APPENDIX A CONNECTION ASSESSMENT

Engineering Study Report

Joss MPC Wind Aggregated Generating Facility (WAGF)

AESO File No. 1533

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Executive Summary

Project Overview

The market participant, Power Renewable Energy Corporation (as the successor to Joss Wind Power Inc.), submitted a system access service request (SASR) to the Alberta Electric System Operator (AESO) for a proposed 120 MW wind aggregated generating facility (WAGF) northeast of the City of Brooks, named the Joss Wind Power Project (the Facility). The Facility includes the market participant's proposed Halsbury 306S substation.

The SASR includes a request for a Rate STS, *Supply Transmission Service*, contract capacity of 120 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1 MW for new system access service in the area, and a request for transmission development (collectively, the Project).

The scheduled in-service date (ISD) for the Project is October 2, 2017.

The market participant has indicated that the Facility may in the future be expanded by up to 180 MW for a maximum capability of up to 300 MW. In a separate and subsequent SASR, the market participant has requested a Rate STS contract capacity increase from 120 MW to 300 MW for the system access service to be provided at the proposed Halsbury 306S substation.

This report details the system performance studies undertaken to assess the impact of the Project on the Alberta interconnected electric system (AIES). The impact of the requested Rate STS contract capacity increase to 300 MW is not assessed in this report.

Existing System

Geographically, the Project is located in the AESO planning area of Empress (Area 48), which is part of the AESO South Planning Region. The Empress area is adjacent to the planning areas of Brooks (Area 47), Medicine Hat (Area 4), Sheerness (Area 43), Vauxhall (Area 52) and Hanna (Area 42).

From a transmission system perspective, the Empress area consists of both 138 kV and 240 kV transmission systems. The Empress area is connected to the planning area of Brooks (Area 47) by the 240 kV transmission lines 951L and 944L (between the Ware Junction 132S and Jenner 275S substations) and to the planning areas of Medicine Hat (Area 4) and Hanna (Area 42) by the 138 kV transmission lines 658L (between the Chappice Lake 649S and Cypress 526S substations) and 7L760/760L (between the Oyen 767S and Amoco Express 163S substations), respectively.

There are a number of existing constraints in the area that are mitigated by remedial action schemes (RASs). Following RAS activation, these constraints are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (TCM Rule).

Study Summary

<u>Study Area for the Project</u>

The study area for the project consists of the AESO planning areas of Empress (Area 48), Hanna (Area 42), Sheerness (Area 43), Brooks (Area 47) and Medicine Hat (Area 4). The study area also includes the tie lines connecting these planning areas to neighbouring planning areas. All transmission facilities within the study area were studied and monitored to assess the impact of the Project on the AIES, including any violations of the Reliability Criteria (as defined in Section 2.1.1).

Analyses Performed for the Project

Power flow analysis was performed for the 2017 summer light (SL), 2017 summer peak (SP), and 2017 winter peak (WP) pre- and post-Project scenarios.

Transient stability analysis was performed for the 2017 SL, 2017 SP, and 2017 WP post-Project scenarios.

Short-circuit analysis was performed for the 2017 WP pre-Project scenario and the 2017 WP and 2024 WP post-Project scenarios.

Results of the pre-Project studies

The following is a brief summary of the pre-Project studies results. Results and applicable mitigation measures for selected pre-Project contingencies are shown in greater detail in Table E- 1 below.

Category A (N-0) conditions

Under Category A conditions, no Reliability Criteria violations were observed for any of the pre-Project scenarios.

Category B (N-1) contingency conditions

The pre-Project power flow analysis identified a number of system performance issues under Category B contingency conditions, including thermal and voltage criteria violations.

Connection alternatives examined for the Project

This report examined three transmission alternatives to meet the market participant's request for system access service.

Alternative 1 – T-tap connection to the 138 kV transmission system via transmission line 601L

This alternative involves connecting the Facility to the existing 138 kV transmission line 601L using a T-tap configuration, and includes:

- adding a new 138 kV circuit of approximately 9 km to connect the market participant's proposed Halsbury 306S substation and the 138 kV transmission line 601L using a T-tap configuration; and
- other associated equipment.

Alternative 2 – Radial connection to 138 kV transmission system via Jenner 275S substation

This alternative involves connecting the Facility to the 138 kV transmission system at the Jenner 275S substation, and includes:

- adding a new 138 kV circuit of approximately 14 km to connect the market participant's proposed Halsbury 306S substation and the Jenner 275S substation;
- adding a 240/138 kV transformer at the Jenner 275S substation;
- expansion of the 138 kV and 240 kV buswork; and
- other associated equipment.

Alternative 3 – Radial connection to 240 kV transmission system via Jenner 275S substation

This alternative involves connecting the Facility to the 240 kV transmission system at the Jenner 275S substation, and includes:

- adding a new 240 kV circuit of approximately 14 km to connect the market participant's proposed Halsbury 306S substation and the Jenner 275S substation;
- adding a 240 kV circuit breaker at the Jenner 275S substation;
- adding a new 240 kV diameter at the Jenner 275S substation; and
- other associated equipment.

<u>Connection alternatives not selected for further studies</u>

Alternative 1 was not selected for further studies because it is not considered technically feasible, given the limited thermal capacity of the existing transmission line 601L and the limited transformation capacity of the existing transformers by which the transmission line 601L is connected to the transmission system. Alternative 2 was not selected for further studies because it involves increased transmission developments and hence, increased costs compared to Alternative 3.

<u>Connection alternative selected for further studies</u>

Alternative 3 was selected for further study as it is technically feasible and has the least amount of transmission development.

<u>Results of the post-Project studies</u>

The following is a brief summary of the post-Project studies results. Results and applicable mitigation measures for selected post-Project contingencies are shown in greater detail in Table E- 1 below.

<u>Category A (N-0) conditions</u>

Under Category A conditions, no Reliability Criteria violations were observed for any of the post-Project scenarios.

<u>Category B (N-1) contingency conditions</u>

The post-Project power flow analysis identified a number of system performance issues under Category B contingency conditions, including thermal and voltage criteria violations.

<u>Project Interdependencies</u>

A number of 144 kV transmission lines in the Project area are known to be limited by current transformer (CT). The observed thermal criteria violations on the 144 kV transmission lines 7L159 and 7L16 following the 9L20 contingency can be mitigated by restoring the respective seasonal continuous thermal ratings of these 144 kV transmission lines (as discussed in Section 7).

The AESO plans to direct the TFO in the Project area to restore the ratings for the 144 kV transmission lines 7L159 and 7L16 to their respective seasonal continuous thermal ratings.

Conclusions and Recommendation

Analysis and Conclusions

Table E- 1 provides analysis of, and conclusions about, the impact of the Project for selected contingencies, including mitigations for observed Reliability Criteria violations. The contingencies in Table E- 1 were selected because, in the post-Project scenarios, either new Reliability Criteria violations were observed or Reliability Criteria violations observed in the pre-Project scenarios were materially worsened. Analysis and conclusions, including mitigations, for the full list of studied conditions is provided in Table 8-1 in Section 8 of the report.

Table E- 1 Project Impact and Mitigation Measures (Selected Contingencies)

Condition	Scenario	Results			Mitigation Measures (Pre- and Post-Project)
		Contingency	Pre-Project Observations	Post-Project Comparison	
Category B	2017 SL	Loss of 240 kV transmission line 9L29	No issues on a 240/144 kV transformer at the Nevis 766S substation	New marginal thermal criteria violation on a 240/144 kV transformer at the Nevis 766S substation	**Pre:** None required for the 240/144 kV transformer at the Nevis 766S substation
					Post: Can be mitigated by the planned RASs for the Suncor Hand Hills and BluEarth Hand Hills WAGFs (collectively, the planned RASs for the Hand Hills WAGFs)
	2017 SP	Loss of 240 kV transmission line 9L29	No issues on a 240/144 kV transformer at the Nevis 766S substation	New marginal thermal criteria violation on a 240/144 kV transformer at the Nevis 766S substation	**Pre:** None required for the 240/144 kV transformer at the Nevis 766S substation
					Post: Can be mitigated by the planned RASs for the Hand Hills WAGFs
	2017 WP	Loss of the 240 kV transmission line 9L29	No issues on a 240/144 kV transformer at the Nevis 766S substation	New marginal thermal criteria violation on a 240/144 kV transformer at the Nevis 766S substation	**Pre:** None required for the 240/144 kV transformer at the Nevis 766S substation
					Post: Can be mitigated by the planned RASs for the Hand Hills WAGFs
		Loss of the 240 kV transmission line 9L20	Thermal criteria violation on the 144 kV transmission line 7L159	Materially increased loading on transmission line 7L159	**Pre:** Can be mitigated with completion of line restoration work (Restoration) at transmission line 7L159.
					Post: Same as pre-Project
			No issues on the 144 kV	New material thermal criteria	**Pre:** None required for the 144 kV transmission line 7L16

Condition	Scenario	Results			Mitigation Measures (Pre- and Post-Project)
		Contingency	Pre-Project Observations	Post-Project Comparison	
			transmission line 7L16	violation on the 144 kV transmission line 7L16	**Post:** Can be mitigated with Restoration of transmission line 7L16

Based on the study results, Alternative 3 is technically viable. The connection assessment identified a number of pre-Project and post-Project system performance issues. Real time operational practices and existing and planned RASs can be used to mitigate most of the pre- and post-Project system performance issues. Mitigation of the observed thermal criteria violations on the 144 kV transmission lines 7L159 and 7L16 following the 9L20 contingency is dependent on the restoration of the 144 kV transmission lines' respective seasonal continuous thermal ratings (as discussed in Section 7 of the report). The AESO plans to direct the TFO in the area to restore the seasonal continuous thermal ratings for transmission lines 7L159 and 7L16.

The Project does not impact the effectiveness of existing RASs in the study area, nor does the Project create the need for new RASs in the study area.

Recommendation

It is recommended to proceed with the Project using Alternative 3 as the preferred option to respond to the market participant's request for system access service. It also recommended to use real time operational practices and existing and planned RASs to mitigate the identified system performance issues. A minimum rating of 333 MVA is recommended for the new 240 kV circuit and is consistent with good electric industry practice as it would accommodate a possible future expansion of the Facility (for a maximum capability of up to 300 MW). The dependencies identified in this report (i.e., restoration of the seasonal continuous thermal ratings of the 144 kV transmission lines 7L16 and 7L159) need to be in service prior to energization of the Project.

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Tables

1. Introduction

This report presents the results of the engineering studies conducted to assess the impact of the Project (as defined below) on the Alberta interconnected electric system (AIES).

1.1. Project

1.1.1. Project Overview

The market participant, Power Renewable Energy Corporation (as the successor to Joss Wind Power Inc.), submitted a system access service request (SASR) to the Alberta Electric System Operator (AESO) for a proposed 120 MW wind aggregated generating facility (WAGF) northeast of the City of Brooks, named the Joss Wind Power Project (the Facility). The Facility includes the market participant's proposed Halsbury 306S substation.

The SASR includes a request for a Rate STS, *Supply Transmission Service*, contract capacity of 120 MW and a Rate DTS, *Demand Transmission Service*, contract capacity of 1 MW for new system access service in the area, and a request for transmission development (collectively, the Project).

The scheduled in-service date (ISD) for the Project is October 2, 2017.

1.1.2. Load Component

- The requested Rate DTS contract capacity is 1 MW

1.1.3. Generation Component

- The estimated maximum authorized real power (MARP) of the Facility is 121.9 MW
- The maximum capability (MC) of the Facility is 120 MW
- The Facility includes 53 turbines of 2.3 MW units; Type 4, SWT-2.3 MW-113
- The requested Rate STS contract capacity is 120 MW
- The market participant has indicated that the Facility's MC may increase by an additional 180 MW in a Phase 2 expansion, for a total MC of 300 MW. The expected ISD of the Phase 2 expansion is August 2018. The Phase 2 expansion is the subject of a separate system access service request to the AESO (Project 1698).
- 0.9 power factor (PF) lagging and 0.95 PF leading is assumed at the Facility output as measured at the generator unit terminal, per the technical requirements of Section 502.1 of the ISO Rules, *Wind Aggregated Generation Facilities Technical Requirements*

1.2. Study Scope

1.2.1. Study Objectives

The objectives of this study are the following:

- Assess the impact of the Project on the performance of the AIES

- Assess any violations of the relevant criteria, standards or requirements of the AESO, both pre- and post-Project.
- Recommend mitigation measures, if required, to enable the reliable connection of the Project to the AIES.

1.2.2. Study Area

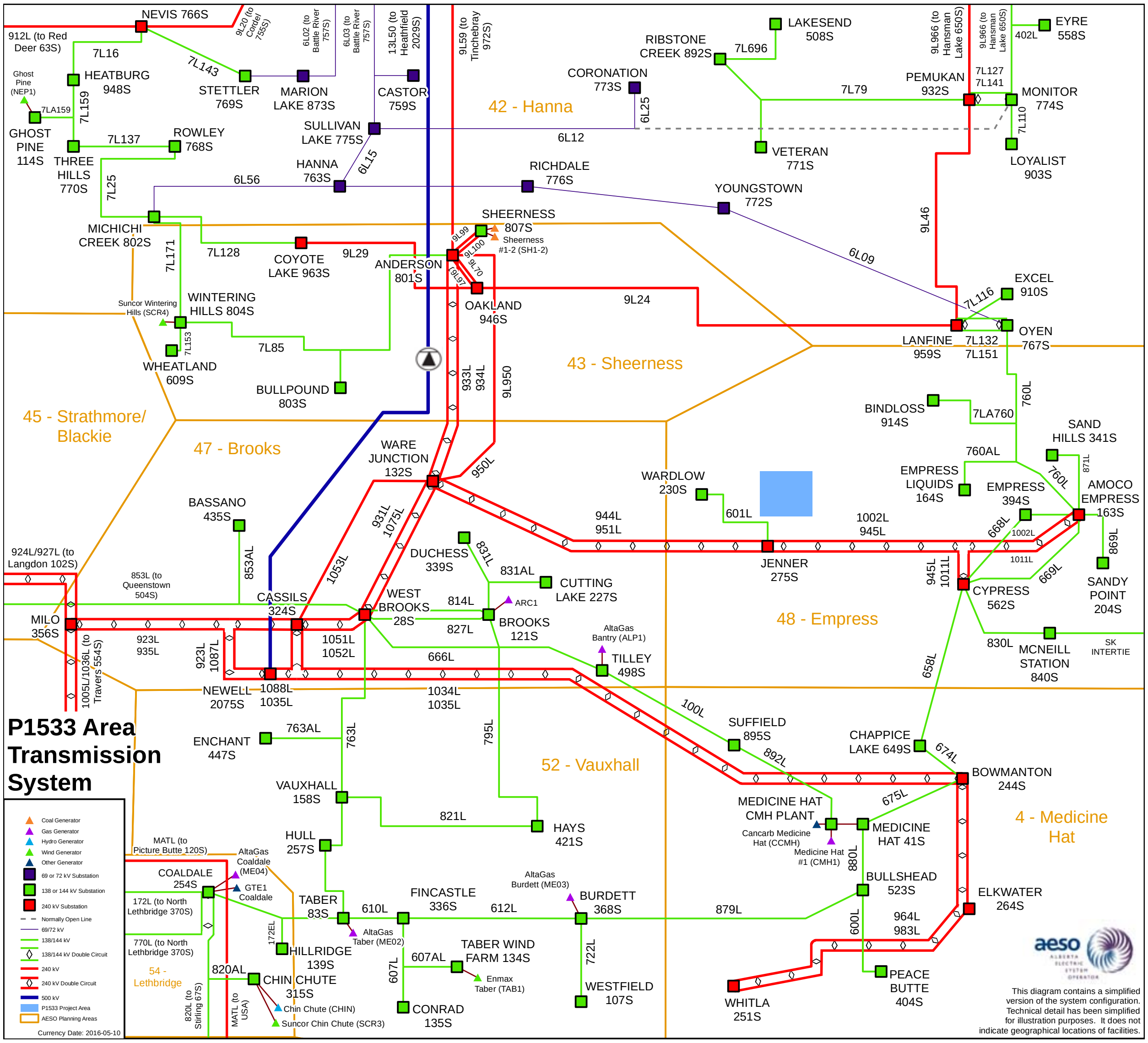
1.2.2.1. Study Area Description

Geographically, the Project is located in the AESO planning area of Empress (Area 48), which is part of the AESO South Planning Region. The Empress area is adjacent to the planning areas of Brooks (Area 47), Medicine Hat (Area 4), Sheerness (Area 43), Vauxhall (Area 52) and Hanna (Area 42).

From a transmission system perspective, the Empress area consists of both 138 kV and 240 kV transmission systems. The Empress area is connected to the planning area of Brooks (Area 47) by the 240 kV transmission lines 951L and 944L (between the Ware Junction 132S and Jenner 275S substations) and to the planning areas of Medicine Hat (Area 4) and Hanna (Area 42) by the 138 kV transmission lines 658L (between the Chappice Lake 649S and Cypress 526S substations) and 7L760/760L (between the Oyen 767S and Amoco Express 163S substations), respectively. The transmission system in the Project area is shown in Figure 1-1.

The study area for the project consists of the AESO planning areas of Empress (Area 48), Hanna (Area 42), Sheerness (Area 43), Brooks (Area 47) and Medicine Hat (Area 4). The study area also includes the tie lines connecting these planning areas to neighbouring planning areas. All transmission facilities within the study area were studied and monitored to assess the impact of the Project on the AIES, including any violations of the Reliability Criteria (as defined in Section 2.1.1).

Figure 1-1: Transmission system in the Project area



1.2.2.2. Existing Constraints

There are a number of existing constraints in the study area that are mitigated by remedial action schemes (RASs). Following RAS activation, these constraints are managed in accordance with the procedures set out in Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* (TCM Rule).

1.2.2.3. AESO Long-Term Plans

The *AESO 2015 Long-term Plan* (2015 LTP)[1] includes the following system developments that are in the vicinity of the study area:[2]

- In the near term (to 2020): Rebuild 138 kV line from Cypress substation to Empress substation to higher capacity
- In medium-term (to 2025): Convert Tilley substation from 138/25 kV to 240/138/25 kV substation
- In the medium term: Connect Tilley substation to 240 kV line between Cassils substation near Brooks and Bowmanton substation near Medicine Hat

None of the above developments were modeled in the studies because the ISDs for the developments fall behind the Project ISD.

The Southern Alberta Transmission Reinforcement Project (SATR) is also progressing in southern Alberta. The relevant components of the SATR developments, which are nearby or in the study area, that were modeled in the studies, are listed in Table 2-6.[3]

1.2.3. Studies Performed

The following analyses were performed for the pre-Project scenarios:

- Power flow analysis (Category A conditions and B contingencies)
- Short-circuit analysis (Category A conditions)

The following analyses were performed for the post-Project scenarios:

- Power flow analysis (Category A conditions and B contingencies)
- Short-circuit analysis (Category A conditions)
- Transient stability analysis (Category B contingencies)

1.3. Report Overview

The Executive Summary provides a high-level summary of the report and its conclusions. Section 1 provides an introduction of the Project. Section 2 describes the criteria, system data, and study assumptions used in this study. Section 3 presents the study methodology used in this study. Section 4 discusses the pre-Project system assessment. Section 5 presents the connection alternatives examined. Section 6 provides a technical analysis of the post-Project system assessment for the alternatives that were selected for further study. Section 7 discusses project interdependencies. Section 8 presents the conclusions and recommendations of this report.

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[1] The 2015 LTP document is available on the AESO website.

[2] The 2015 LTP identifies the transmission developments in the Vauxhall-Empress-Medicine Hat sub-region on page 34.

[3] The *Southern Alberta Transmission Reinforcement* NID was originally approved by the Alberta Utilities Commission in Decision 2009-126 on September 8, 2009, and issued NID Approval No. U2009-340 on September 17, 2009.

2. Criteria, System Data, and Study Assumptions

2.1. Criteria, Standards, and Requirements

2.1.1. AESO Transmission Planning Standards and Criteria

The Transmission Planning (TPL) Standards, which are included in the Alberta Reliability Standards, and the AESO's *Transmission Planning Criteria – Basis and Assumptions* [4] (collectively, the Reliability Criteria) were 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 alternative. Below is a summary of Category A and Category B system conditions.

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

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

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

- Seasonal continuous thermal rating of the line's loading limits.
- Highest specified loading limits for transformers.
- For Category A conditions: Voltage range under normal operating condition per AESO Information Document ID #2010-007RS. For the busses not listed in ID #2010-007RS, Table 2-1 in the *Transmission Planning Criteria – Basis and Assumptions* applies.
- For Category B conditions: the extreme voltage range values per Table 2-1 in the *Transmission Planning Criteria – Basis and Assumptions*

[4] Filed under a separate cover

2.1.2. Information Documents (IDs) and ISO Rules

AESO Information Documents ID #2010-007RS, *General Operating Practices – Voltage Control*, which relates to Section 304.4 of the ISO rules, *Maintaining Network Voltage*, and ID #2013-009R, *South Area Transmission Constraint Management*, which relates to the TCM Rule, were used as guidelines for the studies performed. Pre-contingency operating voltages for key buses within the study area were set in accordance with ID #2010-007RS, if defined in the ID, for all study cases and prior to simulating any contingency events.

2.1.2.1. Wind Aggregated Generation Facility (WAGF) Requirements

The Facility connection should meet the technical requirements of Section 502.1 of the ISO rules, *Wind Aggregated Generation Facilities Technical Requirements*.

2.2. Load and Generation Assumptions

2.2.1. Load Assumptions

The study area load forecast used for this connection study is reflected in Table 2-1 and is at Alberta internal load (AIL) peak, which was based on the *AESO 2012 Long-term Outlook Update* (2012 LTOU). As part of its planning responsibilities, the AESO updates its corporate forecasts routinely to ensure they reflect the latest economic projects, factors and timing. While the AESO has updated its regional forecasts since the connection studies were performed, the use of the current AESO forecast, the *AESO 2016 Long-term Outlook*, would not materially alter the connection study results or affect the conclusions and recommendations in this report.

Table 2-1: Forecast Area Load

Region Name and Season		Forecast Peak Load (MW)
		2017
Central	Summer Peak	1,642
	Winter Peak	1,878
	Summer Light	1,205
South	Summer Peak	2,922
	Winter Peak	3,218
	Summer Light	1,954
AIL w/o Losses	Summer Peak	11,607
	Winter Peak	13,233
	Summer Light	8,348

2.2.2. Generation Assumptions

The existing coal generators and their dispatch levels in and around the study area are listed in Table 2-2.

The forecast wind growth is based on the 2012 LTOU. The existing and under construction wind generators and their dispatch are listed in Table 2-3. The dispatch of future wind projects in the South and Central Region that have passed stage 2 of the AESO Connection Process ahead of Project 1533 is listed in Table 2-4.

Table 2-2: Local Non Wind Generators in the Study Cases

Generator Name	Units	Pmax (MW)	2017 SL Pgen Net to grid (MW)	2017 SP Pgen Net to grid (MW)	2017 WP Pgen Net to grid (MW)
Sheerness	1	408	138	199	311
	2	408	136	200	329
Battle River	3	163	87	117	143
	4	166	88	118	144
	5	407	262	282	357
Total		1,552	712	915	1,284

Table 2-3: Existing and Under Construction Wind Generators in Alberta

Plant Name	Symbol	Planning Area	Net to Grid Output (MW) 2017
Existing Southern Alberta			
Ardenville Wind	ARD1	53	68
Blue Trail Wind	BTR1	53	66
Castle River #1	CR1	53	39
Castle Rock Wind Farm	CRR1	53	77
Cowley Ridge	CRWD	53	38
Enmax Taber	TAB1	52	81
Kettles Hill	KHW1	53	63
McBride Lake Wind farm	AKE1	53	75
Soderglen Wind	GWW1	53	68
Summerview 1	IEW1	53	66
Summerview 2	IEW2	53	66
Suncor Chin Chute	SCR3	54	30
Suncor Magrath	SCR2	53	30
Suncor Wintering Hills	SCR4	43	88
Old Man River	OWF1	53	0*
Blackspring Ridge	BSR1	49	300
Subtotal Southern			**1155**
Existing Central			
Ghost Pine	NEP1	42	82
Halkirk	HAL1	42	150
Fortis Bull Creek DG	BUL1 &2	37	29.5
Total			**261.5**
Under Construction Central			
Total			**0**
Subtotal Central			**261.5**

Total Alberta			**1416.5**

*This wind farm is dispatched to zero to allow for Naturener Wild Rose to be dispatched to full MC such that the total wind generation addition does not change. This dispatch would be more stressful to the study area.

Table 2-4: Southern and Central Alberta future Wind Projects (Past Gate 2)

Southern Wind Project Description	Proj No	Planned ISD	Planning Area	Pgen (MW)	2017 Dispatch MW
Joss MPC WAGF	1533	Q3 2017	48	120	120
Pteragen Peace Butte 116 MW Wind Farm	513	Q1 2017	4	116	0
Naturener Wild Rose Wind Farm	479	Q3 2017	4	204	204
Benign Energy Heritage Wind Farm	515	Q2 2019	53	350	0
Enel Alberta Riverview Wind Farm	524	Q4 2017	53	115	0
Windy Point Wind Farm	580	Q1 2017	53	61	0
Naturener Wild Rose Wind Farm Phase 2	693	Q4 2016	4	200	0
Renewable Energy Services Ltd PC006 Wind Farm	1500	Q3 2017	53	47	0
Old Elm & Pothole Creek Wind Farm	1080	Q2 2018	55	300	0
Subtotal					**324**
Central Wind Project Name	**Proj No**	**Planned ISD**	**Planning Area**	**Pgen (MW)**	**2017 Dispatch MW**
EON Grizzly Bear Wind Facility	1250	Q4 2017	13	120	0
Mainstream Wainwright Wind Project	937	Q1 2018	32	90	0
Suncor Hand Hills Wind Energy Project	635	Q4 2018	42	80	80
BlueEarth Hand Hills Wind Project	678	Q4 2018	42	80	80
Subtotal					**160**

2.2.3. Intertie Flow Assumptions

The following intertie flows between Alberta and WECC system are assumed.

Table 2-5: Alberta and WECC System Intertie Flow Assumptions

Year / Condition	Intertie			
	Import (+) /Export (-) to BC	Import (+) /Export (-) to Saskatchewan	Import (+) /Export (-) to MATL	Import (+) /Export (-) to Medicine Hat
2017 SL	0	0	0	102*
2017 SP	530	150	300	-26
2017 WP	530	150	300	-26

For summer peak and winter peak cases, the combined MATL and Alberta-BC intertie flow is considered at 830 MW import (i.e., MATL import at 300 MW and Alberta-BC to be 530 MW). Alberta-SK intertie flow is considered at 150 MW import. Medicine Hat export is 26 MW.

For summer light cases Medicine Hat import is 102 MW.

2.3. System Projects

Based on the scheduled ISD for the Project, key system transmission projects near the study area include the SATR developments shown in Table 2-6. These developments were modeled in the study scenarios.

Table 2-6: Summary of Future System Projects in or near the Study Area

Project Name	Project ID	Description	In Service Date
SATR	787-63	Rebuild - Stage 2 - 675L/892L	2016-05-04
	787-6	Med Hat Area 138 kV Line Development	2016-12-09
	787-64	New Build - 676L/892L	2016-12-09

2.4. Customer Connection Projects

Customer connection projects within the study area that have passed through Gate 2 of the AESO Connection Process as of May 2016 were modeled within the various study scenarios based on their respective positions in the AESO Connection Queue. Table 2-7 identifies customer connection projects in the study area. It should be noted that the information in this table is subject to change as projects progress.

Table 2-7: Summary of Customer Projects in Study Area

Planning Area	Queue Position*	Project Number	Project Description	Planned ISD	Modeled** in the study cases
4	1	513	Pteragen Peace Butte 116 MW Wind Farm	Q1-2017	Yes
42	6	635	Suncor Hand Hills Wind Energy Project	Q4-2018	Yes
42	7	678	BluEarth Hand Hills Wind Project	Q4-2018	Yes
42	11	863	TransCanada Keystone KXL Pumpstation #3-Current	Q3-2016	Yes
42	12	864	TransCanada Keystone KXL Pumpstation #4-Armitage	Q3-2016	Yes
48	13	865	TransCanada Keystone KXL Pumpstation #5-Cavendish	Q3-2016	Yes
4	2	479	Naturener Wild Rose Wind Farm	Q3- 2017	Yes
4	8	693	Naturener Wild Rose Wind Farm Phase 2	Q4-2016	Yes
4	45	1326	Medicine Hat - Al Rothbauer 321S Interconnection	Q2-2017	No***
47	62	1550	Fortis Blue Earth Inc./JBS D.G.	Q1-2016	Yes
48	64	1533	Joss MPC WAGF	Q3-2017	Yes

* Per the AESO Connection Queue posted as of May 2016. The projects in the study area, if any, that have queue positions after Project 1533 are not listed in this table and were not modelled in the study cases.

** These projects are dispatched per the load and generation levels set out in Section 2.2. The projects that were not modeled in the study will not affect the results of this connection assessment or the conclusions and recommendations contained in this report.

*** This connection project was not modeled because the load and generation associated with this connection project is considered in the 2012 LTOU.

2.5. Facility Ratings and Shunt Elements

Table 2-8 provides the ratings of the key existing transmission lines in the study area. Table 2-9 provides a summary of the shunt elements modeled in the study area.

Table 2-8: Summary of Key Transmission Line Ratings

Transmission Line Number	From	To	Voltage (kV)	Summer Rating (MVA)	Winter Rating (MVA)
9L59	Tinchebray 972S	Anderson 801S	240	549	701
9L950	Anderson 801S	Ware Junction 132S	240	519	663
9L934	Anderson 801S	Ware Junction 132S	240	519	663
931L	Ware Junction 132S	West Brooks 28S	240	592	665
944L	Ware Junction 132S	Jenner 275S	240	550	679
951L	Ware Junction 132S	Jenner 275S	240	550	679
945L	Jenner 275S	Cypress 562S	240	550	679
1002L	Jenner 275S	Amoco Empress 163S	240	550	679

Transmission Line Number	From	To	Voltage (kV)	Summer Rating (MVA)	Winter Rating (MVA)
658L	Cypress 562S	Chappice Lake 649S	138	81	100
668L	Empress 394S	Cypress 562S	138	121	149
892L	Medicine Hat 41S	Suffield 895S	138	67	114
100L	Suffield 895S	Tilley 895S	138	69	115
666L	Tilley 895S	West Brooks 28S	138	98	120
7L760	Empress Liquid Tap	Oyen 767S	144	114	145
760L	Amoco Empress 163S	Empress Liquid Tap	138	120	148
6L09	Oyen 767S	Hanna 763S	69	23	23
7L159	Heatburg 948S	Three Hills 770S	144	99CT* [114]**	99CT [145]
7L16	Nevis 766S	Heatburg 948S	144	99CT [114]	99CT [145]
7L85	Bull pound 803S	Anderson 801S	144	99CT [114]	99CT [145]
7L85	Bull pound 803S	Wintering Hills 804S	144	99CT [114]	99CT [145]
7L128	Coyote Lake 963S	Michichi Creek 802S	144	99CT [164]	99CT [210]
9L27	Cordel 755S	PaintEarth 863S	240	332CT	332CT

* “CT” indicates that the transmission line is limited by current transformer.

** The values in square brackets represent the transmission lines’ ratings if the current transformer limits were removed.

Table 2-9: Summary of Key Transformer Ratings

Substation Name and Number	Transformer ID	Transformer Voltages (kV)	MVA Rating
Cypress 562S	562ST1	240/144	200
Cypress 562S	562ST2	240/144	200
Nevis 766S	901T	240/144	100
Nevis 766S	701T	144/72/25	H-M: 33.3 X-M: 33.3 Y-M: 16.6
Amoco Empress 163S	163ST5_A	240/144	200

The details of key shunt elements in the study area are given in Table 2-10.

Table 2-10: Summary of Key Shunt Elements in the Study Area

Substation Name and Number	Nominal Bus Voltage (kV)	Capacitors			Reactors		
		Number of Switched Shunt Blocks	Total at Nominal Voltage (MVAr)	Status in Study	Number of Switched Shunt Blocks	Total at Nominal Voltage (MVAr)	Status in Study (on or off)
Amoco Empress 163S	138	2	48.70	On	-	-	-
Tilley 498S	138	1	27.17	On	-	-	-
West Brooks 28S	240	-	-	-	1	-50	On
Lanfine 959S	138	2x27.55	55.1				
	34.5 (SVC)	1x200	200	Off/On/TBD	1x-100	-100	Off/On/TBD

2.6. Dynamic Data and Assumptions

Type 4 wind machine generic models (WT4G2 and WT4E2) have been used for the Project Transient Stability (Dynamic) analysis. Table 2-11 and Table 2-12Table 2-12 show parameters for these models.

Table 2-11: Generator Dynamic (WT4G2)

Tiqcmd	Tipcmd	VLVPL1	VLVPL2	GLVPL	VHVRCR	CURHVRCR	RIp_LVPL	T_LVPL
0.01	0.002	0.4	-0.1	1.11	1.25	2.0	2.0	0.02

Table 2-12: Electrical Control Model Dynamic Data (WT4E2)

Tfv	Kpv	KIV	Kpp	Kip	Kf	Tf	QMX	QMN	Ipmax	Trv
0.0	15	2.0	0.08	0.01	0.0	0.08	1.0	-1.2	1.1	0.0
dPMX	**dPMN**	**Tpwr**	**Kqi**	**VminCL**	**VmaxCL**	**KVi**	**Tv**	**Tp**	**ImaxTD**	**Iphl**
0.5	-0.5	0.05	0.01	0.875	1.125	55	0.05	0.05	1.115	1.25
Iqhl	**Tiqf**	**FRT_T**	**FRT_H**	**FRT_D**	**FRT_Iq**	**MaxFRT**	**IQMAX**	**IQMAX**	**DC Link**	**VinvMax**
1.085	0.02	0.875	0.05	0.0	2.0	1.0	1.0	1.0	1.00	1.1
NBR_X										
0.1415										

2.7. Protection Fault Clearing Times

The list of the contingencies and fault clearing times for existing facilities are listed in Table 2-13.

Table 2-13: Protection Fault Clearing Times

Line	Faulted End	Close End Cycles	Far End Cycles

Line	Faulted End	Close End Cycles	Far End Cycles
944L	Ware Junction 132S (Bus 225)	Ware Junction 132S (Bus225) 4 cycles	Jenner 275S (Bus 260) 6.5 cycles
944L	Jenner 275S (Bus 260)	Jenner 275S (Bus 260) 5.25 cycles	Ware Junction 132S (Bus 225) 5.75 cycles
945L	Jenner 275S (Bus 260)	Jenner 275S (Bus 260) 10.5 cycles	Cypress 562S (Bus 677) 5 cycles
945L	Cypress 562S (Bus 677)	Cypress 562S (Bus 677) 4 cycles	Jenner 275S (Bus 260) 11.5 cycles
9L50	Anderson 801S (Bus 1484)	Anderson 801S (Bus 1484) 5 cycles	Ware Junction 132S (Bus 225) 6 cycles
9L50	Ware Junction 132S (Bus 225)	Ware Junction 132S (Bus225) 5 cycles	Anderson 801S (Bus 1484) 6 cycles
1053L	Ware Junction 132S (Bus 225)	Ware Junction 132S (Bus225) 5 cycles	Cassils 324S (Bus 918) 7 cycles
1053L	Cassils 324S (Bus 918)	Cassils 324S (Bus 918) 5 cycles	Ware Junction 132S (Bus 225) 7 cycles

2.8. Voltage Profile Assumptions

The AESO Voltage Control Practice ID #2010-007RS is used to establish normal system (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 all the busses not included in the ID# 2010-007RS. These voltages will be used to set the voltage profile for the study base cases prior to power flow analysis. The key bus voltages for the study area for the project are shown in Table 2-14.

Table 2-14: Summary of Voltage at Key Nodes in the Study Area

Substation Name and number	Nominal Voltage (kV)	Minimum Operating Limit (kV)	Desired Range (kV)	Maximum Operating Limit (kV)
West Brooks 28S	138	138	138-144	145
West Brooks 28S	240	245	245-260	264
Jenner 2775S	240	250	250-260	264
Ware Junction 132S	240	250	254-262	264
Amoco Empress 163S	240	247	247-260	264
Amoco Empress 163S	138	140	140-144	145
Oyen 767S	144	140	143-146	155

2.9. HVDC Power Order

HVDC power order was determined in accordance with the AESO's planned HVDC operating procedure. The HVDC power order and direction of the flow are shown in Table 2-15.

Table 2-15: HVDC power order

Scenario	WATL (MW)	EATL (MW)
2017 SL (pre and post)	-	400 S→N
2017 SP (pre and post)	-	600 S→N
2017 WP (pre and post)	-	470 S→N

3. Study Methodology

All the studies were completed using PTI PSS/E version 33.

3.1. Study Objectives

The objectives of the study are the following:

- Assess the impact of the Project on the performance of the AIES.
- Identify any violations of the relevant criteria, standard or requirements of the AESO, both pre- and post-Project.
- Recommend mitigation measures, if required, to enable the reliable integration of the Project to the AIES.

3.2. Study Scenarios

The scheduled ISD for the Project is October 2, 2017. At the time when the studies for the Project were performed, the scheduled ISD for the Project was August 1, 2017. Hence, the study was conducted for the 2017 summer light (SL), 2017 summer peak (SP), and 2017 winter peak (WP) scenarios. Short-circuit analysis was also completed for the 2024 WP. The shift in the ISD does not materially impact the results of this connection assessment, and does not change the conclusions and recommendations contained in this report.

The study cases were derived from the published AESO Planning Base Case Suite and related auxiliary data files.

Table 3-1 summarizes the study scenarios used for the connection assessment.

Table 3-1: Summary of Study Scenarios

Scenario No.	Year/Season Load
Pre-Project System	
1	2017 SL
2	2017 SP

3	2017 WP
Post-Project System	
4	2017 SL
5	2017 SP
6	2017 WP
7	2024 WP

3.3. Connection Studies Carried Out

The following analyses were performed for the pre-Project scenarios:

- Power flow analysis (Category A conditions and B contingencies)
- Short-circuit analysis (Category A conditions)

The following analyses were performed for the post-Project scenarios:

- Power flow analysis (Category A conditions and B contingencies)
- Short-circuit analysis (Category A conditions)
- Transient stability analysis (Category B contingencies)

Table 3-2 summarizes the studies that were carried out for this connection assessment.

Table 3-2: Summary of Studies Performed

Scenario(s) Studied		Studies Performed	System Conditions Studied
Pre-Project	Post-Project		
1, 2, 3	4, 5, 6	Power flow	Category A and Category B
-	4, 5, 6	Transient stability	Category B
3	6, 7	Short-circuit	Category A

3.4. Power Flow Analysis

Power flow analysis was performed using PSSE v33 for the pre-Project and post-Project conditions as outlined in Table 3-2.

Pre- and post-Project power flow analysis was performed to identify thermal and voltage criteria violations as per the Reliability Criteria. The purpose of the power flow analysis is to quantify any incremental violations in the study area after the Project is connected.

For the power flow analysis, all transmission facilities in the study area were monitored for thermal and voltage criteria violations under Category A conditions and under Category B contingency conditions.

3.4.1. Contingencies Studied

The study included all Category B contingencies within the study area, including the tie lines connecting the study area to the surrounding planning areas.

3.5. Short-Circuit Analysis

Short-circuit analysis was performed for pre- and post-Project scenarios, as well as for the long-term assessment using the AESO 2024 WP Base Case.

A maximum fault level is provided for the proposed Halsbury 306S substation and neighboring substations with the following assumptions:

- Normal system operation with all transmission elements in service and generation dispatched.
- Three-phase faults and single line to ground fault was simulated.
- Polar coordinates and per unit values was used for reporting the results.

Maximum fault level was provided for the following substations:

- Ware Junction 132S
- Jenner 275S
- Cypress 562S
- Amoco Empress 163S
- Empress 394S
- Wardlow 230S
- Chappice Lake 649S

3.6. Transient Stability Analysis

Transient stability analysis for selected Category B contingencies was performed for the Project using the 2017 study cases. The contingency list and the fault clearing time are shown in Table 2-13. These disturbances cover the major transmission lines in the study area. The active power and angle of the generation units and synchronous motors, bus voltage, branch active and reactive power are monitored for selected buses in the study area.

4. Pre-Project System Assessment

4.1. Pre-Project Power Flow Results

This section provides the results for the pre-Project power flow studies. The analysis of these results, including mitigations for observed Reliability Criteria violations, is provided in in Section 8. All power flows are based on 138 kV system voltage.

4.1.1. Scenario 1: 2017 SL

The pre-Project power flow diagrams are provided in Attachment A.

<u>Category A conditions</u>

No Reliability Criteria violations were observed under Category A conditions.

Category B contingency conditions

Thermal criteria violations were observed under Category B contingency conditions.
The observed thermal criteria violations are shown in Table 4-1.

Table 4-1: 2017 SL (Pre-Project), N-1 Thermal Loading

System Condition	Overload Branch	2017 SL Pre-Project	
		Power Flow (MVA)	% Loading
N-1: 9L29 (Oakland 946S - Coyote Lake 963S)	7L128 144 kV Line (Coyote Lake 963S - Michichi Creek 802S)	159.1	167.7
	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	120.1	126.6
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	116.8	123.09
	7L85 144 kV Line (Bull Pound 803S – Anderson 801S)	119.4	125.85
	7L85 144 kV Line (Wintering Hills 804S – Bull Pound 803S)	125.7	132.43

4.1.2. Scenario 2: 2017 SP

The pre-Project power flow diagrams are provided in Attachment C.

Category A conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B contingency conditions

Reliability Criteria violations, both thermal and voltage range criteria violations, were observed under Category B contingency conditions.

The observed thermal criteria violations are shown in Table 4-2 and the observed voltage range criteria violations are shown in Table 4-3.

Table 4-2: 2017 SP (Pre-Project), N-1 Thermal Loading

System Condition	Overload Branch	2017 SP Pre-Project	
		Power Flow (MVA)	% Loading
N-1: 666L (Tilley 498S – West Brooks 28S)	892L 138 kV Line (Suffield 895S – Bowmanton 244S)	72	107.2
N-1: 669L (Amoco Empress 163S - Cypress 562S)	668L 138 kV Line (Empress 394S - Cypress 562S)	121.4	100.4

N-1: 9L29 (Oakland 946S - Coyote Lake 963S)	7L128 144 kV Line (Coyote Lake 963S - Michichi Creek 802S)	160.8	169.4
	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	121.8	128.3
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	117.9	124.2
	7L85 144 kV Line (Bull Pound 803S – Anderson 801S)	111.7	117.7
	7L85 144 kV Line (Wintering Hills 804S – Bull Pound 803S)	121.9	128.5

Table 4-3: 2017 SP (Pre-Project), N-1 Voltage Range Violation

System Condition	Bus No., substation, voltage(kV)	2017 SP Pre-Project		
		Initial Voltage p.u	Post contingency Voltage p.u	Range
N-1: 666L (Tilley 498S – West Brooks 28S)	275 Tilley 498S 138 kV	1.01	0.88	Below extreme minimum

4.1.3. Scenario 3: 2017 WP

The pre-Project power flow diagrams are provided in Attachment E.

<u>Category A conditions</u>

No Reliability Criteria violations were observed under Category A conditions.

<u>Category B contingency conditions</u>

Reliability Criteria violations, both thermal and voltage range criteria violations, were observed under Category B contingency conditions.

The observed thermal criteria violations are shown in Table 4-4 and the observed voltage range criteria violations are shown in Table 4-5.

Table 4-4: 2017 WP (Pre-Project), N-1 Thermal Loading

System Condition	Overload Branch	2017 WP Pre-Project	
		Power Flow (MVA)	% Loading
N-1: 9L29 (Oakland 946S - Coyote Lake 963S)	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	123.9	130.5

	7L128 144 kV Line (Coyote Lake 963S - Michichi Creek 802S)	157	165.4
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	118.7	125.1
	7L85 144 kV Line (Bull Pound 803S – Anderson 801S)	102.7	108.2
	7L85 144 kV Line (Wintering Hills 804S – Bull Pound 803S)	109.4	115.3
N-1: 9L20 (Nevis 766S – Cordel 755S)	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	95.7	100.9

Table 4-5: 2017 WP (Pre-Project), N-1 Voltage Range Violation

System Condition	Bus No., substation, voltage(kV)	2017 WP Pre-Project		
		Initial Voltage p.u	Post outage Voltage p.u	Range
N-1: 666L (Tilley 498S – West Brooks 28S)	270 Suffield 895S 138 kV	1.0	0.81	Below extreme minimum
	275 Tilley 498S 138 kV	1.01	0.77	Below extreme minimum

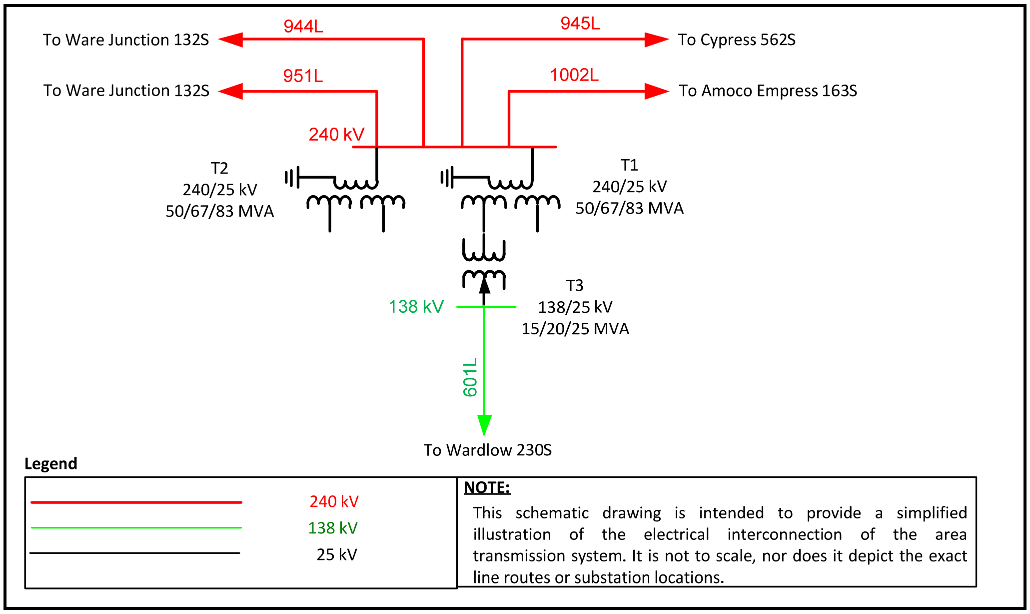
5. Connection Alternatives

5.1. Overview

Three transmission alternatives were examined to meet the market participant's request for system access service. The transmission alternatives that were examined involve developments in the vicinity of the existing Jenner 275S and Wardlow 230S substations, which are located in the Project area.

As shown in Figure 5-1, the Jenner 275S substation contains two 240/25 kV 50/67/83 MVA transformers (T1 and T2). Transformer T1 is also connected to a step up 138/25 kV 15/20/25 MVA transformer (T3), which feeds the Wardlow 230S substation via the 138 kV transmission line 601L.

Figure 5-1: Jenner 275S Substation Configuration



5.2. Connection Alternatives Examined

Below is a description of the developments associated with the transmission alternatives that were examined for the Project.

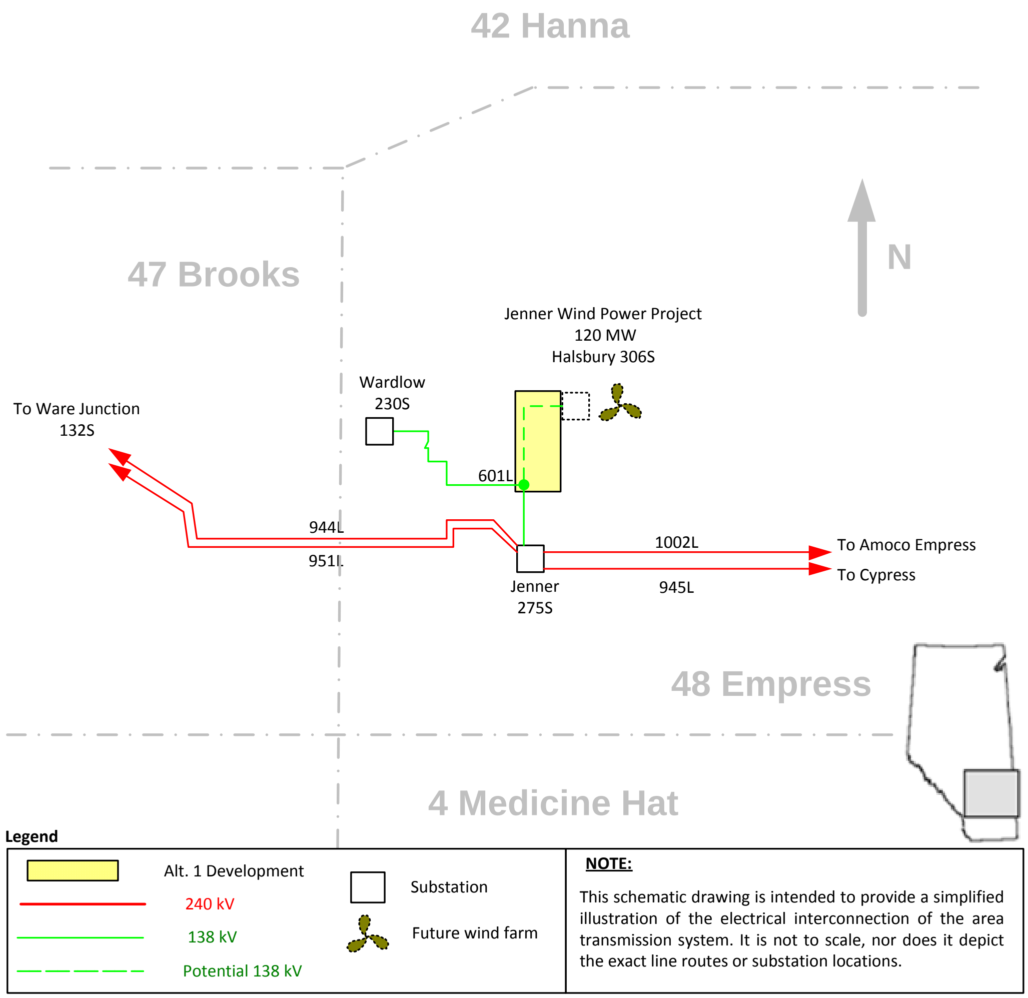
Alternative 1 – T-tap connection to the 138 kV transmission system via transmission line 601L

Alternative 1 involves connecting the Facility to the 138 kV transmission line 601L using a T-tap configuration, as shown in Figure 5-2.

This alternative includes:

- adding a new 138 kV circuit of approximately 9 km to connect the market participant's proposed Halsbury 306S substation and the existing 138 kV transmission line 601L using a T-tap configuration; and
- other associated equipment.

Figure 5-2: Alternative 1



Alternative 2 – Radial connection to 138 kV transmission system via Jenner 275S substation

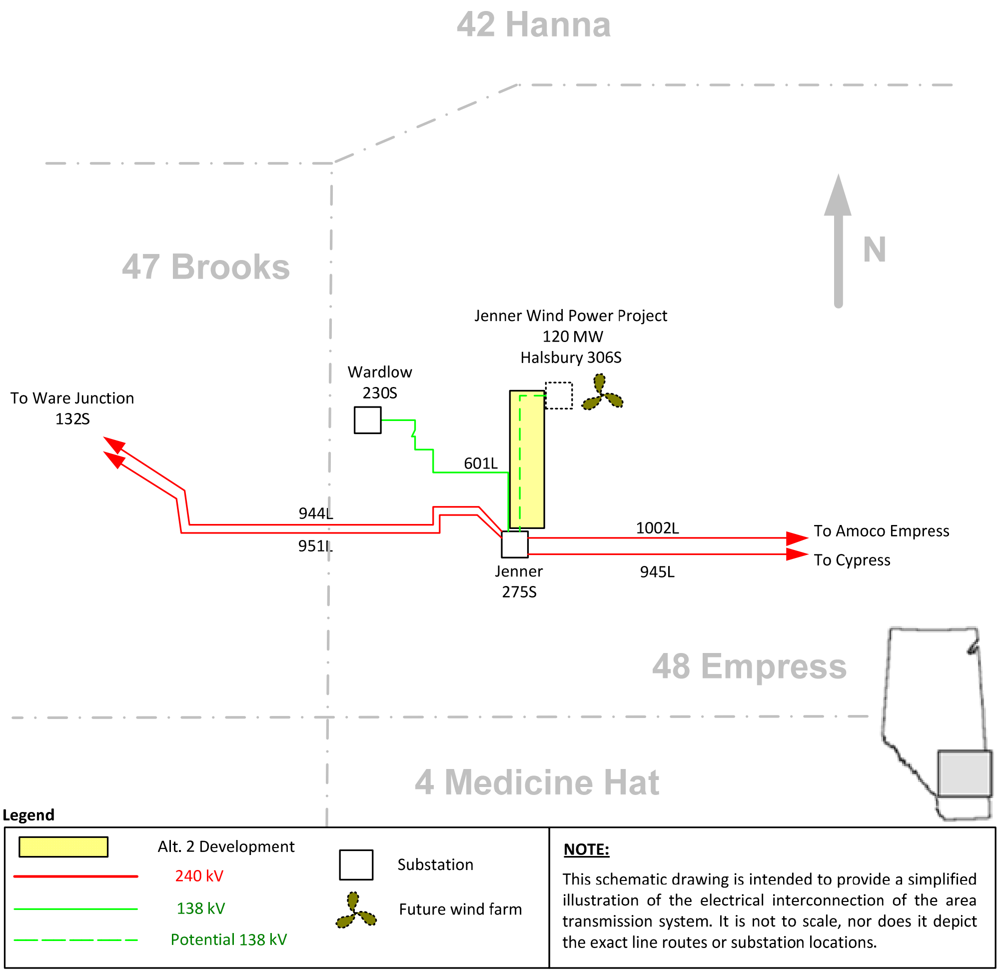
Alternative 2 involves connecting the Facility to the 138 kV transmission system at the Jenner 275S substation, as shown in Figure 5-3.

This alternative includes:

- adding a new 138 kV circuit of approximately 14 km to connect the market participant's proposed Halsbury 306S substation and the Jenner 275S substation;
- adding a 240/138 kV transformer at the Jenner 275S substation;
- expansion of the 138 kV and 240 kV buswork;[5] and
- other associated equipment.

[5] The TFO has advised that this alternative would require expansion of the 138 kV and 240 kV busses.

Figure 5-3: Alternative 2



Alternative 3 – Radial connection to 240 kV transmission system via Jenner 275S substation

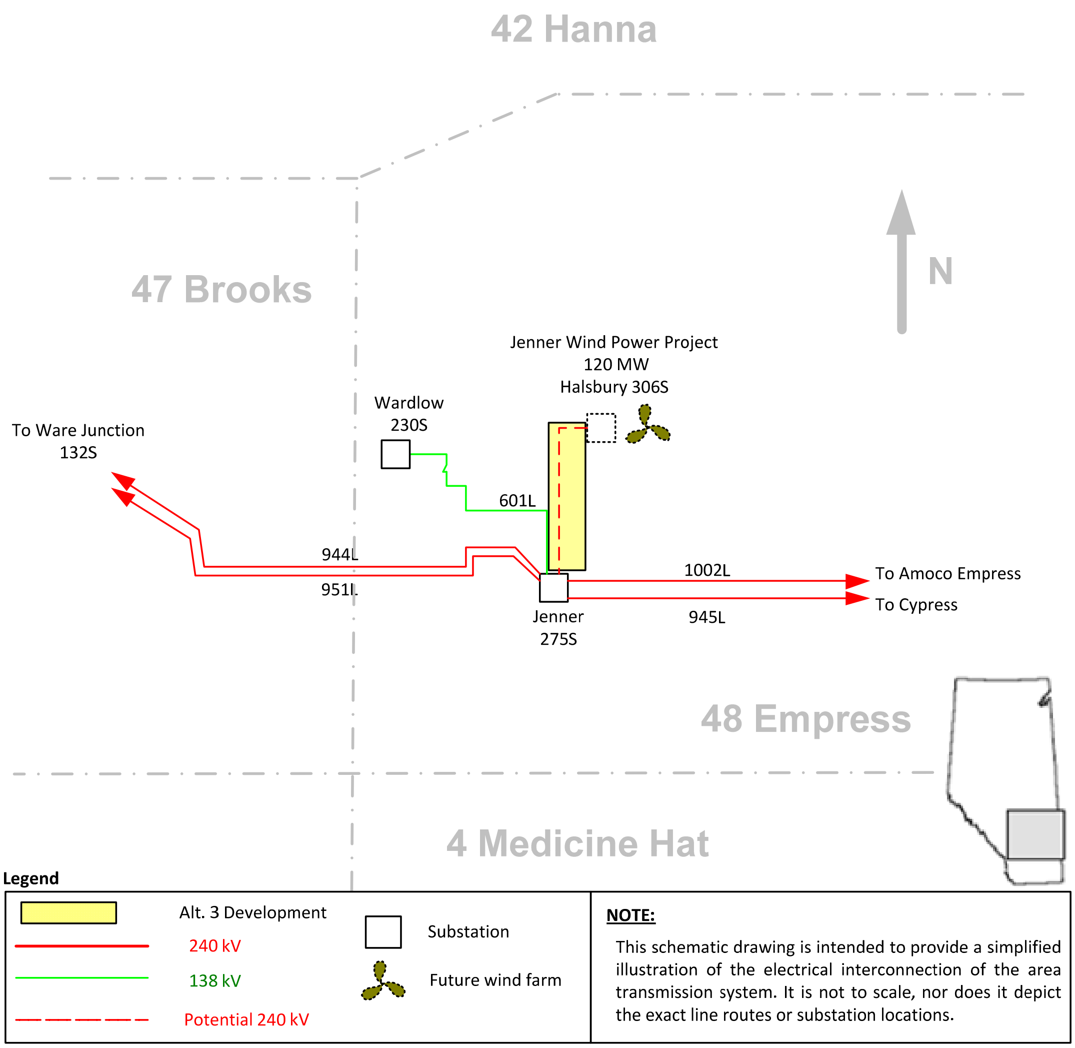
Alternative 3 involves connecting the Facility to the 240 kV transmission system at the Jenner 275S substation, as shown in Figure 5-4.

This alternative includes:

- adding a new 240 kV circuit of approximately 14 km to connect the market participant's proposed Halsbury 306S substation and the Jenner 275S substation;
- adding a 240 kV circuit breaker at the Jenner 275S substation;
- adding a new 240 kV diameter at the Jenner 275S substation; [6] and
- other associated equipment.

[6] The TFO has advised that a new 240 kV diameter would be required at the Jenner 275S substation to connect the new 240 kV transmission circuit.

Figure 5-4: Alternative 3



5.2.1. Connection Alternatives Not Selected for Further Studies

<u>Alternative 1</u>

Alternative 1 is not considered to be technically feasible, given the limited thermal capacity of the existing transmission line 601L and the limited transformation capacity of the existing transformers T1 and T3 by which the transmission line 601L is connected to the transmission system. Alternative 1 was not selected for further study.

<u>Alternative 2</u>

Alternative 2 is considered technically feasible. Alternative 2 involves increased transmission developments and hence, increased costs compared to Alternative 3. Alternative 2 was not selected for further study.

5.2.2. Connection Alternatives Selected for Further Studies

Alternative 3 was selected for further study as it is technically feasible and has the least amount of transmission development.

6. Technical Analysis of the Project Connection

6.1. Power Flow Results

This section provides the results for the post-Project power flow studies. The analysis of these results, including mitigations for observed Reliability Criteria violations, is provided in in Section 8. All power flows are based on 138 kV system voltage.

6.1.1. Scenario 4: 2017 SL

The 2017 SL post-Project power flow diagrams are provided in Attachment B.

Category A conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B contingency conditions

Thermal criteria violations were observed under Category B contingency conditions.

The observed thermal criteria violations are shown in Table 6-1.

Table 6-1: 2017 SL (Post-Project), N-1 Thermal Loading

System Condition	Overload Branch	2017 SL Pre-Project		2017 SL Post-Project		%Diff
		Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
N-1: 9L29 (Oakland 946S - Coyote Lake 963S)	7L128 144 kV Line (Coyote Lake 963S - Michichi Creek 802S)	159.1	167.7	160.5	169.2	1.5
	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	120.1	126.6	122.9	129.5	2.9
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	116.8	123.1	119.5	126	2.9
	7L85 144 kV Line (Bull Pound 803S – Anderson 801S)	119.4	125.9	117	123.2	-2.7
	7L85 144 kV Line (Wintering Hills 804S – Bull Pound 803S)	125.7	132.4	123.2	129.8	-2.6
	Nevis Transformer 766S901T 240/144 kV	100	100	103.2	103.2	3.2

6.1.2. Scenario 5: 2017 SP

The 2017 SP post-Project Power flow diagrams are provided in Attachment D.

Category A conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B contingency conditions

Reliability Criteria violations, both thermal and voltage range criteria violations, were observed under Category B contingency conditions.

The observed thermal criteria violations are shown in Table 6-2 and the observed voltage range criteria violations are shown in Table 6-3.

Table 6-2: 2017 SP (Post-Project), N-1 Thermal Loading

System Condition	Overload Branch	2017 SP Pre-Project		2017 SP Post-Project		%diff
		Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
N-1: 666L (Tilley 498S – West Brooks 28S)	892L 138 kV Line (Suffield 895S – Bowmanton 244S)	72	107.2	72.2	107.7	0.5
N-1: 9L29 (Oakland 946S - Coyote Lake 963S)	7L128 144 kV Line (Coyote Lake 963S to Michichi Creek 802S)	160.8	169.4	160.8	169.4	0
	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	121.8	128.3	124.4	131.1	2.8
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	117.9	124.2	120.5	127.0	2.8
	7L85 144 kV Line (Bull Pound 803S – Anderson 801S)	111.7	117.7	108.8	114.6	-3.1
	7L85 144 kV Line (Wintering Hills 804S – Bull Pound 803S)	121.9	128.5	118.9	125.3	-3.2
	Nevis Transformer 766S901T 240/144 kV	98.4	98.4	101.3	101.3	2.9

Table 6-3: 2017 SP (Post-Project), N-1 Voltage Range Violation

System Condition	Bus No., substation, voltage (kV)	2017 SP Pre-Project			2017 SP Post-Project		
		Initial Voltage p.u	Post outage Voltage p.u	Range	Initial Voltage p.u	Post outage Voltage p.u	Range
N-1: 666L (Tilley 498S – West Brooks 28S)	275 Tilley 498S 138 kV	1.01	0.88	Below extreme minimum	1.00	0.88	Below extreme minimum

6.1.3. Scenario 6: 2017 WP

The 2017 WP post-Project power flow diagrams are provided in Attachment F.

Category A conditions

No Reliability Criteria violations were observed under Category A conditions.

Category B contingency conditions

Reliability Criteria violations, both thermal and voltage range criteria violations, were observed under Category B contingency conditions.

The observed thermal criteria violations are shown in Table 6-4 and the observed voltage range criteria violations are shown in Table 6-5.

Table 6-4: 2017 WP (Post-Project), N-1 Thermal Loading

System Condition	Overload Branch	2017 WP Pre-Project		2017 WP Post-Project		%Diff
		Power Flow (MVA)	% Loading	Power Flow (MVA)	% Loading	
N-1: 9L20 (Nevis 766S – Cordel 755S)	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	95.7	100.9	102.3	107.8	6.9
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	90.5	95.3	97	102.2	6.9
N-1: 9L29 (Oakland 946S - Coyote Lake 963S)	7L159 144 kV Line (7L16 Tap - Heatburg 948S)	123.9	130.5	126.6	133.4	2.9
	7L128 144 kV Line (Coyote Lake 963S - Michichi Creek 802S)	157	165.4	157	165.4	0
	7L16 144 kV Line (Nevis 766S – Heatburg 948S)	118.7	125.1	121.4	127.9	2.8
	7L85 144 kV Line (Bull Pound 803S – Anderson 801S)	102.7	108.2	100	105.3	-2.9
	7L85 144 kV Line (Wintering Hills 804S – Bull Pound 803S)	109.4	115.3	106.8	112.5	-2.8
	Nevis Transformer 766S901T 240/144 kV	98.3	98.3	101.3	101.3	3

Table 6-5: 2017 WP (Post-Project), N-1 Voltage Range Violation

System Condition	Bus No., substation, voltage (kV)	2017 WP Pre-Project			2017 WP Post-Project		
		Initial Voltage p.u	Post outage Voltage p.u	Range	Initial Voltag e p.u	Post outage Voltage p.u	Range
N-1: 666L (Tilley 498S – West Brooks 28S)	270 Suffield 895S 138 kV	1.0	0.81	Below extreme minimum	1.00	0.8	Below extreme minimum
	275 Tilley 498S 138 kV	1.01	0.77	Below extreme minimum	1.01	0.77	Below extreme minimum

6.2. Transient Stability Analysis

The transient stability analysis was performed on the 2017 SL, 2017 SP and 2017 WP scenarios for the selected alternative. Bus voltages, generators' active power and angle, synchronous motors active power and angle, branch active and reactive power were monitored for the contingencies listed in Table 2-13.

The results did not indicate any transient stability concerns, and the system showed acceptable dynamic response to all studied Category B contingencies. Detailed stability plots are provided in Attachments G to I, respectively.

6.3. Short-Circuit Analysis

Short circuit analysis was performed using the 2017 WP and 2024 WP scenarios to determine the expected system short circuit levels[7] in the vicinity of the proposed Halsbury 306S substation. Single phase and three phase fault currents were calculated at the proposed Halsbury 306S substation as well as the adjacent existing substations. The results are provided in the subsections below for consideration in the Project facility design.

6.3.1. Pre-Project

Table 6-6 provides the 2017 WP short-circuit levels before the Project.

Table 6-6: Summary of Short-Circuit Current Levels, Pre-Project (2017 WP)

Substation	Base Voltage (kV)	Pre-fault Voltage (p.u.)	3-phase		Single-phase-to-ground	
			Positive Sequence Impedance (p.u.) 1	Current (kA)	Zero Sequence Impedance (p.u.) 1	Current (kA)
Ware Junction 132S	240	1.055	0.003434+j0.019174	13.59	0.002765+j0.019272	13.40
Jenner 275S	240	1.063	0.006036+j0.034269	7.61	0.025321+j0.111509	4.32
	138	1.023	0.078275+j0.840580	0.525	0.050727+j1.448889	0.424
Cypress	240	1.07	0.006486+j0.043672	5.99	0.015888+j0.111009	3.98

[7] 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.

562S	138	1.017	0.005992+j0.048781	8.89	0.011986+j0.090791	6.99
Amoco Empress 163S	240	1.069	0.006362+j0.043321	6.04	0.017878+j0.116070	3.89
	138	1.016	0.006399+j0.048942	8.84	0.015785+j0.101385	6.58
Empress 394S	138	1.016	0.006705+j0.049613	8.72	0.015449+j0.100869	6.56
Wardlow 230S	138	1.022	0.110085+j0.902412	0.487	0.115679+j1.678937	0.38
Chappice Lake 649S	138	1.016	0.055496+j0.114199	3.47	0.100094+j0.332869	2.21

Note: 1) per unit (p.u.) quantities are on 100 MVA base and system voltage base.

6.3.2. Post-Project

Table 6-7 and Table 6-8 provide the 2017 WP and 2024 WP short-circuit levels after the Project.

Table 6-7: Summary of Short-Circuit Current Levels, Post-Project (2017 WP)

Substation	Base Voltage (kV)	Pre-fault Voltage (p.u.)	3-phase		Single-phase-to-ground	
			Positive Sequence Impedance (p.u.) 1	Current (kA)	Zero Sequence Impedance (p.u.) 1	Current (kA)
Ware Junction 132S	240	1.062	0.003377+j0.018991	13.8	0.002705+j0.018597	13.7
Jenner 275S	240	1.072	0.005629+j0.033089	7.96	0.012114+j0.068444	5.86
	138	1.032	0.076944+j0.840065	0.531	0.037587+j1.406107	0.434
Cypress 562S	240	1.079	0.006274+j0.042981	6.15	0.014503+j0.099902	4.29
	138	1.021	0.005767+j0.047904	9.09	0.010862+j0.082717	7.40
Amoco Empress 163S	240	1.078	0.006147+j0.042614	6.20	0.016461+j0.104952	4.18
	138	1.02	0.006190+j0.048120	9.04	0.014491+j0.093000	6.96
Empress 394S	138	1.02	0.006493+j0.048780	8.91	0.014190+j0.092544	6.93
Wardlow 230S	138	1.031	0.108713+j0.901961	0.492	0.102484+j1.636072	0.388
Chappice Lake 649S	138	1.02	0.055367+j0.113867	3.49	0.099700+j0.330047	2.23

Halsbury 306S	240	1.072	0.008201+j0.052935	4.99	0.006512+j0.068304	4.56

Note: 1) per unit (p.u.) quantities are on 100 MVA base and system voltage base.

Table 6-8: Summary of Short-Circuit Current Level, Post-Project (2024 WP)

Substation	Base Voltage (kV)	Pre-fault Voltage (p.u.)	3-phase		Single-phase-to-ground	
			Positive Sequence Impedance (p.u.) 1	Current (kA)	Zero Sequence Impedance (p.u.) 1	Current (kA)
Ware Junction 132S	240	1.063	0.003351+j0.018217	13.81	0.005031+j0.022102	12.73
Jenner 275S	240	1.057	0.006103+j0.031997	7.81	0.011910+j0.060583	6.01
	138	1.015	0.074837+j0.793943	0.532	0.036461+j1.336838	0.435
Cypress 562S	240	1.052	0.007680+j0.041225	6.03	0.003905+j0.034699	6.45
	138	1.021	0.009030+j0.047898	8.76	0.004725+j0.053001	8.64
Amoco Empress 163S	240	1.051	0.007503+j0.040880	6.08	0.006051+j0.042789	6.05
	138	1.021	0.009197+j0.048144	8.72	0.007366+j0.060132	8.21
Empress 394S	138	1.021	0.009522+j0.048870	8.58	0.007404+j0.060841	8.10
Wardlow 230S	138	1.013	0.106293+j0.855624	0.492	0.101314+j1.566655	0.386
Chappice Lake 649S	138	1.015	0.050951+j0.117012	3.33	0.104575+j0.428414	1.84
Halsbury 306S	240	1.057	0.008657+j0.051905	4.83	0.006962+j0.065289	4.47

Note: 1) per unit (p.u.) quantities are on 100 MVA base and system voltage base.

7. Project Interdependencies

The Project is not dependent on the completion of any 2015 LTP system transmission developments in order to proceed.

A number of 144 kV transmission lines in the Project area are known to be limited by current transformer (CT), as shown in Table 2-8.

Restoration of the seasonal continuous thermal ratings of the 144 kV transmission lines 7L159 and 7L16 can mitigate the thermal criteria violations that are observed following the contingencies of the 240 kV transmission line 9L20.

The AESO plans to direct the TFO in the Project area to restore the ratings for the transmission lines 7L159 and 7L16 to their respective seasonal continuous thermal ratings. The restoration of these transmission lines' respective seasonal continuous thermal ratings is outside the scope of the Project.

8. Conclusions and Recommendations

Analysis and Conclusions

Table 8-1 provides analysis of, and conclusions about, the impact of the Project, including mitigations for observed Reliability Criteria violations.

Table 8-1: Project Impact and Mitigation Measures

Condition	Scenario	Results			Mitigation Measures (Pre- and Post-Project)
		Contingency	Pre-Project Observations	Post-Project Comparison	
Category A	2017 SL	Not applicable	No issues	No impact	None required
	2017 SP	Not applicable	No issues	No impact	None required
	2017 WP	Not applicable	No issues	No impact	None required
Category B	2017 SL	Loss of 240 kV transmission line 9L29	Thermal criteria violation on the 144 kV transmission line 7L128	No material change	**Pre:** Can be mitigated by the planned RASs for the Suncor Hand Hills and BluEarth Hand Hills WAGFs (collectively, the planned RASs for the Hand Hills WAGFs)
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L159	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L16	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L85	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs.
					Post: Same as pre-Project

Condition	Scenario	Results			Mitigation Measures (Pre- and Post-Project)
		Contingency	**Pre-Project Observations**	**Post-Project Comparison**	
			No issues	New marginal thermal criteria violation on a 240/144 kV transformer at the Nevis 766S substation	**Pre:** None required
					Post: Can be mitigated by the planned RASs for the Hand Hills WAGFs
	2017 SP	Loss of the 138 kV transmission line 666L	Thermal criteria violation on the 138 kV transmission line 892L	No material change	**Pre:** Currently being managed by using real time operational practices
					Post: Can also be managed by using real time operational practices
			Voltage range criteria violation on the 138 kV bus at the Tilley 498S substation	No change	**Pre:** Currently being mitigated by using a RAS at Tilley 498S substation (the Tilley 498S RAS)
					Post: Can continue to be mitigated using the Tilley 498S RAS
		Loss of the 138 kV transmission line 669L	Marginal thermal criteria violation on the 138 kV transmission line 668L	Thermal loading reduced (no longer a Reliability Criteria violation)	**Pre:** Currently being managed by using real time operational practices
					Post: None required
		Loss of 240 kV transmission line 9L29	Thermal criteria violation on the 144 kV transmission line 7L128	No material change	**Pre:** be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L159	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L16	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs

Condition	Scenario	Results: Contingency	Results: Pre-Project Observations	Results: Post-Project Comparison	Mitigation Measures (Pre- and Post-Project)
			violation on the 144 kV transmission line 7L85		**Post:** Same as pre-Project
			No issues	New marginal thermal criteria violation on a 240/144 kV transformer at the Nevis 766S substation	**Pre:** None required
					Post: Can be mitigated by the planned RASs for the Hand Hills WAGFs
	2017 WP	Loss of the 240 kV transmission line 9L29	Thermal criteria violation on the 144 kV transmission line 7L159	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L128	No change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L16	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			Thermal criteria violation on the 144 kV transmission line 7L85	No material change	**Pre:** Can be mitigated by the planned RASs for the Hand Hills WAGFs
					Post: Same as pre-Project
			No issues	New marginal thermal criteria violation on a 240/144 kV transformer at the Nevis 766S substation	**Pre:** None required
					Post: Can be mitigated by the planned RASs for the Hand Hills WAGFs

Condition	Scenario	Results			Mitigation Measures (Pre- and Post-Project)
		Contingency	Pre-Project Observations	Post-Project Comparison	
		Loss of the 240 kV transmission line 9L20	Thermal criteria violation on the 144 kV transmission line 7L159	Materially increased thermal loading on transmission line 7L159	**Pre:** Can be mitigated with completion of line restoration work[8] (Restoration) at transmission line 7L159
					Post: Same as pre-Project
			No issues	New material thermal criteria violation on the 144 kV transmission line 7L16	**Pre:** None required
					Post: Can be mitigated with Restoration of transmission line 7L16
		Loss of 138 kV transmission line 666L	Voltage range criteria violation on the 138 kV bus at the Suffield 895S substation	No material change	**Pre:** Currently being mitigated using the Tilley 498S RAS
					Post: Same as pre-Project
			Voltage range criteria violation on the 138 kV bus at the Tilley 498S substation	No change	**Pre:** Currently being mitigated using the Tilley 498S RAS
					Post: Same as pre-Project

Based on the study results, Alternative 3 is technically viable. As shown in Table 8-1, the connection assessment identified a number of pre-Project and post-Project system performance issues. Real time operational practices and existing and planned RASs can be used to mitigate most of the pre- and post-Project system performance issues. Mitigation of the observed thermal criteria violations on the 144 kV transmission lines 7L159 and 7L16 following the 9L20 contingency is dependent on the restoration of the 144 kV transmission lines' respective seasonal continuous thermal ratings (as discussed in Section 7). The AESO plans to direct the TFO in the area to restore the seasonal continuous thermal ratings for transmission lines 7L159 and 7L16.

The Project does not impact the effectiveness of existing RASs in the study area, nor does the Project create the need for new RASs in the study area.

Recommendation

[8] As discussed in Section 7 of this report, a number of 144 kV transmission lines in the Project area are known to be limited by current transformer (CT). The AESO plans to direct the TFO in the Project area to restore the seasonal ratings for all of these transmission lines to their normal continuous seasonal thermal ratings.

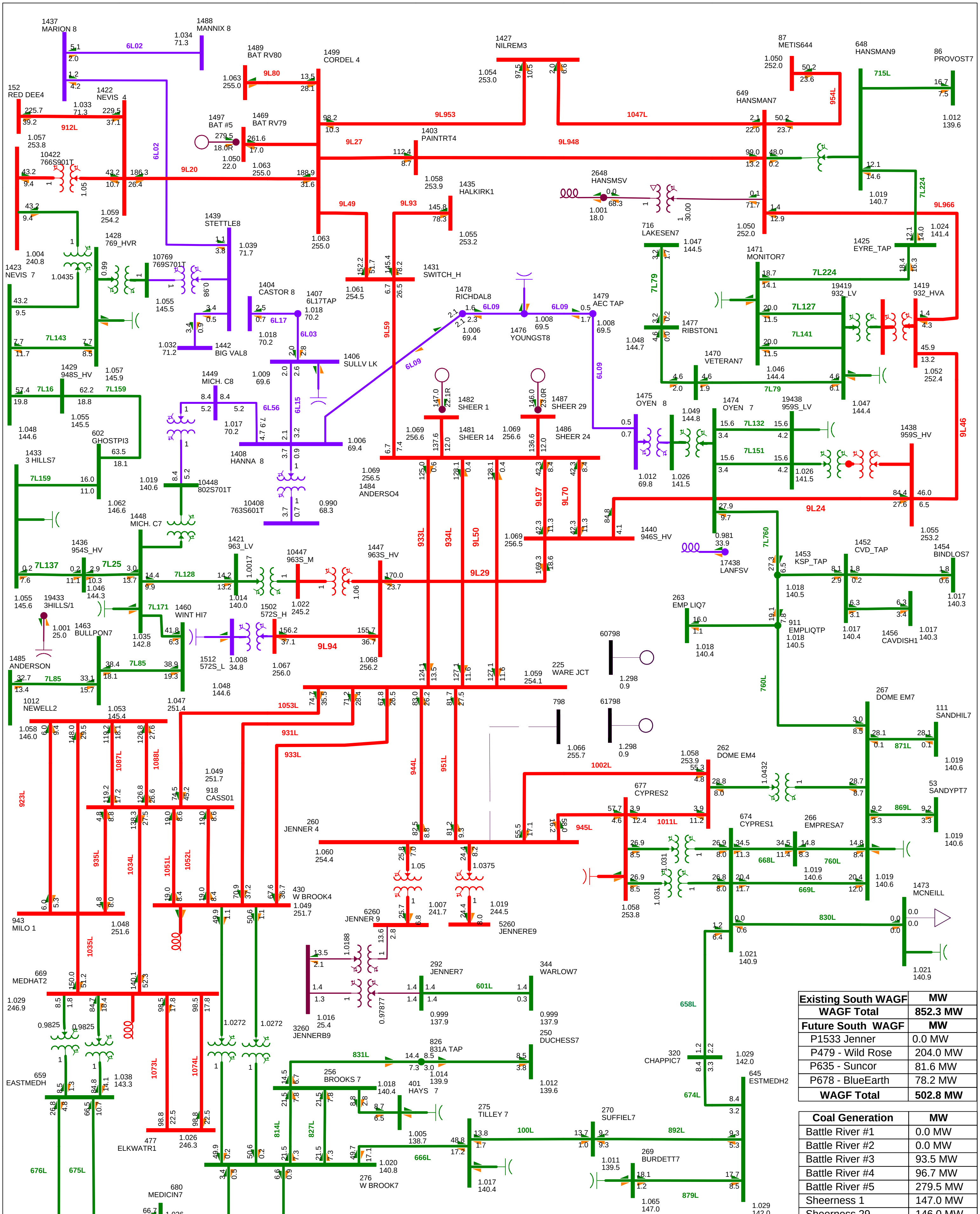
It is recommended to proceed with the Project using Alternative 3 as the preferred option to respond to the market participant's request for system access service, and to use the mitigation measures shown in Table 8-1 to manage the identified system performance issues. A minimum rating of 333 MVA is recommended for the new 240 kV circuit and is consistent with good electric industry practice as it would accommodate a possible future expansion of the Facility (for a maximum capability of up to 300 MW). The dependencies identified in this report (i.e., restoration of the seasonal continuous thermal ratings of the 144 kV transmission lines 7L16 and 7L159) need to be in service prior to energization of the Project.

ATTACHMENT A

2017SL Pre-Connection Power Flow Analysis

Table A-1: Summery of 2017SL Pre-Connection Power Flow Analysis

#	System Condition	Outage	From Substation	To Substation	File Name
B0	N-0	-	-	-	2017SL Pre-Connection (N-0)
B01	N-1	9L29	Oakland 946S	Coyote Lake 963S	Contingency: 9L29(N-1)



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	**MW**
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.8 MW

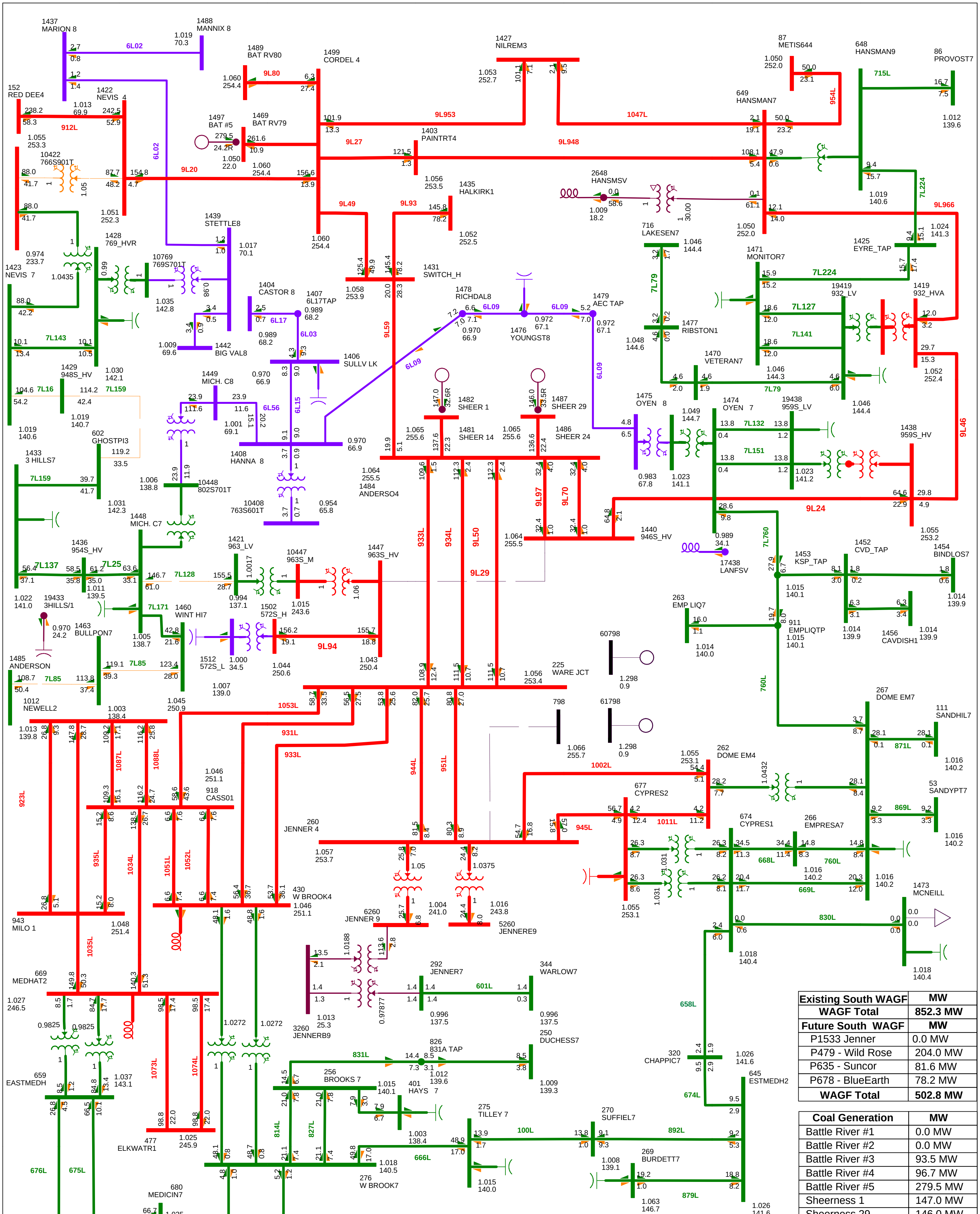
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	93.5 MW
Battle River #4	96.7 MW
Battle River #5	279.5 MW
Sheerness 1	147.0 MW
Sheerness 29	146.0 MW

BC Import: -8.4 MW
SK import: 0.0 MW
MATL import: 0.0 MW
Med-Hat import: 101.6 MW
SOK: 428.4 MW + 0.35 x -225.7 MW

PROJECT 1533, 2017SL PRE-CONNECTION
BASE CASE (N-0)
TUE, SEP 23 2014 8:43

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	MW
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.8 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	93.5 MW
Battle River #4	96.7 MW
Battle River #5	279.5 MW
Sheerness 1	147.0 MW
Sheerness 29	146.0 MW

BC Import: 25.1 MW
SK import: 0.0 MW
MATL import: 0.0 MW
Med-Hat import: 101.6 MW
SOK: 426.6 MW + 0.35 x -238.2 MW

PROJECT 1533, 2017SL PRE-CONNECTION
CONTINGENCY: B01-9L29(N-1)
TUE, SEP 23 2014 8:43

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

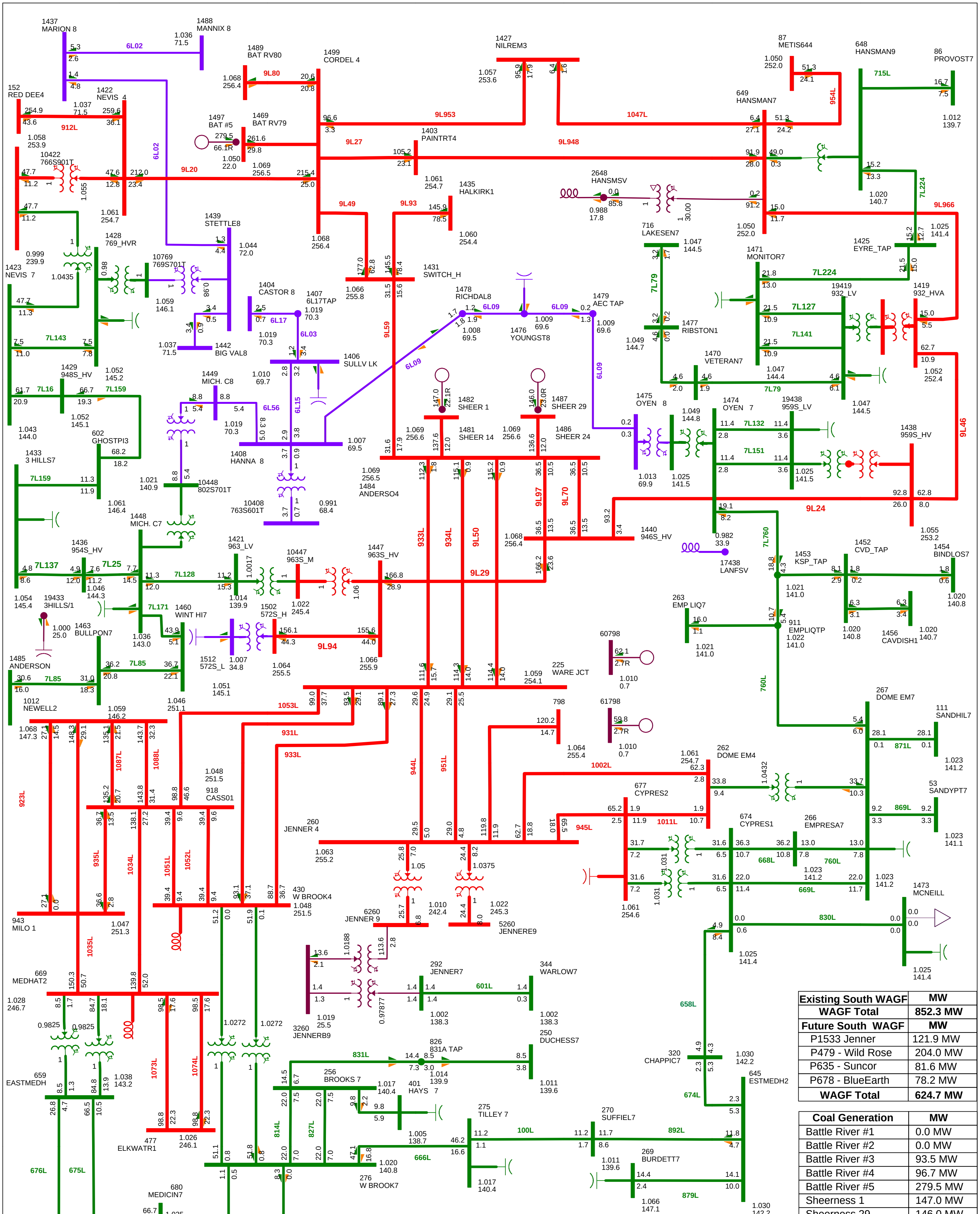
AESO

ATTACHMENT B

2017SL Post-Connection Power Flow Analysis

Table B-1: Summery of 2017SL Post-Connection Power Flow Analysis

#	System Condition	Outage	From Substation	To Substation	File Name
B0	N-0	-	-	-	2017SL Post-Connection (N-0)
B01	N-1	9L29	Oakland 946S	Coyote Lake 963S	Contingency: 9L29(N-1)



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	**MW**
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	**624.7 MW**

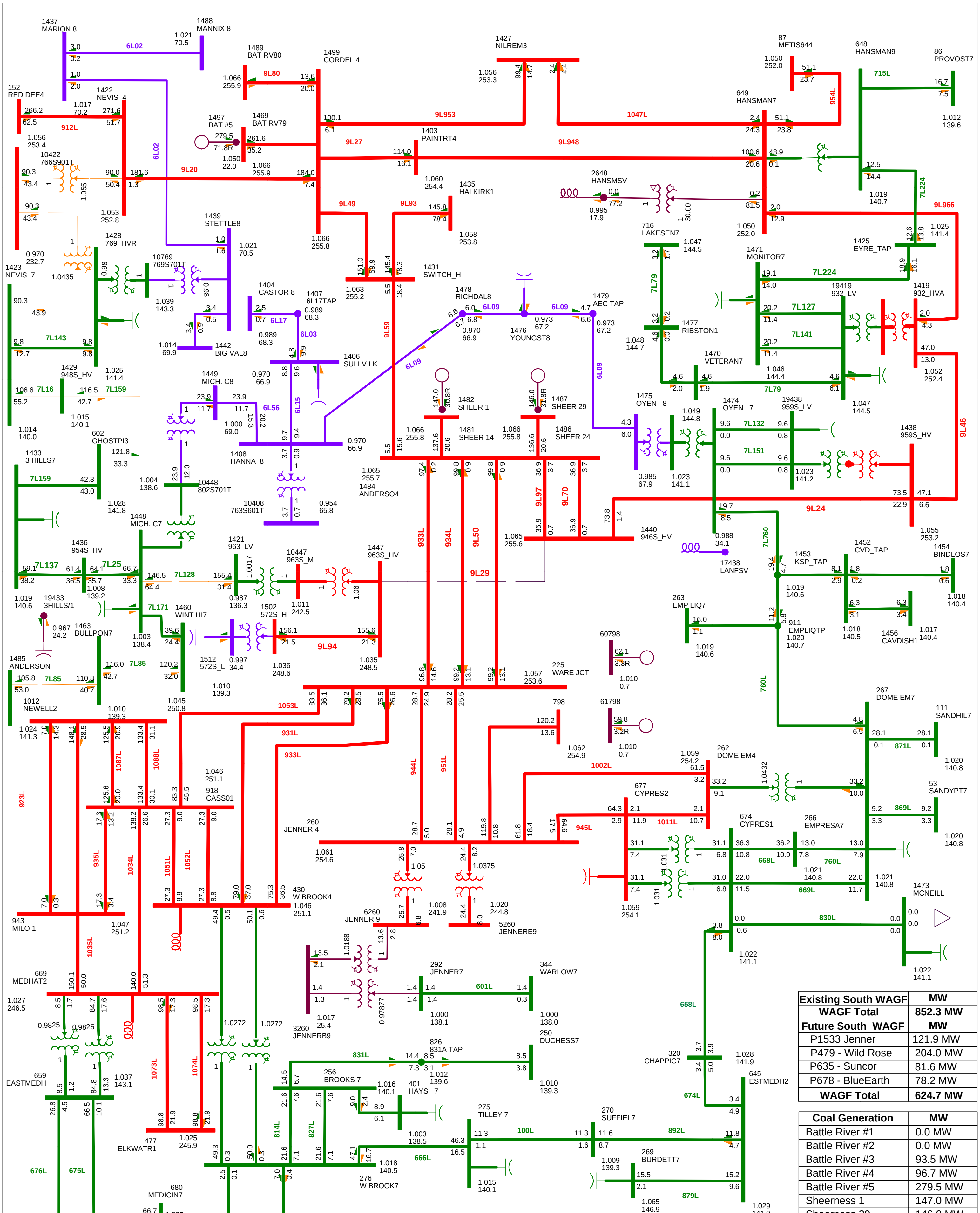
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	93.5 MW
Battle River #4	96.7 MW
Battle River #5	279.5 MW
Sheerness 1	147.0 MW
Sheerness 29	146.0 MW

BC Import: -3.2 MW
SK import: 0.0 MW
MATL import: 0.0 MW
Med-Hat import: 101.6 MW
SOK: 323.3 MW + 0.35 x -254.9 MW

PROJECT 1533, 2017SL POST-CONNECTION
BASE CASE (N-0)
MON, SEP 22 2014 16:57

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	MW
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	624.7 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	93.5 MW
Battle River #4	96.7 MW
Battle River #5	279.5 MW
Sheerness 1	147.0 MW
Sheerness 29	146.0 MW

BC Import: 29.7 MW
SK import: 0.0 MW
MATL import: 0.0 MW
Med-Hat import: 101.6 MW
SOK: 321.5 MW + 0.35 x -266.2 MW

PROJECT 1533, 2017SL POST-CONNECTION
CONTINGENCY: B01-9L29(N-1)
MON, SEP 22 2014 16:57

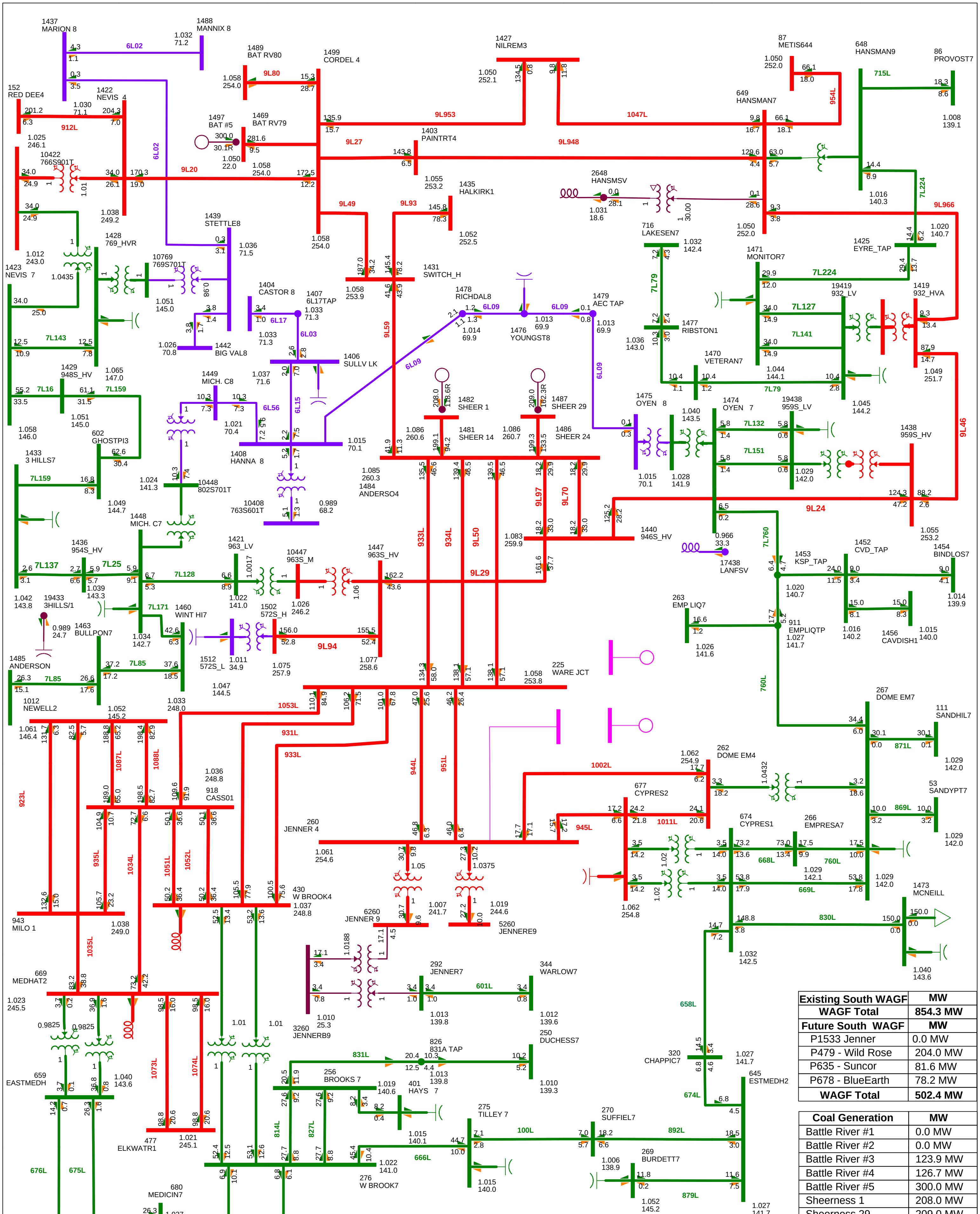
Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO

ATTACHMENT C
2017SP Pre-Connection Power Flow Analysis

Table C-1: Summery of 2017SP Pre-Connection Power Flow Analysis

#	System Condition	Outage	From Substation	To Substation	File Name
B0	N-0	-	-	-	2017SP Pre-Connection (N-0)
B01	N-1	666L	Tilley 498S	West Brooks 28S	Contingency: 666L (N-1)
B02	N-1	669L	Cypress 562S	Amoco Empress 163S	Contingency: 669L (N-1)
B03	N-1	9L29	Oakland 946S	Coyote Lake 963S	Contingency: 9L29 (N-1)



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	**MW**
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	**502.4 MW**

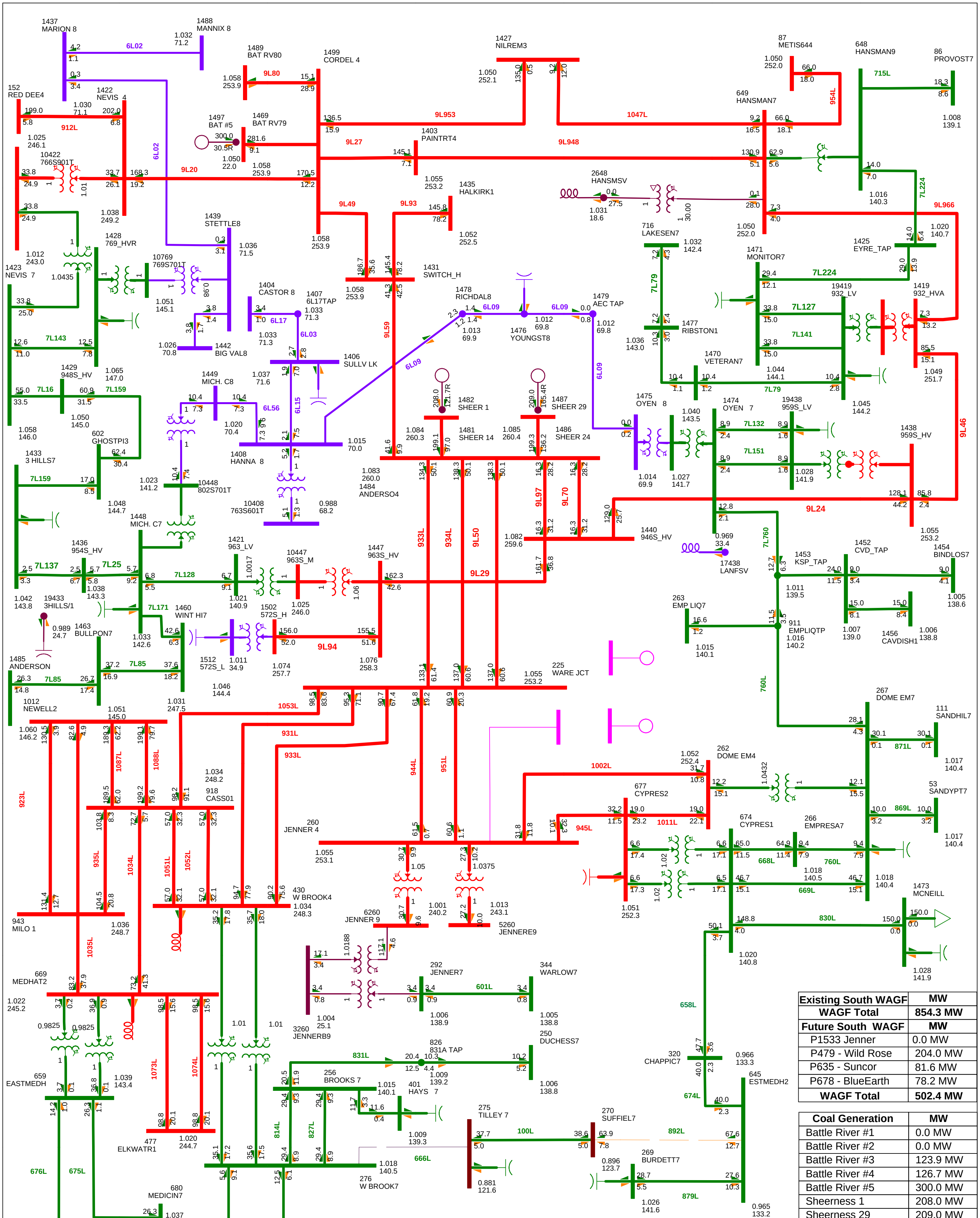
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 551.9 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -26.6 MW
SOK: 219.0 MW + 0.35 x -201.2 MW

PROJECT 1533, 2017SP PRE-CONNECTION
BASE CASE (N-0)
TUE, SEP 23 2014 10:14

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	**MW**
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.4 MW

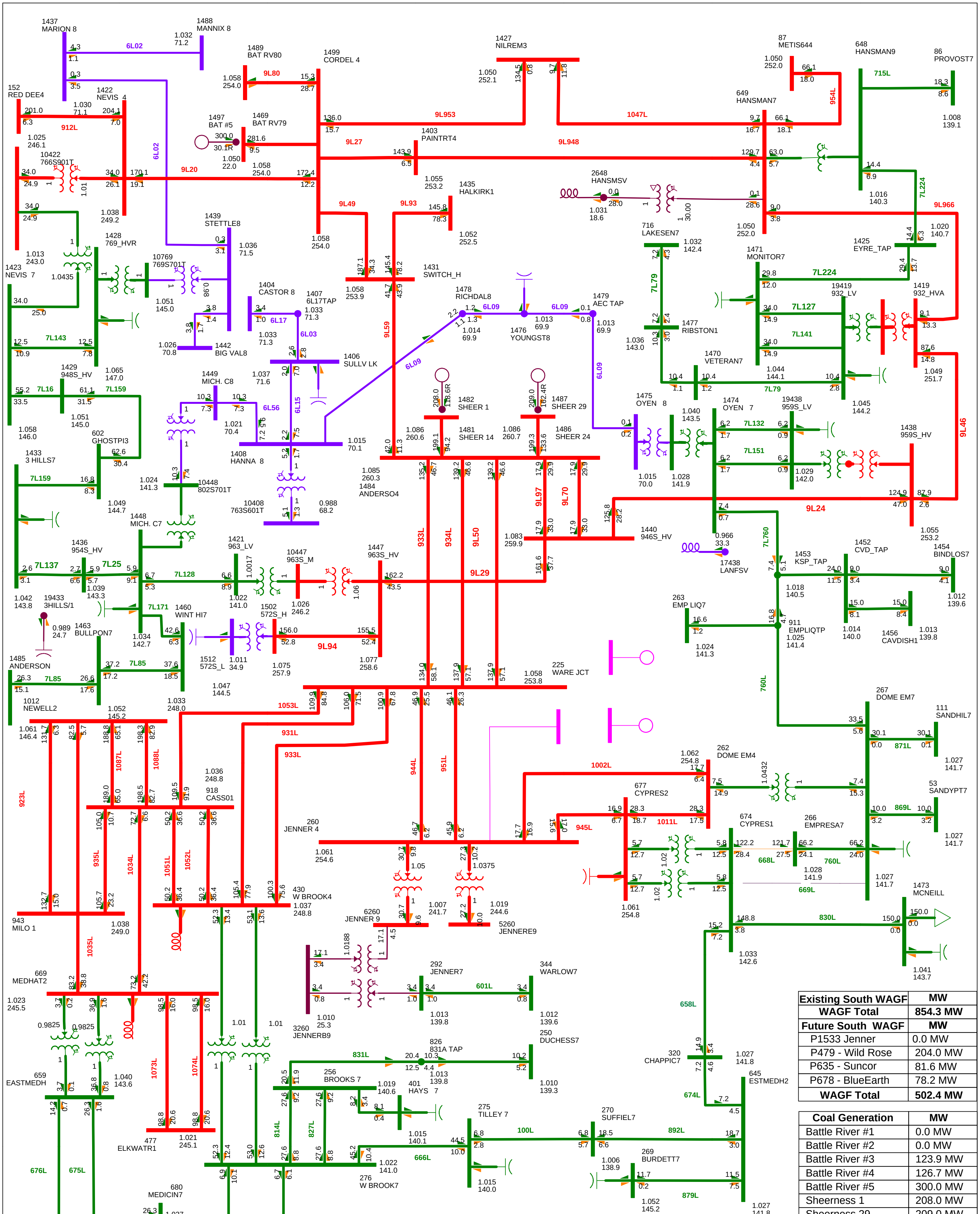
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 559.1 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -26.6 MW
SOK: 218.5 MW + 0.35 x -199.0 MW

PROJECT 1533, 2017SP PRE-CONNECTION
CONTINGENCY: B01-666L(N-1)
TUE, SEP 23 2014 10:14

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	MW
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.4 MW

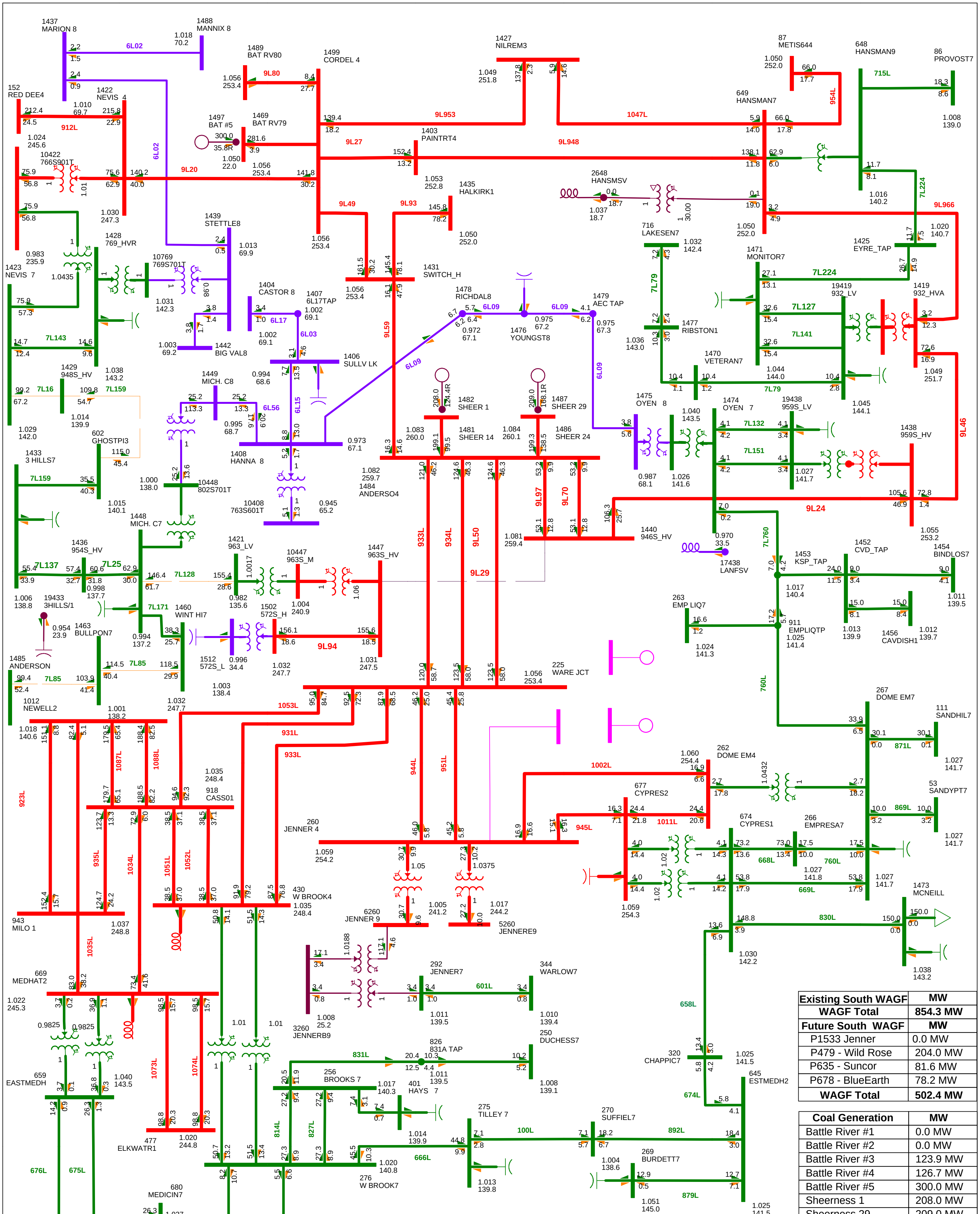
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 552.2 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -26.6 MW
SOK: 219.0 MW + 0.35 x -201.0 MW

PROJECT 1533, 2017SP PRE-CONNECTION
CONTINGENCY: B02-669L(N-1)
TUE, SEP 23 2014 10:14

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	**MW**
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.4 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 586.6 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -26.6 MW
SOK: 217.0 MW + 0.35 x -212.4 MW

PROJECT 1533, 2017SP PRE-CONNECTION
CONTINGENCY: B03-9L29(N-1)
TUE, SEP 23 2014 10:14

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

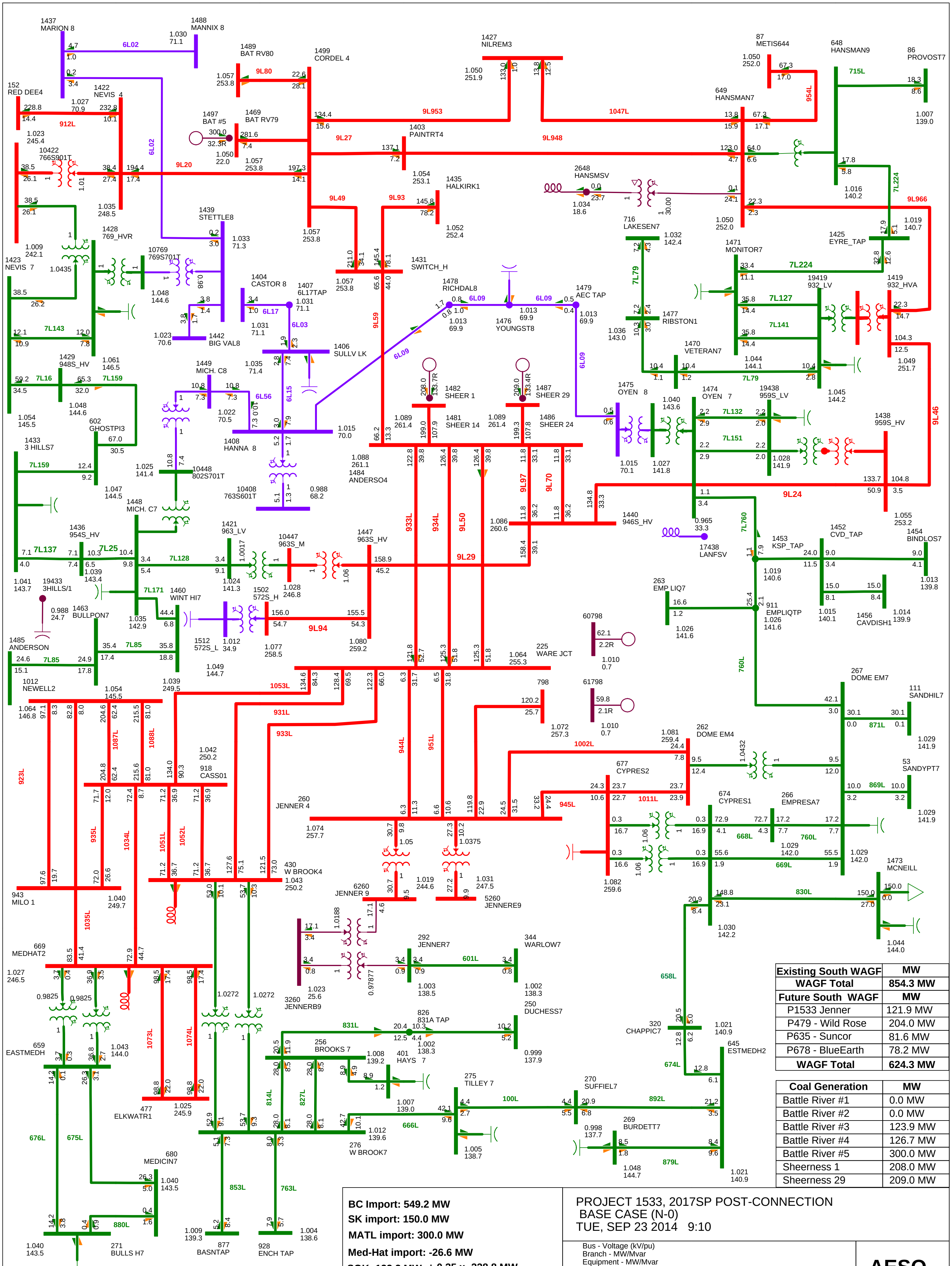
AESO

ATTACHMENT D

2017SP Post-Connection Power Flow Analysis

Table D-1: Summery of 2017SP Post-Connection Power Flow Analysis

#	System Condition	Outage	From Substation	To Substation	File Name
B0	N-0	-	-	-	2017SP Post-Connection (N-0)
B01	N-1	666L	Tilley 498S	West Brooks 28S	Contingency: 666L (N-1)
B02	N-1	9L29	Oakland 946S	Coyote Lake 963S	Contingency: 9L29 (N-1)



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	**MW**
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	**624.3 MW**

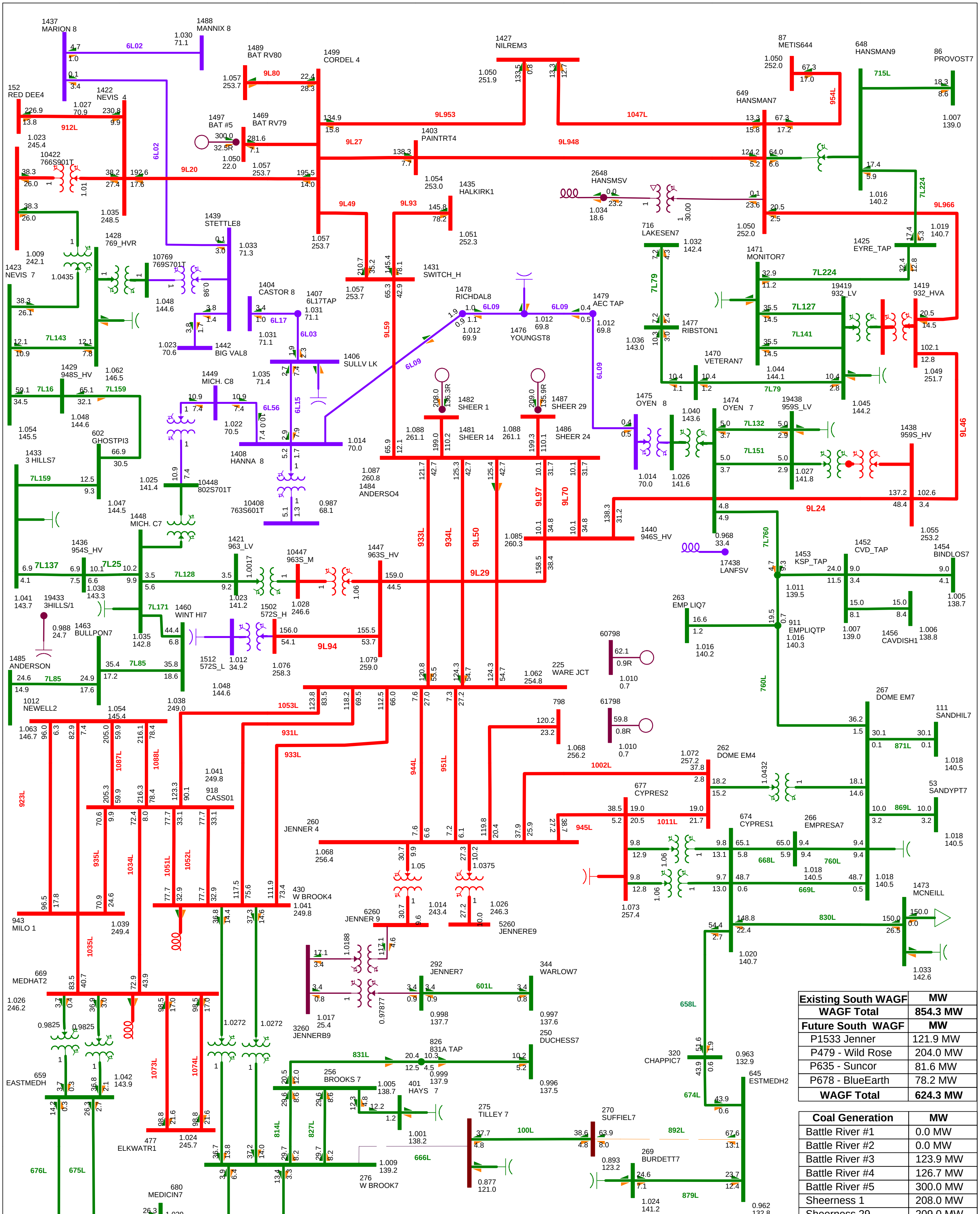
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 549.2 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -26.6 MW
SOK: 123.2 MW + 0.35 x -228.8 MW

PROJECT 1533, 2017SP POST-CONNECTION
BASE CASE (N-0)
TUE, SEP 23 2014 9:10

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	**MW**
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	**624.3 MW**

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 555.9 MW

SK import: 150.0 MW

MATL import: 300.0 MW

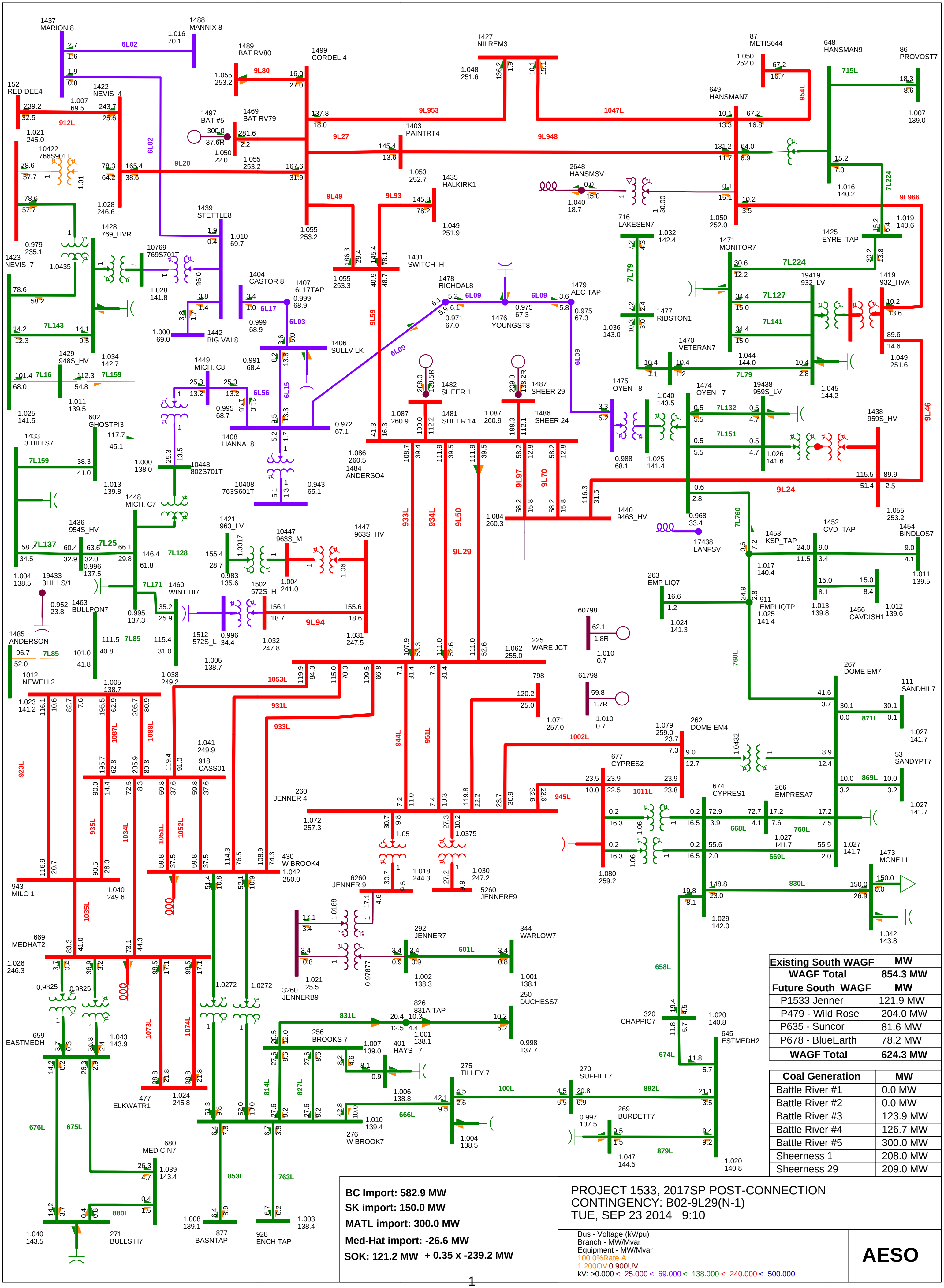
Med-Hat import: -26.6 MW

SOK: 122.7 MW + 0.35 x -226.9 MW

PROJECT 1533, 2017SP POST-CONNECTION
CONTINGENCY: B01-666L(N-1)
TUE, SEP 23 2014 9:10

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	854.3 MW
Future South WAGF	MW
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	624.3 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	123.9 MW
Battle River #4	126.7 MW
Battle River #5	300.0 MW
Sheerness 1	208.0 MW
Sheerness 29	209.0 MW

BC Import: 582.9 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -26.6 MW
SOK: 121.2 MW + 0.35 x -239.2 MW

PROJECT 1533, 2017SP POST-CONNECTION
CONTINGENCY: B02-9L29(N-1)
TUE, SEP 23 2014 9:10

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate A
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

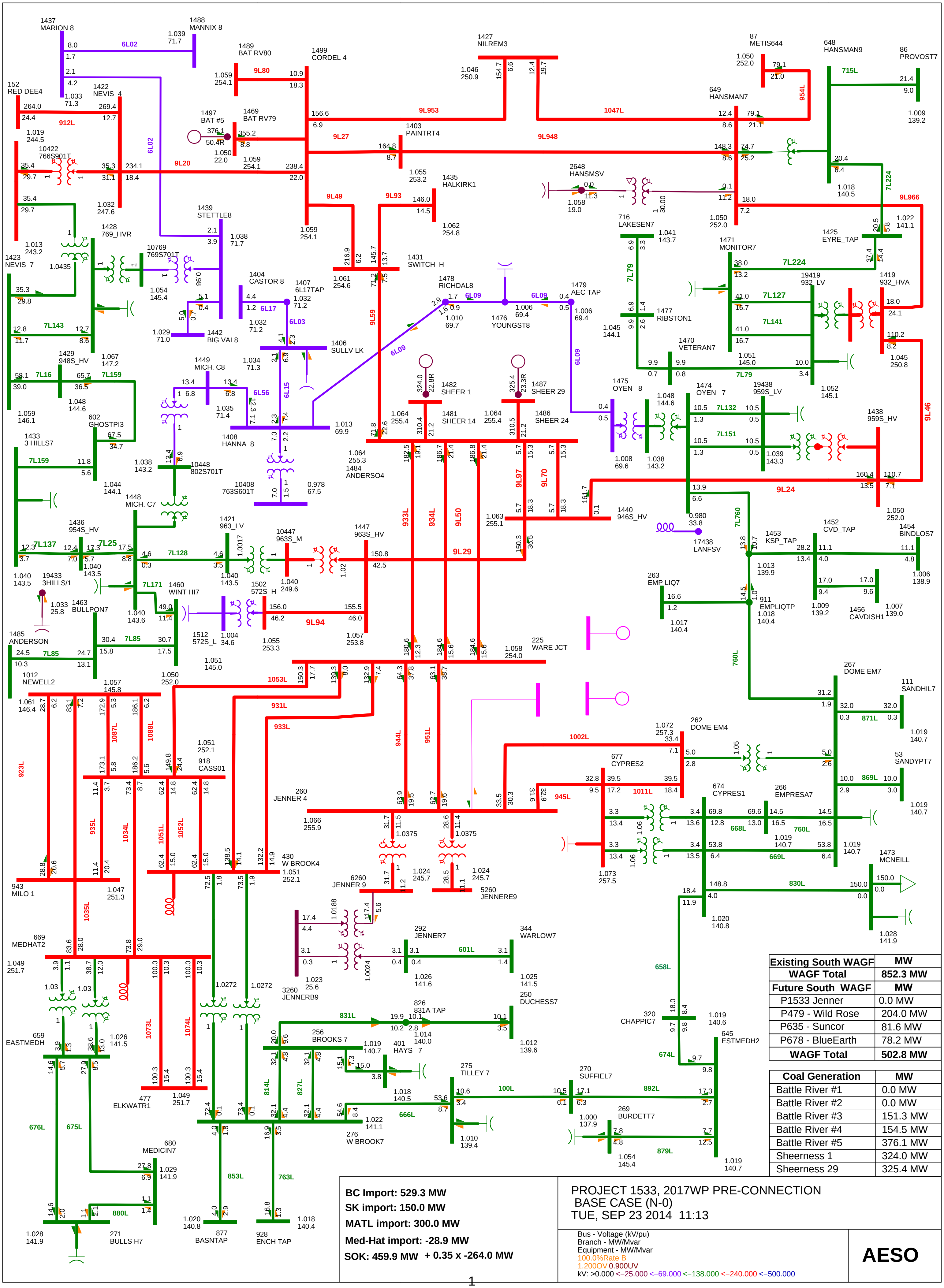
AESO

ATTACHMENT E

2017WP Pre-Connection Power Flow Analysis

Table E-1: Summery of 2017WP Pre-Connection Power Flow Analysis

#	System Condition	Outage	From Substation	To Substation	File Name
B0	N-0	-	-	-	2017WP Pre-Connection (N-0)
B01	N-1	9L29	Oakland 946S	Coyote Lake 963S	Contingency: 9L29 (N-1)
B02	N-1	9L20	Nevis 766S	Cordel 755S	Contingency: 9L20 (N-1)



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	MW
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.8 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	151.3 MW
Battle River #4	154.5 MW
Battle River #5	376.1 MW
Sheerness 1	324.0 MW
Sheerness 29	325.4 MW

BC Import: 529.3 MW

SK import: 150.0 MW

MATL import: 300.0 MW

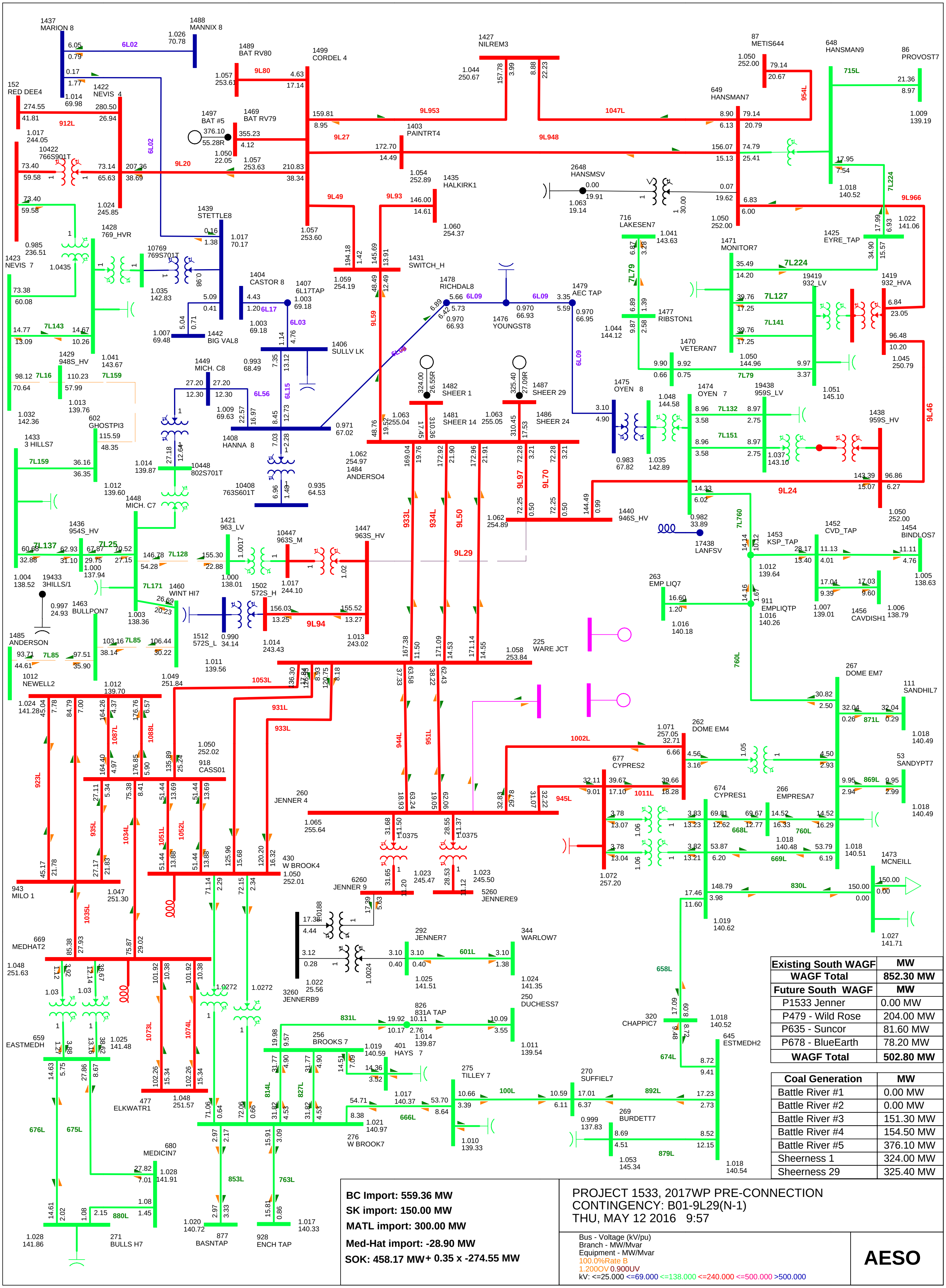
Med-Hat import: -28.9 MW

SOK: 459.9 MW + 0.35 x -264.0 MW

PROJECT 1533, 2017WP PRE-CONNECTION
BASE CASE (N-0)
TUE, SEP 23 2014 11:13

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate B
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	852.30 MW
Future South WAGF	**MW**
P1533 Jenner	0.00 MW
P479 - Wild Rose	204.00 MW
P635 - Suncor	81.60 MW
P678 - BlueEarth	78.20 MW
WAGF Total	502.80 MW

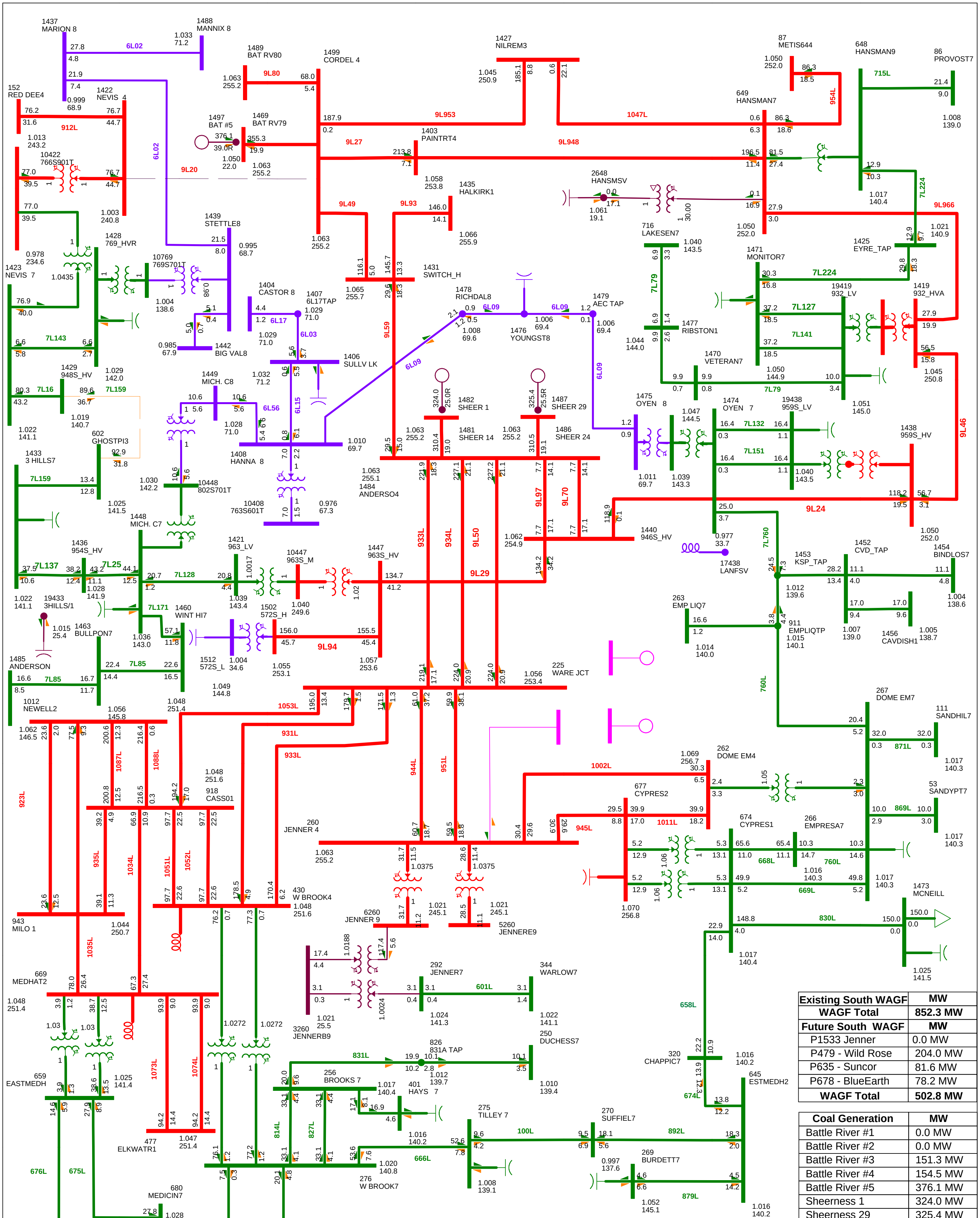
Coal Generation	MW
Battle River #1	0.00 MW
Battle River #2	0.00 MW
Battle River #3	151.30 MW
Battle River #4	154.50 MW
Battle River #5	376.10 MW
Sheerness 1	324.00 MW
Sheerness 29	325.40 MW

BC Import: 559.36 MW
SK import: 150.00 MW
MATL import: 300.00 MW
Med-Hat import: -28.90 MW
SOK: 458.17 MW+ 0.35 x -274.55 MW

PROJECT 1533, 2017WP PRE-CONNECTION
CONTINGENCY: B01-9L29(N-1)
THU, MAY 12 2016 9:57

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate B
1.200OV 0.900UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

AESO



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	MW
P1533 Jenner	0.0 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	502.8 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	151.3 MW
Battle River #4	154.5 MW
Battle River #5	376.1 MW
Sheerness 1	324.0 MW
Sheerness 29	325.4 MW

BC Import: 561.1 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -28.9 MW
SOK: 492.5 MW + 0.35 x -76.2 MW

PROJECT 1533, 2017WP PRE-CONNECTION
CONTINGENCY: B02-9L20(N-1)
TUE, SEP 23 2014 11:13

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate B
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

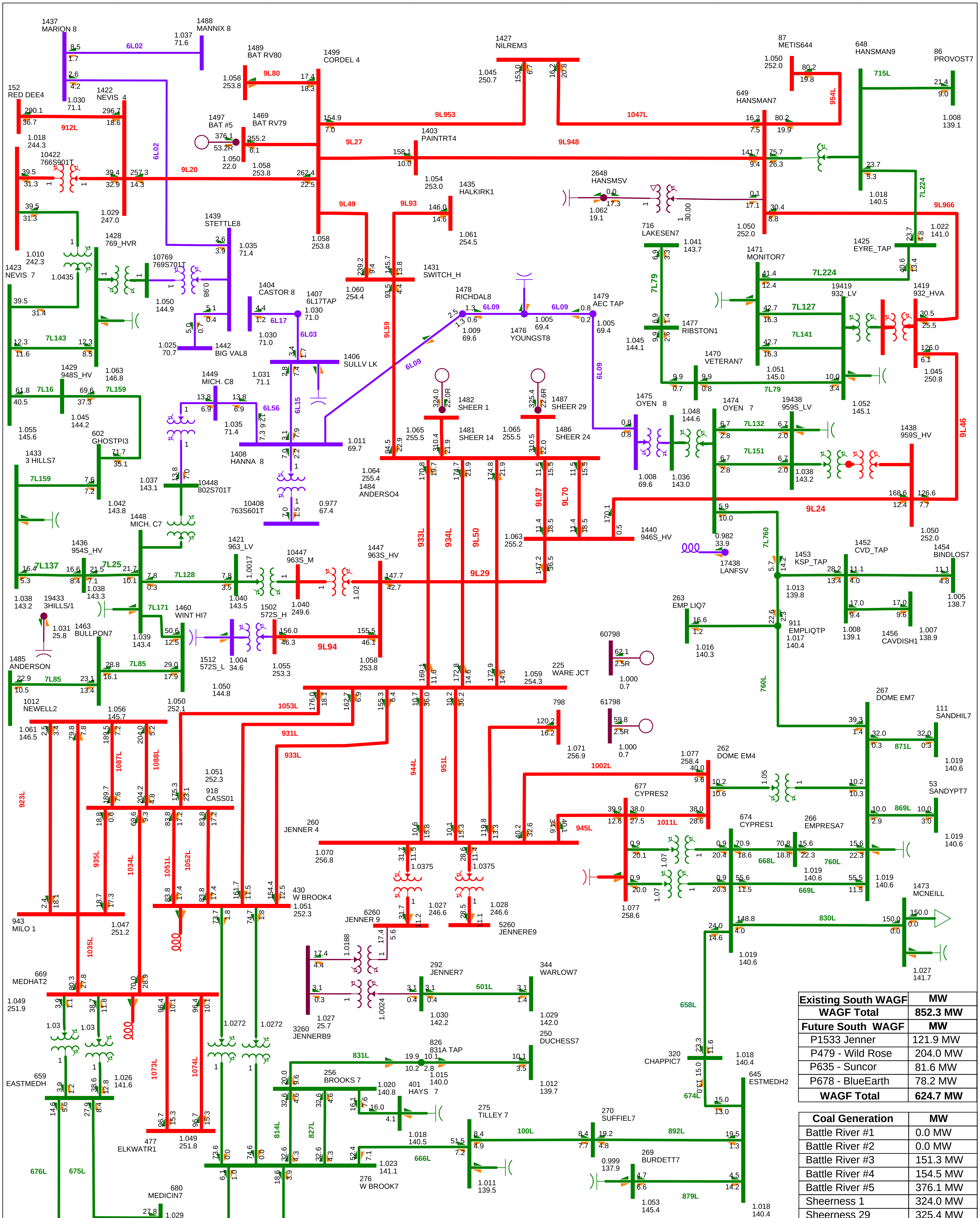
AESO

ATTACHMENT F

2017WP Post-Connection Power Flow Analysis

Table F-1: Summery of 2017WP Post-Connection Power Flow Analysis

#	System Condition	Outage	From Substation	To Substation	File Name
B0	N-0	-	-	-	2017WP Post-Connection (N-0)
B01	N-1	9L20	Nevis 766S	Cordel 755S	Contingency: 9L20 (N-1)
B02	N-1	9L29	Oakland 946S	Coyote Lake 963S	Contingency: 9L29 (N-1)



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	**MW**
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	624.7 MW

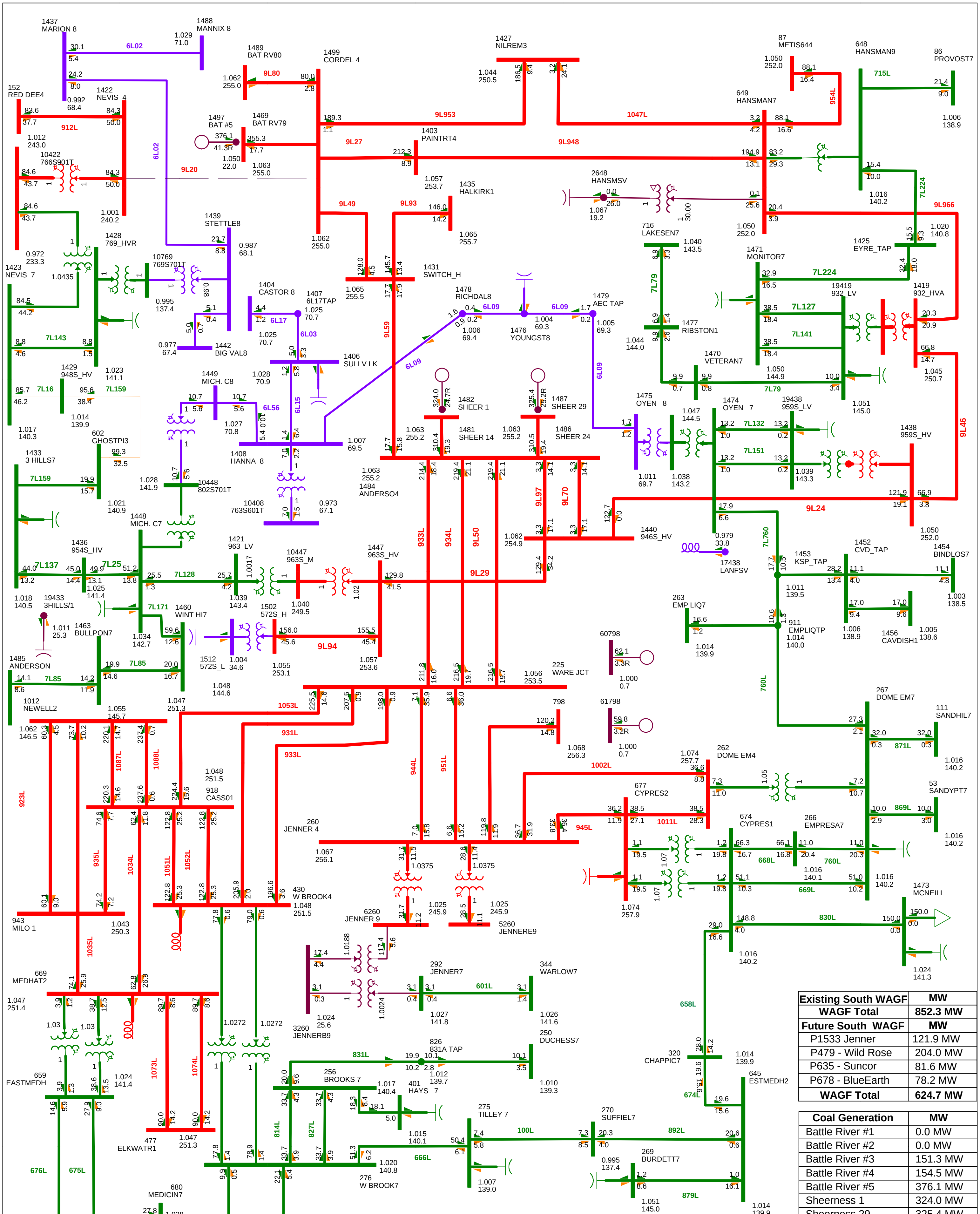
Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	151.3 MW
Battle River #4	154.5 MW
Battle River #5	376.1 MW
Sheerness 1	324.0 MW
Sheerness 29	325.4 MW

BC Import: 528.6 MW
SK import: 150.0 MW
MATL import: 300.0 MW
Med-Hat import: -28.9 MW
SOK: 363.0 MW + 0.35 x -290.1 MW

PROJECT 1533, 2017WP POST-CONNECTION
BASE CASE (N-0)
TUE, SEP 23 2014 10:47

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate B
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	852.3 MW
Future South WAGF	MW
P1533 Jenner	121.9 MW
P479 - Wild Rose	204.0 MW
P635 - Suncor	81.6 MW
P678 - BlueEarth	78.2 MW
WAGF Total	624.7 MW

Coal Generation	MW
Battle River #1	0.0 MW
Battle River #2	0.0 MW
Battle River #3	151.3 MW
Battle River #4	154.5 MW
Battle River #5	376.1 MW
Sheerness 1	324.0 MW
Sheerness 29	325.4 MW

BC Import: 568.3 MW

SK import: 150.0 MW

MATL import: 300.0 MW

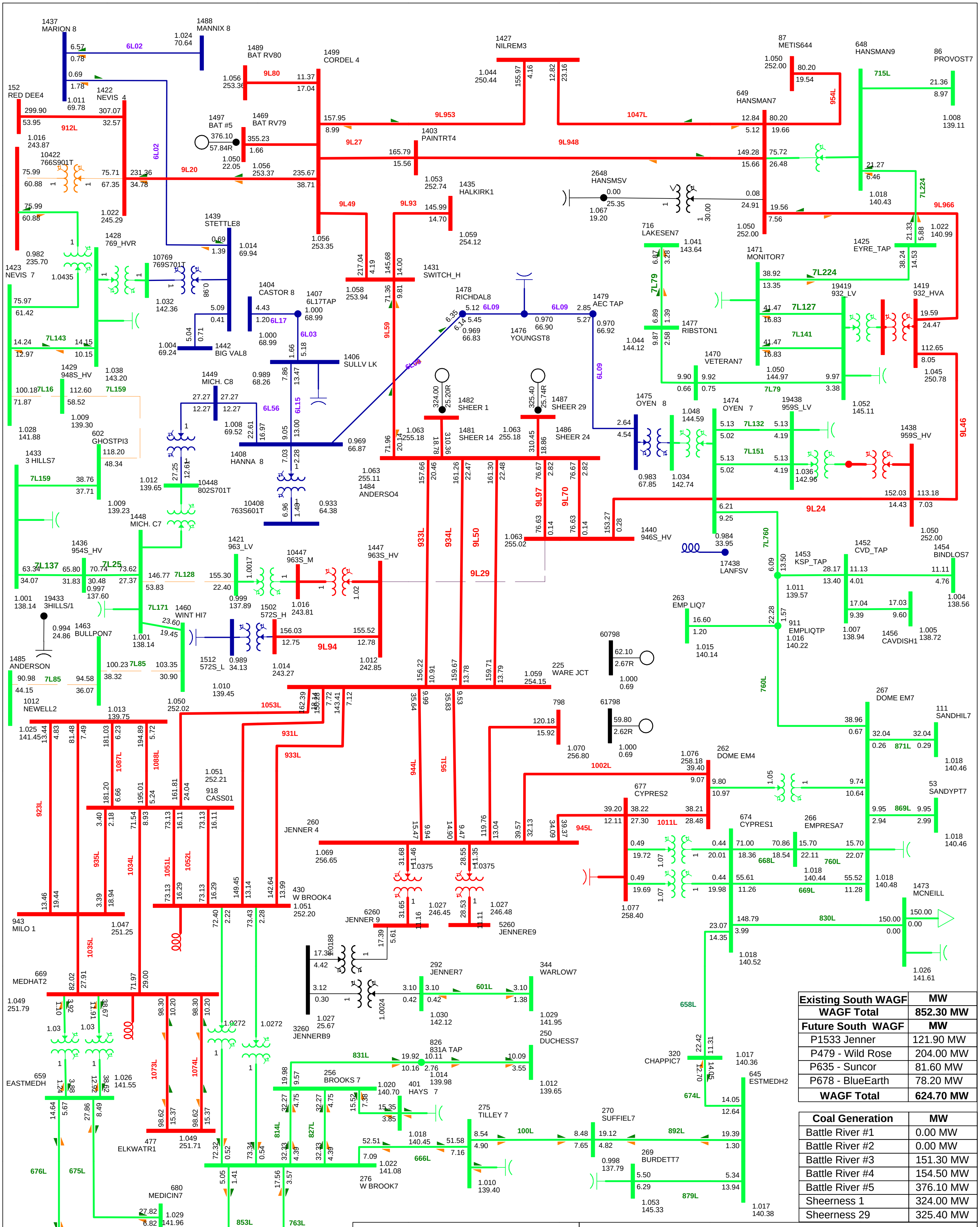
Med-Hat import: -28.9 MW

SOK: 396.2 MW + 0.35 x -83.6 MW

PROJECT 1533, 2017WP POST-CONNECTION
CONTINGENCY: B01-9L20(N-1)
TUE, SEP 23 2014 10:47

Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate B
1.200OV 0.900UV
kV: >0.000 <=25.000 <=69.000 <=138.000 <=240.000 <=500.000

AESO



Existing South WAGF	MW
WAGF Total	852.30 MW
Future South WAGF	**MW**
P1533 Jenner	121.90 MW
P479 - Wild Rose	204.00 MW
P635 - Suncor	81.60 MW
P678 - BlueEarth	78.20 MW
WAGF Total	624.70 MW

Coal Generation	MW
Battle River #1	0.00 MW
Battle River #2	0.00 MW
Battle River #3	151.30 MW
Battle River #4	154.50 MW
Battle River #5	376.10 MW
Sheerness 1	324.00 MW
Sheerness 29	325.40 MW

BC Import: 557.92 MW
SK import: 150.00 MW
MATL import: 300.00 MW
Med-Hat import: -28.90 MW
SOK: 361.30 MW+ 0.35 x -299.90 MW

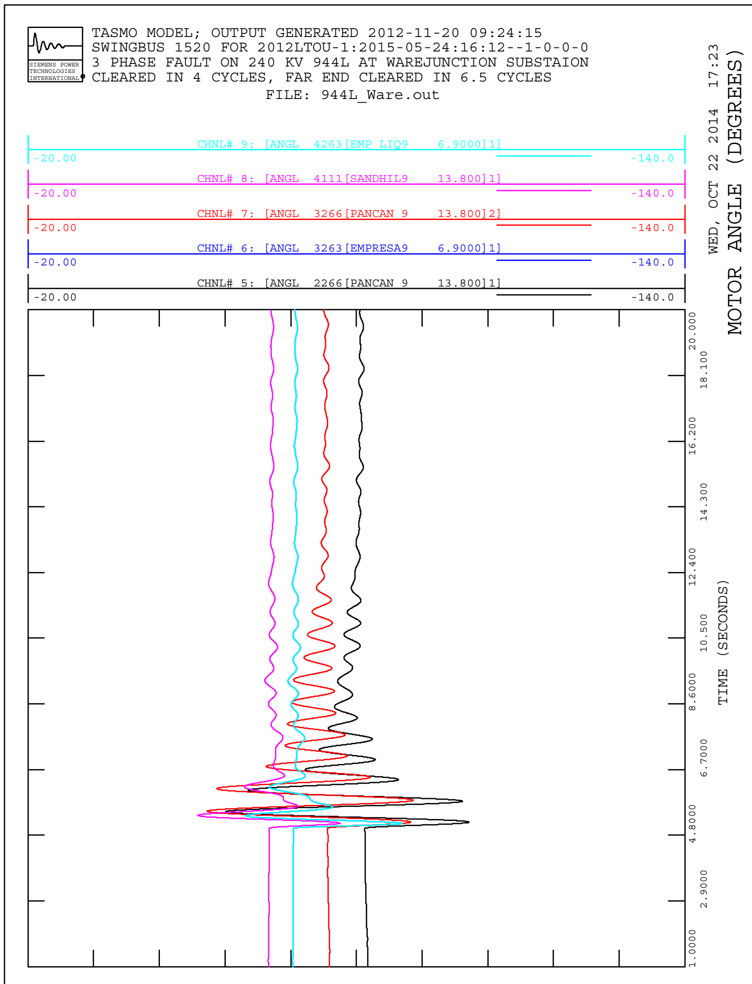
PROJECT 1533, 2017WP POST-CONNECTION
CONTINGENCY: B02-9L29(N-1)
THU, MAY 12 2016 9:59

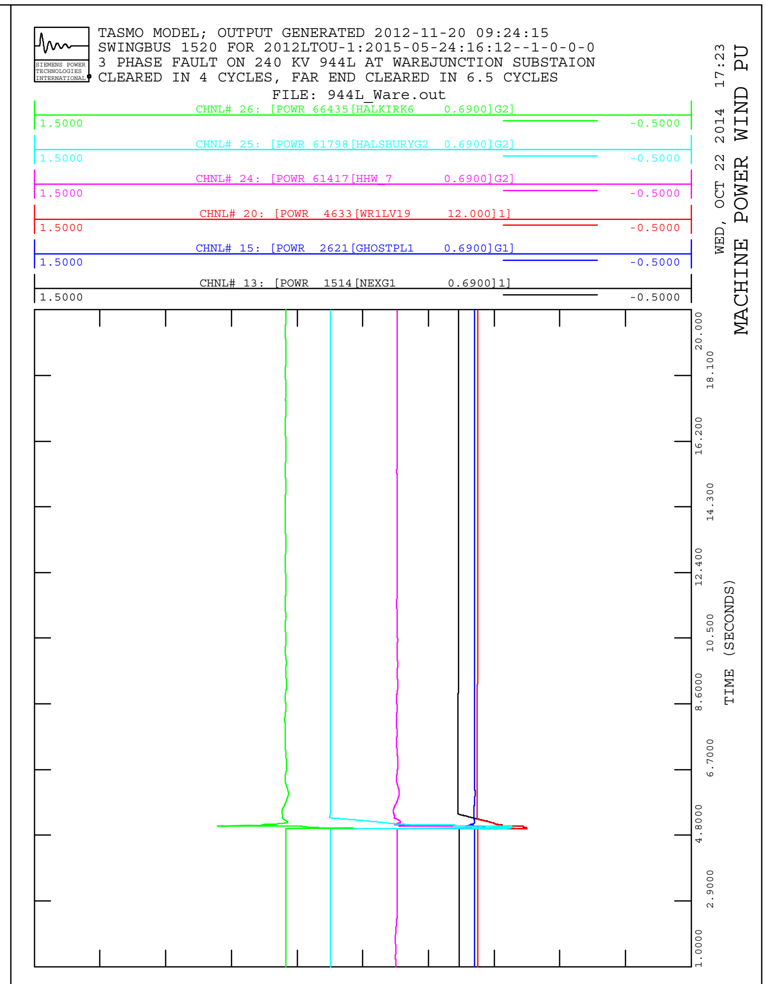
Bus - Voltage (kV/pu)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%Rate B
1.200OV 0.900UV
kV: <=25.000 <=69.000 <=138.000 <=240.000 <=500.000 >500.000

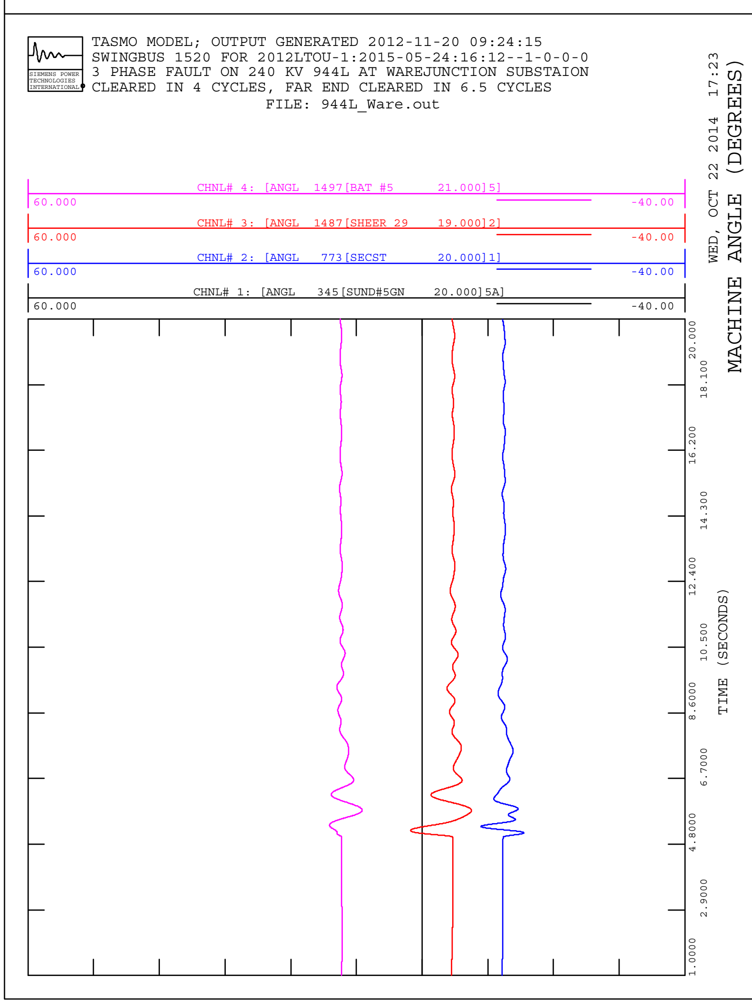
AESO

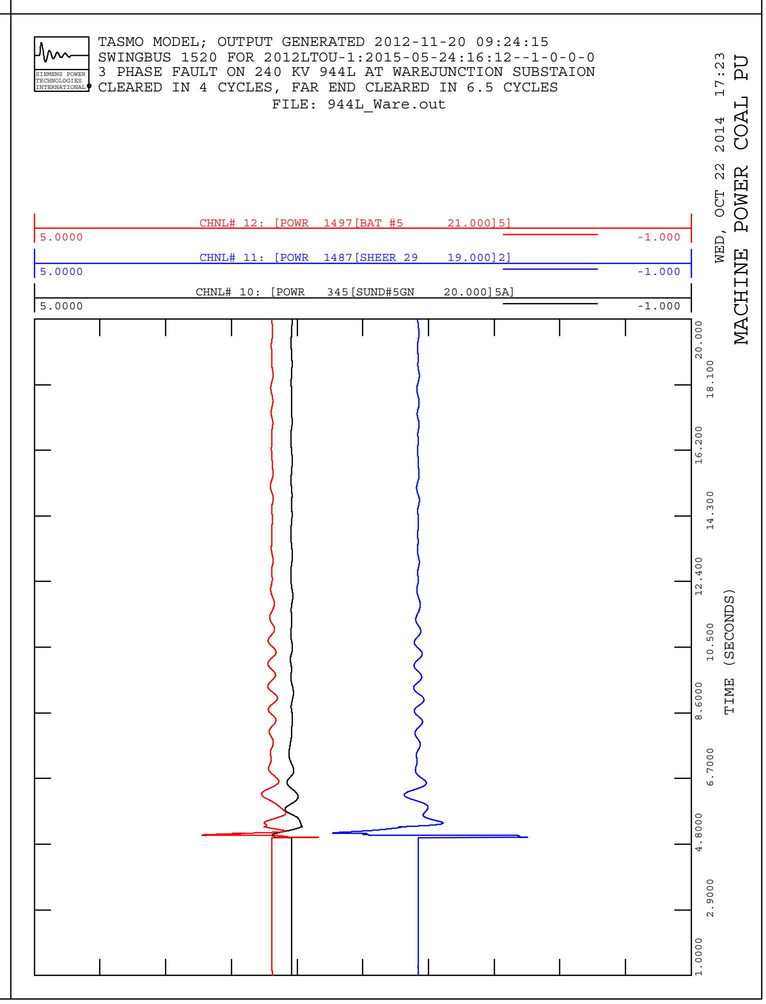
ATTACHMENT G

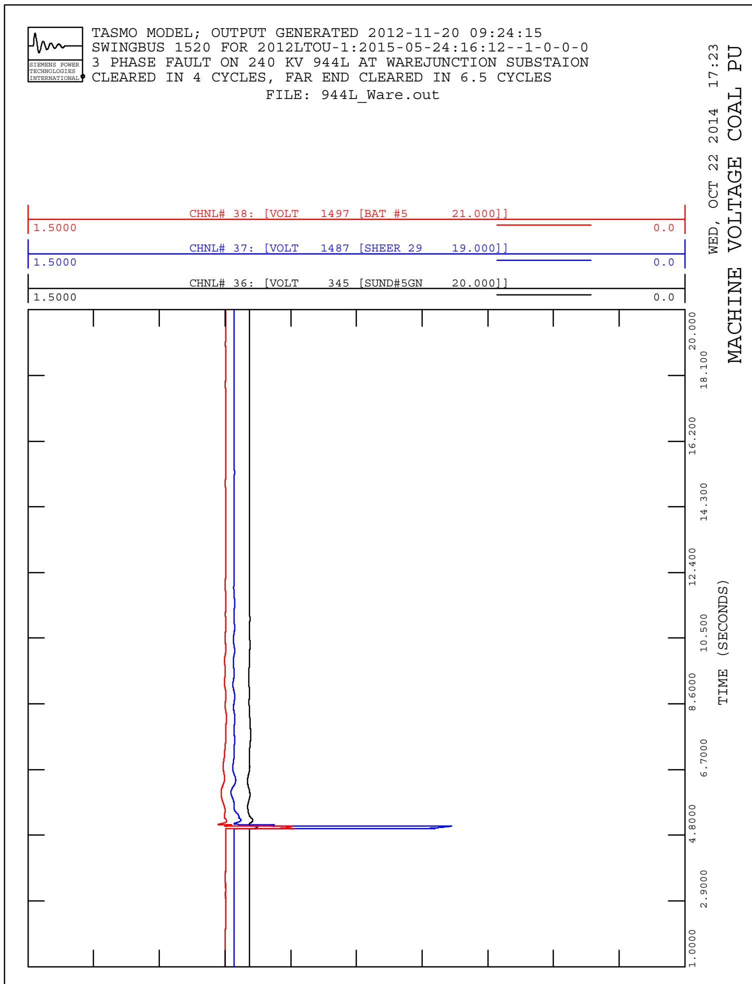
2017SL Post-Connection Transient Stability Analysis

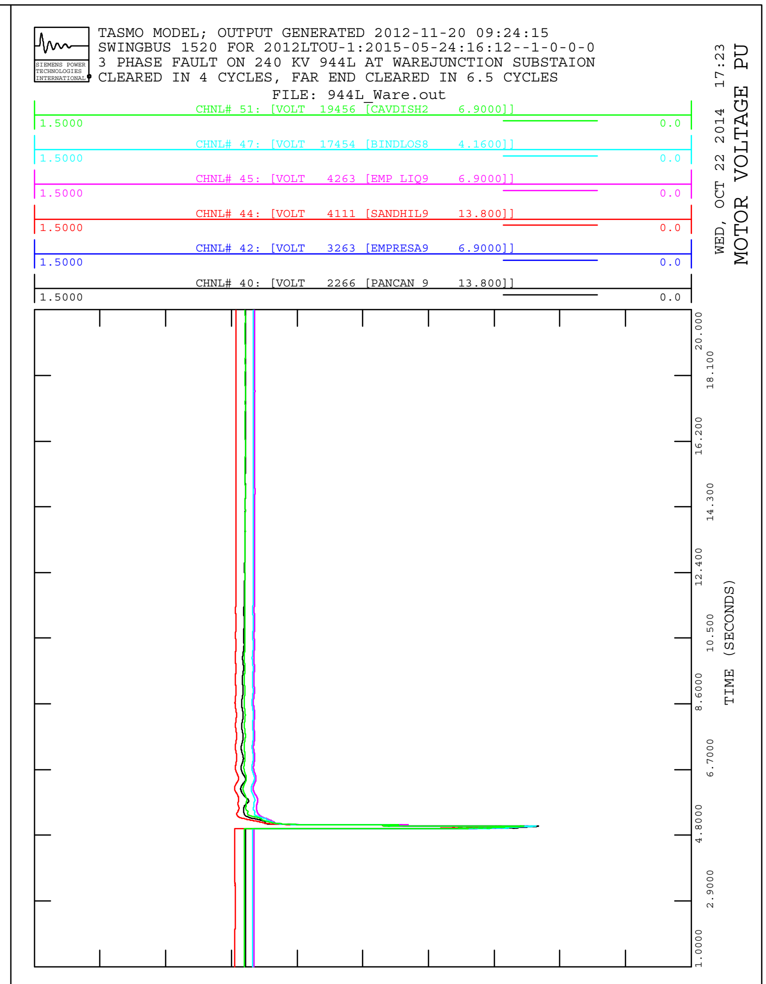

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1]
-20.00 -140.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1]
-20.00 -140.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2]
-20.00 -140.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1]
-20.00 -140.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1]
-20.00 -140.0
WED, OCT 22 2014 17:23
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000

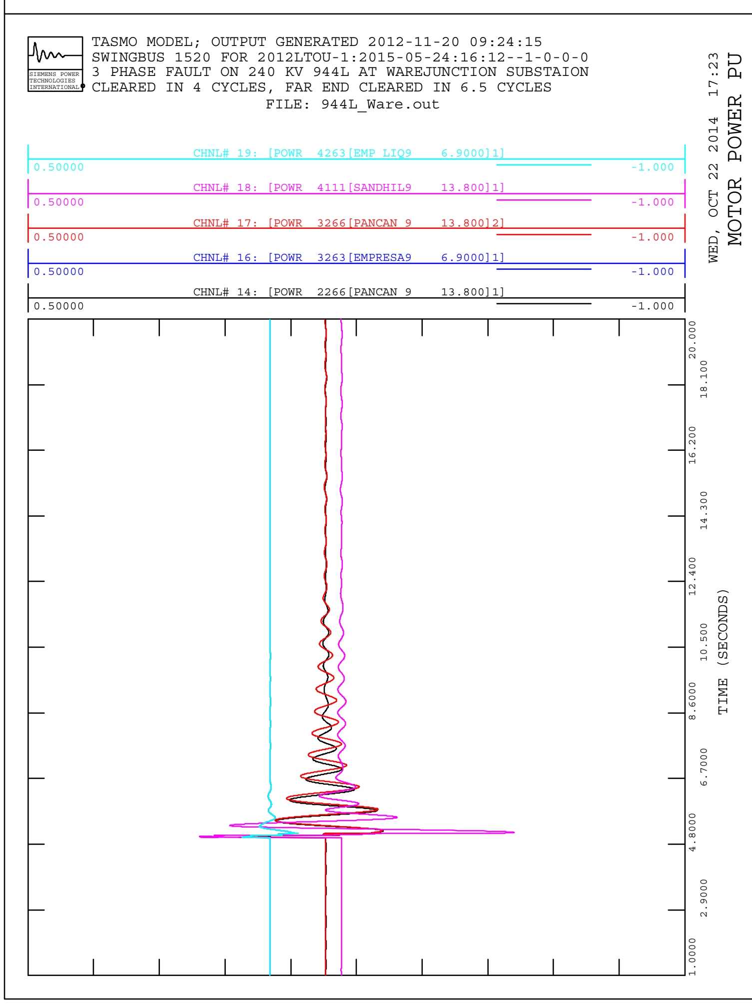

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW_7 0.6900]G2]
1.5000 -0.5000
CHNL# 20: [POWR 4633[WR1LV19 12.000]1]
1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1]
1.5000 -0.5000
WED, OCT 22 2014 17:23
MACHINE POWER WIND PU
TIME (SECONDS)
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000

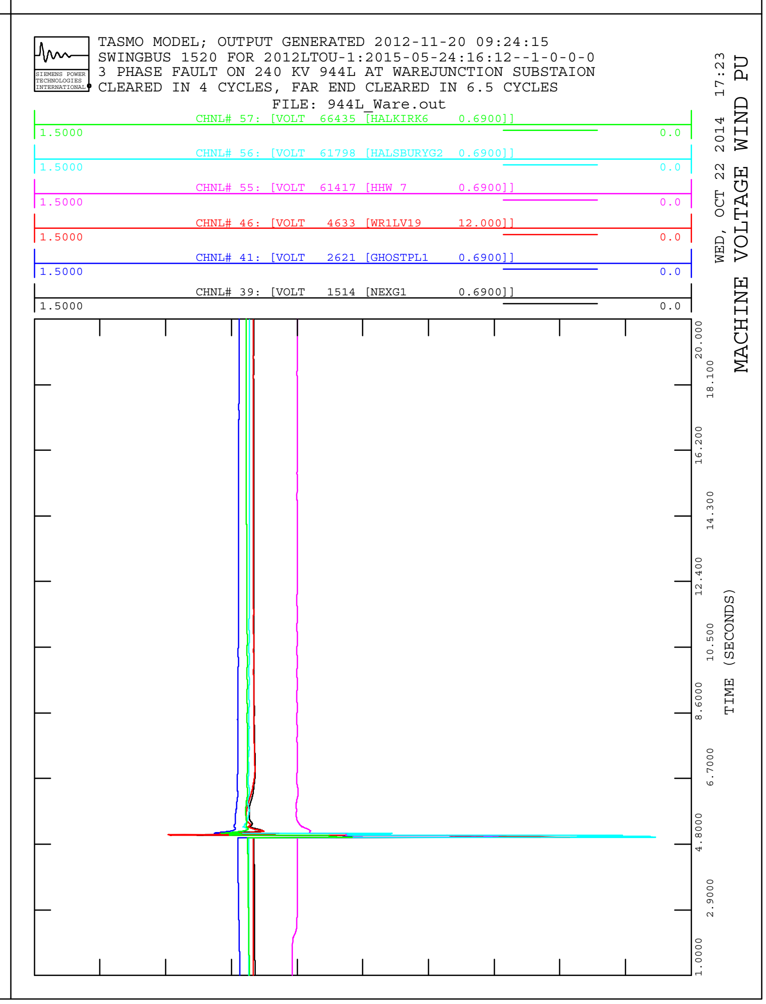

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 4: [ANGL 1497[BAT #5 21.000]5]
60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2]
60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1]
60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A]
60.000 -40.00
WED, OCT 22 2014 17:23
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 12: [POWR 1497[BAT #5 21.000]5]
5.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2]
5.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A]
5.0000 -1.000
WED, OCT 22 2014 17:23
MACHINE POWER COAL PU
TIME (SECONDS)
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000

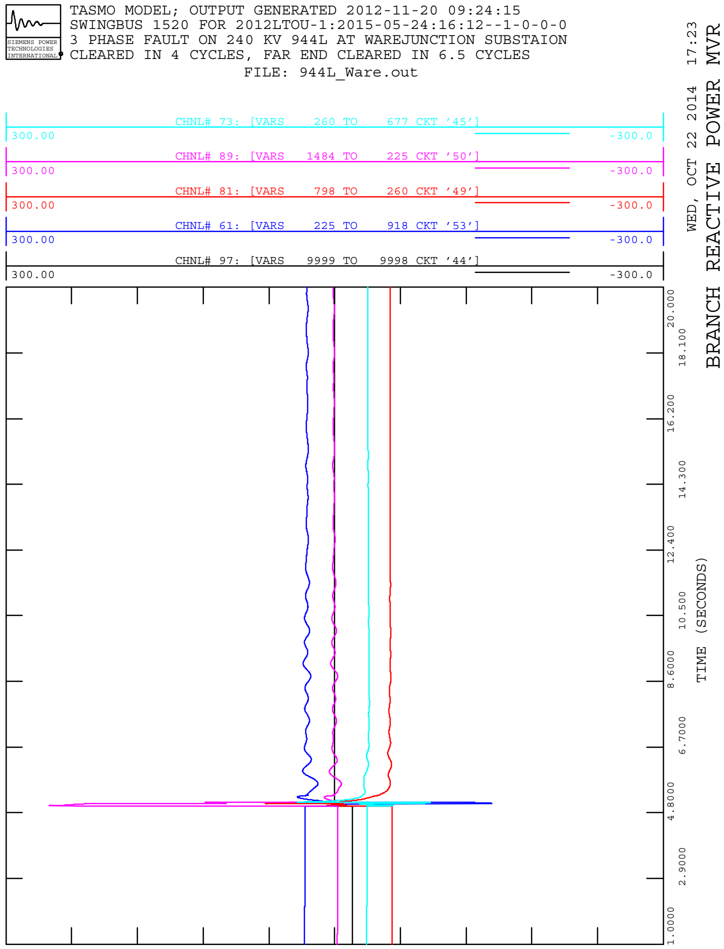

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.0
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.0
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.0
WED, OCT 22 2014 17:23
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 17:23
MOTOR VOLTAGE PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

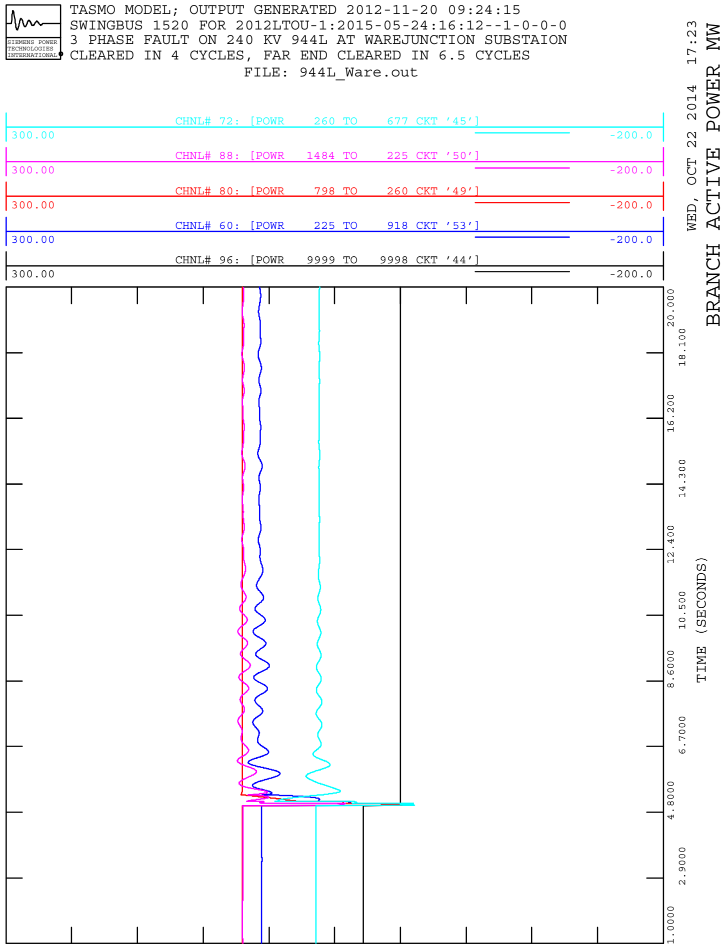

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 17:23
MOTOR POWER PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4633 [WR1LV19 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 17:23
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

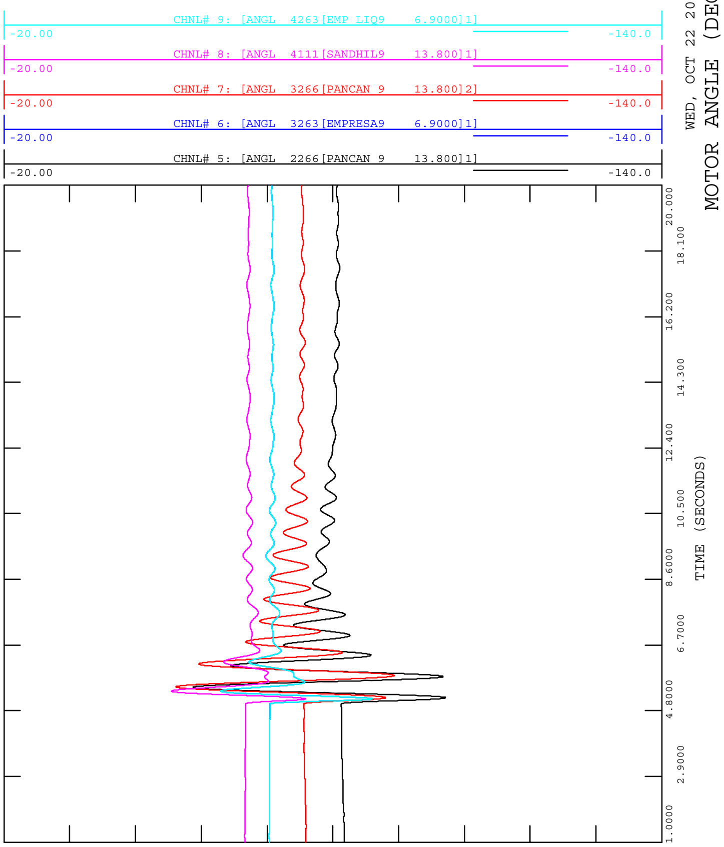
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



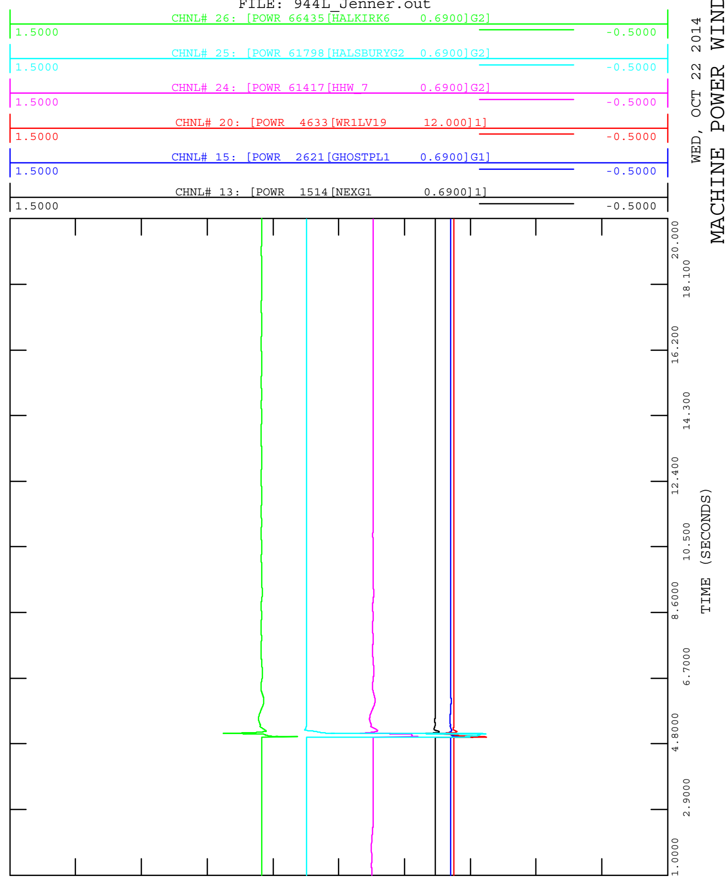
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



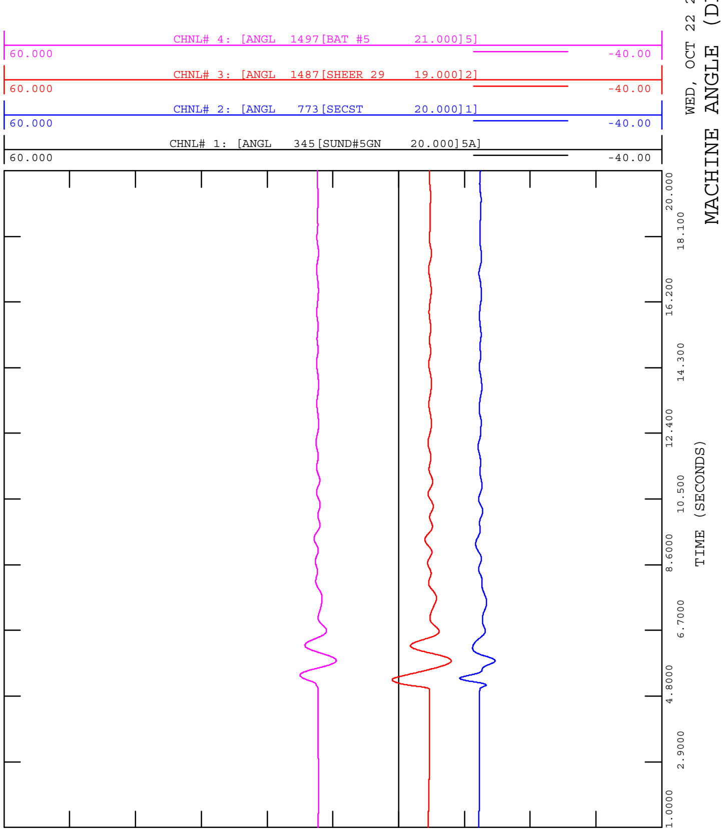
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



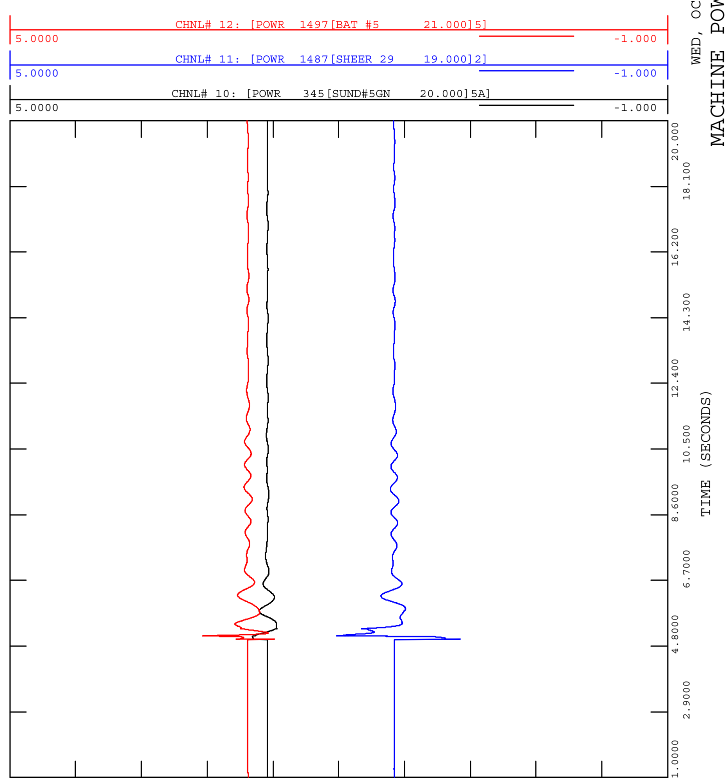
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out

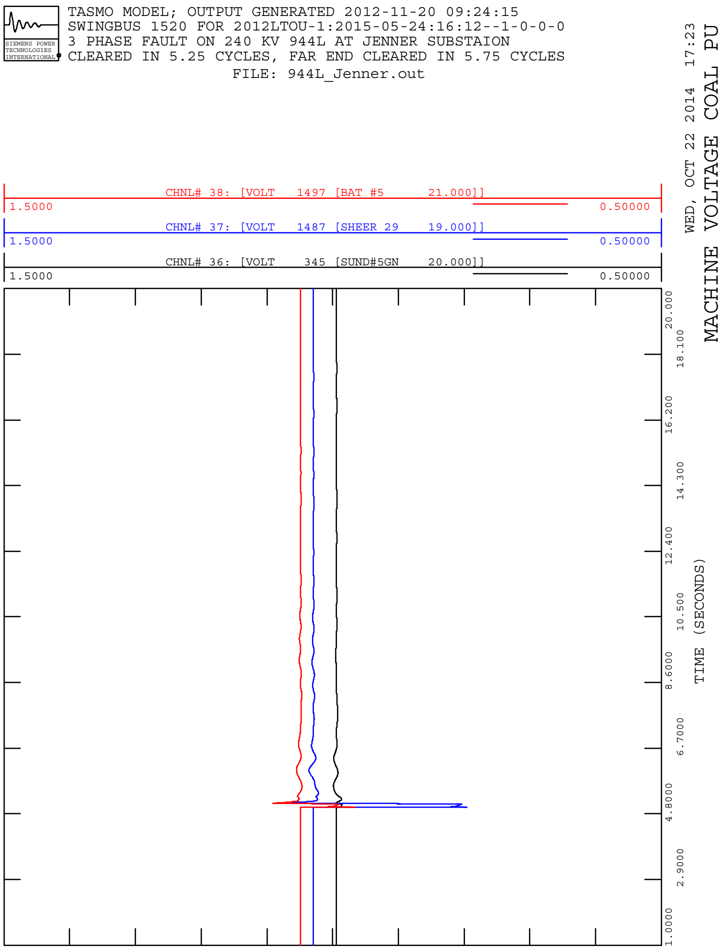


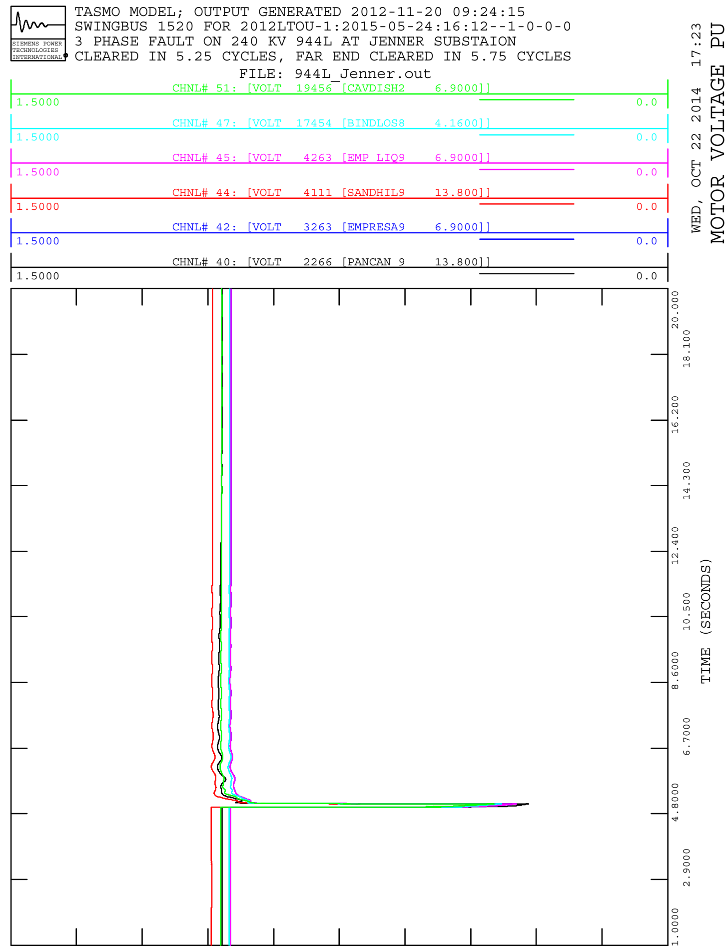
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out

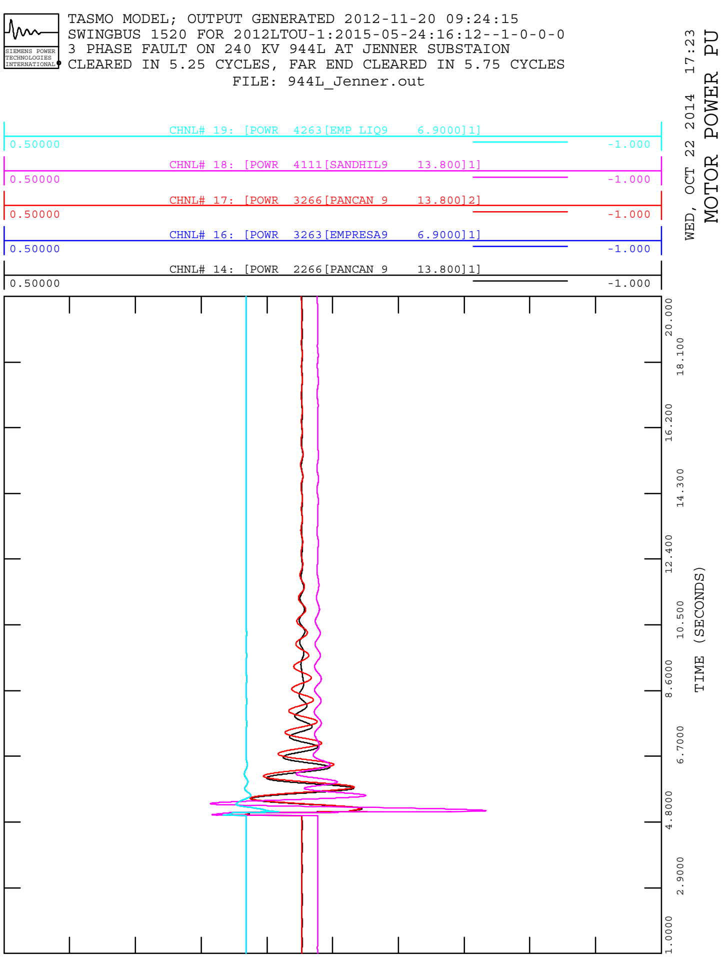


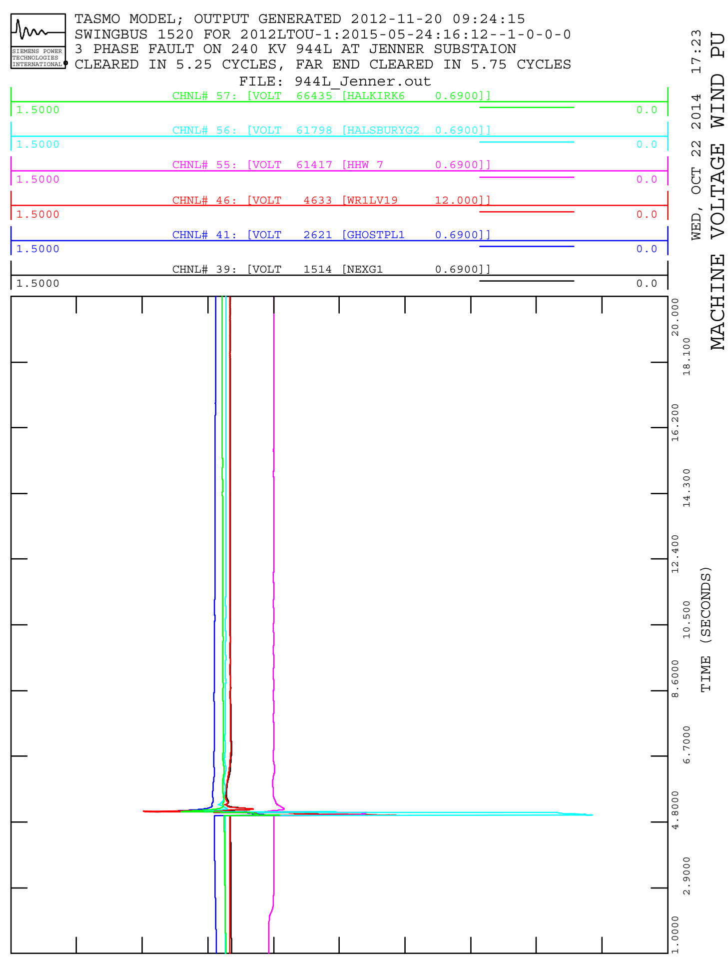
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out




TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.50000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.50000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.50000
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
MACHINE VOLTAGE COAL PU

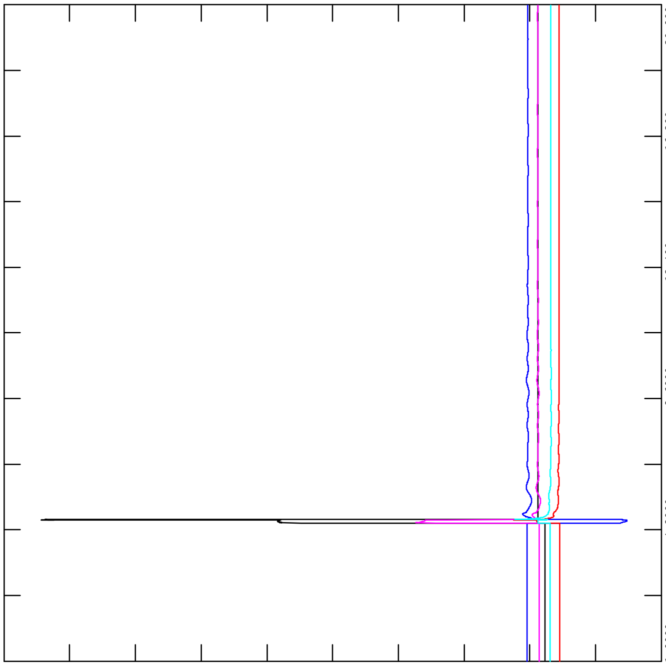

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
MOTOR VOLTAGE PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
MOTOR POWER PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4633 [WR1LV19 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
MACHINE VOLTAGE WIND PU

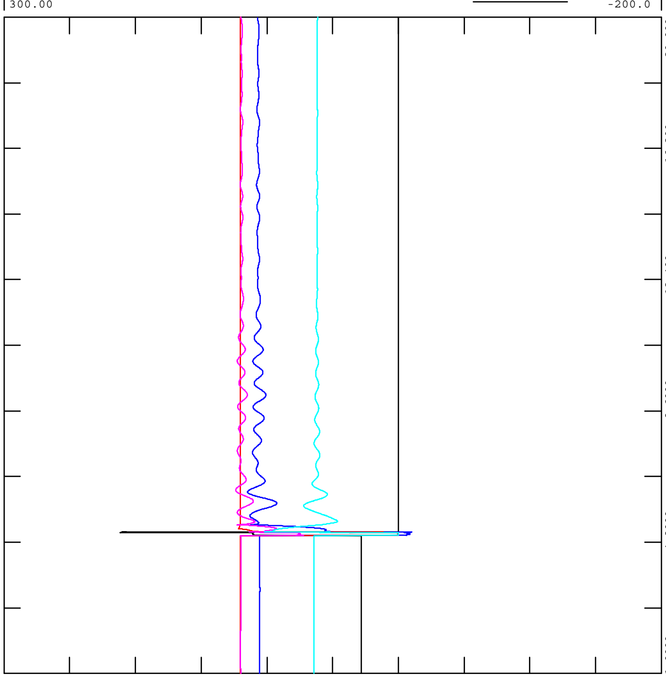
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out

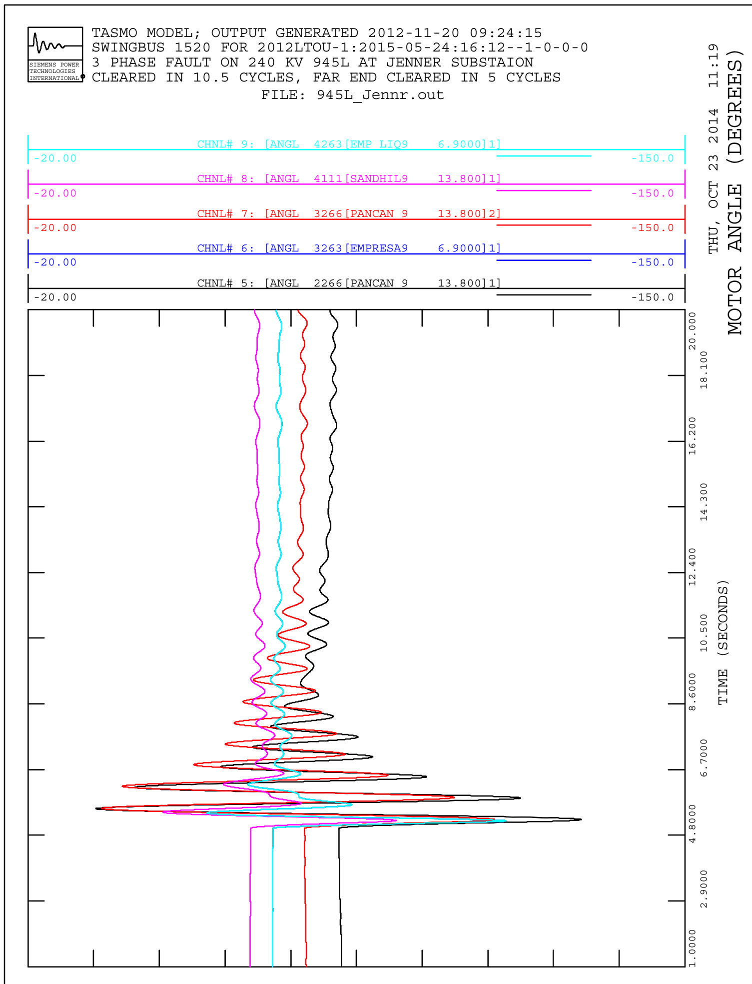
CHNL# 73: [VARS 260 TO 677 CKT '45'] 1300.0 -300.0
CHNL# 89: [VARS 1484 TO 225 CKT '50'] 1300.0 -300.0
CHNL# 81: [VARS 798 TO 260 CKT '49'] 1300.0 -300.0
CHNL# 61: [VARS 225 TO 918 CKT '53'] 1300.0 -300.0
CHNL# 97: [VARS 9999 TO 9998 CKT '44'] 1300.0 -300.0

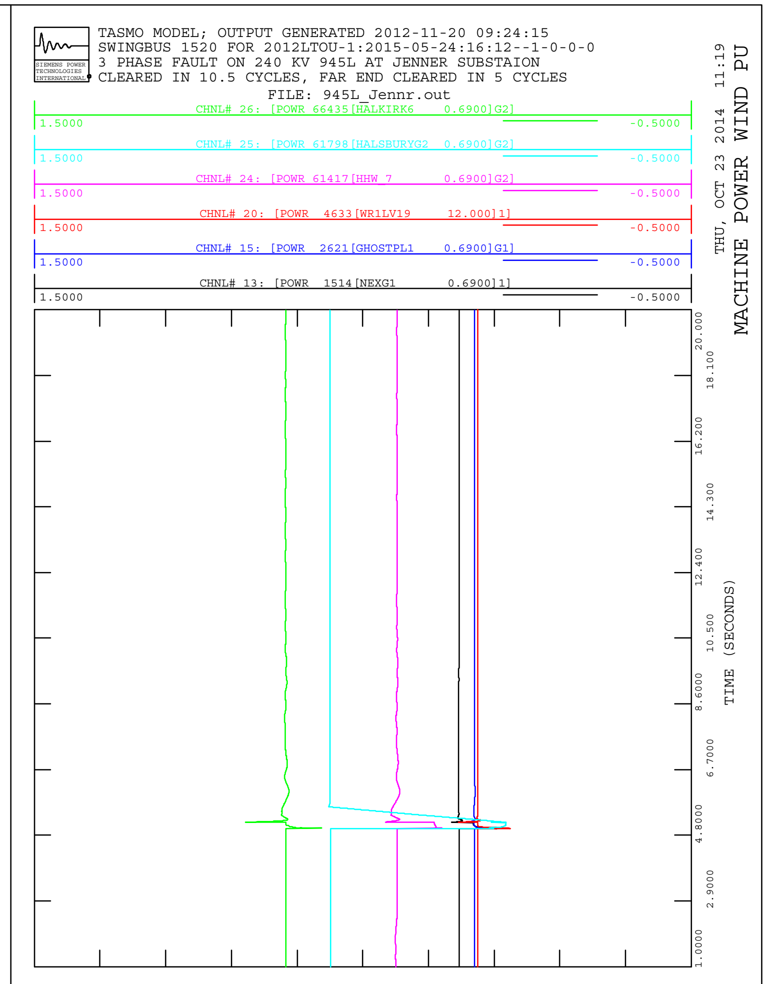


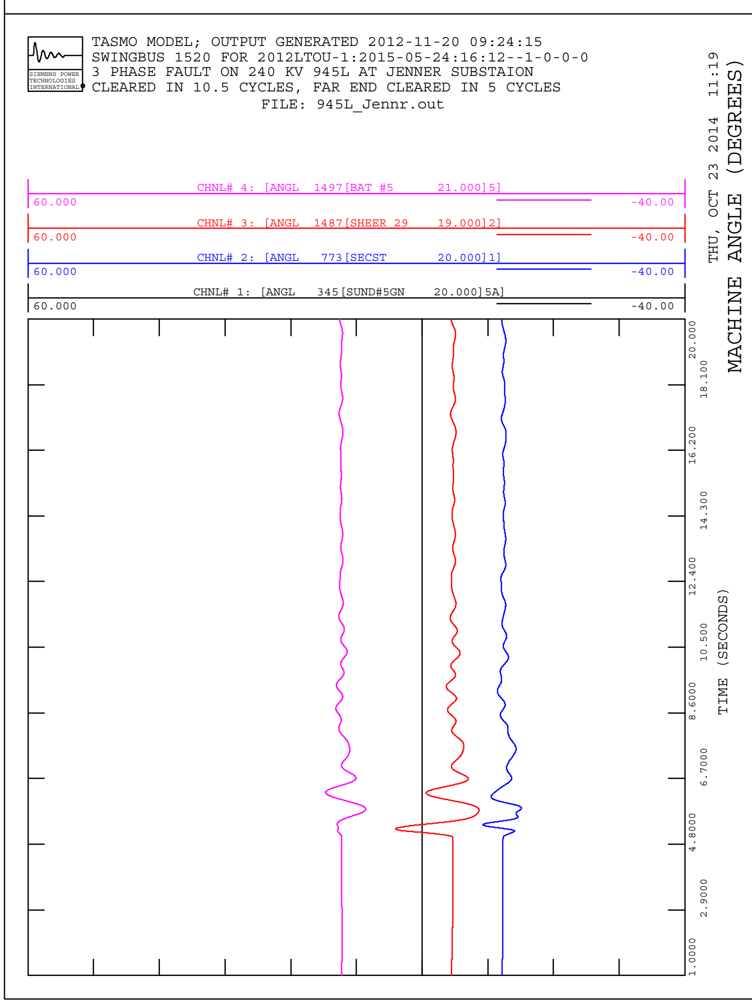
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out

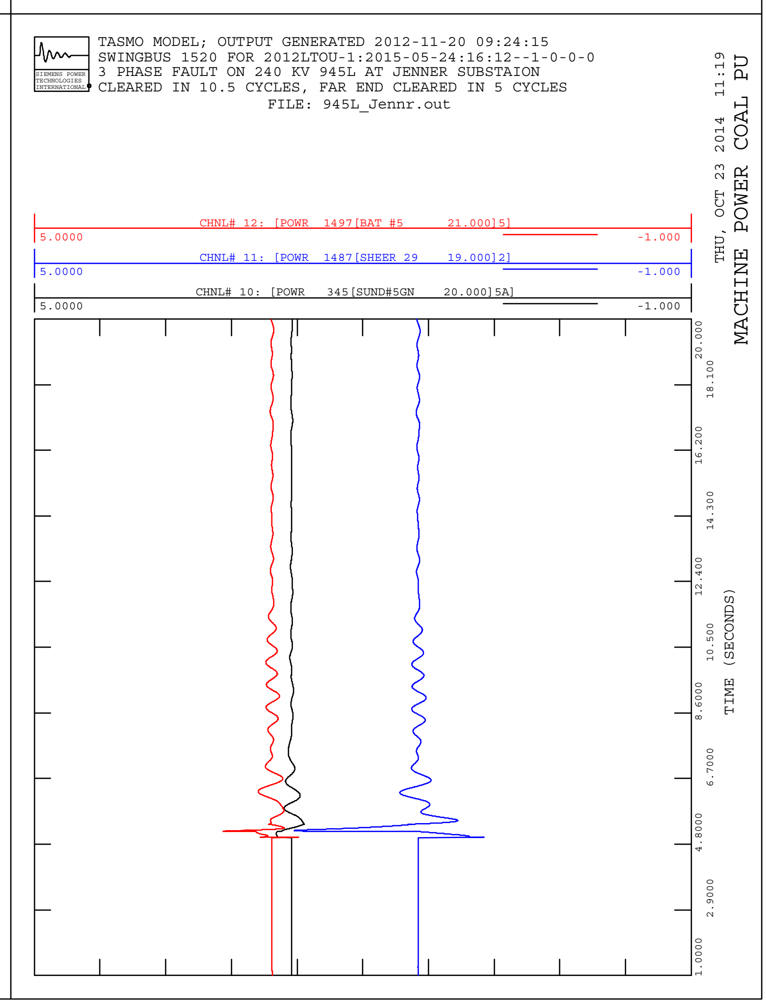
CHNL# 72: [POWR 260 TO 677 CKT '45'] 300.00 -200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50'] 300.00 -200.0
CHNL# 80: [POWR 798 TO 260 CKT '49'] 300.00 -200.0
CHNL# 60: [POWR 225 TO 918 CKT '53'] 300.00 -200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '44'] 300.00 -200.0




TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 9: [ANGL 4263 [EMP LIQ9 6.9000] 1]
-20.00 -150.0
CHNL# 8: [ANGL 4111 [SANDHIL9 13.800] 1]
-20.00 -150.0
CHNL# 7: [ANGL 3266 [PANCAN 9 13.800] 2]
-20.00 -150.0
CHNL# 6: [ANGL 3263 [EMPRESA9 6.9000] 1]
-20.00 -150.0
CHNL# 5: [ANGL 2266 [PANCAN 9 13.800] 1]
-20.00 -150.0
THU, OCT 23 2014 11:19
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

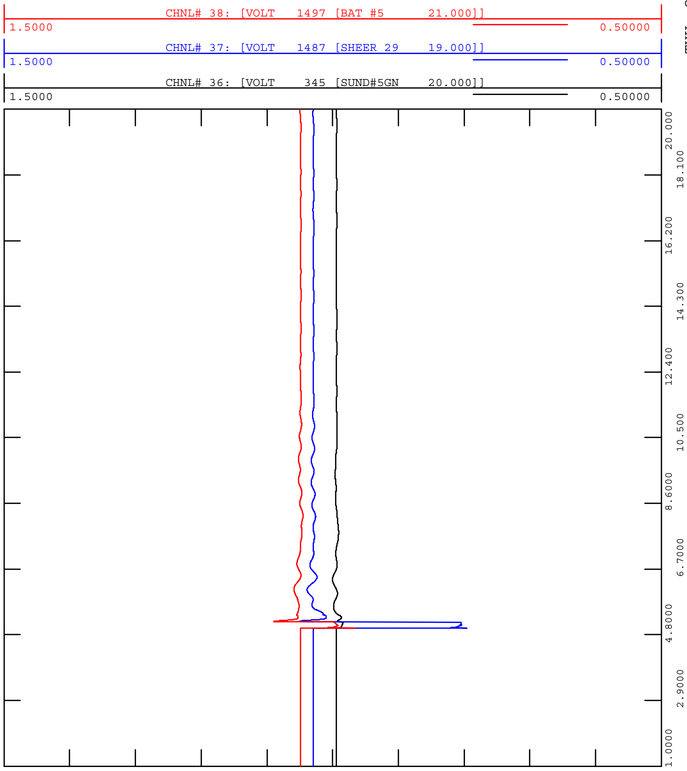

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 26: [POWR 66435 [HALKIRK6 0.6900] G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798 [HALSBURYG2 0.6900] G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417 [HHW_7 0.6900] G2]
1.5000 -0.5000
CHNL# 20: [POWR 4633 [WR1LV19 12.000] 1]
1.5000 -0.5000
CHNL# 15: [POWR 2621 [GHOSTPL1 0.6900] G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514 [NEXG1 0.6900] 1]
1.5000 -0.5000
THU, OCT 23 2014 11:19
MACHINE POWER WIND PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 4: [ANGL 1497 [BAT #5 21.000] 5]
60.000 -40.00
CHNL# 3: [ANGL 1487 [SHEER 29 19.000] 2]
60.000 -40.00
CHNL# 2: [ANGL 773 [SECST 20.000] 1]
60.000 -40.00
CHNL# 1: [ANGL 345 [SUND#5GN 20.000] 5A]
60.000 -40.00
THU, OCT 23 2014 11:19
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 12: [POWR 1497 [BAT #5 21.000] 5]
5.0000 -1.000
CHNL# 11: [POWR 1487 [SHEER 29 19.000] 2]
5.0000 -1.000
CHNL# 10: [POWR 345 [SUND#5GN 20.000] 5A]
5.0000 -1.000
THU, OCT 23 2014 11:19
MACHINE POWER COAL PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

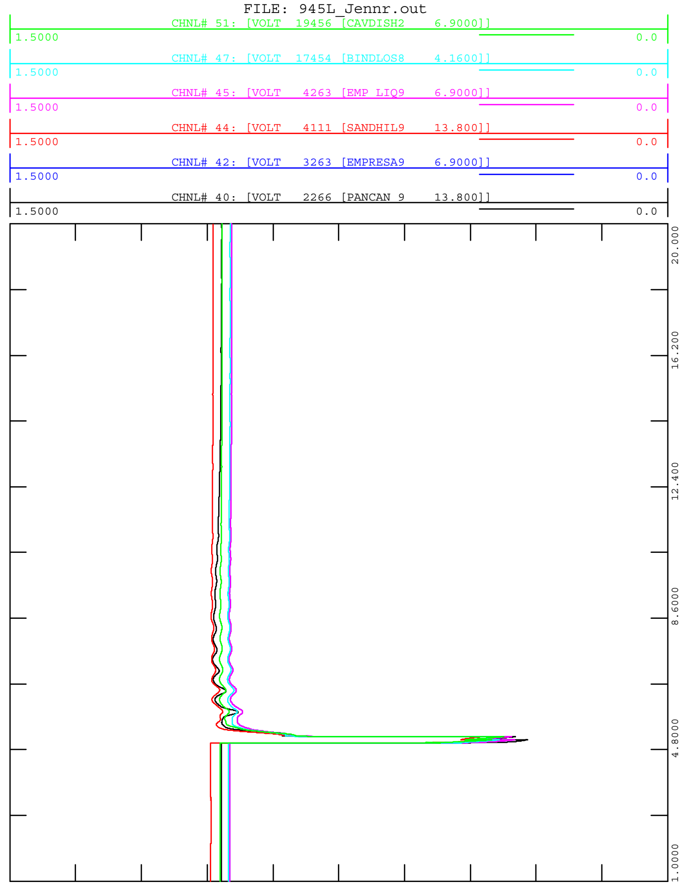
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:19
MACHINE VOLTAGE COAL PU



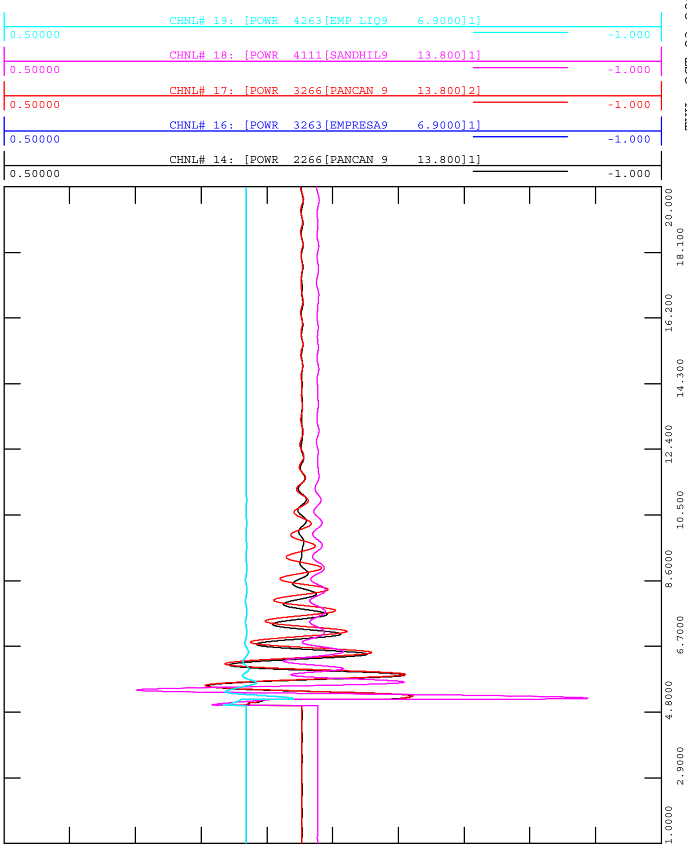
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:19
MOTOR VOLTAGE PU



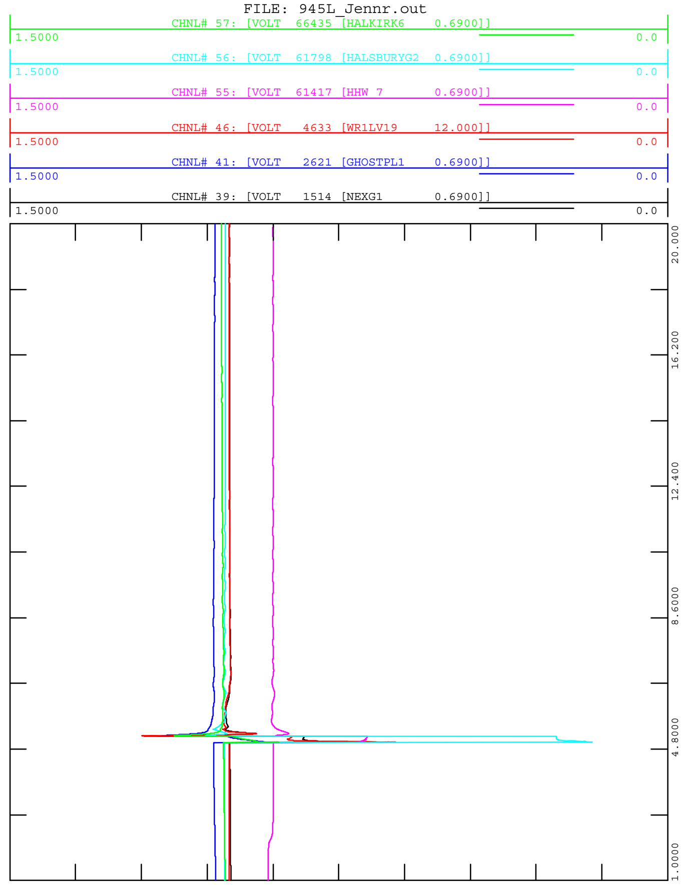
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

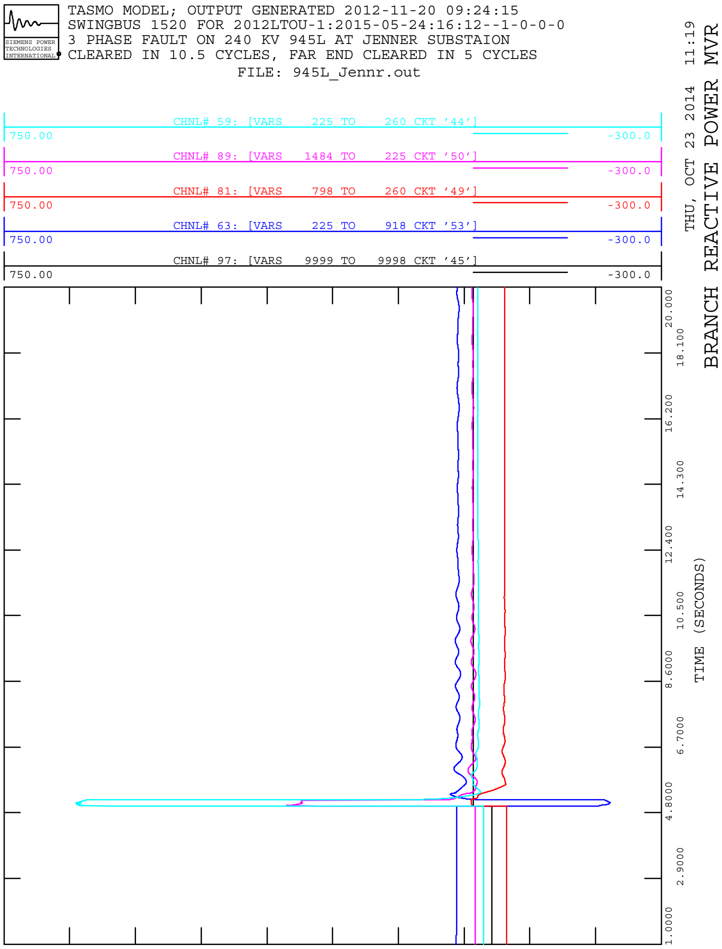
THU, OCT 23 2014 11:19
MOTOR POWER PU

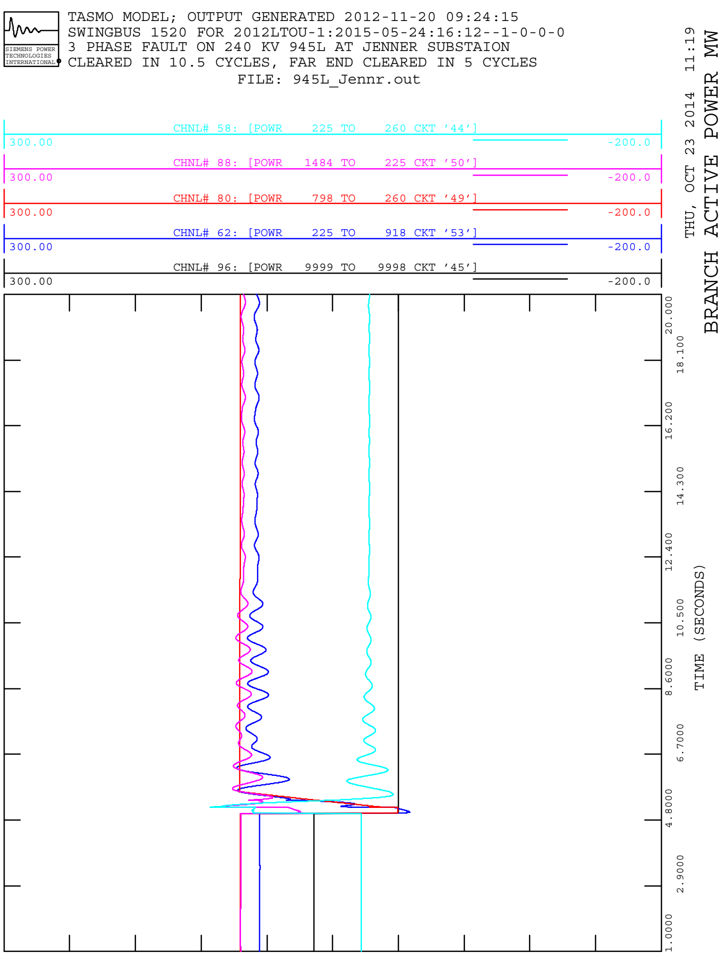


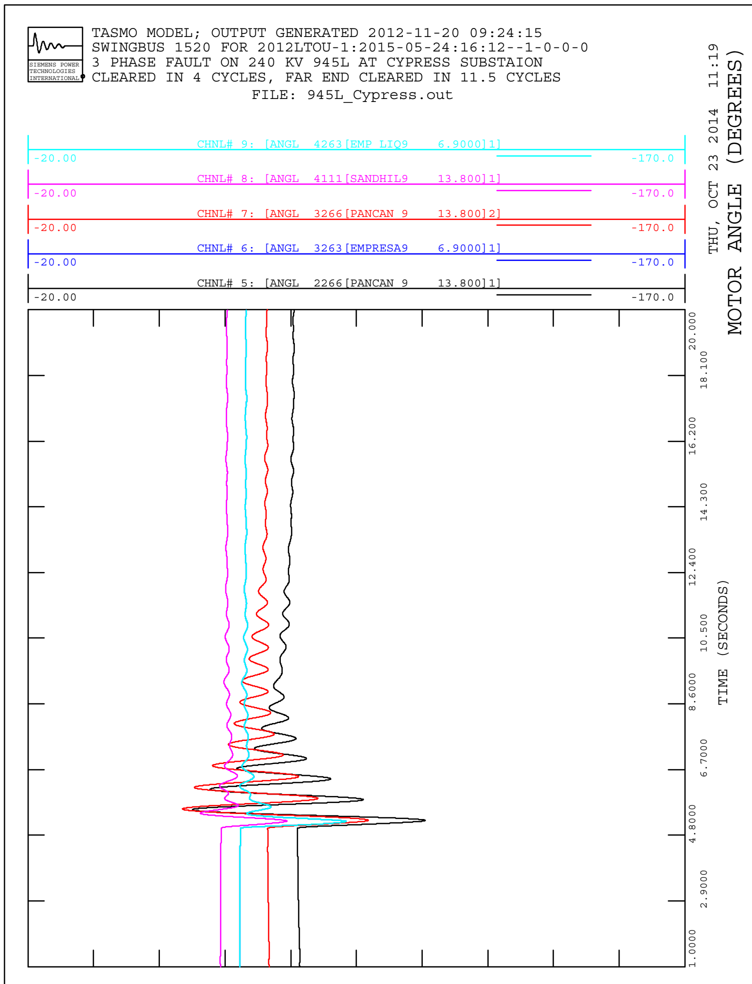
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

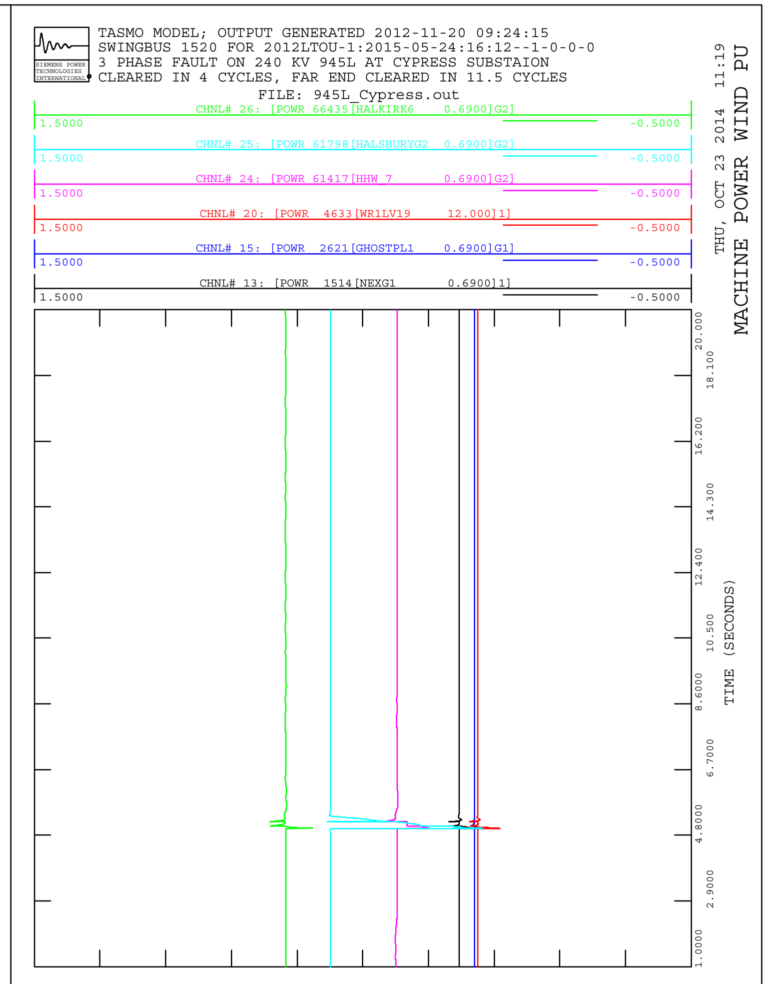
THU, OCT 23 2014 11:19
MACHINE VOLTAGE WIND PU

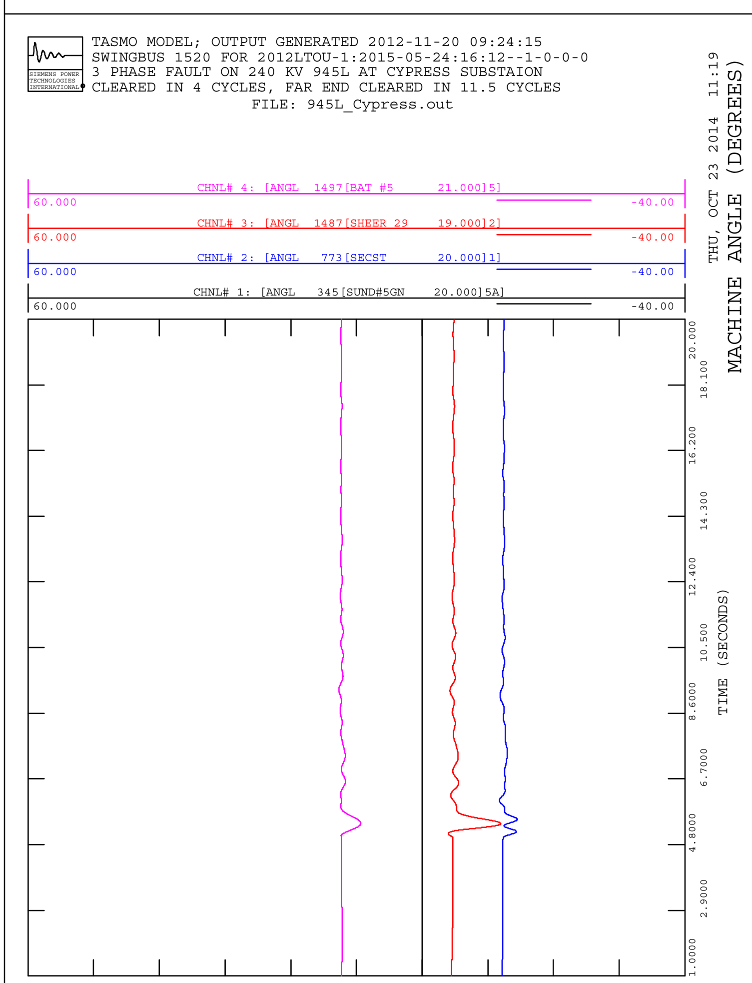


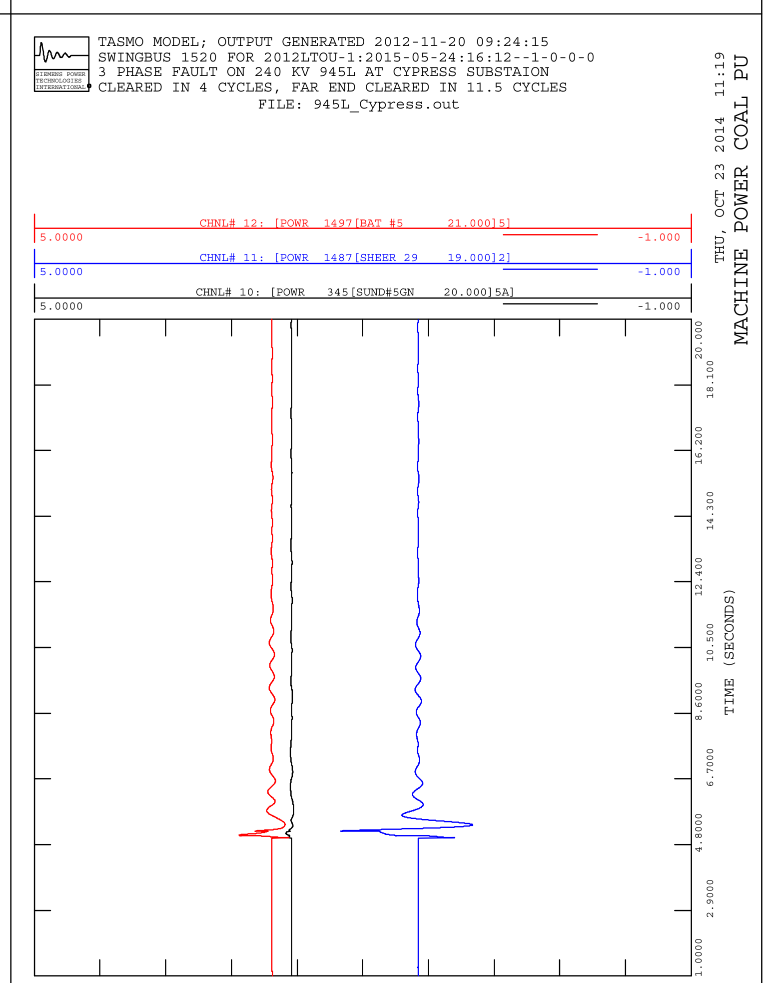

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 59: [VARS 225 TO 260 CKT '44']
750.00 -300.0
CHNL# 89: [VARS 1484 TO 225 CKT '50']
750.00 -300.0
CHNL# 81: [VARS 798 TO 260 CKT '49']
750.00 -300.0
CHNL# 63: [VARS 225 TO 918 CKT '53']
750.00 -300.0
CHNL# 97: [VARS 9999 TO 9998 CKT '45']
750.00 -300.0
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
BRANCH REACTIVE POWER MVR

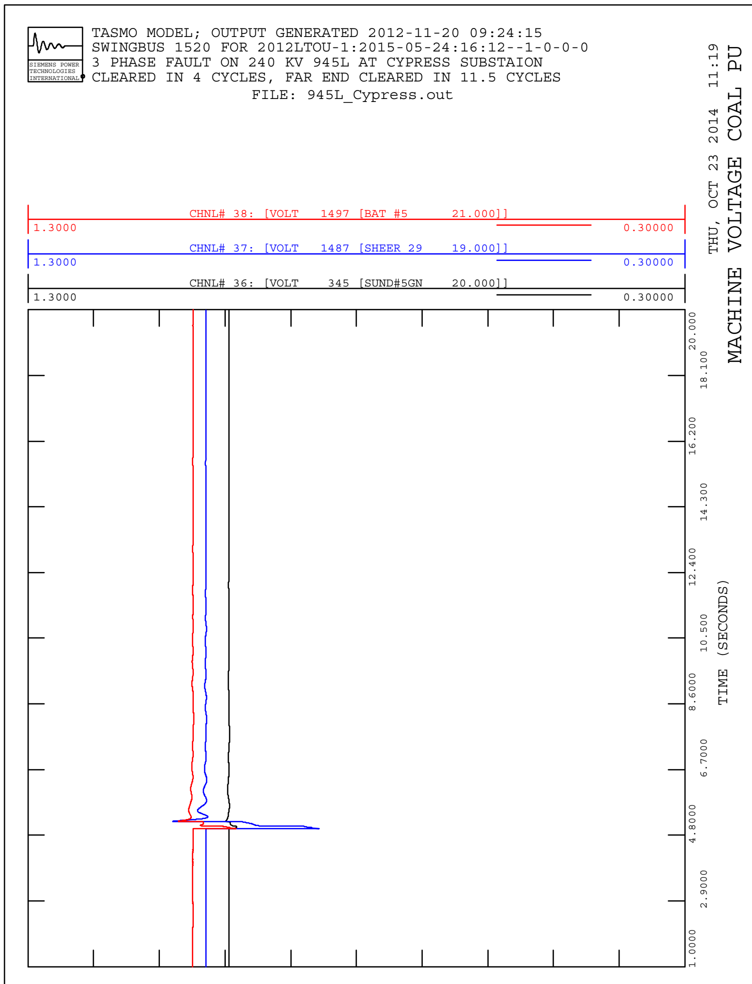

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 58: [POWR 225 TO 260 CKT '44']
300.00 -200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50']
300.00 -200.0
CHNL# 80: [POWR 798 TO 260 CKT '49']
300.00 -200.0
CHNL# 62: [POWR 225 TO 918 CKT '53']
300.00 -200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '45']
300.00 -200.0
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
BRANCH ACTIVE POWER MW

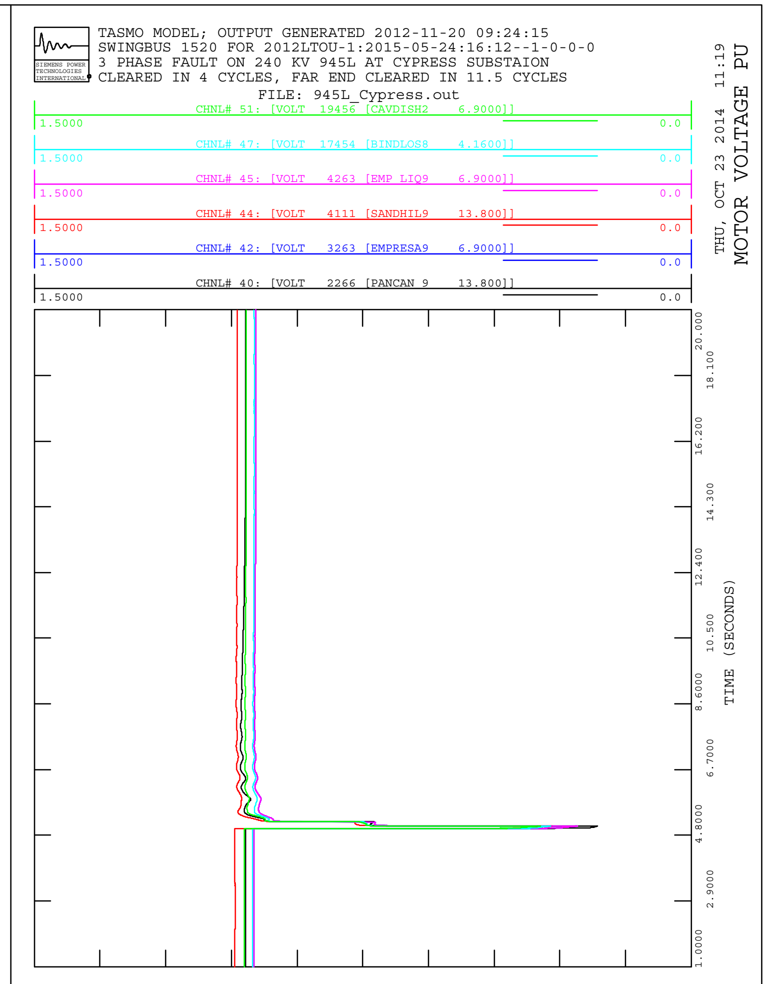

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 9: [ANGL 4263 [EMP LIQ9 6.9000] 1] -20.00 -170.0
CHNL# 8: [ANGL 4111 [SANDHIL9 13.800] 1] -20.00 -170.0
CHNL# 7: [ANGL 3266 [PANCAN 9 13.800] 2] -20.00 -170.0
CHNL# 6: [ANGL 3263 [EMPRESA9 6.9000] 1] -20.00 -170.0
CHNL# 5: [ANGL 2266 [PANCAN 9 13.800] 1] -20.00 -170.0
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MOTOR ANGLE (DEGREES)

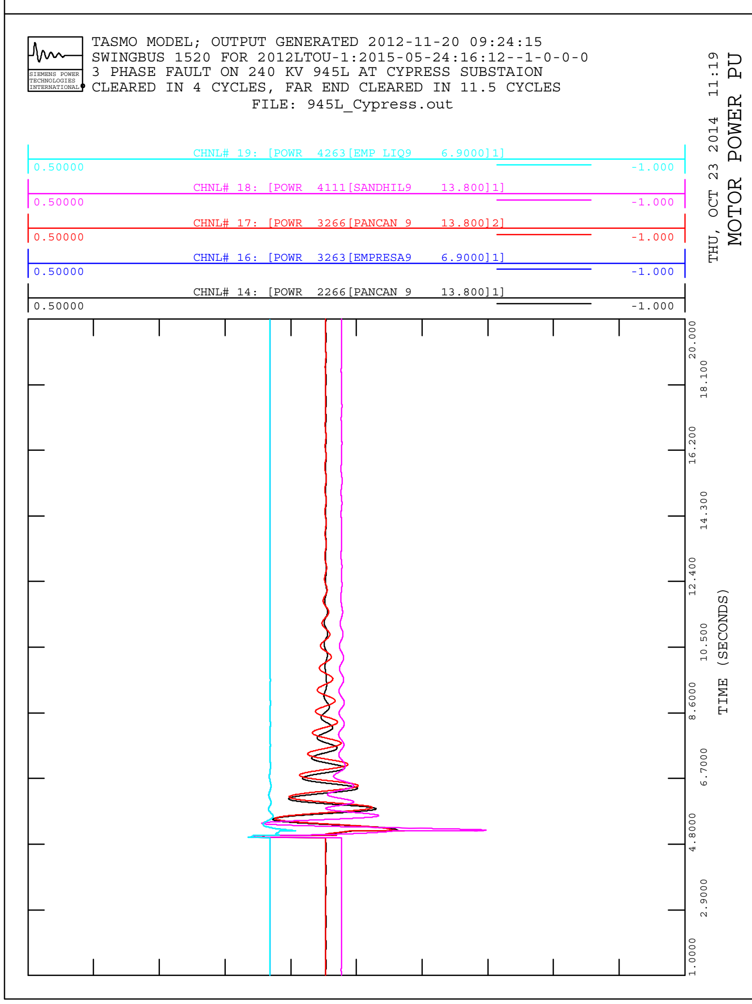

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 26: [POWR 66435 [HALKIRK6 0.6900] G2] 1.5000 -0.5000
CHNL# 25: [POWR 61798 [HALSBURYG2 0.6900] G2] 1.5000 -0.5000
CHNL# 24: [POWR 61417 [HHW 7 0.6900] G2] 1.5000 -0.5000
CHNL# 20: [POWR 4633 [WR1LV19 12.000] 1] 1.5000 -0.5000
CHNL# 15: [POWR 2621 [GHOSTPL1 0.6900] G1] 1.5000 -0.5000
CHNL# 13: [POWR 1514 [NEXG1 0.6900] 1] 1.5000 -0.5000
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MACHINE POWER WIND PU

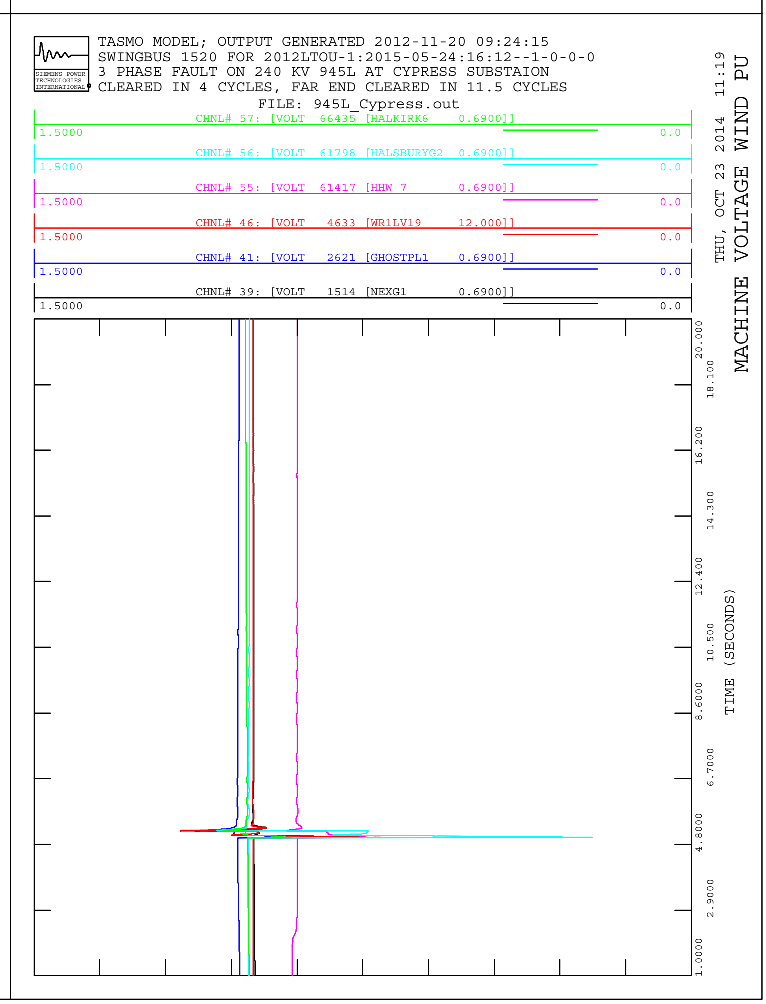

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 4: [ANGL 1497 [BAT #5 21.000] 5] 60.000 -40.00
CHNL# 3: [ANGL 1487 [SHEER 29 19.000] 2] 60.000 -40.00
CHNL# 2: [ANGL 773 [SECST 20.000] 1] 60.000 -40.00
CHNL# 1: [ANGL 345 [SUND#5GN 20.000] 5A] 60.000 -40.00
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MACHINE ANGLE (DEGREES)

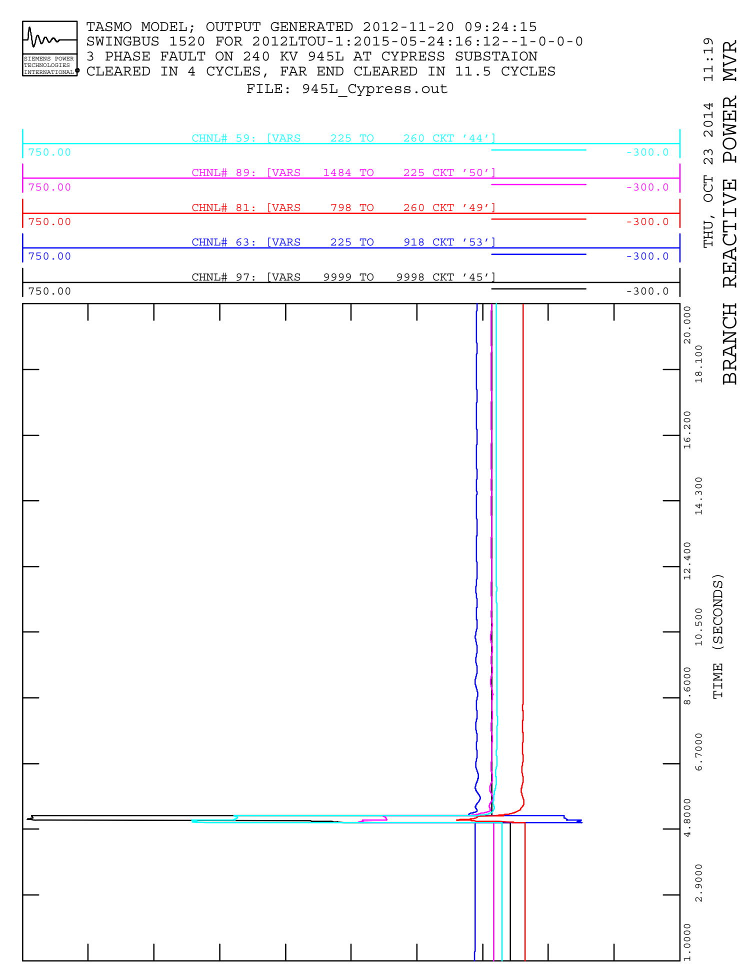

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 12: [POWR 1497 [BAT #5 21.000] 5] 5.0000 -1.000
CHNL# 11: [POWR 1487 [SHEER 29 19.000] 2] 5.0000 -1.000
CHNL# 10: [POWR 345 [SUND#5GN 20.000] 5A] 5.0000 -1.000
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MACHINE POWER COAL PU

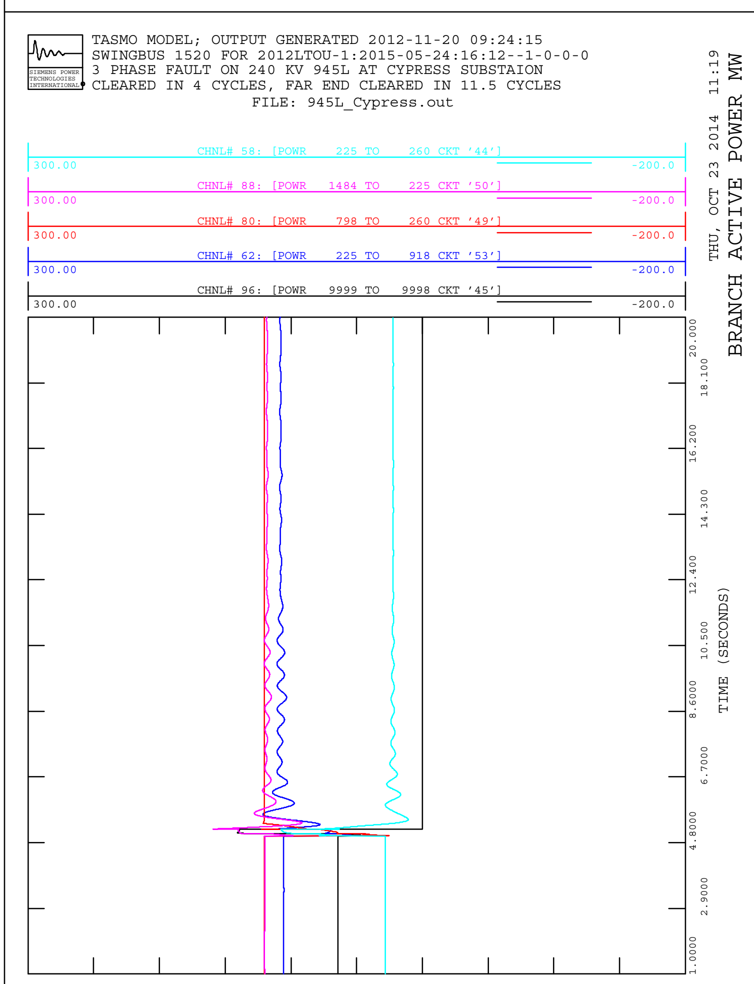

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.3000
0.30000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.3000
0.30000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.3000
0.30000
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MACHINE VOLTAGE COAL PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000
0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000
0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000
0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000
0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000
0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000
0.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MOTOR VOLTAGE PU

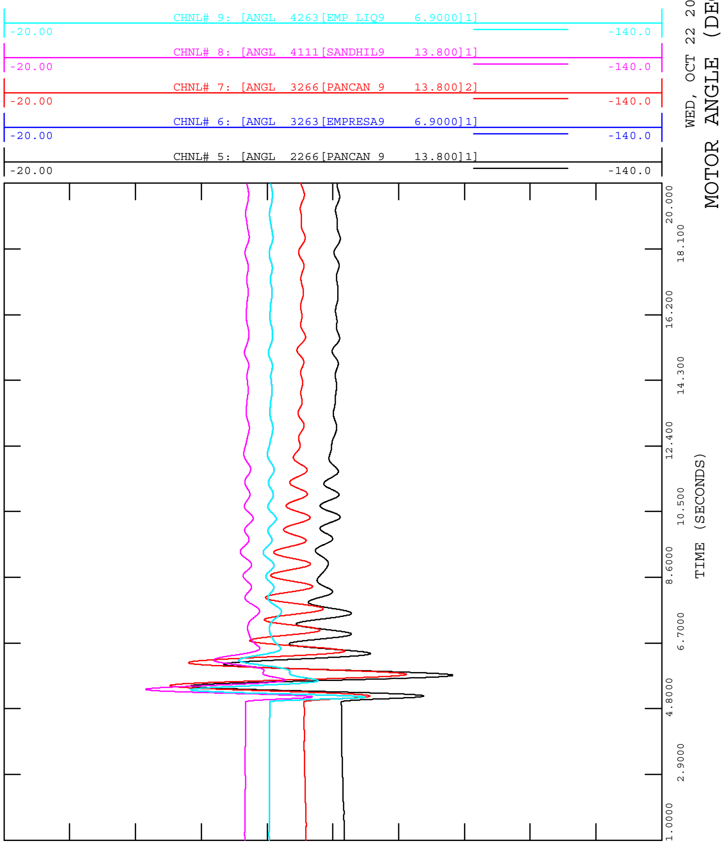

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000
-1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000
-1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000
-1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000
-1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000
-1.000
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MOTOR POWER PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000
0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000
0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000
0.0
CHNL# 46: [VOLT 4633 [WR1LV19 12.000]]
1.5000
0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000
0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000
0.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
THU, OCT 23 2014 11:19
MACHINE VOLTAGE WIND PU

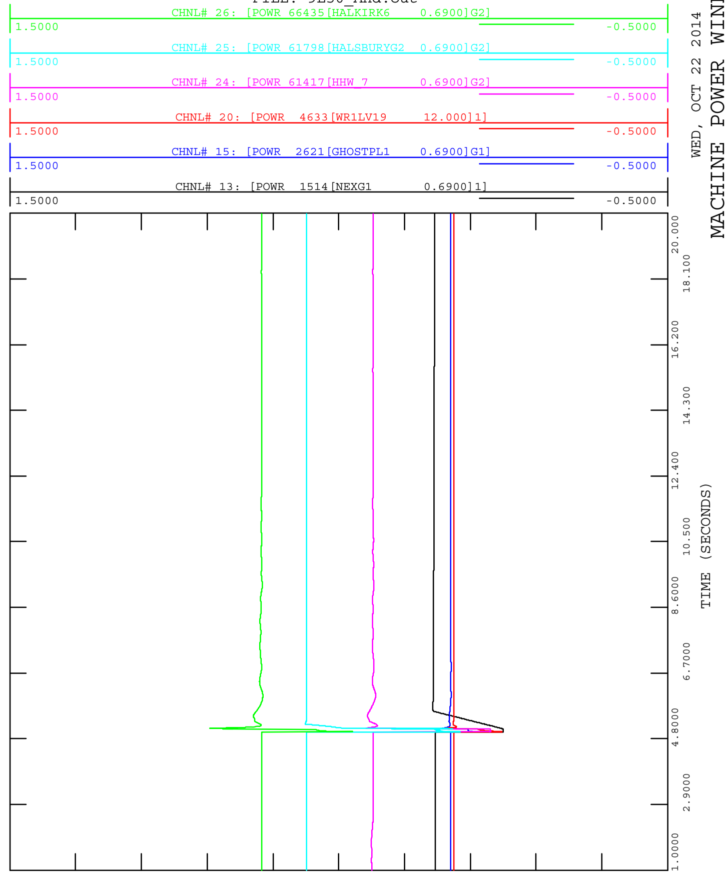

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 59: [VARS 225 TO 260 CKT '44']
750.00
-300.0
CHNL# 89: [VARS 1484 TO 225 CKT '50']
750.00
-300.0
CHNL# 81: [VARS 798 TO 260 CKT '49']
750.00
-300.0
CHNL# 63: [VARS 225 TO 918 CKT '53']
750.00
-300.0
CHNL# 97: [VARS 9999 TO 9998 CKT '45']
750.00
-300.0
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
BRANCH REACTIVE POWER MVR


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 58: [POWR 225 TO 260 CKT '44']
300.00
-200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50']
300.00
-200.0
CHNL# 80: [POWR 798 TO 260 CKT '49']
300.00
-200.0
CHNL# 62: [POWR 225 TO 918 CKT '53']
300.00
-200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '45']
300.00
-200.0
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
BRANCH ACTIVE POWER MW

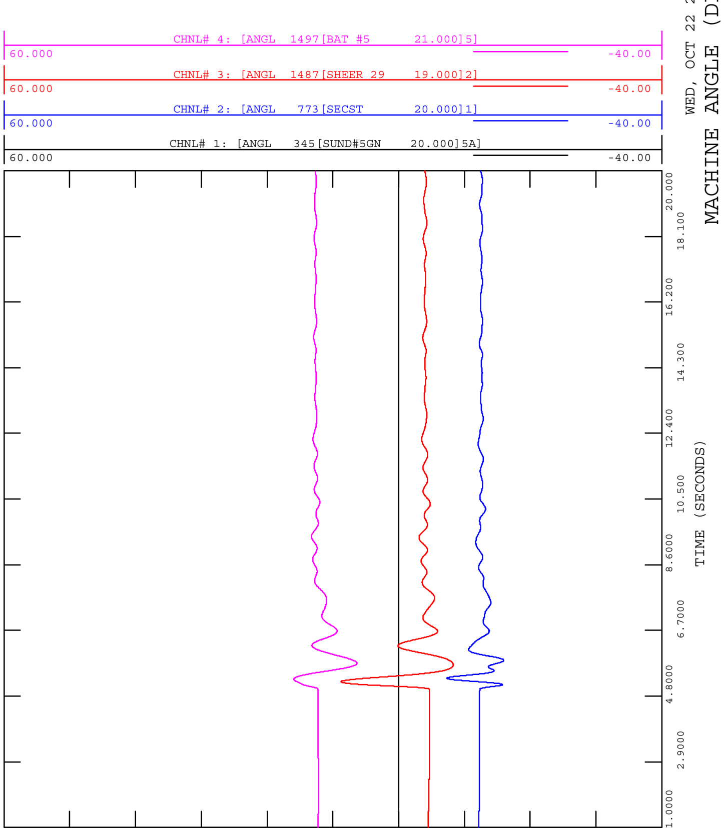
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



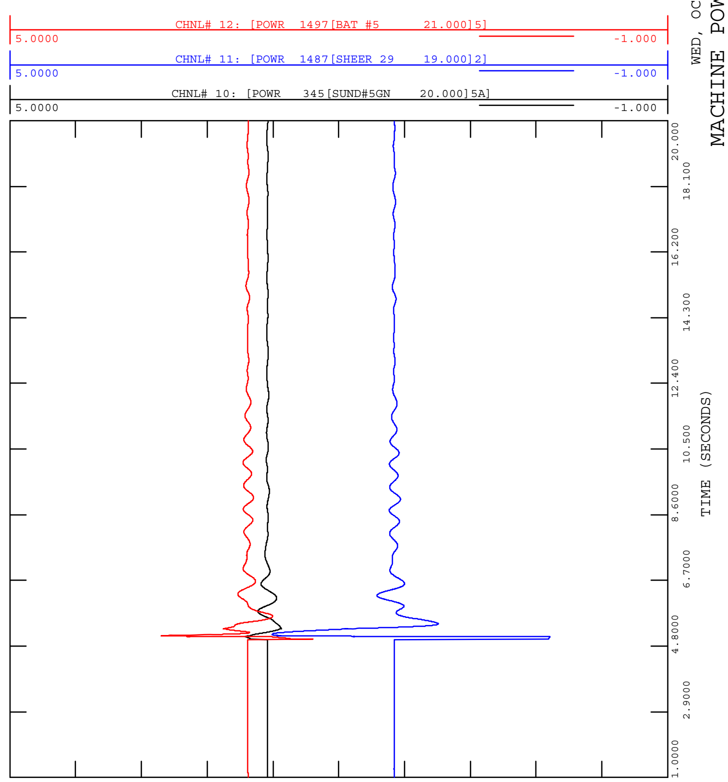
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



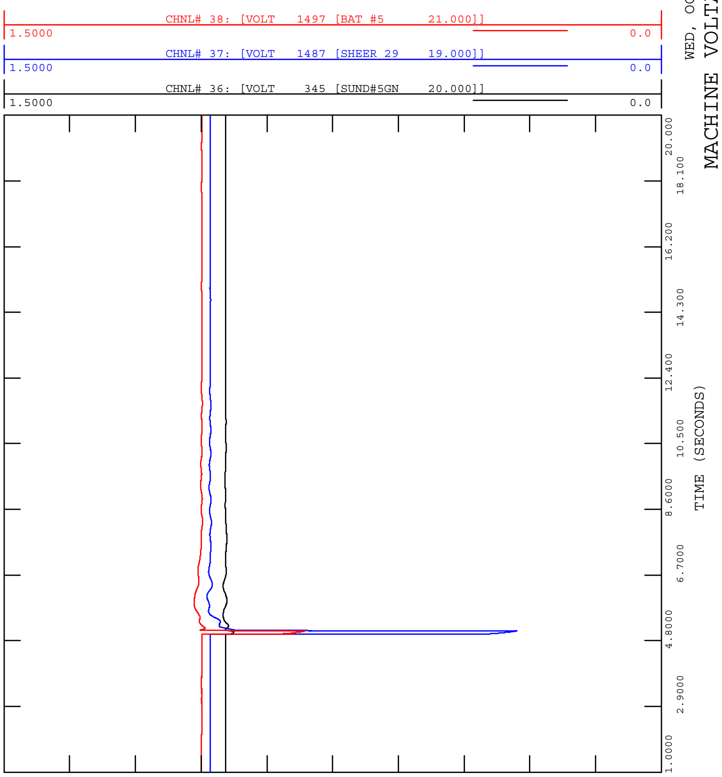
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



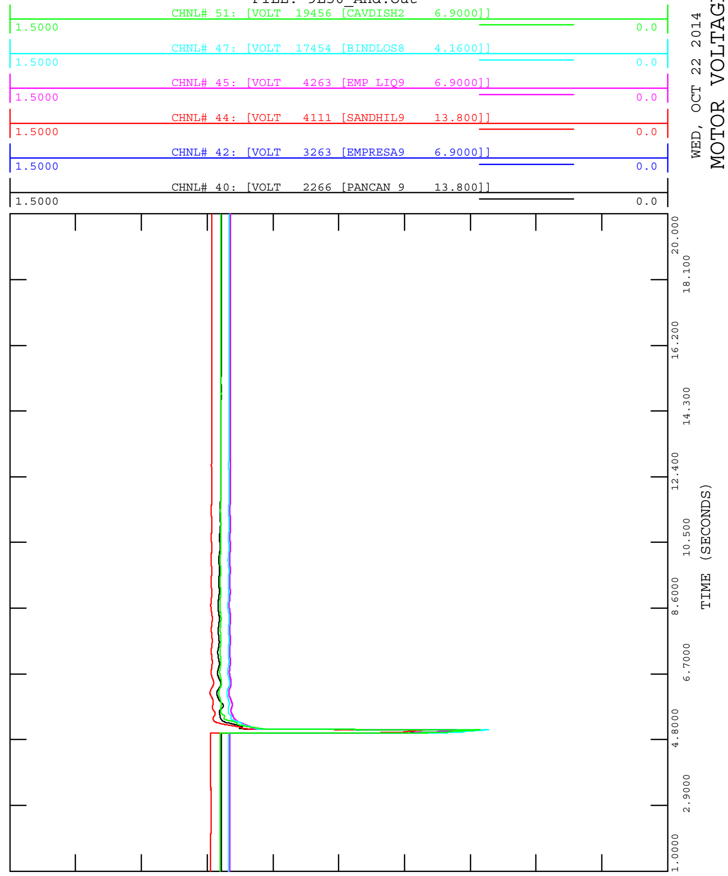
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



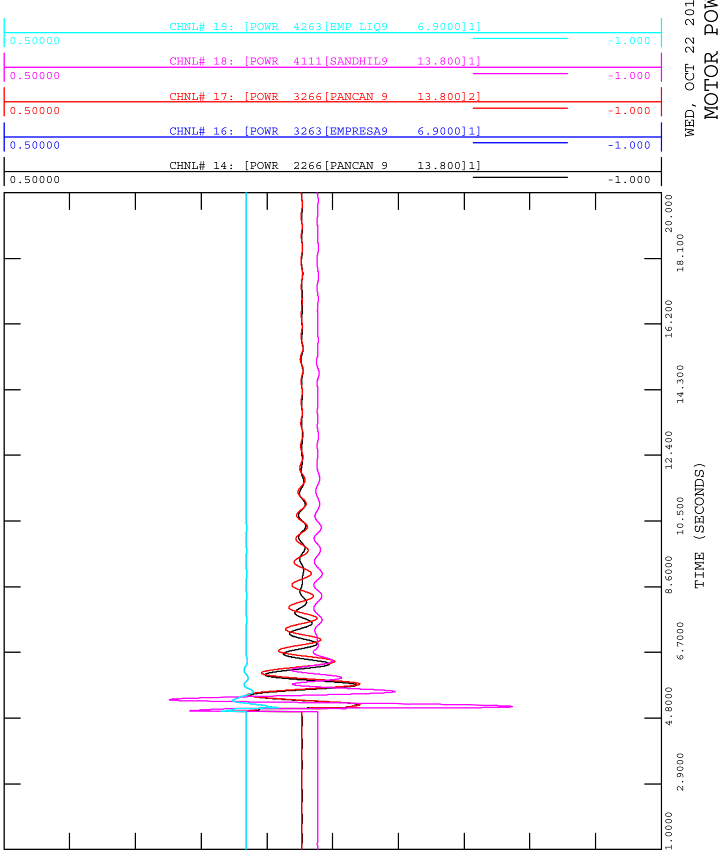
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
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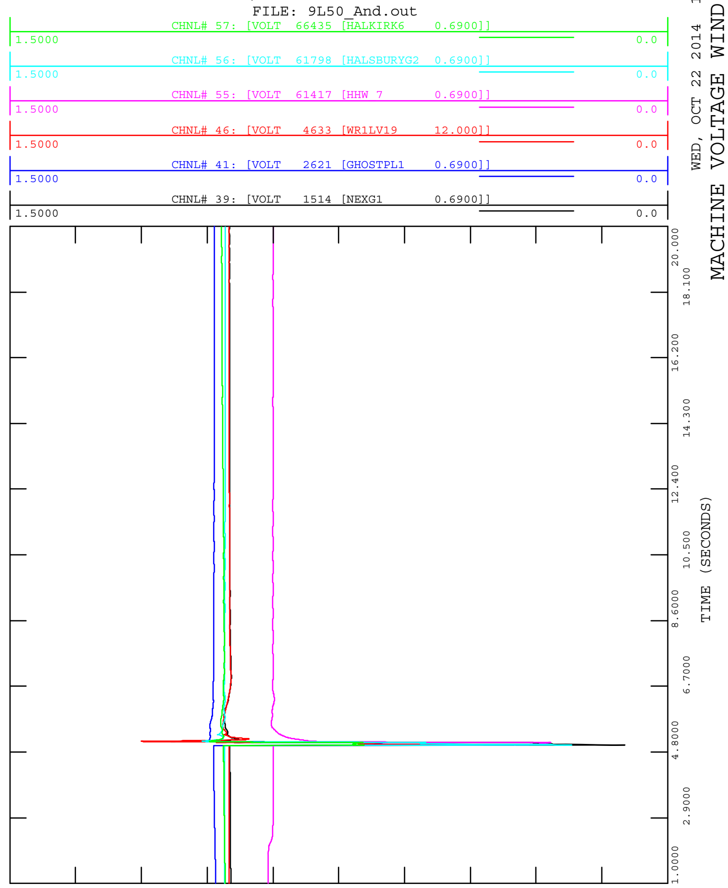
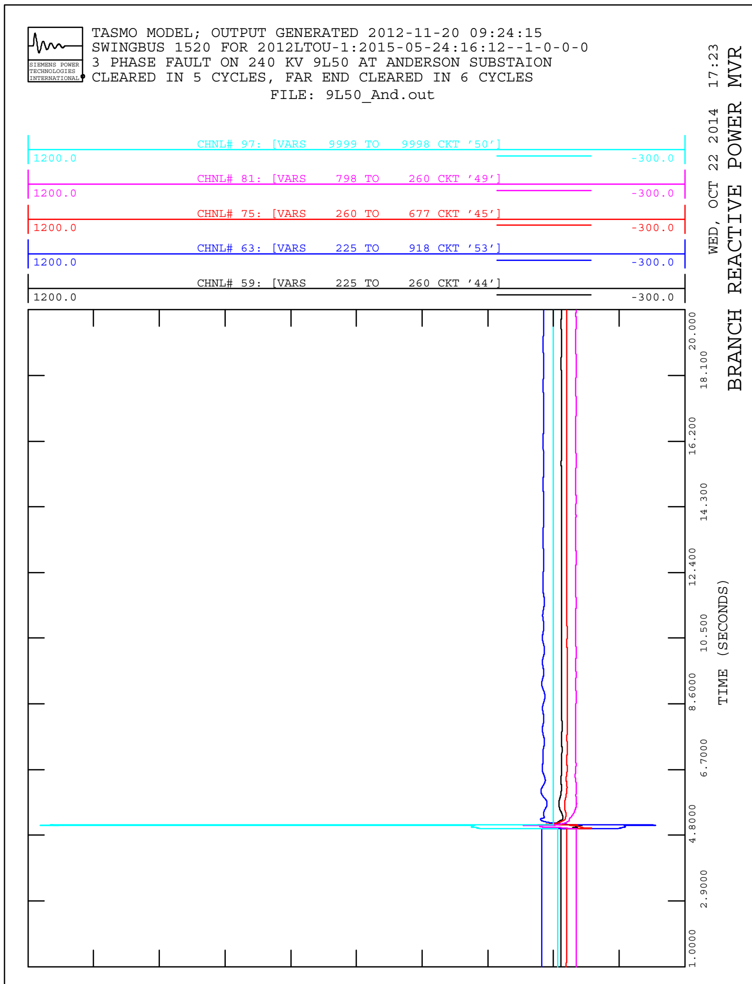
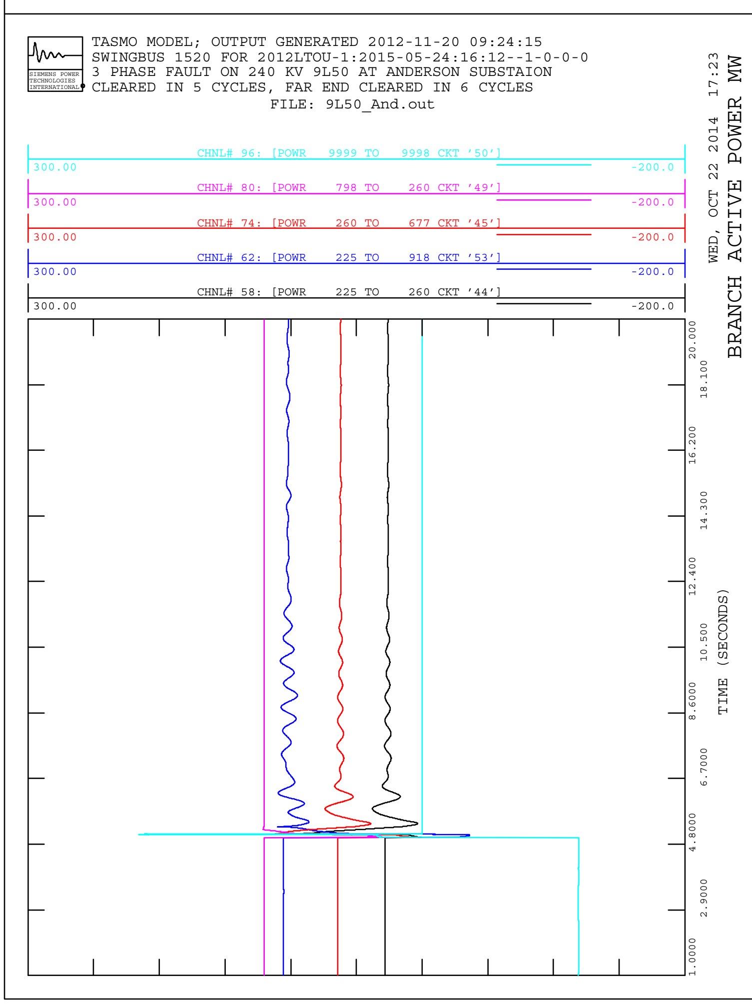
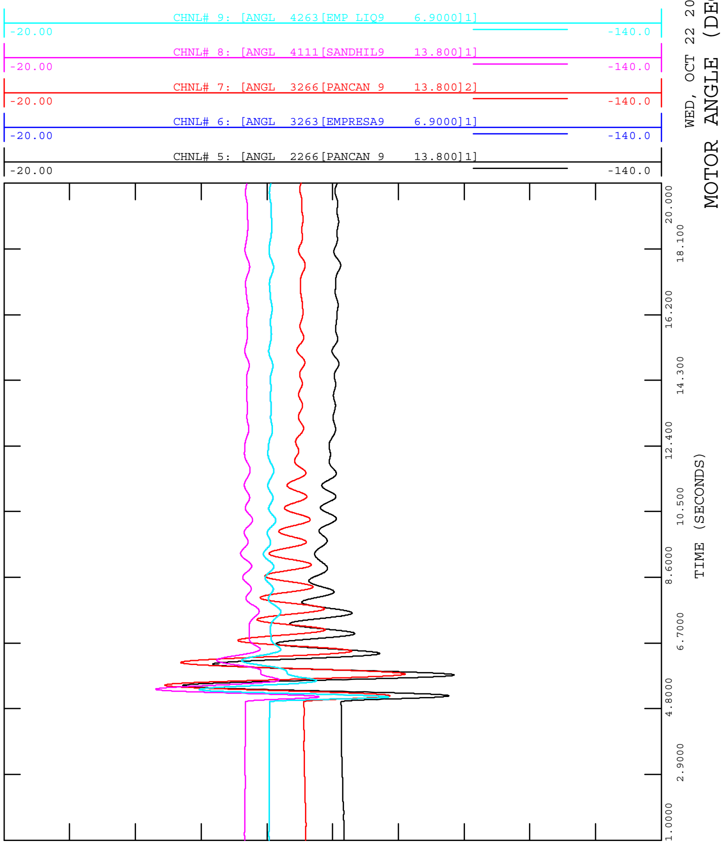
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



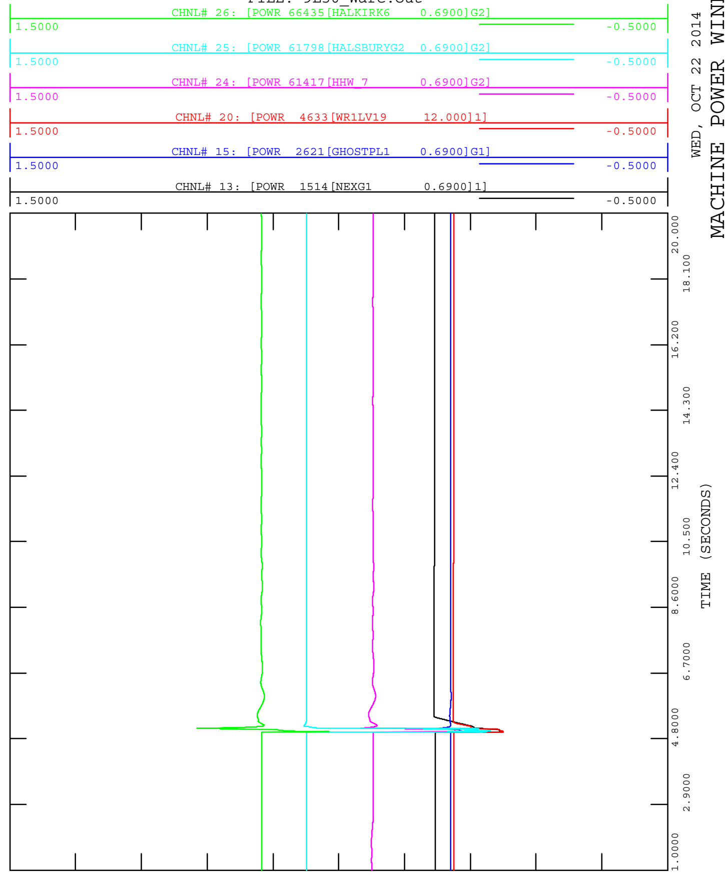

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 97: [VARS 9999 TO 9998 CKT '50']
1200.0
-300.0
CHNL# 81: [VARS 798 TO 260 CKT '49']
1200.0
-300.0
CHNL# 75: [VARS 260 TO 677 CKT '45']
1200.0
-300.0
CHNL# 63: [VARS 225 TO 918 CKT '53']
1200.0
-300.0
CHNL# 59: [VARS 225 TO 260 CKT '44']
1200.0
-300.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
BRANCH REACTIVE POWER MVR


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 96: [POWR 9999 TO 9998 CKT '50']
300.00
-200.0
CHNL# 80: [POWR 798 TO 260 CKT '49']
300.00
-200.0
CHNL# 74: [POWR 260 TO 677 CKT '45']
300.00
-200.0
CHNL# 62: [POWR 225 TO 918 CKT '53']
300.00
-200.0
CHNL# 58: [POWR 225 TO 260 CKT '44']
300.00
-200.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
BRANCH ACTIVE POWER MW

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



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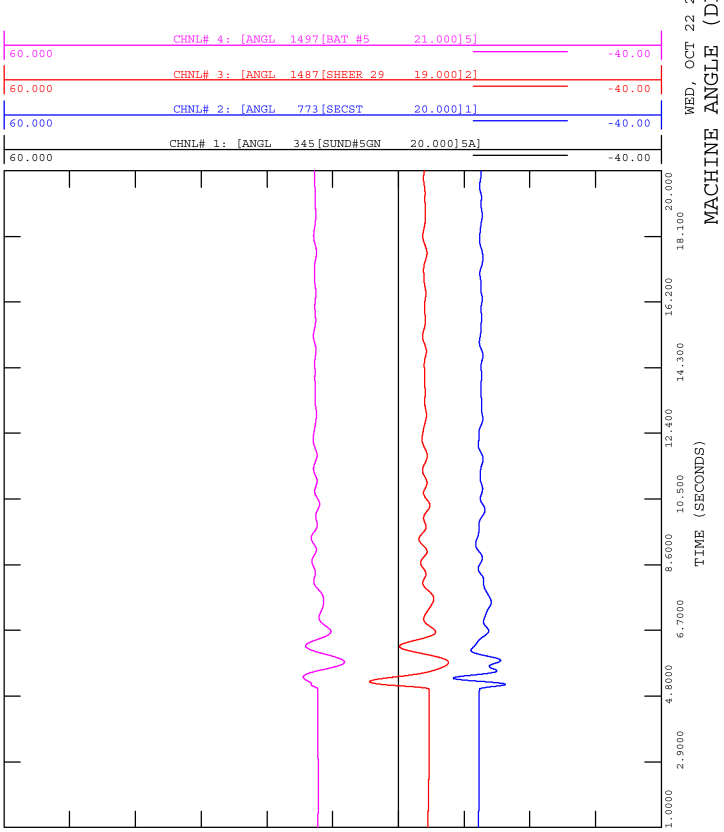
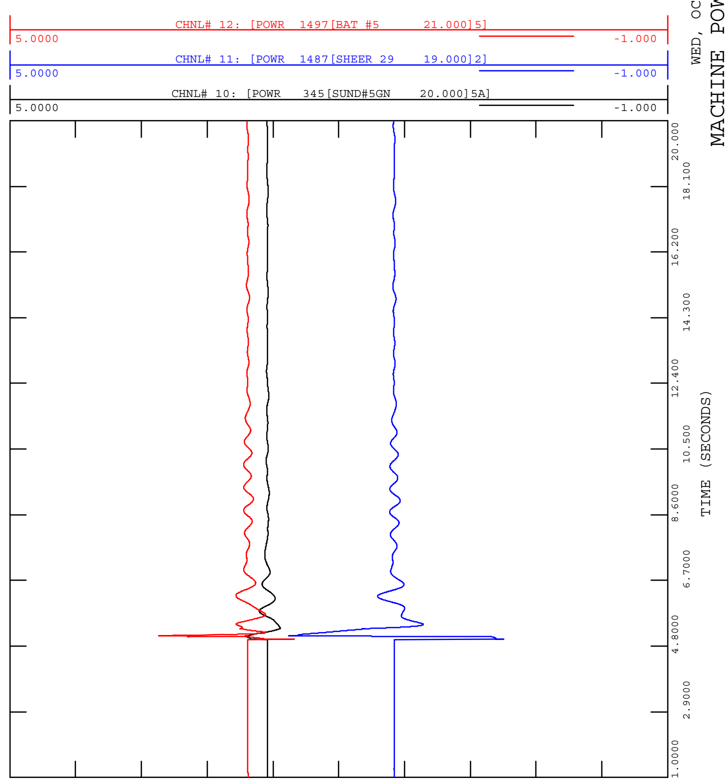
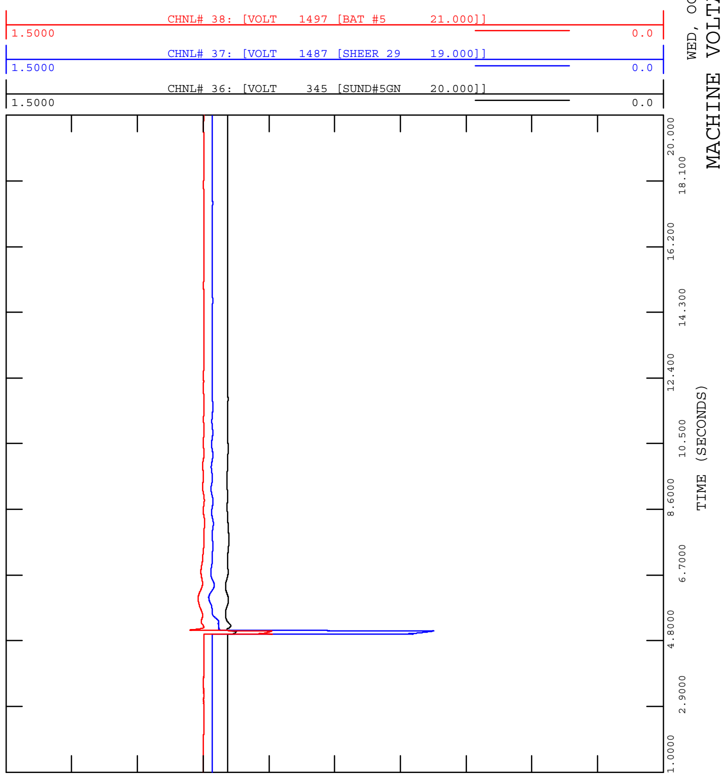
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



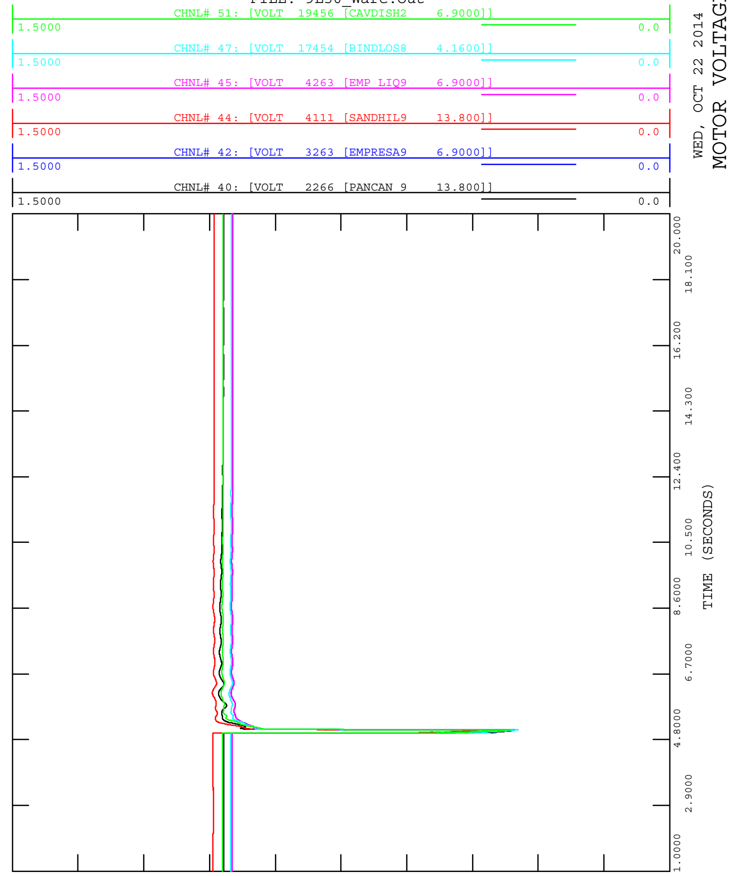
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



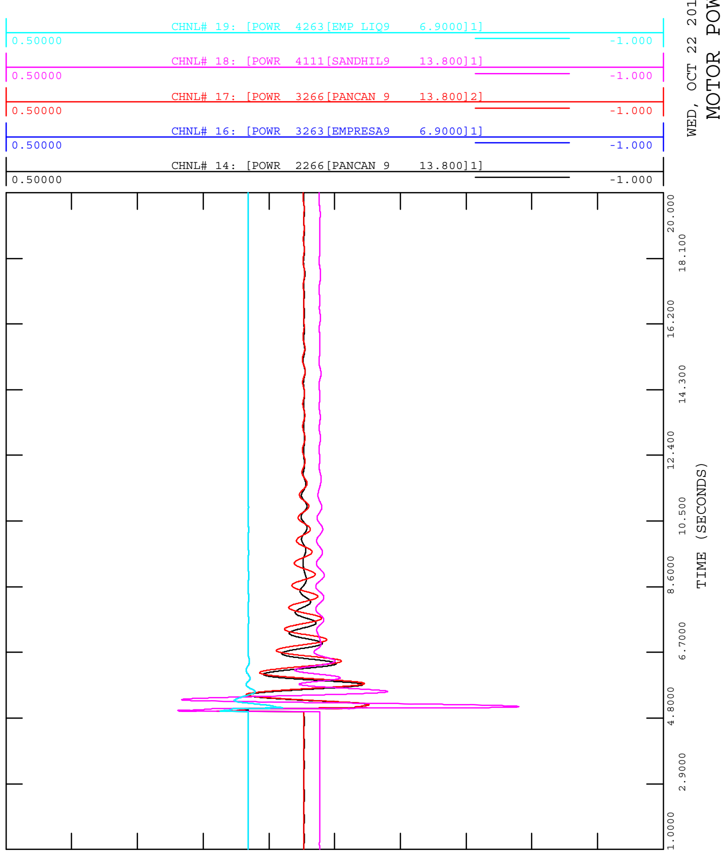
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



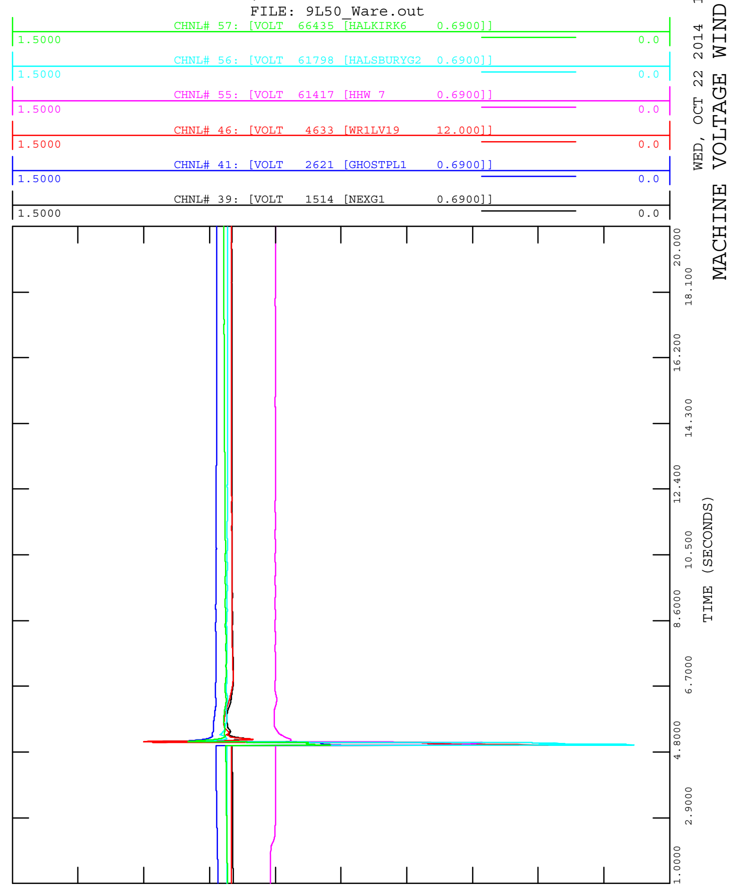
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

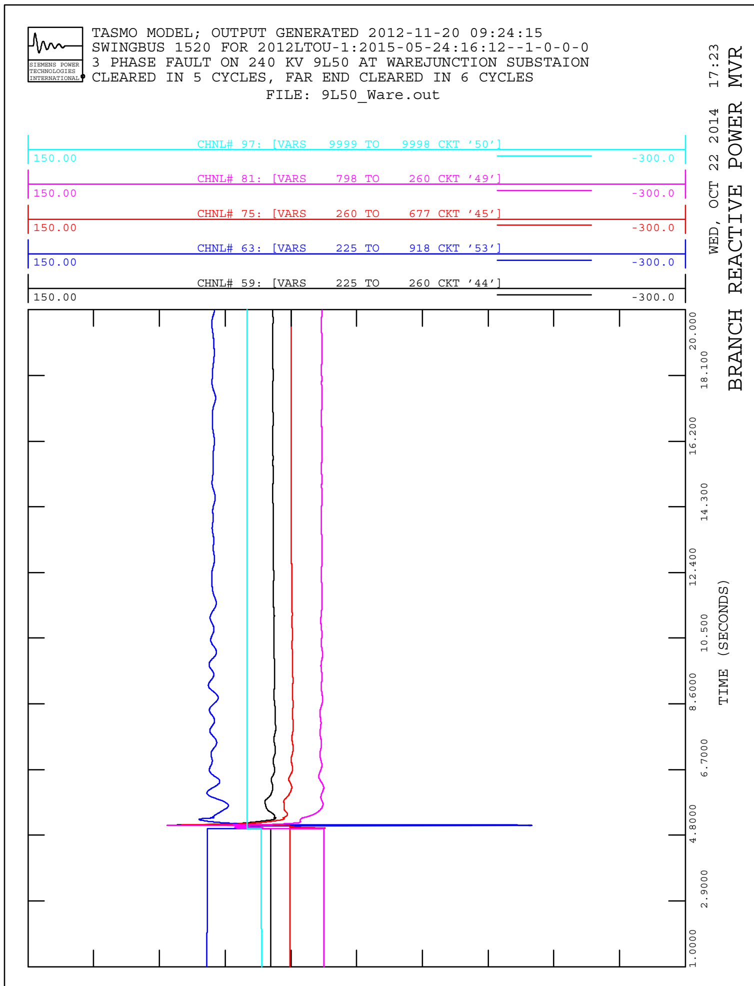


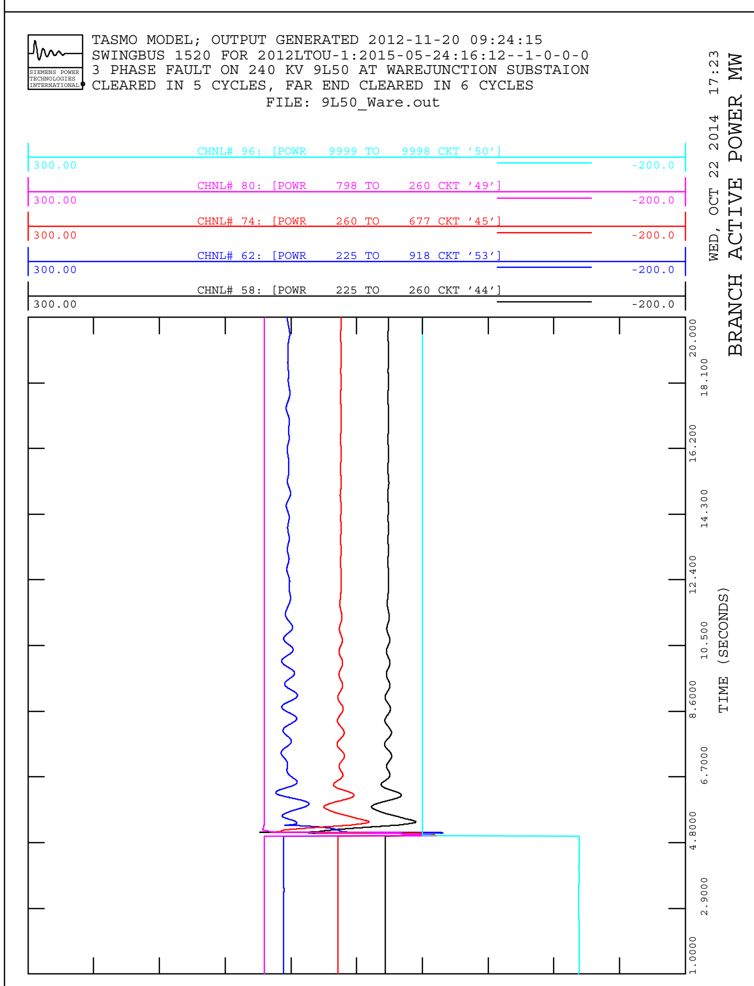
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

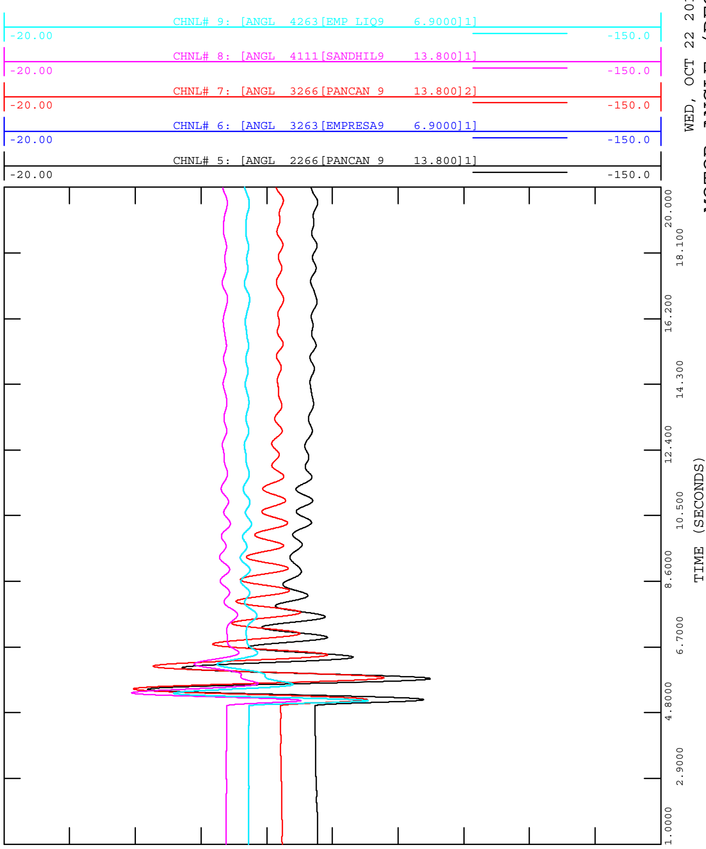



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 97: [VARS 9999 TO 9998 CKT '50']
150.00
-300.0
CHNL# 81: [VARS 798 TO 260 CKT '49']
150.00
-300.0
CHNL# 75: [VARS 260 TO 677 CKT '45']
150.00
-300.0
CHNL# 63: [VARS 225 TO 918 CKT '53']
150.00
-300.0
CHNL# 59: [VARS 225 TO 260 CKT '44']
150.00
-300.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
BRANCH REACTIVE POWER MVR


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 96: [POWR 9999 TO 9998 CKT '50']
300.00
-200.0
CHNL# 80: [POWR 798 TO 260 CKT '49']
300.00
-200.0
CHNL# 74: [POWR 260 TO 677 CKT '45']
300.00
-200.0
CHNL# 62: [POWR 225 TO 918 CKT '53']
300.00
-200.0
CHNL# 58: [POWR 225 TO 260 CKT '44']
300.00
-200.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 17:23
BRANCH ACTIVE POWER MW

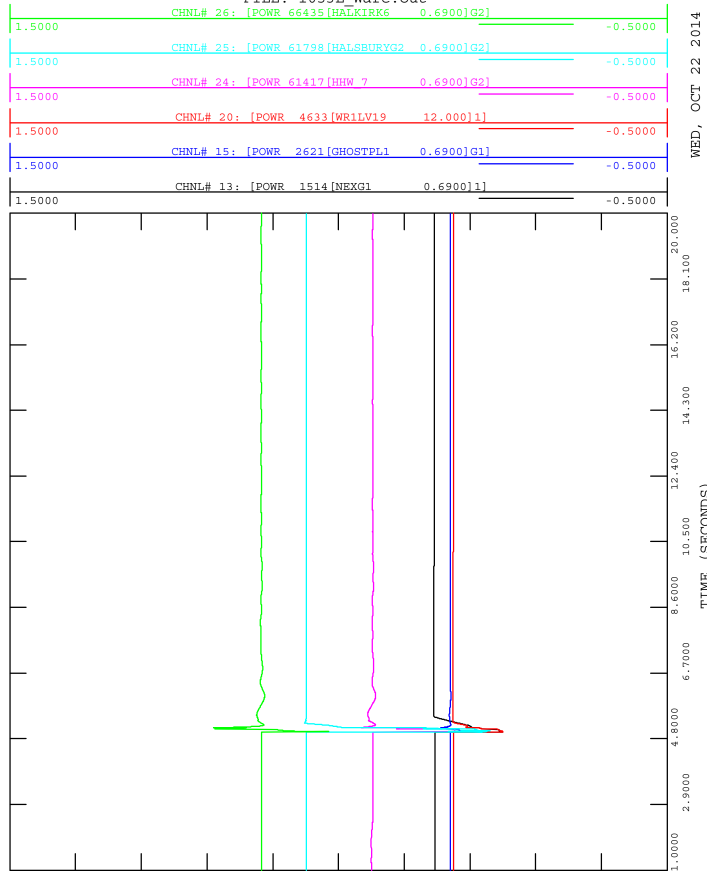
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out

WED, OCT 22 2014 17:23
MOTOR ANGLE (DEGREES)



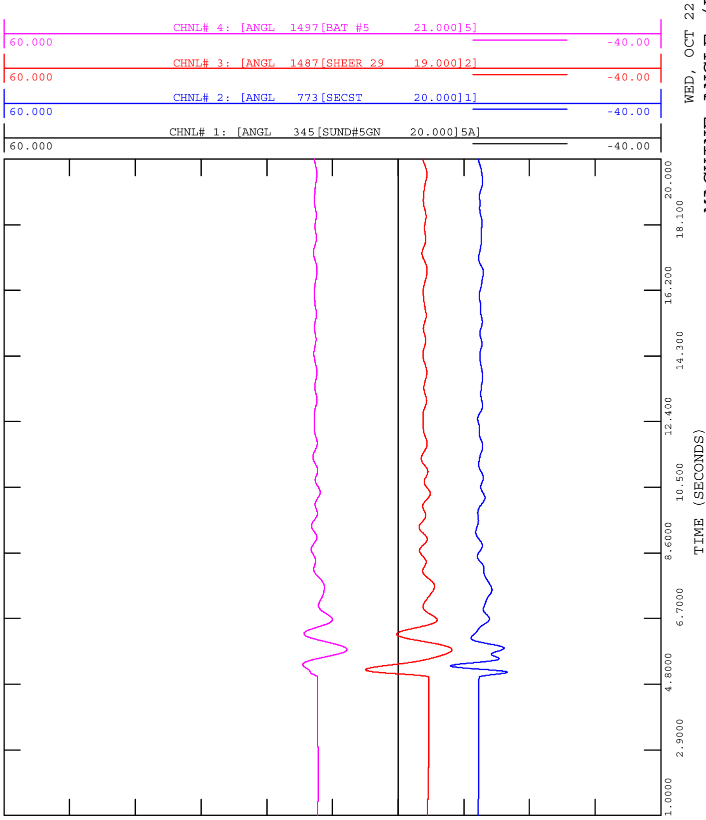
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out

WED, OCT 22 2014 17:24
MACHINE POWER WIND PU



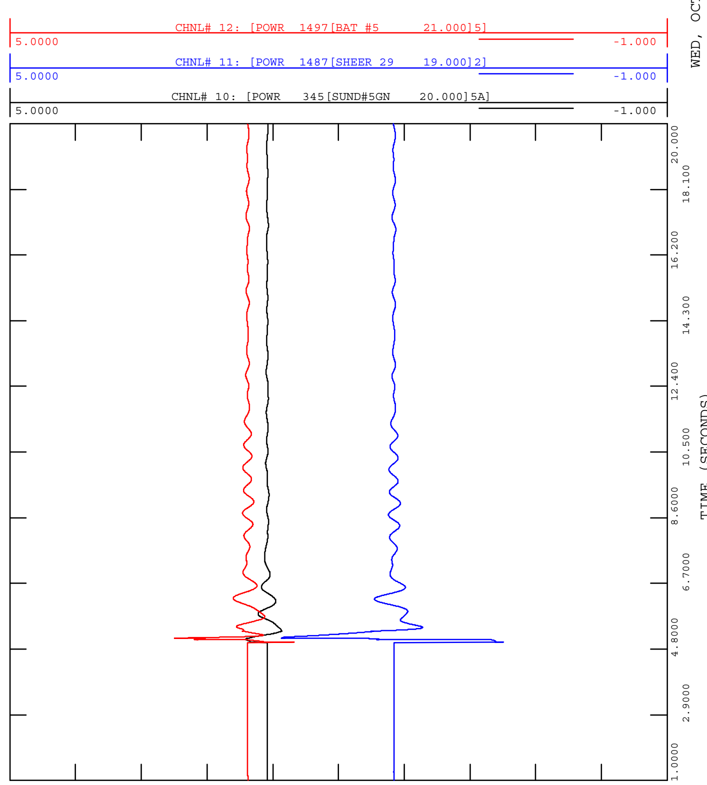
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out

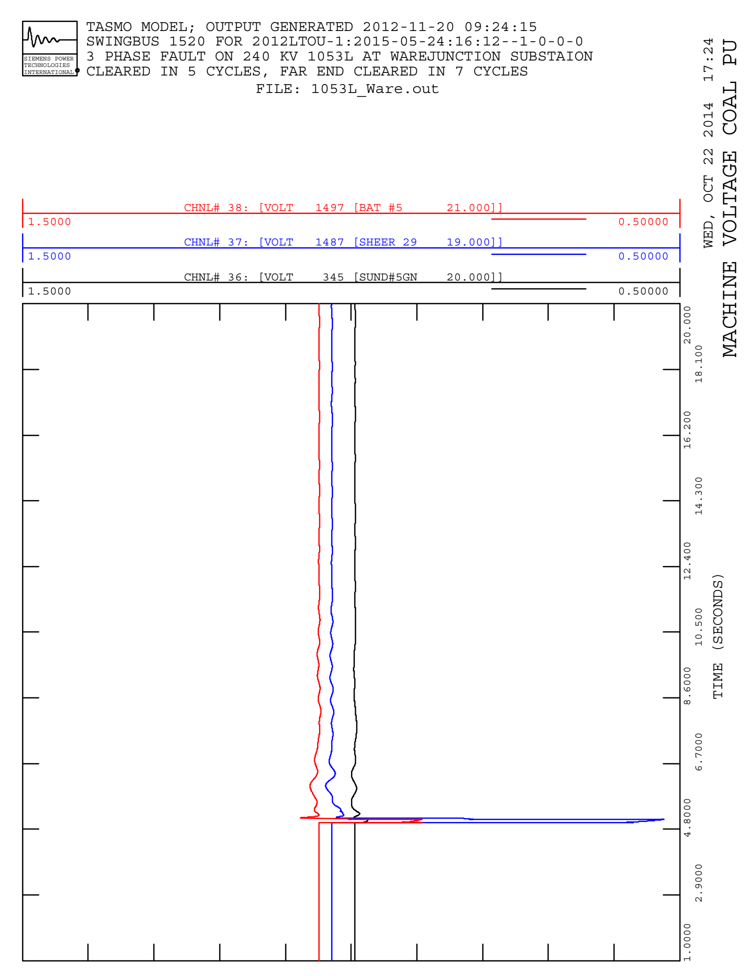
WED, OCT 22 2014 17:23
MACHINE ANGLE (DEGREES)



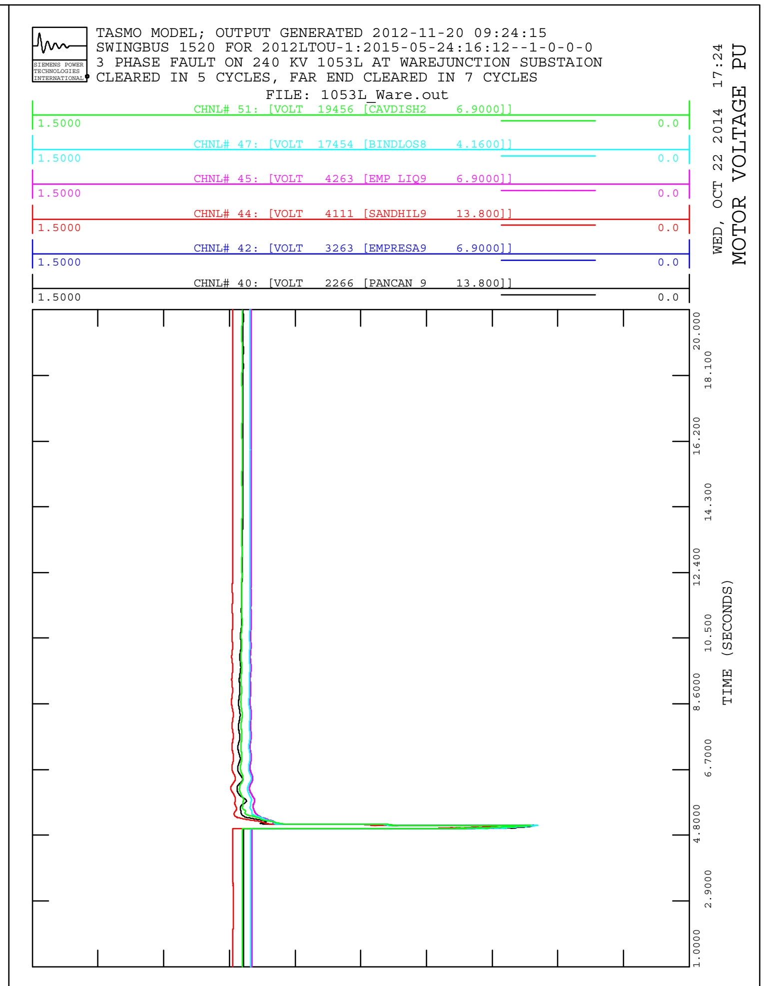
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out

WED, OCT 22 2014 17:24
MACHINE POWER COAL PU

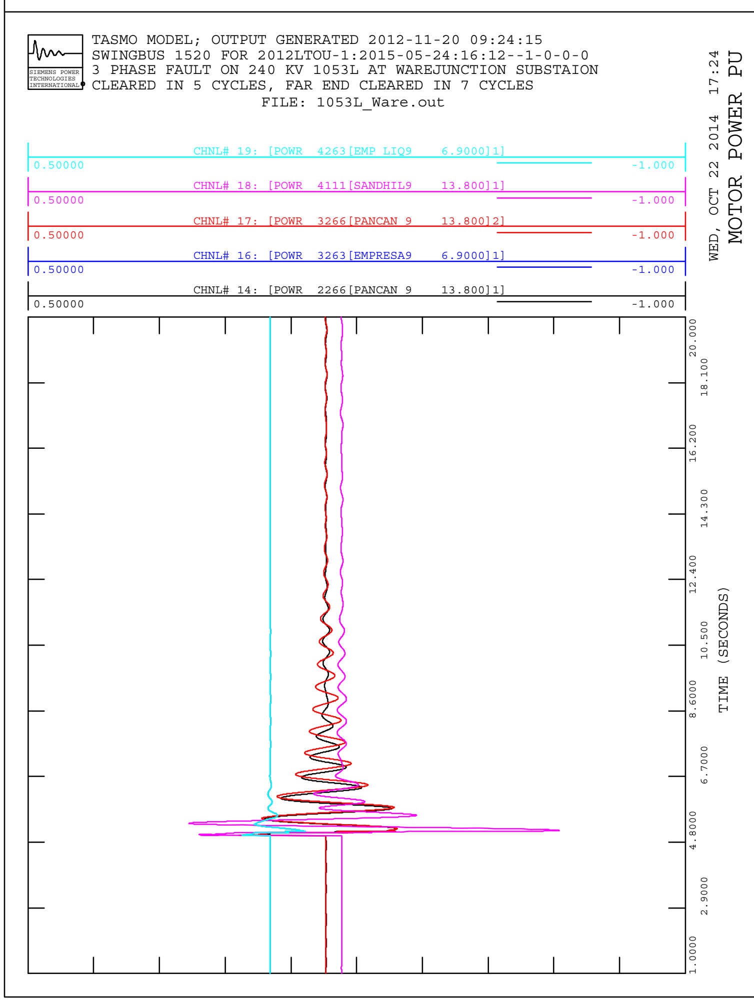




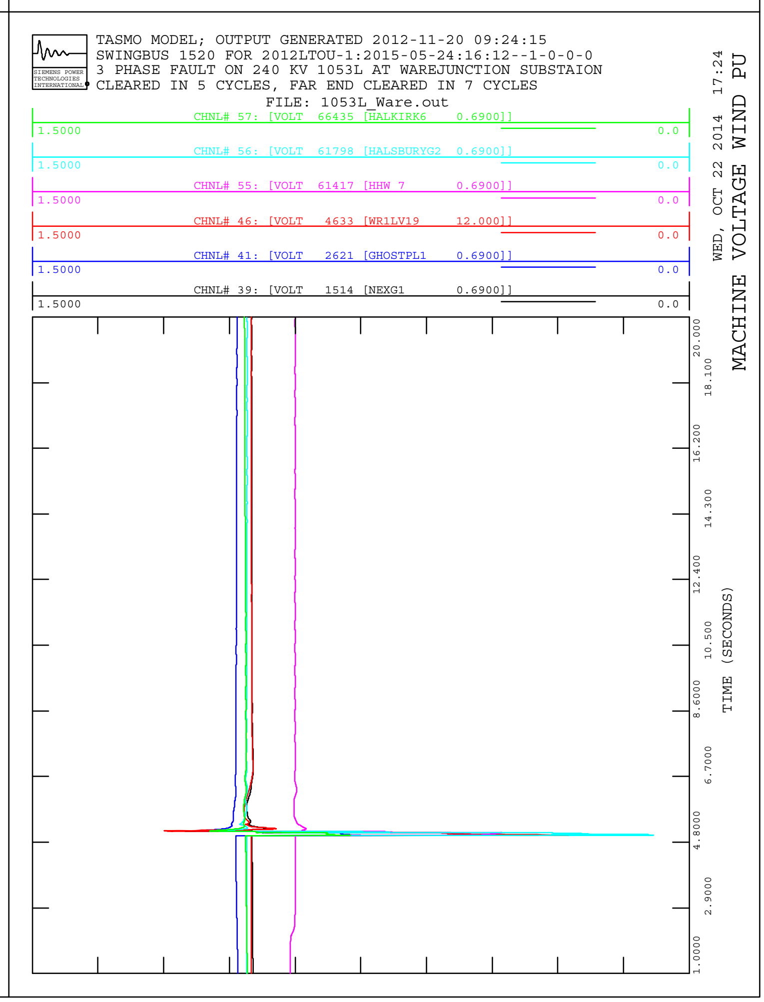
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.50000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.50000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.50000
WED, OCT 22 2014 17:24
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 17:24
MOTOR VOLTAGE PU
TIME (SECONDS)
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000

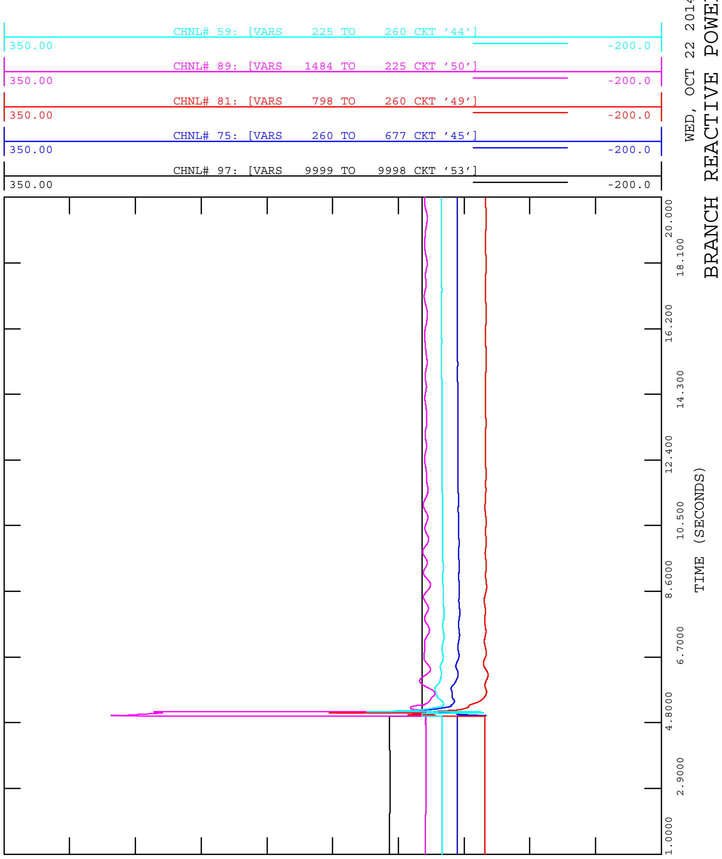


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 17:24
MOTOR POWER PU
TIME (SECONDS)
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000

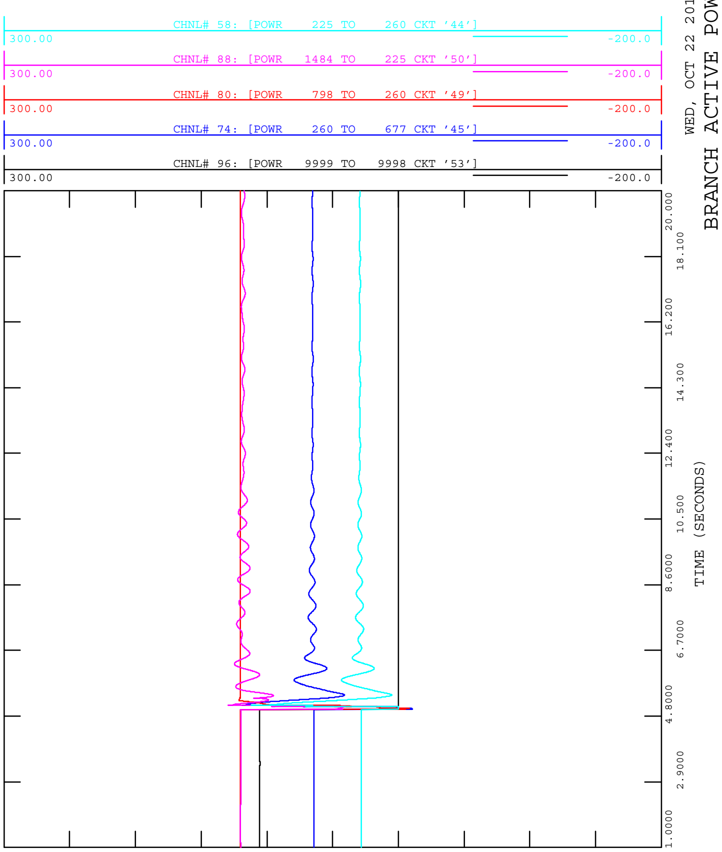


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4633 [WR1LV19 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 17:24
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out

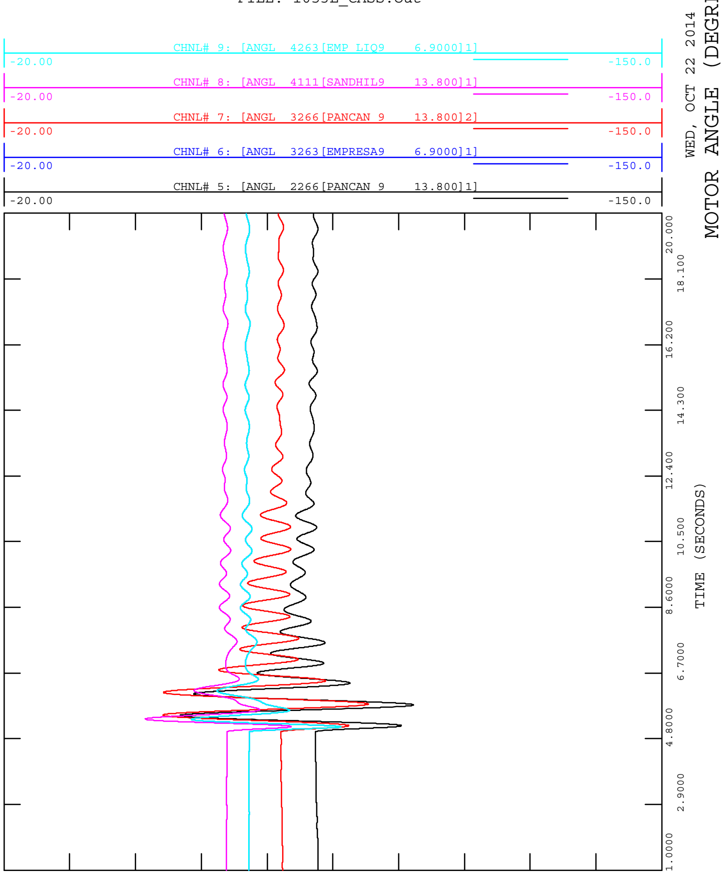


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out



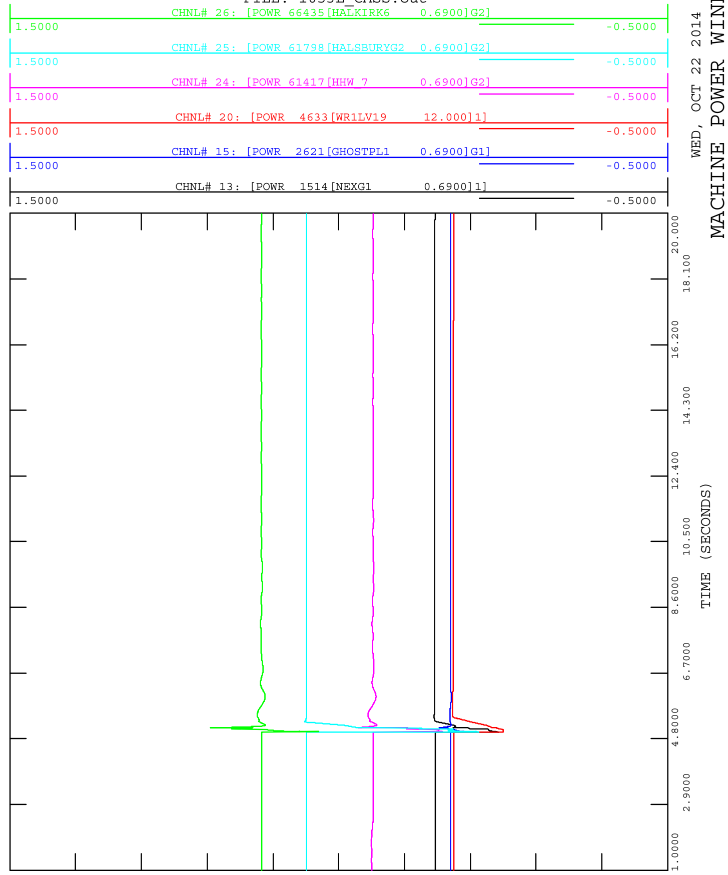
SIEMENS POWER TECHNOLOGIES INTERNATIONAL

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



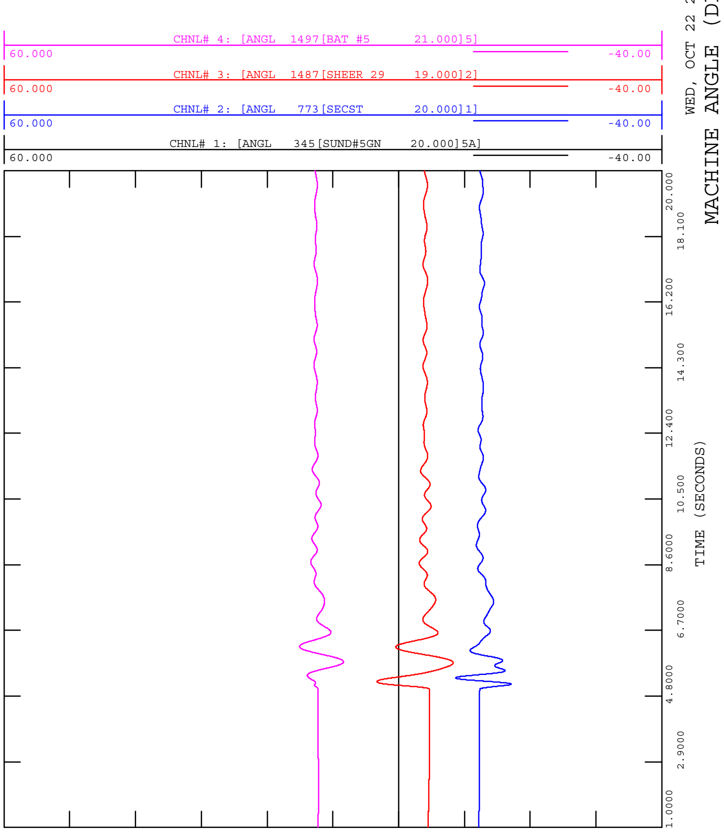
SIEMENS POWER TECHNOLOGIES INTERNATIONAL

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



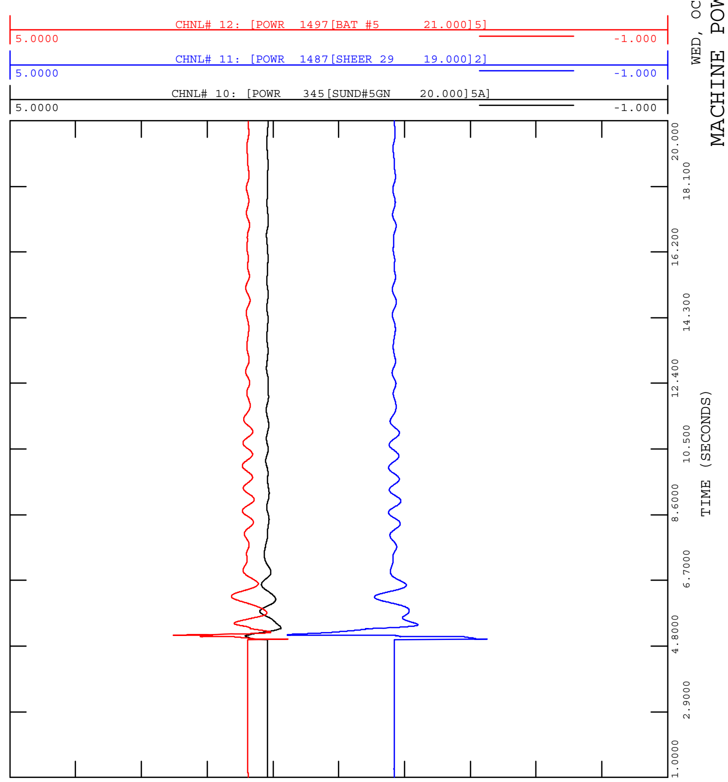
SIEMENS POWER TECHNOLOGIES INTERNATIONAL

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



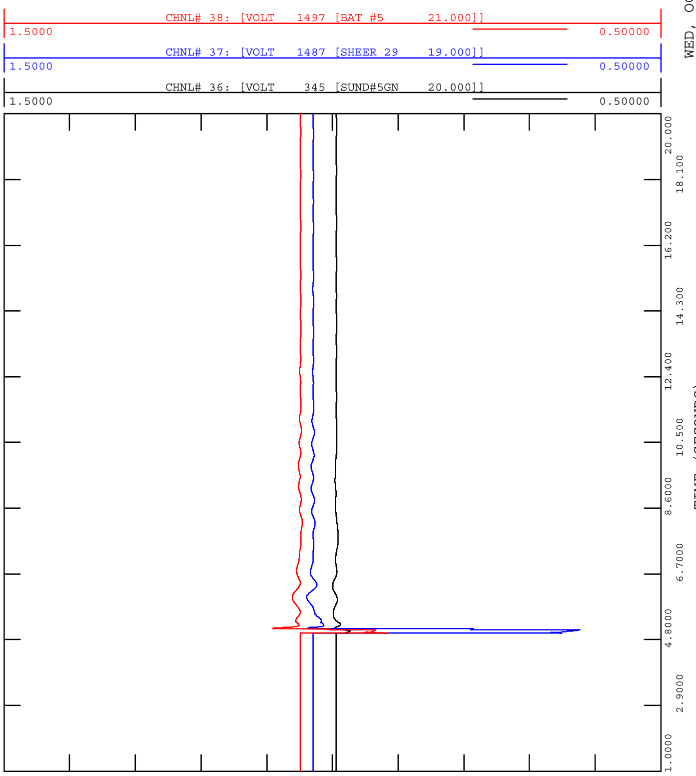
SIEMENS POWER TECHNOLOGIES INTERNATIONAL

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



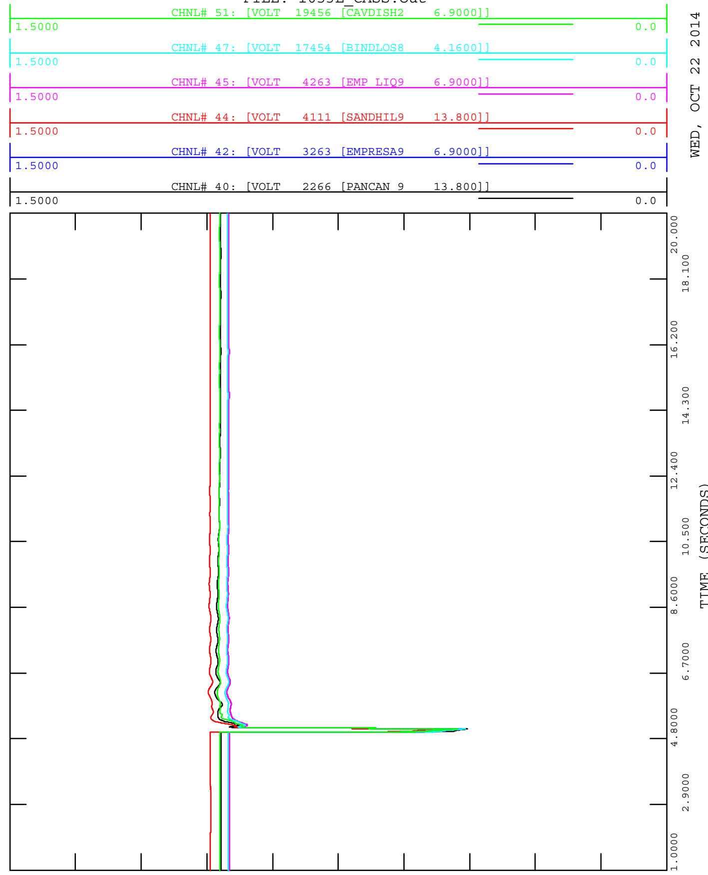
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

WED, OCT 22 2014 17:24
MACHINE VOLTAGE COAL PU



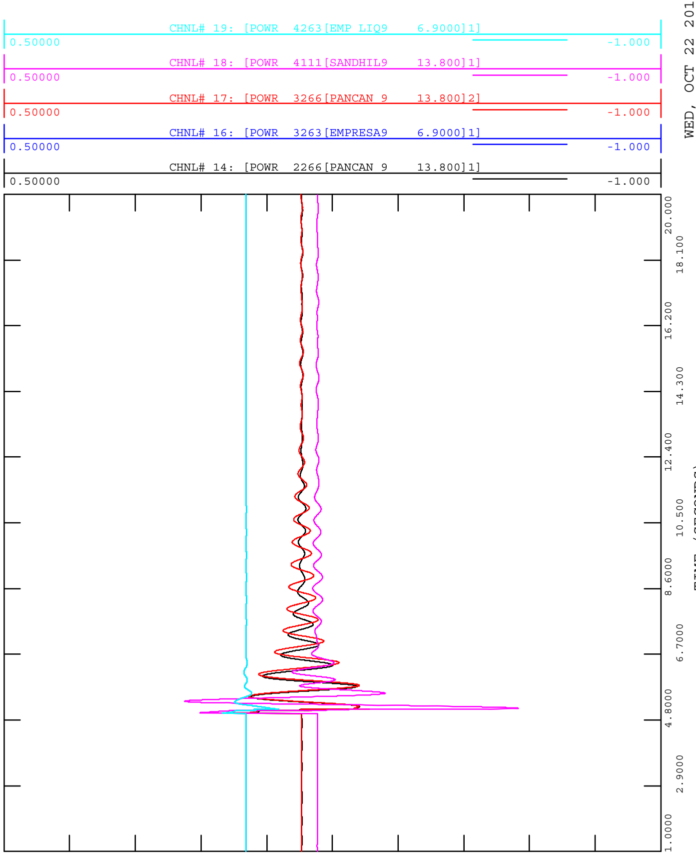
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

WED, OCT 22 2014 17:24
MOTOR VOLTAGE PU



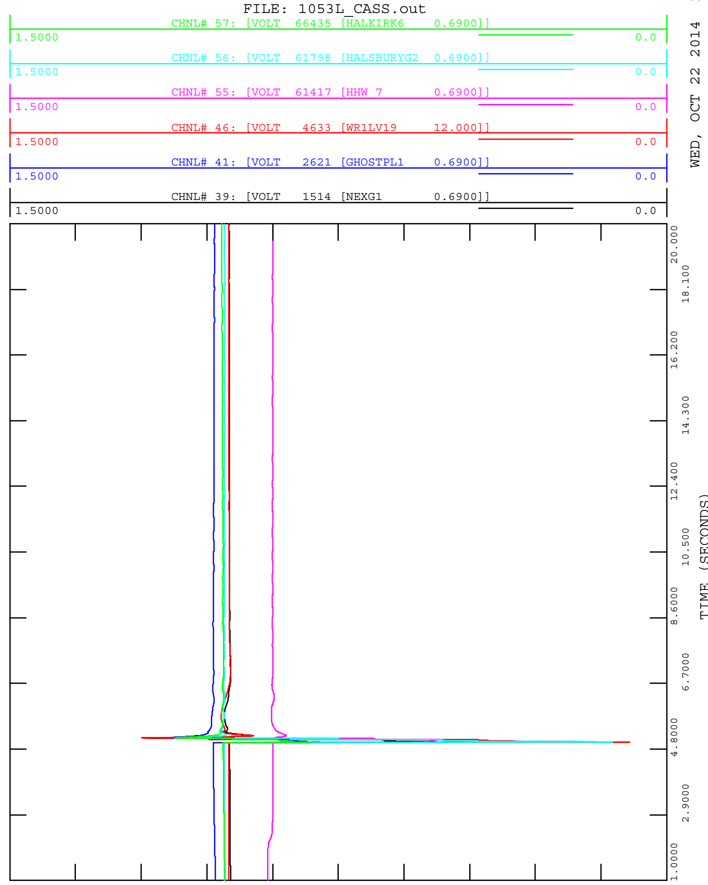
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

WED, OCT 22 2014 17:24
MOTOR POWER PU



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

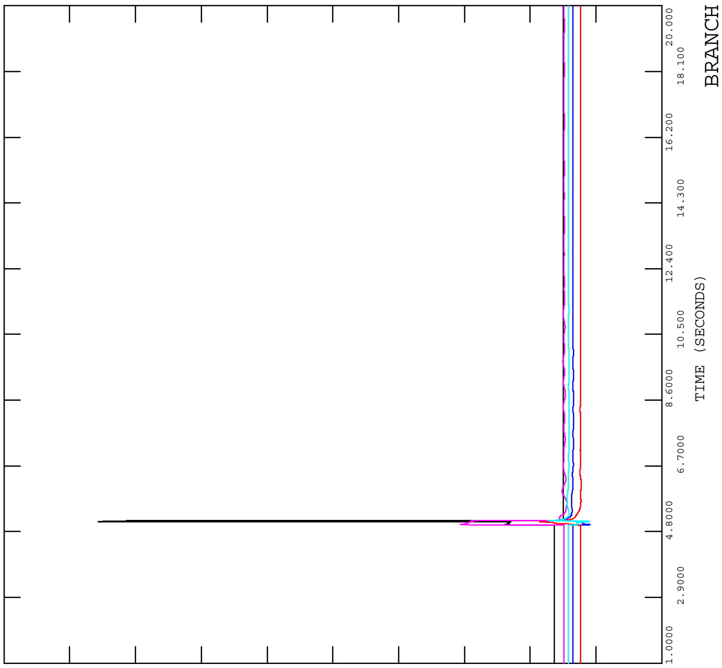
WED, OCT 22 2014 17:24
MACHINE VOLTAGE WIND PU



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

WED, OCT 22 2014 17:24
BRANCH REACTIVE POWER MVR

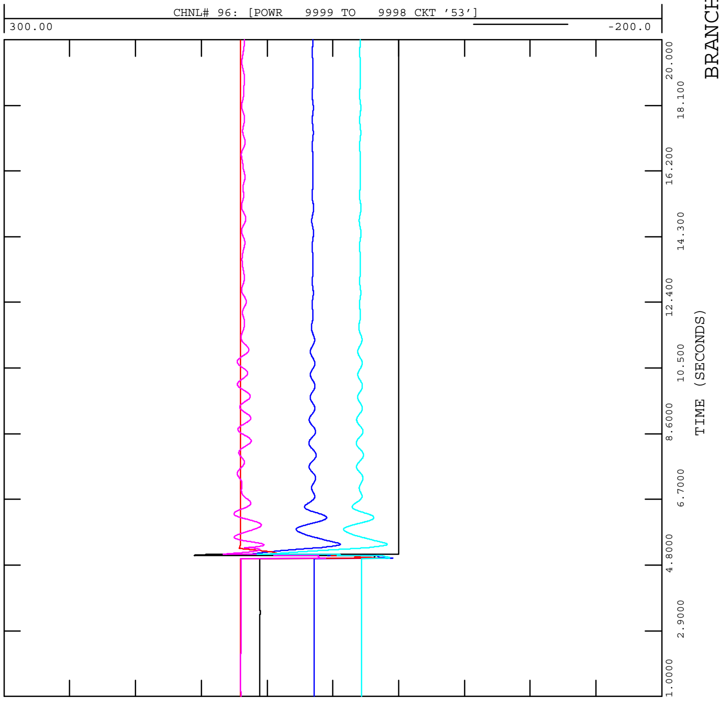
CHNL# 59: [VARS 225 TO 260 CKT '44'] 1700.0 -300.0
CHNL# 89: [VARS 1484 TO 225 CKT '50'] 1700.0 -300.0
CHNL# 81: [VARS 798 TO 260 CKT '49'] 1700.0 -300.0
CHNL# 75: [VARS 260 TO 677 CKT '45'] 1700.0 -300.0
CHNL# 97: [VARS 9999 TO 9998 CKT '53'] 1700.0 -300.0



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

WED, OCT 22 2014 17:24
BRANCH ACTIVE POWER MW

CHNL# 58: [POWR 225 TO 260 CKT '44'] 300.00 -200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50'] 300.00 -200.0
CHNL# 80: [POWR 798 TO 260 CKT '49'] 300.00 -200.0
CHNL# 74: [POWR 260 TO 677 CKT '45'] 300.00 -200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '53'] 300.00 -200.0



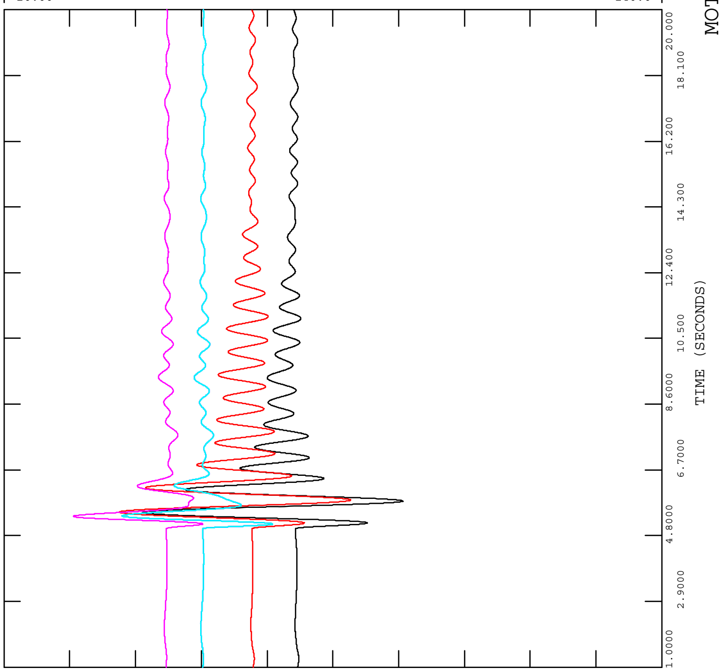
ATTACHMENT H

2017SP Post-Connection Transient Stability Analysis

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out

WED, OCT 22 2014 18:02
MOTOR ANGLE (DEGREES)

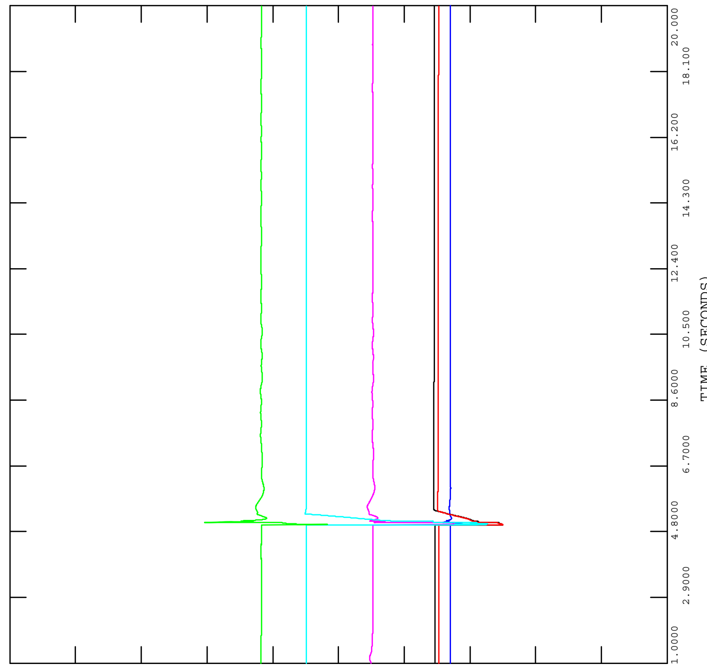
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1] -20.00 -140.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1] -20.00 -140.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2] -20.00 -140.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1] -20.00 -140.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1] -20.00 -140.0



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out

WED, OCT 22 2014 18:02
MACHINE POWER WIND PU

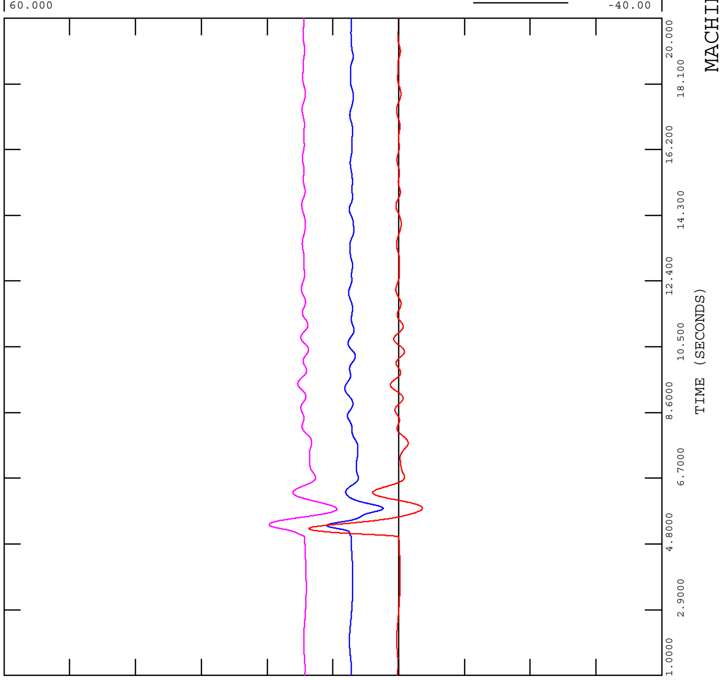
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2] 1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2] 1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW_7 0.6900]G2] 1.5000 -0.5000
CHNL# 20: [POWR 4632[WR1LV15 12.000]1] 1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1] 1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1] 1.5000 -0.5000



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out

WED, OCT 22 2014 18:02
MACHINE ANGLE (DEGREES)

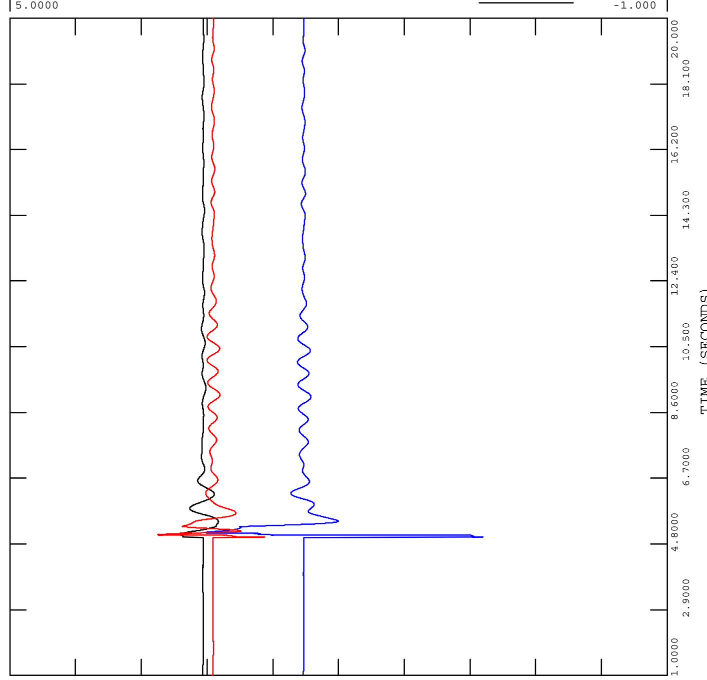
CHNL# 4: [ANGL 1497[BAT #5 21.000]5] 60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2] 60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1] 60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A] 60.000 -40.00

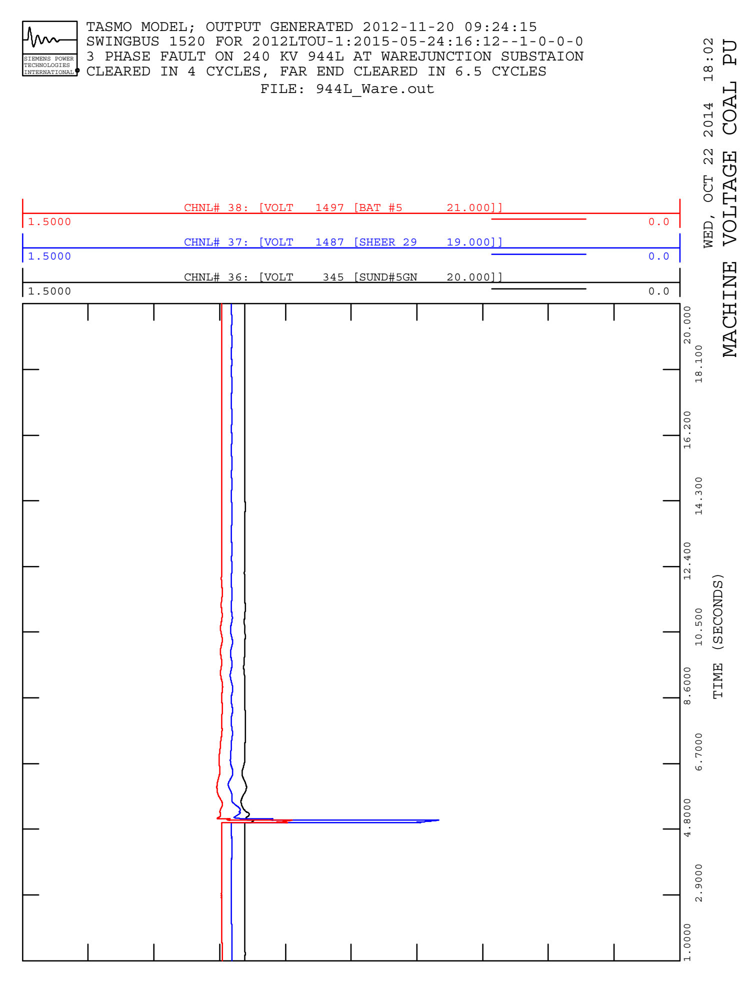


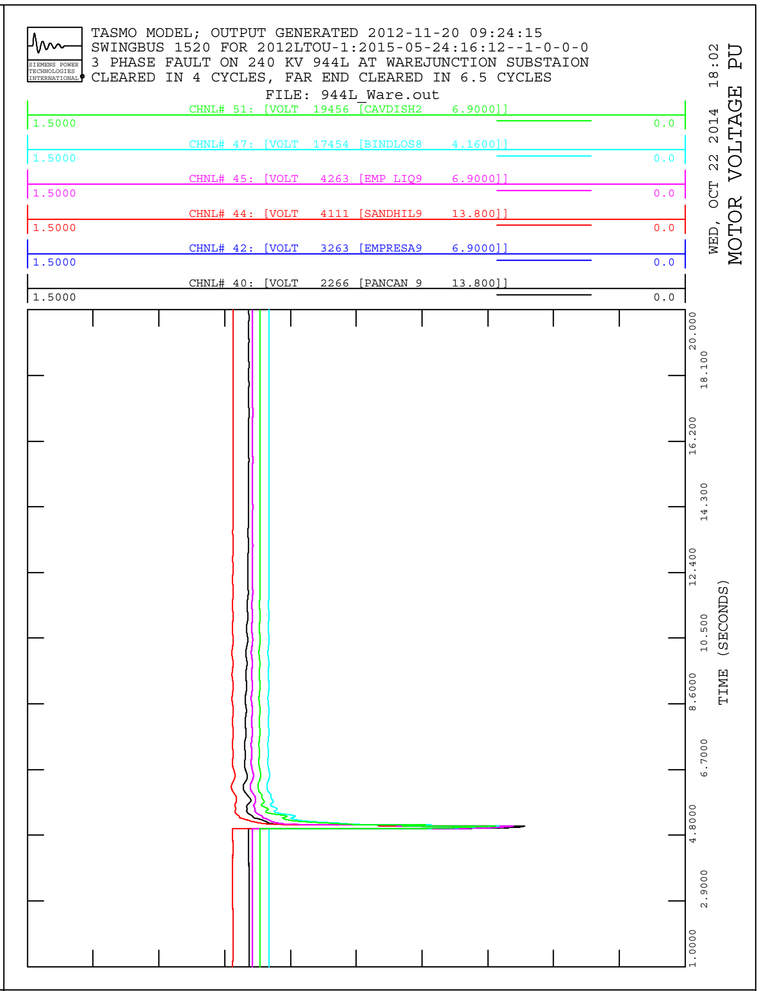
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out

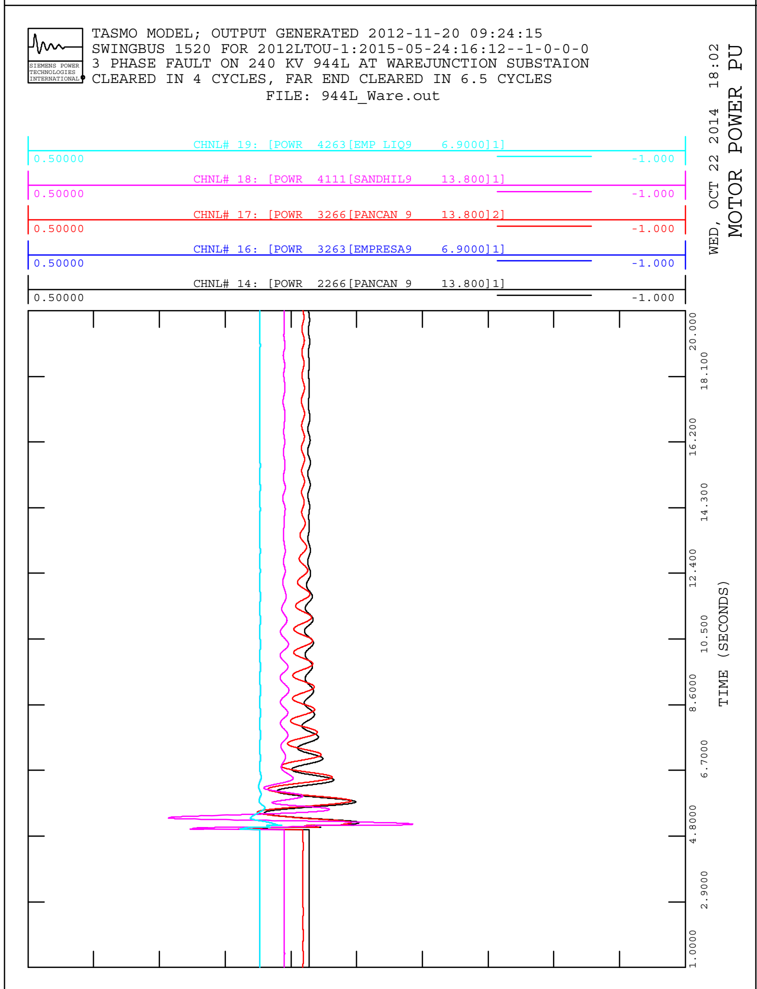
WED, OCT 22 2014 18:02
MACHINE POWER COAL PU

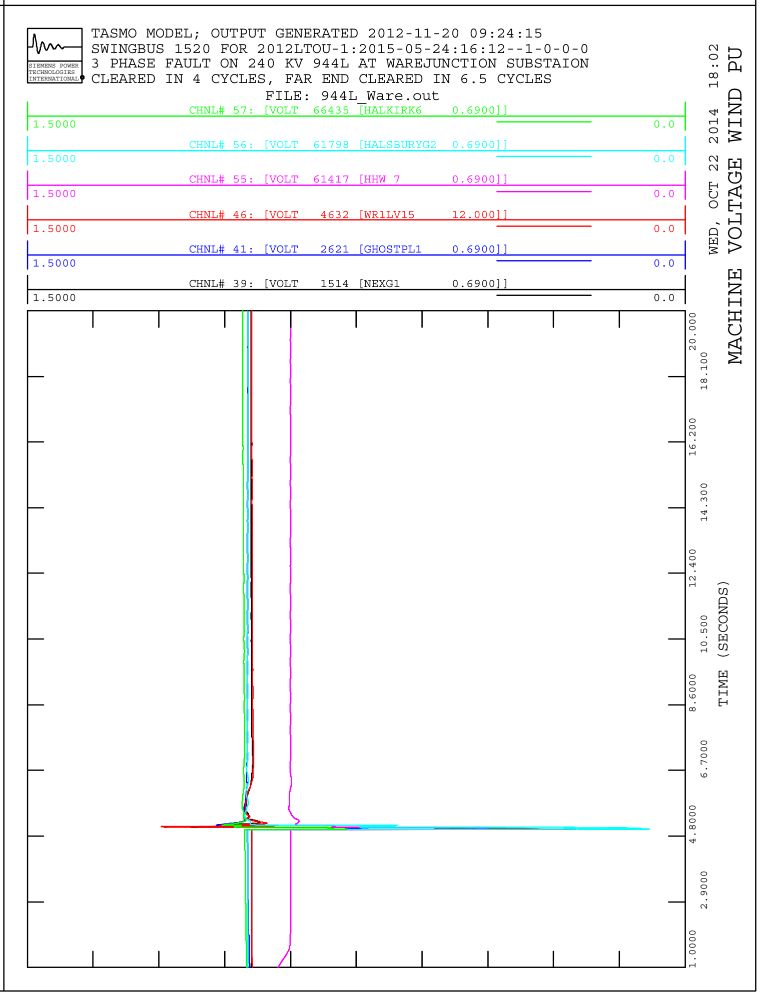
CHNL# 12: [POWR 1497[BAT #5 21.000]5] 5.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2] 5.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A] 5.0000 -1.000



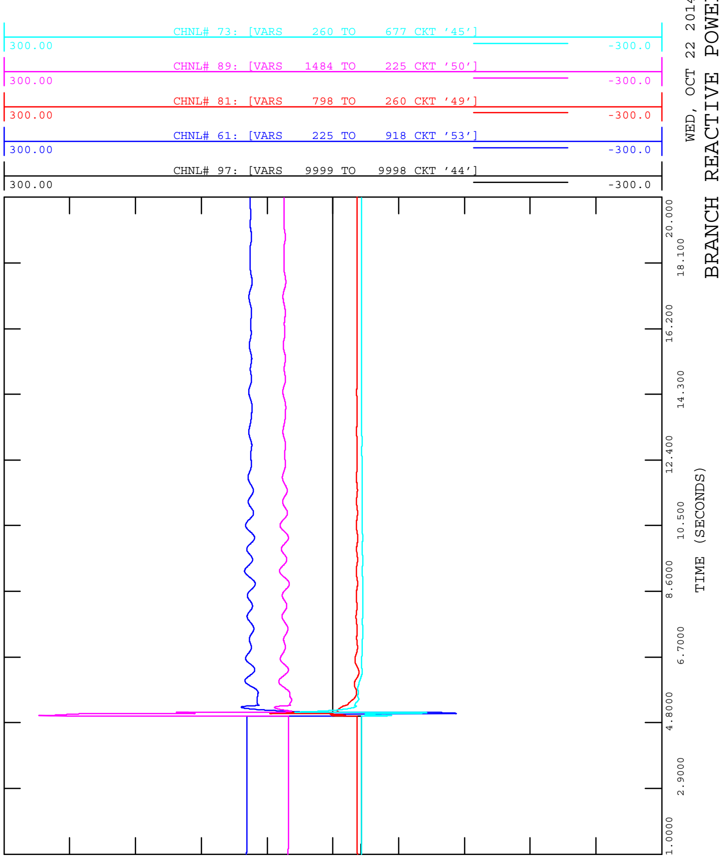

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.0
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.0
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.0
WED, OCT 22 2014 18:02
MACHINE VOLTAGE COAL PU
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 18:02
MOTOR VOLTAGE PU
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)

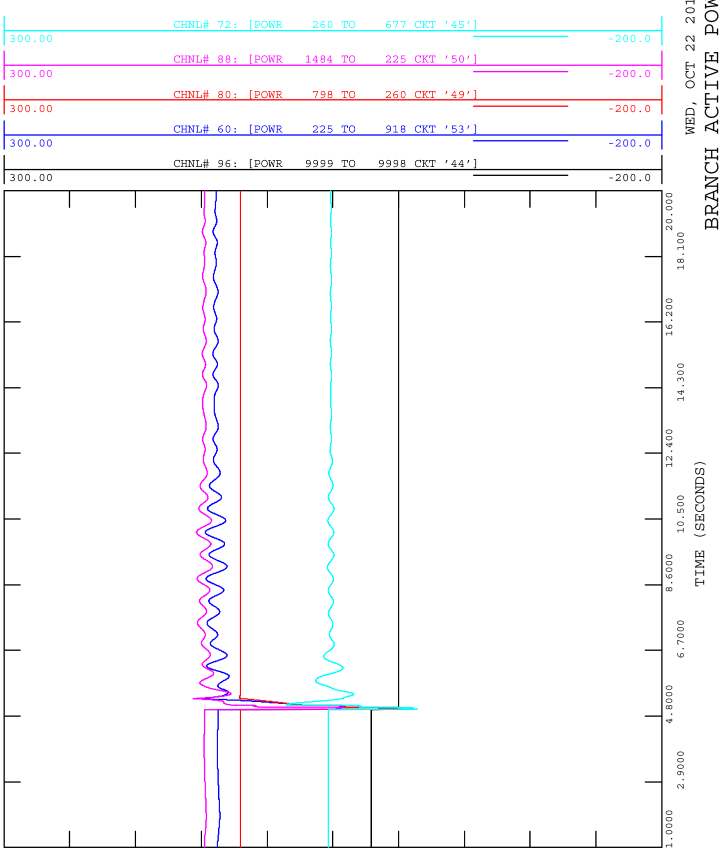

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 18:02
MOTOR POWER PU
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)

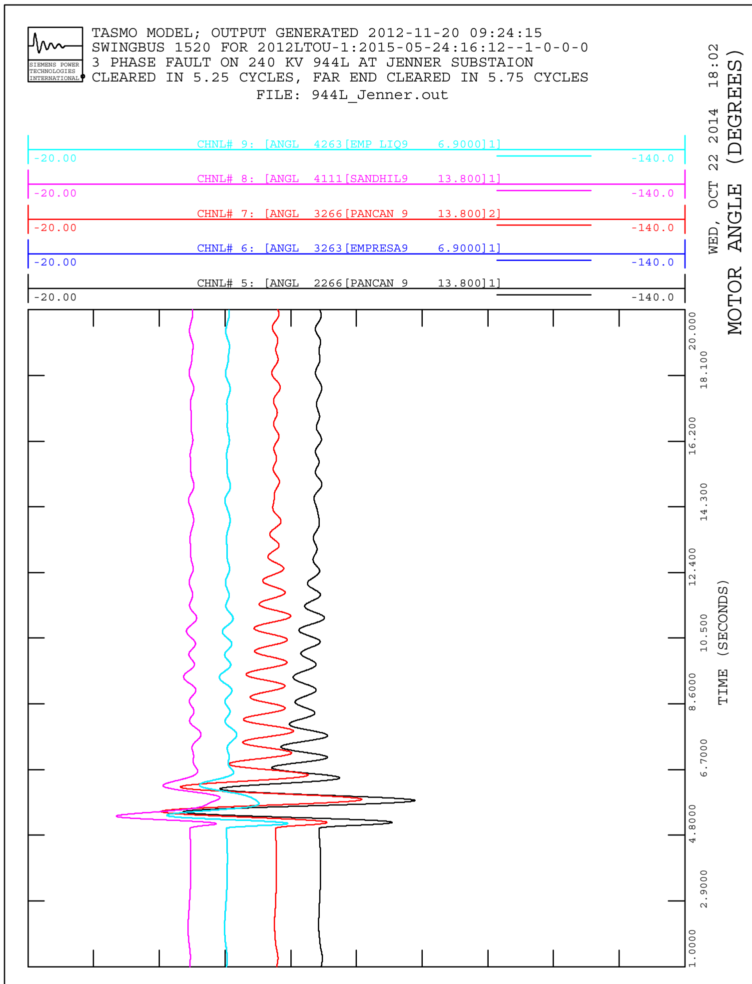

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 18:02
MACHINE VOLTAGE WIND PU
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out

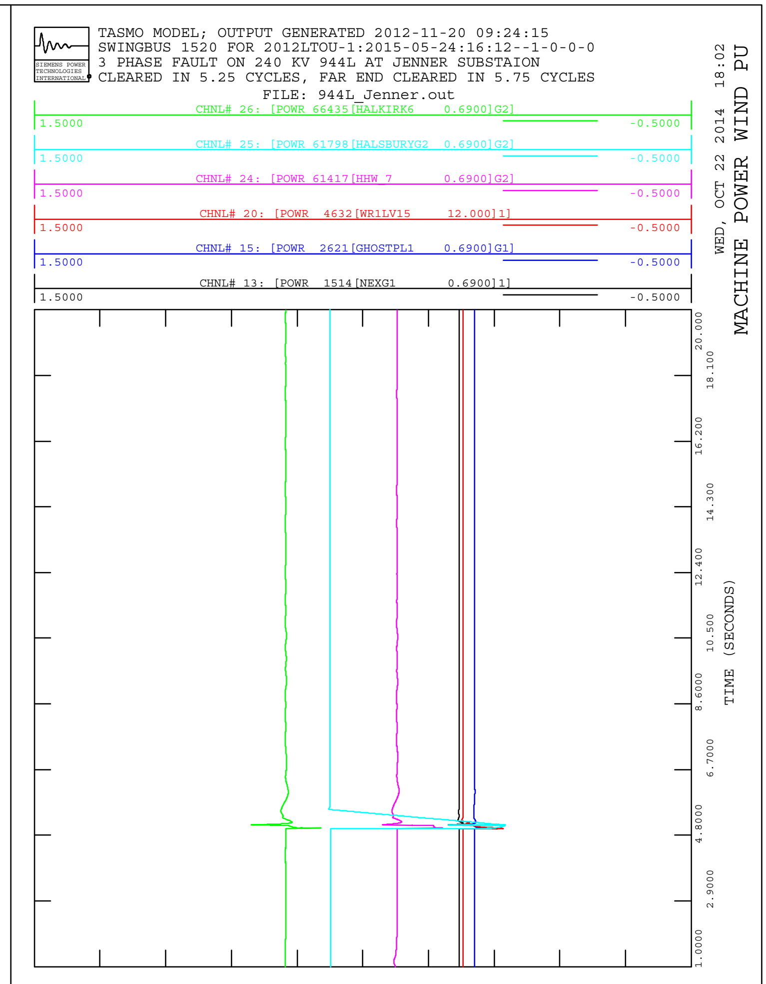


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out

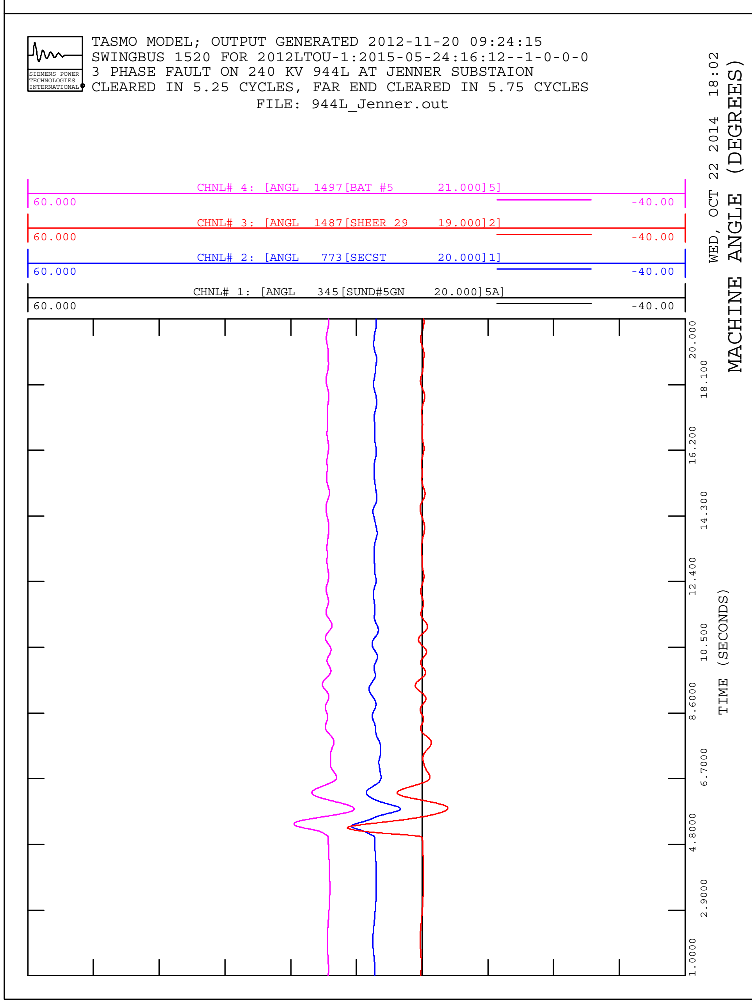




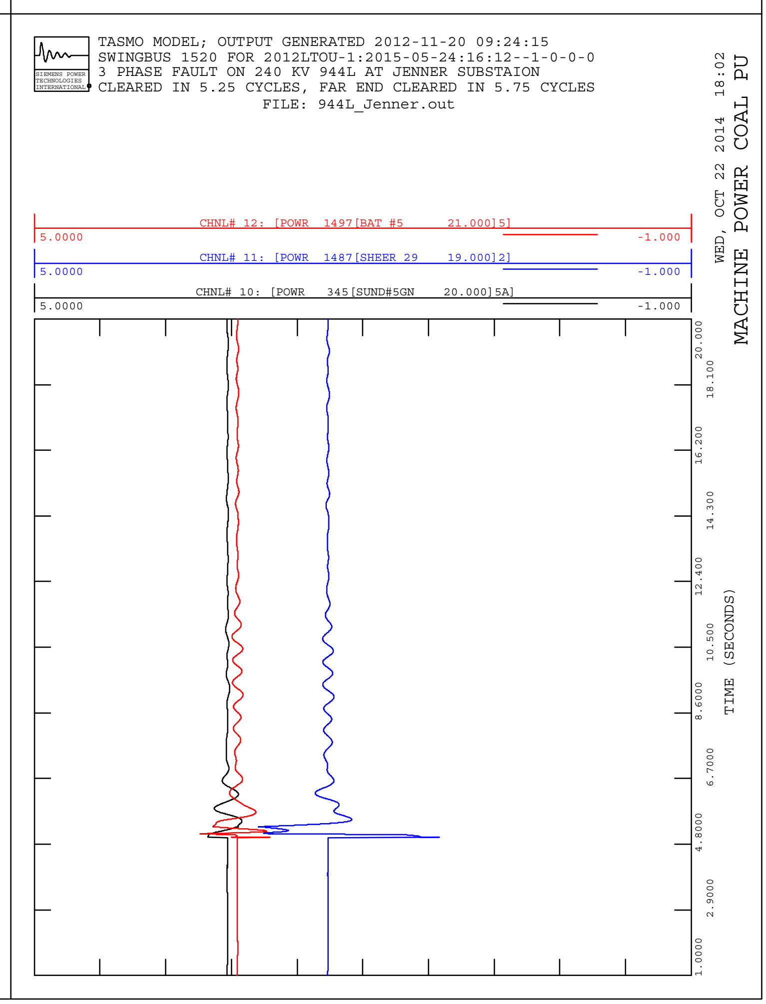
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1]
-20.00 -140.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1]
-20.00 -140.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2]
-20.00 -140.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1]
-20.00 -140.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1]
-20.00 -140.0
WED, OCT 22 2014 18:02
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000



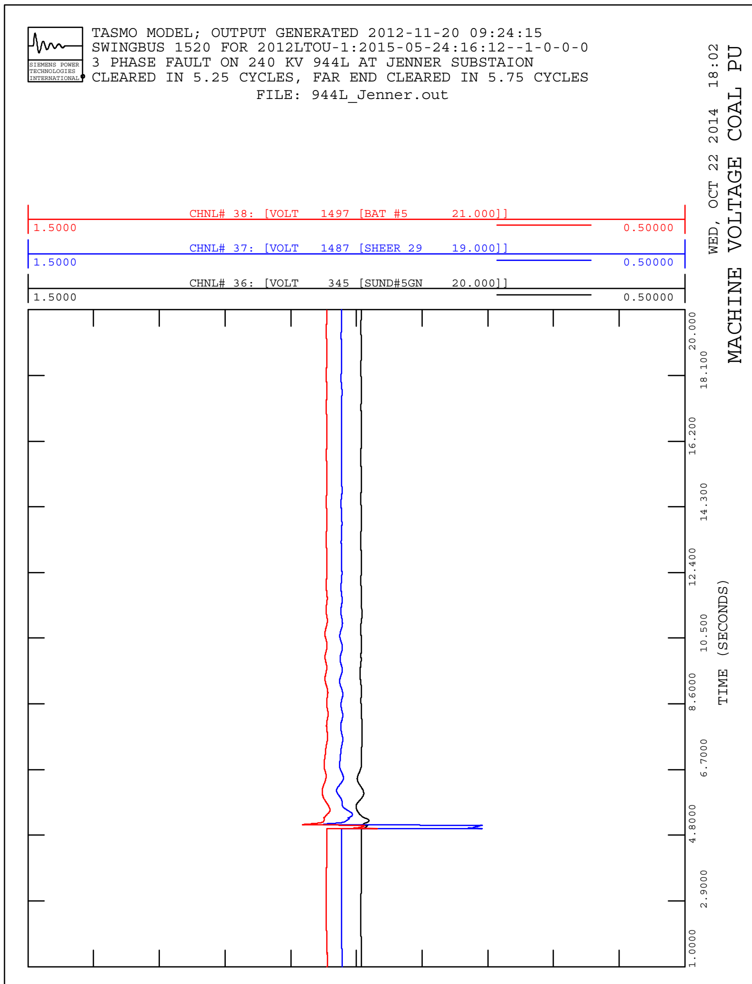
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW_7 0.6900]G2]
1.5000 -0.5000
CHNL# 20: [POWR 4632[WR1LV15 12.000]1]
1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1]
1.5000 -0.5000
WED, OCT 22 2014 18:02
MACHINE POWER WIND PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

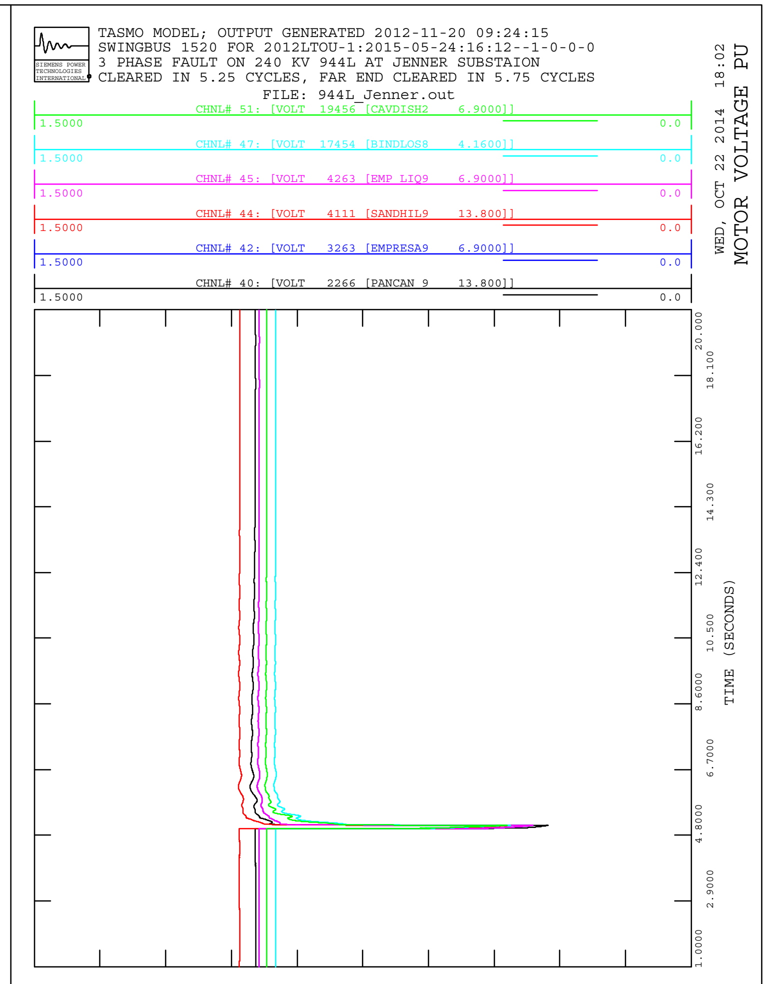


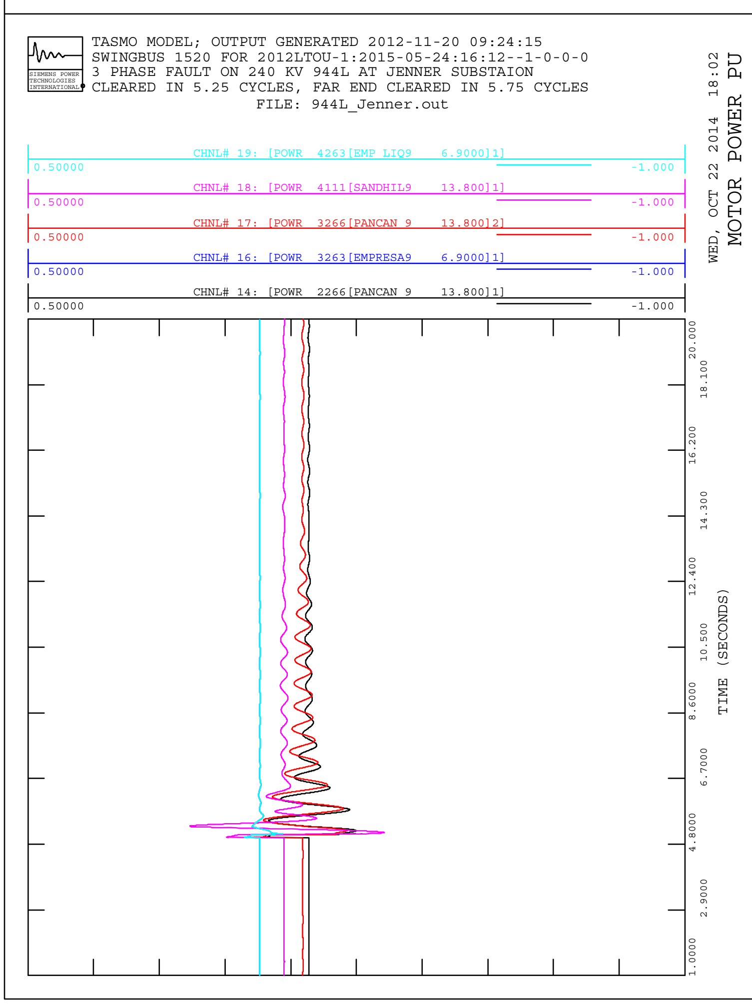
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 4: [ANGL 1497[BAT #5 21.000]5]
60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2]
60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1]
60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A]
60.000 -40.00
WED, OCT 22 2014 18:02
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

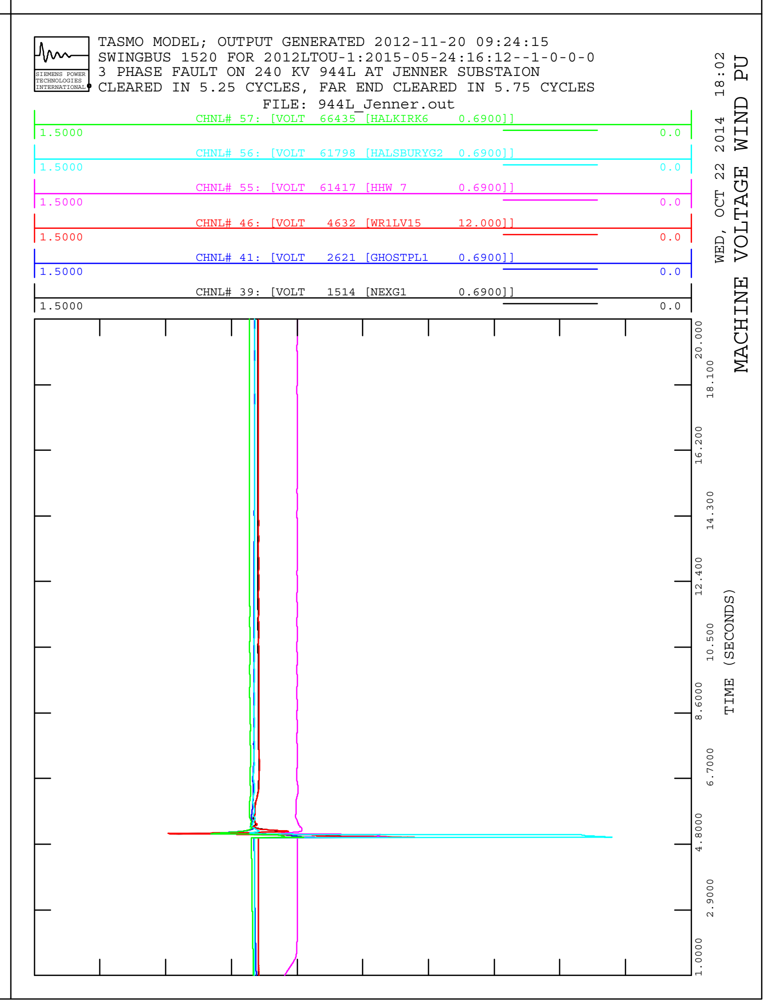


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 12: [POWR 1497[BAT #5 21.000]5]
5.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2]
5.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A]
5.0000 -1.000
WED, OCT 22 2014 18:02
MACHINE POWER COAL PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

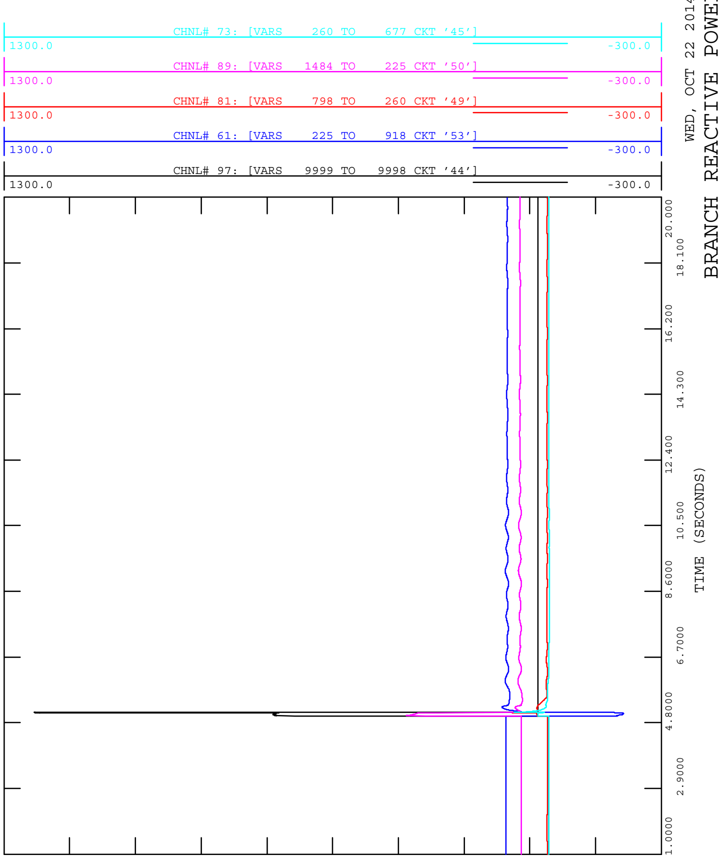

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.50000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.50000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.50000
WED, OCT 22 2014 18:02
MACHINE VOLTAGE COAL PU
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000
TIME (SECONDS)


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 18:02
MOTOR VOLTAGE PU
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000
TIME (SECONDS)

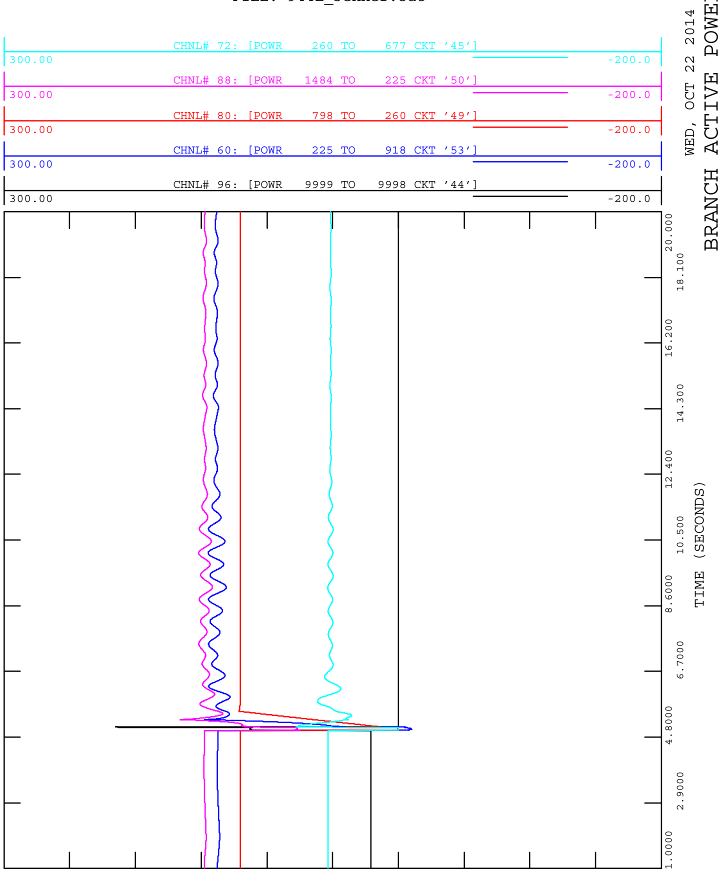

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 18:02
MOTOR POWER PU
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000
TIME (SECONDS)


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 18:02
MACHINE VOLTAGE WIND PU
20.000 18.100 16.200 14.300 12.400 10.500 8.6000 6.7000 4.8000 2.9000 1.0000
TIME (SECONDS)

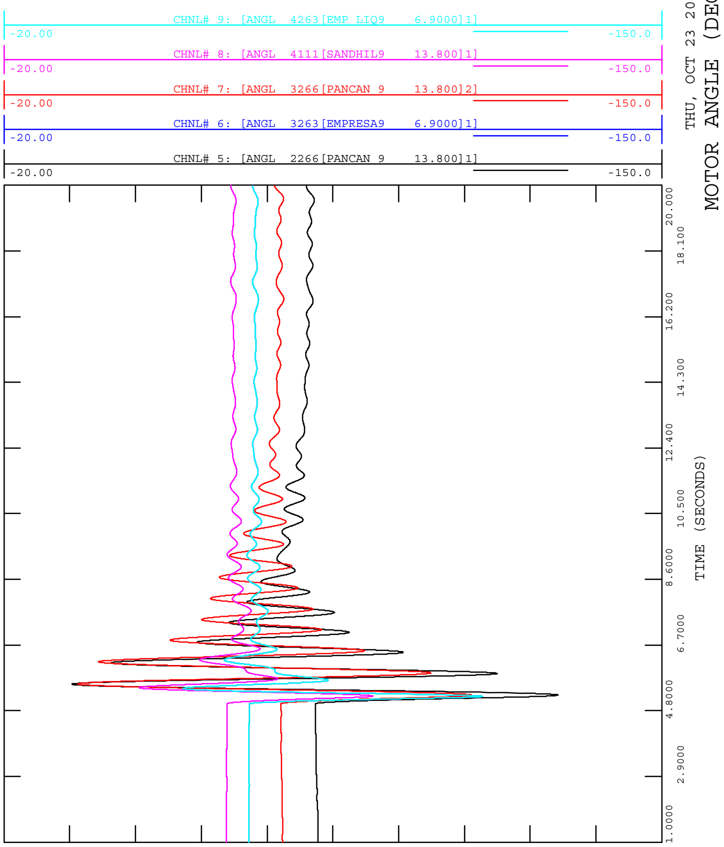
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



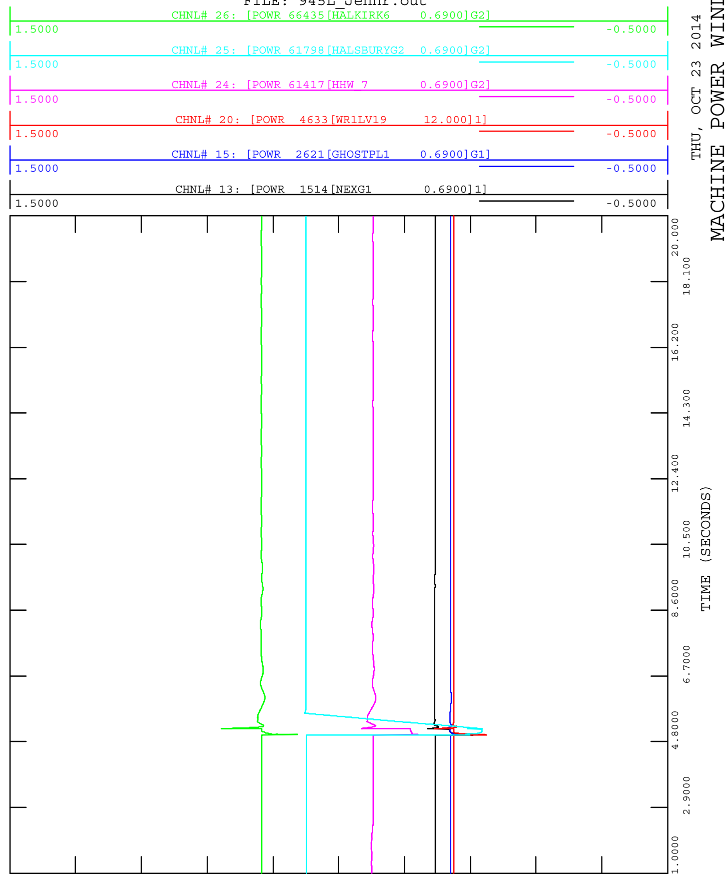
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



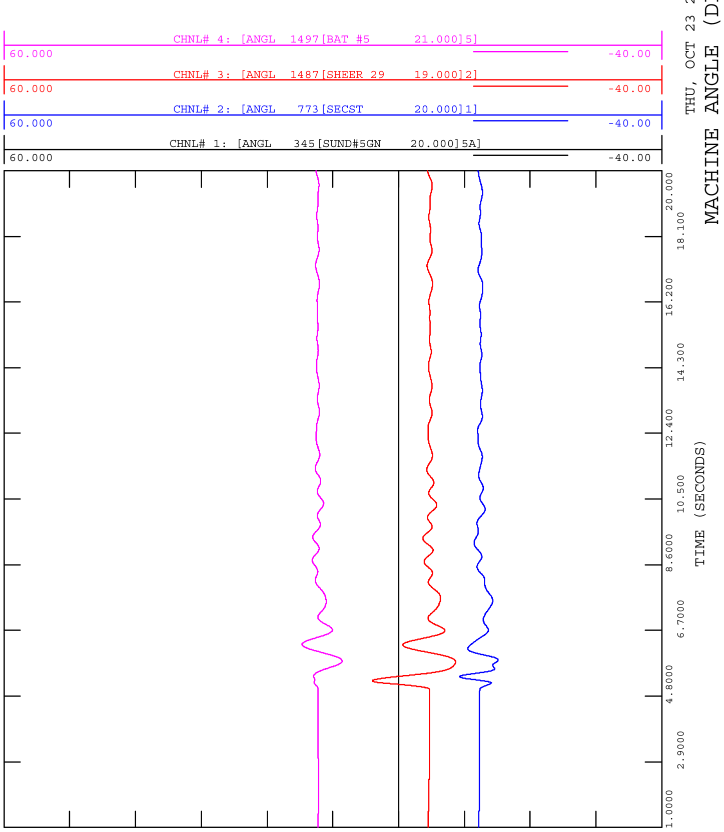
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out



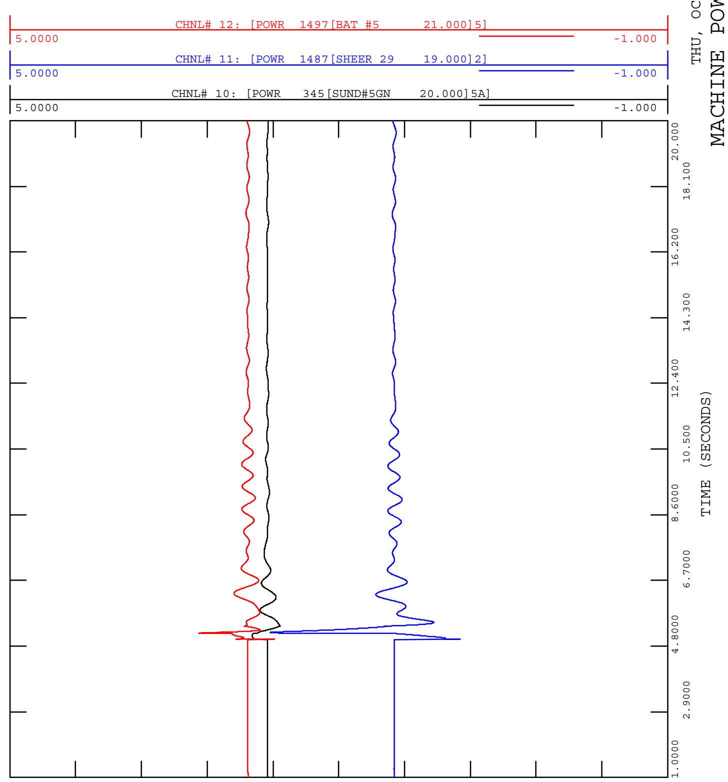
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

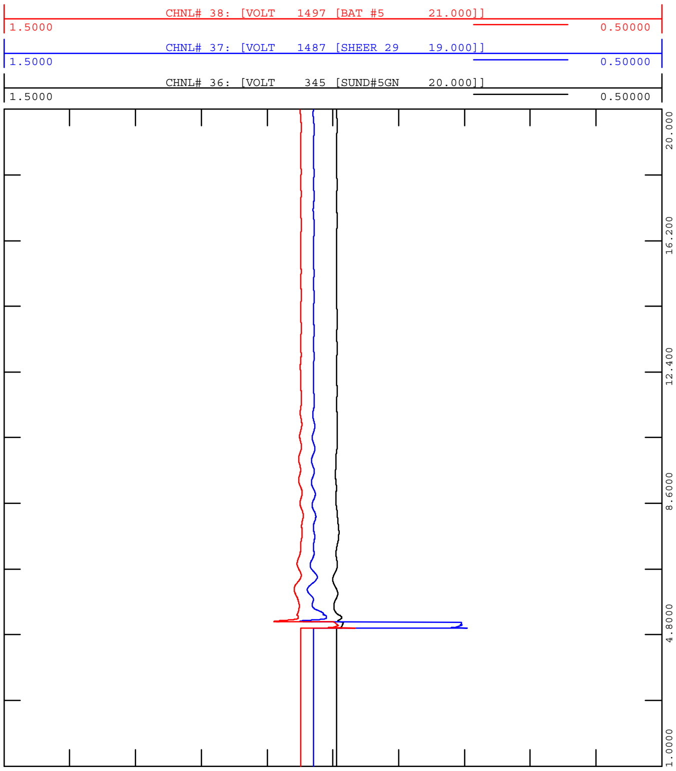


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out



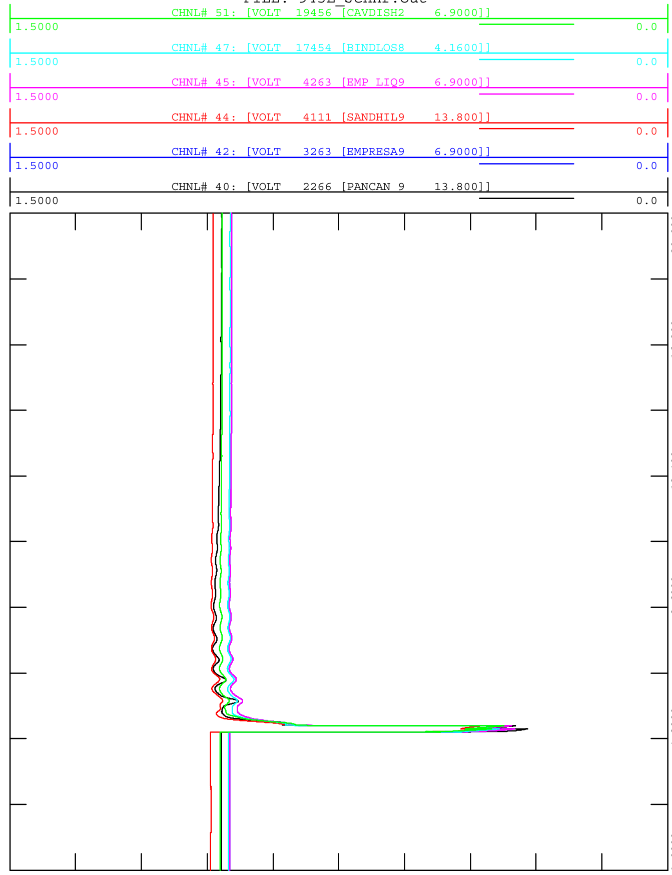
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:19
MACHINE VOLTAGE COAL PU



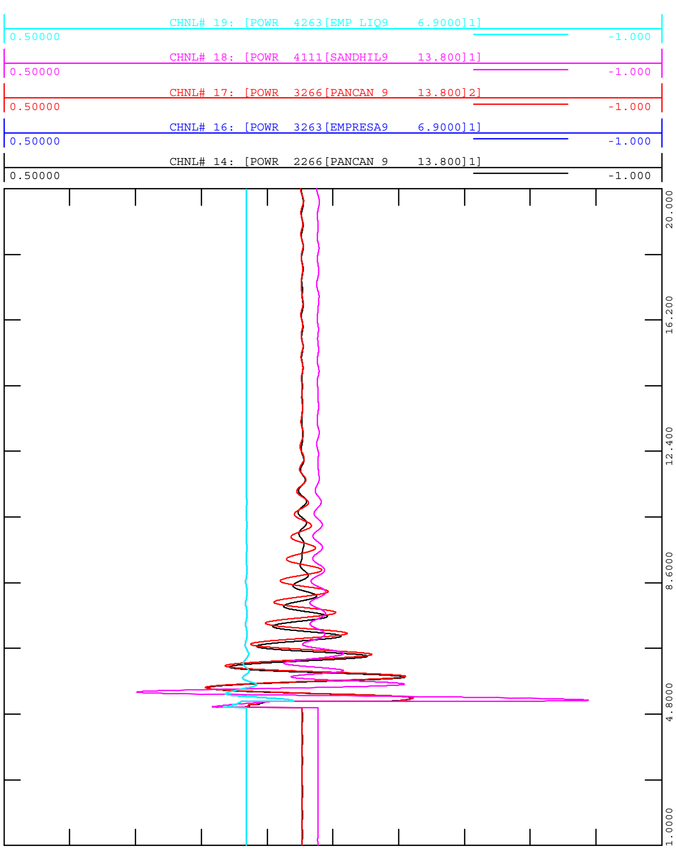
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:19
MOTOR VOLTAGE PU



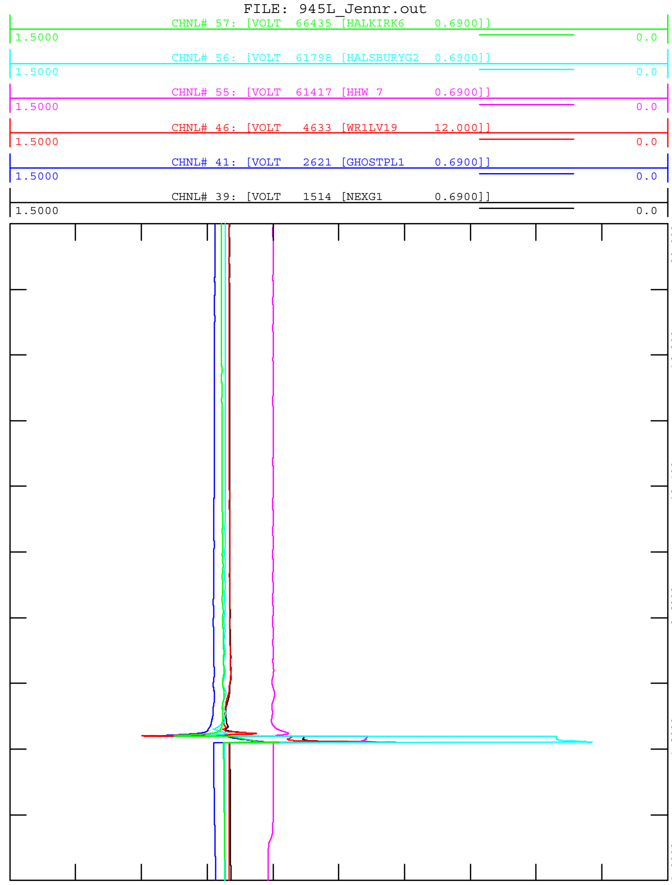
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:19
MOTOR POWER PU

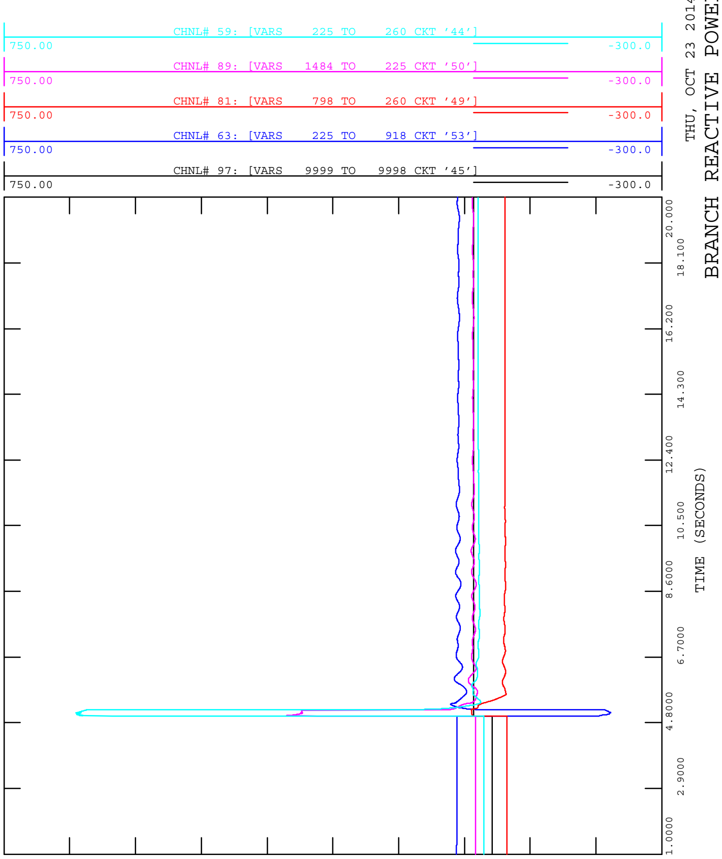


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

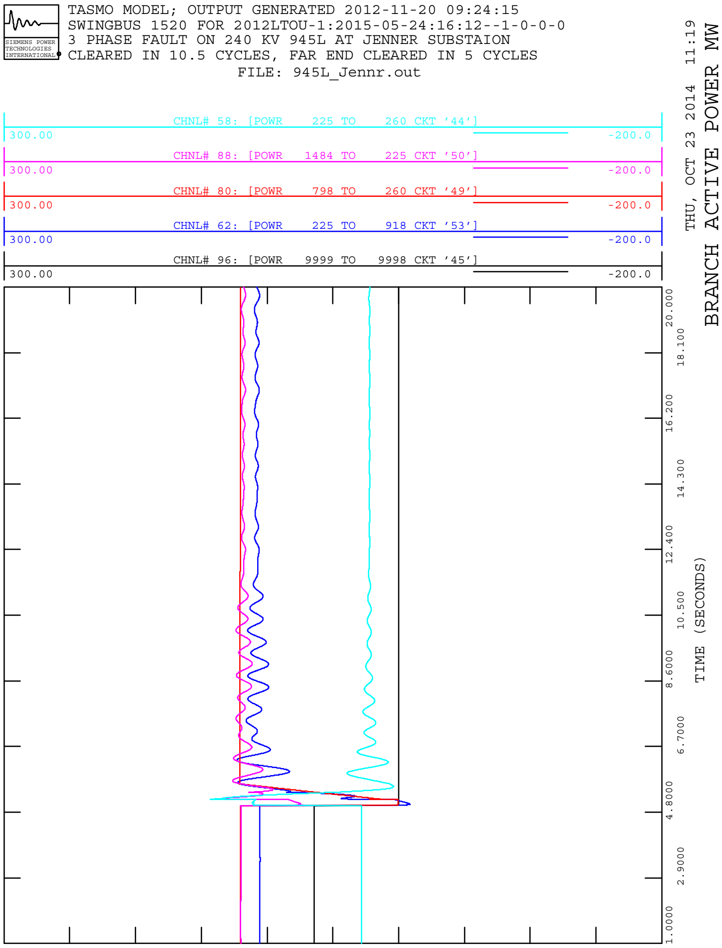
THU, OCT 23 2014 11:19
MACHINE VOLTAGE WIND PU

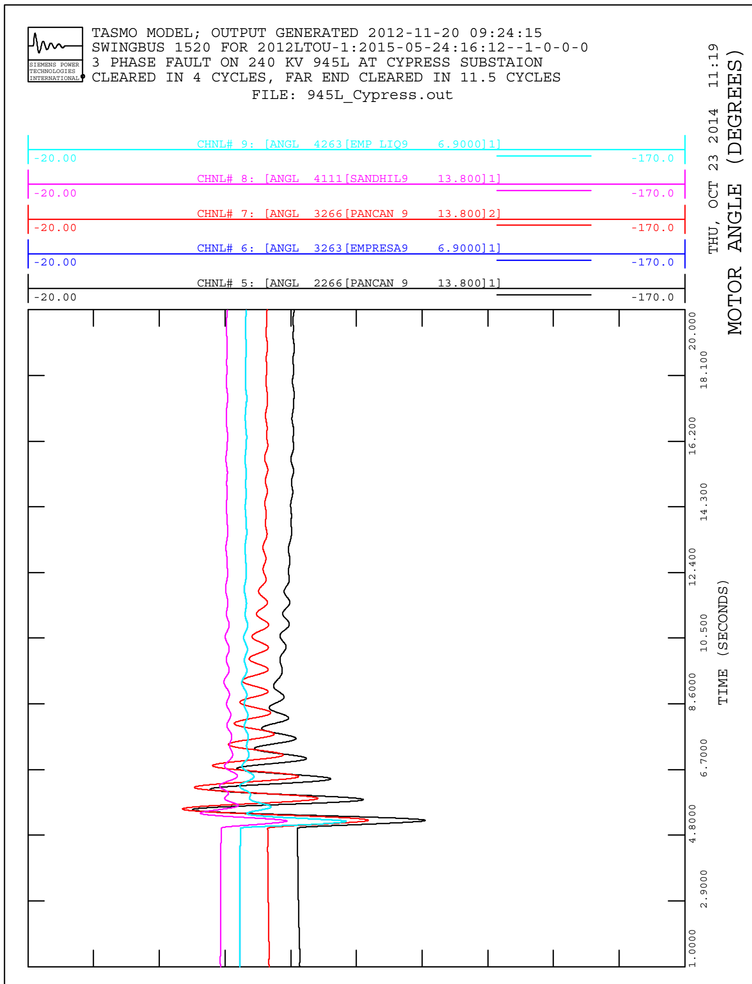


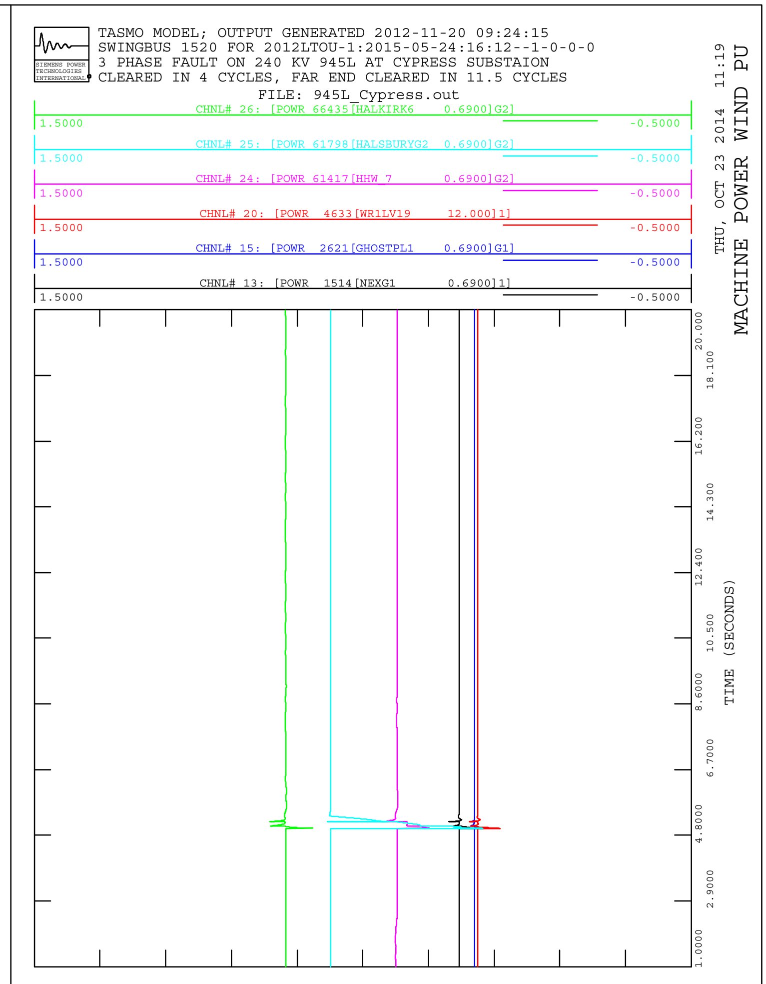
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

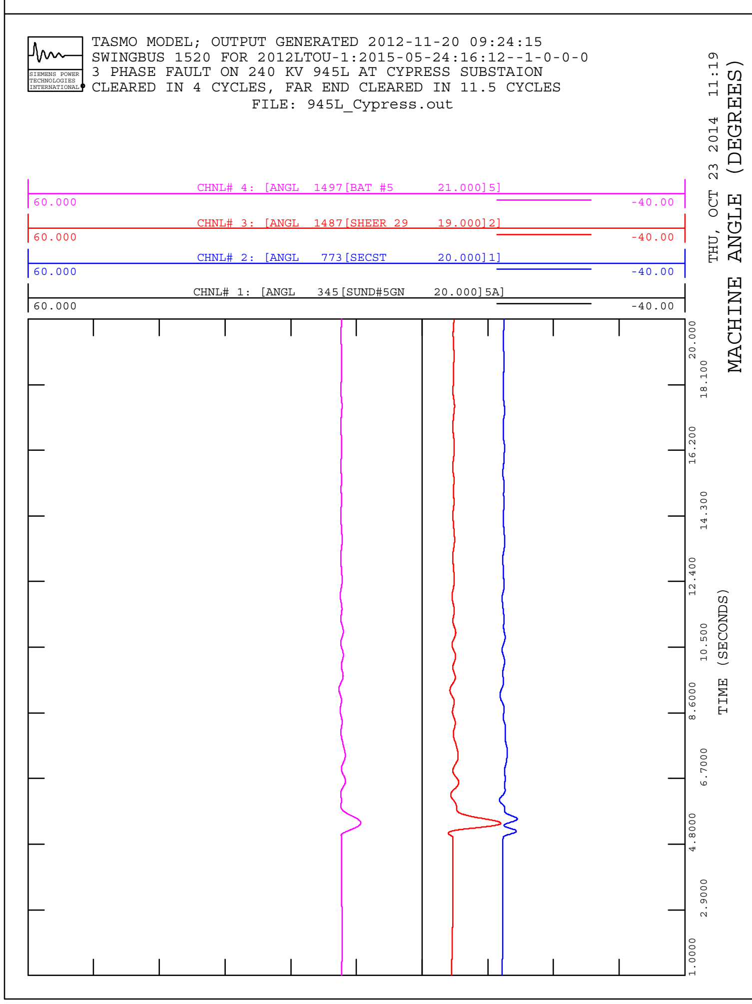


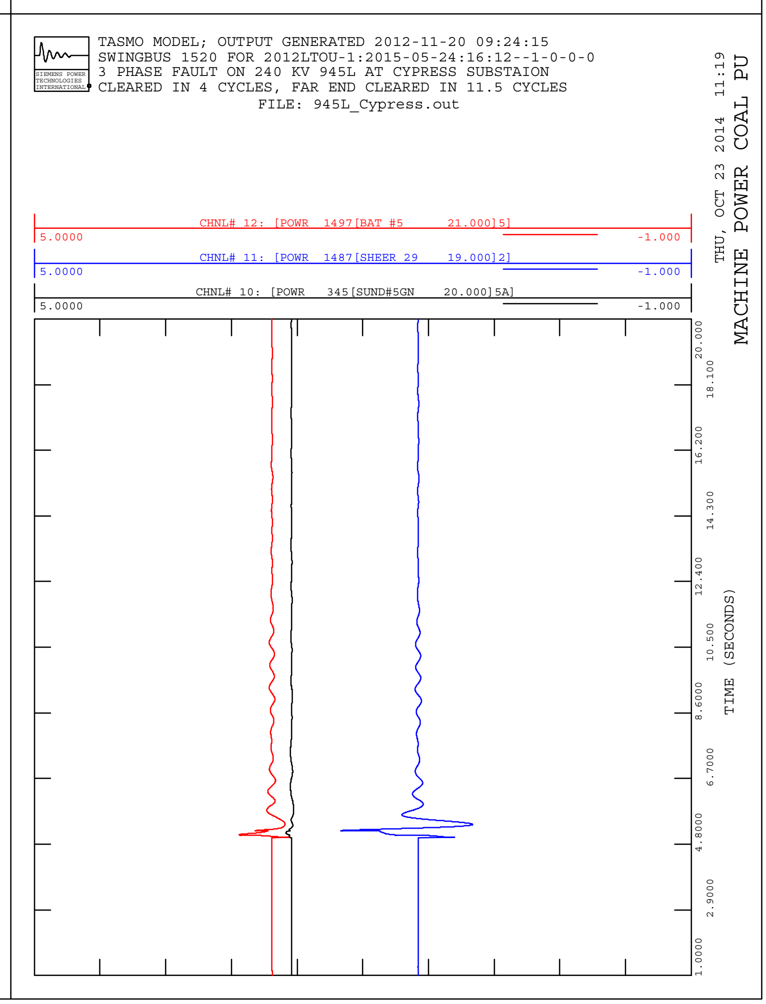
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

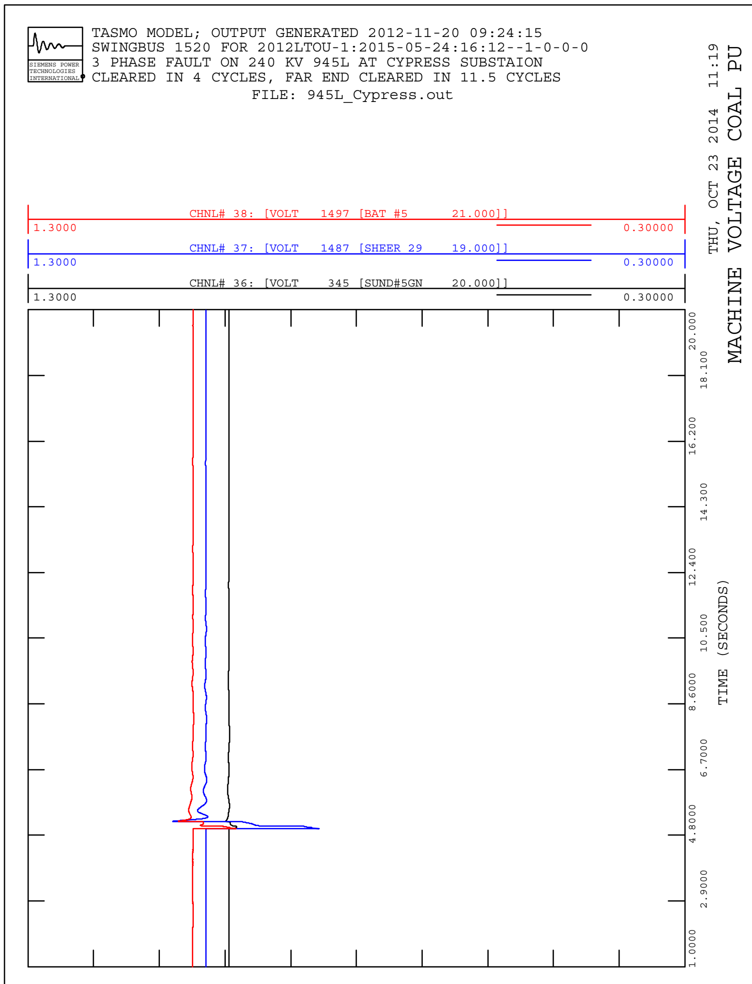


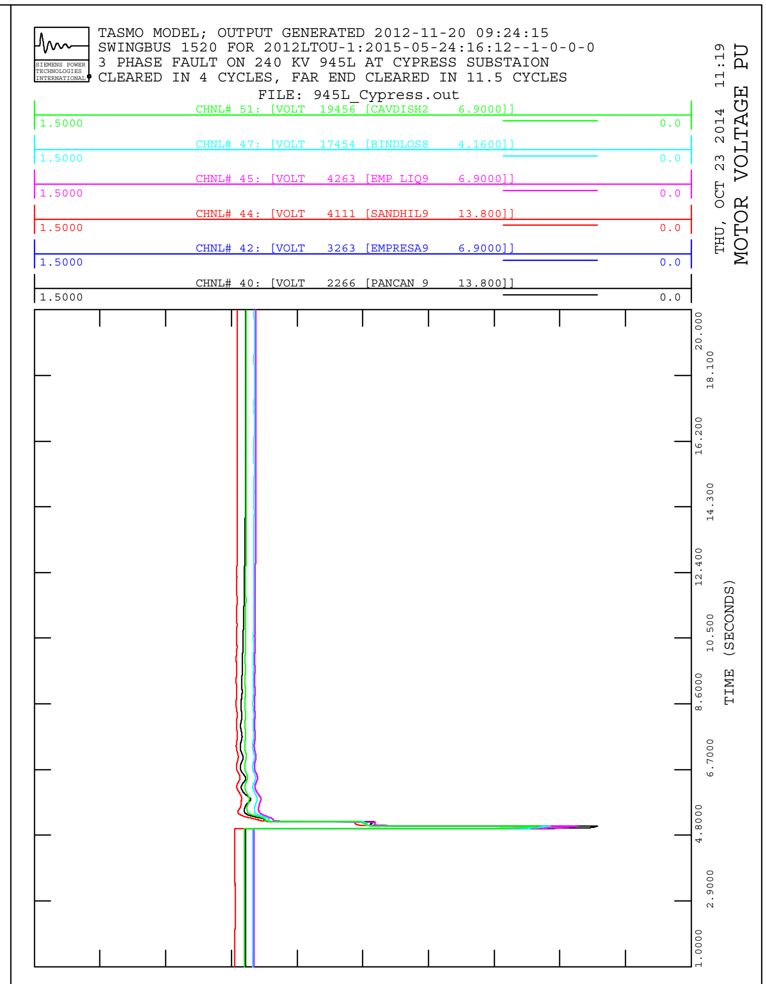

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1]
-20.00 -170.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1]
-20.00 -170.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2]
-20.00 -170.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1]
-20.00 -170.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1]
-20.00 -170.0
THU, OCT 23 2014 11:19
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

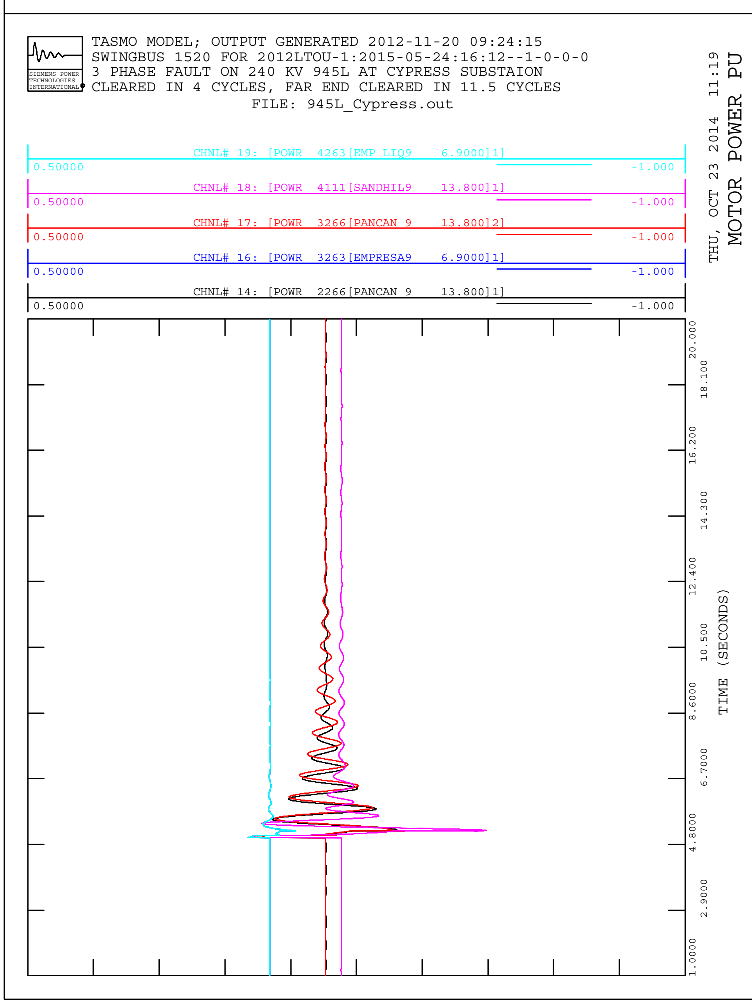

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW 7 0.6900]G2]
1.5000 -0.5000
CHNL# 20: [POWR 4633[WR1LV19 12.000]1]
1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1]
1.5000 -0.5000
THU, OCT 23 2014 11:19
MACHINE POWER WIND PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

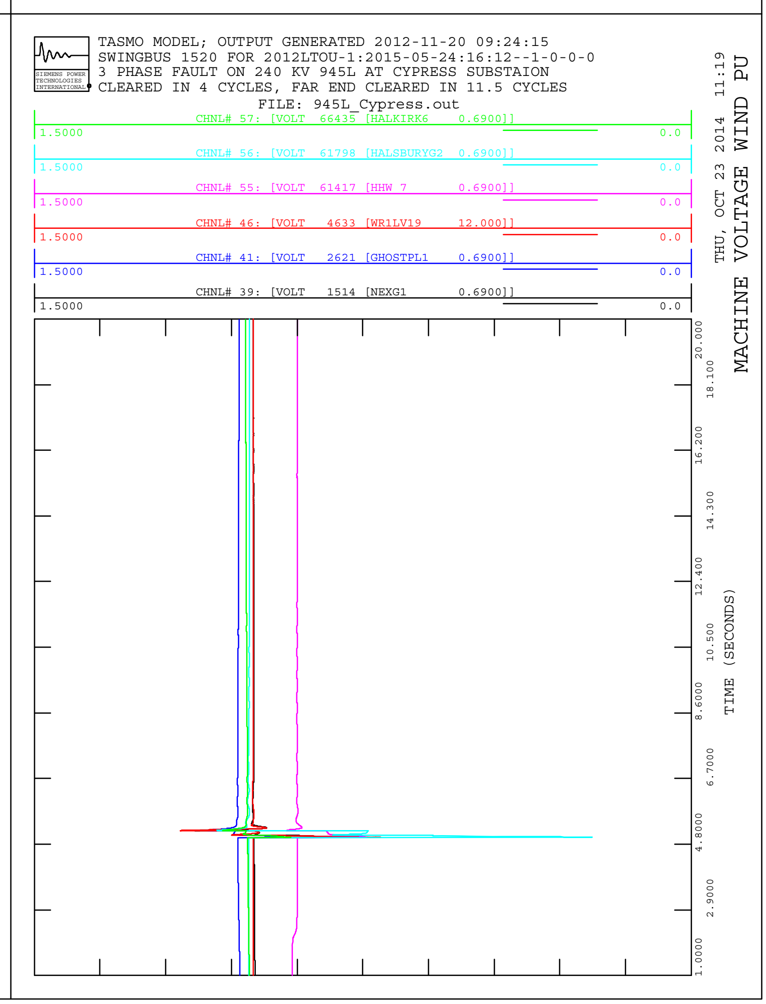

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 4: [ANGL 1497[BAT #5 21.000]5]
60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2]
60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1]
60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A]
60.000 -40.00
THU, OCT 23 2014 11:19
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

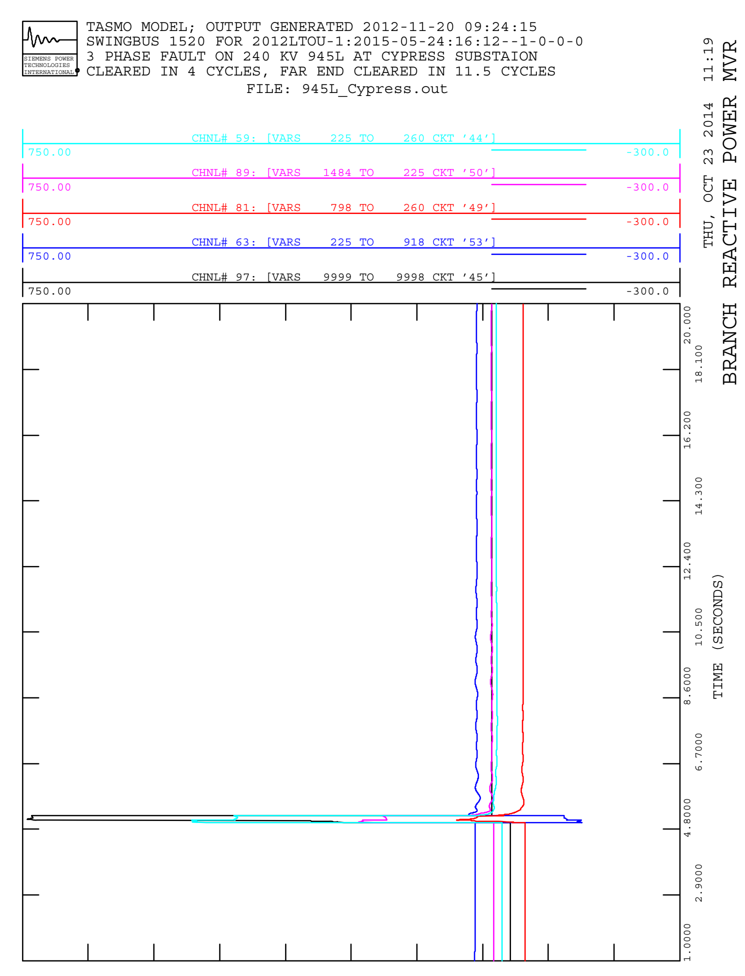

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 12: [POWR 1497[BAT #5 21.000]5]
5.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2]
5.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A]
5.0000 -1.000
THU, OCT 23 2014 11:19
MACHINE POWER COAL PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

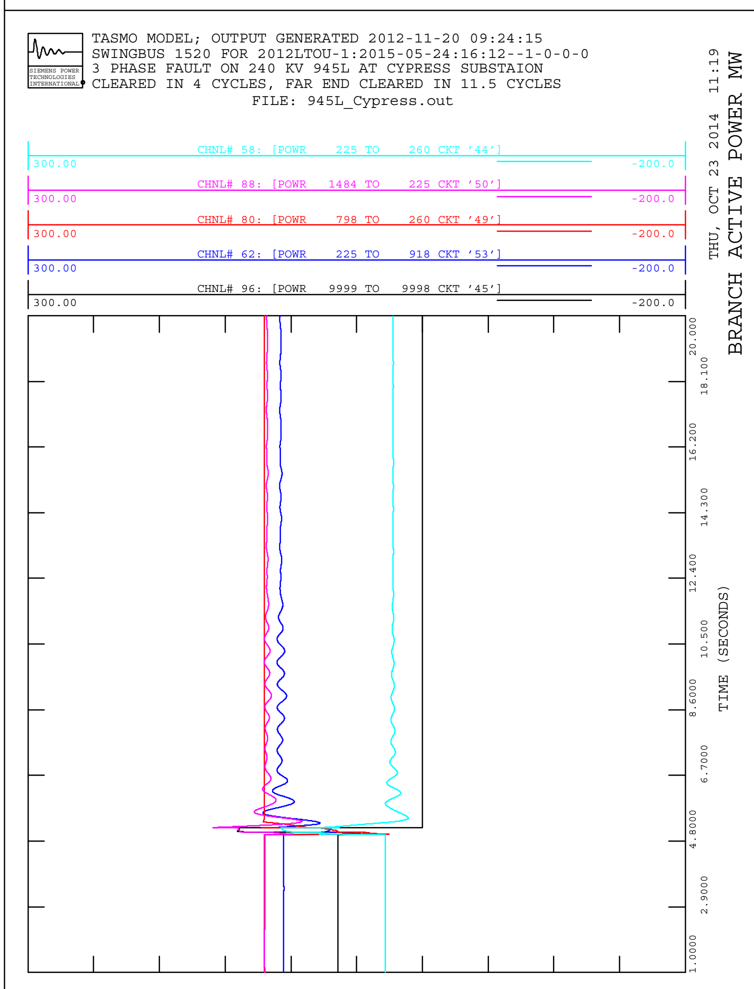

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.3000 0.30000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.3000 0.30000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.3000 0.30000
THU, OCT 23 2014 11:19
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

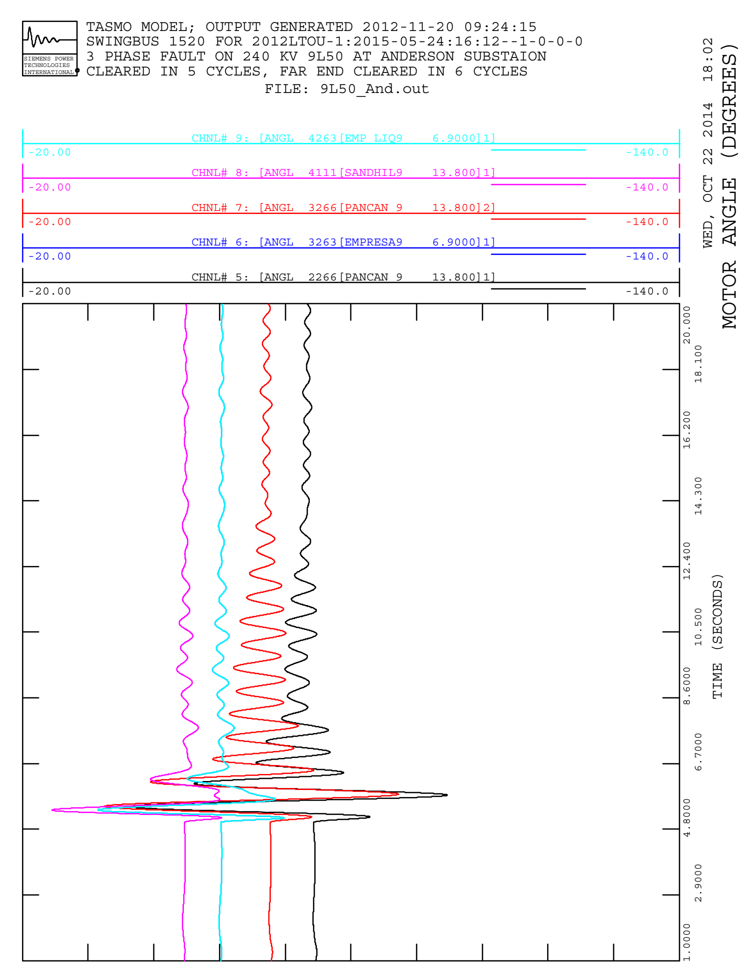

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
THU, OCT 23 2014 11:19
MOTOR VOLTAGE PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

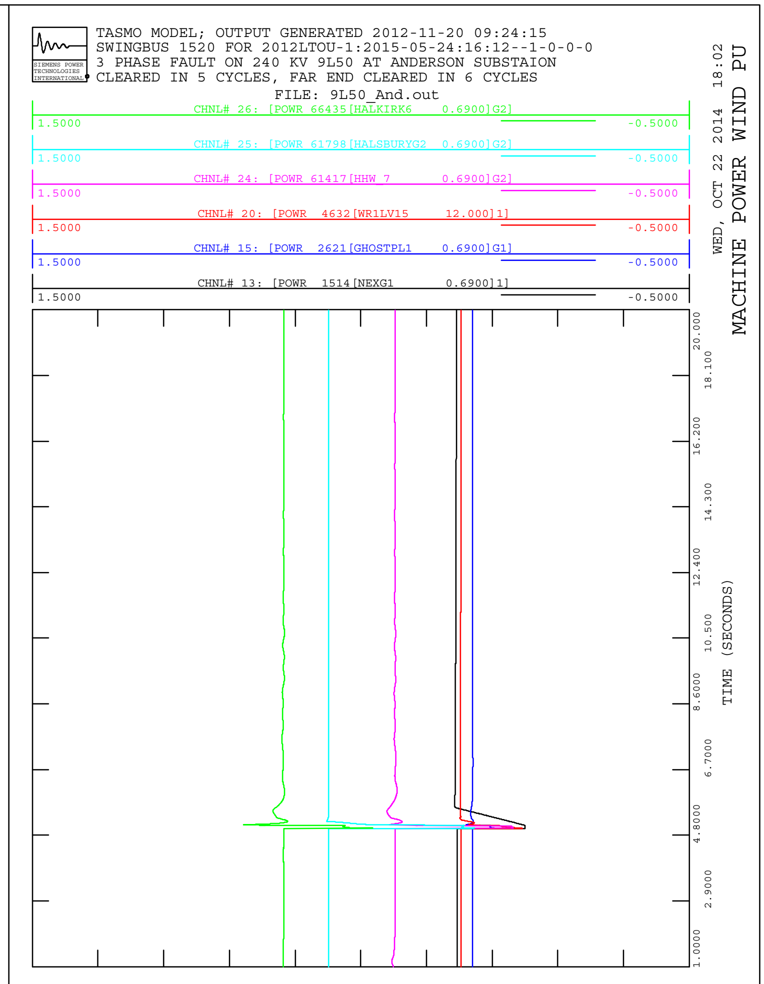

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
THU, OCT 23 2014 11:19
MOTOR POWER PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

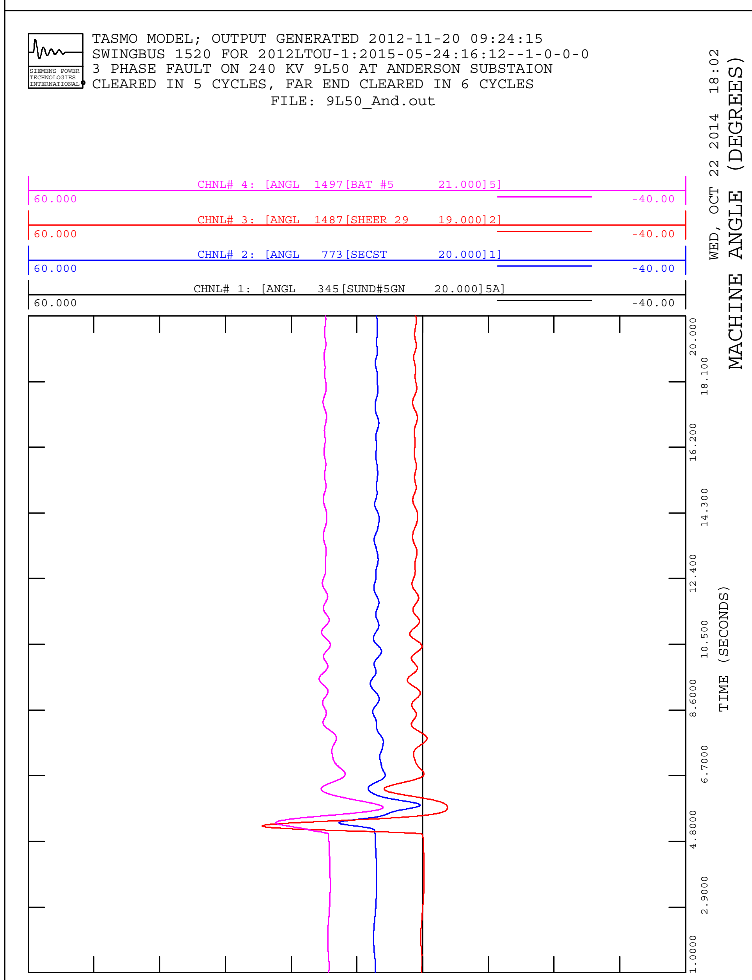

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4633 [WR1LV19 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
THU, OCT 23 2014 11:19
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000

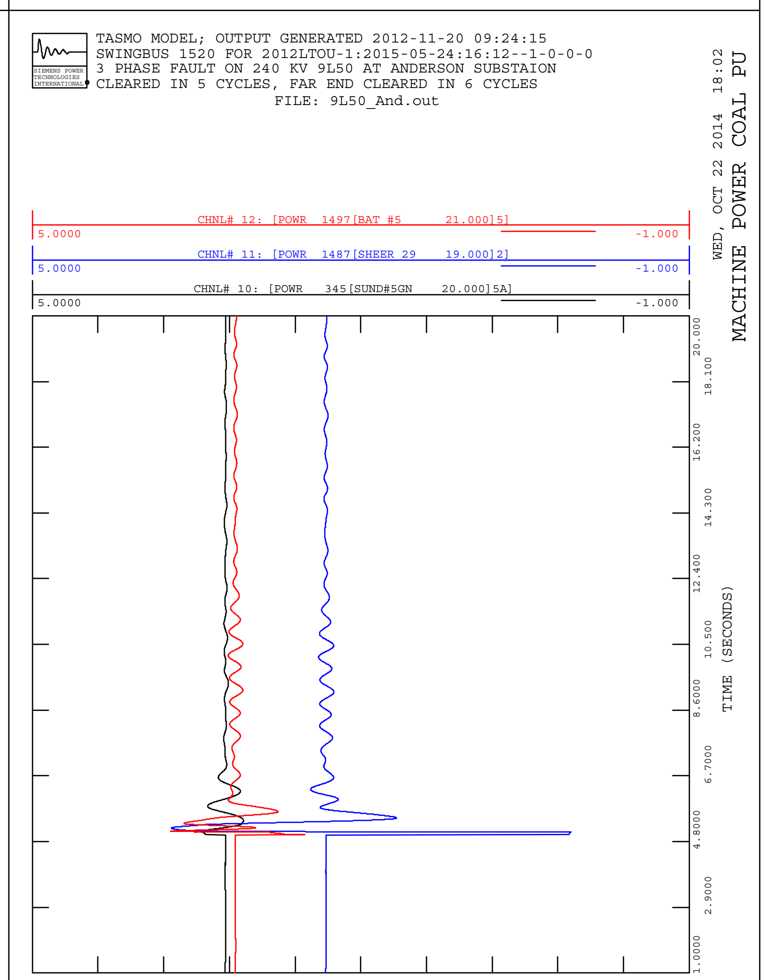

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 59: [VARS 225 TO 260 CKT '44']
750.00
-300.0
CHNL# 89: [VARS 1484 TO 225 CKT '50']
750.00
-300.0
CHNL# 81: [VARS 798 TO 260 CKT '49']
750.00
-300.0
CHNL# 63: [VARS 225 TO 918 CKT '53']
750.00
-300.0
CHNL# 97: [VARS 9999 TO 9998 CKT '45']
750.00
-300.0
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
BRANCH REACTIVE POWER MVR

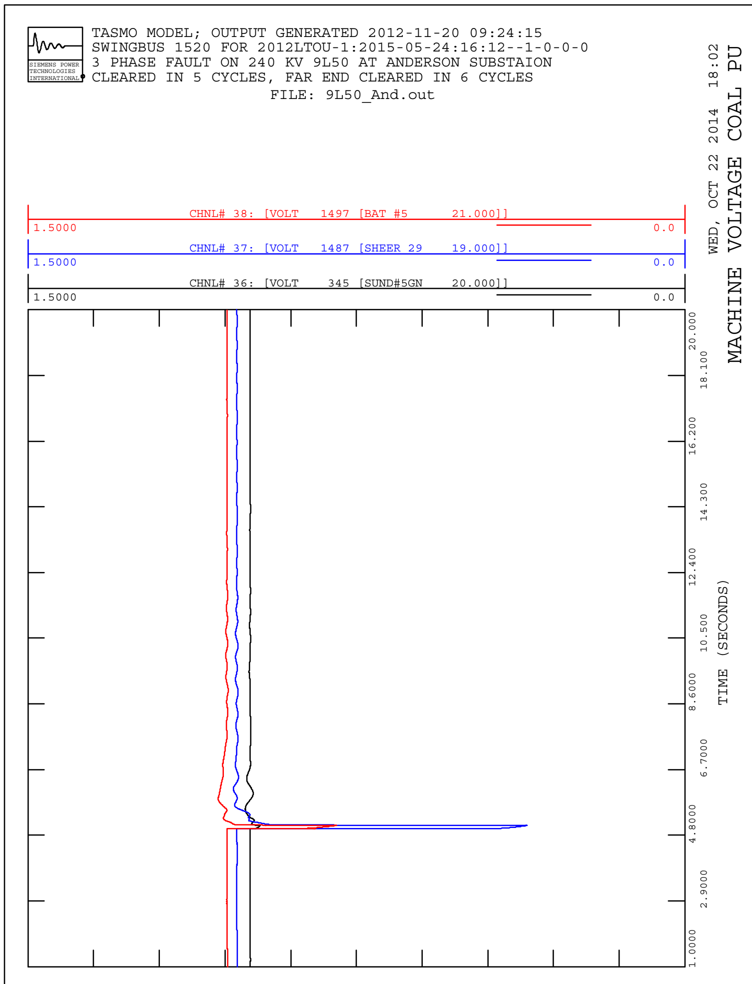

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out
CHNL# 58: [POWR 225 TO 260 CKT '44']
300.00
-200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50']
300.00
-200.0
CHNL# 80: [POWR 798 TO 260 CKT '49']
300.00
-200.0
CHNL# 62: [POWR 225 TO 918 CKT '53']
300.00
-200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '45']
300.00
-200.0
1.0000
2.9000
4.8000
6.7000
8.6000
10.500
12.400
14.300
16.200
18.100
20.000
TIME (SECONDS)
THU, OCT 23 2014 11:19
BRANCH ACTIVE POWER MW

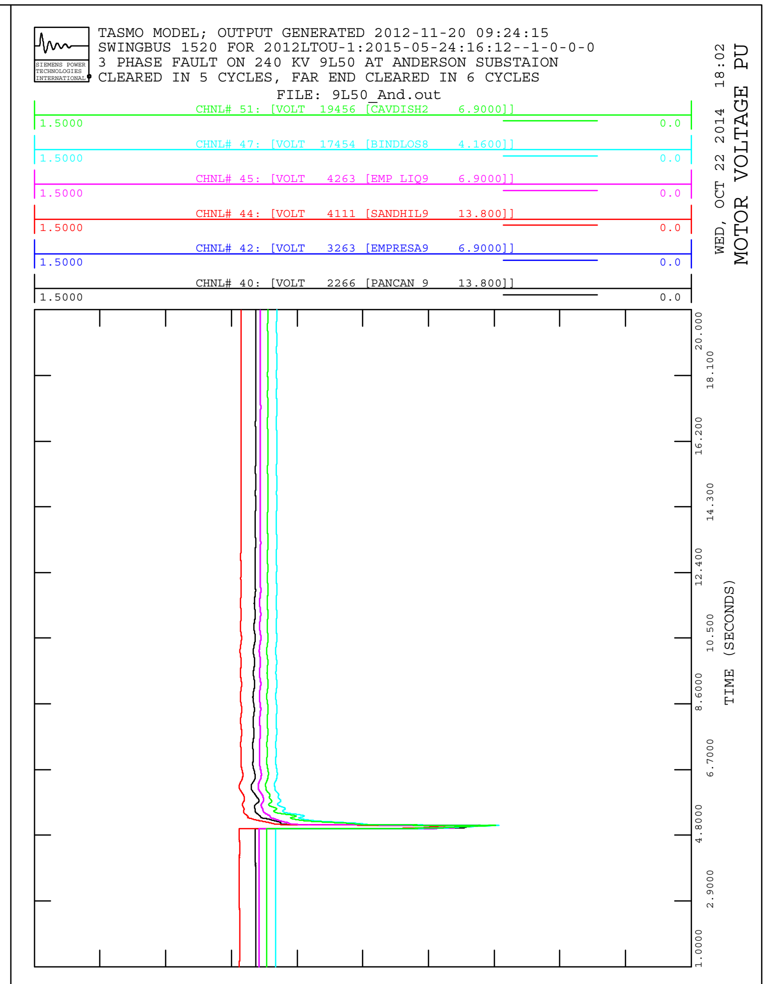

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 9: [ANGL 4263 [EMP LIQ9 6.9000] 1] -20.00 -140.0
CHNL# 8: [ANGL 4111 [SANDHIL9 13.800] 1] -20.00 -140.0
CHNL# 7: [ANGL 3266 [PANCAN 9 13.800] 2] -20.00 -140.0
CHNL# 6: [ANGL 3263 [EMPRESA9 6.9000] 1] -20.00 -140.0
CHNL# 5: [ANGL 2266 [PANCAN 9 13.800] 1] -20.00 -140.0
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MOTOR ANGLE (DEGREES)

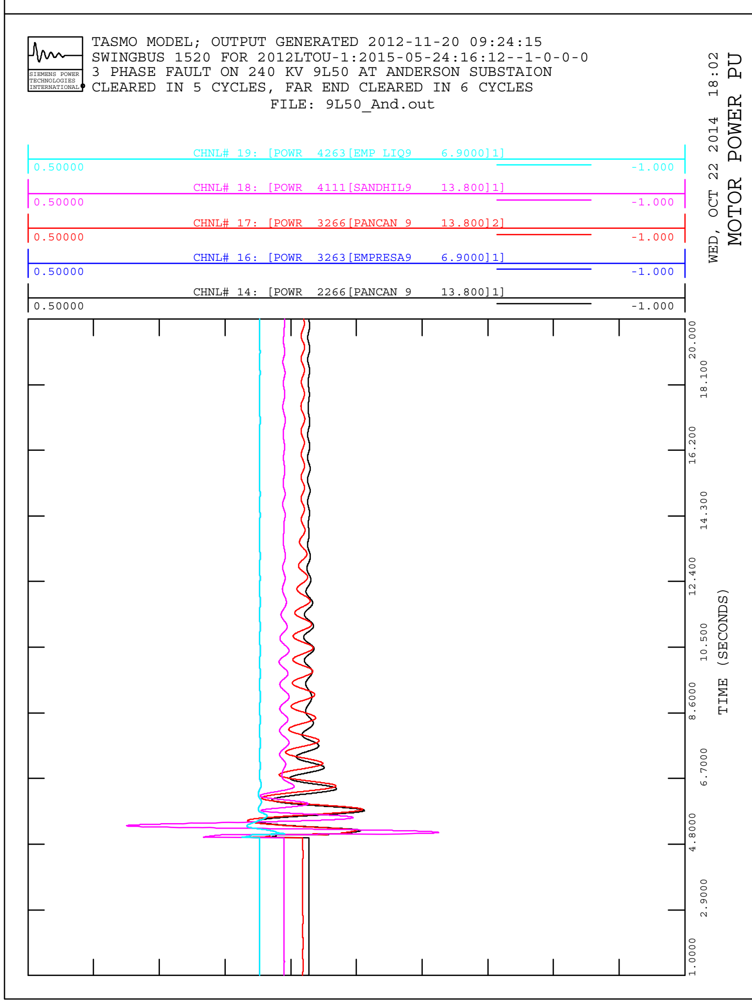

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 26: [POWR 66435 [HALKIRK6 0.6900] G2] 1.5000 -0.5000
CHNL# 25: [POWR 61798 [HALSBURYG2 0.6900] G2] 1.5000 -0.5000
CHNL# 24: [POWR 61417 [HHW_7 0.6900] G2] 1.5000 -0.5000
CHNL# 20: [POWR 4632 [WR1LV15 12.000] 1] 1.5000 -0.5000
CHNL# 15: [POWR 2621 [GHOSTPL1 0.6900] G1] 1.5000 -0.5000
CHNL# 13: [POWR 1514 [NEXG1 0.6900] 1] 1.5000 -0.5000
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MACHINE POWER WIND PU

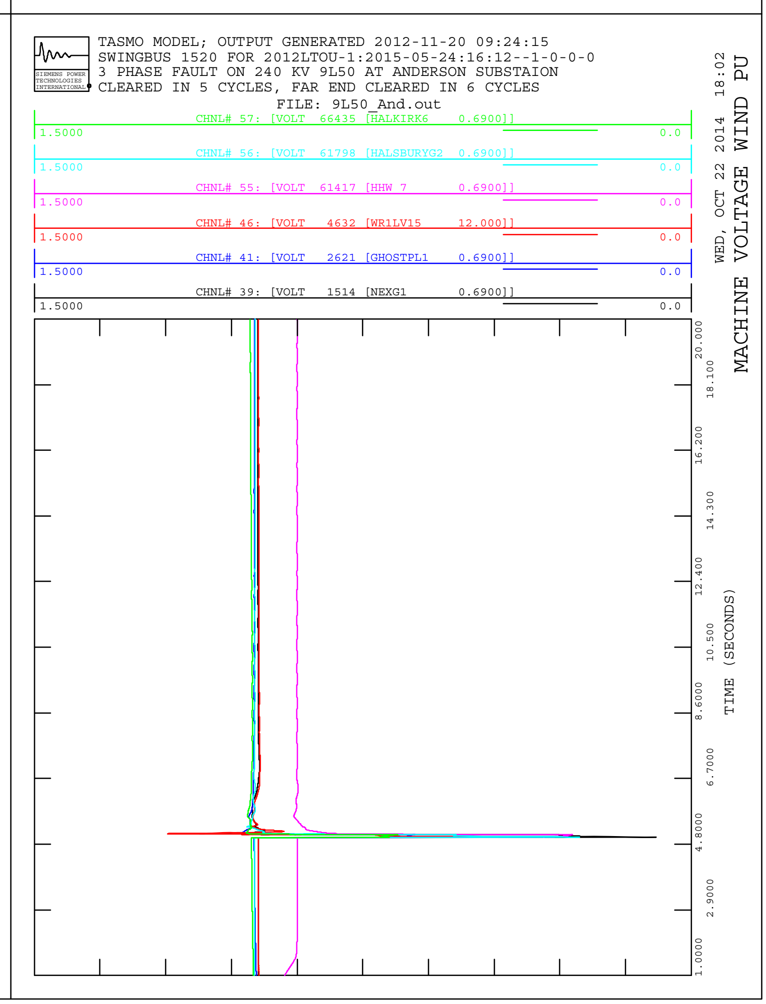

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 4: [ANGL 1497 [BAT #5 21.000] 5] 60.000 -40.00
CHNL# 3: [ANGL 1487 [SHEER 29 19.000] 2] 60.000 -40.00
CHNL# 2: [ANGL 773 [SECST 20.000] 1] 60.000 -40.00
CHNL# 1: [ANGL 345 [SUND#5GN 20.000] 5A] 60.000 -40.00
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MACHINE ANGLE (DEGREES)


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 12: [POWR 1497 [BAT #5 21.000] 5] 5.0000 -1.000
CHNL# 11: [POWR 1487 [SHEER 29 19.000] 2] 5.0000 -1.000
CHNL# 10: [POWR 345 [SUND#5GN 20.000] 5A] 5.0000 -1.000
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MACHINE POWER COAL PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.0
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.0
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.0
WED, OCT 22 2014 18:02
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

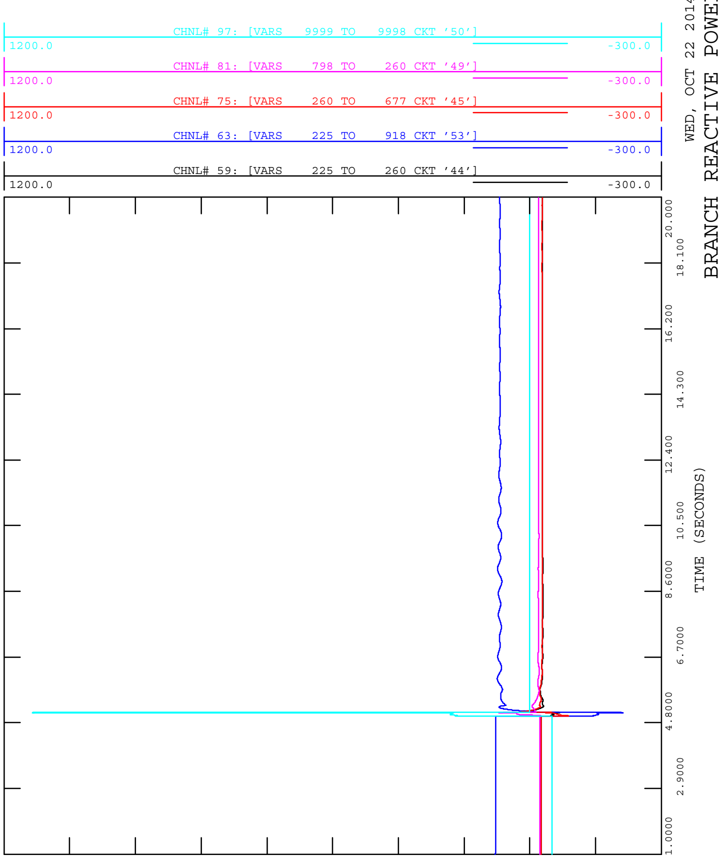

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 18:02
MOTOR VOLTAGE PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 18:02
MOTOR POWER PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
SIEMENS POWER TECHNOLOGIES INTERNATIONAL
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 18:02
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

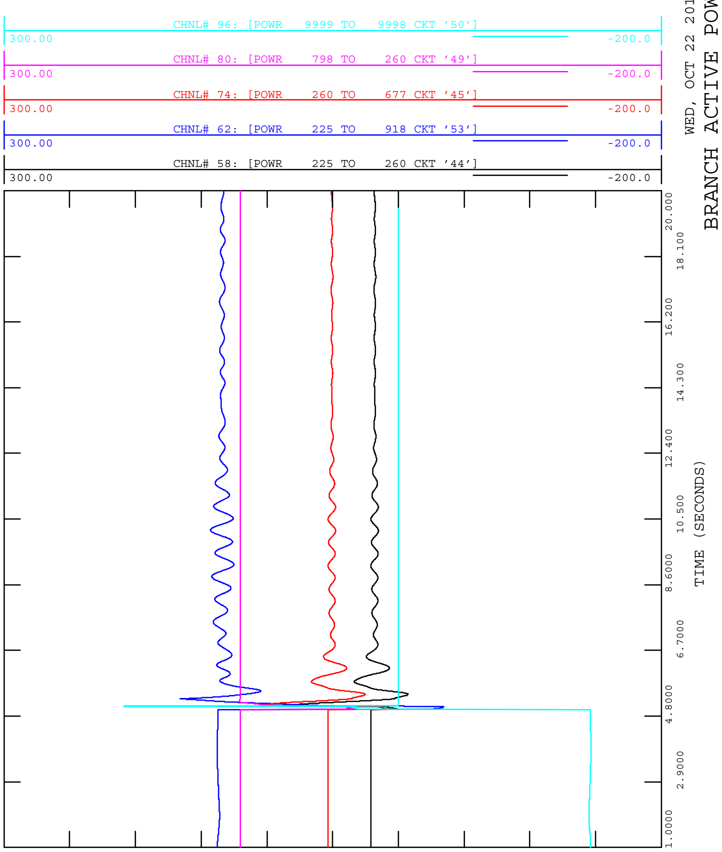
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out

WED, OCT 22 2014 18:02
BRANCH REACTIVE POWER MVR



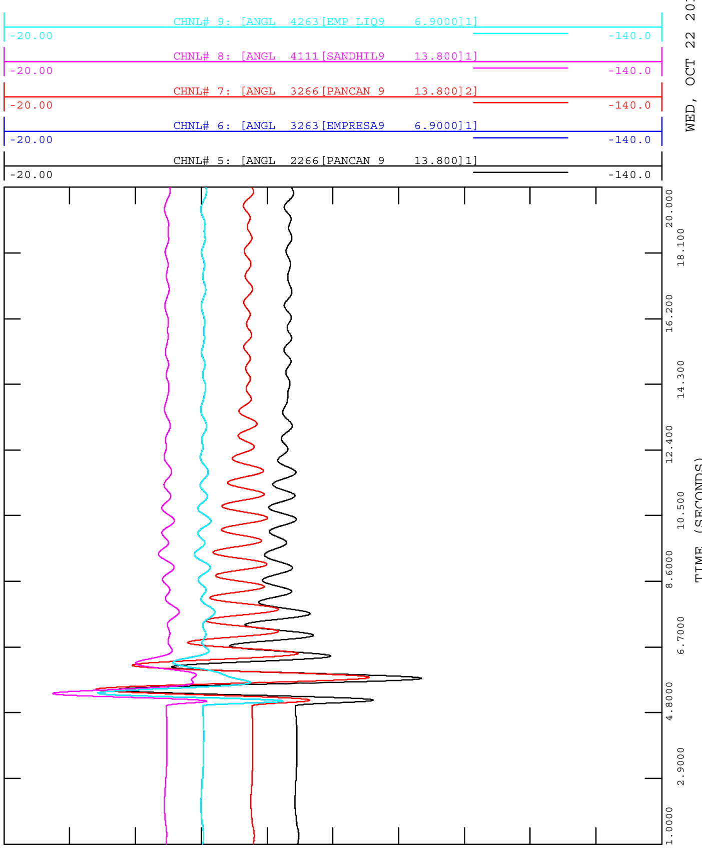
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out

WED, OCT 22 2014 18:02
BRANCH ACTIVE POWER MW



SIEMENS POWER TECHNOLOGIES INTERNATIONAL

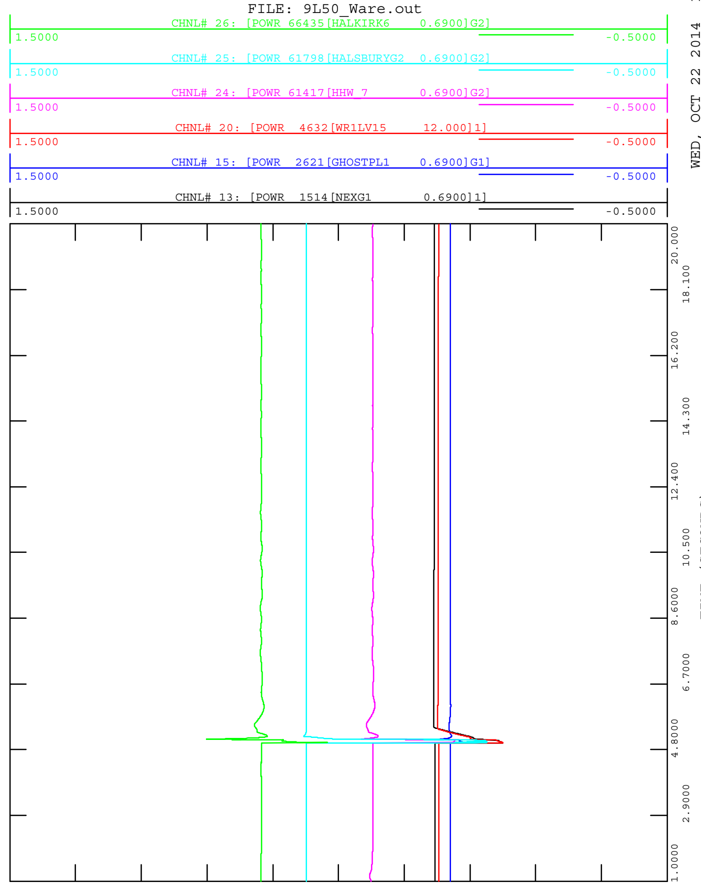
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



WED, OCT 22 2014 18:02
MOTOR ANGLE (DEGREES)

SIEMENS POWER TECHNOLOGIES INTERNATIONAL

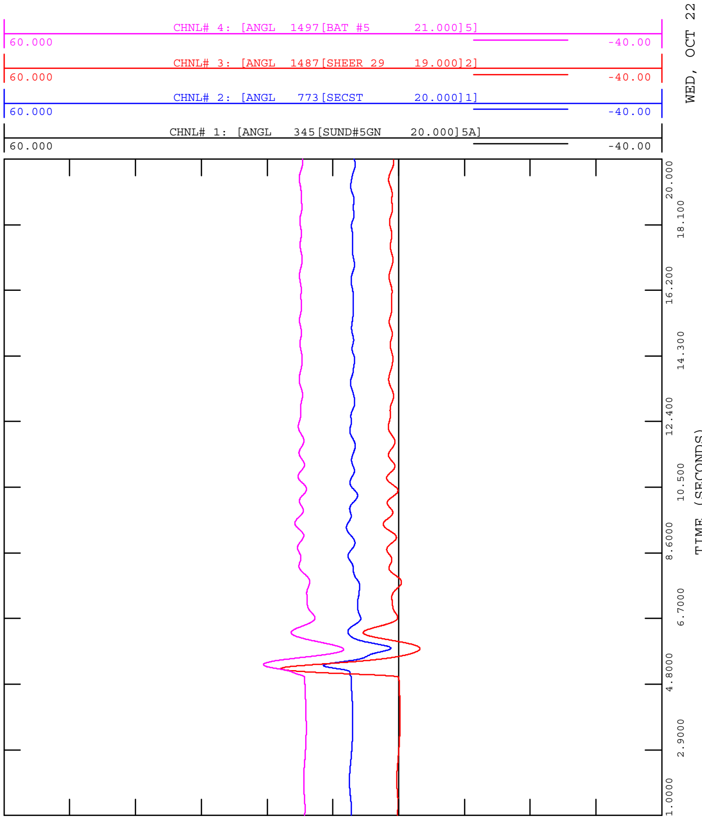
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



WED, OCT 22 2014 18:02
MACHINE POWER WIND PU

SIEMENS POWER TECHNOLOGIES INTERNATIONAL

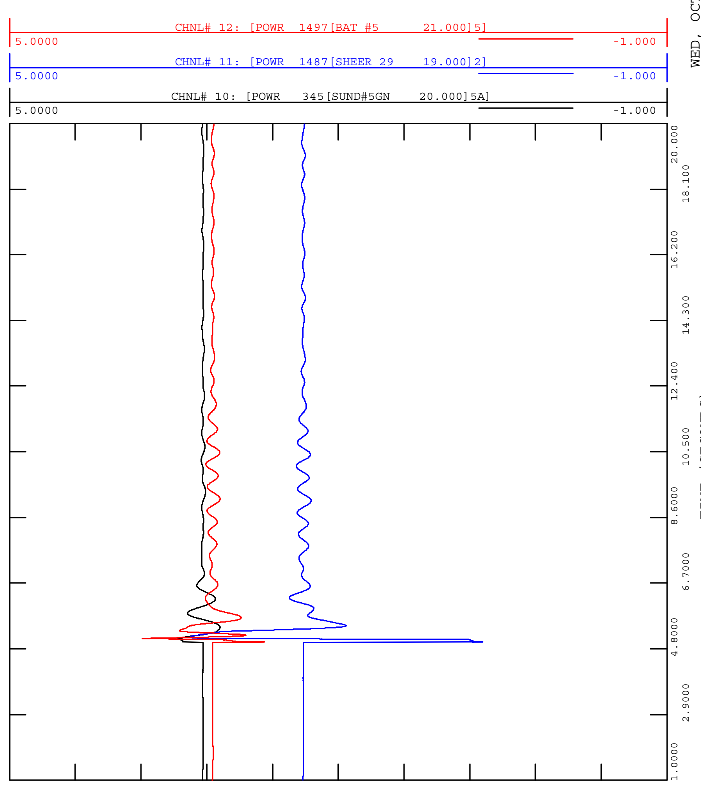
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



WED, OCT 22 2014 18:02
MACHINE ANGLE (DEGREES)

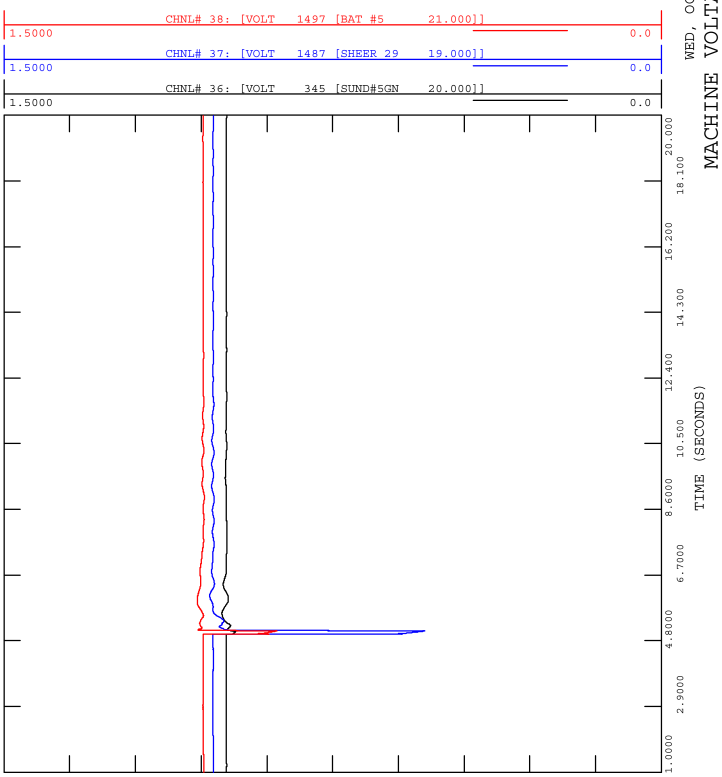
SIEMENS POWER TECHNOLOGIES INTERNATIONAL

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

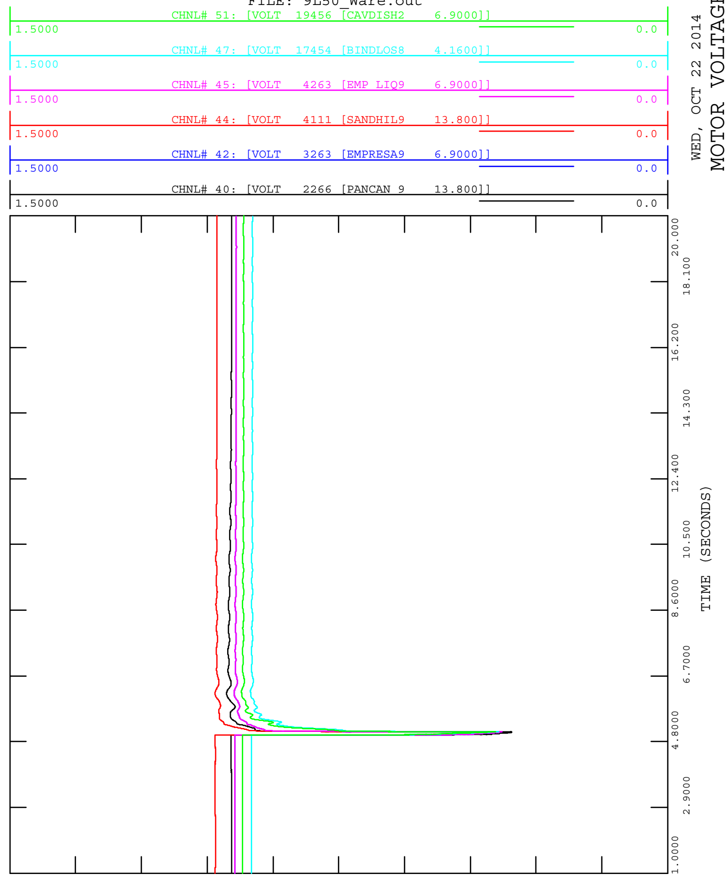


WED, OCT 22 2014 18:02
MACHINE POWER COAL PU

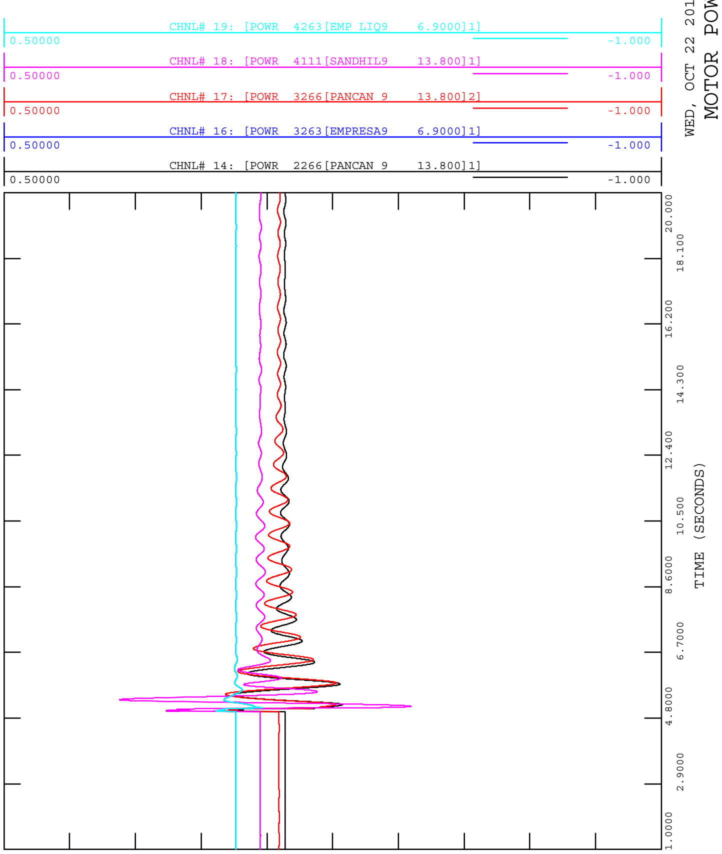
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



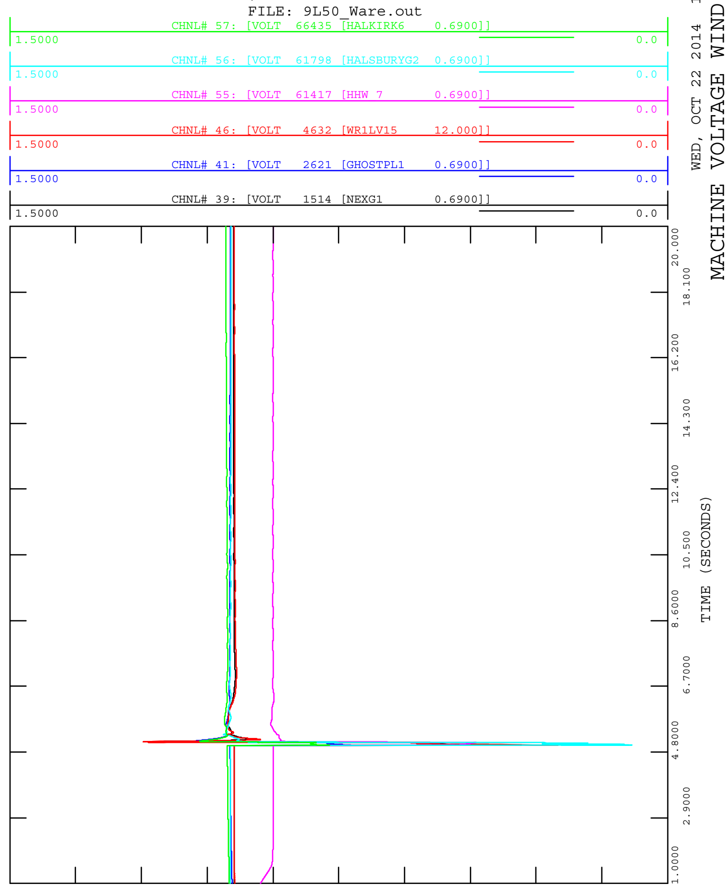
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



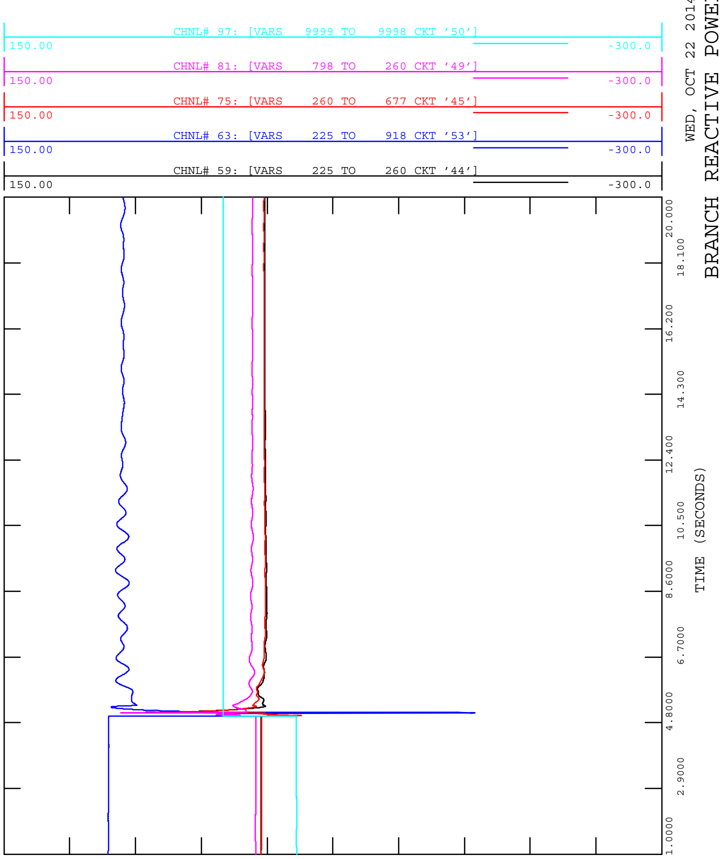
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



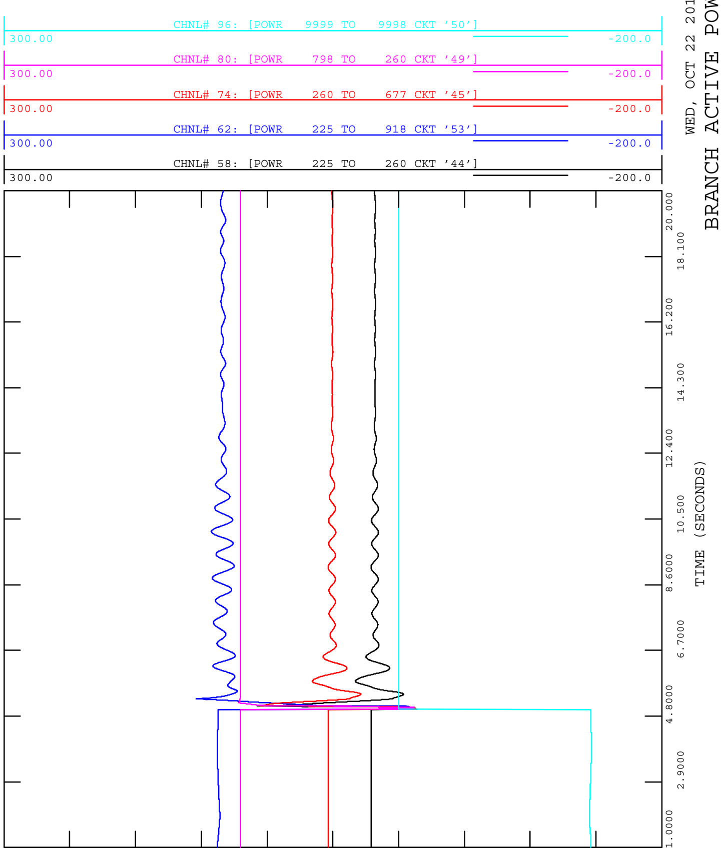
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

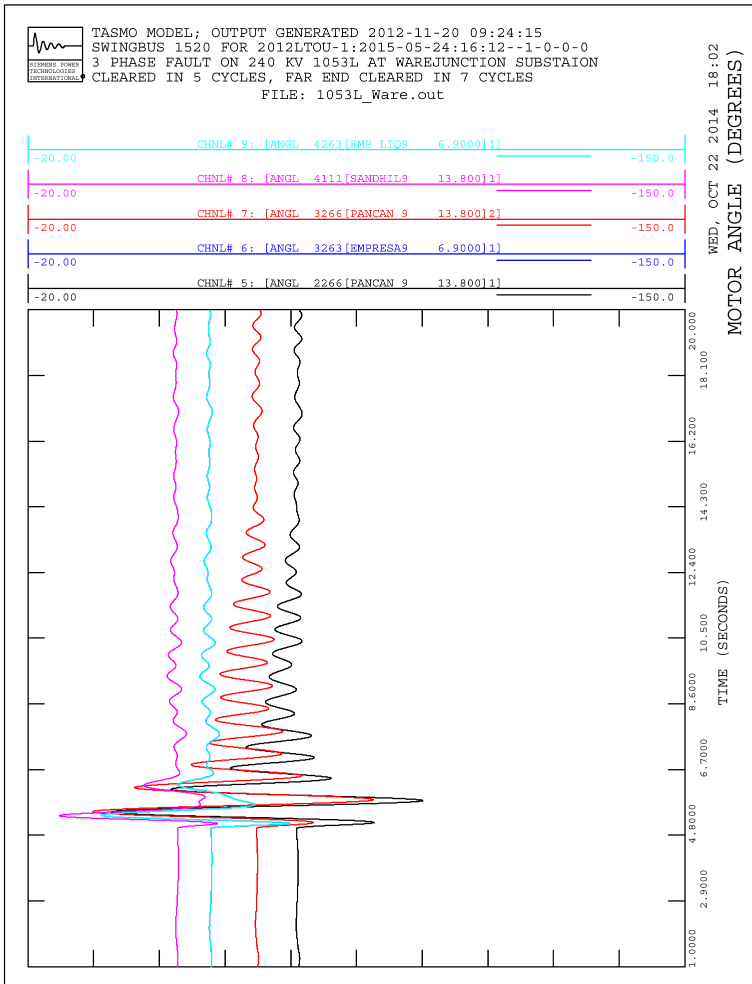
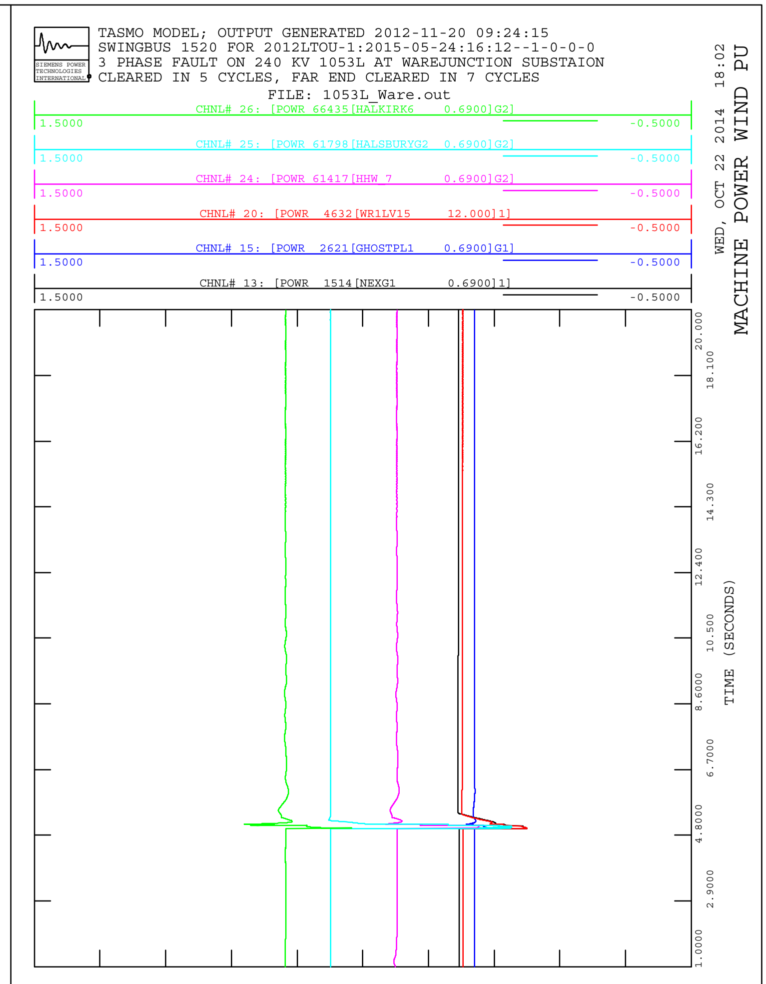
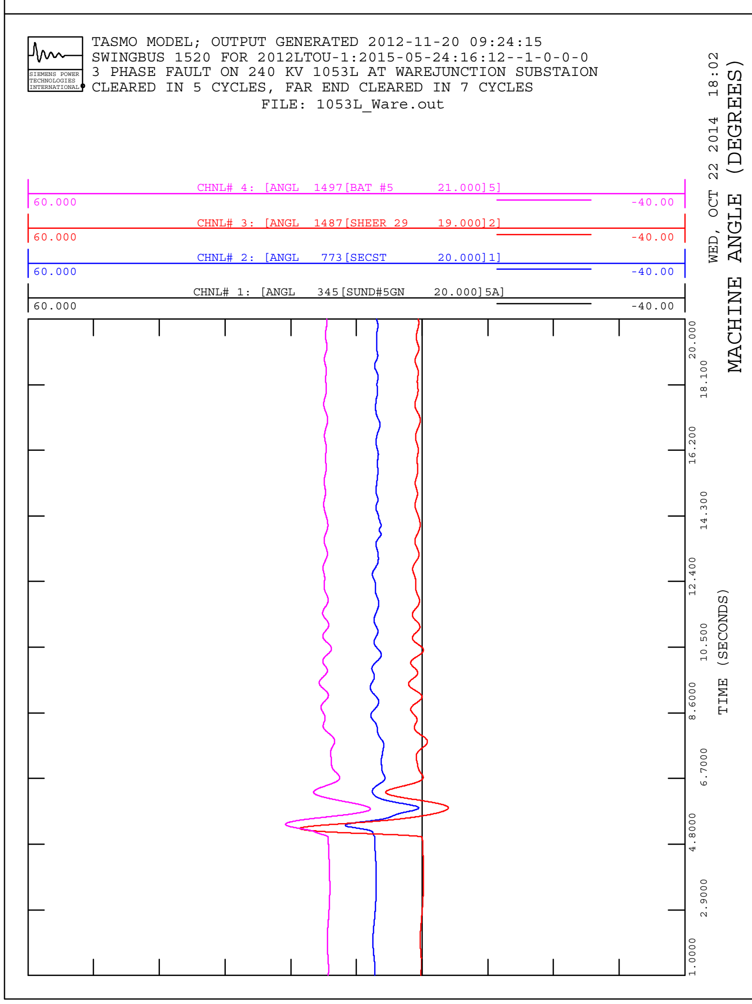
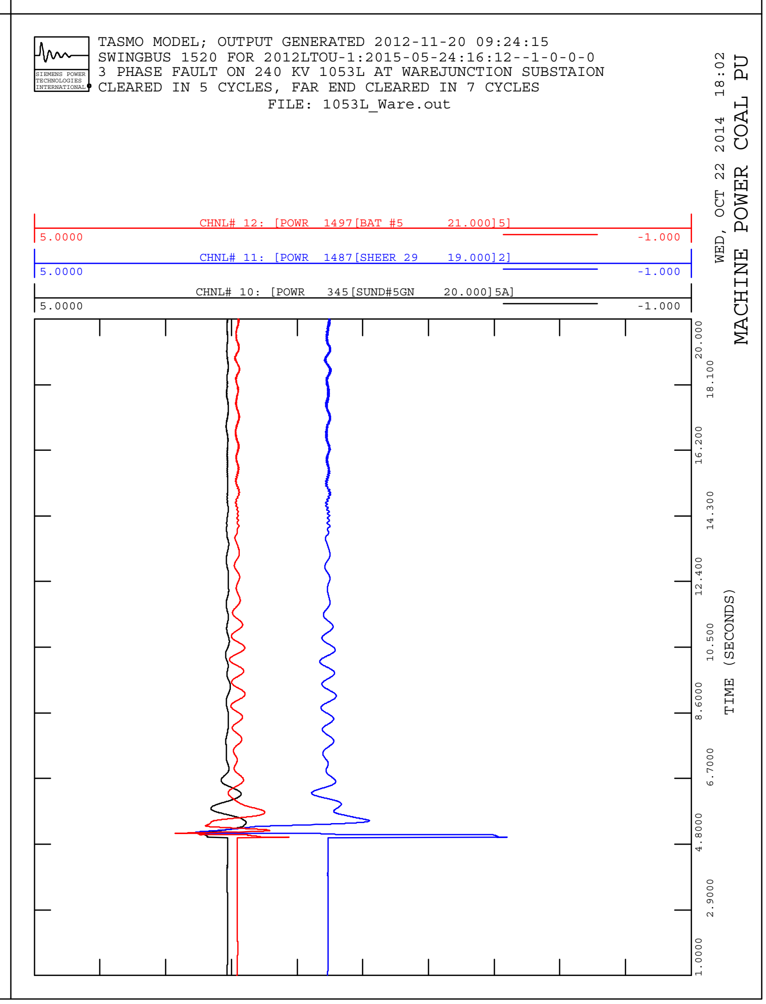


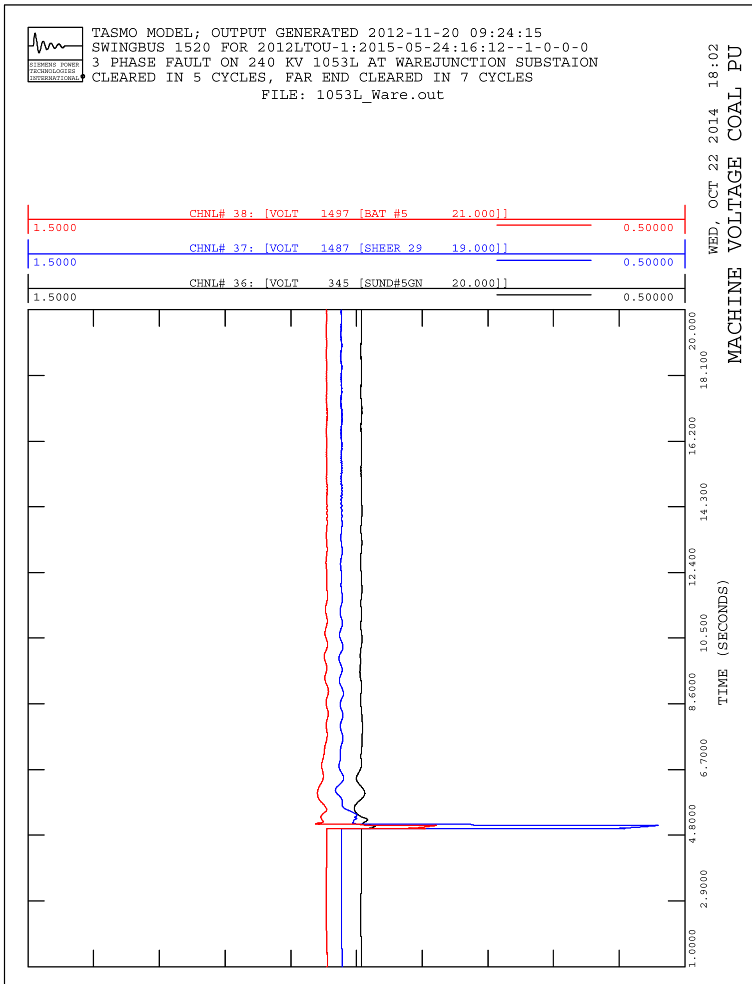
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

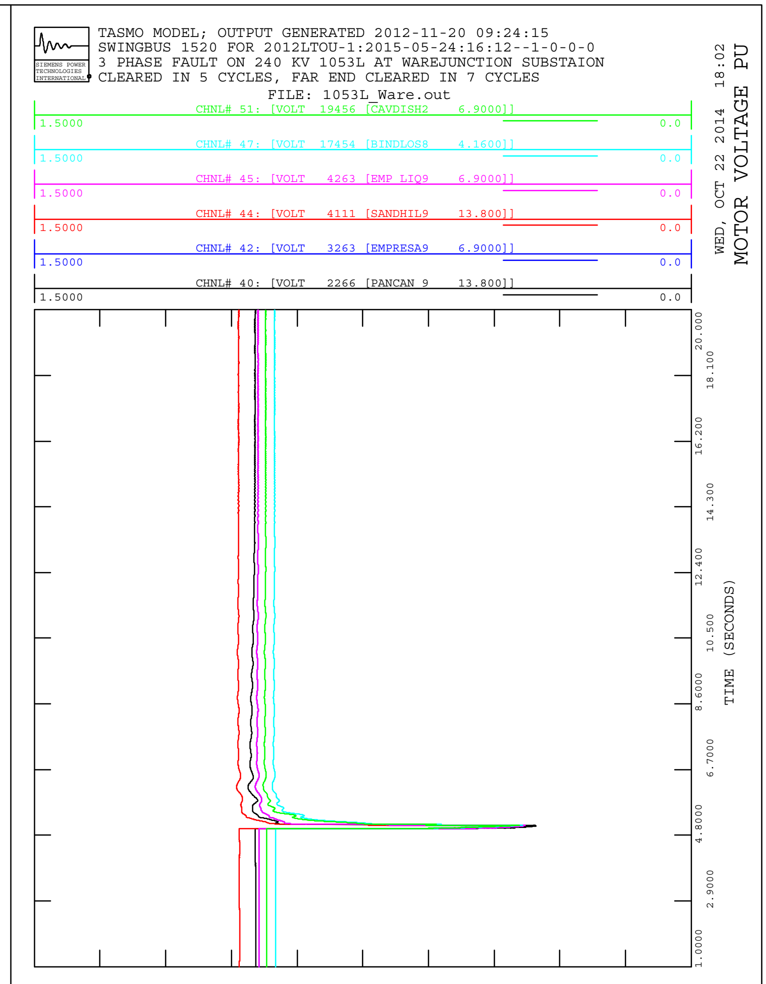


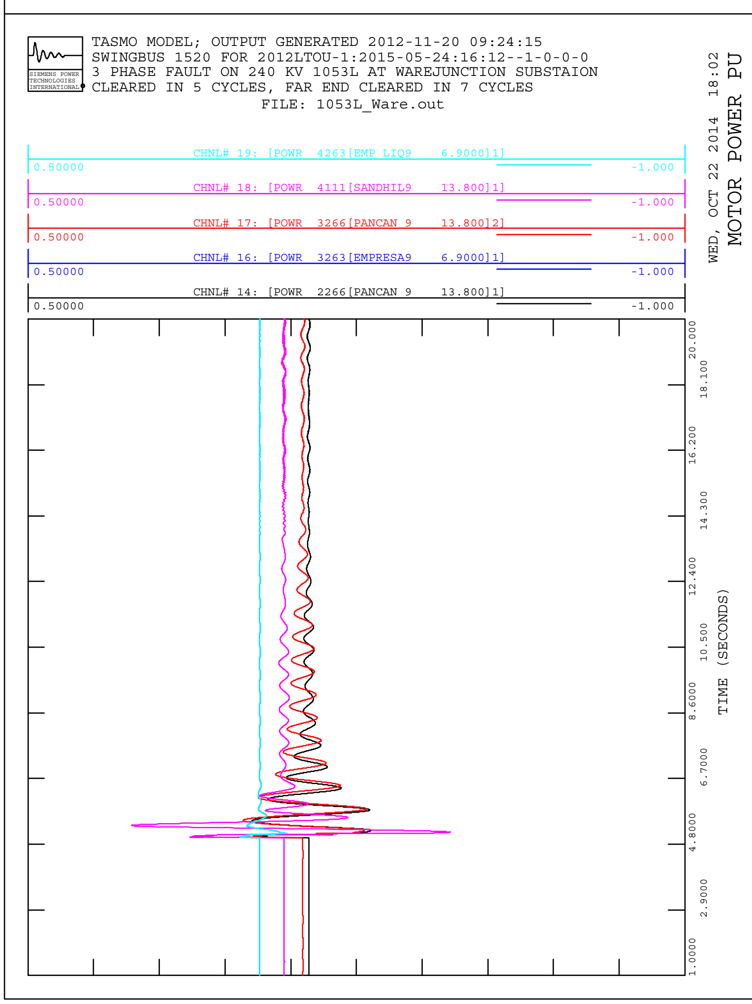
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

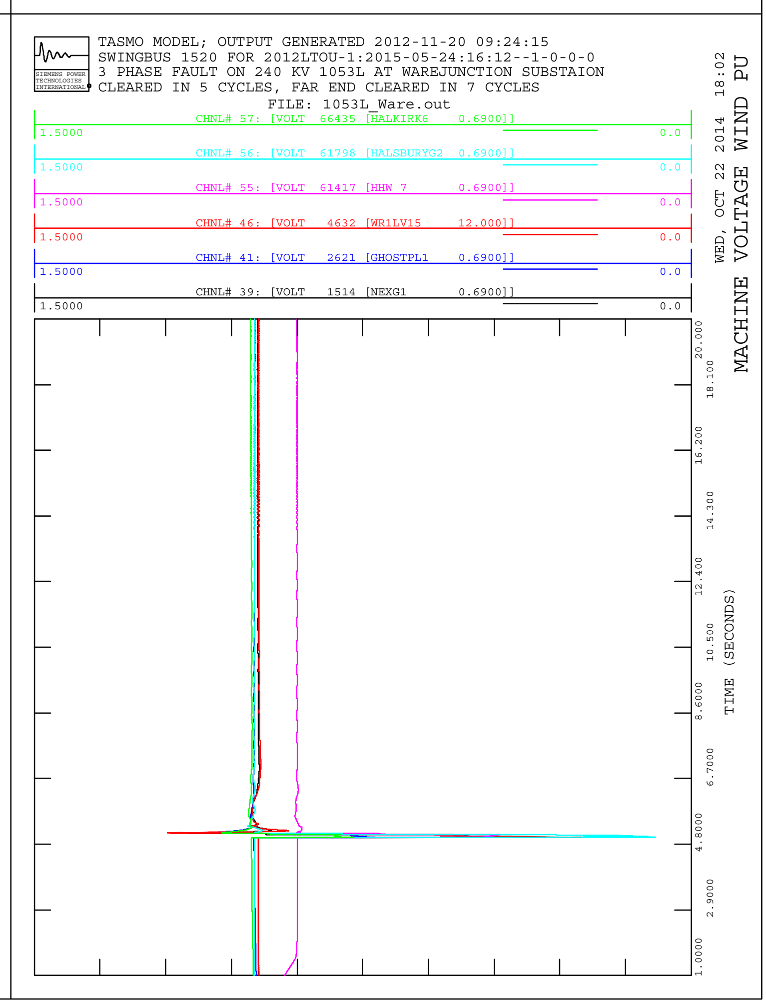



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 9: [ANGL 4263 [EMP LIQ9 6.9000] 1]
-20.00 -150.0
CHNL# 8: [ANGL 4111 [SANDHIL9 13.800] 1]
-20.00 -150.0
CHNL# 7: [ANGL 3266 [PANCAN 9 13.800] 2]
-20.00 -150.0
CHNL# 6: [ANGL 3263 [EMPRESA9 6.9000] 1]
-20.00 -150.0
CHNL# 5: [ANGL 2266 [PANCAN 9 13.800] 1]
-20.00 -150.0
WED, OCT 22 2014 18:02
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 26: [POWR 66435 [HALKIRK6 0.6900] G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798 [HALSBURYG2 0.6900] G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417 [HHW_7 0.6900] G2]
1.5000 -0.5000
CHNL# 20: [POWR 4632 [WR1LV15 12.000] 1]
1.5000 -0.5000
CHNL# 15: [POWR 2621 [GHOSTPL1 0.6900] G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514 [NEXG1 0.6900] 1]
1.5000 -0.5000
WED, OCT 22 2014 18:02
MACHINE POWER WIND PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 4: [ANGL 1497 [BAT #5 21.000] 5]
60.000 -40.00
CHNL# 3: [ANGL 1487 [SHEER 29 19.000] 2]
60.000 -40.00
CHNL# 2: [ANGL 773 [SECST 20.000] 1]
60.000 -40.00
CHNL# 1: [ANGL 345 [SUND#5GN 20.000] 5A]
60.000 -40.00
WED, OCT 22 2014 18:02
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 12: [POWR 1497 [BAT #5 21.000] 5]
5.0000 -1.000
CHNL# 11: [POWR 1487 [SHEER 29 19.000] 2]
5.0000 -1.000
CHNL# 10: [POWR 345 [SUND#5GN 20.000] 5A]
5.0000 -1.000
WED, OCT 22 2014 18:02
MACHINE POWER COAL PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

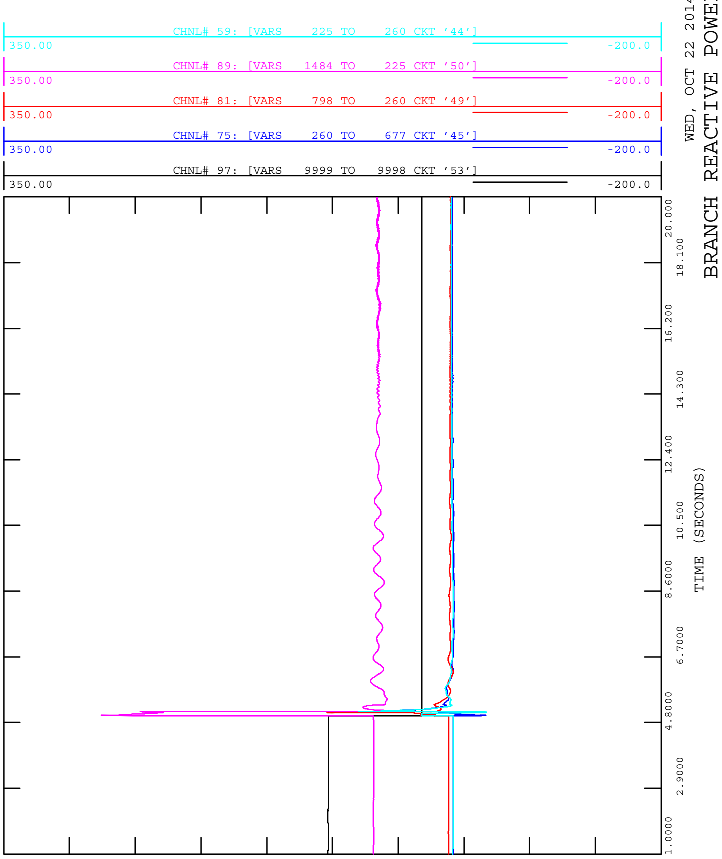

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.50000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.50000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.50000
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MACHINE VOLTAGE COAL PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MOTOR VOLTAGE PU

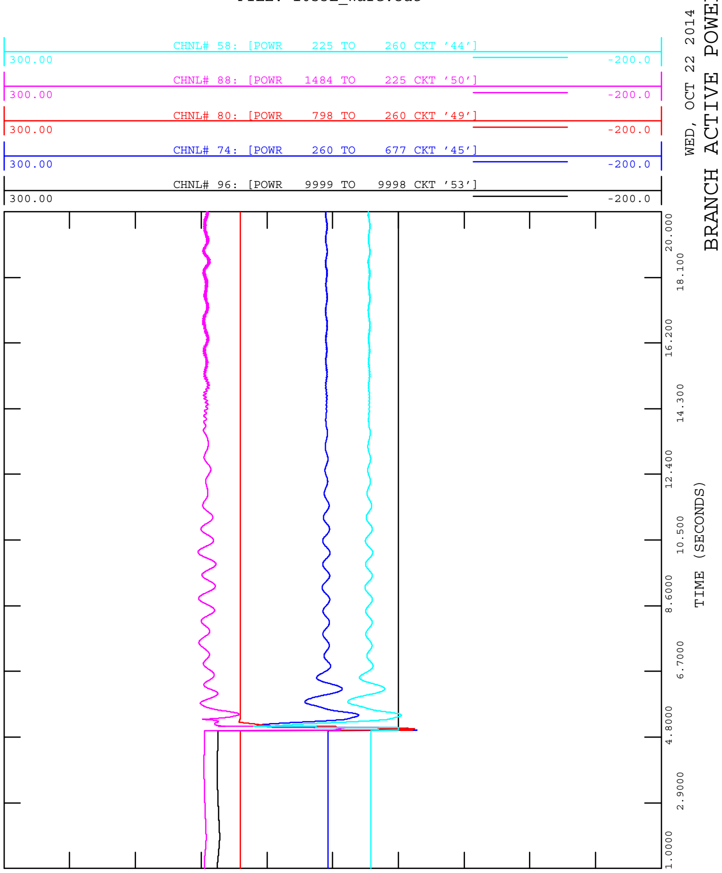

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MOTOR POWER PU


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
1.0000 2.9000 4.8000 6.7000 8.6000 10.500 12.400 14.300 16.200 18.100 20.000
TIME (SECONDS)
WED, OCT 22 2014 18:02
MACHINE VOLTAGE WIND PU

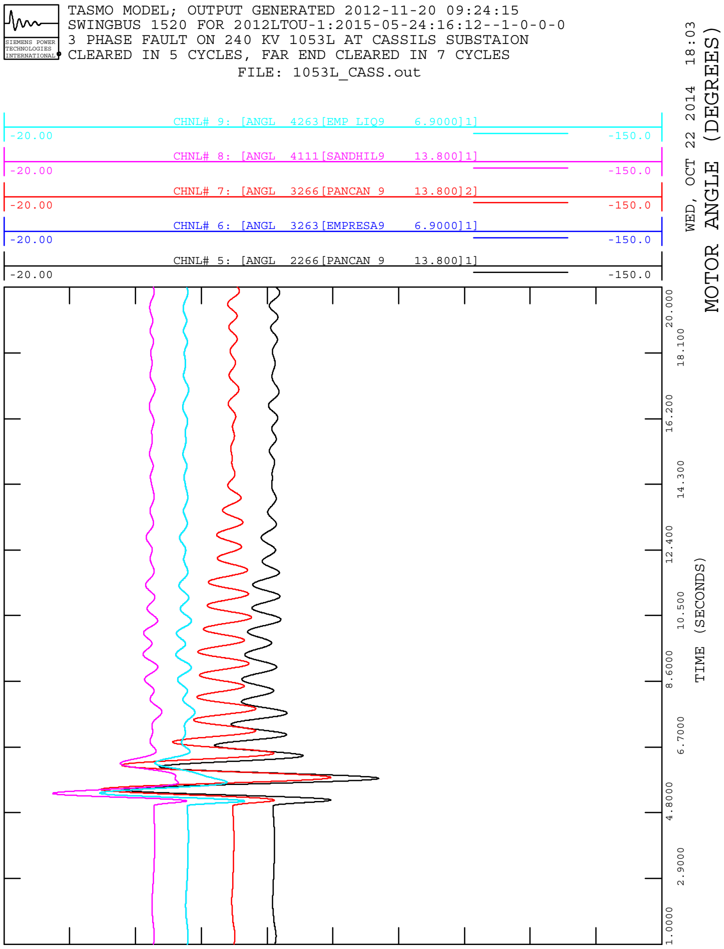
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out



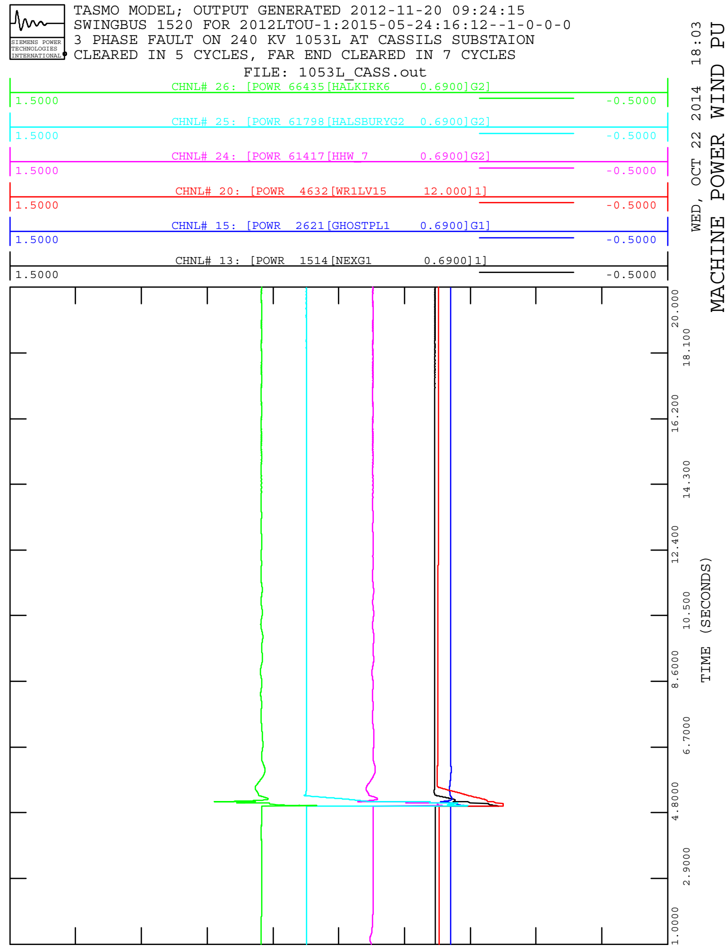
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out



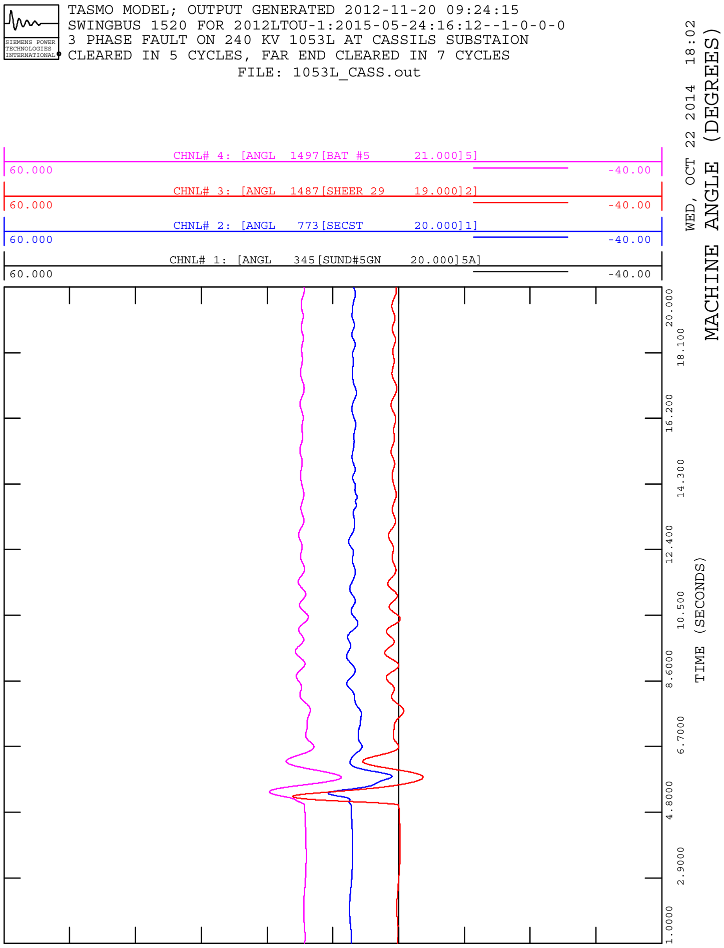
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



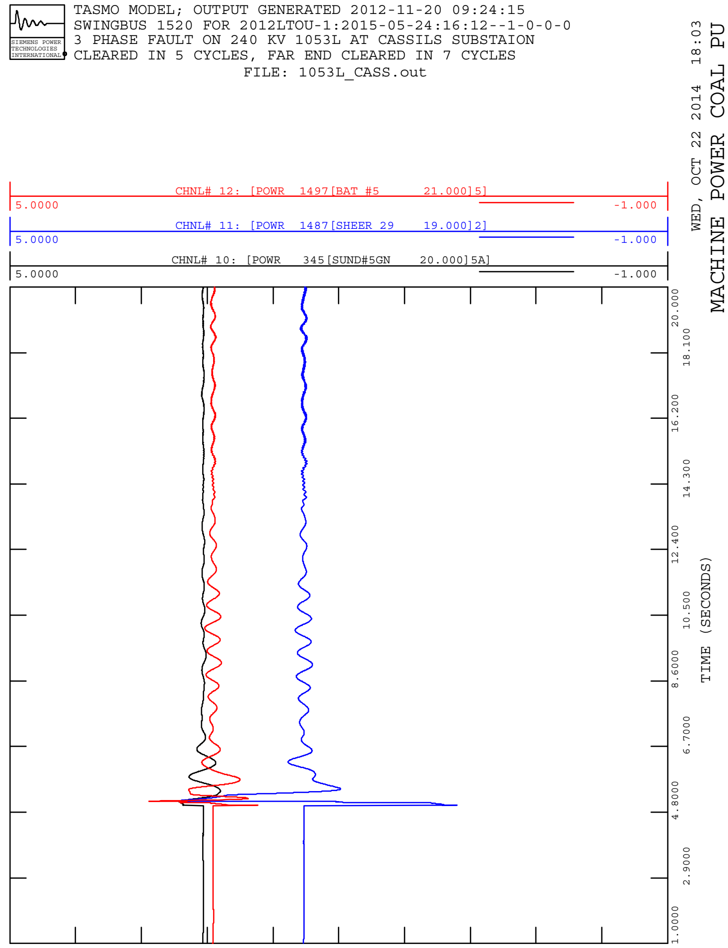
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

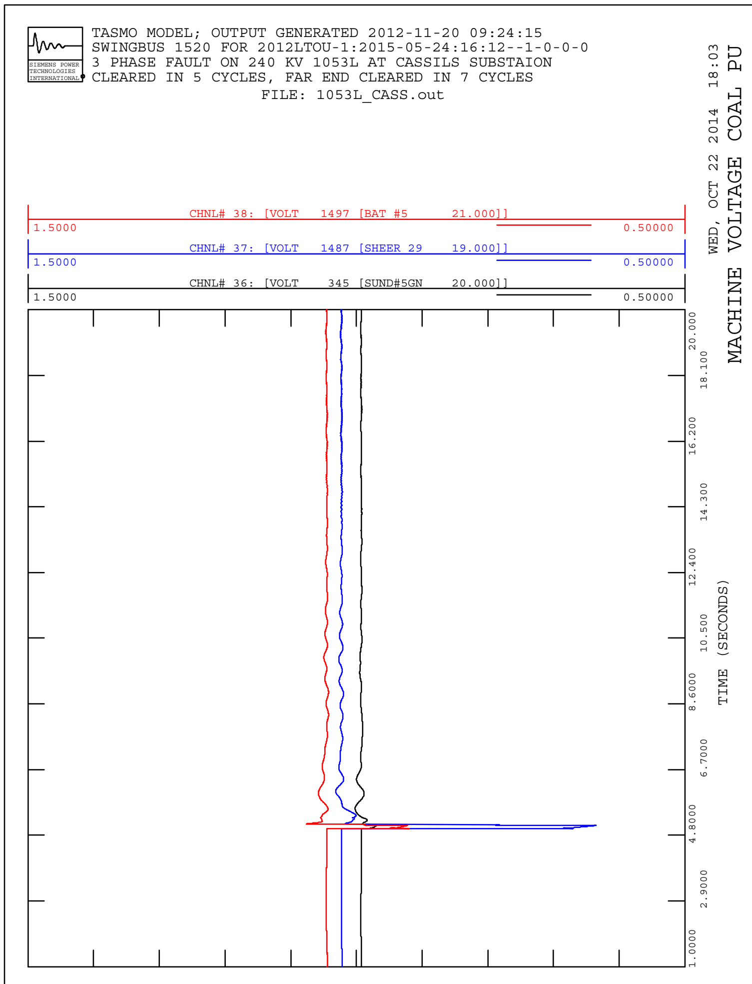


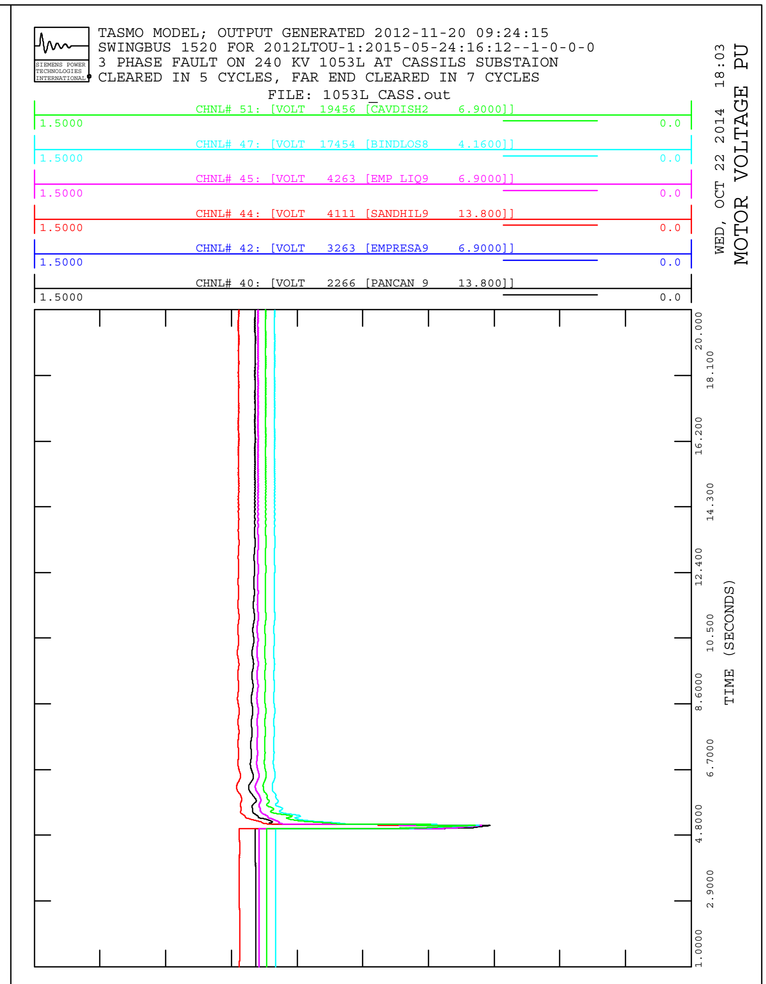
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

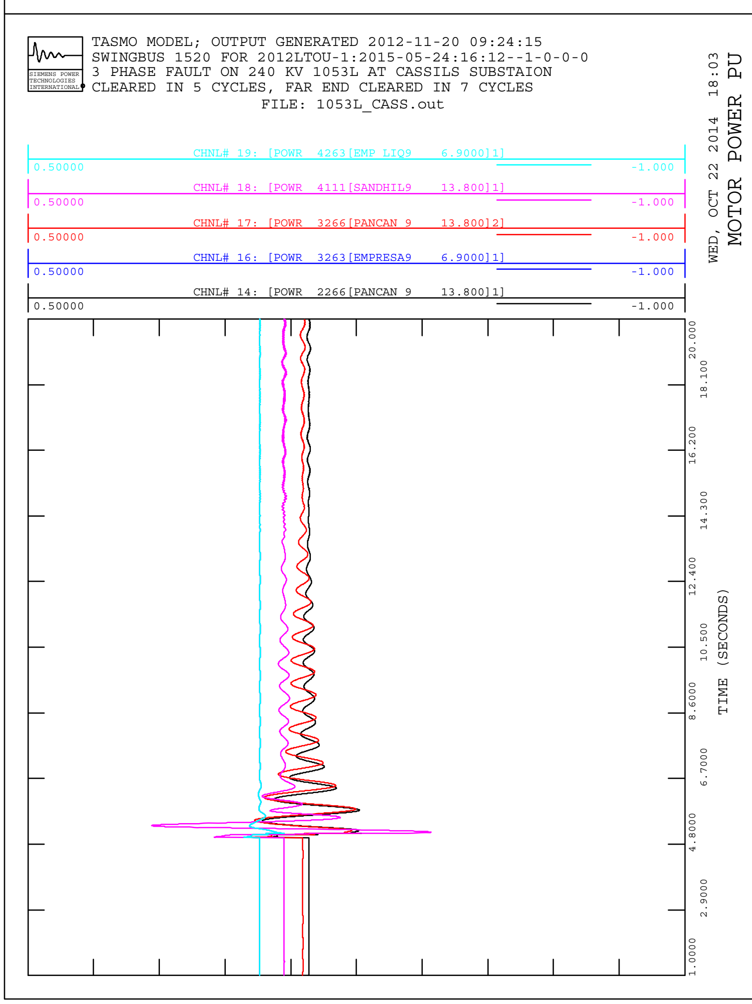


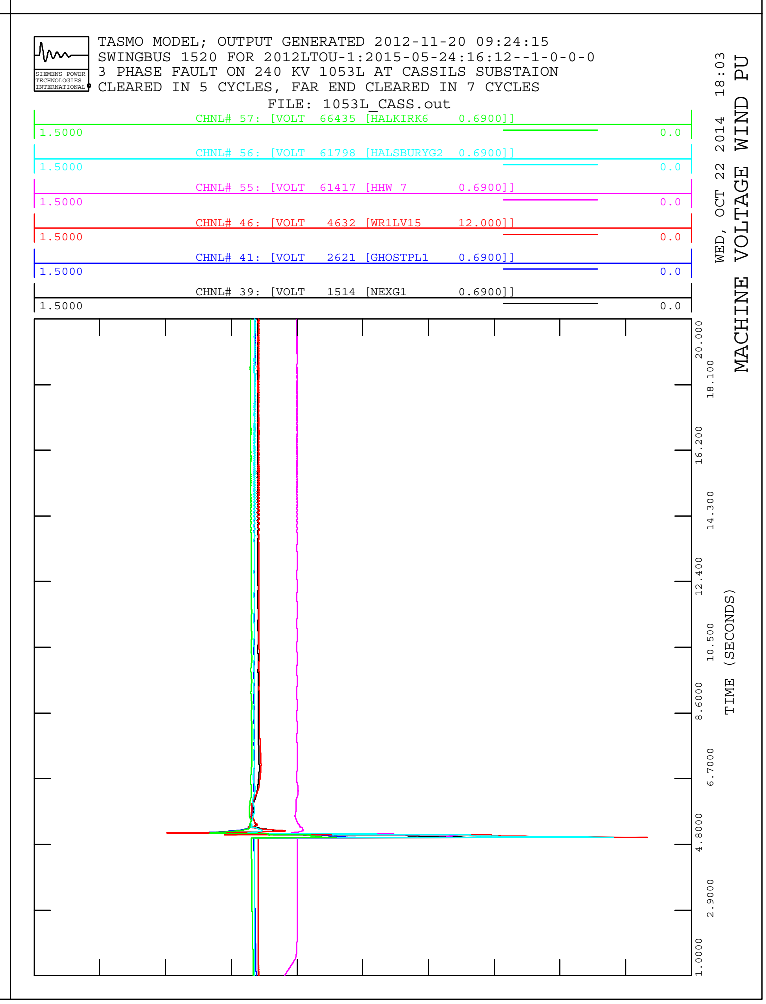
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out




TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.50000
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.50000
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.50000
WED, OCT 22 2014 18:03
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

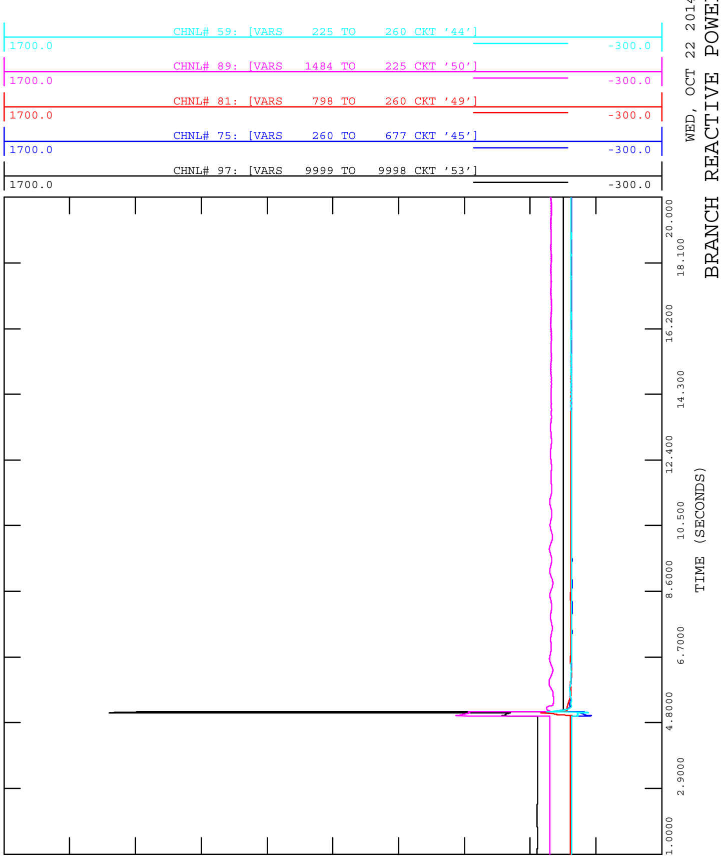

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 18:03
MOTOR VOLTAGE PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 18:03
MOTOR POWER PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 18:03
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
20.000
18.100
16.200
14.300
12.400
10.500
8.6000
6.7000
4.8000
2.9000
1.0000

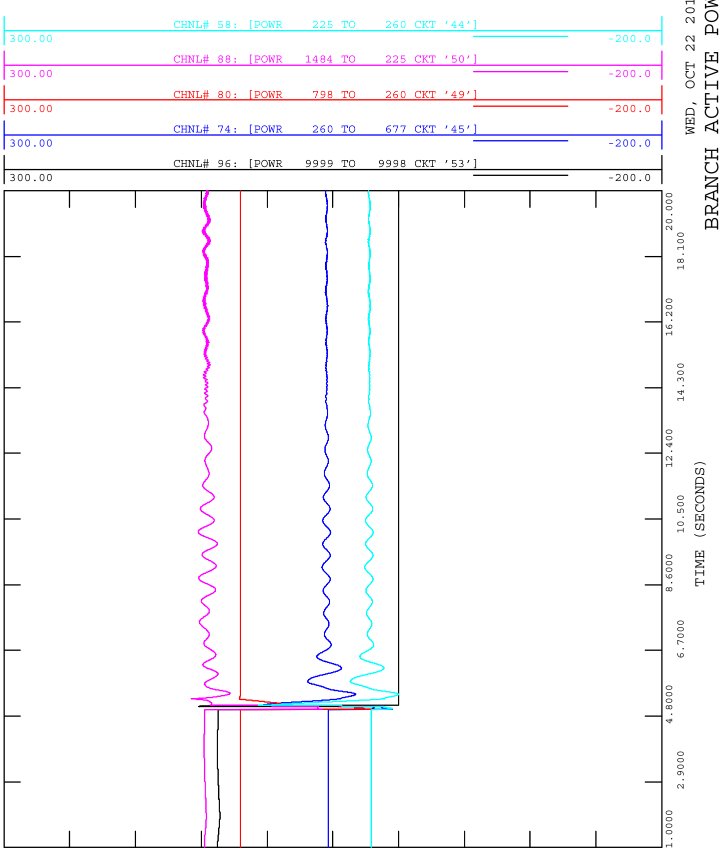
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

WED, OCT 22 2014 18:03
BRANCH REACTIVE POWER MVR



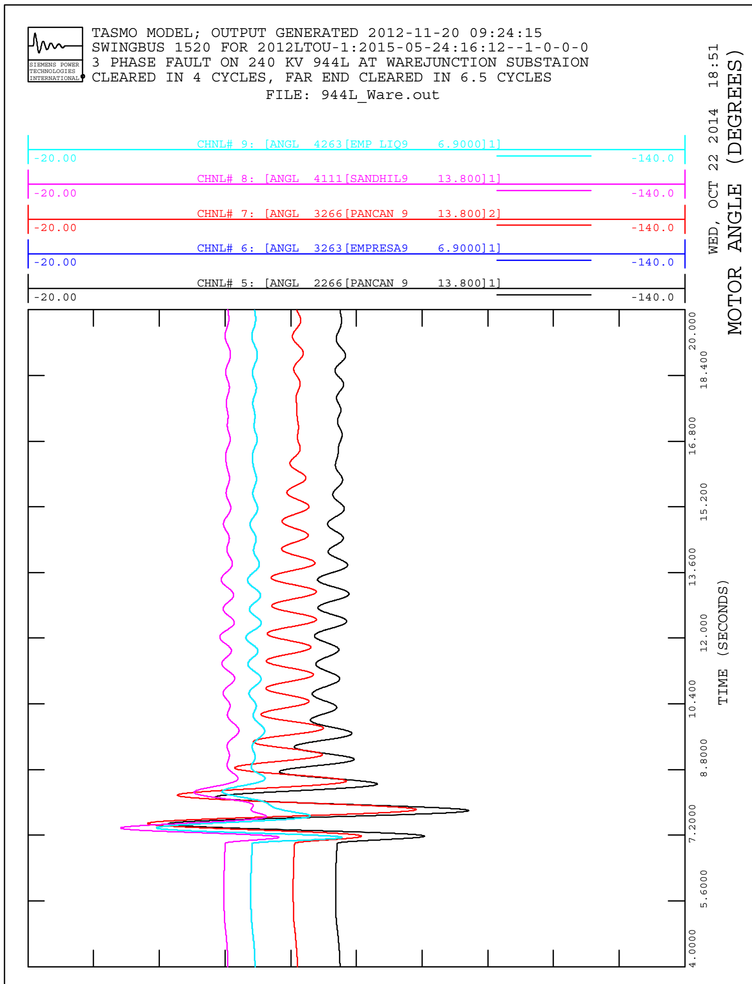
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out

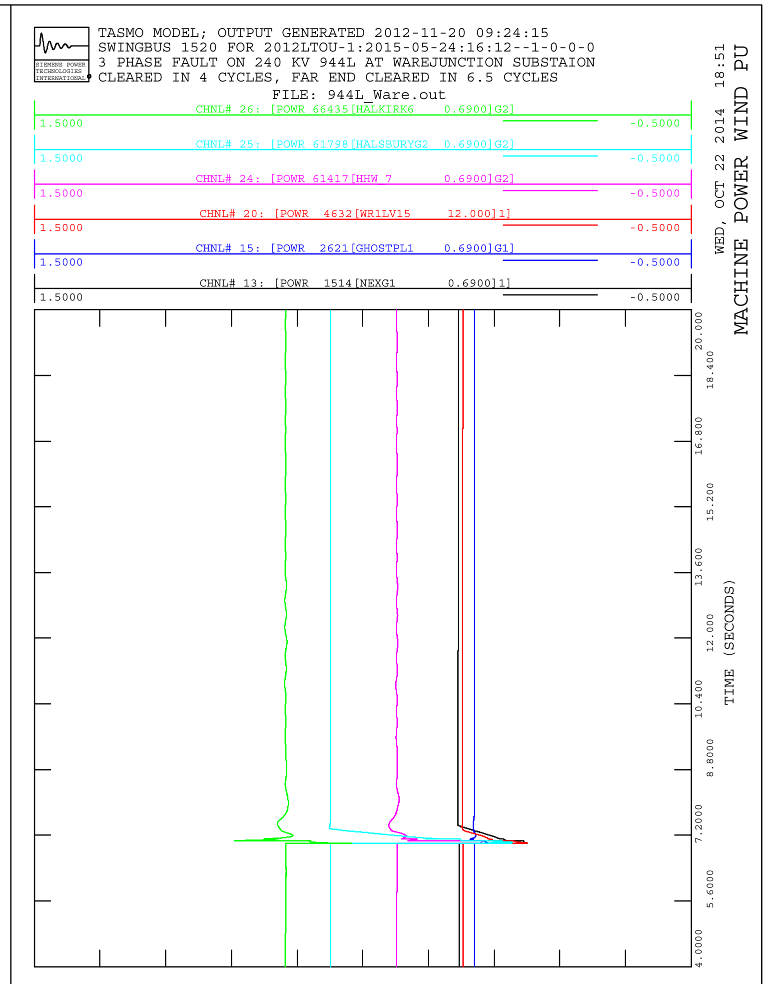
WED, OCT 22 2014 18:03
BRANCH ACTIVE POWER MW

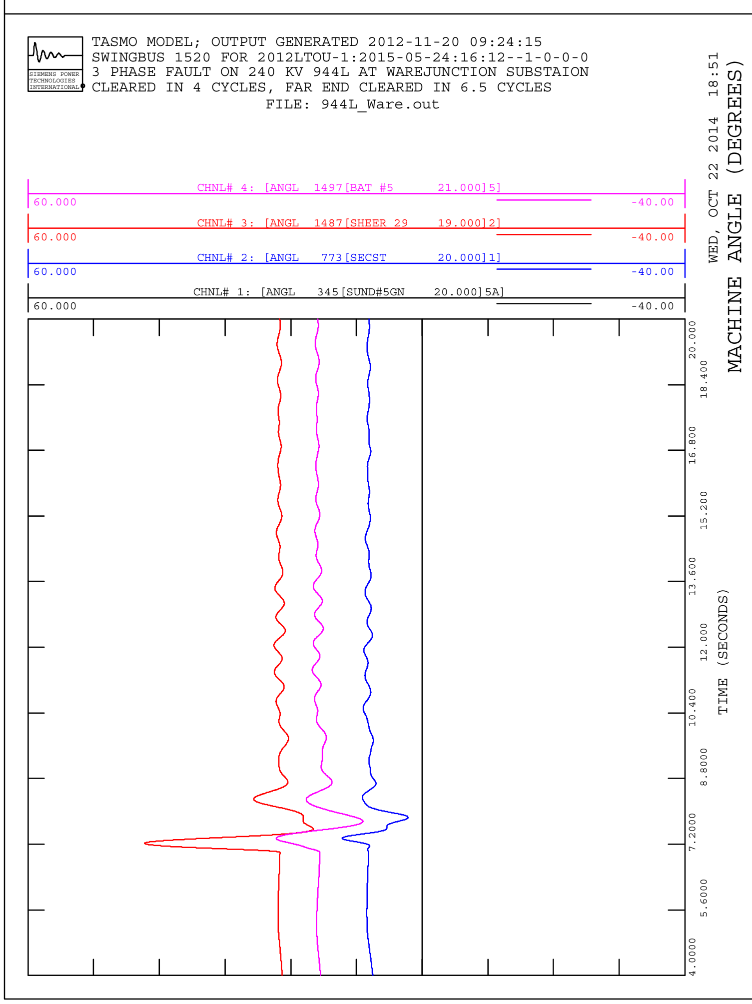


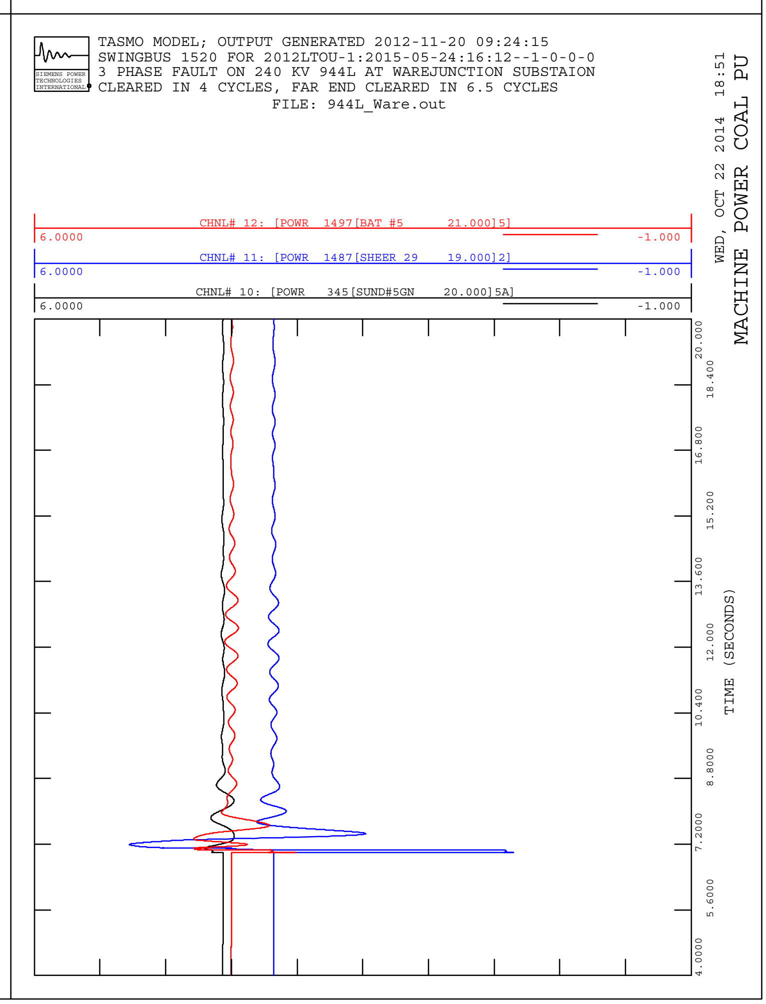
ATTACHMENT I

2017WP Post-Connection Transient Stability Analysis

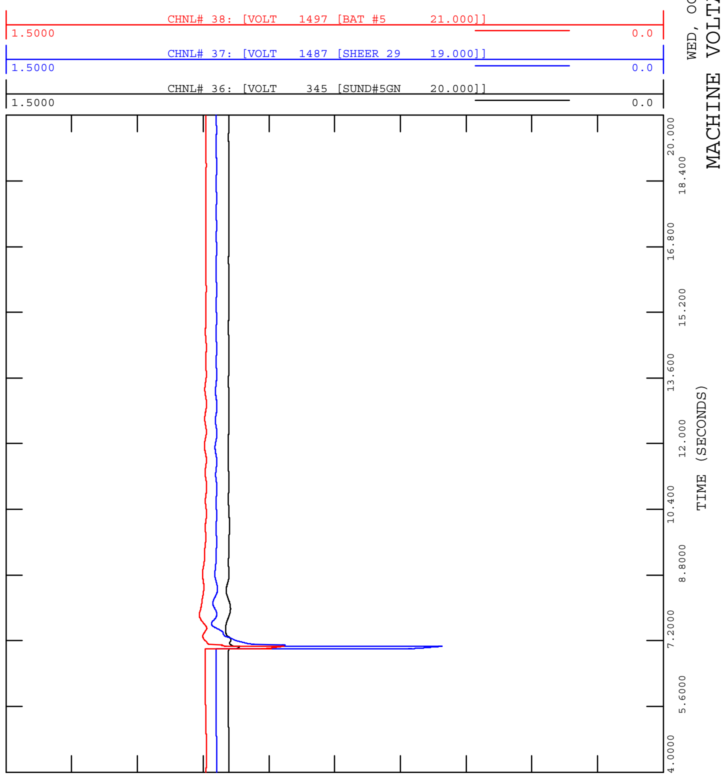

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1]
-20.00 -140.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1]
-20.00 -140.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2]
-20.00 -140.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1]
-20.00 -140.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1]
-20.00 -140.0
WED, OCT 22 2014 18:51
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW 7 0.6900]G2]
1.5000 -0.5000
CHNL# 20: [POWR 4632[WR1LV15 12.000]1]
1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1]
1.5000 -0.5000
WED, OCT 22 2014 18:51
MACHINE POWER WIND PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

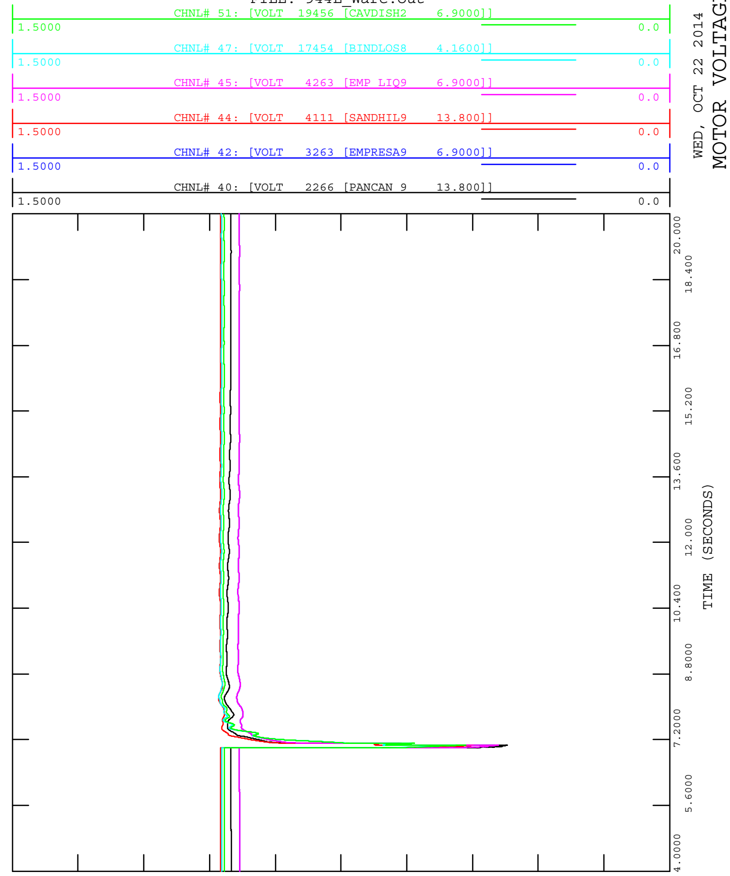

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 4: [ANGL 1497[BAT #5 21.000]5]
60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2]
60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1]
60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A]
60.000 -40.00
WED, OCT 22 2014 18:51
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out
CHNL# 12: [POWR 1497[BAT #5 21.000]5]
6.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2]
6.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A]
6.0000 -1.000
WED, OCT 22 2014 18:51
MACHINE POWER COAL PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

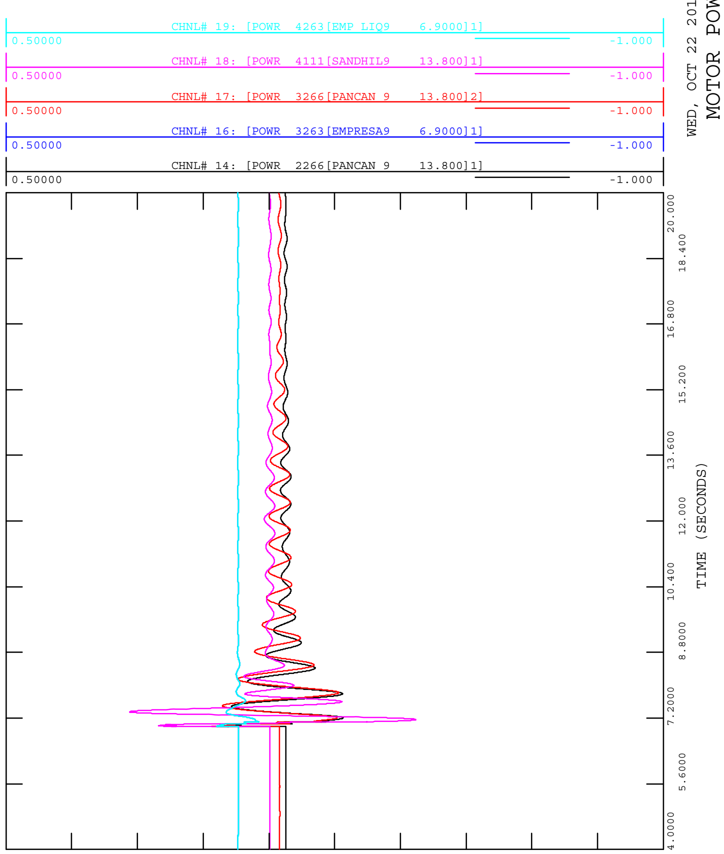
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



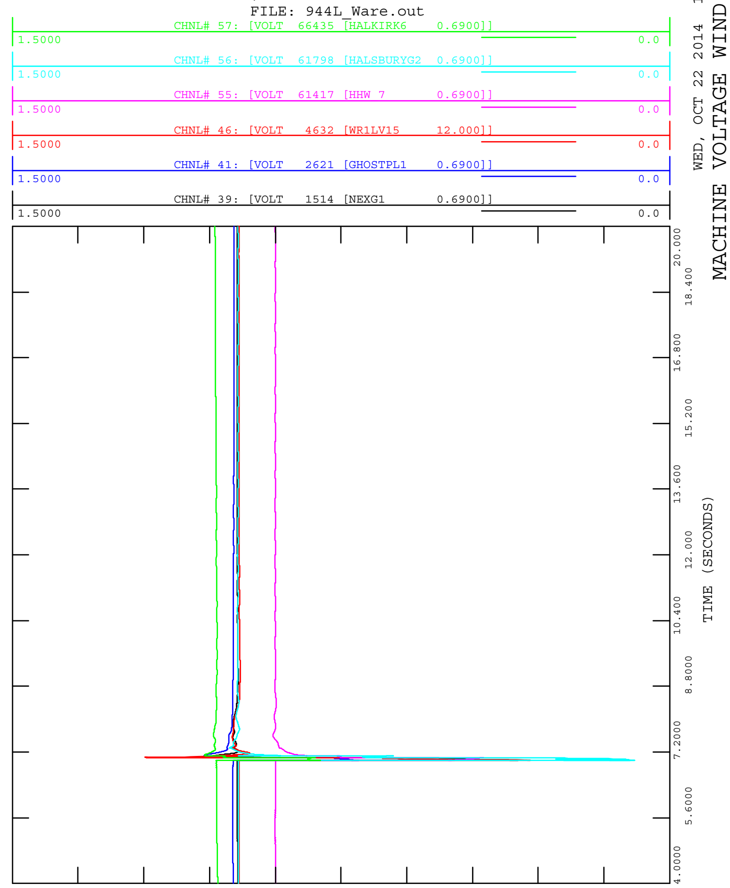
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT WAREJUNCTION SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
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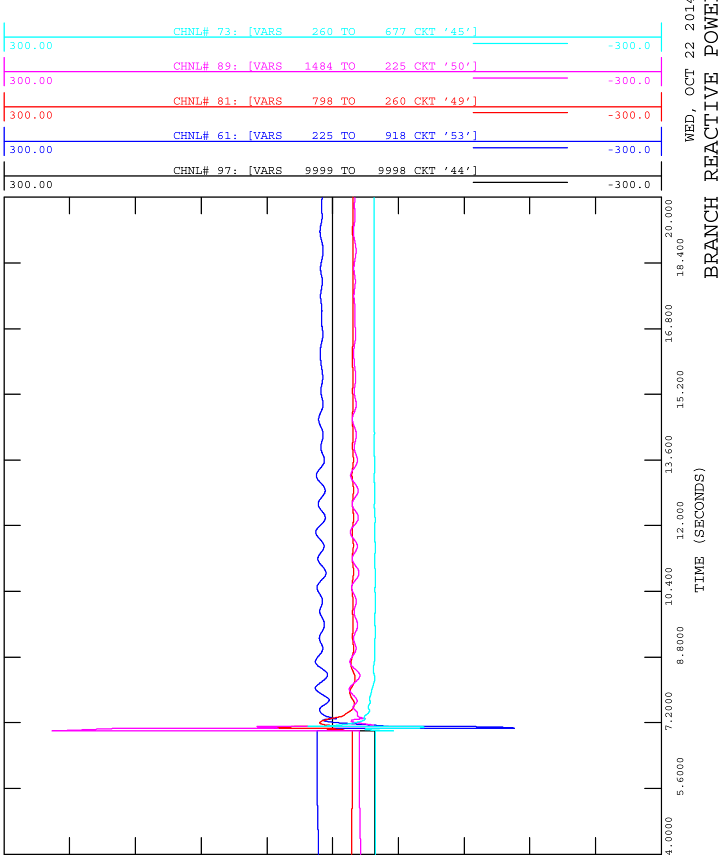
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
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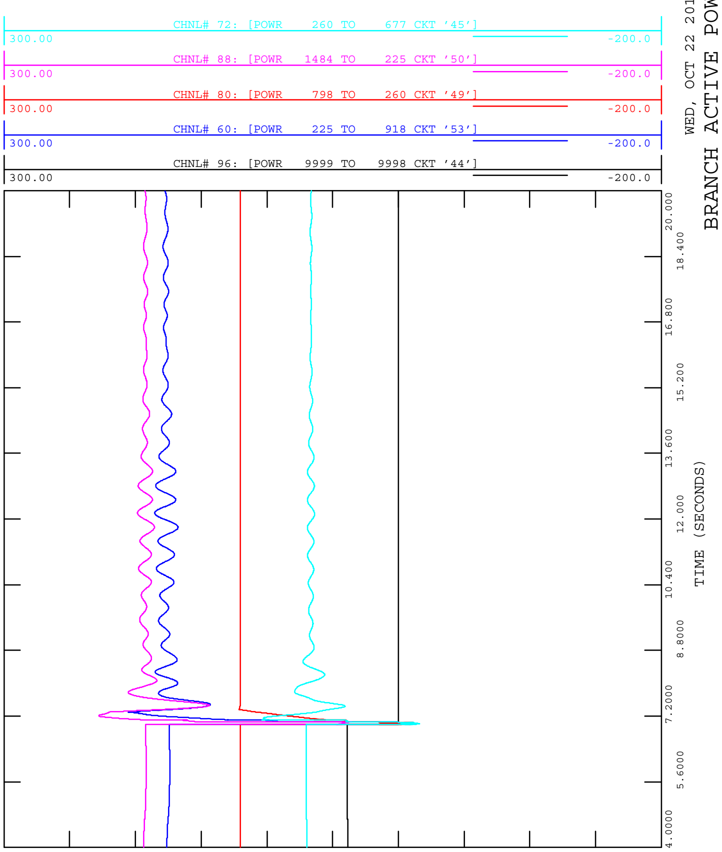
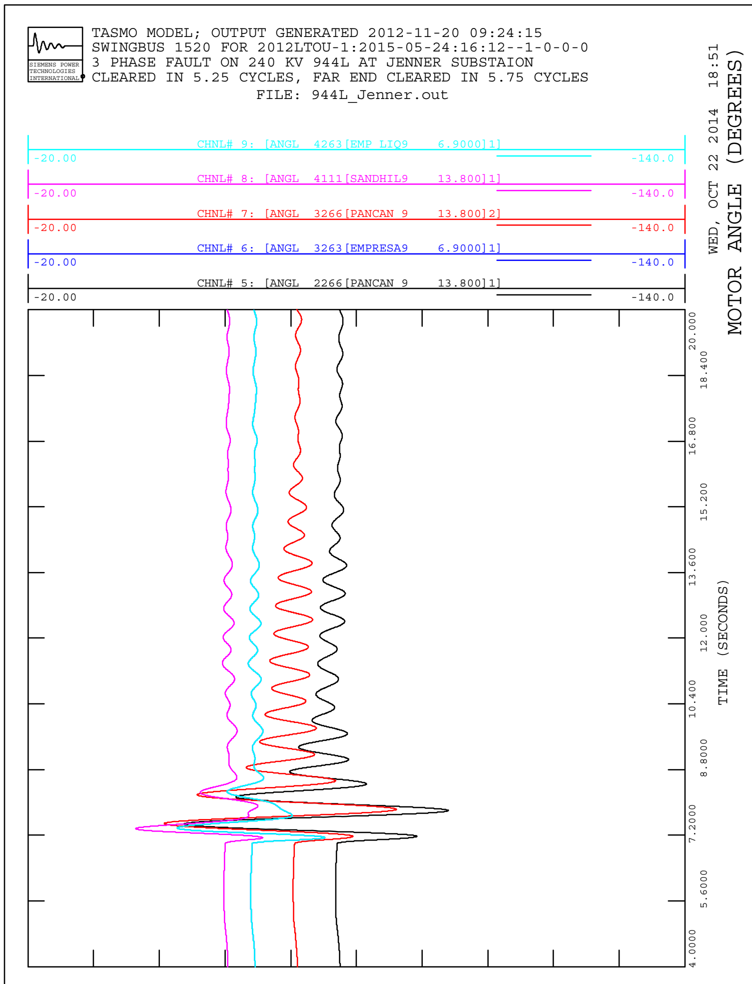
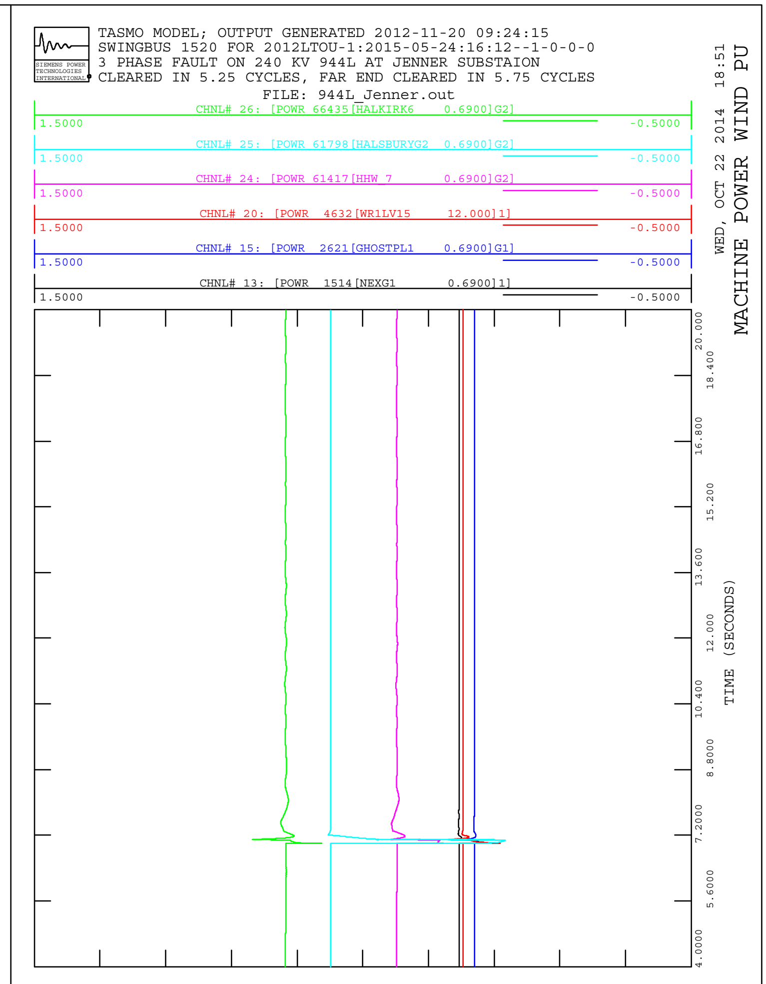
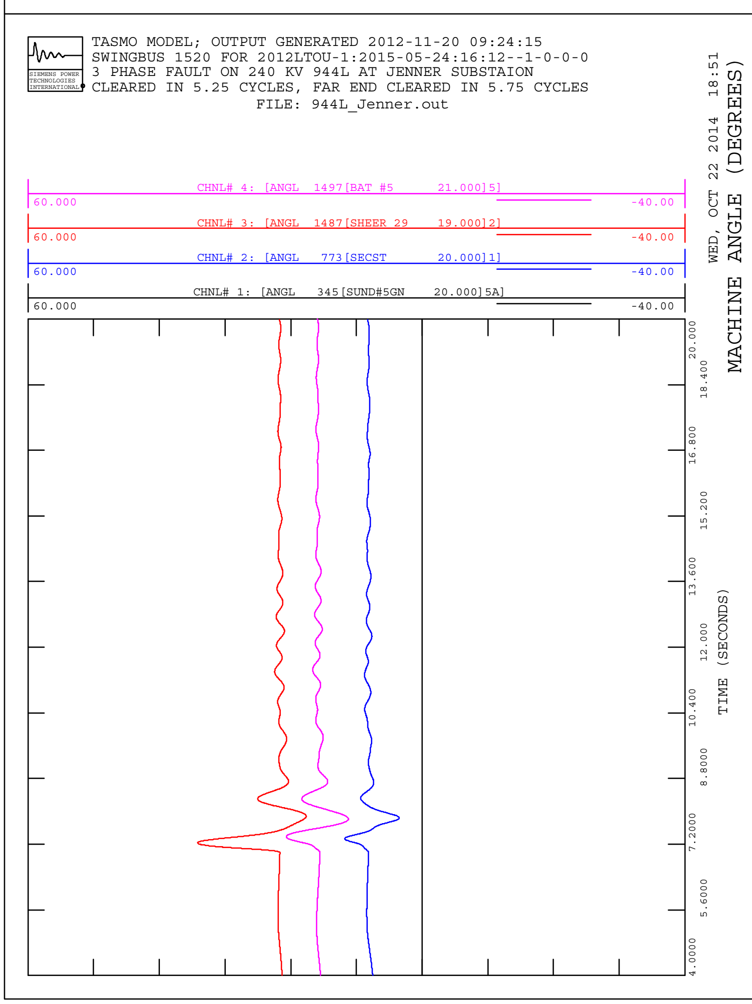
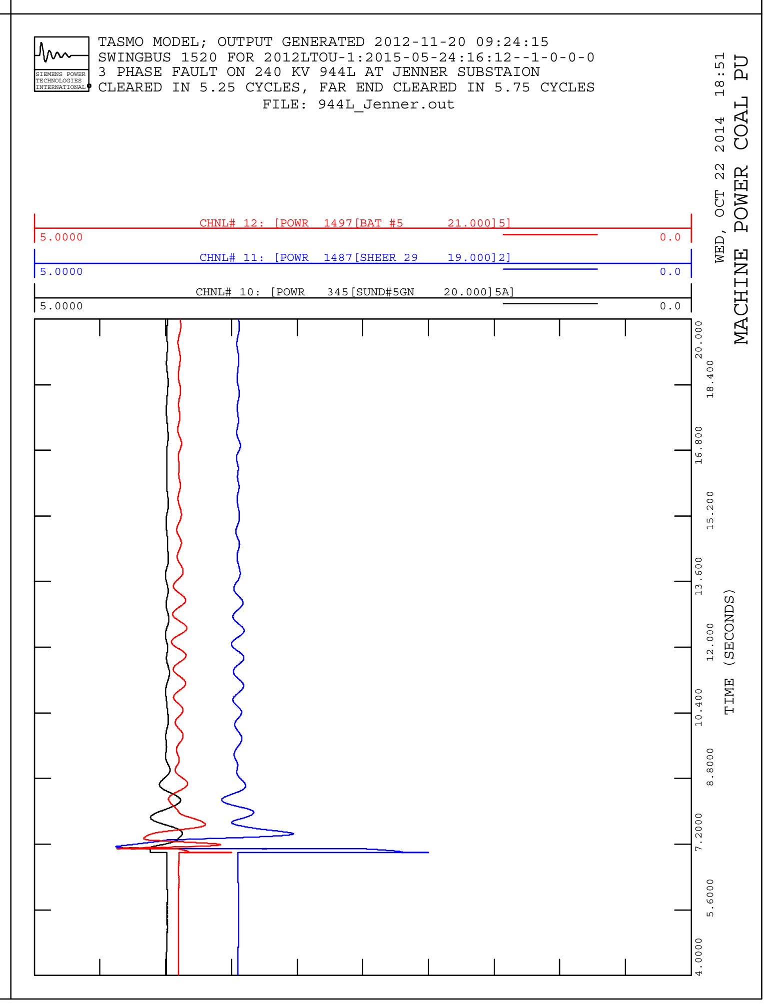
CLEARED IN 4 CYCLES, FAR END CLEARED IN 6.5 CYCLES
FILE: 944L_Ware.out




TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 9: [ANGL 4263 [EMP LIQ9 6.9000] 1] -20.00 -140.0
CHNL# 8: [ANGL 4111 [SANDHIL9 13.800] 1] -20.00 -140.0
CHNL# 7: [ANGL 3266 [PANCAN 9 13.800] 2] -20.00 -140.0
CHNL# 6: [ANGL 3263 [EMPRESA9 6.9000] 1] -20.00 -140.0
CHNL# 5: [ANGL 2266 [PANCAN 9 13.800] 1] -20.00 -140.0
WED, OCT 22 2014 18:51
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 26: [POWR 66435 [HALKIRK6 0.6900] G2] 1.5000 -0.5000
CHNL# 25: [POWR 61798 [HALSBURYG2 0.6900] G2] 1.5000 -0.5000
CHNL# 24: [POWR 61417 [HHW_7 0.6900] G2] 1.5000 -0.5000
CHNL# 20: [POWR 4632 [WR1LV15 12.000] 1] 1.5000 -0.5000
CHNL# 15: [POWR 2621 [GHOSTPL1 0.6900] G1] 1.5000 -0.5000
CHNL# 13: [POWR 1514 [NEXG1 0.6900] 1] 1.5000 -0.5000
WED, OCT 22 2014 18:51
MACHINE POWER WIND PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 4: [ANGL 1497 [BAT #5 21.000] 5] 60.000 -40.00
CHNL# 3: [ANGL 1487 [SHEER 29 19.000] 2] 60.000 -40.00
CHNL# 2: [ANGL 773 [SECST 20.000] 1] 60.000 -40.00
CHNL# 1: [ANGL 345 [SUND#5GN 20.000] 5A] 60.000 -40.00
WED, OCT 22 2014 18:51
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000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SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out
CHNL# 12: [POWR 1497 [BAT #5 21.000] 5] 5.0000 0.0
CHNL# 11: [POWR 1487 [SHEER 29 19.000] 2] 5.0000 0.0
CHNL# 10: [POWR 345 [SUND#5GN 20.000] 5A] 5.0000 0.0
WED, OCT 22 2014 18:51
MACHINE POWER COAL PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
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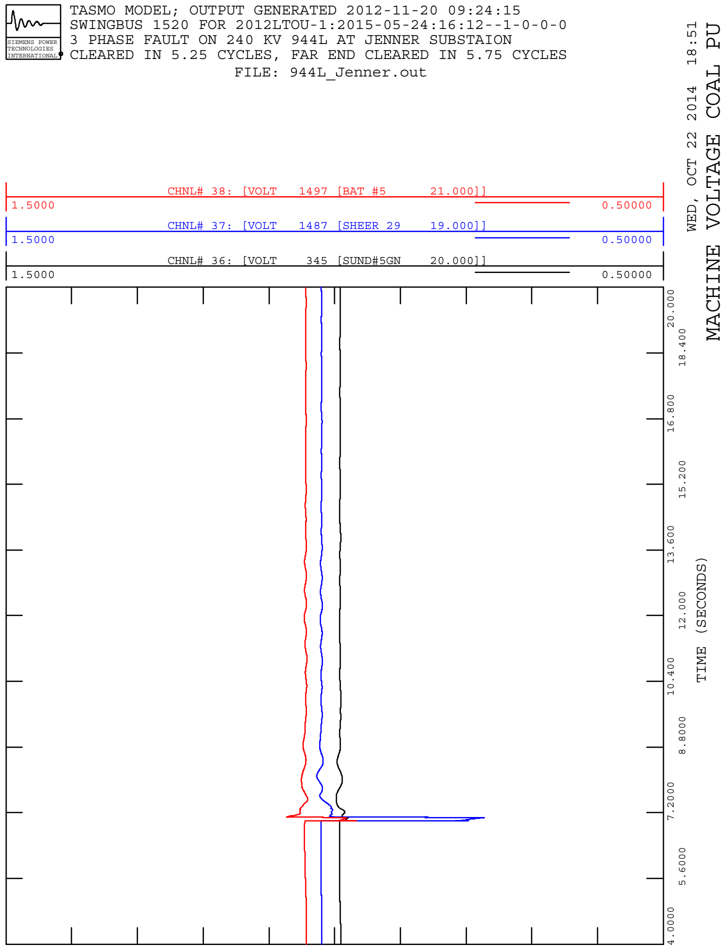
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



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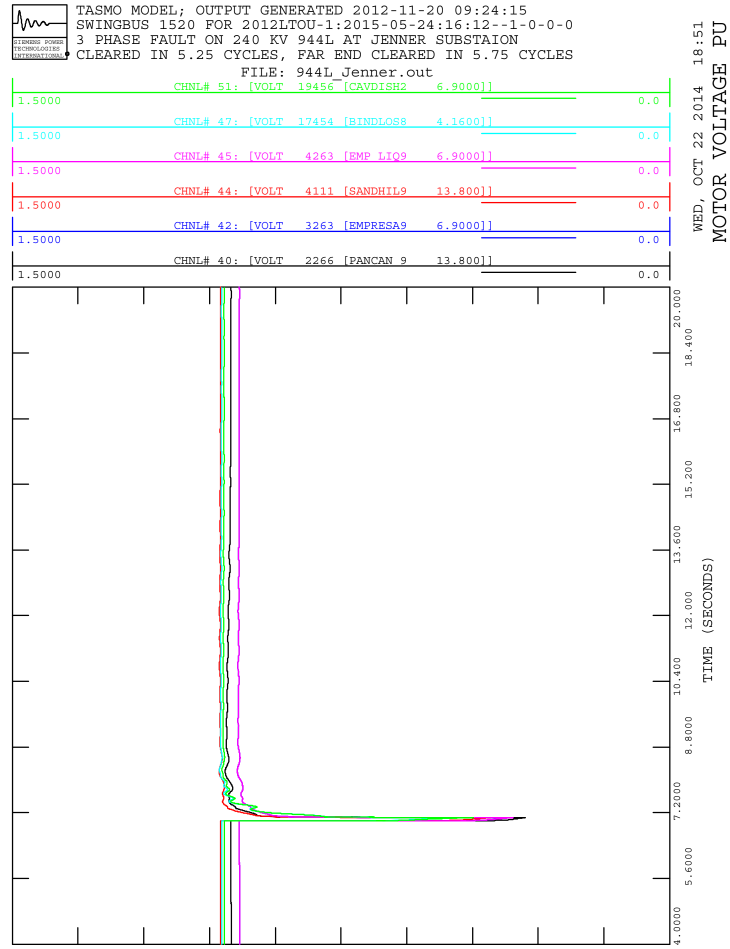
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
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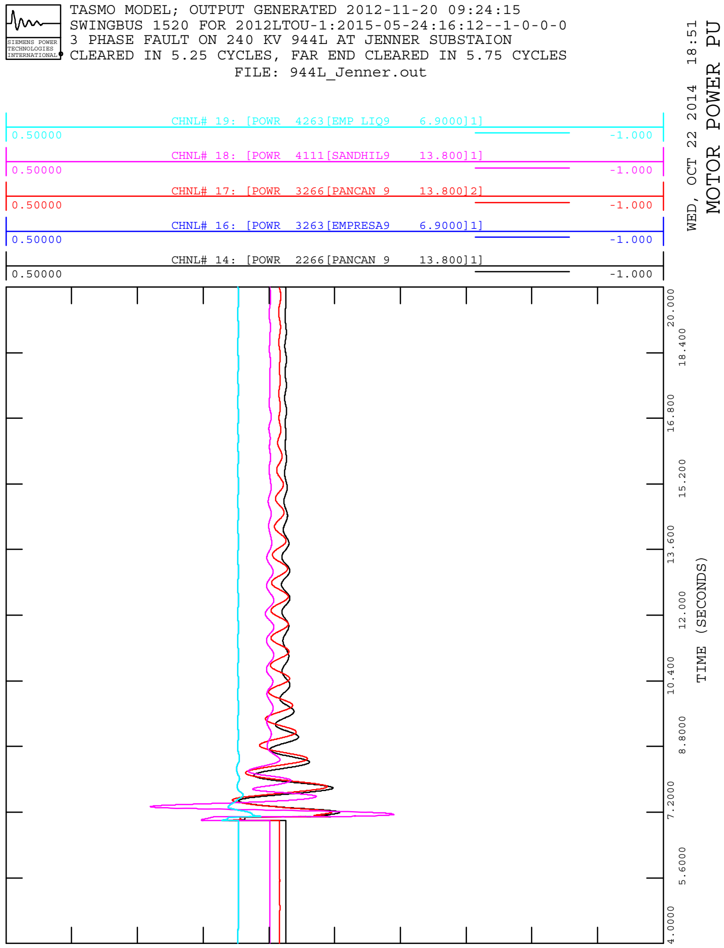
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
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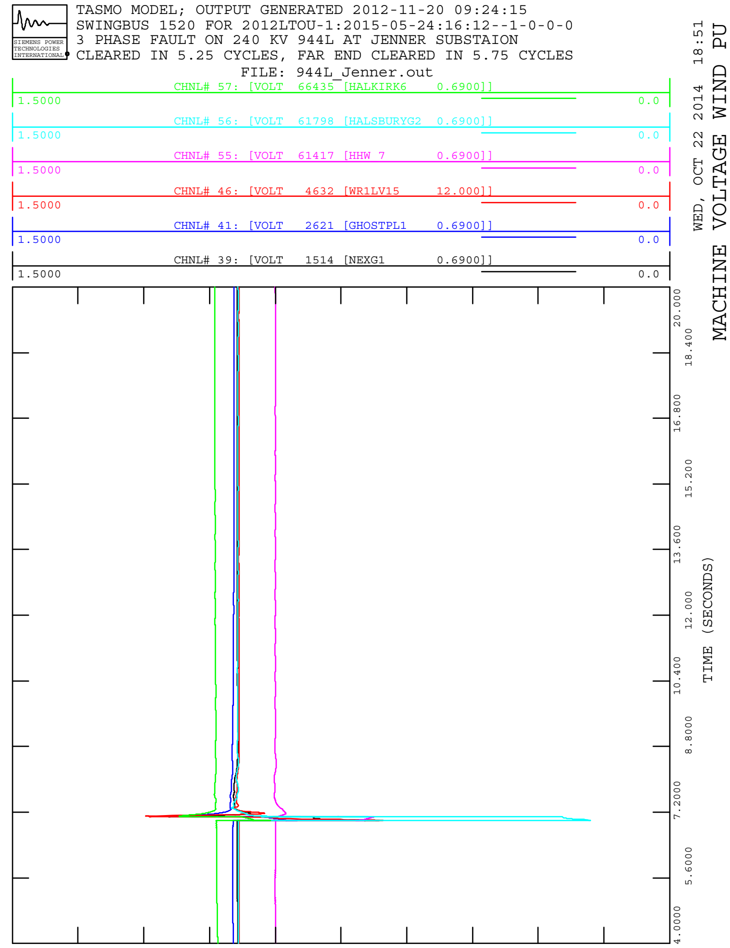
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
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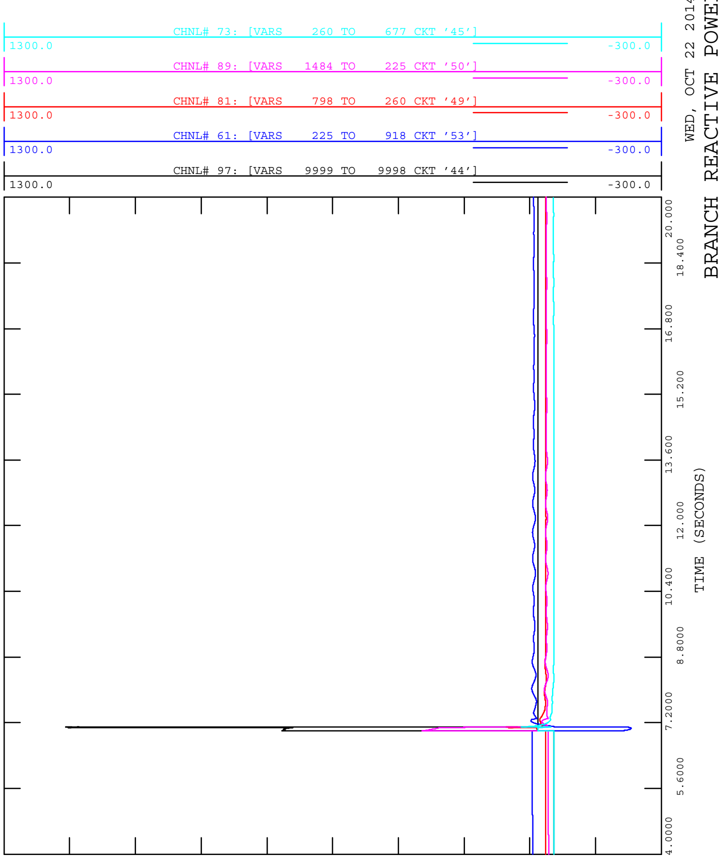
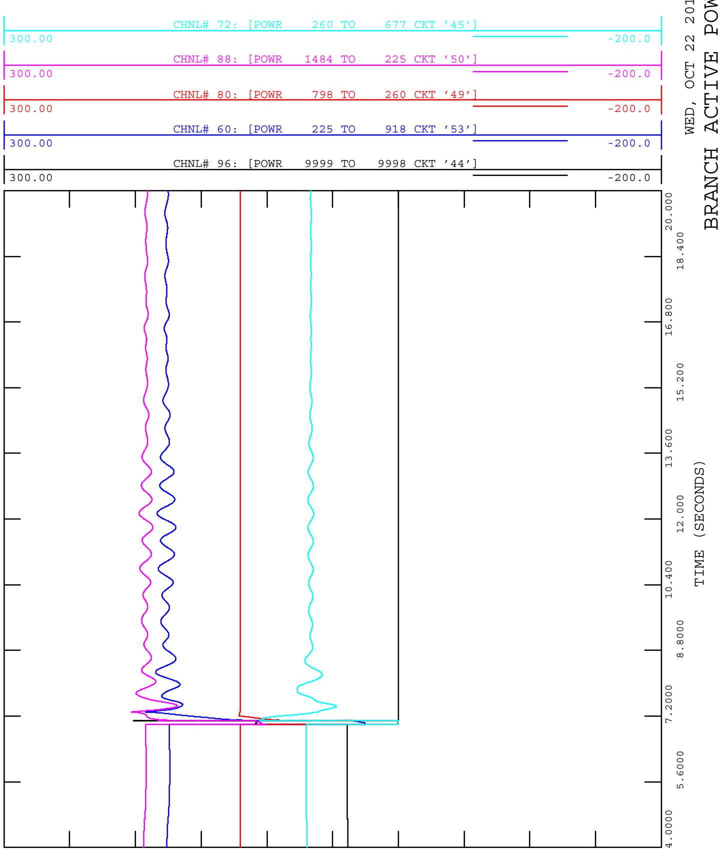
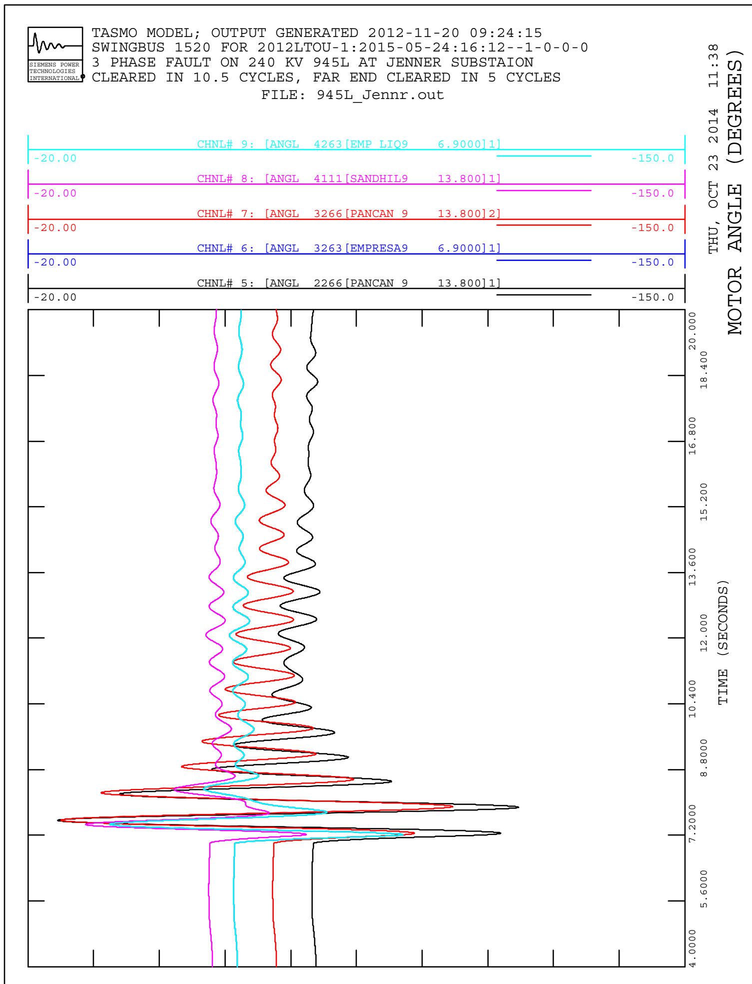
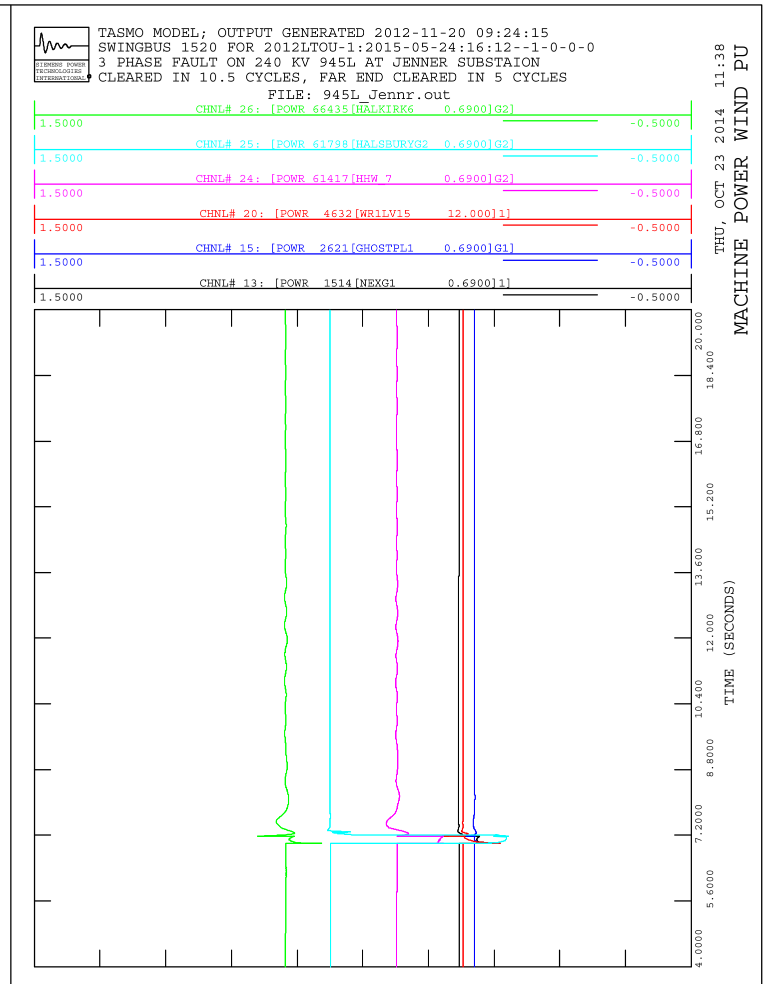
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out

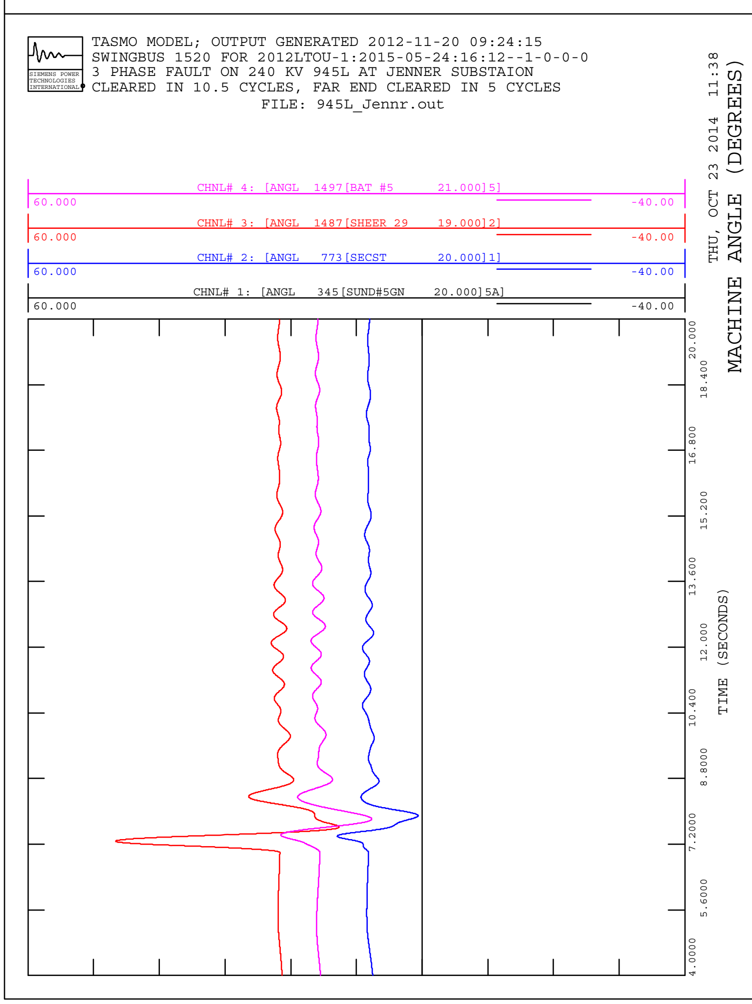


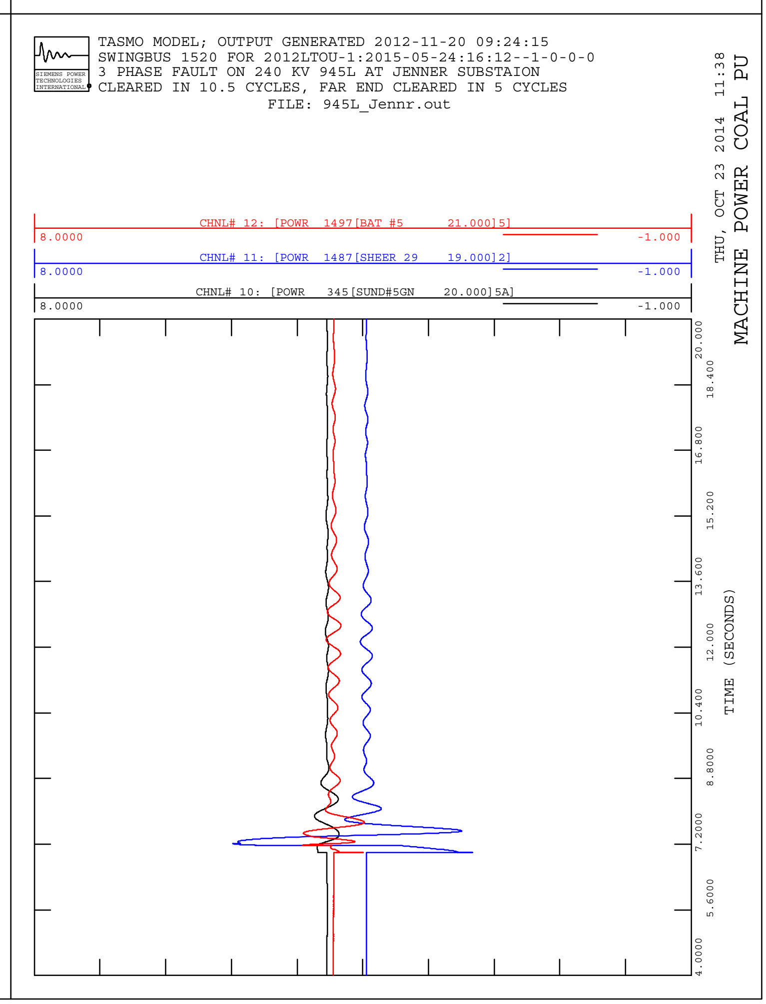
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 944L AT JENNER SUBSTAION
CLEARED IN 5.25 CYCLES, FAR END CLEARED IN 5.75 CYCLES
FILE: 944L_Jenner.out

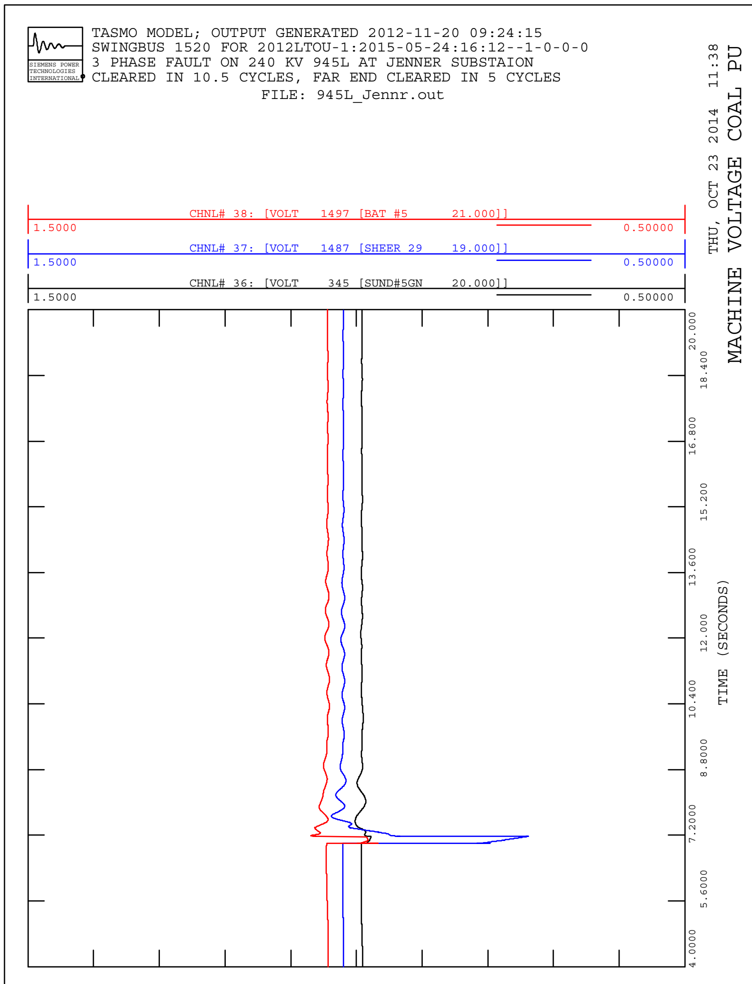


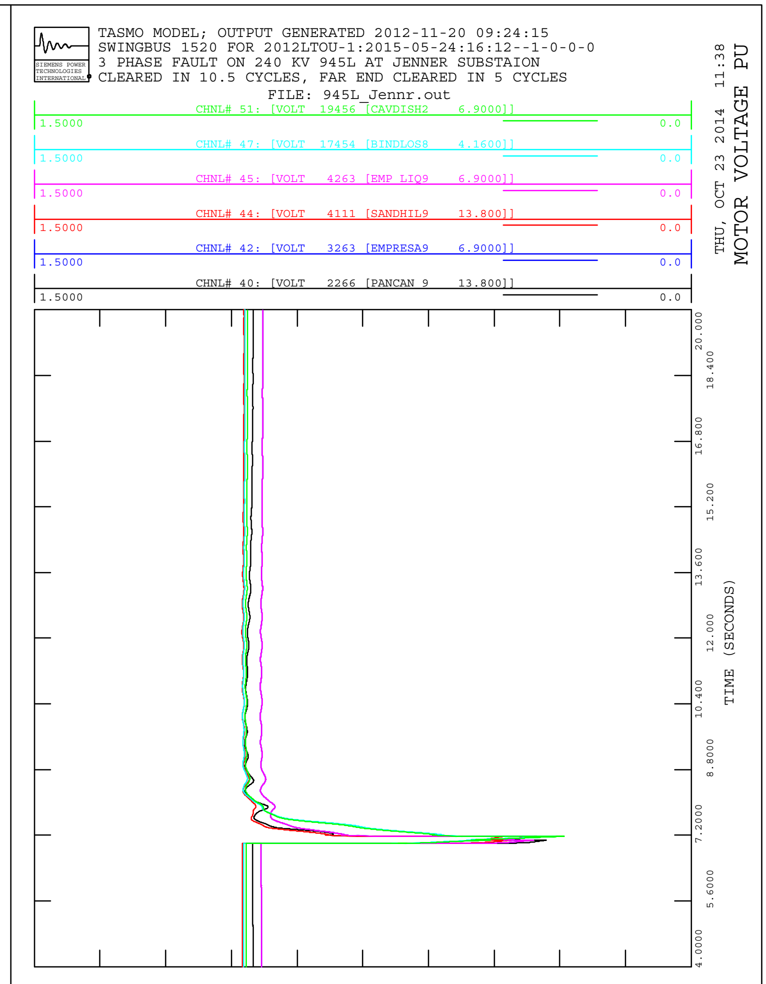

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1]
-20.00 -150.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1]
-20.00 -150.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2]
-20.00 -150.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1]
-20.00 -150.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1]
-20.00 -150.0
THU, OCT 23 2014 11:38
MOTOR ANGLE (DEGREES)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000
TIME (SECONDS)

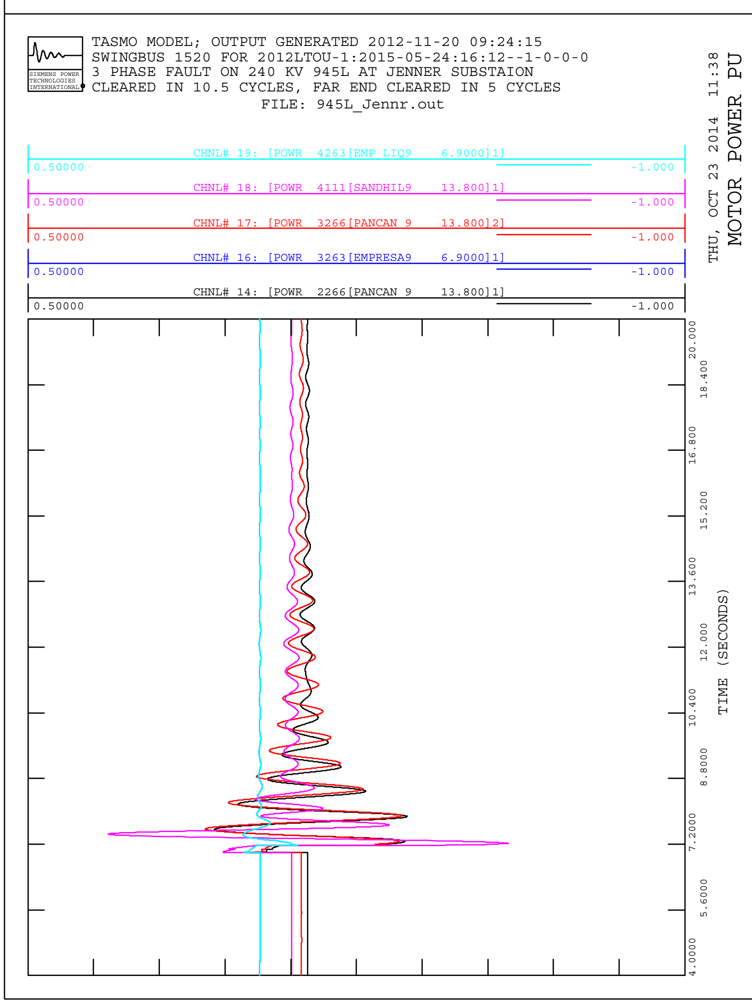

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW_7 0.6900]G2]
1.5000 -0.5000
CHNL# 20: [POWR 4632[WR1LV15 12.000]1]
1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1]
1.5000 -0.5000
THU, OCT 23 2014 11:38
MACHINE POWER WIND PU
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000
TIME (SECONDS)

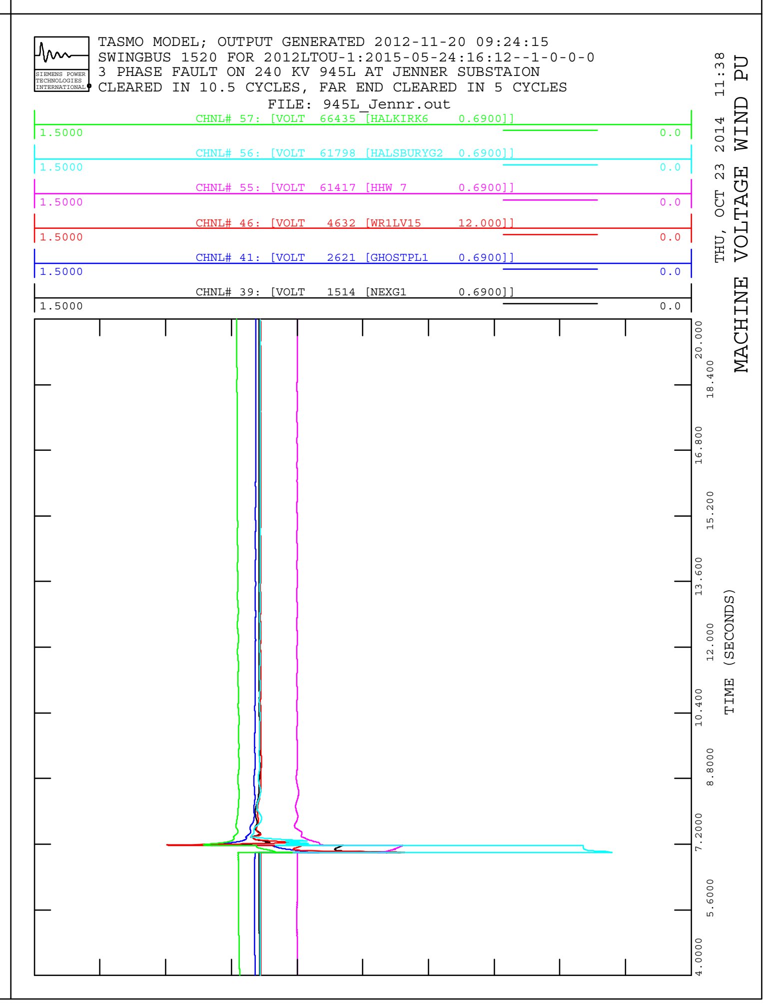

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 4: [ANGL 1497[BAT #5 21.000]5]
60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2]
60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1]
60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A]
60.000 -40.00
THU, OCT 23 2014 11:38
MACHINE ANGLE (DEGREES)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000
TIME (SECONDS)


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 12: [POWR 1497[BAT #5 21.000]5]
8.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2]
8.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A]
8.0000 -1.000
THU, OCT 23 2014 11:38
MACHINE POWER COAL PU
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000
TIME (SECONDS)


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000
0.50000
THU, OCT 23 2014 11:38
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
4.0000
5.6000
7.2000
8.8000
10.400
12.000
13.600
15.200
16.800
18.400
20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000
0.0
THU, OCT 23 2014 11:38
MOTOR VOLTAGE PU
TIME (SECONDS)
4.0000
5.6000
7.2000
8.8000
10.400
12.000
13.600
15.200
16.800
18.400
20.000

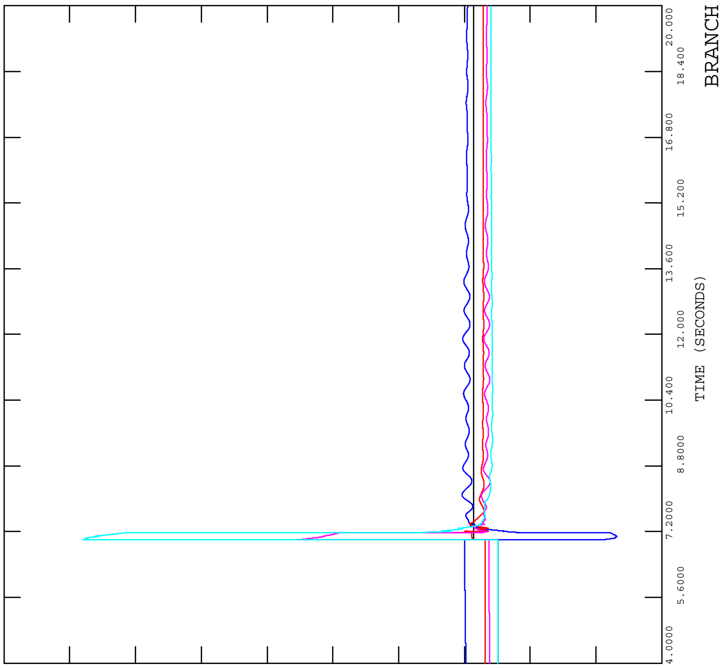

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000
-1.000
THU, OCT 23 2014 11:38
MOTOR POWER PU
TIME (SECONDS)
4.0000
5.6000
7.2000
8.8000
10.400
12.000
13.600
15.200
16.800
18.400
20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000
0.0
THU, OCT 23 2014 11:38
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
4.0000
5.6000
7.2000
8.8000
10.400
12.000
13.600
15.200
16.800
18.400
20.000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:39
BRANCH REACTIVE POWER MVR

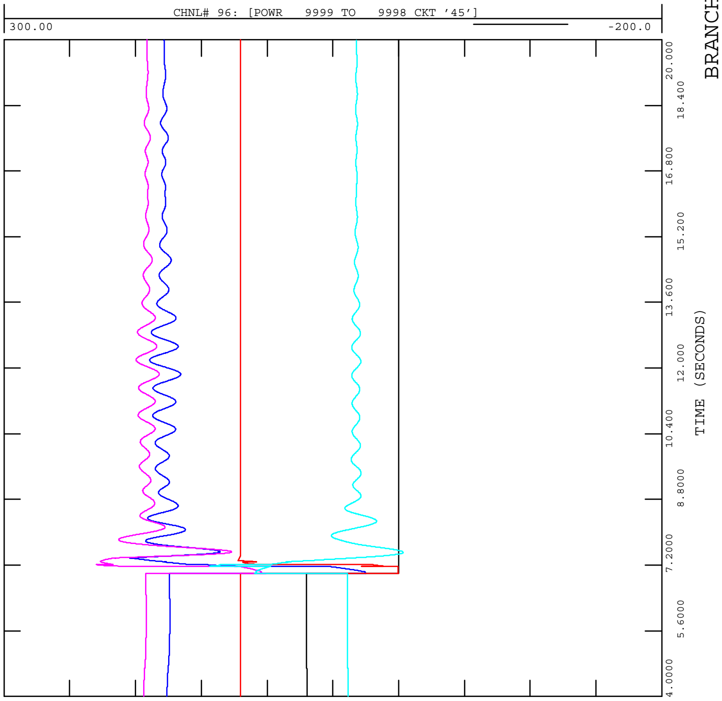
CHNL# 59: [VARS 225 TO 260 CKT '44'] 750.00 -300.0
CHNL# 89: [VARS 1484 TO 225 CKT '50'] 750.00 -300.0
CHNL# 81: [VARS 798 TO 260 CKT '49'] 750.00 -300.0
CHNL# 63: [VARS 225 TO 918 CKT '53'] 750.00 -300.0
CHNL# 97: [VARS 9999 TO 9998 CKT '45'] 750.00 -300.0



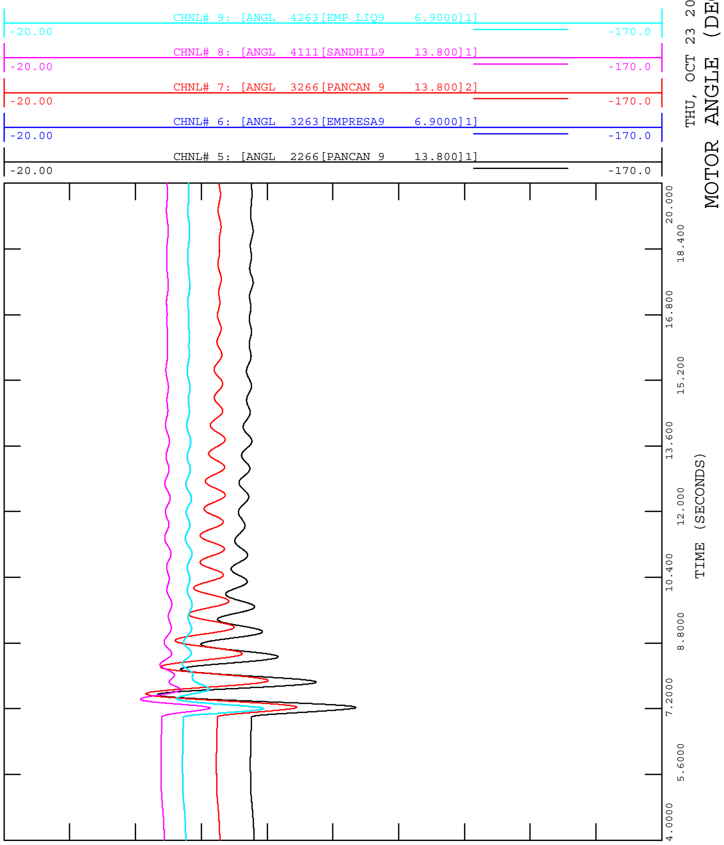
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT JENNER SUBSTAION
CLEARED IN 10.5 CYCLES, FAR END CLEARED IN 5 CYCLES
FILE: 945L_Jennr.out

THU, OCT 23 2014 11:39
BRANCH ACTIVE POWER MW

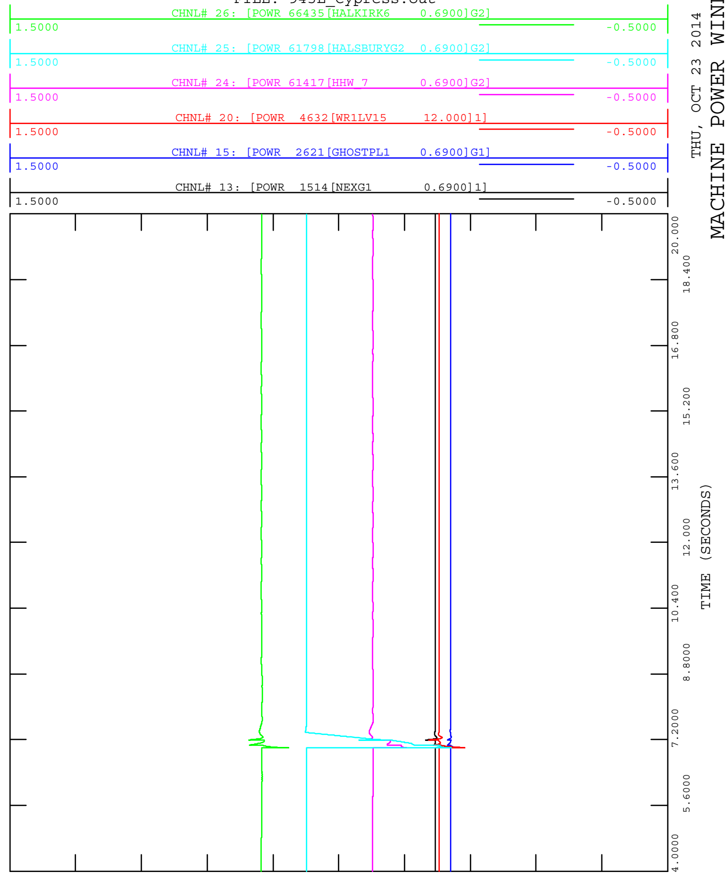
CHNL# 58: [POWR 225 TO 260 CKT '44'] 300.00 -200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50'] 300.00 -200.0
CHNL# 80: [POWR 798 TO 260 CKT '49'] 300.00 -200.0
CHNL# 62: [POWR 225 TO 918 CKT '53'] 300.00 -200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '45'] 300.00 -200.0



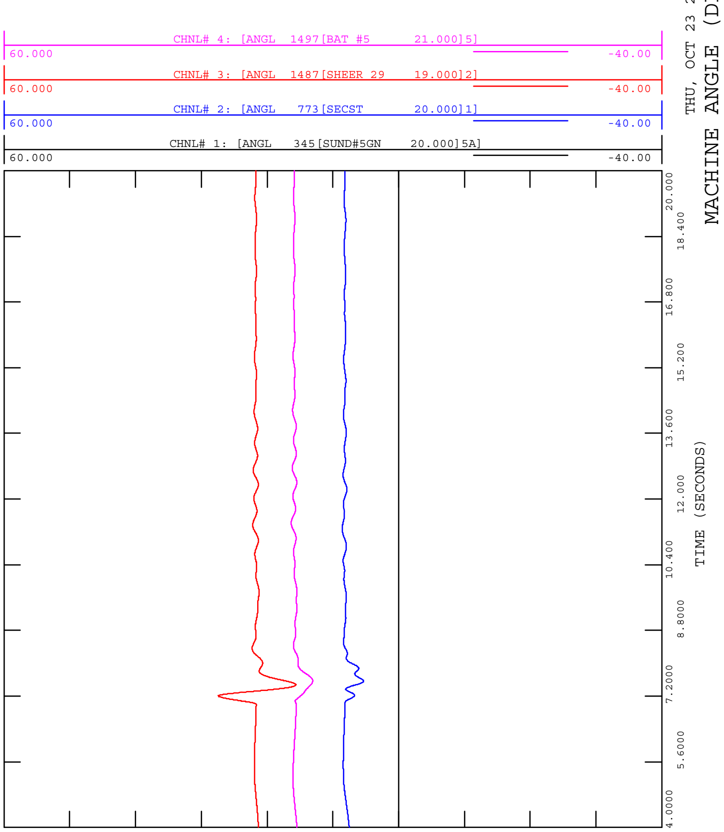
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



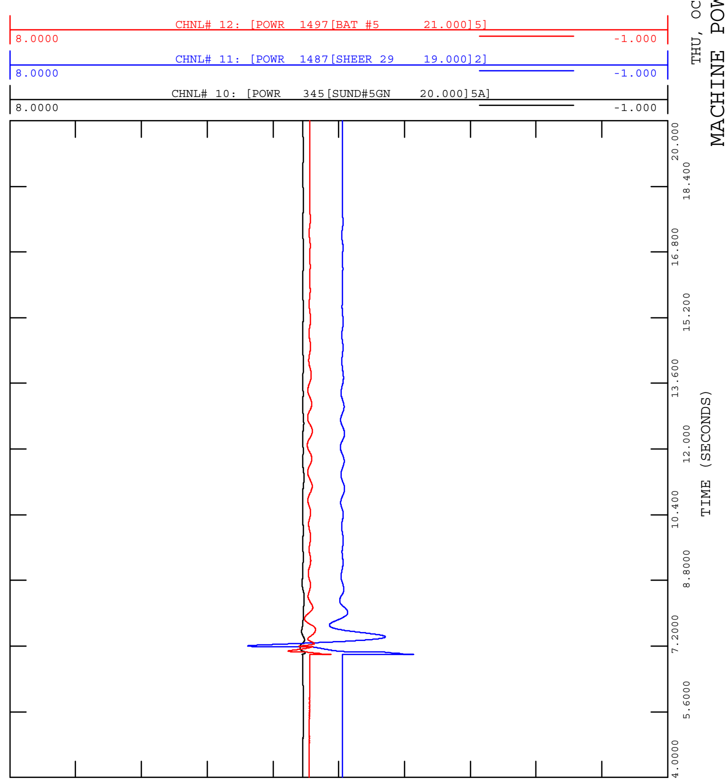
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



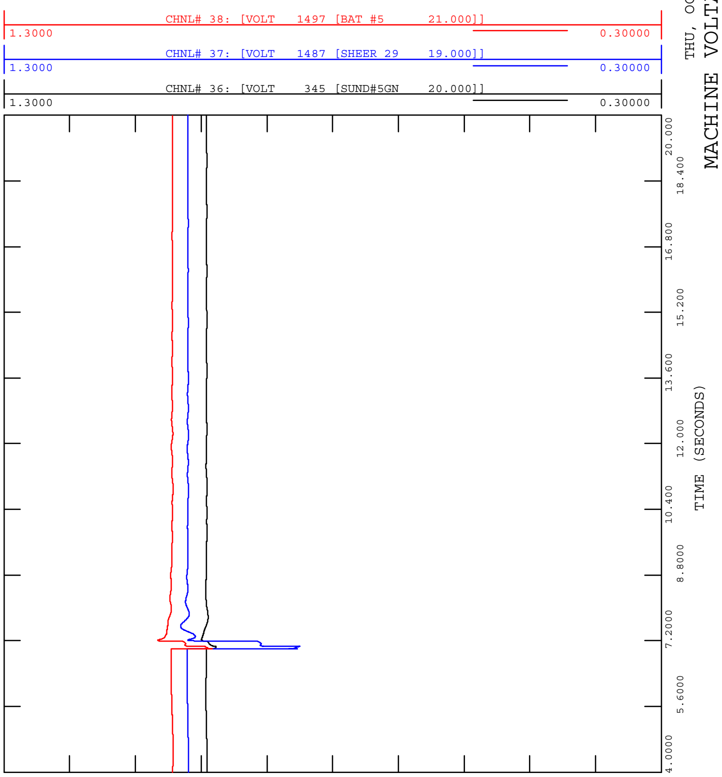
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



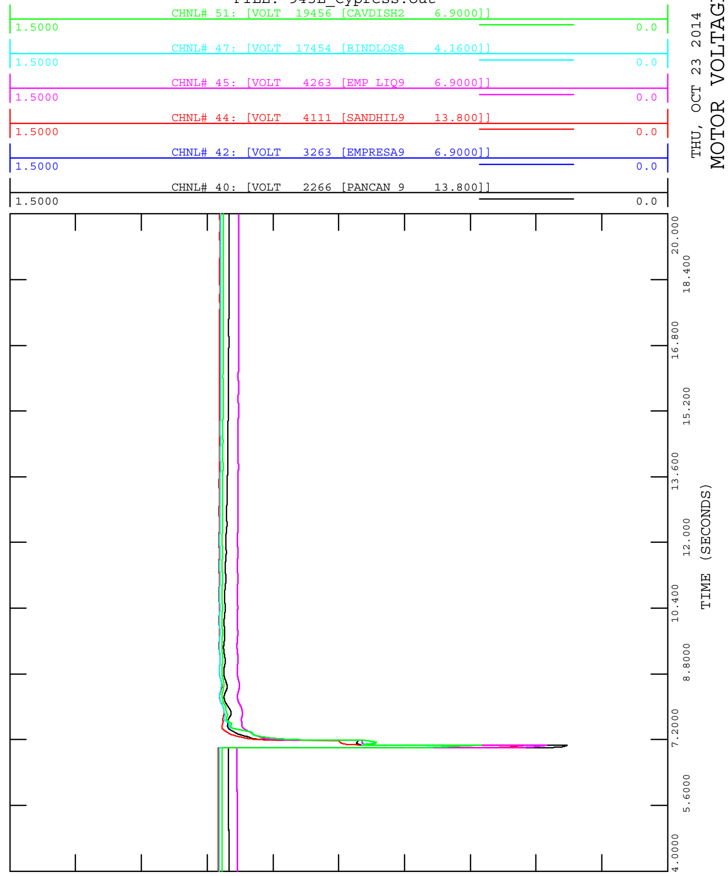
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



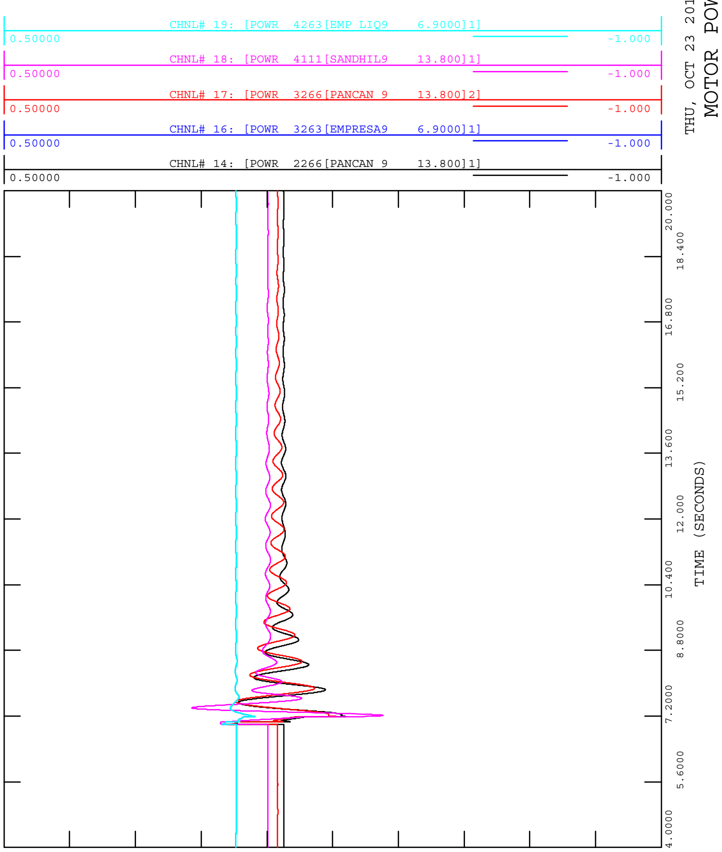
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



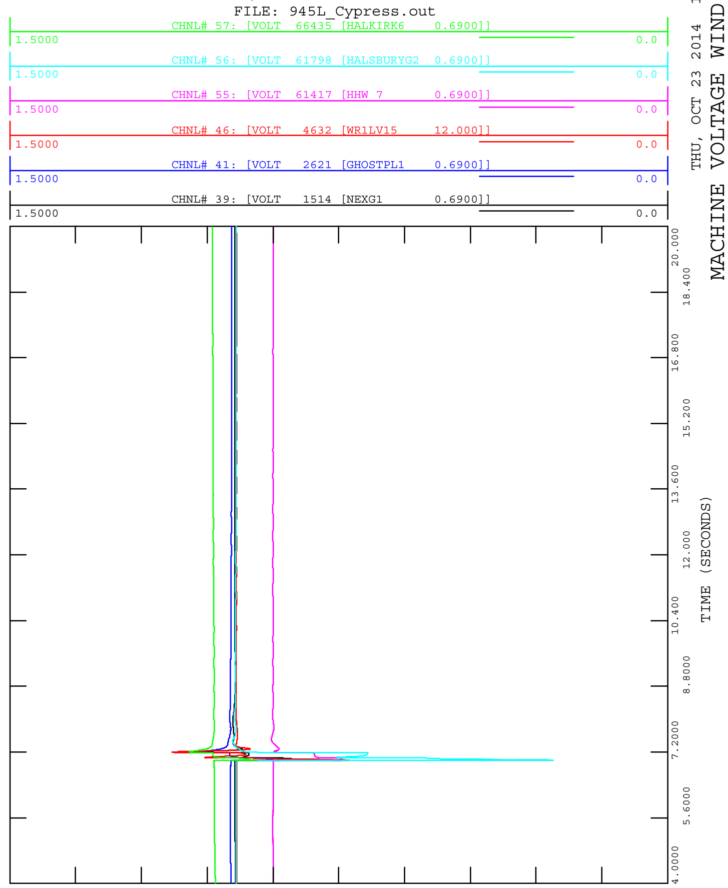
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



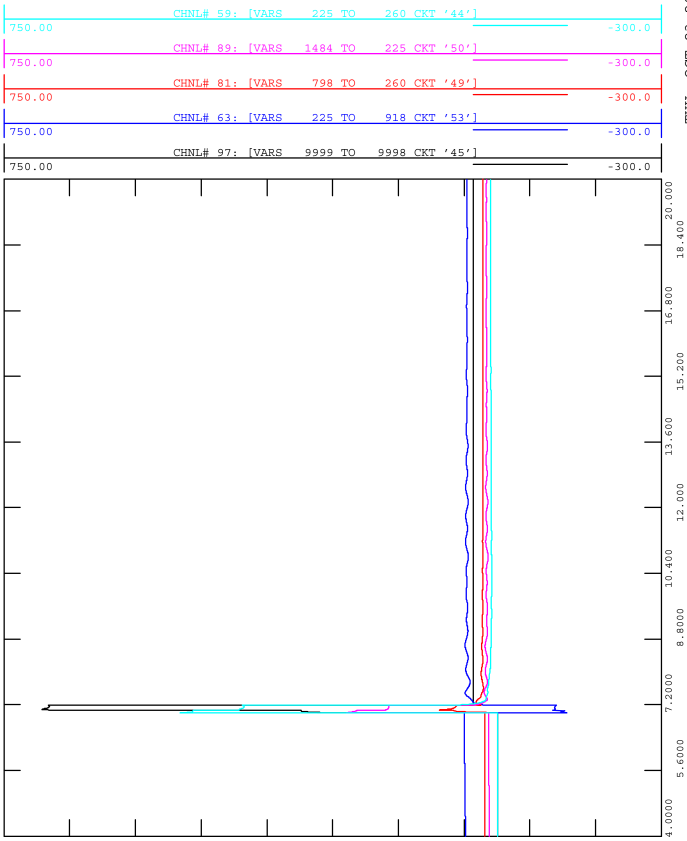
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out

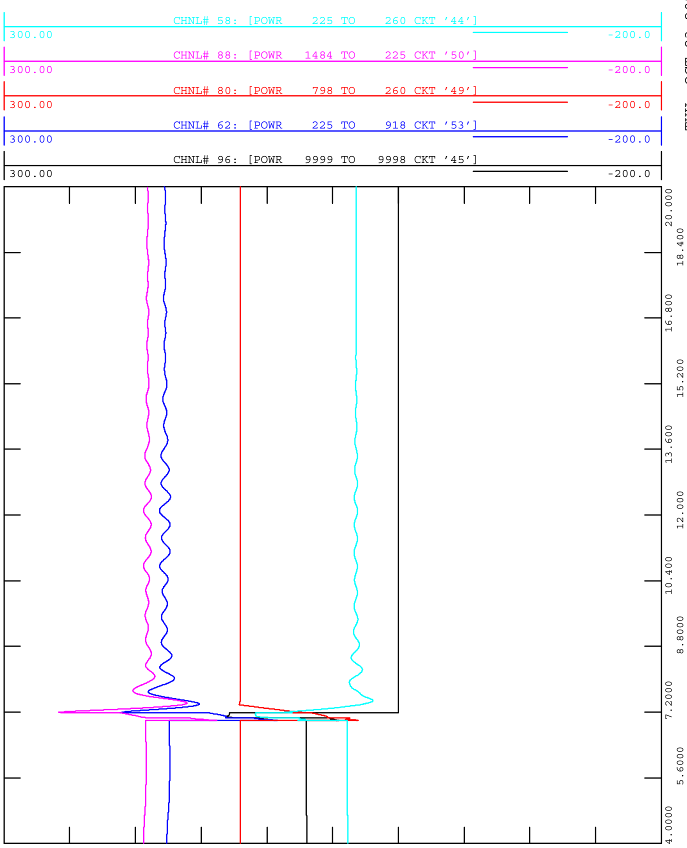


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out

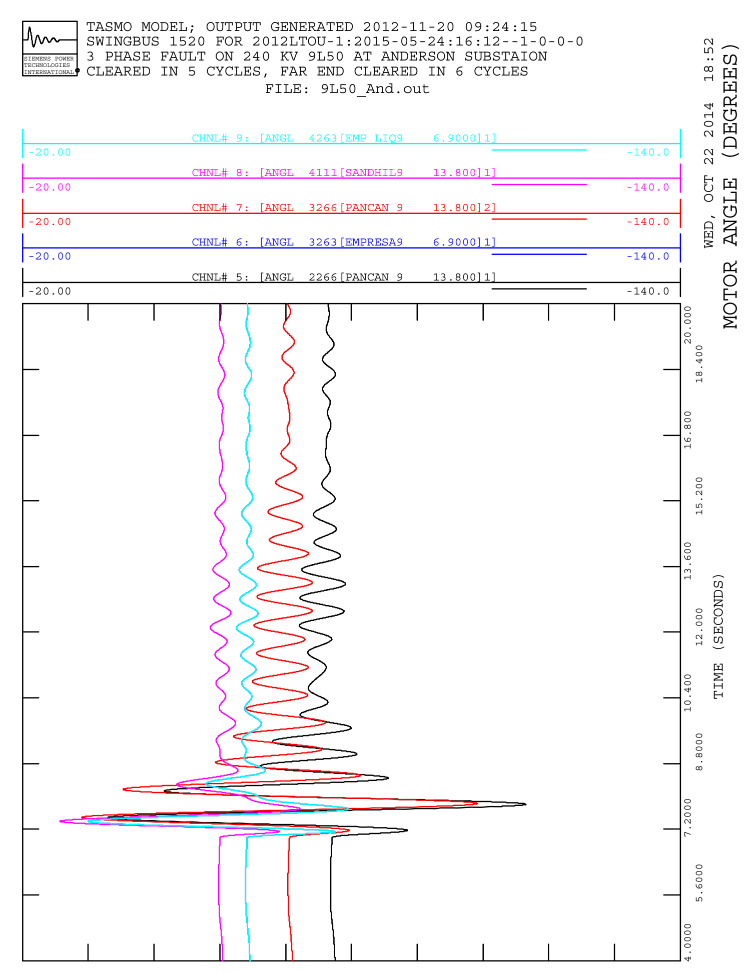


THU, OCT 23 2014 11:39
BRANCH REACTIVE POWER MVR

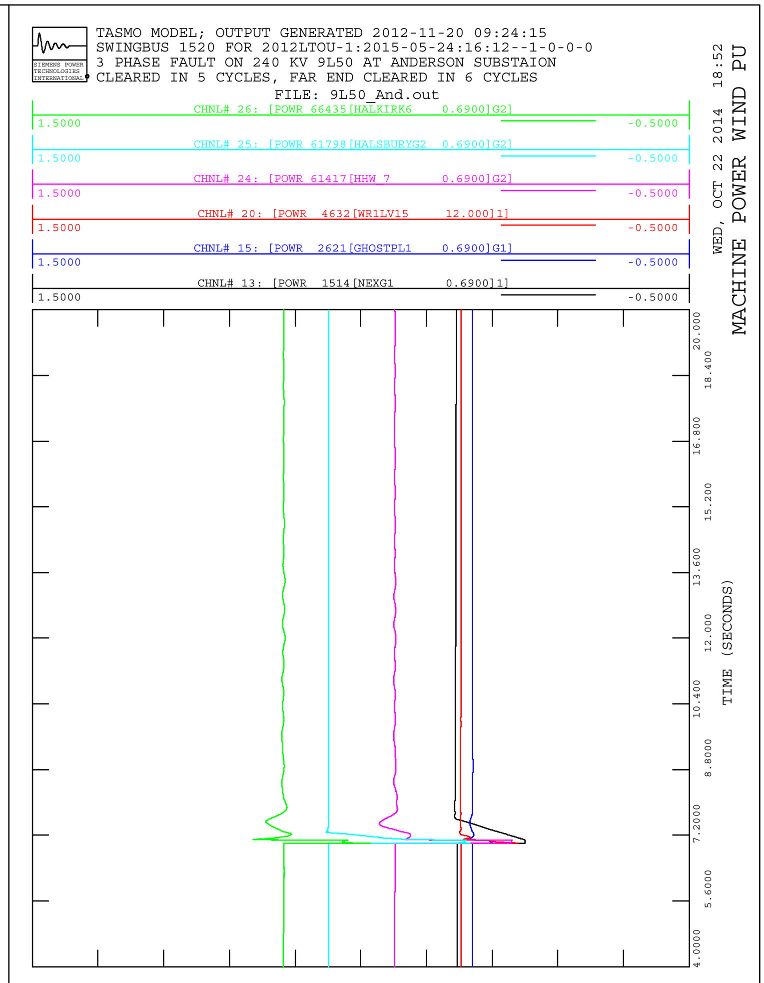
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 945L AT CYPRESS SUBSTAION
CLEARED IN 4 CYCLES, FAR END CLEARED IN 11.5 CYCLES
FILE: 945L_Cypress.out



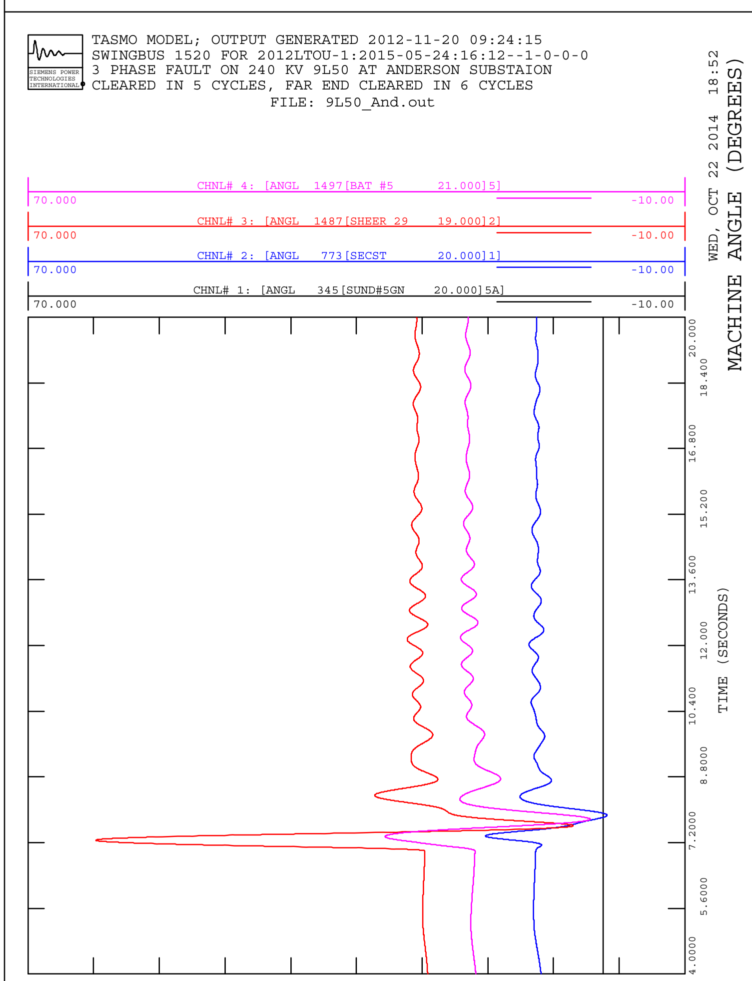
THU, OCT 23 2014 11:39
BRANCH ACTIVE POWER MW



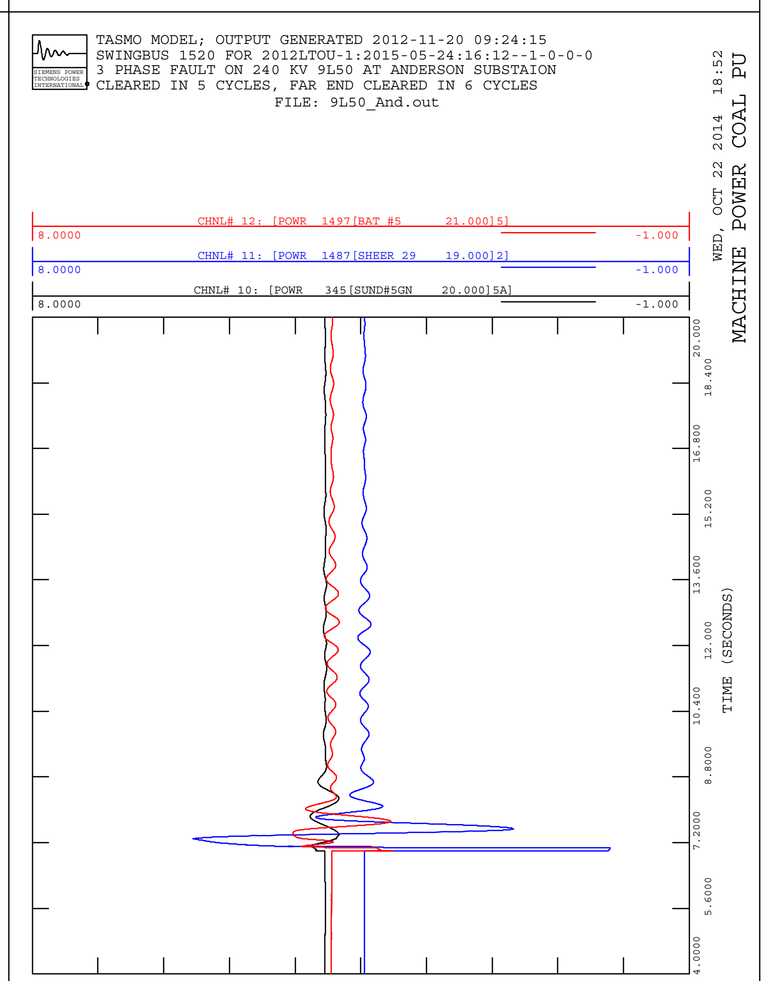
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 9: [ANGL 4263 [EMP LIQ9 6.9000] 1]
-20.00 -140.0
CHNL# 8: [ANGL 4111 [SANDHIL9 13.800] 1]
-20.00 -140.0
CHNL# 7: [ANGL 3266 [PANCAN 9 13.800] 2]
-20.00 -140.0
CHNL# 6: [ANGL 3263 [EMPRESA9 6.9000] 1]
-20.00 -140.0
CHNL# 5: [ANGL 2266 [PANCAN 9 13.800] 1]
-20.00 -140.0
WED, OCT 22 2014 18:52
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000



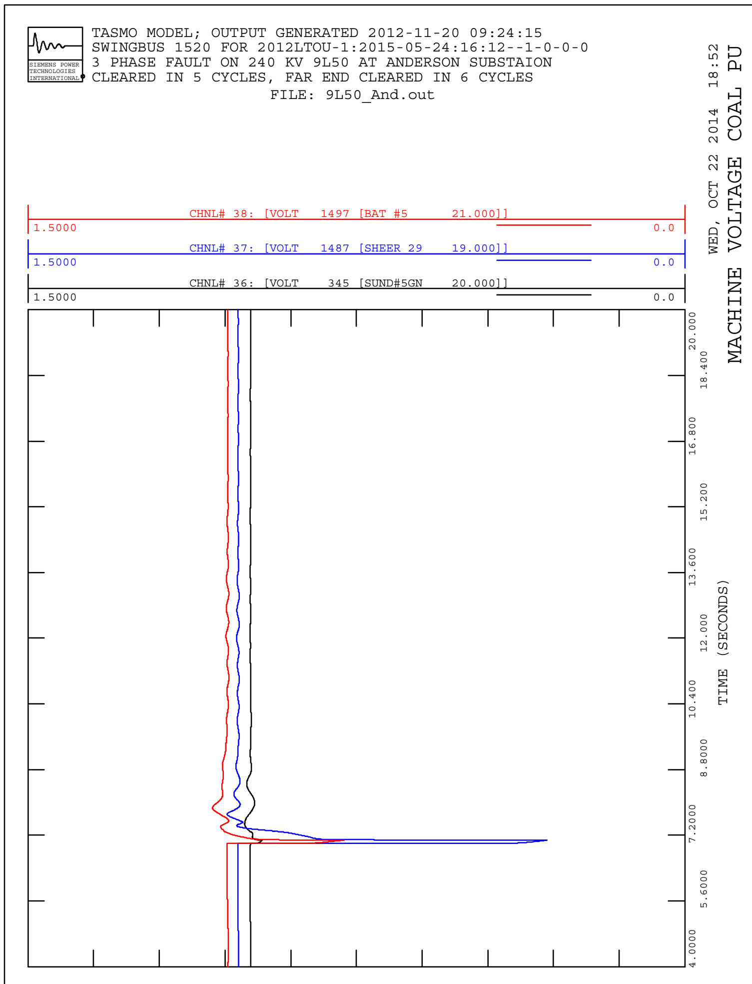
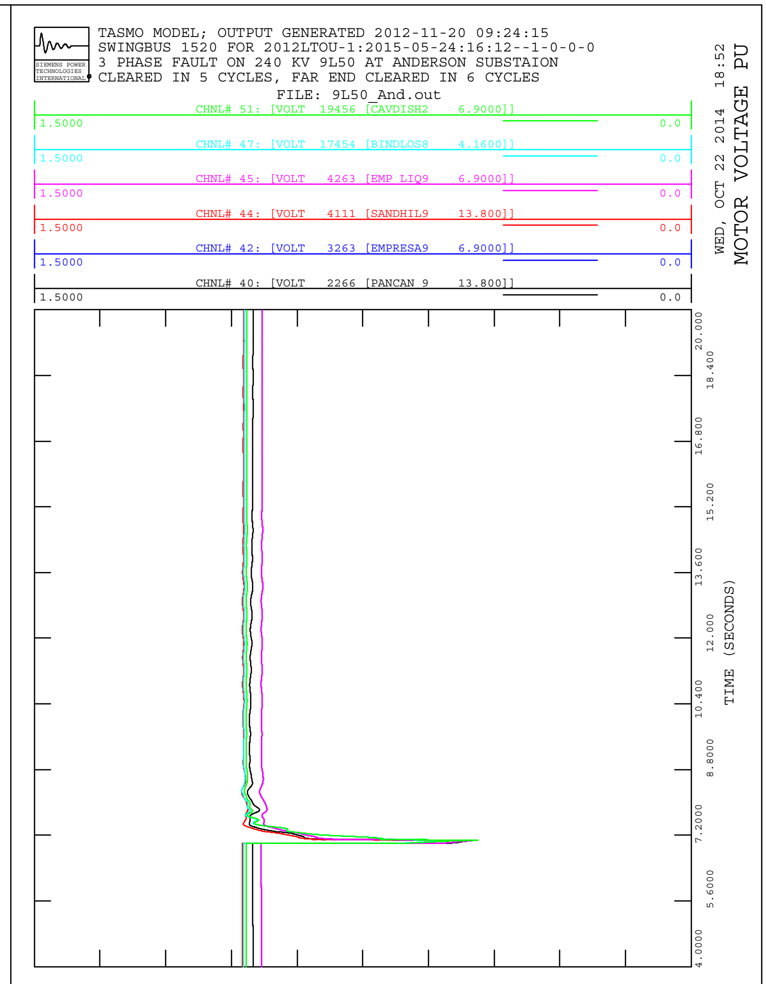
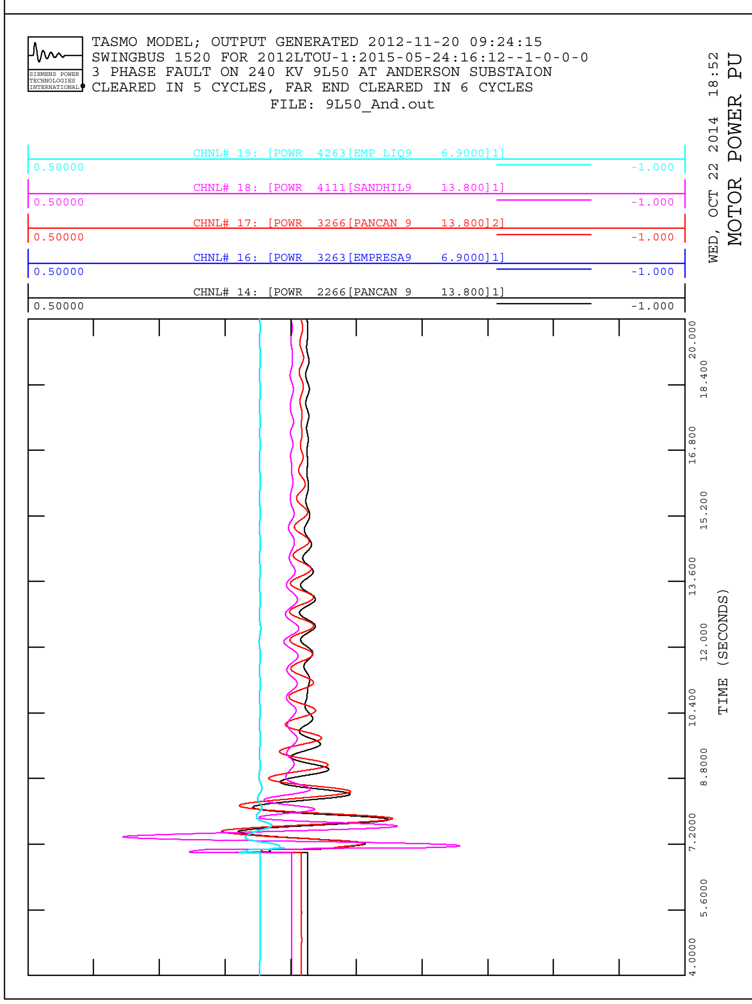
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 26: [POWR 66435 [HALKIRK6 0.6900] G2]
1.5000 -0.5000
CHNL# 25: [POWR 61798 [HALSBURYG2 0.6900] G2]
1.5000 -0.5000
CHNL# 24: [POWR 61417 [HHW_7 0.6900] G2]
1.5000 -0.5000
CHNL# 20: [POWR 4632 [WR1LV15 12.000] 1]
1.5000 -0.5000
CHNL# 15: [POWR 2621 [GHOSTPL1 0.6900] G1]
1.5000 -0.5000
CHNL# 13: [POWR 1514 [NEXG1 0.6900] 1]
1.5000 -0.5000
WED, OCT 22 2014 18:52
MACHINE POWER WIND PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 4: [ANGL 1497 [BAT #5 21.000] 5]
70.000 -10.00
CHNL# 3: [ANGL 1487 [SHEER 29 19.000] 2]
70.000 -10.00
CHNL# 2: [ANGL 773 [SECST 20.000] 1]
70.000 -10.00
CHNL# 1: [ANGL 345 [SUND#5GN 20.000] 5A]
70.000 -10.00
WED, OCT 22 2014 18:52
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 12: [POWR 1497 [BAT #5 21.000] 5]
8.0000 -1.000
CHNL# 11: [POWR 1487 [SHEER 29 19.000] 2]
8.0000 -1.000
CHNL# 10: [POWR 345 [SUND#5GN 20.000] 5A]
8.0000 -1.000
WED, OCT 22 2014 18:52
MACHINE POWER COAL PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 38: [VOLT 1497 [BAT #5 21.000]]
1.5000 0.0
CHNL# 37: [VOLT 1487 [SHEER 29 19.000]]
1.5000 0.0
CHNL# 36: [VOLT 345 [SUND#5GN 20.000]]
1.5000 0.0
WED, OCT 22 2014 18:52
MACHINE VOLTAGE COAL PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 51: [VOLT 19456 [CAVDISH2 6.9000]]
1.5000 0.0
CHNL# 47: [VOLT 17454 [BINDLOS8 4.1600]]
1.5000 0.0
CHNL# 45: [VOLT 4263 [EMP LIQ9 6.9000]]
1.5000 0.0
CHNL# 44: [VOLT 4111 [SANDHIL9 13.800]]
1.5000 0.0
CHNL# 42: [VOLT 3263 [EMPRESA9 6.9000]]
1.5000 0.0
CHNL# 40: [VOLT 2266 [PANCAN 9 13.800]]
1.5000 0.0
WED, OCT 22 2014 18:52
MOTOR VOLTAGE PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 19: [POWR 4263[EMP LIQ9 6.9000]1]
0.50000 -1.000
CHNL# 18: [POWR 4111[SANDHIL9 13.800]1]
0.50000 -1.000
CHNL# 17: [POWR 3266[PANCAN 9 13.800]2]
0.50000 -1.000
CHNL# 16: [POWR 3263[EMPRESA9 6.9000]1]
0.50000 -1.000
CHNL# 14: [POWR 2266[PANCAN 9 13.800]1]
0.50000 -1.000
WED, OCT 22 2014 18:52
MOTOR POWER PU
TIME (SECONDS)
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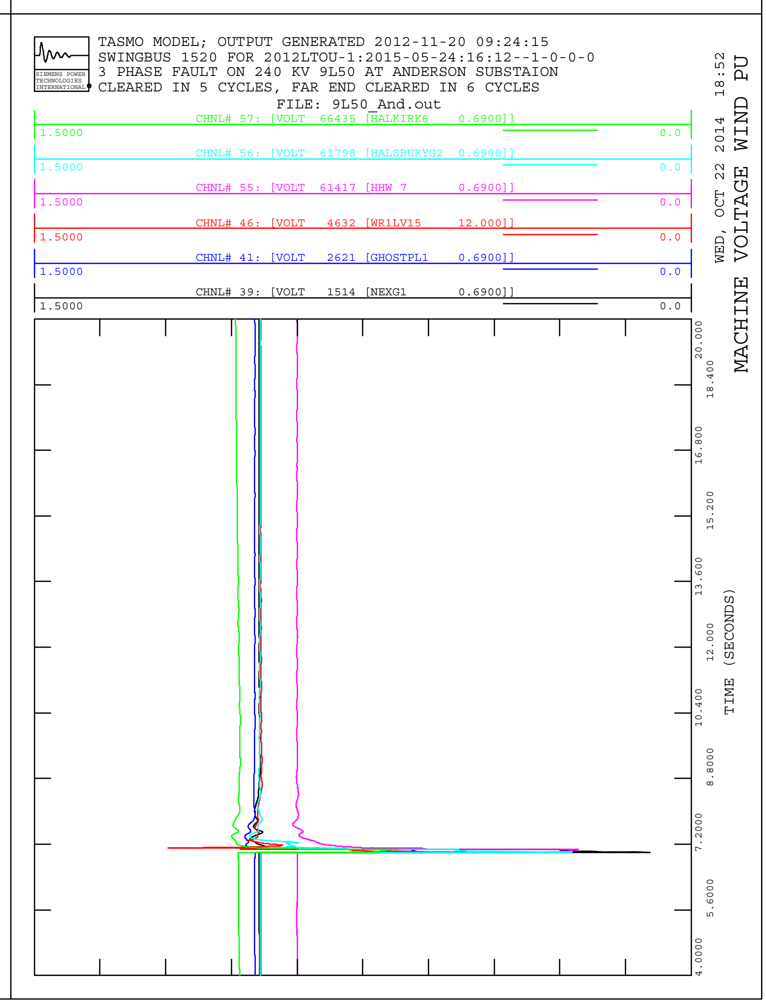
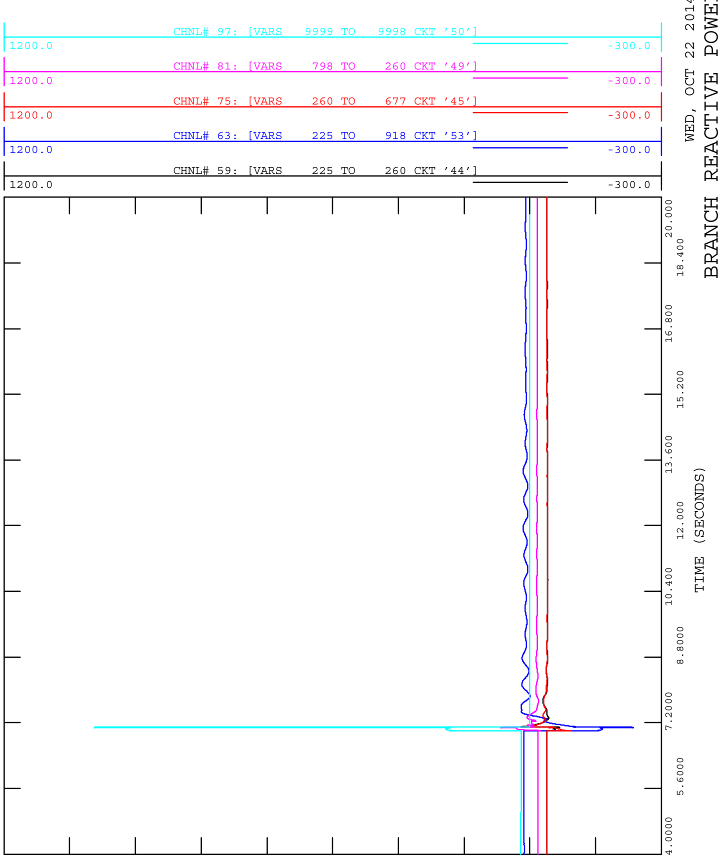
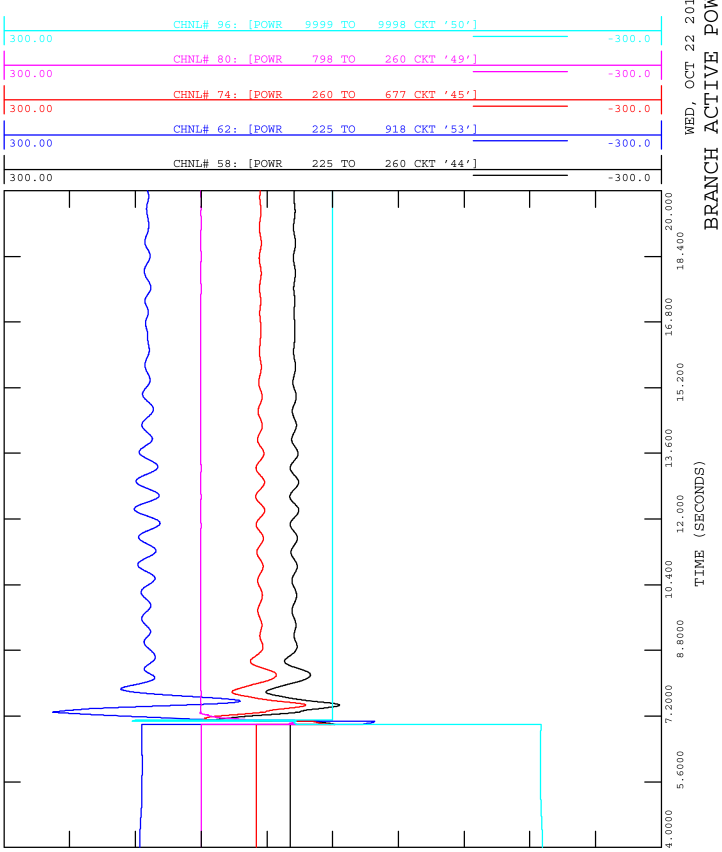

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out
CHNL# 57: [VOLT 66435 [HALKIRK6 0.6900]]
1.5000 0.0
CHNL# 56: [VOLT 61798 [HALSBURYG2 0.6900]]
1.5000 0.0
CHNL# 55: [VOLT 61417 [HHW 7 0.6900]]
1.5000 0.0
CHNL# 46: [VOLT 4632 [WR1LV15 12.000]]
1.5000 0.0
CHNL# 41: [VOLT 2621 [GHOSTPL1 0.6900]]
1.5000 0.0
CHNL# 39: [VOLT 1514 [NEXG1 0.6900]]
1.5000 0.0
WED, OCT 22 2014 18:52
MACHINE VOLTAGE WIND PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

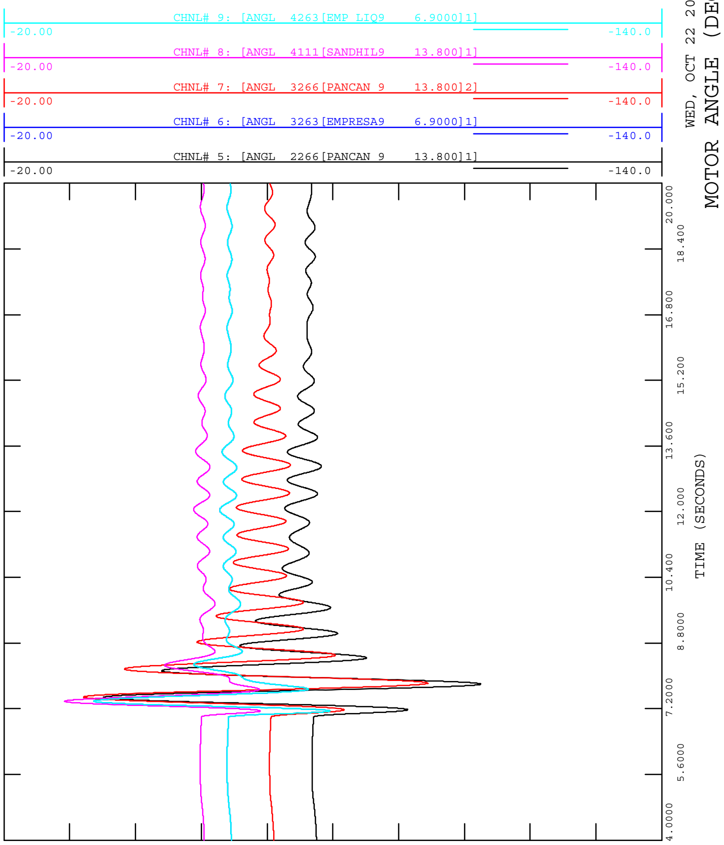
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



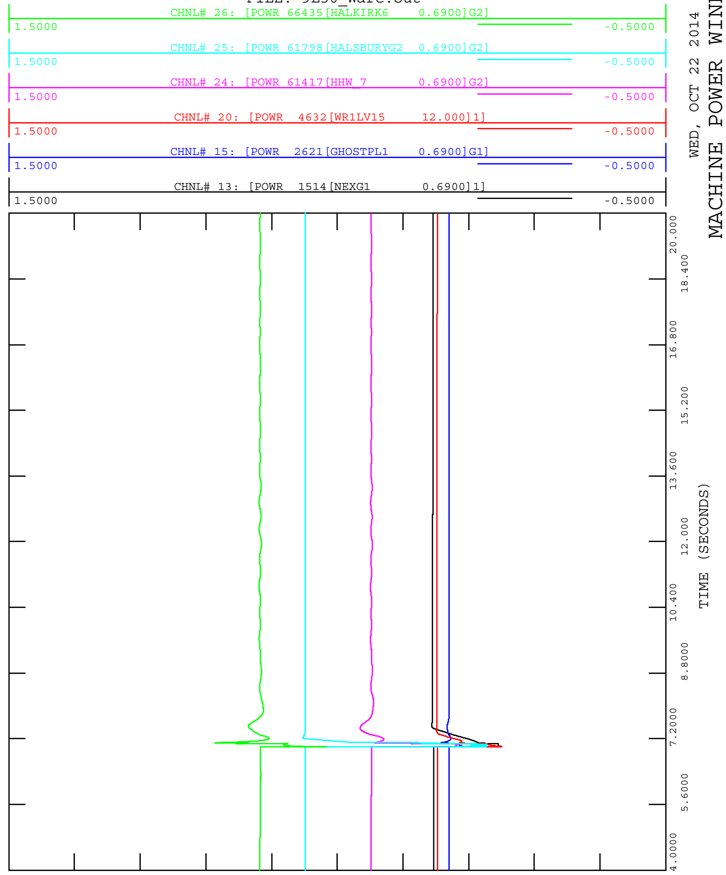
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT ANDERSON SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_And.out



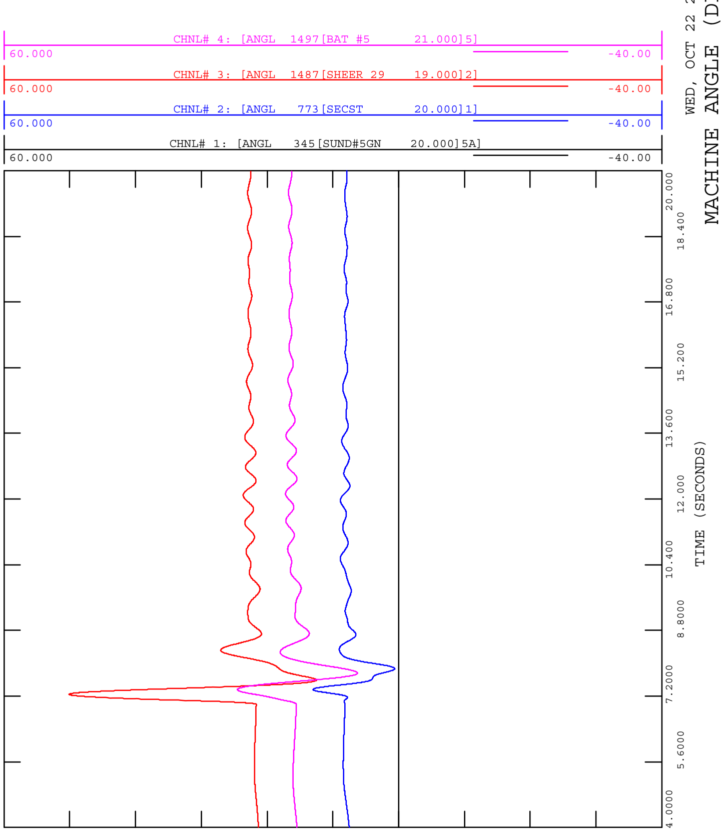
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



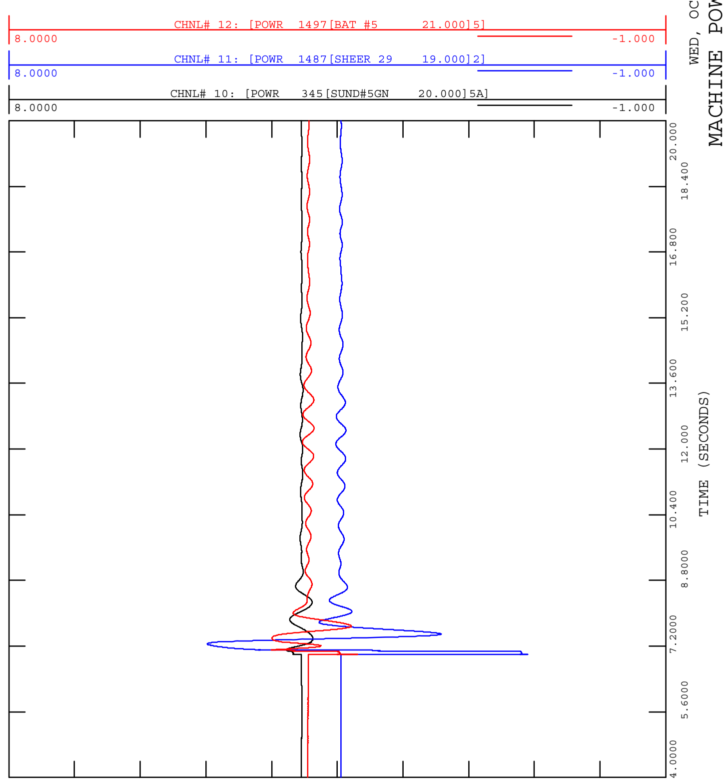
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



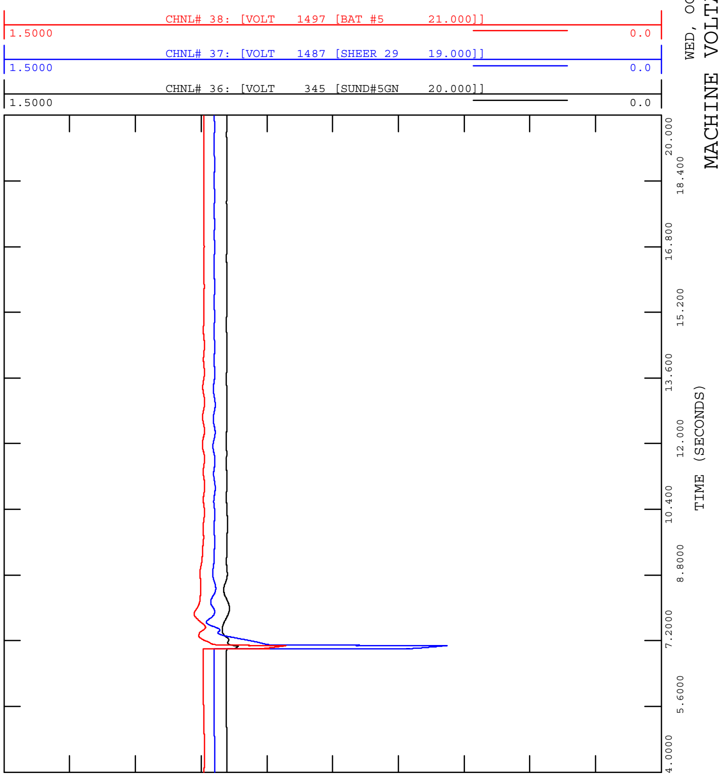
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



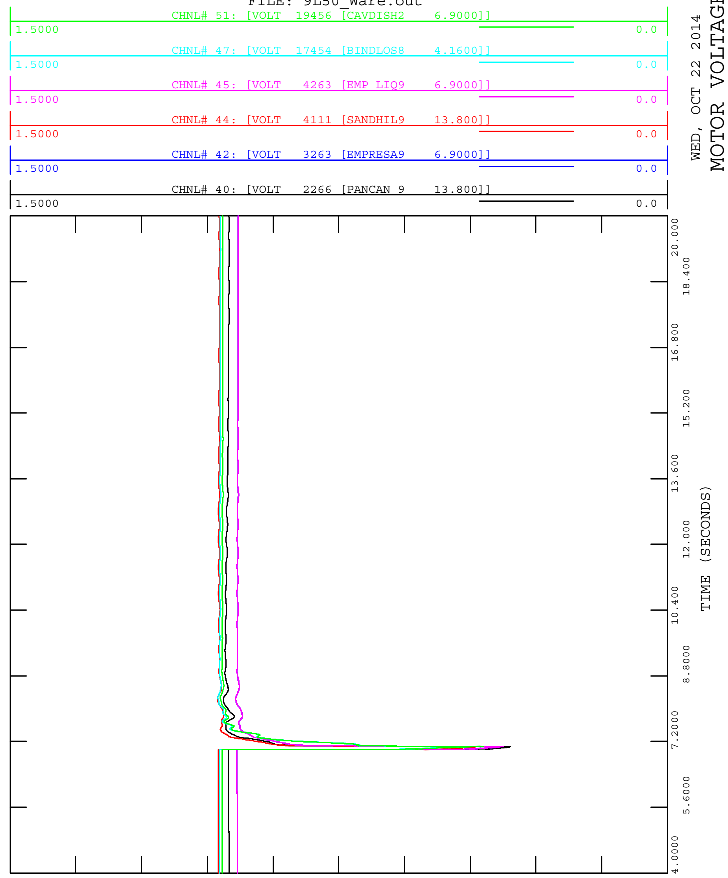
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



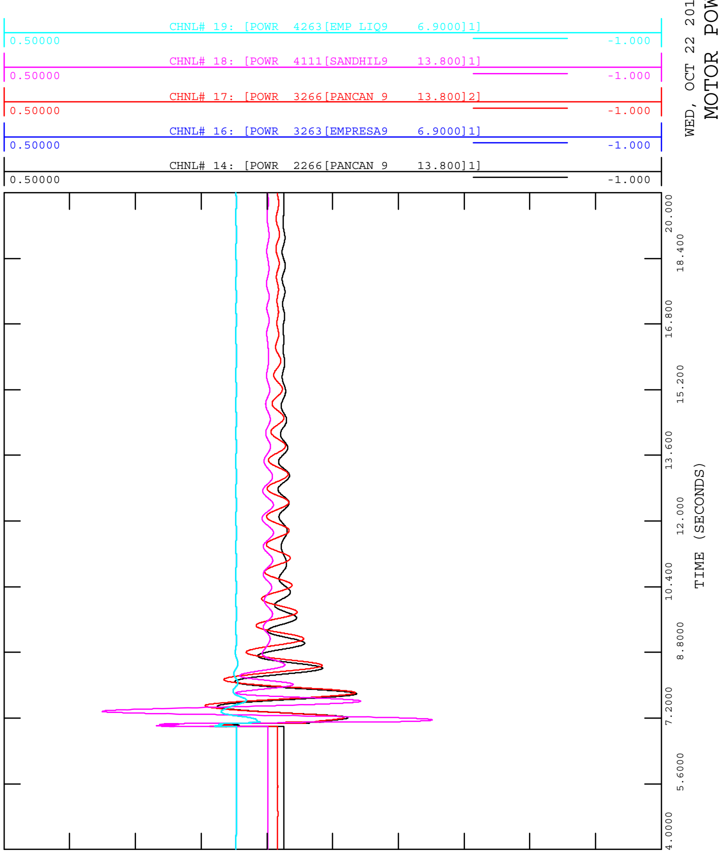
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



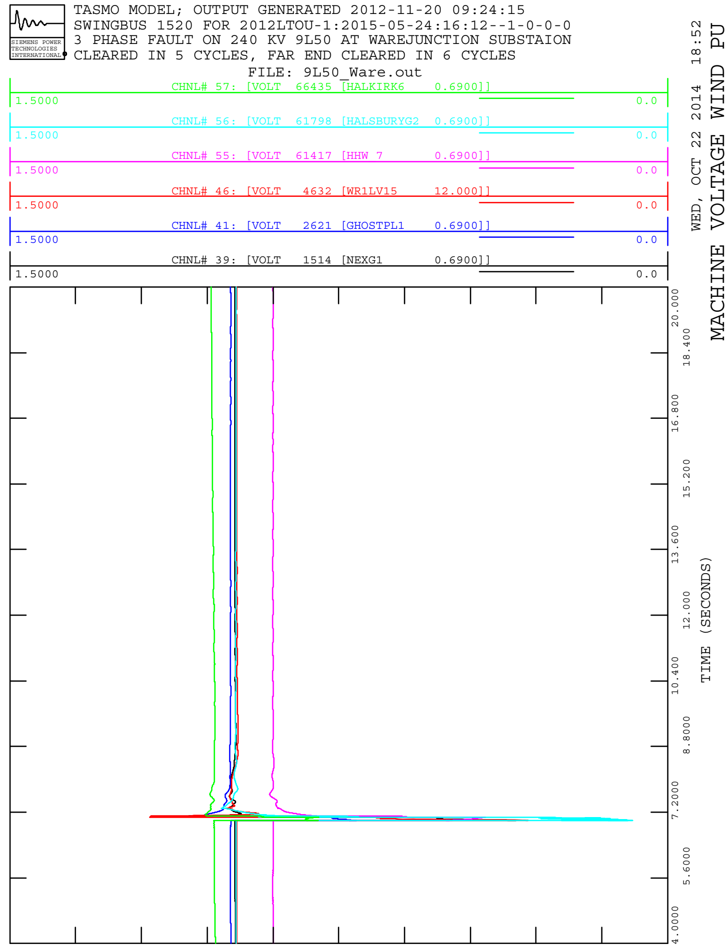
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



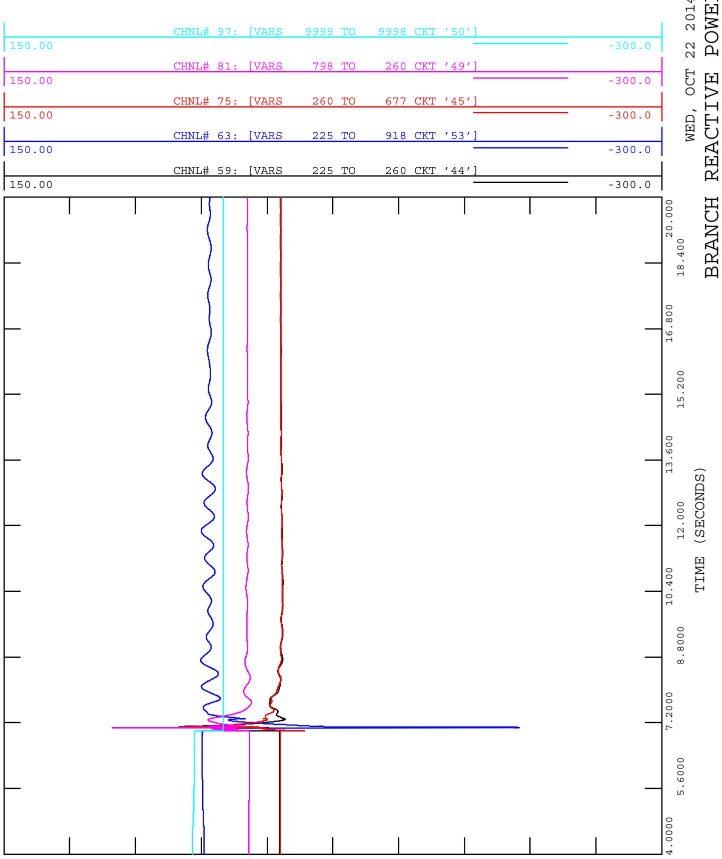
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



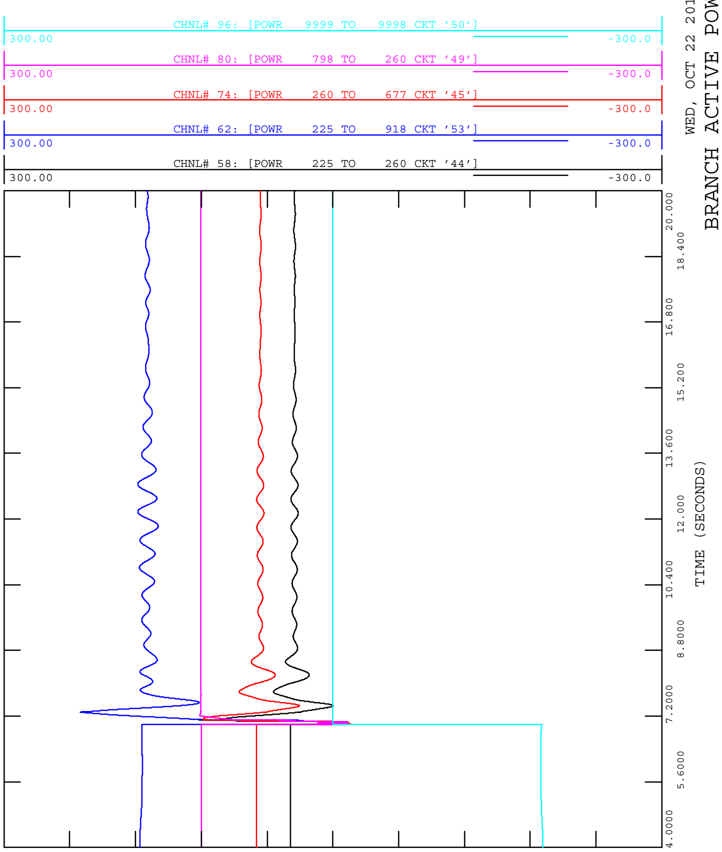
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

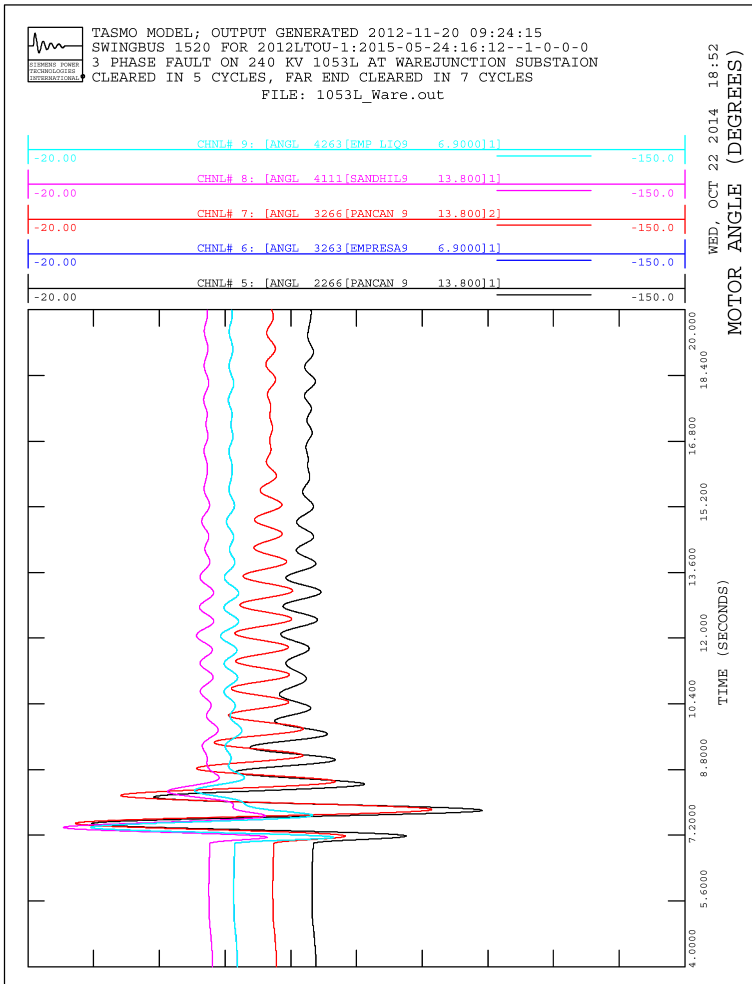


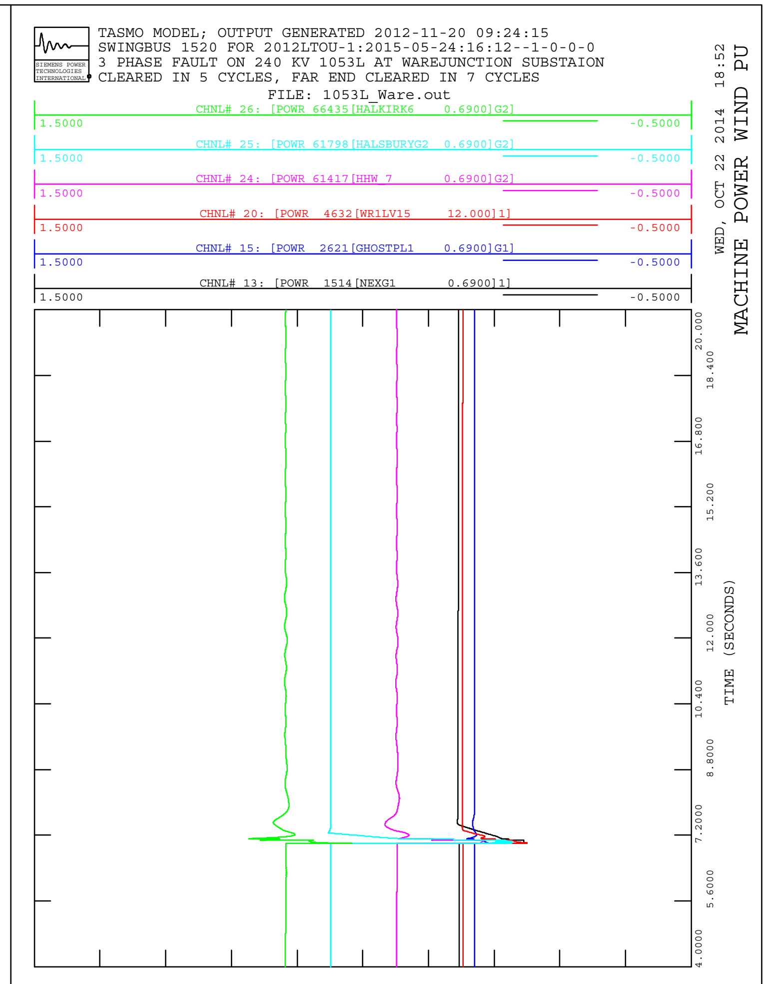
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out

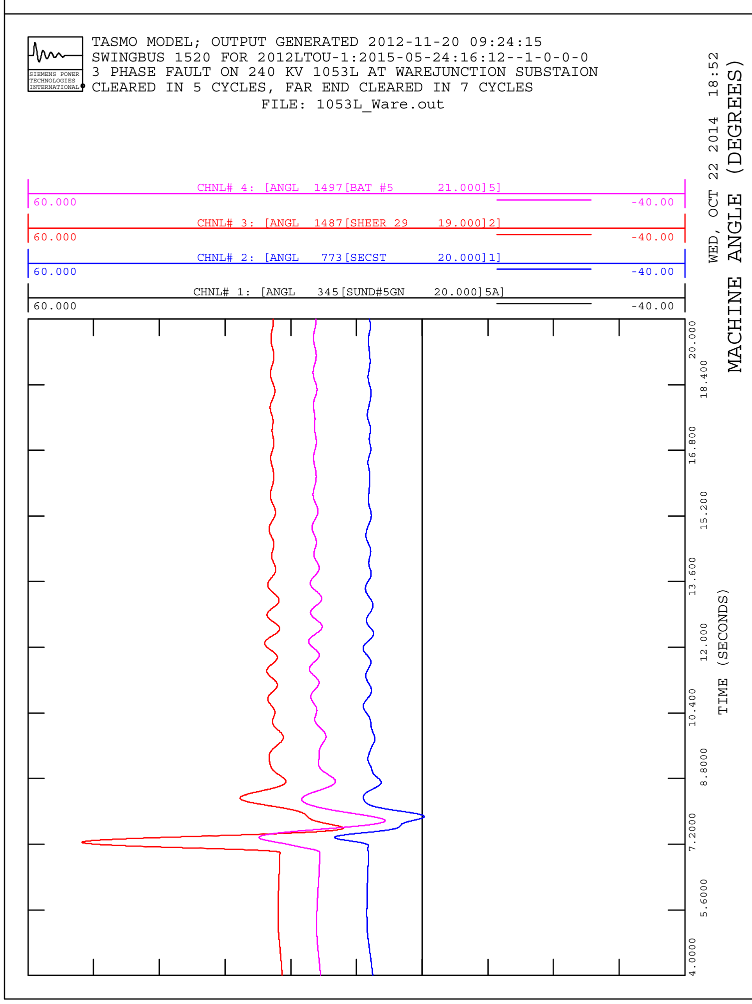


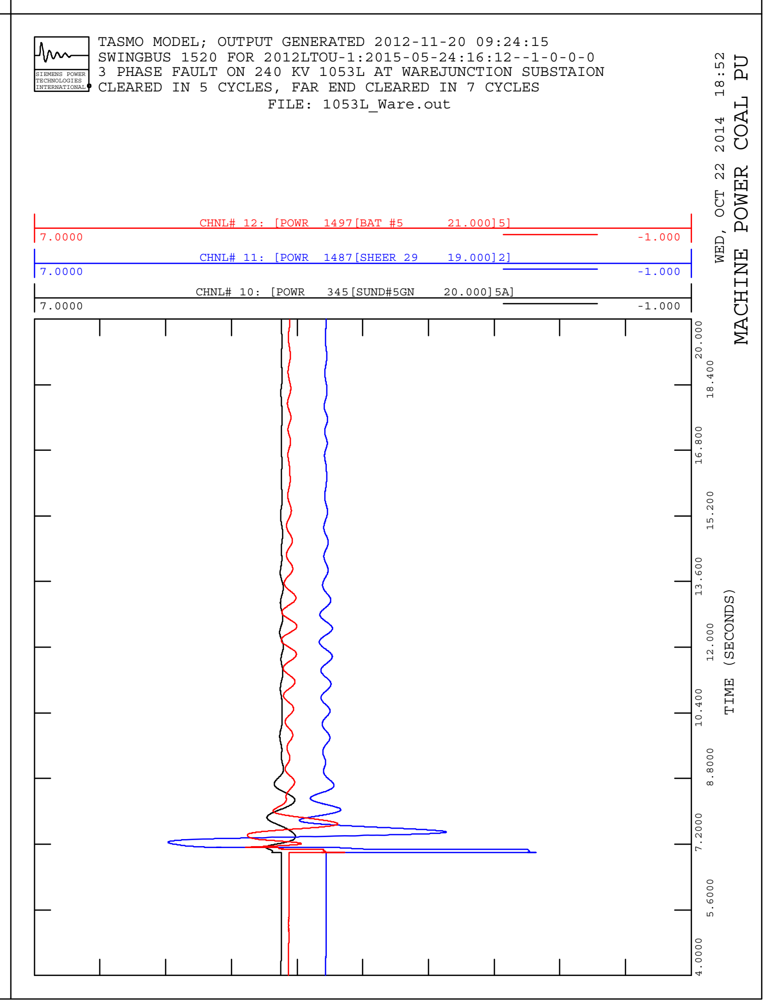
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 9L50 AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 6 CYCLES
FILE: 9L50_Ware.out



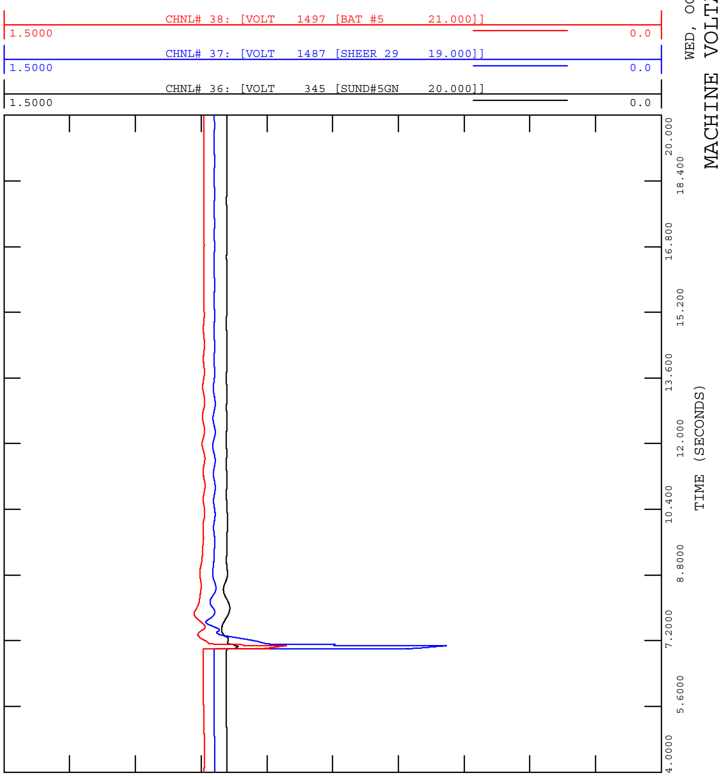

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 9: [ANGL 4263[EMP LIQ9 6.9000]1] -20.00 -150.0
CHNL# 8: [ANGL 4111[SANDHIL9 13.800]1] -20.00 -150.0
CHNL# 7: [ANGL 3266[PANCAN 9 13.800]2] -20.00 -150.0
CHNL# 6: [ANGL 3263[EMPRESA9 6.9000]1] -20.00 -150.0
CHNL# 5: [ANGL 2266[PANCAN 9 13.800]1] -20.00 -150.0
WED, OCT 22 2014 18:52
MOTOR ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 26: [POWR 66435[HALKIRK6 0.6900]G2] 1.5000 -0.5000
CHNL# 25: [POWR 61798[HALSBURYG2 0.6900]G2] 1.5000 -0.5000
CHNL# 24: [POWR 61417[HHW_7 0.6900]G2] 1.5000 -0.5000
CHNL# 20: [POWR 4632[WR1LV15 12.000]1] 1.5000 -0.5000
CHNL# 15: [POWR 2621[GHOSTPL1 0.6900]G1] 1.5000 -0.5000
CHNL# 13: [POWR 1514[NEXG1 0.6900]1] 1.5000 -0.5000
WED, OCT 22 2014 18:52
MACHINE POWER WIND PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

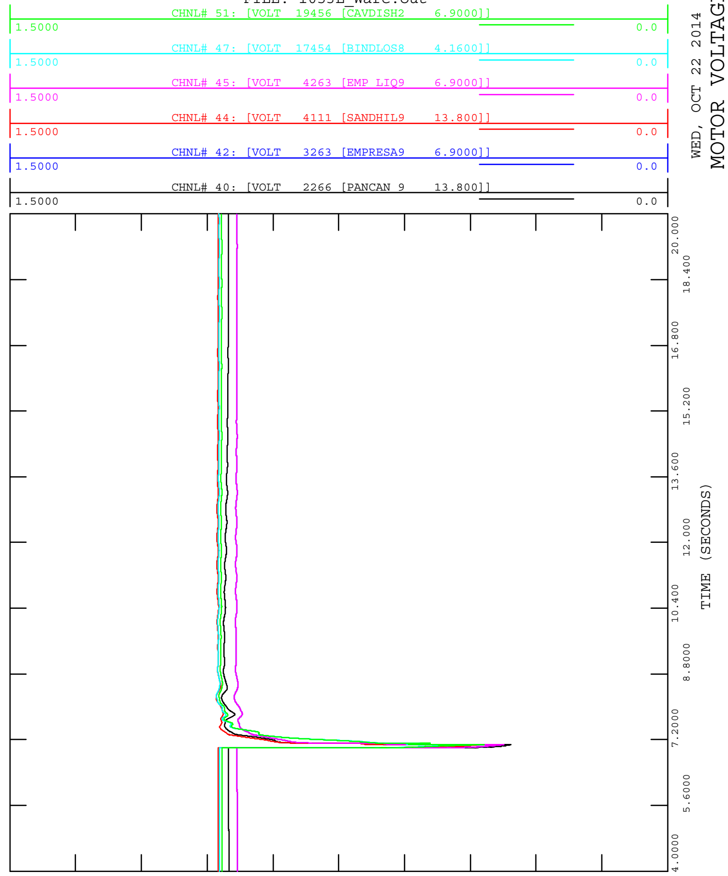

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 4: [ANGL 1497[BAT #5 21.000]5] 60.000 -40.00
CHNL# 3: [ANGL 1487[SHEER 29 19.000]2] 60.000 -40.00
CHNL# 2: [ANGL 773[SECST 20.000]1] 60.000 -40.00
CHNL# 1: [ANGL 345[SUND#5GN 20.000]5A] 60.000 -40.00
WED, OCT 22 2014 18:52
MACHINE ANGLE (DEGREES)
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 12: [POWR 1497[BAT #5 21.000]5] 7.0000 -1.000
CHNL# 11: [POWR 1487[SHEER 29 19.000]2] 7.0000 -1.000
CHNL# 10: [POWR 345[SUND#5GN 20.000]5A] 7.0000 -1.000
WED, OCT 22 2014 18:52
MACHINE POWER COAL PU
TIME (SECONDS)
4.0000 5.6000 7.2000 8.8000 10.400 12.000 13.600 15.200 16.800 18.400 20.000

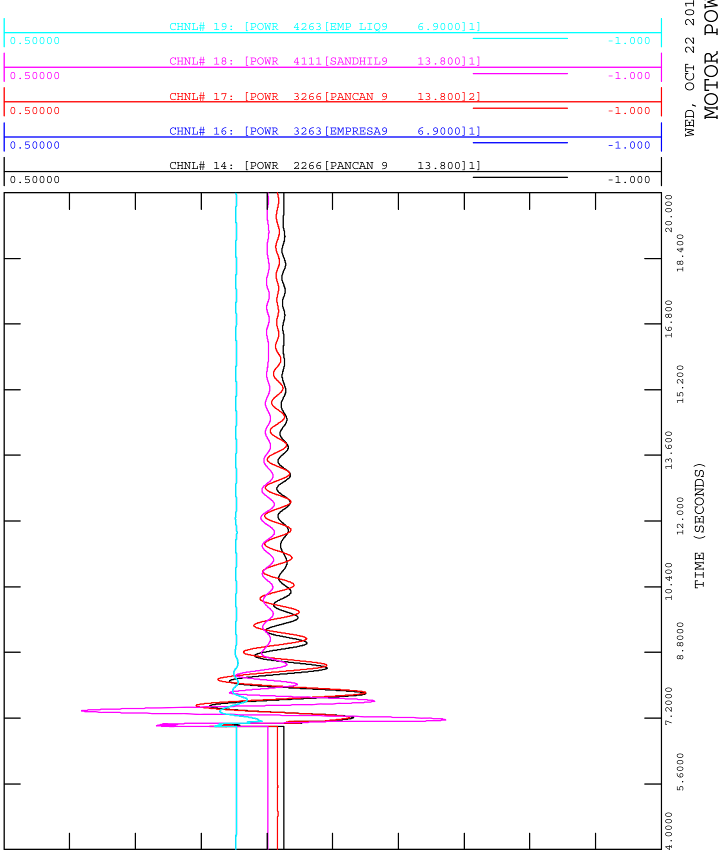
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out



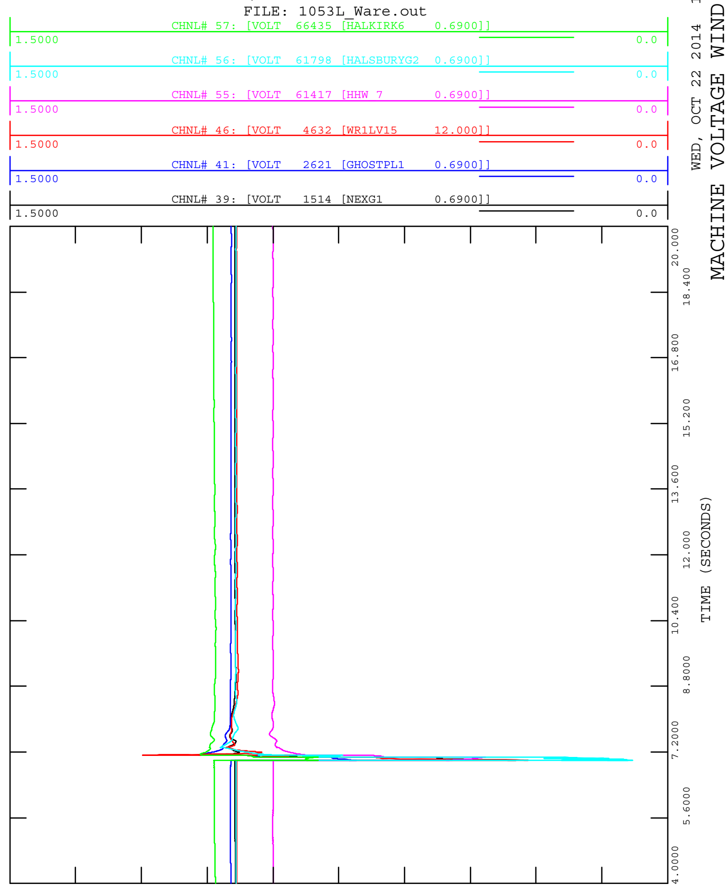
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out

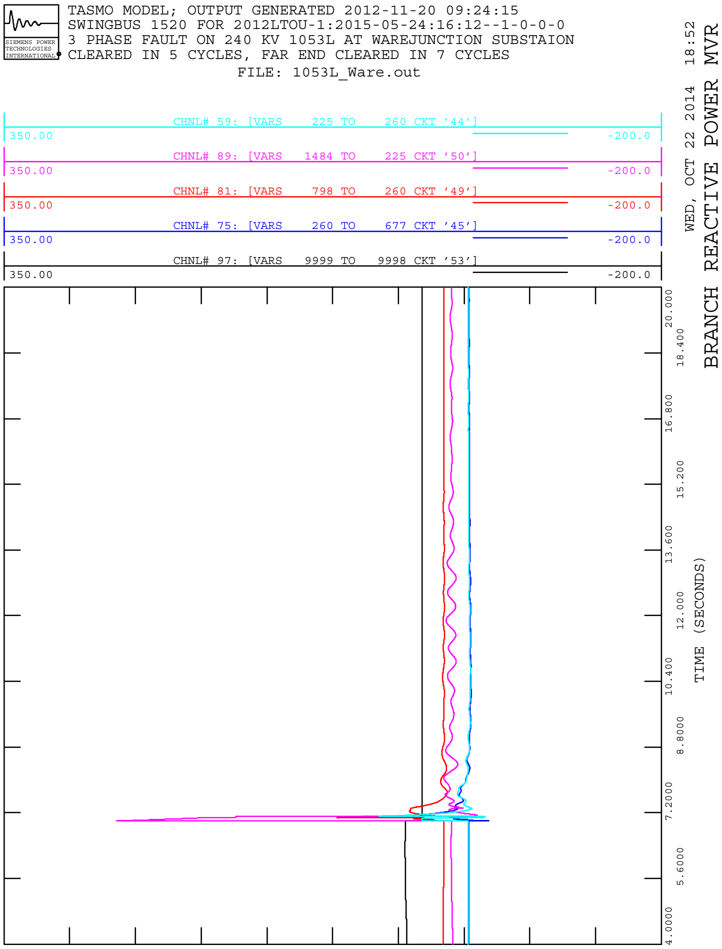


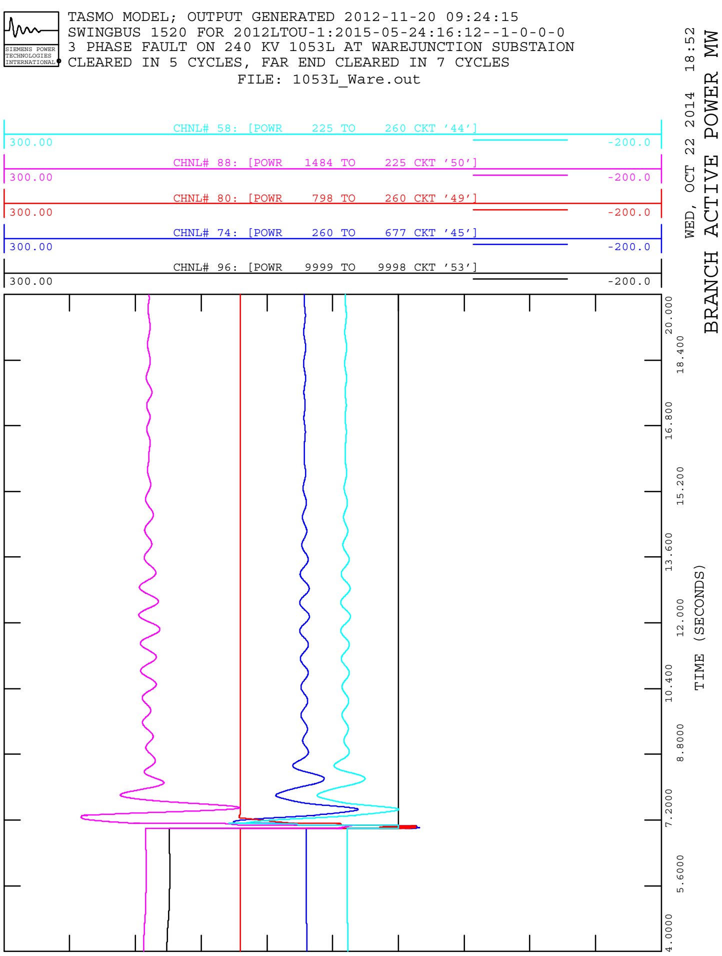
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out



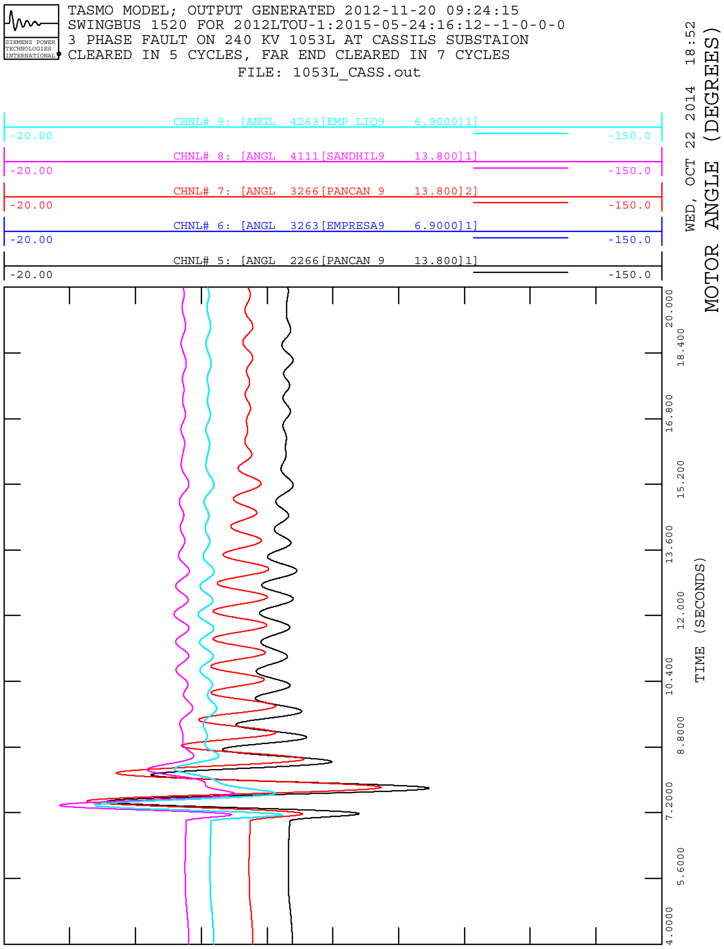
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out



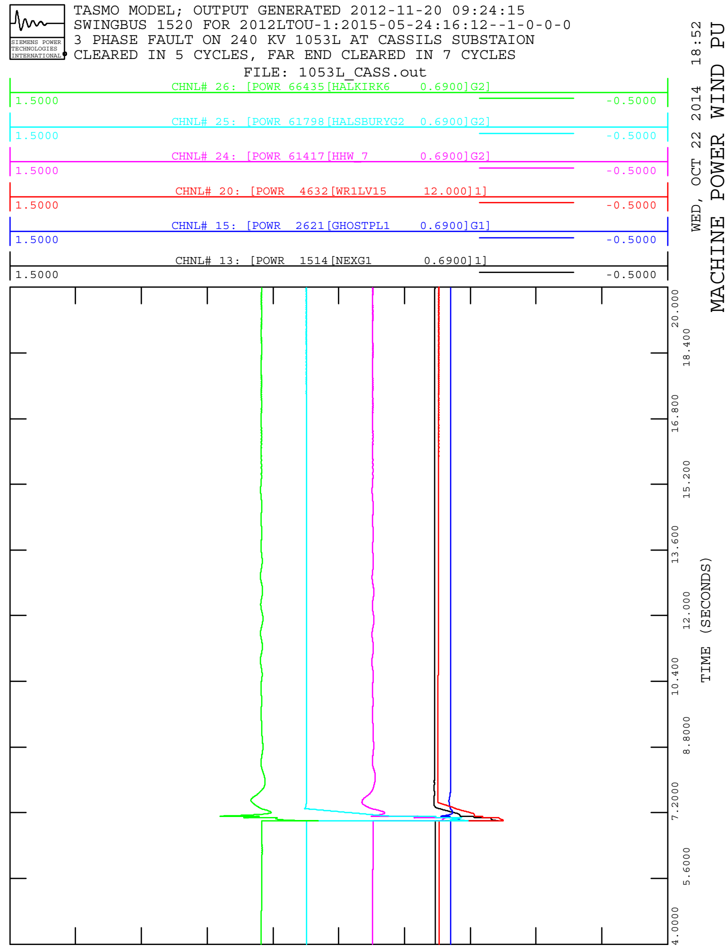

TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 59: [VARS 225 TO 260 CKT '44']
350.00
-200.0
CHNL# 89: [VARS 1484 TO 225 CKT '50']
350.00
-200.0
CHNL# 81: [VARS 798 TO 260 CKT '49']
350.00
-200.0
CHNL# 75: [VARS 260 TO 677 CKT '45']
350.00
-200.0
CHNL# 97: [VARS 9999 TO 9998 CKT '53']
350.00
-200.0
20.000
18.400
16.800
15.200
13.600
12.000
10.400
8.8000
7.2000
5.6000
4.0000
TIME (SECONDS)
WED, OCT 22 2014 18:52
BRANCH REACTIVE POWER MVR


TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT WAREJUNCTION SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_Ware.out
CHNL# 58: [POWR 225 TO 260 CKT '44']
300.00
-200.0
CHNL# 88: [POWR 1484 TO 225 CKT '50']
300.00
-200.0
CHNL# 80: [POWR 798 TO 260 CKT '49']
300.00
-200.0
CHNL# 74: [POWR 260 TO 677 CKT '45']
300.00
-200.0
CHNL# 96: [POWR 9999 TO 9998 CKT '53']
300.00
-200.0
20.000
18.400
16.800
15.200
13.600
12.000
10.400
8.8000
7.2000
5.6000
4.0000
TIME (SECONDS)
WED, OCT 22 2014 18:52
BRANCH ACTIVE POWER MW

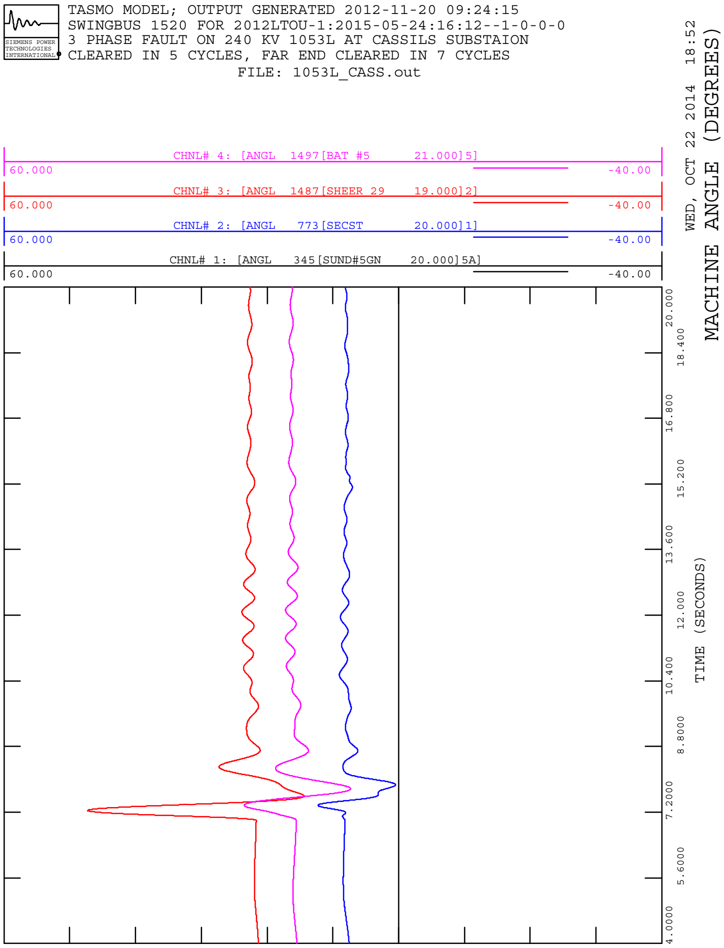
TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
CLEARED IN 5 CYCLES, FAR END CLEARED IN 7 CYCLES
FILE: 1053L_CASS.out



TASMO MODEL; OUTPUT GENERATED 2012-11-20 09:24:15
SWINGBUS 1520 FOR 2012LTOU-1:2015-05-24:16:12--1-0-0-0
3 PHASE FAULT ON 240 KV 1053L AT CASSILS SUBSTAION
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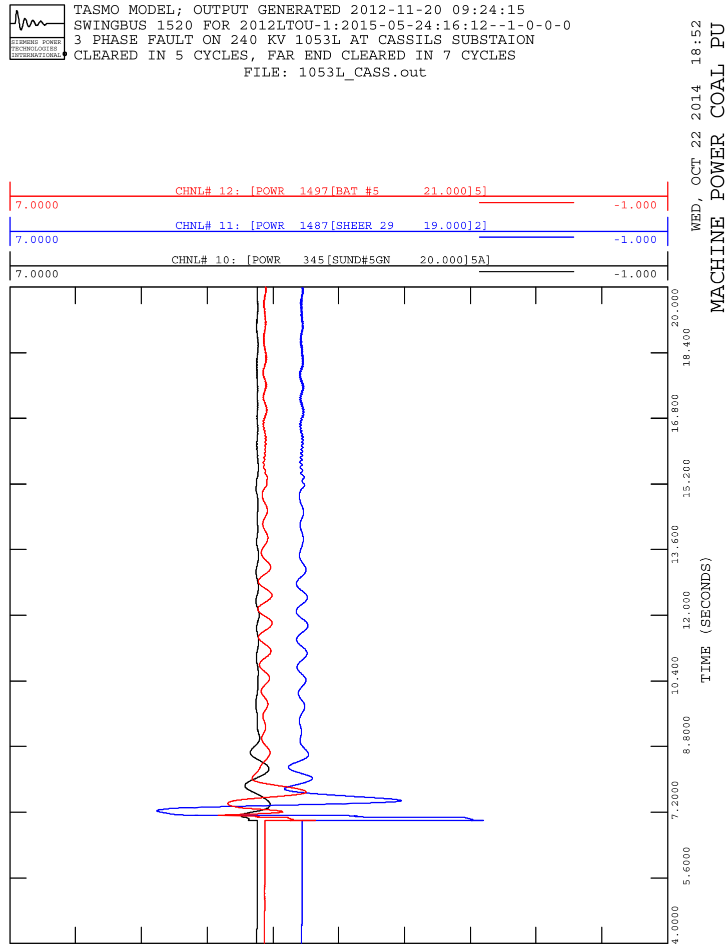

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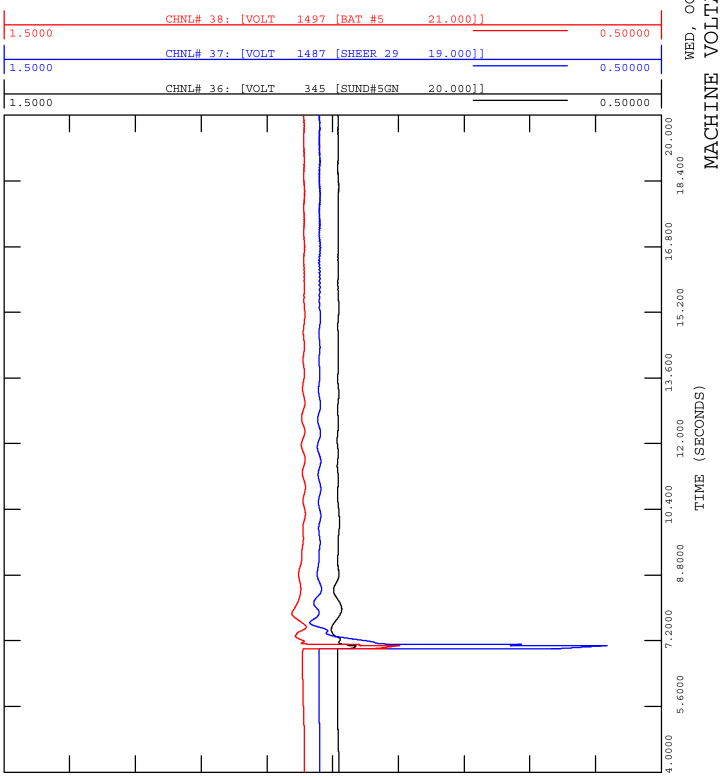

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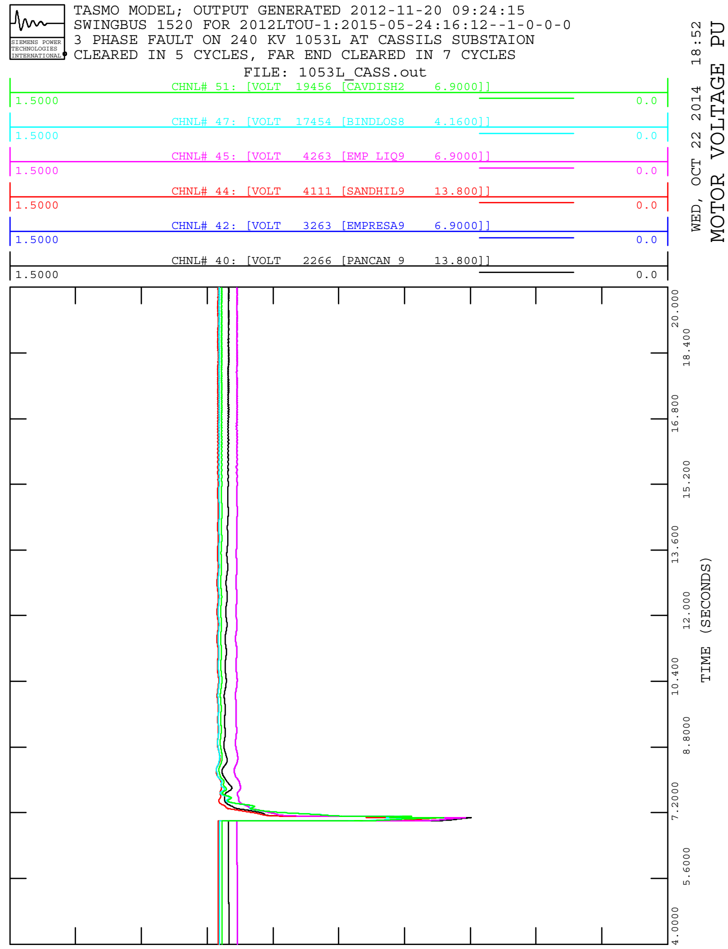

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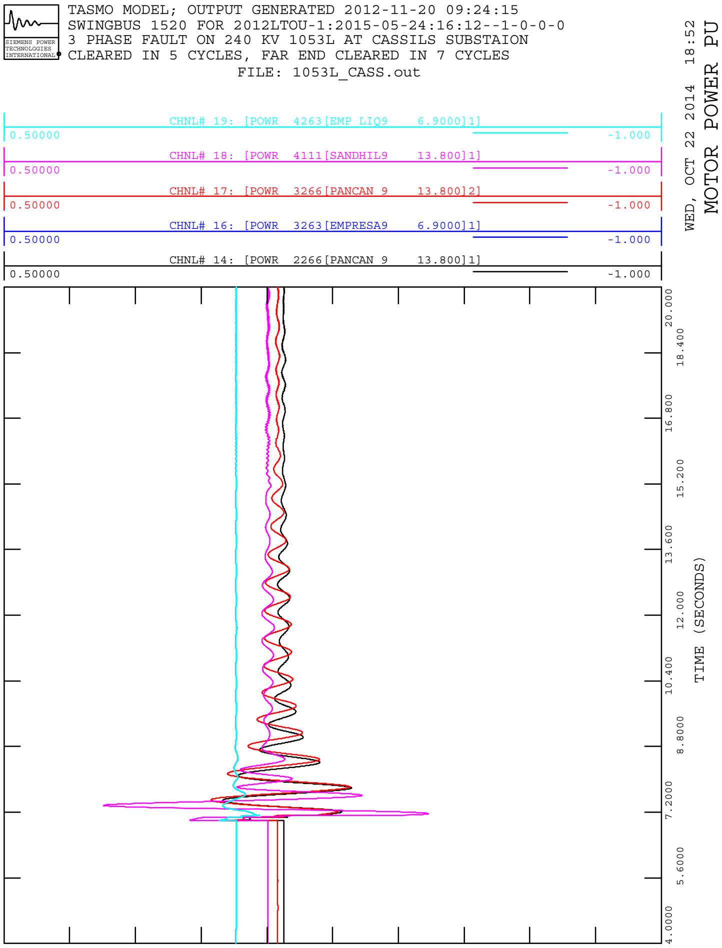

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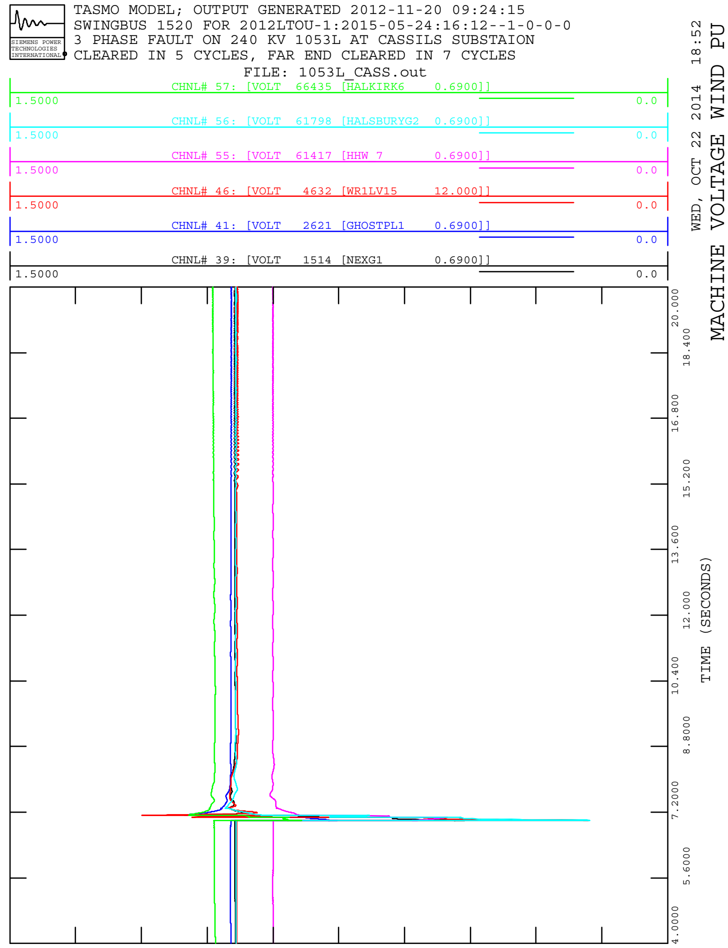

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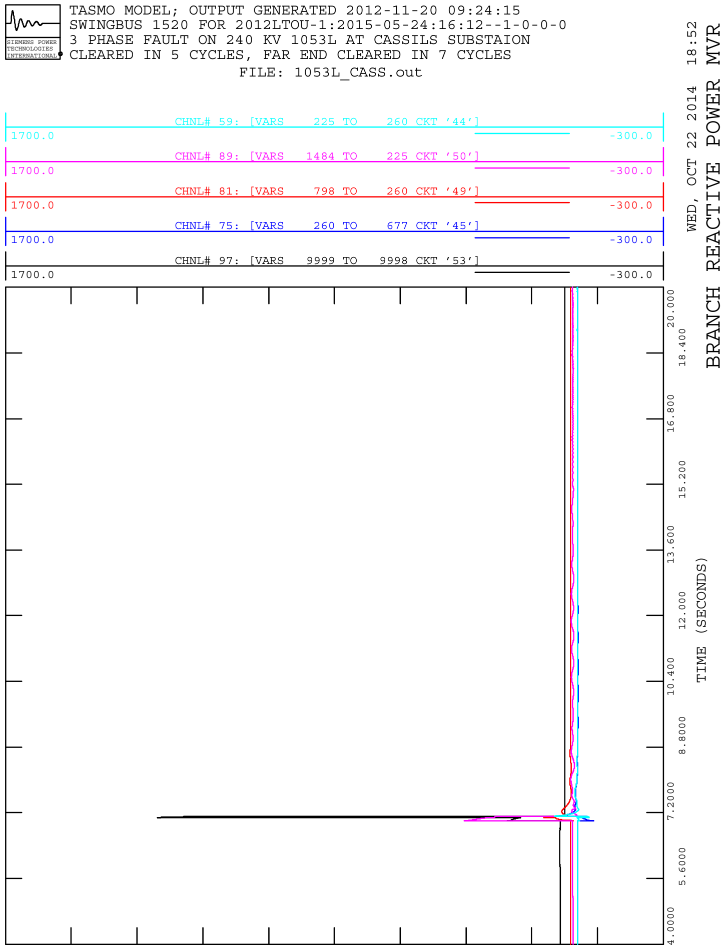

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