 394S

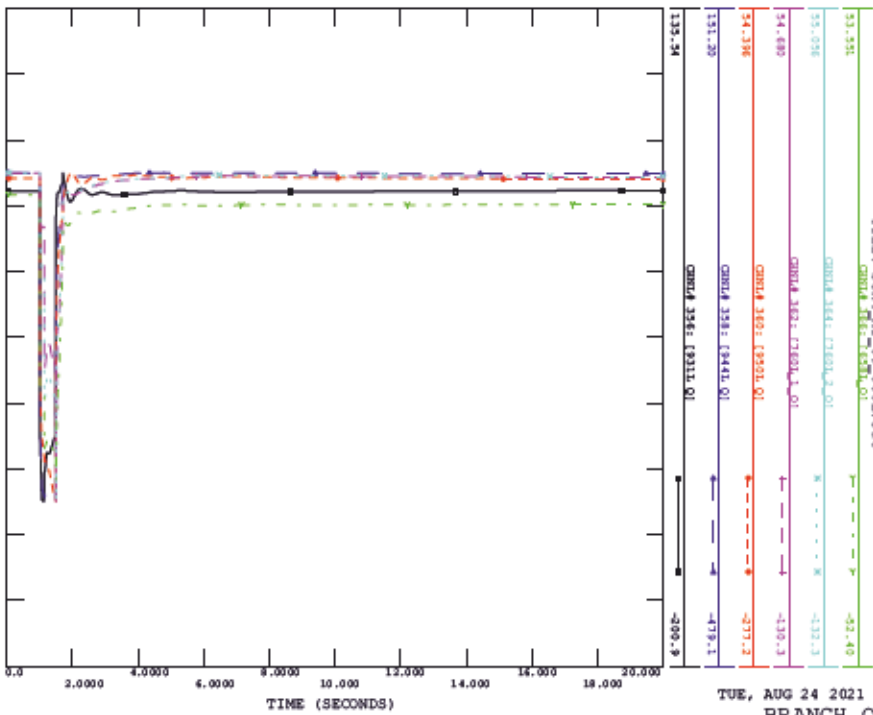


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 394S



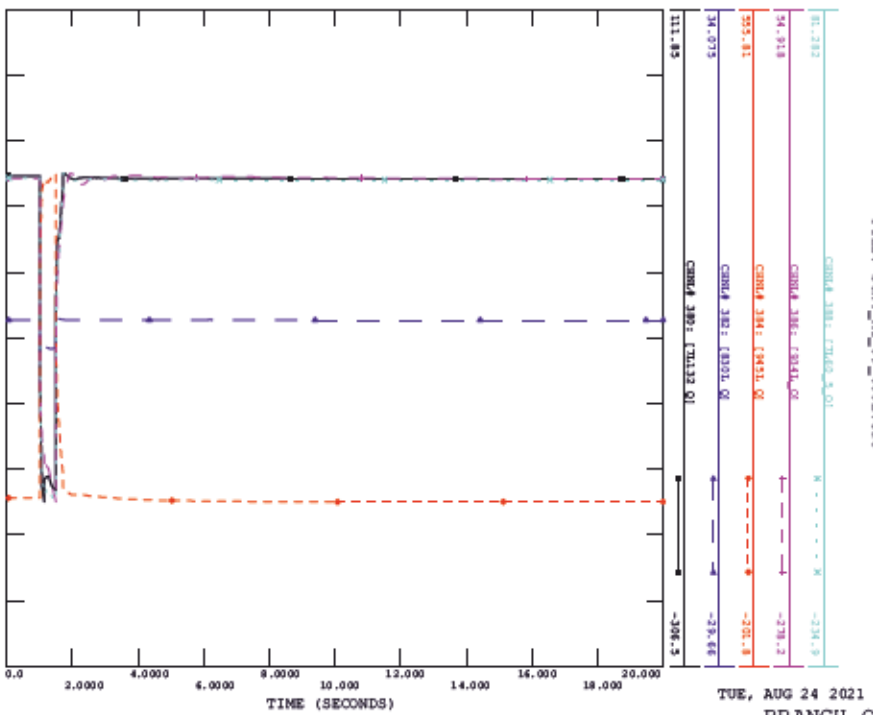
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CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945

FILE: Scm4_AI_09_668L.out



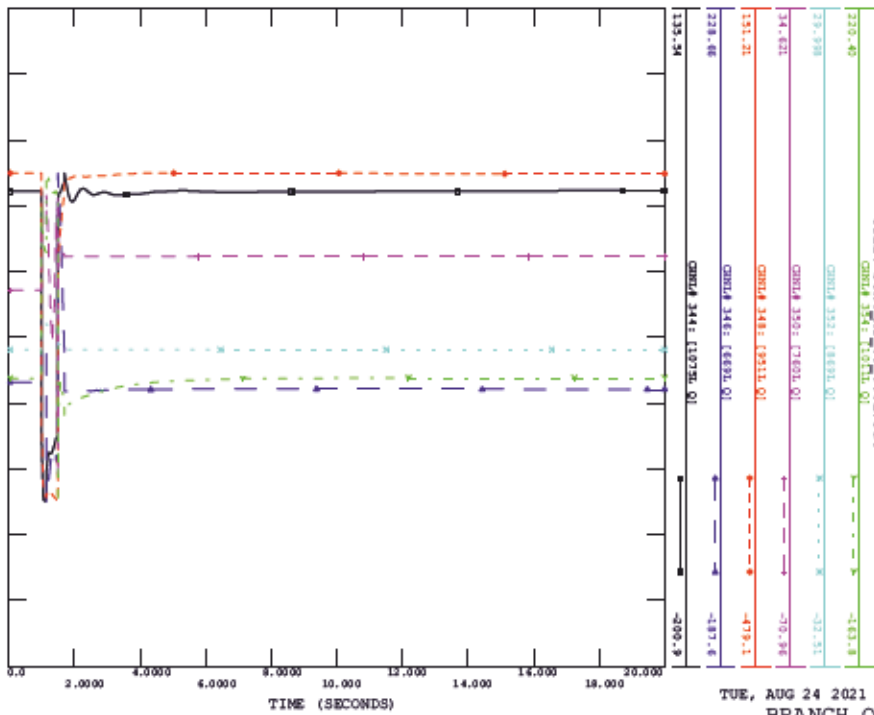
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CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945

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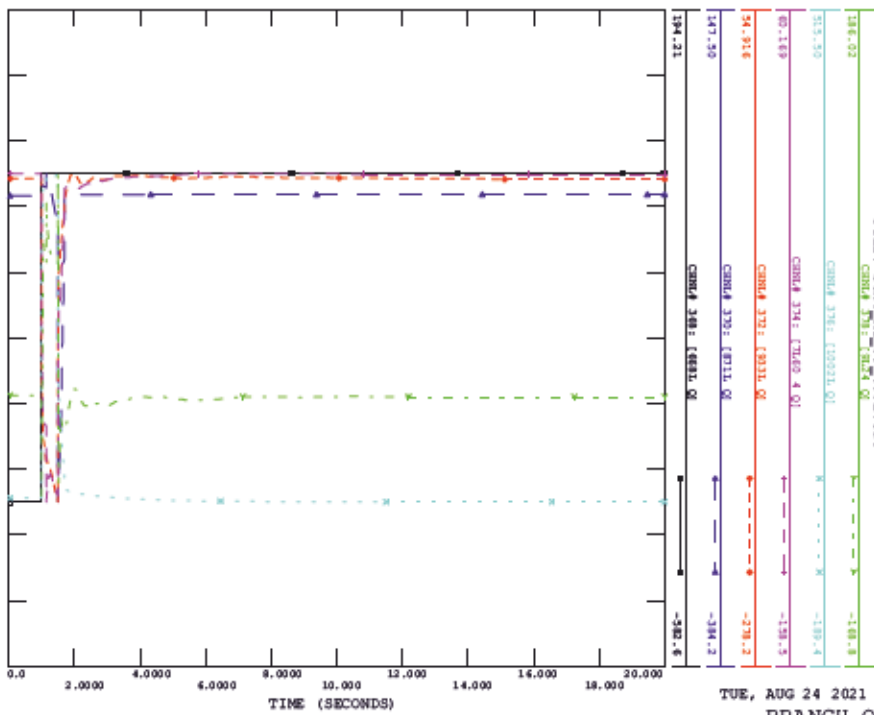
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FILE: Scm4_AI_09_668L.out



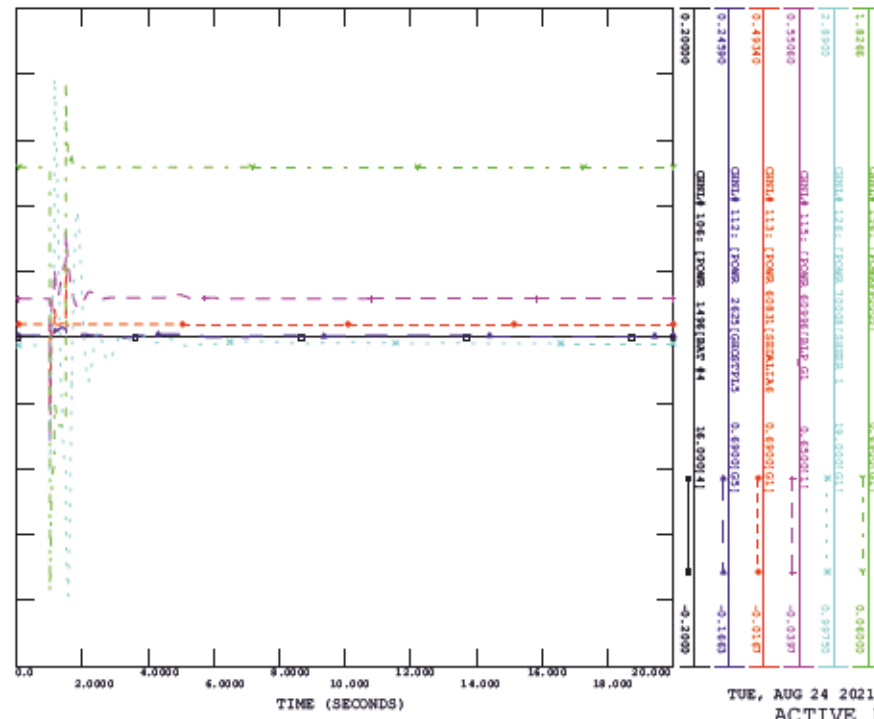
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_09_668L, FAULT LOCATION EMPRESS 3945

FILE: Scm4_AI_09_668L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629

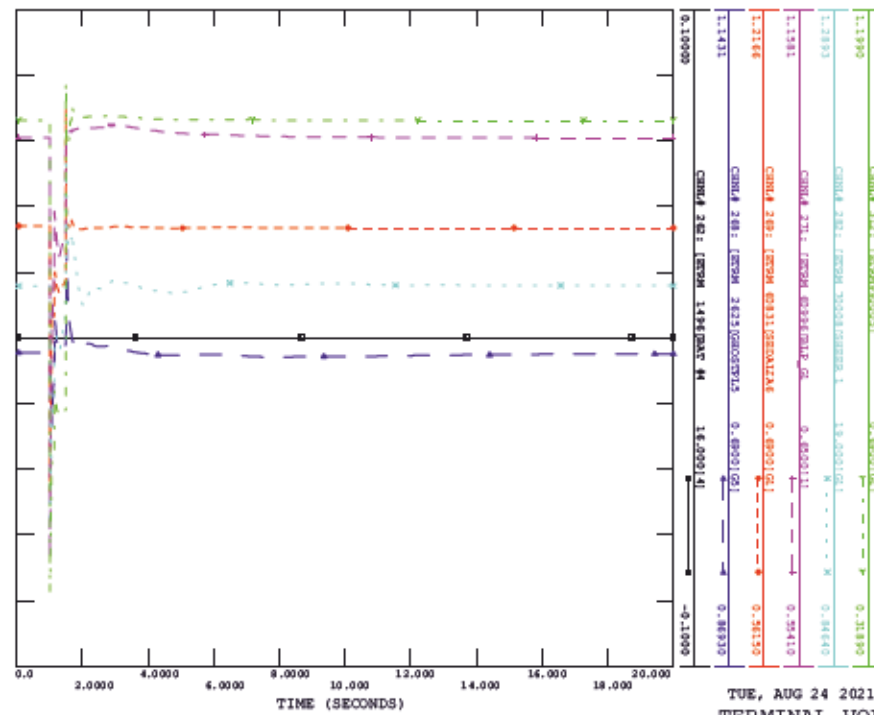
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TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629

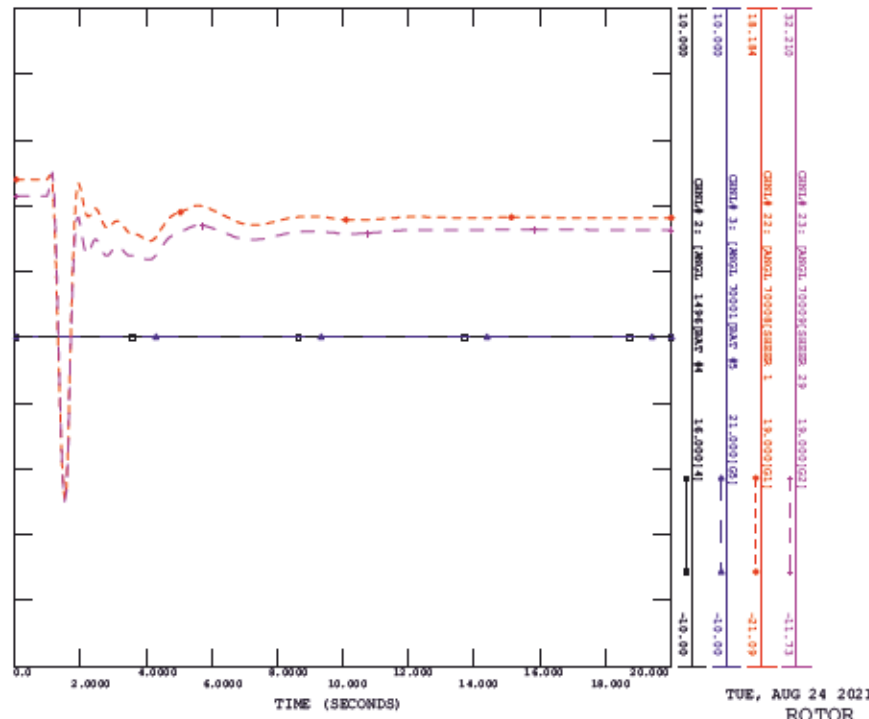
FILE: Scm4_A1_10_668L.out



TUE, AUG 24 2021 13:15
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629

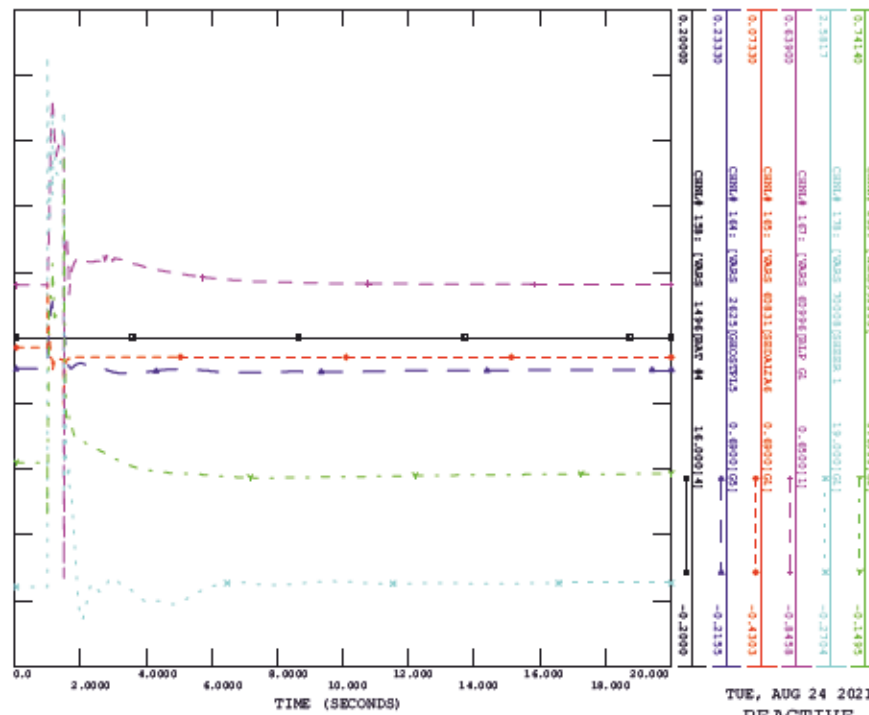
FILE: Scm4_A1_10_668L.out



TUE, AUG 24 2021 13:15
ROTOR ANGLE

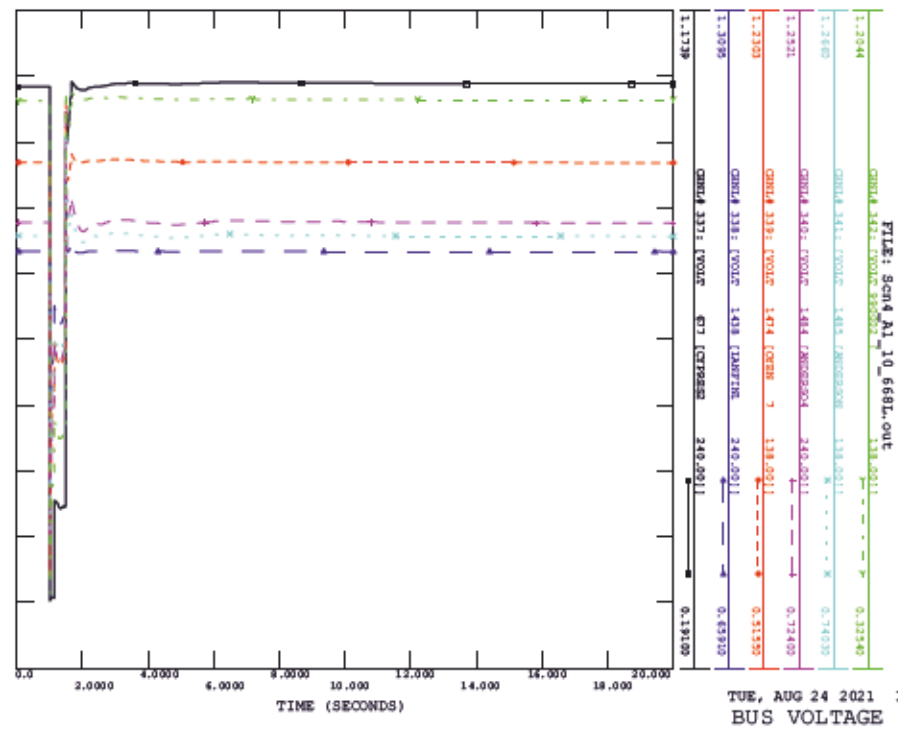
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629

FILE: Scm4_A1_10_668L.out

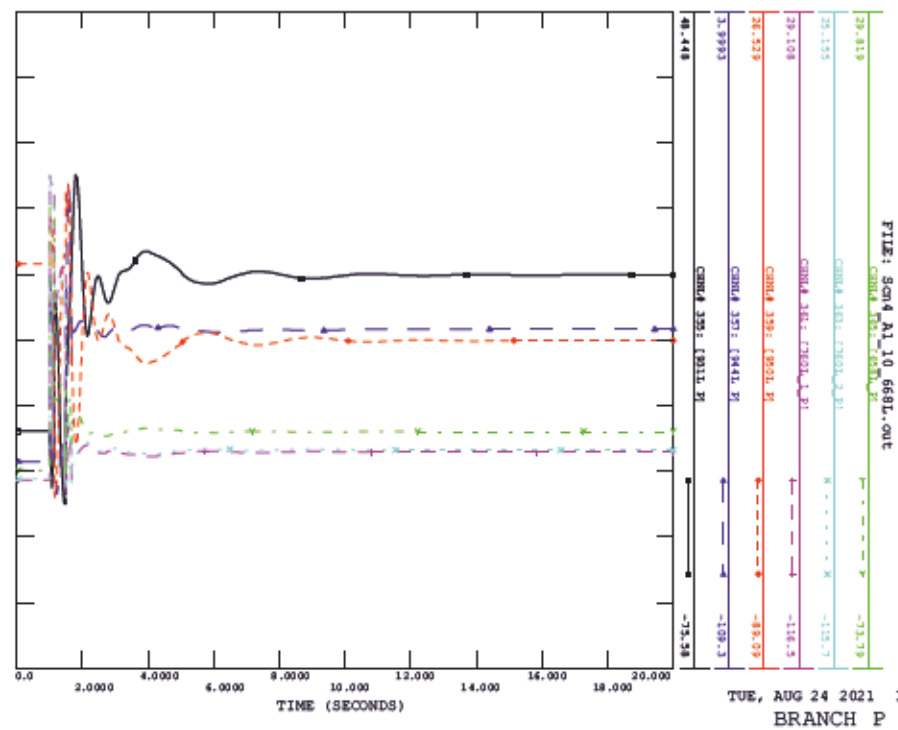


TUE, AUG 24 2021 13:15
REACTIVE POWER

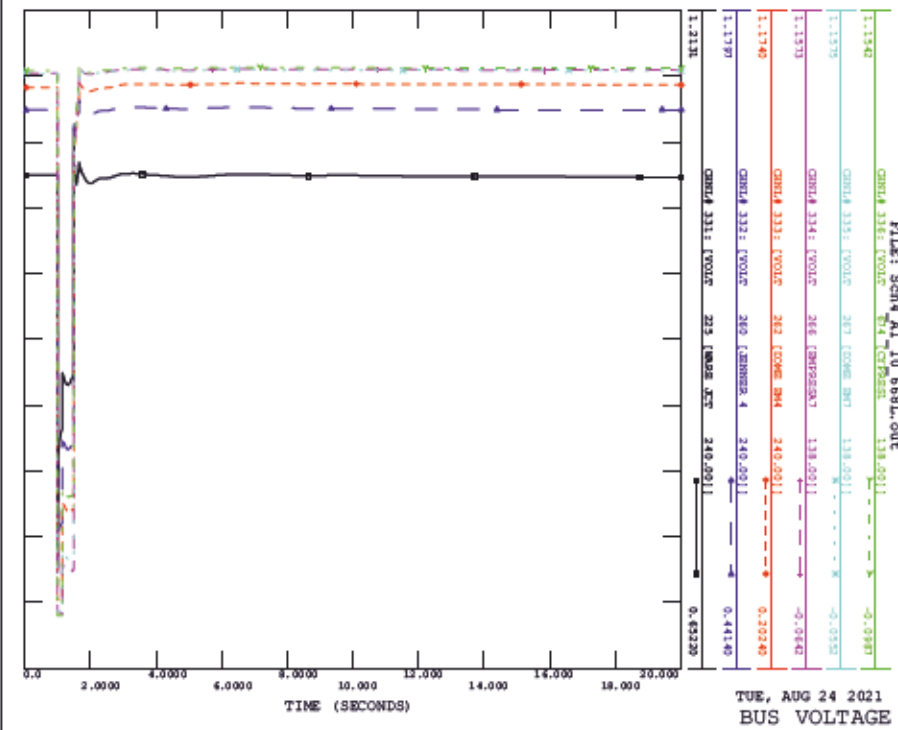
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629



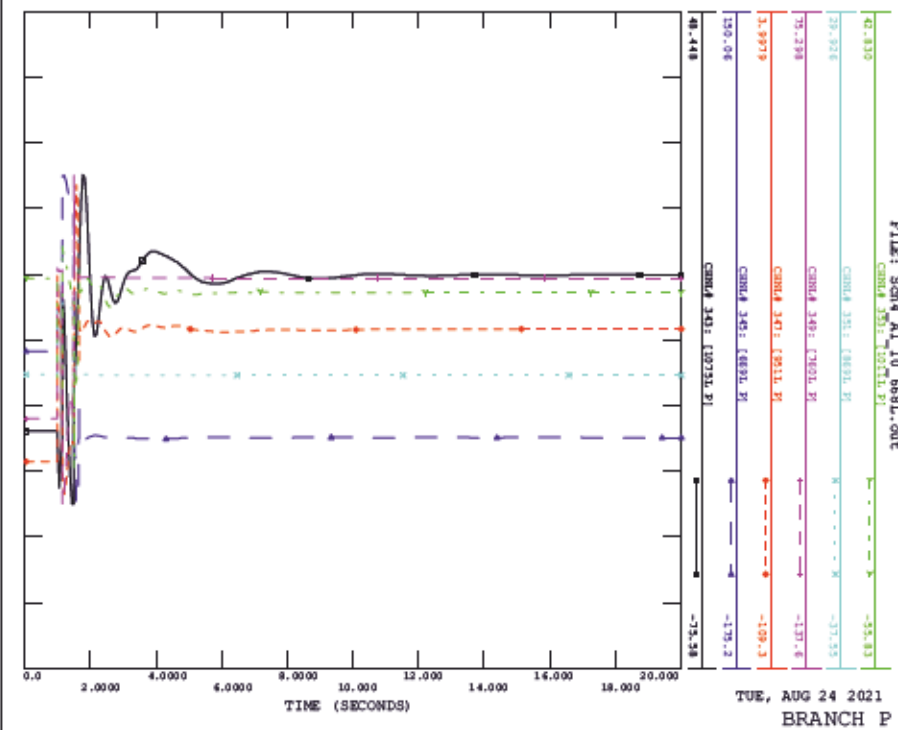
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629

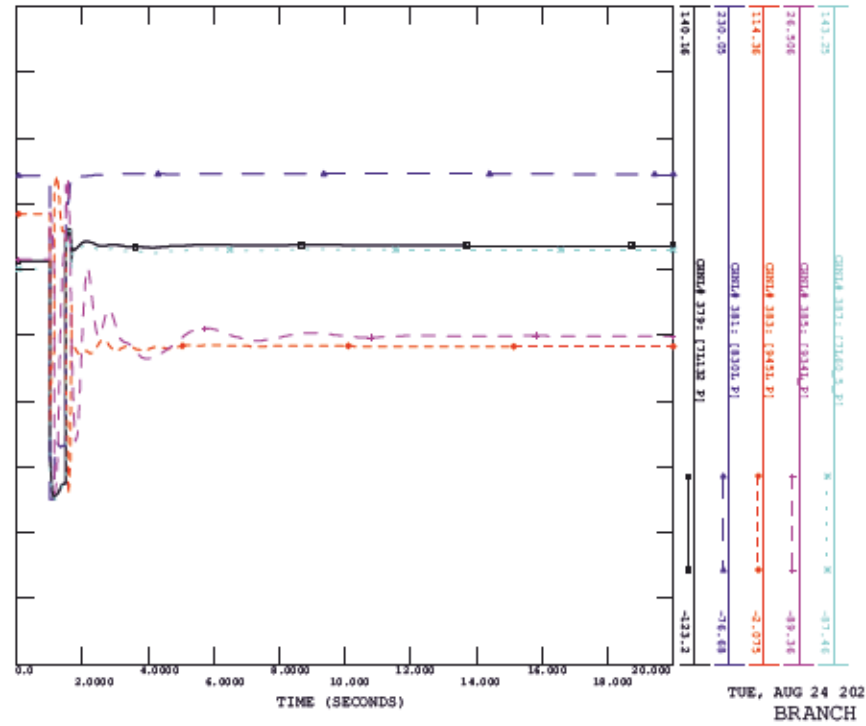


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_10_668L, FAULT LOCATION CYPRESS 5629

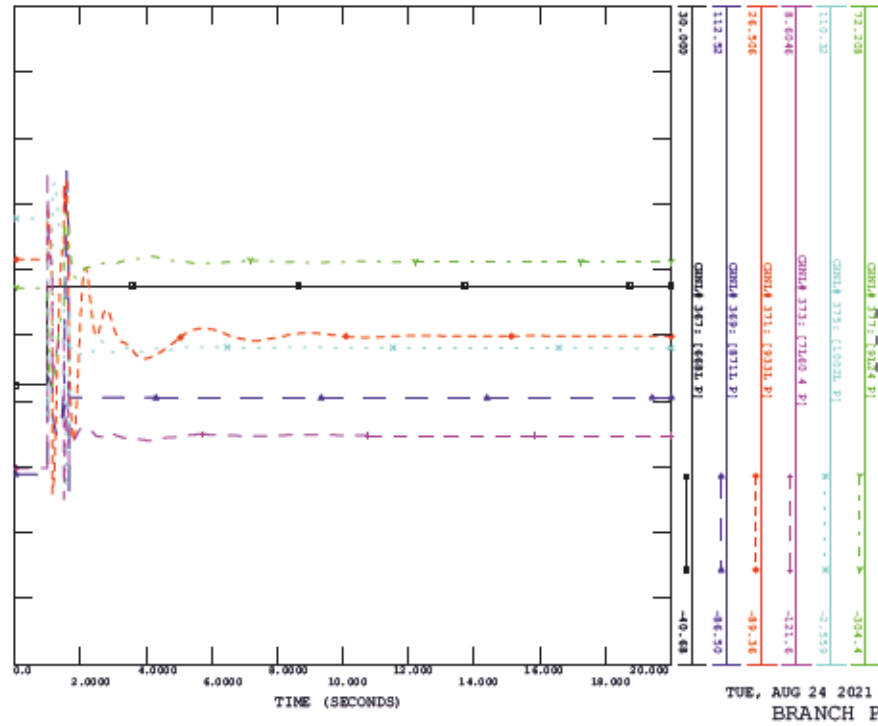
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TUE, AUG 24 2021 13:15
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_10_668L, FAULT LOCATION CYPRESS 5629

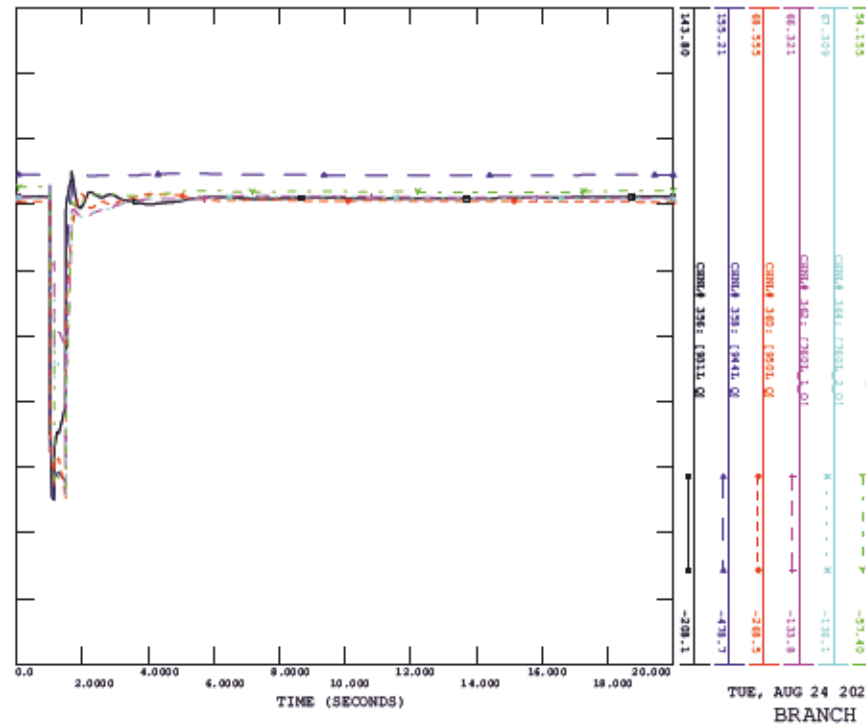
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TUE, AUG 24 2021 13:15
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_10_668L, FAULT LOCATION CYPRESS 5629

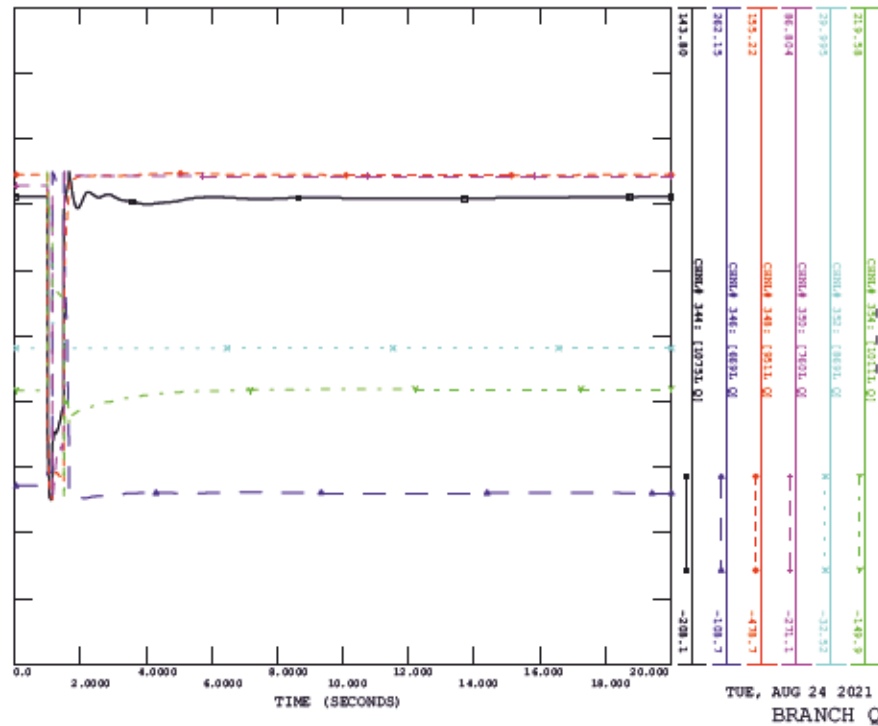
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TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_10_668L, FAULT LOCATION CYPRESS 5629

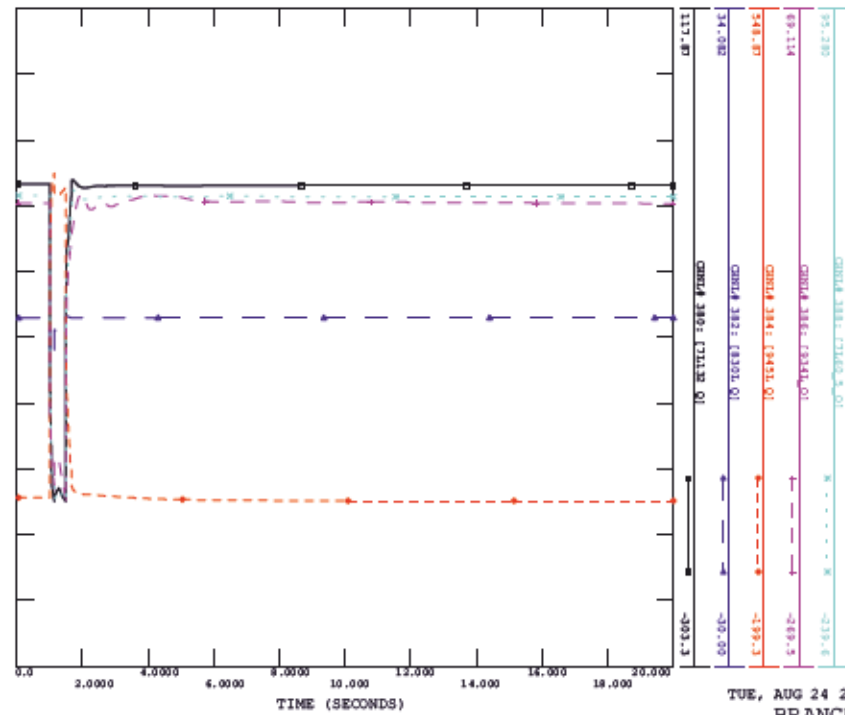
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

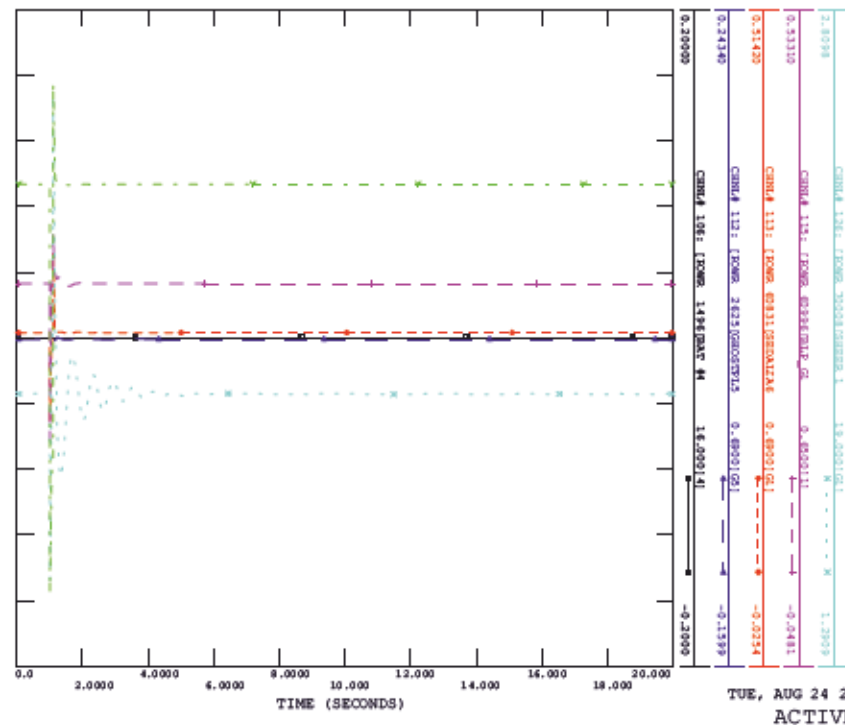
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5625

FILE: Scm4_A1_10_668L.out



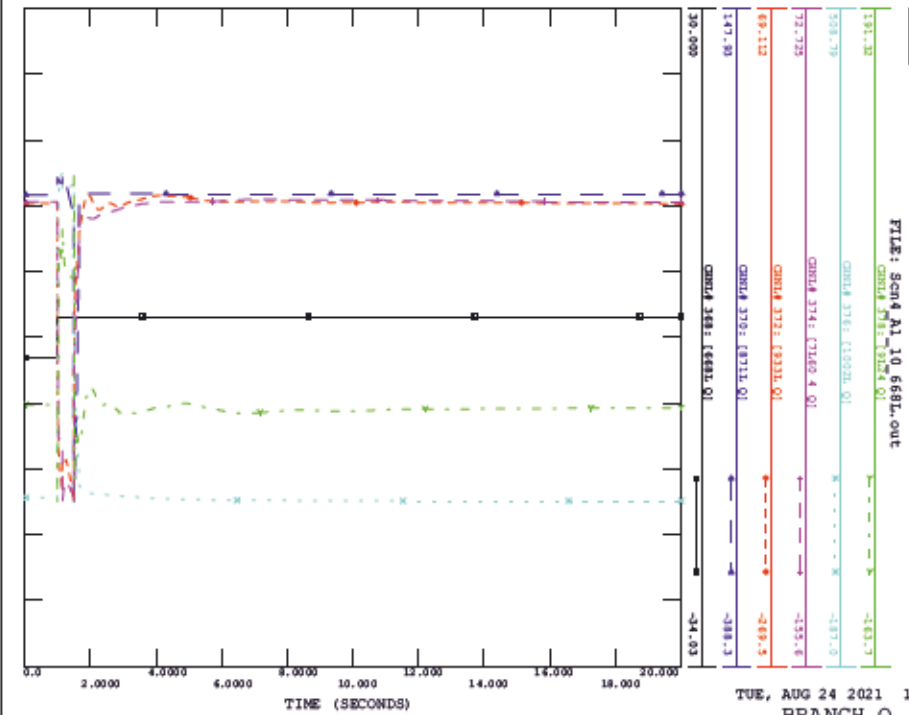
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_11_1011L, FAULT LOCATION RMOCO EMPRESS

FILE: Scm4_A1_11_1011L.out



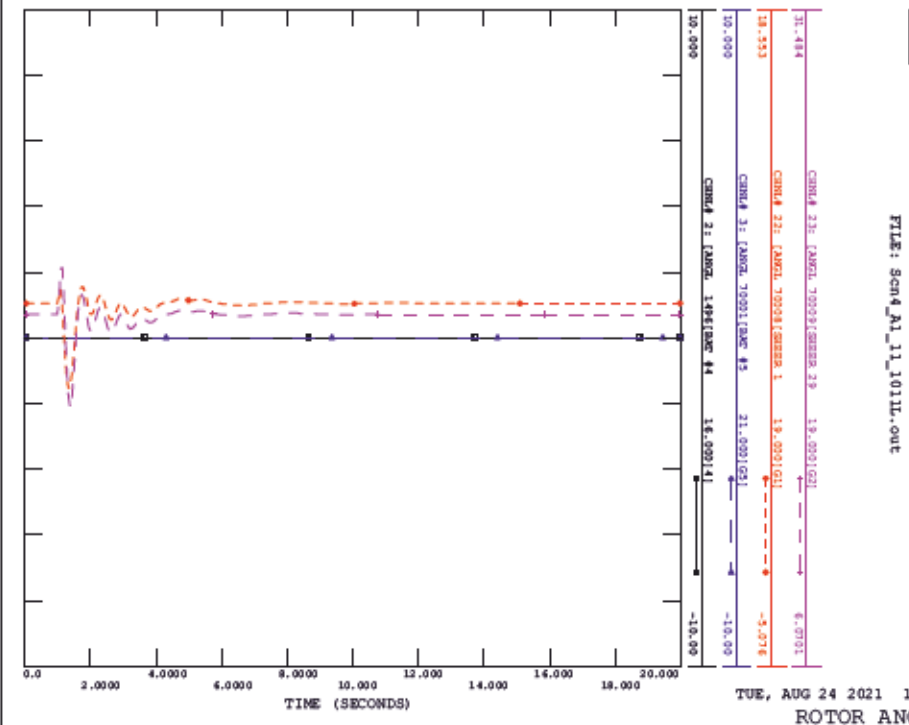
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_10_668L, FAULT LOCATION CYPRESS 5625

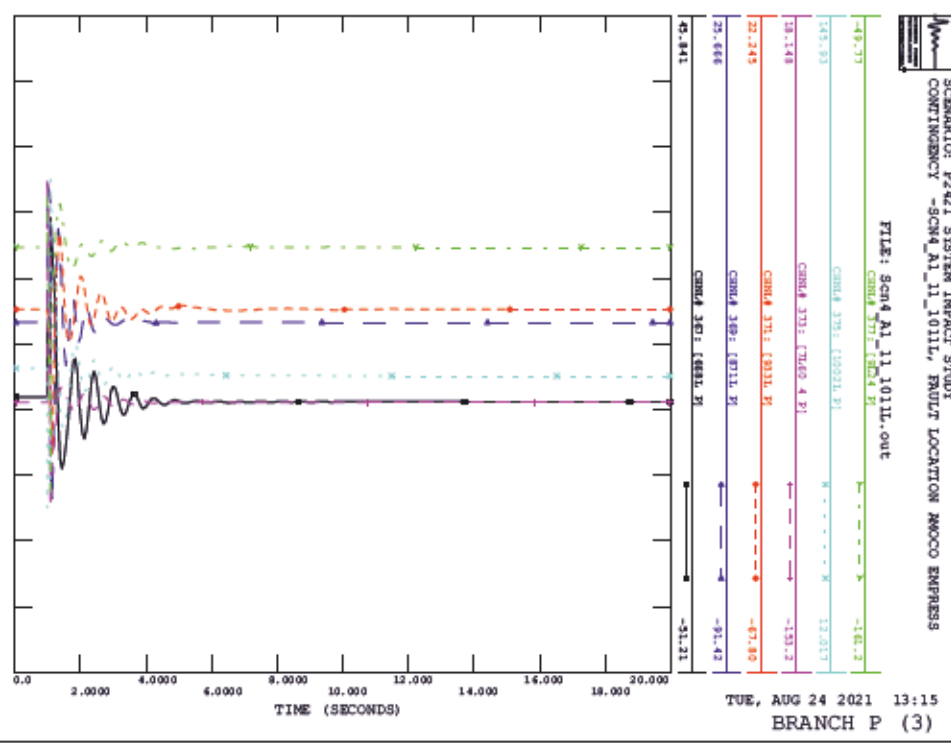
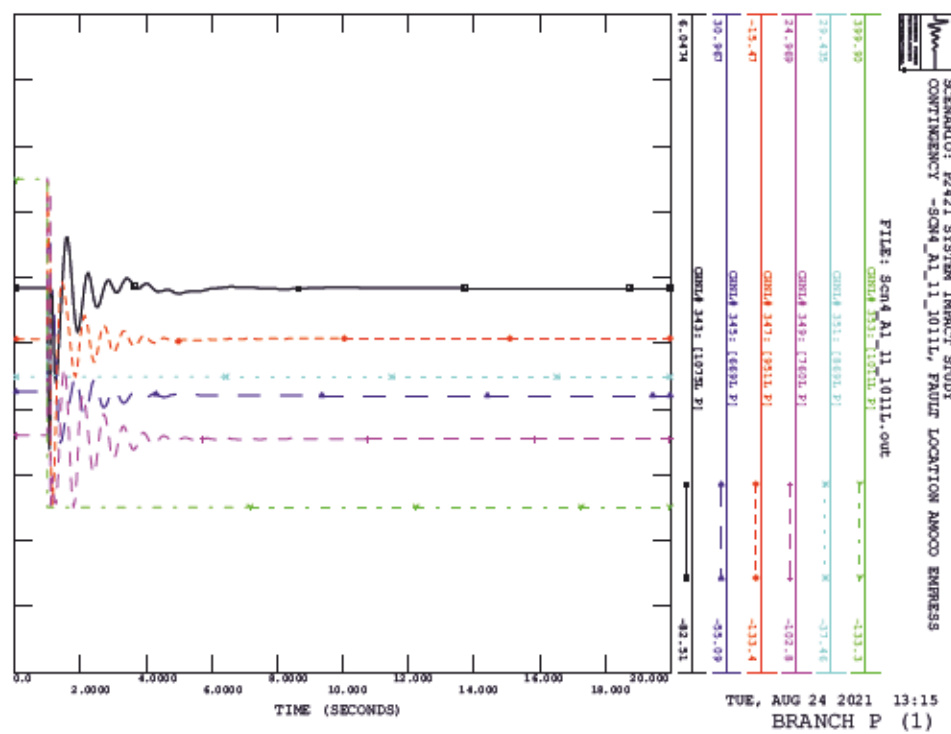
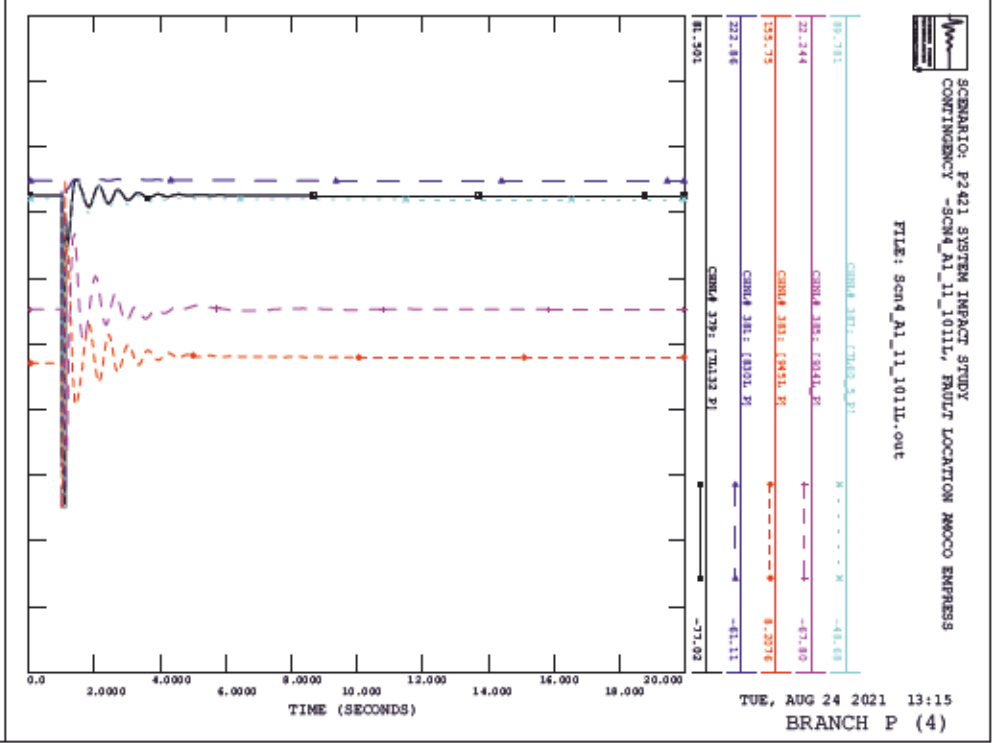
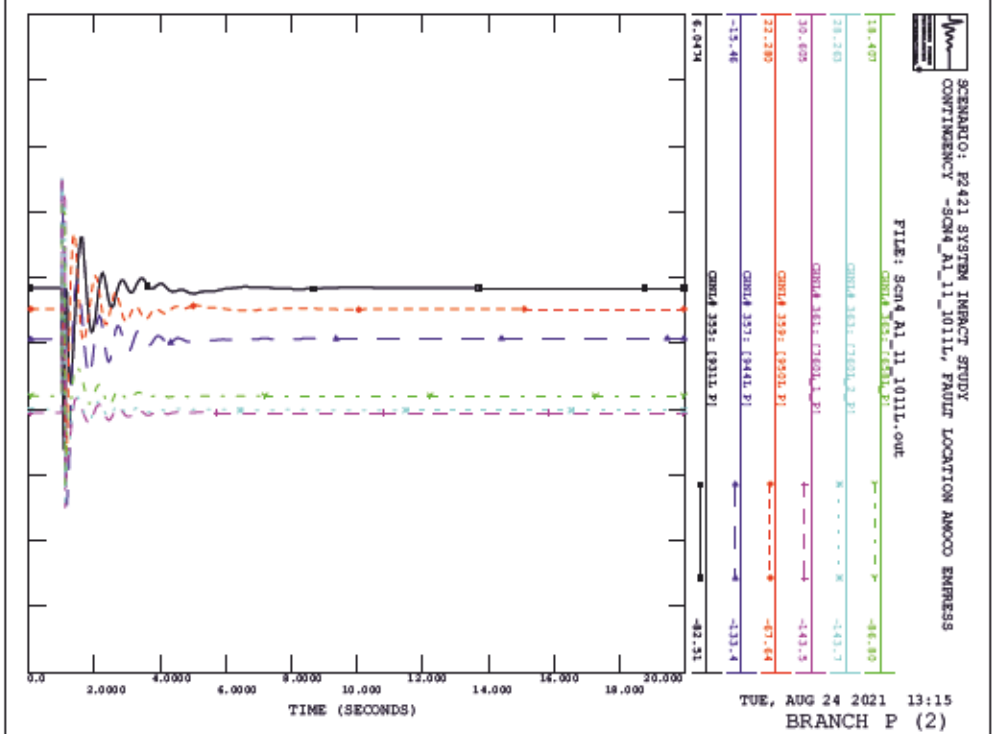
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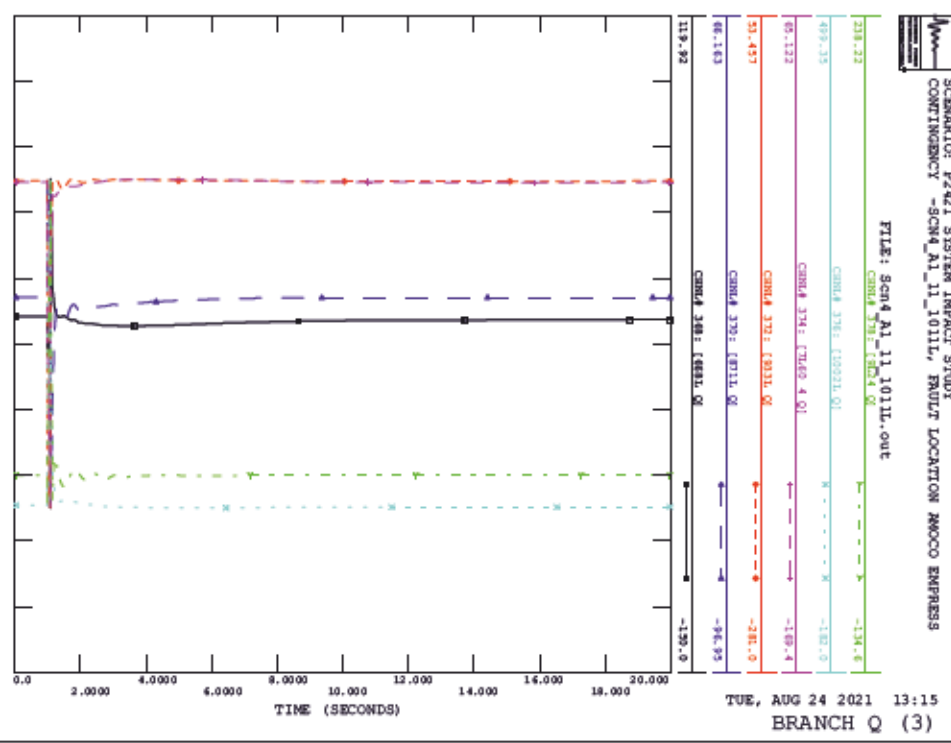
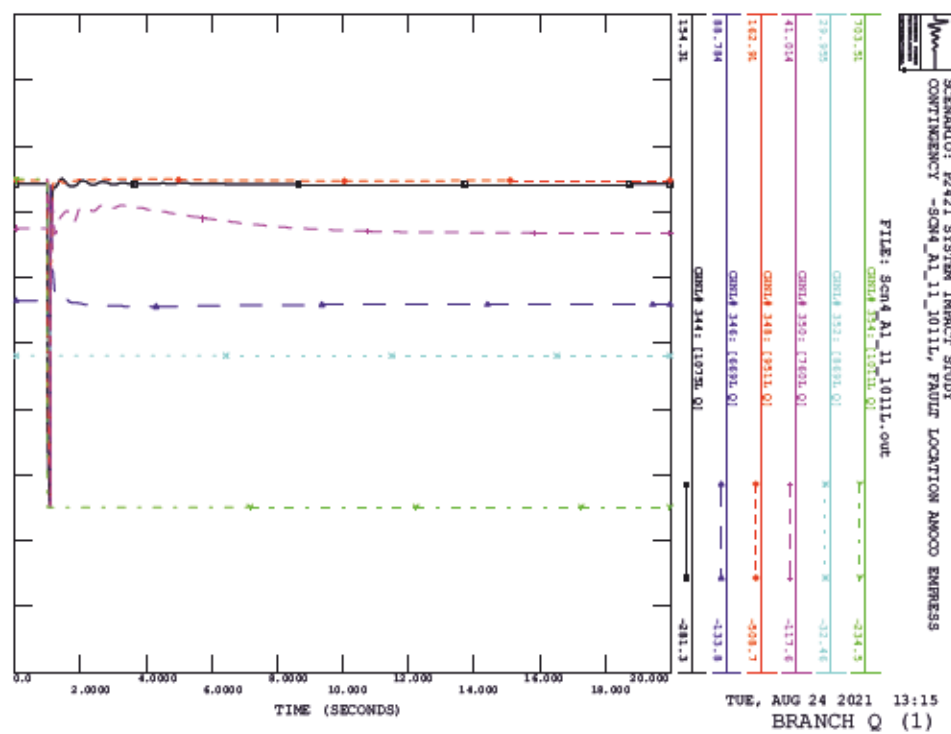
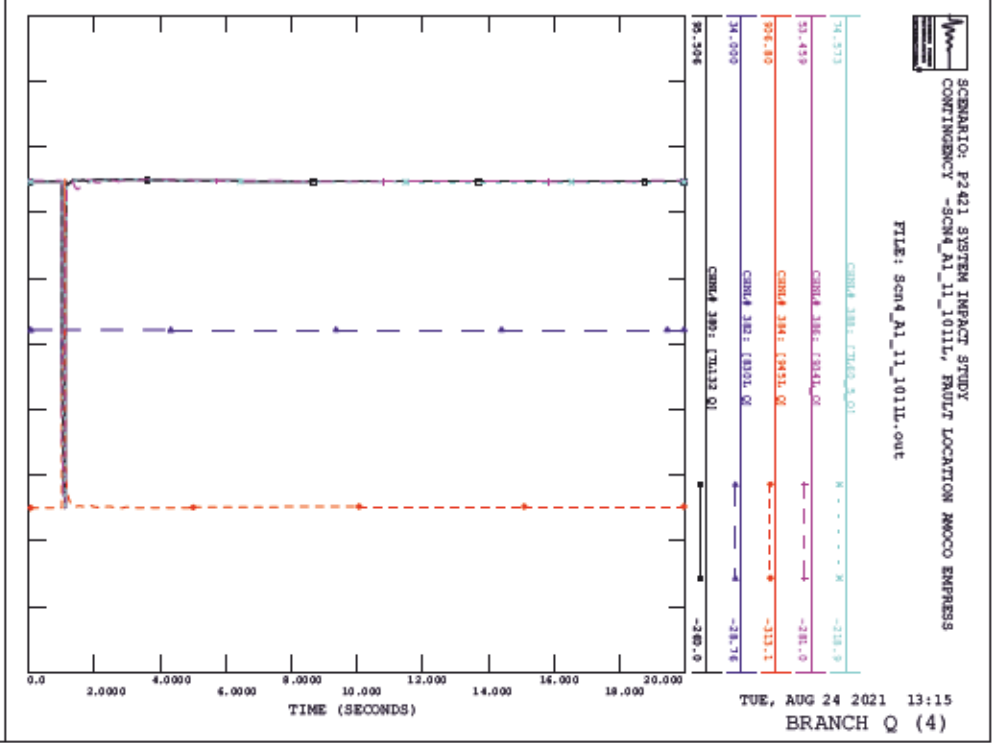
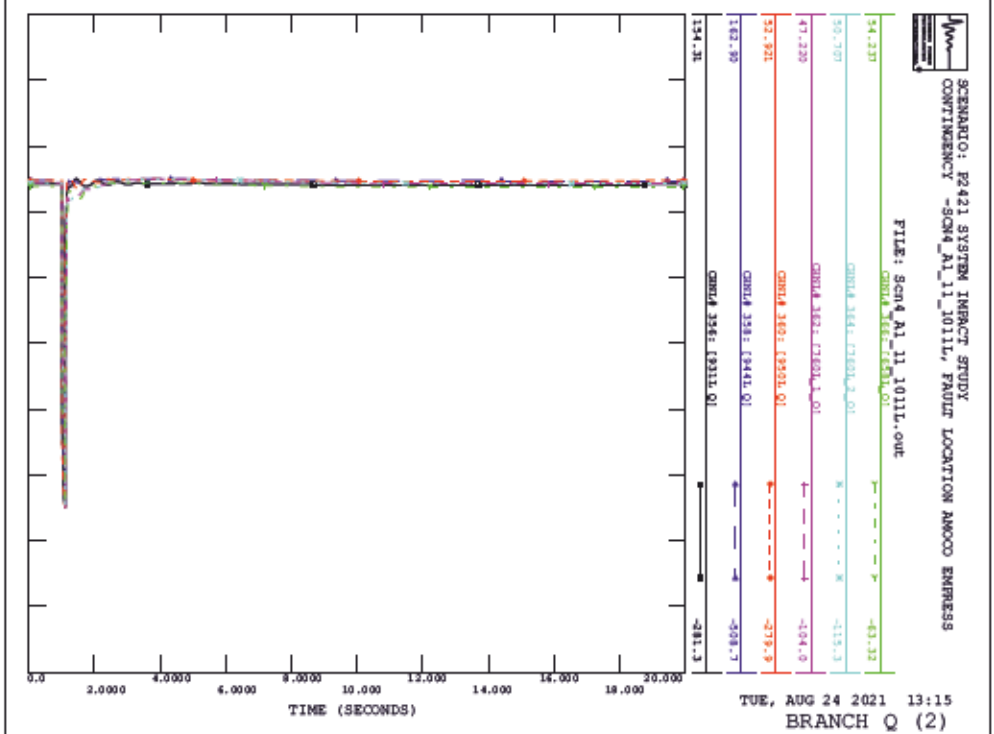


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_11_1011L, FAULT LOCATION RMOCO EMPRESS

FILE: Scm4_A1_11_1011L.out

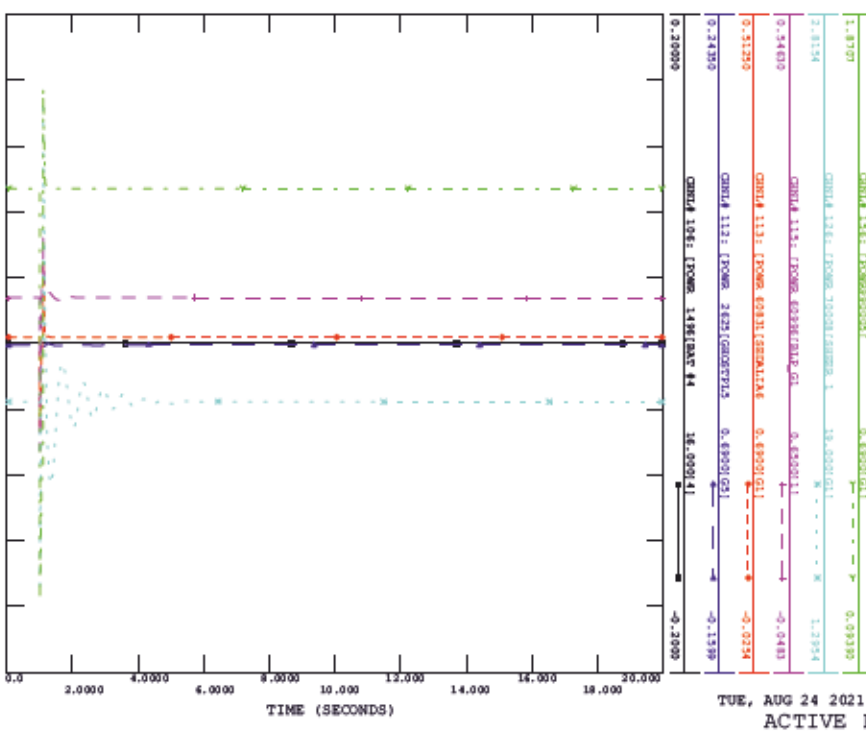






SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

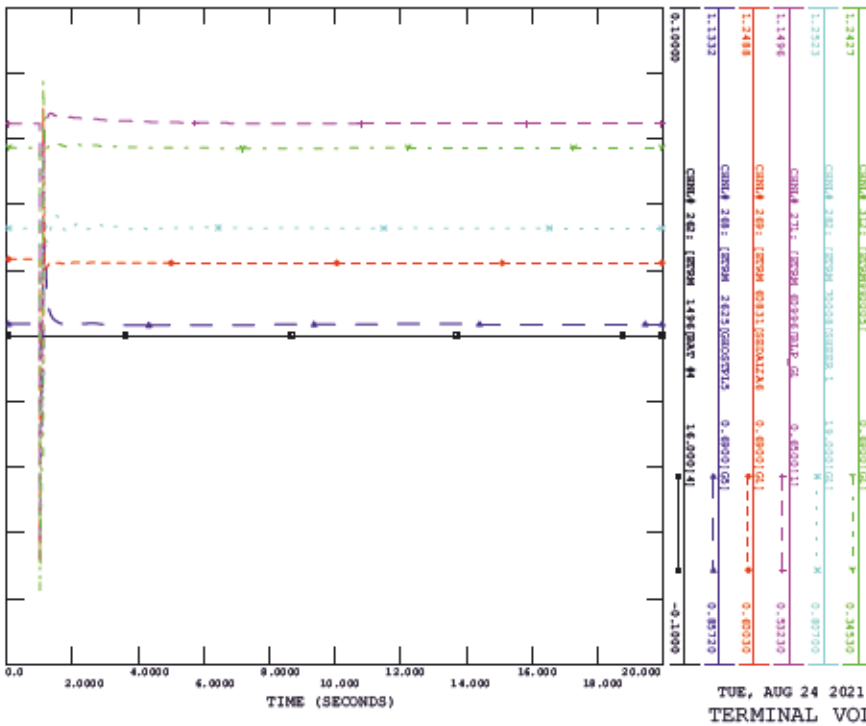
FILE: Scm4_A1_12_1011L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

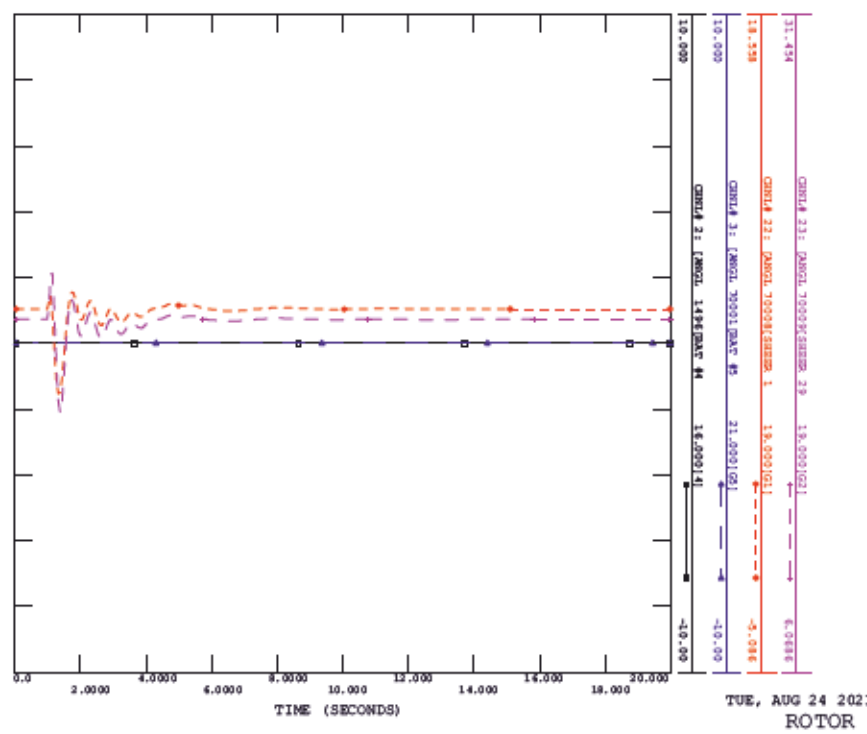
FILE: Scm4_A1_12_1011L.out



TUE, AUG 24 2021 13:15
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

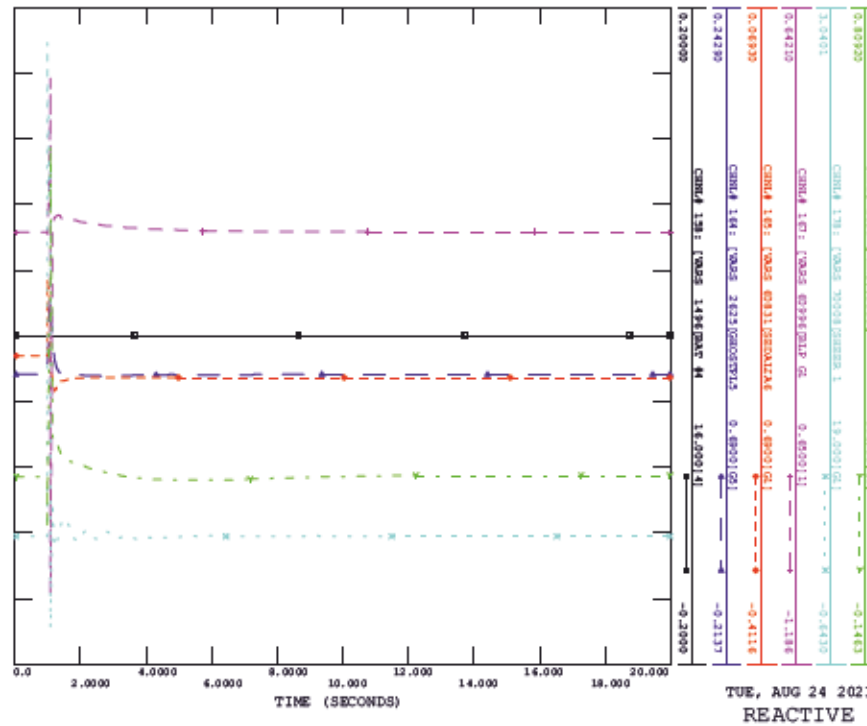
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TUE, AUG 24 2021 13:15
ROTOR ANGLE

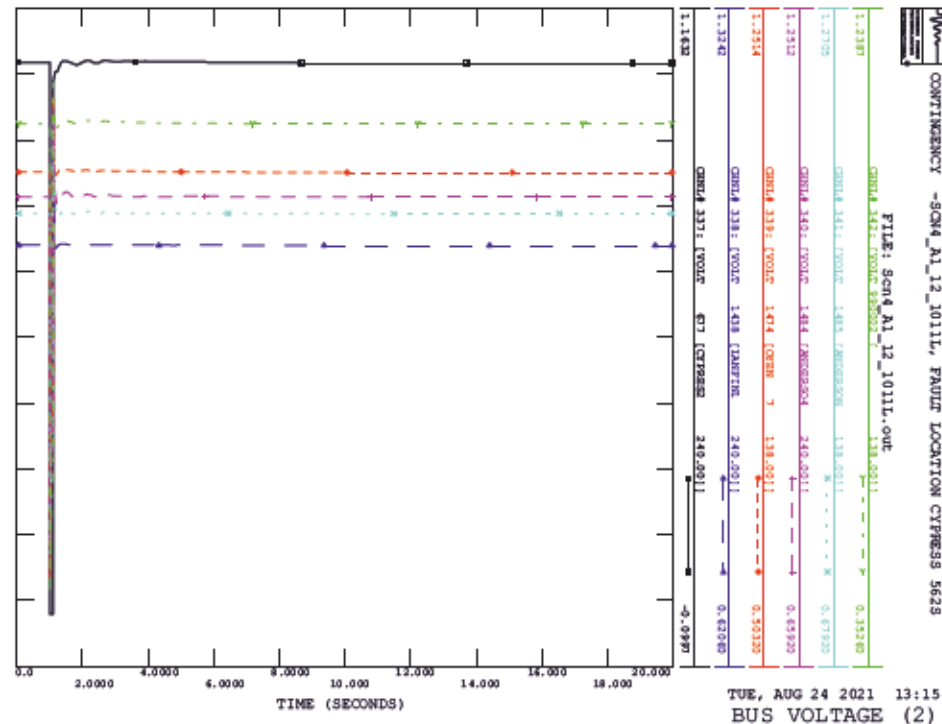
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

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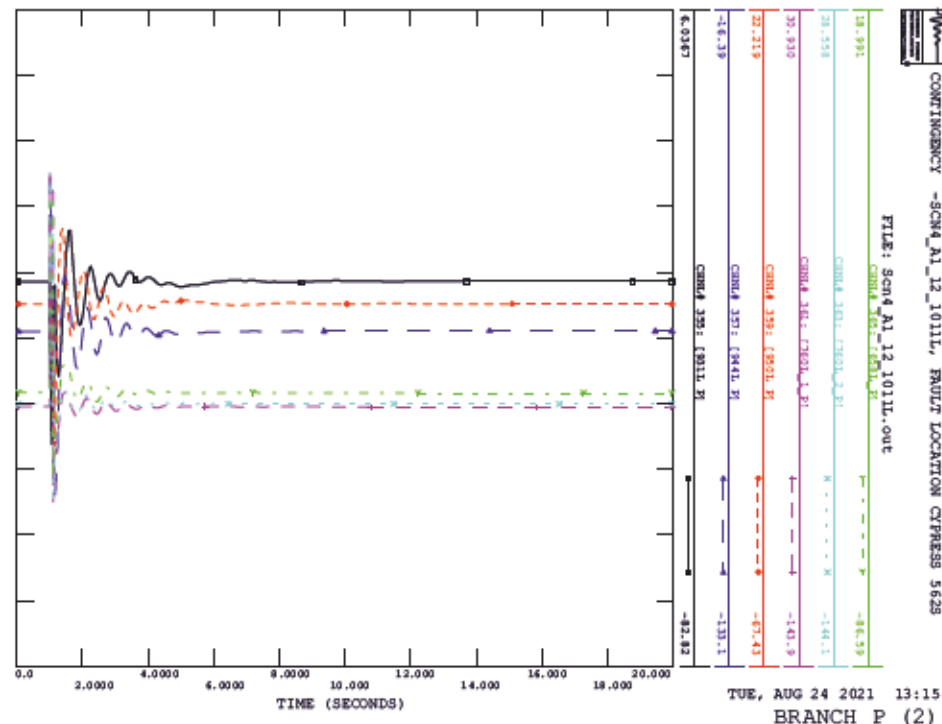


TUE, AUG 24 2021 13:15
REACTIVE POWER

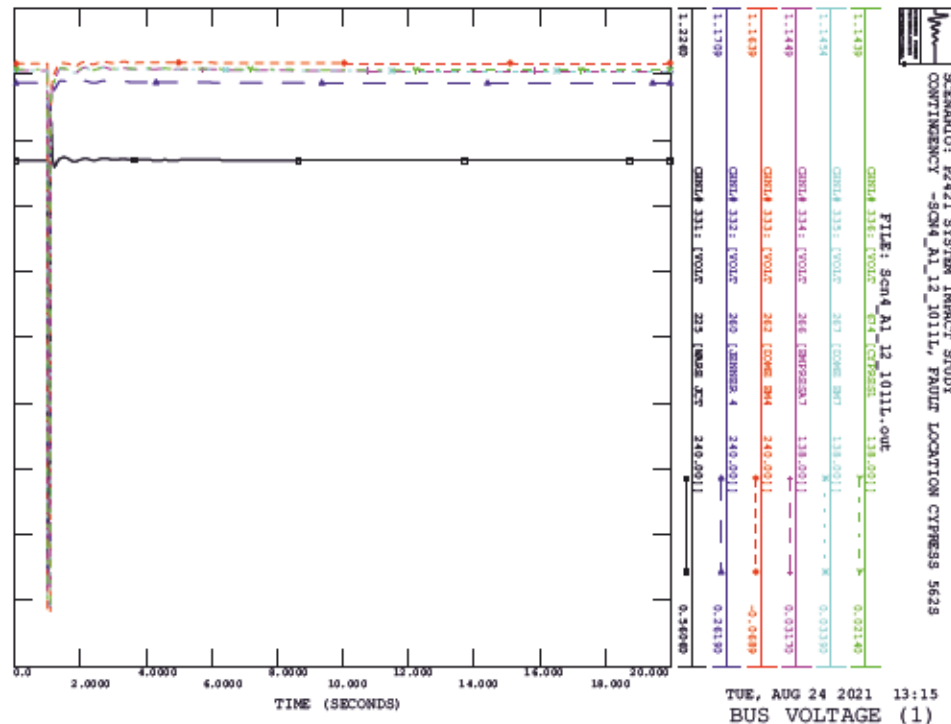
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625



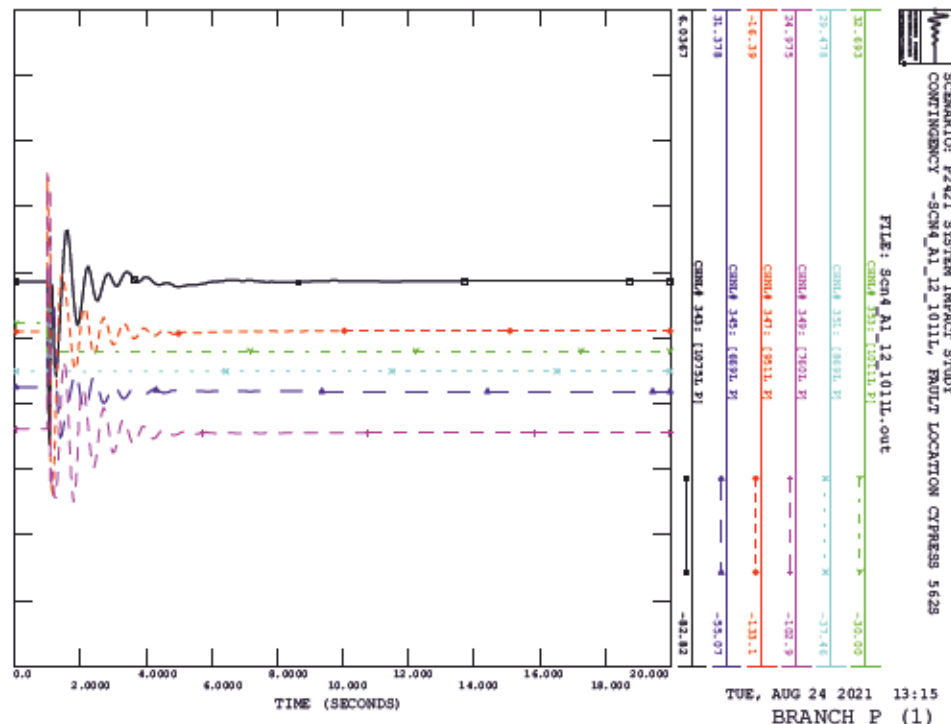
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

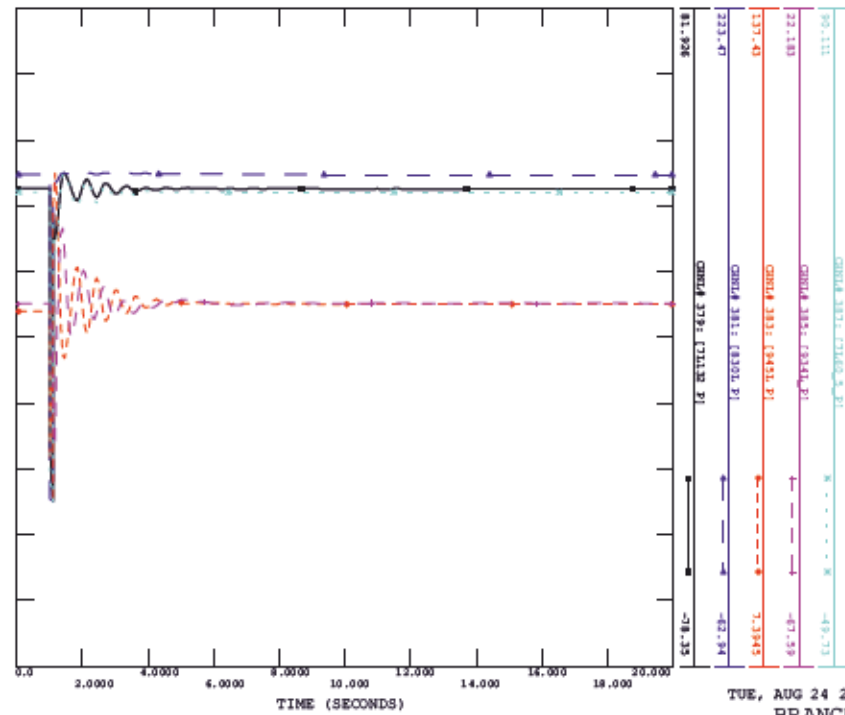


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625



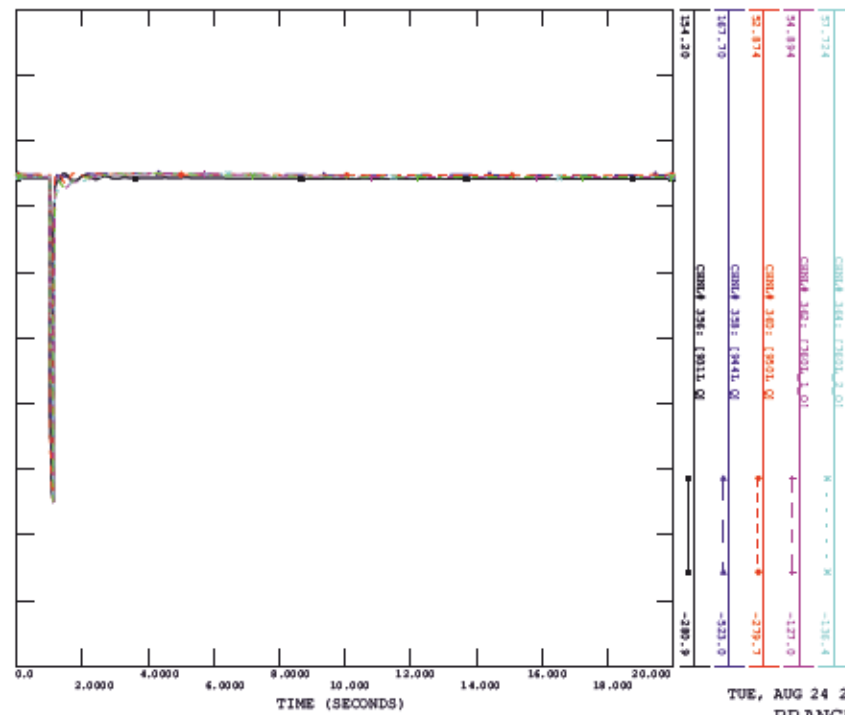
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CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

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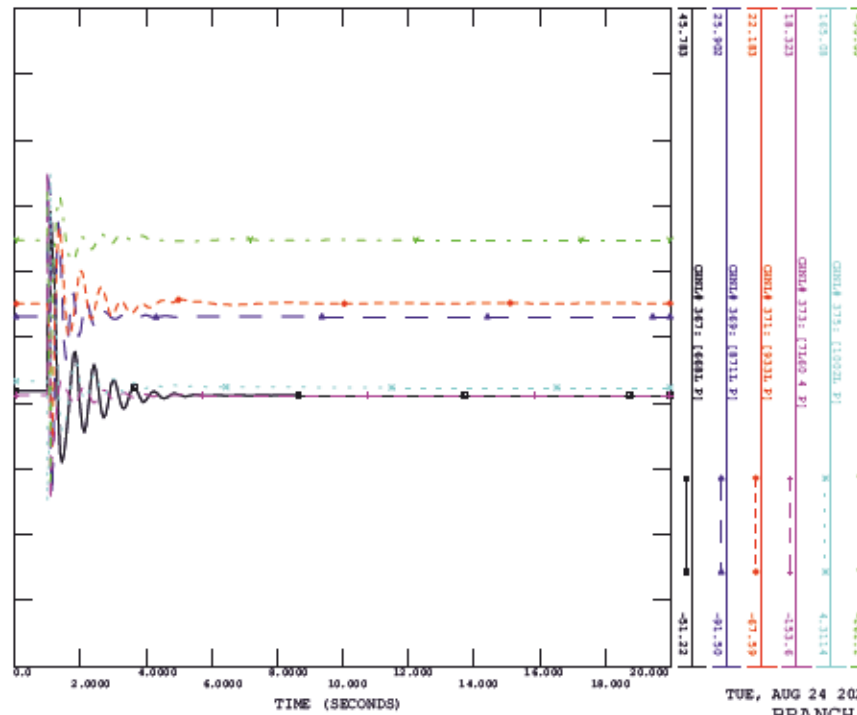
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

FILE: Scm4_A1_12_1011L.out



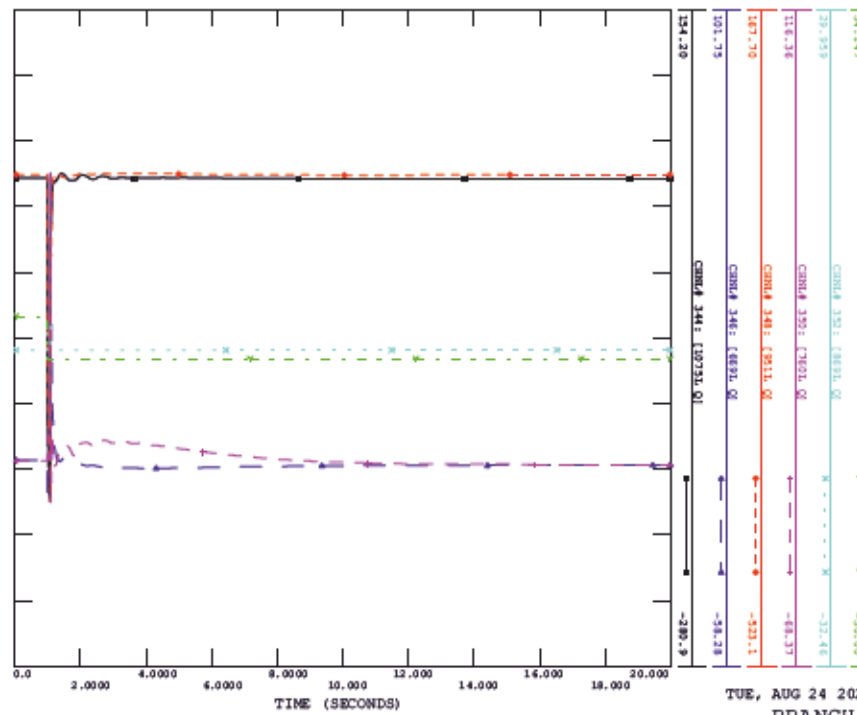
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

FILE: Scm4_A1_12_1011L.out



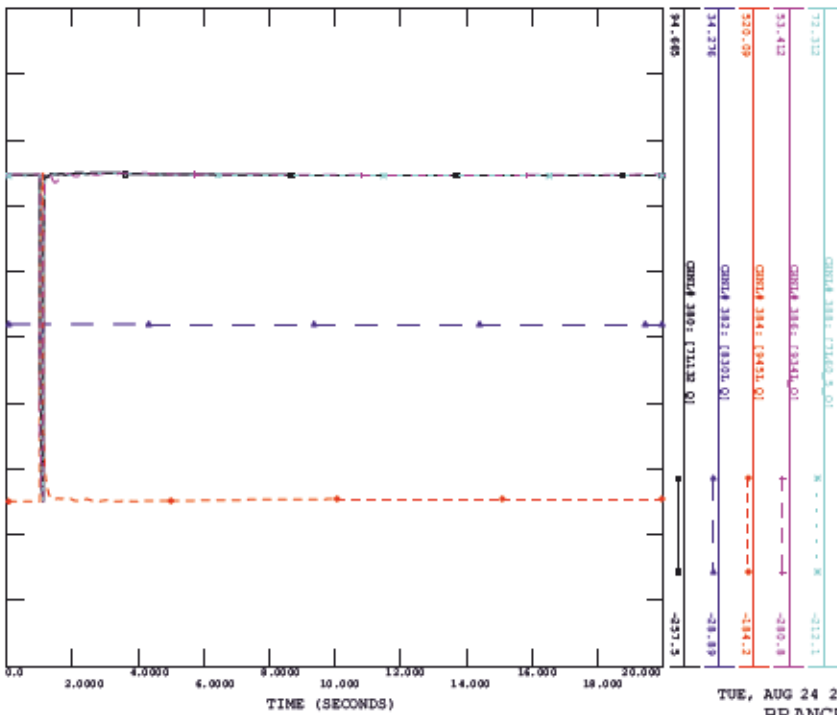
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

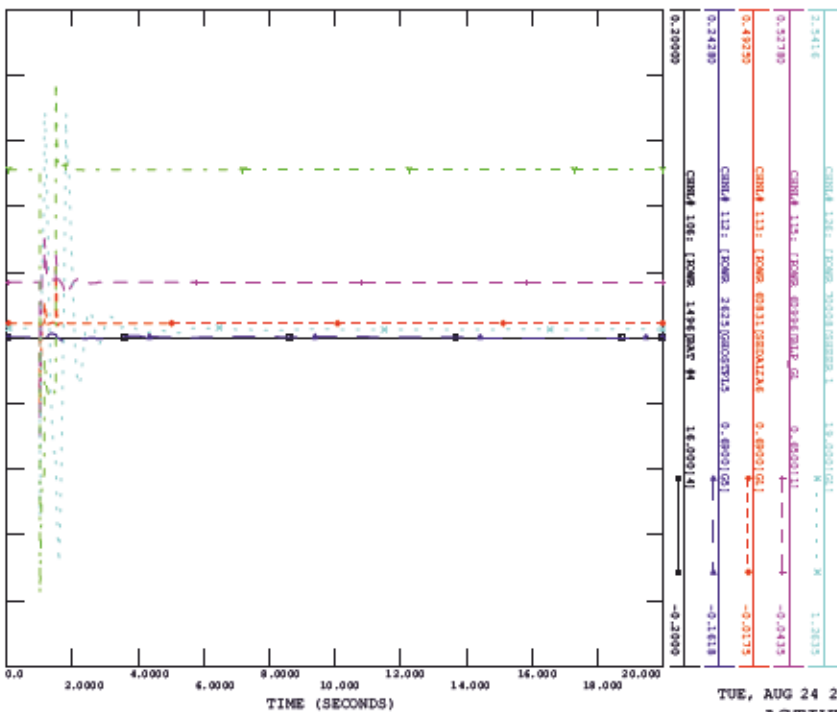
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TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_13_669L, FAULT LOCATION ANOCO EXPRESS

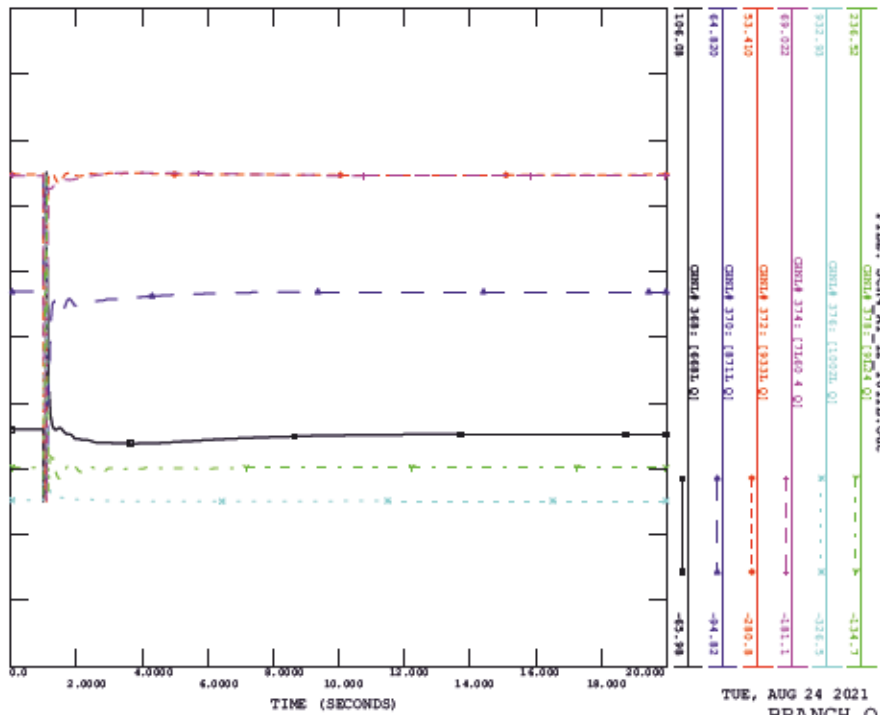
FILE: scm4_A1_13_669L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_12_1011L, FAULT LOCATION CYPRESS 5625

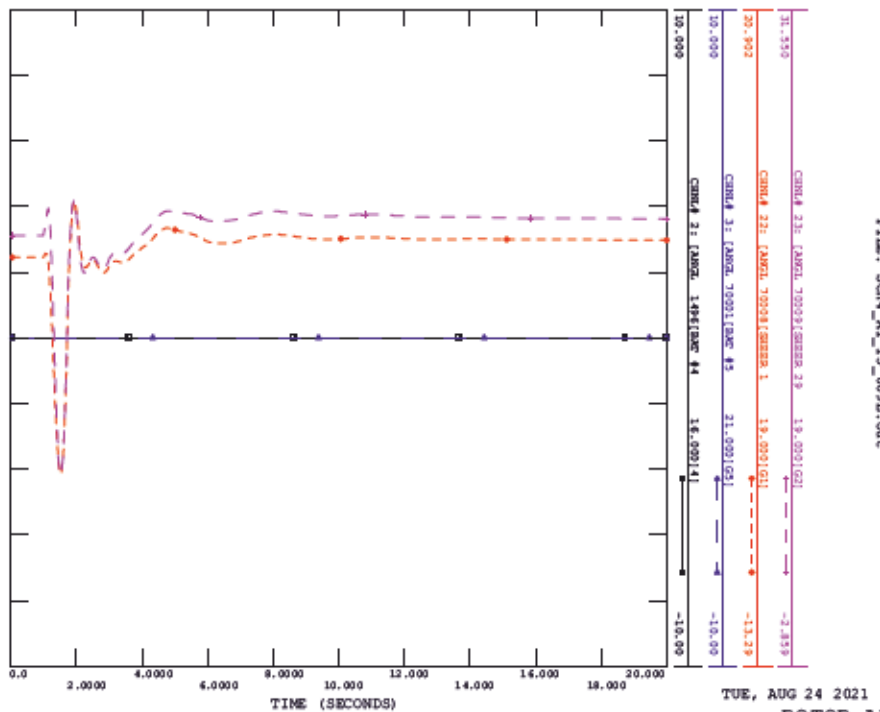
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TUE, AUG 24 2021 13:15
BRANCH Q (3)

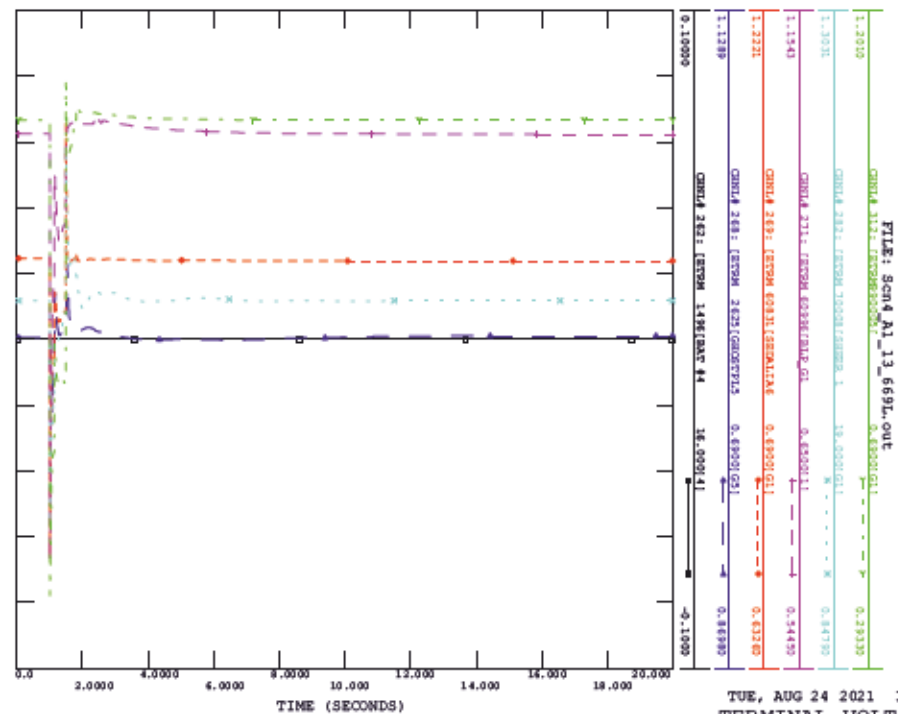
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_13_669L, FAULT LOCATION ANOCO EXPRESS

FILE: scm4_A1_13_669L.out

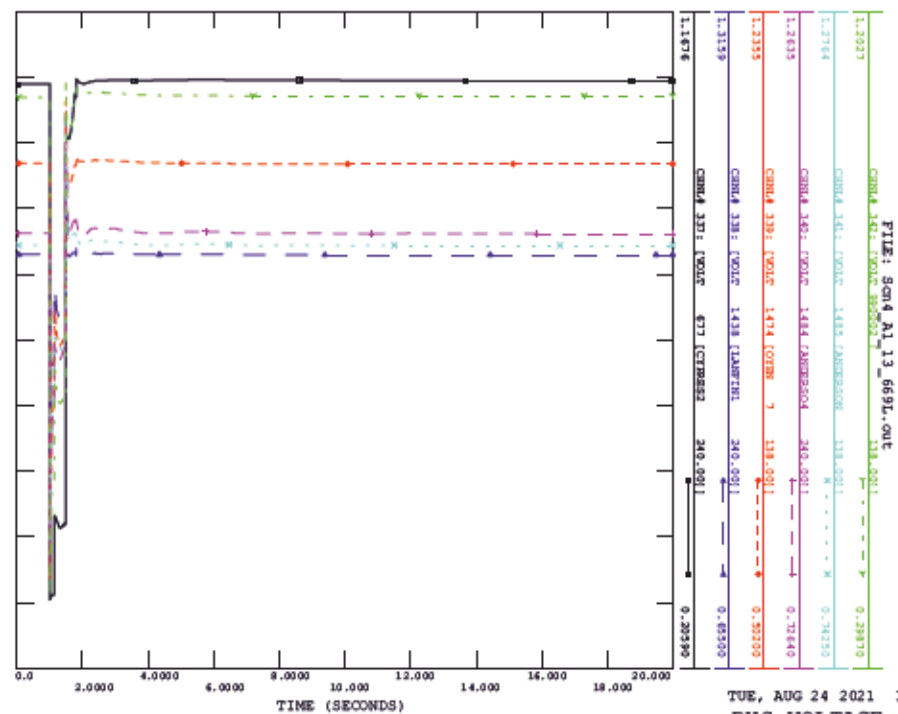


TUE, AUG 24 2021 13:15
ROTOR ANGLE

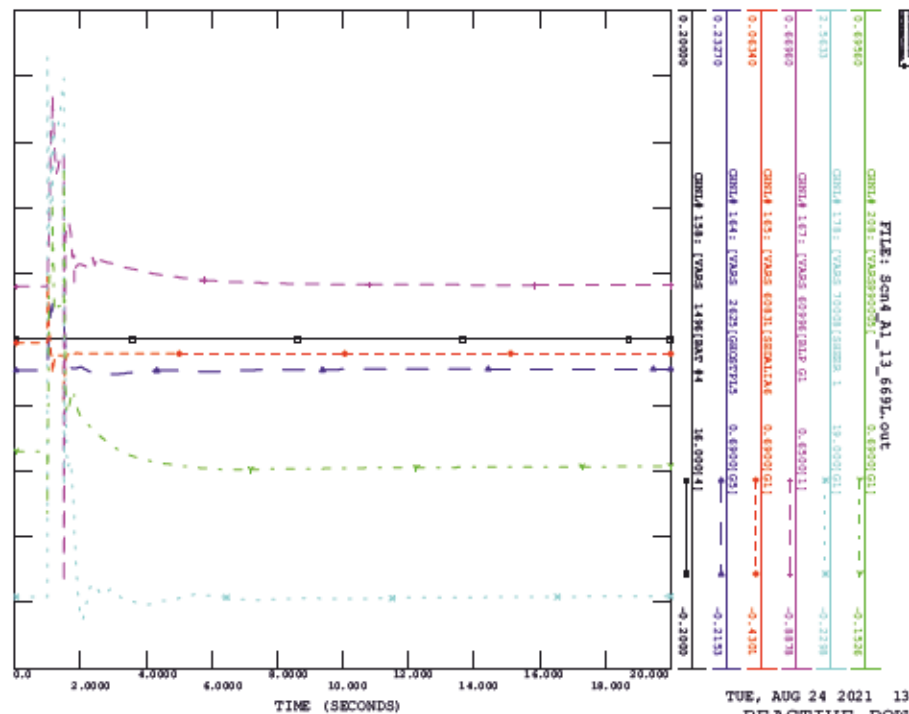
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_13_669L, FAULT LOCATION ANOCO EMPRESS



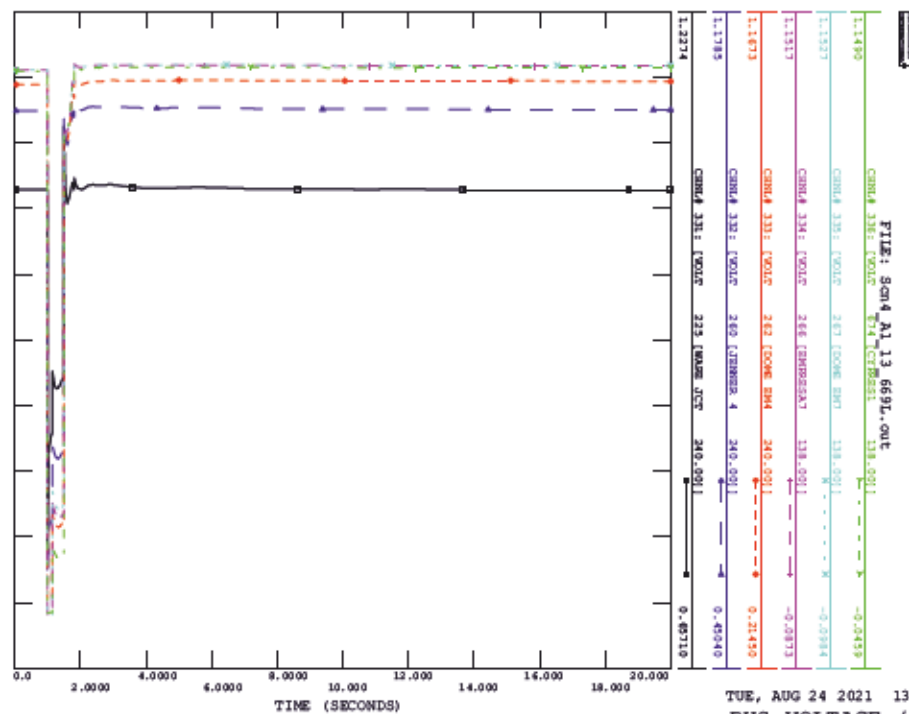
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_13_669L, FAULT LOCATION ANOCO EMPRESS



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

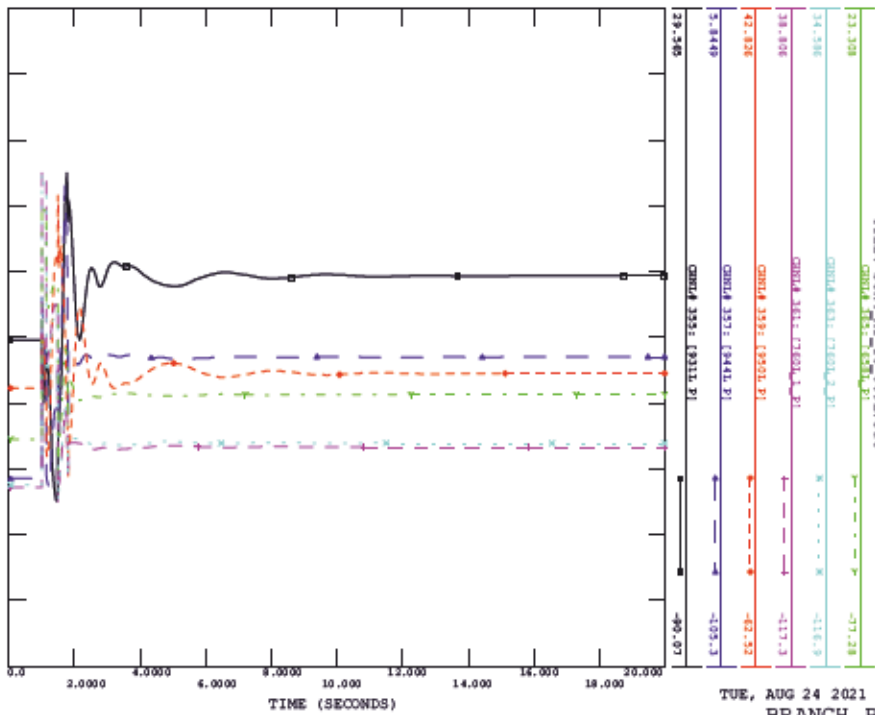


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_13_669L, FAULT LOCATION ANOCO EMPRESS



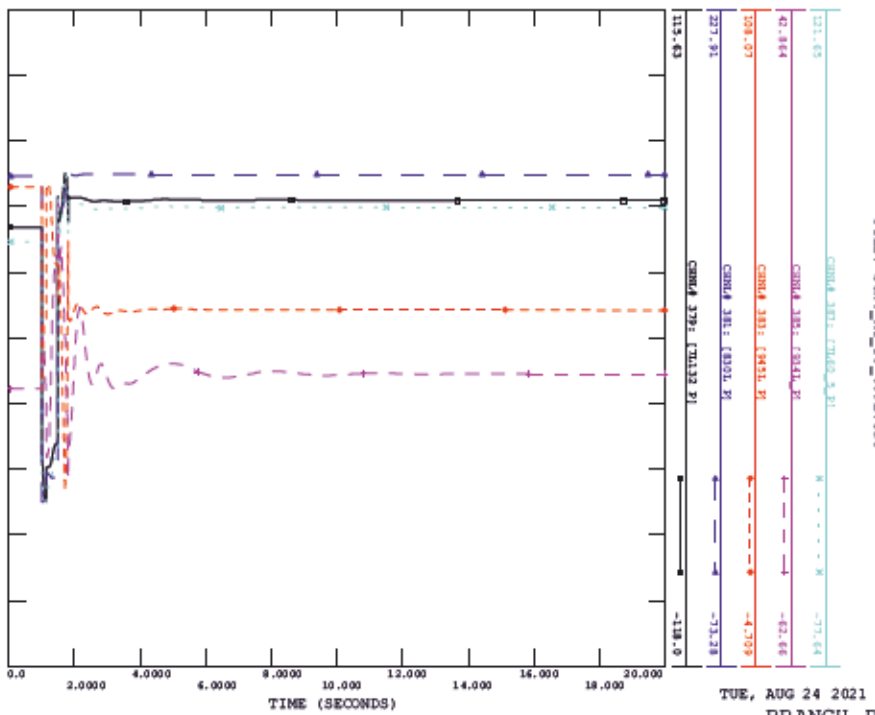
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_13_669L.out



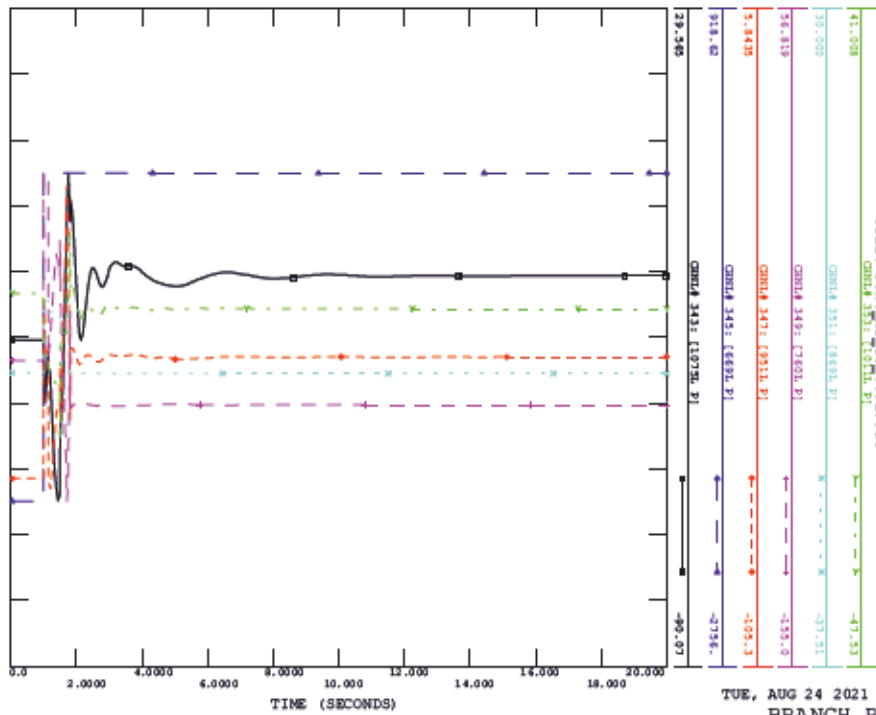
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_13_669L.out



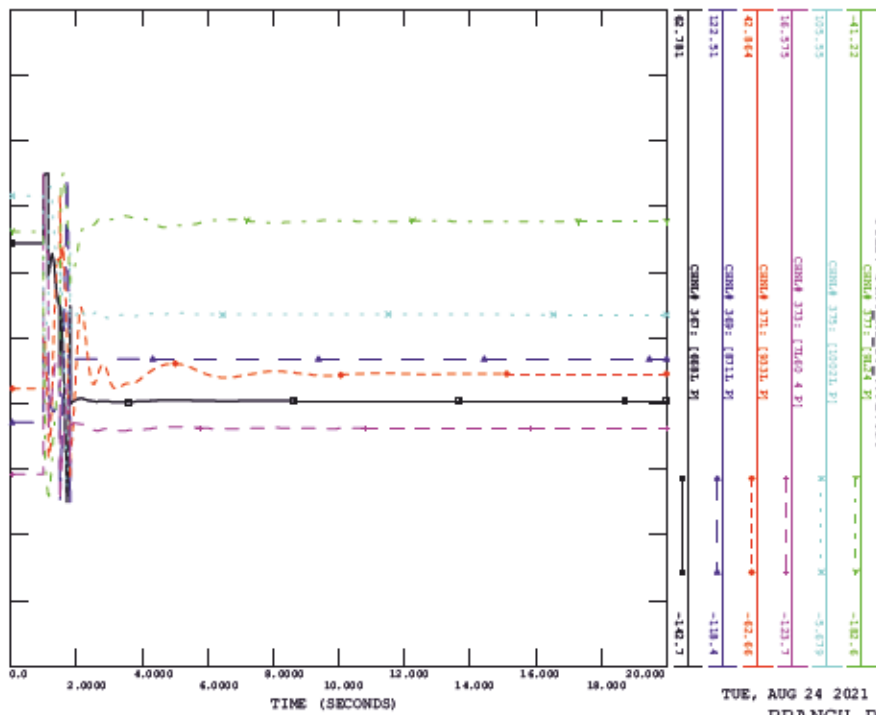
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_13_669L.out



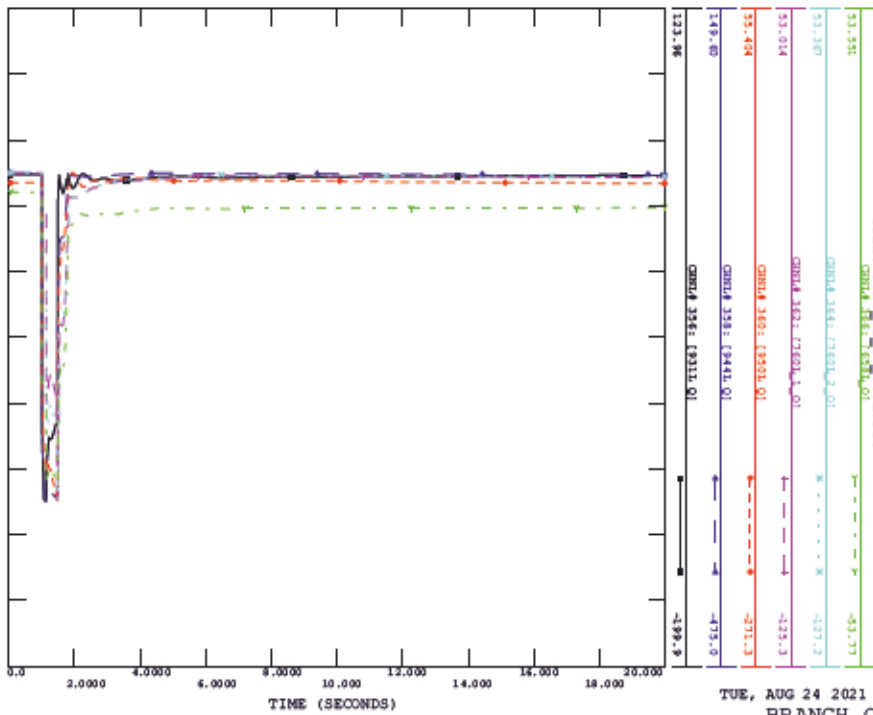
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_13_669L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

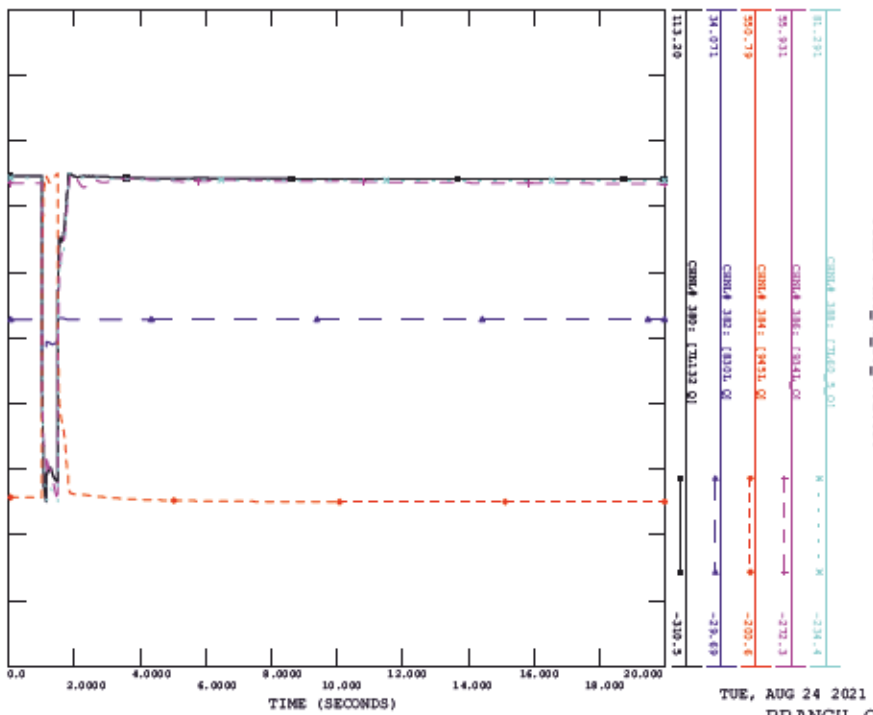
FILE: Scm4_AI_13_669L.out



TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

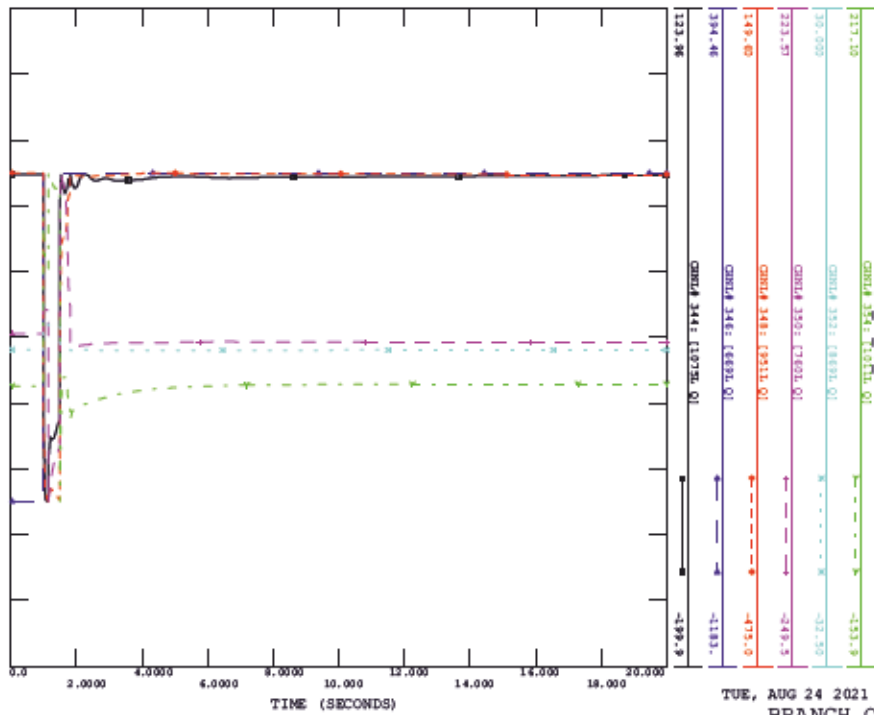
FILE: Scm4_AI_13_669L.out



TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

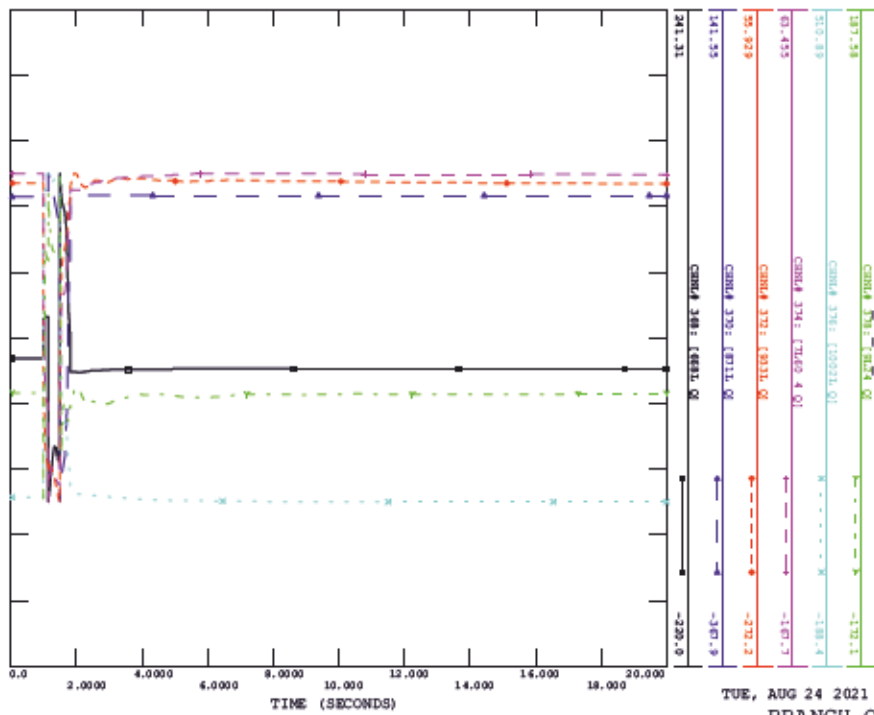
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_13_669L, FAULT LOCATION ANOCO EMPRESS

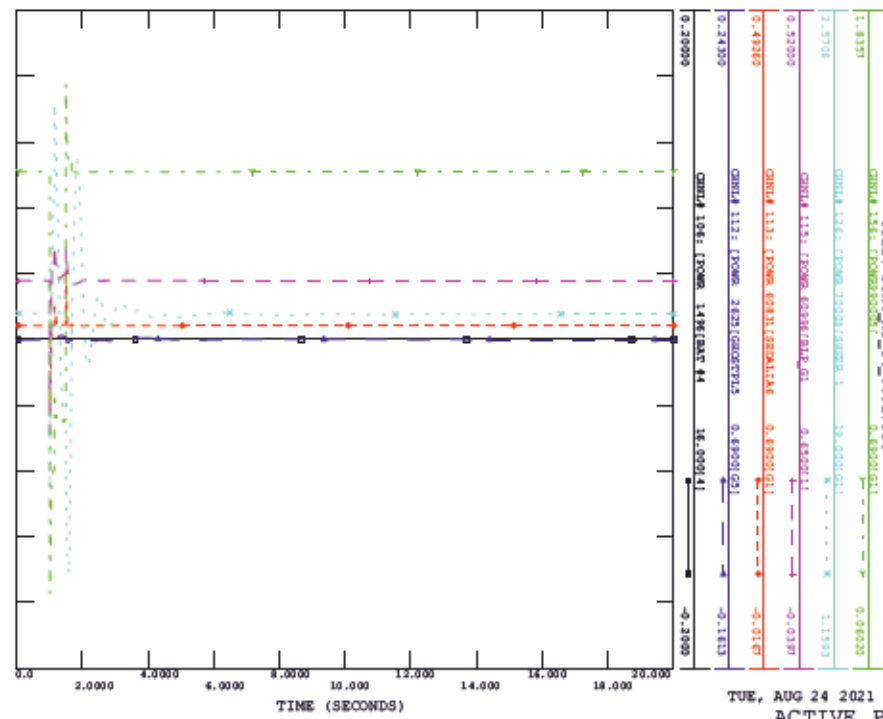
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TUE, AUG 24 2021 13:15
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

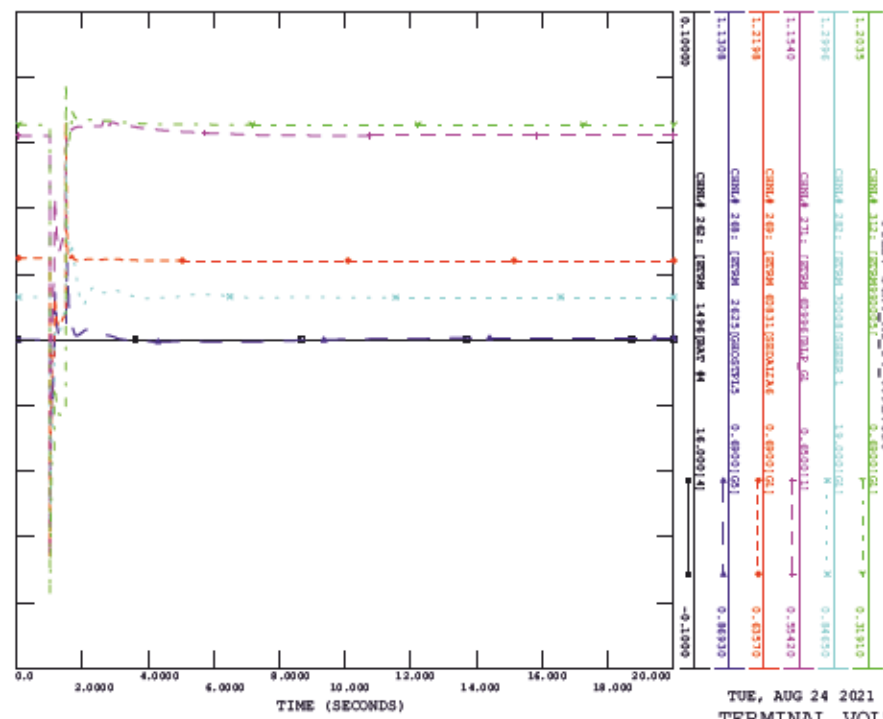
FILE: Scm4_A1_14_669L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

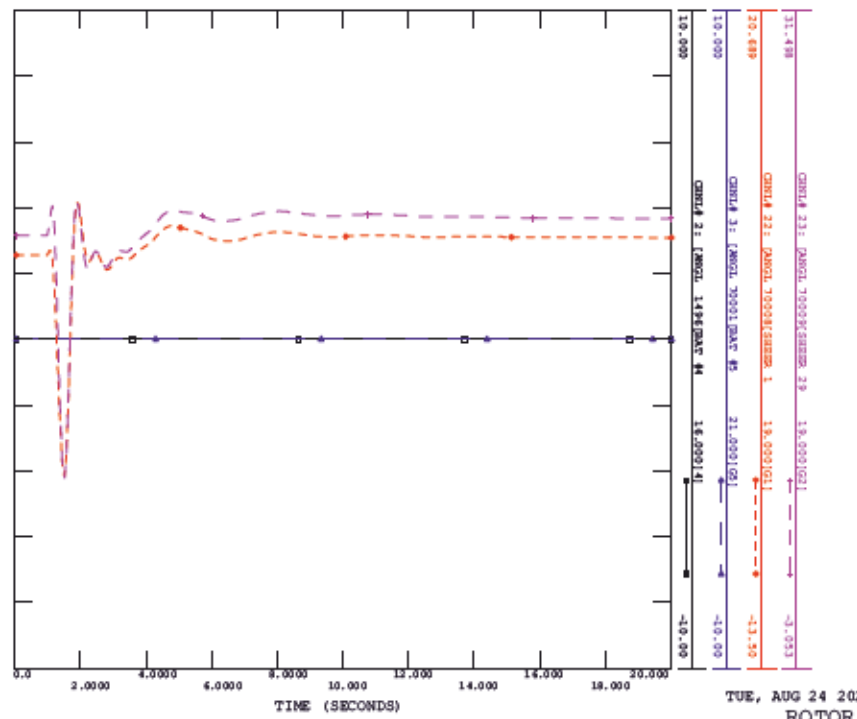
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TUE, AUG 24 2021 13:15
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

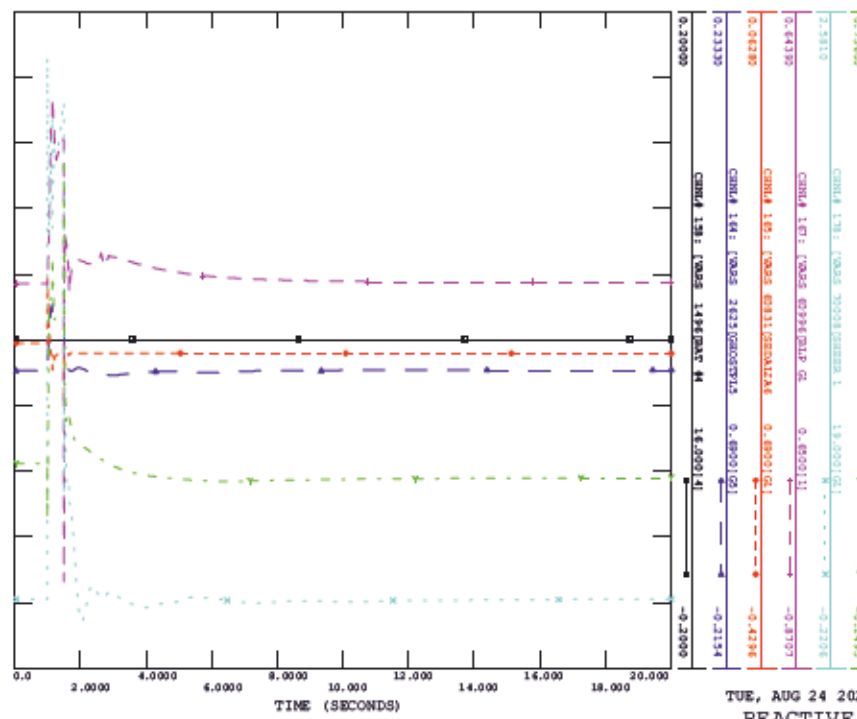
FILE: Scm4_A1_14_669L.out



TUE, AUG 24 2021 13:15
ROTOR ANGLE

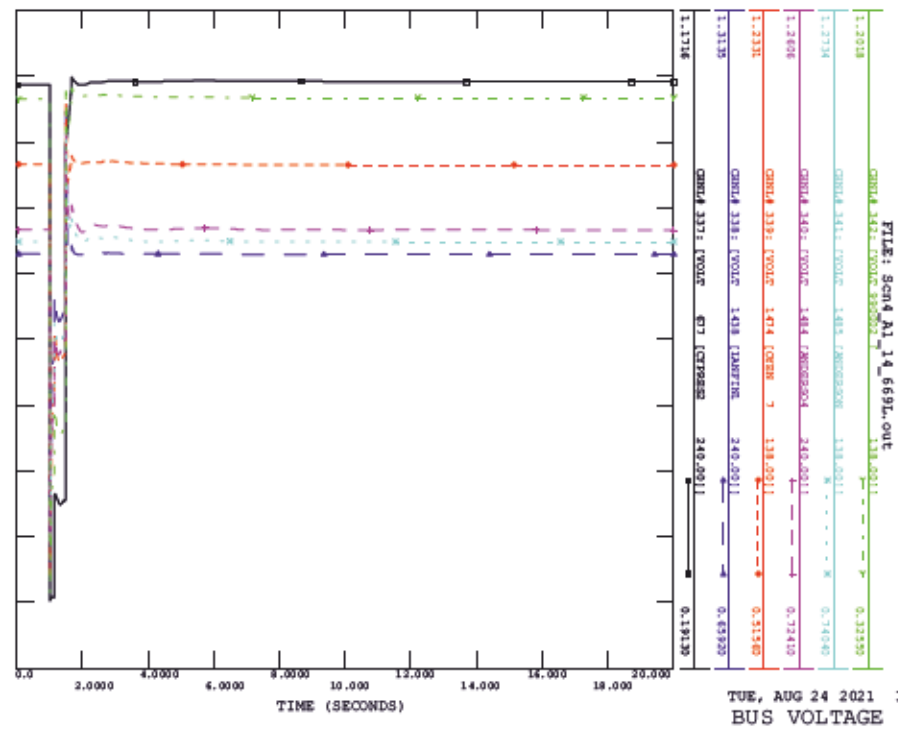
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

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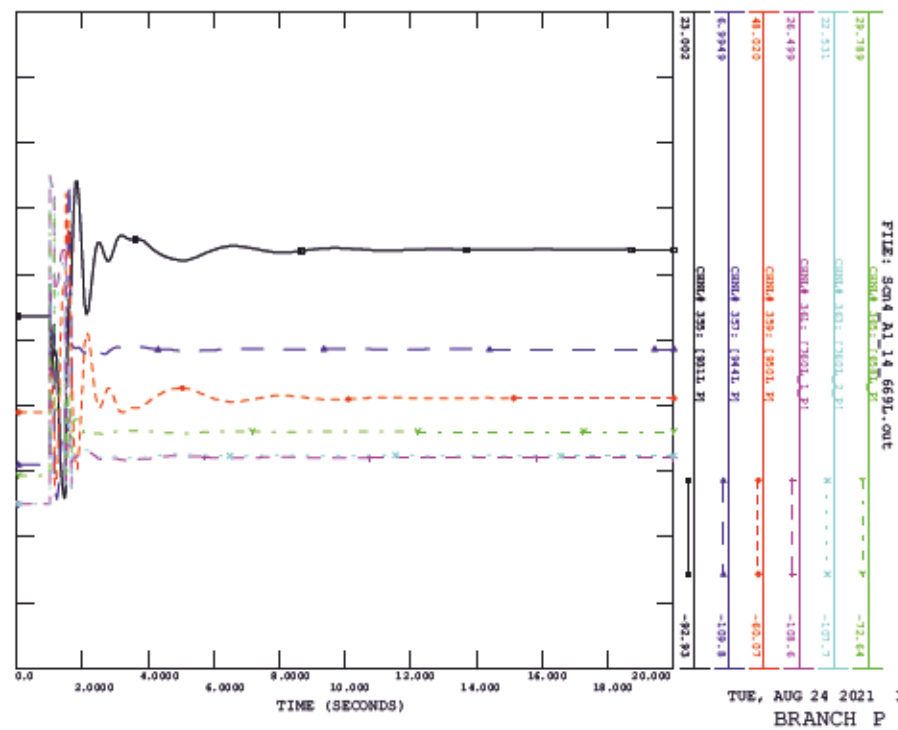


TUE, AUG 24 2021 13:15
REACTIVE POWER

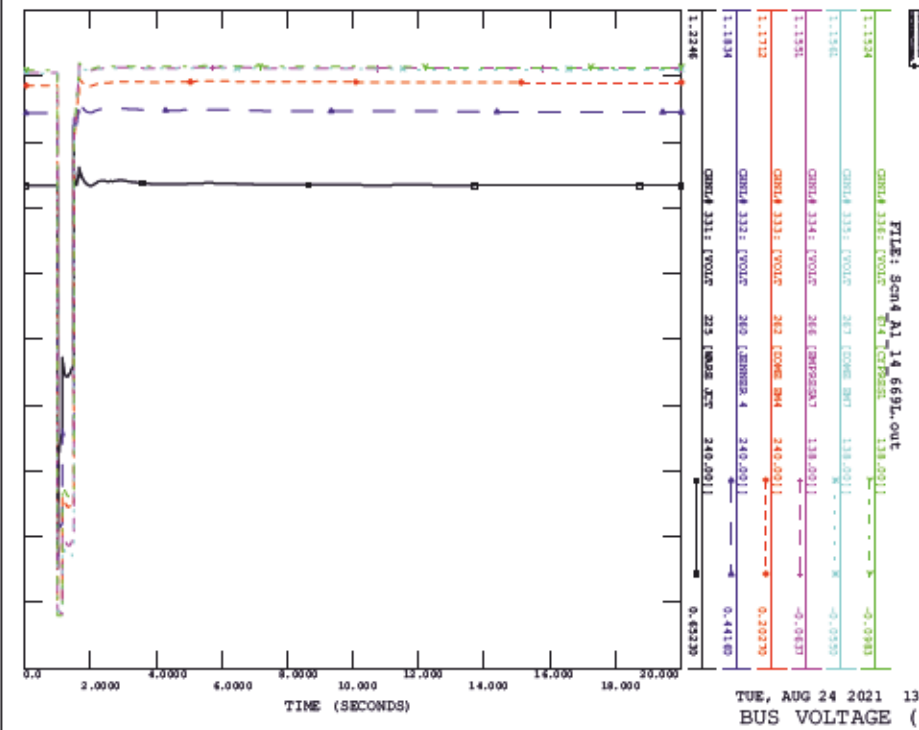
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629



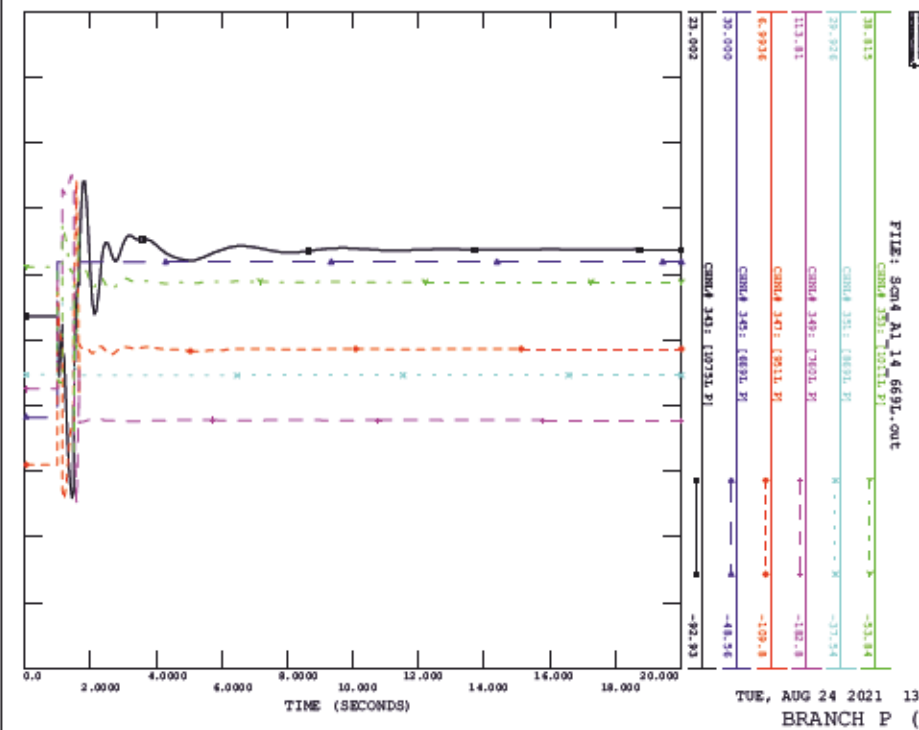
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

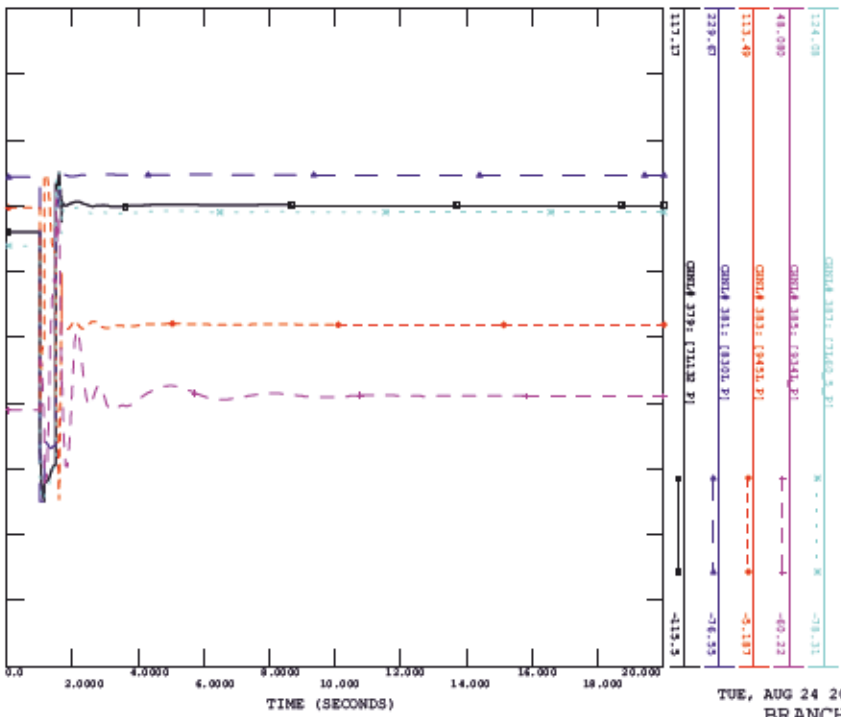


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_14_669L, FAULT LOCATION CYPRESS 5629

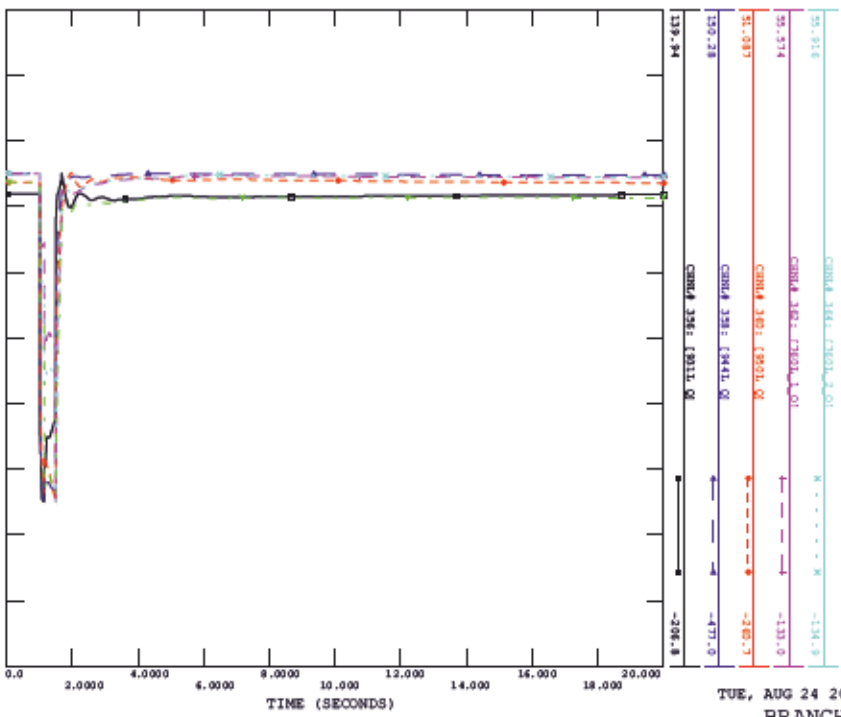
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TUE, AUG 24 2021 13:15
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_14_669L, FAULT LOCATION CYPRESS 5629

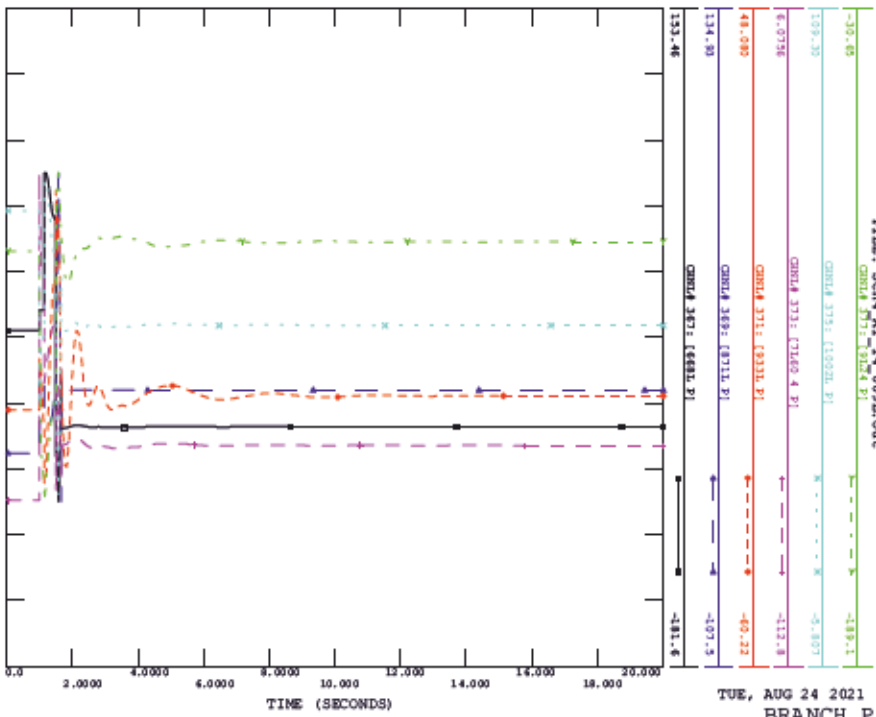
FILE: Ssch4_AI_14_669L.out



TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_14_669L, FAULT LOCATION CYPRESS 5629

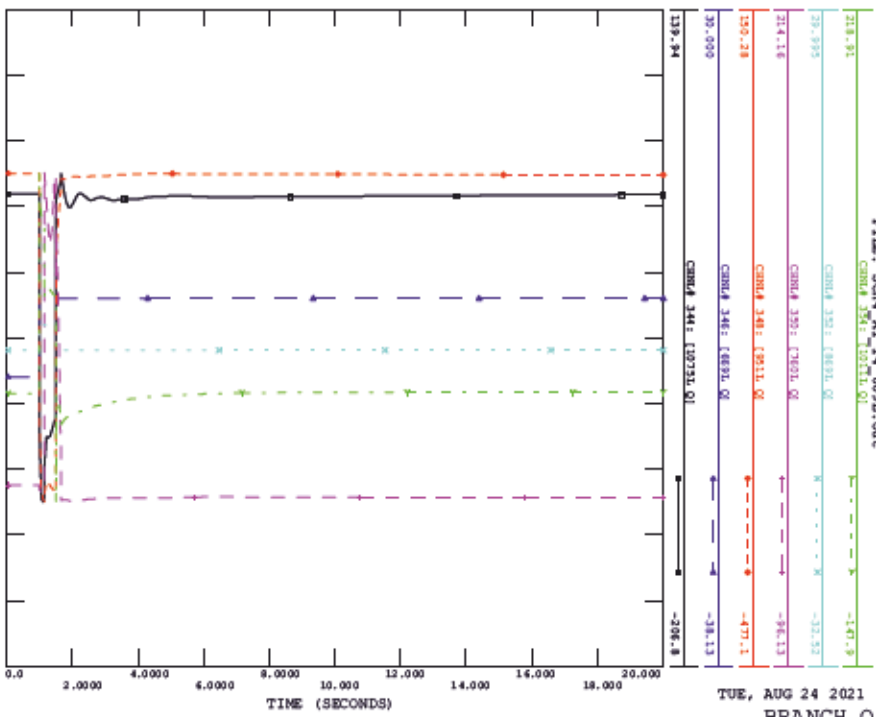
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TUE, AUG 24 2021 13:15
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH4_AI_14_669L, FAULT LOCATION CYPRESS 5629

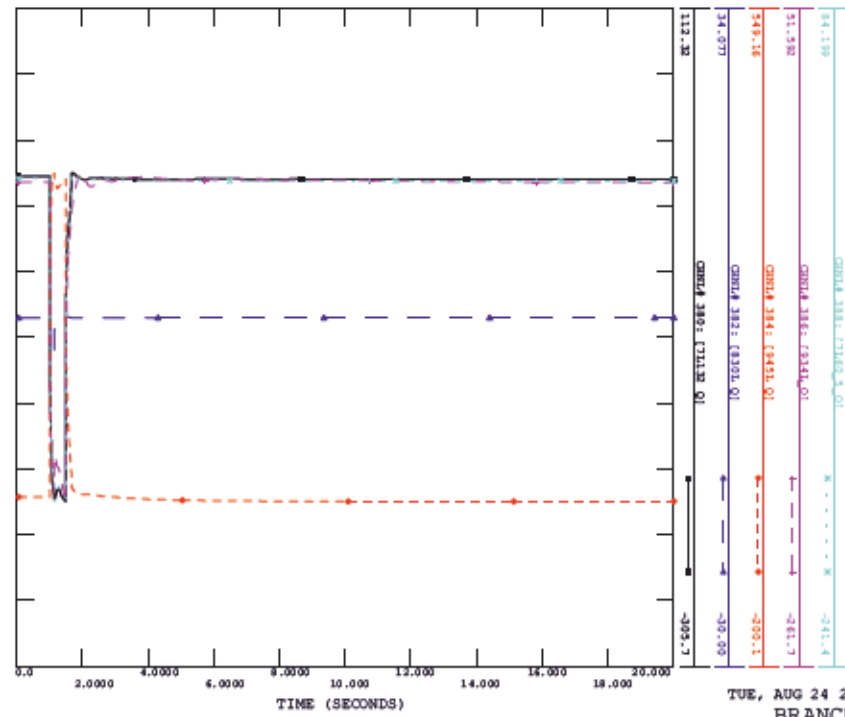
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

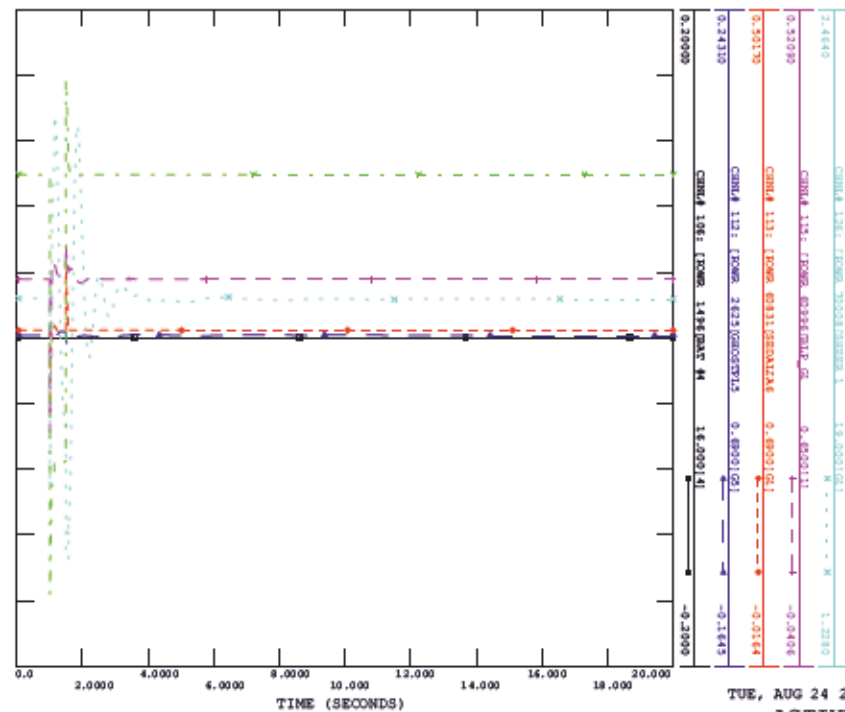
FILE: Scm4_A1_14_669L.out



TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_15_760L, FAULT LOCATION ANOCO EXPRESS

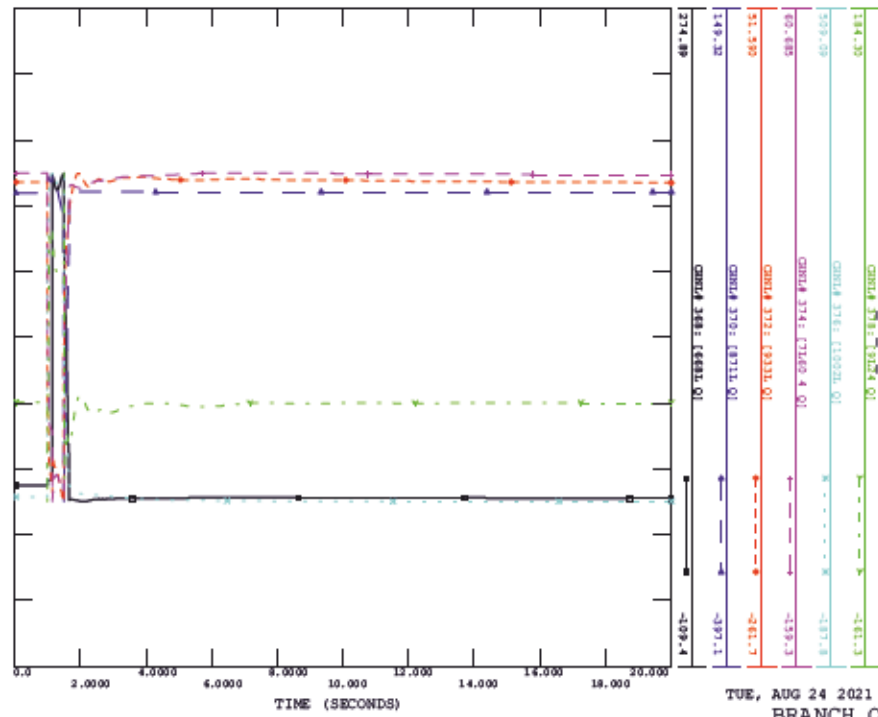
FILE: Scm4_A1_15_760L.out



TUE, AUG 24 2021 13:15
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_14_669L, FAULT LOCATION CYPRESS 5629

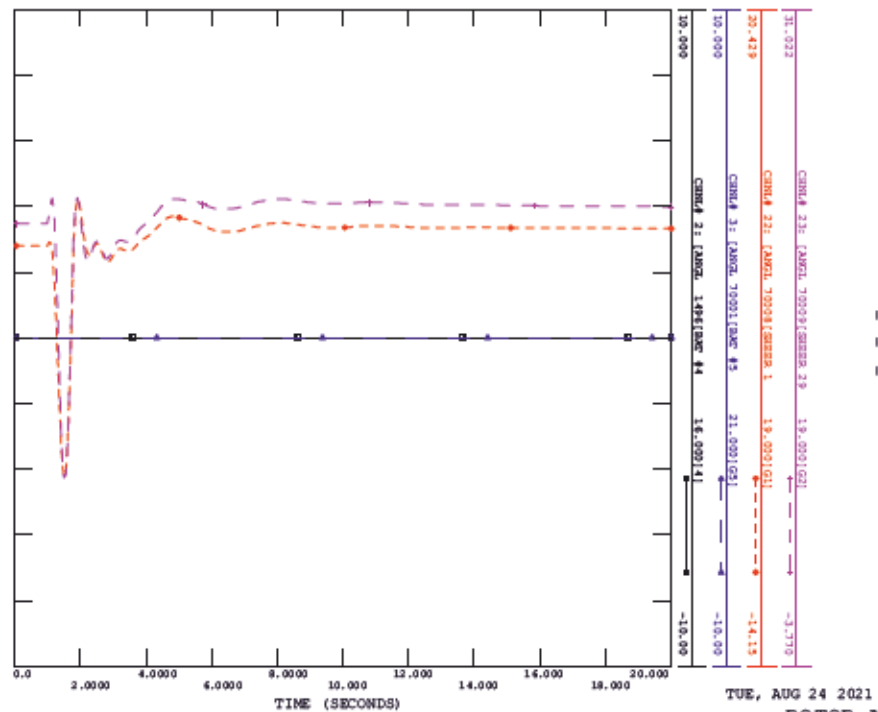
FILE: Scm4_A1_14_669L.out



TUE, AUG 24 2021 13:15
BRANCH Q (3)

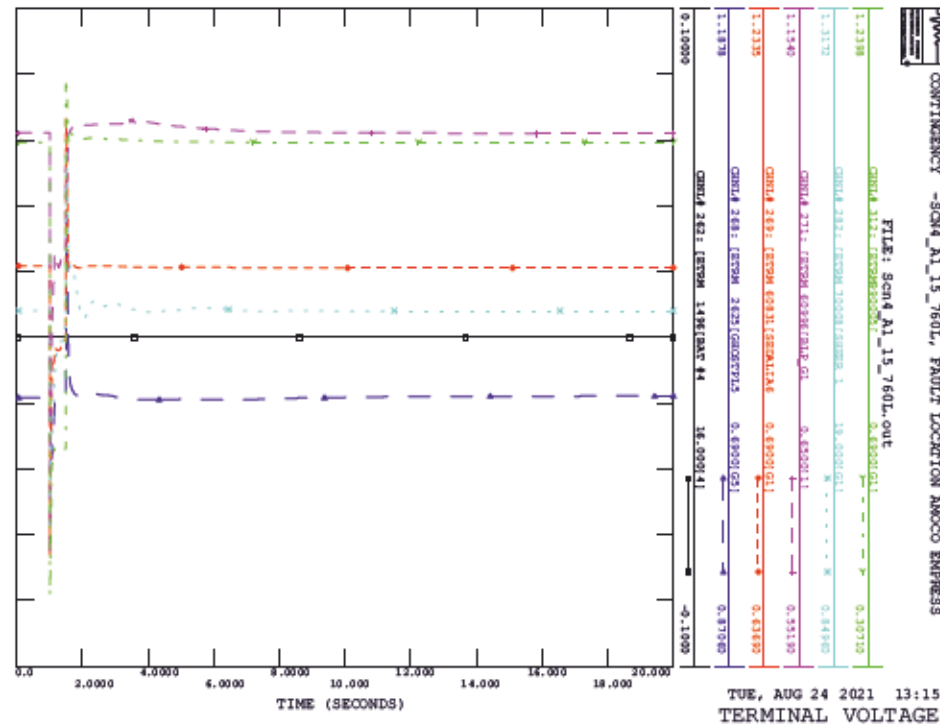
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_15_760L, FAULT LOCATION ANOCO EXPRESS

FILE: Scm4_A1_15_760L.out

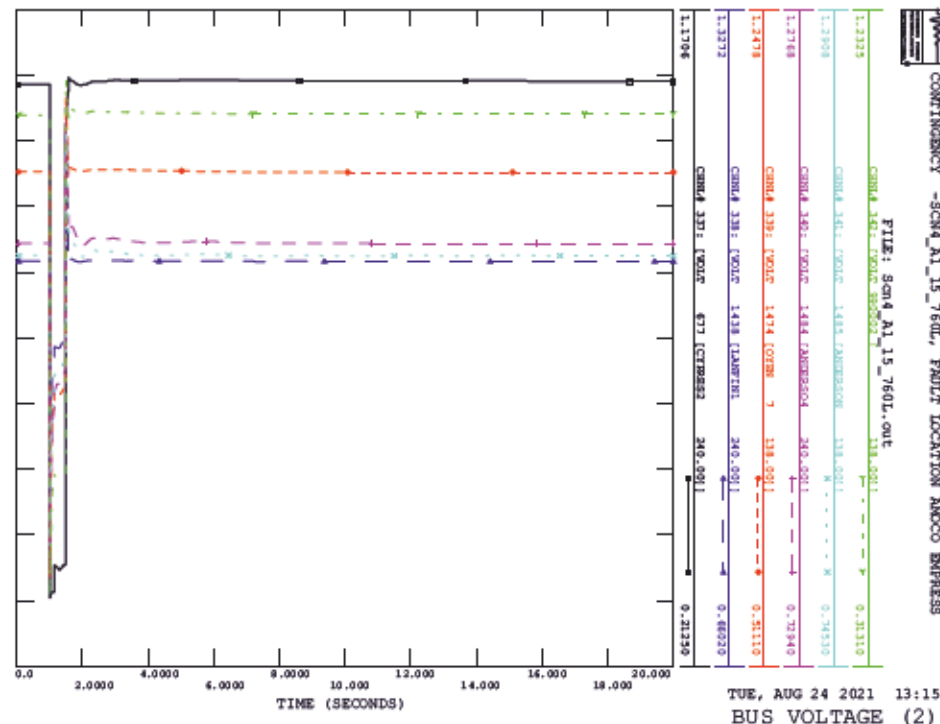


TUE, AUG 24 2021 13:15
ROTOR ANGLE

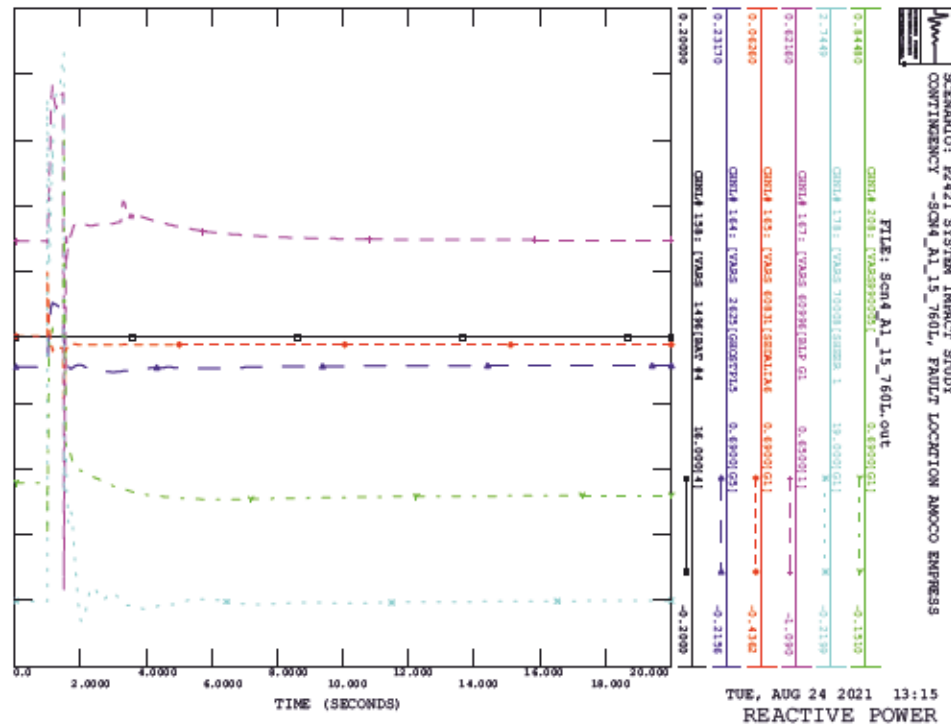
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_15_760L, FAULT LOCATION ANOCO EMPRESS



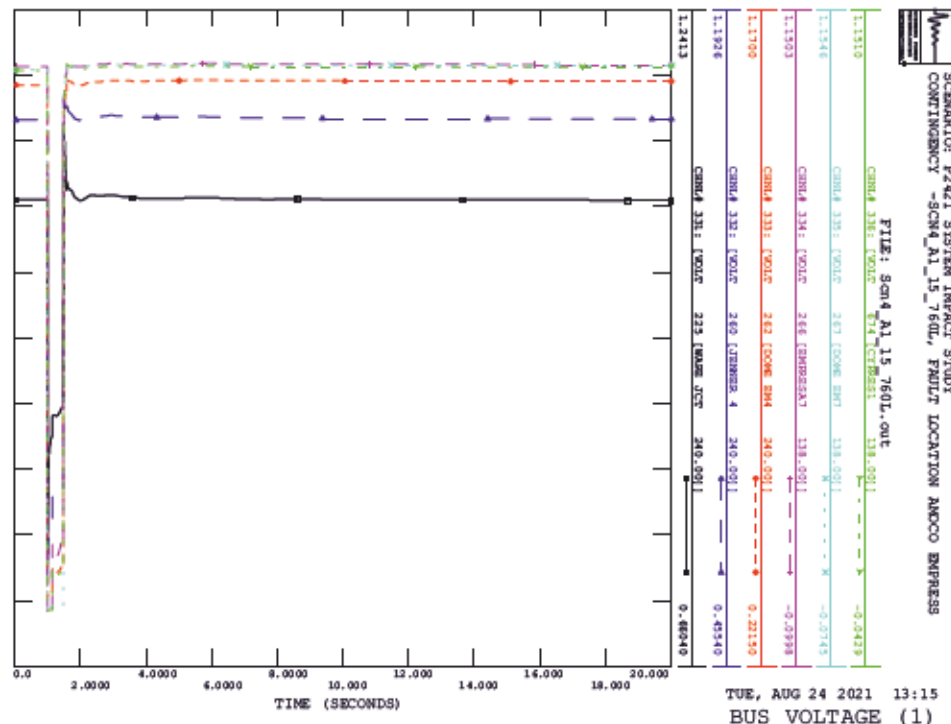
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_15_760L, FAULT LOCATION ANOCO EMPRESS



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

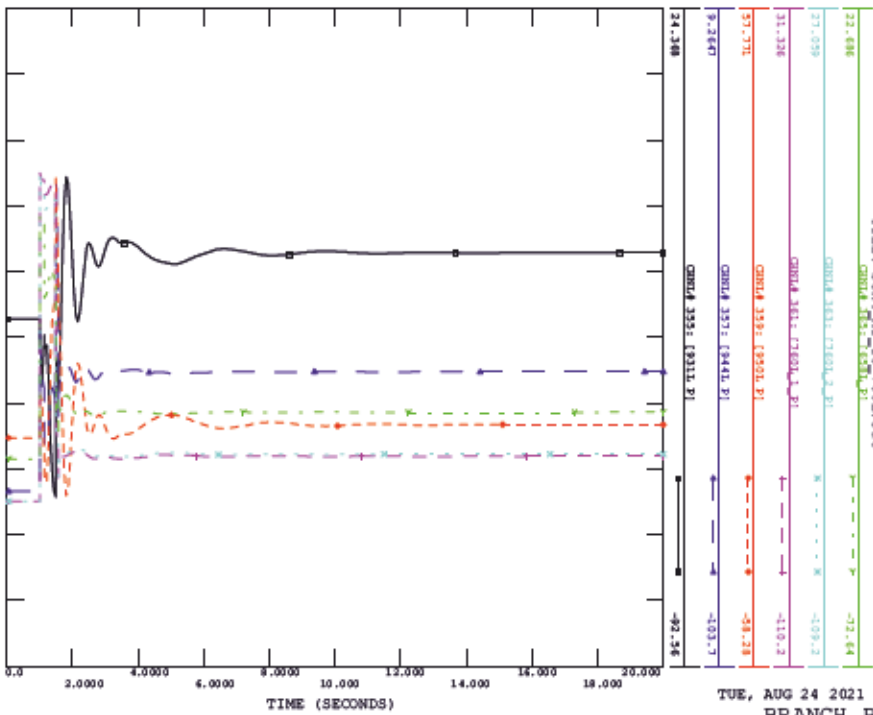


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_15_760L, FAULT LOCATION ANOCO EMPRESS



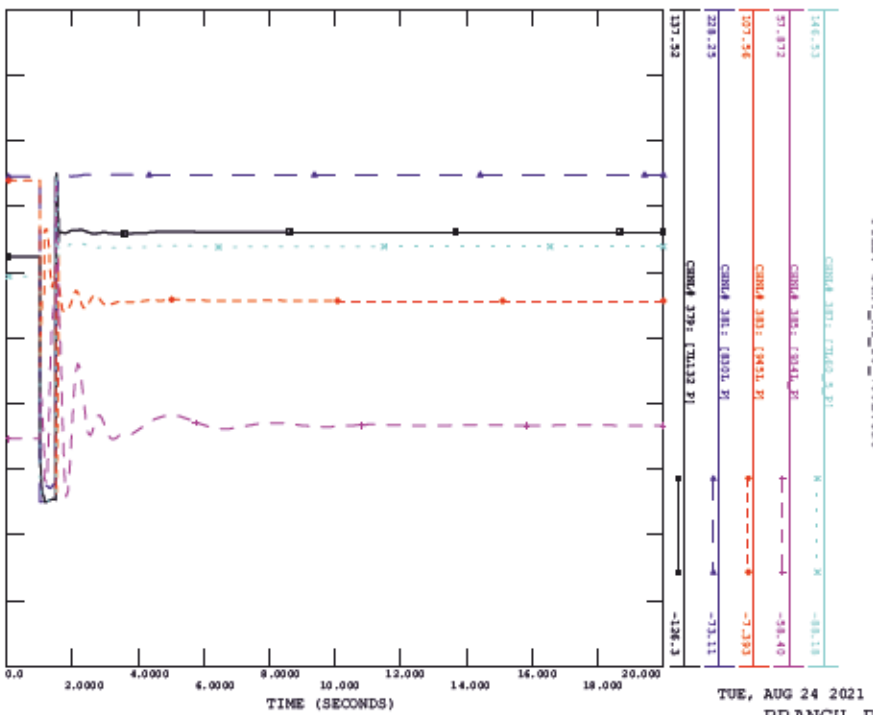
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CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_15_760L.out



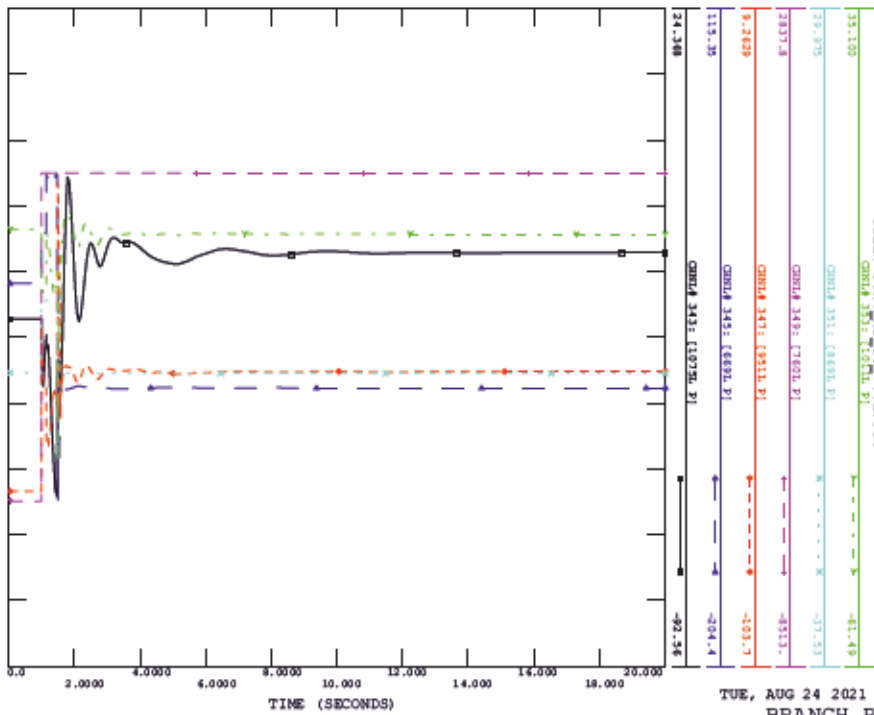
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CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_15_760L.out



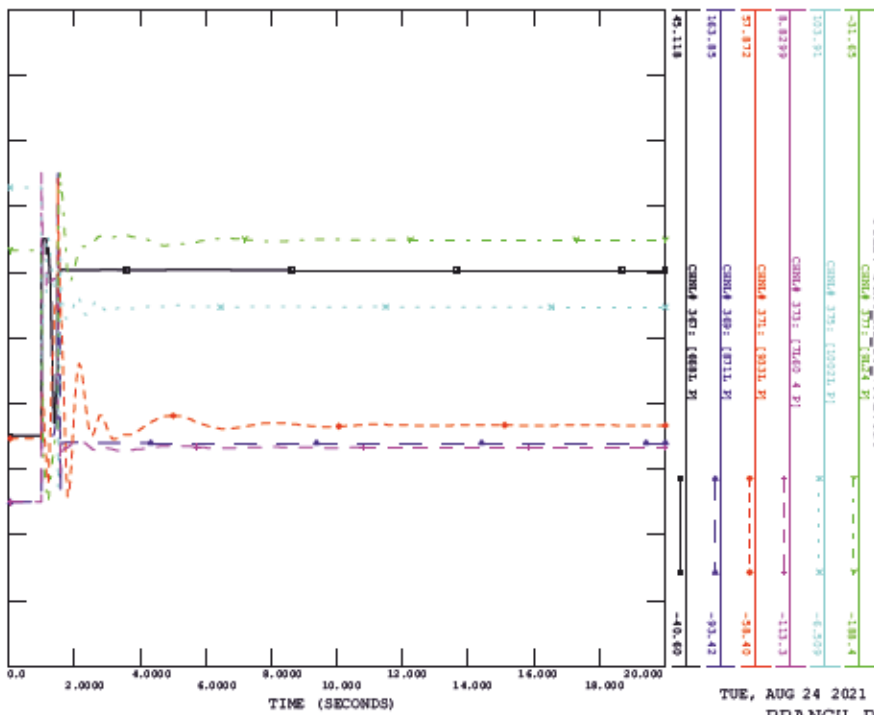
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CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

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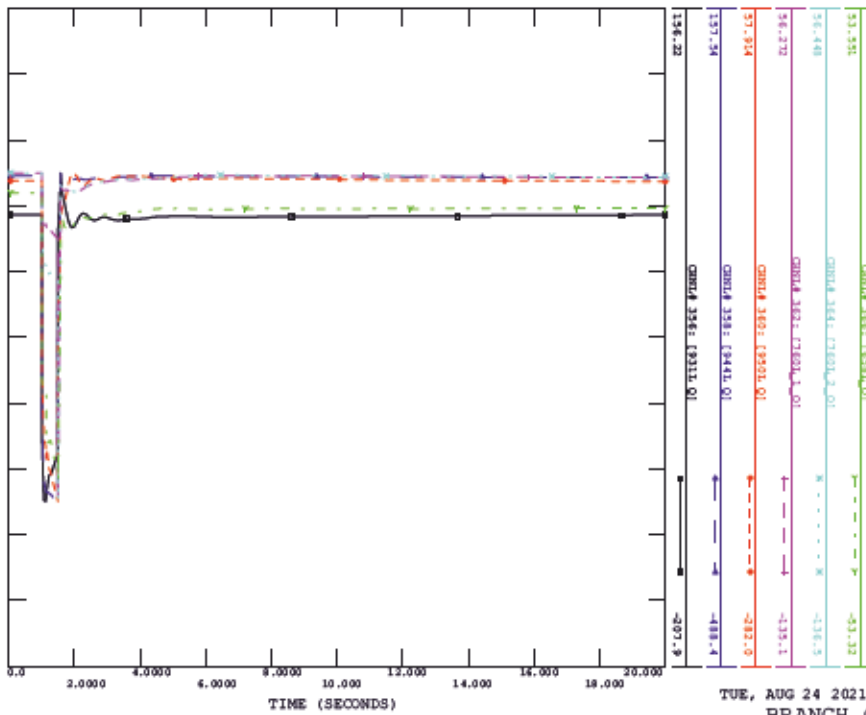
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CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm4_AI_15_760L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

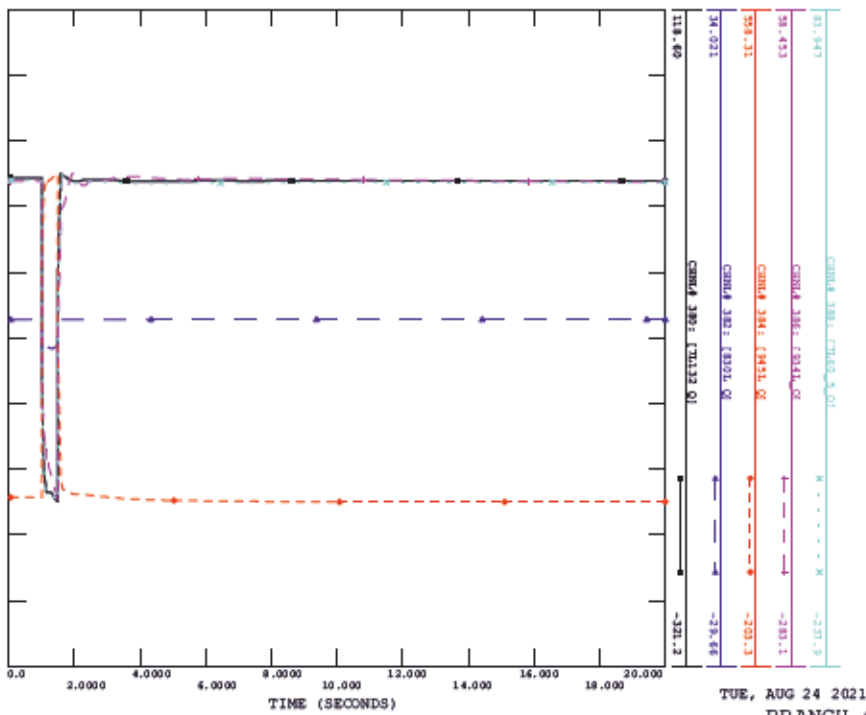
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TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

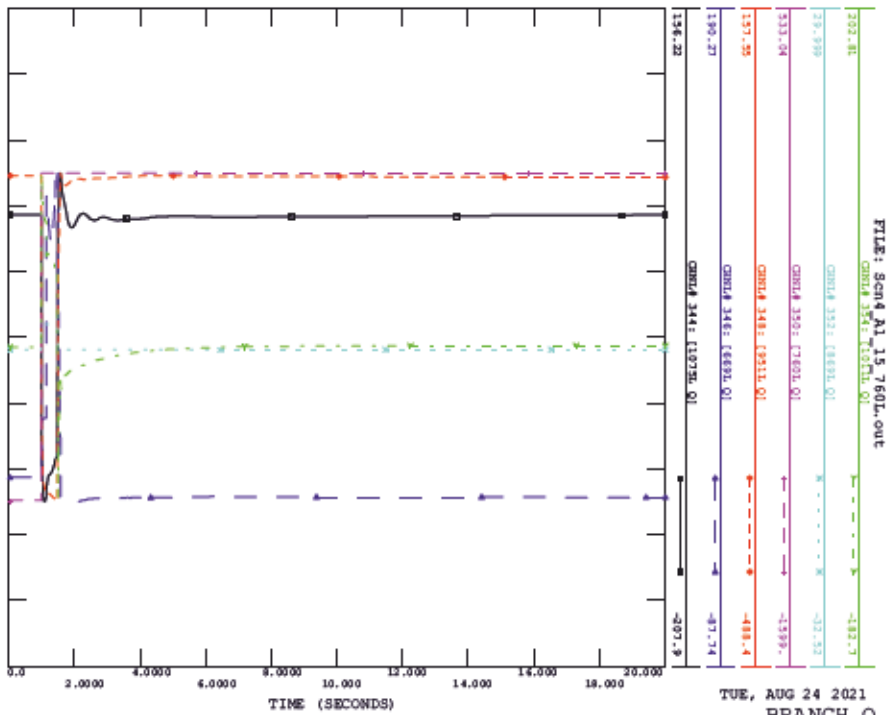
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TUE, AUG 24 2021 13:15
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

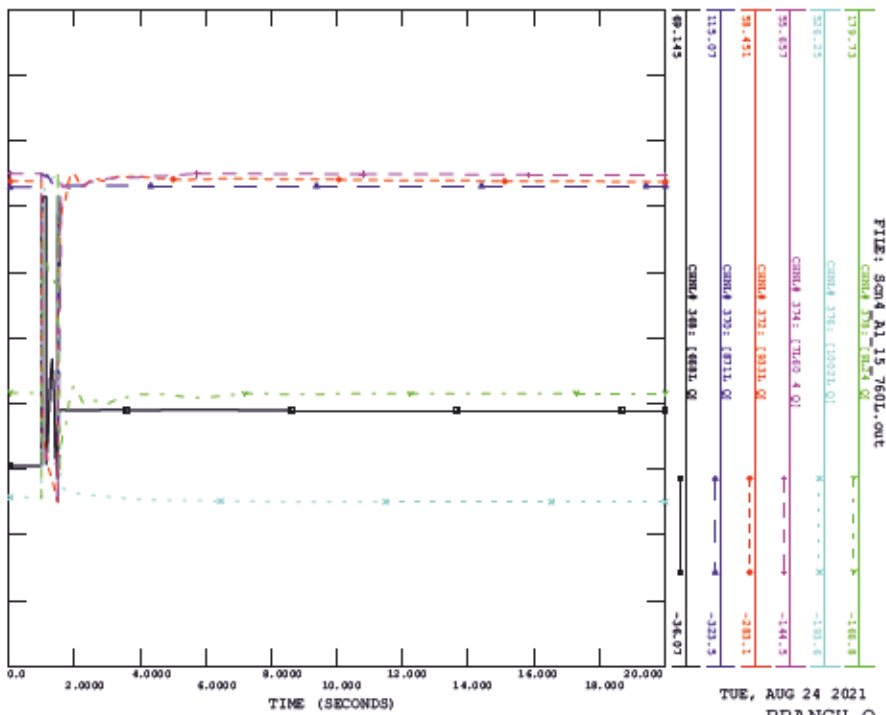
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

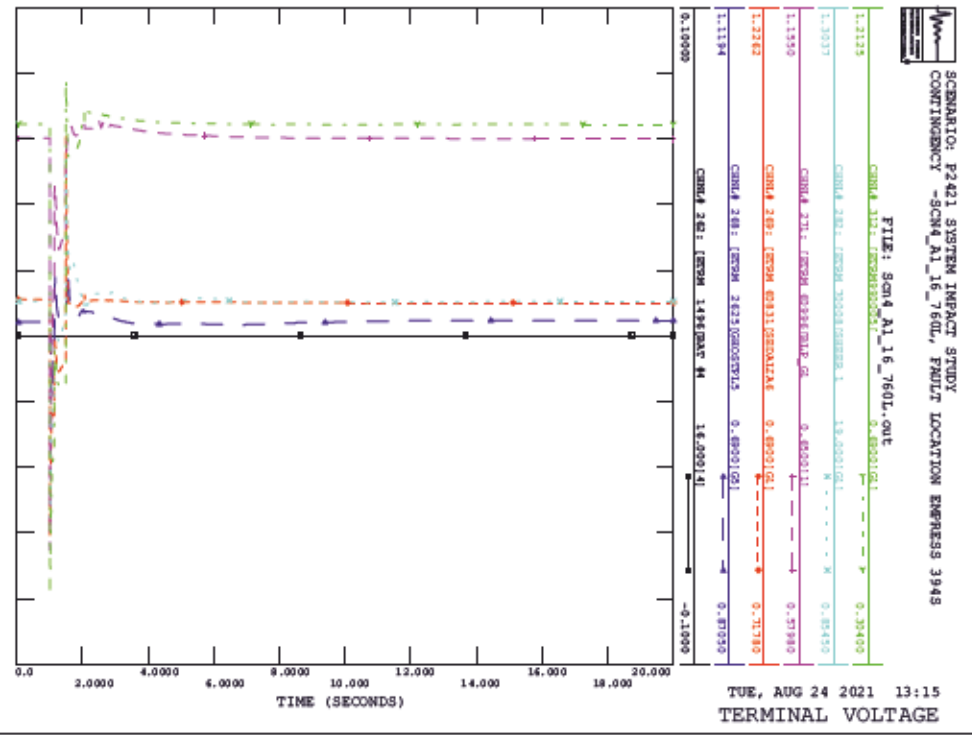
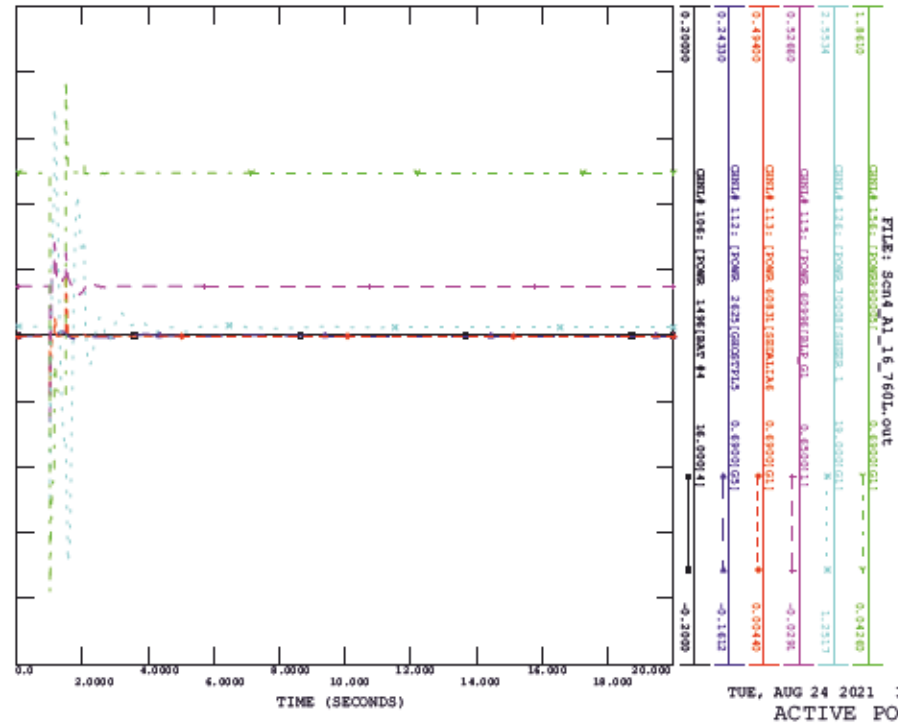
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CONTINGENCY -SCM4_AI_15_760L, FAULT LOCATION ANOCO EMPRESS

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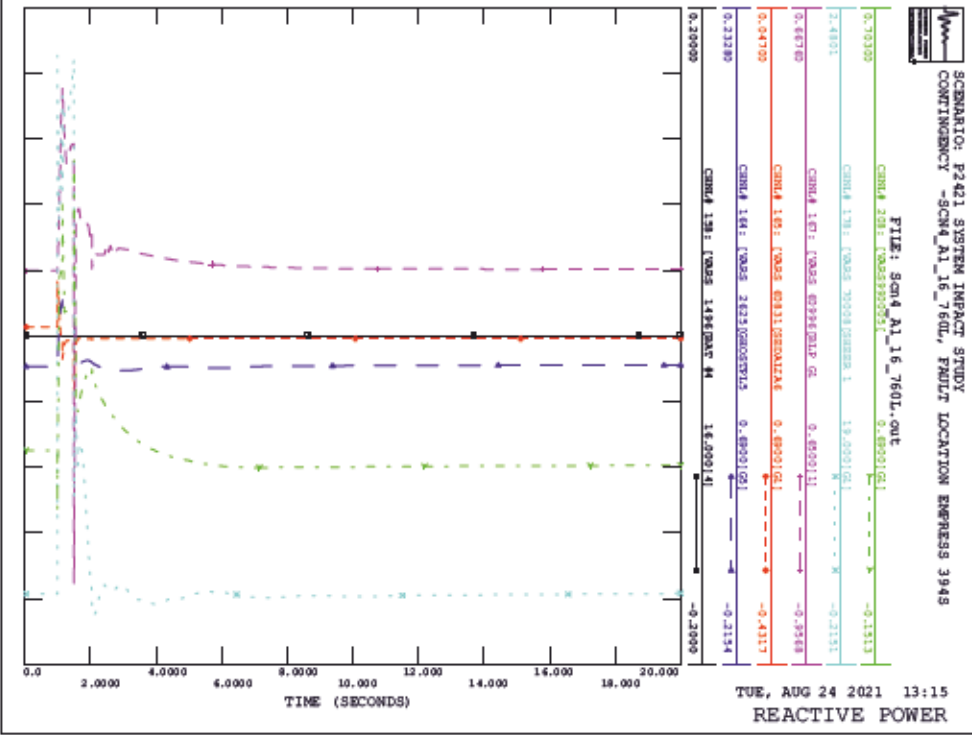
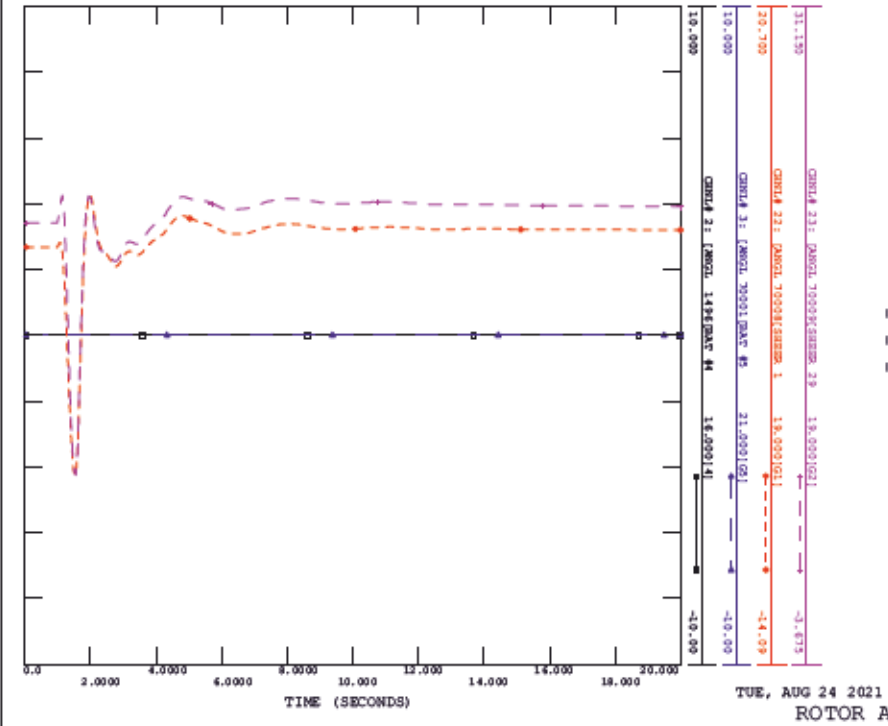


TUE, AUG 24 2021 13:15
BRANCH Q (3)

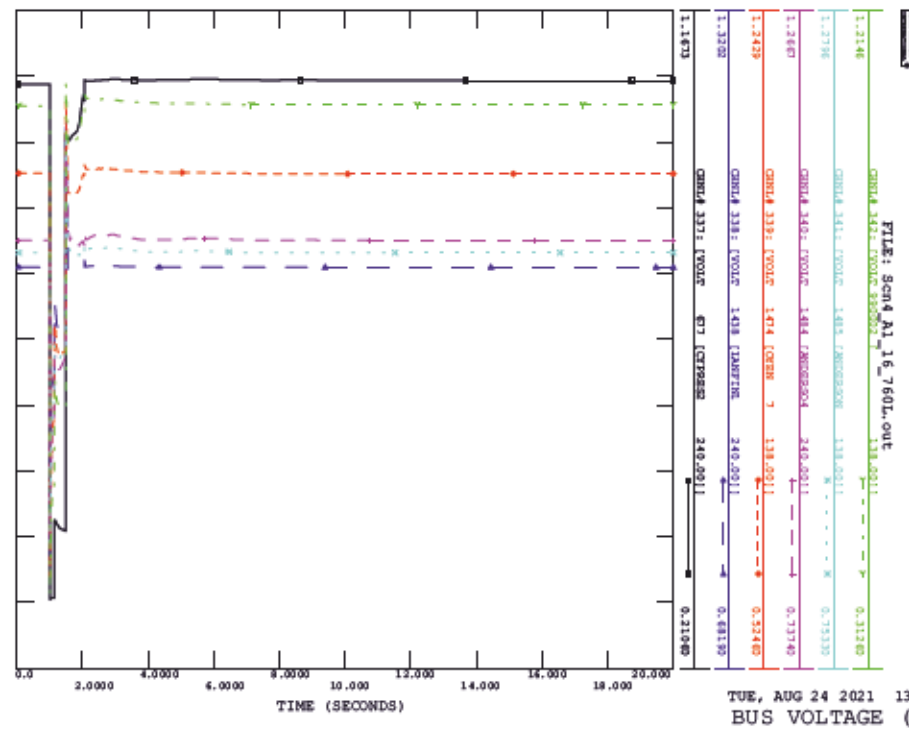
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRES 3945



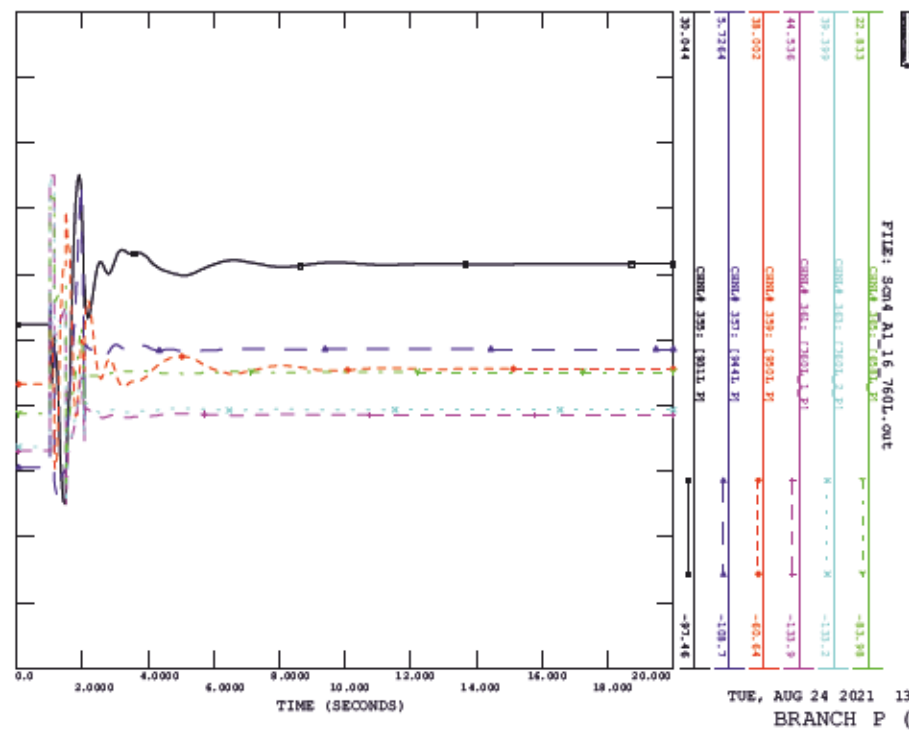
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRES 3945



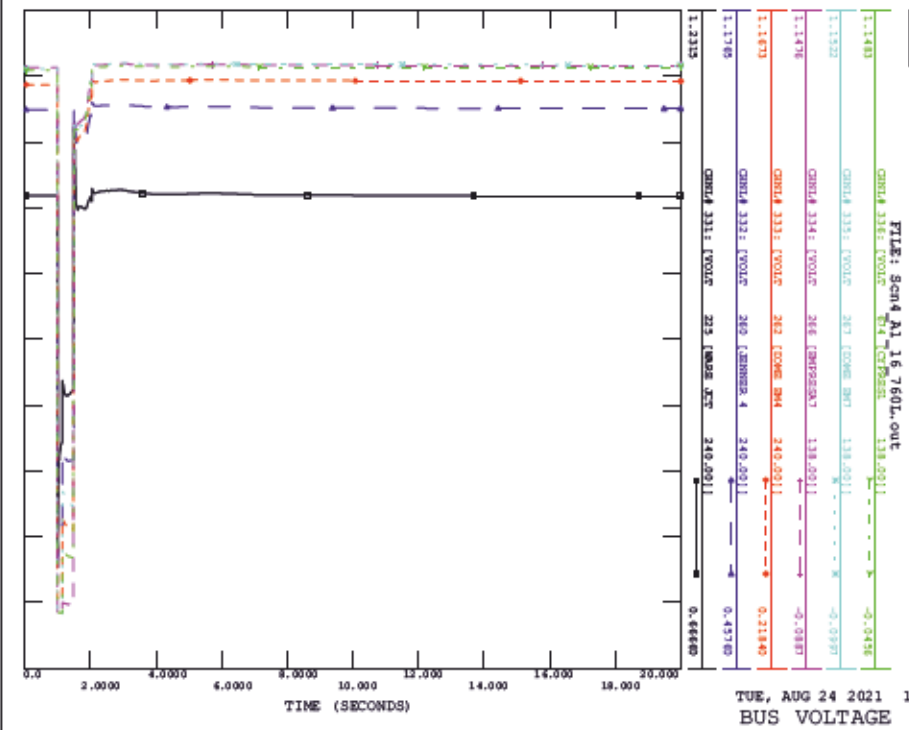
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 3945



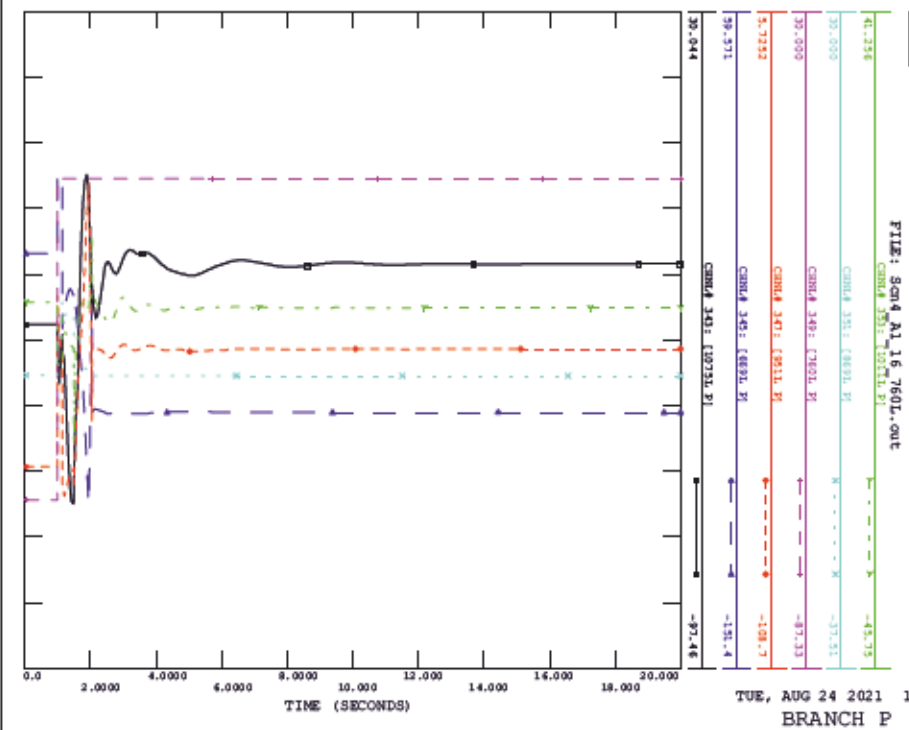
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 3945



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 3945

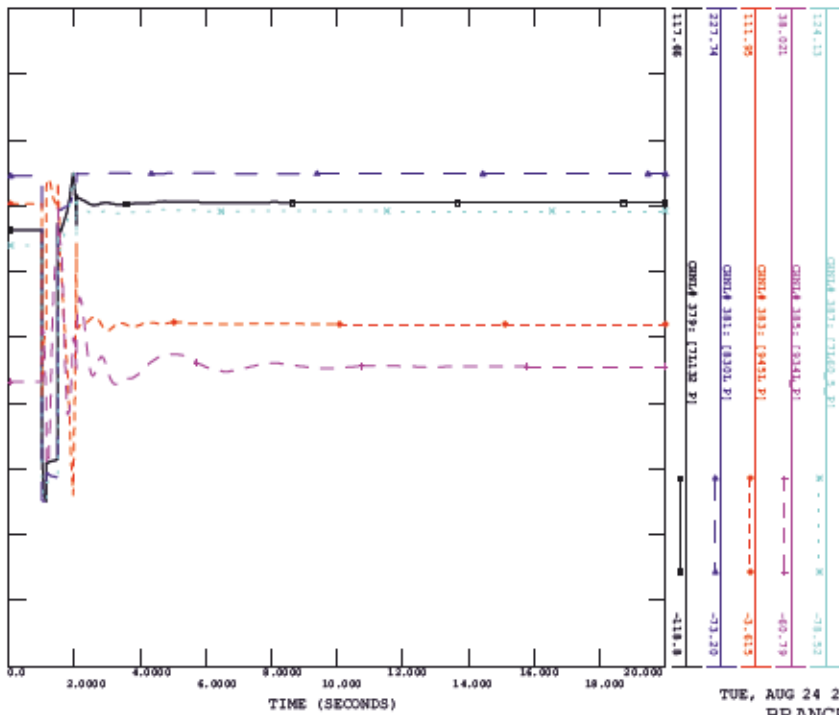


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 3945



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 394S

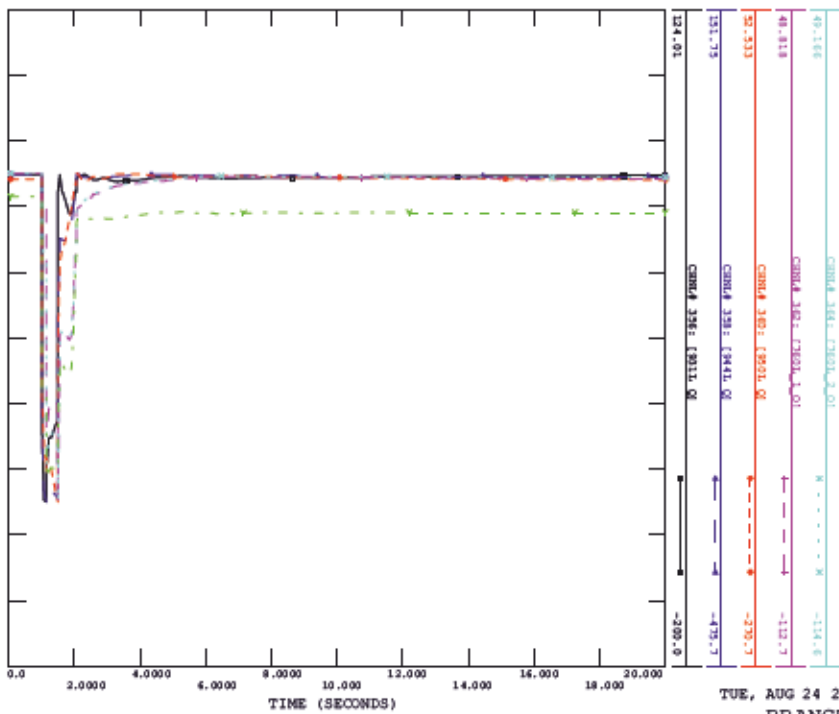
FILE: Scm4_A1_16_760L.out



TUE, AUG 24 2021 13:15
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 394S

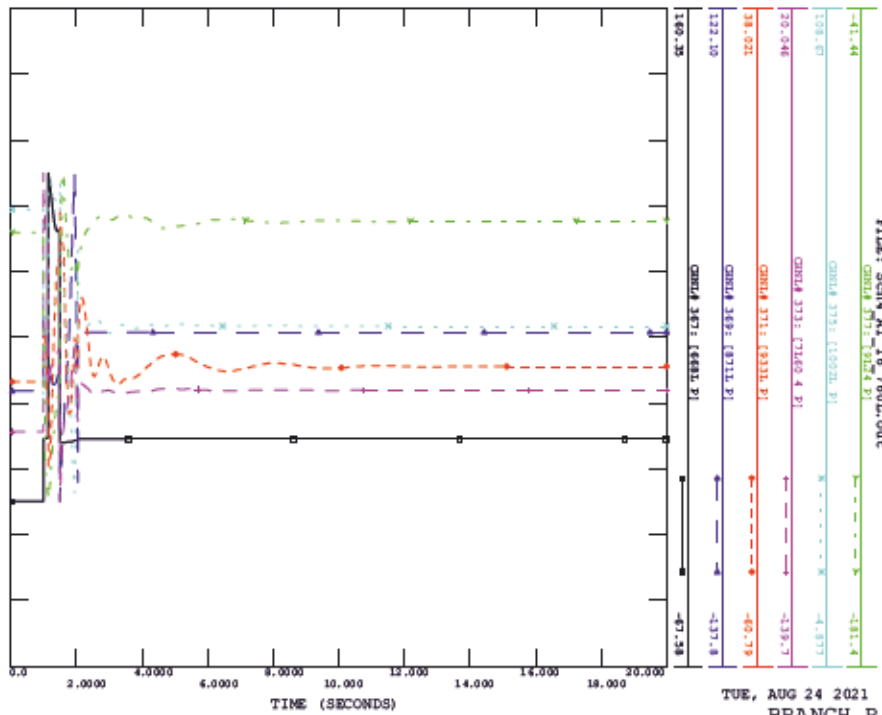
FILE: Scm4_A1_16_760L.out



TUE, AUG 24 2021 13:15
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 394S

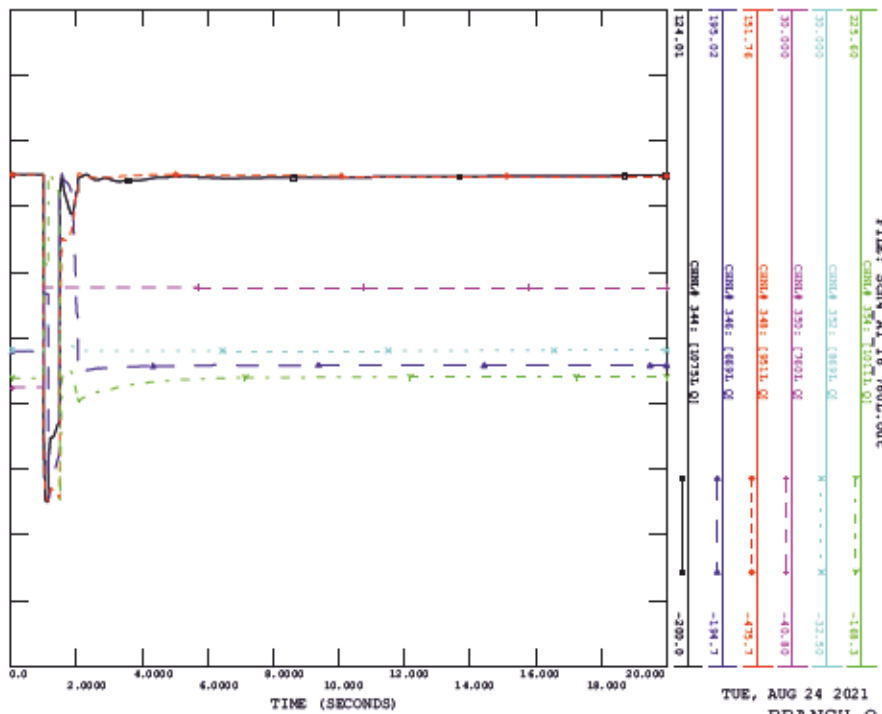
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TUE, AUG 24 2021 13:15
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 394S

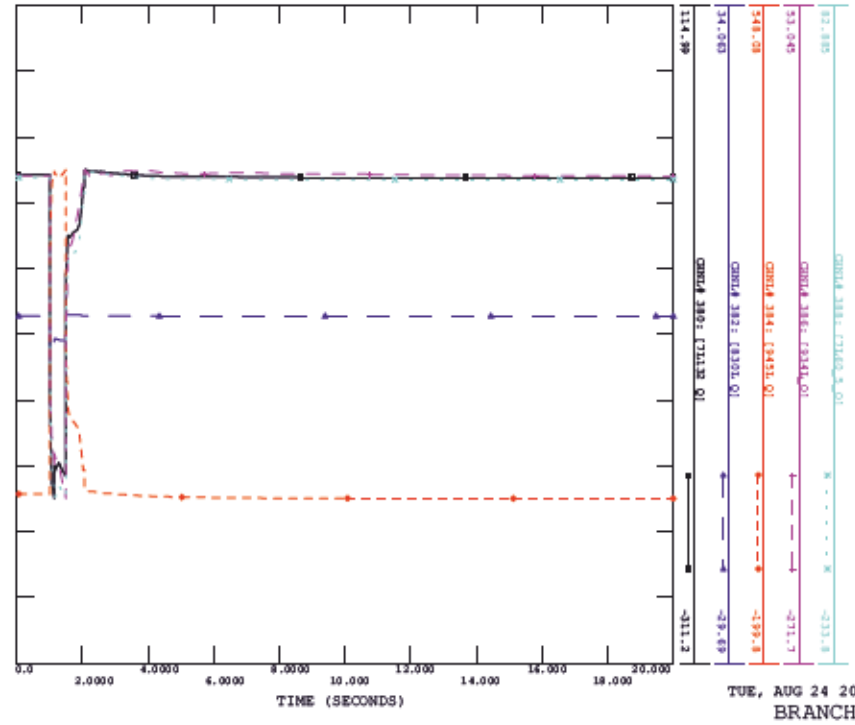
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TUE, AUG 24 2021 13:15
BRANCH Q (1)

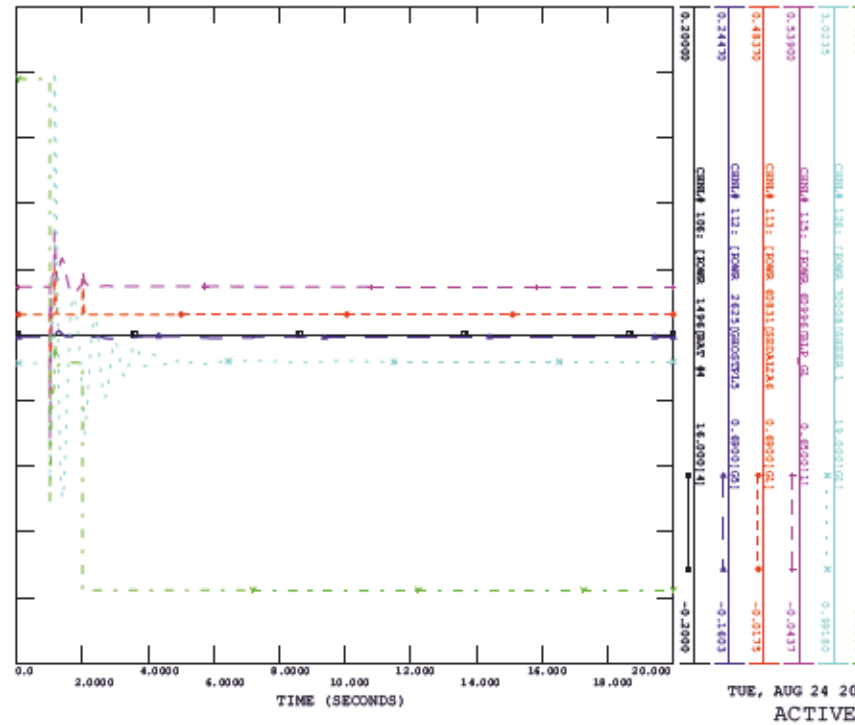
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 394S

FILE: Scm4_A1_16_760L.out



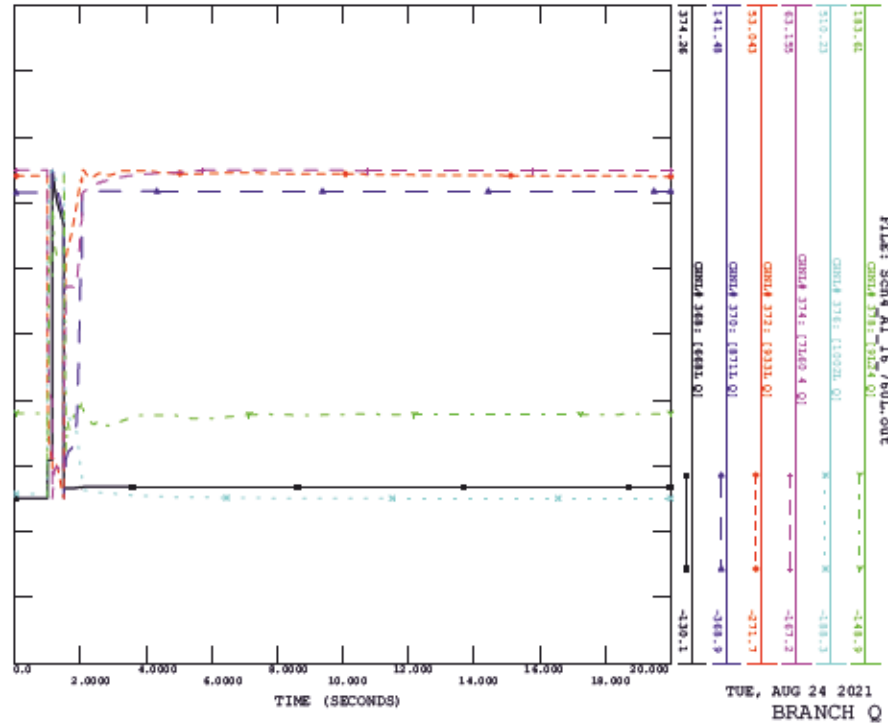
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_17_71760, FAULT LOCATION RMOCO EMPRESS

FILE: Scm4_A1_17_71760.out



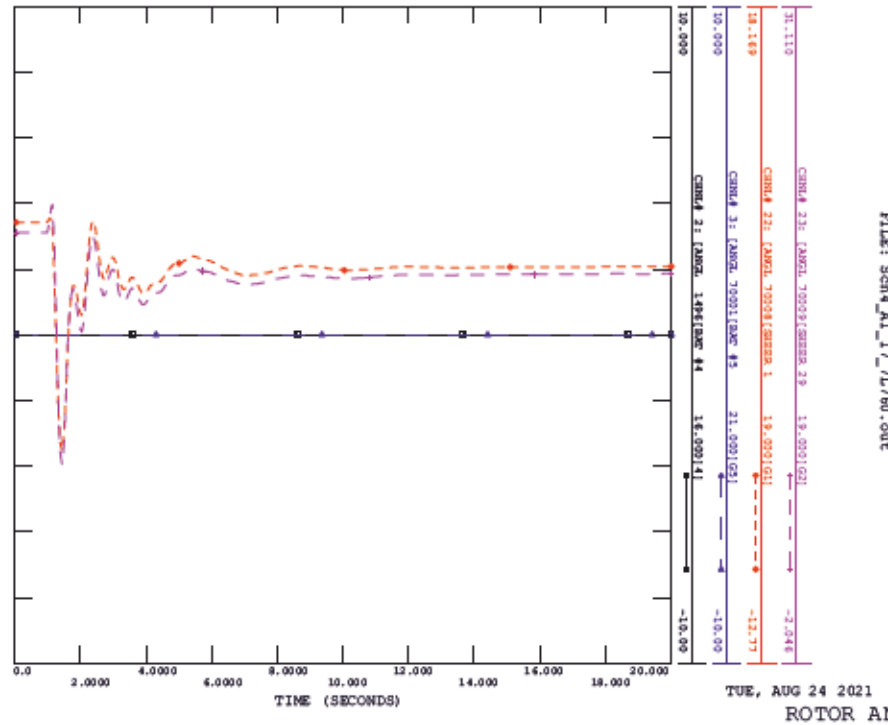
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_16_760L, FAULT LOCATION EMPRESS 394S

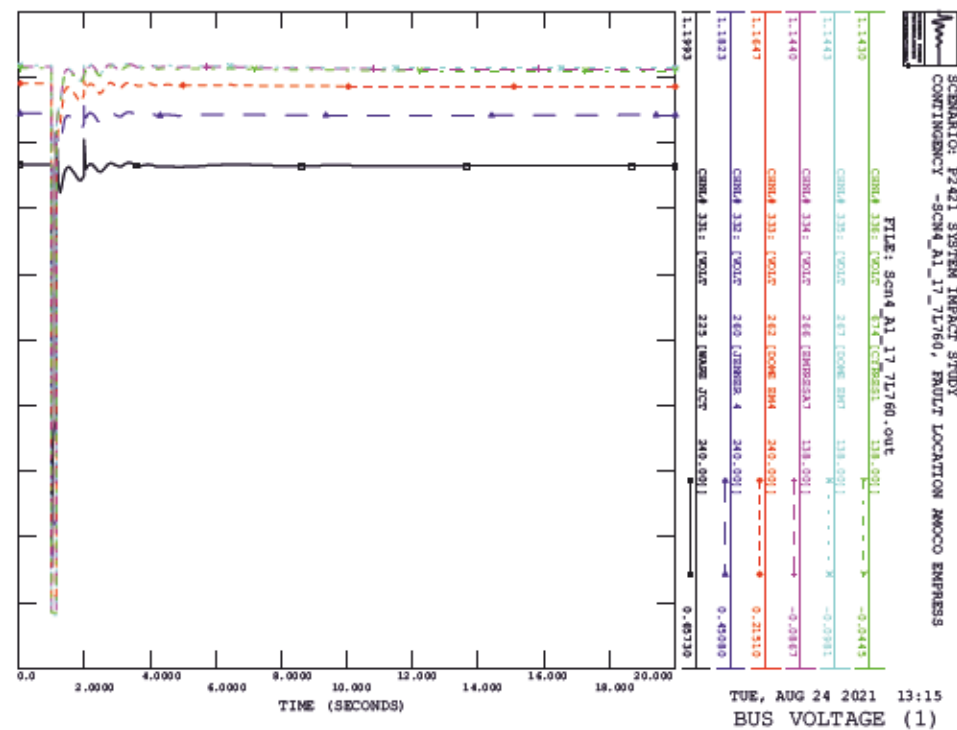
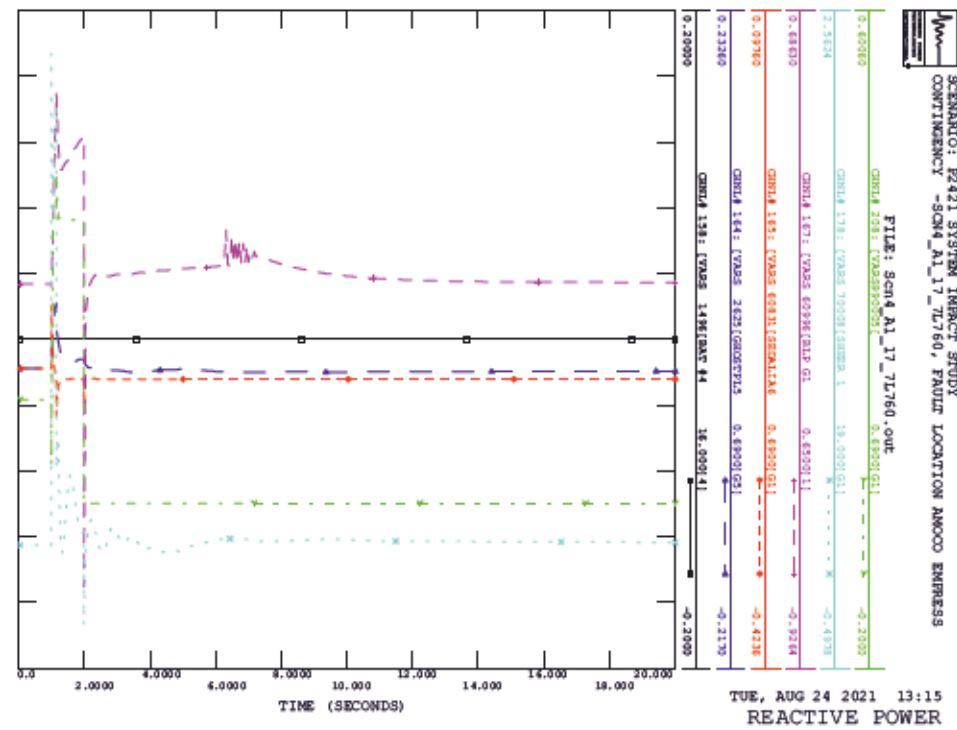
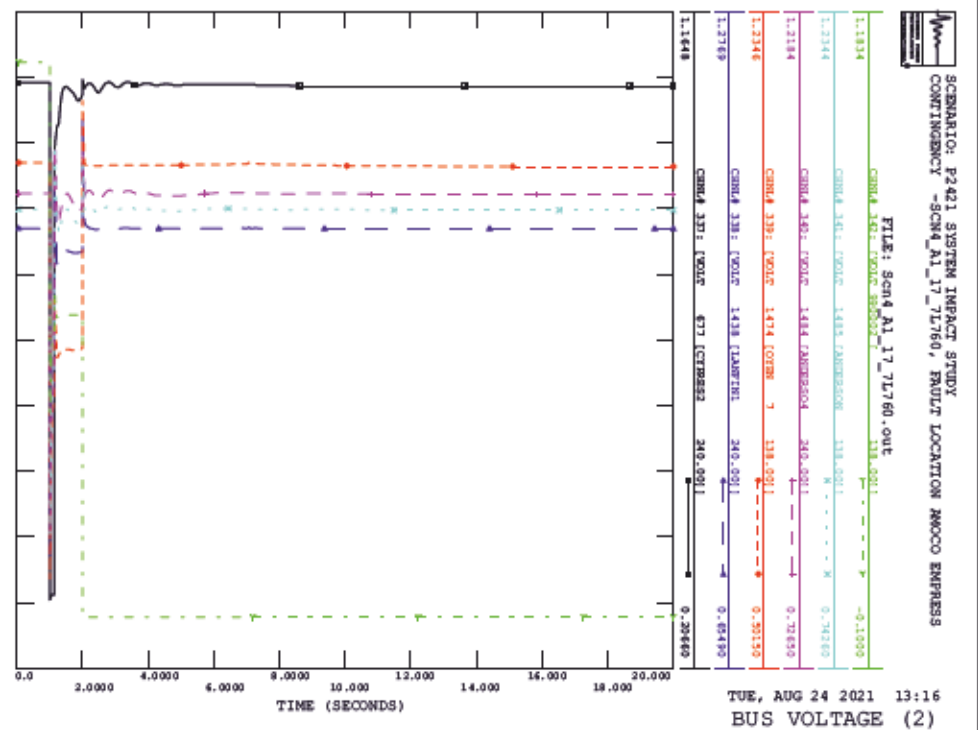
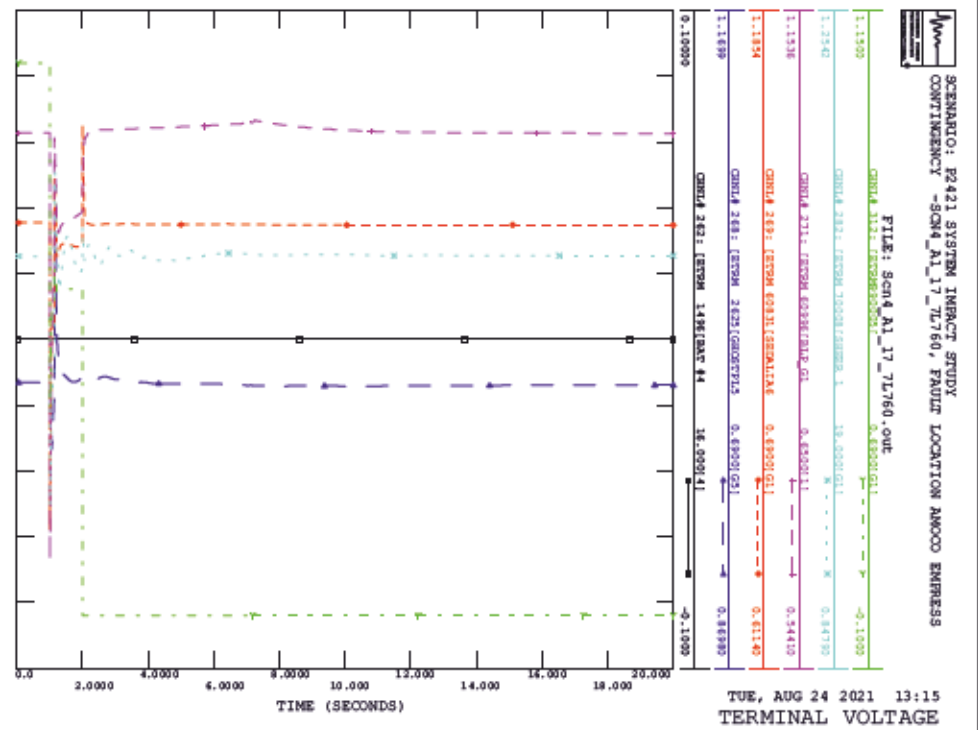
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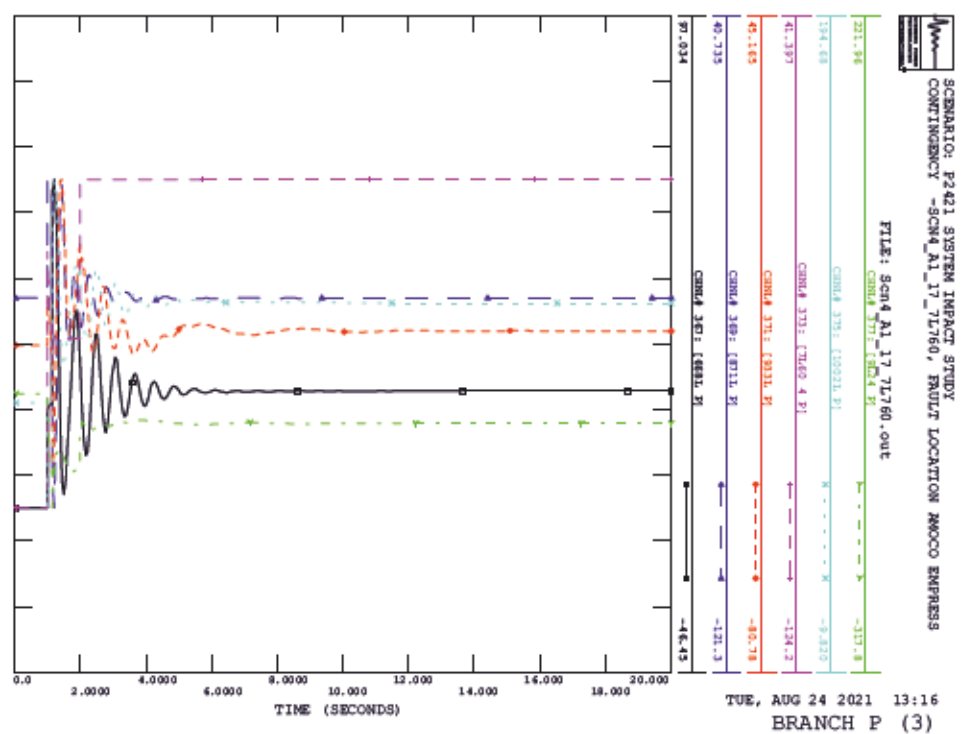
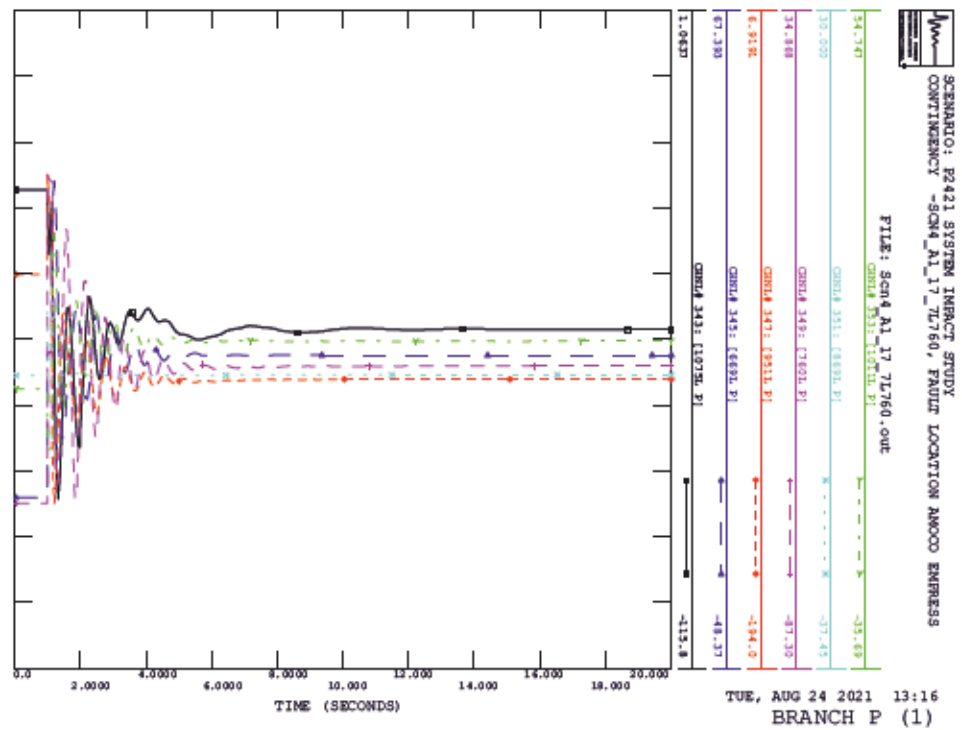
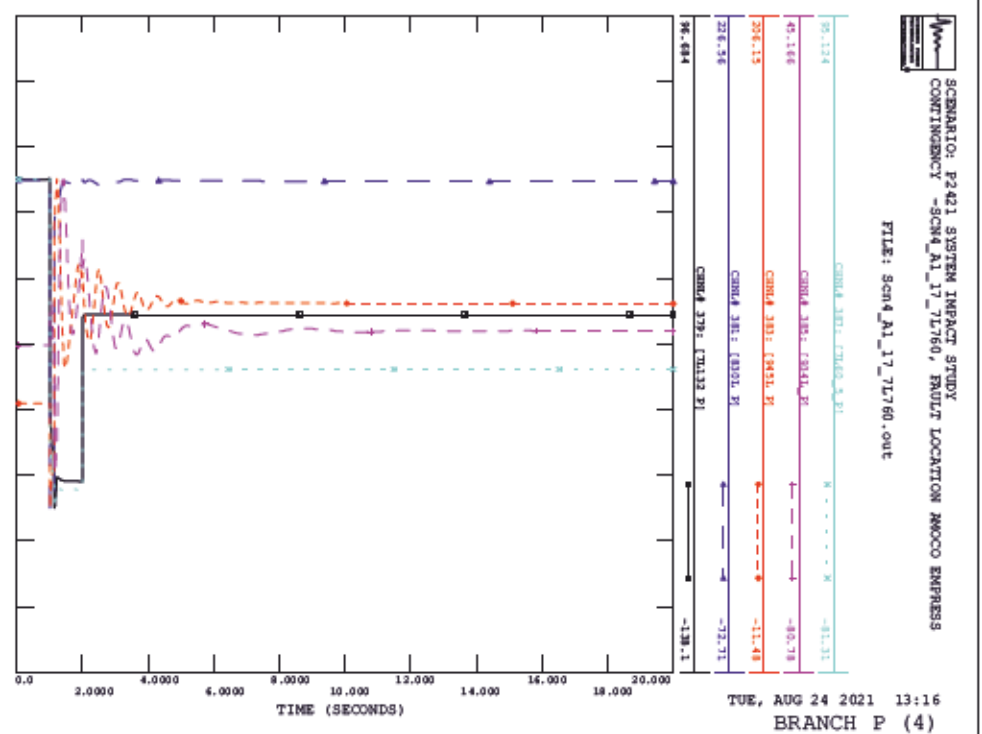
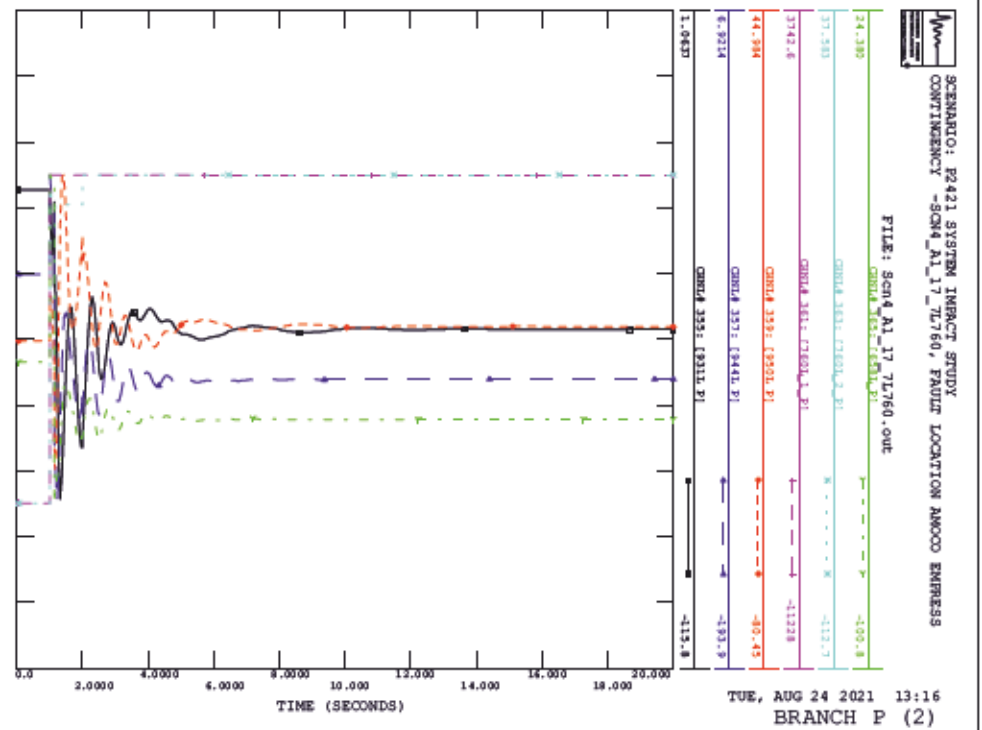


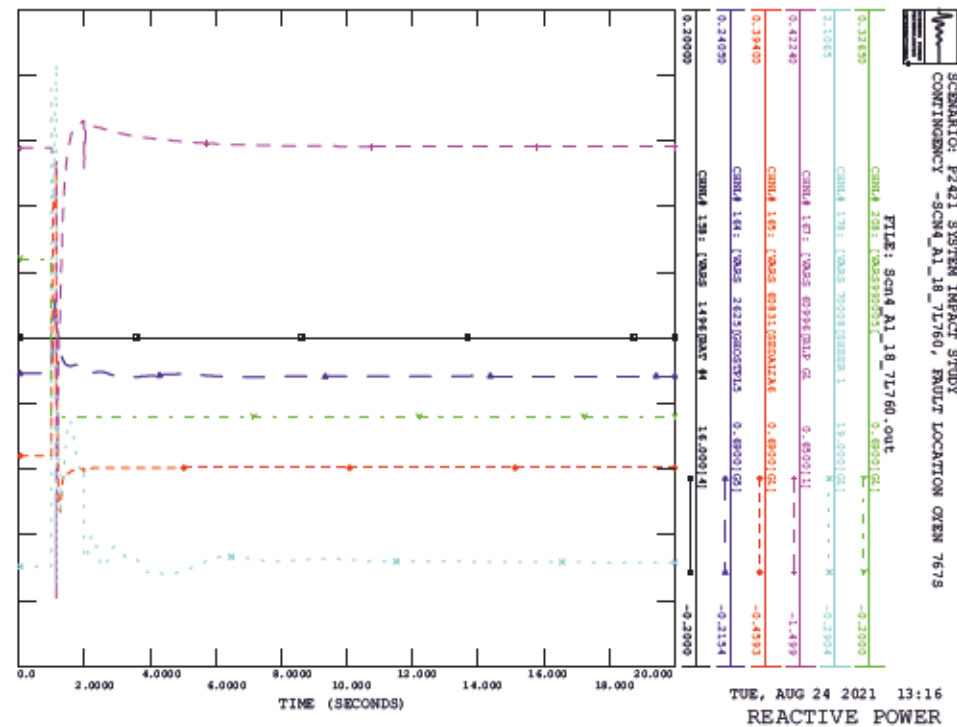
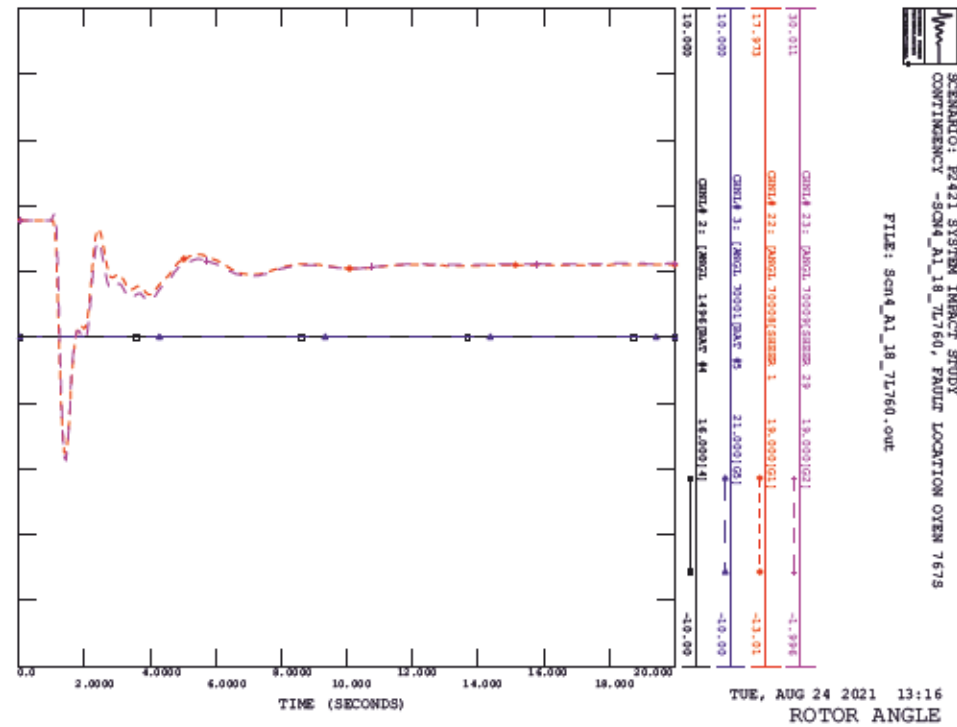
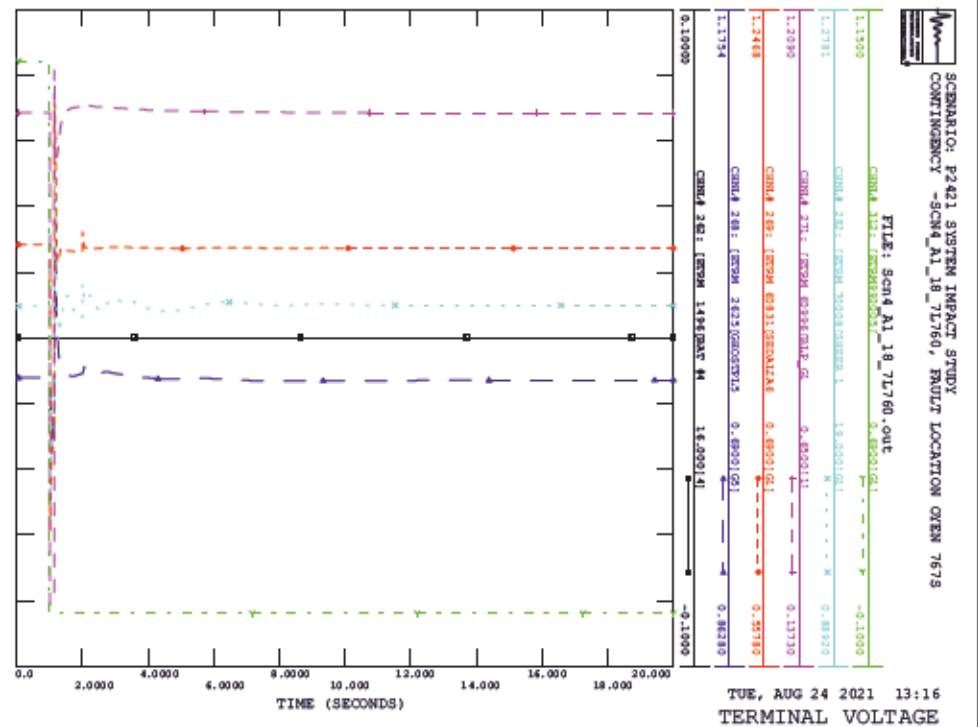
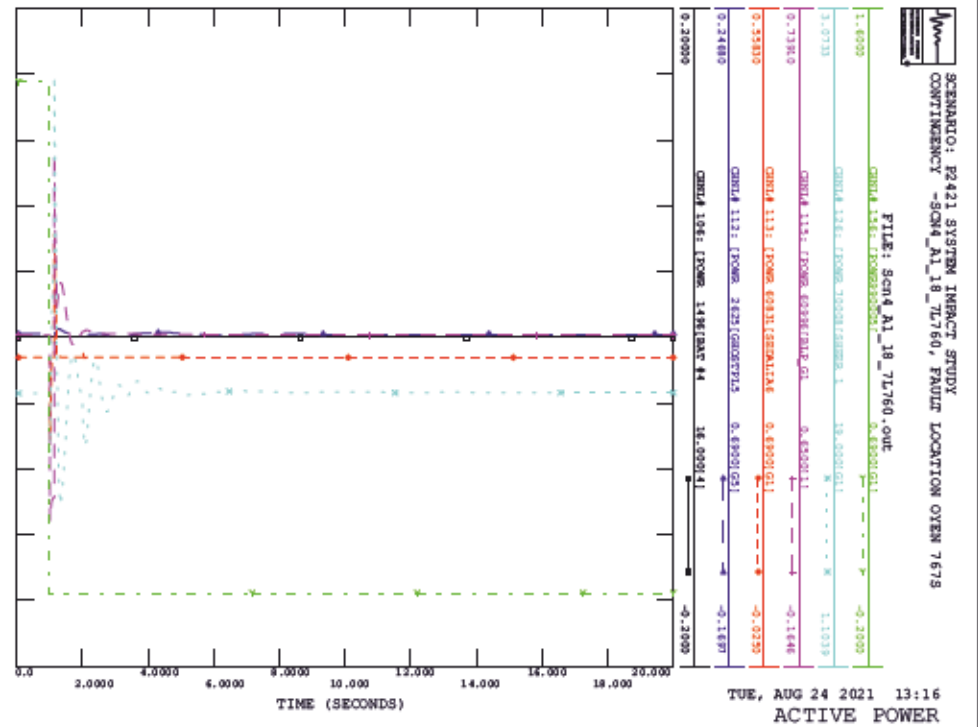
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_17_71760, FAULT LOCATION RMOCO EMPRESS

FILE: Scm4_A1_17_71760.out

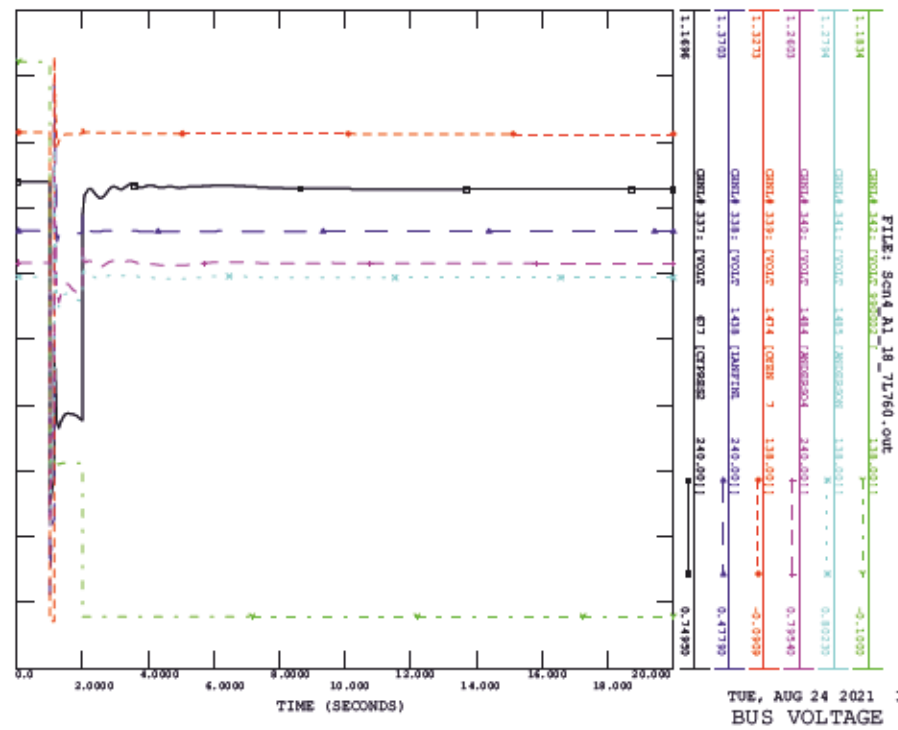




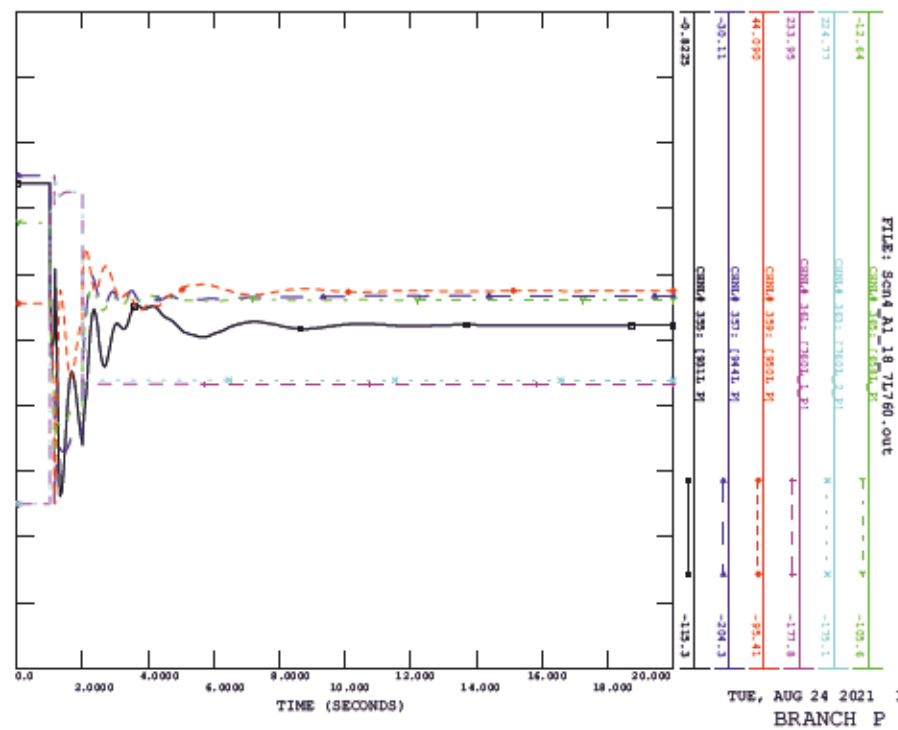




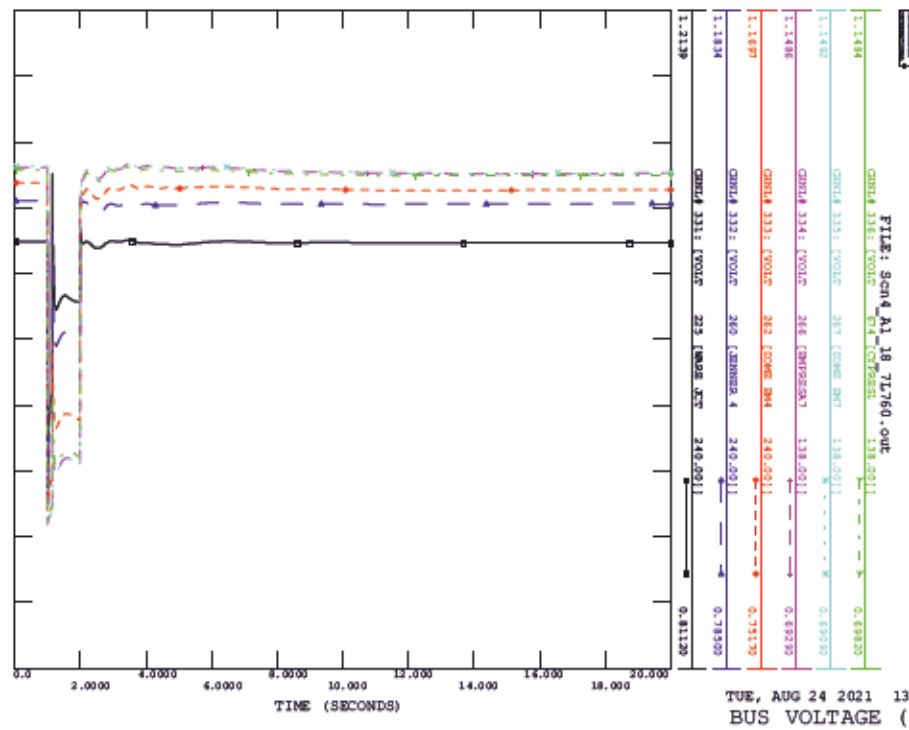
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675



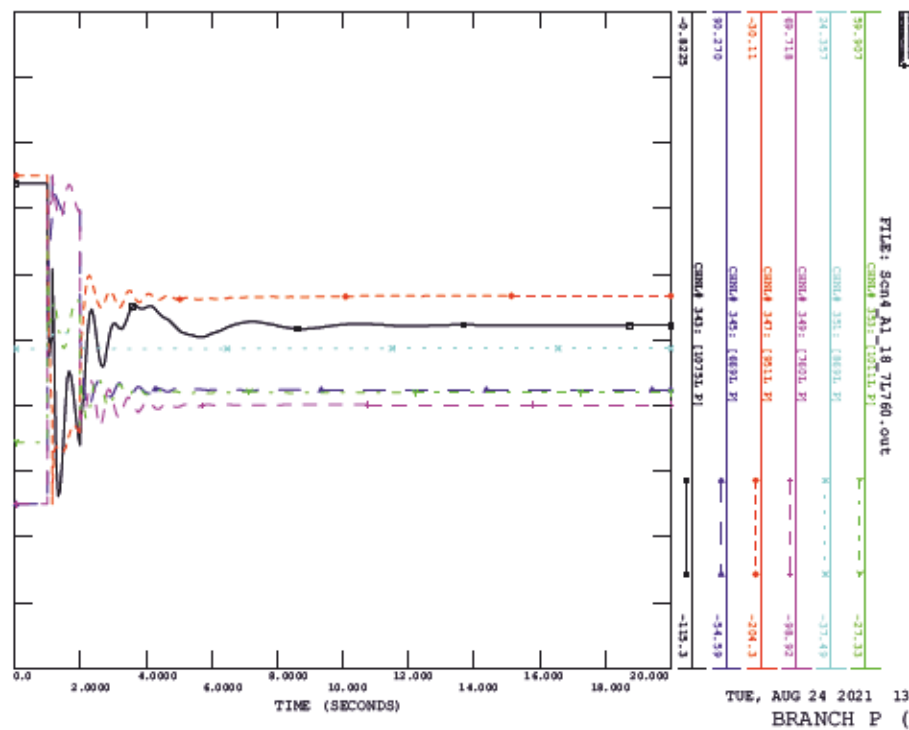
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675

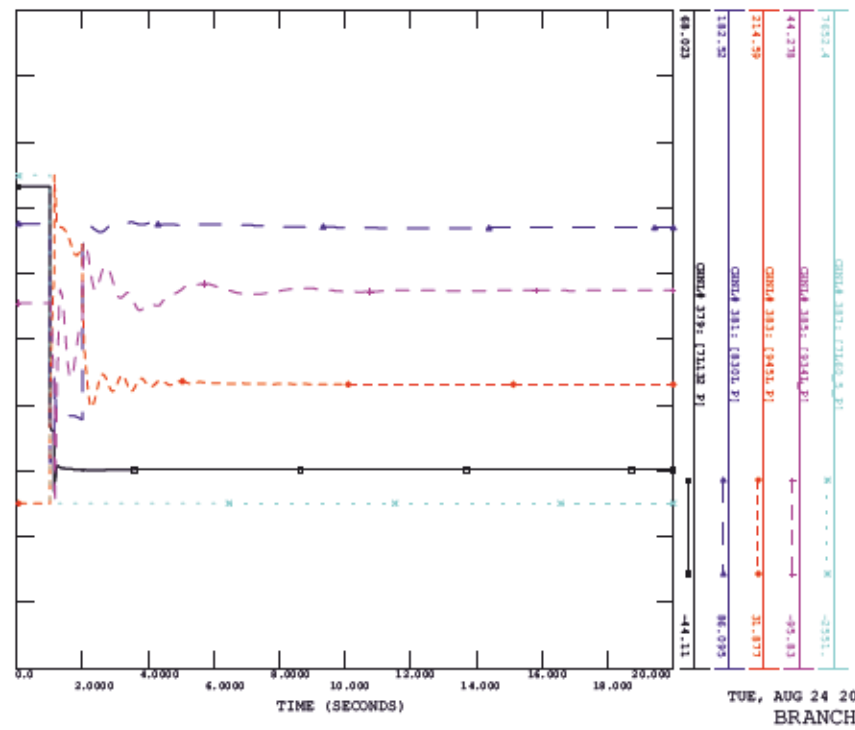


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675



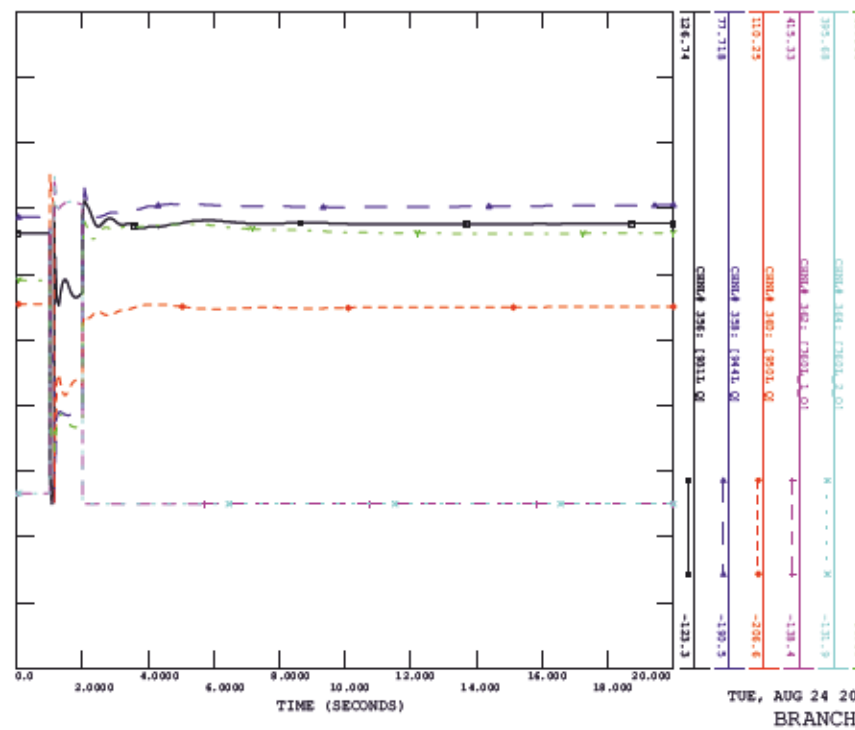
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675

FILE: scm4_A1_18_7L760.out



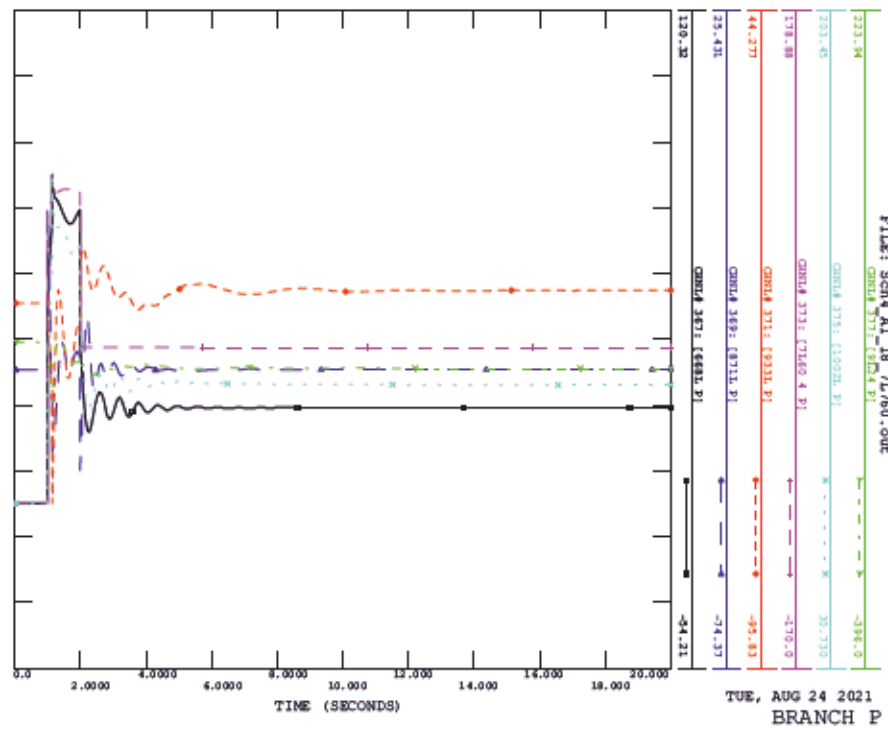
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675

FILE: scm4_A1_18_7L760.out



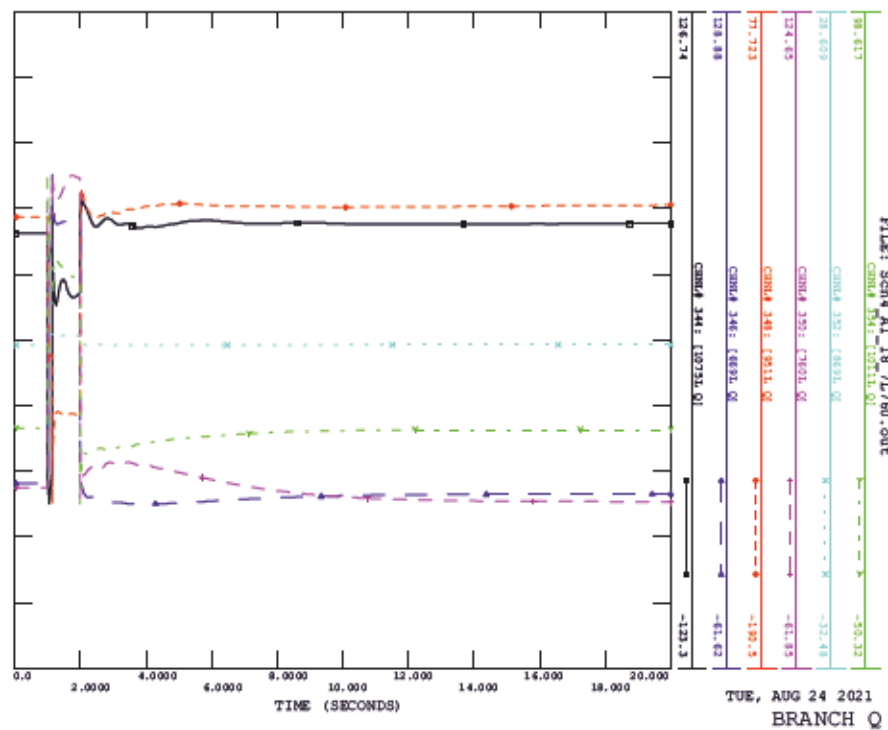
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CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675

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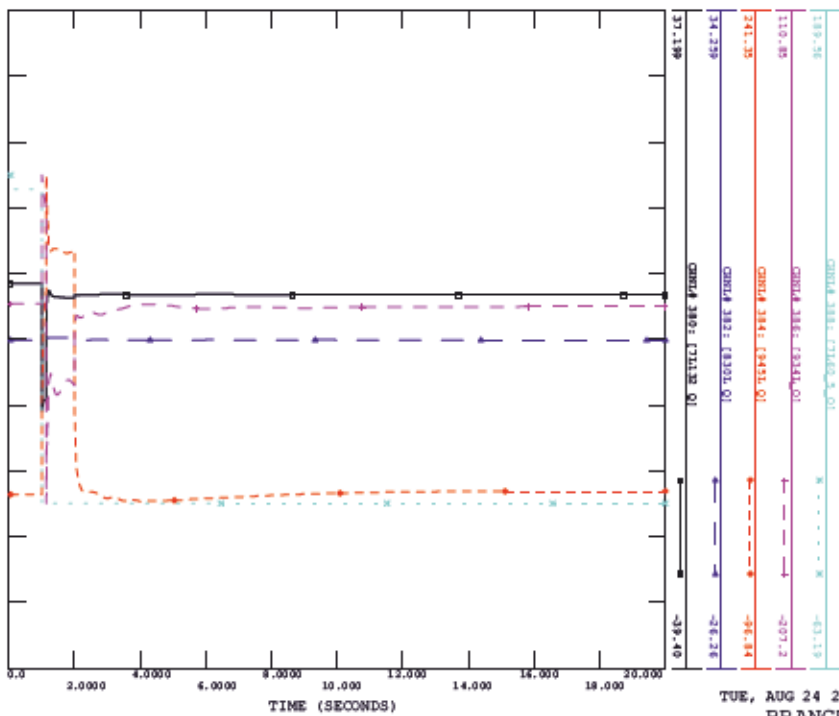
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OPEN 7675

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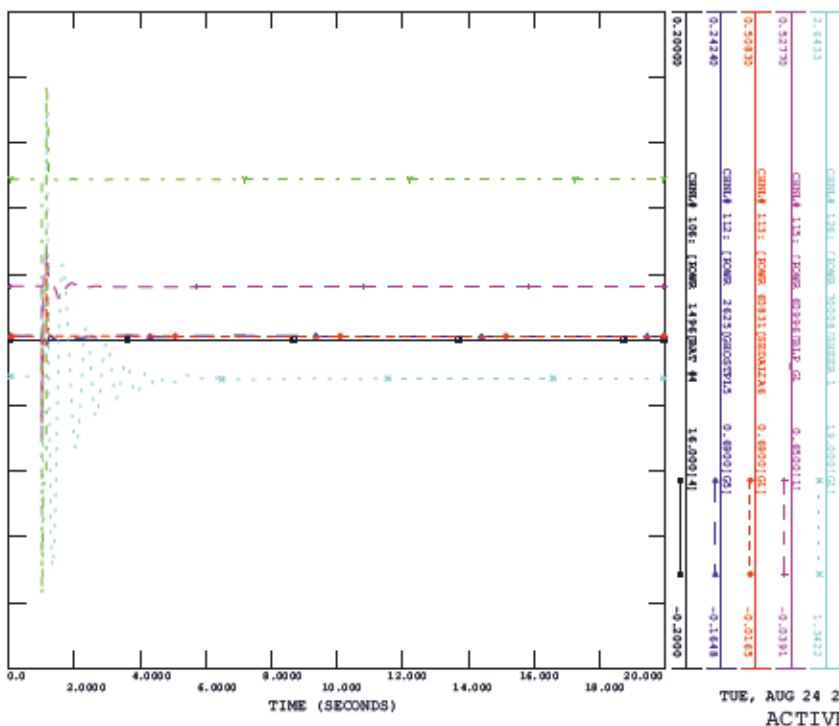
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CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OYEN 767S

FILE: scm4_A1_18_7L760.out



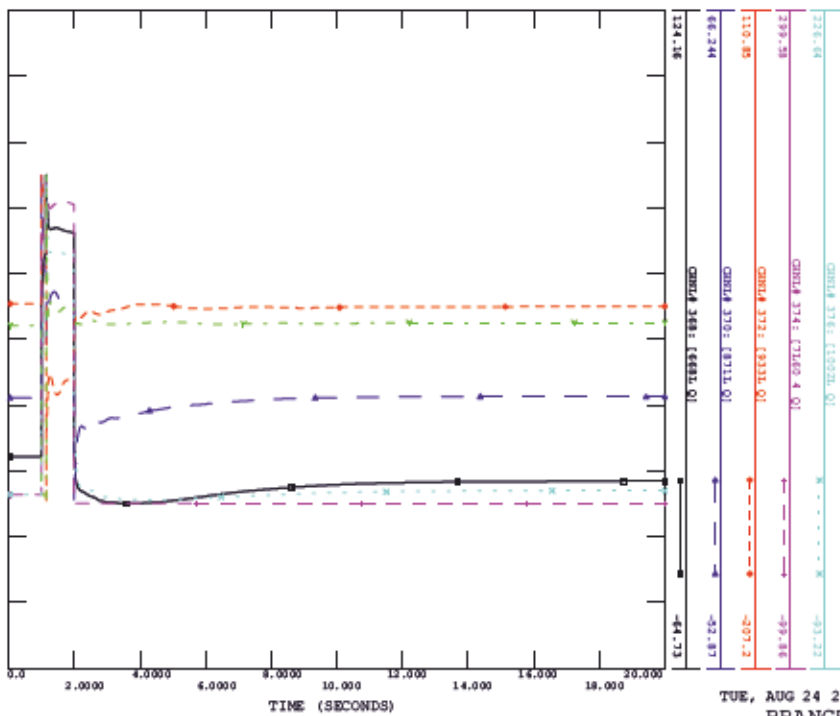
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_19_830L, FAULT LOCATION CYPRESS 562S

FILE: scm4_A1_19_830L.out



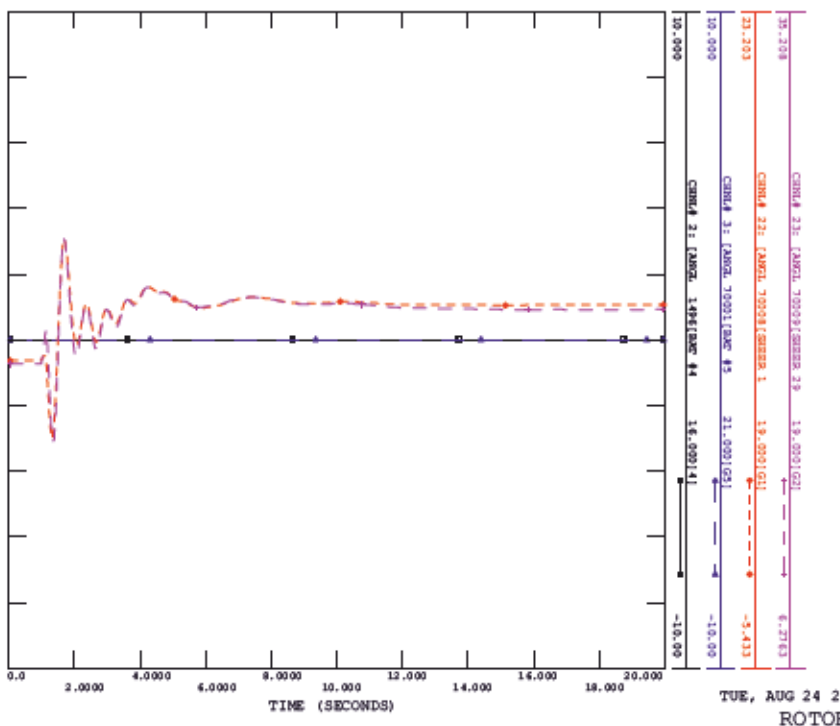
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_18_7L760, FAULT LOCATION OYEN 767S

FILE: scm4_A1_18_7L760.out

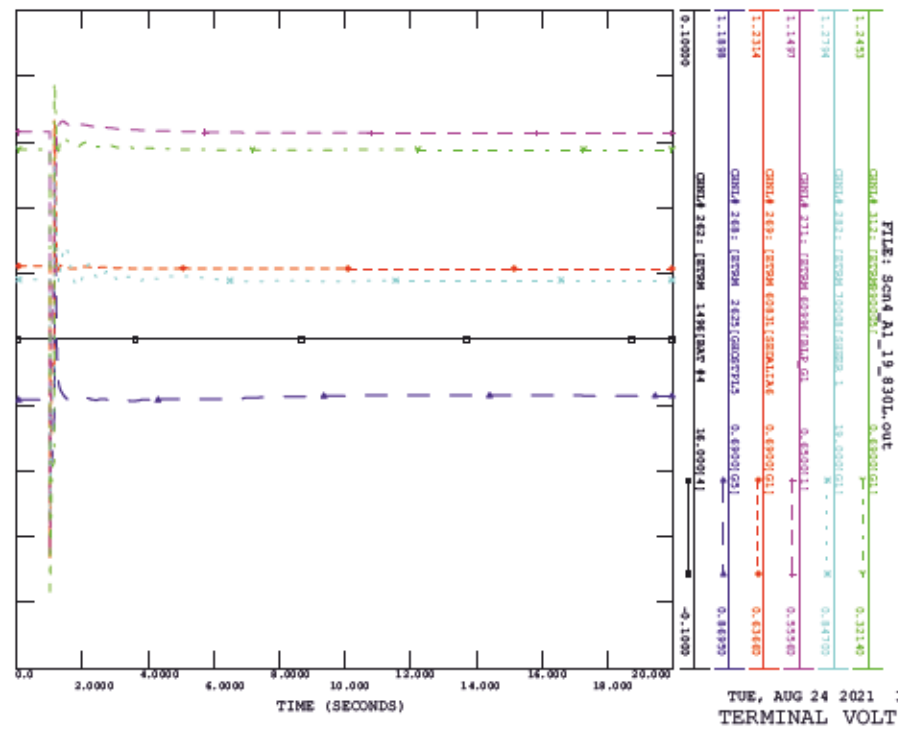


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_19_830L, FAULT LOCATION CYPRESS 562S

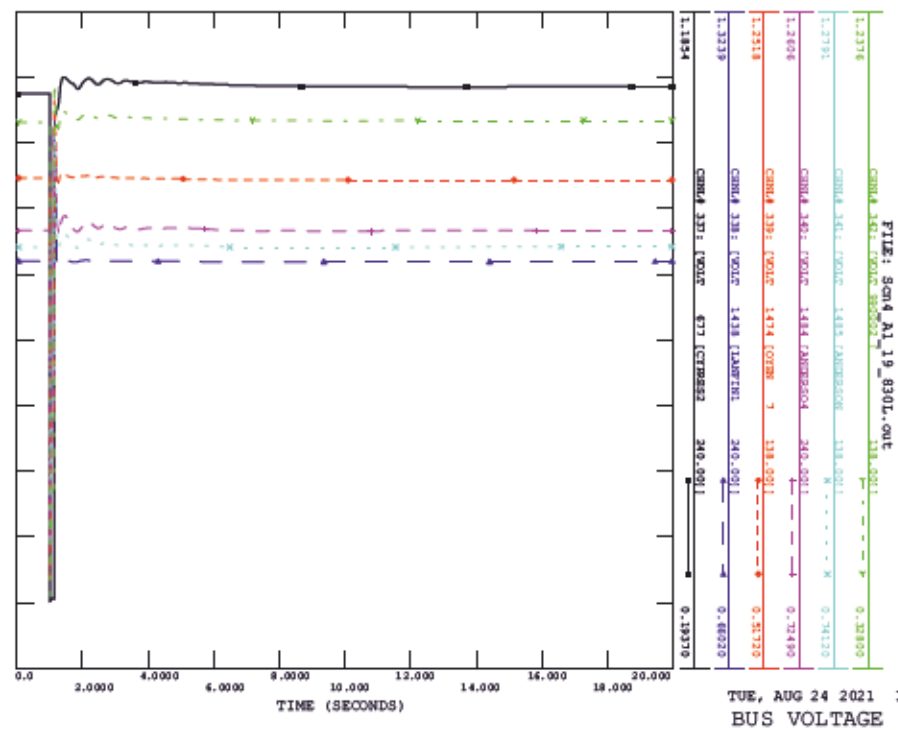
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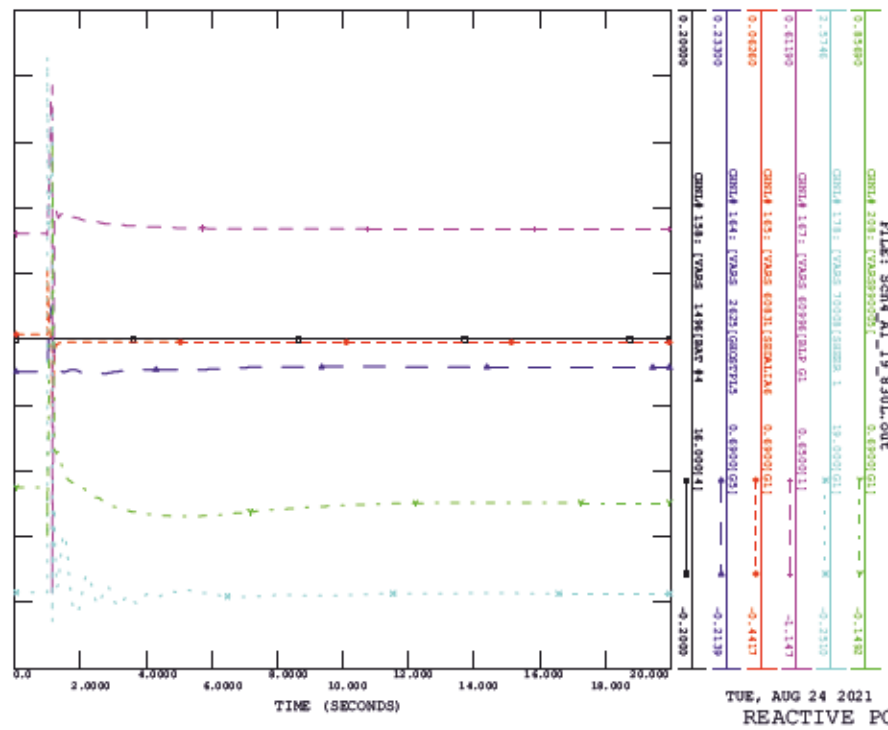
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_19_830L, FAULT LOCATION CYPRESS 5629



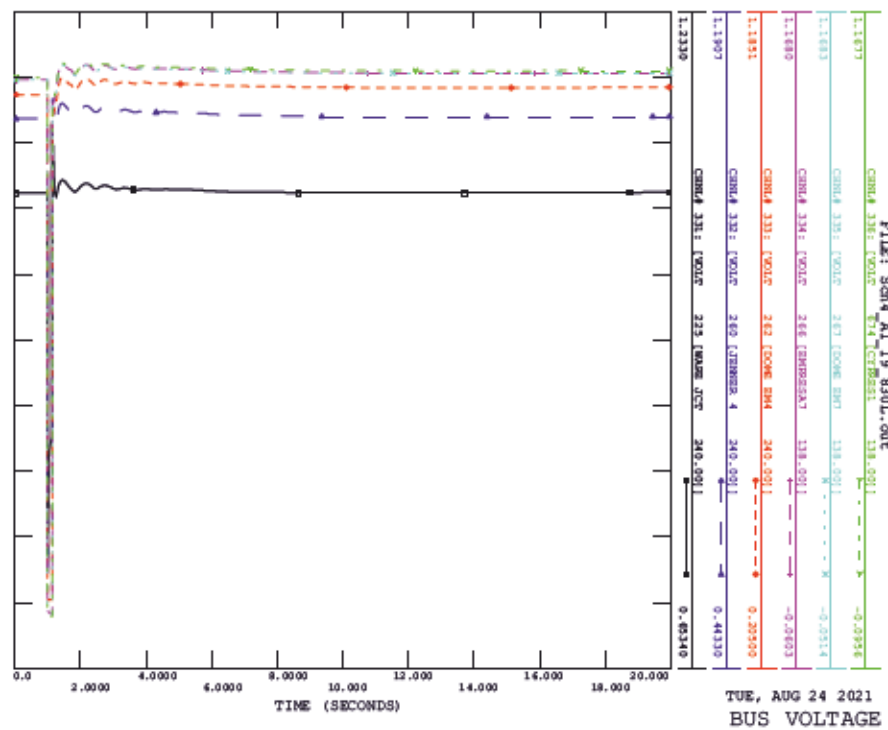
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_19_830L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_19_830L, FAULT LOCATION CYPRESS 5629

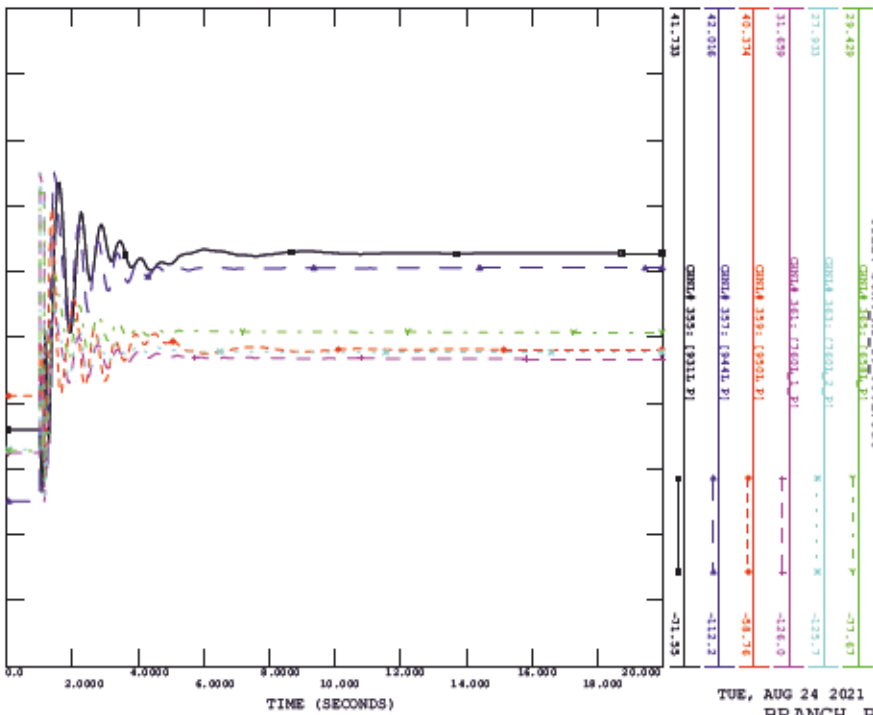


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_19_830L, FAULT LOCATION CYPRESS 5629



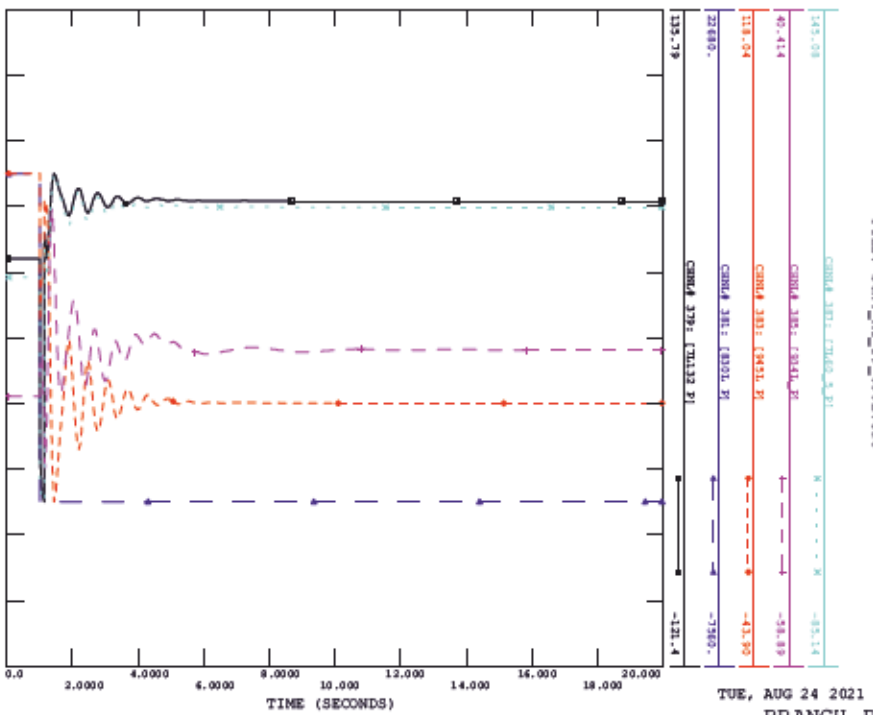
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm4_AI_19_830L.out



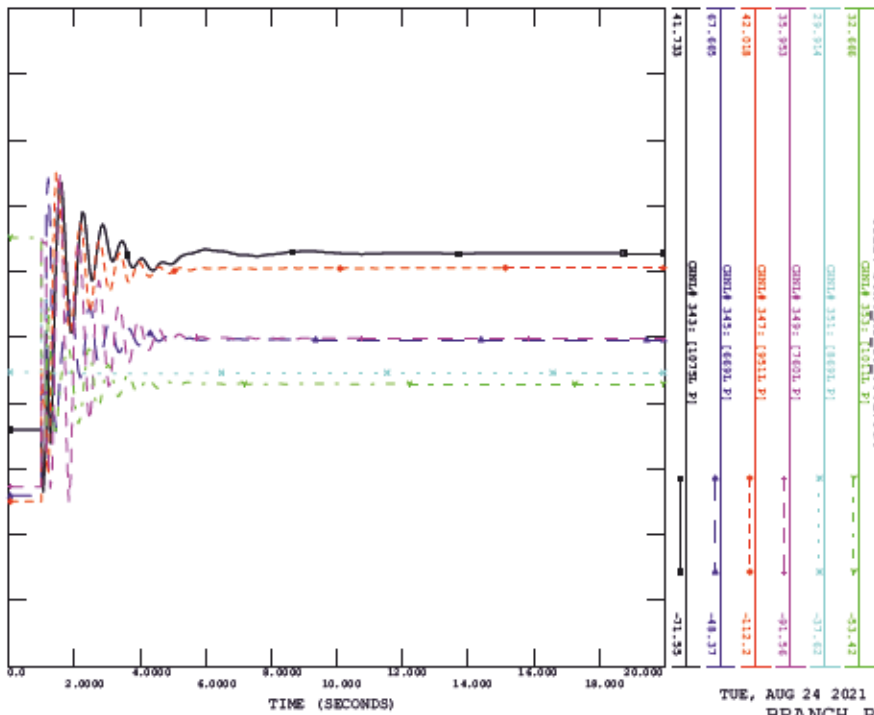
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CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

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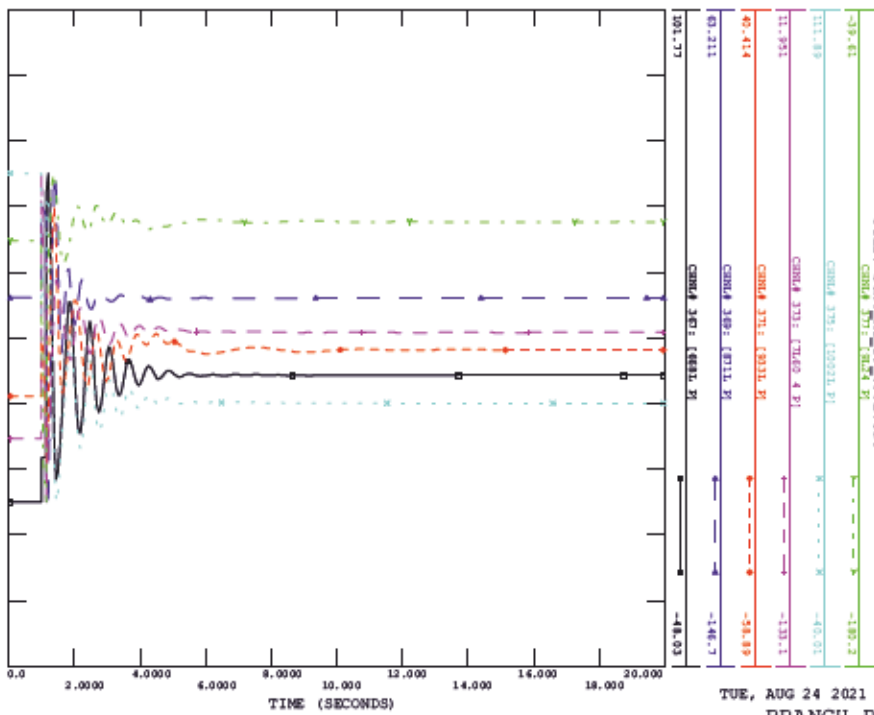
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CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

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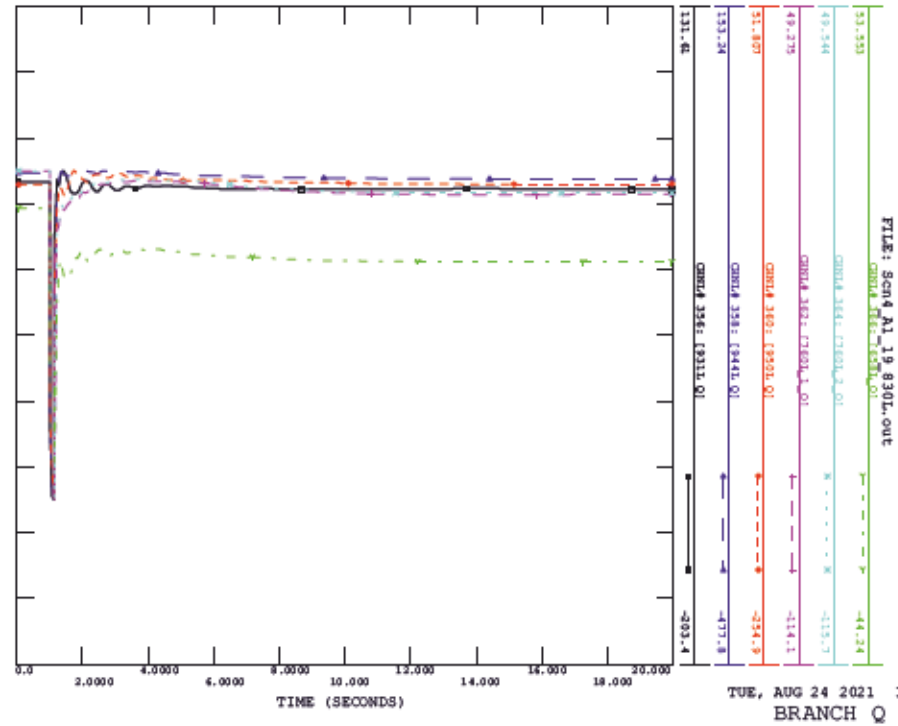
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CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

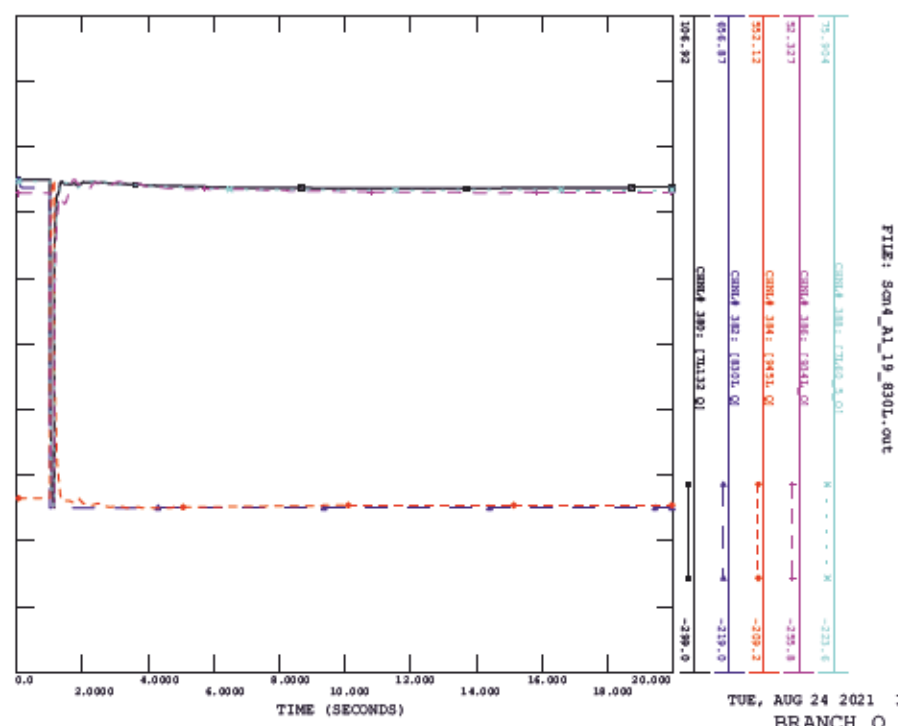
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TUE, AUG 24 2021 13:16
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

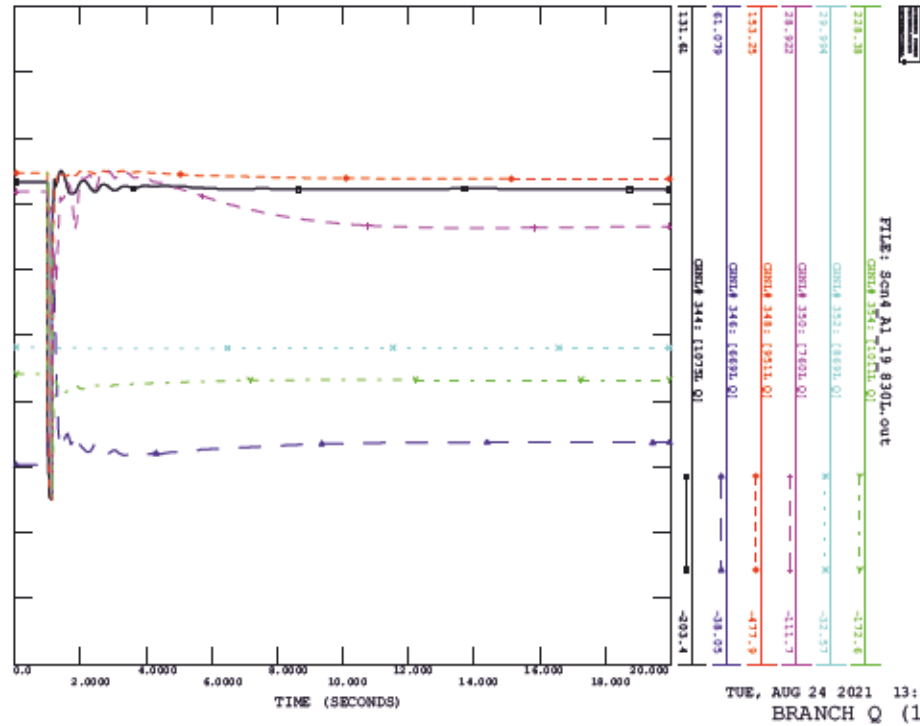
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TUE, AUG 24 2021 13:16
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

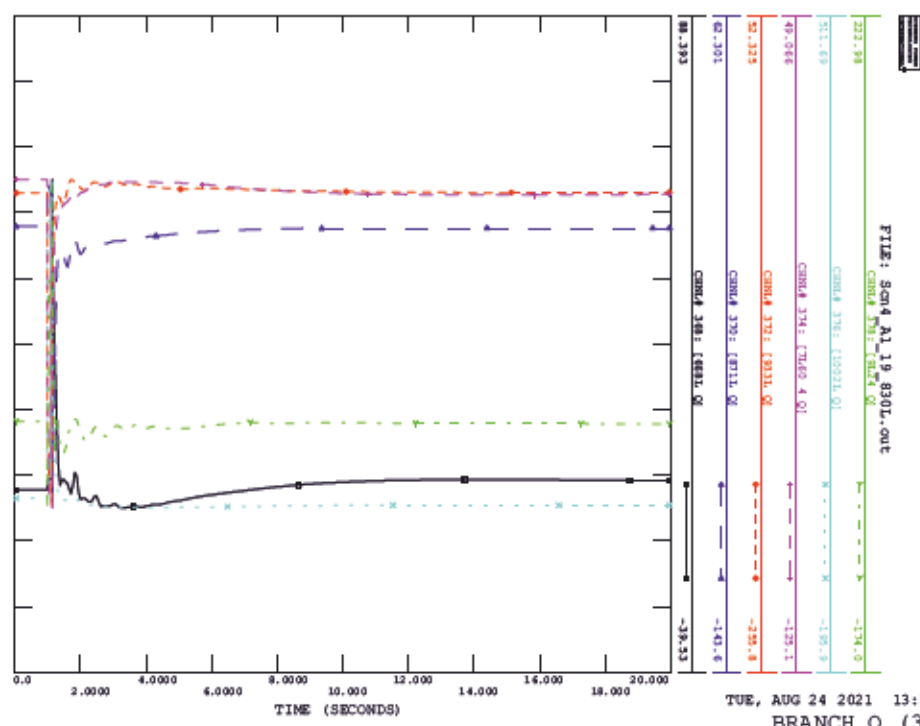
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TUE, AUG 24 2021 13:16
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_19_830L, FAULT LOCATION CYPRESS 5629

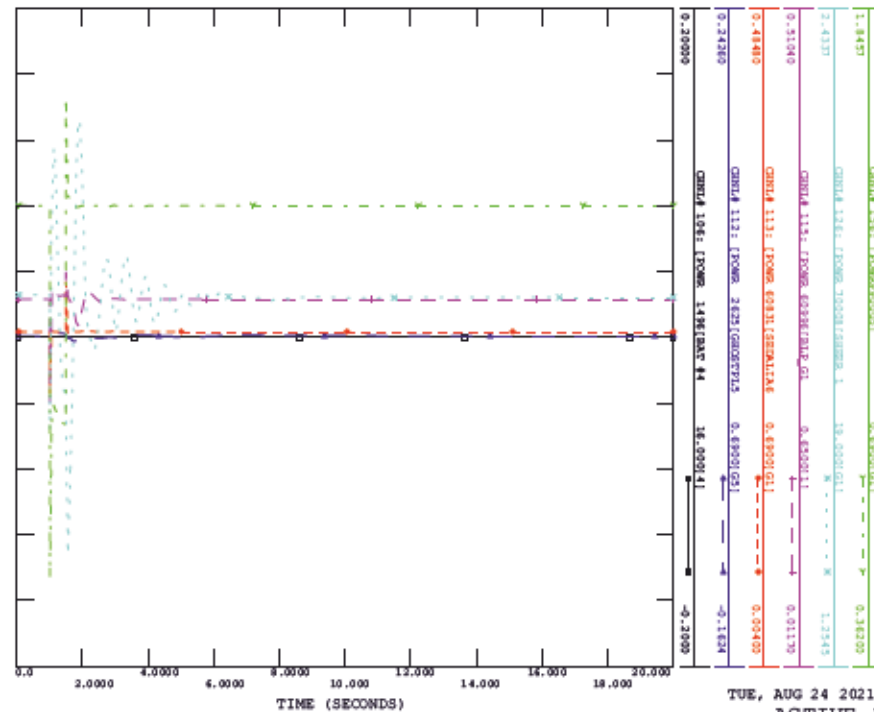
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TUE, AUG 24 2021 13:16
BRANCH Q (3)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S

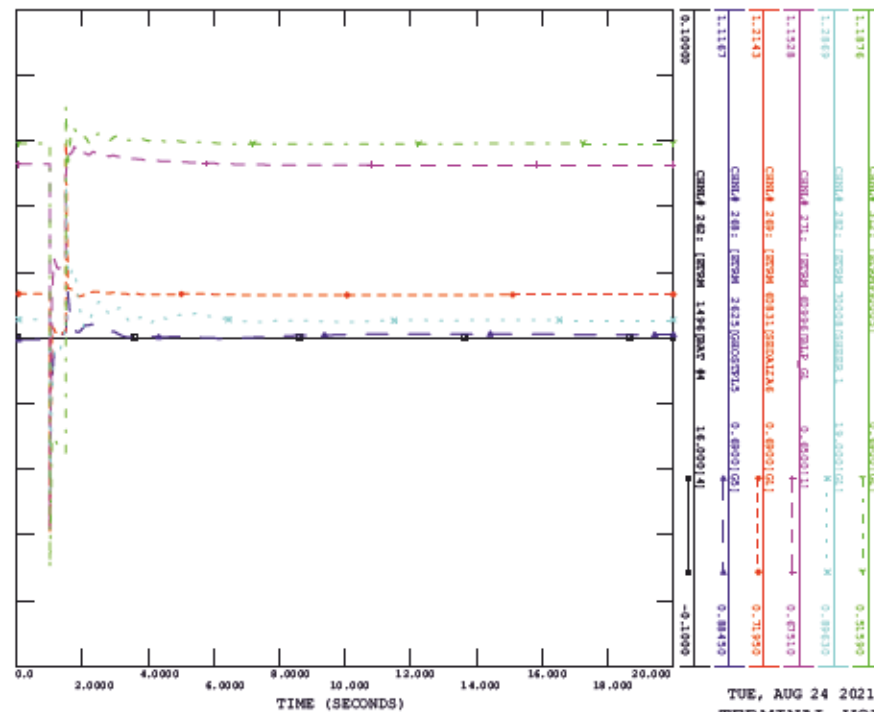
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TUE, AUG 24 2021 13:16
ACTIVE POWER

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S

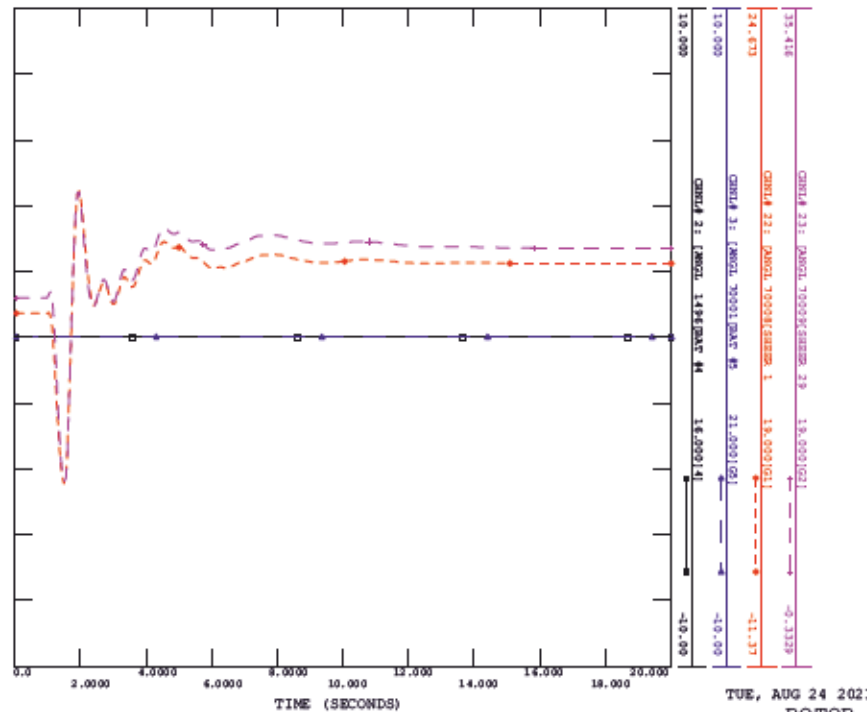
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TUE, AUG 24 2021 13:16
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S

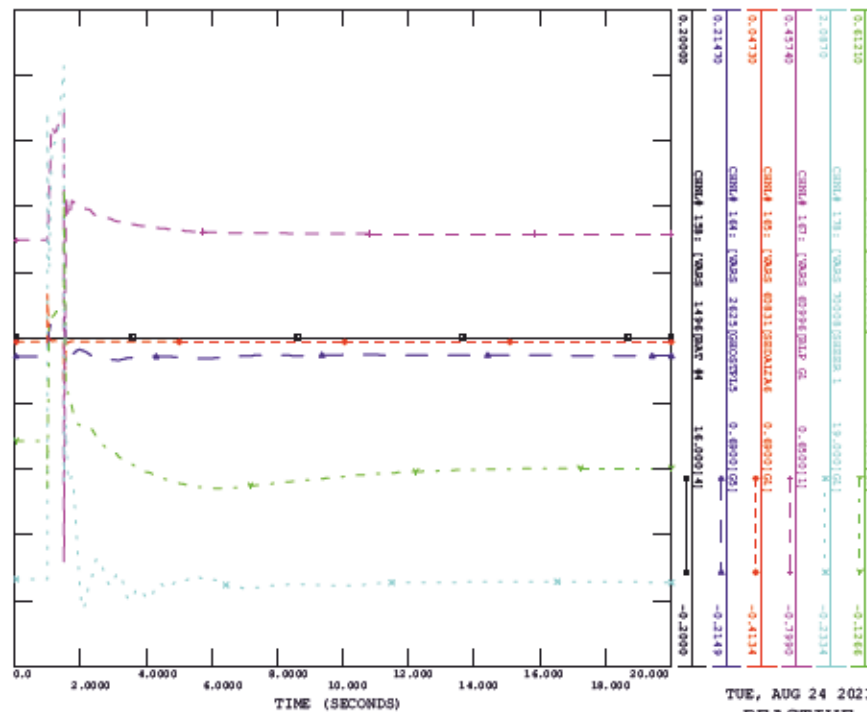
FILE: Scm4_A1_20_830L.out



TUE, AUG 24 2021 13:16
ROTOR ANGLE

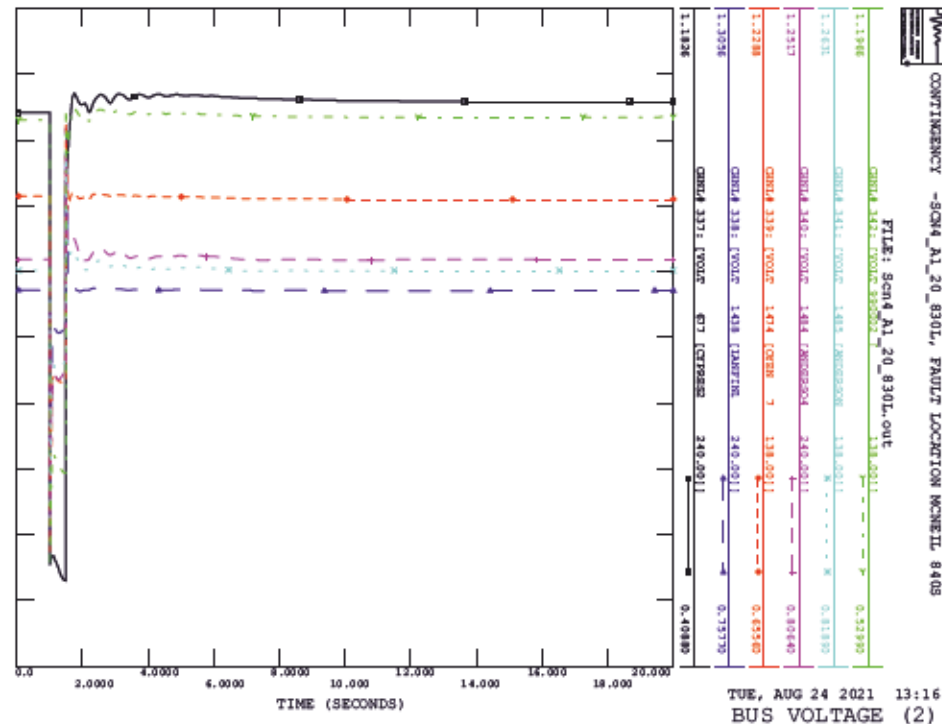
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S

FILE: Scm4_A1_20_830L.out

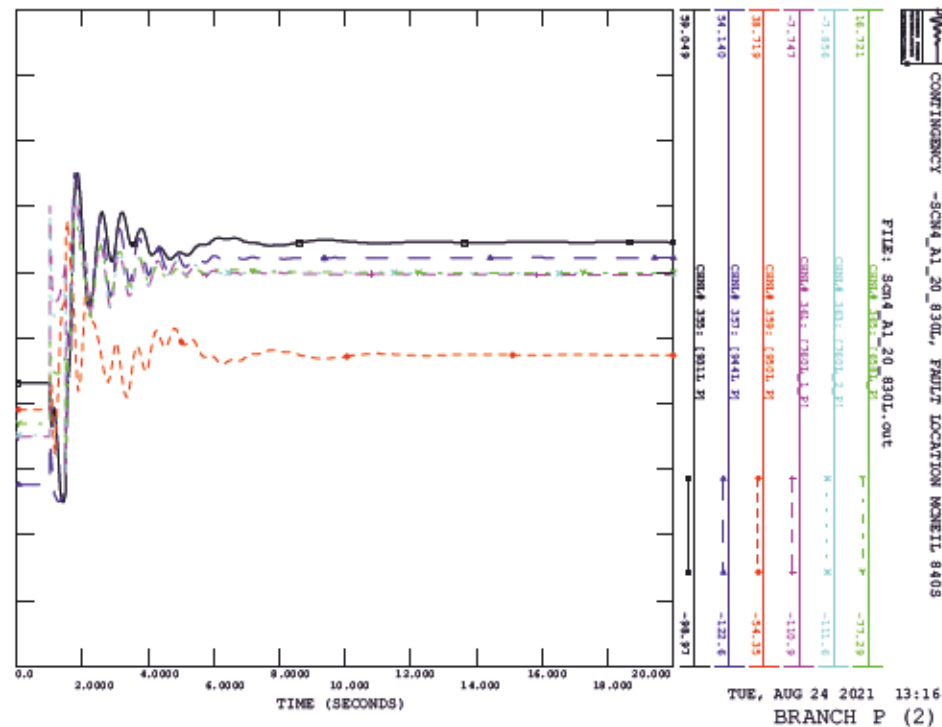


TUE, AUG 24 2021 13:16
REACTIVE POWER

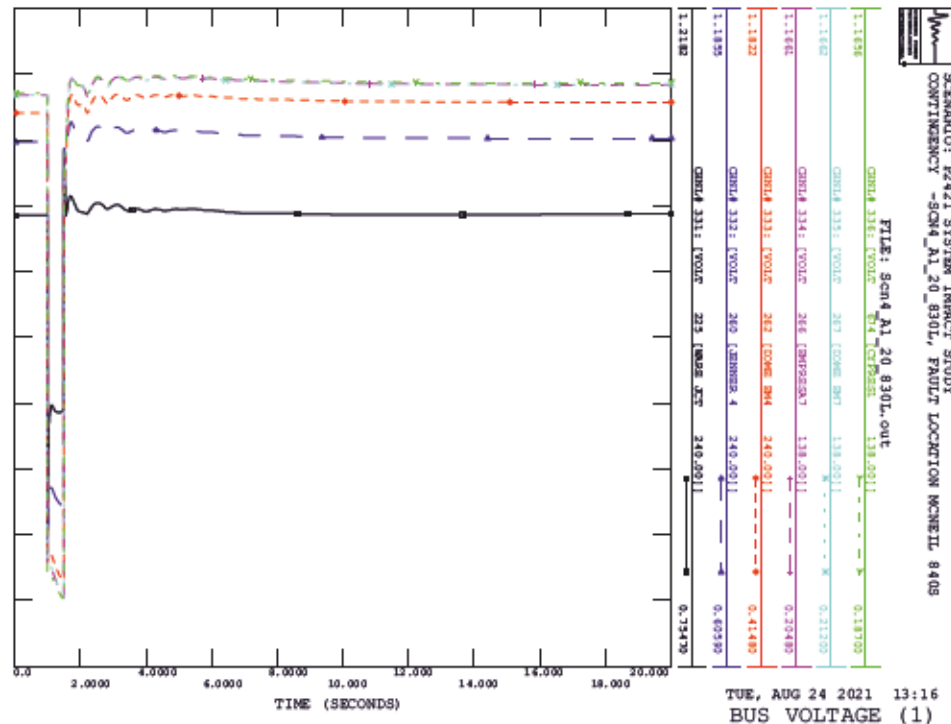
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S



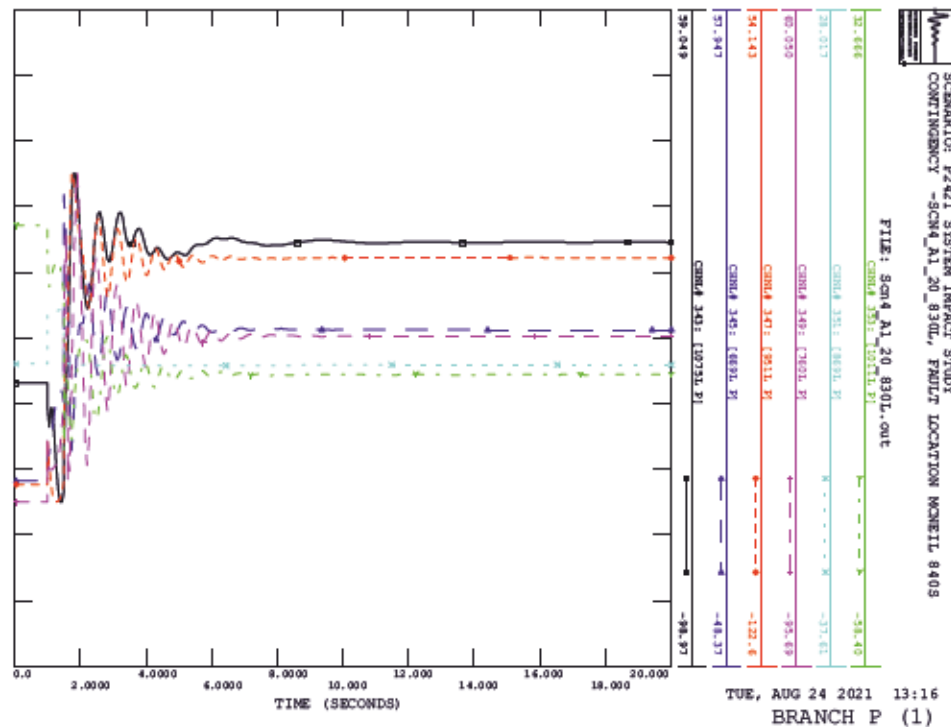
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S

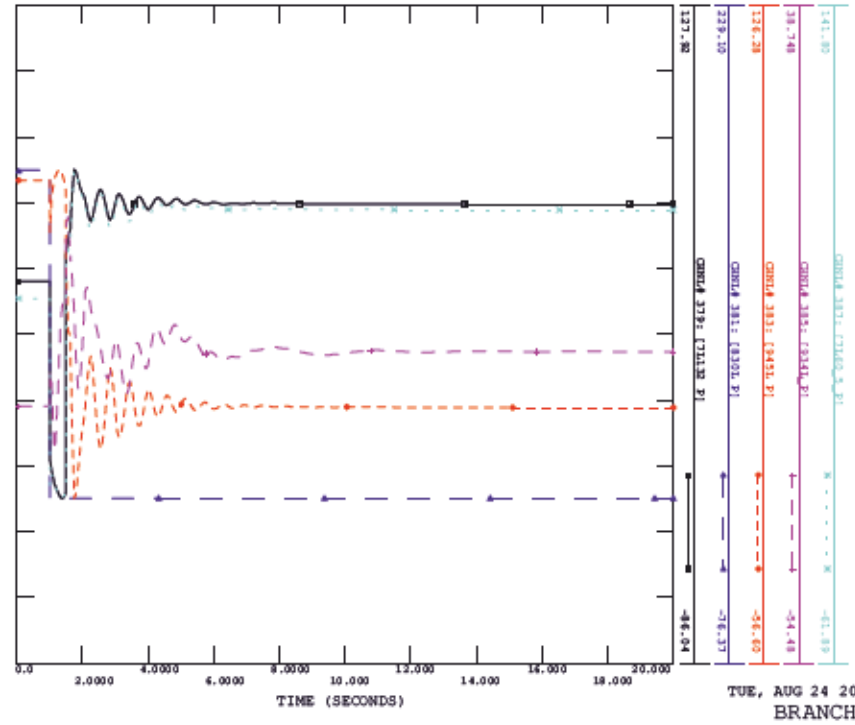


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WOMBIL 840S



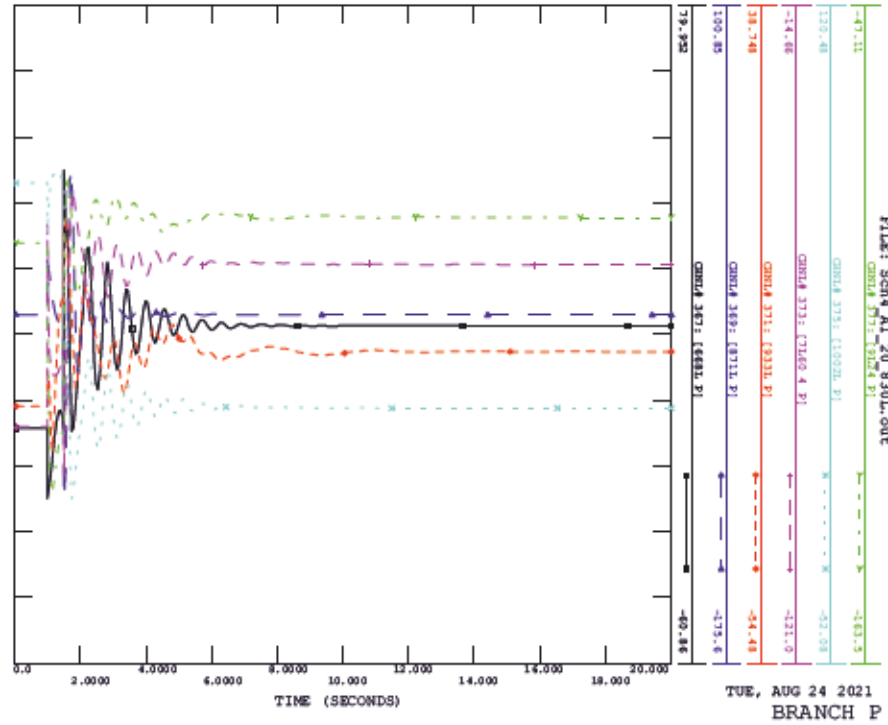
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_20_830L, FAULT LOCATION WOMBIL 840S

FILE: Scm4_AI_20_830L.out



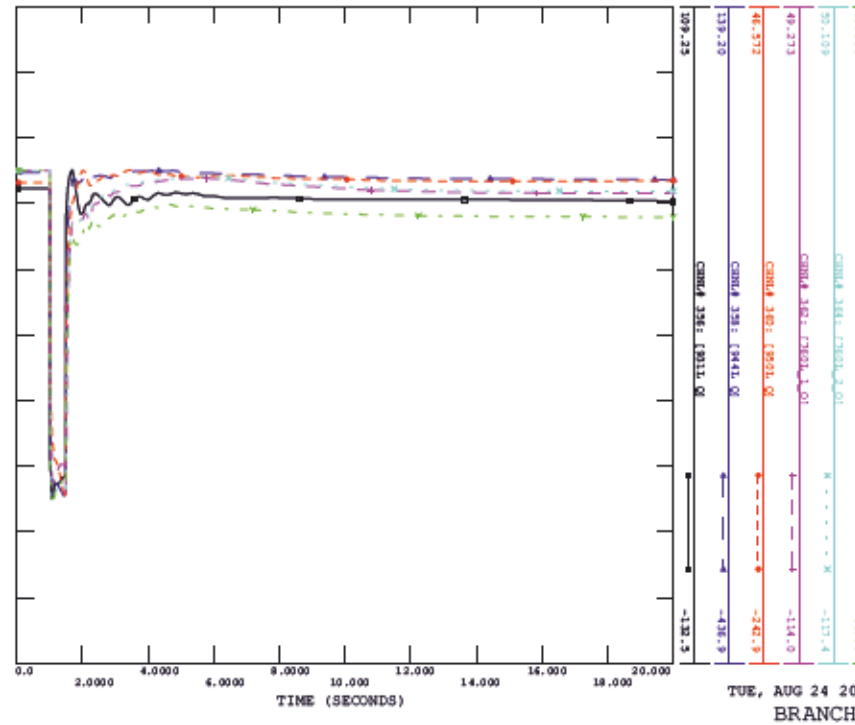
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_20_830L, FAULT LOCATION WOMBIL 840S

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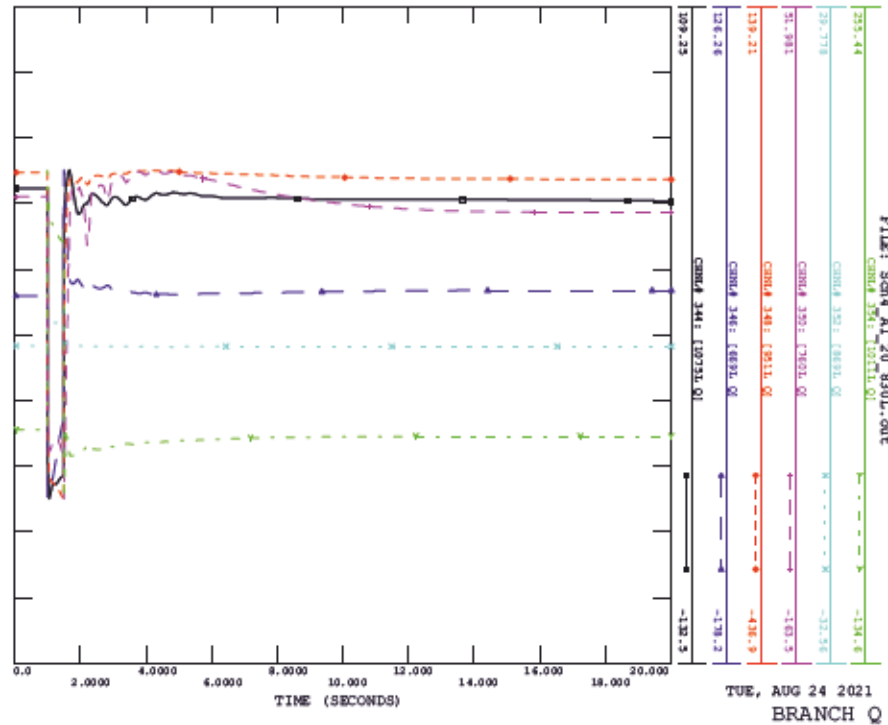
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CONTINGENCY -SCM4_AI_20_830L, FAULT LOCATION WOMBIL 840S

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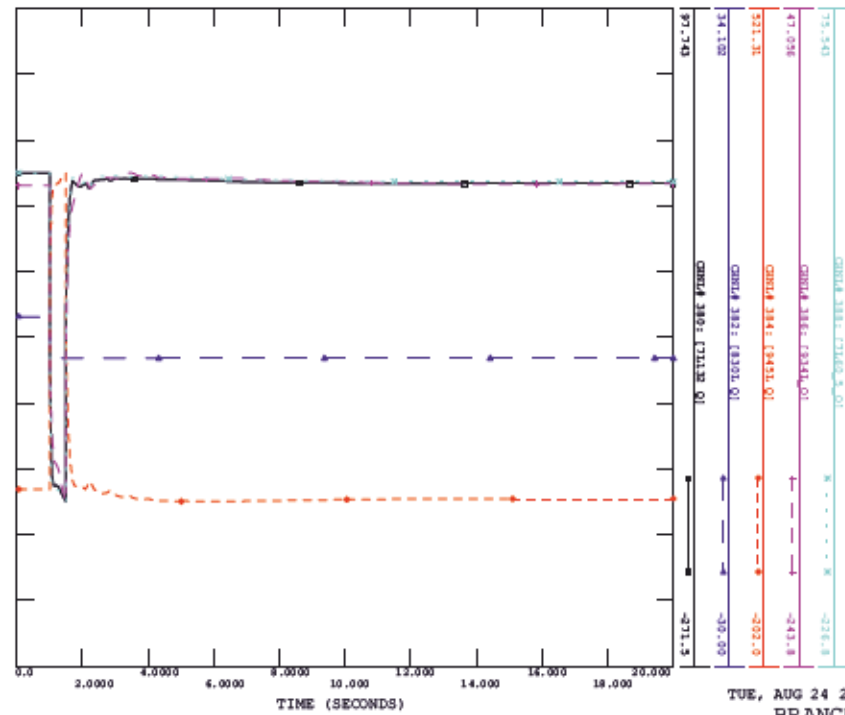
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM4_AI_20_830L, FAULT LOCATION WOMBIL 840S

FILE: Scm4_AI_20_830L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WCNBIL 840S

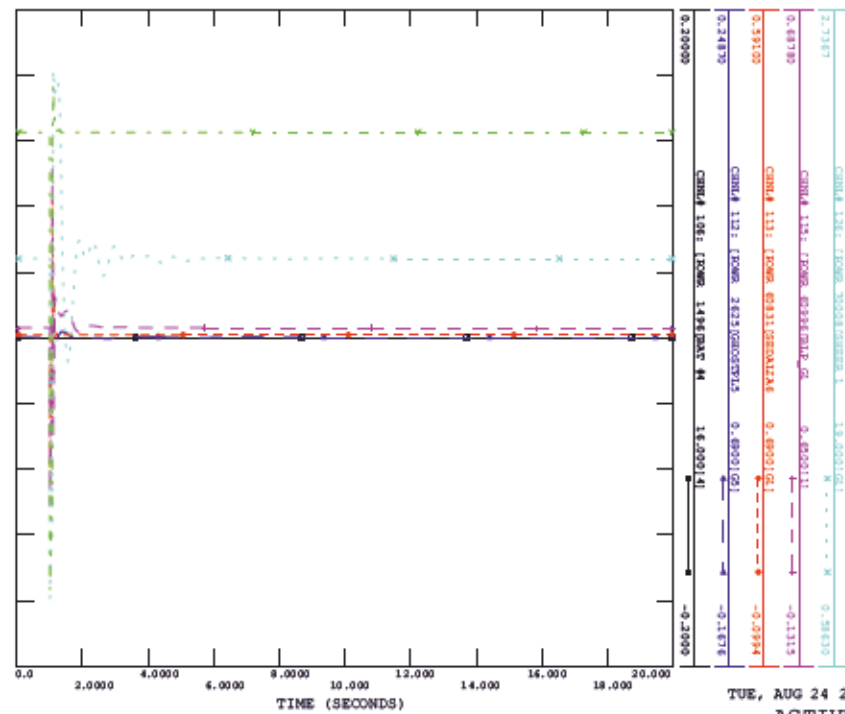
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TUE, AUG 24 2021 13:16
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_21_933L_934L, FAULT LOCATION ANDERSON

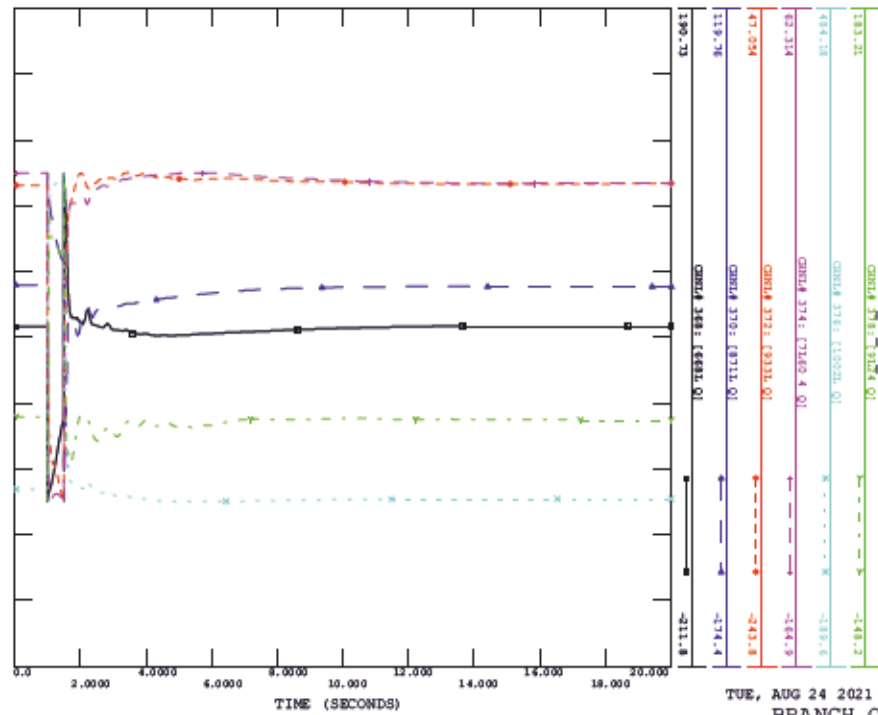
FILE: Scm4_A1_21_933L_934L.out



TUE, AUG 24 2021 13:16
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_20_830L, FAULT LOCATION WCNBIL 840S

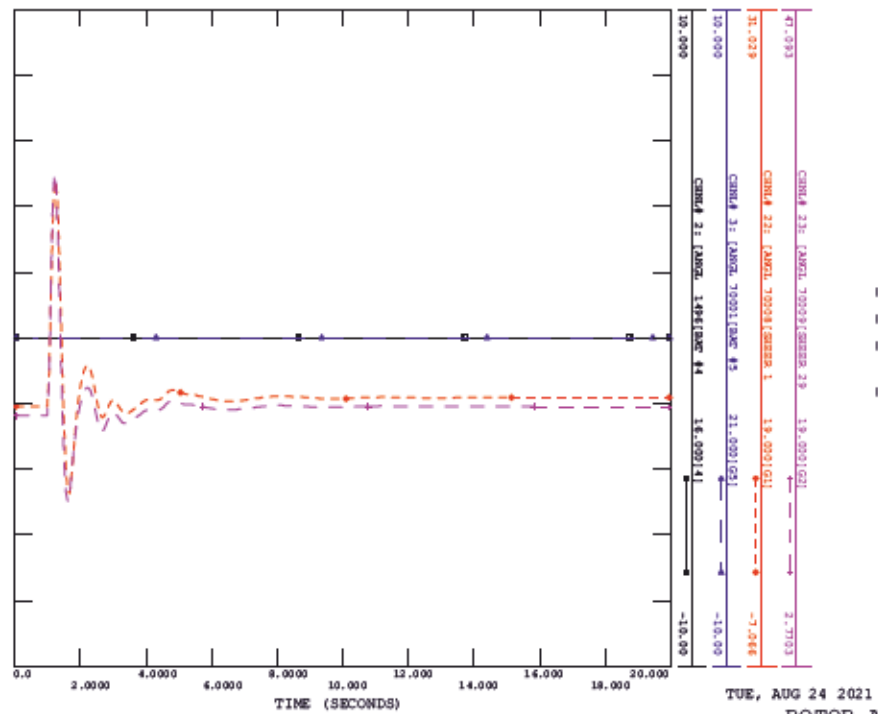
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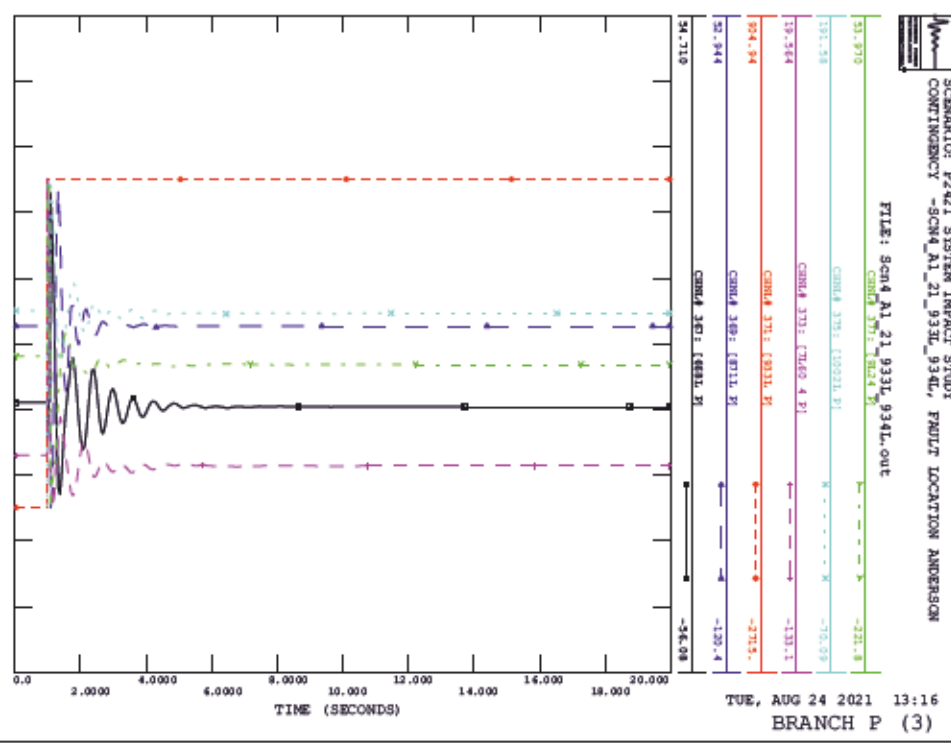
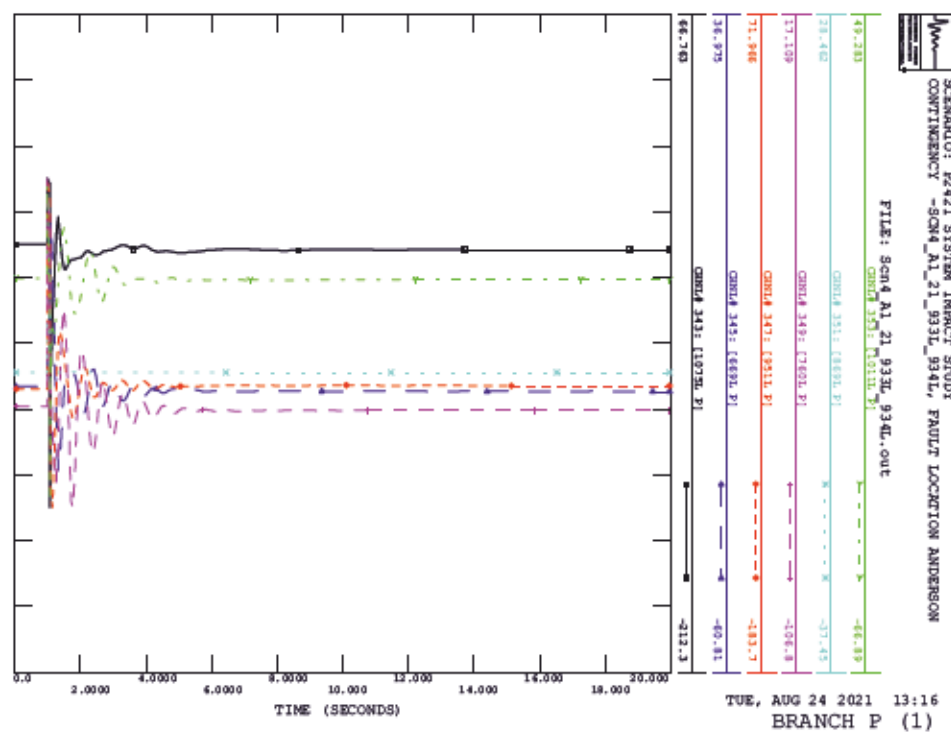
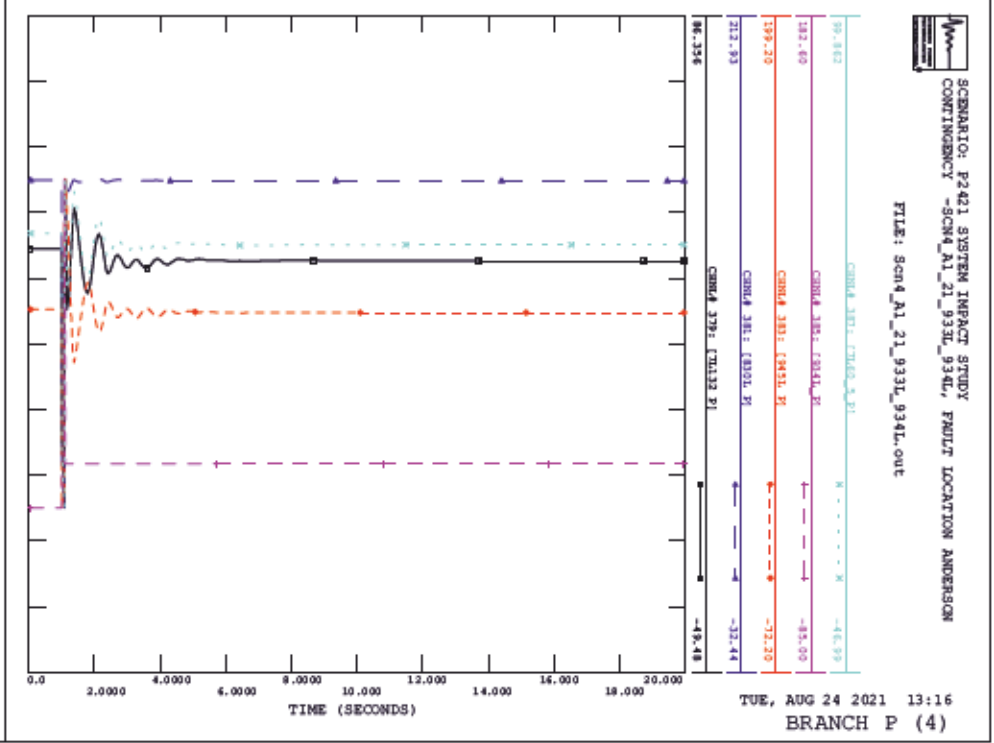
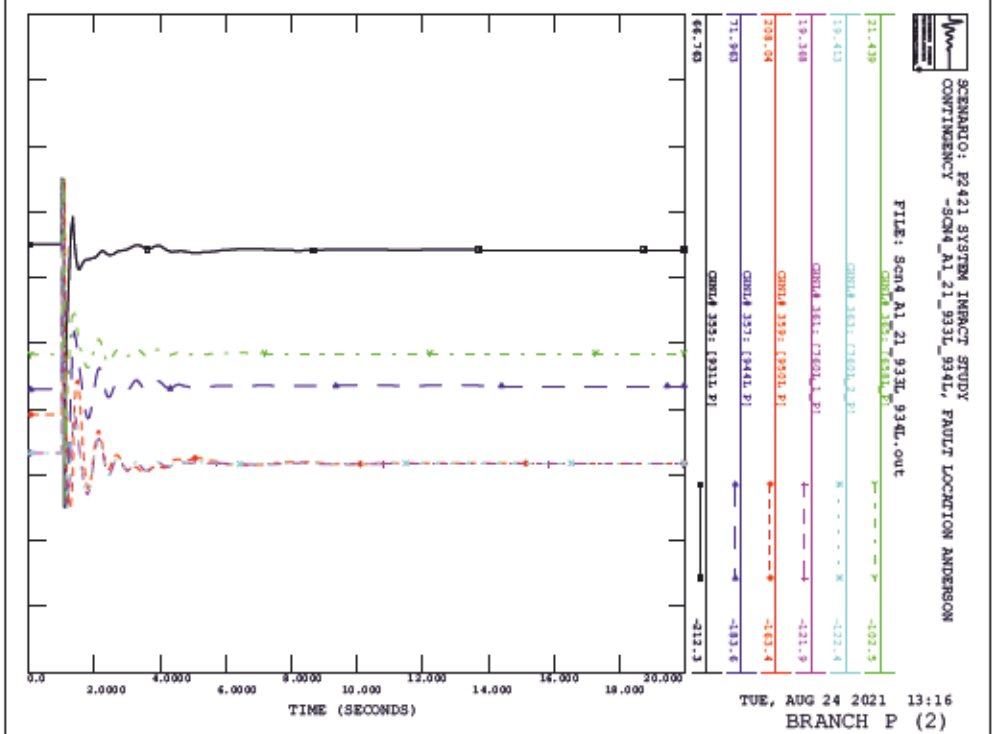
TUE, AUG 24 2021 13:16
BRANCH Q (3)

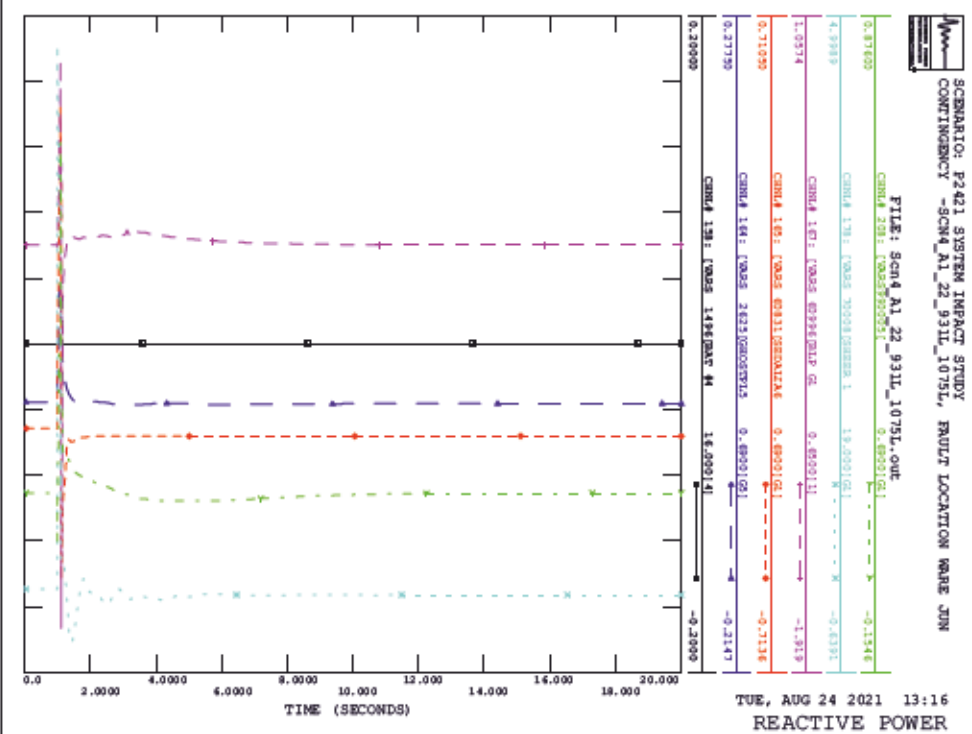
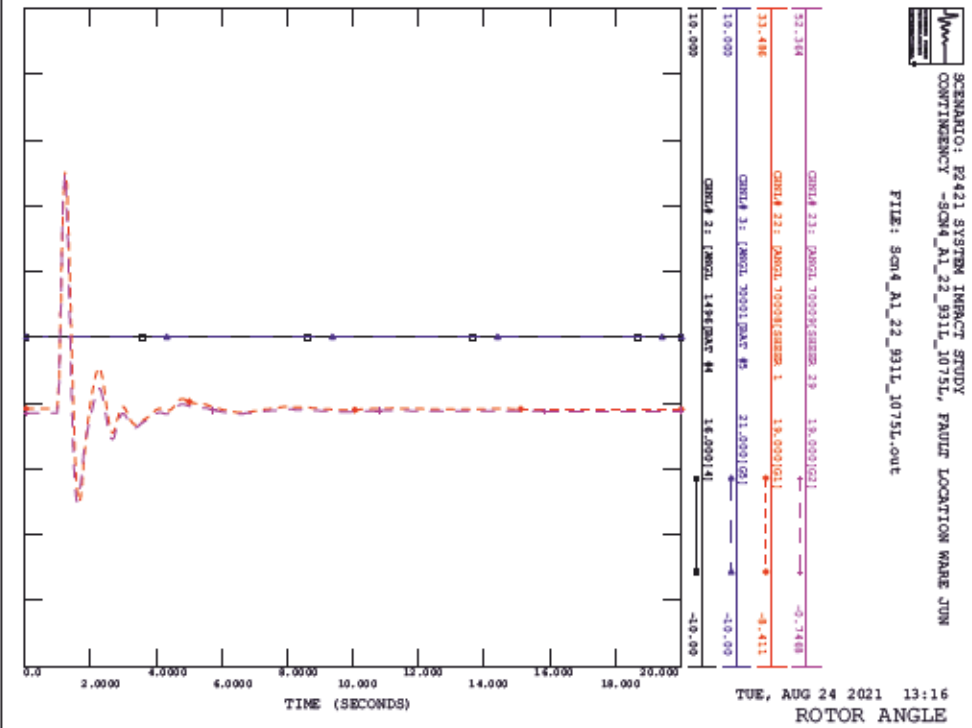
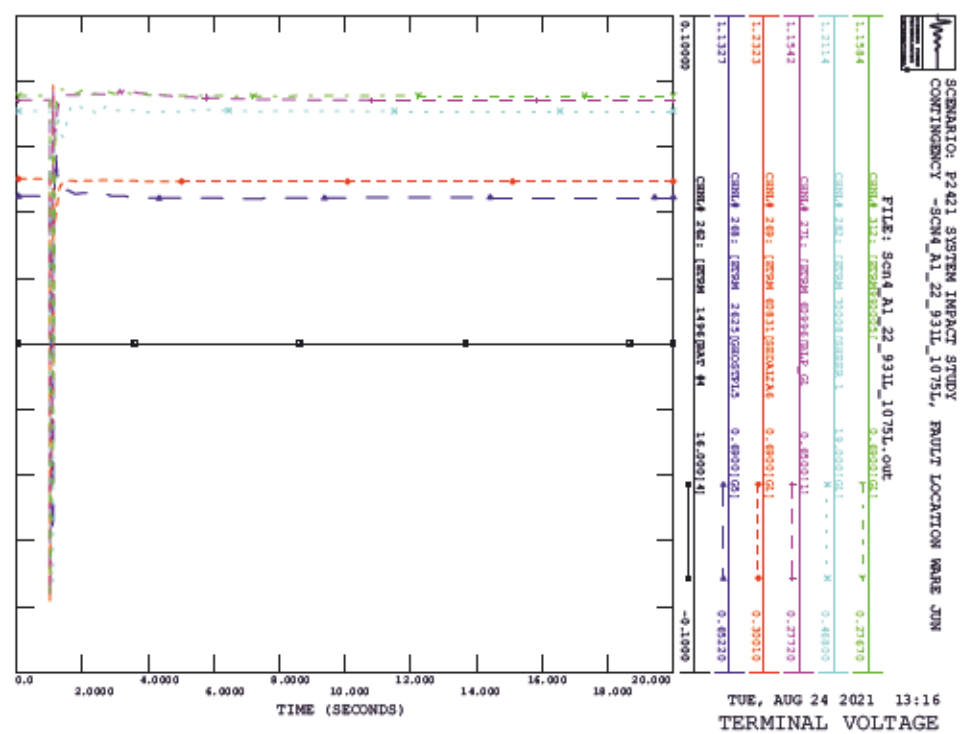
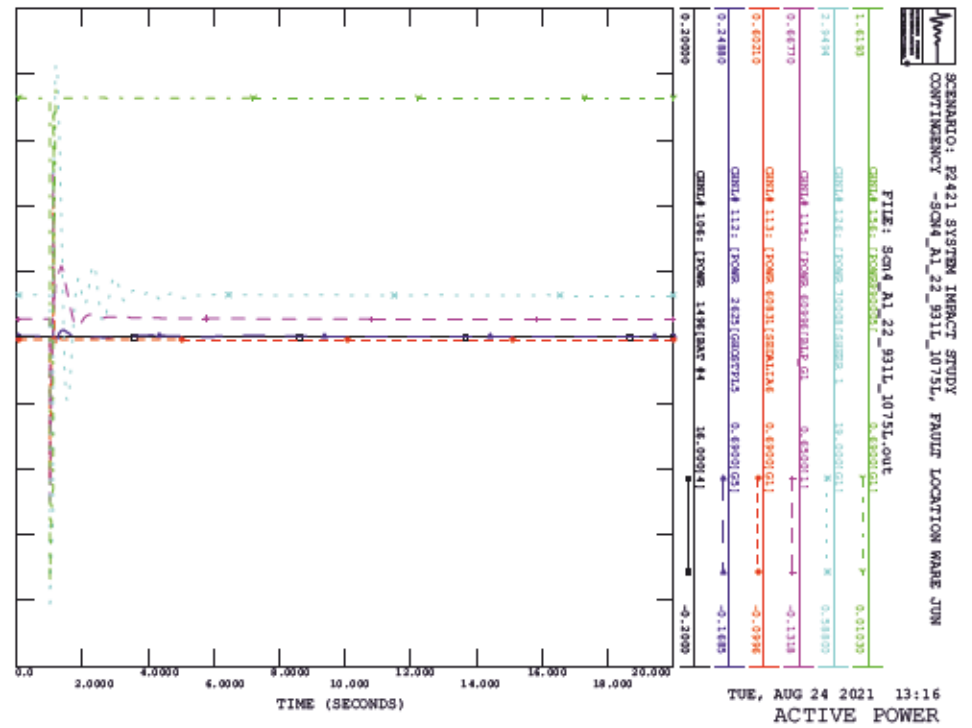
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_21_933L_934L, FAULT LOCATION ANDERSON

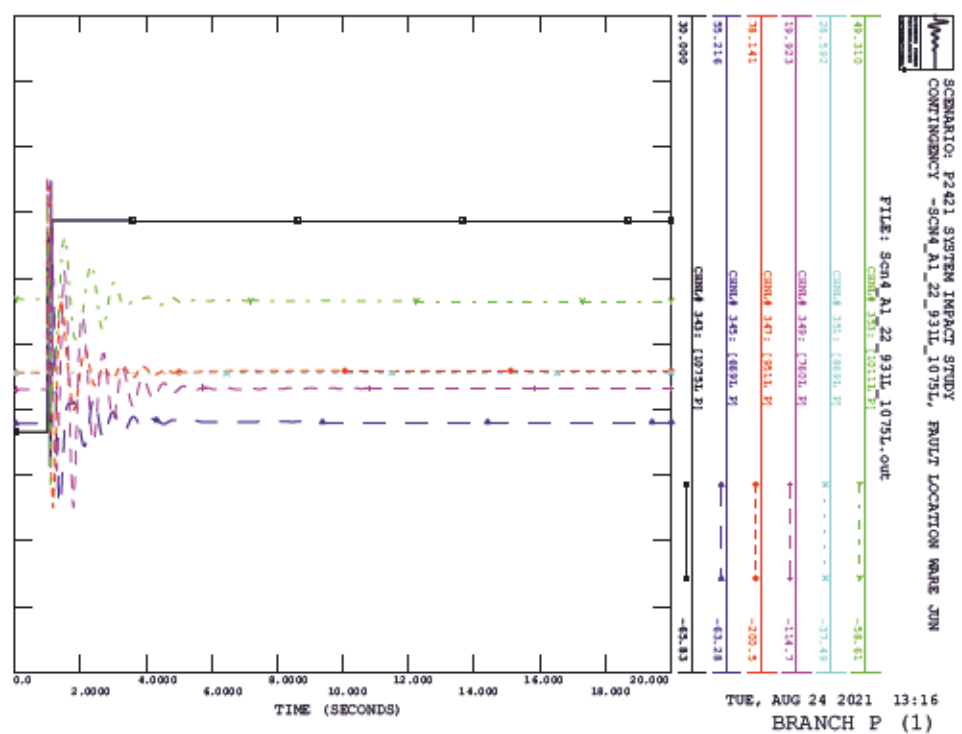
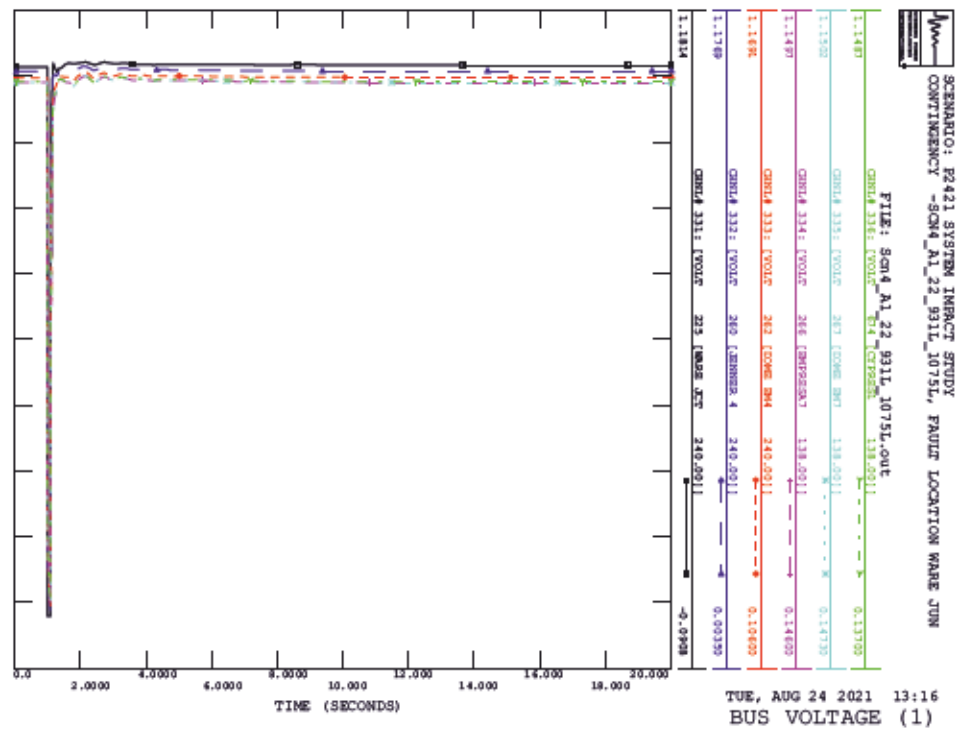
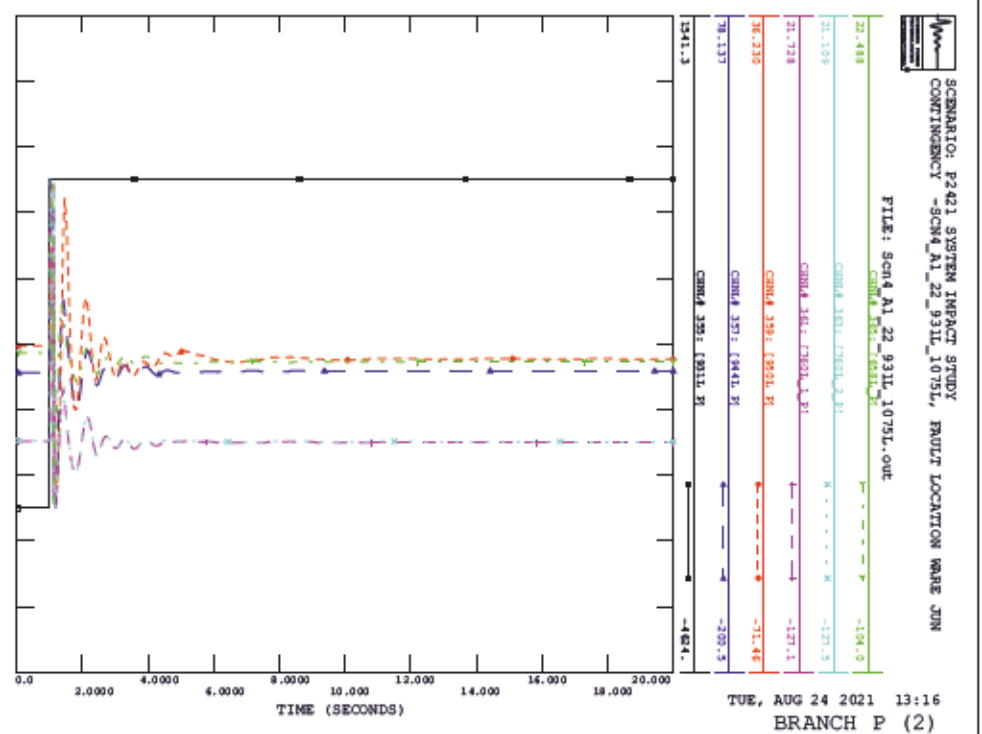
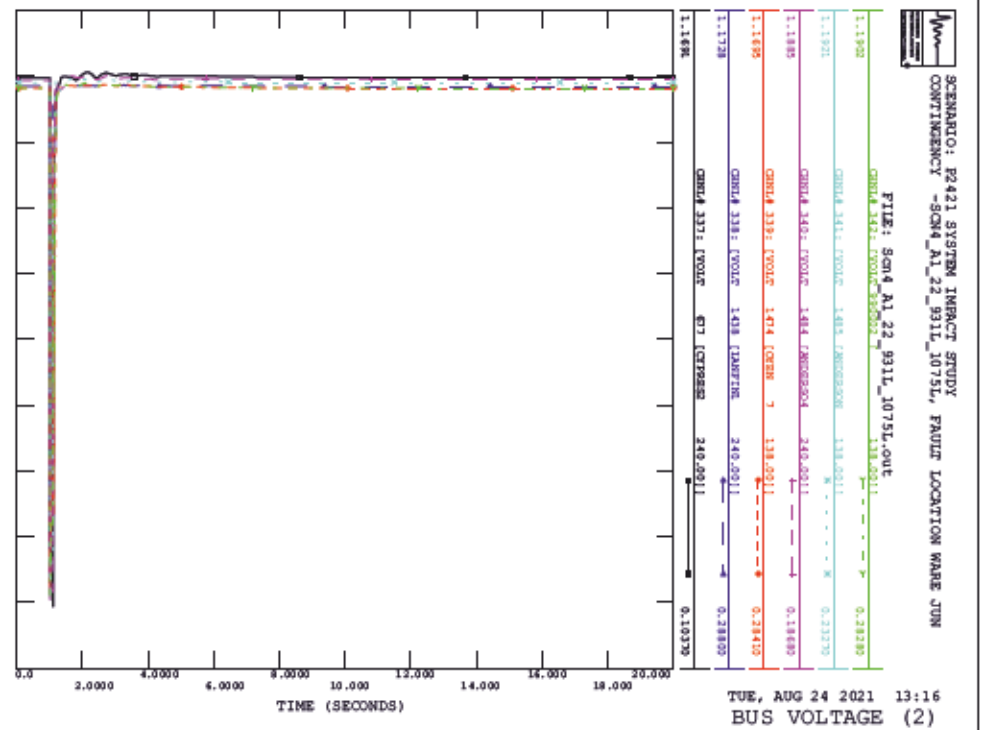
FILE: Scm4_A1_21_933L_934L.out



TUE, AUG 24 2021 13:16
ROTOR ANGLE

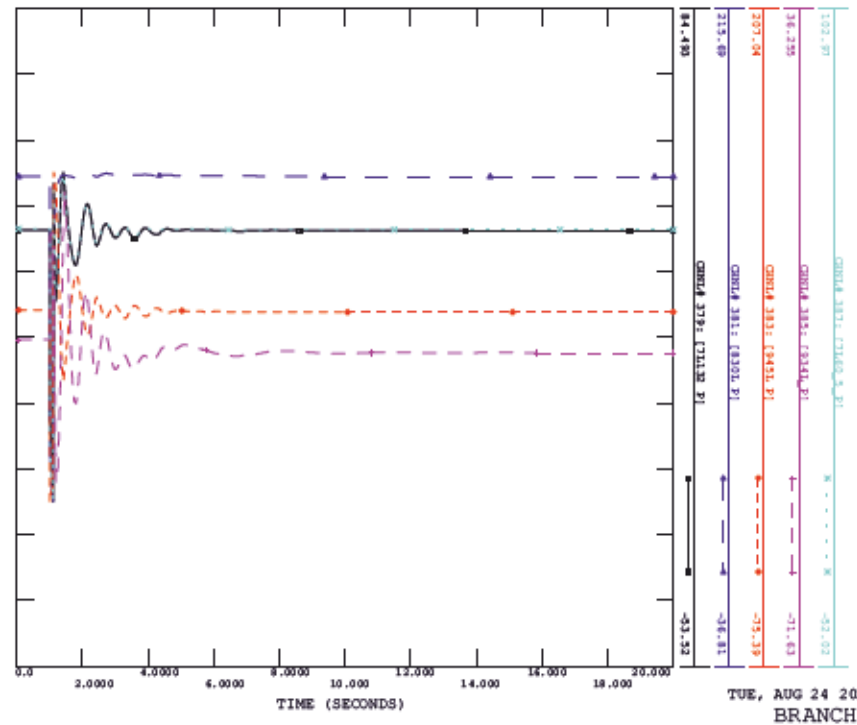






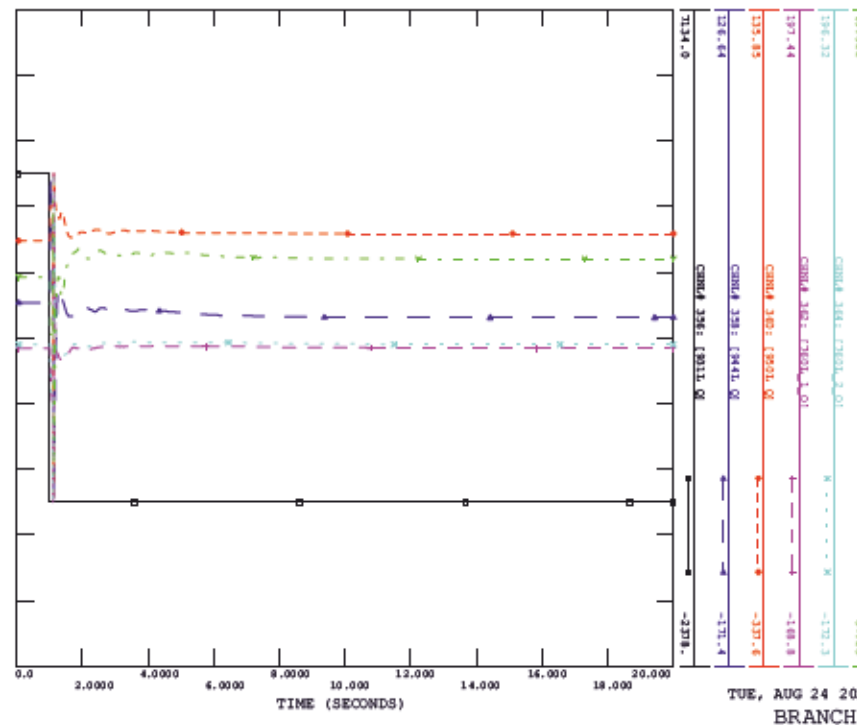
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_22_931L_1075L, FAULT LOCATION WARE JIN

FILE: SCM4_AI_22_931L_1075L.out



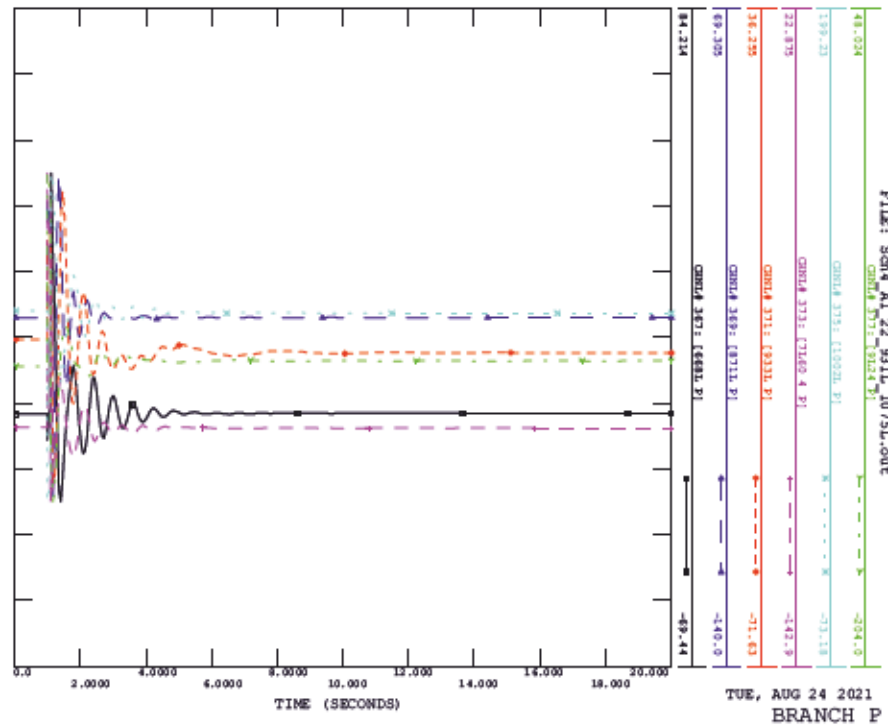
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_22_931L_1075L, FAULT LOCATION WARE JIN

FILE: SCM4_AI_22_931L_1075L.out



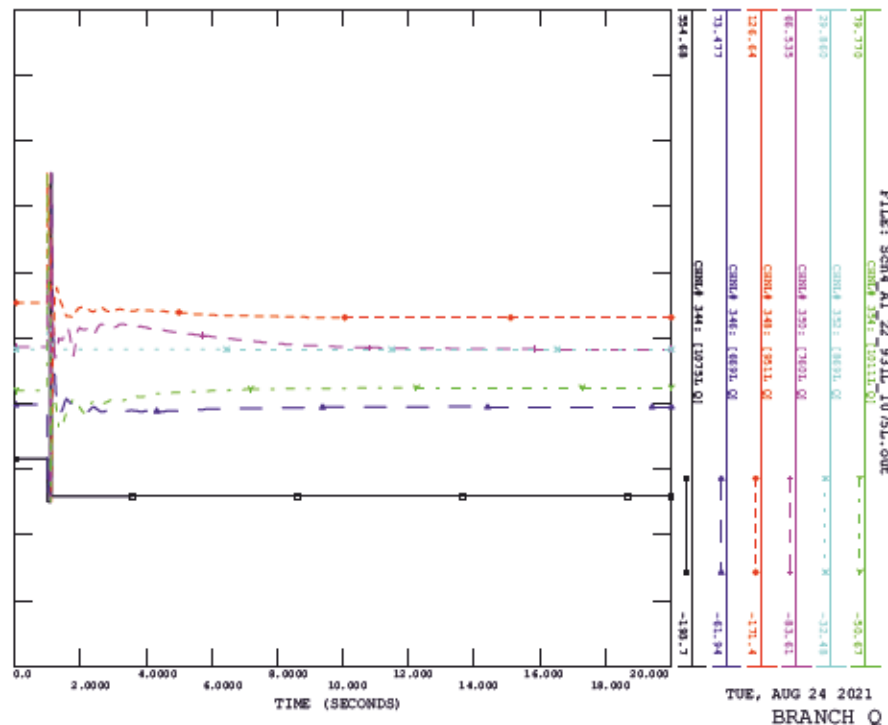
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_22_931L_1075L, FAULT LOCATION WARE JIN

FILE: SCM4_AI_22_931L_1075L.out

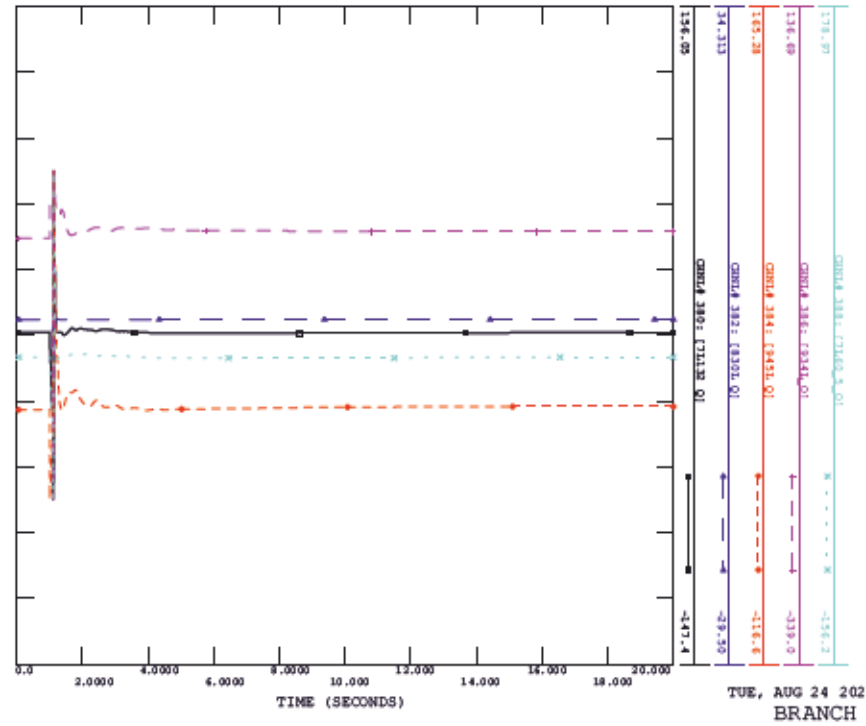


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_22_931L_1075L, FAULT LOCATION WARE JIN

FILE: SCM4_AI_22_931L_1075L.out

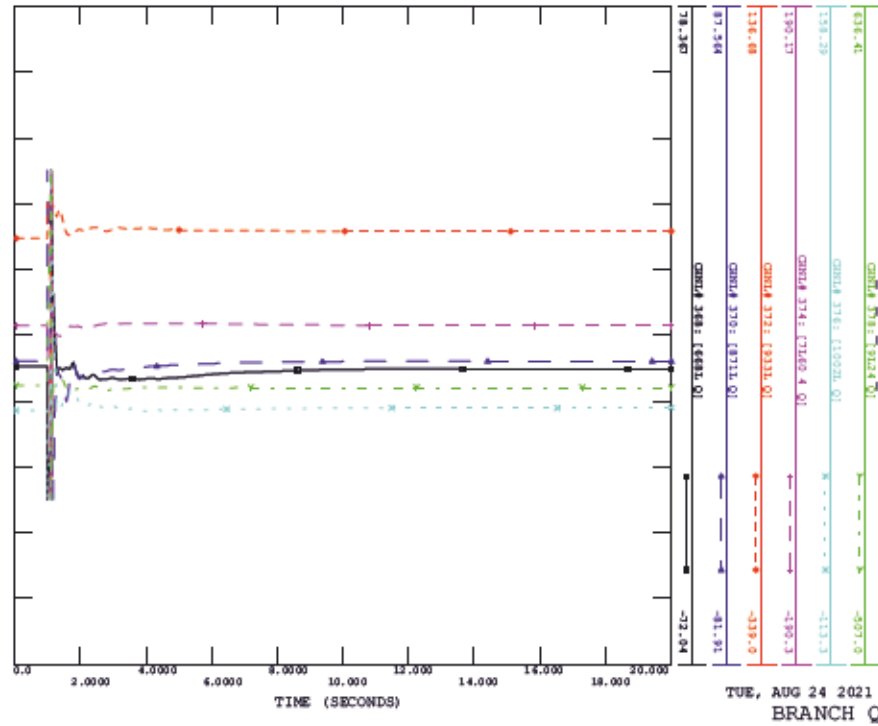


SCENARIO: P2421 SYSTEM IMPACT STUDY
 CONTINGENCY -SCM4_A1_22_931L_1075L, FAULT LOCATION WARE JUN
 FILE: SCM4_A1_22_931L_1075L.out



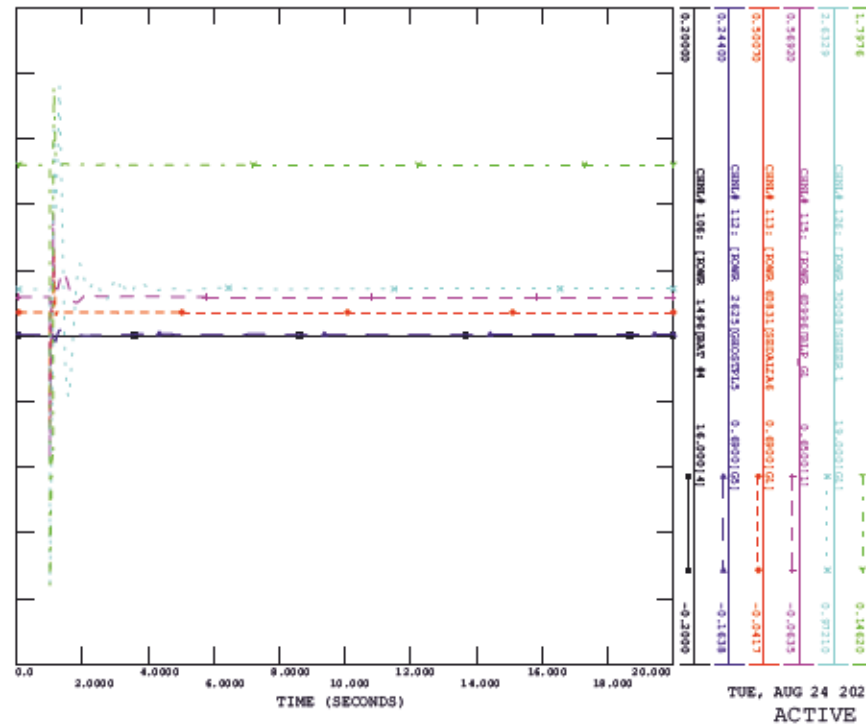
TUE, AUG 24 2021 13:16
 BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
 CONTINGENCY -SCM4_A1_22_931L_1075L, FAULT LOCATION WARE JUN
 FILE: SCM4_A1_22_931L_1075L.out



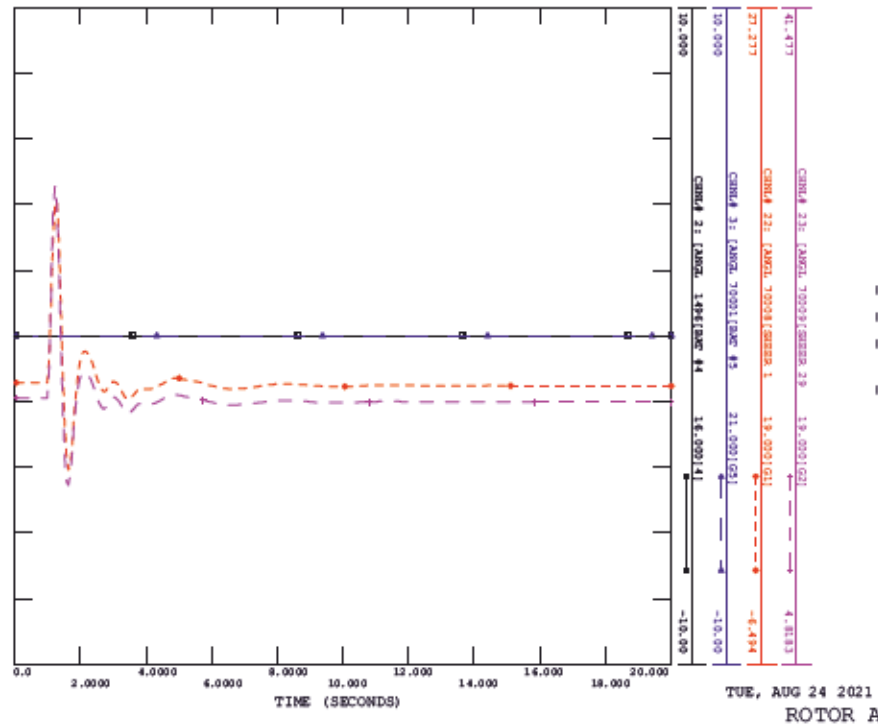
TUE, AUG 24 2021 13:16
 BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
 CONTINGENCY -SCM4_A1_23_944L_951L, FAULT LOCATION JENNER 27
 FILE: SCM4_A1_23_944L_951L.out

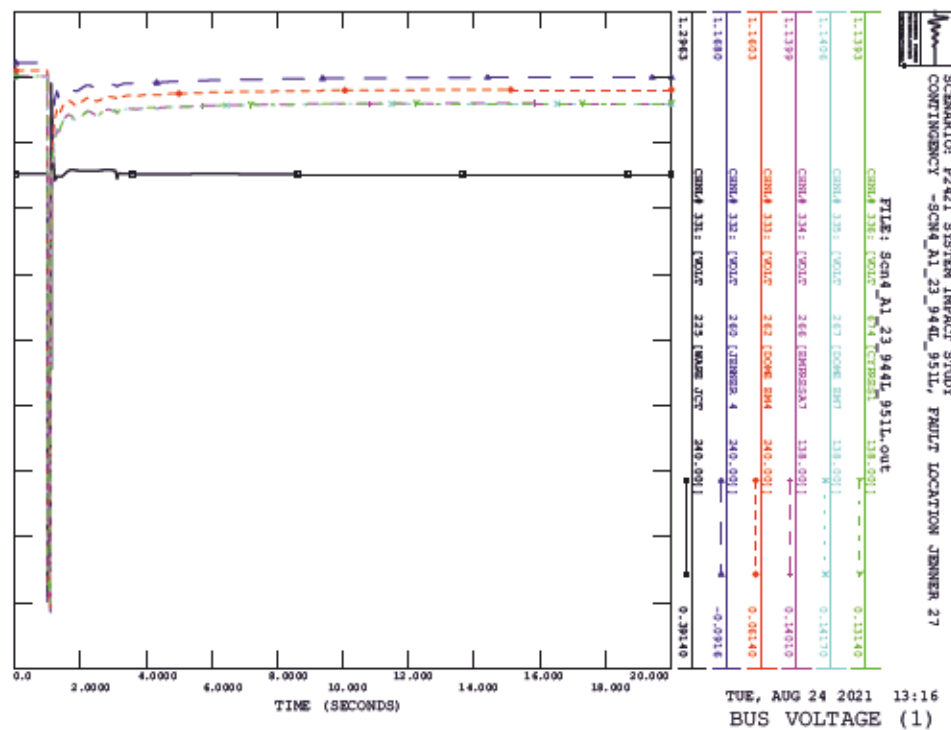
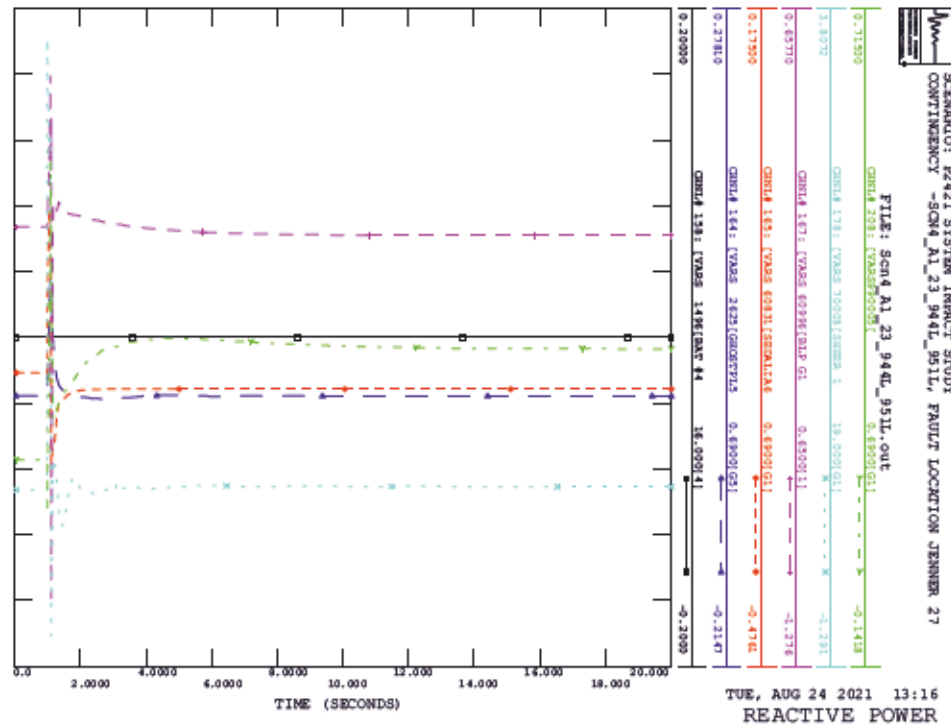
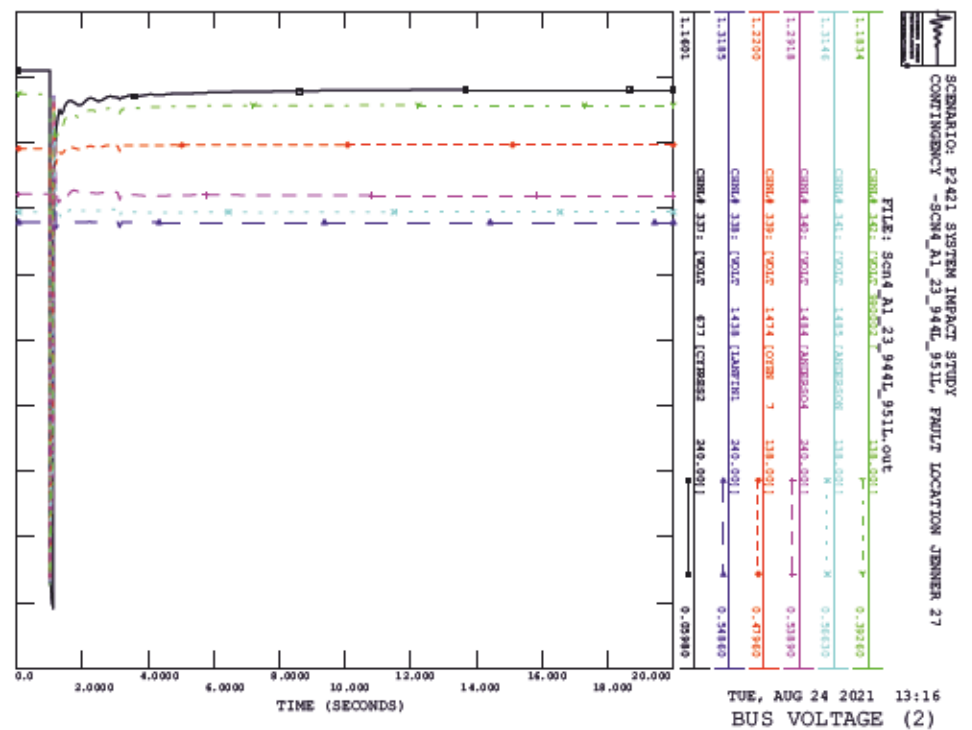
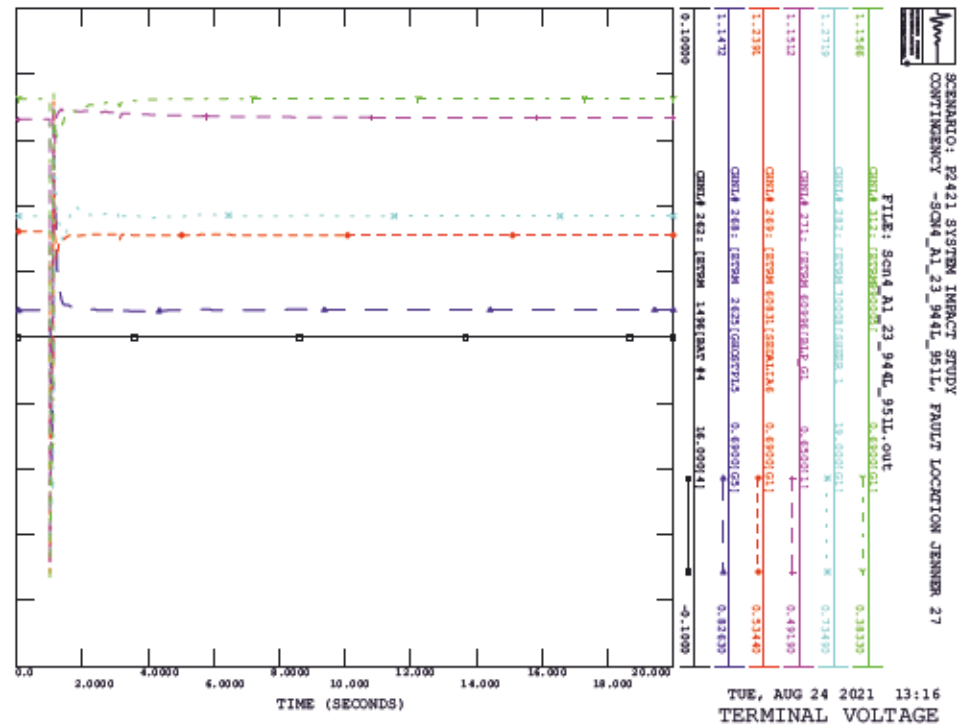


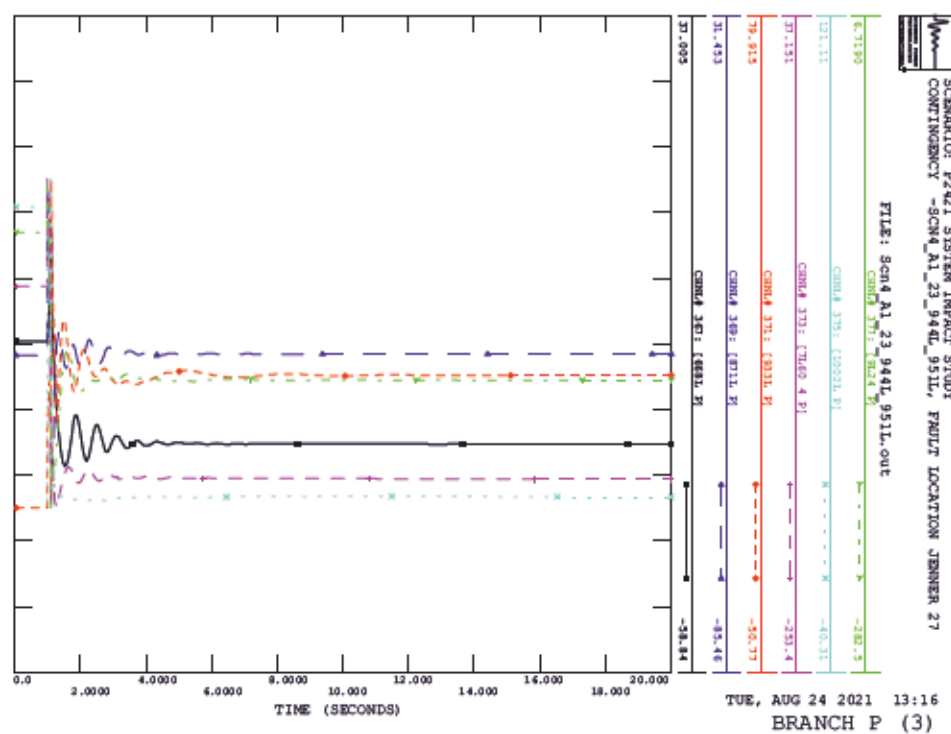
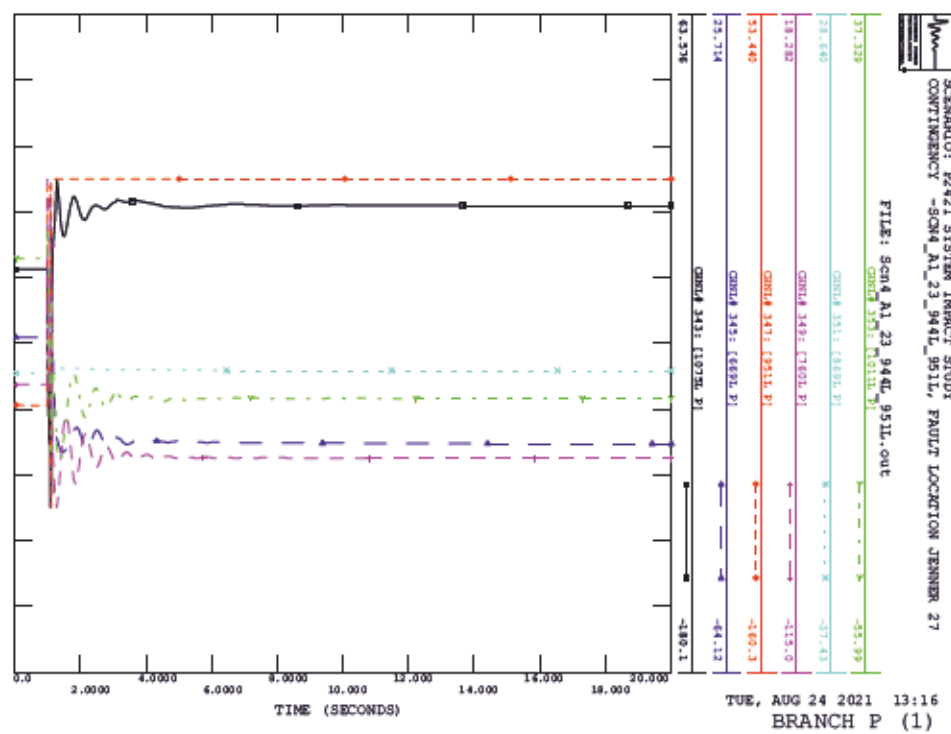
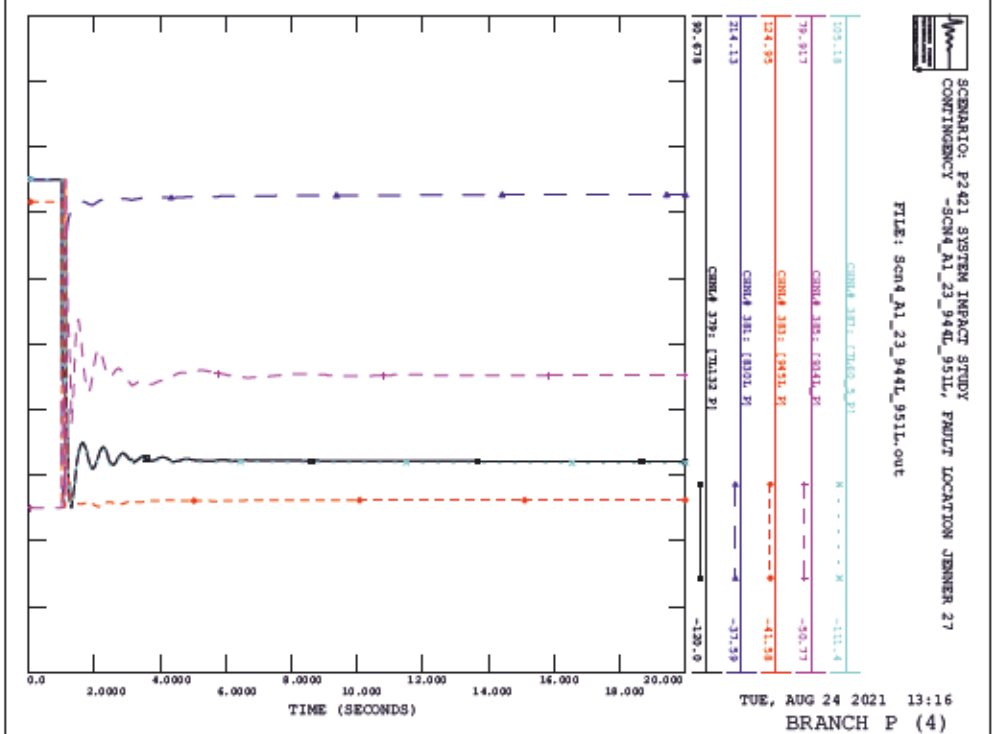
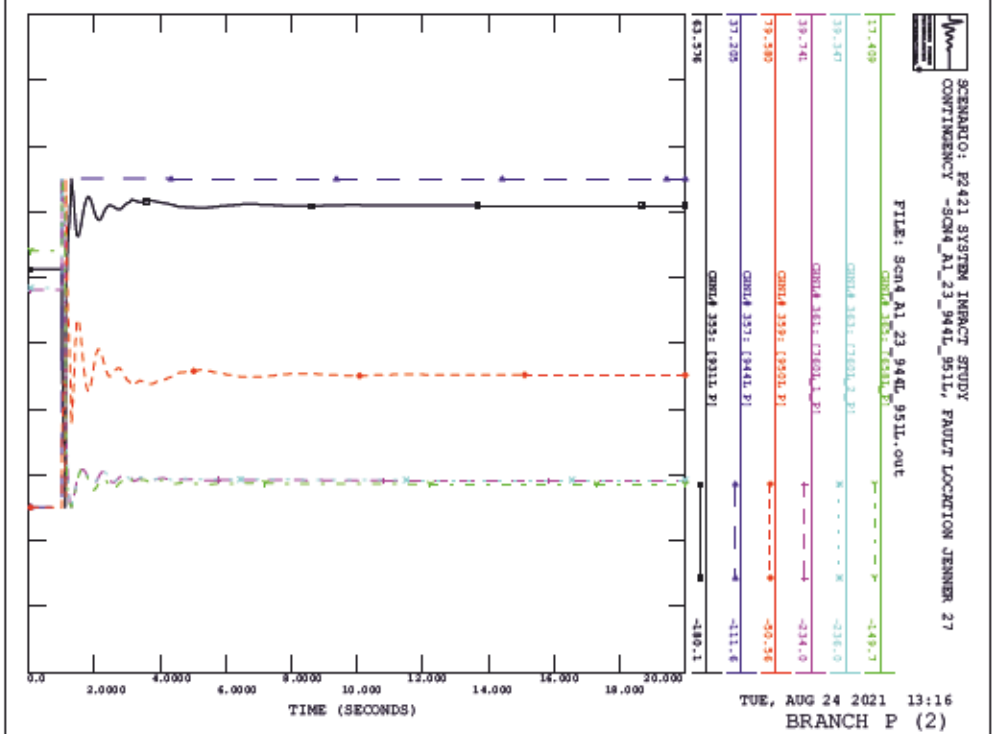
TUE, AUG 24 2021 13:16
 ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
 CONTINGENCY -SCM4_A1_23_944L_951L, FAULT LOCATION JENNER 27
 FILE: SCM4_A1_23_944L_951L.out



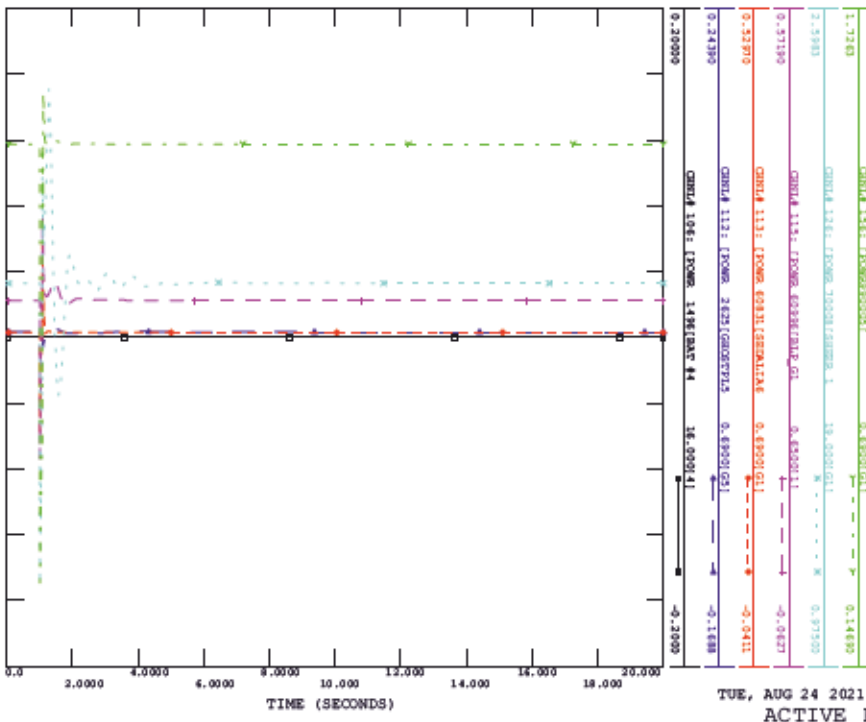
TUE, AUG 24 2021 13:16
 ROTOR ANGLE





SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2

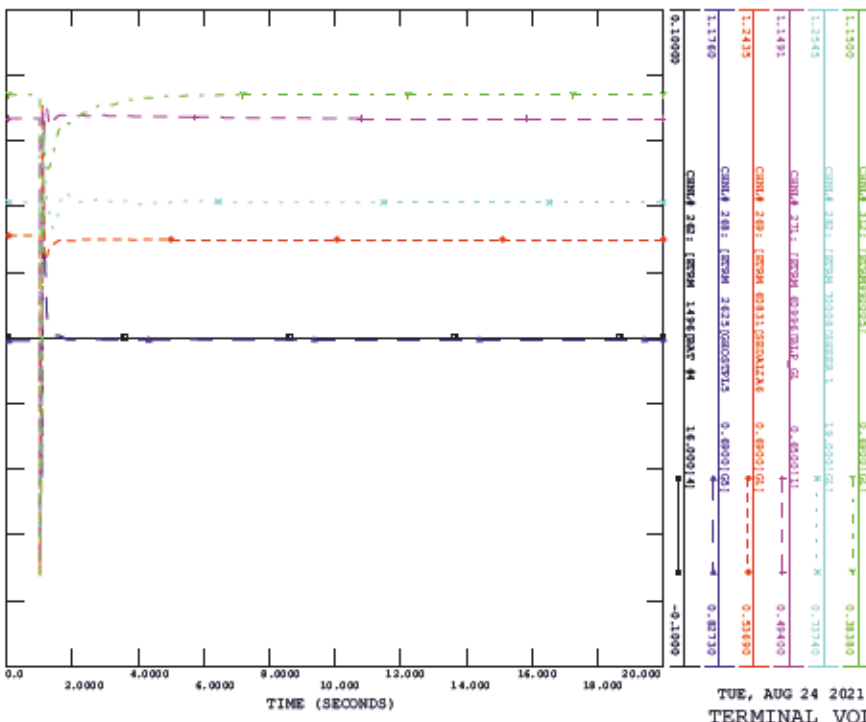
FILE: SCM4_AI_24_1002L_945L.out



TUE, AUG 24 2021 13:16
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2

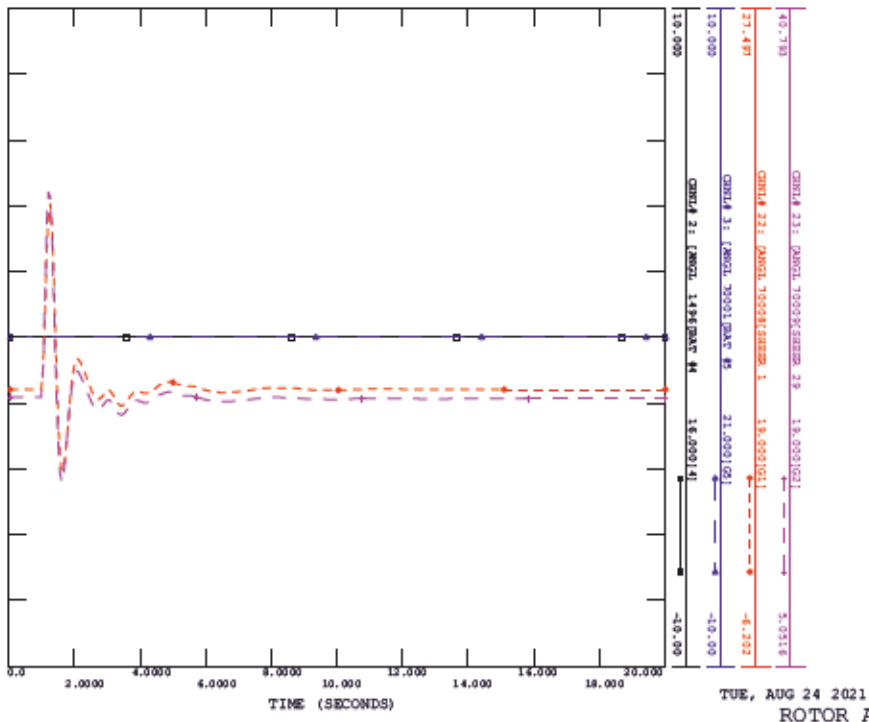
FILE: SCM4_AI_24_1002L_945L.out



TUE, AUG 24 2021 13:16
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2

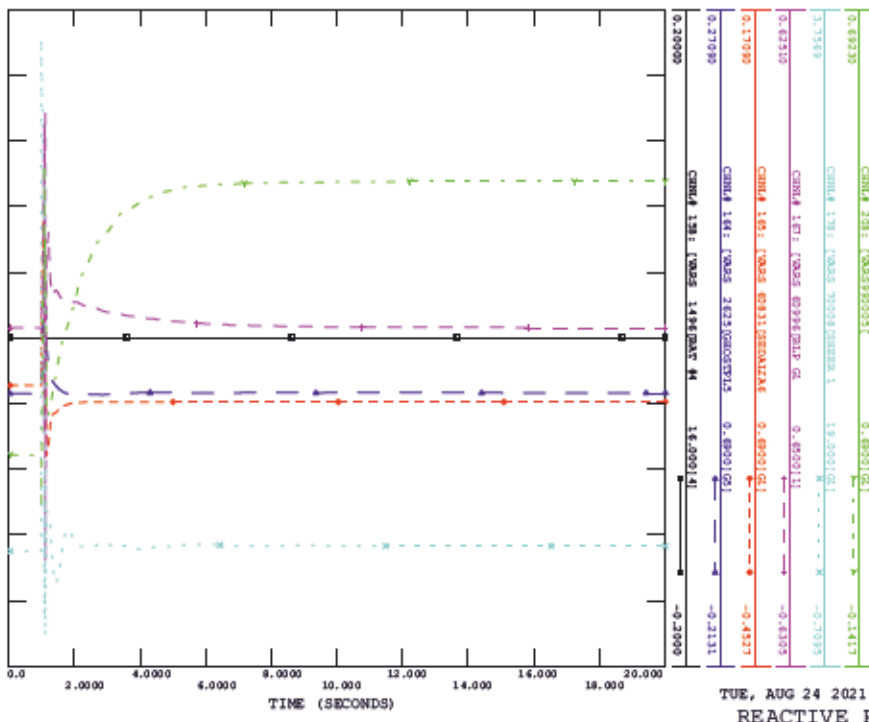
FILE: SCM4_AI_24_1002L_945L.out



TUE, AUG 24 2021 13:16
ROTOR ANGLE

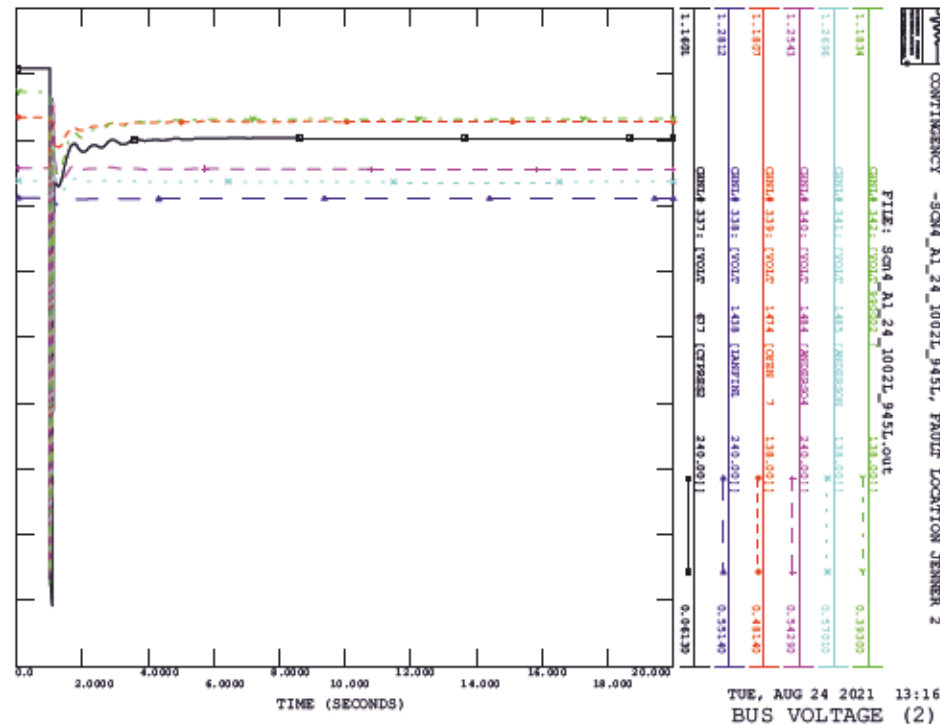
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2

FILE: SCM4_AI_24_1002L_945L.out

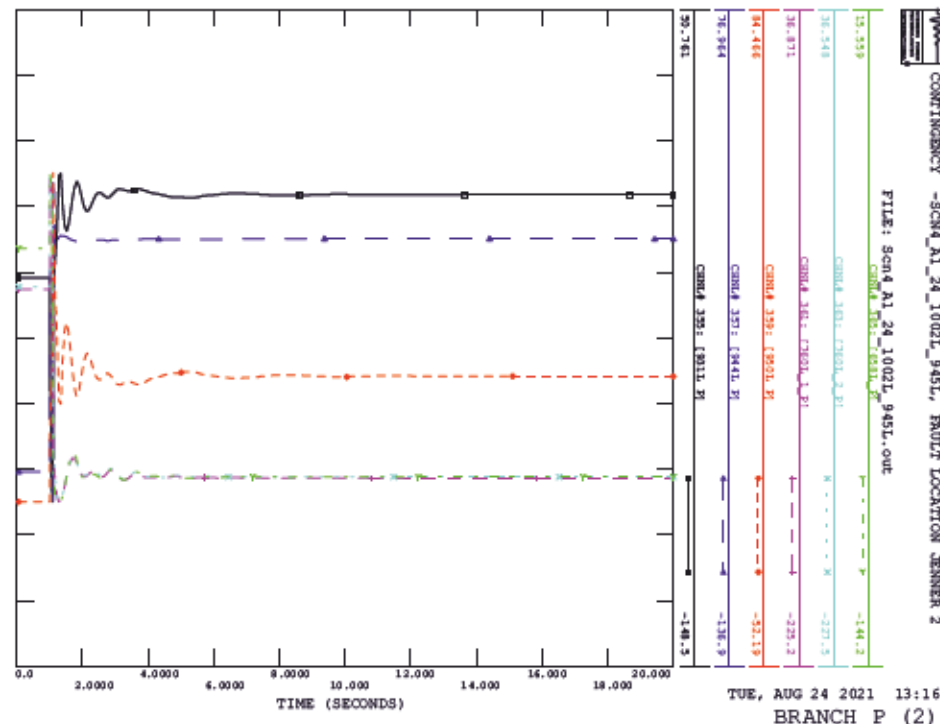


TUE, AUG 24 2021 13:16
REACTIVE POWER

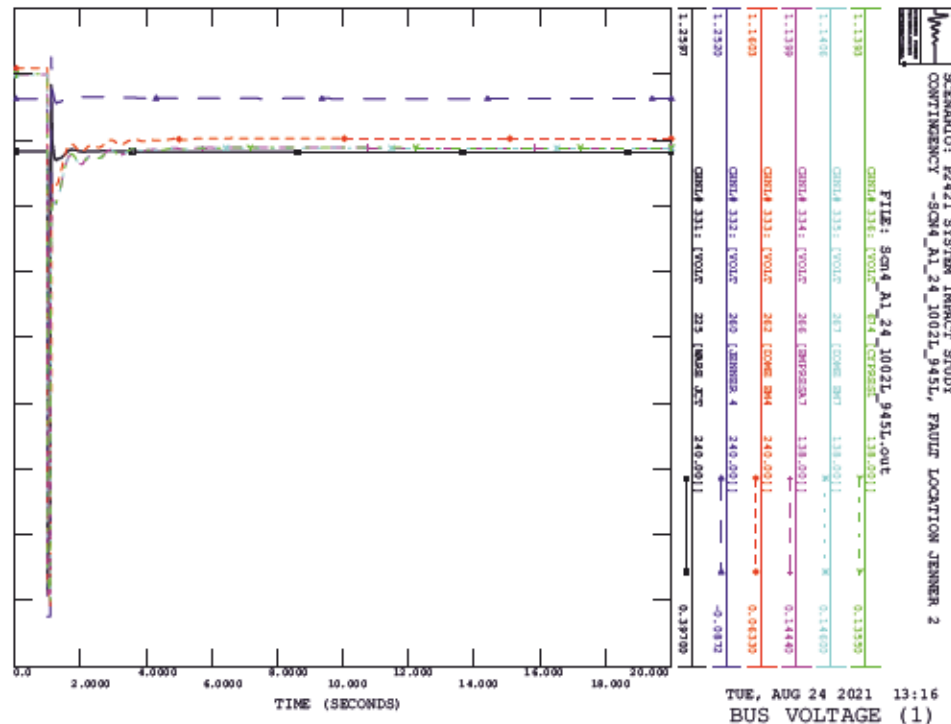
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2



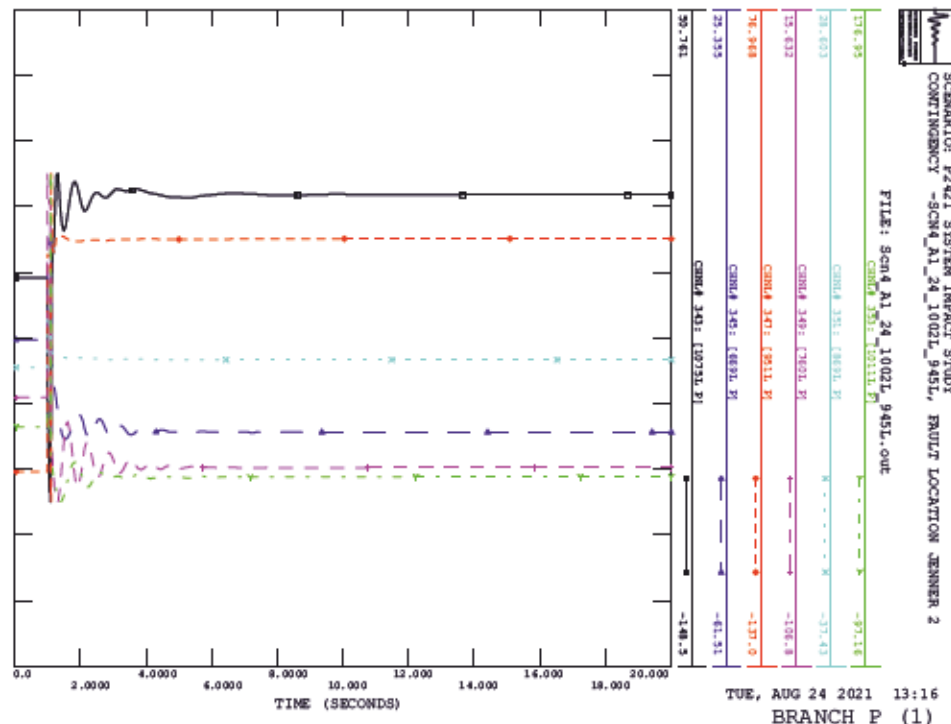
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2

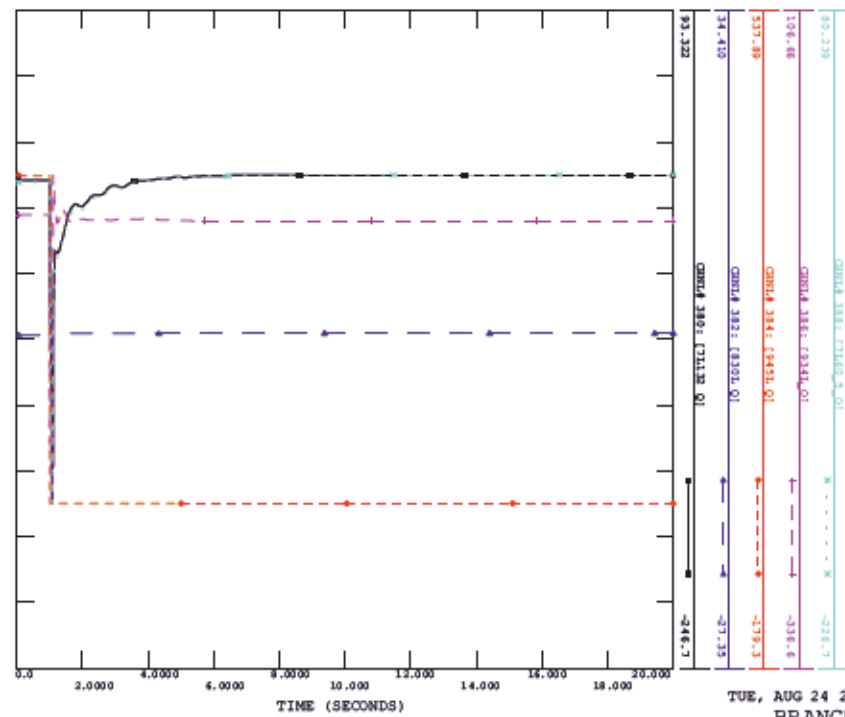


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_AI_24_1002L_945L, FAULT LOCATION JENNER 2



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_24_1002L_945L, FAULT LOCATION JENNER 2

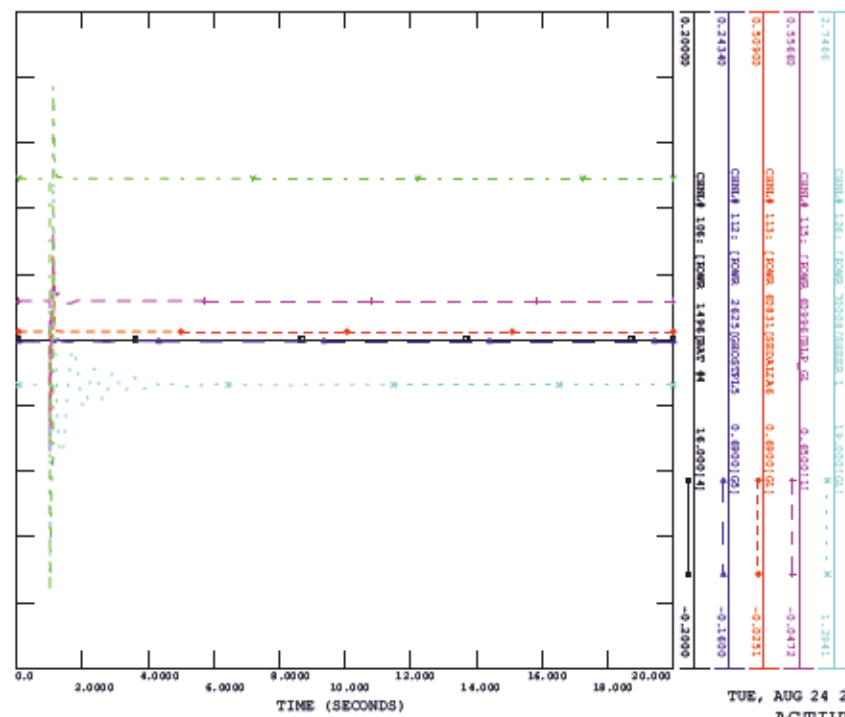
FILE: SCM4_A1_24_1002L_945L.out



TUE, AUG 24 2021 13:16
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_25_1002L_1011L, FAULT LOCATION ANOCO E

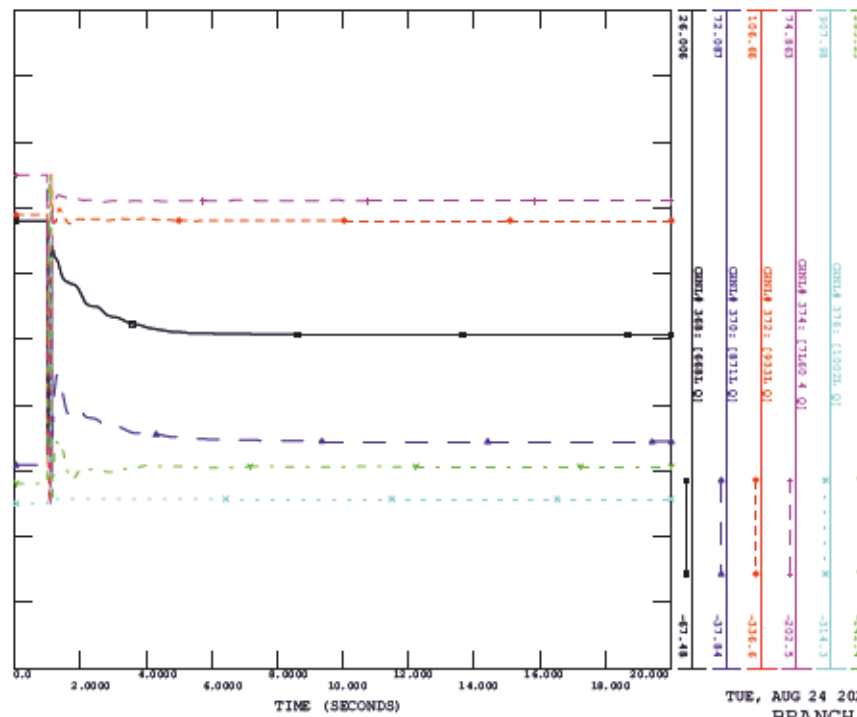
FILE: SCM4_A1_25_1002L_1011L.out



TUE, AUG 24 2021 13:16
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_24_1002L_945L, FAULT LOCATION JENNER 2

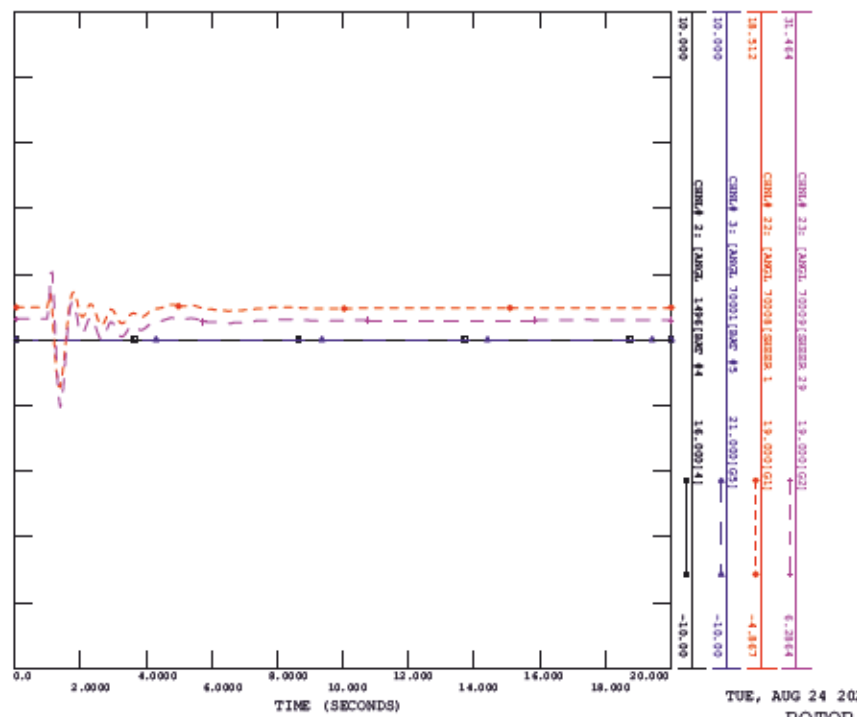
FILE: SCM4_A1_24_1002L_945L.out



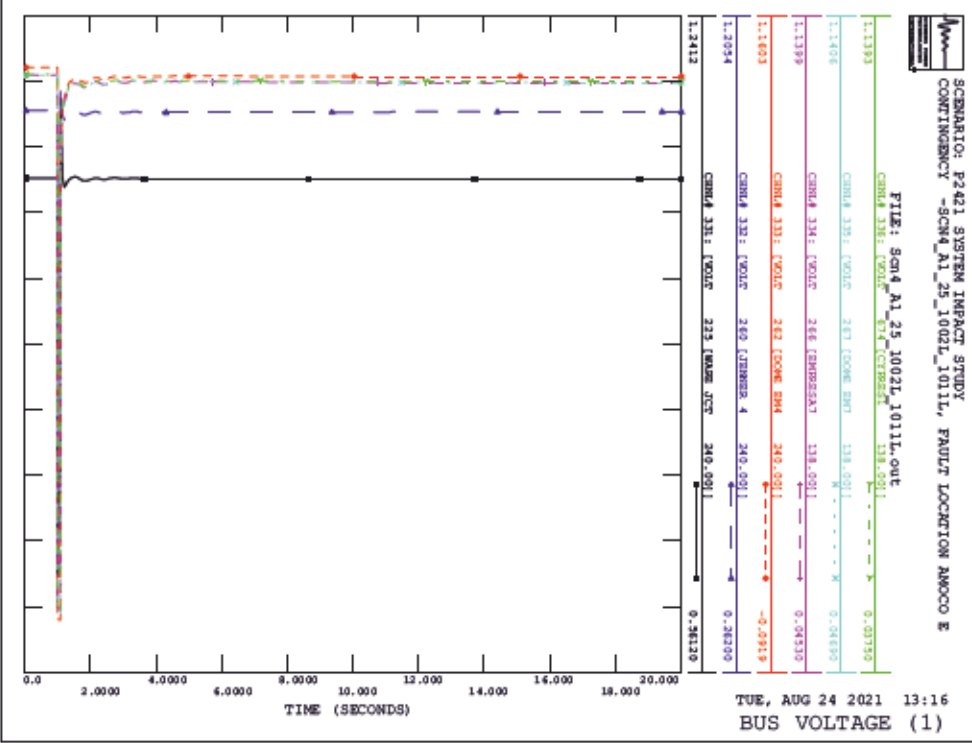
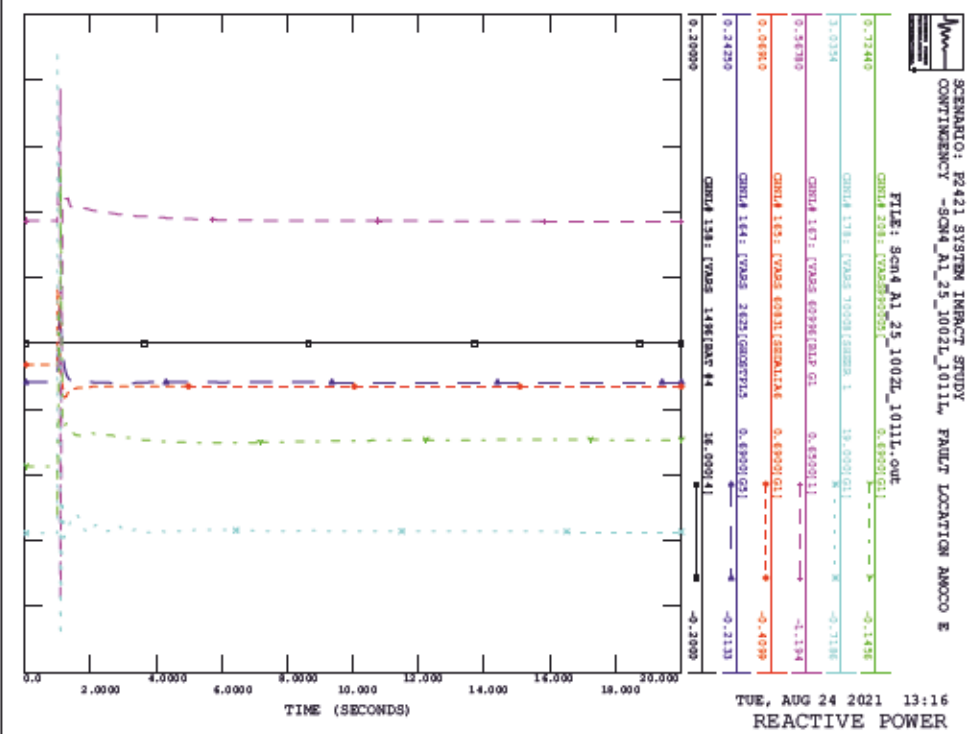
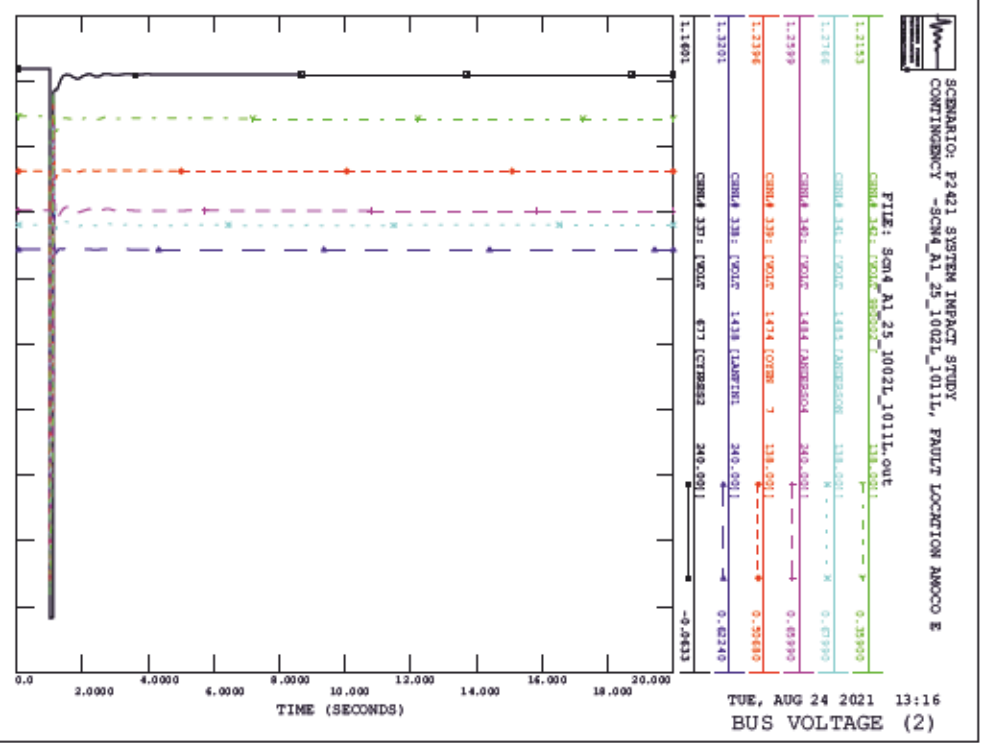
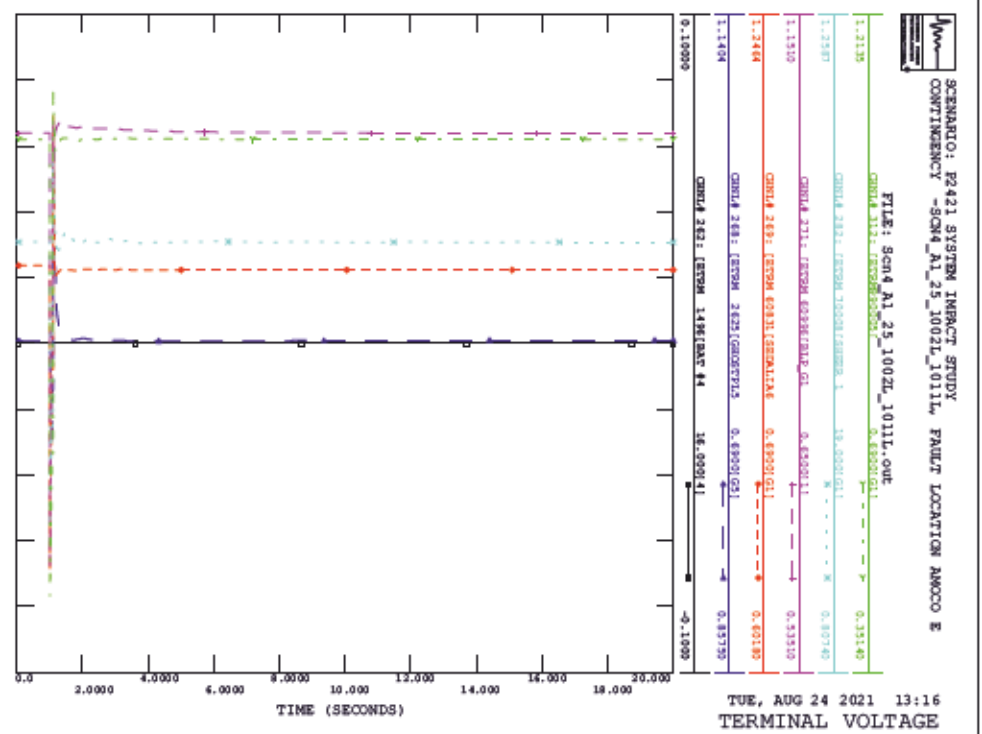
TUE, AUG 24 2021 13:16
BRANCH Q (3)

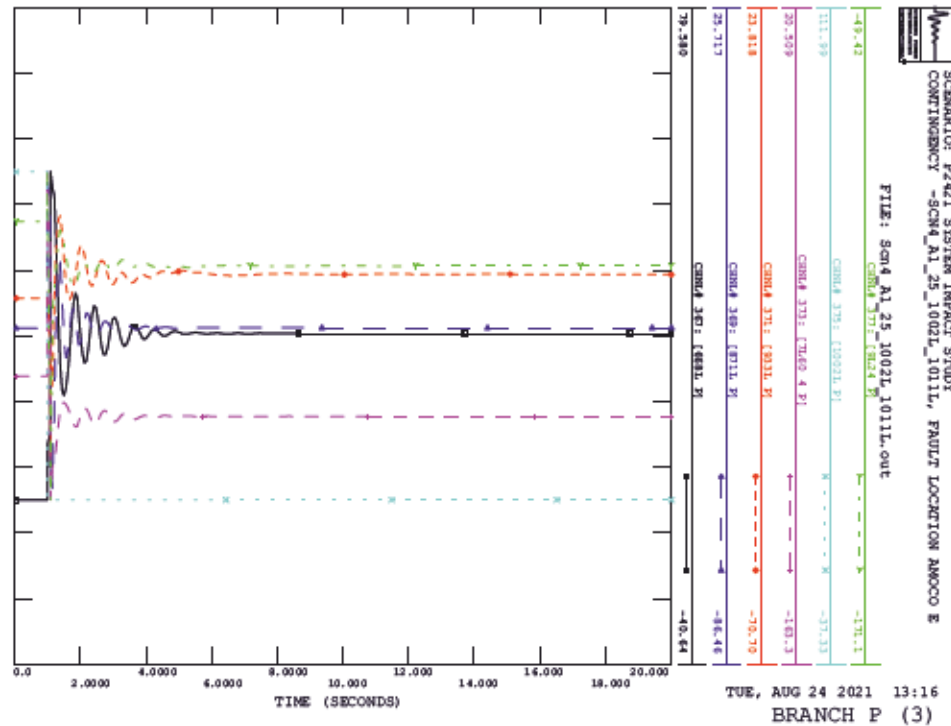
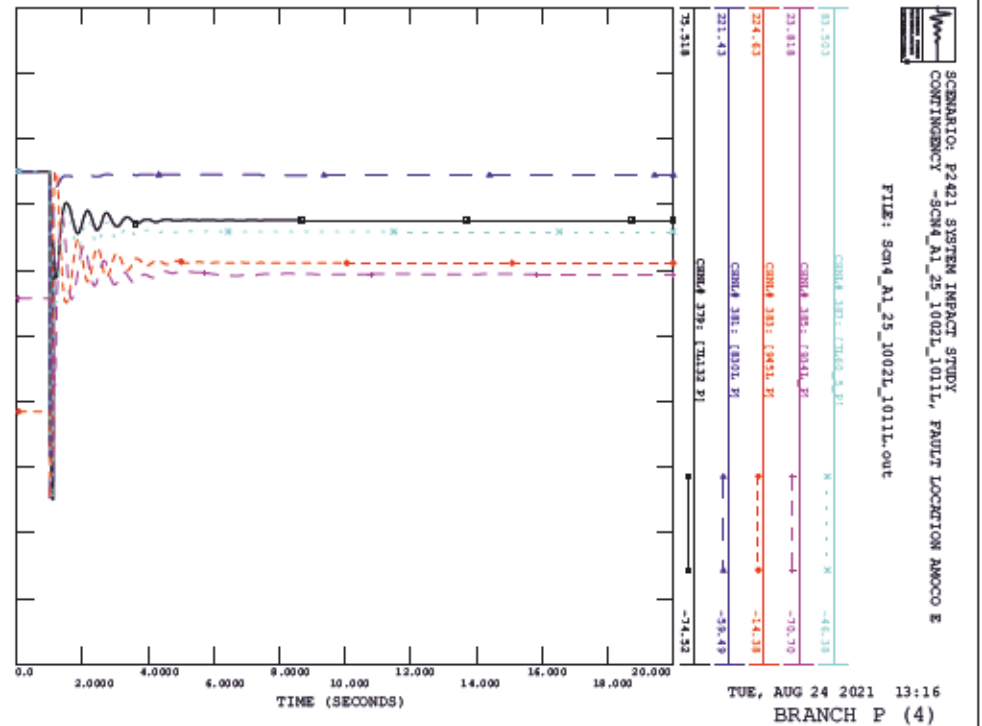
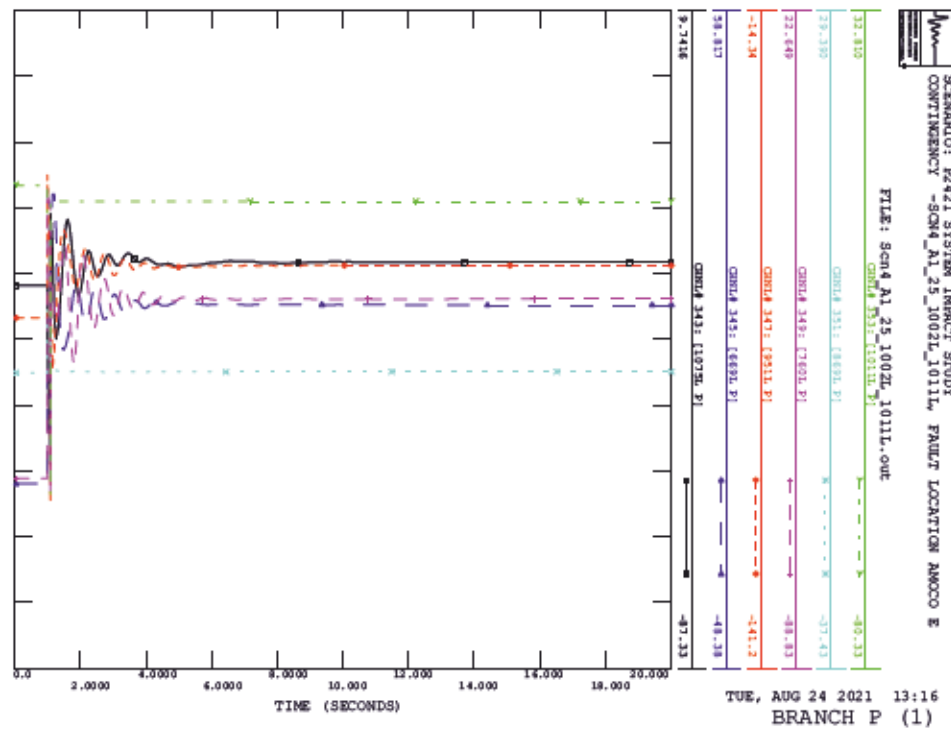
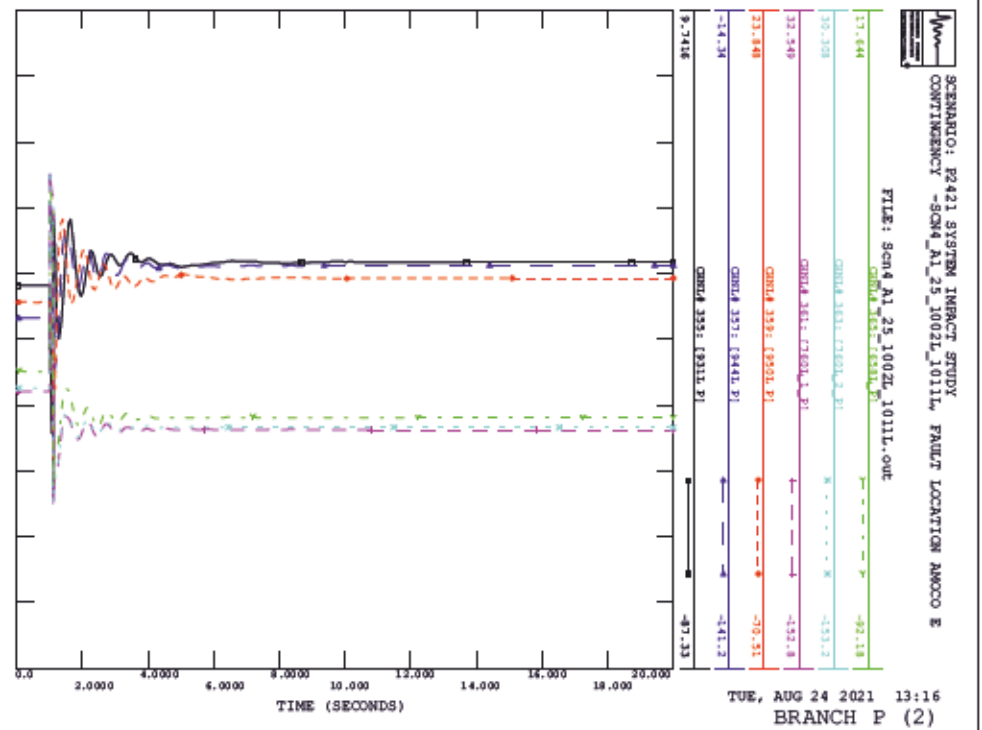
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM4_A1_25_1002L_1011L, FAULT LOCATION ANOCO E

FILE: SCM4_A1_25_1002L_1011L.out



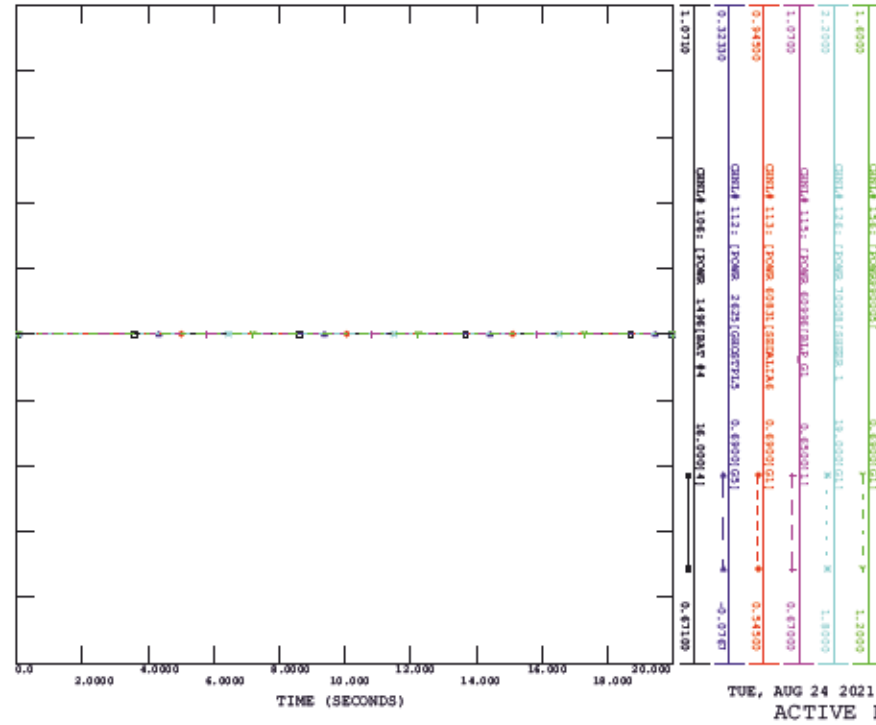
TUE, AUG 24 2021 13:16
ROTOR ANGLE





SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT

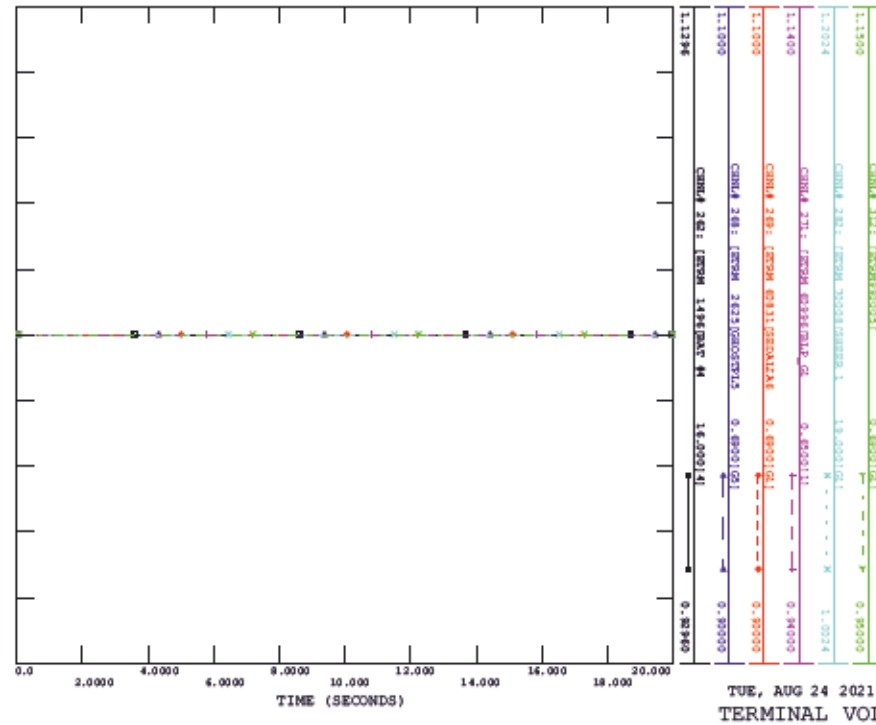
FILE: Scm5_A1_nofault.out



TUE, AUG 24 2021 13:18
ACTIVE POWER

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT

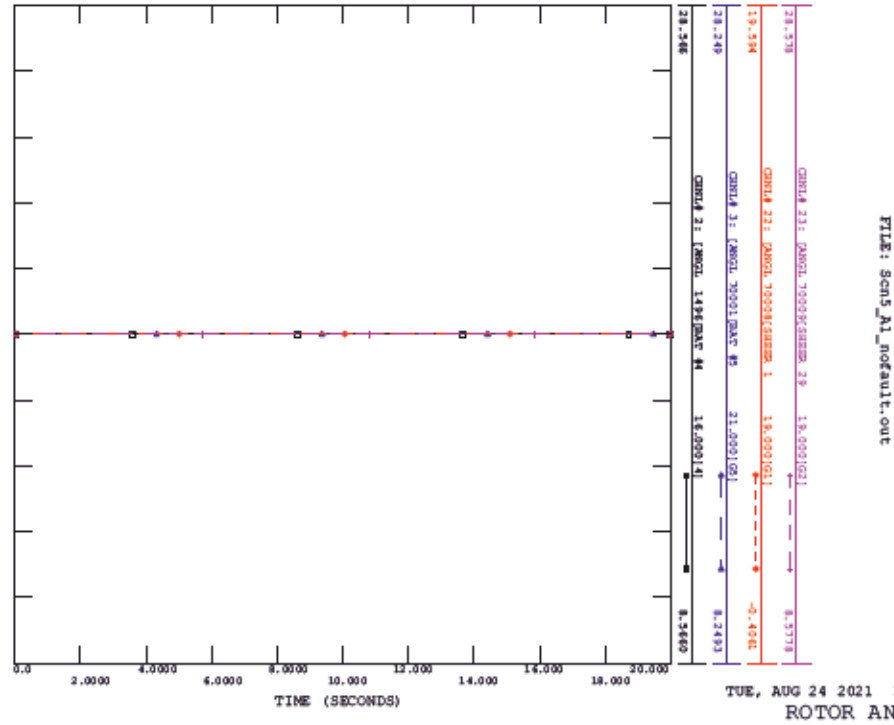
FILE: Scm5_A1_nofault.out



TUE, AUG 24 2021 13:18
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT

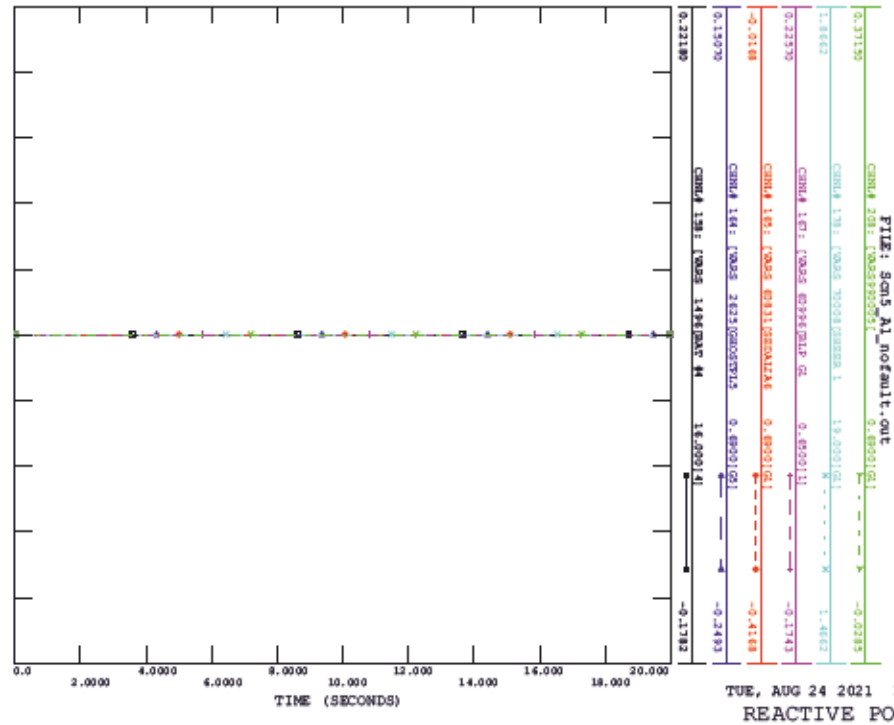
FILE: Scm5_A1_nofault.out



TUE, AUG 24 2021 13:18
ROTOR ANGLE

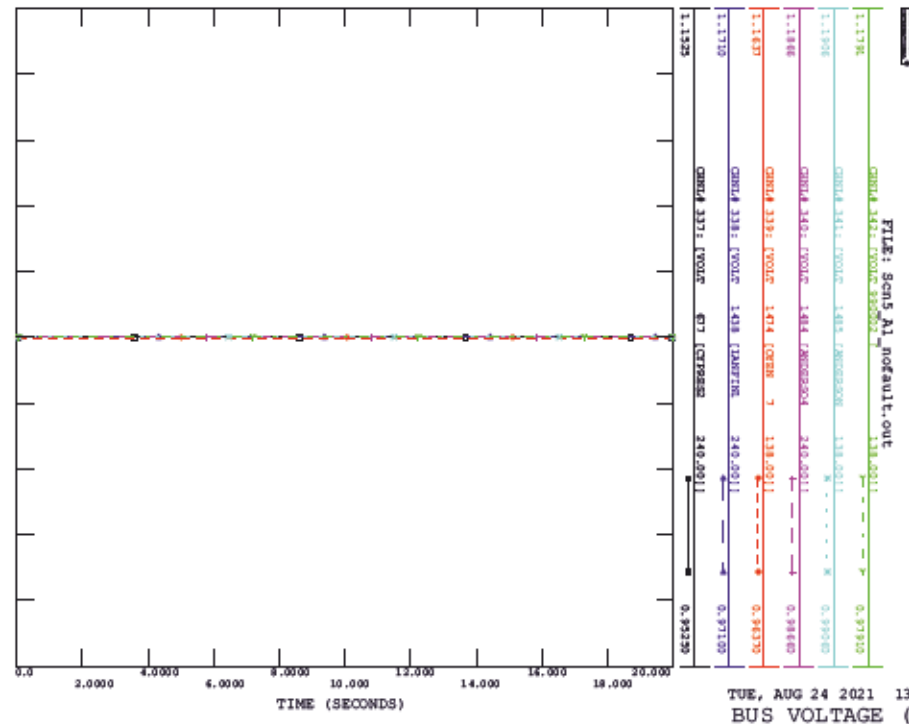
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT

FILE: Scm5_A1_nofault.out

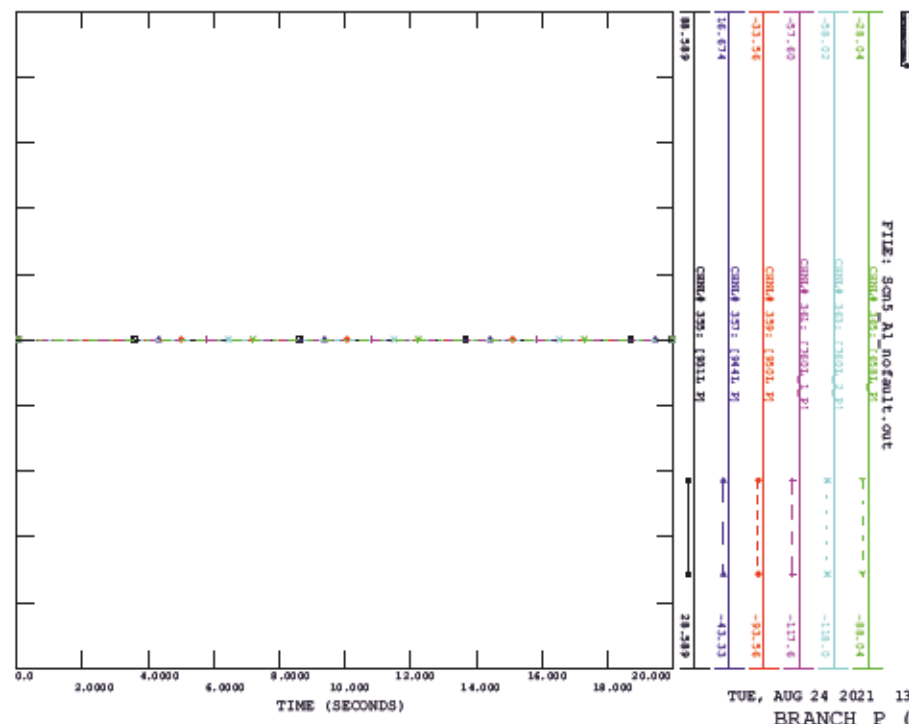


TUE, AUG 24 2021 13:18
REACTIVE POWER

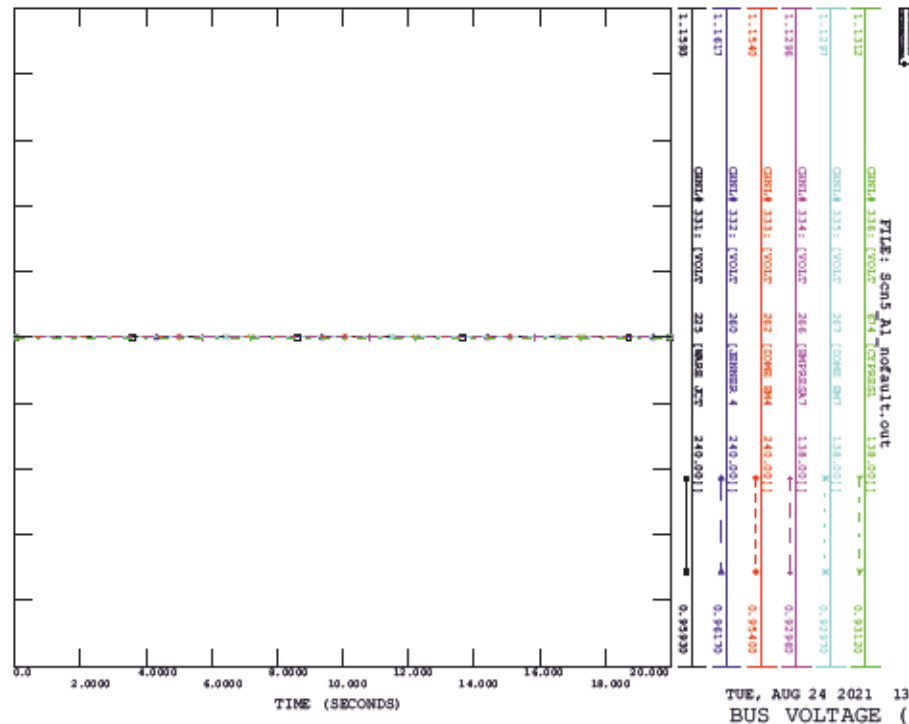
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCMS_A1_NOFAULT, FAULT LOCATION NO FAULT



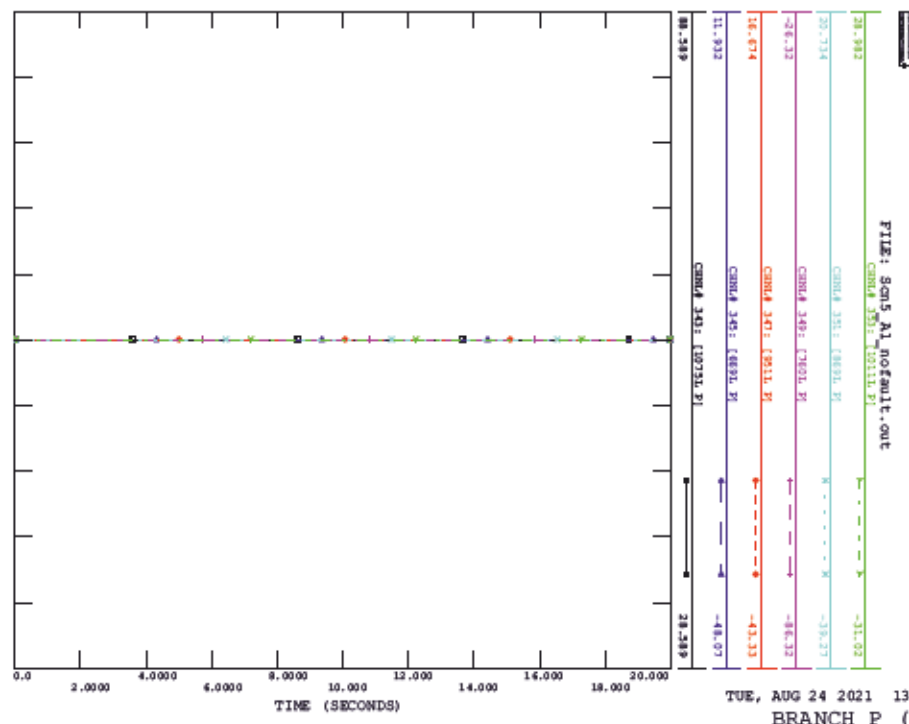
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCMS_A1_NOFAULT, FAULT LOCATION NO FAULT



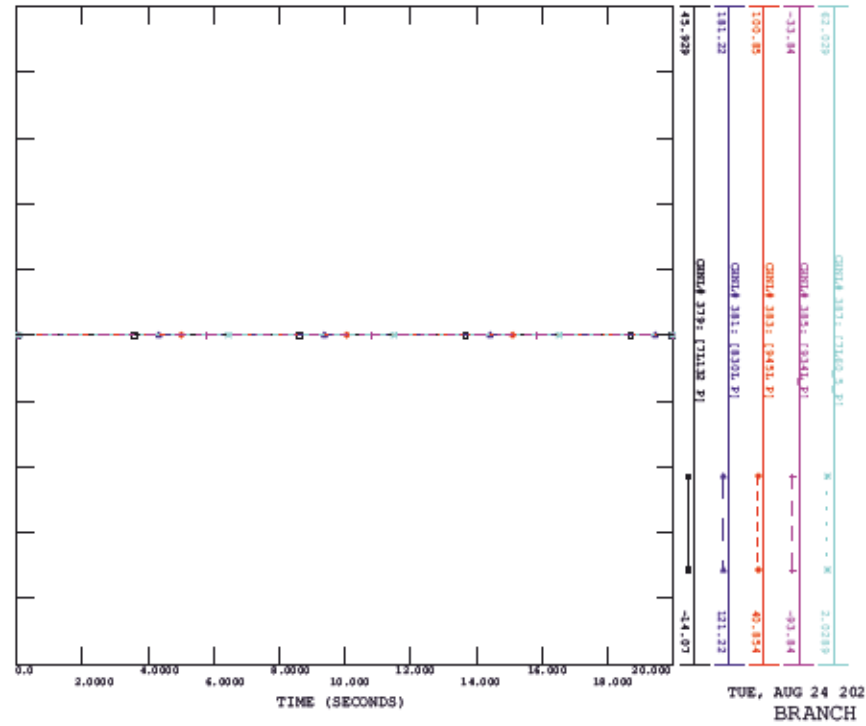
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCMS_A1_NOFAULT, FAULT LOCATION NO FAULT



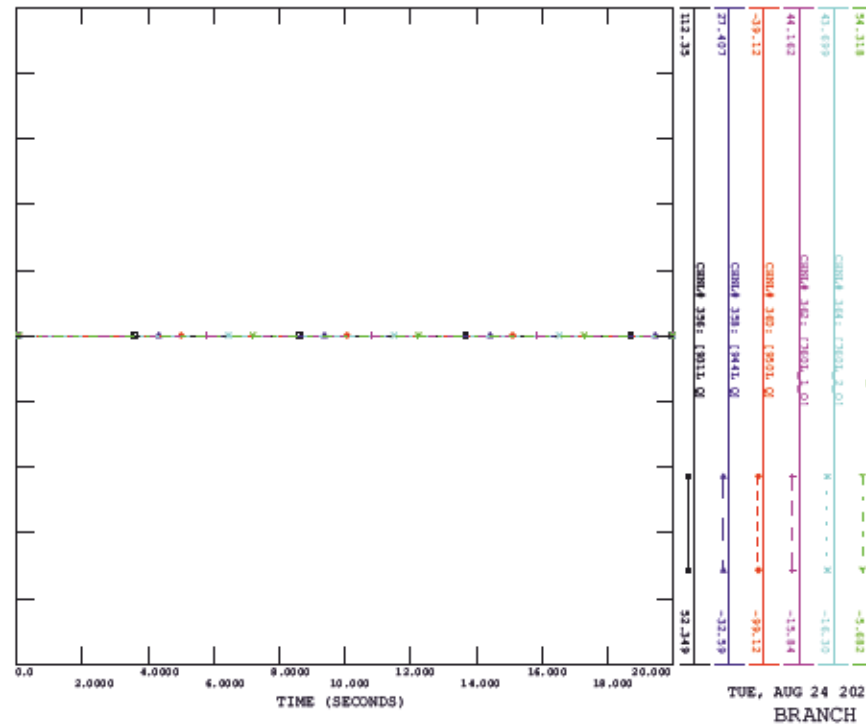
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY - SCMS_A1_NOFAULT, FAULT LOCATION NO FAULT



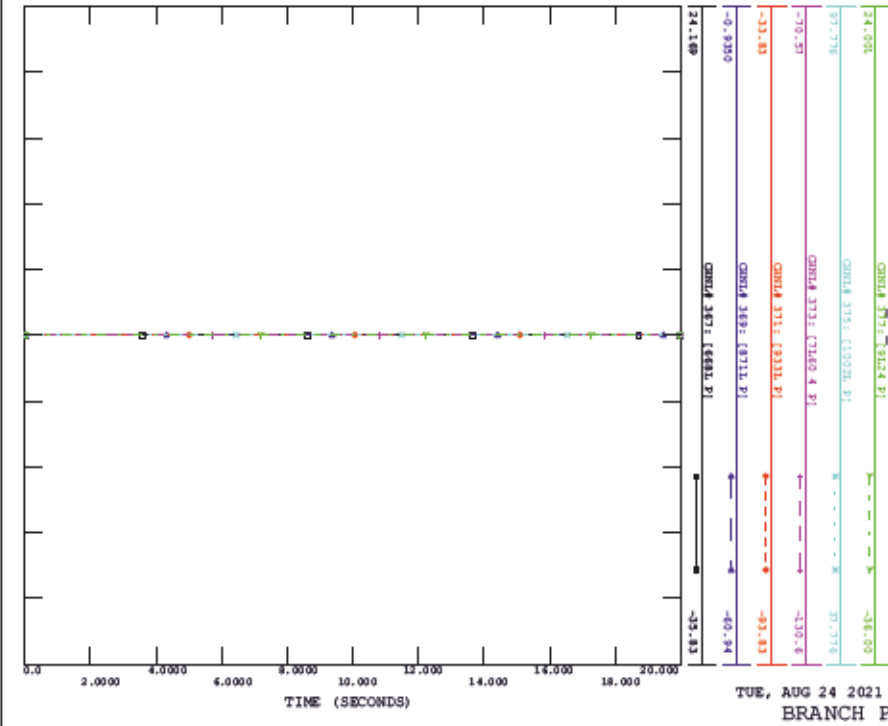
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT



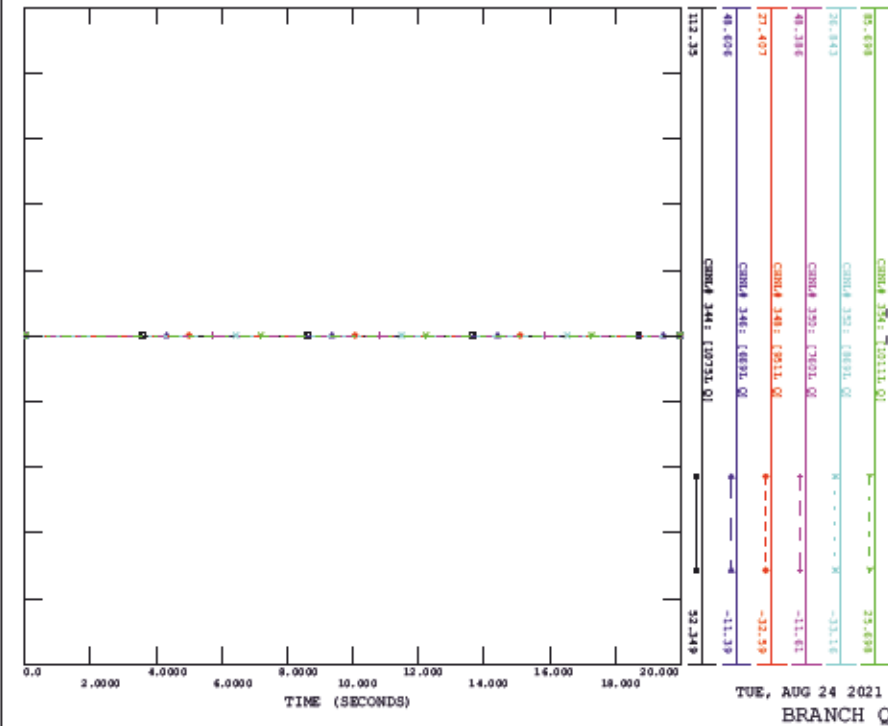
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT



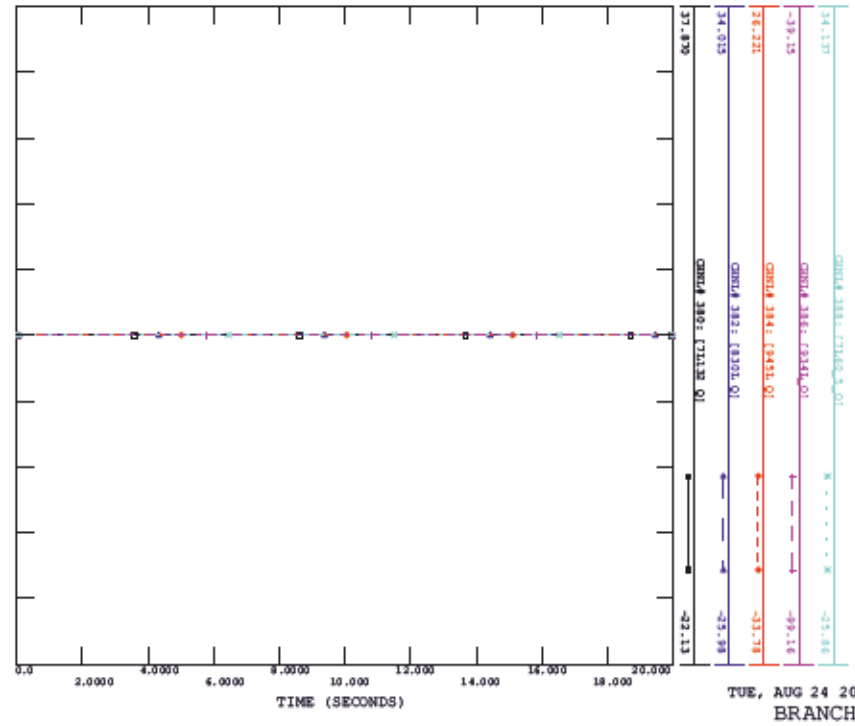
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT



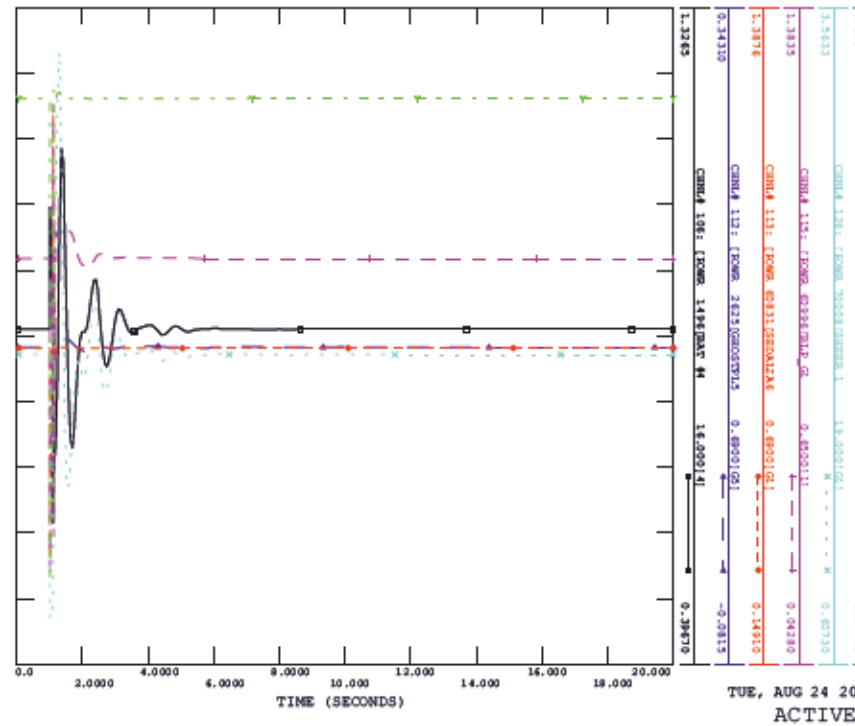
SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT



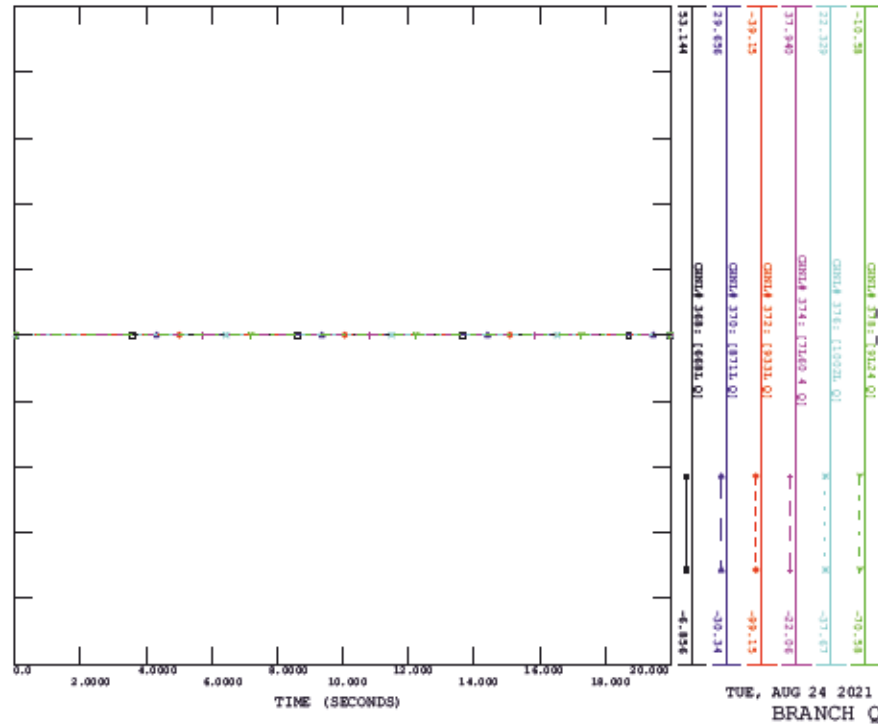
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT
FILE: Sens_A1_nofault.out



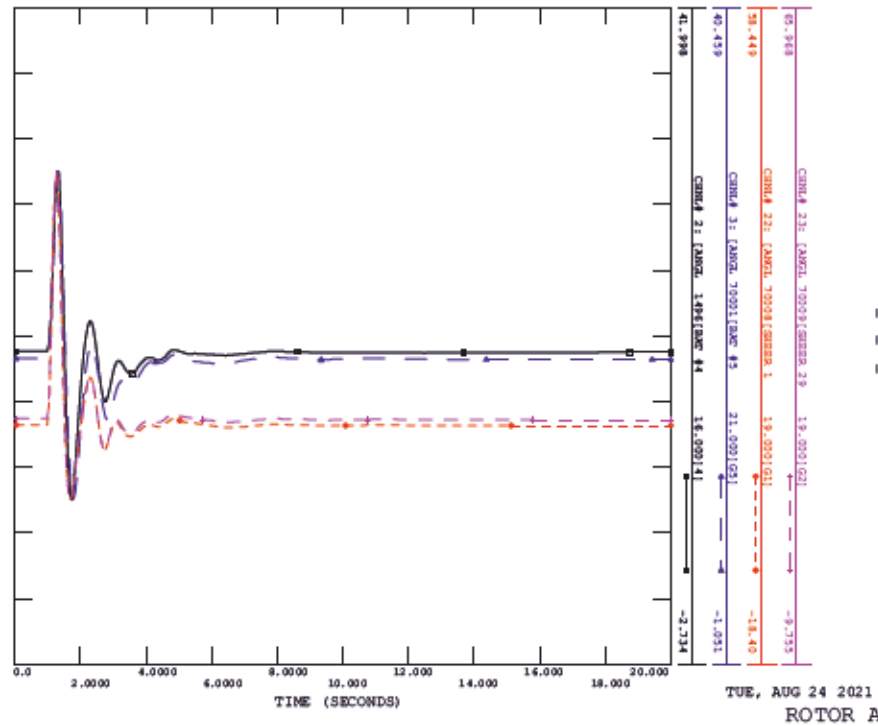
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_01_944L, FAULT LOCATION WARE JUNCTION
FILE: Sens_A1_01_944L.out



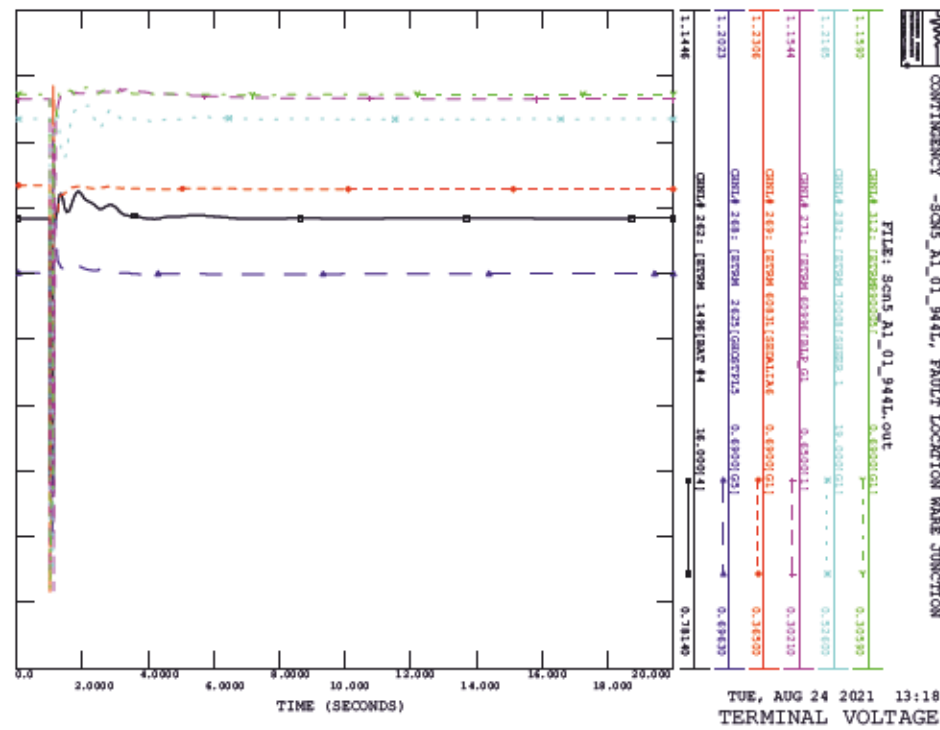
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_NOFAULT, FAULT LOCATION NO FAULT
FILE: Sens_A1_nofault.out



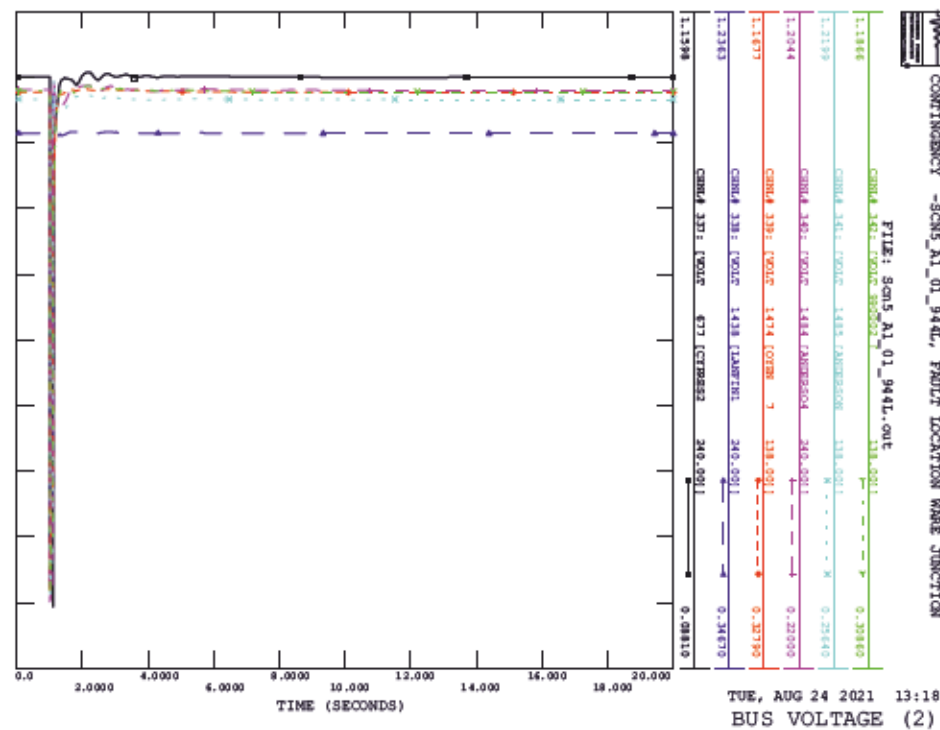
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_01_944L, FAULT LOCATION WARE JUNCTION
FILE: Sens_A1_01_944L.out



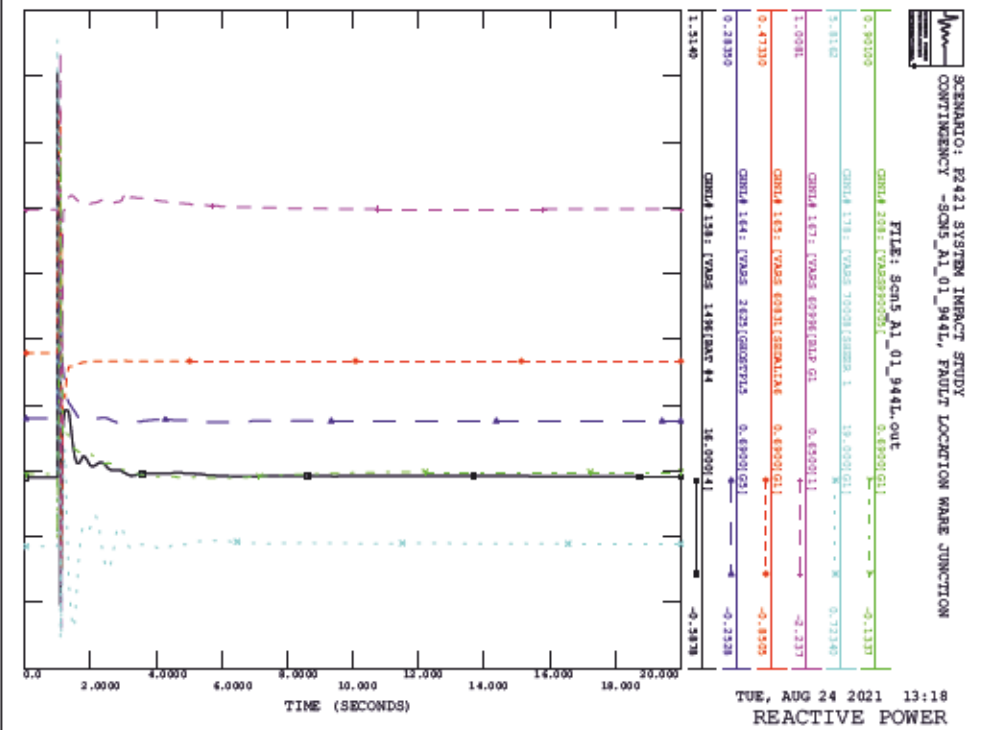
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_01_944L, FAULT LOCATION WARE JUNCTION



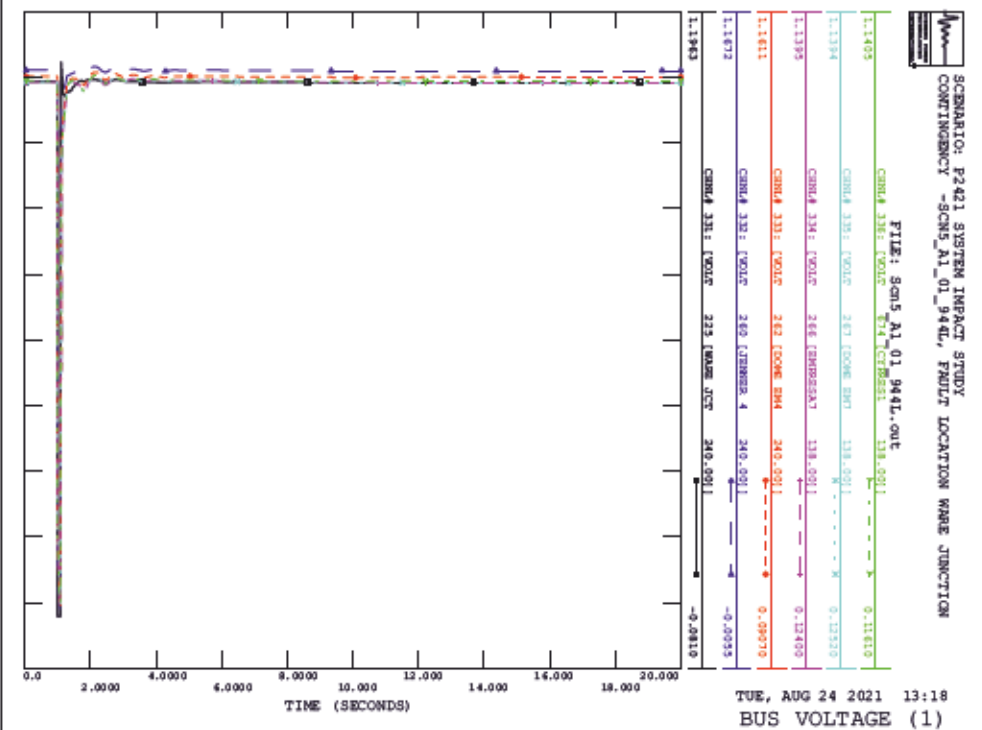
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_01_944L, FAULT LOCATION WARE JUNCTION

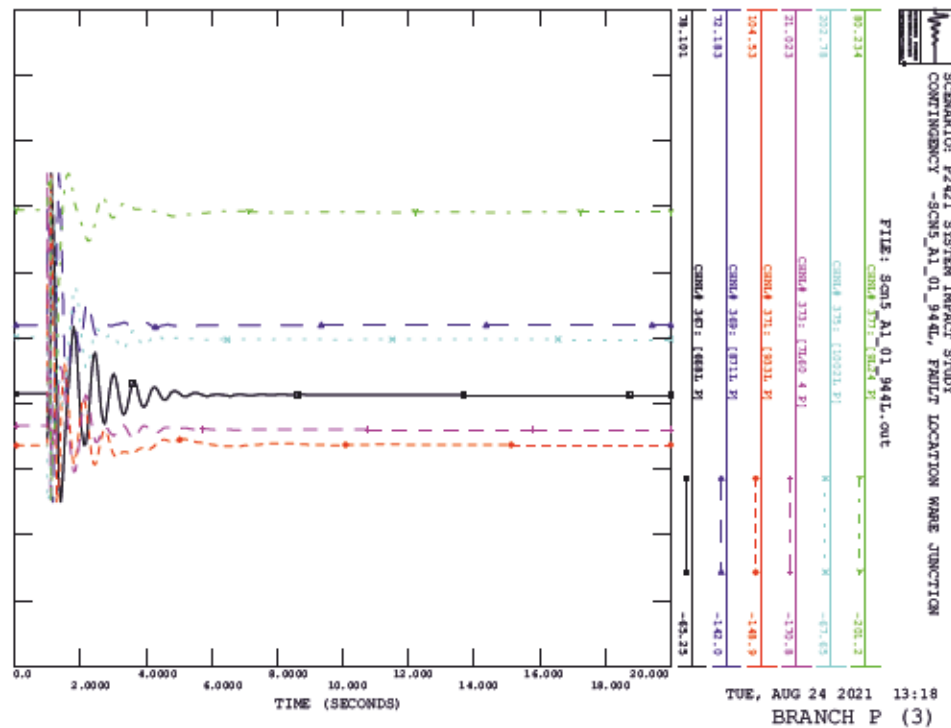
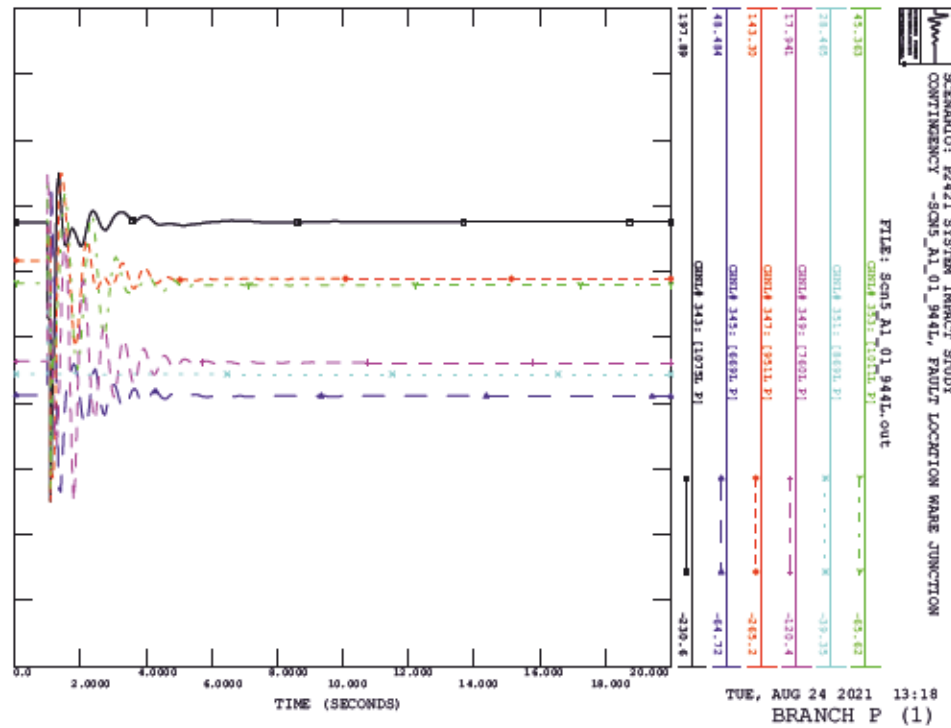
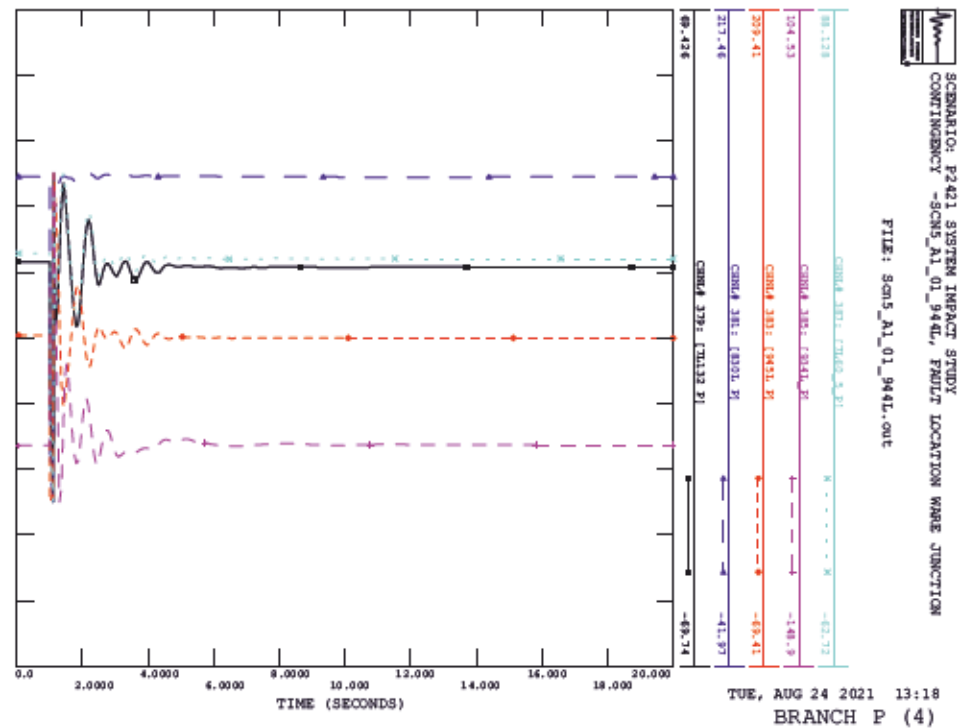
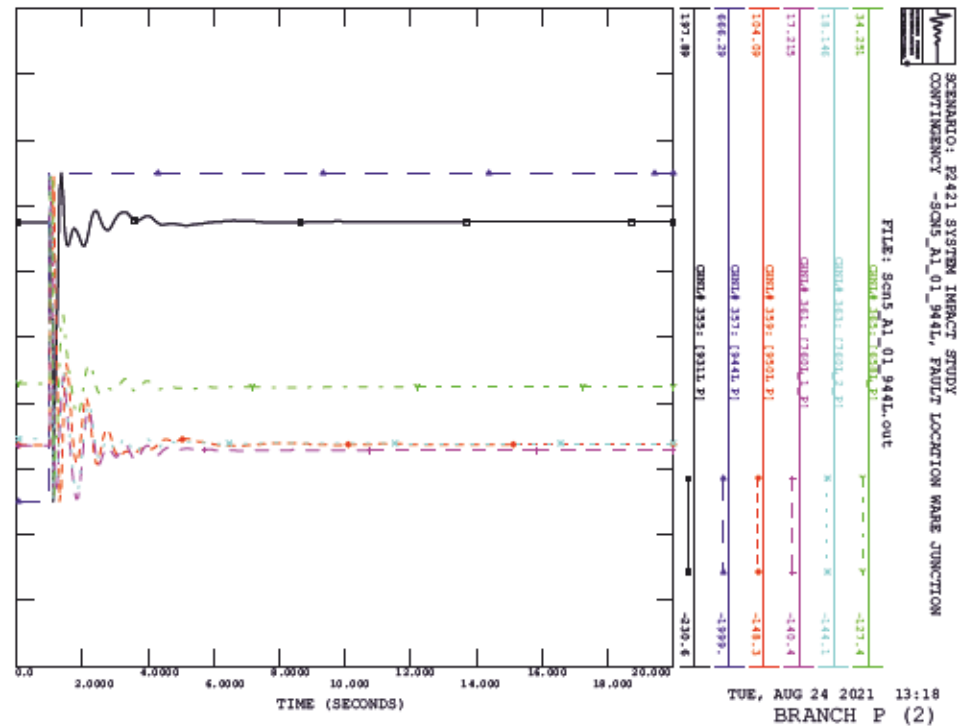


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_01_944L, FAULT LOCATION WARE JUNCTION



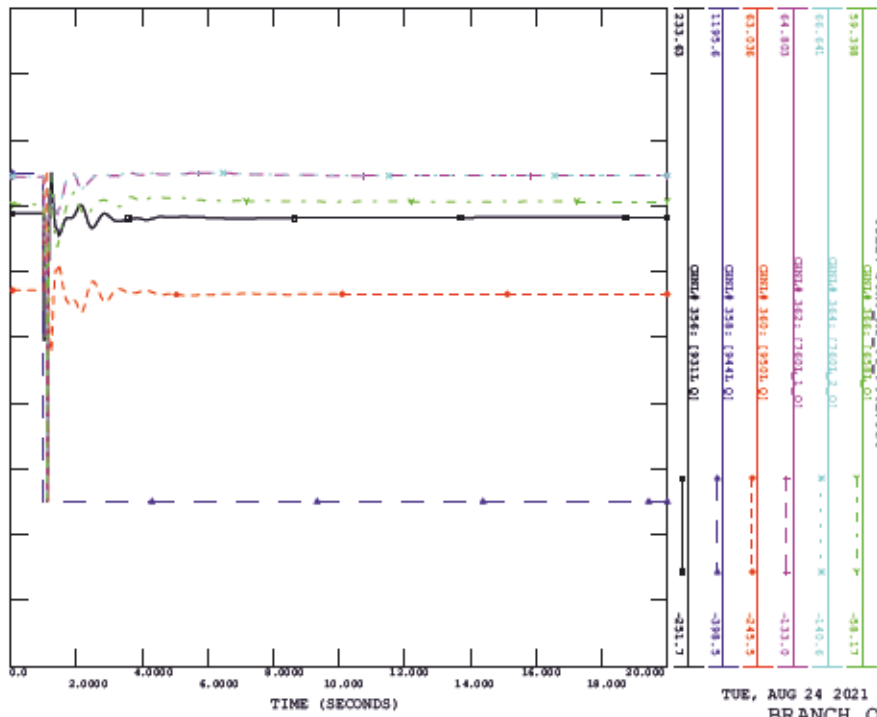
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_01_944L, FAULT LOCATION WARE JUNCTION





SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_01_944L, FAULT LOCATION WARE JUNCTION

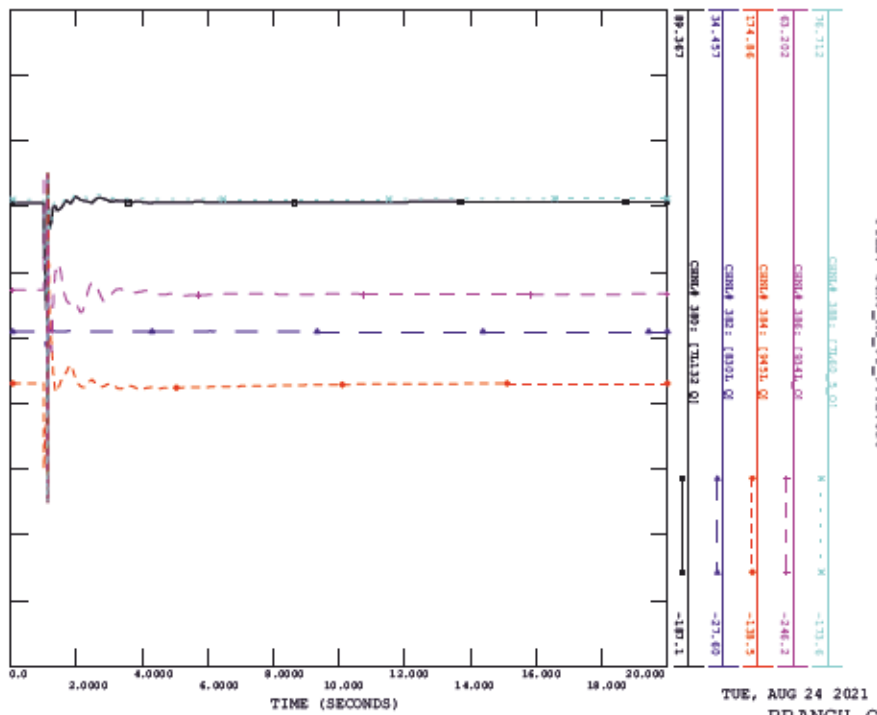
FILE: Scm5_AI_01_944L.out



TUE, AUG 24 2021 13:18
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_01_944L, FAULT LOCATION WARE JUNCTION

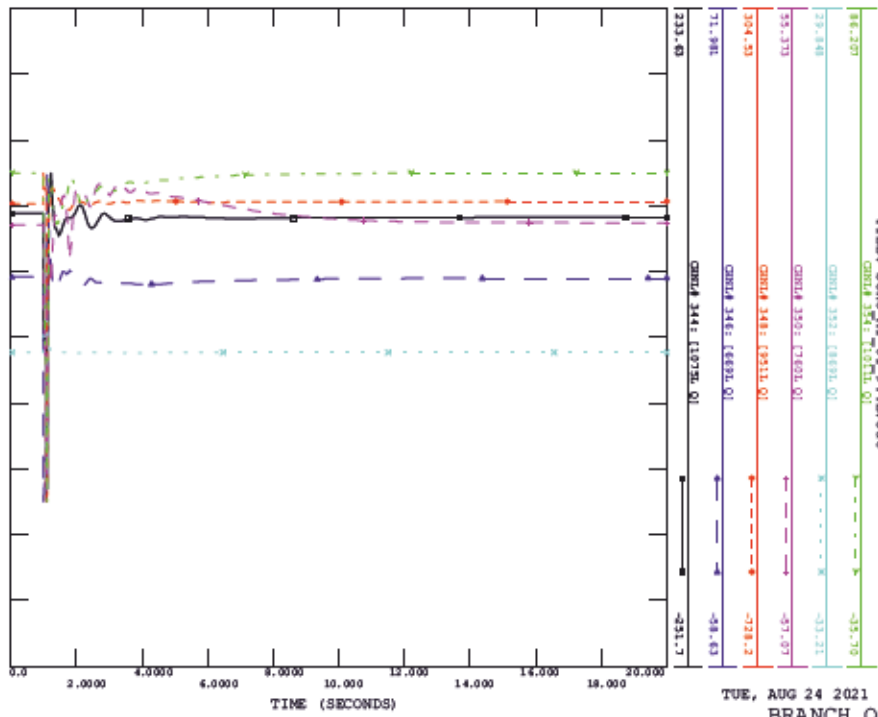
FILE: Scm5_AI_01_944L.out



TUE, AUG 24 2021 13:18
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_01_944L, FAULT LOCATION WARE JUNCTION

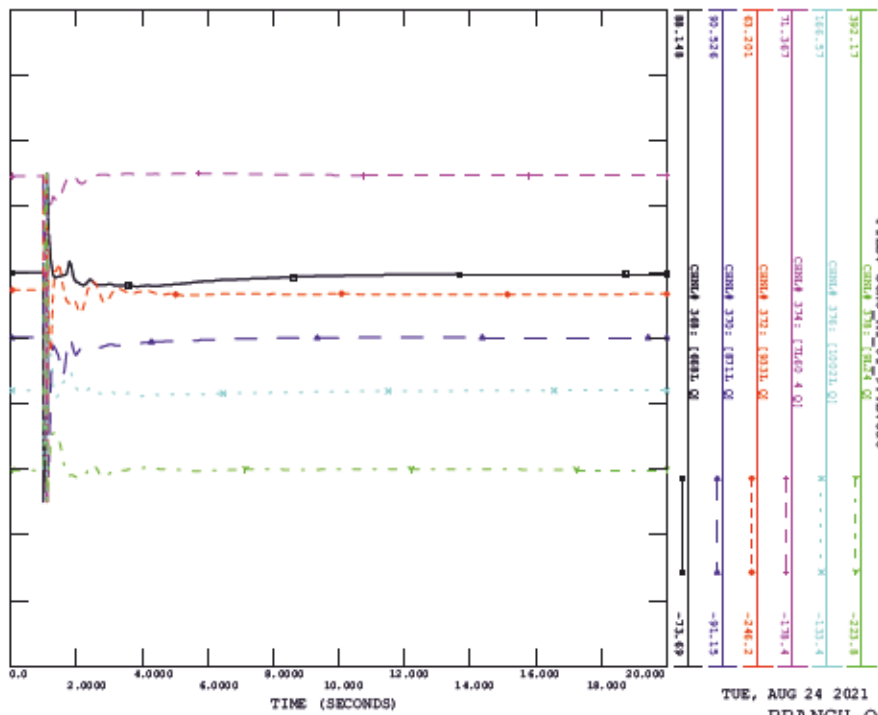
FILE: Scm5_AI_01_944L.out



TUE, AUG 24 2021 13:18
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_01_944L, FAULT LOCATION WARE JUNCTION

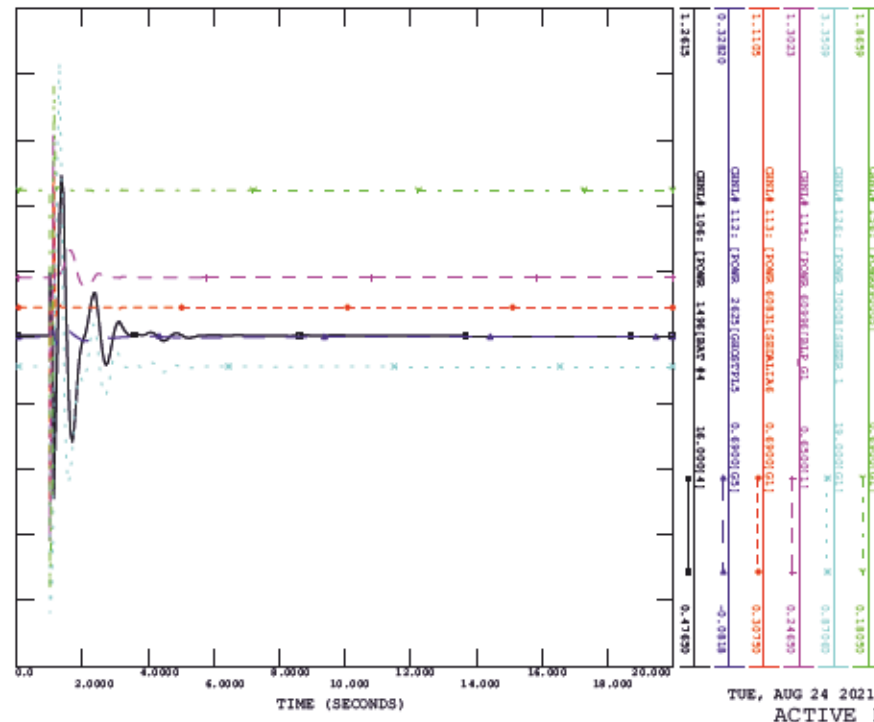
FILE: Scm5_AI_01_944L.out



TUE, AUG 24 2021 13:18
BRANCH Q (3)

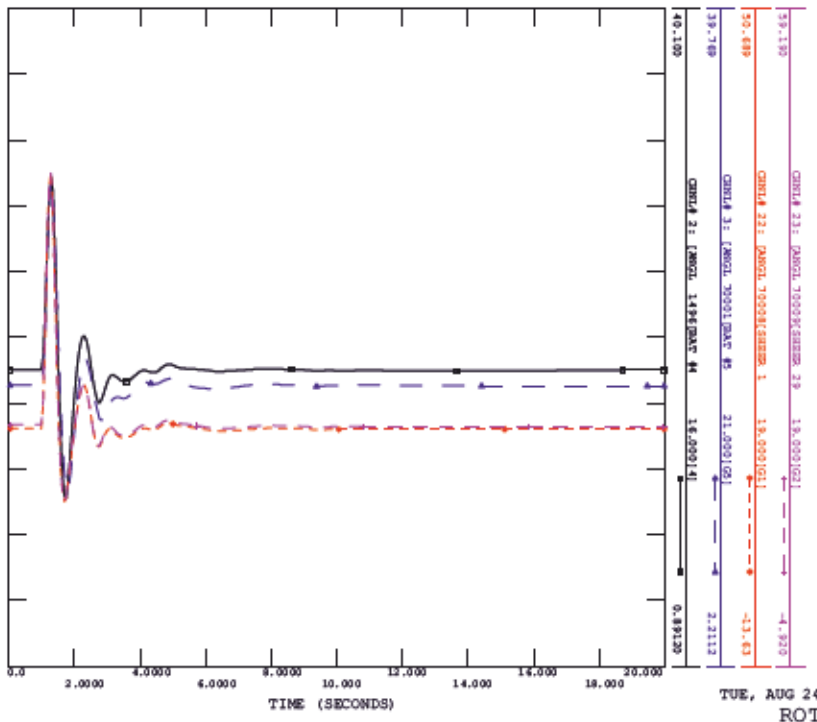
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 275S

FILE: Scm5_A1_02_944L.out



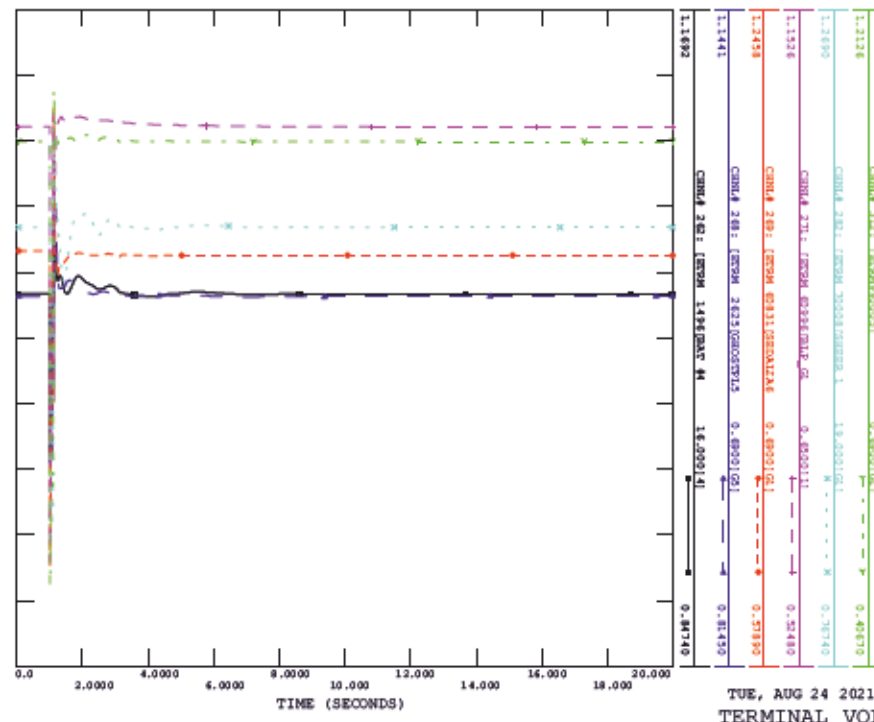
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 275S

FILE: Scm5_A1_02_944L.out



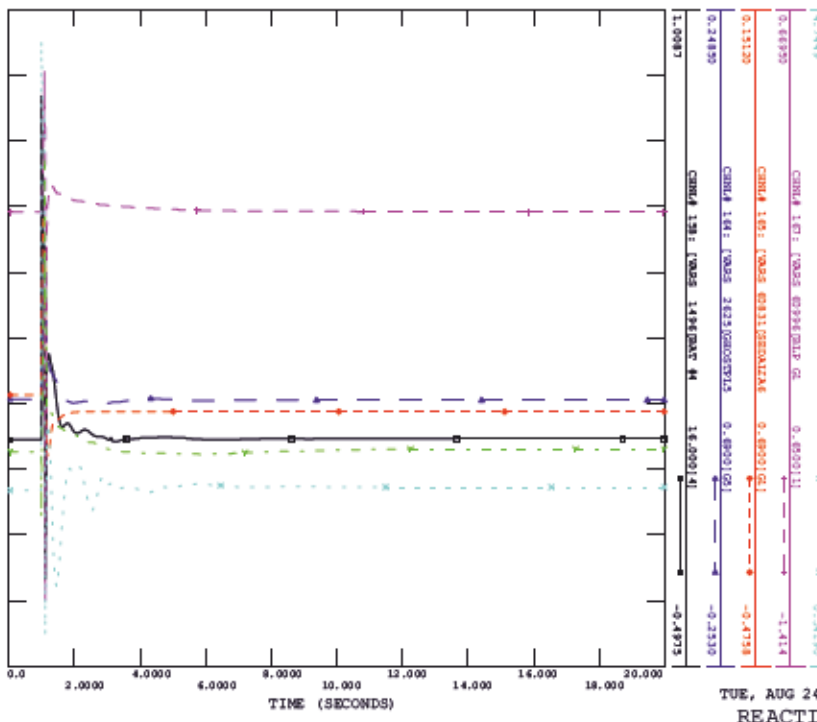
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 275S

FILE: Scm5_A1_02_944L.out



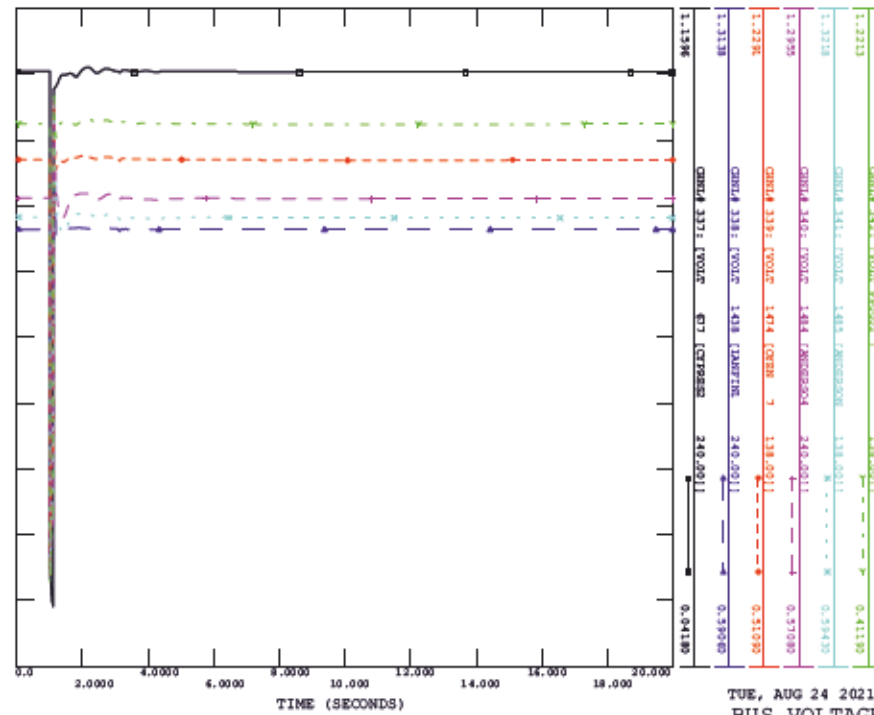
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 275S

FILE: Scm5_A1_02_944L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2155

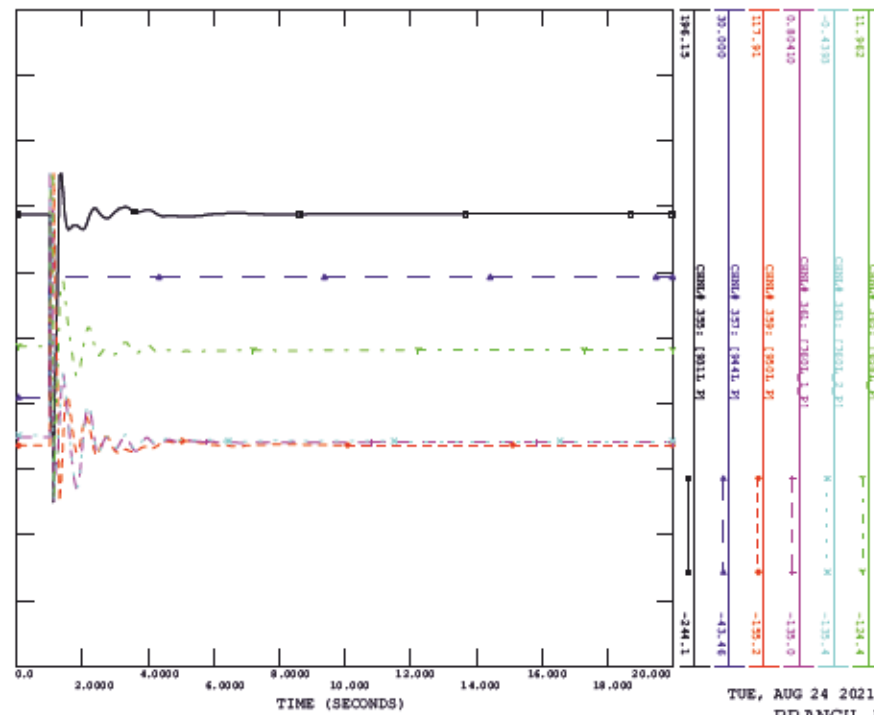
FILE: Scm5_A1_02_944L.out



TUE, AUG 24 2021 13:18
BUS VOLTAGE (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2155

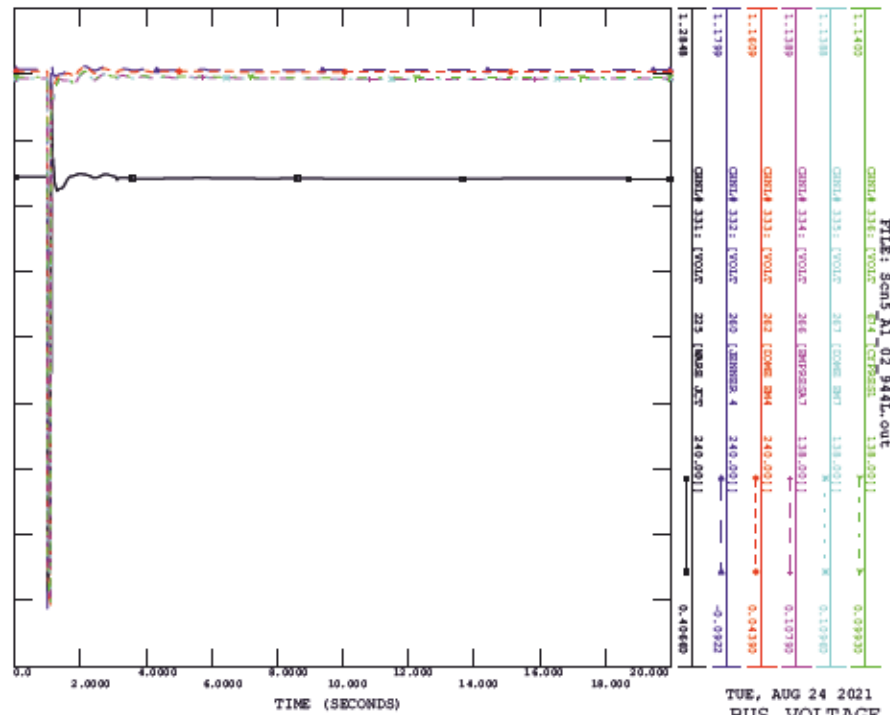
FILE: Scm5_A1_02_944L.out



TUE, AUG 24 2021 13:18
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2155

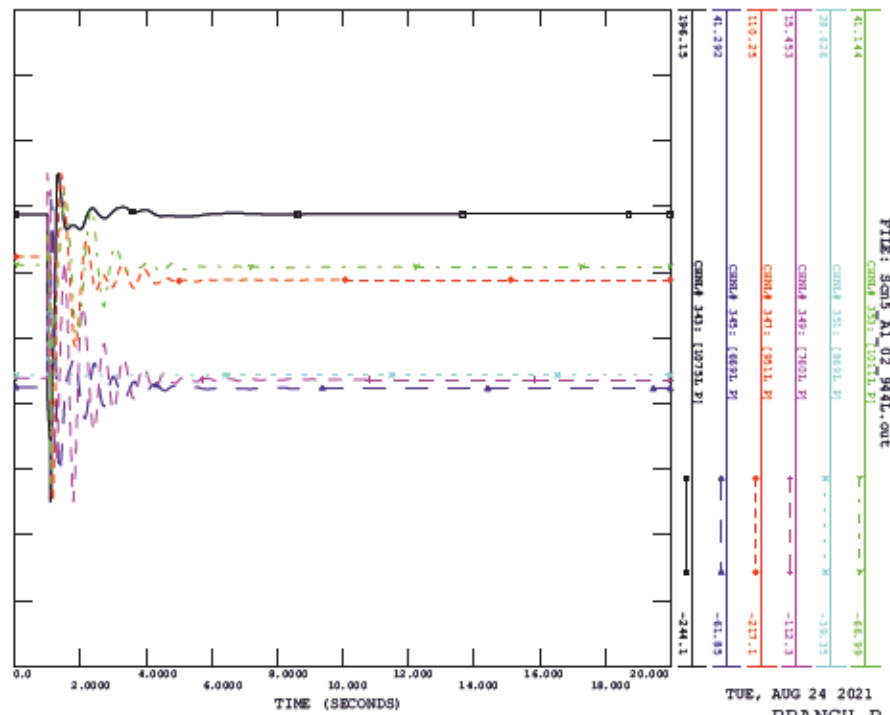
FILE: Scm5_A1_02_944L.out



TUE, AUG 24 2021 13:18
BUS VOLTAGE (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2155

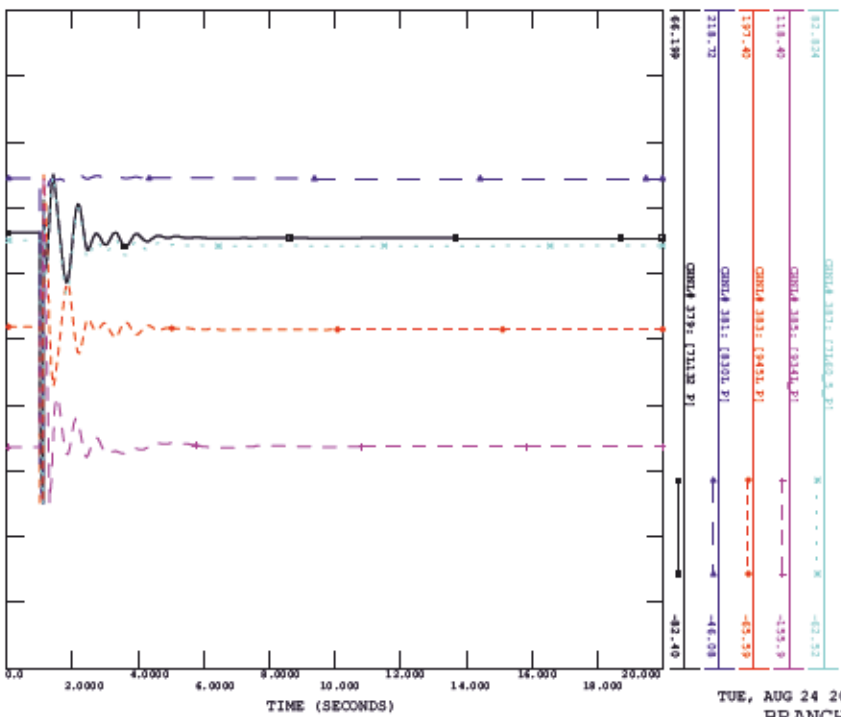
FILE: Scm5_A1_02_944L.out



TUE, AUG 24 2021 13:18
BRANCH P (1)

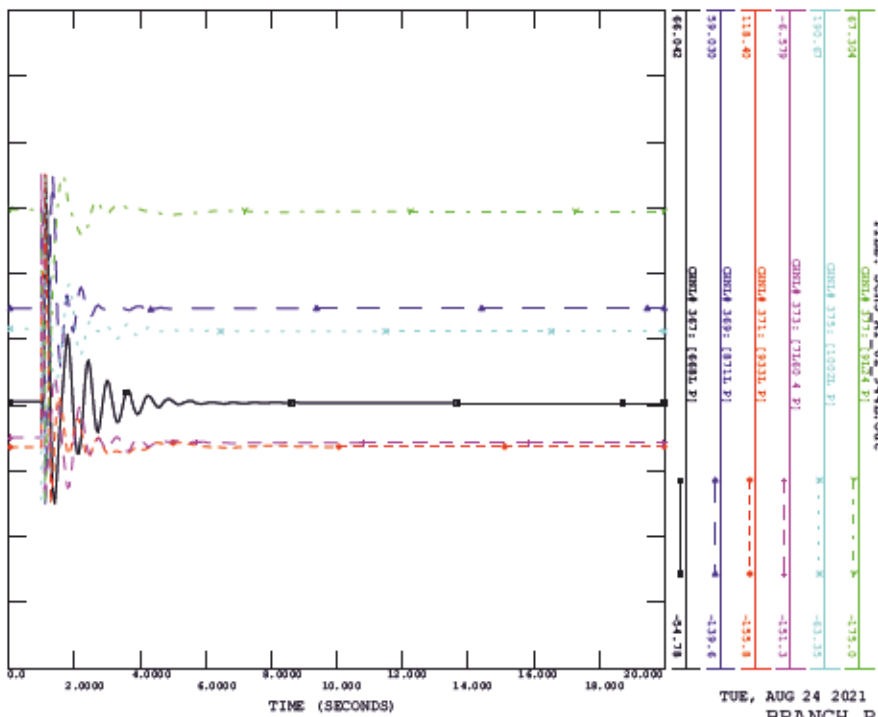
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2755

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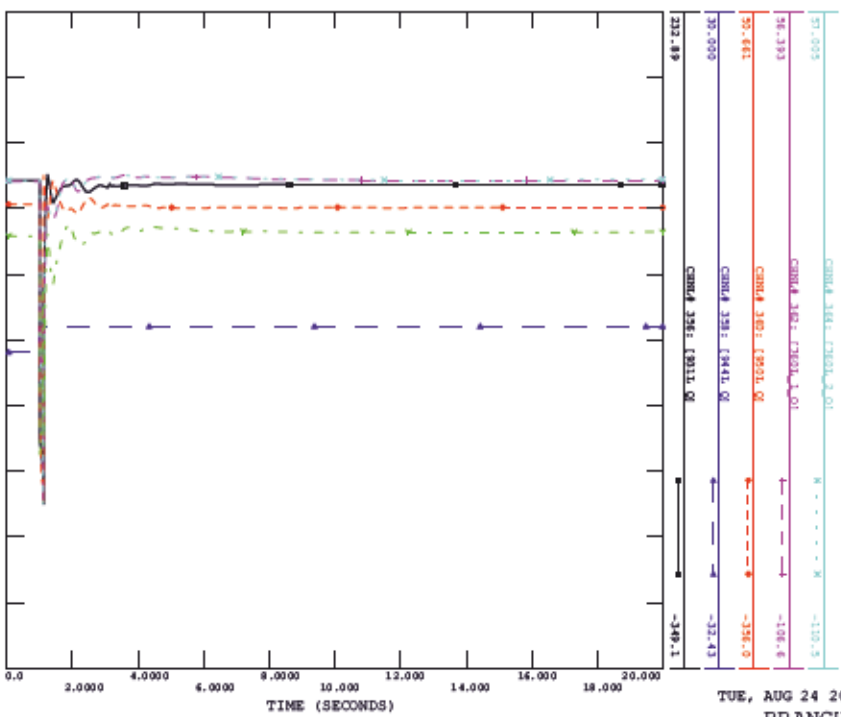
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CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2755

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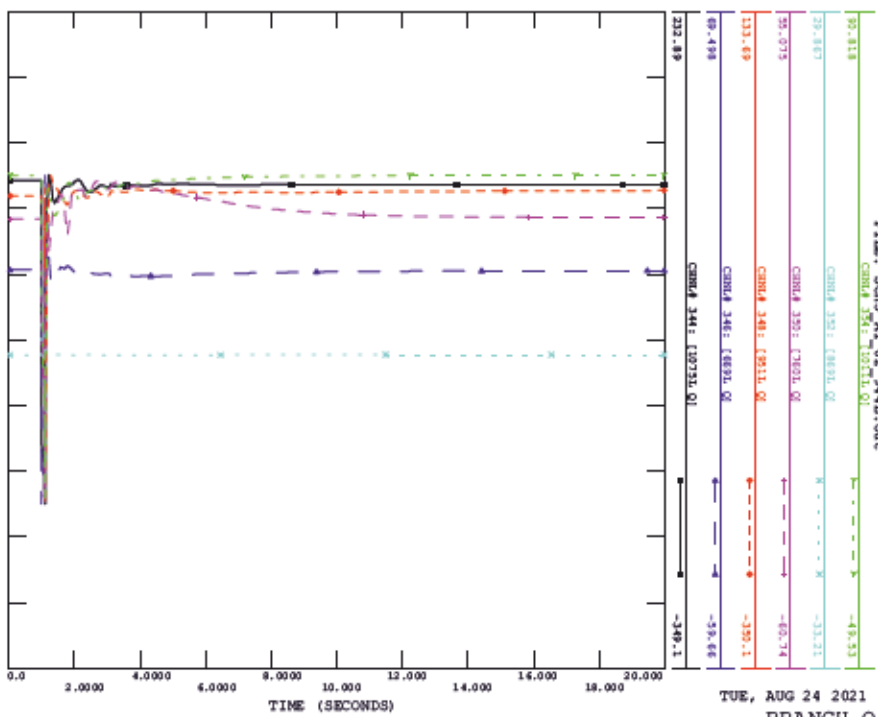
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CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2755

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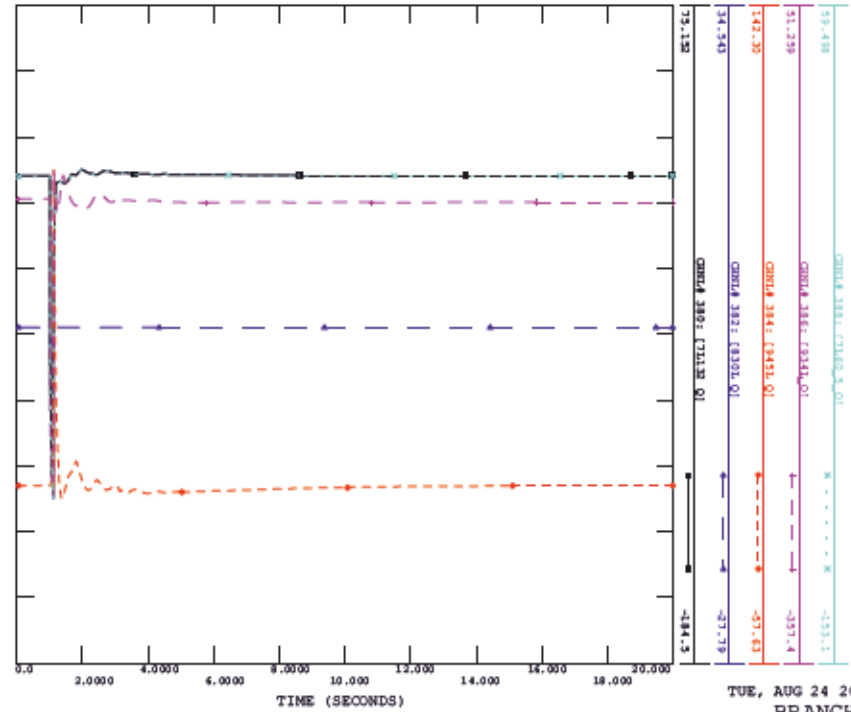
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CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2755

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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2755

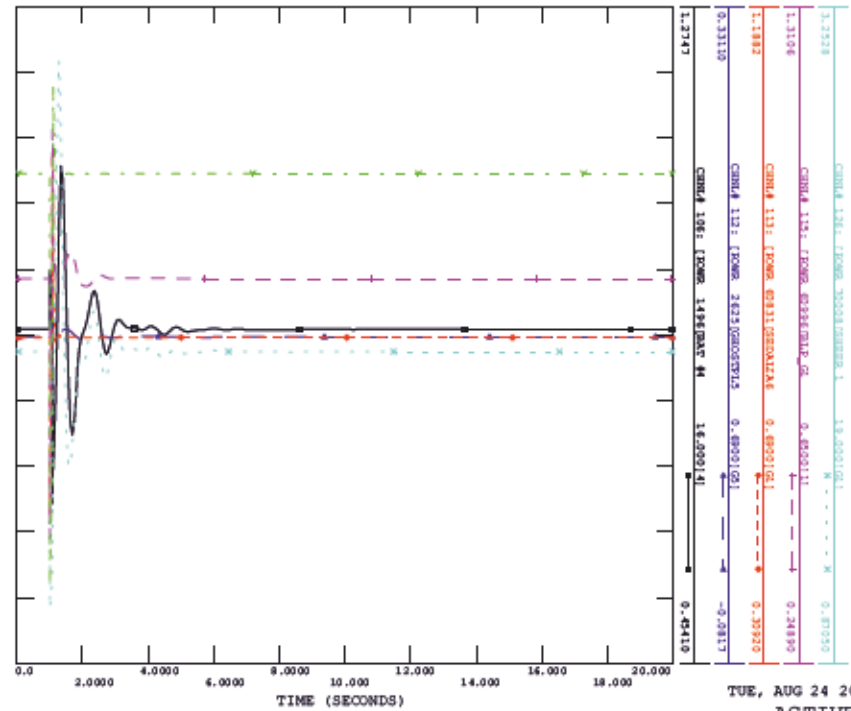
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TUE, AUG 24 2021 13:18
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755

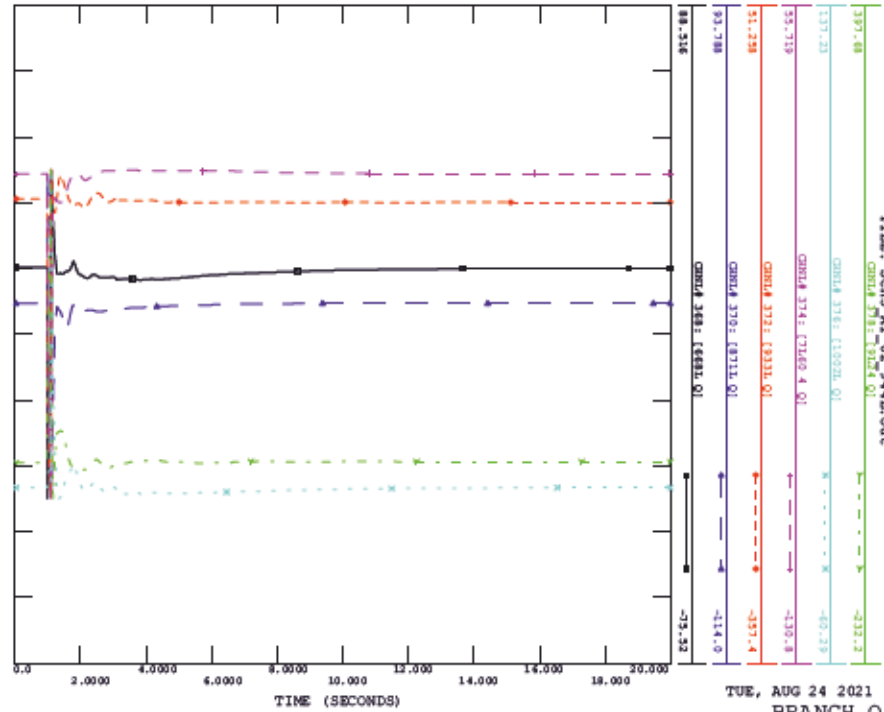
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TUE, AUG 24 2021 13:18
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_02_944L, FAULT LOCATION JENNER 2755

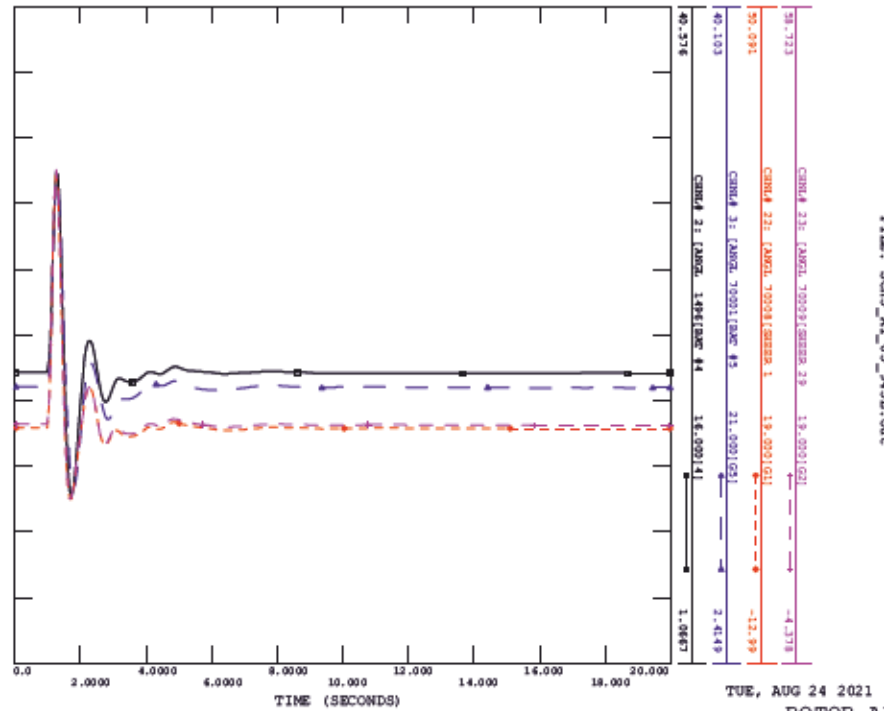
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TUE, AUG 24 2021 13:18
BRANCH Q (3)

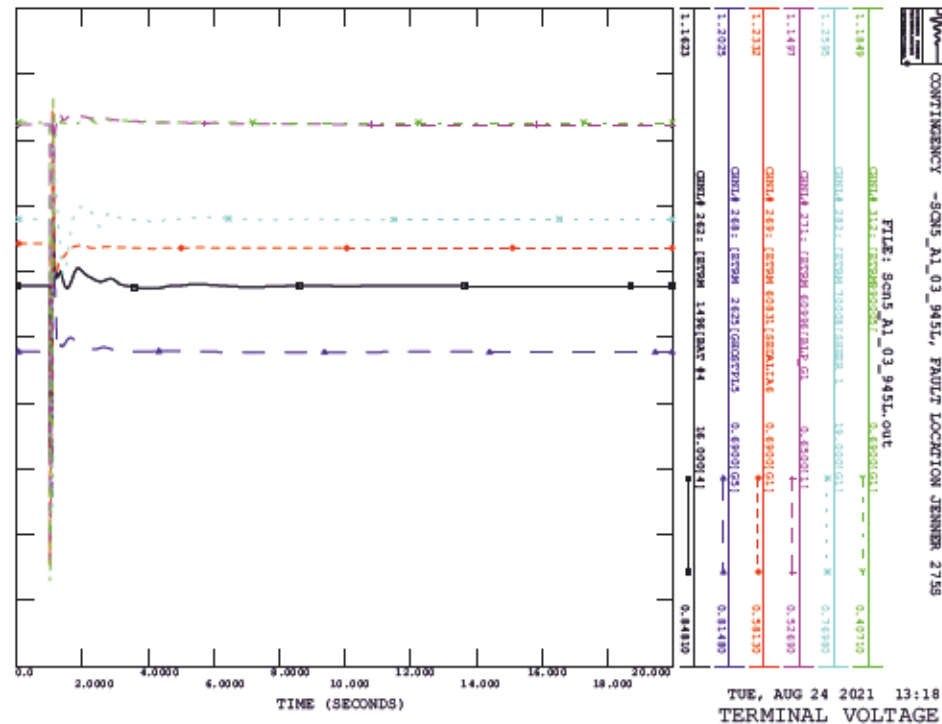
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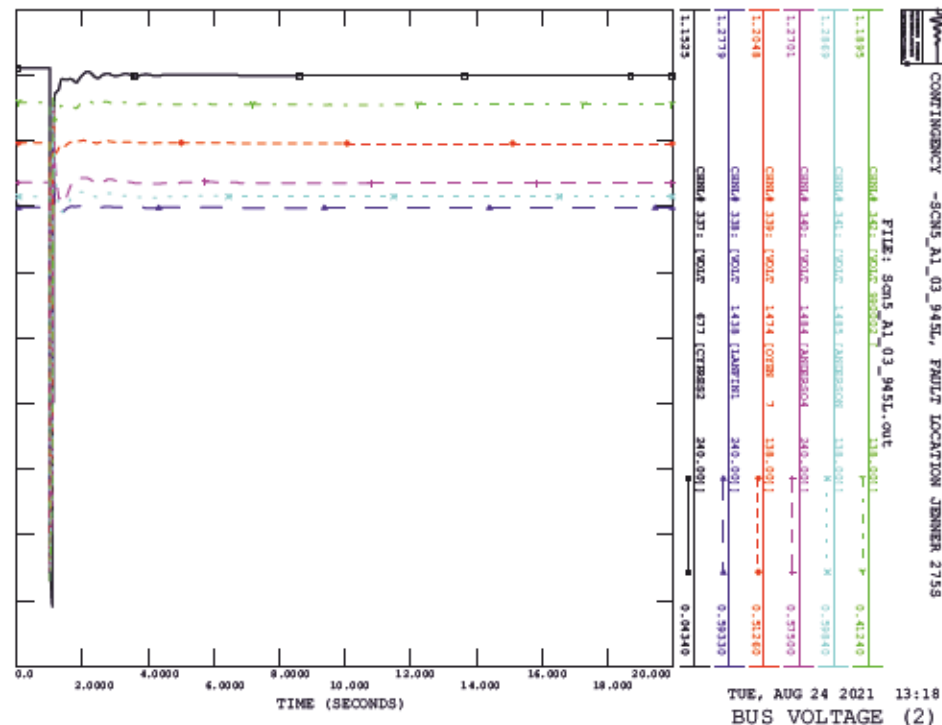


TUE, AUG 24 2021 13:18
ROTOR ANGLE

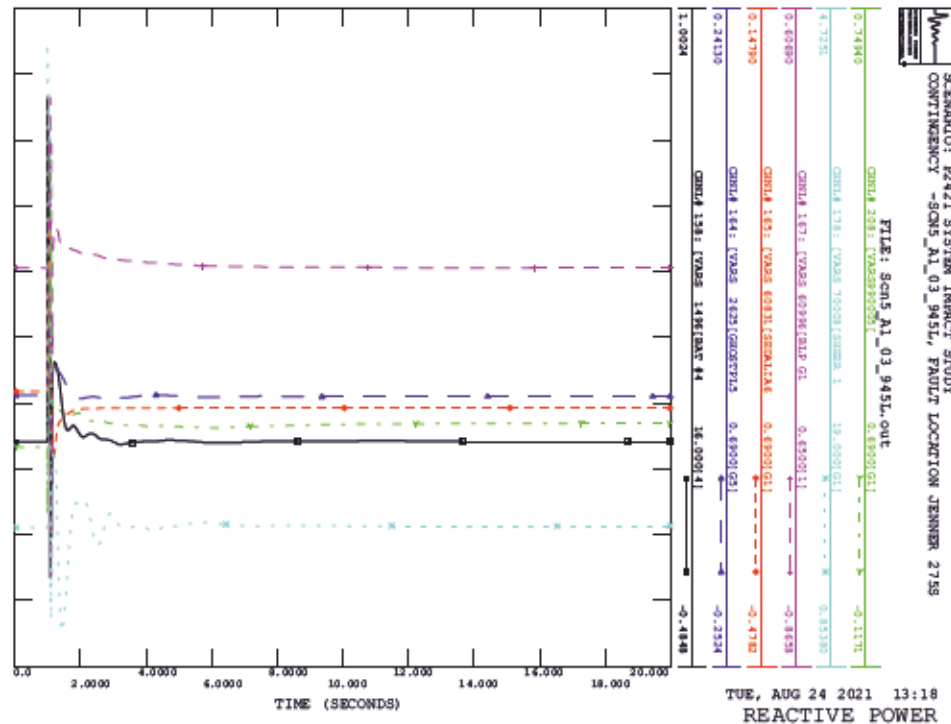
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CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755



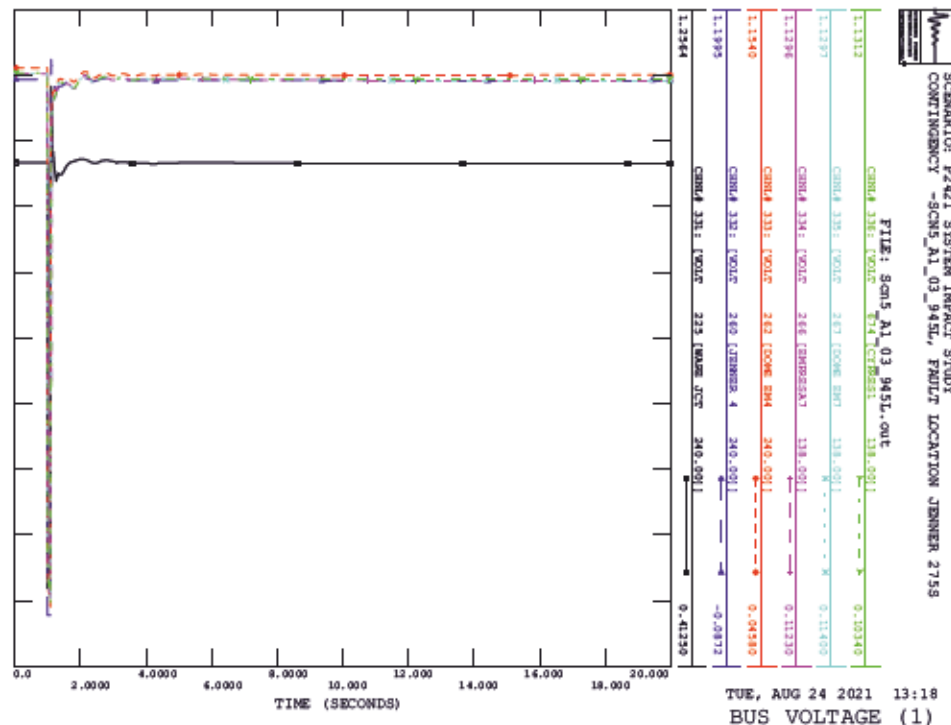
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CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755

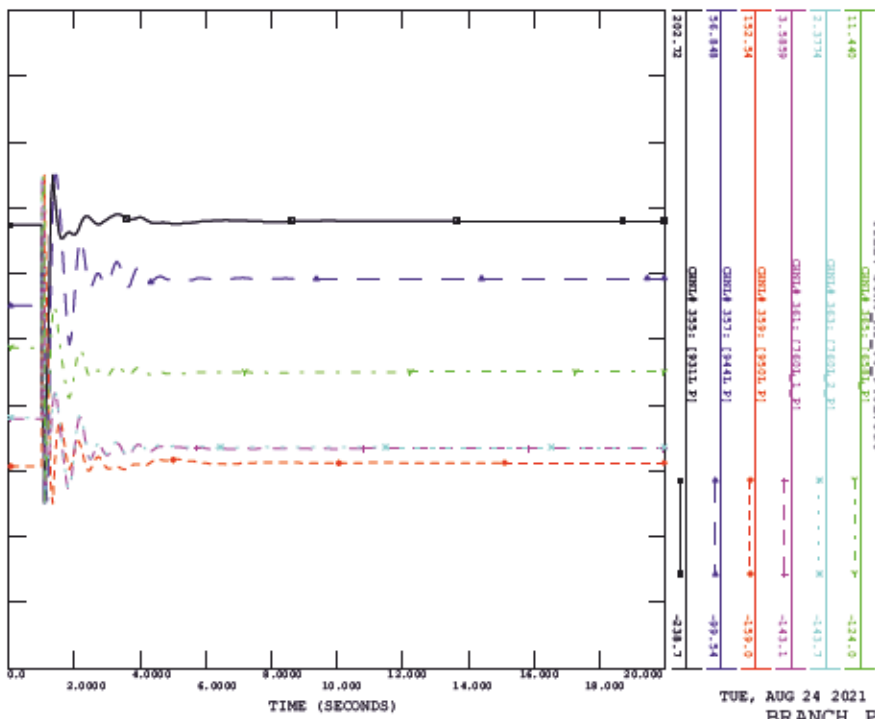


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CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755



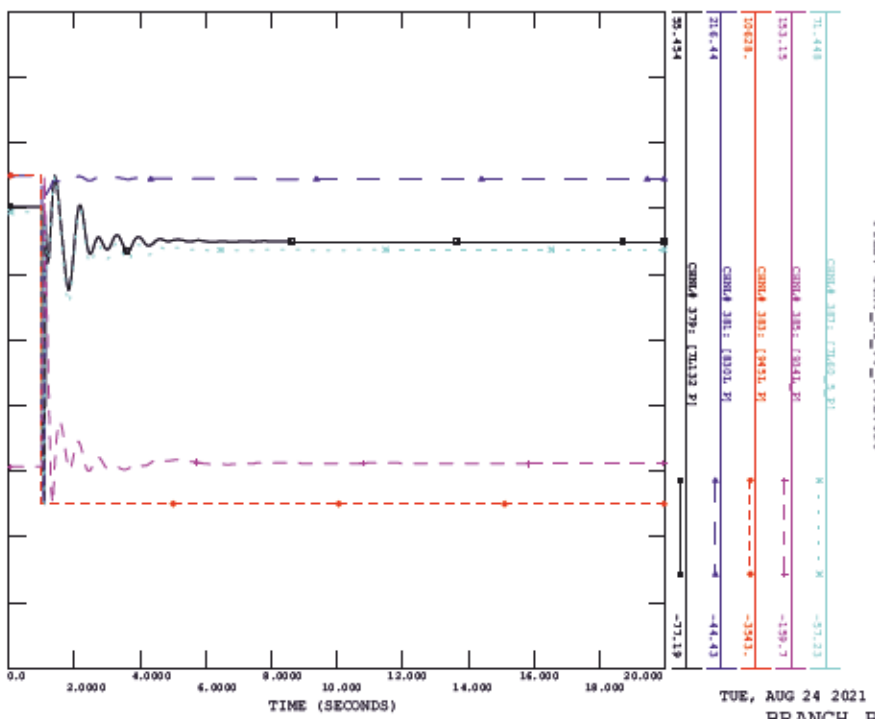
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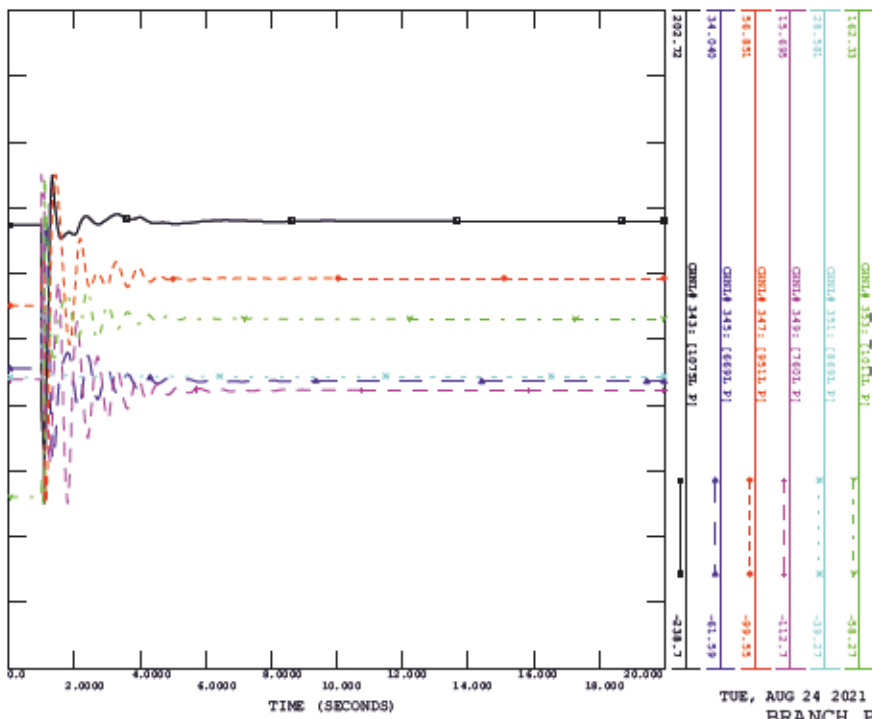
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CONTINGENCY -SCM5_AI_03_945L, FAULT LOCATION JENNER 2755

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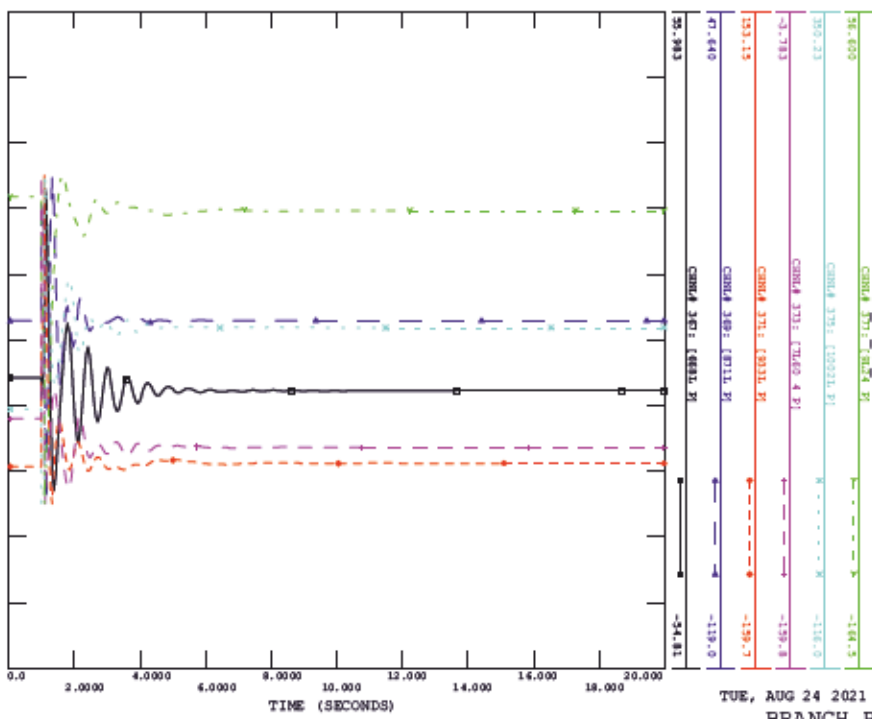
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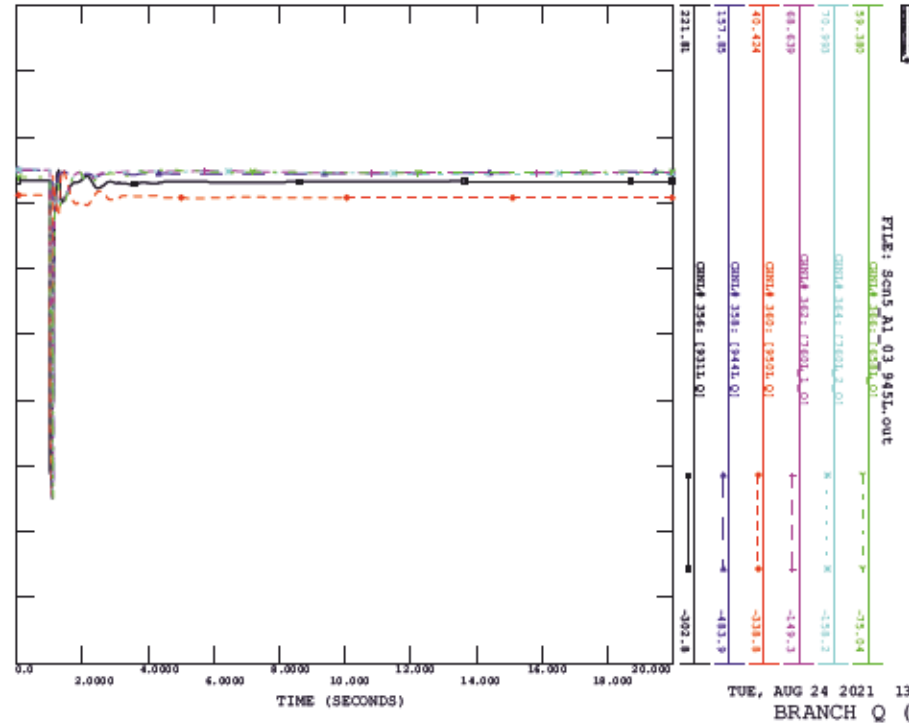


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CONTINGENCY -SCM5_AI_03_945L, FAULT LOCATION JENNER 2755

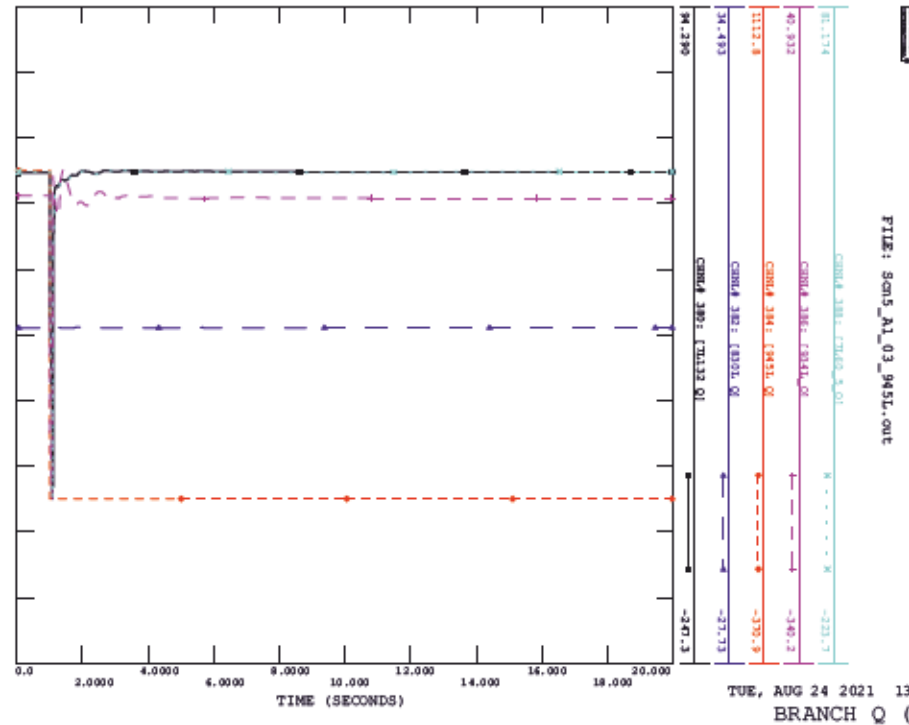
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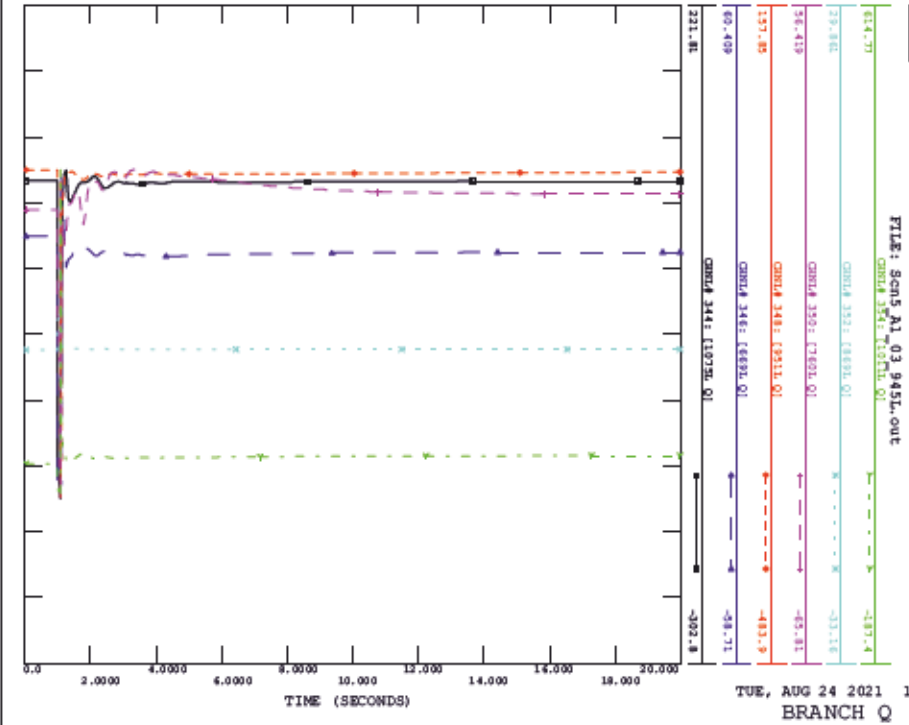
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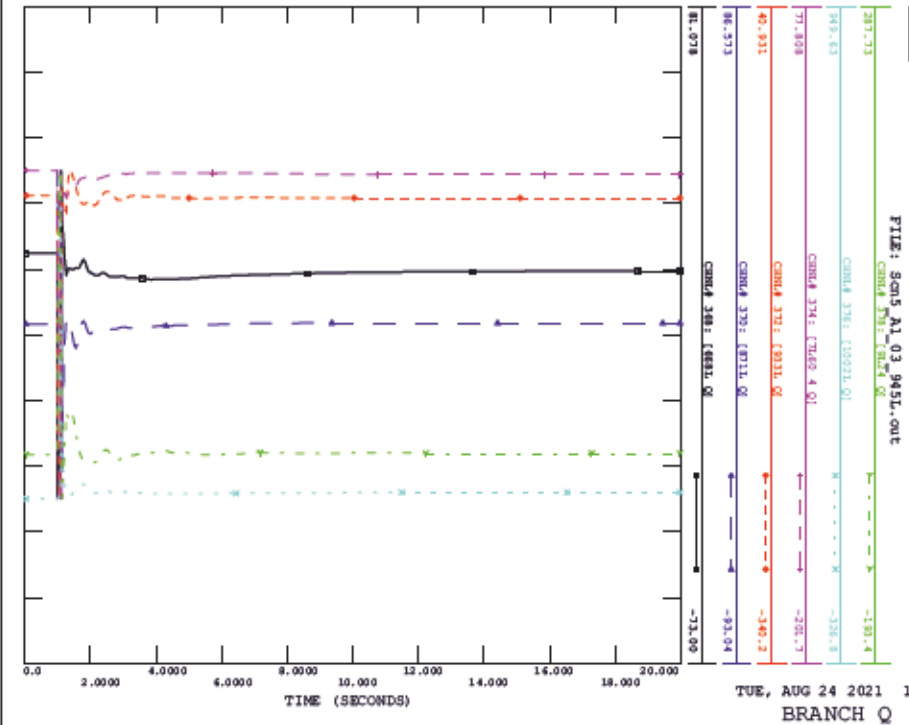
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CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755



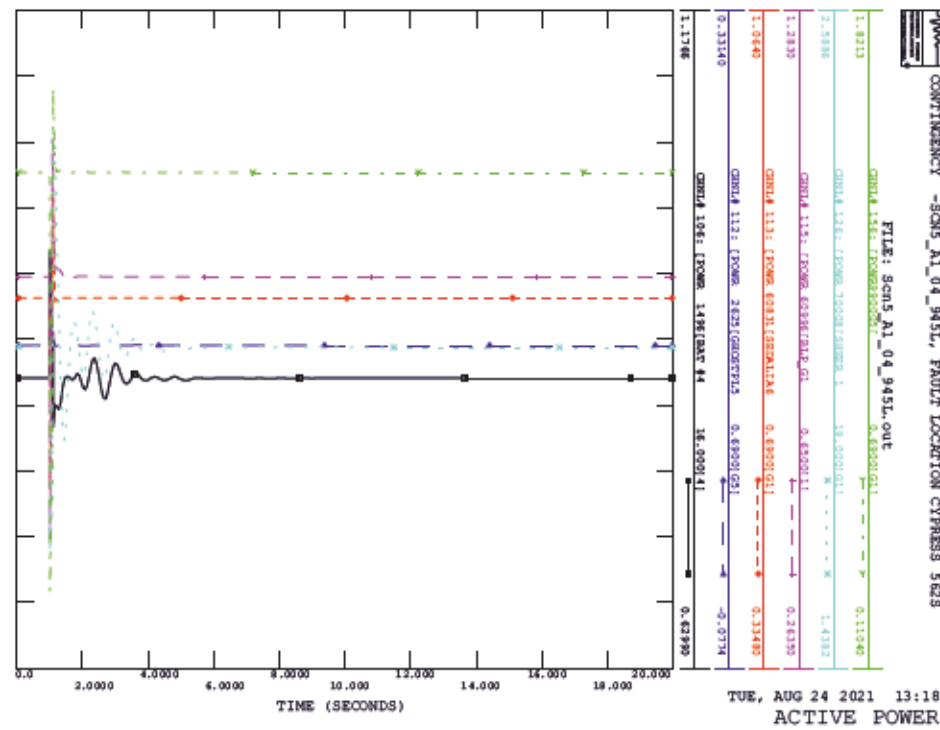
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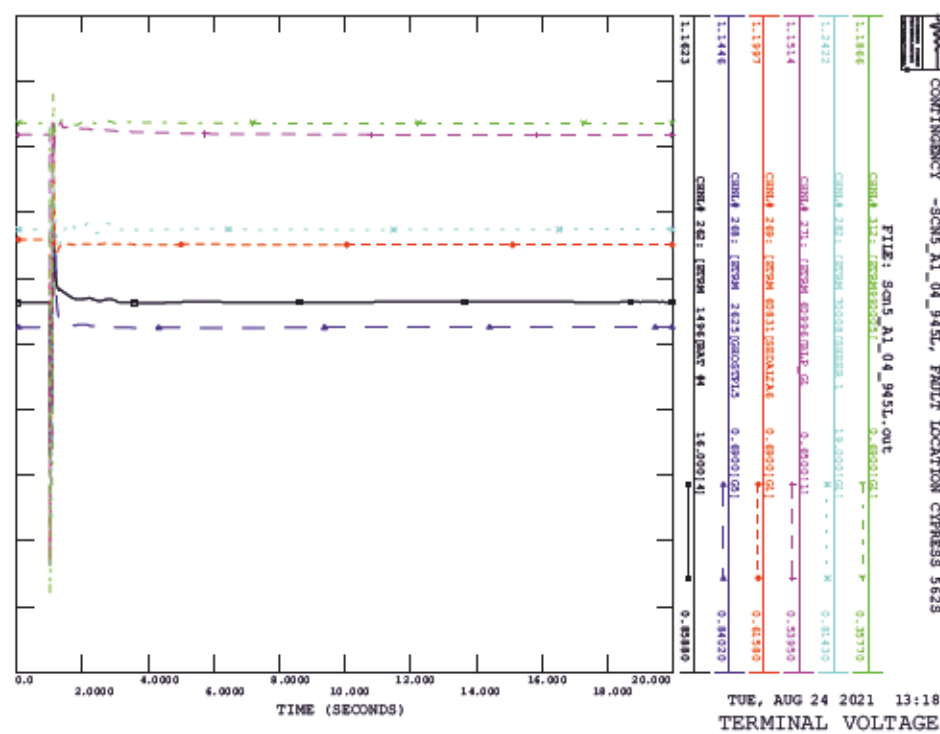
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CONTINGENCY -SCM5_A1_03_945L, FAULT LOCATION JENNER 2755



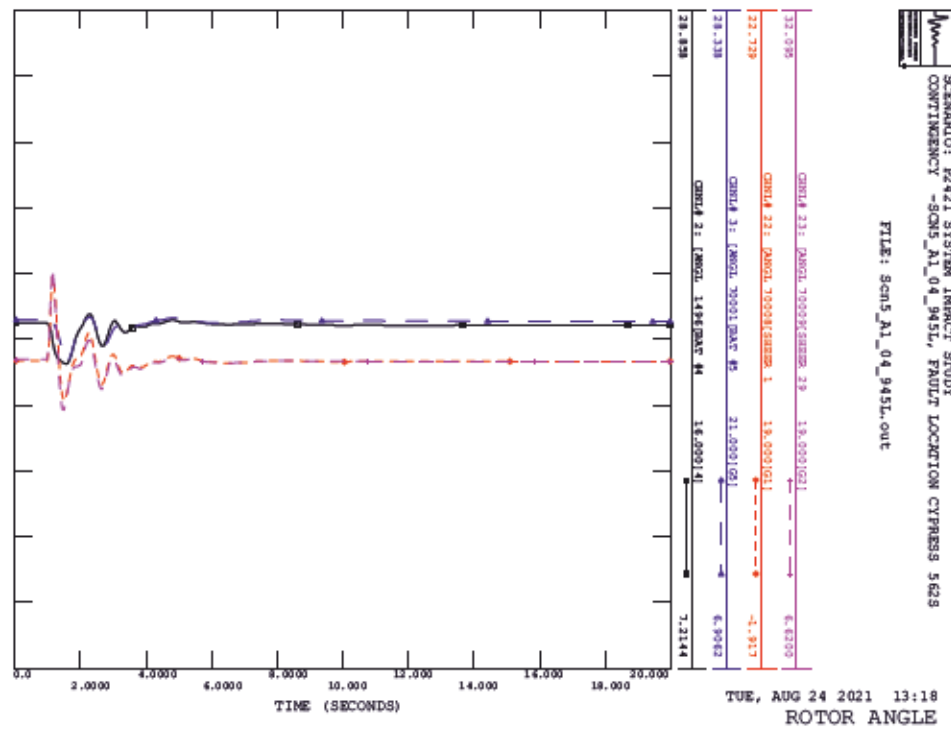
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CONTINGENCY -SCM5_A1_04_945L, FAULT LOCATION CYPRESS 5629



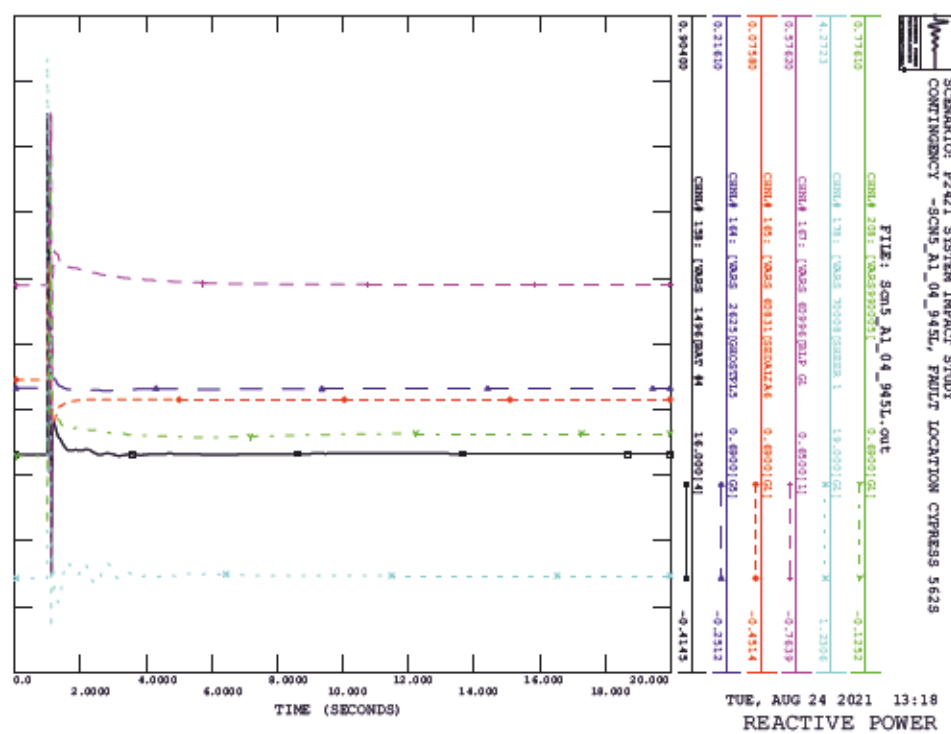
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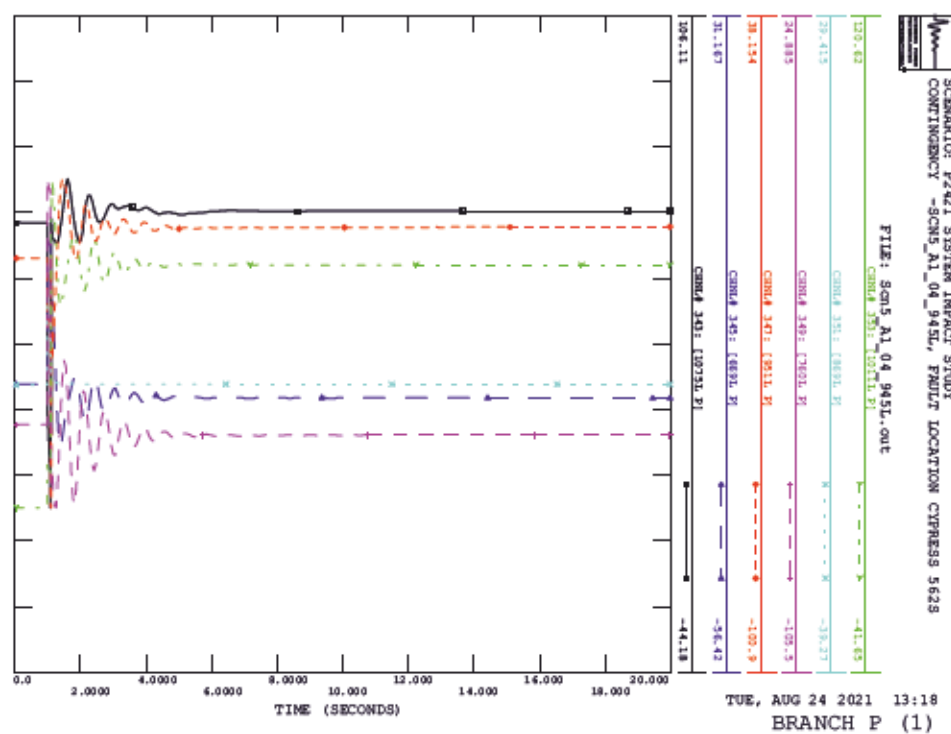
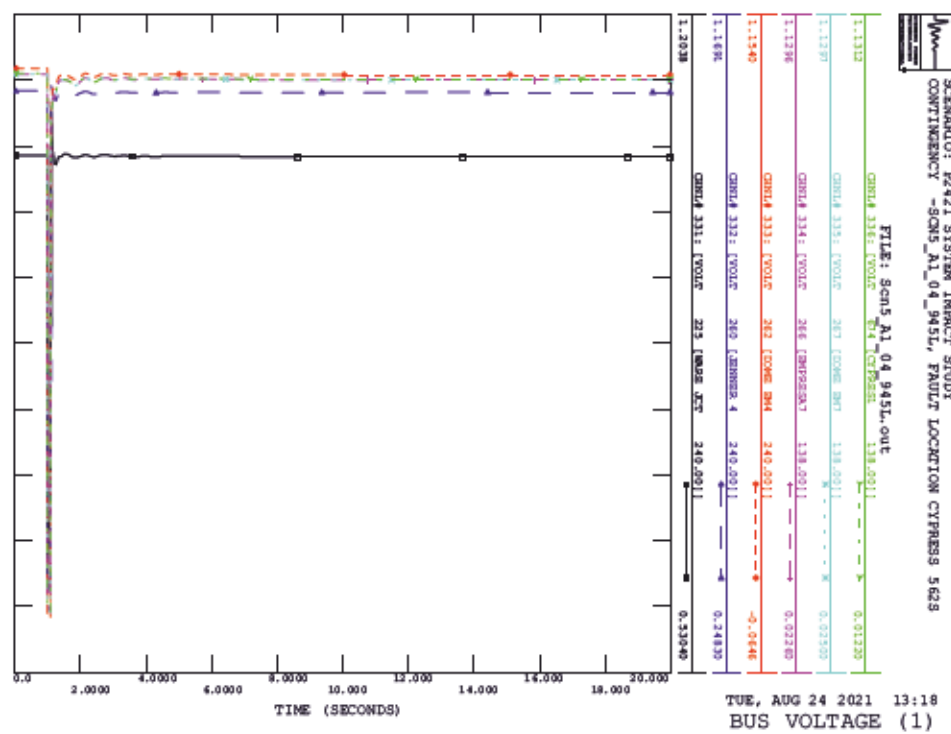
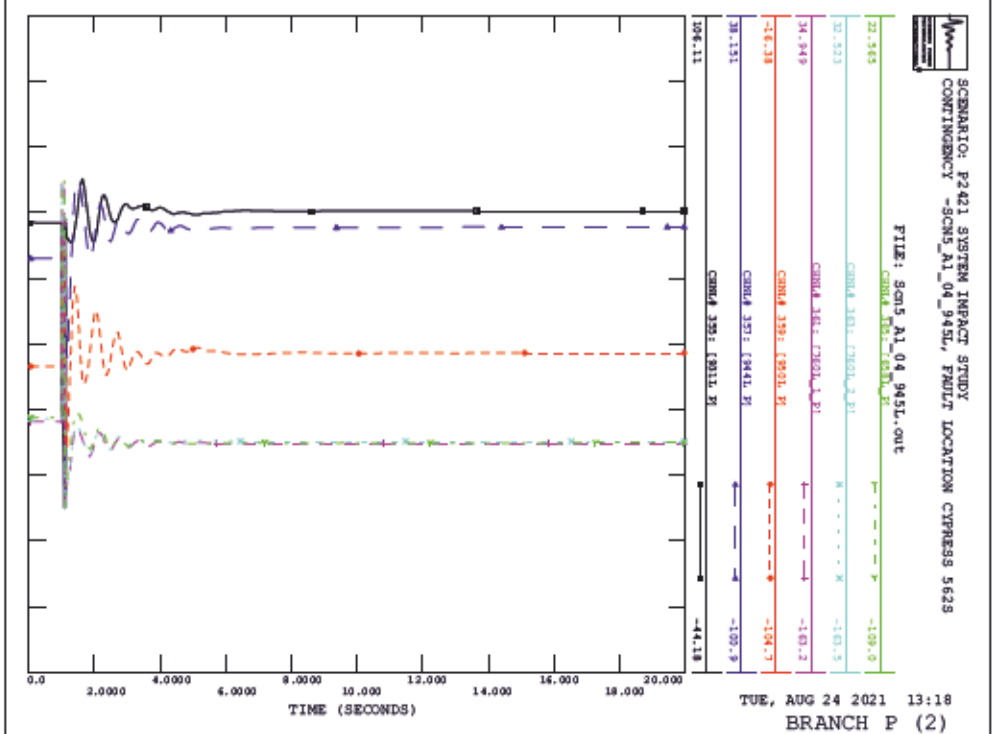
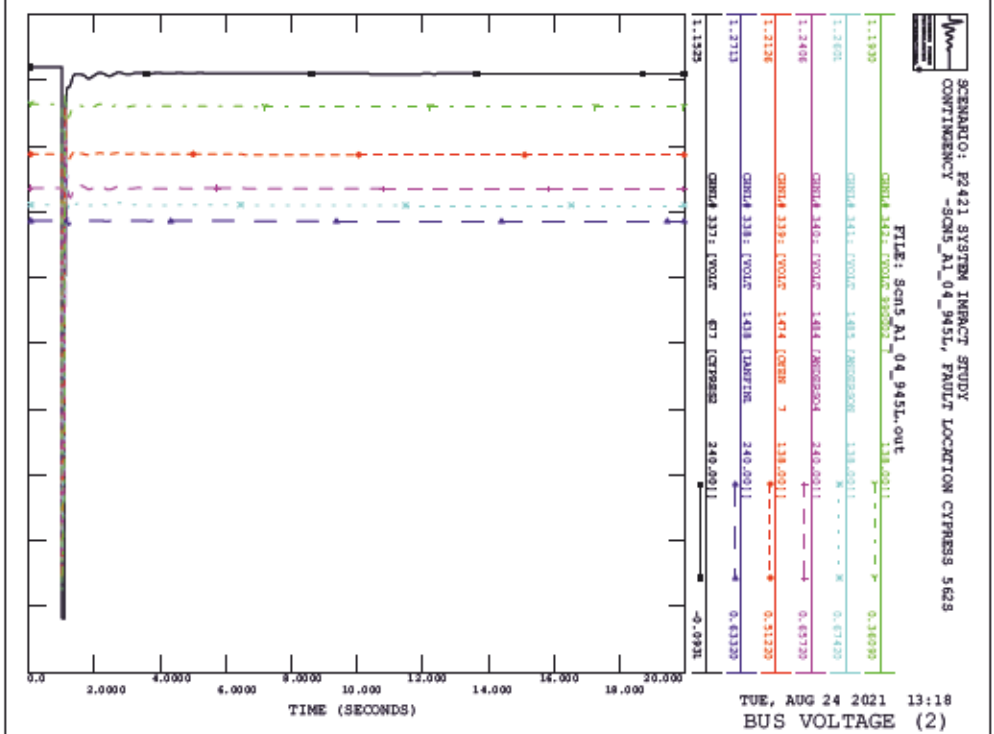


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CONTINGENCY -SCM5_A1_04_945L, FAULT LOCATION CYPRESS 5629



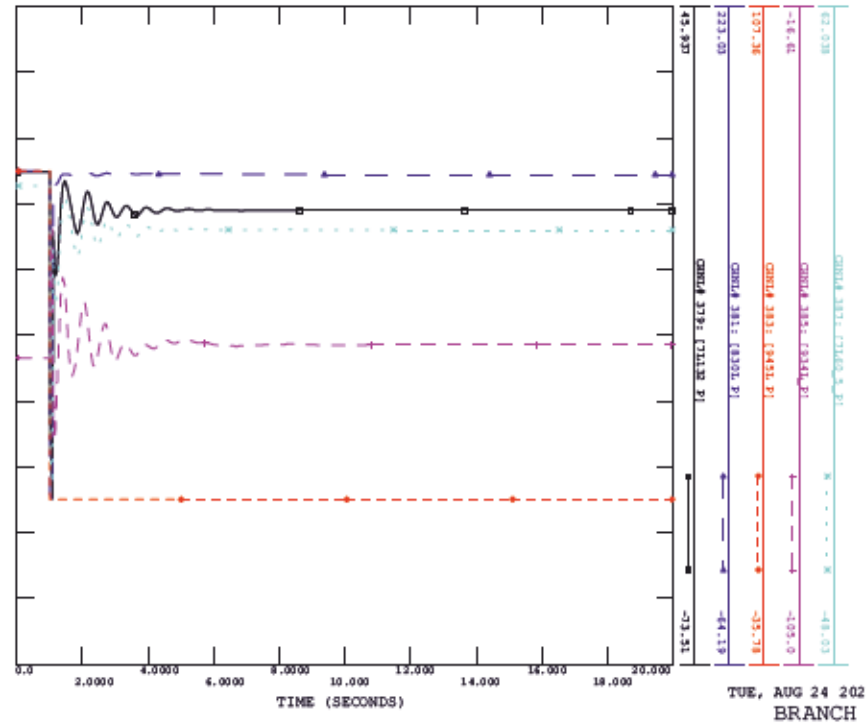
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CONTINGENCY -SCM5_A1_04_945L, FAULT LOCATION CYPRESS 5629





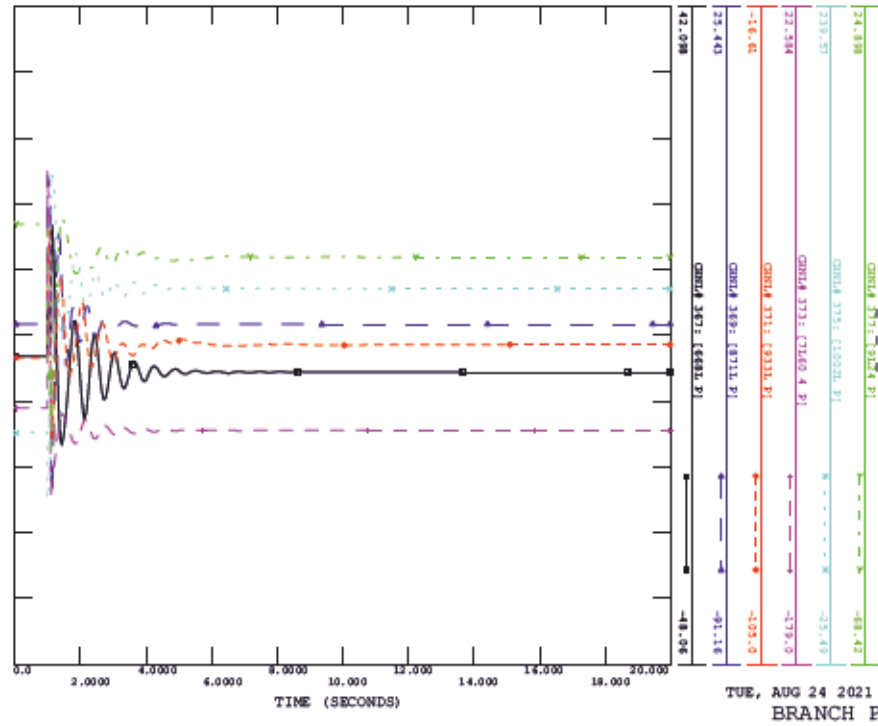
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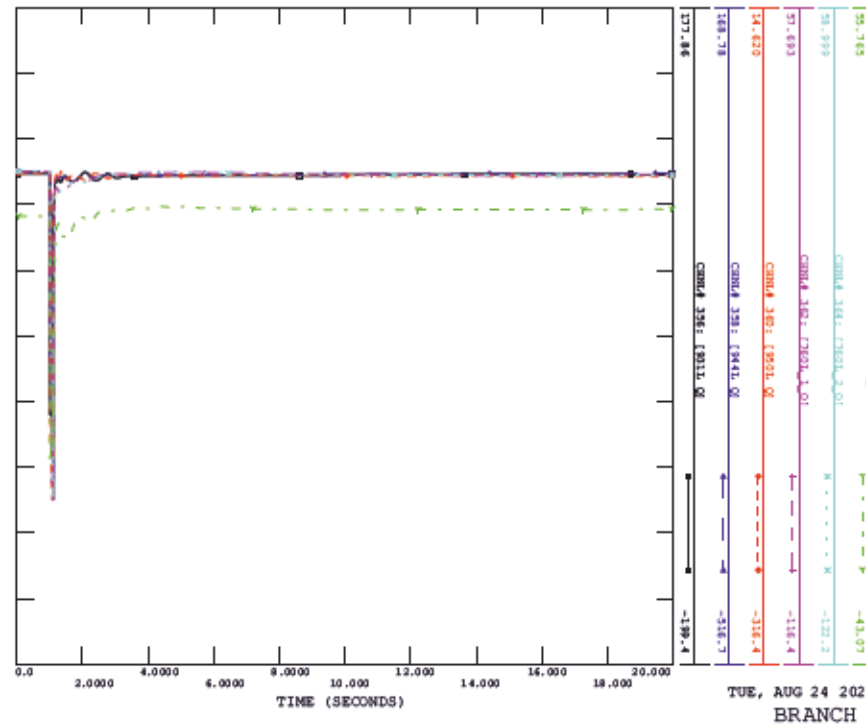
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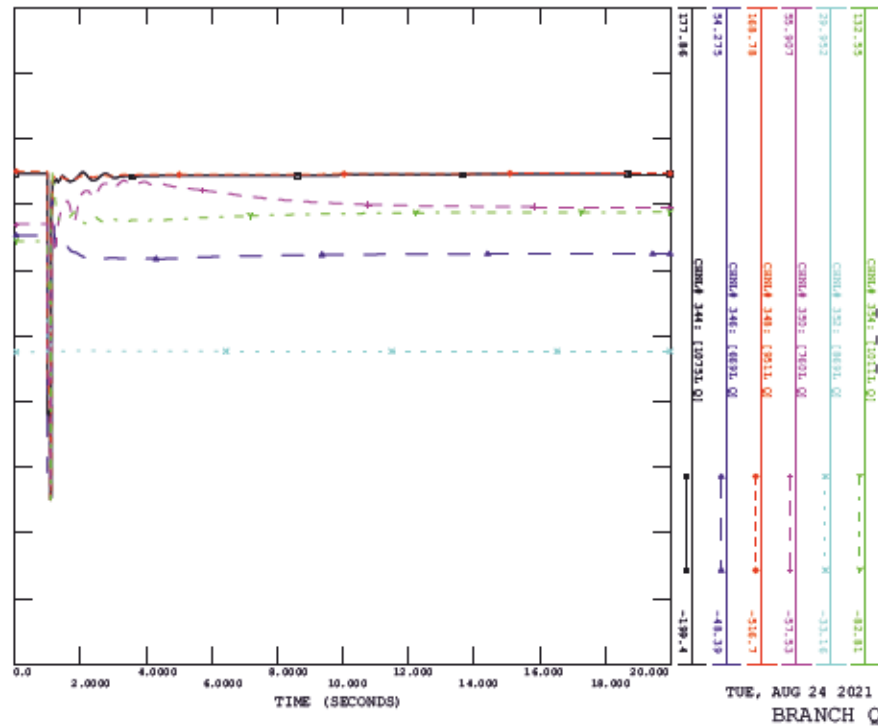
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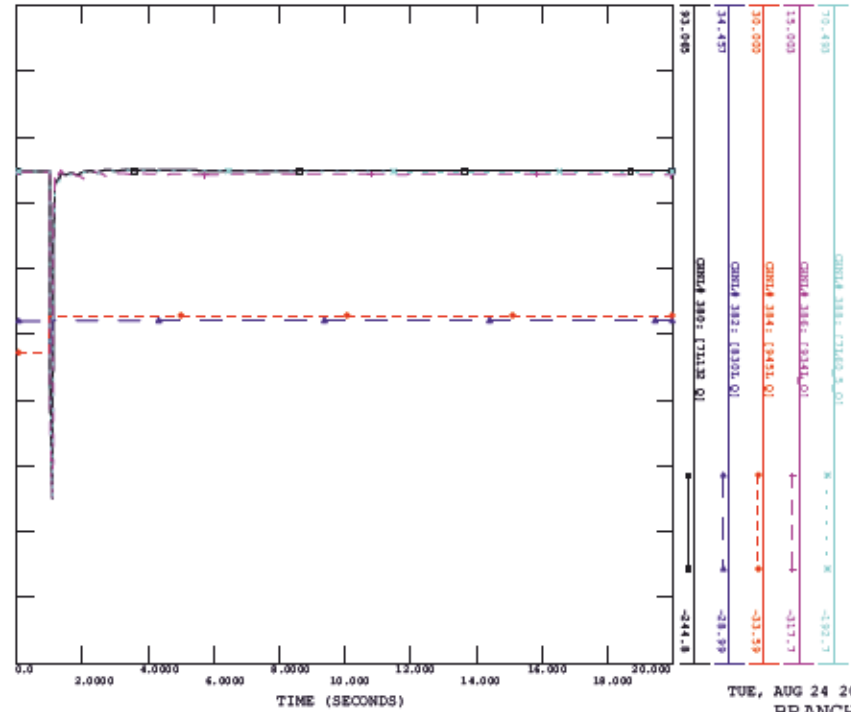
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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_04_945L, FAULT LOCATION CYPRESS 5629

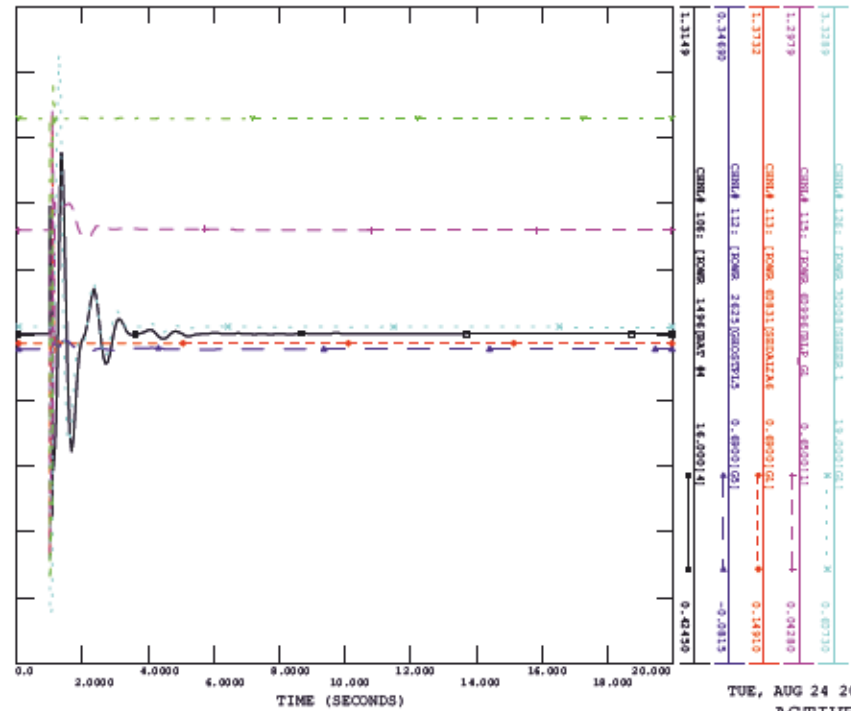
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TUE, AUG 24 2021 13:18
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_05_951L, FAULT LOCATION WARE JUNCTION

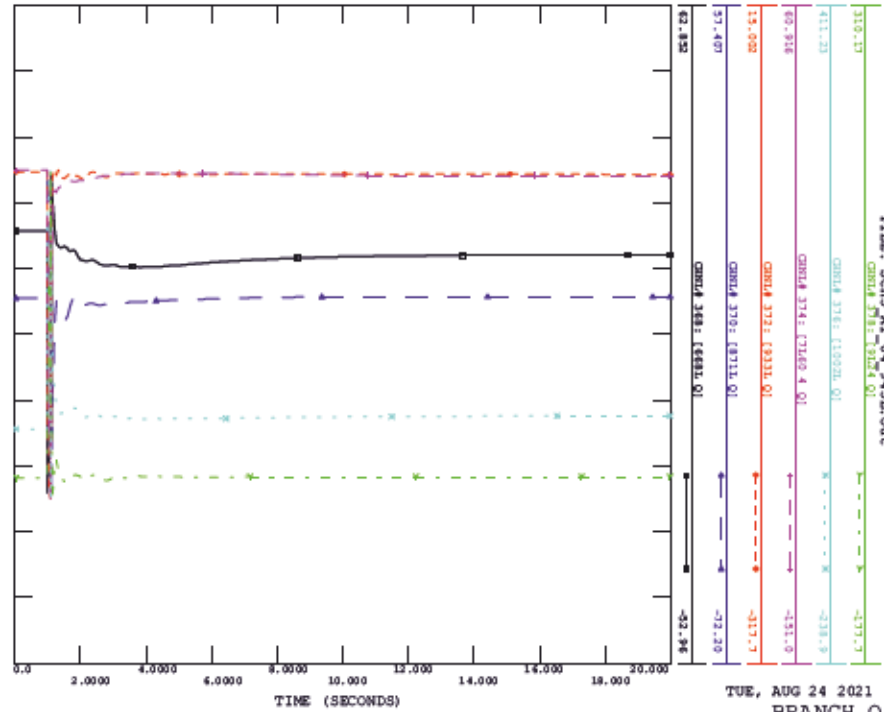
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TUE, AUG 24 2021 13:18
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_04_945L, FAULT LOCATION CYPRESS 5629

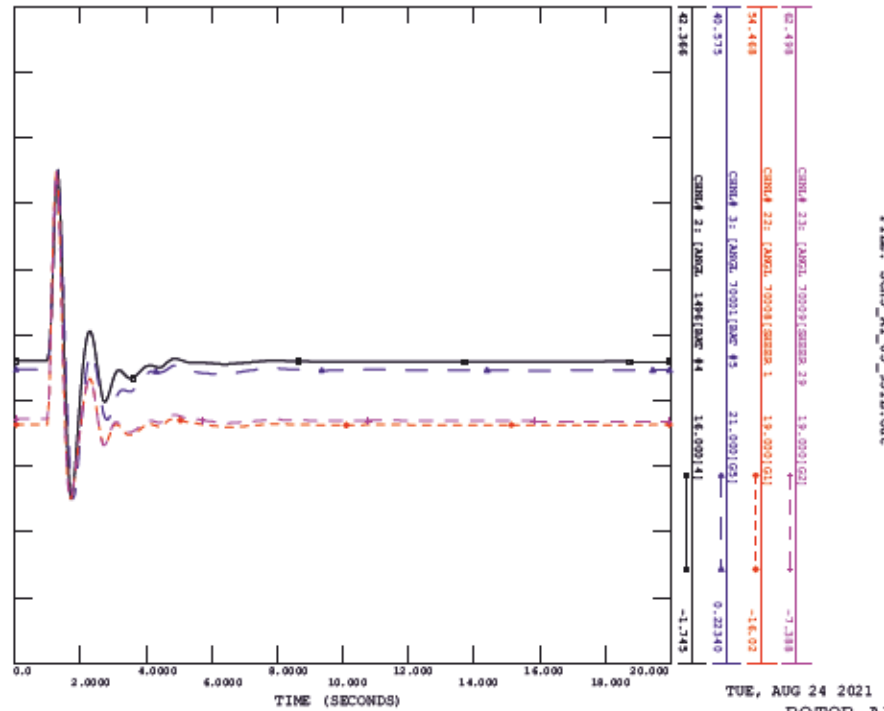
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TUE, AUG 24 2021 13:18
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_05_951L, FAULT LOCATION WARE JUNCTION

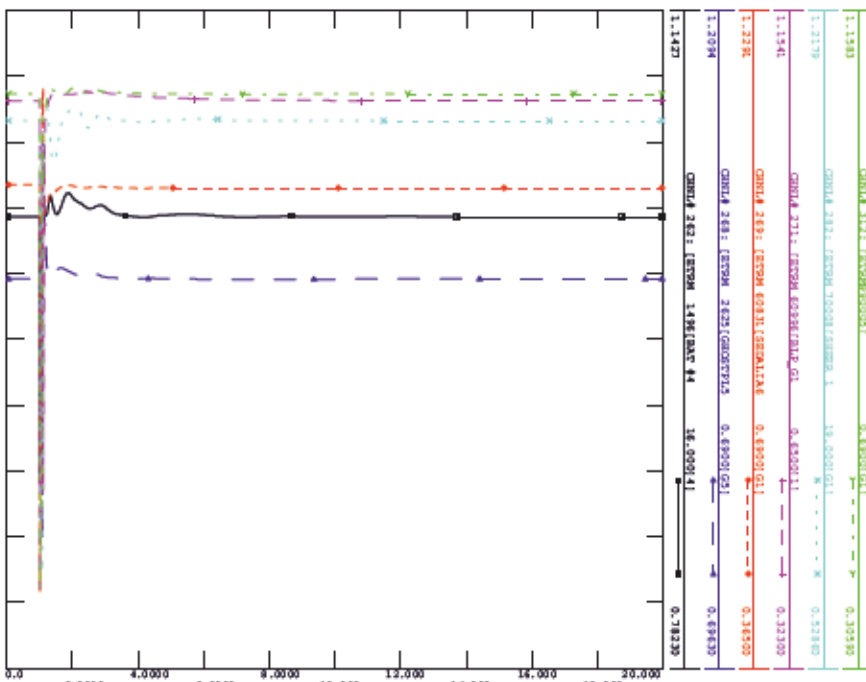
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TUE, AUG 24 2021 13:18
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_05_951L, FAULT LOCATION WARE JUNCTION

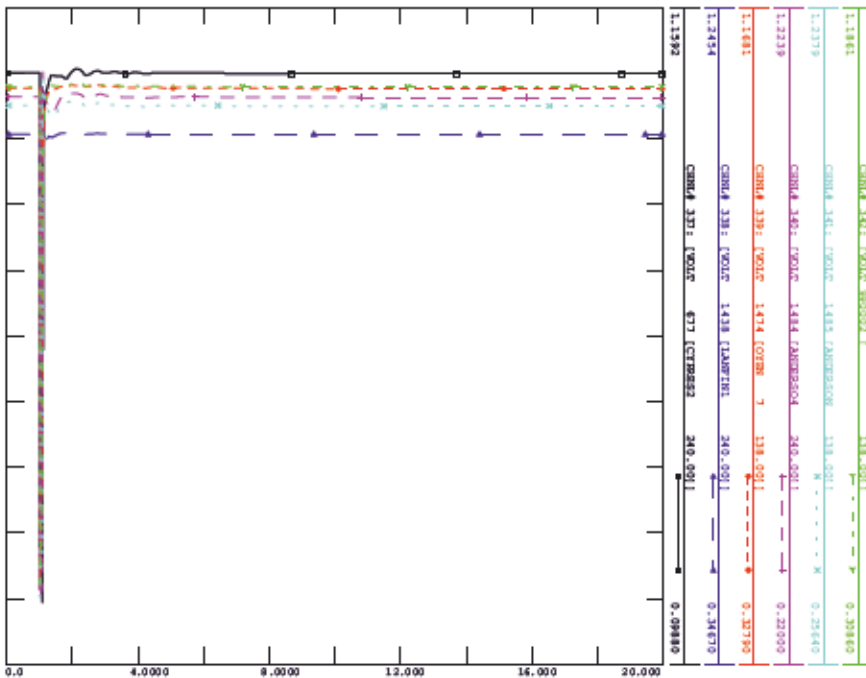
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TUE, AUG 24 2021 13:18
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_05_951L, FAULT LOCATION WARE JUNCTION

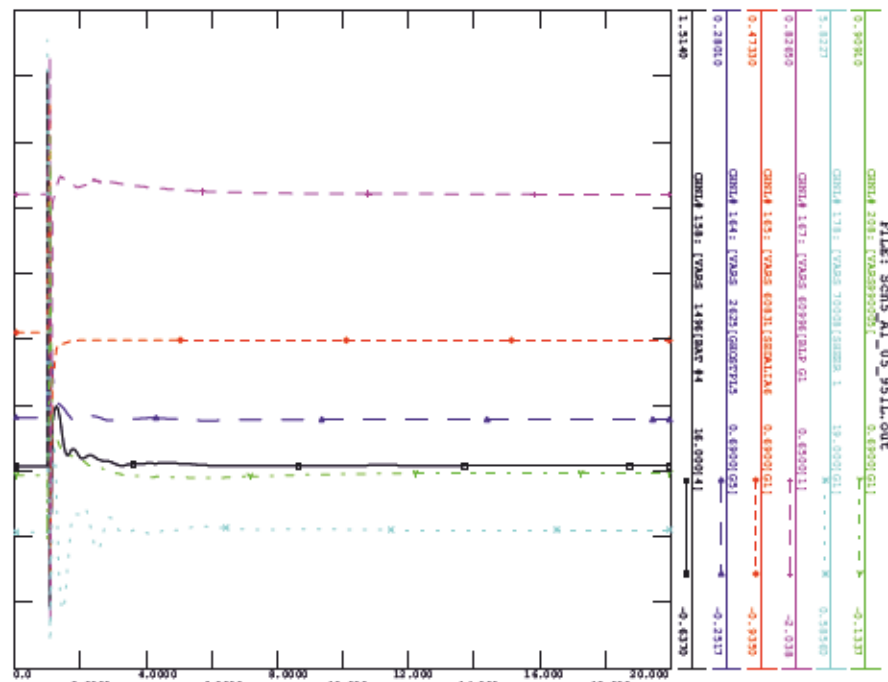
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TUE, AUG 24 2021 13:18
BUS VOLTAGE (2)

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CONTINGENCY -SCM5_A1_05_951L, FAULT LOCATION WARE JUNCTION

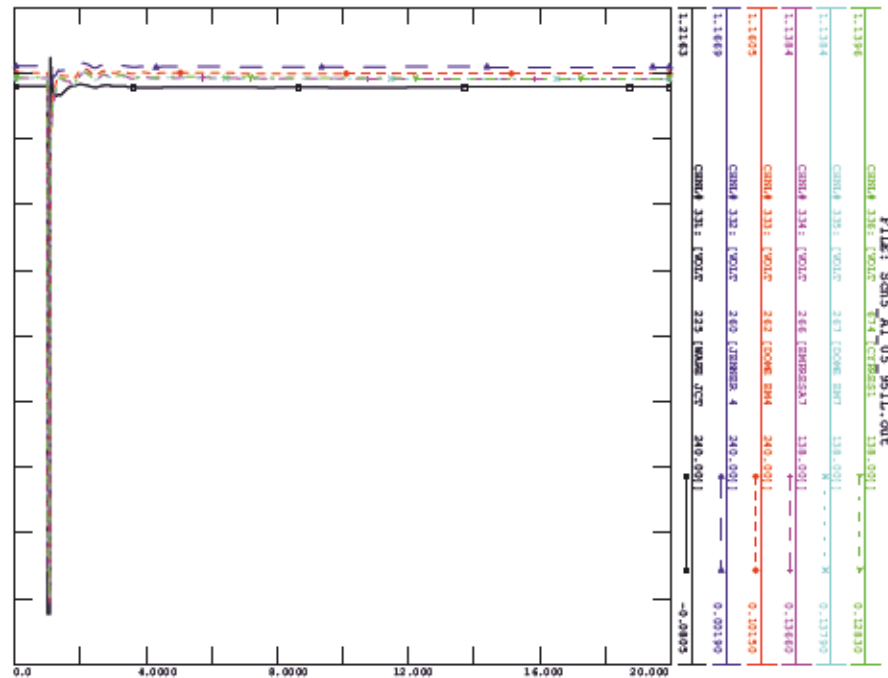
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TUE, AUG 24 2021 13:18
REACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_05_951L, FAULT LOCATION WARE JUNCTION

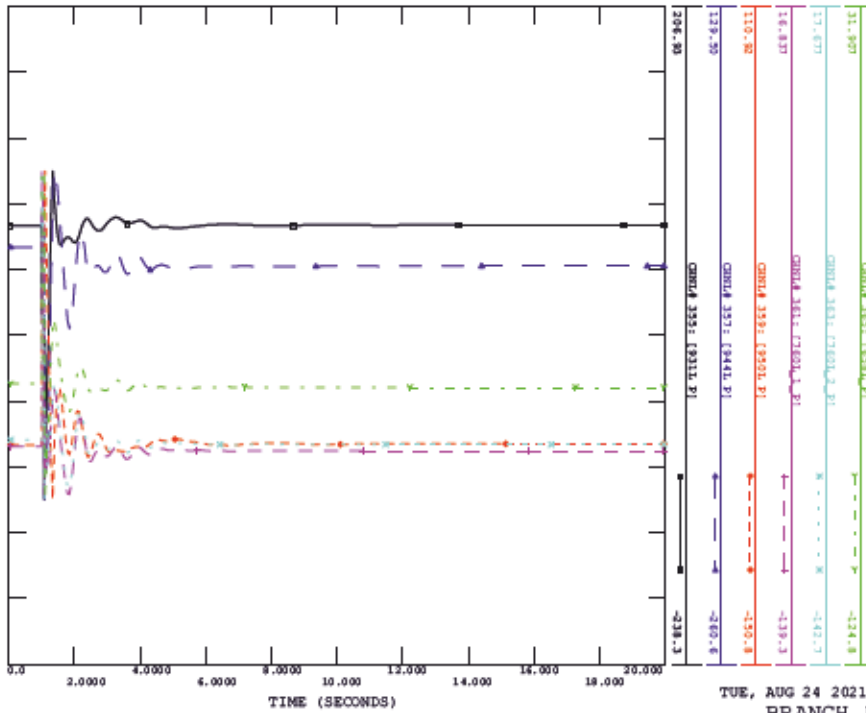
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TUE, AUG 24 2021 13:18
BUS VOLTAGE (1)

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CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

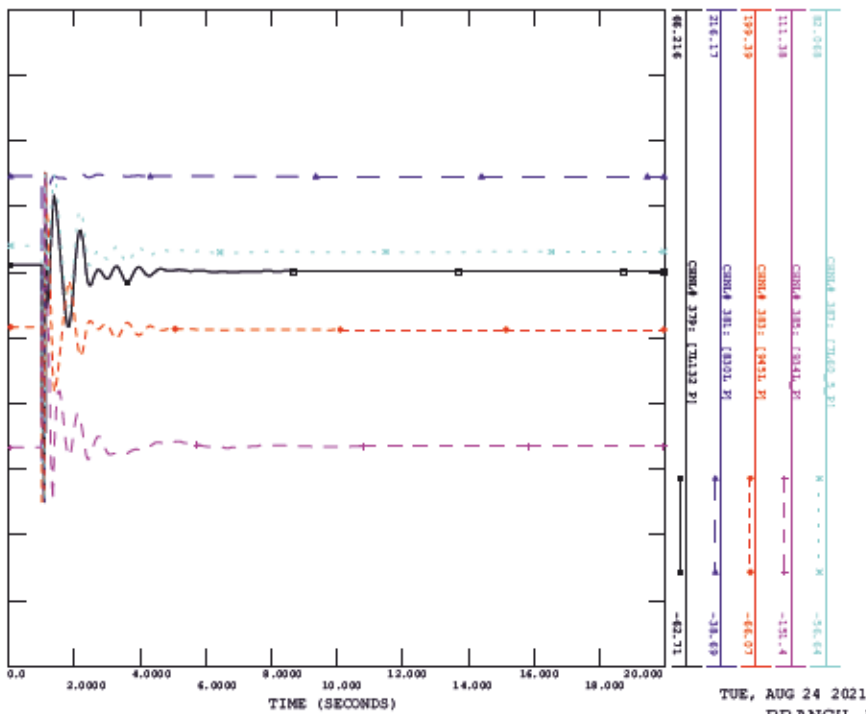
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TUE, AUG 24 2021 13:18
BRANCH P (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

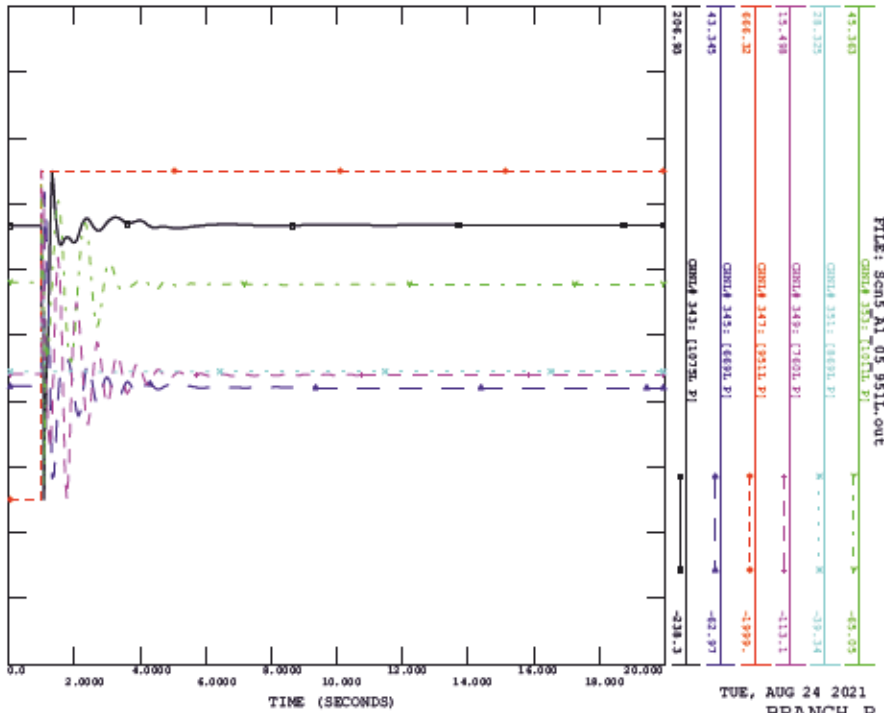
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TUE, AUG 24 2021 13:18
BRANCH P (4)

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CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

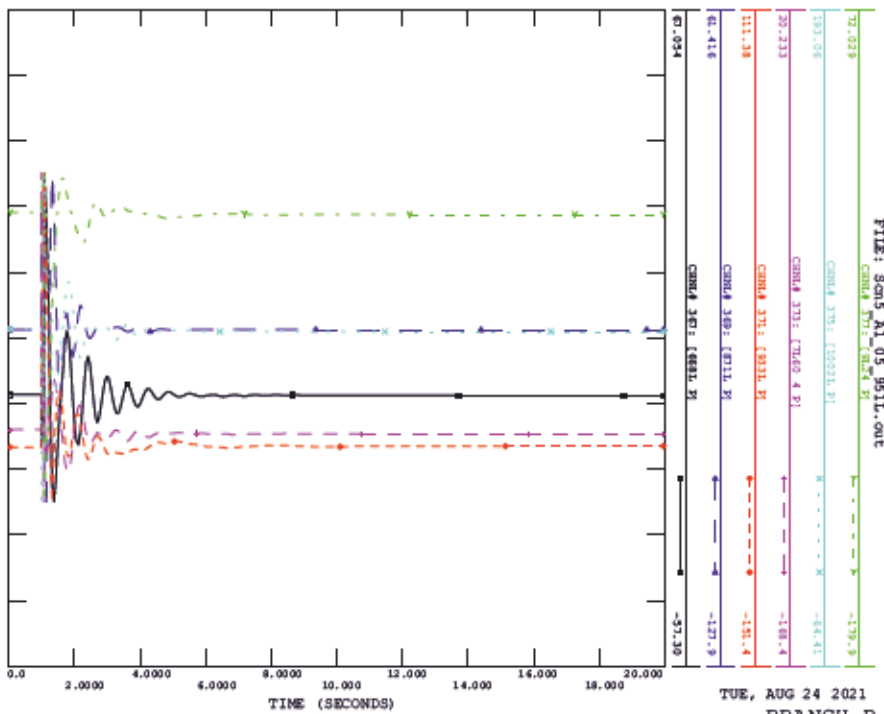
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TUE, AUG 24 2021 13:18
BRANCH P (1)

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CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

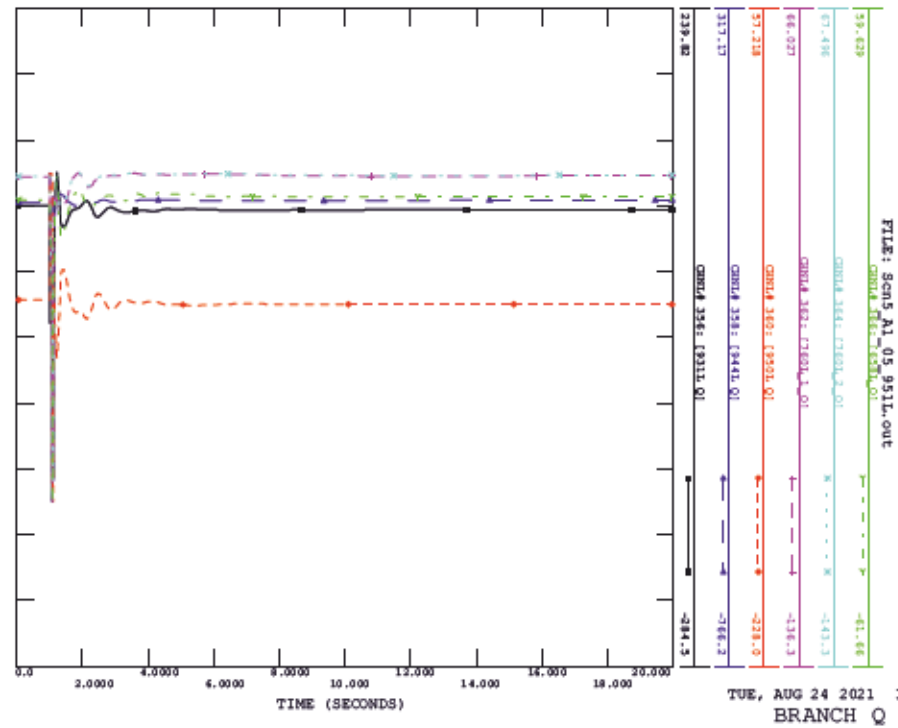
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TUE, AUG 24 2021 13:18
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

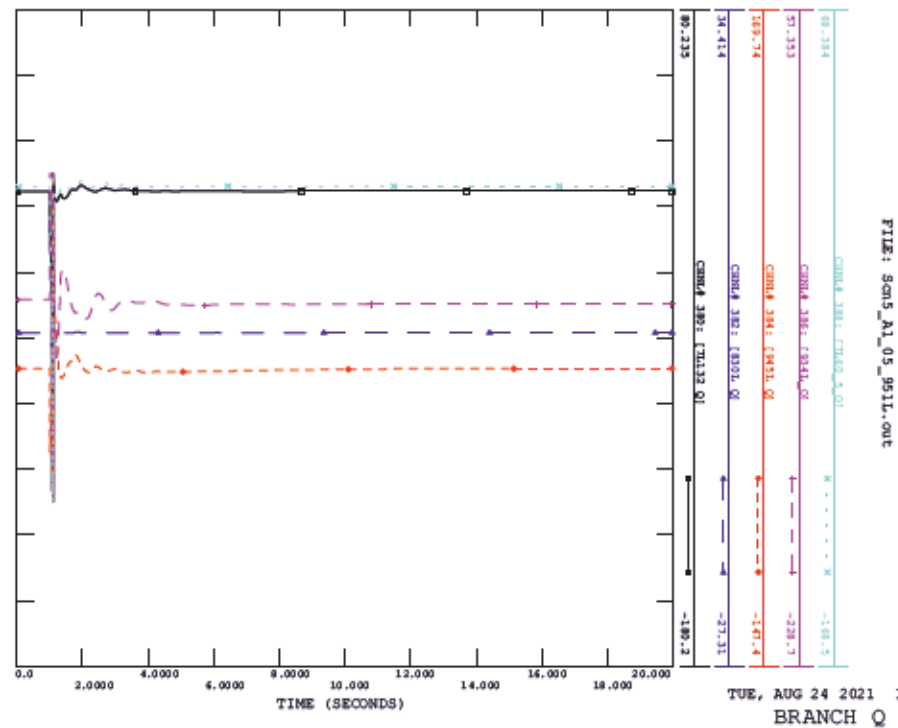
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TUE, AUG 24 2021 13:18
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

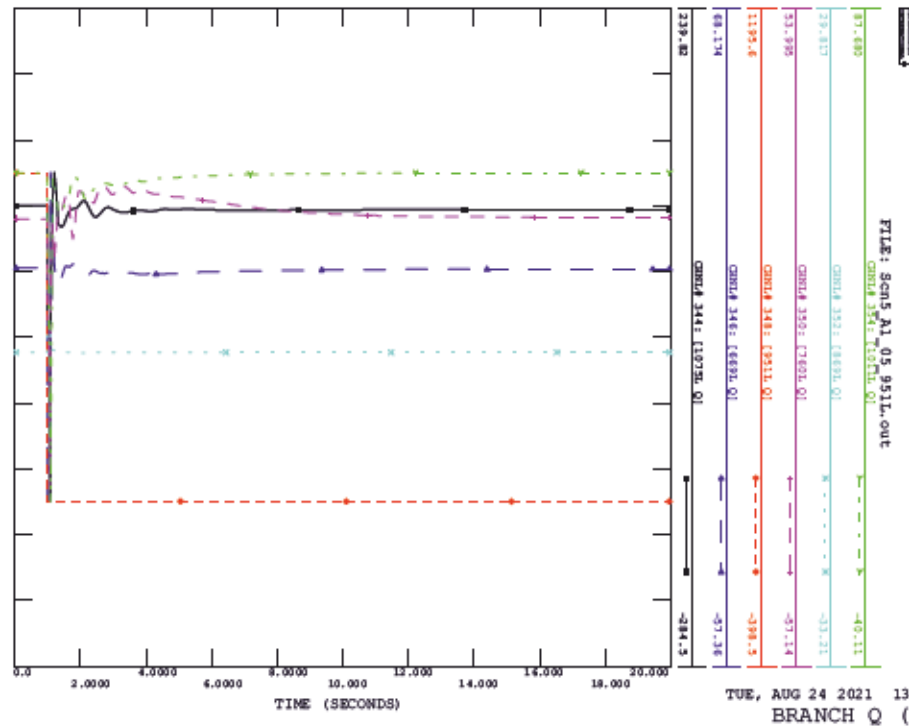
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TUE, AUG 24 2021 13:18
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

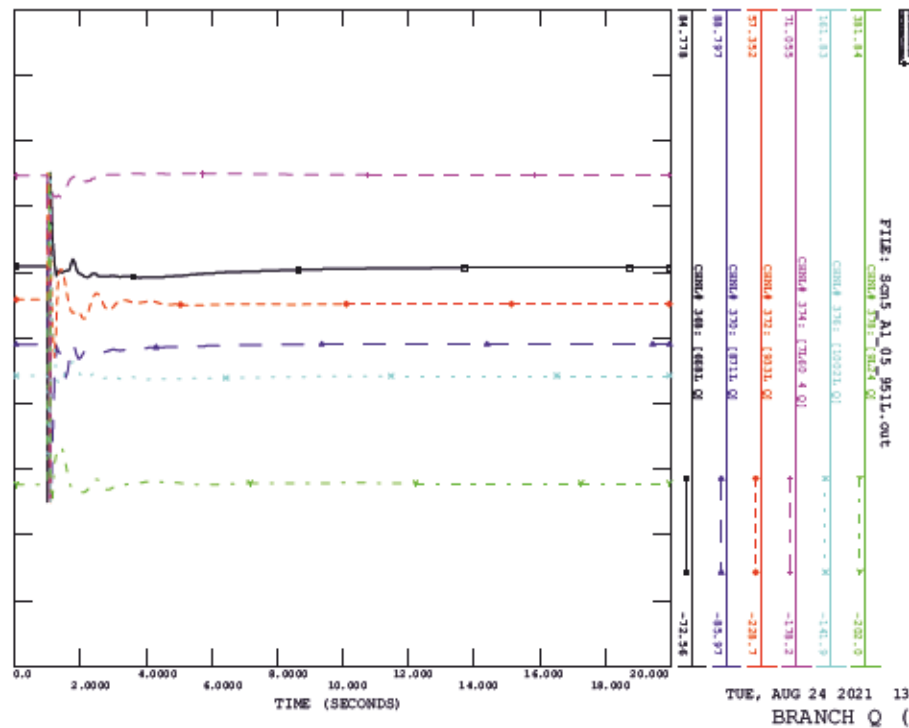
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TUE, AUG 24 2021 13:18
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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_05_951L, FAULT LOCATION WARE JUNCTION

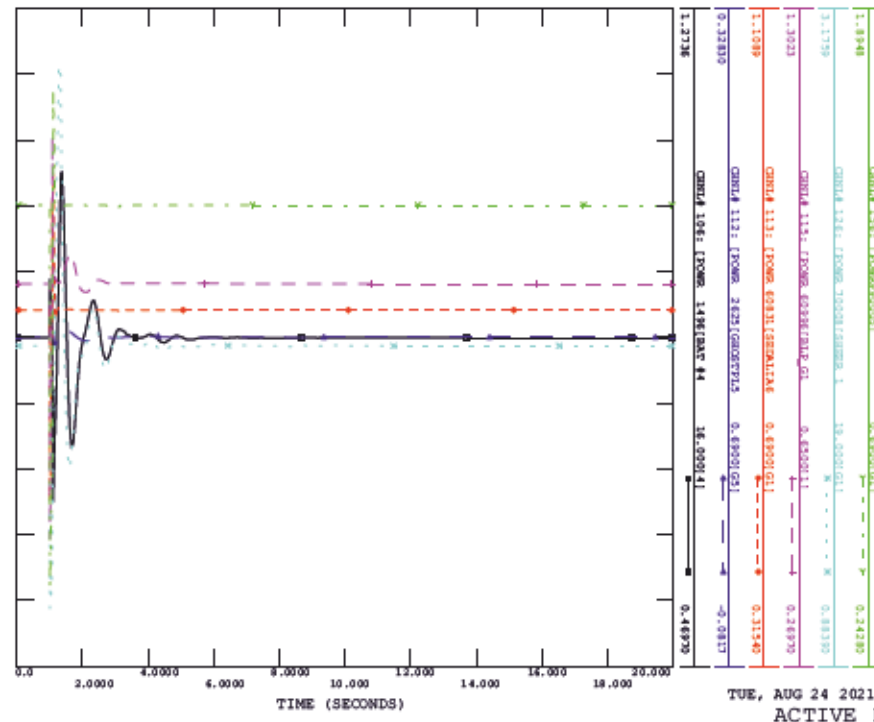
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TUE, AUG 24 2021 13:18
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

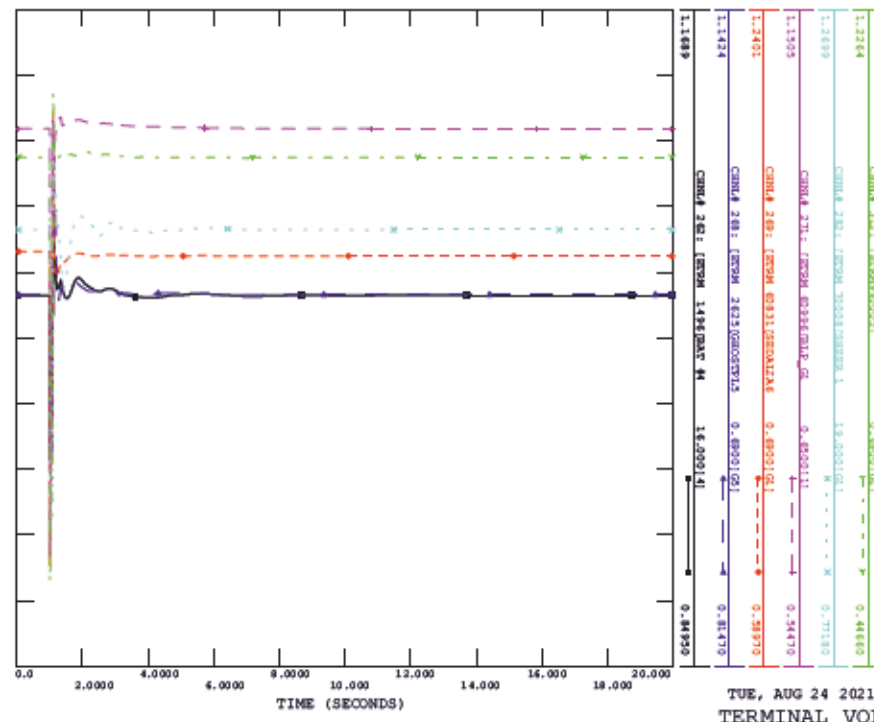
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TUE, AUG 24 2021 13:18
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

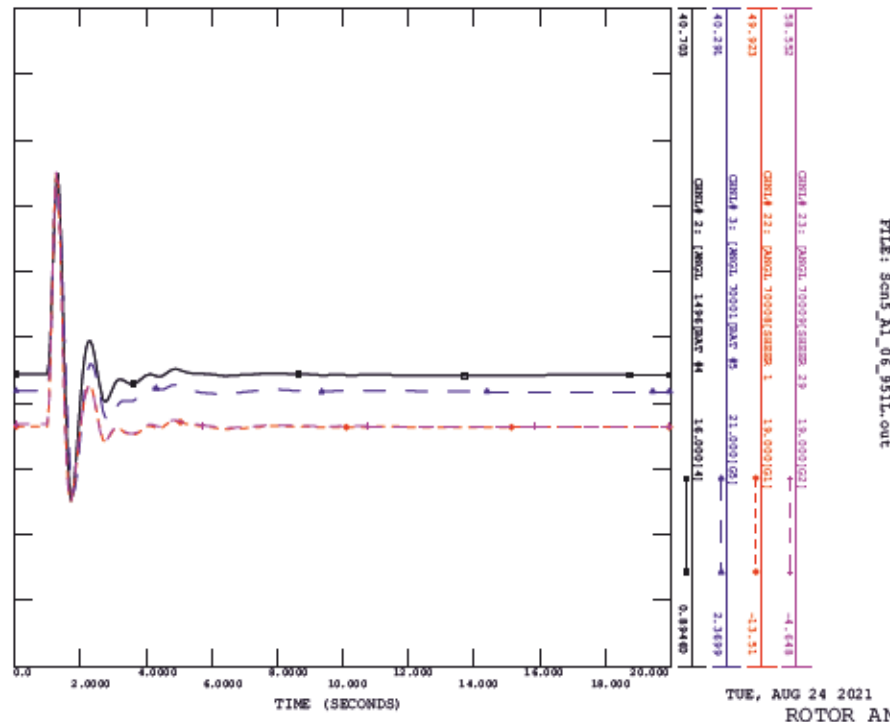
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TUE, AUG 24 2021 13:18
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

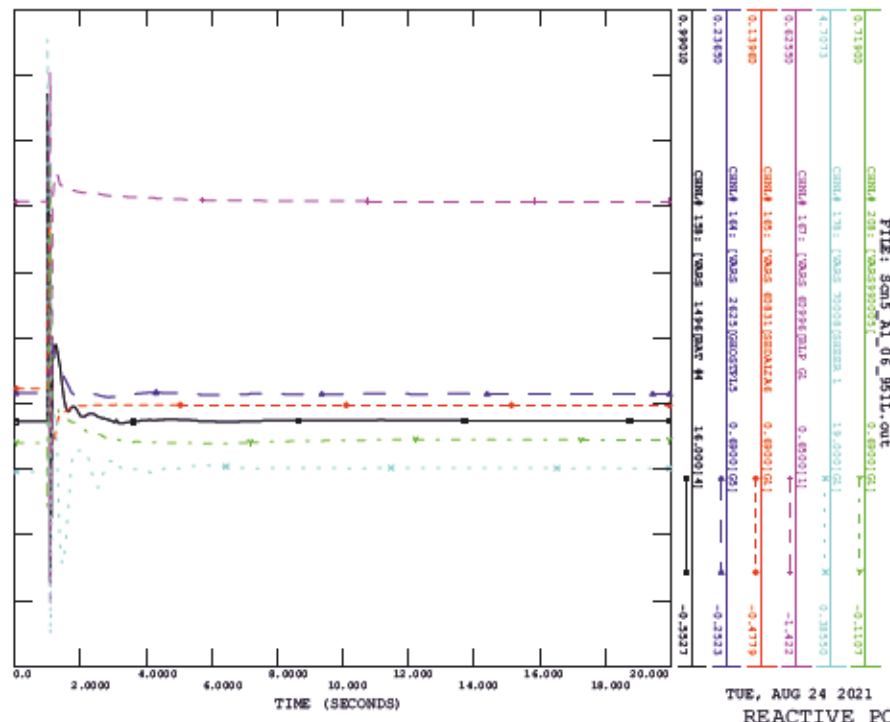
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TUE, AUG 24 2021 13:18
ROTOR ANGLE

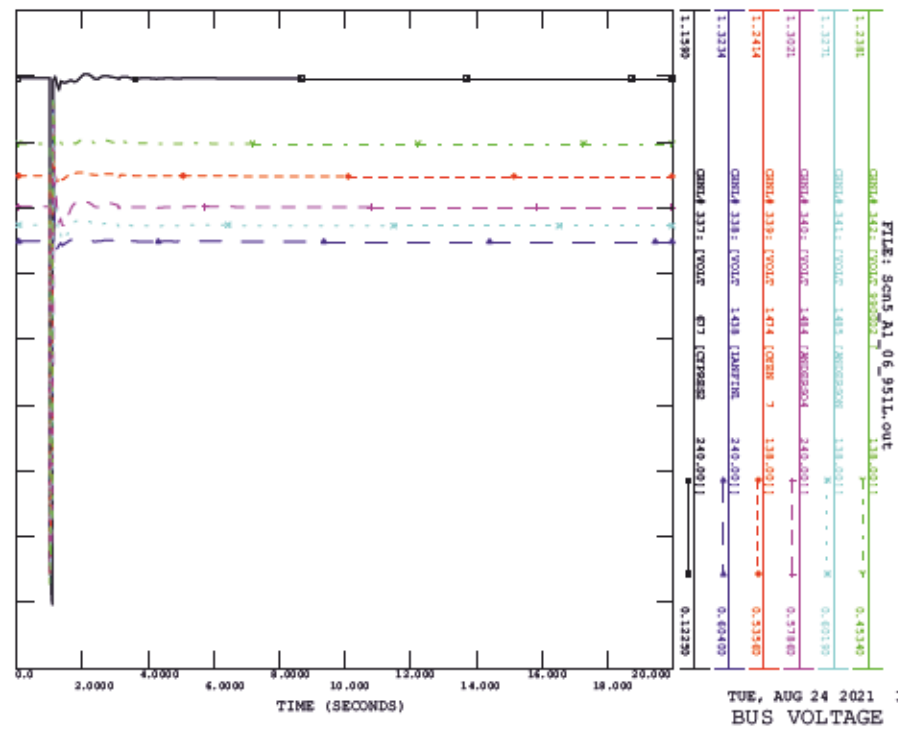
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

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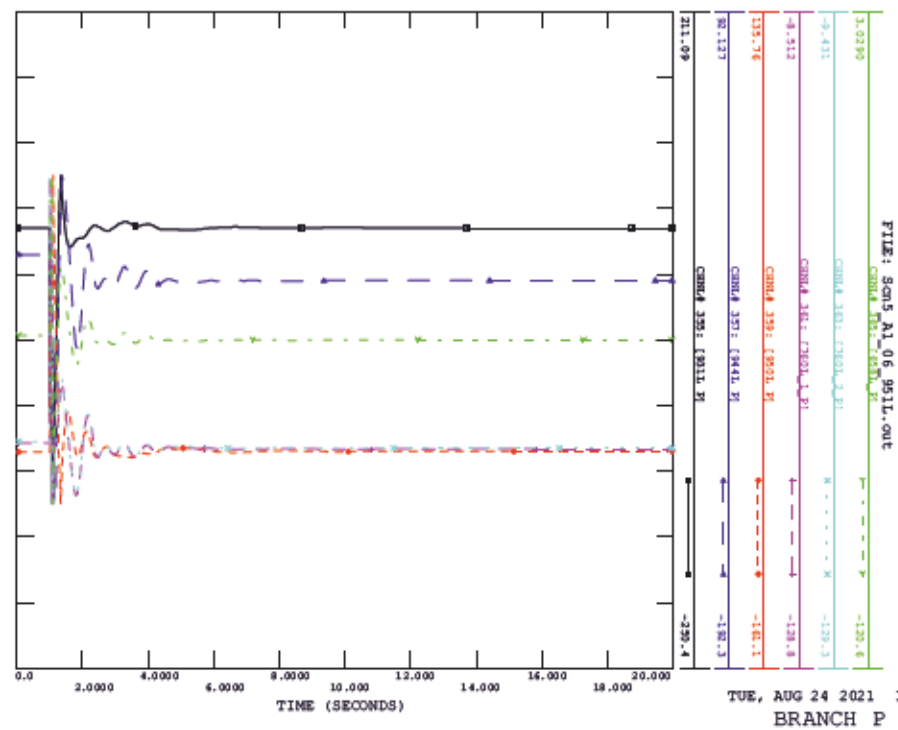


TUE, AUG 24 2021 13:18
REACTIVE POWER

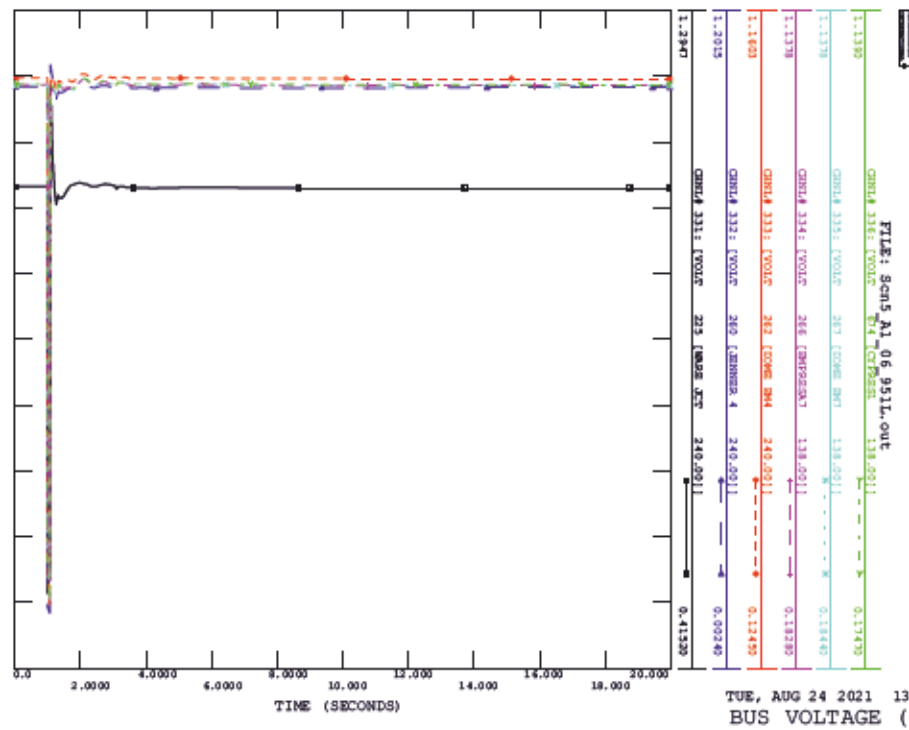
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CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755



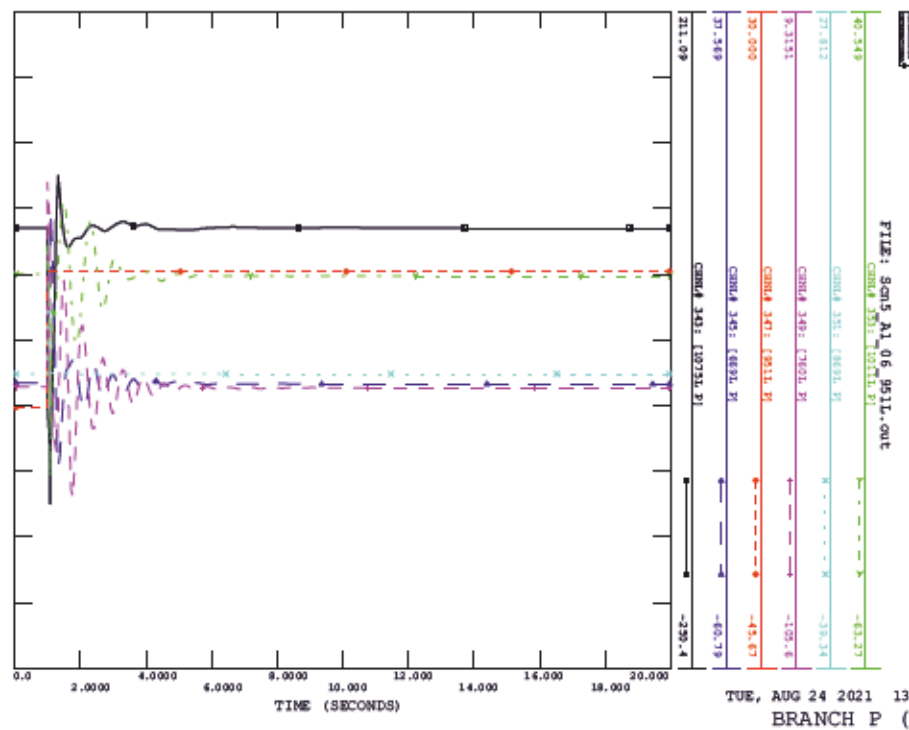
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

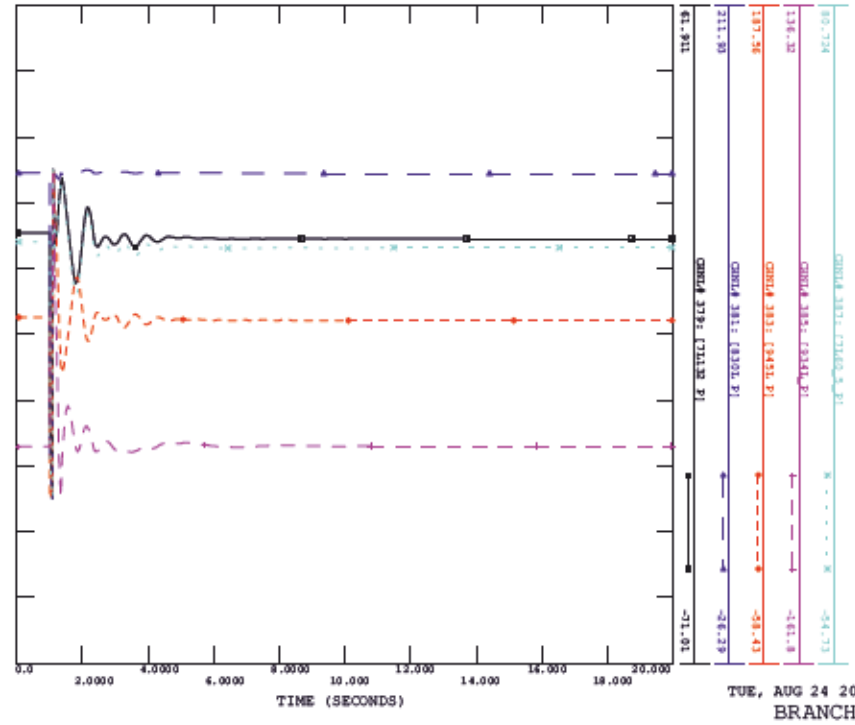


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755



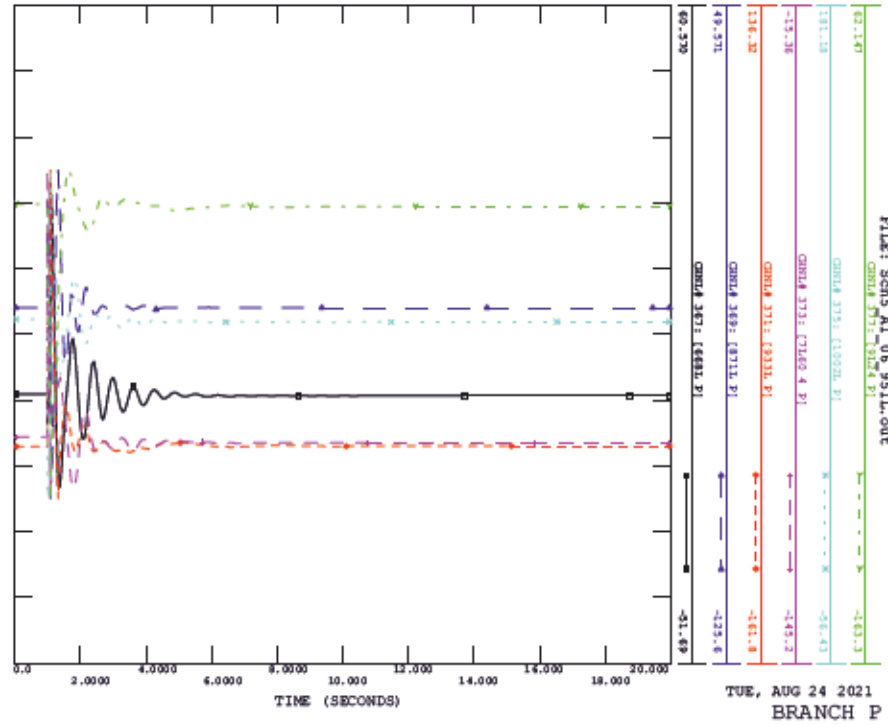
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

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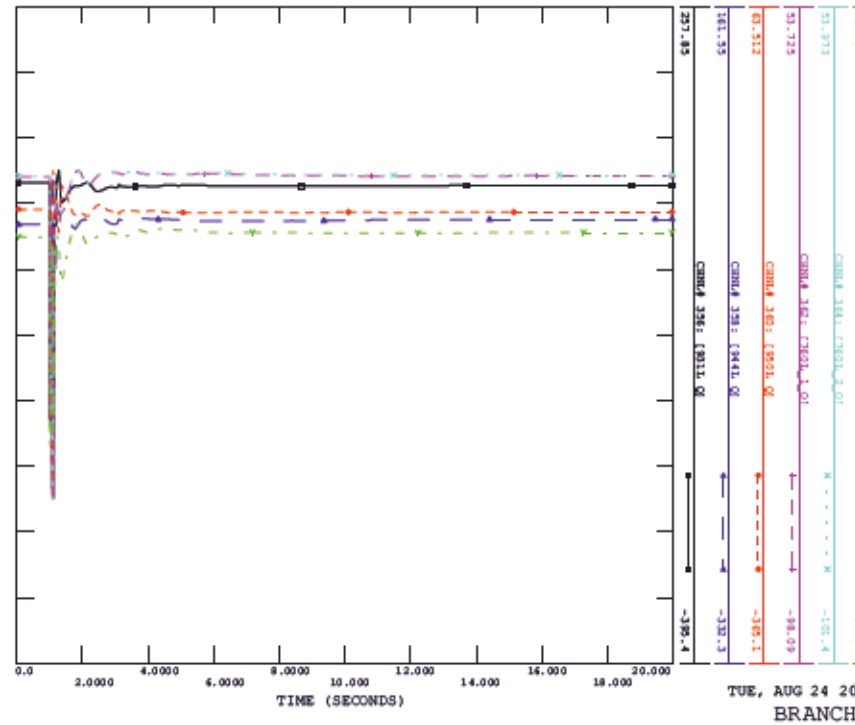
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CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

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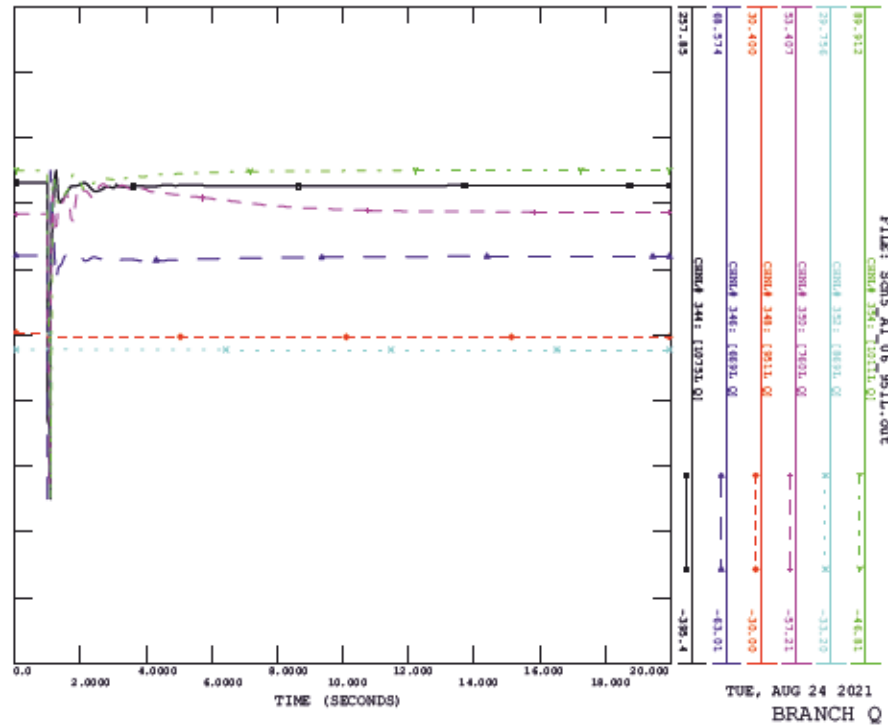
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CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

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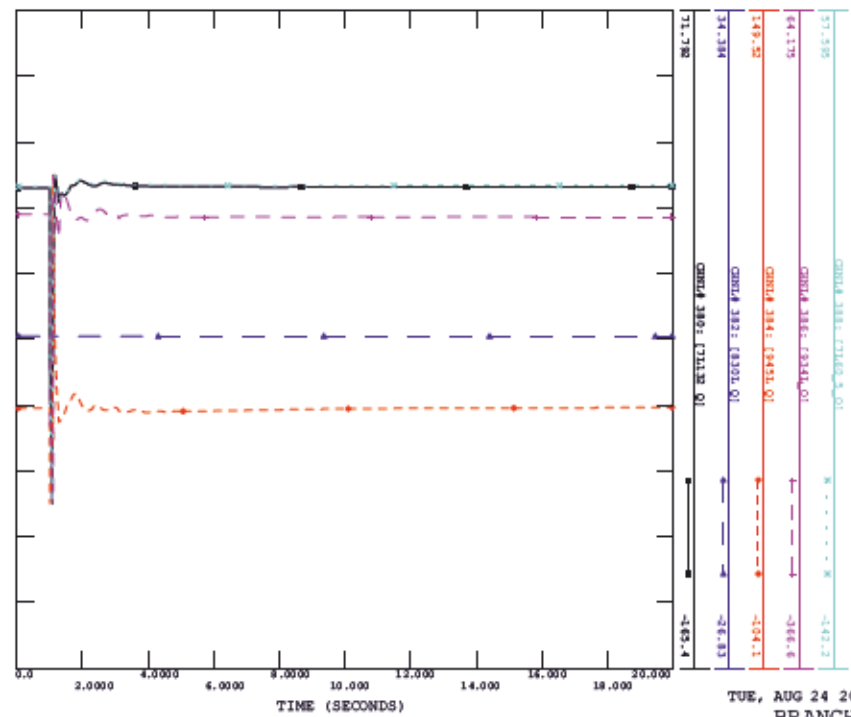
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CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 2755

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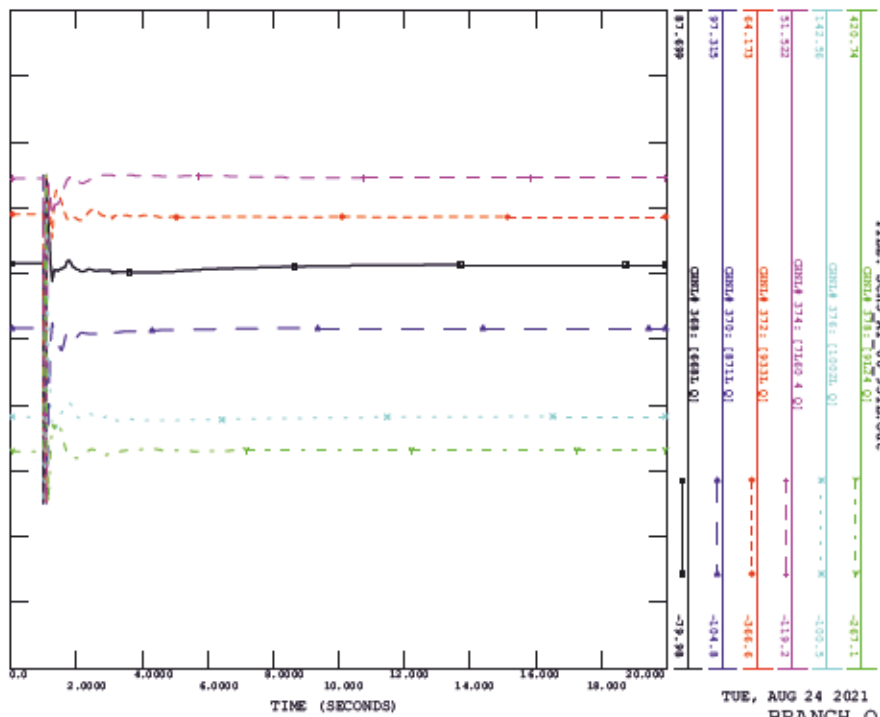
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CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 275S

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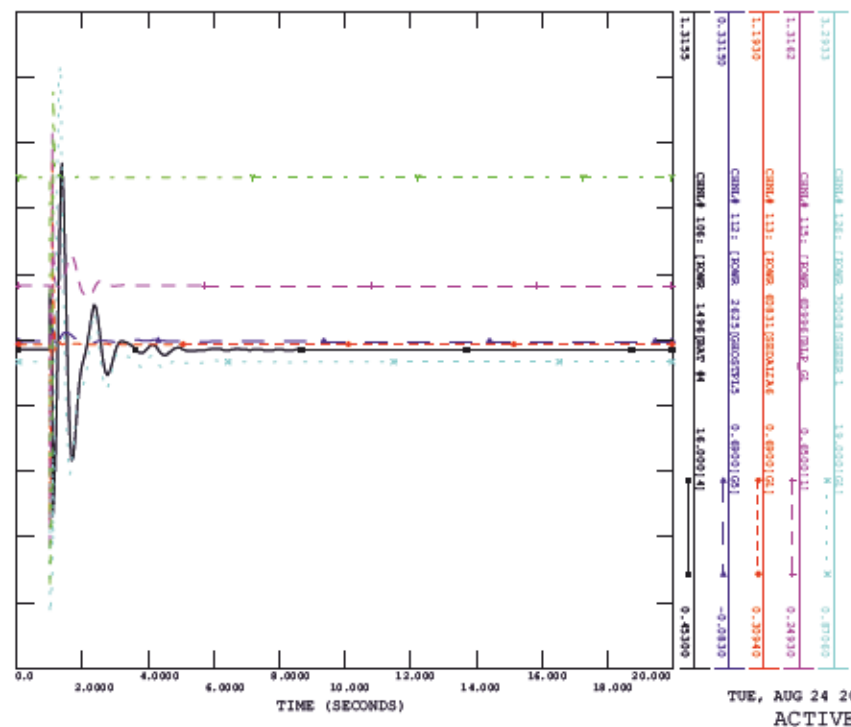
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CONTINGENCY -SCM5_A1_06_951L, FAULT LOCATION JENNER 275S

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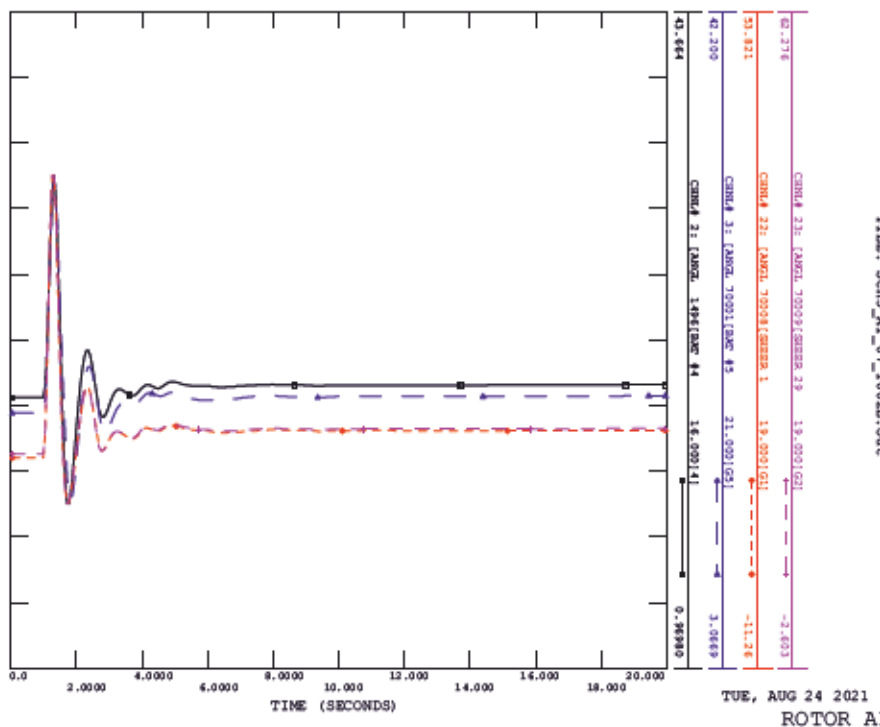
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CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 275S

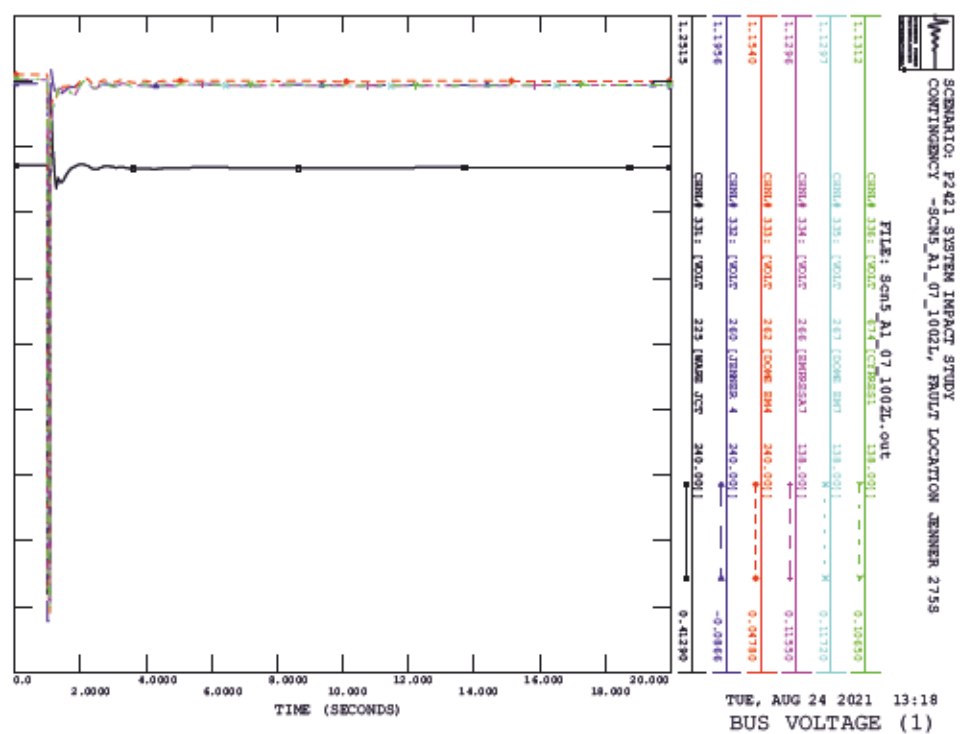
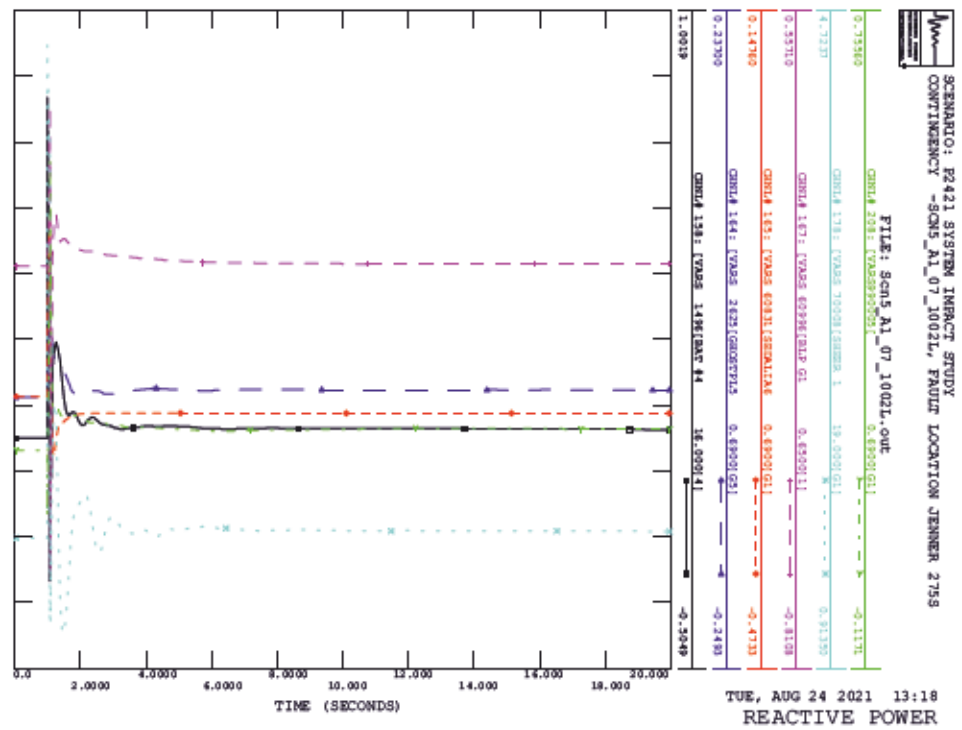
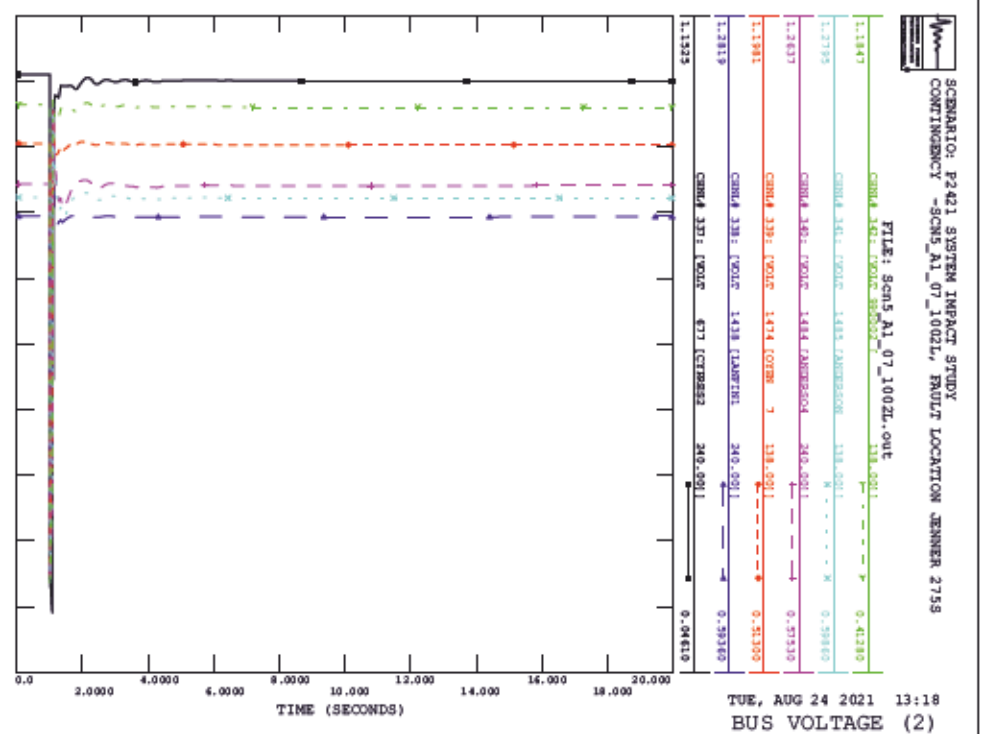
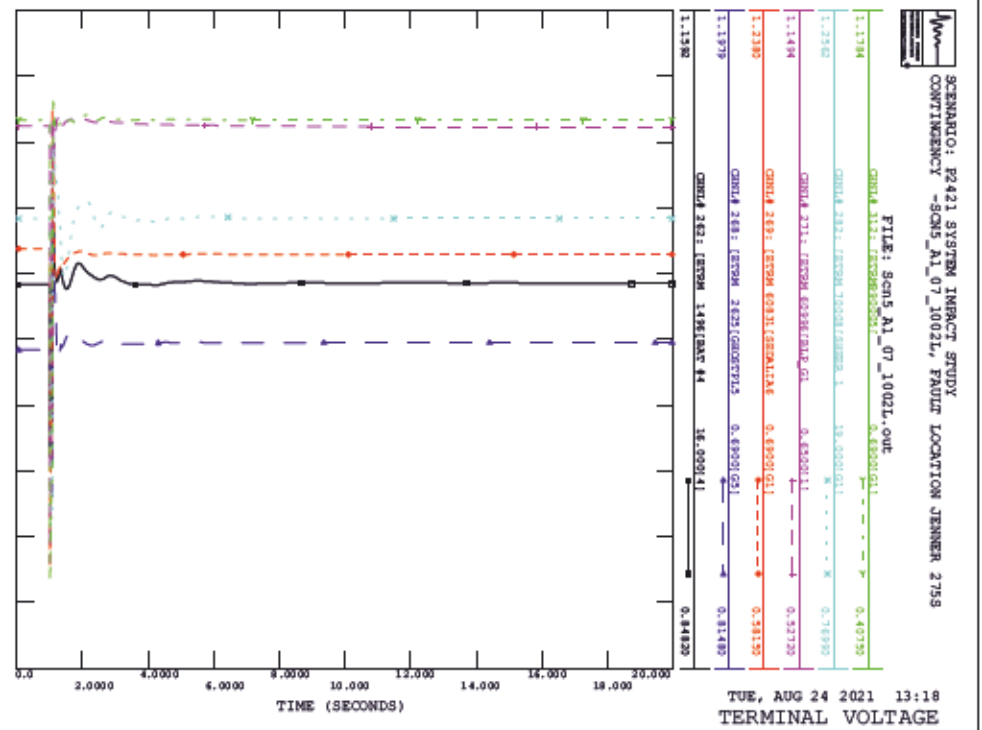
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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 275S

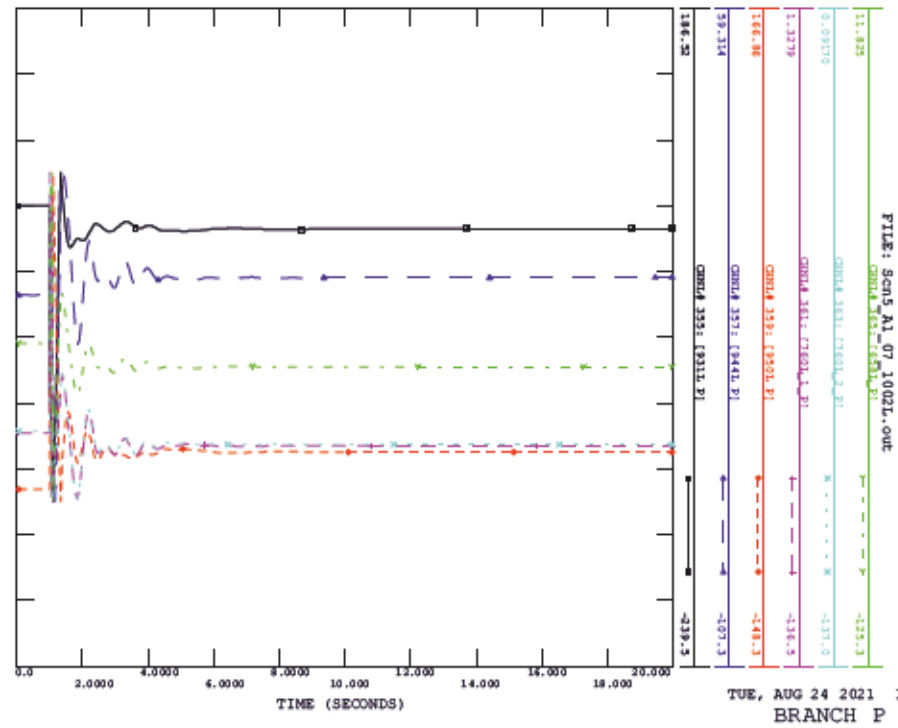
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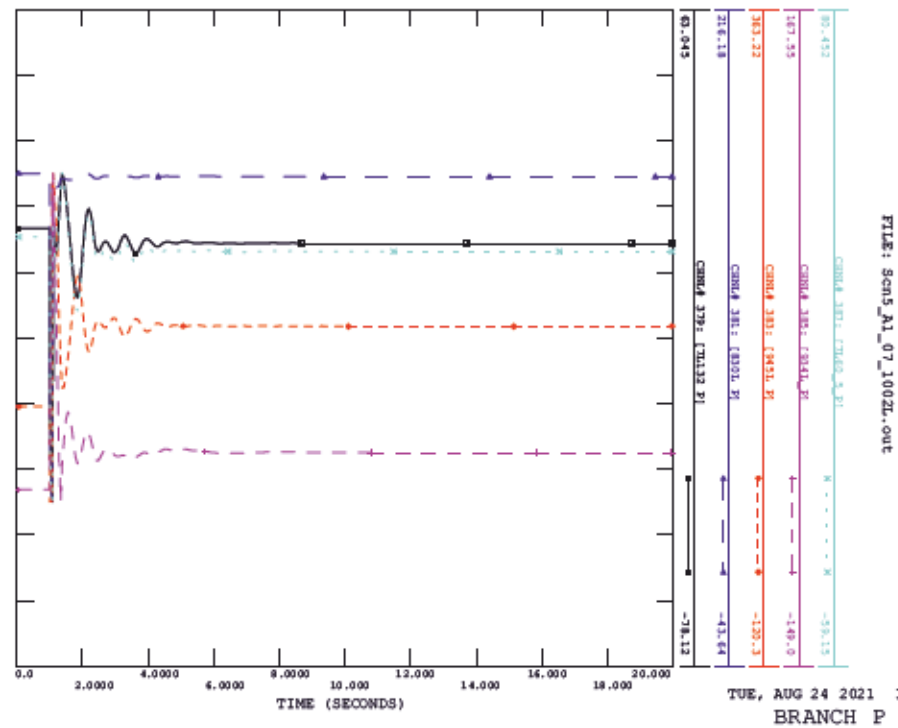
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CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 2755

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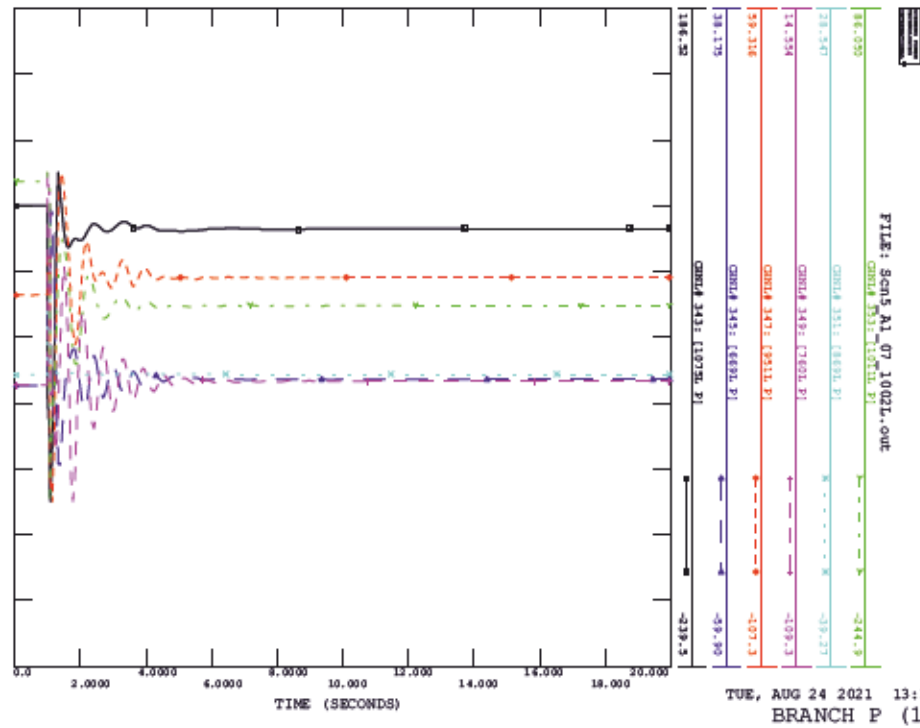
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CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 2755

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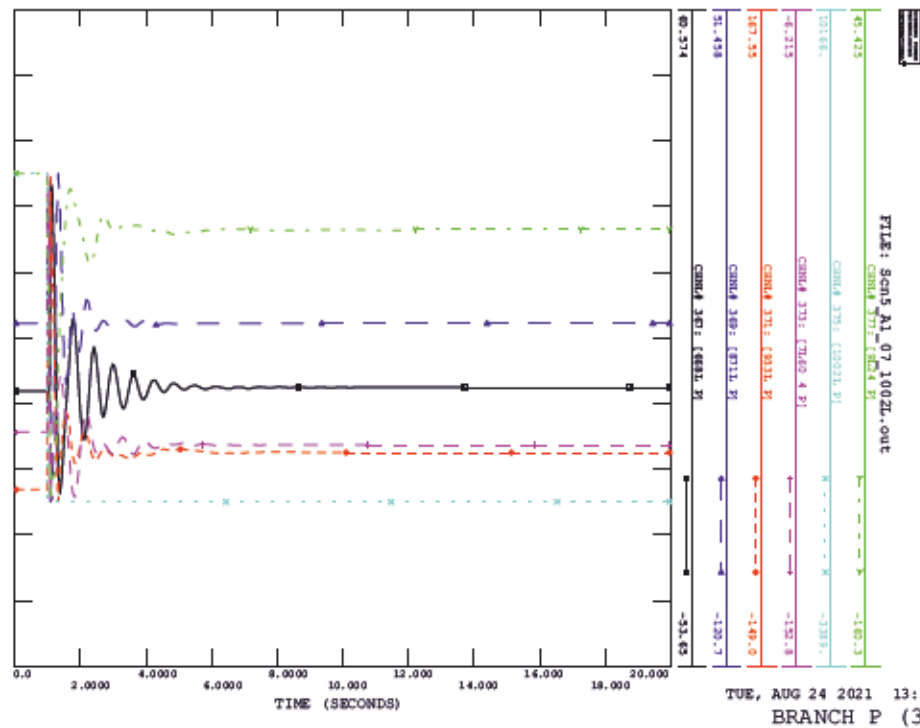
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CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 2755

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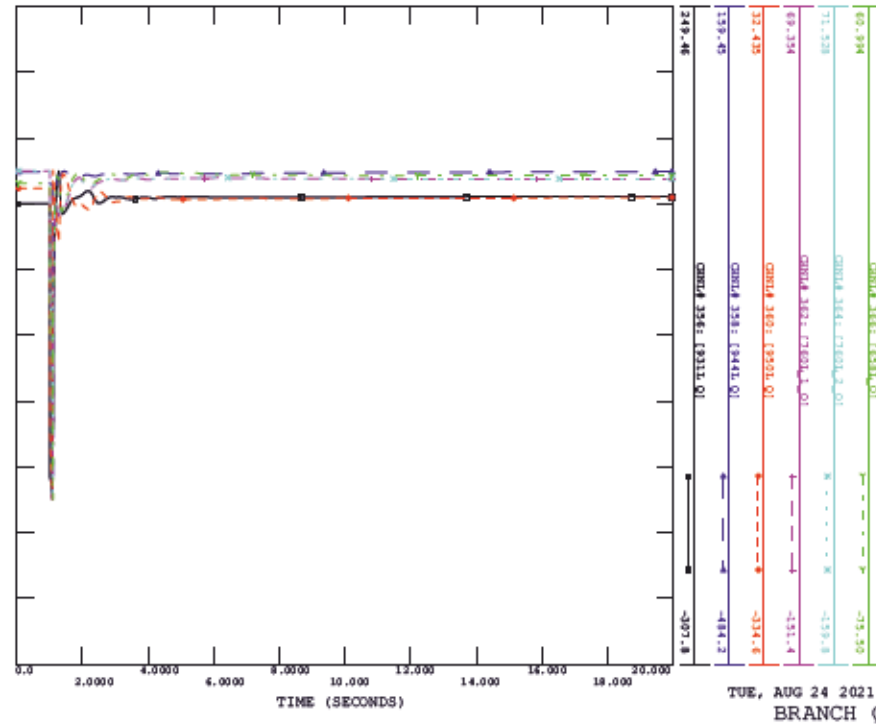
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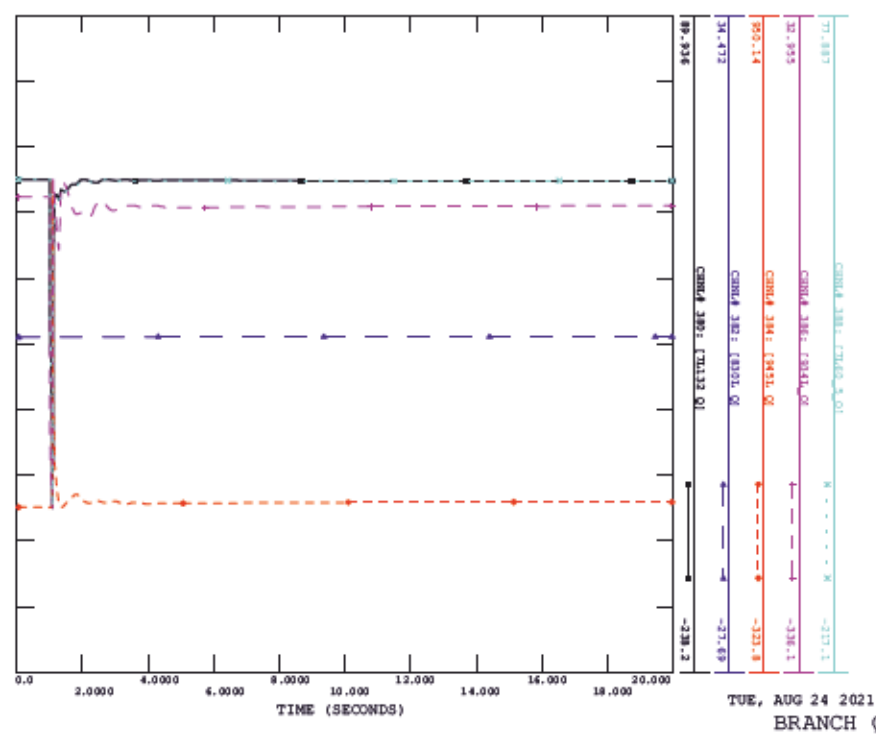
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CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 2755

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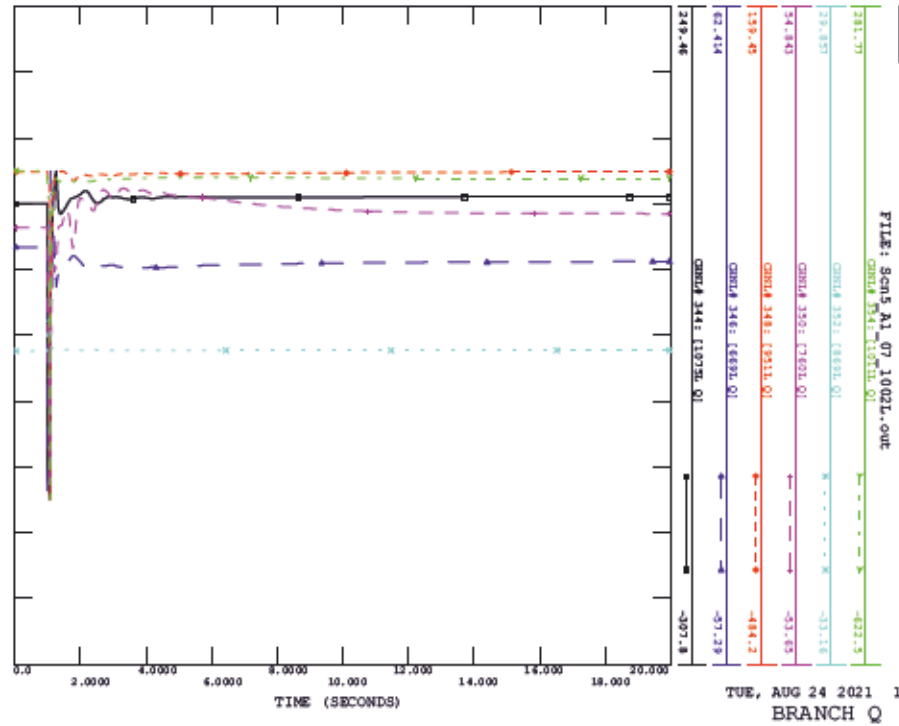
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CONTINGENCY -SCM5_A1_07_1002L, FAULT LOCATION JENNER 2755

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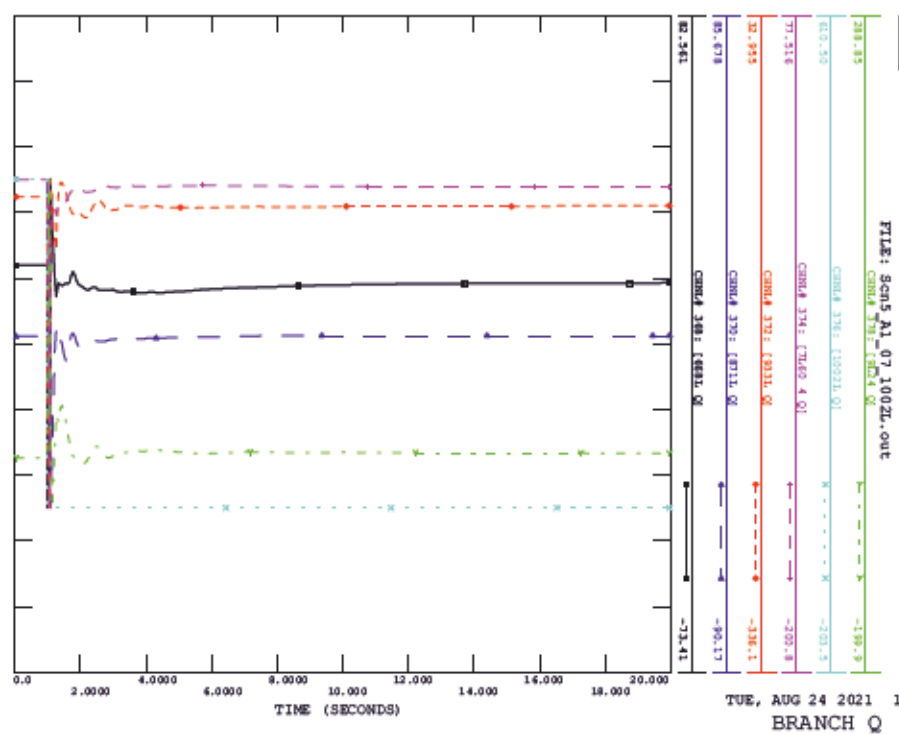
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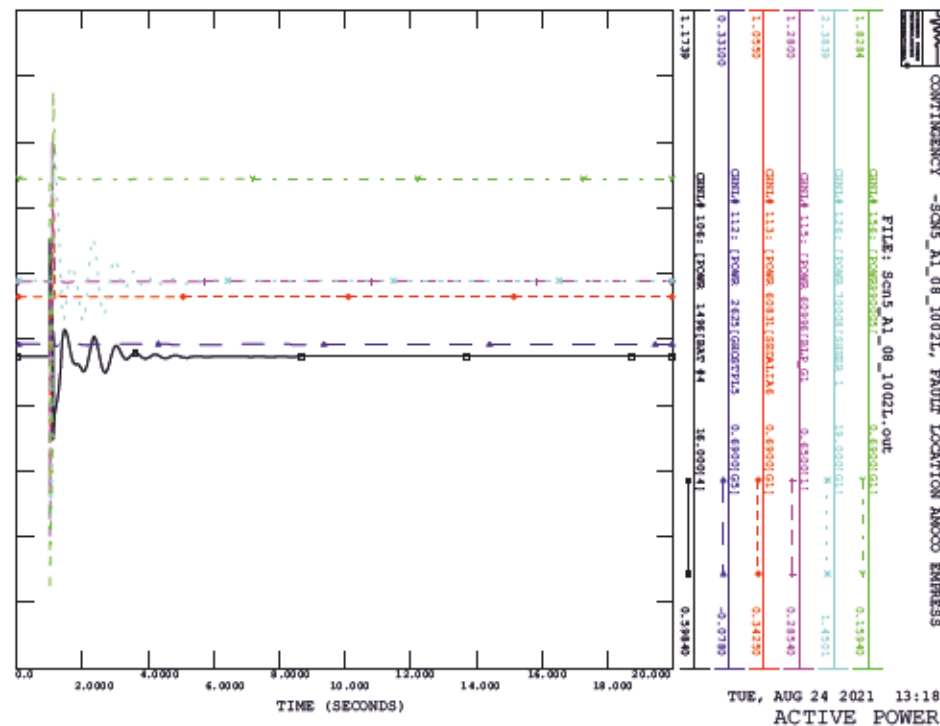


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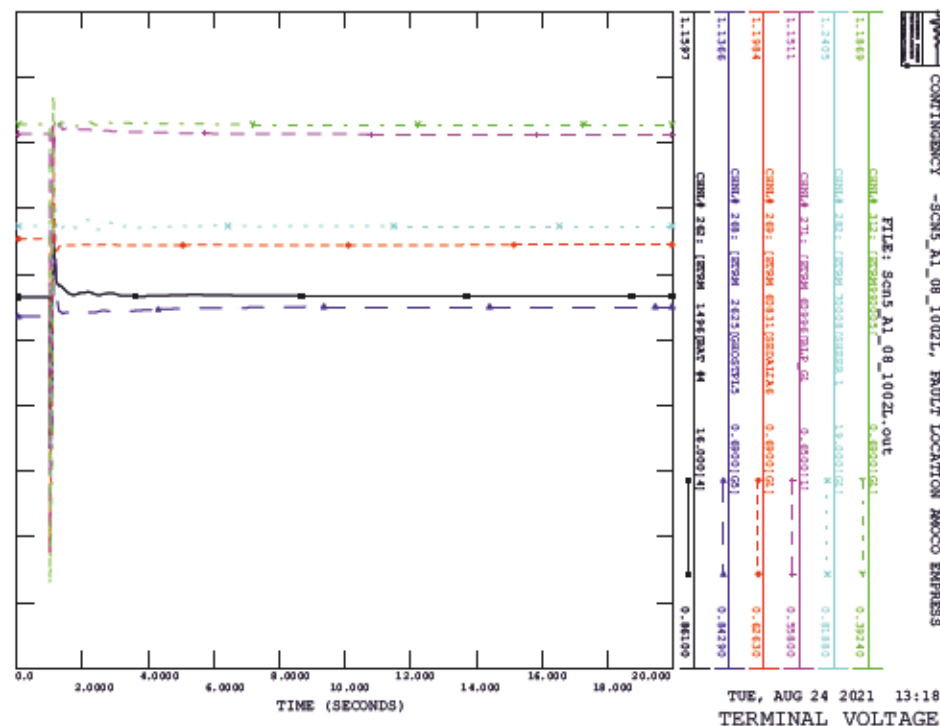
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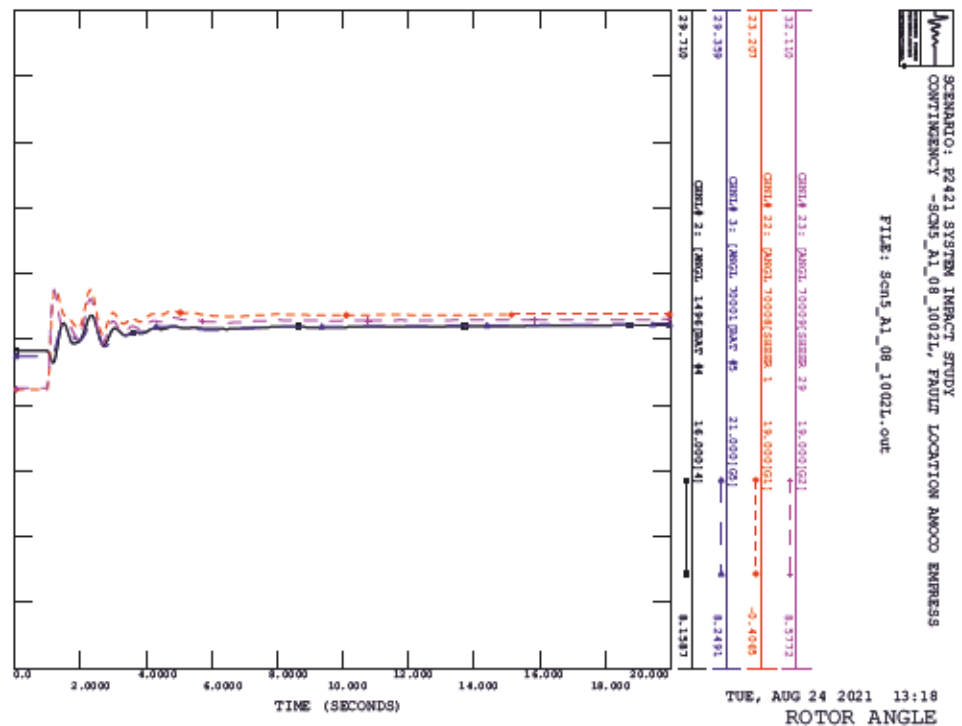
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS



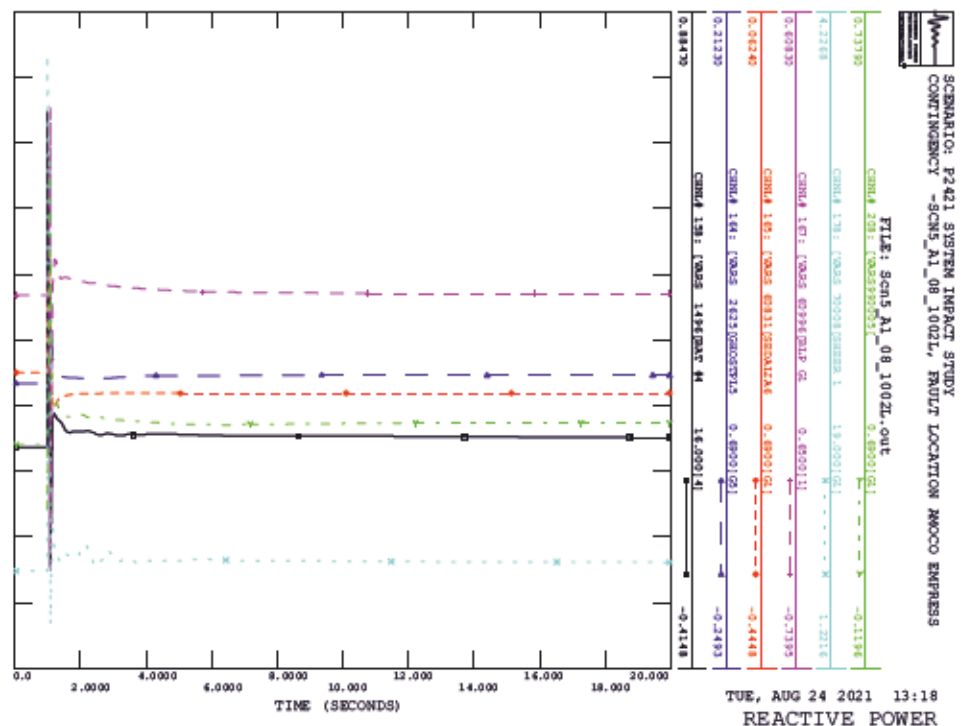
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CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

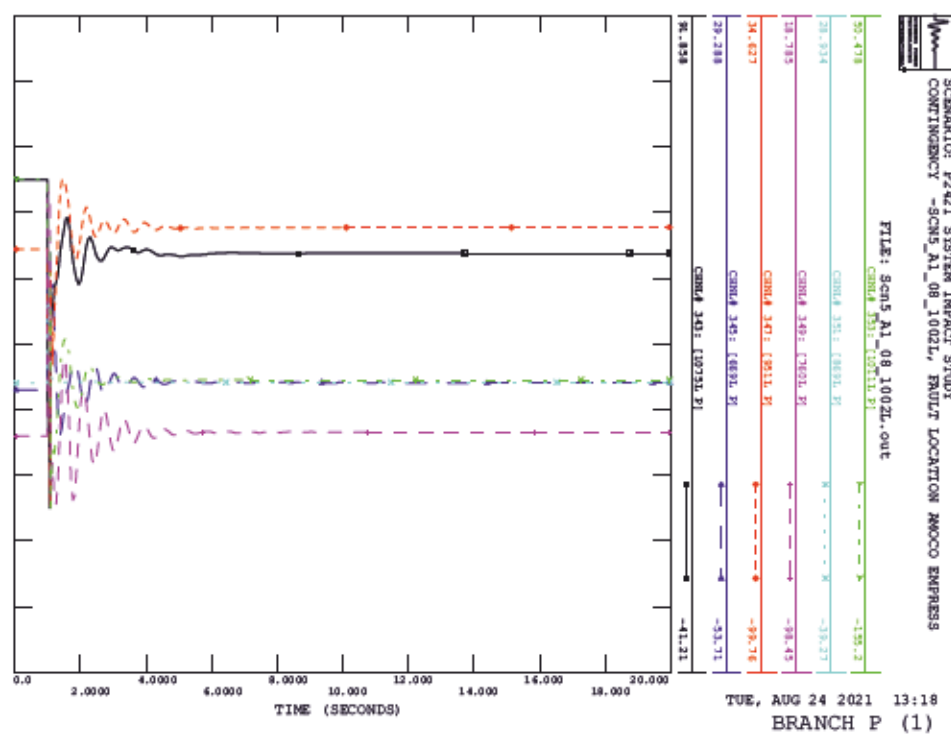
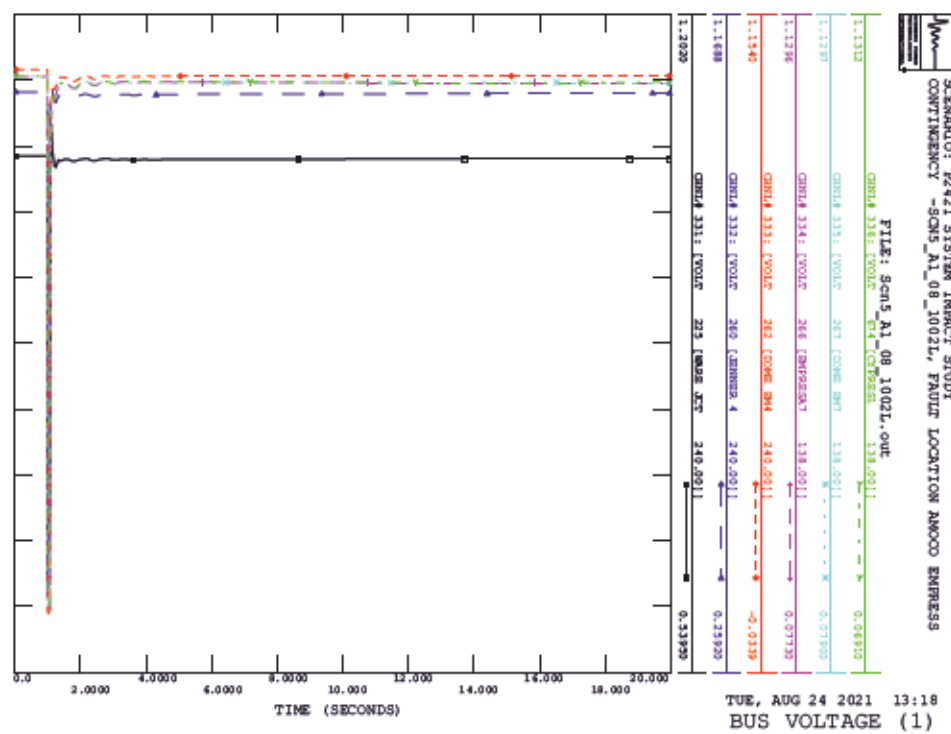
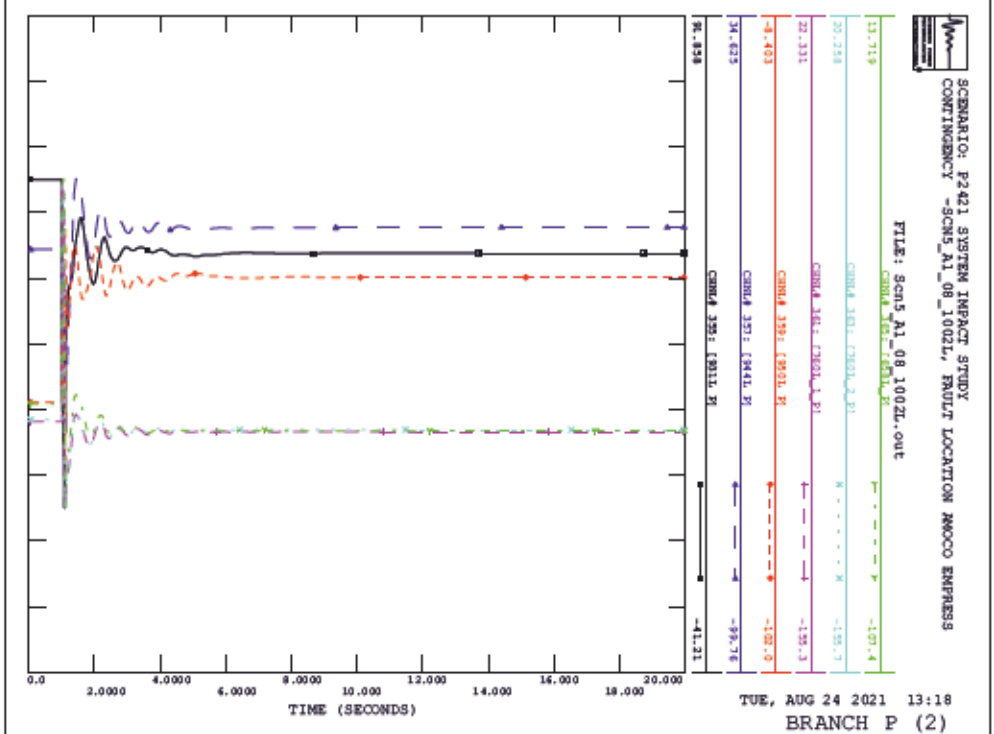
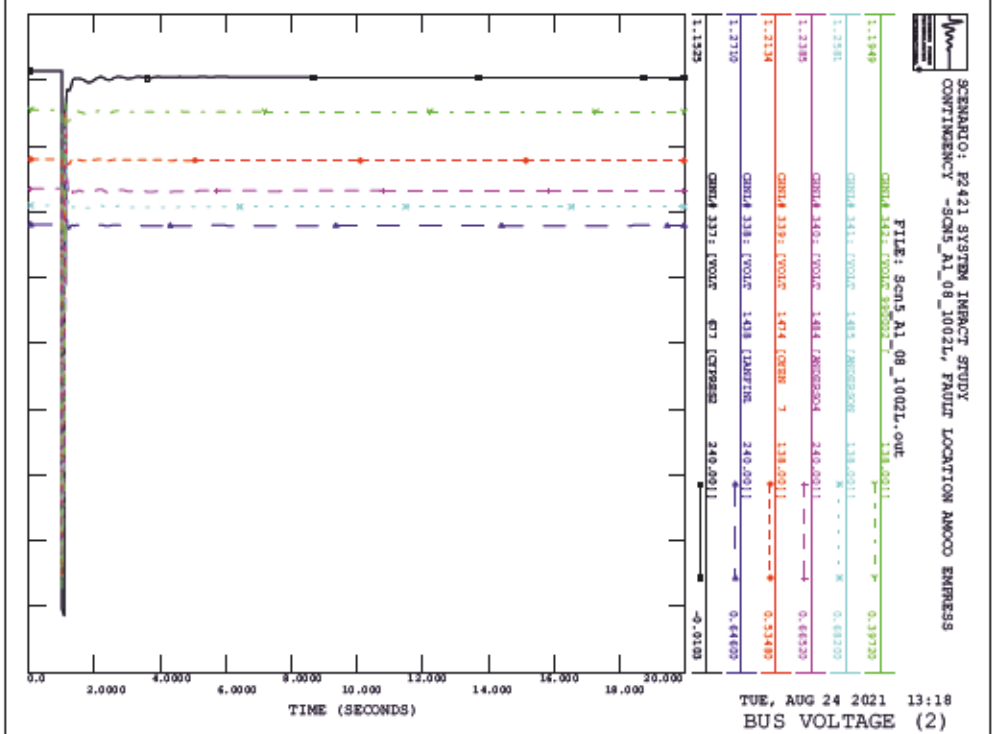


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CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS



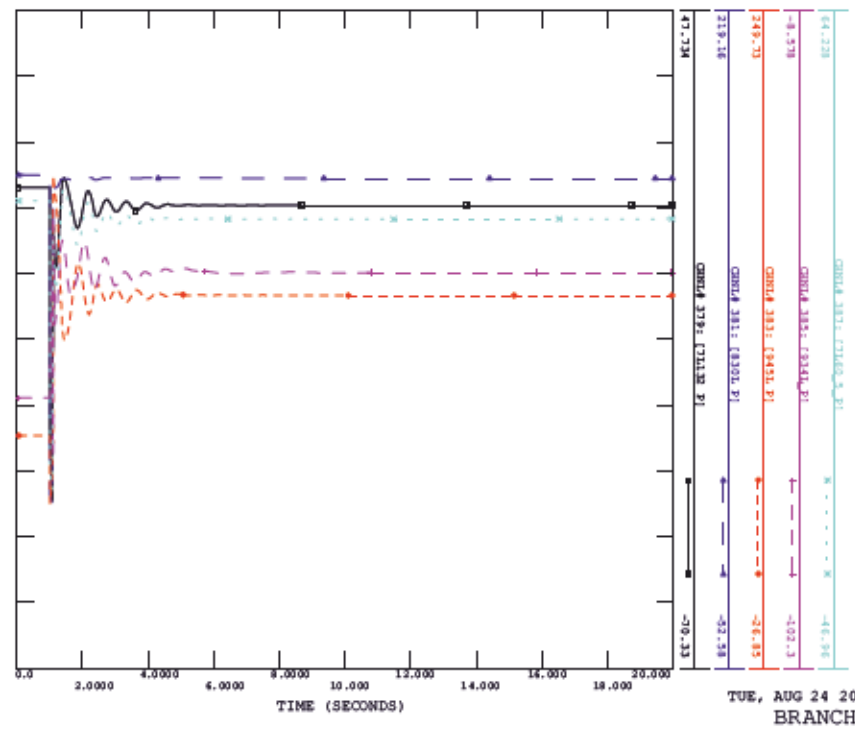
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS





SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

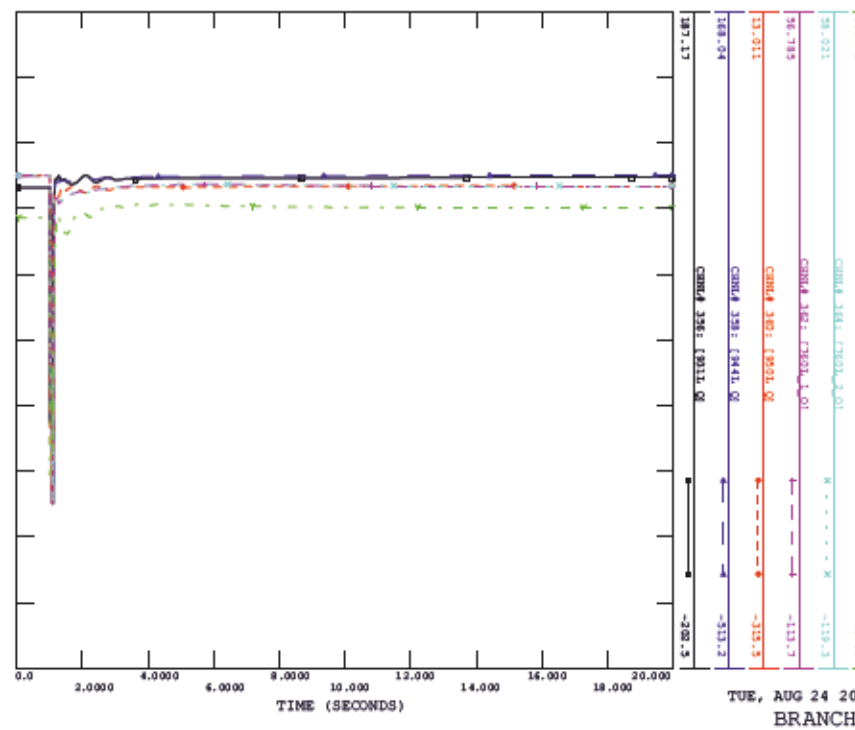
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TUE, AUG 24 2021 13:18
BRANCH P (4)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

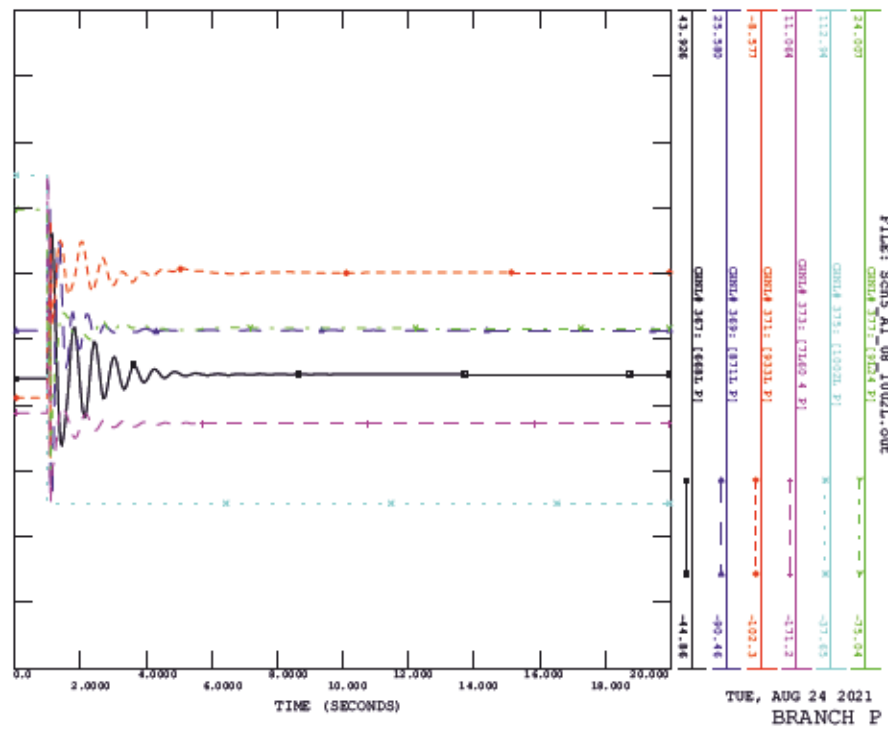
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TUE, AUG 24 2021 13:18
BRANCH Q (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

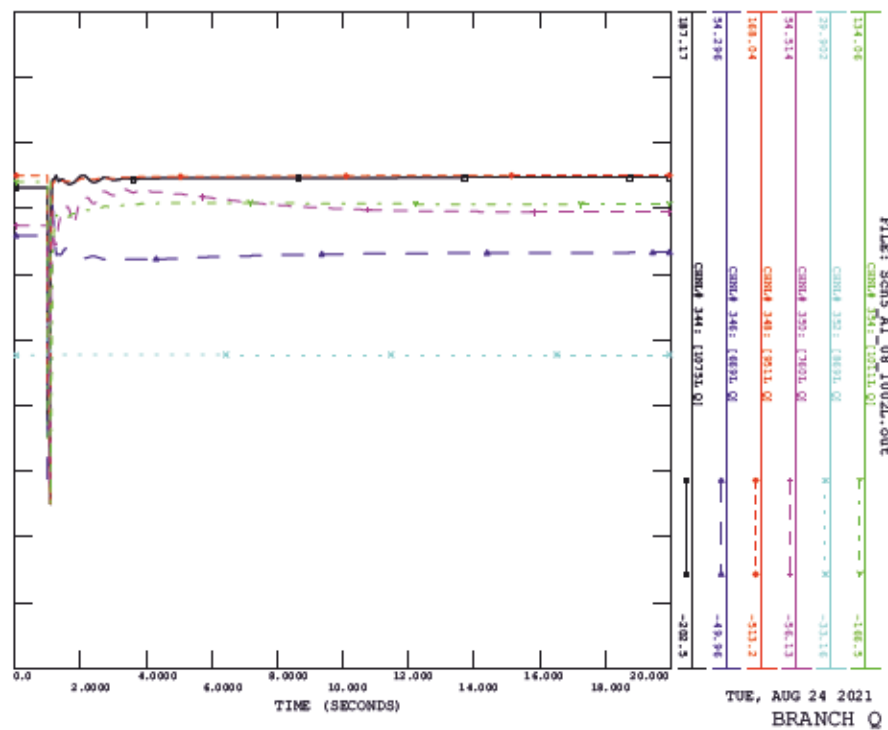
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TUE, AUG 24 2021 13:18
BRANCH P (3)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

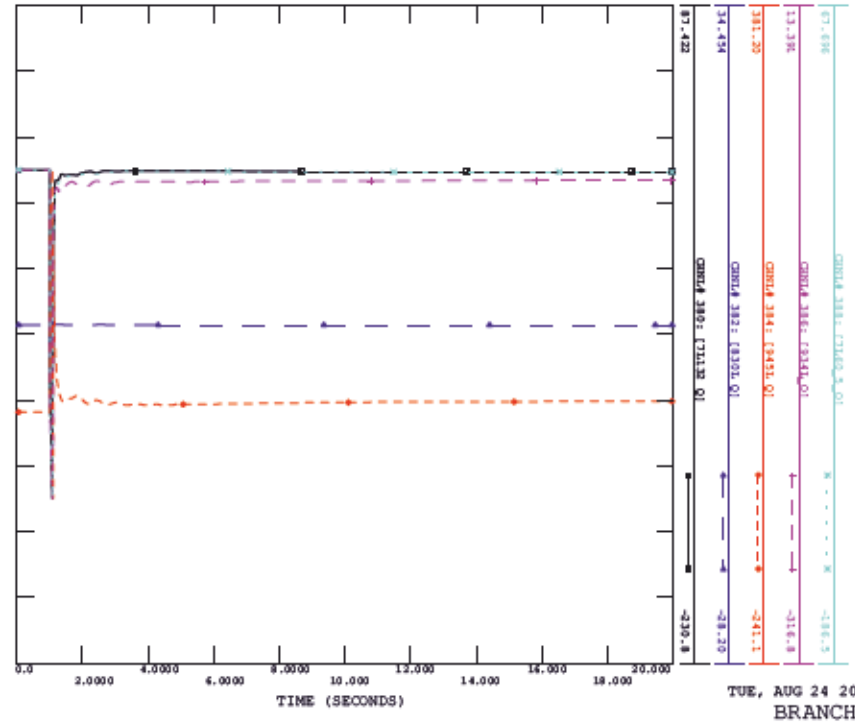
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TUE, AUG 24 2021 13:18
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOOD EXPRESS

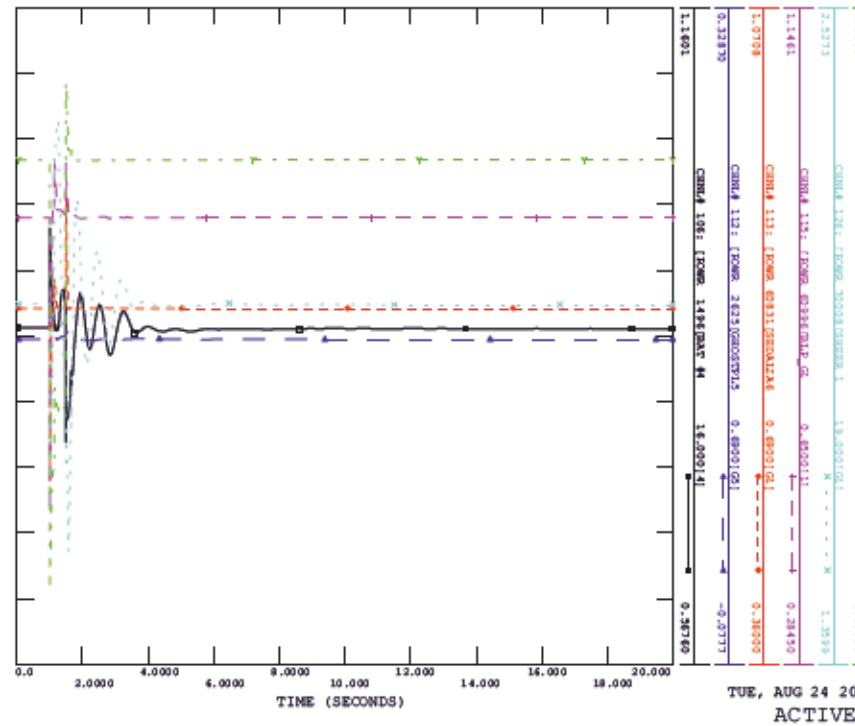
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TUE, AUG 24 2021 13:18
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_09_668L, FAULT LOCATION EXPRESS 394S

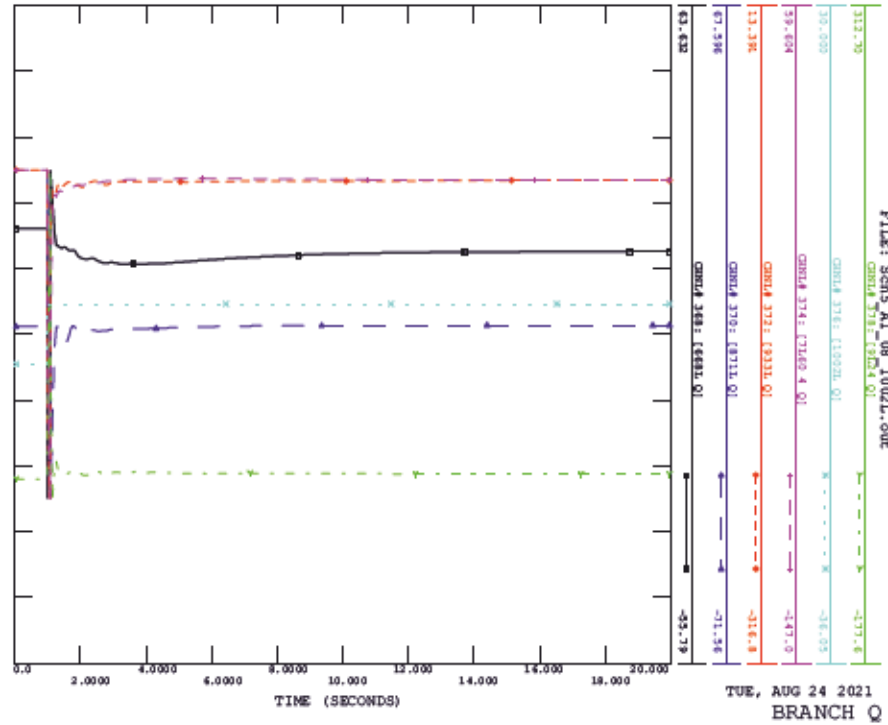
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TUE, AUG 24 2021 13:18
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_08_1002L, FAULT LOCATION AMOOD EXPRESS

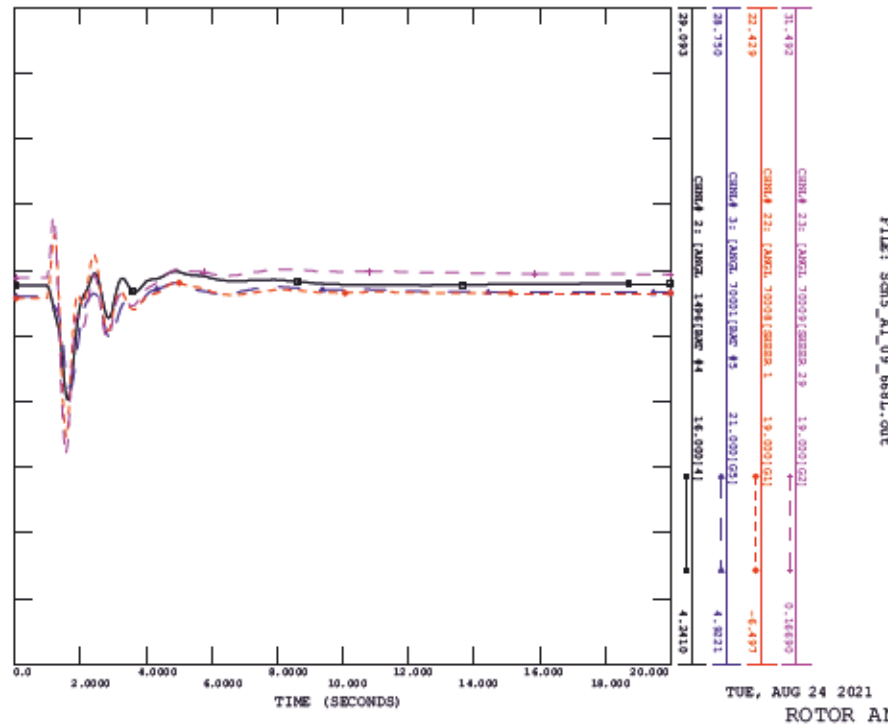
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TUE, AUG 24 2021 13:18
BRANCH Q (3)

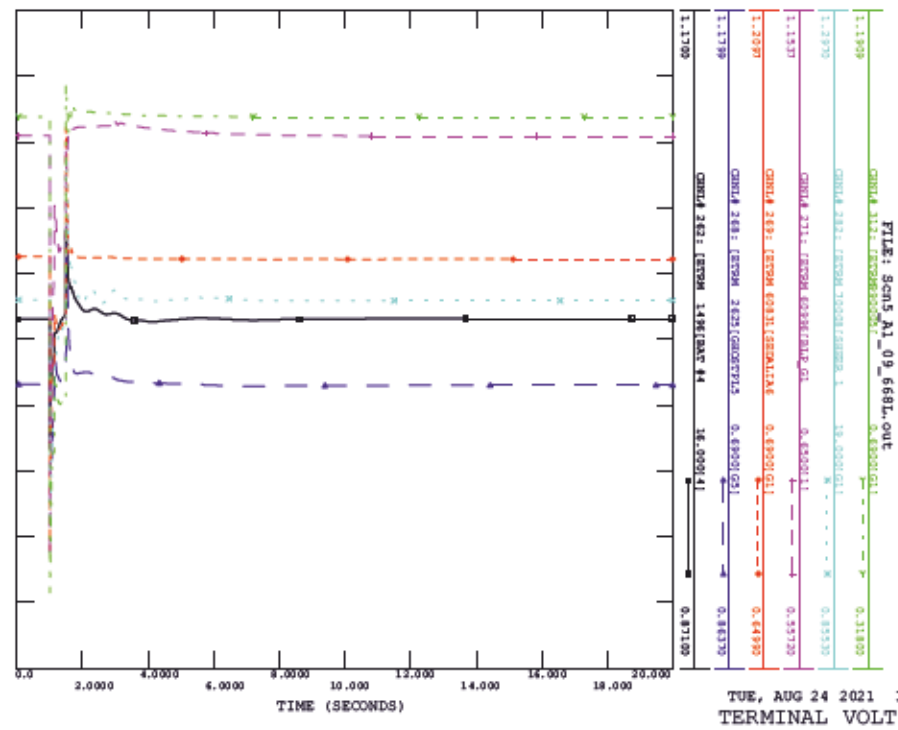
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_09_668L, FAULT LOCATION EXPRESS 394S

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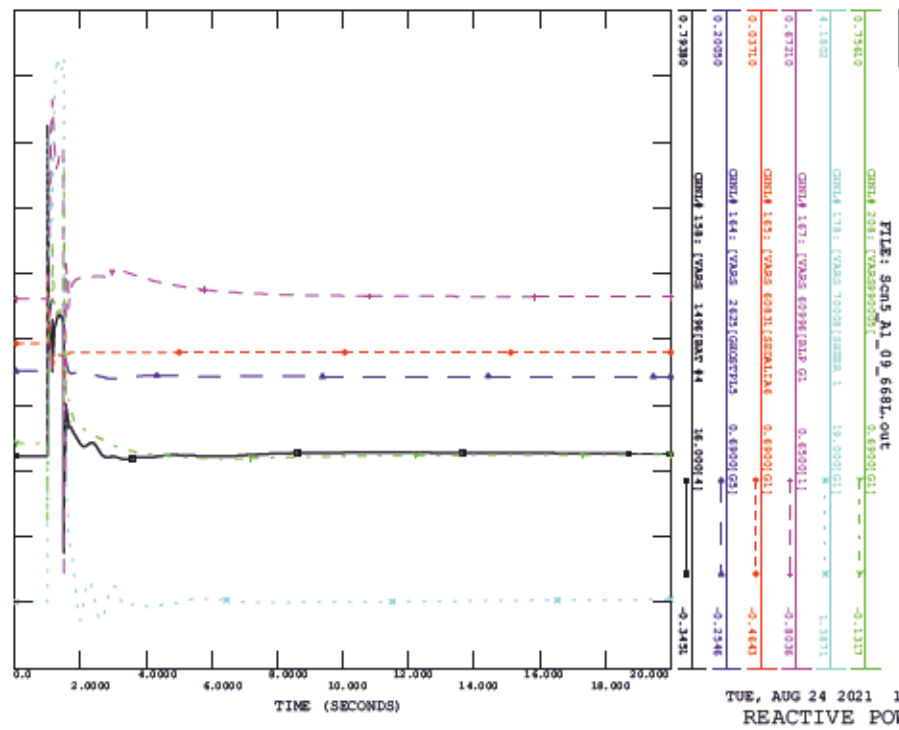


TUE, AUG 24 2021 13:18
ROTOR ANGLE

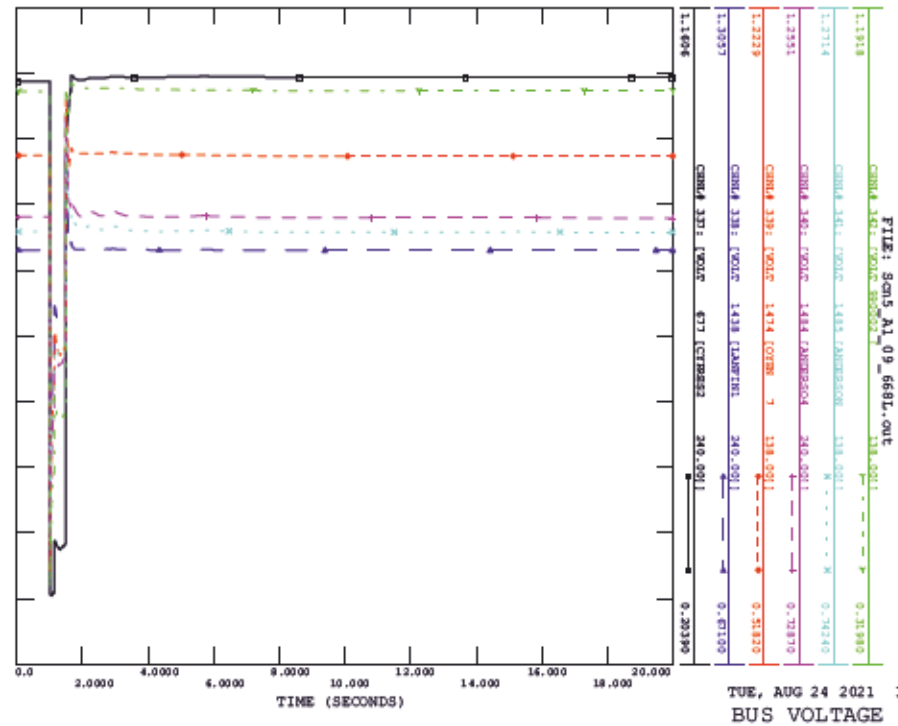
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CONTINGENCY -SCM5_A1_09_668L, FAULT LOCATION EMPRESS 3945



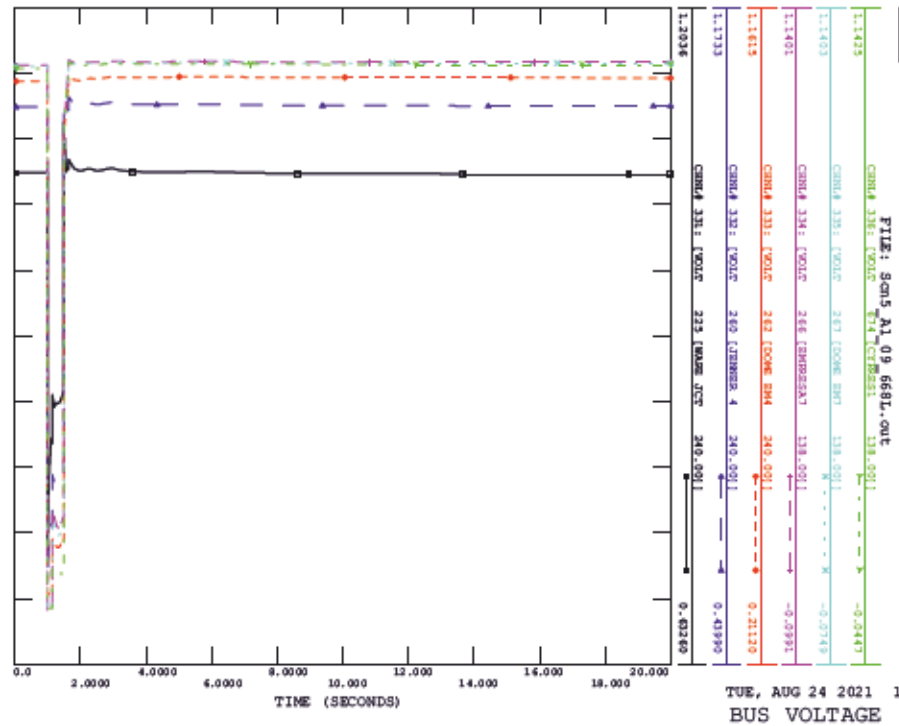
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_09_668L, FAULT LOCATION EMPRESS 3945



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_09_668L, FAULT LOCATION EMPRESS 3945

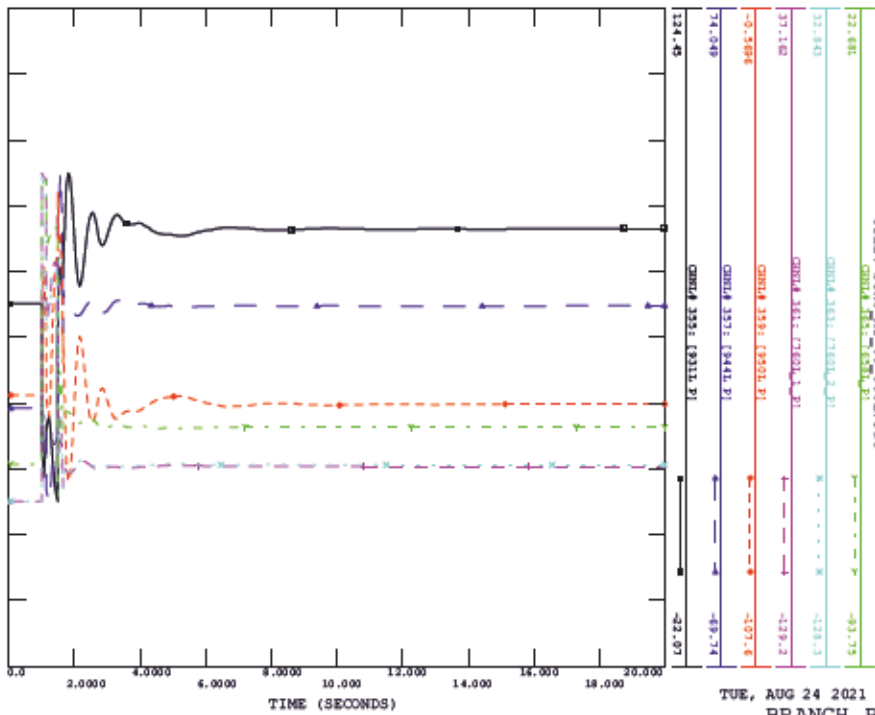


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_09_668L, FAULT LOCATION EMPRESS 3945



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRESS 394S

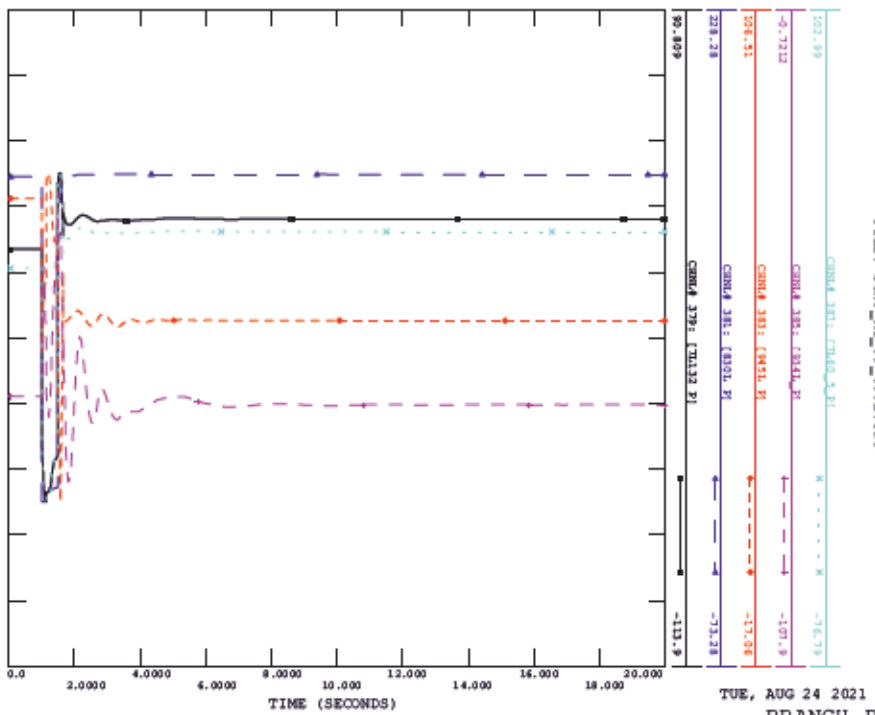
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TUE, AUG 24 2021 13:18
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRESS 394S

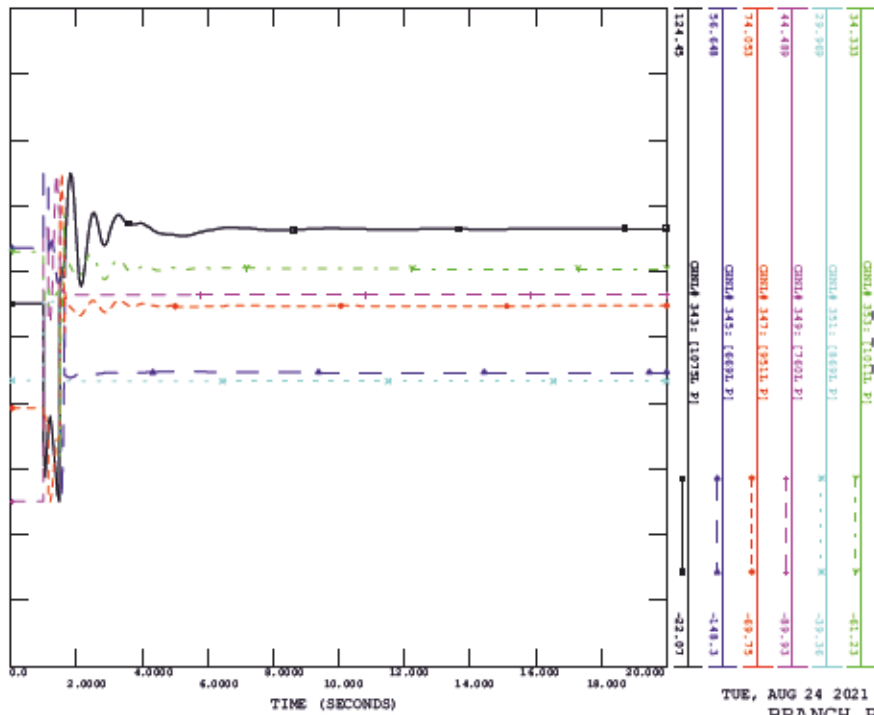
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TUE, AUG 24 2021 13:18
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRESS 394S

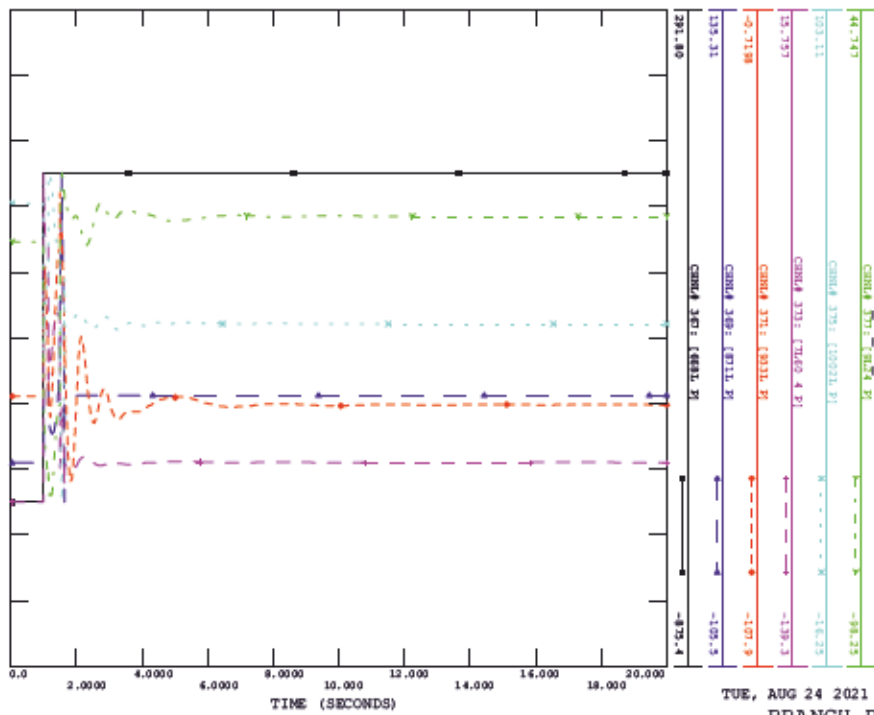
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TUE, AUG 24 2021 13:18
BRANCH P (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRESS 394S

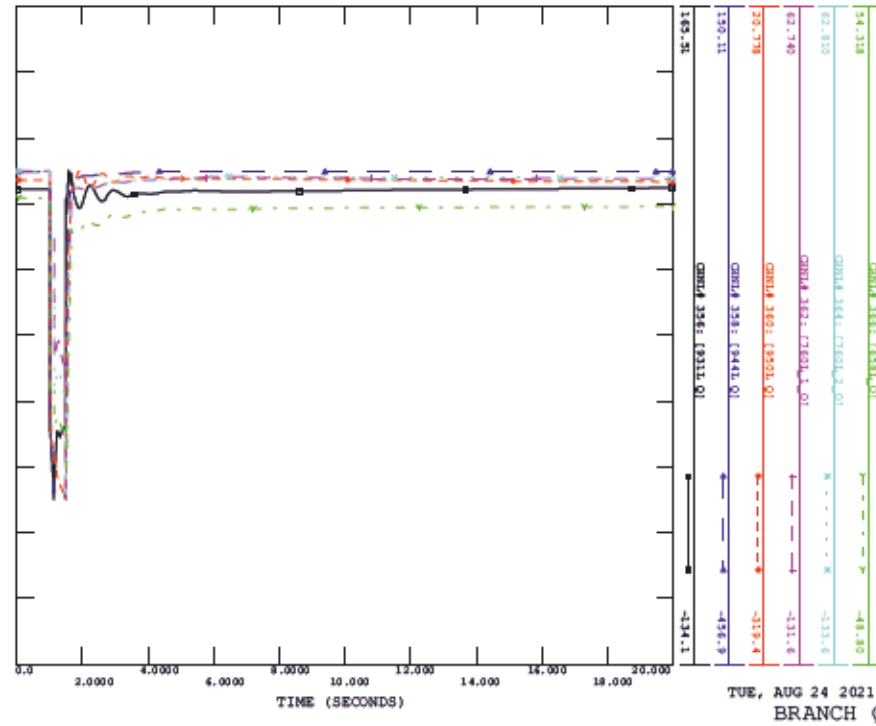
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TUE, AUG 24 2021 13:18
BRANCH P (3)

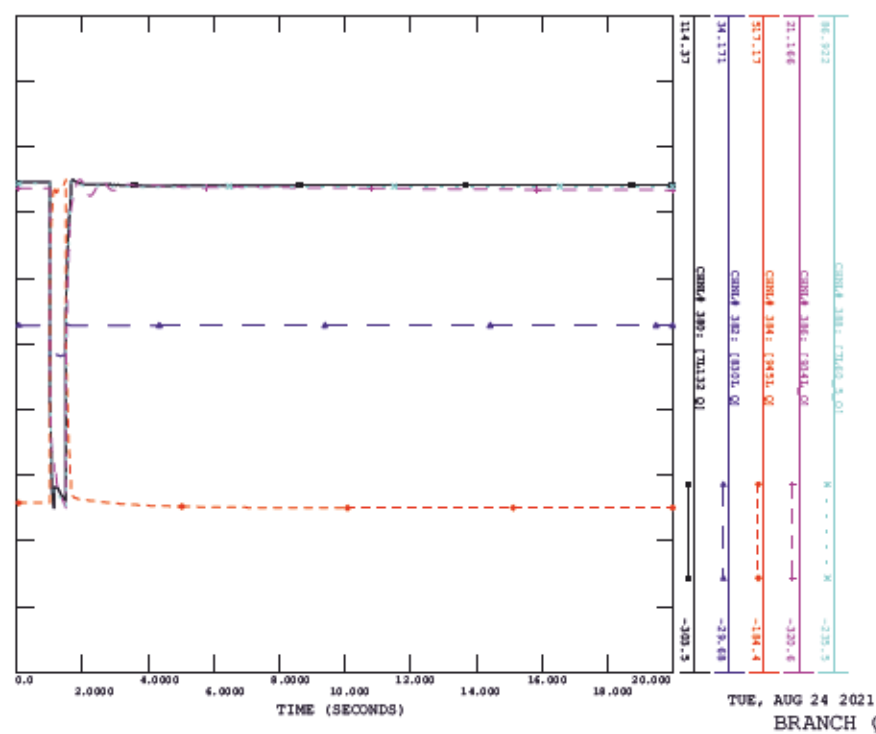
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRES 3945

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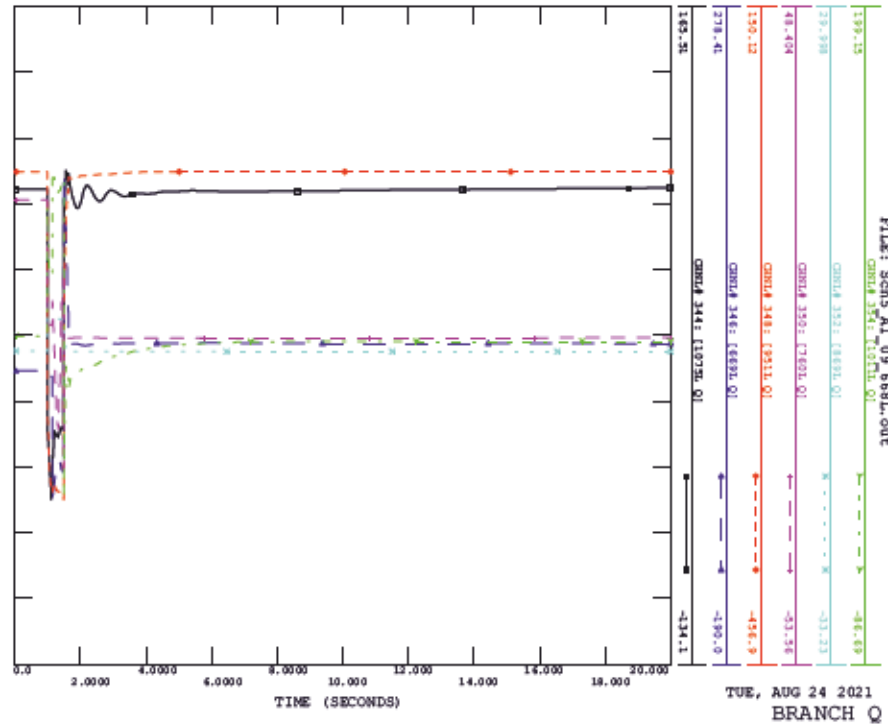
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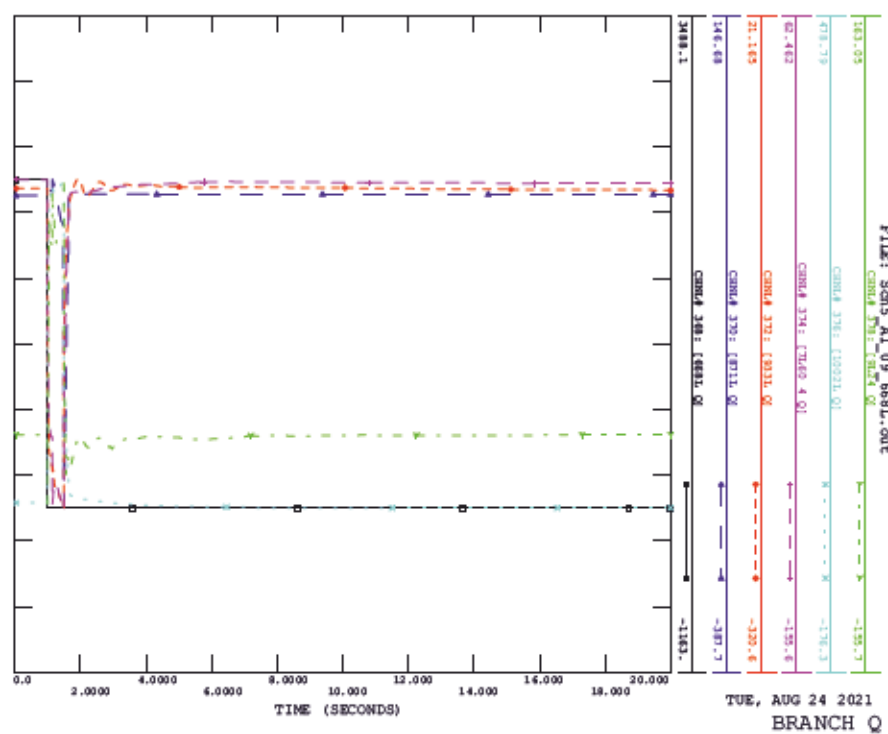
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CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRES 3945

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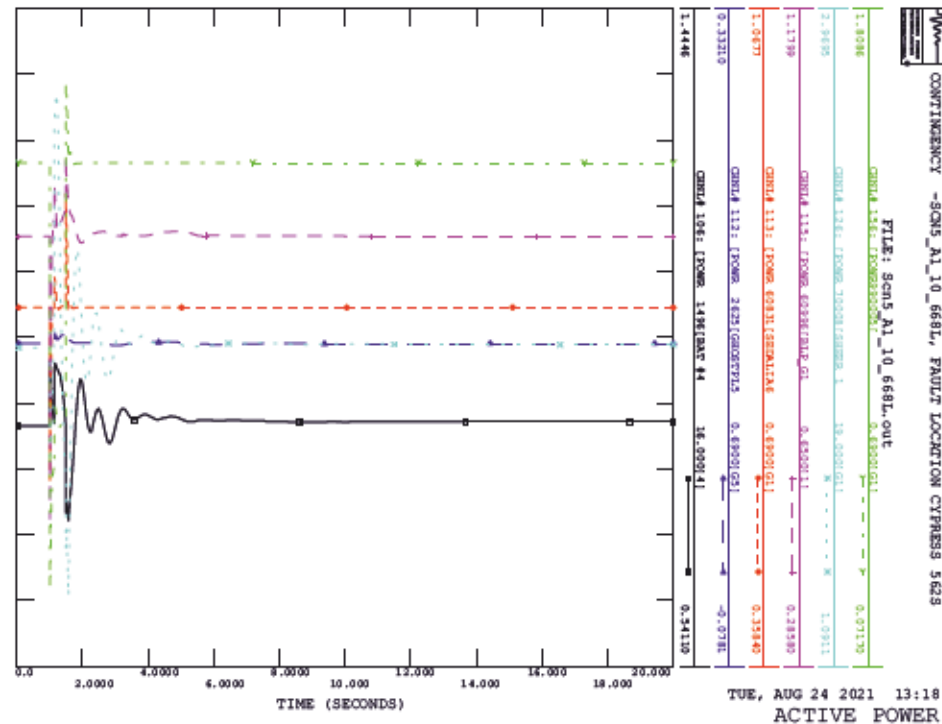


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_AI_09_668L, FAULT LOCATION EMPRES 3945

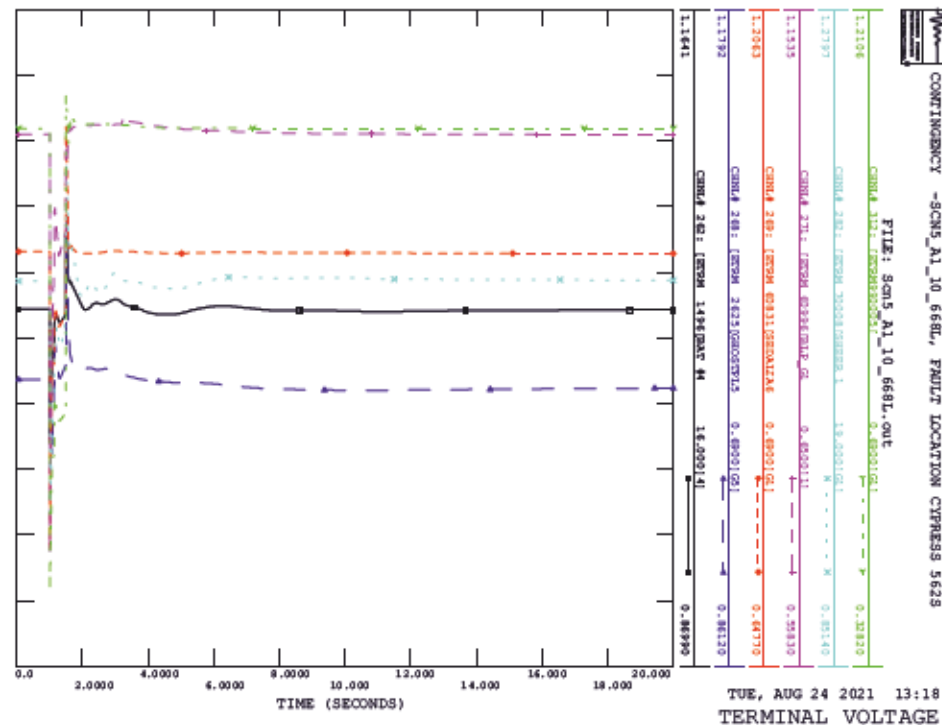
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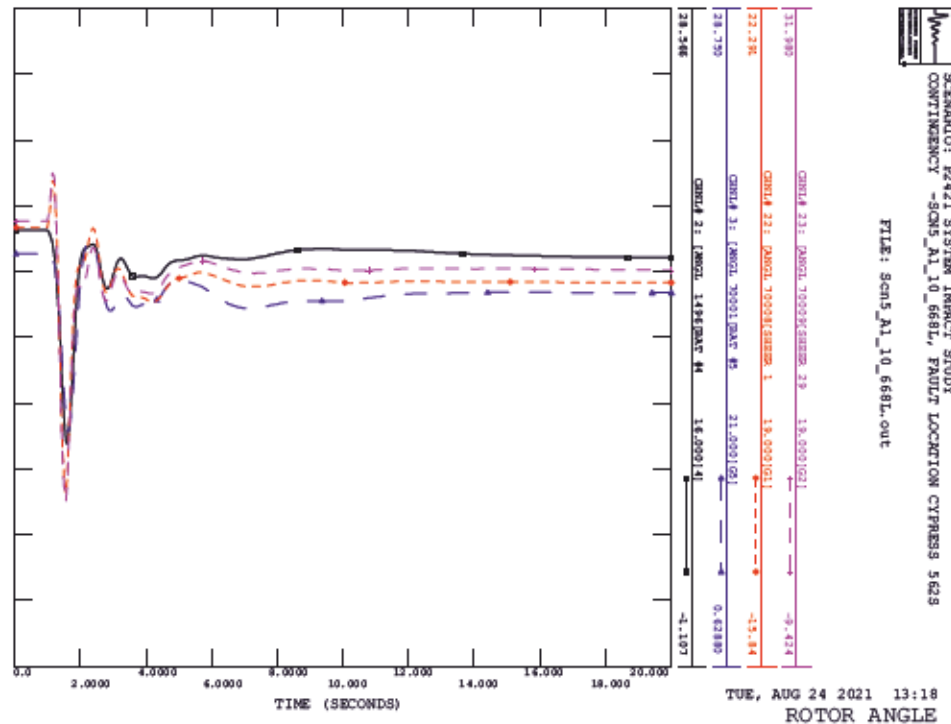
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



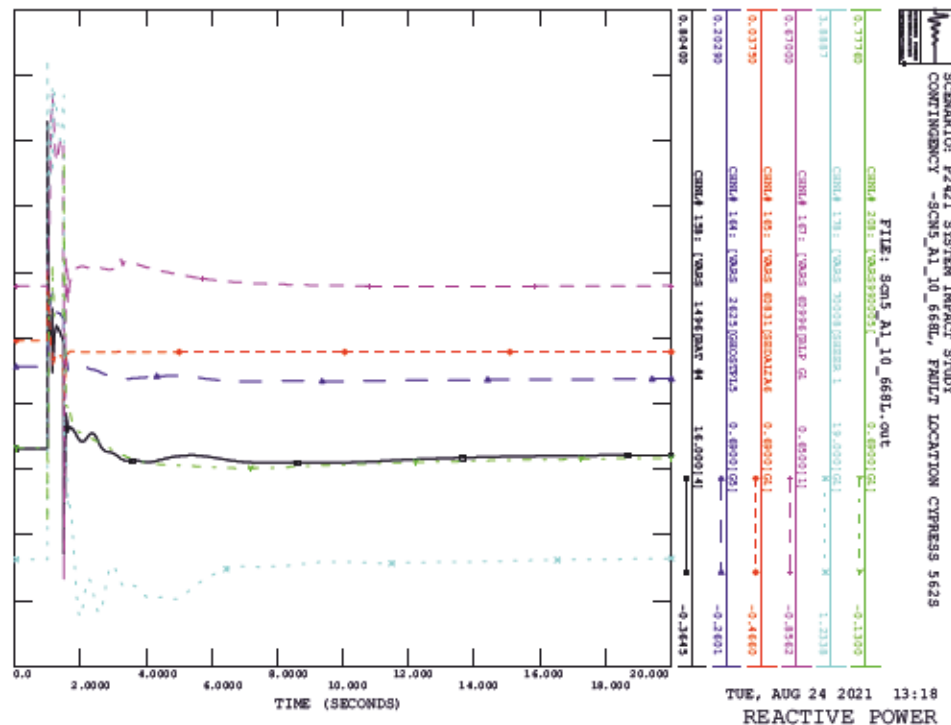
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



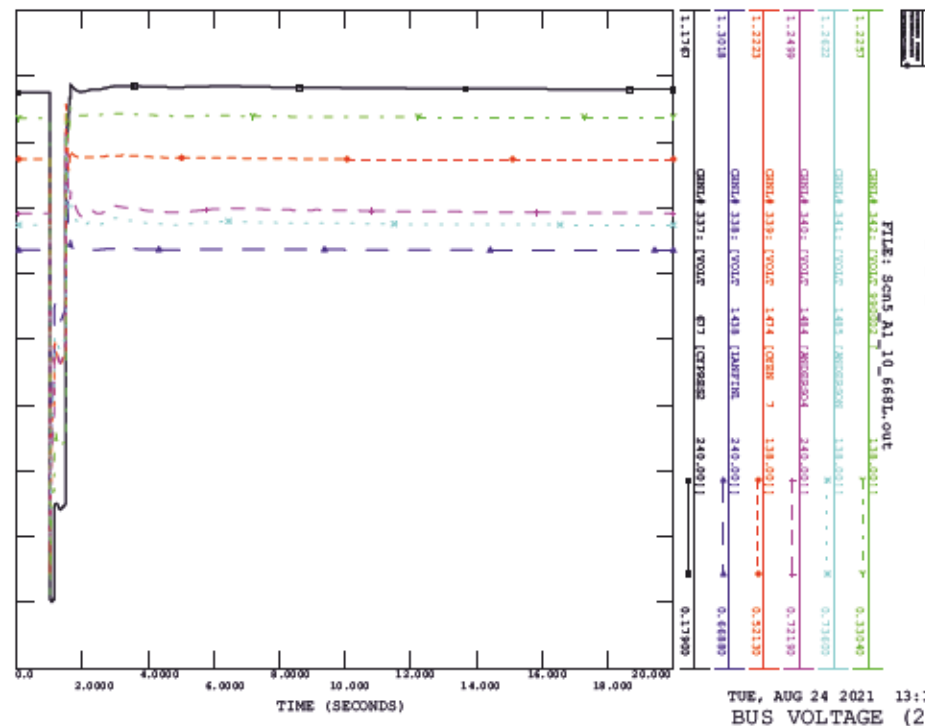
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



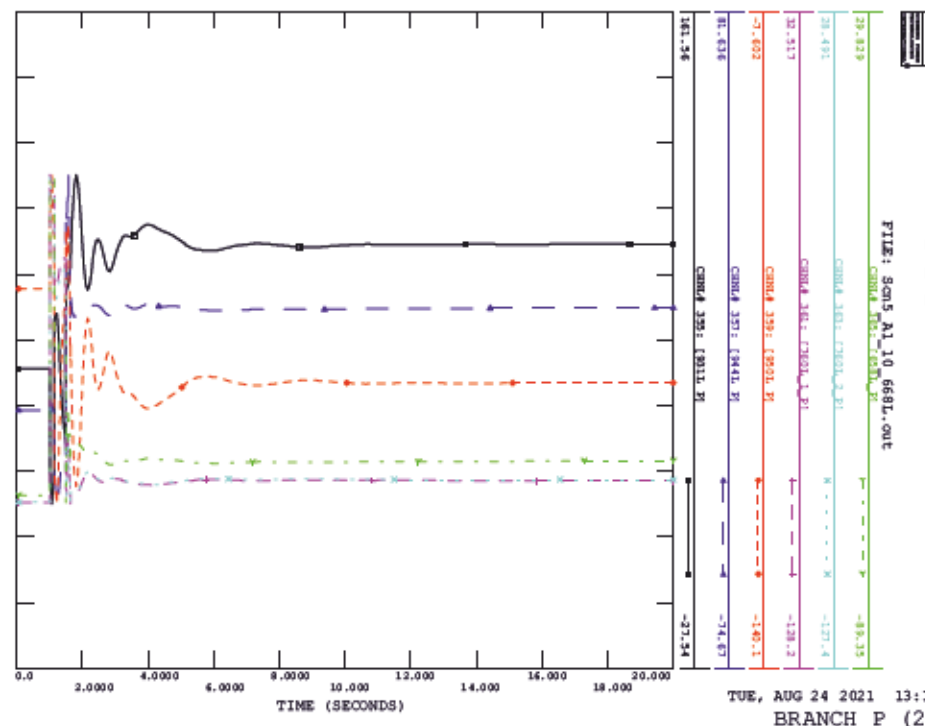
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CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



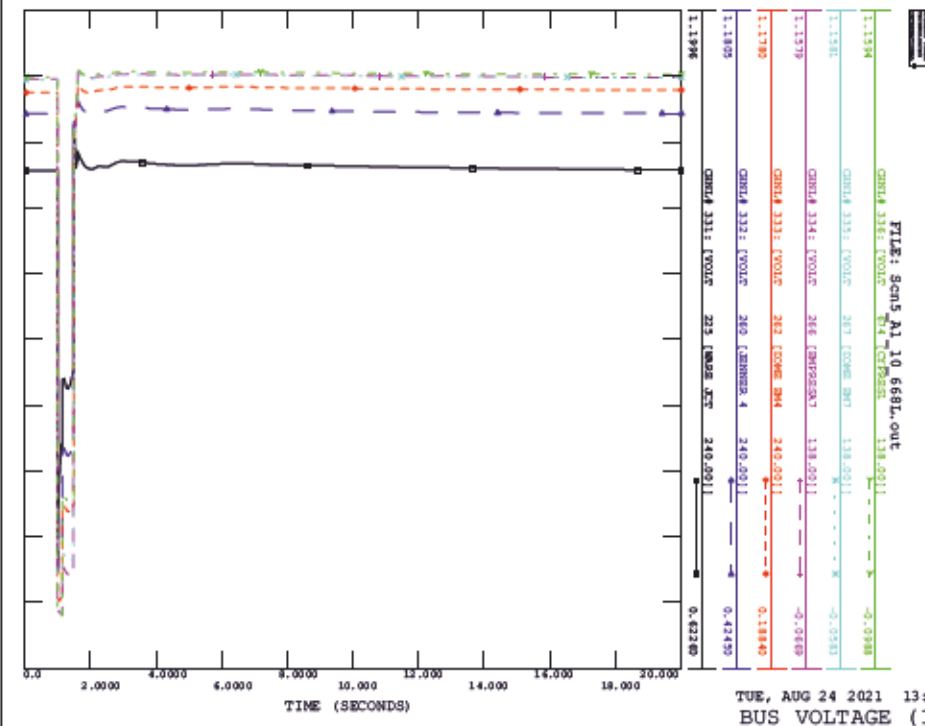
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



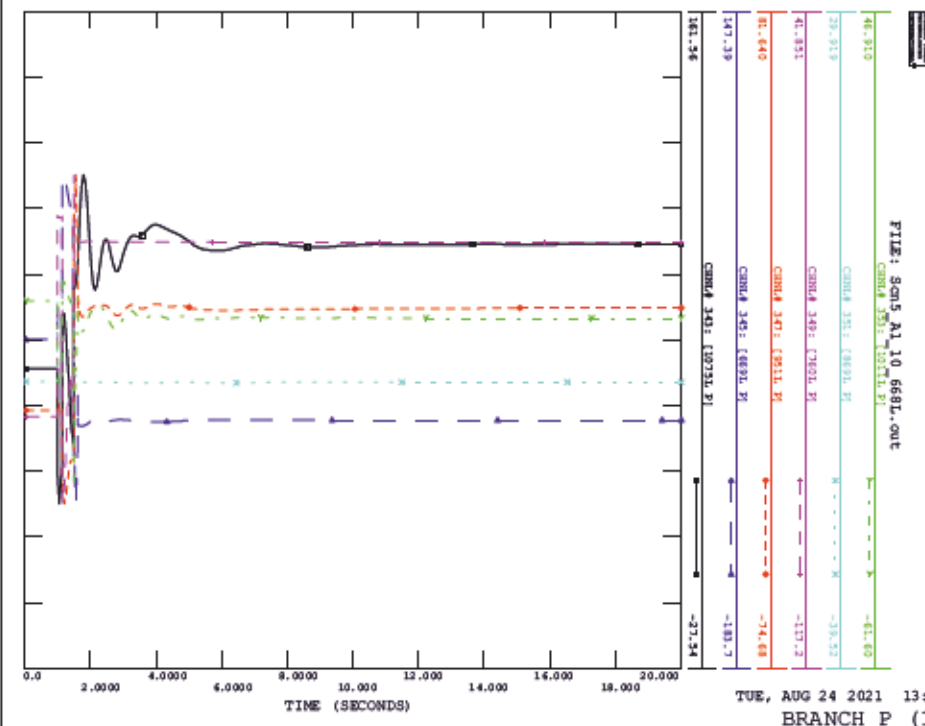
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629

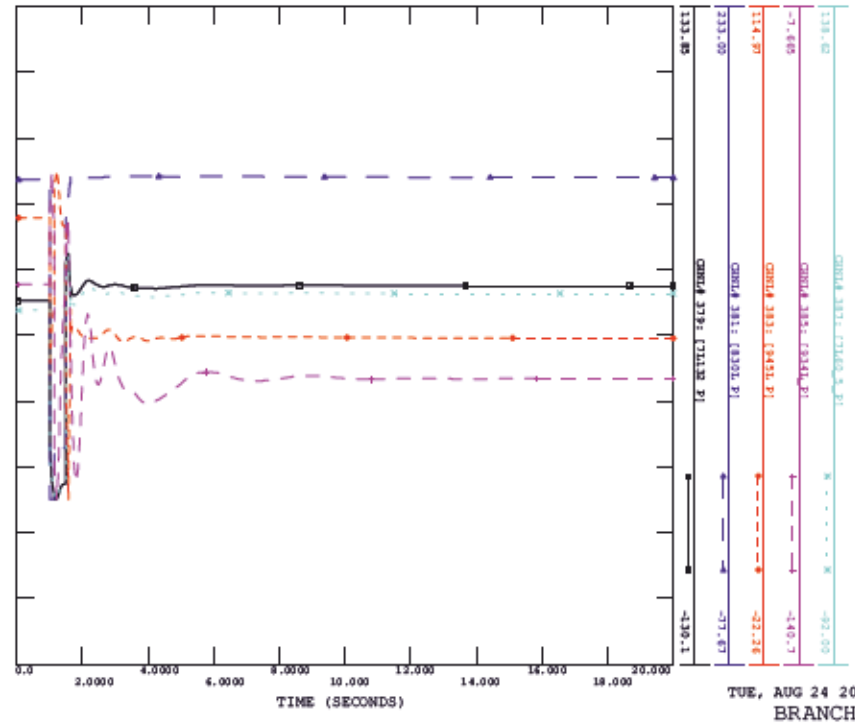


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629

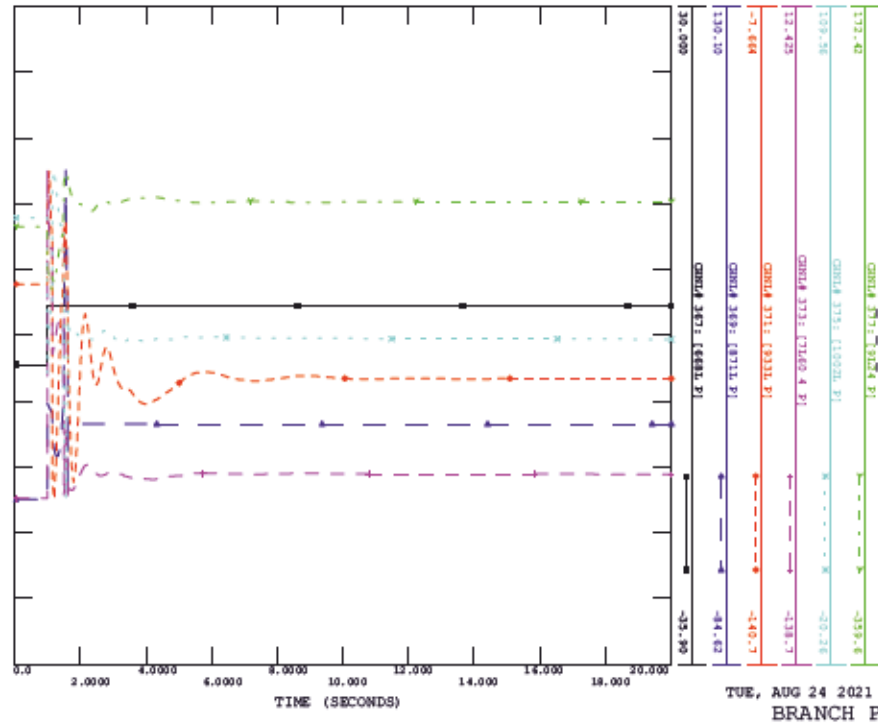
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TUE, AUG 24 2021 13:18
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629

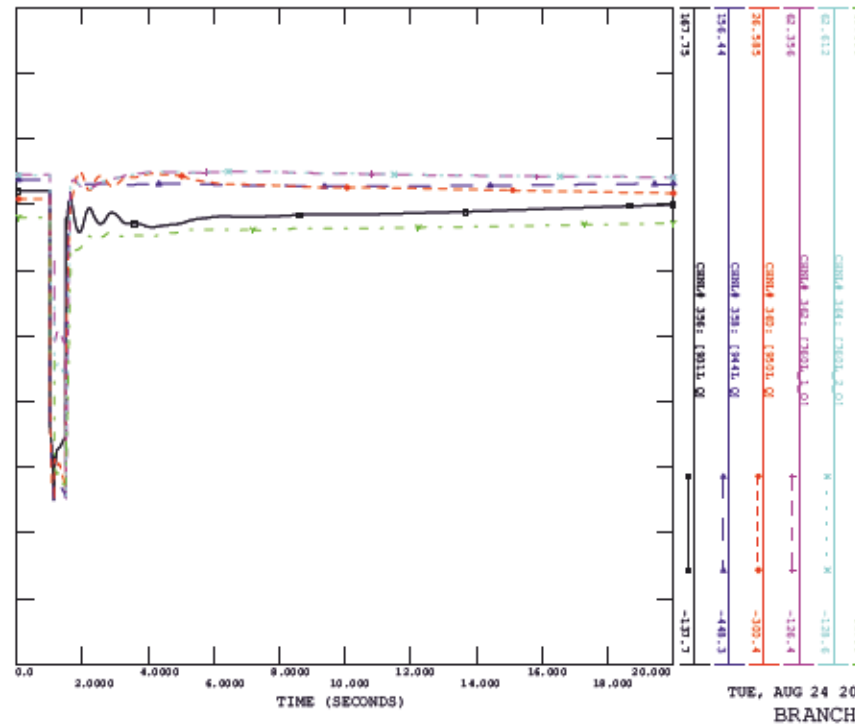
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TUE, AUG 24 2021 13:18
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
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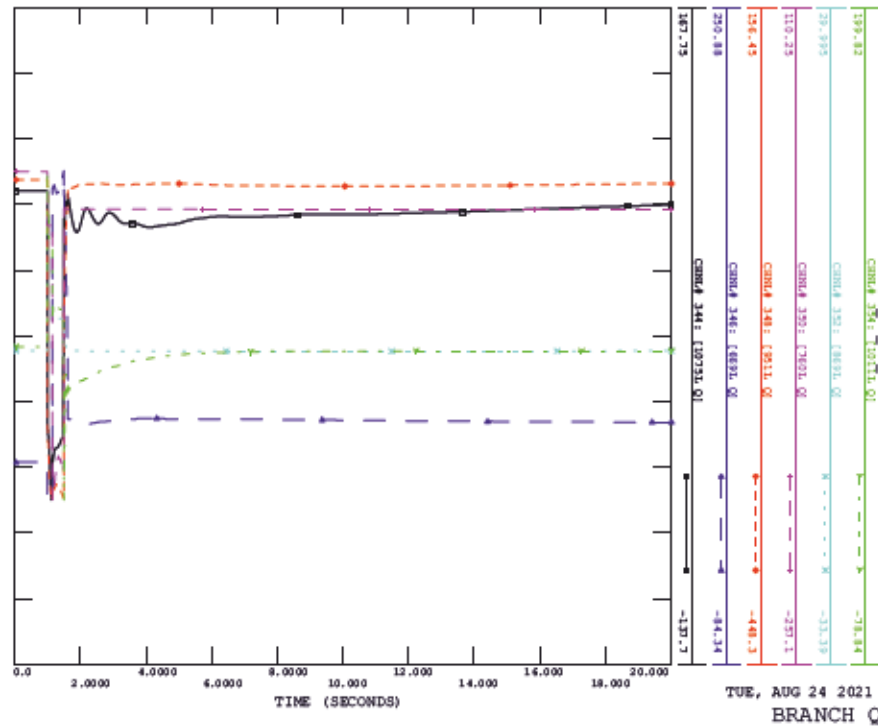
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TUE, AUG 24 2021 13:18
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629

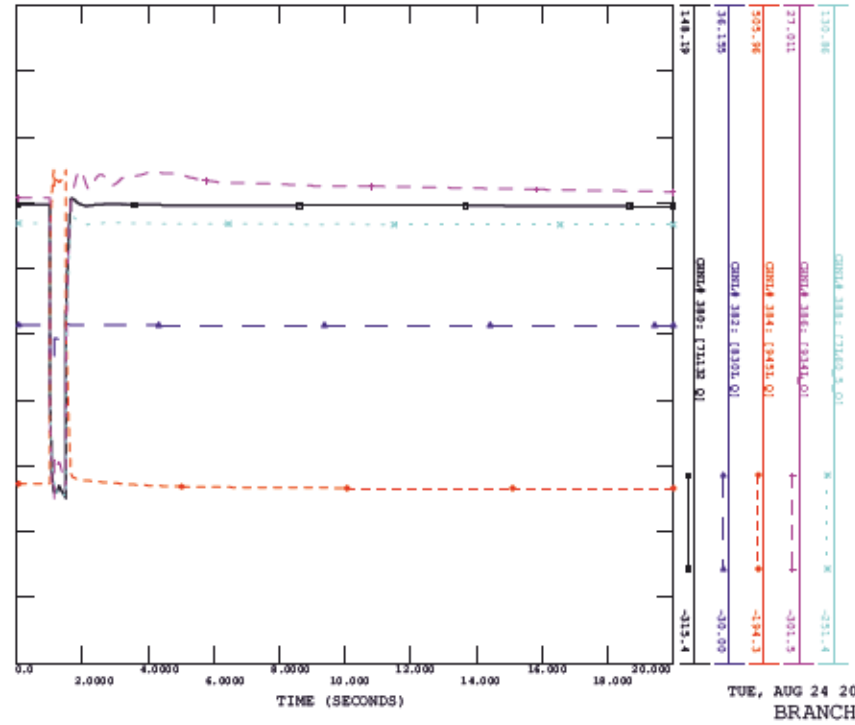
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TUE, AUG 24 2021 13:18
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629

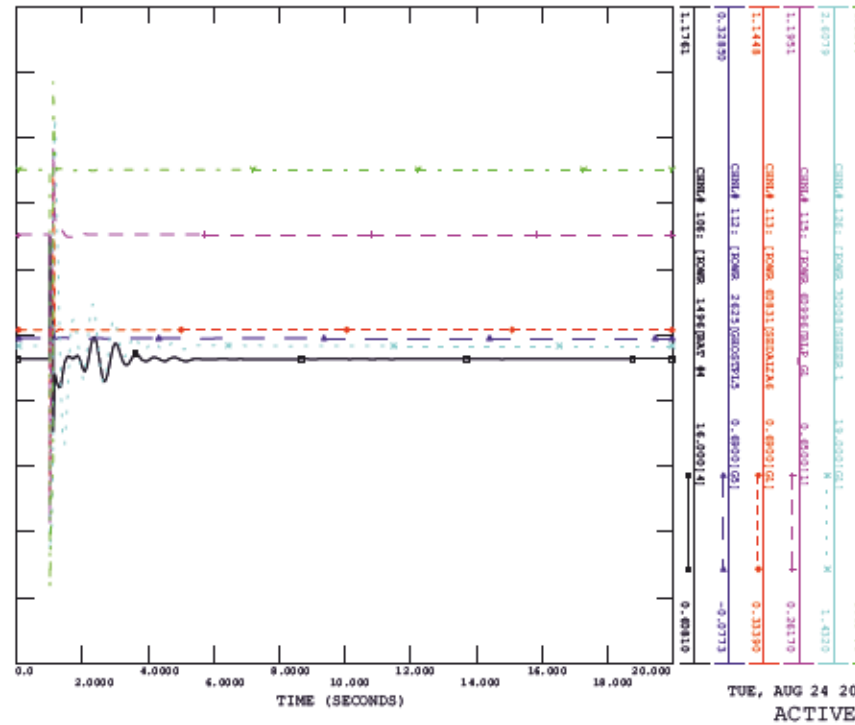
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TUE, AUG 24 2021 13:18
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_11_1011L, FAULT LOCATION RMOCO EMPRESS

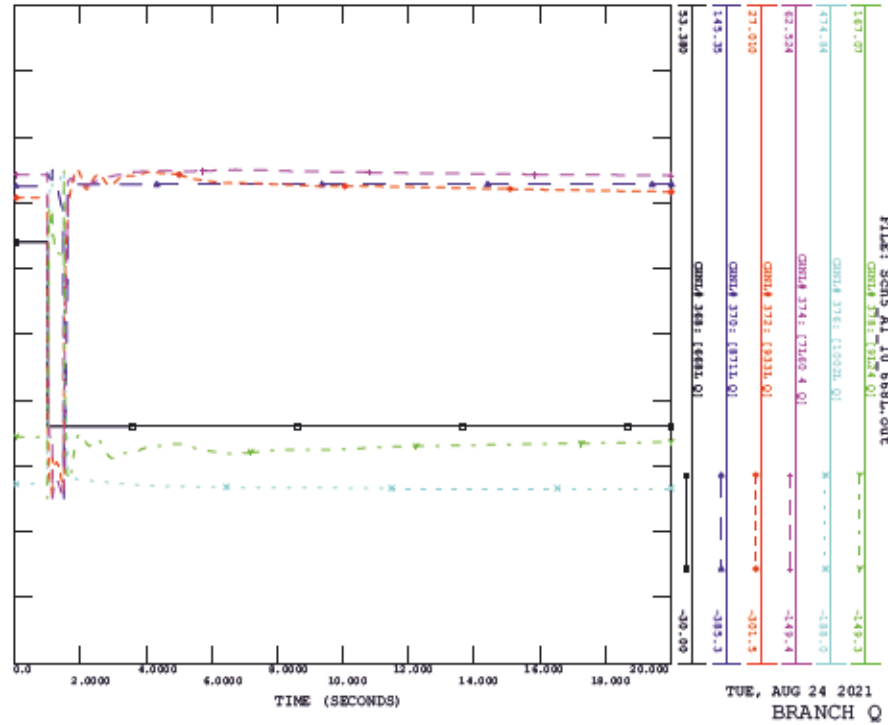
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TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_10_668L, FAULT LOCATION CYPRESS 5629

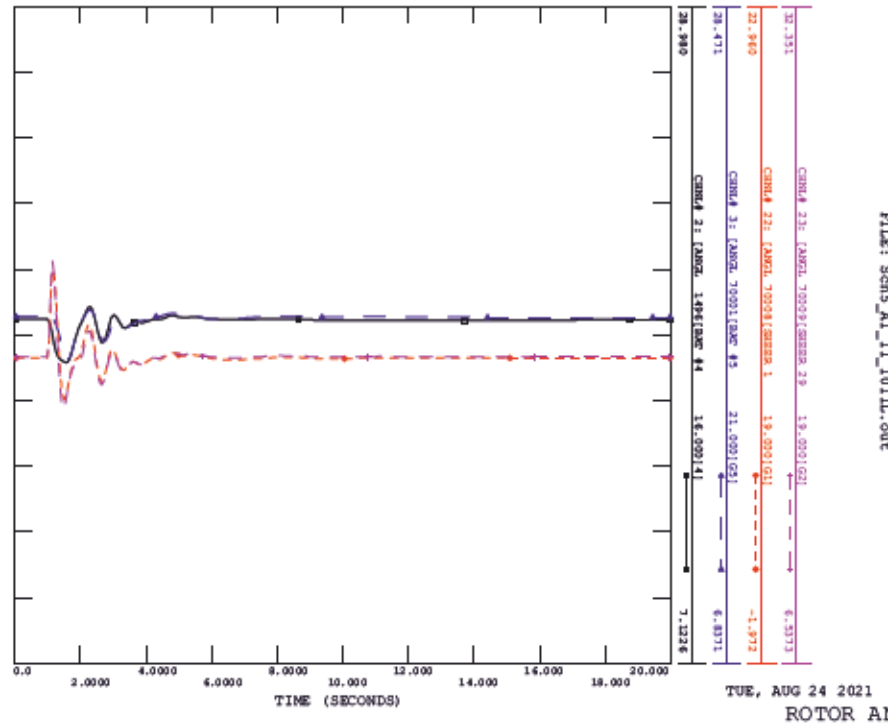
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TUE, AUG 24 2021 13:18
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_11_1011L, FAULT LOCATION RMOCO EMPRESS

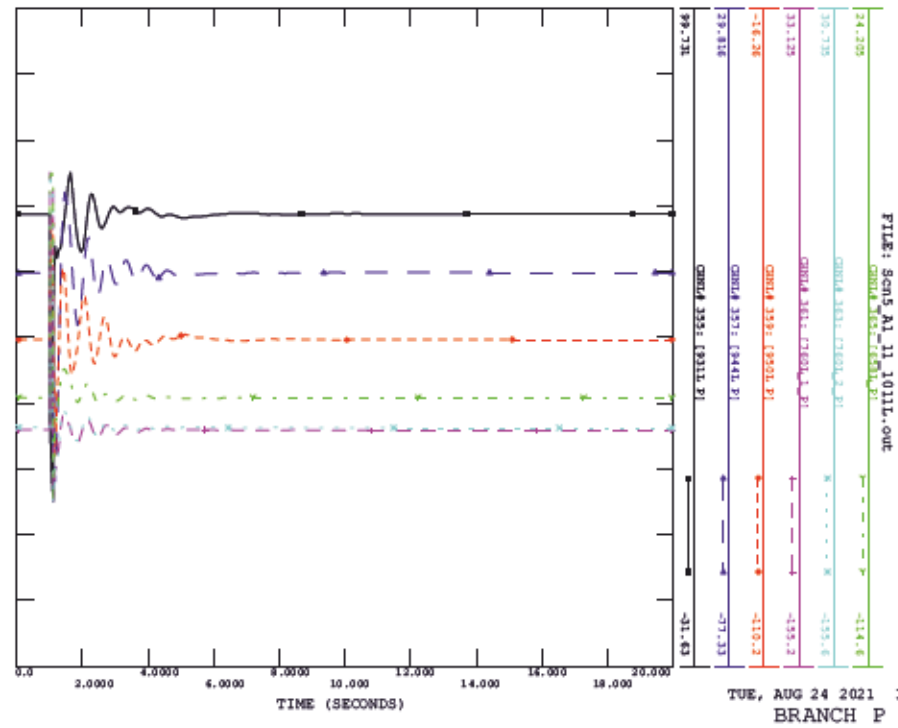
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TUE, AUG 24 2021 13:19
ROTOR ANGLE

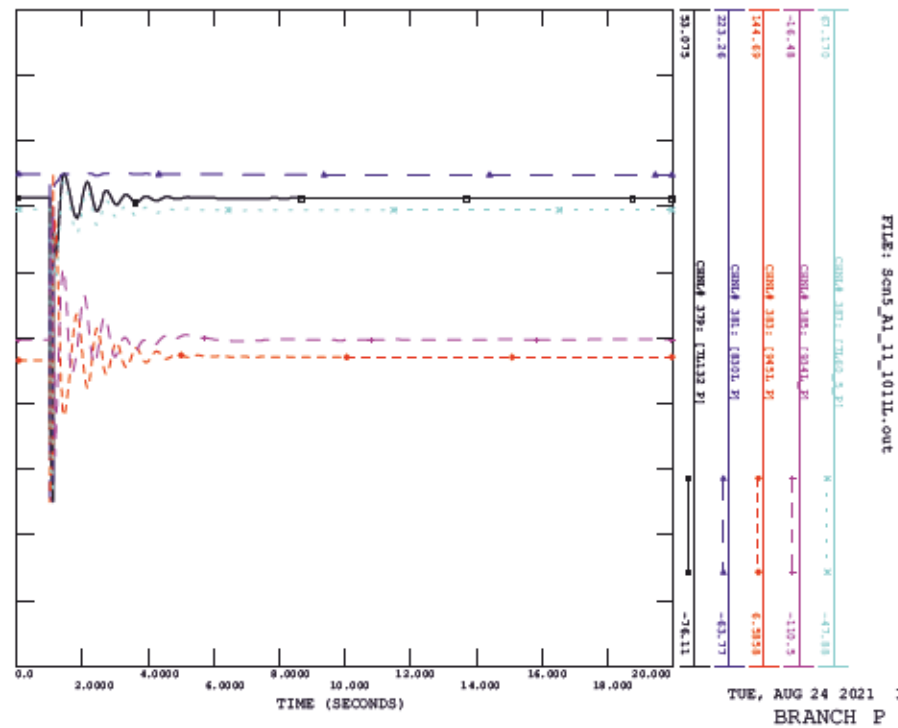
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CONTINGENCY -SCM5_A1_11_1011L, FAULT LOCATION AMOCO EXPRESS

FILE: scm5_A1_11_1011L.out



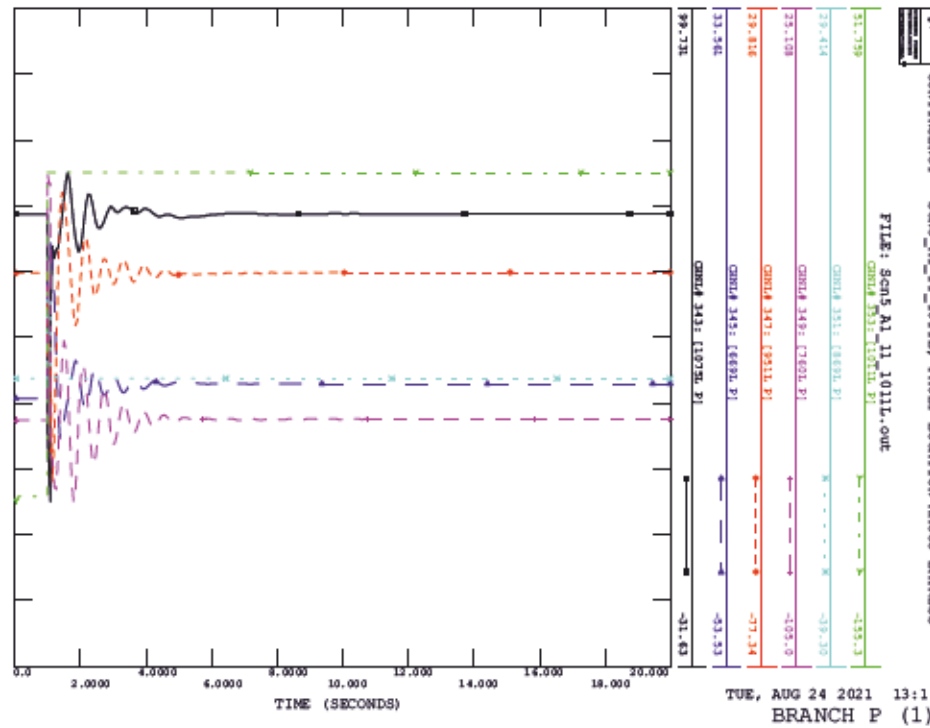
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CONTINGENCY -SCM5_A1_11_1011L, FAULT LOCATION AMOCO EXPRESS

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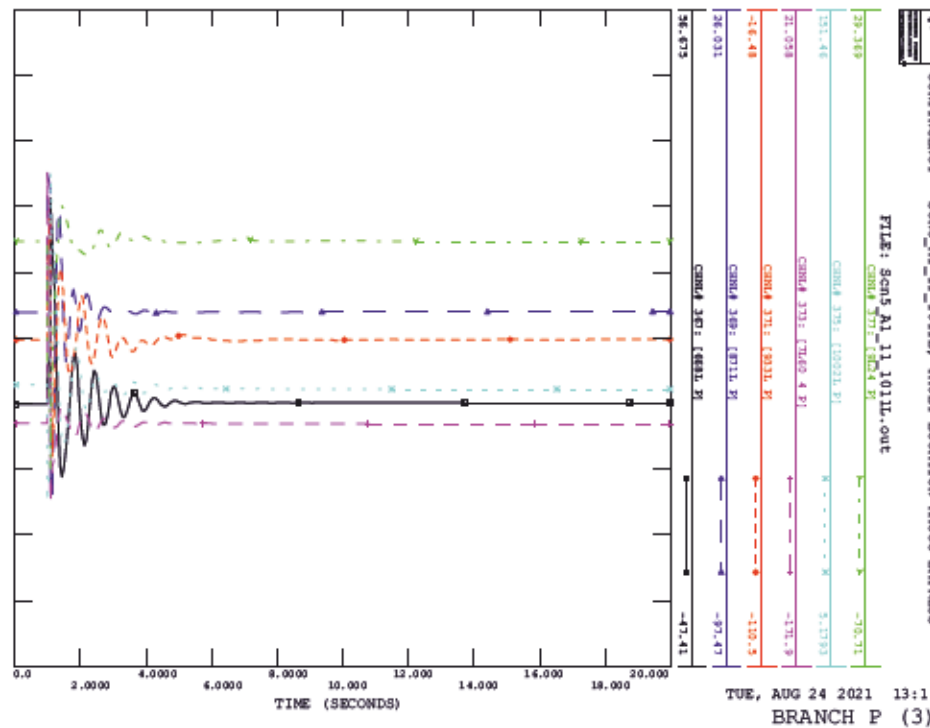
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CONTINGENCY -SCM5_A1_11_1011L, FAULT LOCATION AMOCO EXPRESS

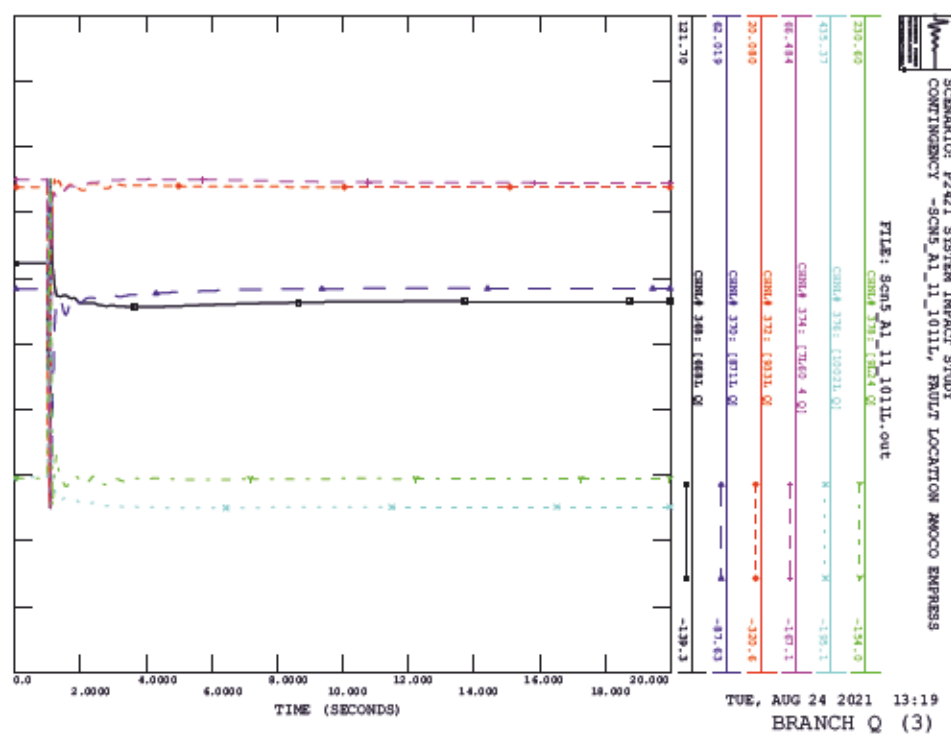
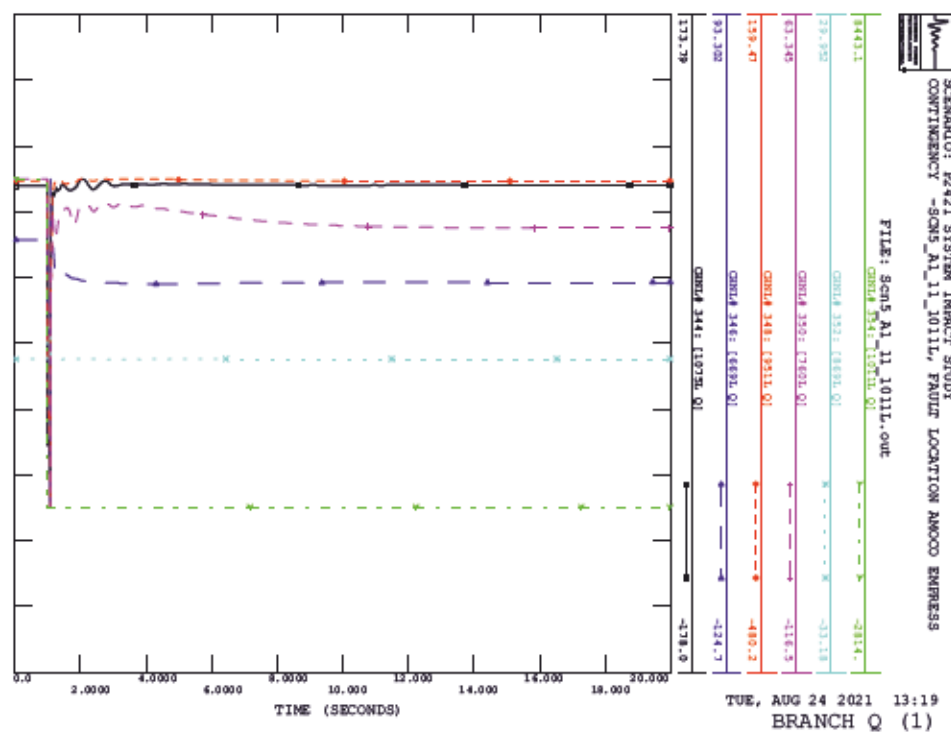
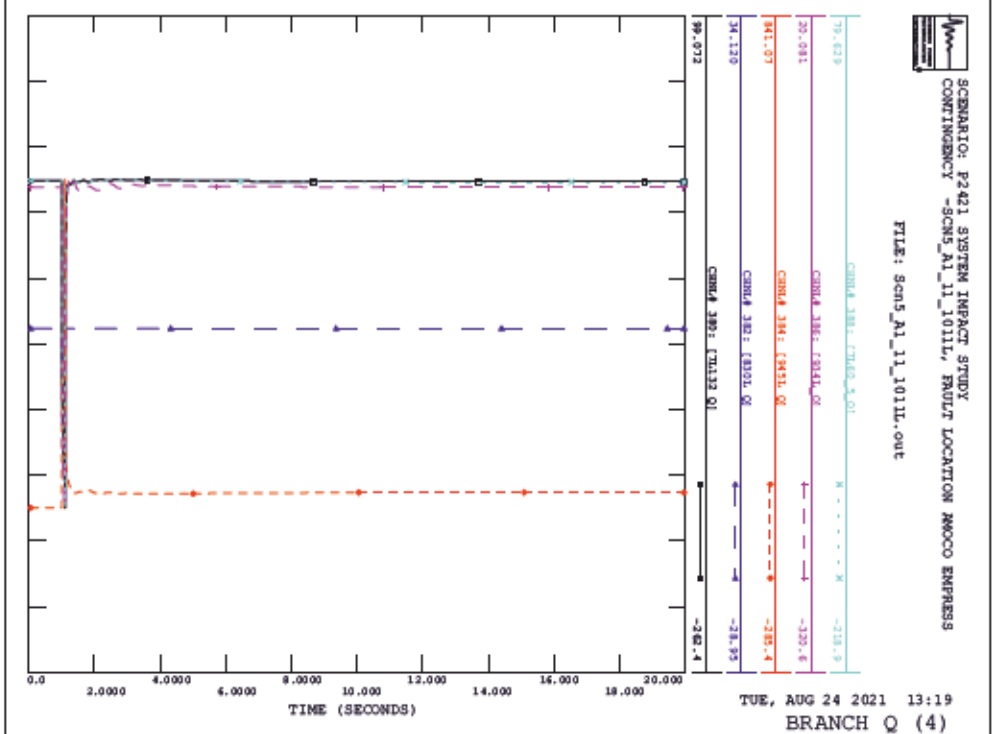
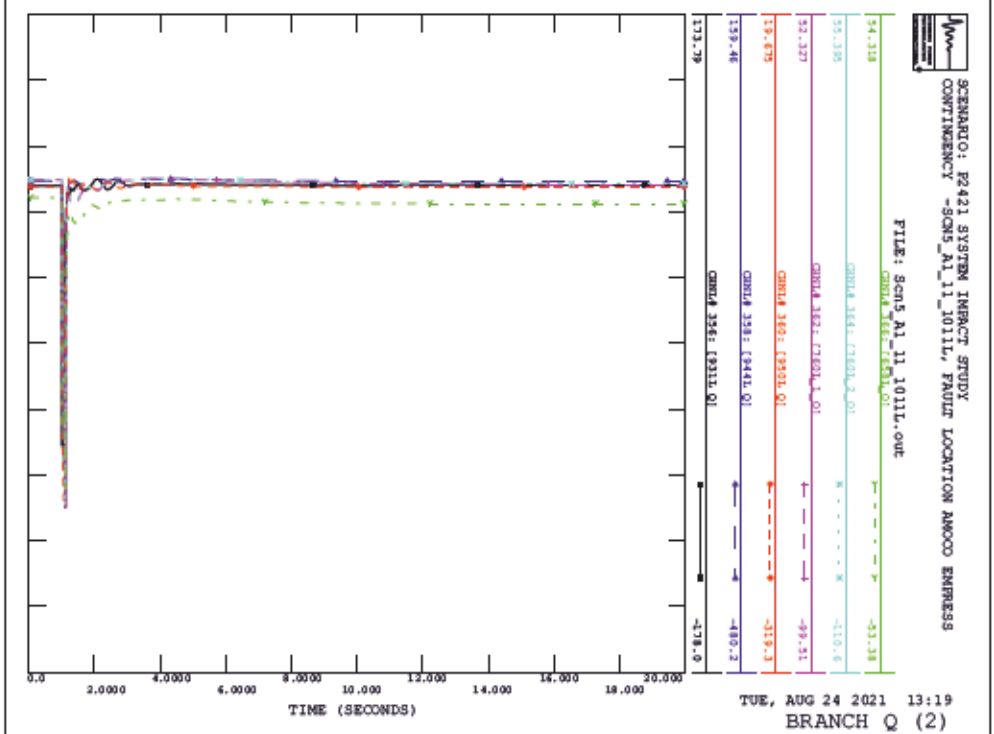
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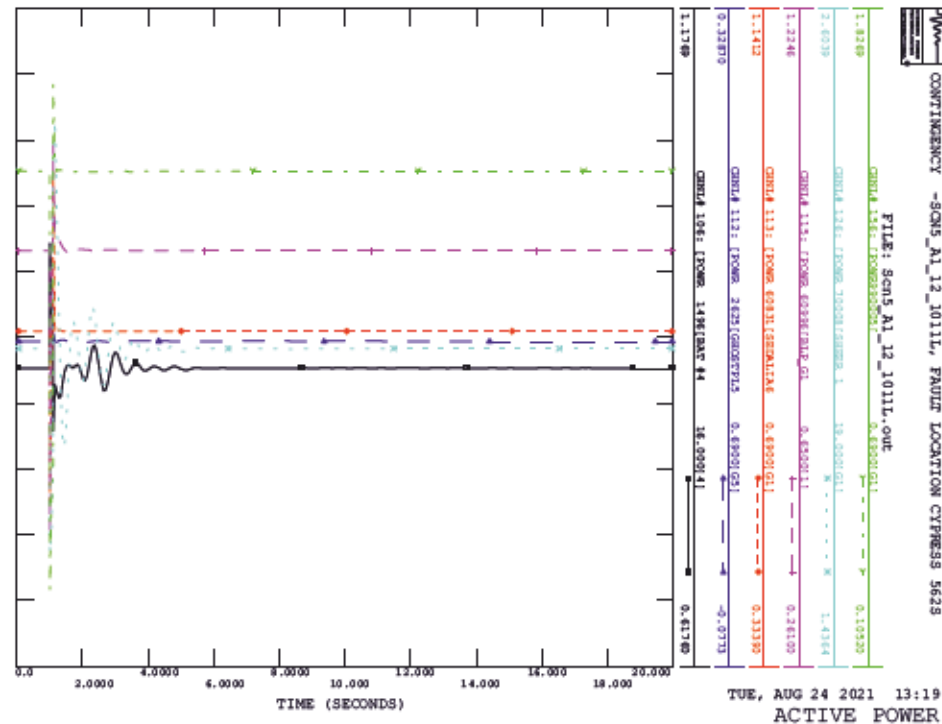
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CONTINGENCY -SCM5_A1_11_1011L, FAULT LOCATION AMOCO EXPRESS

FILE: scm5_A1_11_1011L.out

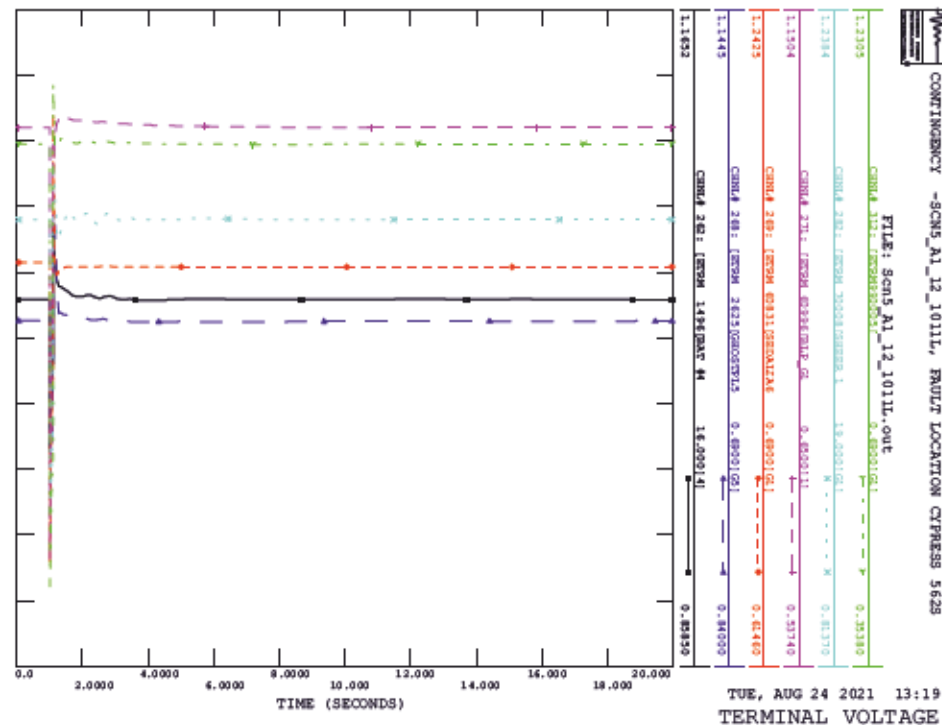




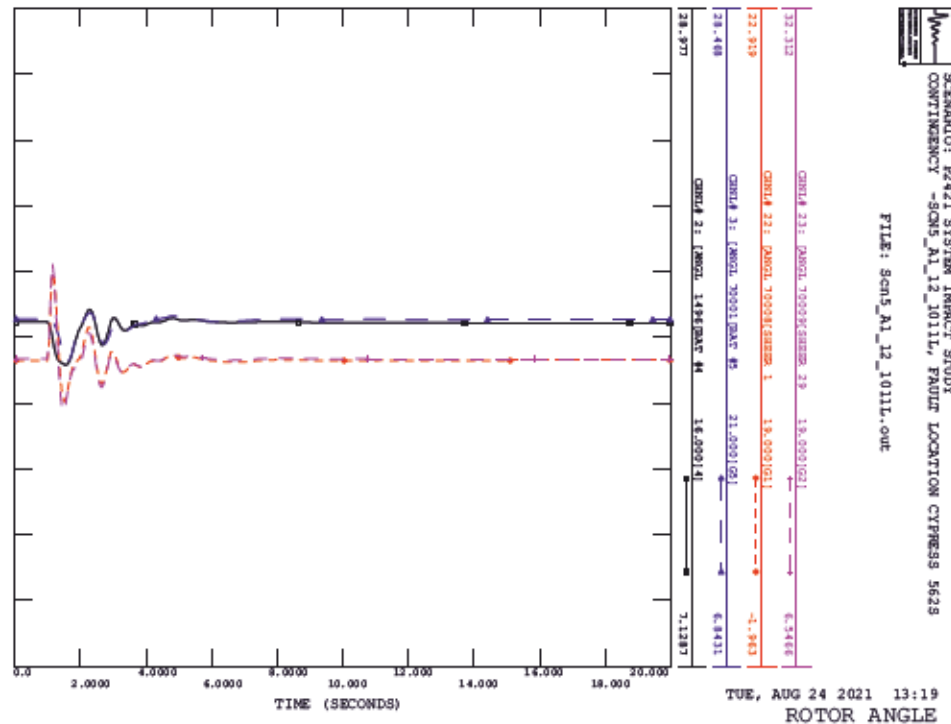
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



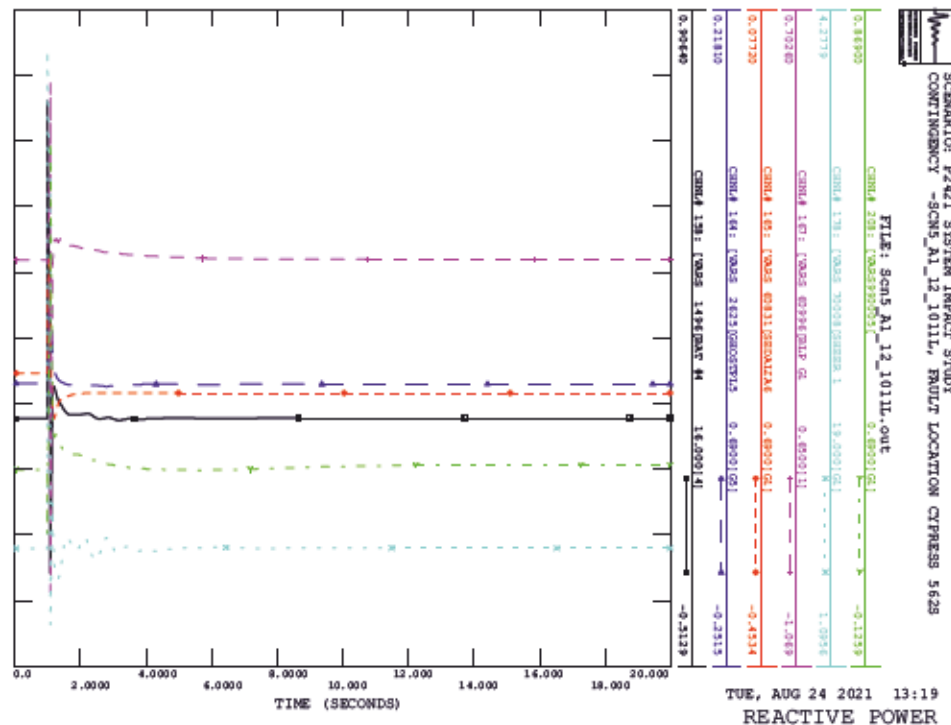
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CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



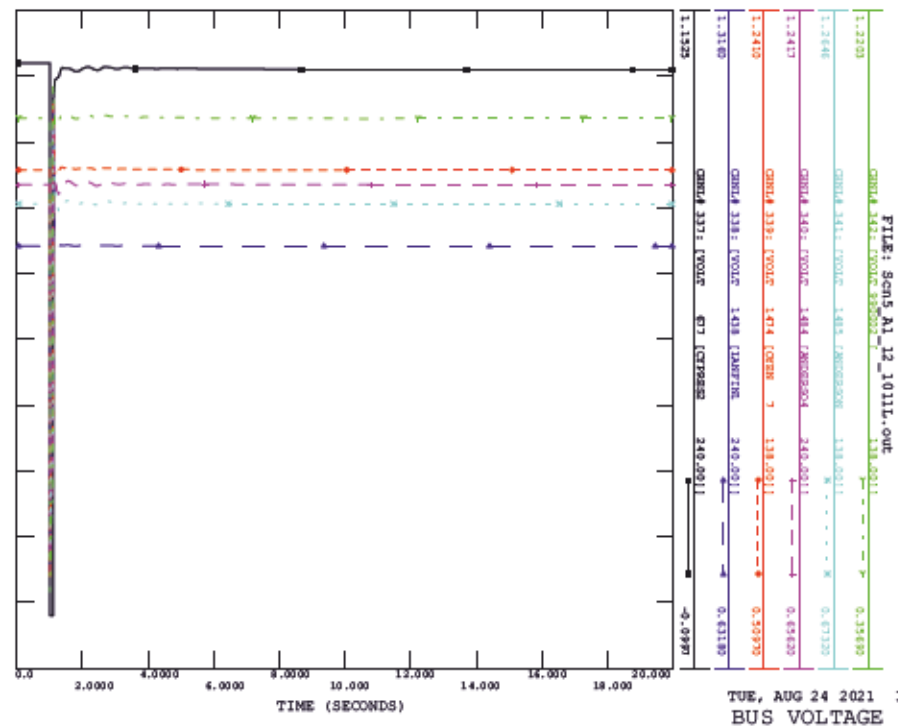
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CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



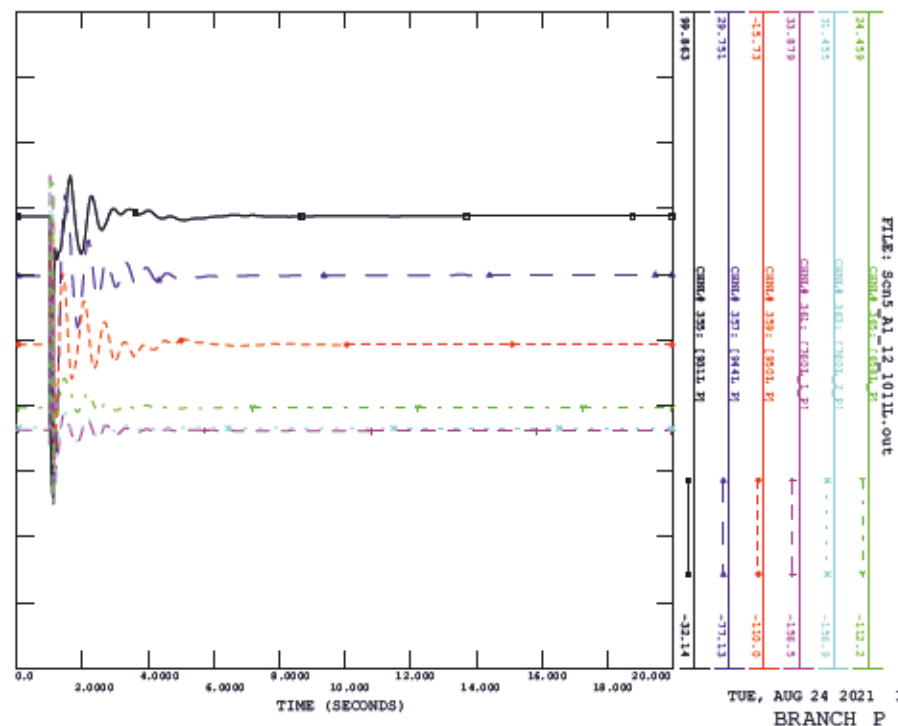
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CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



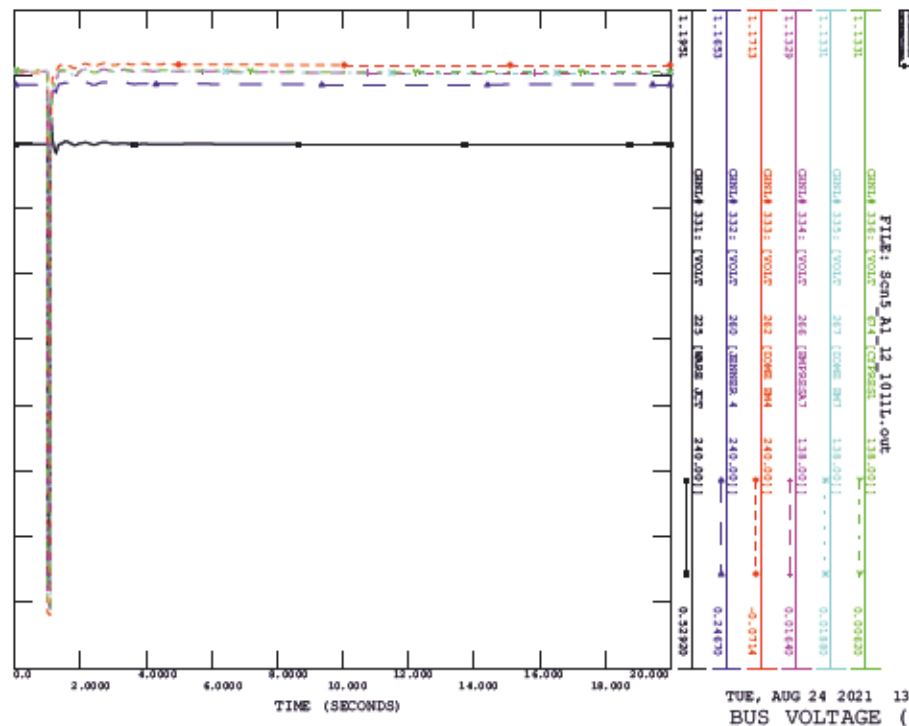
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CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



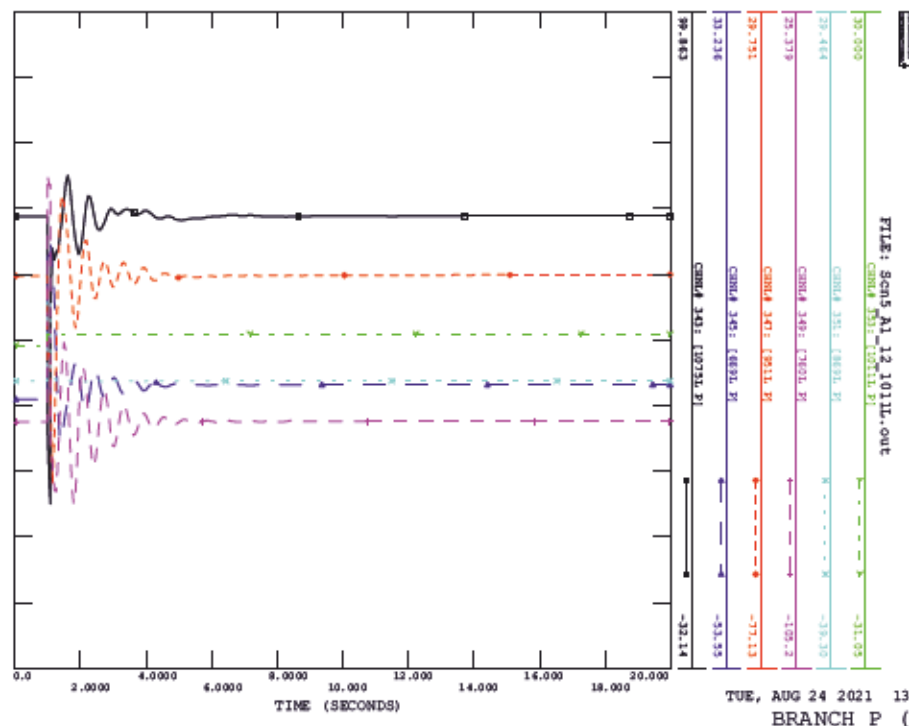
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625

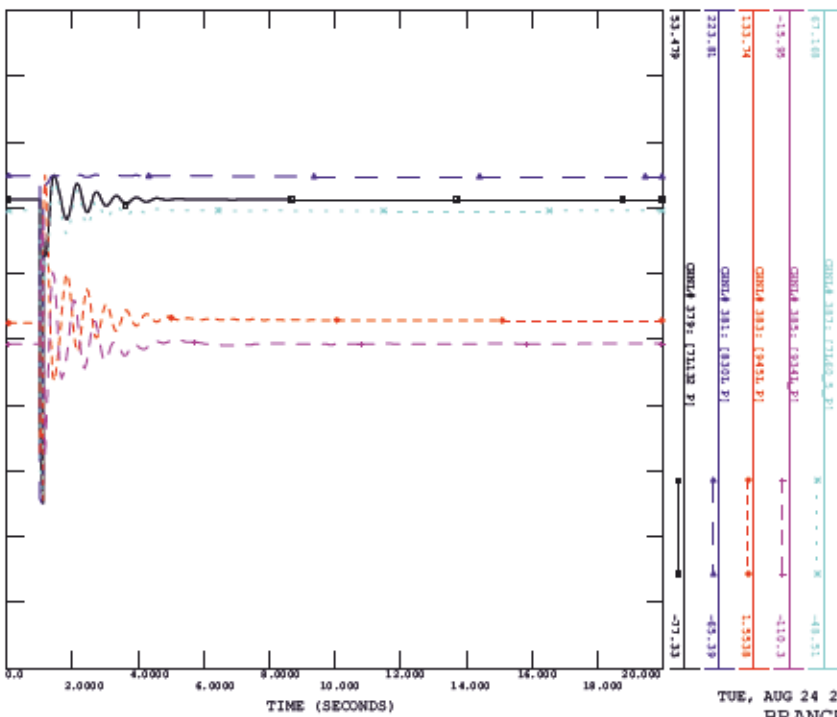


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625

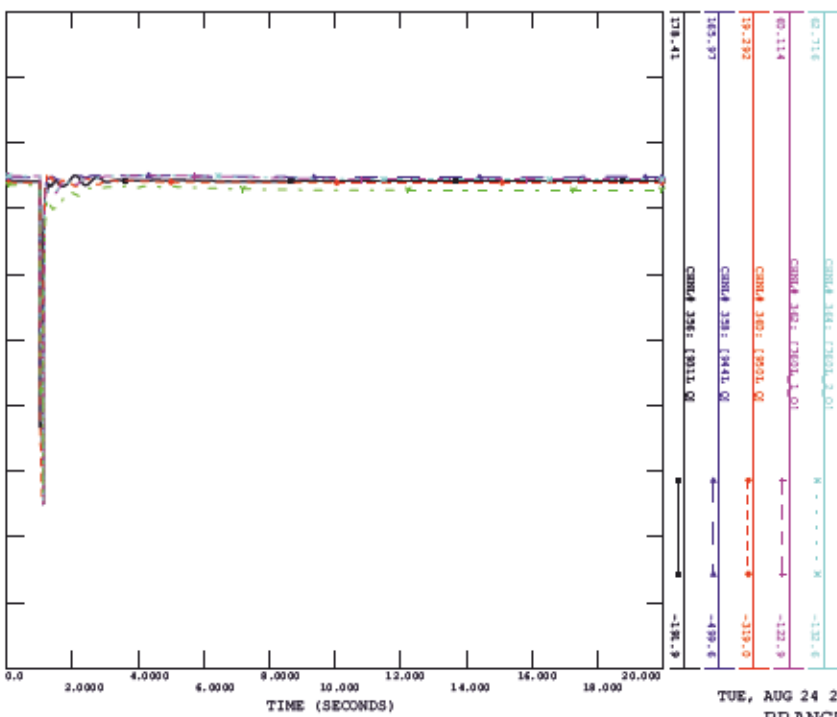
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TUE, AUG 24 2021 13:19
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625

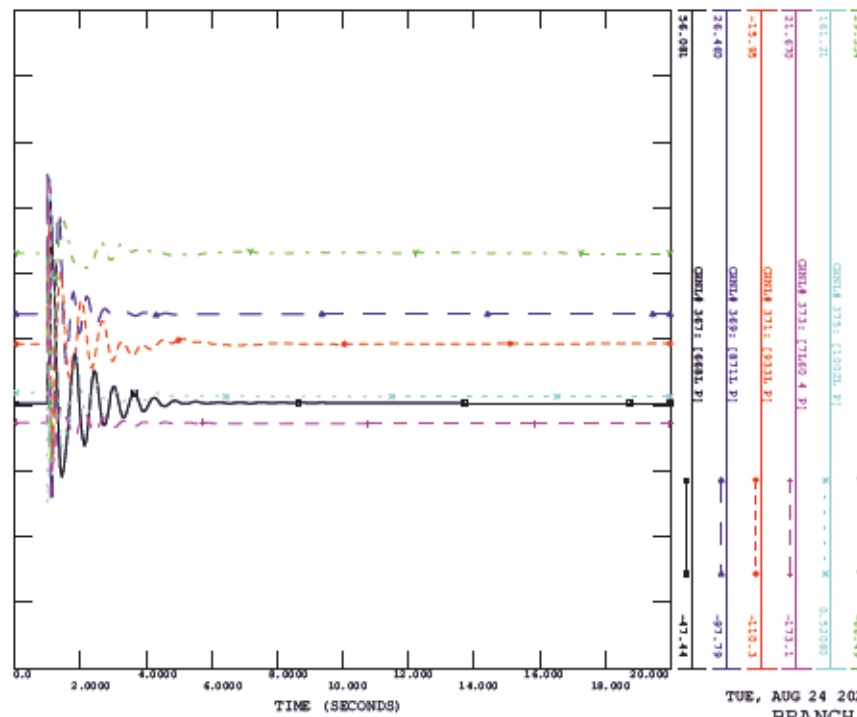
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TUE, AUG 24 2021 13:19
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625

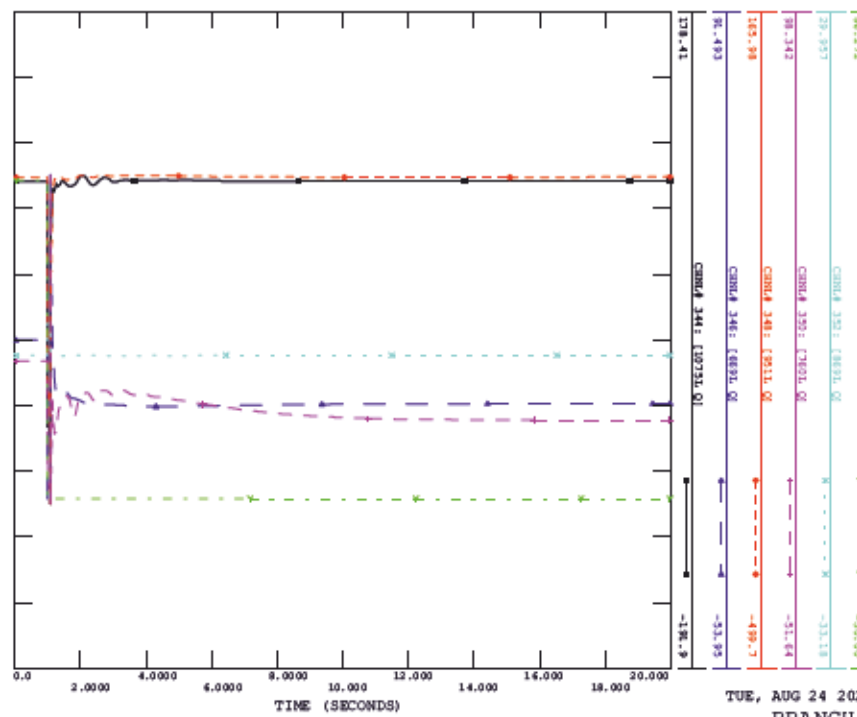
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TUE, AUG 24 2021 13:19
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625

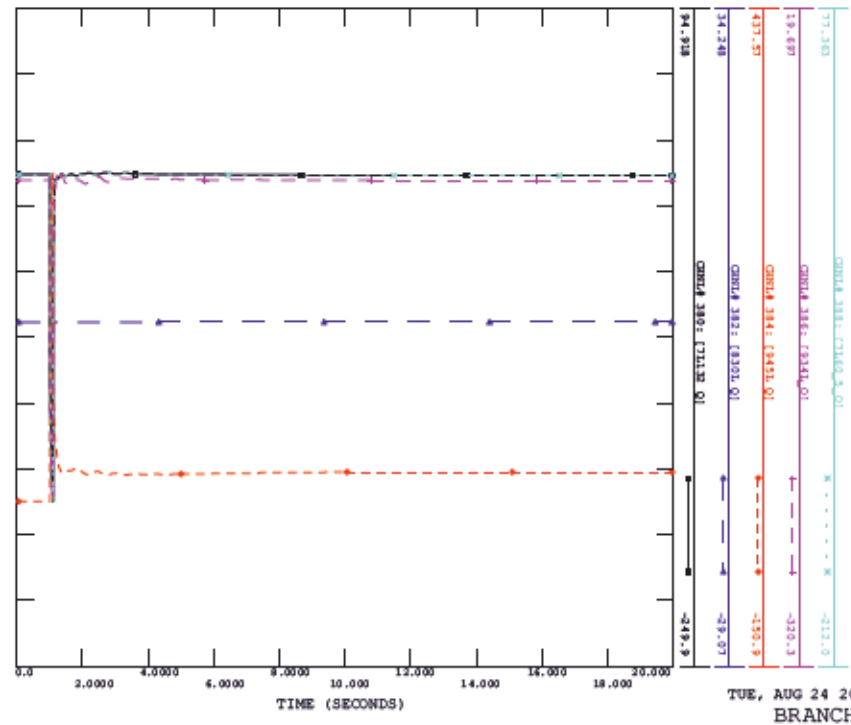
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TUE, AUG 24 2021 13:19
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_13_1011L, FAULT LOCATION CYPRESS 5625

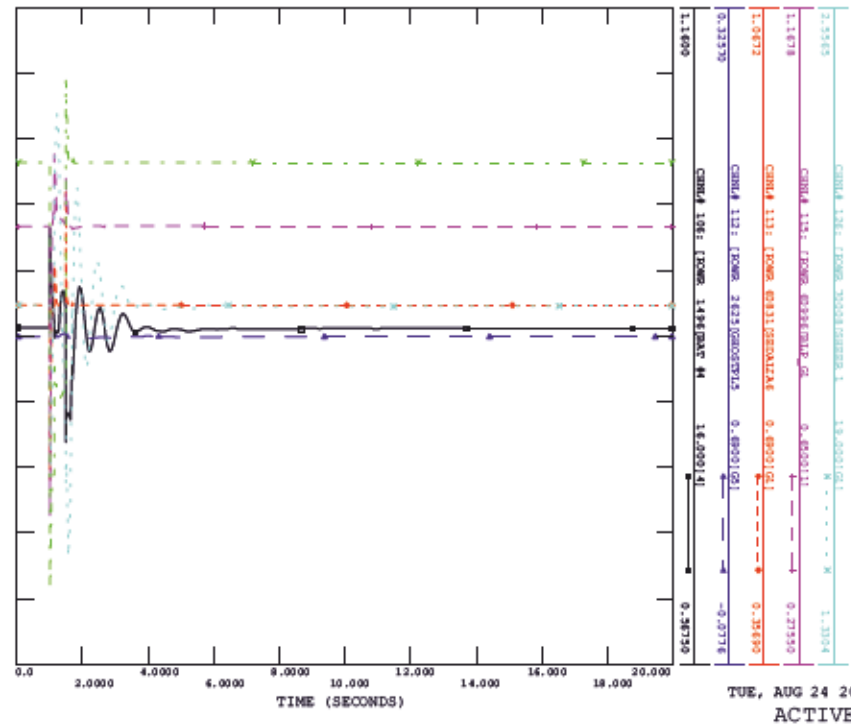
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TUE, AUG 24 2021 13:19
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EXPRESS

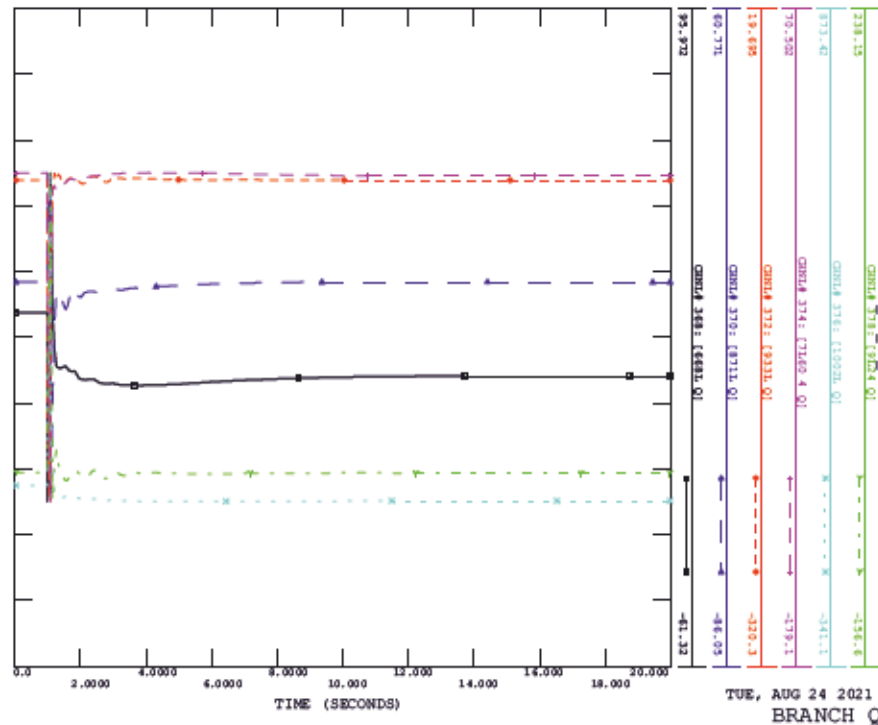
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TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_12_1011L, FAULT LOCATION CYPRESS 5625

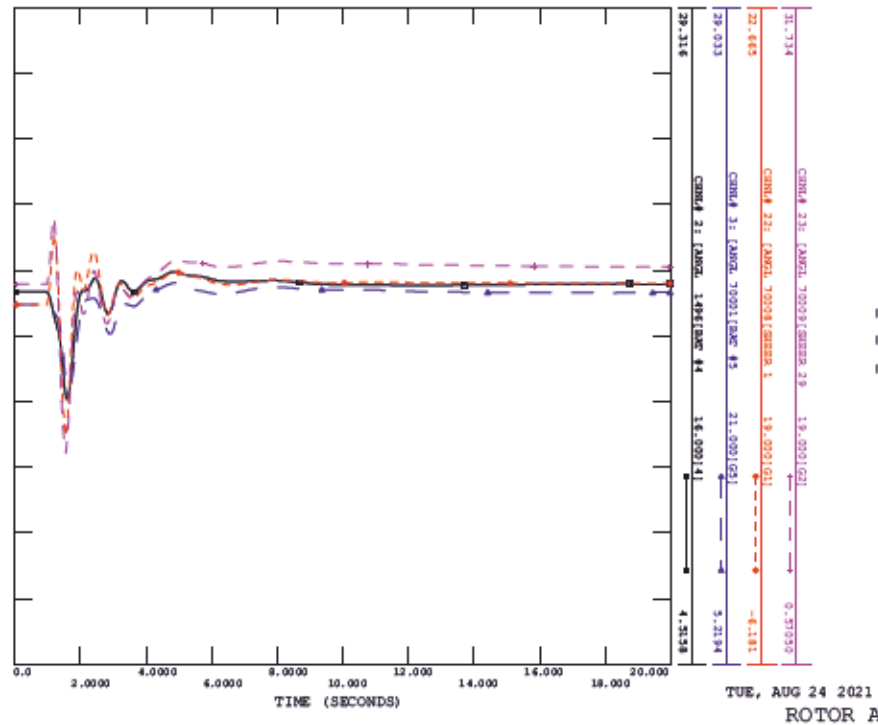
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TUE, AUG 24 2021 13:19
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EXPRESS

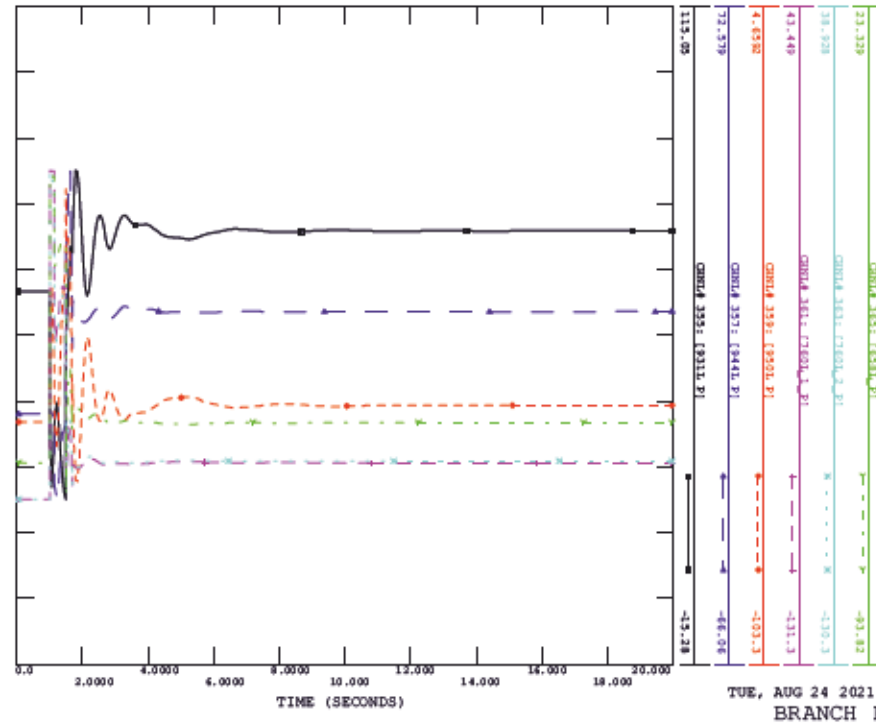
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TUE, AUG 24 2021 13:19
ROTOR ANGLE

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

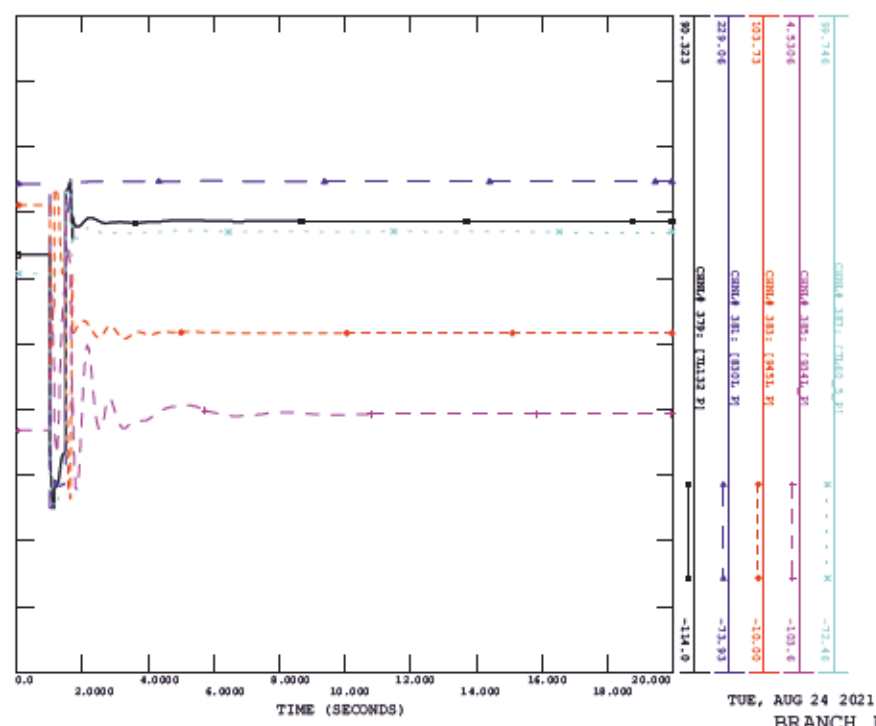
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TUE, AUG 24 2021 13:19
BRANCH P (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

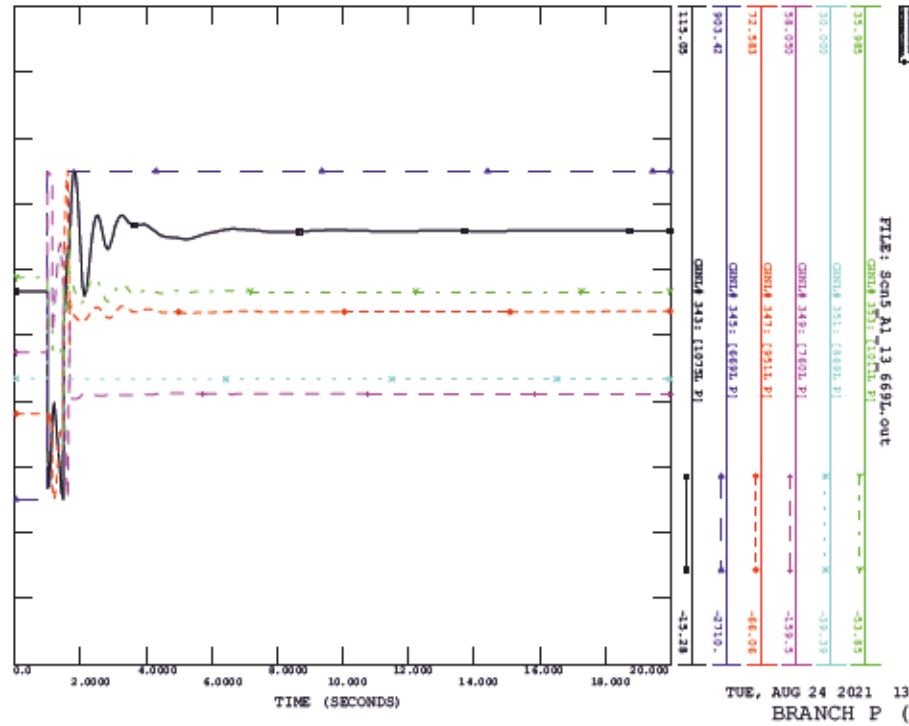
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TUE, AUG 24 2021 13:19
BRANCH P (4)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

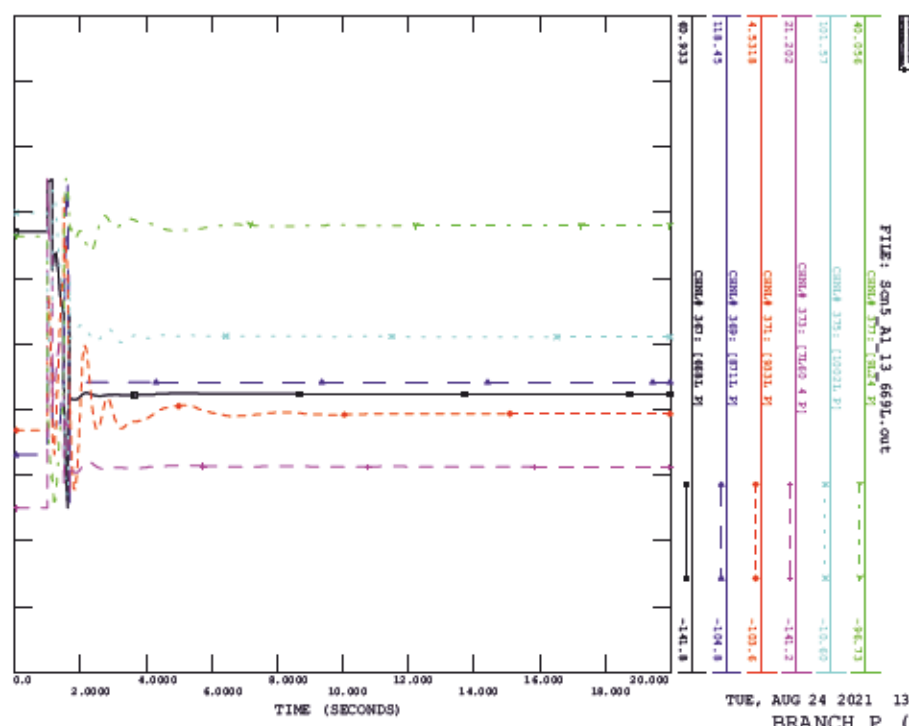
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TUE, AUG 24 2021 13:19
BRANCH P (1)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

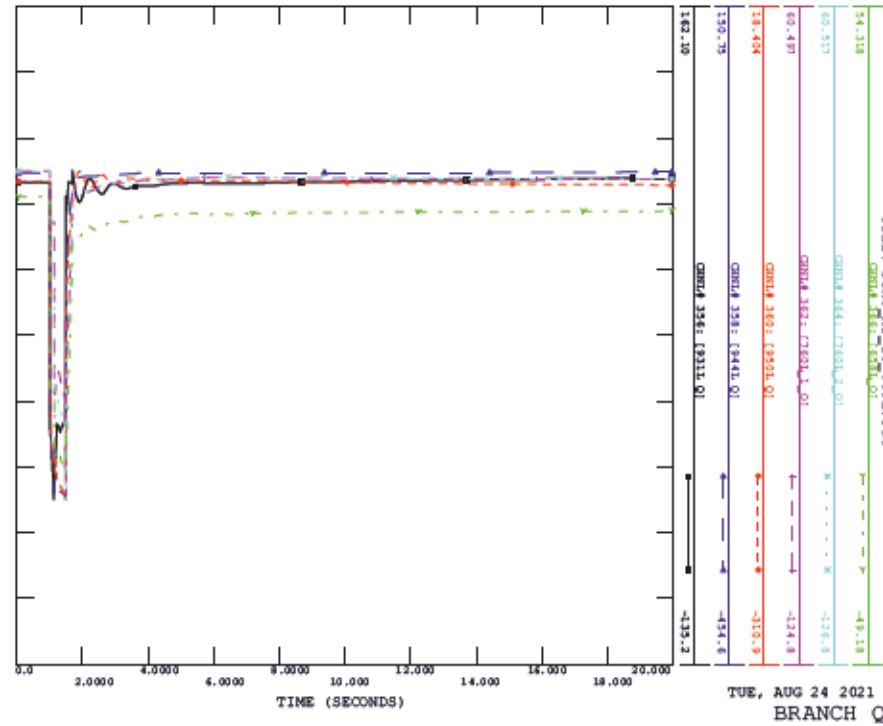
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TUE, AUG 24 2021 13:19
BRANCH P (3)

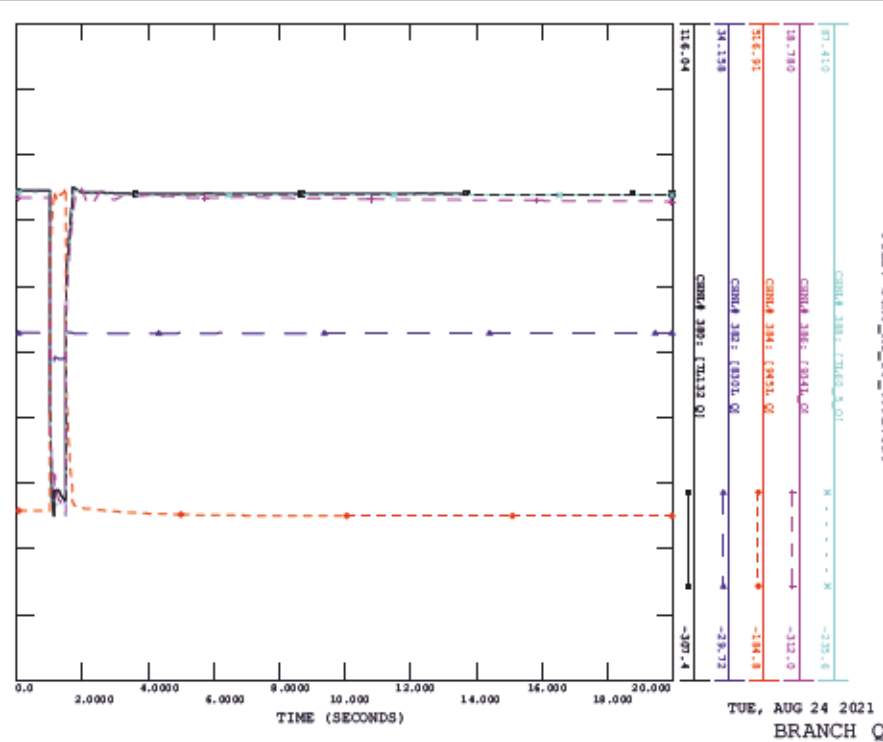
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm5_A1_13_669L.out



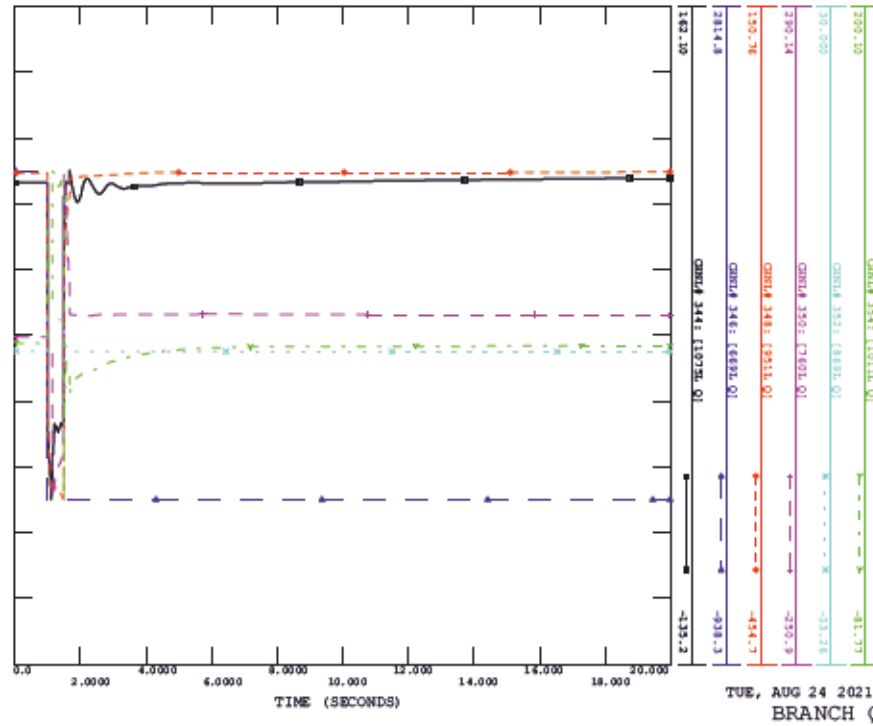
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CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

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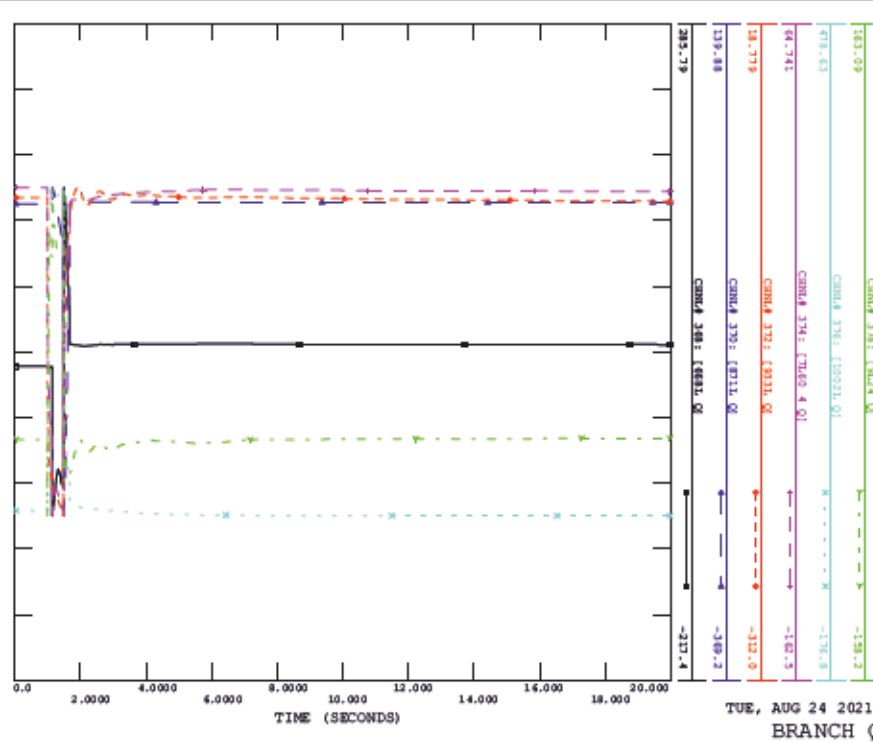
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm5_A1_13_669L.out

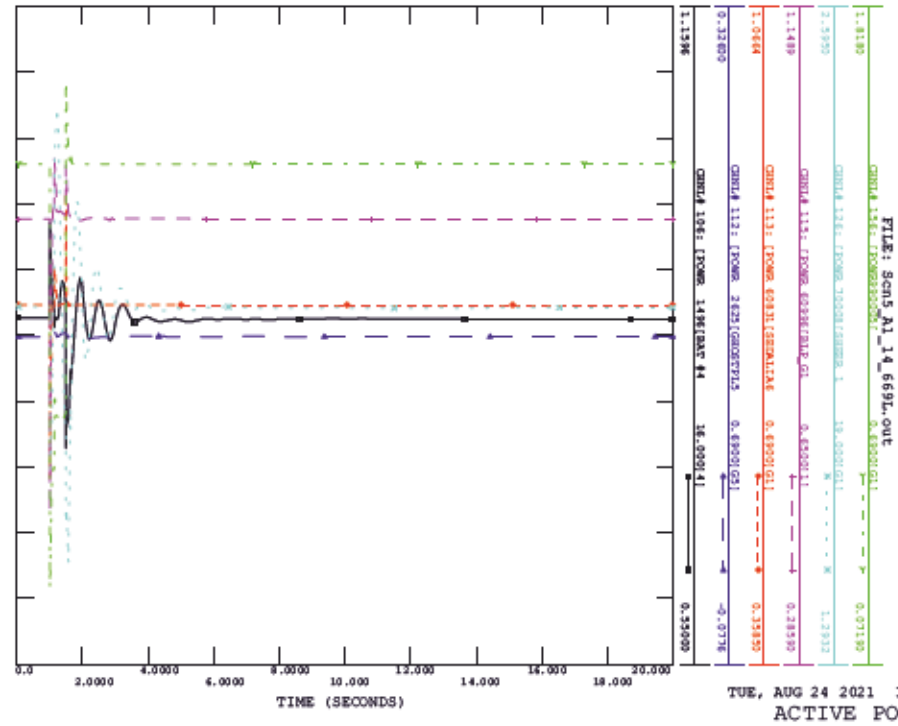


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_13_669L, FAULT LOCATION ANOCO EMPRESS

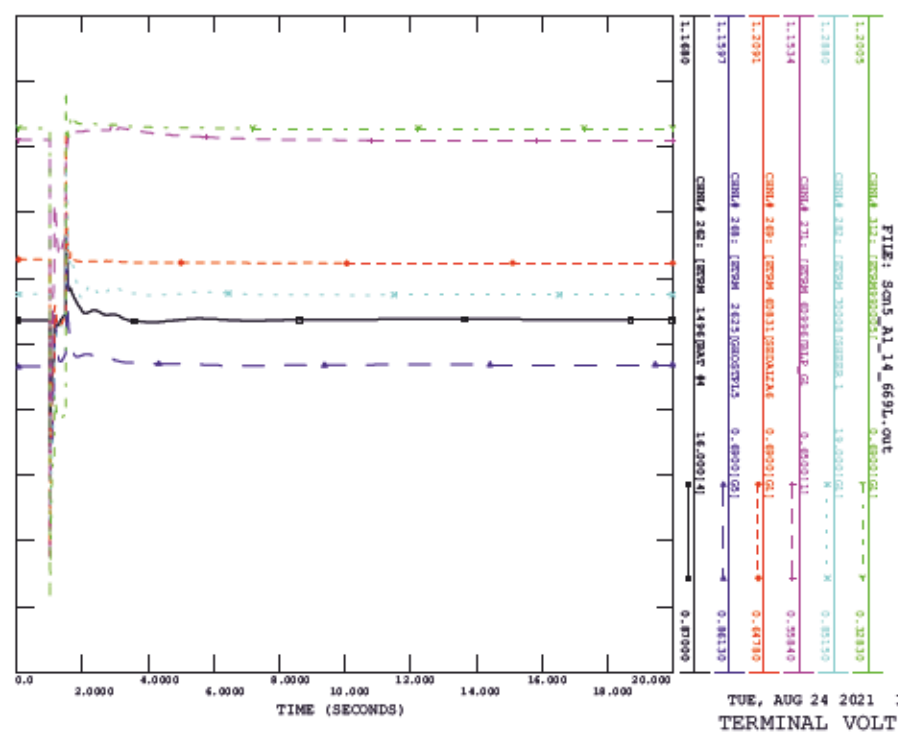
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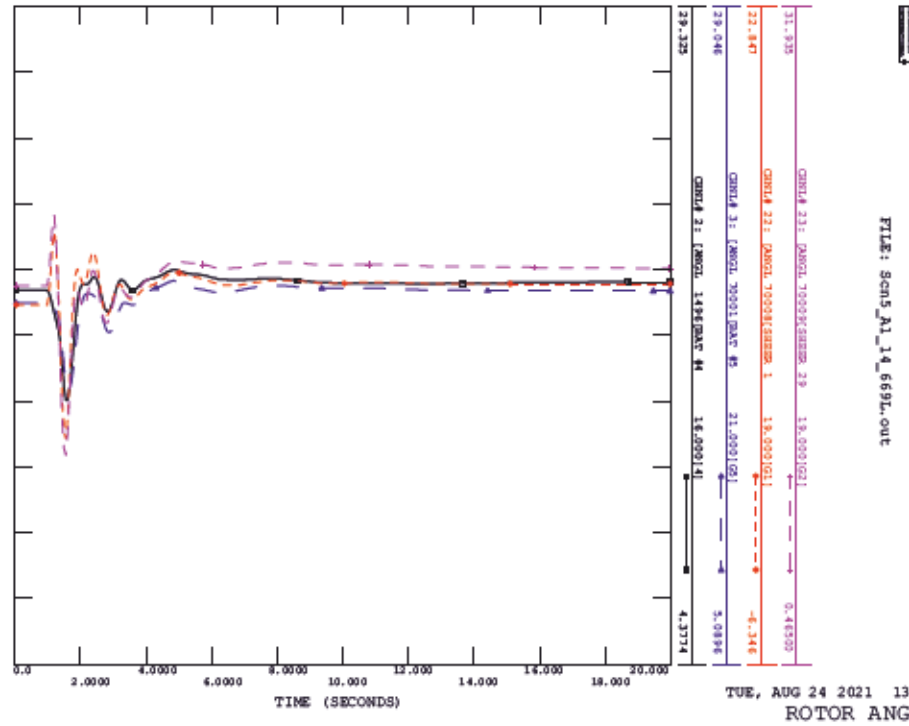
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



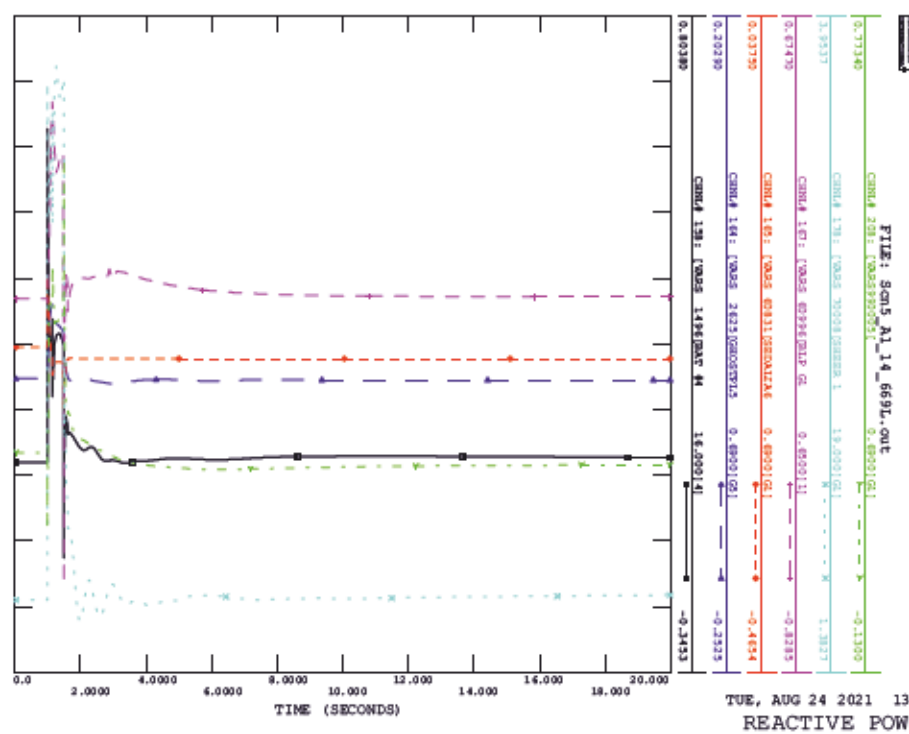
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



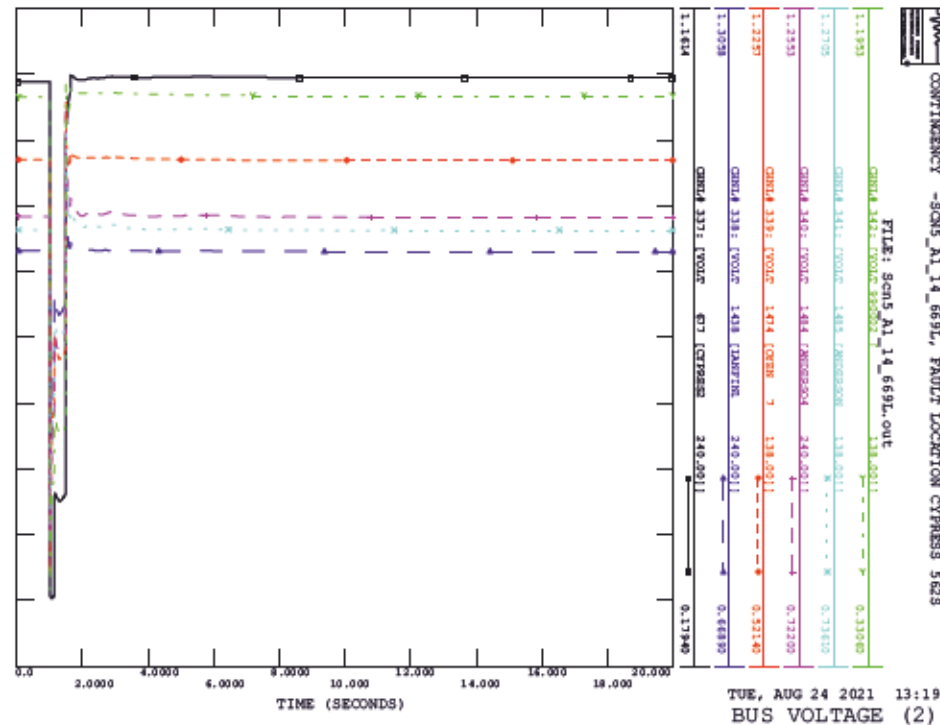
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CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



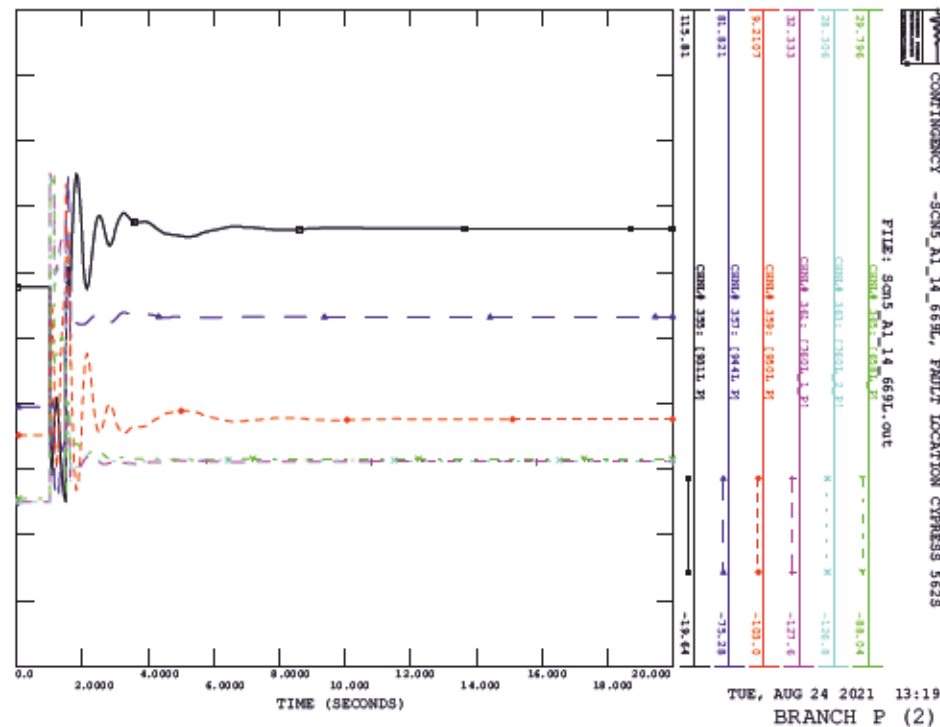
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CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



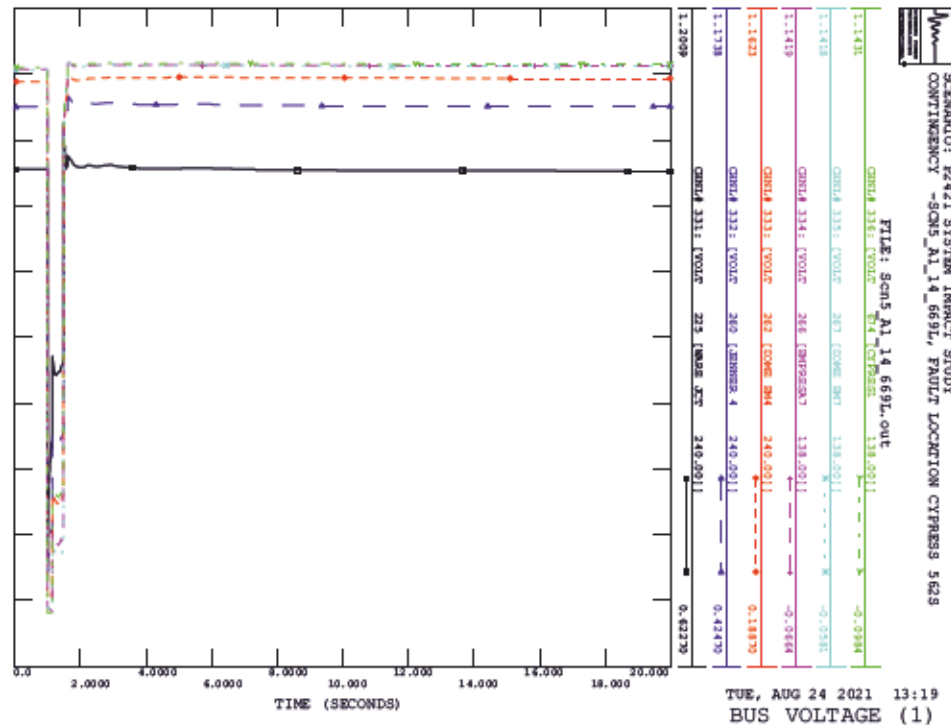
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CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



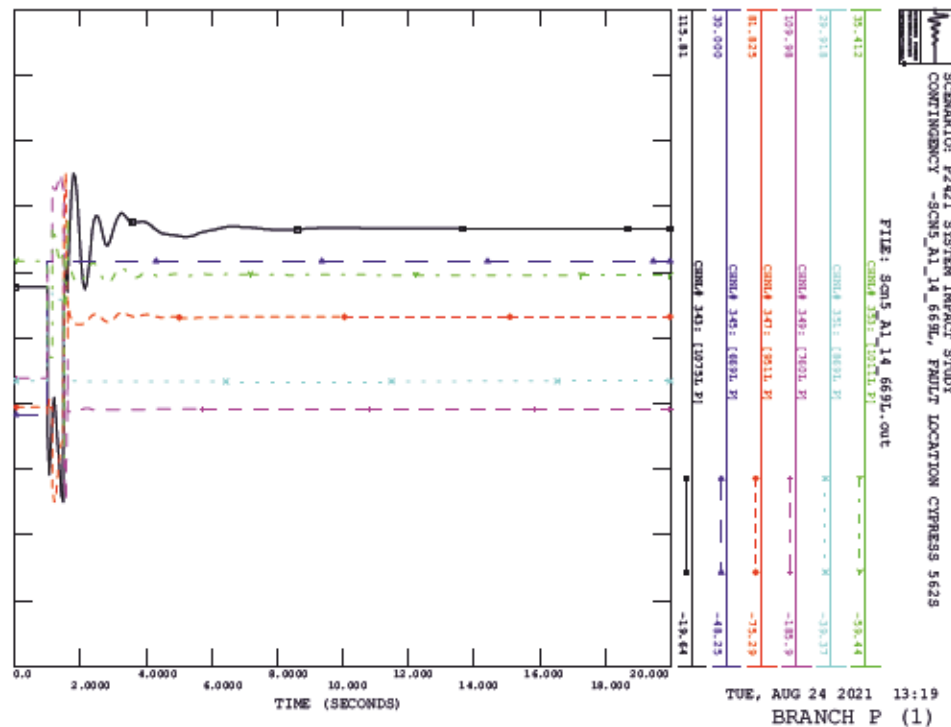
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

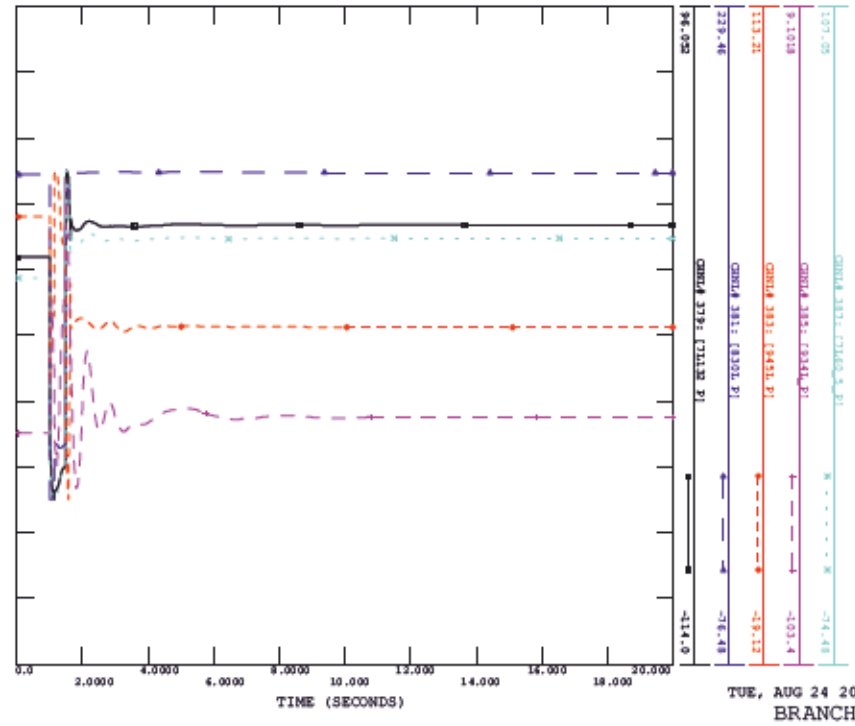


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

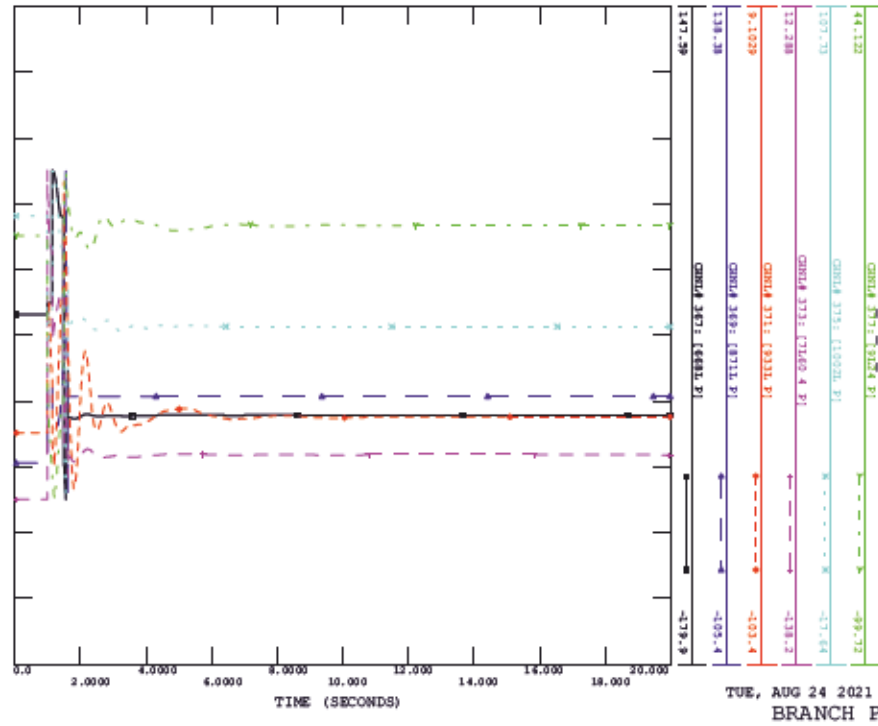
FILE: Scm5_A1_14_669L.out



TUE, AUG 24 2021 13:19
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

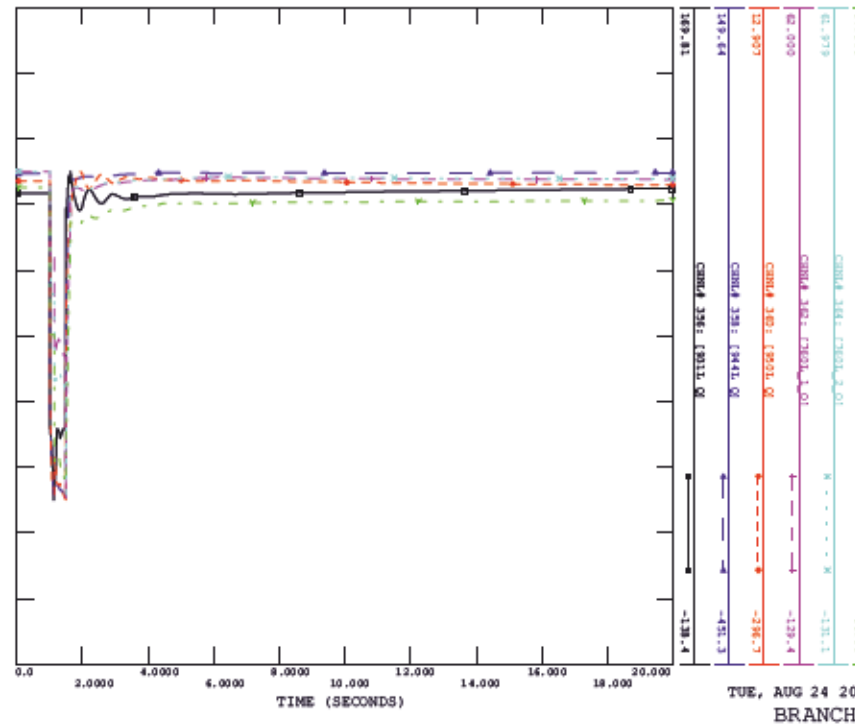
FILE: Scm5_A1_14_669L.out



TUE, AUG 24 2021 13:19
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

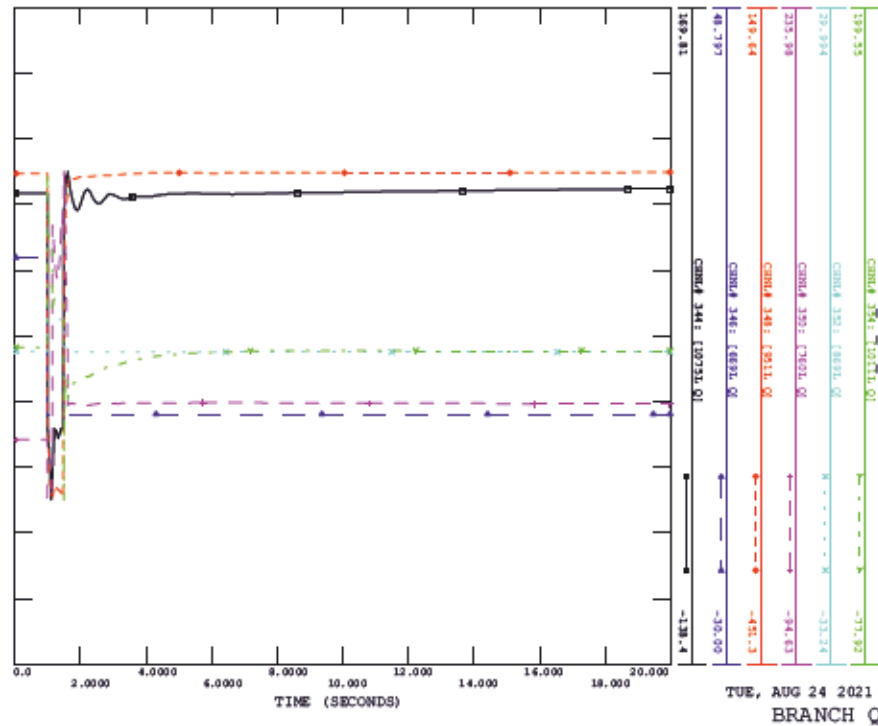
FILE: Scm5_A1_14_669L.out



TUE, AUG 24 2021 13:19
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

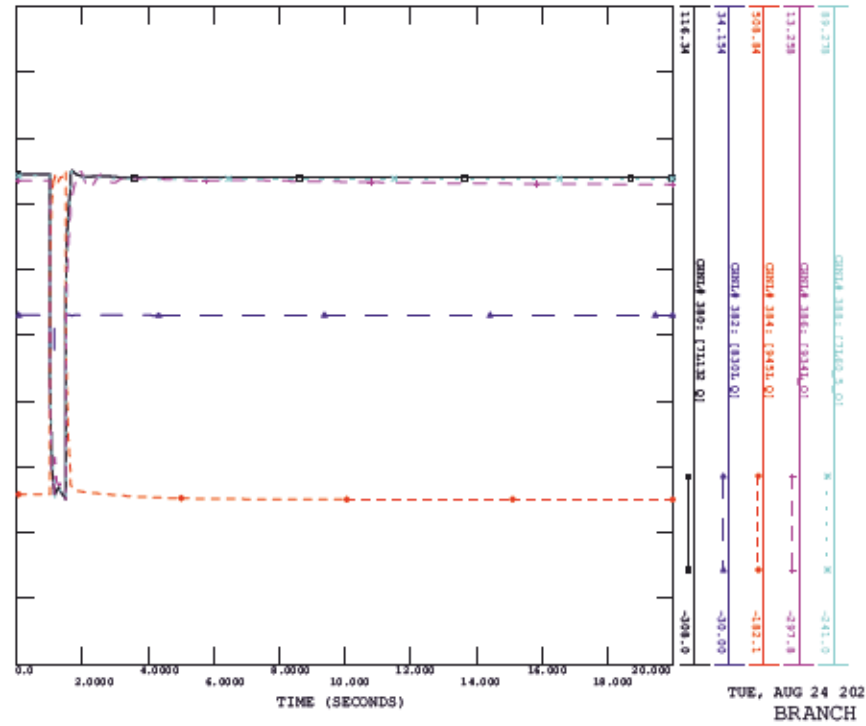
FILE: Scm5_A1_14_669L.out



TUE, AUG 24 2021 13:19
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

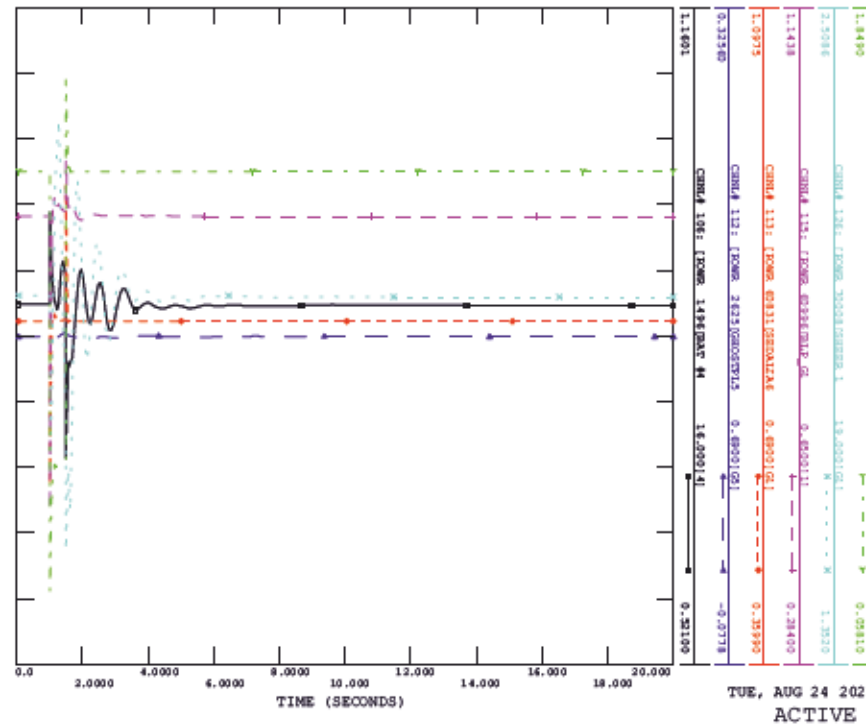
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TUE, AUG 24 2021 13:19
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EXPRESS

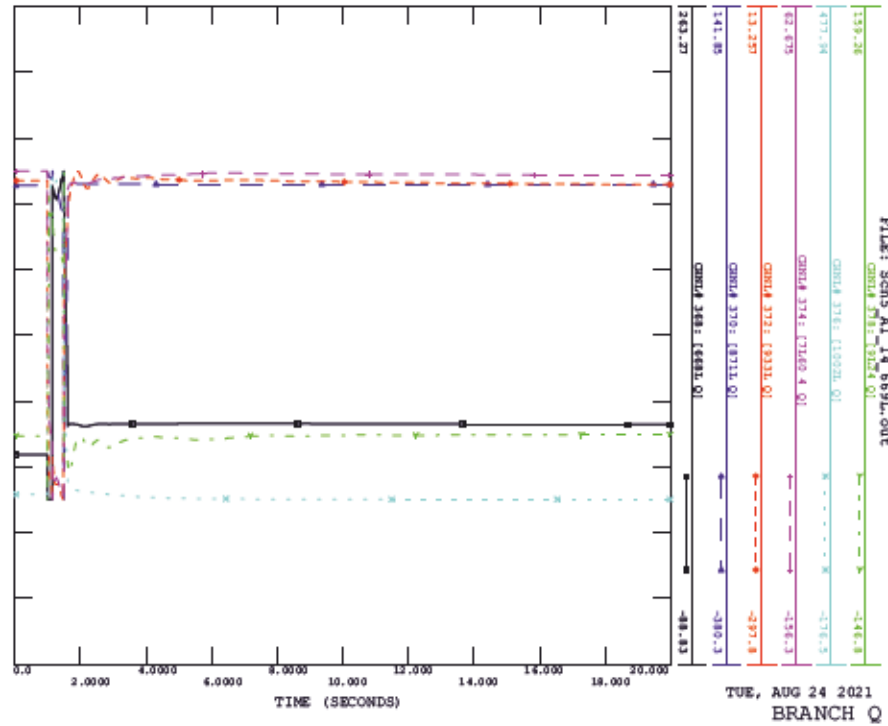
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TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_14_669L, FAULT LOCATION CYPRESS 5629

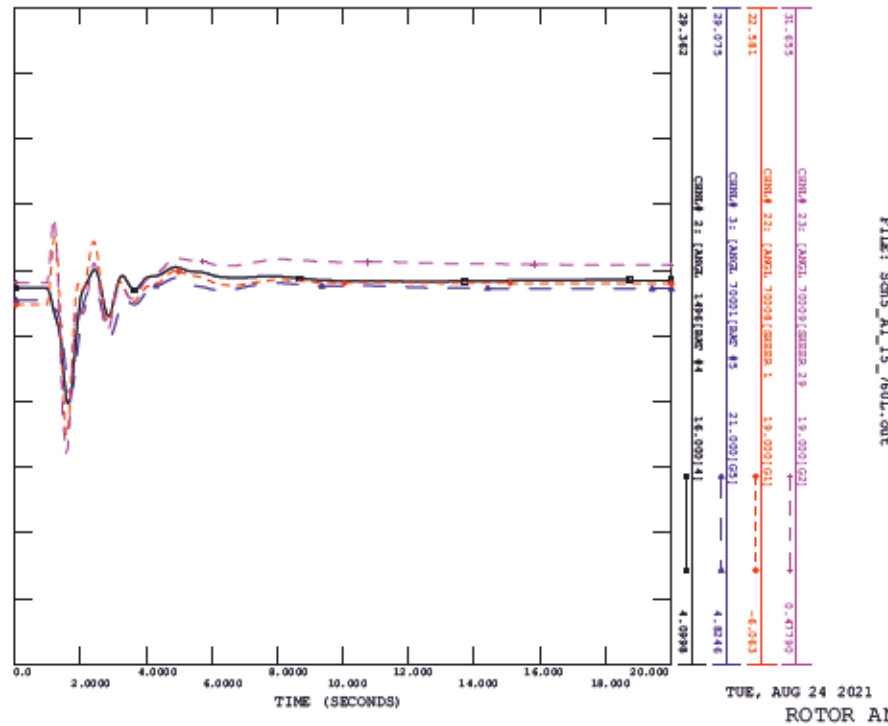
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TUE, AUG 24 2021 13:19
BRANCH Q (3)

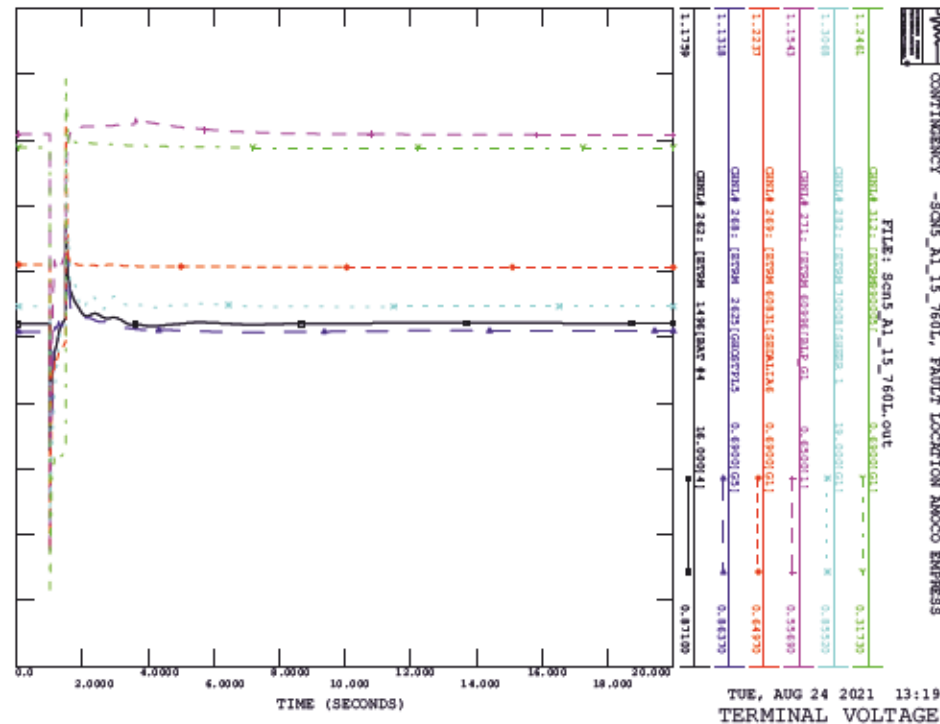
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EXPRESS

FILE: Scm5_A1_15_760L.out

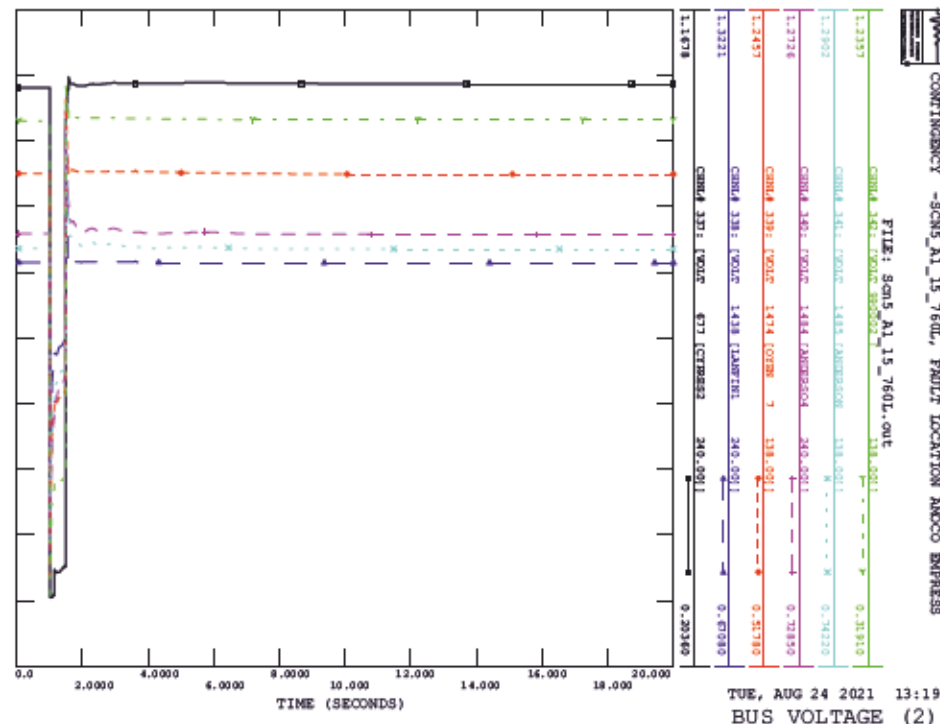


TUE, AUG 24 2021 13:19
ROTOR ANGLE

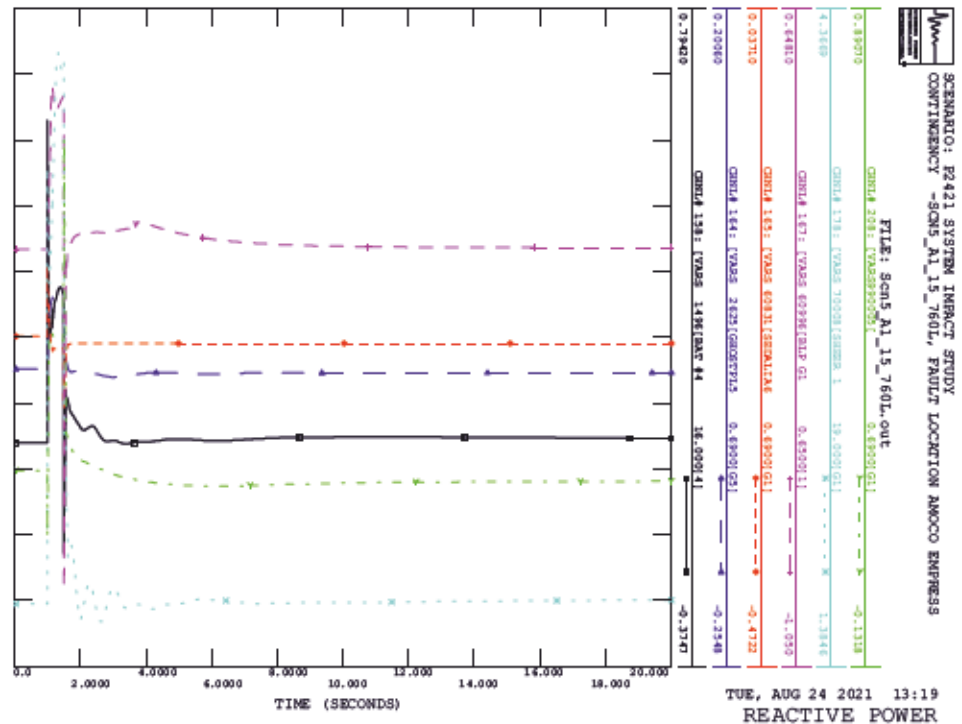
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS



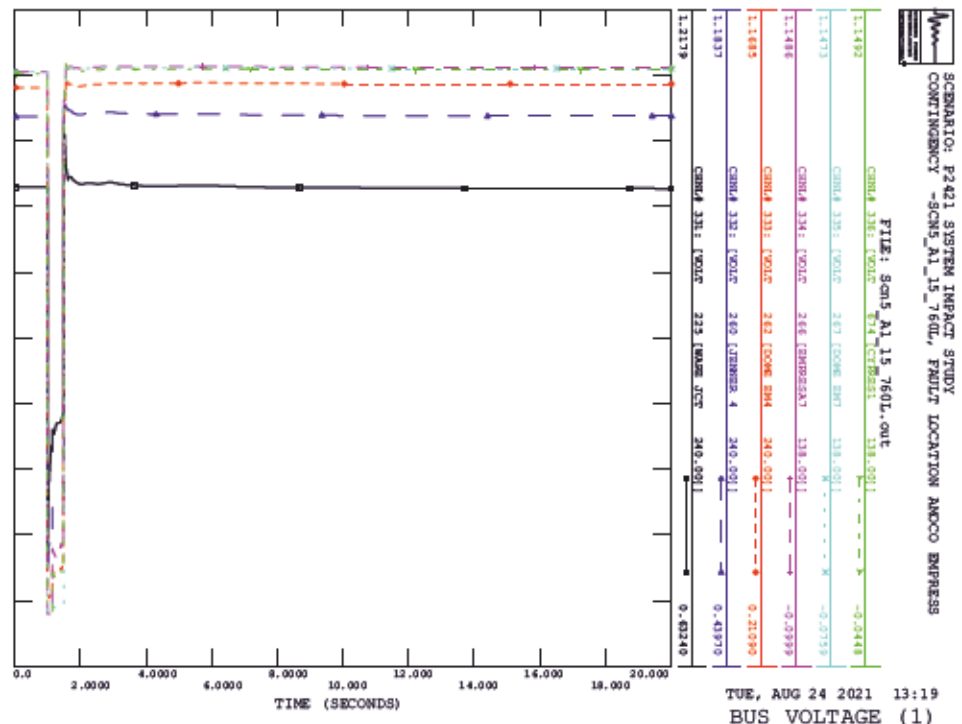
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

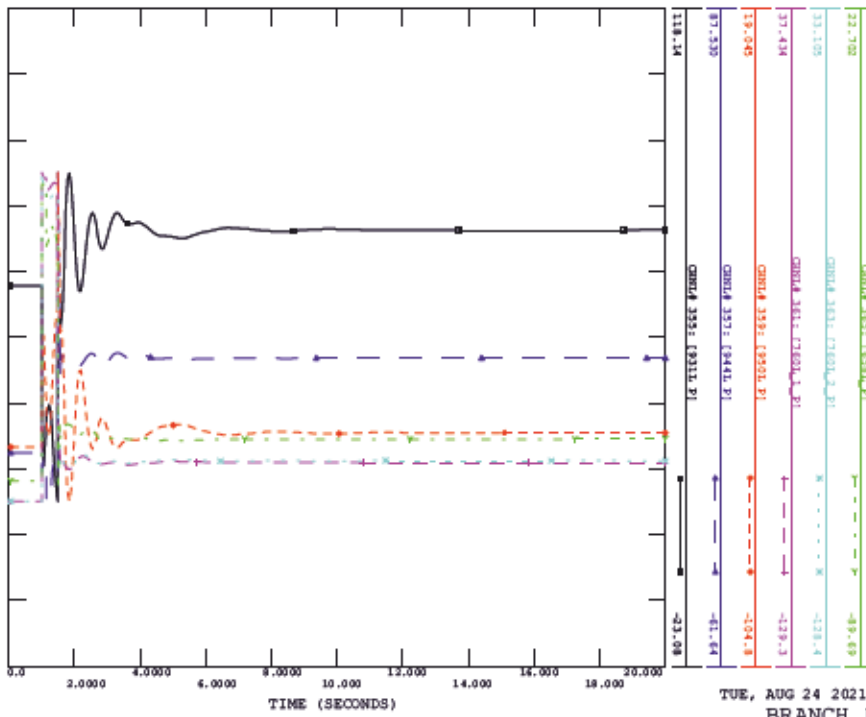


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS



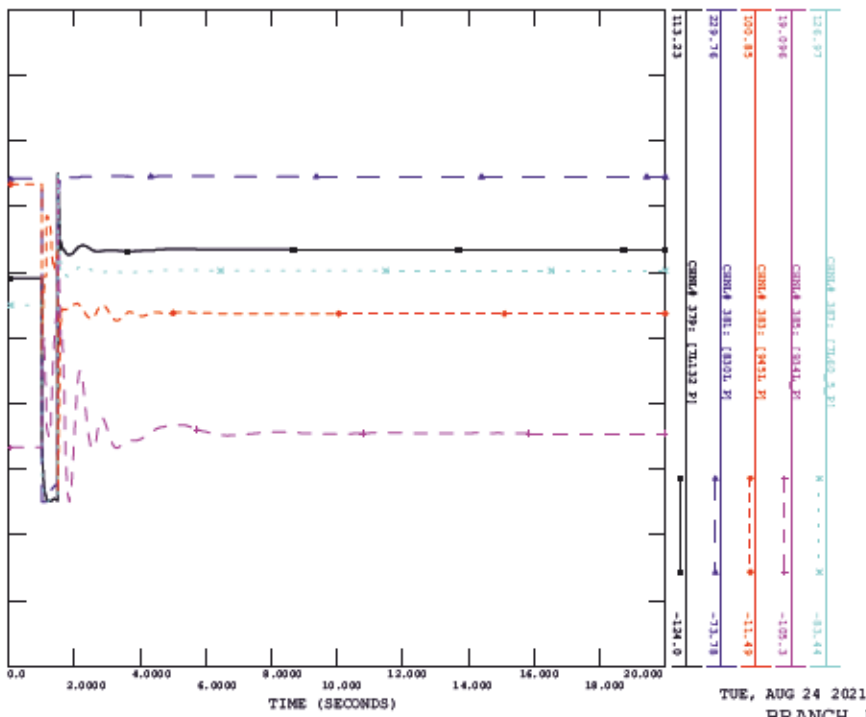
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm5_A1_15_760L.out



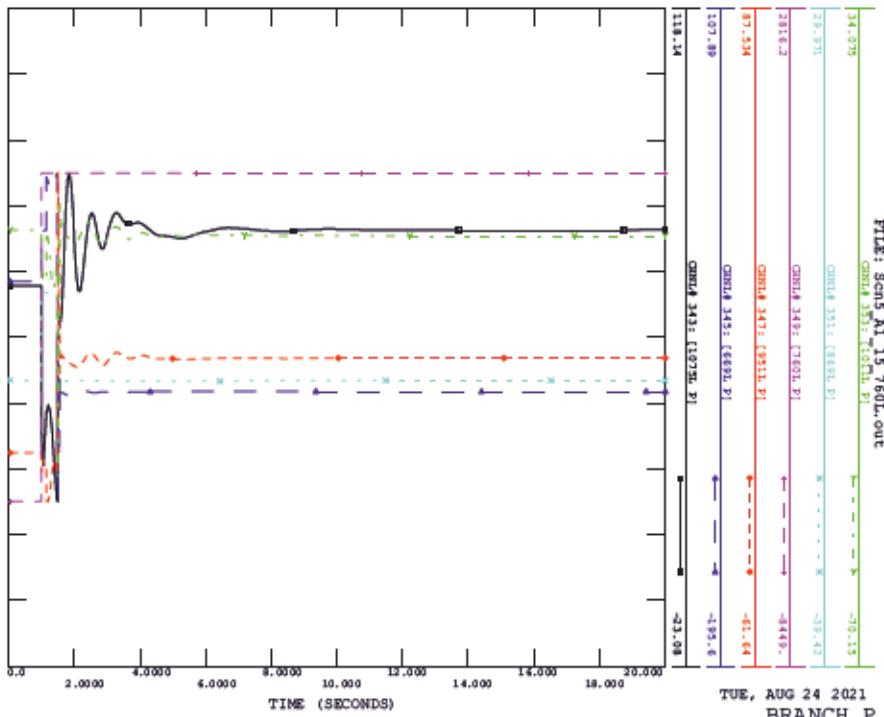
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm5_A1_15_760L.out



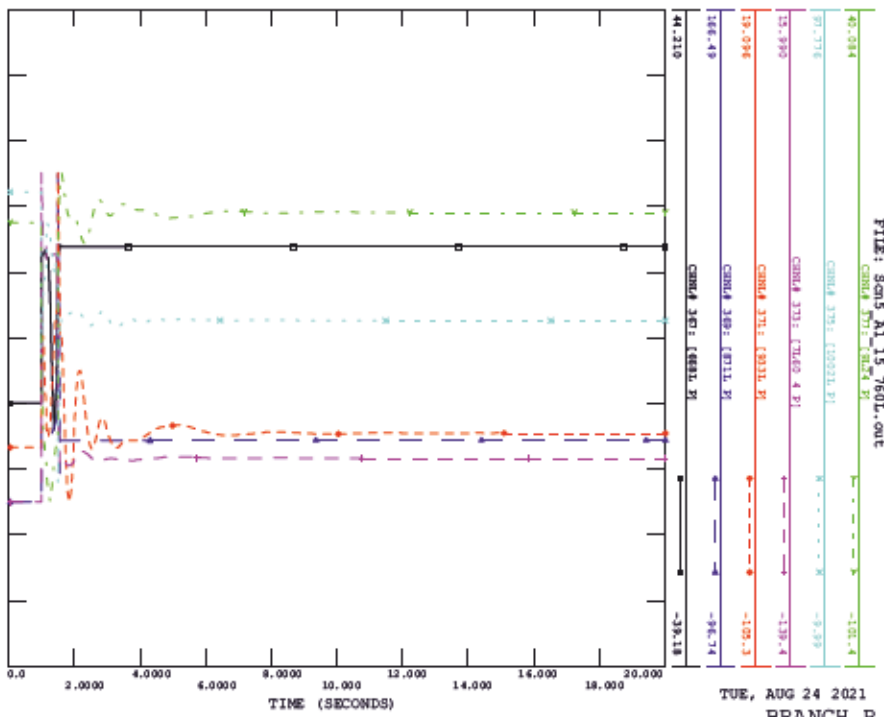
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

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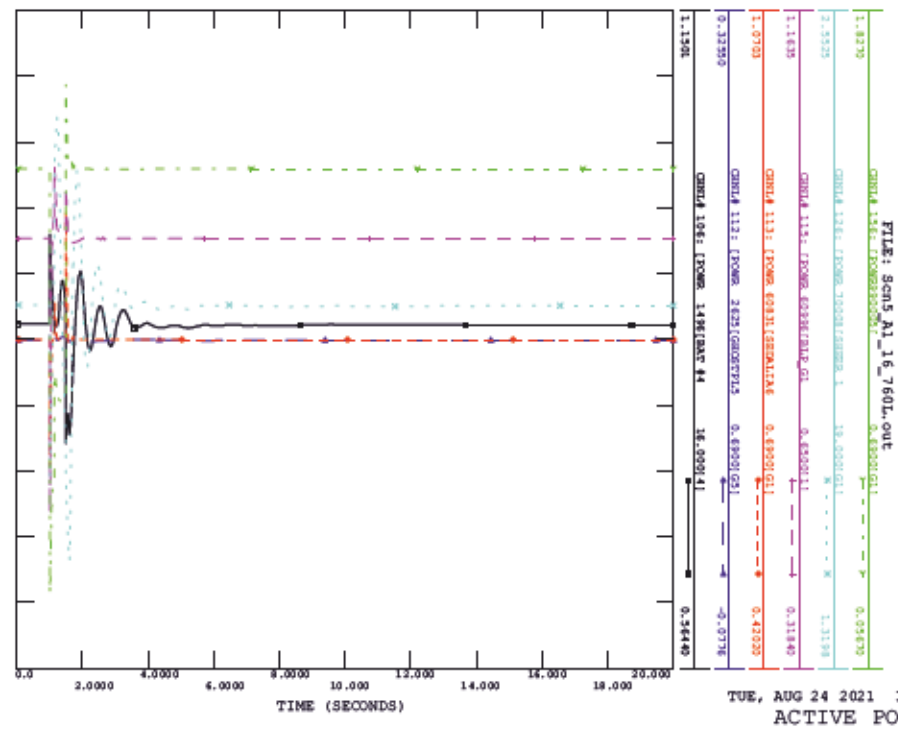


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

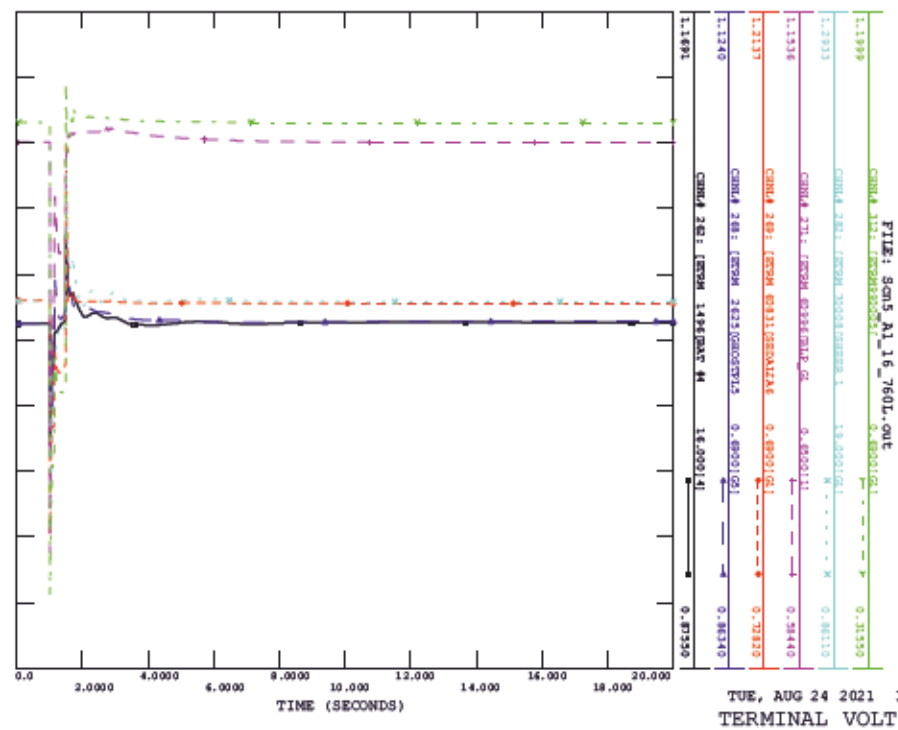
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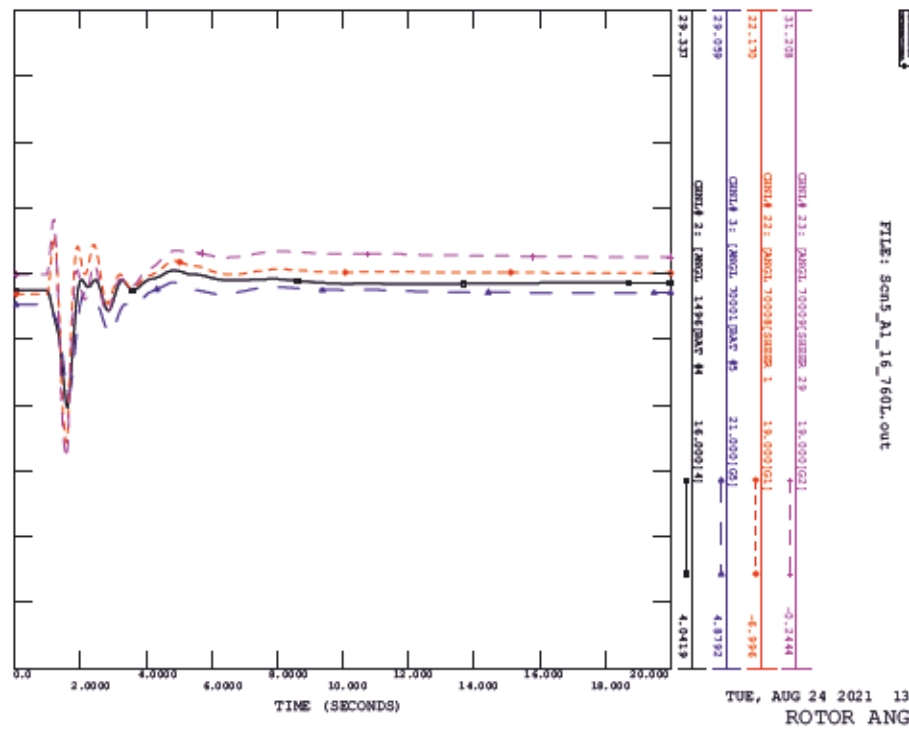
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 394S



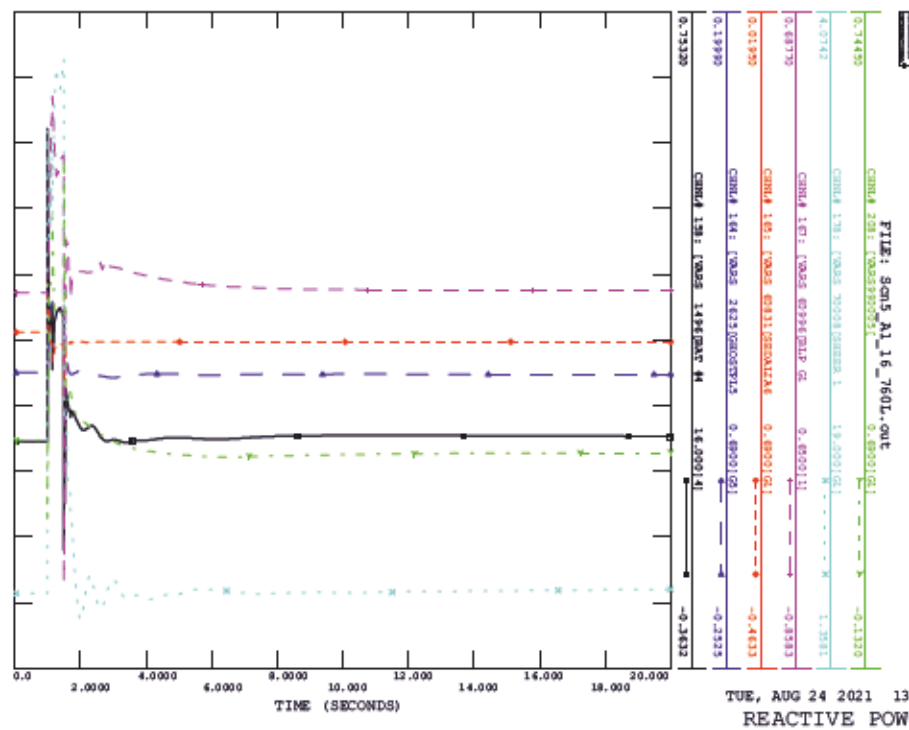
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 394S



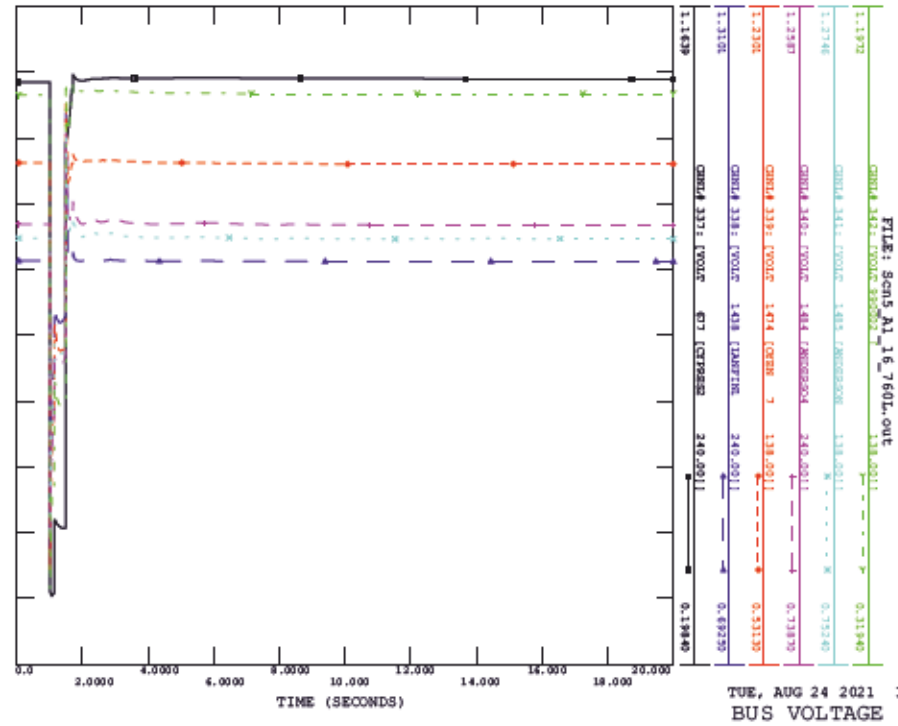
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 394S



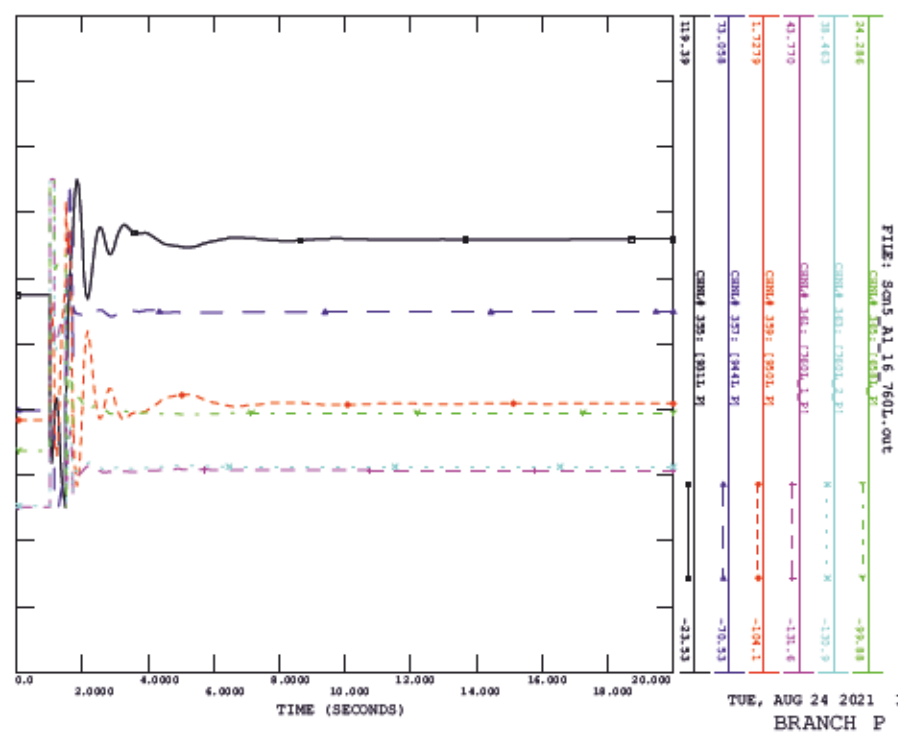
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 394S



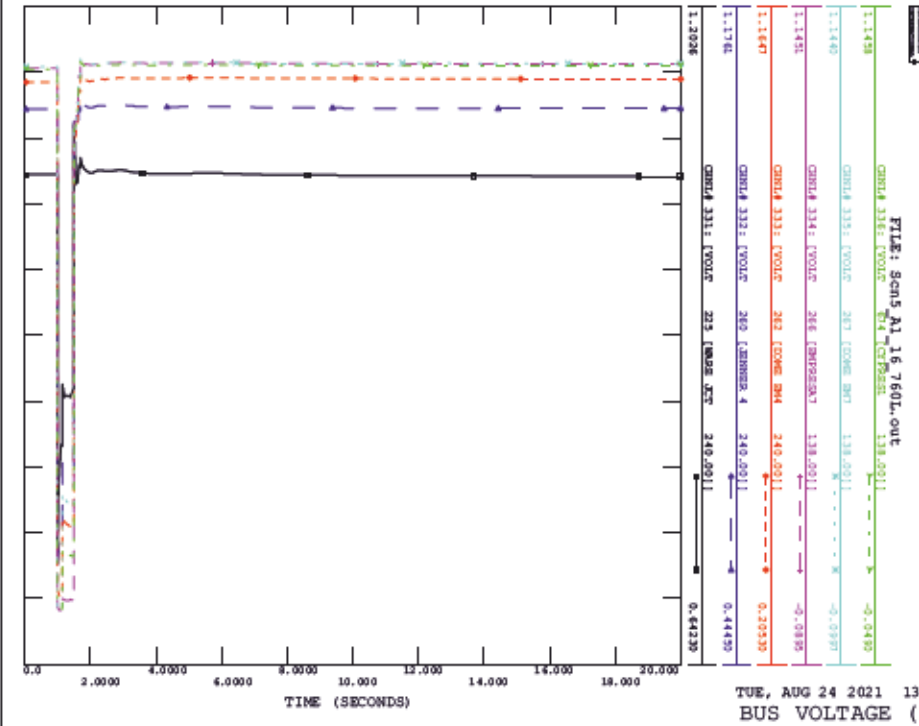
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 3945



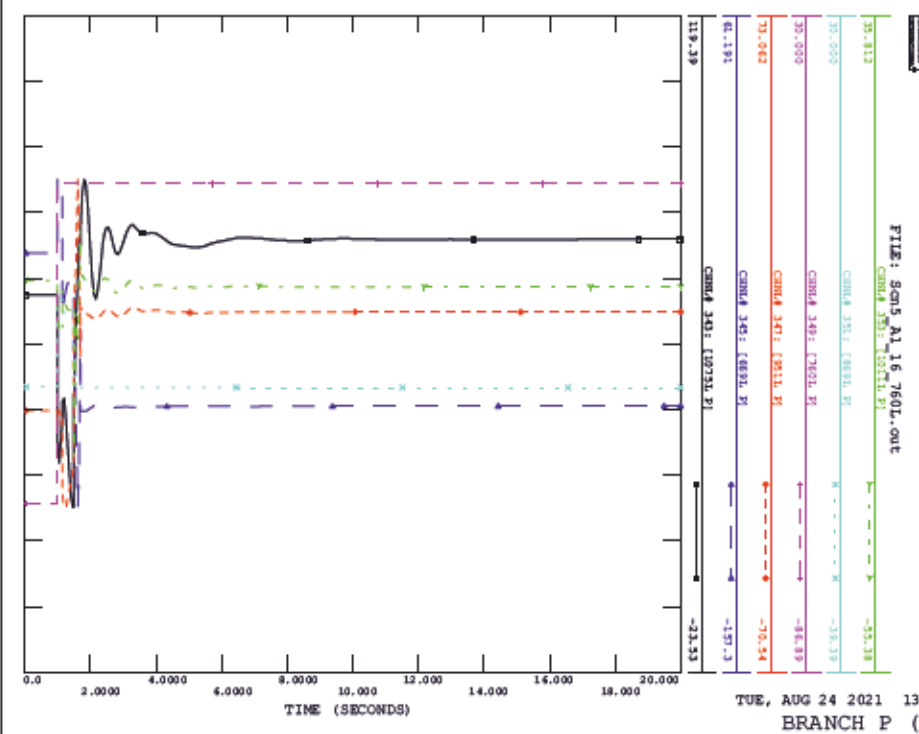
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 3945



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 3945

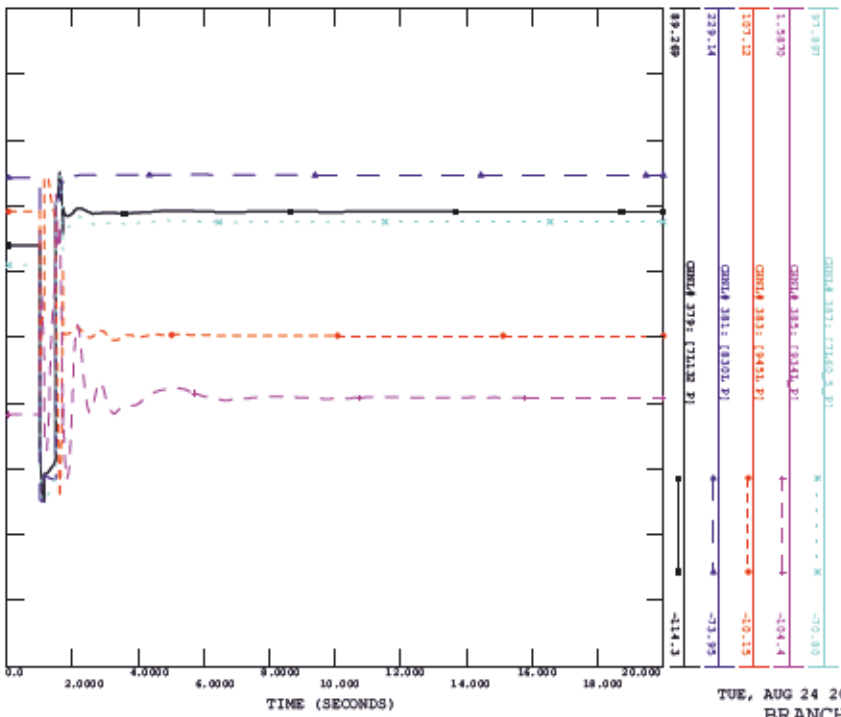


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 3945



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRES 3945

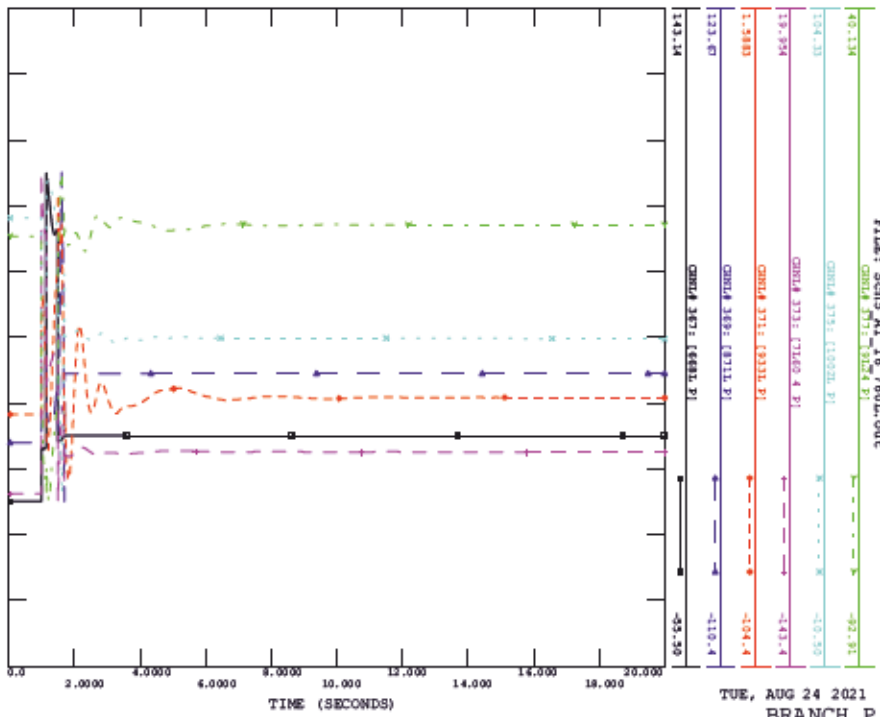
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TUE, AUG 24 2021 13:19
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRES 3945

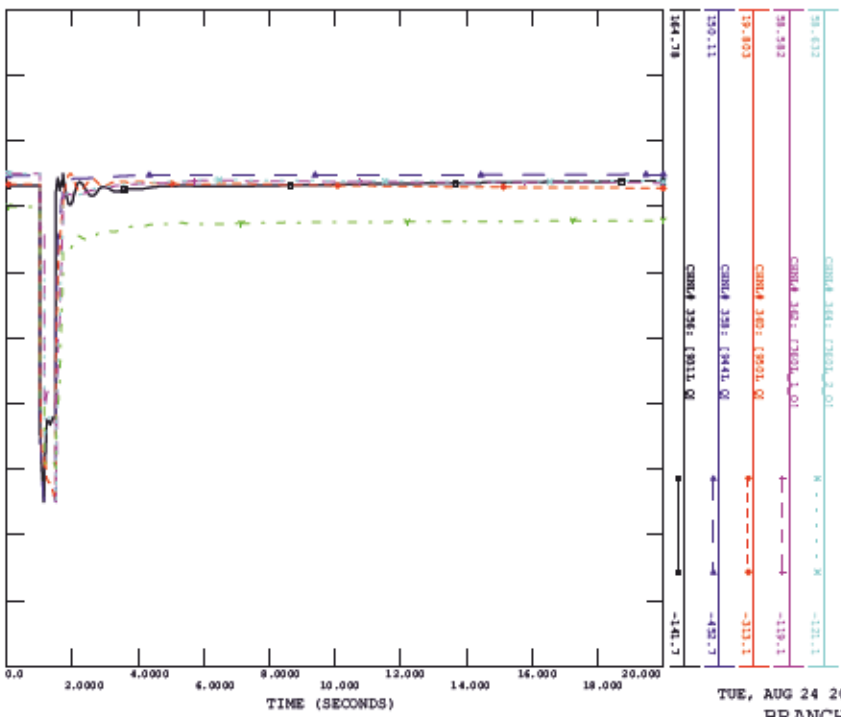
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TUE, AUG 24 2021 13:19
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRES 3945

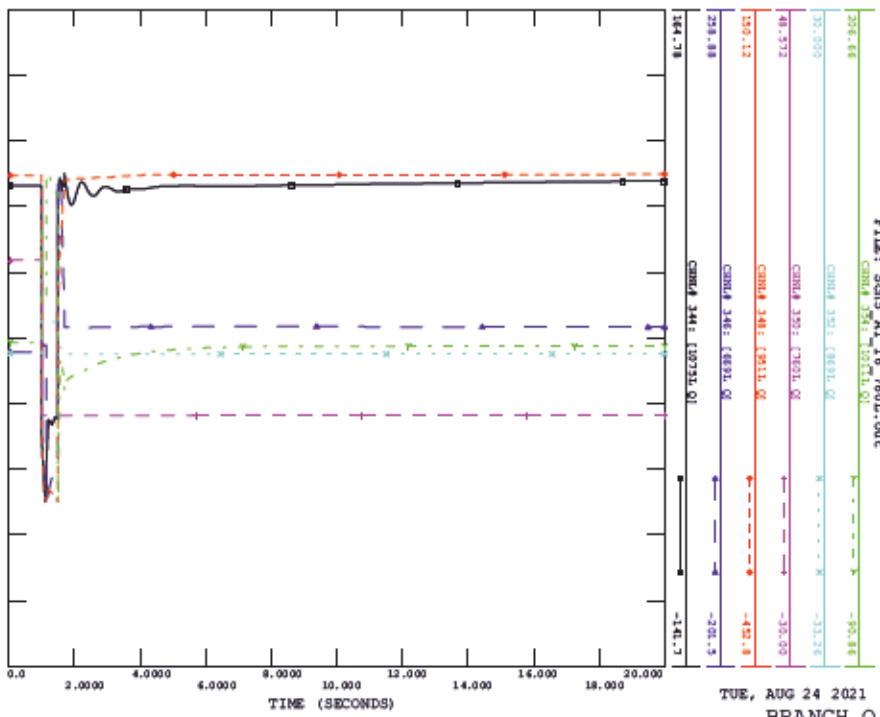
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TUE, AUG 24 2021 13:19
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRES 3945

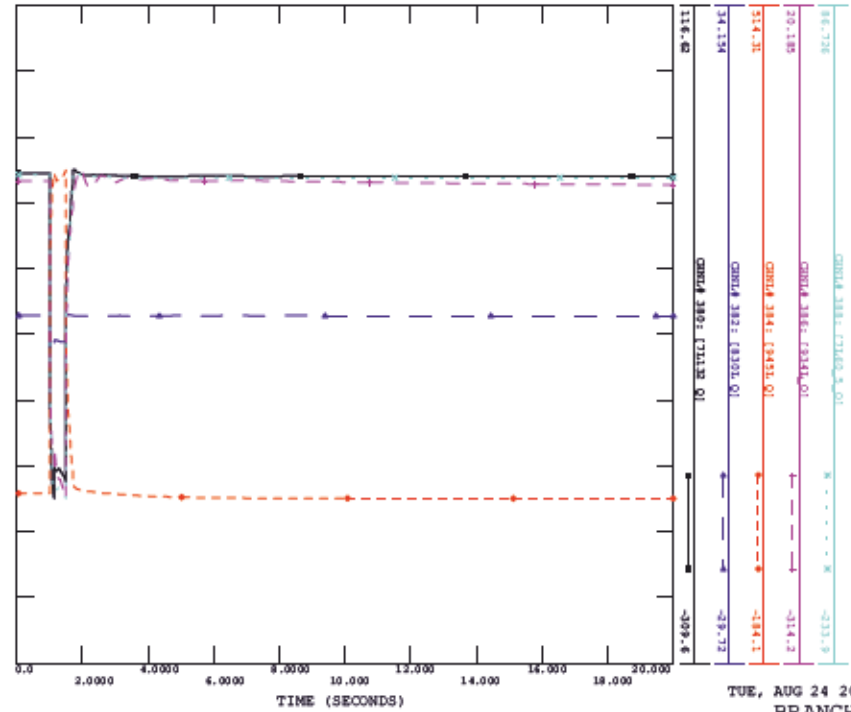
FILE: Scm5_A1_16_760L.out



TUE, AUG 24 2021 13:19
BRANCH Q (1)

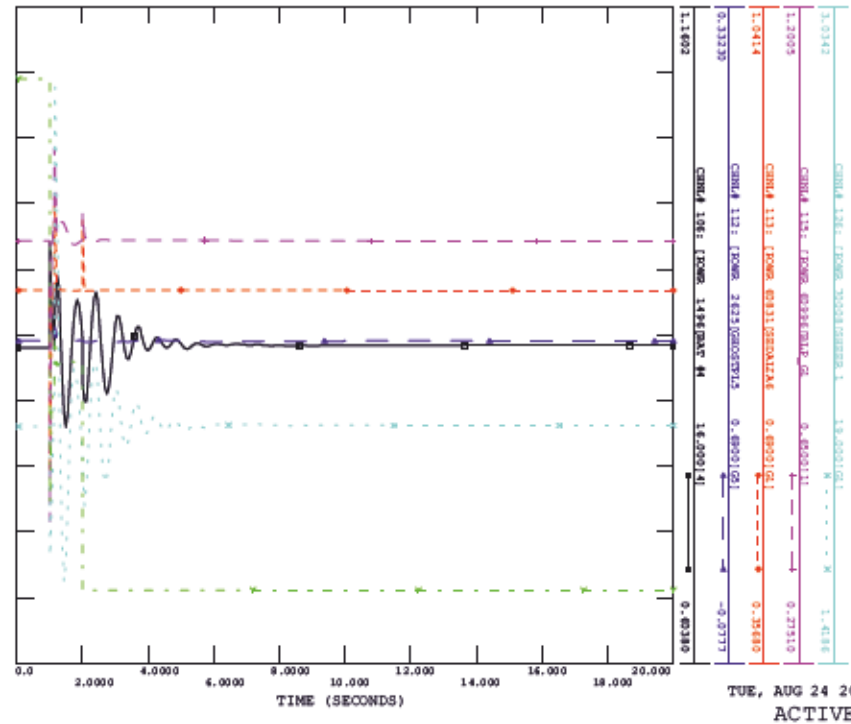
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 394S

FILE: Scm5_A1_16_760L.out



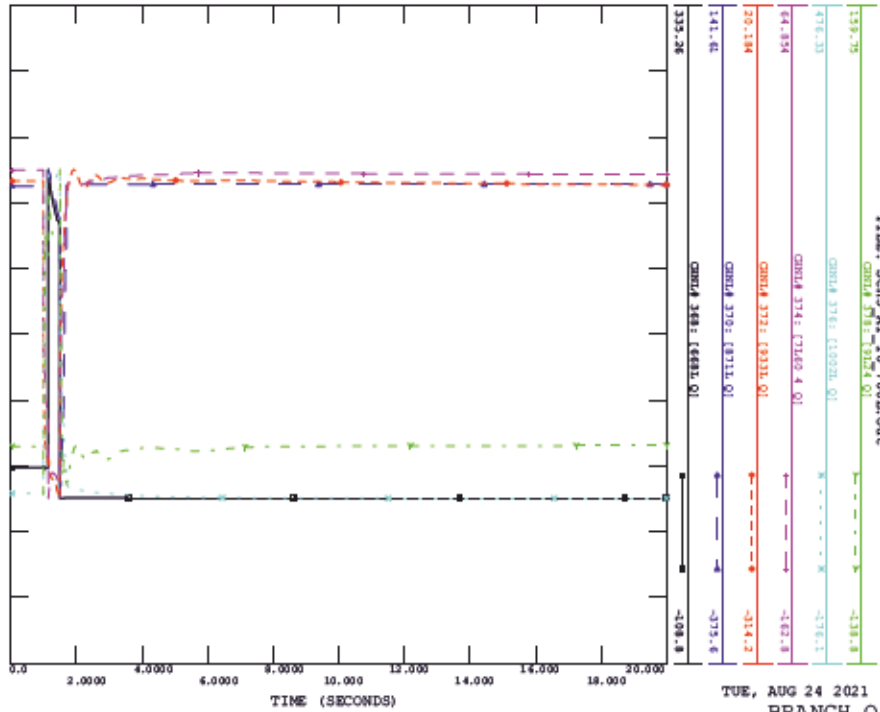
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_17_7L760, FAULT LOCATION RMOCO EMPRESS

FILE: Scm5_A1_17_7L760.out



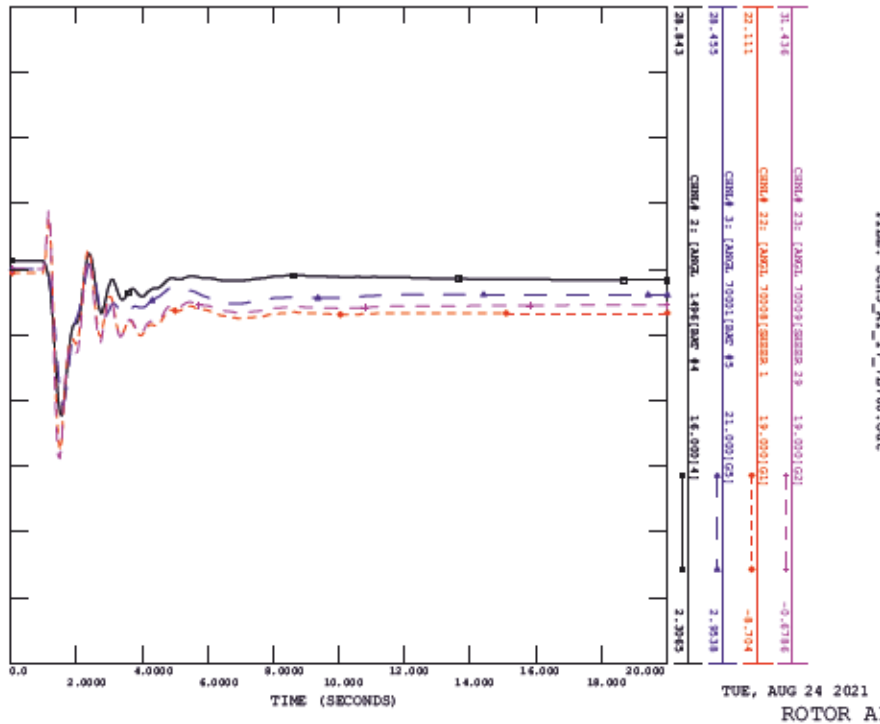
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_16_760L, FAULT LOCATION EMPRESS 394S

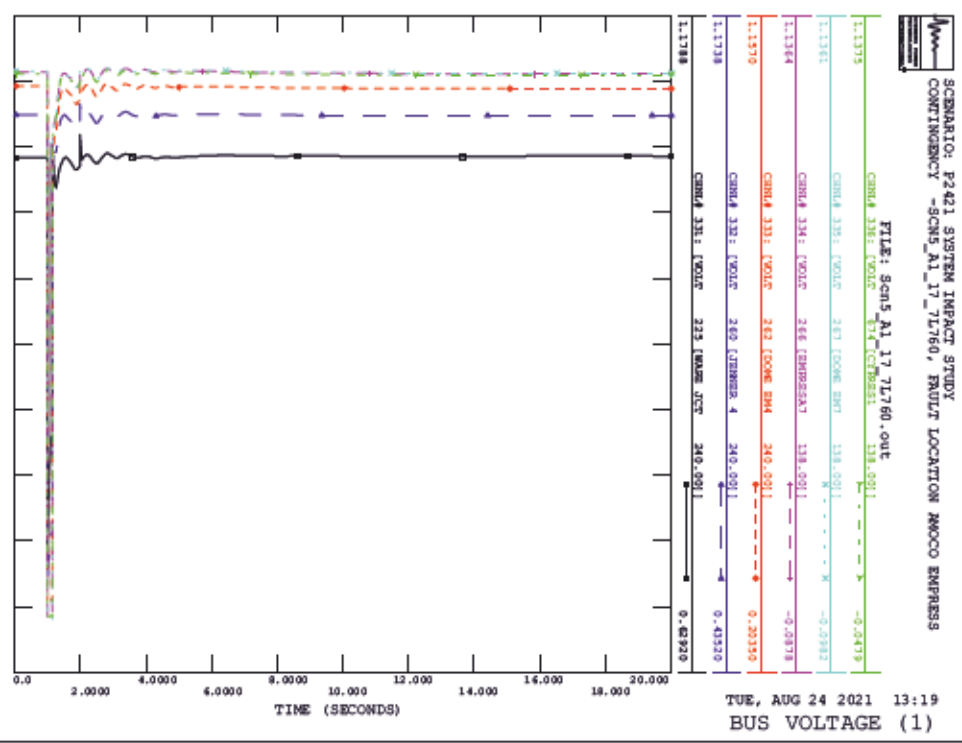
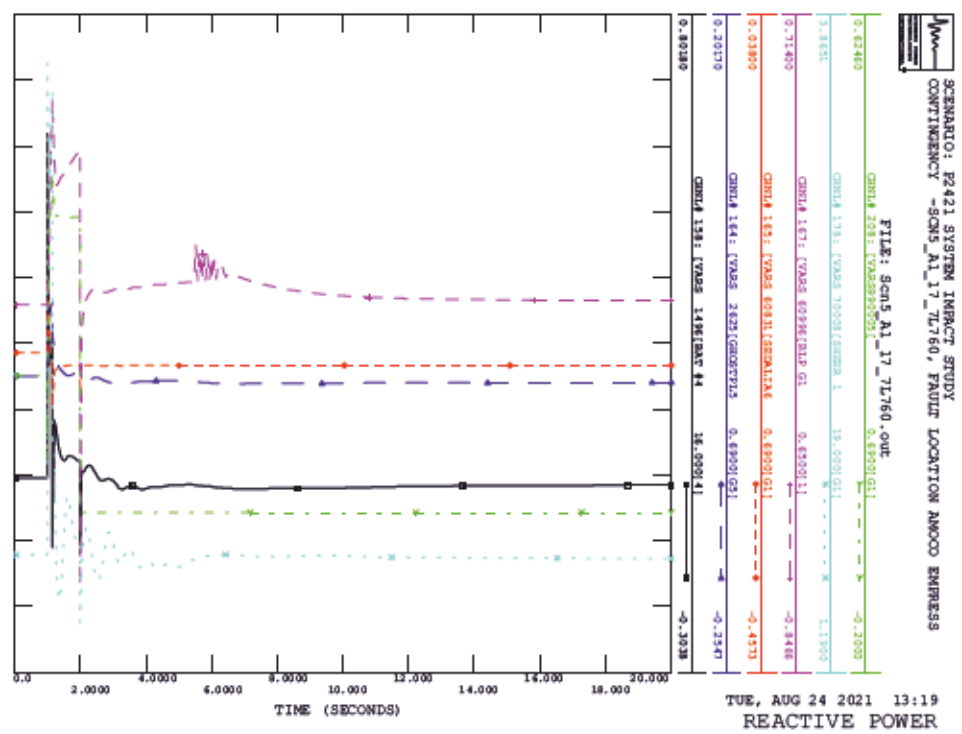
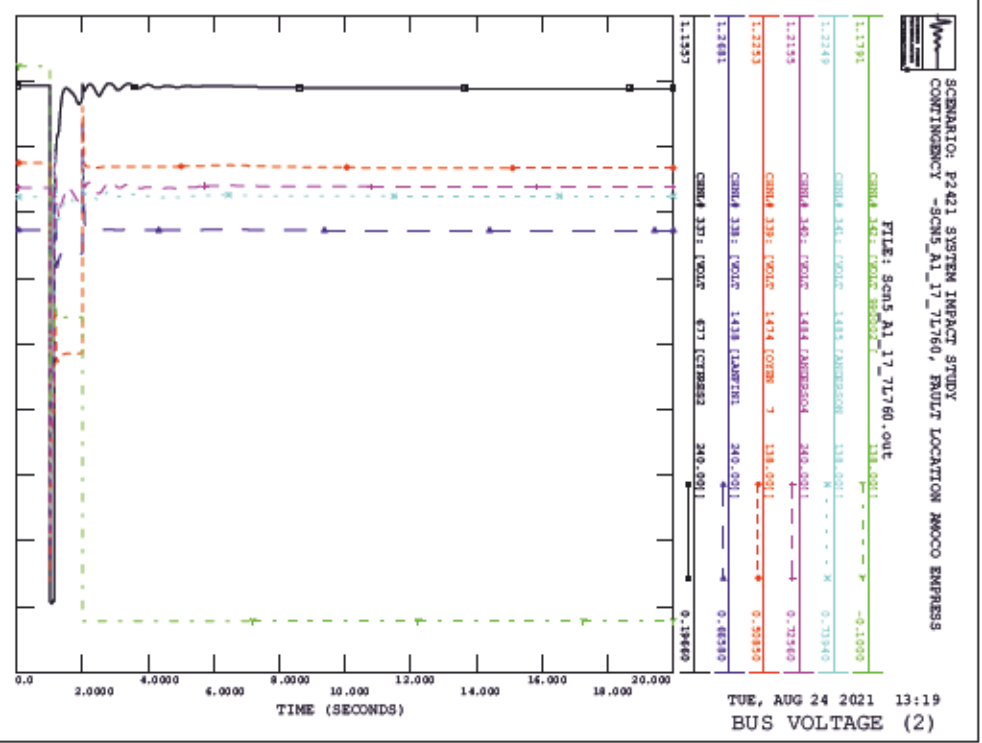
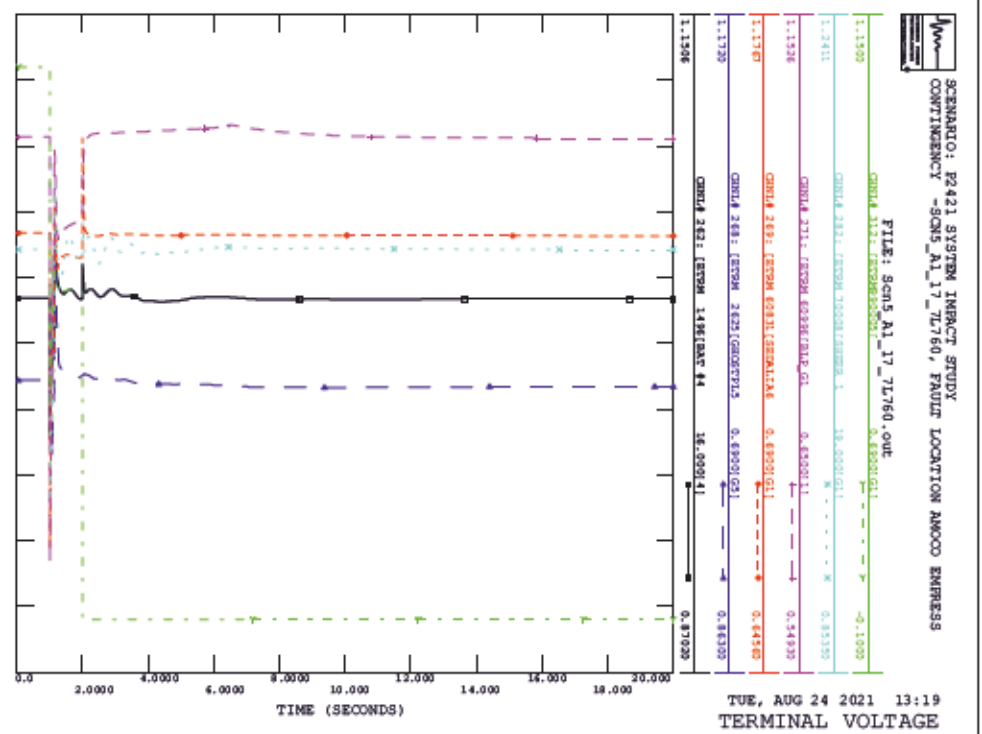
FILE: Scm5_A1_16_760L.out

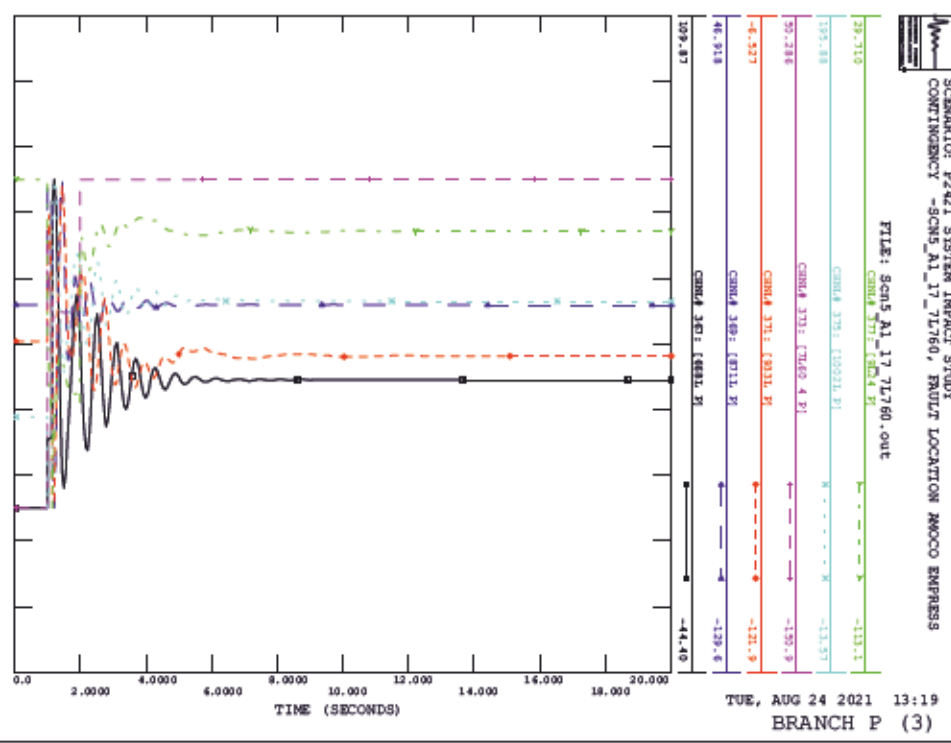
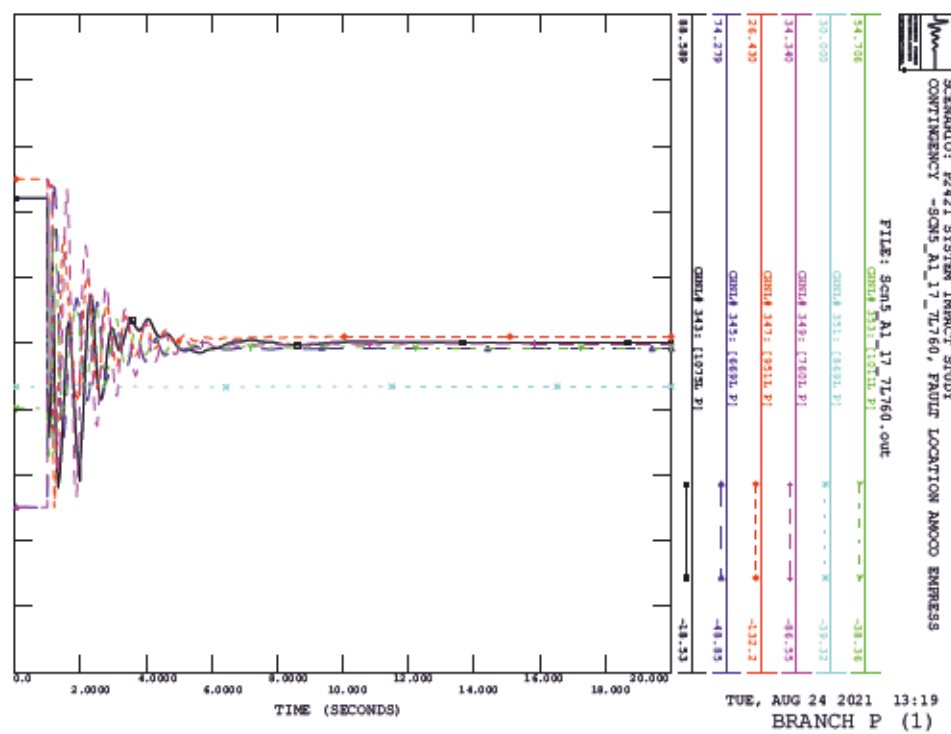
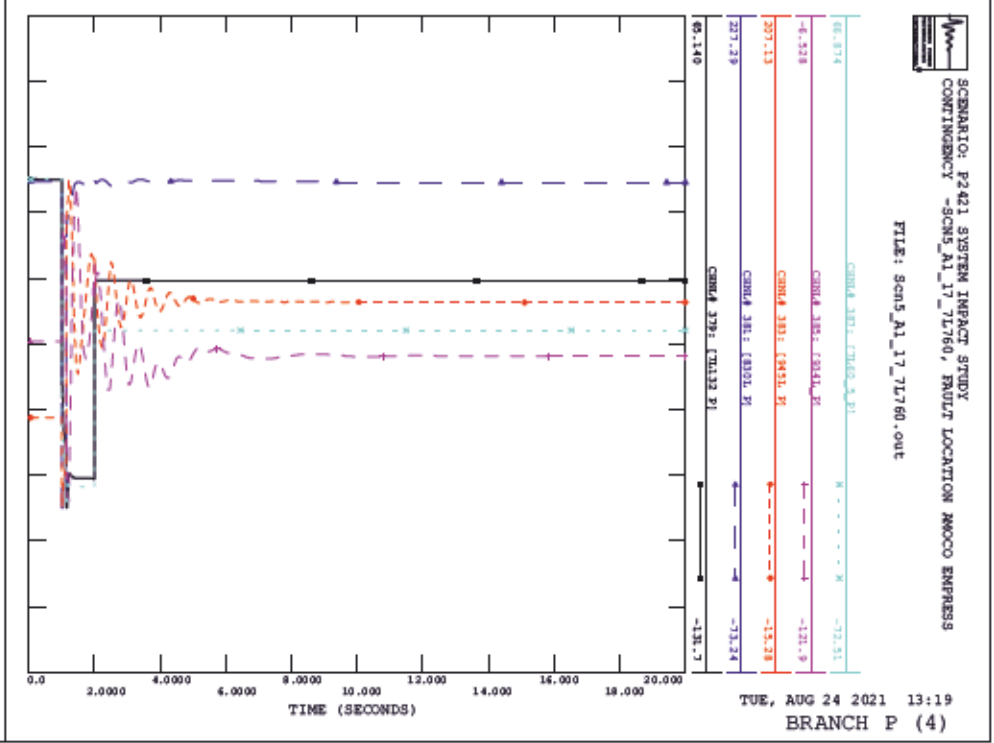
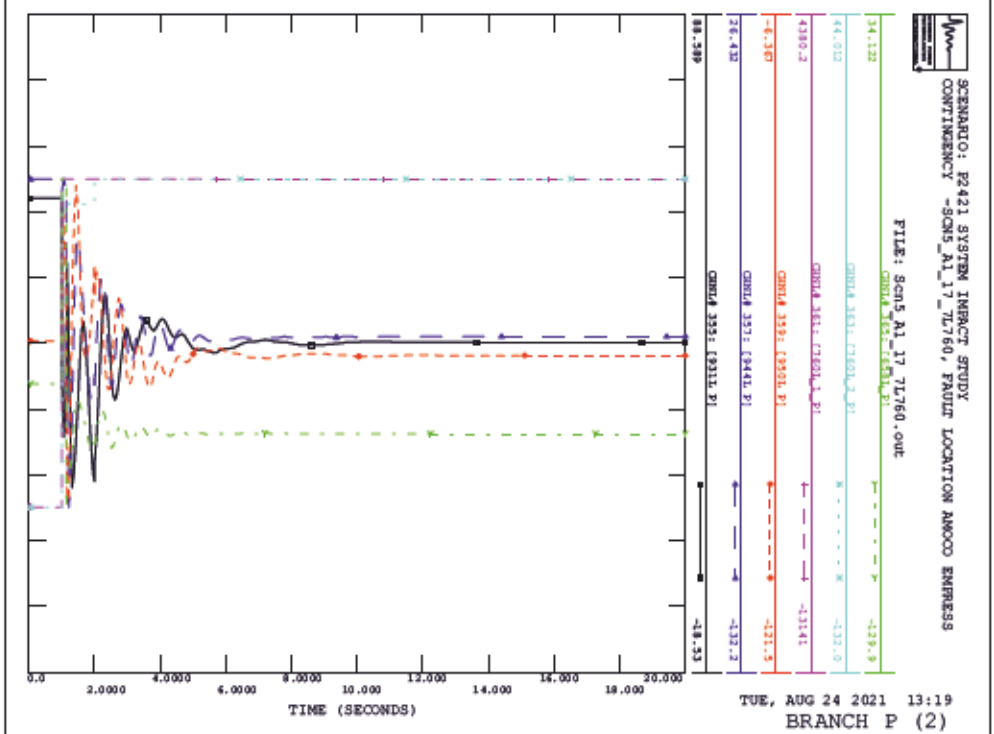


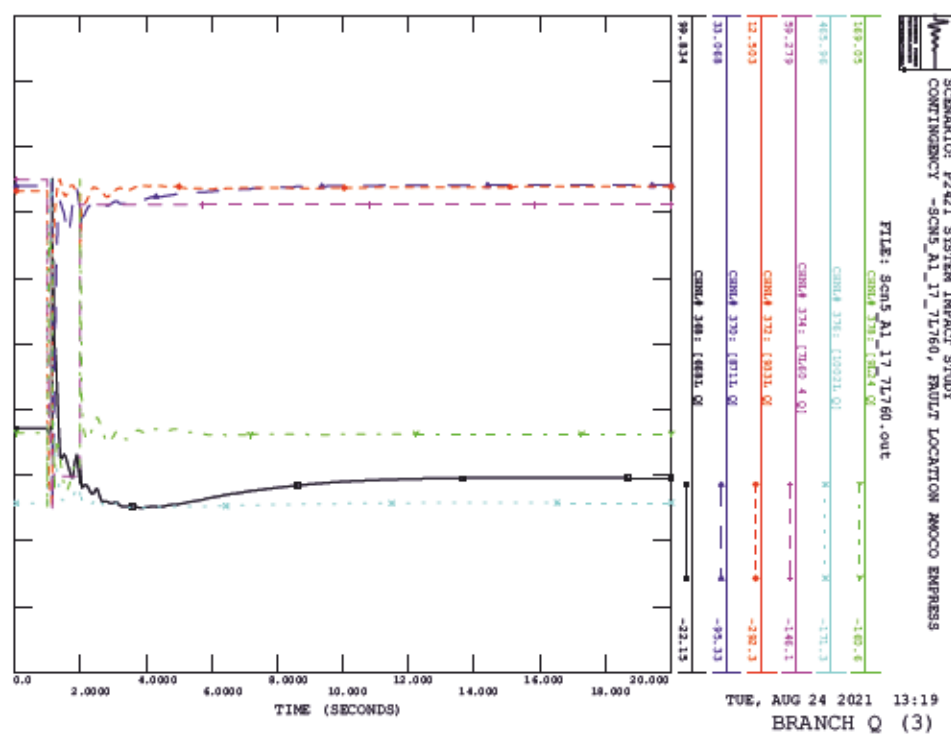
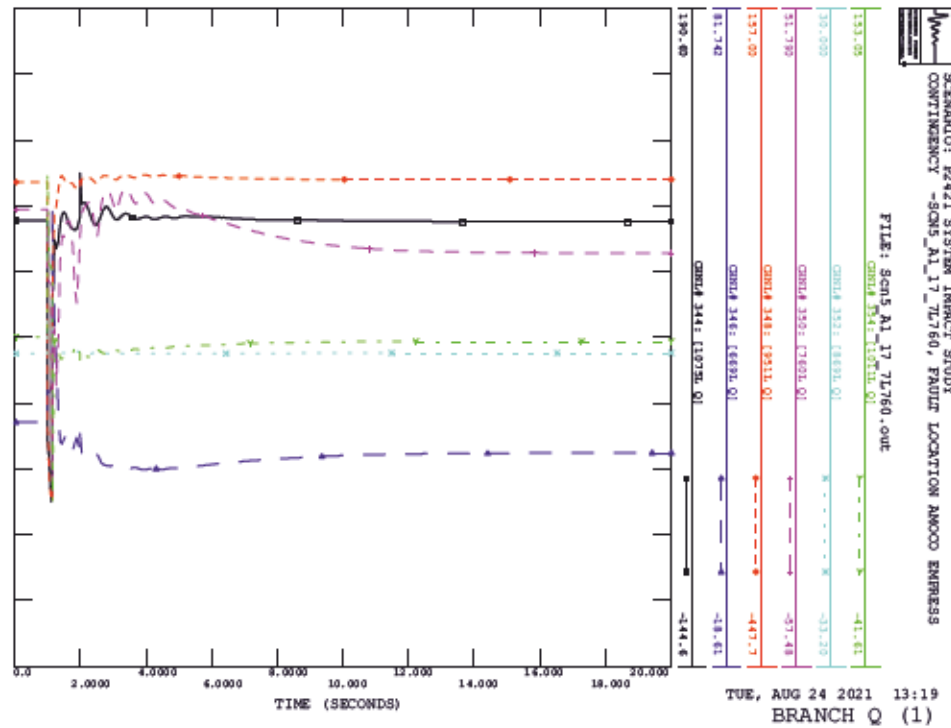
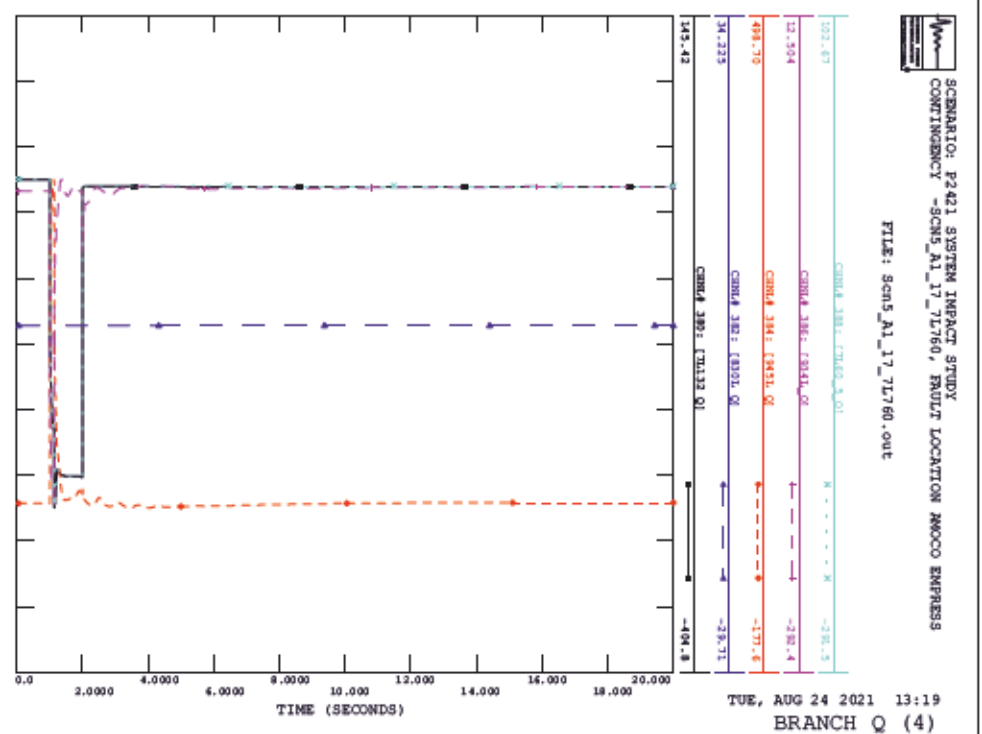
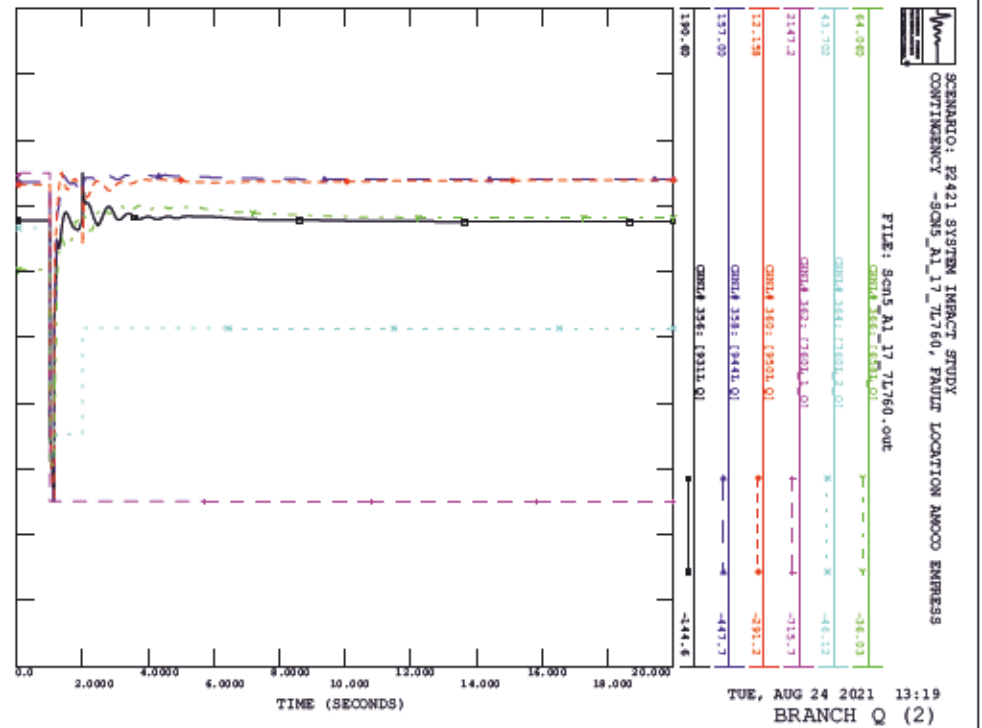
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_17_7L760, FAULT LOCATION RMOCO EMPRESS

FILE: Scm5_A1_17_7L760.out

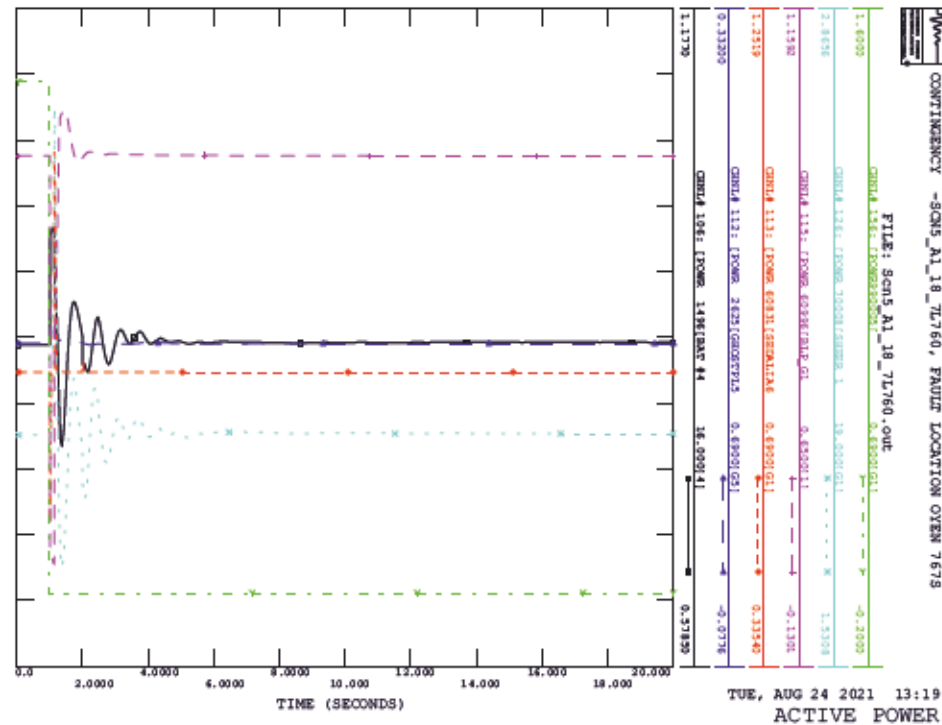




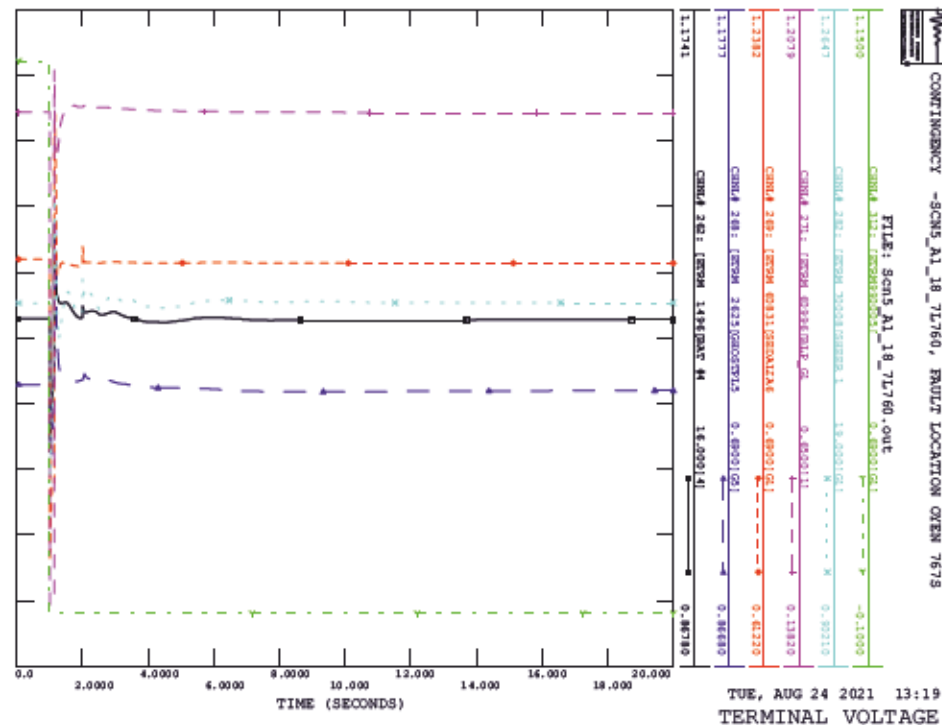




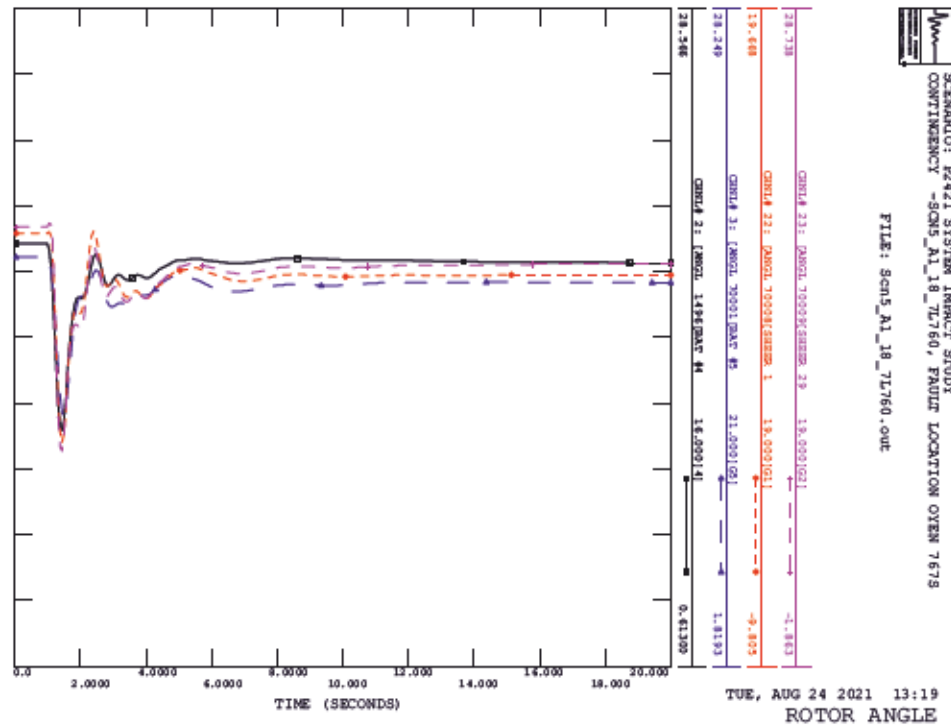
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675



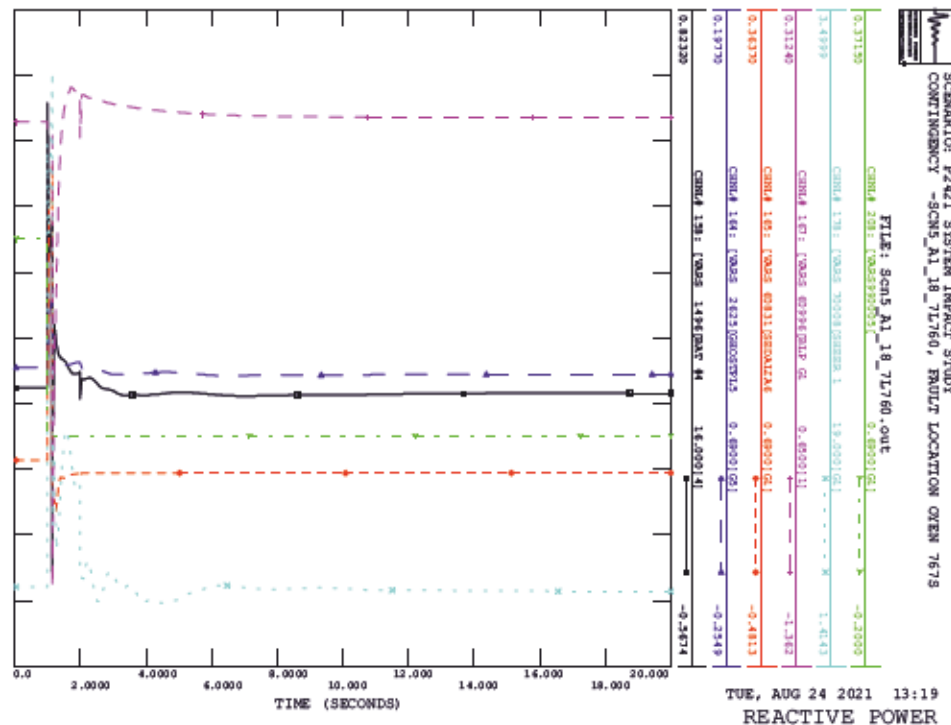
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CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675

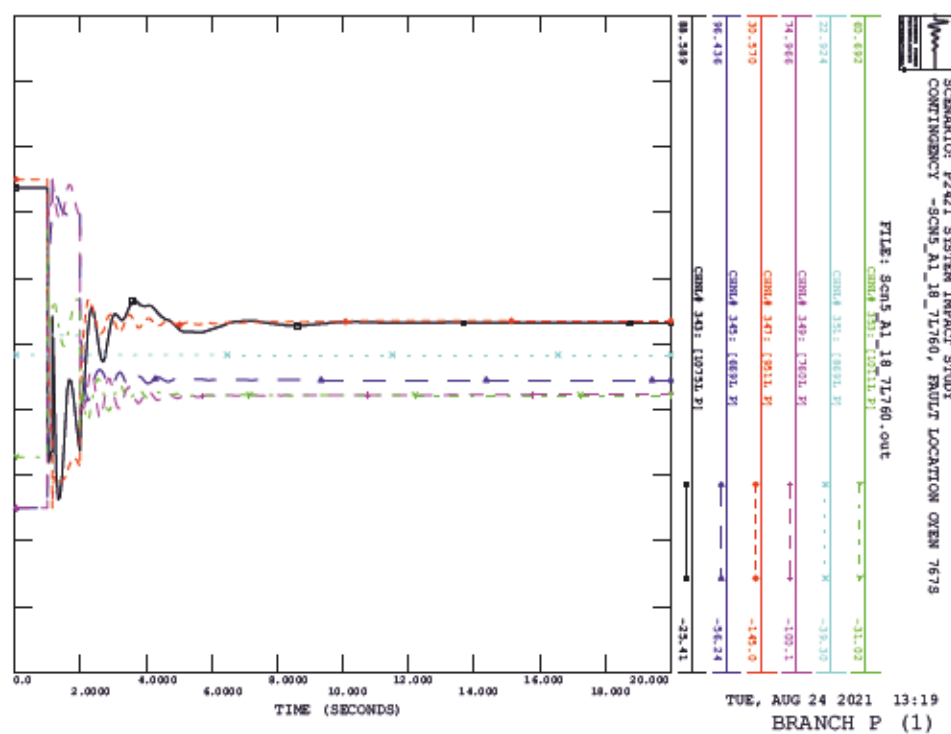
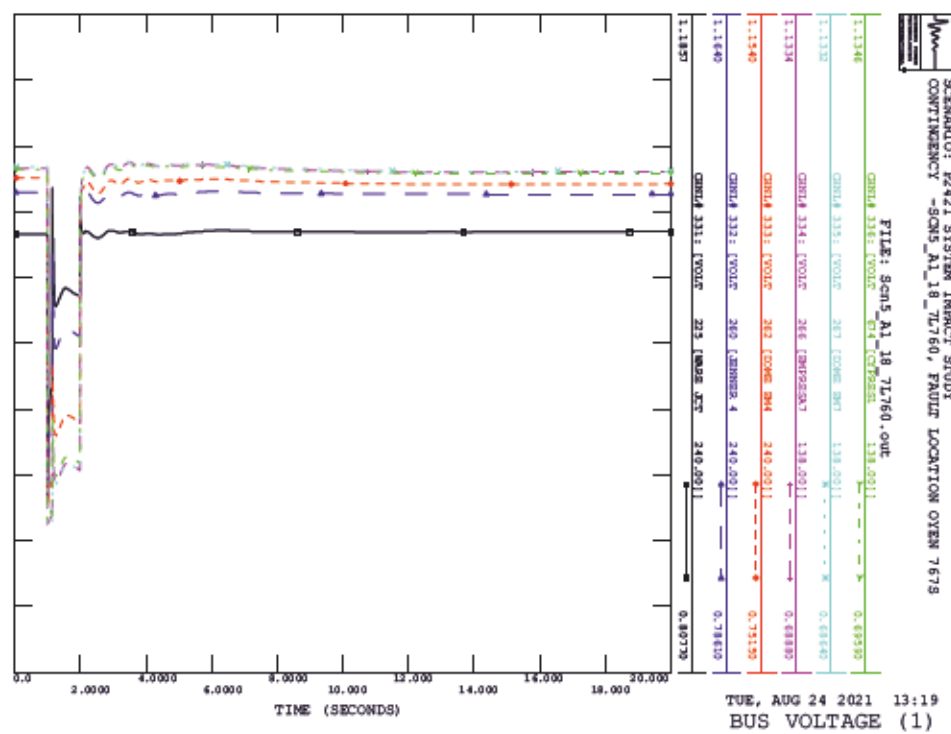
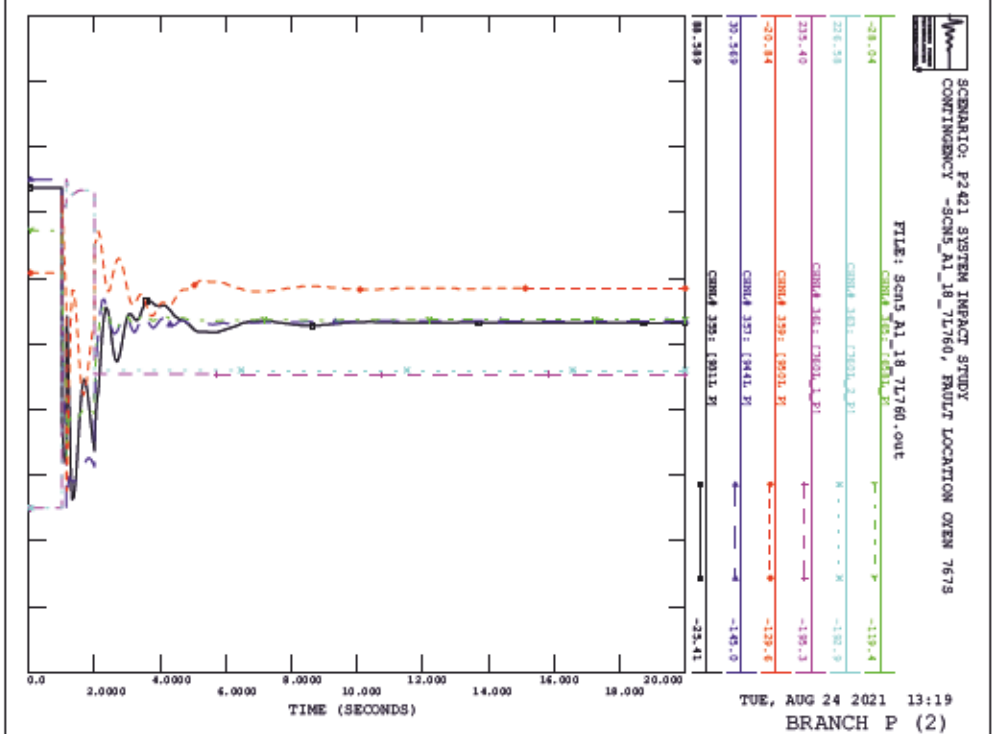
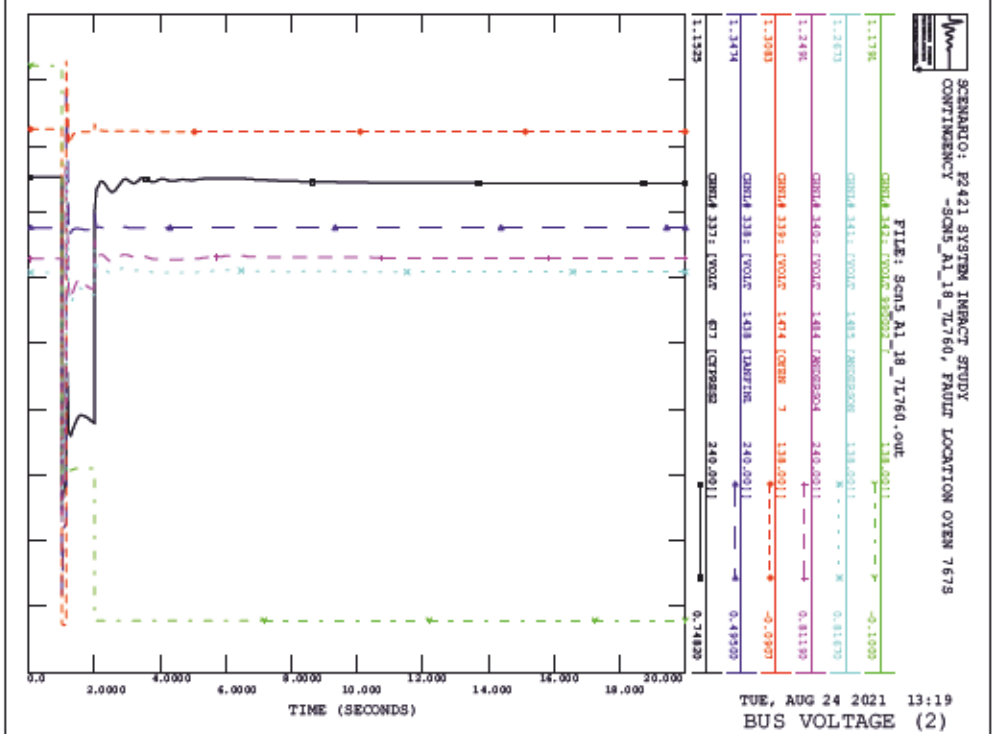


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675



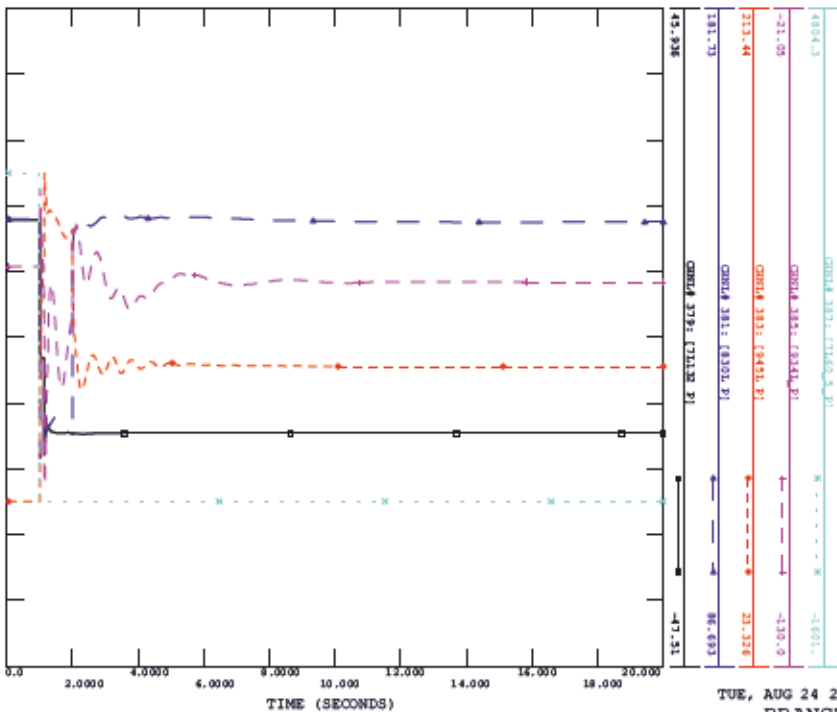
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CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675





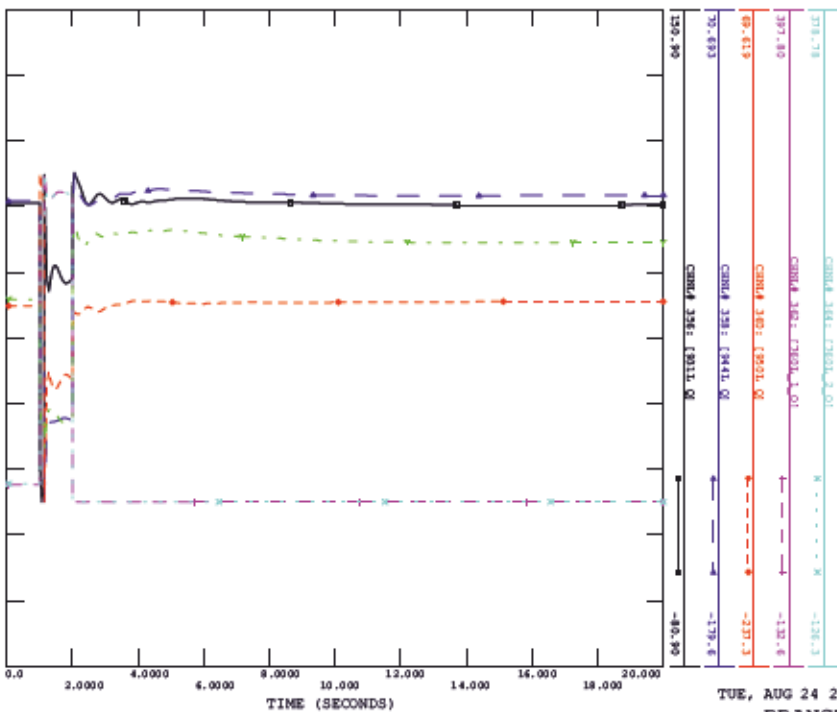
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CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675

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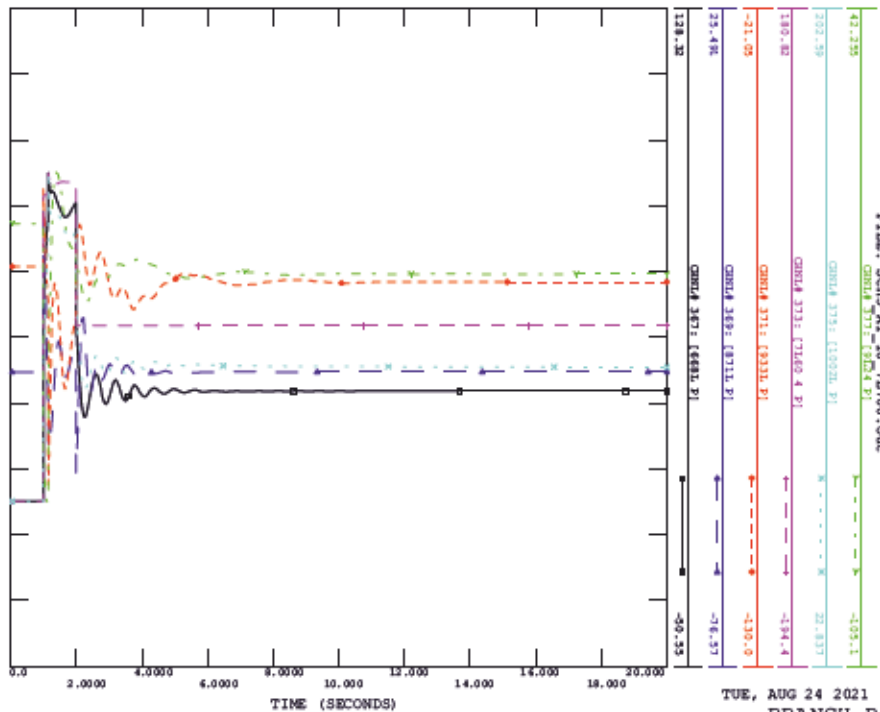
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CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675

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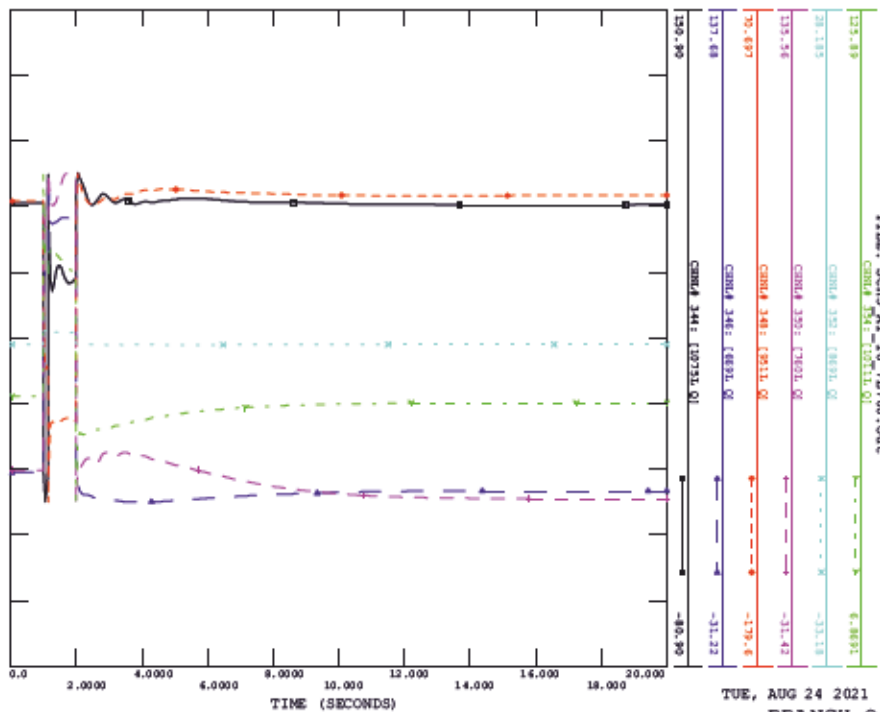
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675

FILE: Scm5_A1_18_7L760.out



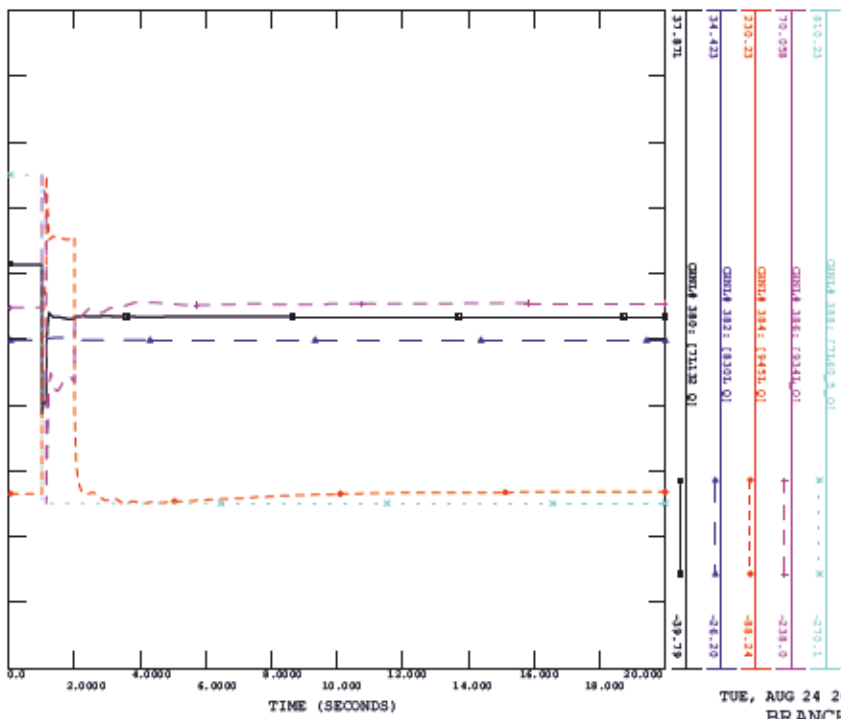
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OPEN 7675

FILE: Scm5_A1_18_7L760.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OYEN 767S

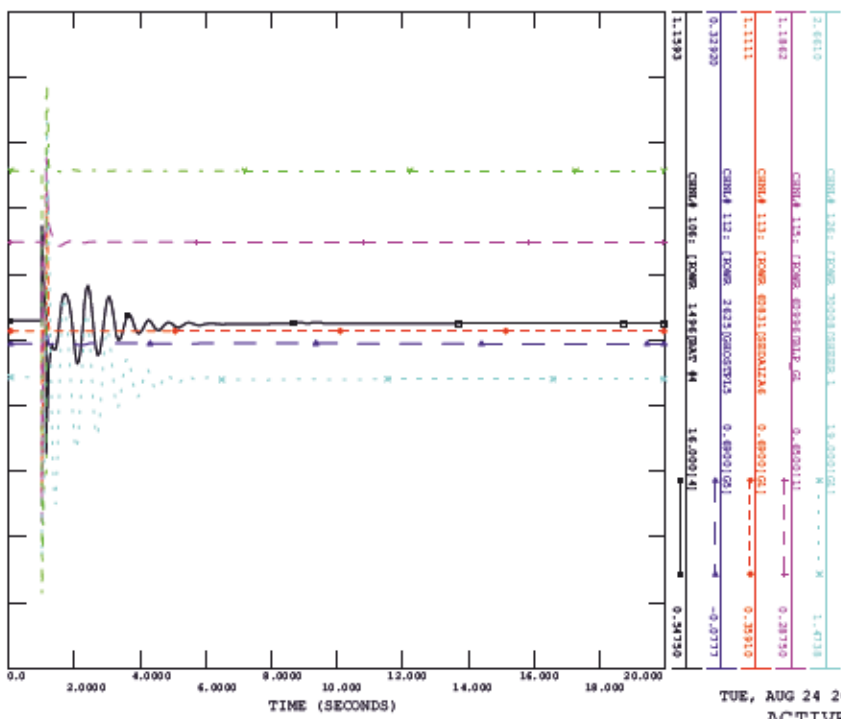
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TUE, AUG 24 2021 13:19
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 562S

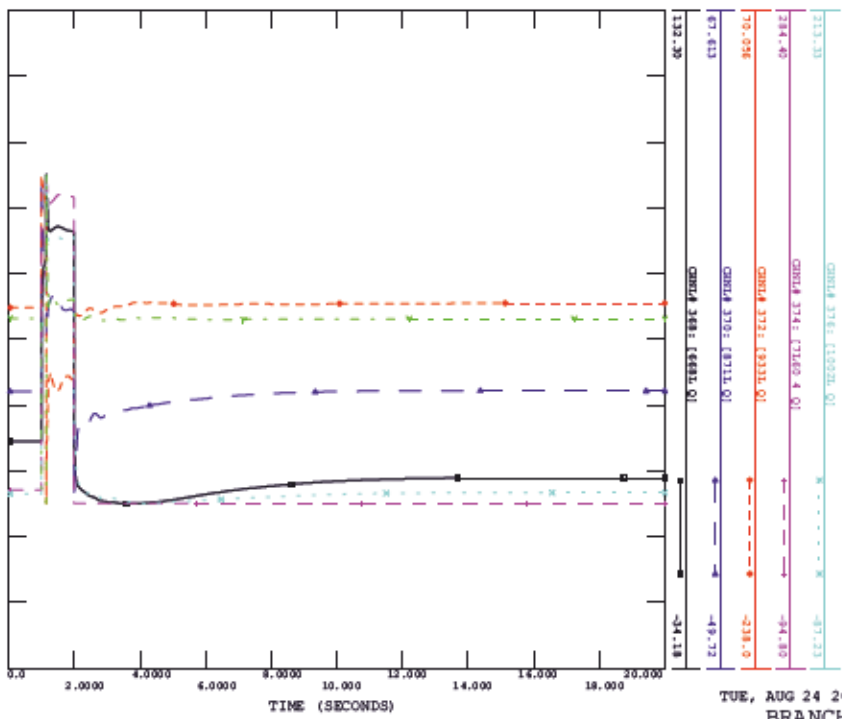
FILE: Scm5_A1_19_830L.out



TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_18_7L760, FAULT LOCATION OYEN 767S

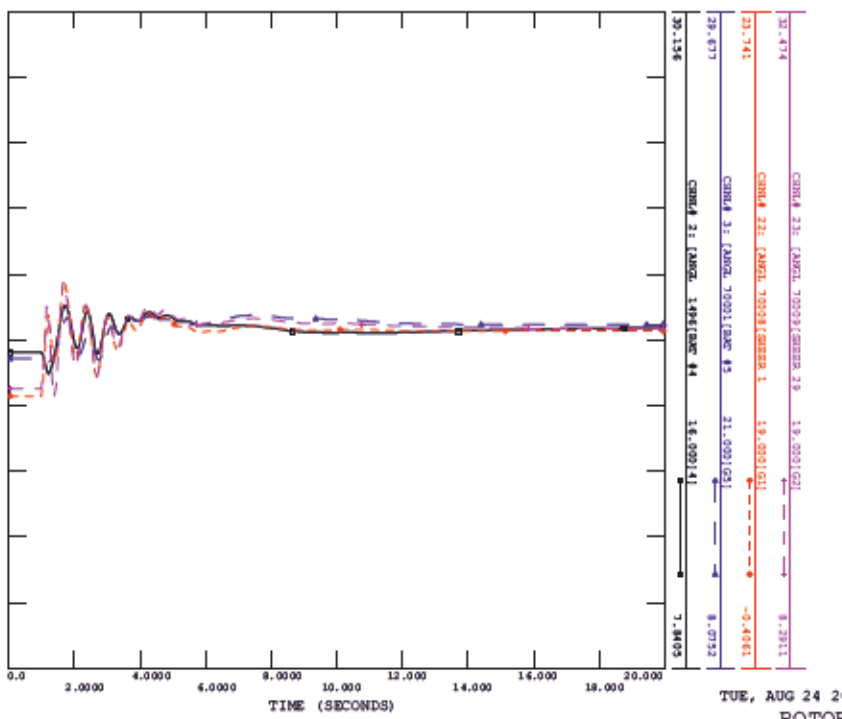
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TUE, AUG 24 2021 13:19
BRANCH Q (3)

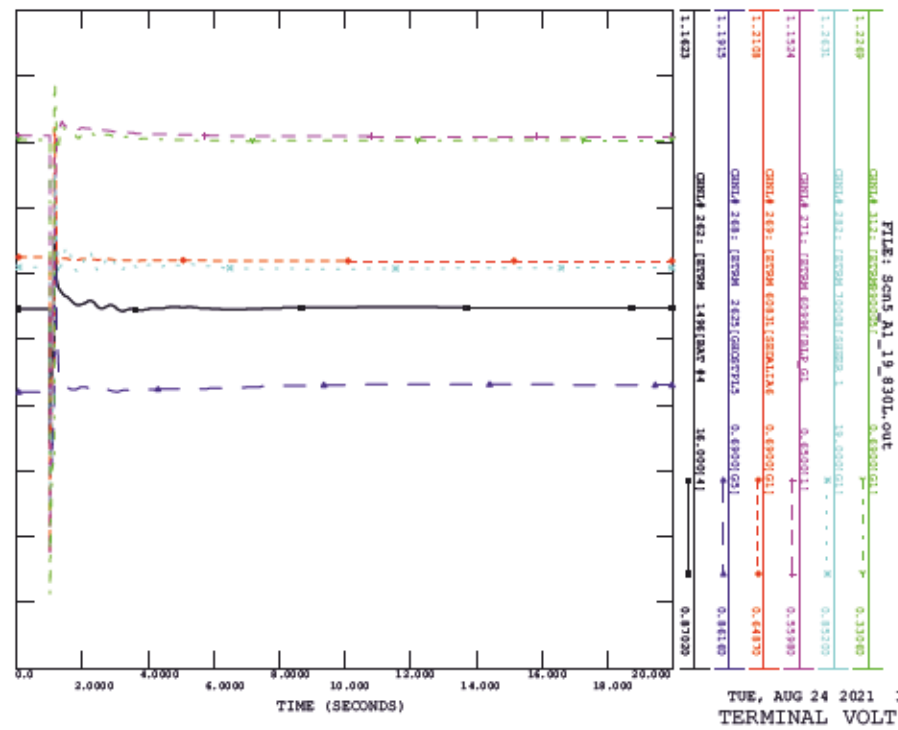
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 562S

FILE: Scm5_A1_19_830L.out

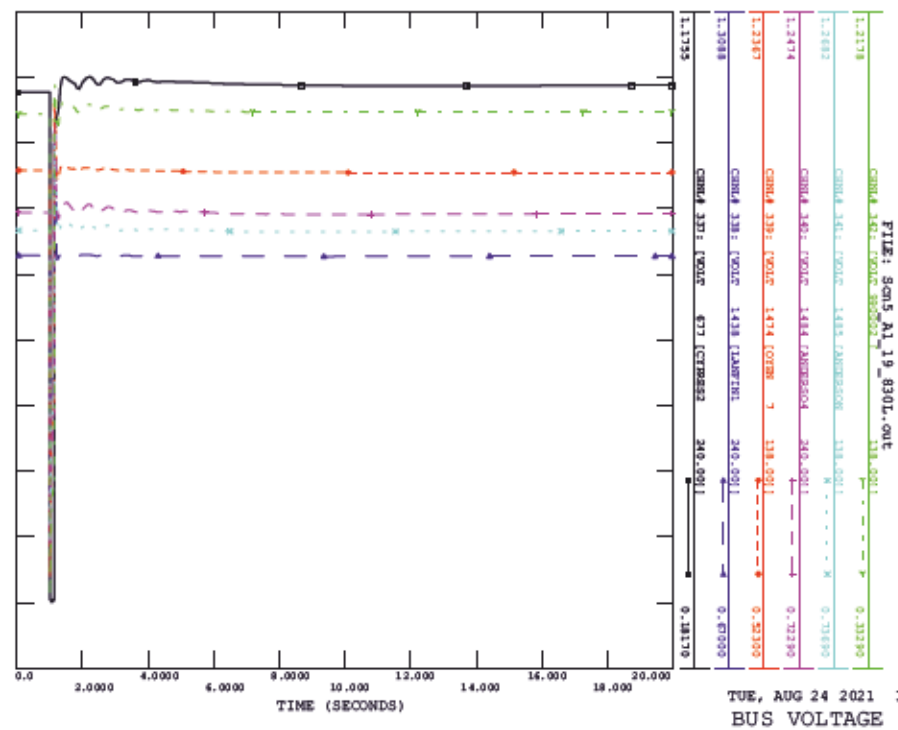


TUE, AUG 24 2021 13:19
ROTOR ANGLE

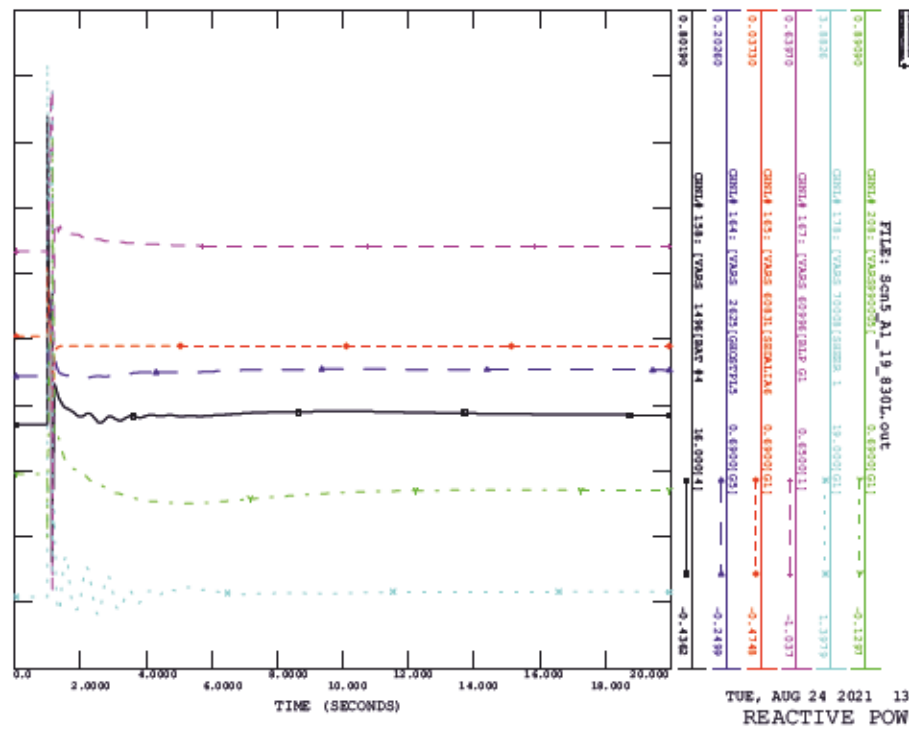
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629



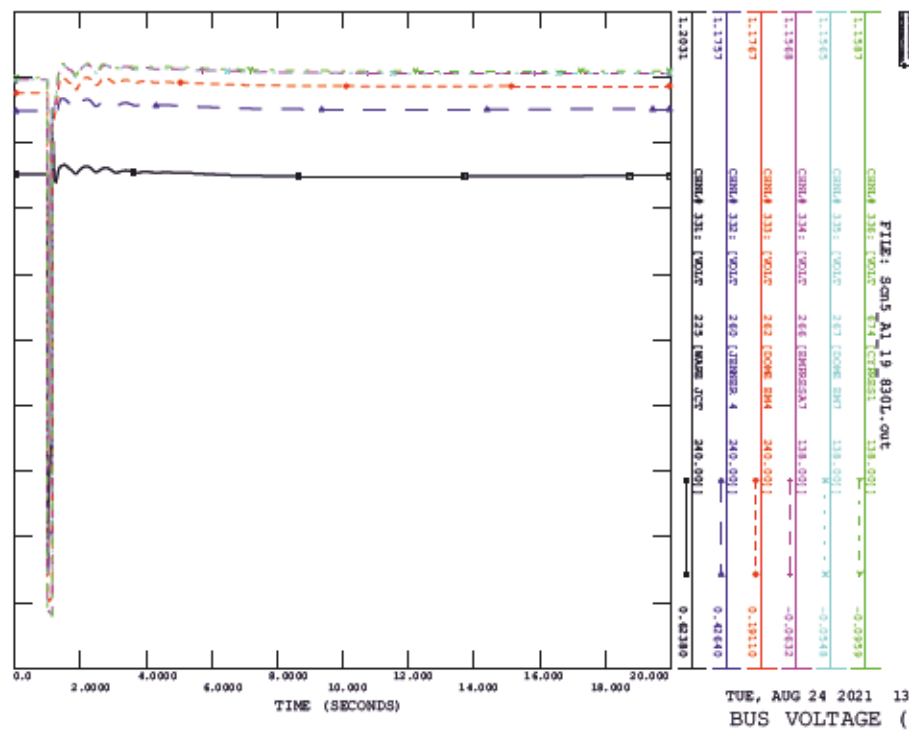
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

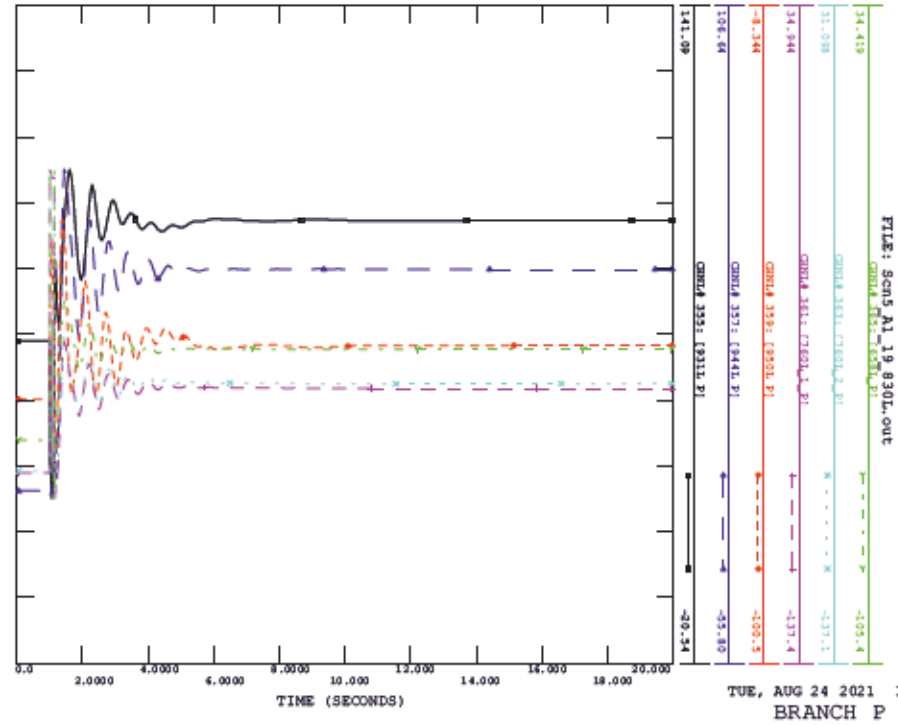


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629



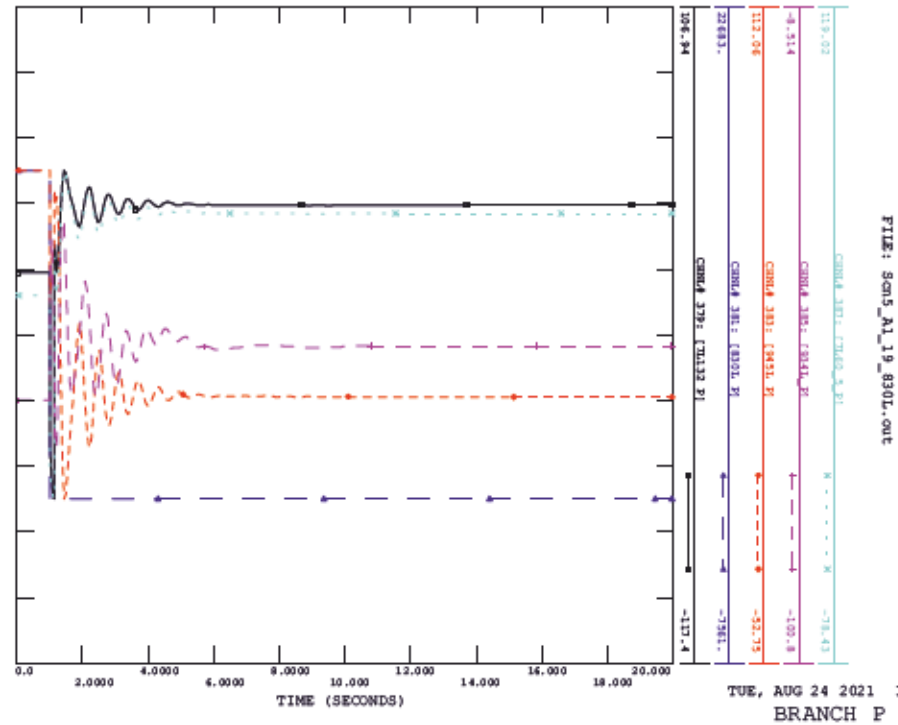
SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



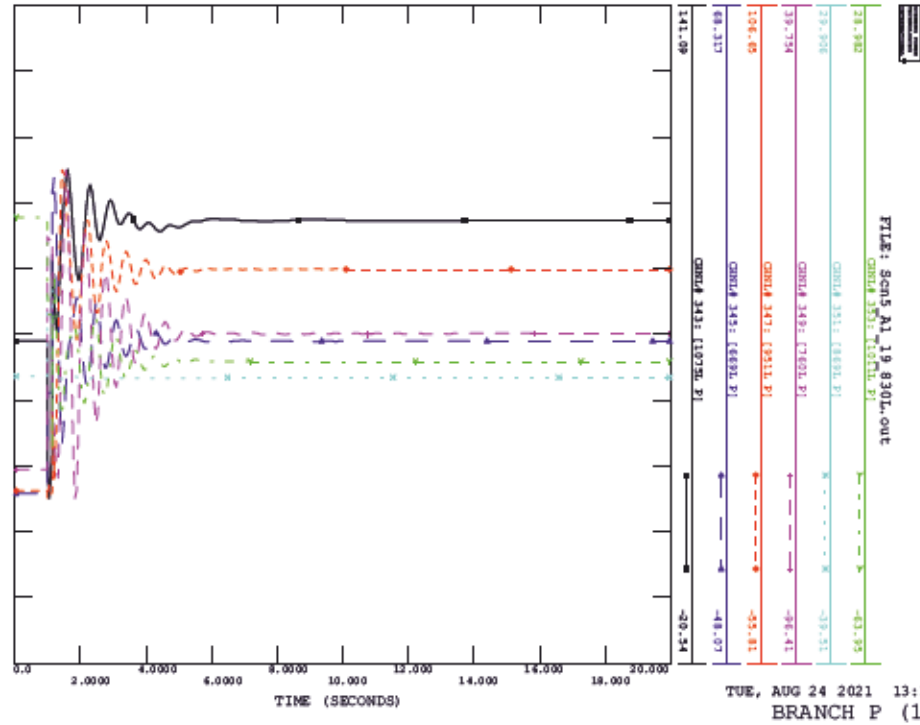
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CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



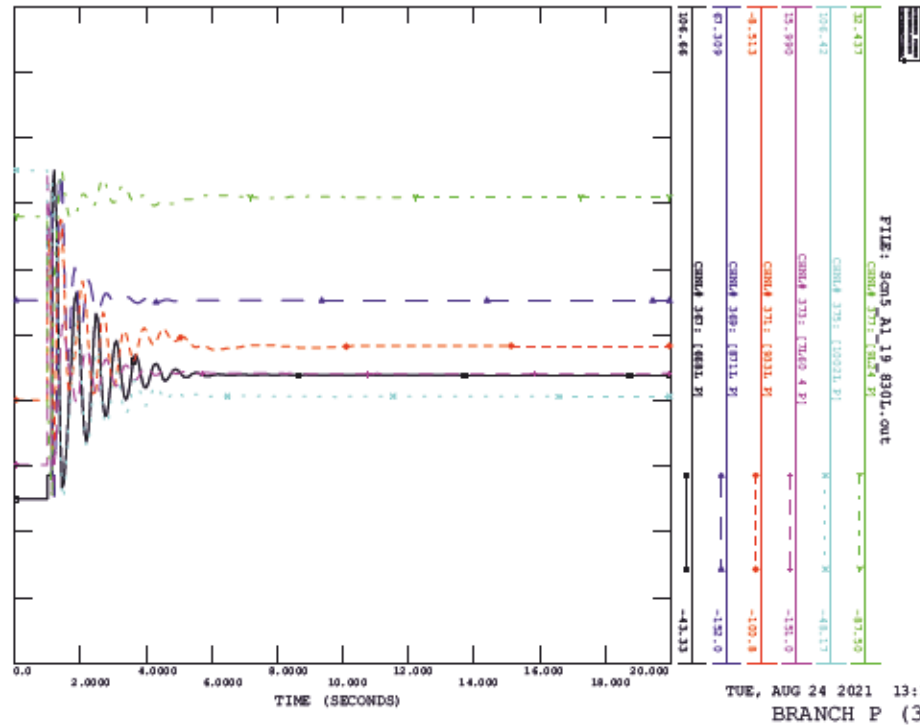
SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



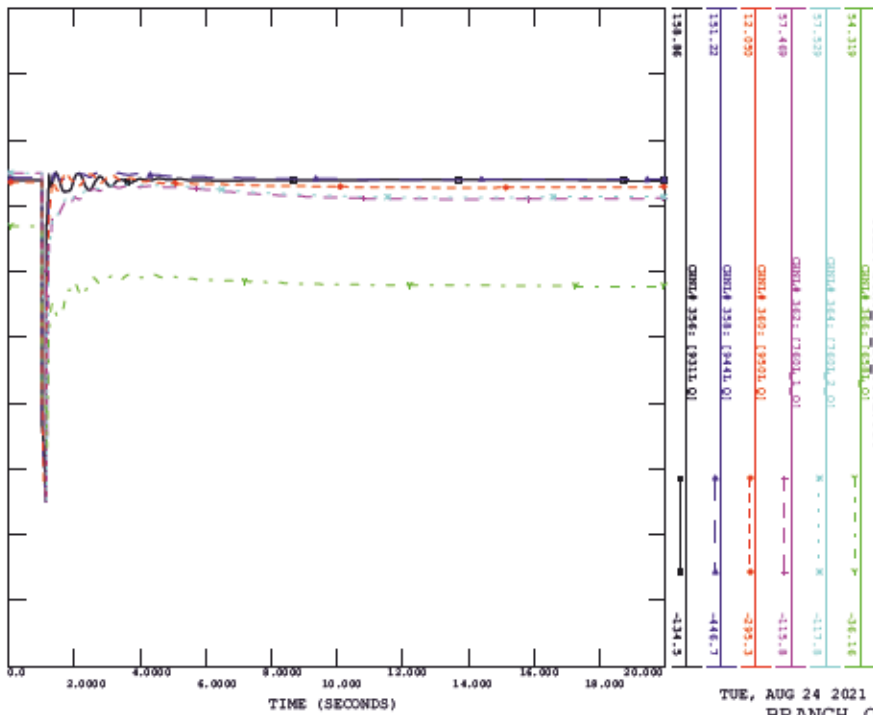
SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



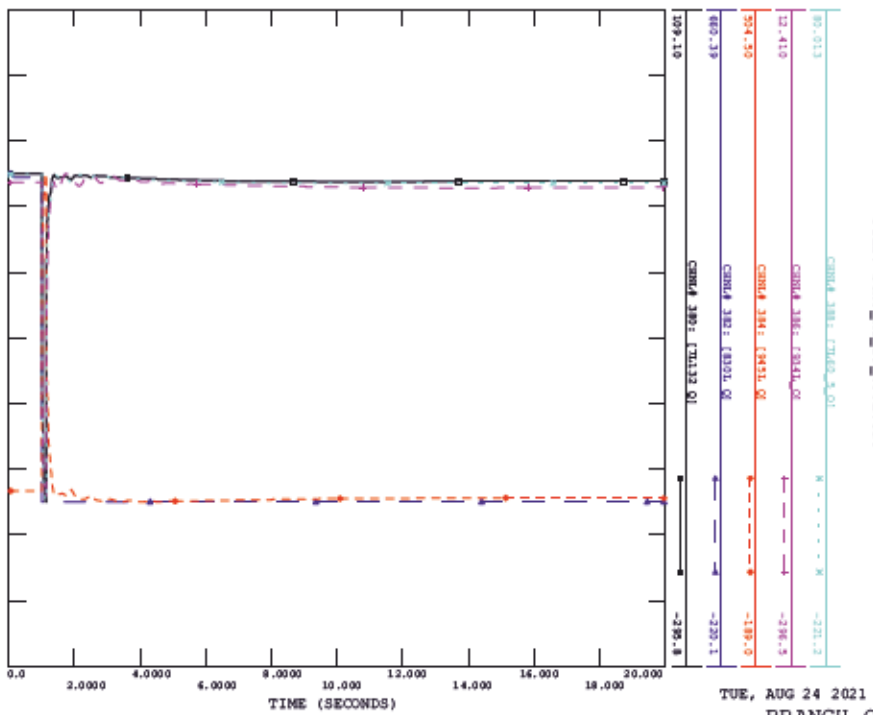
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CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



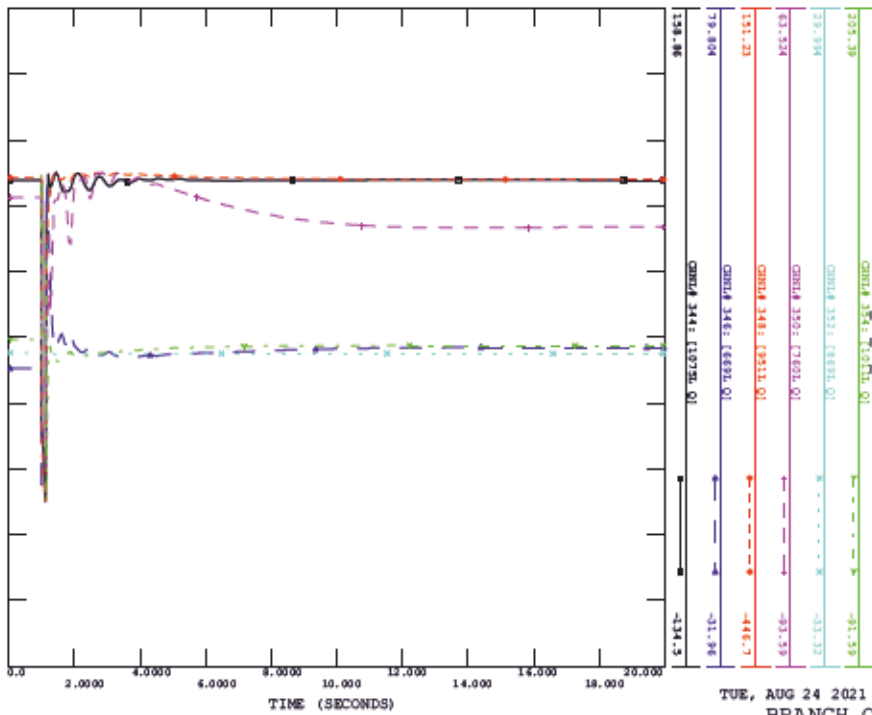
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



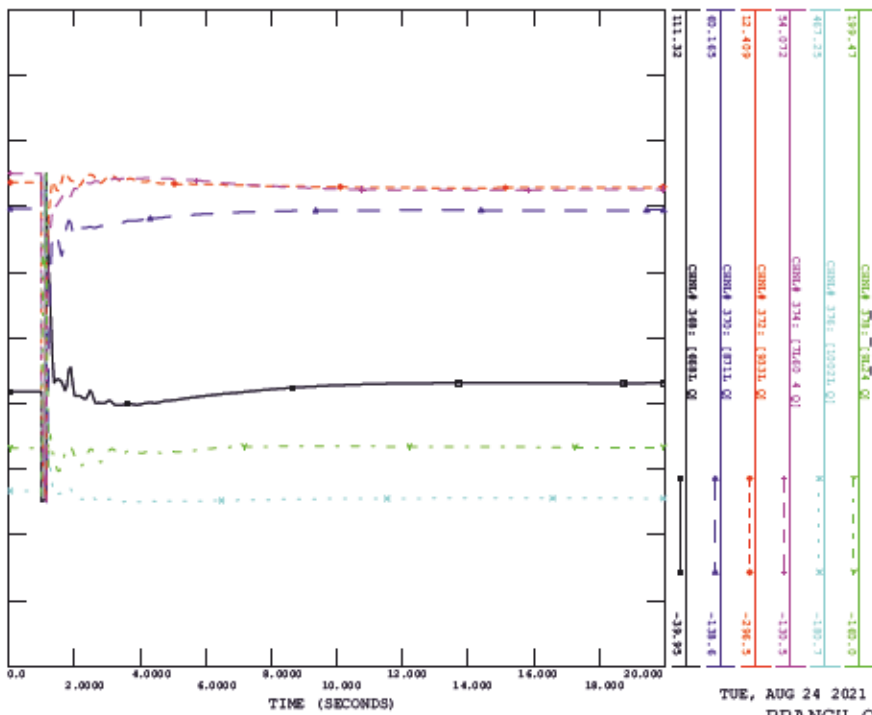
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CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

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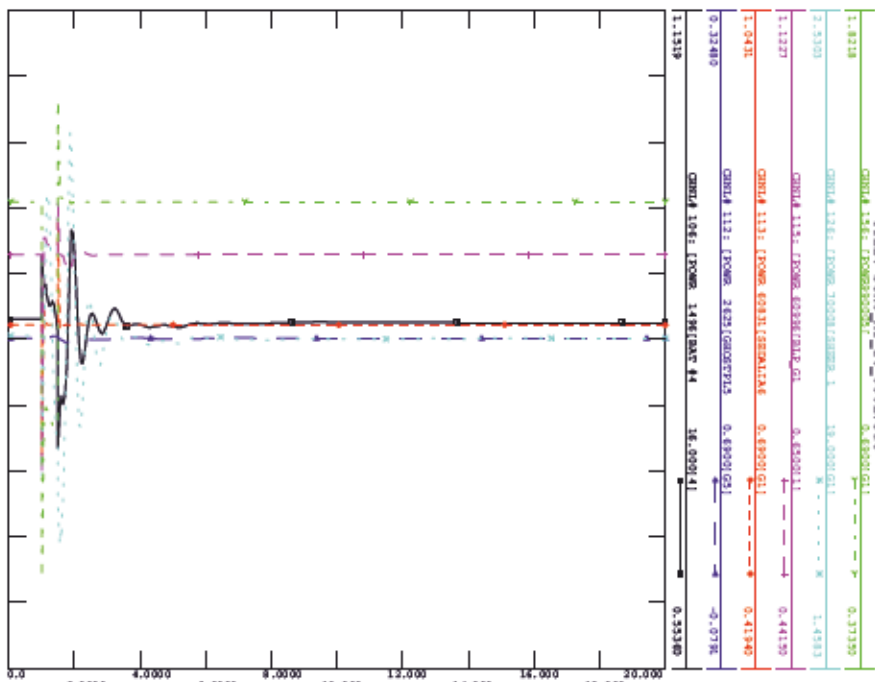
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm5_A1_19_830L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WOMBIL 840S

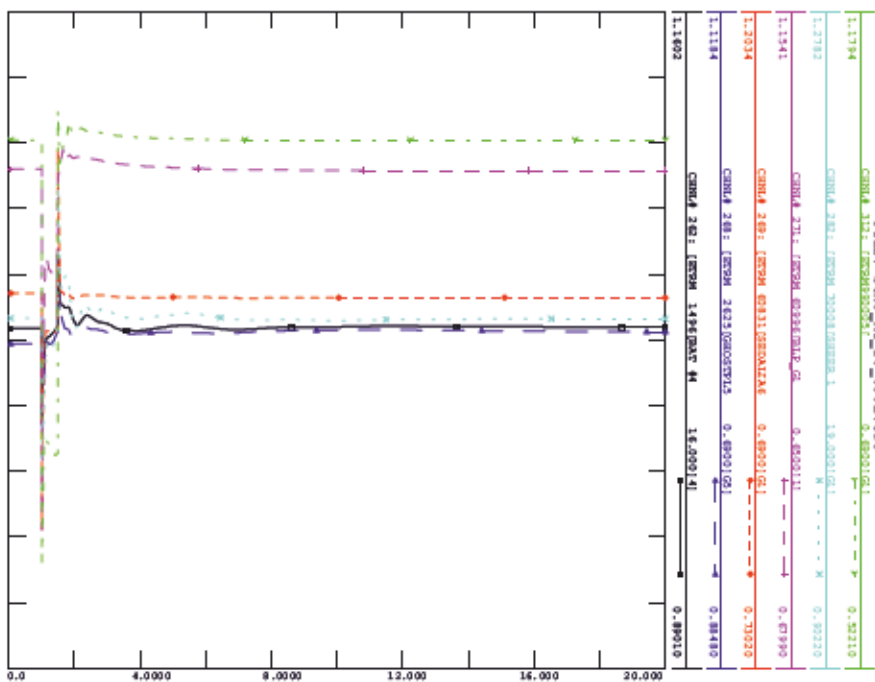
FILE: Scm5_A1_20_830L.out



TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WOMBIL 840S

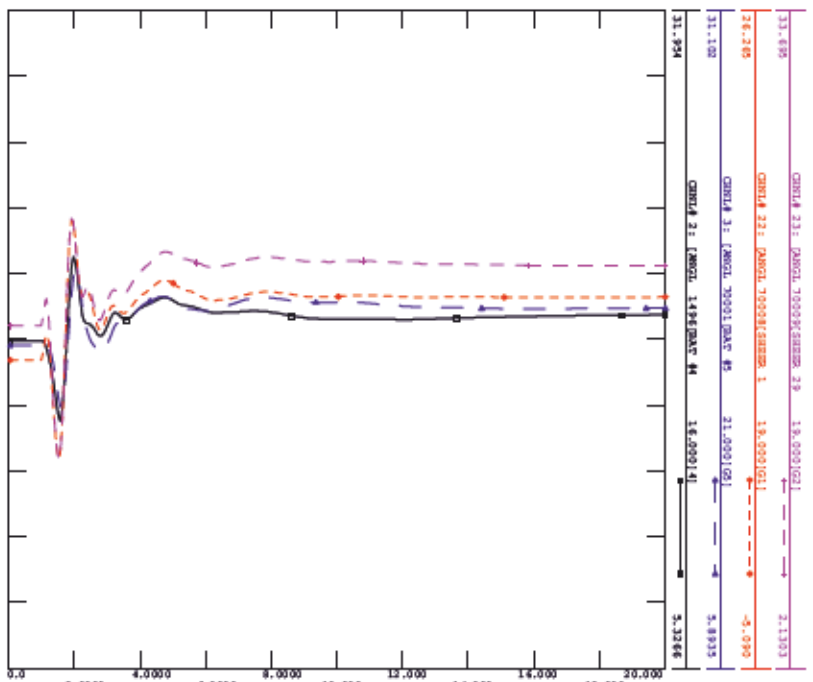
FILE: Scm5_A1_20_830L.out



TUE, AUG 24 2021 13:19
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WOMBIL 840S

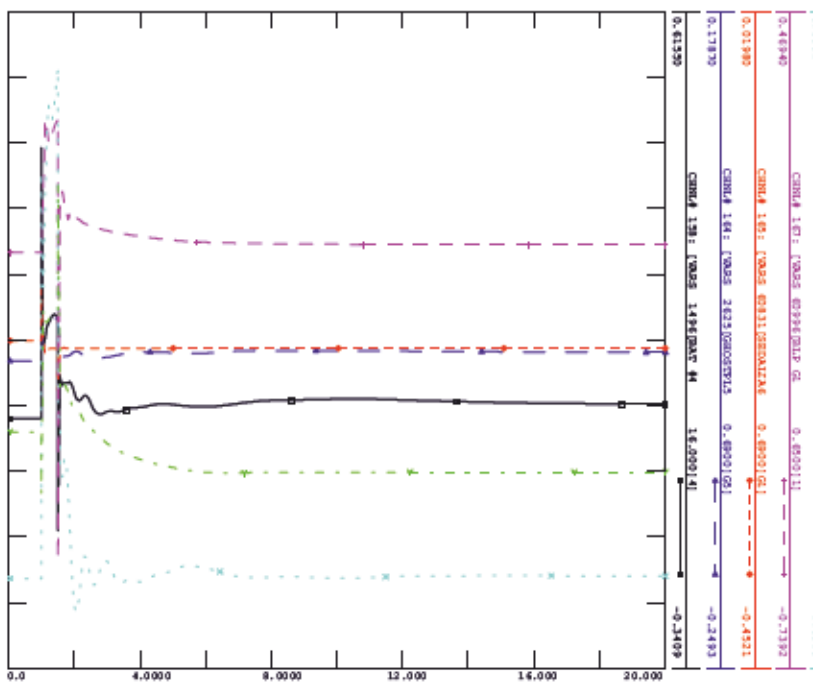
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TUE, AUG 24 2021 13:19
ROTOR ANGLE

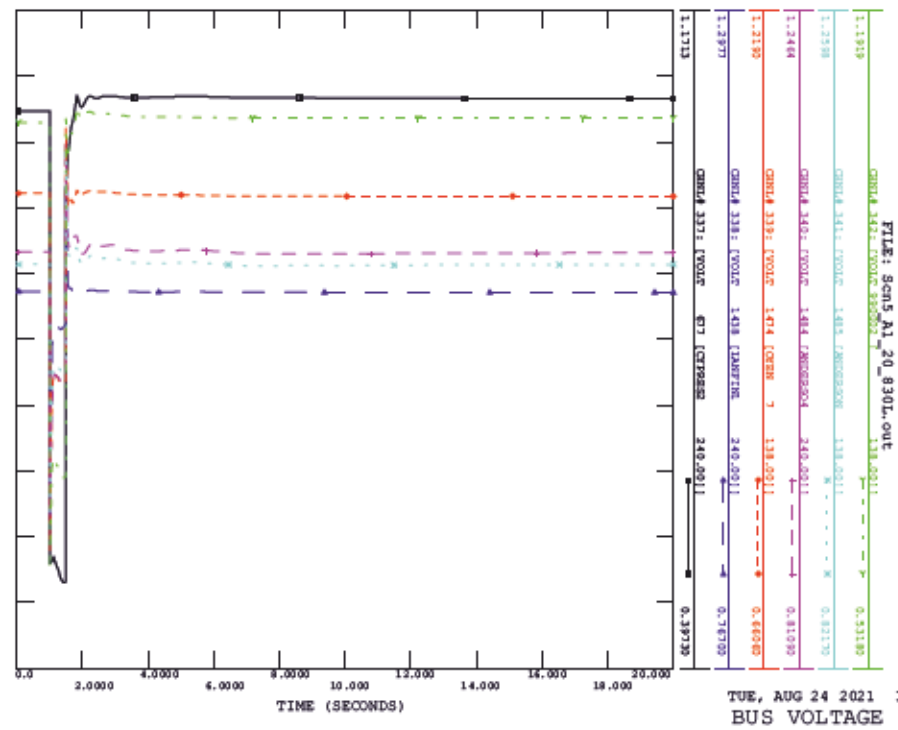
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WOMBIL 840S

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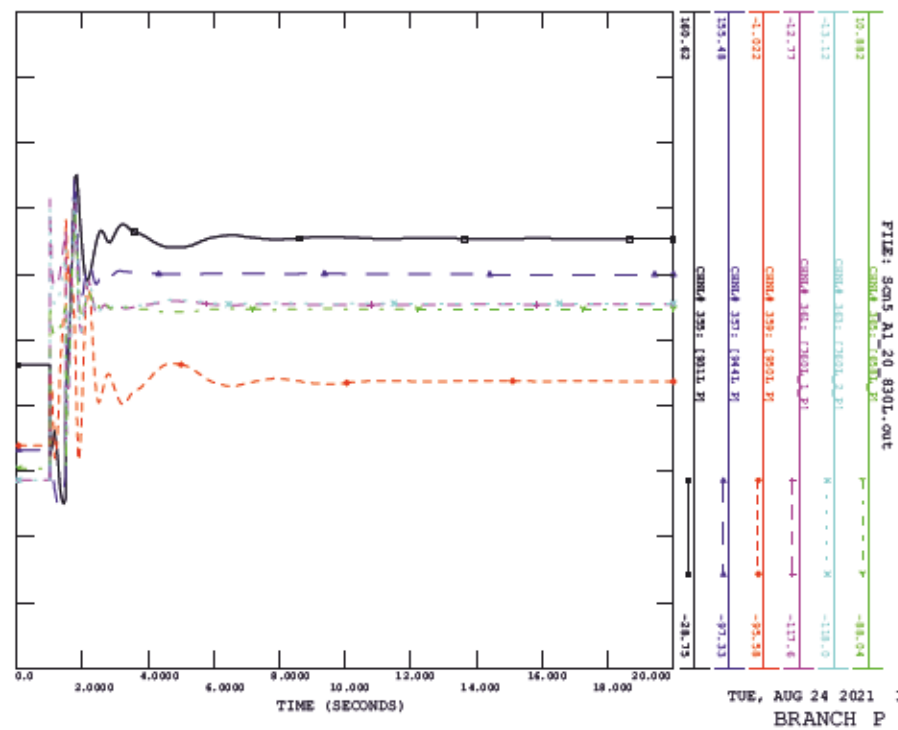


TUE, AUG 24 2021 13:19
REACTIVE POWER

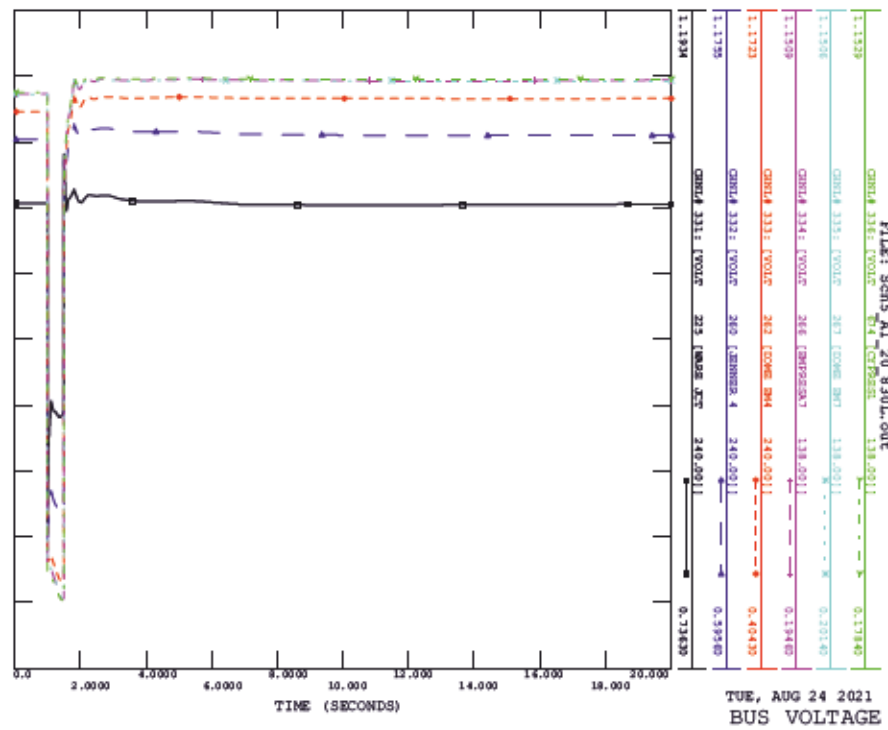
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CONTINGENCY -SCM5_A1_20_930L, FAULT LOCATION WOMBIL 840S



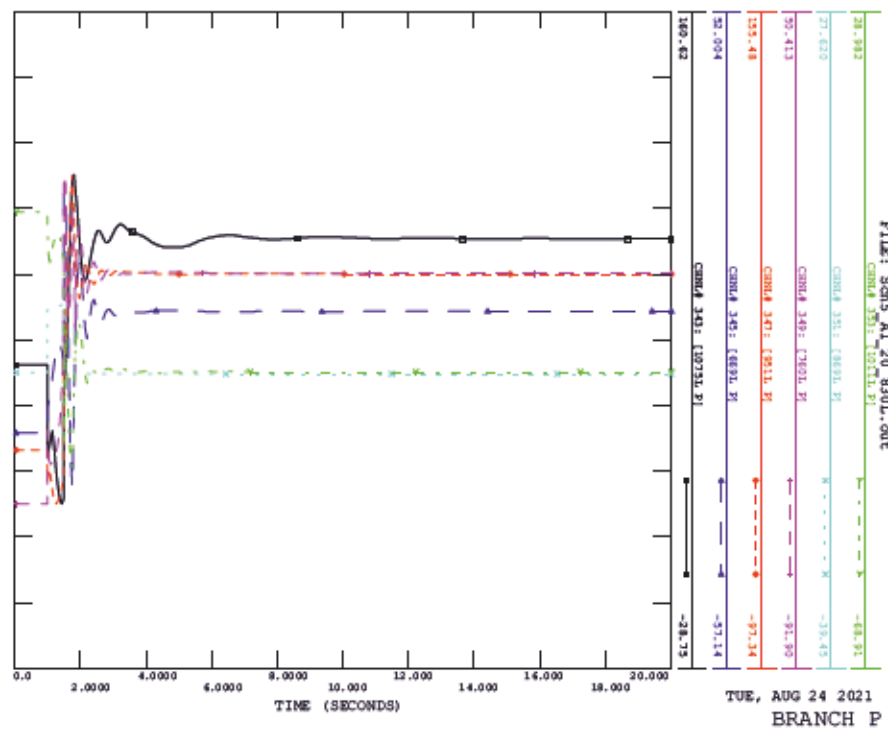
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_930L, FAULT LOCATION WOMBIL 840S



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_930L, FAULT LOCATION WOMBIL 840S

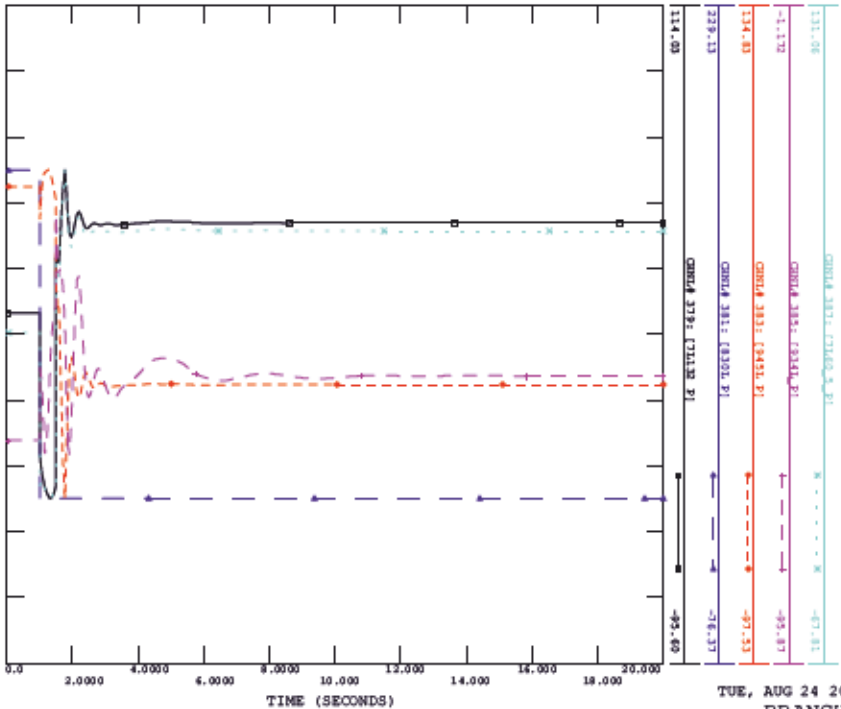


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_930L, FAULT LOCATION WOMBIL 840S



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WONEIL 840S

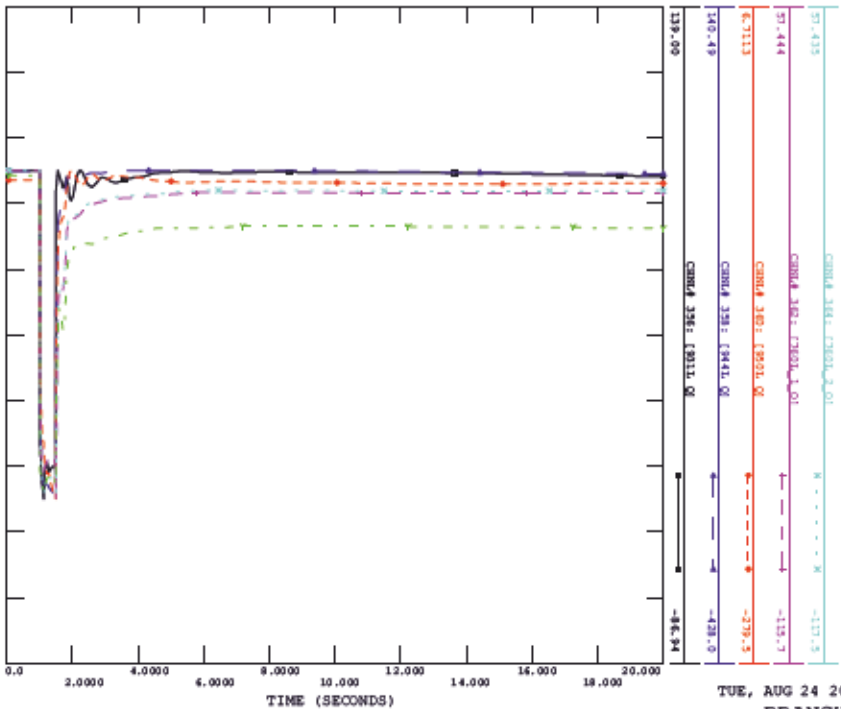
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TUE, AUG 24 2021 13:19
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WONEIL 840S

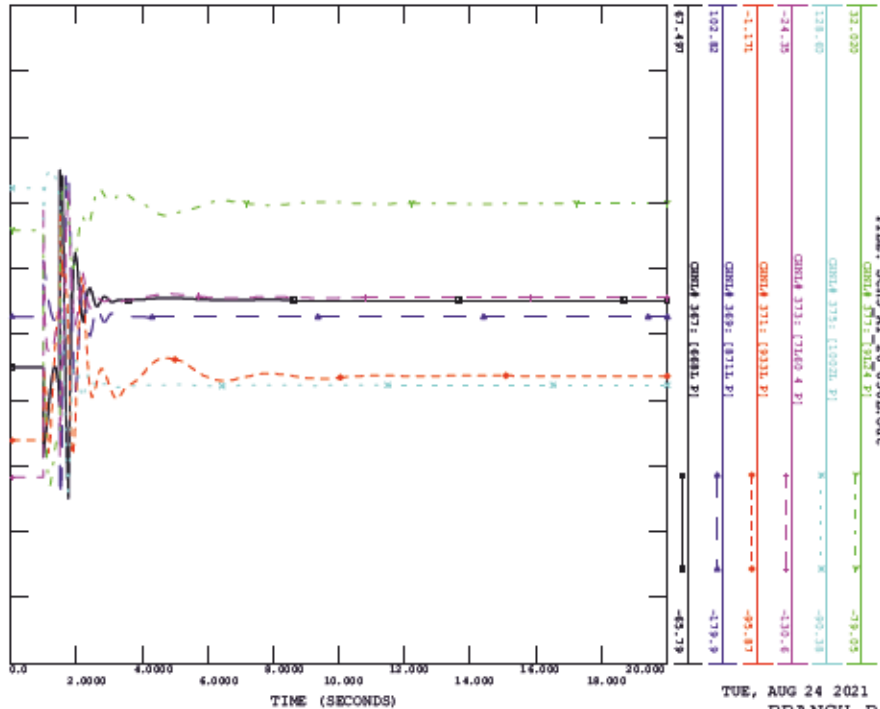
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TUE, AUG 24 2021 13:19
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WONEIL 840S

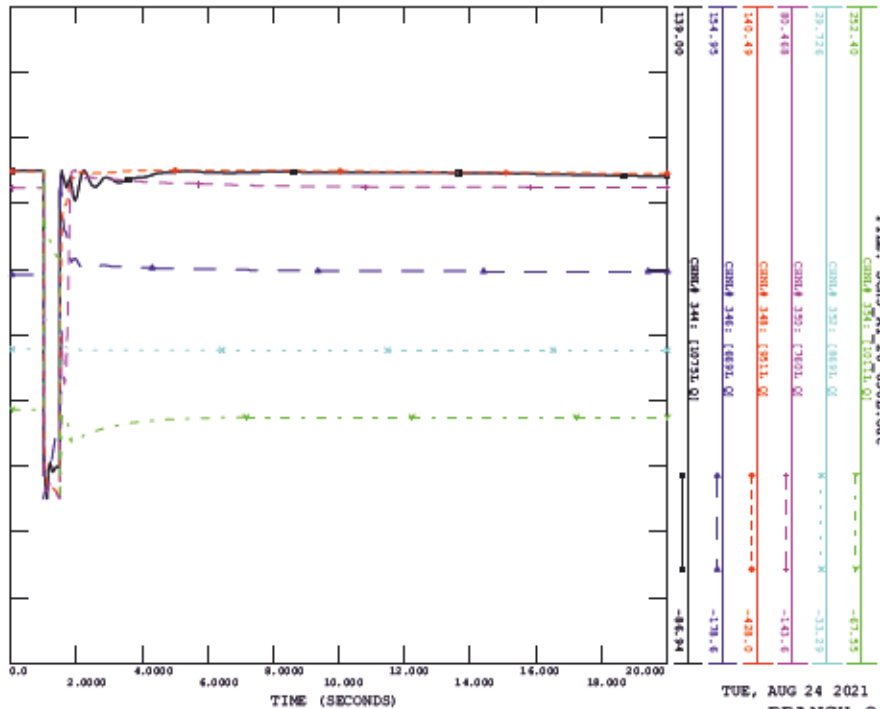
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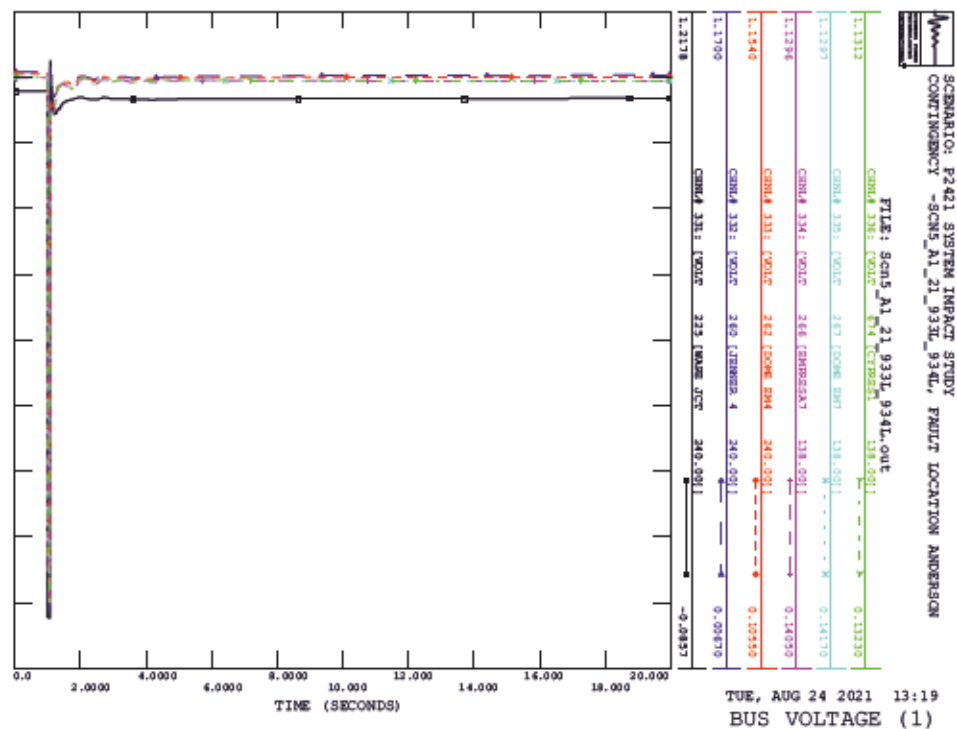
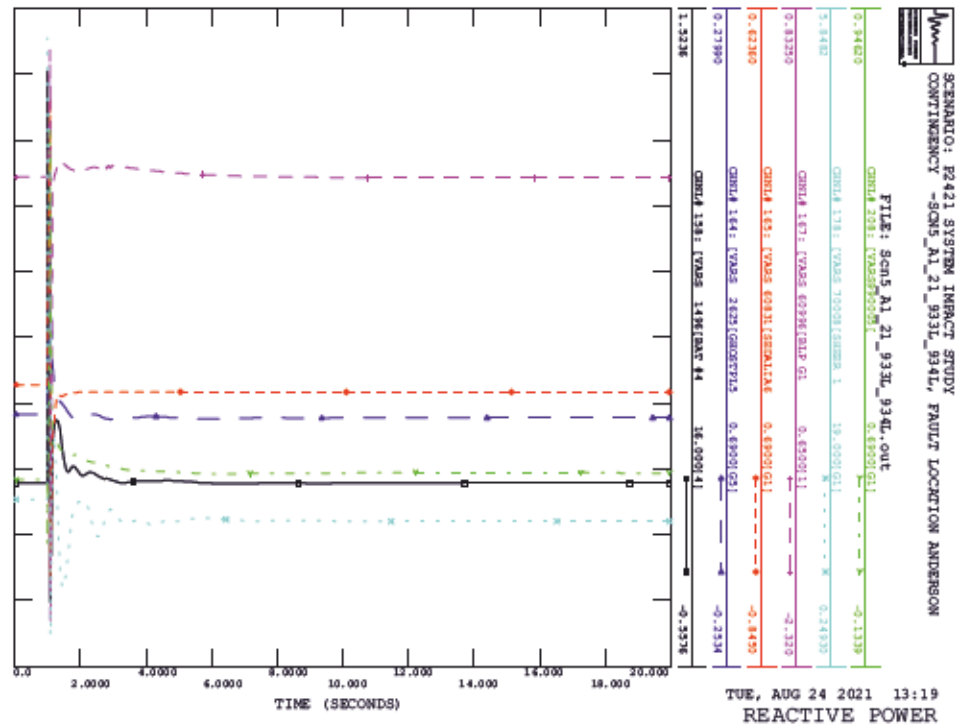
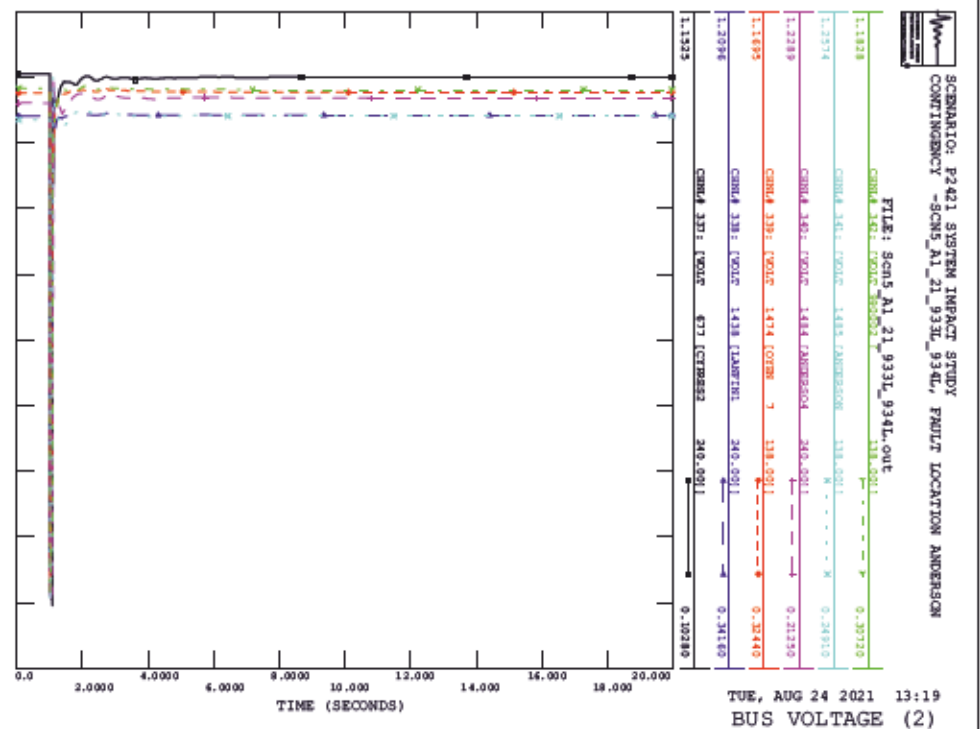
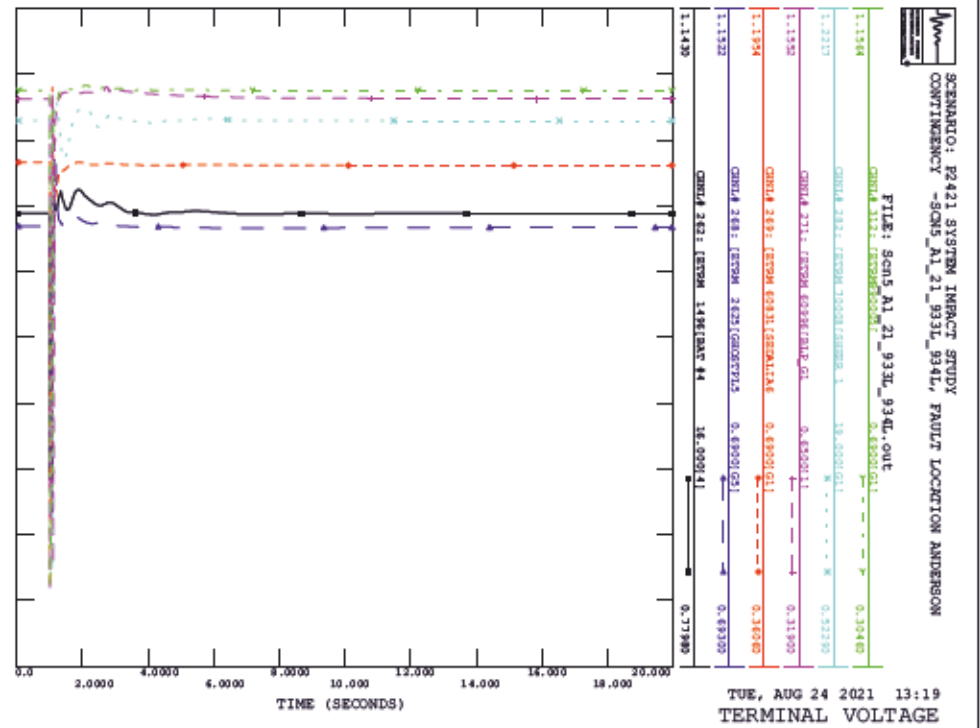
TUE, AUG 24 2021 13:19
BRANCH P (3)

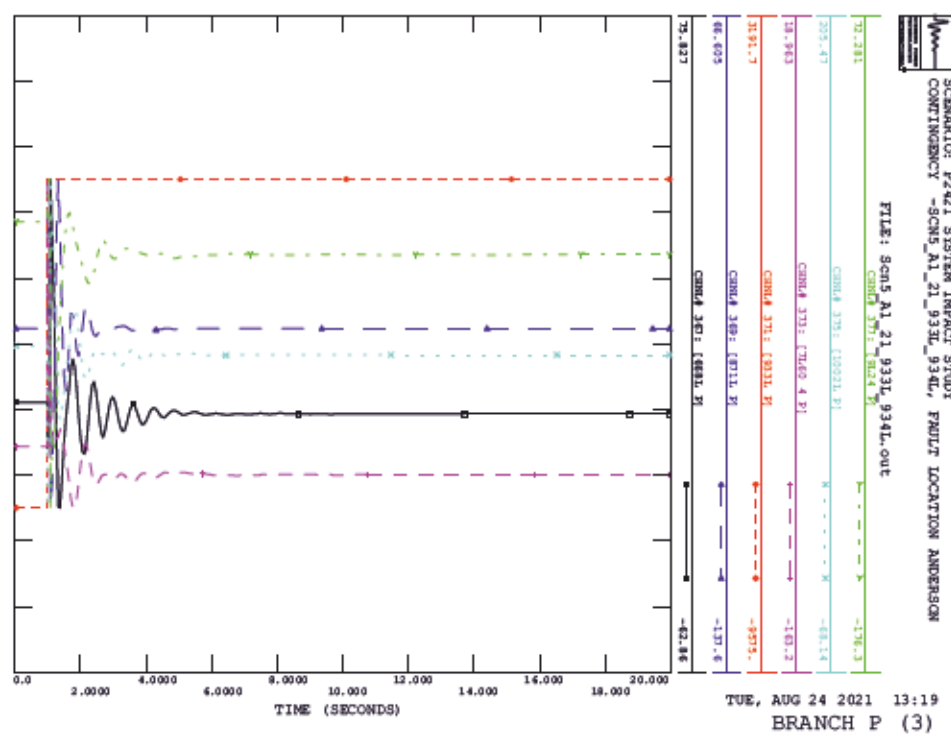
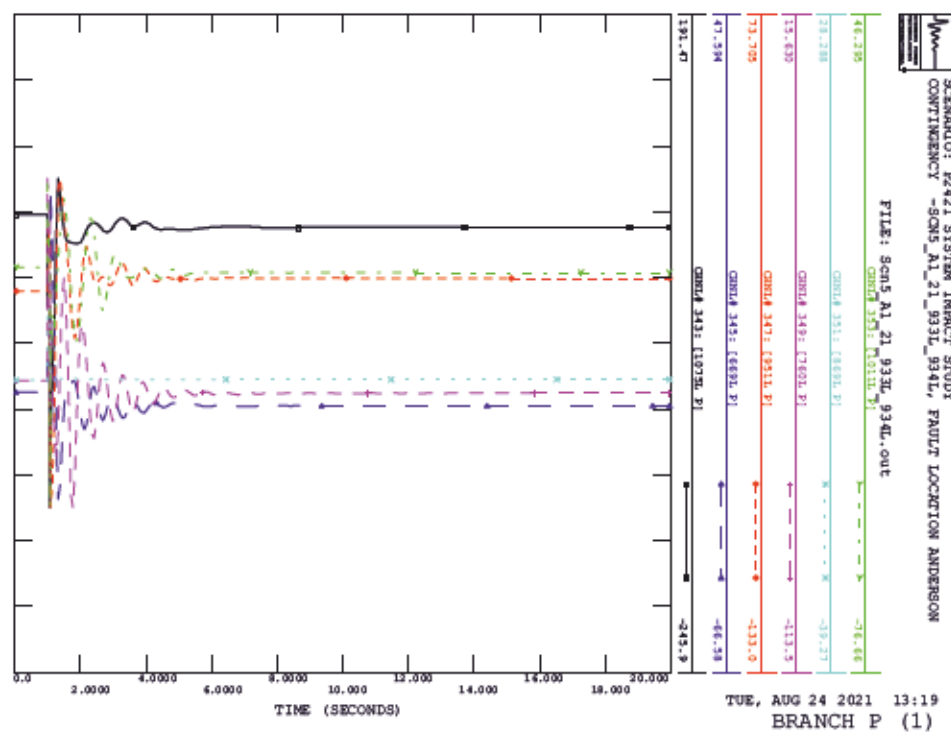
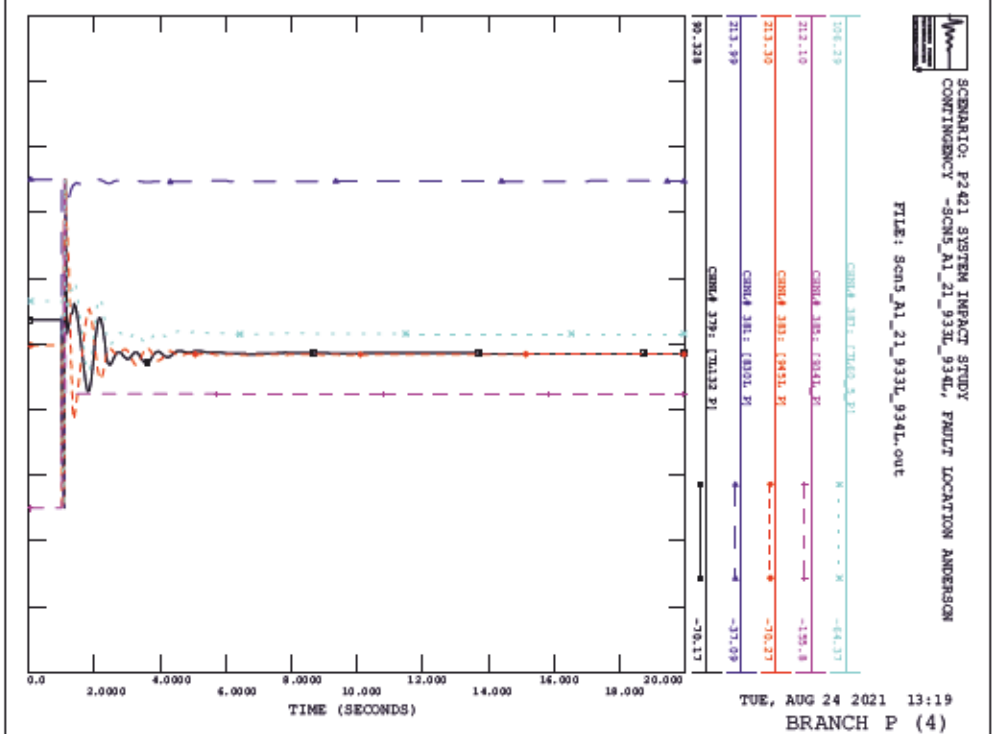
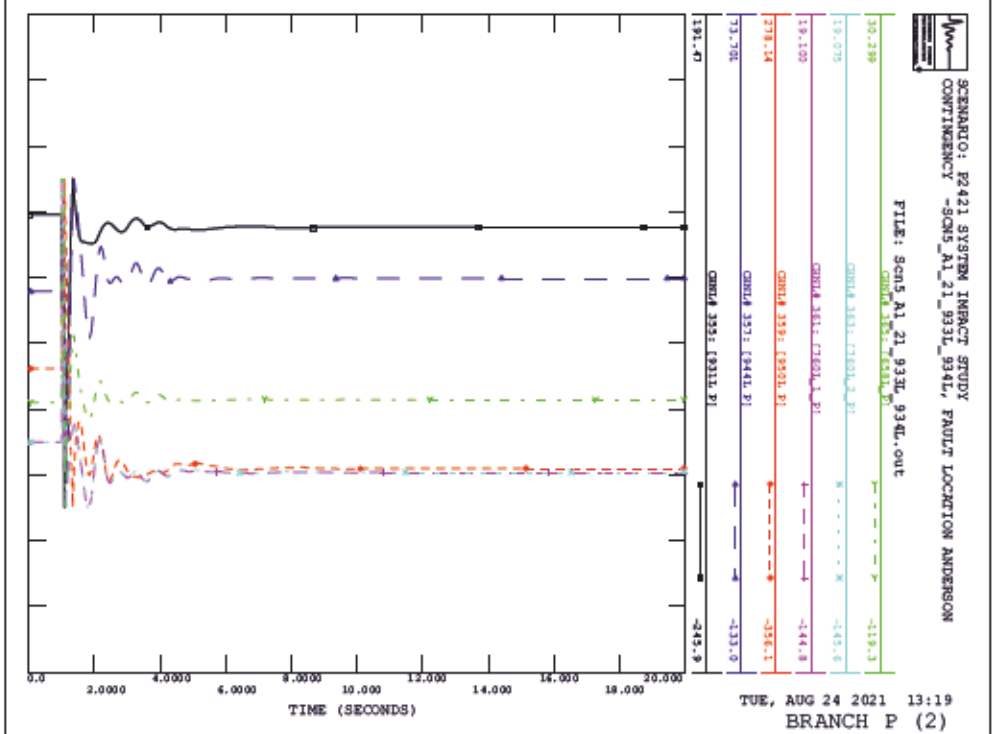
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_20_830L, FAULT LOCATION WONEIL 840S

FILE: Scm5_A1_20_830L.out



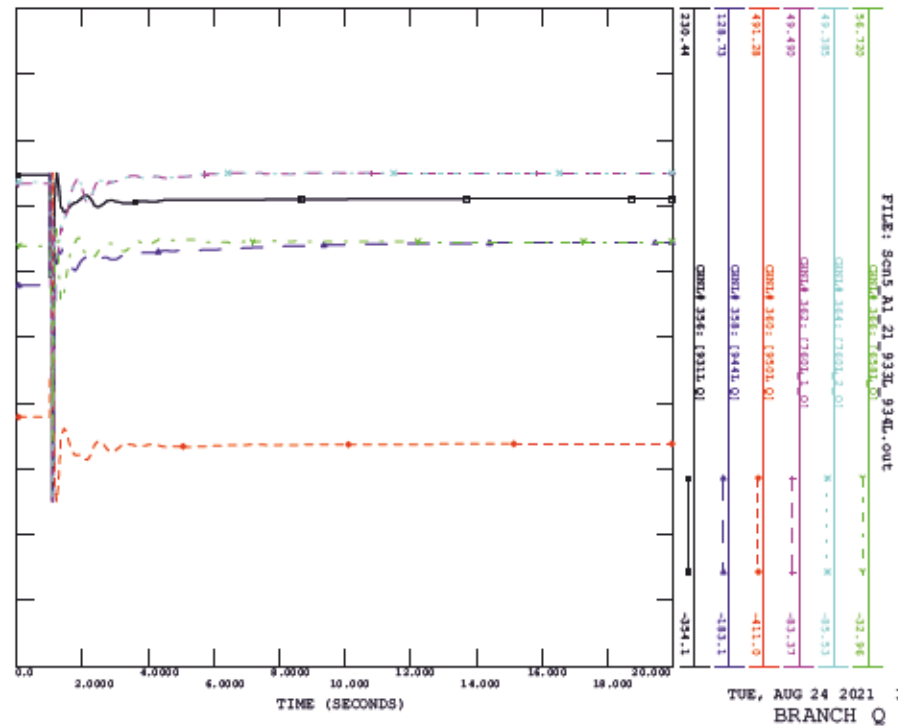
TUE, AUG 24 2021 13:19
BRANCH Q (1)





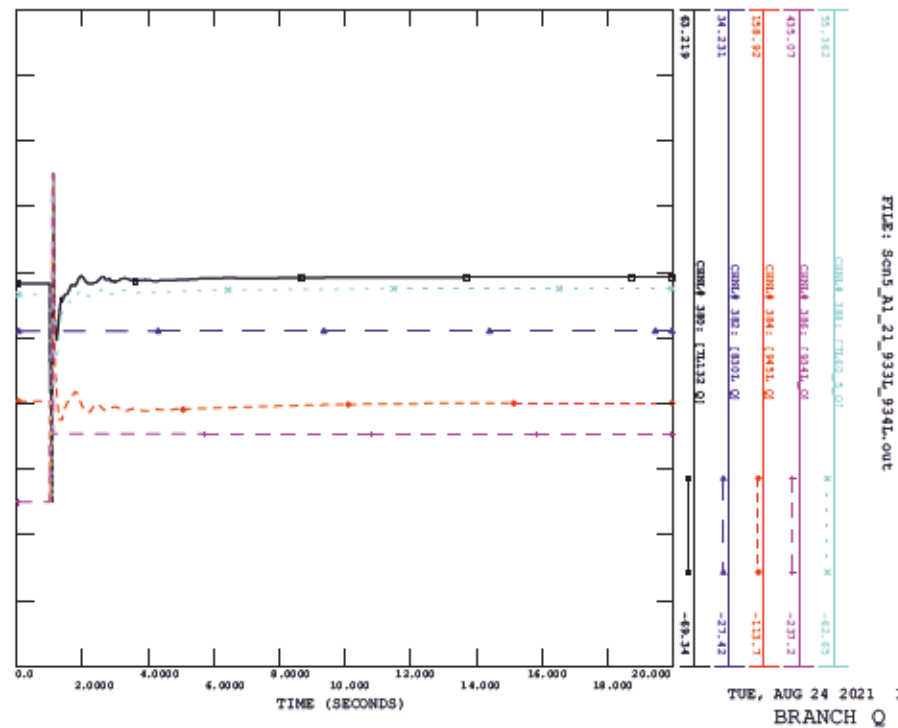
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_21_933L_934L, FAULT LOCATION ANDERSON

FILE: SCM5_A1_21_933L_934L.out



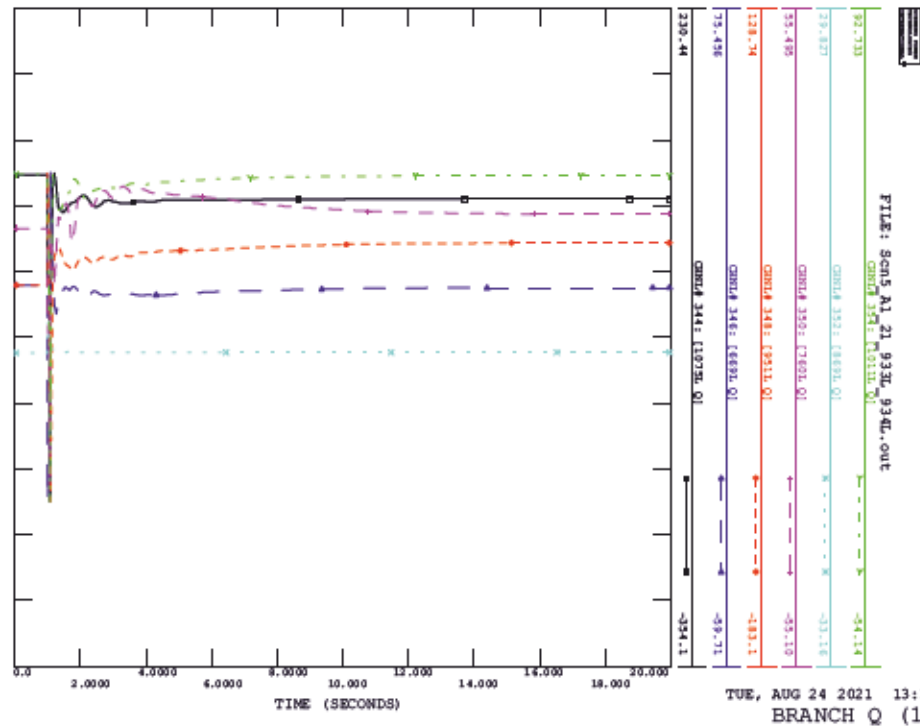
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CONTINGENCY -SCM5_A1_21_933L_934L, FAULT LOCATION ANDERSON

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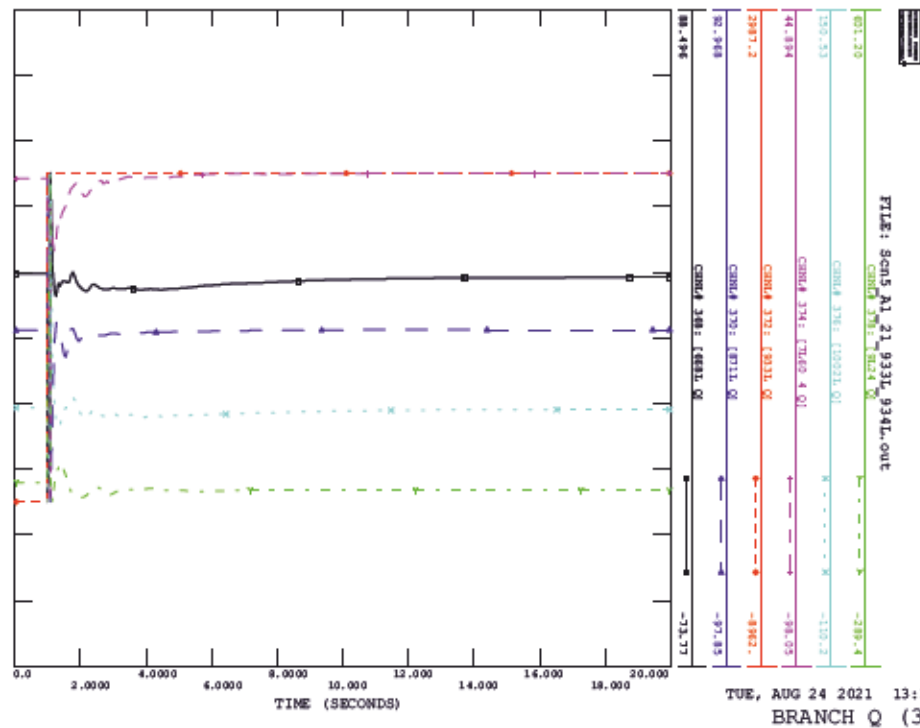
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CONTINGENCY -SCM5_A1_21_933L_934L, FAULT LOCATION ANDERSON

FILE: SCM5_A1_21_933L_934L.out



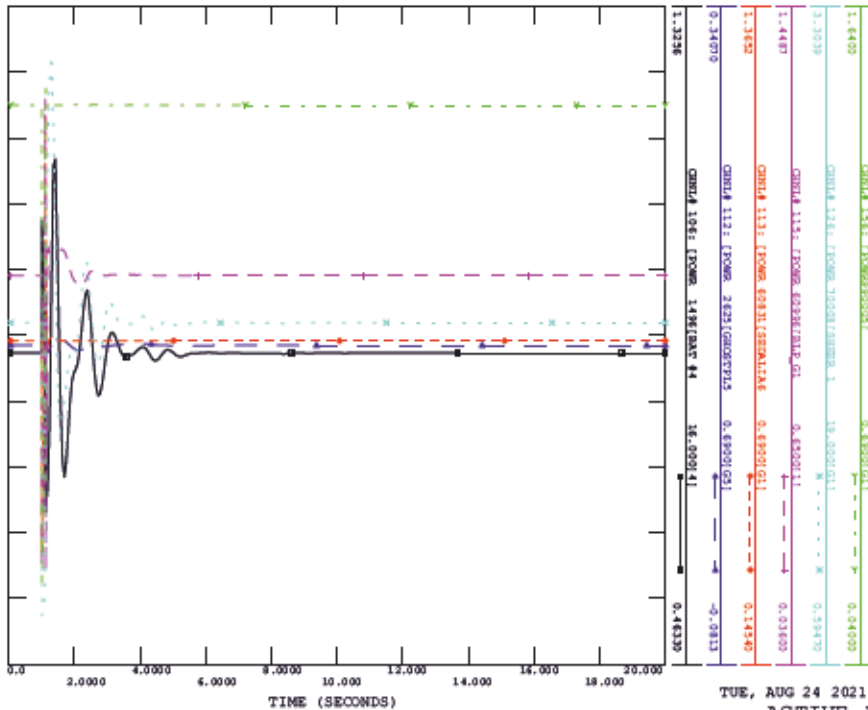
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CONTINGENCY -SCM5_A1_21_933L_934L, FAULT LOCATION ANDERSON

FILE: SCM5_A1_21_933L_934L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN

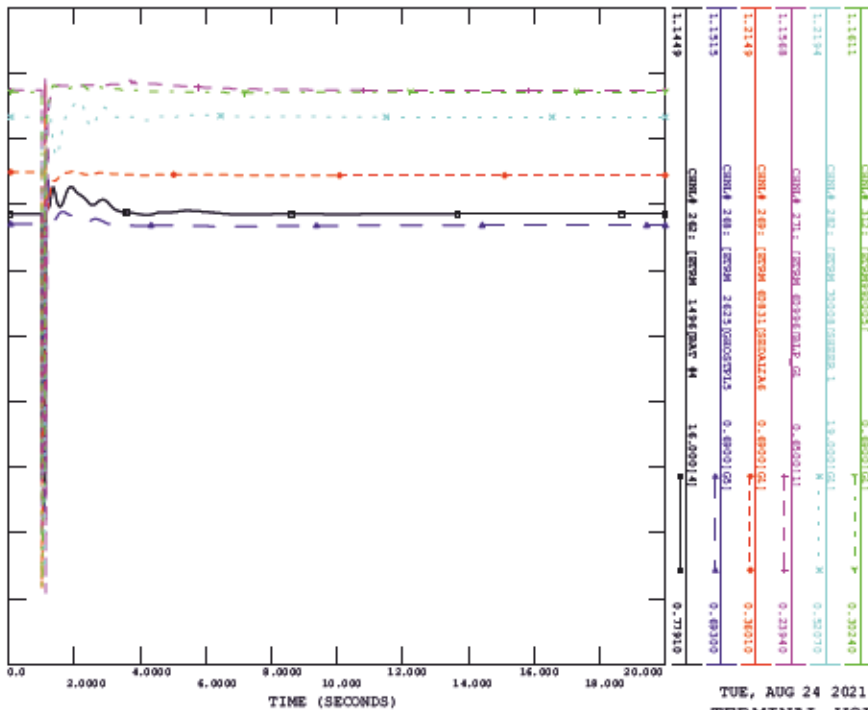
FILE: SCM5_A1_22_931L_1075L.OUT



TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN

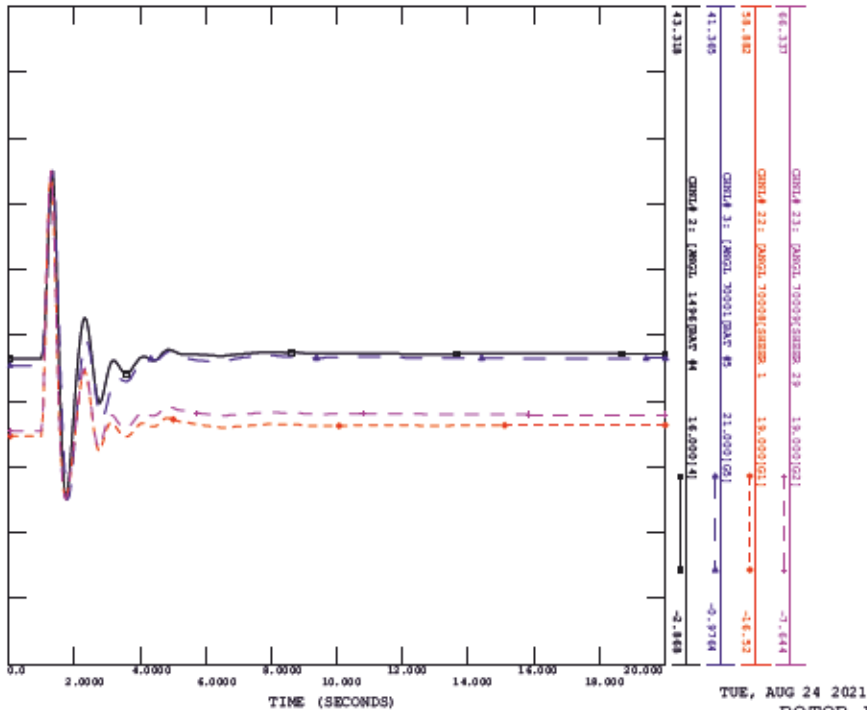
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TUE, AUG 24 2021 13:19
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN

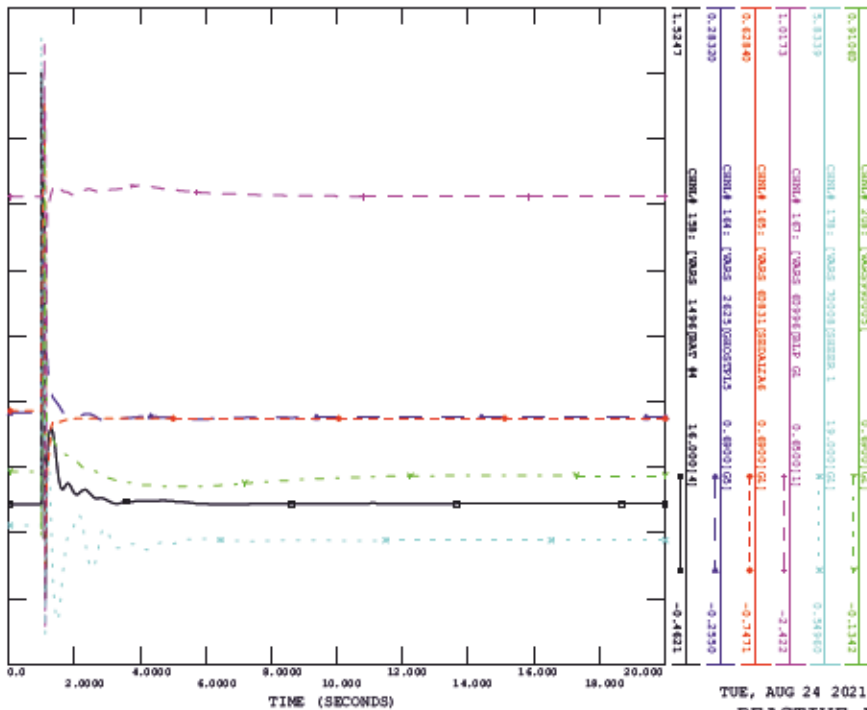
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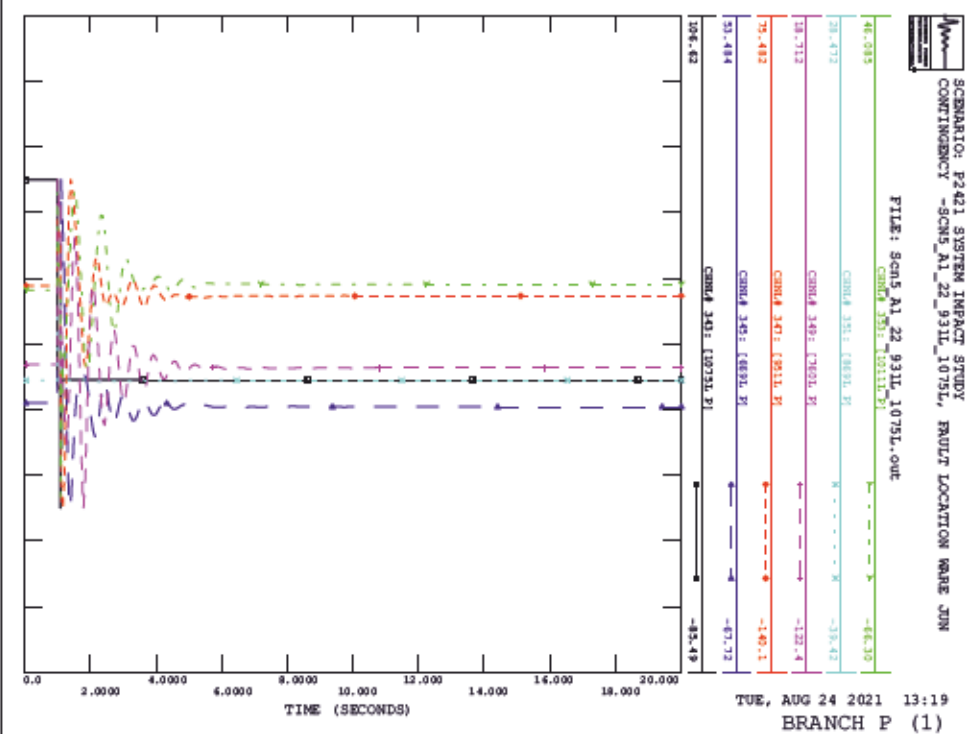
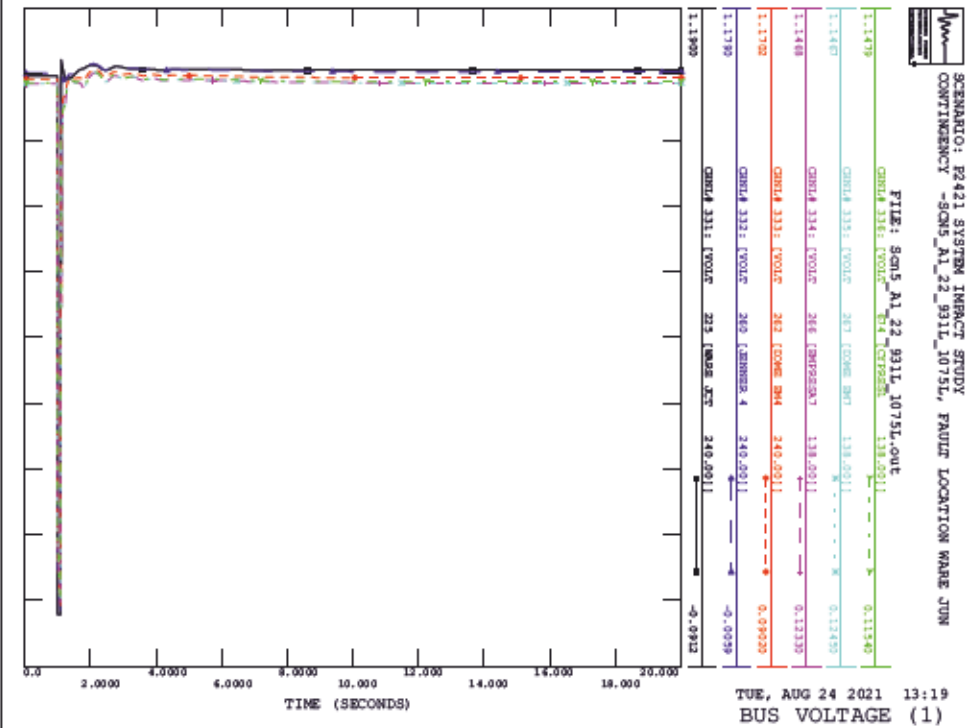
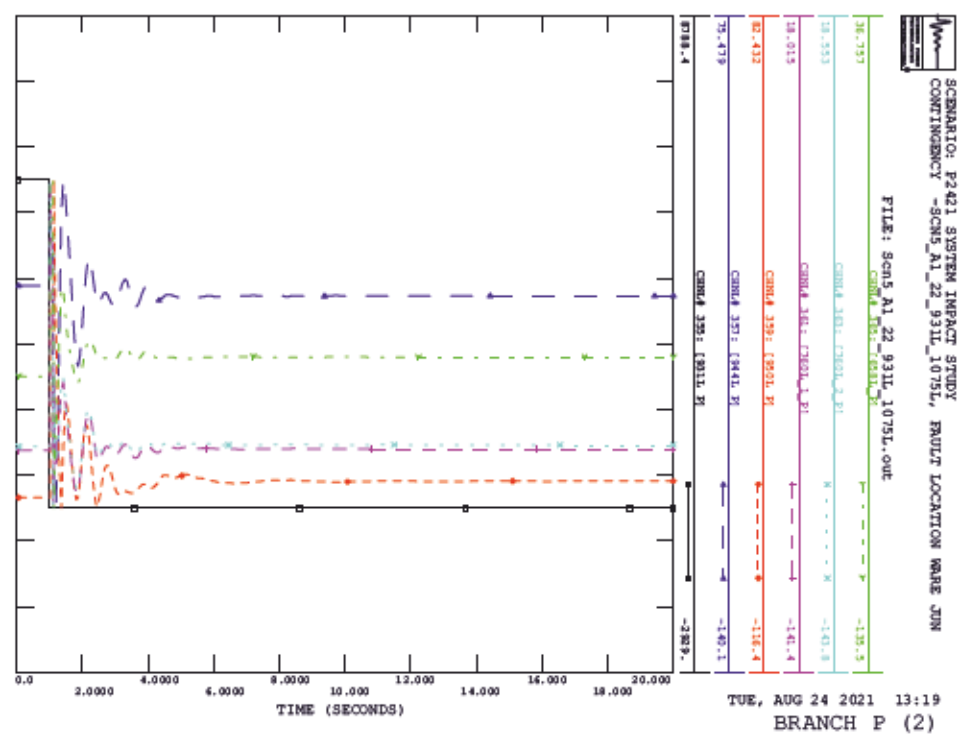
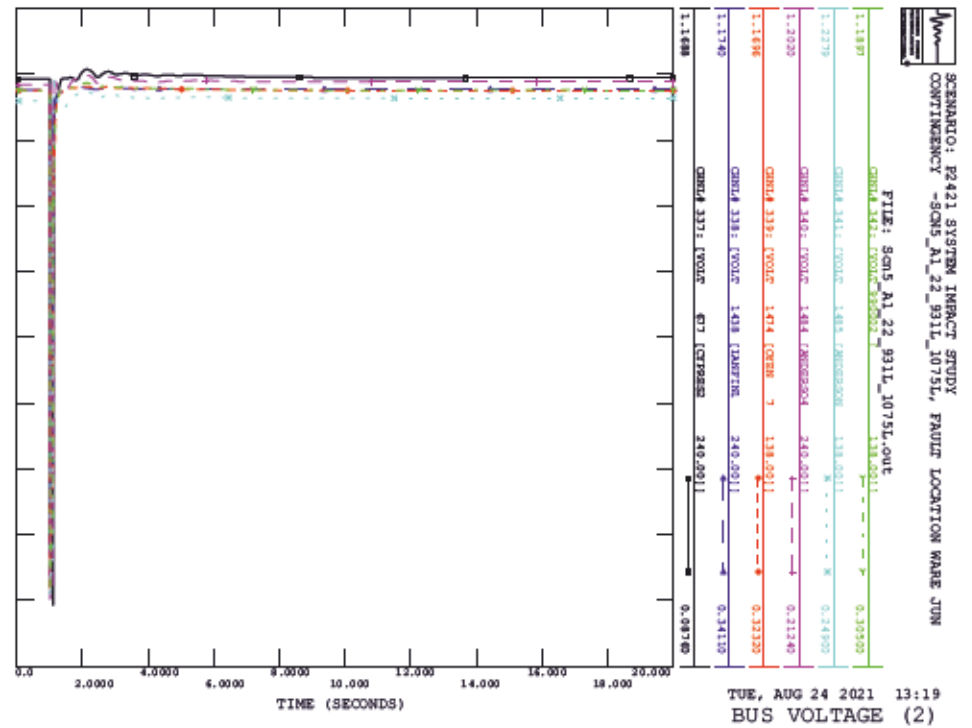
TUE, AUG 24 2021 13:19
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN

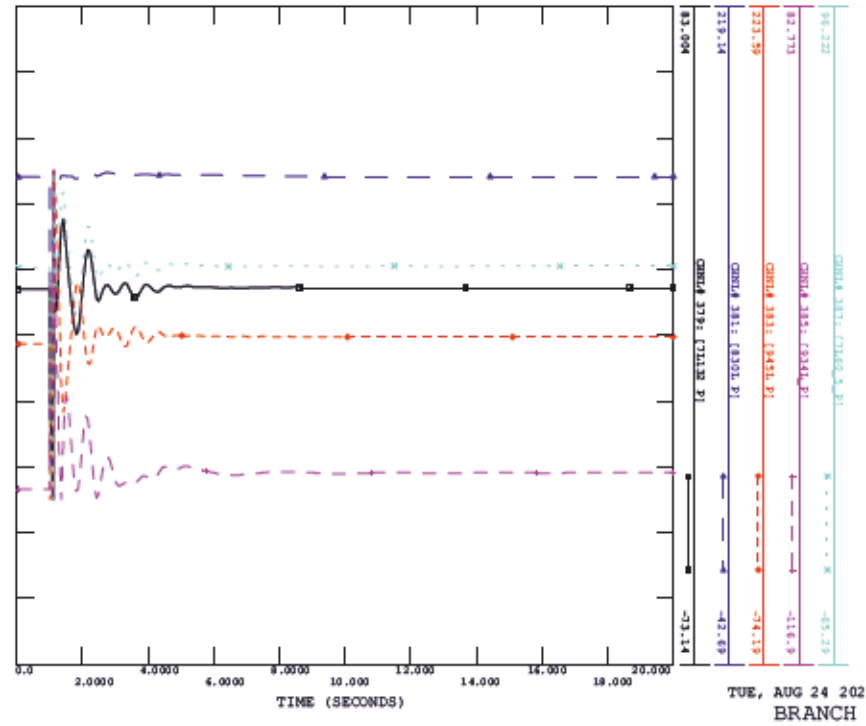
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TUE, AUG 24 2021 13:19
REACTIVE POWER

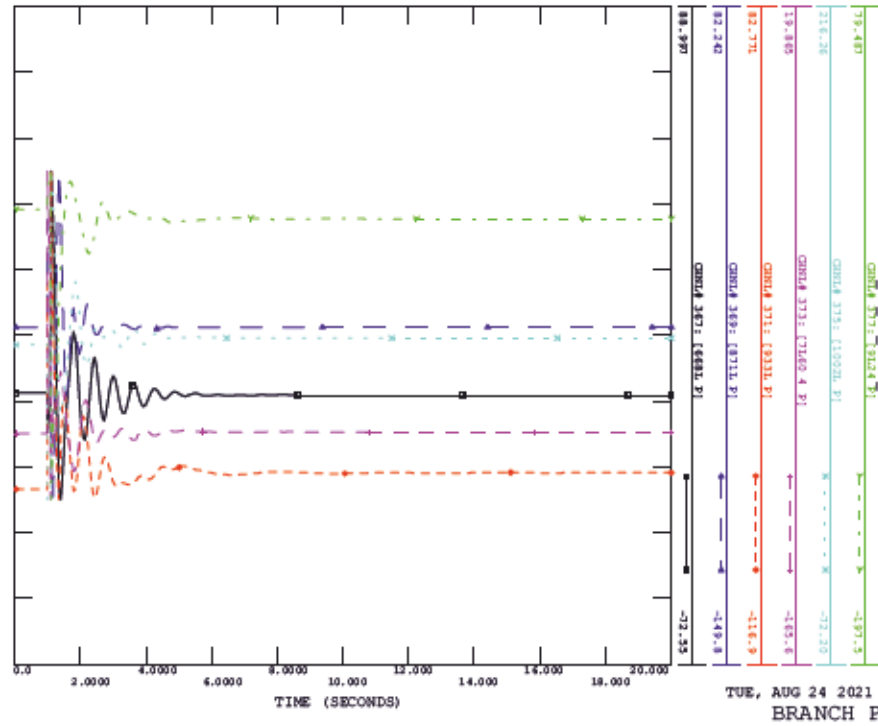


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN
FILE: SCM5_A1_22_931L_1075L.out



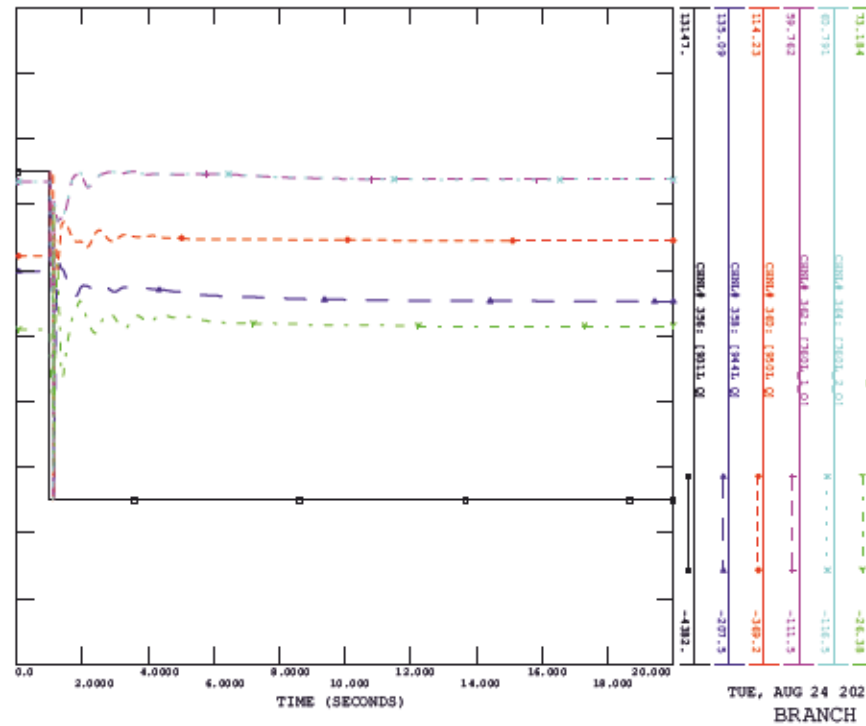
TUE, AUG 24 2021 13:19
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN
FILE: SCM5_A1_22_931L_1075L.out



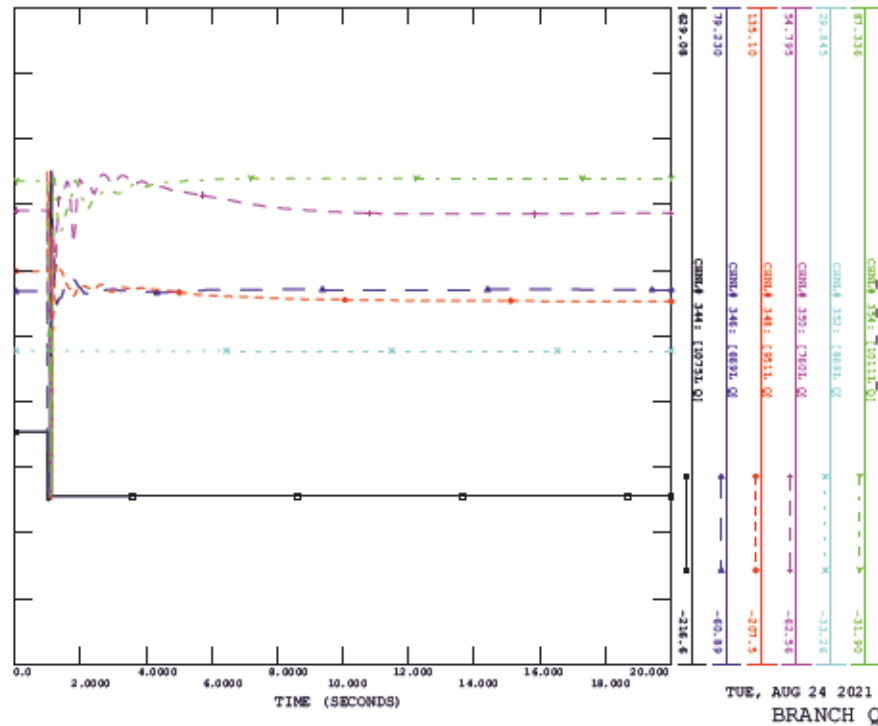
TUE, AUG 24 2021 13:19
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN
FILE: SCM5_A1_22_931L_1075L.out



TUE, AUG 24 2021 13:19
BRANCH Q (2)

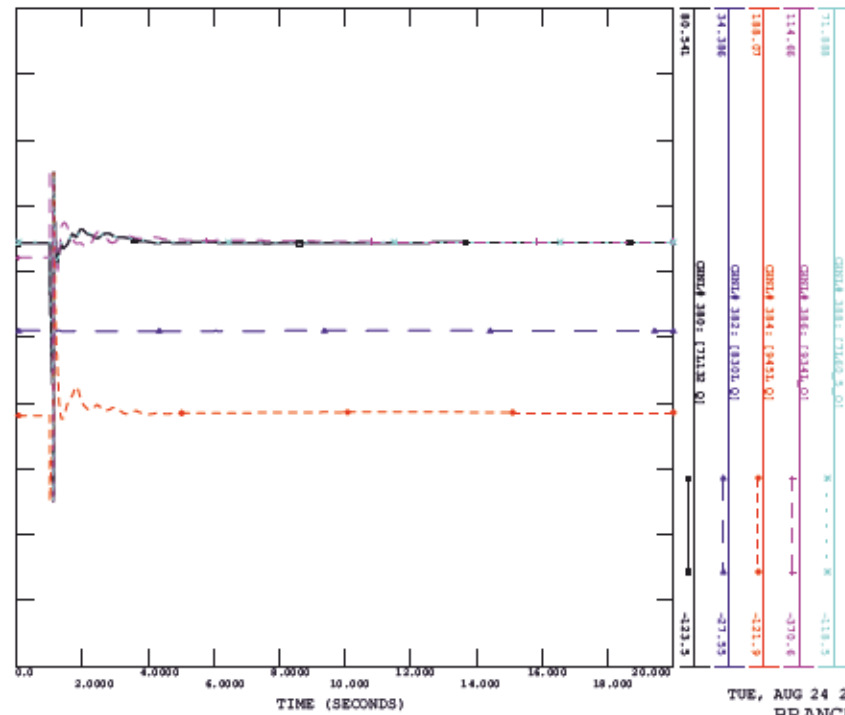
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN
FILE: SCM5_A1_22_931L_1075L.out



TUE, AUG 24 2021 13:19
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN

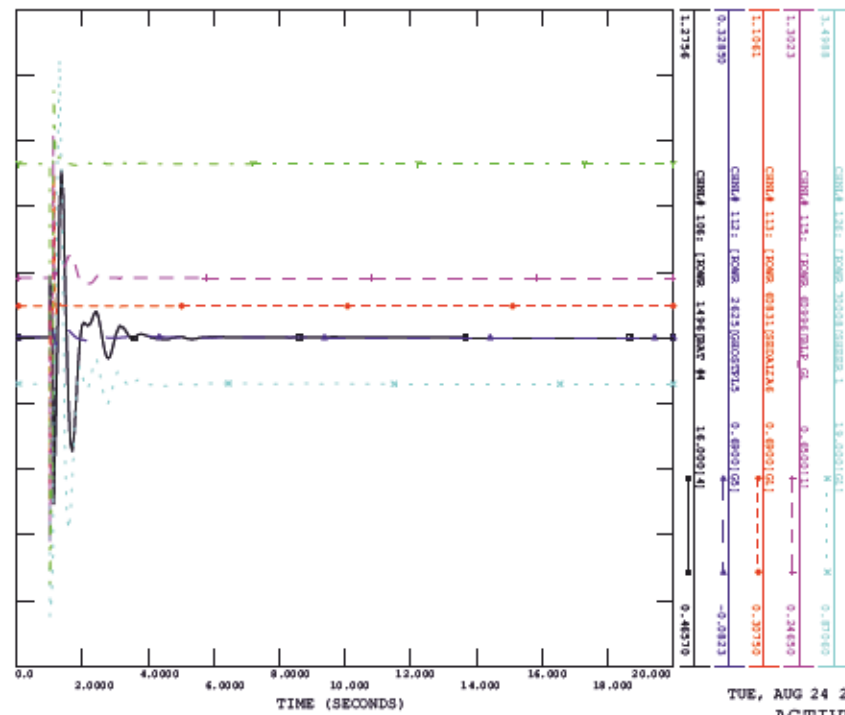
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TUE, AUG 24 2021 13:19
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_23_944L_951L, FAULT LOCATION JENNER 27

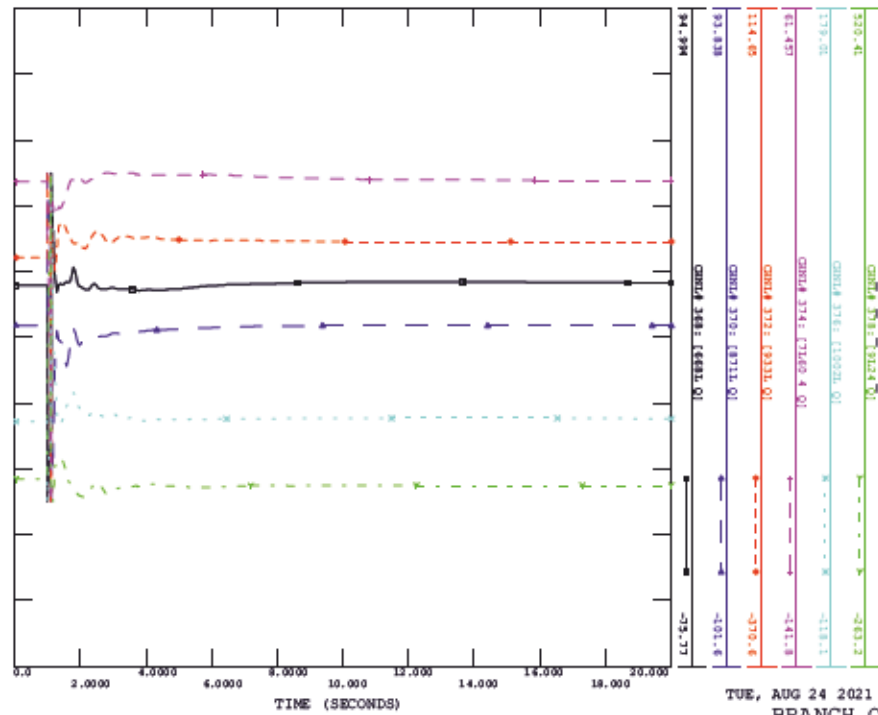
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TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_22_931L_1075L, FAULT LOCATION WARE JIN

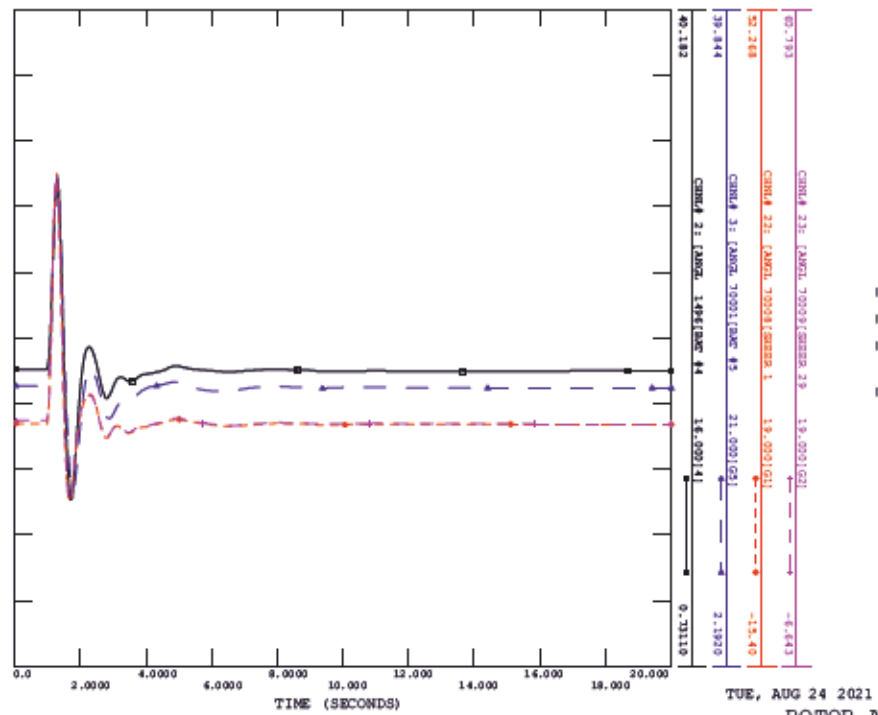
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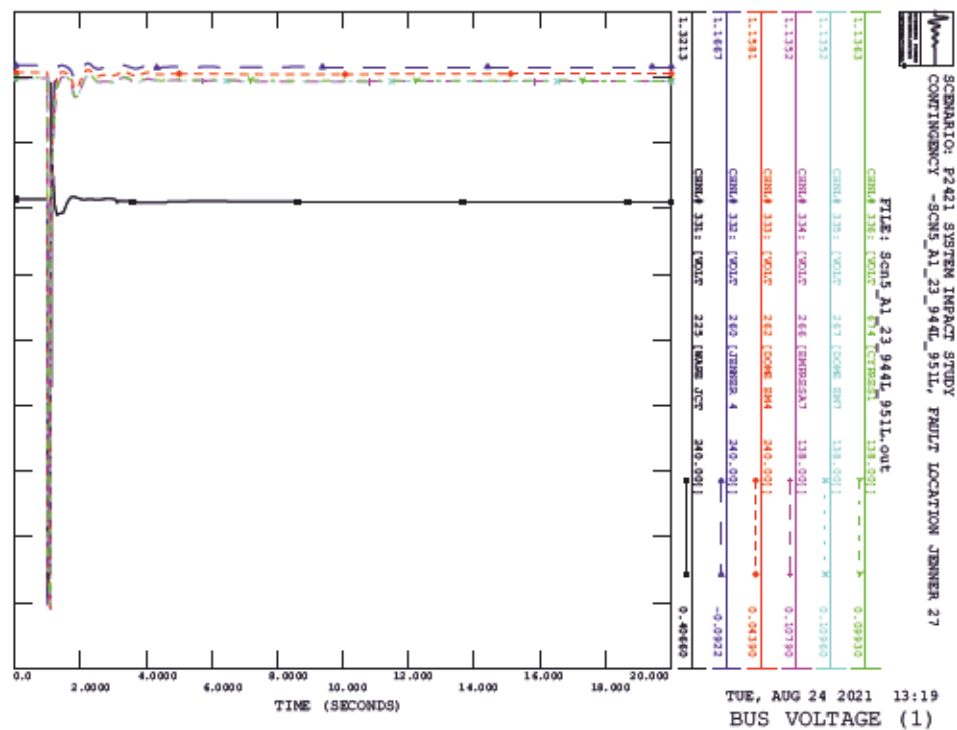
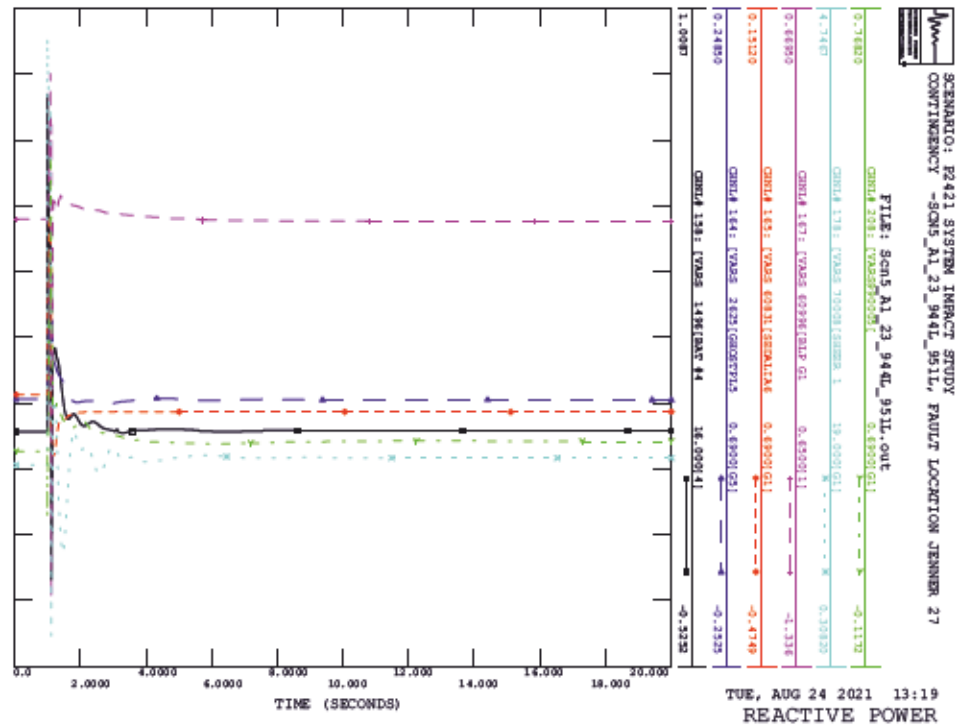
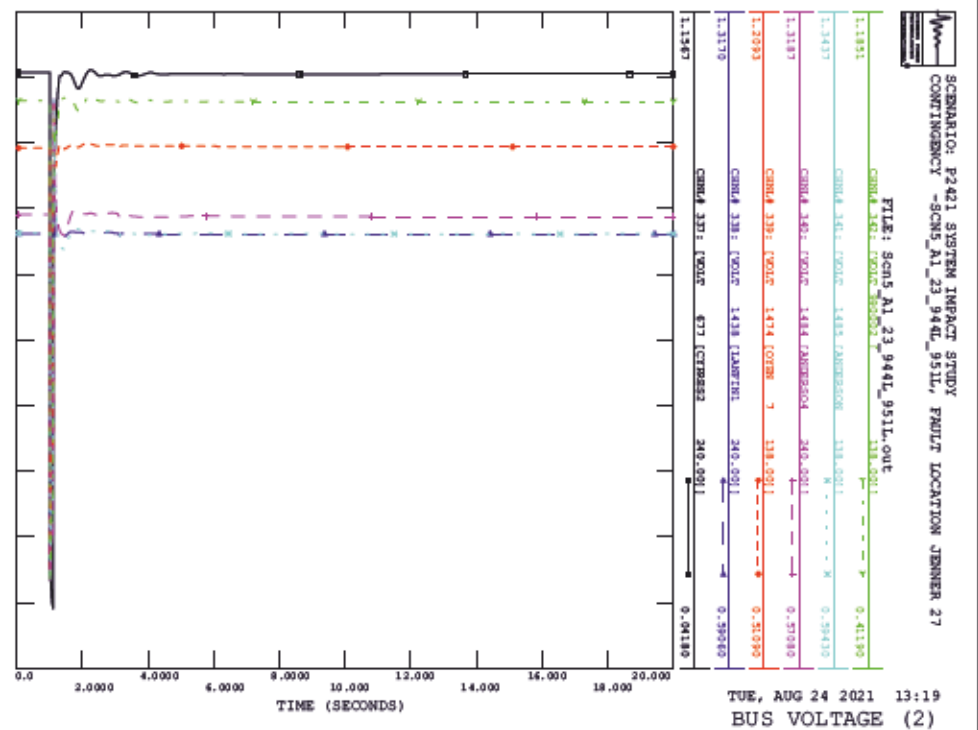
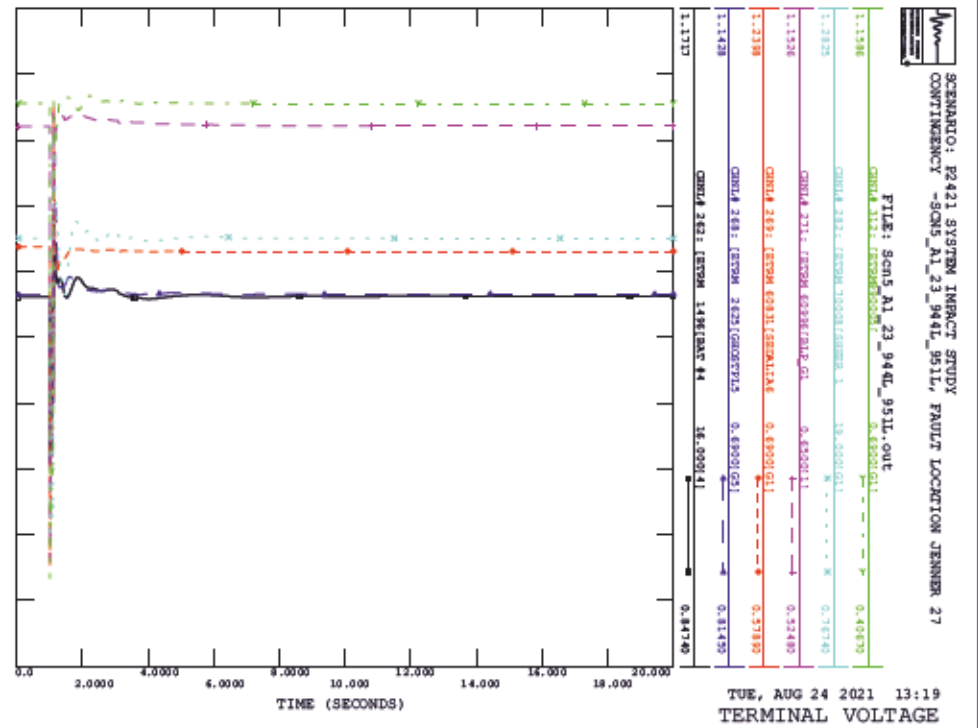
TUE, AUG 24 2021 13:19
BRANCH Q (3)

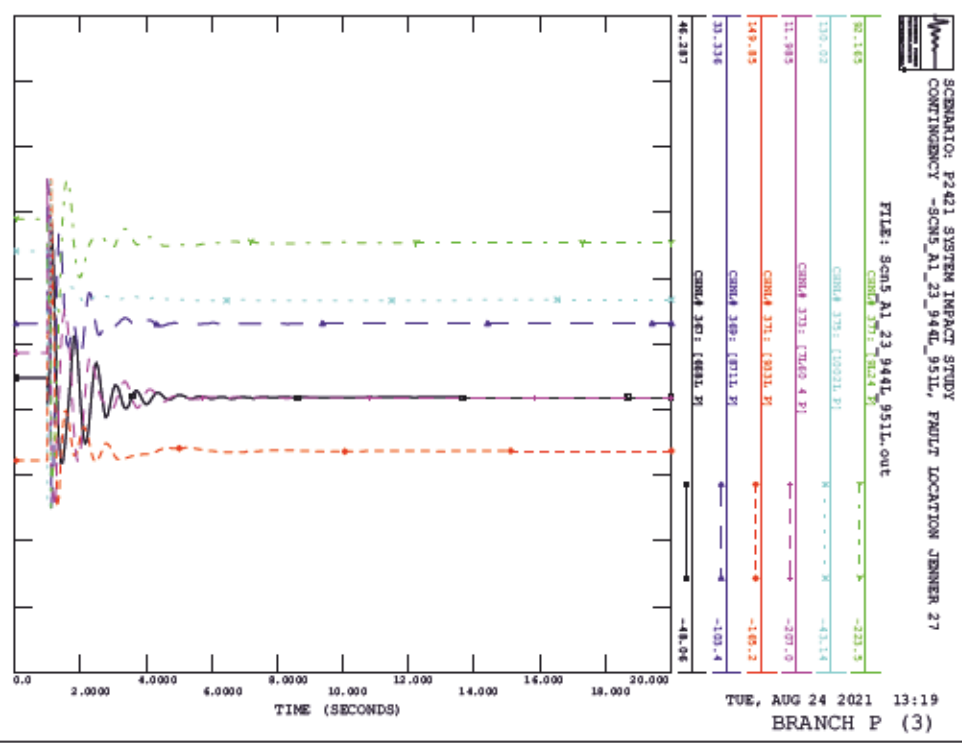
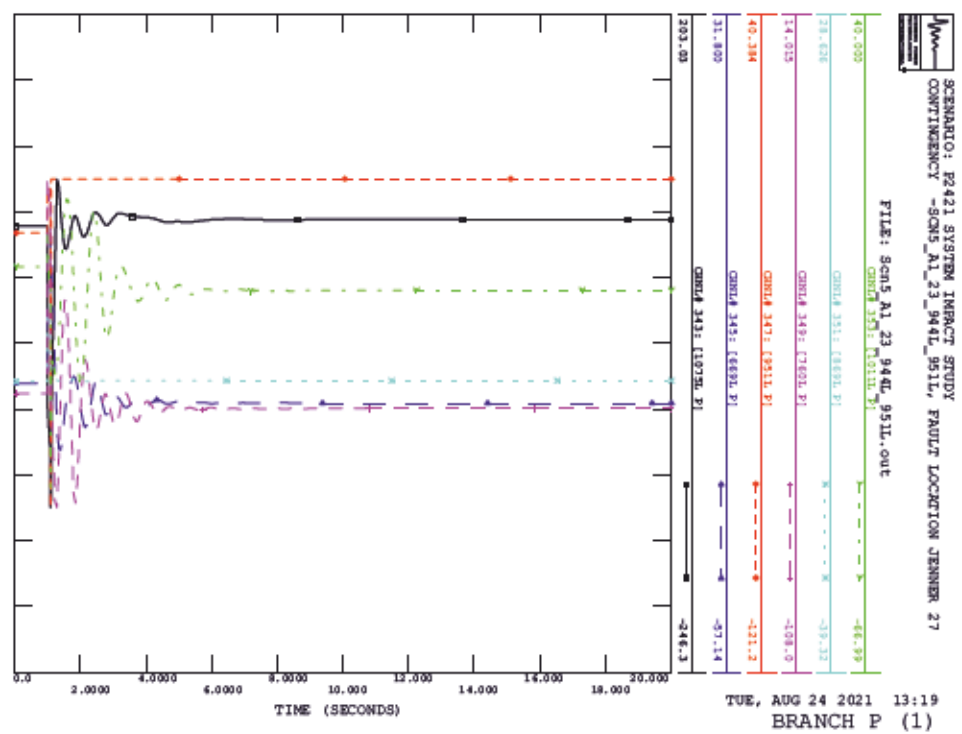
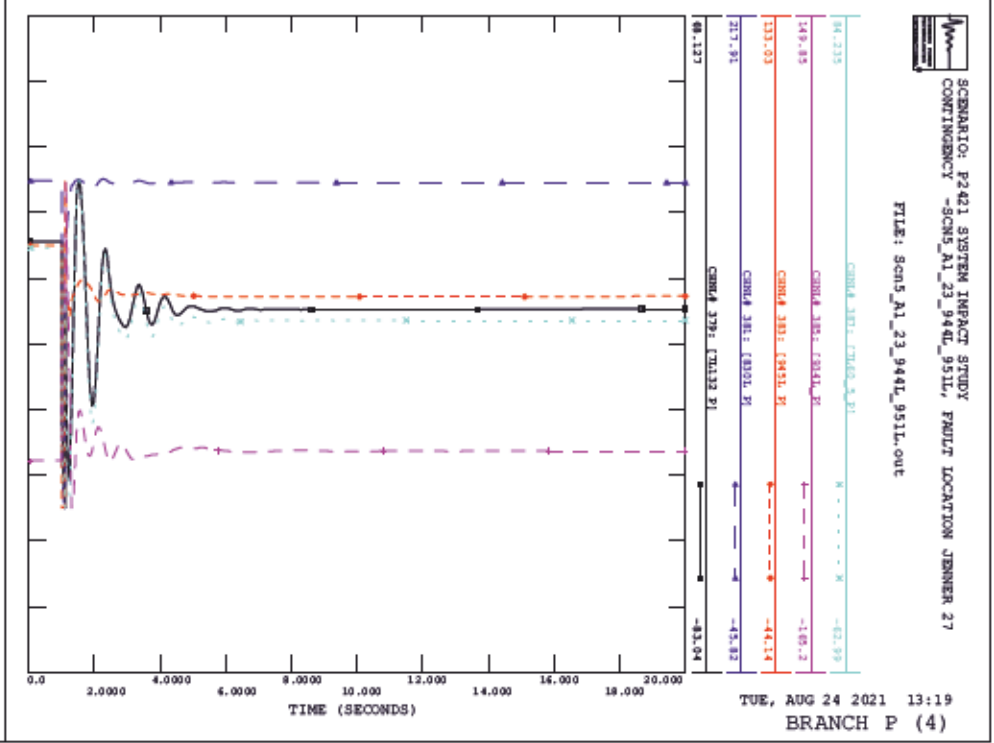
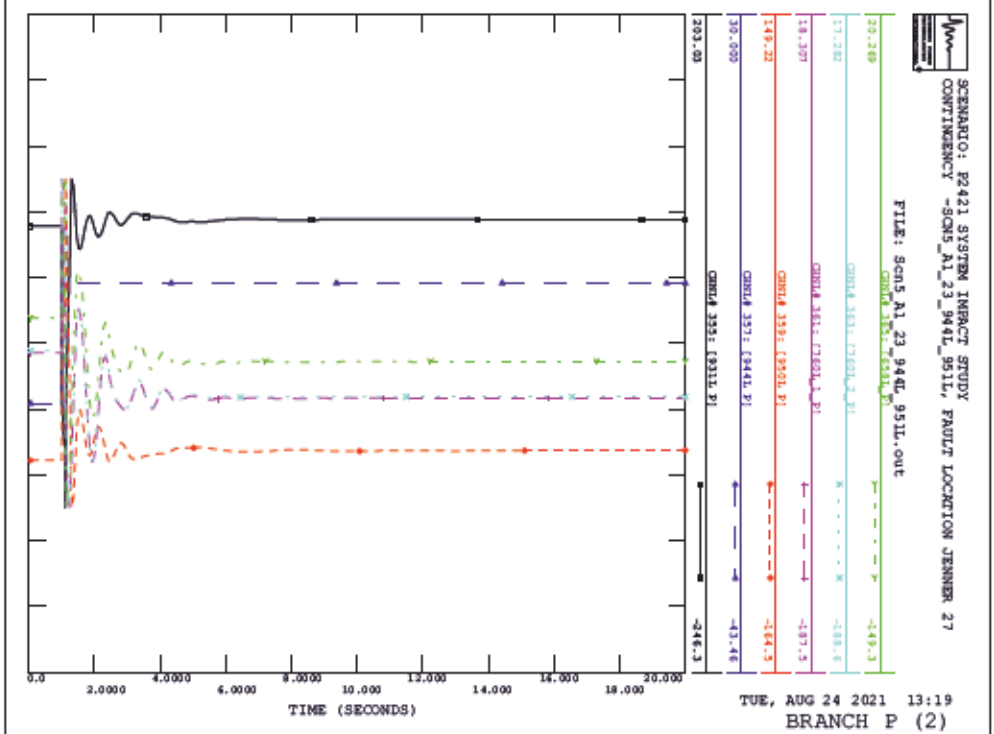
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_23_944L_951L, FAULT LOCATION JENNER 27

FILE: SCM5_A1_23_944L_951L.out

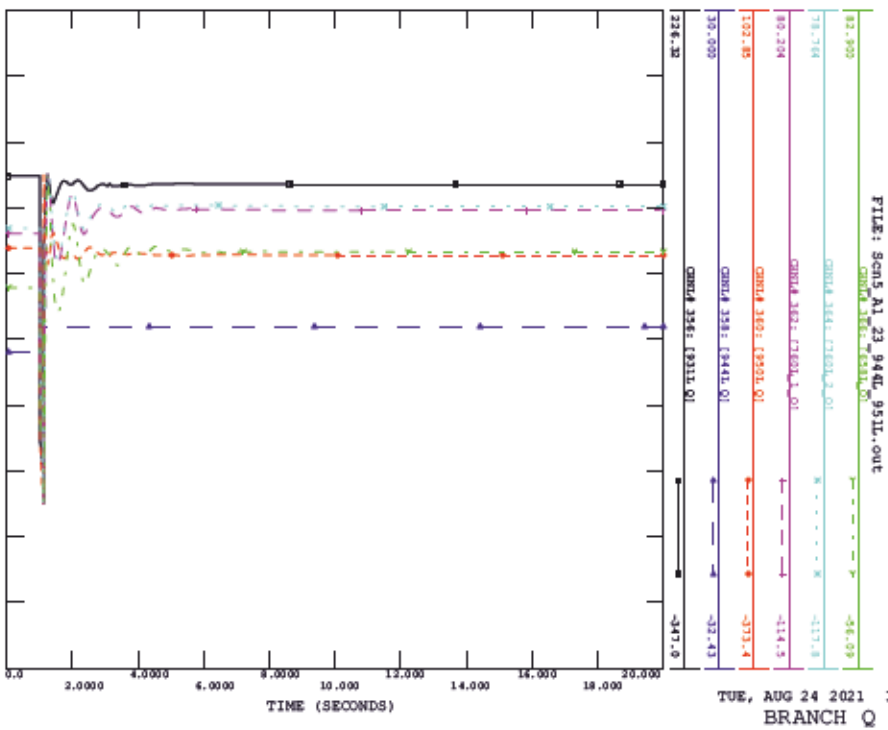


TUE, AUG 24 2021 13:19
ROTOR ANGLE

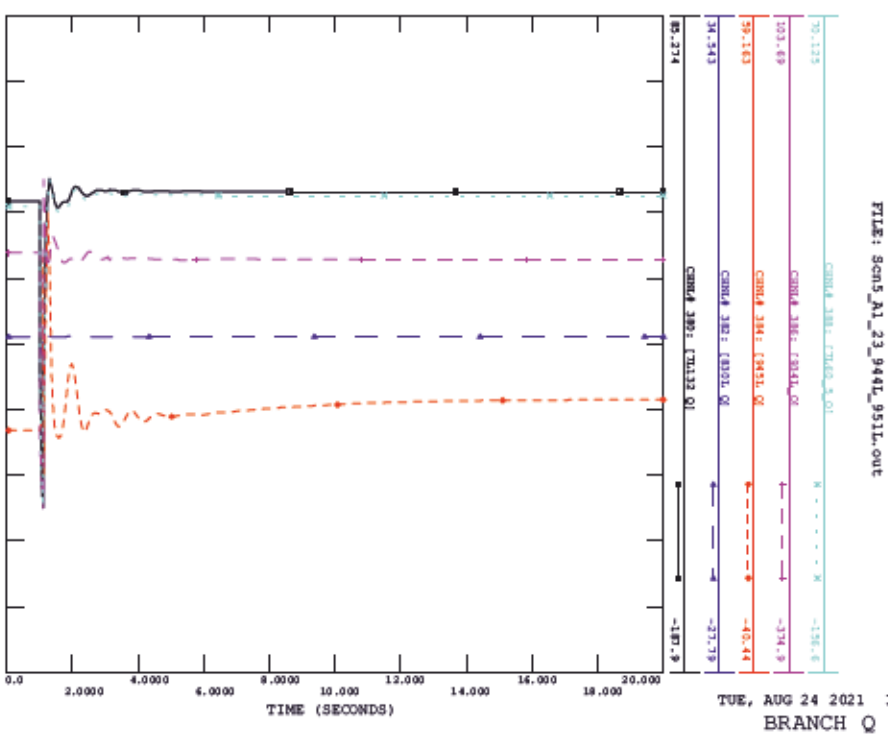




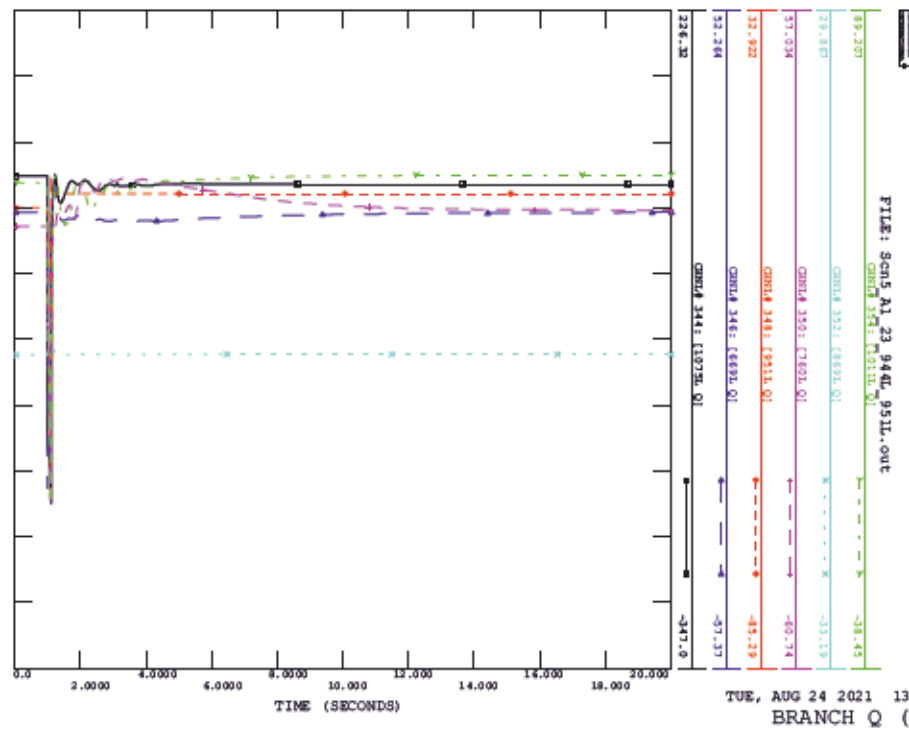
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_23_944L_951L, FAULT LOCATION JENNER 27



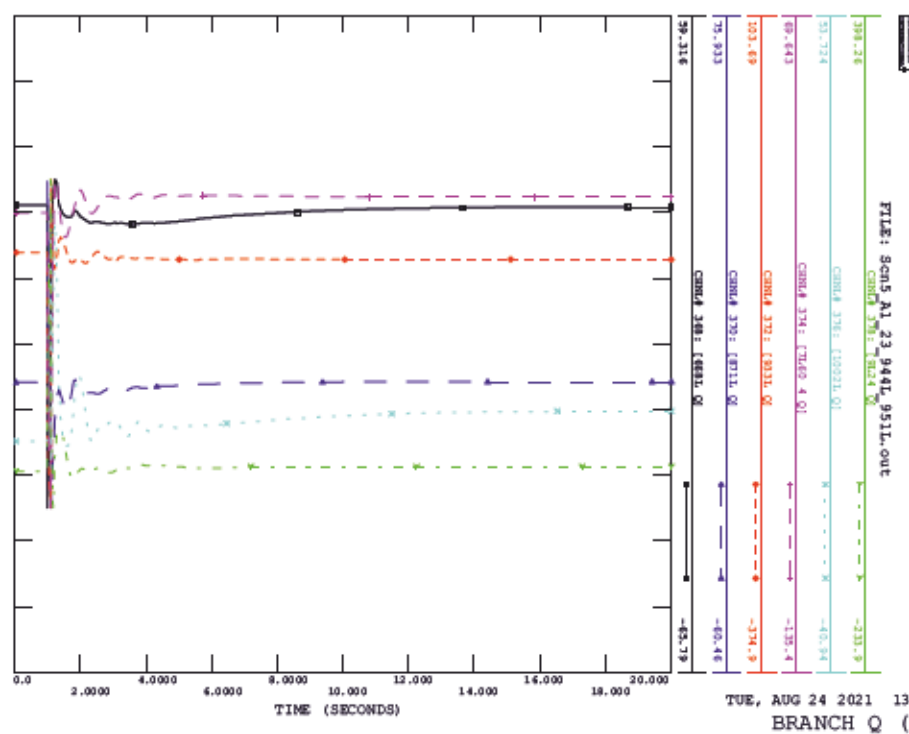
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_23_944L_951L, FAULT LOCATION JENNER 27



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_23_944L_951L, FAULT LOCATION JENNER 27

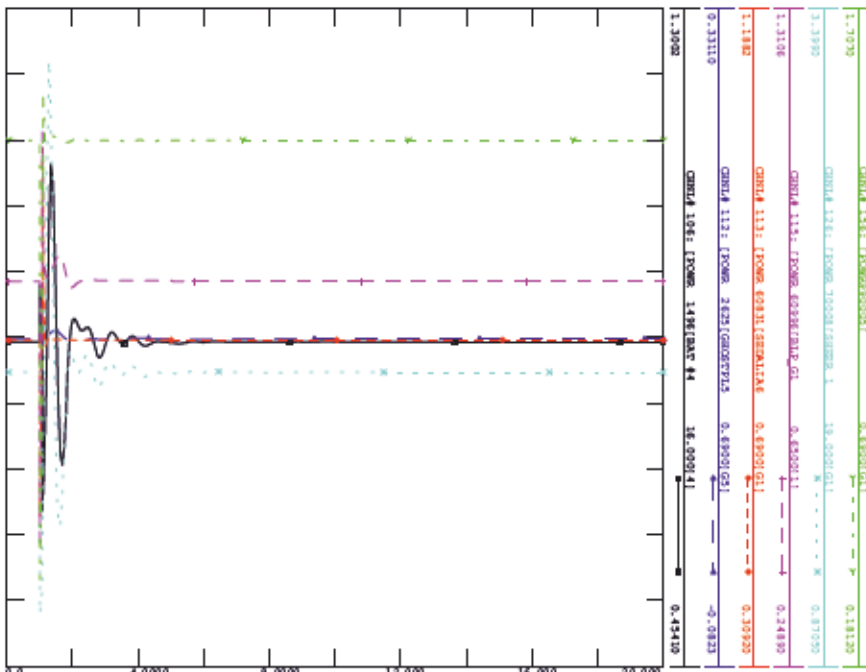


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_23_944L_951L, FAULT LOCATION JENNER 27



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2

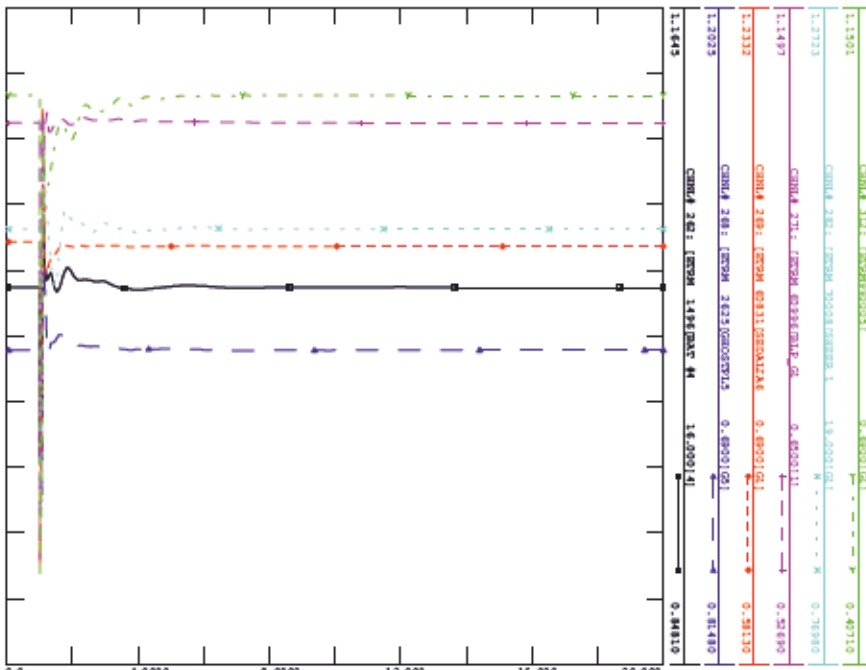
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TUE, AUG 24 2021 13:19
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2

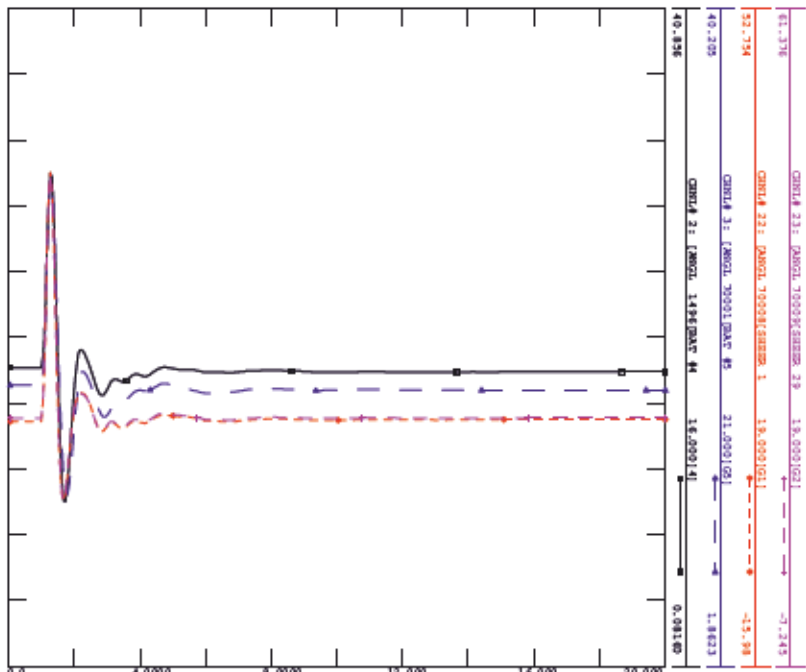
FILE: SCM5_A1_24_1002L_945L.out



TUE, AUG 24 2021 13:19
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2

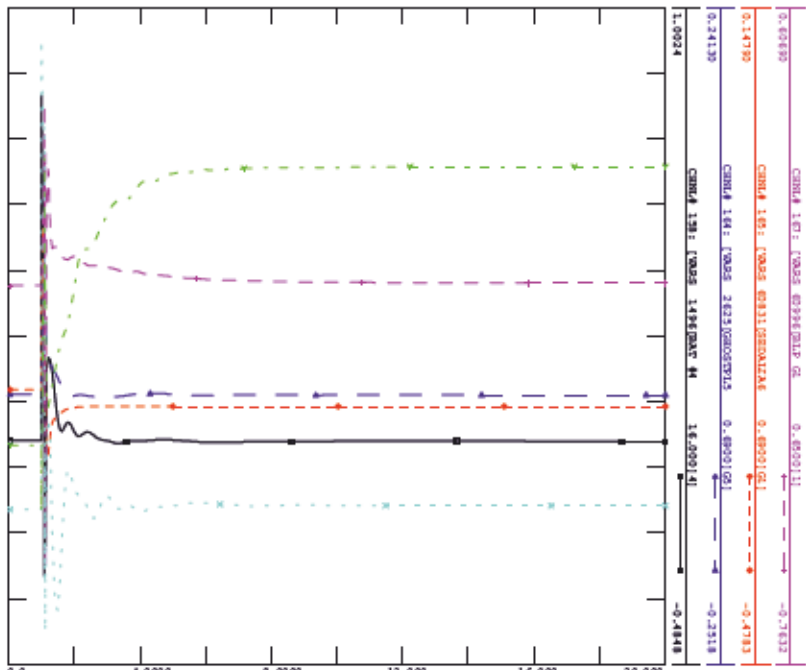
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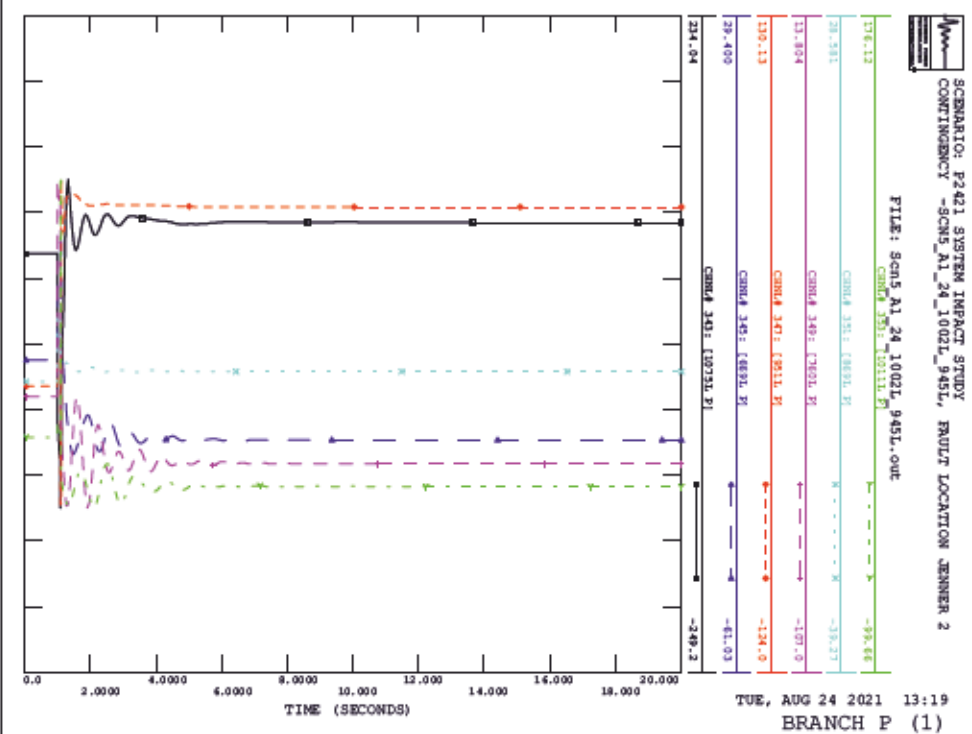
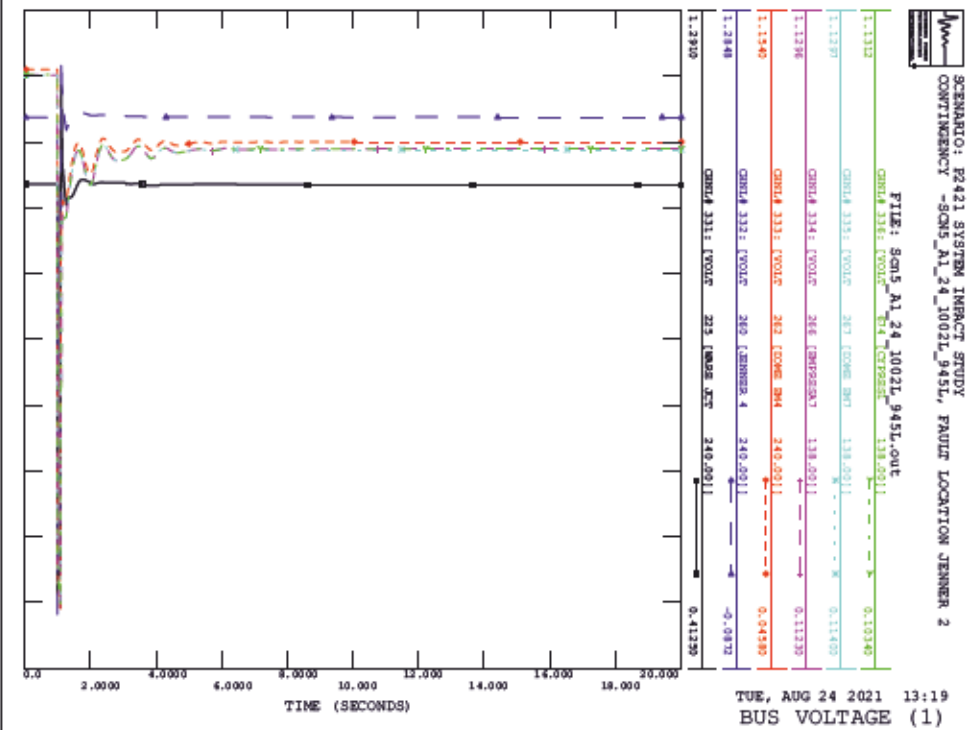
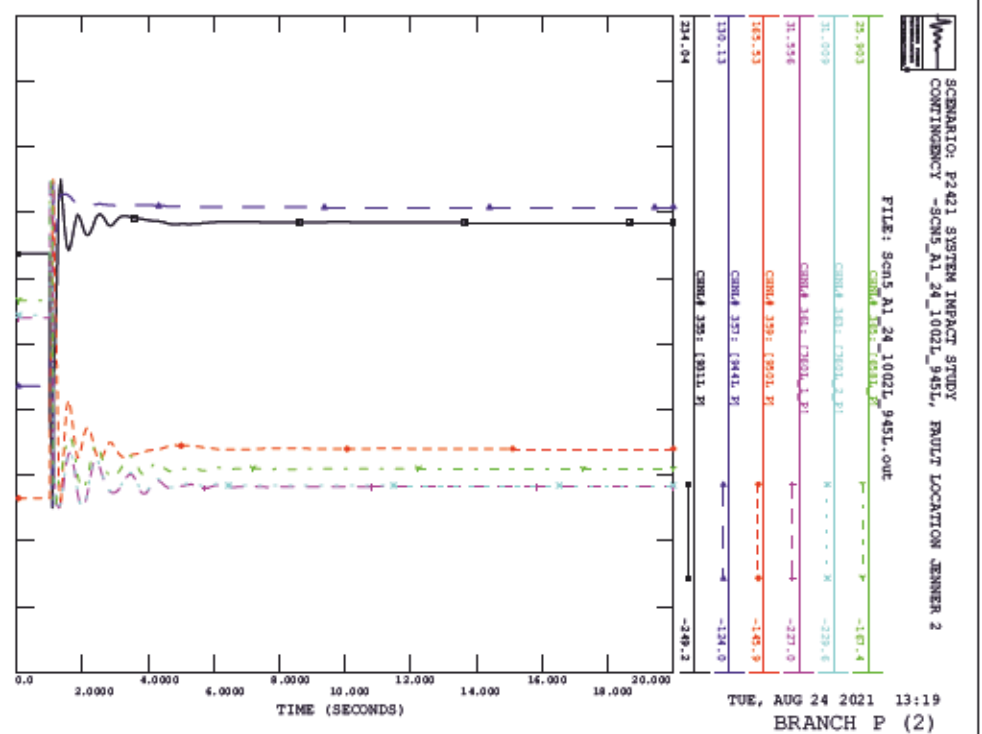
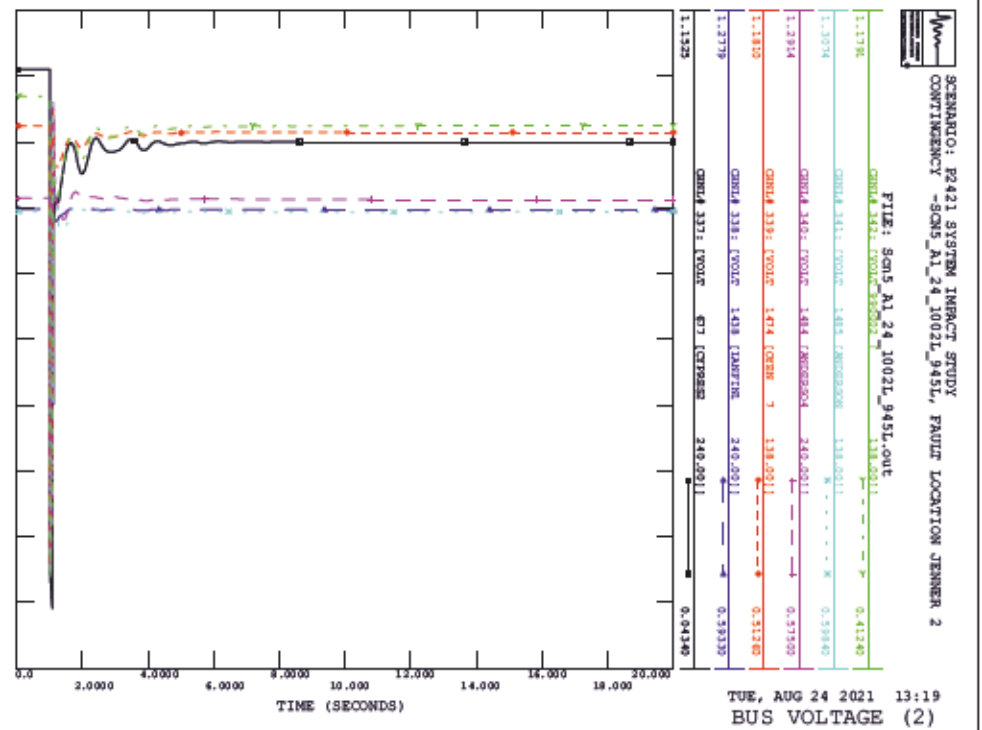
TUE, AUG 24 2021 13:19
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2

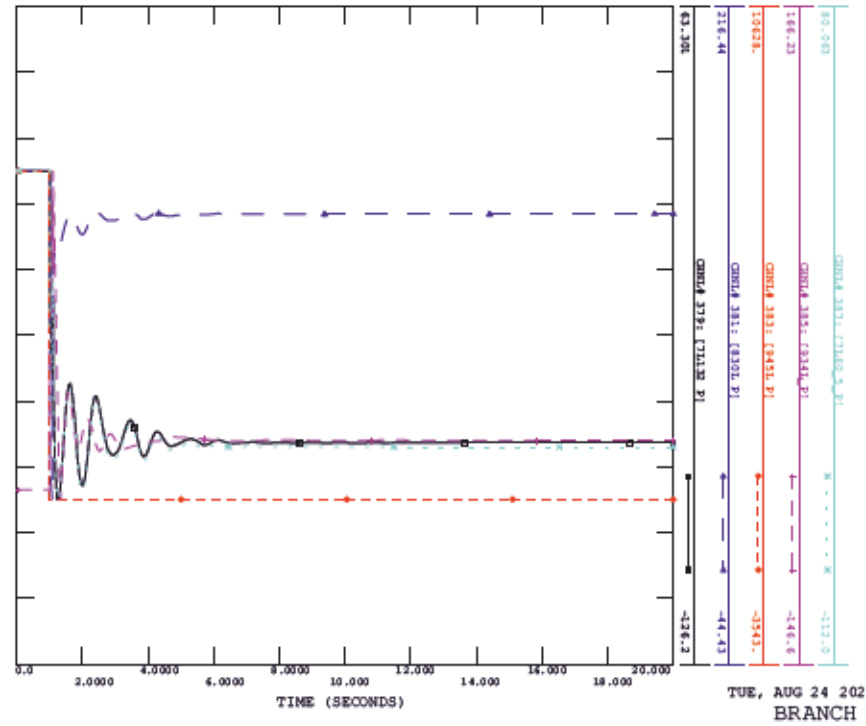
FILE: SCM5_A1_24_1002L_945L.out



TUE, AUG 24 2021 13:19
REACTIVE POWER

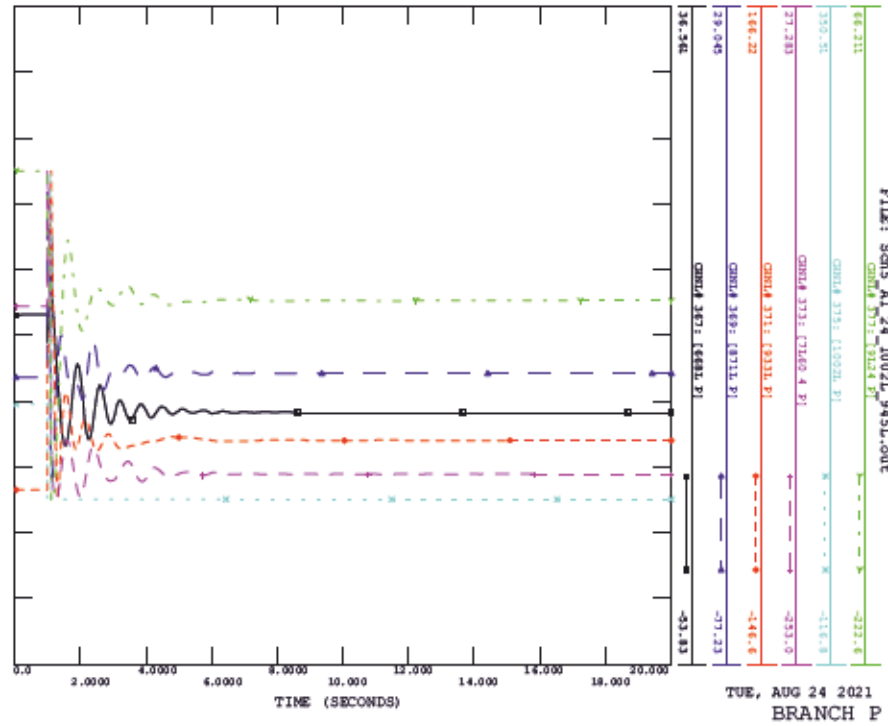


SCENARIO: P2421 SYSTEM INTERACT STUDY
 CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2
 FILE: SCM5_A1_24_1002L_945L.out



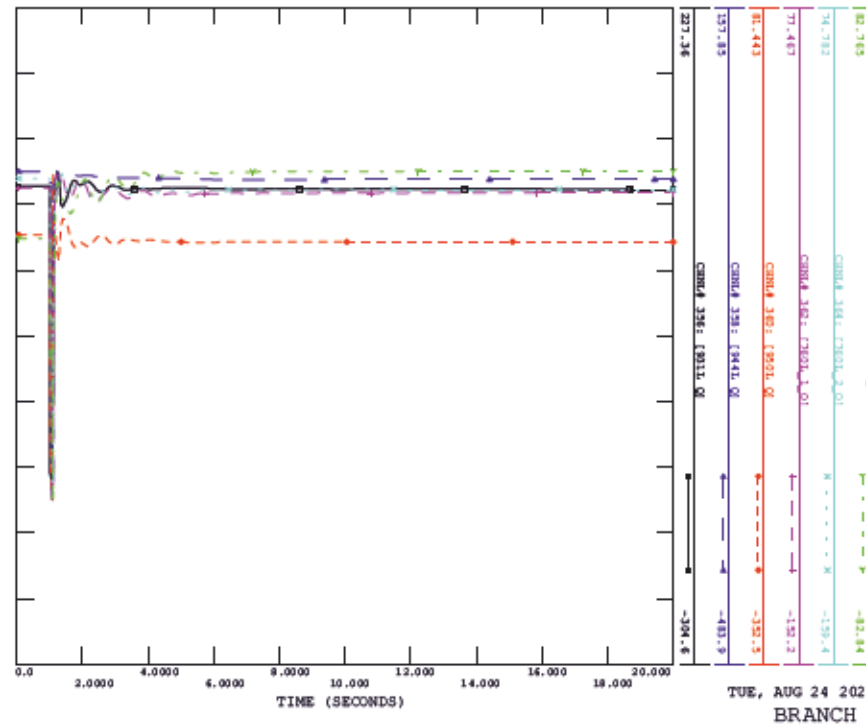
TUE, AUG 24 2021 13:19
 BRANCH P (4)

SCENARIO: P2421 SYSTEM INTERACT STUDY
 CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2
 FILE: SCM5_A1_24_1002L_945L.out



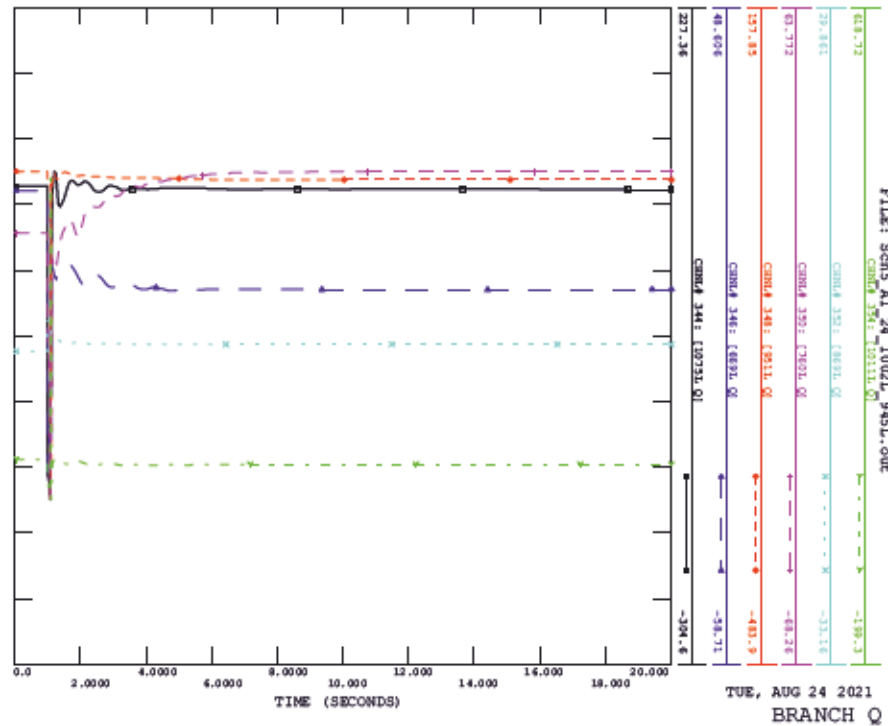
TUE, AUG 24 2021 13:19
 BRANCH P (3)

SCENARIO: P2421 SYSTEM INTERACT STUDY
 CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2
 FILE: SCM5_A1_24_1002L_945L.out



TUE, AUG 24 2021 13:19
 BRANCH Q (2)

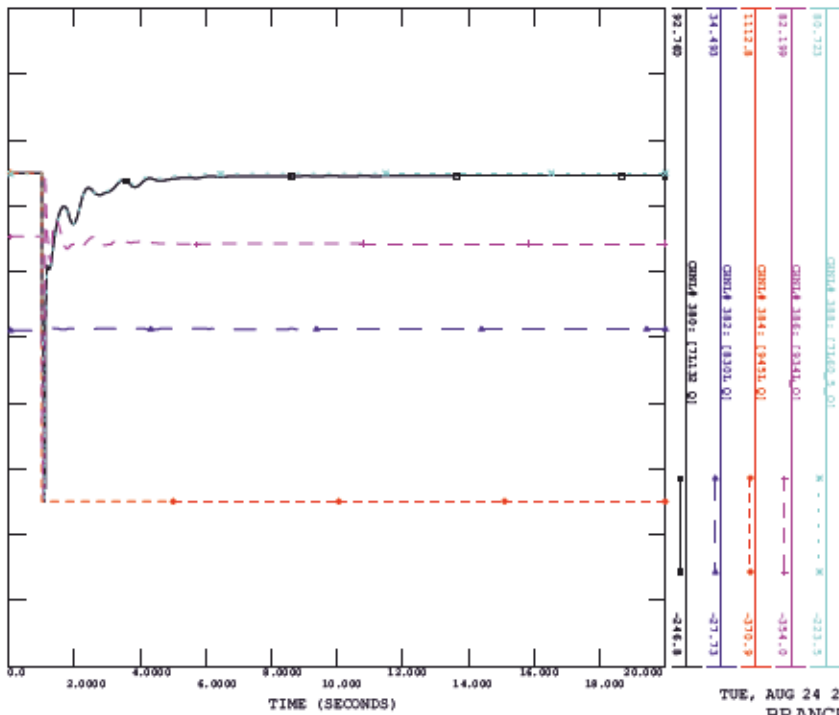
SCENARIO: P2421 SYSTEM INTERACT STUDY
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 FILE: SCM5_A1_24_1002L_945L.out



TUE, AUG 24 2021 13:19
 BRANCH Q (1)

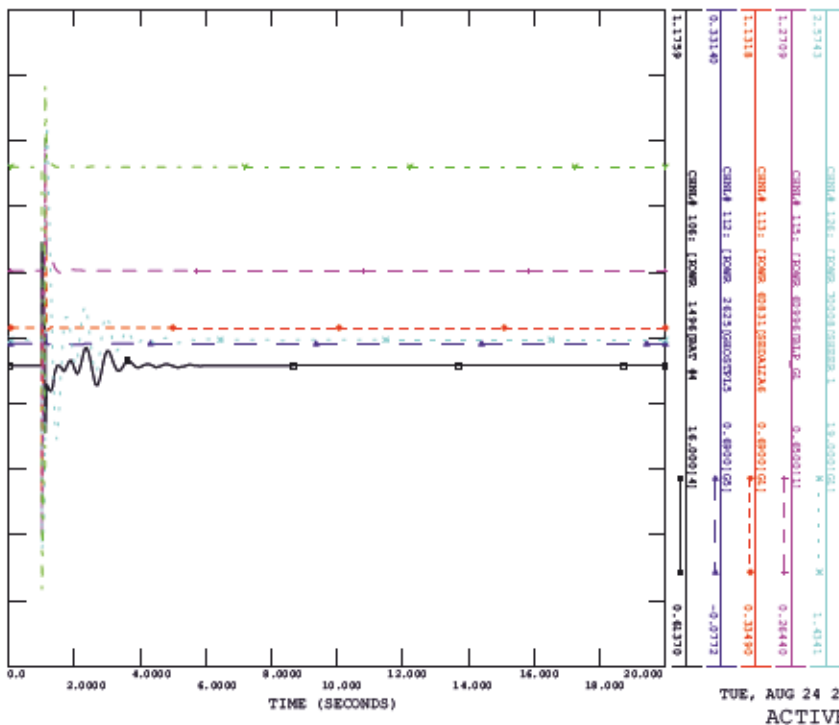
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2

FILE: scm5_A1_24_1002L_945L.out



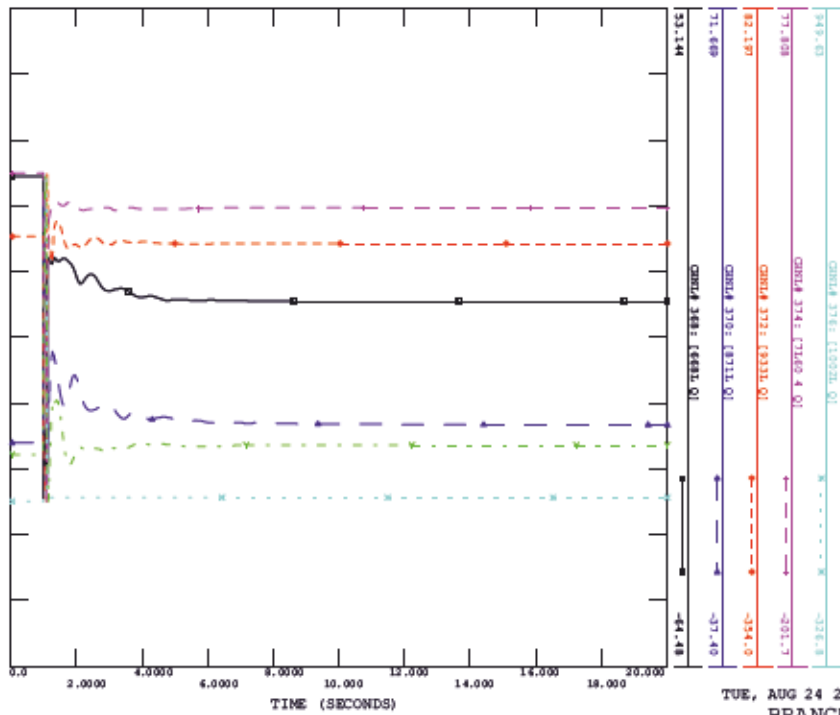
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_25_1002L_1011L, FAULT LOCATION AMOCO E

FILE: scm5_A1_25_1002L_1011L.out



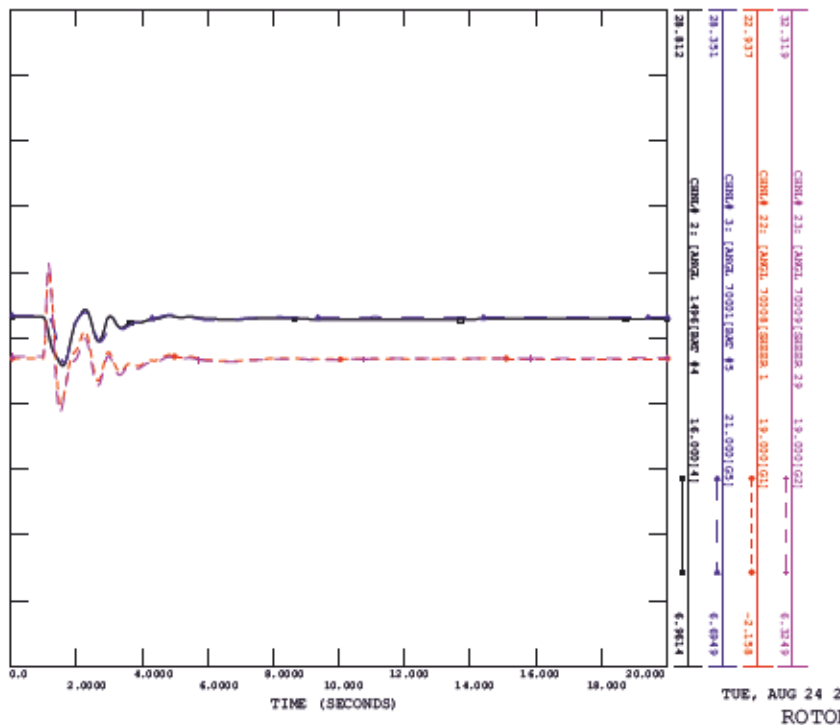
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_24_1002L_945L, FAULT LOCATION JENNER 2

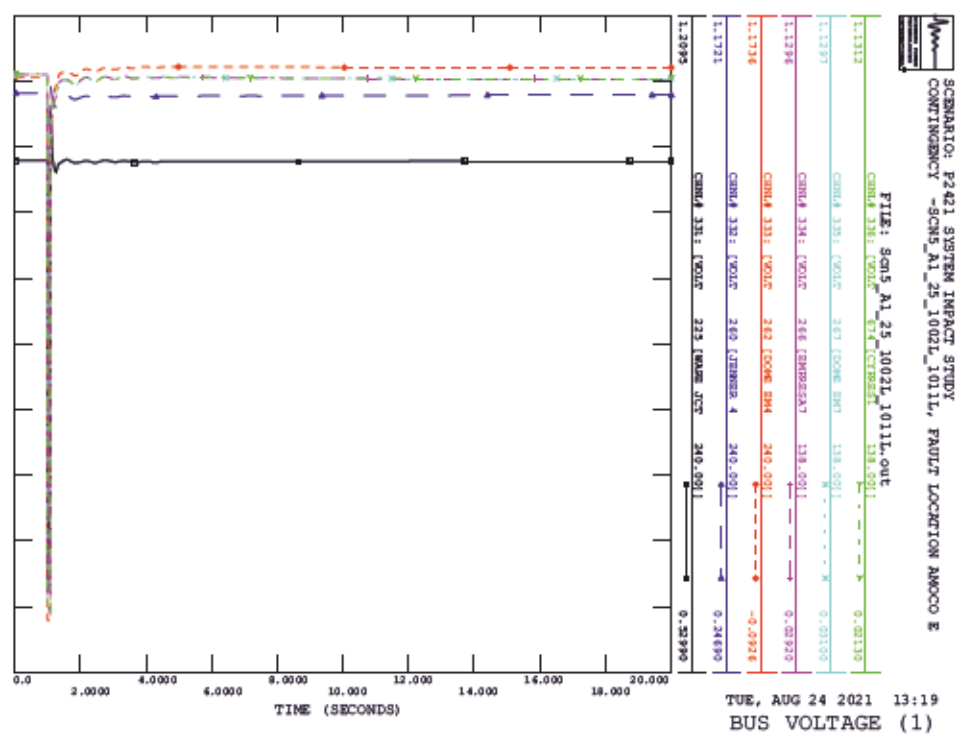
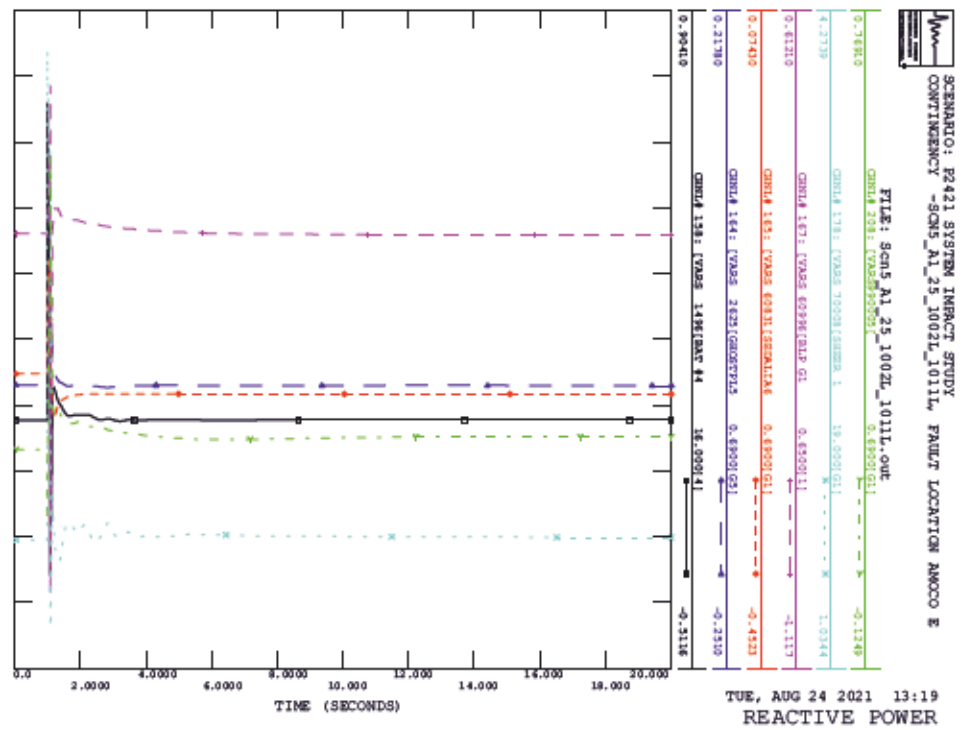
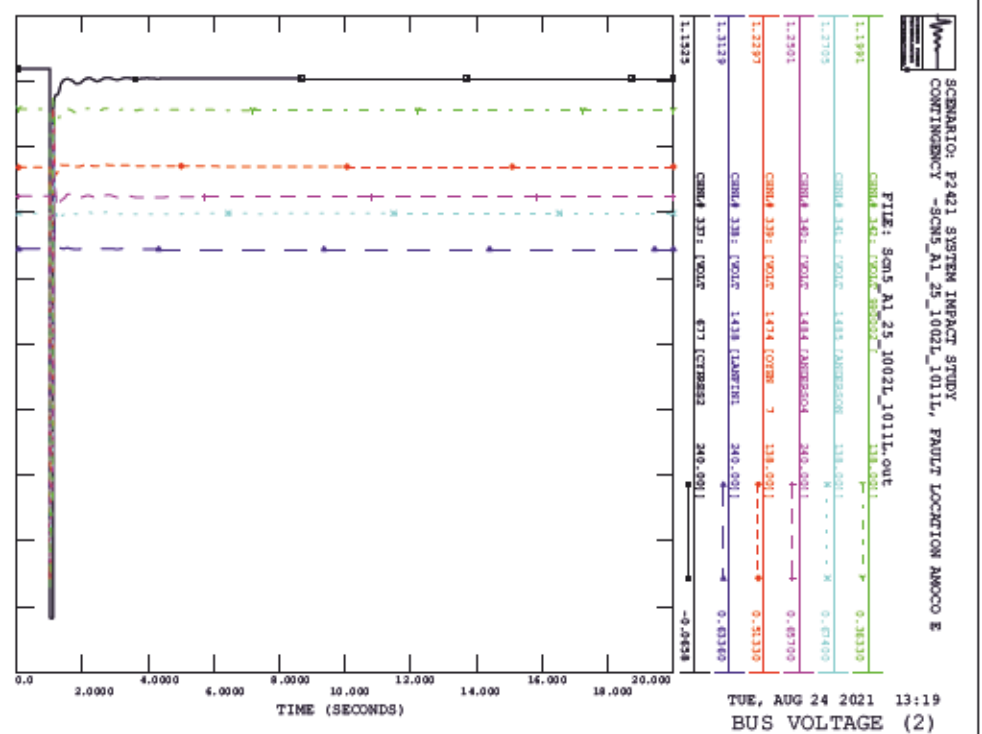
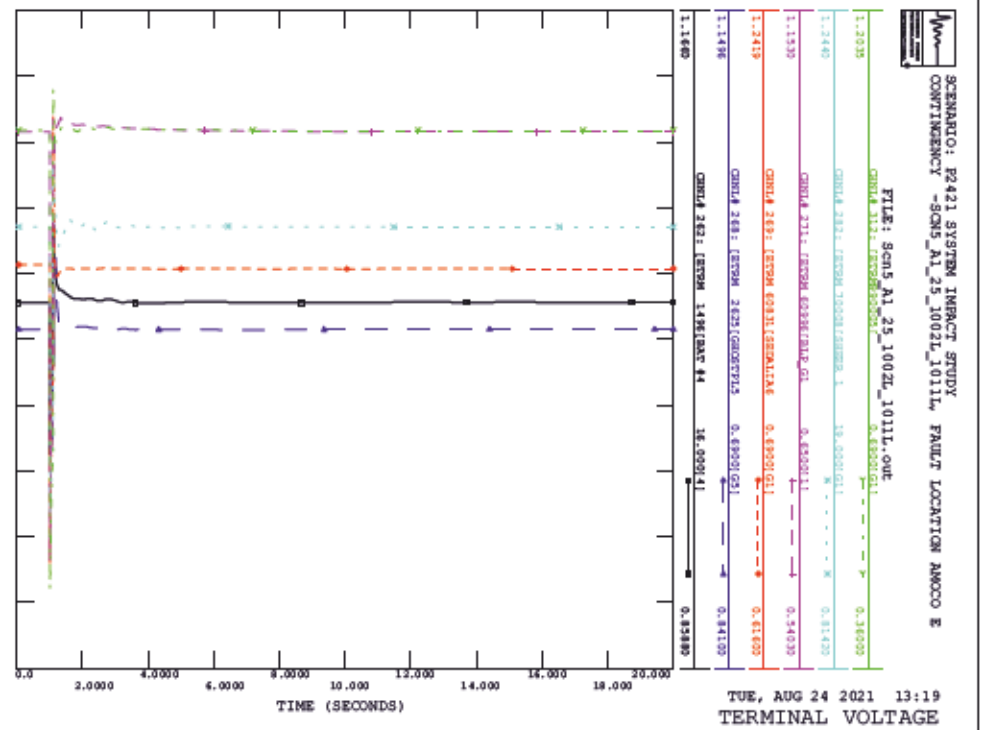
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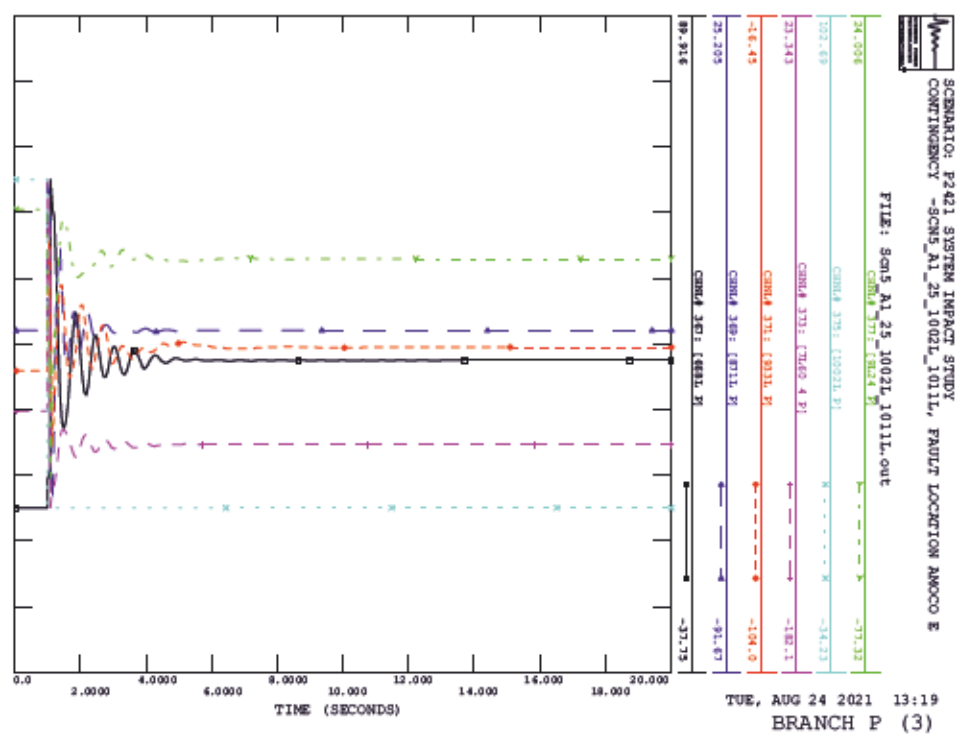
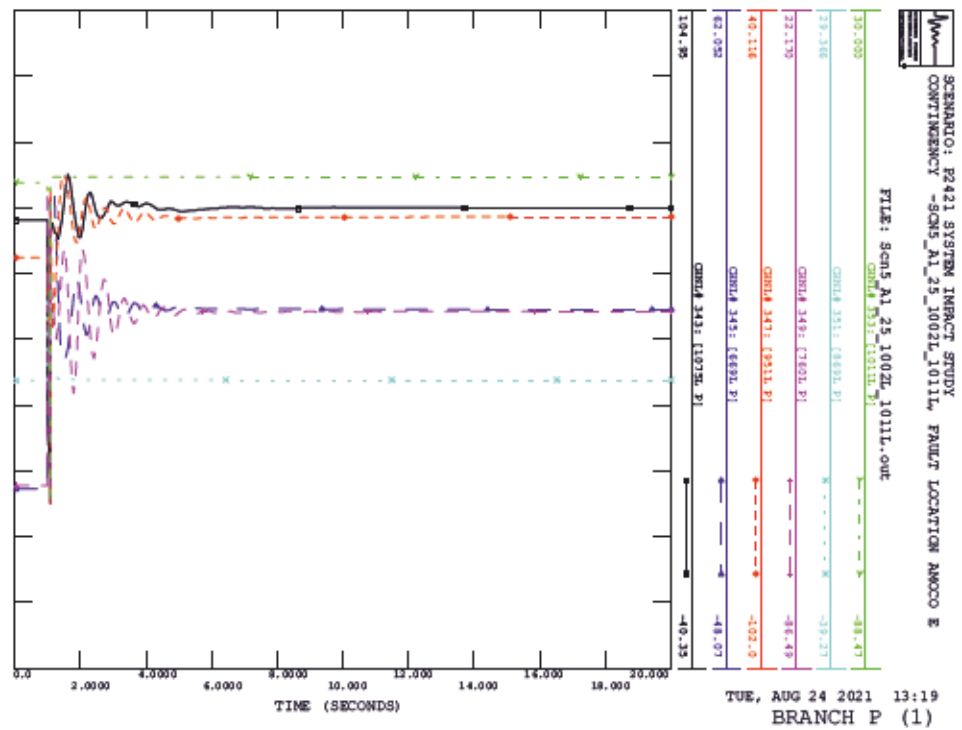
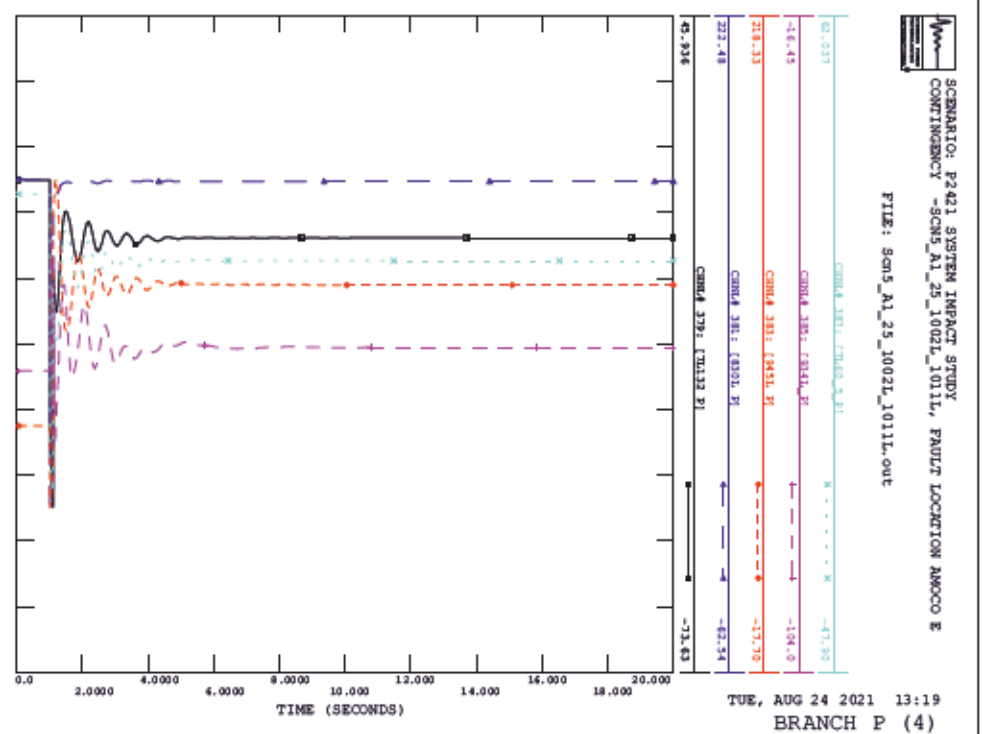
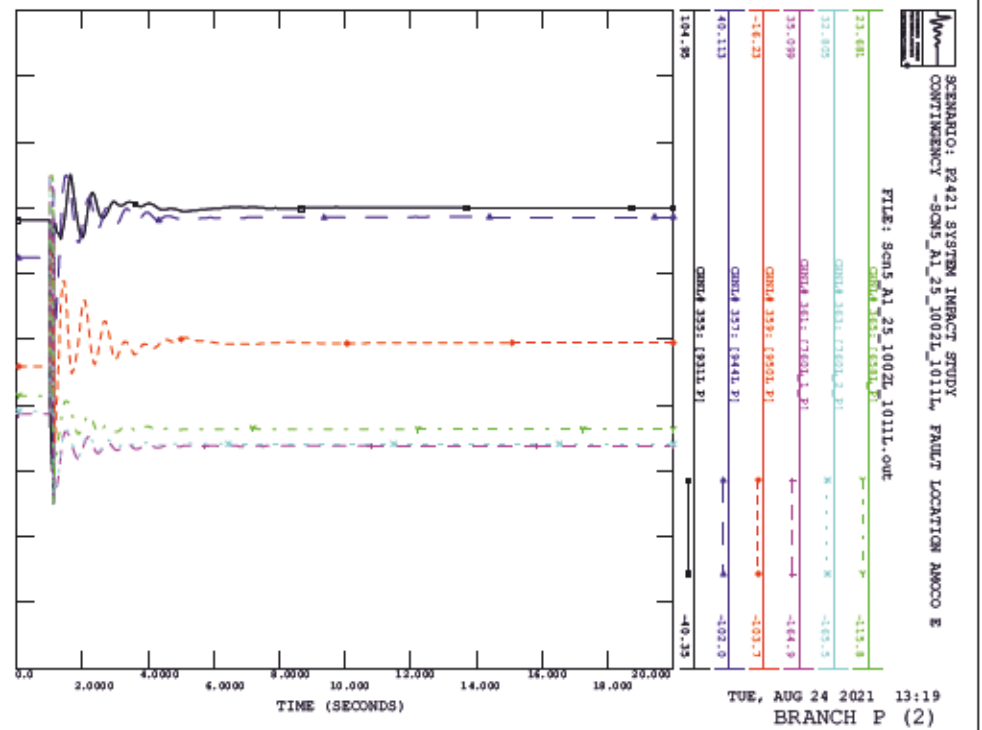


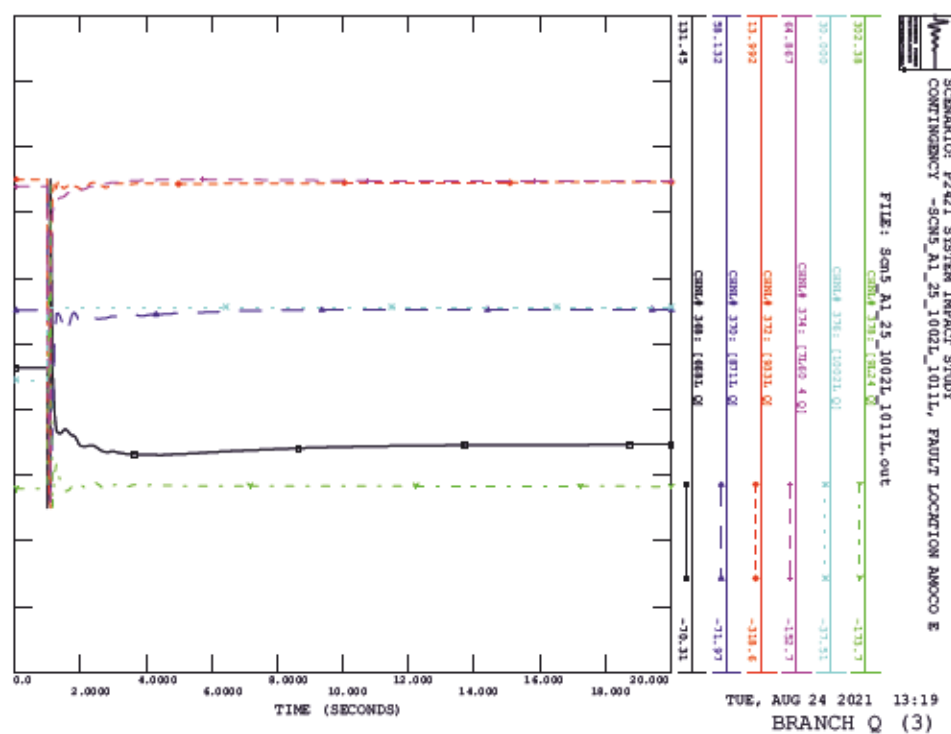
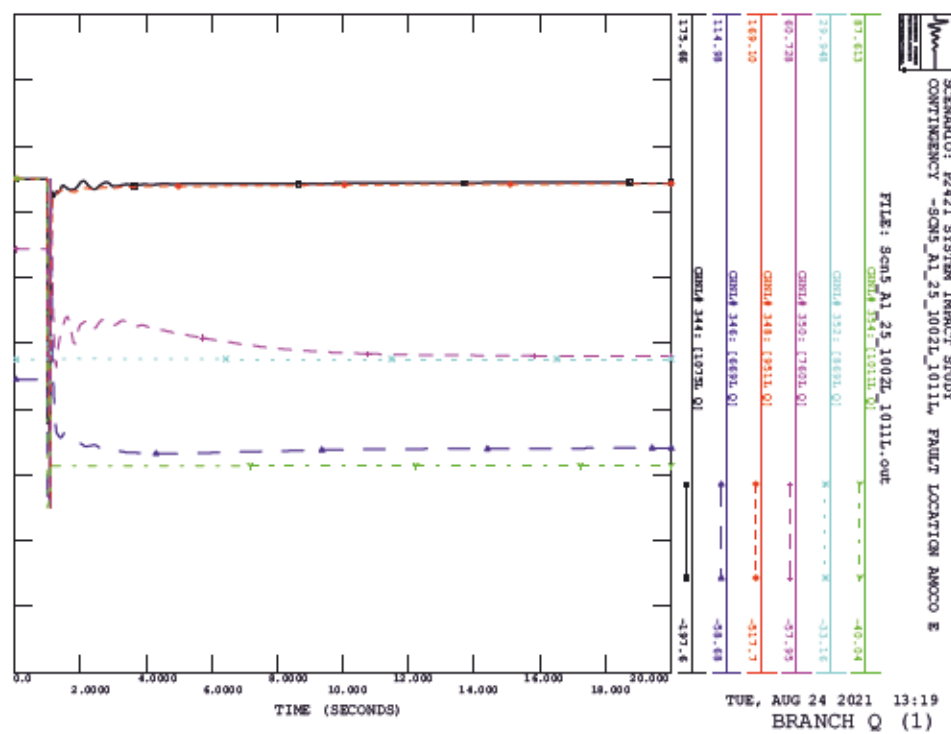
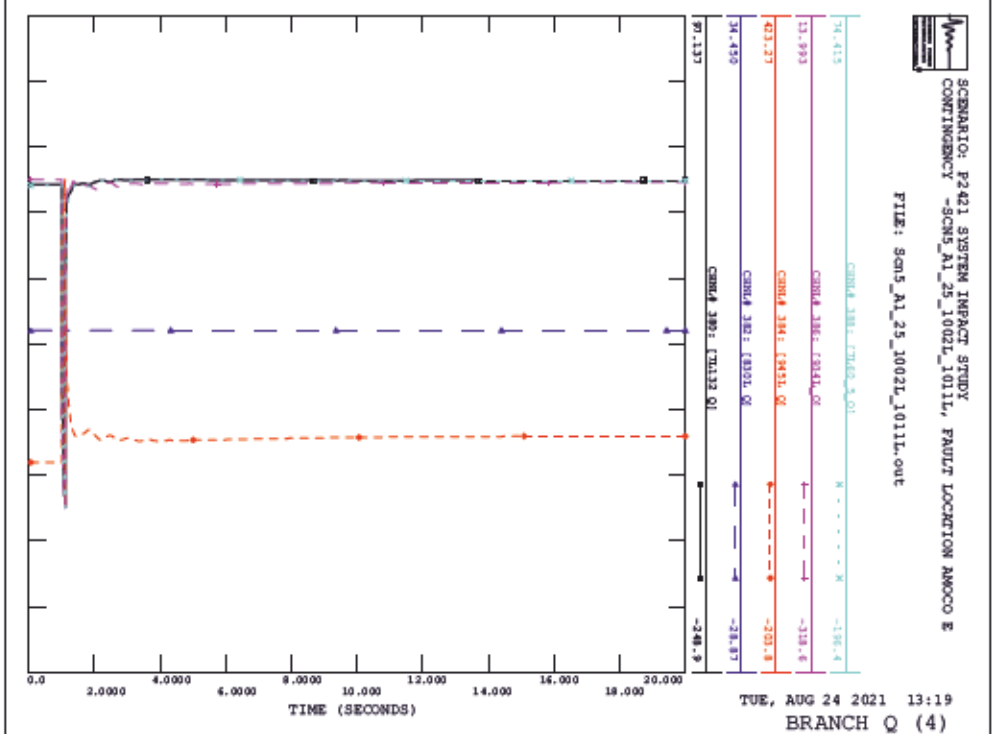
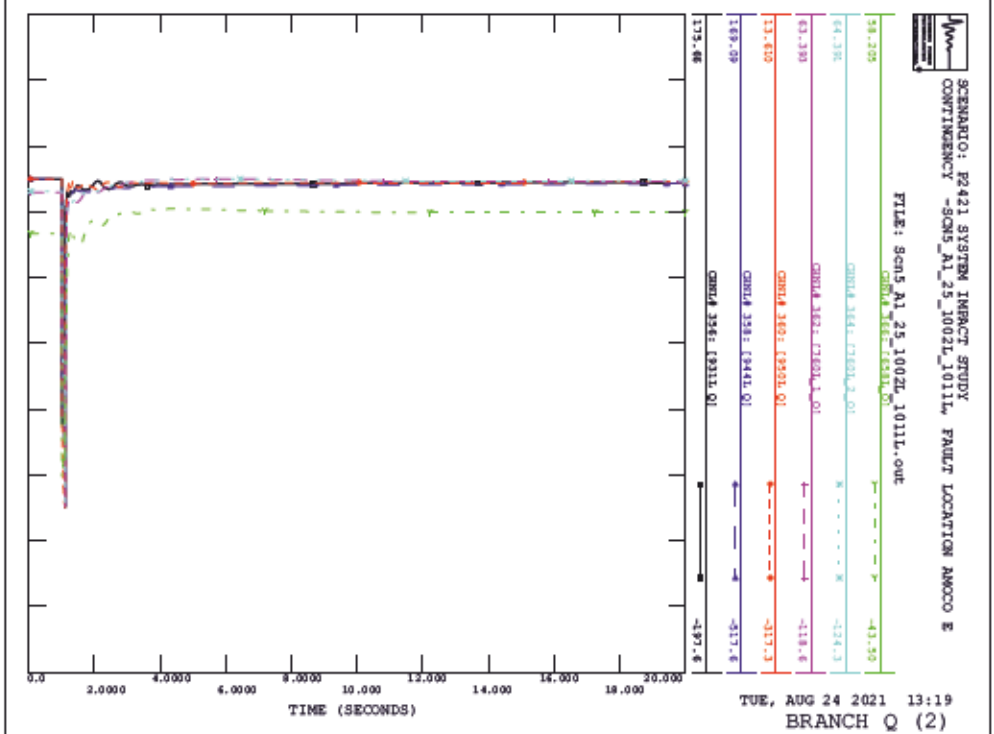
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM5_A1_25_1002L_1011L, FAULT LOCATION AMOCO E

FILE: scm5_A1_25_1002L_1011L.out



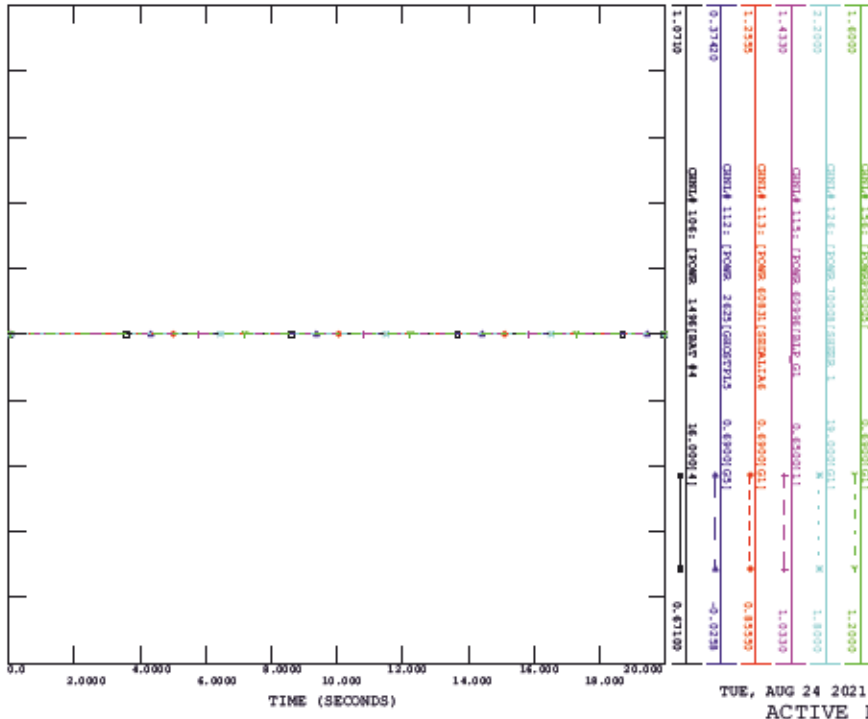






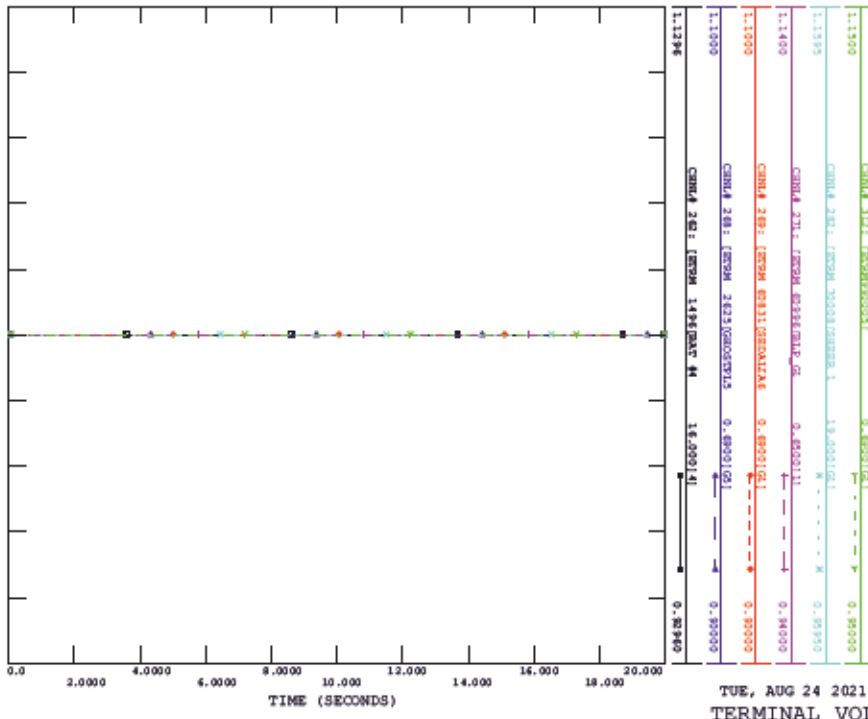
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

FILE: scen6_A1_nofault.out



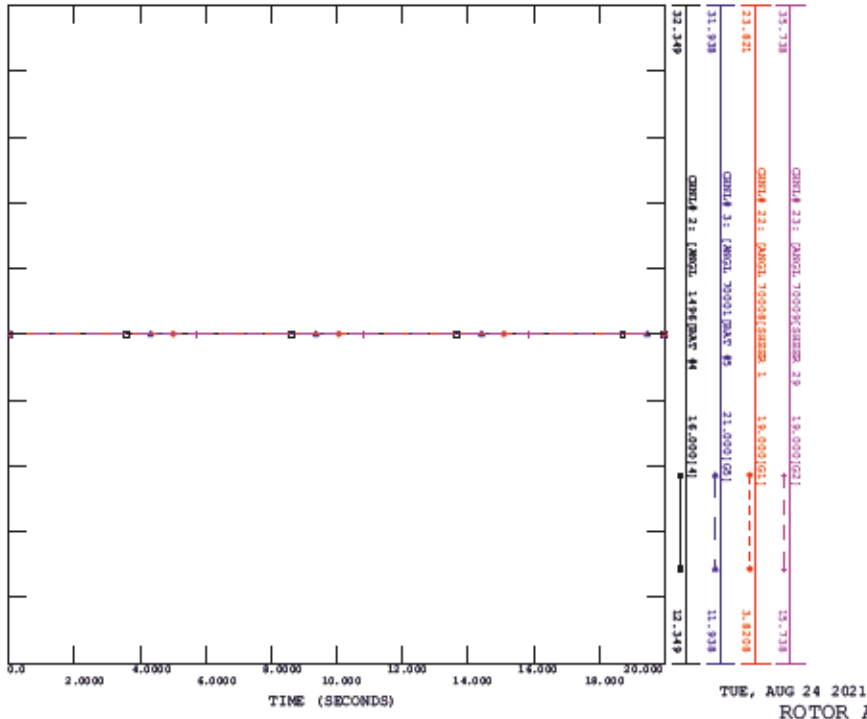
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

FILE: scen6_A1_nofault.out



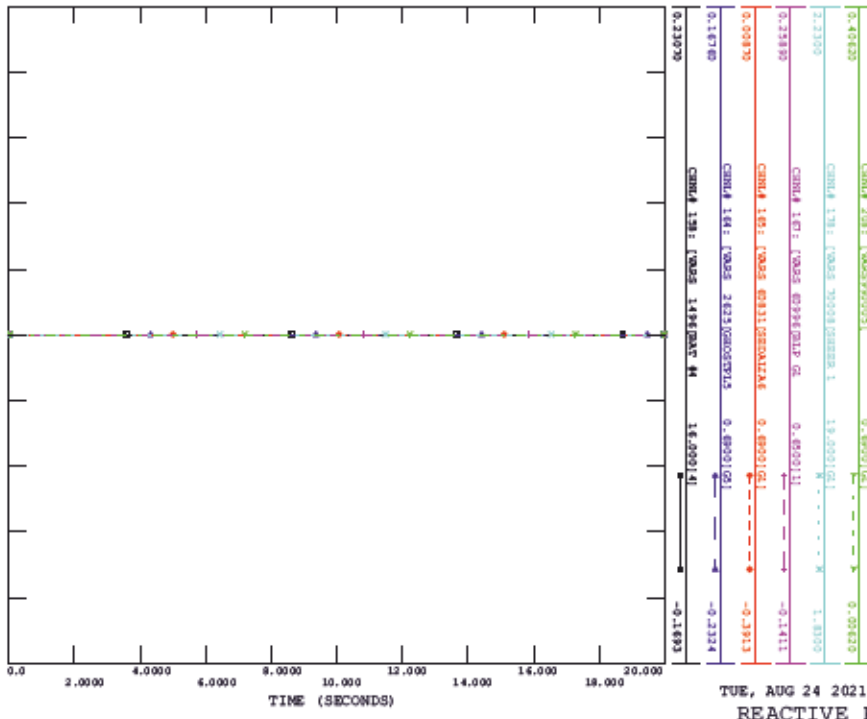
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

FILE: scen6_A1_nofault.out



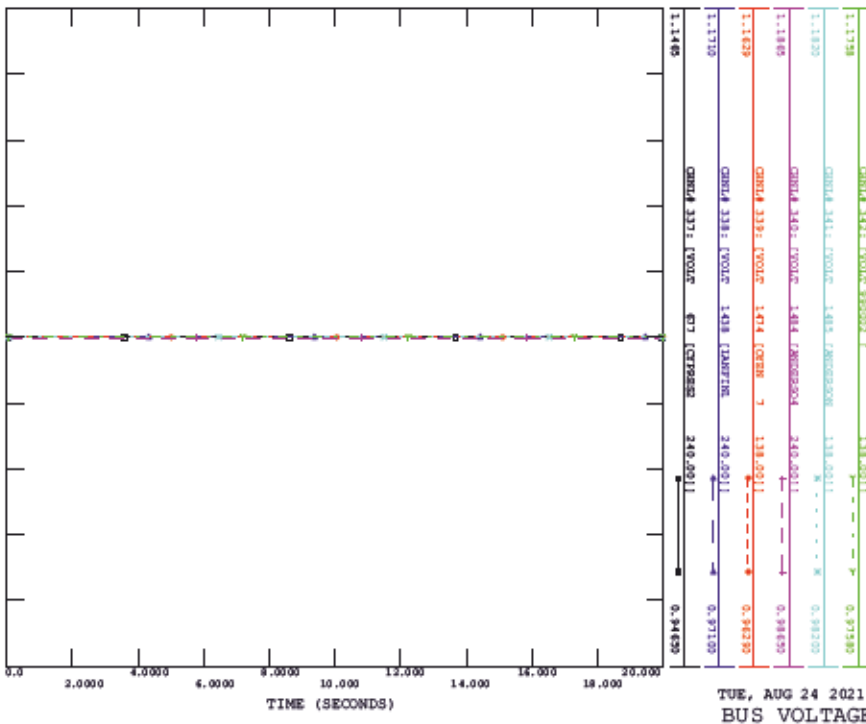
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

FILE: scen6_A1_nofault.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

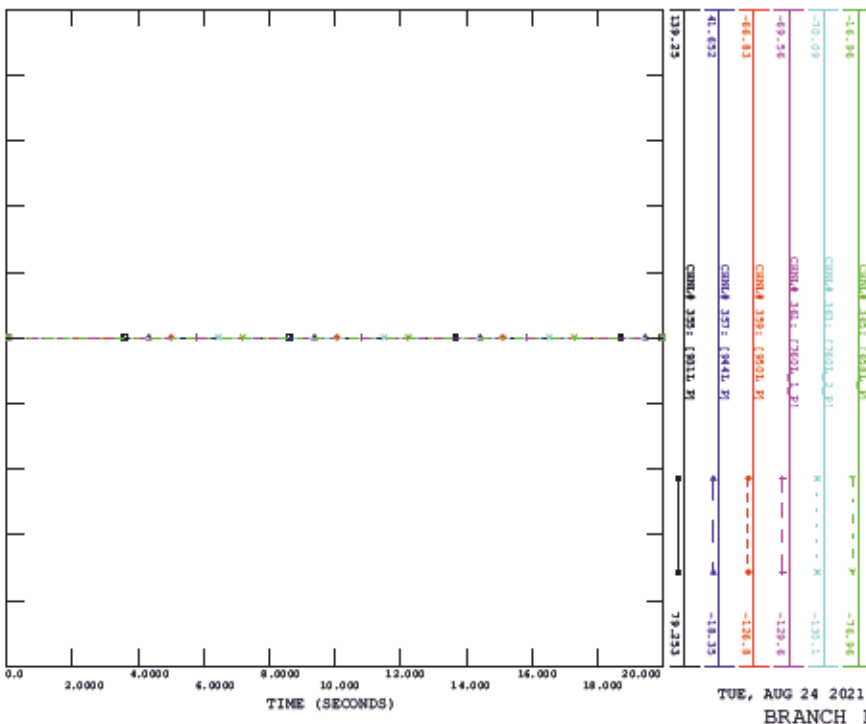
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TUE, AUG 24 2021 13:21
BUS VOLTAGE (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

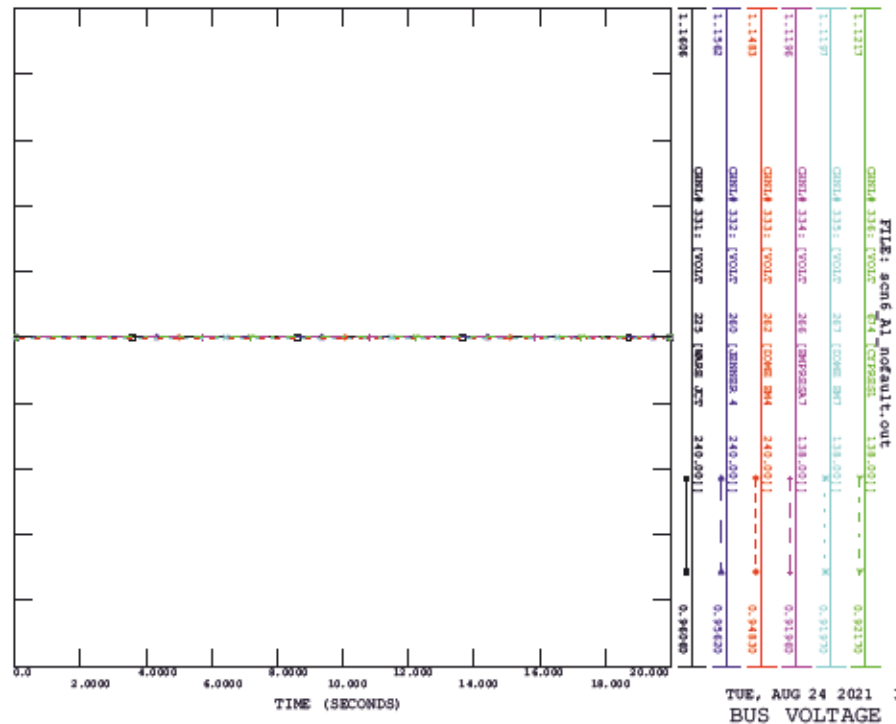
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TUE, AUG 24 2021 13:21
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

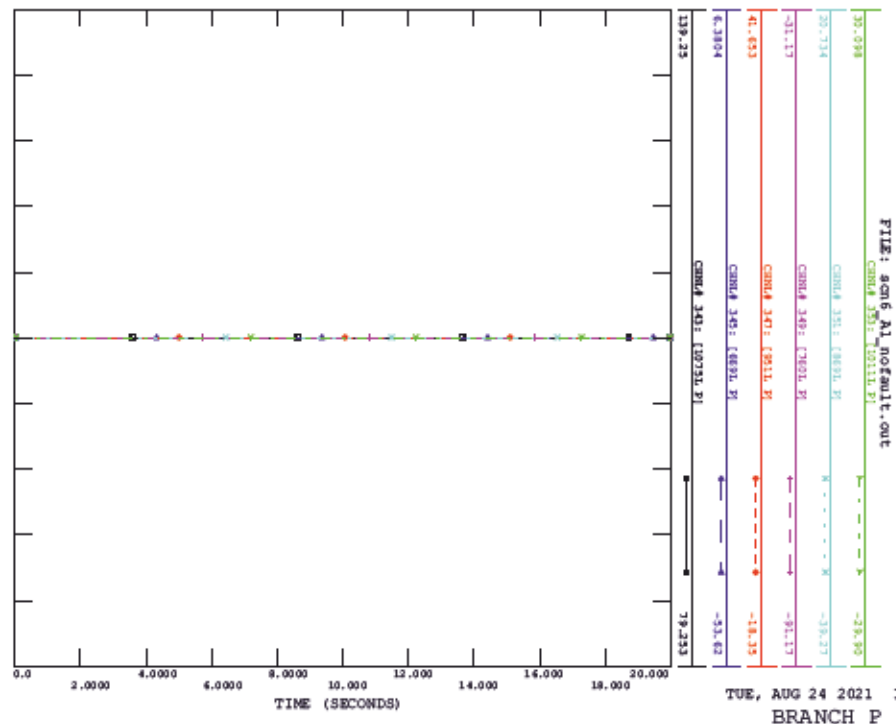
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TUE, AUG 24 2021 13:21
BUS VOLTAGE (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

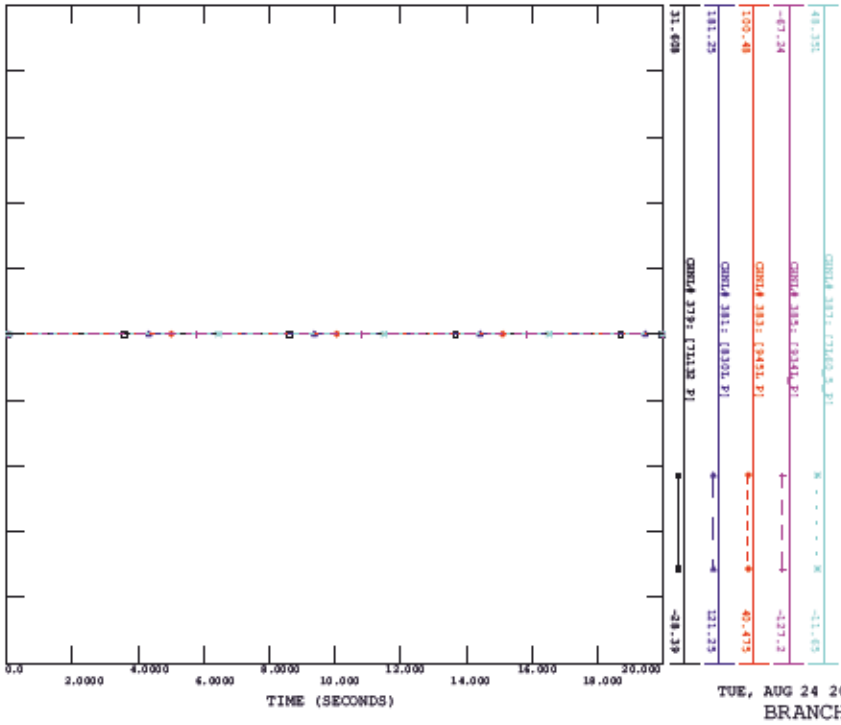
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TUE, AUG 24 2021 13:21
BRANCH P (1)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

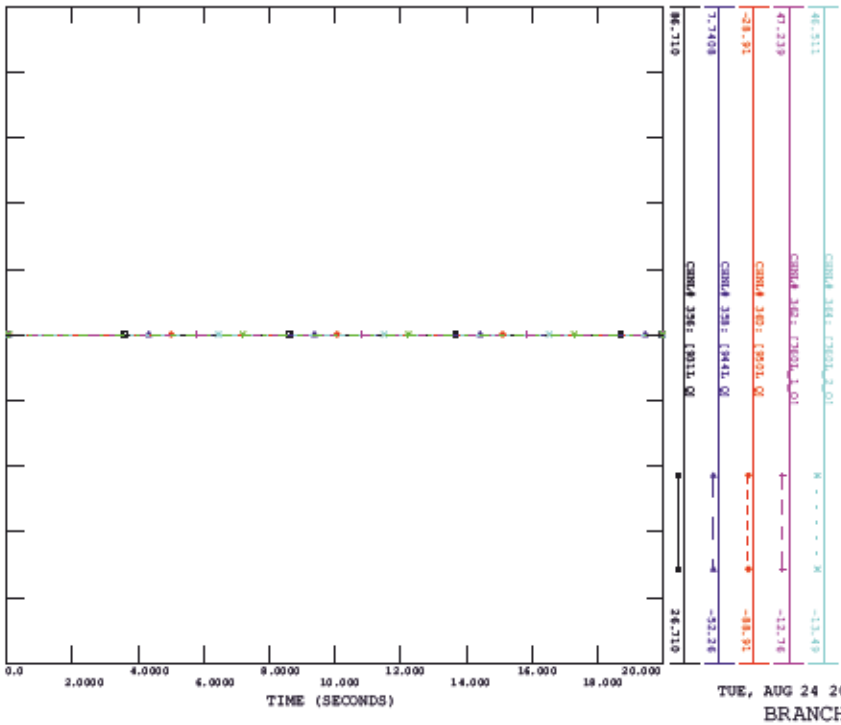
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TUE, AUG 24 2021 13:21
BRANCH P (4)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

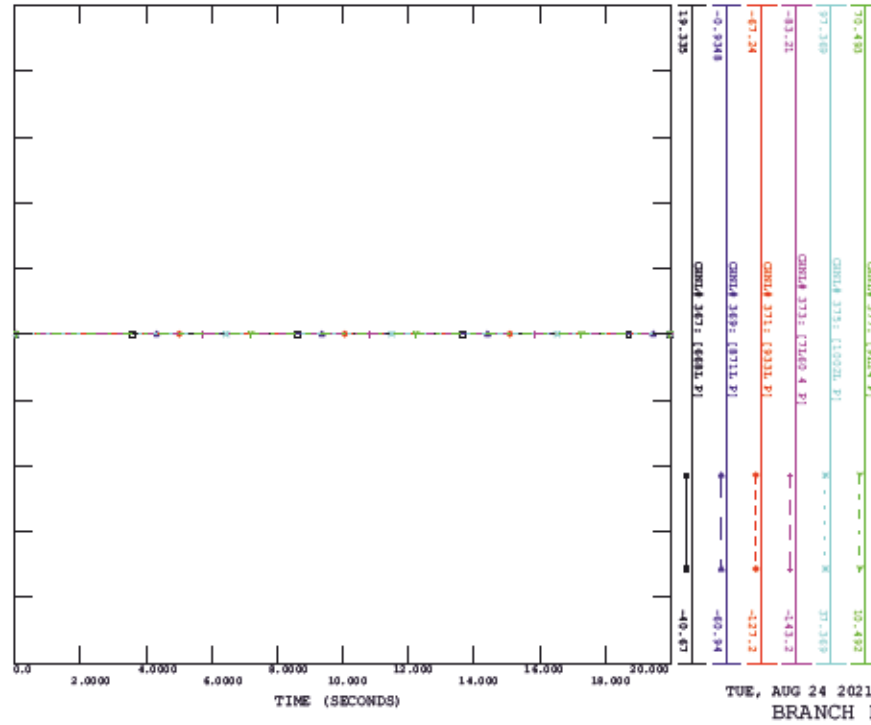
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TUE, AUG 24 2021 13:21
BRANCH Q (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

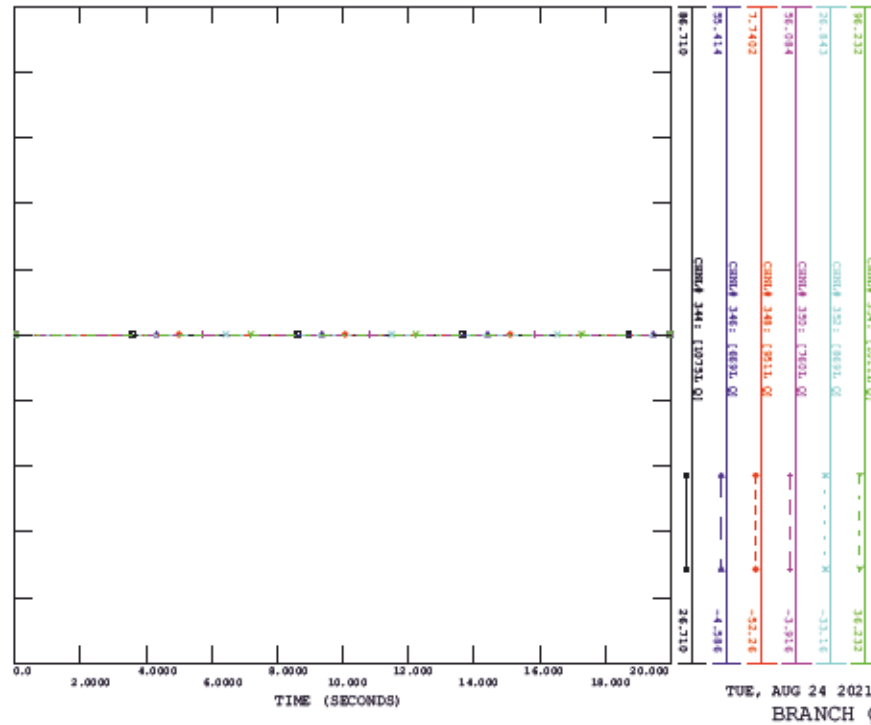
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TUE, AUG 24 2021 13:21
BRANCH P (3)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

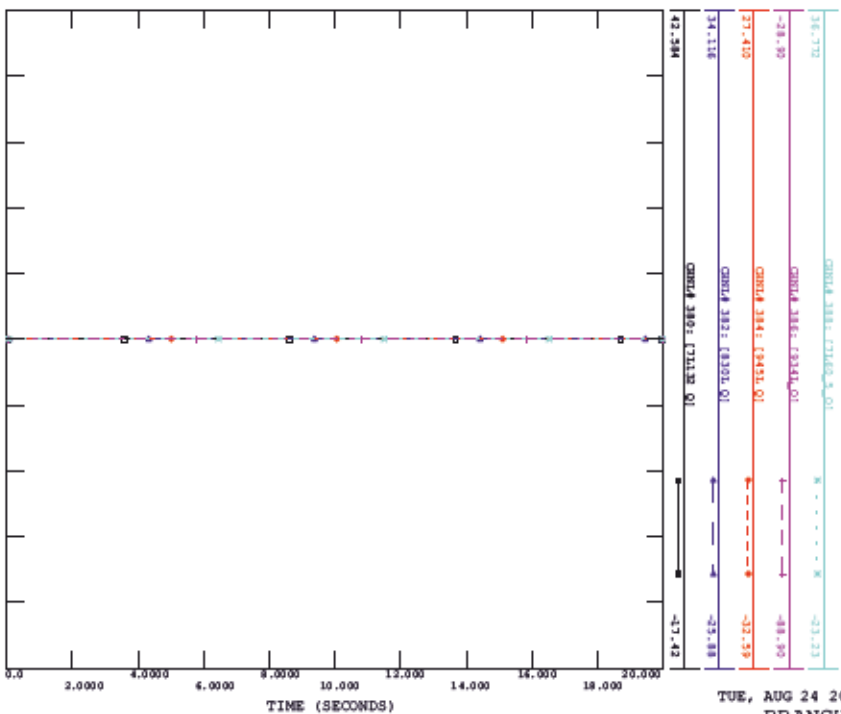
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TUE, AUG 24 2021 13:21
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

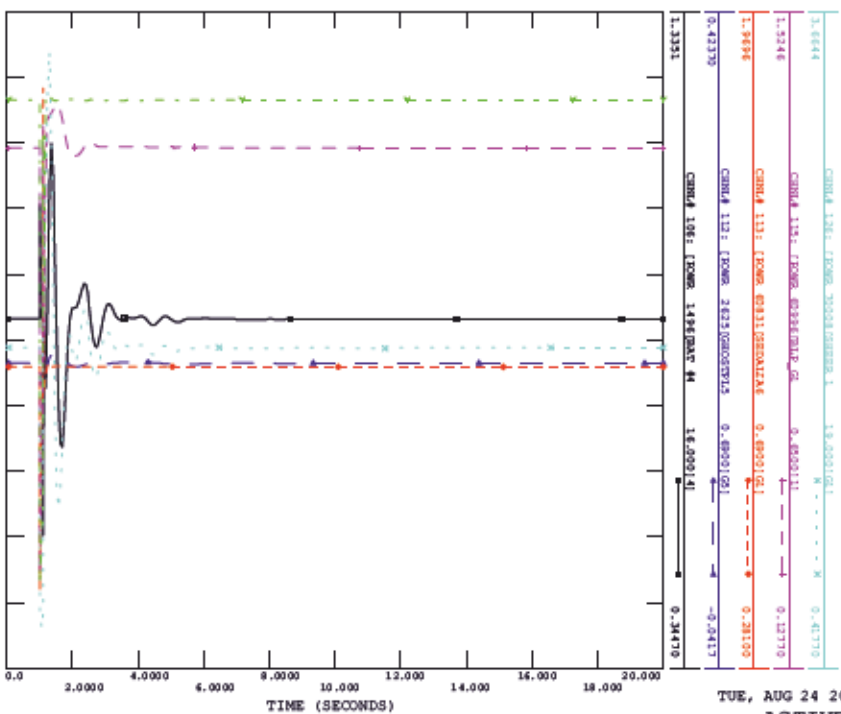
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TUE, AUG 24 2021 13:21
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_01_944L, FAULT LOCATION WARE JUNCTION

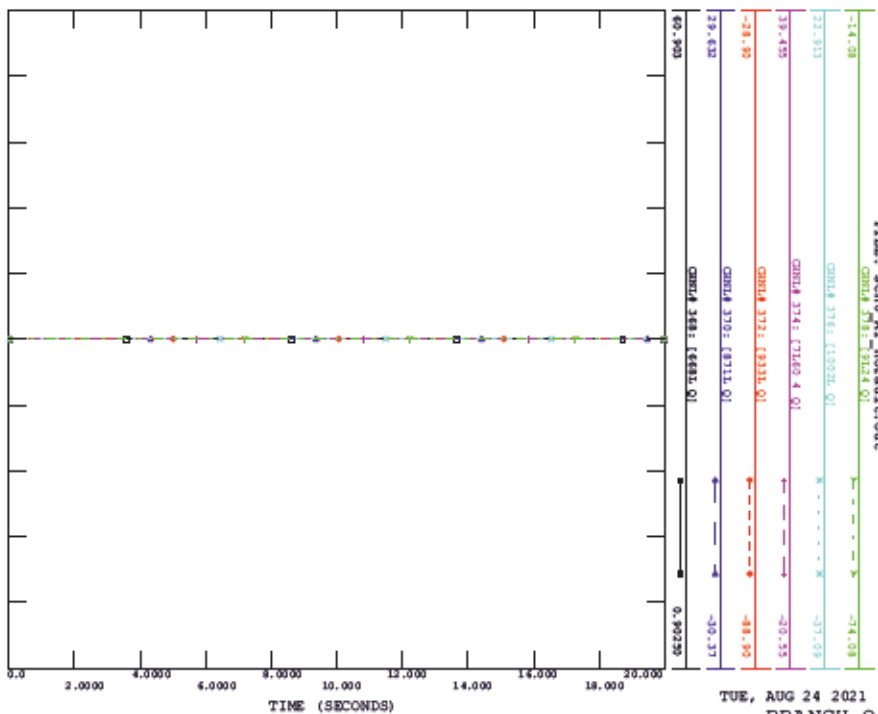
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TUE, AUG 24 2021 13:21
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_NOFAULT, FAULT LOCATION NO FAULT

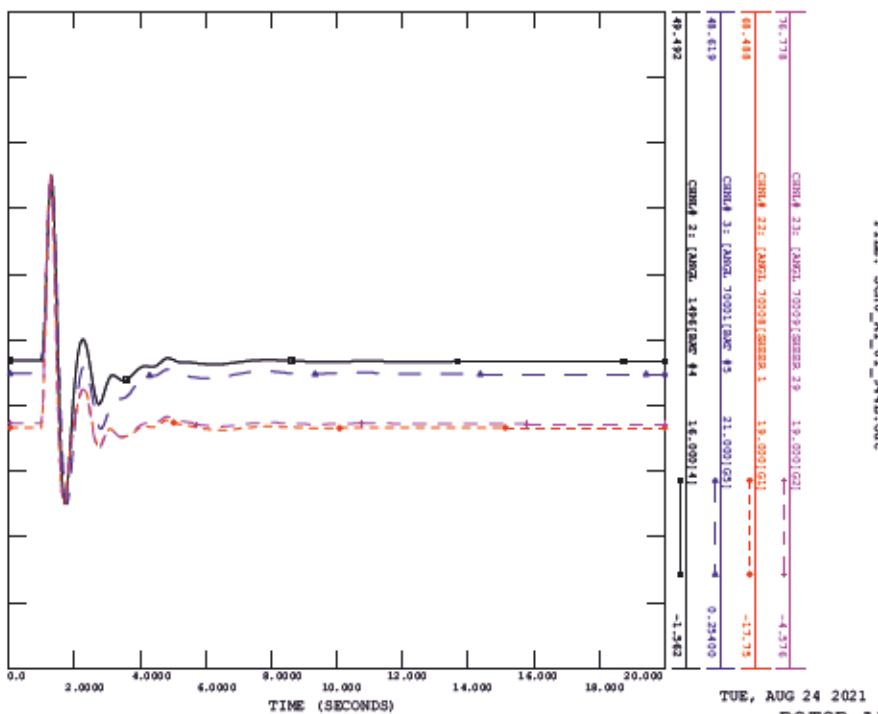
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TUE, AUG 24 2021 13:21
BRANCH Q (3)

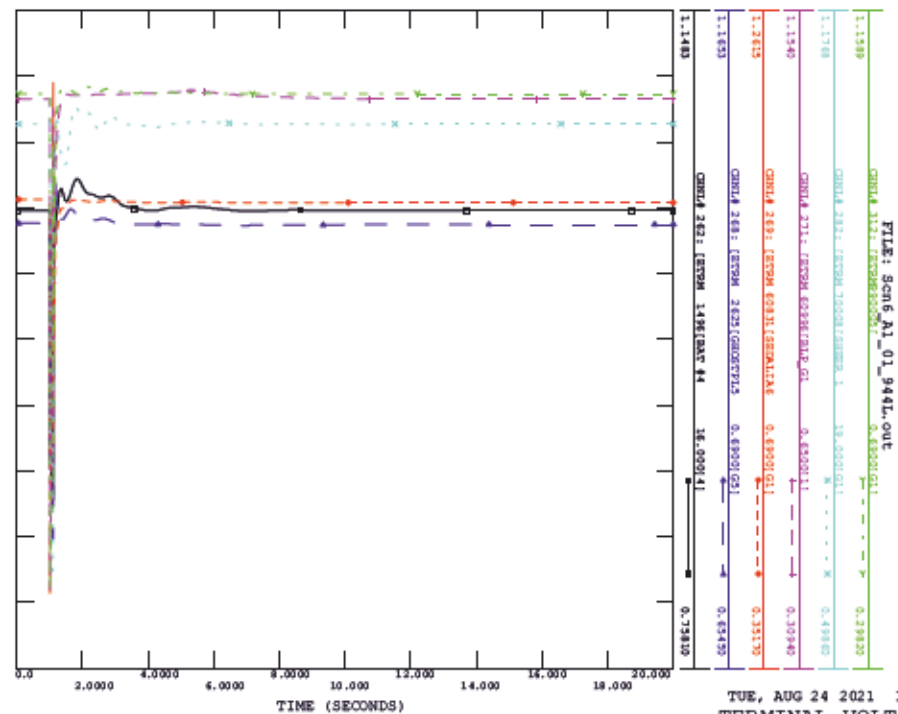
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_01_944L, FAULT LOCATION WARE JUNCTION

FILE: scm6_A1_01_944L.out

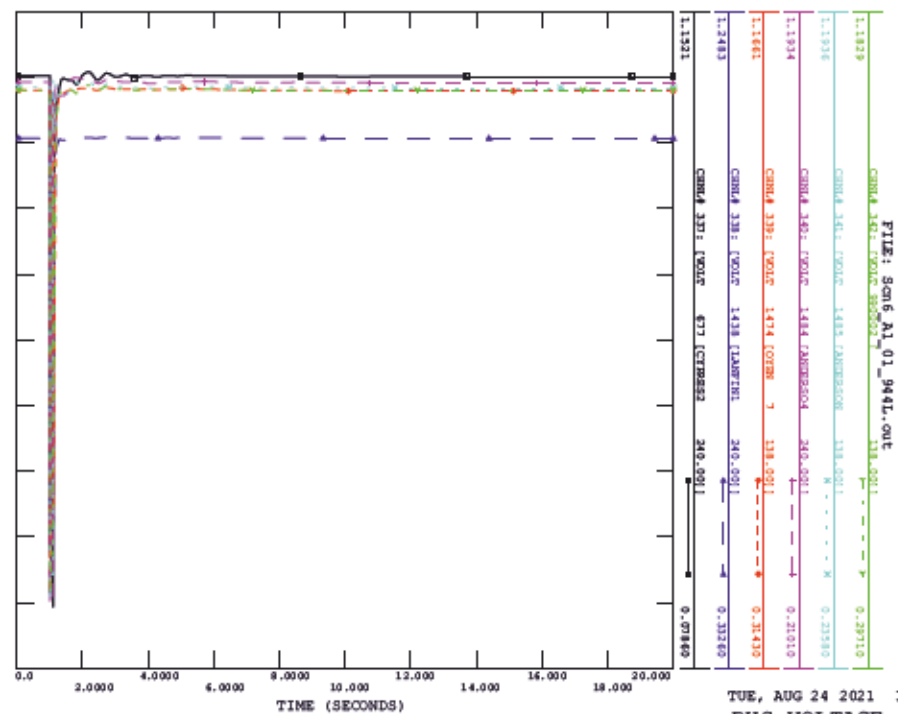


TUE, AUG 24 2021 13:21
ROTOR ANGLE

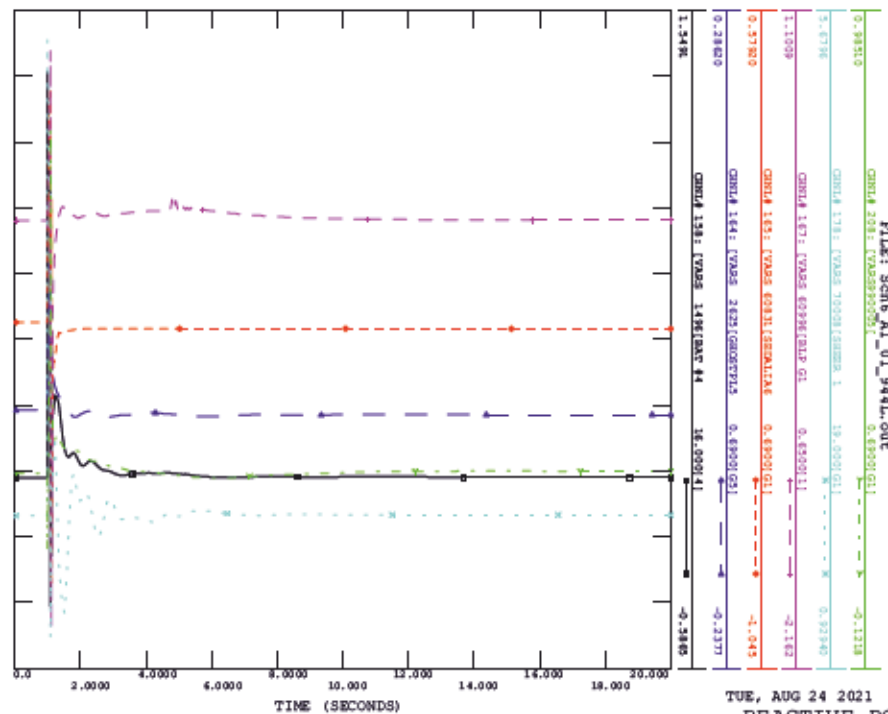
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_01_944L, FAULT LOCATION WARE JUNCTION



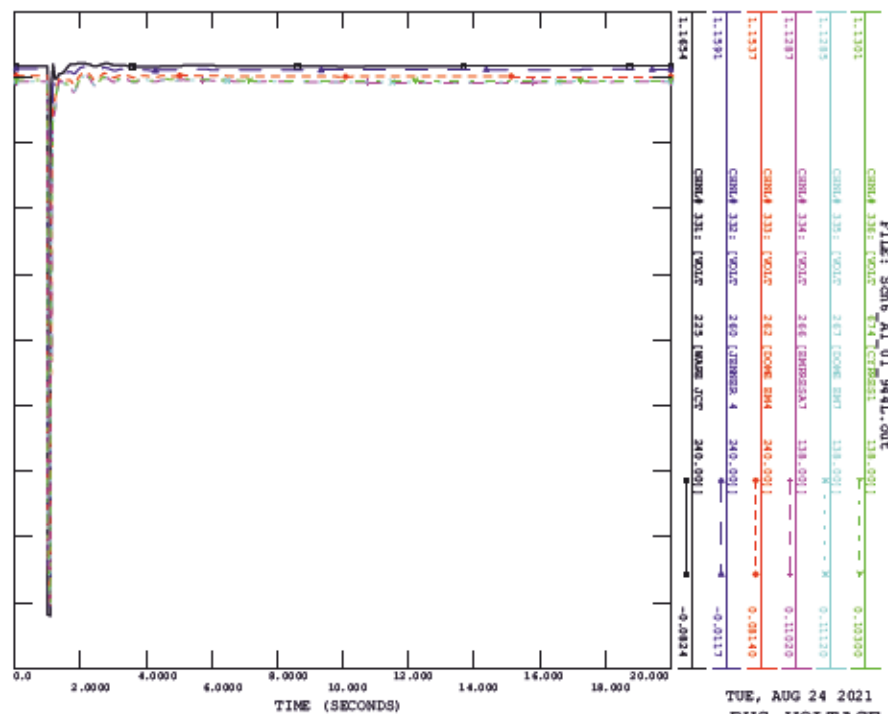
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_01_944L, FAULT LOCATION WARE JUNCTION



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_01_944L, FAULT LOCATION WARE JUNCTION

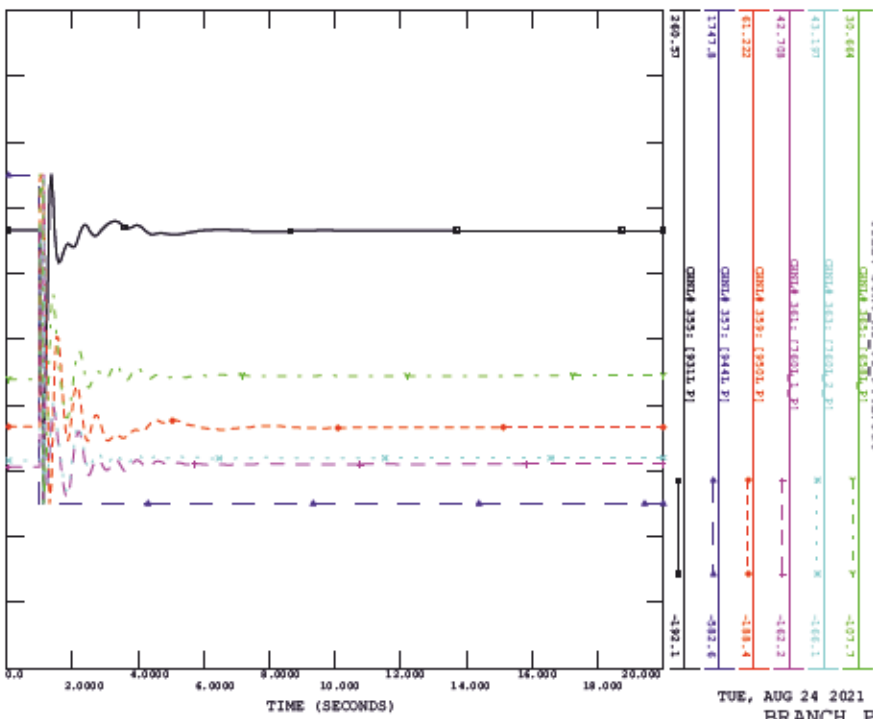


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_01_944L, FAULT LOCATION WARE JUNCTION



SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCH6_A1_01_944L, FAULT LOCATION WARE JUNCTION

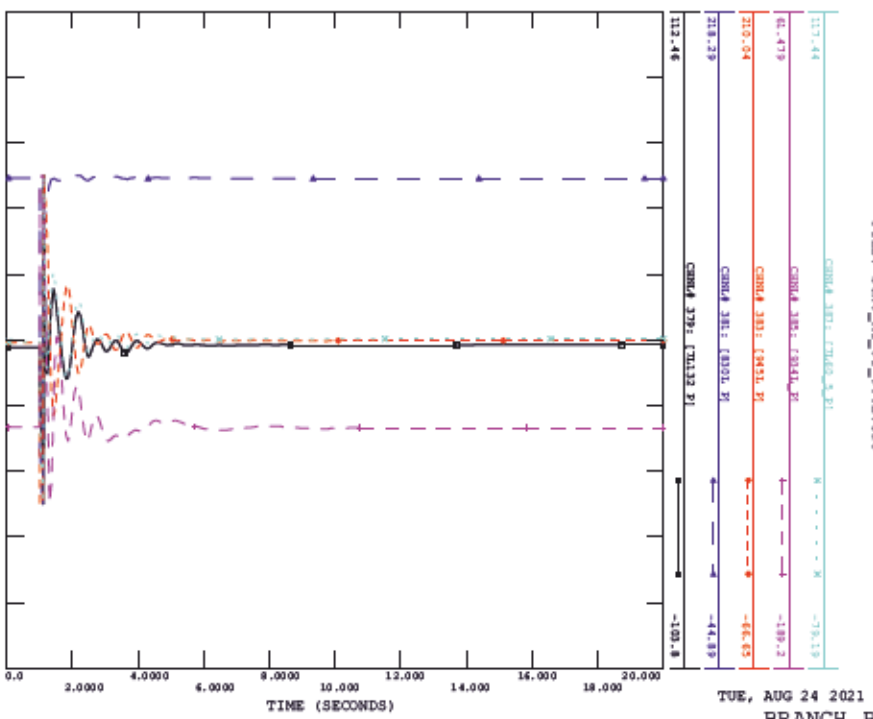
FILE: Scn6_A1_01_944L.out



TUE, AUG 24 2021 13:21
BRANCH P (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCH6_A1_01_944L, FAULT LOCATION WARE JUNCTION

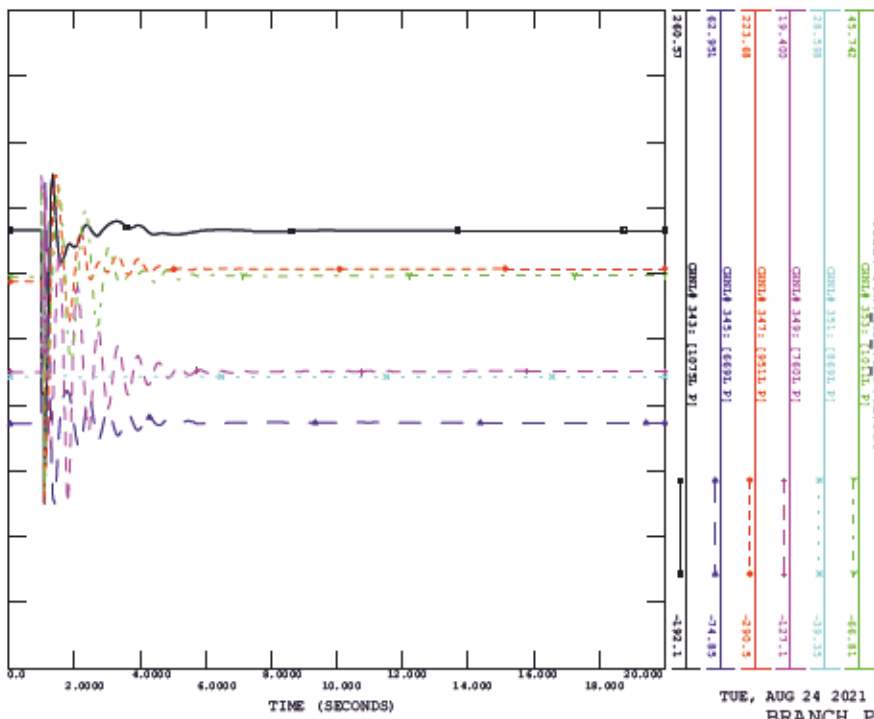
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TUE, AUG 24 2021 13:21
BRANCH P (4)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCH6_A1_01_944L, FAULT LOCATION WARE JUNCTION

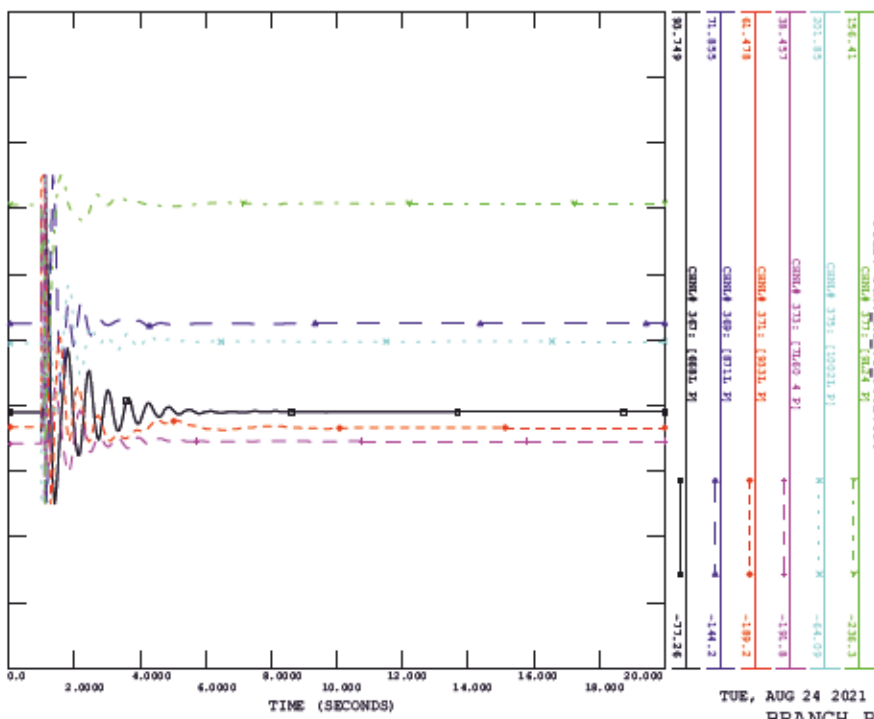
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TUE, AUG 24 2021 13:21
BRANCH P (1)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCH6_A1_01_944L, FAULT LOCATION WARE JUNCTION

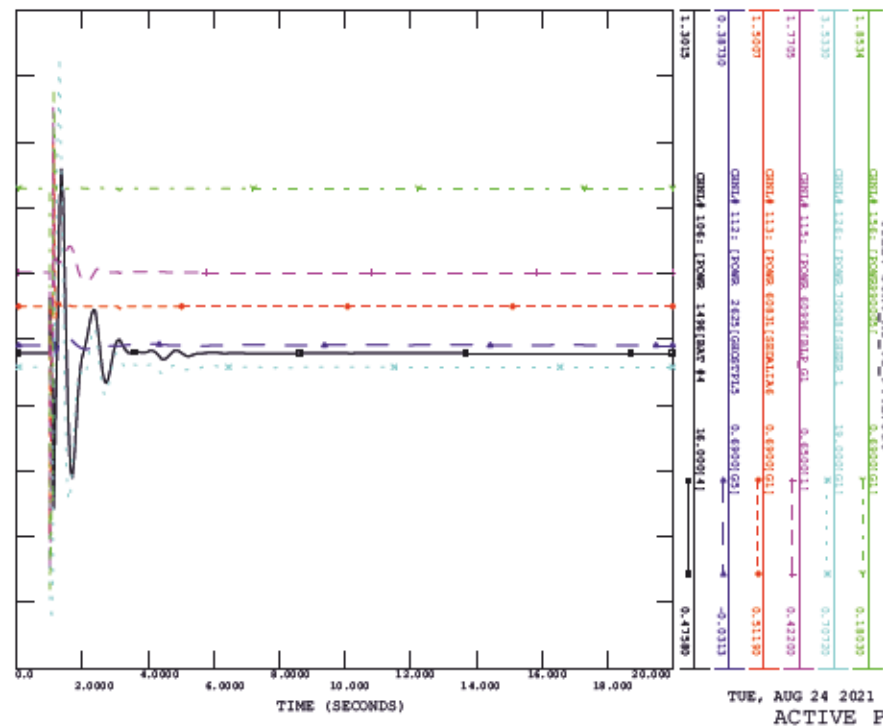
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TUE, AUG 24 2021 13:21
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_02_944L, FAULT LOCATION JENNER 275S

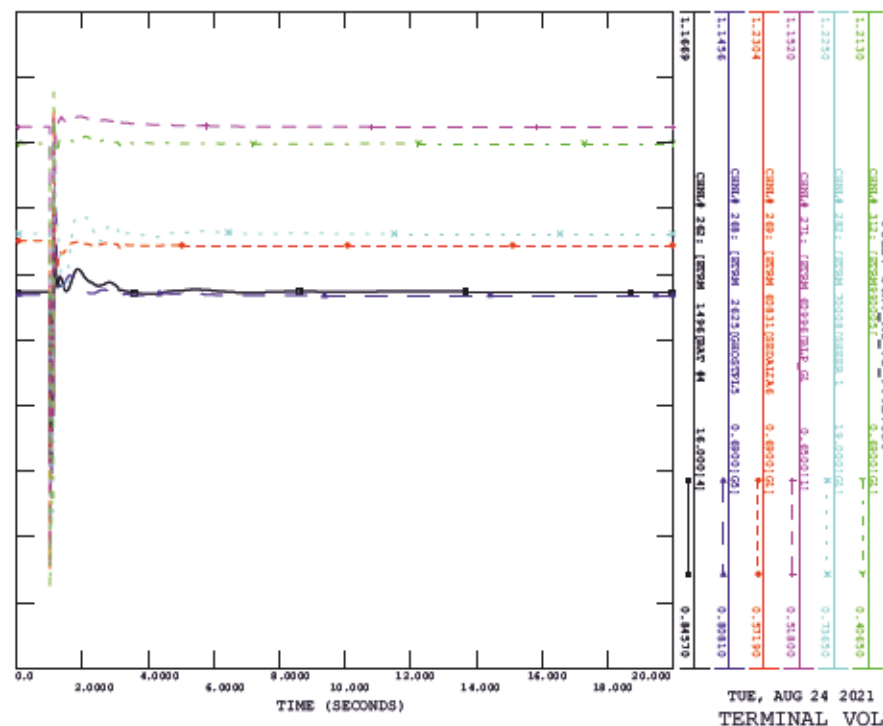
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TUE, AUG 24 2021 13:21
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_02_944L, FAULT LOCATION JENNER 275S

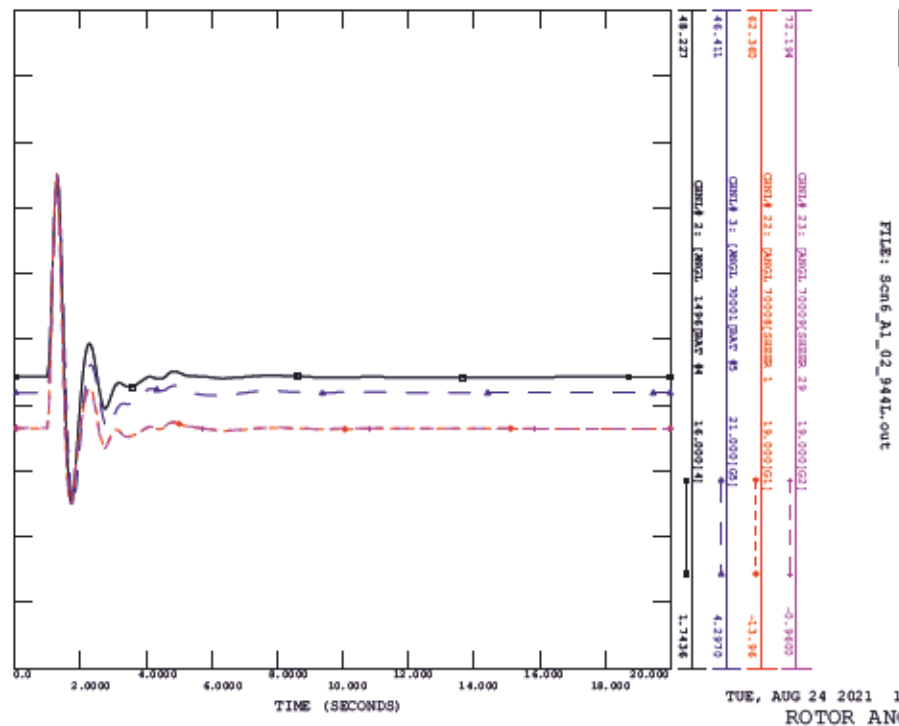
FILE: Scm6_A1_02_944L.out



TUE, AUG 24 2021 13:21
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_02_944L, FAULT LOCATION JENNER 275S

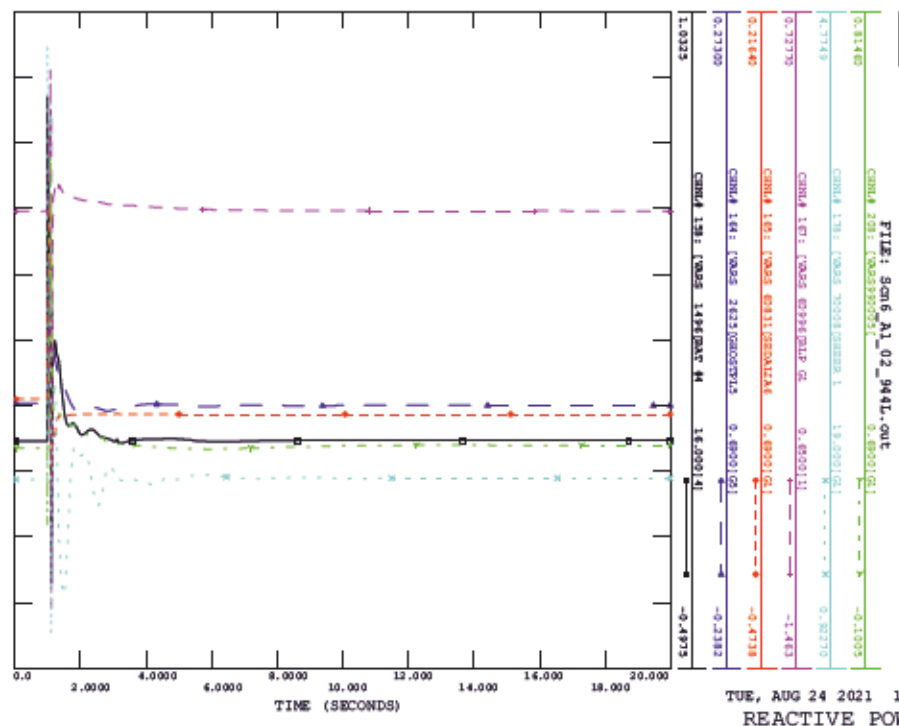
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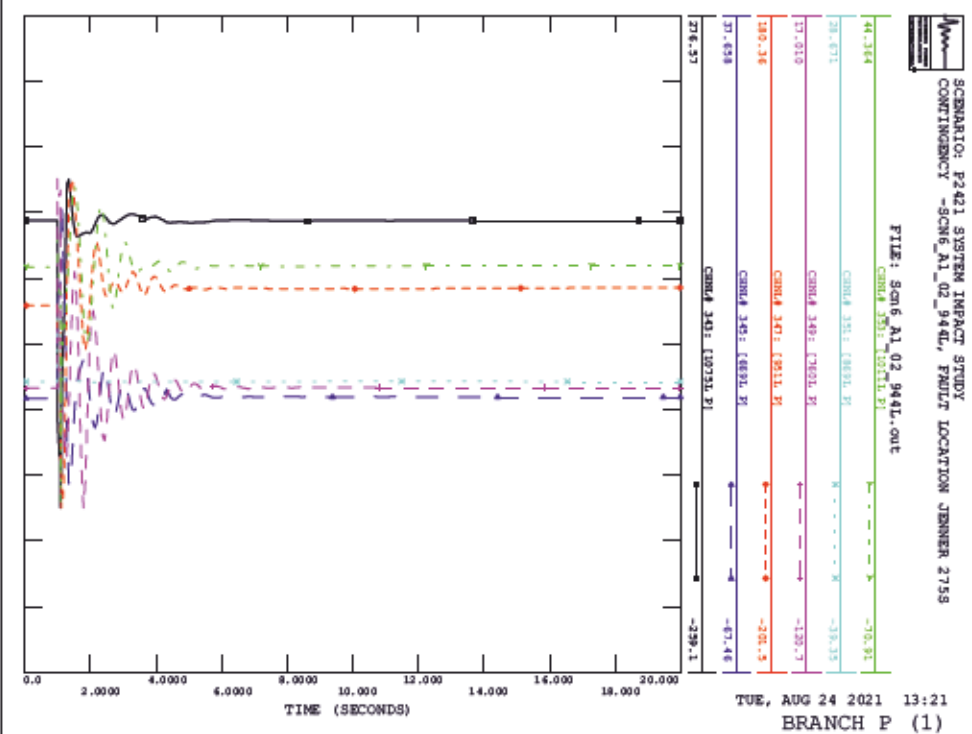
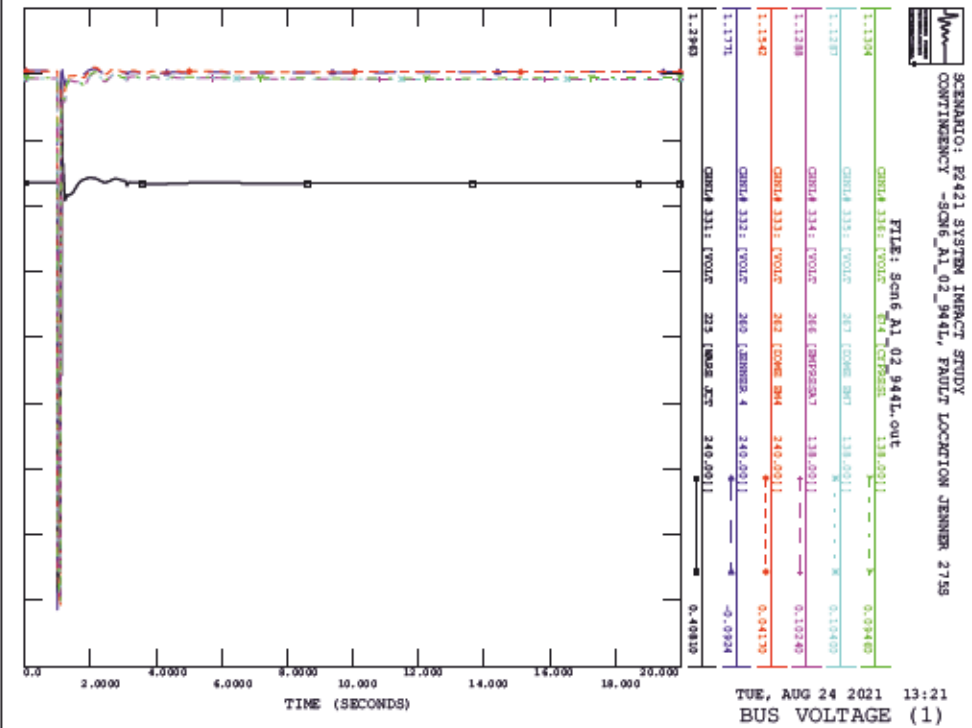
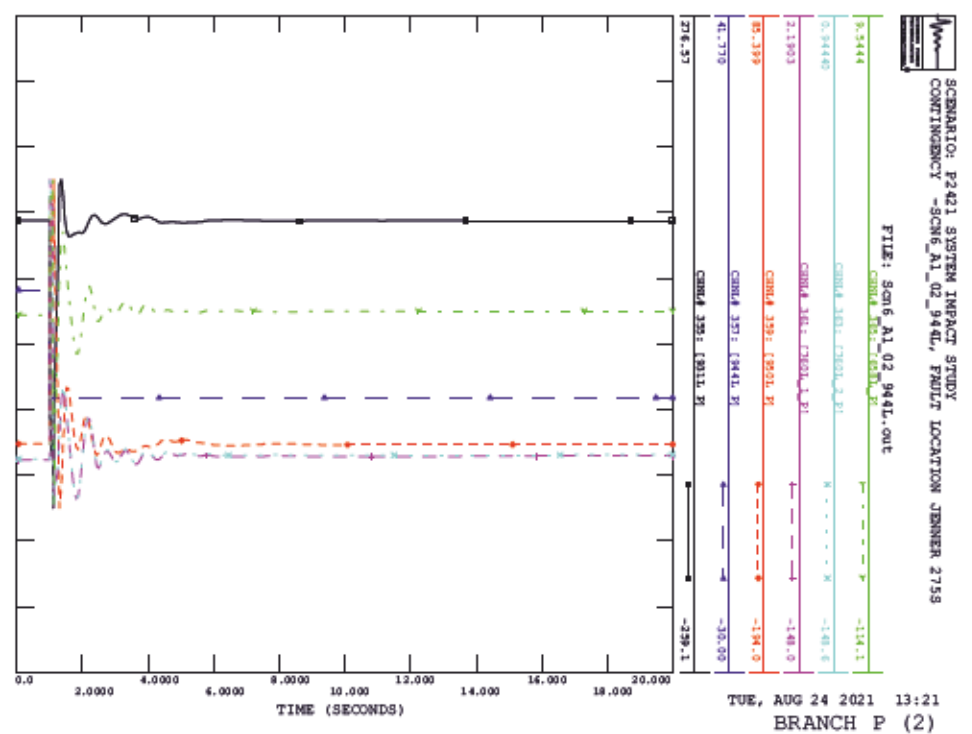
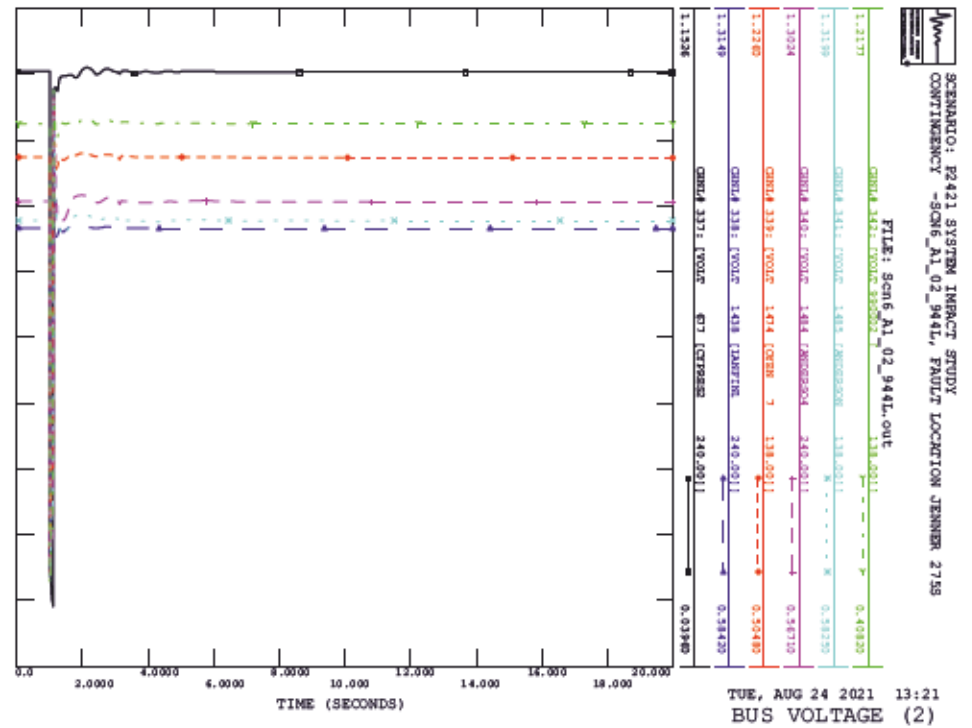
TUE, AUG 24 2021 13:21
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_02_944L, FAULT LOCATION JENNER 275S

FILE: Scm6_A1_02_944L.out

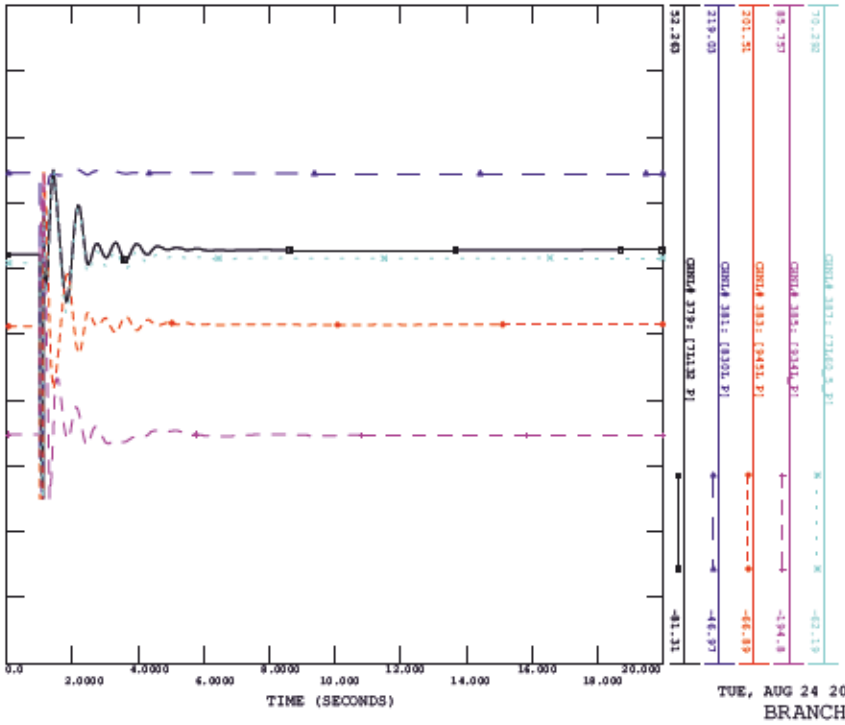


TUE, AUG 24 2021 13:21
REACTIVE POWER



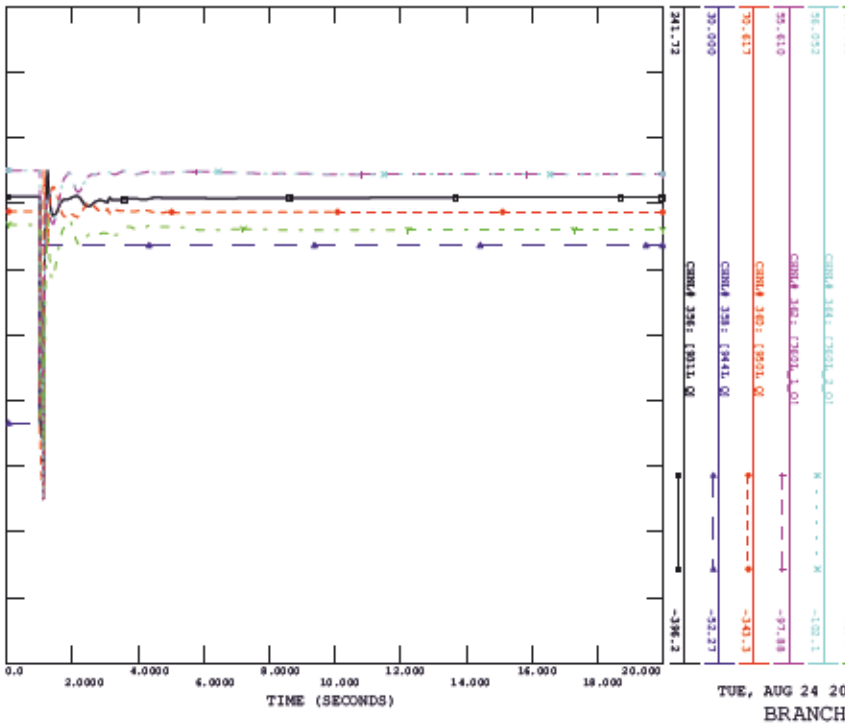
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_02_944L, FAULT LOCATION JENNER 2755

FILE: Scn6_A1_02_944L.out



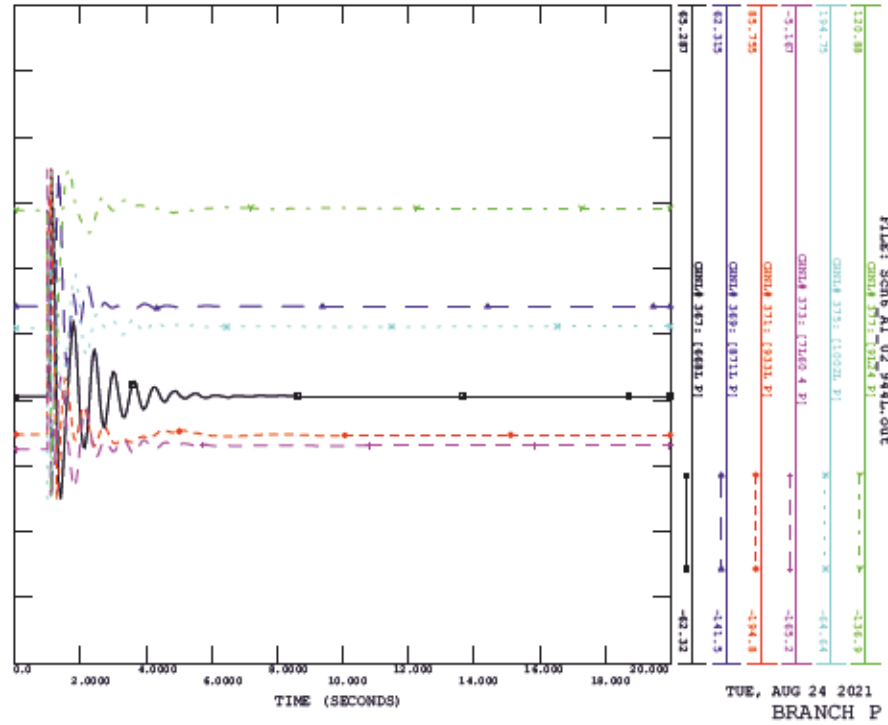
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_02_944L, FAULT LOCATION JENNER 2755

FILE: Scn6_A1_02_944L.out



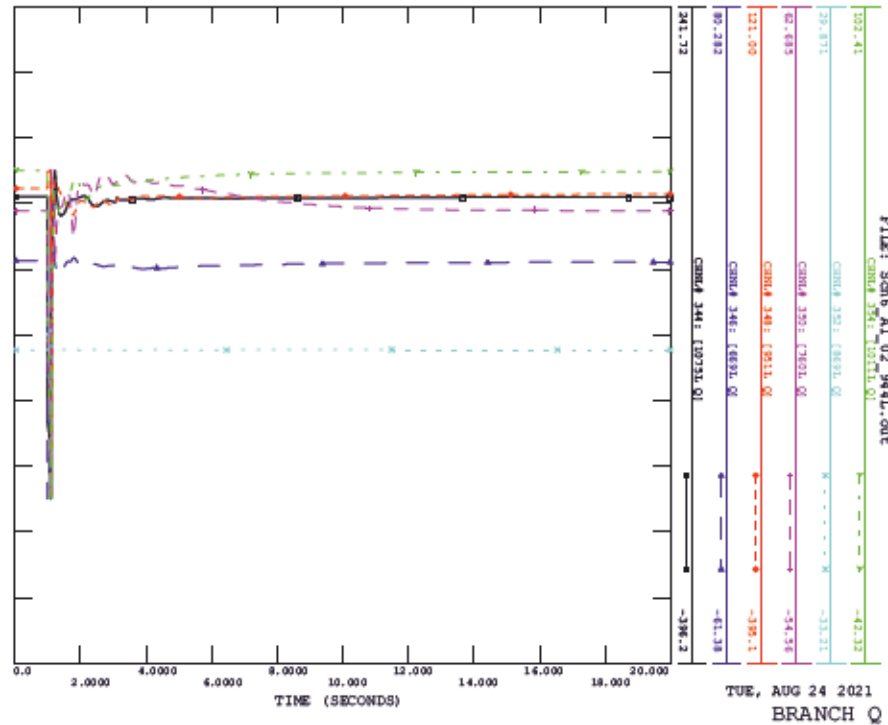
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CONTINGENCY -SCH6_A1_02_944L, FAULT LOCATION JENNER 2755

FILE: Scn6_A1_02_944L.out



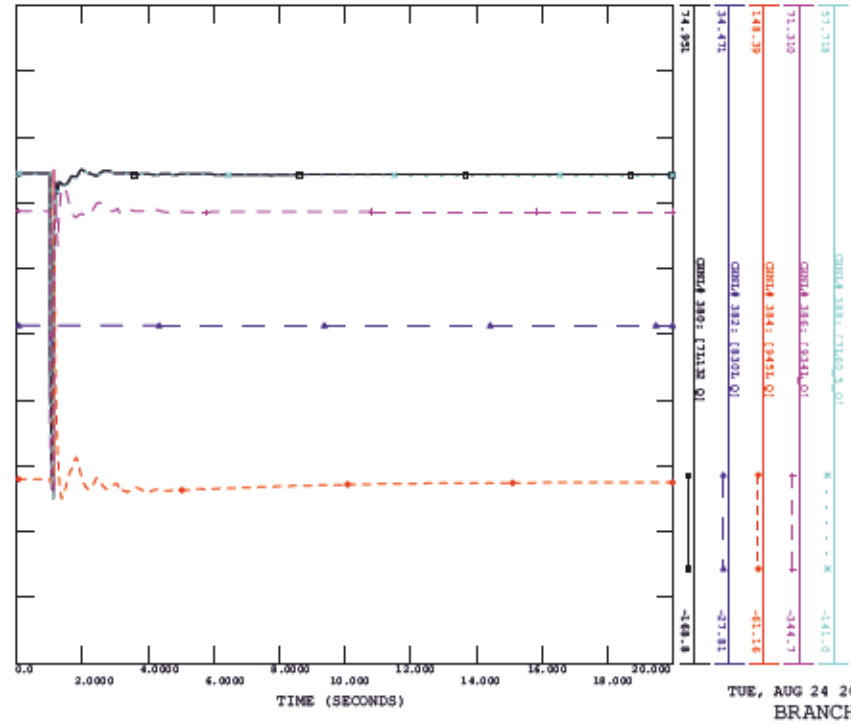
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_02_944L, FAULT LOCATION JENNER 2755

FILE: Scn6_A1_02_944L.out



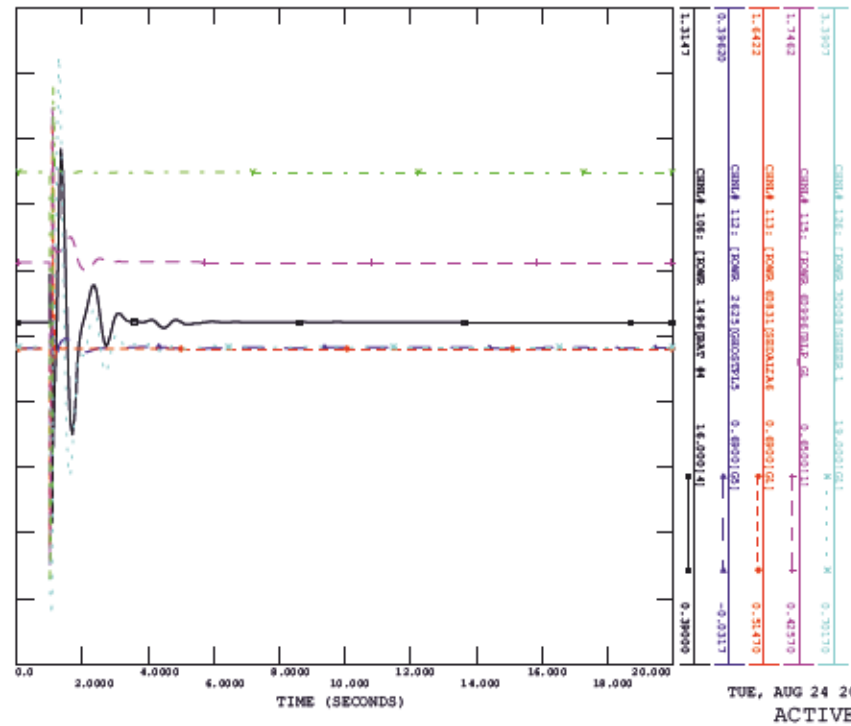
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCN6_A1_02_944L, FAULT LOCATION JENNER 2155

FILE: Scn6_A1_02_944L.out



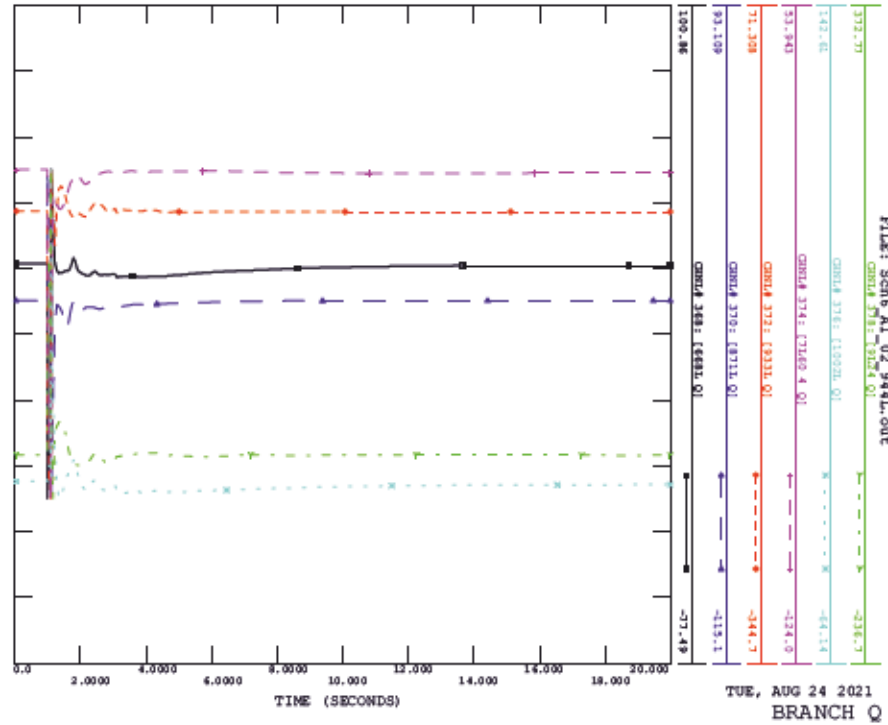
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCN6_A1_03_945L, FAULT LOCATION JENNER 2155

FILE: Scn6_A1_03_945L.out



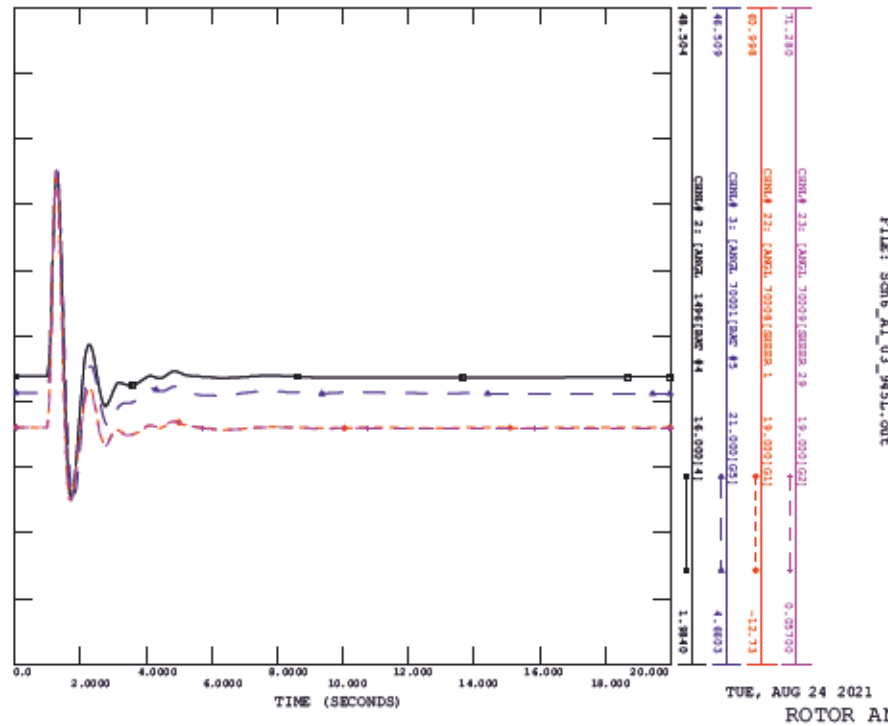
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCN6_A1_02_944L, FAULT LOCATION JENNER 2155

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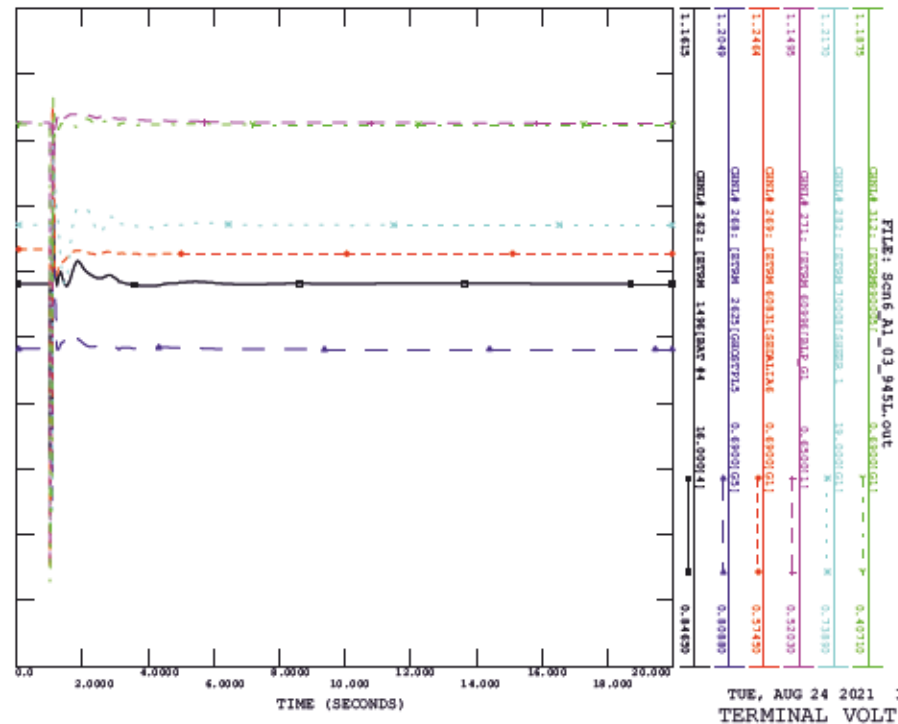


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY - SCN6_A1_03_945L, FAULT LOCATION JENNER 2155

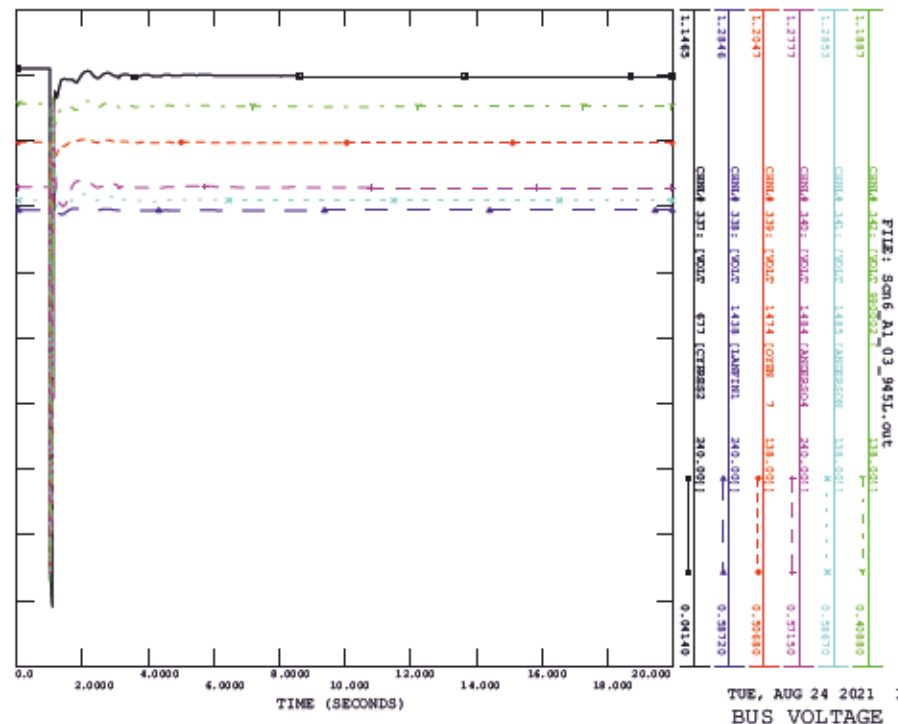
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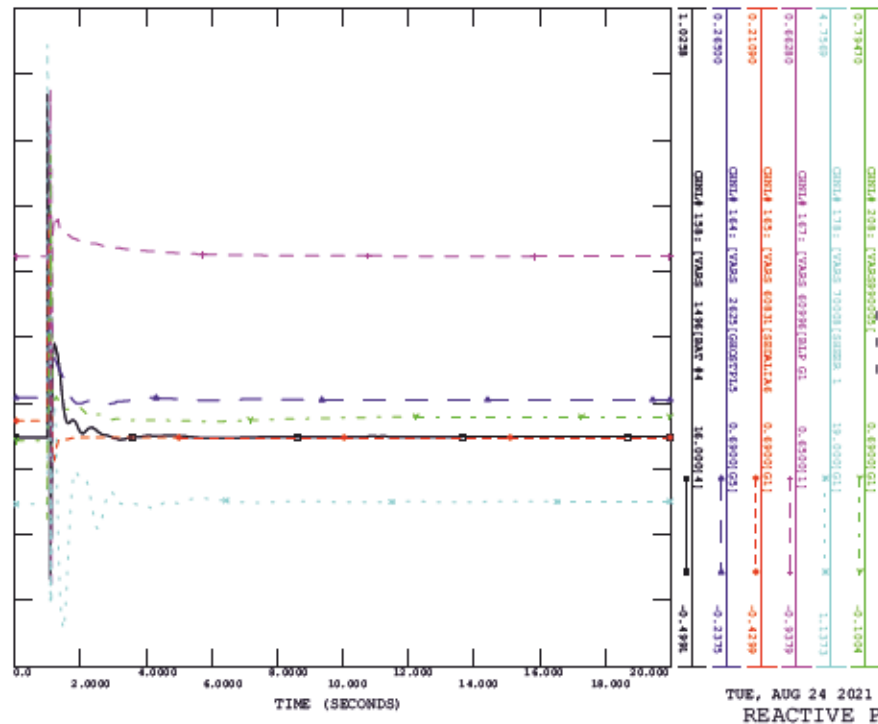
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_03_945L, FAULT LOCATION JENNER 2755



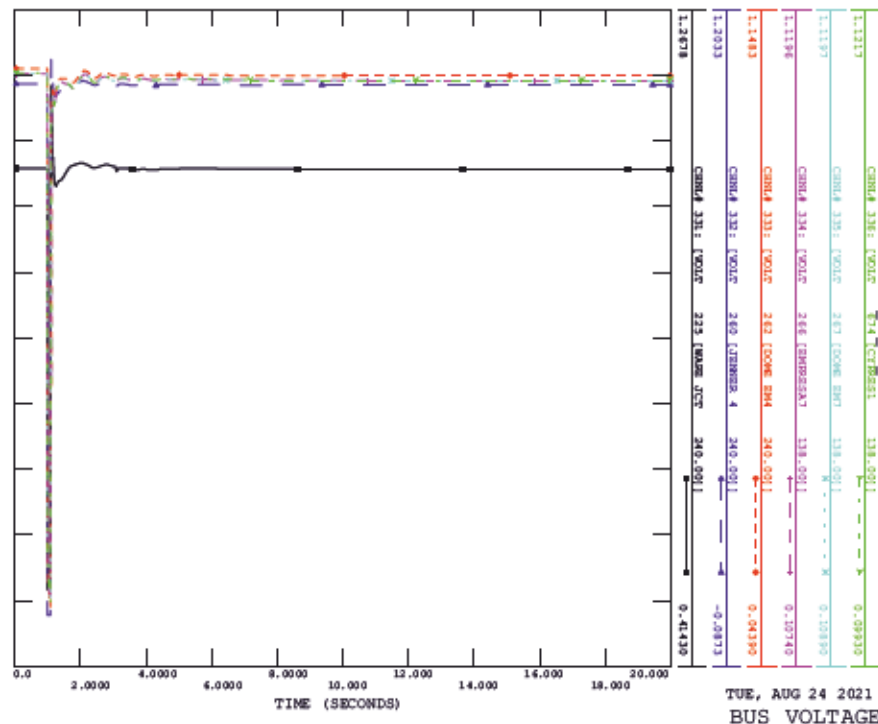
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_03_945L, FAULT LOCATION JENNER 2755



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_03_945L, FAULT LOCATION JENNER 2755

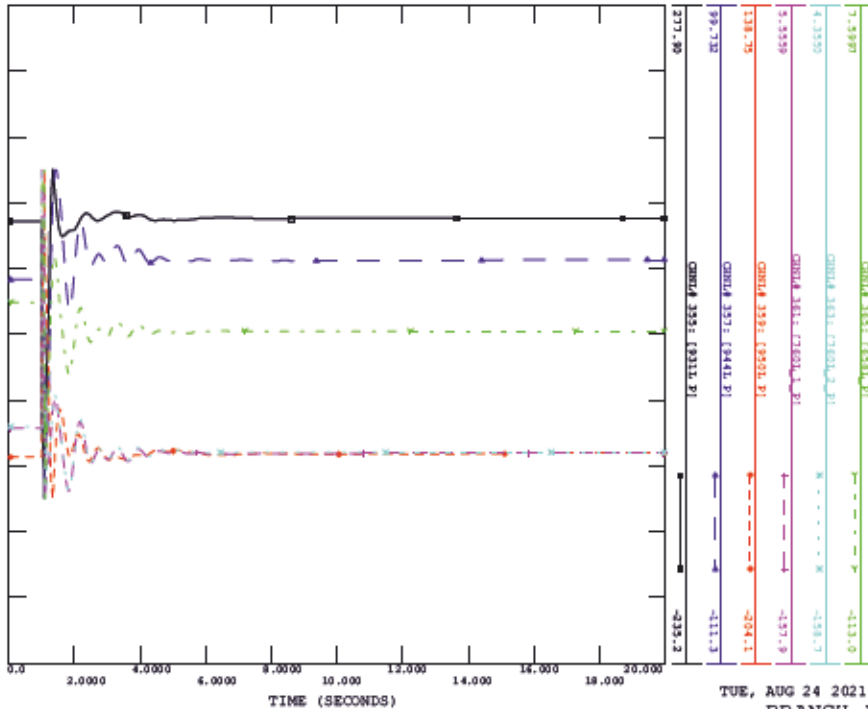


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCH6_A1_03_945L, FAULT LOCATION JENNER 2755



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_03_945L, FAULT LOCATION JENNER 2755

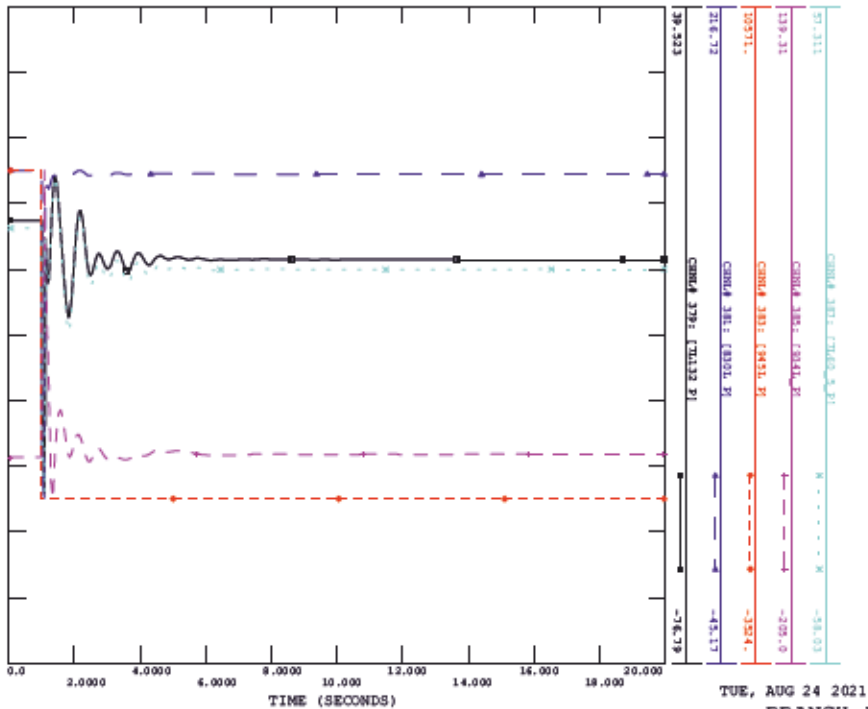
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TUE, AUG 24 2021 13:21
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_03_945L, FAULT LOCATION JENNER 2755

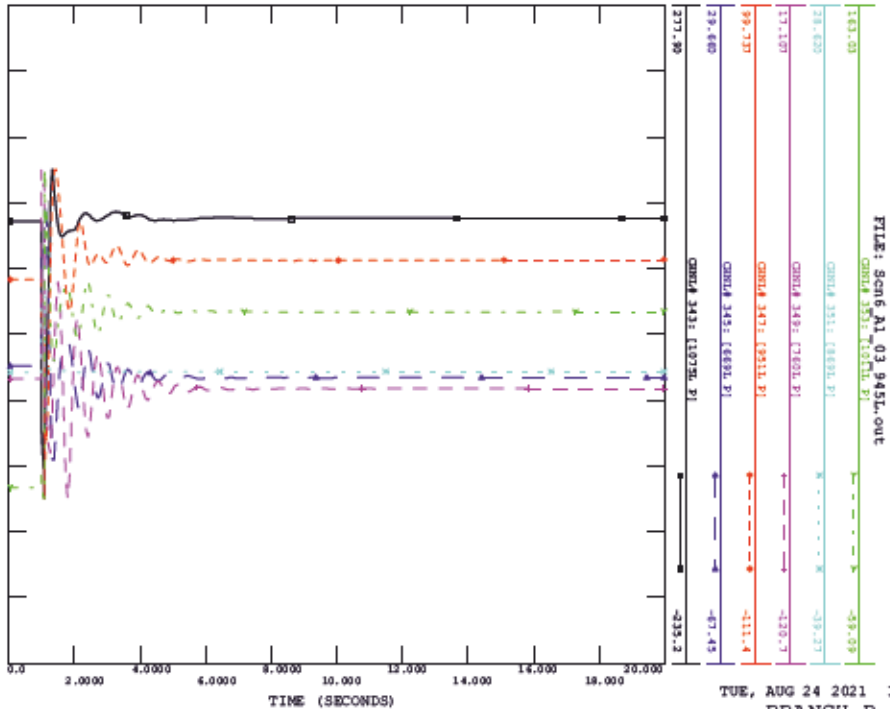
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TUE, AUG 24 2021 13:21
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_03_945L, FAULT LOCATION JENNER 2755

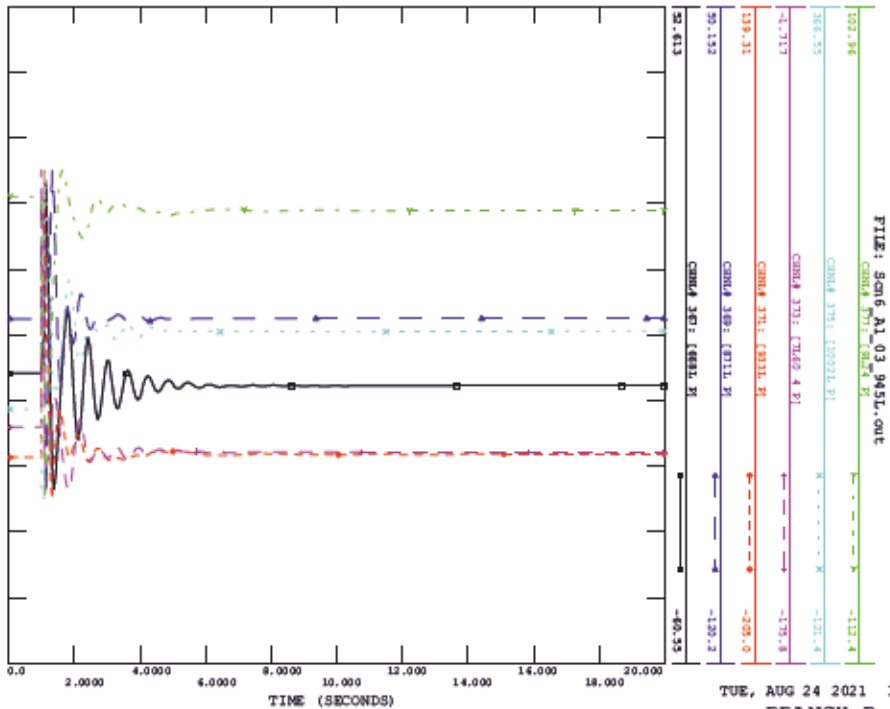
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TUE, AUG 24 2021 13:21
BRANCH P (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
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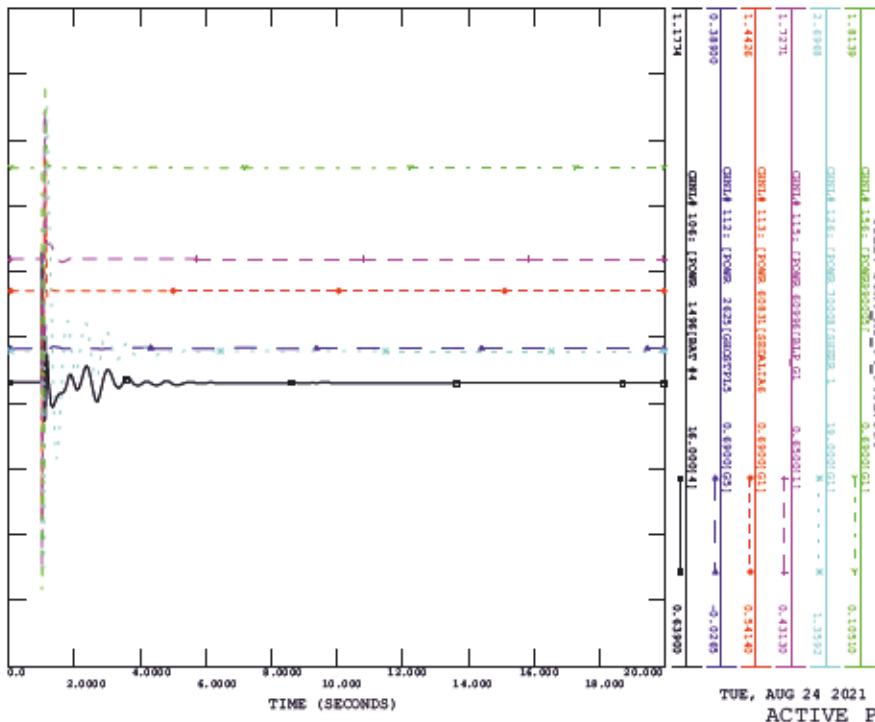
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TUE, AUG 24 2021 13:21
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_04_945L, FAULT LOCATION CYPRESS 5629

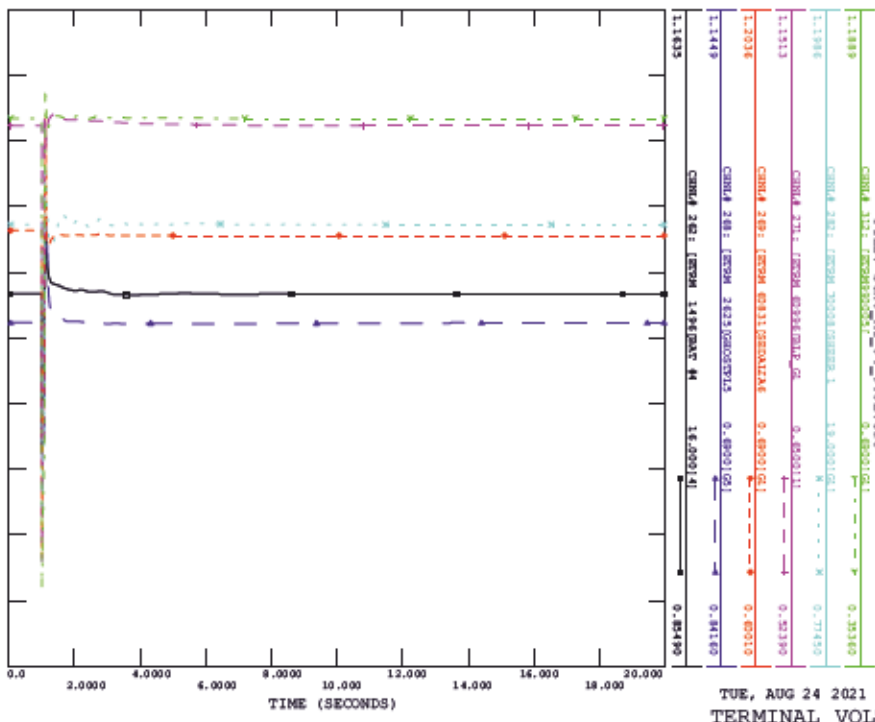
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TUE, AUG 24 2021 13:21
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_04_945L, FAULT LOCATION CYPRESS 5629

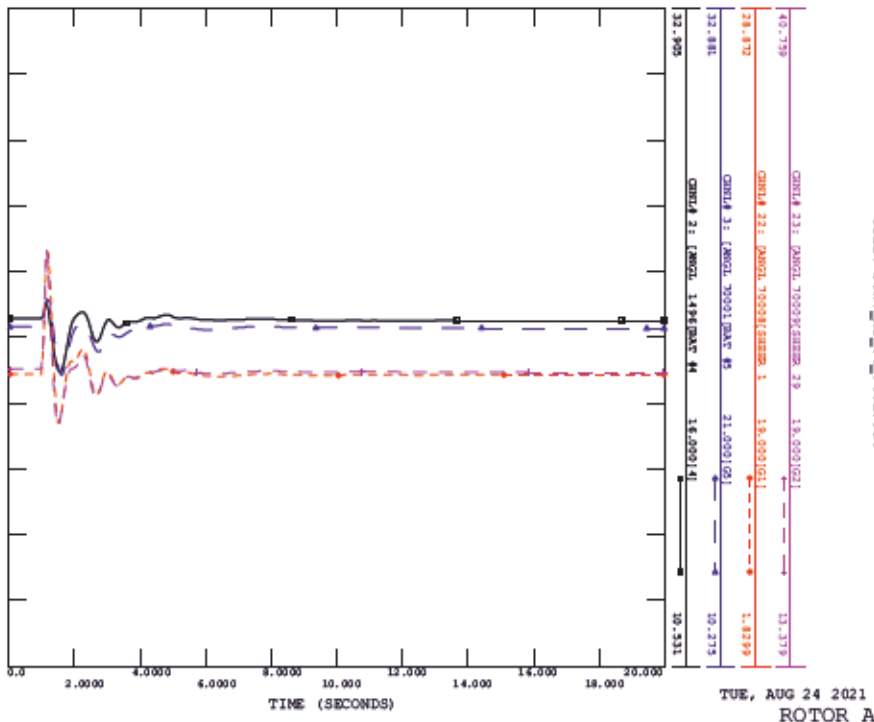
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TUE, AUG 24 2021 13:21
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_04_945L, FAULT LOCATION CYPRESS 5629

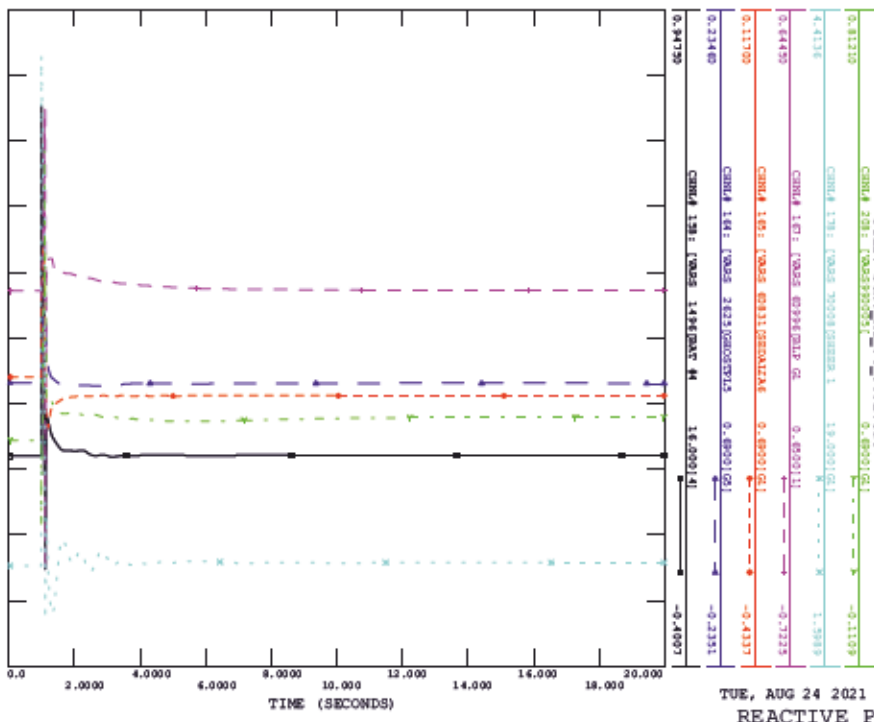
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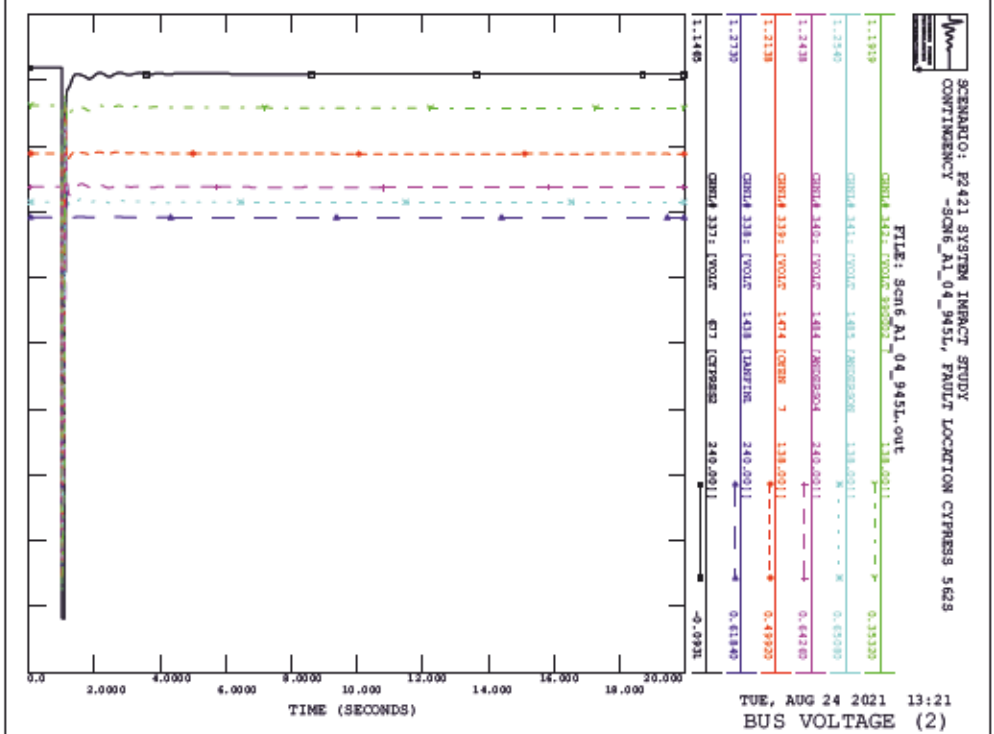
TUE, AUG 24 2021 13:21
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_04_945L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_04_945L.out

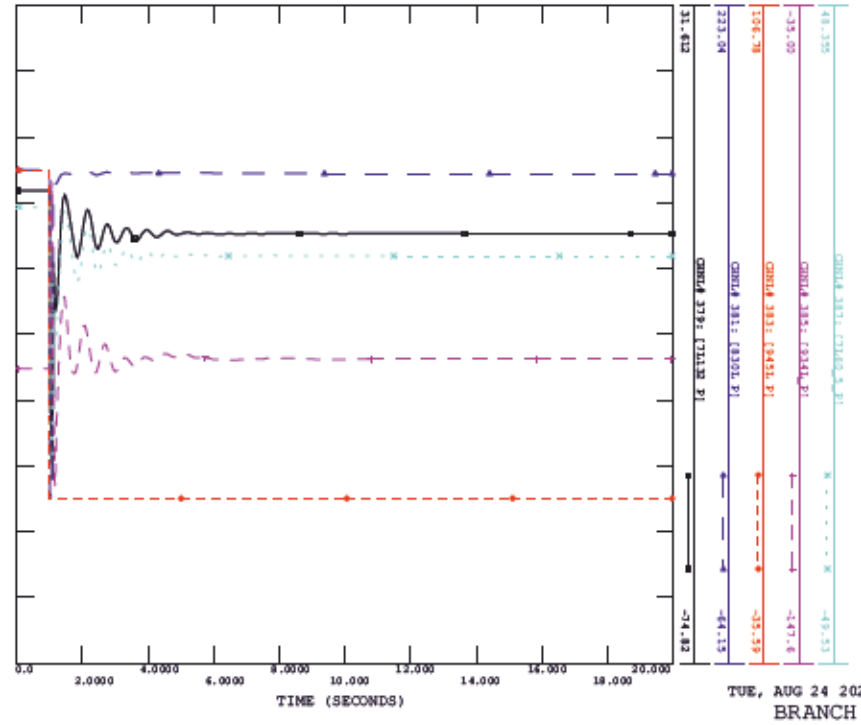


TUE, AUG 24 2021 13:21
REACTIVE POWER



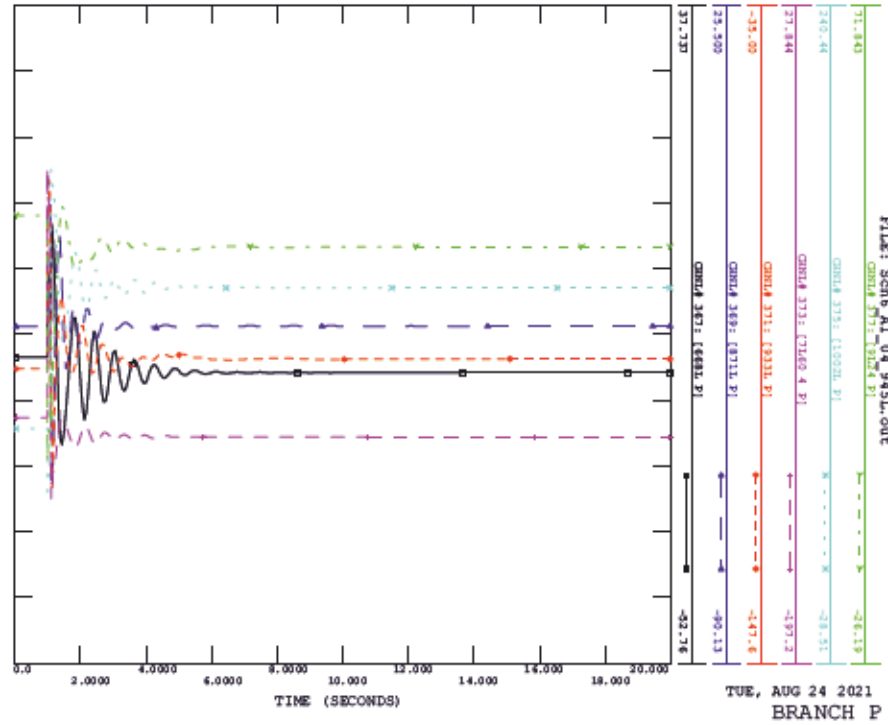
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CONTINGENCY -SCM6_AI_04_945L, FAULT LOCATION CYPRESS 5629

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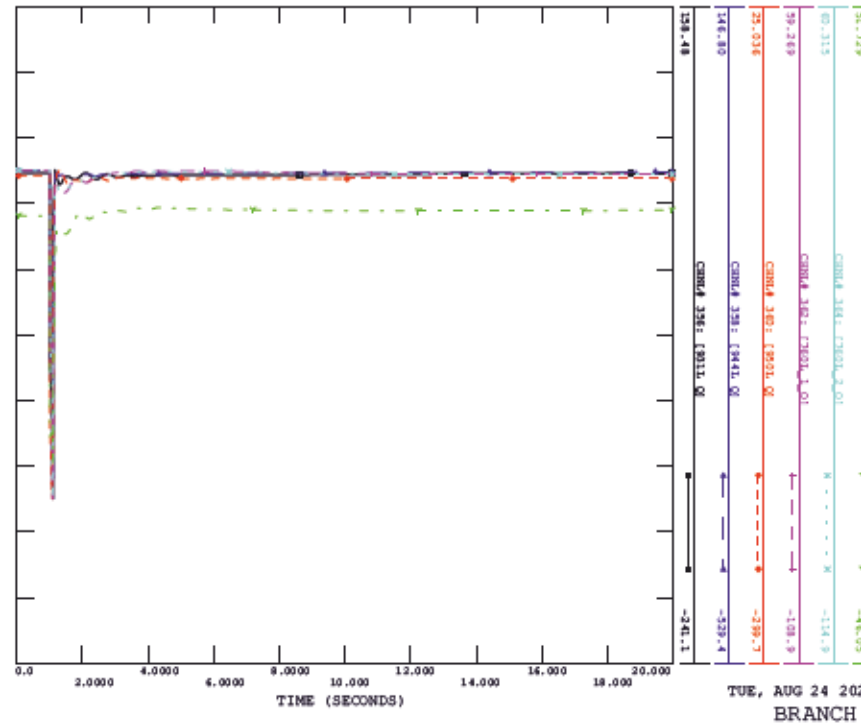
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CONTINGENCY -SCM6_AI_04_945L, FAULT LOCATION CYPRESS 5629

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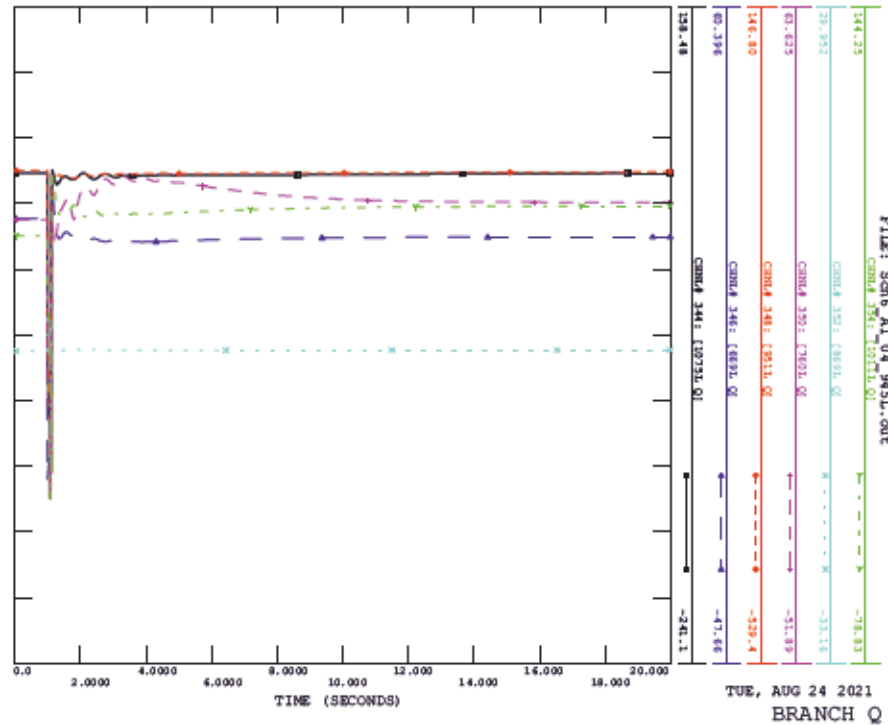
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CONTINGENCY -SCM6_AI_04_945L, FAULT LOCATION CYPRESS 5629

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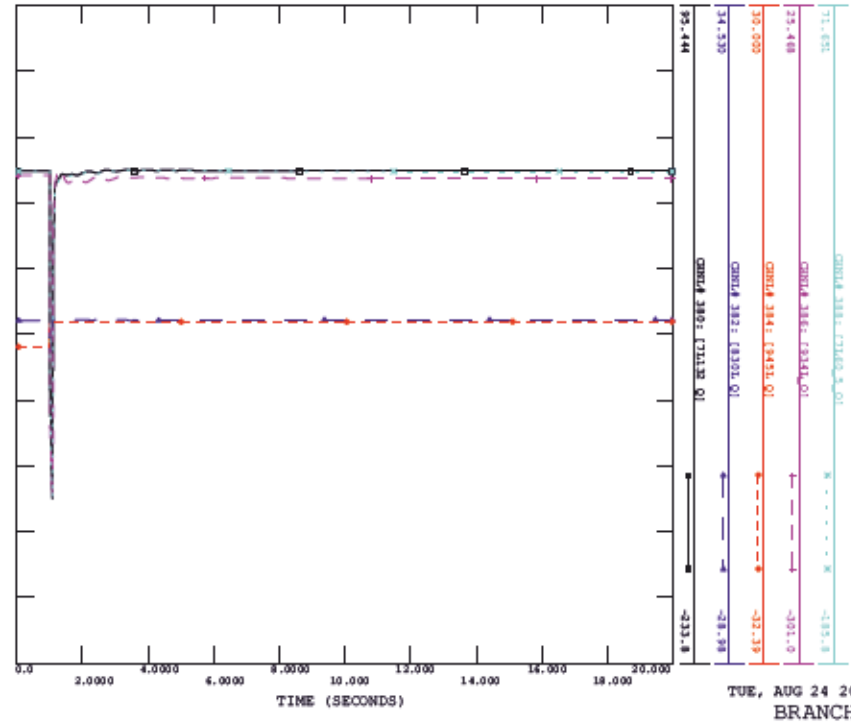
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CONTINGENCY -SCM6_AI_04_945L, FAULT LOCATION CYPRESS 5629

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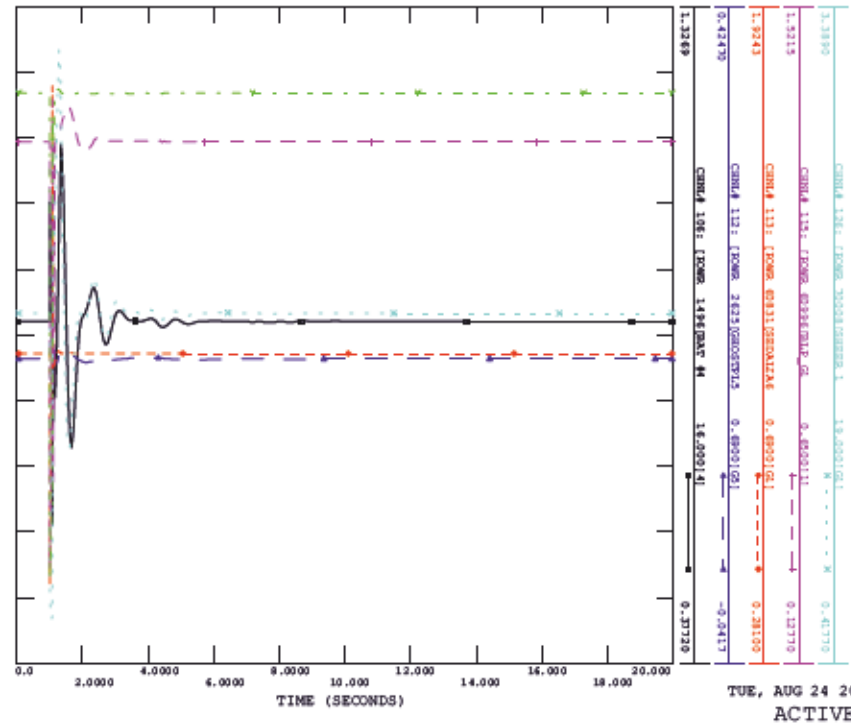
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CONTINGENCY -SCM6_A1_04_9451L, FAULT LOCATION CYPRESS 5629

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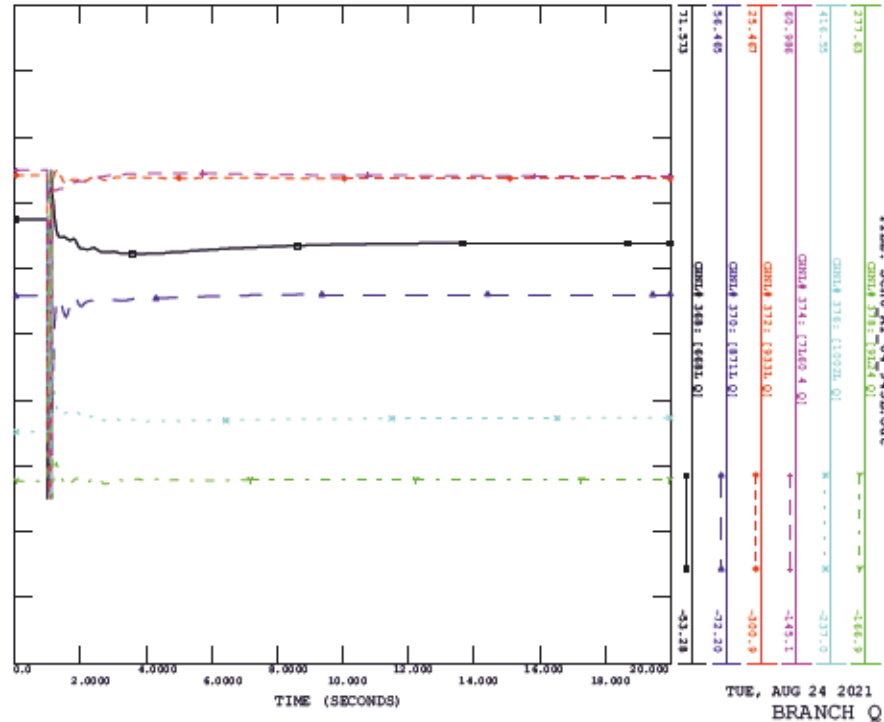
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_05_951L, FAULT LOCATION WARE JUNCTION

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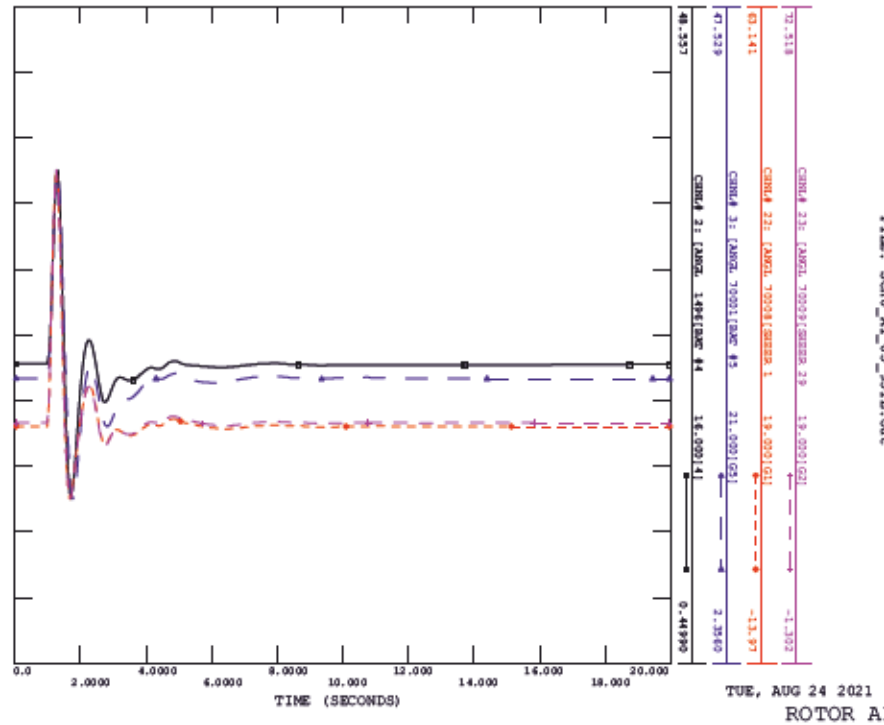
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CONTINGENCY -SCM6_A1_04_9451L, FAULT LOCATION CYPRESS 5629

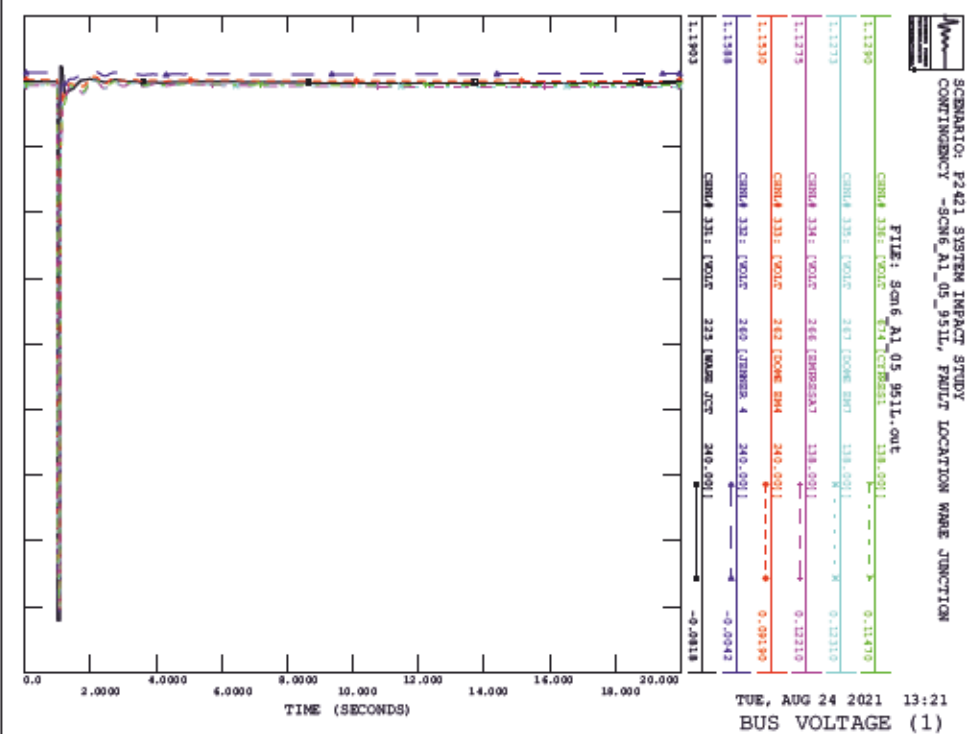
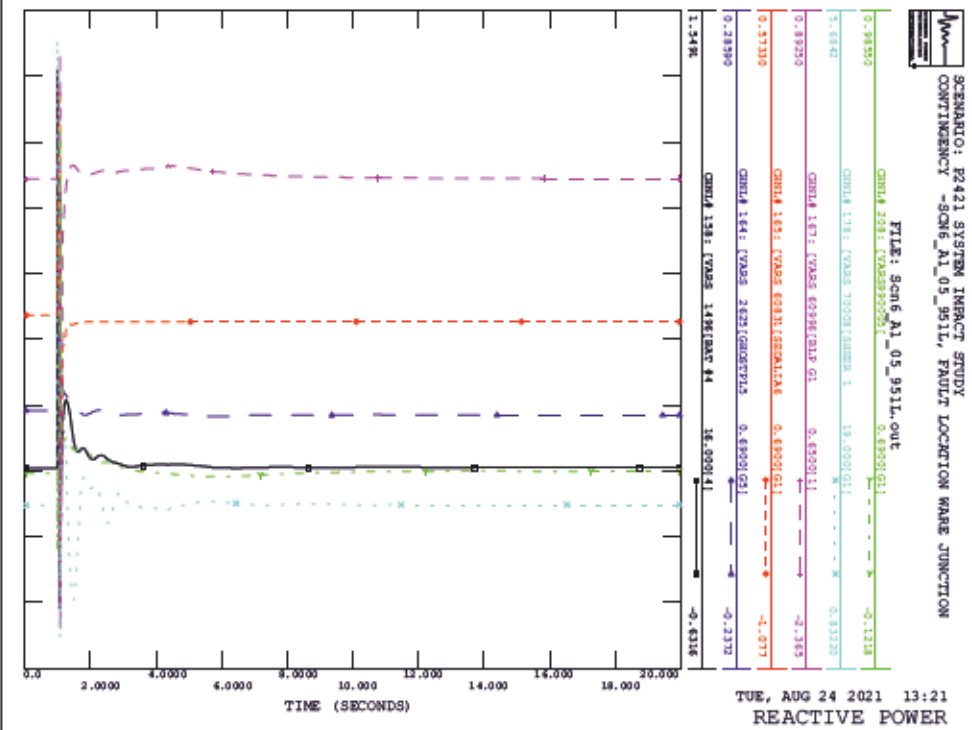
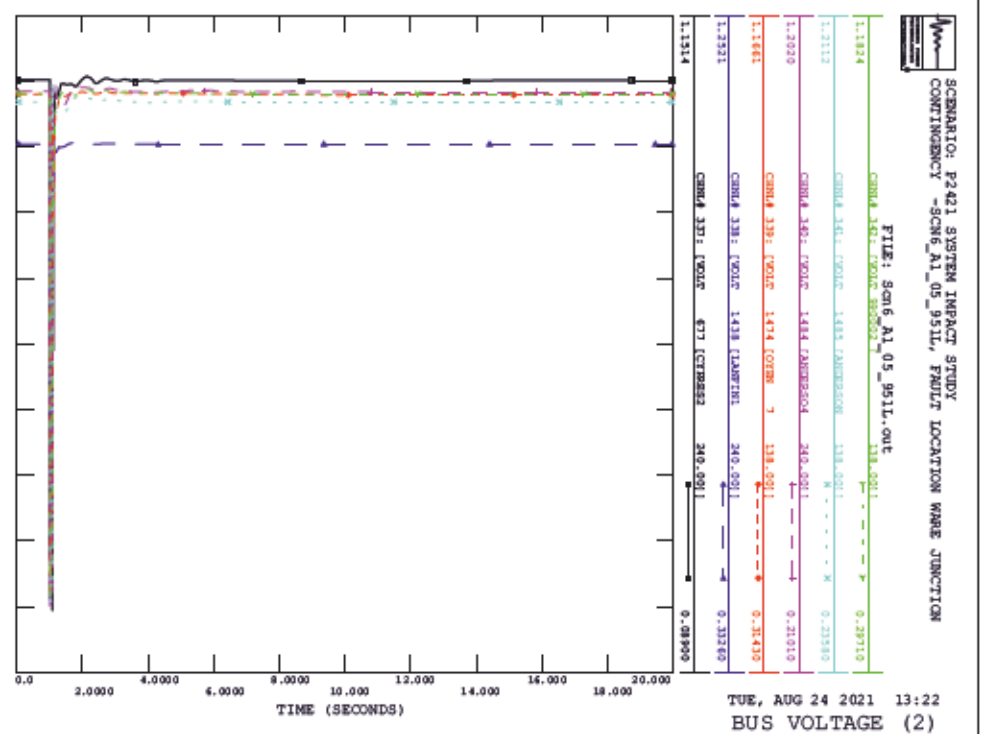
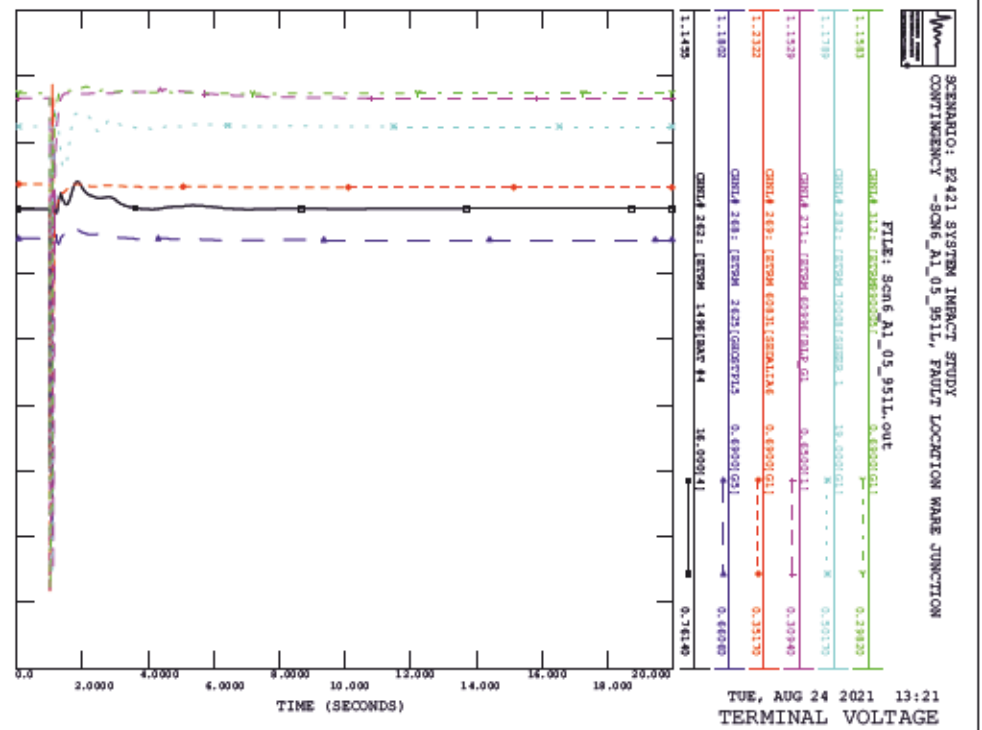
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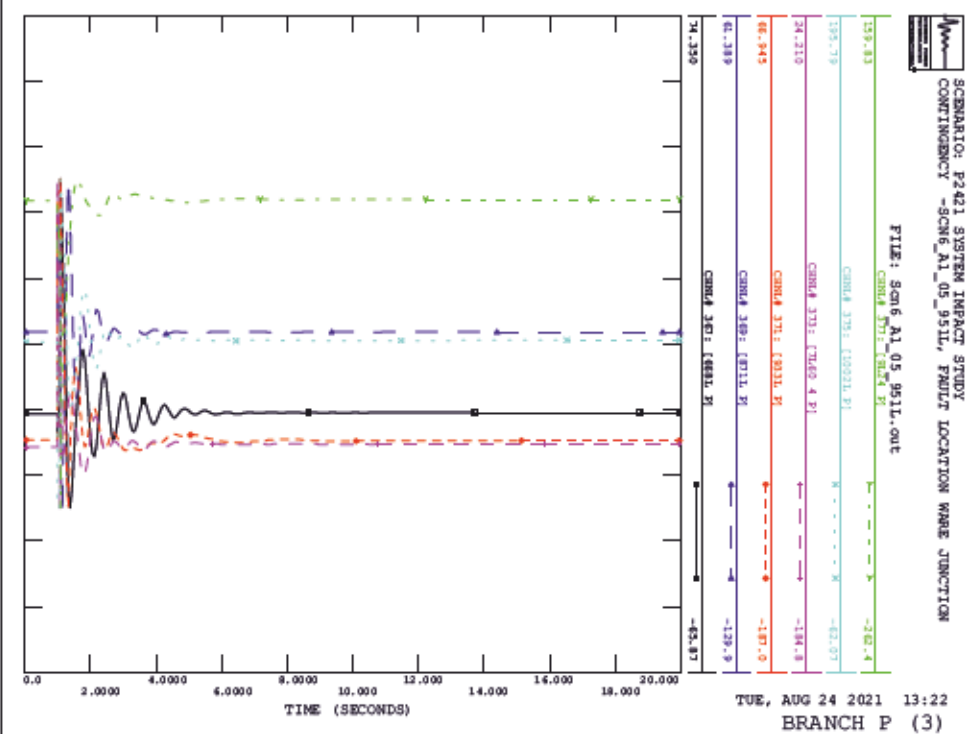
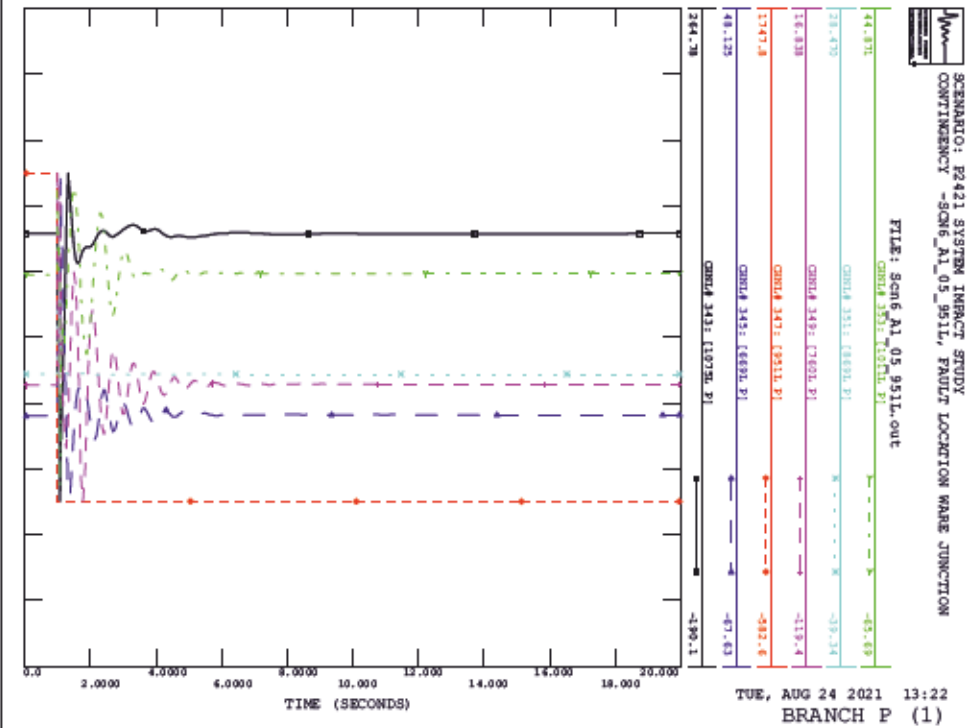
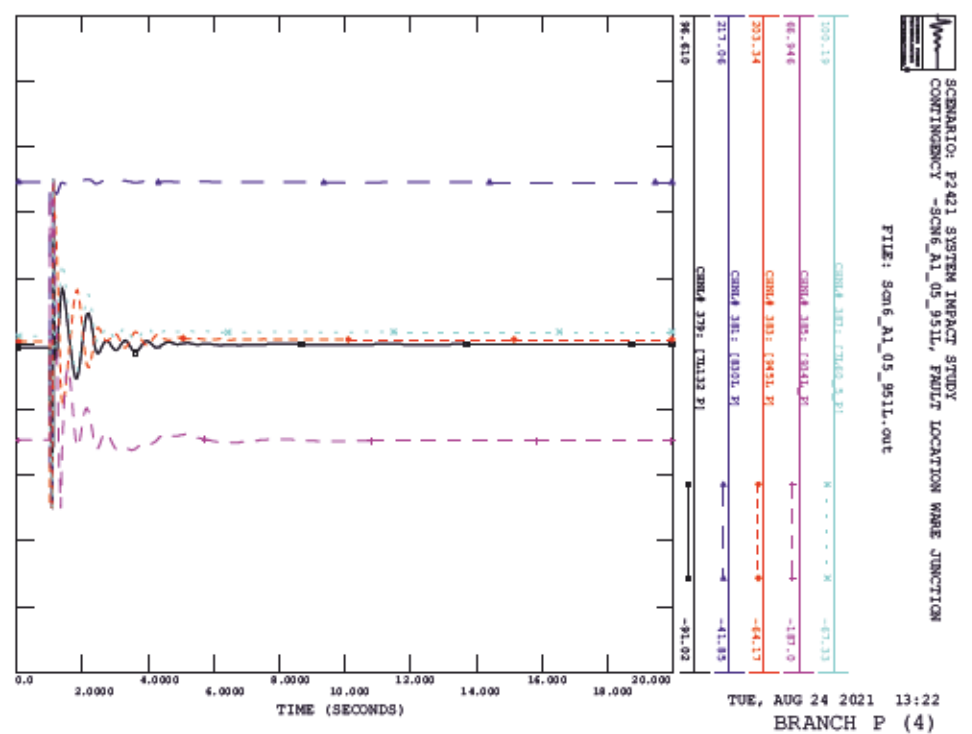
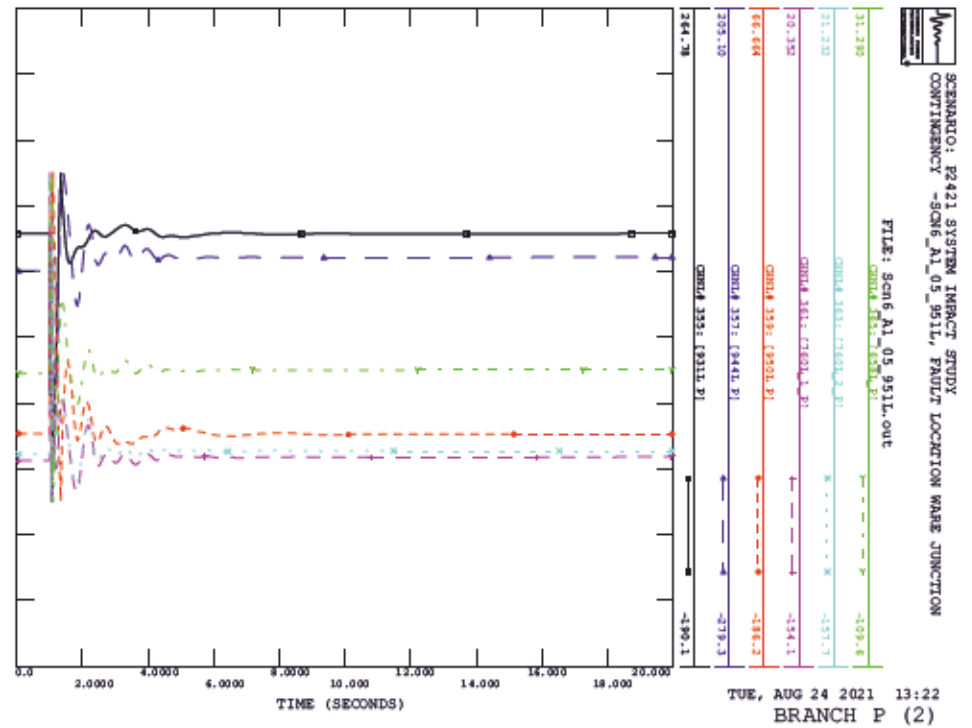


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_05_951L, FAULT LOCATION WARE JUNCTION

FILE: Scm6_A1_05_951L.out

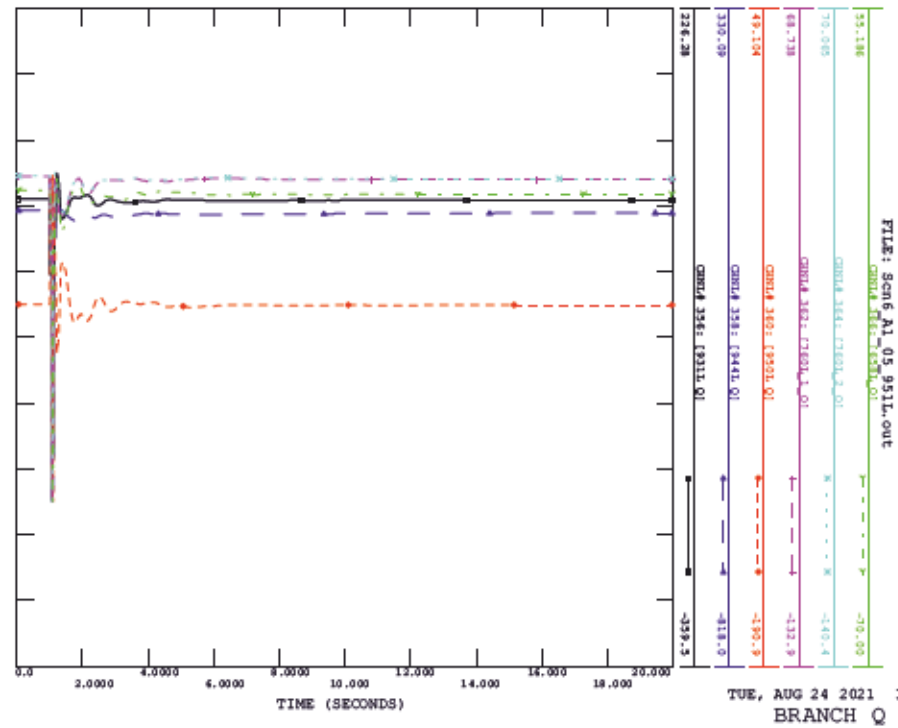






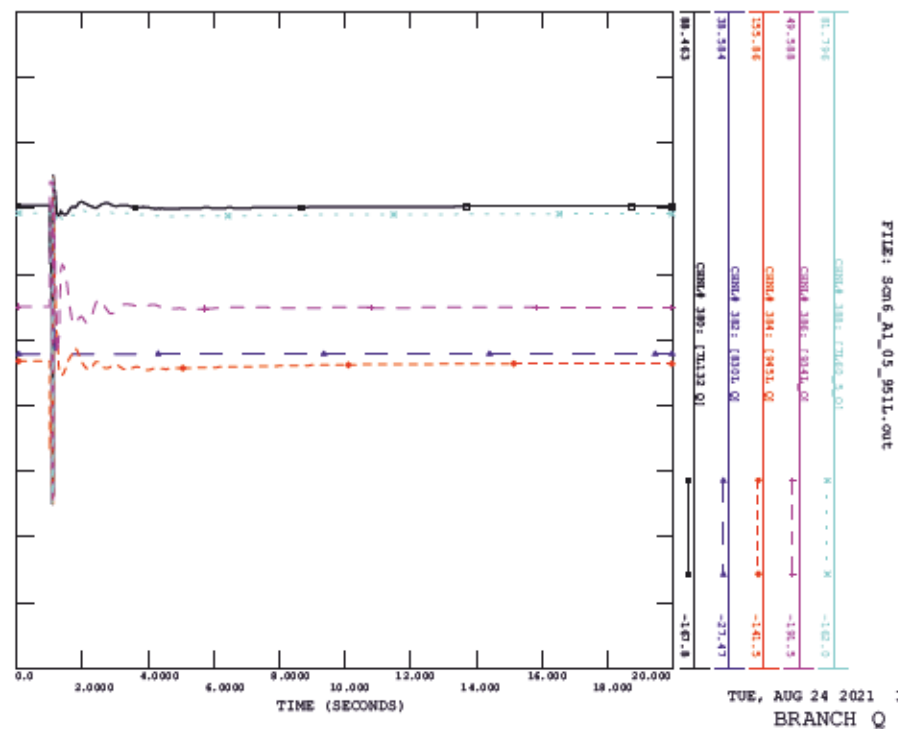
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CONTINGENCY -SCM6_AI_05_951L, FAULT LOCATION WARE JUNCTION

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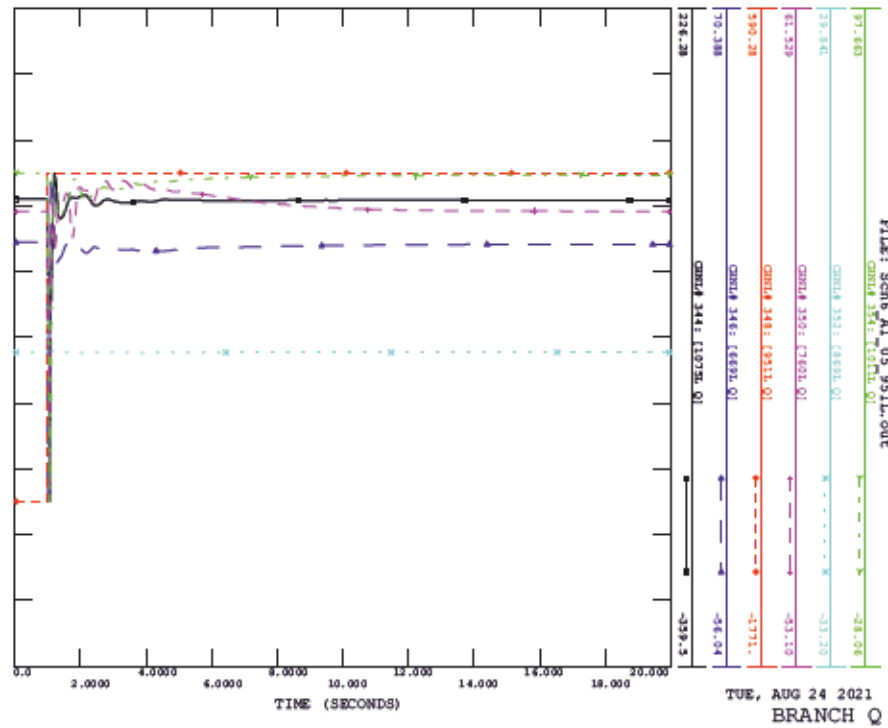
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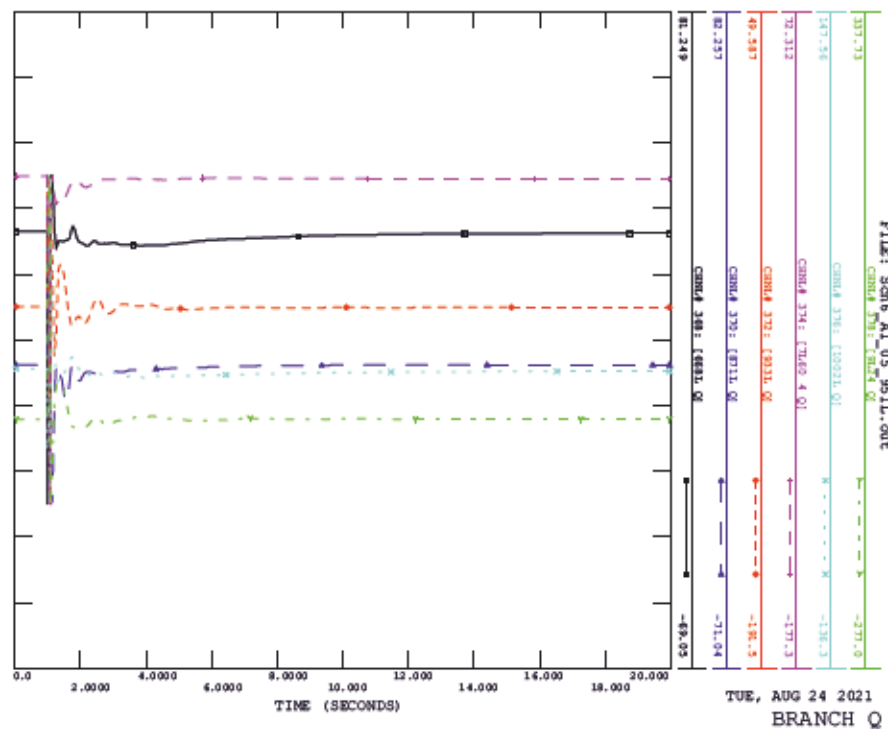
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CONTINGENCY -SCM6_AI_05_951L, FAULT LOCATION WARE JUNCTION

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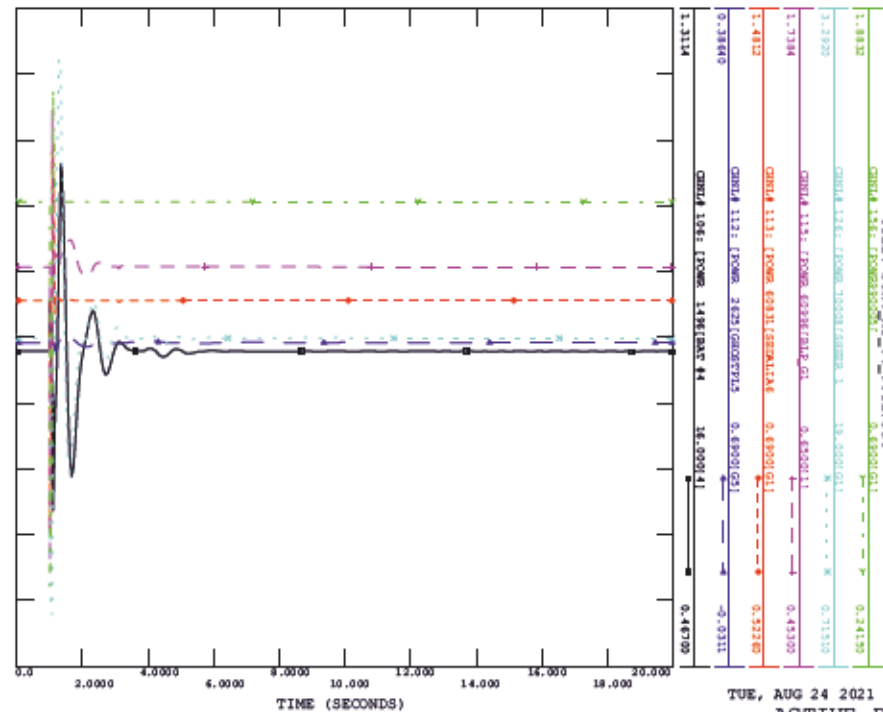
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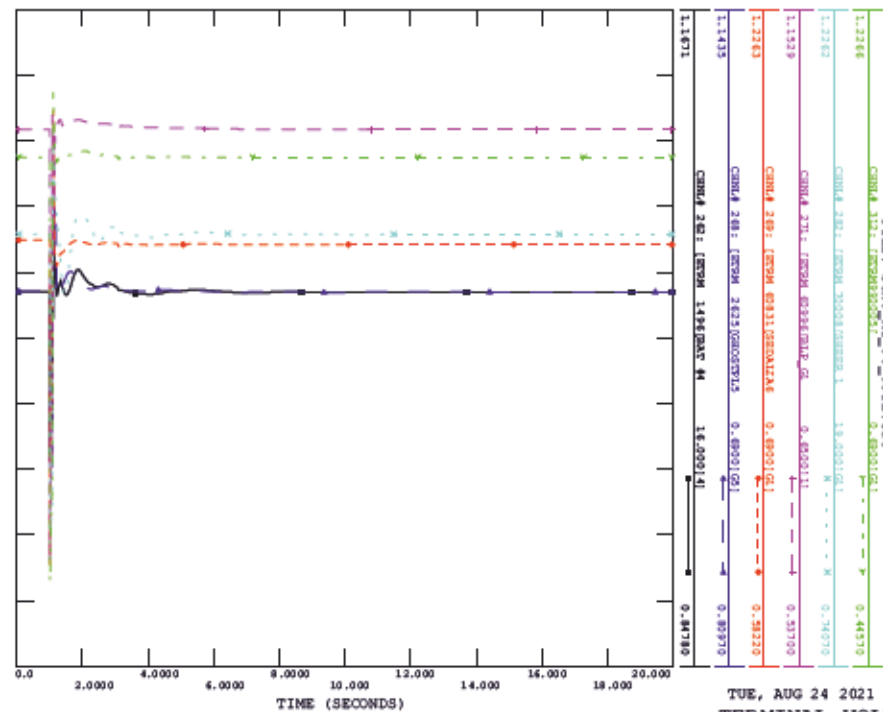
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CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2755

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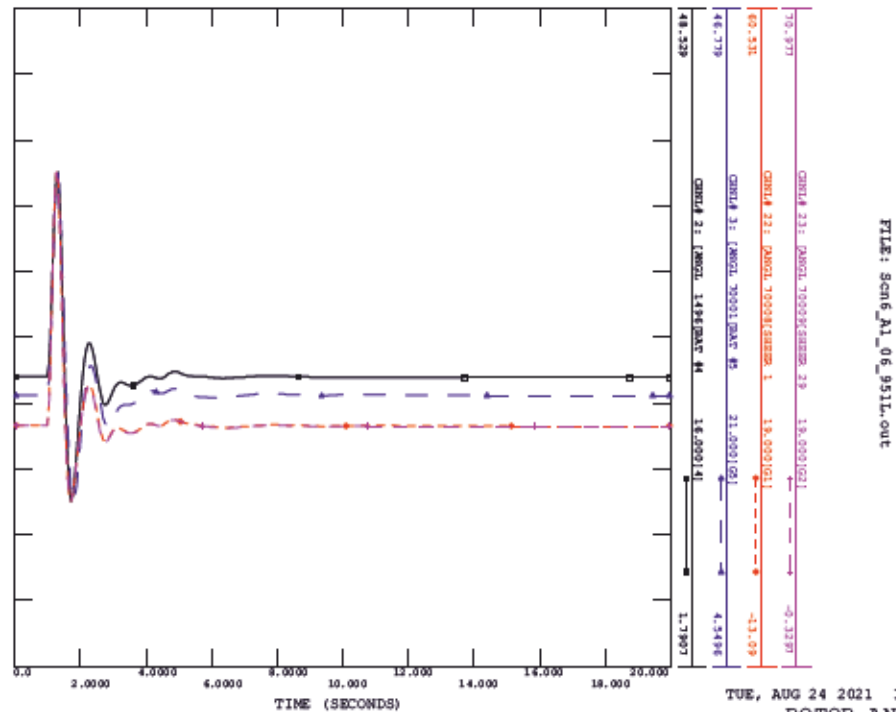
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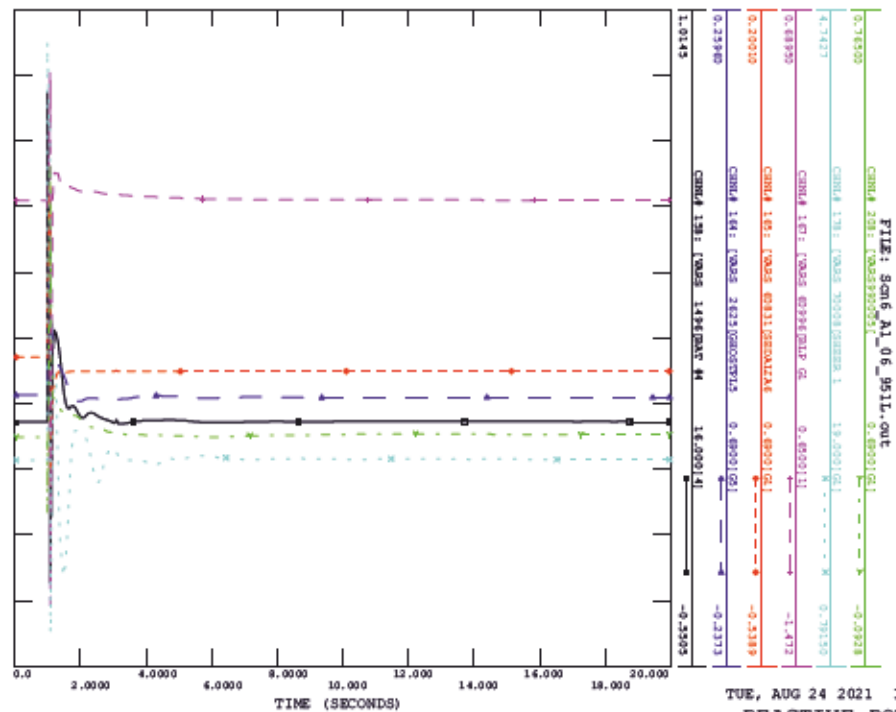
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CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2755

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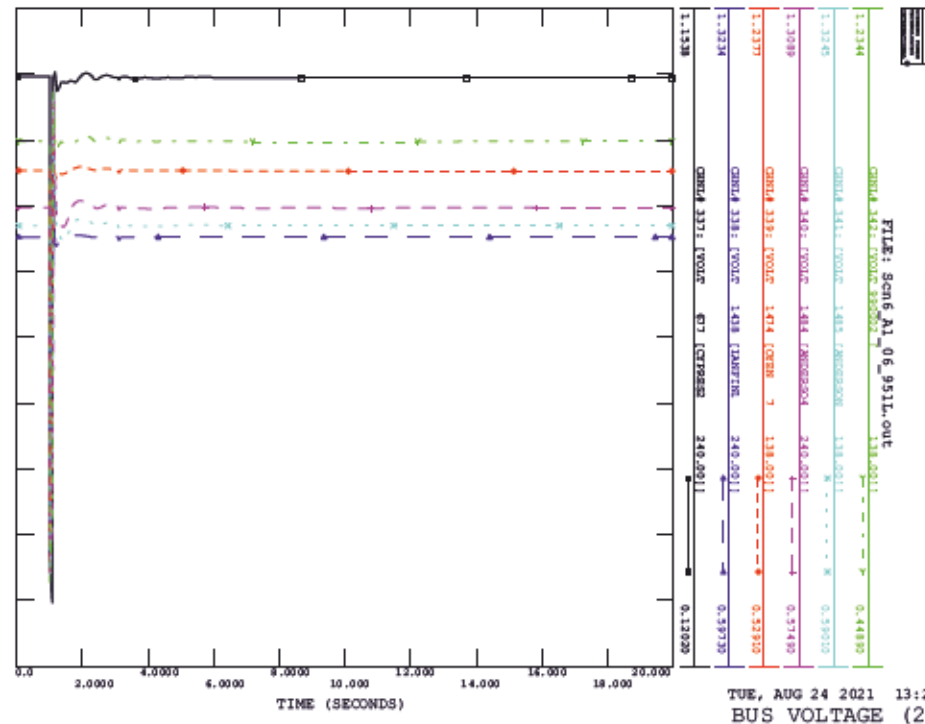


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2755

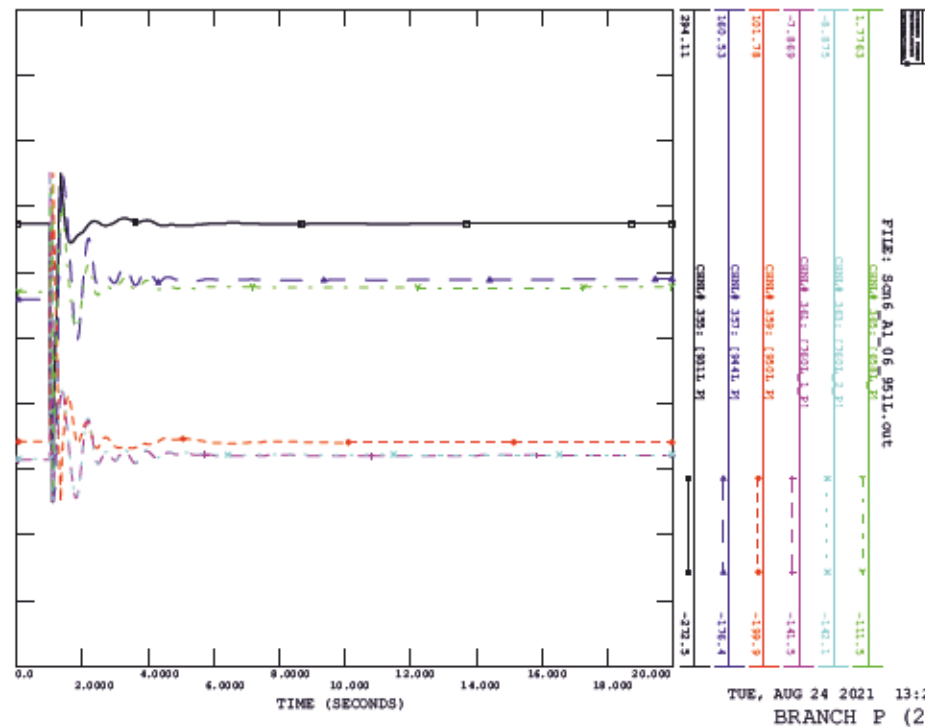
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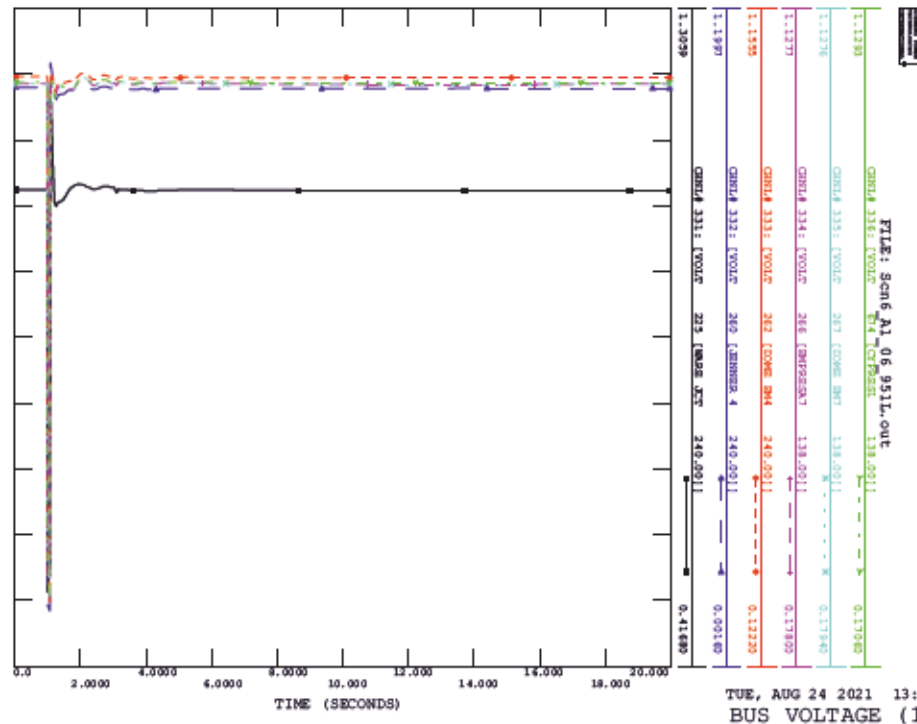
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2155



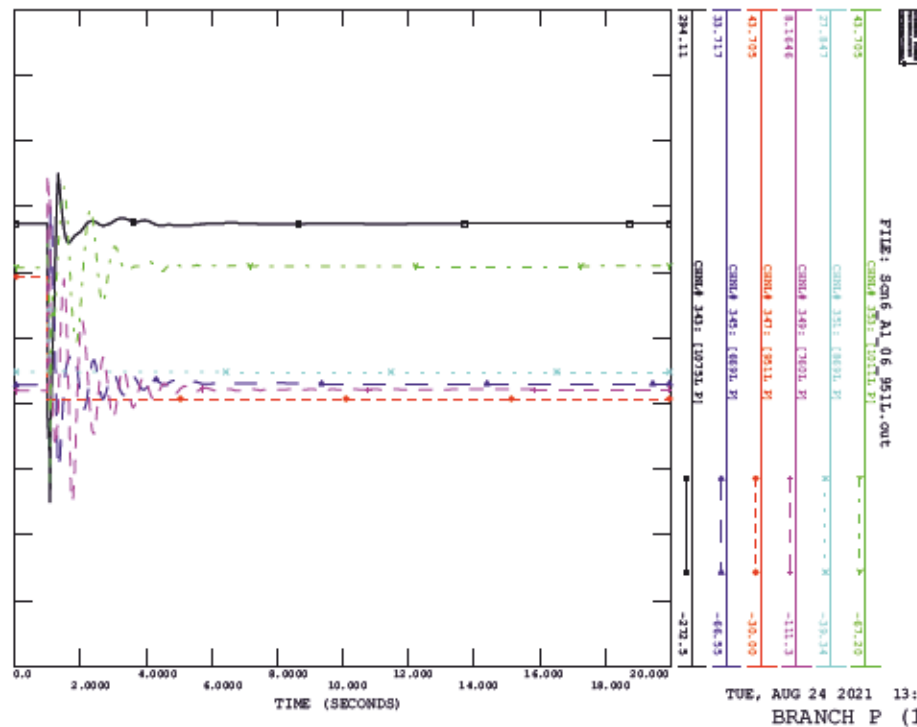
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2155



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2155

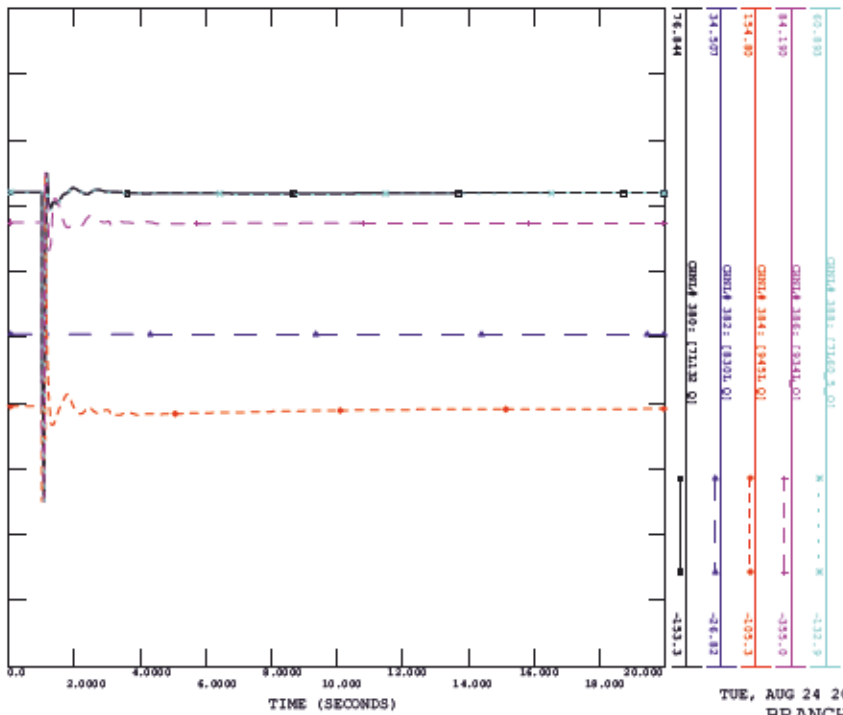


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 2155



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 275S

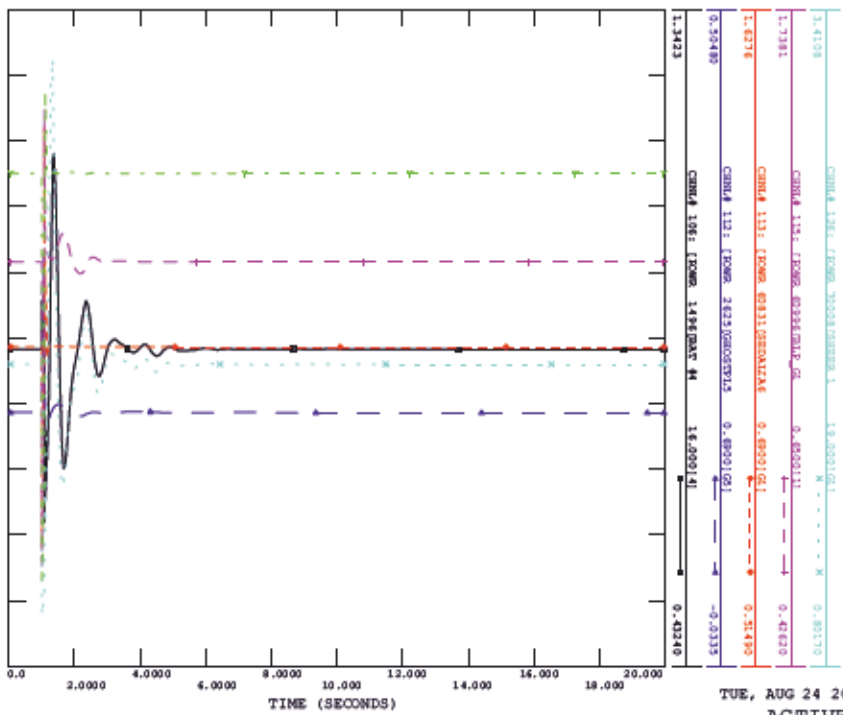
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TUE, AUG 24 2021 13:22
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_07_1002L, FAULT LOCATION JENNER 275S

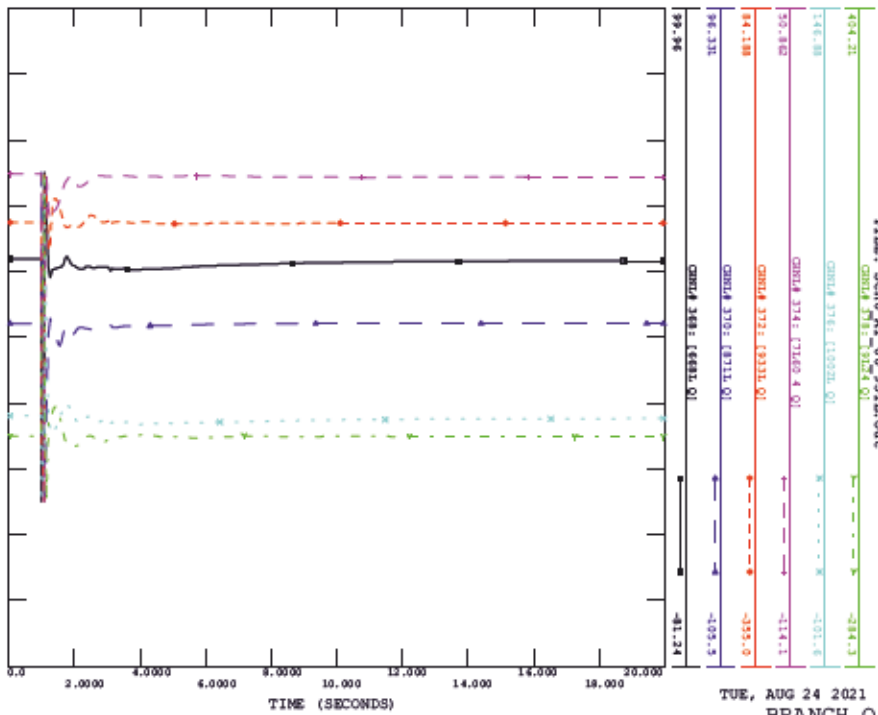
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TUE, AUG 24 2021 13:22
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_06_951L, FAULT LOCATION JENNER 275S

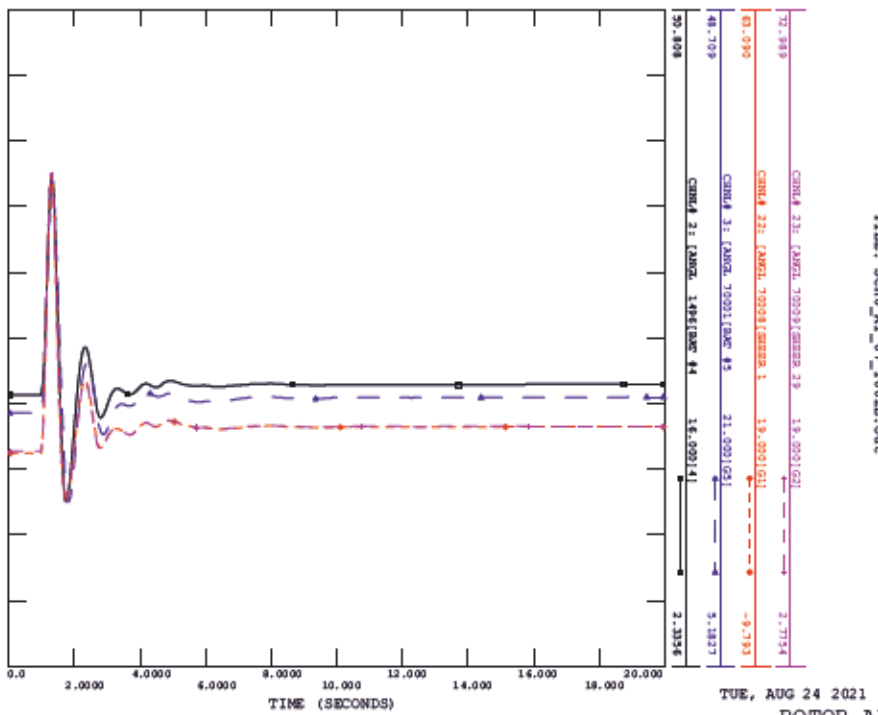
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TUE, AUG 24 2021 13:22
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_07_1002L, FAULT LOCATION JENNER 275S

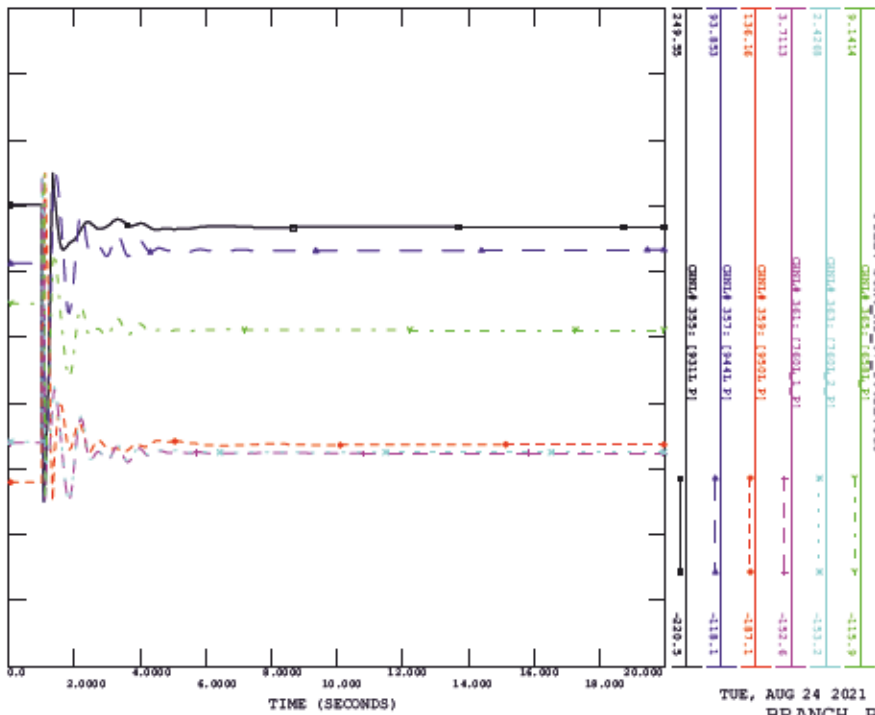
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TUE, AUG 24 2021 13:22
ROTOR ANGLE

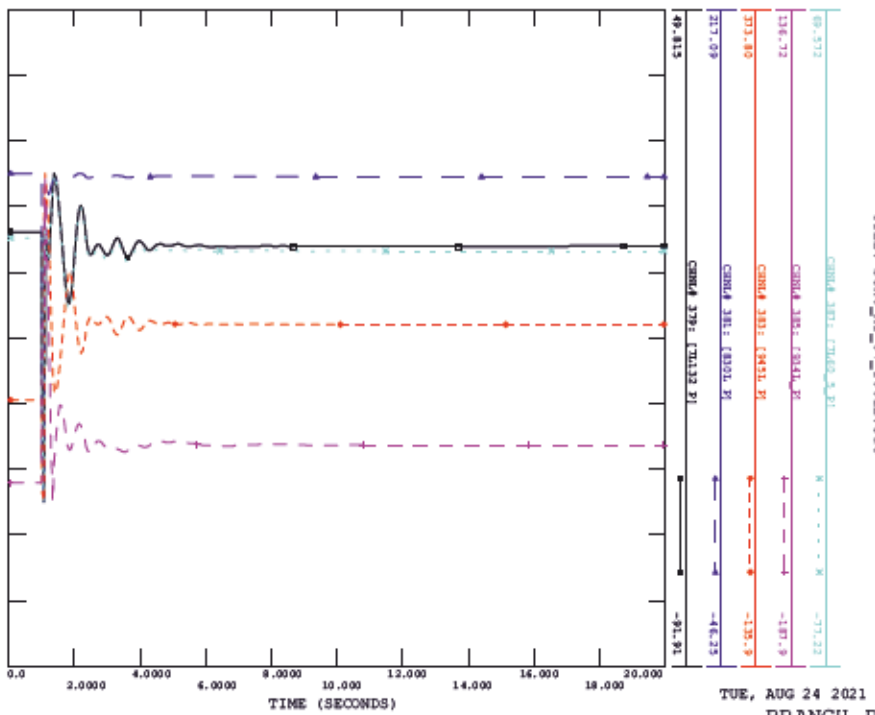
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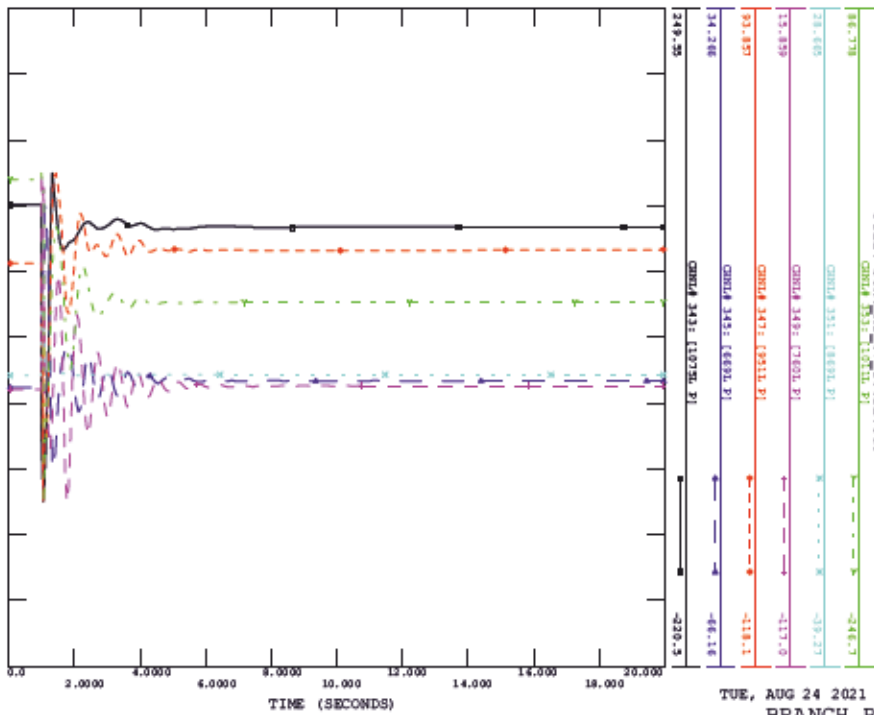
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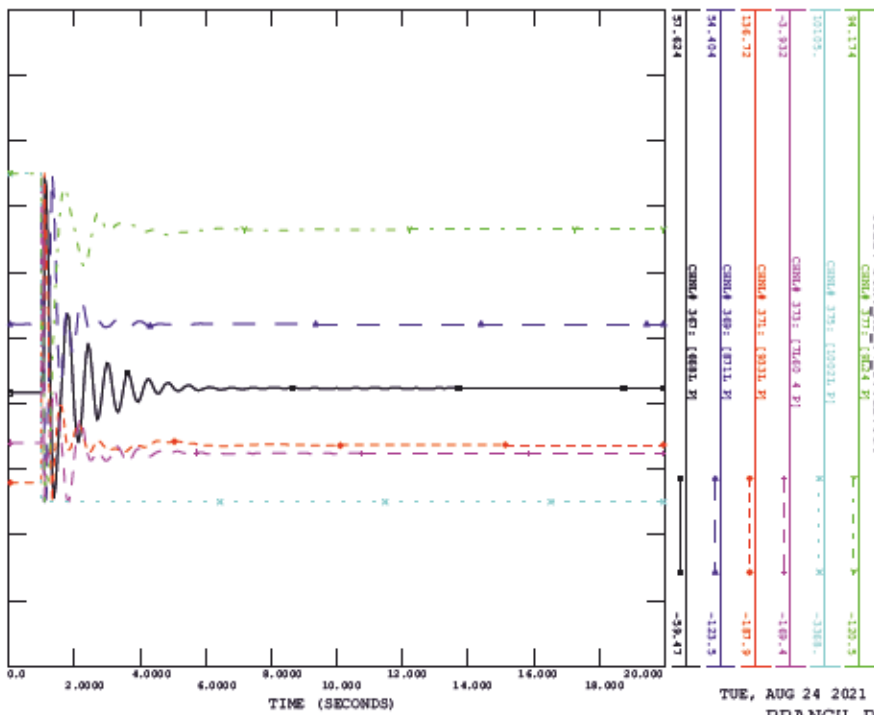
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CONTINGENCY -SCM6_A1_07_1002L, FAULT LOCATION JENNER 275S

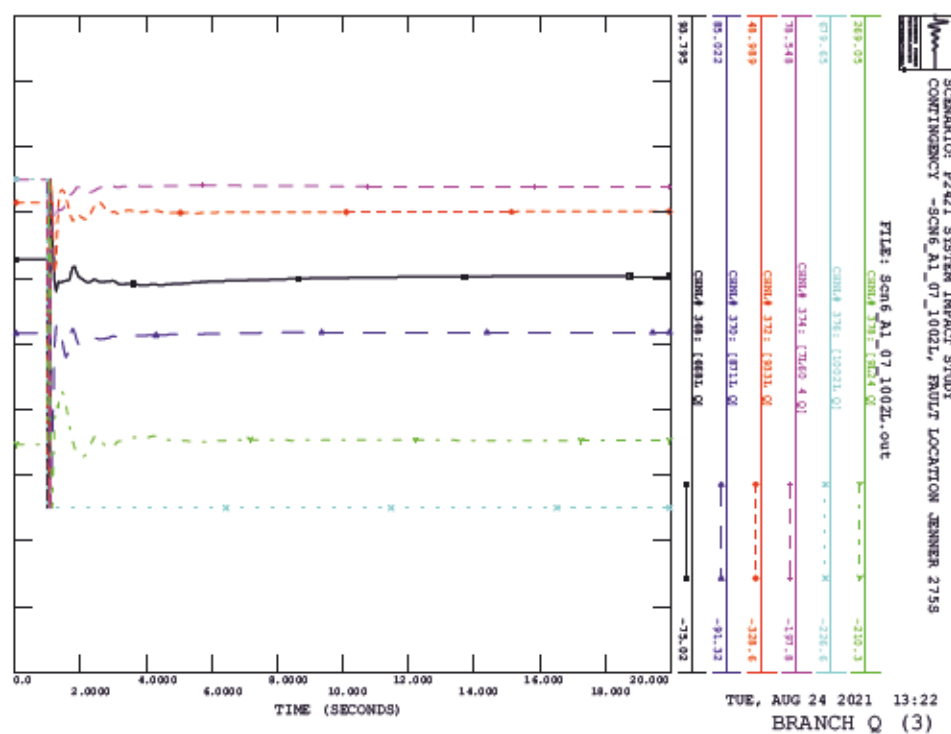
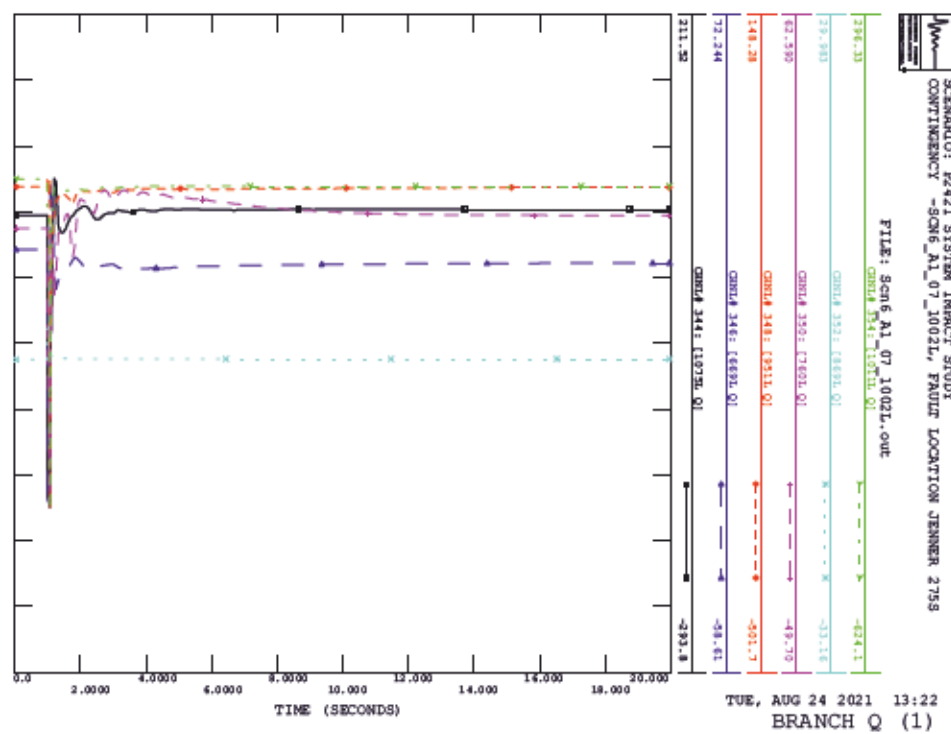
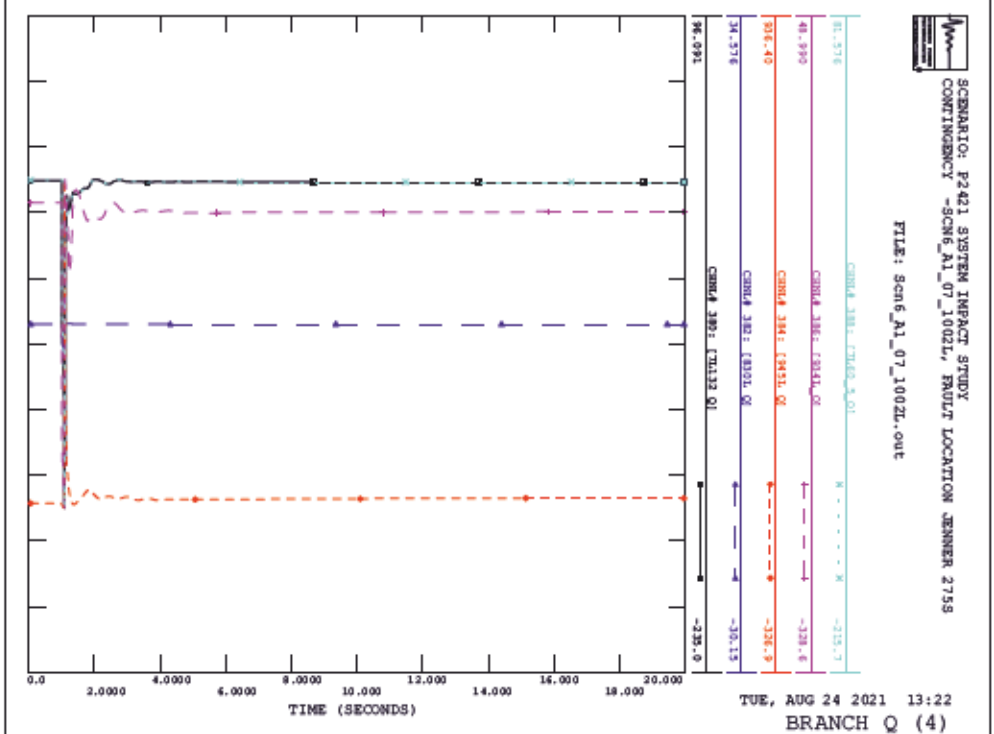
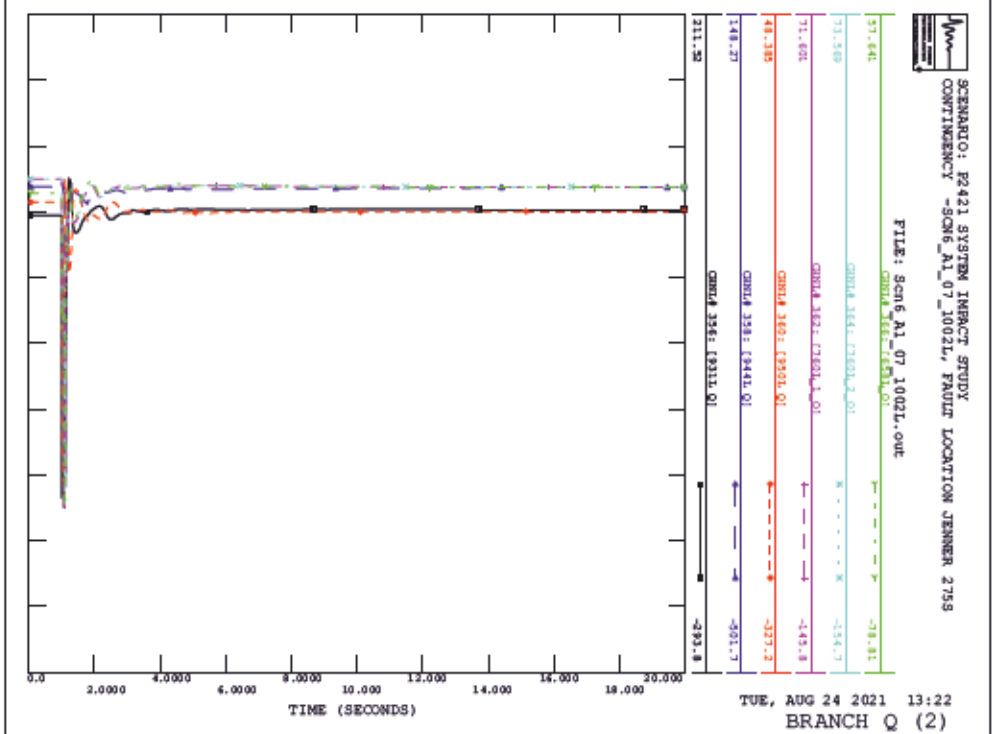
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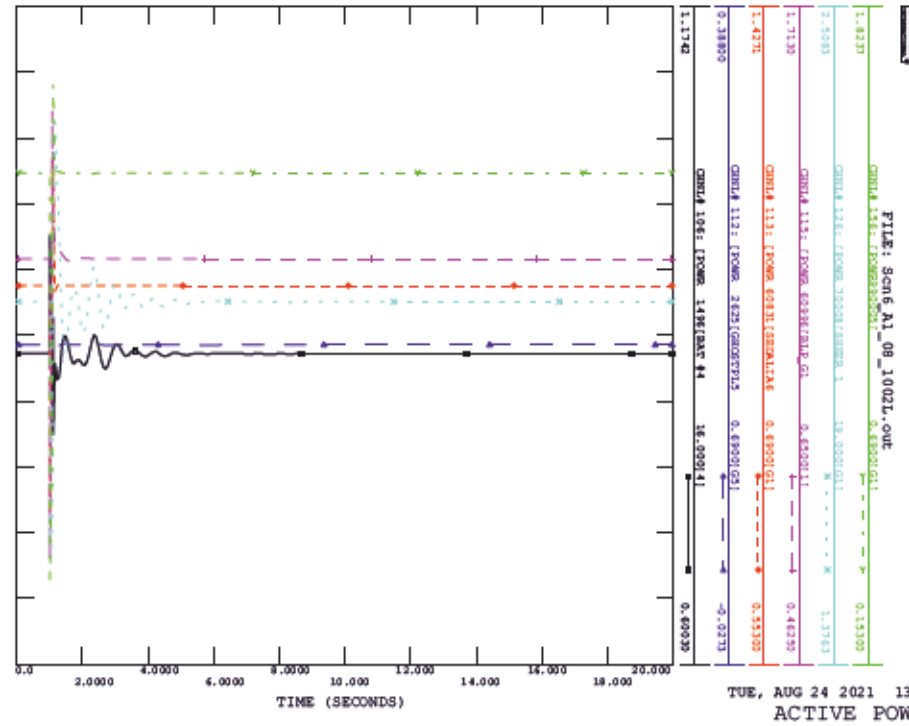
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CONTINGENCY -SCM6_A1_07_1002L, FAULT LOCATION JENNER 275S

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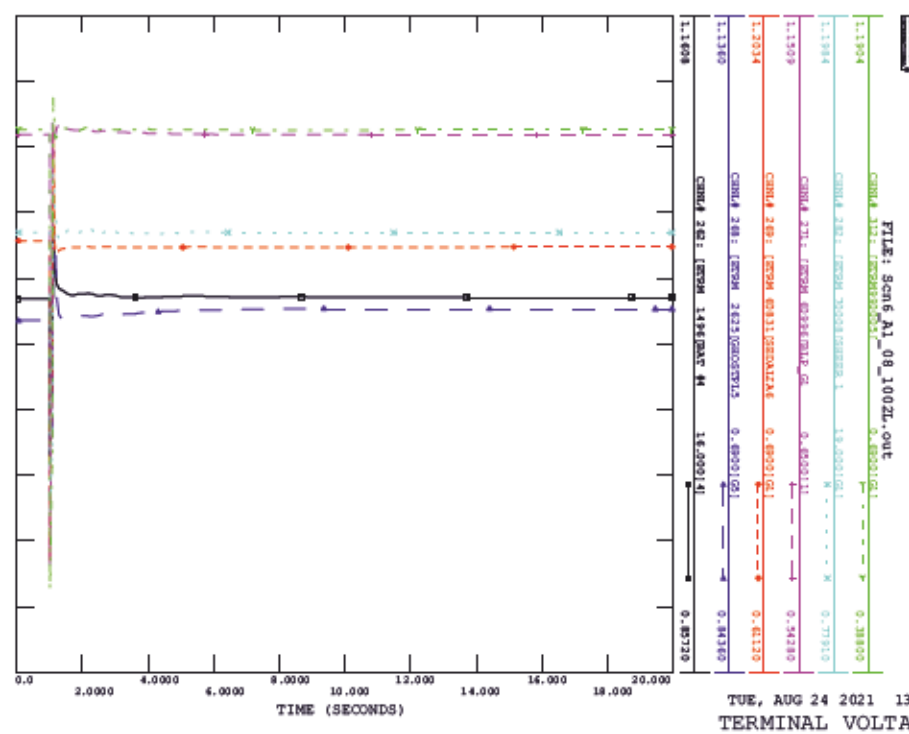




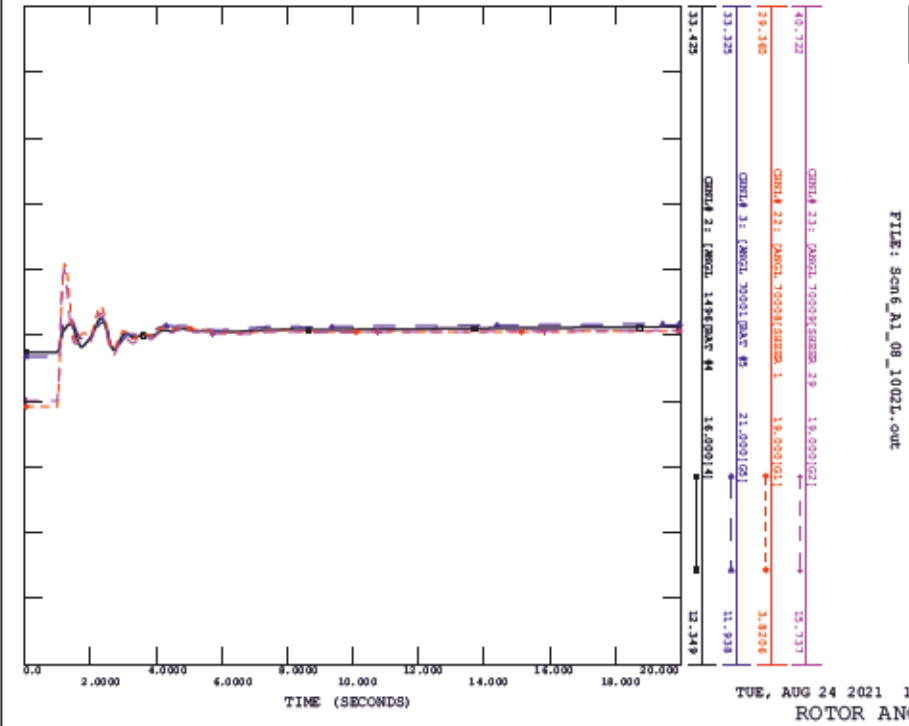
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CONTINGENCY -SCM6_A1_08_100ZL, FAULT LOCATION AMOO EXPRESS



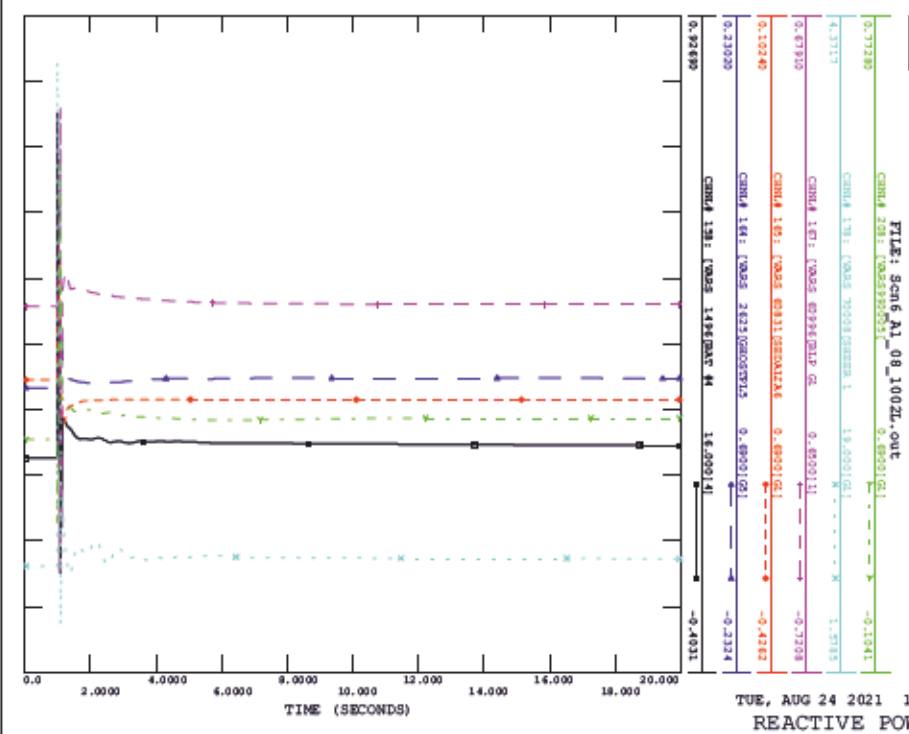
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CONTINGENCY -SCM6_A1_08_100ZL, FAULT LOCATION AMOO EXPRESS

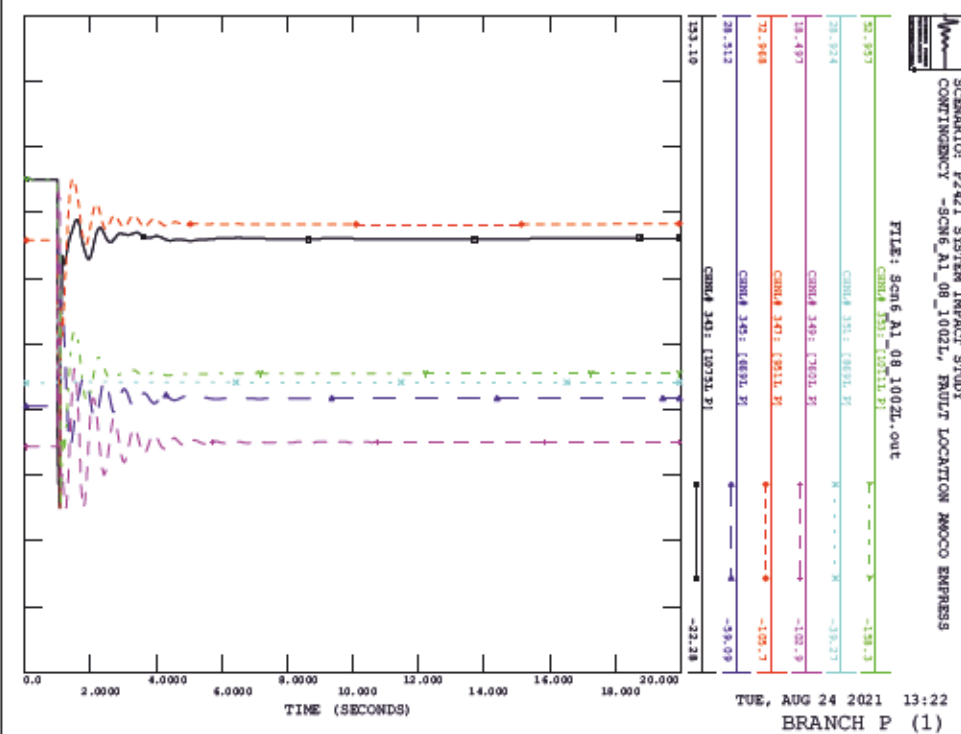
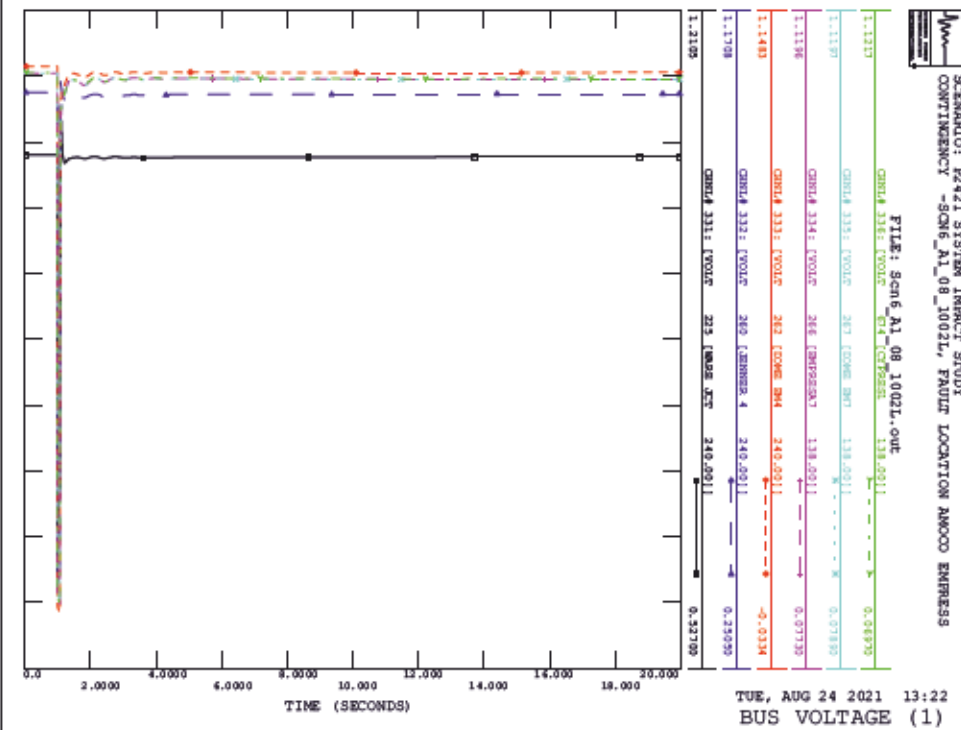
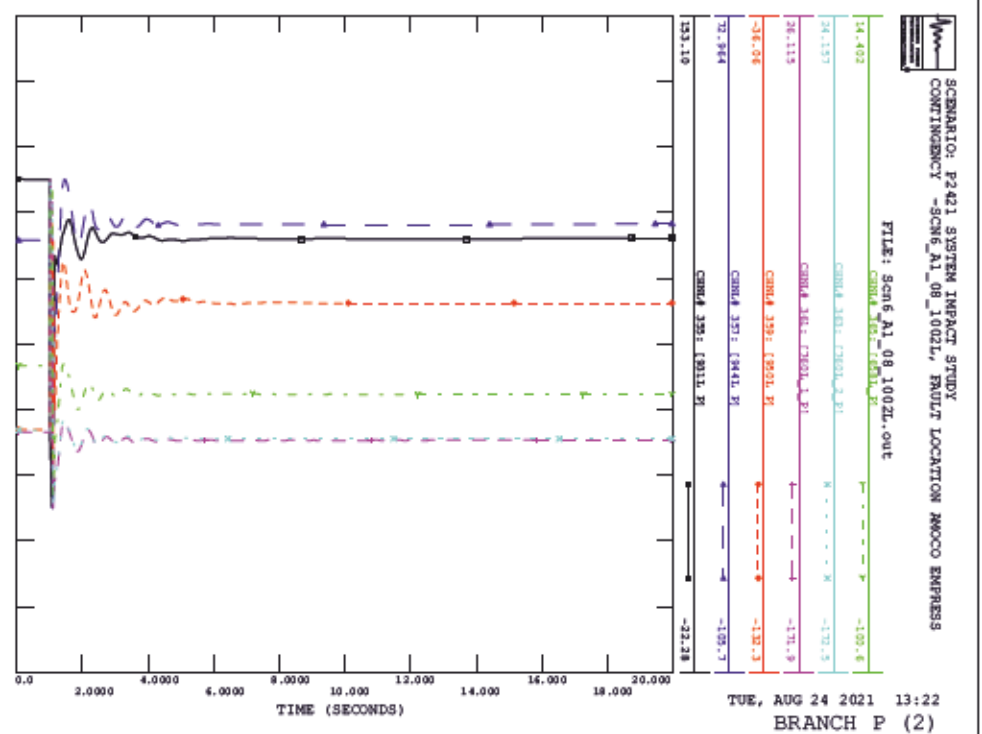
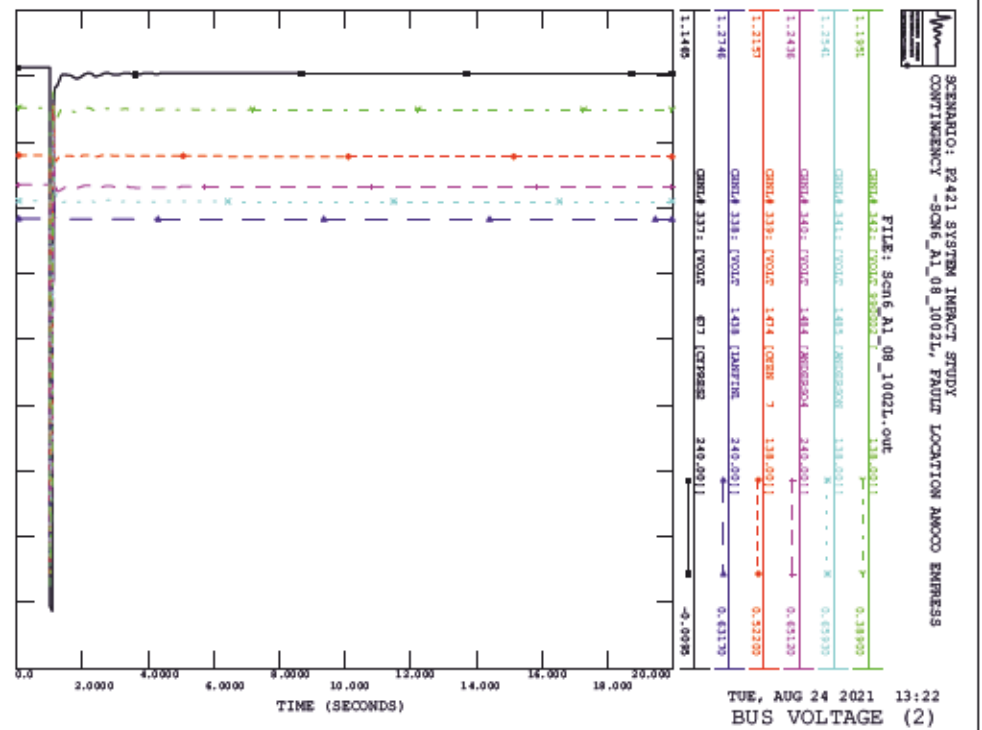


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_08_100ZL, FAULT LOCATION AMOO EXPRESS



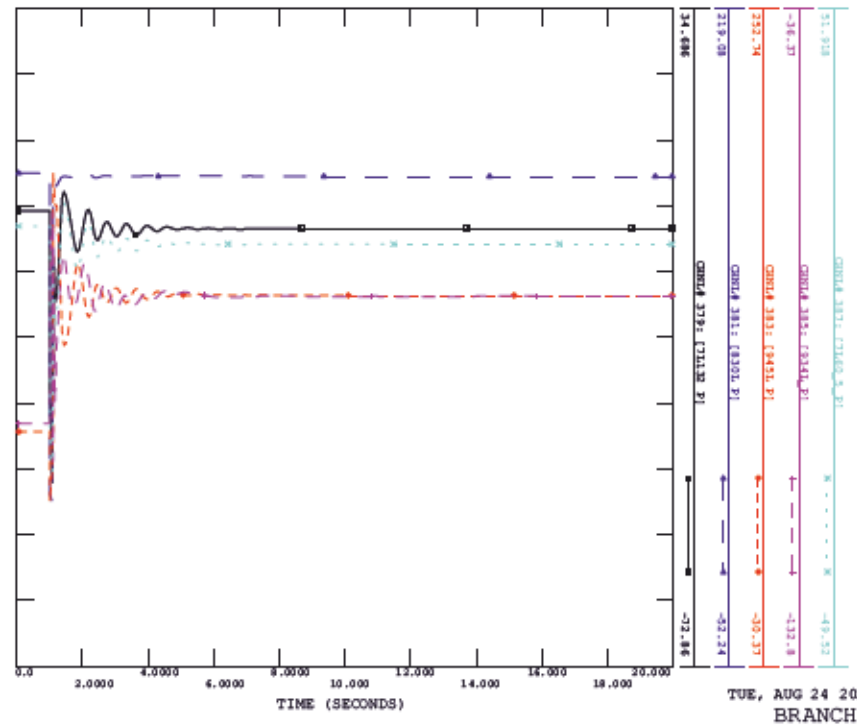
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CONTINGENCY -SCM6_A1_08_100ZL, FAULT LOCATION AMOO EXPRESS





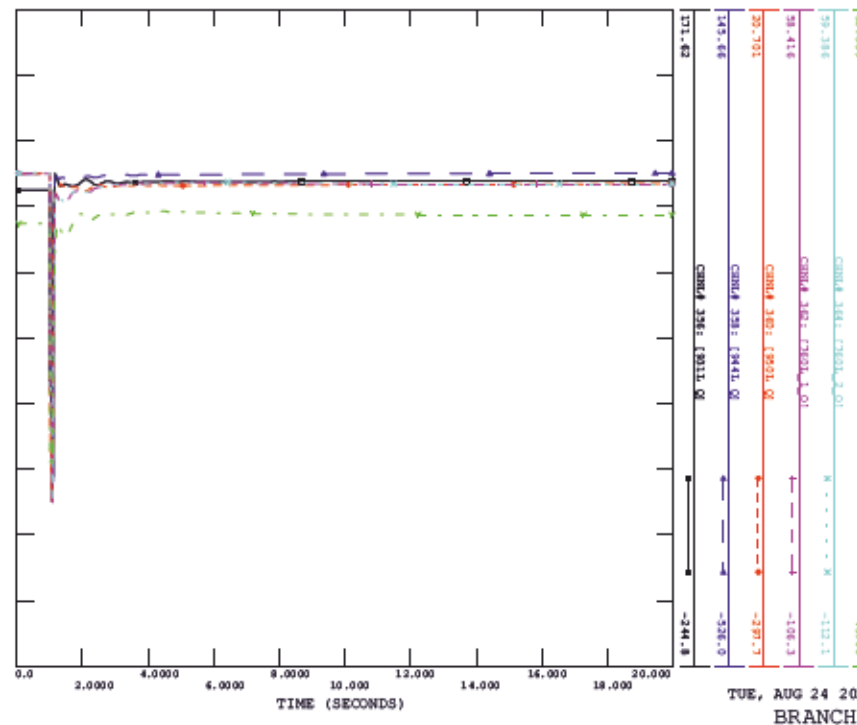
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CONTINGENCY -SCH6_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

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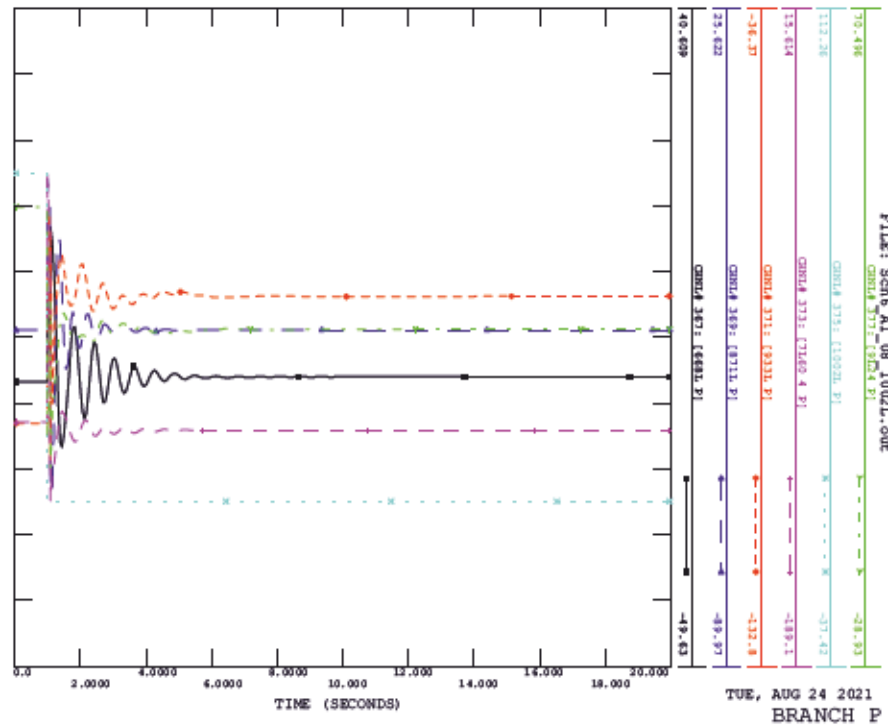
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CONTINGENCY -SCH6_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

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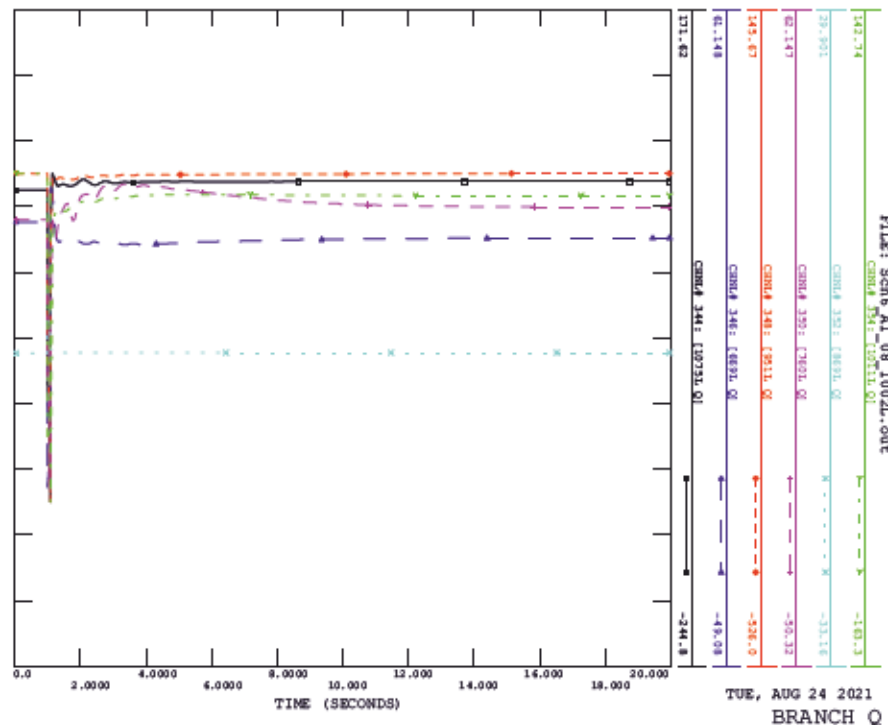
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CONTINGENCY -SCH6_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

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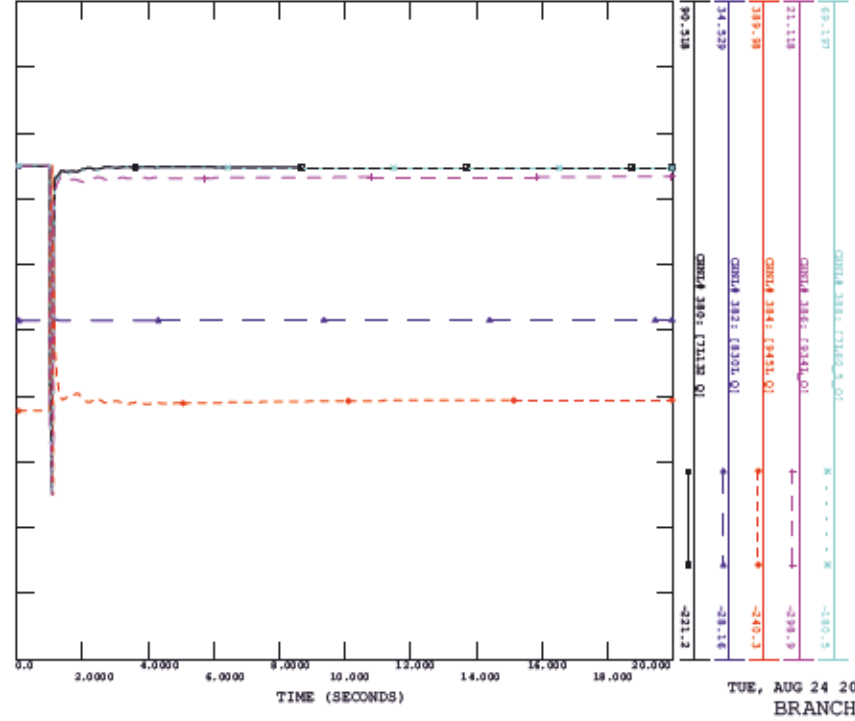
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CONTINGENCY -SCH6_A1_08_1002L, FAULT LOCATION AMOCO EXPRESS

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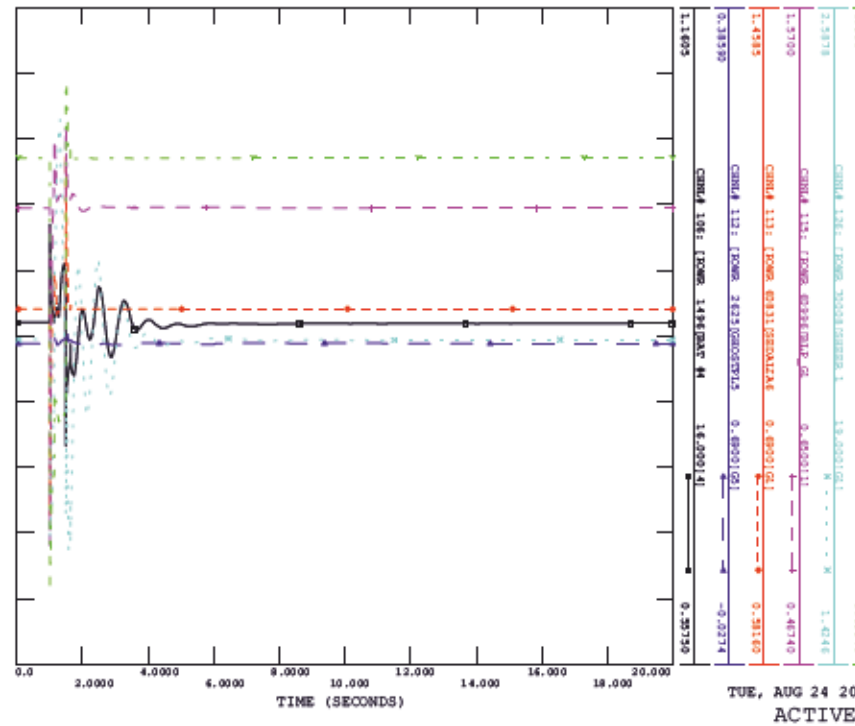
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CONTINGENCY -SCM6_A1_08_1002L, FAULT LOCATION AMOOD EXPRESS

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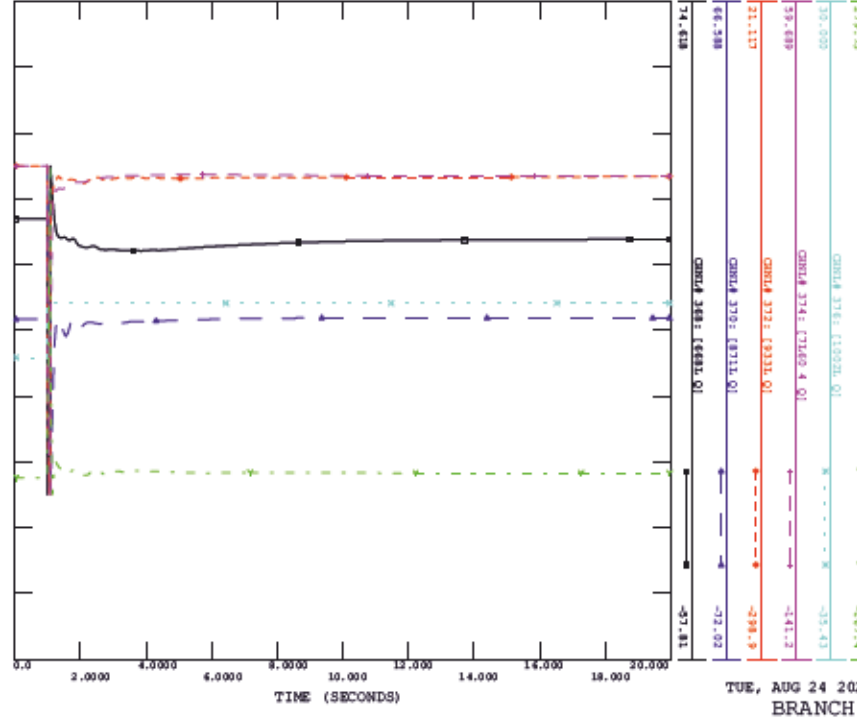
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_09_668L, FAULT LOCATION EXPRESS 394S

FILE: Scm6_A1_09_668L.out



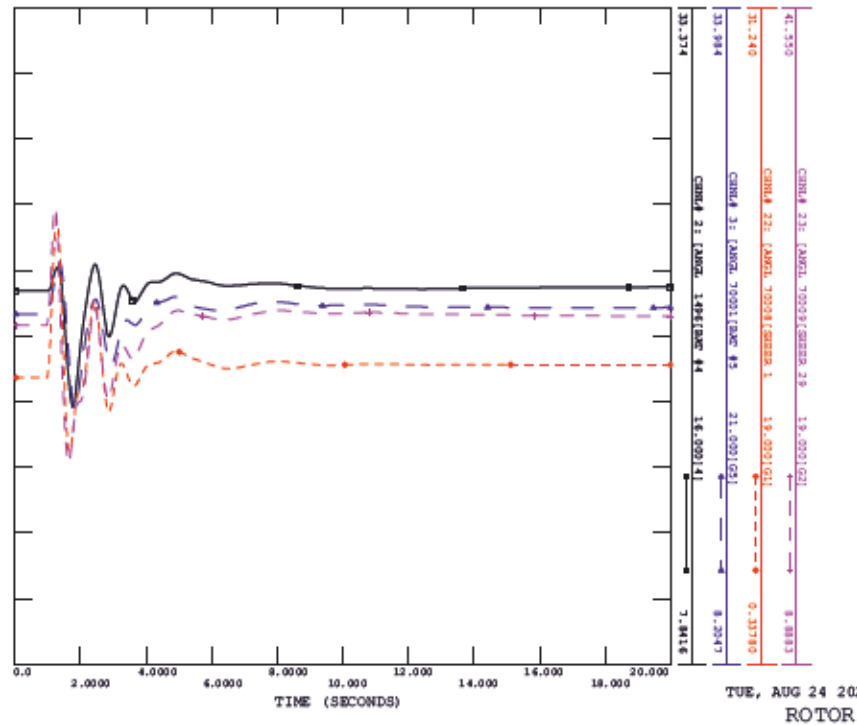
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_08_1002L, FAULT LOCATION AMOOD EXPRESS

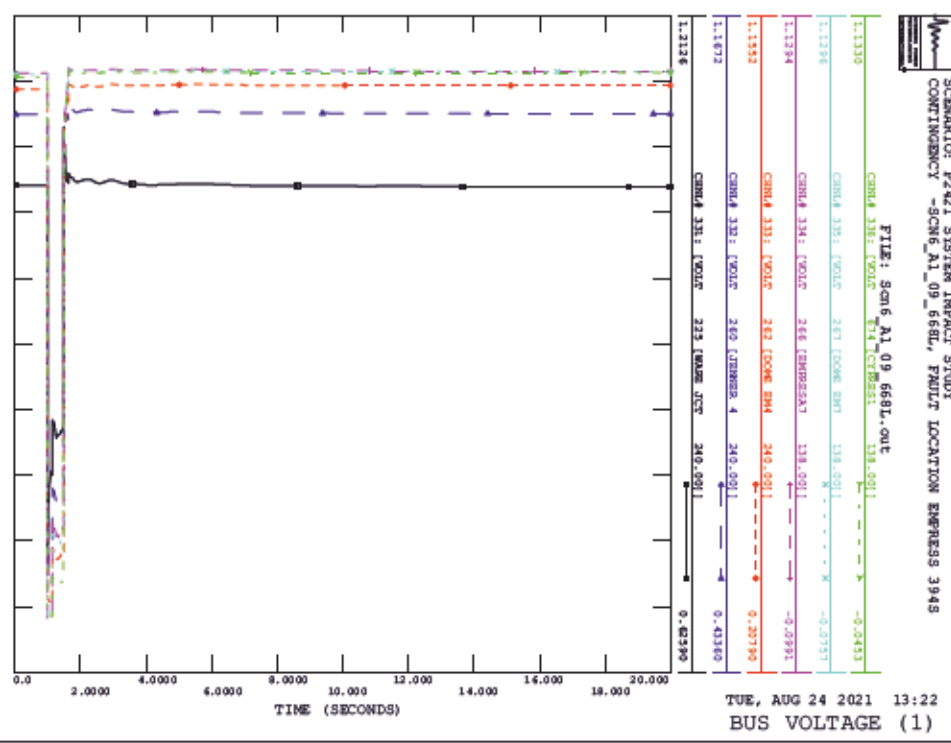
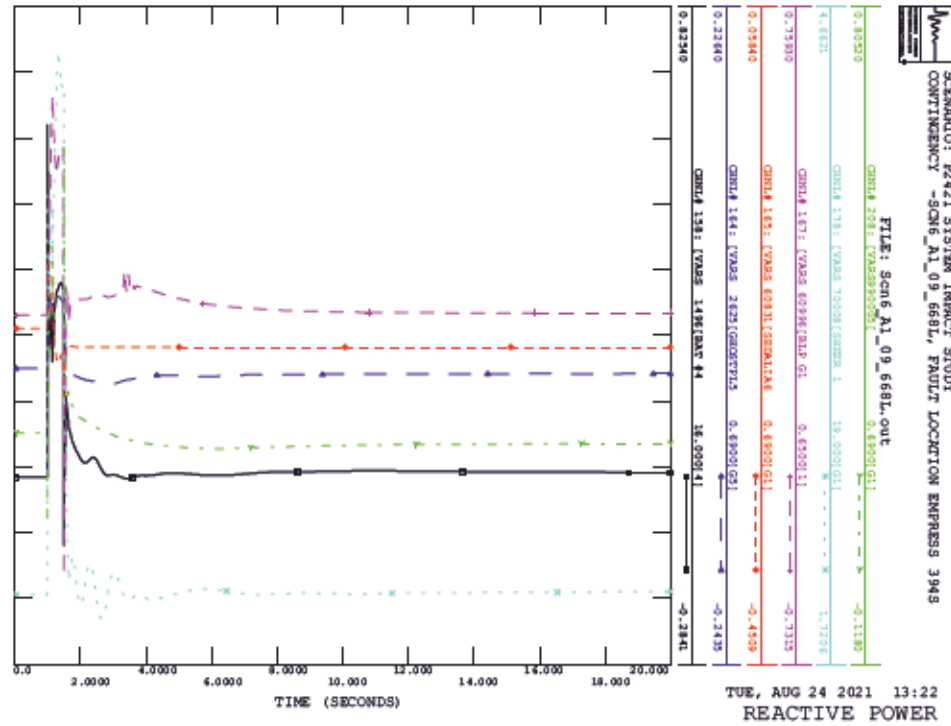
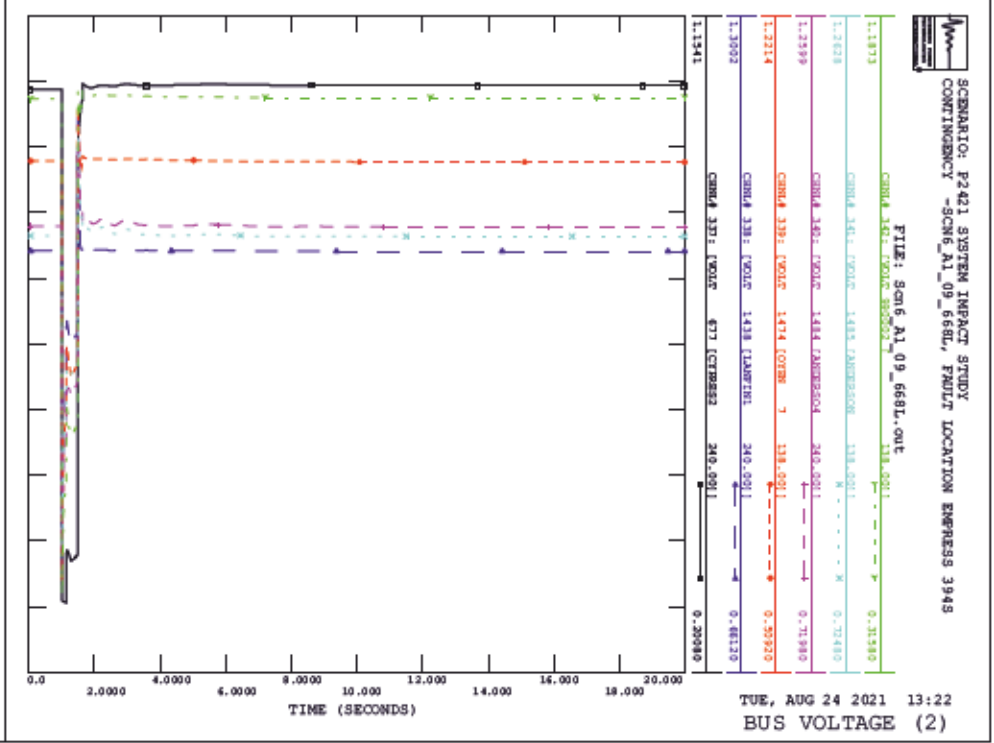
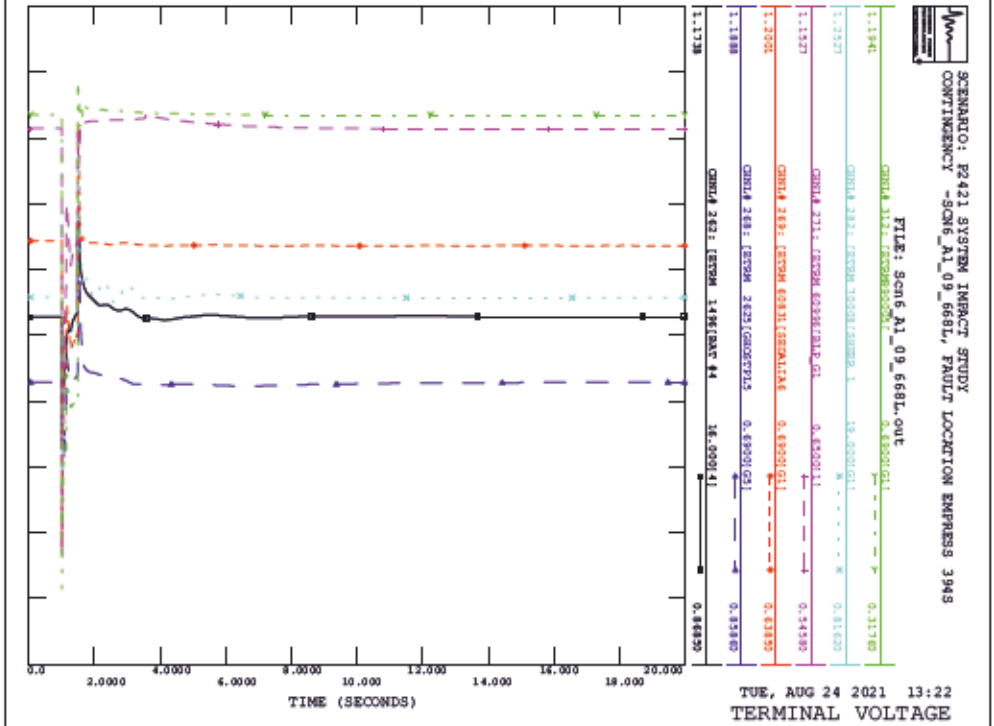
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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_09_668L, FAULT LOCATION EXPRESS 394S

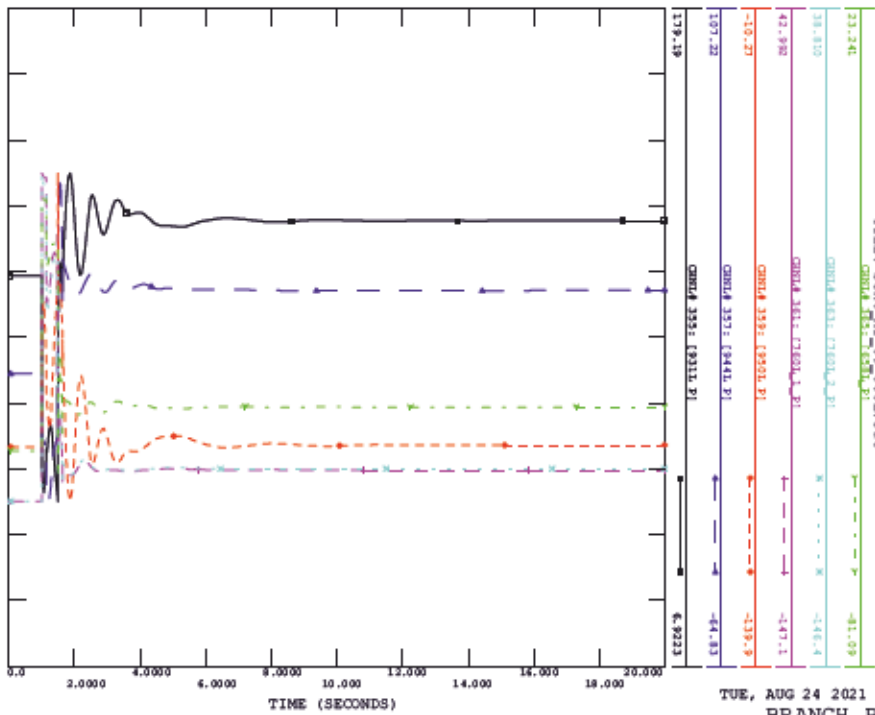
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SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_09_668L, FAULT LOCATION EMPRESS 3945

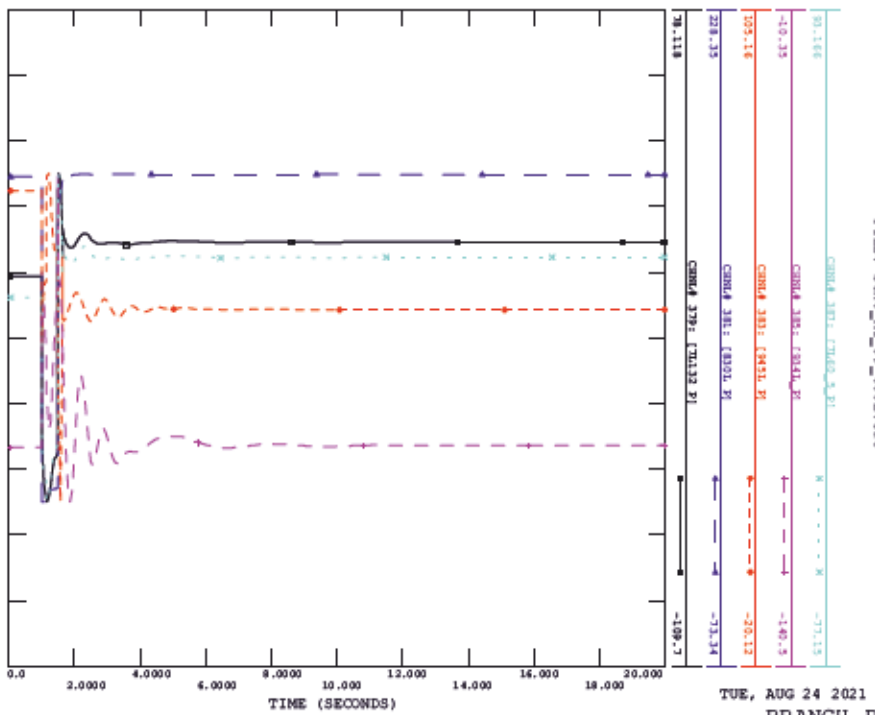
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TUE, AUG 24 2021 13:22
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_09_668L, FAULT LOCATION EMPRESS 3945

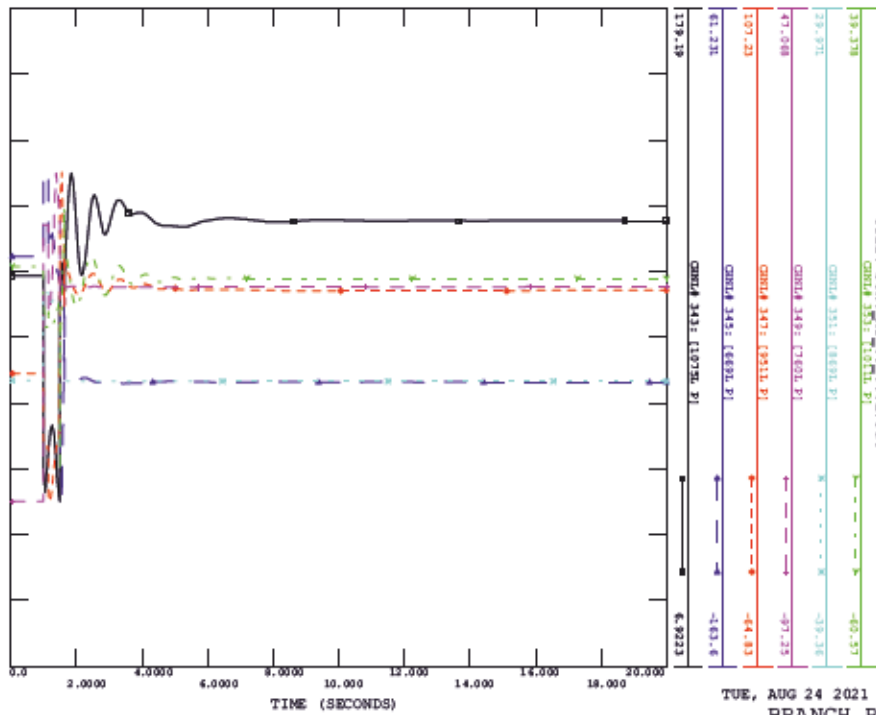
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TUE, AUG 24 2021 13:22
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_09_668L, FAULT LOCATION EMPRESS 3945

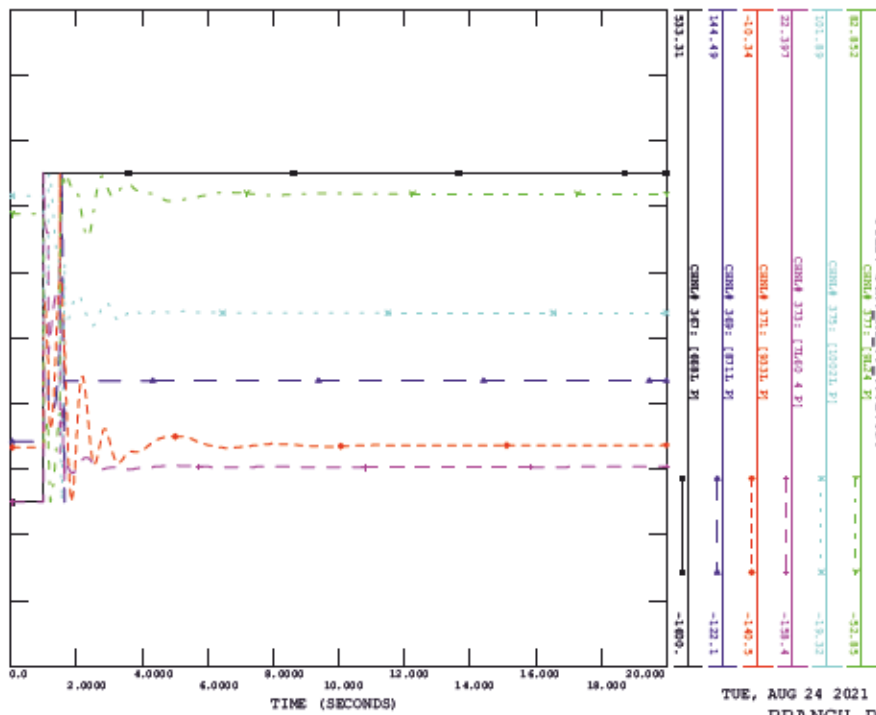
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TUE, AUG 24 2021 13:22
BRANCH P (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_09_668L, FAULT LOCATION EMPRESS 3945

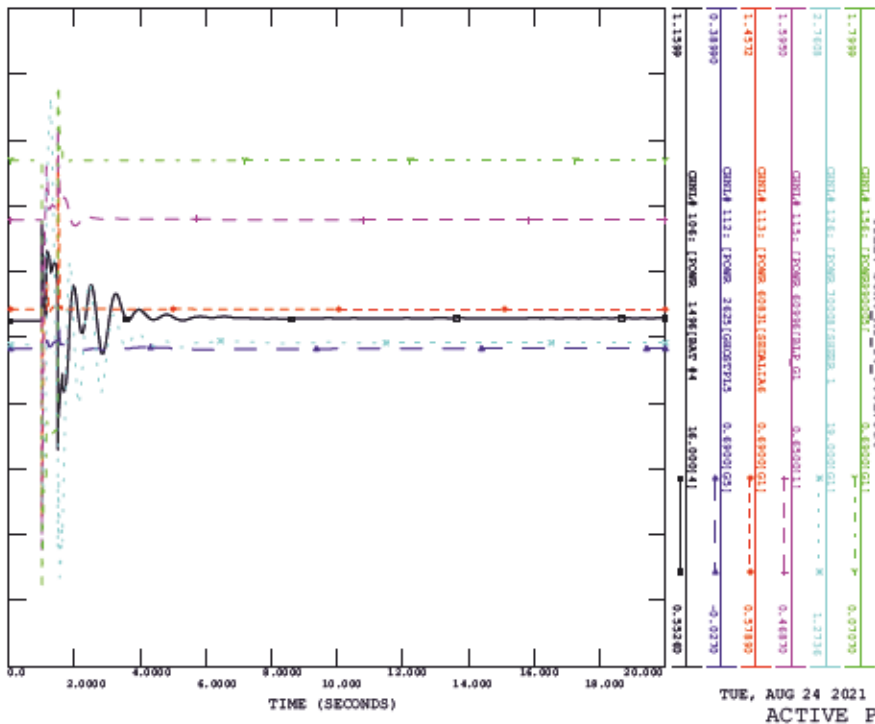
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TUE, AUG 24 2021 13:22
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

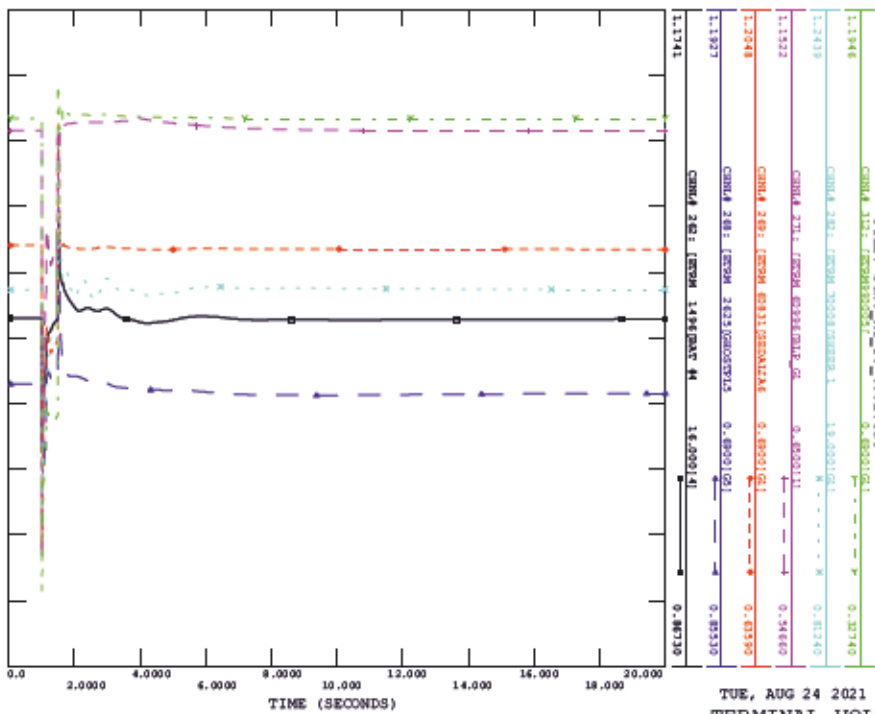
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TUE, AUG 24 2021 13:22
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

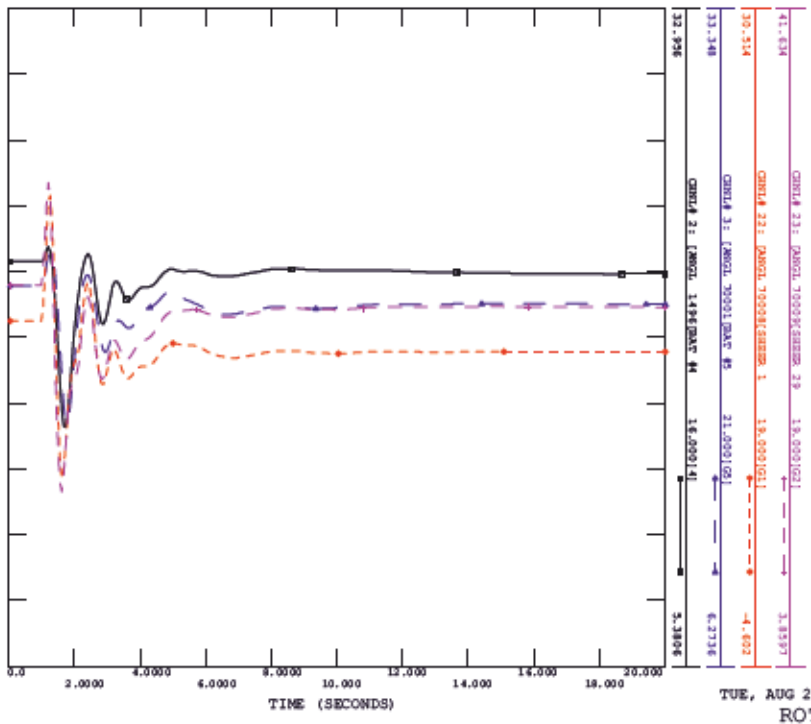
FILE: Scm6_A1_10_668L.out



TUE, AUG 24 2021 13:22
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

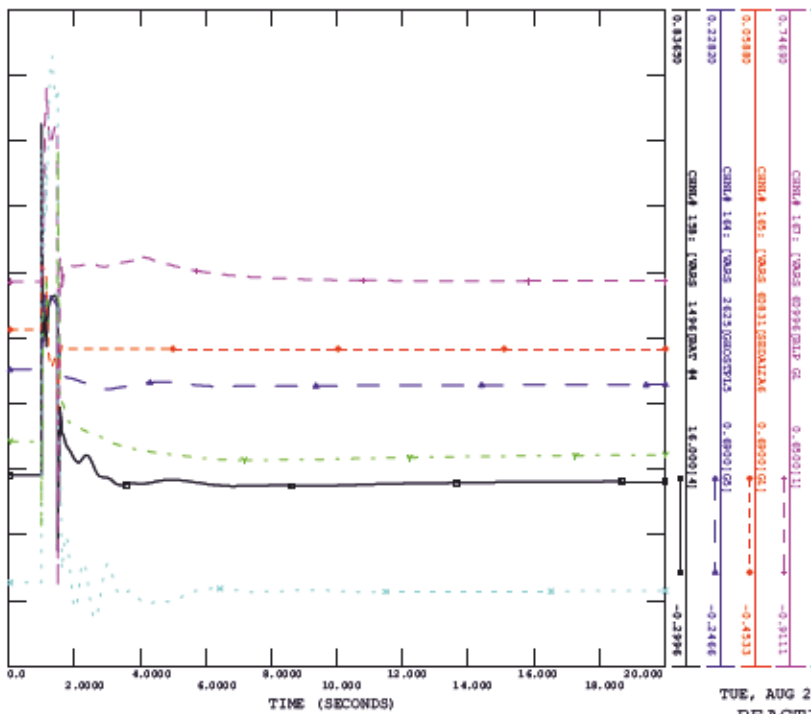
FILE: Scm6_A1_10_668L.out



TUE, AUG 24 2021 13:22
ROTOR ANGLE

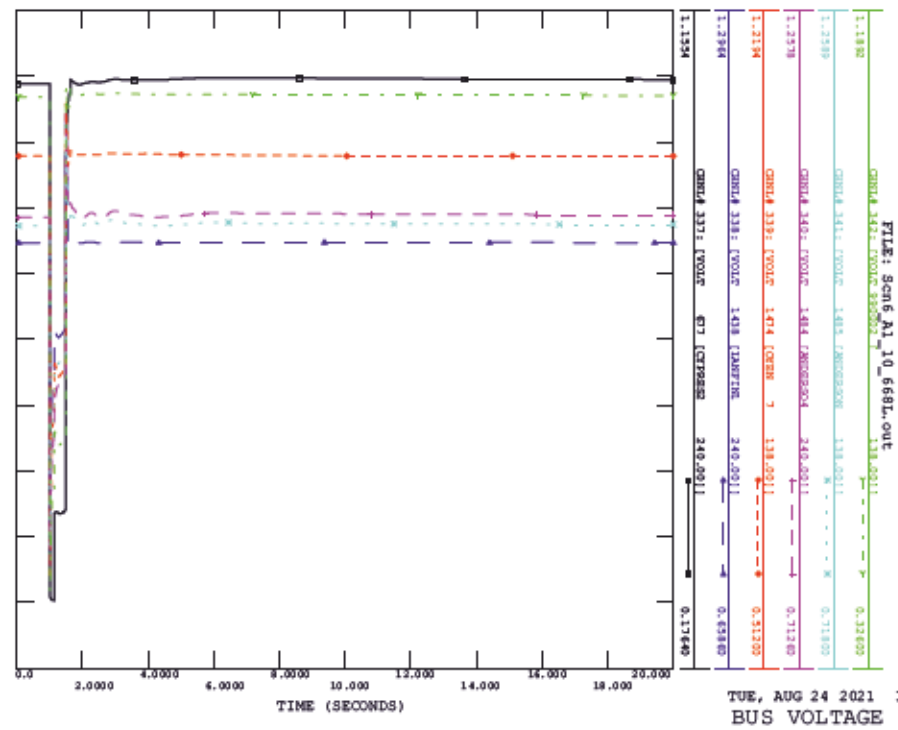
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_10_668L.out

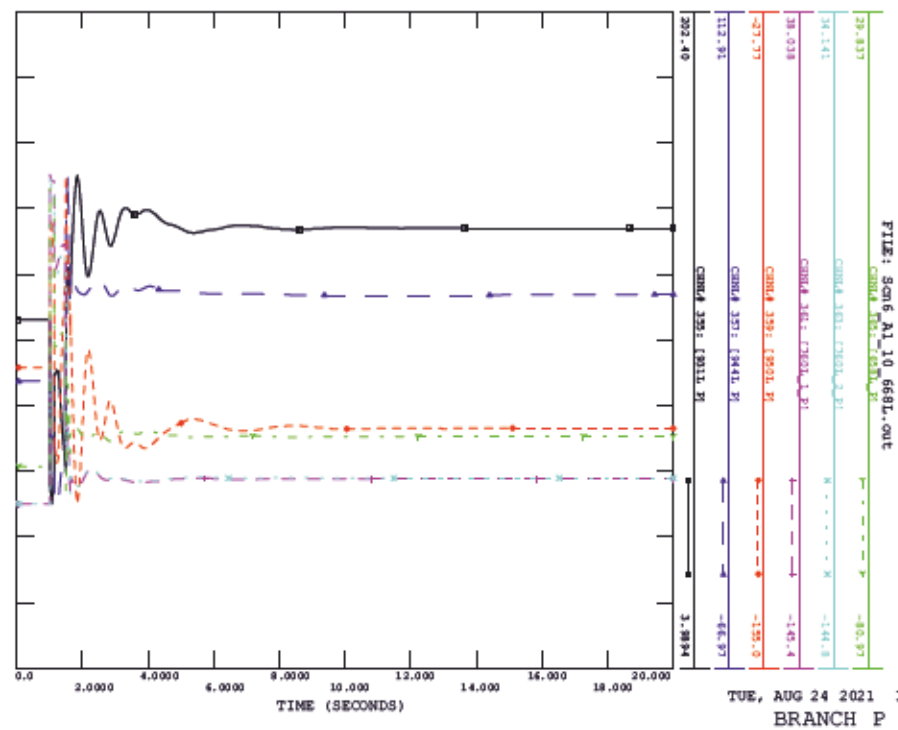


TUE, AUG 24 2021 13:22
REACTIVE POWER

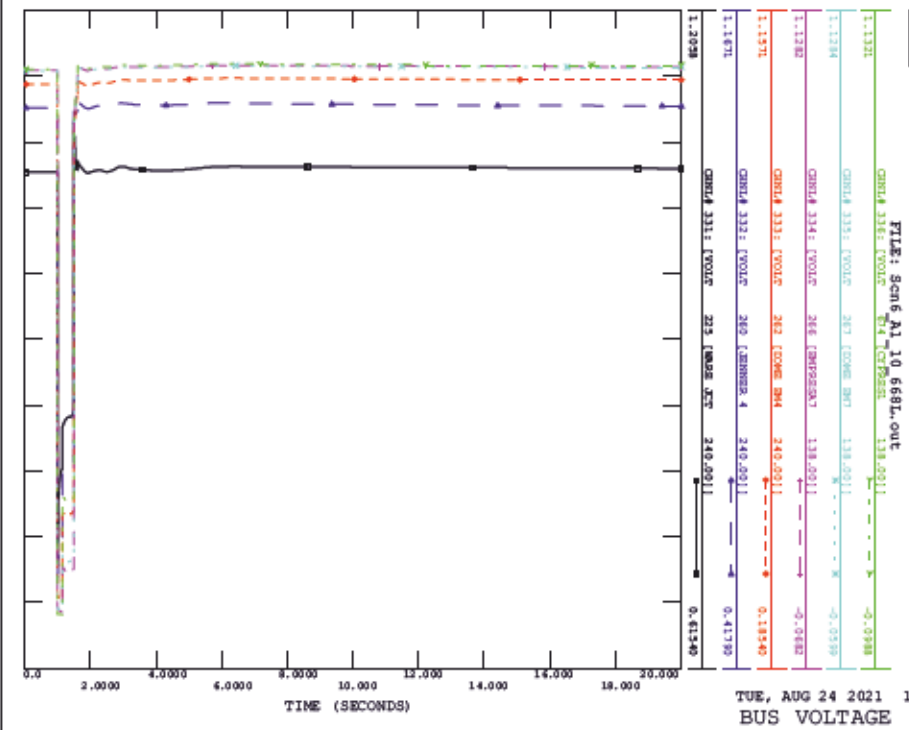
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629



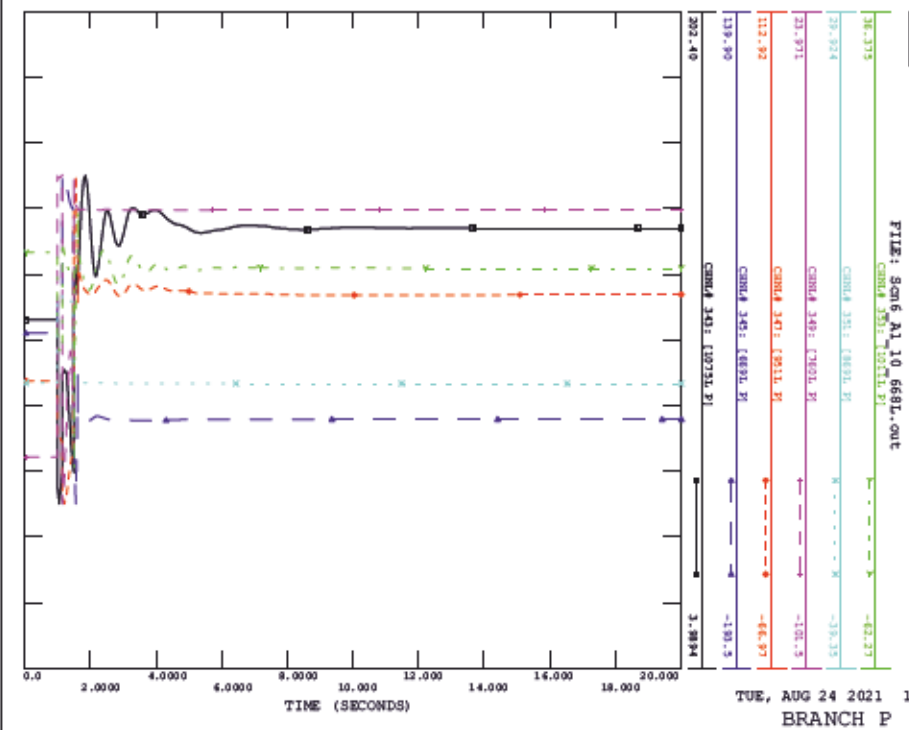
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

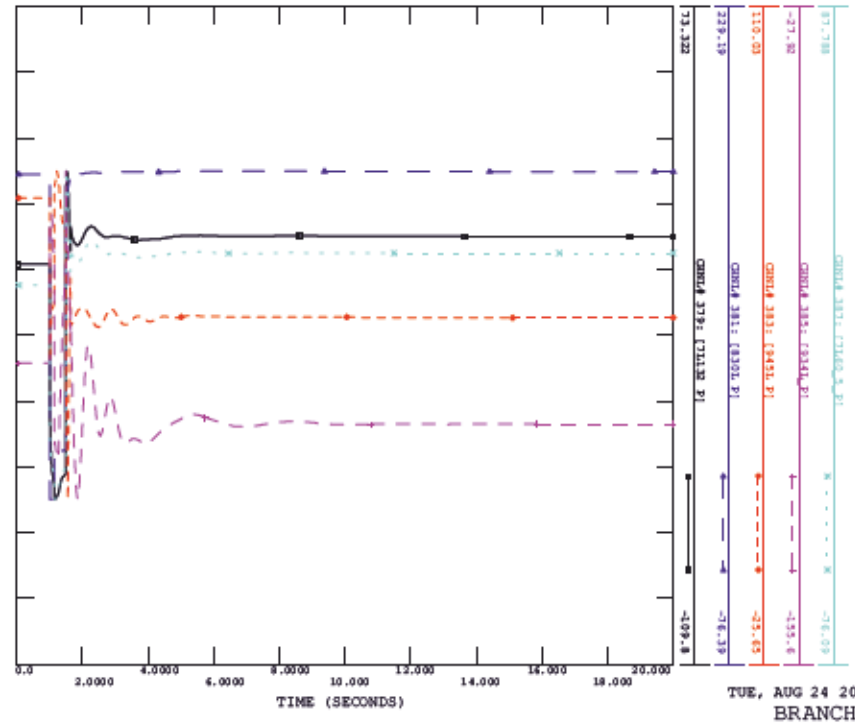


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629



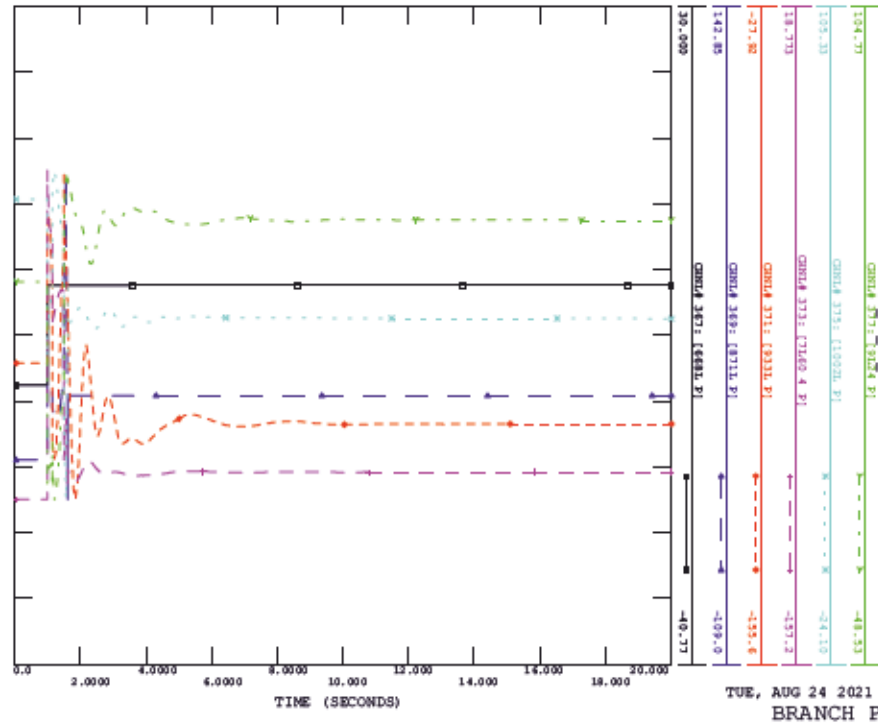
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CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_10_668L.out



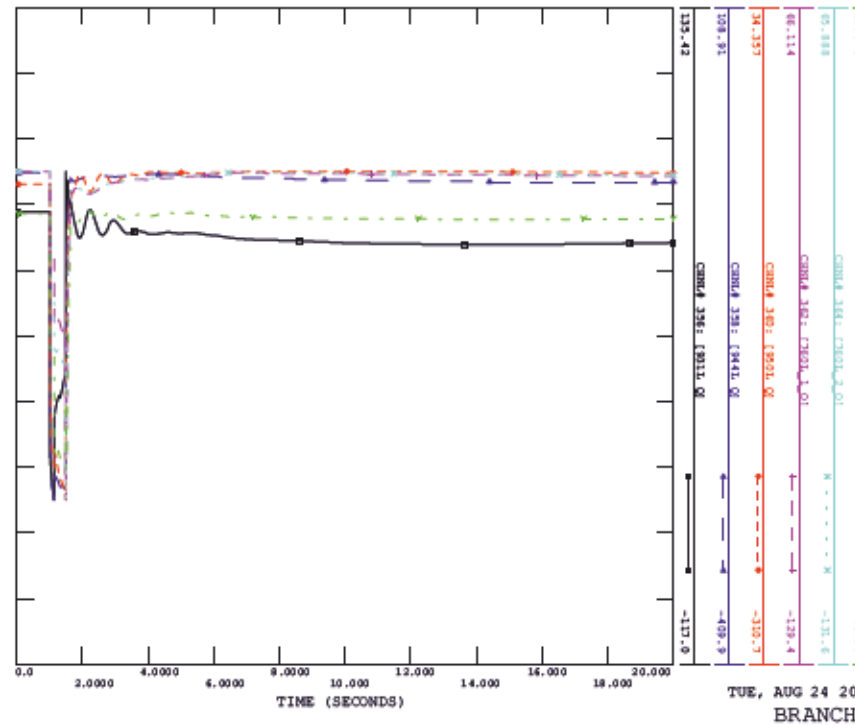
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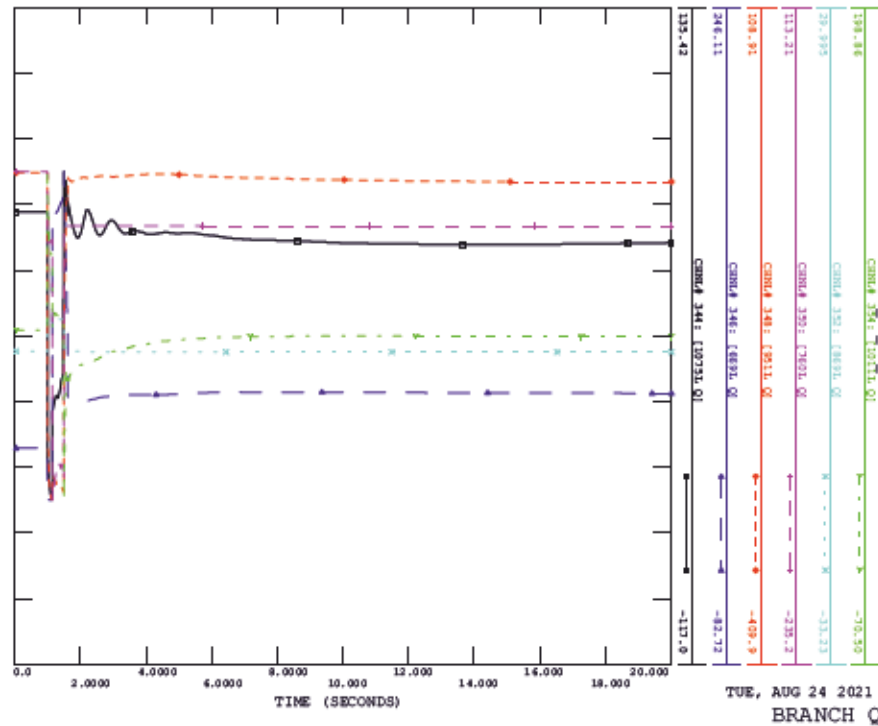
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CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

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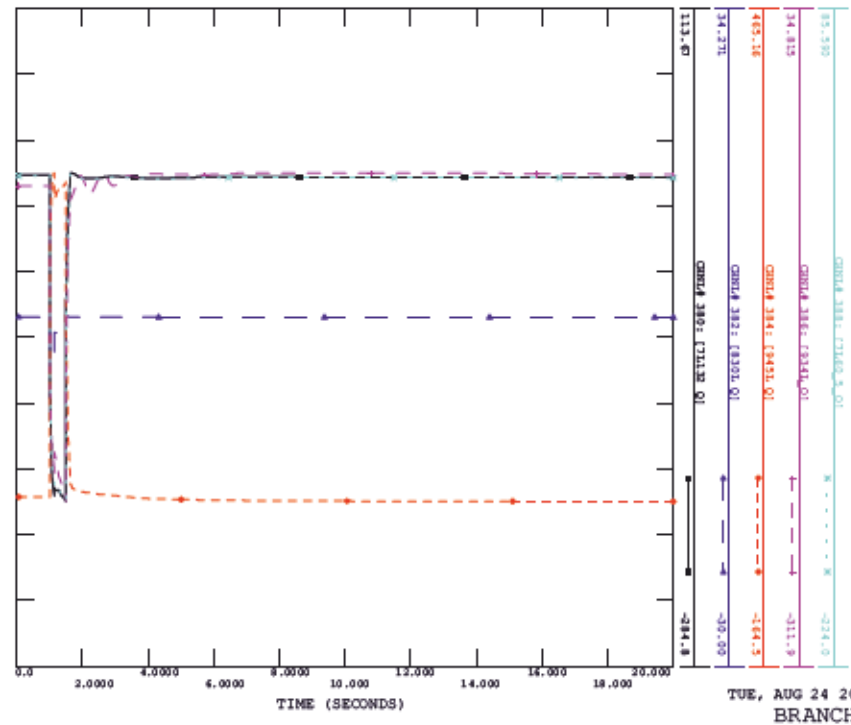
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CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_10_668L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

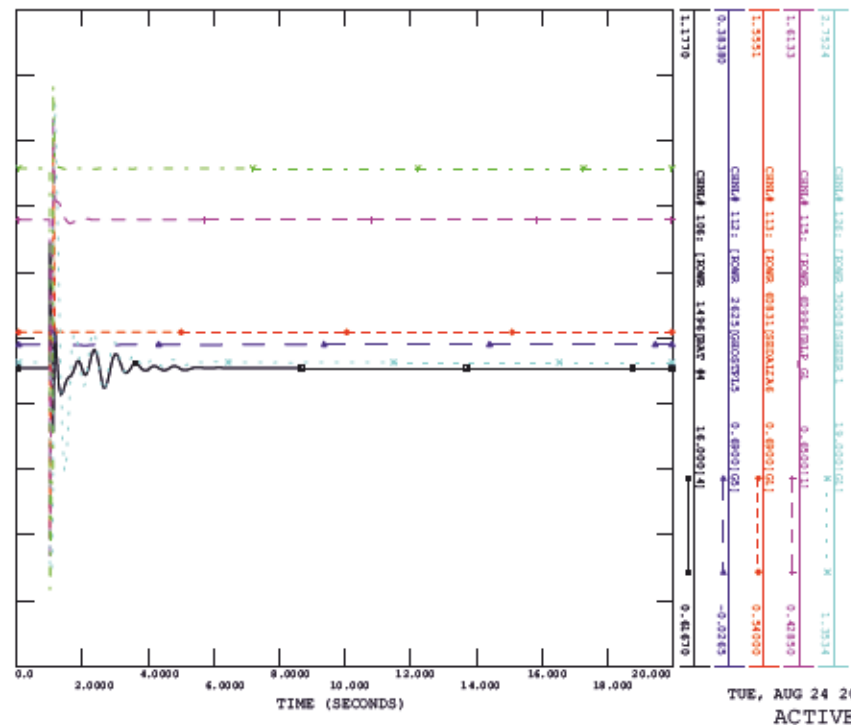
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TUE, AUG 24 2021 13:22
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_11_1011L, FAULT LOCATION RMOCO EMPRESS

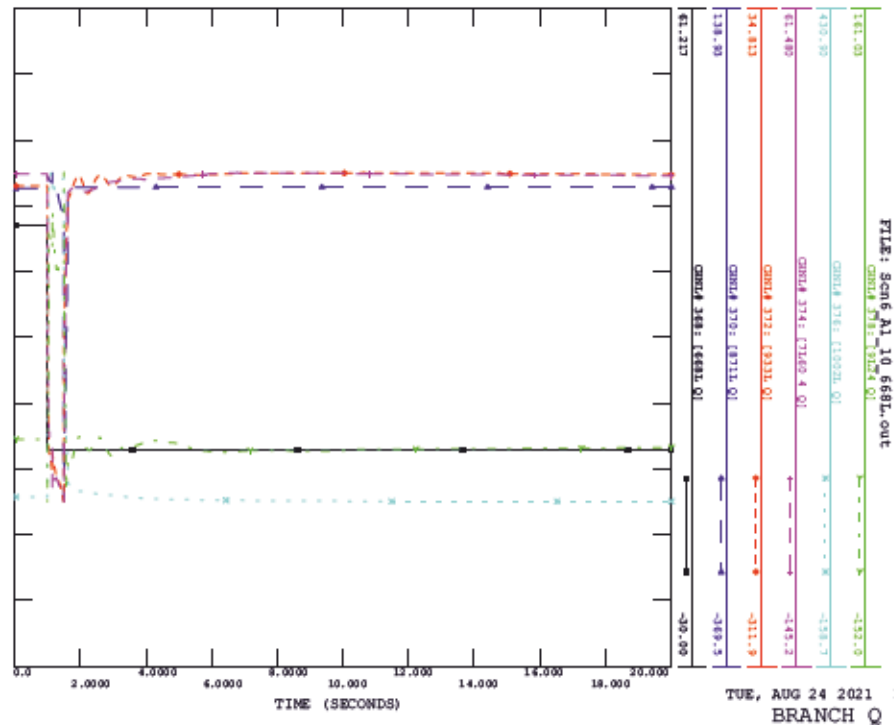
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TUE, AUG 24 2021 13:22
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_10_668L, FAULT LOCATION CYPRESS 5629

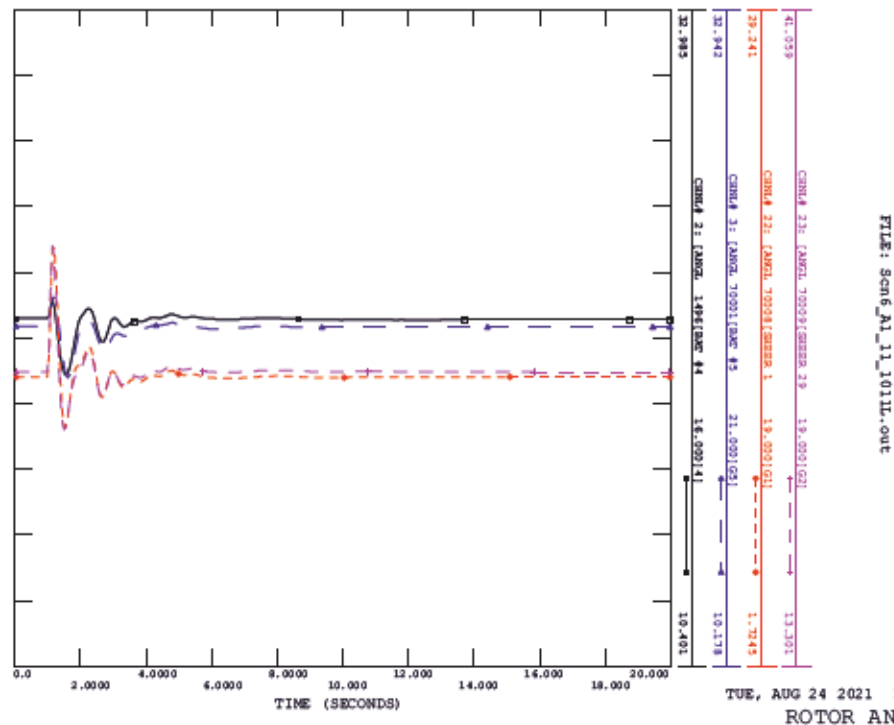
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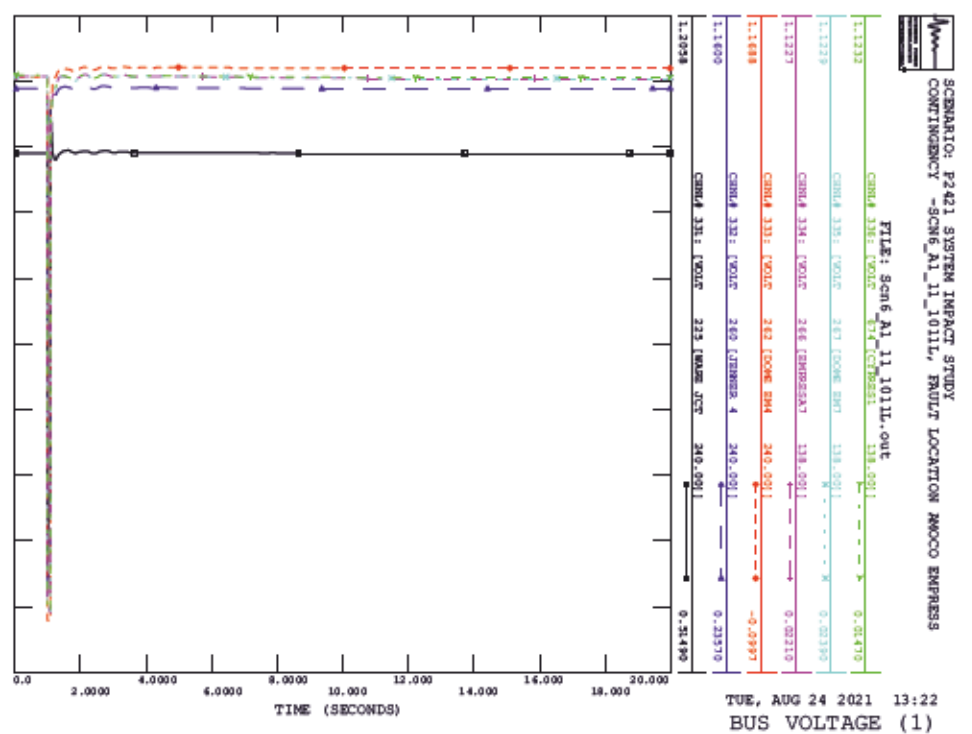
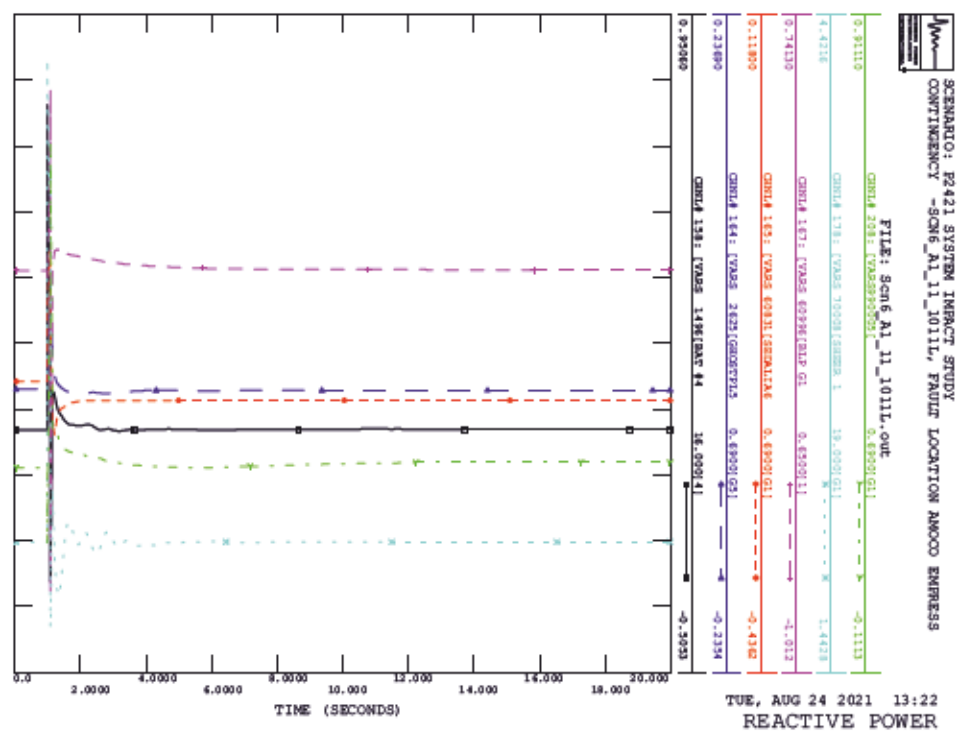
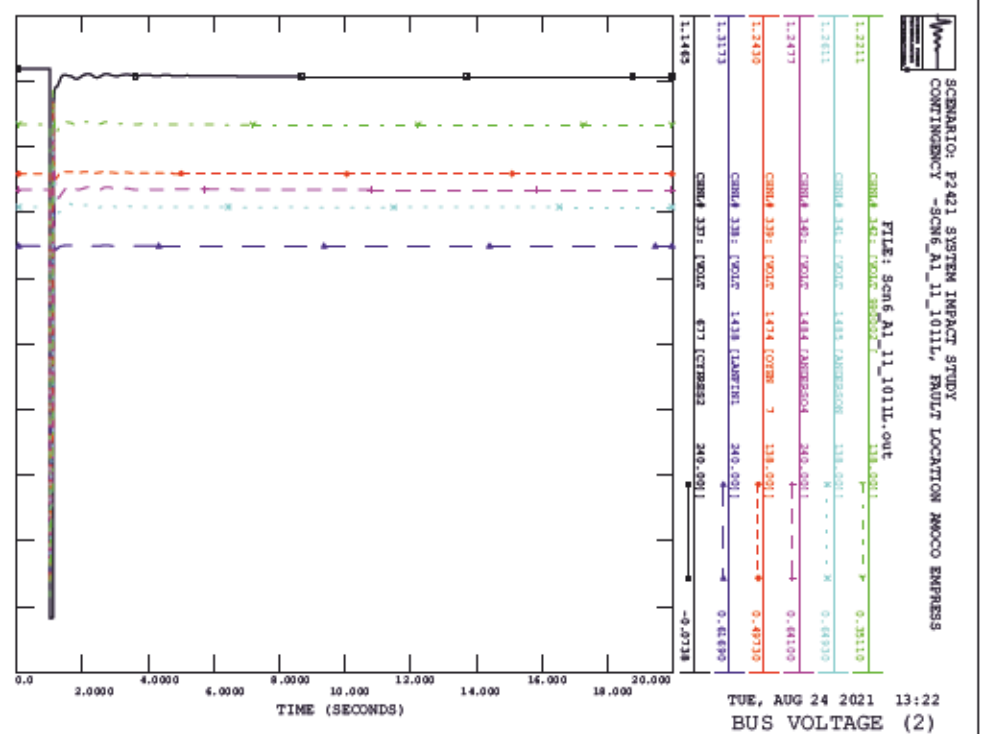
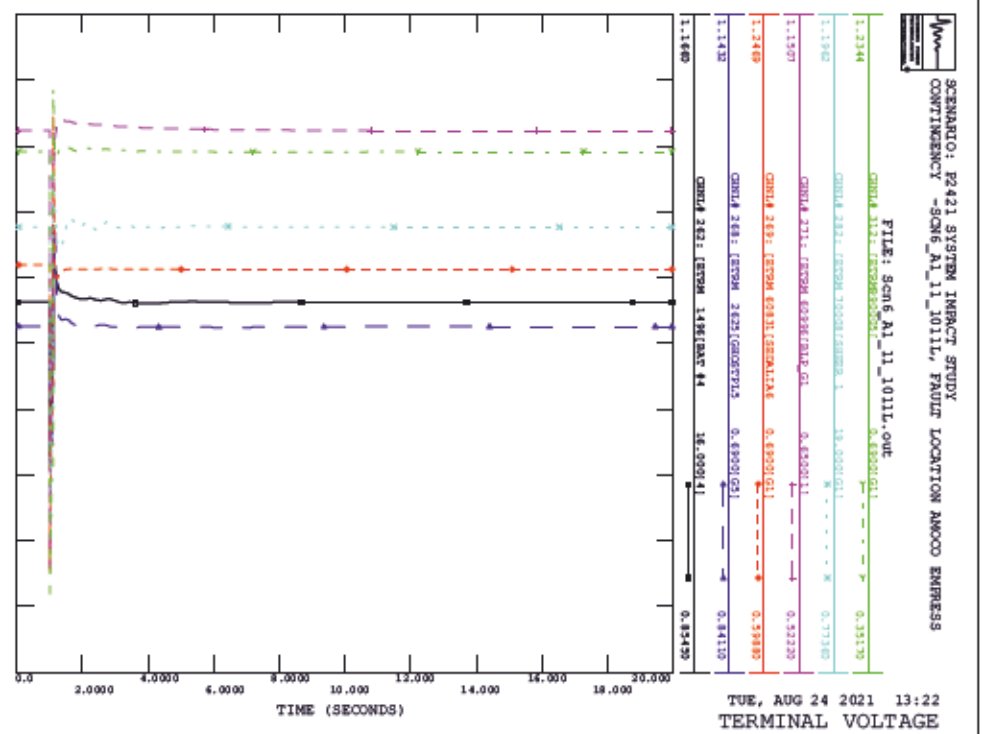
TUE, AUG 24 2021 13:22
BRANCH Q (3)

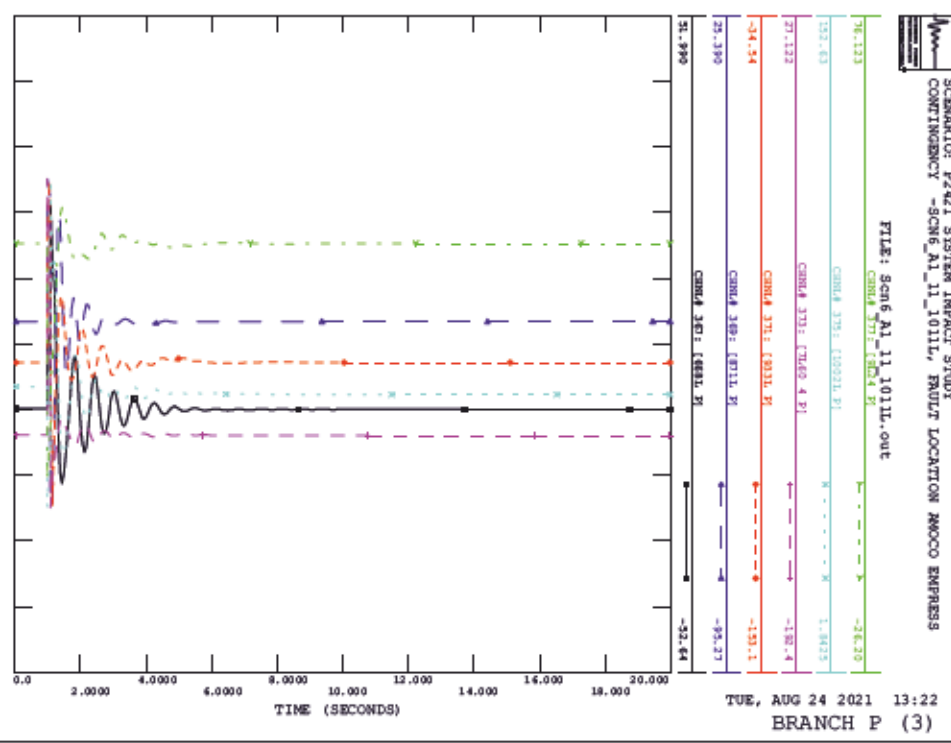
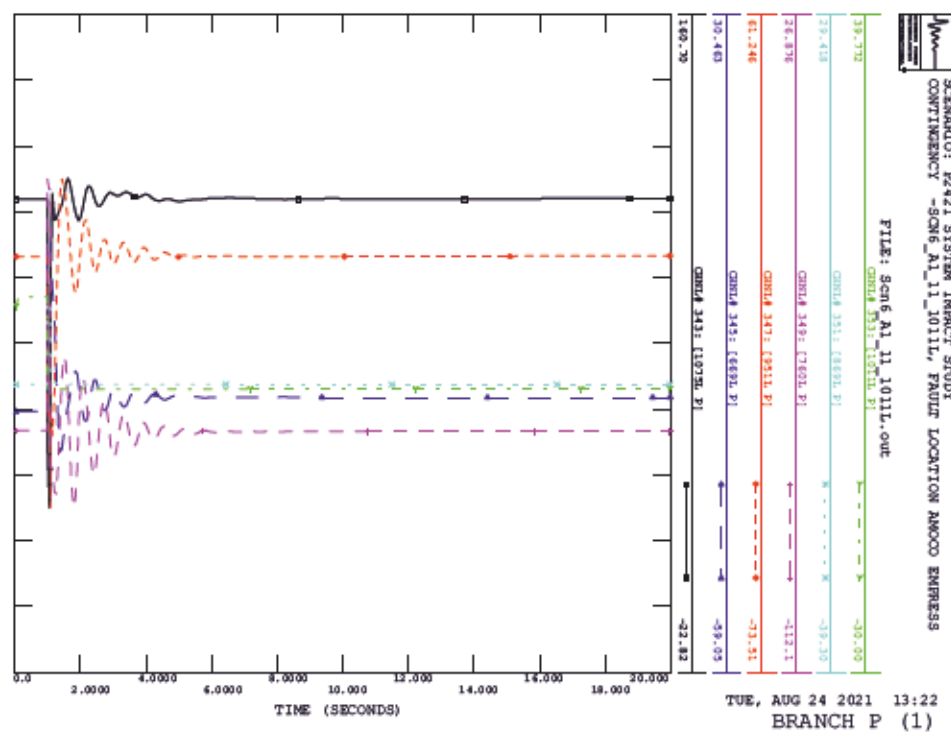
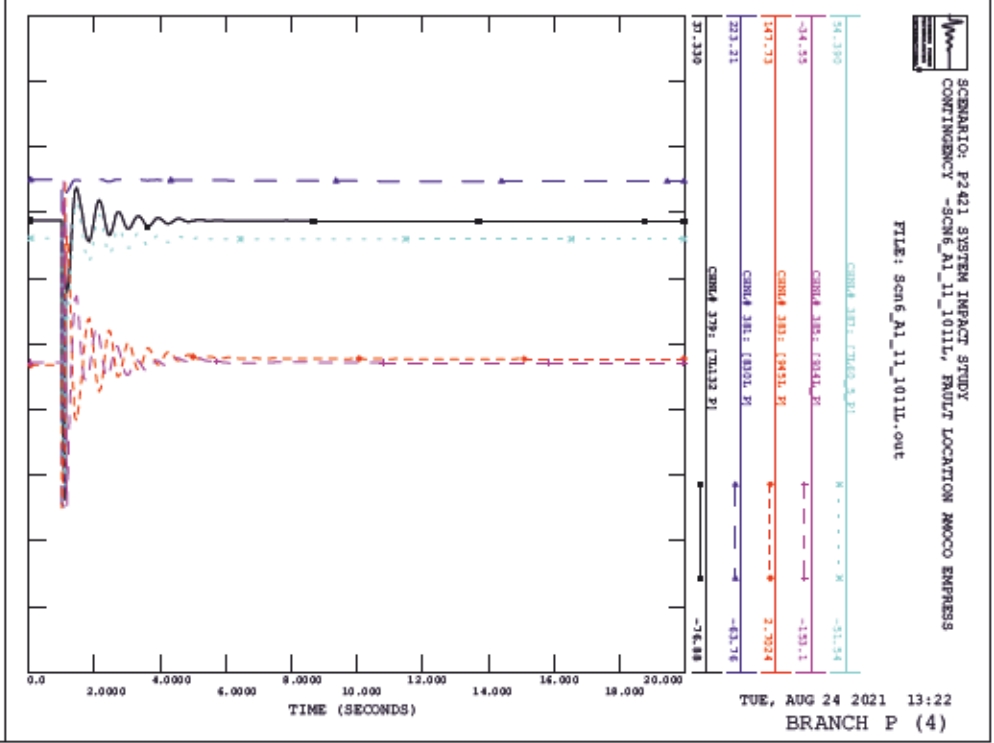
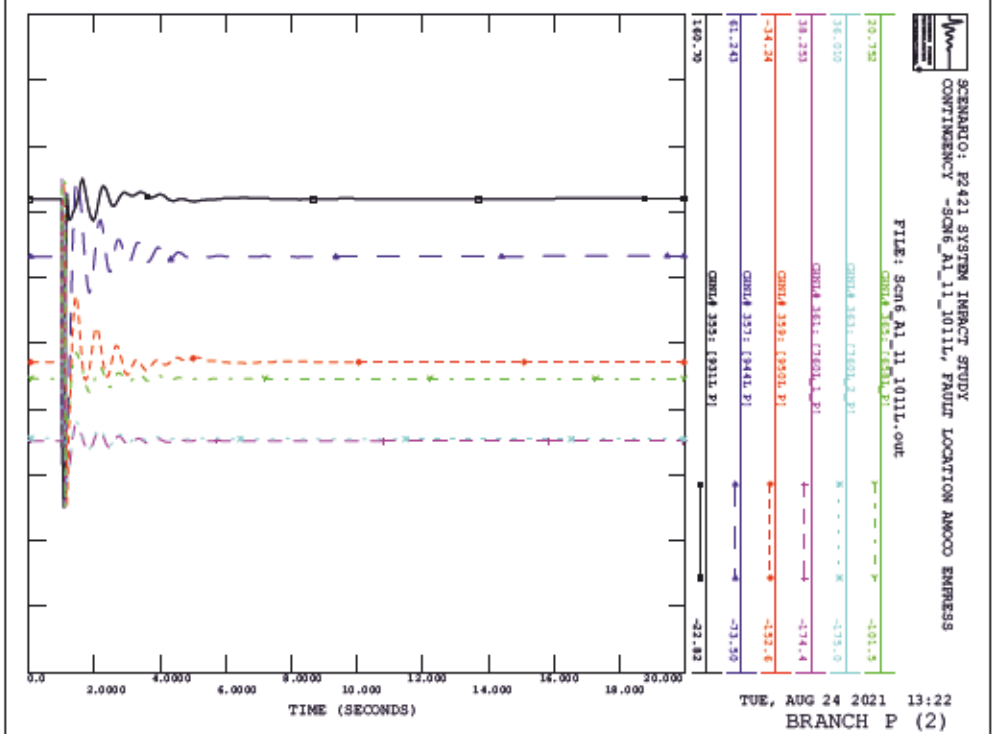
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_11_1011L, FAULT LOCATION RMOCO EMPRESS

FILE: Scn6_A1_11_1011L.out

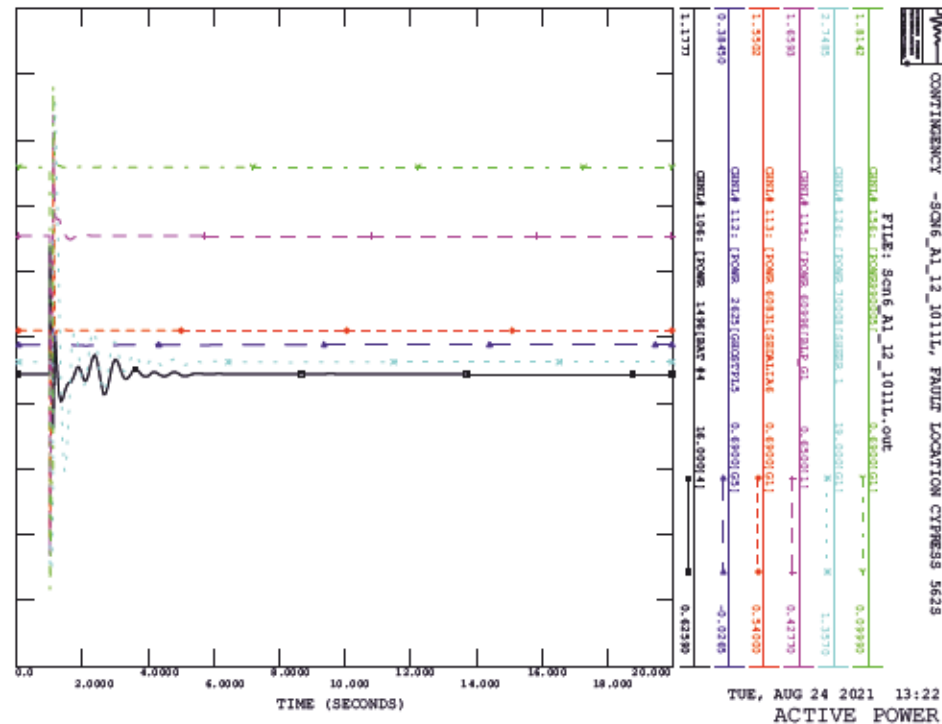


TUE, AUG 24 2021 13:22
ROTOR ANGLE

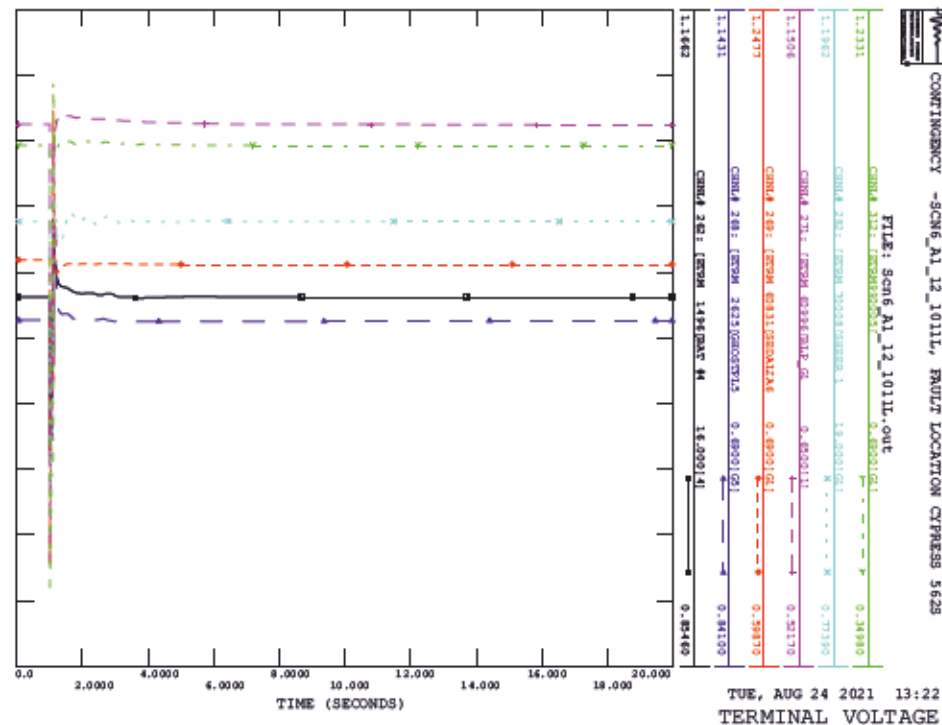




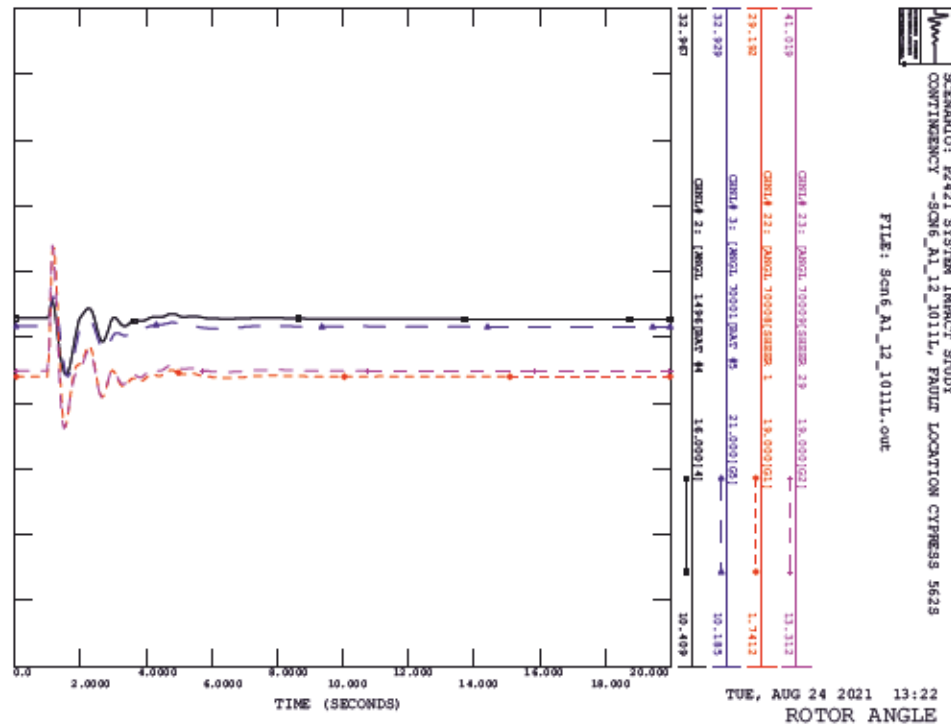
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CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625



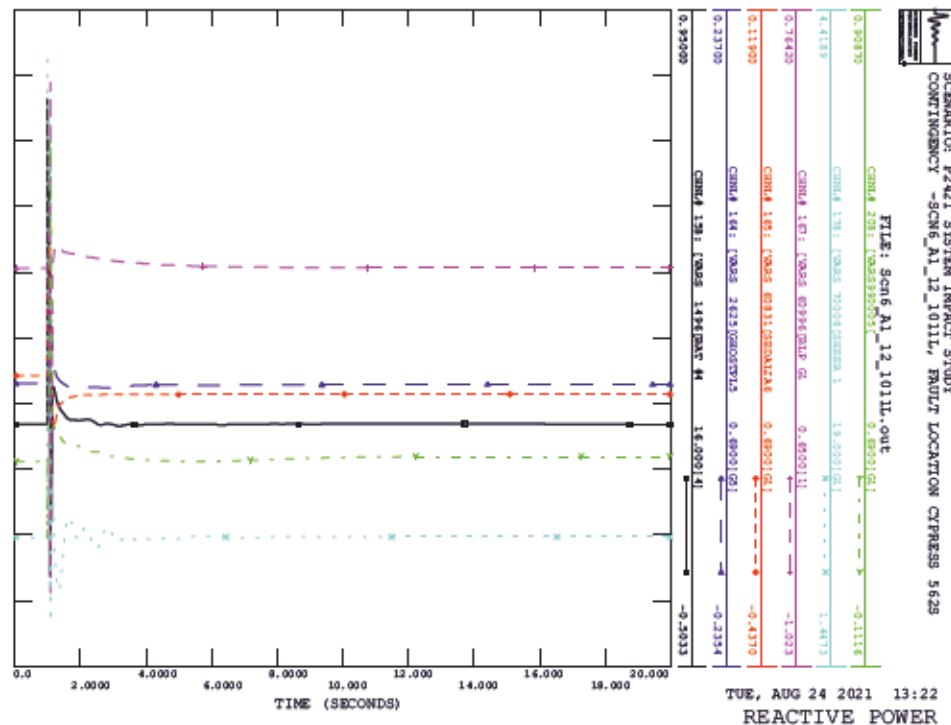
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625

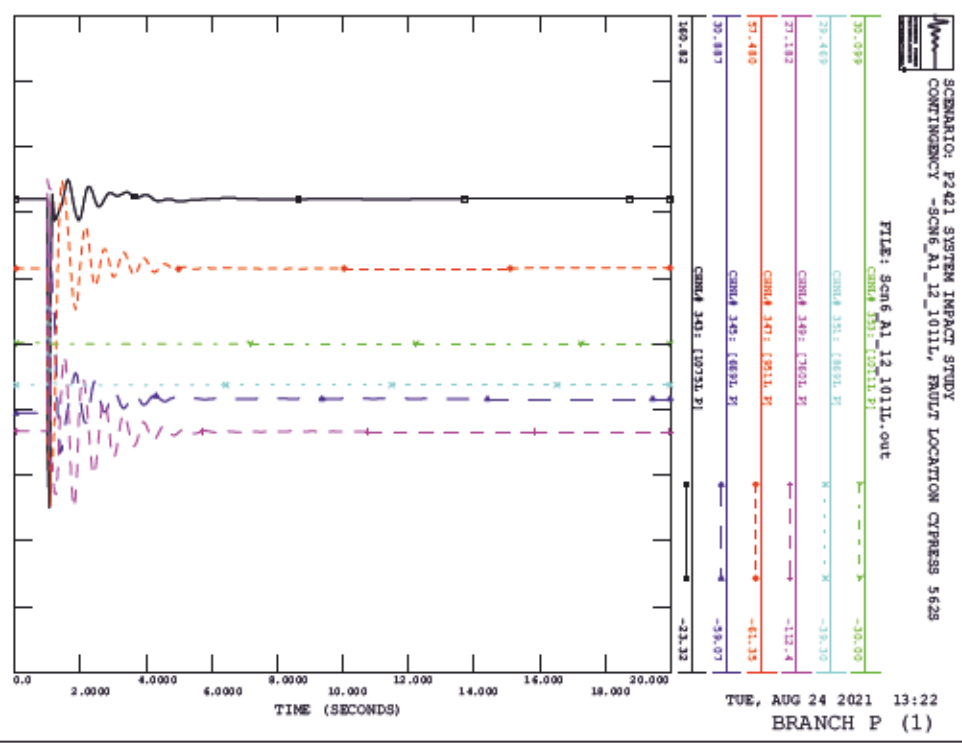
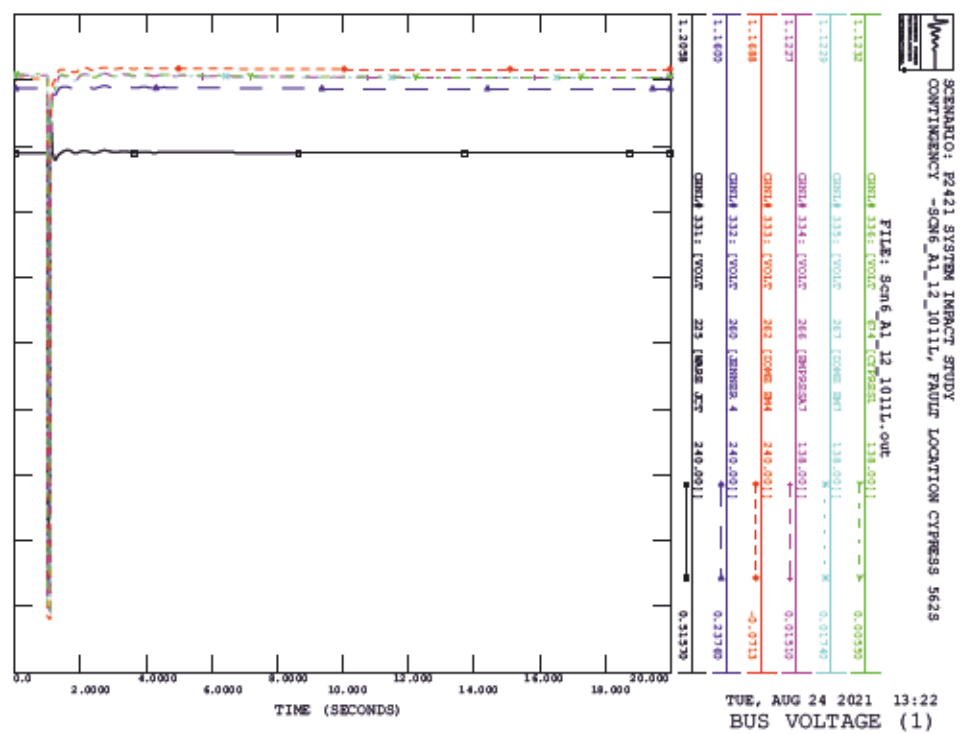
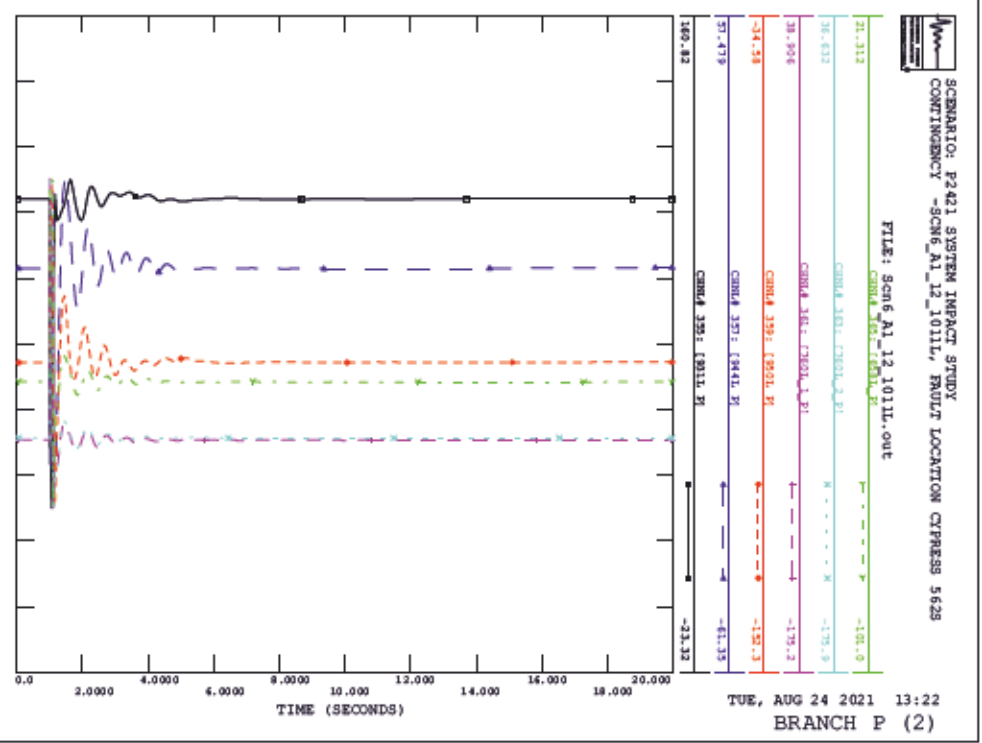
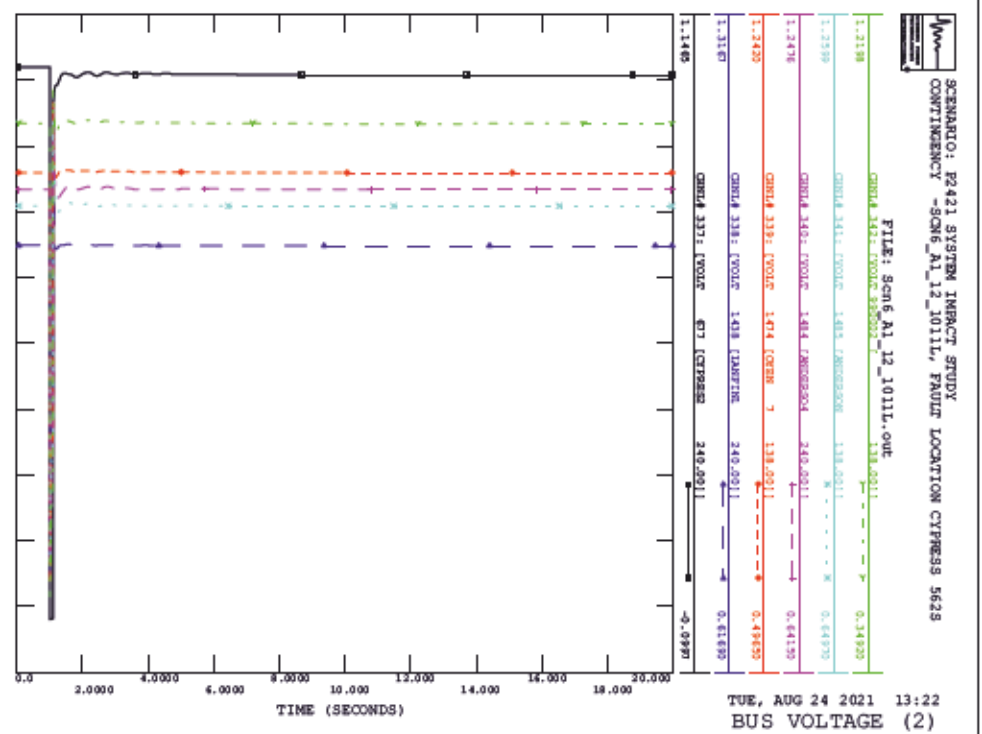


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625



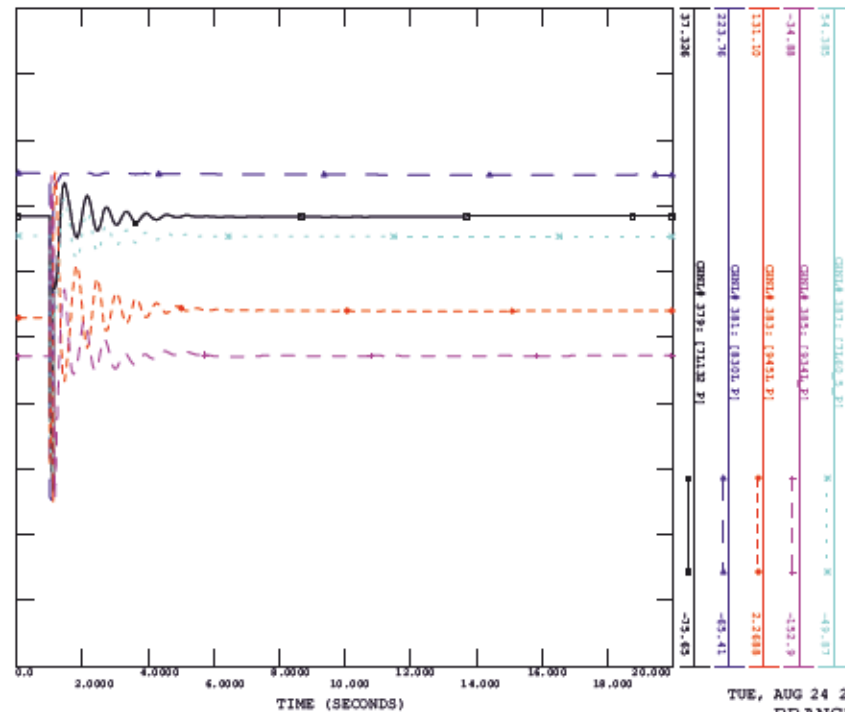
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625





SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625

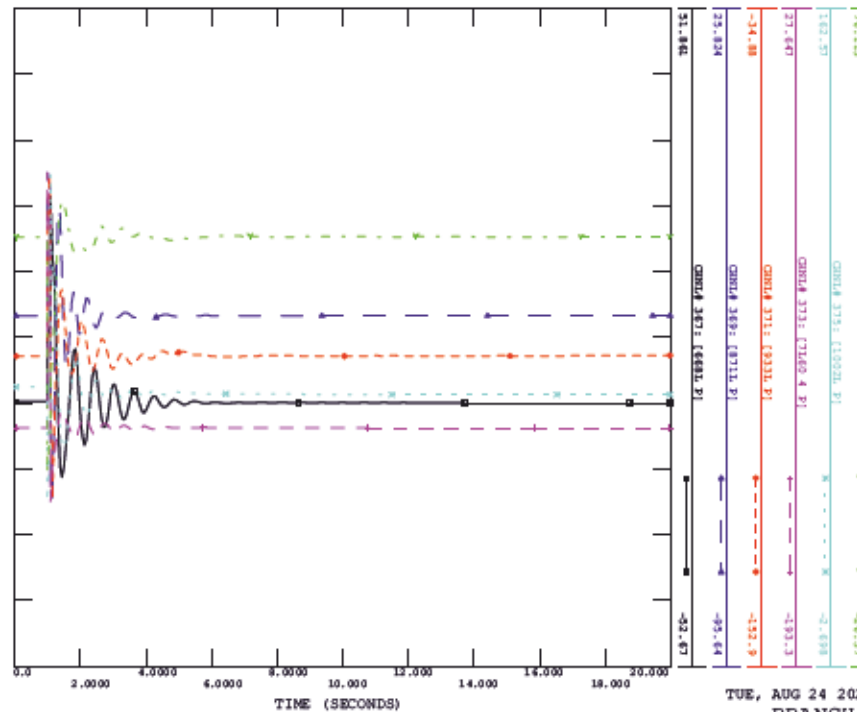
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TUE, AUG 24 2021 13:22
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625

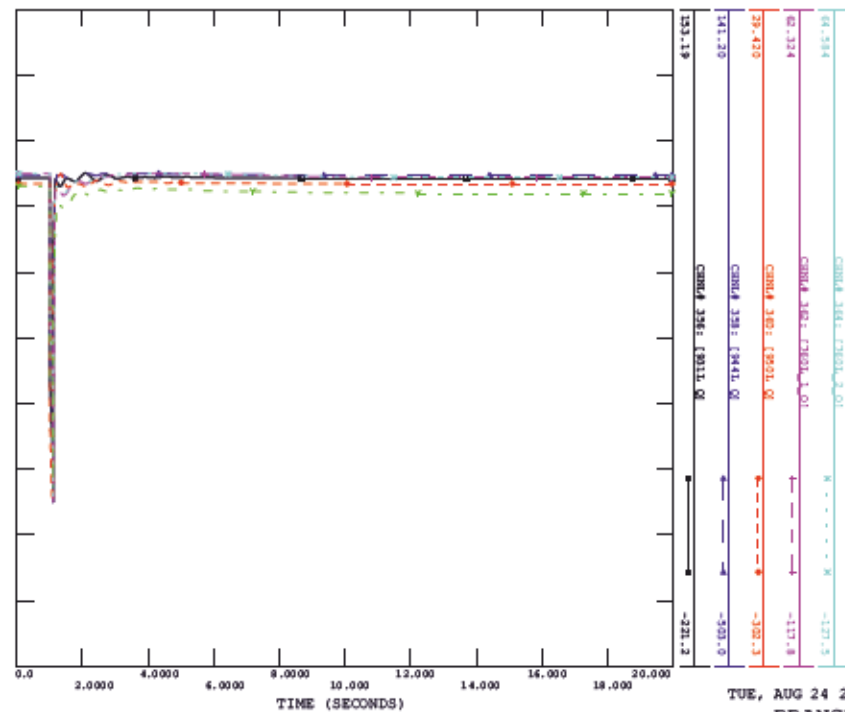
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TUE, AUG 24 2021 13:22
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625

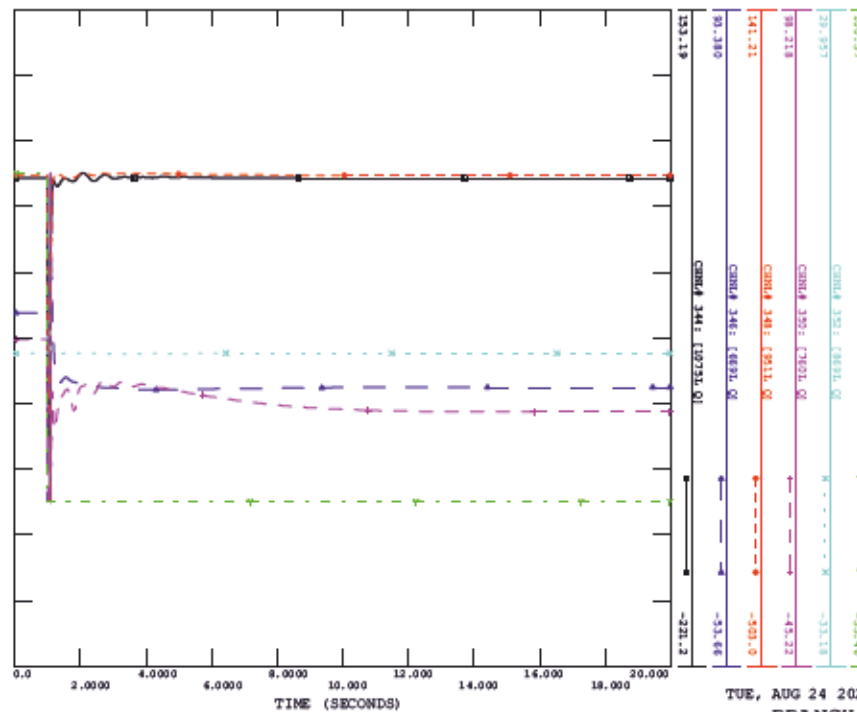
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TUE, AUG 24 2021 13:22
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625

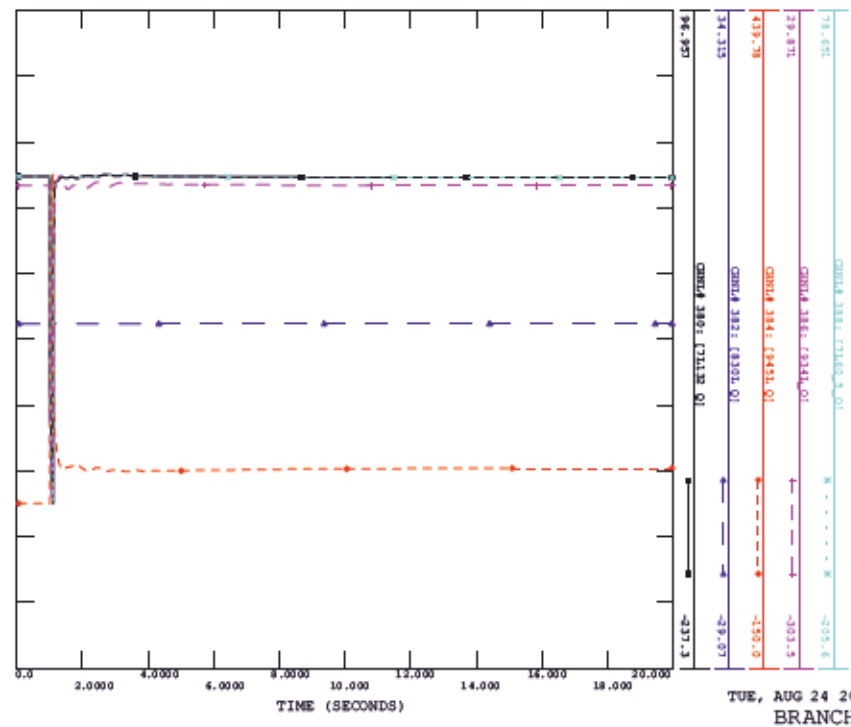
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TUE, AUG 24 2021 13:22
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_13_1011L, FAULT LOCATION CYPRESS 5625

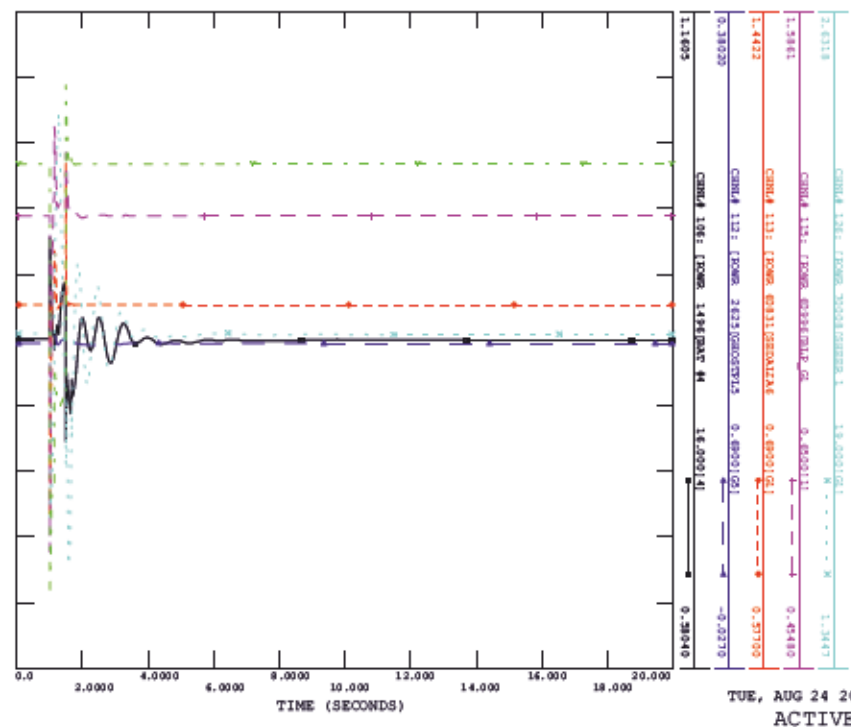
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TUE, AUG 24 2021 13:22
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_13_669L, FAULT LOCATION ANOCO EXPRESS

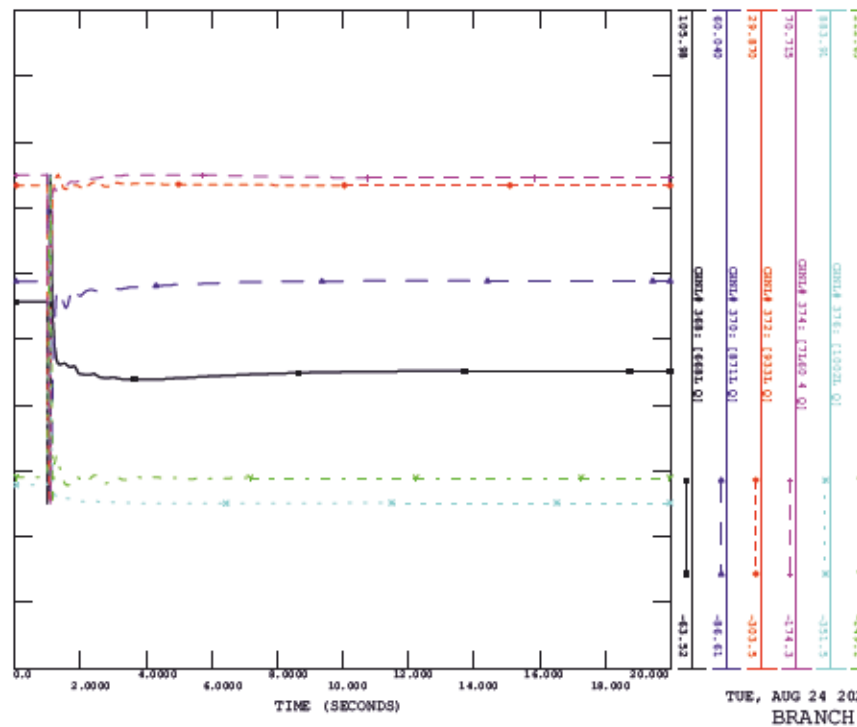
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TUE, AUG 24 2021 13:22
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_12_1011L, FAULT LOCATION CYPRESS 5625

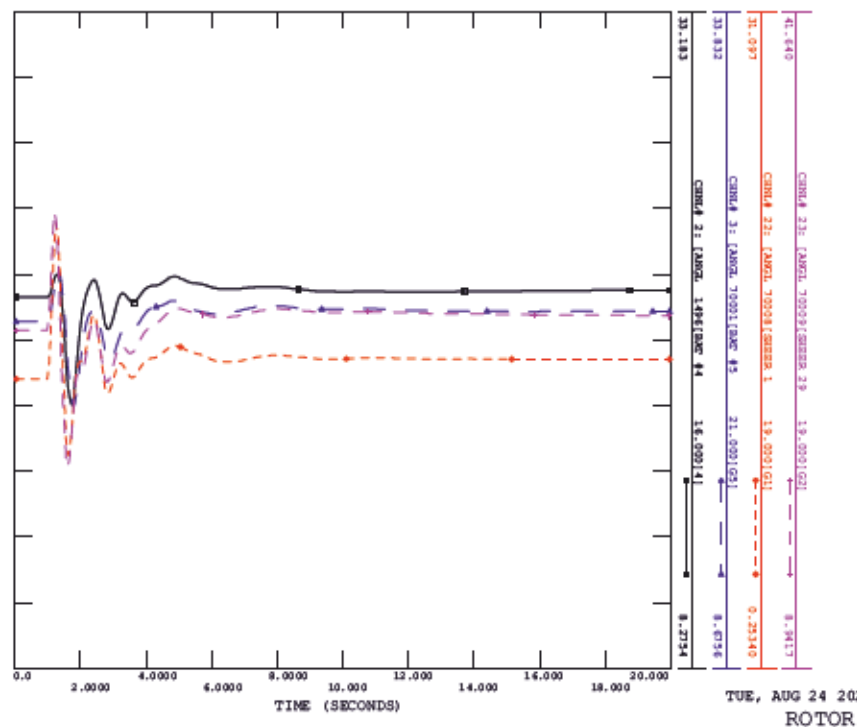
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TUE, AUG 24 2021 13:22
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_13_669L, FAULT LOCATION ANOCO EXPRESS

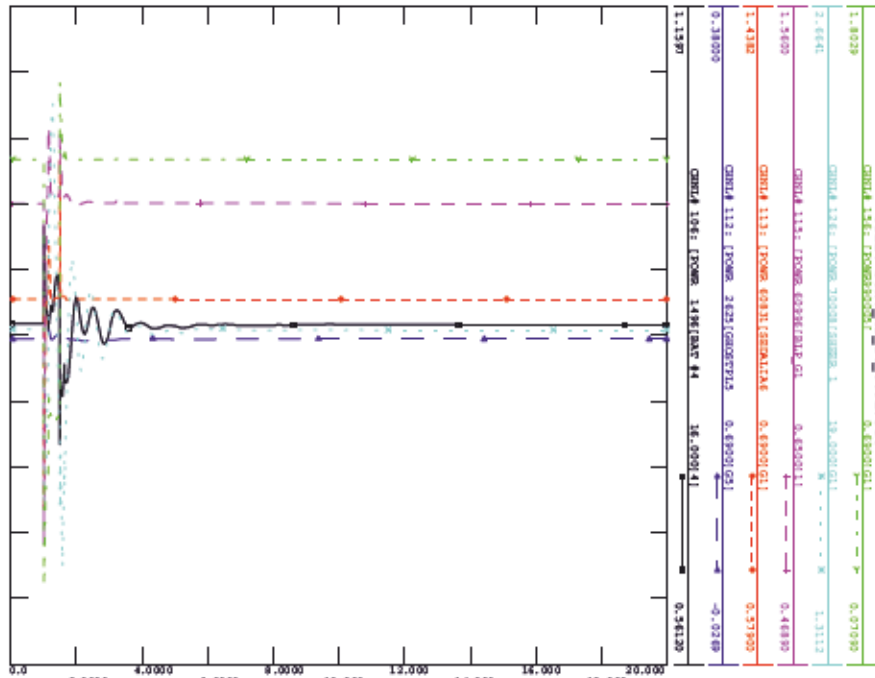
FILE: Scm6_A1_13_669L.out



TUE, AUG 24 2021 13:22
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_14_669L, FAULT LOCATION CYPRESS 5629

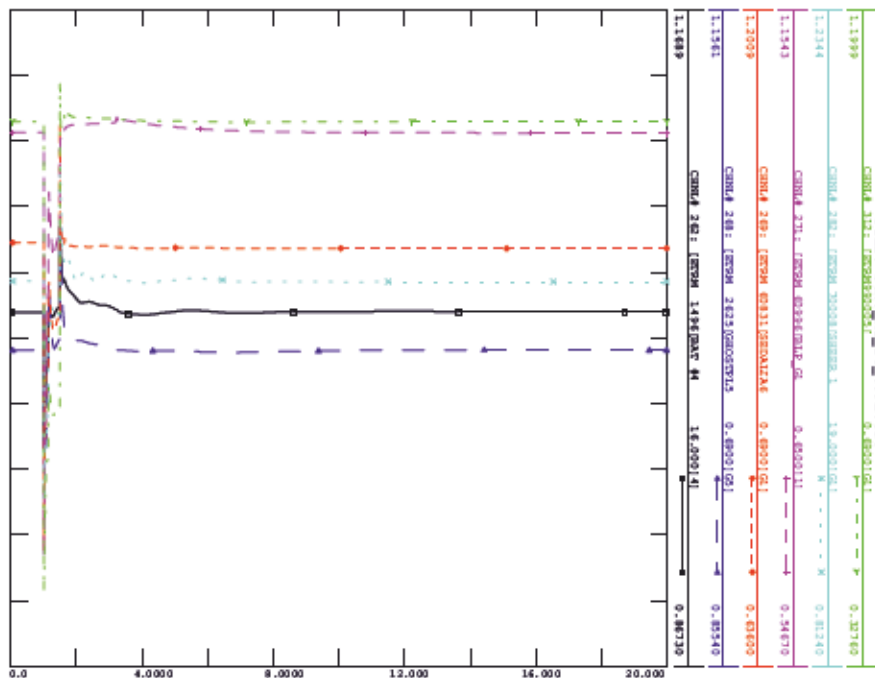
FILE: Scm6_A1_14_669L.out



TUE, AUG 24 2021 13:22
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_14_669L, FAULT LOCATION CYPRESS 5629

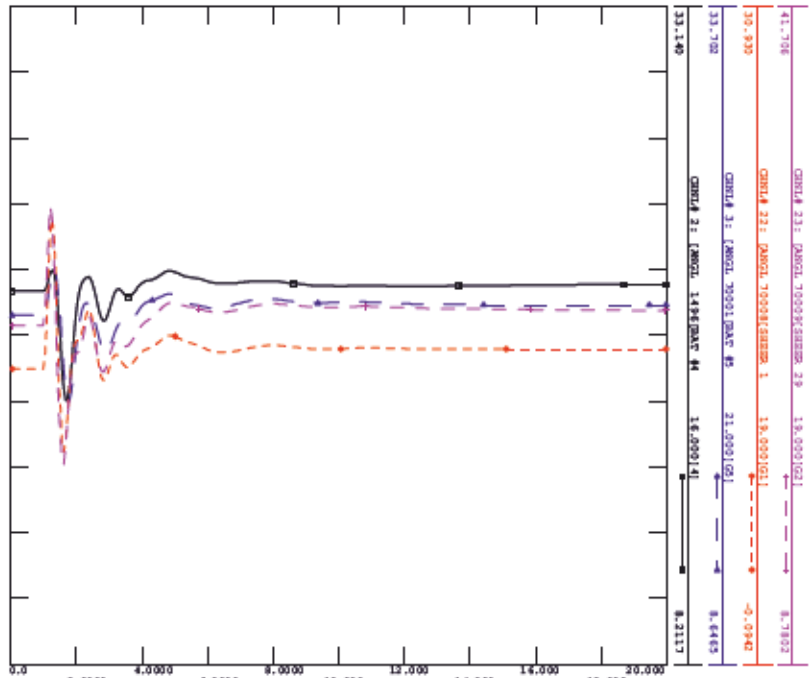
FILE: Scm6_A1_14_669L.out



TUE, AUG 24 2021 13:22
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_14_669L, FAULT LOCATION CYPRESS 5629

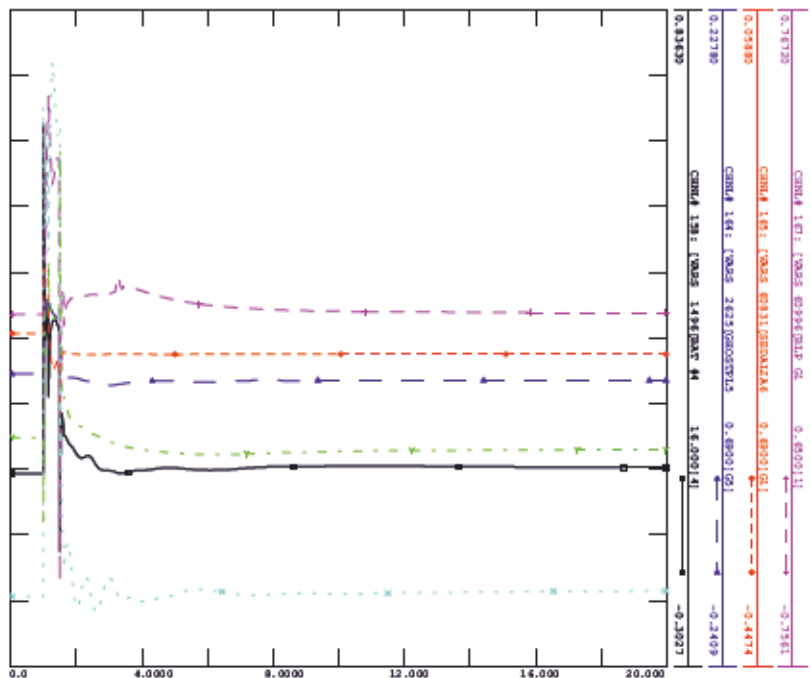
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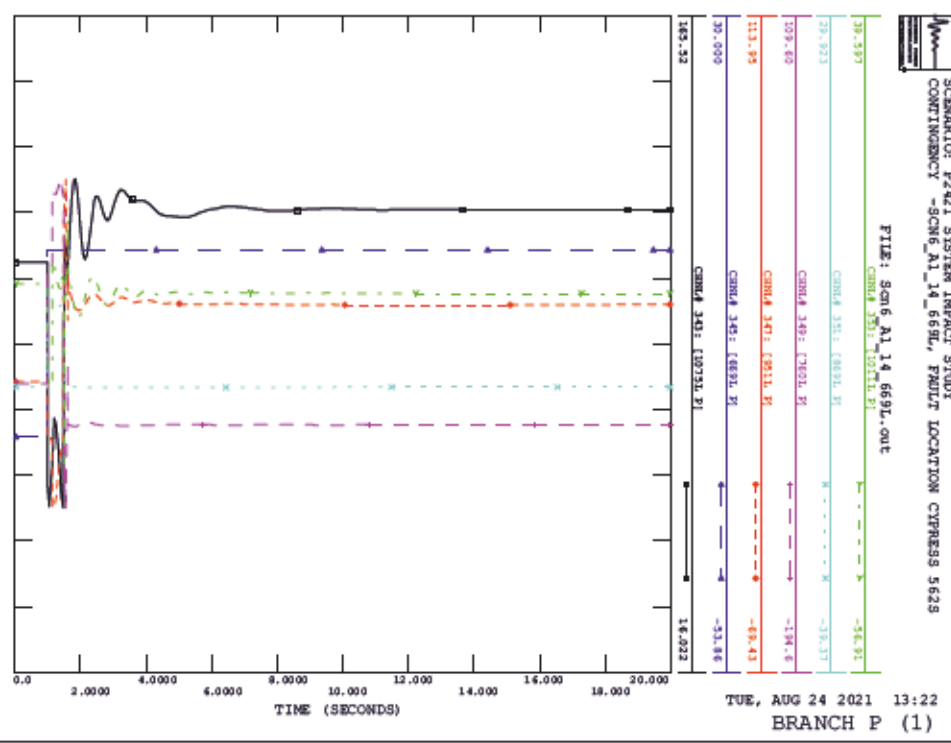
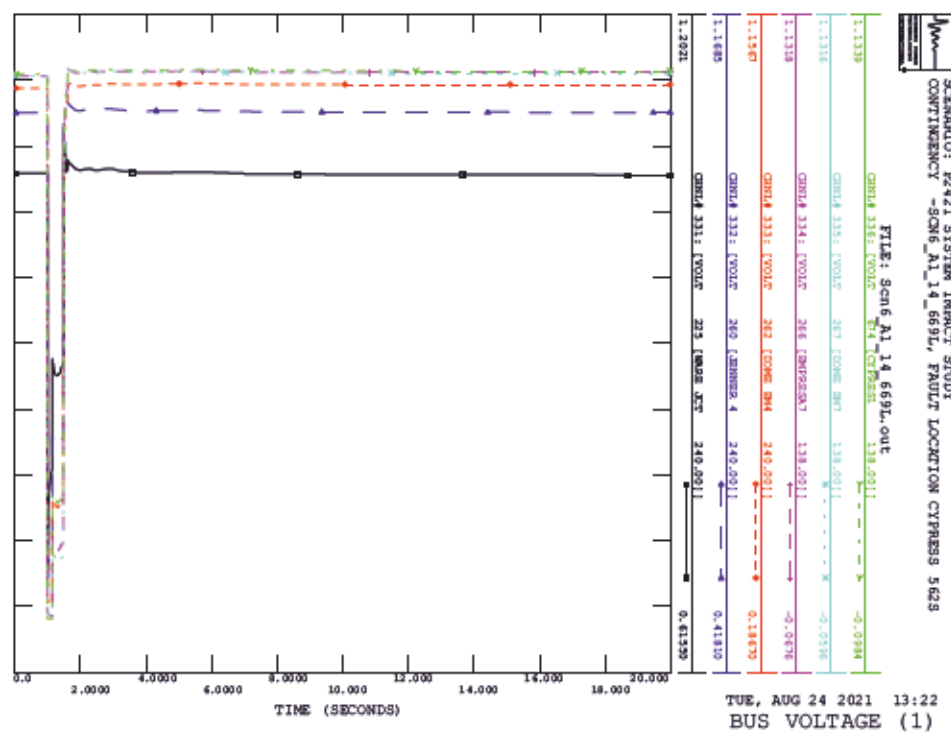
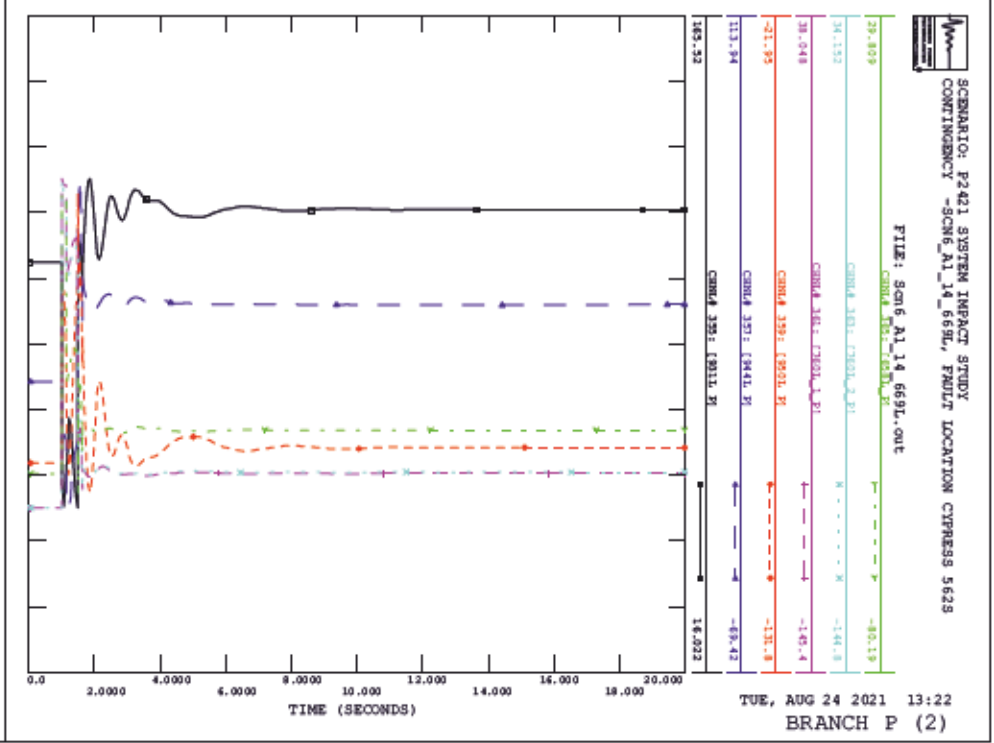
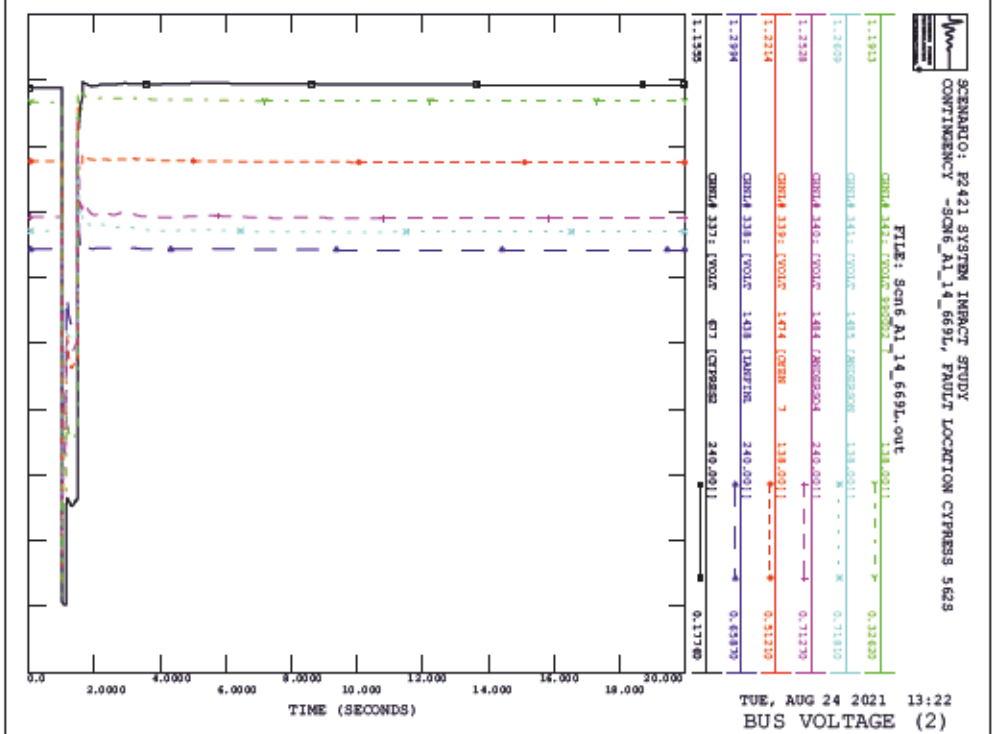
TUE, AUG 24 2021 13:22
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_14_669L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_14_669L.out

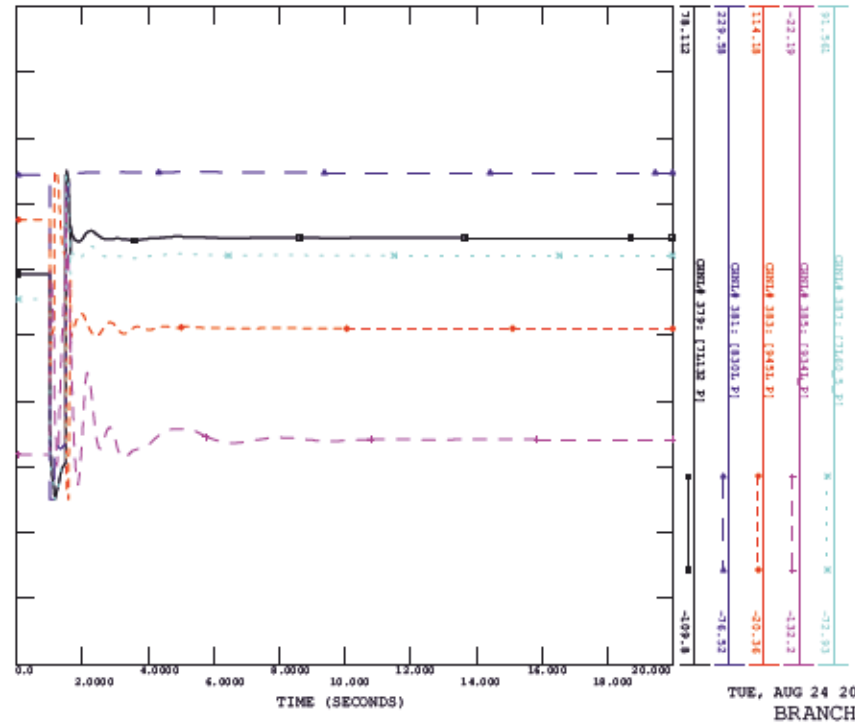


TUE, AUG 24 2021 13:22
REACTIVE POWER



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_14_669L, FAULT LOCATION CYPRESS 5629

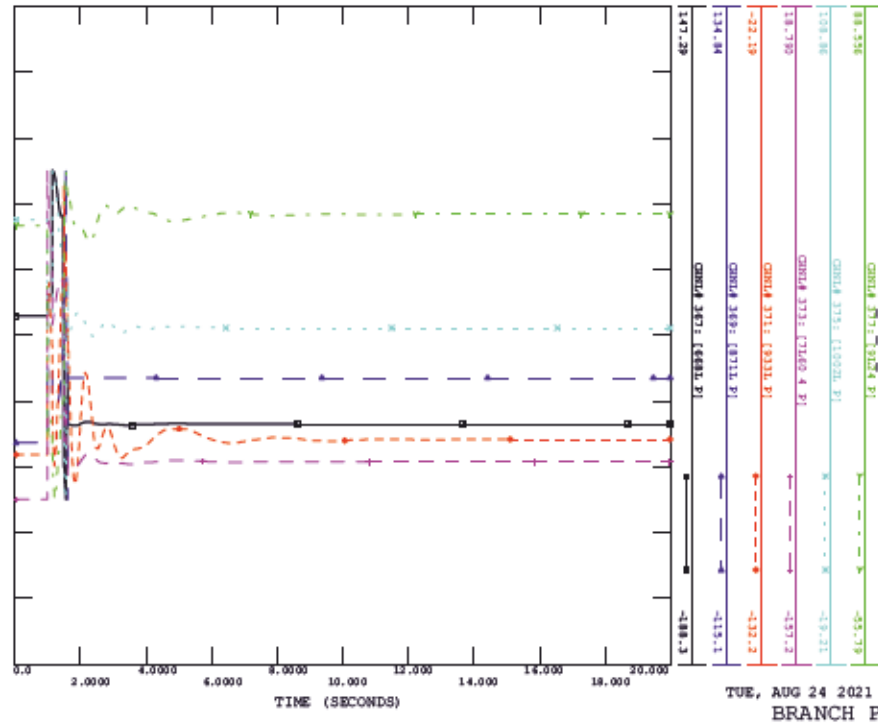
FILE: Scm6_AI_14_669L.out



TUE, AUG 24 2021 13:22
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_14_669L, FAULT LOCATION CYPRESS 5629

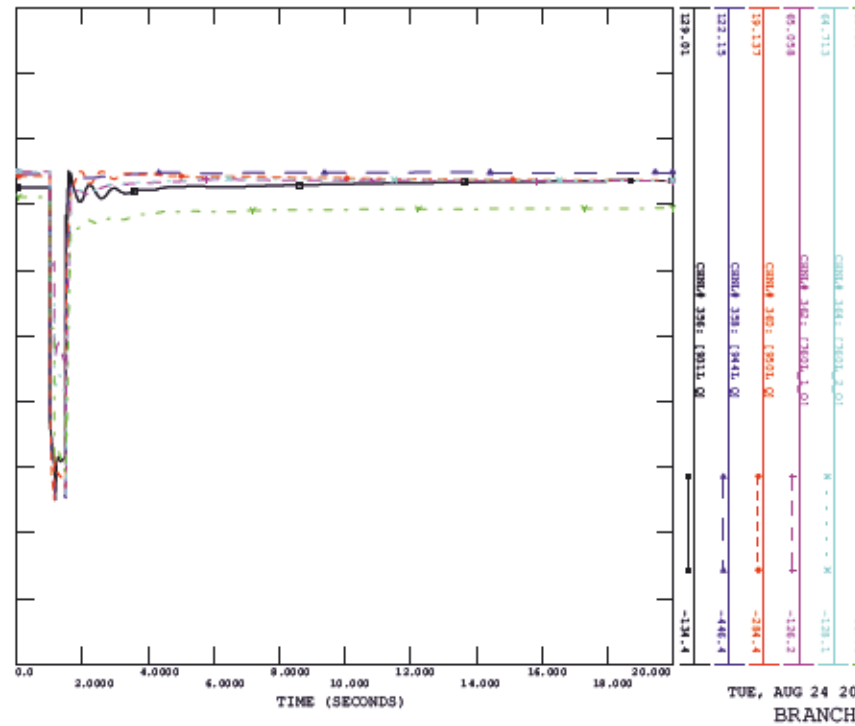
FILE: Scm6_AI_14_669L.out



TUE, AUG 24 2021 13:22
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_14_669L, FAULT LOCATION CYPRESS 5629

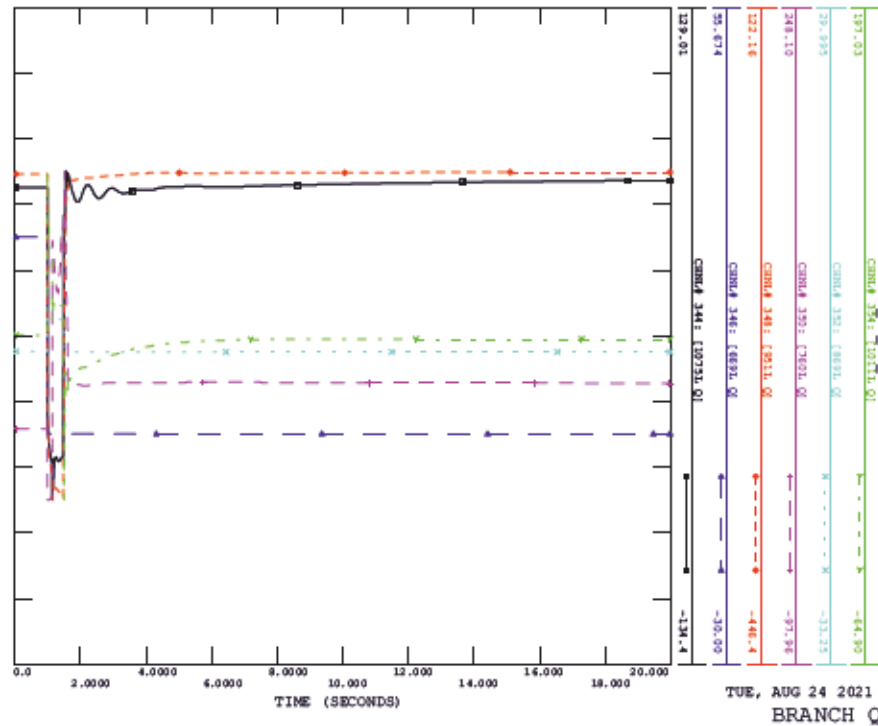
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TUE, AUG 24 2021 13:22
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_AI_14_669L, FAULT LOCATION CYPRESS 5629

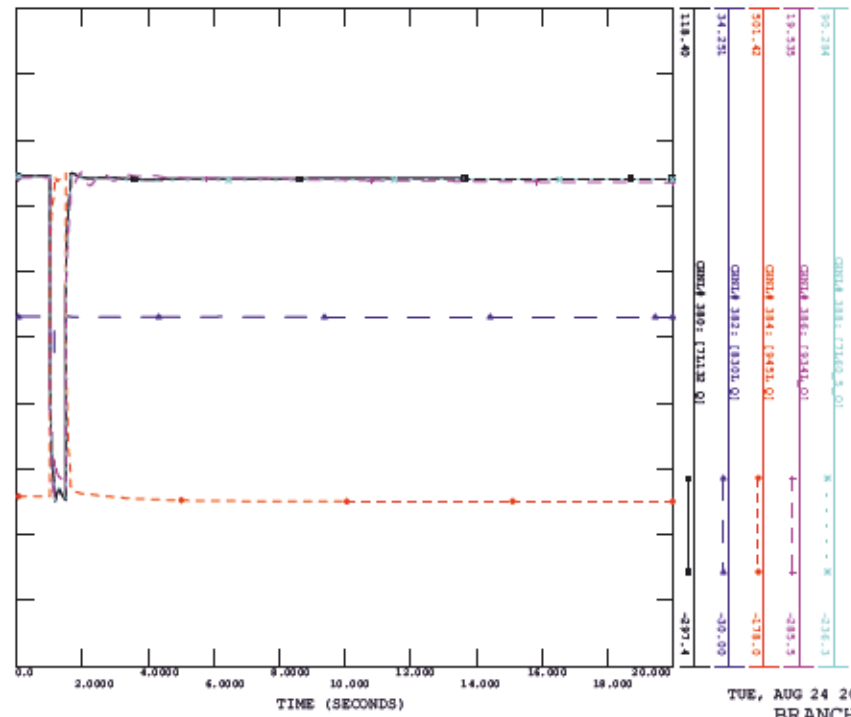
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TUE, AUG 24 2021 13:22
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_14_669L, FAULT LOCATION CYPRESS 5629

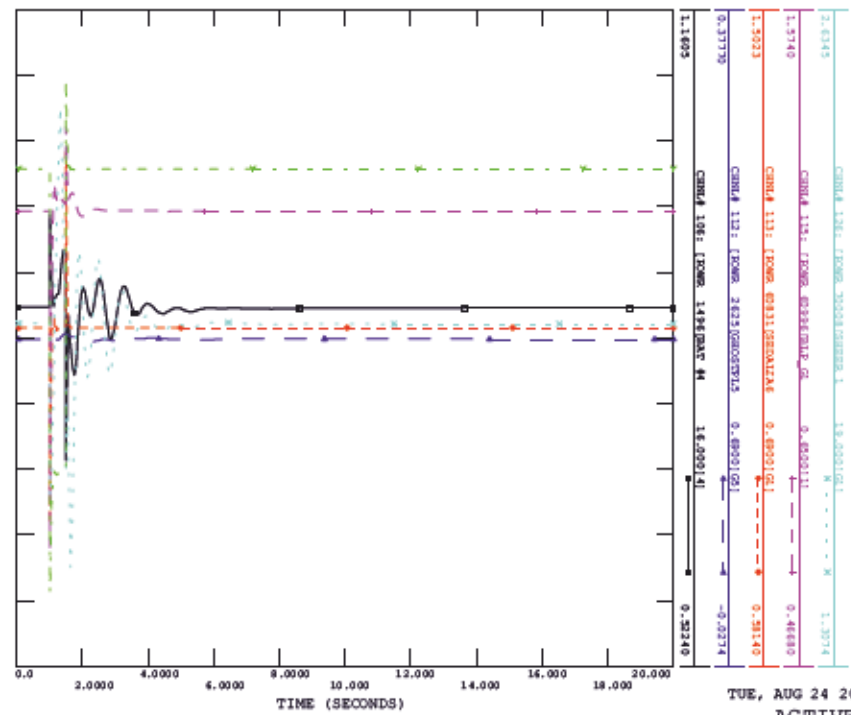
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TUE, AUG 24 2021 13:22
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EXPRESS

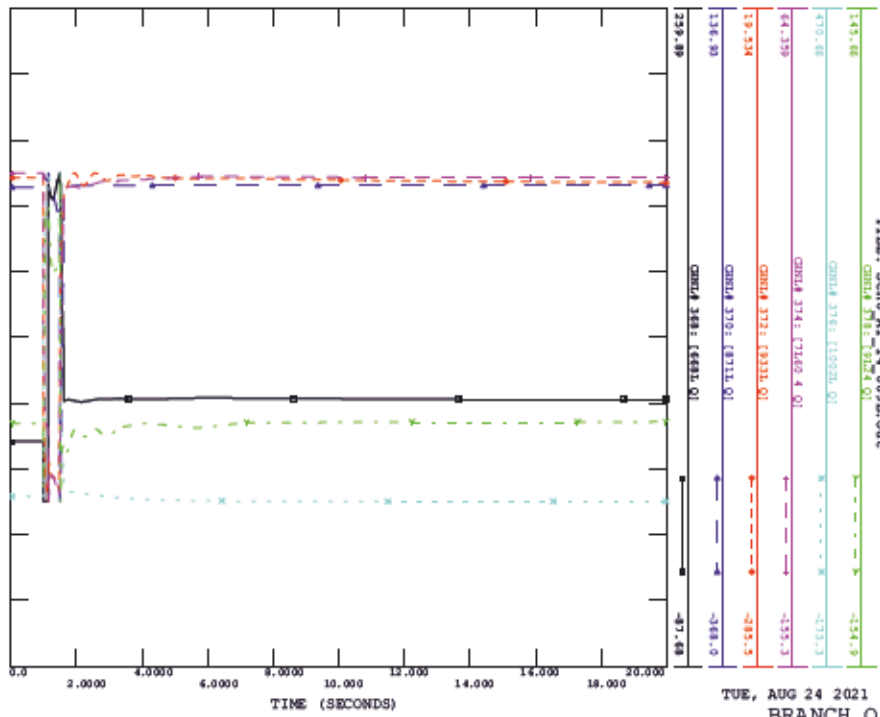
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TUE, AUG 24 2021 13:22
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_14_669L, FAULT LOCATION CYPRESS 5629

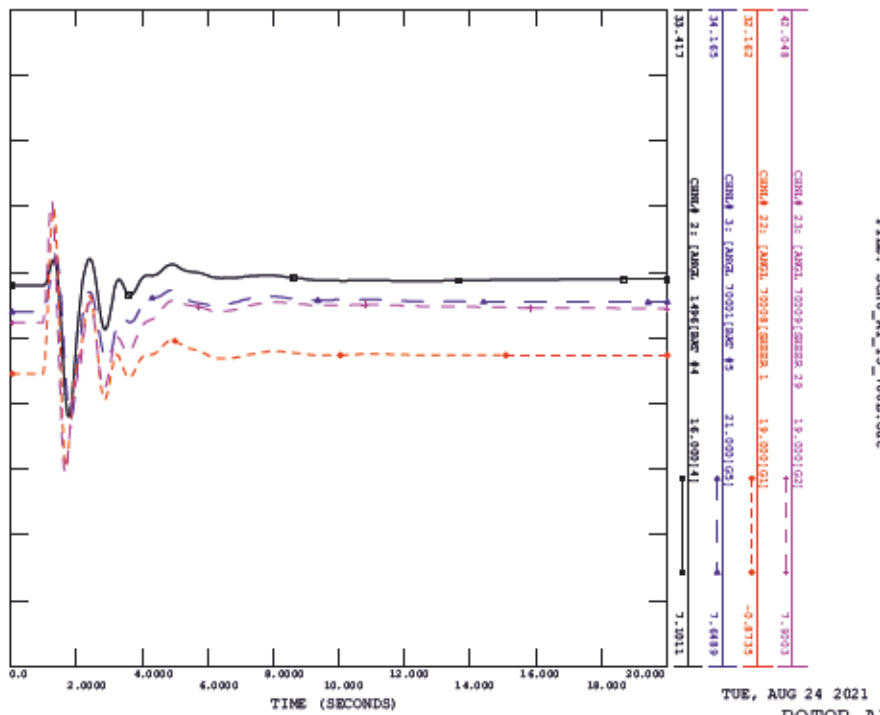
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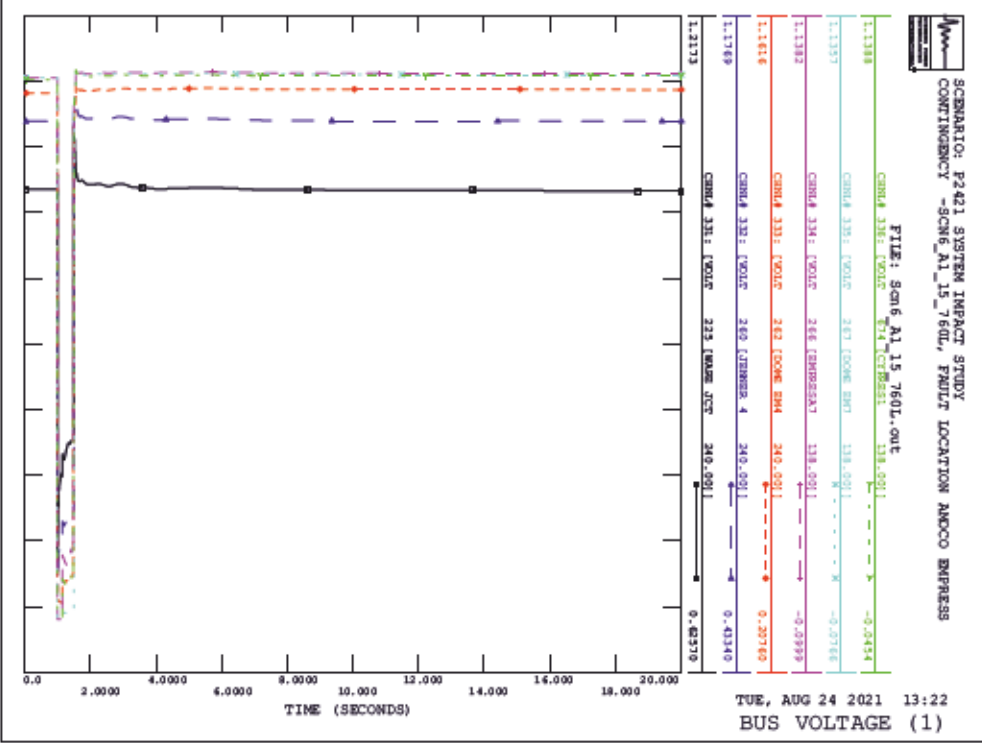
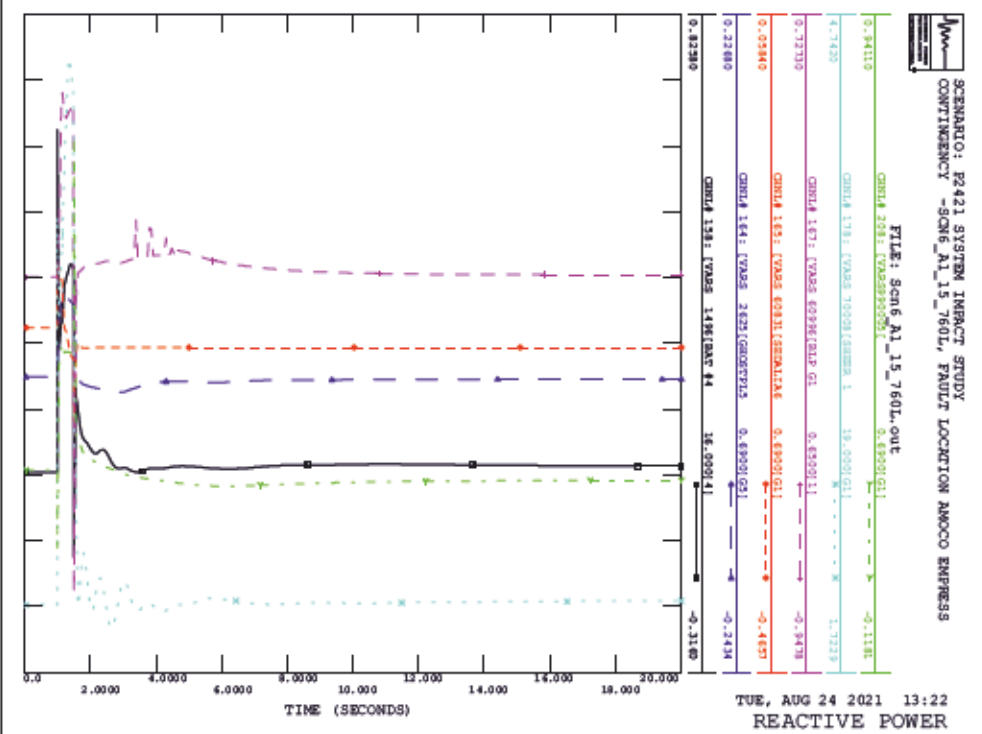
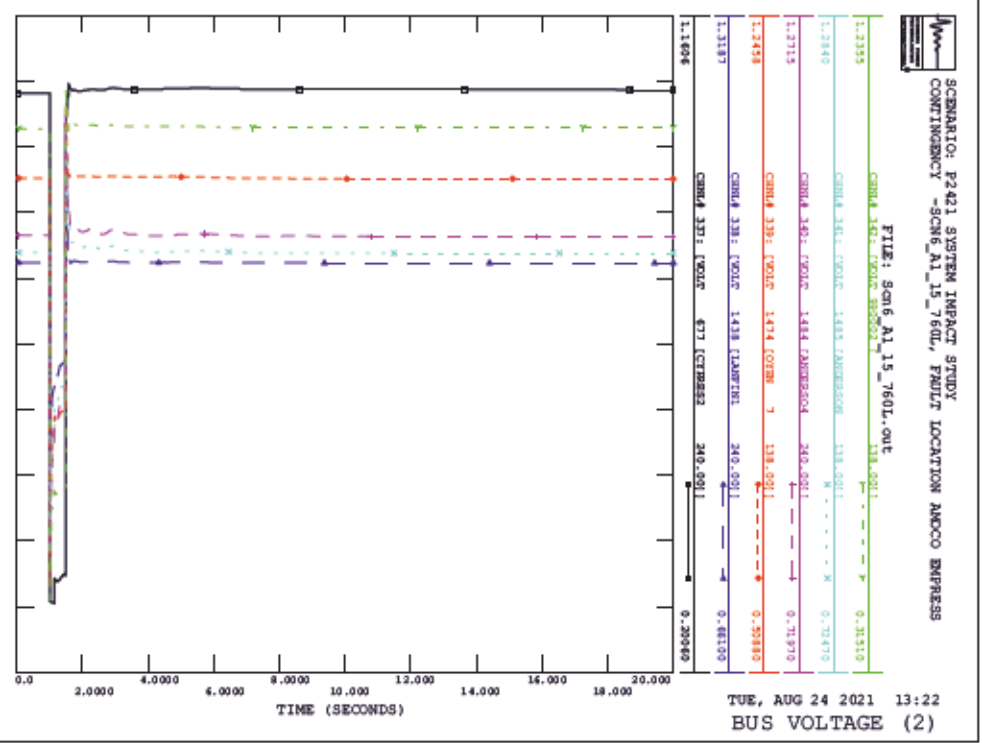
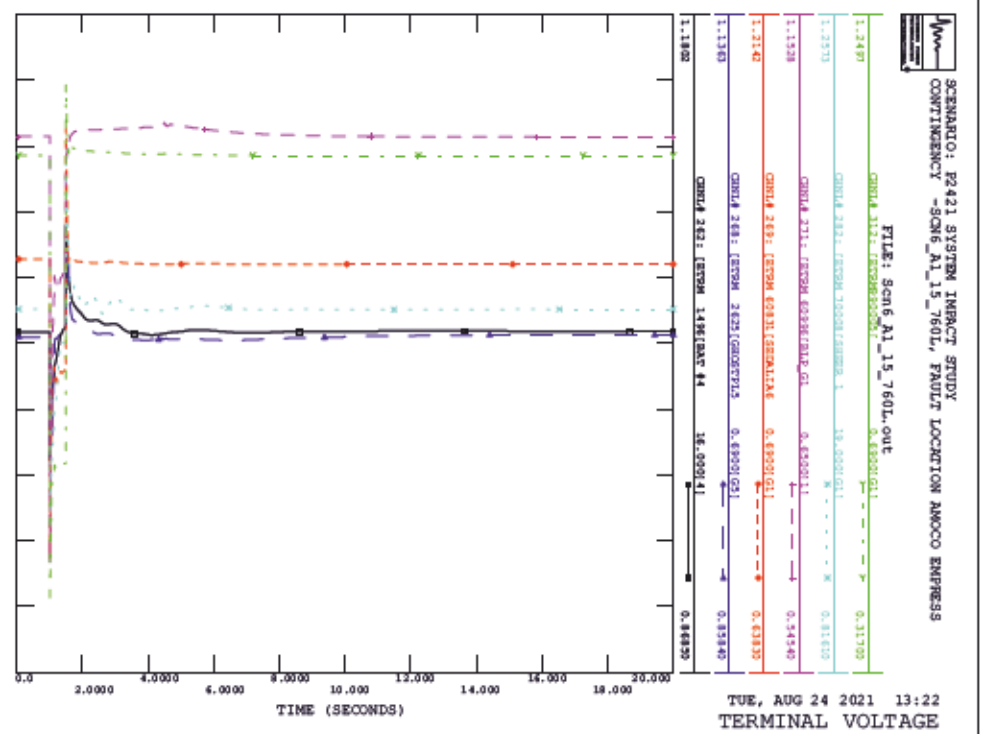
TUE, AUG 24 2021 13:22
BRANCH Q (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EXPRESS

FILE: Scn6_A1_15_760L.out

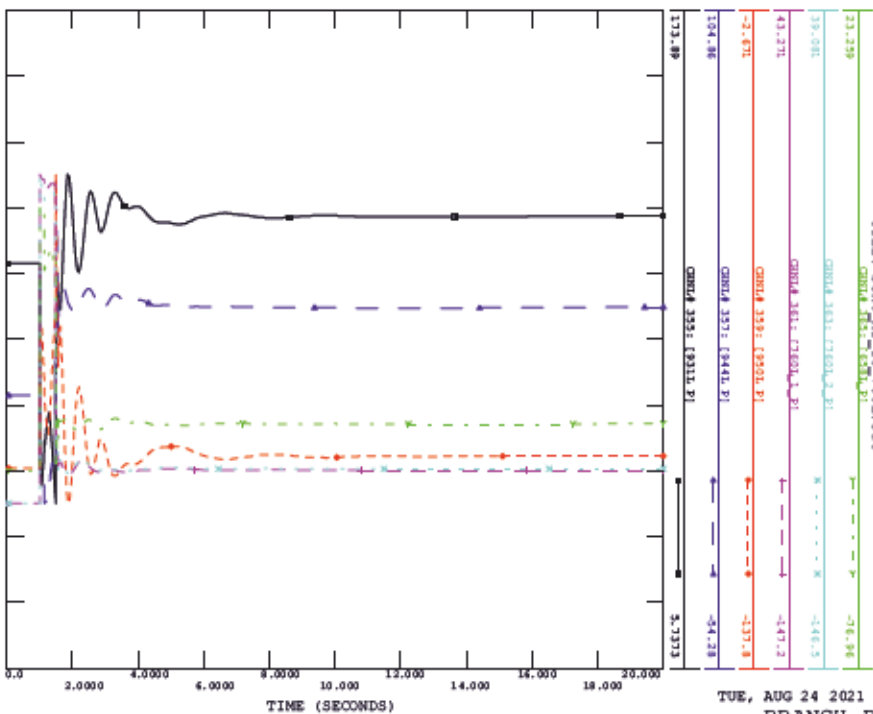


TUE, AUG 24 2021 13:22
ROTOR ANGLE



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

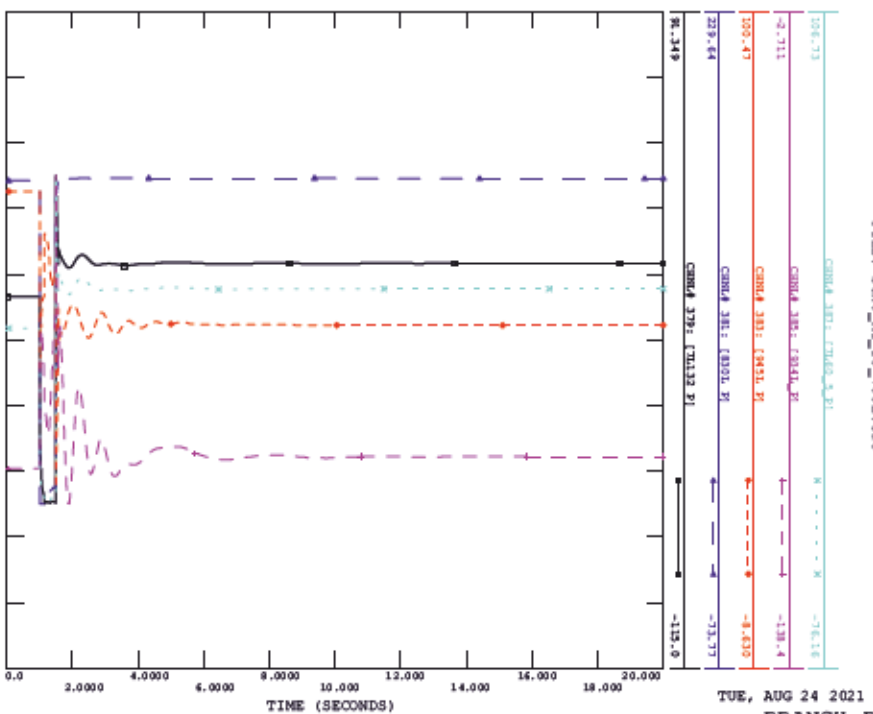
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TUE, AUG 24 2021 13:22
BRANCH P (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

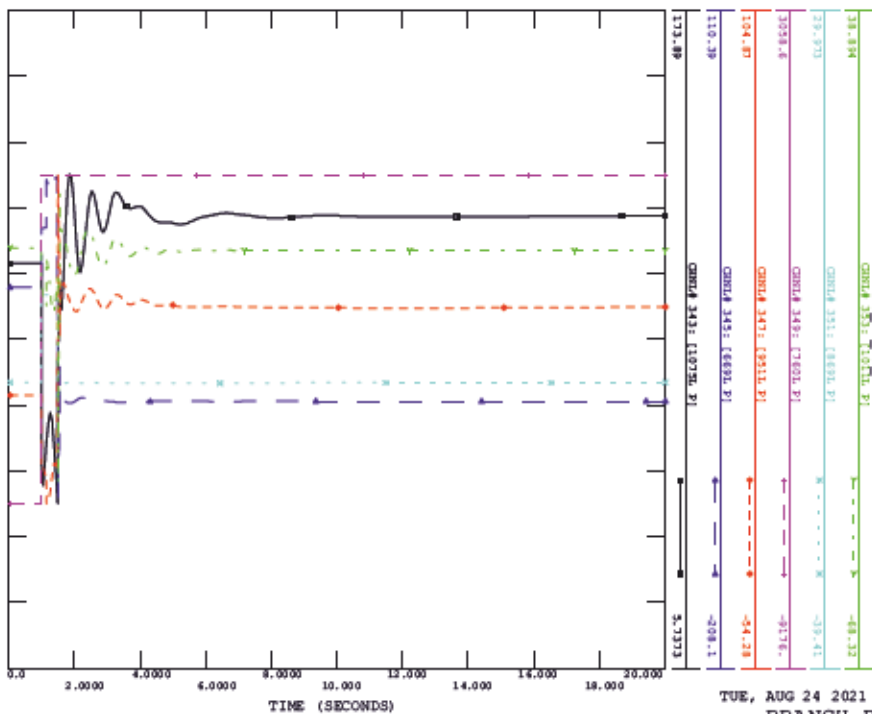
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TUE, AUG 24 2021 13:22
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

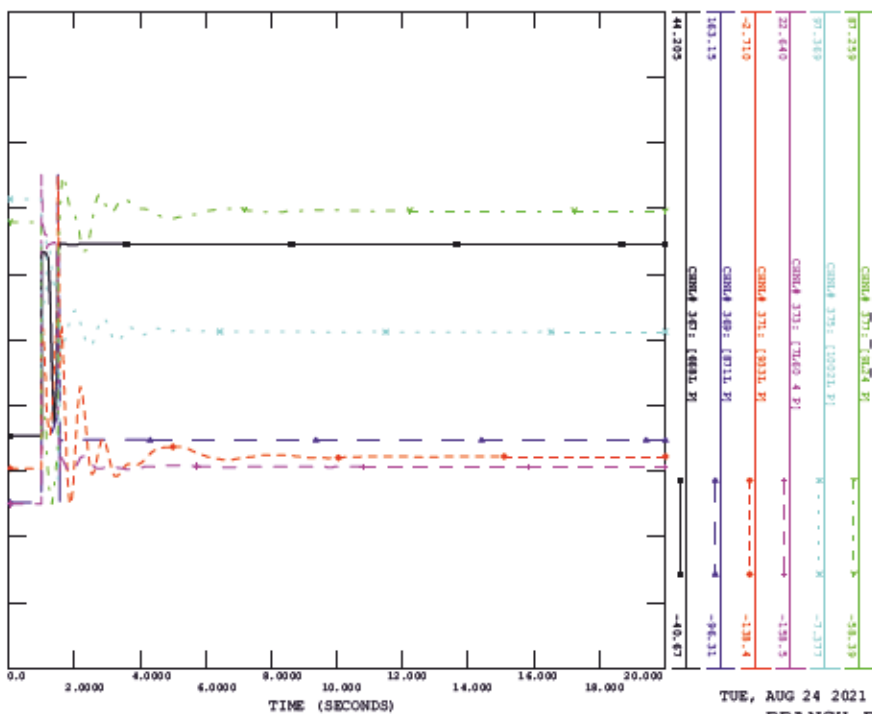
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TUE, AUG 24 2021 13:22
BRANCH P (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

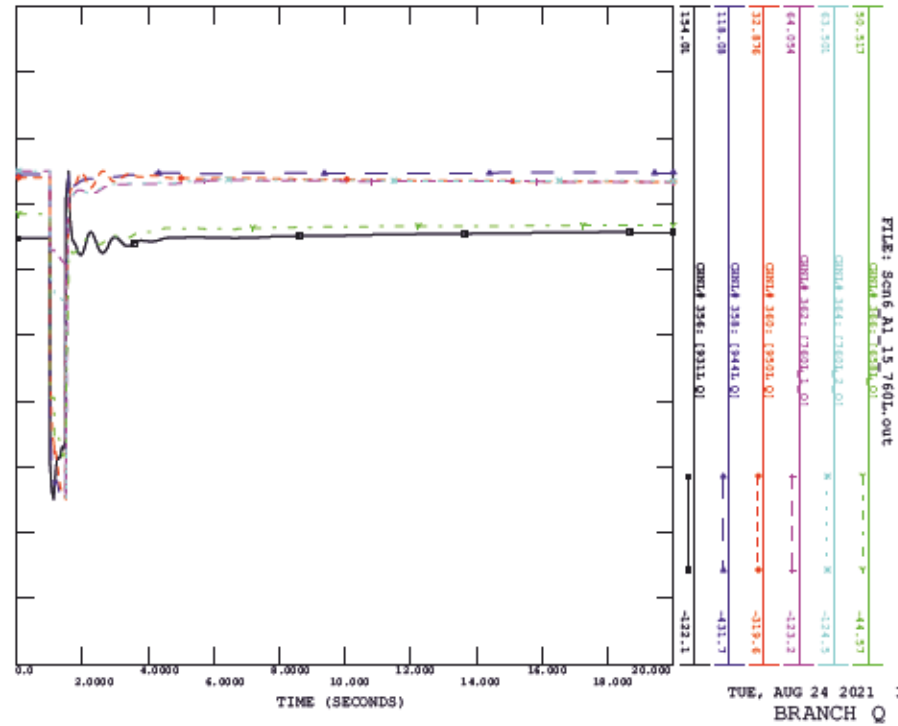
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TUE, AUG 24 2021 13:22
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

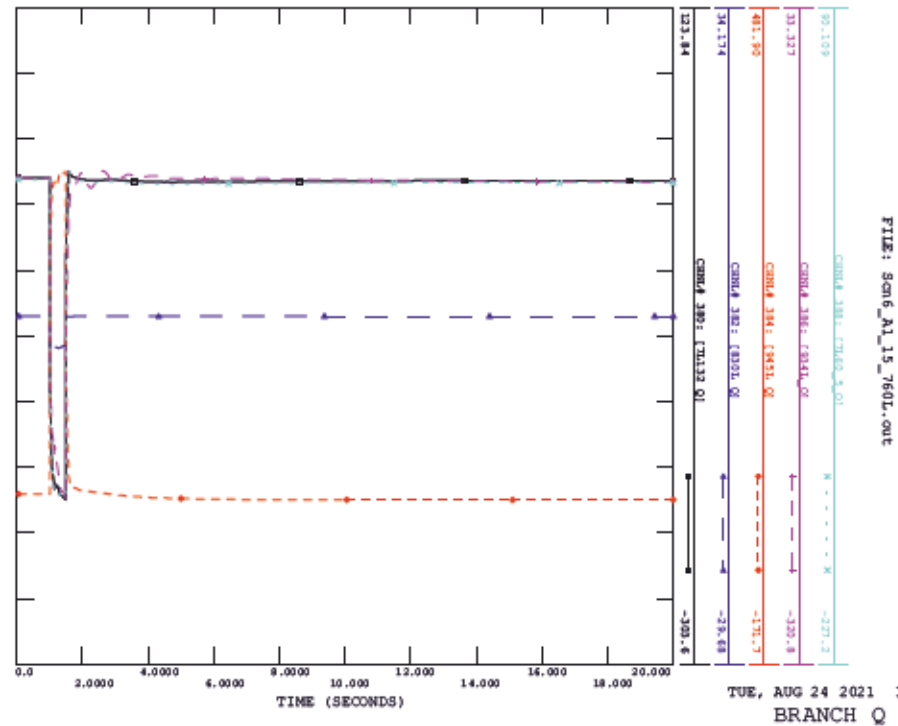
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TUE, AUG 24 2021 13:22
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

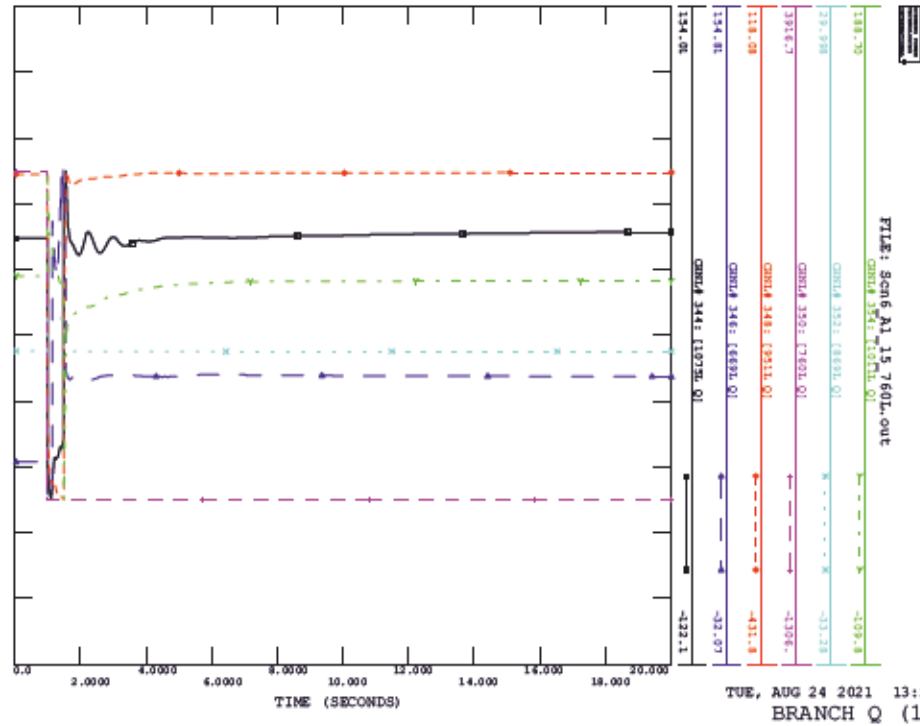
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TUE, AUG 24 2021 13:22
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

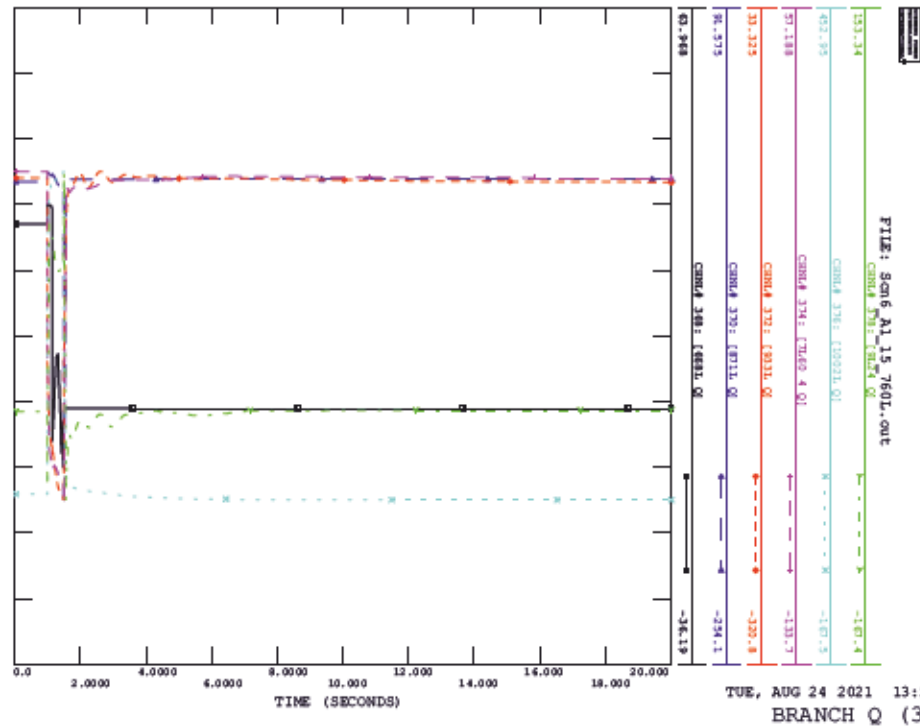
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TUE, AUG 24 2021 13:22
BRANCH Q (1)

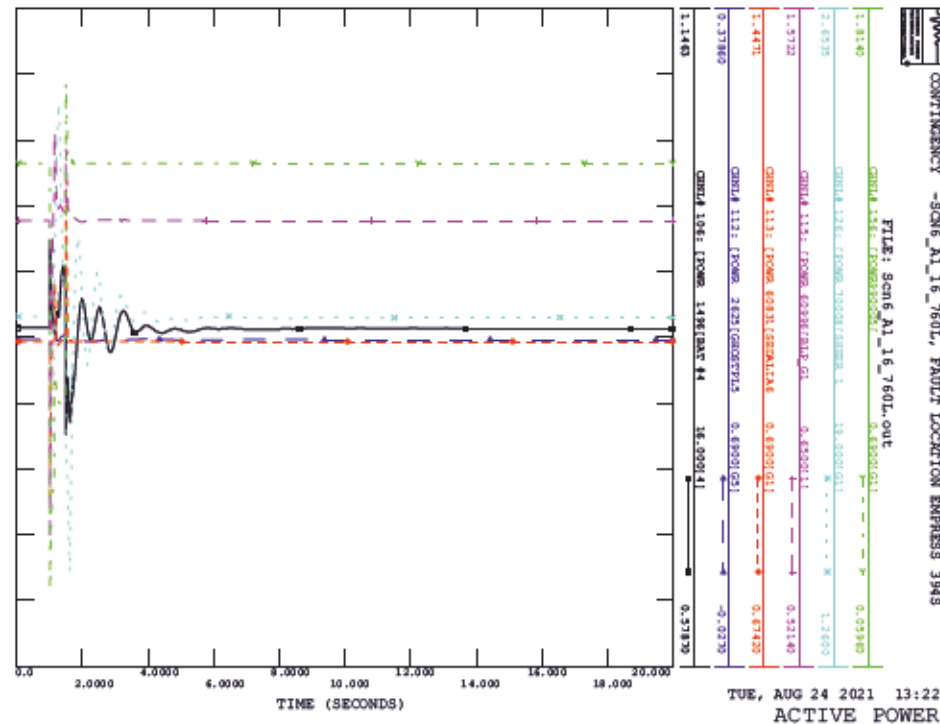
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CONTINGENCY -SCM6_A1_15_760L, FAULT LOCATION ANOCO EMPRESS

FILE: Scm6_A1_15_760L.out

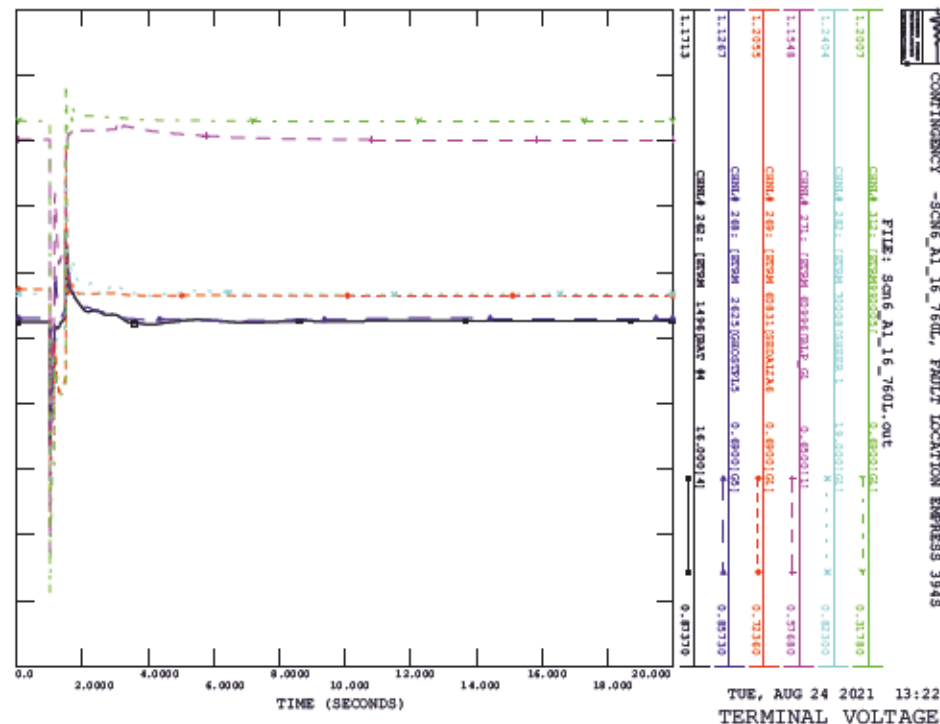


TUE, AUG 24 2021 13:22
BRANCH Q (3)

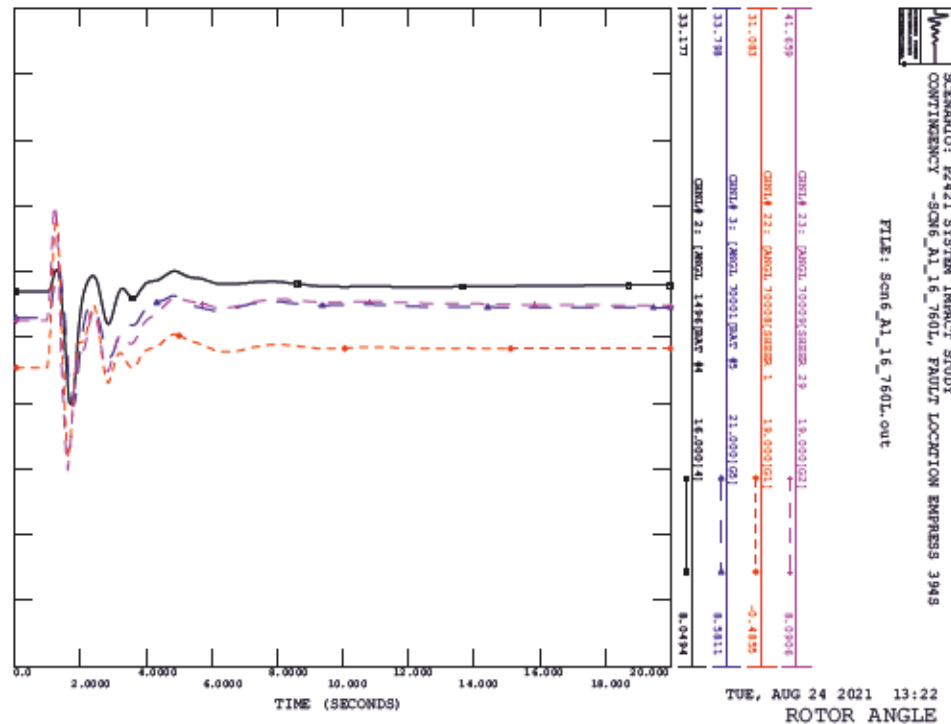
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CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



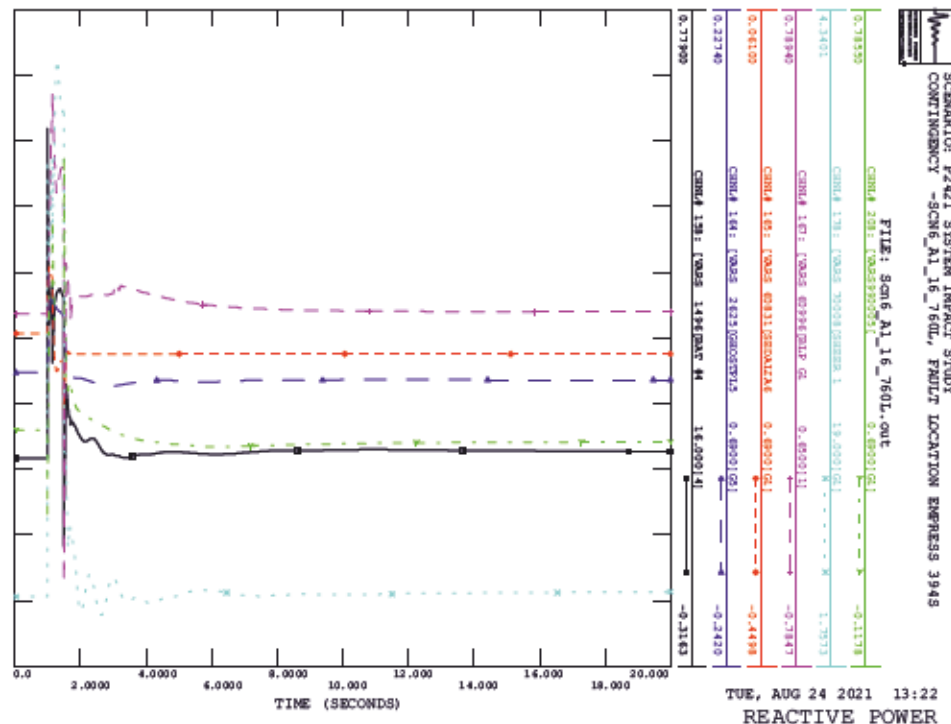
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CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



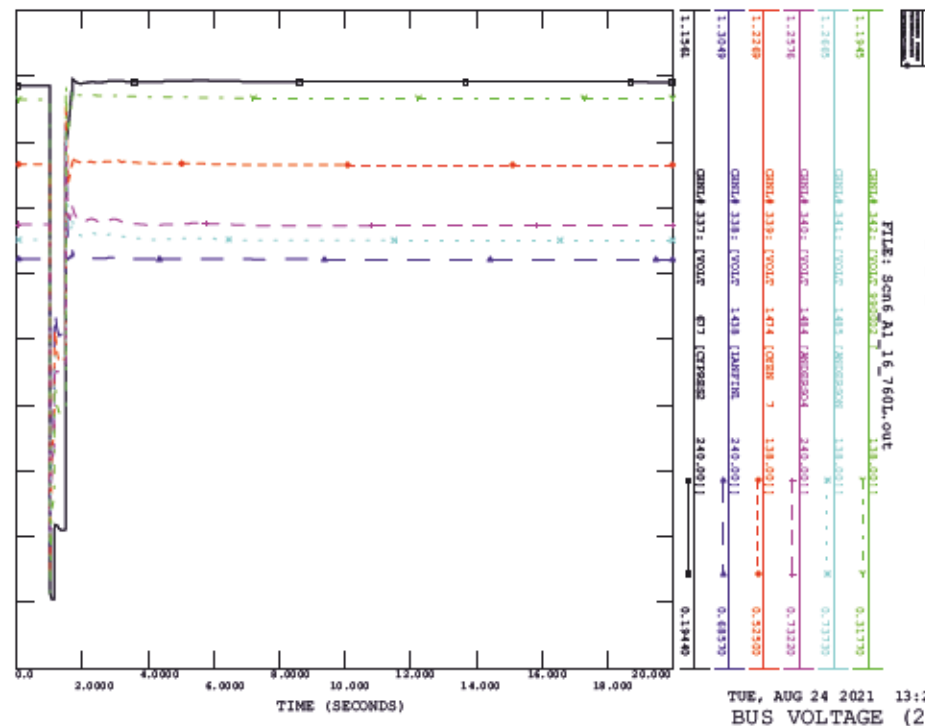
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CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



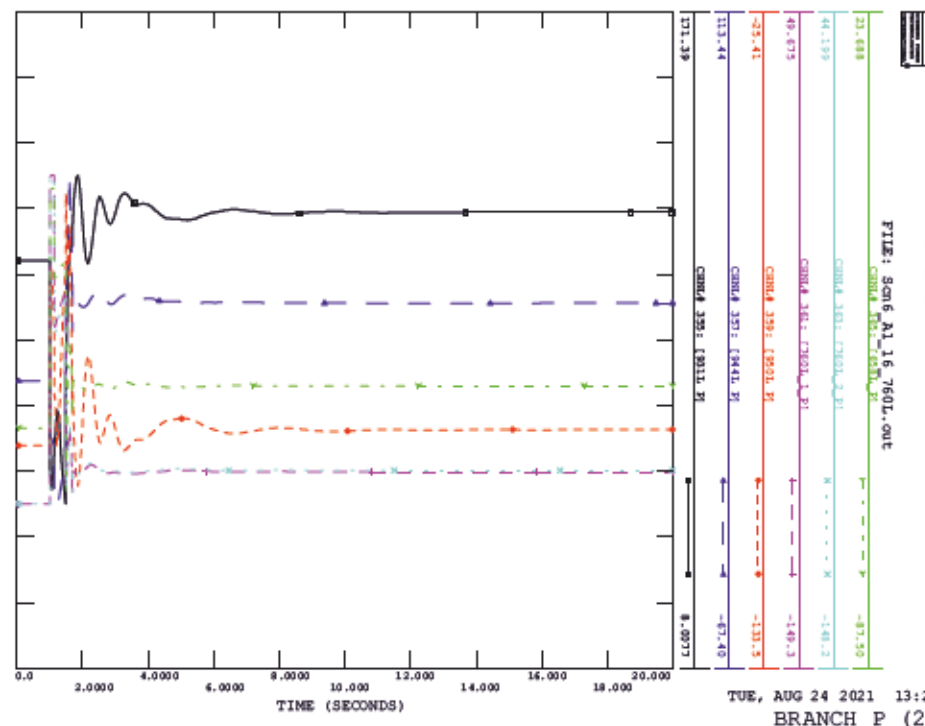
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CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



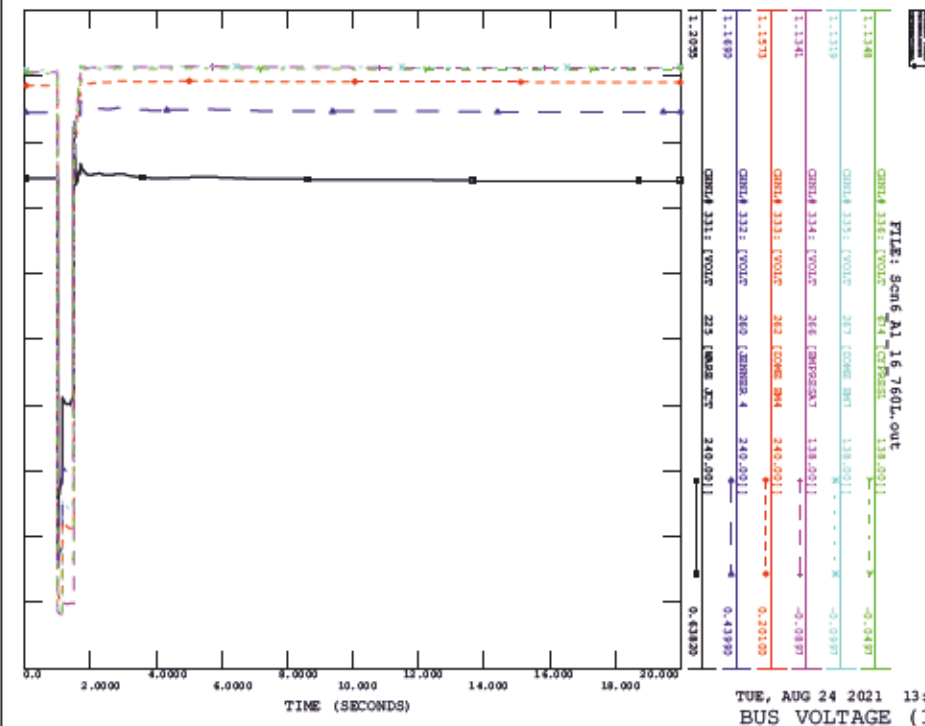
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CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



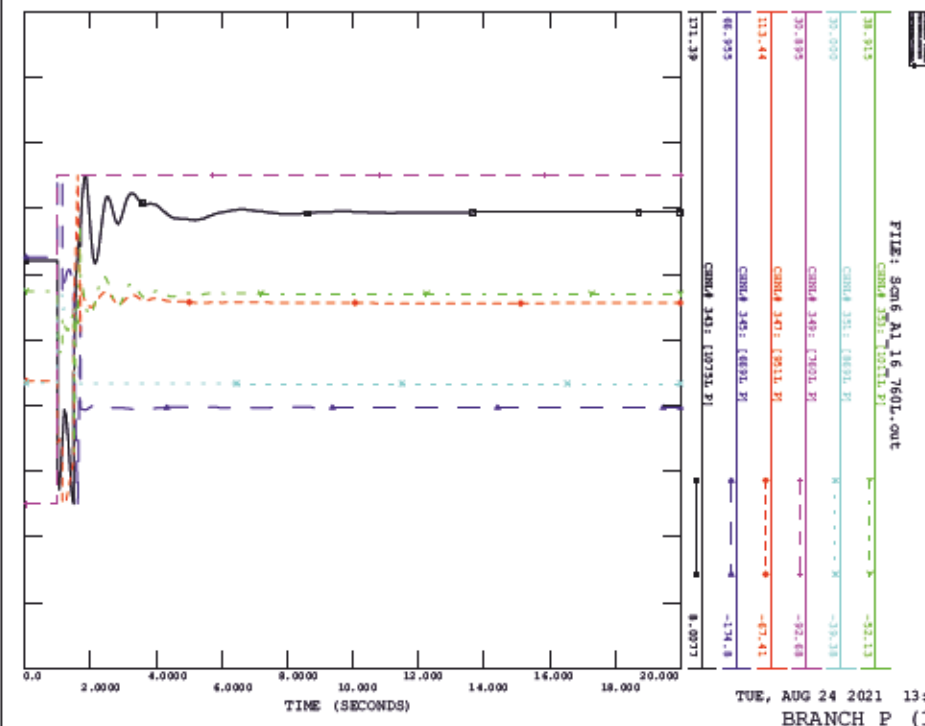
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S

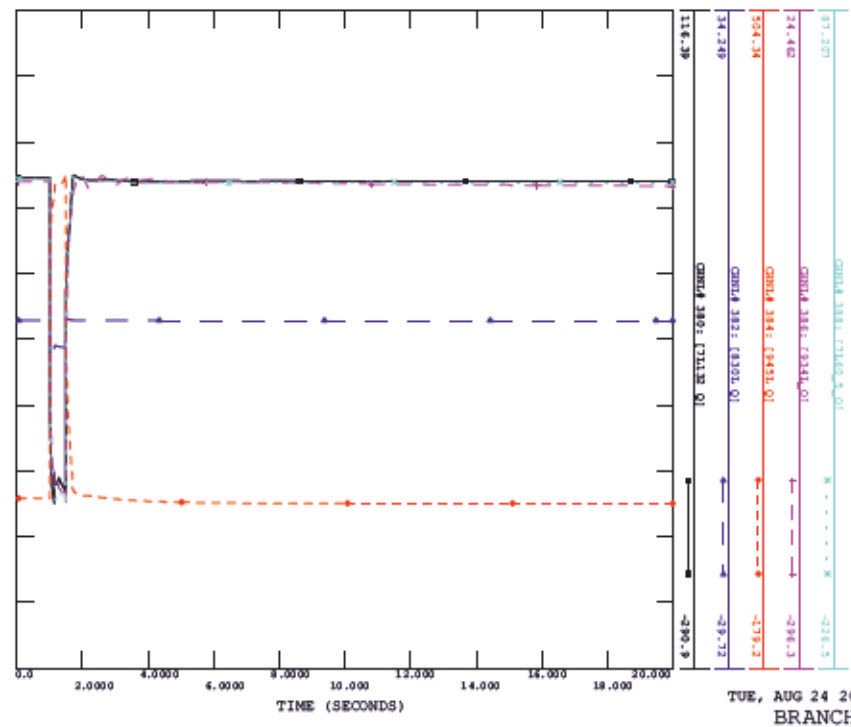


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_16_760L, FAULT LOCATION EMPRESS 394S



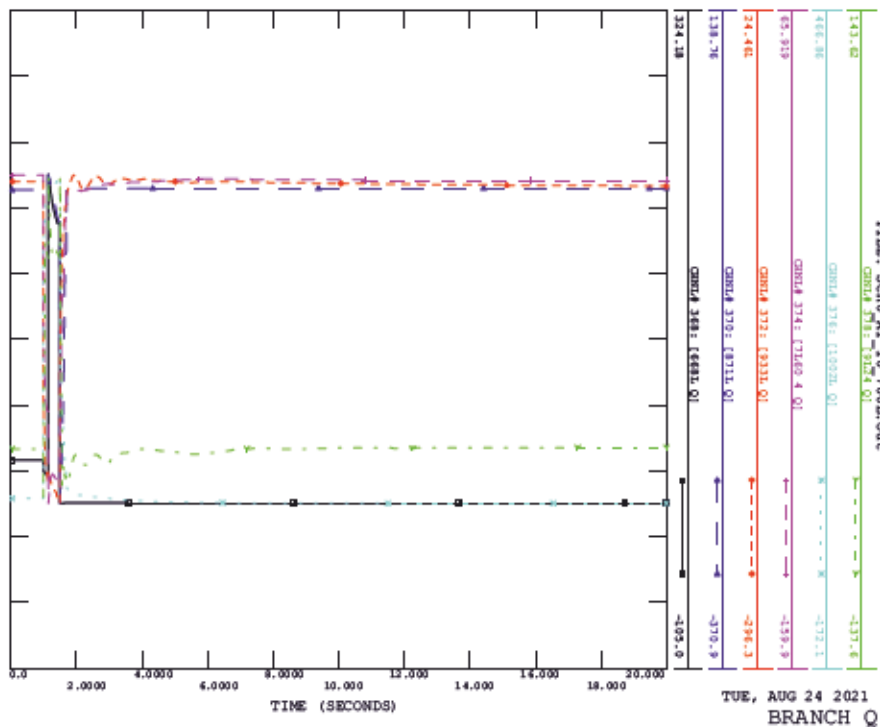
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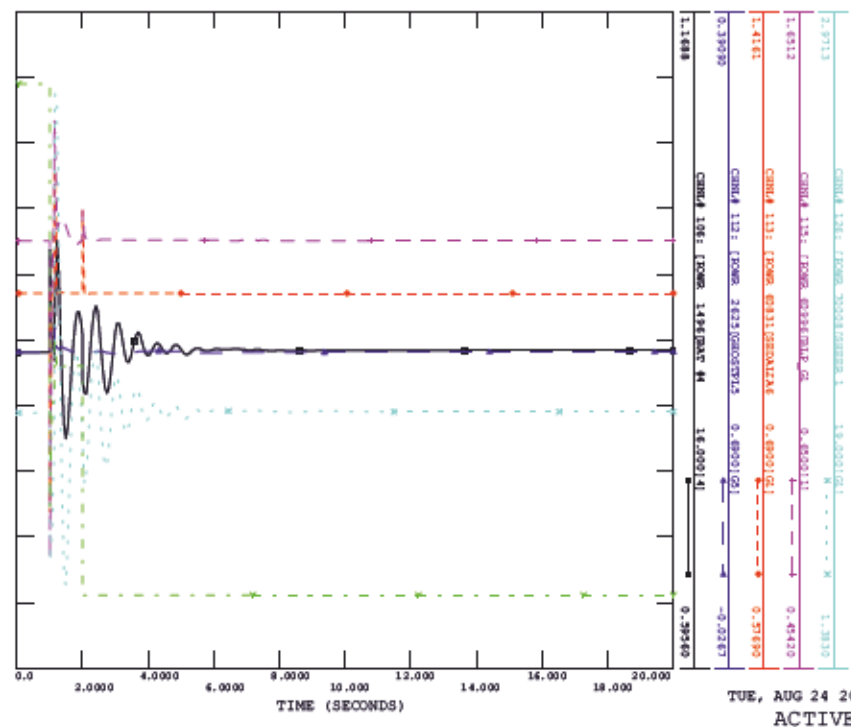
SCENARIO: P2421 SYSTEM IMPACT STUDY
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FILE: Scm6_A1_16_760L.out



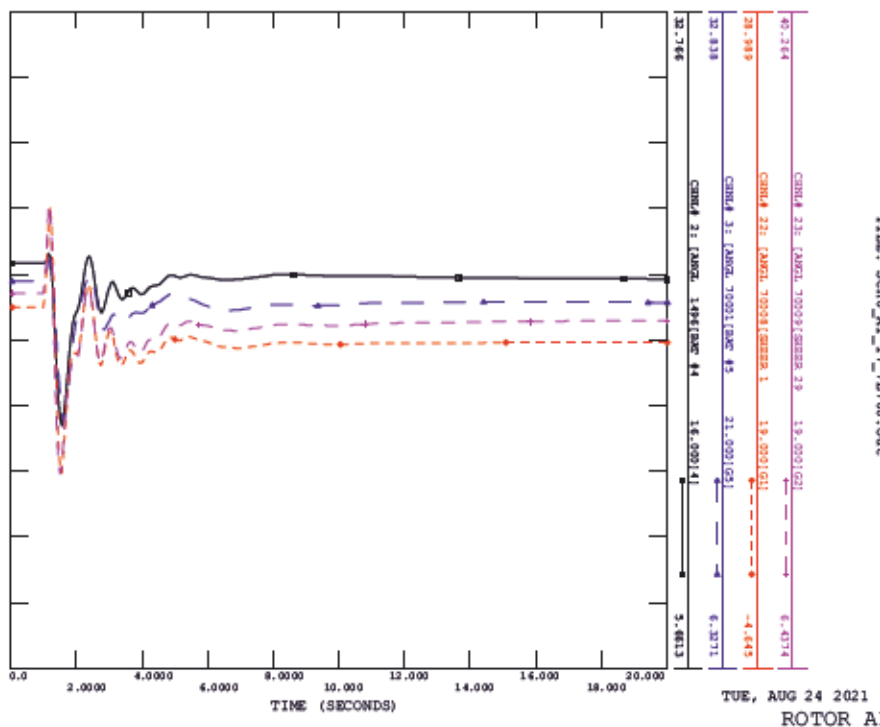
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CONTINGENCY -SCM6_A1_17_71760, FAULT LOCATION AMOCO EMPRESS

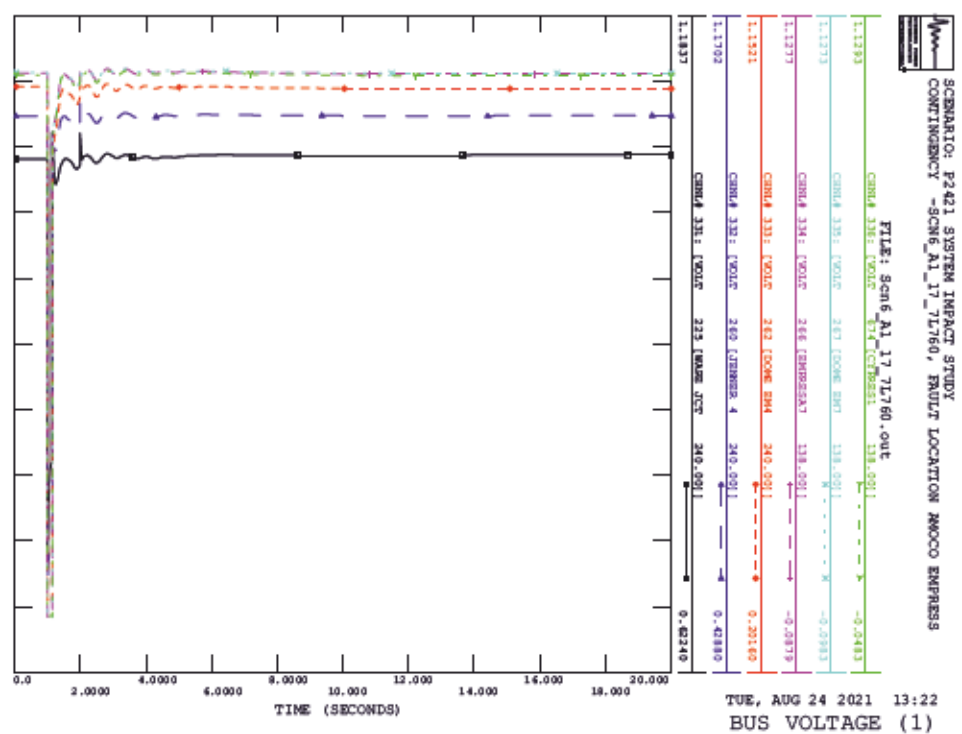
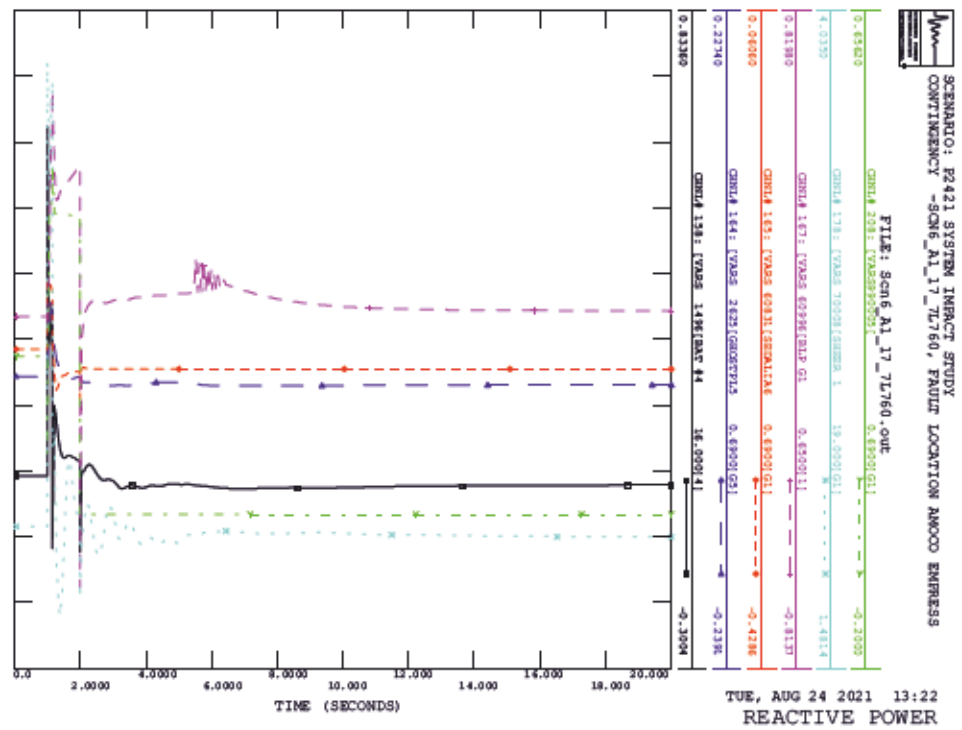
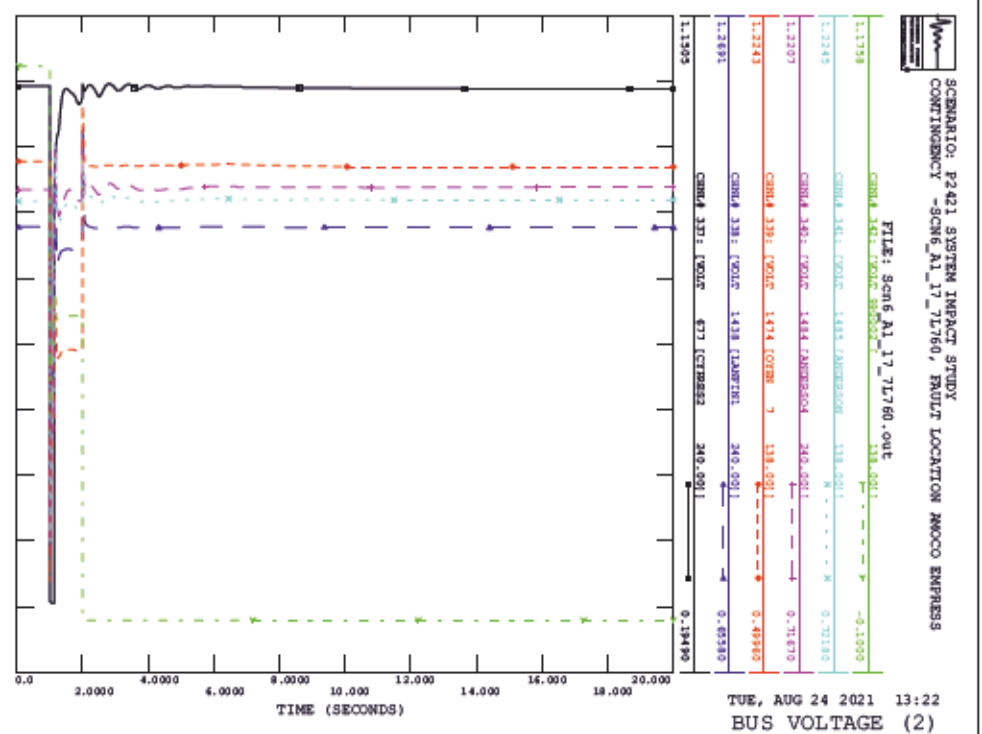
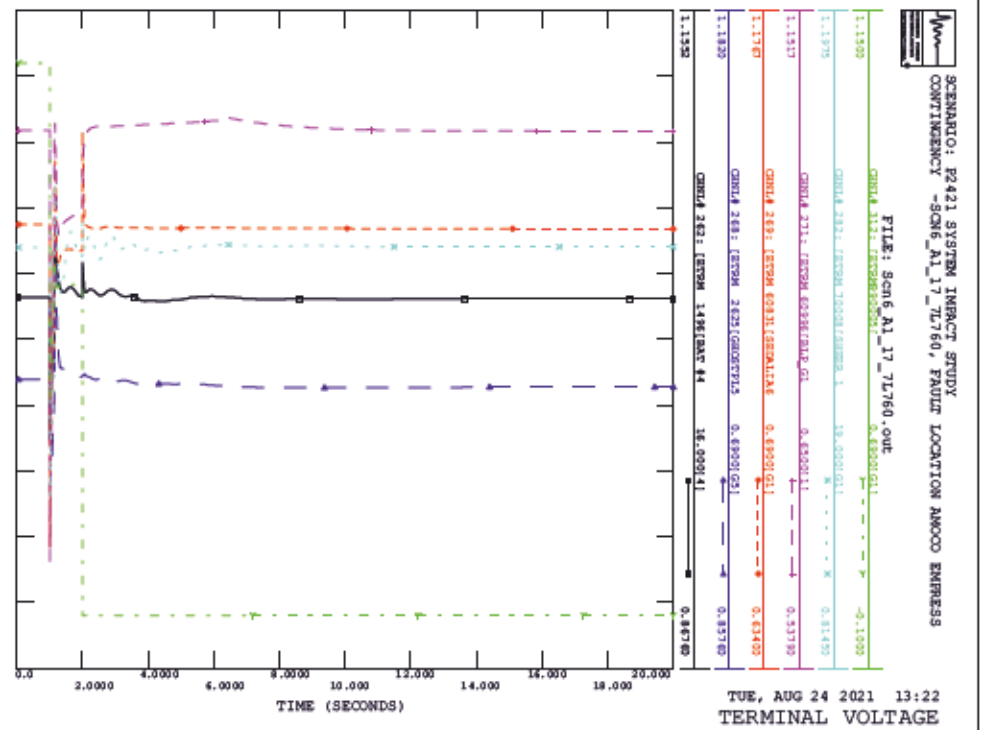
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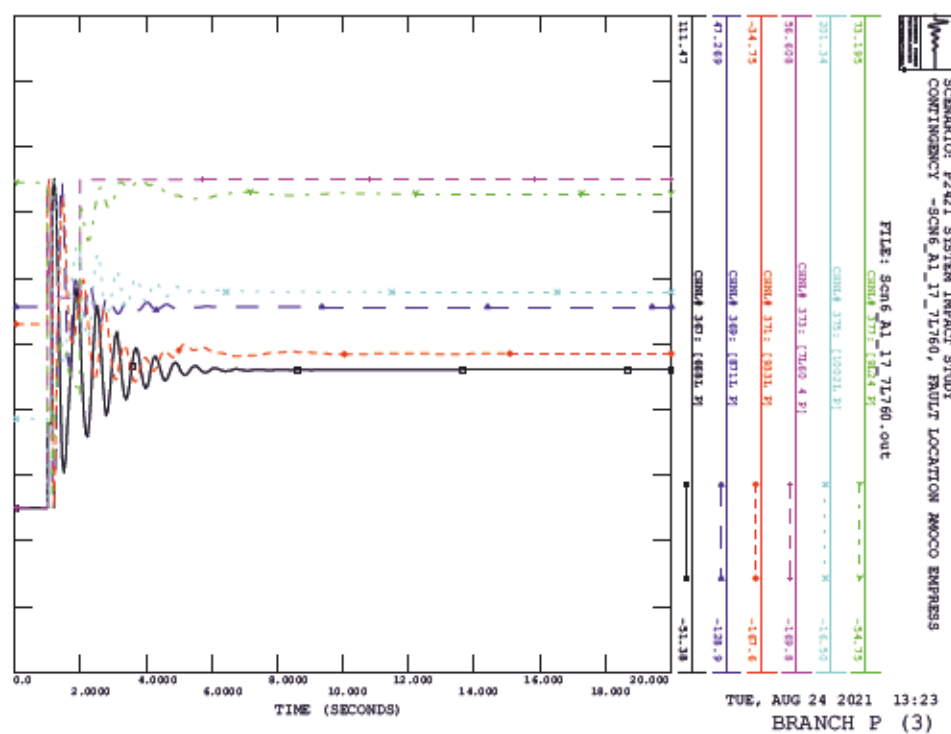
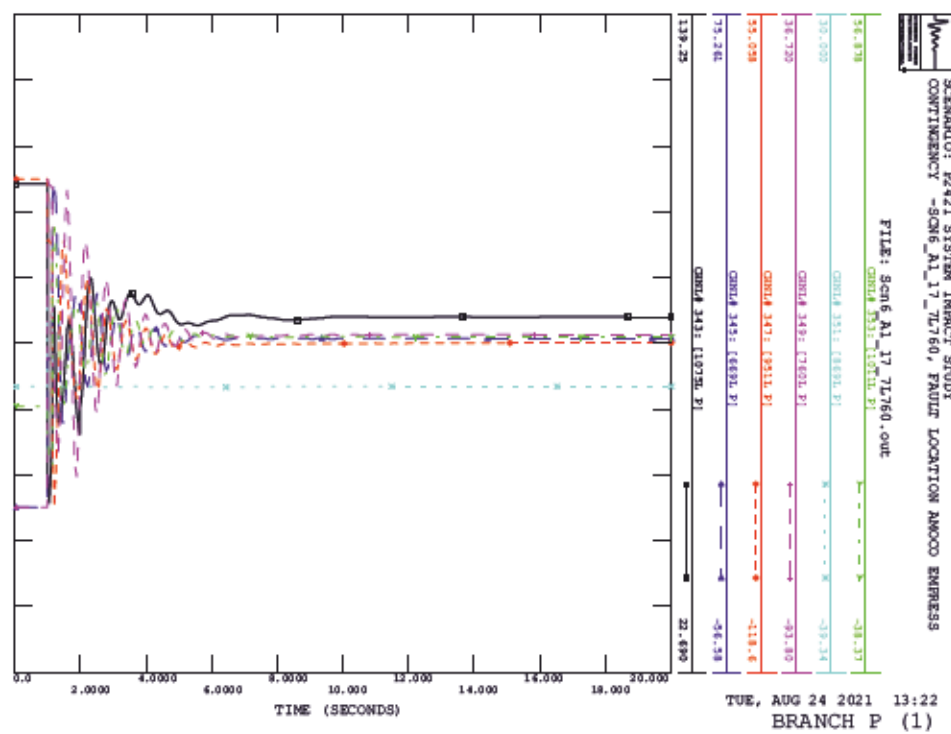
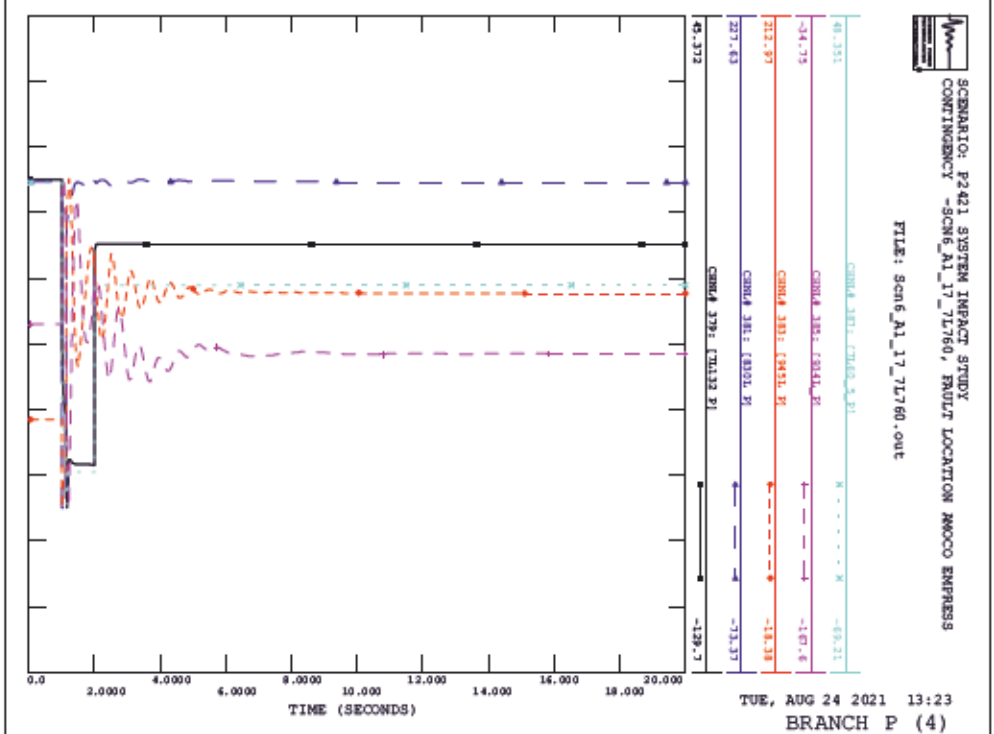
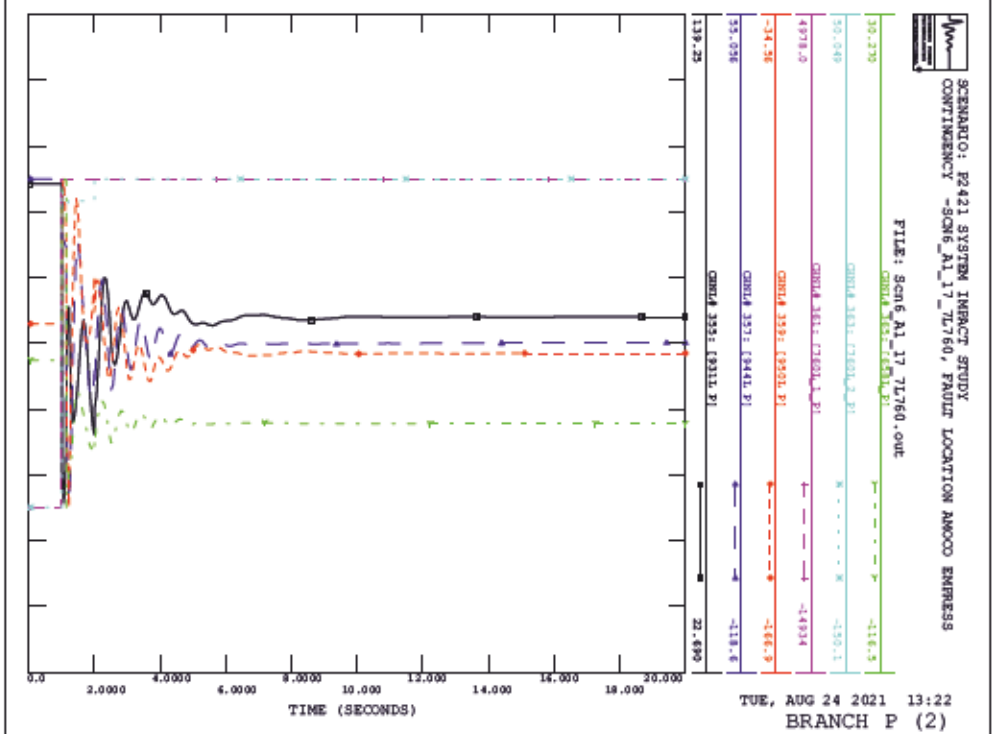


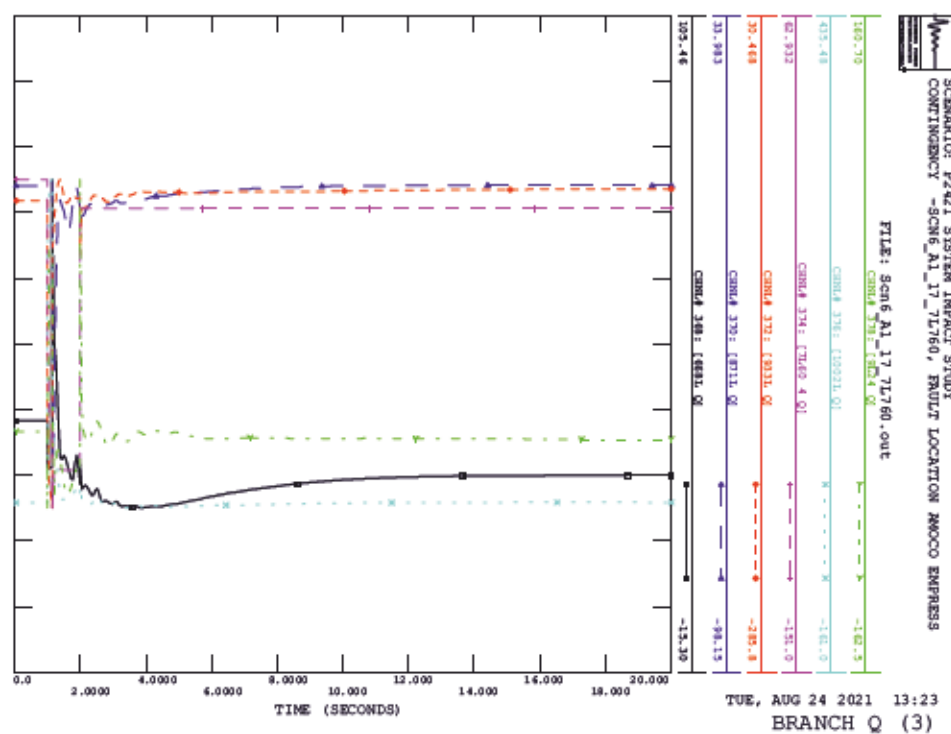
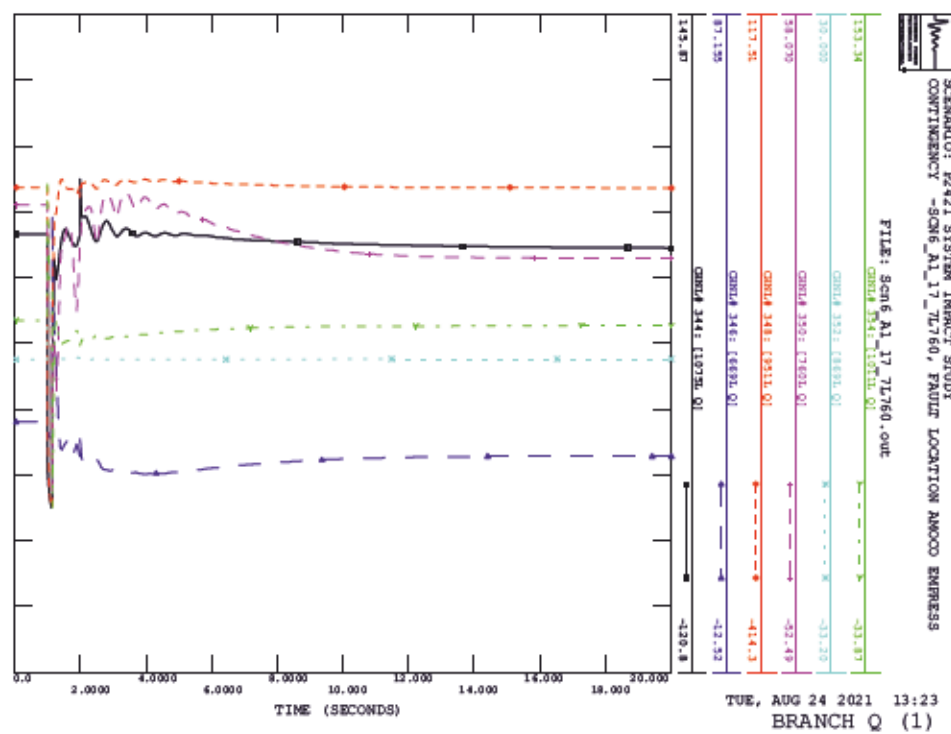
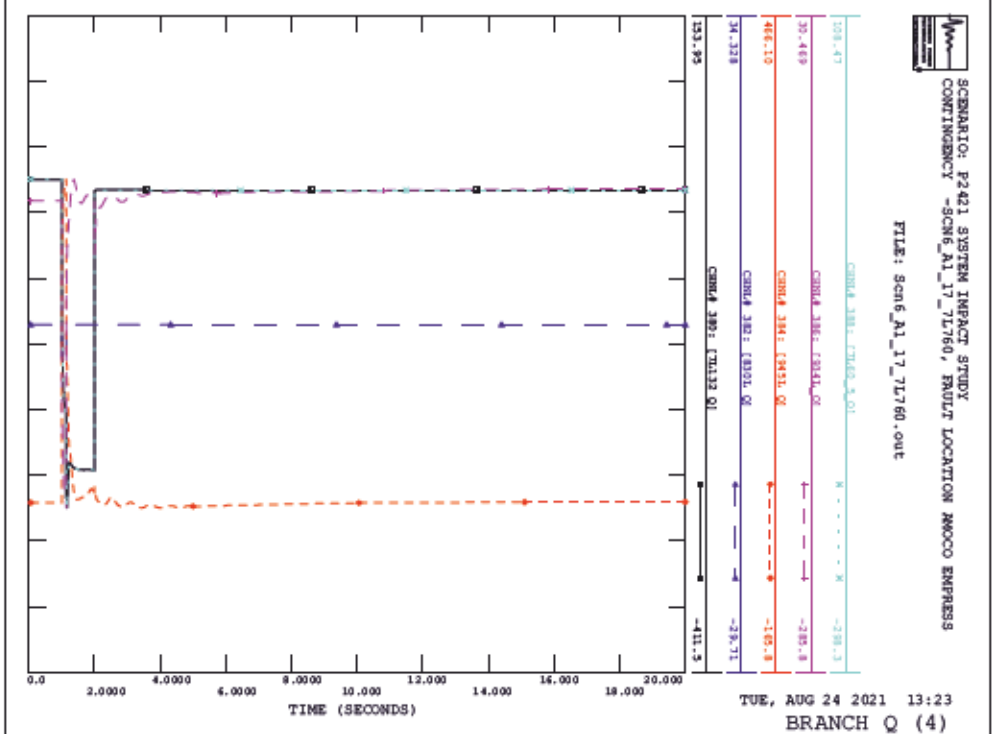
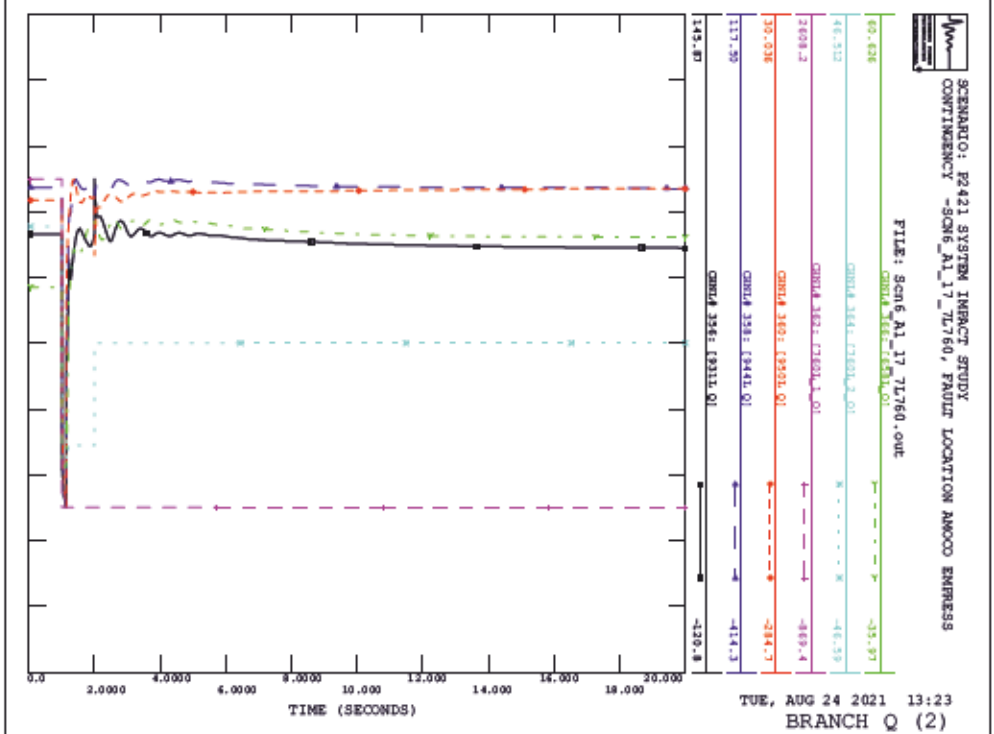
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_17_71760, FAULT LOCATION AMOCO EMPRESS

FILE: Scm6_A1_17_71760.out



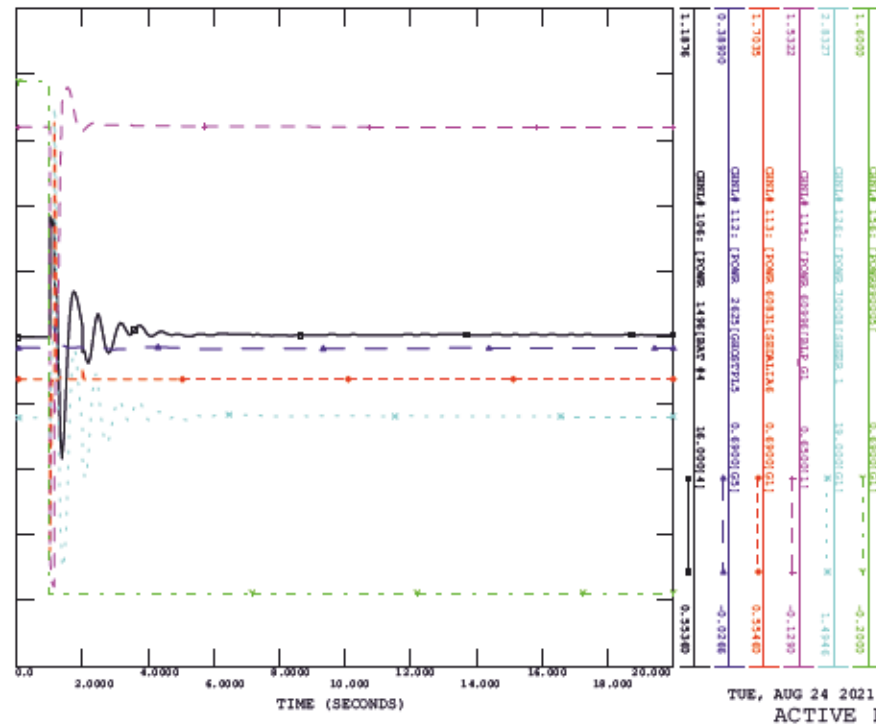






SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675

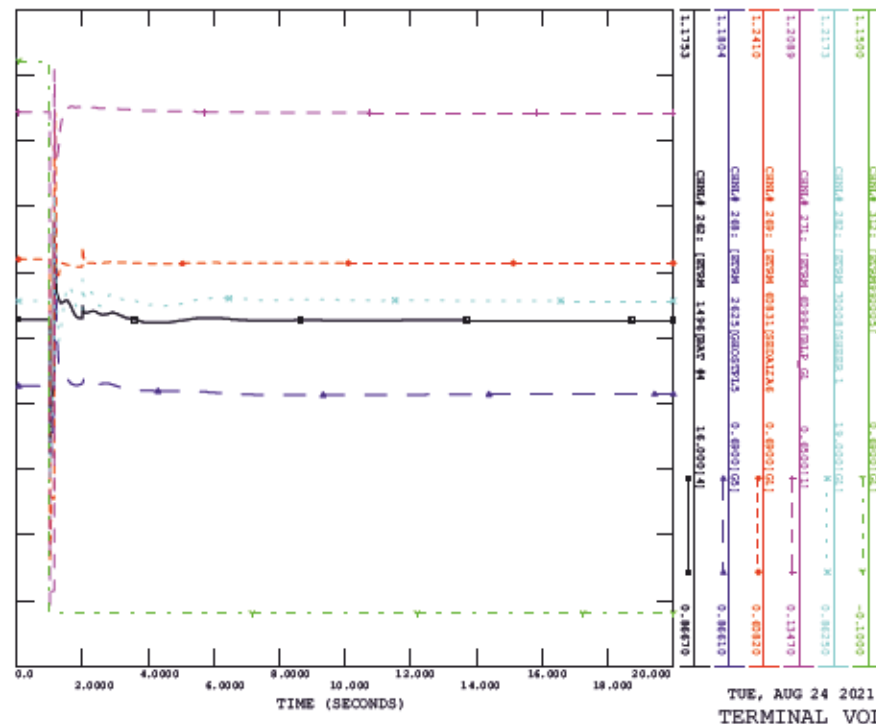
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TUE, AUG 24 2021 13:23
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675

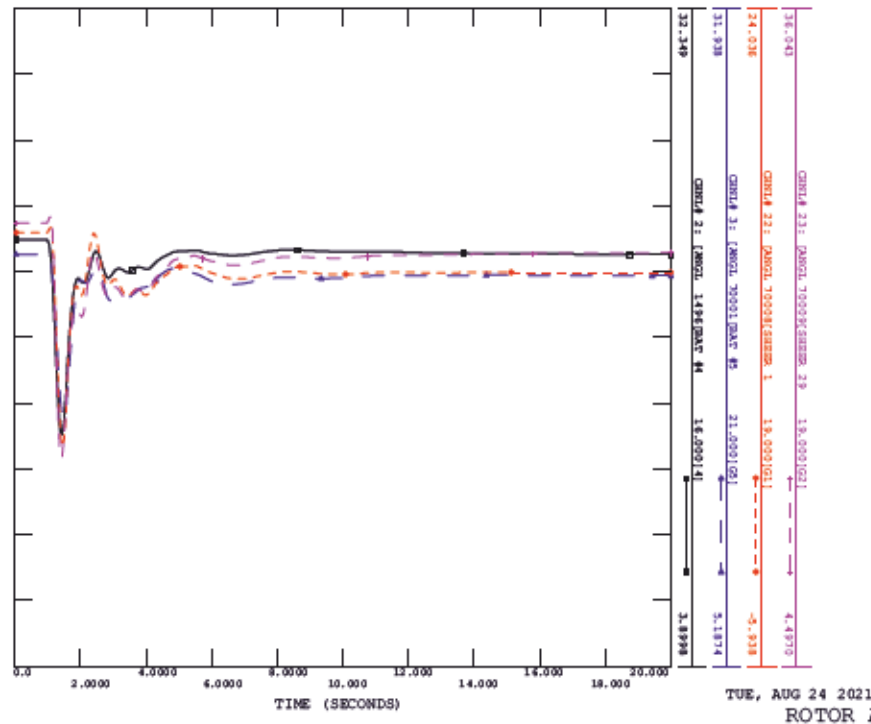
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TUE, AUG 24 2021 13:23
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675

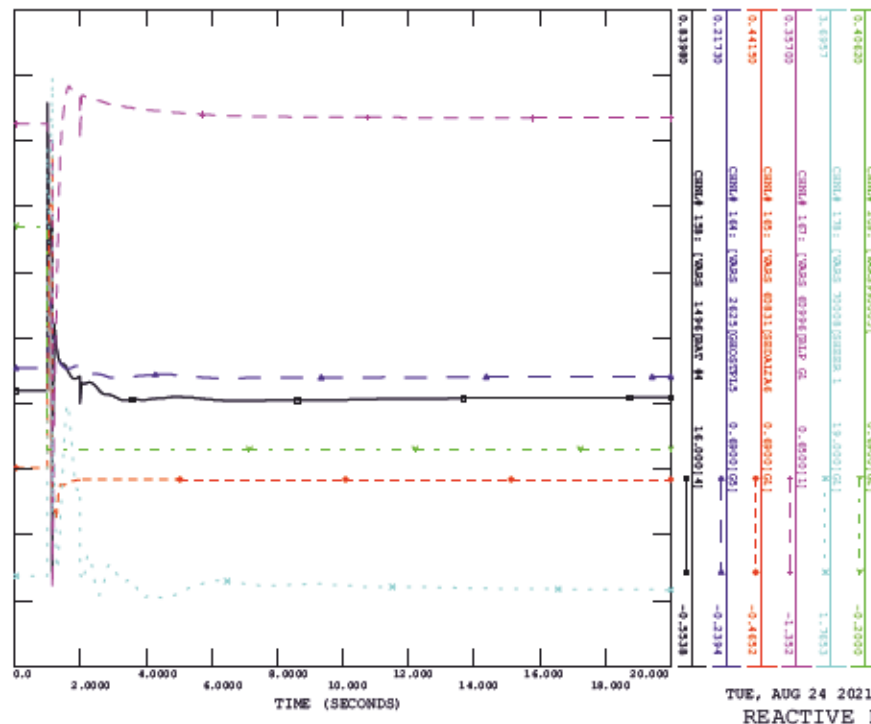
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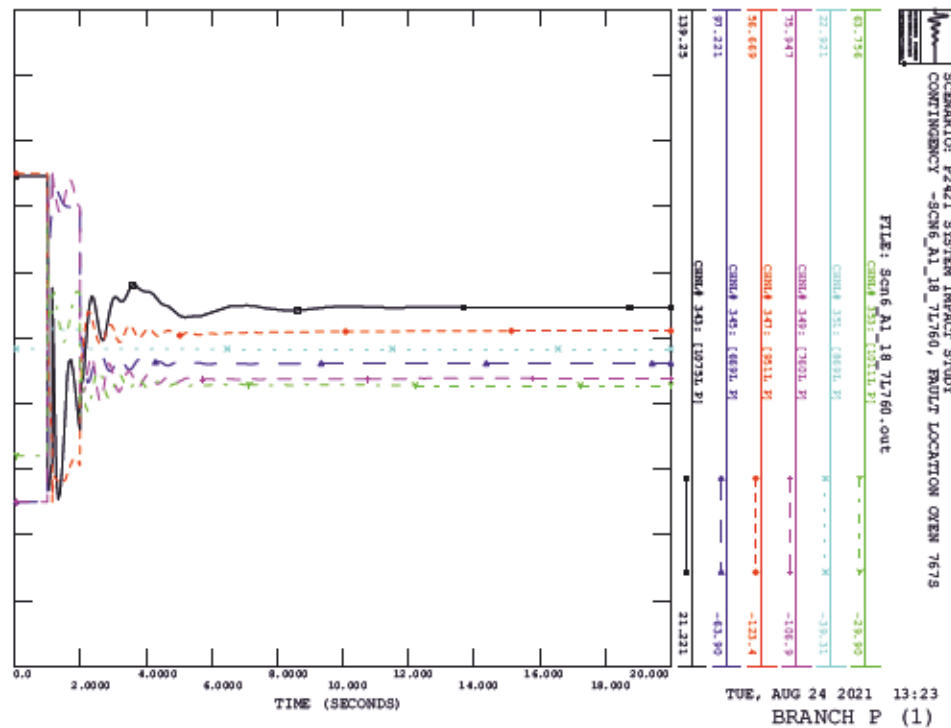
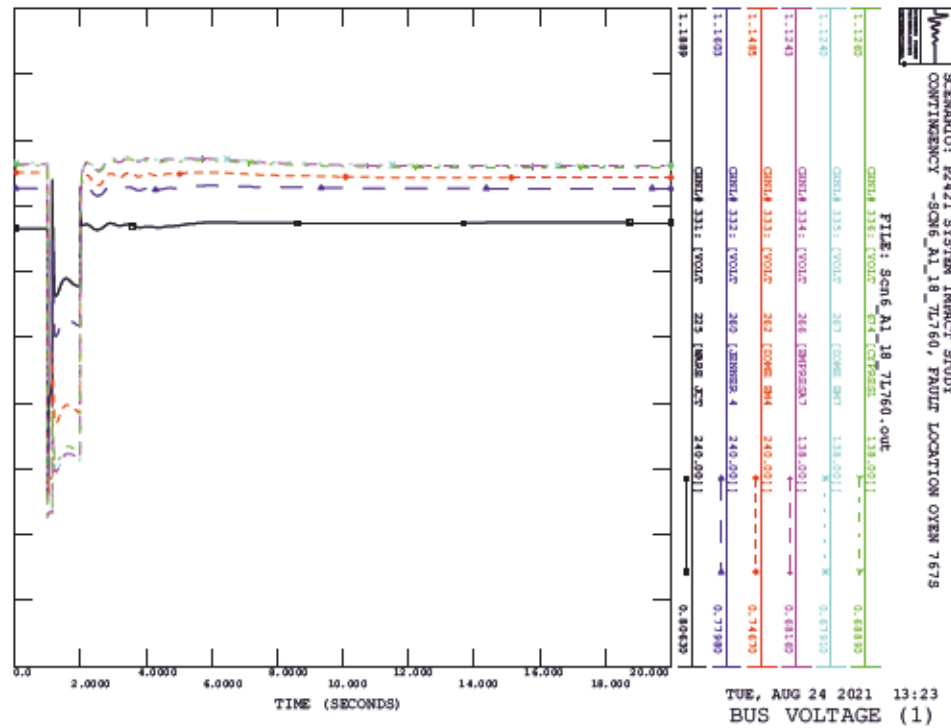
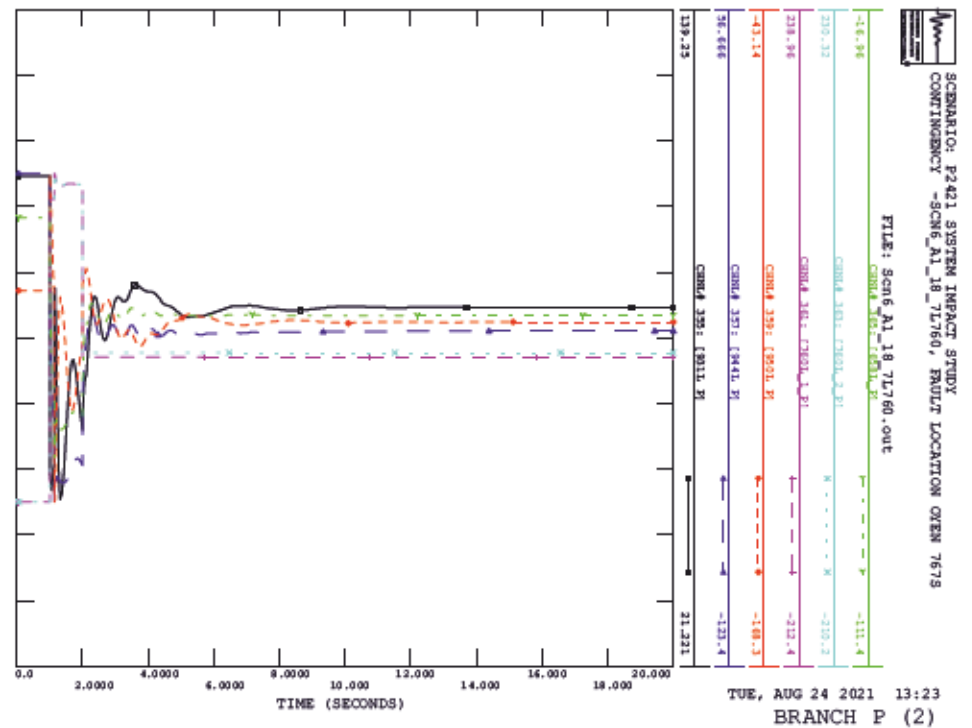
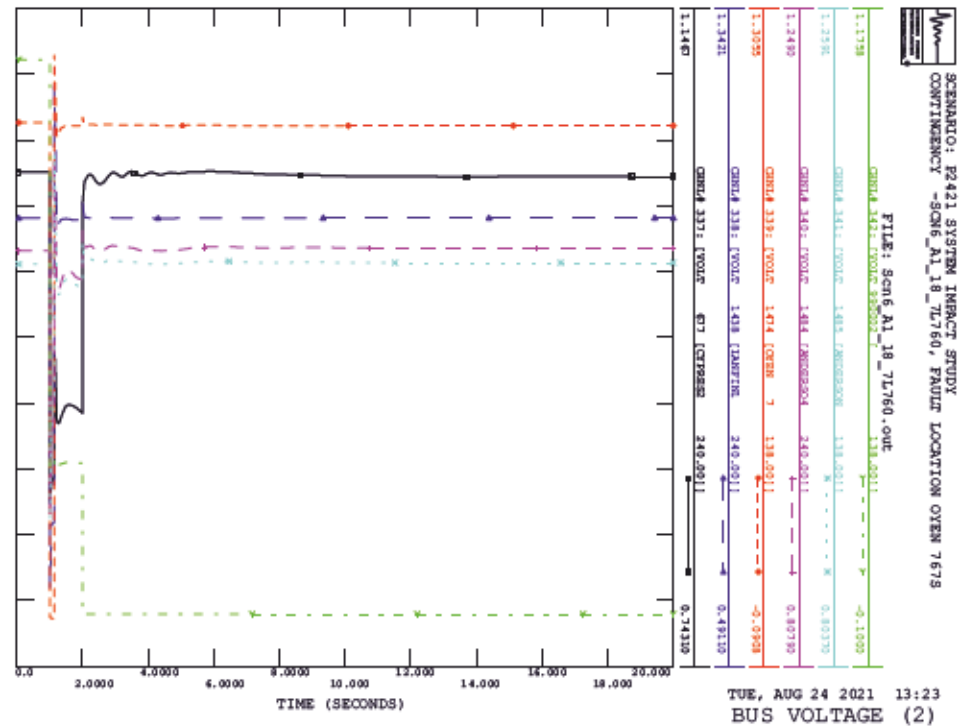
TUE, AUG 24 2021 13:23
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675

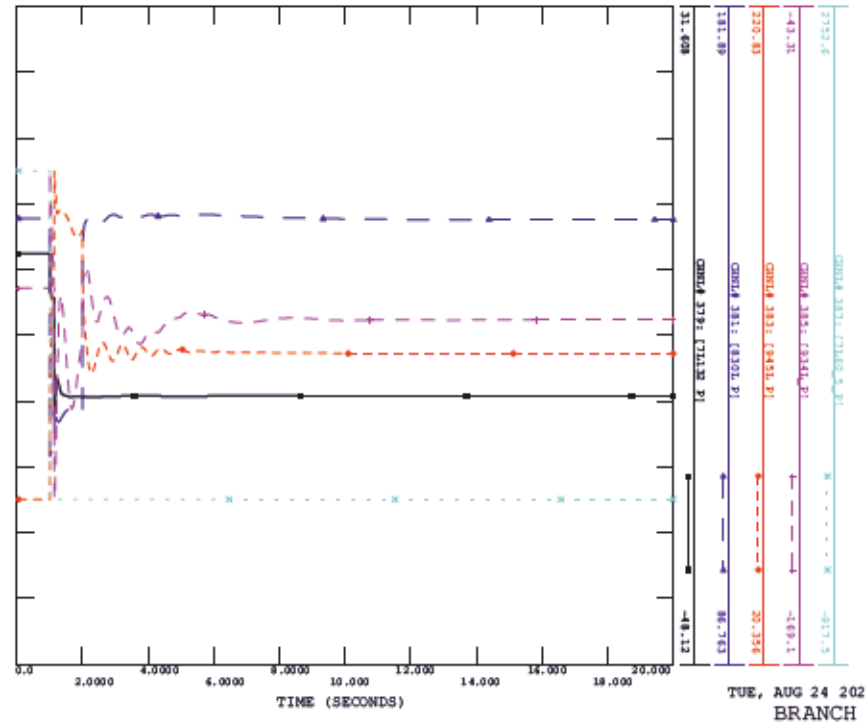
FILE: Scm6_A1_18_7L760.out



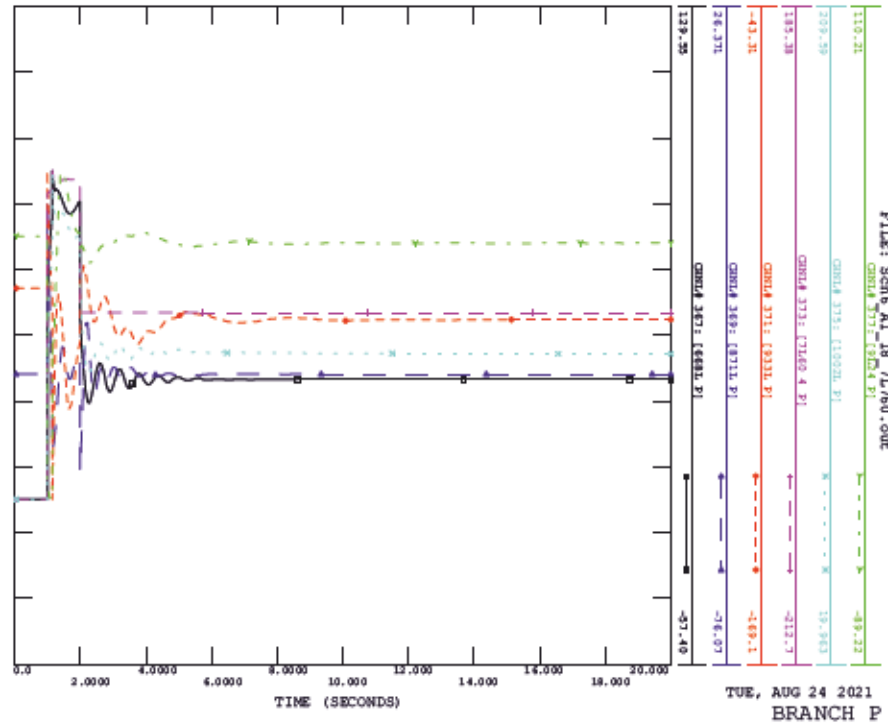
TUE, AUG 24 2021 13:23
REACTIVE POWER



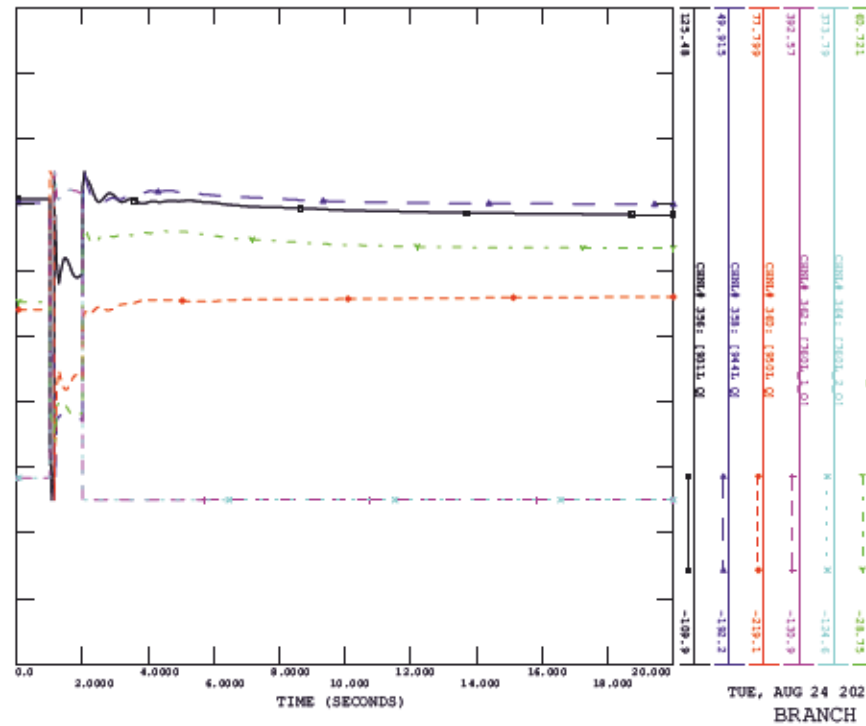
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675
FILE: Scm6_A1_18_7L760.out



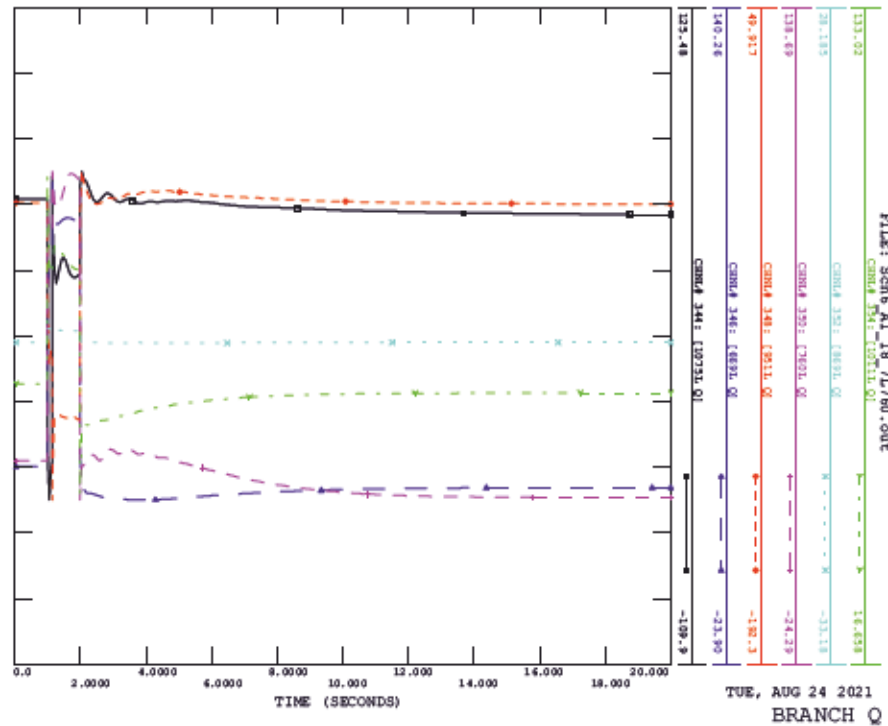
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675
FILE: Scm6_A1_18_7L760.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675
FILE: Scm6_A1_18_7L760.out

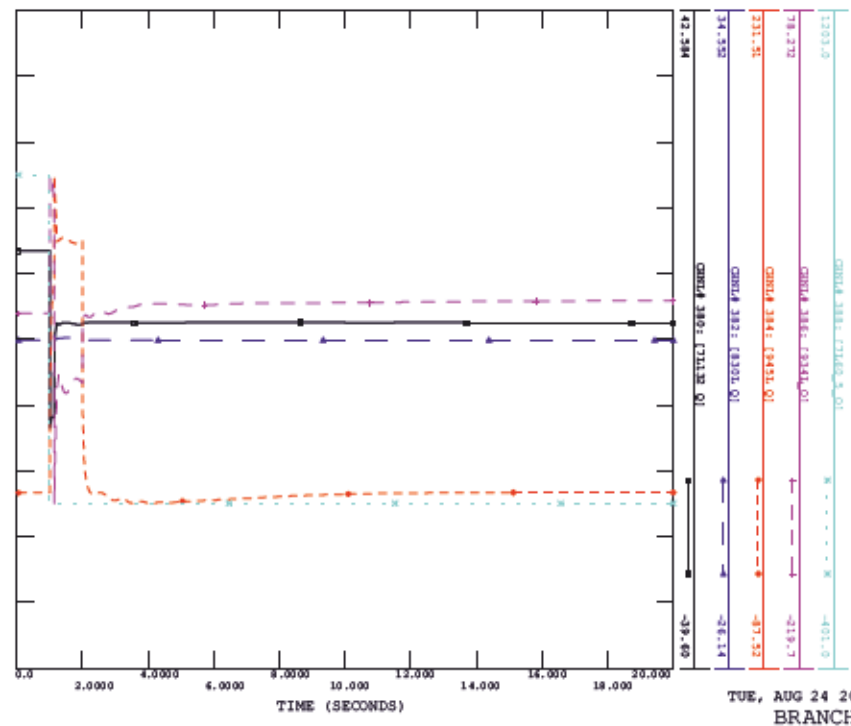


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OPEN 7675
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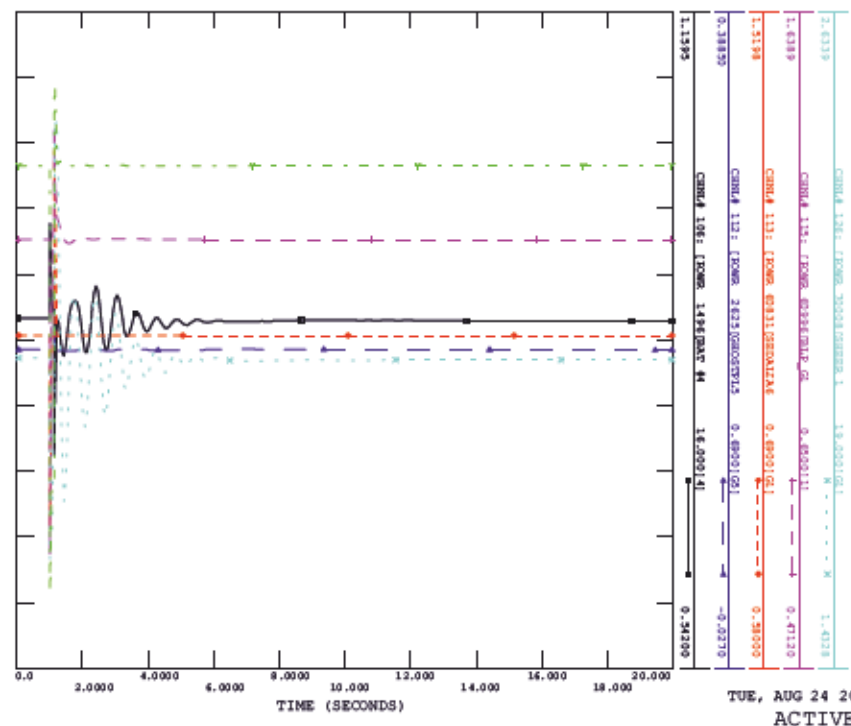
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OYEN 7673

FILE: Scm6_A1_18_7L760.out



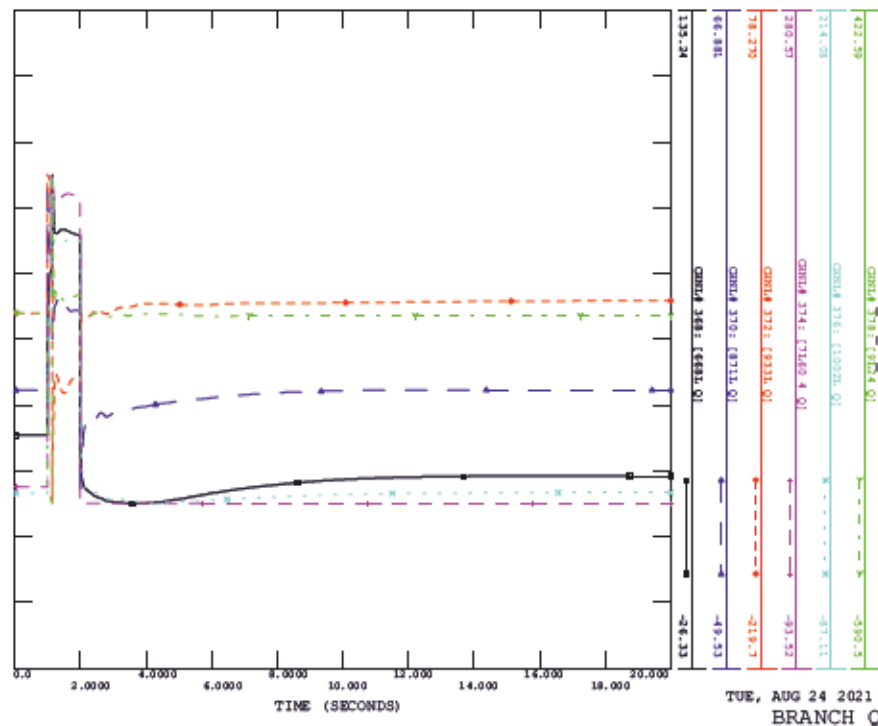
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

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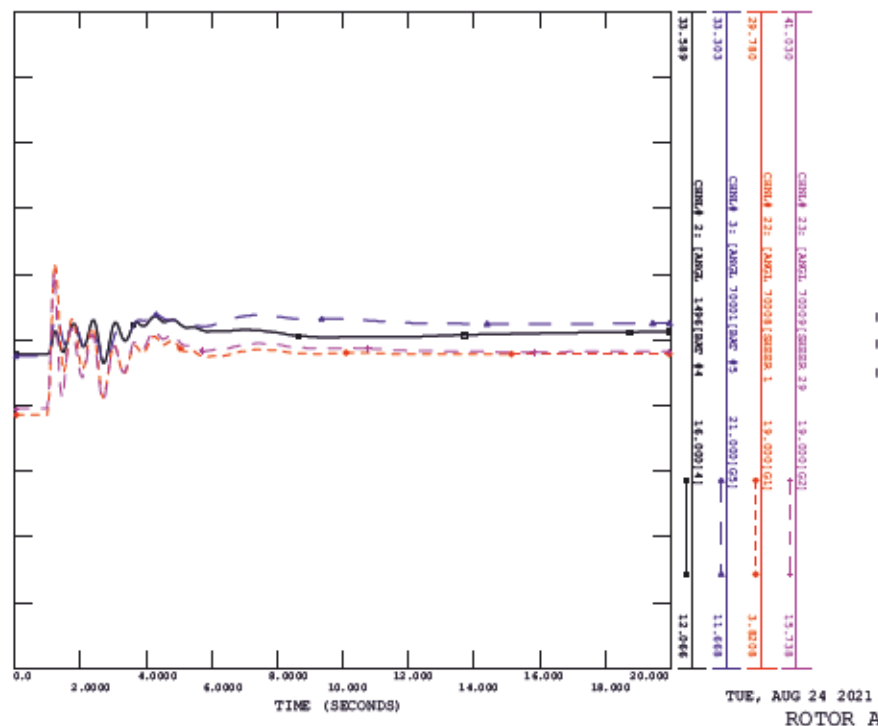
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_18_7L760, FAULT LOCATION OYEN 7673

FILE: Scm6_A1_18_7L760.out



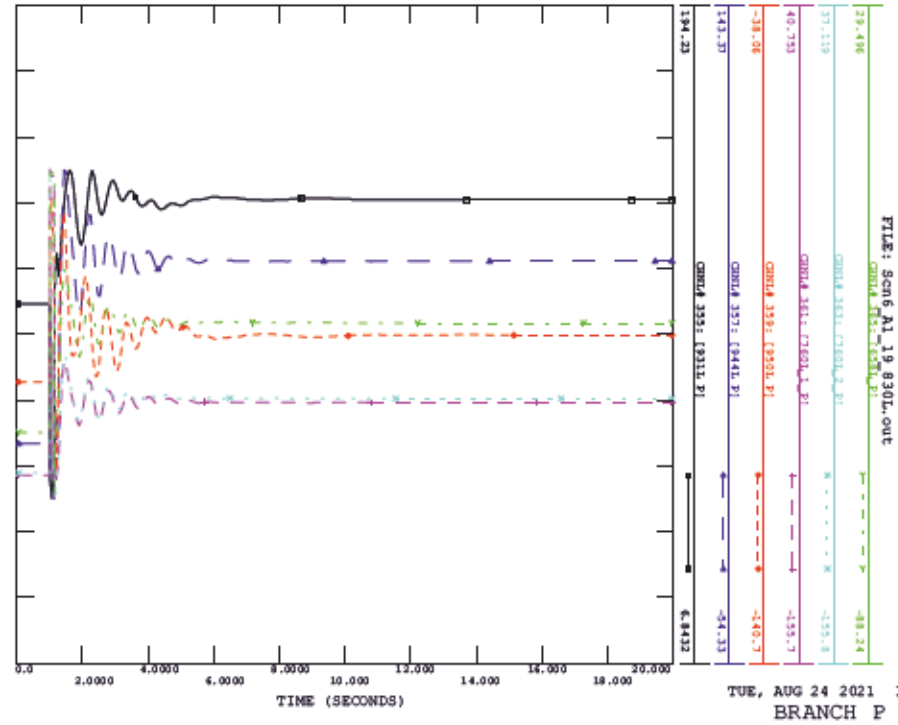
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_19_830L.out



SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

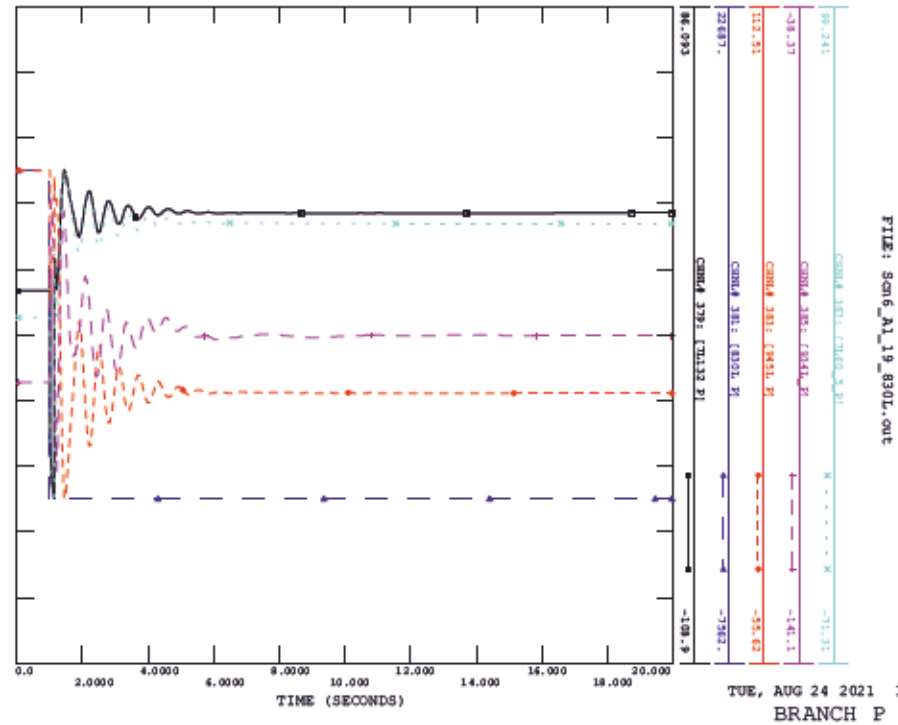
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TUE, AUG 24 2021 13:23
BRANCH P (2)

SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

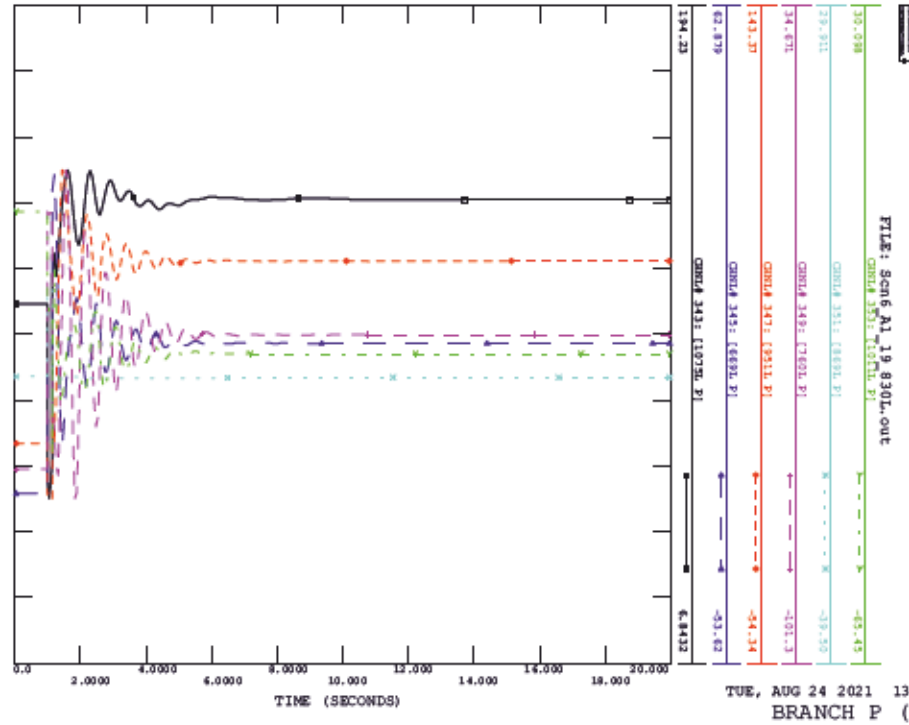
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TUE, AUG 24 2021 13:23
BRANCH P (4)

SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

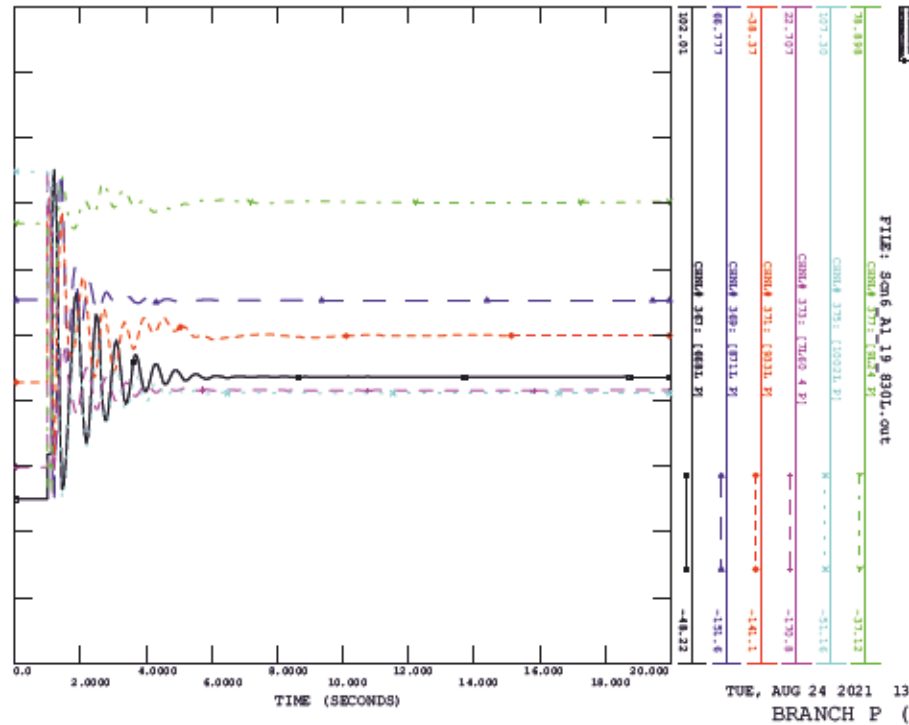
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TUE, AUG 24 2021 13:23
BRANCH P (1)

SCENARIO: P2421 SYSTEM INTRCT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

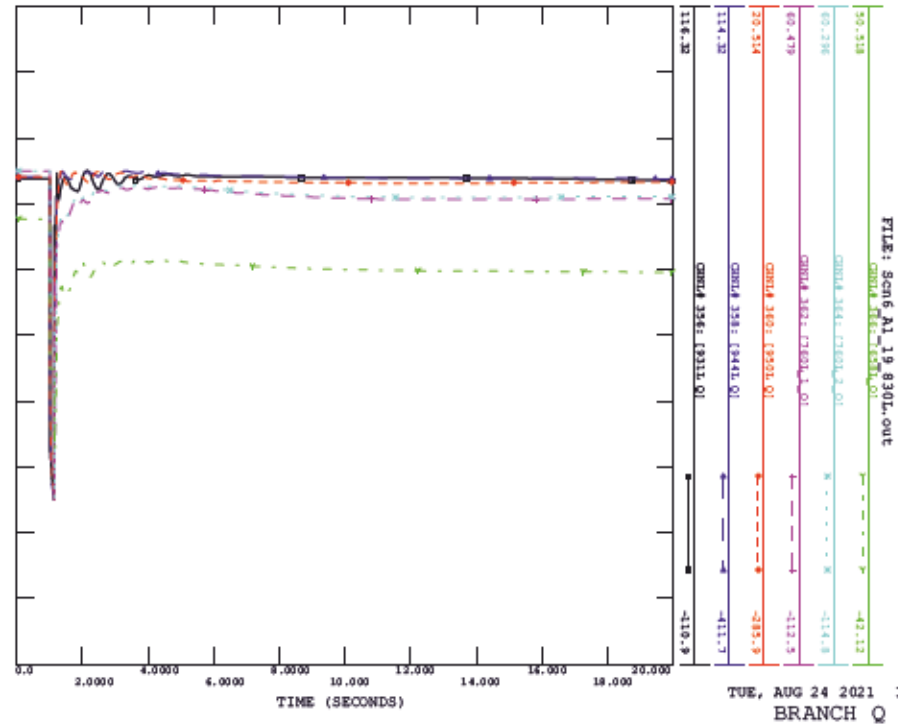
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TUE, AUG 24 2021 13:23
BRANCH P (3)

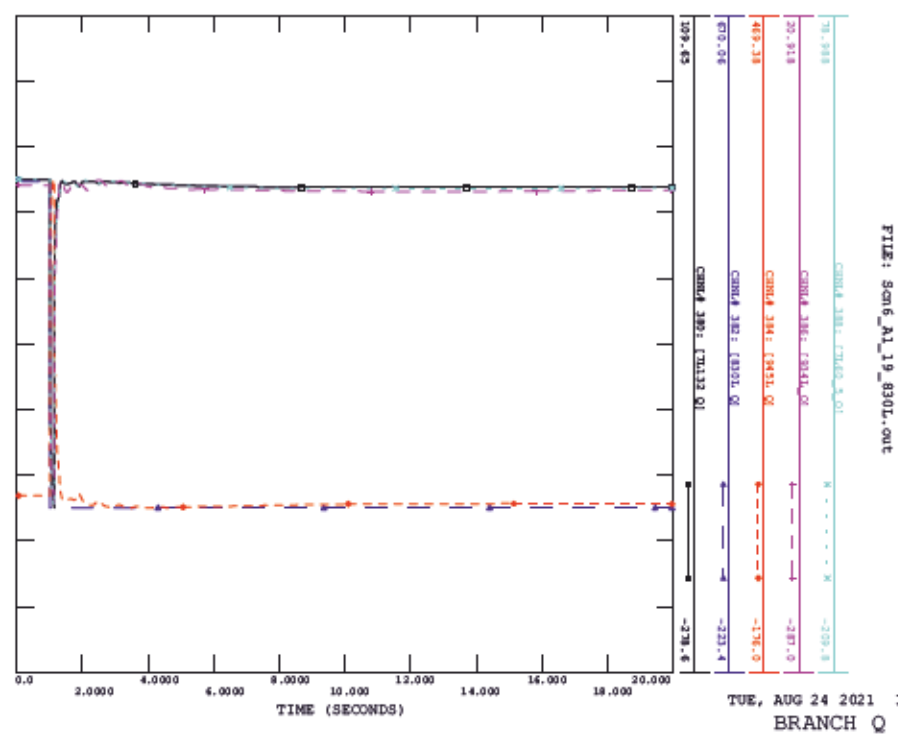
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_19_830L.out



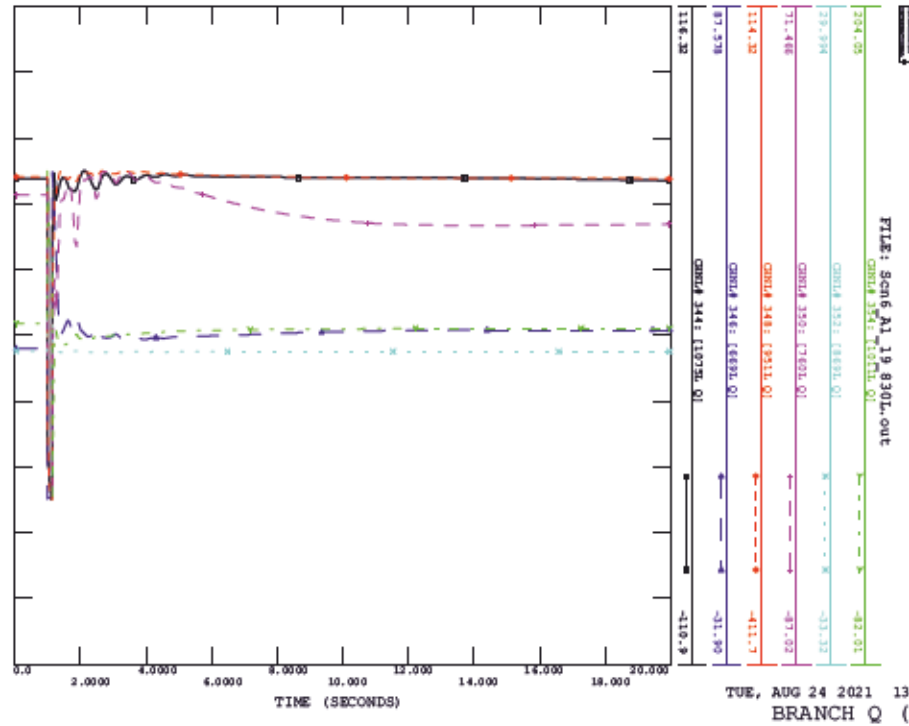
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_19_830L.out



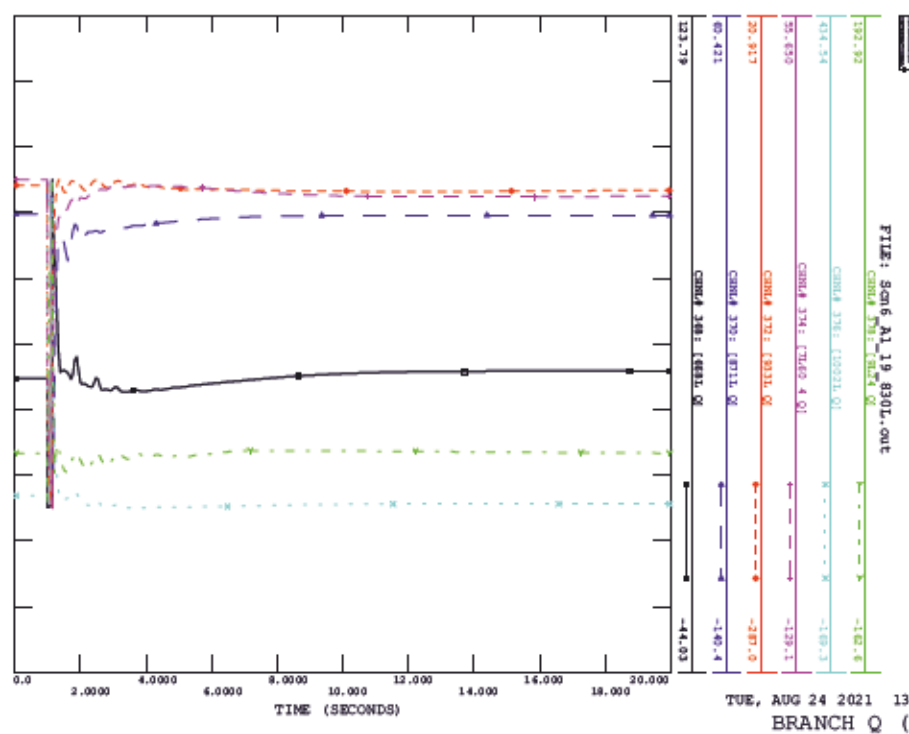
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

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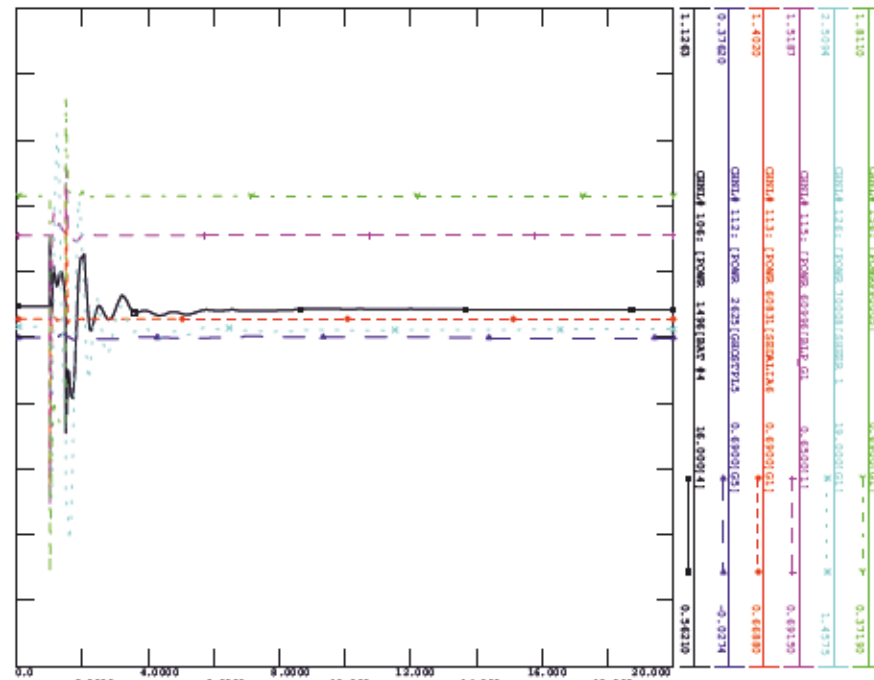
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_19_830L, FAULT LOCATION CYPRESS 5629

FILE: Scm6_A1_19_830L.out



SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

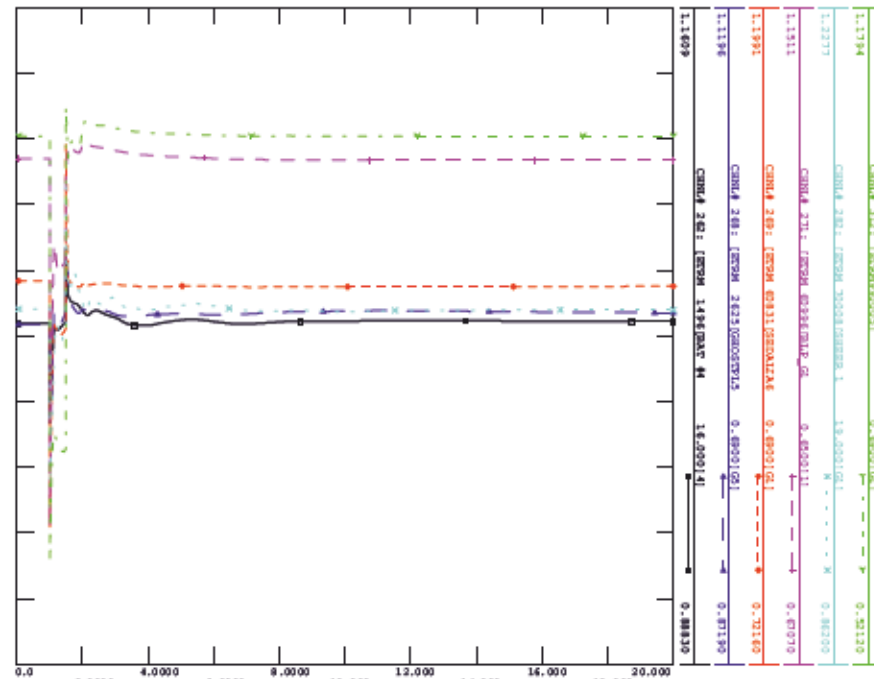
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TUE, AUG 24 2021 13:23
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

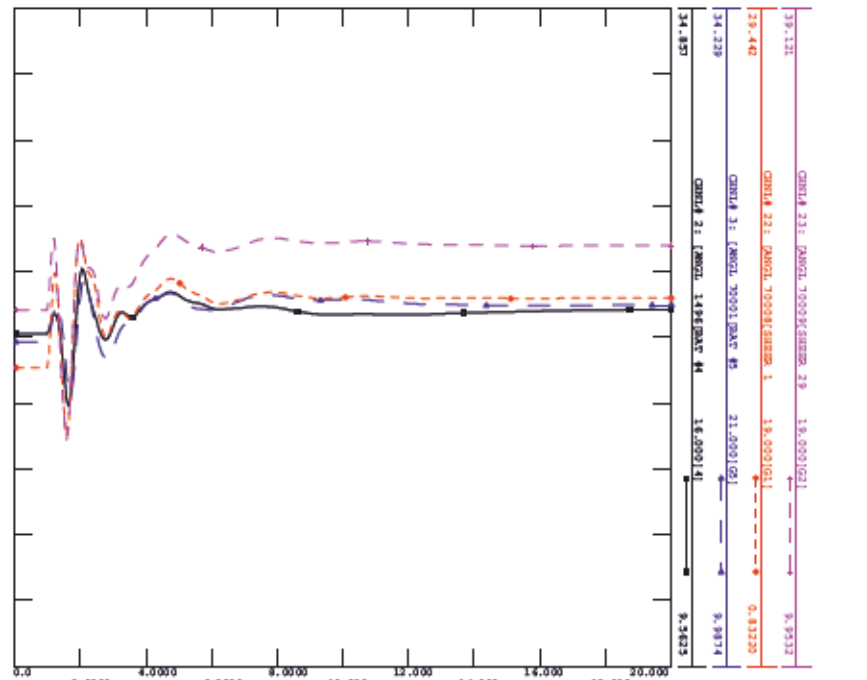
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TUE, AUG 24 2021 13:23
TERMINAL VOLTAGE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

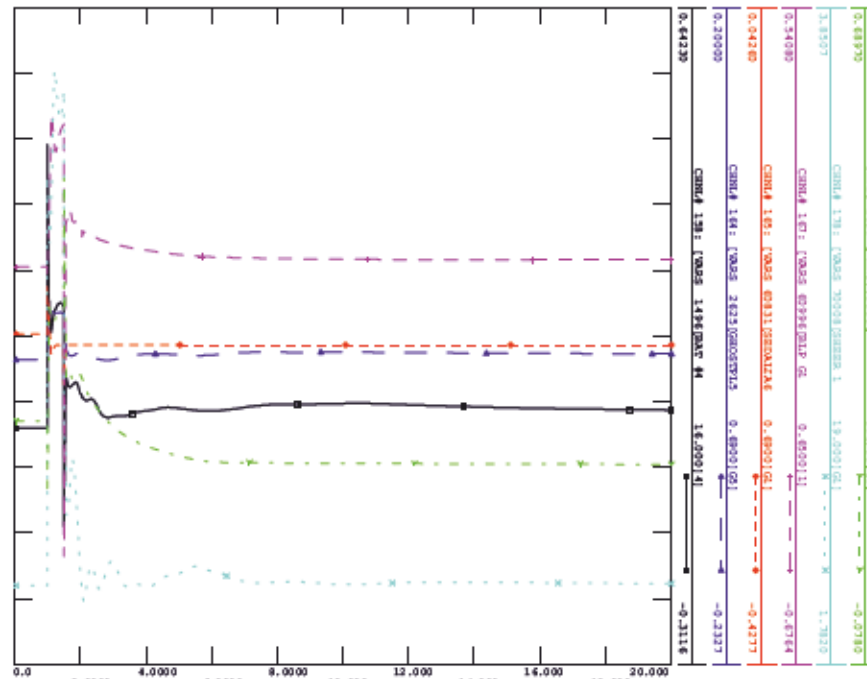
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TUE, AUG 24 2021 13:23
ROTOR ANGLE

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

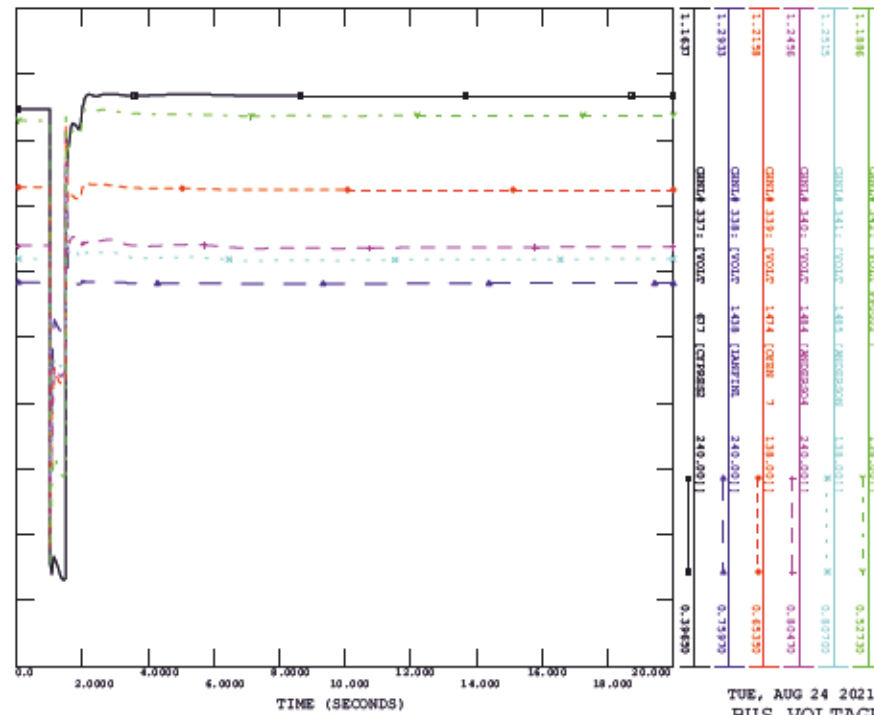
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TUE, AUG 24 2021 13:23
REACTIVE POWER

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

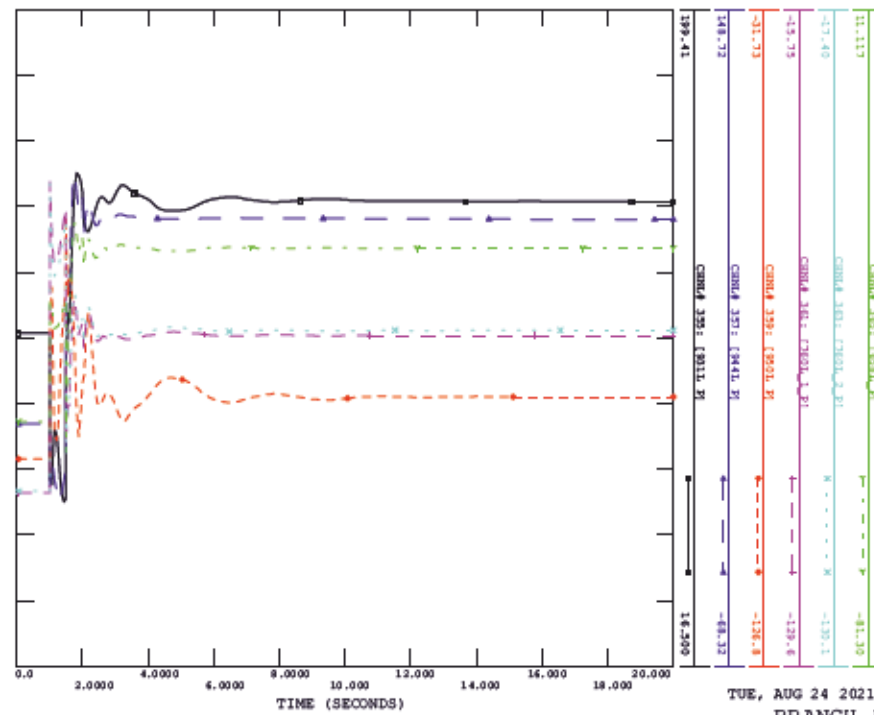
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TUE, AUG 24 2021 13:23
BUS VOLTAGE (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

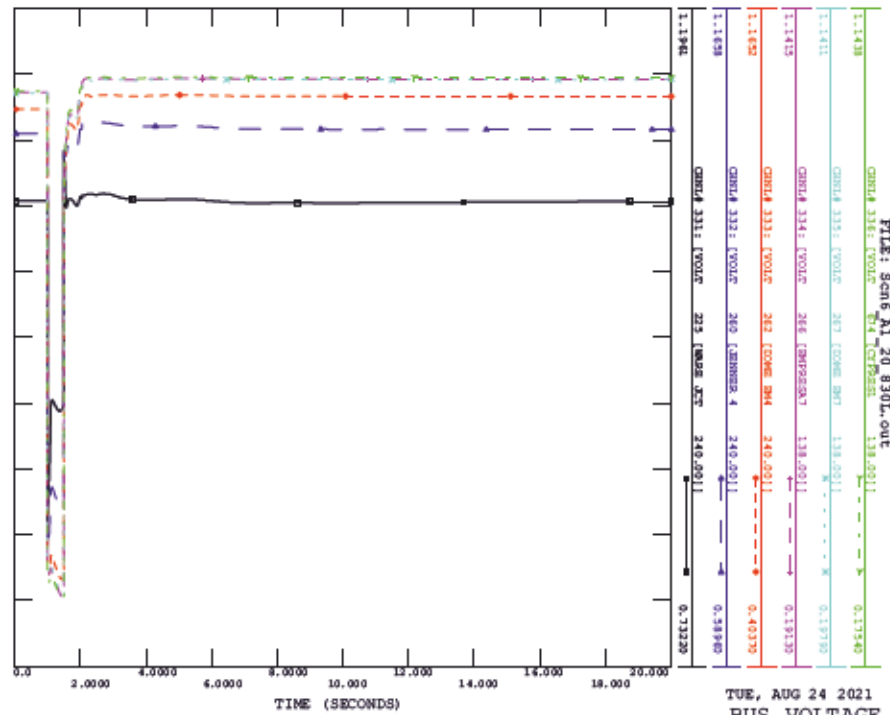
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TUE, AUG 24 2021 13:23
BRANCH P (2)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

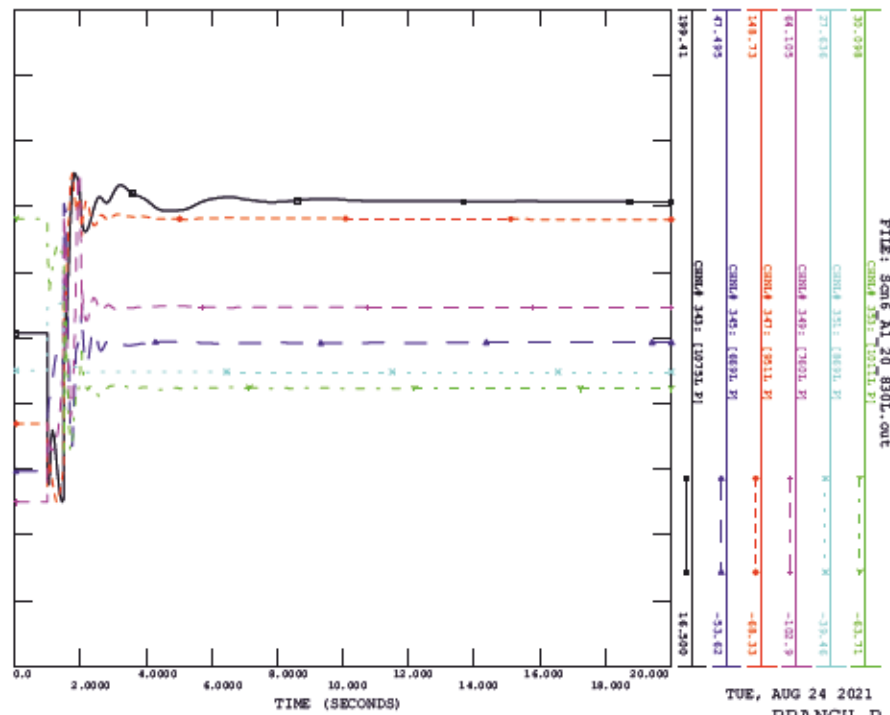
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TUE, AUG 24 2021 13:23
BUS VOLTAGE (1)

SCENARIO: P2421 SYSTEM INTERACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WOMBIL 840S

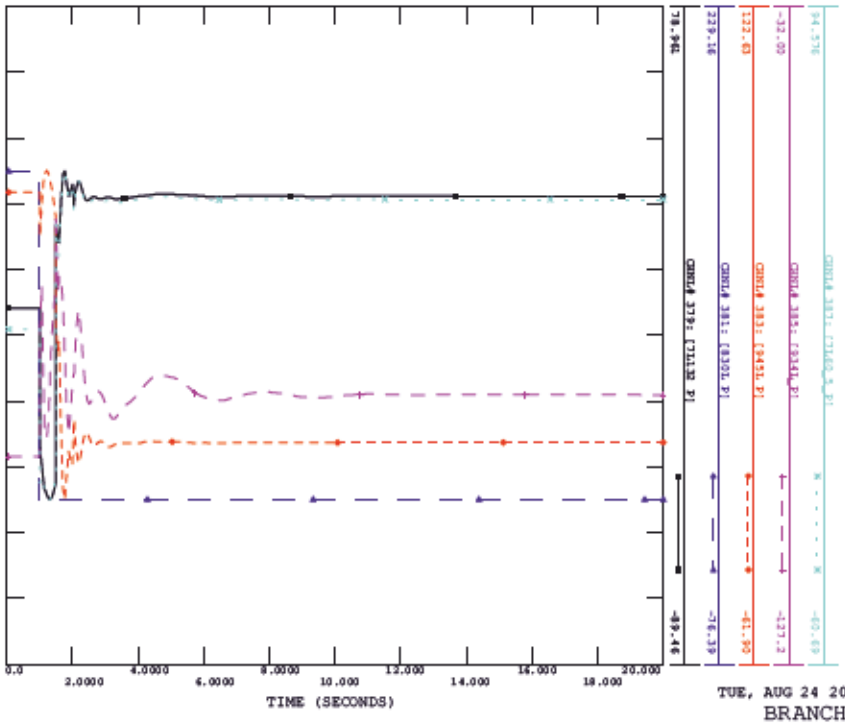
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TUE, AUG 24 2021 13:23
BRANCH P (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WONEIL 840S

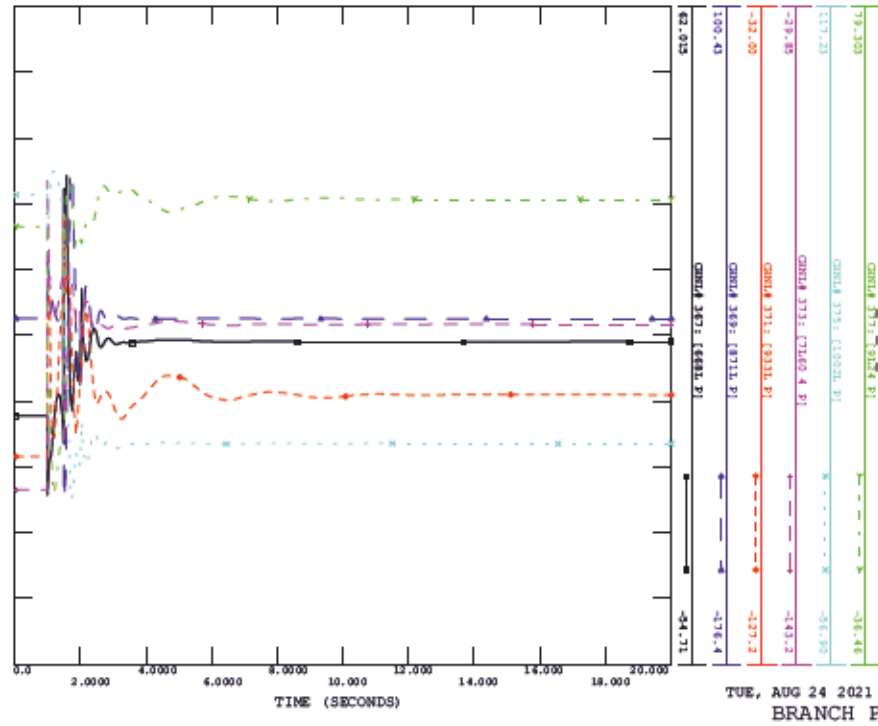
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TUE, AUG 24 2021 13:23
BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WONEIL 840S

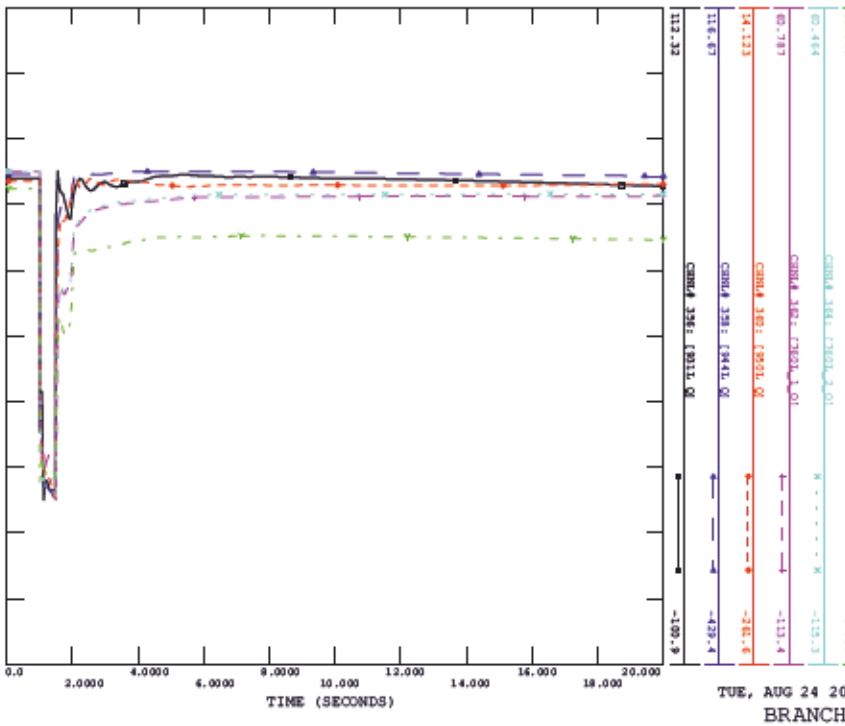
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TUE, AUG 24 2021 13:23
BRANCH P (3)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WONEIL 840S

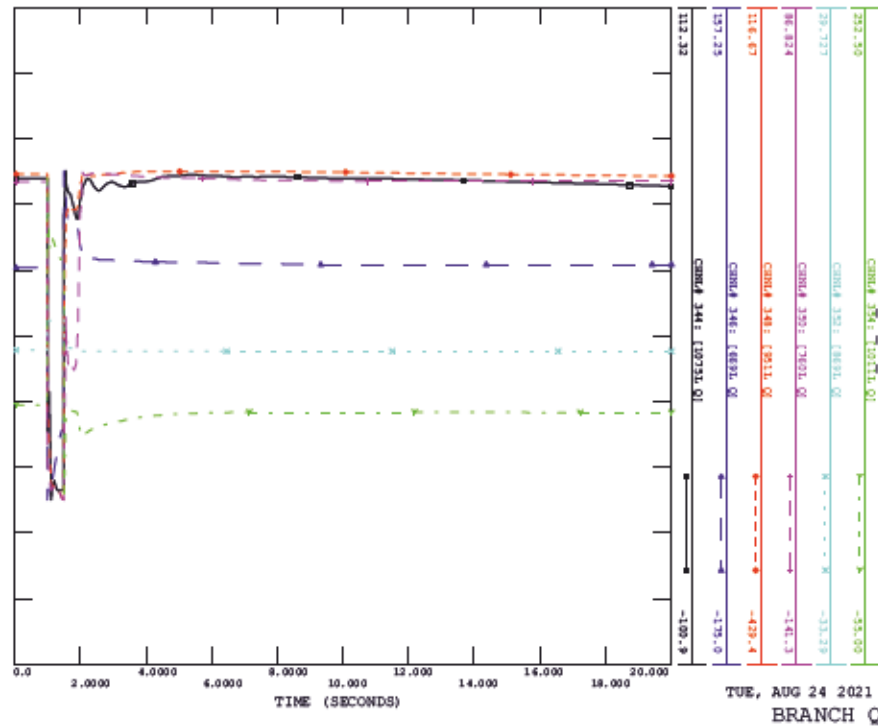
FILE: Scm6_A1_20_830L.out



TUE, AUG 24 2021 13:23
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WONEIL 840S

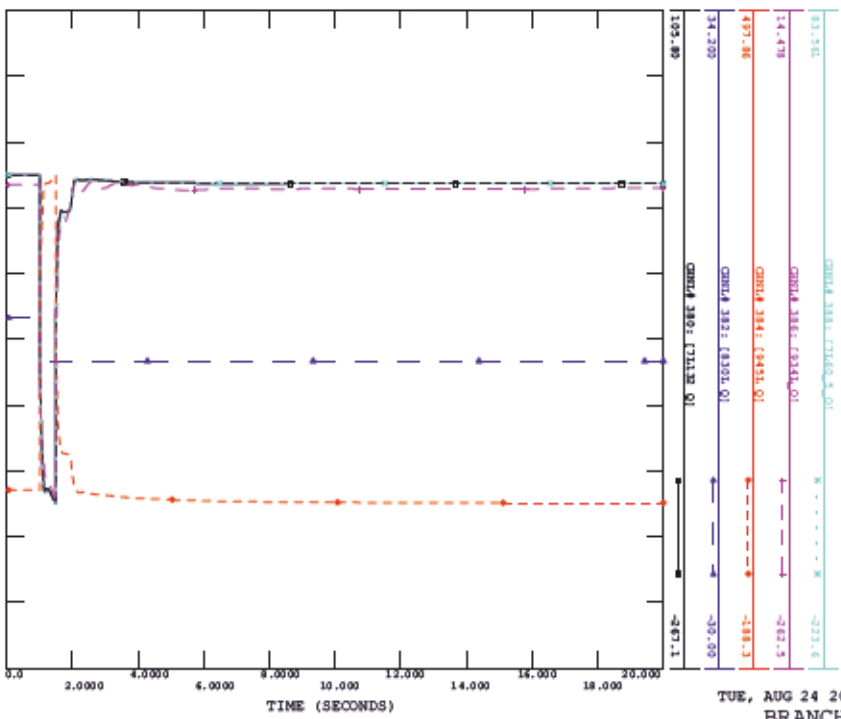
FILE: Scm6_A1_20_830L.out



TUE, AUG 24 2021 13:23
BRANCH Q (1)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WCNBIL 840S

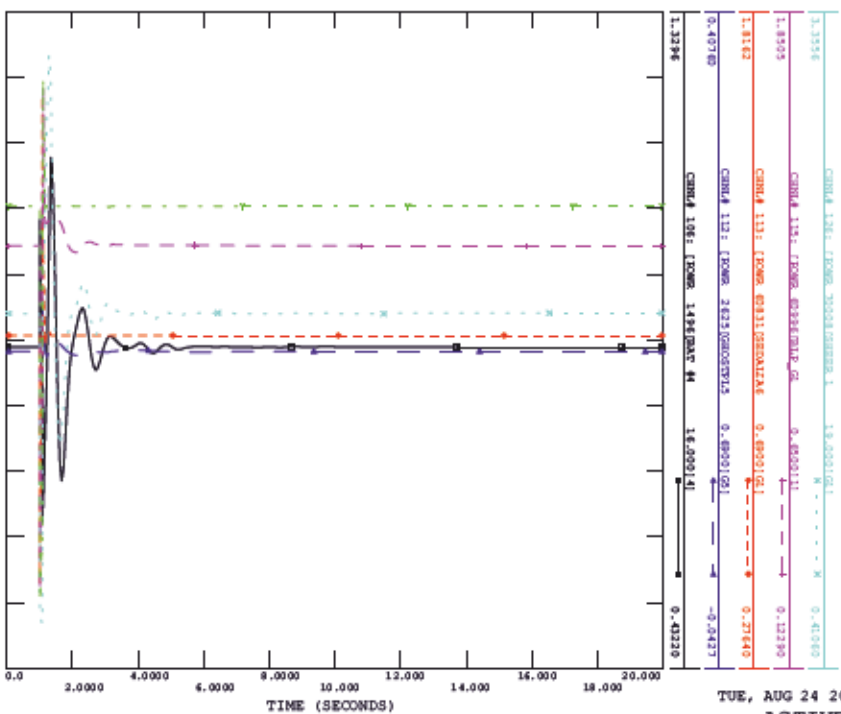
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TUE, AUG 24 2021 13:23
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_21_933L_934L, FAULT LOCATION ANDERSON

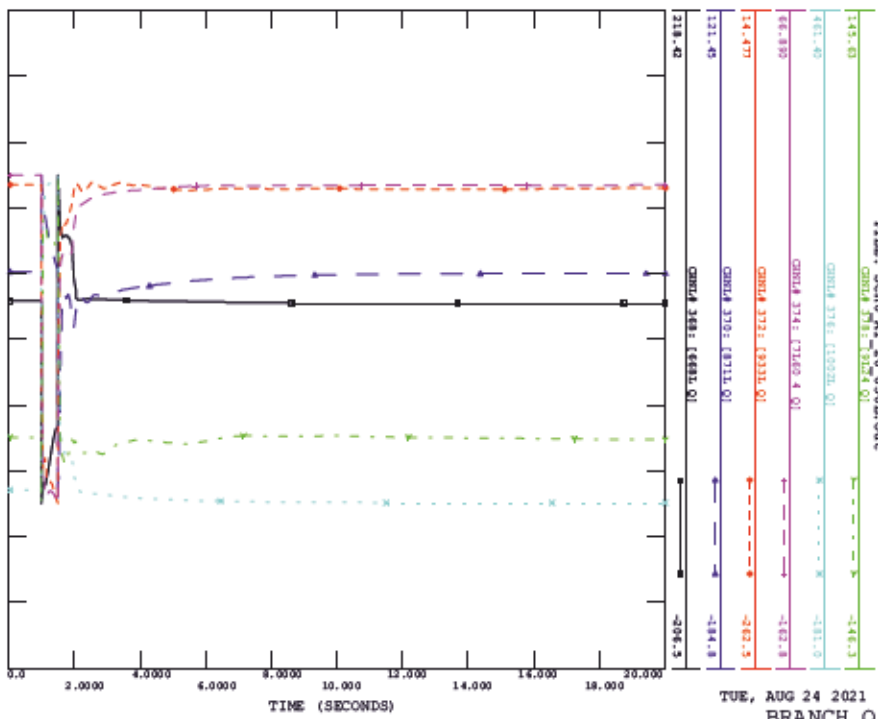
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TUE, AUG 24 2021 13:23
ACTIVE POWER

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_20_830L, FAULT LOCATION WCNBIL 840S

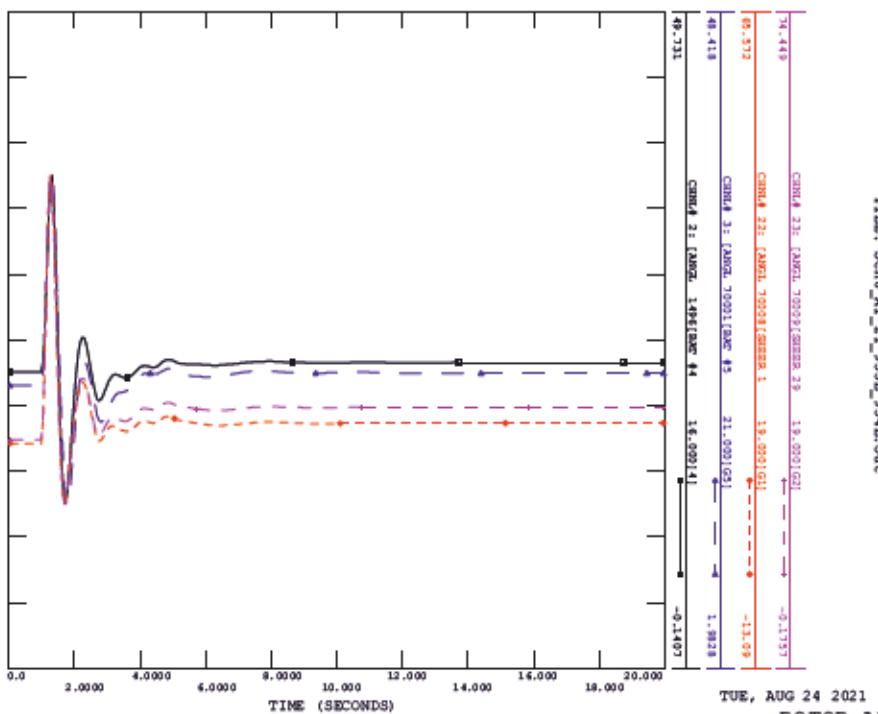
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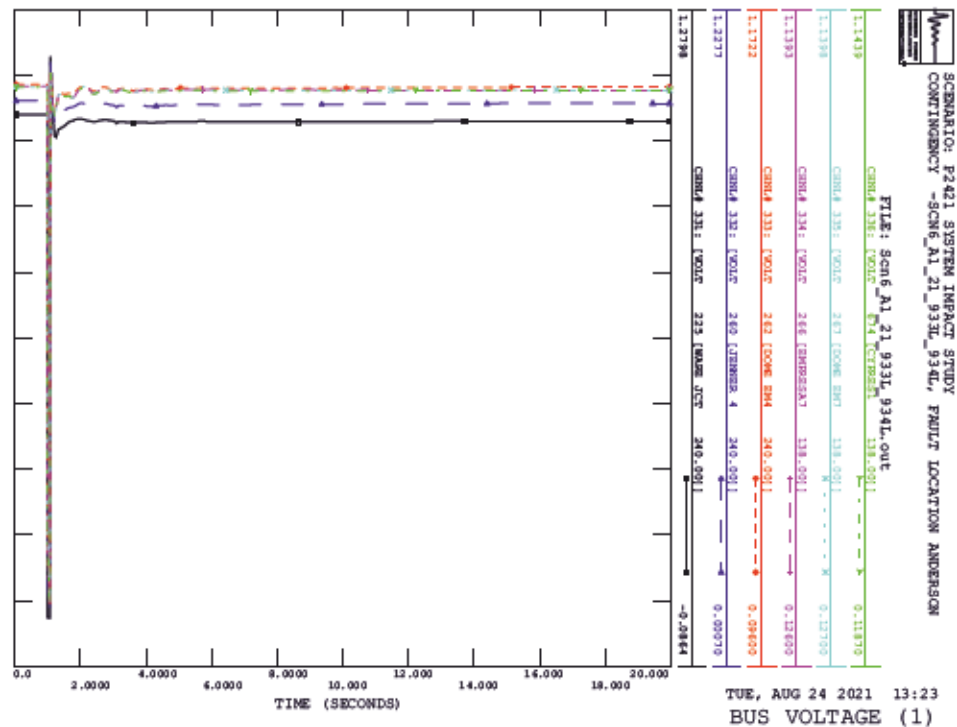
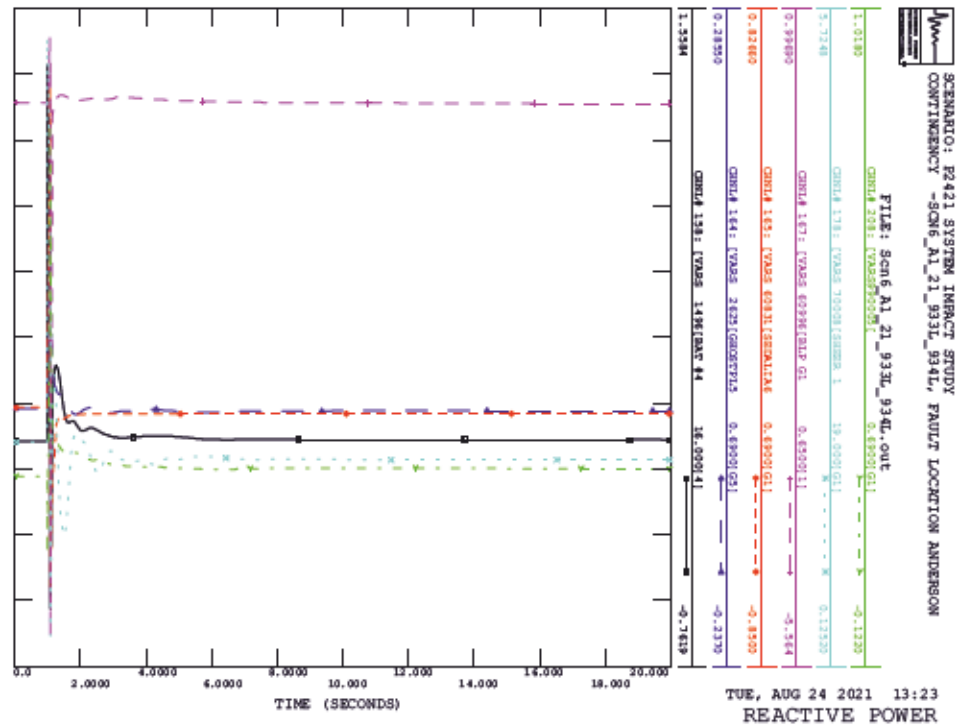
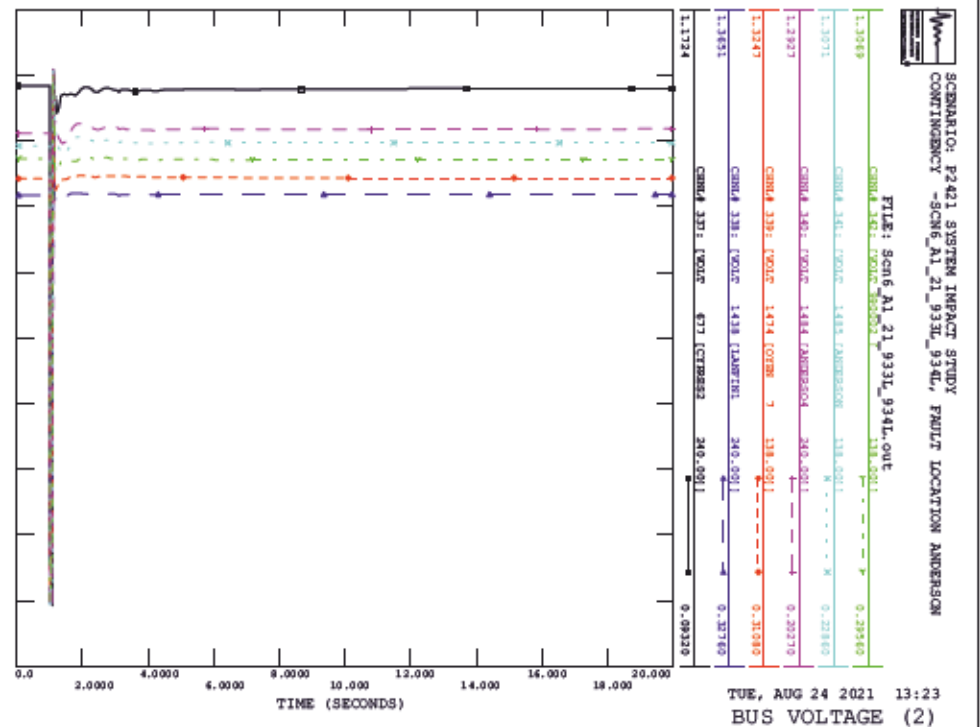
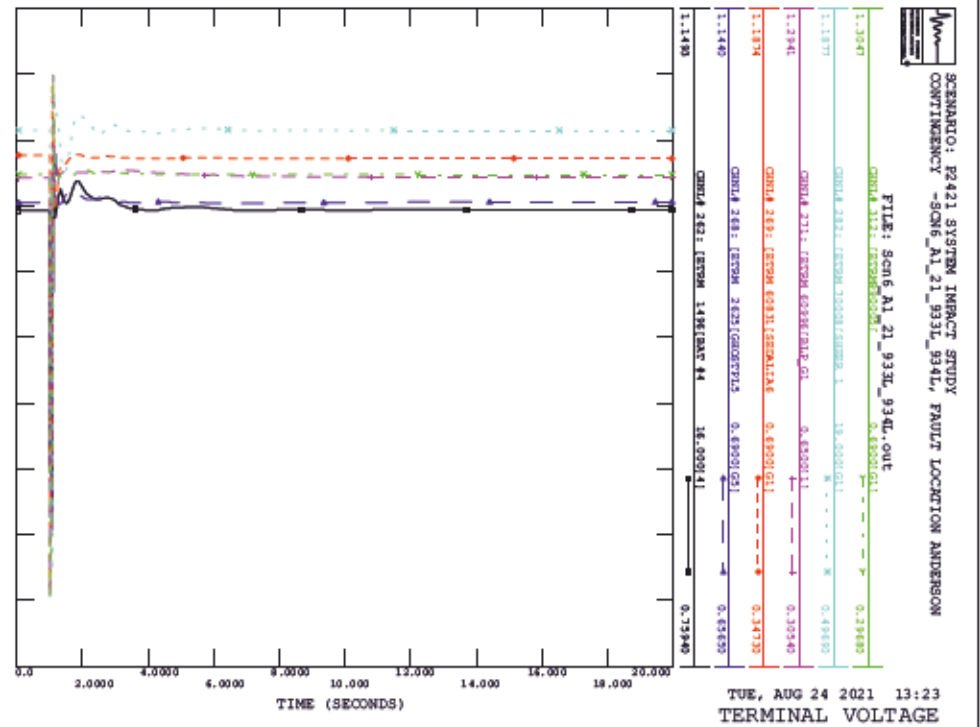
TUE, AUG 24 2021 13:23
BRANCH Q (3)

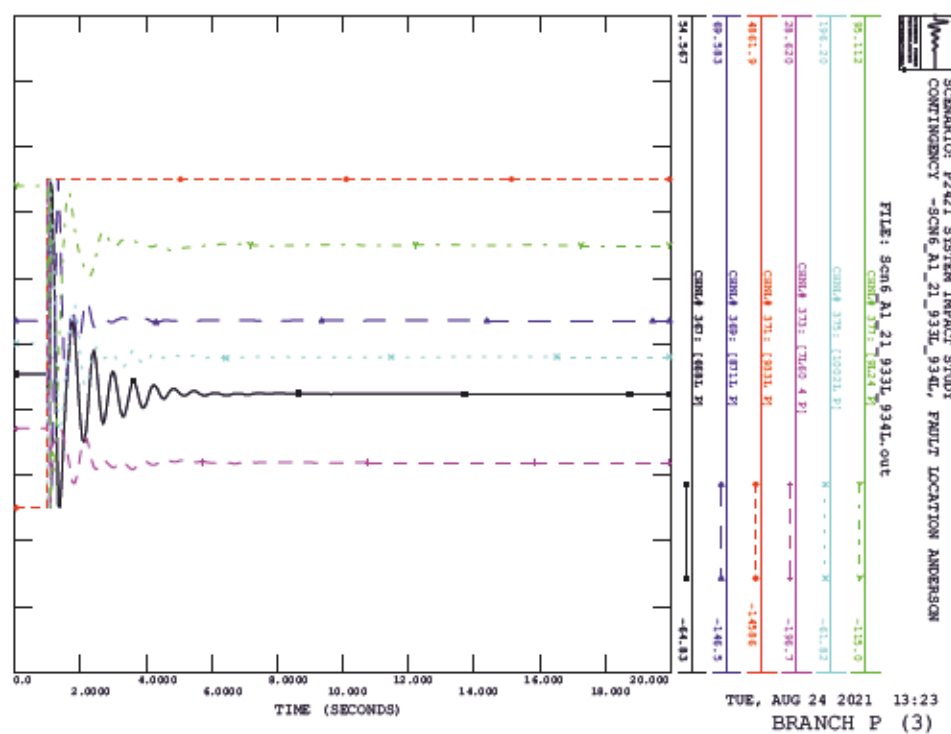
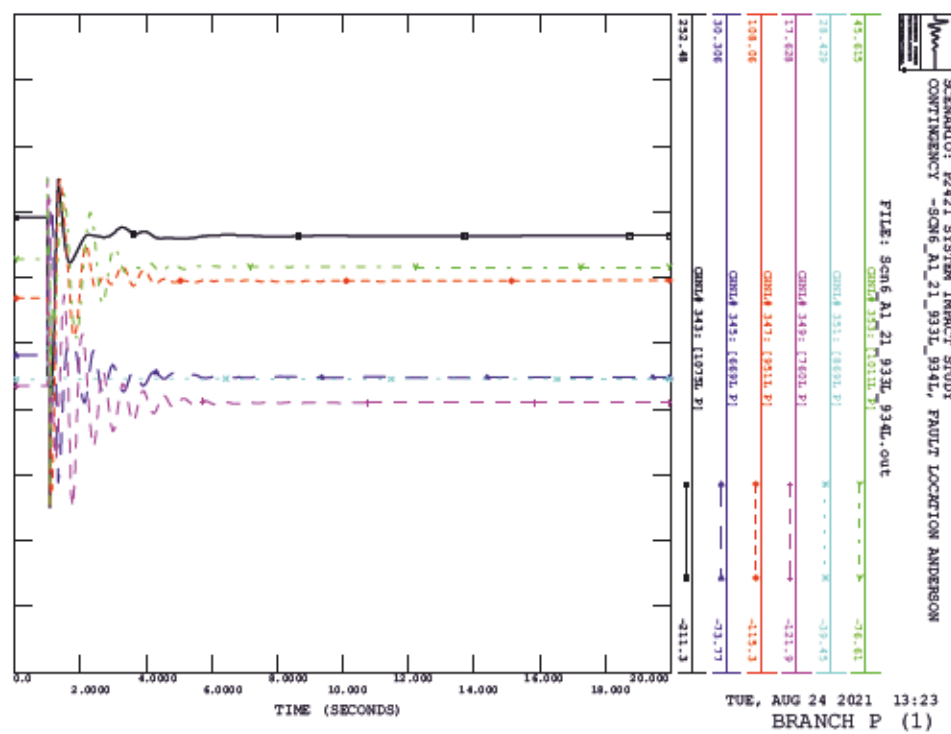
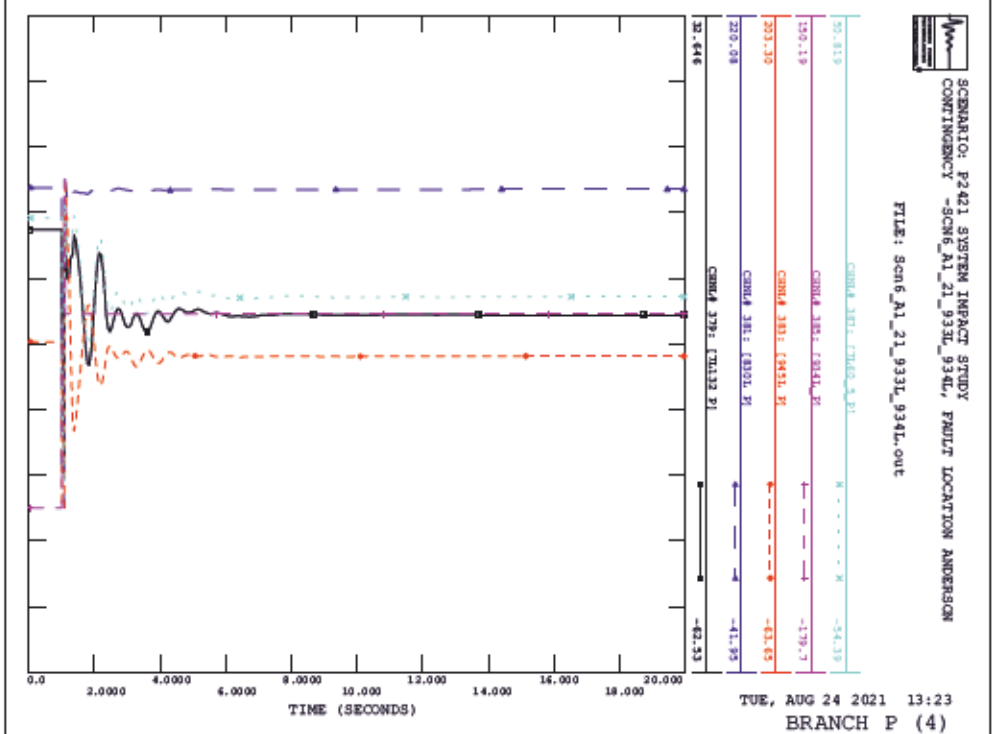
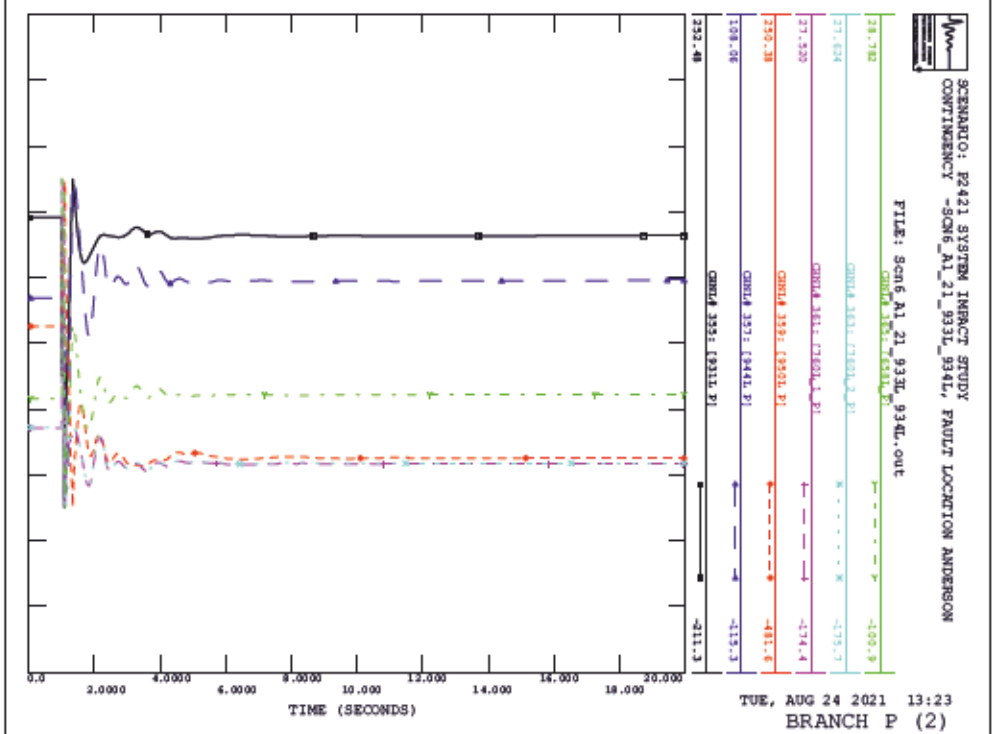
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_21_933L_934L, FAULT LOCATION ANDERSON

FILE: Scn6_A1_21_933L_934L.out



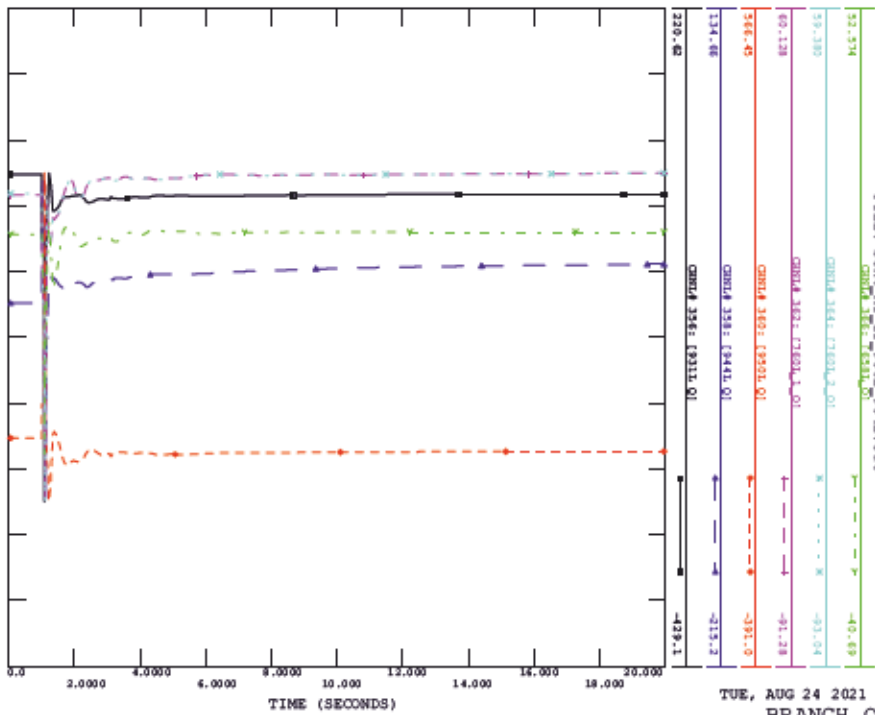
TUE, AUG 24 2021 13:23
ROTOR ANGLE





SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_21_933L_934L, FAULT LOCATION ANDERSON

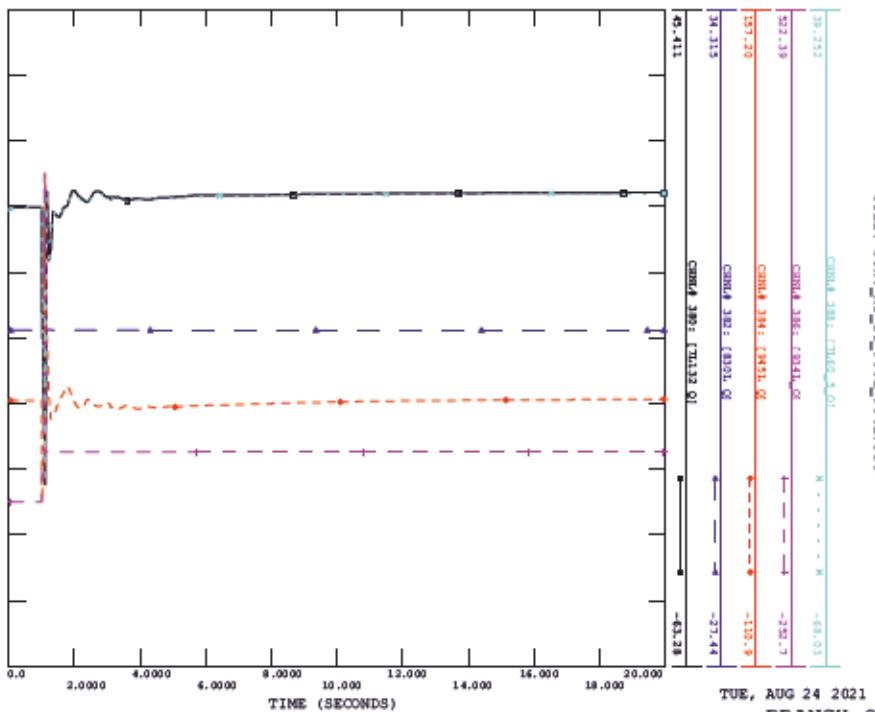
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TUE, AUG 24 2021 13:23
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_21_933L_934L, FAULT LOCATION ANDERSON

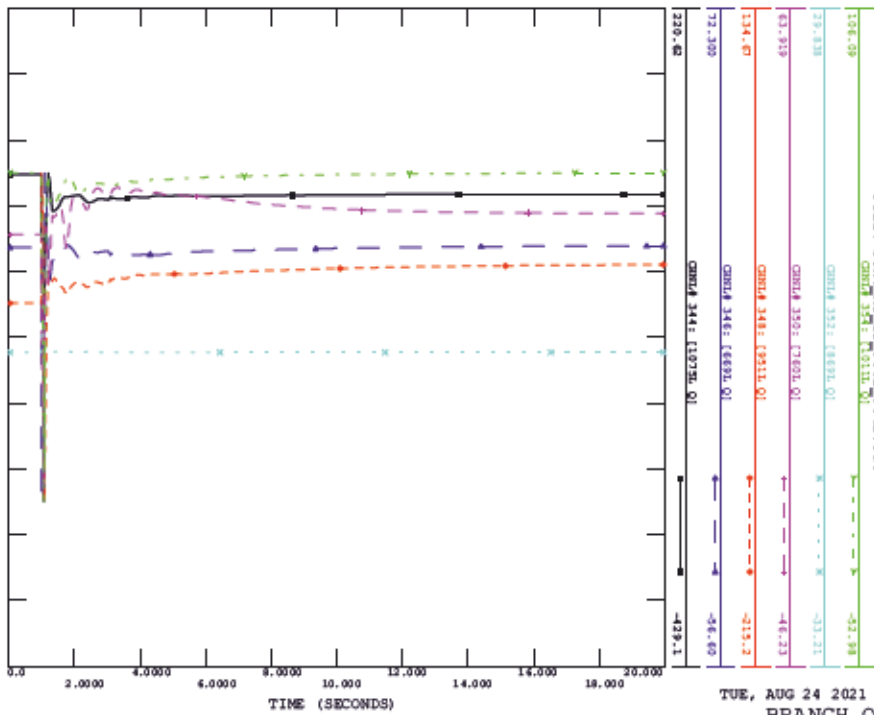
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TUE, AUG 24 2021 13:23
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_21_933L_934L, FAULT LOCATION ANDERSON

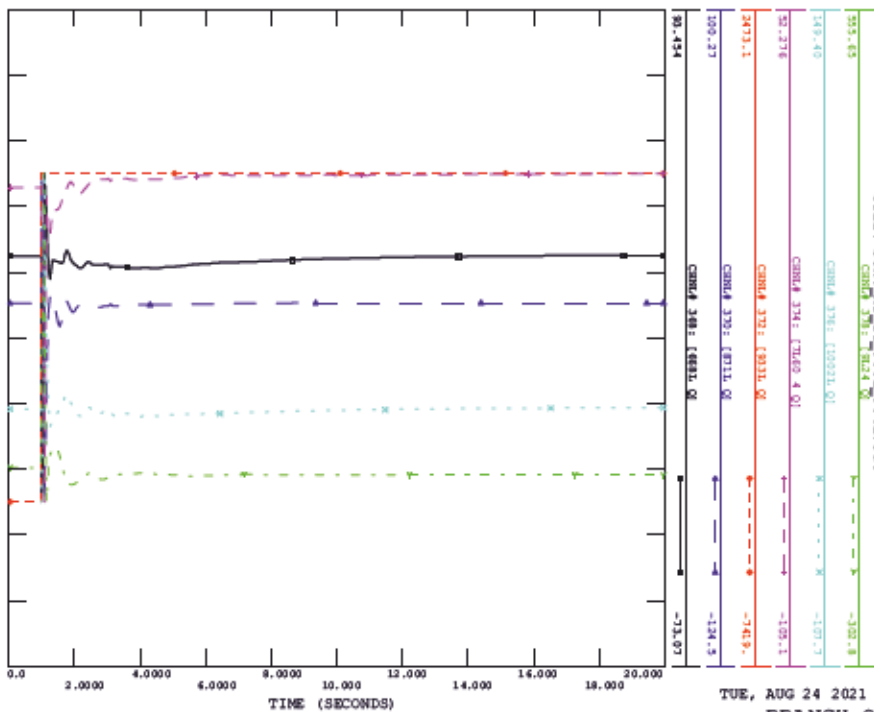
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TUE, AUG 24 2021 13:23
BRANCH Q (1)

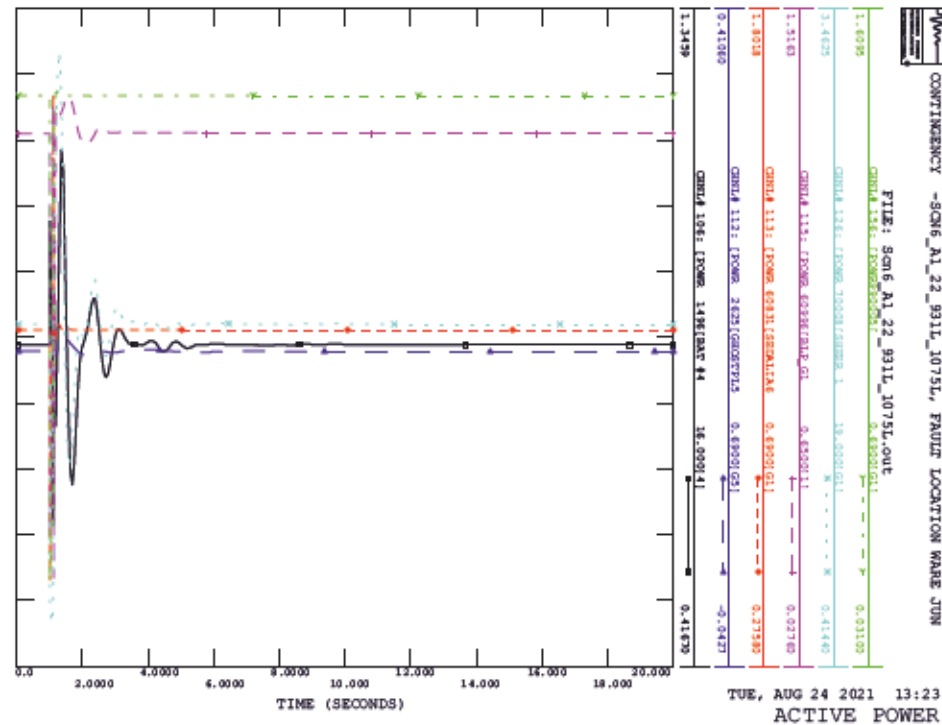
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_21_933L_934L, FAULT LOCATION ANDERSON

FILE: SCM6_A1_21_933L_934L.out

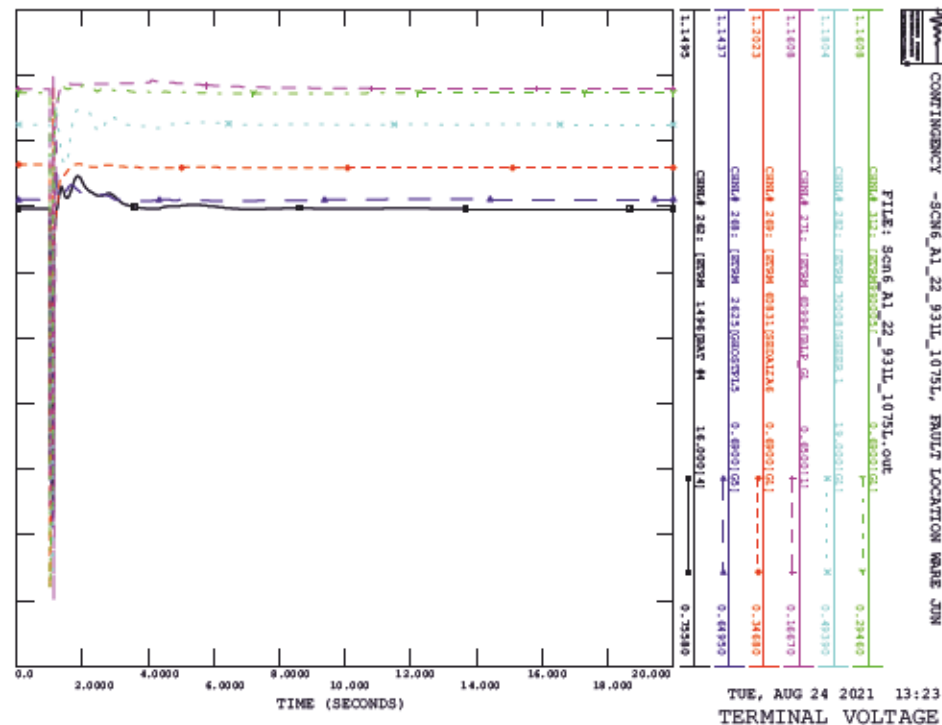


TUE, AUG 24 2021 13:23
BRANCH Q (3)

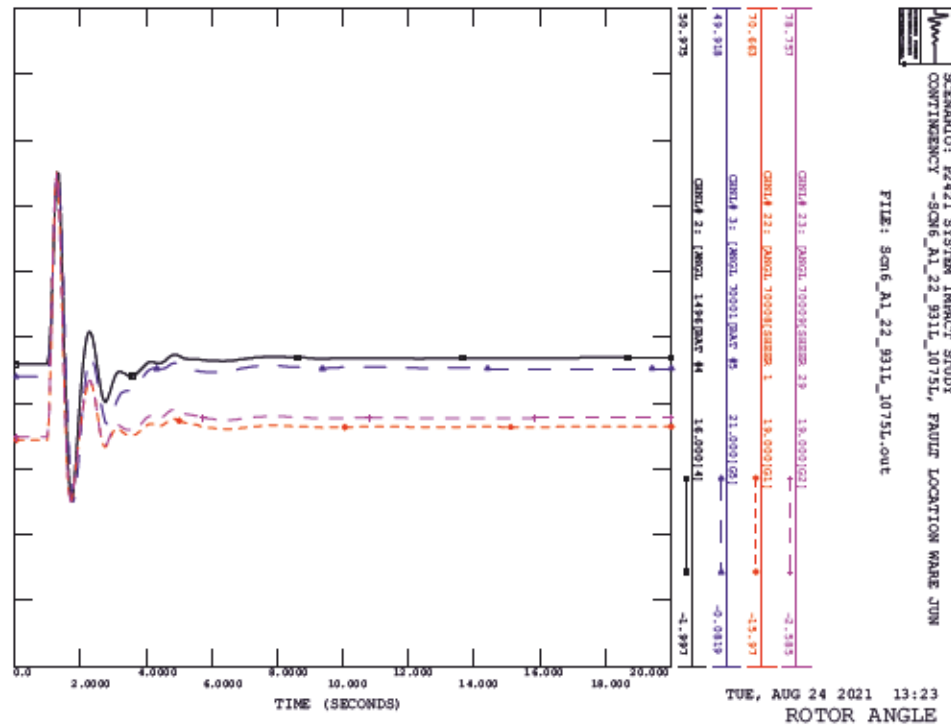
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_22_931L_1075L, FAULT LOCATION WARE JIN



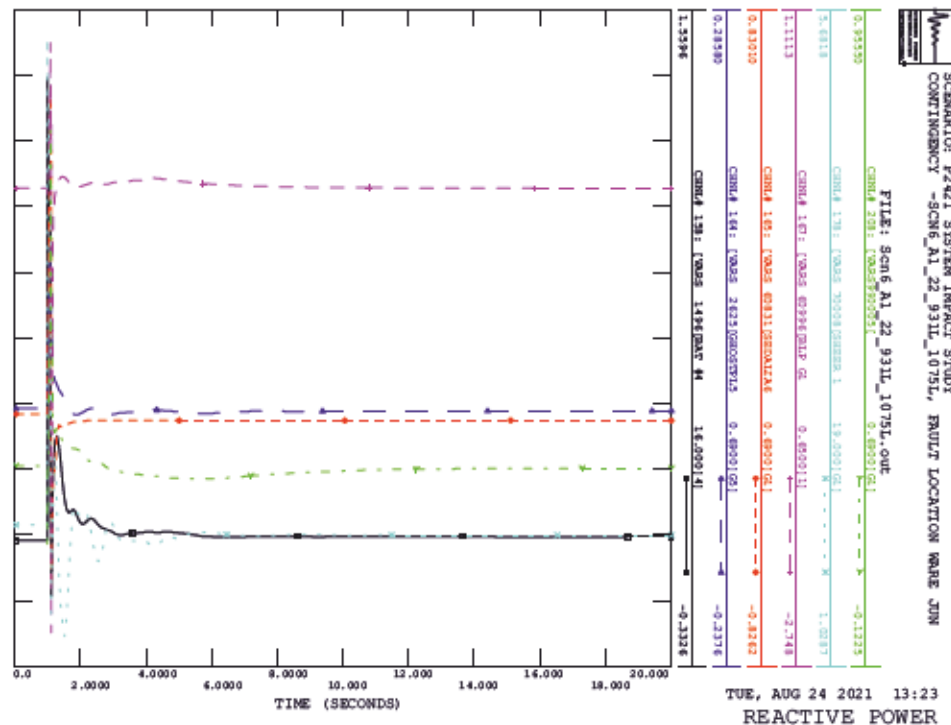
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_22_931L_1075L, FAULT LOCATION WARE JIN

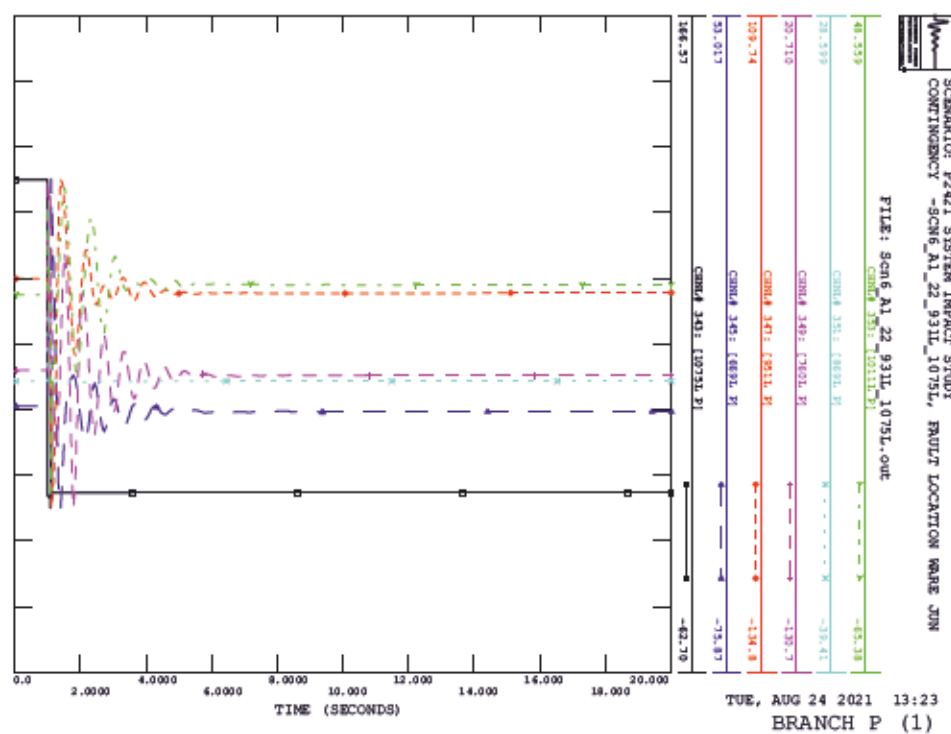
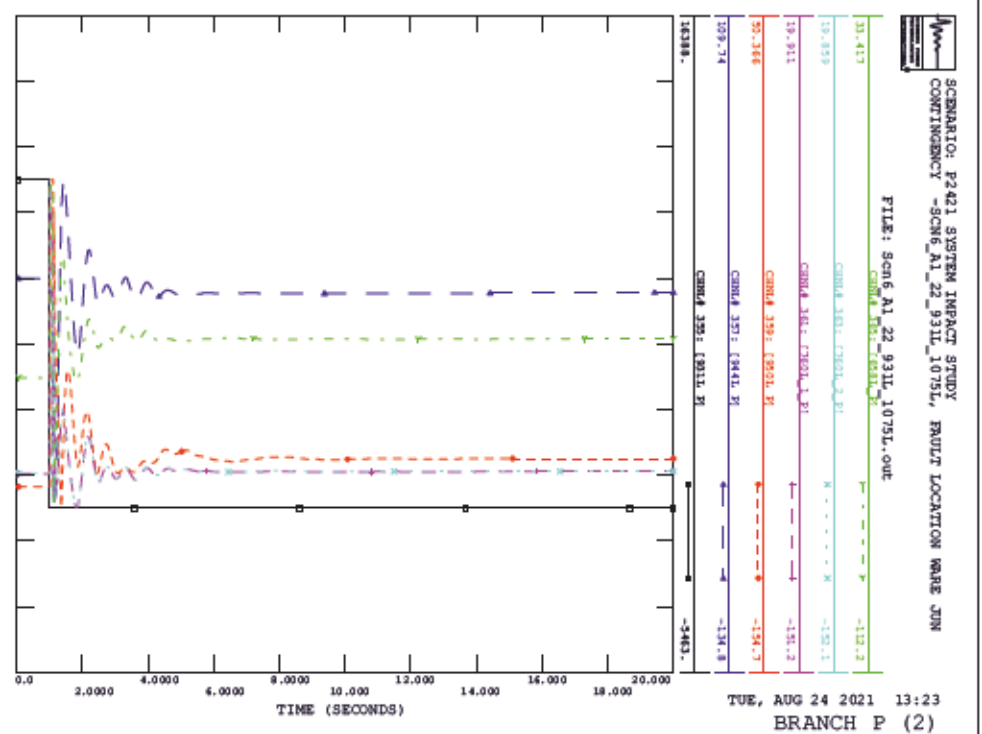
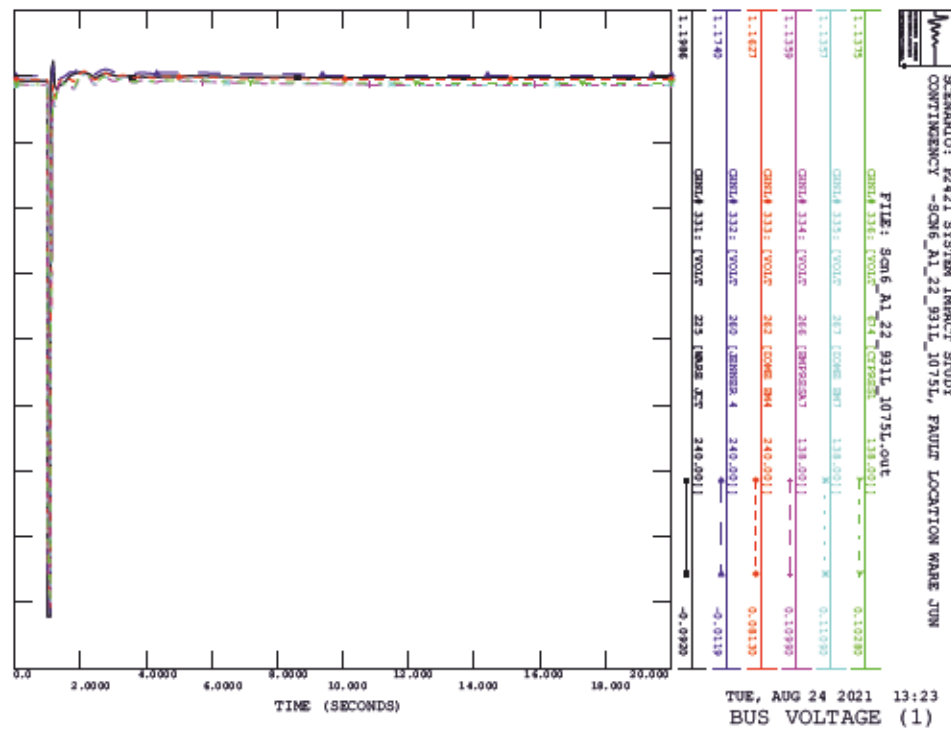
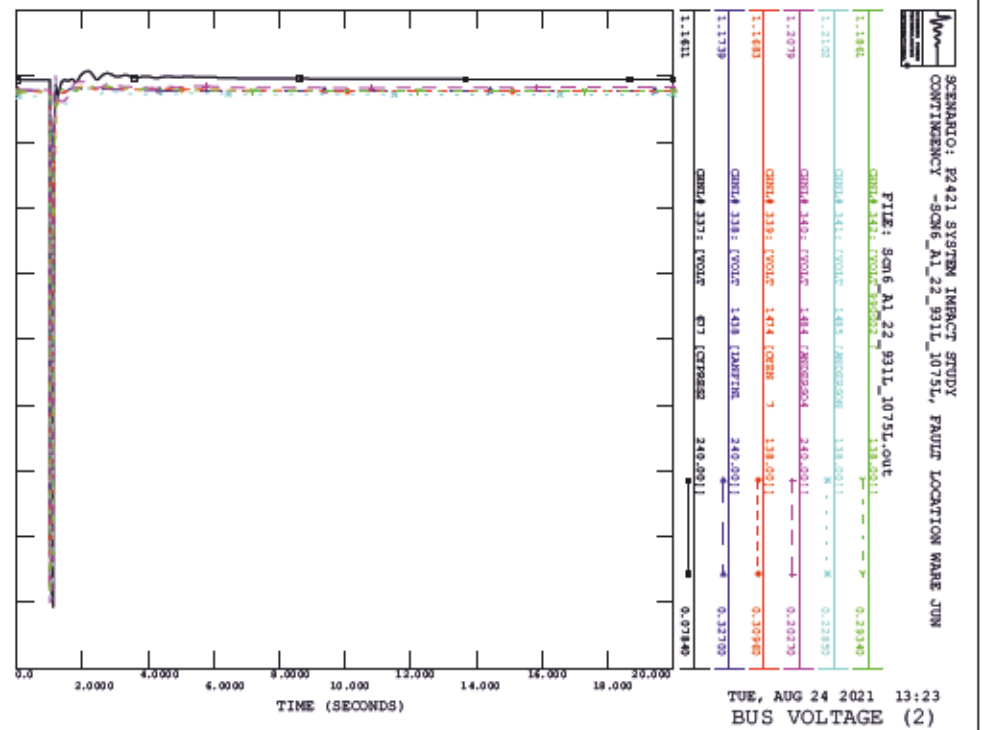


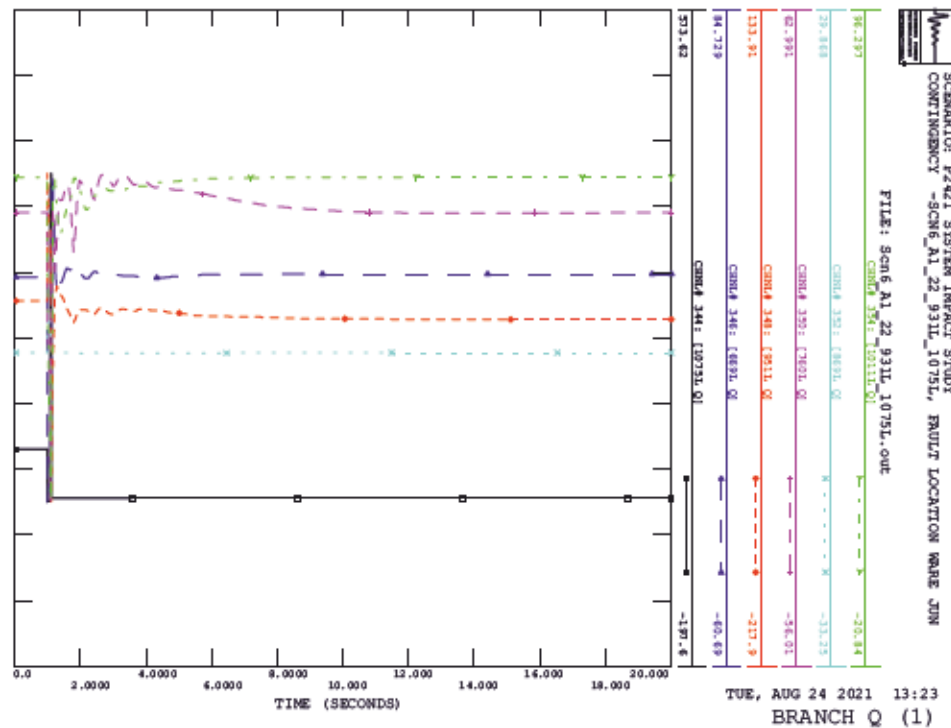
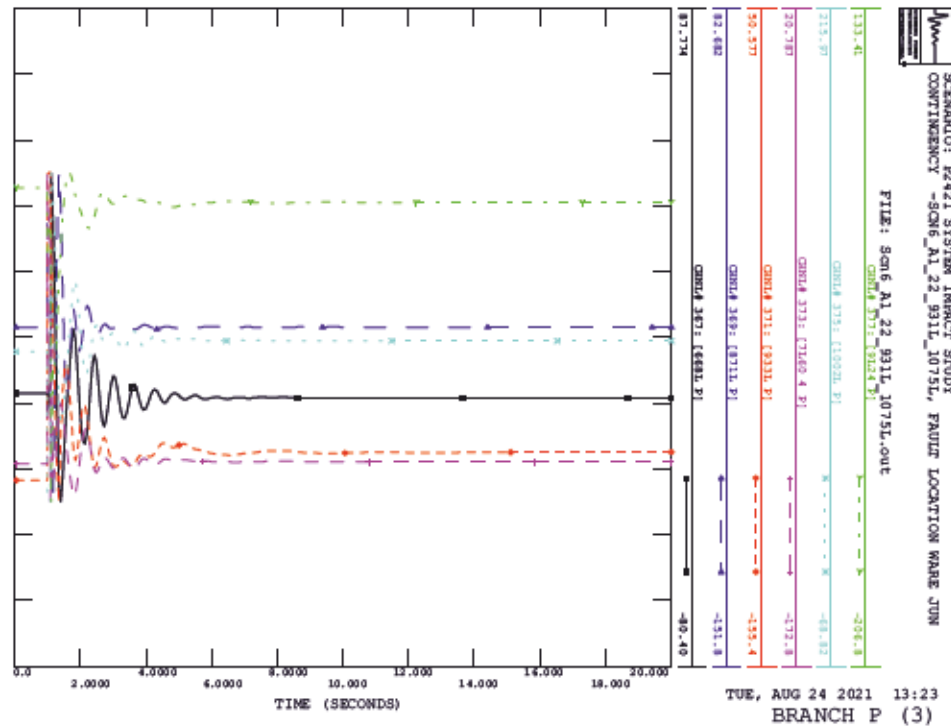
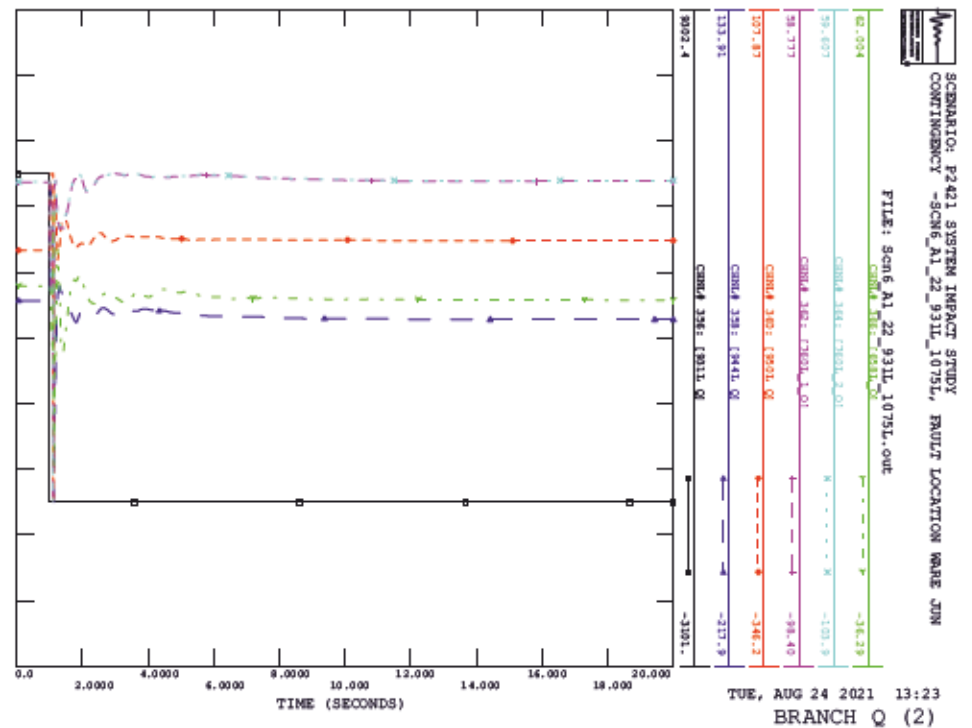
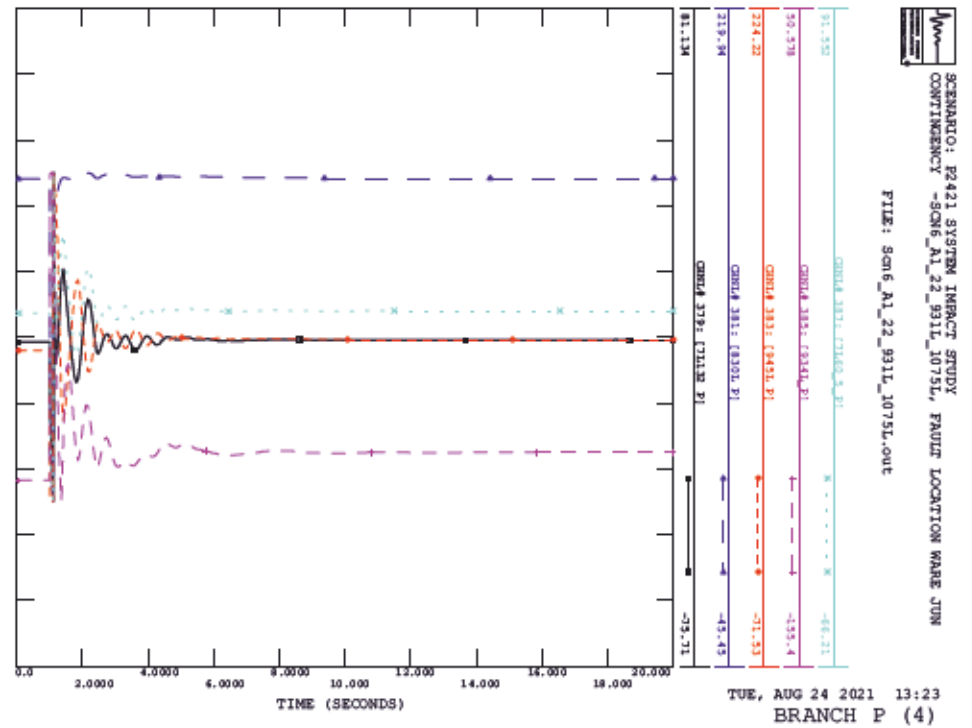
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_22_931L_1075L, FAULT LOCATION WARE JIN

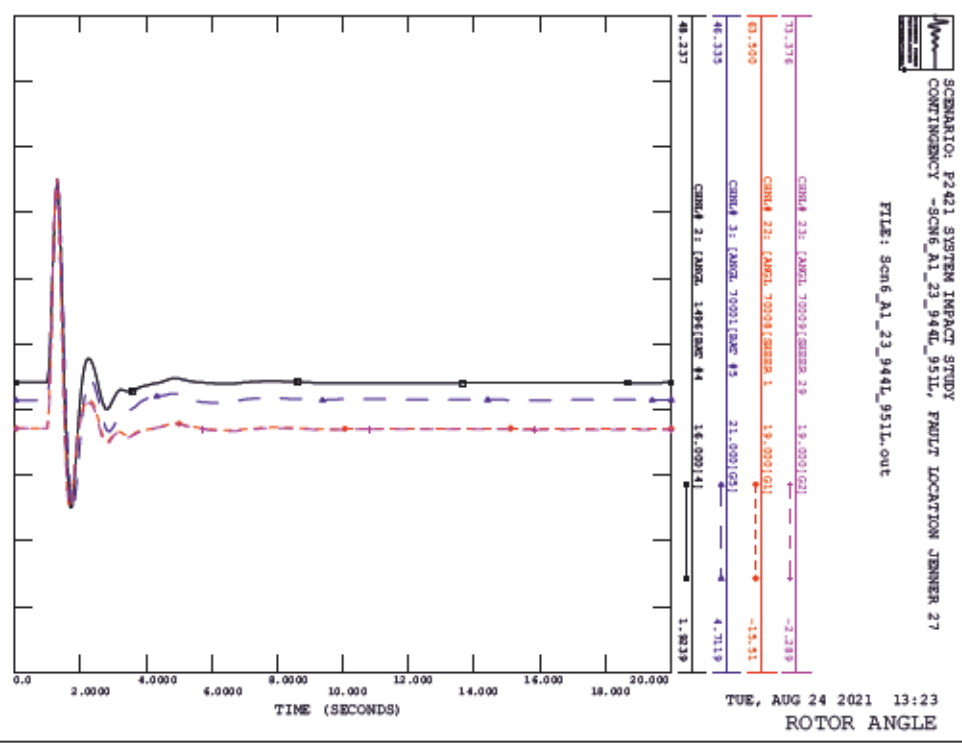
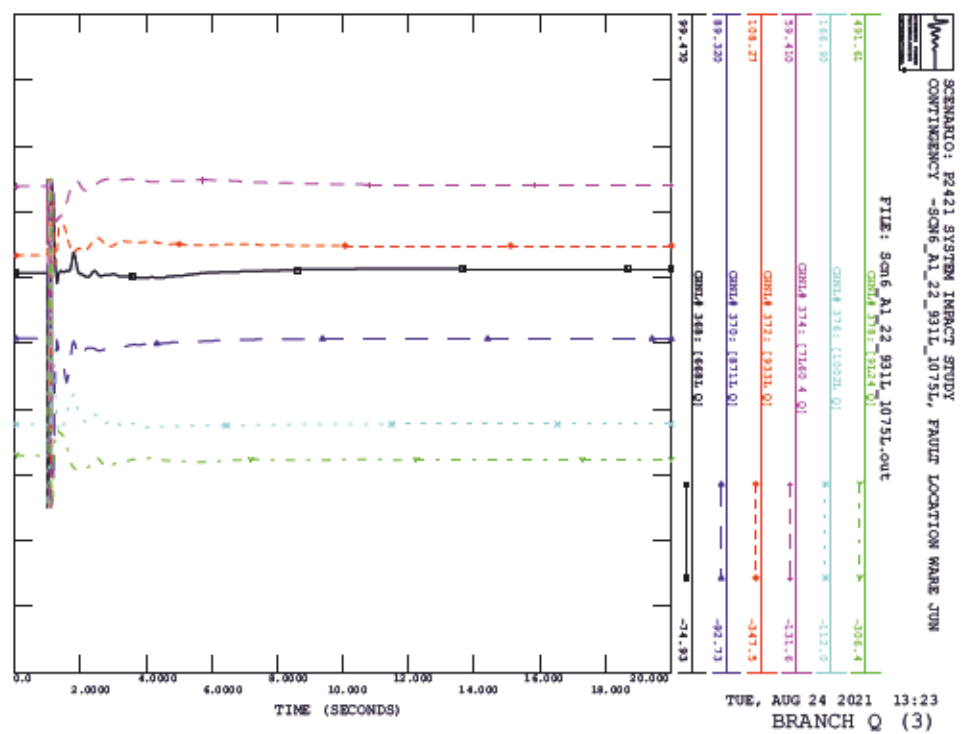
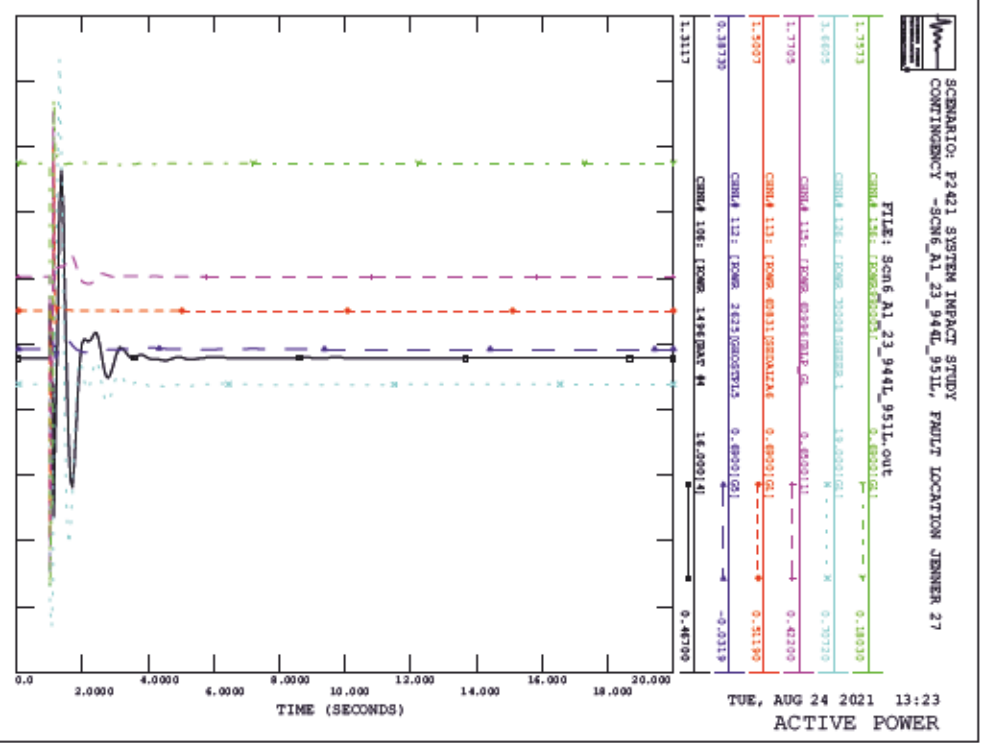
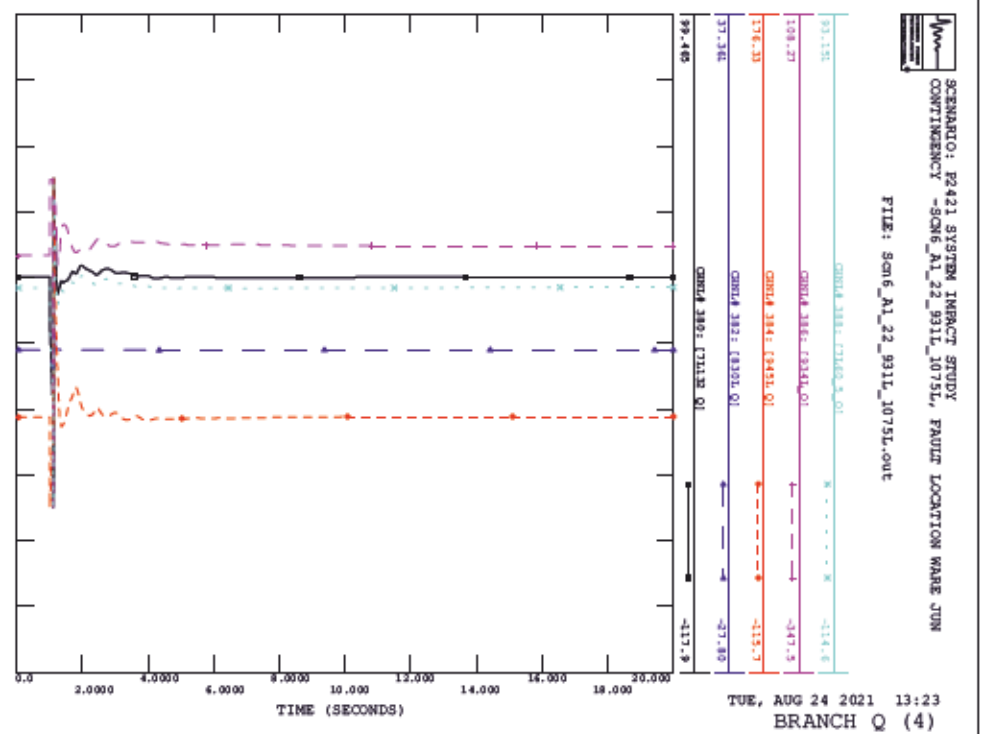


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_22_931L_1075L, FAULT LOCATION WARE JIN



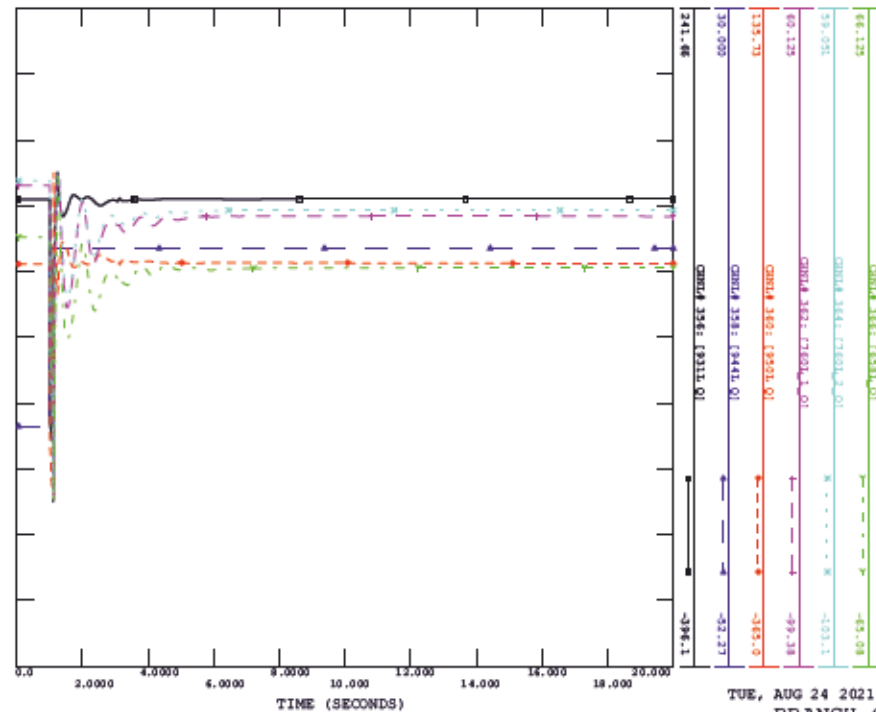






SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_23_944L_951L, FAULT LOCATION JENNER 27

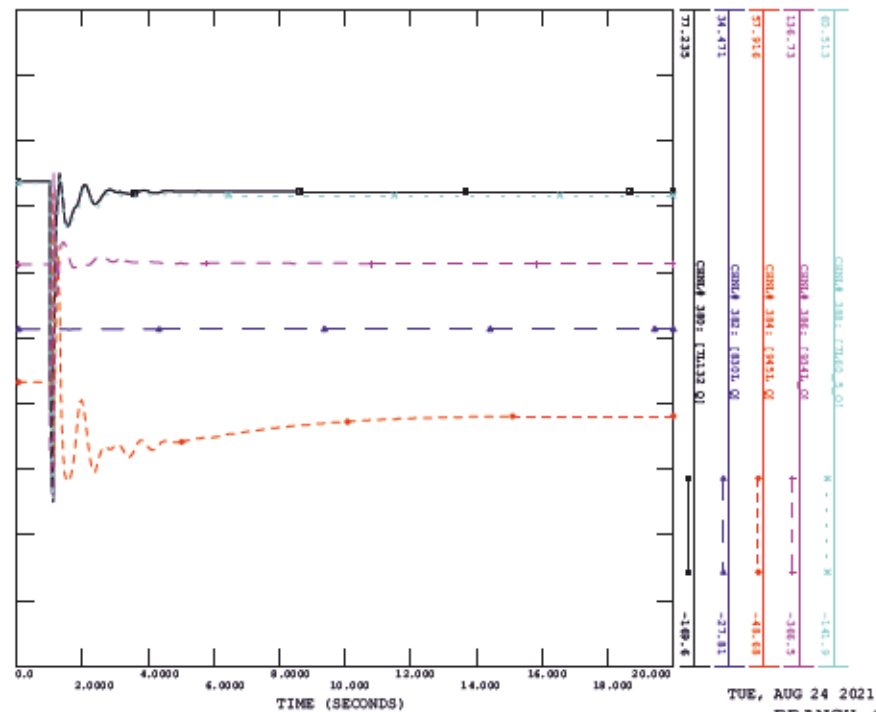
FILE: SCM6_A1_23_944L_951L.out



TUE, AUG 24 2021 13:23
BRANCH Q (2)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_23_944L_951L, FAULT LOCATION JENNER 27

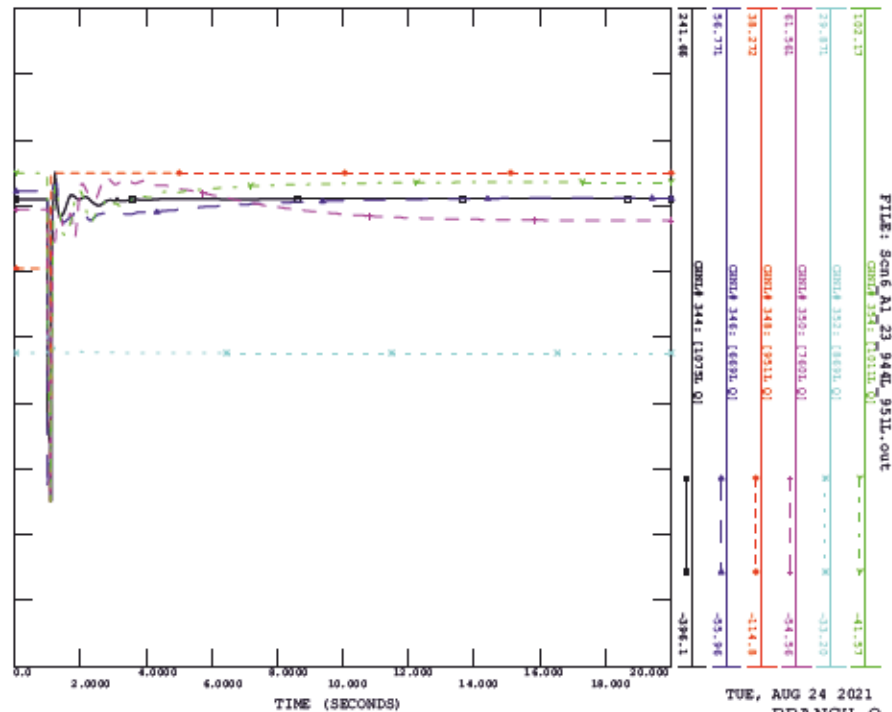
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TUE, AUG 24 2021 13:23
BRANCH Q (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_23_944L_951L, FAULT LOCATION JENNER 27

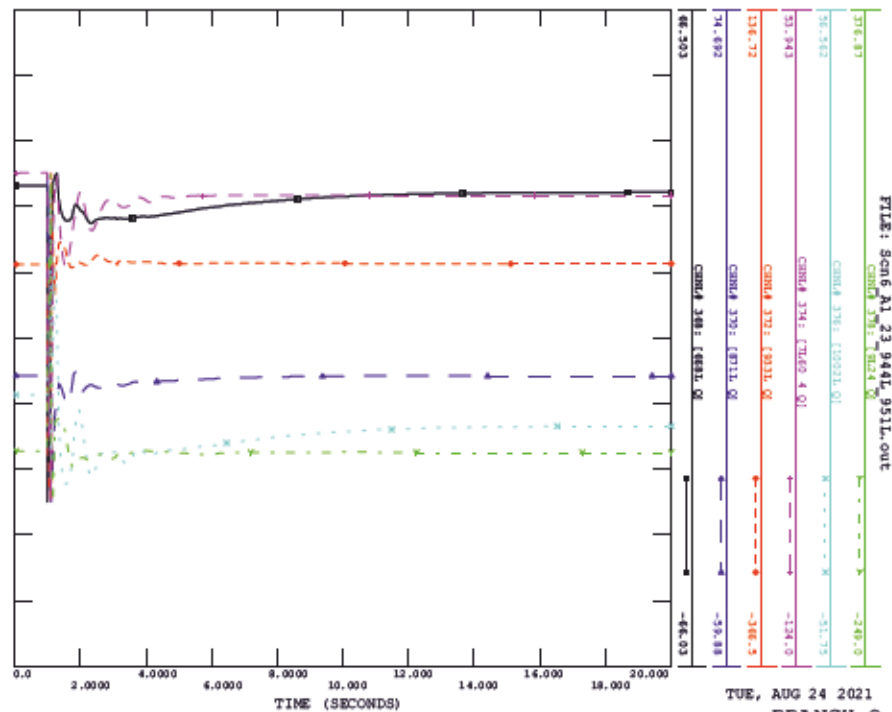
FILE: SCM6_A1_23_944L_951L.out



TUE, AUG 24 2021 13:23
BRANCH Q (1)

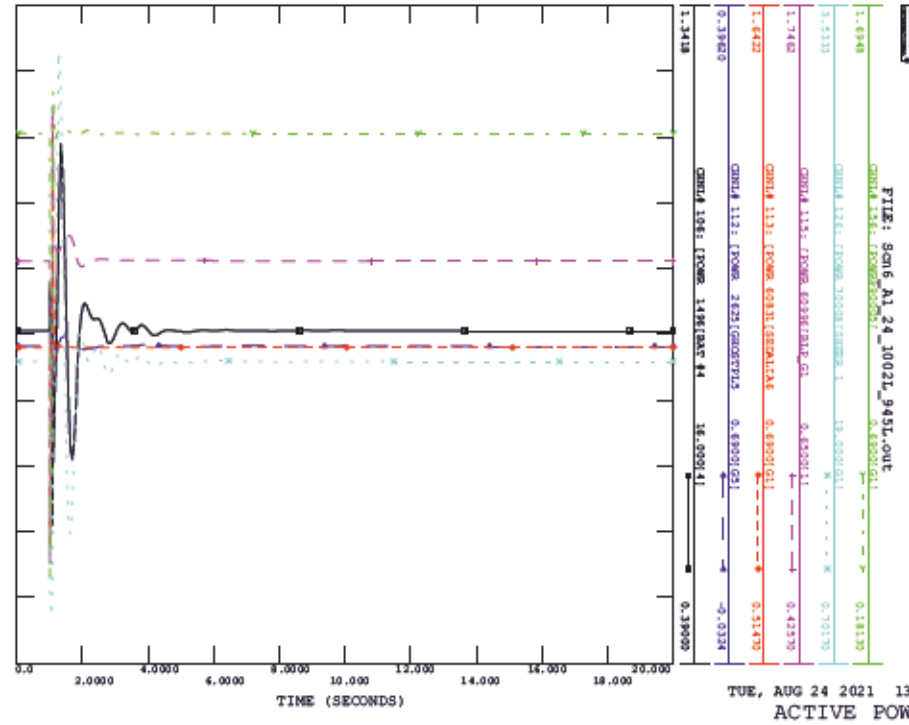
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_23_944L_951L, FAULT LOCATION JENNER 27

FILE: SCM6_A1_23_944L_951L.out

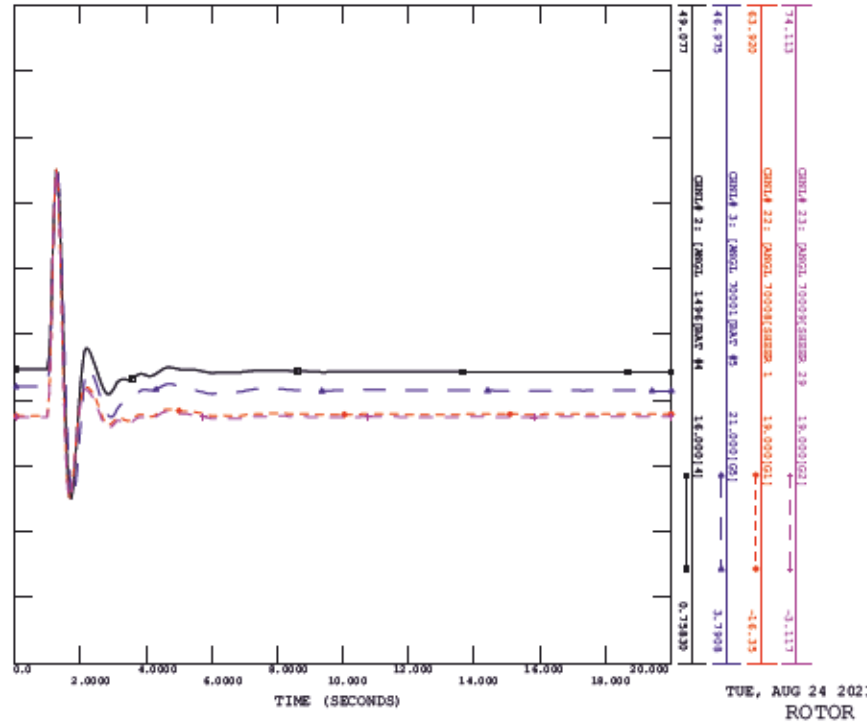


TUE, AUG 24 2021 13:23
BRANCH Q (3)

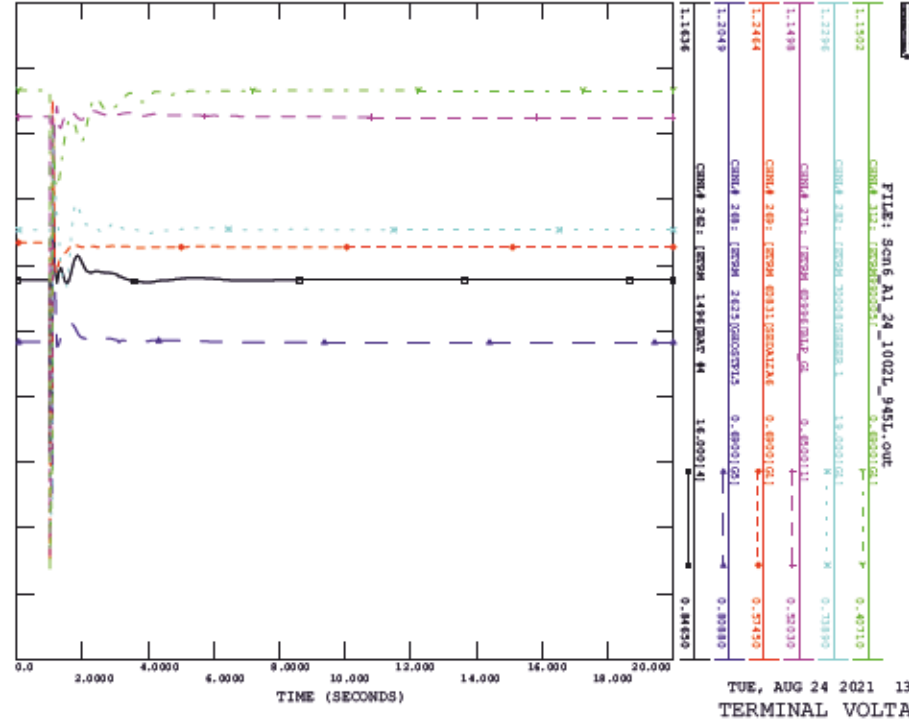
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_24_1002L_945L, FAULT LOCATION JENNER 2



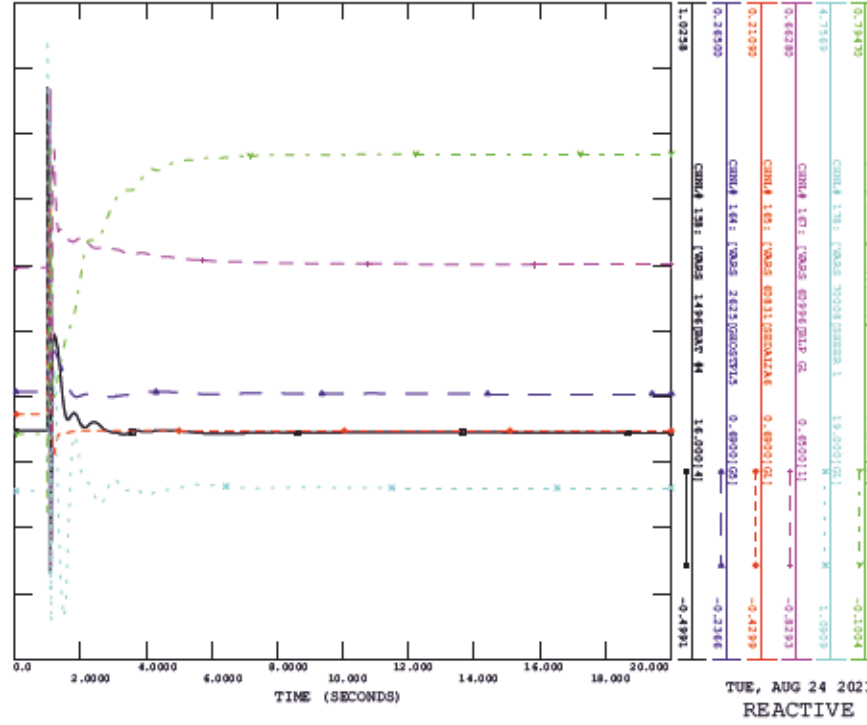
SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_24_1002L_945L, FAULT LOCATION JENNER 2
FILE: SCM6_A1_24_1002L_945L.out
TUE, AUG 24 2021 13:23
ROTOR ANGLE

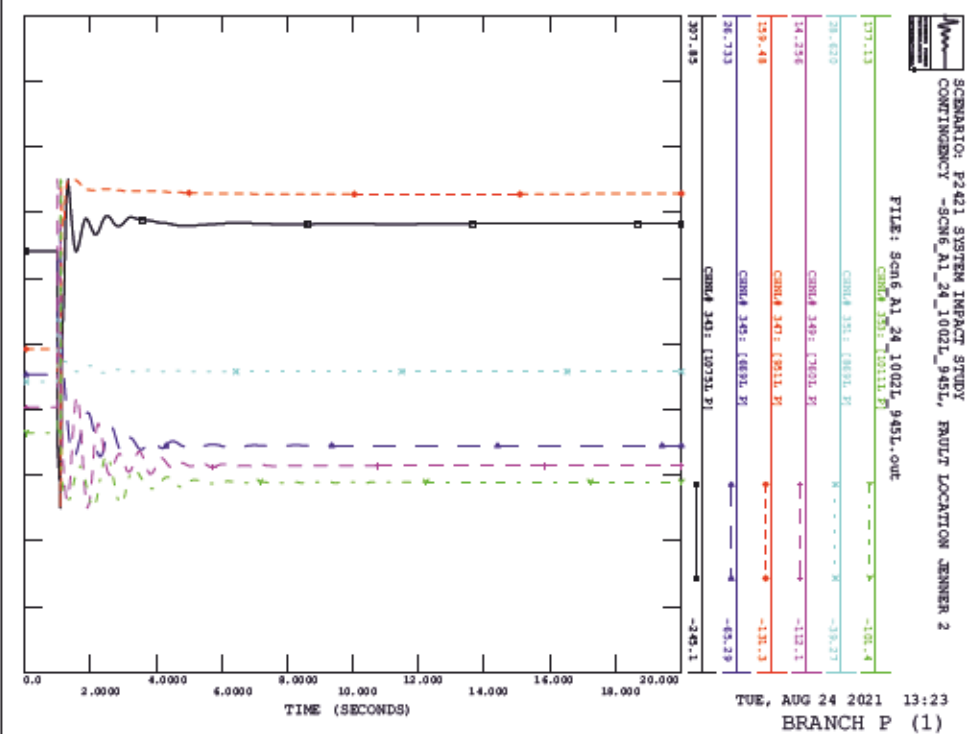
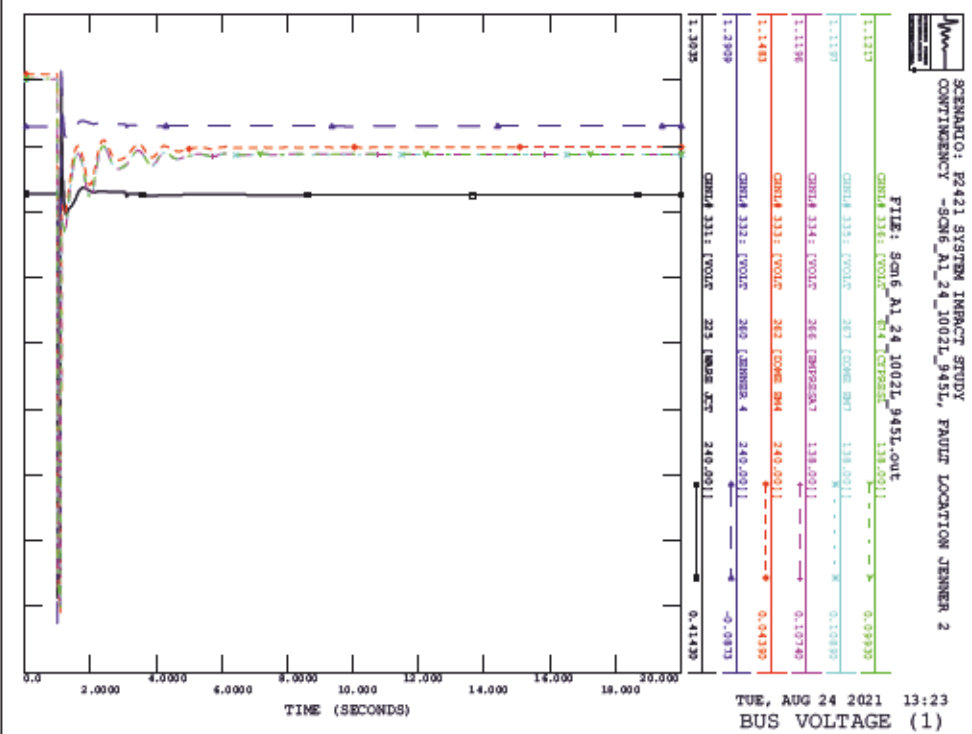
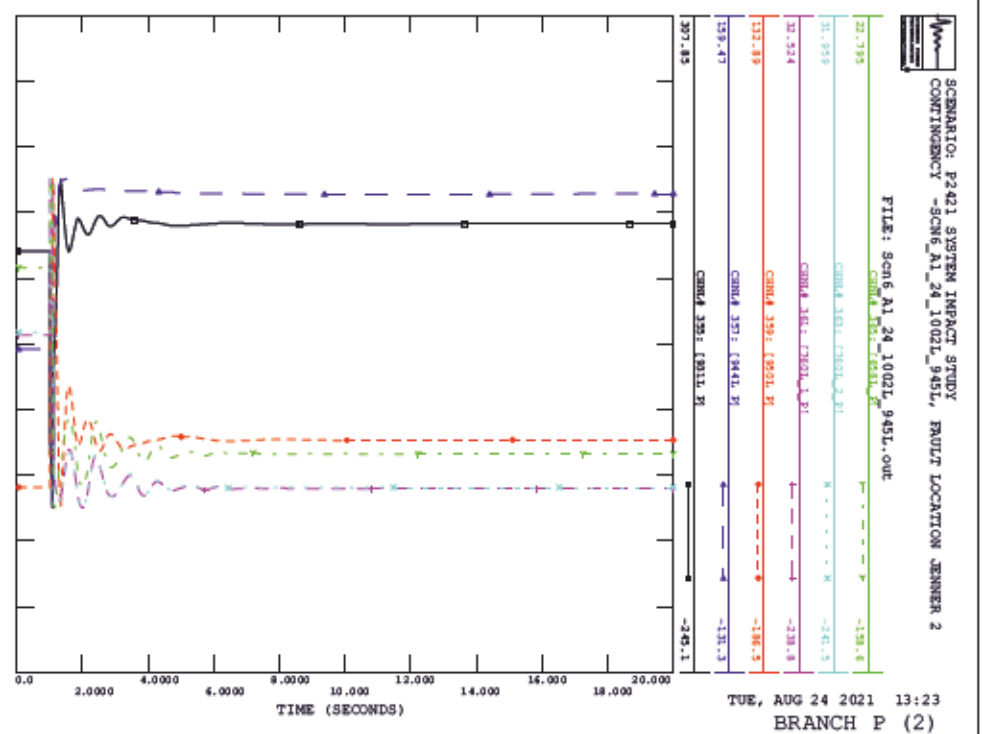
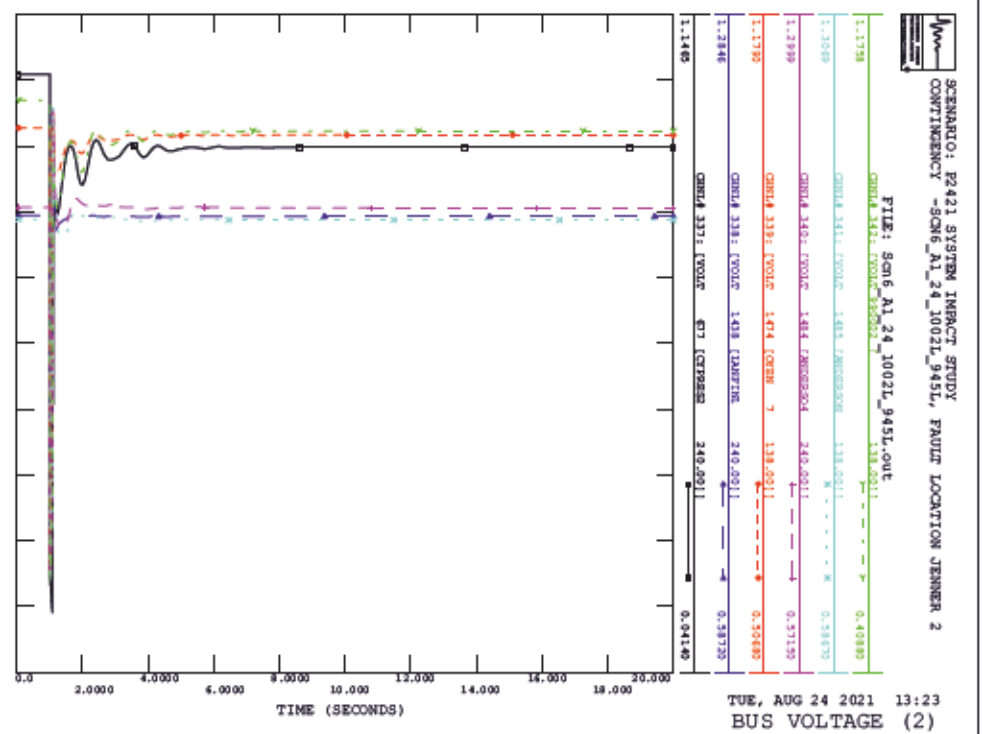


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_24_1002L_945L, FAULT LOCATION JENNER 2

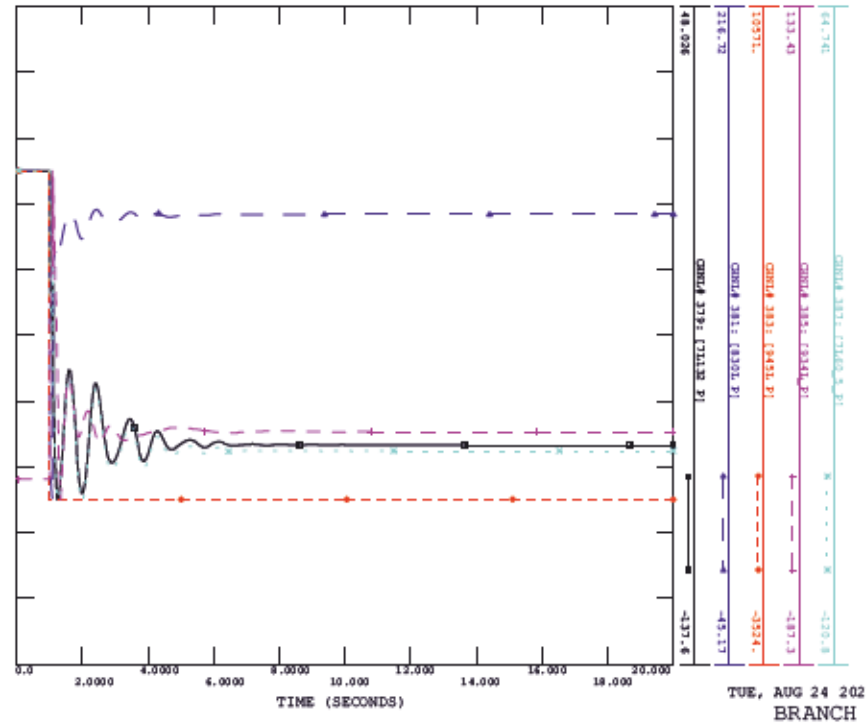


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_24_1002L_945L, FAULT LOCATION JENNER 2
FILE: SCM6_A1_24_1002L_945L.out
TUE, AUG 24 2021 13:23
REACTIVE POWER



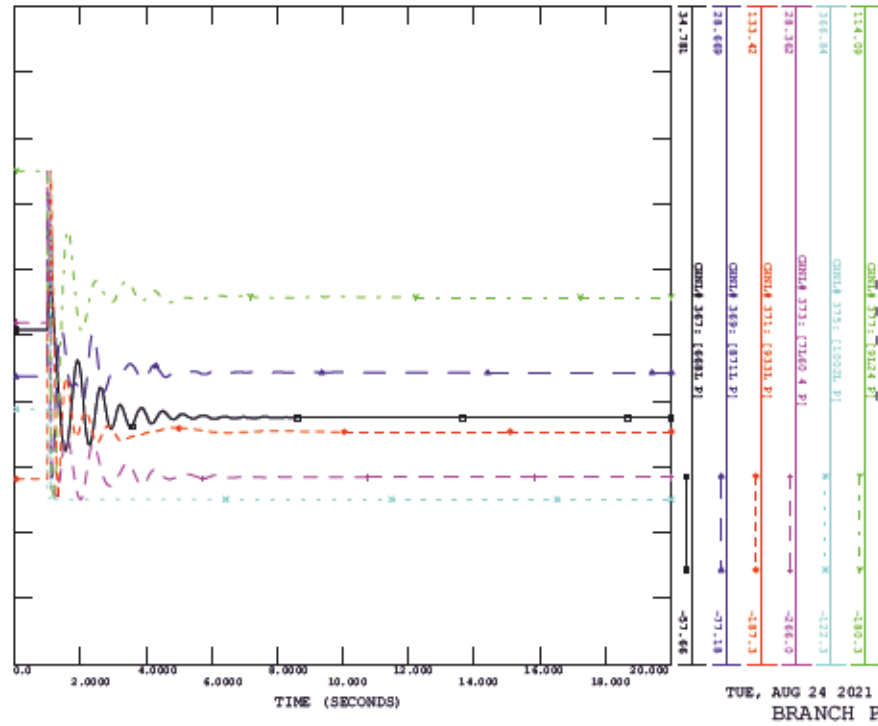


SCENARIO: P2421 SYSTEM IMPACT STUDY
 CONTINGENCY -SCM6_AI_24_1002L_945L, FAULT LOCATION JENNER 2
 FILE: scm6_AI_24_1002L_945L.out



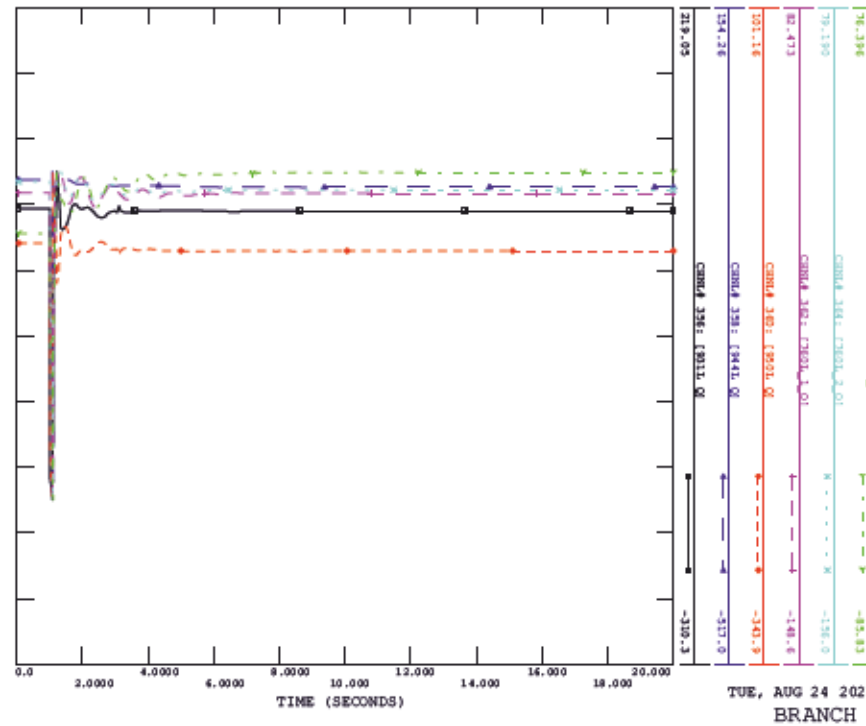
TUE, AUG 24 2021 13:23
 BRANCH P (4)

SCENARIO: P2421 SYSTEM IMPACT STUDY
 CONTINGENCY -SCM6_AI_24_1002L_945L, FAULT LOCATION JENNER 2
 FILE: scm6_AI_24_1002L_945L.out



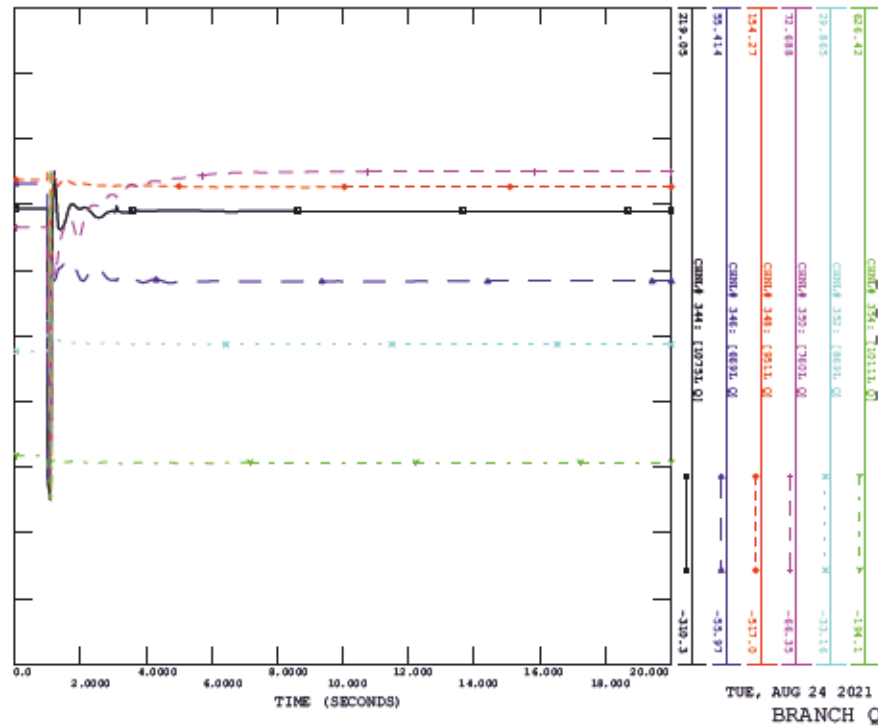
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SCENARIO: P2421 SYSTEM IMPACT STUDY
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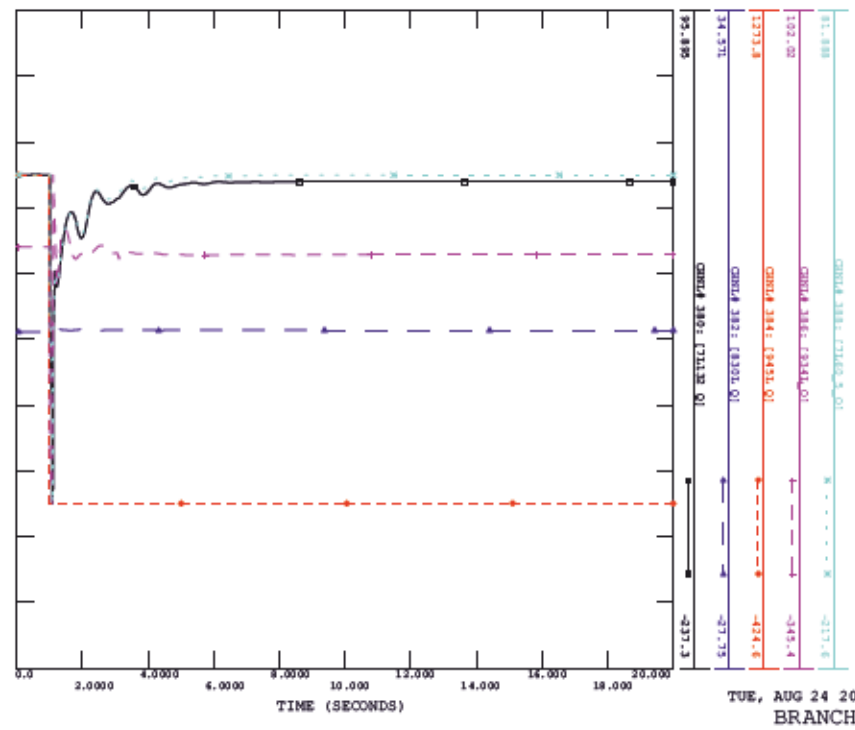
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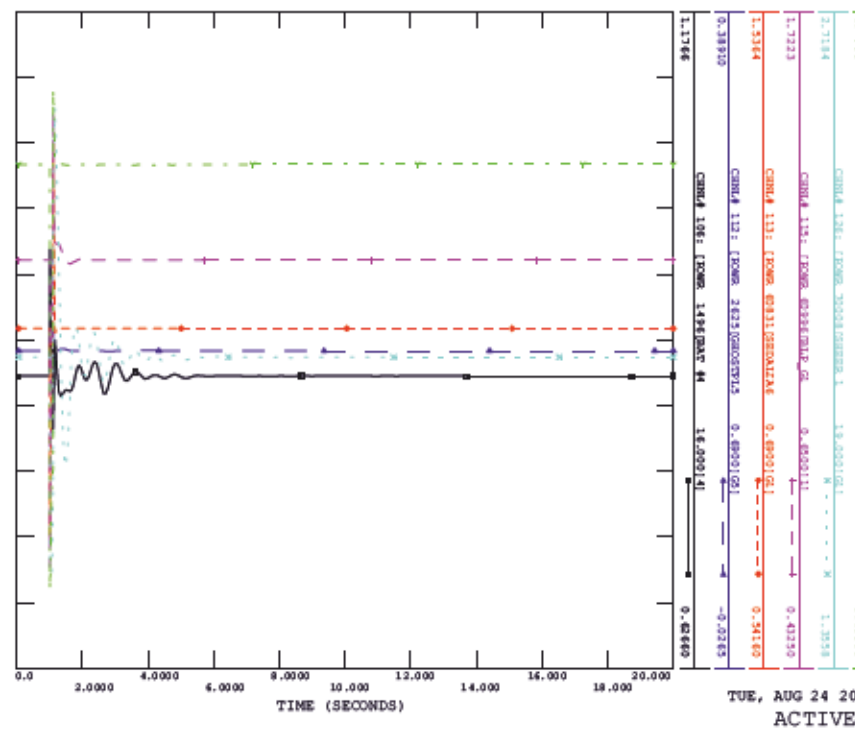
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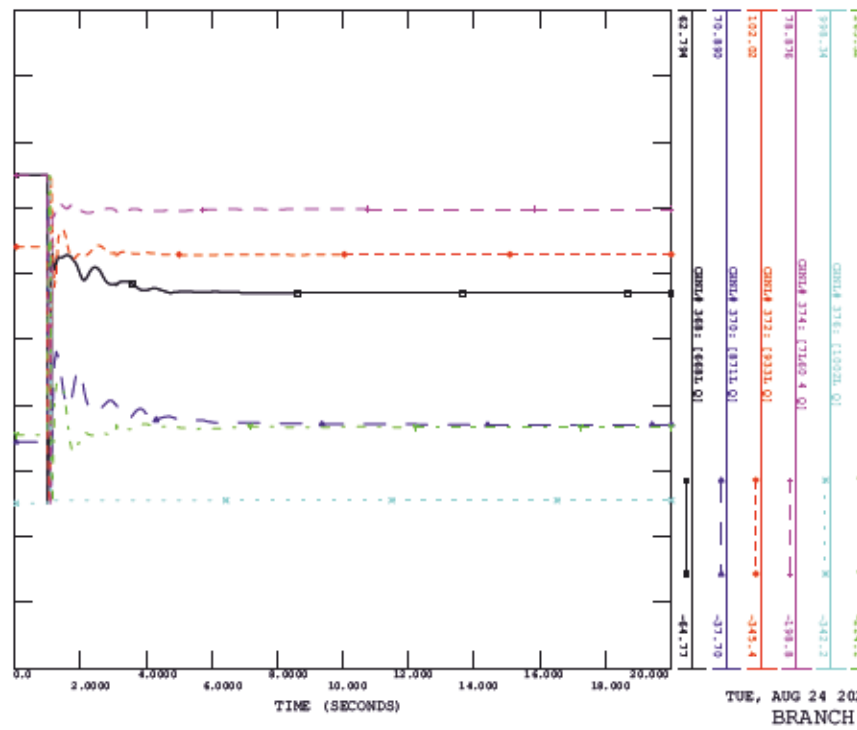
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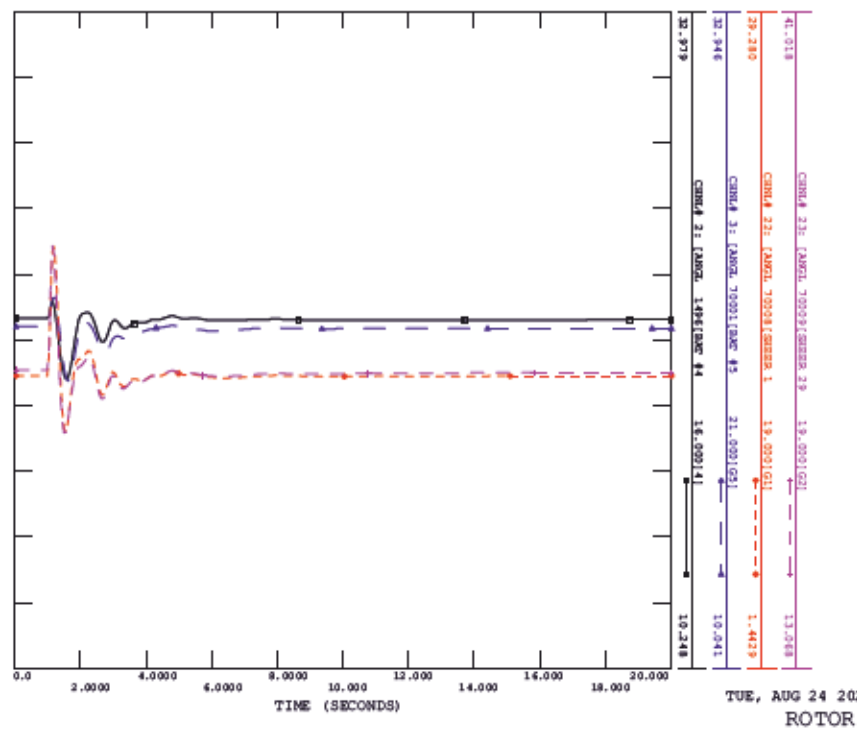
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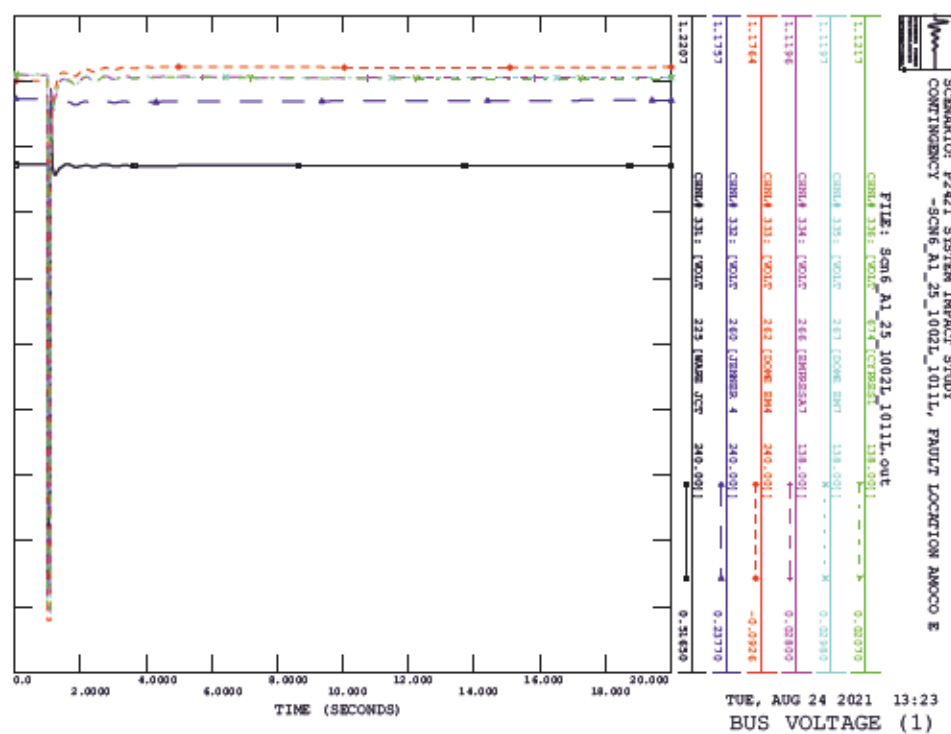
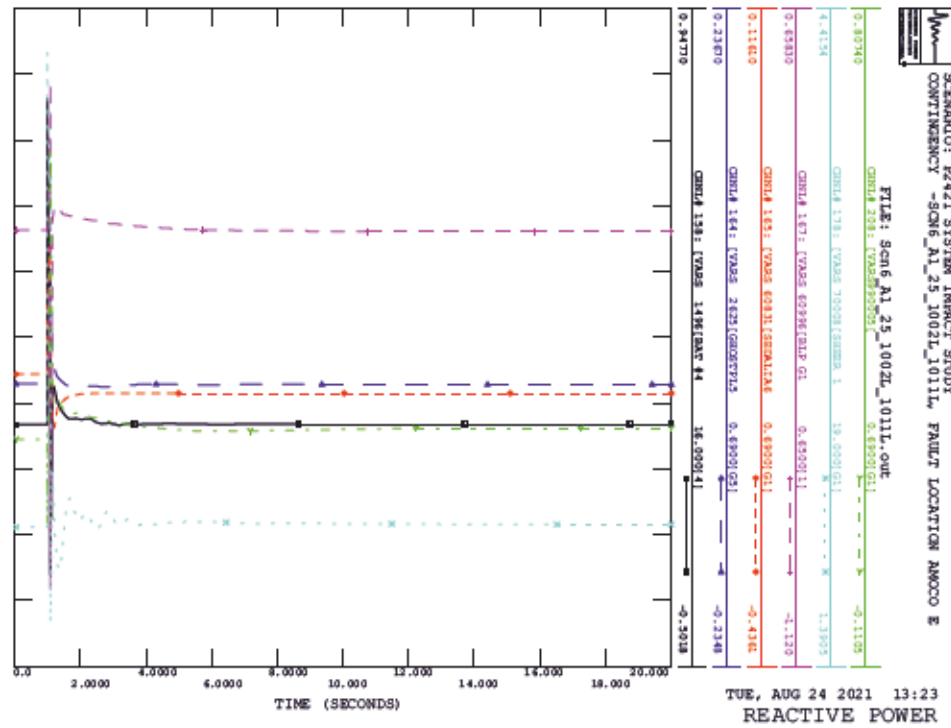
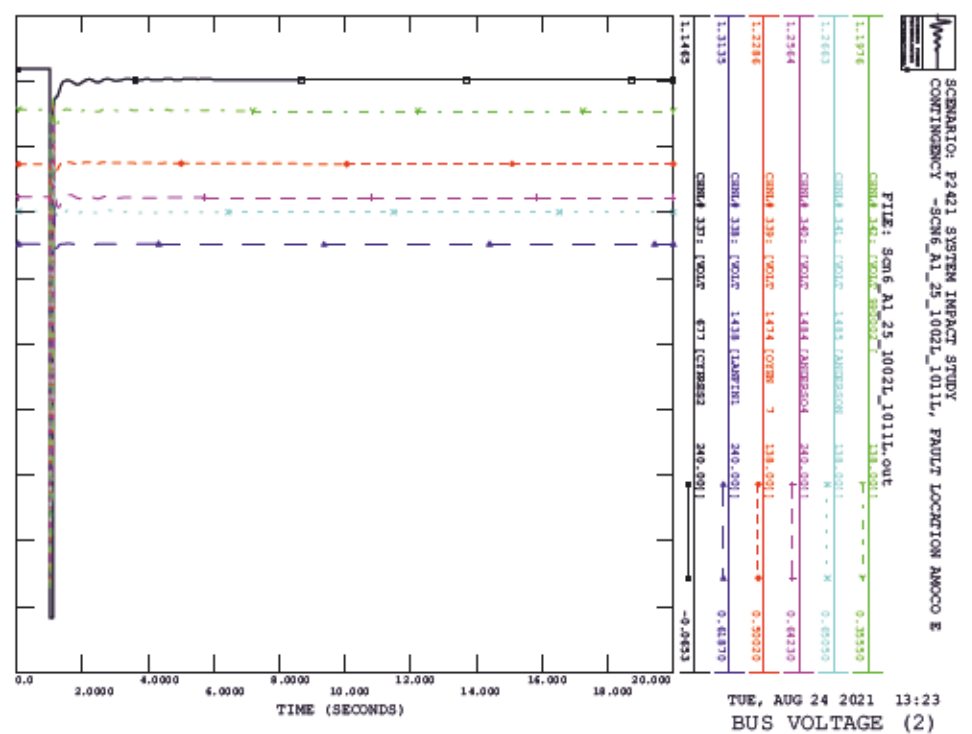
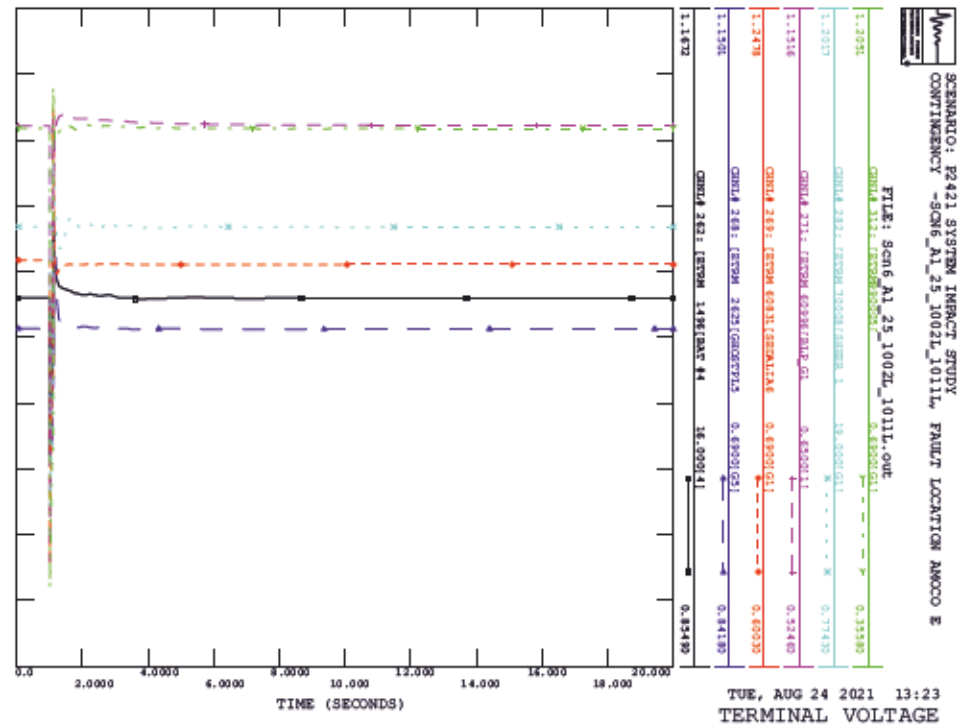
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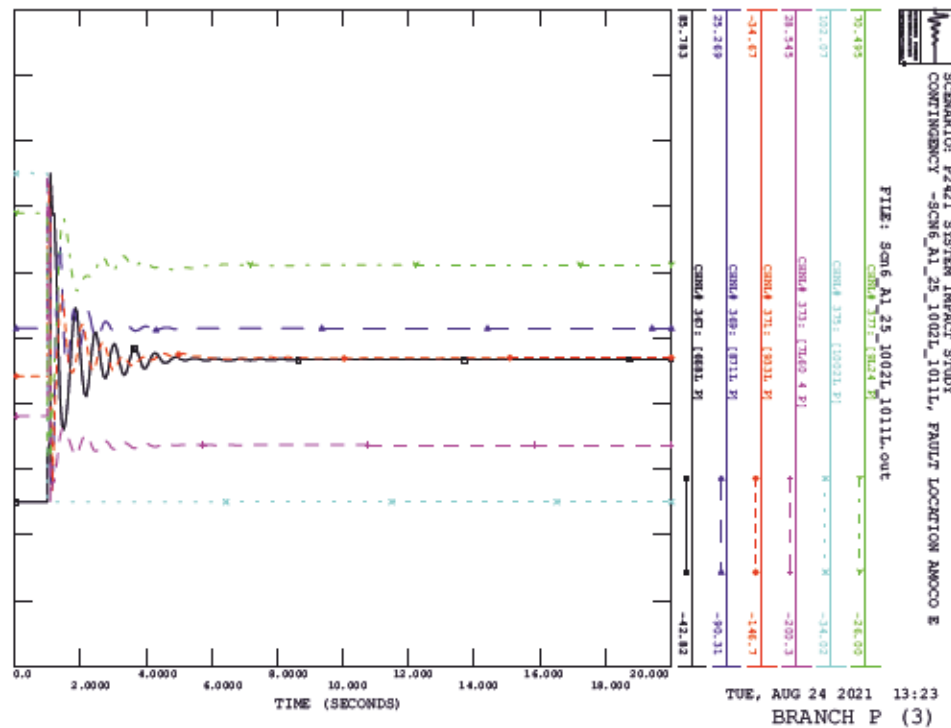
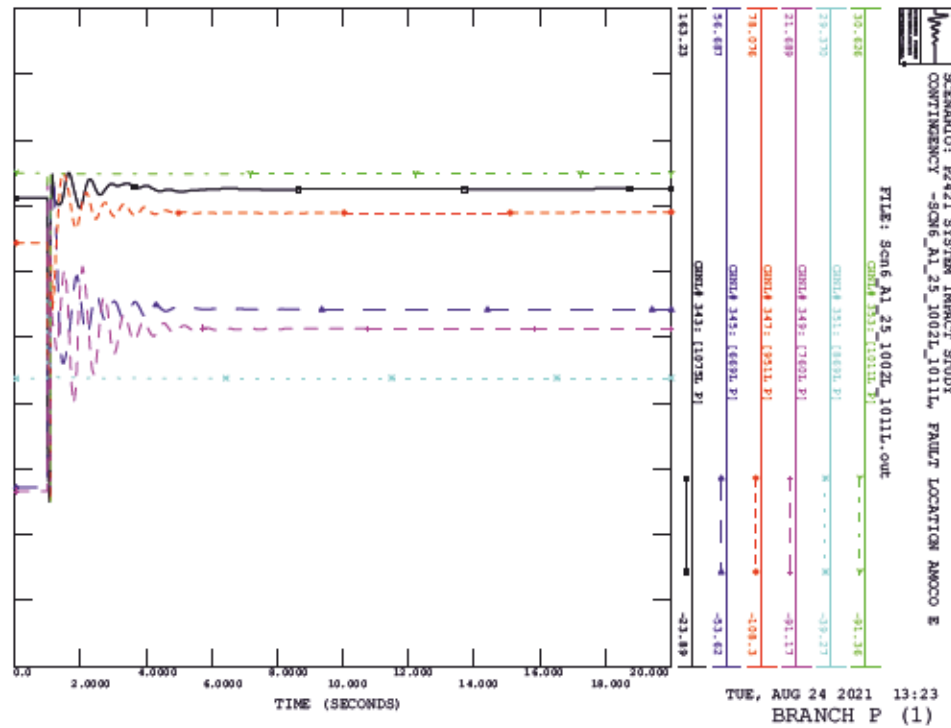
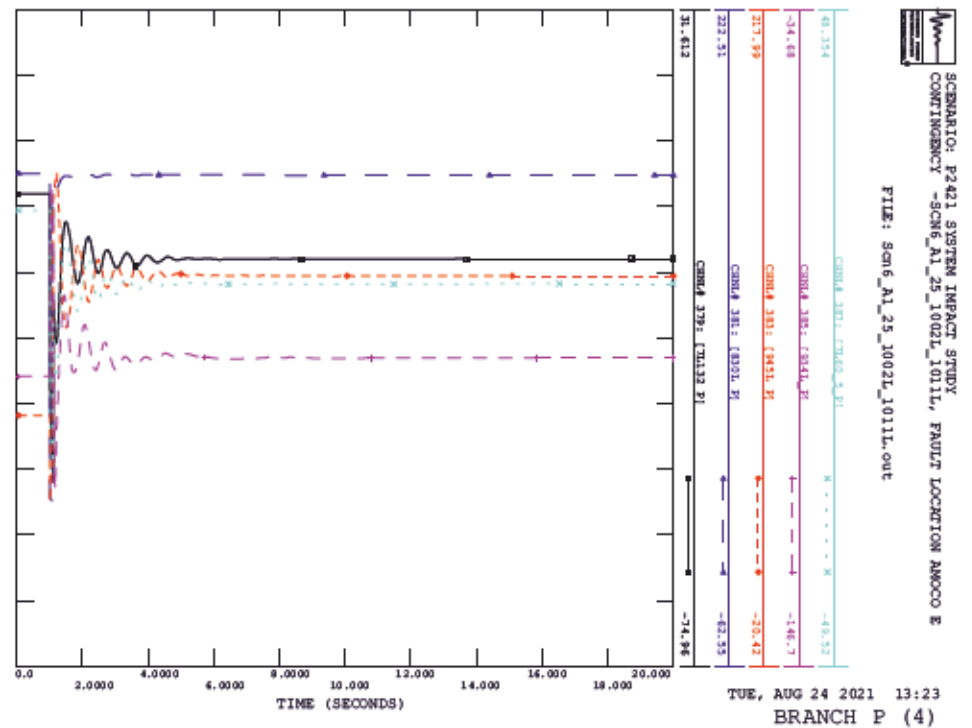
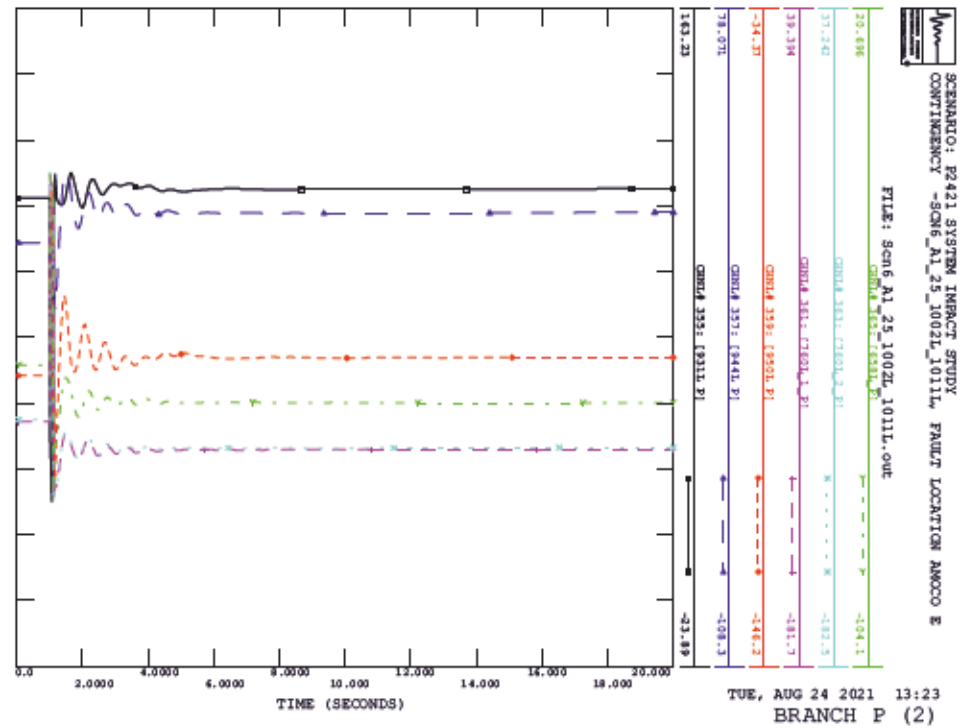


SCENARIO: P2421 SYSTEM IMPACT STUDY
CONTINGENCY -SCM6_A1_25_1002L_1011L, FAULT LOCATION ANOCO E

FILE: scm6_A1_25_1002L_1011L.out







Attachment A5

Dynamic Data and Assumptions

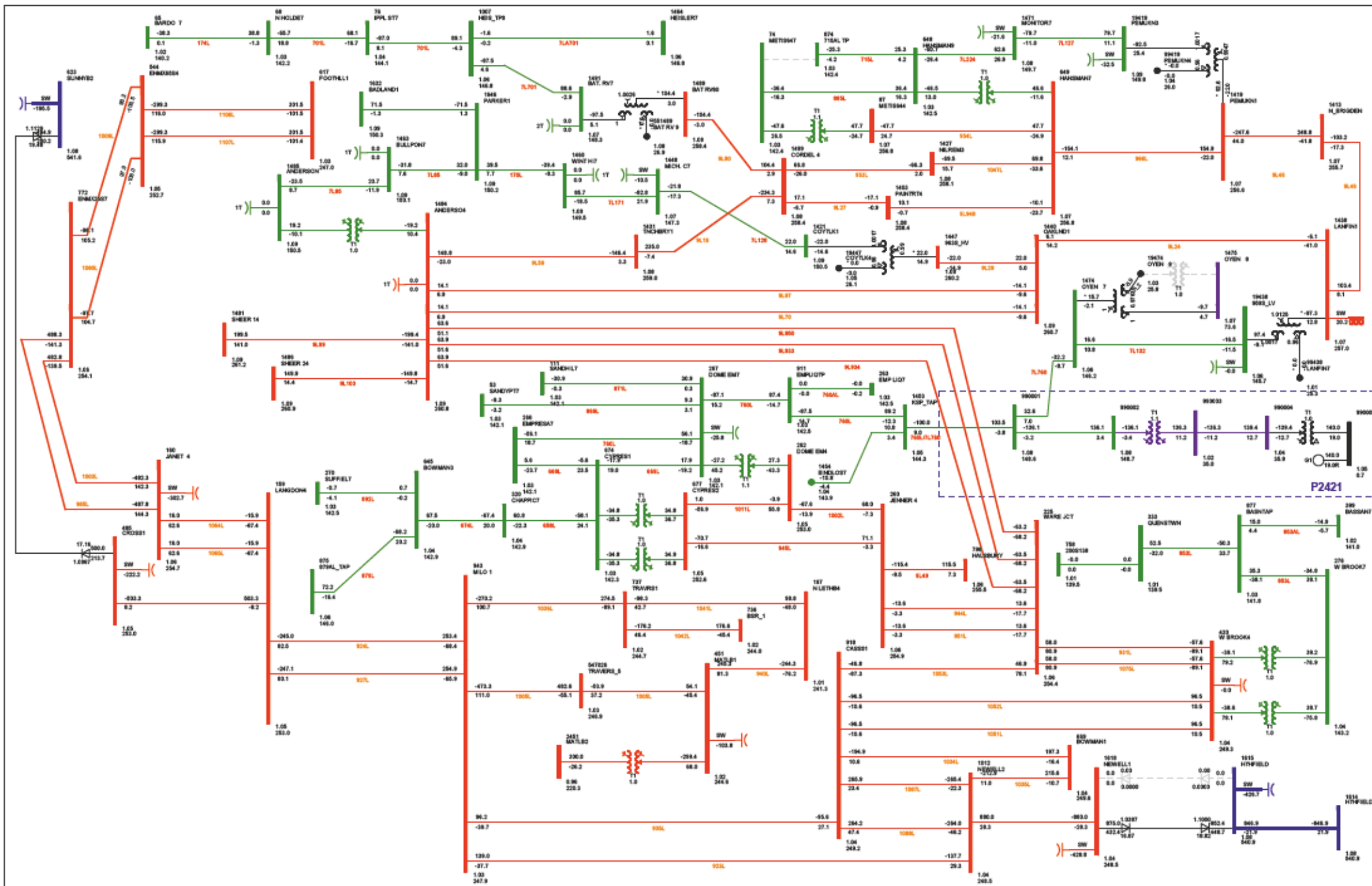
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0
0.02 10.0 0.9 0.5 1.1 1.1 0.90 0.00 -1.0 0.01 0 99 -99 1/

560051 'USRMDL' G1 'RECAU1' 102 0 6 45 6 9
0 0 1 0 0 0
0.90 1.1 0.01 -0.10 0.10 1 1.0 -1.0 1.00 0 0 0
0.01 0.60 -0.60 1.10 0.9 0.3 5.0 0.5 0.0 0
0.01 99 -99 1 0 1.0 0.01
0.00 0.01 0.49 0.01 0.5 1 1.2 1
0.00 0.01 0.49 0.01 0.5 1 1.2 1/

560051 'USRMDL' G1 'REPCAU1' 107 0 7 27 7 9
894 894 872 '80' 1 1 1
0.05 0.5 3 0 0.05 0.9 0 0 0 0.05 -0.05 0 0 0.6 -0.6
0.5 0.25 0.25 -0.0006 0.0006 999 -999 1 0 0.5 20 20/
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Attachment A6

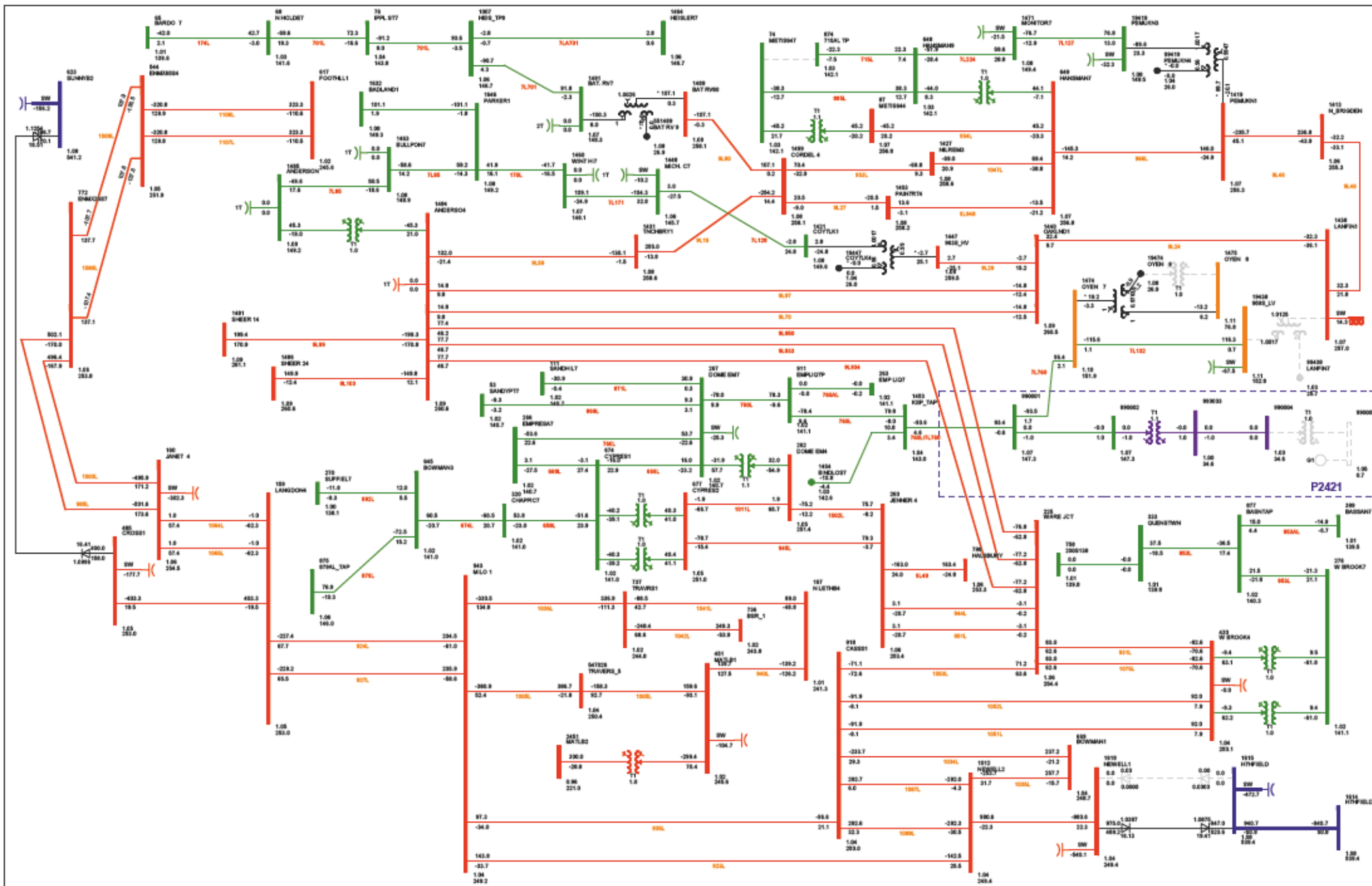
Post-Mitigation Power Flow Diagrams



P2421 RESC Big Sky MPC Solar
 DC Input=455.3 MW Sack Input=150.0 MW MATL Input=300.0 MW
 MH Input= 21.3 MW

FIGURE H-1-1-N-0: NORMAL OPERATION
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

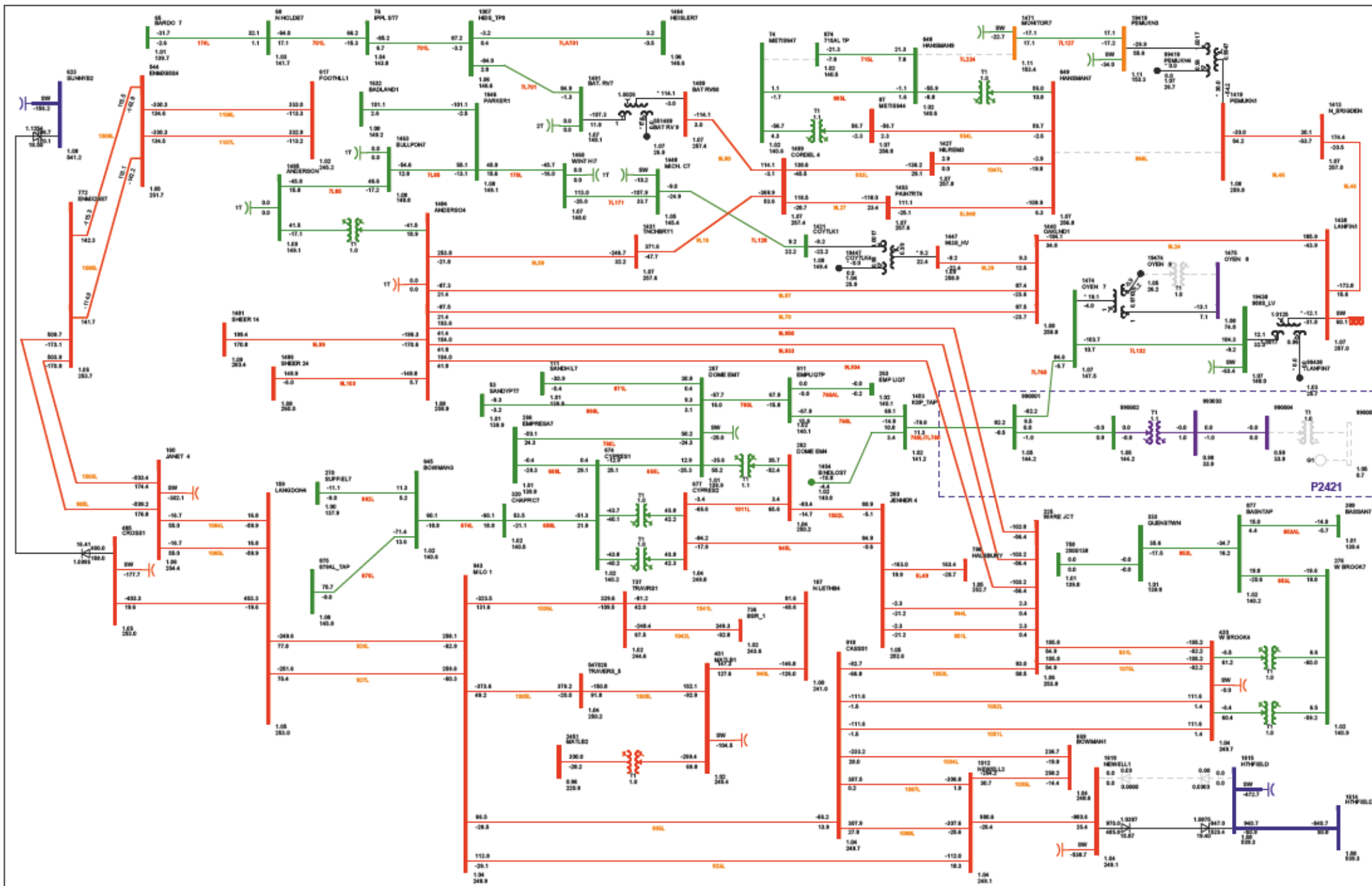
Rev: 1/15/2021
 Project: P2421
 Location: Big Sky
 Scale: 1:1000
 Date: 08/26/2021



P2421 RESC Big Sky MPC Solar
 DC Input:-468.3 MW Sack Input:-150.0 MW MATL Input:-300.0 MW
 MH Input:-42.9 MW

FIGURE I2-1-2 N-1: A8683T1 (LANFIRE 9688 TRANSFORMER T1) WITH RAS
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

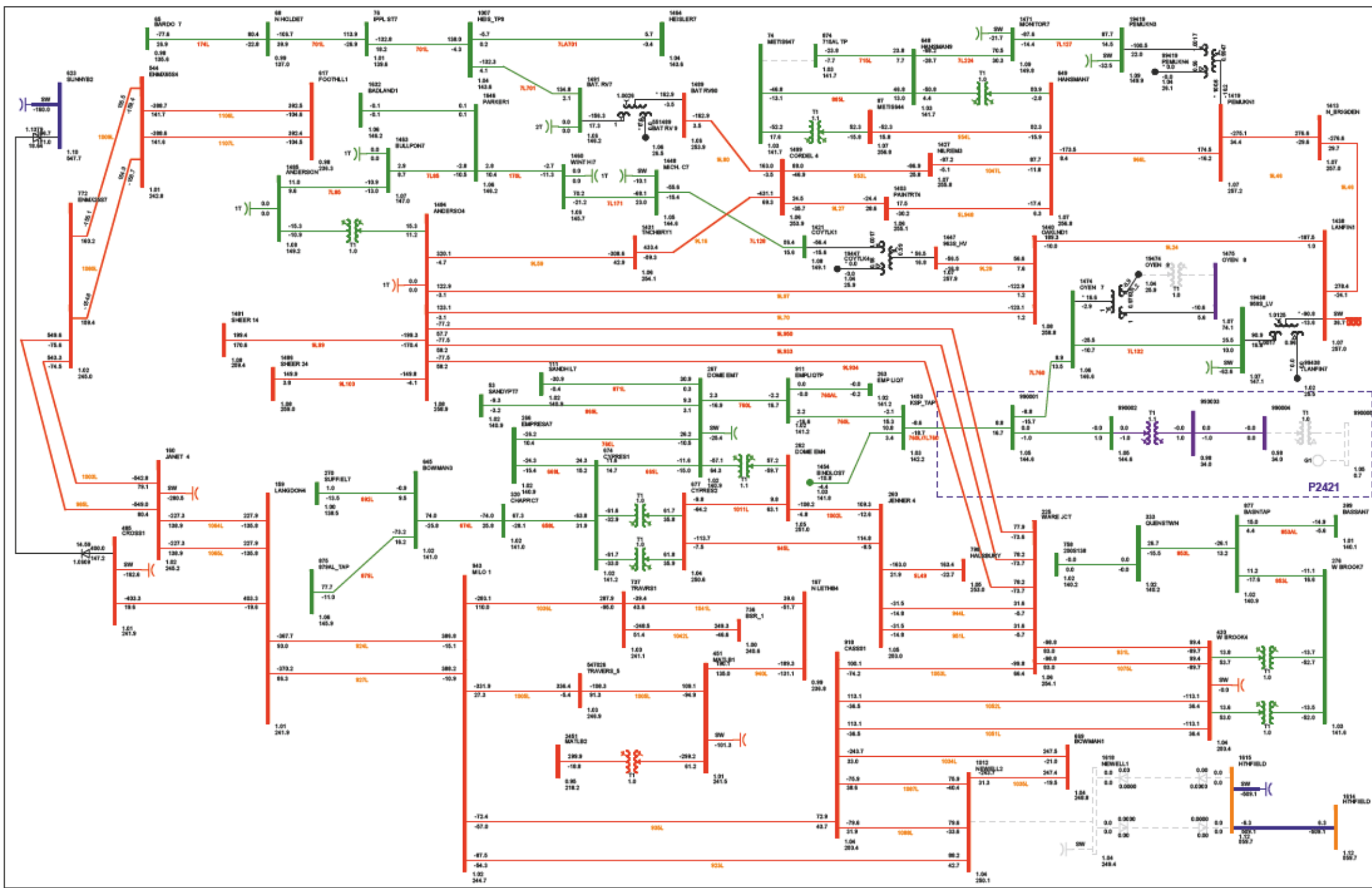
Rev: 1/10/2021
 Project: P2421
 Drawn: [Name]
 Checked: [Name]
 Approved: [Name]



P2421 RESC Big Sky MPC Solar
 DC Inport: 478.7 MW Sack Inport: 150.0 MW MATL Inport: 300.0 MW
 MH Inport: 42.9 MW

FIGURE I2-1-3 N-1: 9L988 (PEMUKAN 9328 TO HANSMAN LAKE 6508) WITH RAS
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

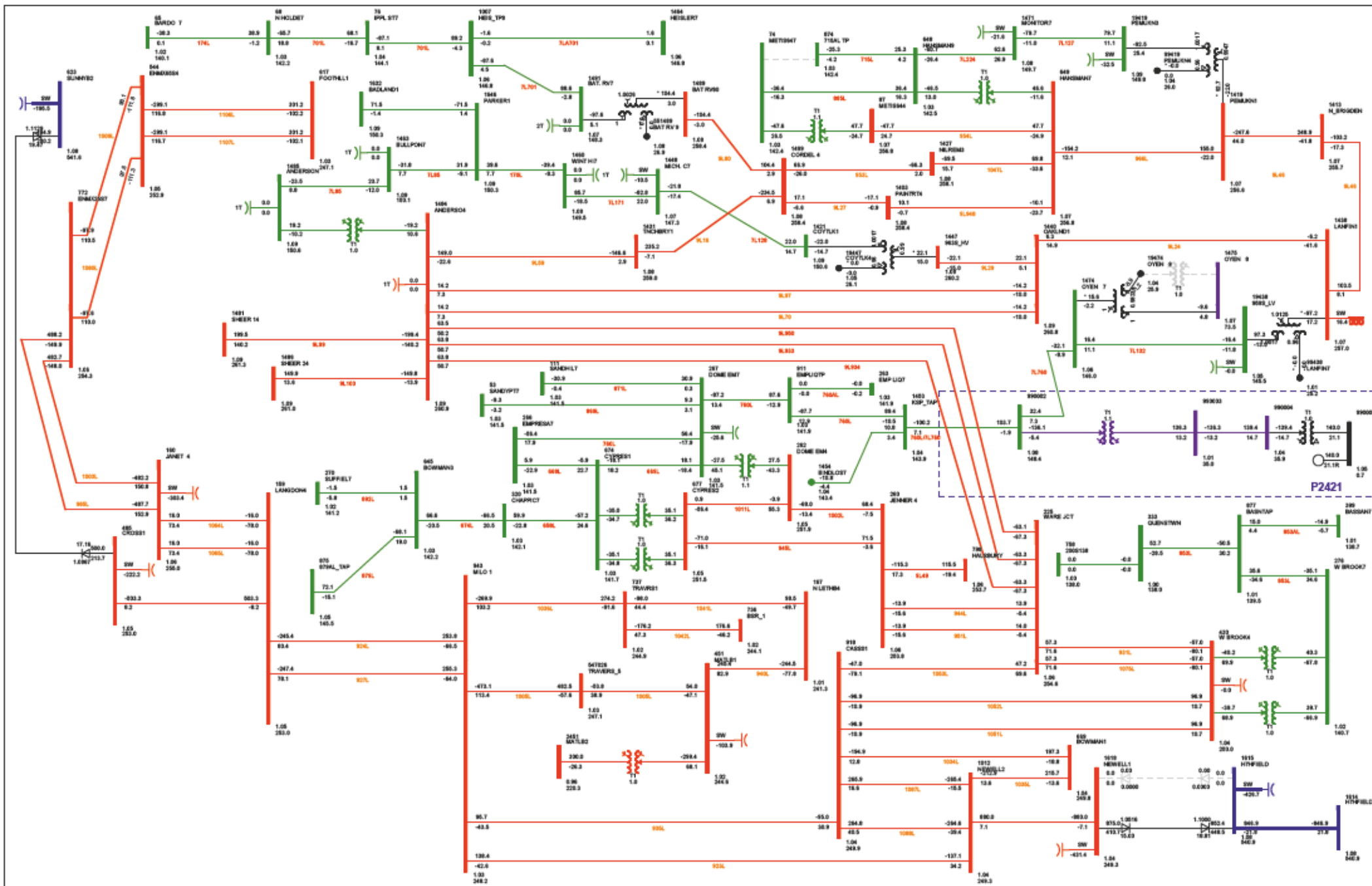
Rev: 1/15/2021
 Project: P2421
 1/15/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Inport: 044.3 MW Sack Inport: 150.0 MW MATL Inport: 299.9 MW
 MH Inport: 42.9 MW

FIGURE I2-1-4 N-1: EATL WITH RAS
 2023 SUMMER PEAK (POST-A1)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

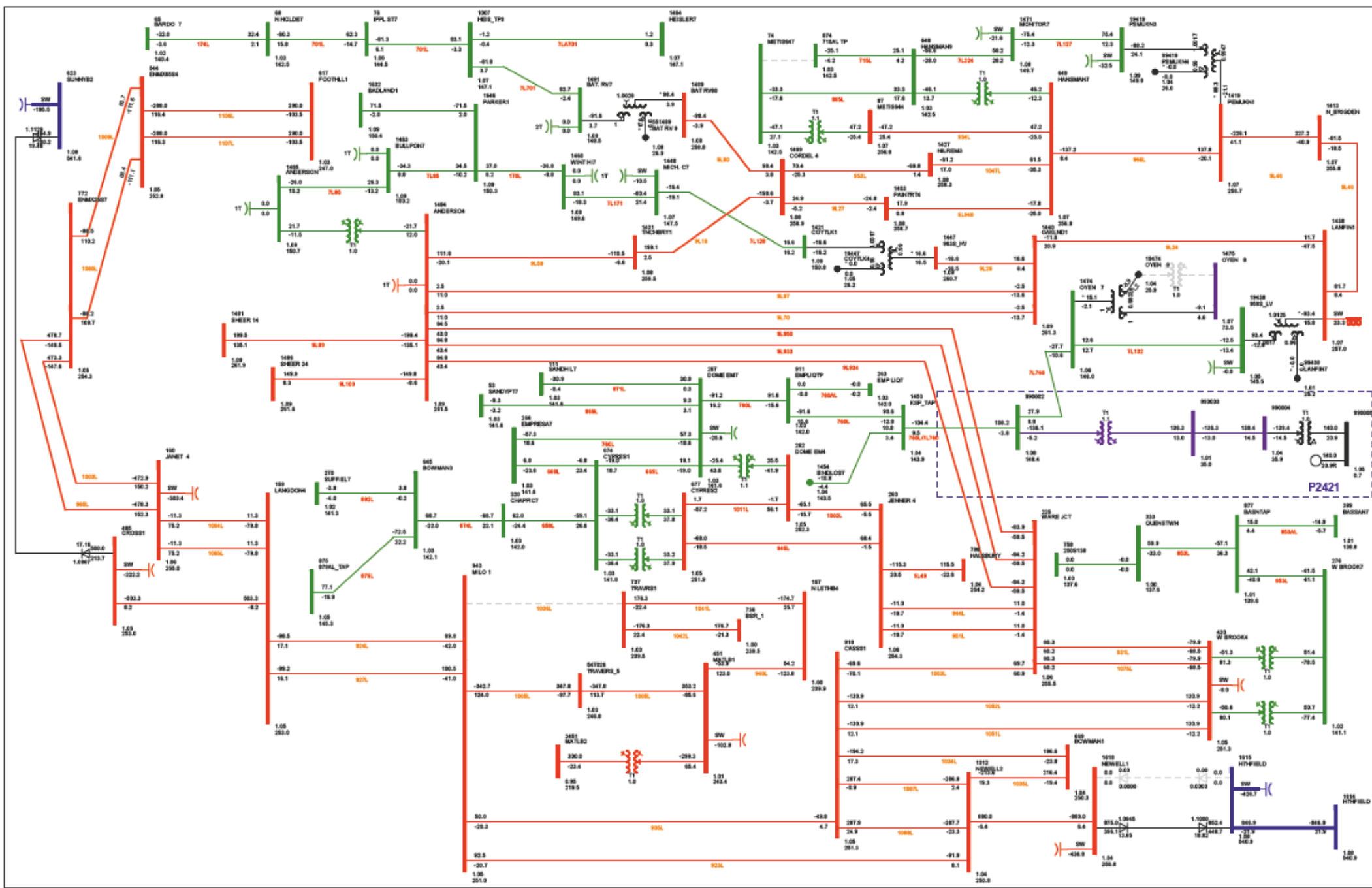
Rev: 1/16/2021
 Project: P2421
 Location: Big Sky
 Date: 08/26/2021



P2421 RESC Big Sky MPC Solar
 DC Input=455.0 MW Sack Input=150.0 MW MATL Input=300.0 MW
 MH Input= 21.3 MW

FIGURE B-1-1-N-0: NORMAL OPERATION
 2023 SUMMER PEAK (POST-A2)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

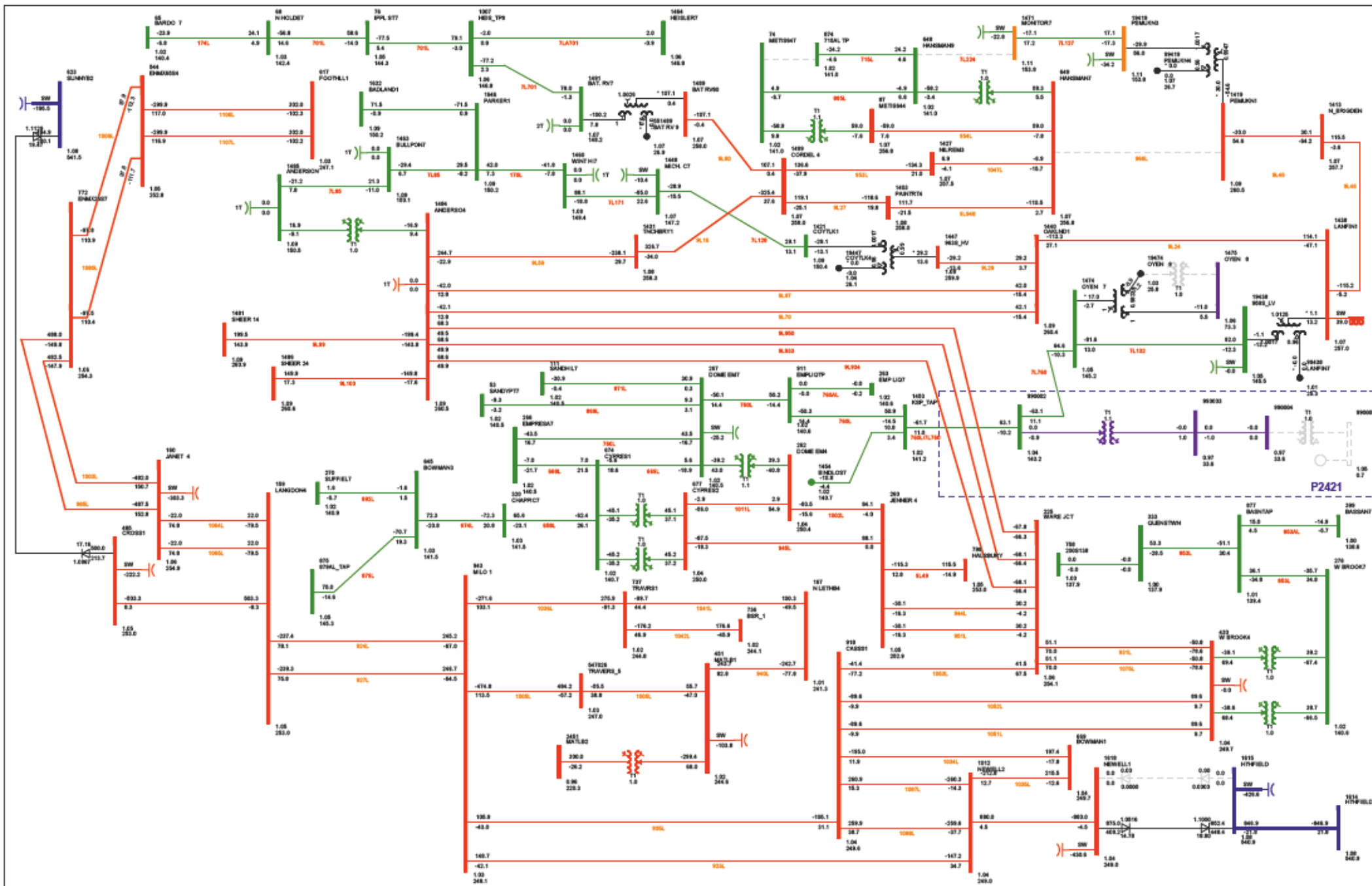
Rev: 1/15/2021
 Project: P2421
 Location: Big Sky
 Scale: 1:1000
 Date: 08/26/2021



P2421 RESC Big Sky MPC Solar
 DC Input=665.6 MW Sack Input=150.0 MW MATL Input=300.0 MW
 MH Input=22.4 MW

FIGURE B-1-3 N-1: 1038L (MLO 3688 TO TRAVERS 6648) WITH RAS
 2023 SUMMER PEAK (POST-A2)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

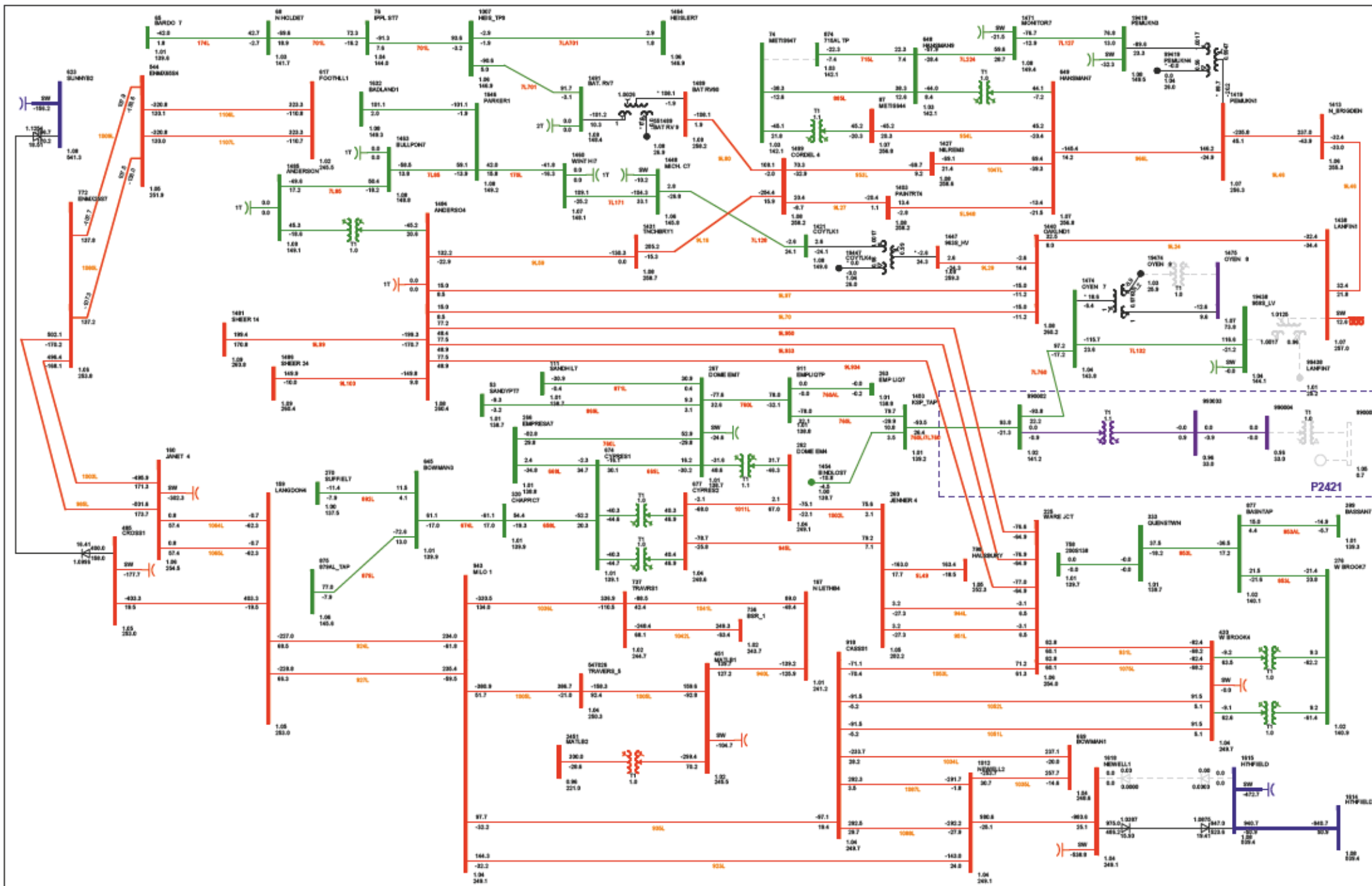
Rev: 1/16/2021
 Project: P2421
 Location: Big Sky MPC Solar
 Scale: 1:1000
 Author: [Name]
 Date: 08/26/2021



P2421 RESC Big Sky MPC Solar
 DC Input=594.2 MW Sack Input=150.0 MW MATL Input=300.0 MW
 MH Input=22.3 MW

FIGURE B-1-4 N-1: 9L988 (PEMUKAN 9328 TO HANSMAN LAKE 6508) WITH RAS
 2023 SUMMER PEAK (POST-A2)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

Rev: 1/10/2021
 Project: P2421
 1/10/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM



P2421 RESC Big Sky MPC Solar
 DC Input:-470.0 MW Sack Input:-150.0 MW MATL Input:-300.0 MW
 MH Input:-42.9 MW

FIGURE I4-1-2 N-1: A8683T1 (LANFINE 9688 TRANSFORMER T1) WITH RAS
 2023 SUMMER PEAK (POST-A2)
 PRINTED ON WEDNESDAY 26. AUGUST 2021

Rev: 1/15/2021
 Project: P2421
 1/15/2021 10:00:00 AM - 10:00:00 AM - 10:00:00 AM

Attachment A7

Constraint Effective Factors Table

Table H-2: Effective Factor – Alternative 1

Contingency	Line	Power Plant									
		P2421	Ghost Pine	Tilley	P1533 Joss	Sharp Hills	P1898	Halkirk	Brooks Solar	Jenner	P2199
2023 SL HS (Scenario 4)											
A959ST1 (Lanfine 959S Transformer T1)	7L60 (7LA760 Tap to P2421 Tap)	0.8446	0.0093	-0.0064	-0.0101	0.0006	0.8476	0.0029	-0.0059	-0.0111	-0.0099
163ST5 (Amoco Empress 163S Transformer T5)	7L60 (Oyen 767S to P2421 Tap)	0.9055	-0.0005	-0.0002	-0.0004	-0.0008	-0.0036	0.0005	-0.0005	-0.0005	-0.0004
944L_951L (Jenner 275S to Ware Junction 132S)	760L (Amoco Empress 163S to 760AL Tap)	0.1952	0.0085	-0.0920	-0.6282	0.0381	0.0844	0.0129	-0.0220	-0.6074	-0.6234
944L_951L (Jenner 275S to Ware Junction 132S)	658L (Cypress 562S to Chappice Lake 649S)	-0.2304	-0.0100	0.0831	-0.5025	-0.0450	-0.0995	-0.0159	0.0257	-0.4880	-0.4950
944L_951L (Jenner 275S to Ware Junction 132S)	760L/7L760 (7LA760 Tap to 760AL Tap)	0.1949	0.0085	-0.0923	-0.6327	0.0380	0.0842	0.0129	-0.0220	-0.6113	-0.6284
944L_951L (Jenner 275S to Ware Junction 132S)	7L60 (7LA760 Tap to P2421 Tap)	0.1952	0.0083	-0.0948	-0.6654	0.0379	0.0840	0.0130	-0.0221	-0.6409	-0.6637
2023 SP HS (Scenario 5)											
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	0.8199	0.0074	-0.0070	-0.0102	-0.0005	0.7842	0.0017	-0.0059	-0.0133	-0.0106
A959ST1 (Lanfine 959S Transformer T1)	760L/7L760 (7LA760 Tap to 760AL Tap)	0.8185	0.0074	-0.0070	-0.0102	-0.0005	0.7828	0.0017	-0.0059	-0.0132	-0.0106
A959ST1 (Lanfine 959S Transformer T1)	7L60 (7LA760 Tap to P2421 Tap)	0.8194	0.0075	-0.0071	-0.0106	-0.0003	0.7826	0.0017	-0.0057	-0.0124	-0.0109
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	-0.0737	-0.0486	-0.0668	-0.0930	-0.0667	-0.0746	-0.0511	-0.0751	-0.0916	-0.0933
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	0.1458	0.0227	0.0738	0.0861	0.2713	0.2013	-0.0351	0.0711	0.0833	0.0861
853L (Queenstown 504S to West Brooks 28S)	1005L (Milo 356S to P2009 Tap)	-0.0537	-0.0354	-0.0544	-0.0682	-0.0486	-0.0544	-0.0373	-0.0608	-0.0668	-0.0684
EATL	174L (Bardo 197S to North Holden 395S)	0.0581	0.0591	0.0495	0.0537	0.0721	0.0665	0.0830	0.0491	0.0525	0.0536
163ST5 (Amoco Empress 163S Transformer T5)	7L60 (Oyen 767S to P2421 Tap)	0.9035	-0.0007	-0.0003	-0.0005	-0.0024	-0.0068	-0.0004	-0.0004	-0.0006	-0.0005
2023 SP HW (Scenario 6)											
1002L (Jenner 275S to Amoco Empress 163S)	7L60 (7LA760 Tap to P2421 Tap)	0.3803	0.0077	-0.0480	-0.0640	0.0647	0.1566	0.0174	-0.0281	-0.0636	-0.0639
945L (Jenner 275S to Cypress 562S)	7L60 (7LA760 Tap to P2421 Tap)	0.3776	0.0077	-0.0484	-0.0632	0.0642	0.1554	0.0173	-0.0281	-0.0628	-0.0631
949L (Jenner 275S to Halsbury 306S)	7L60 (7LA760 Tap to P2421 Tap)	0.4040	0.0077	-0.0446	0.0000	0.0682	0.1662	0.0180	-0.0288	-0.0706	-0.0710
1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newell 2075S)	0.1782	0.1118	0.2514	0.2412	0.1575	0.1809	0.1258	0.2567	0.2386	0.2406
9L24 (Oakland 946S to Lanfine A959S)	7L60 (7LA760 Tap to P2421 Tap)	0.4744	-0.0007	-0.0644	-0.0892	0.1779	0.2867	0.0318	-0.0520	-0.0885	-0.0892

Contingency	Line	Power Plant									
		P2421	Ghost Pine	Tilley	P1533 Joss	Sharp Hills	P1898	Halkirk	Brooks Solar	Jenner	P2199
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	0.8028	0.0070	-0.0050	-0.0120	-0.0012	0.7688	0.0011	-0.0050	-0.0116	-0.0123
A959ST1 (Lanfine 959S Transformer T1)	760L/7L760 (7LA760 Tap to 760AL Tap)	0.8002	0.0070	-0.0051	-0.0119	-0.0011	0.7650	0.0011	-0.0050	-0.0115	-0.0122
A959ST1 (Lanfine 959S Transformer T1)	7L60 (7LA760 Tap to P2421 Tap)	0.7989	0.0072	-0.0061	-0.0117	-0.0008	0.7561	0.0013	-0.0052	-0.0115	-0.0119
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	-0.0738	-0.0477	-0.0622	-0.0927	-0.0665	-0.0746	-0.0518	-0.0692	-0.0914	-0.0929
9L966 (Pemukan 932S to Hansman Lake 650S)	7L60 (7LA760 Tap to P2421 Tap)	0.4202	0.0096	-0.0382	-0.0635	0.0932	0.1850	0.0145	-0.0229	-0.0630	-0.0635
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	0.1469	0.0225	0.0744	0.0856	0.2617	0.1982	-0.0360	0.0713	0.0851	0.0855
912L (Nevis 766S to Red Deer 63S)	174L (Bardo 197S to North Holden 395S)	0.0959	0.1215	0.0787	0.0873	0.1175	0.1093	0.1414	0.0777	0.0868	0.0873
912L (Nevis 766S to Red Deer 63S)	7L60 (7LA760 Tap to P2421 Tap)	0.4205	0.0310	-0.0342	-0.0590	0.0852	0.1828	0.0397	-0.0189	-0.0585	-0.0590
9L20 (Nevis 766S to Cordel 755S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	0.0124	-0.1155	0.0175	0.0184	0.0130	0.0127	0.0132	0.0173	0.0183	0.0184
9L20 (Nevis 766S to Cordel 755S)	7L60 (7LA760 Tap to P2421 Tap)	0.4169	0.0071	-0.0371	-0.0623	0.0816	0.1792	0.0362	-0.0217	-0.0618	-0.0622
9L46 (Lanfine 959S to Pemukan 932S)	7L60 (7LA760 Tap to P2421 Tap)	0.4381	0.0124	-0.0287	-0.0525	0.0000	0.2109	0.0096	-0.0137	-0.0520	-0.0524
EATL	174L (Bardo 197S to North Holden 395S)	0.0541	0.0550	0.0469	0.0502	0.0653	0.0612	0.0772	0.0464	0.0500	0.0502
EATL	701L (North Hoden 395S to Strome 223S)	0.0513	0.0559	0.0460	0.0489	0.0585	0.0563	0.0762	0.0456	0.0487	0.0489
EATL	7L171 (Michichi Creek 802S to Wintering Hills 804S)	0.0056	-0.1142	0.0113	0.0116	0.0043	0.0047	0.0006	0.0112	0.0116	0.0116
163ST5 (Amoco Empress 163S Transformer T5)	7L60 (Oyen 767S to P2421 Tap)	0.9148	-0.0016	-0.0003	-0.0010	-0.0053	-0.0132	-0.0013	-0.0005	-0.0010	-0.0010
658L/674L (Cypress 562S to Bowmanton 244S)	7L60 (7LA760 Tap to P2421 Tap)	0.4016	0.0067	-0.0246	-0.0793	0.0669	0.1651	0.0168	-0.0252	-0.0787	-0.0793
933L_934L Anderson 801S to Ware Junction 132S	7L60 (7LA760 Tap to P2421 Tap)	0.4022	0.0189	-0.0571	-0.0842	0.0805	0.1754	0.0298	-0.0420	-0.0836	-0.0841
1002L/1011L (Amoco Empress 163S to Cypress 562S to Jenner 275S)	7L60 (7LA760 Tap to P2421 Tap)	0.3809	0.0078	-0.0500	-0.0629	0.0649	0.1572	0.0175	-0.0284	-0.0624	-0.0628

Table H-3: Effective Factor – Alternative 2

Contingency	Line	Power Plant									
		P2421	Ghost Pine	Tilley	P1533 Joss	Sharp Hills	P1898	Halkirk	Brooks Solar	Jenner	P2199
2023 SL HS (Scenario 4)											
A959ST1 (Lanfine 959S Transformer T1)	7L60 (7LA760 Tap to P2421)	0.8429	0.0093	-0.0064	-0.0101	0.0006	0.8467	0.0029	-0.0058	-0.0110	-0.0099
7L60 (Oyen 767S to P2421)	7L60 (7LA760 Tap to P2421)	0.9038	0.0000	0.0012	0.0014	0.0002	0.0003	0.0003	-0.0002	0.0004	0.0016
760L/7L60 (Amoco Empress 163S to Oyen 767S)	7L60 (Oyen 767S to P2421)	0.9072	-0.0004	-0.0002	-0.0003	-0.0008	-0.0039	0.0005	-0.0004	-0.0005	-0.0002
163ST5 (Amoco Empress 163S Transformer T5)	7L60 (Oyen 767S to P2421)	0.9066	-0.0004	-0.0002	-0.0003	-0.0007	-0.0033	0.0004	-0.0004	-0.0005	-0.0003
944L_951L (Jenner 275S to Ware Junction 132S)	760L (Amoco Empress 163S to 760AL Tap)	0.1915	0.0083	-0.0906	-0.6280	0.0371	0.0823	0.0126	-0.0215	-0.6065	-0.6240
944L_951L (Jenner 275S to Ware Junction 132S)	658L (Cypress 562S to Chappice Lake 649S)	-0.2282	-0.0098	0.0826	-0.5039	-0.0443	-0.0977	-0.0156	0.0252	-0.4889	-0.4969
944L_951L (Jenner 275S to Ware Junction 132S)	760L/7L60 (7LA760 Tap to 760AL Tap)	0.1913	0.0082	-0.0909	-0.6330	0.0370	0.0821	0.0126	-0.0214	-0.6110	-0.6295
944L_951L (Jenner 275S to Ware Junction 132S)	7L60 (7LA760 Tap to P2421)	0.1921	0.0081	-0.0937	-0.6684	0.0370	0.0820	0.0127	-0.0216	-0.6430	-0.6676
2023 SP HS (Scenario 5)											
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	0.8175	0.0073	-0.0070	-0.0102	-0.0005	0.7815	0.0016	-0.0059	-0.0133	-0.0106
A959ST1 (Lanfine 959S Transformer T1)	760L/7L60 (7LA760 Tap to 760AL Tap)	0.8162	0.0073	-0.0070	-0.0102	-0.0005	0.7801	0.0016	-0.0058	-0.0131	-0.0106
A959ST1 (Lanfine 959S Transformer T1)	7L60 (7LA760 Tap to P2421)	0.8179	0.0074	-0.0071	-0.0106	-0.0003	0.7804	0.0017	-0.0057	-0.0124	-0.0108
7L60 (Oyen 767S to P2421)	7L60 (7LA760 Tap to P2421)	0.8973	-0.0001	0.0002	0.0004	-0.0002	0.0000	0.0000	-0.0001	-0.0006	0.0003
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	-0.0738	-0.0489	-0.0665	-0.0935	-0.0670	-0.0748	-0.0514	-0.0749	-0.0920	-0.0939
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	0.1467	0.0228	0.0739	0.0861	0.2715	0.2021	-0.0351	0.0711	0.0834	0.0861
853L (Queenstown 504S to West Brooks 28S)	1005L (Milo 356S to P2009 Tap)	-0.0537	-0.0356	-0.0542	-0.0685	-0.0487	-0.0545	-0.0374	-0.0607	-0.0671	-0.0687
EATL	174L (Bardo 197S to North Holden 395S)	0.0584	0.0592	0.0495	0.0537	0.0721	0.0667	0.0830	0.0491	0.0526	0.0537
760L/7L60 (Amoco Empress 163S to Oyen 767S)	7L60 (Oyen 767S to P2421)	0.9028	-0.0007	-0.0003	-0.0005	-0.0023	-0.0064	-0.0004	-0.0004	-0.0006	-0.0005
163ST5 (Amoco Empress 163S Transformer T5)	7L60 (Oyen 767S to P2421)	0.9046	-0.0006	-0.0003	-0.0004	-0.0020	-0.0054	-0.0004	-0.0003	-0.0005	-0.0005
2023 SP HW (Scenario 6)											
1002L (Jenner 275S to Amoco Empress 163S)	7L60 (7LA760 Tap to P2421)	0.3863	0.0079	-0.0476	-0.0636	0.0647	0.1585	0.0174	-0.0280	-0.0632	-0.0635
945L (Jenner 275S to Cypress 562S)	7L60 (7LA760 Tap to P2421)	0.3836	0.0078	-0.0480	-0.0628	0.0642	0.1573	0.0173	-0.0279	-0.0624	-0.0627
949L (Jenner 275S to Halsbury 306S)	7L60 (7LA760 Tap to P2421)	0.4099	0.0078	-0.0443	0.0000	0.0680	0.1679	0.0179	-0.0286	-0.0701	-0.0706
1088L (Cassils 324S to Newell 2075S)	1087L (Cassils 324S to Newell 2075S)	0.1785	0.1117	0.2513	0.2411	0.1573	0.1808	0.1257	0.2566	0.2386	0.2406
9L24 (Oakland 946S to Lanfine A959S)	7L60 (7LA760 Tap to P2421)	0.4792	-0.0006	-0.0640	-0.0889	0.1773	0.2872	0.0317	-0.0517	-0.0882	-0.0889

Contingency	Line	Power Plant									
		P2421	Ghost Pine	Tilley	P1533 Joss	Sharp Hills	P1898	Halkirk	Brooks Solar	Jenner	P2199
A959ST1 (Lanfine 959S Transformer T1)	760L (Amoco Empress 163S to 760AL Tap)	0.7995	0.0062	-0.0041	-0.0123	-0.0017	0.7431	0.0008	-0.0048	-0.0118	-0.0128
A959ST1 (Lanfine 959S Transformer T1)	760L/7L760 (7LA760 Tap to 760AL Tap)	0.7964	0.0063	-0.0042	-0.0122	-0.0016	0.7396	0.0008	-0.0048	-0.0117	-0.0127
A959ST1 (Lanfine 959S Transformer T1)	7L60 (7LA760 Tap to P2421)	0.7961	0.0067	-0.0053	-0.0118	-0.0011	0.7357	0.0011	-0.0050	-0.0115	-0.0121
A959ST1 (Lanfine 959S Transformer T1)	6L09 (Oyen 767S to Hanna 763S)	0.0744	-0.0105	0.0081	0.0122	-0.0006	0.1020	-0.0025	0.0058	0.0121	0.0122
7L60 (Oyen 767S to P2421)	7L60 (7LA760 Tap to P2421)	0.8895	-0.0003	0.0008	-0.0001	-0.0004	-0.0003	-0.0002	0.0001	0.0000	-0.0002
1036L (Milo 356S to Travers 554S)	1005L (Milo 356S to P2009 Tap)	-0.0735	-0.0477	-0.0621	-0.0925	-0.0664	-0.0740	-0.0518	-0.0691	-0.0913	-0.0928
9L966 (Pemukan 932S to Hansman Lake 650S)	7L60 (7LA760 Tap to P2421)	0.4259	0.0097	-0.0379	-0.0632	0.0929	0.1865	0.0145	-0.0228	-0.0626	-0.0631
9L966 (Pemukan 932S to Hansman Lake 650S)	7L224 (Hansman Lake 650S to Monitor 774S)	0.1470	0.0225	0.0743	0.0855	0.2619	0.1989	-0.0360	0.0712	0.0850	0.0854
912L (Nevis 766S to Red Deer 63S)	174L (Bardo 197S to North Holden 395S)	0.0961	0.1216	0.0788	0.0874	0.1176	0.1096	0.1415	0.0778	0.0869	0.0874
912L (Nevis 766S to Red Deer 63S)	7L60 (7LA760 Tap to P2421)	0.4263	0.0310	-0.0339	-0.0586	0.0850	0.1844	0.0396	-0.0188	-0.0581	-0.0586
9L20 (Nevis 766S to Cordel 755S)	7L171 (Michichi Creek 802S to Wintering Hills 804S)	0.0124	-0.1156	0.0175	0.0184	0.0129	0.0127	0.0131	0.0173	0.0183	0.0183
9L20 (Nevis 766S to Cordel 755S)	7L60 (7LA760 Tap to P2421)	0.4227	0.0072	-0.0368	-0.0619	0.0814	0.1809	0.0361	-0.0216	-0.0614	-0.0619
9L46 (Lanfine 959S to Pemukan 932S)	7L60 (7LA760 Tap to P2421)	0.4439	0.0124	-0.0285	-0.0523	0.0000	0.2124	0.0096	-0.0137	-0.0518	-0.0522
EATL	174L (Bardo 197S to North Holden 395S)	0.0544	0.0551	0.0470	0.0504	0.0655	0.0616	0.0773	0.0465	0.0502	0.0503
EATL	701L (North Hoden 395S to Strome 223S)	0.0515	0.0561	0.0461	0.0491	0.0587	0.0566	0.0763	0.0458	0.0489	0.0490
EATL	7L171 (Michichi Creek 802S to Wintering Hills 804S)	0.0055	-0.1143	0.0112	0.0116	0.0042	0.0047	0.0004	0.0111	0.0115	0.0115
760L/7L60 (Amoco Empress 163S to Oyen 767S)	7L60 (Oyen 767S to P2421)	0.8968	-0.0009	-0.0002	-0.0005	-0.0031	-0.0072	-0.0008	-0.0002	-0.0005	-0.0005
163ST5 (Amoco Empress 163S Transformer T5)	7L60 (Oyen 767S to P2421)	0.8981	-0.0008	-0.0002	-0.0005	-0.0026	-0.0059	-0.0006	-0.0002	-0.0005	-0.0005
658L/674L (Cypress 562S to Bowmanton 244S)	7L60 (7LA760 Tap to P2421)	0.4073	0.0068	-0.0244	-0.0789	0.0668	0.1666	0.0167	-0.0250	-0.0782	-0.0788
933L_934L Anderson 801S to Ware Junction 132S	7L60 (7LA760 Tap to P2421)	0.4082	0.0189	-0.0567	-0.0837	0.0804	0.1772	0.0297	-0.0417	-0.0831	-0.0836
1002L/1011L (Amoco Empress 163S to Cypress 562S to Jenner 275S)	7L60 (7LA760 Tap to P2421)	0.3865	0.0079	-0.0496	-0.0625	0.0648	0.1587	0.0175	-0.0282	-0.0620	-0.0624