

June 11, 2013

Attention: Don Popowich  
Director of Facilities  
Alberta Utilities Commission  
Fifth Avenue Place  
4th Floor, 425 - 1 Street SW  
Calgary, AB T2P 3L8

Dear Mr. Popowich:

**Re: Application to the Alberta Utilities Commission (AUC) for approval of the Riverview Wind Energy Connection Needs Identification Document**

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Please find enclosed the Alberta Electric System Operator (AESO) application for approval of the Needs Identification Document (NID) for the proposed Riverview Wind Energy Connection pursuant to Section 34 of the *Electric Utilities Act*.

The AESO understands that AltaLink Management Ltd. will file the related facilities application shortly. The AESO requests that the Commission combine the NID and the facilities application and consider them together pursuant to Section 15.4 of the Hydro and Electric Energy Act.

Please do not hesitate to contact any of the individuals below if you have questions or concerns regarding the foregoing:

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Sincerely,



David Michaud  
Manager, Regulatory Services



## **Alberta Utilities Commission**

### **In the Matter of the Need for the Riverview Wind Energy Connection**

**And in the matter of the *Electric Utilities Act*, S.A. 2003, c. E-5.1, the *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2, the *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16, the *Transmission Regulation*, AR 86/2007 and Alberta Utilities Commission Rule 007, all as amended**

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**Application of the Alberta Electric System Operator for  
approval of the Riverview Wind Energy Connection Needs  
Identification Document**

## PART A - APPLICATION

### 1 Introduction

**1.1 Application** – Pursuant to Section 34(1)(c) of the *Electric Utilities Act (Act)* and in accordance with the further provisions set out in legislation<sup>1</sup>, the Alberta Electric System Operator (AESO) applies to the Alberta Utilities Commission (the “Commission”) for approval of the *Riverview Wind Energy Connection Needs Identification Document (Application)*.

**1.2 Application Overview** – This Application describes the need for transmission development arising from an Enel Alberta Wind Inc. (the “market participant”) request for transmission system access service for its proposed 115 MW wind aggregated generating facility, the Riverview Wind Power Facility (Facility), located in the Pincher Creek area. Connection of the Facility to the existing Castle Rock Ridge 205S substation requires expansion at the Castle Rock Ridge 205S substation primarily to include adding a 240 kV breaker and associated equipment (collectively, the Proposed Transmission Development, as further described in Paragraph 2.2).. The market participant’s requested in-service date for the new connection is Q4 2014.

Having followed the AESO Connection Process,<sup>2</sup> the AESO has determined that the Proposed Transmission Development, in conjunction with certain Southern Alberta Transmission Reinforcements (SATR), provides a reasonable opportunity for the market participant to exchange electricity and is consistent with the AESO’s long-term transmission forecasts and plans for the area. The AESO, in accordance with its

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<sup>1</sup> The *Alberta Utilities Commission Act*, S.A. 2007, c. A-37.2, the *Hydro and Electric Energy Act*, R.S.A. 2000, c. H-16, the *Transmission Regulation*, AR 86/2007 and Alberta Utilities Commission Rule 007, all as amended.

<sup>2</sup> The AESO Connection Process is also in referenced in Part C, note iv.

## **Riverview Wind Energy Connection Needs Identification Document**

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responsibility to plan the transmission system, submits this Application to the Commission for approval.<sup>3,4</sup>

**1.3 AESO Directions to the TFO** – During the AESO Connection Process, the AESO issued various directions to AltaLink Management Ltd. (AltaLink) as the legal owner of transmission facilities (TFO), including direction to assist the AESO in preparing its needs identification document.<sup>5</sup>

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<sup>3</sup> Some of the legislative provisions relating to the AESO's planning duties and duty to provide system access service are referenced in Part C, notes I and ii.

<sup>4</sup> Application scope is further addressed in Part C, note v.

<sup>5</sup> The directions are described in more detail in the following sections of this Application and in Part C, note vi.

## **2 Need Overview and Proposed Transmission Development**

**2.1 Duty to Provide Transmission System Access Service** – The AESO, pursuant to its responsibilities under Section 29 of the Act, must provide system access service on the transmission system in a manner that gives all market participants a reasonable opportunity to exchange electric energy and ancillary services.

The market participant has requested connection of its Facility to the transmission system, thereby establishing the need for transmission development. Through the AESO Connection Process, the AESO, AltaLink and the market participant have collaborated to determine the characteristics of the Proposed Transmission Development and the AESO has assessed the impacts of connecting the Facility to the transmission system and issued directions to AltaLink to prepare a transmission facility proposal<sup>6</sup> to meet the market participant's need.

**2.2 Proposed Transmission Development** – The Proposed Transmission Development is comprised of modifications to the existing Castle Rock Ridge 205S substation to include one new 240 kV circuit breaker and associated switching, connections, protections, controls and telecommunications as required to connect the Facility to the Castle Rock Ridge 205S substation.<sup>7</sup>

**2.3 Transmission Development Alternatives** – No alternatives to the Proposed Transmission Development were identified by the AESO or AltaLink.

**2.4 Connection Assessment** – Power flow, transient stability and short circuit analyses were conducted to assess transmission system performance prior to and

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<sup>6</sup> Also referred to as facility application, or FA, under Commission Rule 007.

<sup>7</sup> Details and configuration of equipment required for the Proposed Transmission Development, including substation single-line diagrams, are more specifically described in the AESO's Functional Specification included in AltaLink's transmission facility proposal. Also, further details will be determined as detailed engineering progresses and the market participant's operating requirements are finalized. Routing and/or siting of transmission facilities do not form part of this Application and are addressed in AltaLink's facility proposal. Market participant facilities that may subsequently be connected to the Proposed Transmission Development are the responsibility of the market participant and are not included in this Application.

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following connection of the proposed Facility in 2014 and for 2017 after certain SATR developments are planned to be in service. The load and generation assumptions used in the analyses align with the AESO *2012 Long-term Outlook (2012LTO)* with a variance for forecast wind generation to capture uncertainties regarding the timing of future wind projects. The 2012LTO is used by the AESO to assess adequacy of the regional transmission system and to identify future transmission system expansion and enhancement plans.

The power flow analysis indicates that connection of the Facility will result in new overloads and exacerbate existing overloads under the studied normal (N-0) and contingency (N-1) conditions in 2014. The analysis also confirms that these overloads will be resolved by 2017 once the following SATR developments are in place:

- Blackie Area 138 kV upgrades and
- 911L replacement.<sup>8</sup>

Subsequent to completion of the foregoing analyses, the expected in-service dates (ISD) for three wind aggregated generation facilities (WAGF) were postponed from 2014 to 2015.<sup>9</sup> Consequently, the AESO performed a sensitivity analysis to determine whether these recent changes would affect the results and conclusions of the initial power flow analysis. The sensitivity study indicates that the previously identified overloads will be reduced, but not removed, as a result of the revised ISDs.

Until such time as the specified SATR developments are in place, the AESO will analyze and implement operating procedures, including remedial action schemes, and apply ISO Rule 302.1 Real Time Transmission Constraint Management (TCM Rule) as

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<sup>8</sup> Approval No. U2011-115, **Stage I**, paragraph 1 (911L replacement) and **Stage II**, paragraph 9 (Blackie Area 138 kV upgrades). The 911L replacement with 1037L/1038L forms part of Proceeding ID No. 2001, AltaLink Application No. 1608861

<sup>9</sup> Heritage Wind Farm, Windy Point Wind Farm and McLaughlin Wind Farm

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## Riverview Wind Energy Connection Needs Identification Document

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system conditions require.<sup>10</sup> The TCM Rule could result in curtailment of generators in the area that are effective in managing constraints.<sup>11</sup> The AESO has identified these effective generators and, as further described in Section 2.7 and Appendix B, has notified all potentially affected market participants accordingly.

Based on the transient stability and short circuit analyses, connection of the Facility did not affect the response of the system under transient conditions and did not materially change the current fault levels in the system.<sup>12</sup>

**2.5 Request for Exception** – Since the AESO has determined that transmission system overloads may occur in the area under normal conditions, the AESO is seeking Commission approval of an exception to its obligations under the *Transmission Regulation*, s.15(1)(e)(i) and s. 15(1)(f), pursuant to the provisions of the *Transmission Regulation*, s.15(2). Such exception will apply until the SATR developments described in Section 2.4 are in service.

**2.6 Proposed Transmission Development Cost** – AltaLink has estimated the in-service cost of the Proposed Transmission Development to be in the order of \$3.5 million (+20%/-10%) generally comprised of the costs of the Proposed Transmission Development described in Section 2.2. In accordance with the ISO Tariff, the AESO has determined that there are no system related costs in respect of the Proposed Transmission Development.

**2.7 Participant Involvement Program** – The AESO directed AltaLink to assist the AESO in conducting a participant involvement program (PIP), in accordance with Commission Rule 007, NID13 and Appendix A. The AESO and AltaLink utilized various

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<sup>10</sup> The AESO develops appropriate ISO Rules (including remedial action schemes) and practices to address transmission constraints that may materialize from time to time. The creation and management of such ISO rules pertain to operational matters that are beyond the scope of this NID.

<sup>11</sup> Details regarding the generator effectiveness factors is provided in Appendix A, Attachment F.

<sup>12</sup> Further information regarding the Connection Assessment is included as Appendix A to this Application.

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methods to notify stakeholders of the need for transmission development in the vicinity of the Proposed Transmission Development. The AESO knows of no concerns related to the need for the Proposed Transmission Development.

Having identified that overloads in the area may occur under normal operating conditions after connection of the Facility and until the SATR developments described in Section 2.4 are in place, the AESO notified all potential effective generators of its intention to manage such constraints using the TCM Rule. The AESO received an enquiry from one party regarding its notification to generators and has addressed all questions and concerns.<sup>13</sup>

**2.8 Environmental and Socio-Economic Overview** – As potential environmental effects are related to siting, routing, and on-going operations of the Proposed Transmission Development, the AESO has not undertaken a separate environmental and socio-economic assessment of the sort contemplated in Commission Rule 007, section 6.1 – NID12. The AESO has been advised that AltaLink’s facility proposal will contain information in respect of Commission Rule 007, section 6.1 – NID12.<sup>14</sup>

**2.9 Approval is in the Public Interest** – Having regard to the following:

- the transmission planning duties of the AESO as described in Sections 17, 29, 33 and 34 of the Act;
- the duty of the AESO to facilitate the operation of markets as described in Section 17(b) of the Act;
- the Connection Assessment;
- information obtained from the AESO PIP activities; and
- the AESO’s long-term transmission system plans,

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<sup>13</sup> Further information regarding the AESO’s PIP for this Application is included as Appendix C including a copy of the AESO’s letter to effective generators.

<sup>14</sup> As per Appendix D of this Application, the AESO has been advised that AltaLink’s facility proposal will contain information in respect of Commission Rule 007, Section 6.1 – NID12.



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it is the conclusion of the AESO that the Proposed Transmission Development provides a reasonable opportunity for the market participant to exchange electricity. Further, the AESO confirms that the load and generation forecasts used in the AESO's Connection Assessment are consistent with the *AESO 2012 Long-term Outlook* used for transmission system planning and that connection to the transmission system as proposed is consistent with other system plans in the area. In consideration of these factors, the AESO submits that approval of the Application is in the public interest.

### **3 Request to Combine this Application with the Facility Proposal for Consideration in a Single Process**

3.1 Pursuant to subsection 35(1) of the Act, the AESO has directed AltaLink to prepare a transmission facility proposal to meet the need identified. The AESO understands that AltaLink's facility proposal will be filed shortly.<sup>15</sup> The AESO requests, and expects that AltaLink will also request, that this Application be combined with the facility proposal for consideration by the Commission in a single process. This request is consistent with section 15.4 of the *Hydro and Electric Energy Act* and section 6 of Commission Rule 007.

3.2 While it is believed that this Application and the facility proposal will be materially consistent, the AESO respectfully requests that in its consideration of both, the Commission be mindful of the fact that the documents have been prepared separately and for different purposes. The purpose of this Application is to obtain approval for the identified transmission system need and provide a preliminary description of the manner proposed to meet that need. In contrast, the facility proposal will contain more detailed engineering and designs for the Proposed Transmission Development and seek approval for the construction and operation of specific facilities.

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<sup>15</sup> The AESO understands that AltaLink intends to file a facility proposal relating to this Application to be titled *Riverview Wind Power Facility Interconnection*.

#### 4 Relief Requested

4.1 The AESO submits that its assessment of the need to meet the market participant's request for transmission system access service is technically complete and that approval of the need for the Proposed Transmission Development and the specified exception to the requirements of the *Transmission Regulation*, s. 15(1)(e)(i) and s. 15(1)(f) is in the public interest.

4.2 For the reasons set out herein, and pursuant to Section 34 of the Act, the AESO requests that the Commission approve this Application, including issuing an approval of the need to connect the market participant and of the following elements:

- A. modify the Castle Rock Ridge 205S substation including switching, connections, protections, controls and telecommunications as required to connect the Facility;
- B. modify, alter, add or remove equipment and any operational, protections, control and telecommunication devices required at existing facilities in the area to undertake the work described above, and to ensure proper integration with the transmission system; and
- C. an exception to the requirements of the *Transmission Regulation*, s. 15(1)(e)(i) and s.15(1)(f).

All of which is respectfully submitted this 11<sup>th</sup> day of June 2013.

Alberta Electric System Operator



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Doyle Sullivan, P. Eng. Director,  
Regulatory Services

## **PART B – APPLICATION APPENDICES**

The following appended documents support the Application (Part A).

**APPENDIX A**      **Connection Assessment** – Appendix A contains the *Connection Engineering Study Report, Riverview Wind Farm*, prefaced by the *Connection Engineering Study Report, Riverview Wind Farm Connection, Sensitivity Study* (AESO Sensitivity Study) which collectively contain an assessment of transmission system performance prior to and following the connection of the Proposed Transmission Development. As part of the AESO Connection Process, a consultant was engaged to conduct the connection assessment described in the *Connection Engineering Study Report, Riverview Wind Farm* (Study). The AESO defined the Study scope and provided the system models and Study assumptions. The AESO also reviewed this report and its conclusions and, in conjunction with the AESO Sensitivity Study, finds the Study acceptable for the purposes of assessing the impacts of the Proposed Transmission Development on the transmission system.

Appendix A describes the study scope and methodology, assumptions, reliability criteria and detailed results.

**APPENDIX B**      **TFO Capital Cost Estimate** – Appendix C contains detailed cost estimates corresponding to the Proposed Transmission Development. These estimates have been prepared by AltaLink at the direction of the AESO. The estimates are prepared to an approximate accuracy level of +20%/-10% which exceed the accuracy requirement of Commission Rule 007, NID10.

**APPENDIX C**      **AESO PIP** – Appendix B contains a summary of the PIP activities conducted regarding the need for the Proposed Transmission Development. Copies of the relevant materials distributed during the PIP are attached for reference.

**APPENDIX D**      **TFO confirmation that Commission Rule 007 NID 12 aspects are being addressed in Facility Proposal** – Appendix D contains a letter provided by

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AltaLink confirming that the seven major aspects of Commission Rule 007, NID 12 are addressed throughout AltaLink's facility proposal.

### PART C – REFERENCES

- i. **AESO Planning Duties and Responsibilities** – Certain aspects of AESO duties and responsibilities with respect to planning the transmission system are described in the Act. For example, section 17, subsections (g), (h), (i), and (j), describe the general planning duties of the AESO.<sup>16</sup> Section 33 of the Act states that the AESO “must forecast the needs of Alberta and develop plans for the transmission system to provide efficient, reliable, and non-discriminatory system access service and the timely implementation of required transmission system expansions and enhancements”. Where, as in this case, the market participant (refer to note ii below) is requesting system access service, the AESO must prepare and submit for Commission approval, as per section 34(1)(c), a needs identification document that describes the need to respond to requests for system access service, including the assessments undertaken by the AESO regarding the manner proposed to address that need. Other aspects of the AESO’s transmission planning duties and responsibilities are set out in sections 8, 10, and 11, of the *Transmission Regulation*.
- ii. **Duty to Provide Transmission System Access** – Section 29 of the Act describes that the AESO “must provide system access service on the transmission system in a manner that gives all market participants wishing to exchange electric energy and ancillary services a reasonable opportunity to do so”.
- iii. **AESO Planning Criteria** – The AESO is required to plan a transmission system that satisfies applicable reliability standards. The AESO Planning Criteria is described at: <http://www.aeso.ca/rulesprocedures/8677.html>.<sup>17</sup>
- iv. **AESO Connection Process** – For information, the AESO Connection Process, which changes from time to time, is generally described at: <http://www.aeso.ca/8602.html>.<sup>18</sup>
- v. **Application for Approval of the Need for Expansion or Enhancement of the Capability of the Transmission System** – This Application is directed solely to the question of the need for expansion or enhancement of the capability of the transmission system as more fully described in the Act and the *Transmission Regulation*. This Application does not seek approval of those

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<sup>16</sup> The legislation and regulations refer to the Independent System Operator or ISO. "AESO" and "Alberta Electric System Operator" are the registered trade names of the Independent System Operator.

<sup>17</sup> This link is provided for ease of reference and does not form part of this Application.

<sup>18</sup> This link is provided for ease of reference and does not form part of this Application.

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aspects of transmission development that are managed and executed separately from the needs identification document approval process. Other aspects of the AESO's responsibilities regarding transmission development are managed under the appropriate processes, including the ISO Rules, Alberta Reliability Standards and the ISO tariff, which are subject to specific regulatory approvals. While the Application or its supporting appendices may refer to such other processes or information from time to time, the inclusion of such information is for context and reference only.

- vi. **Directions to the TFO** – Pursuant to subsection 35(1) of the Act, the AESO has directed the TFO, in whose service territory the need is located, to prepare a Facility Proposal to meet the need identified. The facility proposal is also submitted to the Commission for approval. The TFO has also been directed by the AESO under section 39 of the Act to prepare a proposal to provide services to address the need for the Proposed Transmission Development. The AESO has also directed the TFO, pursuant to section 39 of the Act and section 14 of the *Transmission Regulation*, to assist in the preparation of the AESO's Application.
  
- vii. **Capital Cost Estimates** –The provision of capital costs estimates in the Application is for the purposes of relative comparison and context only. The AESO's responsibilities in respect of project cost reporting are described in the *Transmission Regulation*, including section 25, and AESO Rule 9.1.

## **APPENDIX A CONNECTION ASSESSMENT**



# Connection Engineering Study Report

## Riverview Wind Farm Connection Sensitivity Study

Project No. 524  
Revision: 0  
May 7, 2013



	Name	Signature	Date
Prepared	Ralph Liu, E.I.T.		May 7, 2013
Approved	Sami Abdulsalam, P. Eng.		May 7 <sup>th</sup> , 2013

APEGA Permit to Practice P-8200

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## Attachments

Attachment A	2014 Pre-Connection Power Flow Analysis (N-0 and N-1)
Attachment B	2014 Post-Connection Power Flow Analysis (N-0 and N-1)
Attachment C	2014 Post-Connection Power Flow Analysis (N-1 after Removing N-0 Overloads)

## 1. INTRODUCTION

This Riverview Wind Farm Connection Sensitivity Study Report (Sensitivity Study) is presented as a supplement to the *Connection Engineering Study Report Riverview Wind Farm* dated April 19, 2013 (original Engineering Study) which was performed to assess the impact of connecting the Riverview Wind Aggregated Generating Facility (WAGF) to the Alberta Interconnected Electric System (AIES). The AESO completed this Sensitivity Study to test whether recent changes in the AESO connection queue would affect the results and conclusions of the original Engineering Study.

The Riverview WAGF is planned to connect to the AIES in October 2014 before completion of the 911L replacement and Blackie Area 138 kV upgrades, both part of Southern Alberta Transmission Reinforcement (SATR) development. The original Engineering Study shows significant overloads on 911L line under system normal conditions in the 2014 study scenarios; this is the first wind connection study in southern Alberta that shows significant overloads on 911L line under system normal conditions.

Table 2-5 of the original Engineering Study provides the 2014 and 2017 generation dispatch assumptions used in the study cases based on the in-service dates (ISDs) of wind generation in the AESO connection queue at the time of the study. The 2014 WAGF listed in Table 2-5 includes dispatching three wind generators that have since undergone ISD updates: Project No. 515 Heritage Wind Farm, Project No. 580 Windy Point Wind Farm and Project No. 750 McLaughlin Wind Farm are now planned to be connected in 2015 instead of 2014. Therefore, the AESO conducted this Sensitivity Study to consider the wind projects listed on the AESO connection queue (as of April 2013), and to assess the impact of connecting Riverview WAGF with this updated information.

### 1.1 Study Scope

With the updated ISDs, there will be fewer wind generators connected in the Pincher Creek area in 2014 than was assumed in the original Engineering Study. This will not worsen the dynamic performance and short-circuit levels for the Riverview WAGF. Only the power flow analysis is performed in this Sensitivity Study for the 2014 scenarios. There is no change to the 2017 dispatch assumptions listed in Table 2-5 of the original Engineering Study.

This report is presented in the following sections:

1. Introduction
2. Criteria and Assumptions
3. Pre-Connection System Assessment
4. Post-Connection System Assessment
5. Summary and Conclusions

## 2. CRITERIA AND ASSUMPTIONS

The analysis is performed using PSS/E version 33. The following criteria and assumptions are applied in the analysis.

### 2.1 Reliability Criteria and Applicable AESO OPPs

The Reliability Criteria and applicable AESO Operating Policies and Procedures (OPPs) described in Section 2.1 of the original Engineering Study report are applied in this study.

### 2.2 Load and Generation Assumptions

The load assumptions described in Section 2.2 of the original Engineering Study report are applied in this study, as shown in Table 2-1 below. These load assumptions are based on the AESO 2012 Long-term Outlook corporate forecast.

**Table 2-1 2014 Summer Load Forecast**

Region	2014 Light (MW)	2014 Peak (MW)
Central	1166	1570
South	1955	2866
AIL	7831	10671

The wind generation dispatch is updated considering the latest ISDs of wind developments in southern Alberta, as shown in Table 2-2 below. This updated wind generation dispatch is used in this study. Other generation assumptions remain the same as those of the original Engineering Study.

**Table 2-2 Study Area Wind Generation Dispatch**

Name	2014 Dispatch (MW)
Castle River Wind Farm	40
Cowley Ridge Wind Farm	38
McBride Lake Wind Farm	75
Summerview I Wind Farm	69
Magrath Wind Farm	30
Soderglen Wind Farm	68
Chin Chute Wind Farm	30
Kettles Hill Wind Farm	63
Taber Wind Farm	81
Blue Trail Wind Farm	66
Summerview II Wind Farm	66

Name	2014 Dispatch (MW)
Ardenville Wind Farm <sup>1</sup>	52
Castle Rock Wind Farm	115
Suncor Wintering Hills Wind Farm	88
Ghost Pine Wind Farm	82
Halkirk Wind Farm	150
Alberta Wind Energy Old Man River Wind Farm	47
Pteragen Peace Butte 116MW Wind Farm	35
Blackspring Ridge I Wind Farm	300
Heritage I and II Wind Farm	offline
Windy Point Wind Farm	offline
Willowridge Wind Farm	offline
McLaughlin Wind Farm	offline
<b>Total</b>	<b>1495</b>

Note 1: Ardenville wind farm output is reduced by 14 MW from its full output 66MW in all N-0 scenarios in this study, to manage the pre-connection existing overload on 608L due to the rating of the line and high output from the radially connected wind farms. This overload will be alleviated through the proposed 240/138 kV Windy-Flats development<sup>1</sup>.

### **2.3 Intertie Assumptions**

The intertie assumptions in this sensitivity study are the same with the original Engineering Study.

In 2014 summer light cases, it is assumed that the AIES exports 800 MW to BC, the AIES and MATL exchange is 0 MW, the AIES exports 150 MW to Saskatchewan and imports 90 MW from the City of Medicine Hat.

In 2014 summer peak cases, it is assumed that AIES imports 480 MW from BC, imports 300 MW from MATL, imports 150 MW from Saskatchewan and exports 26 MW to the City of Medicine Hat.

### **2.4 System Project Assumptions**

The system project assumptions in this Sensitivity Study are the same as those of the original Engineering Study.

Based on the proposed ISD for Riverview WAGF, Fidler 312S substation is modeled in the 2014 study scenarios. The following SATR developments are not modeled in the 2014 study scenarios:

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<sup>1</sup> On September 21, 2012, the AESO filed the Windy Flats Amendment to the AUC SATR Approval No. U2011-115 (SATR NID Approval) to replace upgrades at Peigan substation with construction of the new Windy Flats substation.

- the SATR Blackie Area 138 kV upgrade
- the SATR 240 kV double circuit from Castle Rock Ridge 205S to Chapel Rock 491S
- the SATR 911L replacement
- the SATR 240 kV line from Journault 260S to MATL Picture Butte 120S
- the SATR 988L from Goose Lake 103S to Journault 260S

## 2.5 Study Scenarios

The following scenarios are studied:

- Pre-connection 2014 summer light (SL) load scenario
- Pre-connection 2014 summer peak (SP) load scenario
- Post-connection 2014 SL load scenario
- Post-connection 2014 SP load scenario

## 2.6 Study Area

The study area and monitored areas described in Section 1.2.2.1 of the original Engineering Study are used in this Sensitivity Study, i.e. AESO planning areas 53, 54 and 55.

## 3. PRE-CONNECTION SYSTEM ASSESSMENT

The pre-connection system assessment is performed using 2014 system configuration without the Riverview WAGF. The steady-state performance of the pre-connection system is assessed under summer light and summer peak load scenarios. Relevant Single Line Diagrams (SLDs) are provided in Attachment A. The percentage unit for transformer elements is MVA and for non-transformer elements is current expressed as MVA.

### 3.1 System Normal (N-0) Conditions

The overloads under system normal conditions are provided in Table 3-1 for pre-connection 2014SL and 2014SP study scenarios. These potential overloads will be managed using the AESO Transmission Constraint Management (TCM) Rule in real time, as required. No voltage violation is observed.

Table 3-1: Overloads under N-0 Conditions - 2014 Pre-Connection

Scenario	Figure Number	Contingency	Overloaded Element		
			Monitored Element	MVA Flow	% Flow
2014SL	A-1-1	None	N/A	N/A	N/A
2014SP	A-2-1	None	911L (Peigan 65S to SS-65)	386 MVA	107.6
		None	180L (Fort Macleod 15S to Stavely 928S)	90 MVA	103.3

### 3.2 Single Element Contingency (N-1) Conditions

The overloads under N-1 contingencies are summarized in Table 3-2 for pre-connection 2014 SP and SL study scenarios. Note that even if N-0 overloads persist under N-1 conditions, they are not repeated in the N-1 overload result tables. These potential overloads are managed using the current OPP515, existing and planned remedial action schemes (RAS) in southern Alberta.

No voltage violation is observed under N-1 conditions.

**Table 3-2: Overloads under N-1 Conditions - 2014 Pre-Connection**

Scenario	Figure Number	Contingency	Overloaded Element		
			Monitored Element	MVA Flow	% Flow
2014SL	A-1-2	616L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	194 MVA	108.1
	A-1-3	955L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	189 MVA	105.7
	A-1-4	956L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	189 MVA	105.7
	A-1-5	170L (Russell 632S to Coleman 799S)	Peigan 59S 240/138 kV Transformer T1	187 MVA	104.6
	A-1-6	Goose Lake 103S 240/138 kV Transformer T1	Peigan 59S 240/138 kV Transformer T1	235 MVA	131.1
	A-1-7	911L (Peigan 59S to SS-65)	180L (Fort Macleod 15S to Stavely 928S)	90 MVA	104.6
2014SP	A-2-2	Goose Lake 103S 240/138 kV Transformer T1	Peigan 59S 240/138 kV Transformer T1	228 MVA	127.1
	A-2-3	616L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	191 MVA	106.5
	A-2-4	955L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	185 MVA	103.3
	A-2-5	956L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	185 MVA	103.3
	A-2-6	170L (Russell 632S to Coleman 799S)	Peigan 59S 240/138 kV Transformer T1	183 MVA	102.3

## 4. POST-CONNECTION SYSTEM ASSESSMENT

The steady-state performance of the system is also assessed using 2014 system configuration with the proposed Riverview WAGF. The steady-state performance of the post-connection system is assessed under summer light and summer peak load scenarios. Relevant SLDs are provided in Attachments B and C.

#### 4.1 System Normal (N-0) Conditions

The overloads under system normal conditions are provided in Table 4-1 for post-connection 2014SL and SP study scenarios. Compared with the pre-connection N-0 overload results in Table 3-1, it is shown that the connection of Riverview WAGF worsens the overloads on transmission lines 911L and 180L by more than 3%. Similar to the pre-connection conditions, these potential overloads will be managed using the AESO TCM Rule in real time, as required.

No voltage violation is observed under system normal conditions.

**Table 4-1: Overloads under N-0 Conditions - 2014 Post-Connection**

Scenario	Figure Number	Contingency	Overloaded Element		
			Monitored Element	MVA Flow	% Flow
2014SL	B-1-1	None	N/A	N/A	N/A
2014SP	B-2-1	None	911L (Peigan 59S to SS-65)	425 MVA	119.0
		None	180L (Fort Macleod 15S to Stavelly 928S)	95 MVA	109.7

#### 4.2 Single Element Contingency (N-1) Conditions

The overloads under N-1 conditions are summarized in Table 4-2 for post-connection 2014 SP and SL study scenarios. Note that even if N-0 overloads persist under N-1 conditions, they are not repeated in the N-1 overload result tables.

Overloads under N-1 conditions are reported if they are either larger by 3% compared with the pre-connection overloads or are created after the Riverview WAGF connection. It is shown from Table 4-2 that Riverview WAGF connection either causes new overloads or worsens the pre-connection existing overloads on transmission lines 911L, 225L, 180L, 170L, 172L and Peigan 59S 240/138 kV Transformer T1 by more than 3%. Whether RAS is required to mitigate these overloads also depends on the N-1 analysis after all overloads under N-0 conditions are removed. Refer to Section 4.3 for the high-level RAS requirements for Riverview WAGF.

No voltage violation is observed.



Table 4-2: Overloads under N-1 Conditions - 2014 Post-Connection

Scenario	Figure Number	Contingency	Overloaded Element		
			Monitored Element	MVA Flow	% Flow
2014SL	B-1-2	955L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	197 MVA	109.9
	B-1-3	956L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	197 MVA	109.9
	B-1-4	412L (Pincher Creek 396S to Russell 632S)	Peigan 59S 240/138 kV Transformer T1	184 MVA	102.7
	B-1-5	170L (Russell 632S to Coleman 799S)	Peigan 59S 240/138 kV Transformer T1	192 MVA	107.4
			911L (Peigan 59S to SS-65)	371 MVA	103.5
	B-1-6	968L (Peigan 59S to N Lethbridge 370S)	911L (Peigan 59S to SS-65)	367 MVA	102.3
	B-1-7	967L (Peigan 59S to N Lethbridge 370S)	911L (Peigan 59S to SS-65)	367 MVA	102.3
	B-1-8	1005L (Picture Butte 120S to Milo 356S)	911L (Peigan 59S to SS-65)	376 MVA	104.4
	B-1-9	Magrath 225S T1 138/69 kV Transformer	225L (Stirling 67S to Raymond 313S tap)	27 MVA	102.2
	B-1-10	863L (Magrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 313S tap)	27 MVA	103.3
	B-1-11	940L (N. Lethbridge 370S to Picture Butte 120S)	911L (Peigan 59S to SS-65)	376 MVA	105.0
	B-1-12	911L (Peigan 59S to SS-65)	180L (Fort Macleod 15S to Stavely 928S)	98 MVA	115.0
2014SP	B-2-2	863L (Magrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 313S tap)	27 MVA	103.4
	B-2-3	Magrath 225S T1 138/69 kV Transformer	225L (Stirling 67S to Raymond 313S tap)	27 MVA	102.3
	B-2-4	725L (Fort MacLeod 15S to Bowron 674S)	172L (N. Lethbridge 370S to Monarch 492S)	93 MVA	105.5
	B-2-5	911L (Peigan 59S to SS-65)	170L (Coleman 799S to Russell 632S)	123 MVA	101.6
	B-2-6	955L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	192 MVA	107.3
	B-2-7	956L (Goose Lake 103S to Peigan 59S)	Peigan 59S 240/138 kV Transformer T1	192 MVA	107.3

### 4.3 Single Element Contingency (N-1) Conditions after Applying the TCM Rule

In order to facilitate RAS design, overloads under N-0 conditions are removed before N-1 events are studied. For the 2014 SL study scenario, there is no overload under N-0 conditions. Therefore, the N-1 results for 2014SL in Table

4-2 can be used to facilitate RAS design. For the 2014 SP study scenario, overloads exist under N-0 conditions. The AESO TCM Rule is applied in the study cases to remove these overloads on 911L and 180L under N-0 conditions, i.e., curtailing all effective generators in Area 53 using a pro-rata methodology. These effective generators are listed in the Appendix F to the original Engineering Study. As a result, approximately 210 MW of generation is curtailed in the 2014SP study case. Then power flow analysis under N-1 conditions is performed and the results are shown in Table 4-3. The SLDs of these results are presented in Attachment C.

The study results under N-1 conditions after removing all N-0 overloads have shown potential overloads on transmission lines 911L, 180L, 225L and Peigan 59S Transformer T1, as shown in Table 4-2 for 2014SL and Table 4-3 for 2014SP scenarios. Section 4.1 and 4.2 describes that these overloads are caused by or significantly worsened by the connection of Riverview WAGF. Therefore, in order to mitigate these potential overloads under N-1 conditions, operator intervention or RAS may be required to run back or trip the Riverview WAGF.

The AESO is currently assessing the existing RAS in southern Alberta to mitigate the identified potential overloads, specifically on 180L, and the detailed RAS design for the Riverview WAGF. The major communication facilities required to implement RAS for Riverview WAGF are already in place. Once the additional assessments are finalized and it is confirmed whether new RAS is needed for Riverview WAGF, AESO will issue an updated Functional Specification to the Transmission Facility Owner (TFO) and the market participant.

**Table 4-3: Overloads under N-1 Conditions - 2014 Post-Connection after Removing N-0 Overloads**

Scenario	Figure Number	Contingency	Overloaded Element		
			Monitored Element	MVA Flow	% Flow
2014SP	C-1-2	1005L (Picture Butte 120S to Milo 356S)	911L (Peigan 59S to SS-65)	403 MVA	112.0
			180L (Fort Macleod 15S to Stavely 928S)	93 MVA	108.3
	C-1-3	911L (Peigan 59S to SS-65)	180L (Fort Macleod 15S to Stavely 928S)	110 MVA	130.2
	C-1-4	968L (Peigan 59S to N. Lethbridge 370S)	911L (Peigan 59S to SS-65)	366 MVA	101.5
	C-1-5	967L (Peigan 59S to N. Lethbridge 370S)	911L (Peigan 59S to SS-65)	366 MVA	101.6
	C-1-6	412L (Pincher Creek 396S to Russell 632S)	911L (Peigan 59S to SS-65)	368 MVA	102.0

	C-1-7	170L (Russell 632S to Coleman 799S)	911L (Peigan 59S to SS-65)	379 MVA	105.1
	C-1-8	180L (Fort Macleod 15S to Stavely 928S)	911L (Peigan 59S to SS-65)	377 MVA	104.5

## **5. SUMMARY AND CONCLUSIONS**

This Sensitivity Study assesses the thermal impact of connecting Riverview WAGF to the AIES considering the latest ISDs of wind projects in southern Alberta. Power flow analysis is performed with this updated information, for pre- and post- Riverview WAGF connection 2014 SP and 2014 SL scenarios. All other assumptions are consistent with the original Engineering Study.

Compared with the original Engineering Study, the Sensitivity Study results show slightly lower overloads under N-0 and N-1 conditions. Prior to completion of the SATR developments, the AESO TCM rule will be applied to manage potential overloads on 911L and 180L under system normal conditions. All of the directly affected generators provided in the original Engineering Study Appendix F remain the same. Operator intervention or RAS may be required to run back or trip Riverview WAGF under certain contingencies to alleviate the potential overloads on transmission lines 911L, 180L, 225L and Peigan 59S 240/138 kV Transformer T1. A number of operating procedures and RAS are already implemented to manage the anticipated overloads on 180L, 225L and Peigan 59S 240/138 kV Transformer T1.

The AESO is currently assessing the existing RAS in southern Alberta to mitigate the identified potential overloads, specifically on 180L, and the detailed RAS design for the Riverview WAGF. The major communication facilities required to implement RAS for Riverview WAGF are already in place. Once the additional assessments are finalized and it is confirmed whether new RAS is needed for Riverview WAGF, AESO will issue an updated Functional Specification to the TFO and the market participant.

## **Attachment A**

### **Pre-Connection 2014 Power Flow Results**

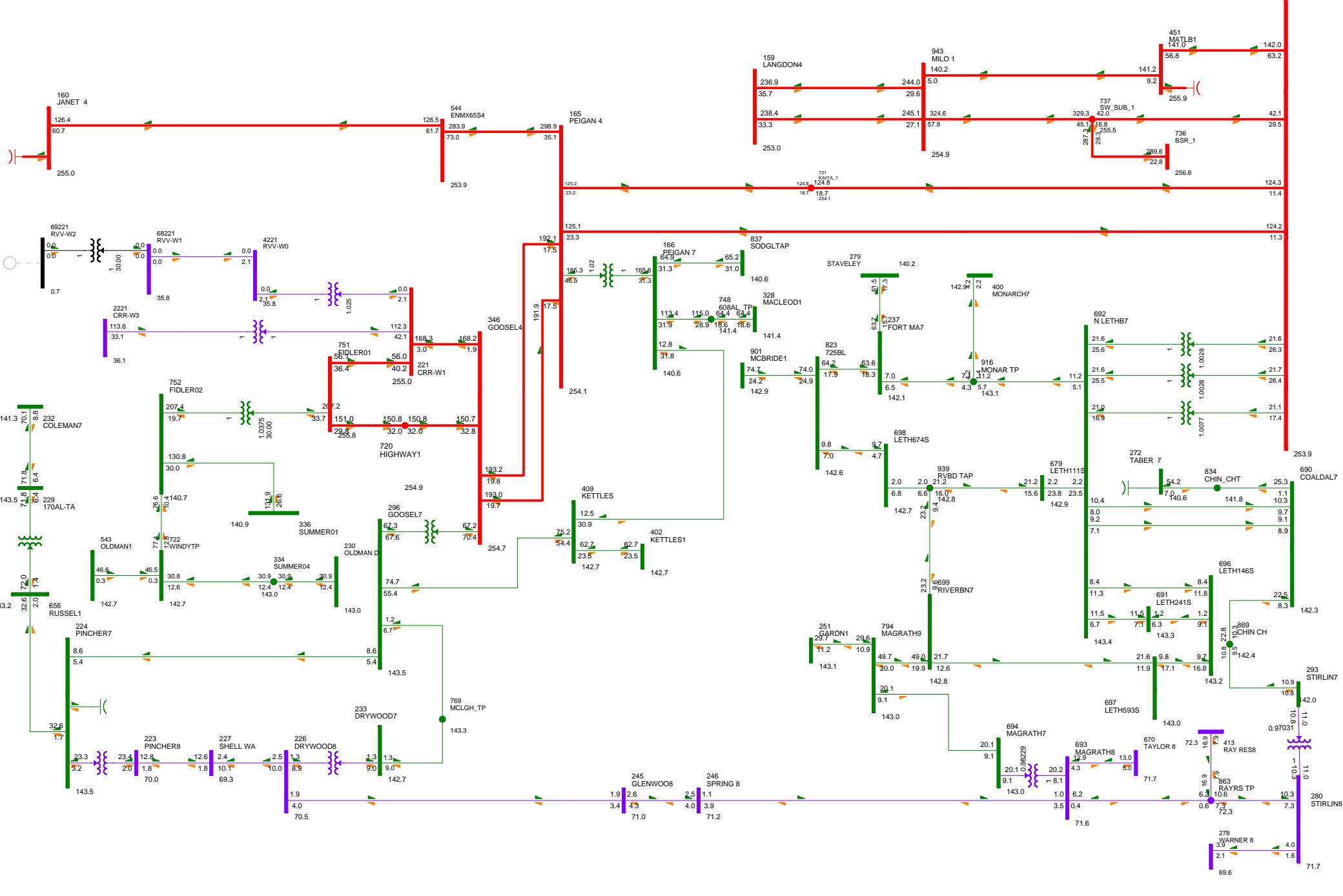


FIGURE A\_1\_1, 2014SL PRE-CONNECTION  
 BASE CASE  
 FRI, APR 12 2013 13:21  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

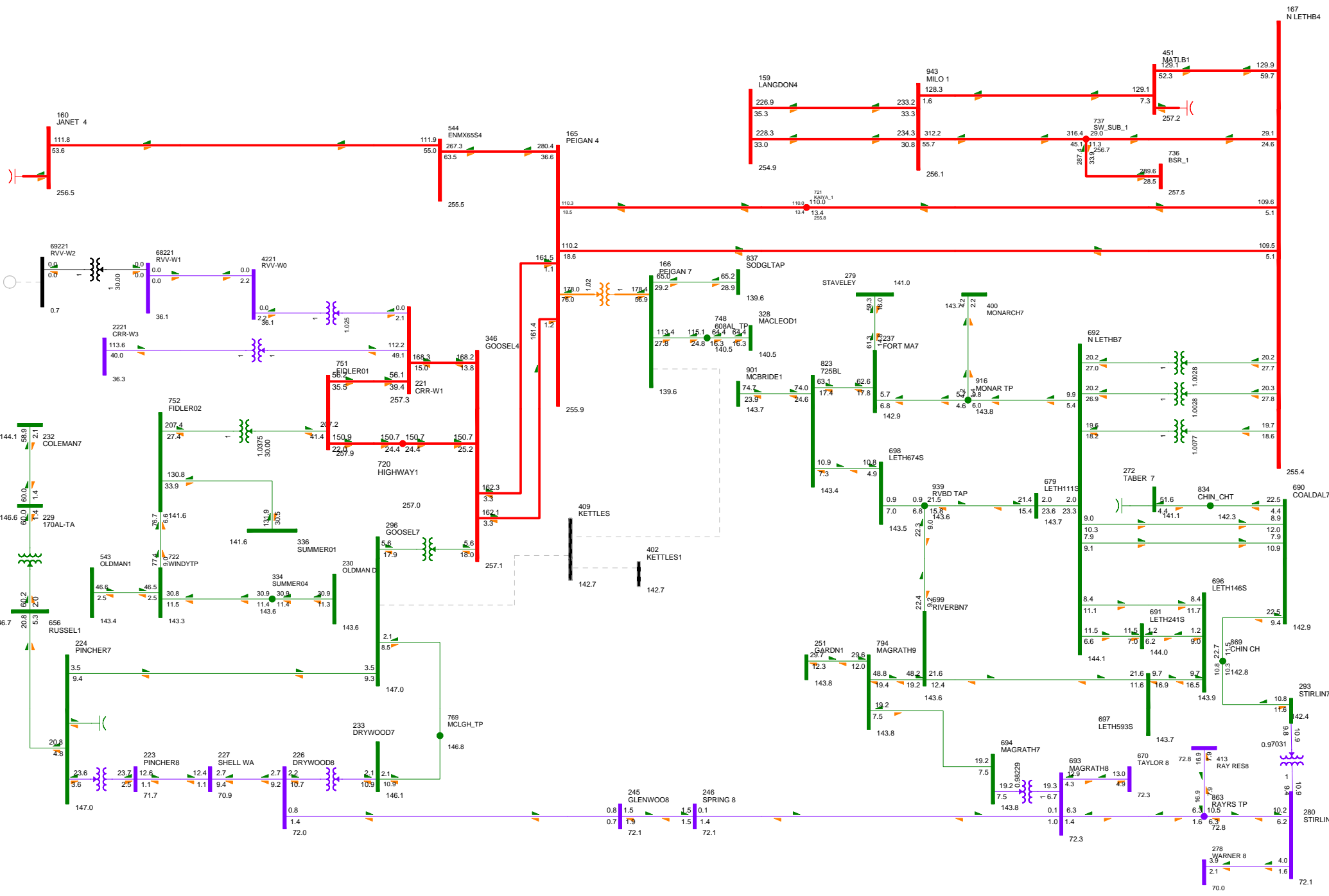


FIGURE A 1 2, 2014SL PRE-CONNECTION  
 616L (GOOSE LAKE 103S TO PEIGAN 99S)  
 FRI, APR 12 2013 13:22  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

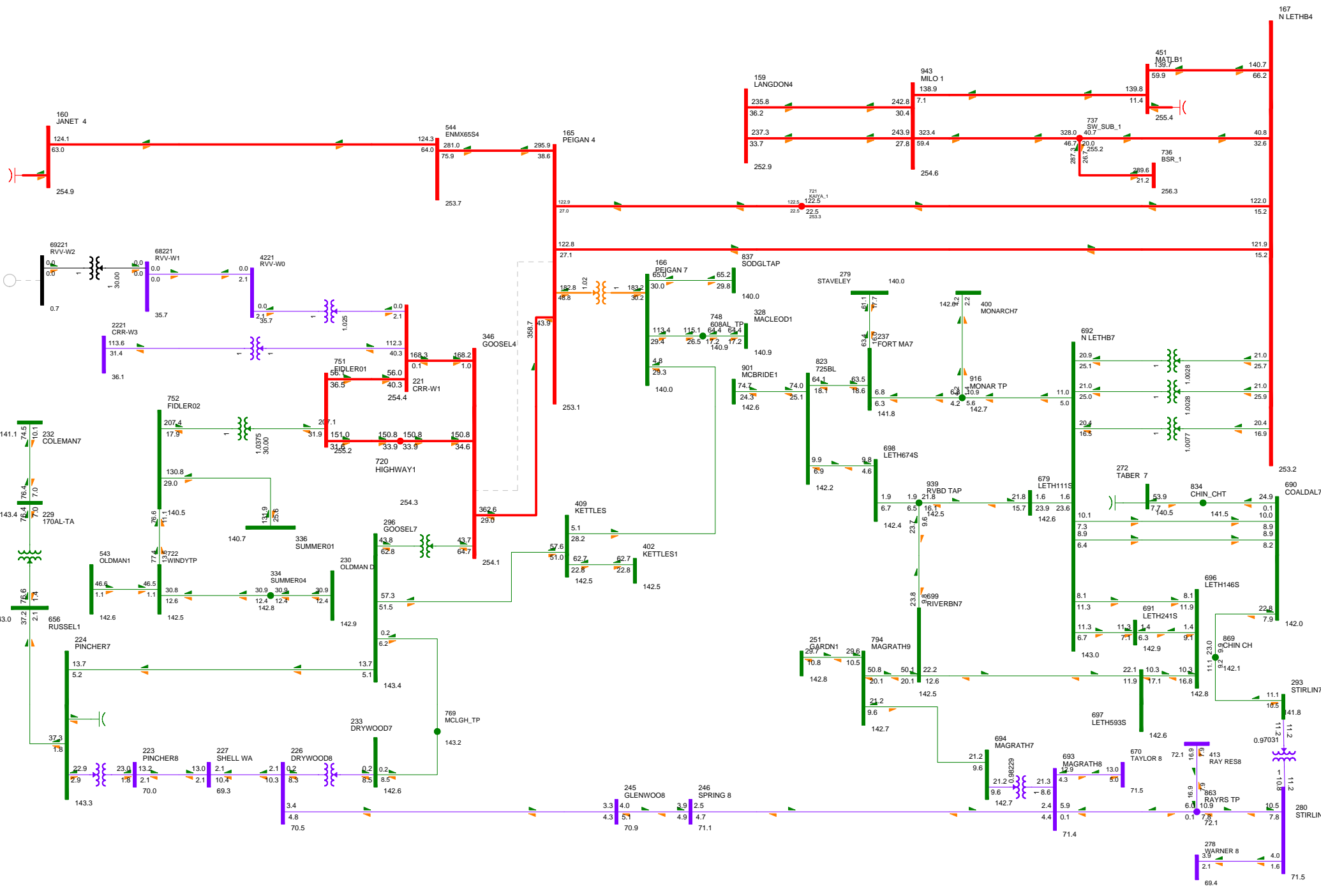


FIGURE A 1 - 3, 2014SL PRE-CONNECTION  
 955L (GOOSE LAKE 103S TO PEIGAN 99S)  
 FRI, APR 12 2013 13:22  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

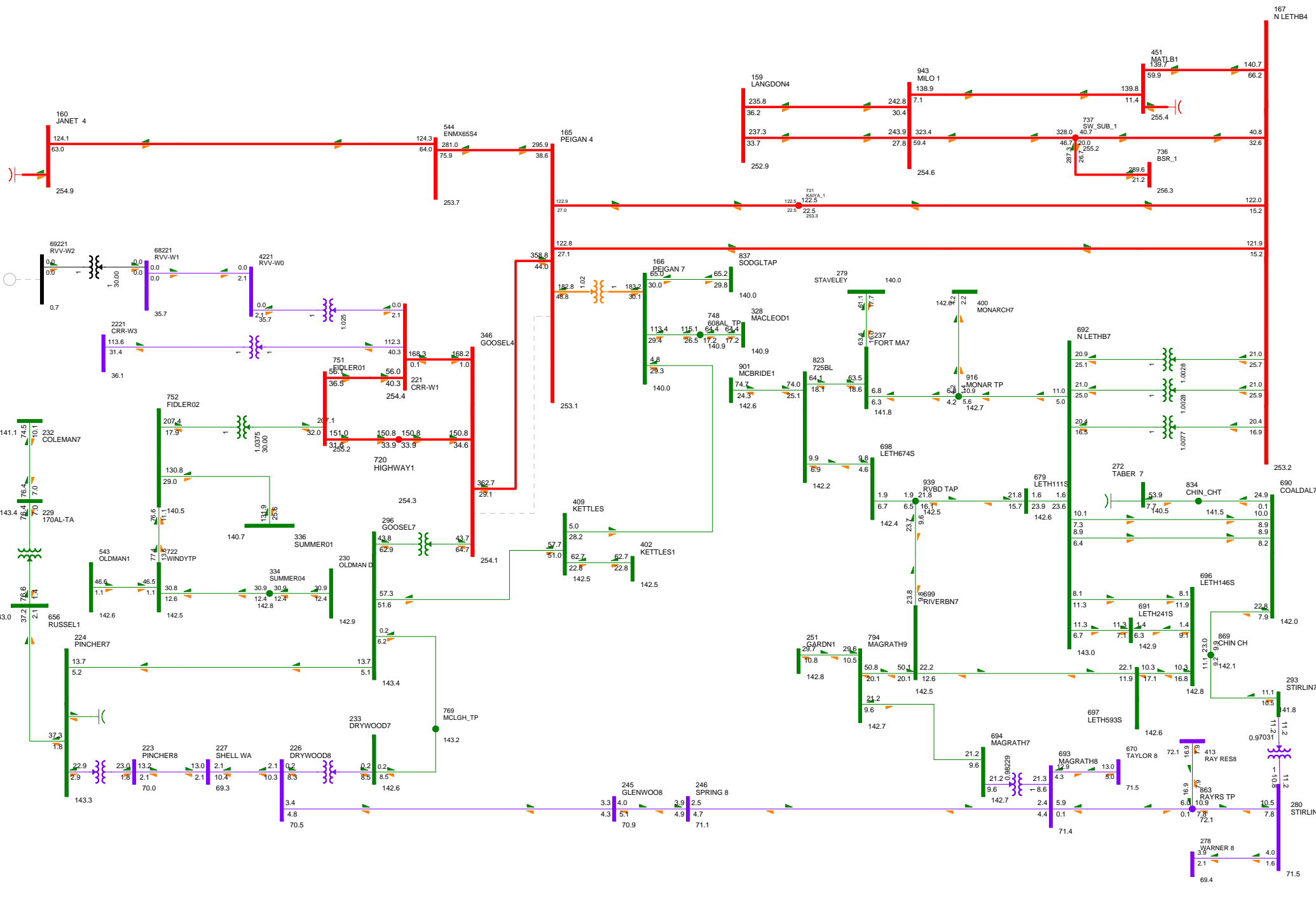


FIGURE A 1 4, 2014SL PRE-CONNECTION  
 996L (GOOSE LAKE 103S TO PEIGAN 99S)  
 FRI, APR 12 2013 13:22  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



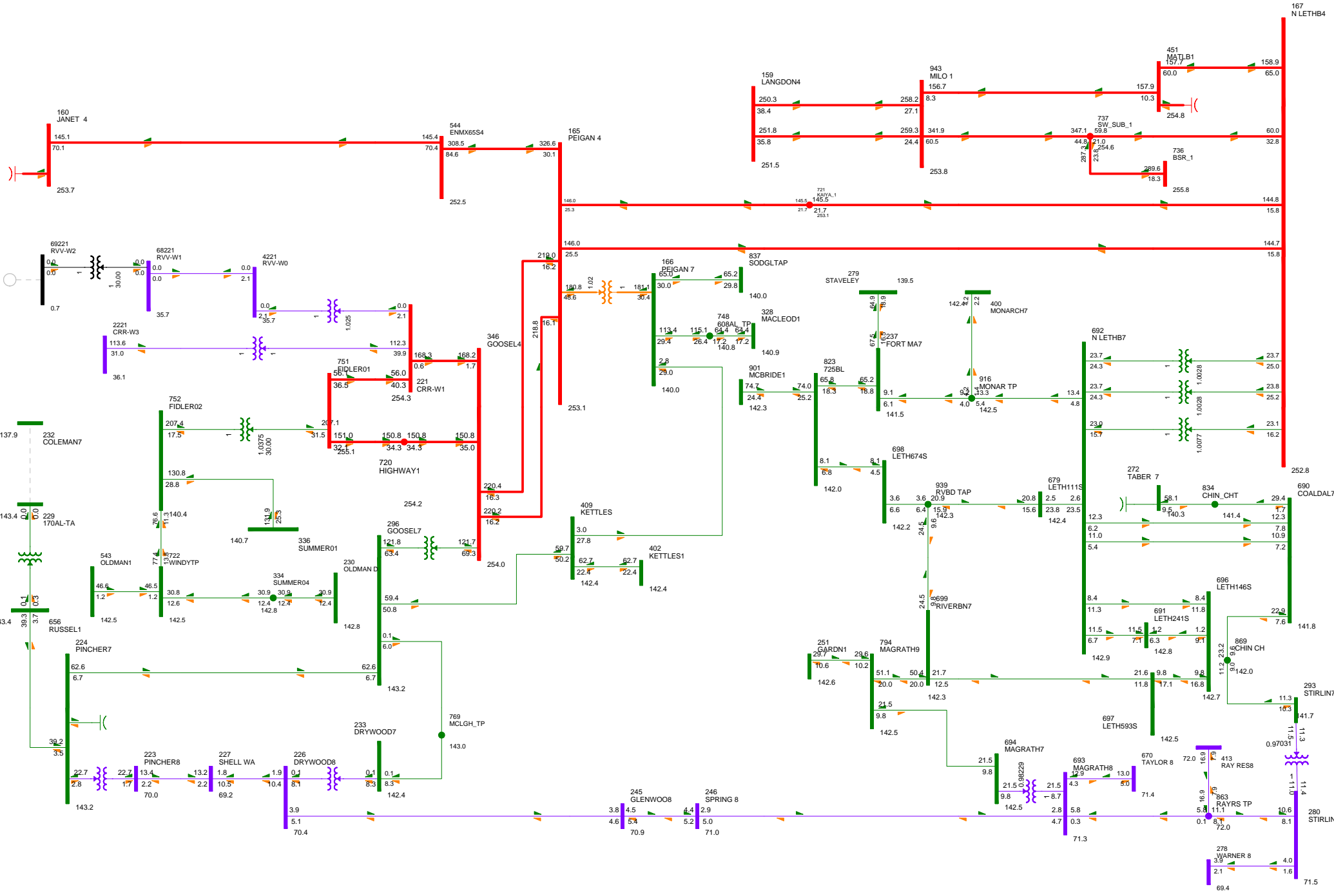


FIGURE A 1-5, 2014SL PRE-CONNECTION  
170L (RUSSELL 6325 TO COLEMAN 7995)  
FRI, APR 12 2013 13:22  
P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: ≤34.500 ≤69.000 ≤138.000 ≤240.000 ≤500.000  
100.0%RATEA

Bus - VOLTAGE (KV/PU)  
Branch - MW/MVAR  
Equipment - MW/MVAR

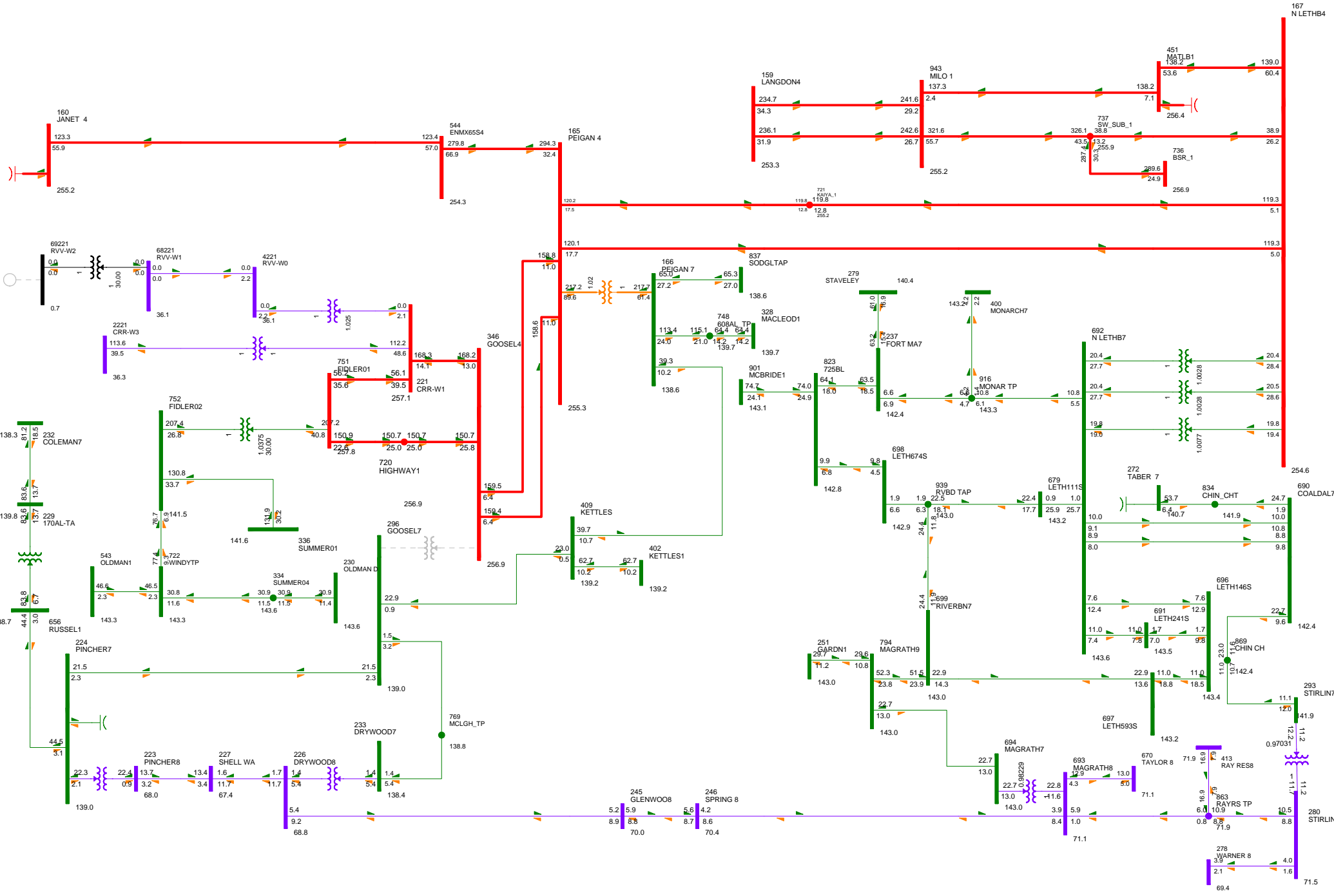


FIGURE A.1.6, 2014SL PRE-CONNECTION  
 GOOSE LAKE 103S 240/138 KV TRANSFORMER T1  
 FRI, APR 12 2013 13:22  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

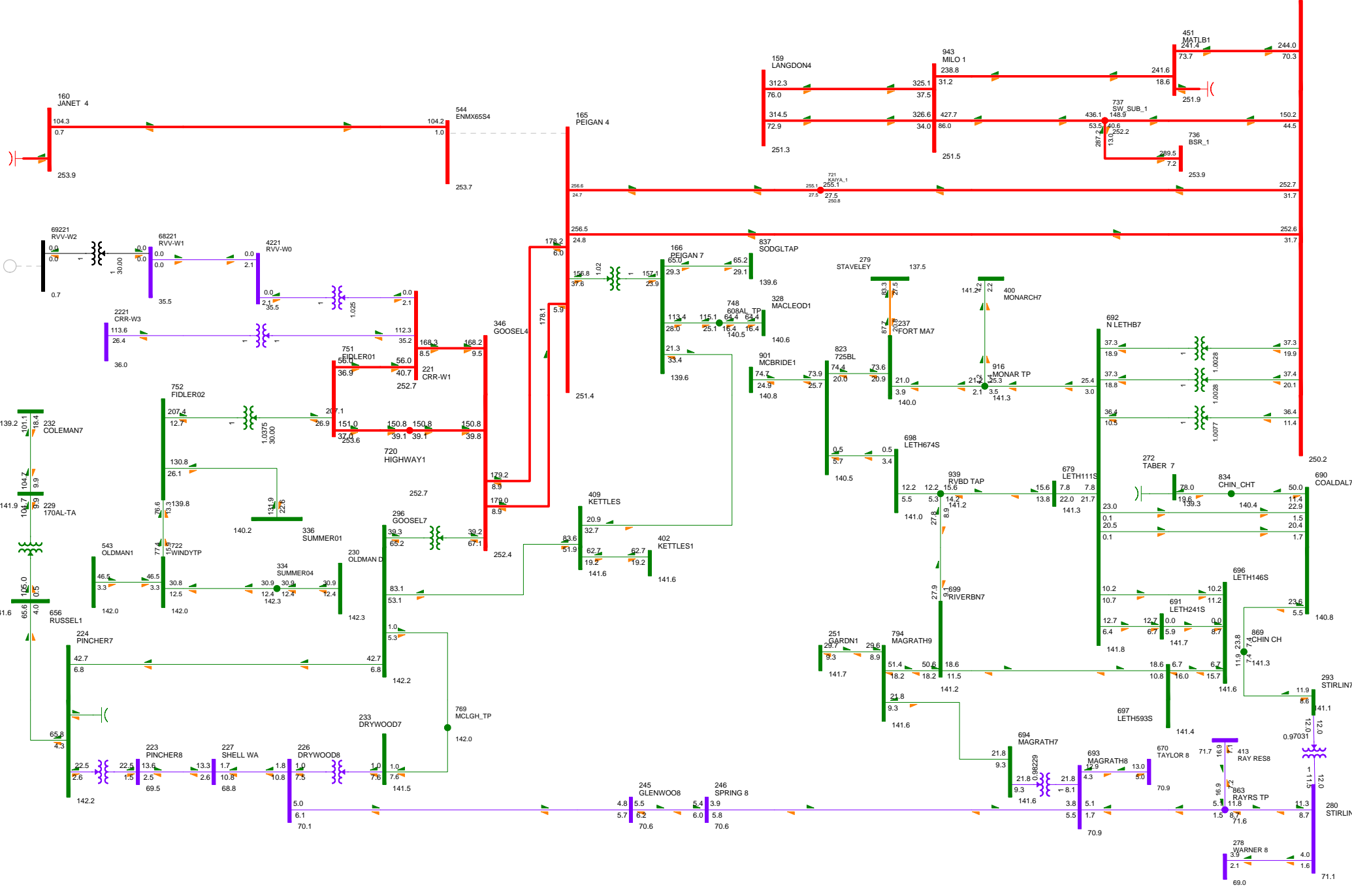


FIGURE A 1-7, 2014SL PRE-CONNECTION  
 911L (PEIGAN S8S TO SS-65)  
 FRI, APR 12 2013 13:22  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

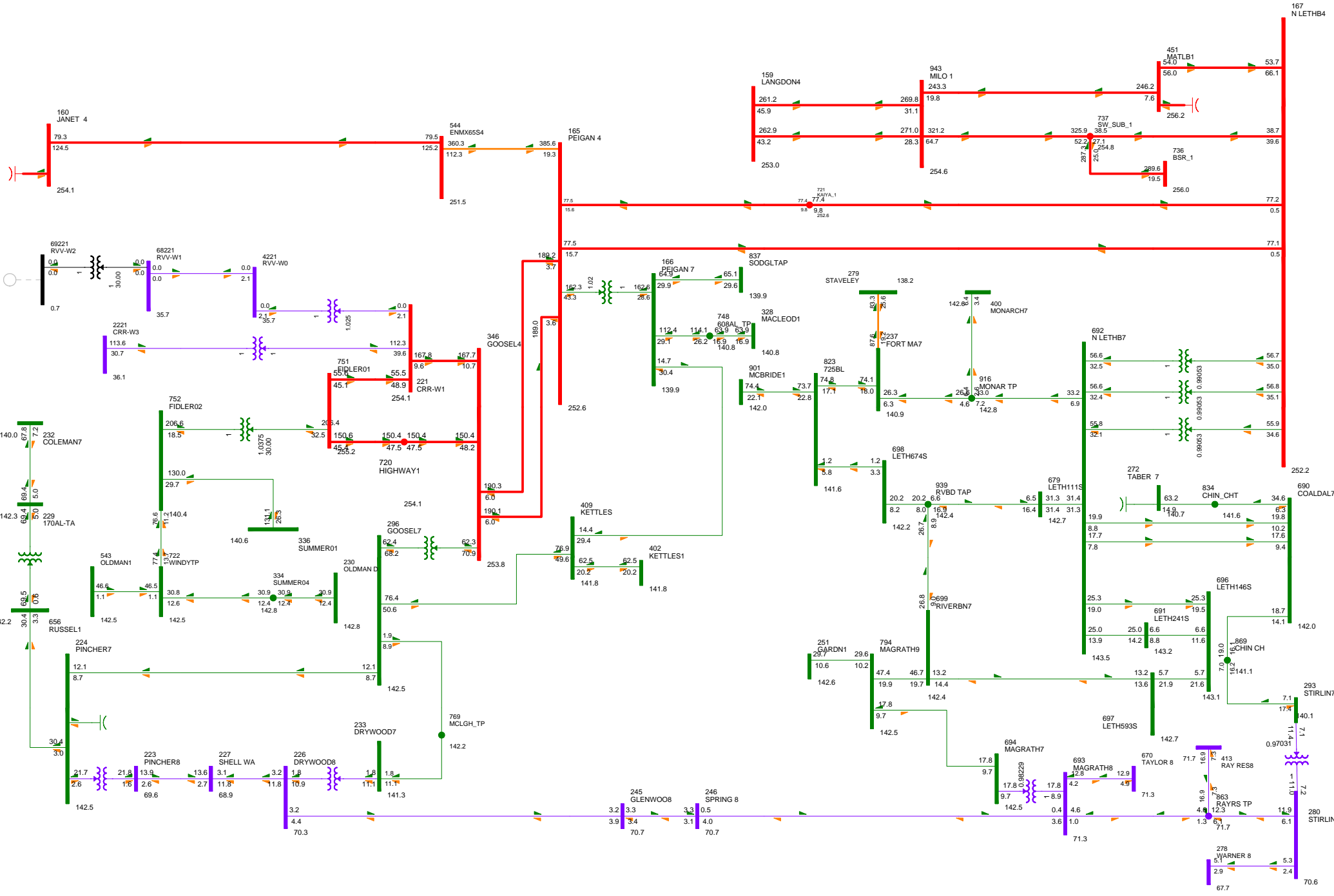


FIGURE A\_2\_1, 2014SP PRE-CONNECTION  
 BASE CASE  
 FRI, APR 12 2013 13:24  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

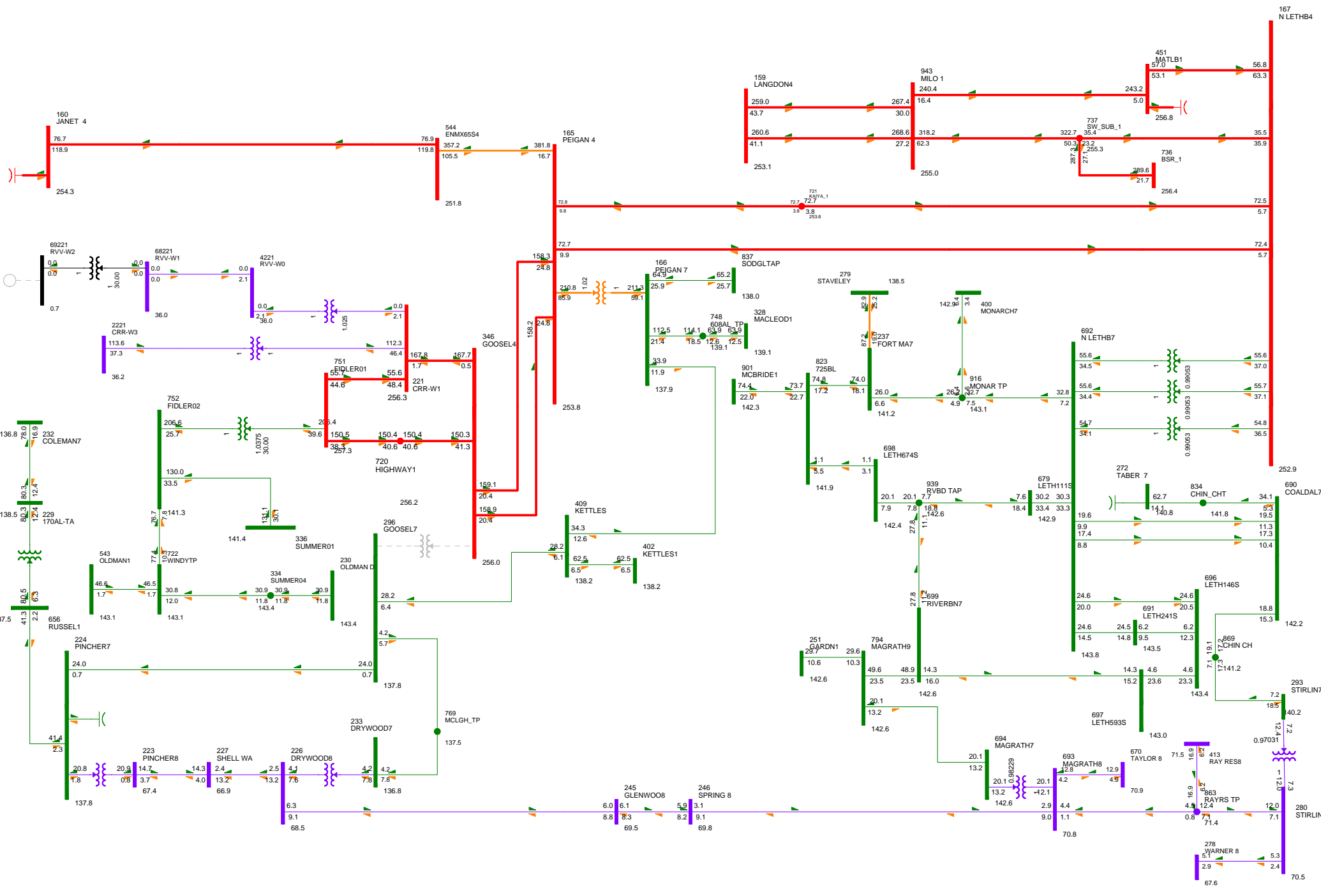


FIGURE A.2.2. 2014SP PRE-CONNECTION  
 GOOSE LAKE 103S 240/138 KV TRANSFORMER T1  
 FRI, APR 12 2013 13:24  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

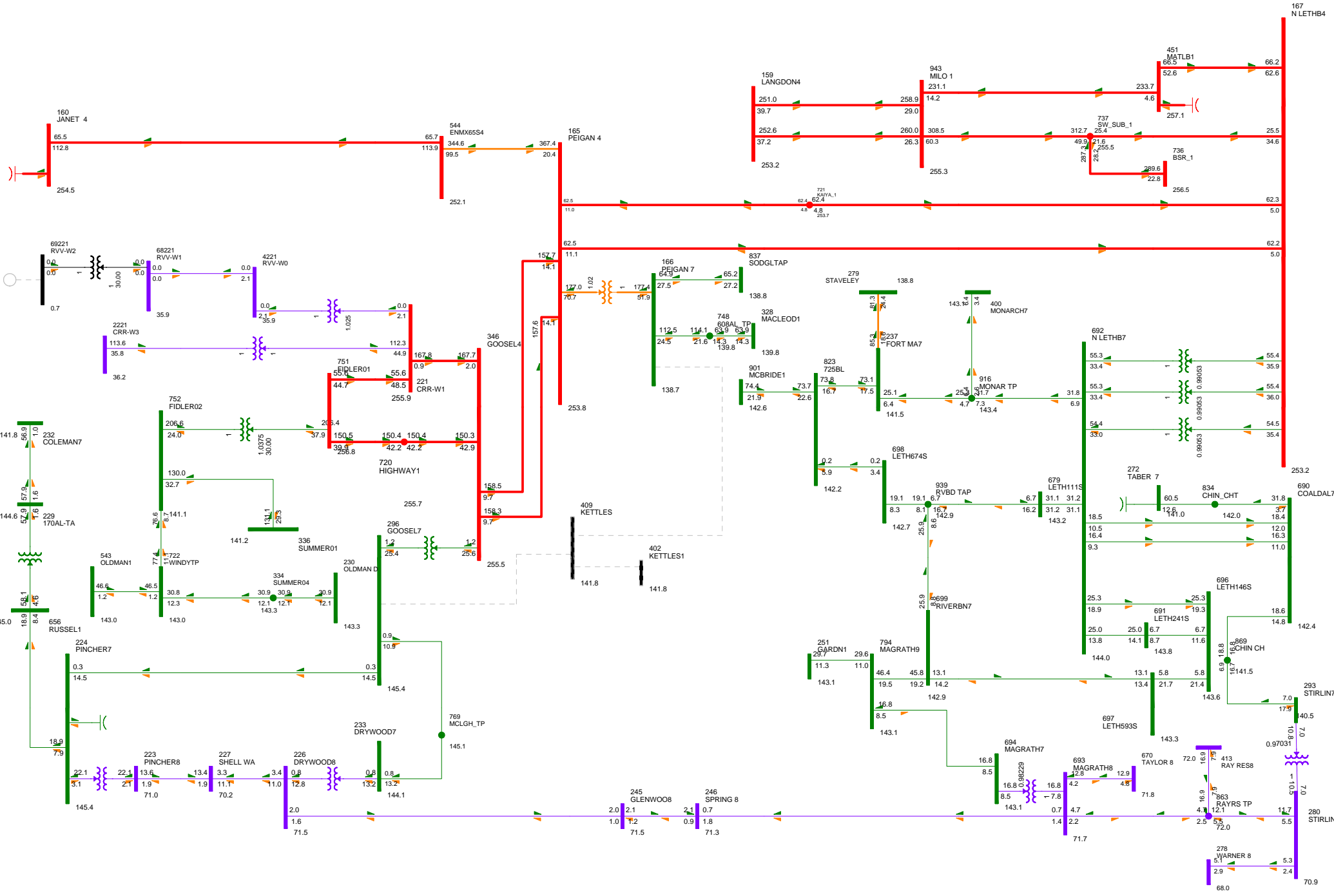


FIGURE A 2 - 3, 2014SP PRE-CONNECTION  
 616L (GOOSE LAKE 103S TO PEIGAN 59S)  
 FRI, APR 12 2013 13:24  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

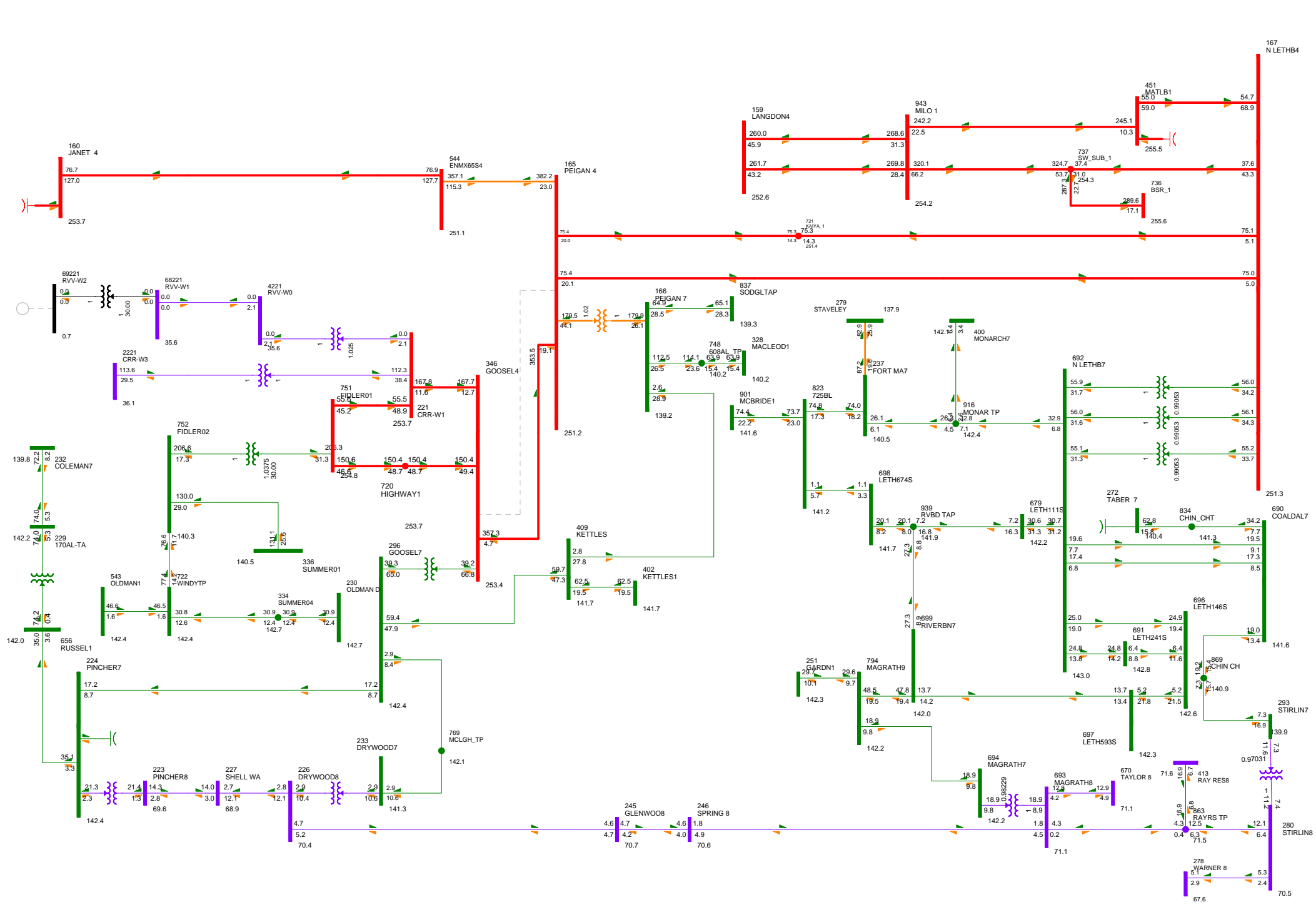


FIGURE A 2-4. 2014SP PRE-CONNECTION  
 955L (GOOSE LAKE 103S TO PEIGAN 59S)  
 FRI, APR 12 2013 13:30  
 P524\_Sensitivity

### Project 524 Riverview WAGF - Sensitivity Study

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

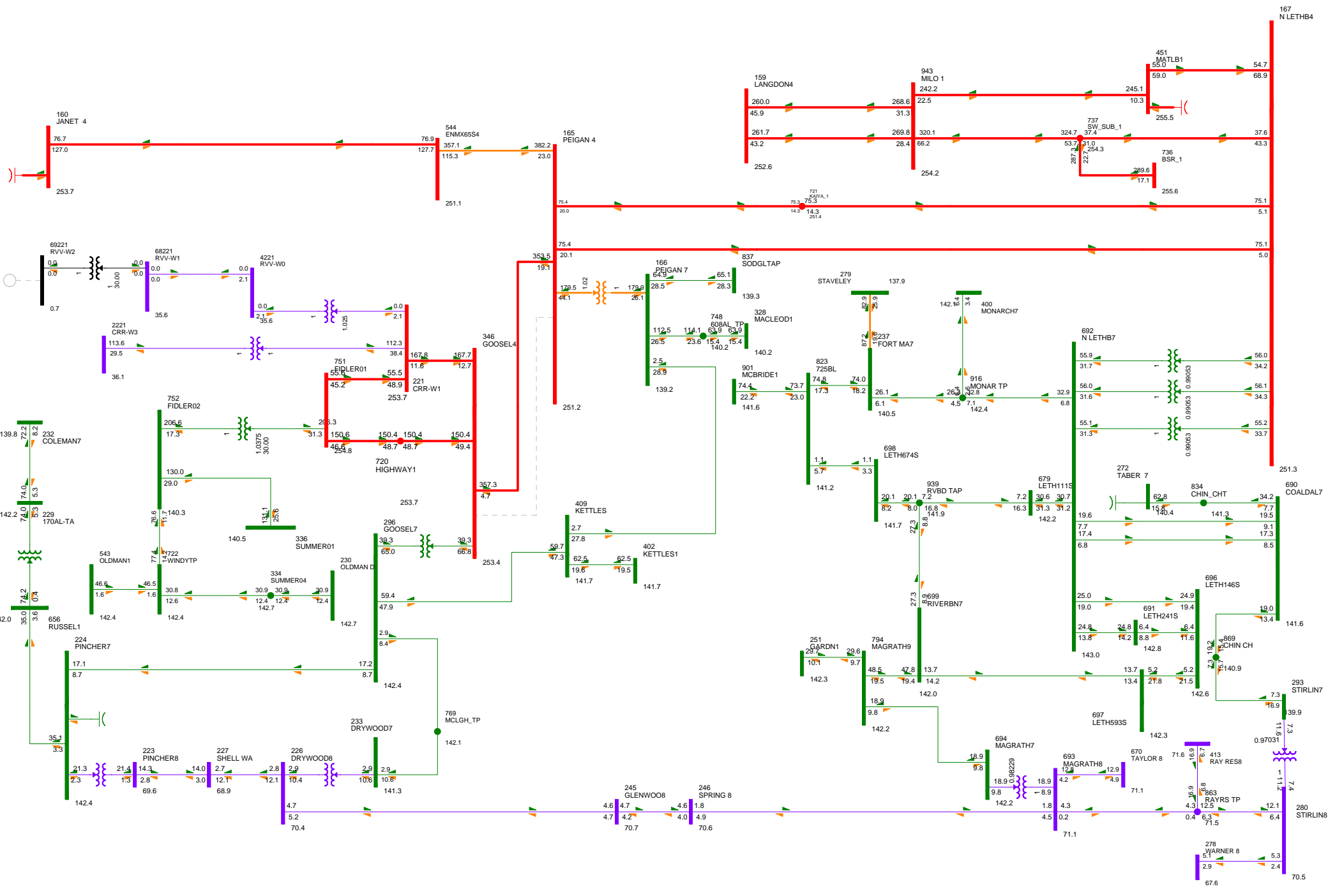


FIGURE A 2 5, 2014SP PRE-CONNECTION  
 996L (GOOSE LAKE 103S TO PEIGAN 59S)  
 FRI, APR 12 2013 13:30  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



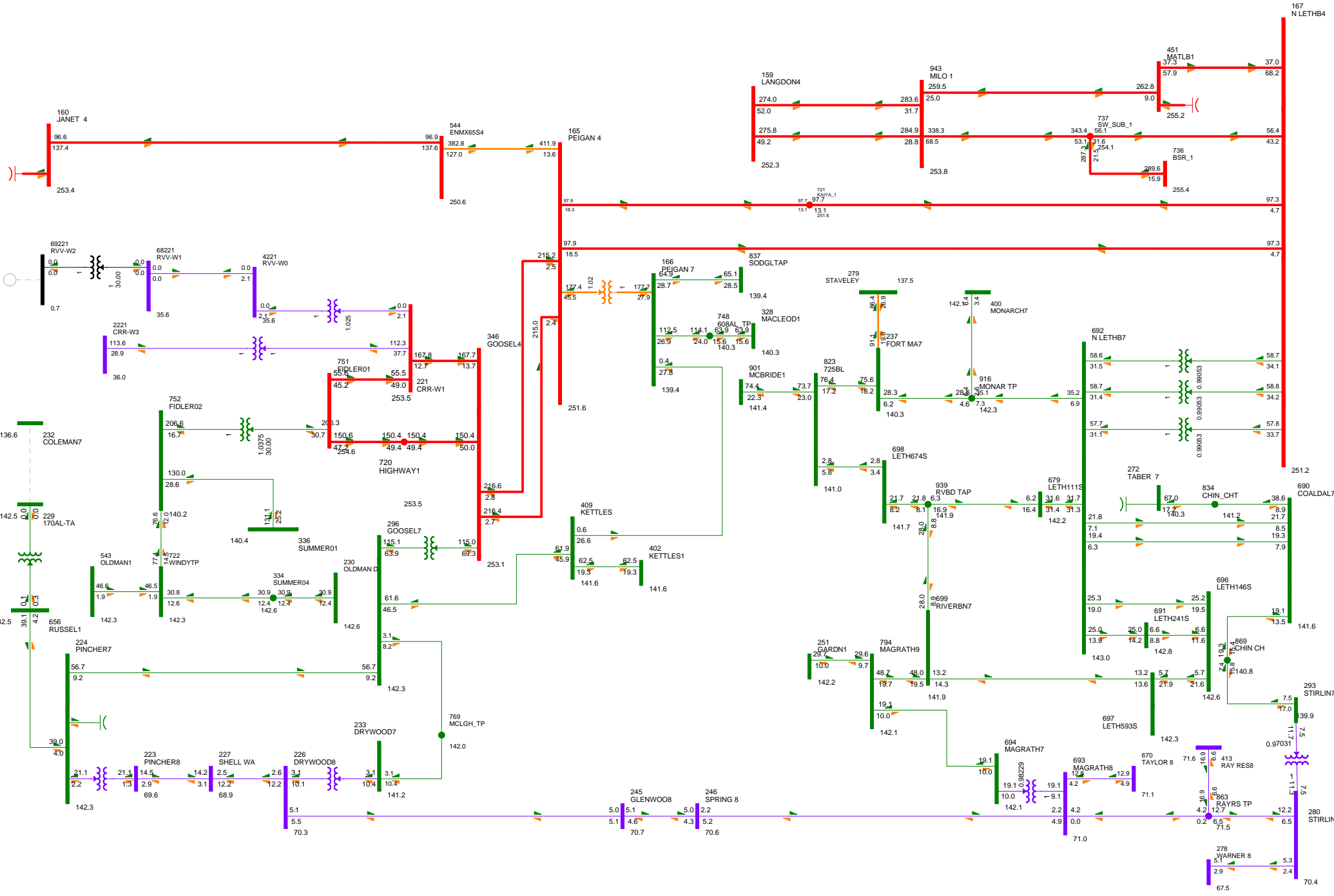


FIGURE A 2 6. 2014SP PRE-CONNECTION  
 170L (RUSSELL 6325 TO COLEMAN 7995)  
 FRI, APR 12 2013 13:30  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

## **Attachment B**

### **Post-Connection 2014 Power Flow Results**

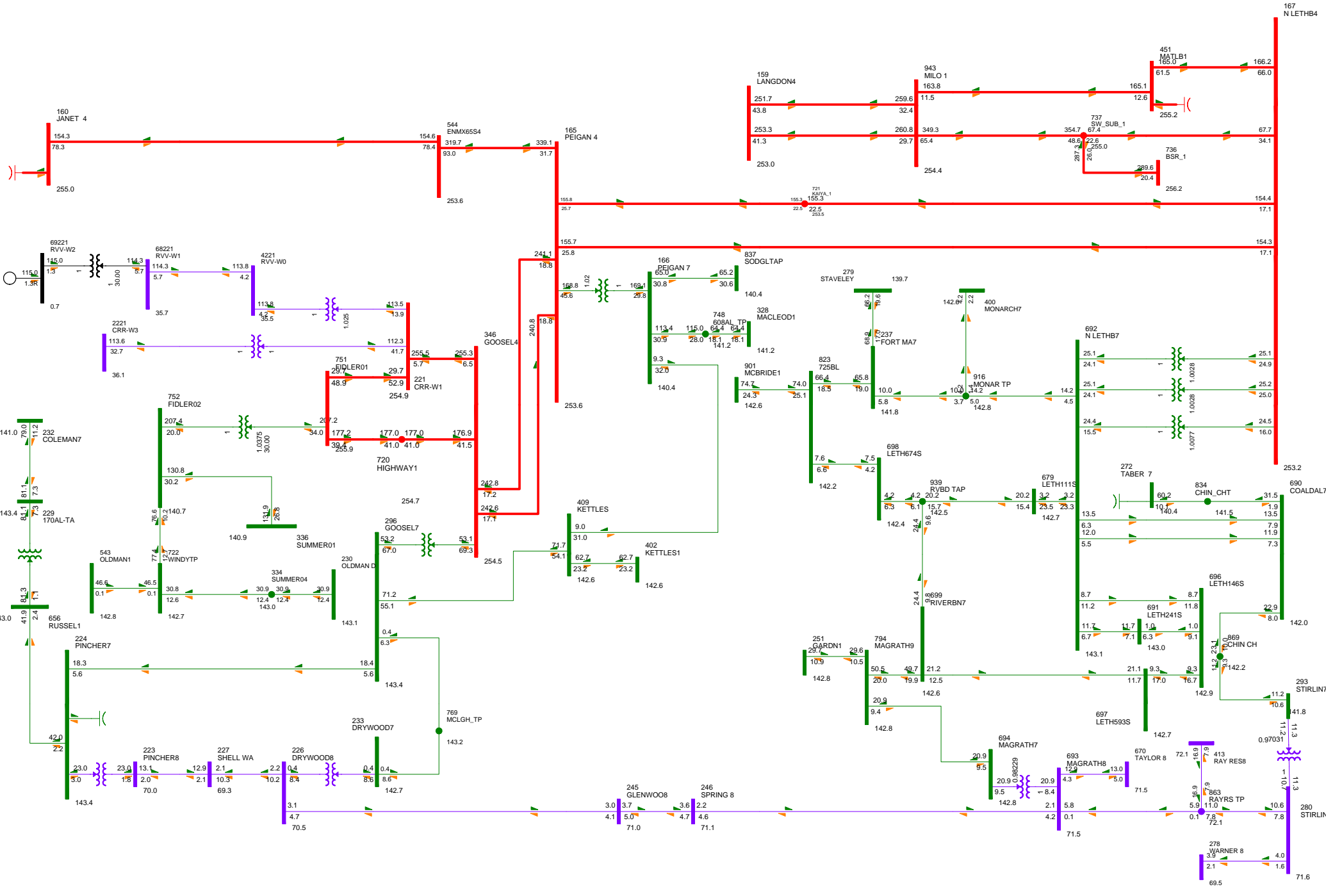


FIGURE B\_1\_1, 2014SL POST-CONNECTION  
 BASE CASE  
 FRI, APR 12 2013 13:34  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

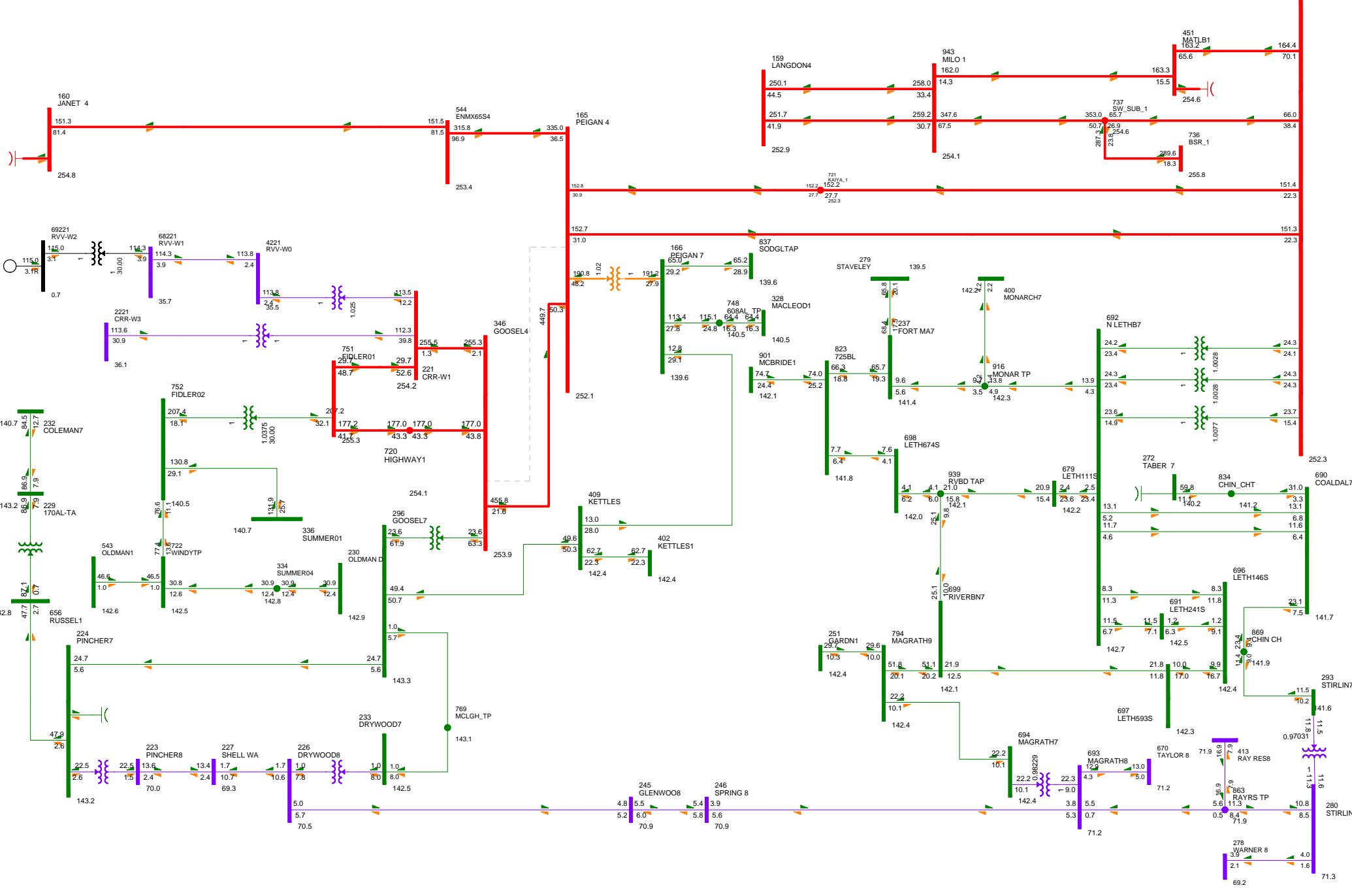


FIGURE B 1 2, 2014SL POST-CONNECTION  
 995L (GOOSE LAKE 103S TO PEIGAN 99S)  
 FRI, APR 12 2013 13:34  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

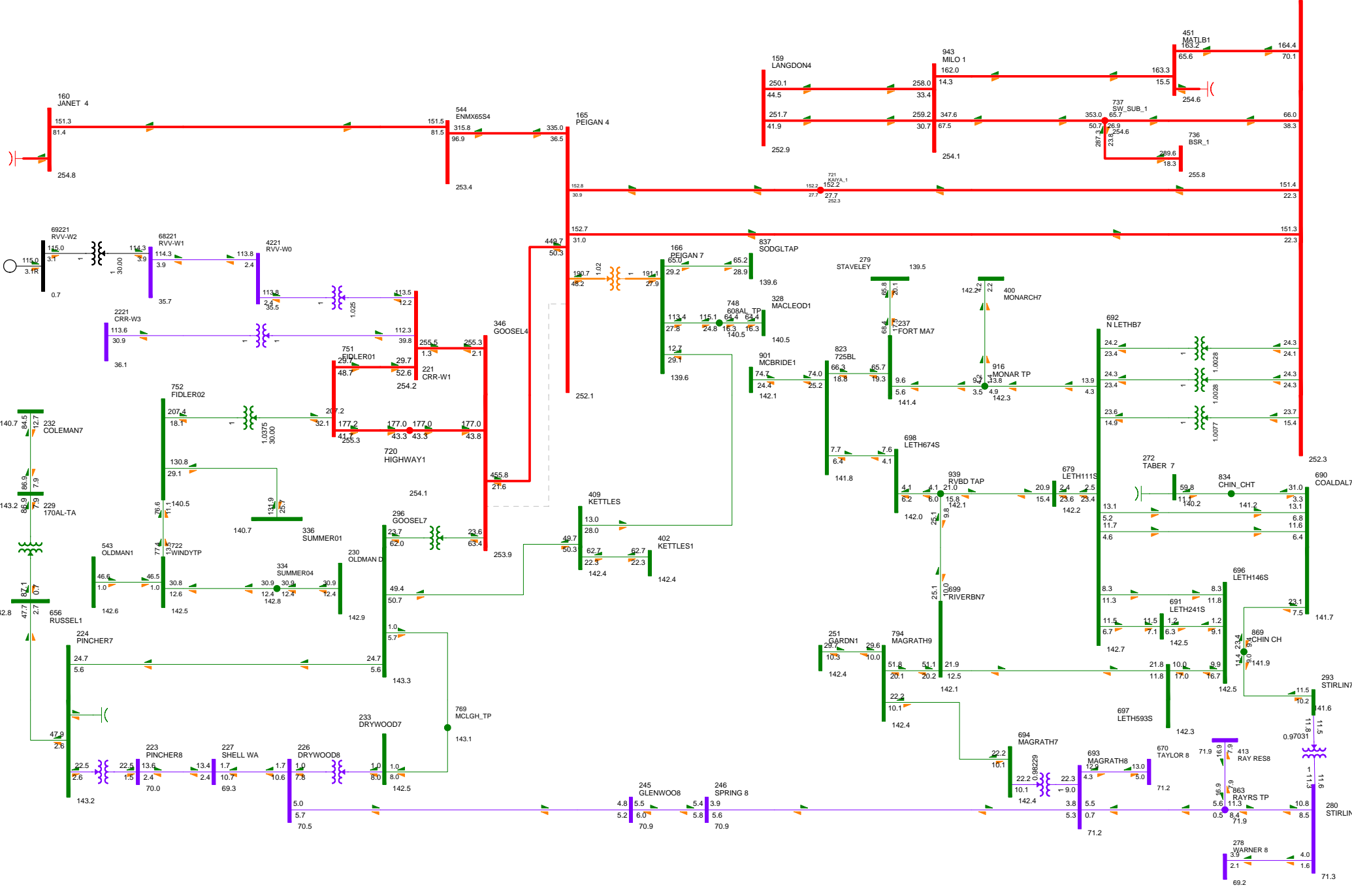


FIGURE B 1-3, 2014SL POST-CONNECTION  
 996L (GOOSE LAKE 103S TO PEIGAN 99S)  
 FRI, APR 12 2013 13:34  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

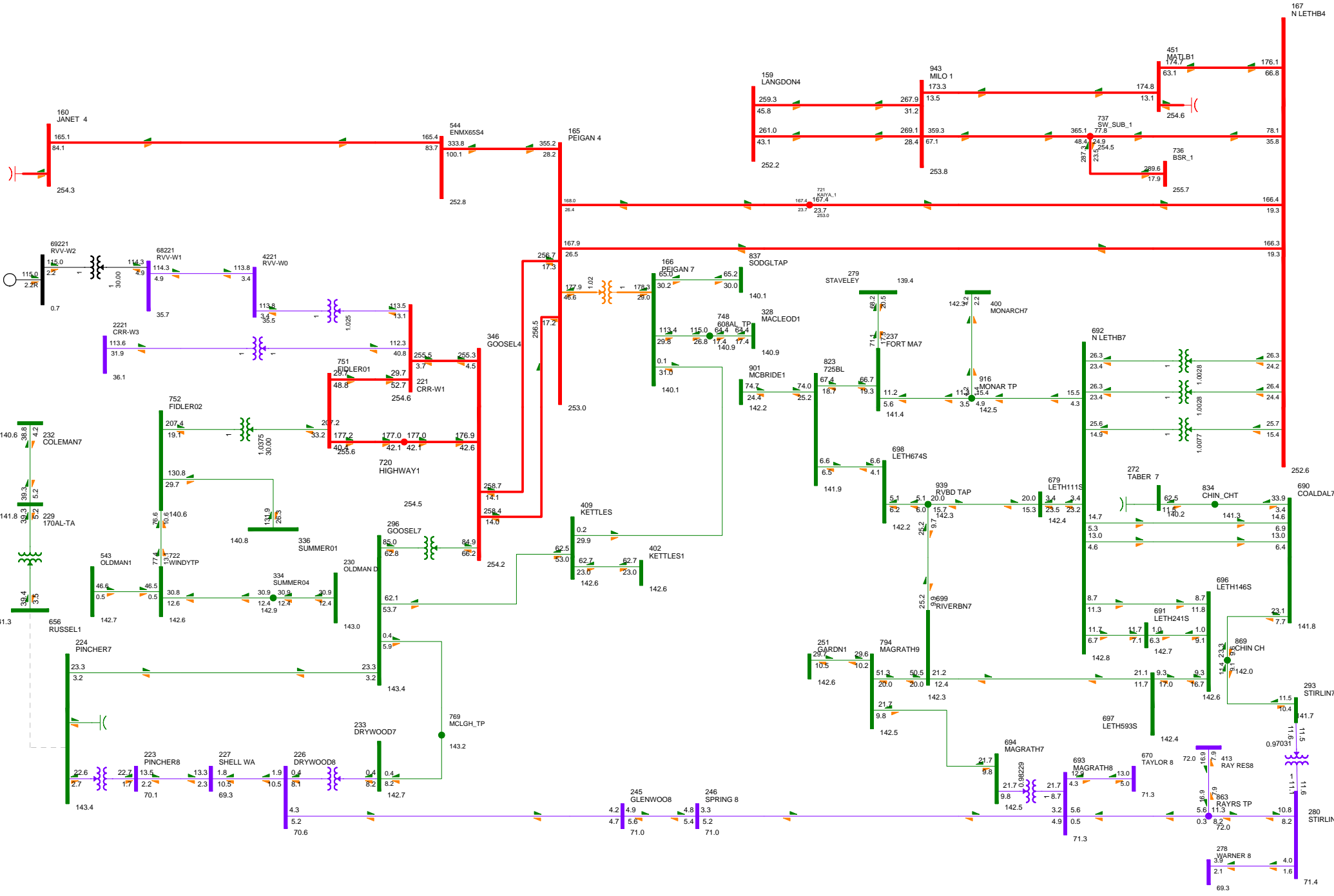


FIGURE B 1 4, 2014SL POST-CONNECTION  
 412L (PINCHER CREEK 396S TO RUSSELL 632S)  
 FRI, APR 12 2013 13:34  
 P524\_Sensitivity

### Project 524 Riverview WAGF - Sensitivity Study

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

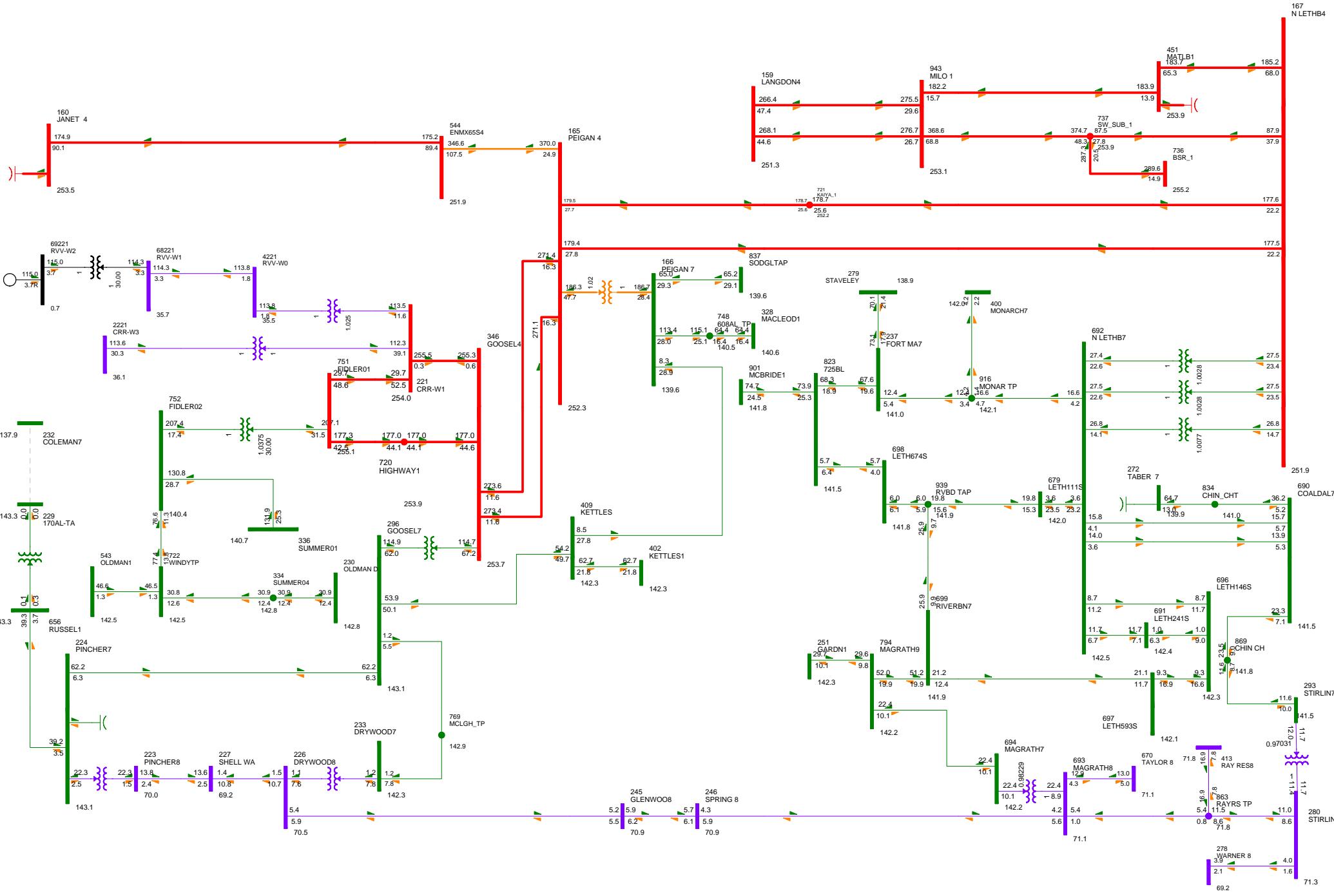


FIGURE B 1 5, 2014SL POST-CONNECTION  
170L (RUSSELL 6325 TO COLEMAN 7995)  
FRI, APR 12 2013 13:34  
P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
100.0%RATEA

Bus - VOLTAGE (KV/PU)  
Branch - MW/MVAR  
Equipment - MW/MVAR

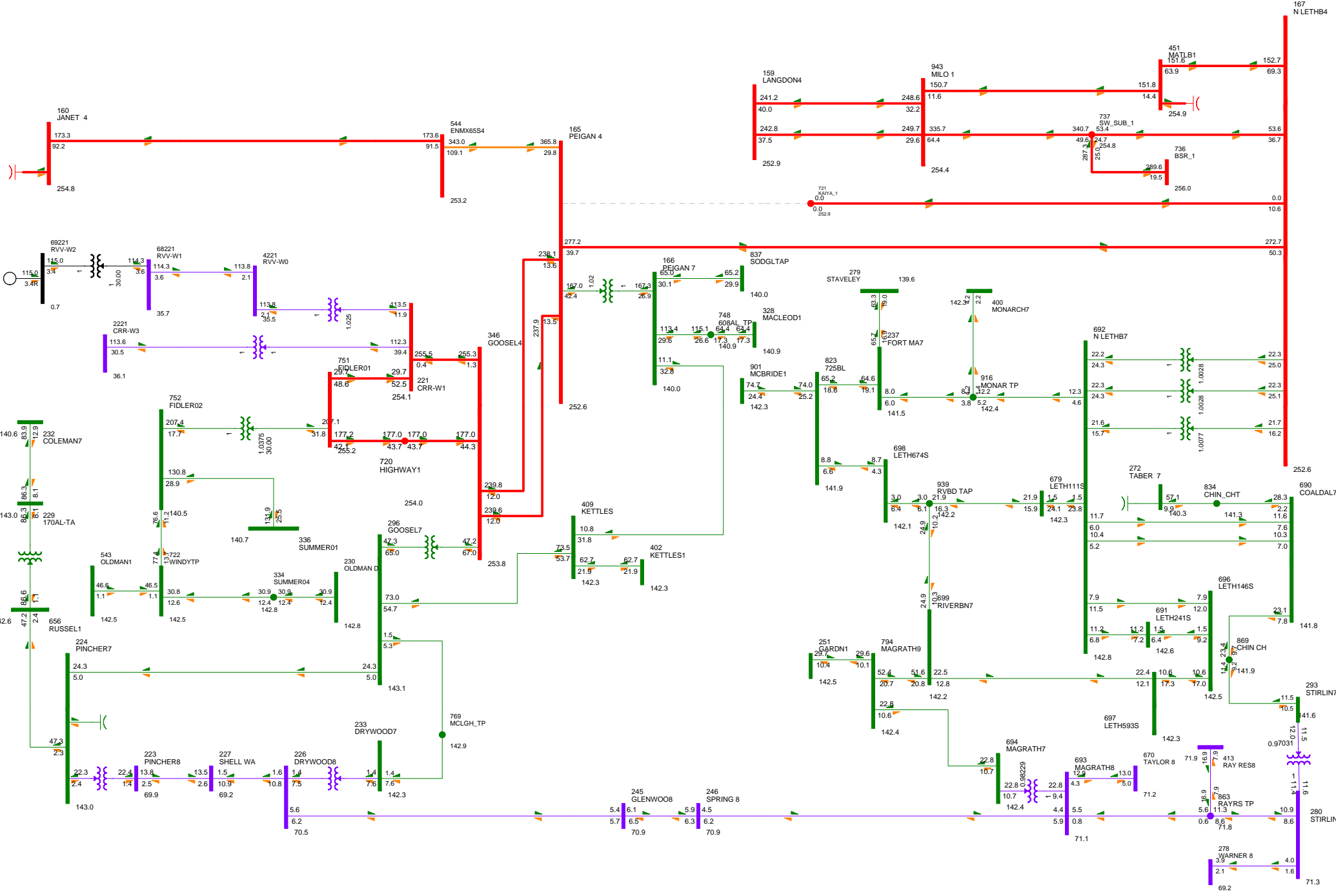


FIGURE B 1 6, 2014SL POST-CONNECTION  
 988L (PEIGAN 58S TO N LETHBRIDGE 370S)  
 FRI, APR 12 2013 13:35  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



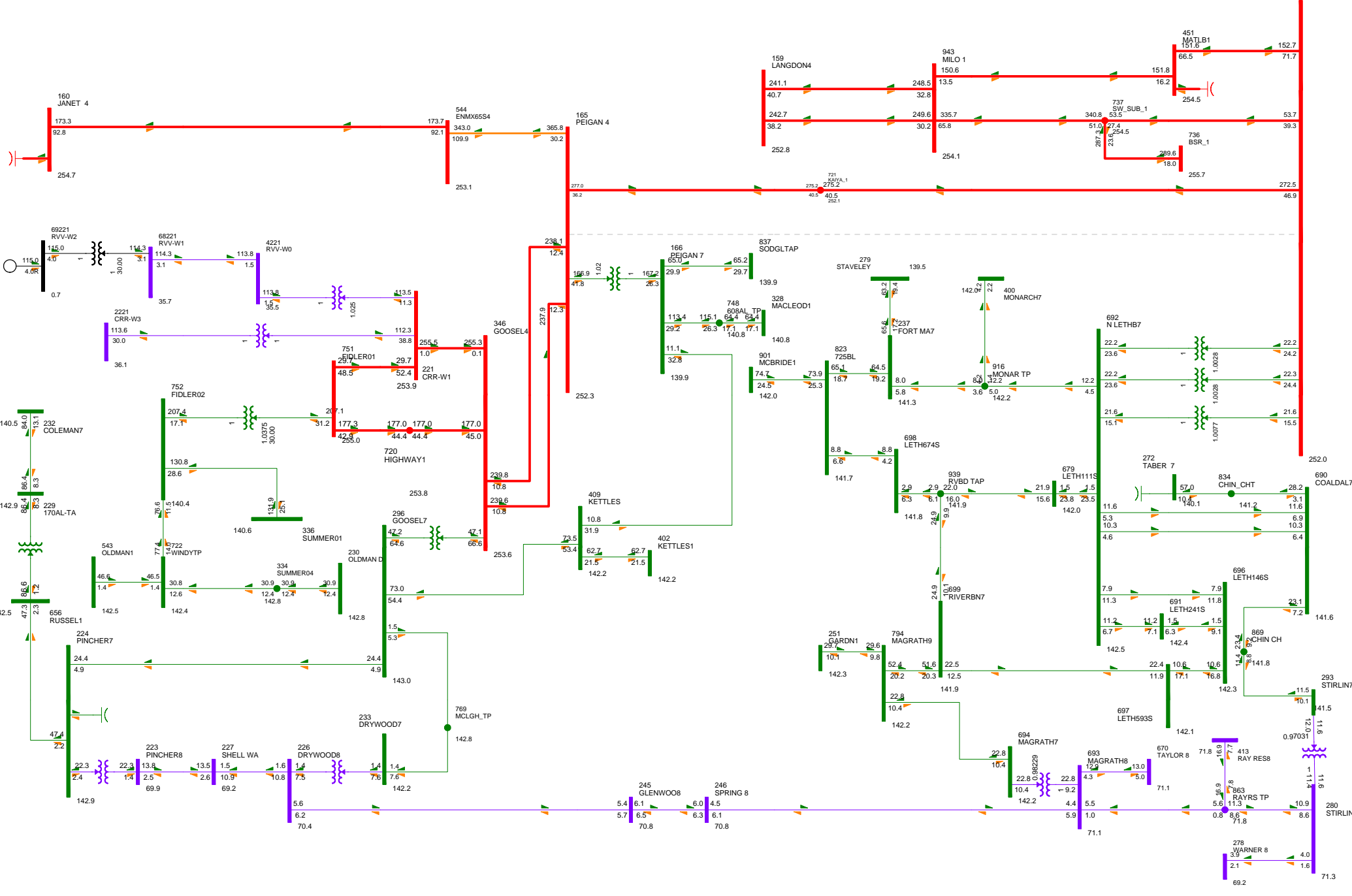


FIGURE B 1.7, 2014SL POST-CONNECTION  
 997L (PEIGAN 585 TO N LETHBRIDGE 370S)  
 FRL APR 12 2013 13:35  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

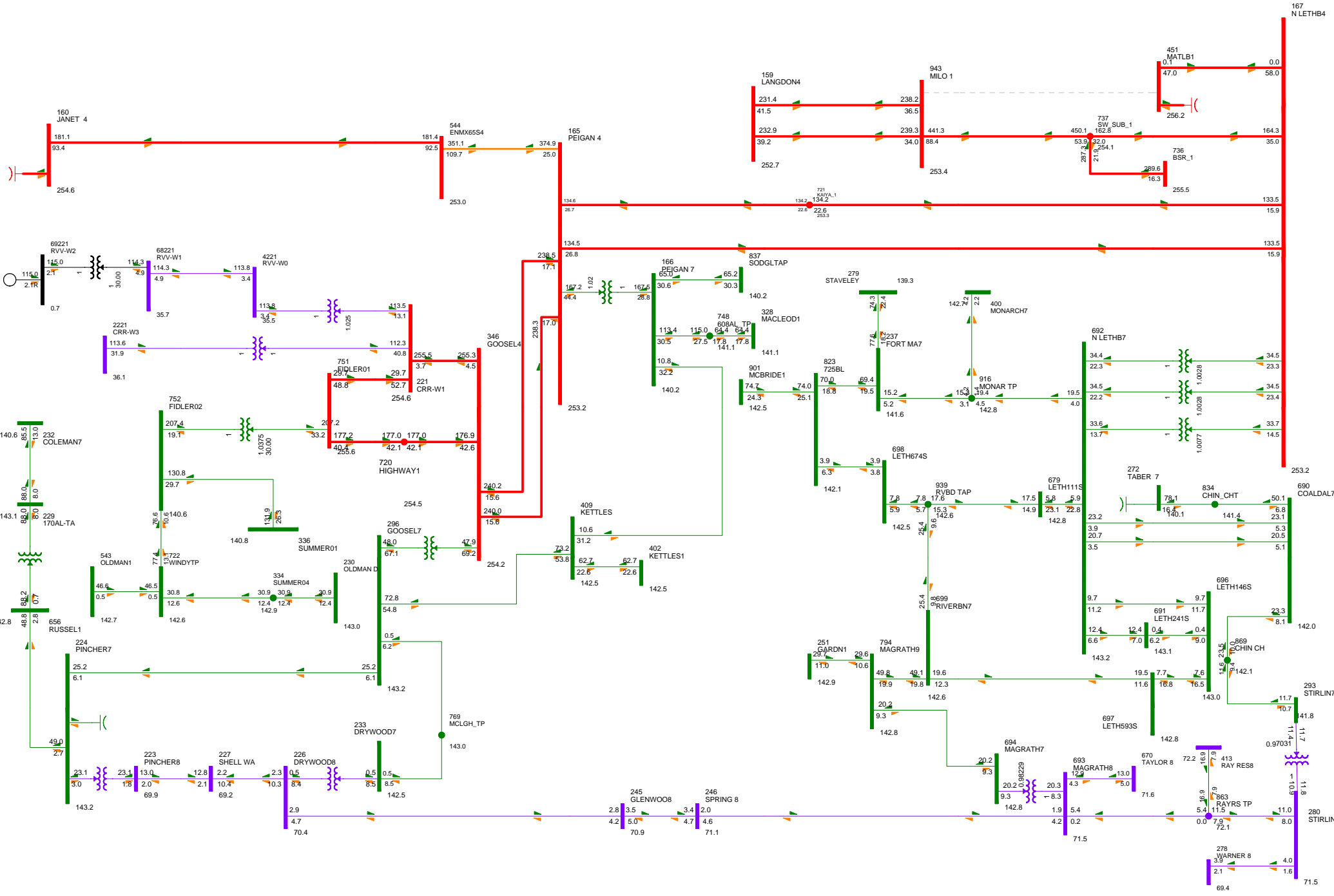


FIGURE B-1-8, 2014SL POST-CONNECTION  
 100SL (PICTURE BUTTE 120S TO MILO 366S)  
 FRI, APR 12 2013 13:35  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

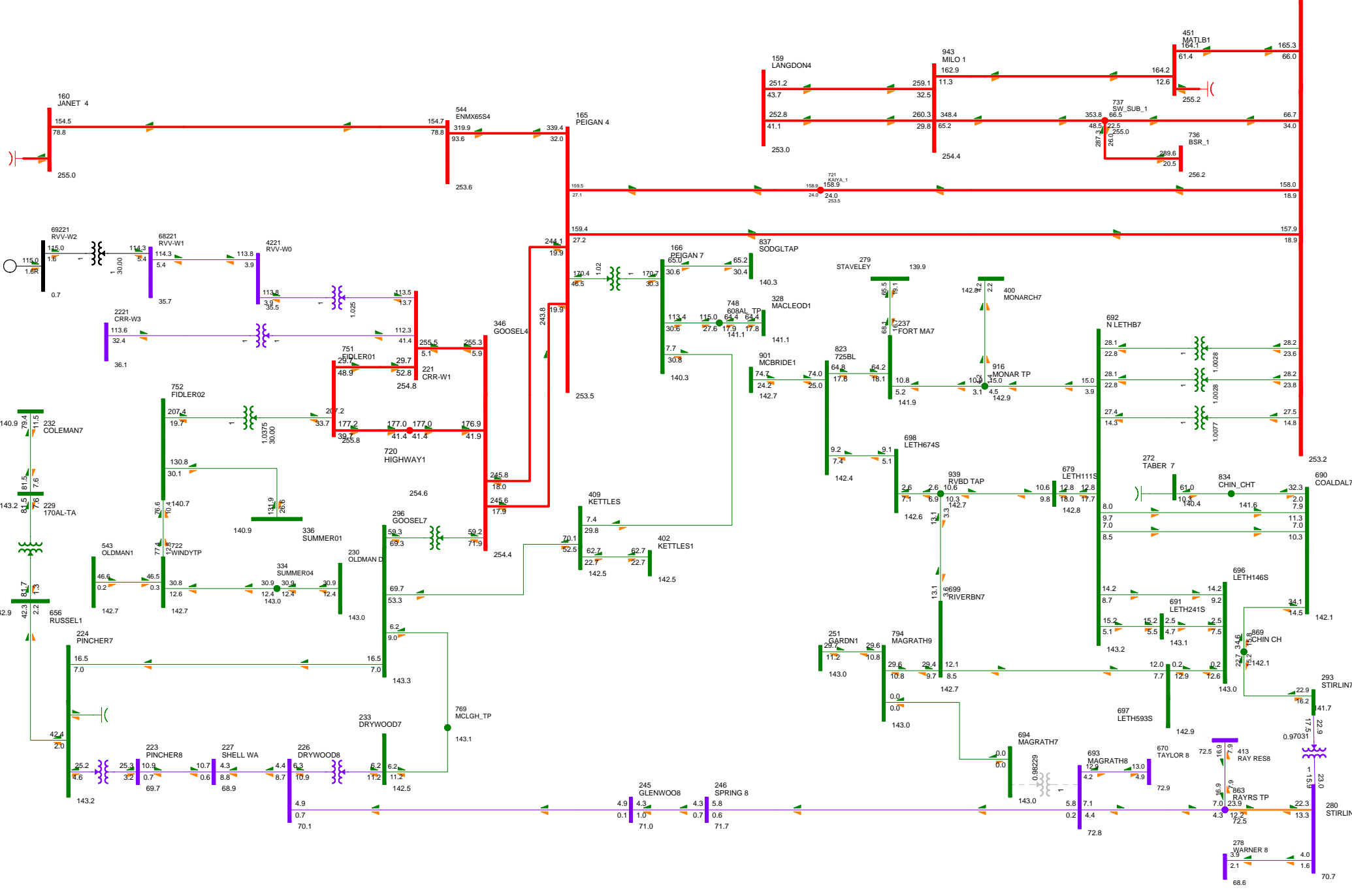


FIGURE B 1 9, 2014SL POST-CONNECTION  
 MAGRATH 225S T1 13869 KV TRANSFORMER  
 FRI, APR 12 2013 13:35  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

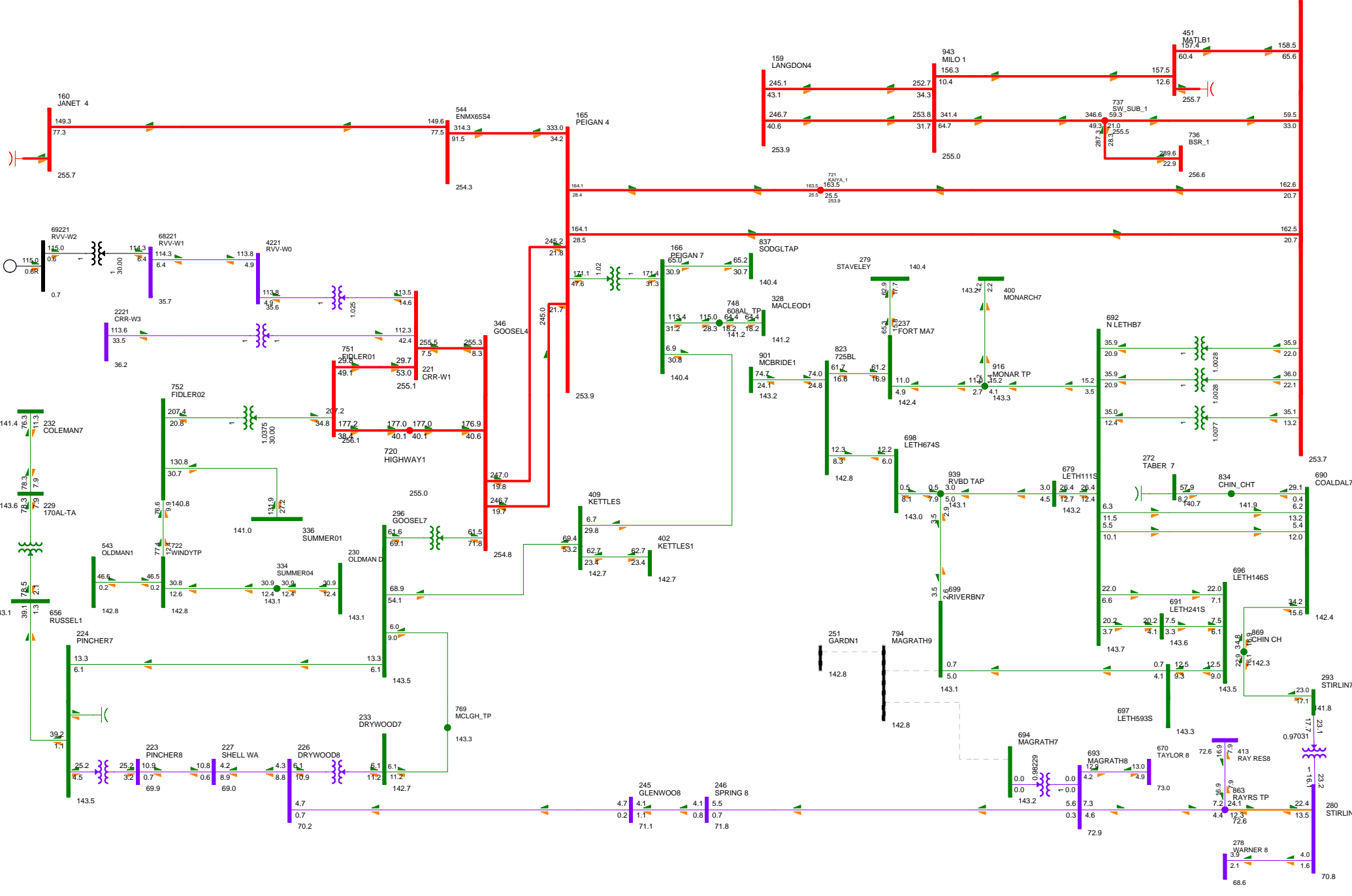


FIGURE B\_1\_10\_2014SL POST-CONNECTION  
 85SL (MAGRATH 2255 TO RIVERBEND 6185)  
 FRI, APR 12 2013 13:35  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



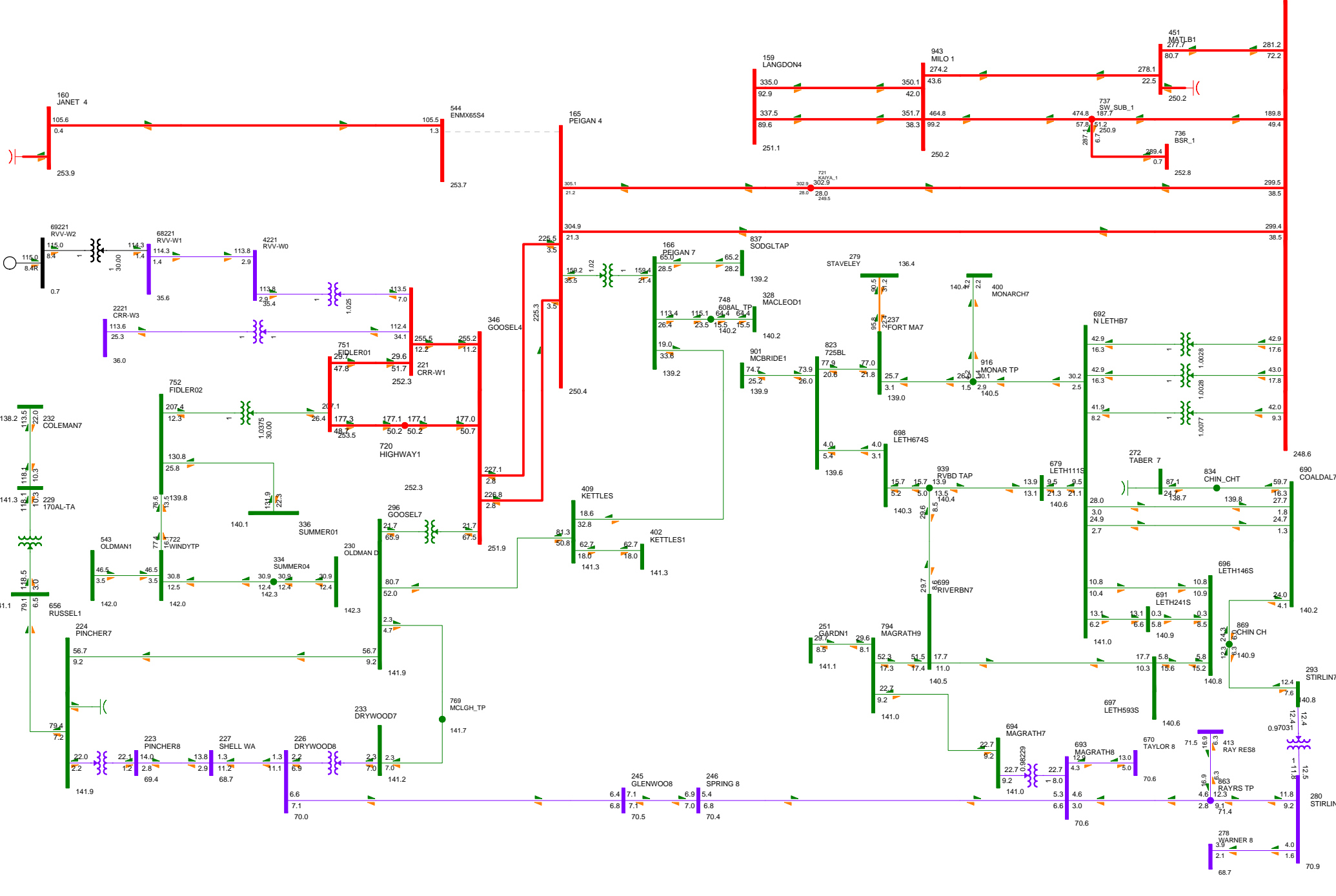


FIGURE B-1-12\_2014SL POST-CONNECTION  
 911L (PEIGAN 585 TO SS-65)  
 FRI APR 12 2013 13:35  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

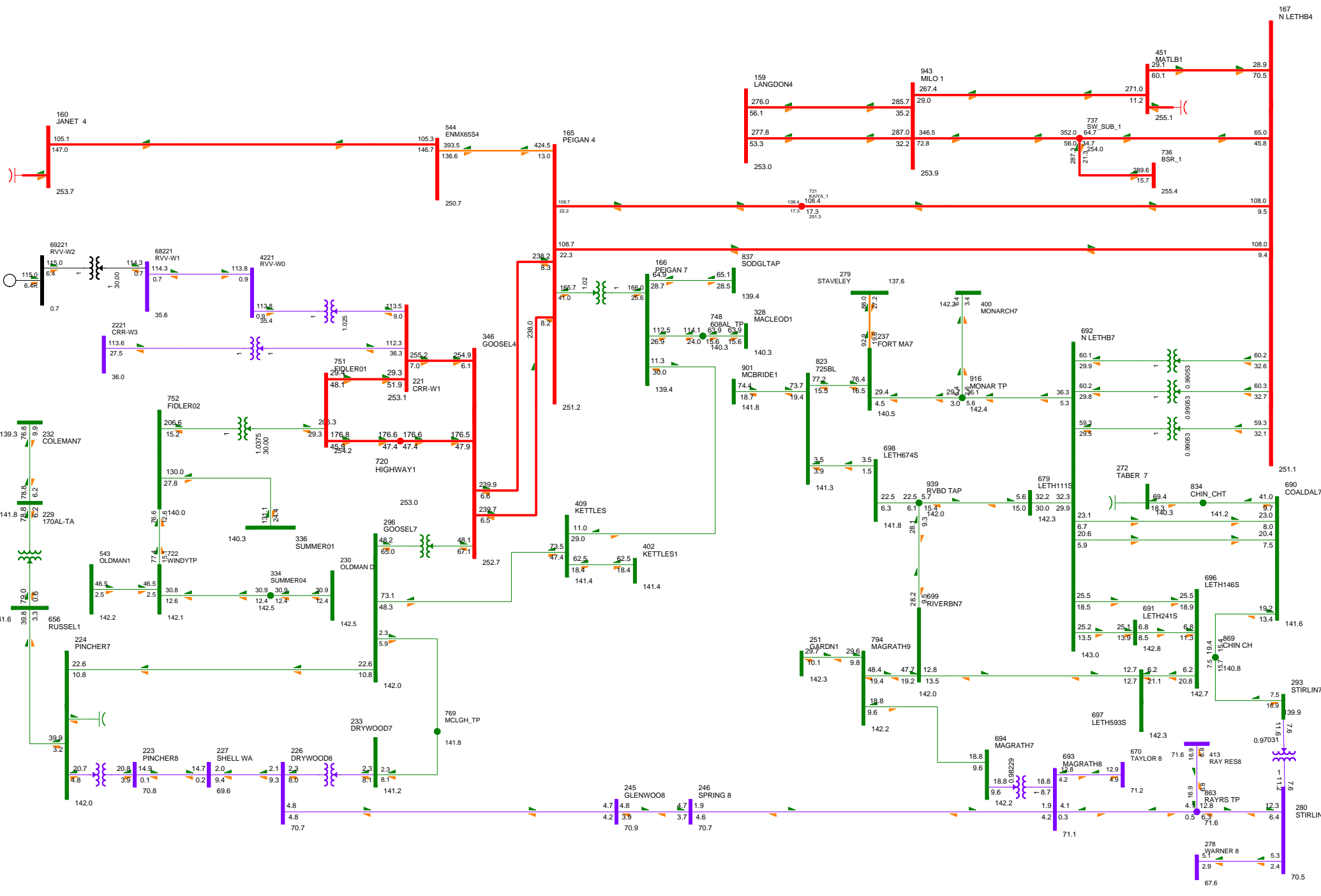


FIGURE B\_2\_1\_2014SP POST-CONNECTION  
 BASE CASE  
 FRI, APR 12 2013 13:37  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

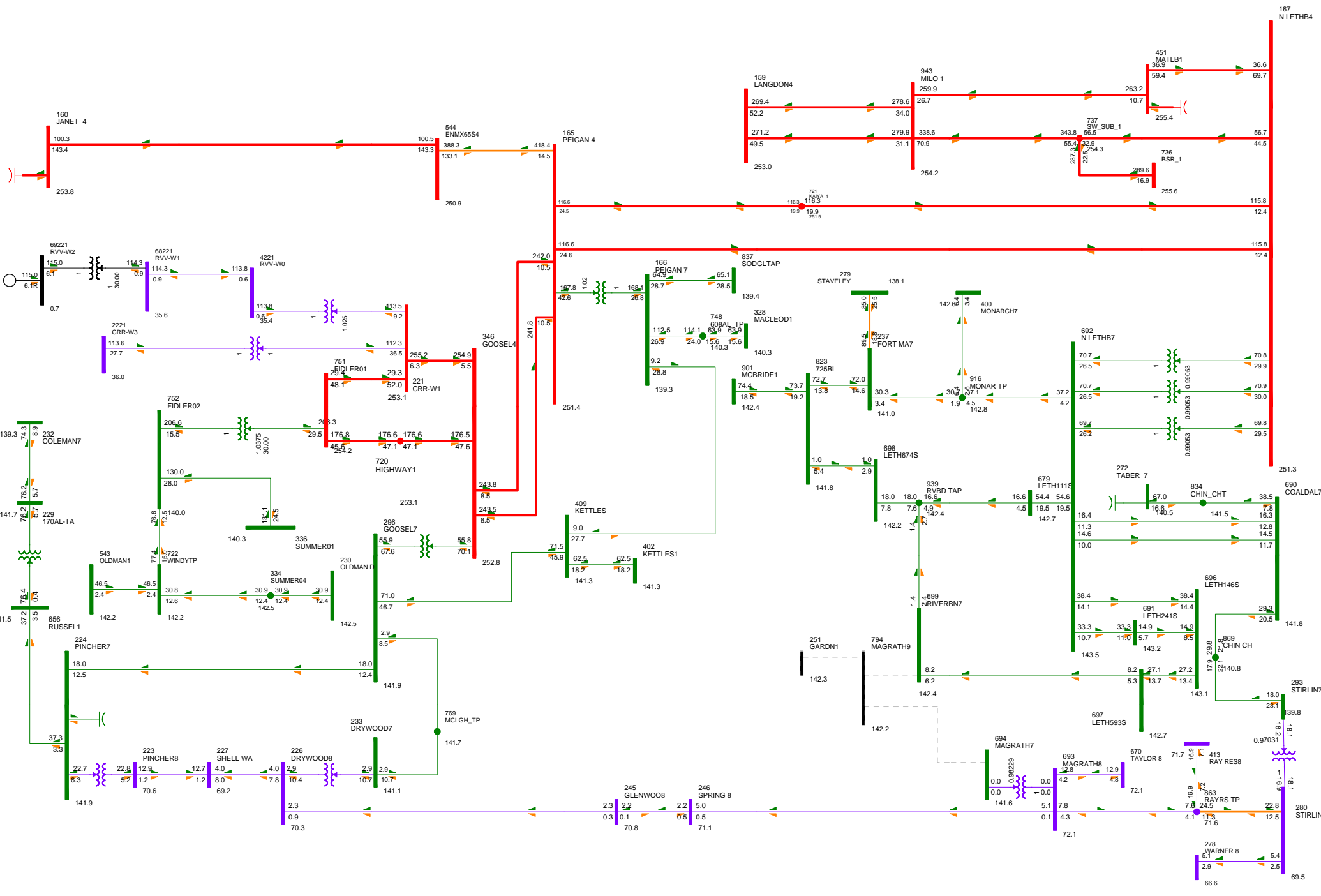


FIGURE B 2 2, 2014SP POST-CONNECTION  
 85SL (MAGRATH 225S TO RIVERBEND 618S)  
 FRI, APR 12 2013 13:38  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



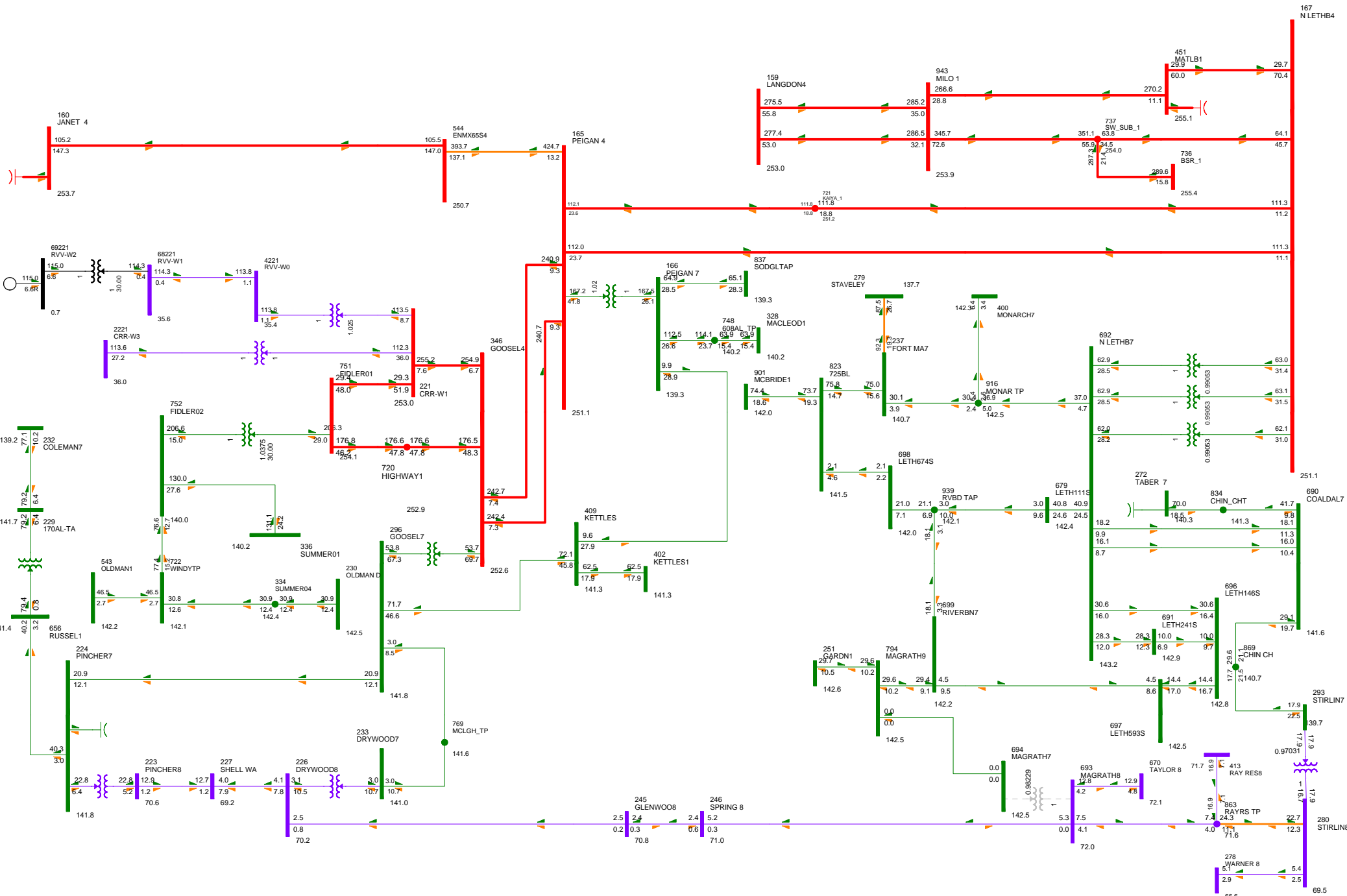


FIGURE B 2\_3\_2014SP POST-CONNECTION  
MAGRATH 225S T1 13869 KV TRANSFORMER  
FRL APR 12 2013 13:38  
P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
100.0%RATEA

Bus - VOLTAGE (KV/PU)  
Branch - MW/MVAR  
Equipment - MW/MVAR

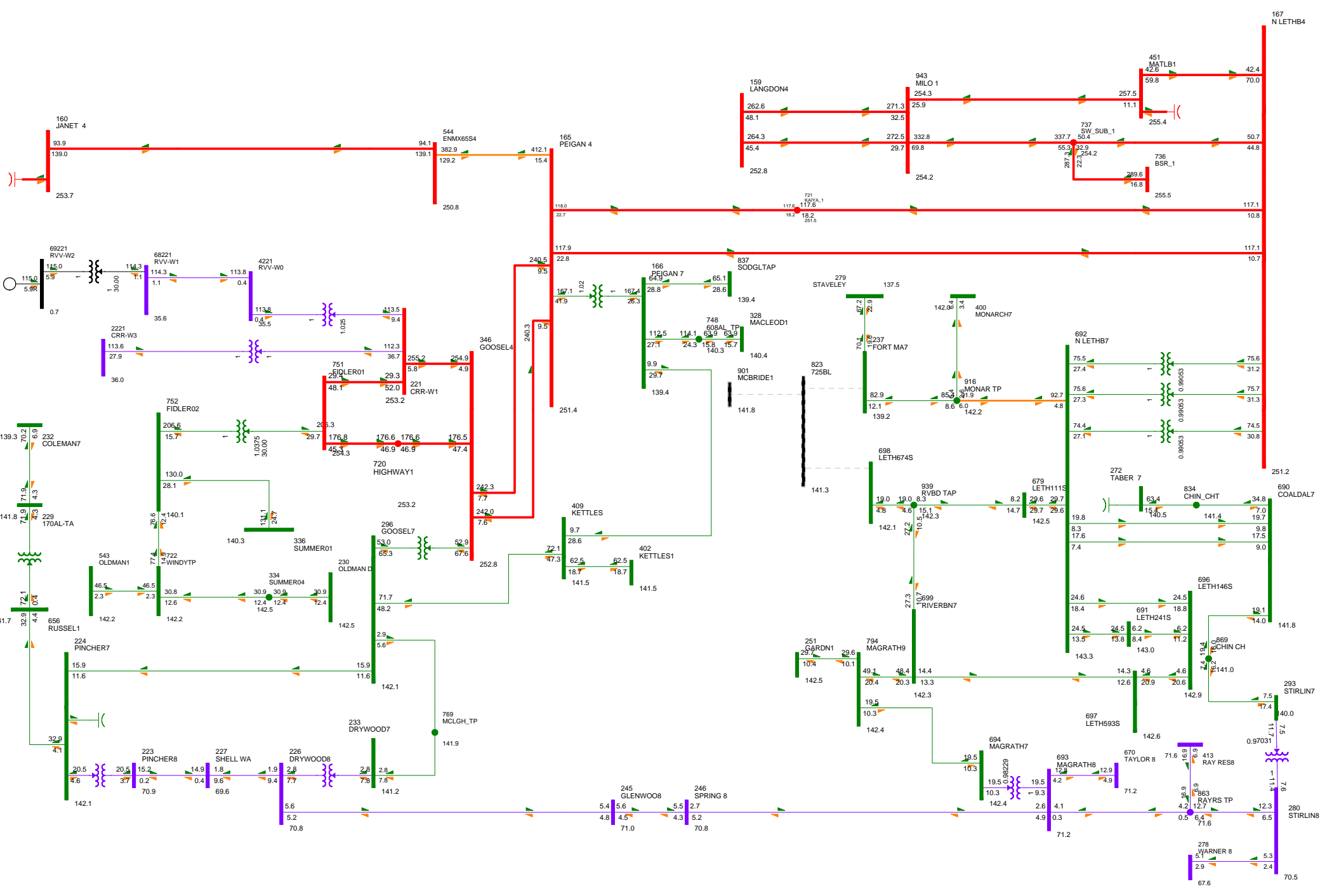


FIGURE B-2-4, 2014SP POST-CONNECTION  
 725L (FORT MACLEOD 15S TO BOWRON 674S)  
 FRI, APR 12 2013 13:40  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV:  $\leq 34.500$   $\leq 69.000$   $\leq 138.000$   $\leq 240.000$   $\leq 500.000$   
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

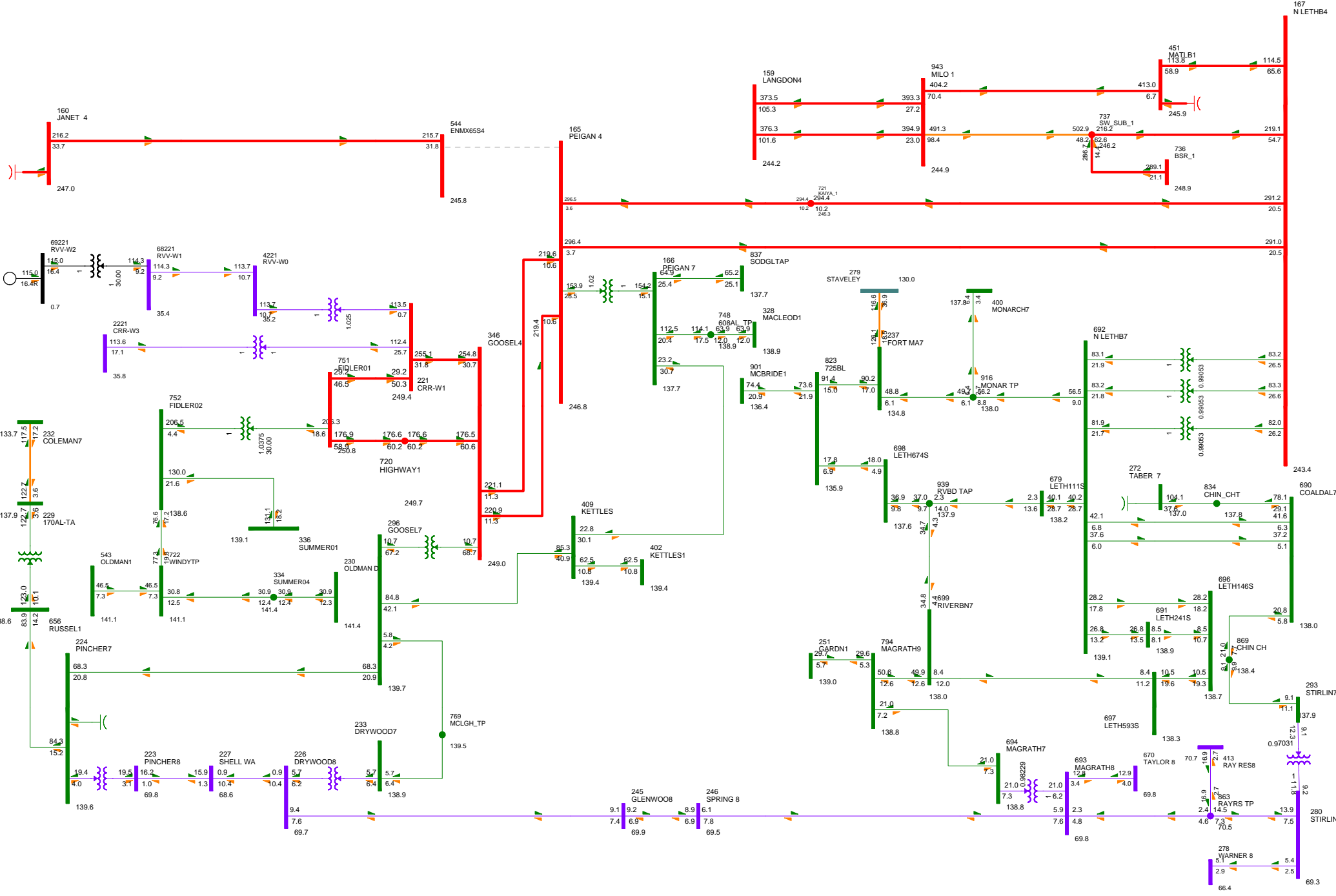


FIGURE B 2.5, 2014SP POST-CONNECTION  
 911L (PEIGAN S8S TO SS-65)  
 FRL/ APR 12 2013 13:40  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

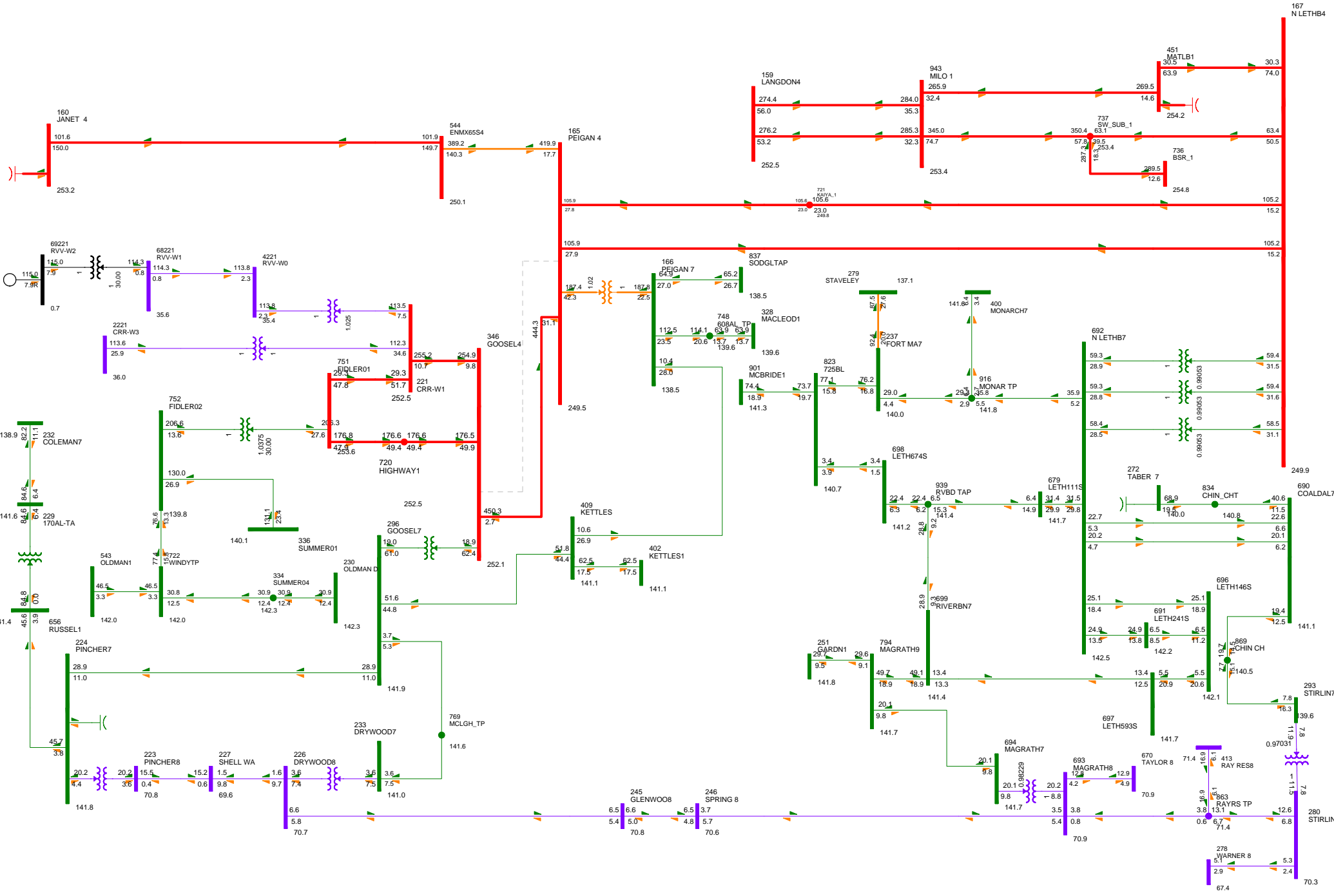


FIGURE B 2 6, 2014SP POST-CONNECTION  
 955L (GOOSE LAKE 103S TO PEIGAN 59S)  
 FRI, APR 12 2013 13:40  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

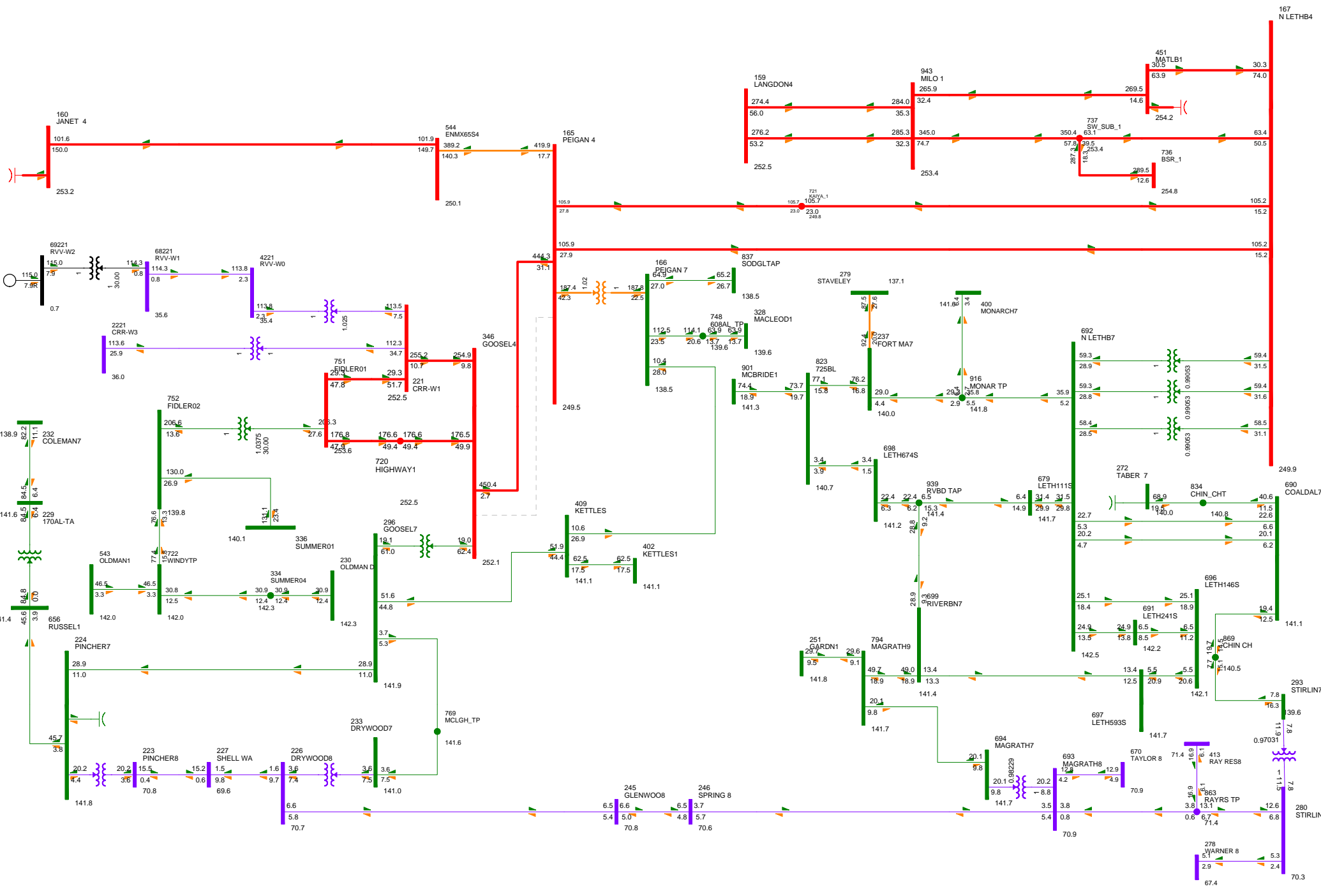


FIGURE B 2-7, 2014SP POST-CONNECTION  
 996L (GOOSE LAKE 103S TO PEIGAN 99S)  
 FRI, APR 12 2013 13:41  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

## **Attachment C**

### **Post-Connection 2014 Power Flow Results (N-1 after Removing N-0 Overloads)**

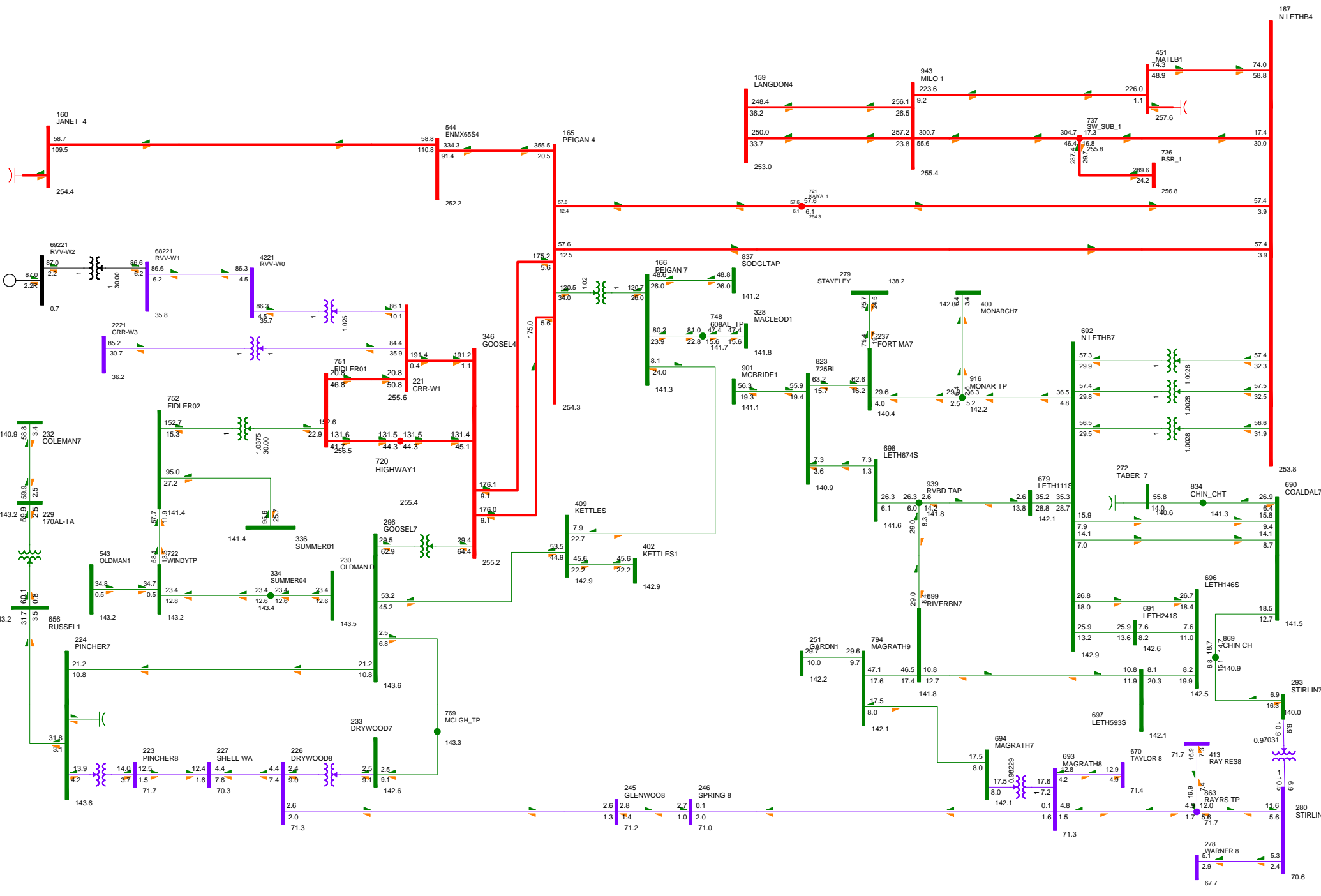


FIGURE C\_1\_1, 2014SP POST-CONNECTION (N-0 OVERLOAD REMOVED)  
 BASE CASE  
 TUE, APR 16 2013 10:23  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: ≤34.500 ≤69.000 ≤138.000 ≤240.000 ≤500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

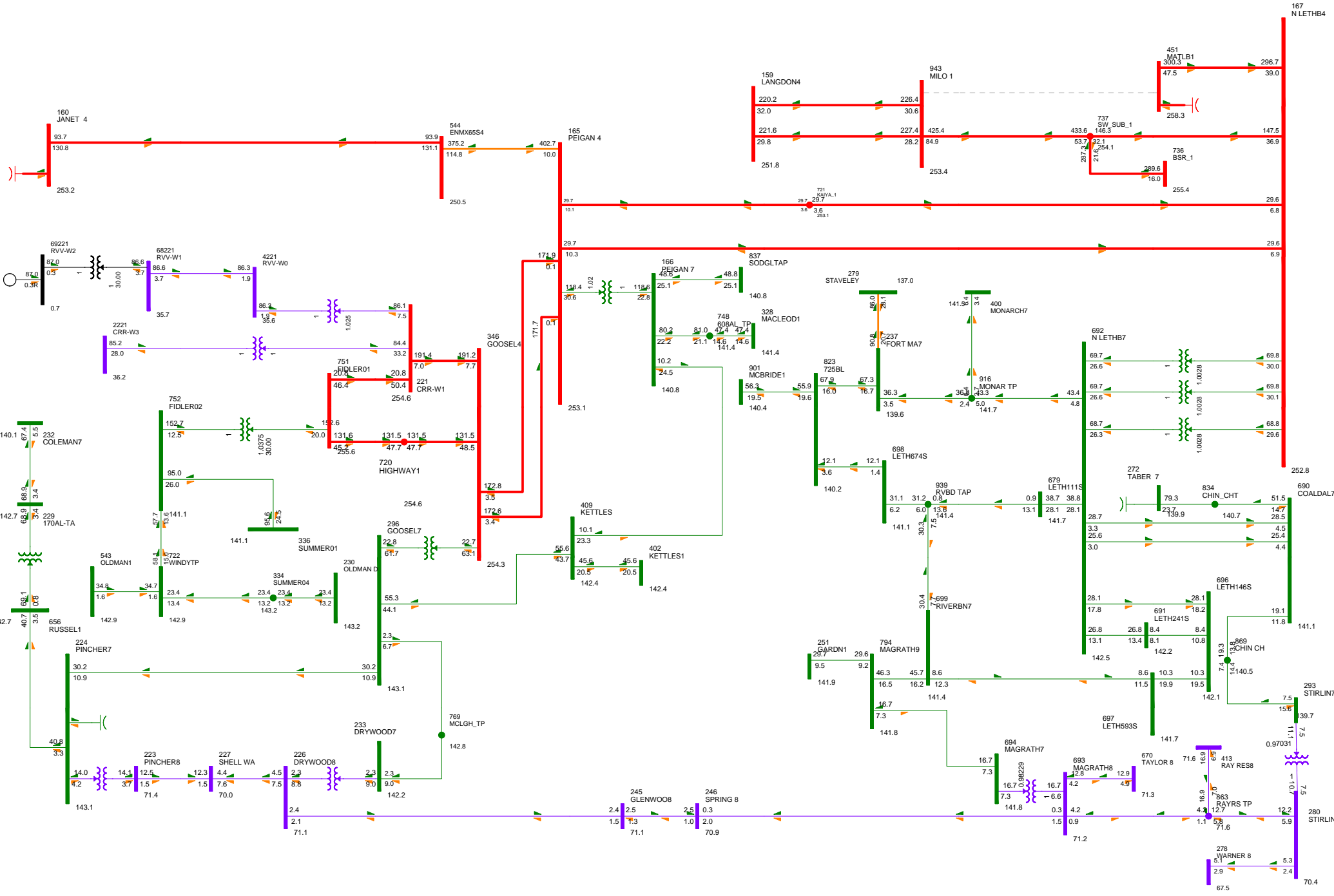


FIGURE C\_1\_2\_2014SP POST-CONNECTION (N=0 OVERLOAD REMOVED)  
 100SL (PICTURE BUTTE 120S TO MILO 356S)  
 TUE, APR 16 2013 10:23  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



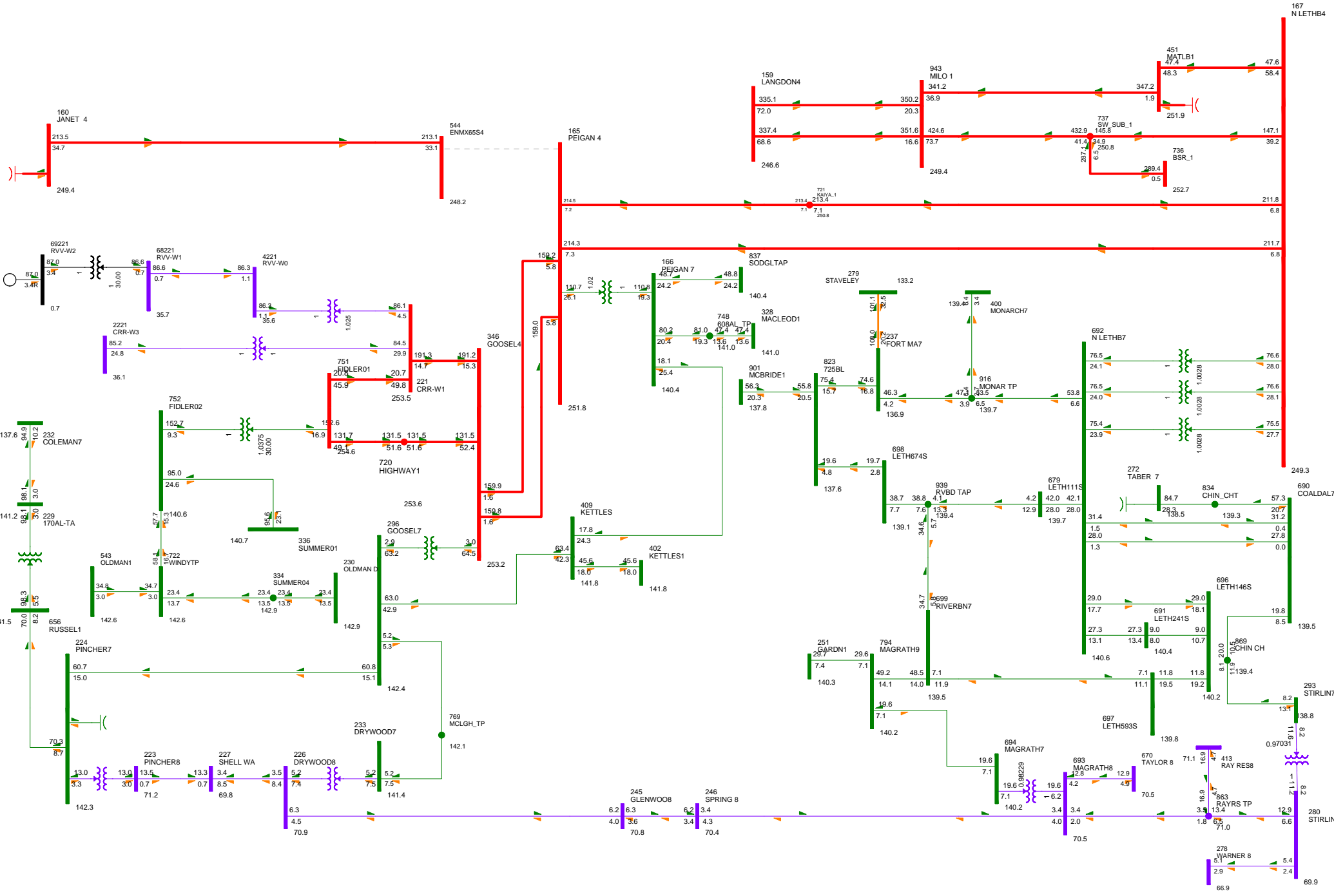


FIGURE C-1-3, 2014SP POST-CONNECTION (N-0 OVERLOAD REMOVED)  
 911L (PEIGAN 585 TO SS-65)  
 TUE, APR 16 2013 10:23  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

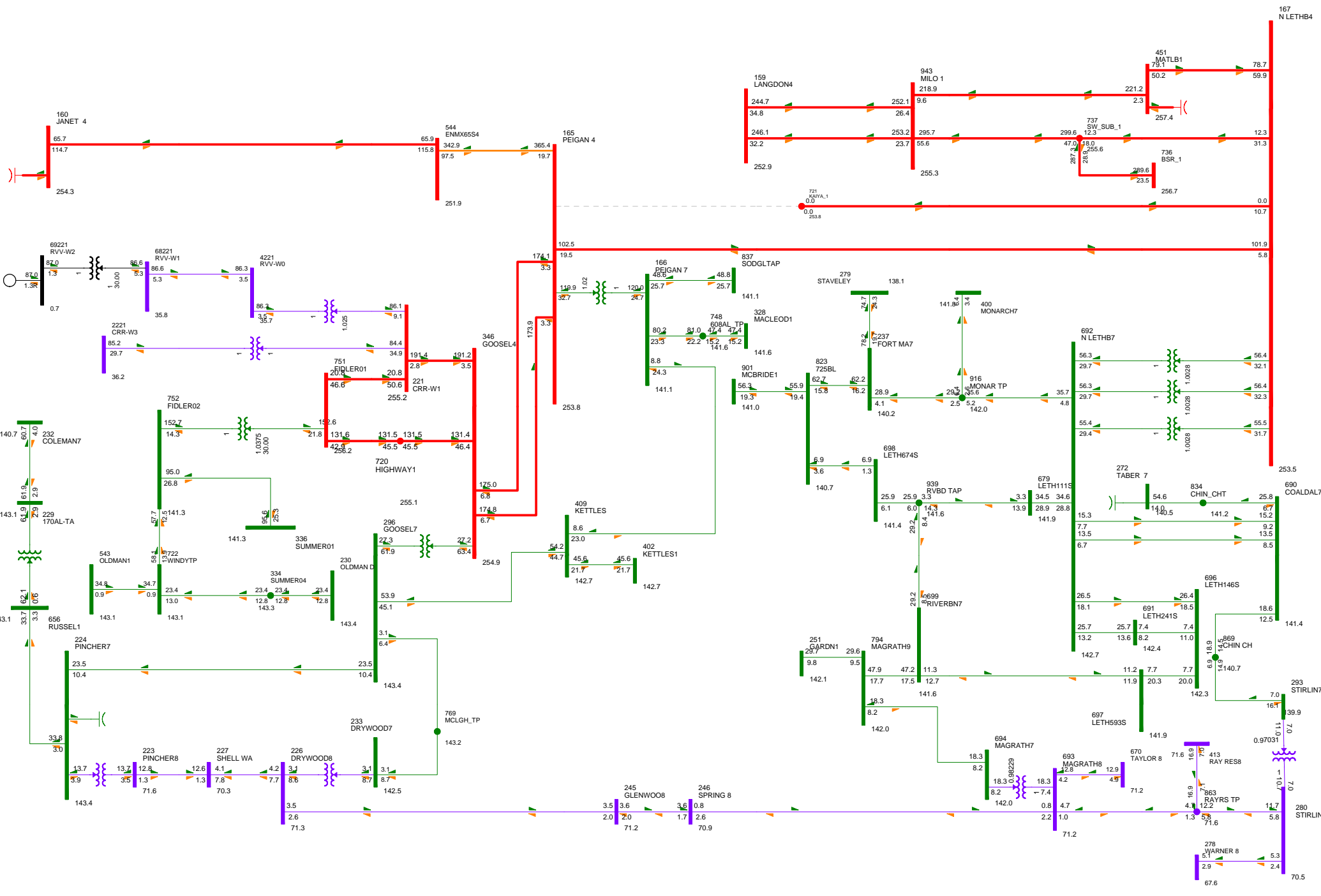


FIGURE C-1-4, 2014SP POST-CONNECTION (N-0 OVERLOAD REMOVED)  
 988L (PEIGAN 585 TO N. LETHBRIDGE 3705)  
 TUE, APR 16 2013 10:23  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

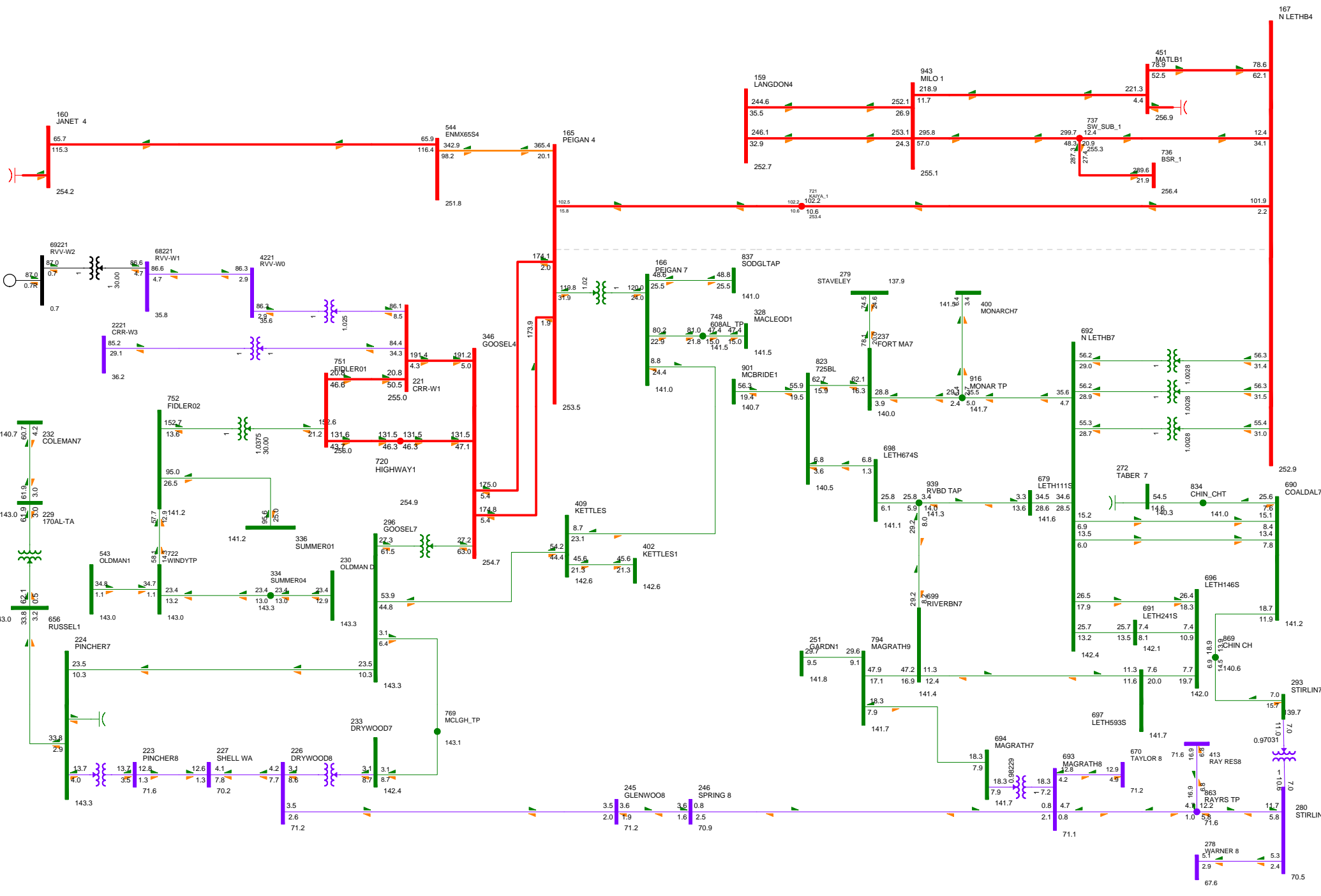


FIGURE C-1.5, 2014SP POST-CONNECTION (N=0 OVERLOAD REMOVED)  
 997L (PEIGAN 585 TO N. LETHBRIDGE 3705)  
 TUE, APR 16 2013 10:23  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

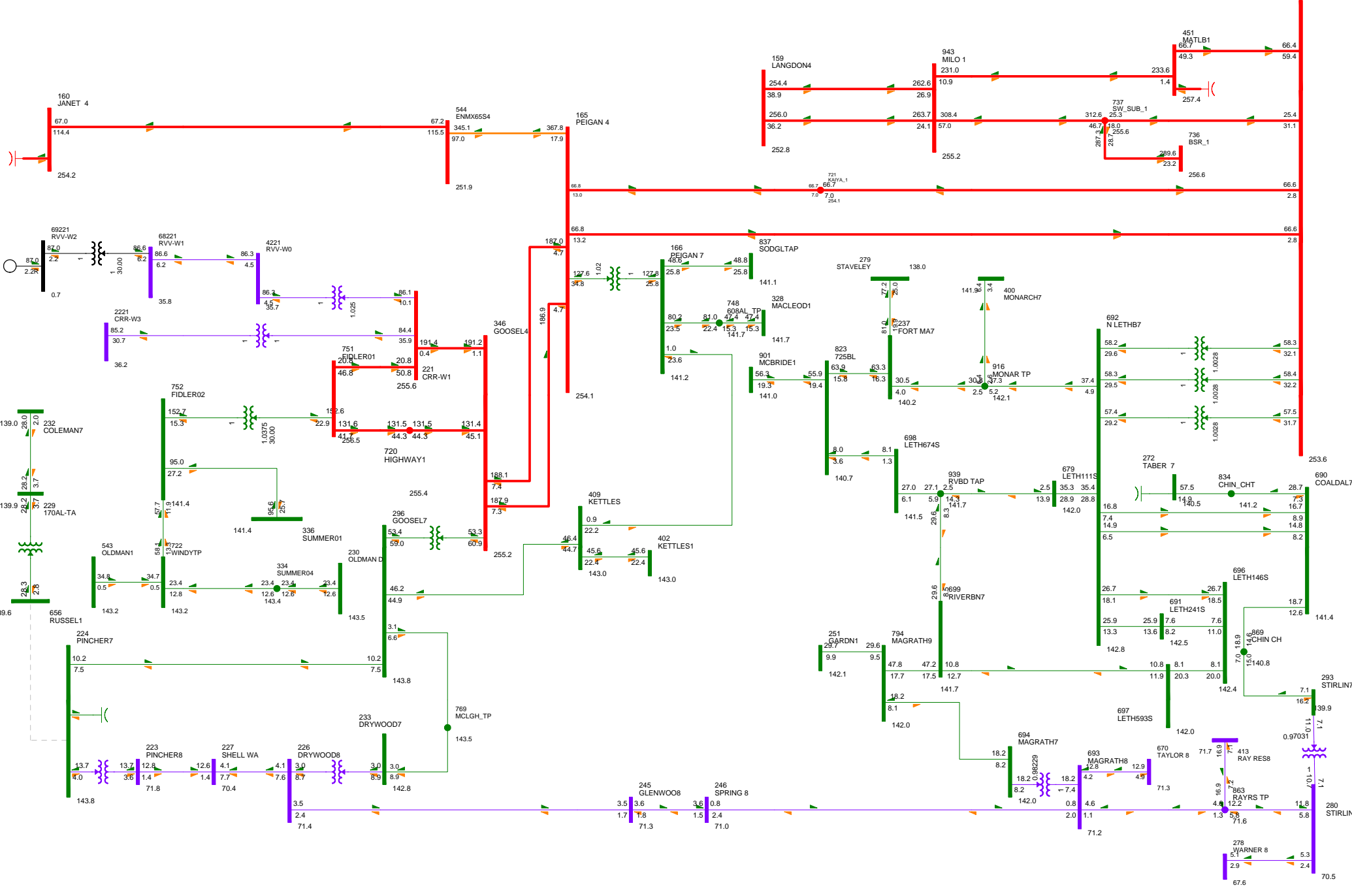


FIGURE C\_1\_6, 2014SP POST-CONNECTION (N=0 OVERLOAD REMOVED)  
 412L (PINCHER CREEK 396S TO RUSSELL 632S)  
 TUE, APR 16 2013 10:23  
 P524\_Sensitivity

### Project 524 Riverview WAGF - Sensitivity Study

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

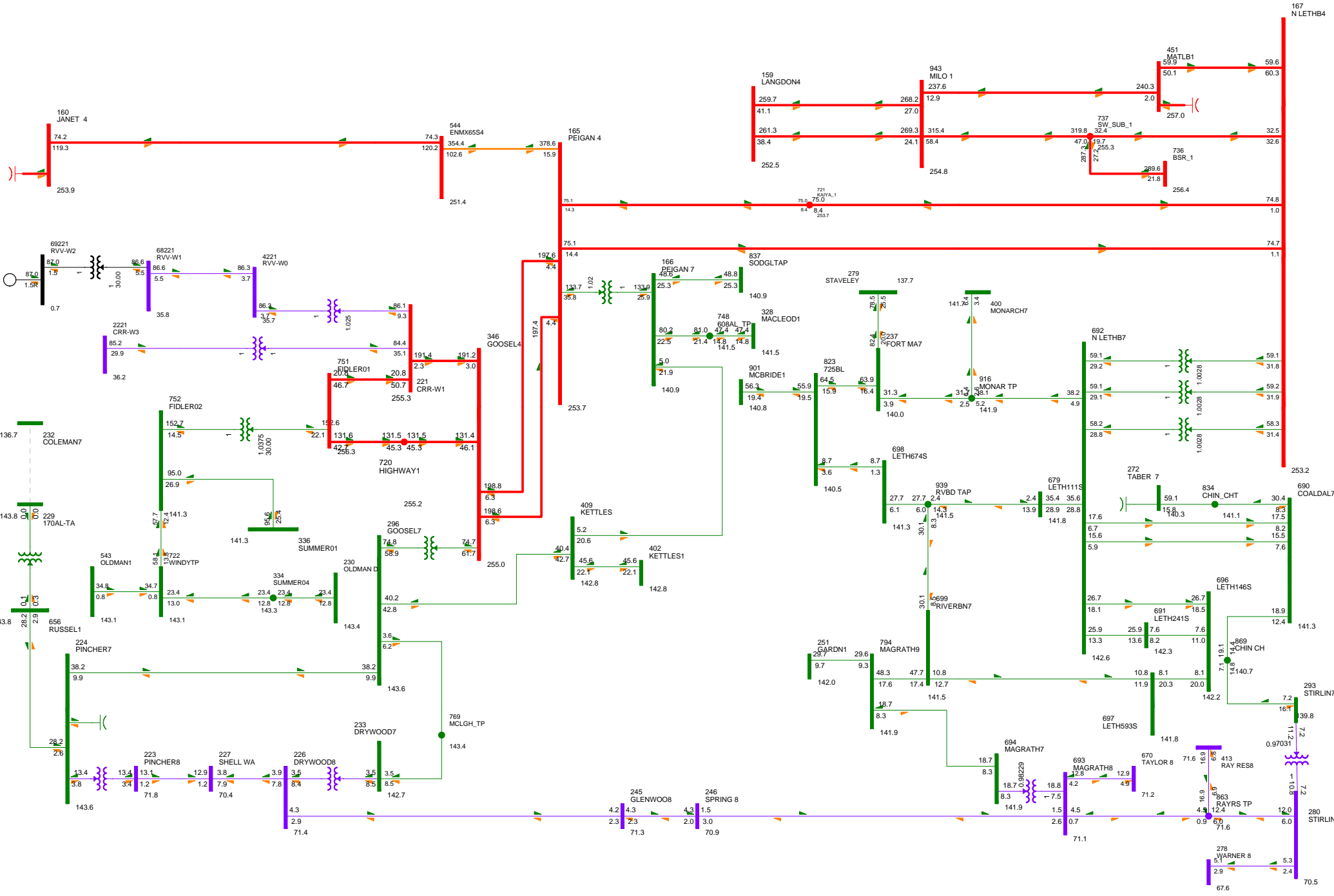


FIGURE C-17. 2014SP POST-CONNECTION (N-0 OVERLOAD REMOVED)  
 1701 (RUSSELL 6325 TO COLEMAN 7995)  
 TUE, APR 16 2013 10:24  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR

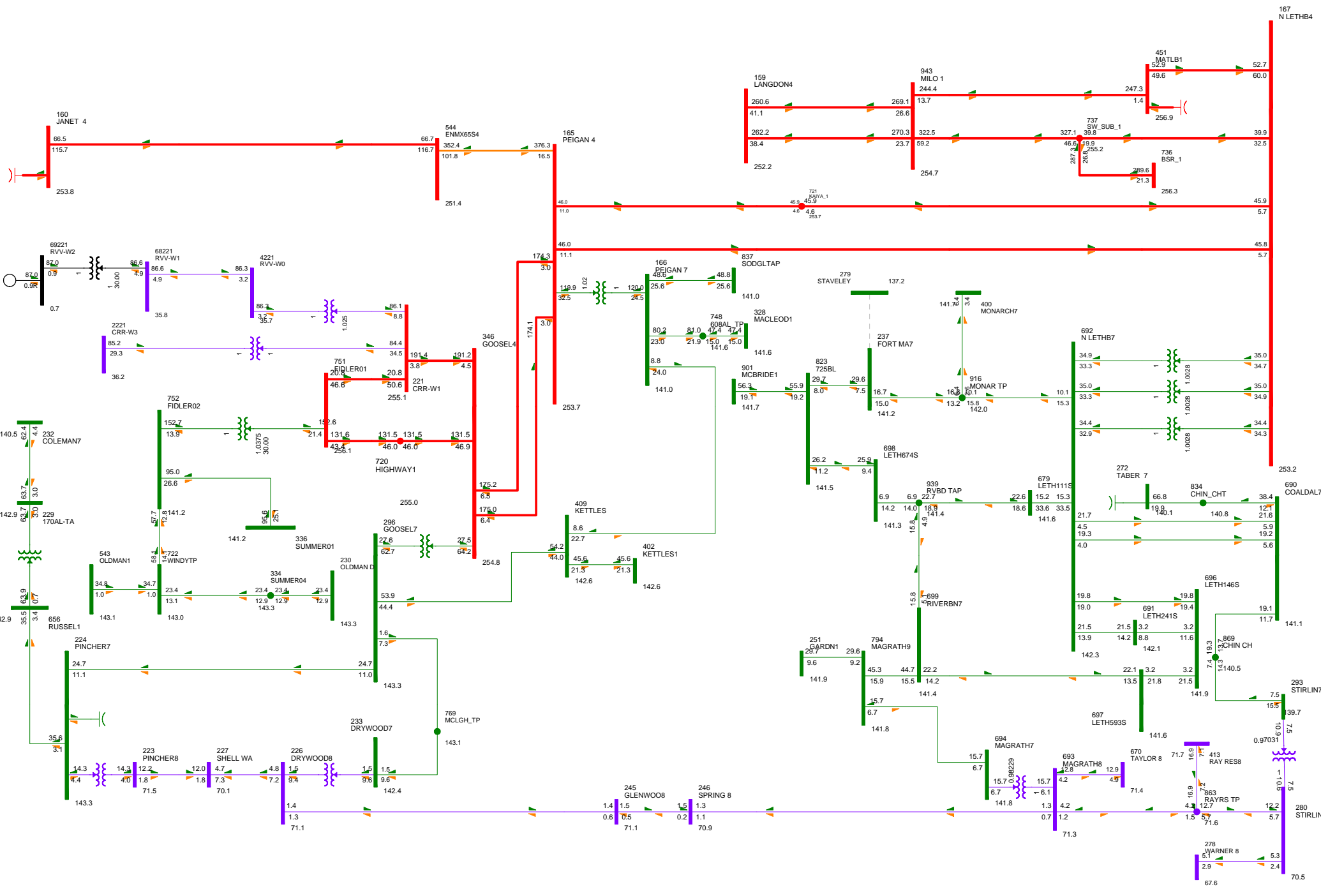


FIGURE C-1.8, 2014SP POST-CONNECTION (N-0 OVERLOAD REMOVED)  
 180L (FORT MACLEOD ISS TO STAVELEY 928S)  
 TUE, APR 16 2013 10:24  
 P524\_Sensitivity

**Project 524 Riverview WAGF - Sensitivity Study**

KV: <=34.500 <=69.000 <=138.000 <=240.000 <=500.000  
 100.0%RATEA

Bus - VOLTAGE (KV/PU)  
 Branch - MW/MVAR  
 Equipment - MW/MVAR



# *Enel Alberta Riverview Wind Farm*

## Project Number: 524

The attached engineering study report has been prepared by a third party as part of the AESO's connection process. The AESO has reviewed the report and the conclusions that it contains, and finds it acceptable for the purpose of assessing potential impacts of the proposed connection on the transmission system. The studies and conclusions presented in the attached engineering study report, specifically those related to the short-term, 2014 study scenarios were further tested using updated project development information reflecting recent changes in planned system and customer developments in service dates. The AESO completed this Sensitivity Study to test whether recent changes in the AESO connection queue would affect the results and conclusions of the original Engineering Study. These additional sensitivity studies are provided under a separate cover. There are no changes to the study assumptions for the 2017 longer-term study scenarios and hence the results and conclusions presented in the attached engineering study report remain accurate for assessing the longer-term impact of connecting the proposed ENEL Alberta Riverview Wind Farm to the AIES.

Information regarding the AESO's connection process can be found at: <http://www.aeso.ca/8602.html>

Date: June 10, 2013

Function	Name	Company	Signature	Date
Studies Engineer	Ralph Liu, Ph.D., P.Eng	AESO		June 10, 2013
Manager, Projects and System Access Studies	Sami Abdulsalam, Ph.D., P.Eng	AESO		June 10, 2013

Public

# Connection Engineering Study Report


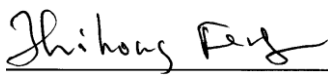
## Riverview Wind Farm

Project No. 524

Revision: 0

April 19, 2013



Company	Role	Name	Signature	Date
Powertech Labs	Prepared	Saeed Arabi, Ph. D.		Apr 19, 2013
Powertech Labs	Approved	Zhihong Feng, P. Eng.		Apr 19, 2013

**APEGA Permit to Practice P-9440**



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## Executive Summary

Castle Rock Ridge Wind Energy Inc. filed a Preliminary Assessment Application (PAA) to Alberta Electric System Operator (AESO) for connection of the Riverview Wind Aggregated Generating Facility (WAGF) in Ft. MacLeod planning area (Area 53) on September 23, 2005. Subsequently, the project was formally transferred to Enel Alberta Wind Inc. (the Market Participant). The Maximum Authorized Real Power (MARP) of Riverview WAGF is 115 MW. Figure 1-1 presents the schematic of the anticipated transmission system in the area at the requested in-service-date (ISD) of this project, October 2014.

The Riverview WAGF will be comprised of 50 Siemens SWT 101 (2.3 MW) wind turbine generators. The proposed Riverview WAGF will be connected to the Alberta Interconnected Electric System (AIES) via the existing switching station Castle Rock Ridge (CRR) 205S in the Pincher Creek area.

The purpose of this connection study was to assess the impact of connecting Riverview WAGF to the AIES. In order to identify any reliability concerns associated with the connection of Riverview WAGF, the system was assessed with and without the proposed development. Steady-state, transient stability and short circuit analyses were performed to compare the system response before and after the connection of Riverview WAGF.

Based on the study results, the connection of Riverview WAGF will adversely impact the transmission system in southern Alberta, either causing new overloads or worsening the existing overloads, under system normal and Category B contingency events.

Before Southern Alberta Transmission Reinforcement (SATR) developments are in service, especially the 911L replacement and Blackie Area 138 kV upgrade, AESO Transmission Constraint Management (TCM) rule will be applied to manage potential overloads under system normal conditions. A Remedial Action Scheme will be required to run back or trip Riverview WAGF under certain contingencies to alleviate the potential overloads on transmission lines 911L, 180L, 225L and Peigan 59S Transformer T1.

All these potential overloads are expected to be alleviated after SATR developments are in service.

# 1. Introduction

This Connection Engineering Study Report presents the results of the study conducted to analyze impact on the reliability of the Alberta Interconnected Electric System (AIES) with the connection of the proposed Riverview WAGF project.

## 1.1. Project

### 1.1.1. Project Overview

Castle Rock Ridge Wind Energy Inc. filed a Preliminary Assessment Application (PAA) with the Alberta Electric System Operator (AESO) for connection of the Riverview Wind Aggregated Generating Facility (WAGF) in the Ft. MacLeod planning area (Area 53) on September 23, 2005. Subsequently, the project was formally transferred to Enel Alberta Wind Inc. The Maximum Authorized Real Power (MARP) of Riverview WAGF is 115 MW<sup>1</sup>. Figure 1-1 presents the schematic of the anticipated transmission system in the area after the requested in-service-date (ISD) of this project, October 2014.

The Riverview WAGF will be comprised of 50 Siemens SWT 101 (2.3 MW) wind turbine generators. The proposed Riverview WAGF will be connected to the AIES via the existing switching station Castle Rock Ridge (CRR) 205S in the Pincher Creek area.

## 1.2. Study Scope

### 1.2.1. Study Objectives

The purpose of this connection study was to assess the impact of connecting Riverview WAGF to the AIES. In order to identify any reliability concerns associated with the connection of Riverview WAGF, the system was assessed with and without the proposed development. Steady-state, transient stability and short circuit analyses were performed to compare the system response before and after the connection of Riverview WAGF.

### 1.2.2. Study Area

#### 1.2.2.1. Study Area Description

The study area includes AESO planning areas 53, 54 and 55. The outage of transmission elements rated at 138 kV and above in the study area was considered during contingency analysis. The monitored areas for voltage and thermal violations during contingency analysis are shown in Table 1-1. These areas are geographically located in southern Alberta.

---

<sup>1</sup> Note that the size of the transmission step-up transformer in the collector station the market participant has proposed is insufficient for the full capacity of the WAGF when the reactive power is taken into consideration. The MARP will be reduced to 103 MW until such time as the transformer nameplate rating of at least 127 MVA is submitted to the AESO, at that time the MARP will be increased to 115 MW.

Figure 1-1: Schematic of 2014 Transmission System in the Study Area

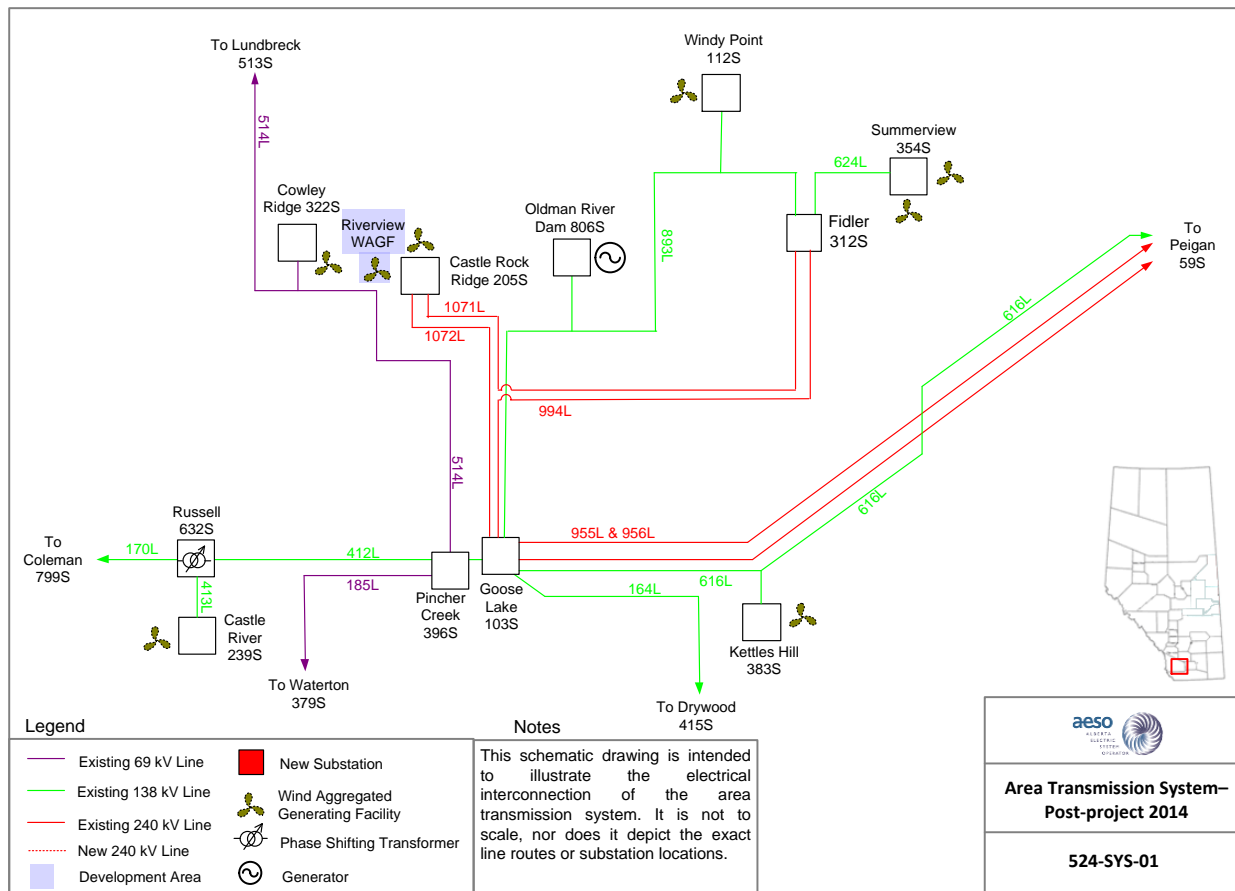


Table 1-1: Summary of Monitored Areas for Contingency Analysis

Area Number	Area Name	Voltage Range
53	Fort Macleod	69 kV to 240 kV
54	Lethbridge	138 kV to 240 kV
55	Glenwood	69 kV to 240 kV

### 1.2.2.2. Existing Constraints

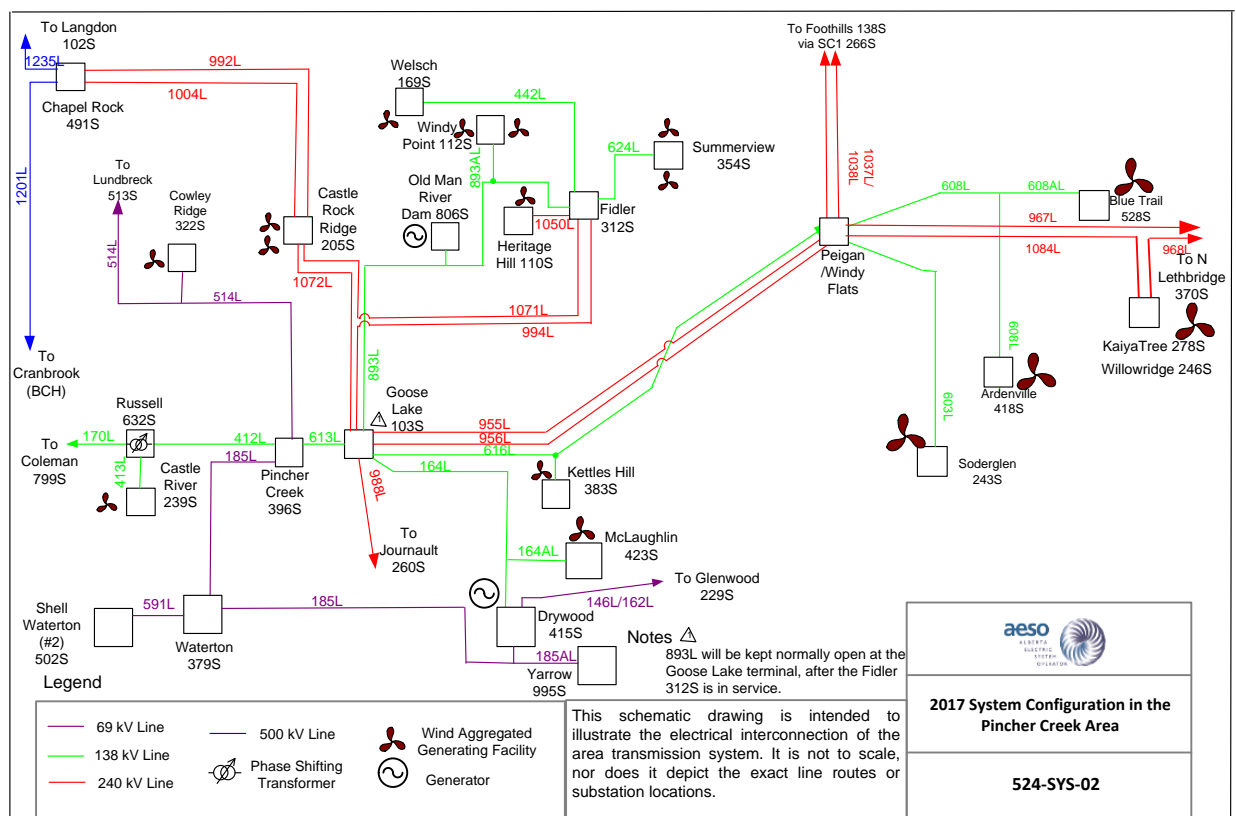
It has been proposed that Riverview WAGF will be connected in the Fort Macleod planning area (Area 53). The Fort Macleod area consists of 69 kV, 138 kV and 240 kV transmission systems. A schematic of the anticipated 2014 transmission system configuration is shown in Figure 1-1. As more wind farms connect into the Fort Macleod area, it becomes a generation rich area under high wind conditions. The unbalanced wind power mainly goes through 911L to the Calgary area or goes through 786L to the British Columbia (BC) system. Wind power in the Fort Macleod area is constrained due to the summer line ratings of 911L and 786L of 341 MVA and 99 MVA, respectively. Currently these constraints are managed using the AESO’s Operating Policies and Procedures (OPP) OPP-515 South Area Operation.

### 1.2.2.3. AESO Long-Term Plans

In the AESO's *Long-term Transmission Plan*, additional major transmission developments will be constructed in the area as part of the approved Southern Alberta Transmission Reinforcement<sup>2</sup> (SATR) developments to address the constraints in Area 53 by 2017. Refer to Figure 1-2 for a schematic showing the 2017 transmission system configuration in the general Pincher Creek area. As part of SATR, the existing 911L will be replaced by a new double circuit 240 kV conductor line with series compensation. As well, a double circuit 240 kV line, one side strung, will be constructed from Goose Lake 103S to Journault 260S and beyond.

Furthermore, the planned SATR developments include a double circuit 240 kV line from the Goose Lake 103S substation to a new 500kV/240kV substation connected to the Alberta-BC 1201L tie line currently connecting Langdon 102S and BC Hydro's Cranbrook substation.

Figure 1-2 2017 System Configuration in the Pincher Creek Area



<sup>2</sup> Decision 2009-126, Approval No. 2011-115.

<sup>3</sup> The AESO filed its Goose Lake to Chapel Rock Amendment to the Alberta Utilities Commission (Commission) Southern Alberta Transmission System Reinforcement (SATR) Approval No. U2011-115 with the Commission on December 14, 2012.

## 2. Criteria, System Data, and Study Assumptions

The analysis for the connection of Riverview WAGF was conducted using DSATools version 12.0. The following criteria and assumptions reflect the development of the base cases and the methodology used in the analysis.

### 2.1. Criteria, Standards, and Requirements

#### 2.1.1. AESO Transmission Reliability Criteria

The AESO Transmission Reliability Criteria is the basis for connection studies in the AIES. The transmission system will be designed to meet the Reliability Criteria under credible worst-case loading and generation conditions.

Category A represents a normal system with no contingencies and all facilities in service. Under Category A conditions, 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 ratings, and the system must be stable with no cascading outages.

Category B events result in the loss of any single specified system element under specified fault conditions with normal clearing. The specified elements are a generator, a transmission circuit, a transformer or single pole of a DC line. The acceptable impact on the system is the same as Category A.

The thermal limits were assumed to be one hundred percent of the normal summer rating. Thermal overloads that increased by at least three percent with the addition of the Riverview WAGF were considered significant thermal impacts in this study.

The extreme minimum and maximum voltage limits specified by the AESO Reliability Criteria were used to identify Category B system voltage violations. Table 2-1 shows the acceptable steady-state voltages for various transmission voltage classes.

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

Nominal	Extreme Minimum	Normal Minimum	Normal Maximum	Extreme Maximum
500	500	510	540	550
240	220	240	264	264
144	130	137	151	155
138	124	135	145	150
72	65	71	75	78
69	62	65	72	74

The AESO's voltage deviation criteria for Point of Delivery (POD) low voltage buses are shown in Table 2-2.

**Table 2-2: Voltage Deviation Criteria**

Parameter and Reference Point	Time Period		
	Post Transient (Up to 30s)	Post Auto Control (30 sec to 5 min)	Post Manual Control (Steady-State)
Voltage Deviation from Steady-State at POD Low Voltage Bus	± 10%	± 7%	± 5%

### 2.1.2. AESO Operating Policies and Procedures (OPPs) and Authoritative Documents (ADs)

The desired minimum and maximum voltage limits specified by AESO OPP-702 Voltage Control were used to establish pre-contingency voltage profiles in the study areas. OPP-702 voltage violations were removed prior to performing Category B (N-1) contingency analysis. Table 2-3 summarizes the OPP-702 desired voltage range for substations in the study area.

**Table 2-3: OPP-702 Desired Voltage Range**

Substation Name and Number	Nominal Voltage (kV)	Desired Min (kV)	Desired Max (kV)
Pincher Creek 396S	138	138	144
Peigan 59S	240	235	258
	138	138	144
North Lethbridge 370S	240	240	260
	138	138	144
Medicine Hat T41S	138	138	144
Bullshead T523S	138	138	144
Taber T83S	138	138	144
West Brook T28S	240	245	260
	138	138	144

## 2.2. Load and Generation Assumptions

### 2.2.1. Load Assumptions

Based on the AESO 2012 Long-term Outlook (2012LTO), the Central and South region loads, as well as the Alberta Internal Load (AIL), modeled in the 2014 and 2017 summer light and peak



load scenarios are provided in Table 2-4. The region load totals include motor load, station service load and behind-the-fence load.

**Table 2-4: 2014 and 2017 Summer Load Forecasts**

Region	2014 Light (MW)	2014 Peak (MW)	2017 Light (MW)	2017 Peak (MW)
Central	1166	1570	1223	1630
South	1955	2866	2101	3041
AIL	7831	10671	8864	11923

### 2.2.2. Generation Assumptions

The pre-connection Riverview WAGF study cases were defined with all existing and those currently constructing wind generation facilities dispatched up to their contracted Maximum Capability level. The remaining forecast wind growths were allocated to wind generation projects in the connection queue to stress the local transmission network in the study area. The forecast wind growths are based on the 2012LTO with a variance to capture an uncertainty around the timing of future wind projects. Table 2-5 shows the wind generation dispatch defined for the pre and post Riverview WAGF project. Remaining generation in the case was dispatched based on economic merit.

**Table 2-5: Study Areas Wind Generation Dispatch**

Name	2014 Dispatch (MW)	2017 Dispatch (MW)
Castle River Wind Farm	40	40
Cowley Ridge Wind Farm	38	38
McBride Lake Wind Farm	75	75
Summerview I Wind Farm	69	69
Magrath Wind Farm	30	30
Soderglen Wind Farm	68	68
Chin Chute Wind Farm	30	30
Kettles Hill Wind Farm	63	63
Taber Wind Farm	81	81
Blue Trail Wind Farm	66	66
Summerview II Wind Farm	66	66
Ardenville Wind Farm <sup>1</sup>	66	66
Castle Rock Ridge Wind Farm	103	103
Suncor Wintering Hills Wind Farm	88	88

Name	2014 Dispatch (MW)	2017 Dispatch (MW)
Ghost Pine Wind Farm	82	82
Halkirk Wind Farm	150	150
Alberta Wind Energy Oldman River Wind	47	47
Benign Energy Heritage I Wind Farm	100	100
Benign Energy Heritage II Wind Farm	0	250
Windy Point Wind Farm	61	61
Willowridge Wind Farm	0	100
McLaughlin Wind Farm	75	75
Blackspring Ridge I Wind Farm	97	96
<b>Total</b>	<b>1495</b>	<b>1844</b>

Note 1: Ardenville wind farm output was reduced by about 14 MW in all N-0 scenarios in this study, to manage the pre-connection existing overload on 608L due to the rating of the line and high output from the radially connected wind farms. This overload will be alleviated through the proposed 240/138 kV Windy Flats development.<sup>4</sup>

### 2.2.3. Intertie Flow Assumptions

The 2014 and 2017 summer light and summer peak load conditions were analyzed for the connection of Riverview WAGF.

In summer light cases, it is assumed that the AIES exports 800 MW to BC, the AIES and MATL exchange is 0 MW, the AIES exports 150 MW to Saskatchewan and imports 90 MW from the City of Medicine Hat.

In summer peak cases, it is assumed that AIES imports 480 MW from BC, imports 300 MW from MATL, imports 150 MW from Saskatchewan and exports 26 MW to the City of Medicine Hat.

## 2.3. LVRT Capability of Wind Turbine Generators in Study Areas

A summary of Low-Voltage Ride-Through (LVRT) capabilities for wind turbine generators in the study area is presented in Table 2-6. Existing wind turbine generators without sufficient LVRT capabilities may trip during or after a fault. These existing wind farms may not have been subject to the AESO's LVRT requirement as specified in the AESO's Wind Aggregated Generating Facilities Technical Requirements (effective December 1, 2011).

<sup>4</sup> On September 21, 2012, the AESO filed the Windy Flats Amendment to the AUC SATR Approval No. U2011-115 with the Commission to replace upgrades at the Peigan 59S substation with construction of the new Windy Flats 138S substation.

**Table 2-6: LVRT Capability of Existing and Proposed Wind Turbine Generators**

Bus Name	LVRT Capability	Minimum Terminal Voltage
Castle River	No	trip after 80ms below 0.75 pu terminal voltage
Cowley Ridge	No	trip after 80ms below 0.75 pu terminal voltage
McBride Lake	No	trip after 80ms below 0.75 pu terminal voltage
Summerview I	No	trip after 80ms below 0.75 pu terminal voltage
Magrath	No	trip after 2ms below 0.70 pu terminal voltage
Soderglen	Yes	-
Chin-Chute	Yes	-
Kettles Hill	No	trip after 2ms below 0.70 pu terminal voltage
Taber	Yes	-
Blue Trail	Yes	-
Summerview II	Yes	-
Ardenville	Yes	-
Castle Rock Ridge	Yes	-
Suncor Wintering Hills	Yes	-
Ghost Pine	Yes	-
Halkirk	Yes	-
Alberta Wind Energy Old Man River	Yes	-
Benign Energy Heritage I	Yes	-
Benign Energy Heritage II	Yes	-
Windy Point	Yes	-
Willowridge	Yes	-
McLaughlin	Yes	-
Blackspring Ridge I	Yes	-
Riverview	Yes	-

## 2.4. System Project Assumptions

Projects that have passed Gate 2 of the AESO connection process were modeled for the various scenarios based on their ISDs.

Based on the proposed ISD for Riverview WAGF, Fidler 312S substation was modeled for both 2014 and 2017 study scenarios. Furthermore, in the 2017 scenarios, 240 kV lines 992L and 1004L were assumed to connect between Chapel Rock 491S and Castle Rock Ridge 205S substations. The following SATR developments were assumed to be in service in 2017 but not in service in 2014. Therefore the developments were modeled in the 2017 study cases but not in the 2014 study cases:

- the SATR Blackie Area 138 kV upgrade
- the SATR 240 kV double circuit from CRR 205S to Chapel Rock 491S
- the SATR 911L replacement
- the SATR 240 kV line from Journault 260S to MATL Picture Butte 120S
- the SATR 988L from Goose Lake 103S to Journault 260S

## **3. Study Methodology**

### **3.1. Study Objectives**

The purpose of this connection study was to assess the impact of connecting Riverview WAGF to the AIES. In order to identify any reliability concerns associated with the connection of Riverview WAGF, the system was assessed with and without the proposed development. Steady-state, transient stability and short circuit analyses were performed to compare the system response before and after the connection of Riverview WAGF.

### **3.2. Study Scenarios**

The 2014 and 2017 summer light and summer peak load scenarios were analyzed for the connection impact of Riverview WAGF.

Wind generation in the study areas were dispatched according to Table 2-5. The other generators in the AIES were dispatched based on economic dispatch of the study scenarios. The export/import flow assumptions are described in Section 2.2.3.

### **3.3. Connection Studies Carried Out**

- Power flow (Category A and B from the AESO Reliability Criteria and the Alberta Reliability Standards)
- Transient stability analysis (Category A and B)
- Short-Circuit analysis

### **3.4. Power Flow Analysis**

The power flow studies were performed for the pre- and post- connection of the proposed Riverview WAGF in the study scenarios described in Section 3.2. The system performance was evaluated under Category A (N-0 - system normal) and Category B (N-1 - single element out-of-service) conditions.

The thermal limits were assumed to be one hundred percent of the normal summer rating. Thermal overloads that increased by at least three percent with the addition of the Riverview WAGF were considered significant thermal impacts.

The extreme minimum and maximum voltage limits specified by AESO Reliability Criteria were used to identify Category B system voltage violations.

### **3.5. Transient Stability Analysis**

The transient stability studies were performed for the pre- and post- connection of the proposed Riverview WAGF in the study scenarios described in Section 3.2. The power flow cases used in the power flow analysis were also used for the transient stability analysis. Specific Category B (N-1) faults located in the vicinity of the Fort MacLeod area were studied. The system load was modeled using the WECC default model of twenty percent induction motor load with the remaining load of one hundred percent constant current and one hundred percent constant impedance for real and reactive components, respectively.

Bus voltages and bus frequencies, branch active and reactive power flows and wind generator active, reactive power outputs and rotor speed were monitored. For each dynamic contingency, the plots of bus voltages, bus frequencies, wind generator active, reactive power outputs and rotor speed, and line active and reactive power flows are provided. In all the cases, the disturbance simulation started at 1 second and the case was run up to 15 seconds.

### 3.6. Short-Circuit Analysis

The considered scenarios for short-circuit studies were 2014 and 2022 summer light and summer peak conditions. The short-circuit studies were performed for both pre-connection conditions and post-connection conditions. Both three-phase and single-line-to-ground fault currents were calculated.

## 4. Pre-Connection System Assessment

### 4.1. Pre-Connection Power Flow Analysis

The pre-connection system assessment was performed using 2014 and 2017 system configurations without Riverview WAGF. The steady-state performance of the existing system was assessed under both summer light and summer peak loading scenarios, as described in section 3.2. Relevant Single Line Diagrams (SLDs) are provided in Attachment B.

#### 4.1.1. System Normal (N-0) Conditions

The performance of the pre-connection system under normal (N-0) conditions was assessed without the proposed Riverview WAGF. The transmission system overloads in the monitored areas are summarized in Table 4-1. Note that even if N-0 violations persist under the N-1 conditions, they will not be repeated in the N-1 result tables. Management of the listed overloads is addressed in the post-connection studies, section 6. No voltage violation was observed under system normal conditions.

**Table 4-1: Pre-connection System N-0 Overloads**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SL	B-1-1	None	Peigan 59S 240/138kV T1	179	186.7	104.3
2017SL	B-2-1	None	None	-	-	-
2014SP	B-3-1	None	911L (Peigan 59S to SS-65)	341	404.1	118.5
			180L (Fort MacLeod 15S to Stavely 928S)	85	89.8	105.6
			Peigan 59S 240/138kV T1	179	184.4	103.0
2017SP	B-4-1	None	None	-	-	-

#### 4.1.2. Single Element Contingency (N-1) Conditions

Single element (N-1) contingency analysis was performed using the summer light and summer peak scenarios. The results of the N-1 contingency analysis are summarized in Table 4-2 and Table 4-3. The listed overloads are currently managed by OPP515 and operator actions in real-time operation. No voltage violation was observed under single element contingency conditions.

**Table 4-2: Pre-connection System N-1 Overloads, Summer Light Scenarios**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SL	B-5-1	911L (Peigan 59S to SS-65)	180L (Fort MacLeod 15S to Stavely 928S)	85	95.4	112.2
	B-5-2	863L (MaGrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 225L tap)	25	28.7	114.8
	B-5-3	MaGrath 225S 138/69kV T1	225L (Stirling 67S to Raymond 225L tap)	25	28.5	114.1
2017SL	B-2-1	N/A	None	-	-	-

**Table 4-3: Pre-connection System N-1 Overloads, Summer Peak Scenarios**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SP	B-6-1	911L (Peigan 59S to SS-65)	172L (Taber 83S to Chin Chute 172L tap)	119	120.5	101.3
	B-6-2	725L (Fort MacLeod 15S to Bowron 674S)	172L (North Lethbridge 370S to Monarch 172L tap)	85	85.8	100.9
	B-6-3	863L (MaGrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 225L tap)	25	28.6	114.5
	B-6-4	MaGrath 225S 138/69kV T1	225L (Stirling 67S to Raymond 225L tap)	25	28.4	113.7
2017SP	B-7-1	Goose Lake 103S 240/138kV T1	616L (Peigan 59S to Kettles Hill 616L tap)	119	127.4	107.1

In the studied 2017 SP scenario with high wind generation, a large portion of Pincher Creek area 138 kV generation will flow onto 240 kV system via the Goose Lake 103S 240/138 kV transformer T1. Under Goose Lake transformer T1 contingency, most of these flows are pushed to Peigan 59S 240 kV system via the 138 kV line 616L. This is the major cause for 616L N-1 overload shown in the table above. This overload can be mitigated using operating procedures, as required.

## 4.2. Pre-Connection Transient Stability Analysis

Transient stability analysis was performed to assess the stability of the pre-connection system without Riverview WAGF. The power flow cases of 2014 summer light and summer peak, used in the steady-state analysis, were also used for the transient stability analysis. Specific Category B (N-1) faults located in the vicinity of the Fort MacLeod area were studied.

### 4.2.1. Disturbance List

The faults were applied to 138 kV and 240 kV lines in the vicinity of the Riverview WAGF with the subsequent outage of the lines. Refer to Attachment C for simulated faults.

Wind generator active power, reactive power, terminal voltage, and rotor speed, bus voltages and frequencies, and branch active and reactive power flows were monitored; these quantities are plotted for each dynamic contingency. In all cases, the disturbance simulation started at 1 second and the case was run up to 15 seconds.

### 4.2.2. Transient Stability Results for Existing System

In general, only the wind turbine generators without sufficient LVRT capability (Section 2.3) and the wind turbine generators whose point of connection voltage dropped below 0.15 pu after the fault, tripped during the simulated fault scenarios. There was no load shedding and the system response was stable under all simulated faults. Detailed study results are presented in Attachment C.

## 4.3. Short Circuit Analysis

Short circuits studies were performed for the 2014 summer light and summer peak scenarios, and without the connection of Riverview WAGF. Both three-phase and single-line-to-ground fault currents were calculated. The results of the short circuit analysis are presented in Table 4-4 and Table 4-5.

**Table 4-4: Pre-connection System Fault Level at Key Substations near Riverview WAGF under Summer Light Loading Conditions**

Scenario	Bus				Positive Seq.		Zero Seq.		3-Phase	1-Phase
	Number	Name	Sub	Pre-fault Voltage	R	X	R	X	[kA]	[kA]



2014SL	165	PEIGAN 4	240.	59S	1.0507	0.0035	0.0262	0.0217	0.0963	9.08	4.76
	166	PEIGAN 7	138.	59S	1.0106	0.0063	0.0489	0.0930	0.3561	8.48	2.69
	221	CRR-W1	240.	205S	1.0548	0.0041	0.0333	0.0295	0.1324	7.17	3.56
	224	PINCHER7	138.	396S	1.0332	0.0055	0.0424	0.0248	0.1260	9.79	5.87
	296	GOOSEL7	138.	103S	1.0334	0.0052	0.0417	0.0244	0.1245	9.96	5.95
	346	GOOSEL4	240.	103S	1.0541	0.0038	0.0298	0.0259	0.1169	8.02	4.02
	751	FIDLER01	240.	312S	1.0583	0.0040	0.0332	0.0306	0.1385	7.20	3.46

**Table 4-5: Pre-connection System Fault Level at Key Substations near Riverview WAGF under Summer Peak Loading Conditions**

Scenario	Bus				Positive Seq.		Zero Seq.		3-Phase	1-Phase	
	Number	Name	Sub	Pre-fault Voltage	R	X	R	X	[kA]	[kA]	
2014SP	165	PEIGAN 4	240.	59S	1.0427	0.0035	0.0264	0.0216	0.0958	9.02	4.76
	166	PEIGAN 7	138.	59S	1.0044	0.0063	0.0491	0.0928	0.3551	8.45	2.70
	221	CRR-W1	240.	205S	1.0494	0.0041	0.0335	0.0294	0.1320	7.12	3.56
	224	PINCHER7	138.	396S	1.0241	0.0057	0.0428	0.0246	0.1249	9.69	5.88
	296	GOOSEL7	138.	103S	1.0243	0.0053	0.0421	0.0242	0.1234	9.86	5.96
	346	GOOSEL4	240.	103S	1.0480	0.0039	0.0300	0.0258	0.1165	7.95	4.02
	751	FIDLER01	240.	312S	1.0532	0.0041	0.0334	0.0305	0.1381	7.14	3.46

## 5. Connection Alternatives

The AESO identified only one connection alternative for connecting the Riverview WAGF to the existing transmission system, and that alternative was shown in Figure 1-1. This proposed connection alternative would connect the market participant’s proposed Riverview WAGF to the AIES via the existing switching station Castle Rock Ridge (CRR) 205S in the Pincher Creek area.

## 6. Technical Analysis of the Connection Alternatives

The transmission system performance with the connection of the 115 MW Riverview WAGF was assessed under the 2014 and 2017 summer light and summer peak scenarios. Power flow

analysis, transient stability analysis, and short circuit analysis were performed to evaluate the impact of the connection of the Riverview WAGF.

## 6.1. Power Flow Analysis

The steady-state performance of the system was assessed under system normal (N-0) and single element (N-1) outage conditions with the proposed Riverview WAGF. The results of the contingency analysis are summarized in the following sections. Relevant SLDs are provided in Attachment D.

### 6.1.1. System Normal (N-0) Condition

No voltage violation was observed under system normal condition.

Riverview WAGF connection significantly worsened some of the 2014 existing overloads and introduced a new overload under system normal condition, as presented in Table 6-1. No overloads were observed in the 2017 cases. Note that even if N-0 violations persist under the N-1 conditions, they will not be repeated in the N-1 result tables in Section 6.1.2.

**Table 6-1: Post-connection System N-0 Overloads**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SL	D-1-1	None	911L (Peigan 59S to SS-65)	341	357.4	104.8
			Peigan 59S 240/138kV T1	179	190.5	106.4
2017SL	D-2-1	None	None	-	-	-
2014SP	D-3-1	None	911L (Peigan 59S to SS-65)	341	442.6	129.8
			180L (Fort MacLeod 15S to Stavelly 928S)	85	95.2	112.0
			Peigan 59S 240/138kV T1 (59S-59S)	179	187.6	104.8
2017SP	D-4-1	None	None	-	-	-

### 6.1.2. Single Element Contingency (N-1) Conditions

The same study cases used for N-0 analysis in section 6.1.1 are used here for N-1 analysis.

No voltage violation was observed under single element contingency conditions.

Compared with the pre-connection overloads in Table 4-2 and Table 4-3, an increase of 3% or more in thermal loading is defined as a noticeable change. Overloads are reported if they are either larger by a 3% margin compared with the pre-connection overloads or are created after Riverview connection. The observed thermal overloads are summarized in Table 6-2 and Table 6-3. RAS design for the Riverview WAGF connection will be based on results in Section 6.1.3 with AESO Transmission Constraint Management (TCM) rule applied.

**Table 6-2: Post-connection System N-1 Overloads, Summer Light Scenarios**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SL	D-5-1	911L (Peigan 59S to SS-65)	180L (Fort MacLeod 15S to Stavelly 928S)	85	104.8	123.3
	D-5-2	863L (MaGrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 225L tap)	25	29.7	118.9
	D-5-3	MaGrath 225S 138/69kV T1	225L (Stirling 67S to Raymond 225L tap)	25	29.5	118.1
2017SL	D-2-1	N/A	None	-	-	-

**Table 6-3: Post-connection System N-1 Overloads, Summer Peak Scenarios**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SP	D-6-1	911L (Peigan 59S to SS-65)	172L (Taber 83S to Chin Chute 172L tap)	119	133.6	112.3
	D-6-2	725L (Fort MacLeod 15S to Bowron 674S)	172L (North Lethbridge 370S to Monarch 172L tap)	85	90.8	106.8
	D-6-3	863L (MaGrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 225L tap)	25	29.9	119.4
	D-6-4	1005L (Picture Butte 120S to Milo 356S)	172L (Taber 83S to Chin Chute 172L tap)	119	123.3	103.6
	D-6-5	MaGrath 225S 138/69kV T1	225L (Stirling 67S to Raymond 225L tap)	25	29.6	118.5
2017SP	D-4-1	N/A	None	-	-	-

### 6.1.3. Single Element Contingency (N-1) Conditions after Applying the TCM Rule

Generator effectiveness factors were calculated to estimate the ability of each generator to relieve transmission element constraints. The generator effectiveness factors for mitigating 911L and 180L overloads under normal system (N-0) condition are shown in Attachment F.

In order to remove the N-0 overloads in the 2014 study cases, the AESO TCM Rule (i.e., curtailing by a pro-rata methodology for all effective generators in Area 53) was applied. As a result, 70 MW and 330 MW of generation were curtailed respectively in 2014SL and 2014SP cases. The SLDs of the study area with N-0 overloads removed are presented in Figures D-7-1 and D-8-1 of Attachment D.

After removing N-0 overloads, the analysis under N-1 contingencies was performed, and the results were presented in Table 6-4 and Table 6-5 .

**Table 6-4: Post-connection System N-1 Overloads, Summer Light Scenarios after Removing N-0 Overloads**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SL With No N-0 Overload	D-9-1	955L (Peigan 59S to Goose Lake103S)	Peigan 59S 240/138kV T1	179	206.9	115.6
	D-9-2	956L (Peigan 59S to Goose Lake103S)	Peigan 59S 240/138kV T1	179	206.9	115.6
	D-9-3	911L (Peigan 59S to SS-65)	180L (Fort MacLeod 15S to Stavelly 928S)	85	98.7	116.1
	D-9-4	967L (Peigan 59S to North Lethbridge 370S)	911L (Peigan 59S to SS-65)	341	375.4	110.1
	D-9-5	940L (North Lethbridge 370S to Picture Butte 120S)	911L (Peigan 59S to SS-65)	341	379.2	111.2
	D-9-6	968L (Peigan 59S to North Lethbridge 370S)	911L (Peigan 59S to SS-65)	341	375.1	110.0
	D-9-7	1041L (North Lethbridge 370S to Travers 554S)	911L (Peigan 59S to SS-65)	341	374.4	109.8
	D-9-8	412L (Pincher Creek 396S to Russell 632S)	911L (Peigan 59S to SS-65)	341	355.0	104.1
			Peigan 59S 240/138kV T1 (59S-59S)	179	188.5	105.3
	D-9-9	170L (Coleman 799S to Russell 632S)	911L (Peigan 59S to SS-65)	341	351.6	108.1
			Peigan 59S 240/138kV T1 (59S-59S)	179	195.8	109.8
	D-9-10	180L (Fort MacLeod 15S to Stavelly 928S)	911L (Peigan 59S to SS-65)	341	354.0	103.8
	D-9-11	863L (MaGrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 225L tap)	25	29.0	115.8
D-9-12	1005L (Picture Butte 120S to Milo 356S)	911L (Peigan 59S to SS-65)	341	375.4	110.1	
D-9-13	MaGrath 225S 138/69kV T1	225L (Stirling 67S to Raymond 225L tap)	25	28.8	115.0	

**Table 6-5: Post-connection System N-1 Overloads, Summer Peak Scenarios after Removing N-0 Overloads**

Scenario	Figure #	Contingency	Overloaded Element			
			Element Name	MVA Rating	MVA Flow	% Flow
2014SP With No N-0 Overload	D-10-1	911L (Peigan 59S to SS-65)	180L (Fort MacLeod 15S to Stavely 928S)	85	106.2	124.9
	D-10-2	967L (Peigan 59S to North Lethbridge 370S)	911L (Peigan 59S to SS-65)	341	358.1	105.0
	D-10-3	968L (Peigan 59S to North Lethbridge 370S)	911L (Peigan 59S to SS-65)	341	358.1	105.0
	D-10-4	1041L (North Lethbridge 370S to Travers 554S)	911L (Peigan 59S to SS-65)	341	362.8	106.4
	D-10-5	170L (Coleman 799S to Russell 632S)	911L (Peigan 59S to SS-65)	341	360.8	105.8
	D-10-6	180L (Fort MacLeod 15S to Stavely 928S)	911L (Peigan 59S to SS-65)	341	357.7	104.9
	D-10-7	863L (MacGrath 225S to Riverbend 618S)	225L (Stirling 67S to Raymond 225L tap)	25	26.3	105.2
	D-10-8	1005L (Picture Butte 120S to Milo 356S)	911L (Peigan 59S to SS-65)	341	388.1	113.8
			180L (Fort MacLeod 15S to Stavely 928S)	85	89.3	105.1
D-10-9	MaGrath 225S 138/69kV T1	225L (Stirling 67S to Raymond 225L tap)	25	26.1	104.4	

## 6.2. Transient Stability Analysis

Transient stability analysis was performed to assess the stability of the system after the connection of Riverview WAGF under various Category B (N-1) fault scenarios. The power flow cases of 2014 with removed N-0 overloads (Riverview generation set at maximum output), as well as those of 2017, were used for the transient stability analysis. Specific Category B (N-1) faults located in the vicinity of Riverview project were studied.

### 6.2.1. Disturbance List

The faults were applied to 138 kV and 240 kV lines in the vicinity of the Riverview WAGF with the subsequent outage of the lines. Refer to Attachment E for simulated faults.

Wind generator active power, reactive power, terminal voltage, and rotor speed, bus voltages and frequencies, and branch active and reactive power flows were monitored; these quantities

were plotted for each dynamic contingency. In all cases, the disturbance simulation started at 1 second and the case was run up to 15 seconds.

### 6.2.2. Transient stability Results with Riverview WAGF Online

The transient stability results for the system after the connection of the Riverview WAGF are summarized in Attachment E. The system response and southern Alberta wind turbine generators were monitored during the simulations.

In general, only the wind turbine generators without sufficient LVRT capability (Section 2.3) and the wind turbine generators whose point of connection voltage dropped below 0.15 pu after the fault, tripped during the simulated fault scenarios. There was no load shedding and the system response was stable under all simulated faults.

### 6.3. Short Circuit Analysis

Short circuits studies were performed on four scenarios to determine the fault levels in the system after the connection of Riverview WAGF. Both three-phase and single-line-to-ground fault currents were calculated. The results of the short circuit analysis are given in Table 6-6 and Table 6-7.

**Table 6-6: Proposed Connection System Fault Level at Key Substations near Riverview WAGF under Summer Light Loading Conditions**

Scenario	Bus				Positive Seq.		Zero Seq.		3-Phase	1-Phase	
	Number	Name	Sub	Pre-fault Voltage	R	X	R	X	[kA]	[kA]	
2014SL	165	PEIGAN 4	240.	59S	1.0489	0.0035	0.0262	0.0217	0.0963	9.08	4.76
	166	PEIGAN 7	138.	59S	1.0091	0.0063	0.0489	0.0930	0.3561	8.48	2.69
	221	CRR-W1	240.	205S	1.0536	0.0041	0.0333	0.0295	0.1324	7.17	3.56
	224	PINCHER7	138.	396S	1.0323	0.0055	0.0424	0.0248	0.1260	9.79	5.87
	296	GOOSEL7	138.	103S	1.0326	0.0052	0.0417	0.0244	0.1245	9.96	5.95
	346	GOOSEL4	240.	103S	1.0527	0.0038	0.0298	0.0259	0.1169	8.02	4.02
	751	FIDLER01	240.	312S	1.0571	0.0040	0.0332	0.0306	0.1385	7.20	3.46
2022SL	165	PEIGAN 4	240.	59S	1.0516	0.0015	0.0138	0.0177	0.0742	17.32	6.94
	166	PEIGAN 7	138.	59S	1.0421	0.0059	0.0480	0.0197	0.1134	8.65	5.92
	221	CRR-W1	240.	205S	1.0537	0.0013	0.0146	0.0123	0.0626	16.43	7.75
	224	PINCHER7	138.	396S	1.0461	0.0031	0.0328	0.0140	0.0847	12.71	8.27
	296	GOOSEL7	138.	103S	1.0456	0.0027	0.0319	0.0130	0.0817	13.06	8.55
	346	GOOSEL4	240.	103S	1.0522	0.0013	0.0138	0.0127	0.0631	17.35	7.83
	751	FIDLER01	240.	312S	1.0515	0.0014	0.0157	0.0157	0.0775	15.28	6.52

**Table 6-7: Proposed Connection System Fault Level at Key Substations near Riverview WAGF under Summer Peak Loading Conditions**

Scenario	Bus				Positive Seq.		Zero Seq.		3-Phase	1-Phase	
	Number	Name	Sub	Pre-fault Voltage	R	X	R	X	[kA]	[kA]	
2014SP	165	PEIGAN 4	240.	59S	1.0367	0.0035	0.0264	0.0216	0.0958	9.02	4.76
	166	PEIGAN 7	138.	59S	1.0012	0.0063	0.0491	0.0928	0.3551	8.45	2.70
	221	CRR-W1	240.	205S	1.0457	0.0041	0.0335	0.0294	0.1320	7.12	3.56
	224	PINCHER7	138.	396S	1.0213	0.0057	0.0428	0.0246	0.1249	9.69	5.88
	296	GOOSEL7	138.	103S	1.0216	0.0053	0.0421	0.0242	0.1234	9.86	5.96
	346	GOOSEL4	240.	103S	1.0438	0.0039	0.0300	0.0258	0.1165	7.95	4.02
	751	FIDLER01	240.	312S	1.0495	0.0041	0.0334	0.0305	0.1381	7.14	3.46
2022SP	165	PEIGAN 4	240.	59S	1.0186	0.0015	0.0135	0.0175	0.0731	17.76	7.07
	166	PEIGAN 7	138.	59S	1.0090	0.0059	0.0477	0.0194	0.1124	8.71	5.97
	221	CRR-W1	240.	205S	1.0258	0.0013	0.0142	0.0121	0.0616	16.91	7.91
	224	PINCHER7	138.	396S	1.0158	0.0031	0.0324	0.0138	0.0837	12.86	8.37
	296	GOOSEL7	138.	103S	1.0158	0.0027	0.0315	0.0128	0.0807	13.21	8.65
	346	GOOSEL4	240.	103S	1.0243	0.0013	0.0134	0.0125	0.0621	17.87	7.99
	751	FIDLER01	240.	312S	1.0244	0.0014	0.0154	0.0155	0.0765	15.58	6.62

## 7. Project Interdependencies

There are no project interdependencies for this Riverview WAGF wind connection project.



## 8. Summary and Conclusion

The transmission system performance was assessed under the 2014 and 2017 summer light (with high wind and high export) and summer peak (with high wind and high import) scenarios. Power flow analysis, transient stability analysis, and short circuit analysis were performed to evaluate the impact of the Riverview WAGF connection to the AIES.

Based on the proposed ISD for Riverview WAGF, Fidler 312S substation was modeled for both 2014 and 2017 study scenarios. Furthermore, in 2017 scenarios, 240 kV lines 992L and 1004L were assumed to connect between Chapel Rock 491S and Castle Rock Ridge 205S substations.

The following SATR developments were assumed to be in service for the 2017 study scenarios; they were assumed not in service for the 2014 study scenarios:

- the SATR Blackie Area 138 kV upgrade
- the SATR 240 kV double circuit from CRR205S to Chapel Rock 491S
- the SATR 911L replacement
- the SATR 240 kV line from Journault 260S to MATL Picture Butte 120S
- the SATR 988L from Goose Lake 103S to Journault 260S

The steady-state analysis showed that the connection of Riverview WAGF will negatively impact the system under normal conditions. Moreover, several thermal overloads were observed after single element contingency for the studied system conditions, while some of them were significantly worsened by the Riverview WAGF connection in 2014 scenarios. Steady-state analysis with AESO TCM rules applied was also performed to assist in RAS design for the Riverview WAGF connection.

Before SATR developments are in service, especially the 911L replacement and Blackie Area 138 kV upgrade, AESO TCM rule will be applied to manage potential overloads under system normal conditions. RAS will be required to run back or trip Riverview WAGF under certain contingencies to alleviate the potential overloads on transmission lines 911L, 180L, 225L and Peigan 59S Transformer T1. More detailed RAS design is provided in the AESO functional specification for Riverview WAGF.

All these potential overloads are expected to be alleviated after SATR developments are in service.

No transient stability issues were identified with the Riverview WAGF connection for the studied fault scenarios.

No significant change in the short circuit levels was observed near the Castle Rock Ridge 205S substation as a result of Riverview WAGF addition.

P524

**Riverview WAGF**

Attachment A

Dynamic Data of Equipment Proposed for Connection

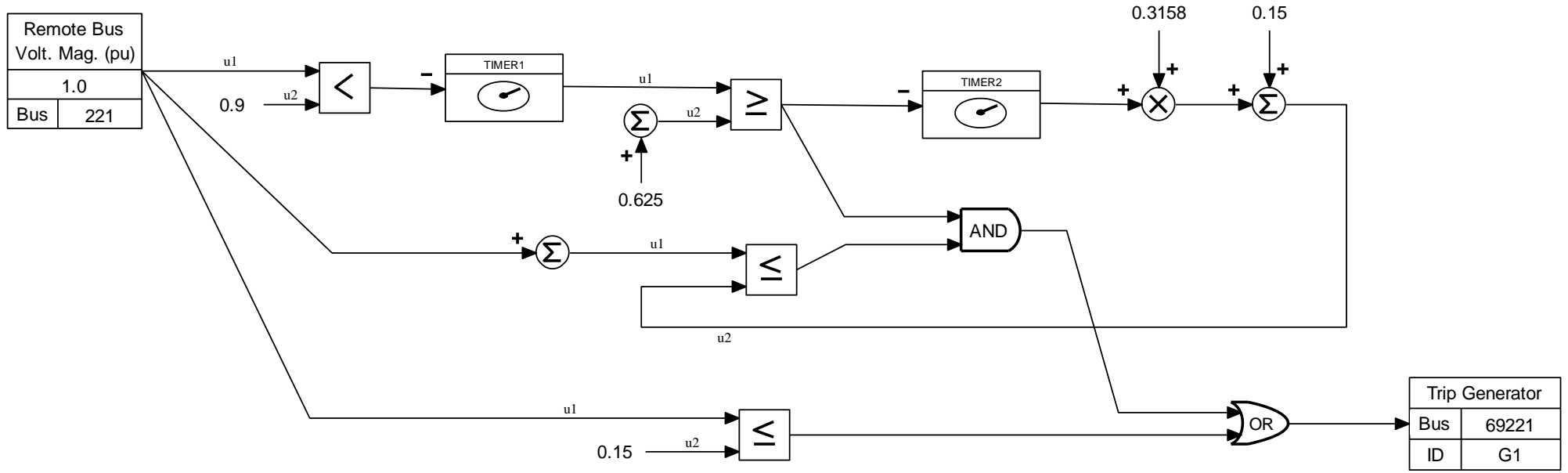
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/ Riverview Wind Farm (P524)

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-0.500000 0.050000 0.100000 0.900000 1.100000 100.000000 0.050000 0.050000 1.700000  
1.110000 1.110000 /

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P524

**Riverview WAGF**

Attachment B

Pre-Connection Power Flow Single Line Diagrams

2014 and 2017 Summer Light and Peak Scenarios

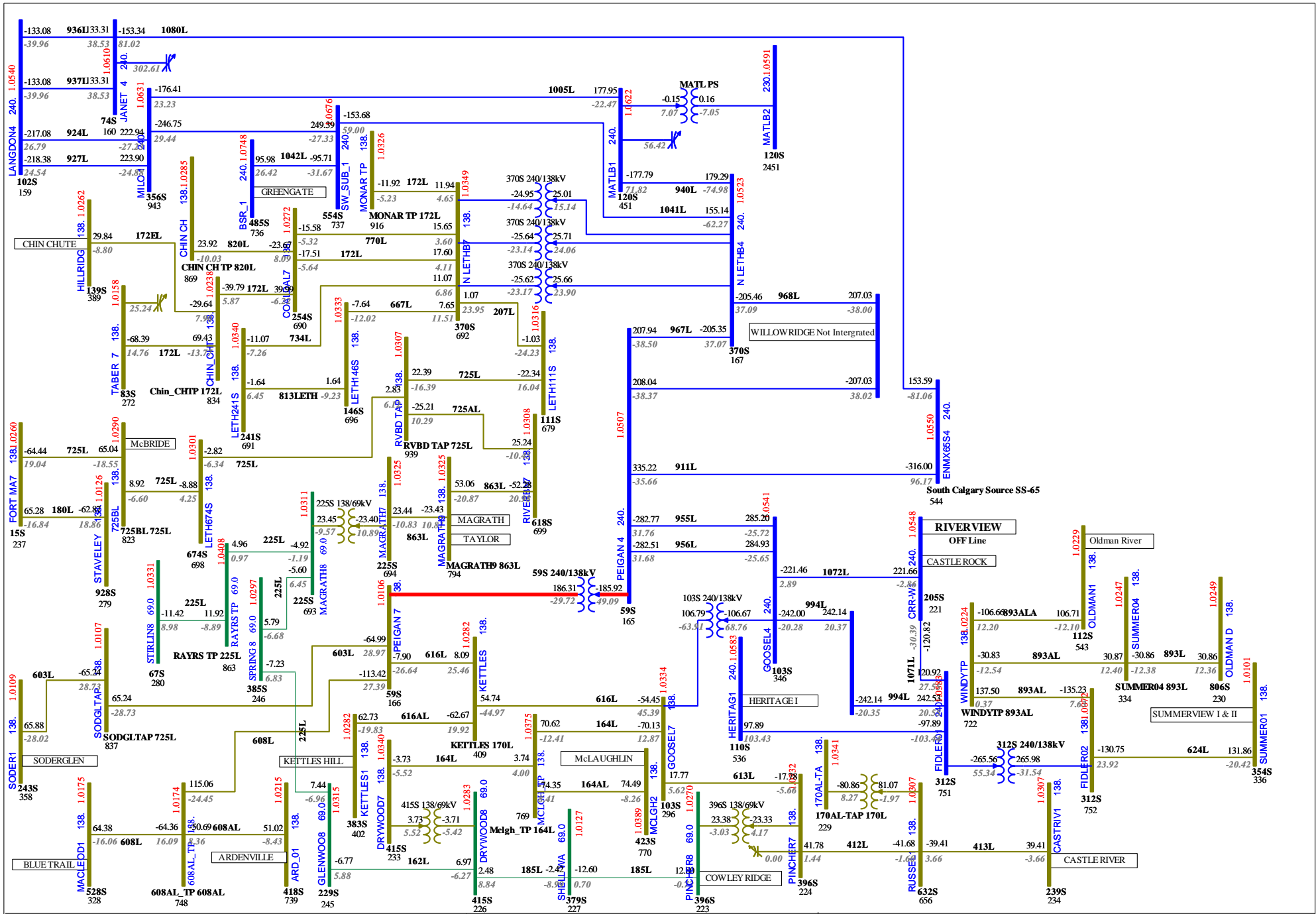


Figure B-1-1 Base Case  
 Overload 59S 240/138kV T1 (59S-59S)

### Riverview (P524)

2014 Summer Light  
 P524 Not Integrated

69 kV	<span style="color: green;">█</span>	WAGF	
138 kV	<span style="color: yellow;">█</span>	MW	69.11
240 kV	<span style="color: blue;">█</span>	MVAR	-34.10
Overload	<span style="color: red;">█</span>		

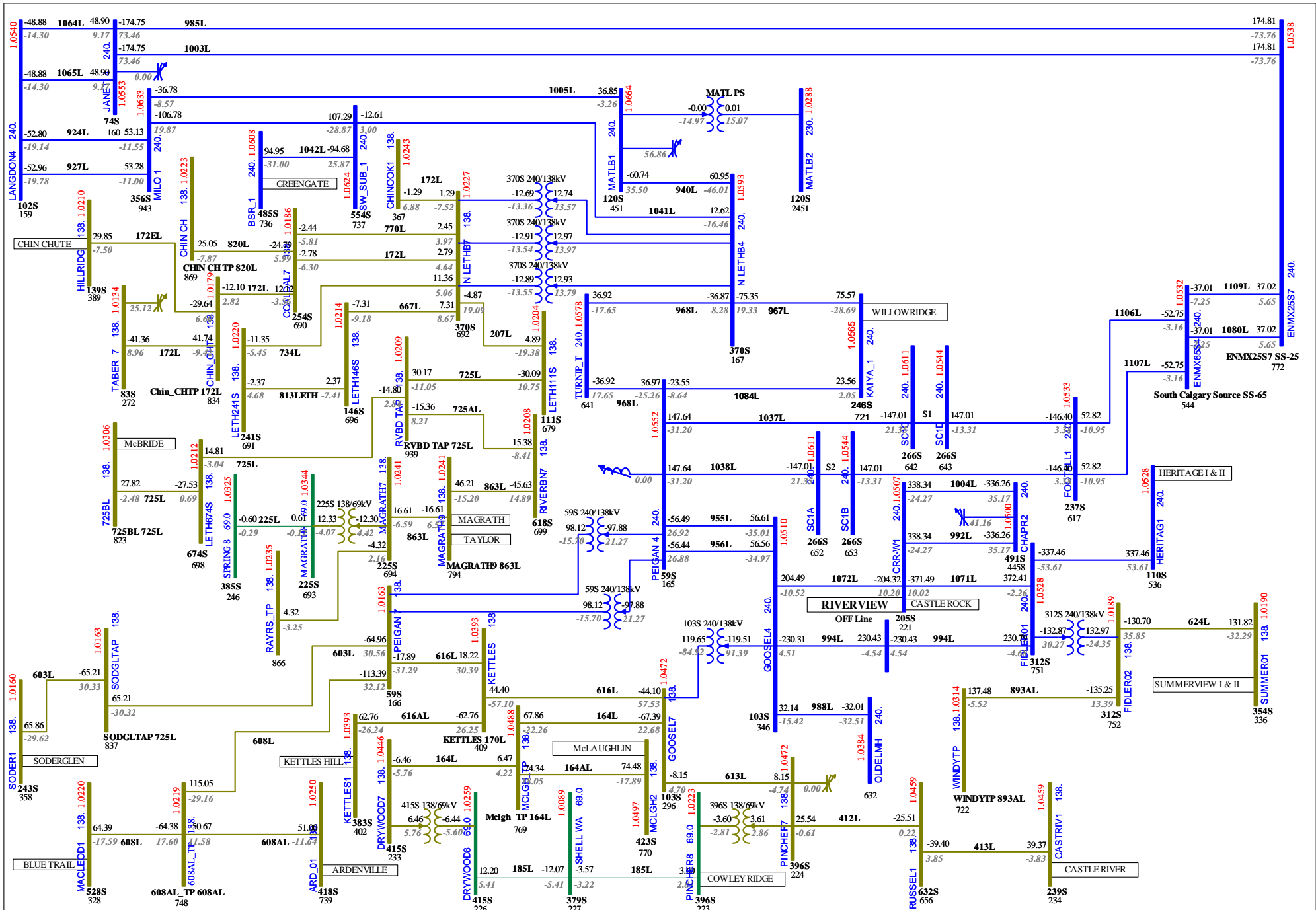


Figure B-2-1 Base Case

### Riverview (P524)

2017 Summer Light  
P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

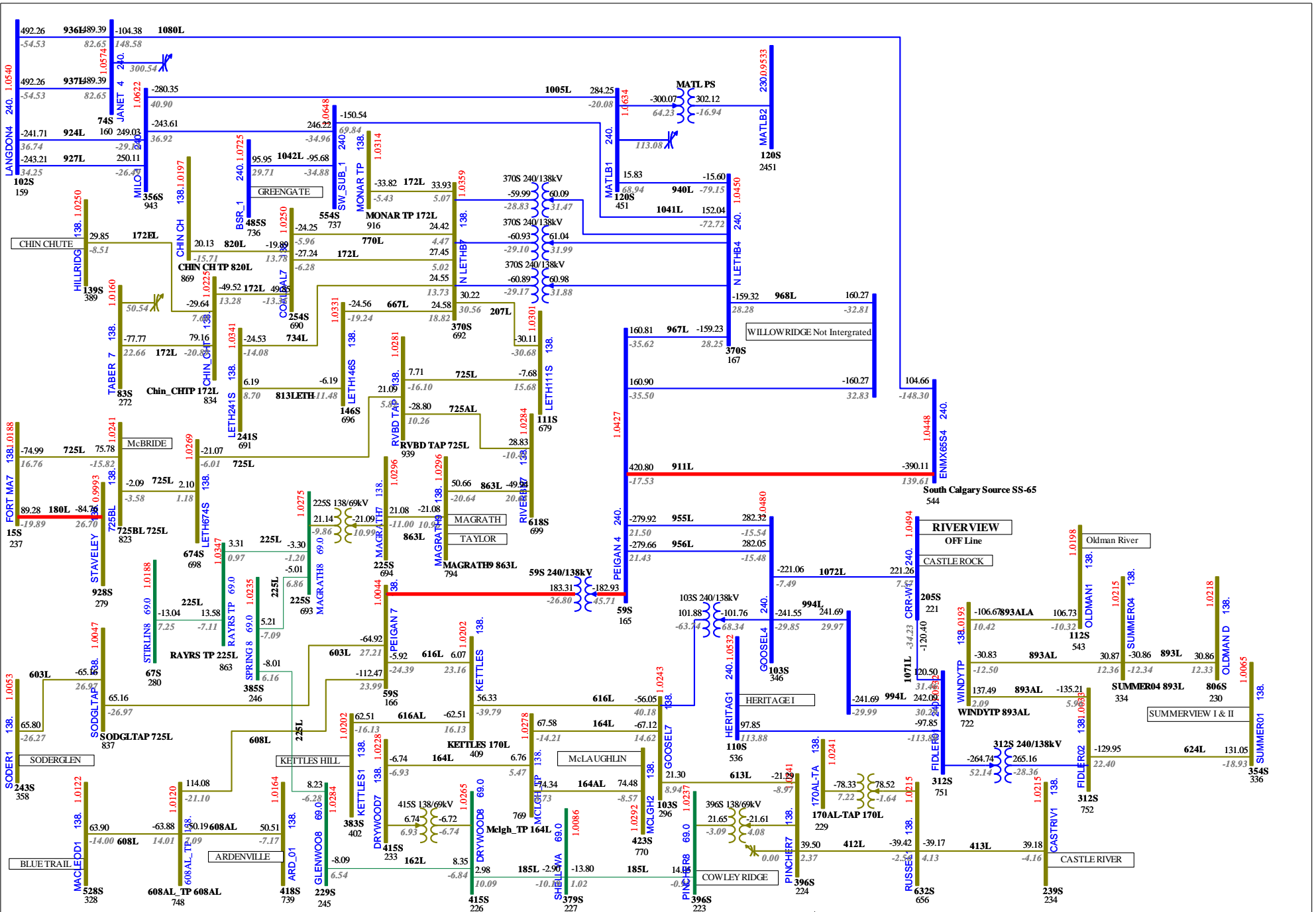


Figure B-3-1 Base Case  
 Overload 911L (59S-S. Calgary Source SS-65)  
 180L (15S-928S)  
 59S 240/138kV T1 (59S-59S)

### Riverview (P524)

2014 Summer Peak  
 P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



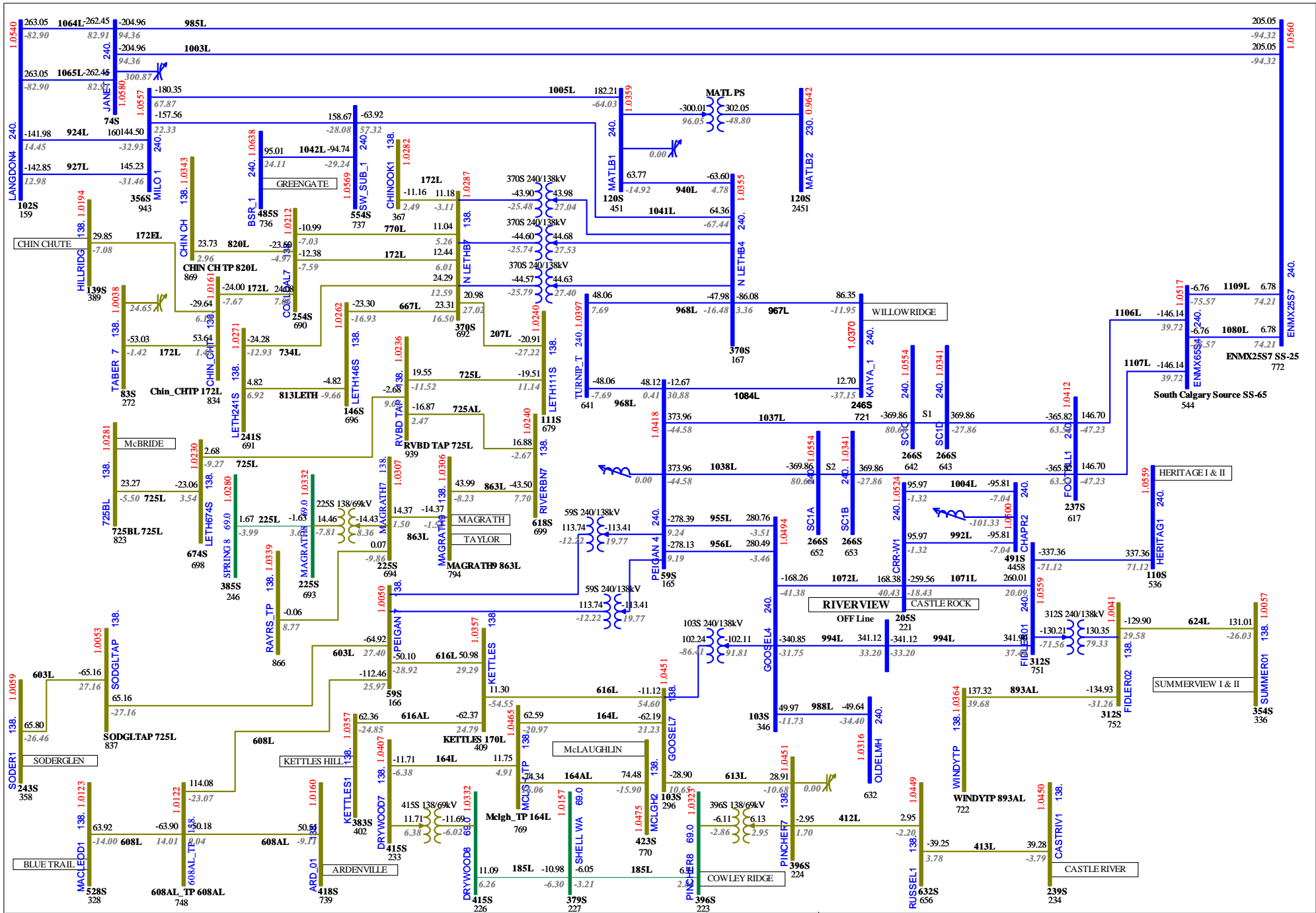


Figure B-4-1 Base Case

### Riverview (P524)

2017 Summer Peak  
P524 Not Integrated

- 69 kV —
- 138 kV —
- 240 kV —
- Overload —

WAGF	
MW	69.11
MVAR	-34.10

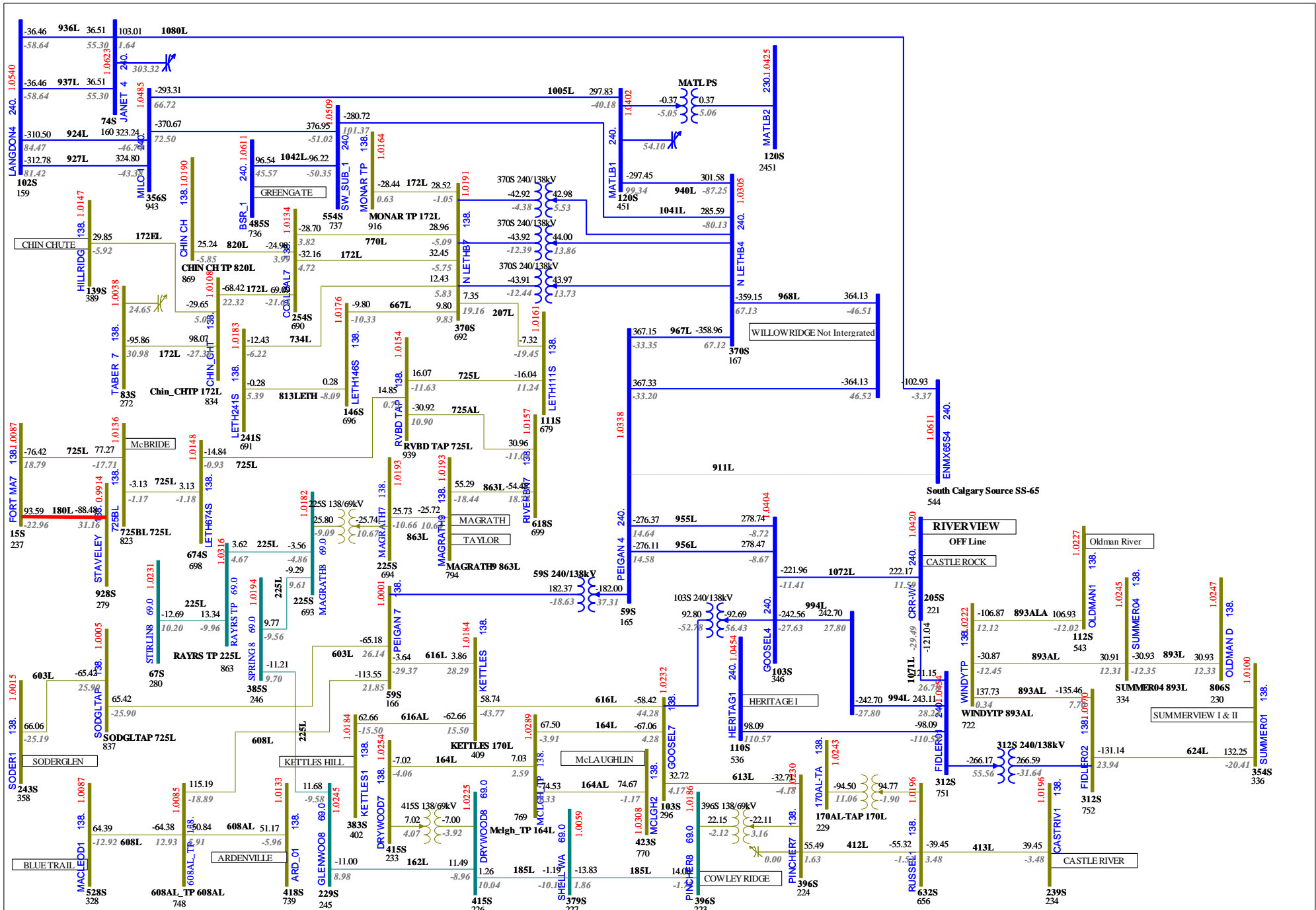


Figure B-5-1 Contingency: 911L (59S-S. Calg. Source SS-65)  
 Overload: 180L (15S-928S)

Riverview (P524)  
 2014 Summer Light  
 P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

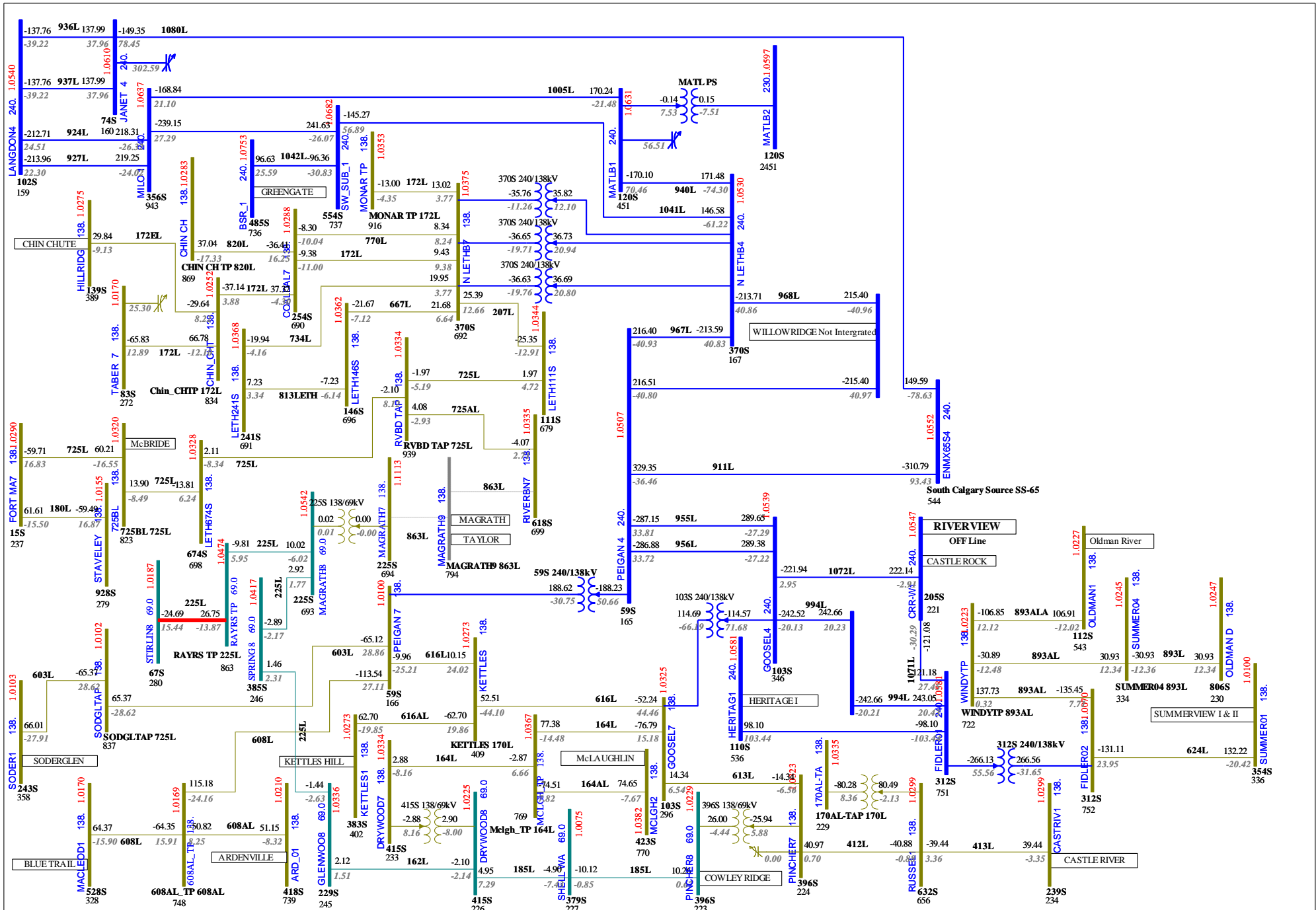
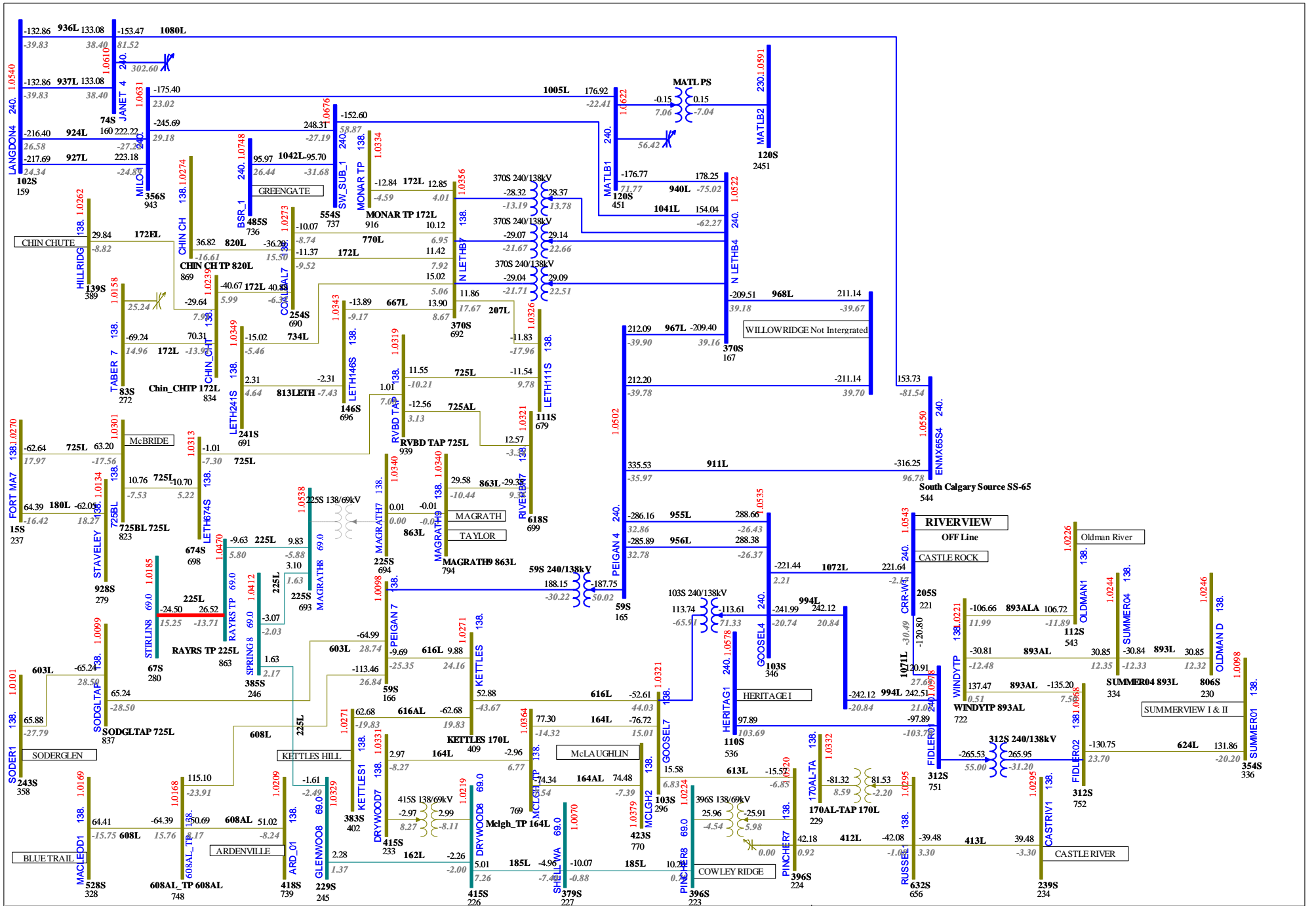


Figure B-5-2 Contingency: 863L (225S-618S)  
 Overload: 225L (67S-RAYS TP 225L)

Riverview (P524)  
 2014 Summer Light  
 P524 Not Integrated

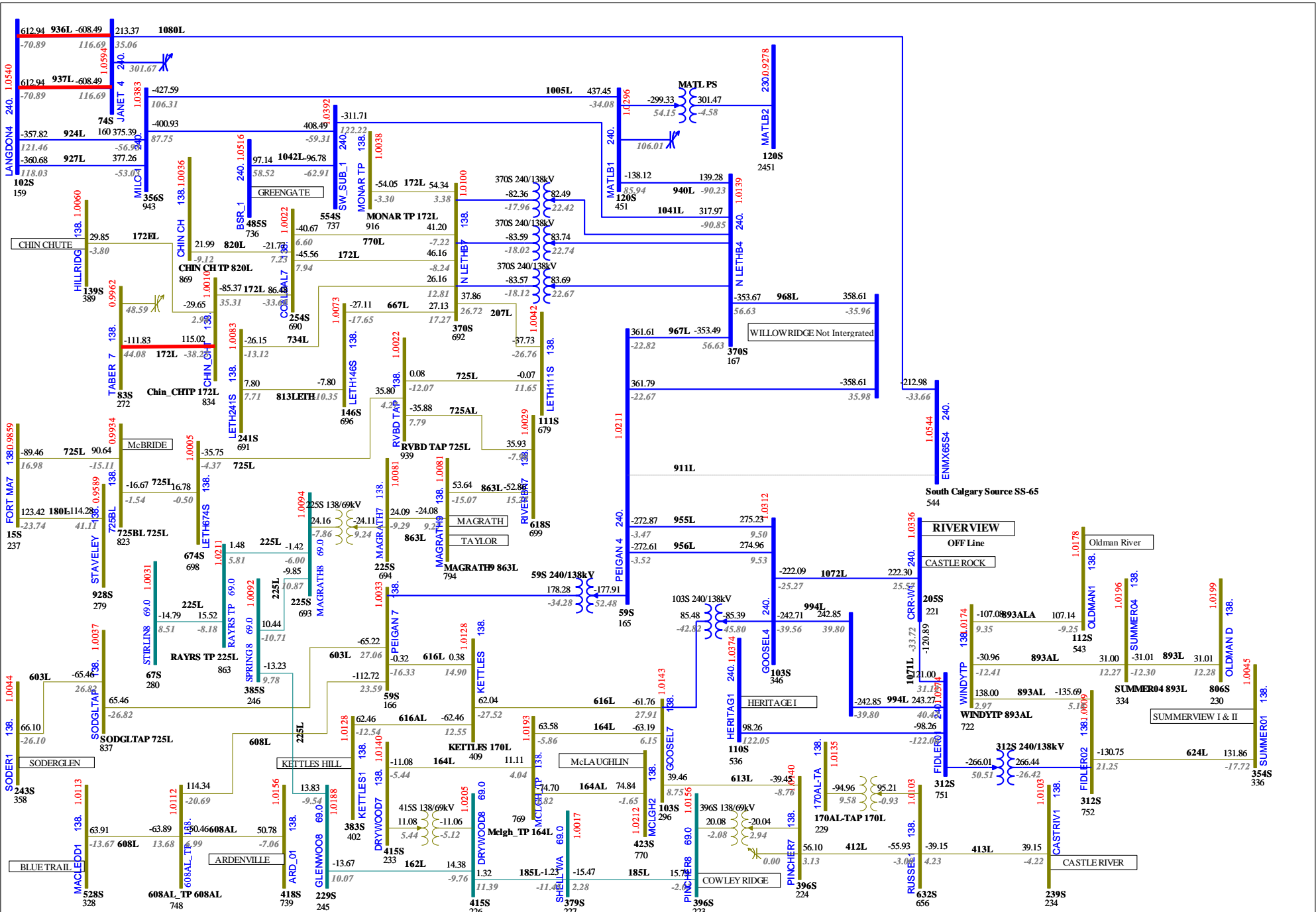
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138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



**Figure B-5-3** Contingency: 225S 138/69kV T1 (225S-225S)  
 Overload: 225L (67S-RAYS TP 225L)

**Riverview (P524)**  
 2014 Summer Light  
 P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



**Figure B-6-1** Contingency: 911L (59S-S. Calg. Source SS-65)  
 Overload: 936L (102S-74S)  
 937L (102S-74S)  
 172L (83S- CHIN\_CHTP 172L)

**Riverview (P524)**  
 2014 Summer Peak  
 P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

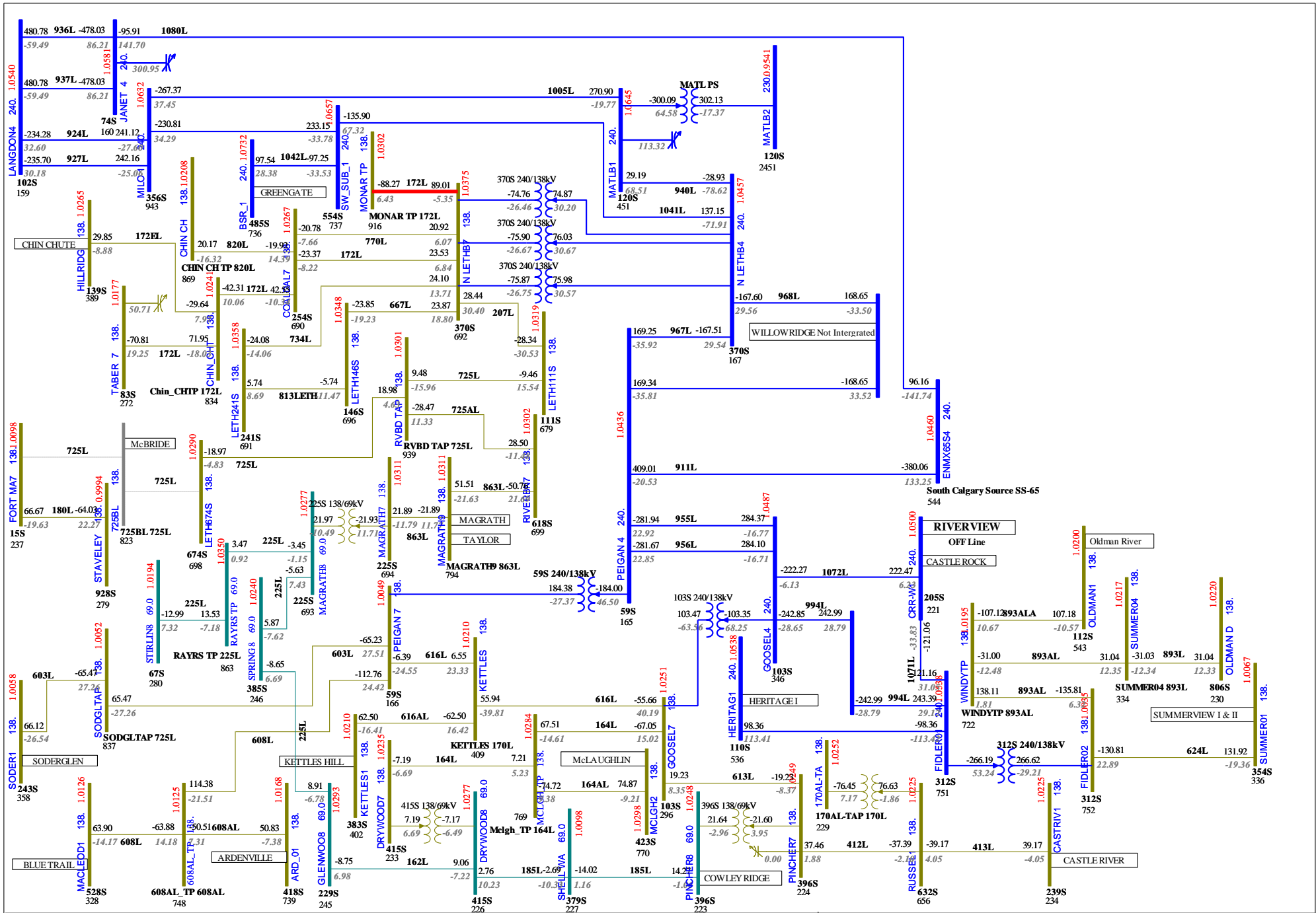


Figure B-6-2 Contingency: 725L (15S-674S)  
 Overload: 172L (370S-MONAR TP 172L)

### Riverview (P524)

2014 Summer Peak  
 P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

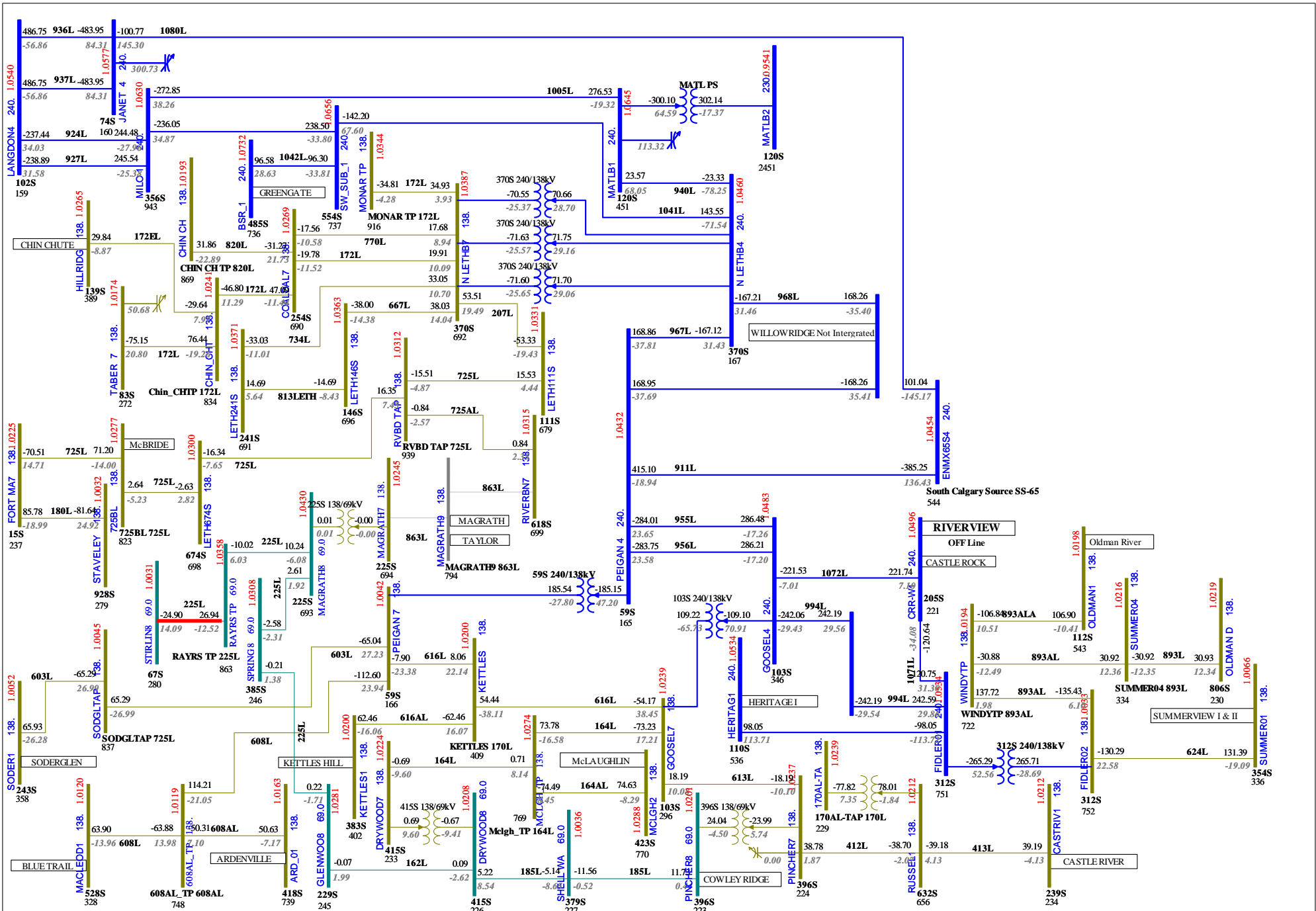
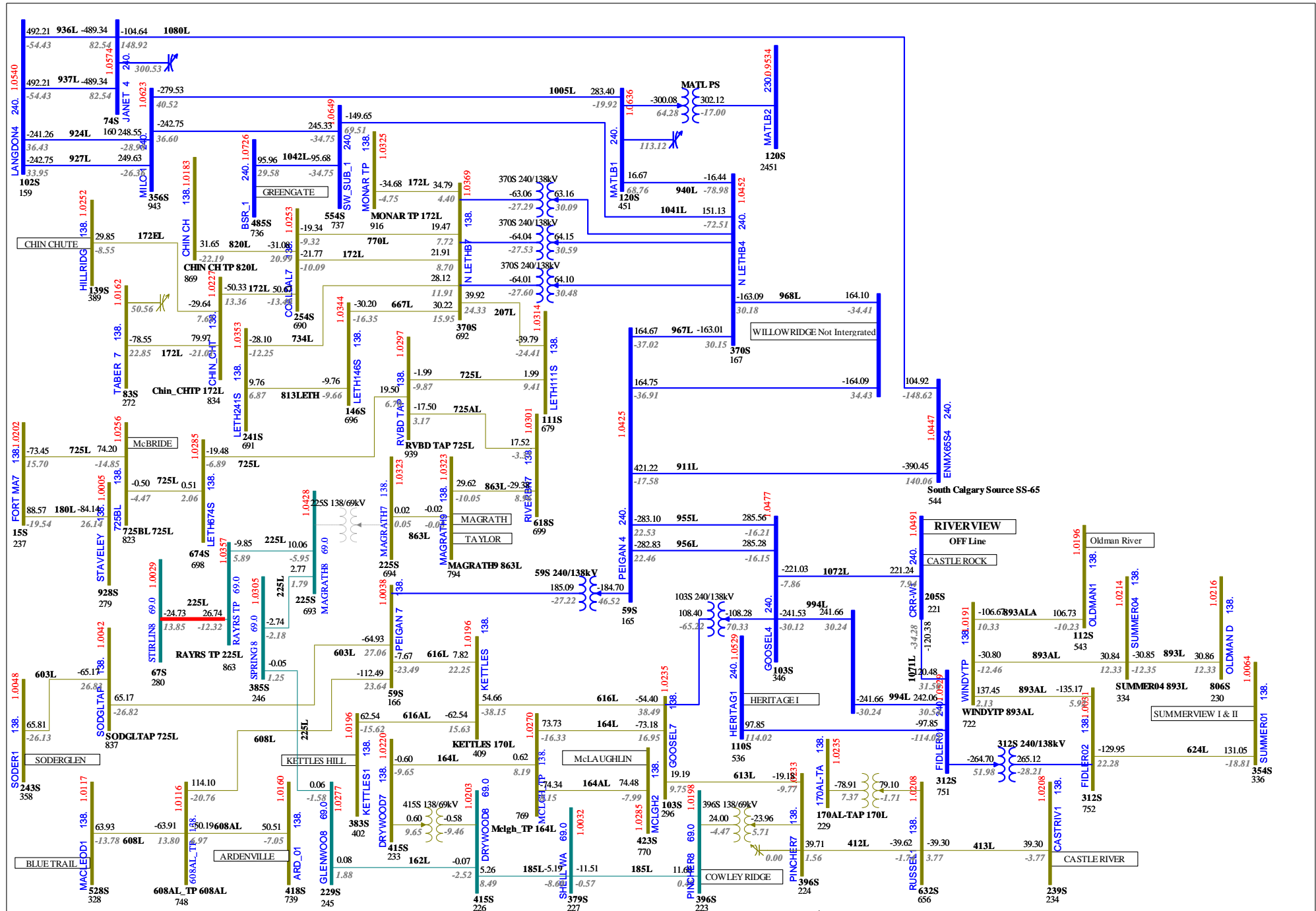


Figure B-6-3 Contingency: 863L (225S-618S)  
 Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Peak  
 P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

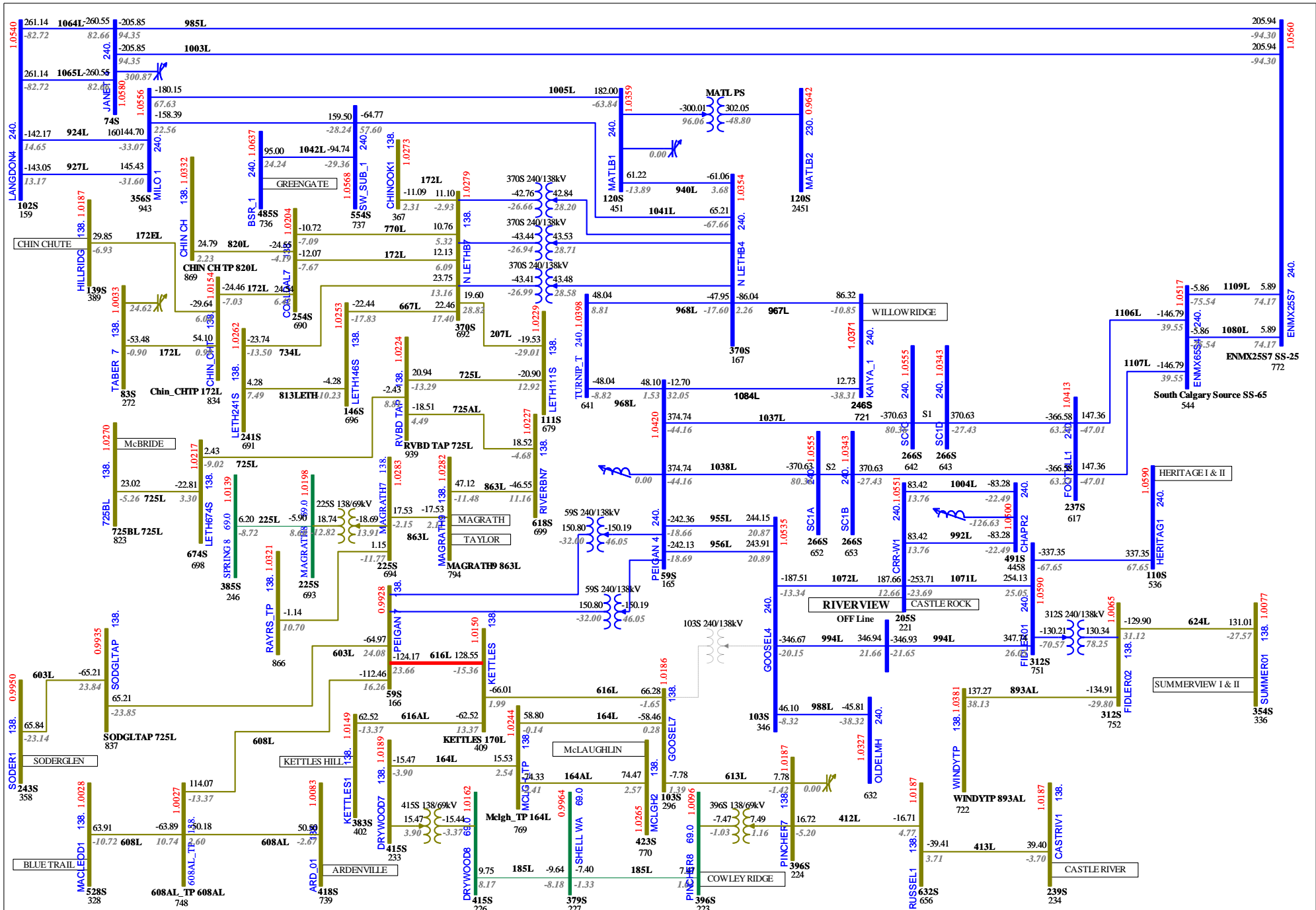


**Figure B-6-4** Contingency: 225S 138/69kV T1 (225S-225S)  
 Overload: 225L (67S-RAYRS TP 225L)

**Riverview (P524)**  
 2014 Summer Peak  
 P524 Not Integrated

69 kV	█	WAGF	█
138 kV	█	MW	69.11
240 kV	█	MVAR	-34.10
Overload	█		





**Figure B-7-1** Contingency 103S 240/138kV T1 (103S-103S)  
Overload 616L (59S-KETTLES 170L)

**Riverview (P524)**  
2017 Summer Peak  
P524 Not Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

P524

**Riverview WAGF**

Attachment C1

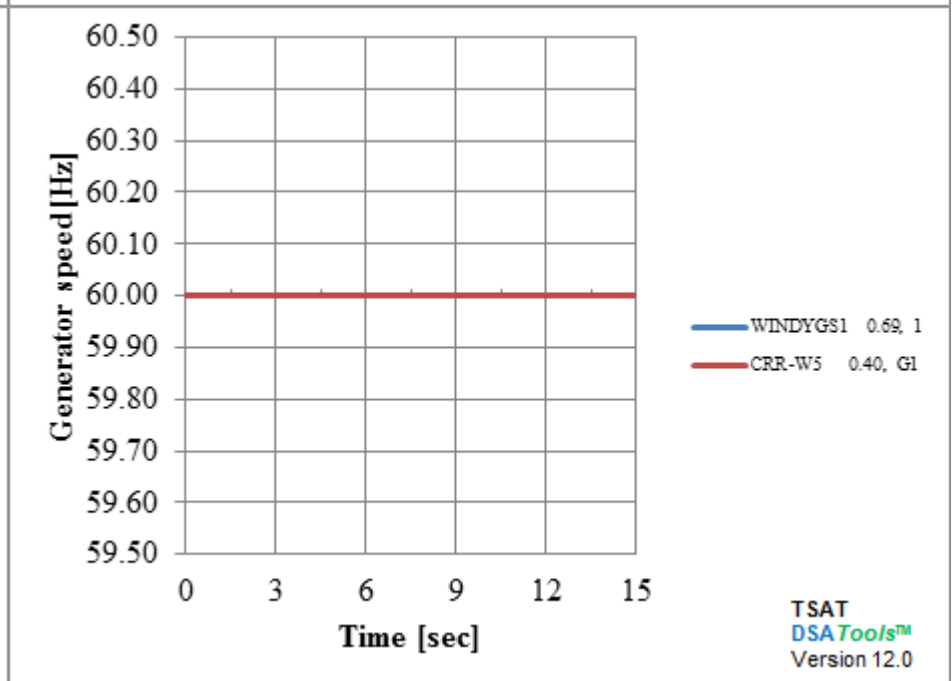
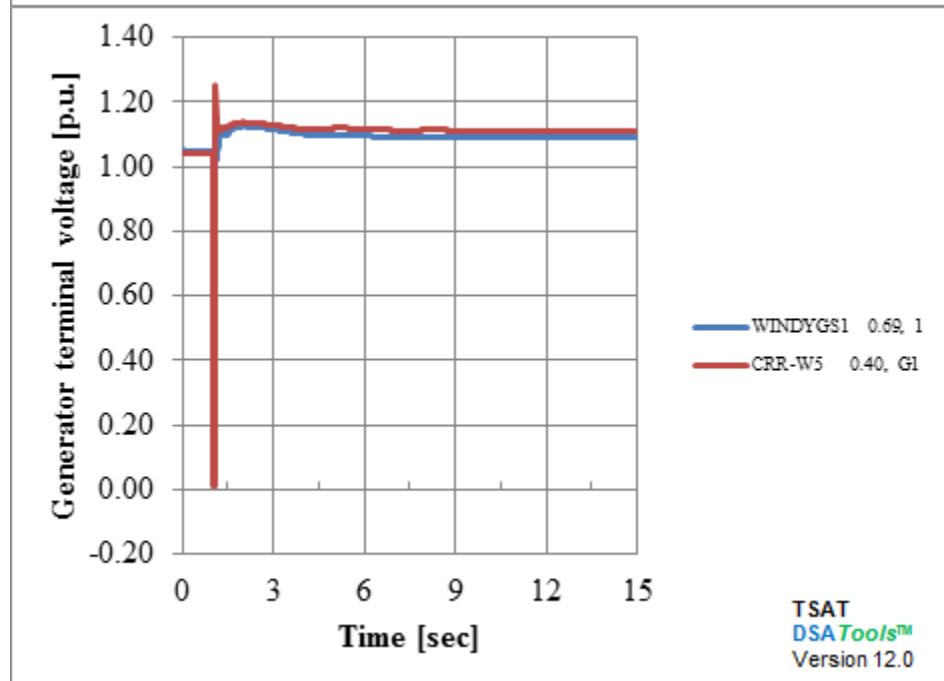
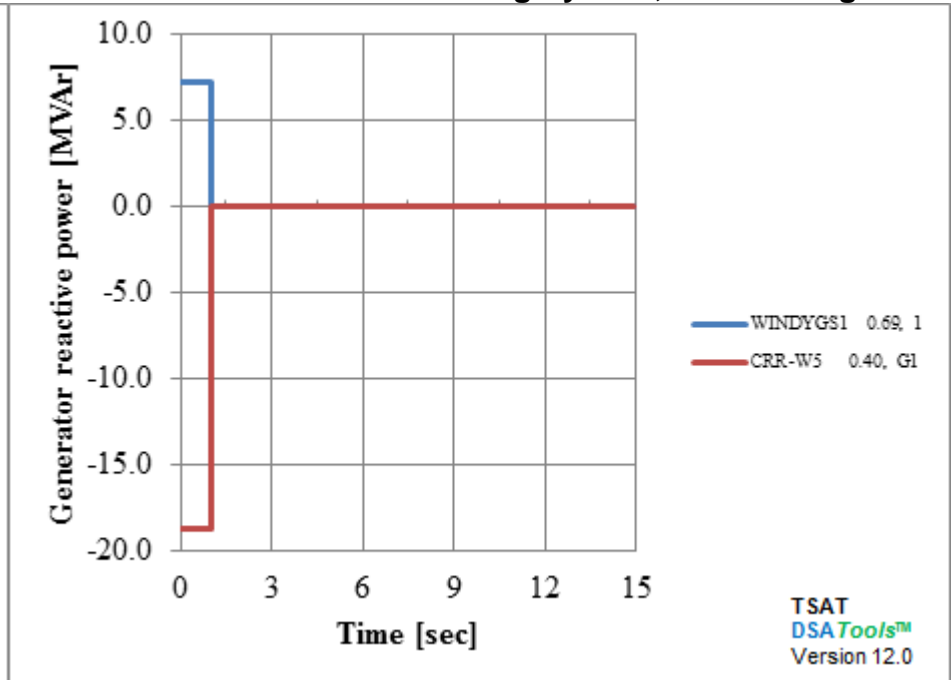
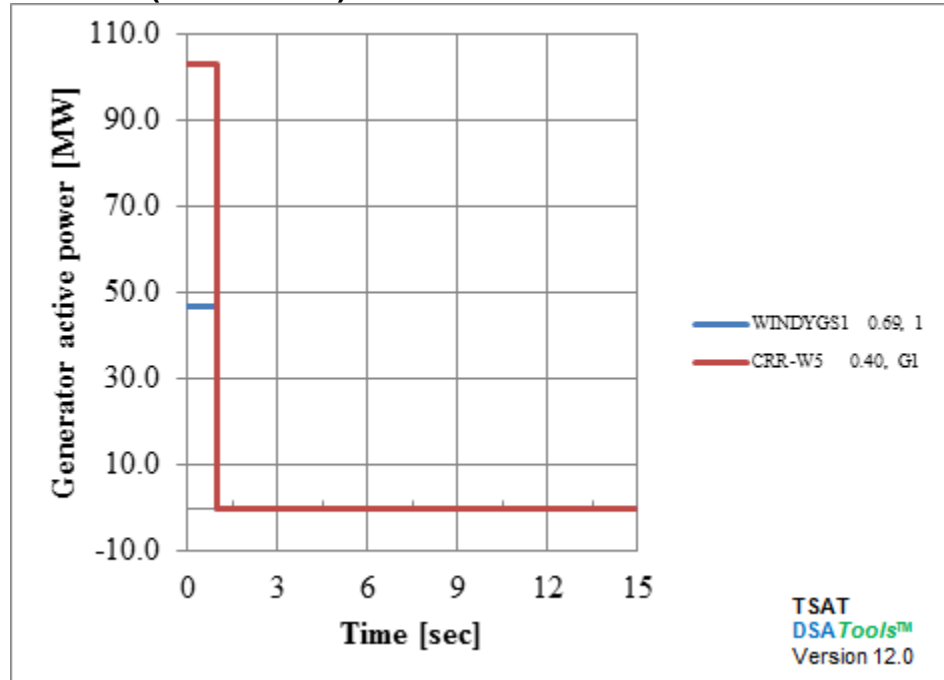
Pre-Connection Transient Stability Results

Part 1

2014 Summer Light Scenario

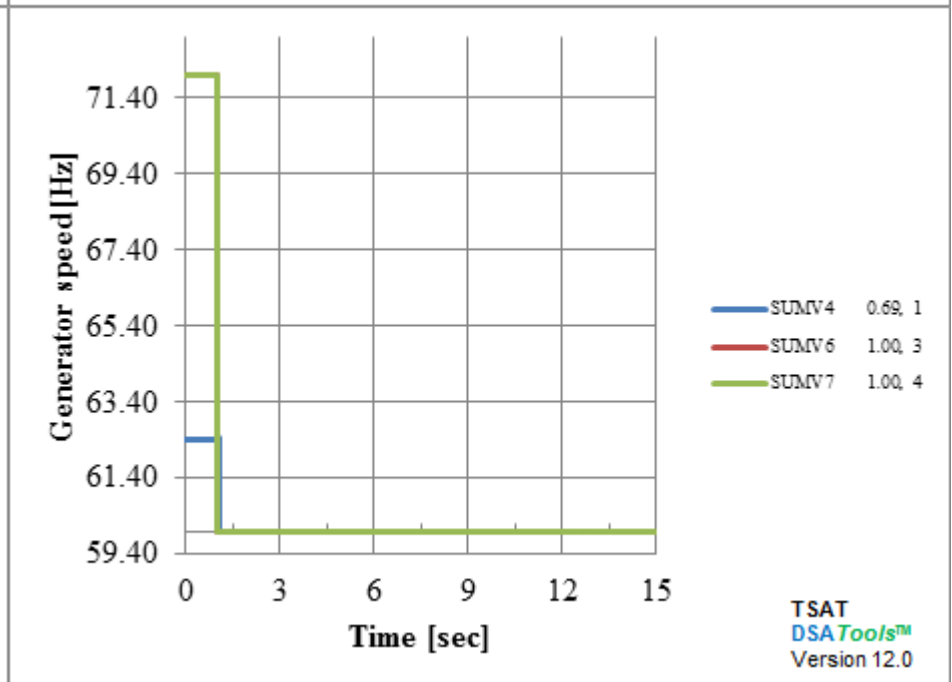
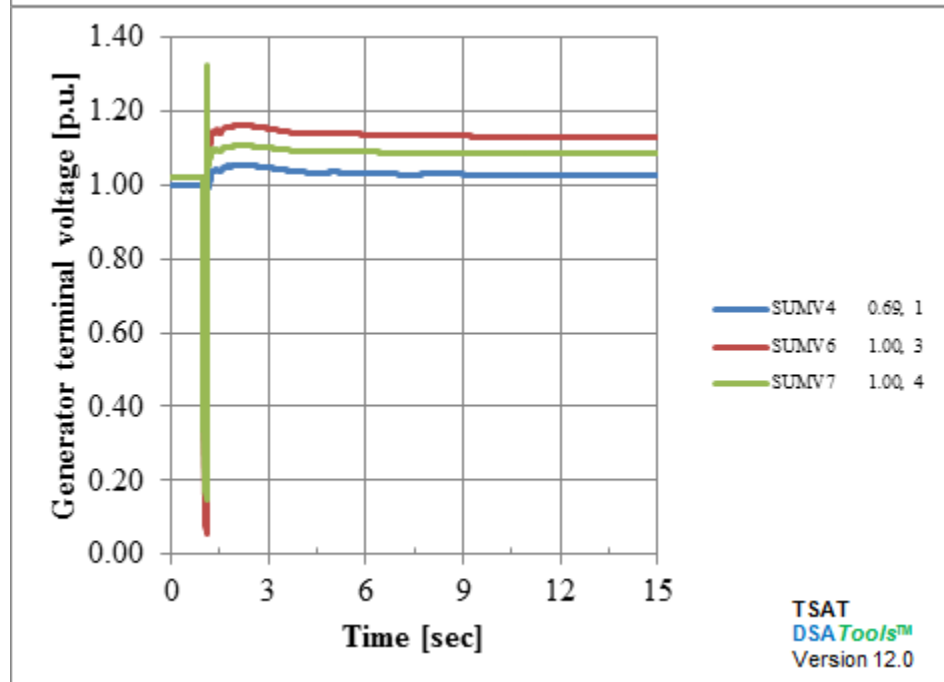
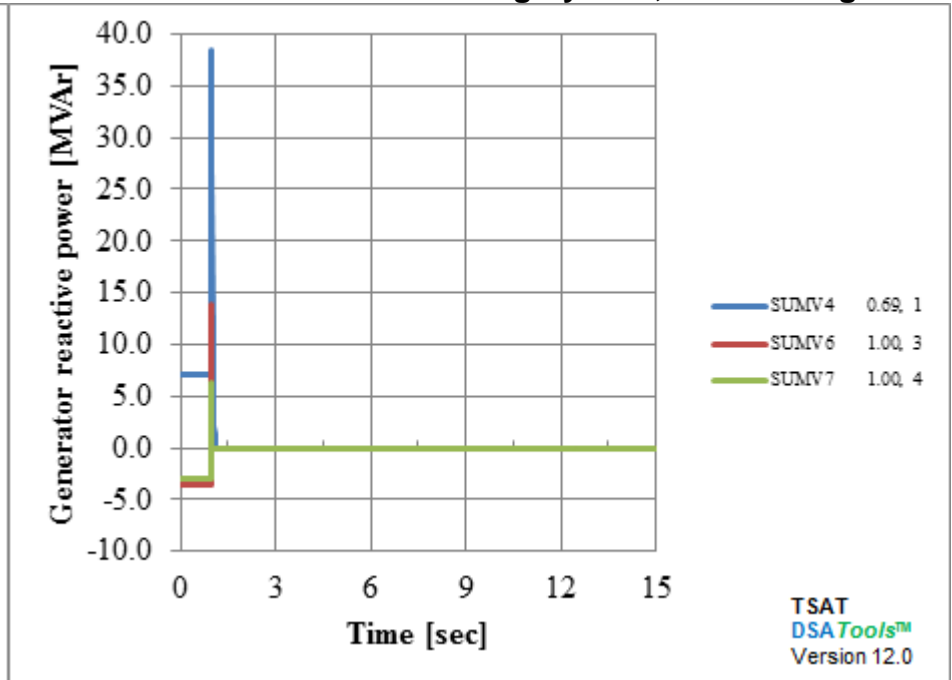
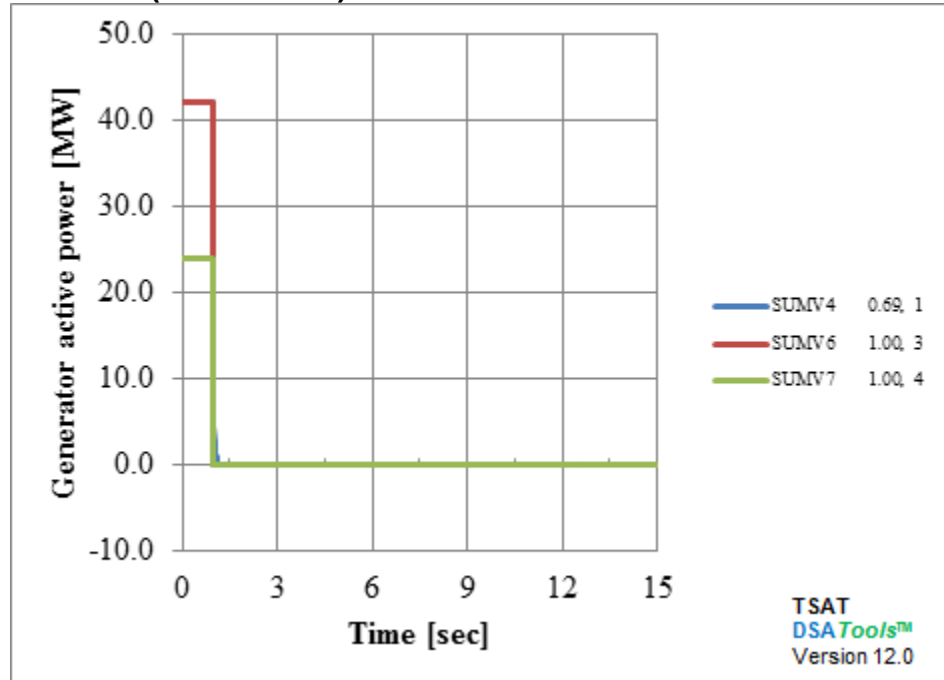
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Existing System, Summer Light 2014



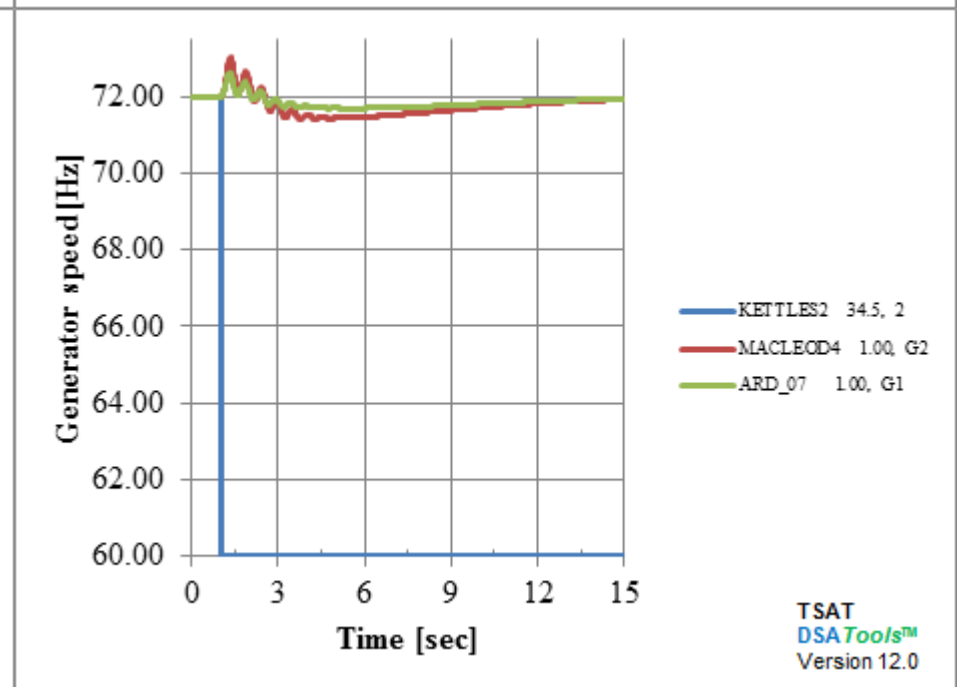
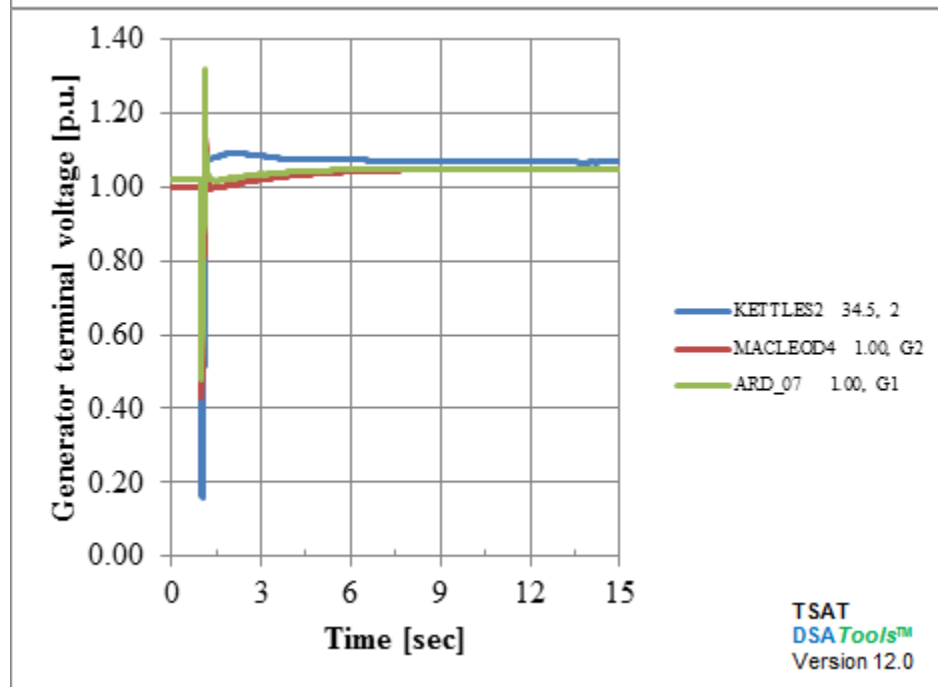
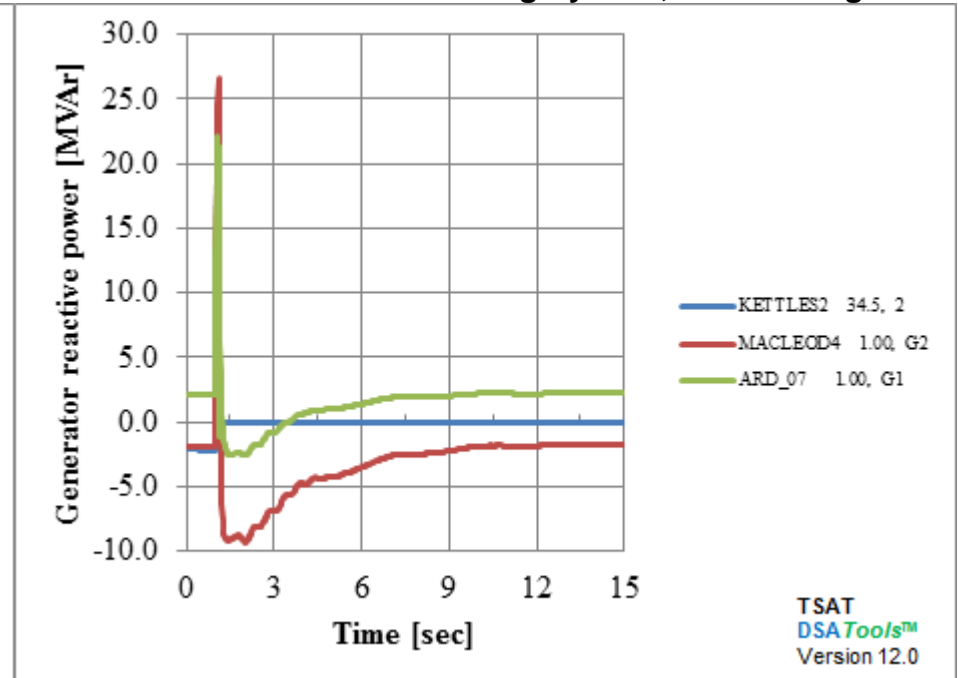
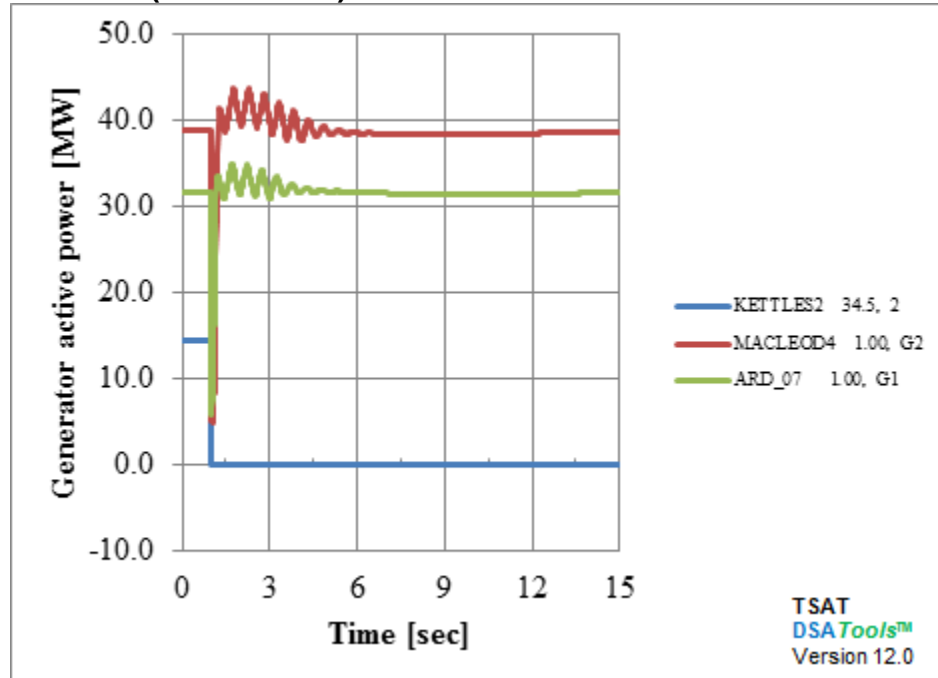
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Existing System, Summer Light 2014



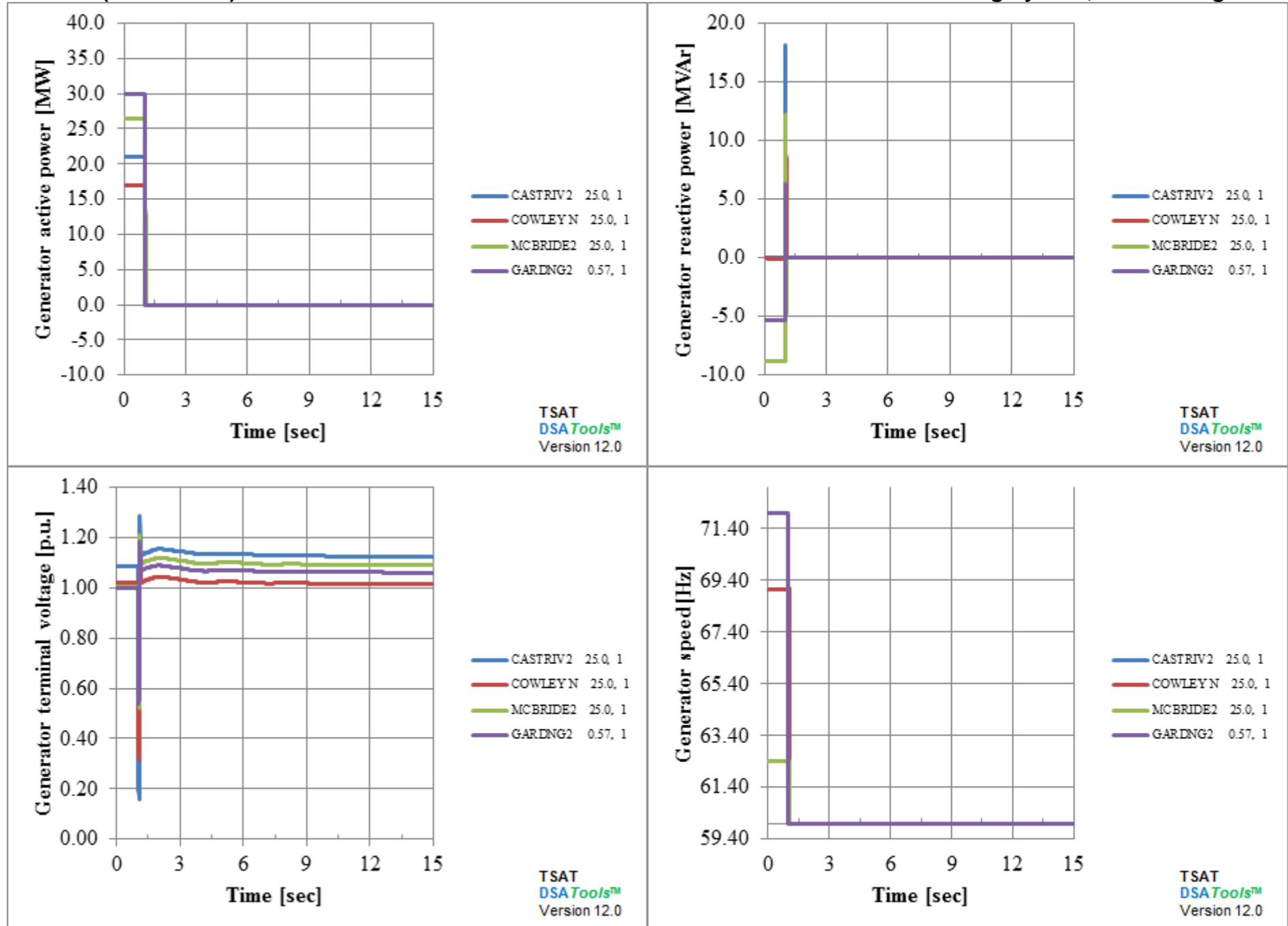
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Existing System, Summer Light 2014



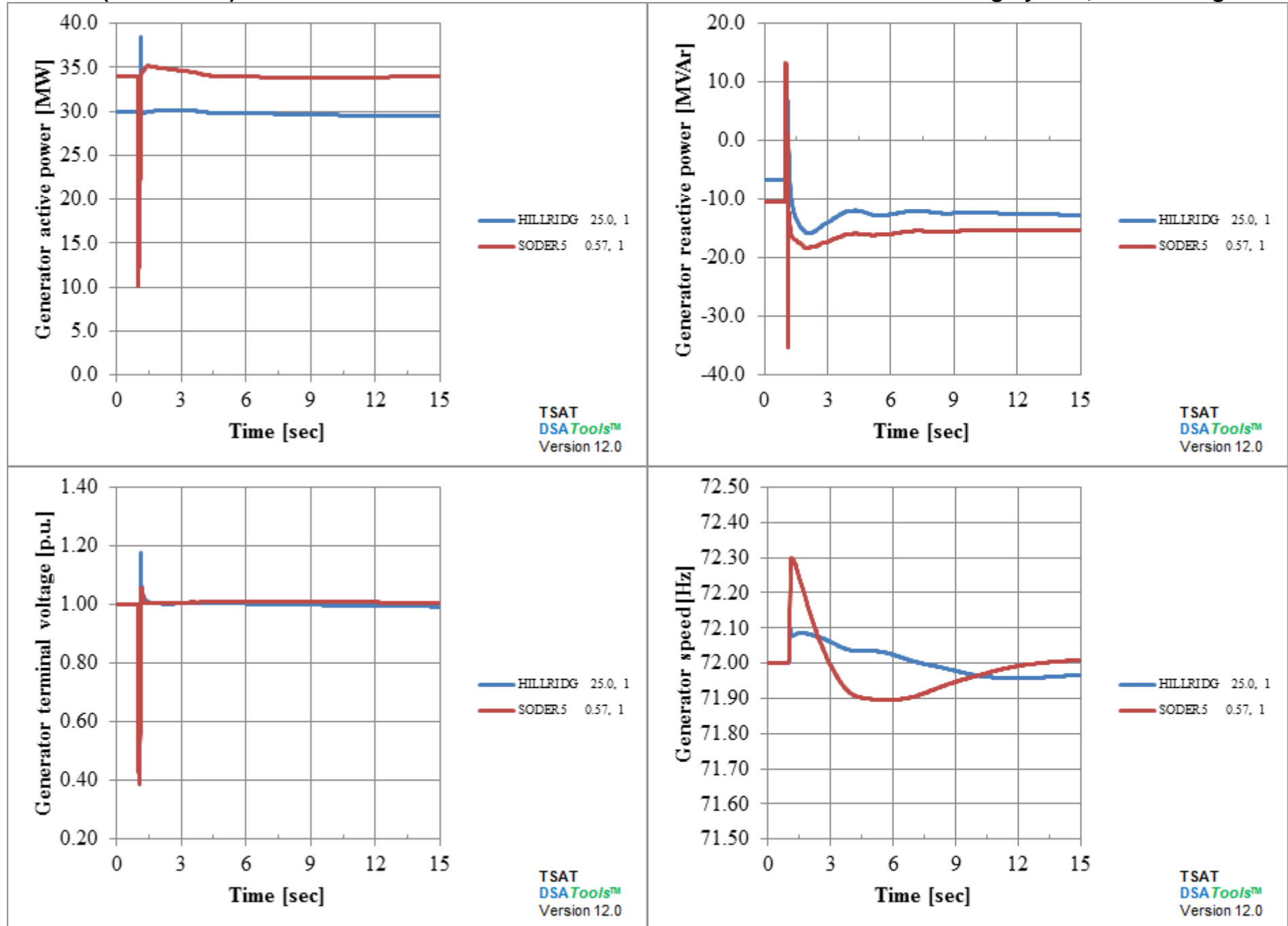
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Existing System, Summer Light 2014



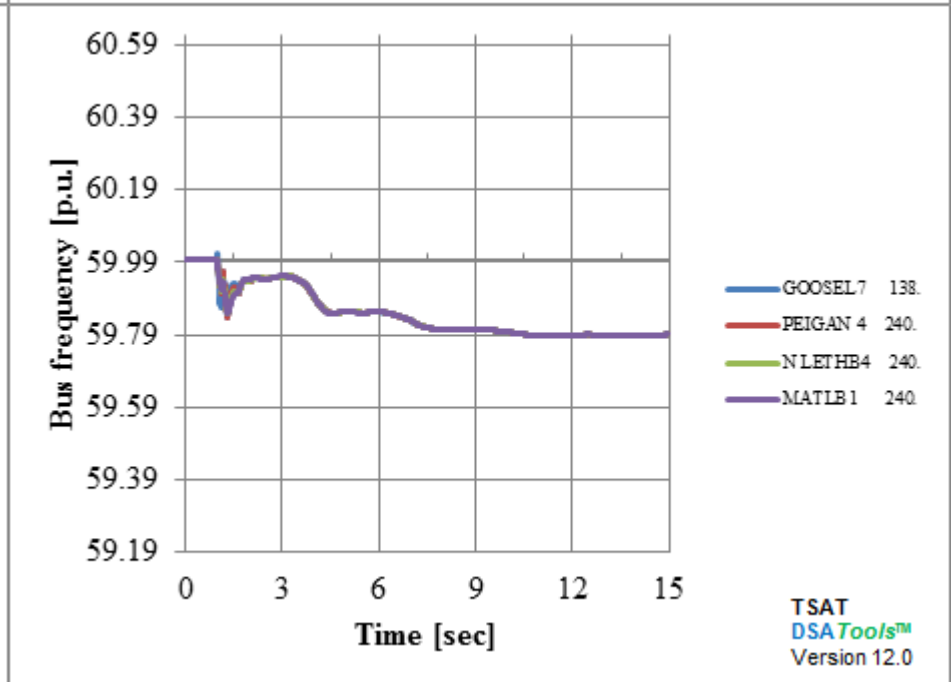
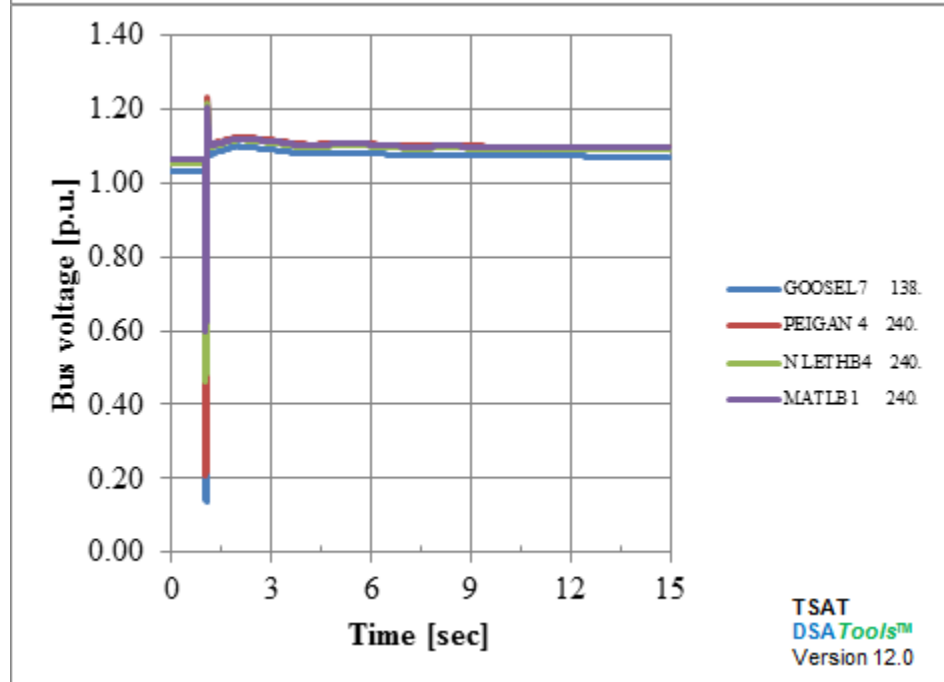
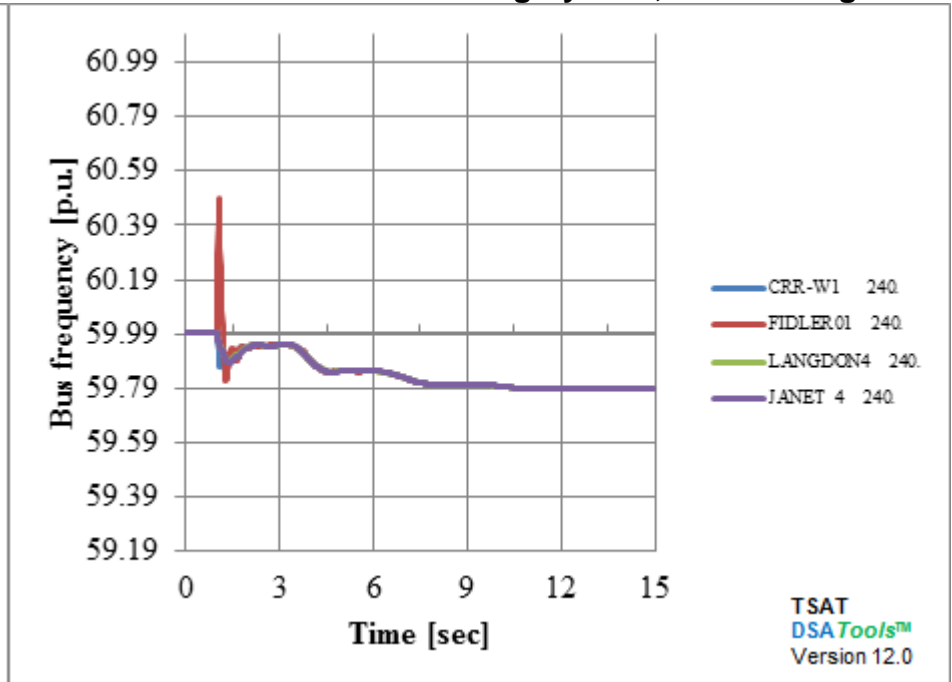
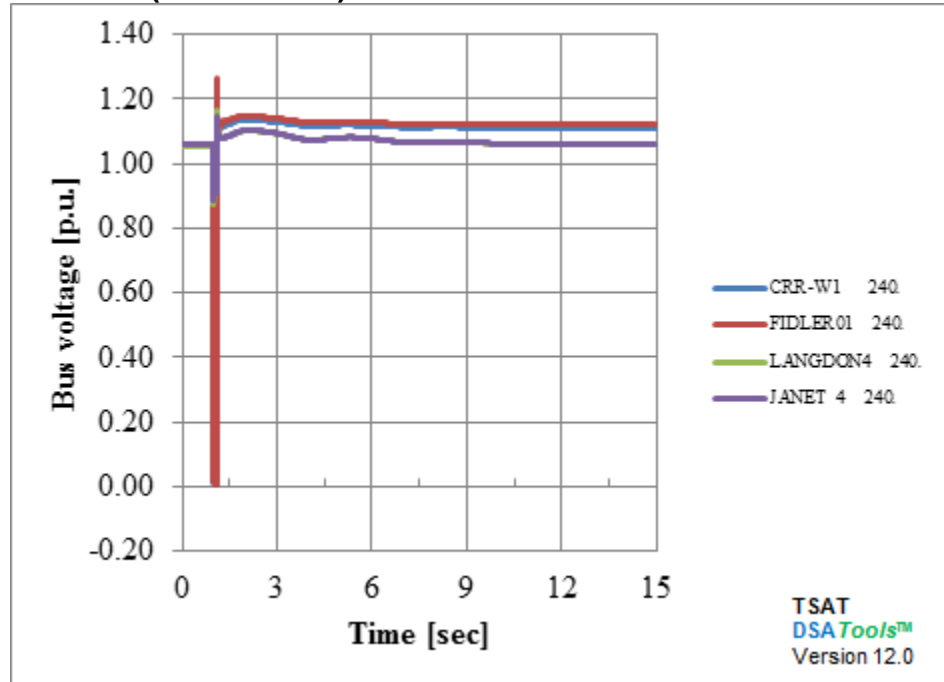
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Light 2014



1 -- 994L (103S - 312S) NEAR 103S

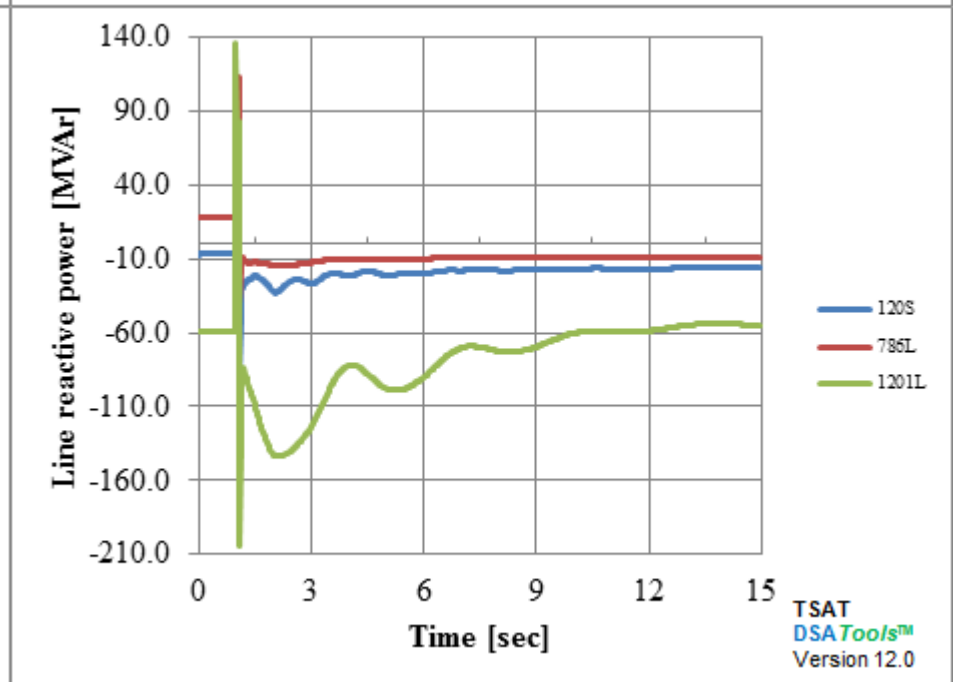
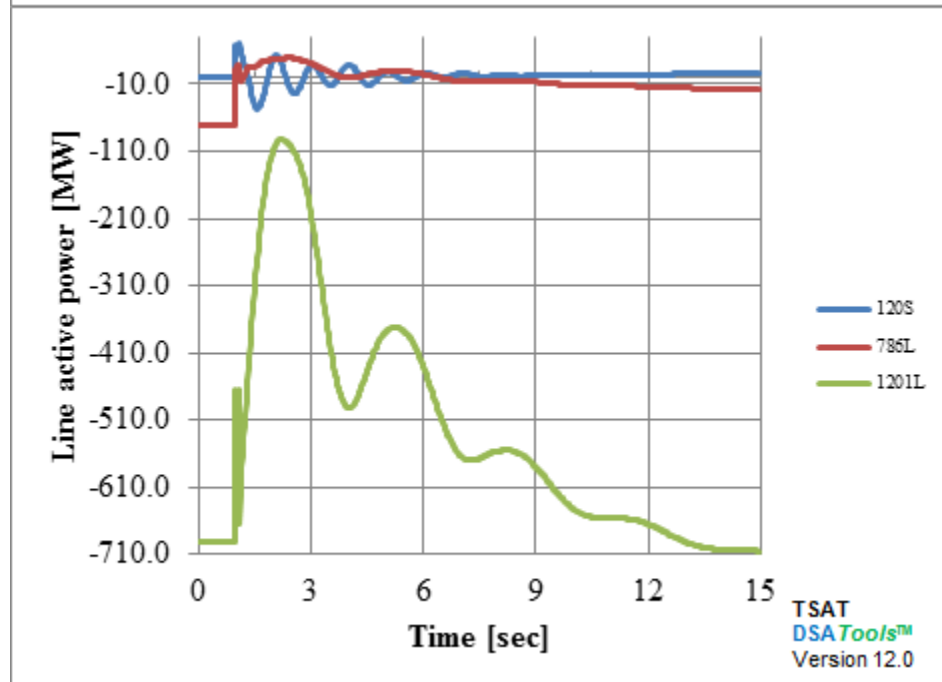
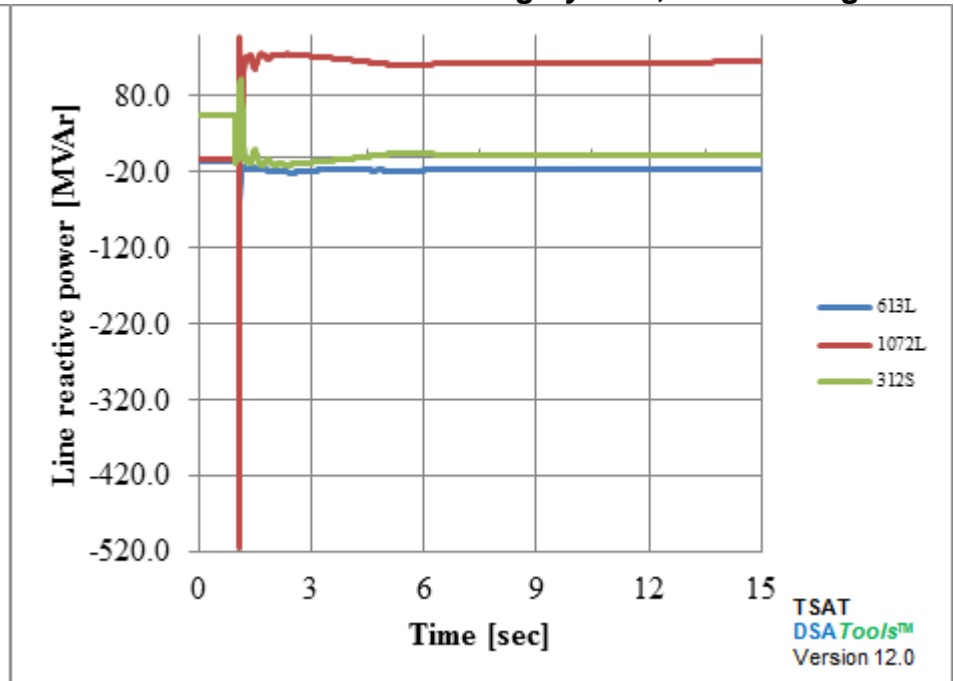
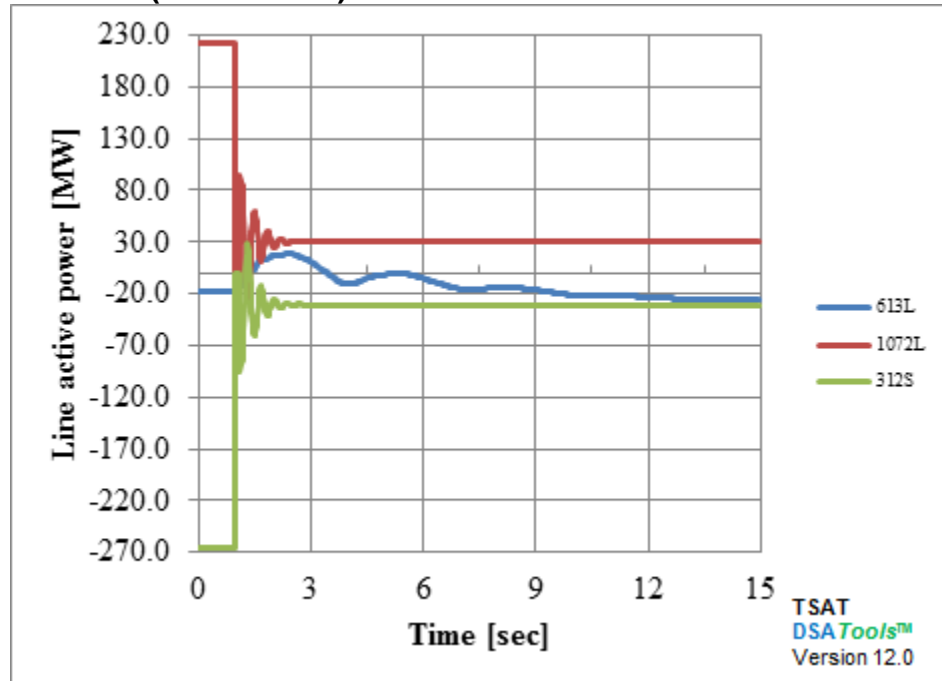
Existing System, Summer Light 2014





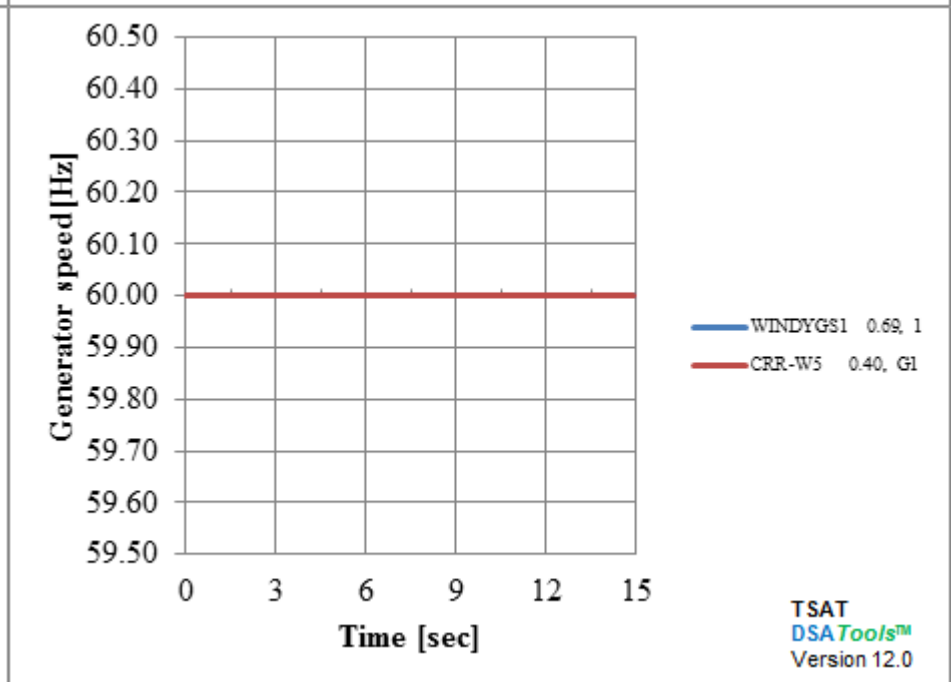
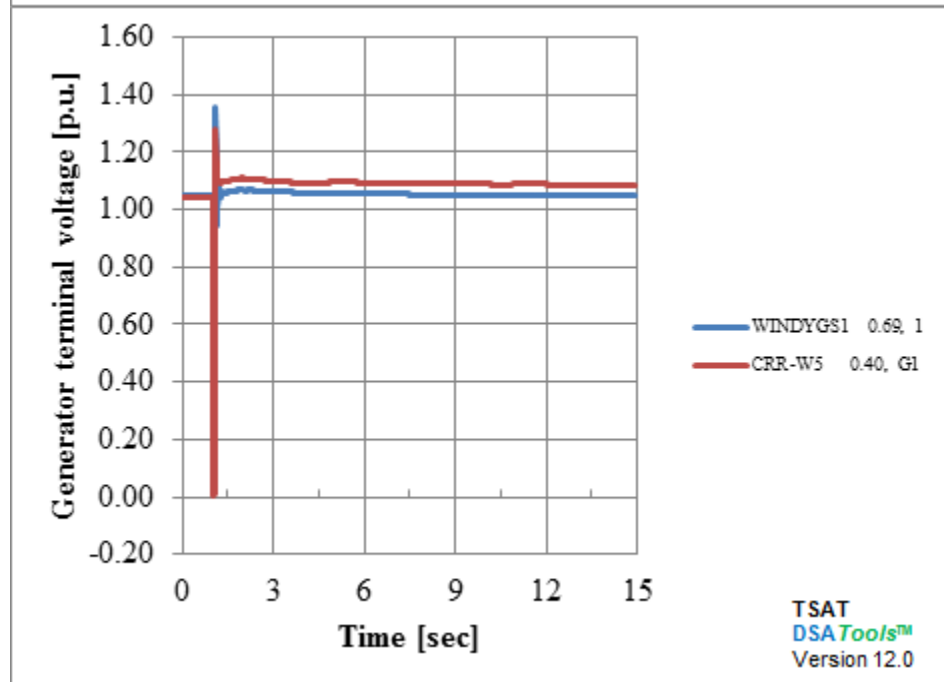
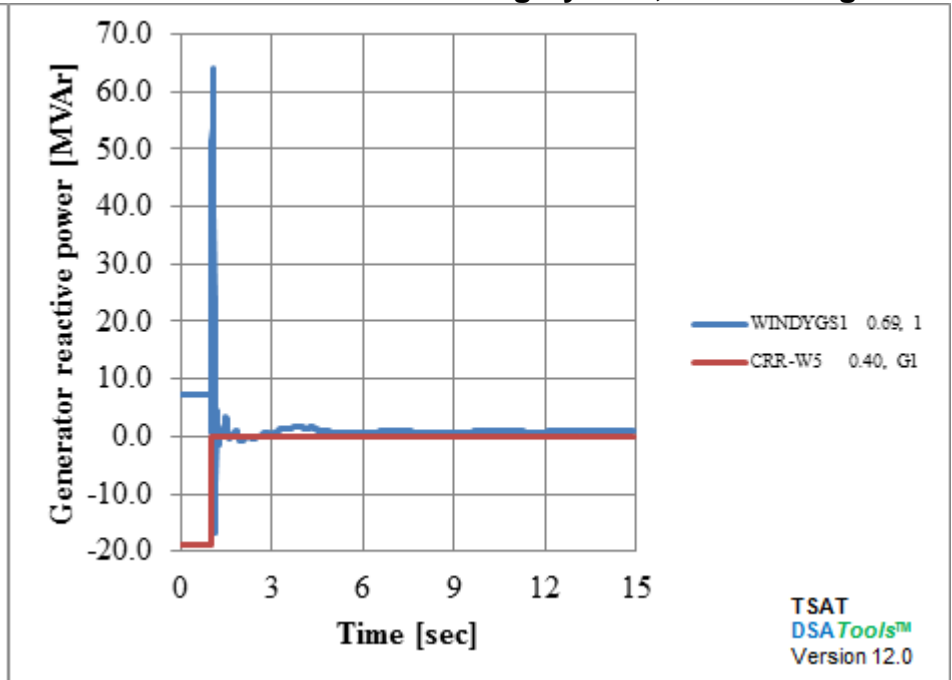
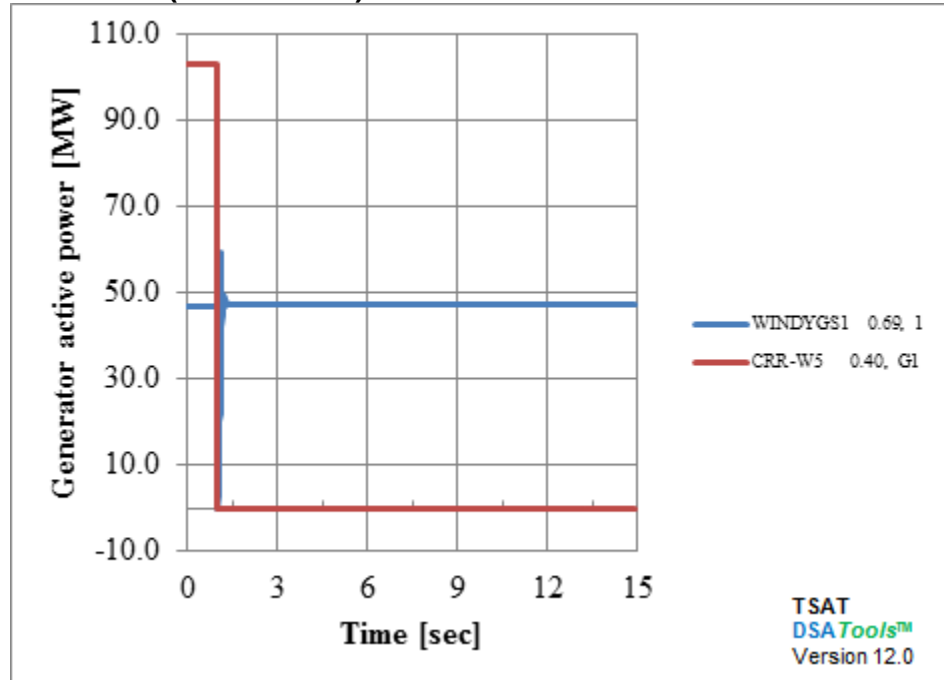
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Existing System, Summer Light 2014



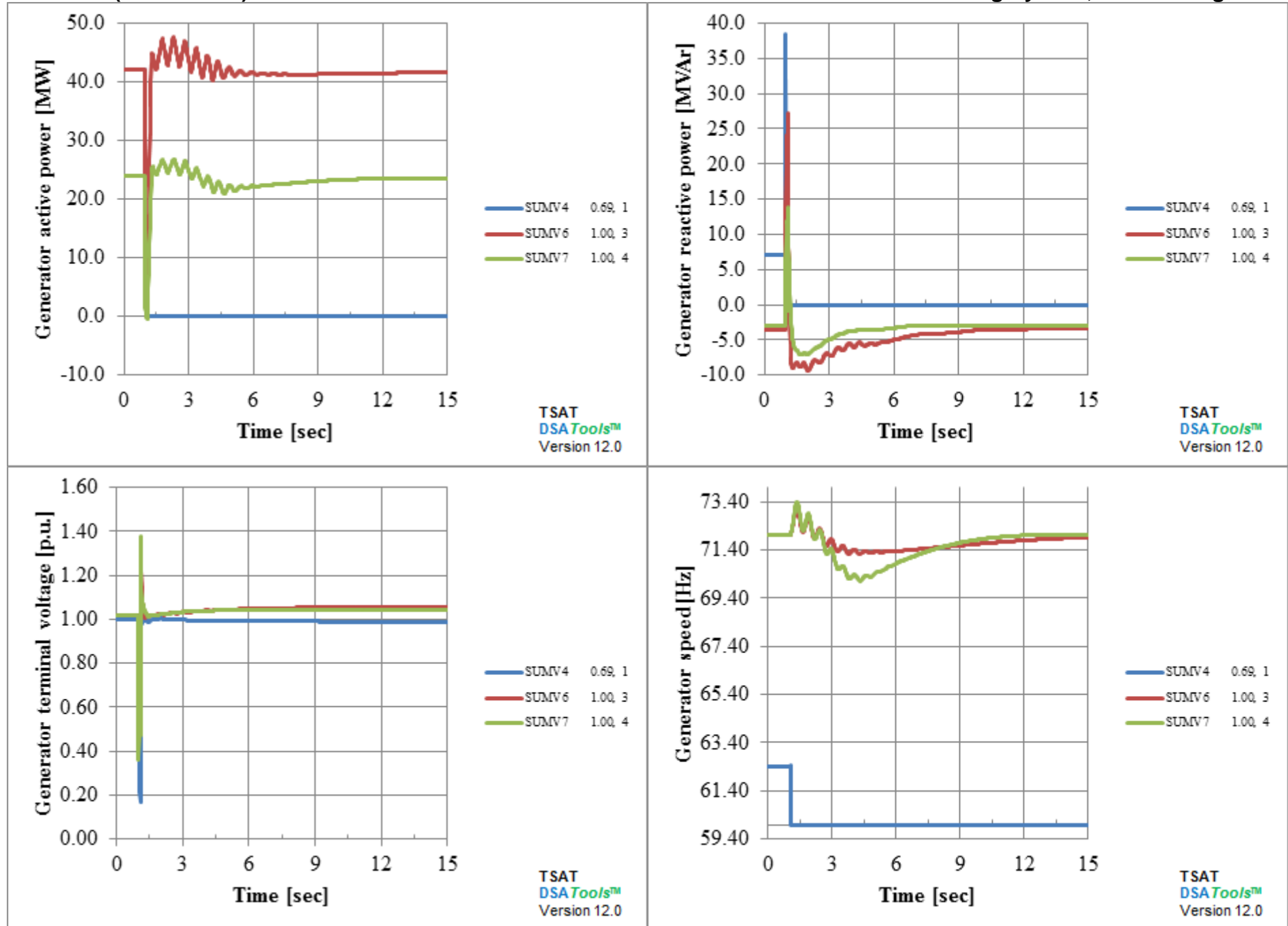
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Light 2014



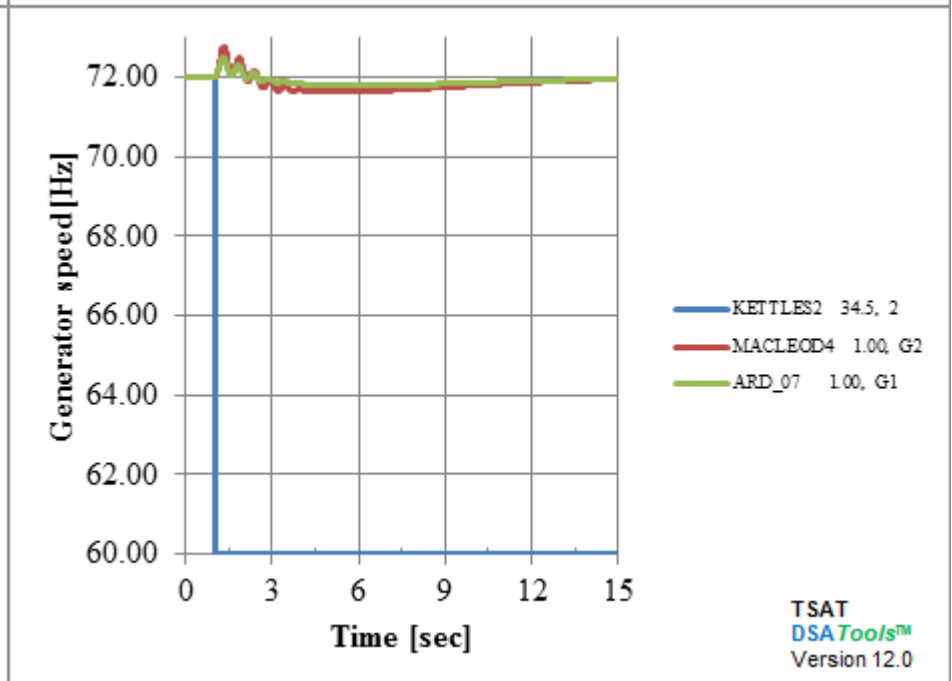
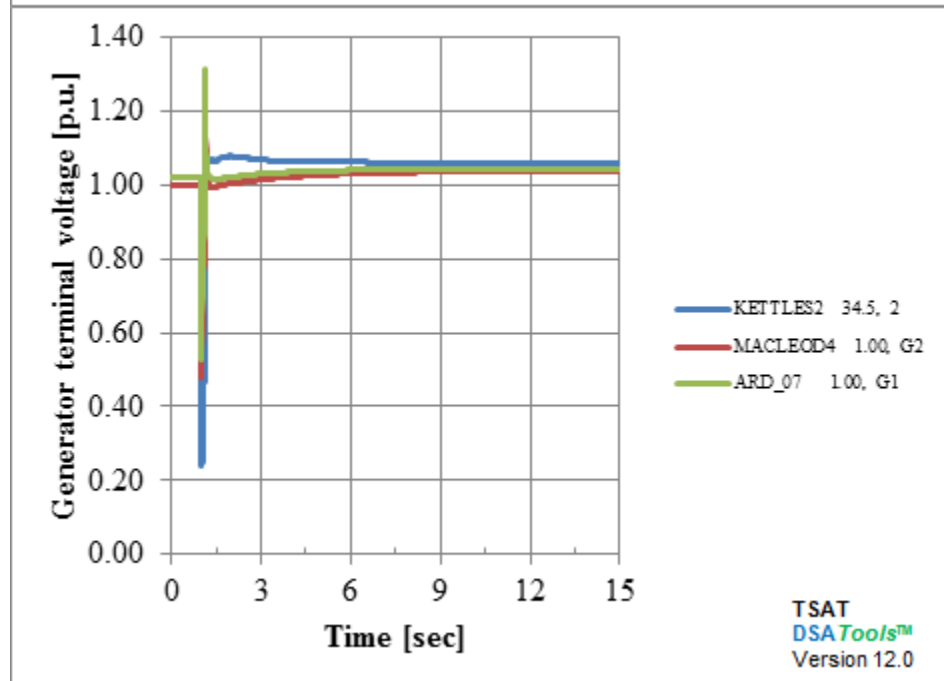
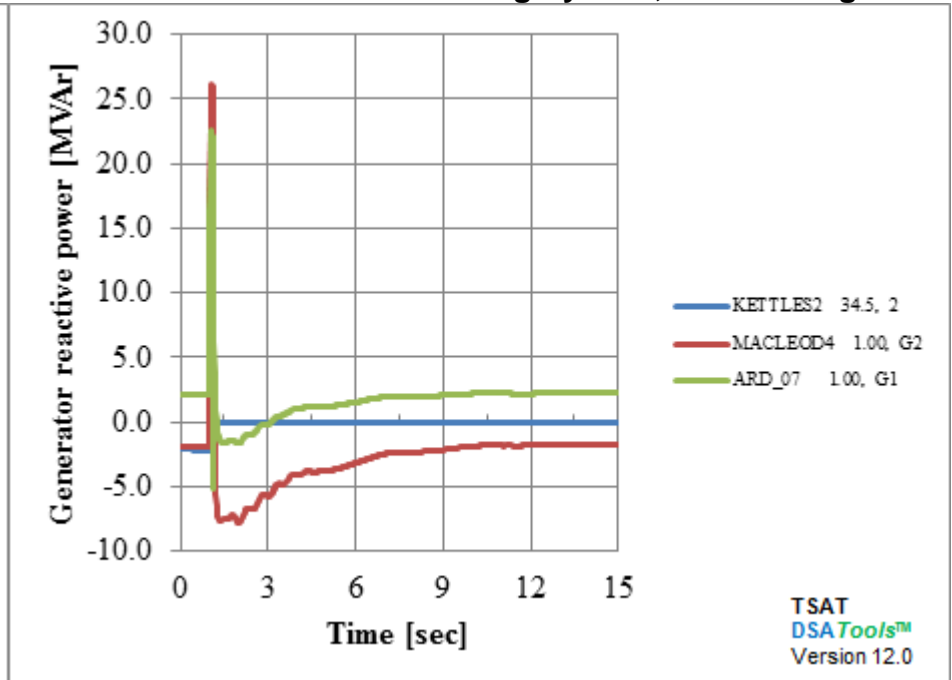
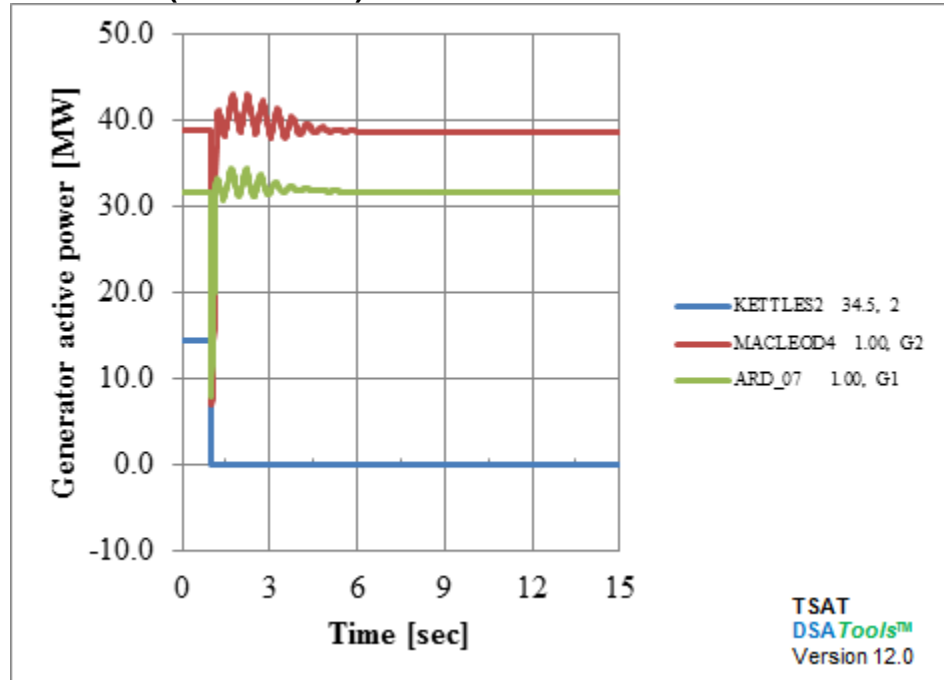
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Light 2014



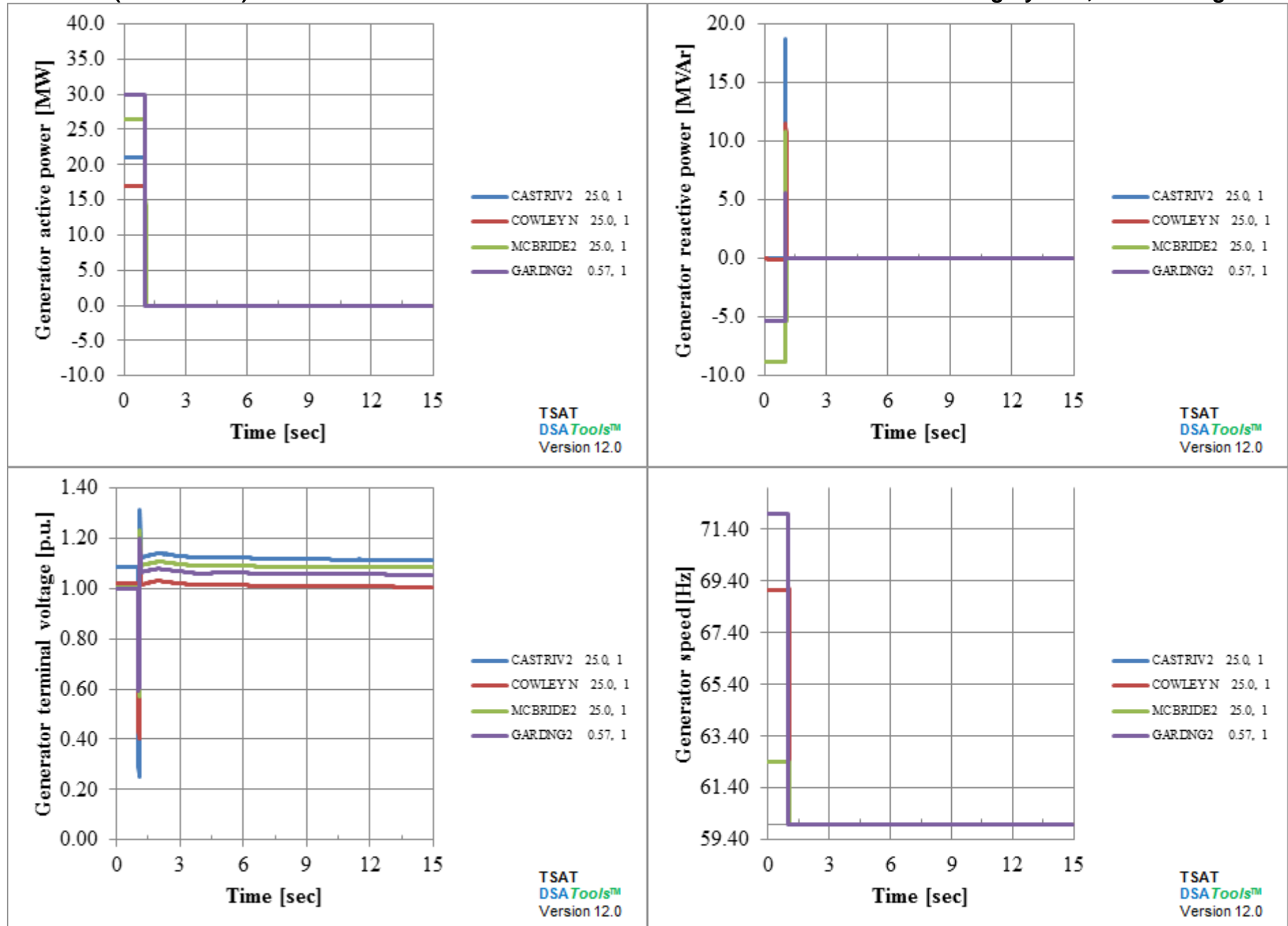
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Light 2014



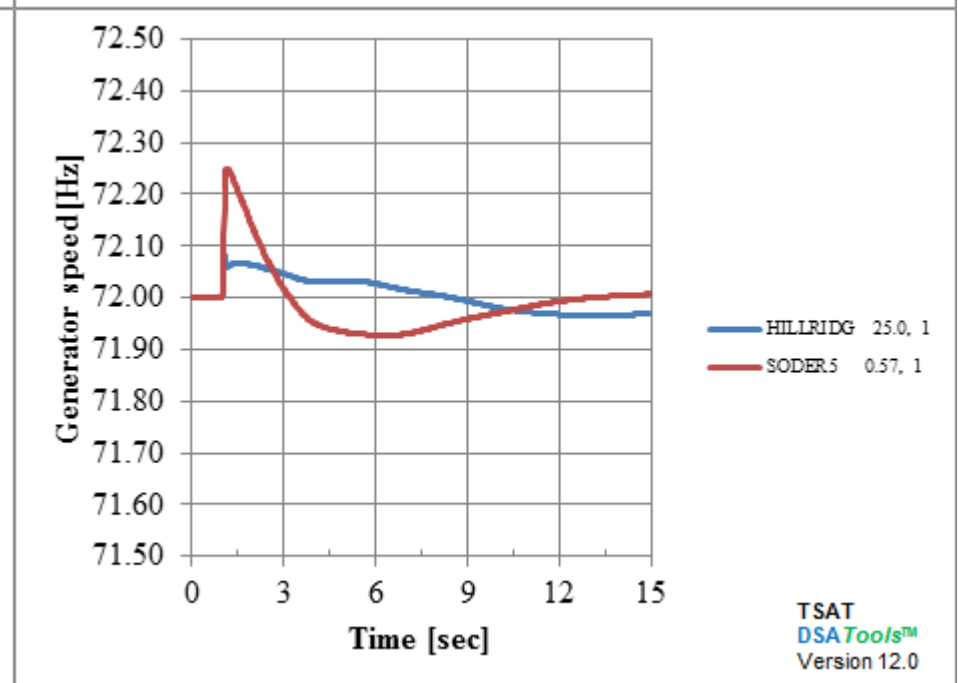
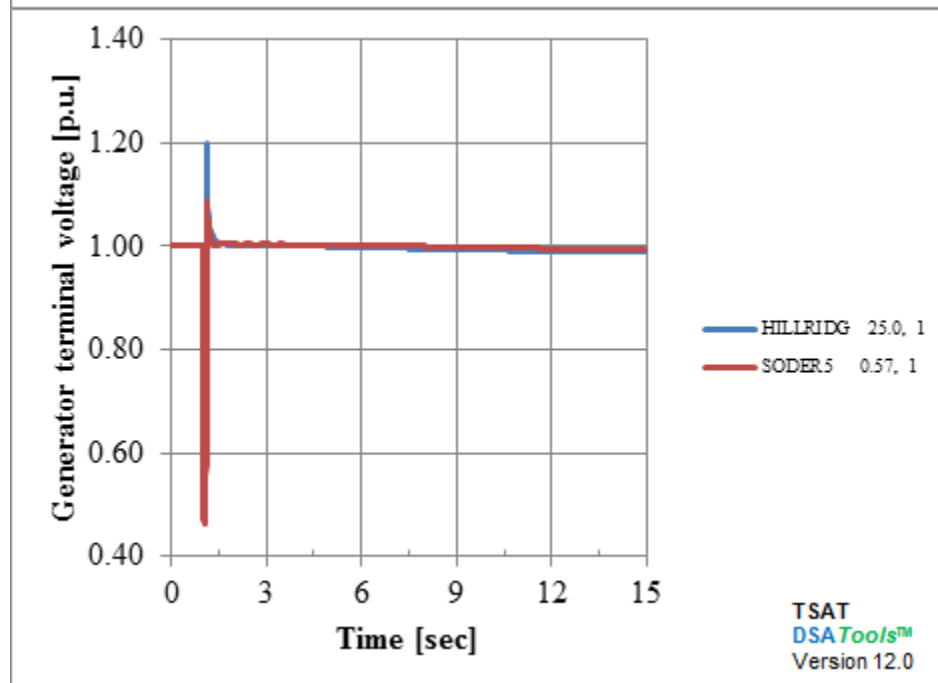
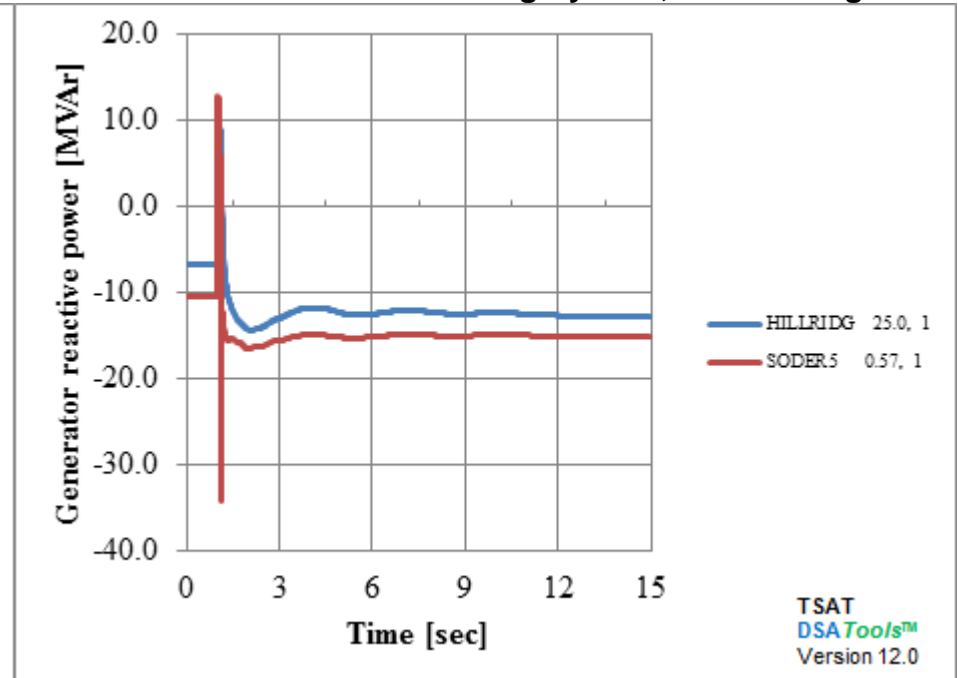
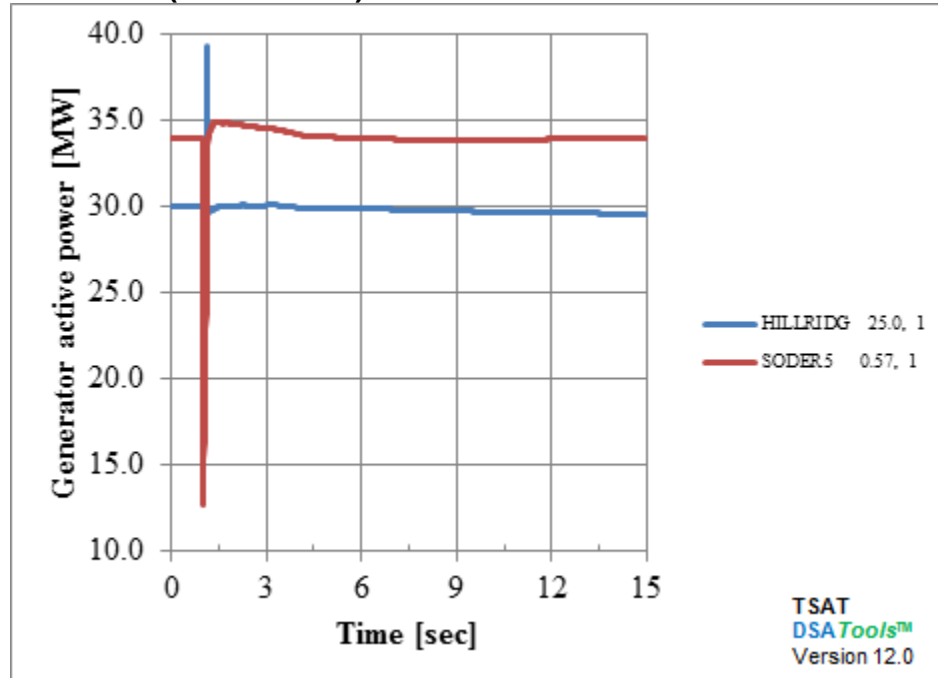
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Light 2014



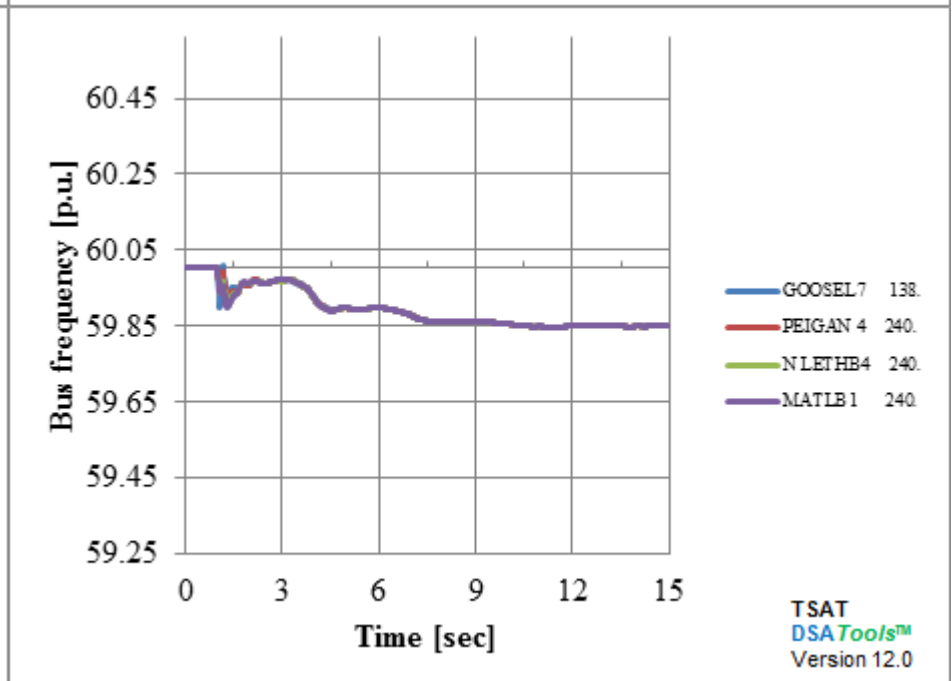
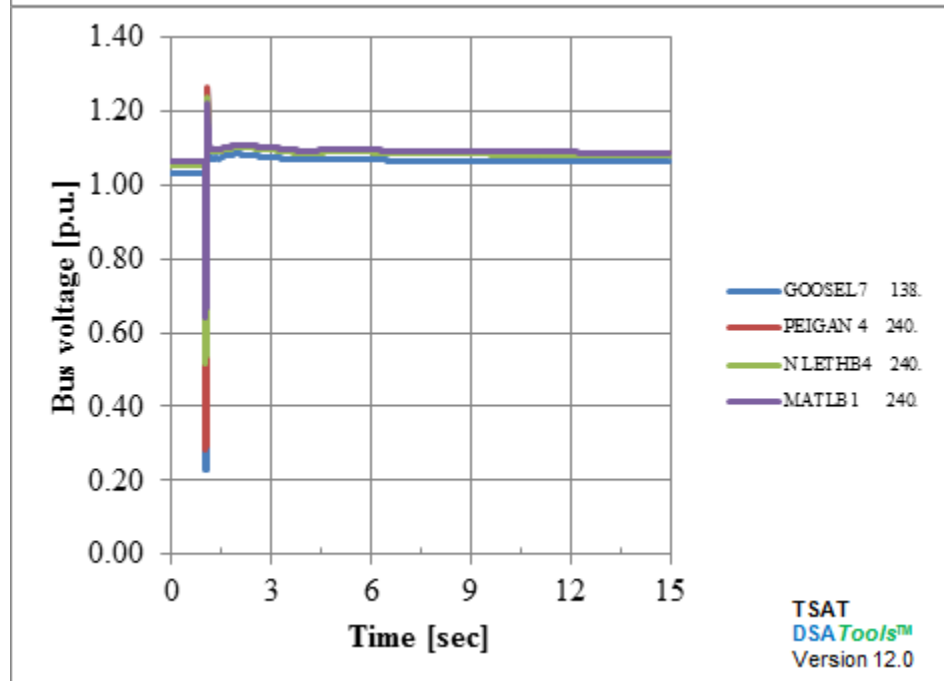
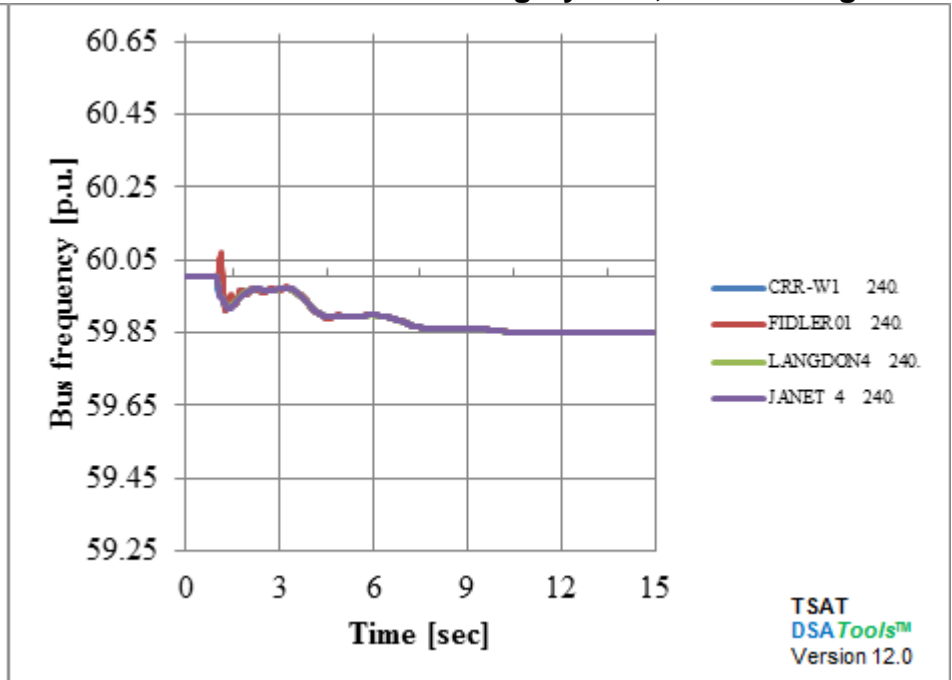
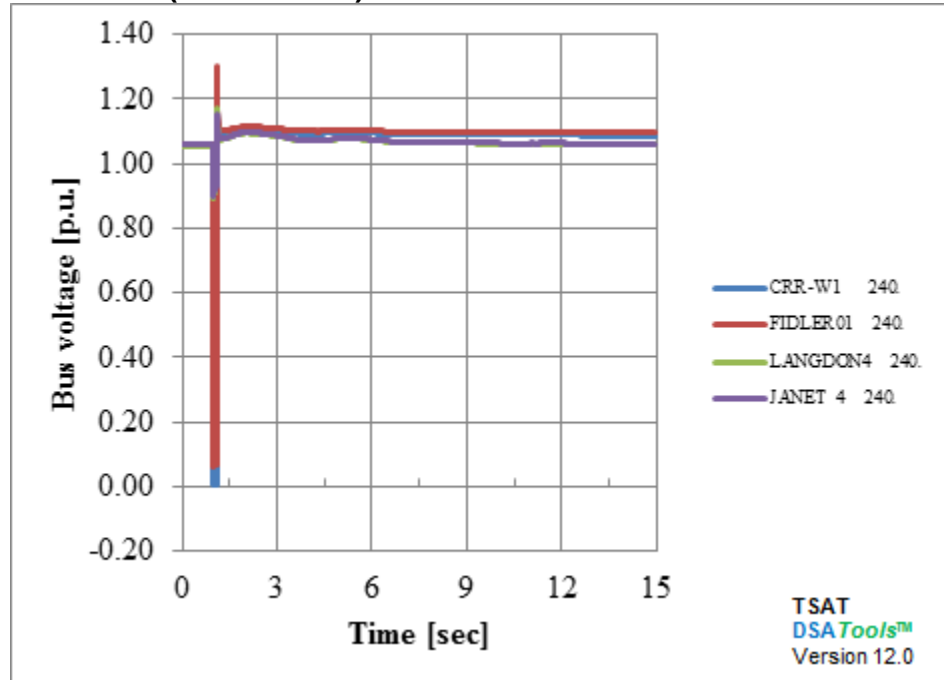
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Light 2014



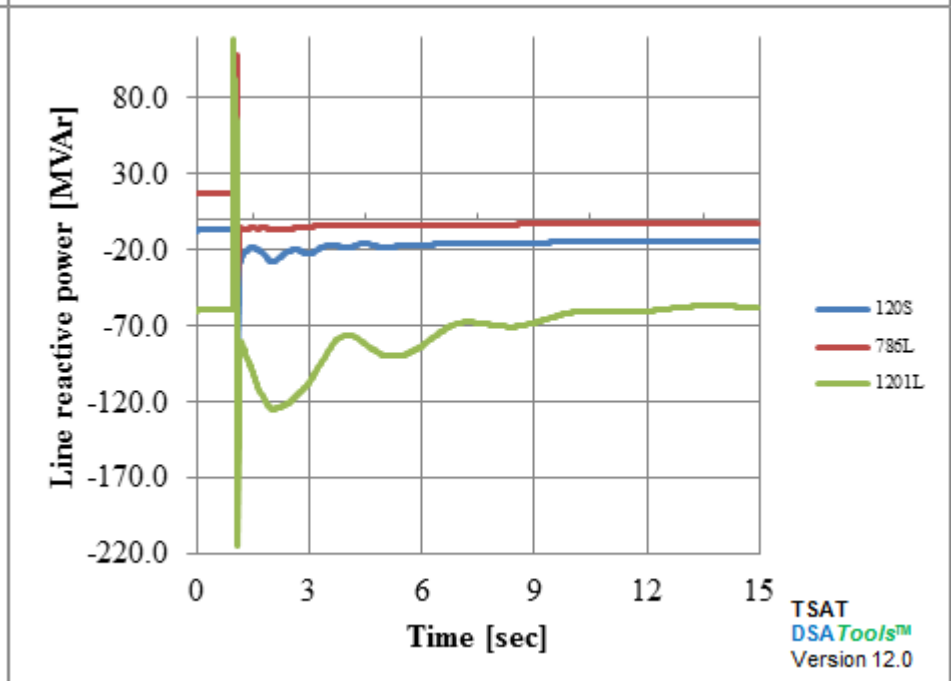
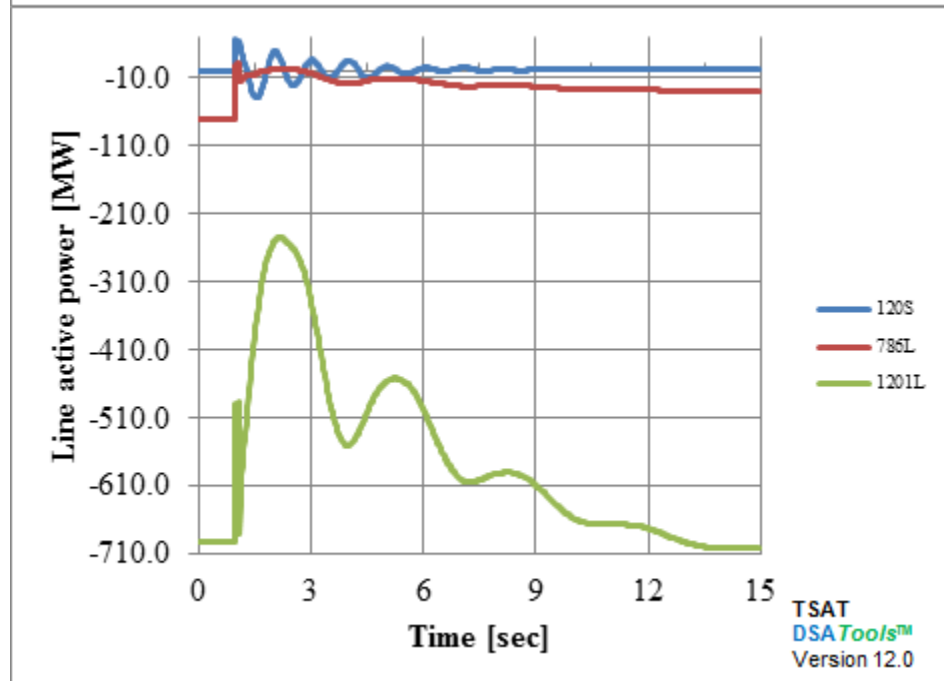
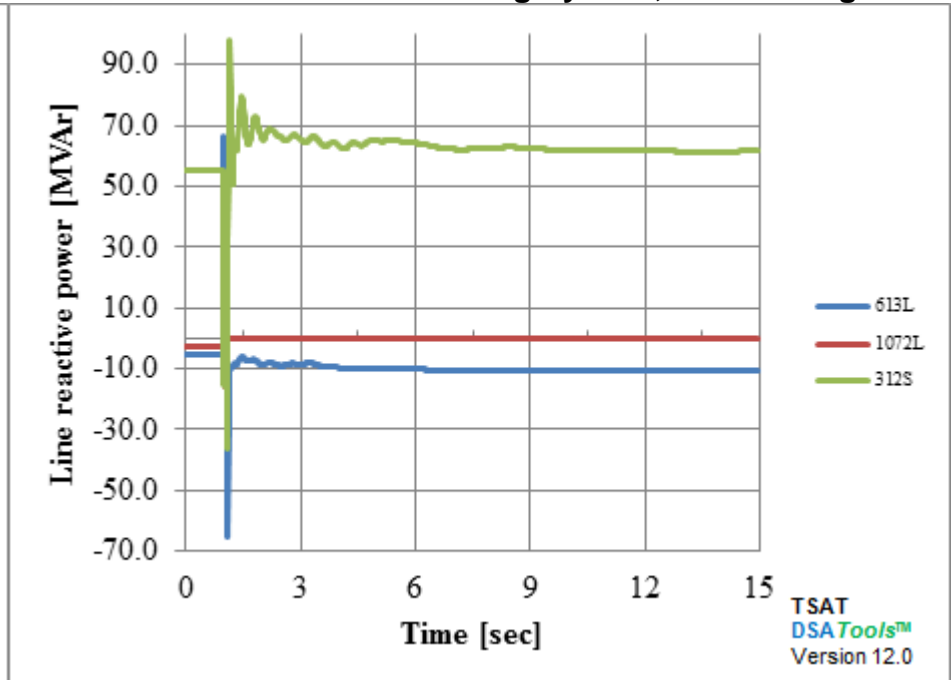
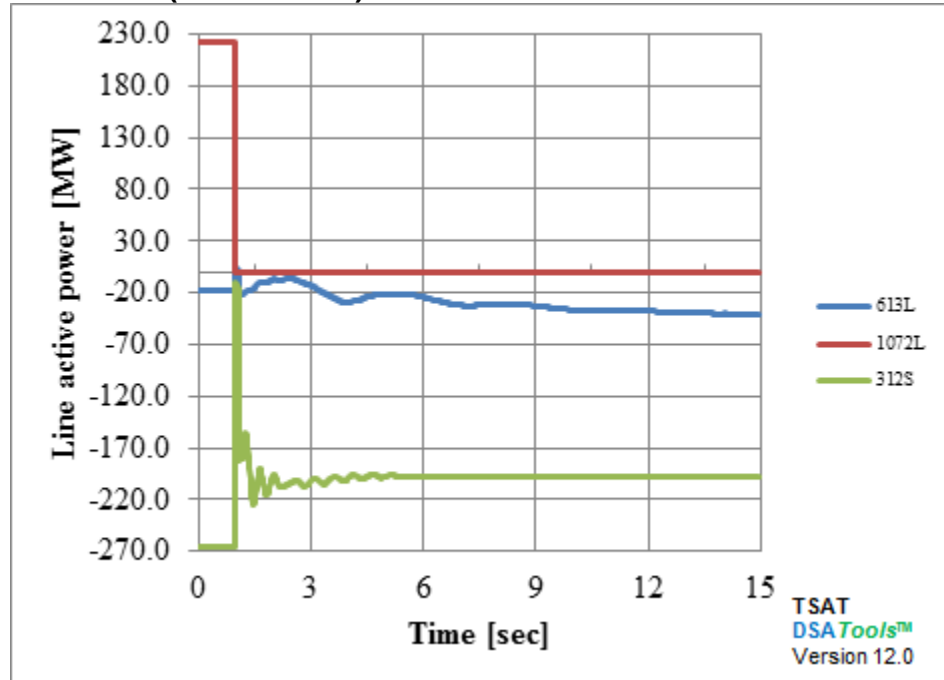
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Light 2014



2 -- 1071L (205S - 312S) NEAR 205S

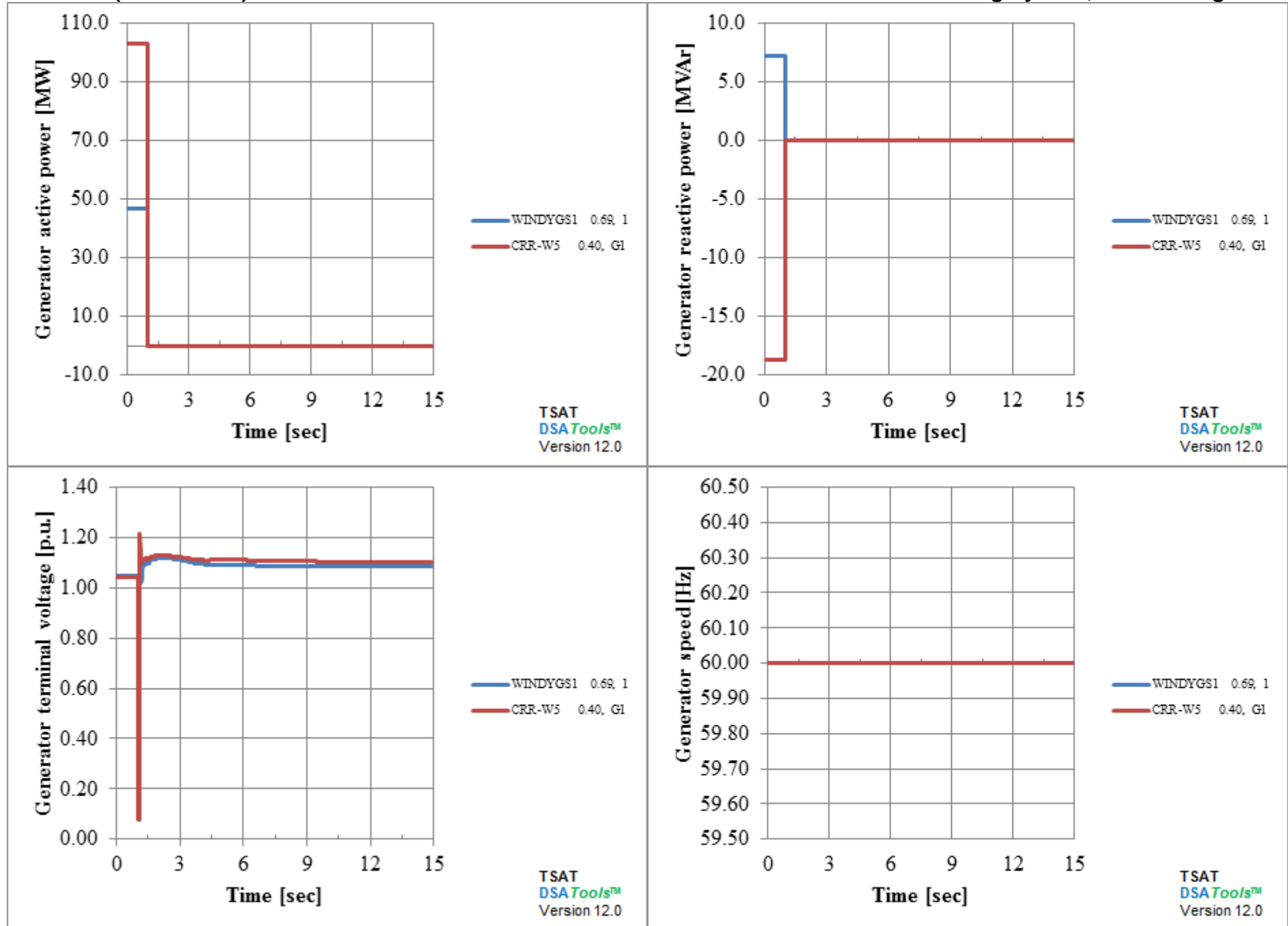
Existing System, Summer Light 2014





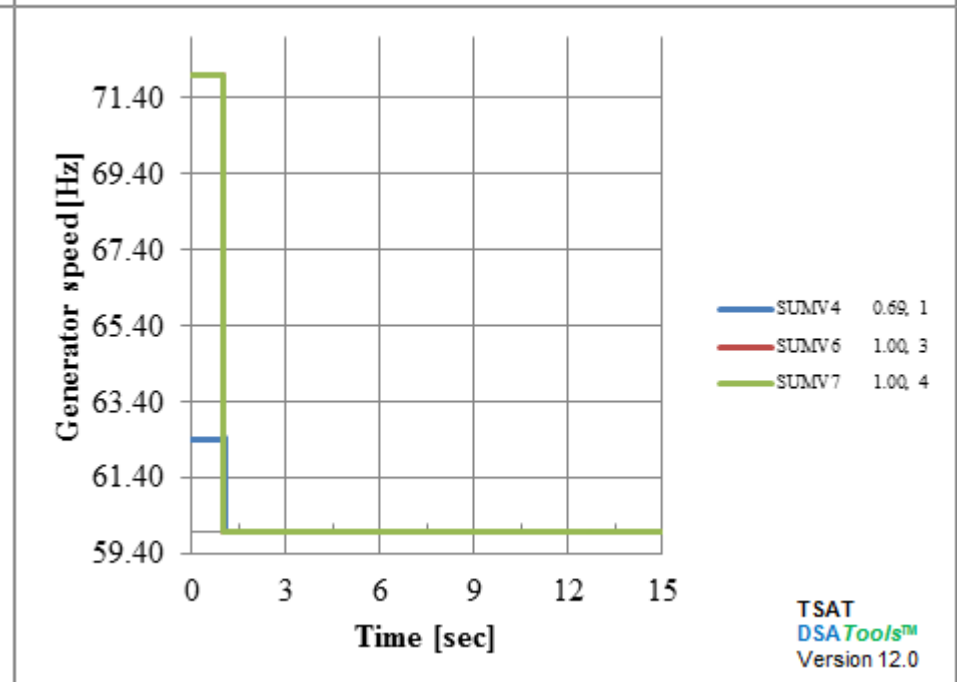
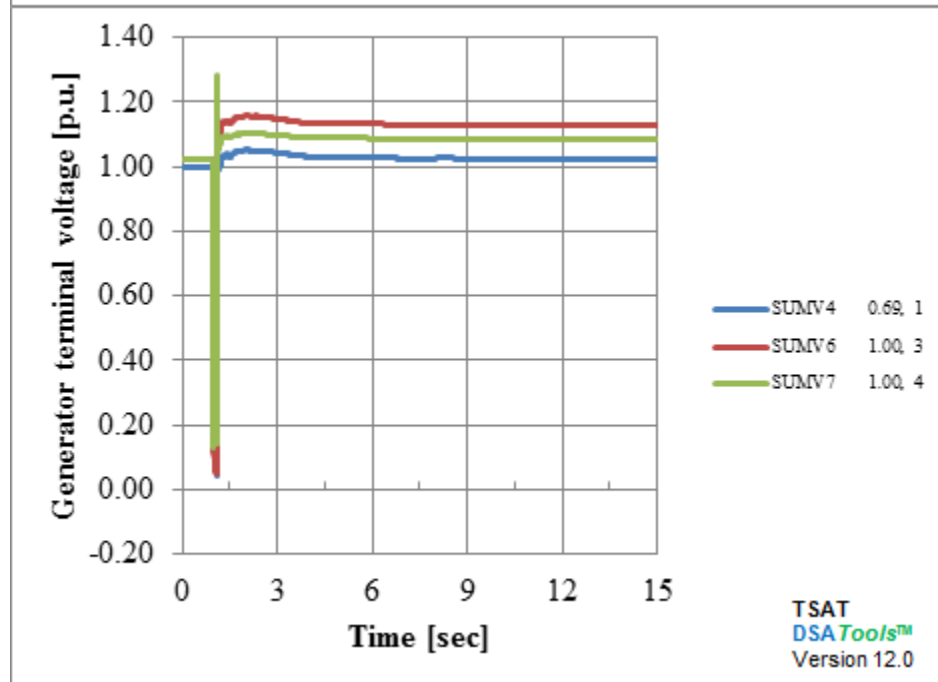
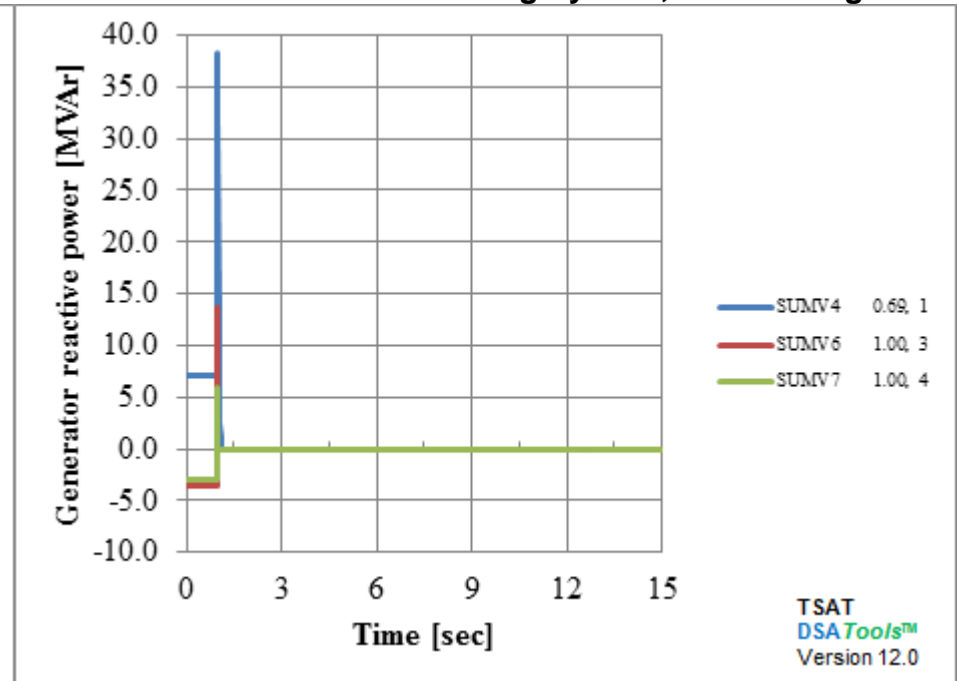
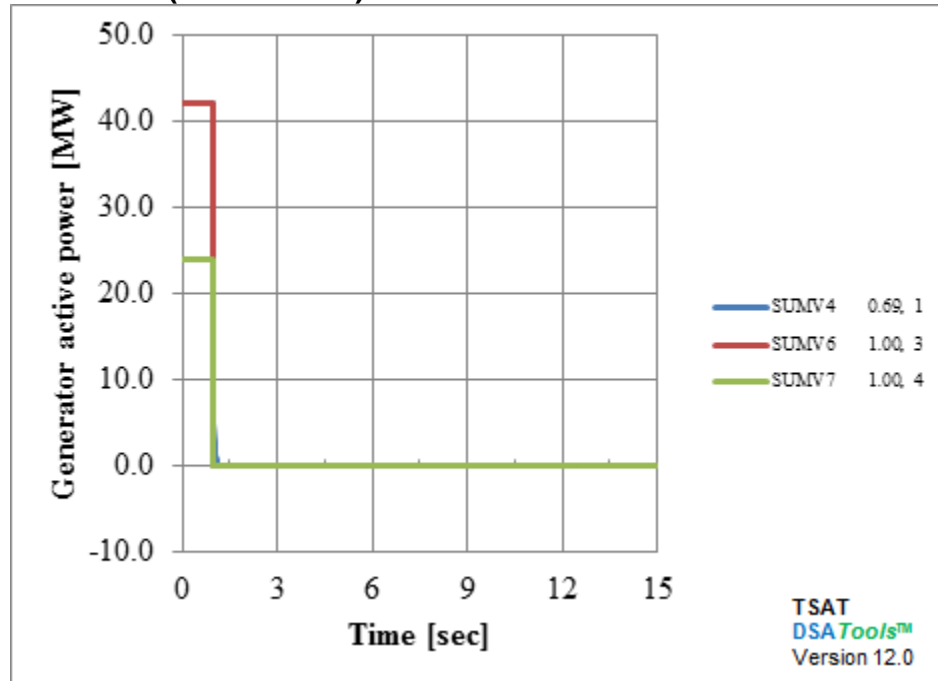
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



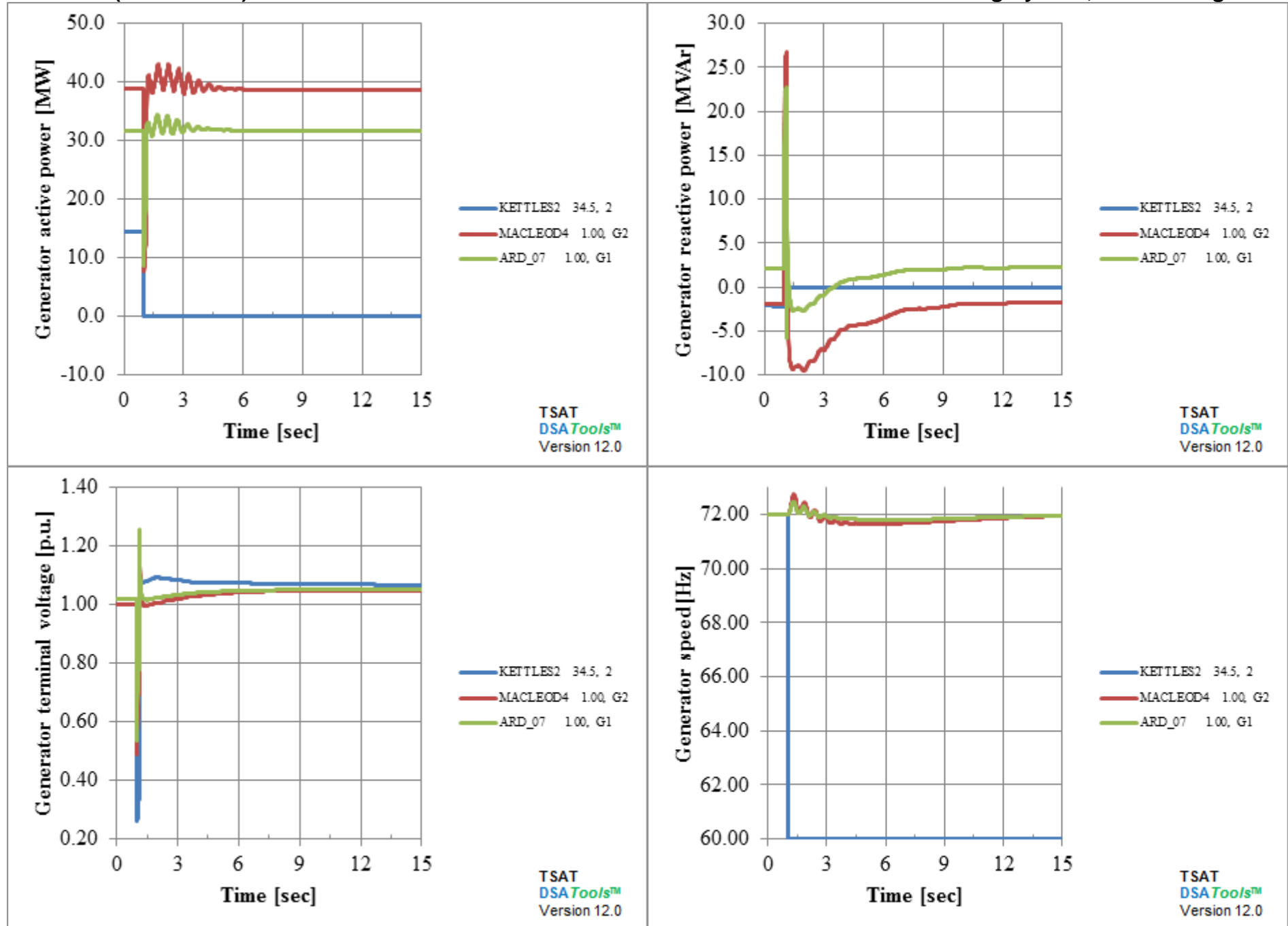
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



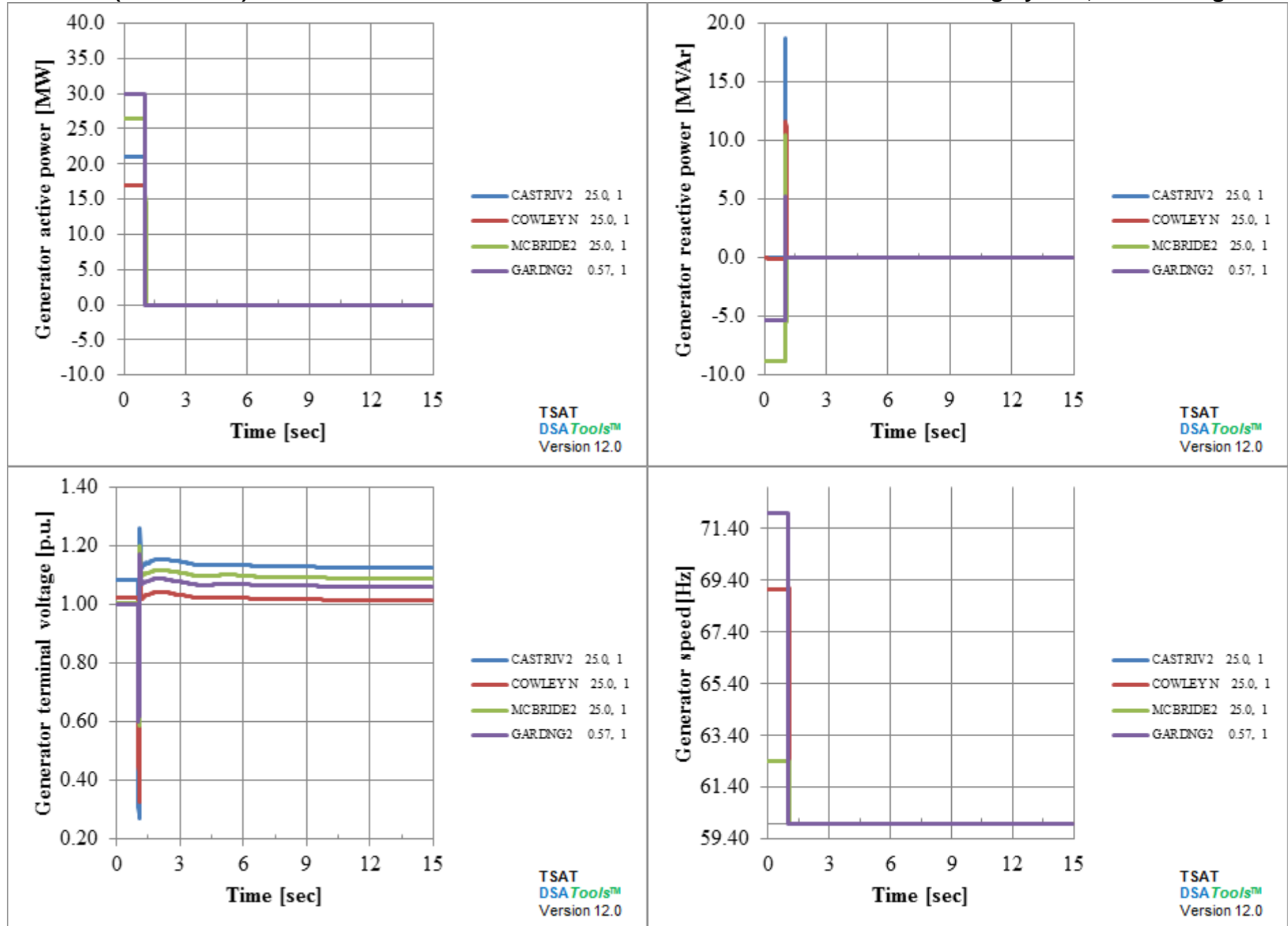
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



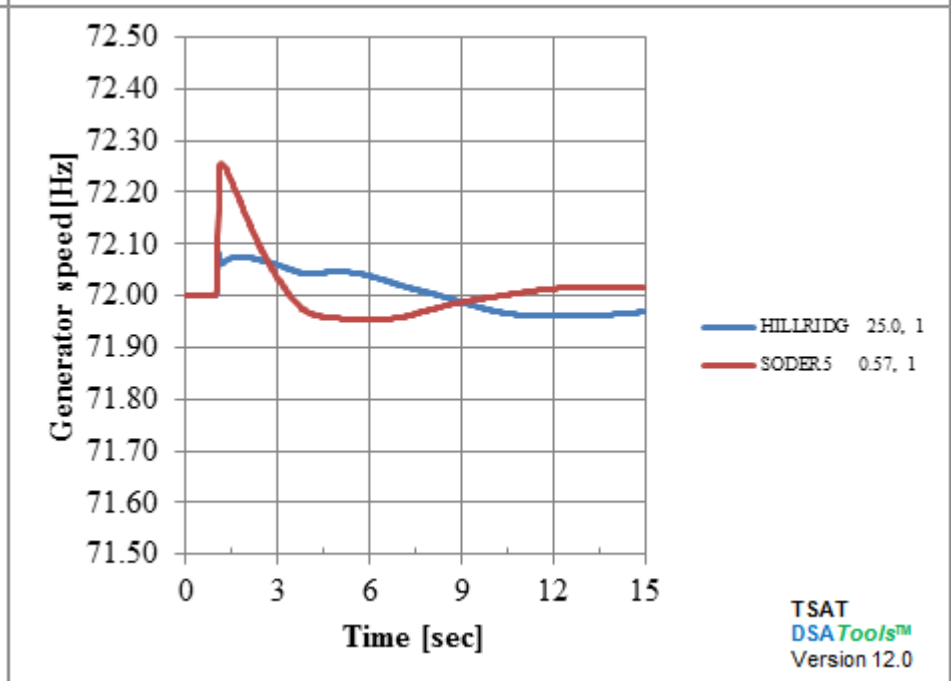
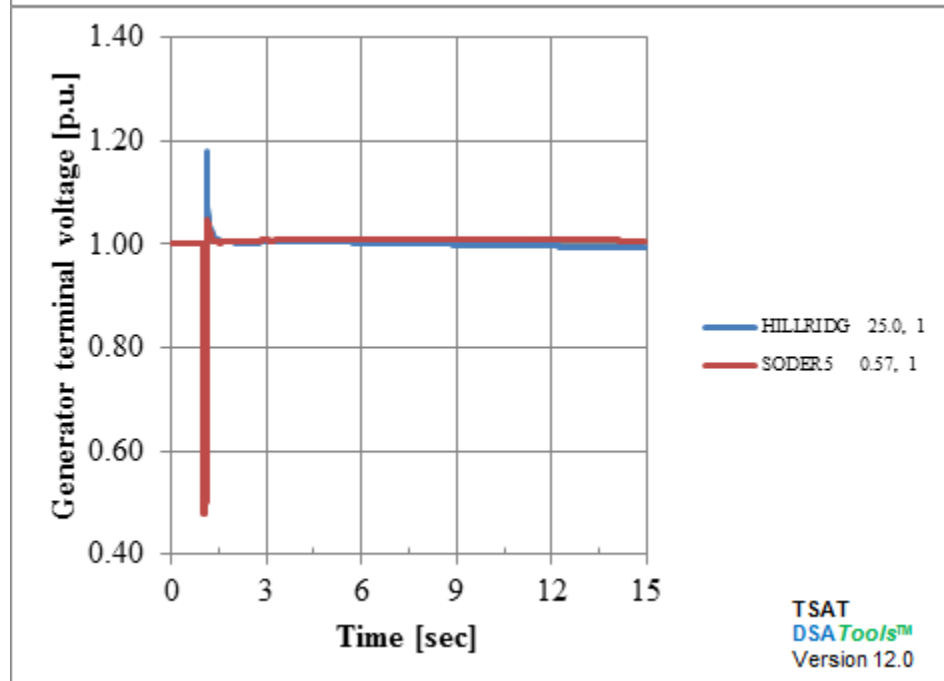
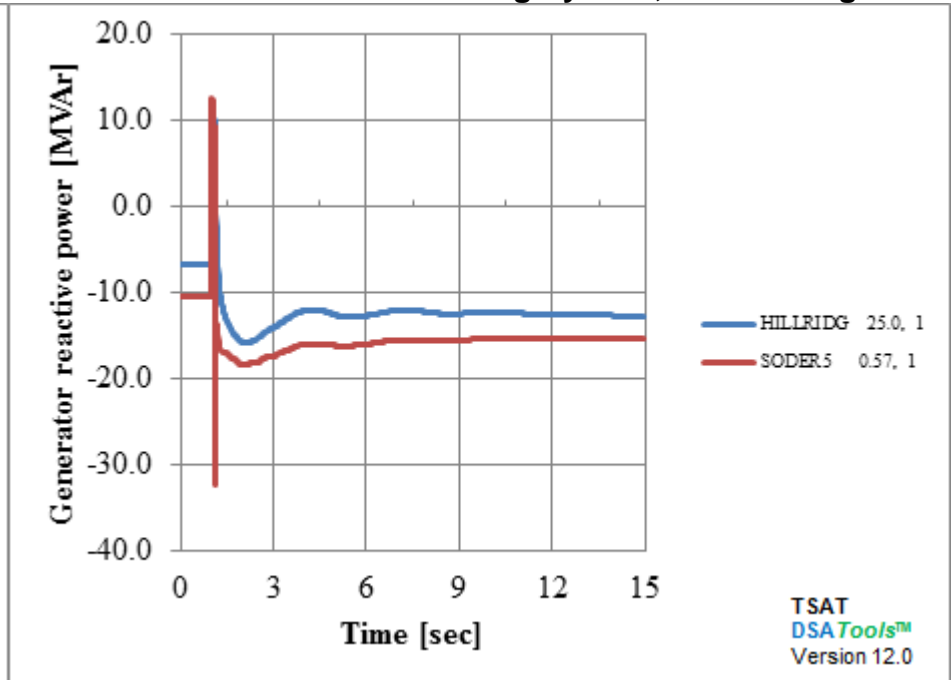
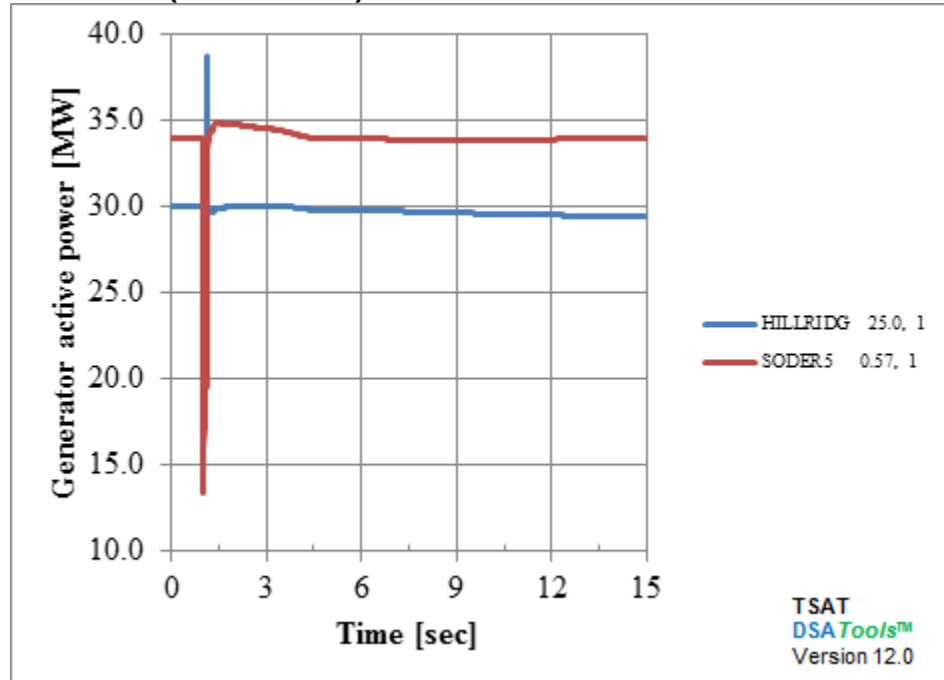
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



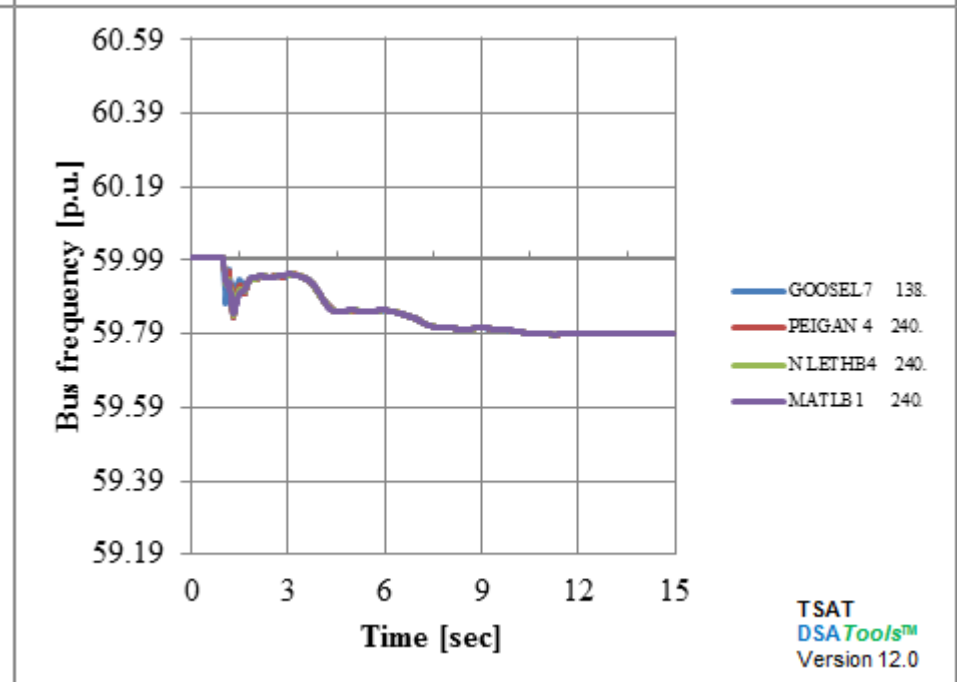
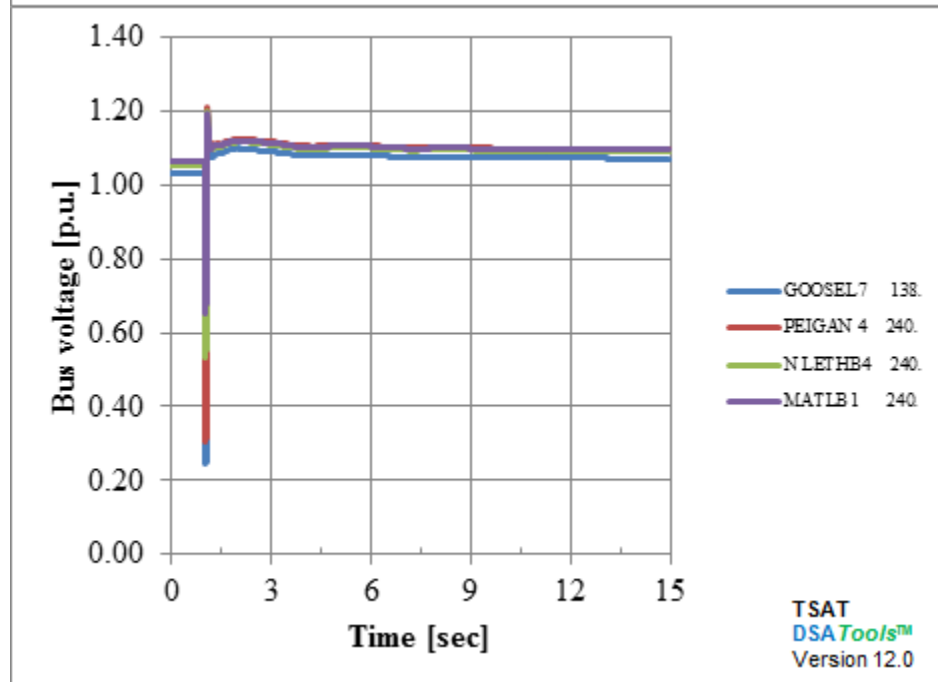
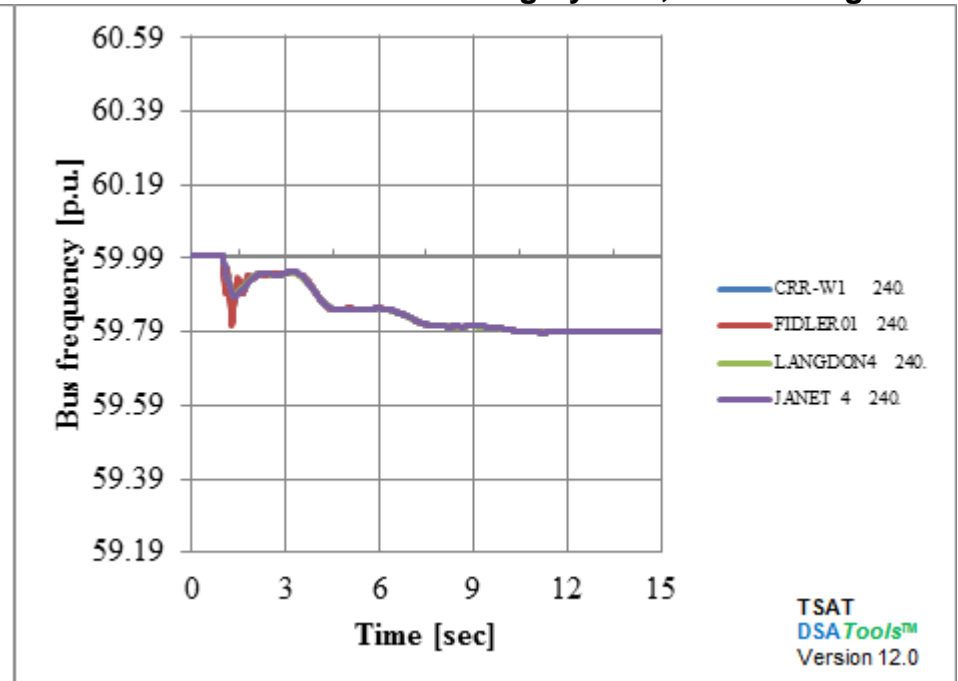
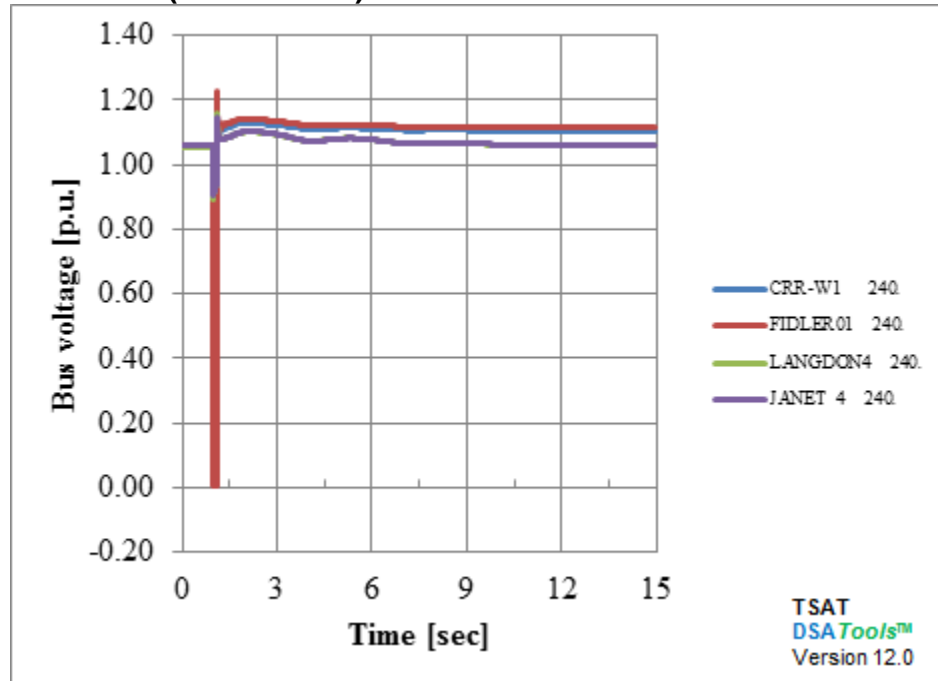
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



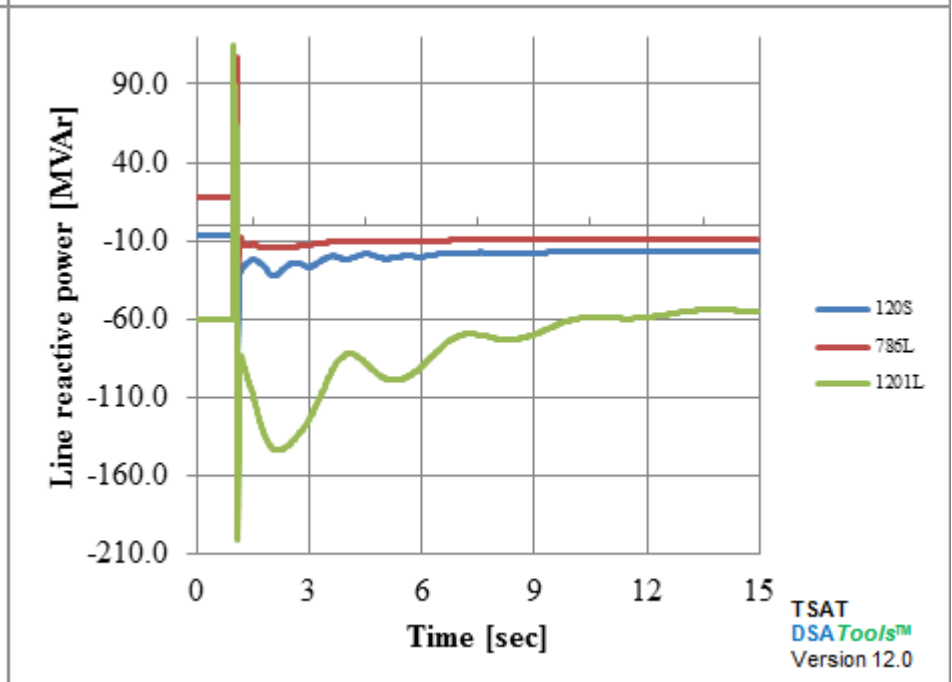
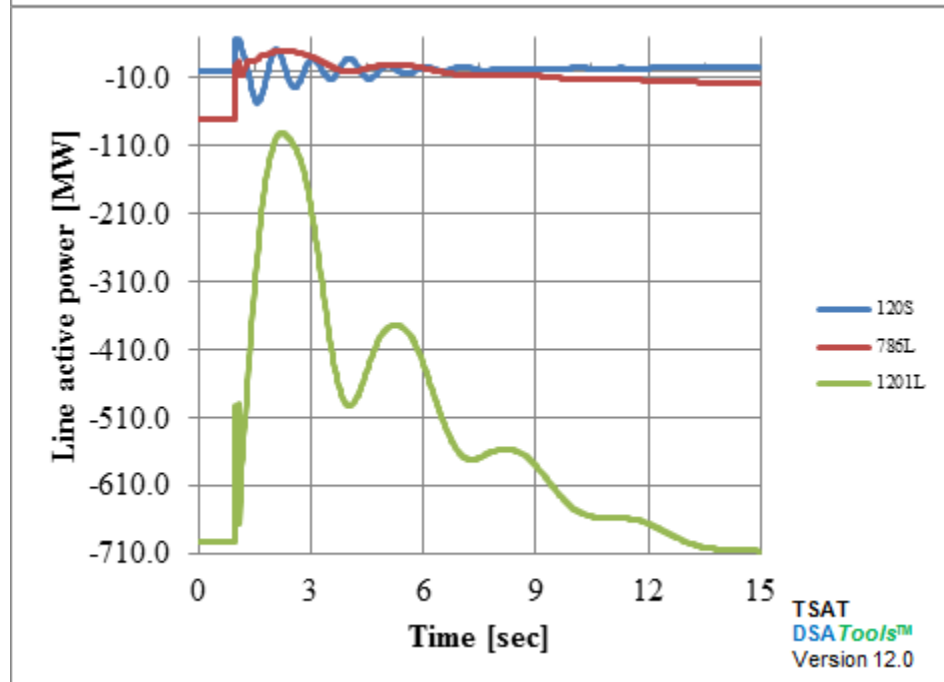
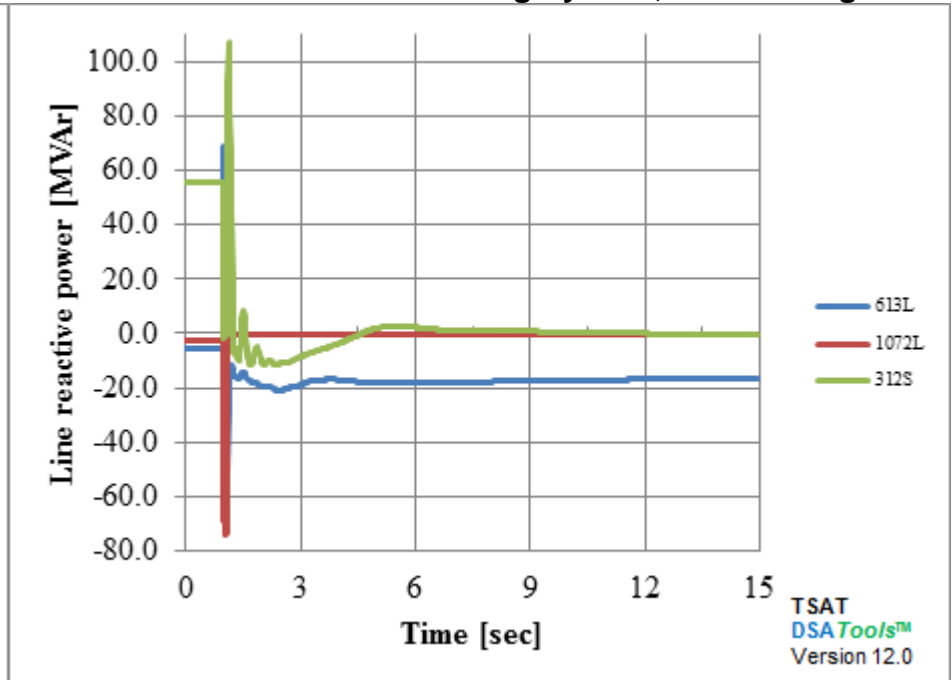
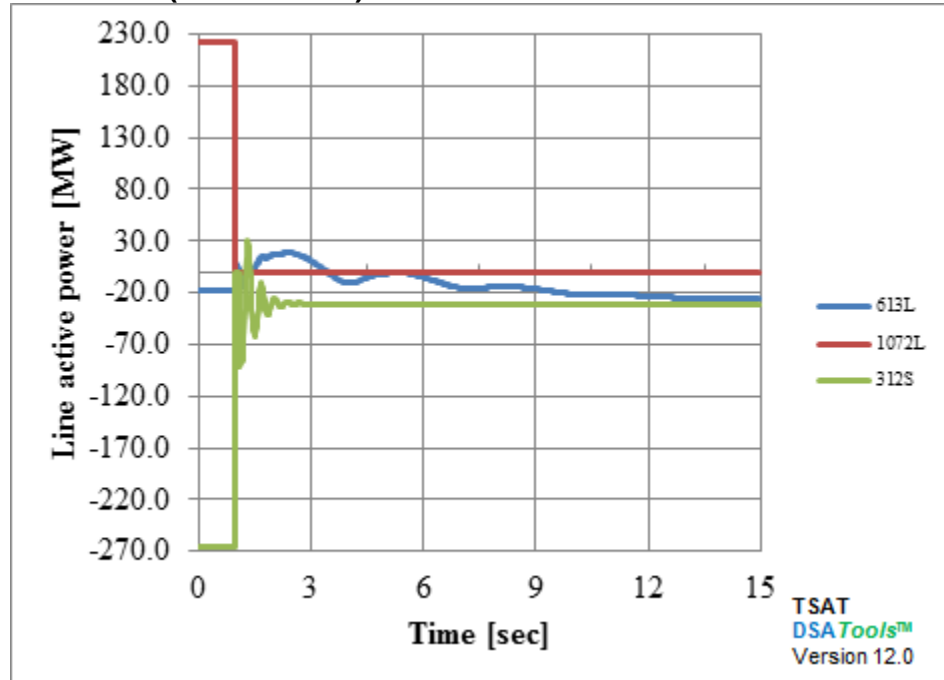
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



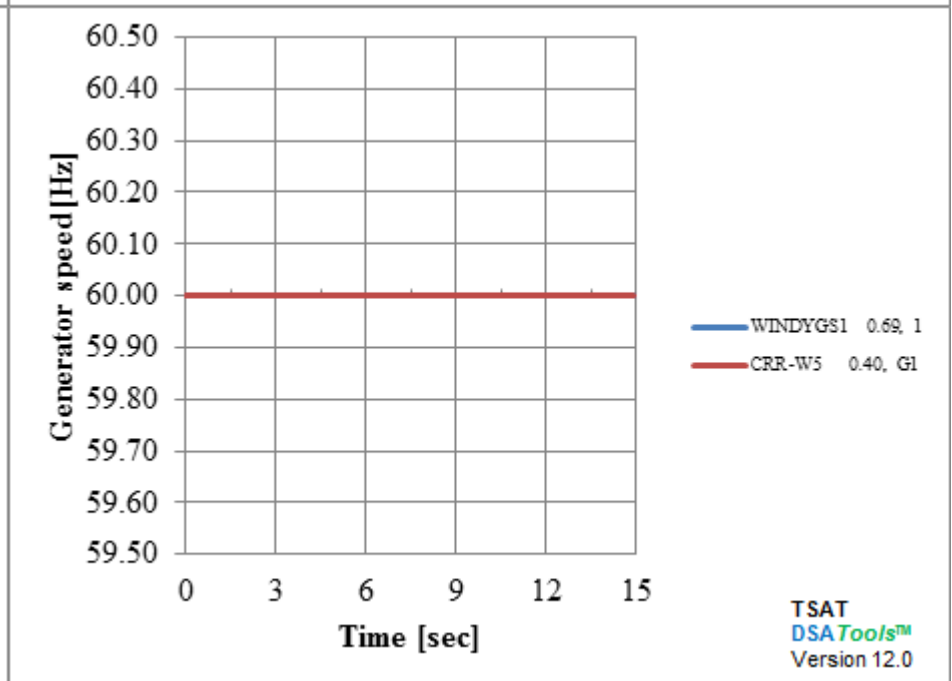
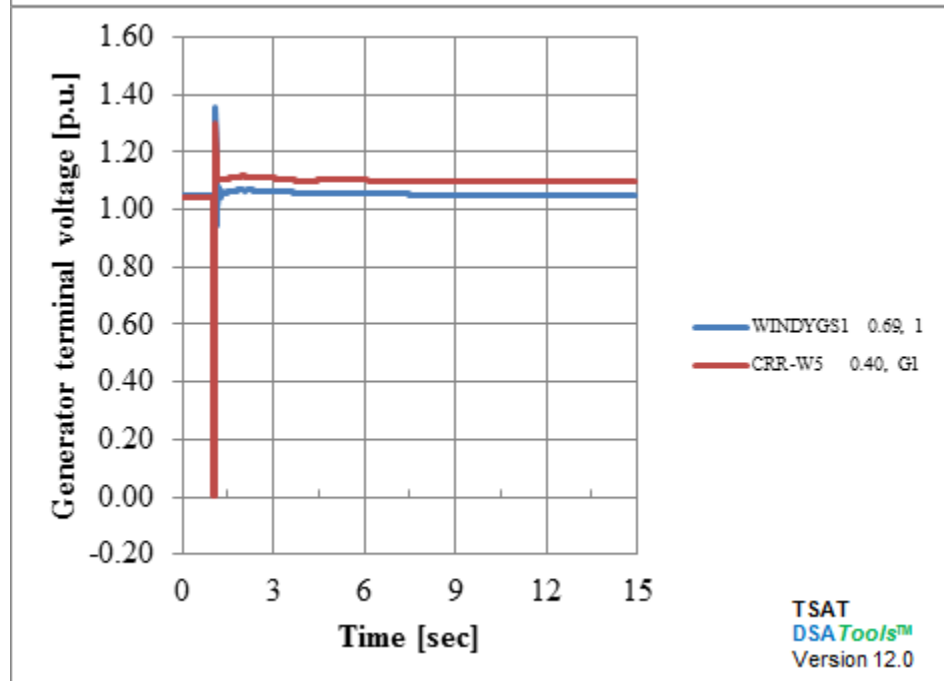
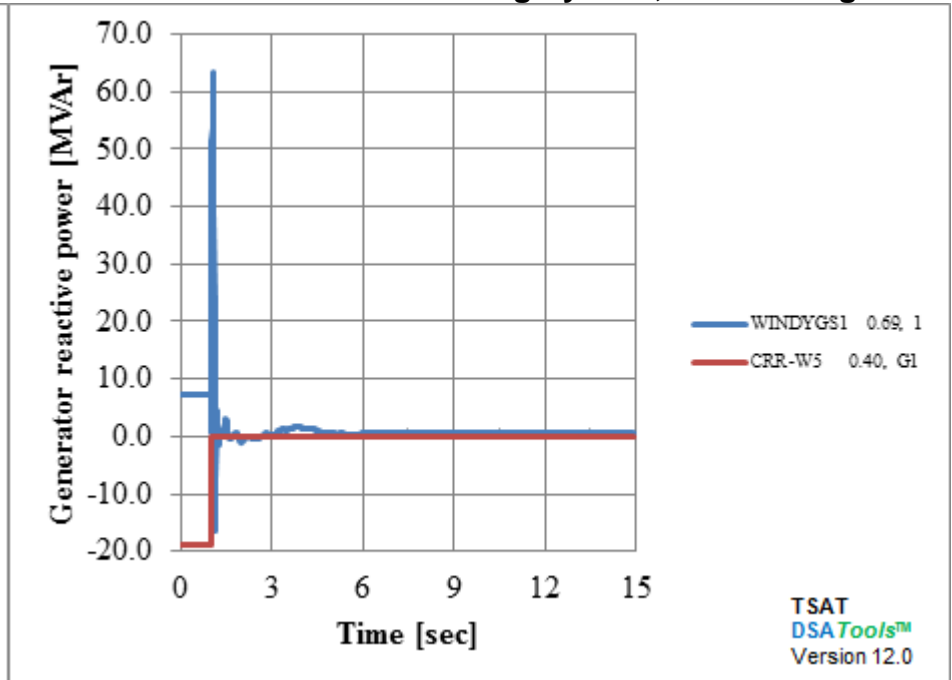
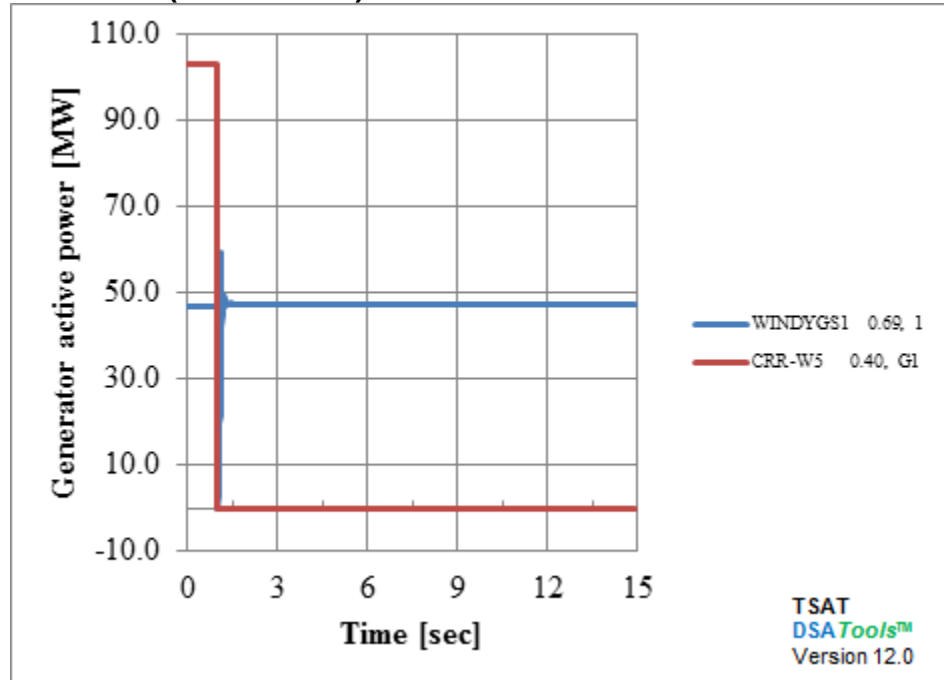
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Light 2014



4 -- 1072L (205S - 103S) NEAR 205S

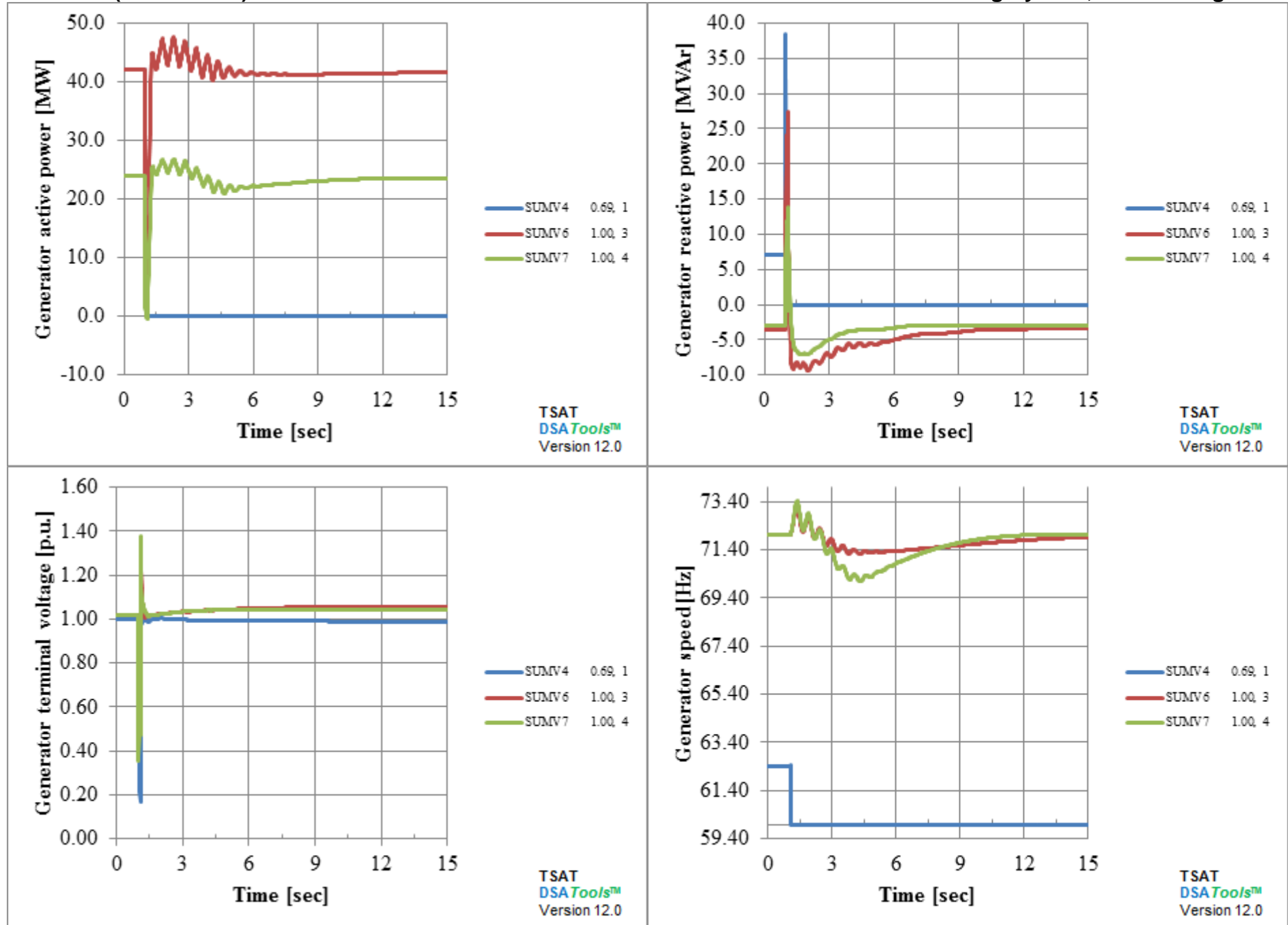
Existing System, Summer Light 2014





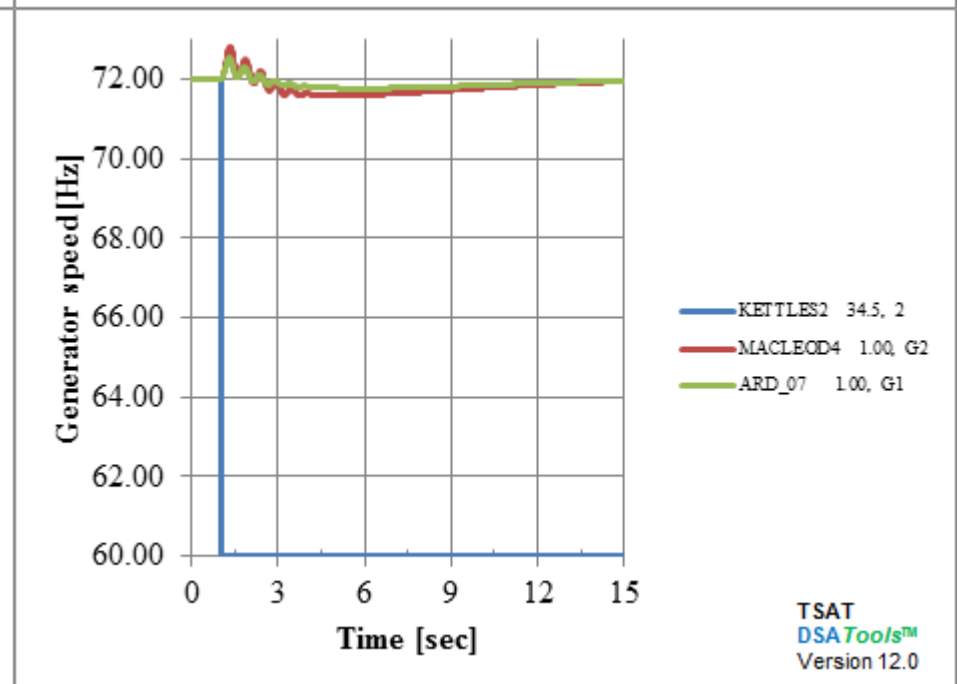
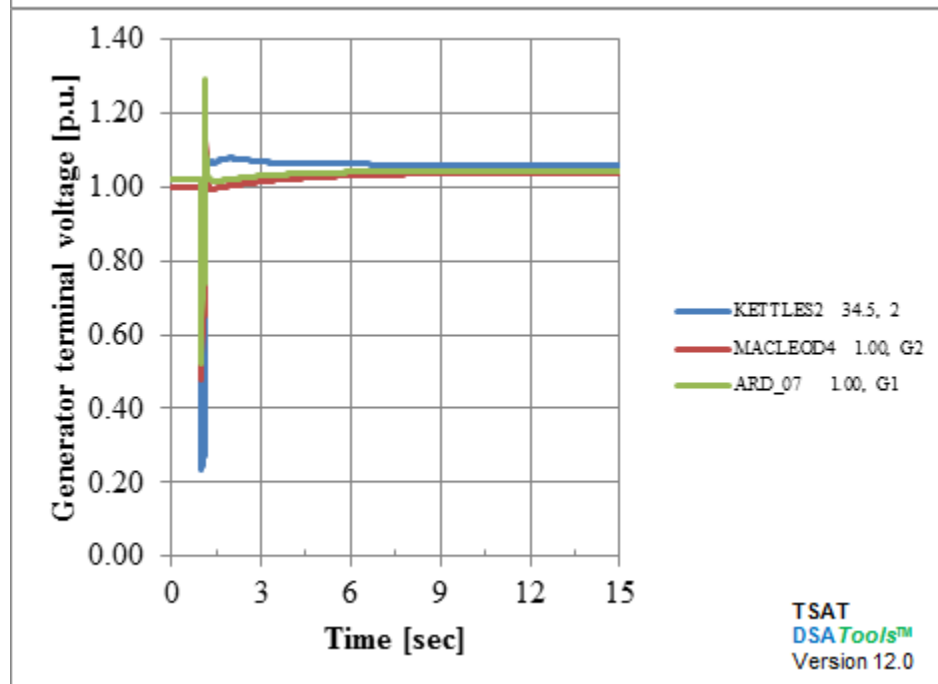
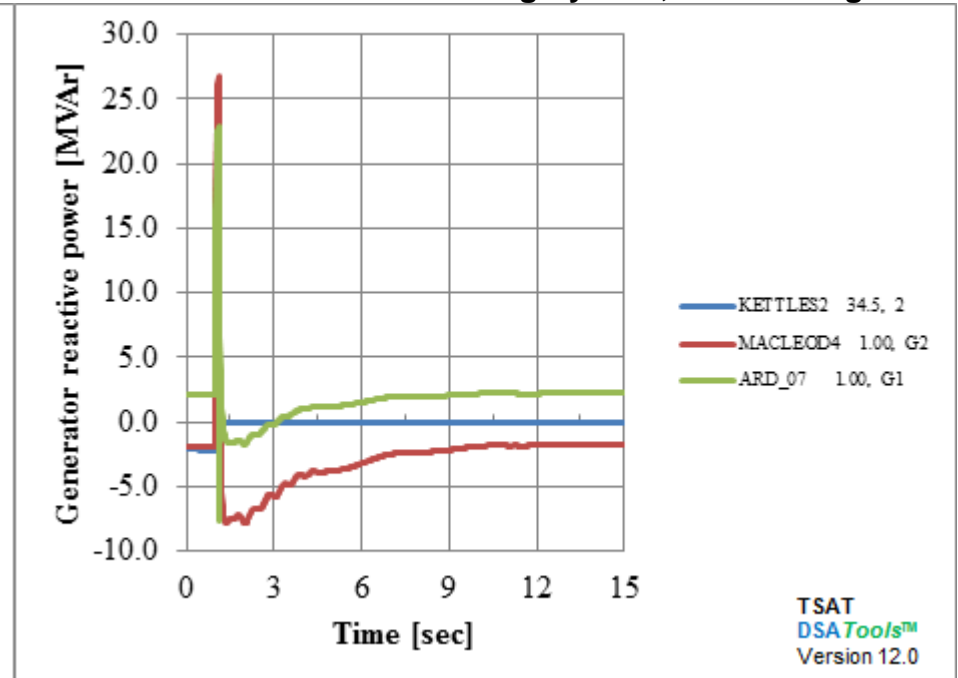
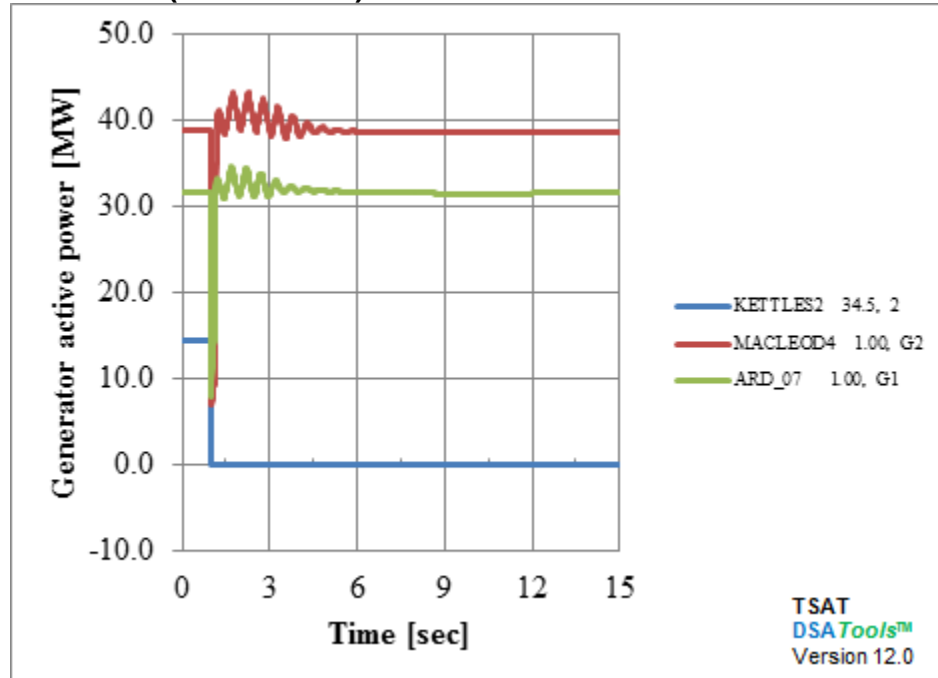
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Light 2014



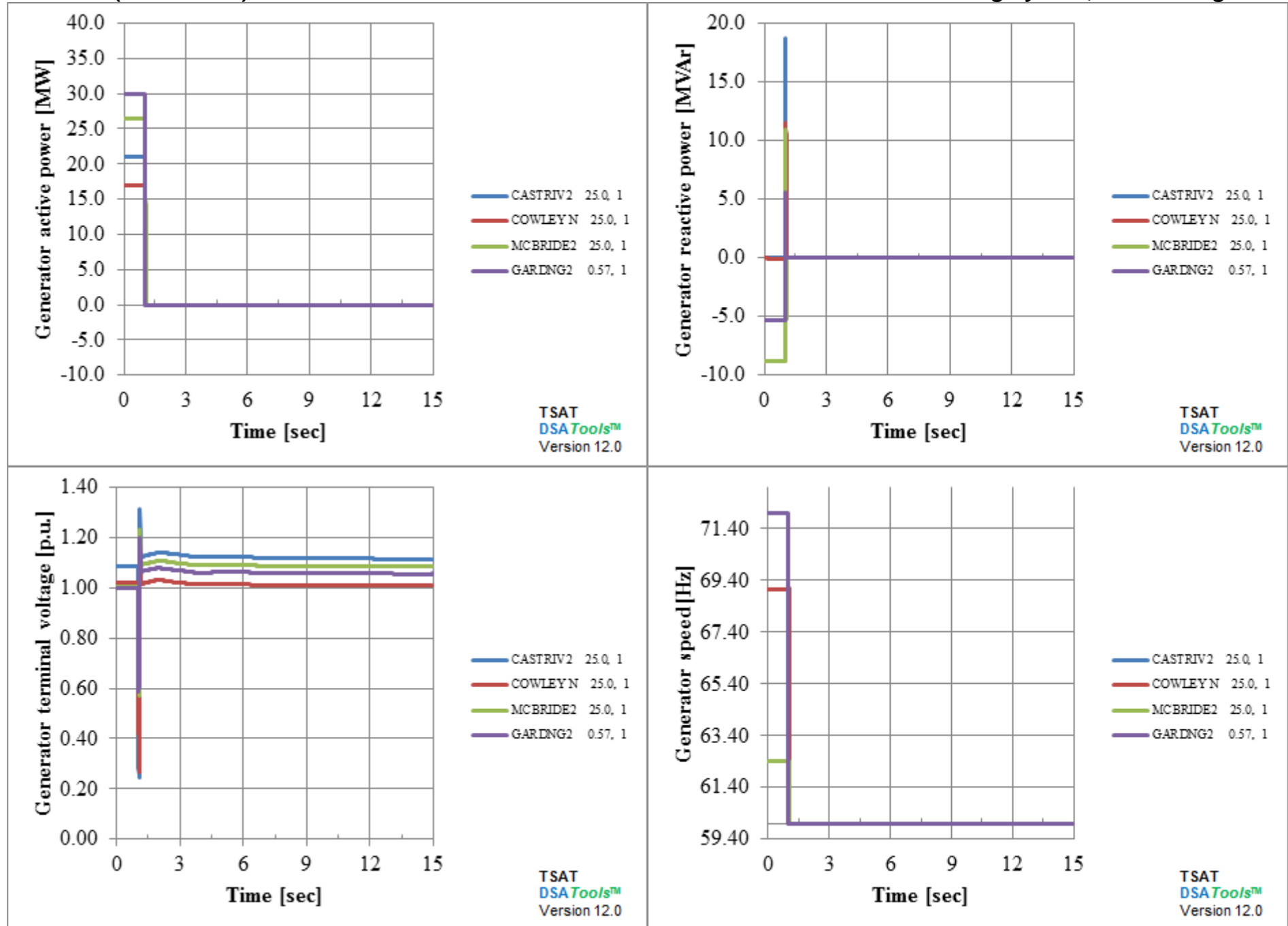
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Light 2014



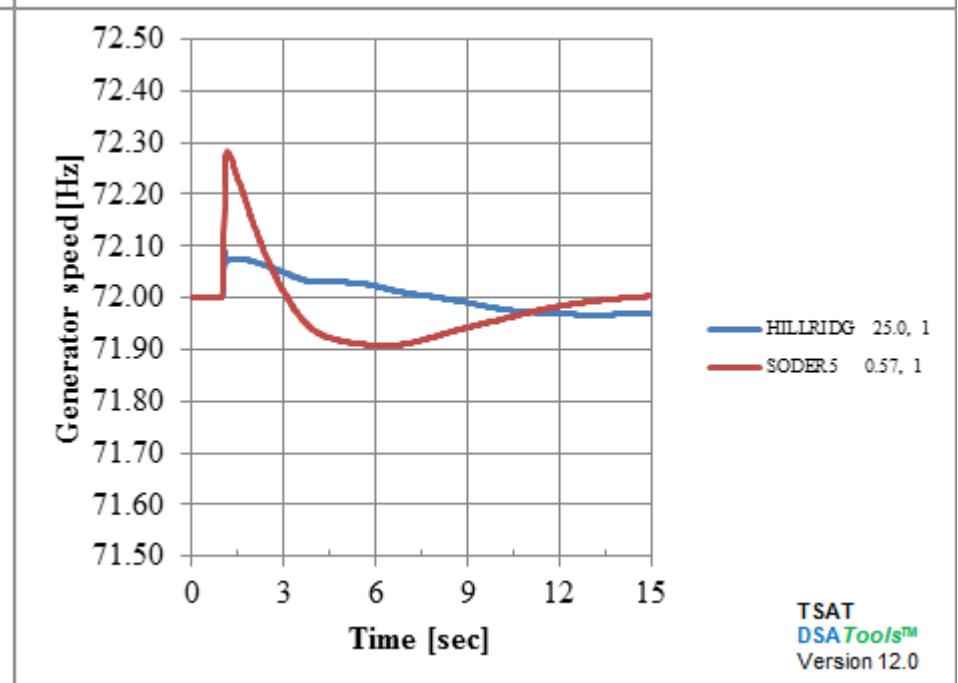
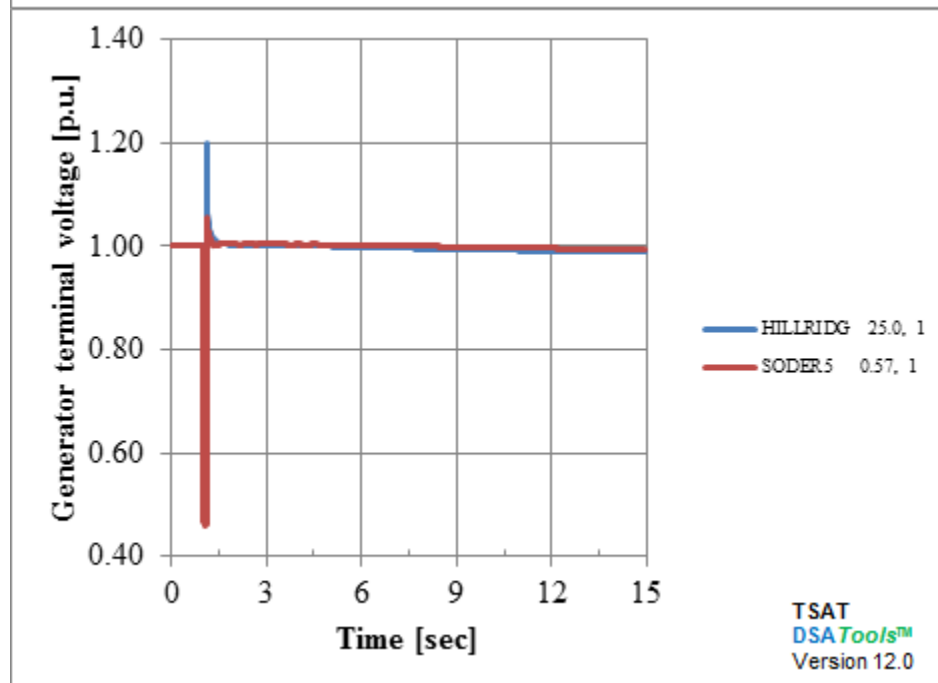
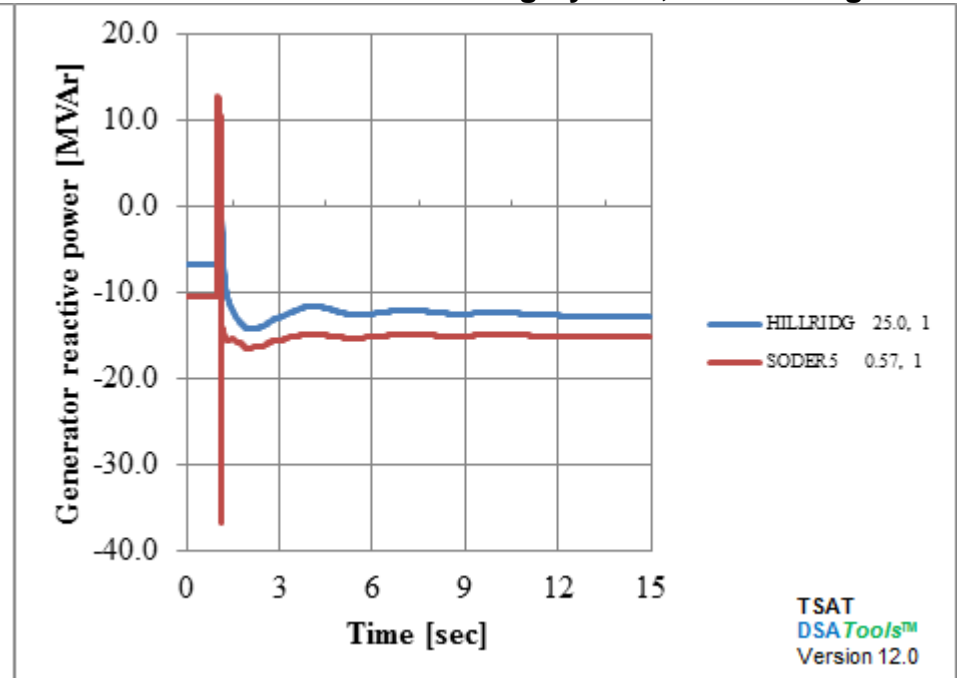
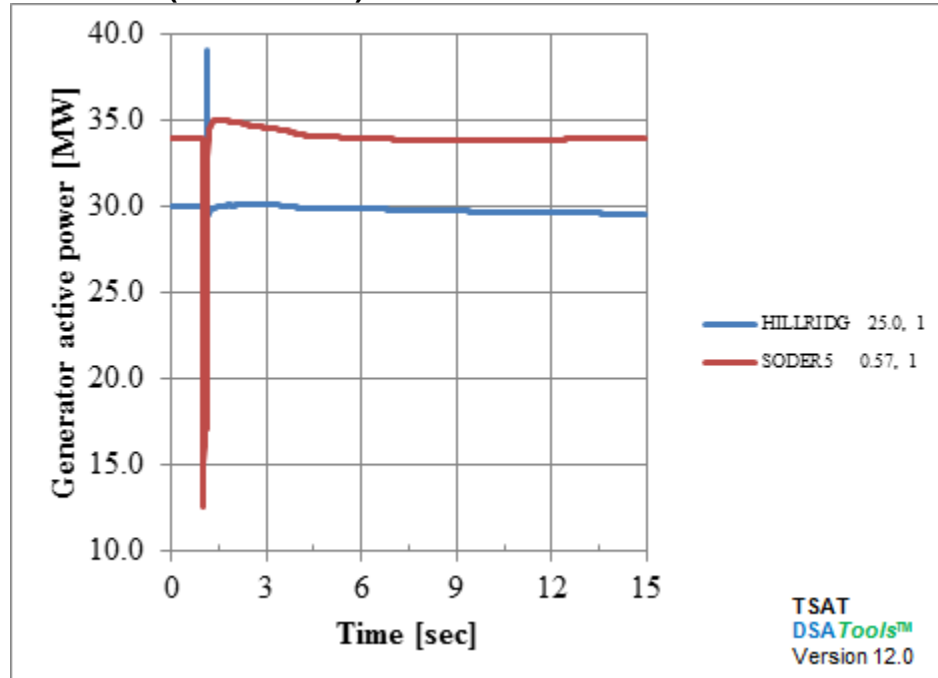
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Light 2014



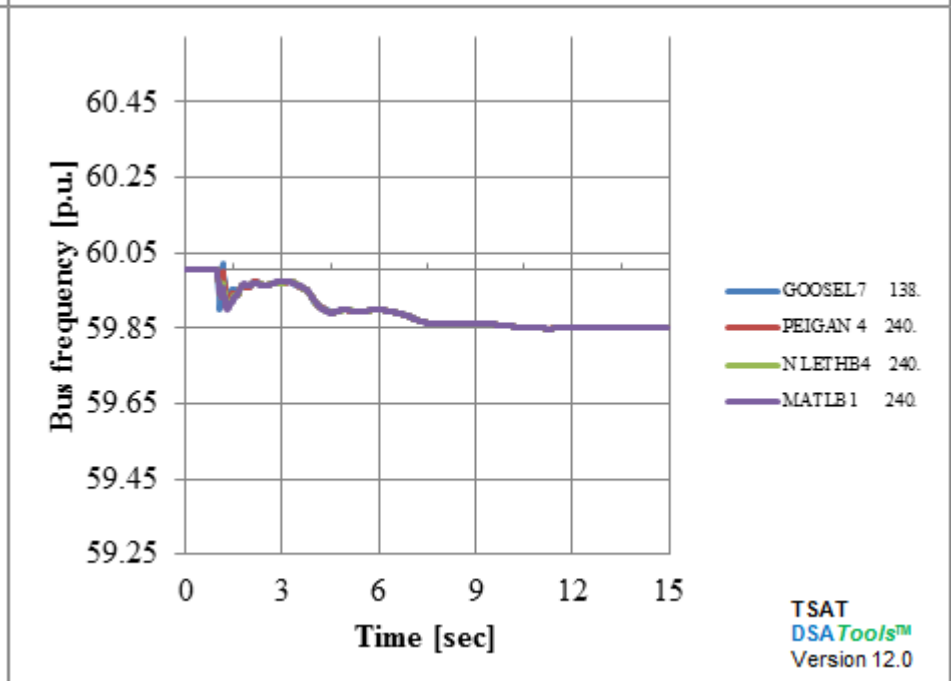
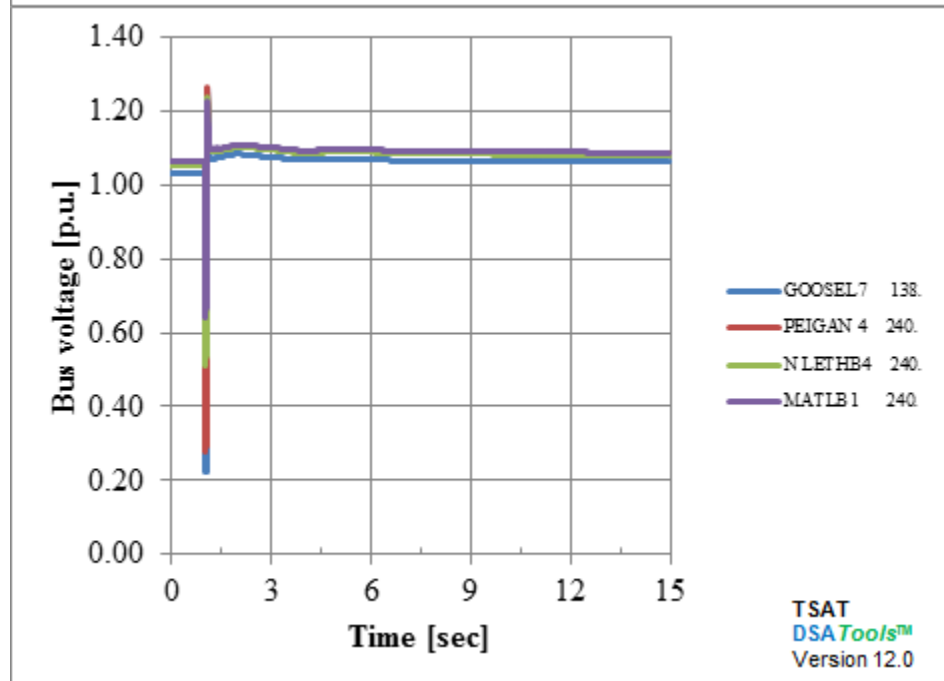
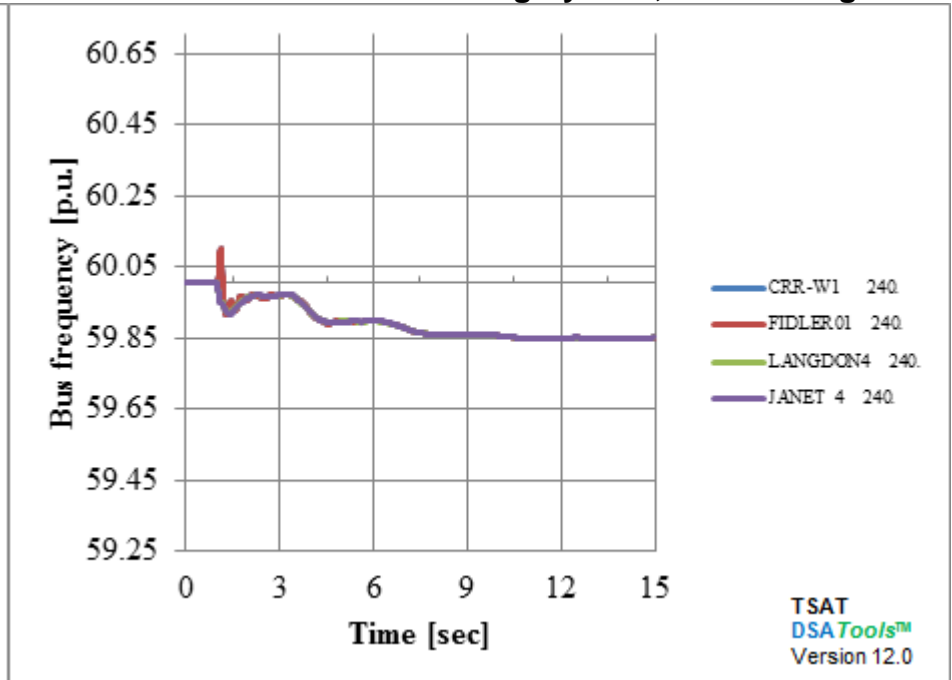
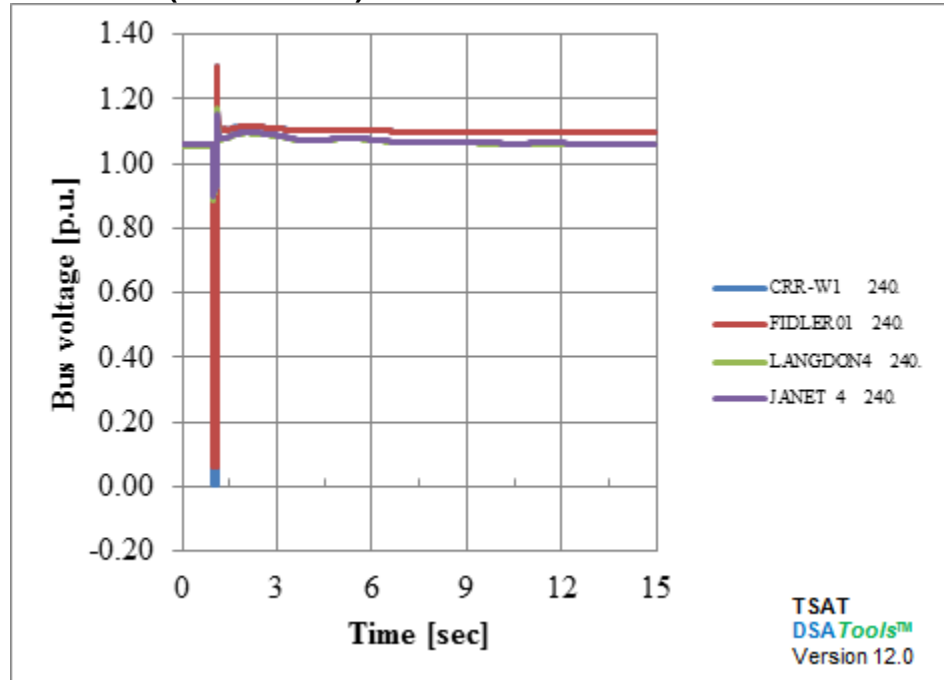
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Light 2014



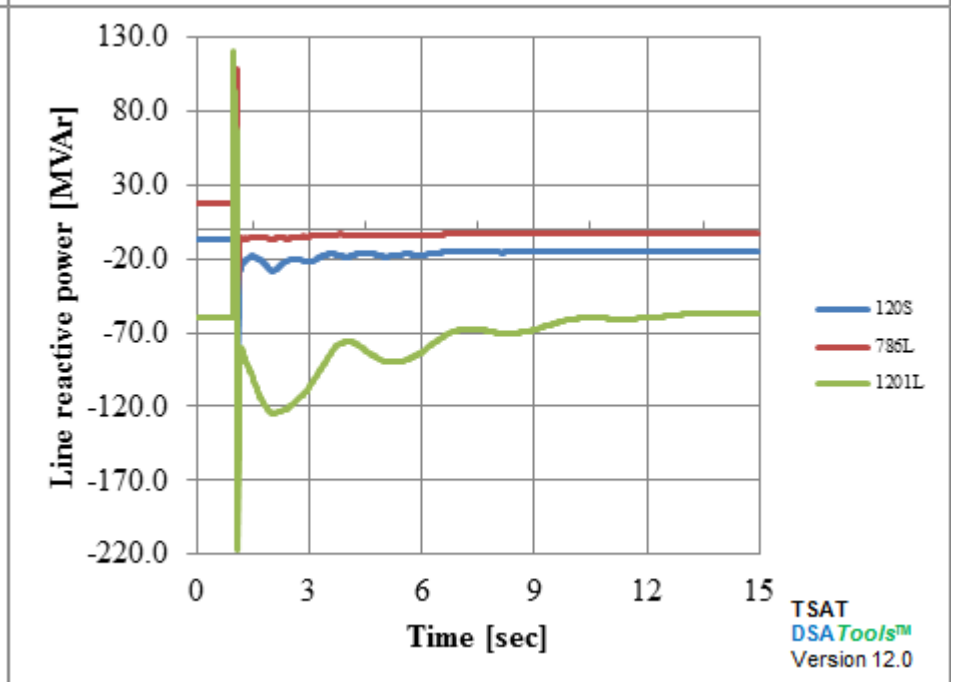
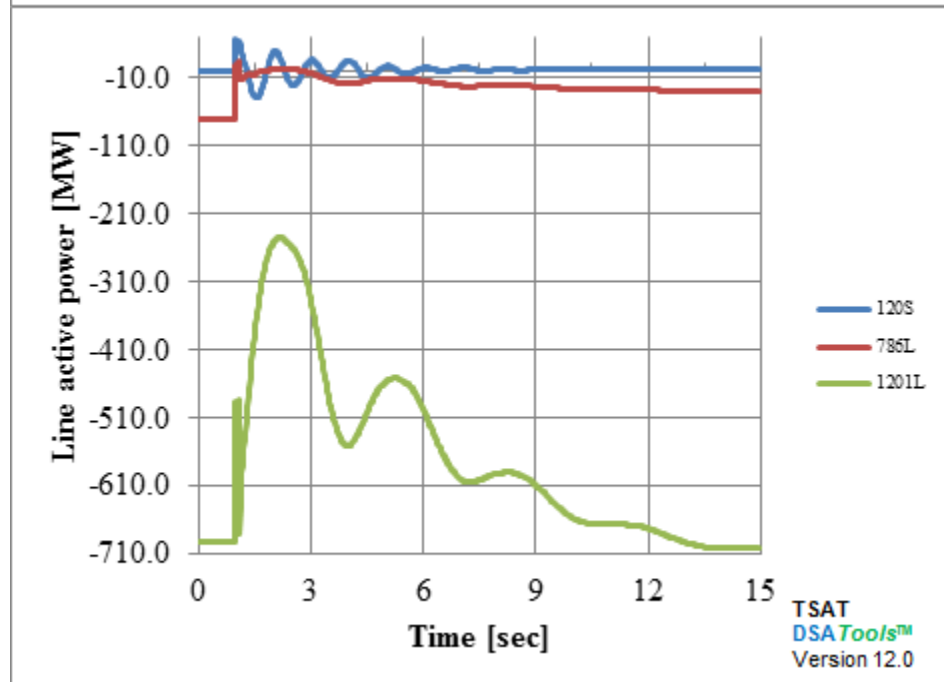
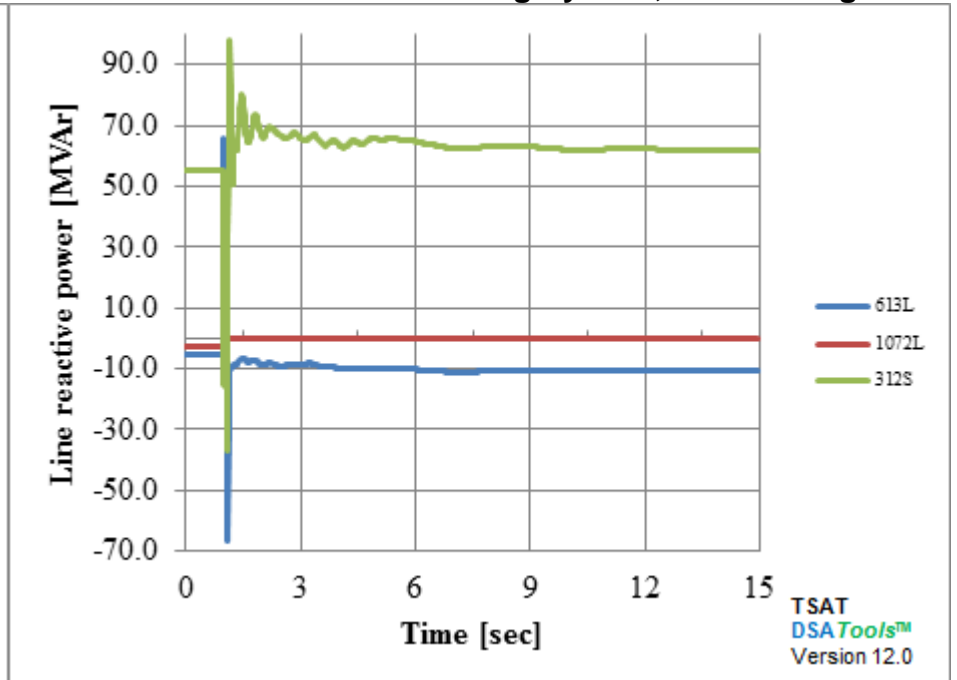
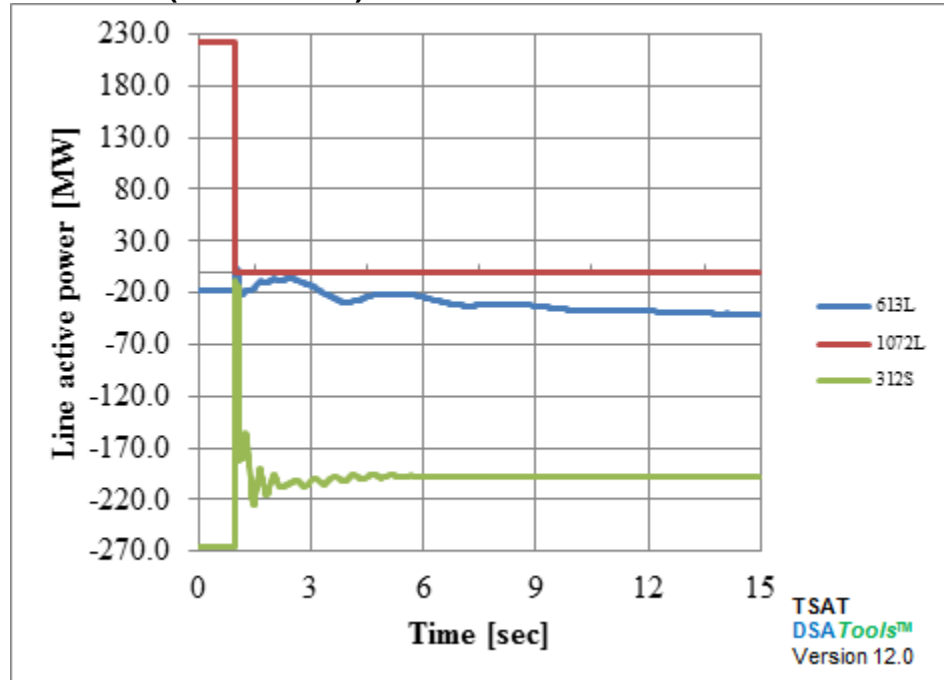
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Light 2014



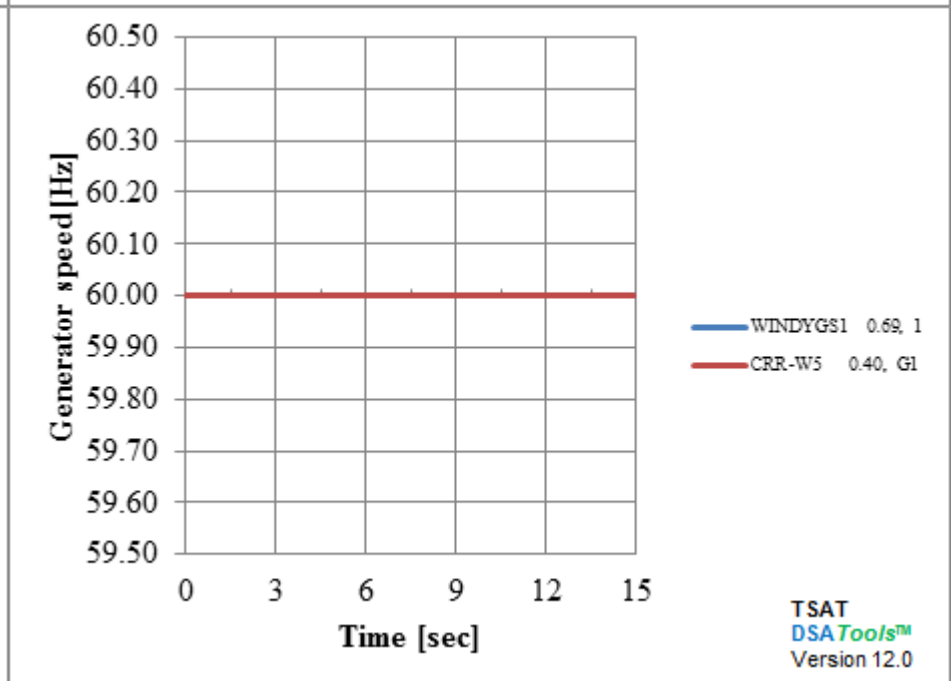
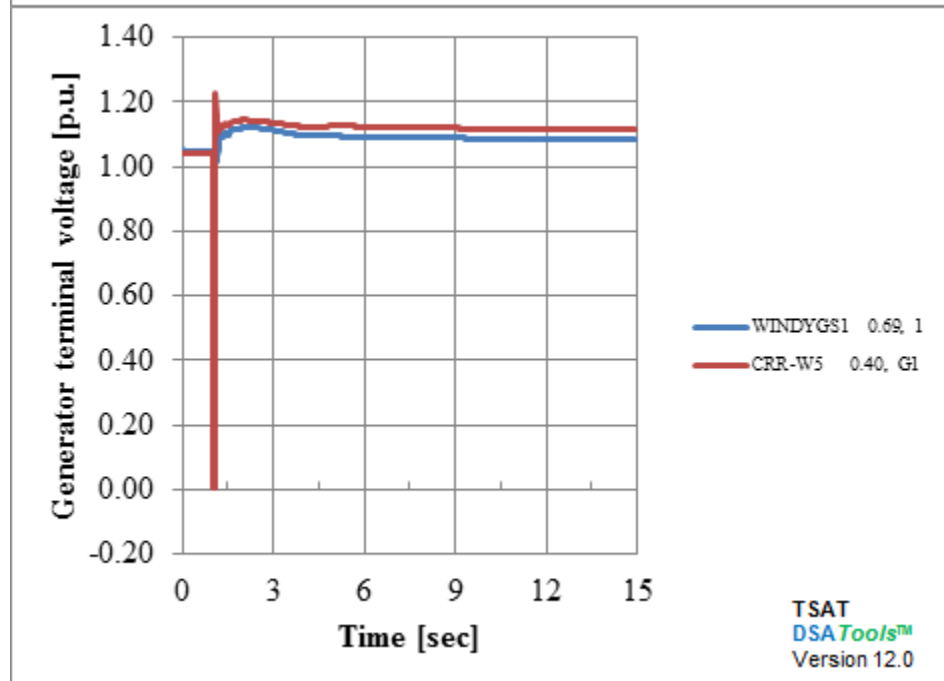
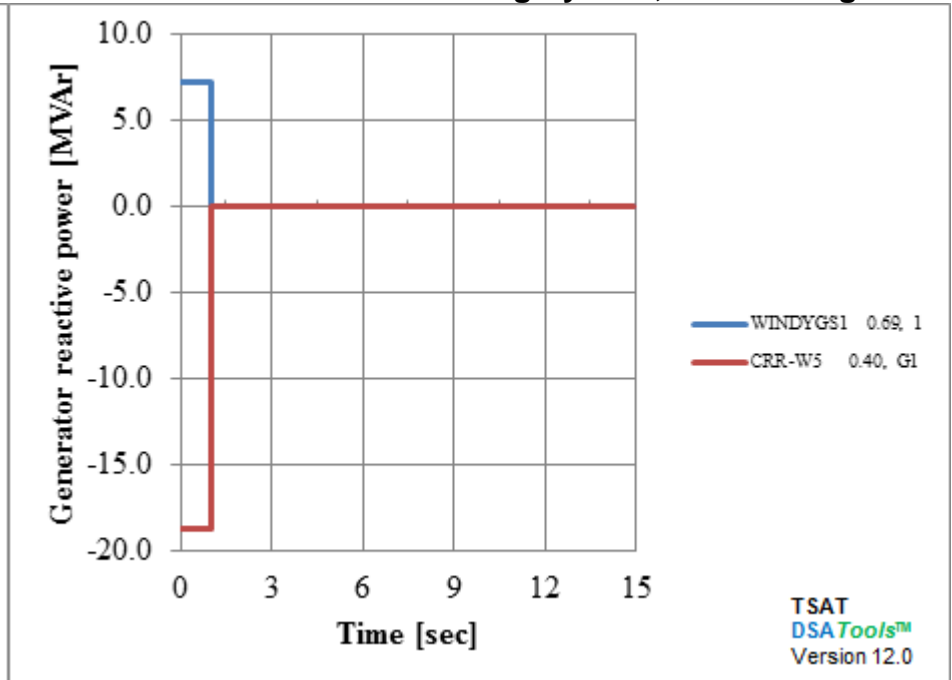
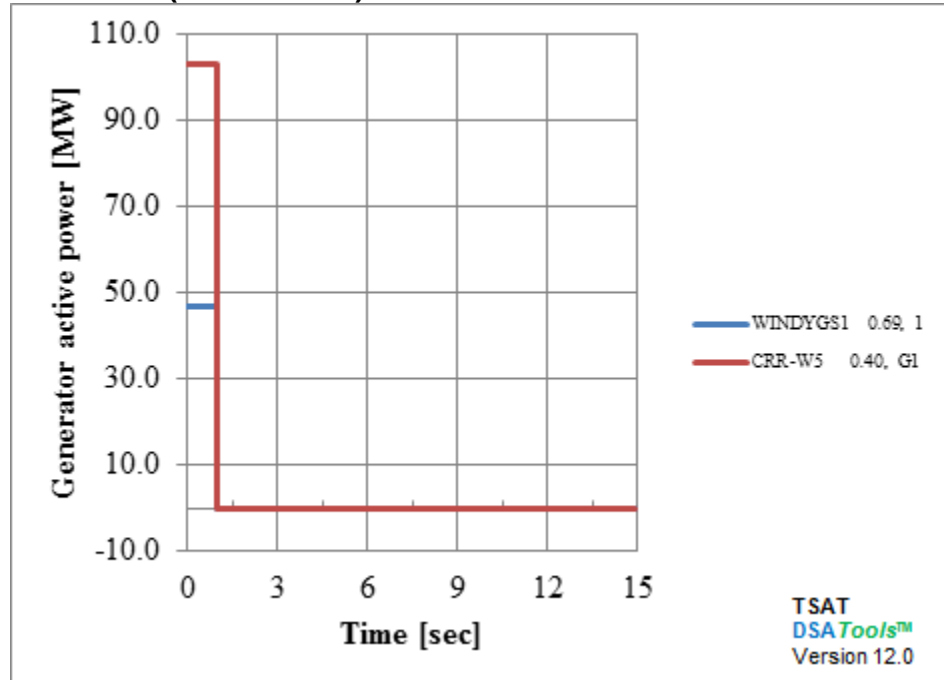
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Light 2014



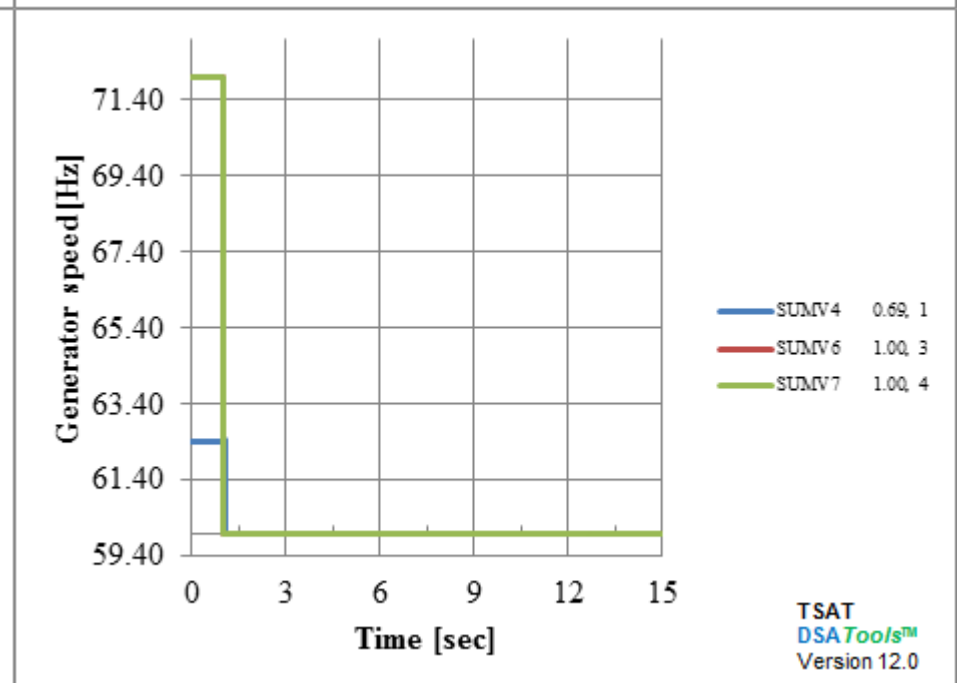
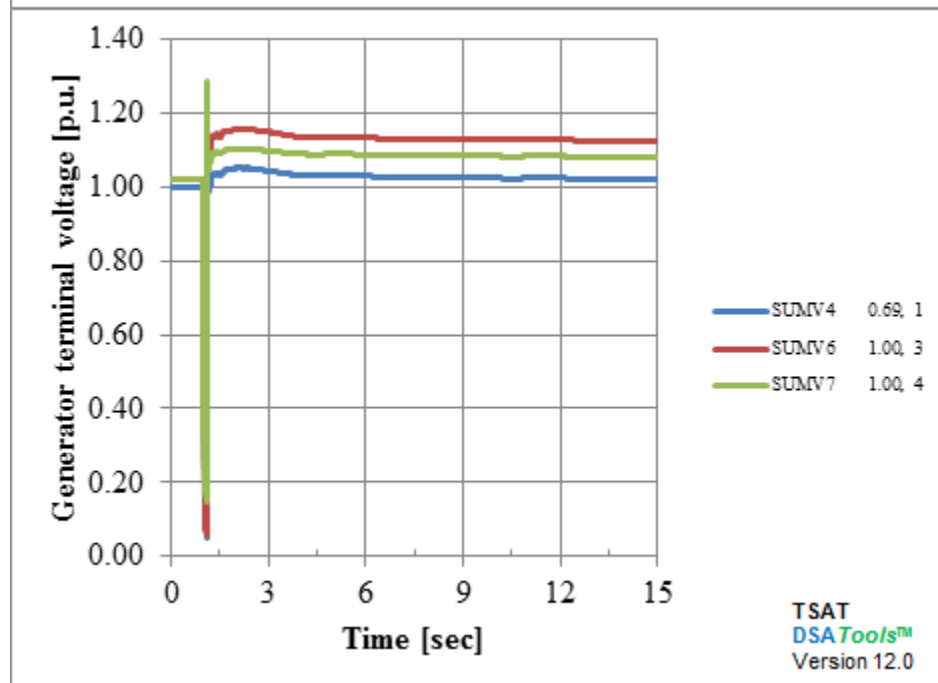
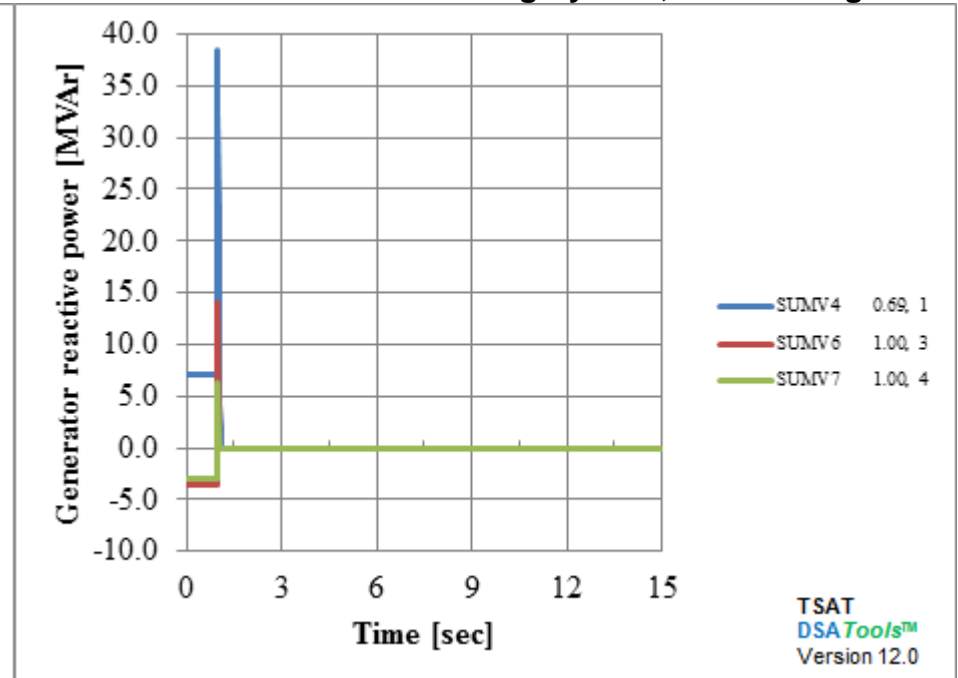
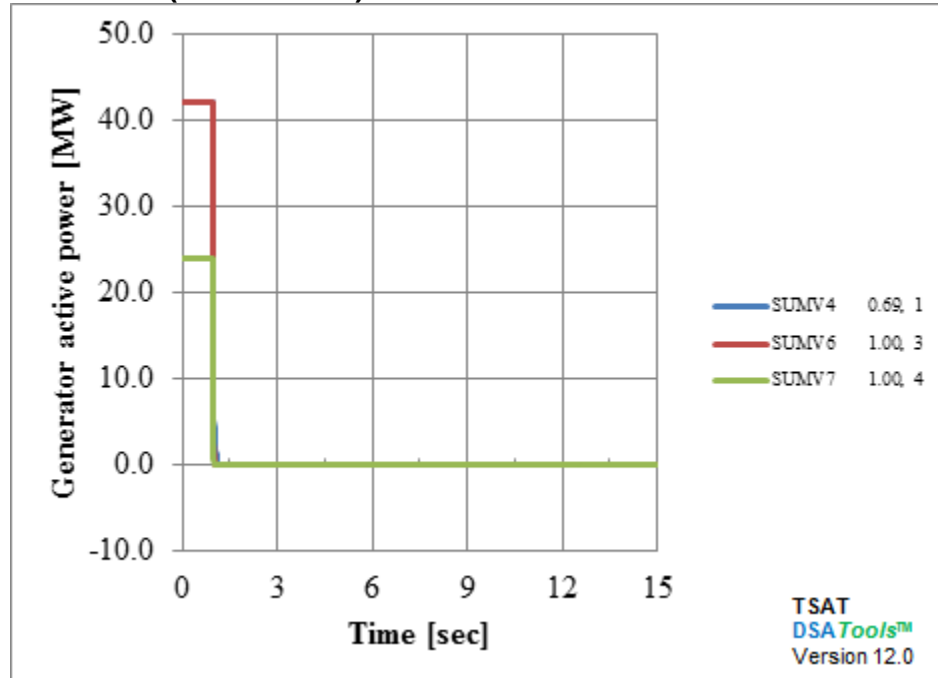
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Light 2014



5 -- 1072L (205S - 103S) NEAR 103S

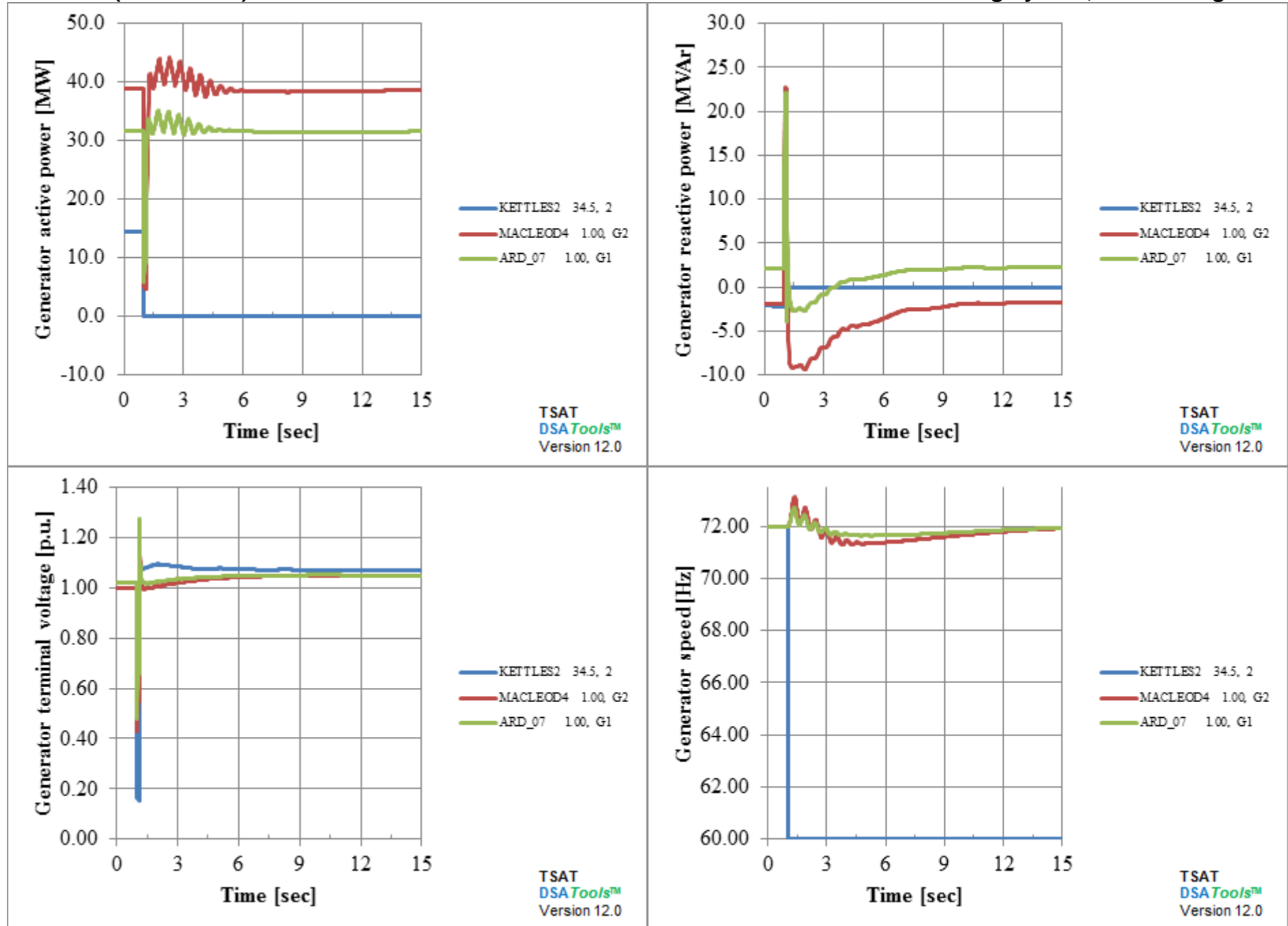
Existing System, Summer Light 2014





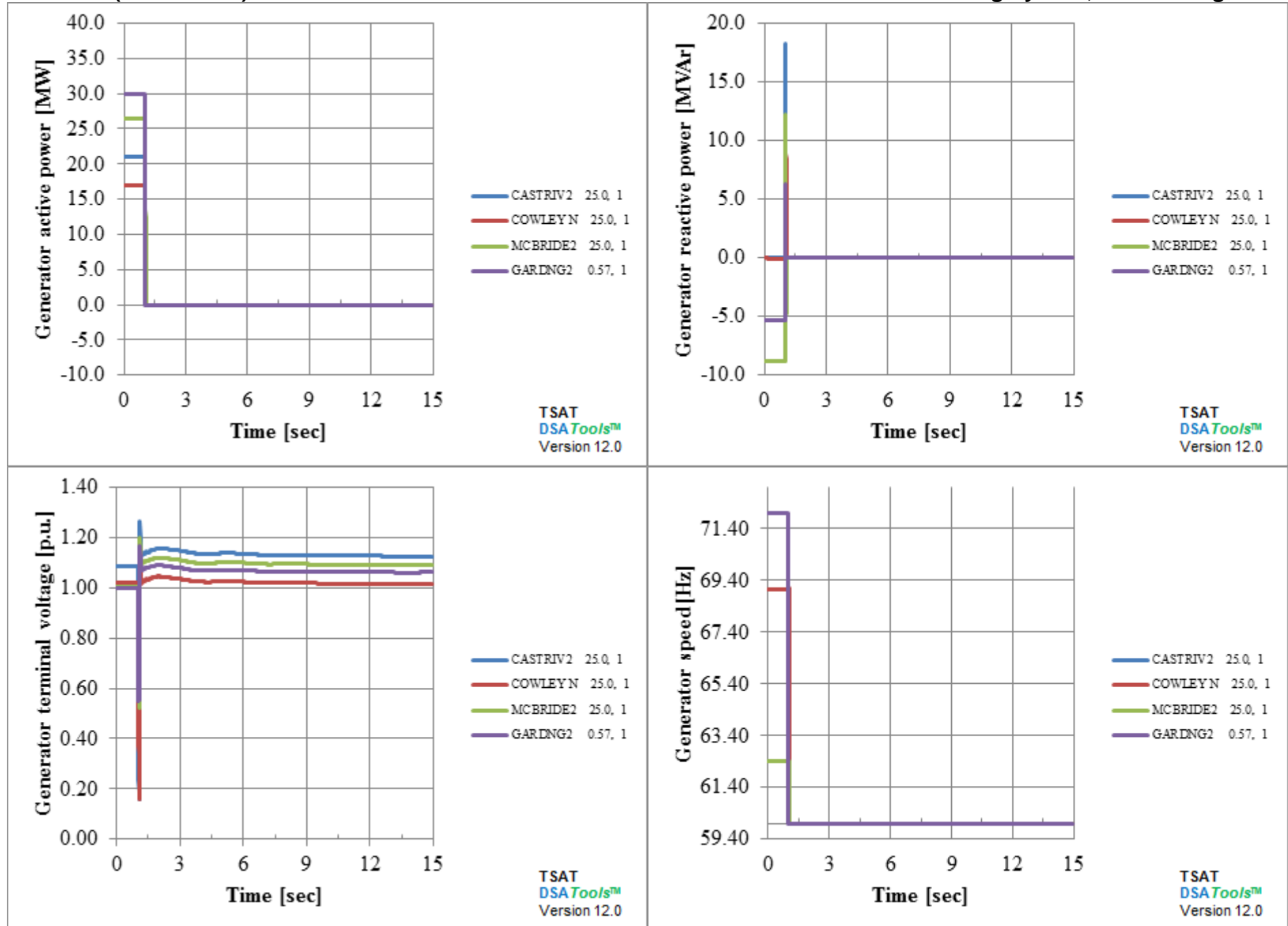
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Light 2014



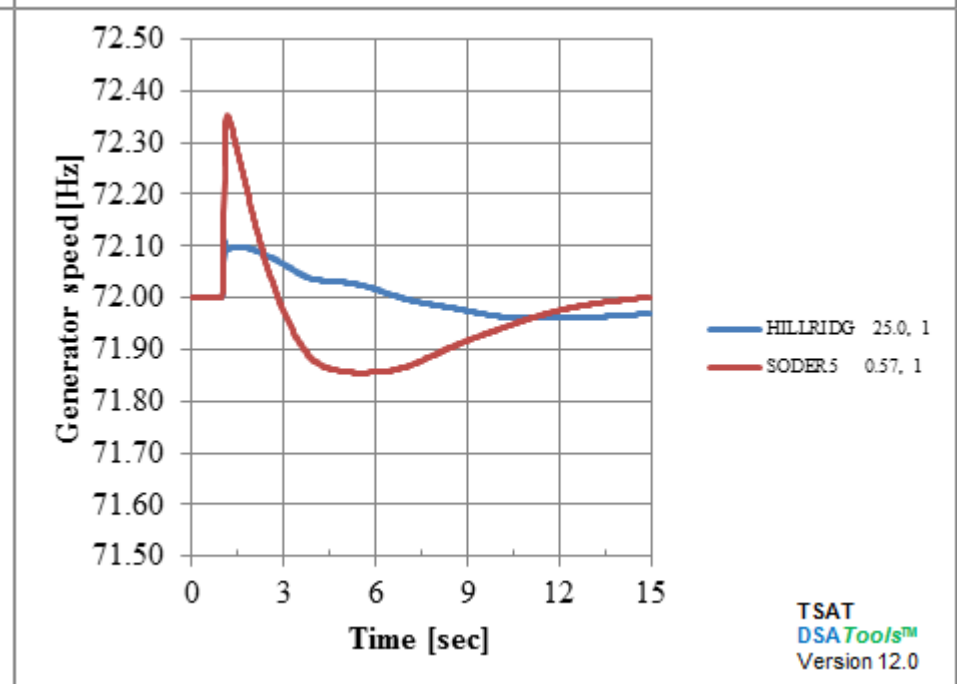
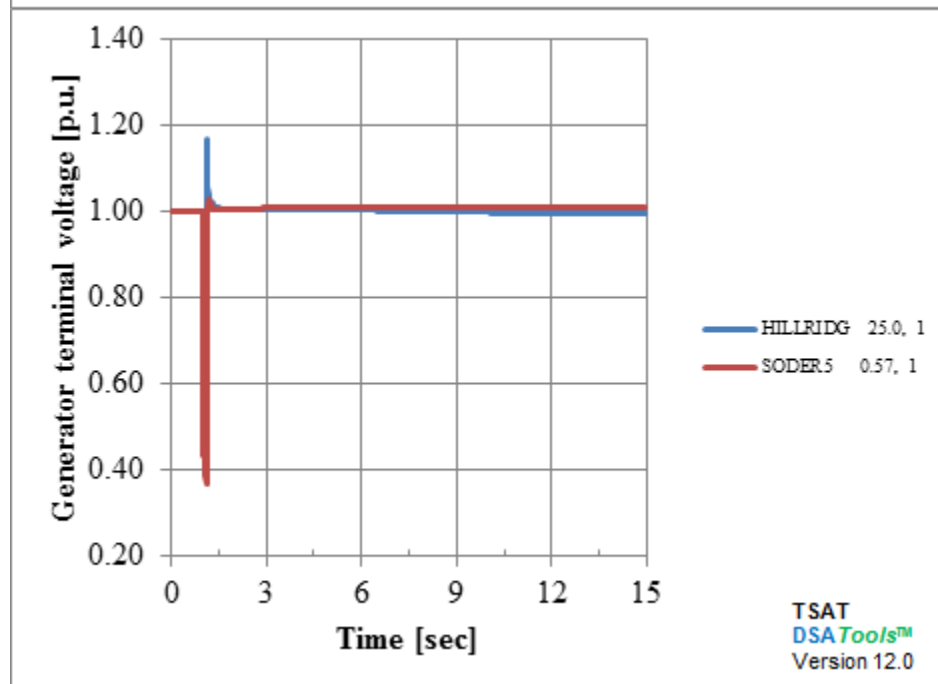
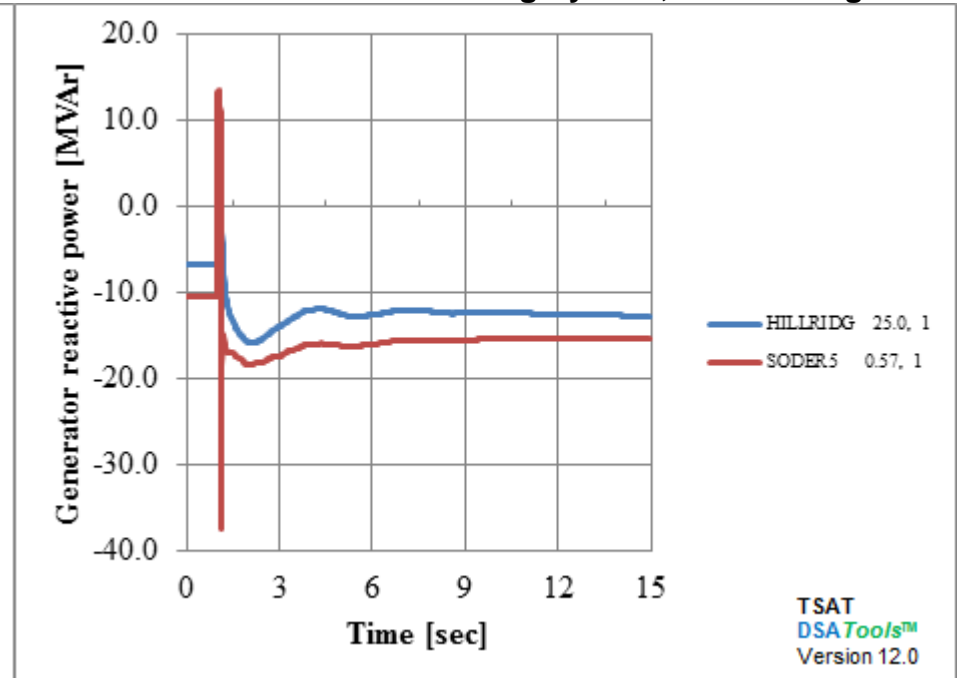
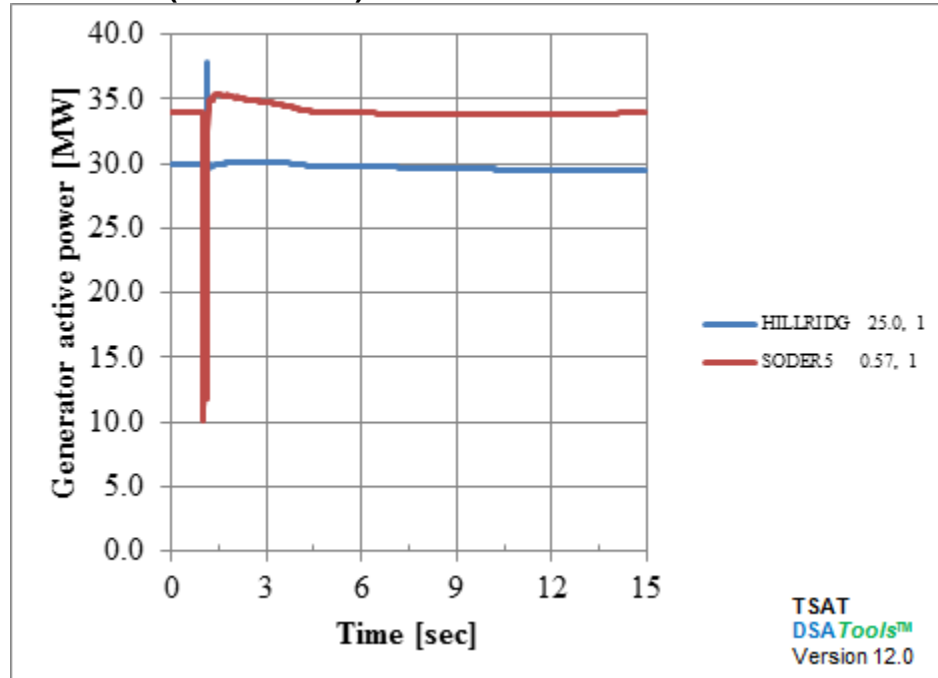
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Light 2014



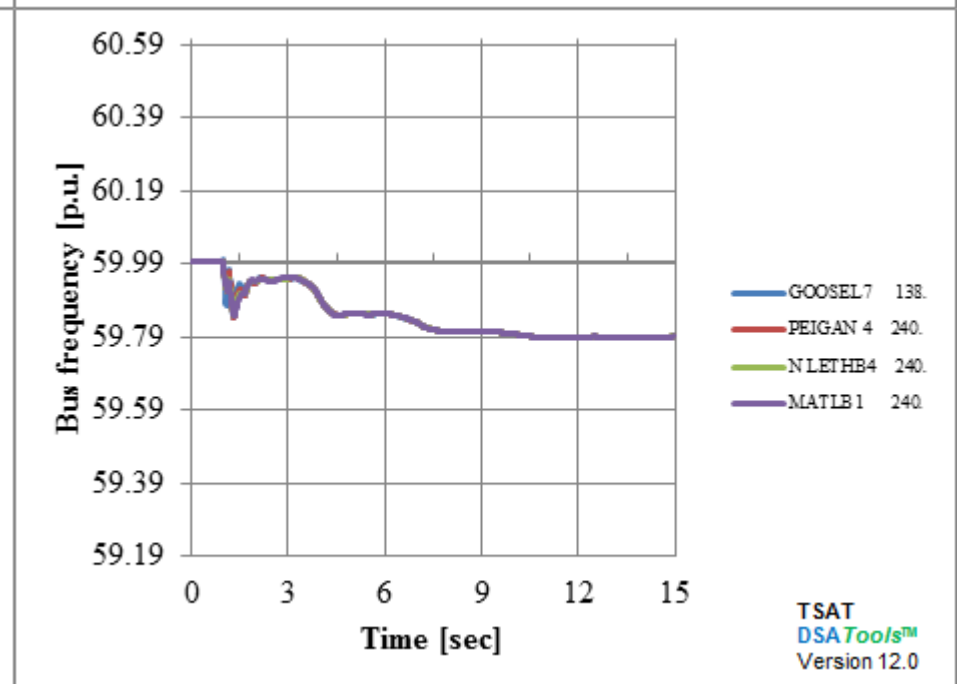
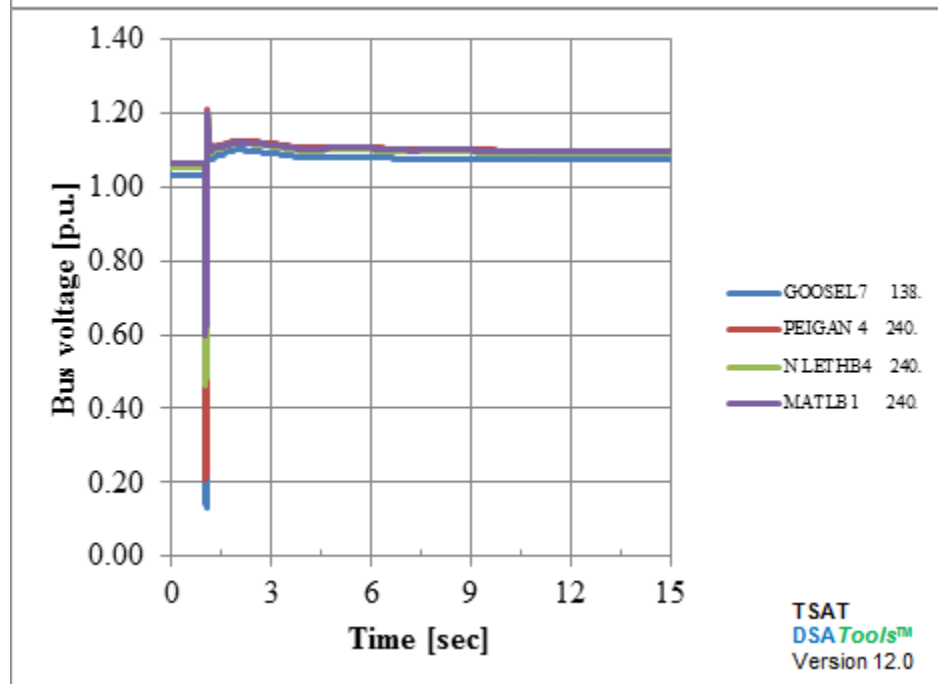
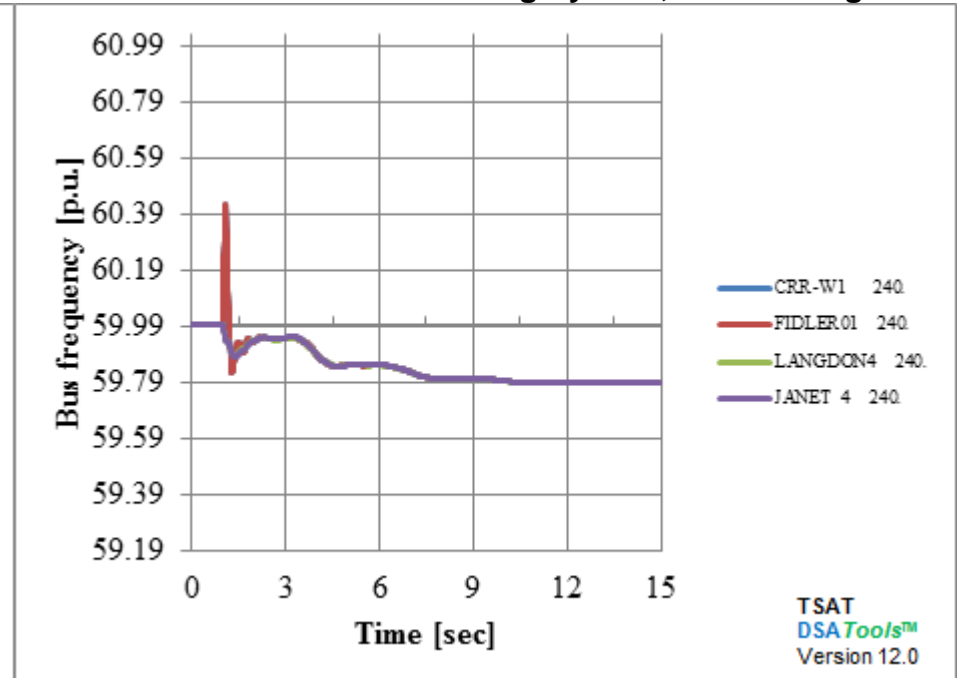
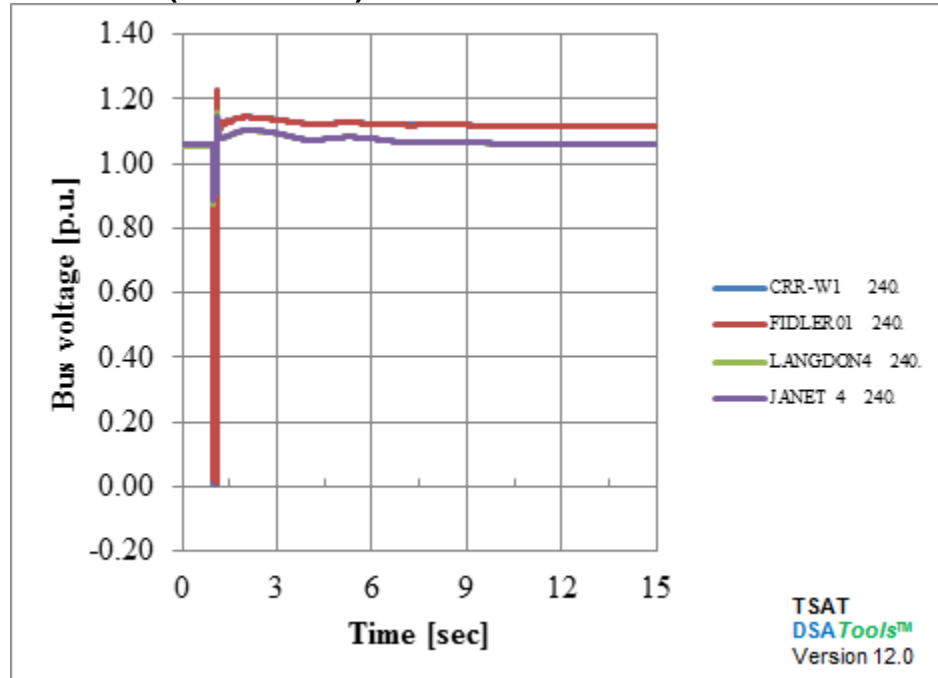
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Light 2014



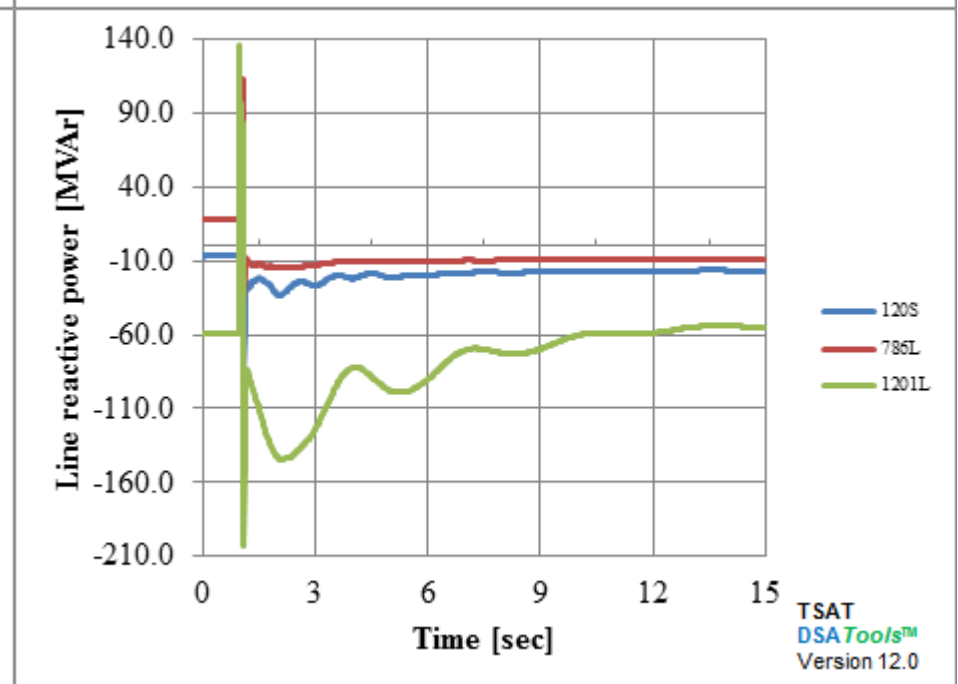
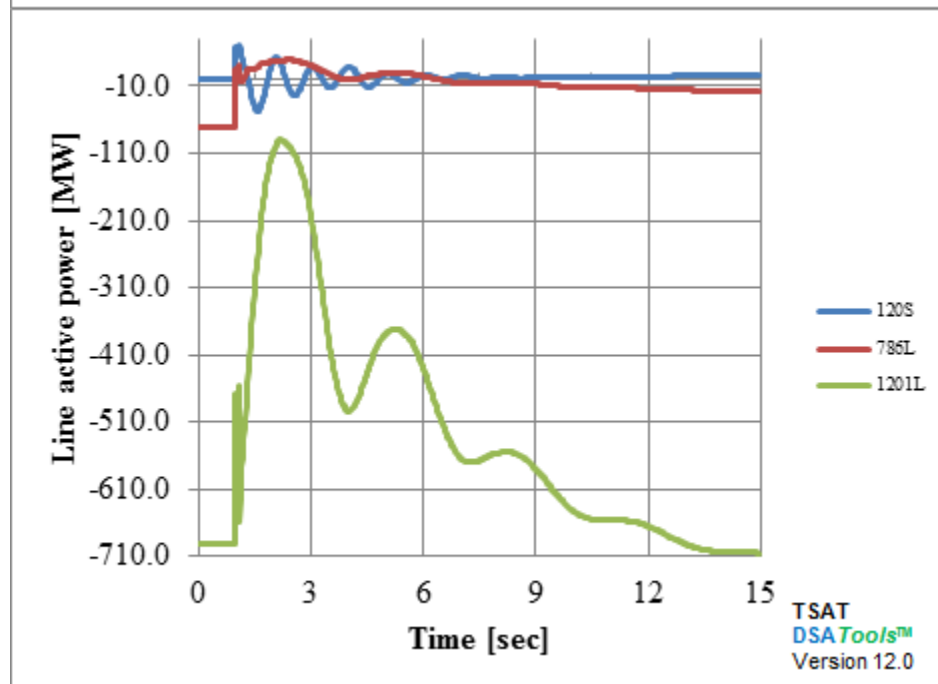
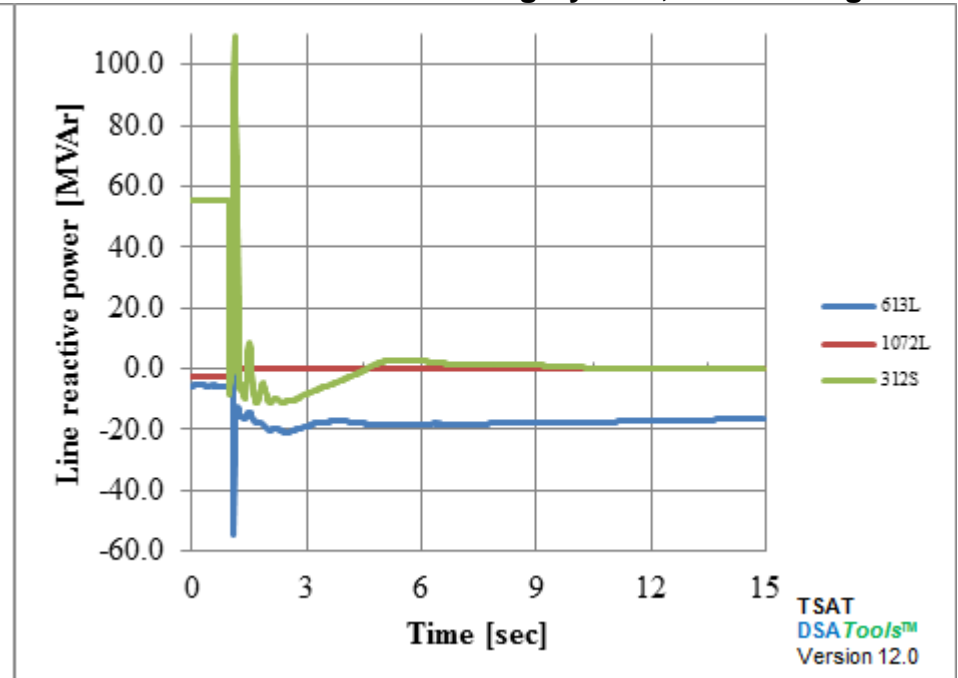
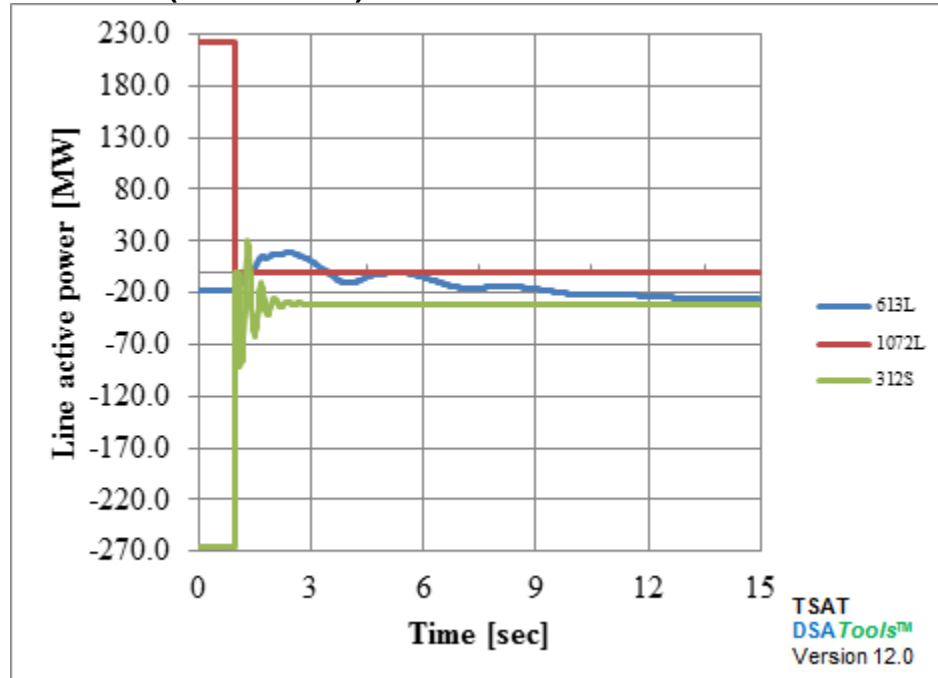
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Light 2014



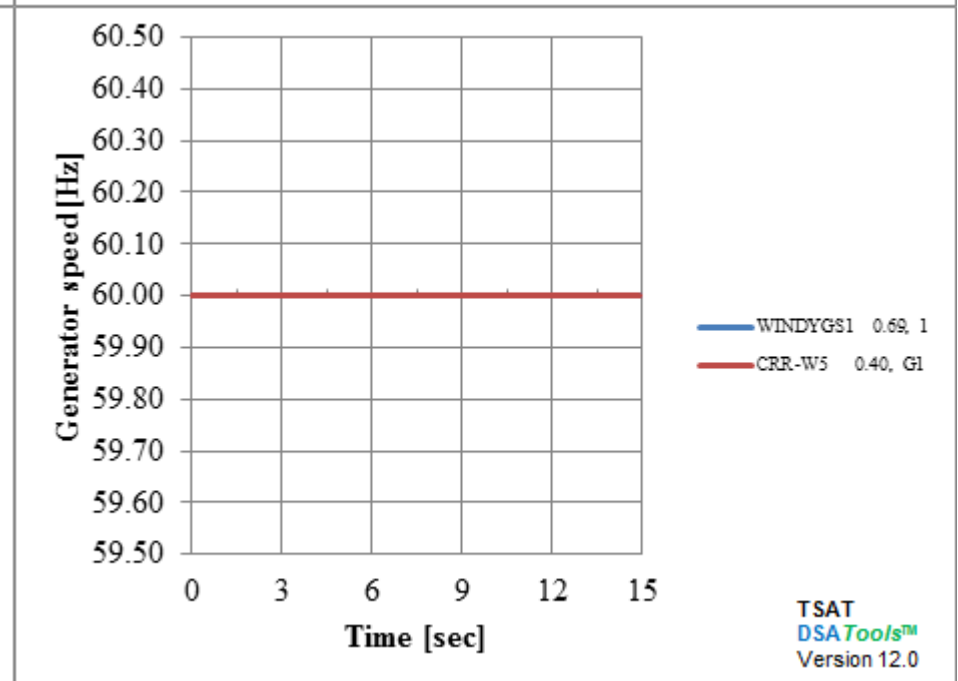
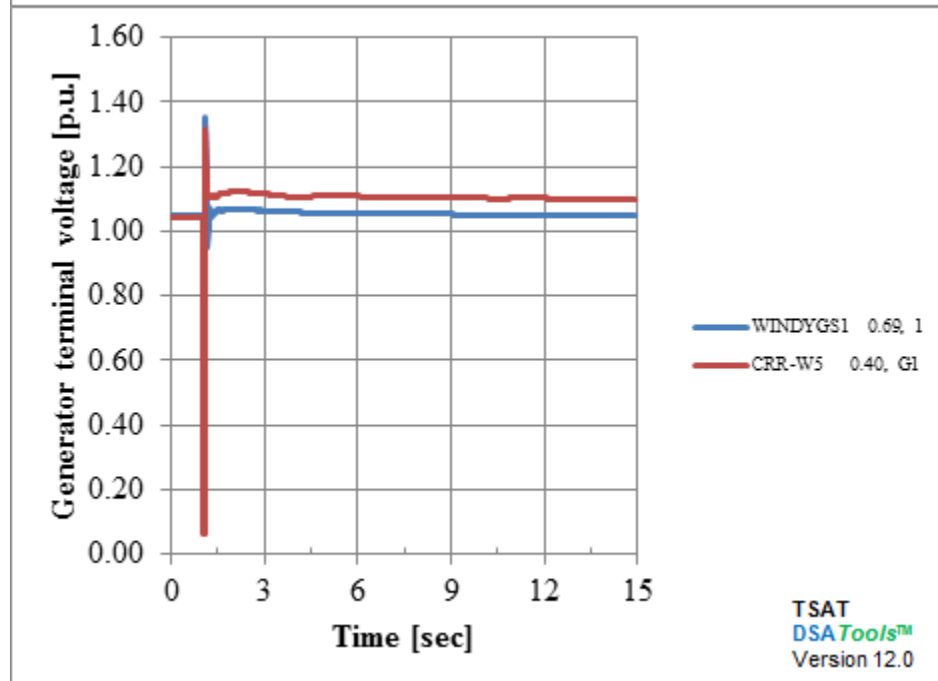
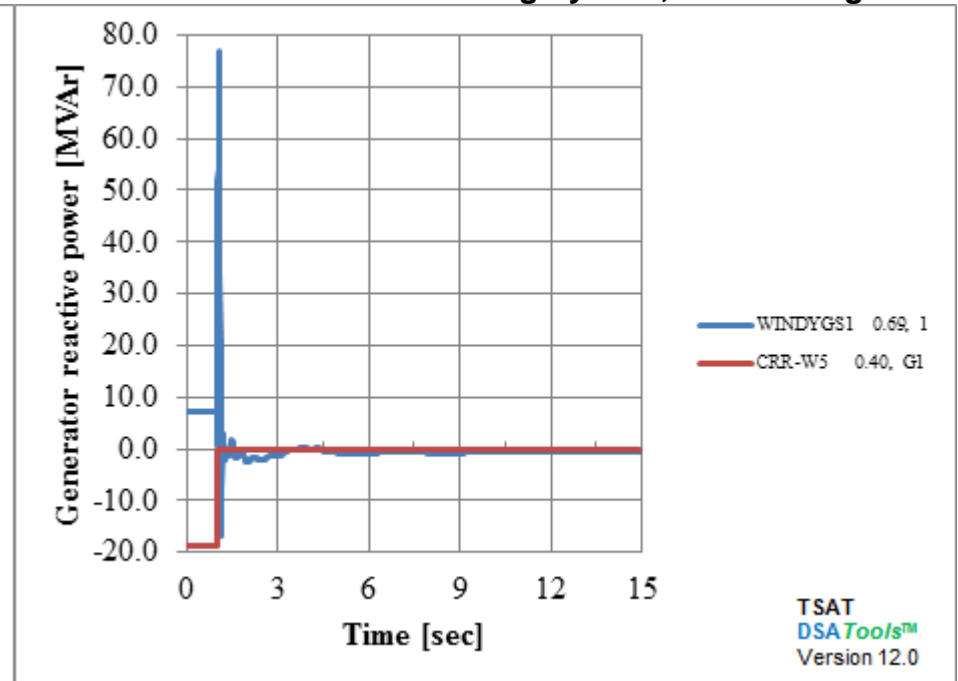
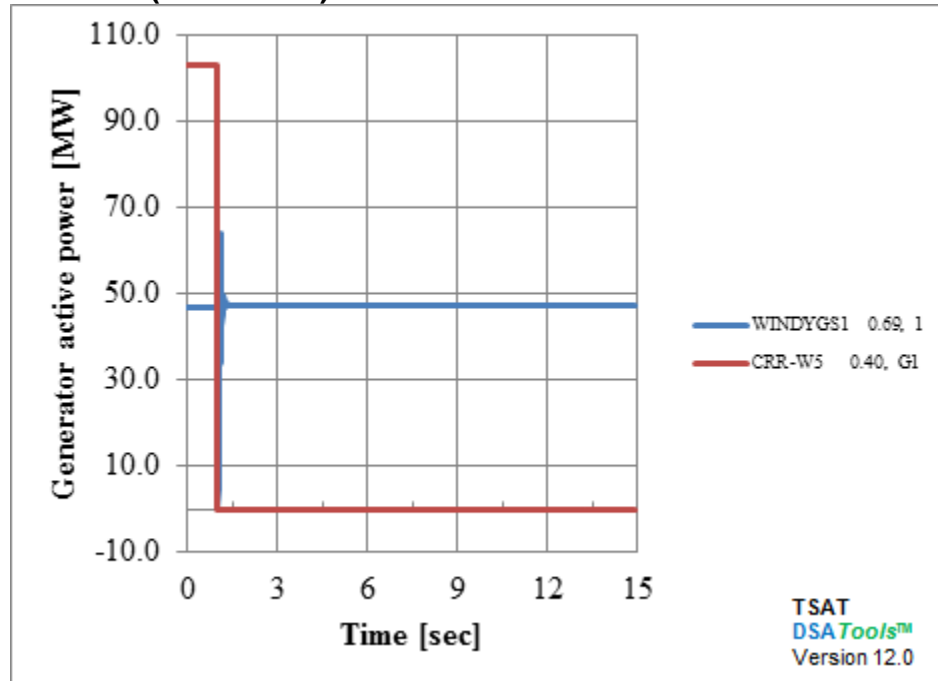
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Light 2014



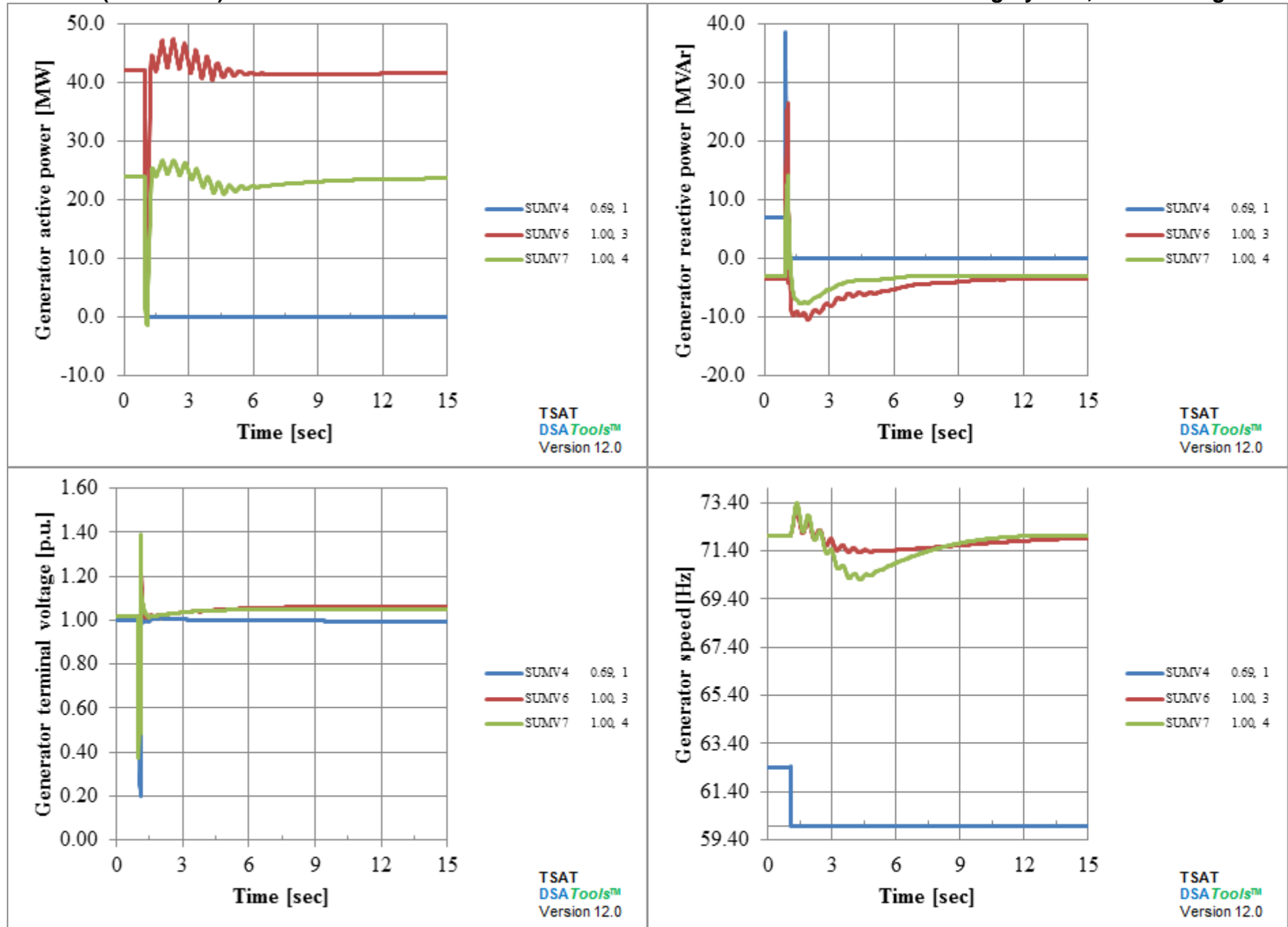
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



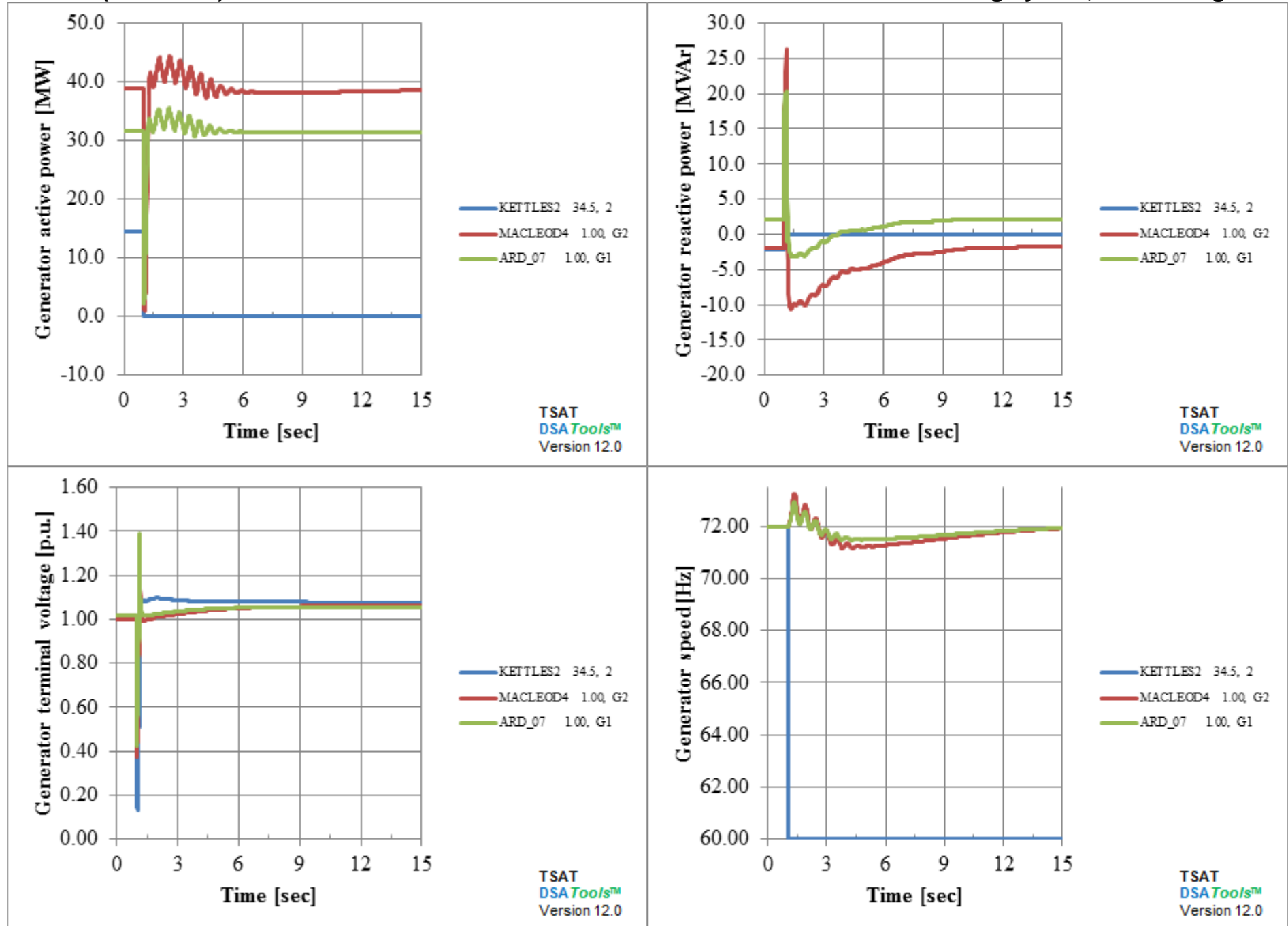
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



6 -- 956L (59S - 103S) NEAR 59S

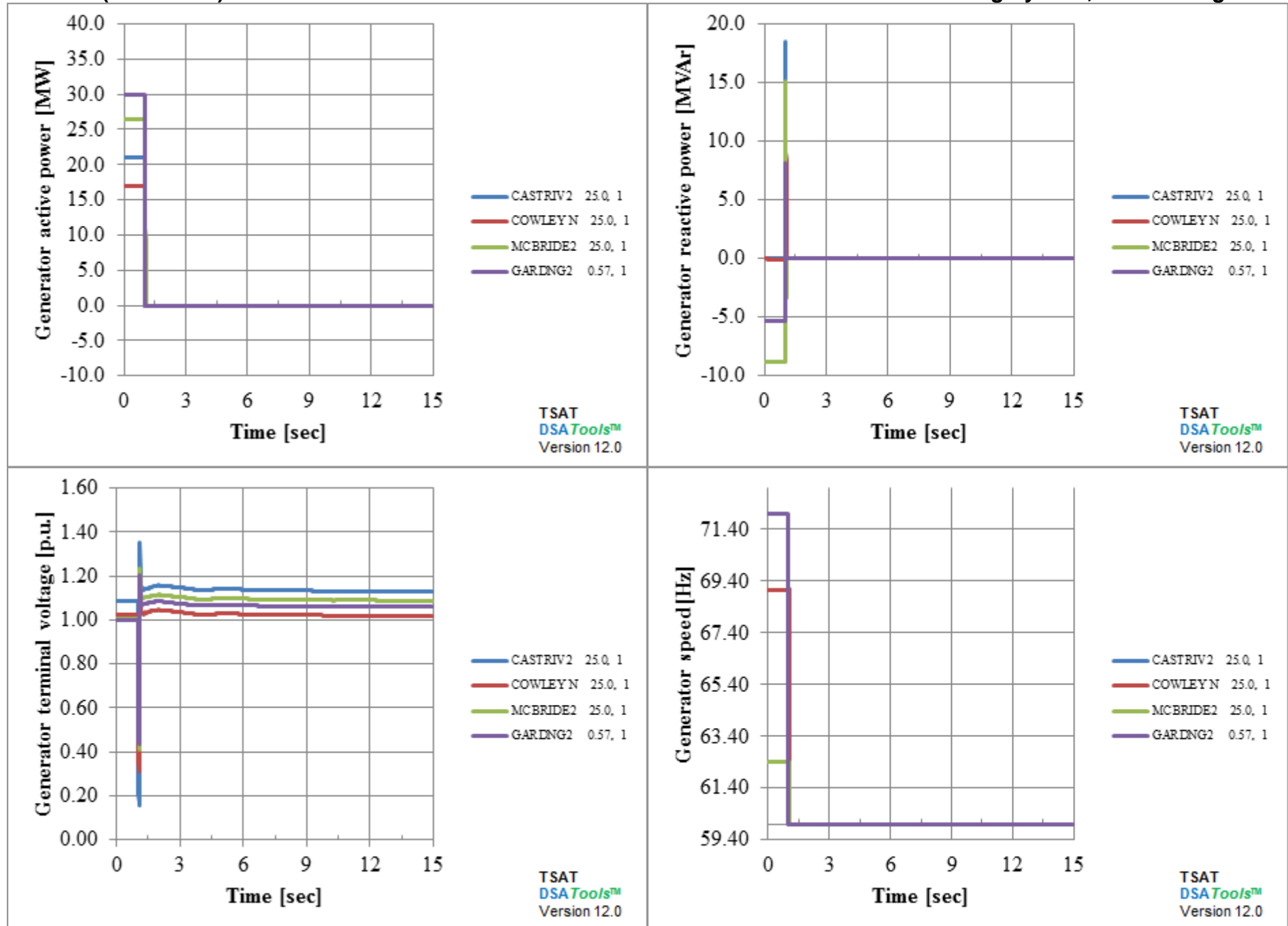
Existing System, Summer Light 2014





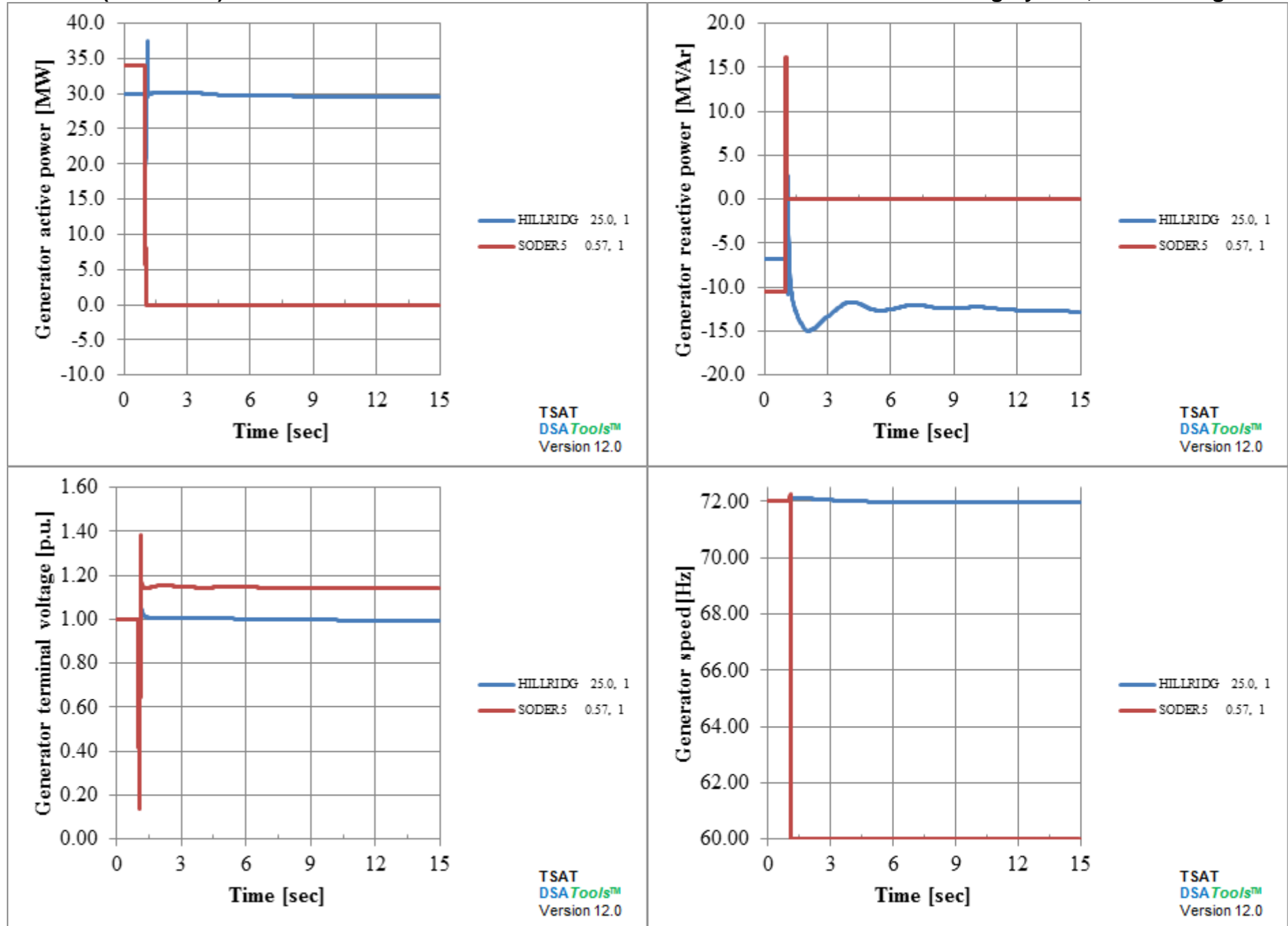
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



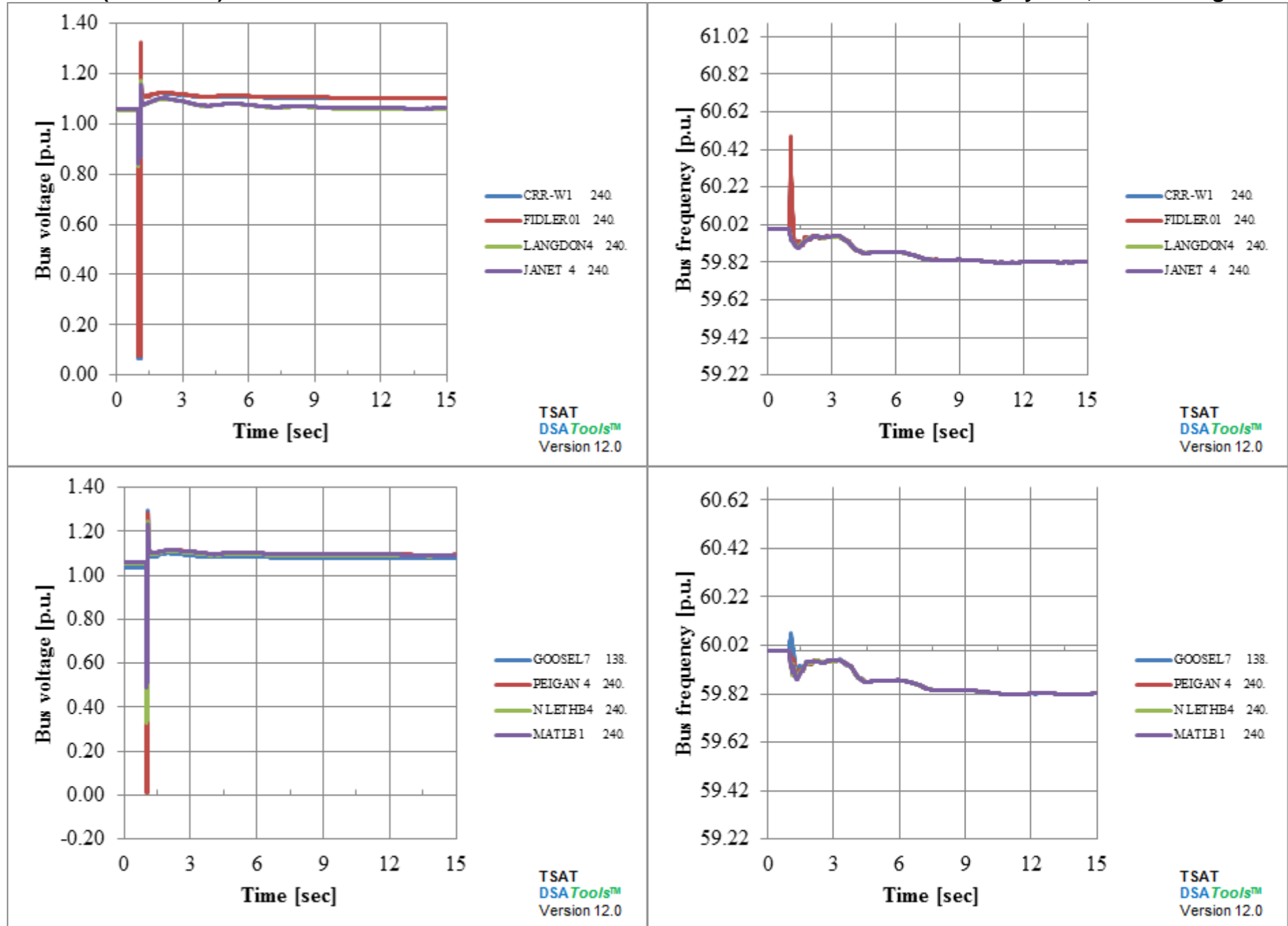
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



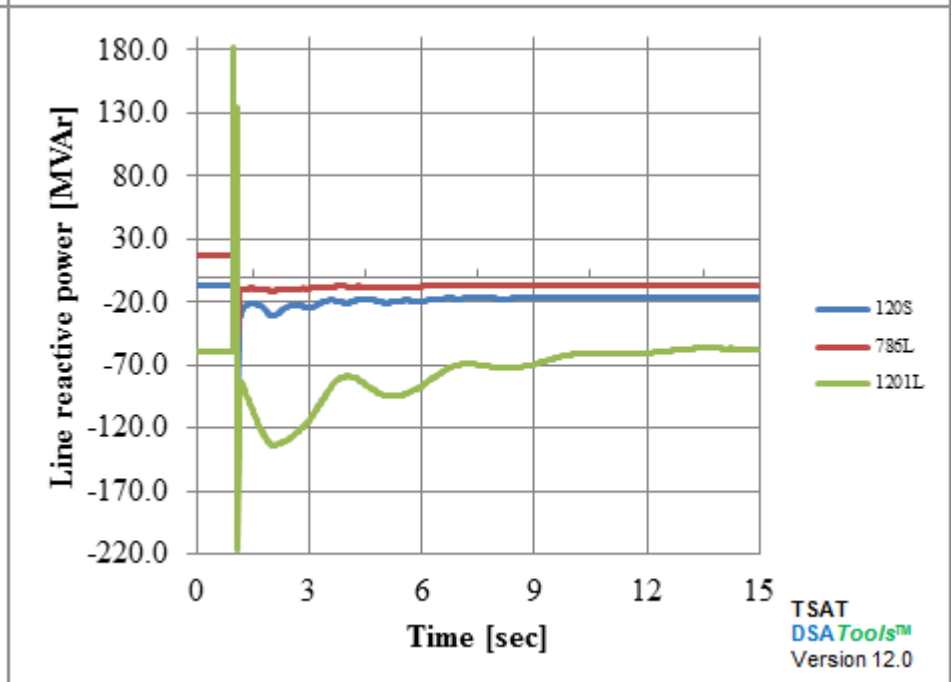
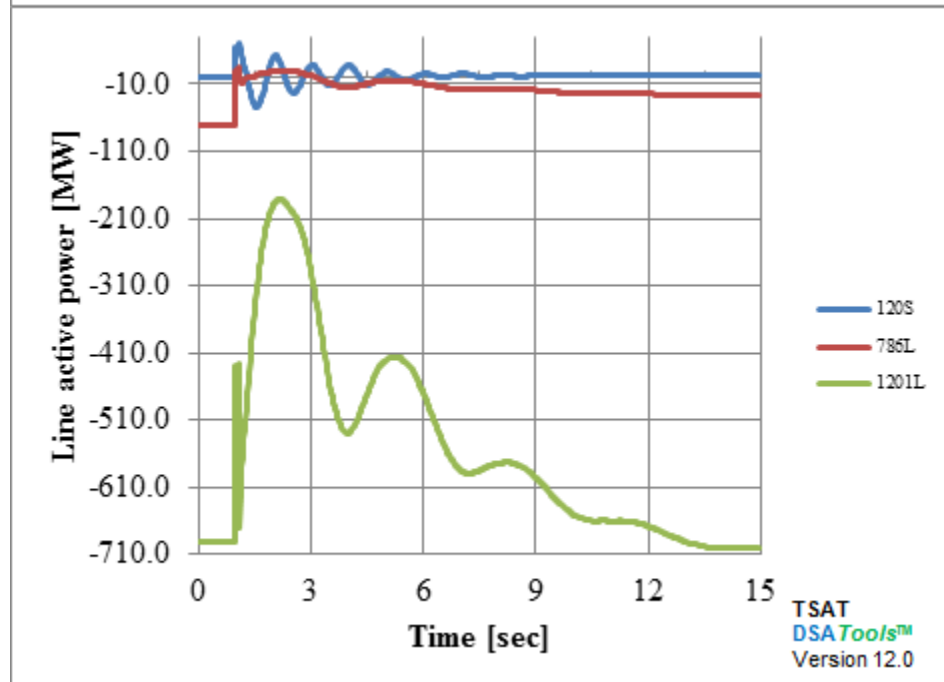
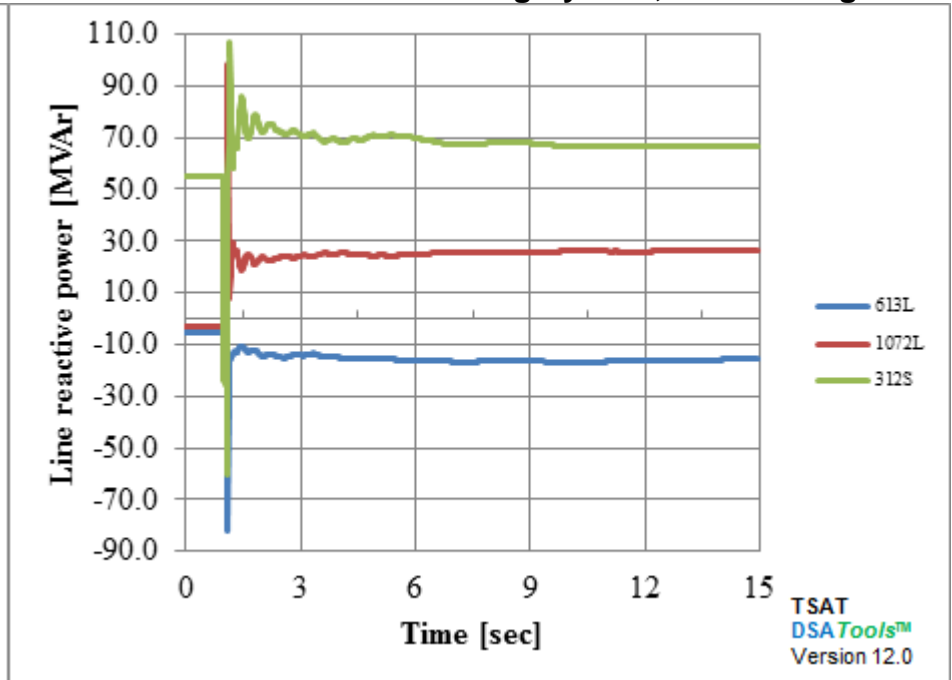
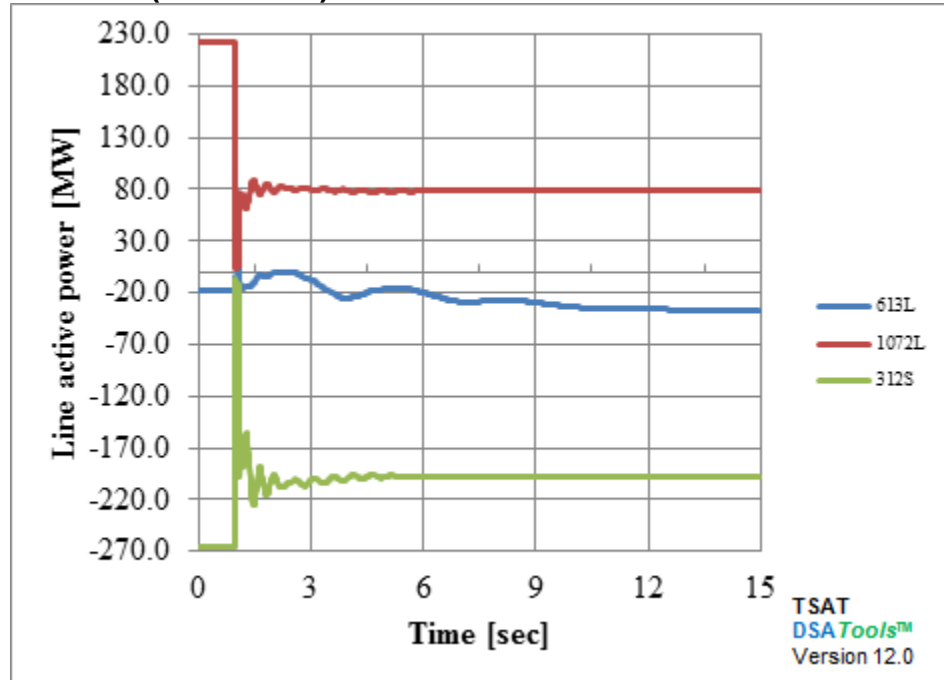
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



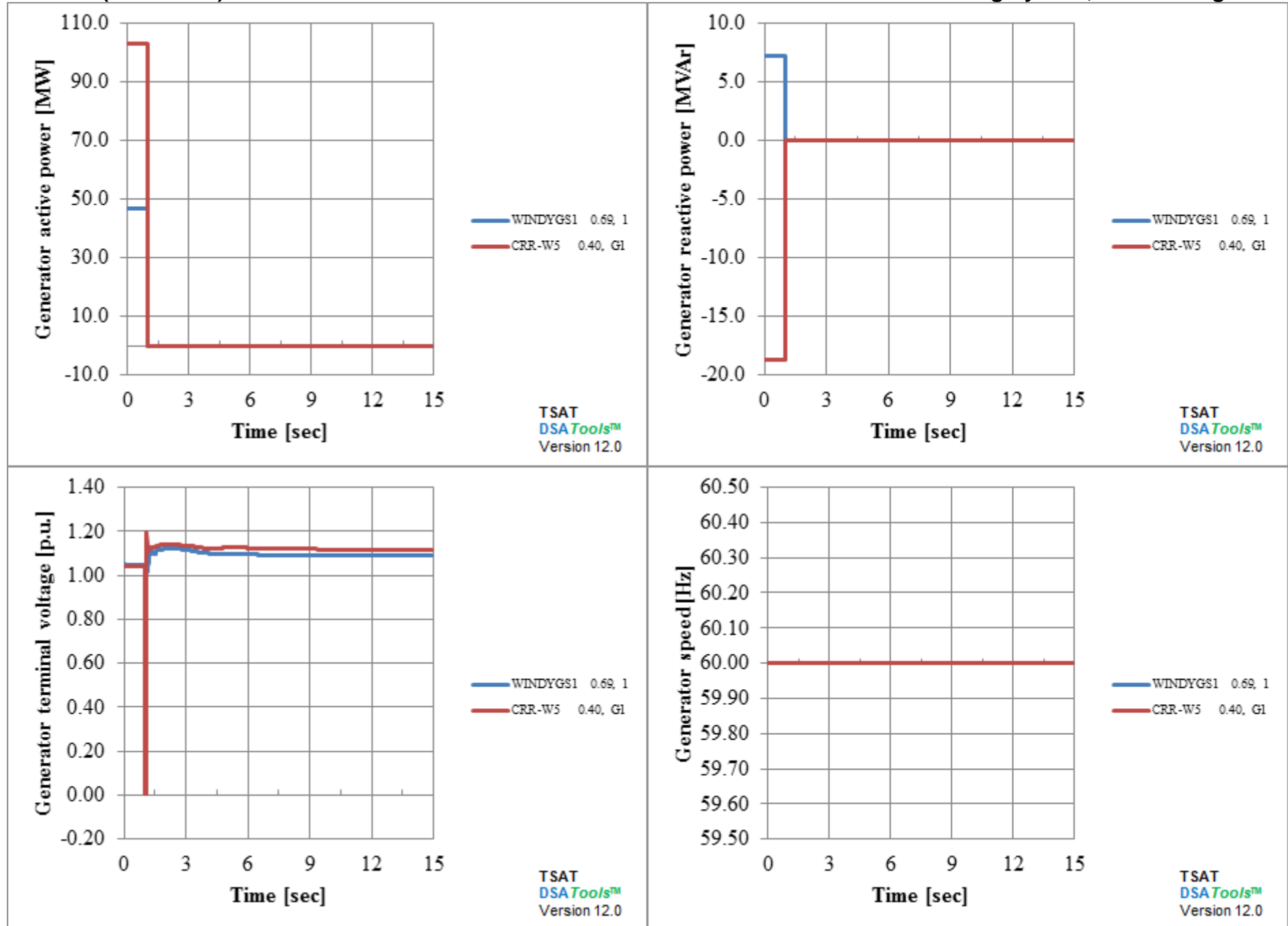
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



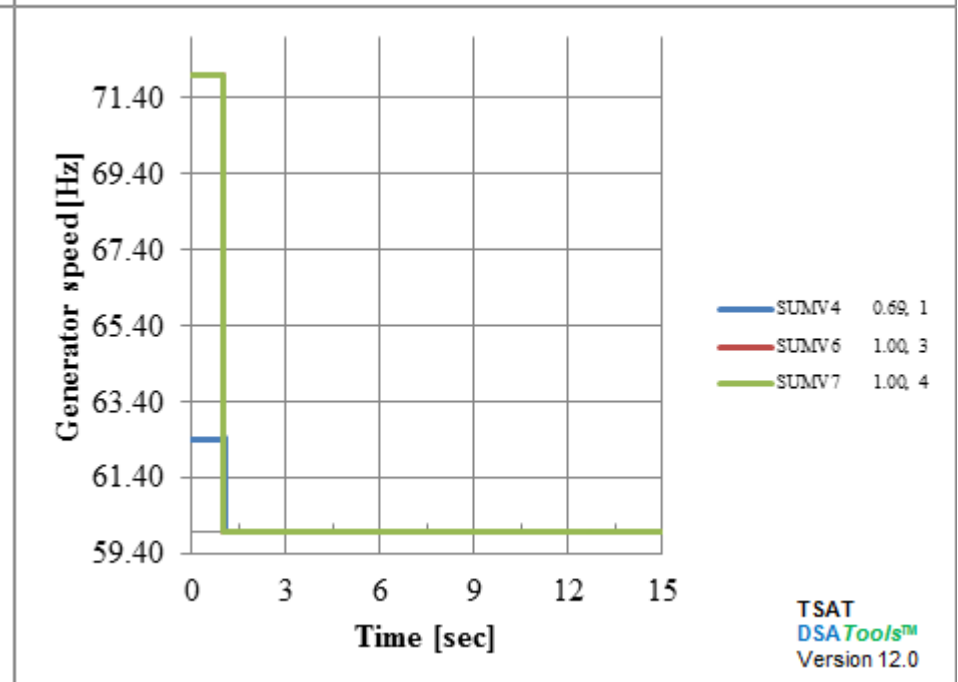
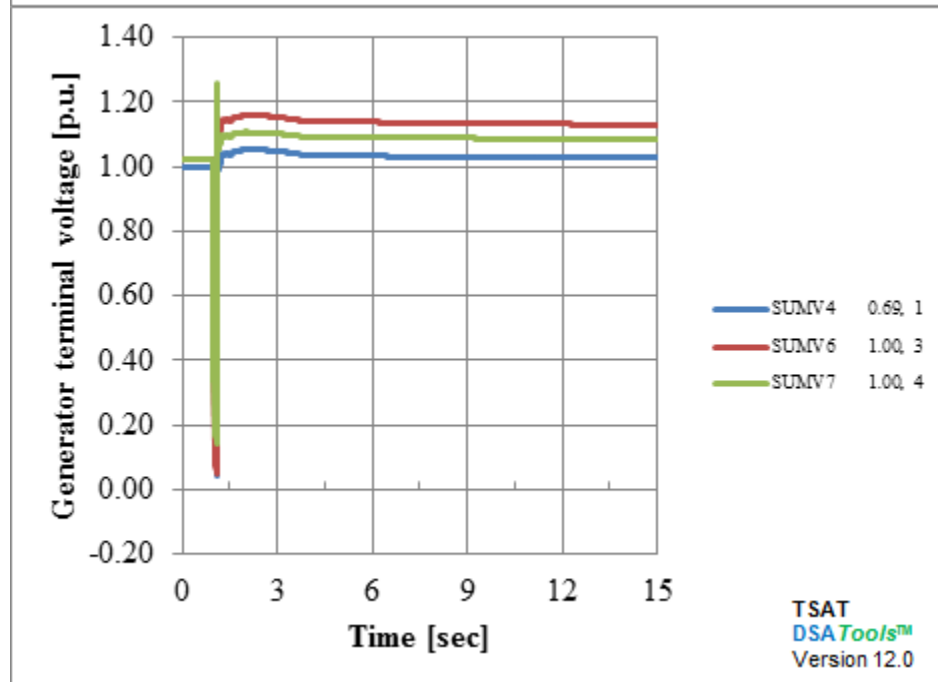
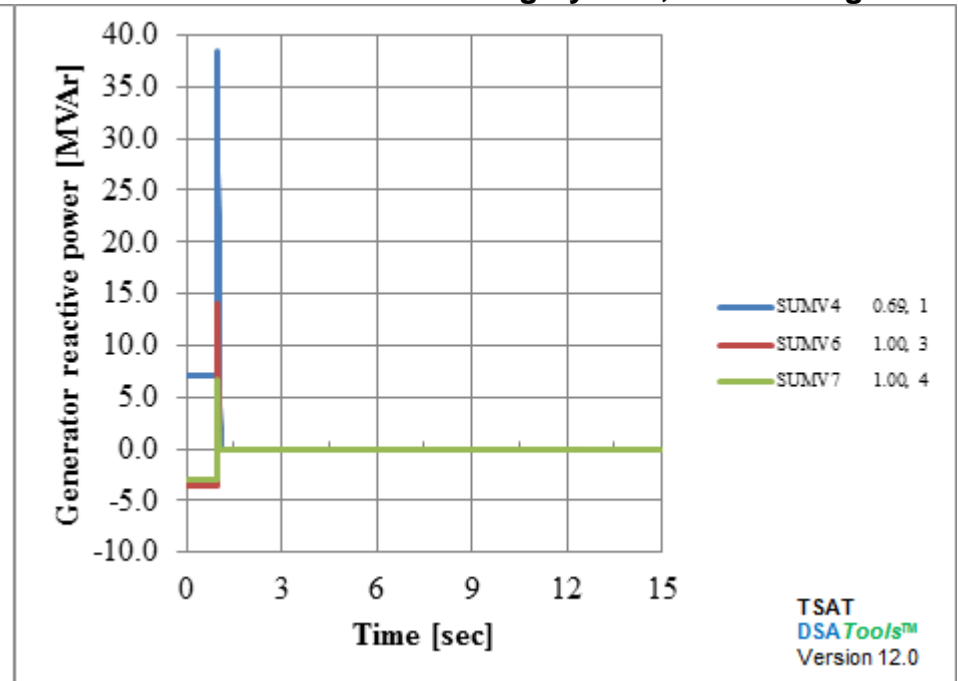
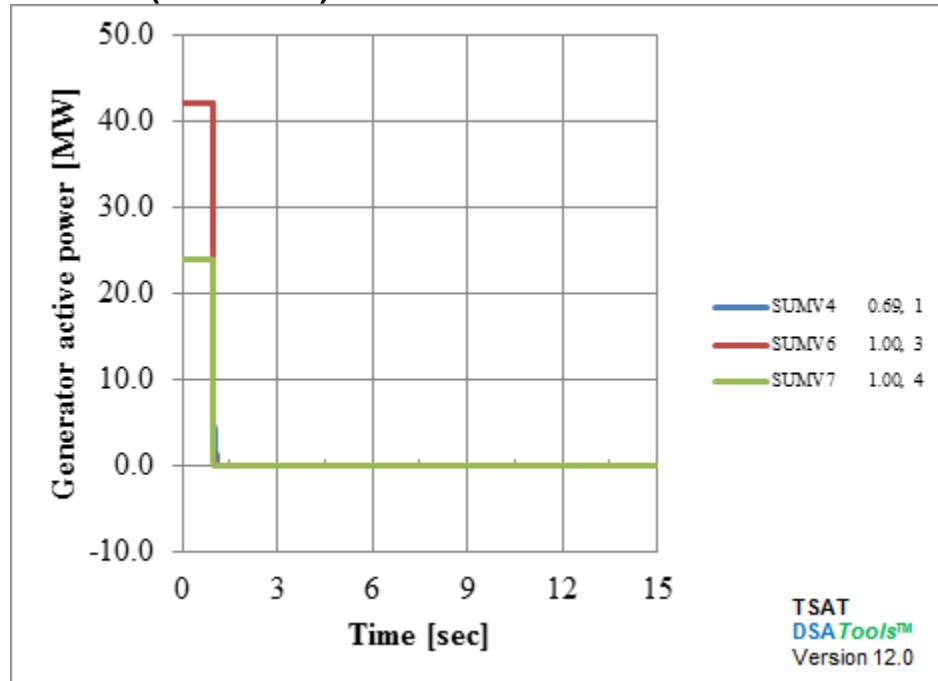
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



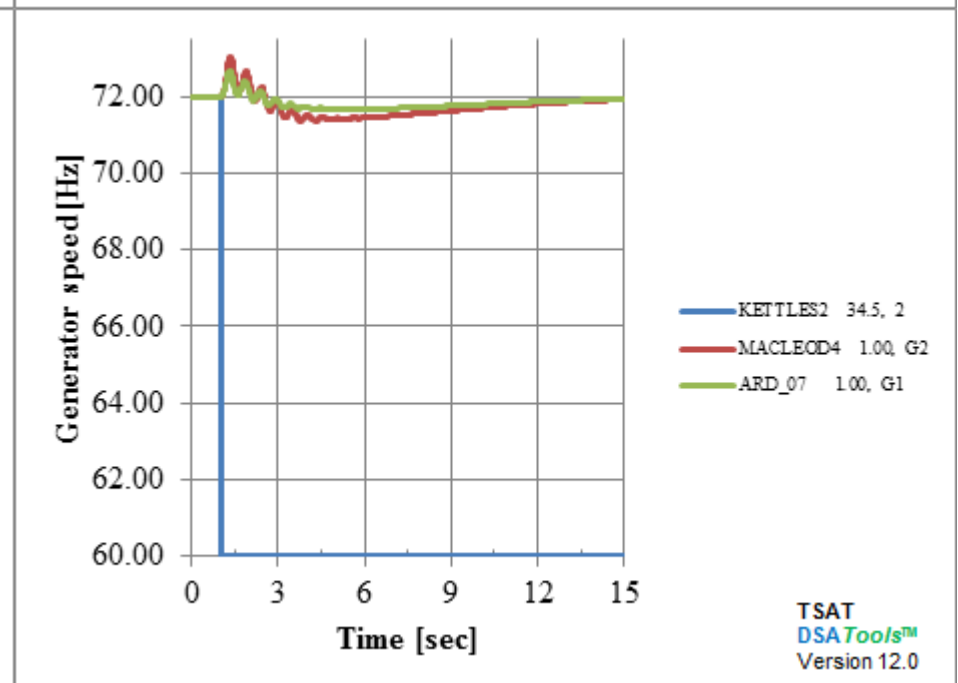
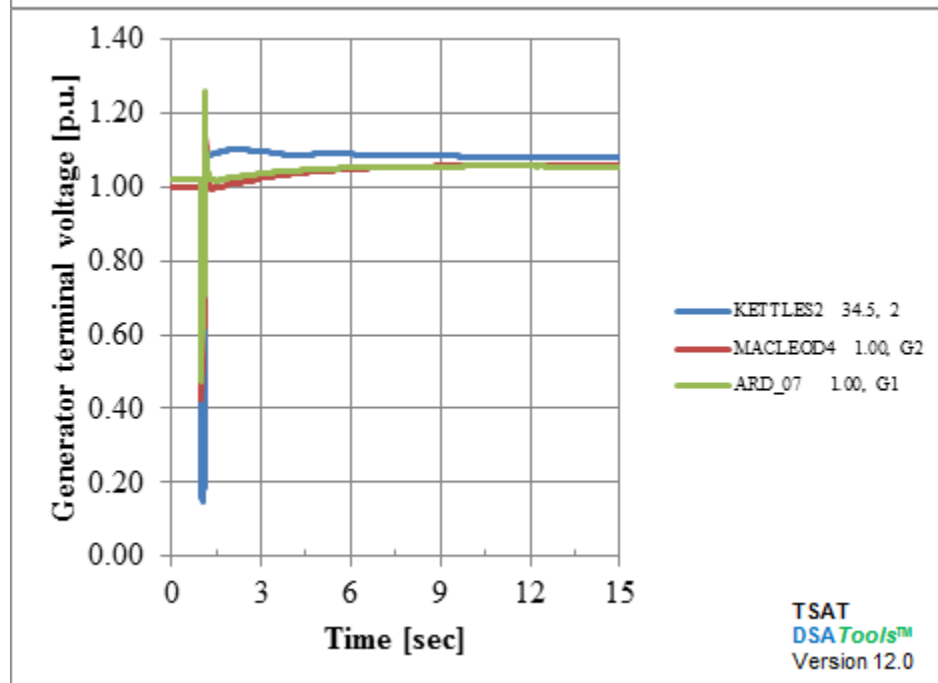
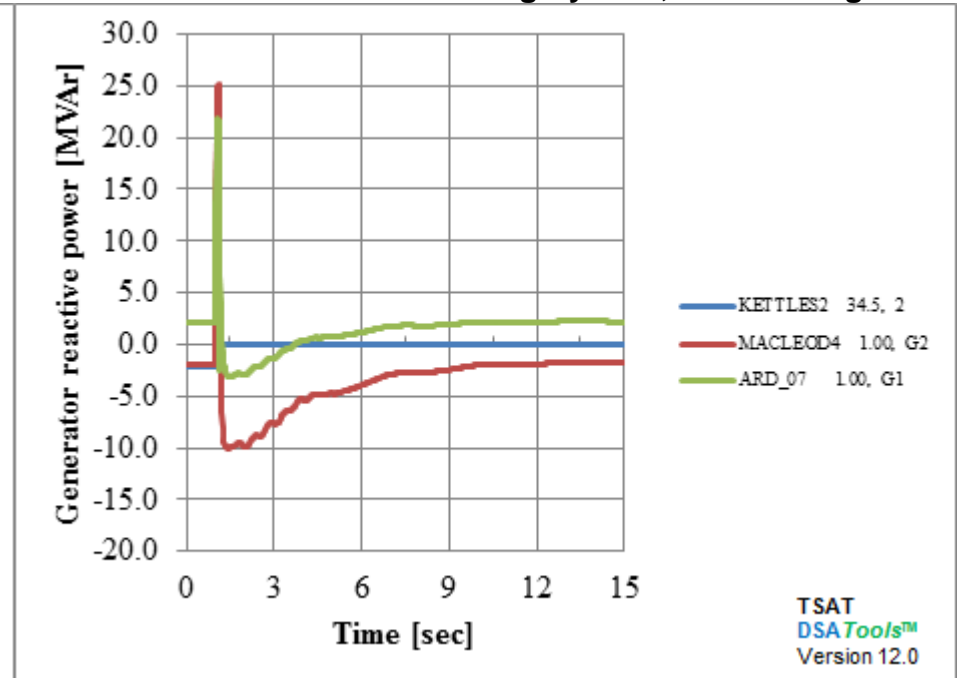
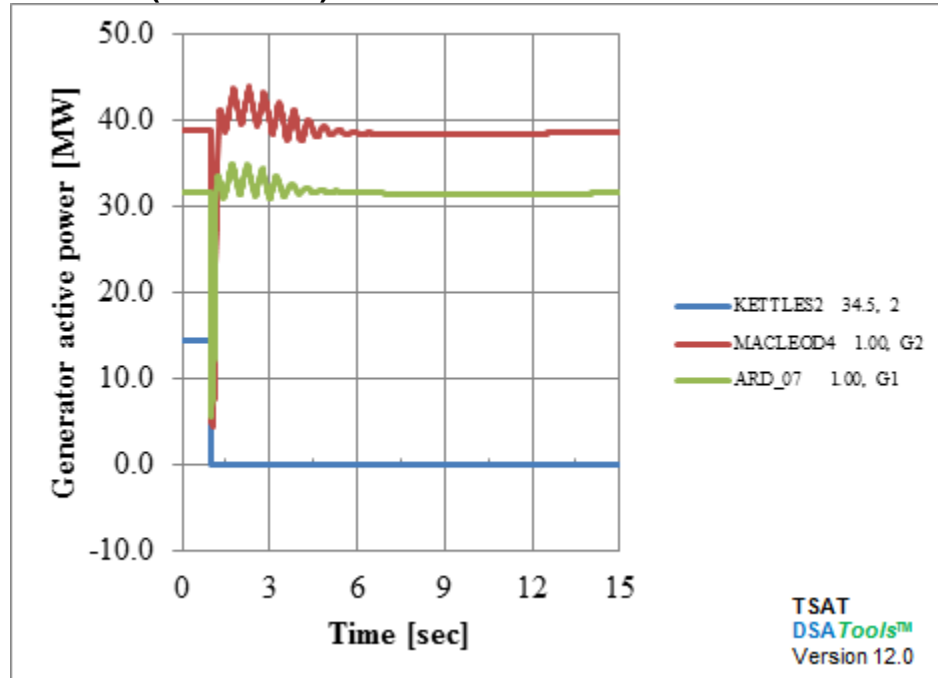
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



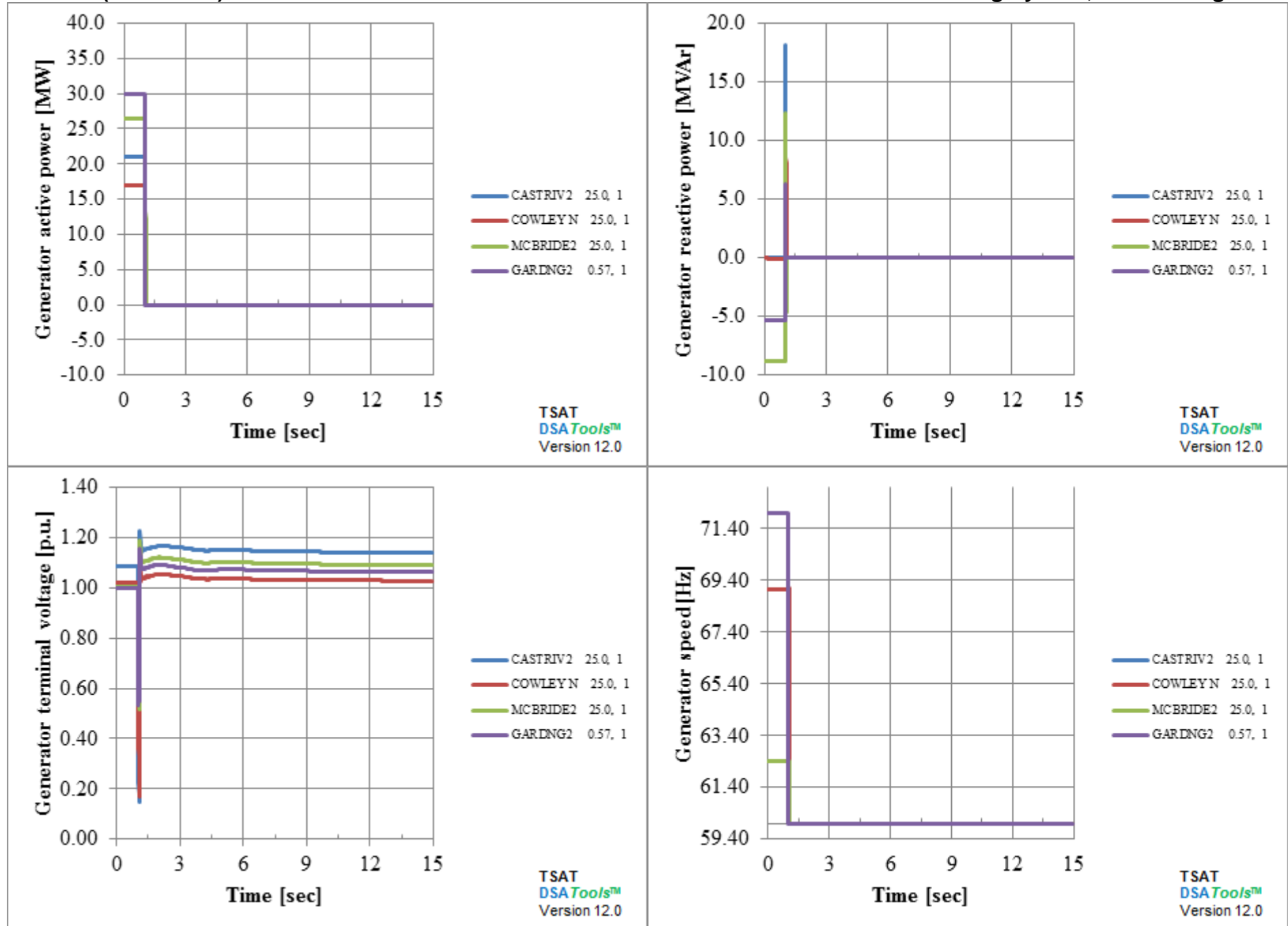
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



7 -- 956L (59S - 103S) NEAR 103S

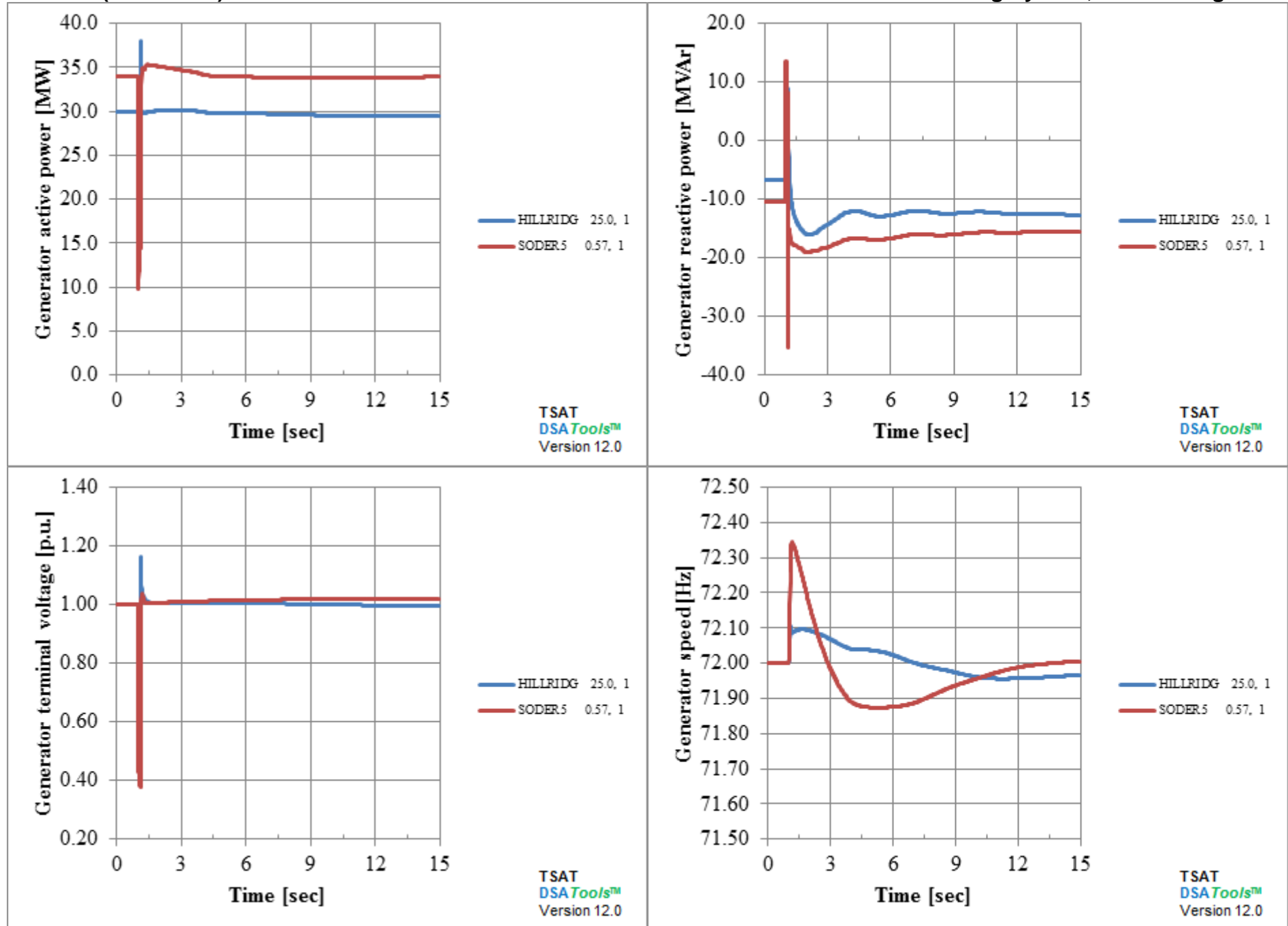
Existing System, Summer Light 2014





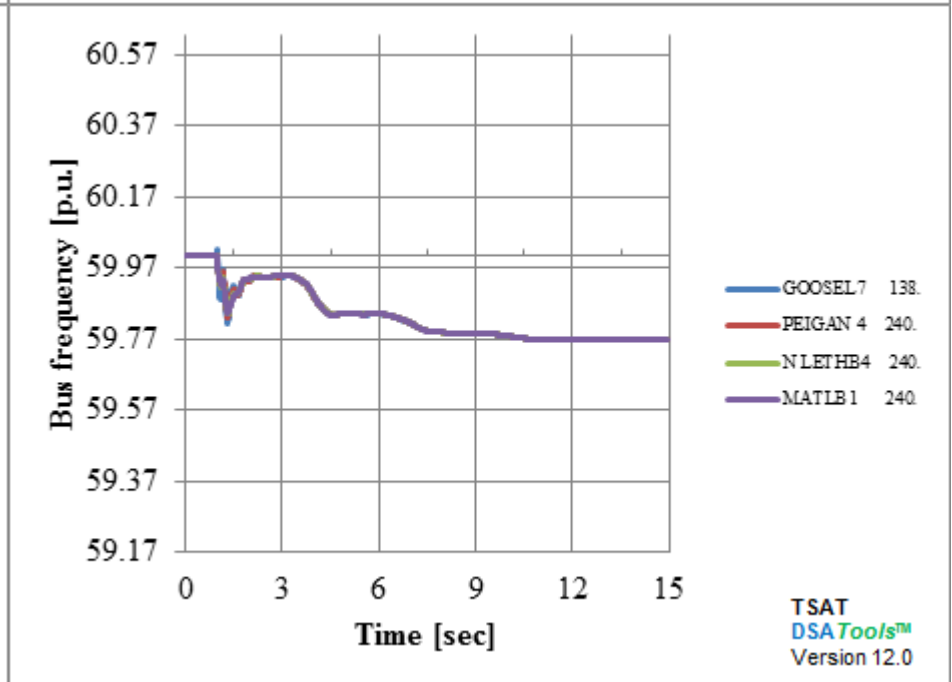
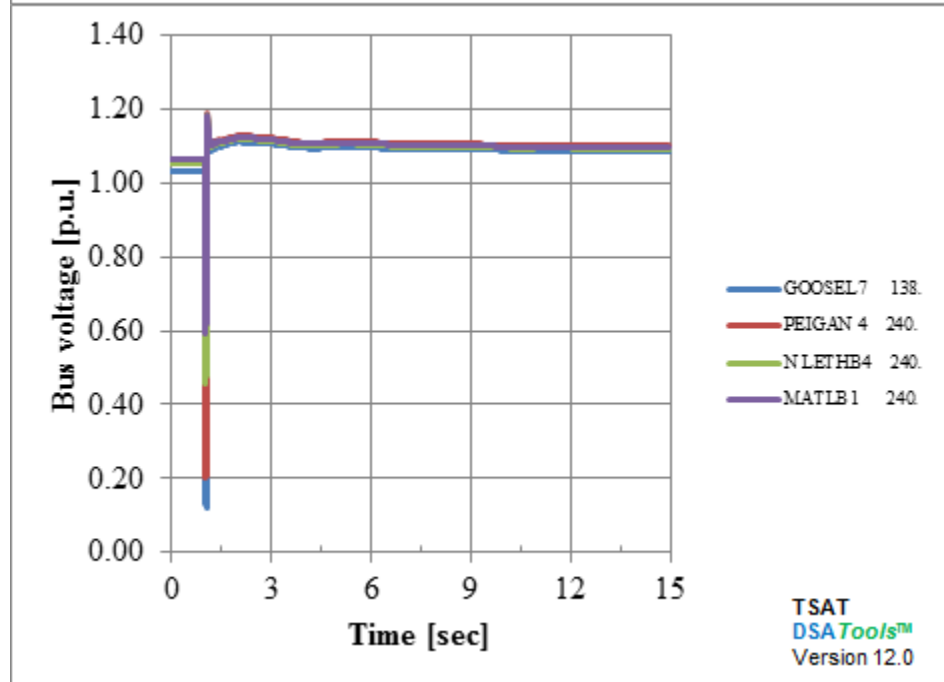
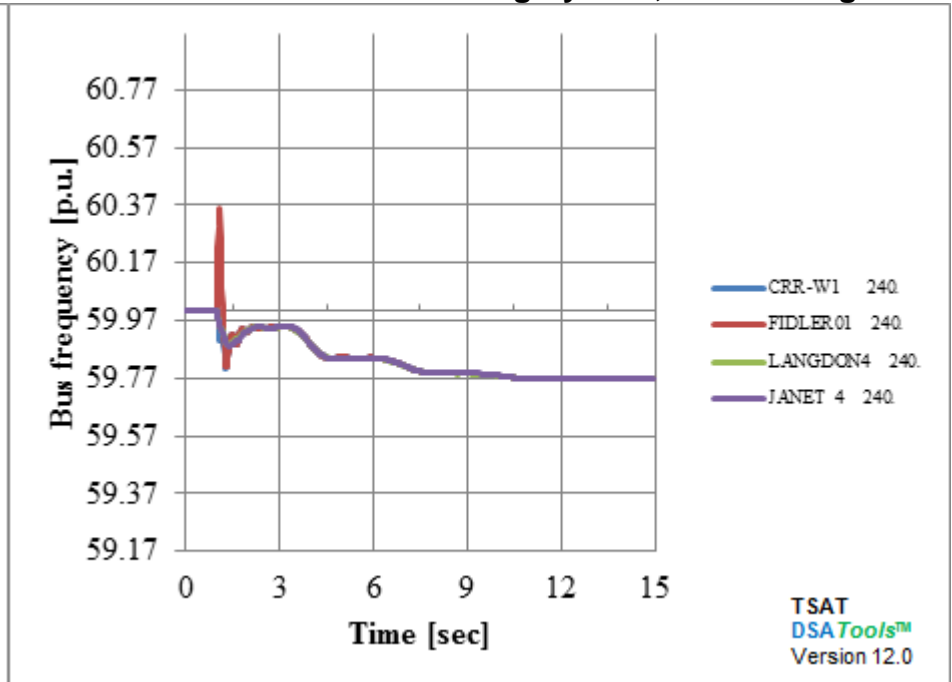
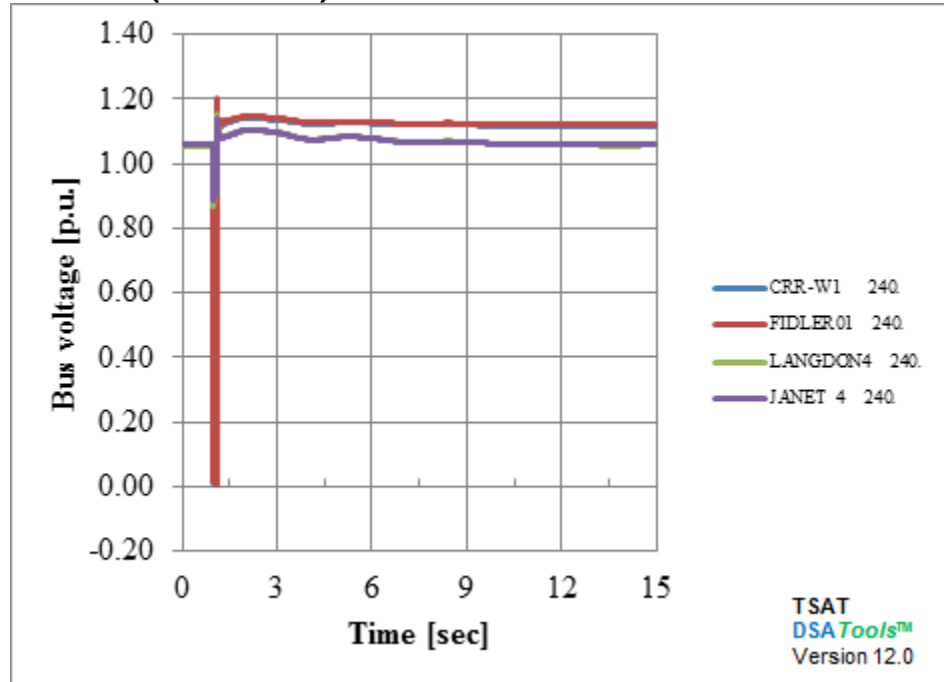
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



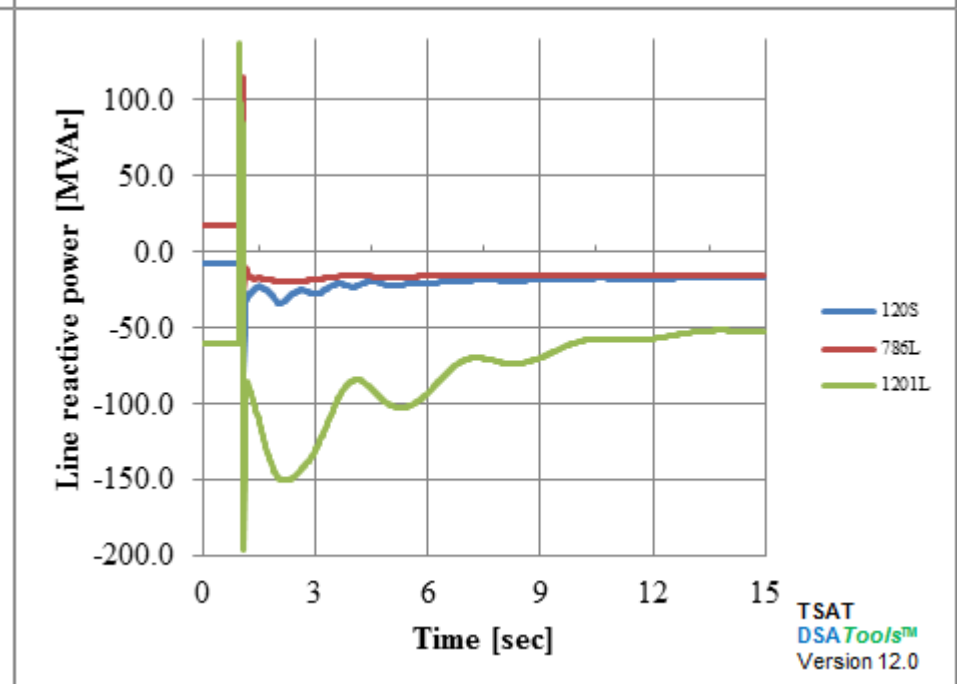
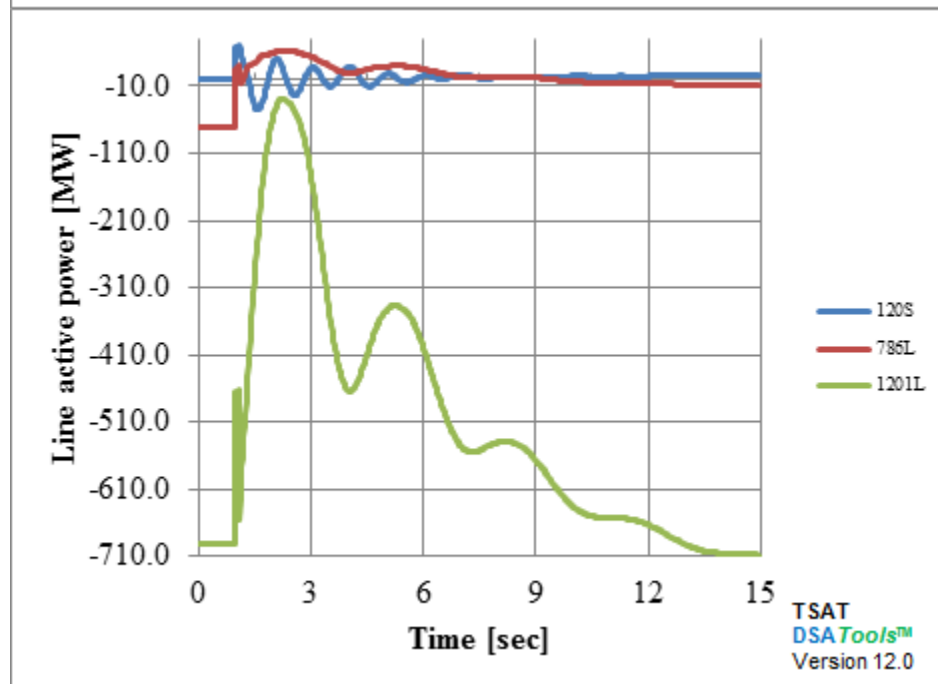
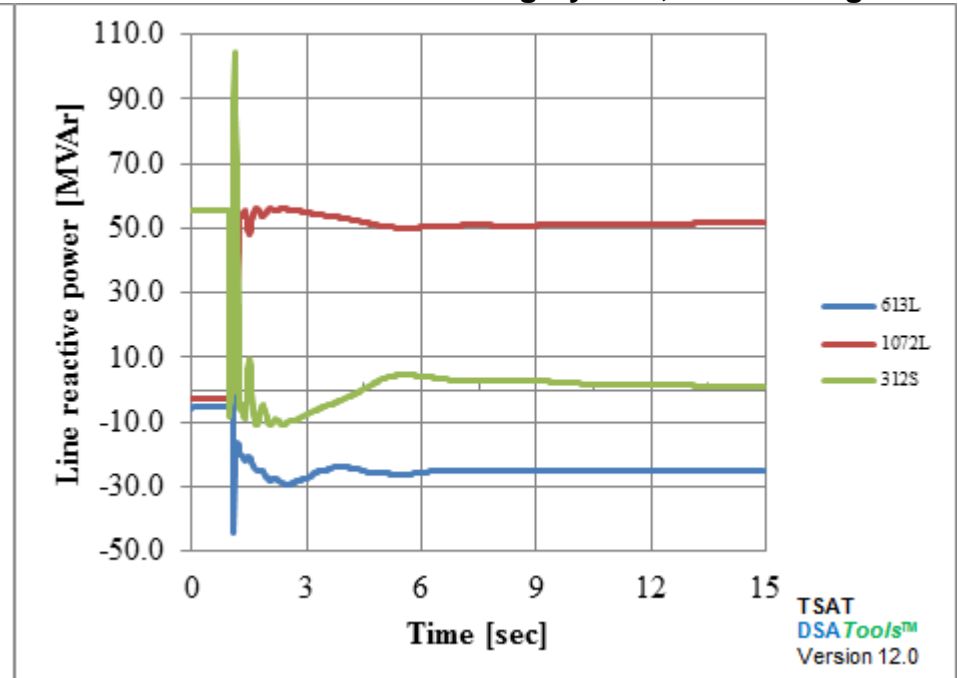
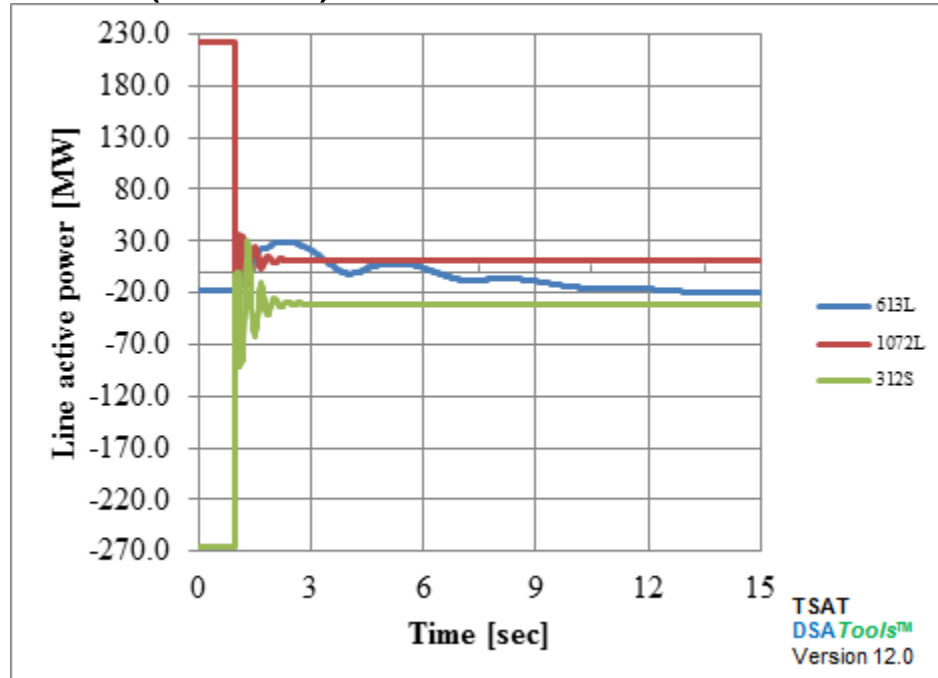
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



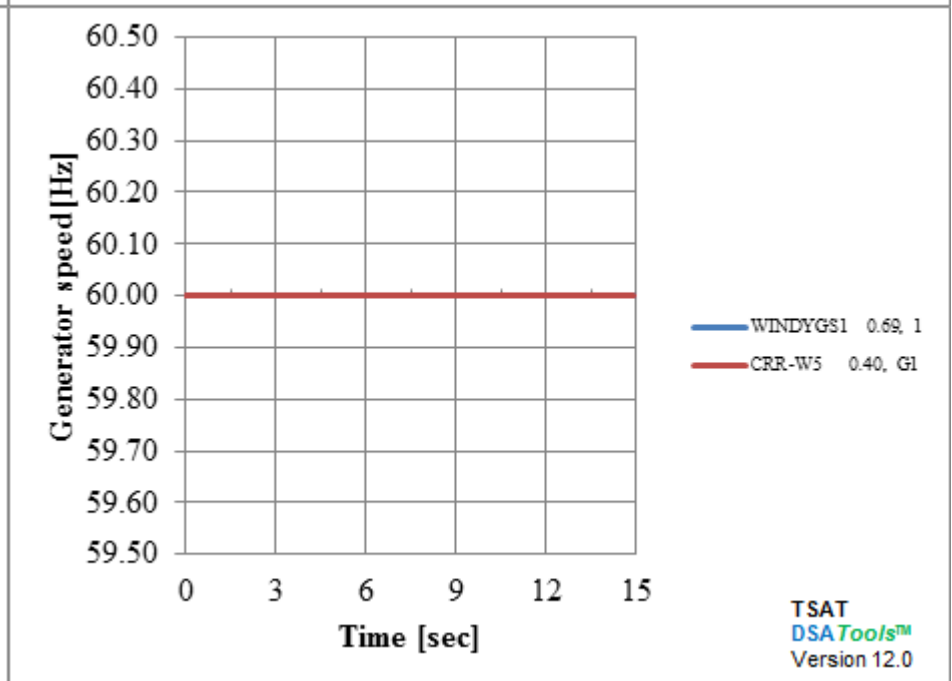
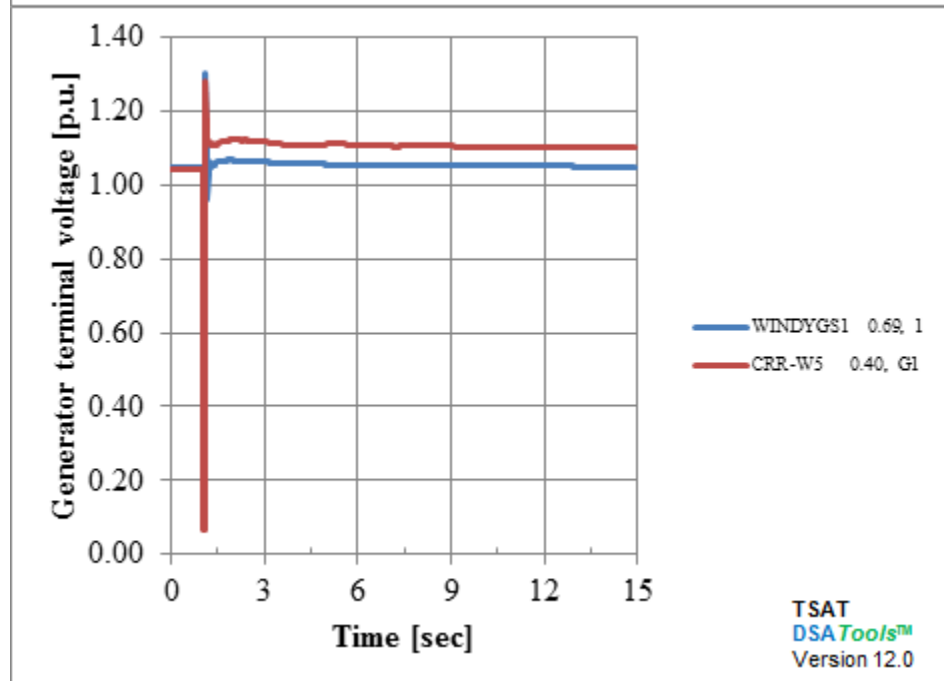
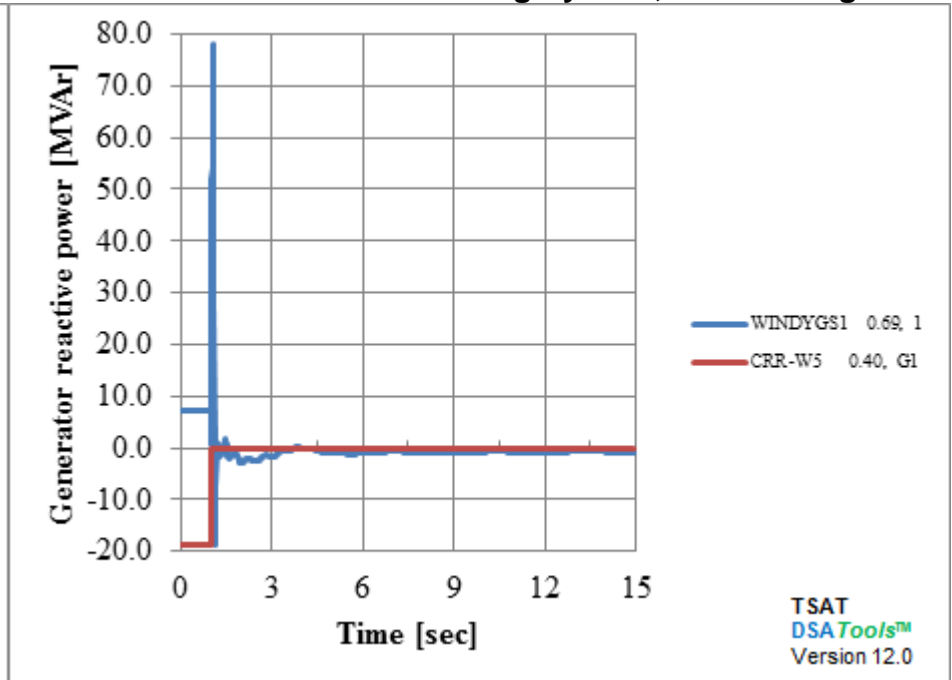
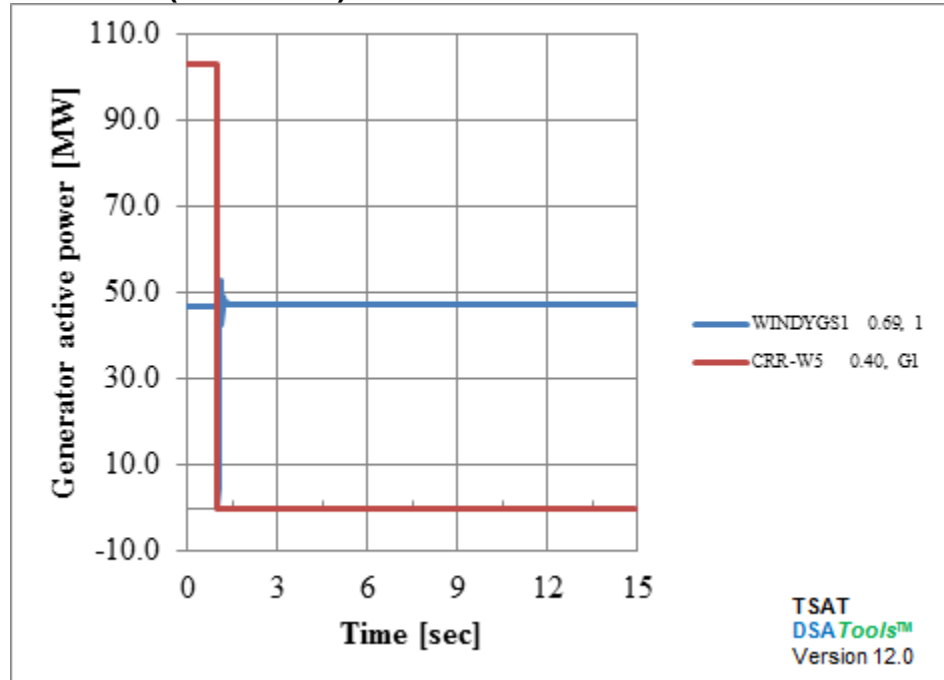
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



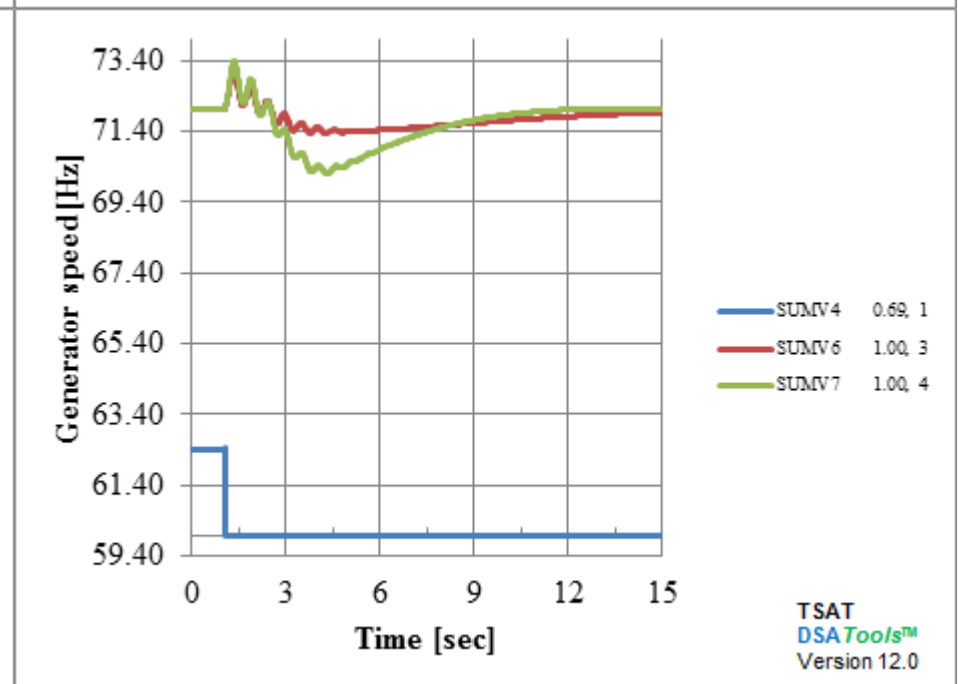
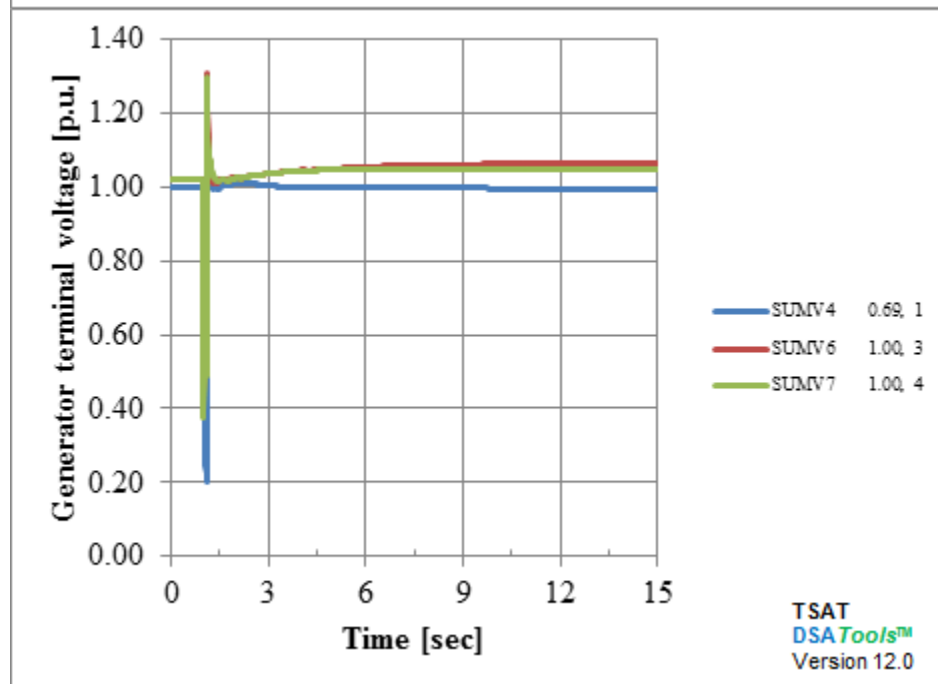
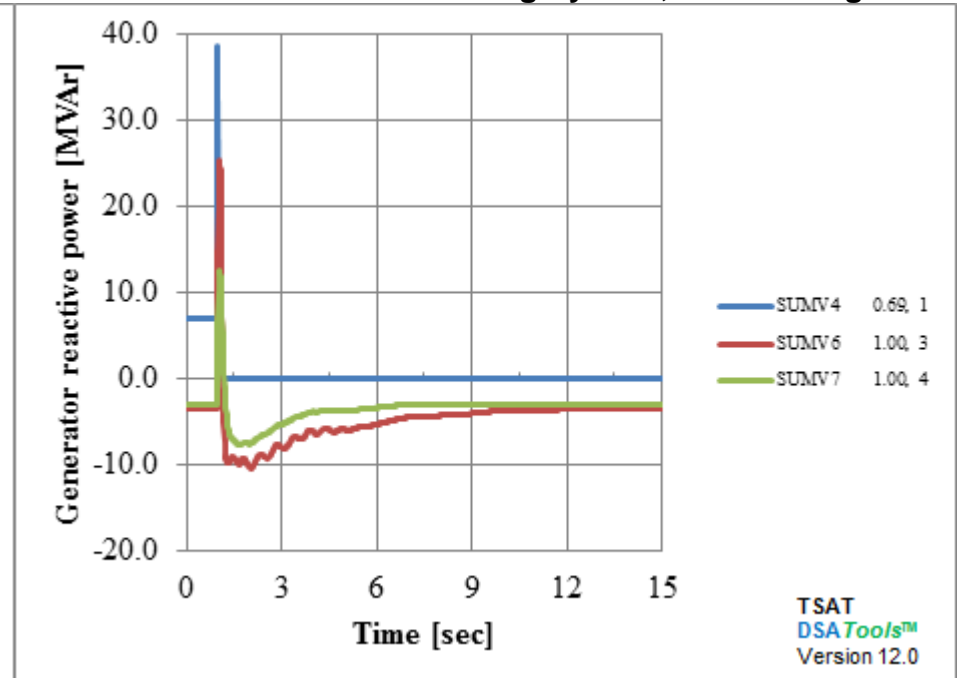
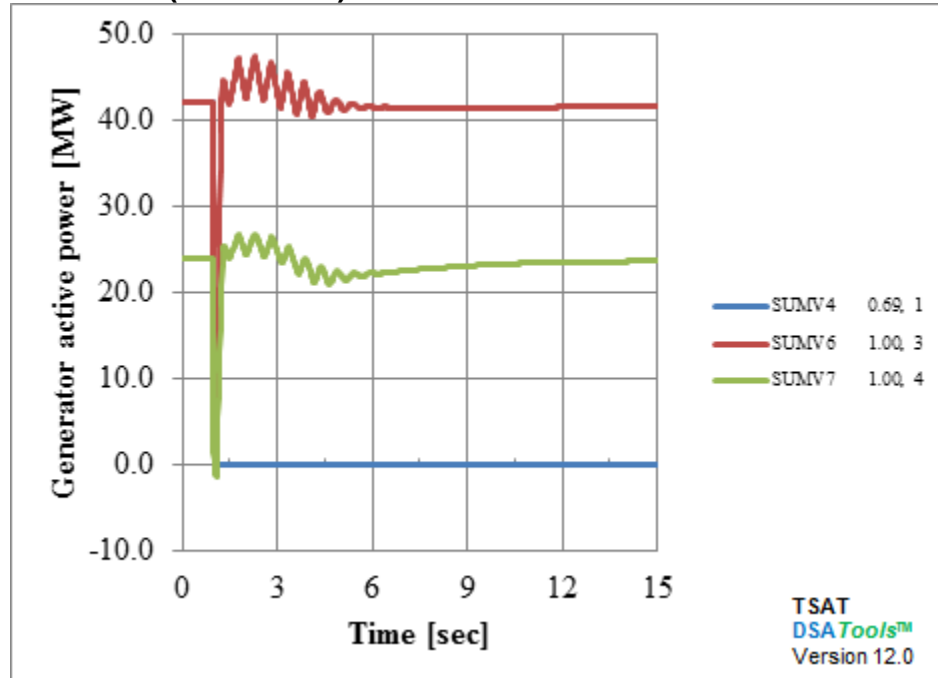
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Light 2014



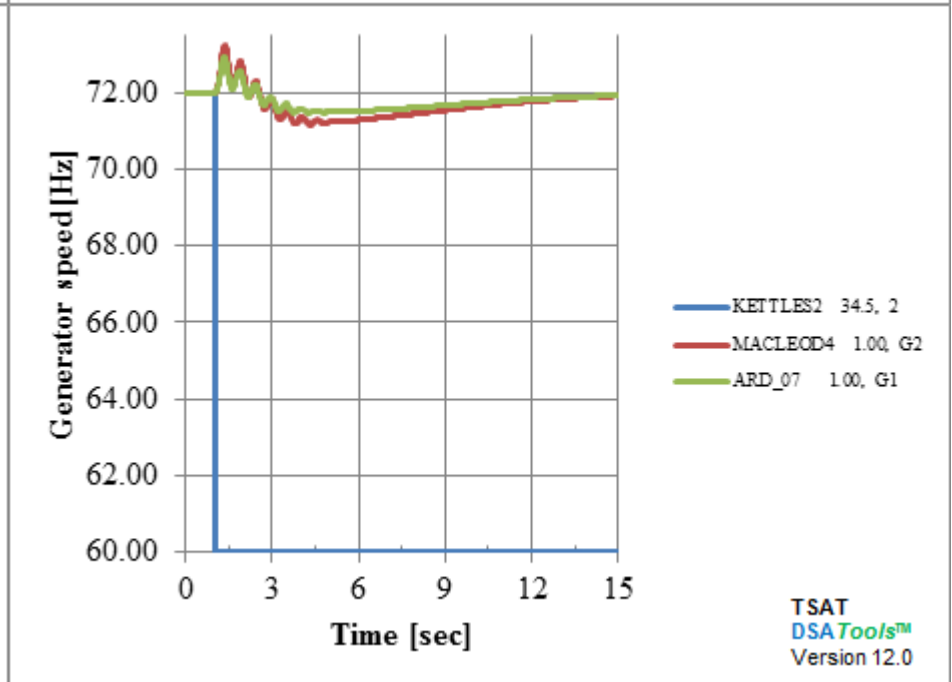
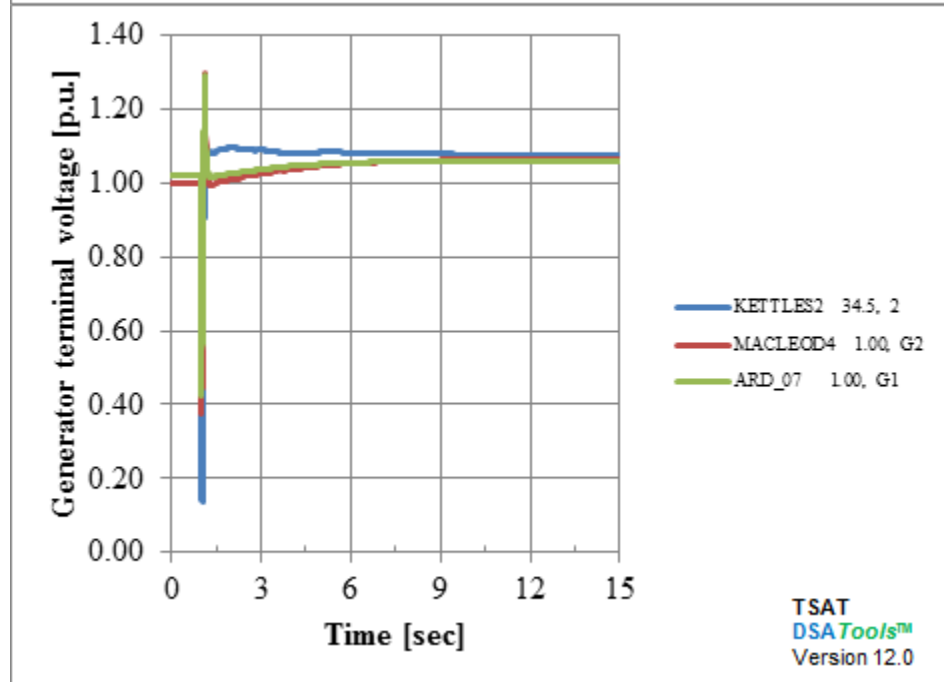
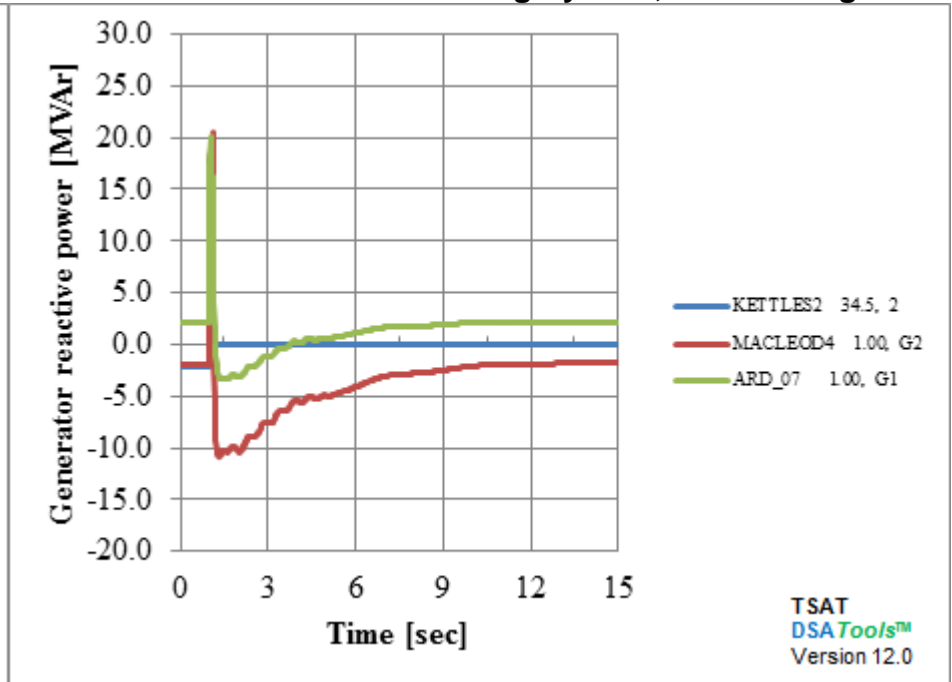
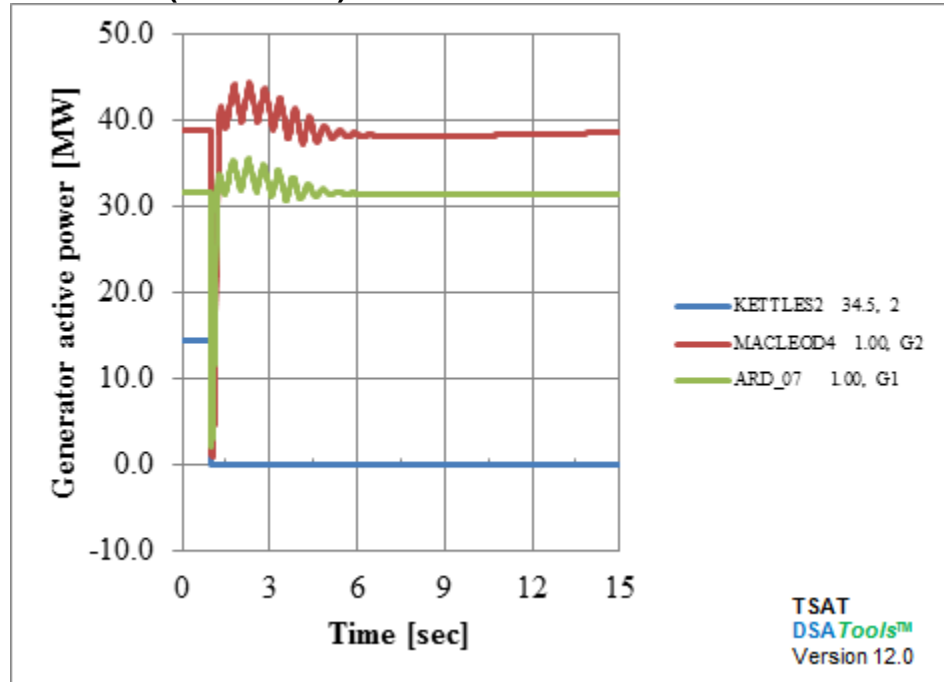
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Light 2014



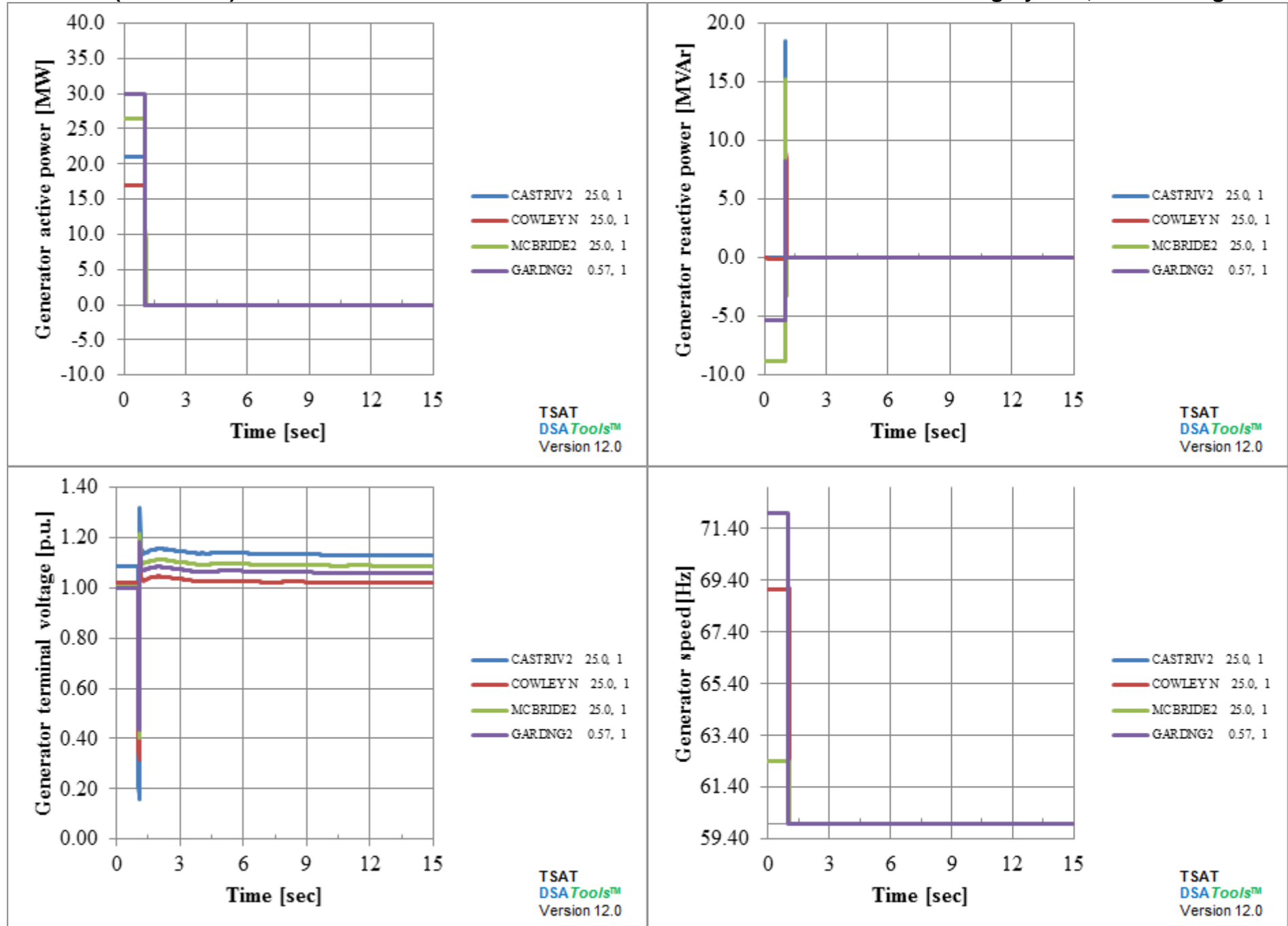
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Light 2014



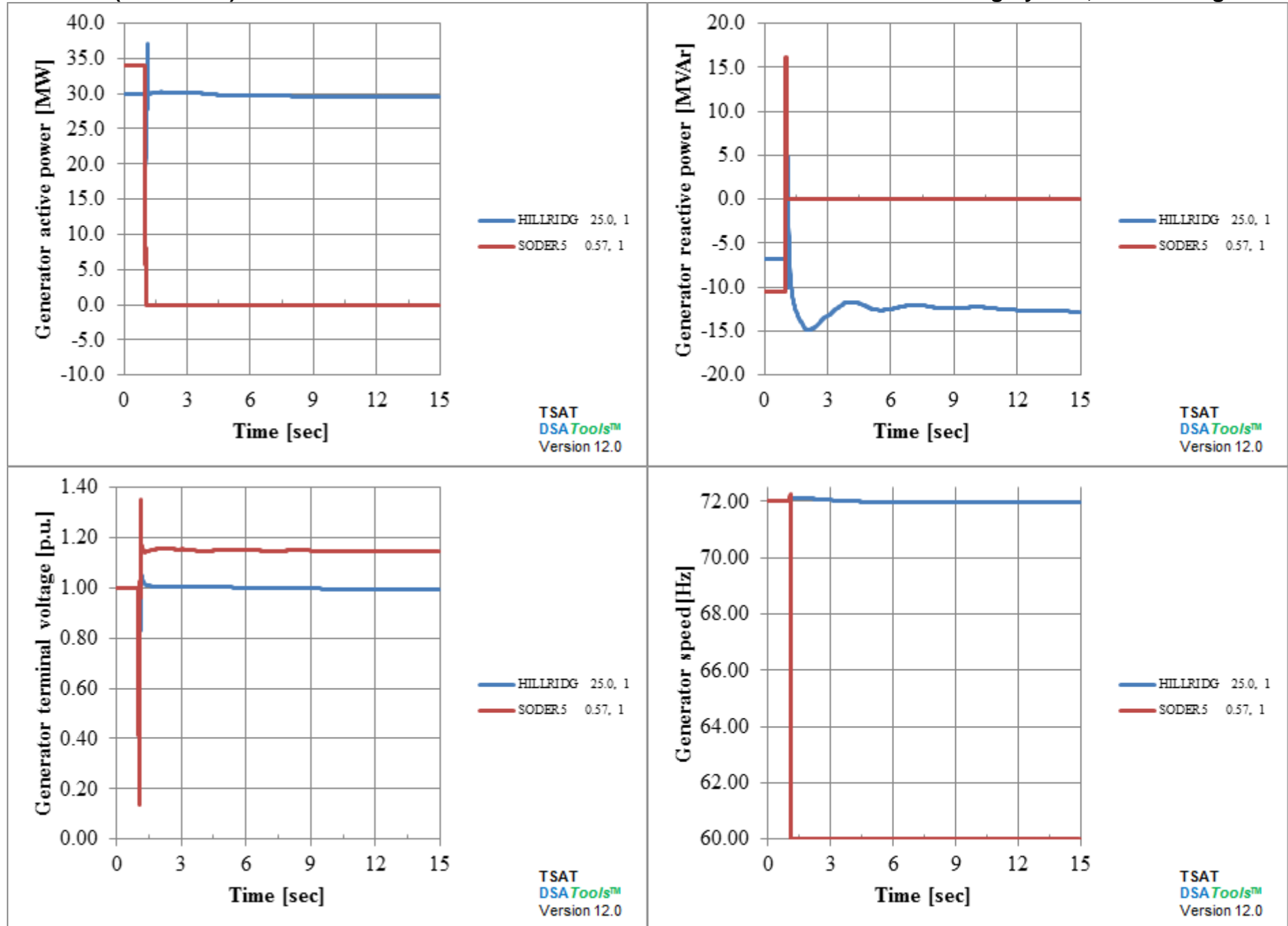
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Light 2014



8 -- 1084L (59S - 246S) NEAR 59S

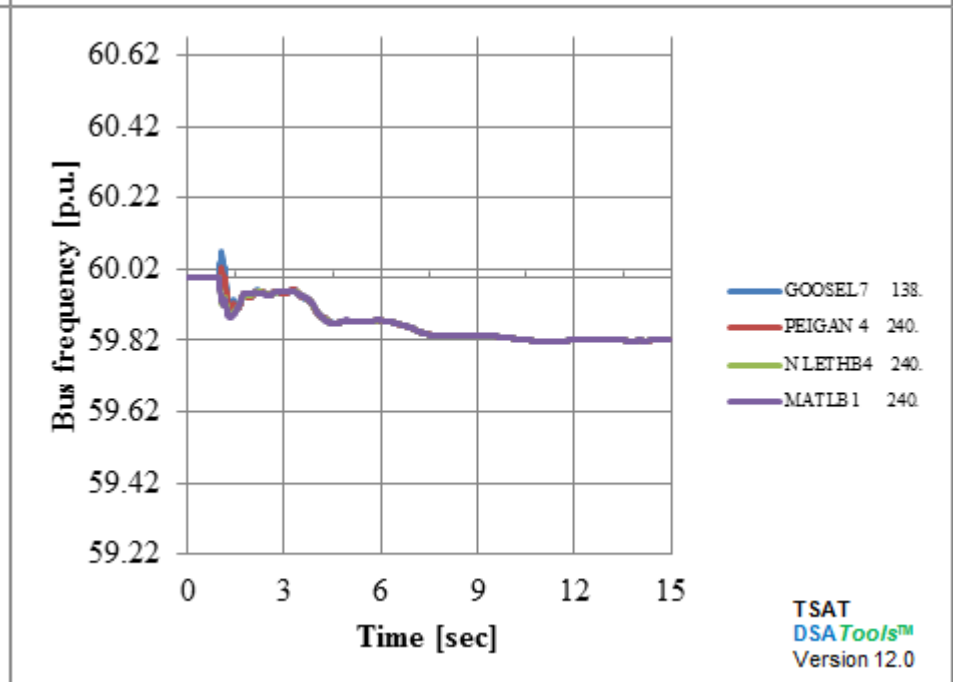
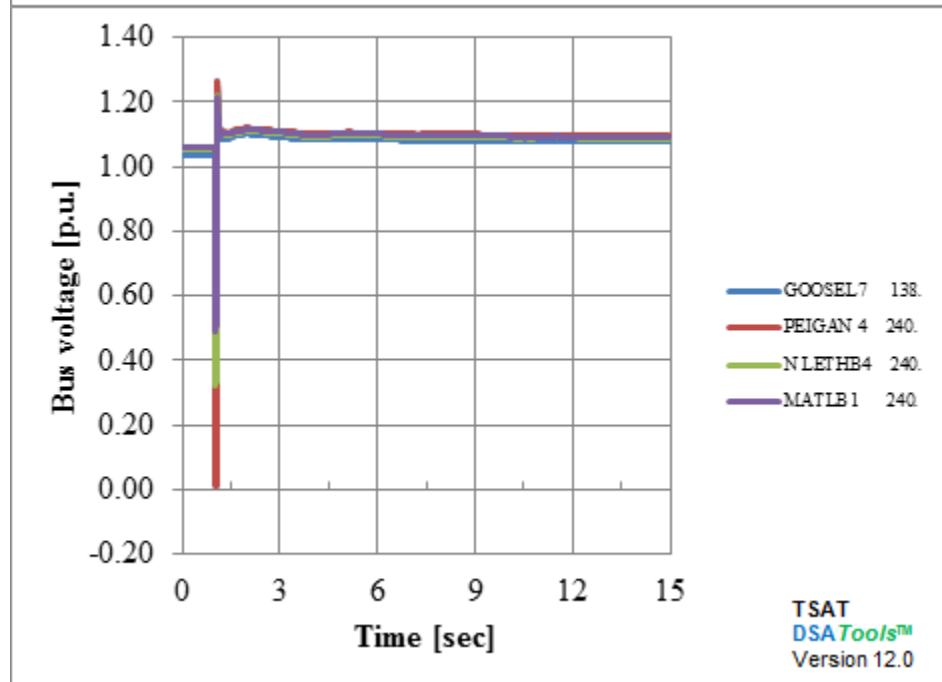
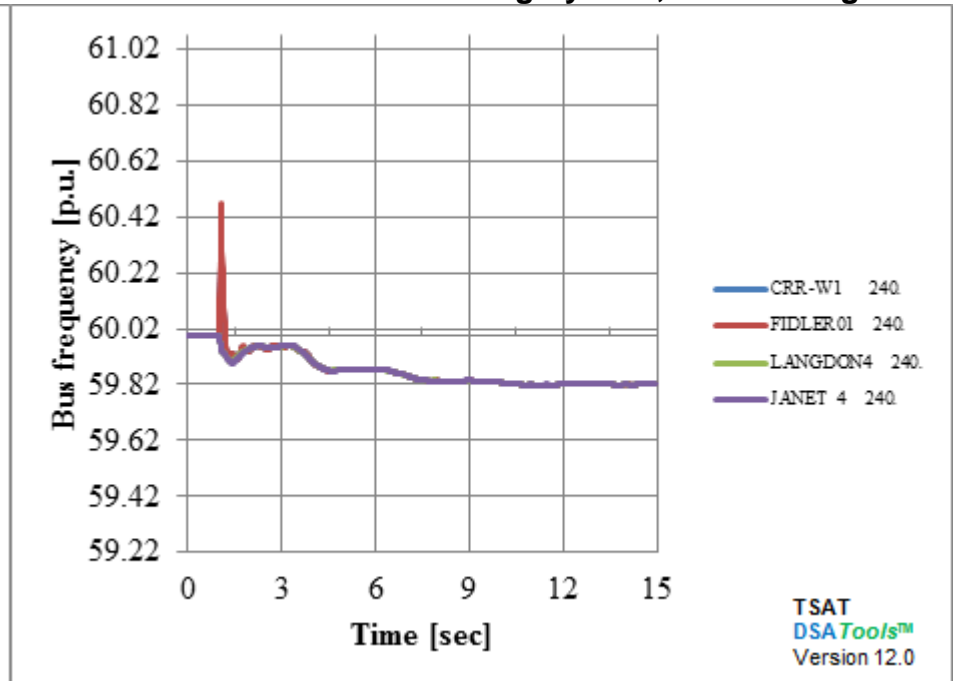
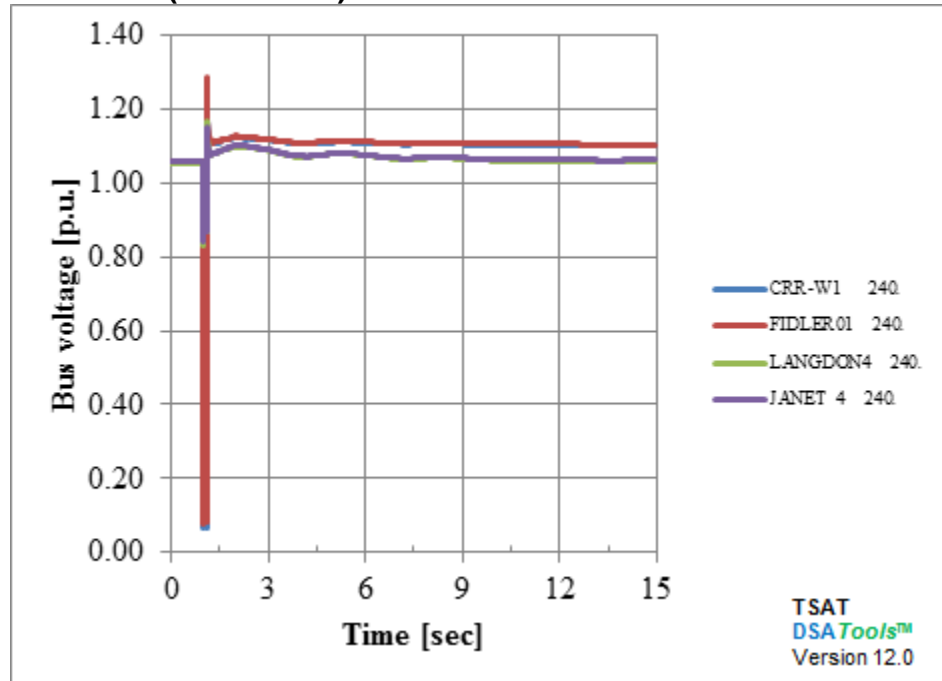
Existing System, Summer Light 2014





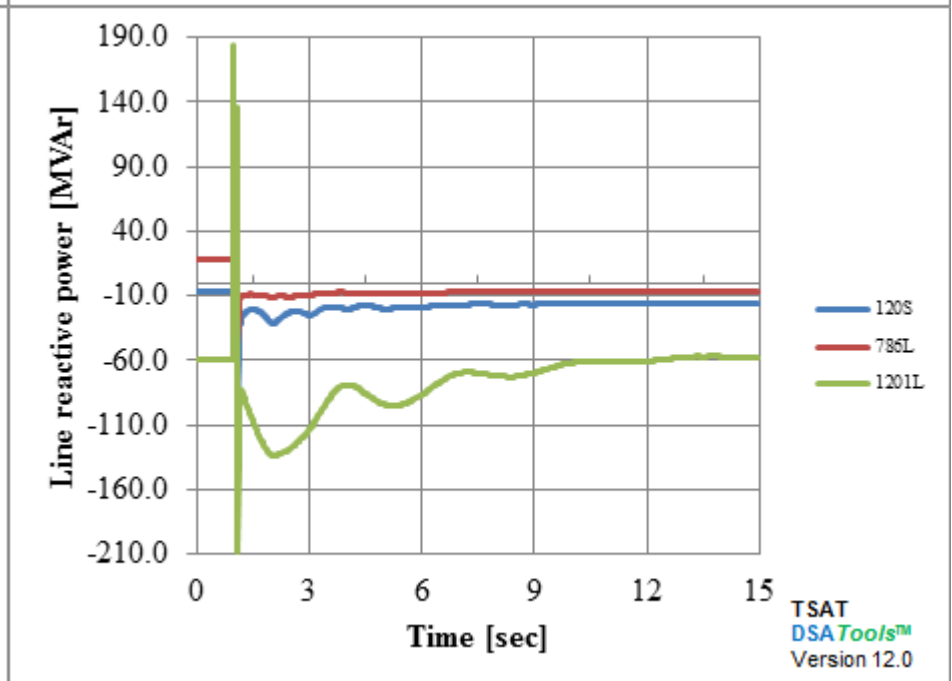
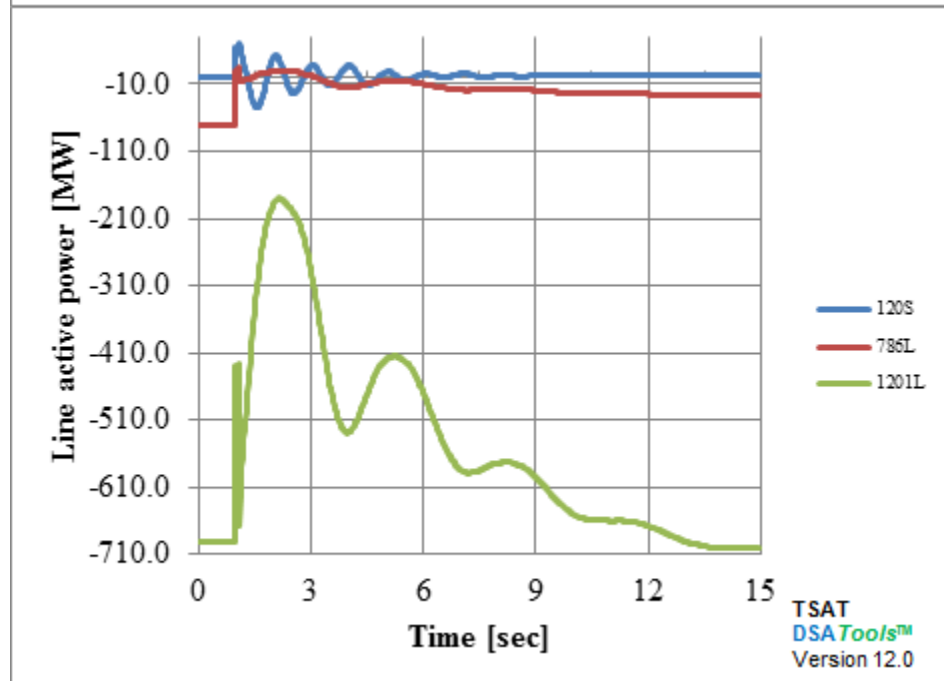
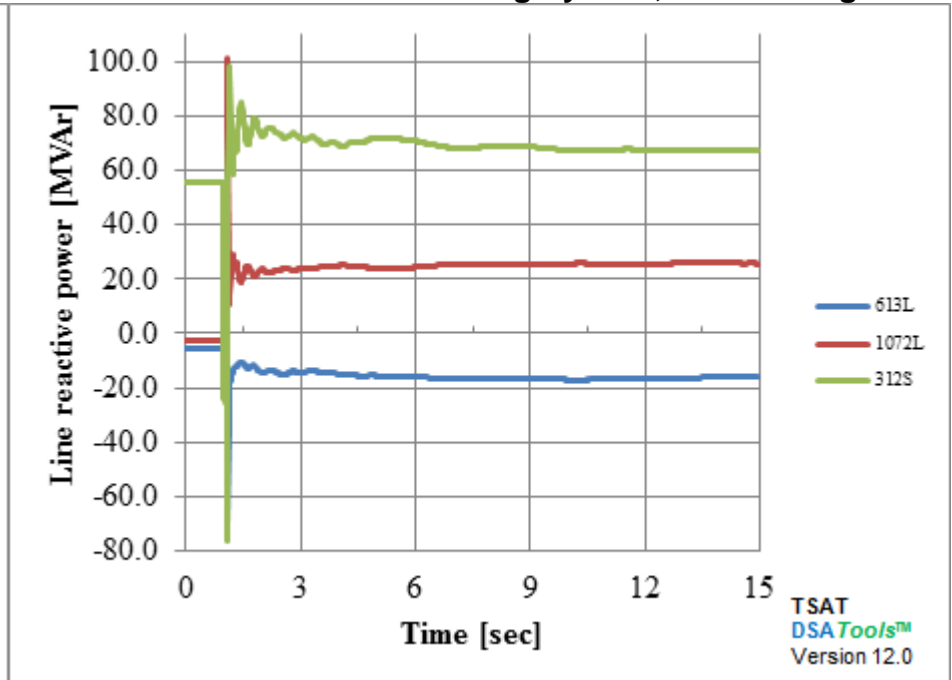
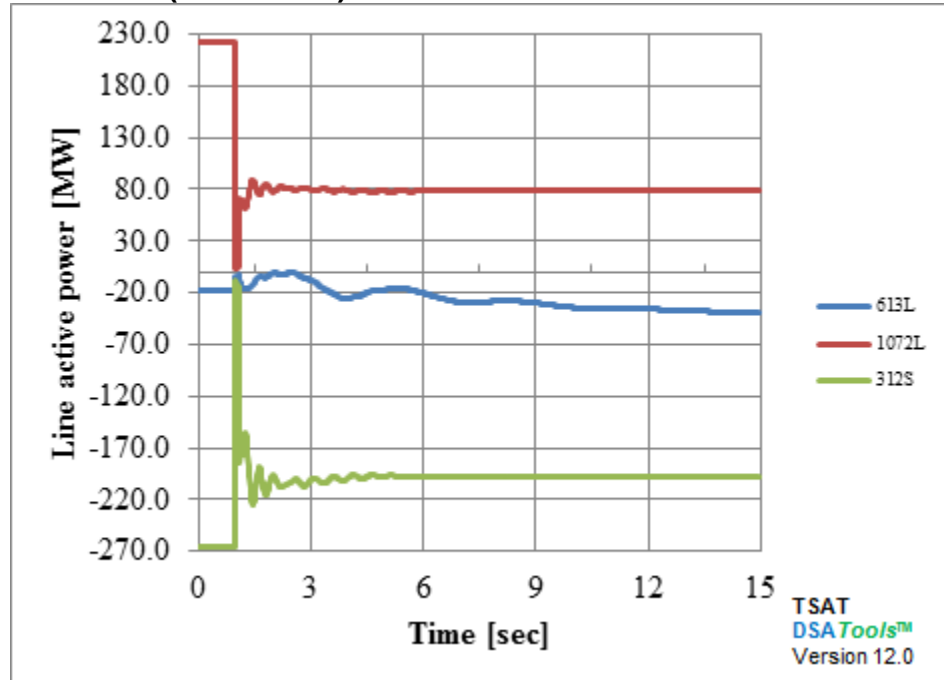
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Light 2014



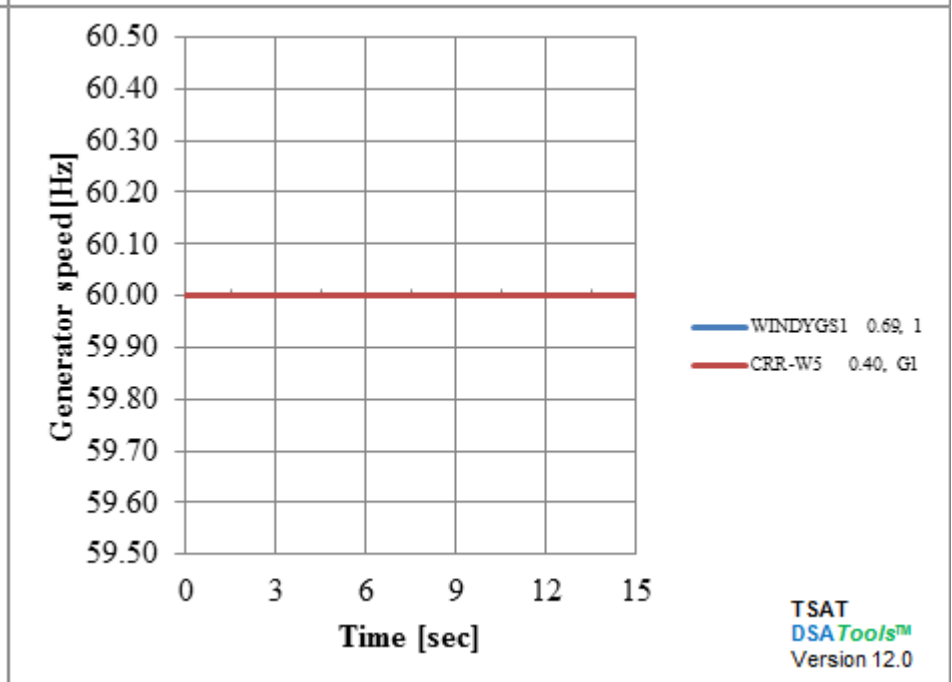
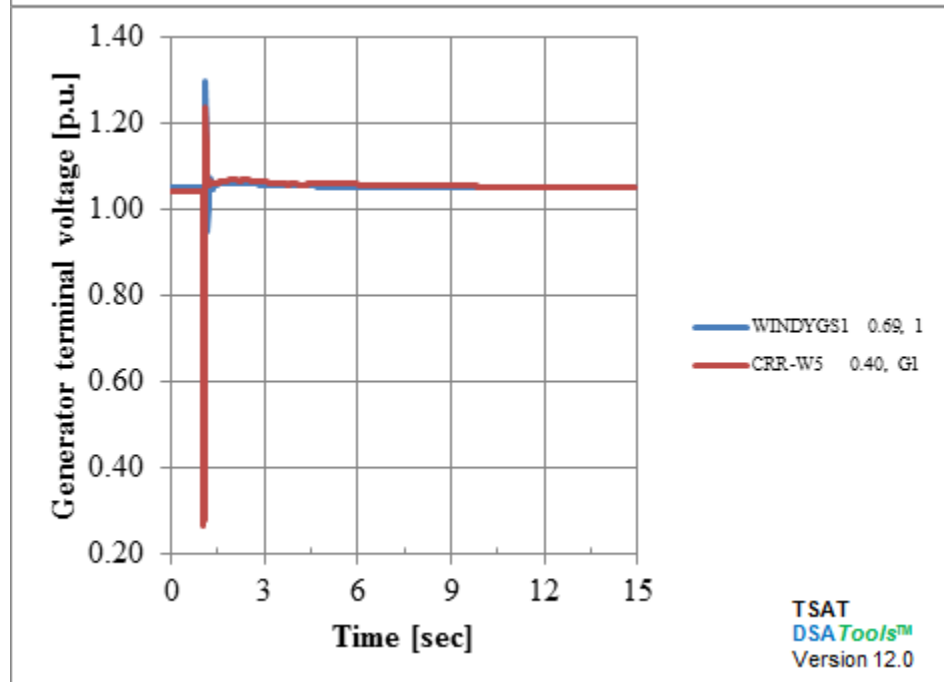
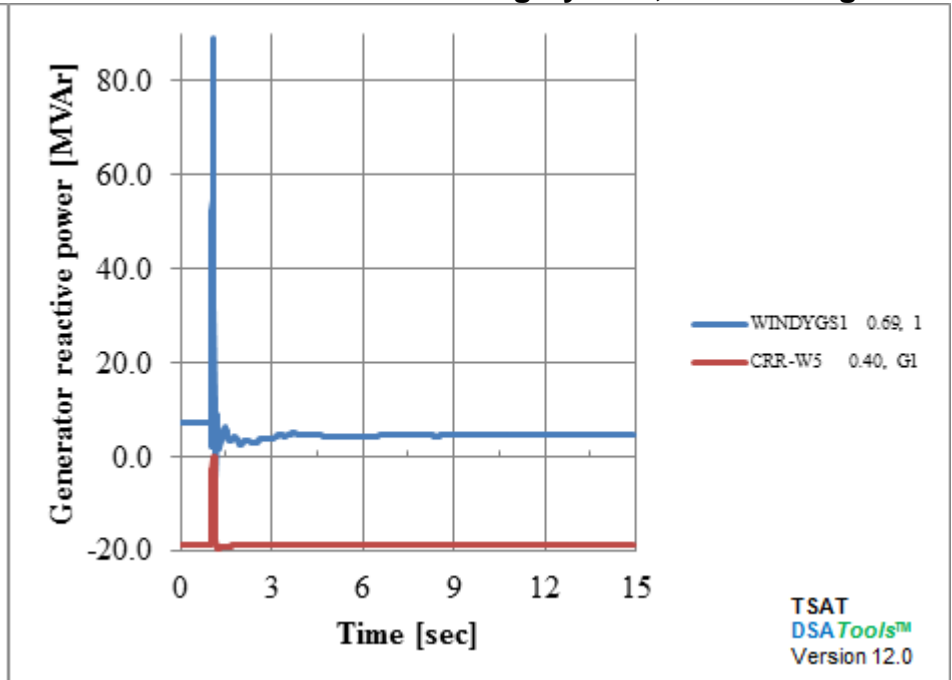
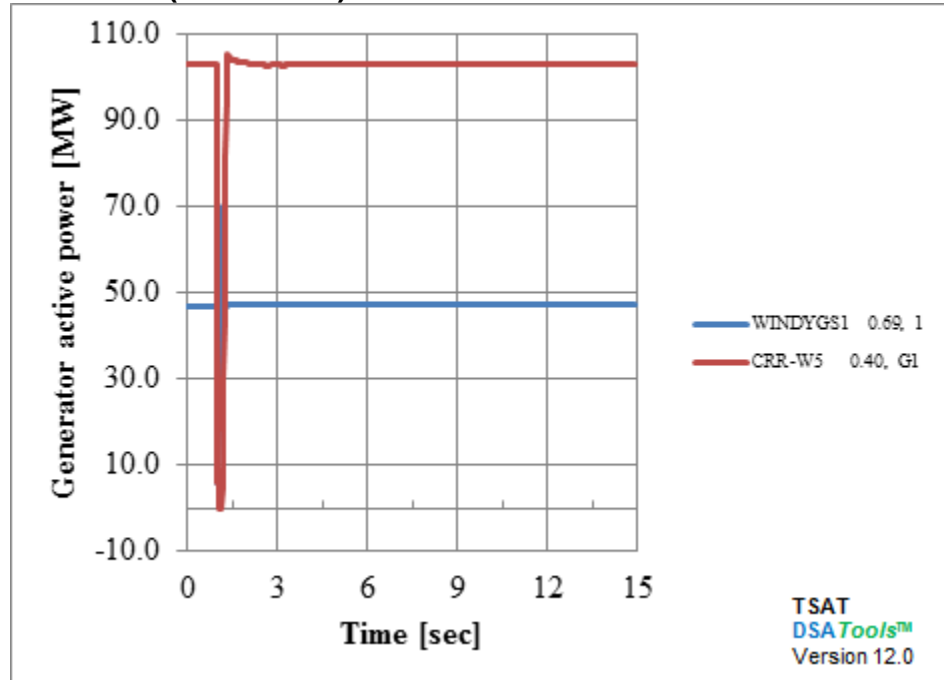
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Light 2014



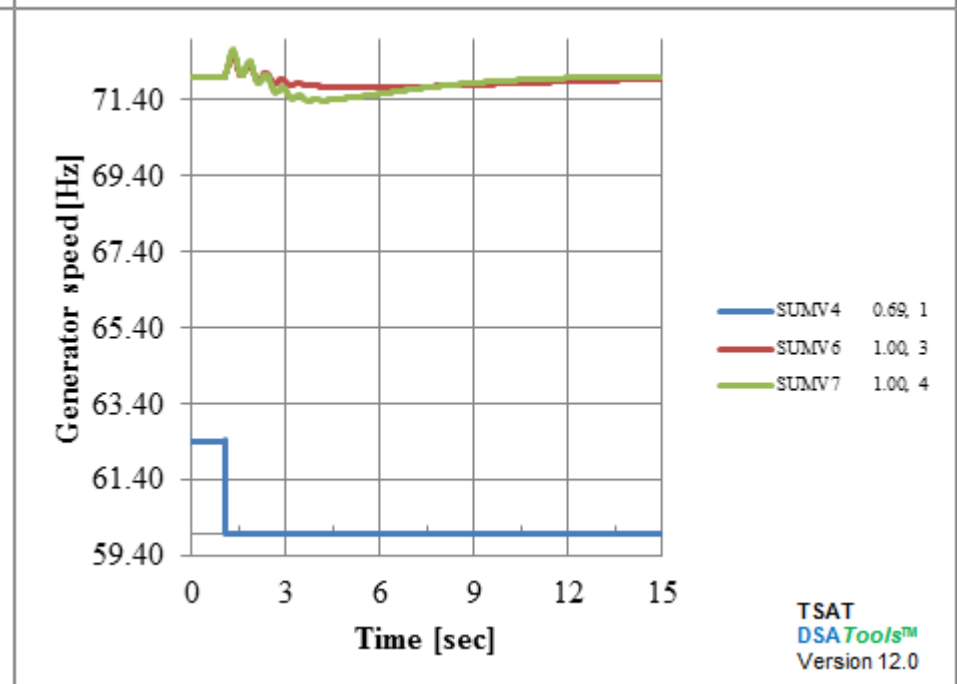
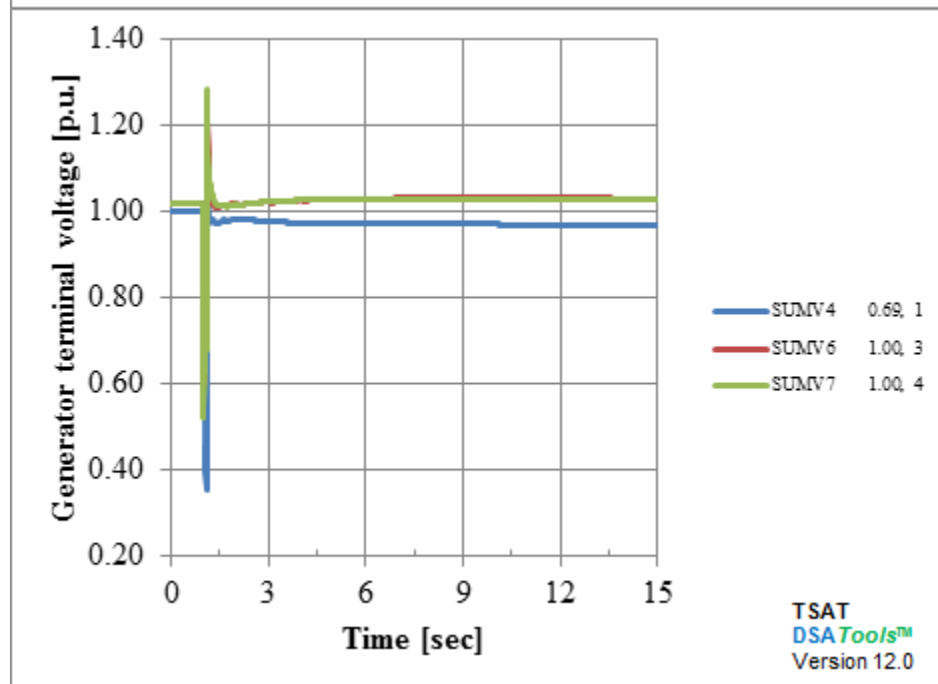
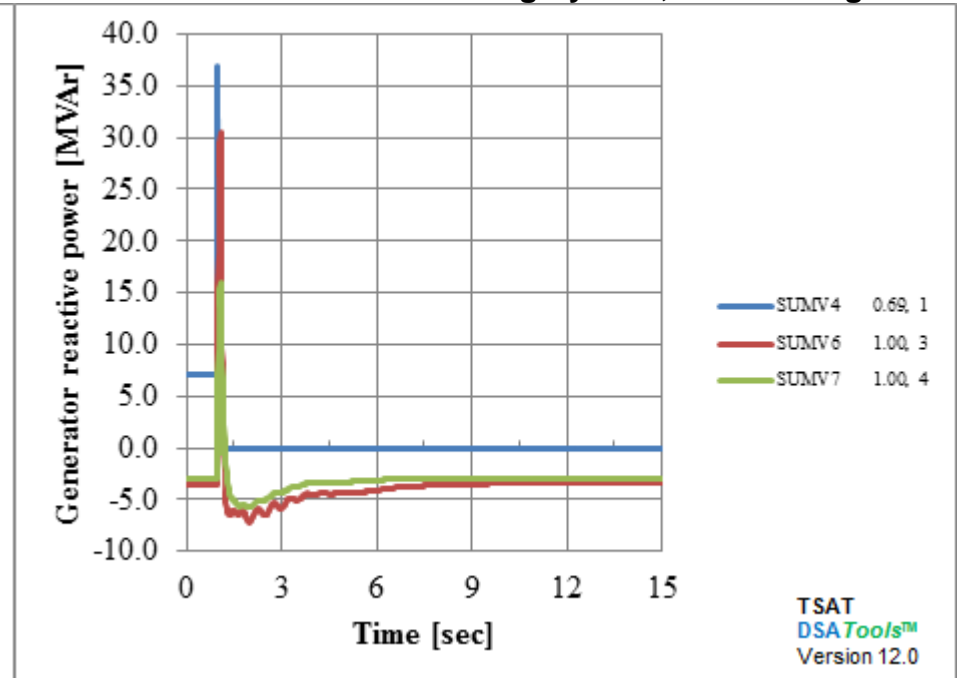
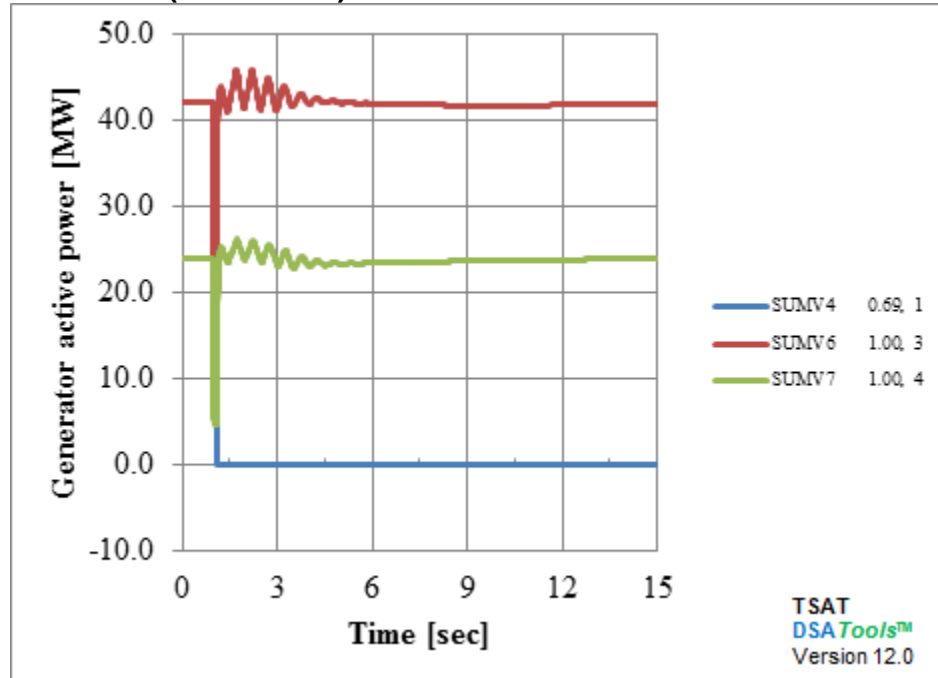
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Light 2014



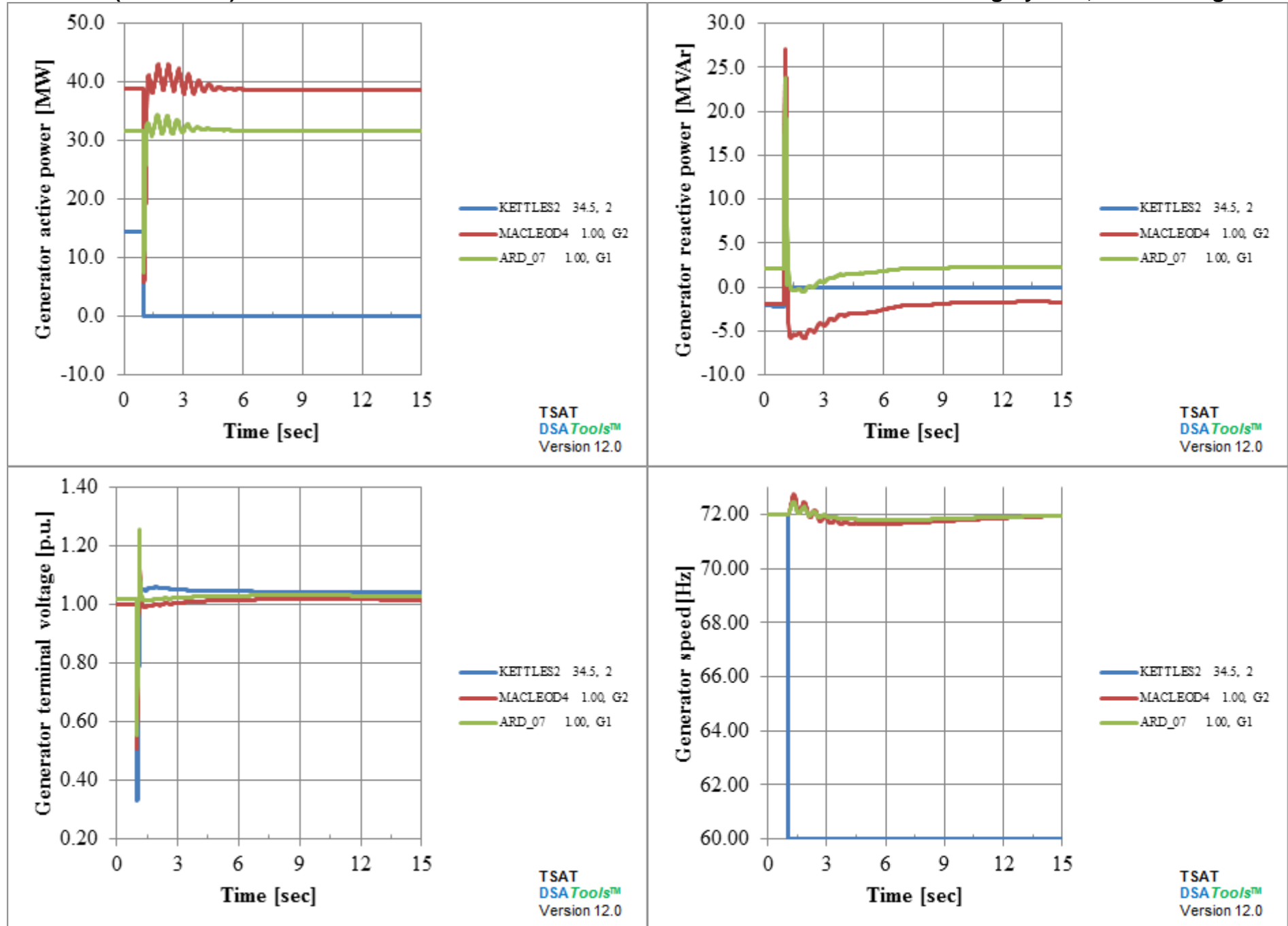
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Light 2014



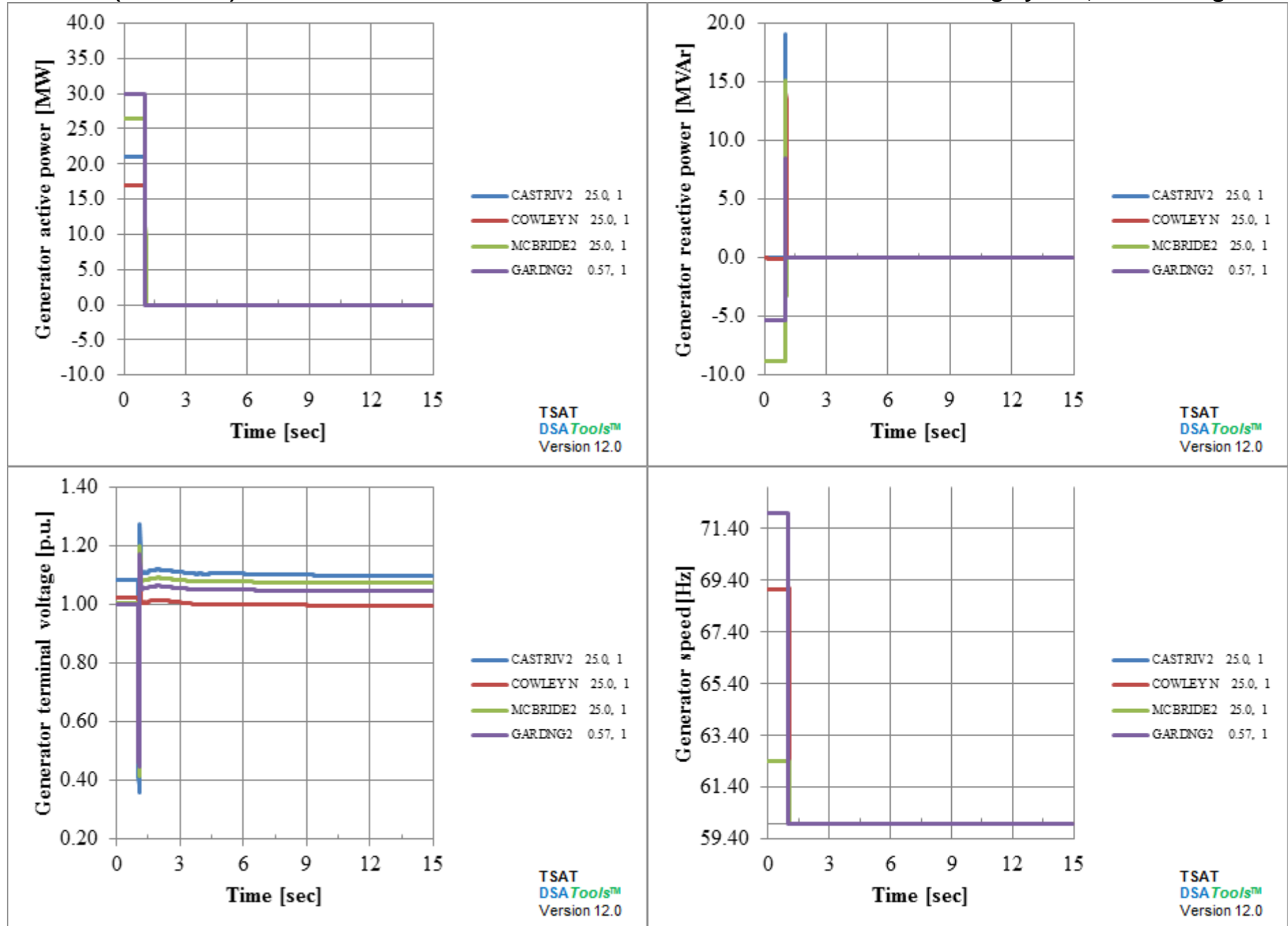
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Light 2014



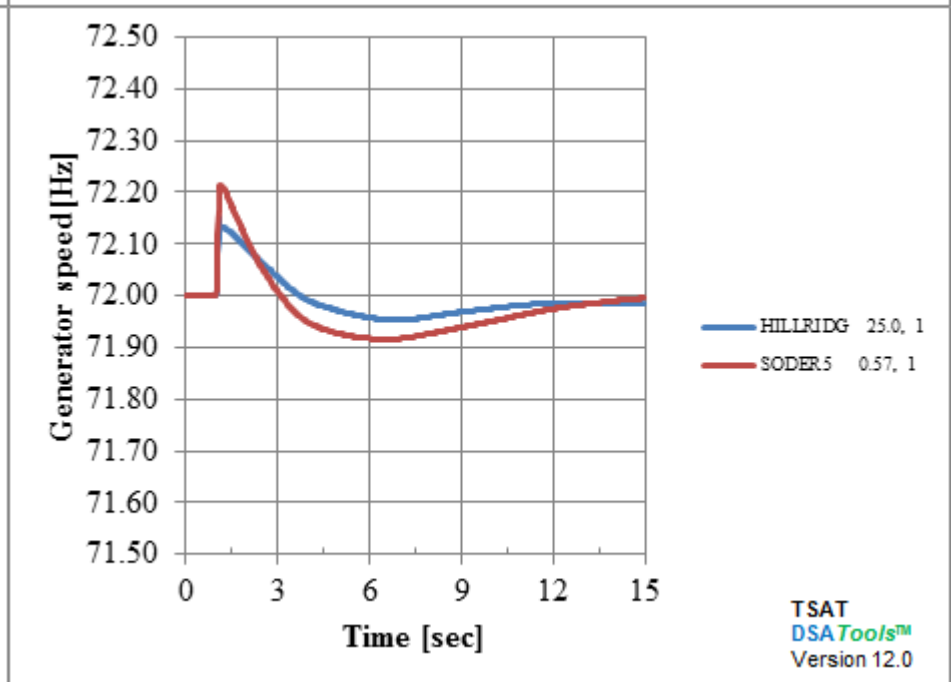
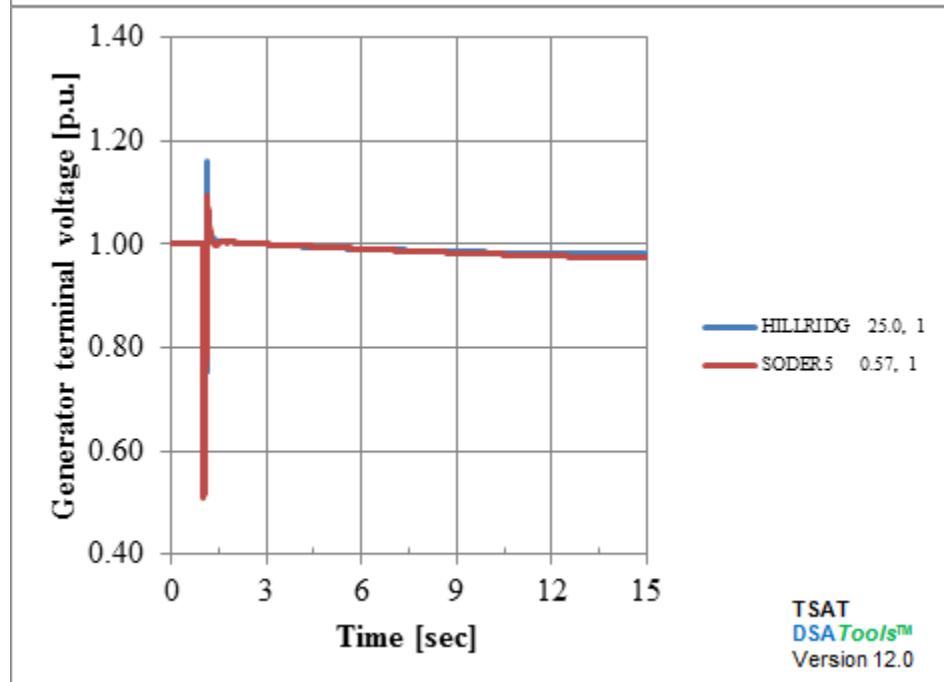
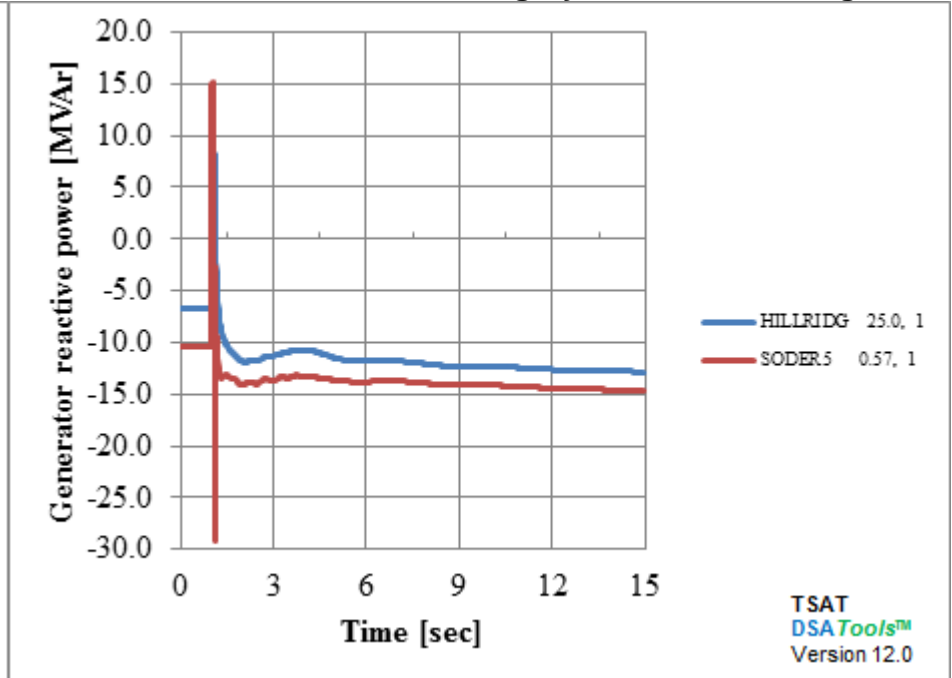
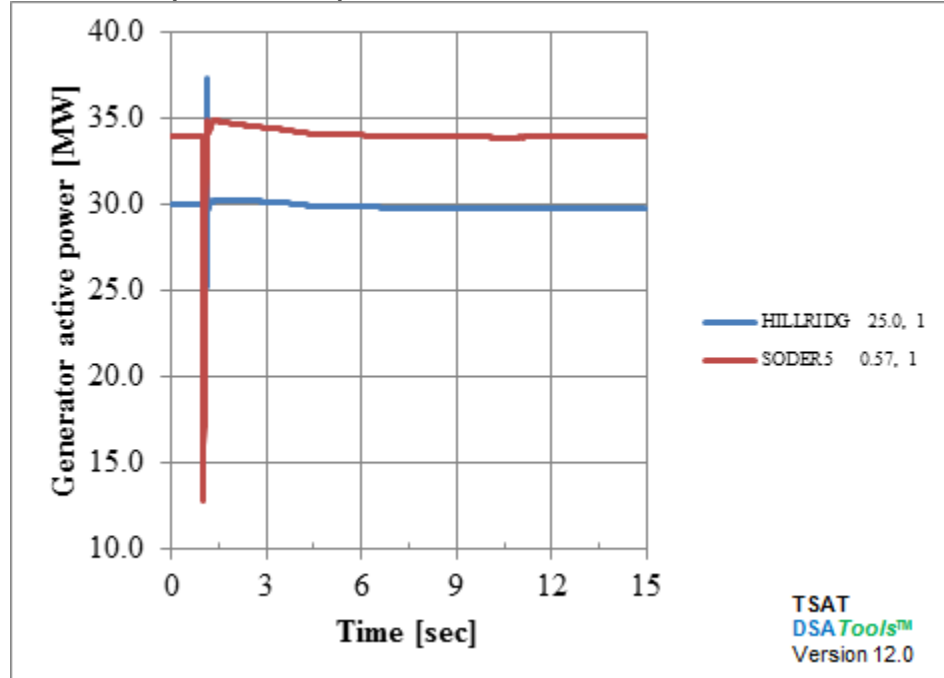
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Light 2014



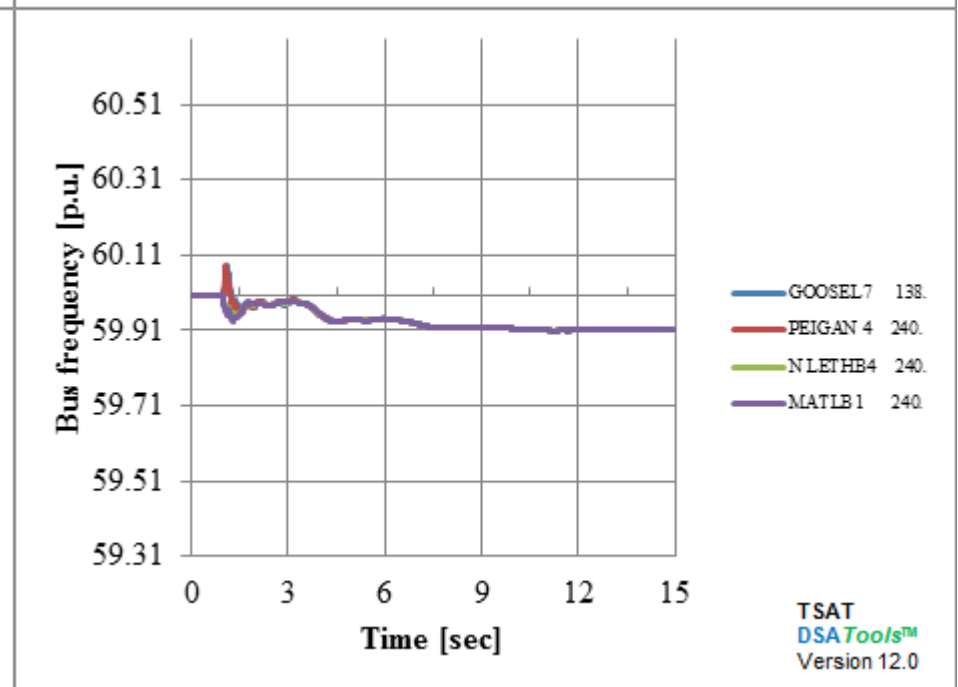
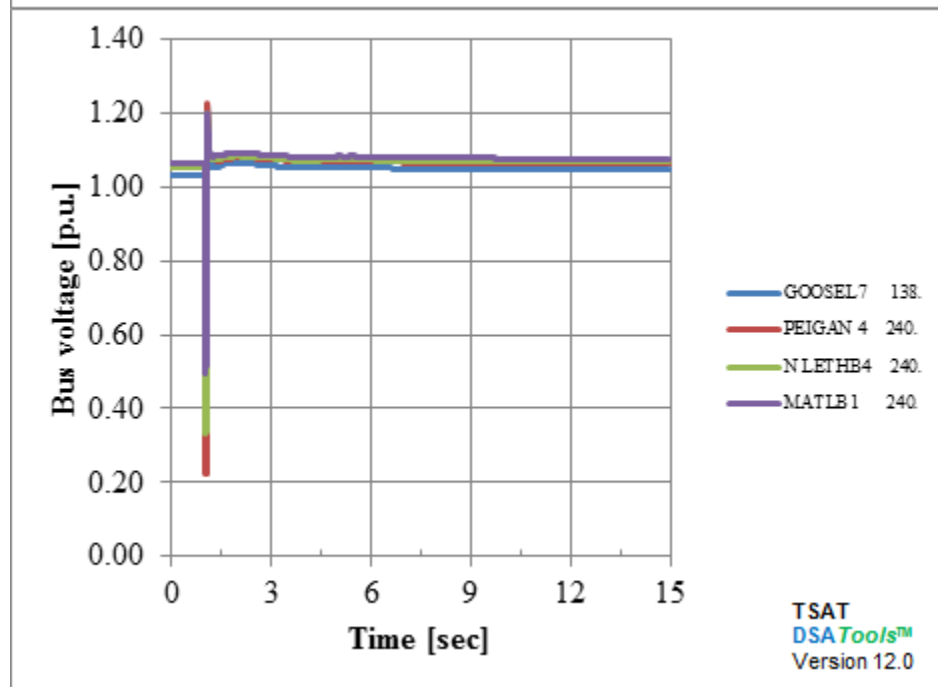
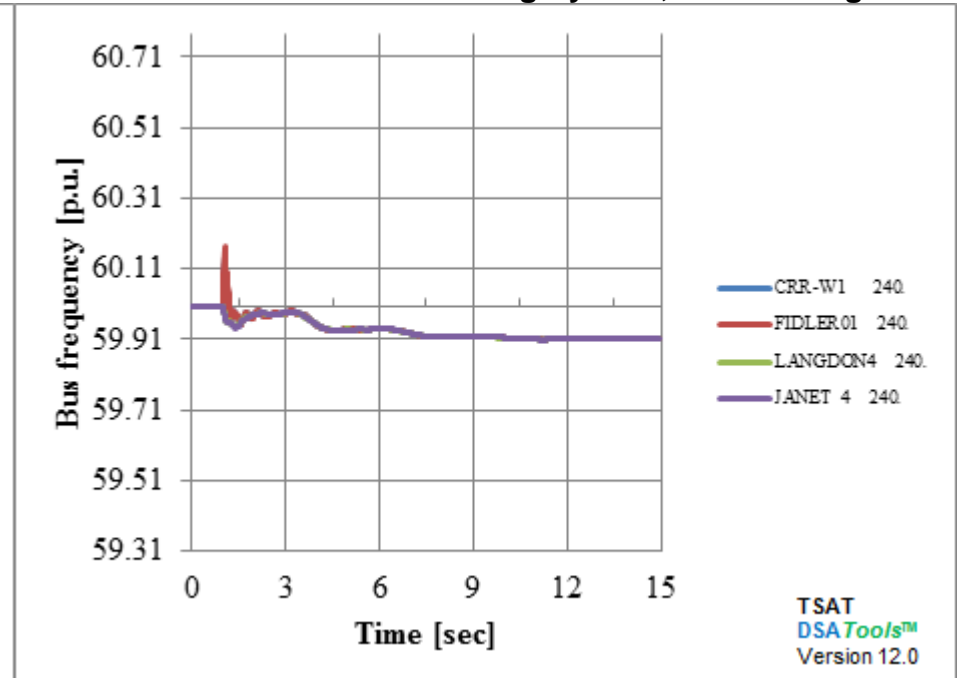
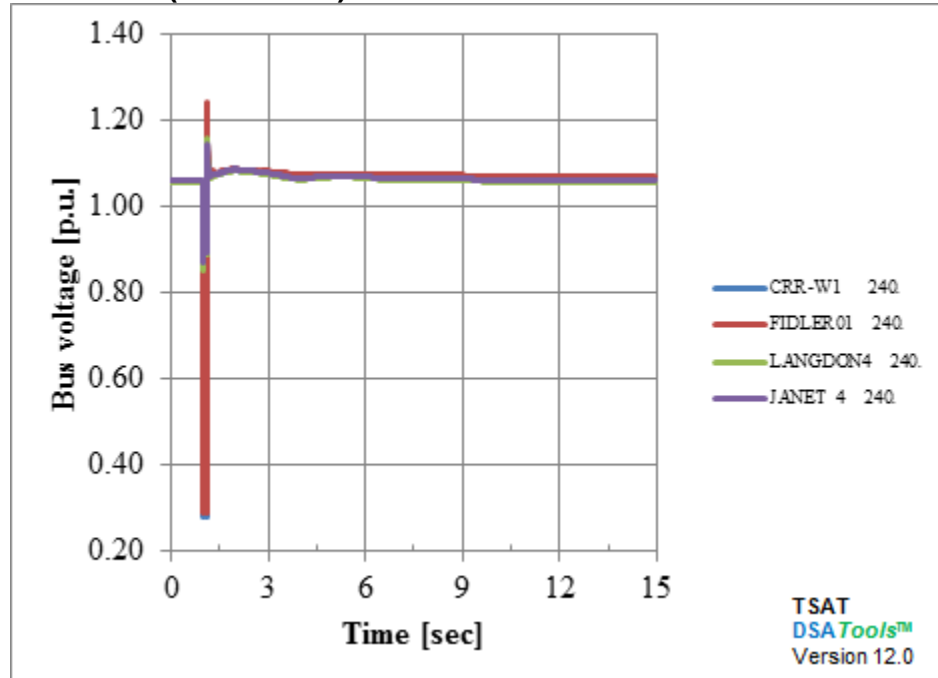
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Light 2014



9 -- 1084L (59S - 246S) NEAR 246S

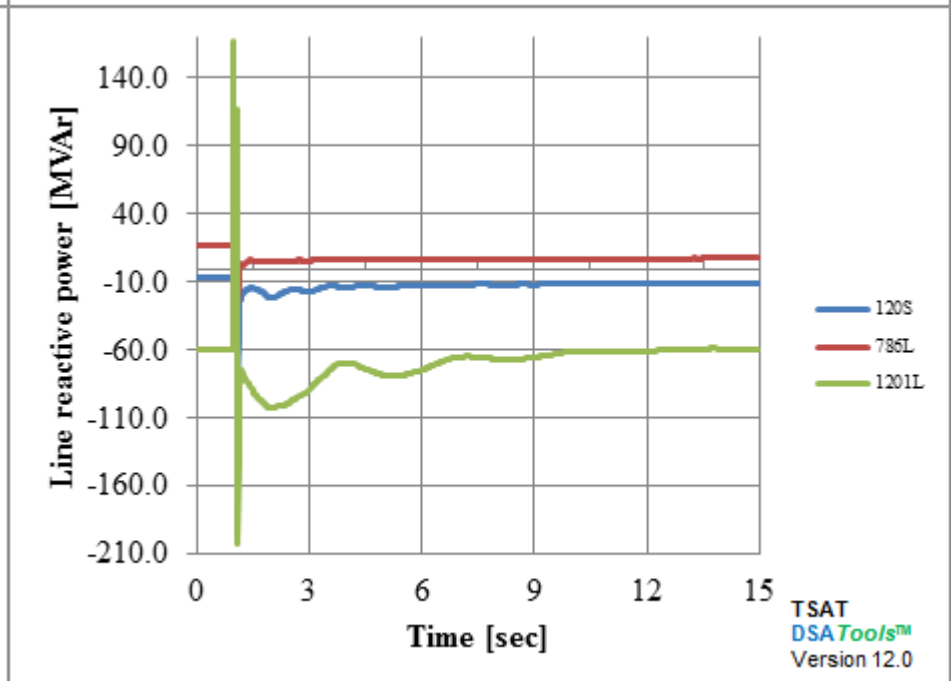
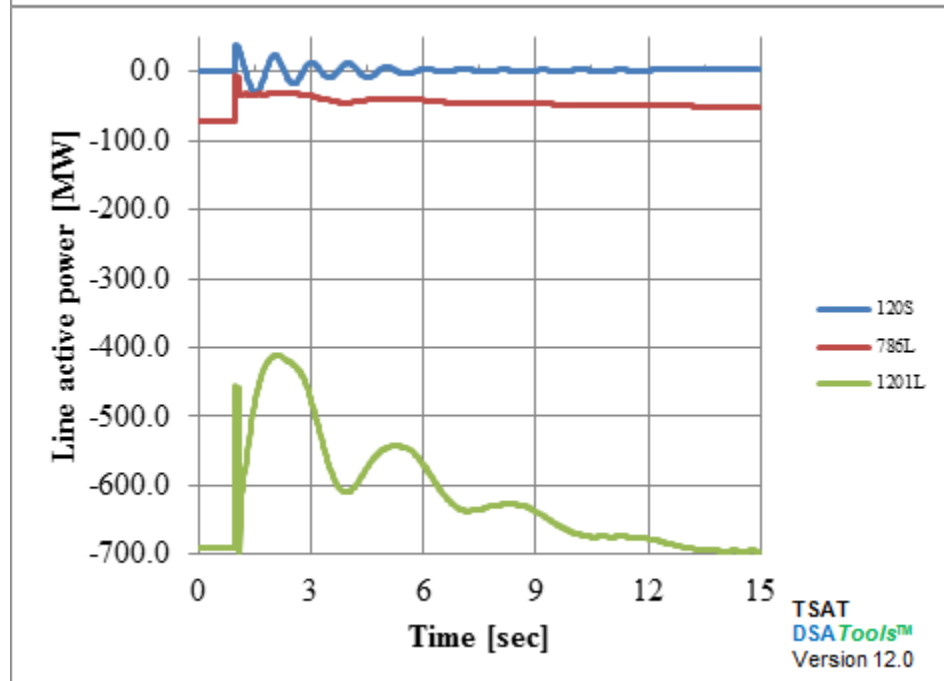
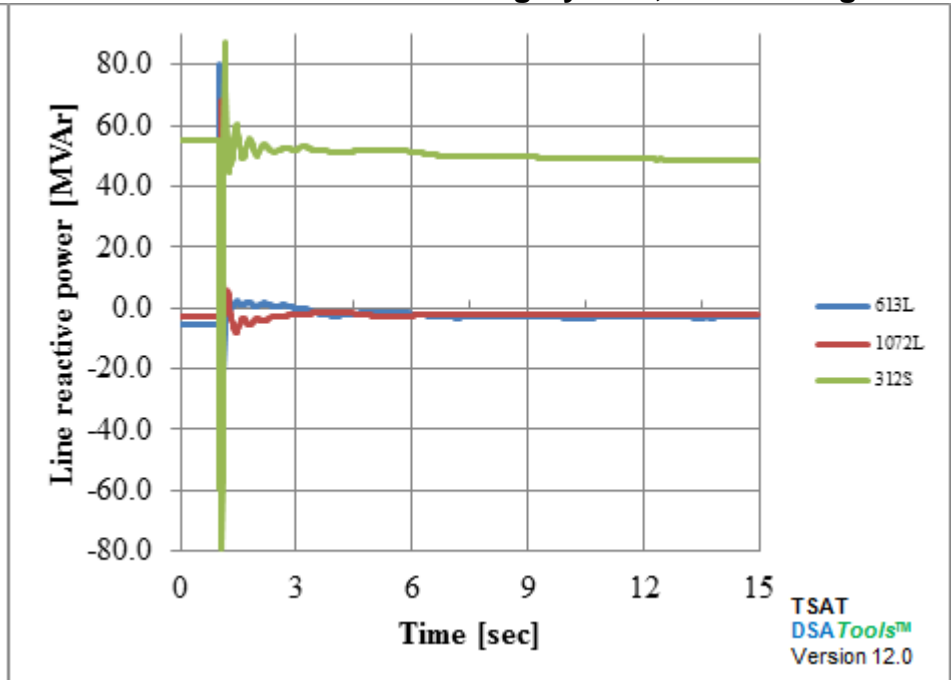
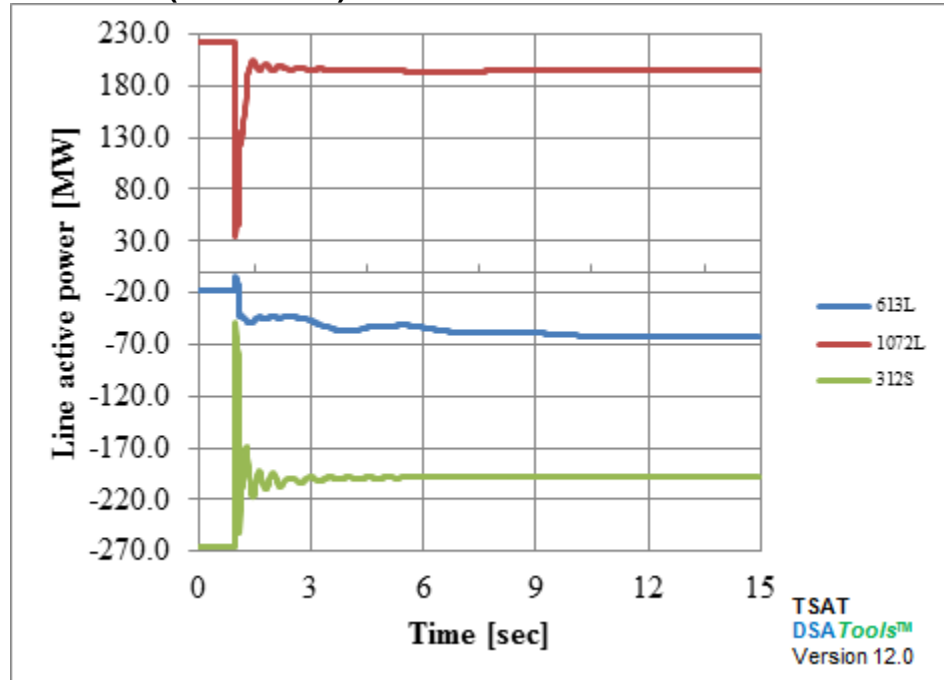
Existing System, Summer Light 2014





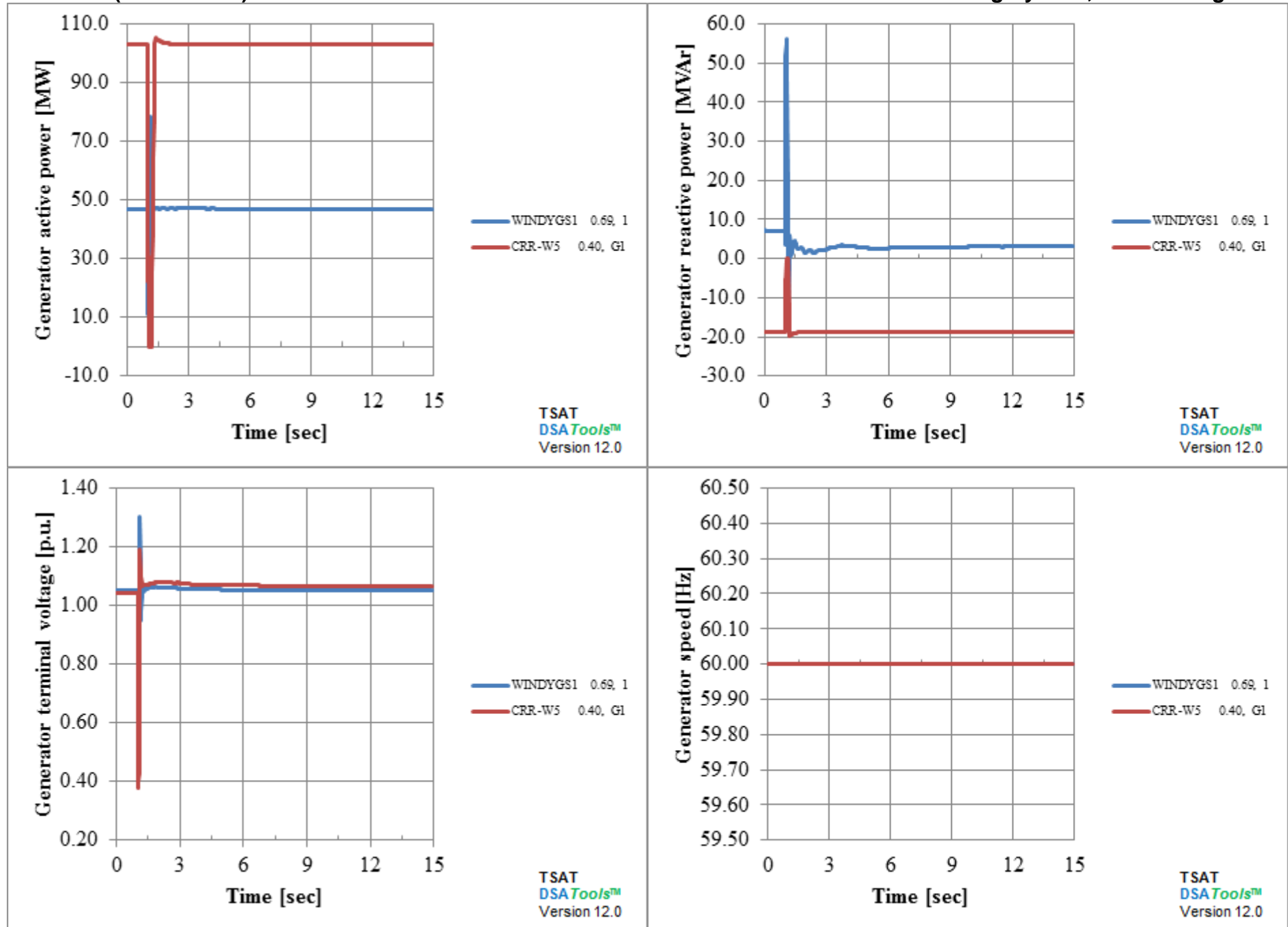
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Light 2014



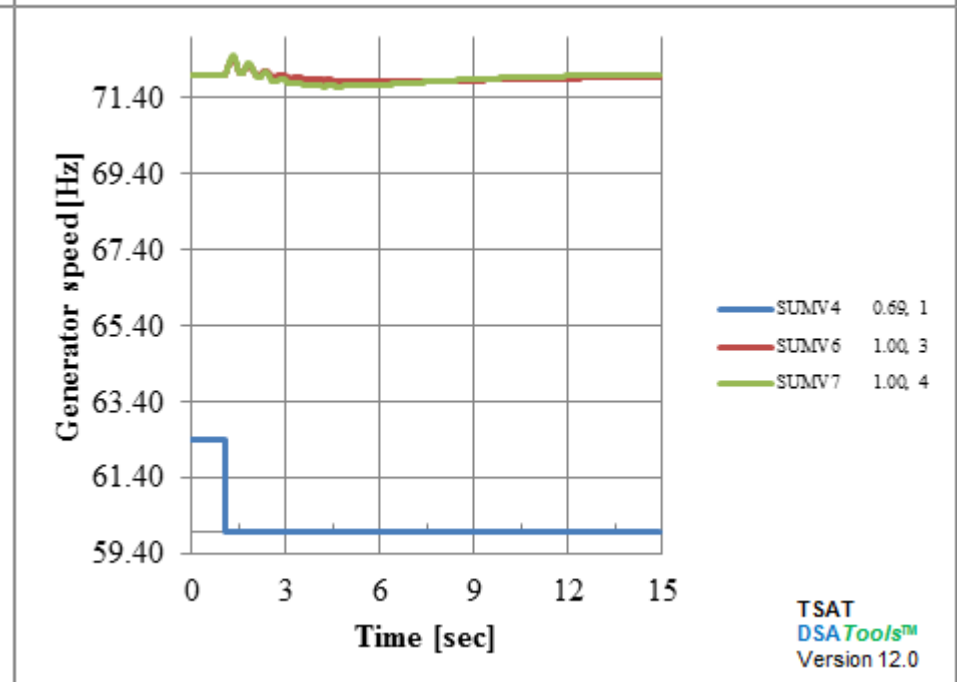
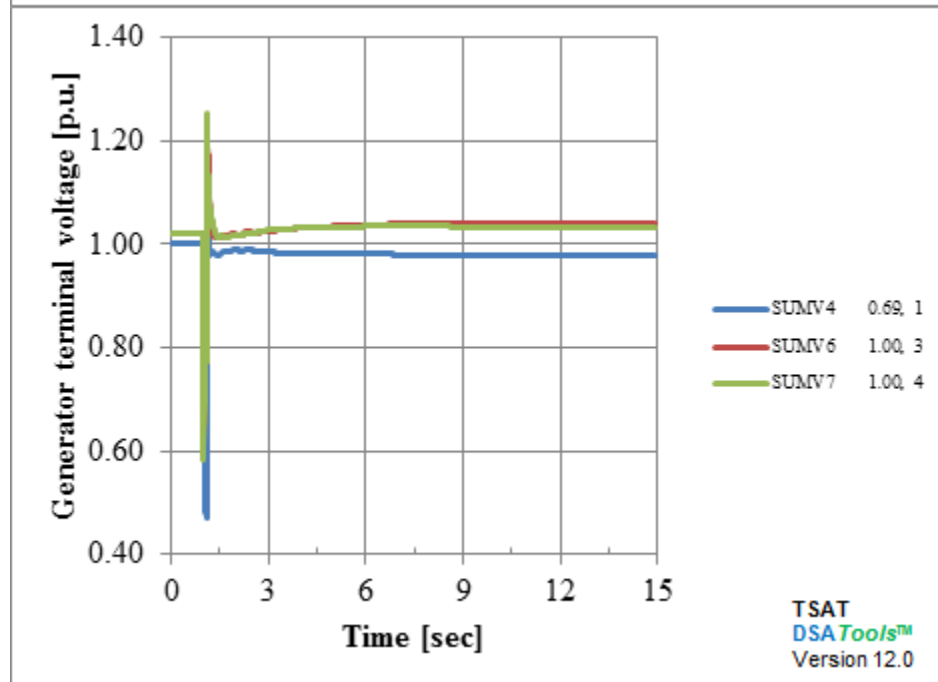
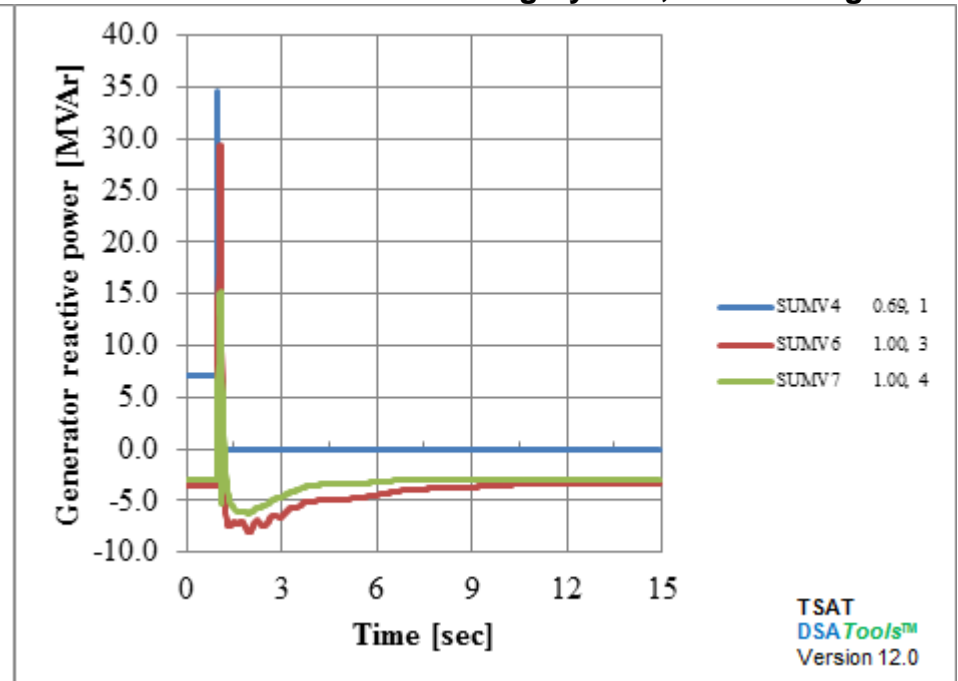
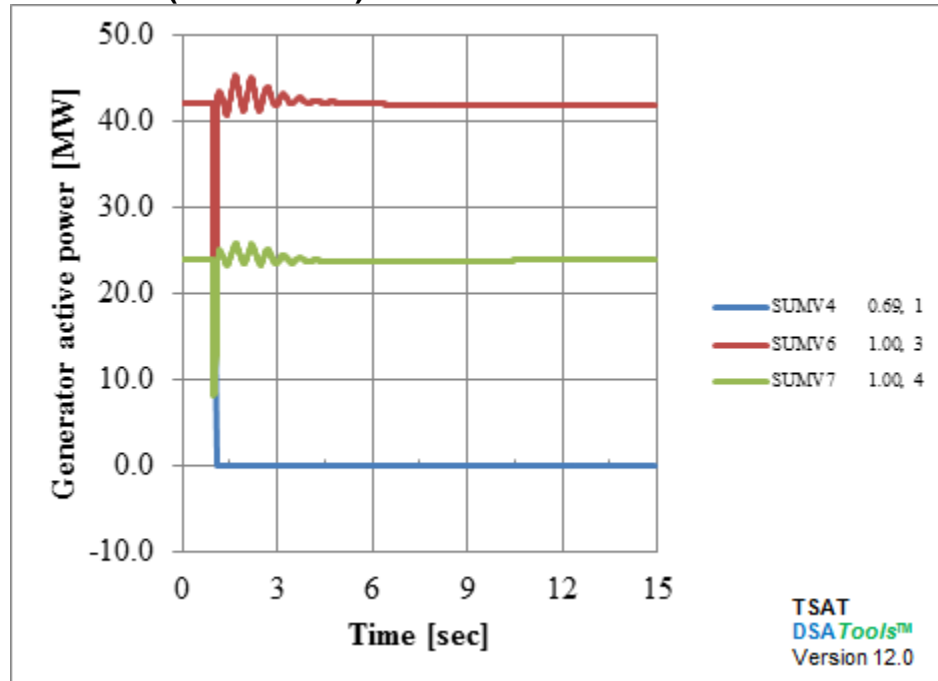
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Light 2014



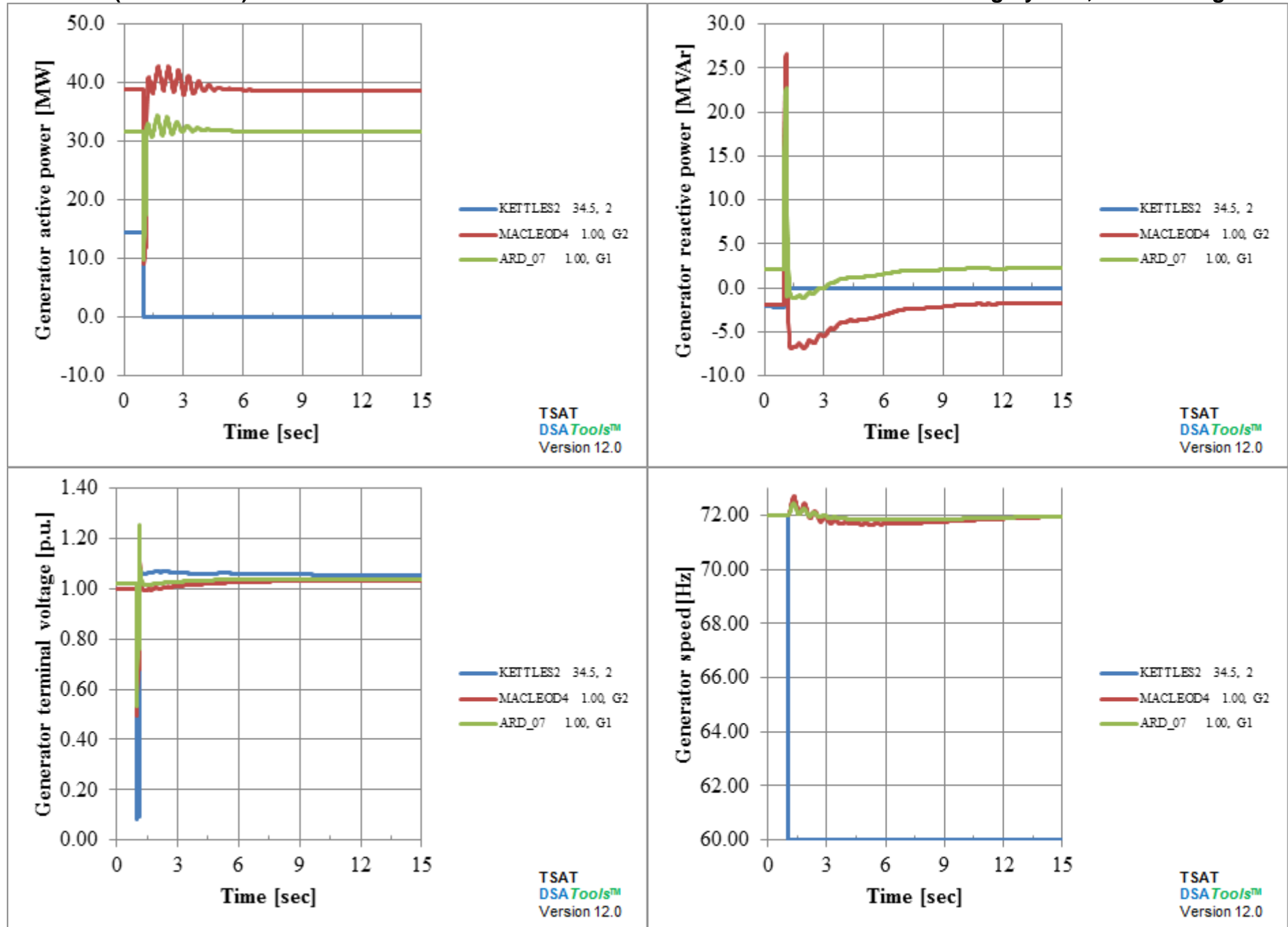
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Light 2014



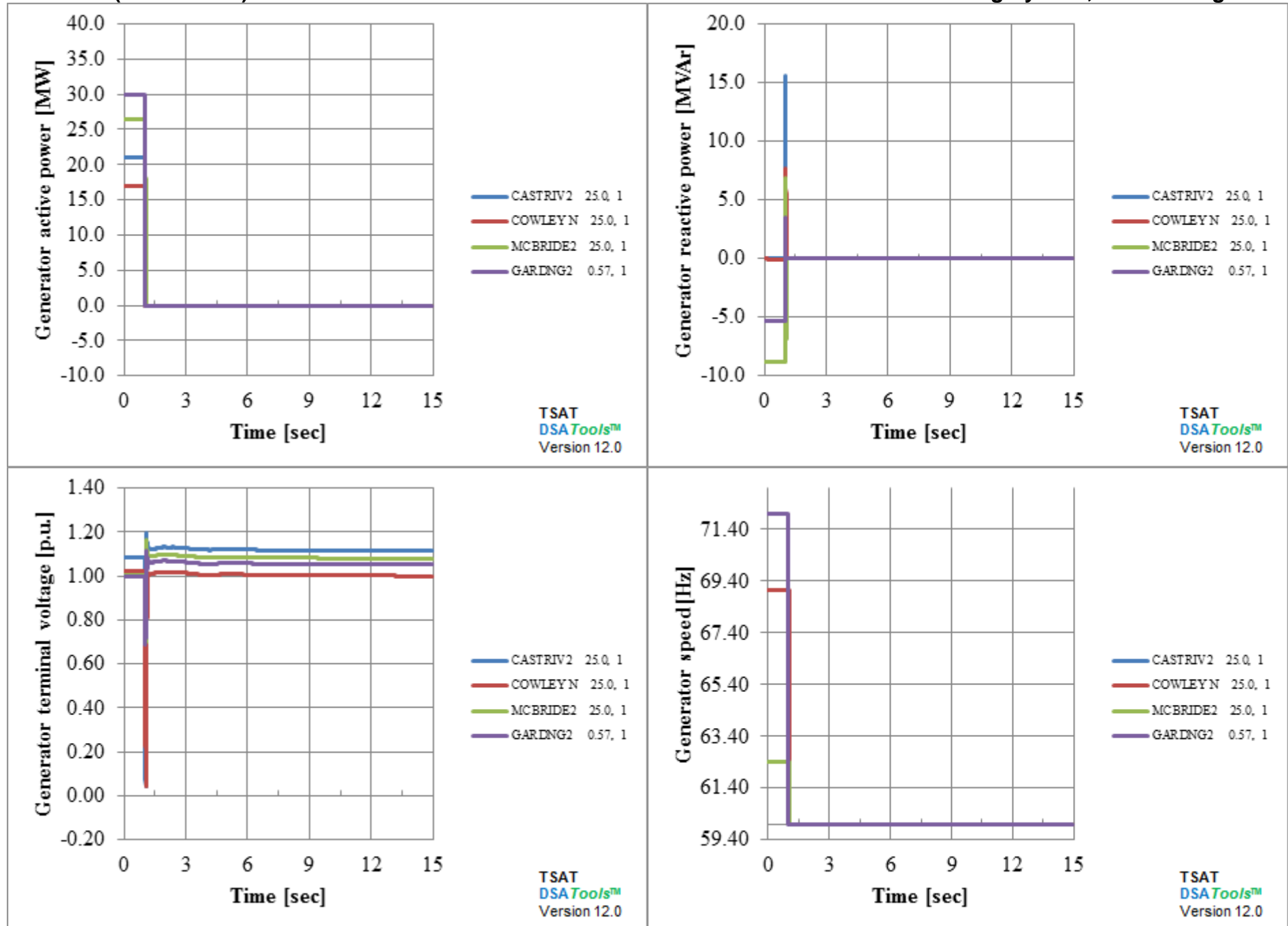
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Light 2014



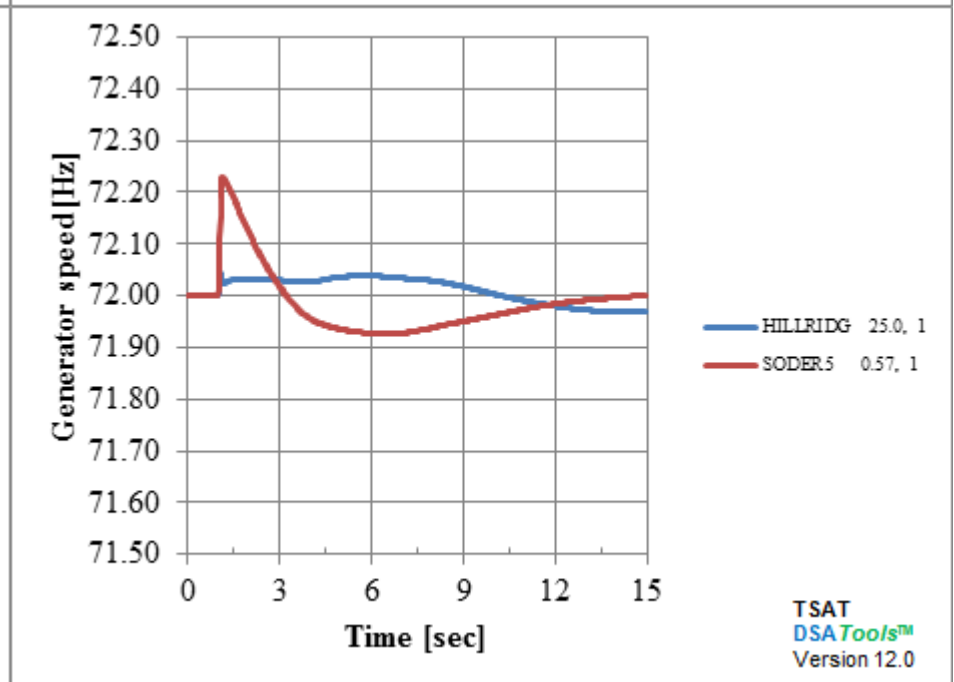
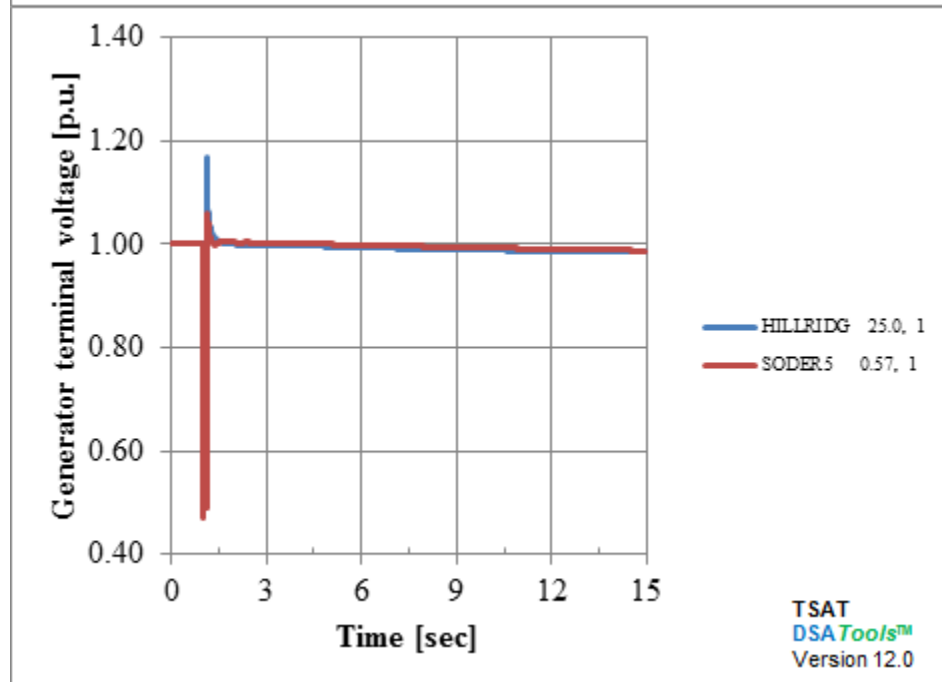
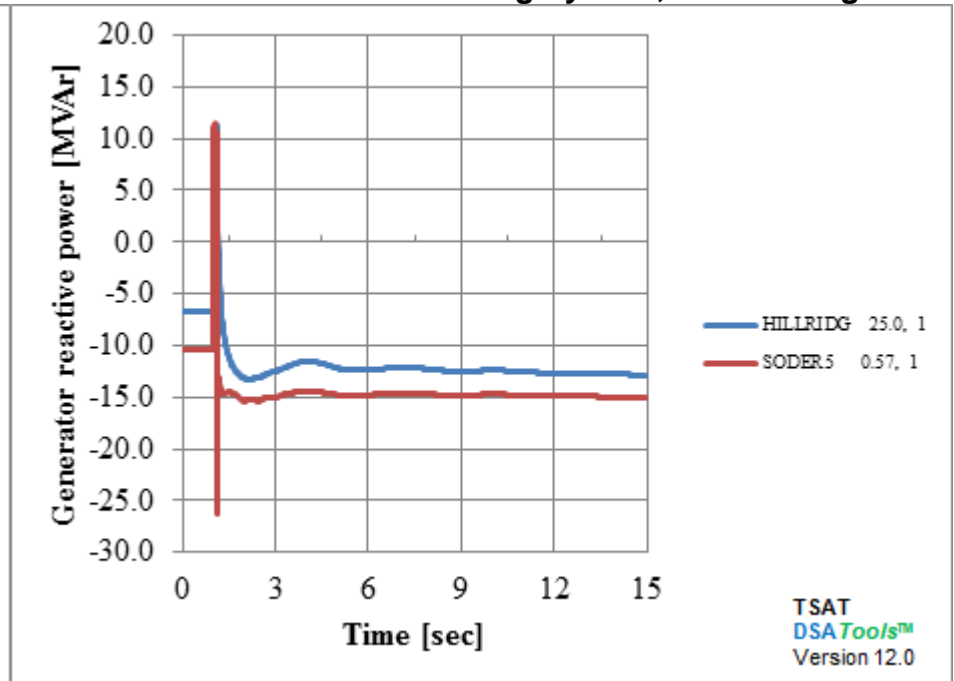
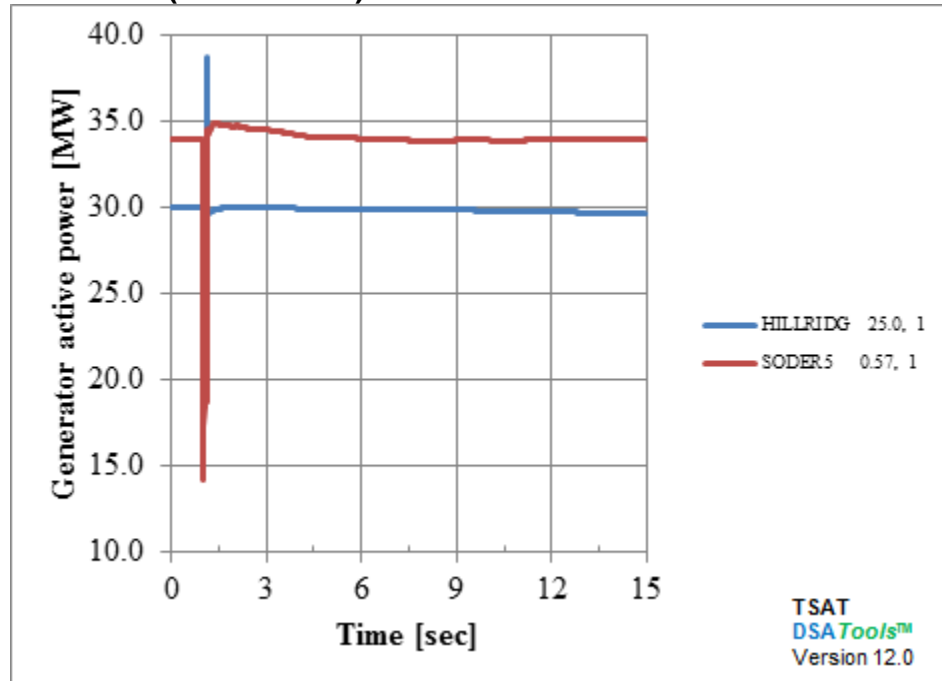
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Light 2014



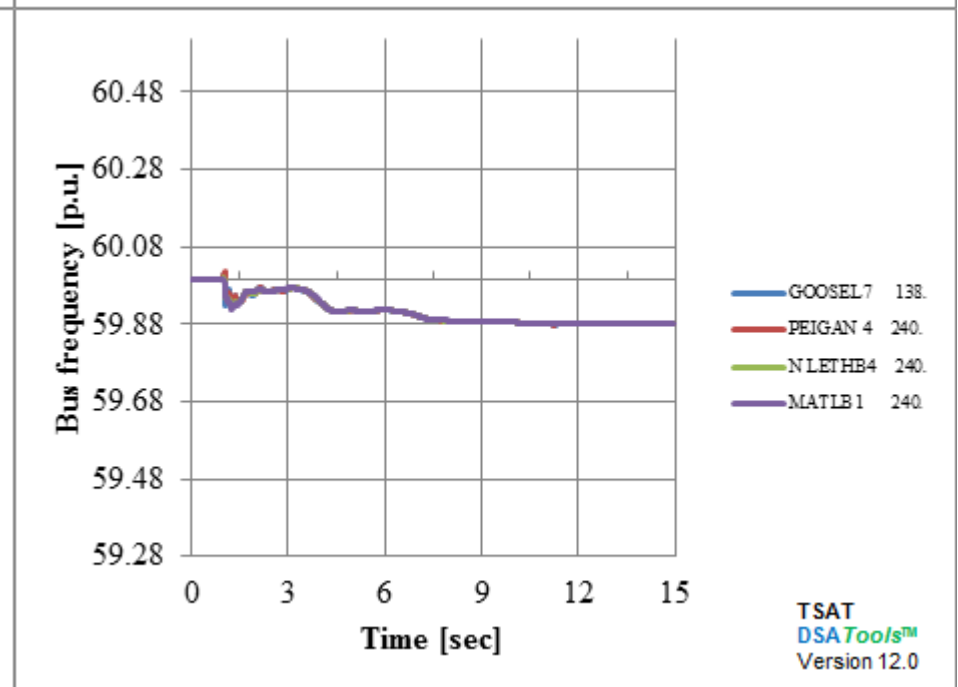
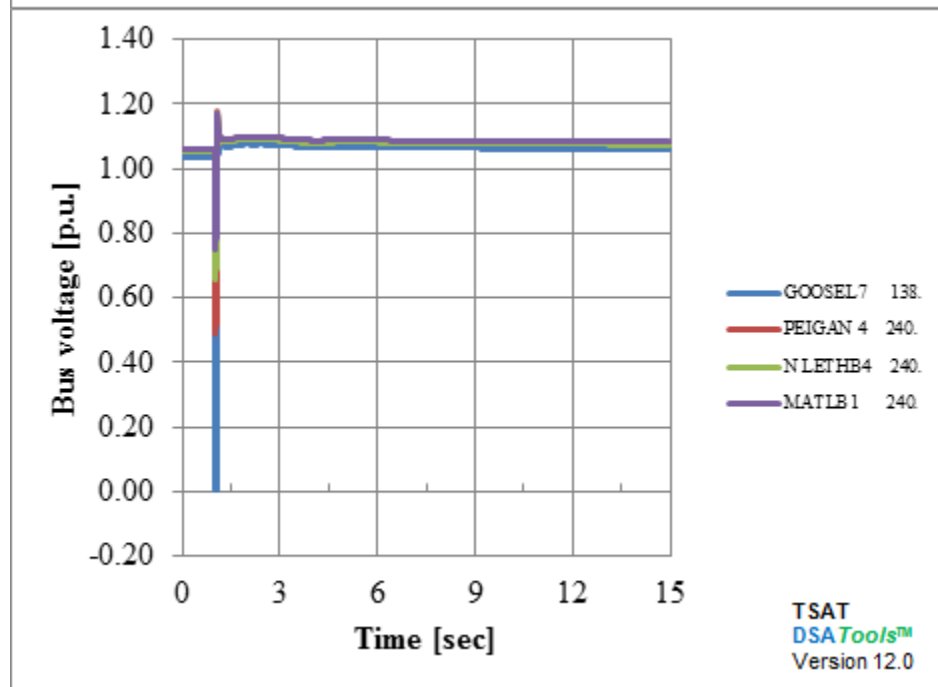
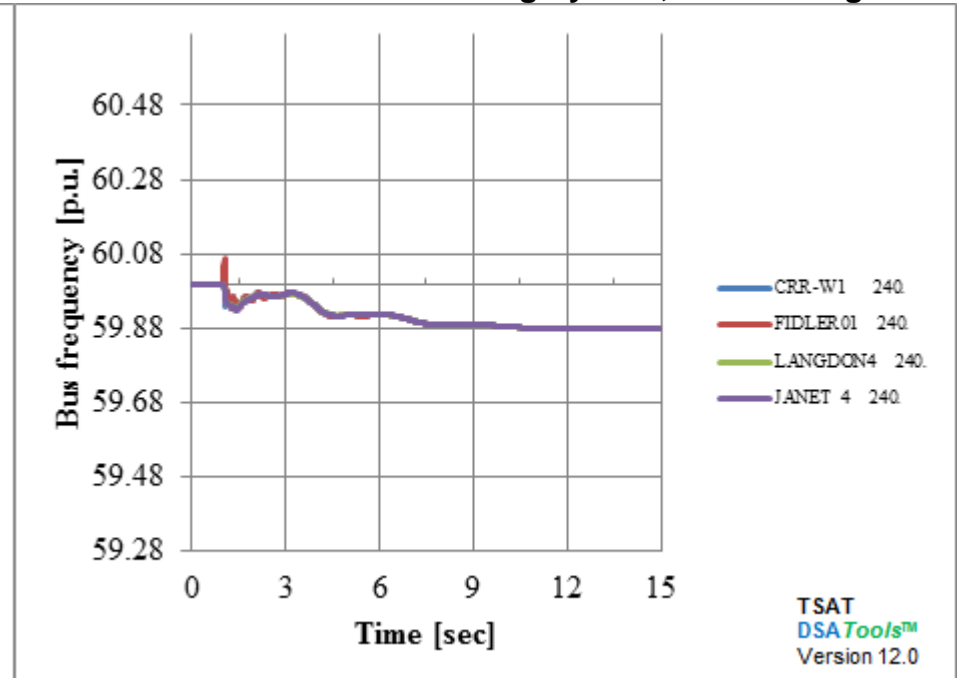
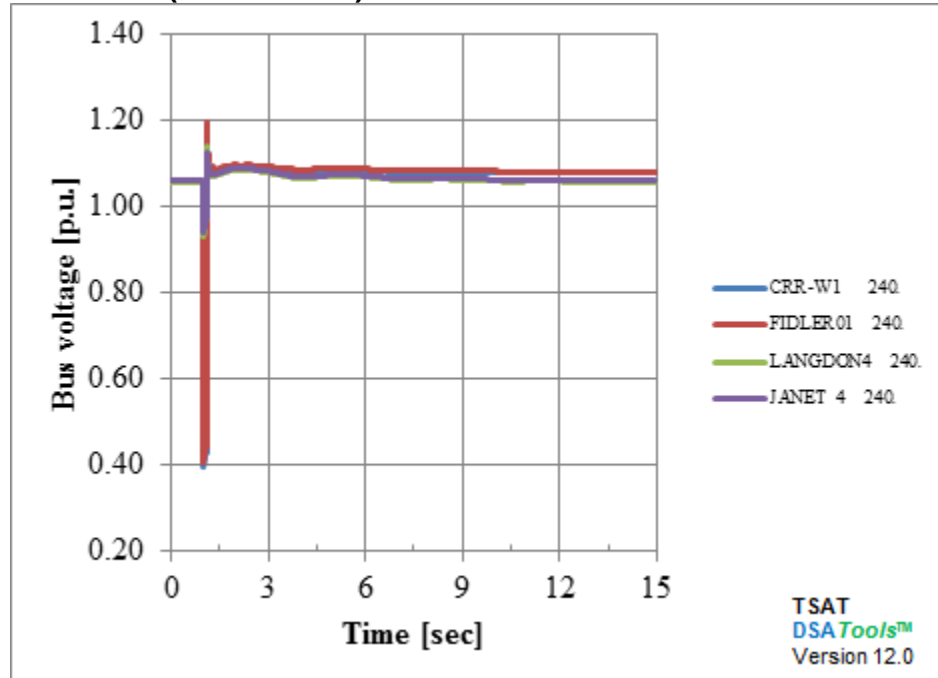
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Light 2014



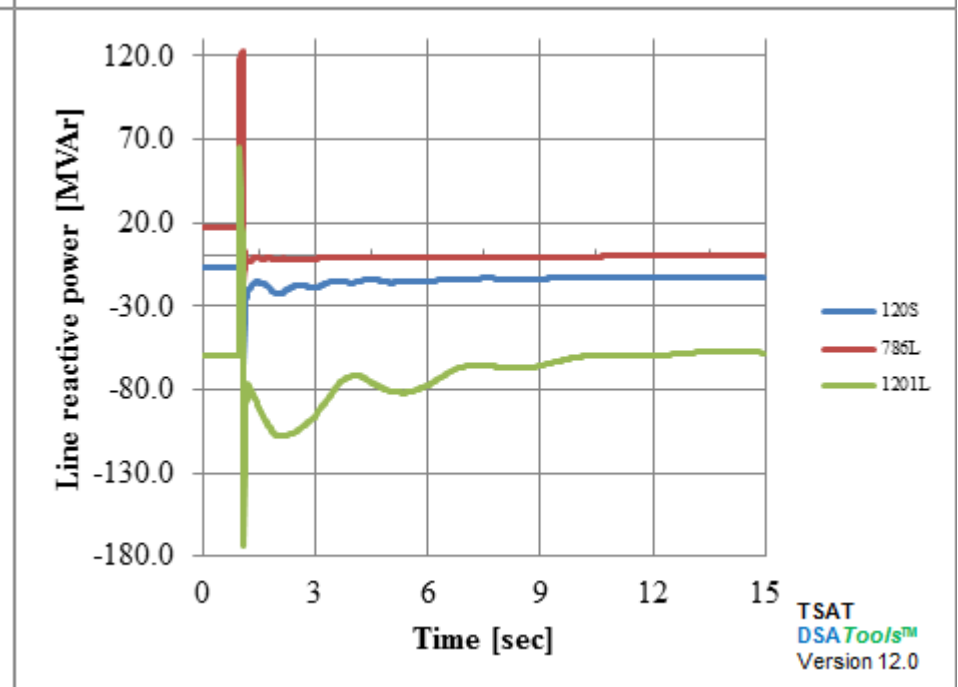
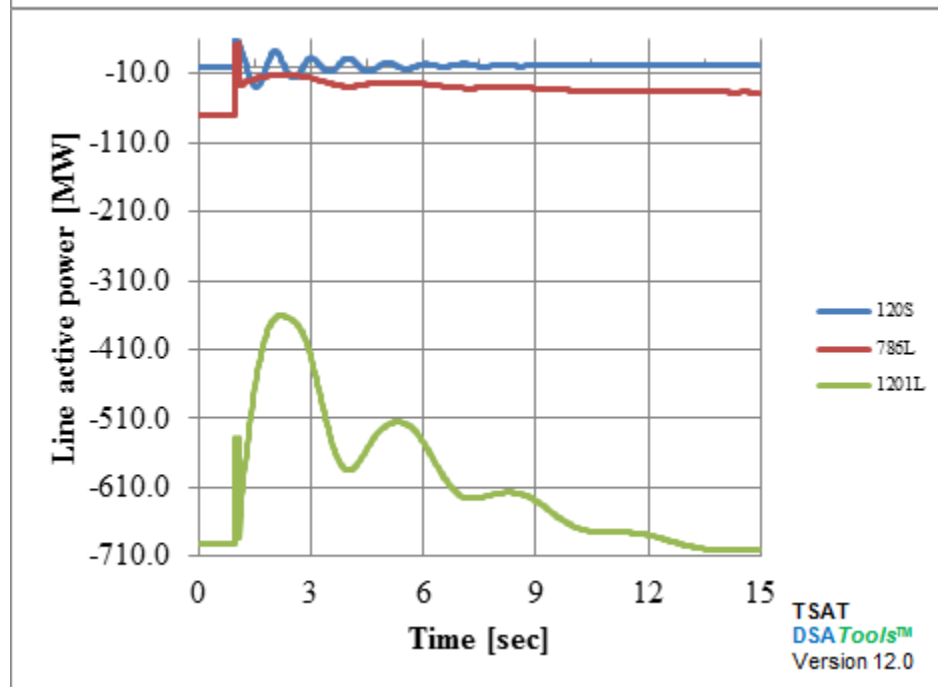
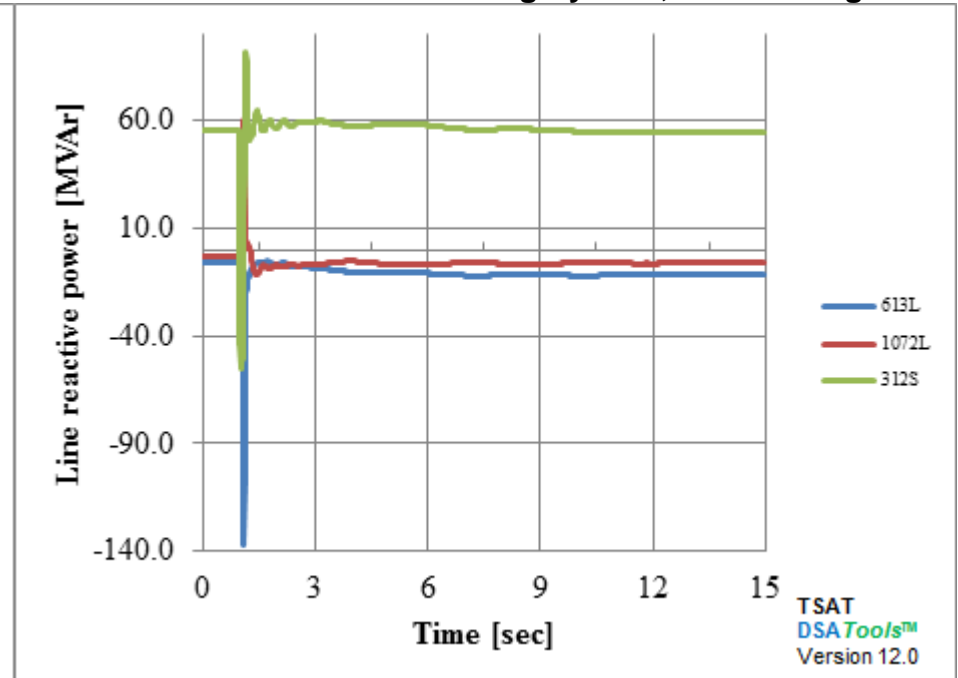
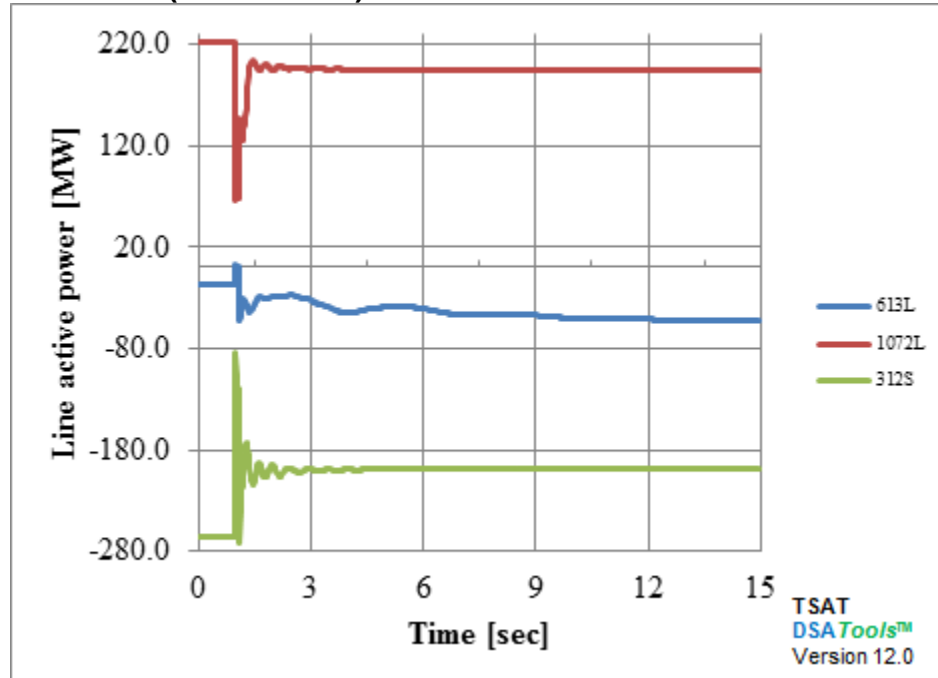
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Light 2014



10 -- 164L (103S - 415S) NEAR 103S

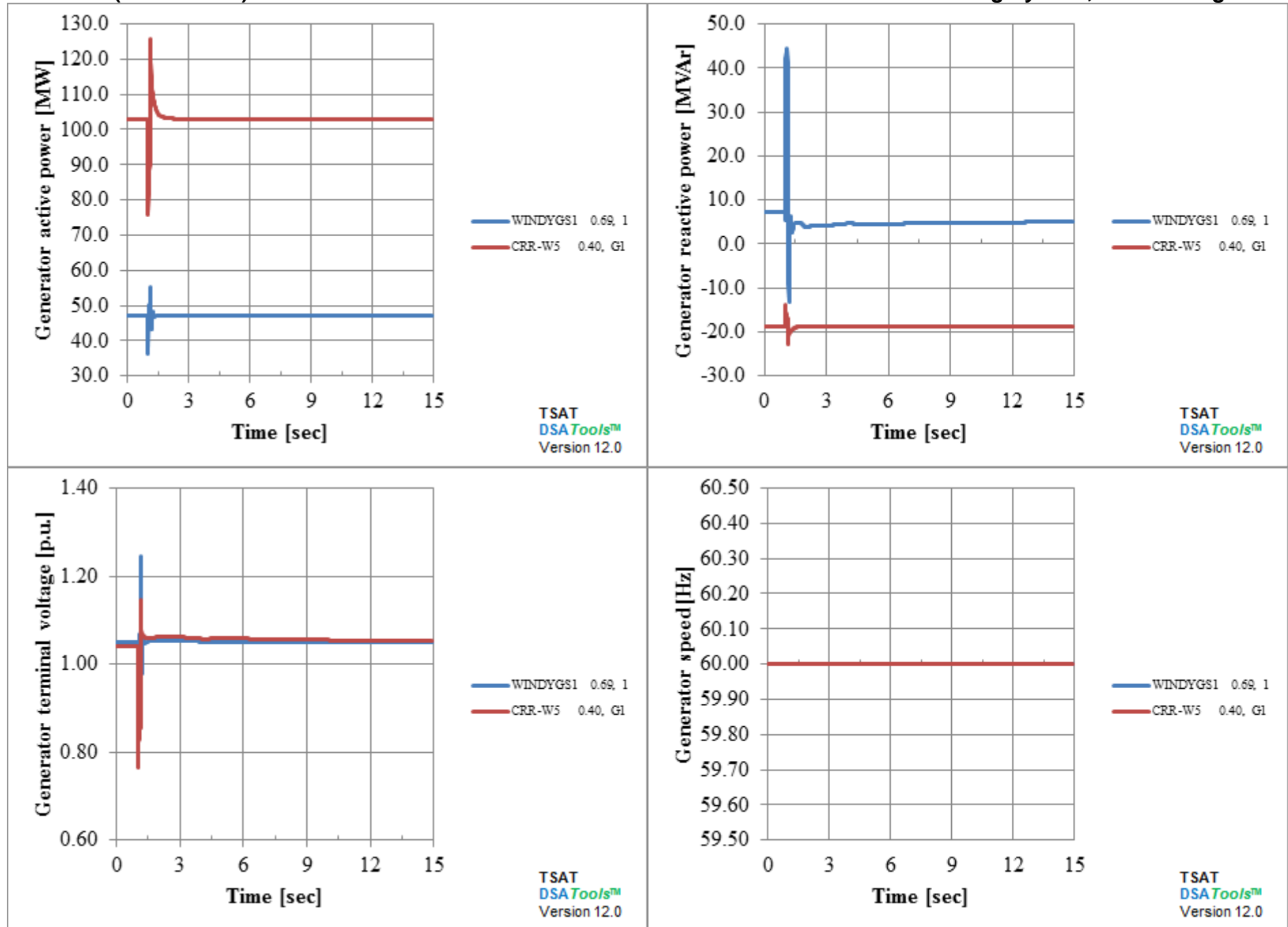
Existing System, Summer Light 2014





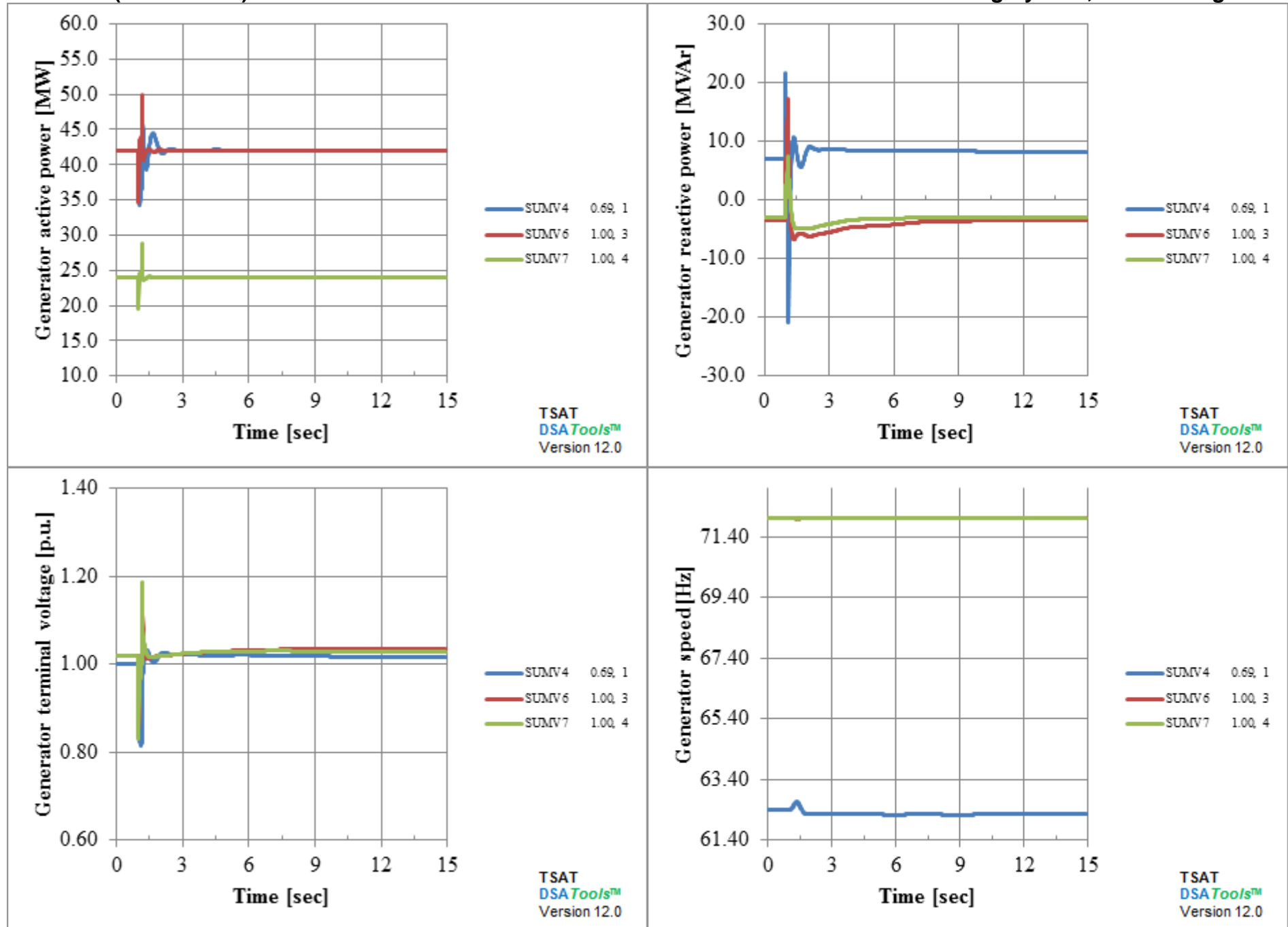
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



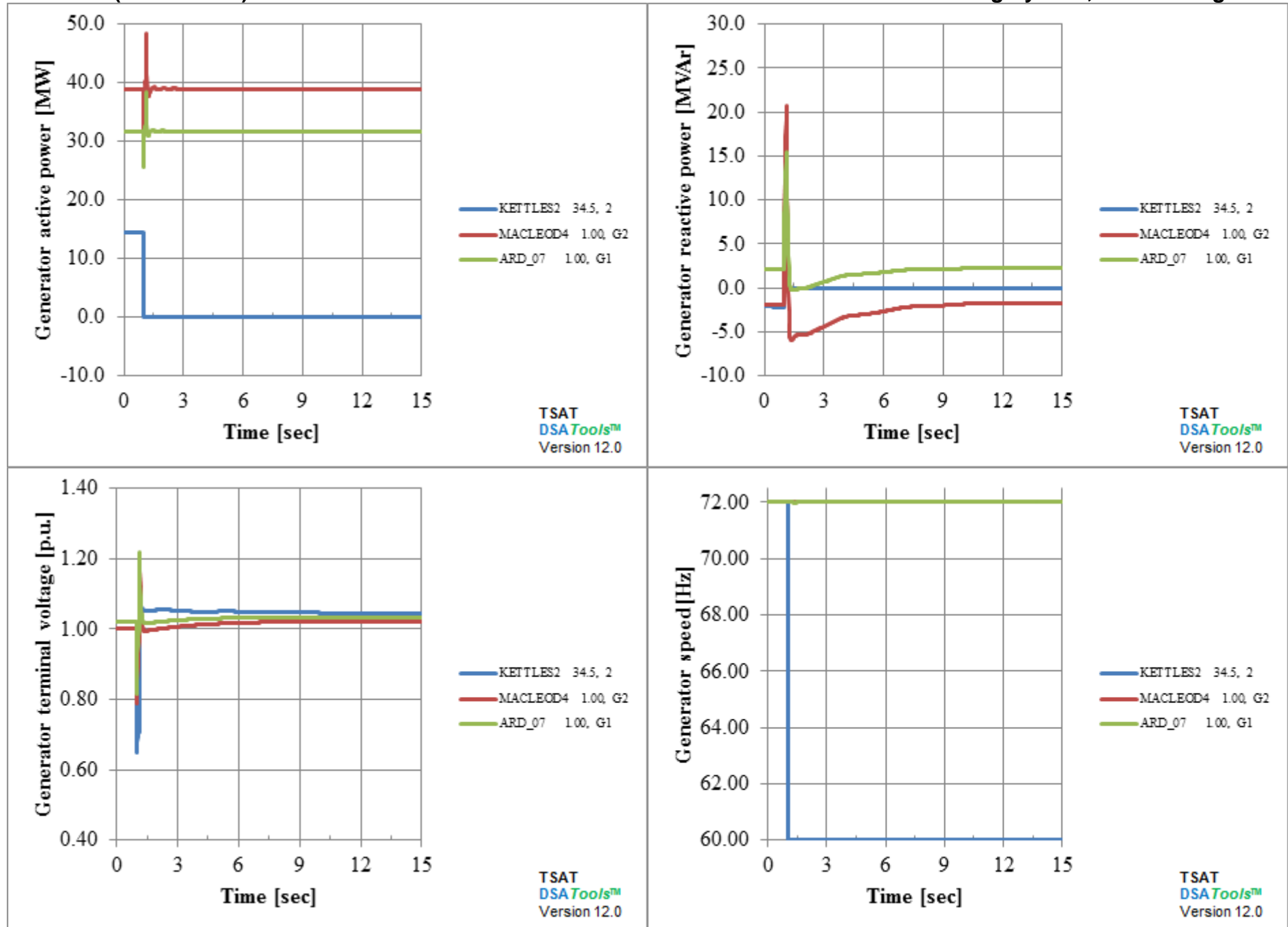
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



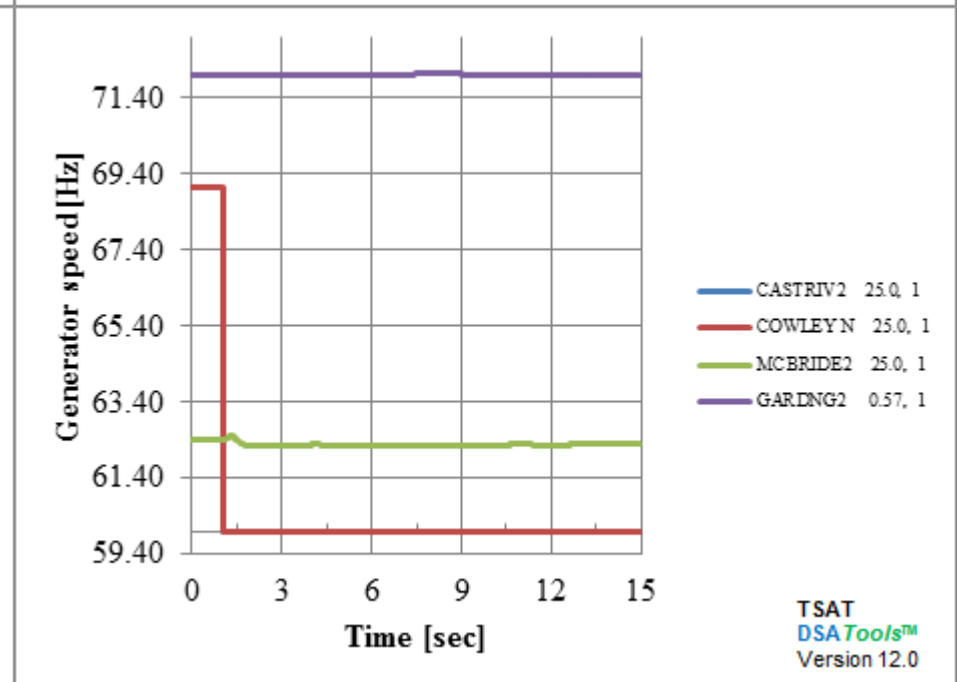
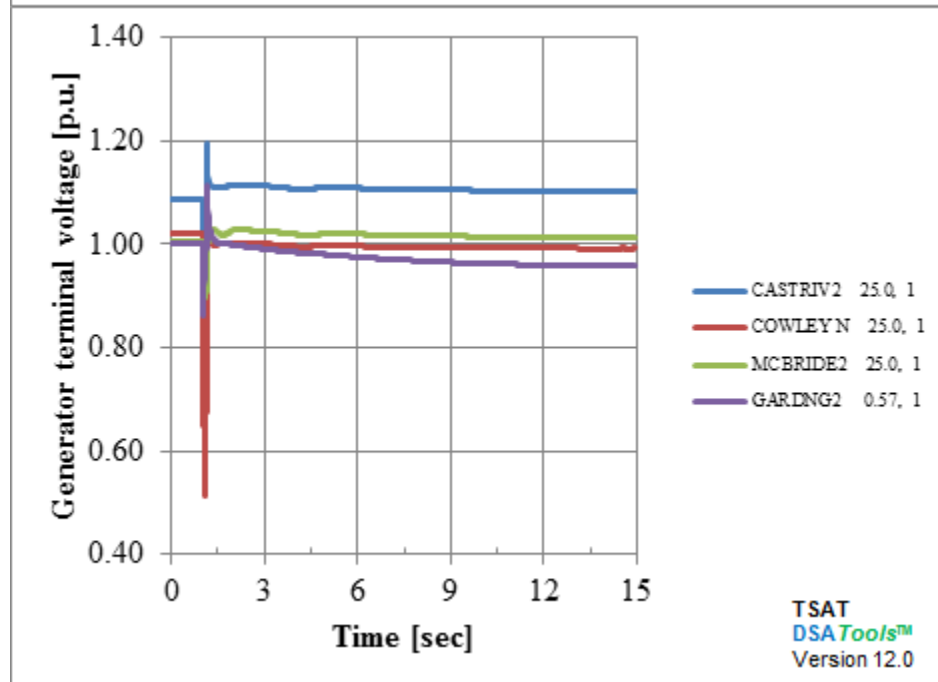
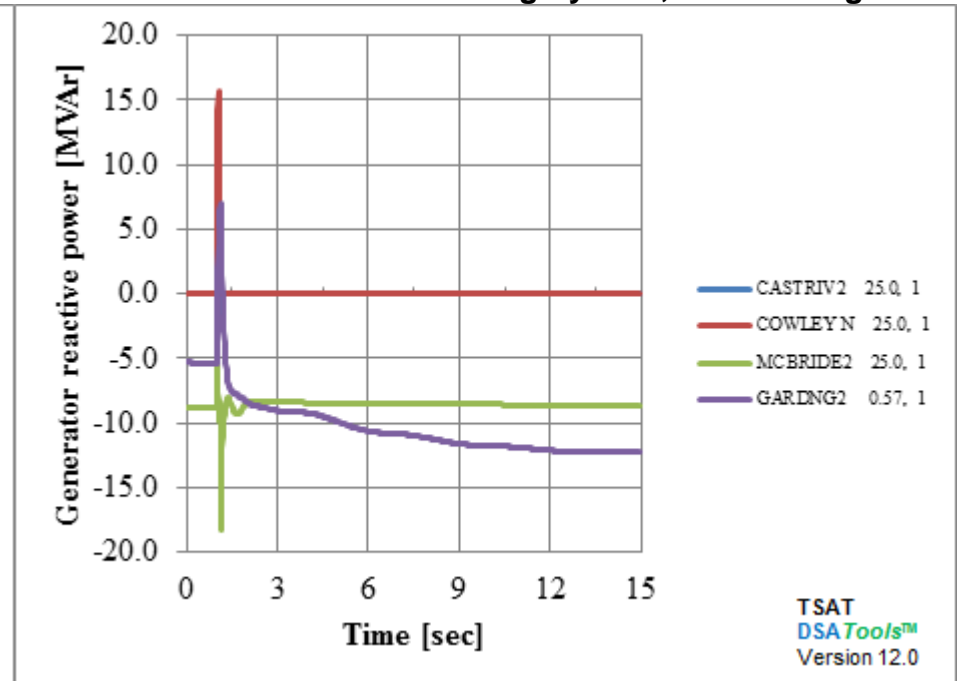
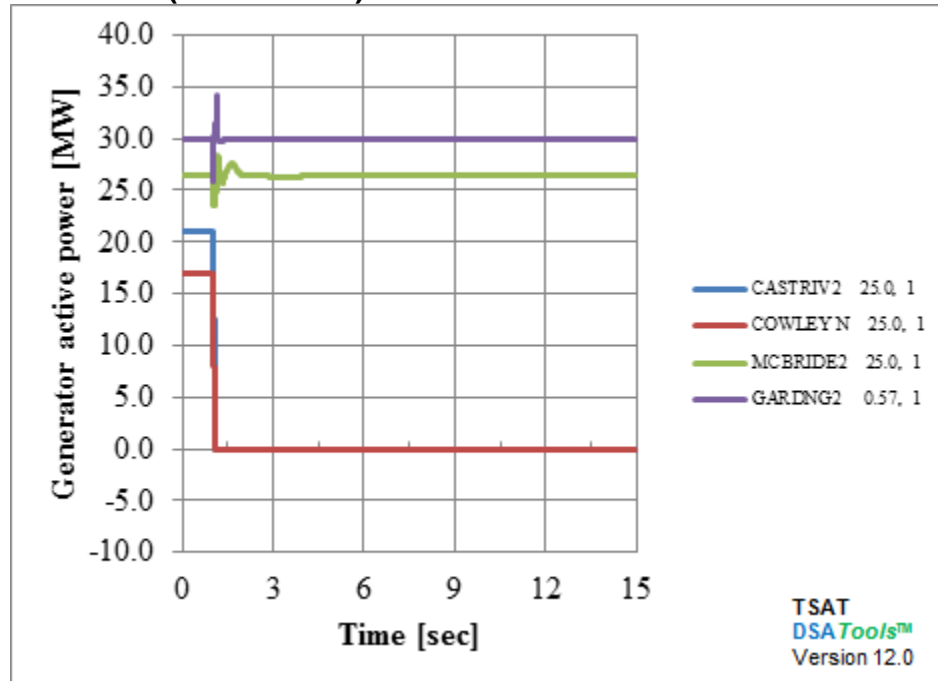
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



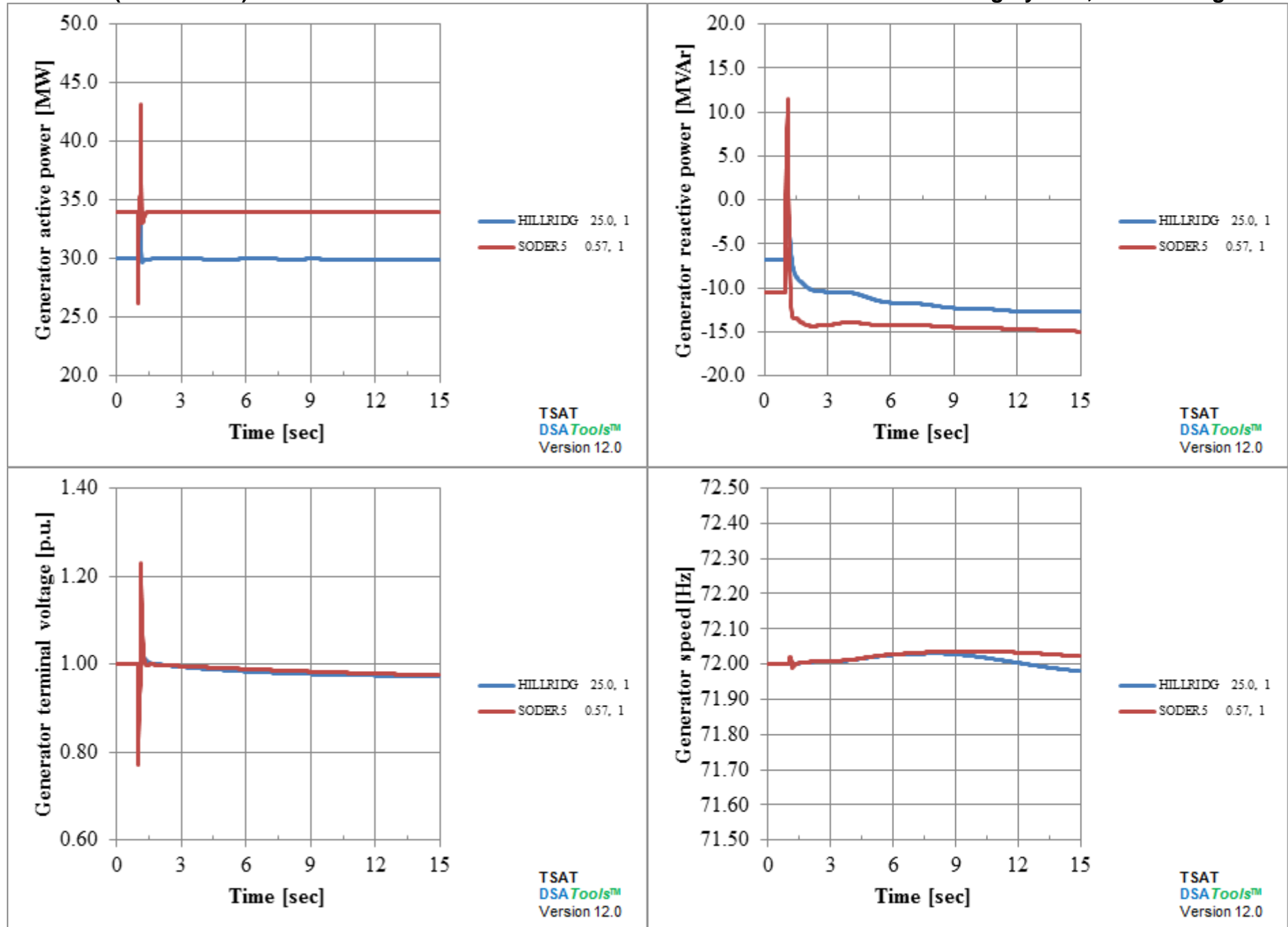
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



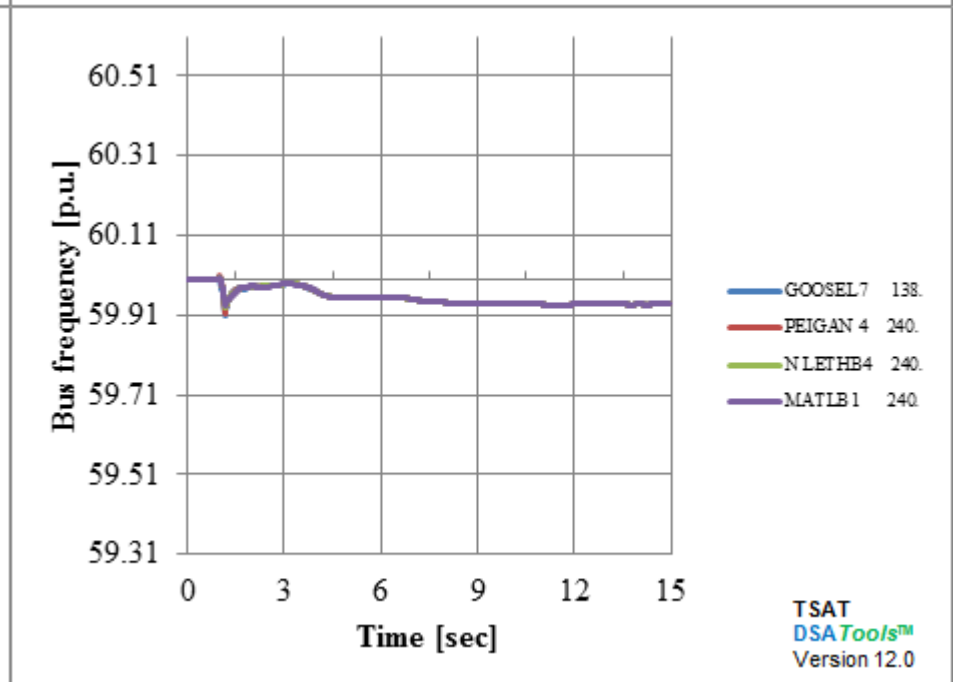
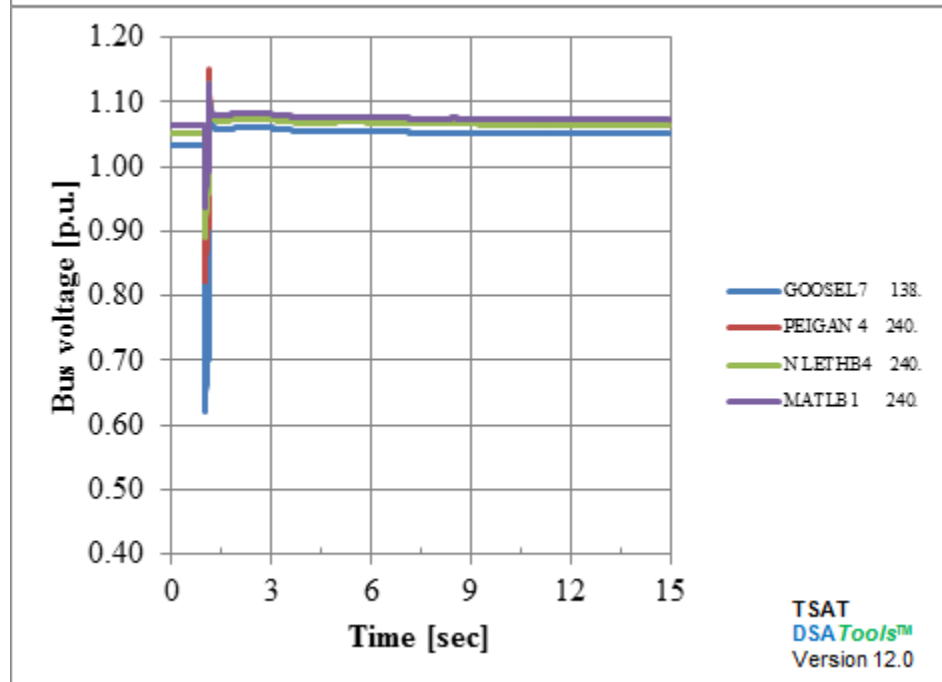
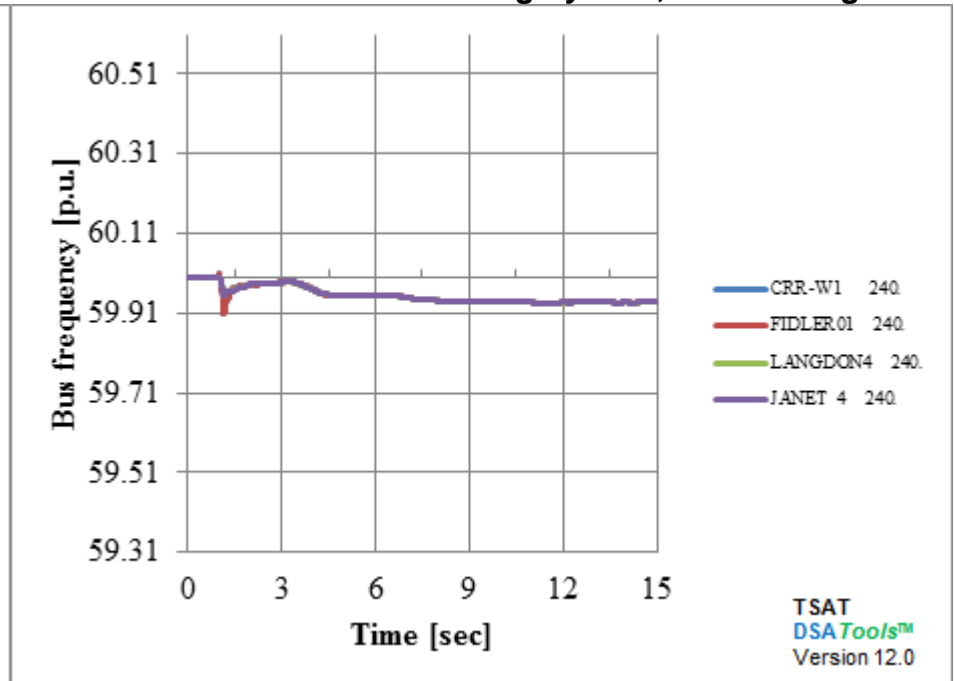
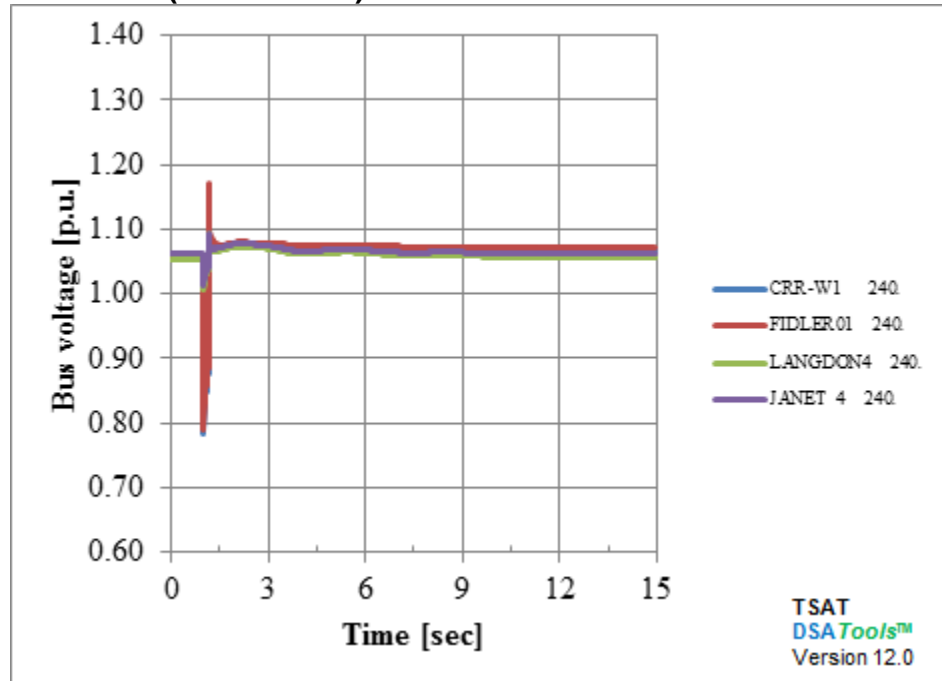
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



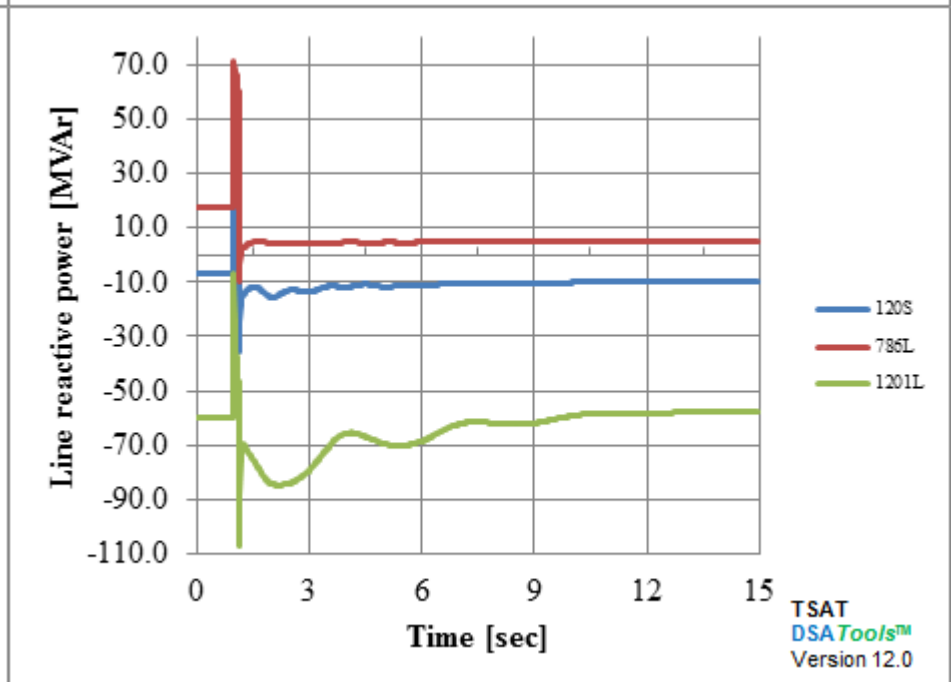
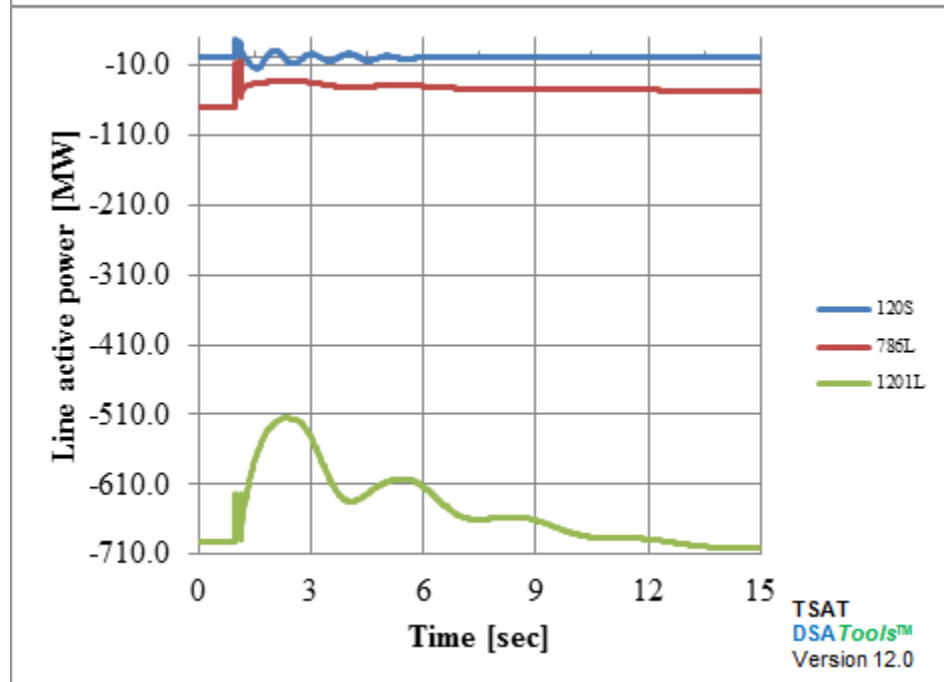
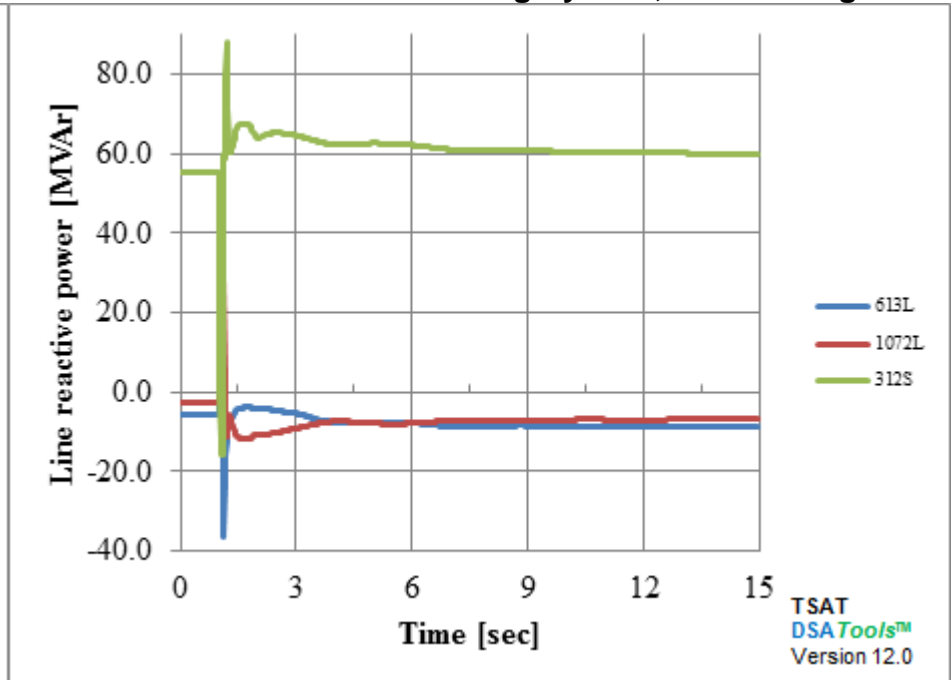
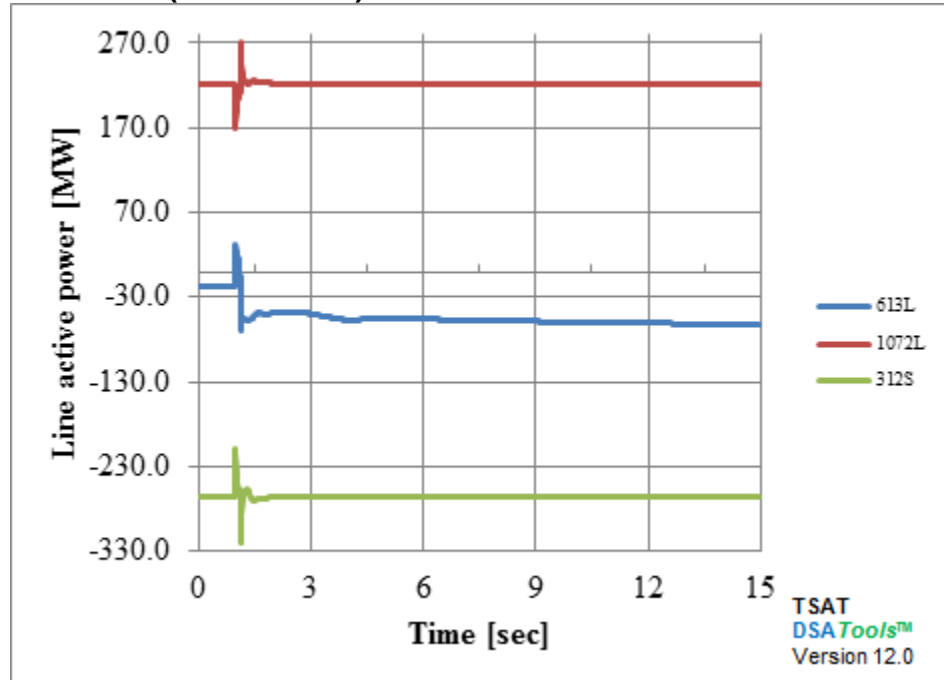
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



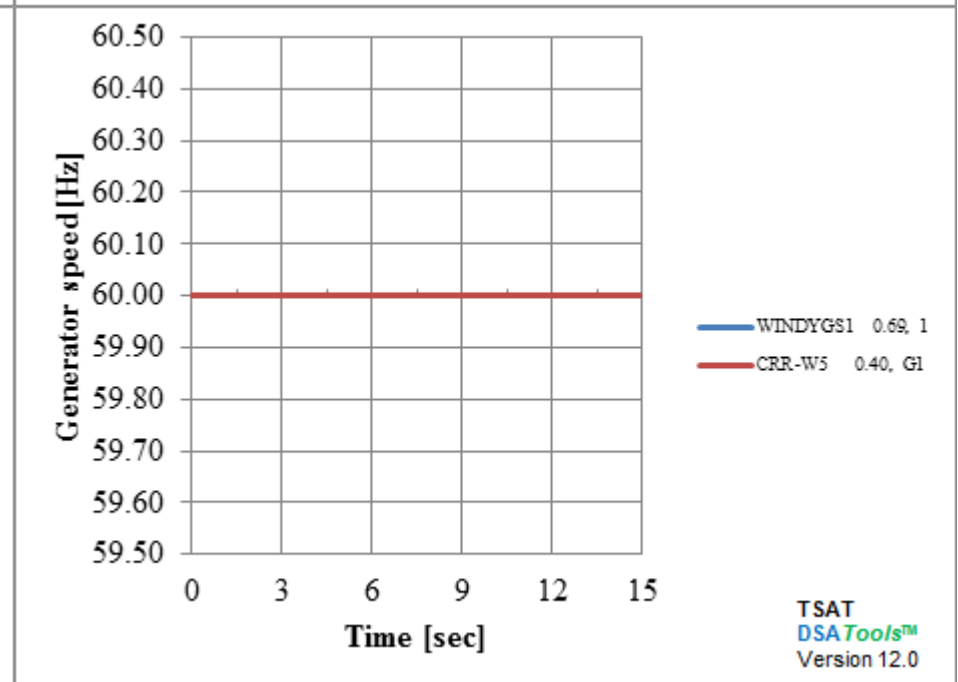
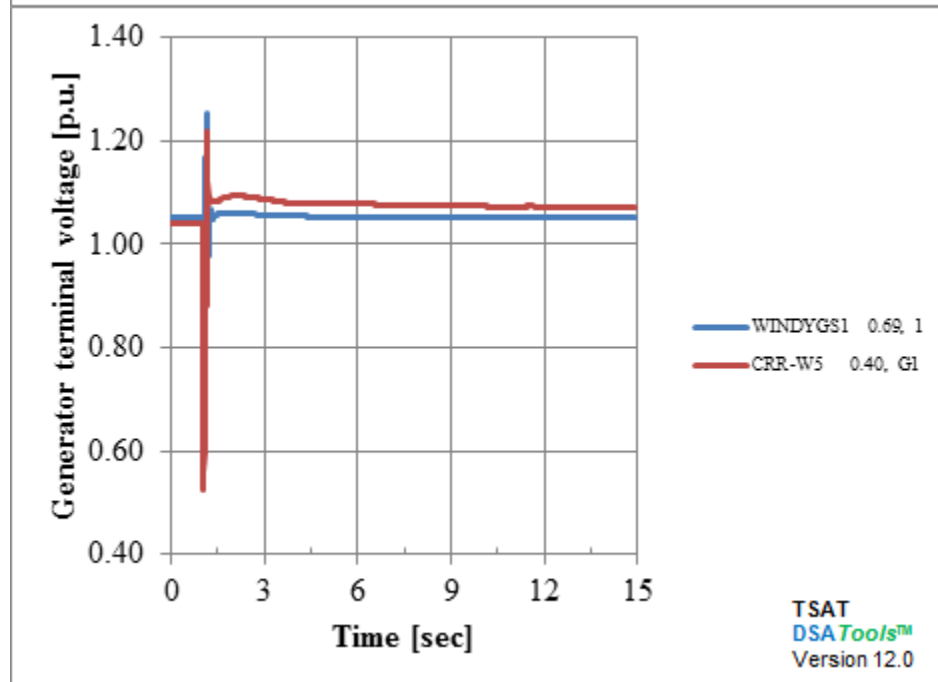
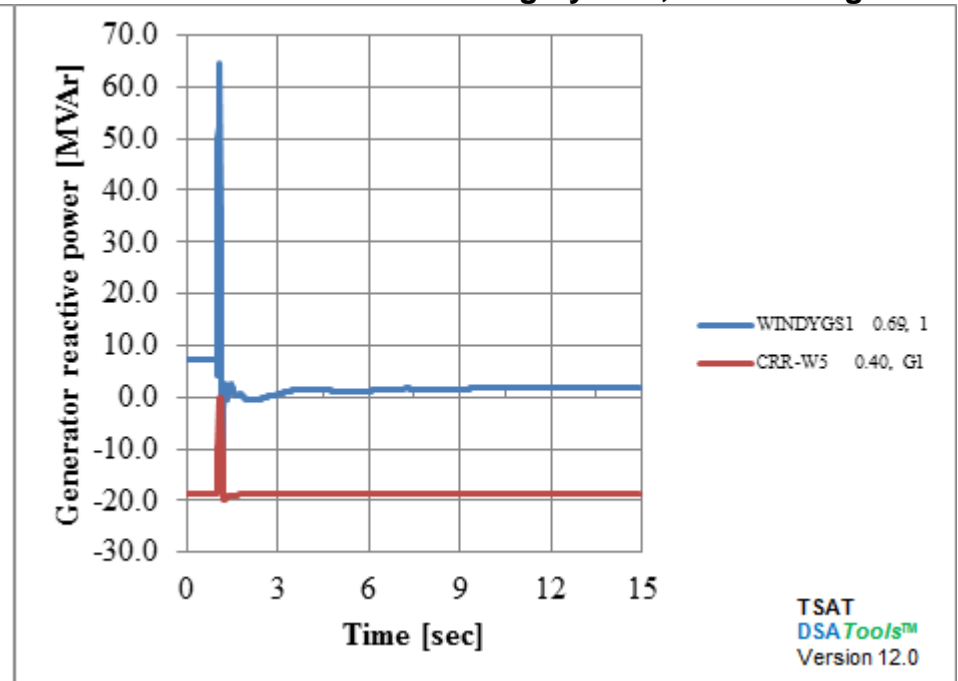
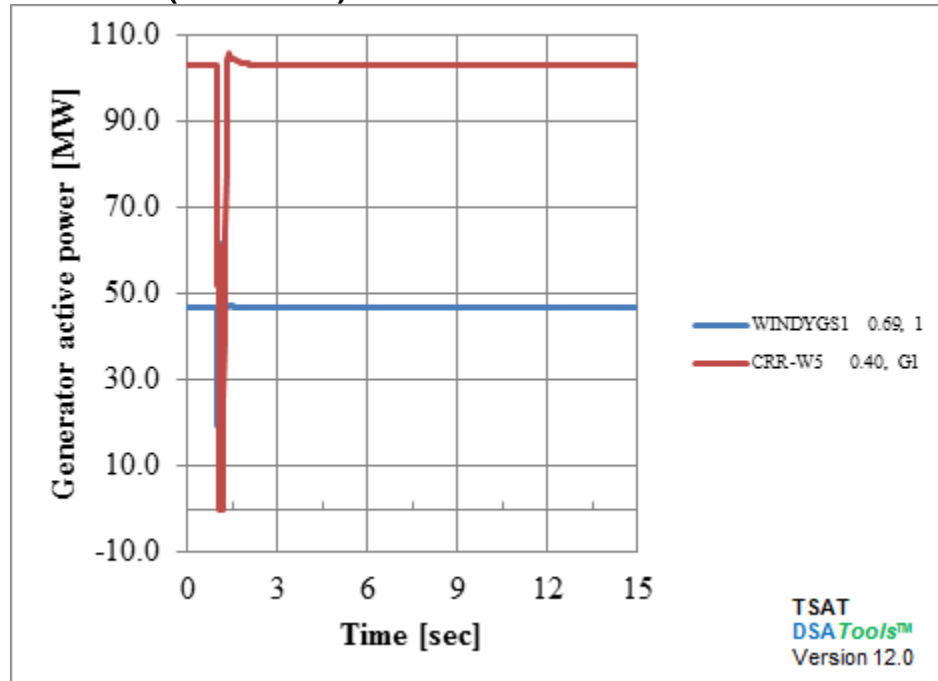
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Light 2014



12 -- 616L (59S - 103S) NEAR 59S

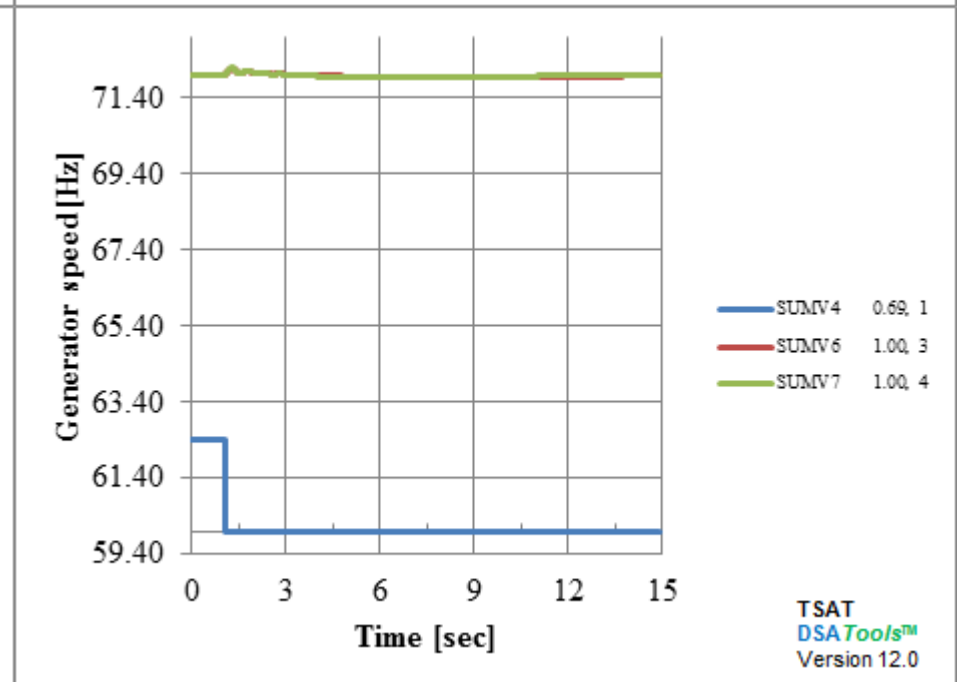
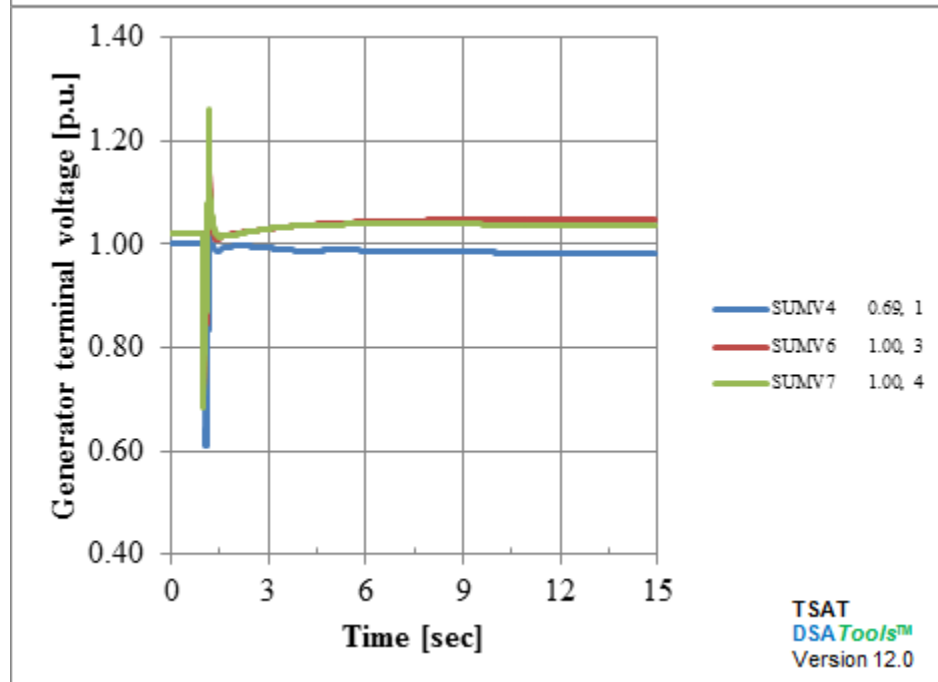
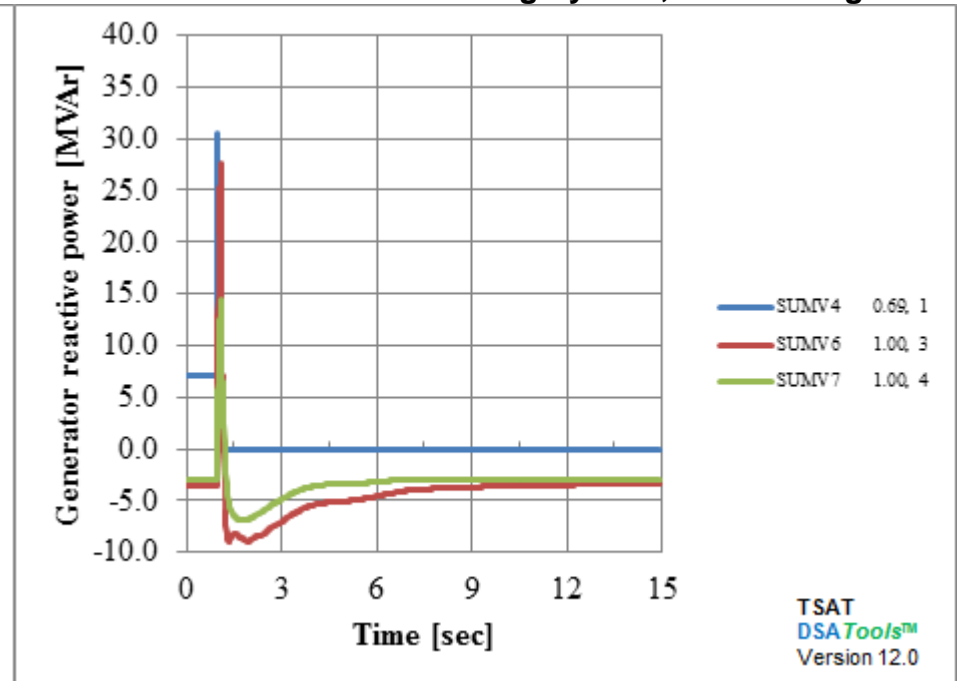
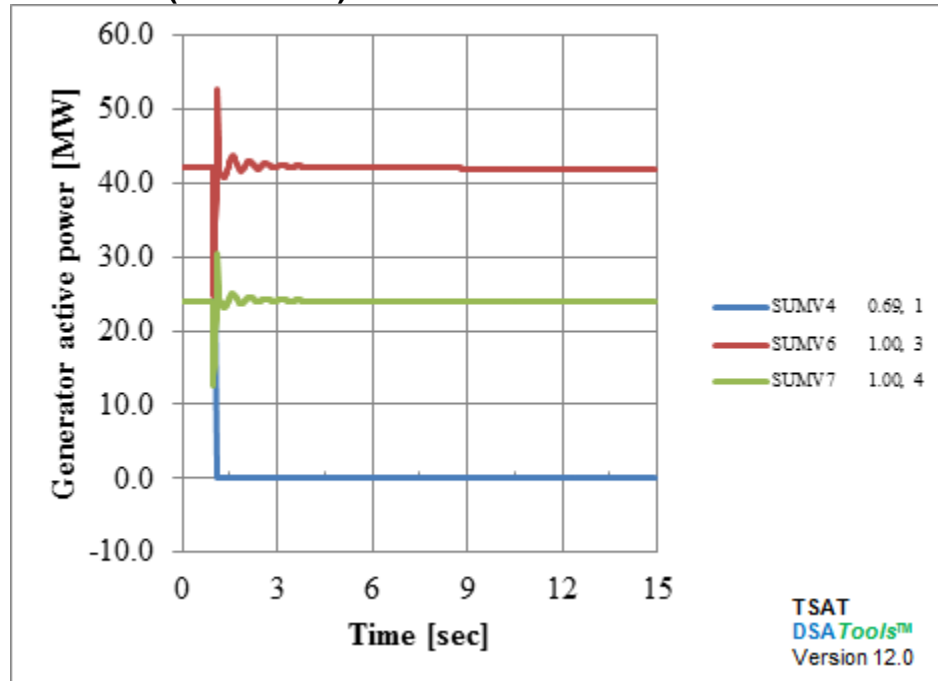
Existing System, Summer Light 2014





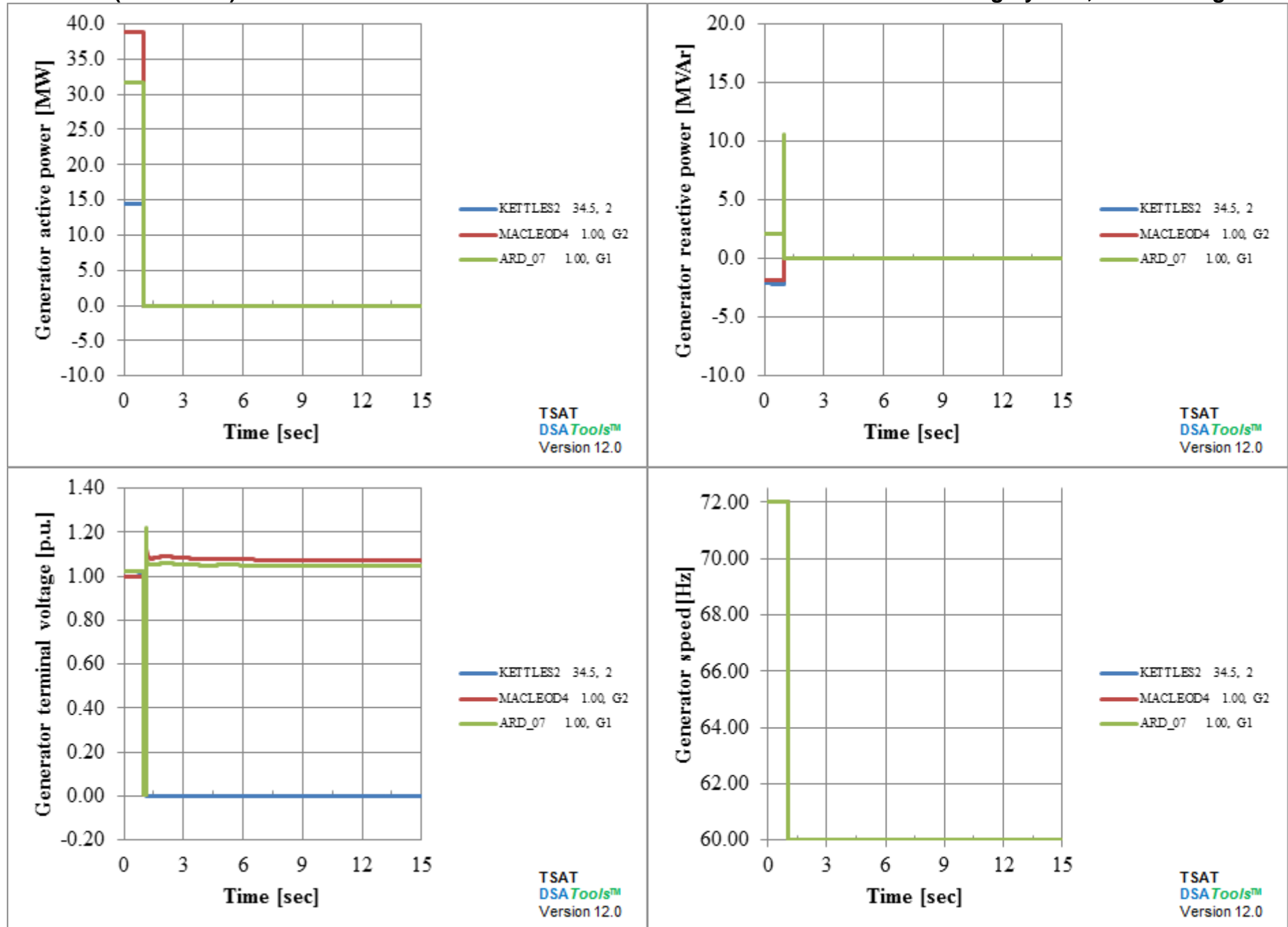
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



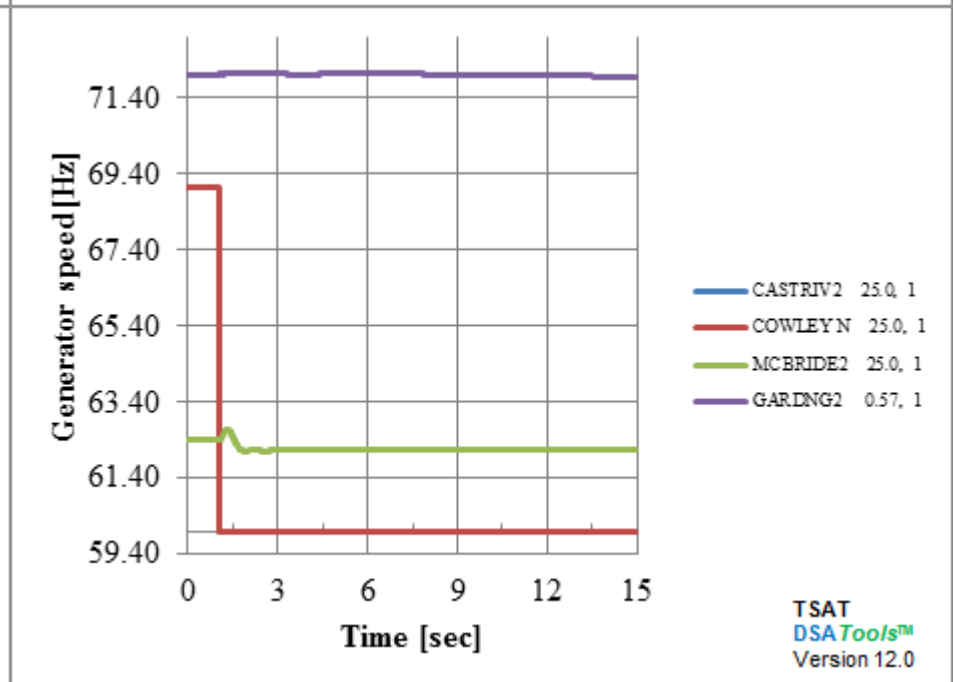
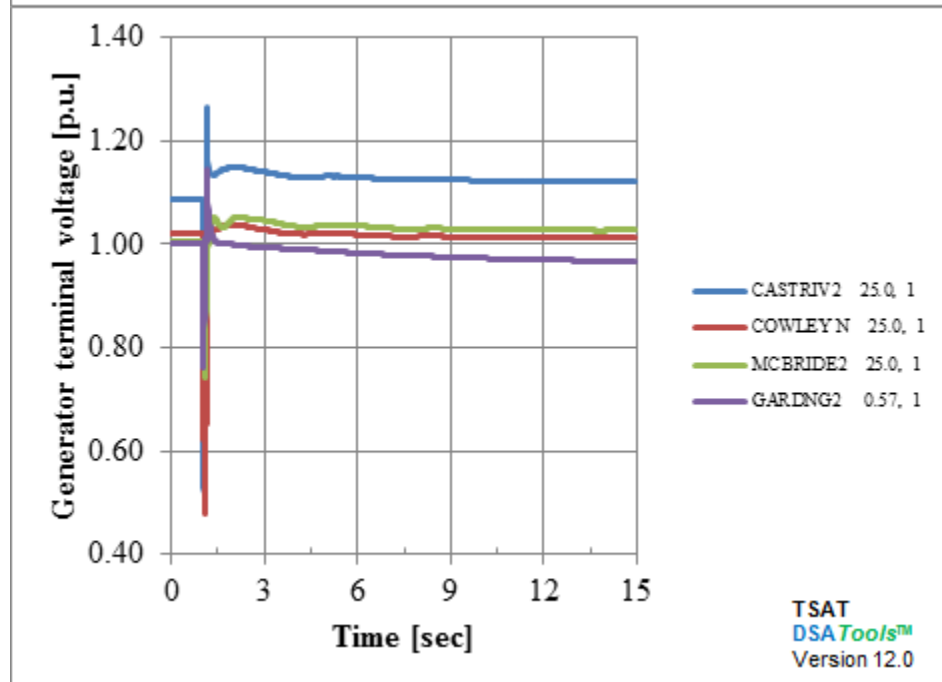
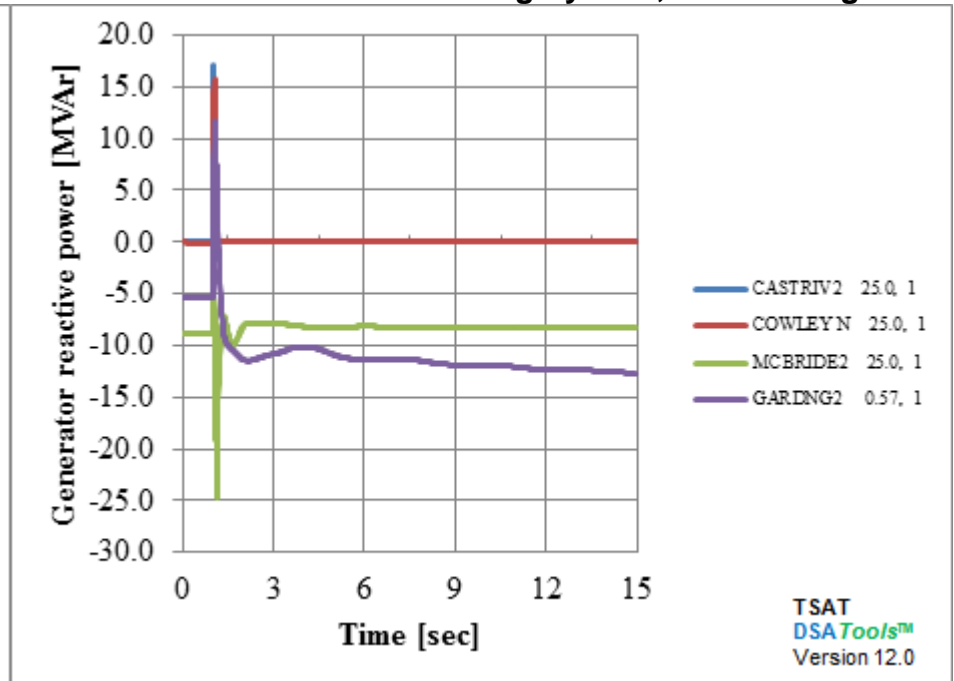
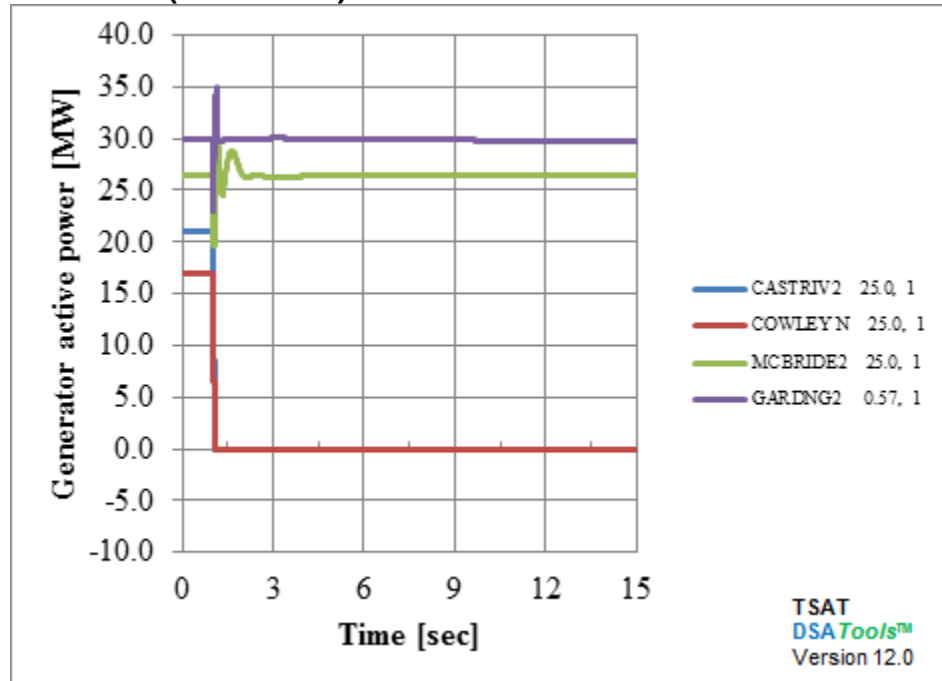
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



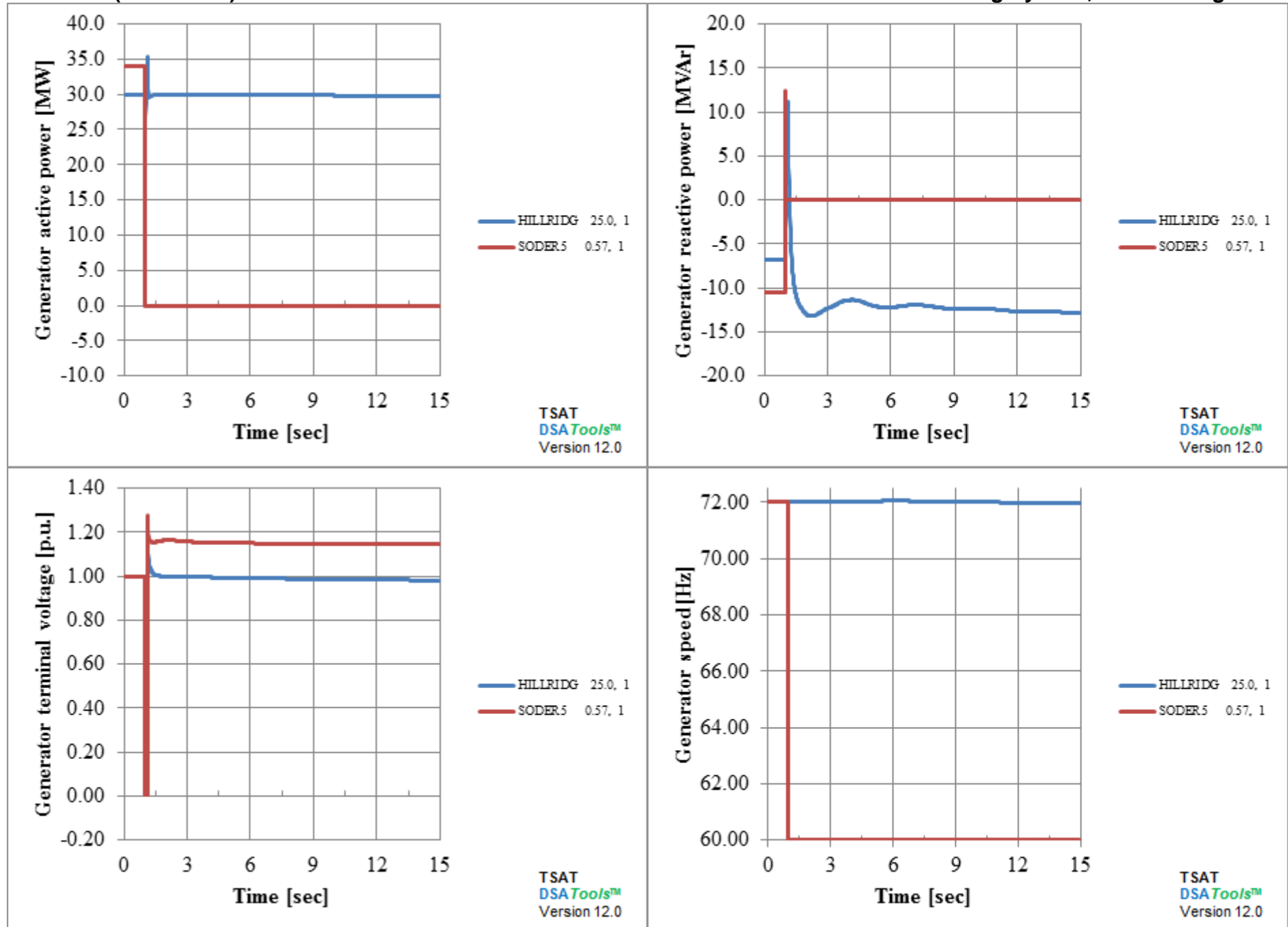
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



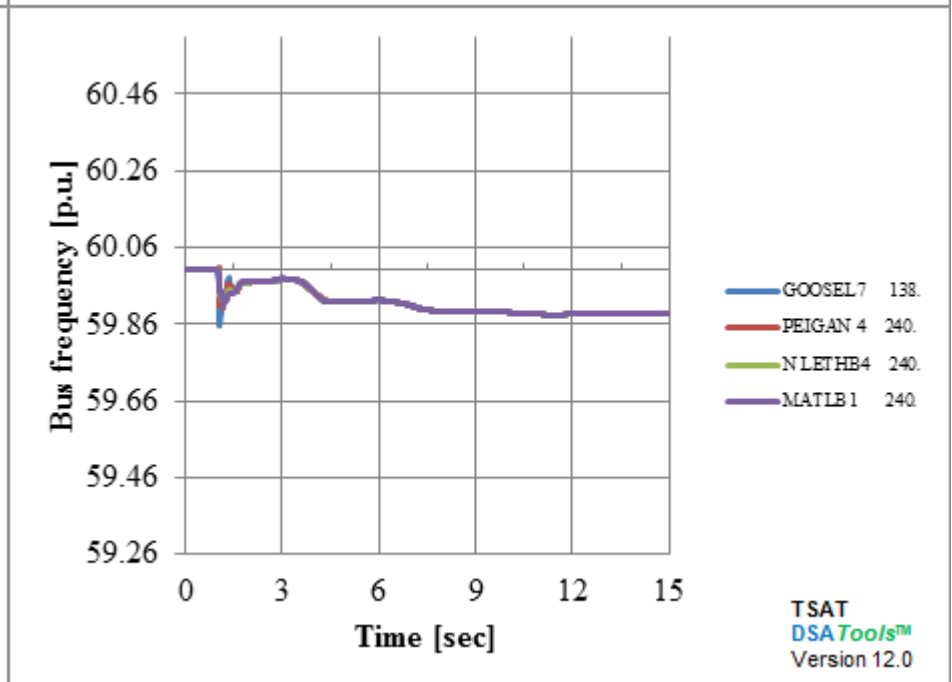
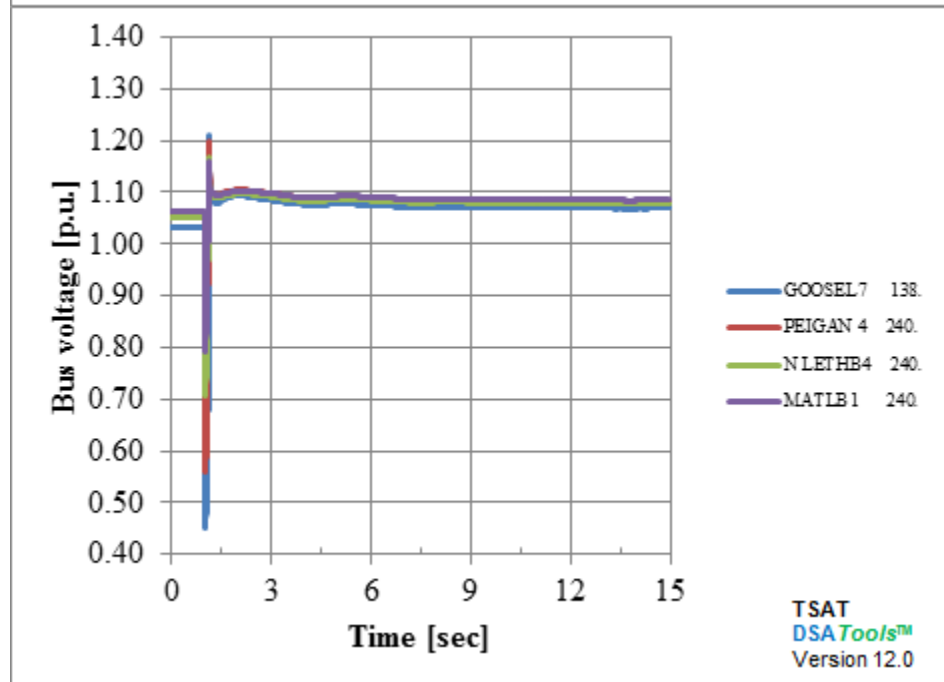
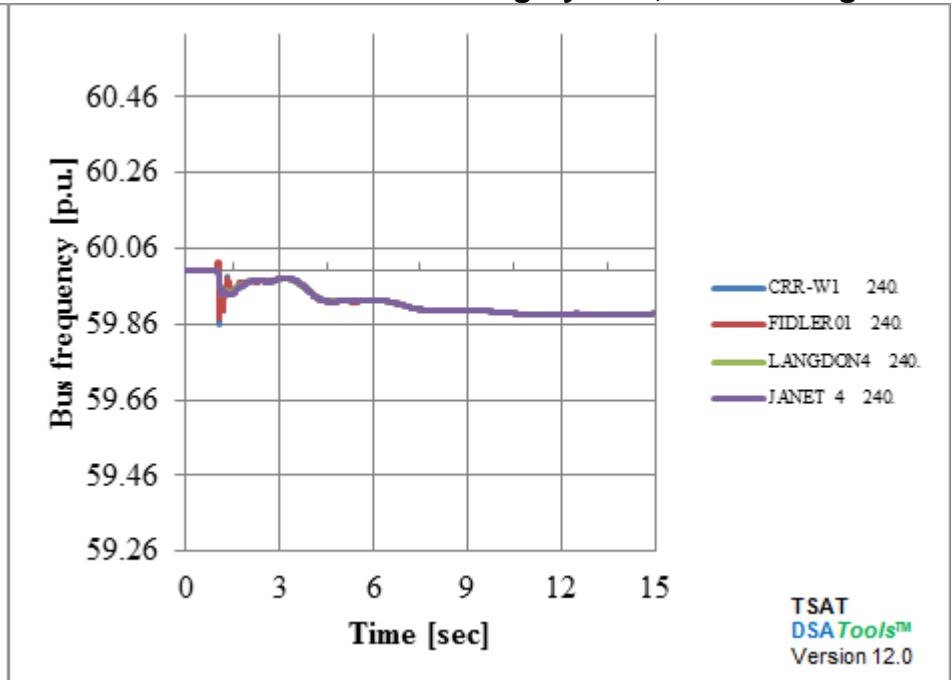
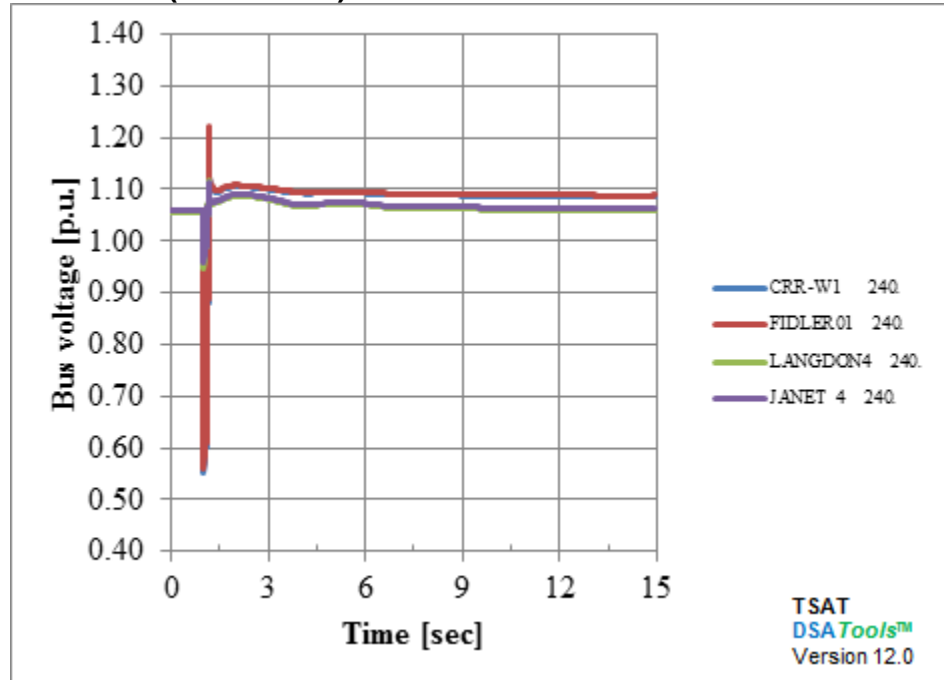
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



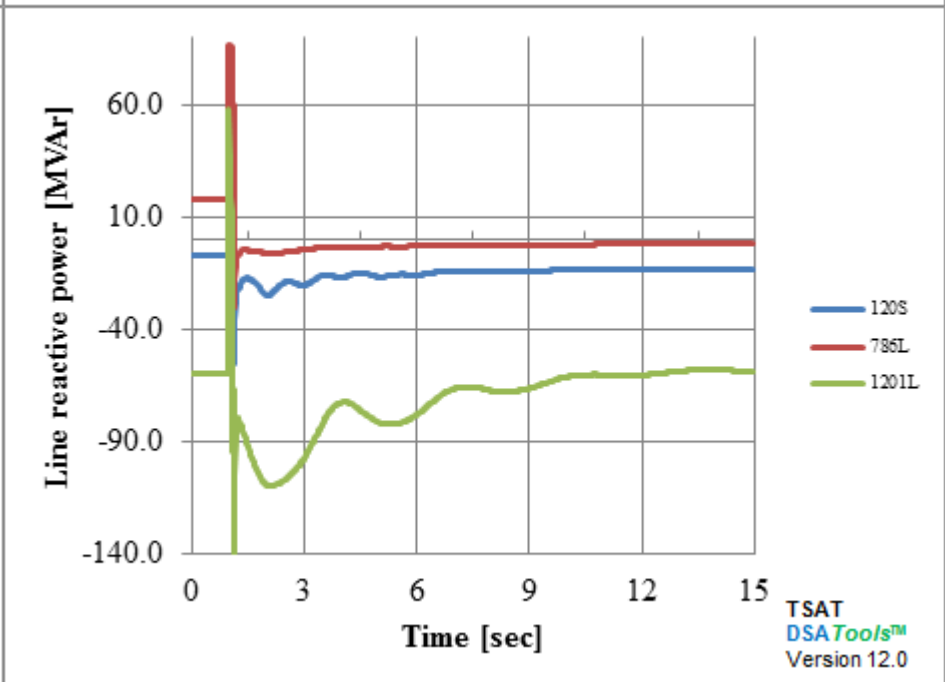
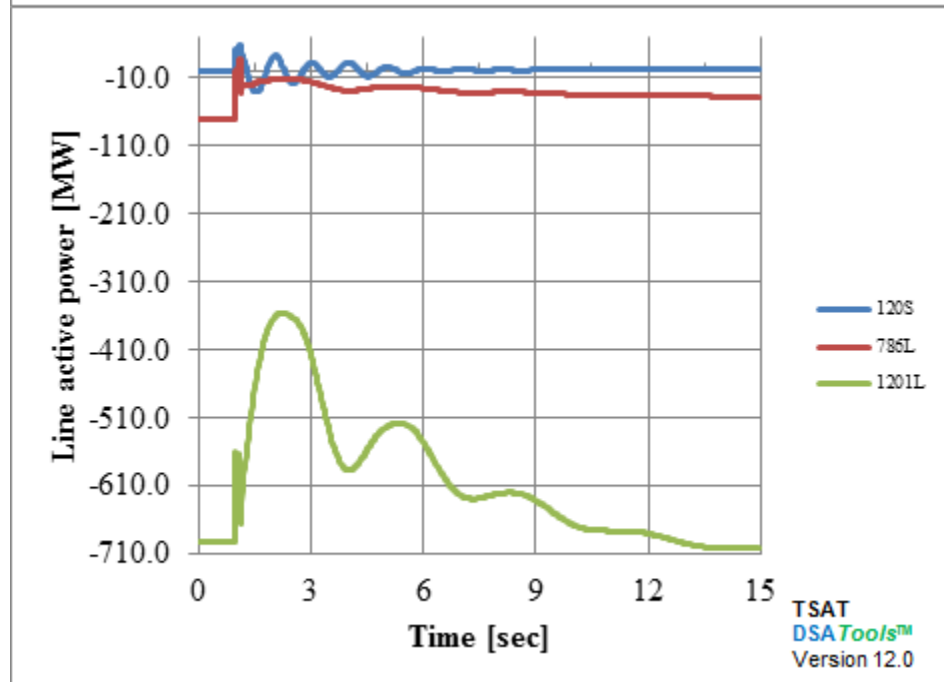
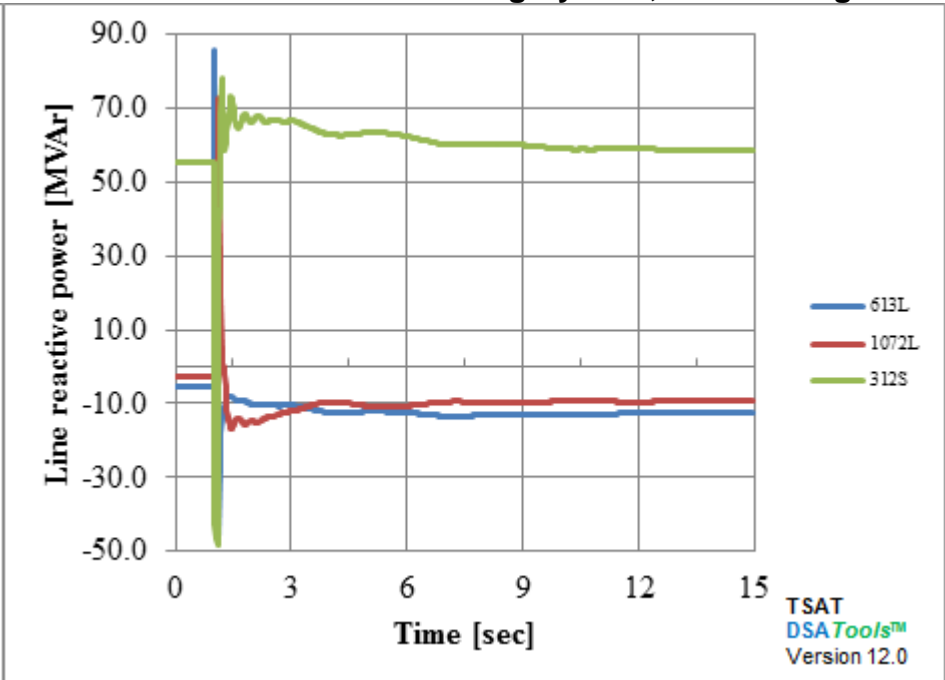
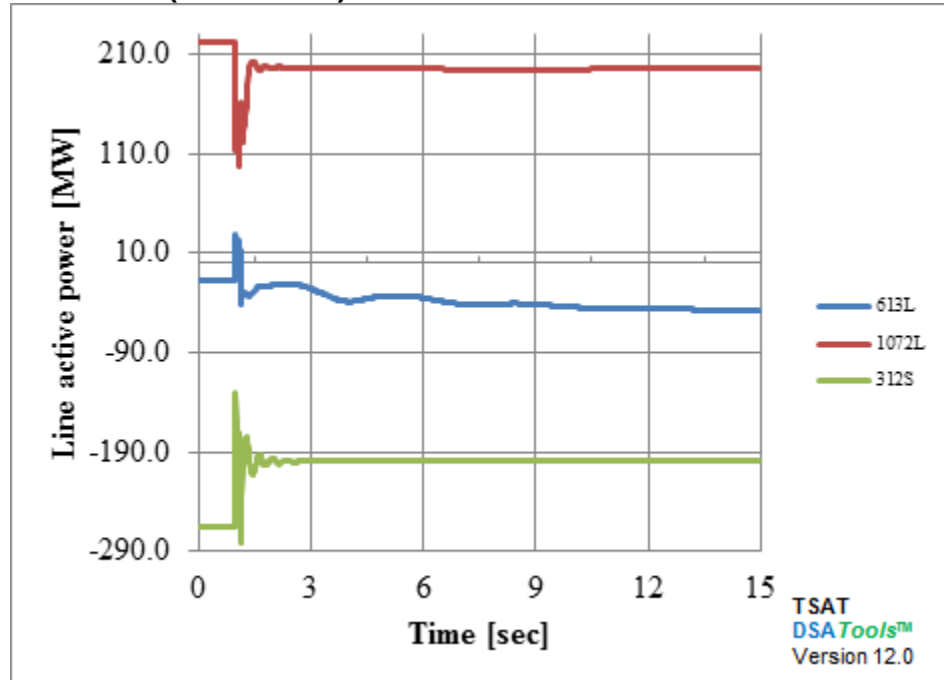
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



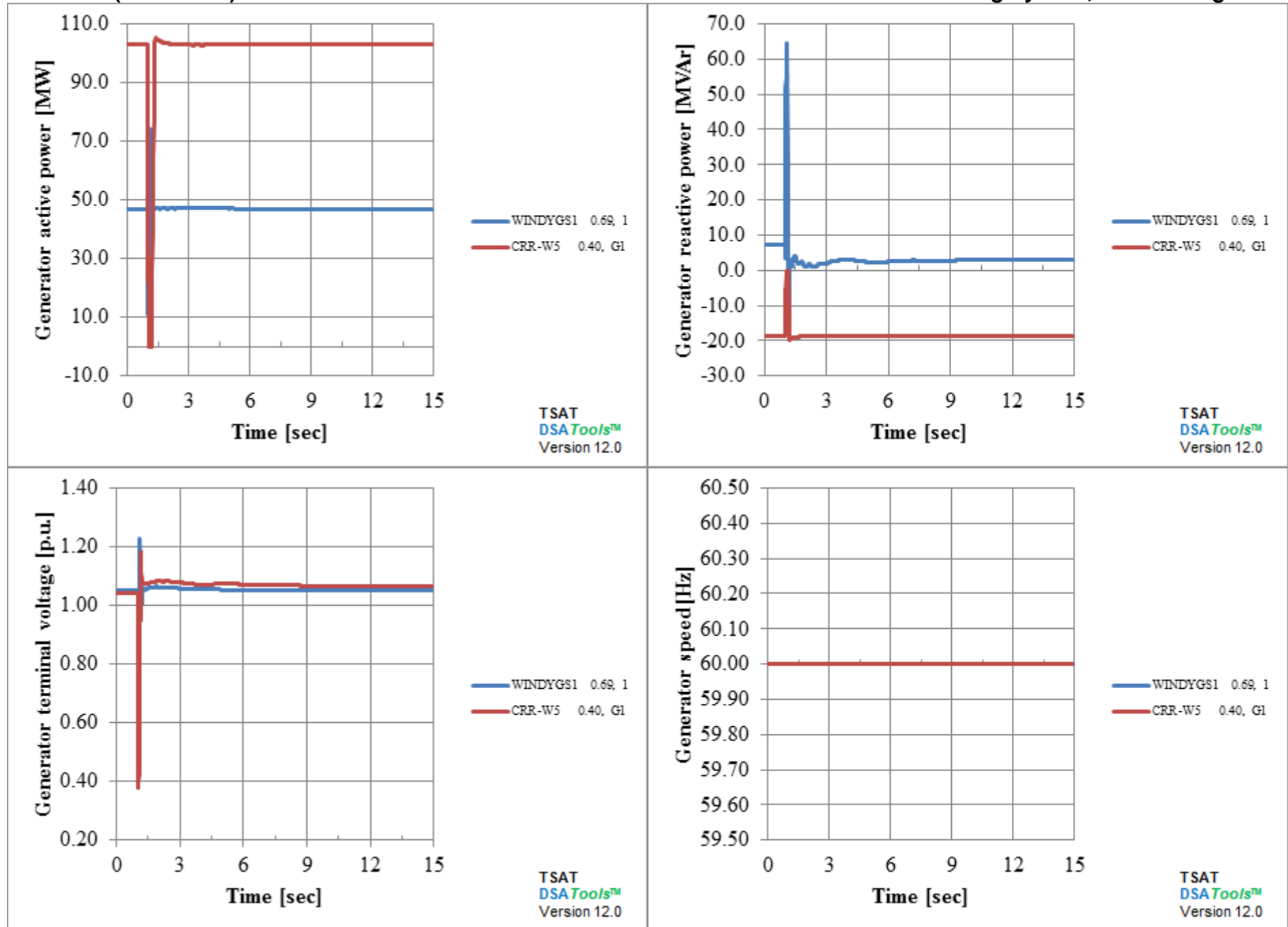
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Light 2014



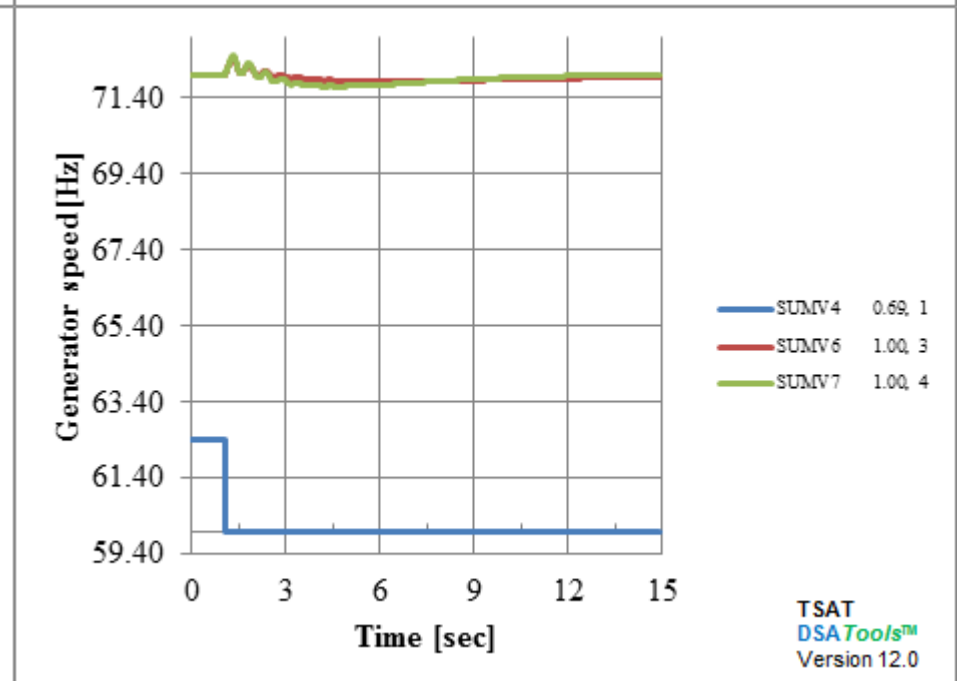
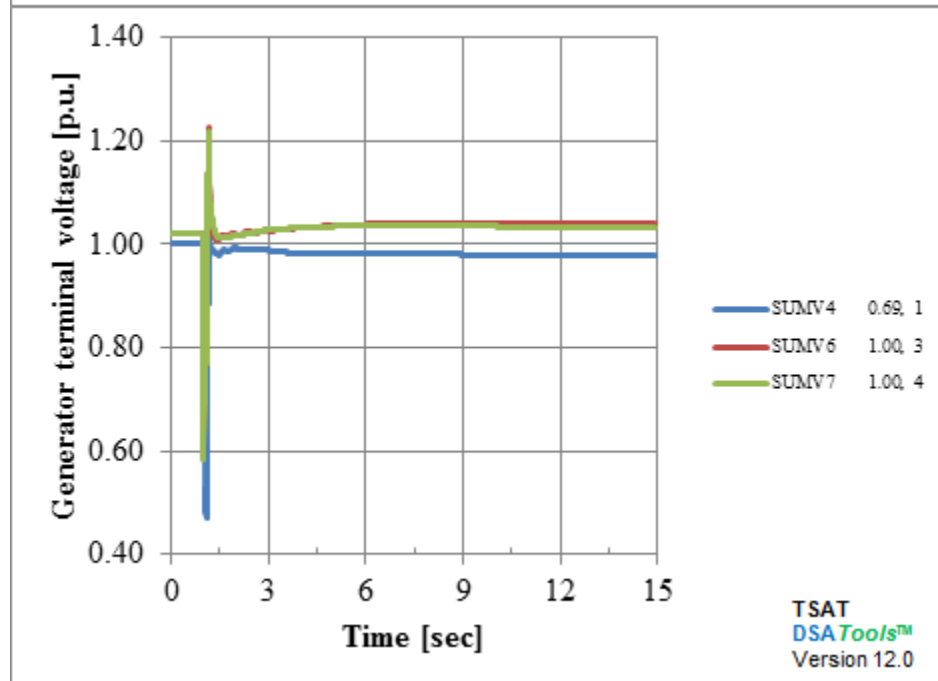
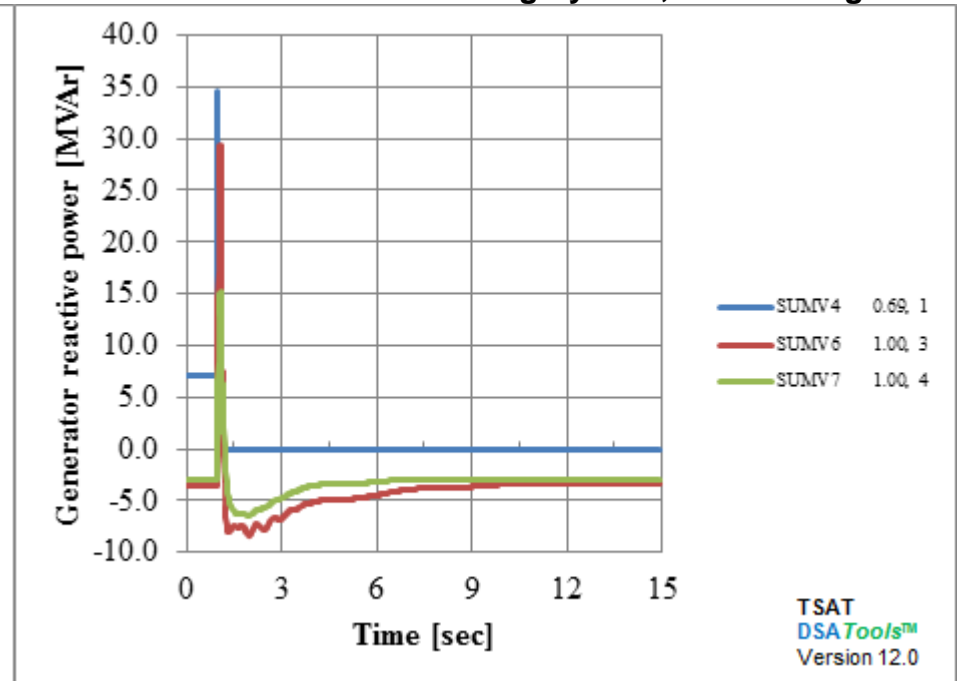
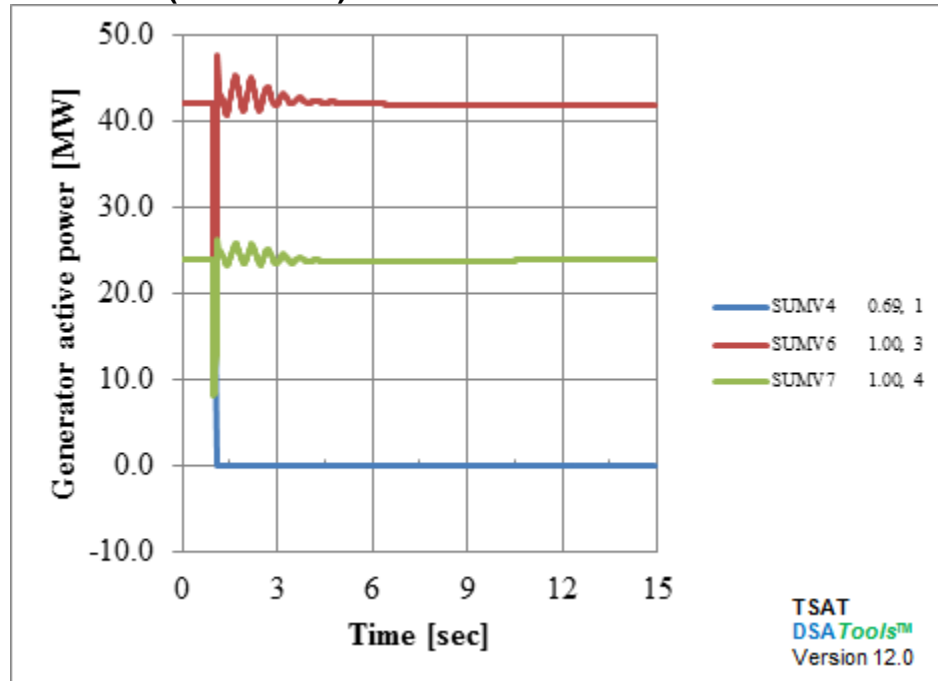
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



13 -- 616L (59S - 103S) NEAR 103S

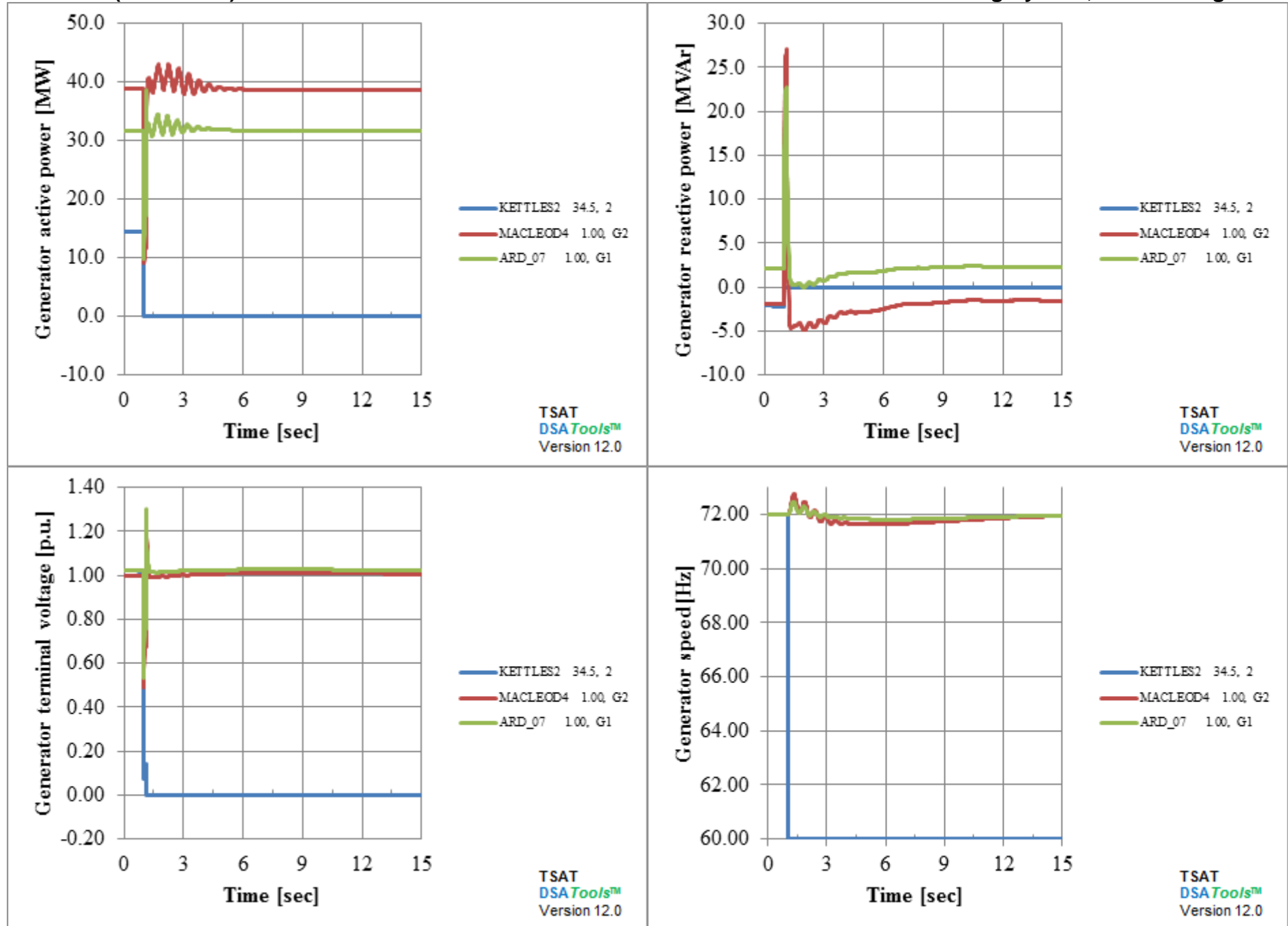
Existing System, Summer Light 2014





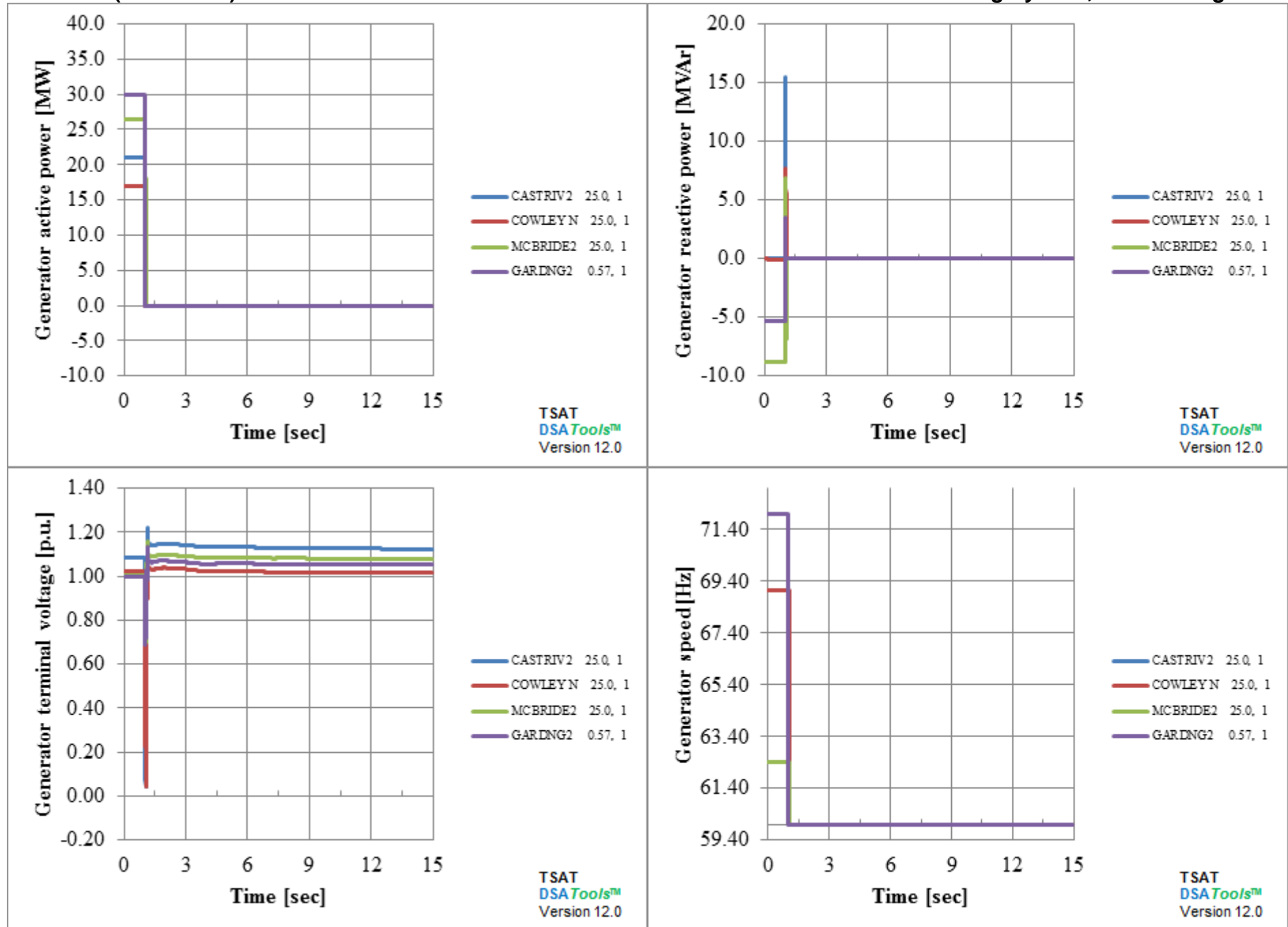
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



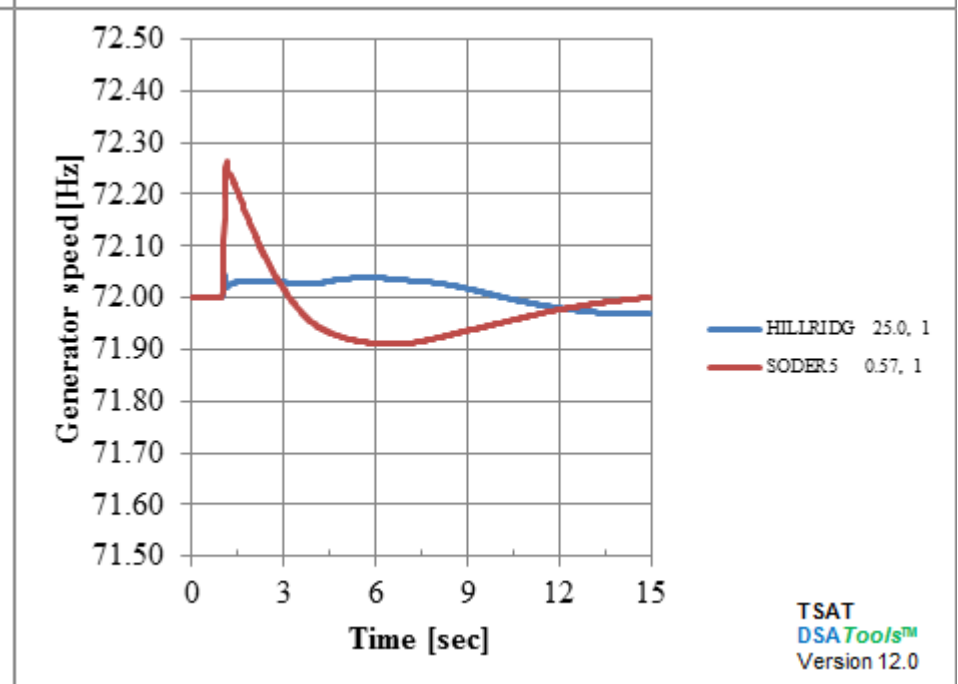
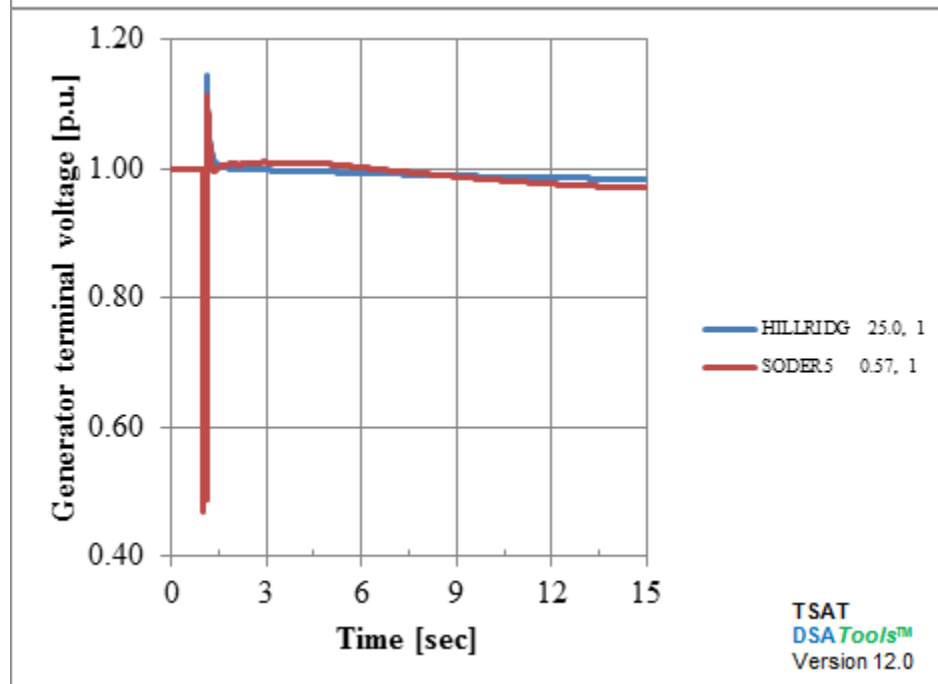
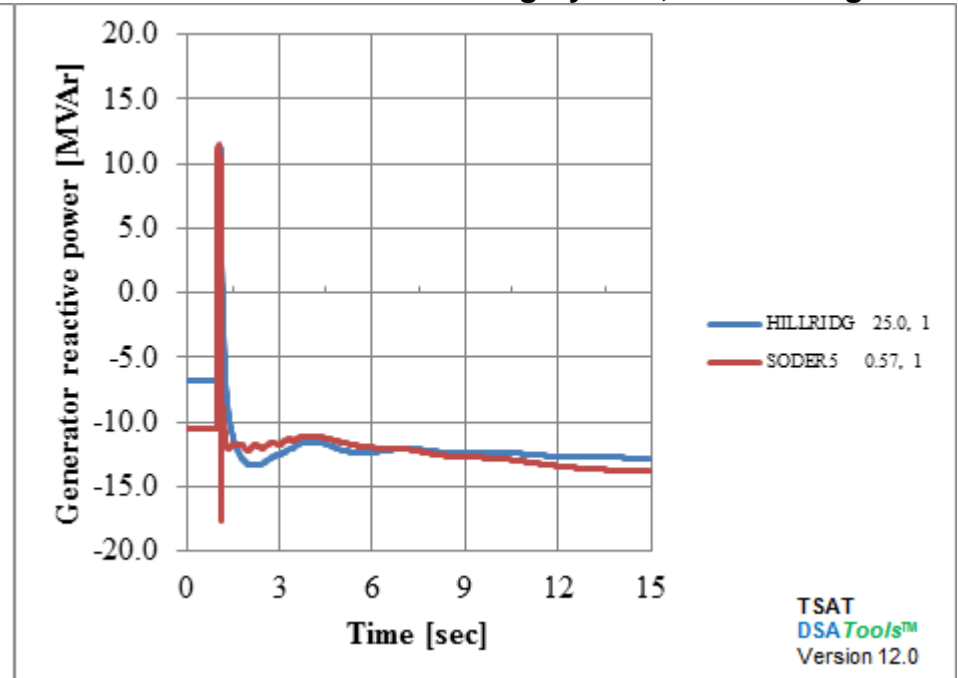
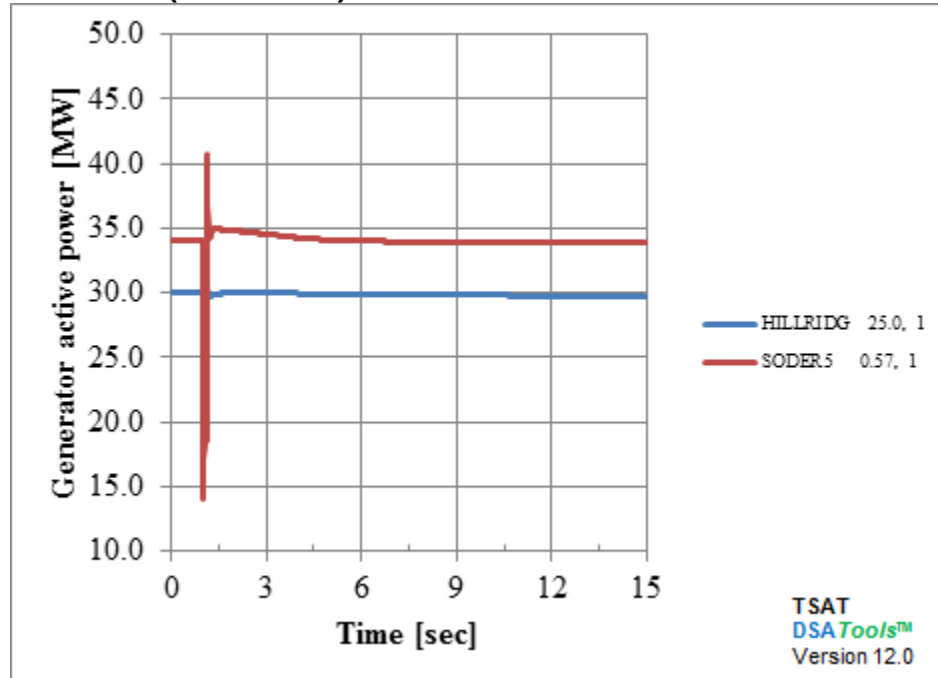
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



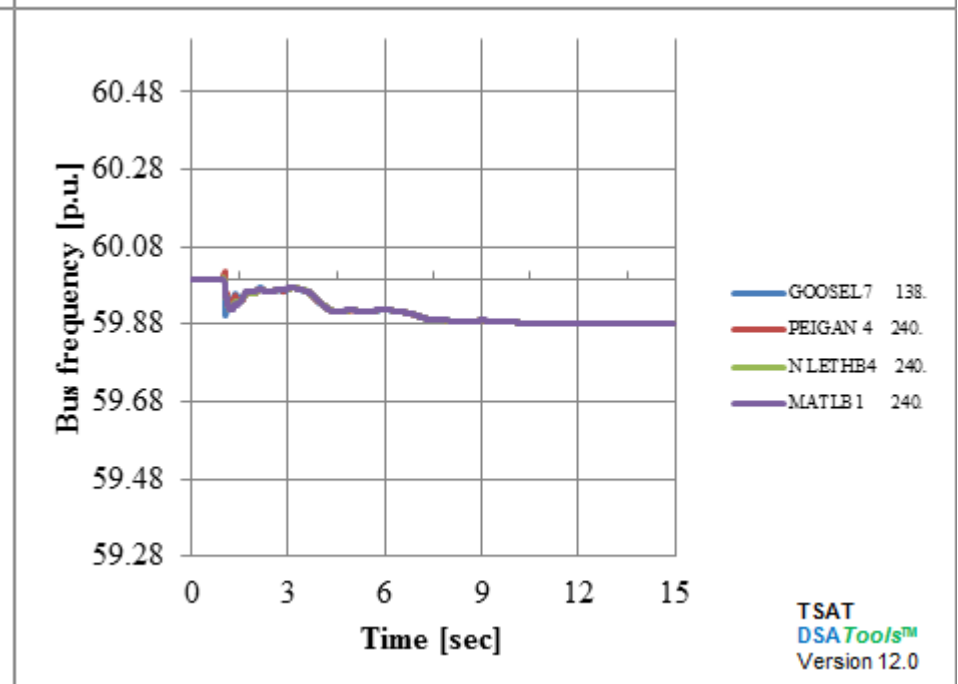
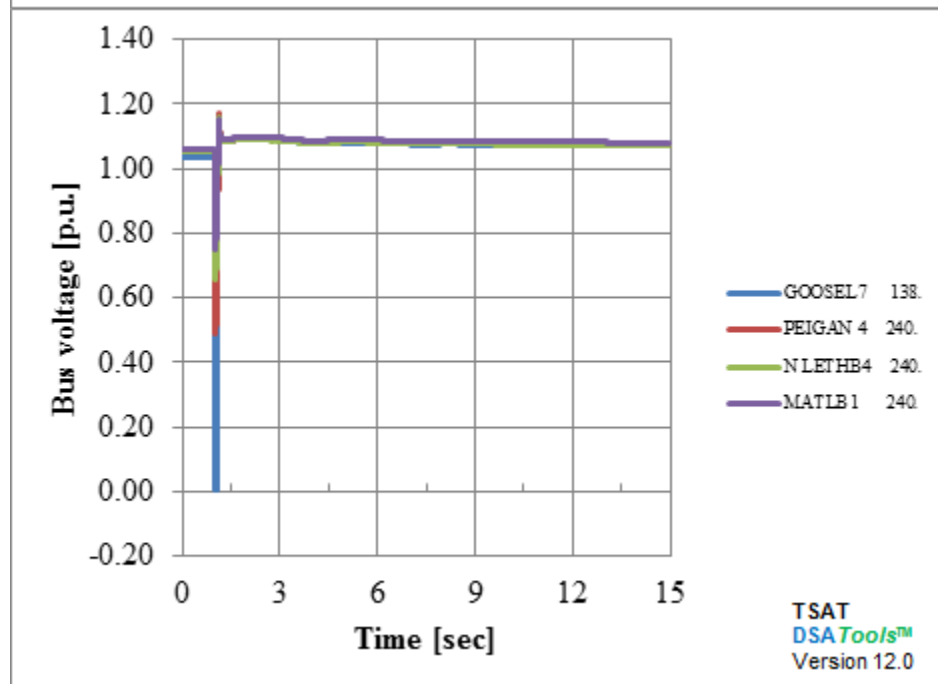
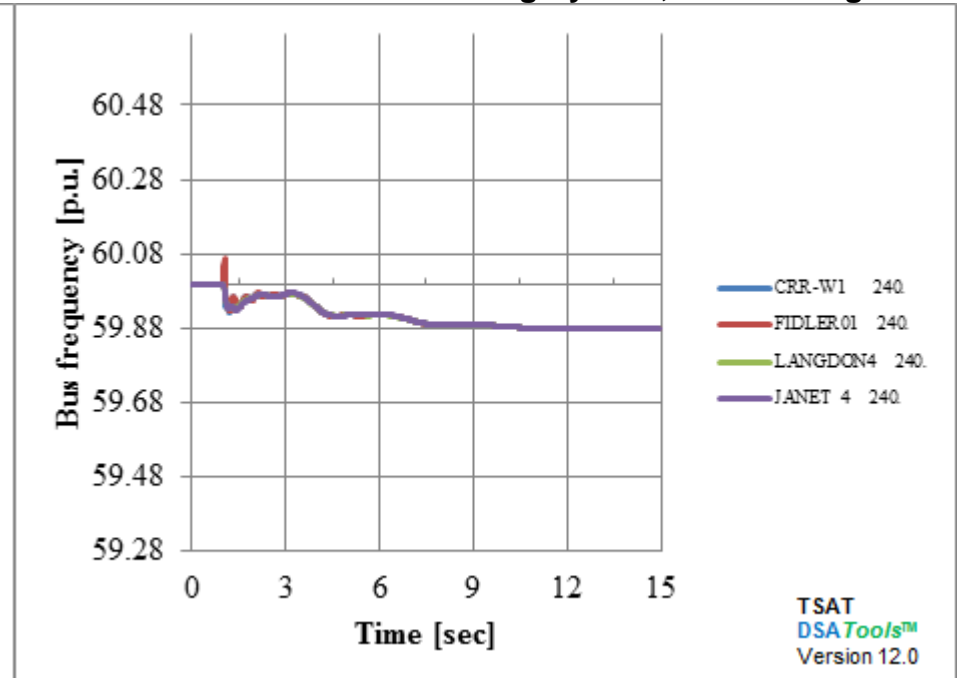
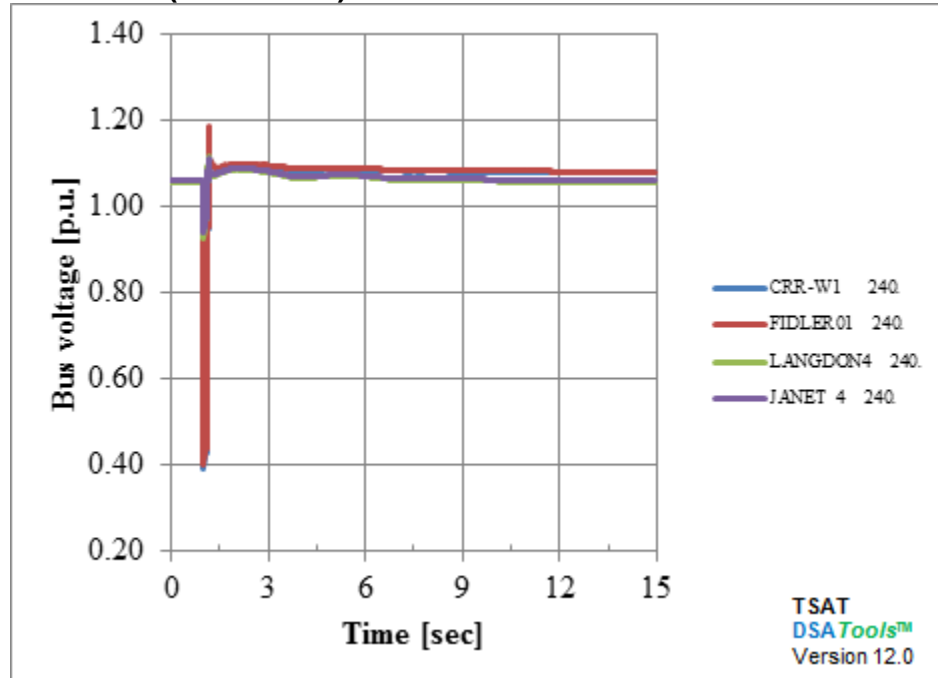
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



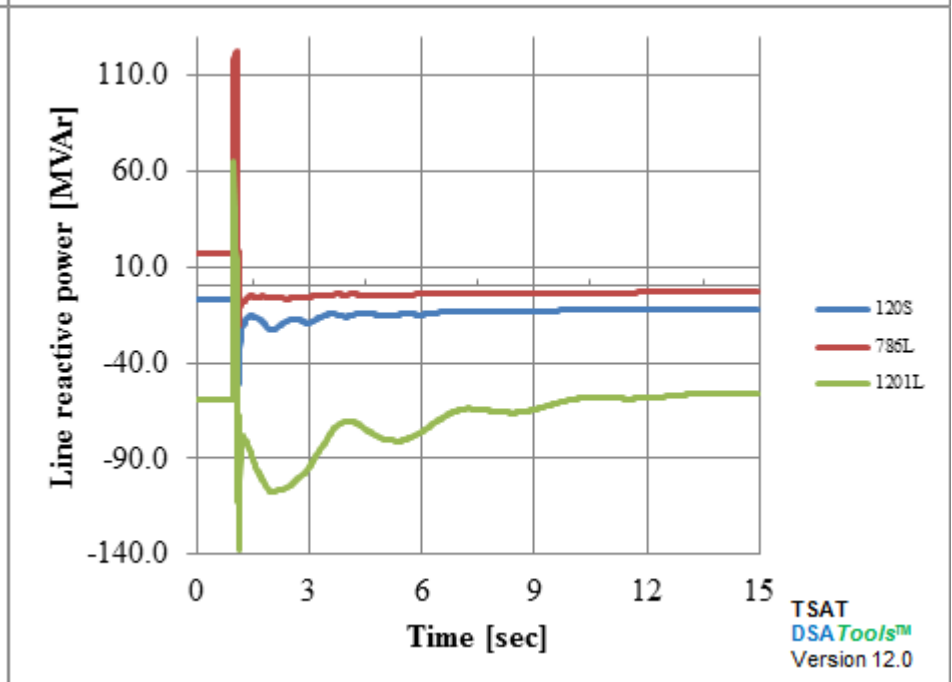
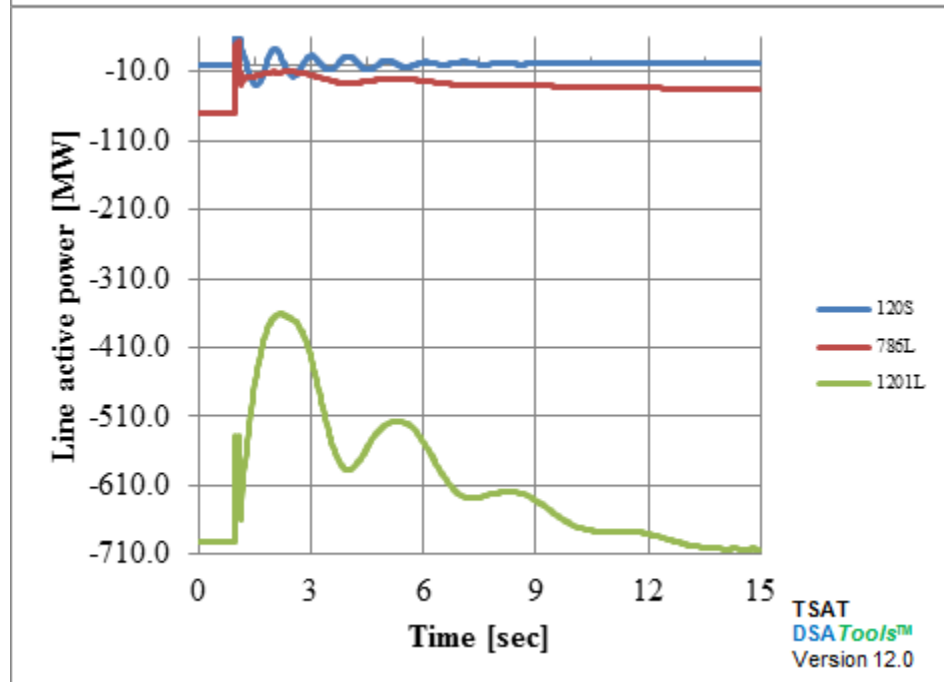
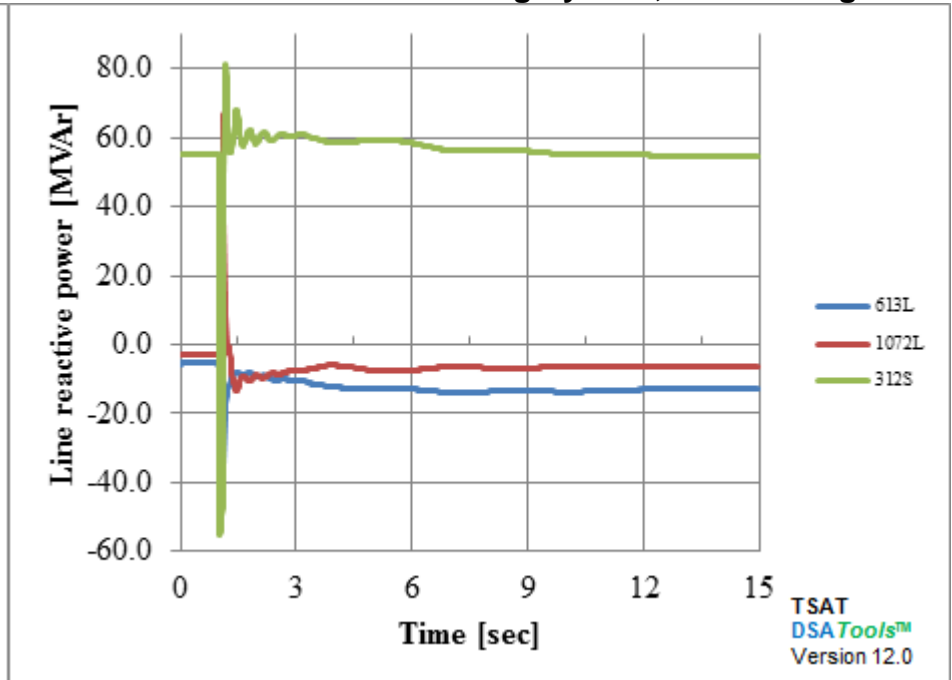
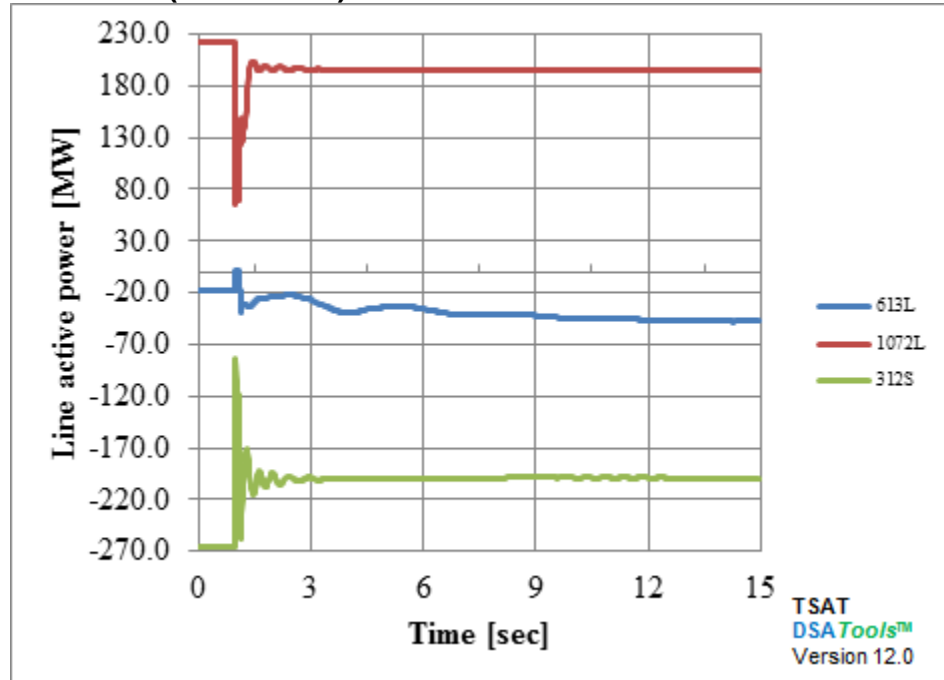
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



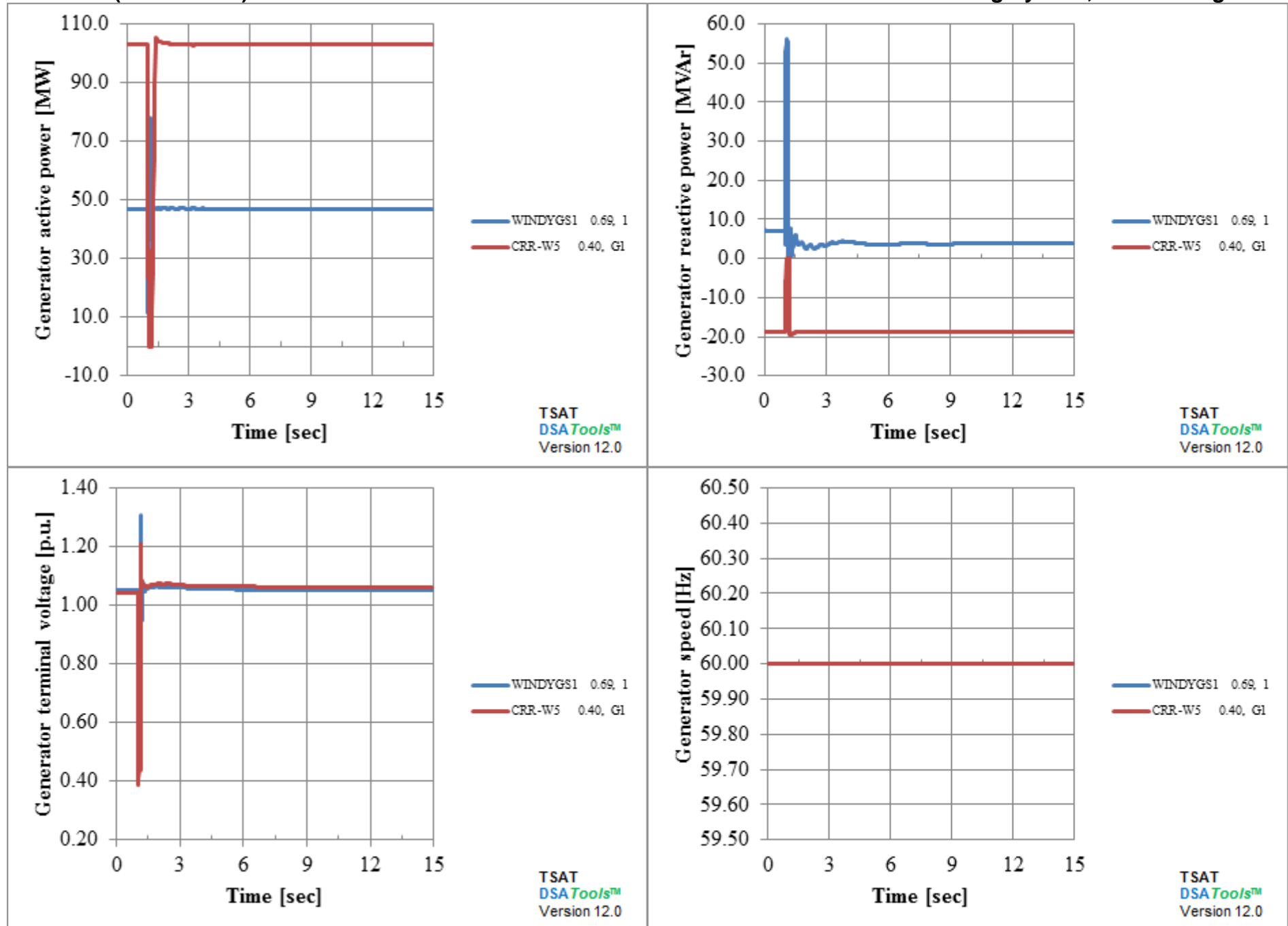
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Light 2014



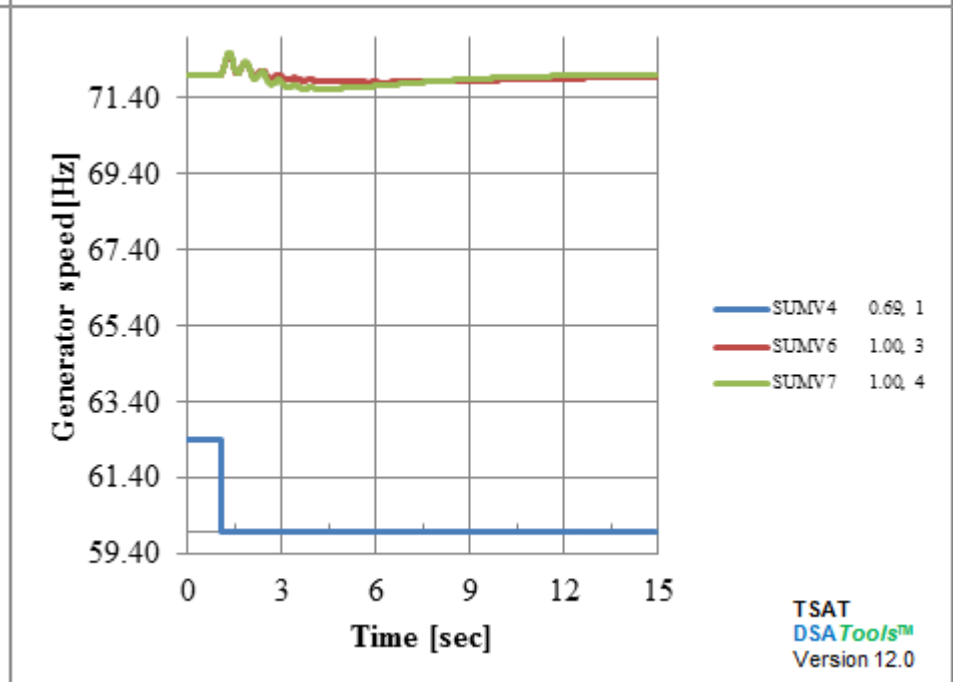
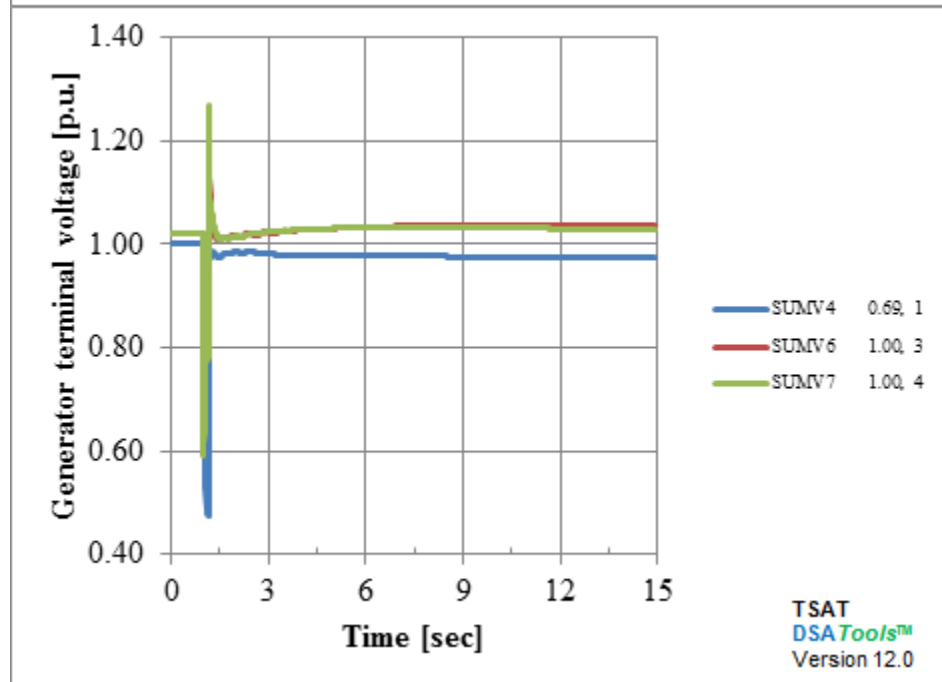
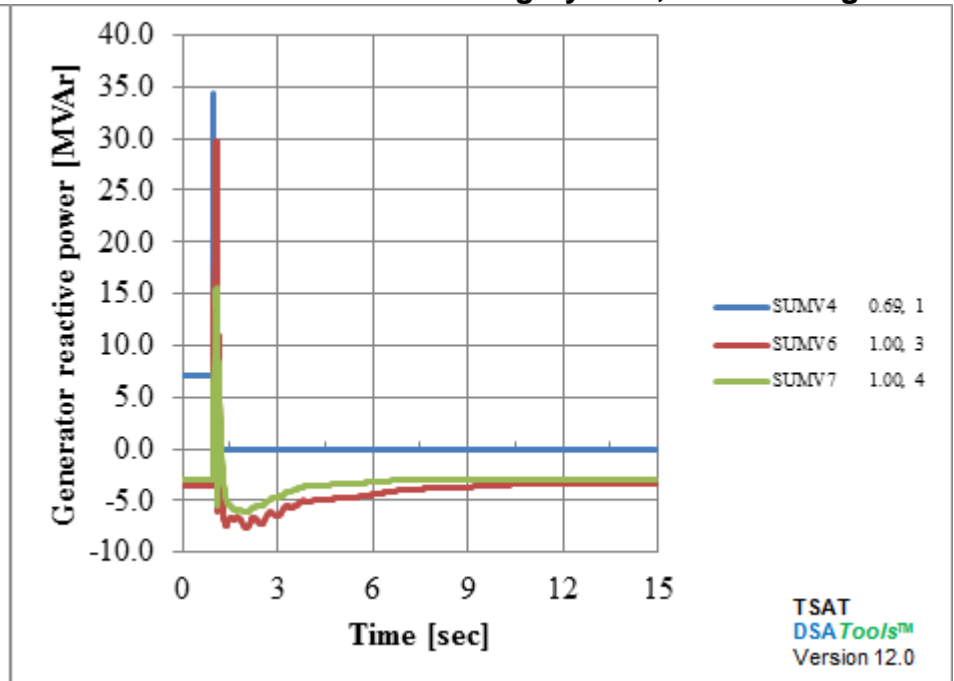
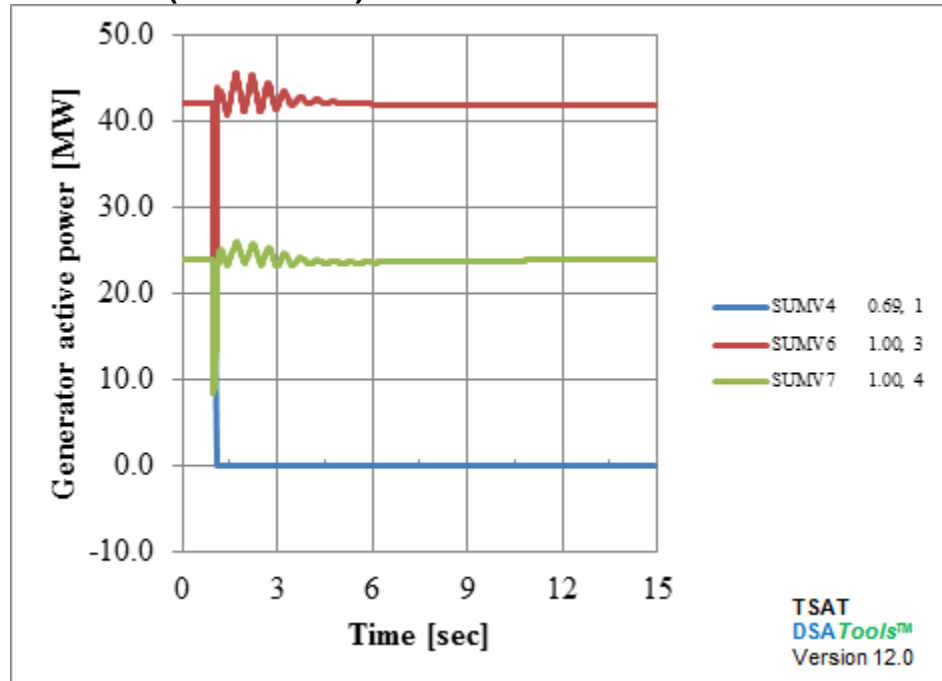
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Light 2014



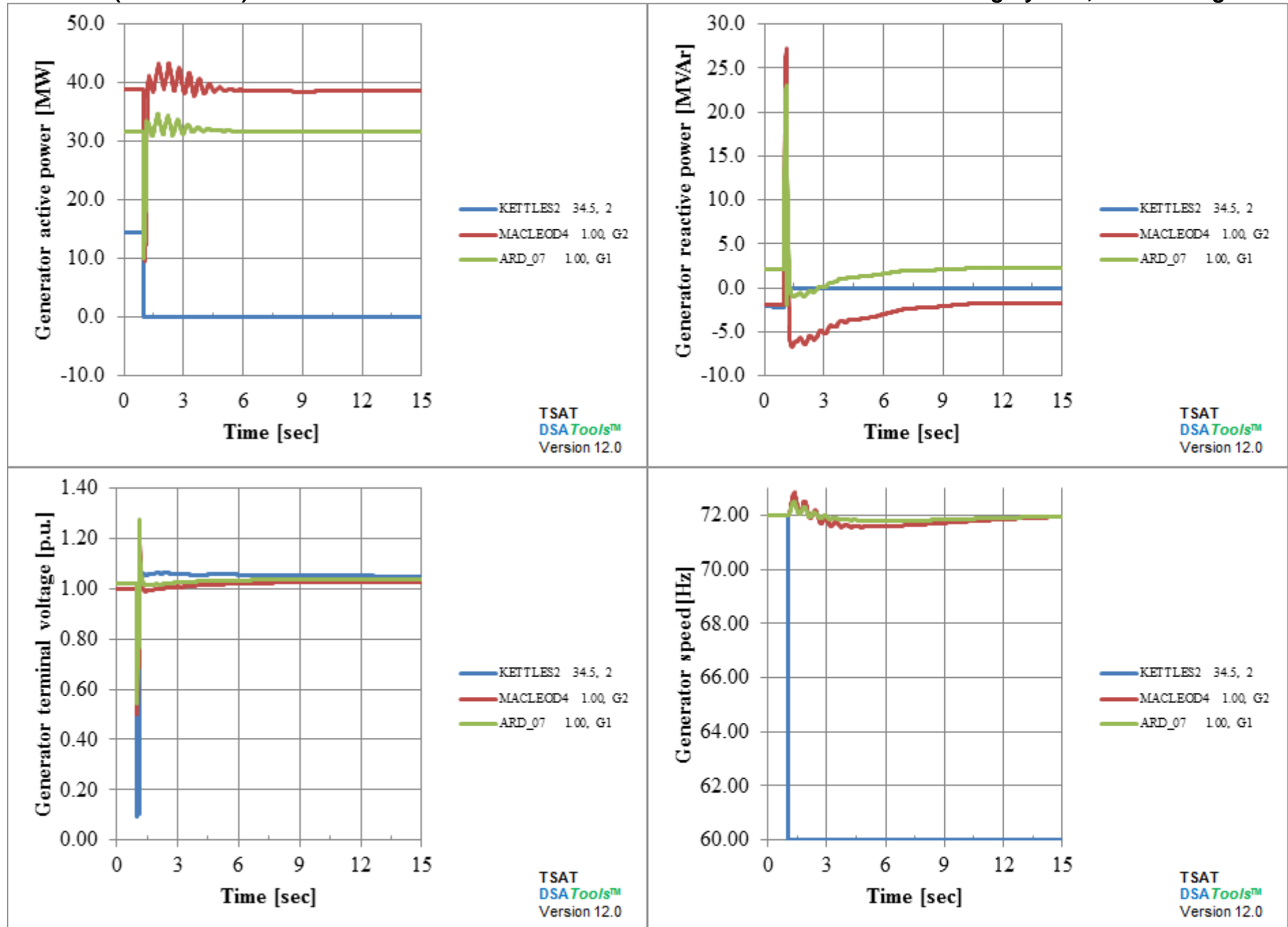
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Light 2014



14 -- 613L (396S - 103S) NEAR 396S

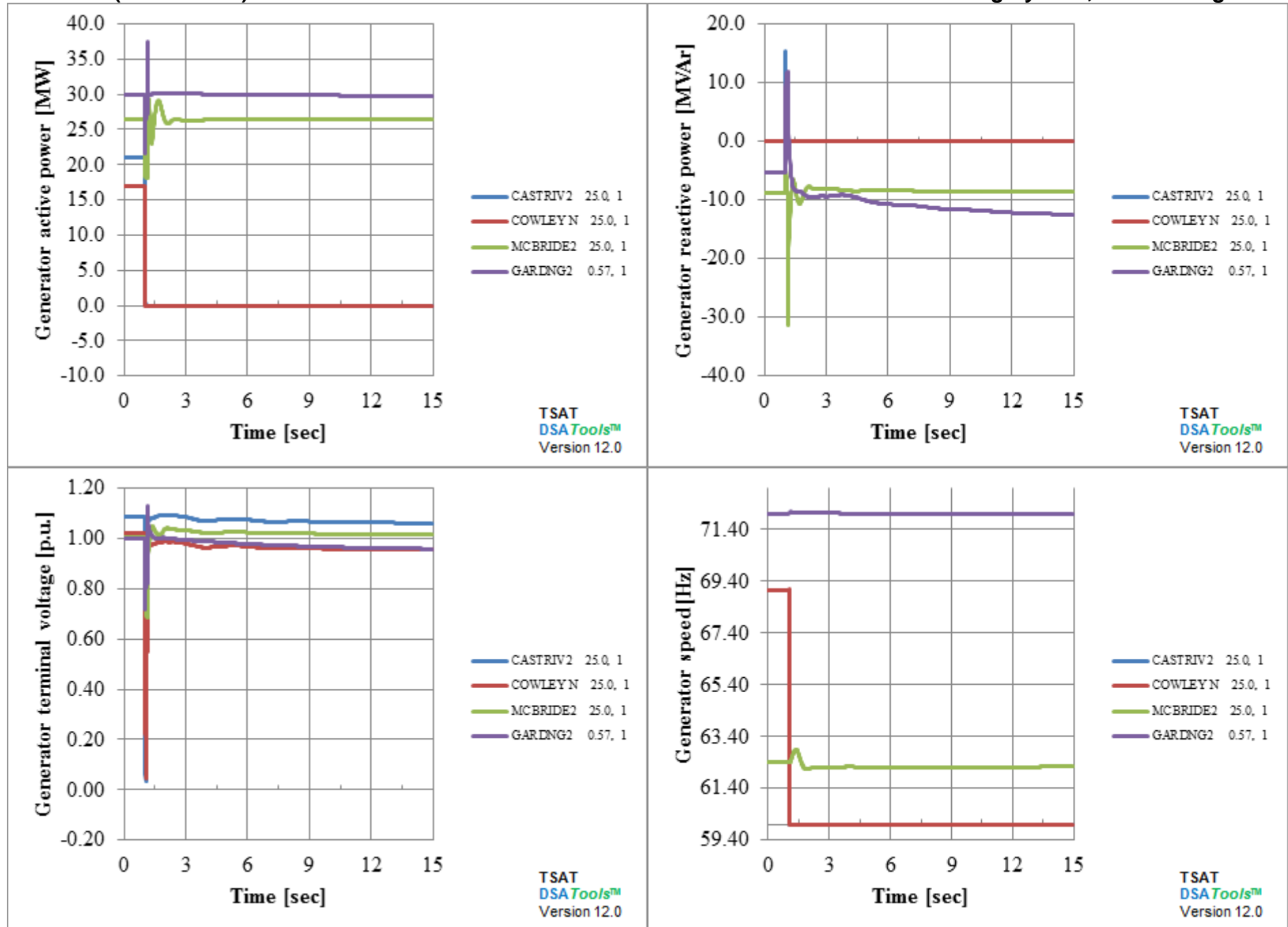
Existing System, Summer Light 2014





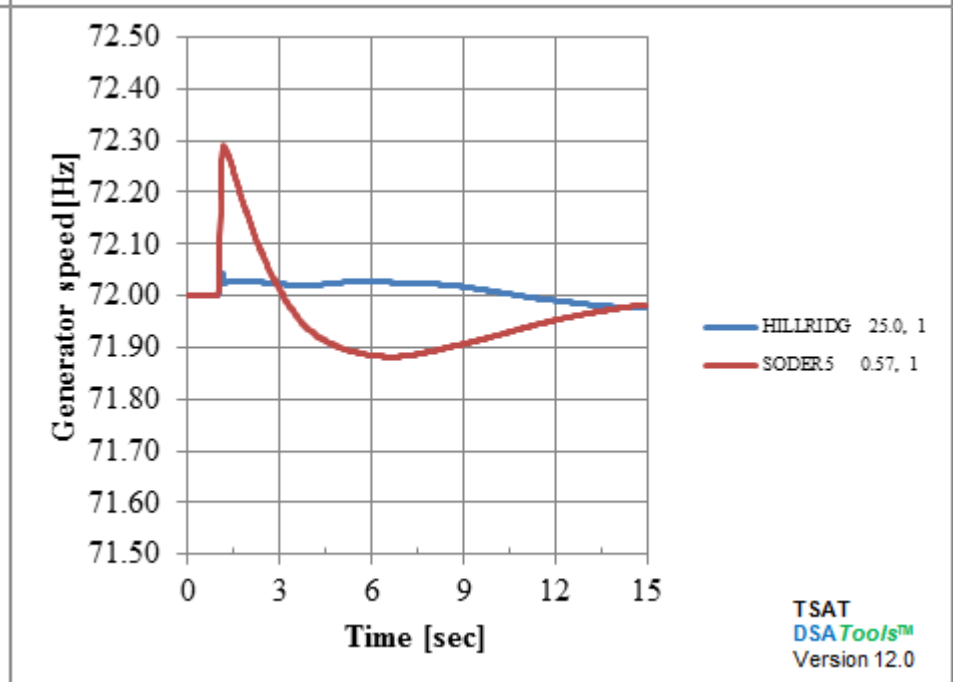
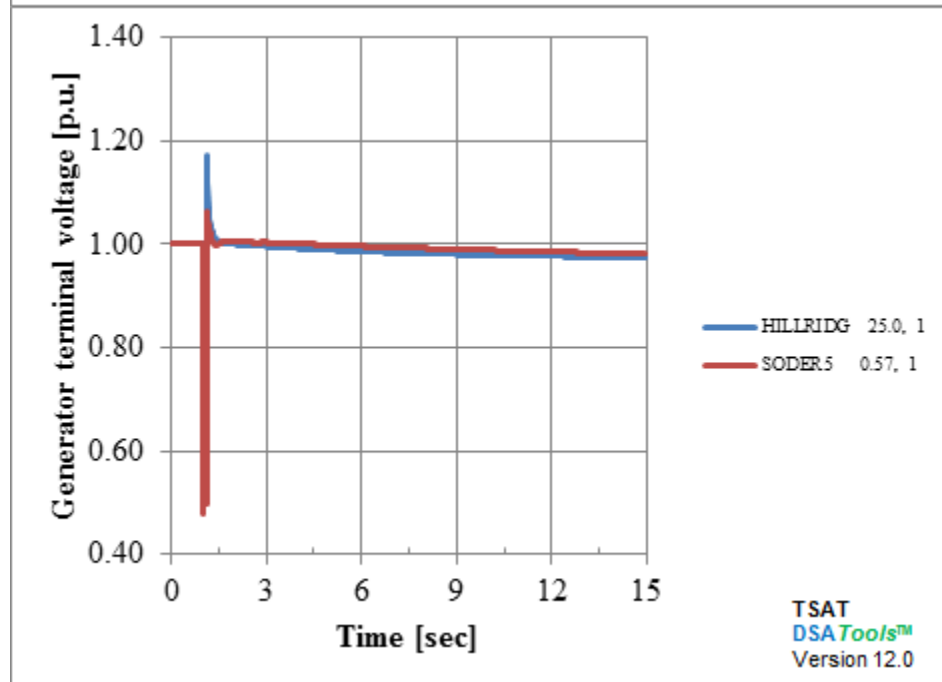
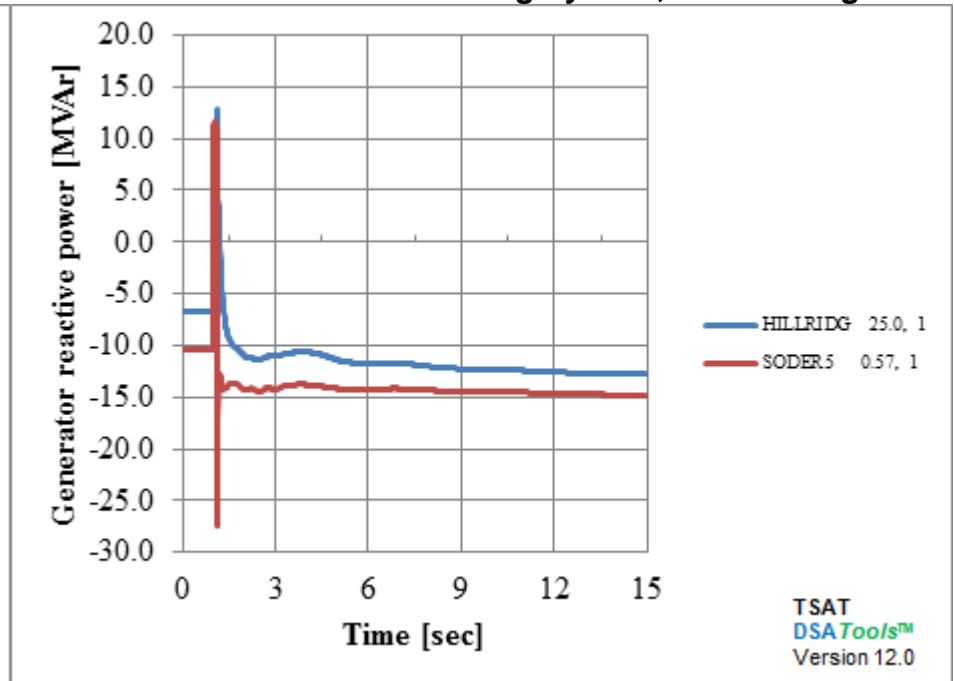
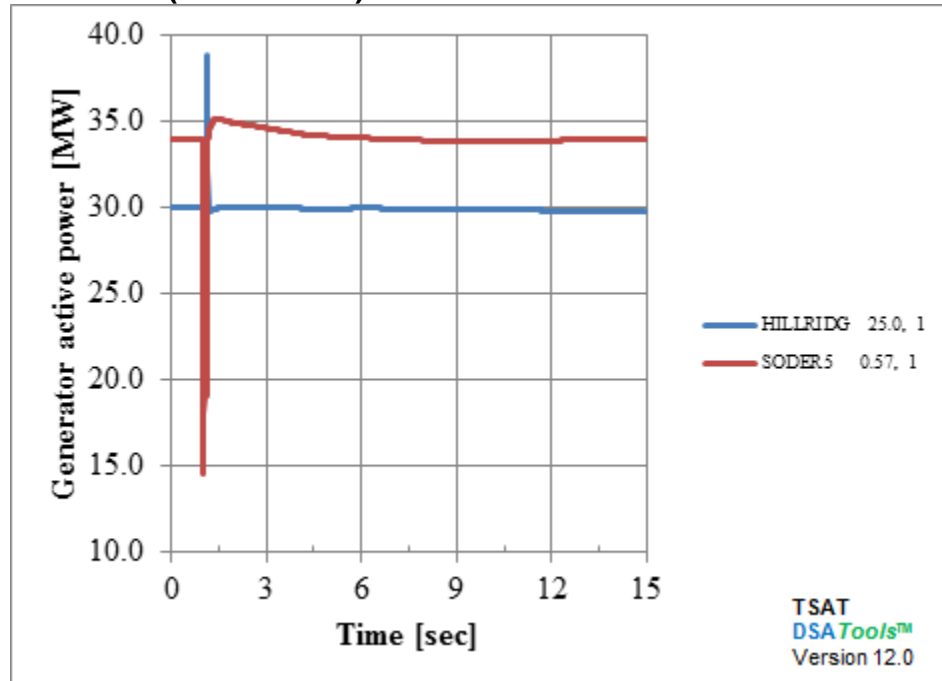
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Light 2014



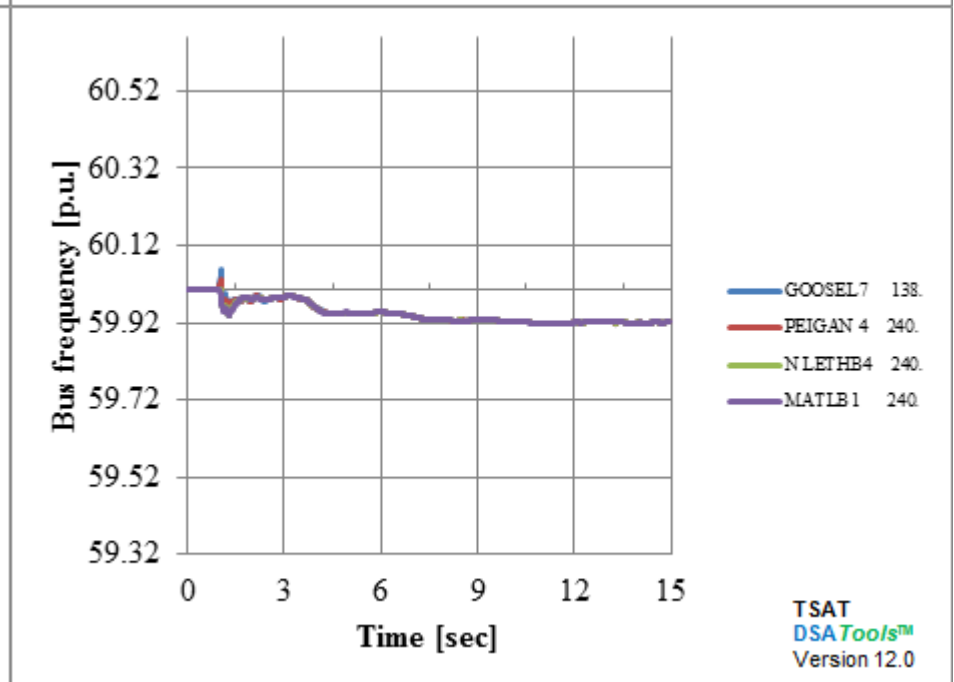
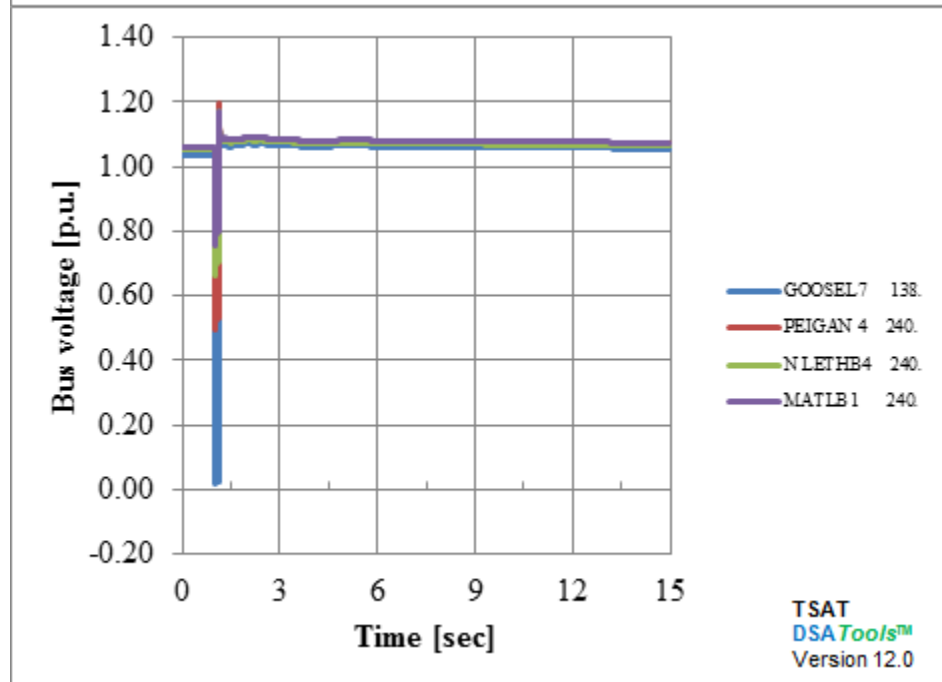
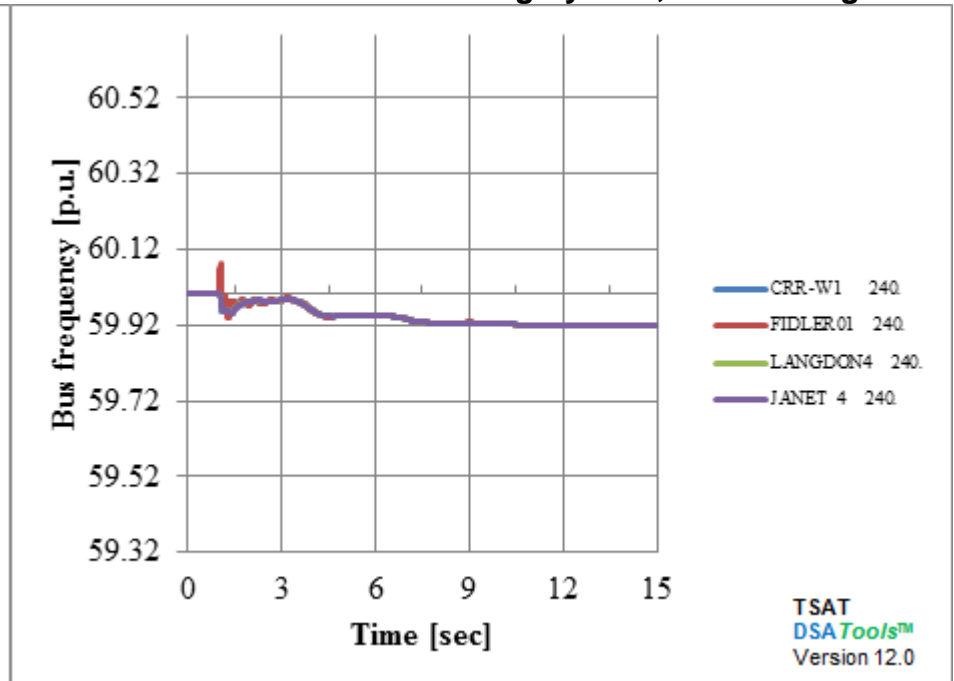
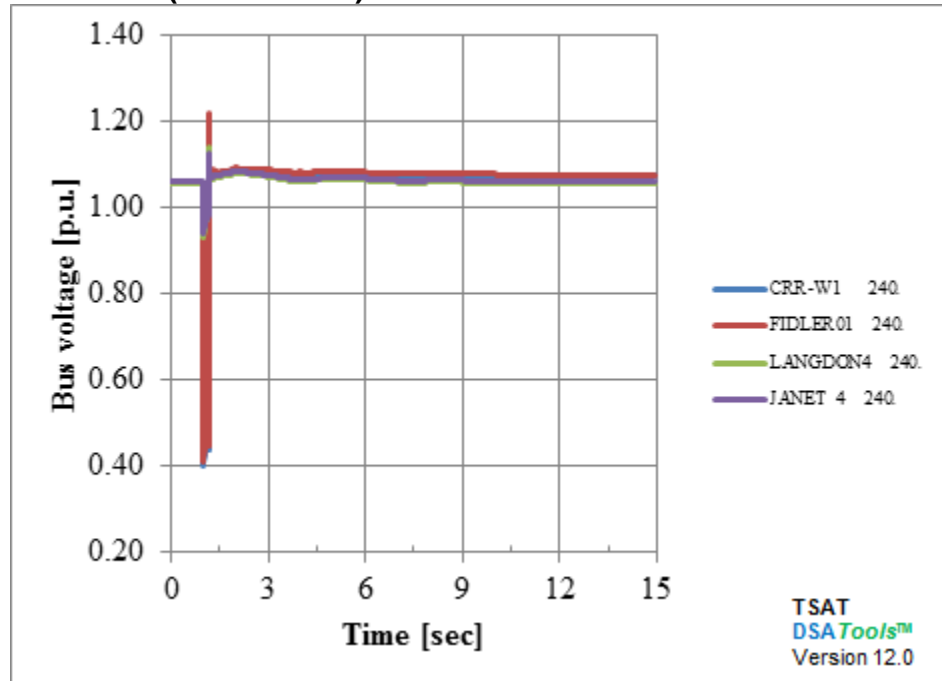
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Light 2014



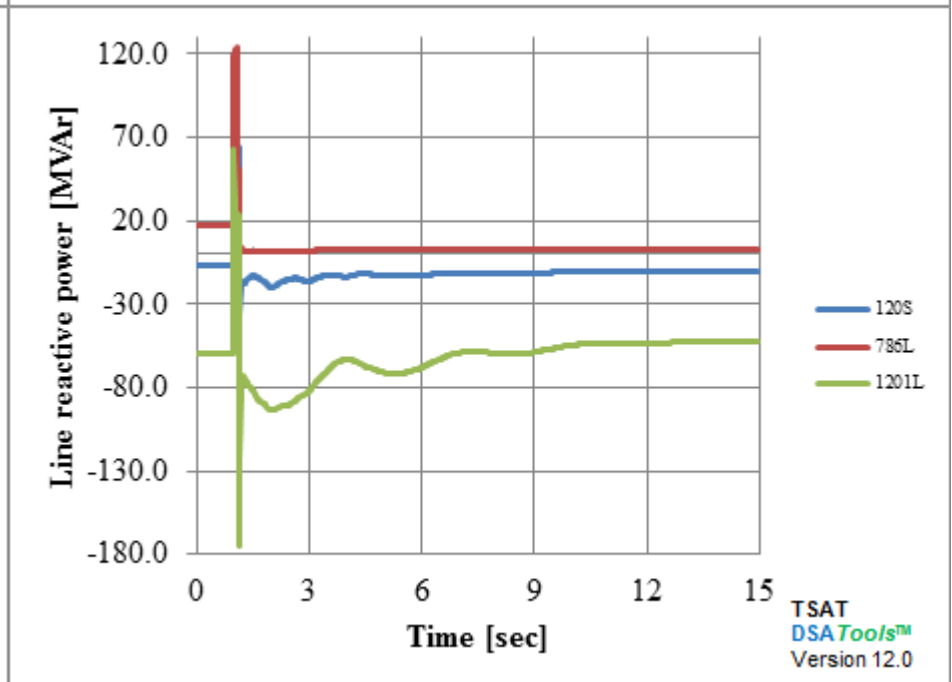
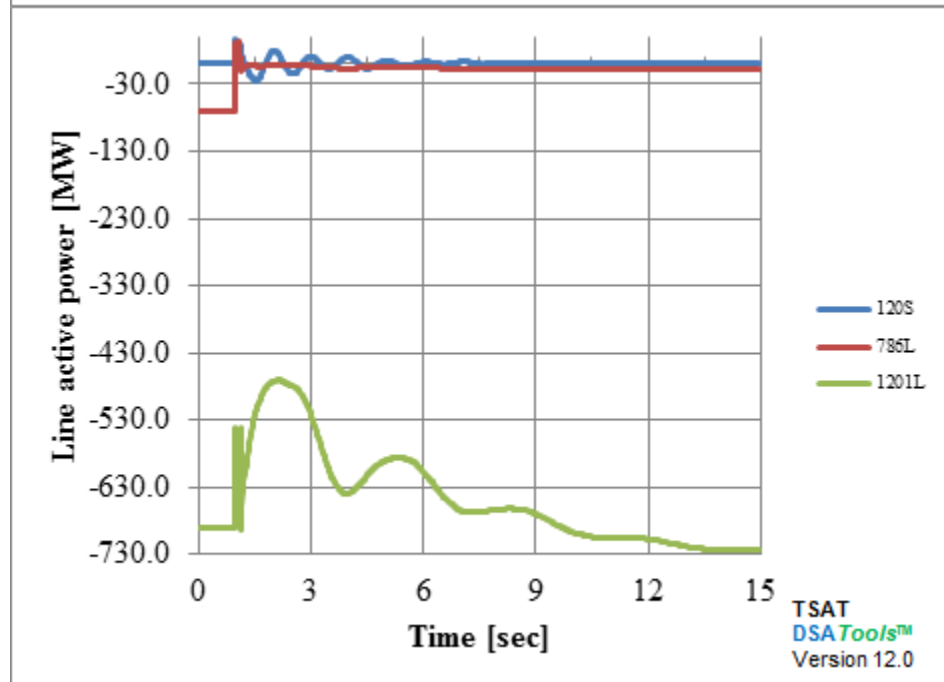
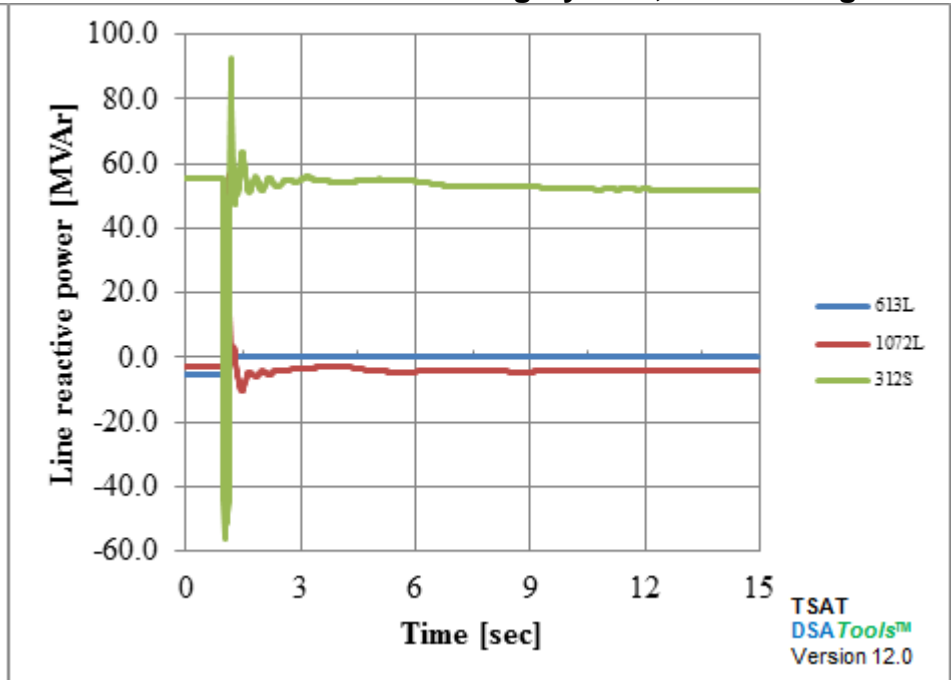
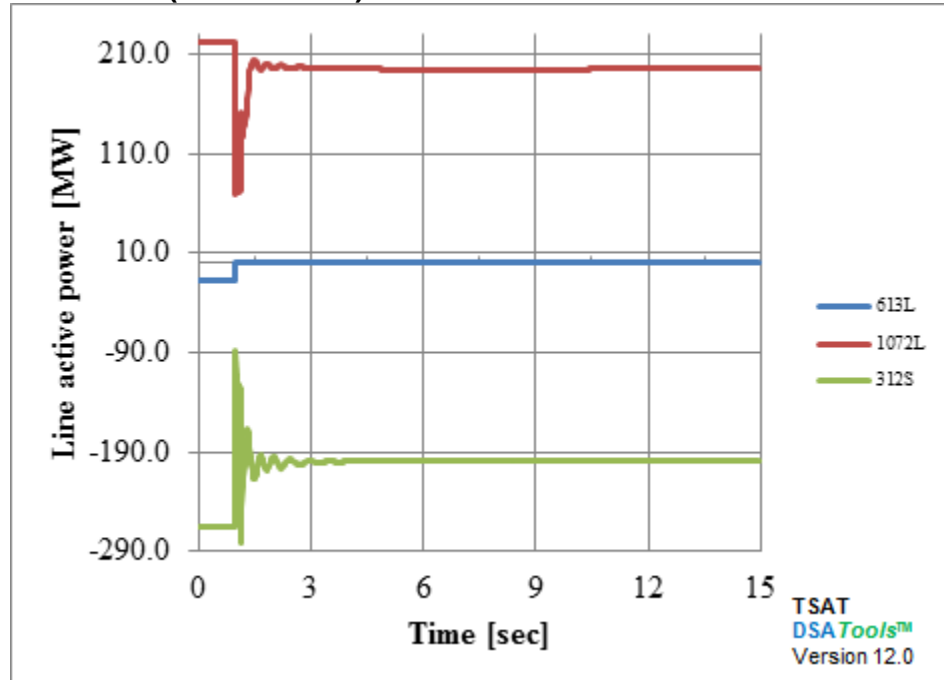
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Light 2014



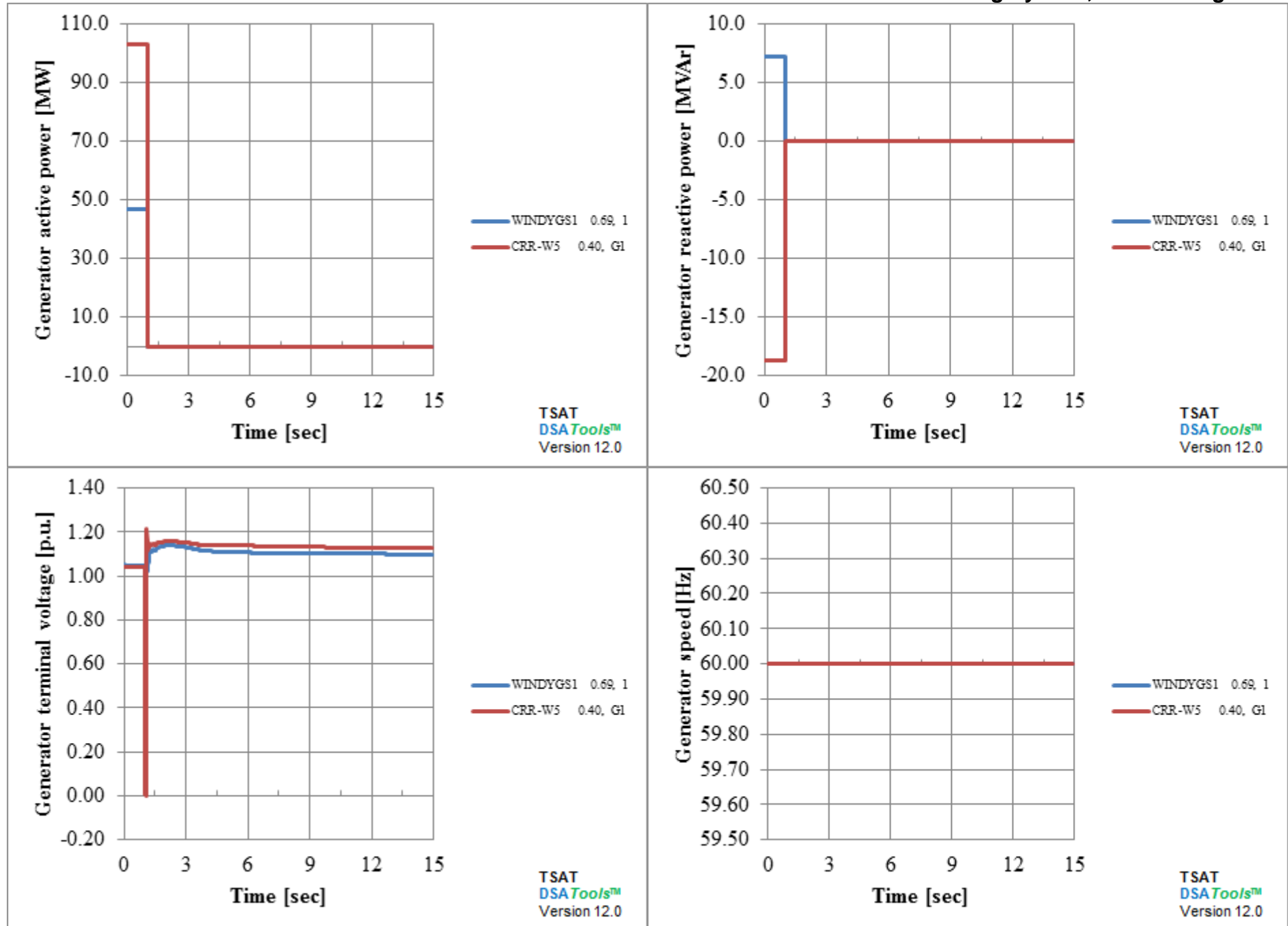
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Light 2014



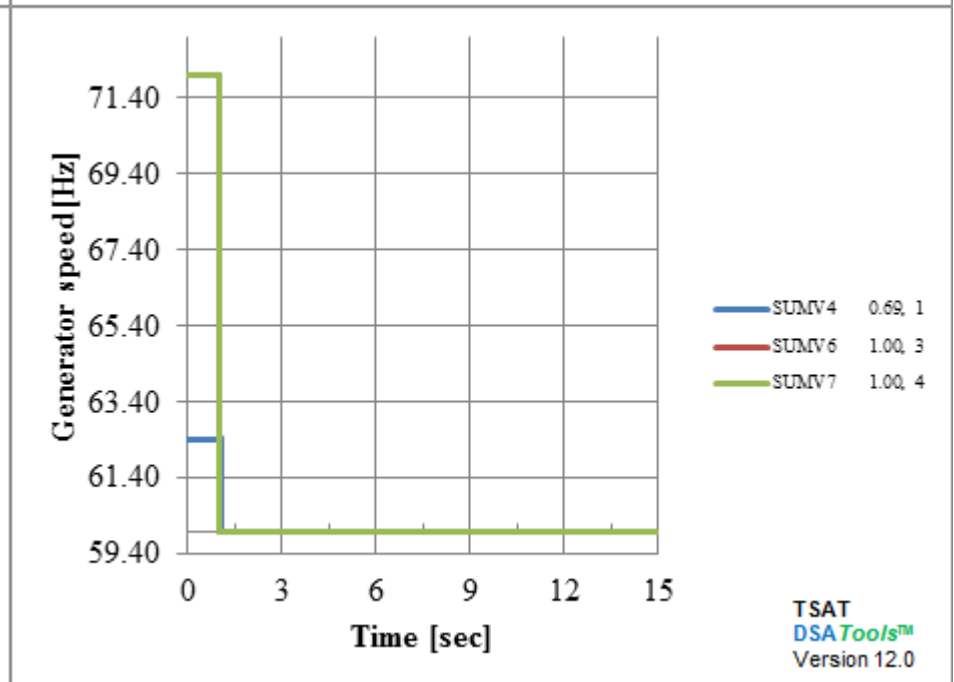
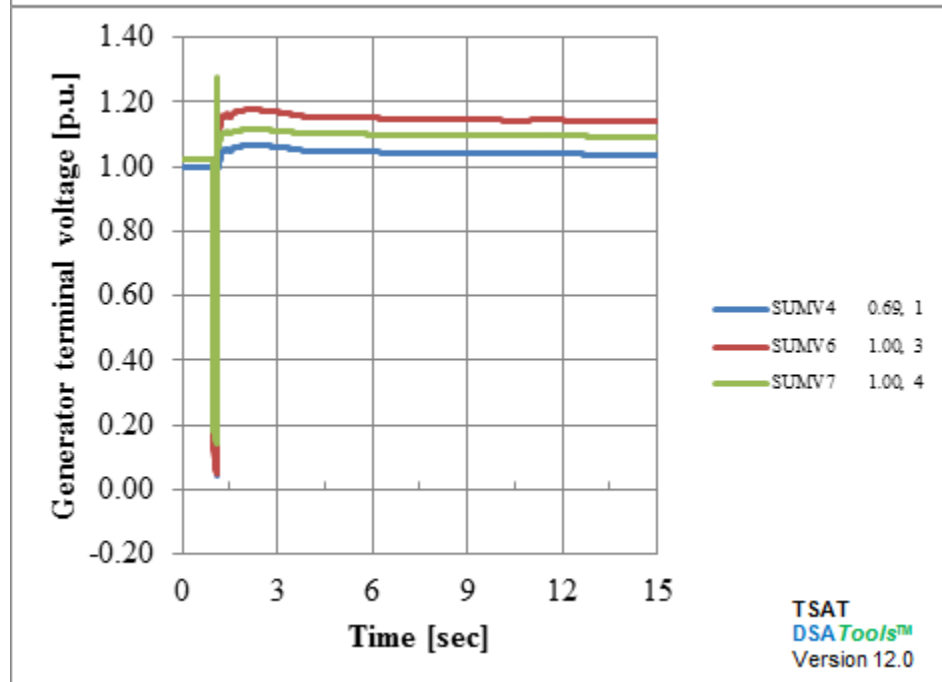
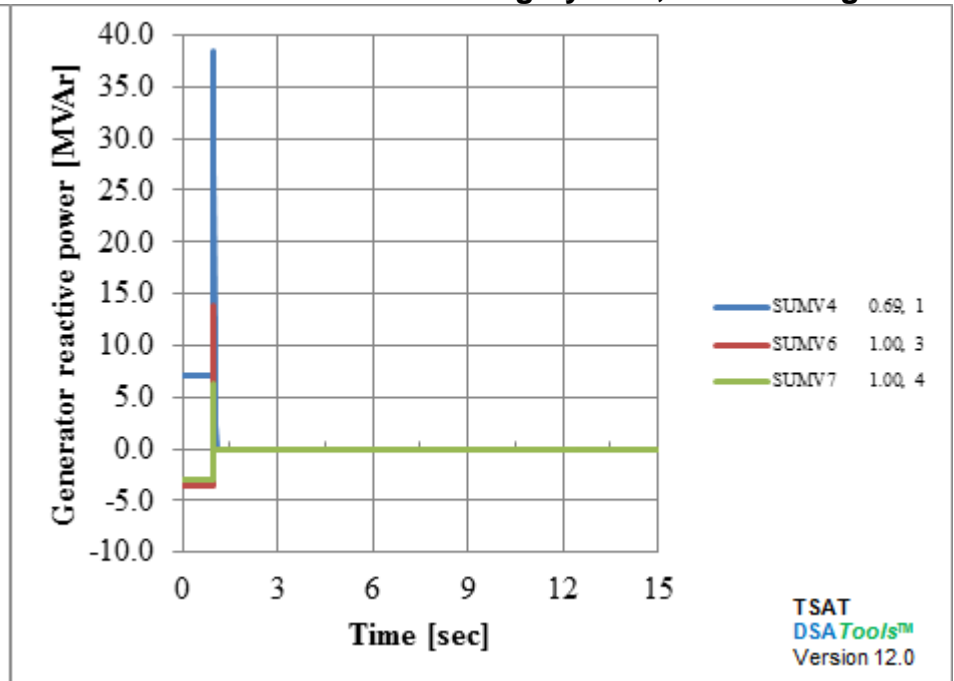
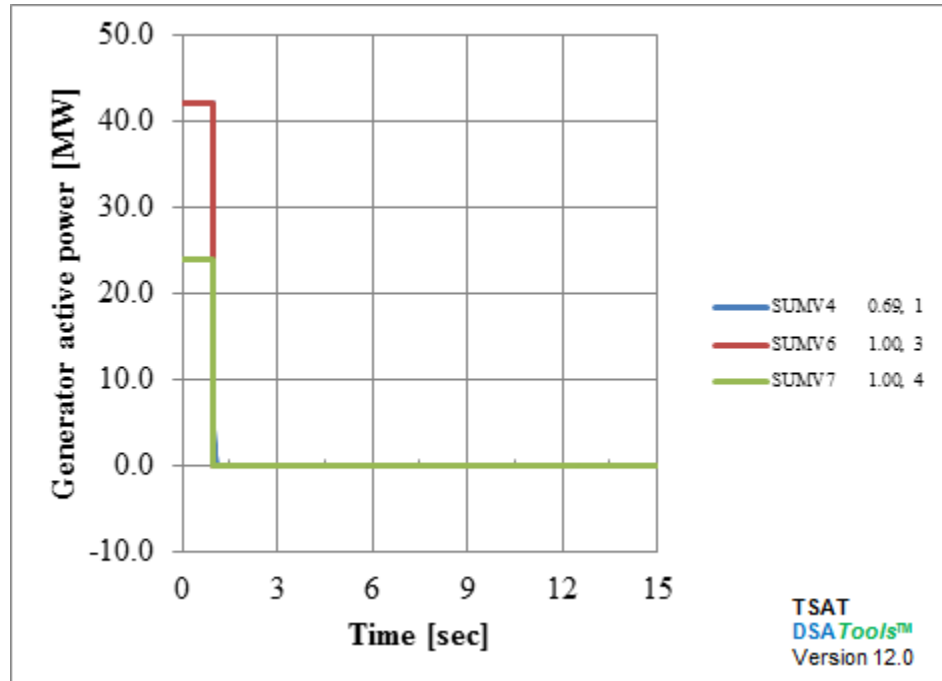
15 -- 103S 240KV-138KV

Existing System, Summer Light 2014



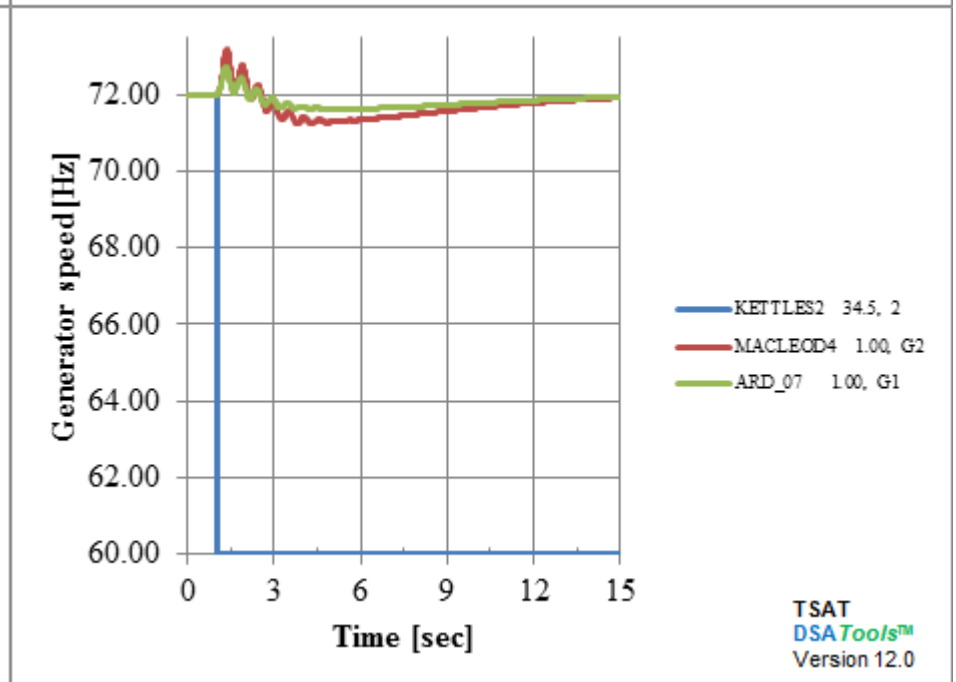
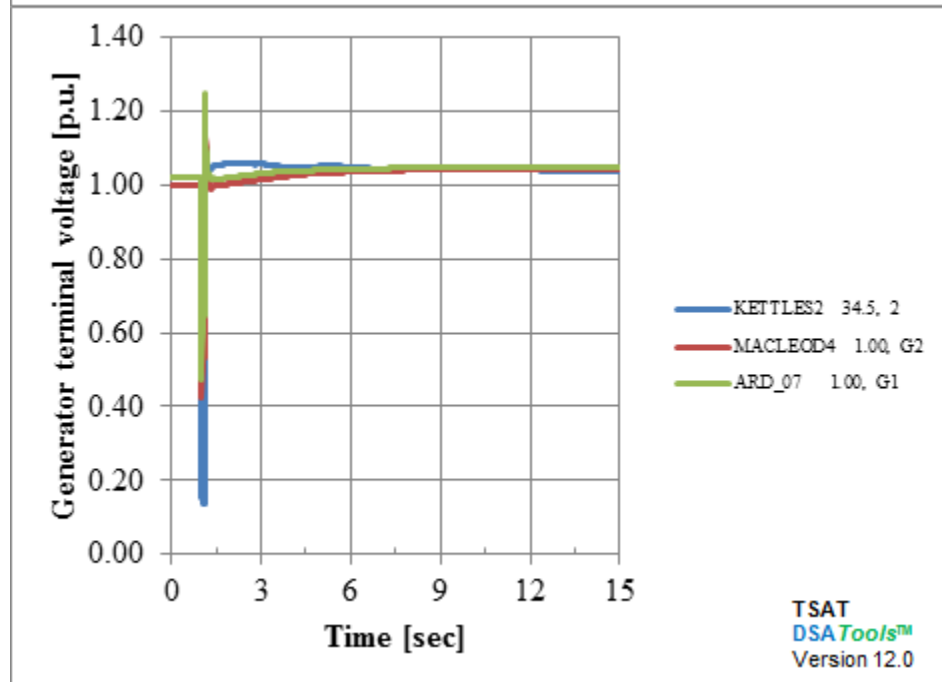
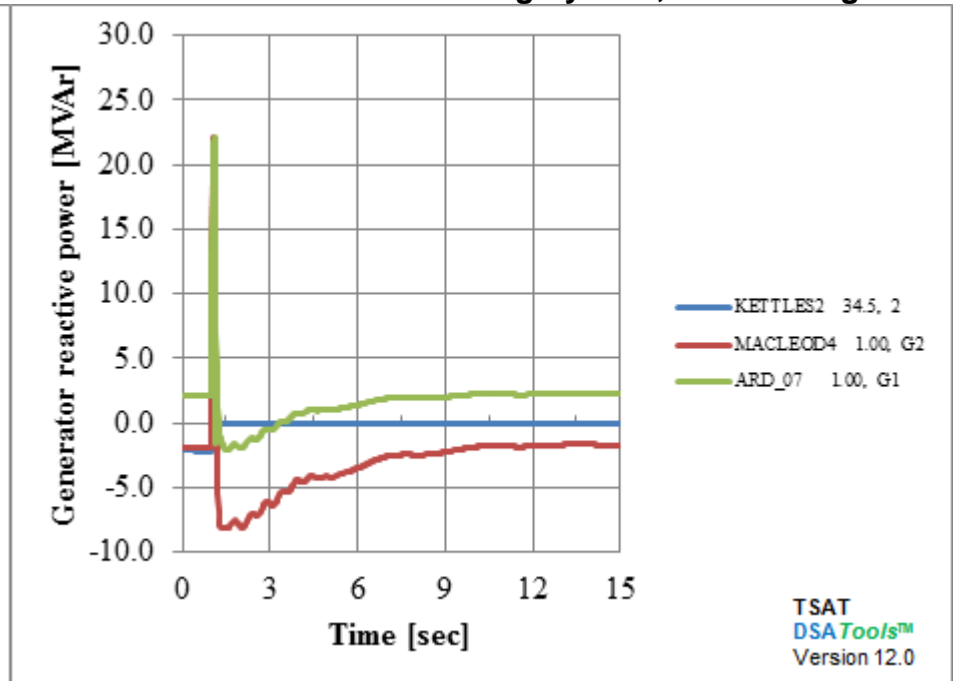
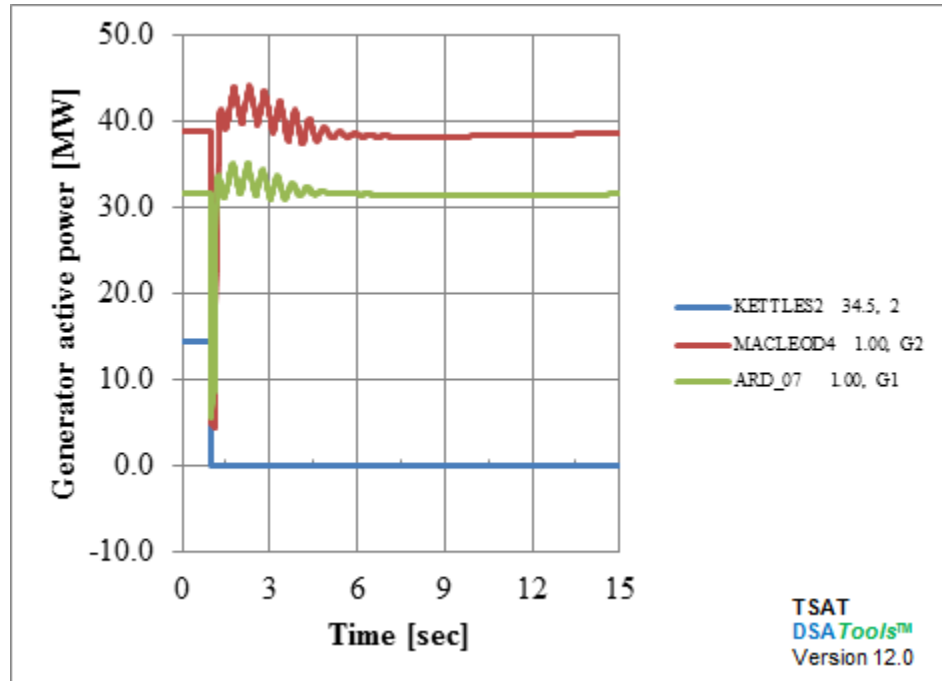
15 -- 103S 240KV-138KV

Existing System, Summer Light 2014



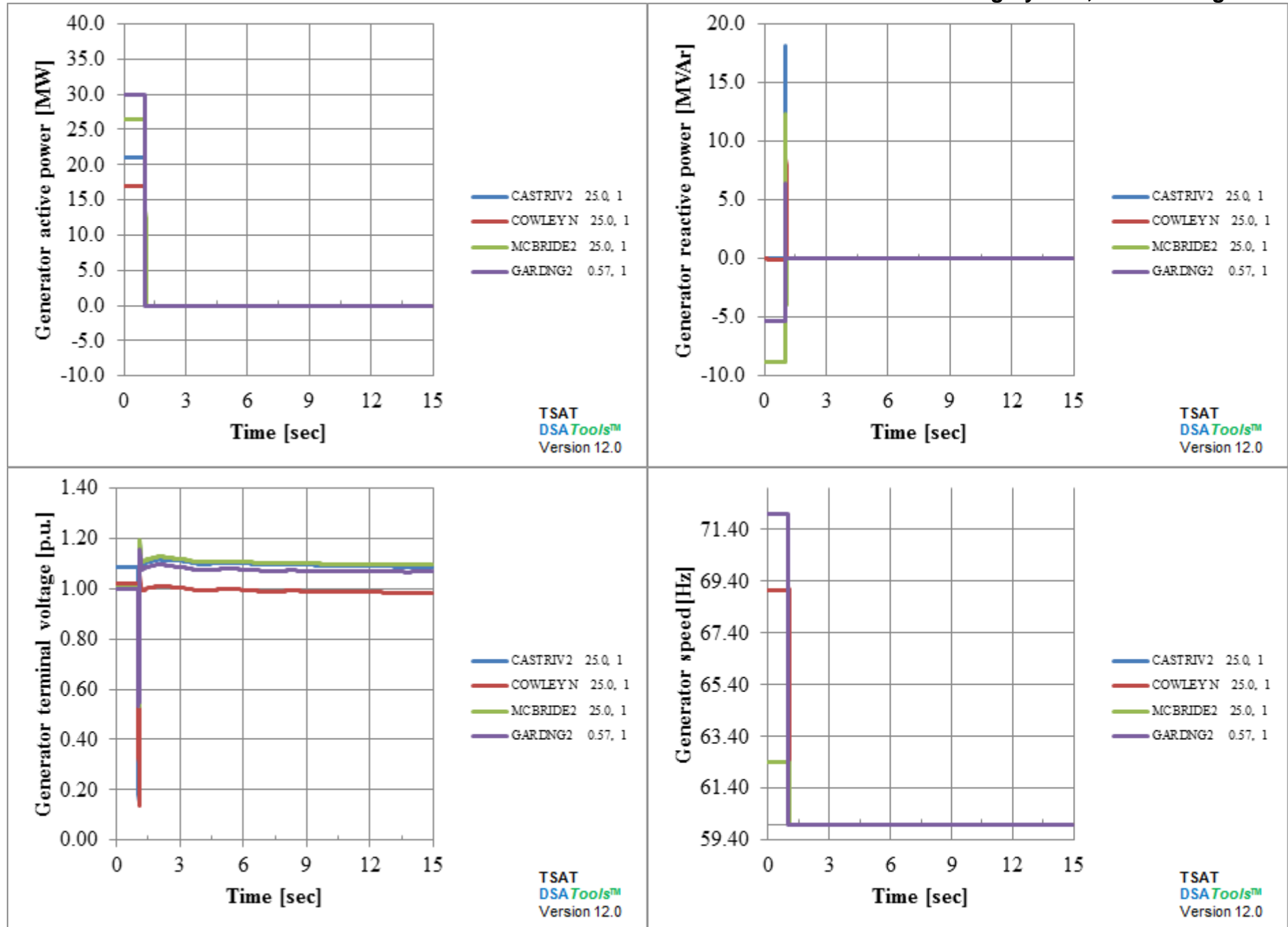
15 -- 103S 240KV-138KV

Existing System, Summer Light 2014



15 -- 103S 240KV-138KV

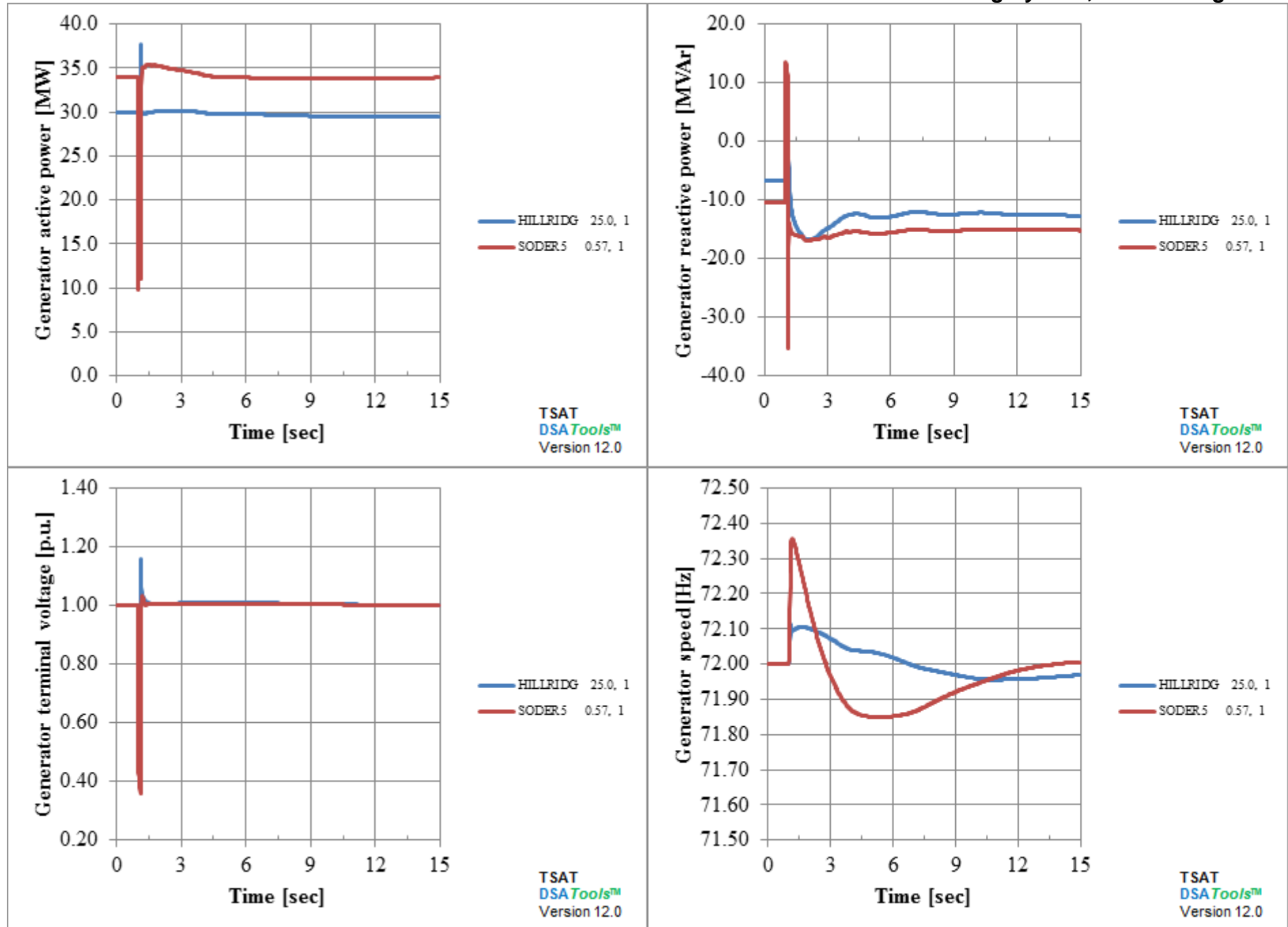
Existing System, Summer Light 2014





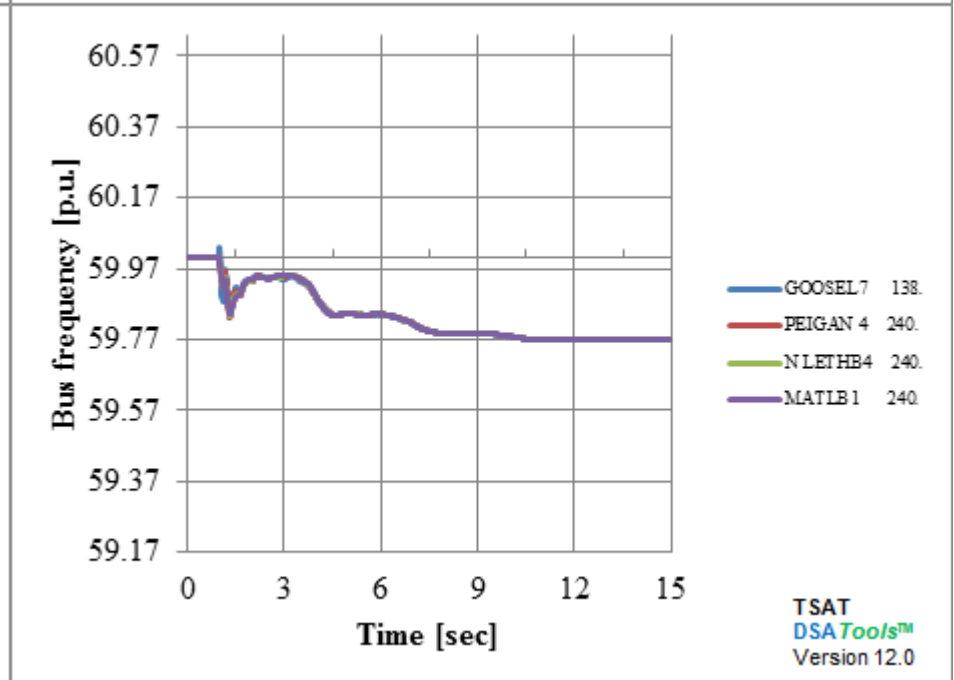
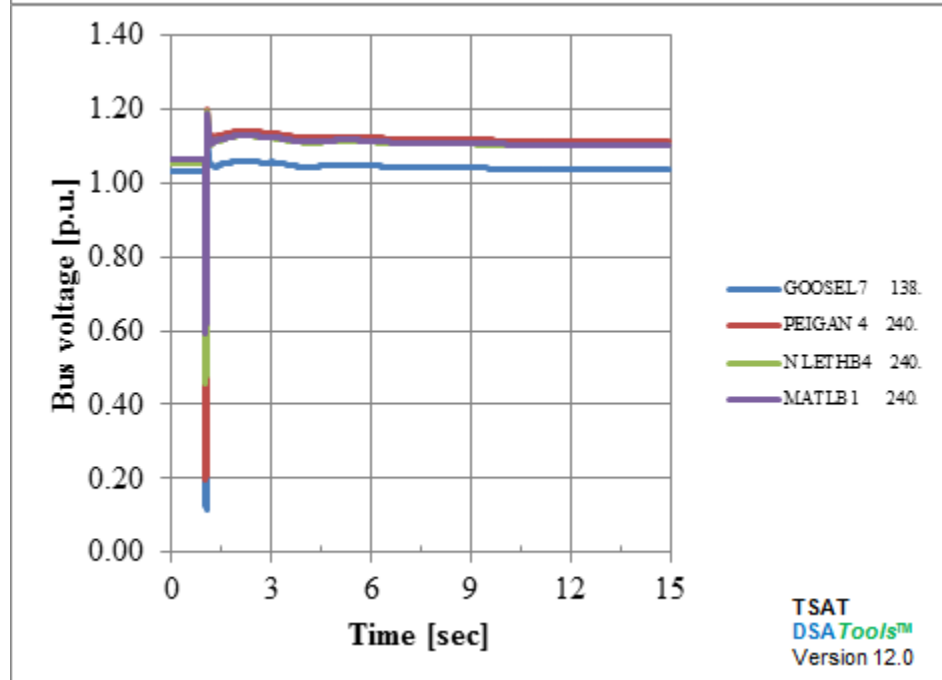
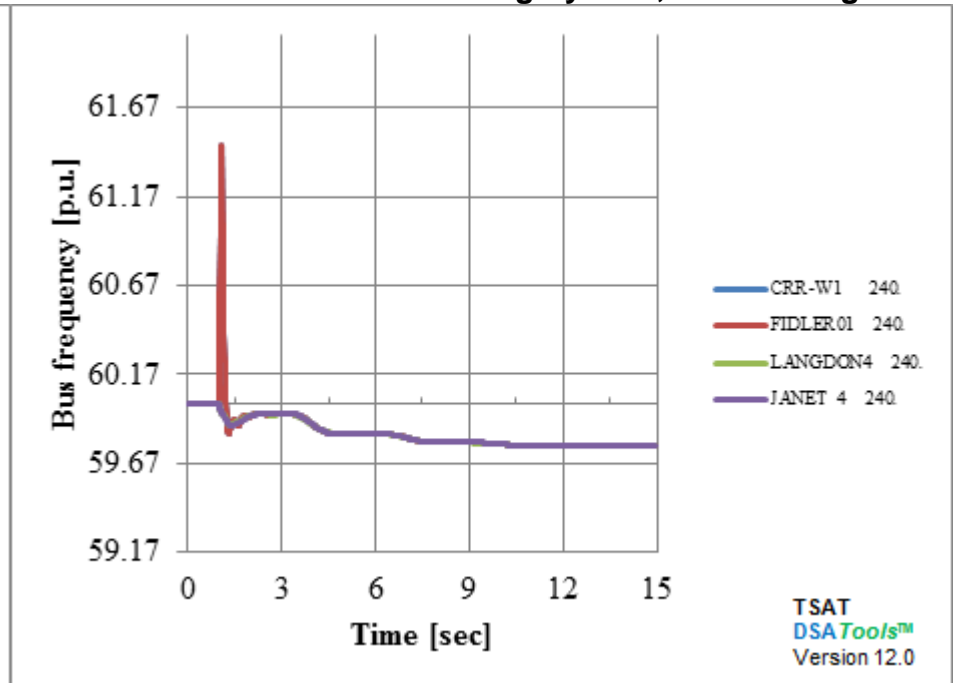
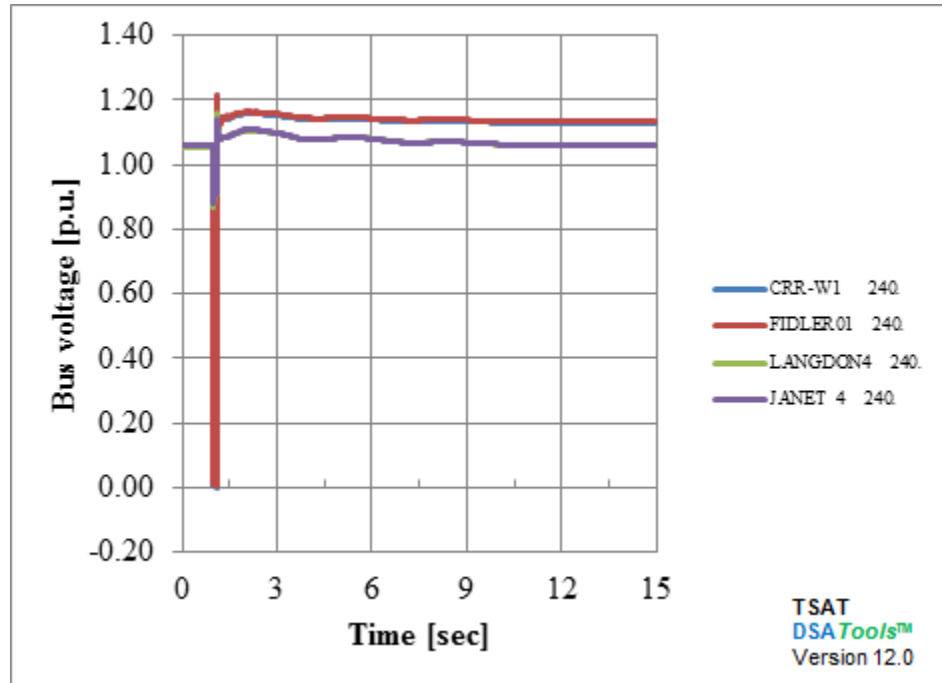
15 -- 103S 240KV-138KV

Existing System, Summer Light 2014



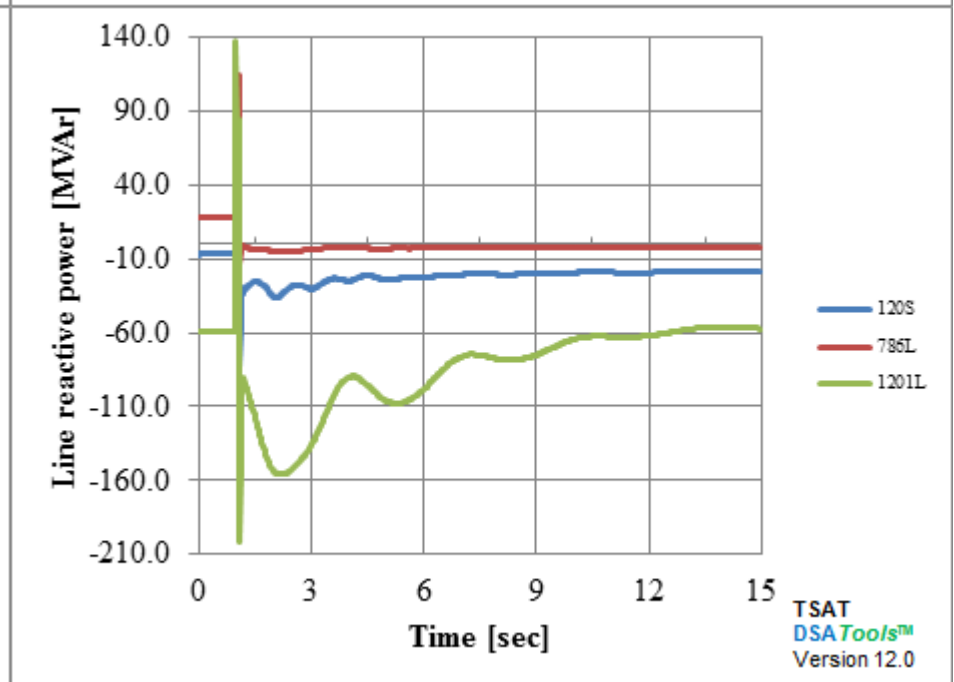
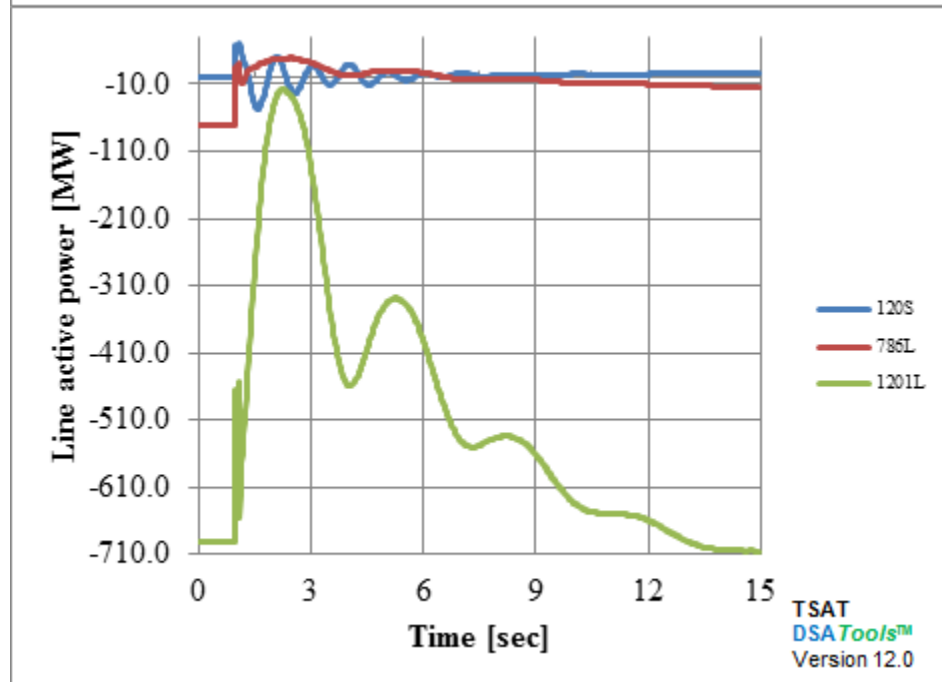
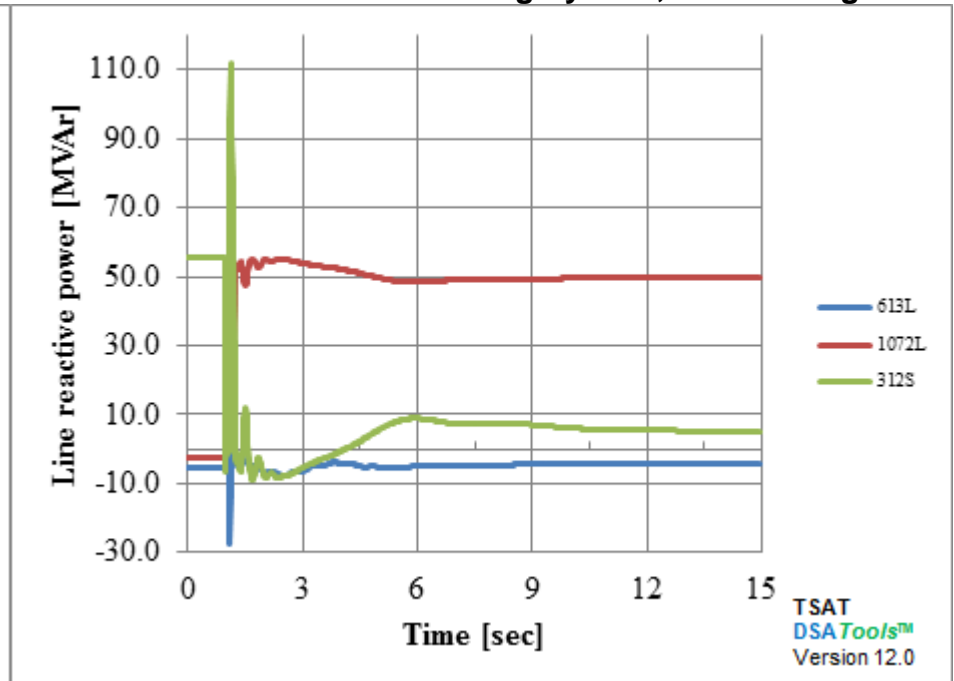
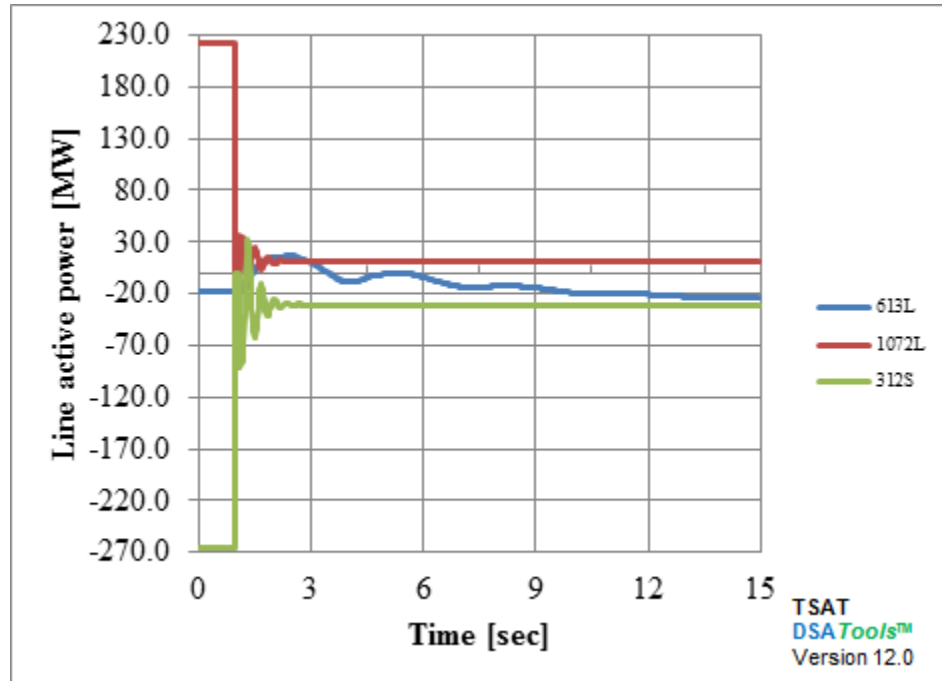
15 -- 103S 240KV-138KV

Existing System, Summer Light 2014



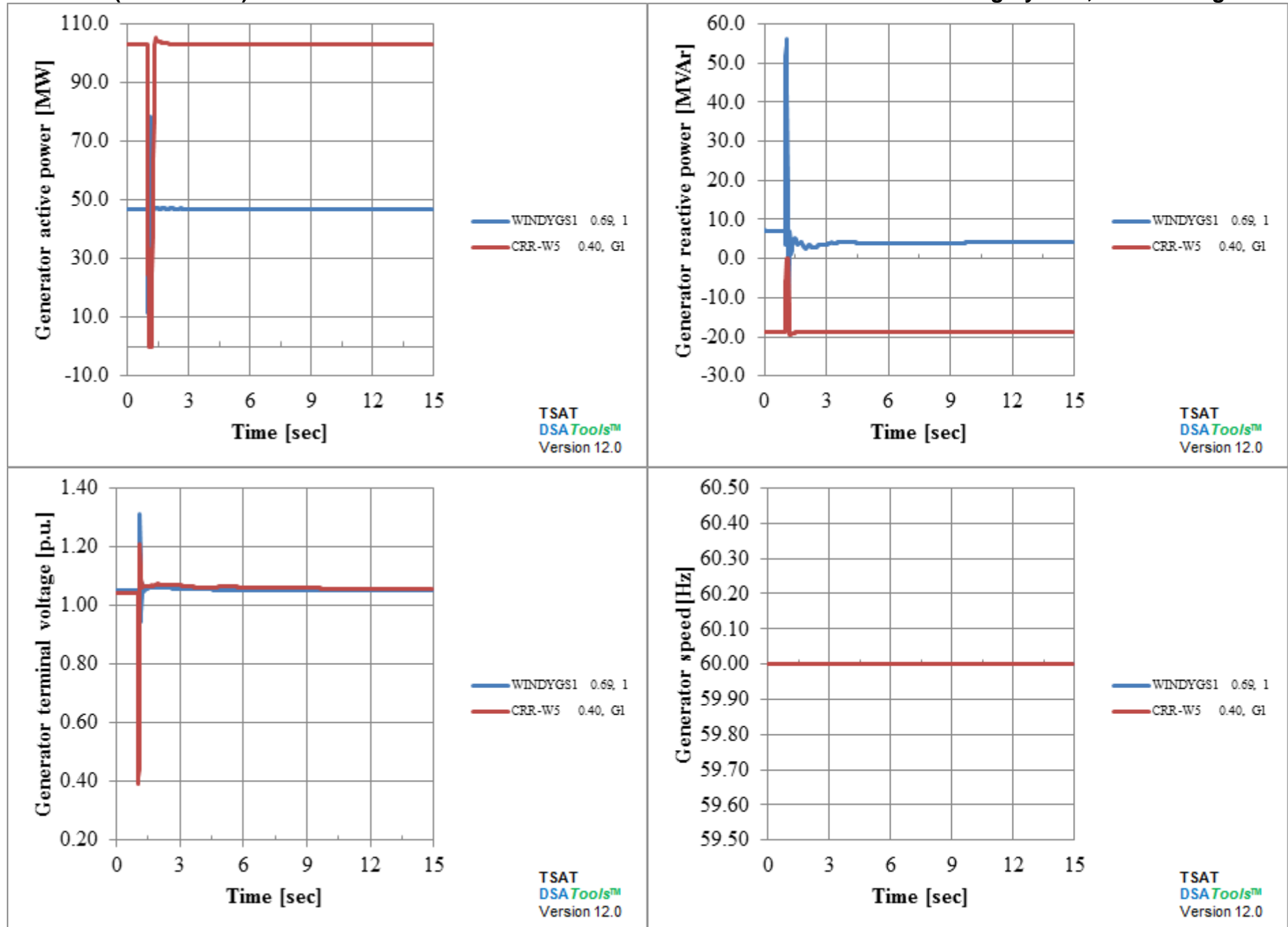
15 -- 103S 240KV-138KV

Existing System, Summer Light 2014



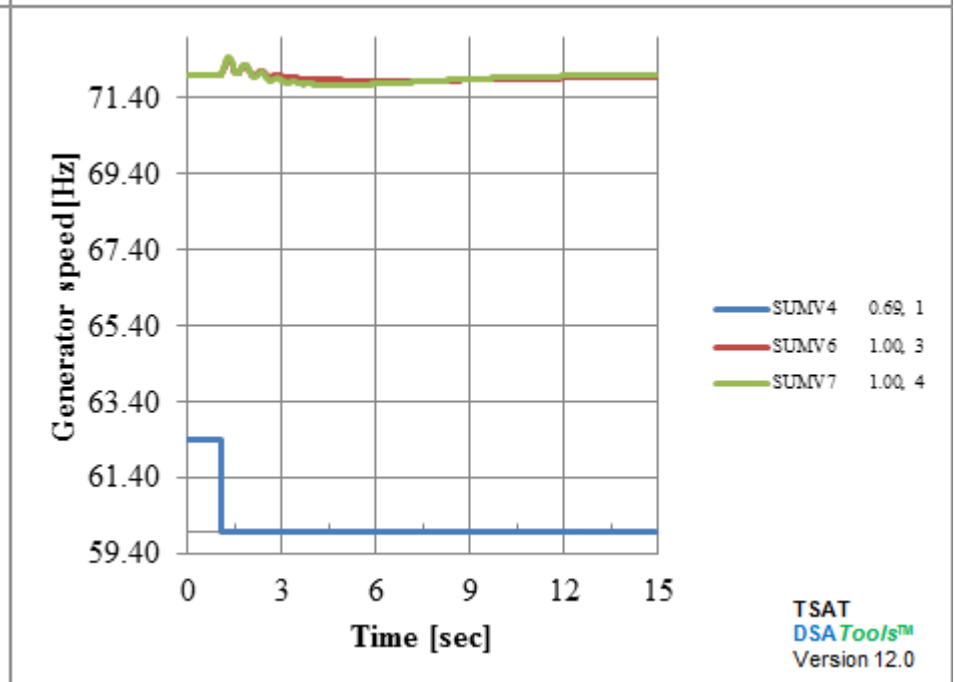
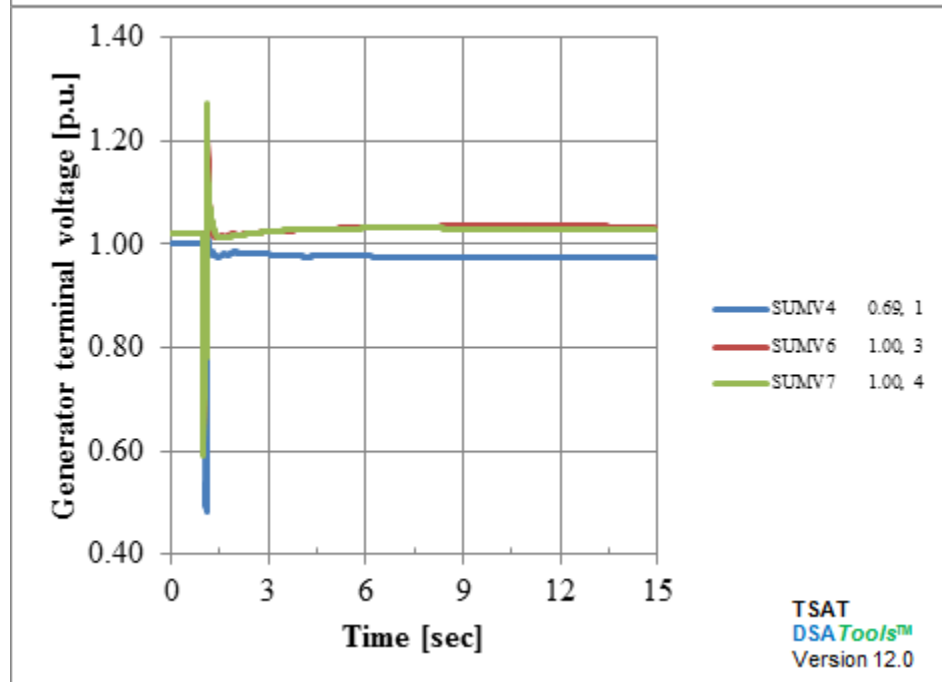
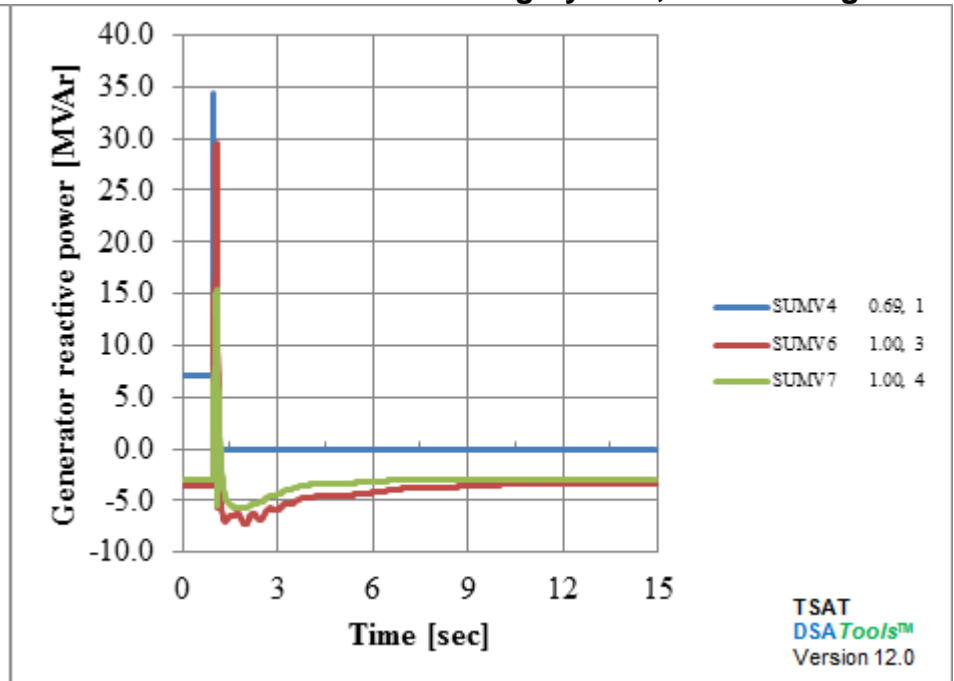
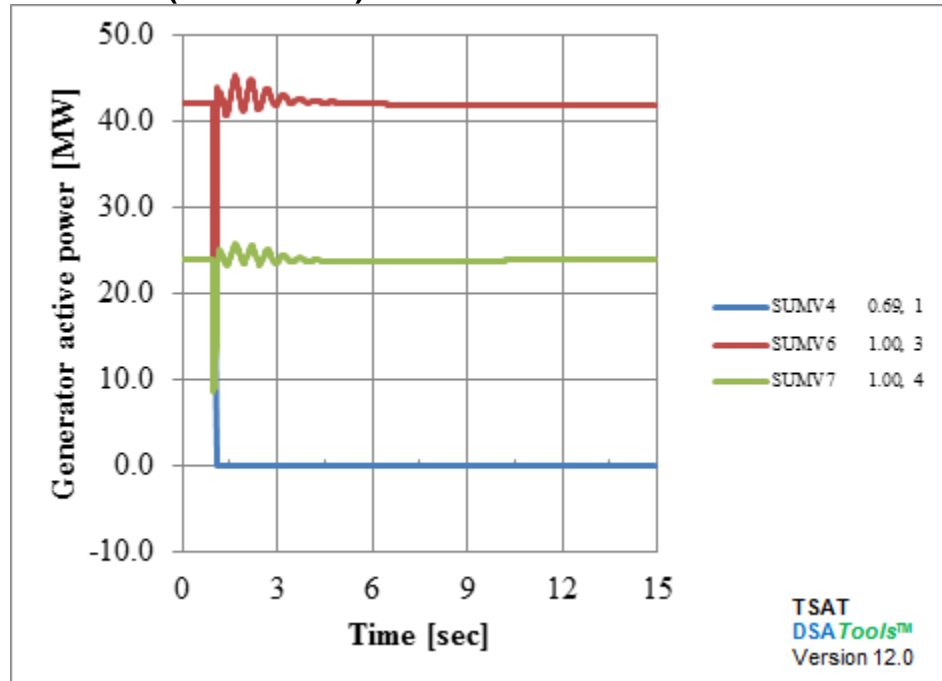
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Light 2014



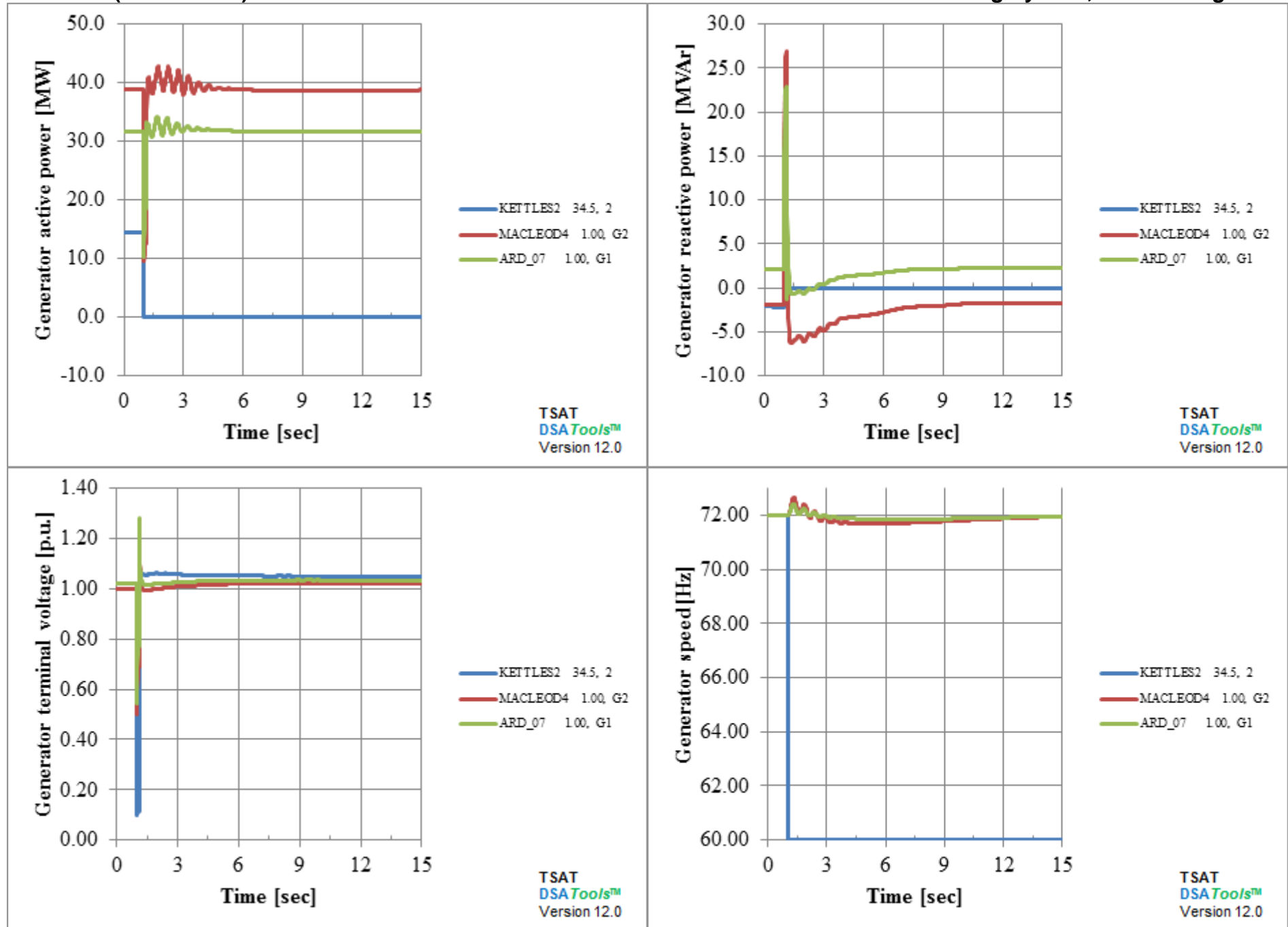
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Light 2014



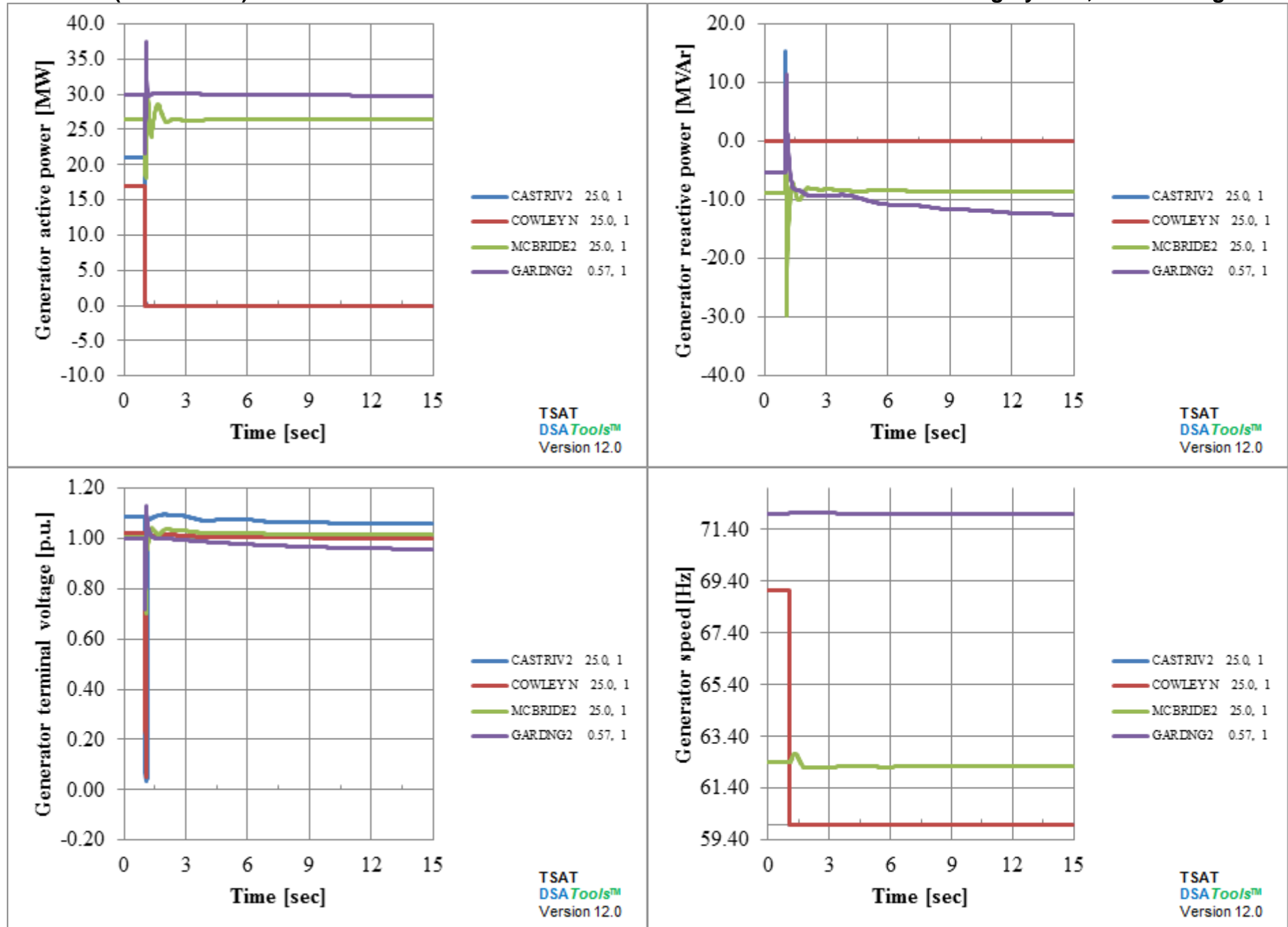
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Light 2014



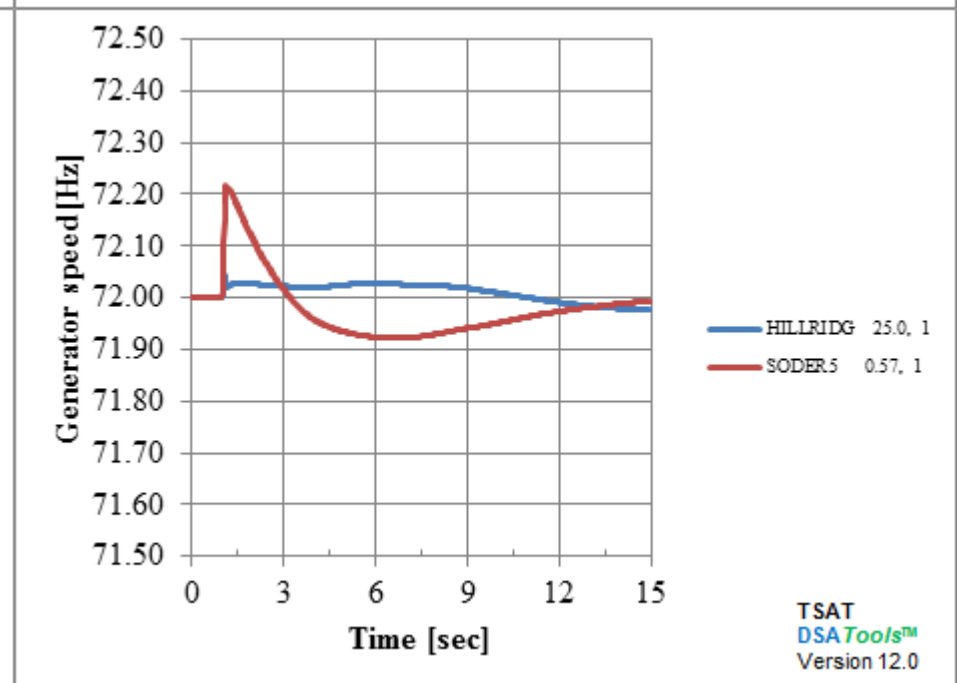
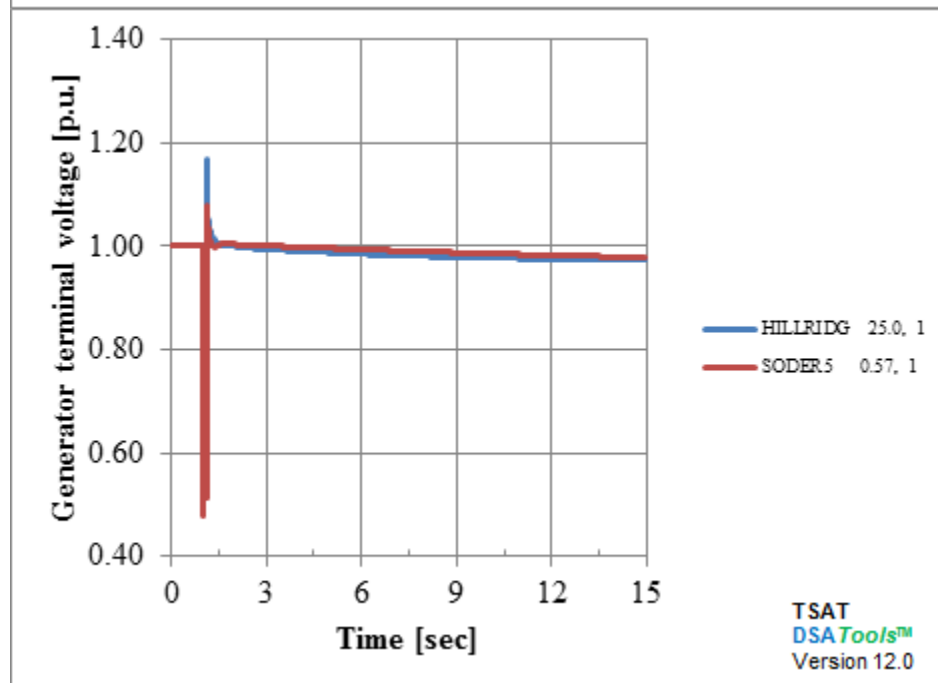
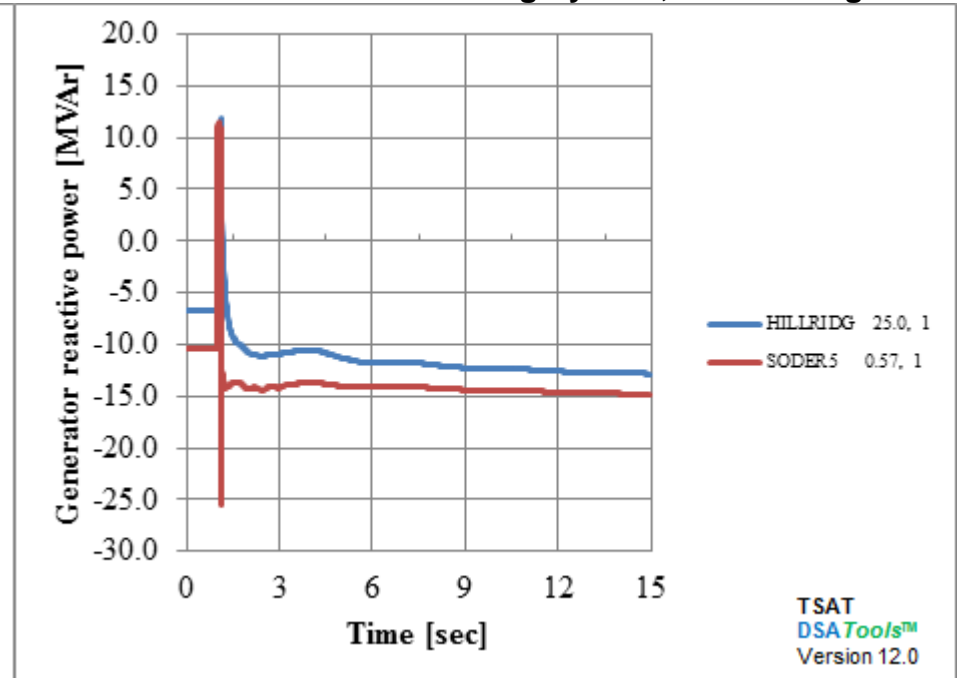
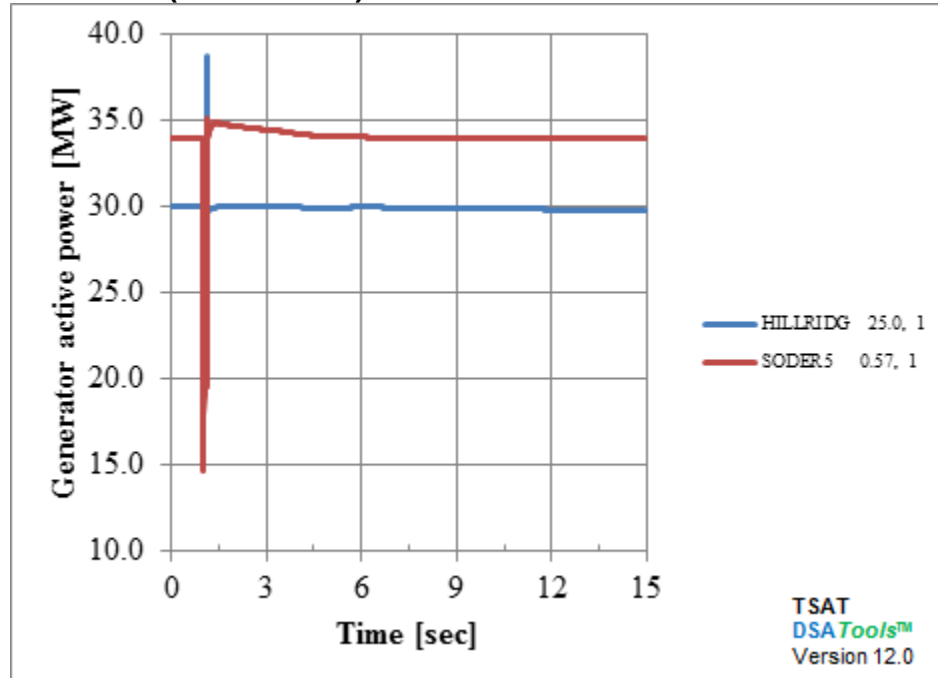
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Light 2014



16 -- 412L (396S - 632S) NEAR 396S

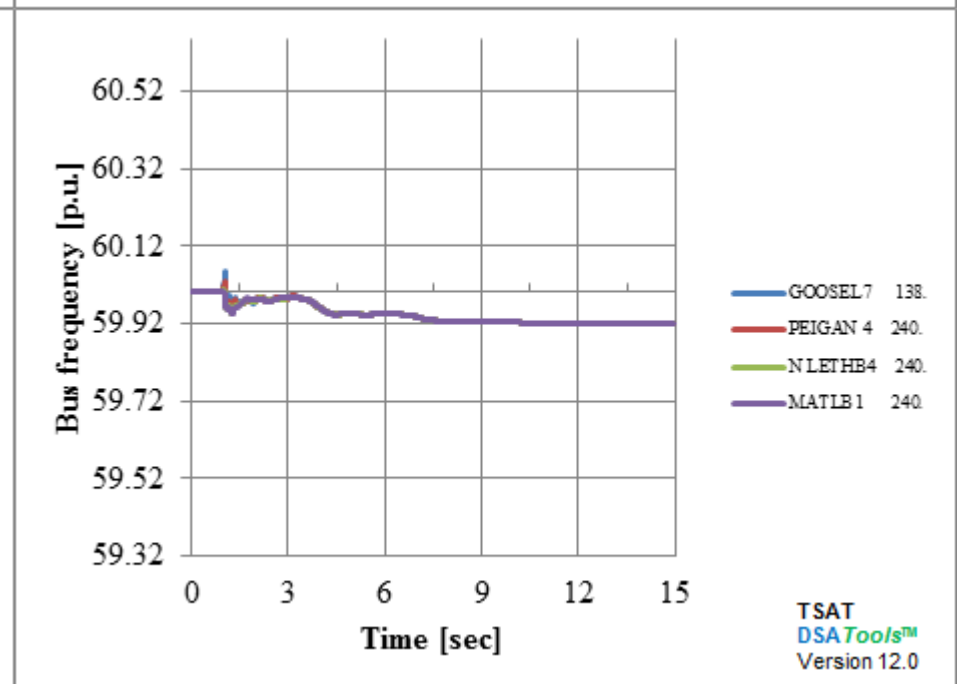
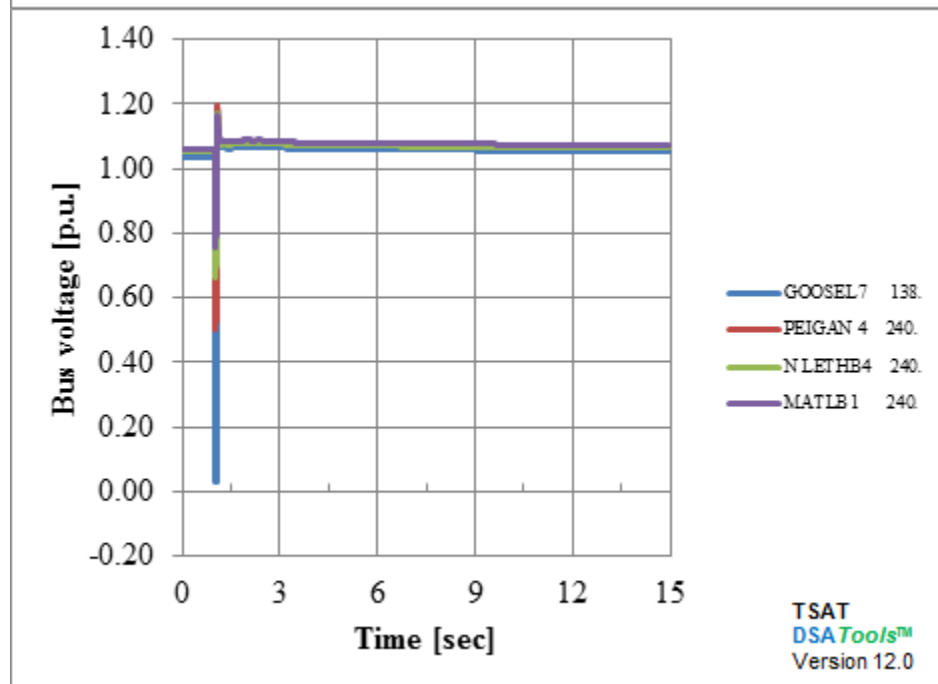
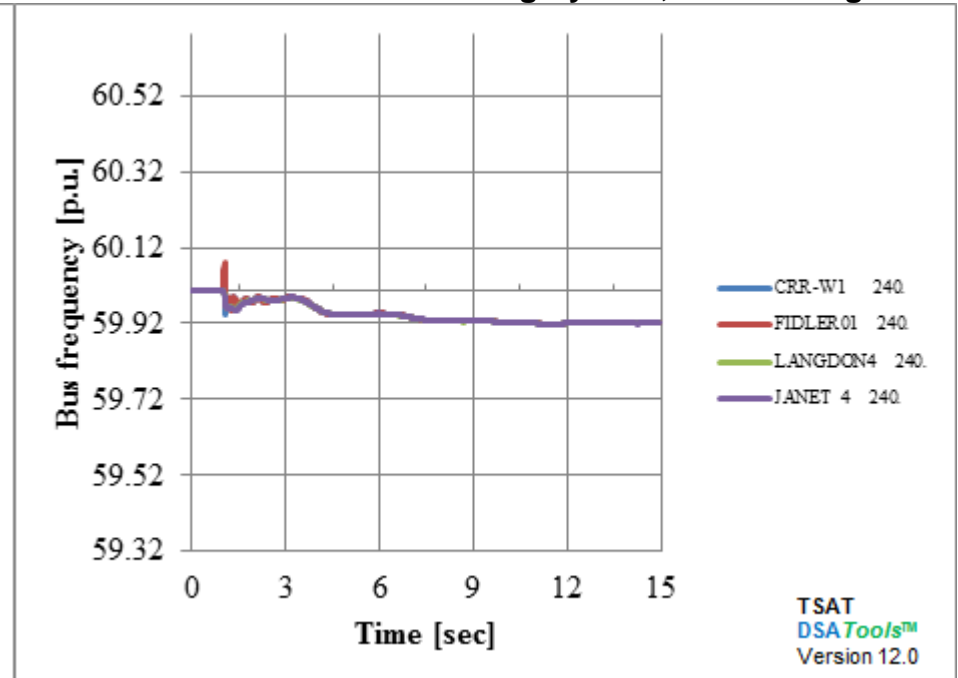
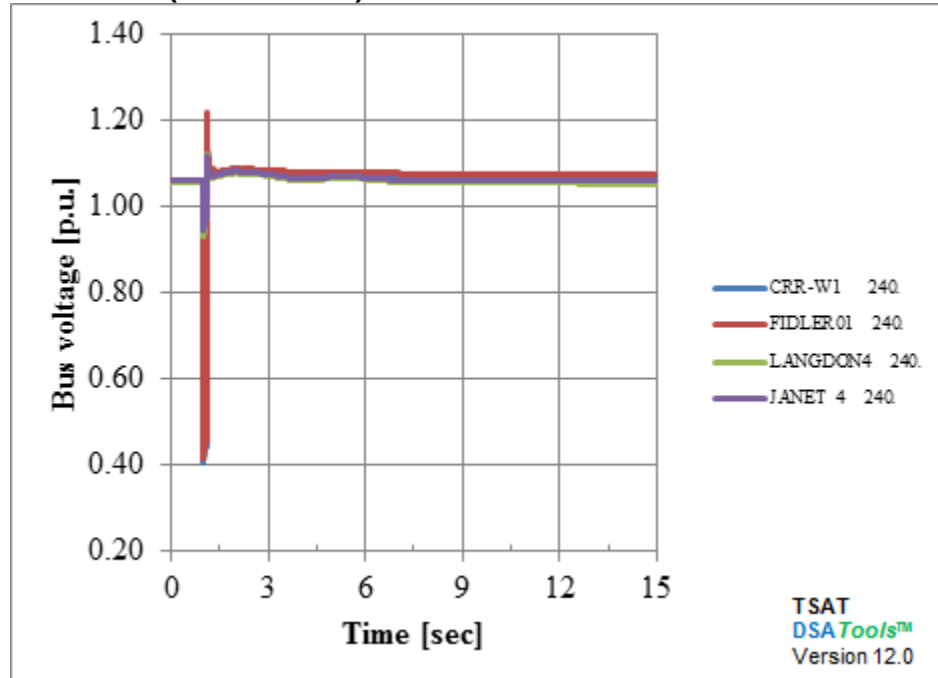
Existing System, Summer Light 2014





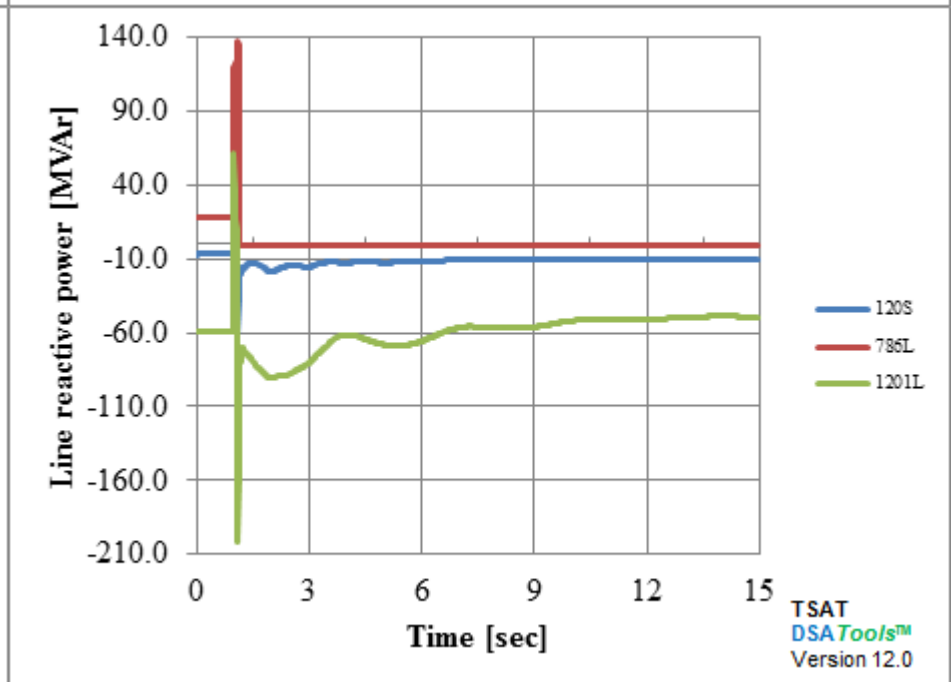
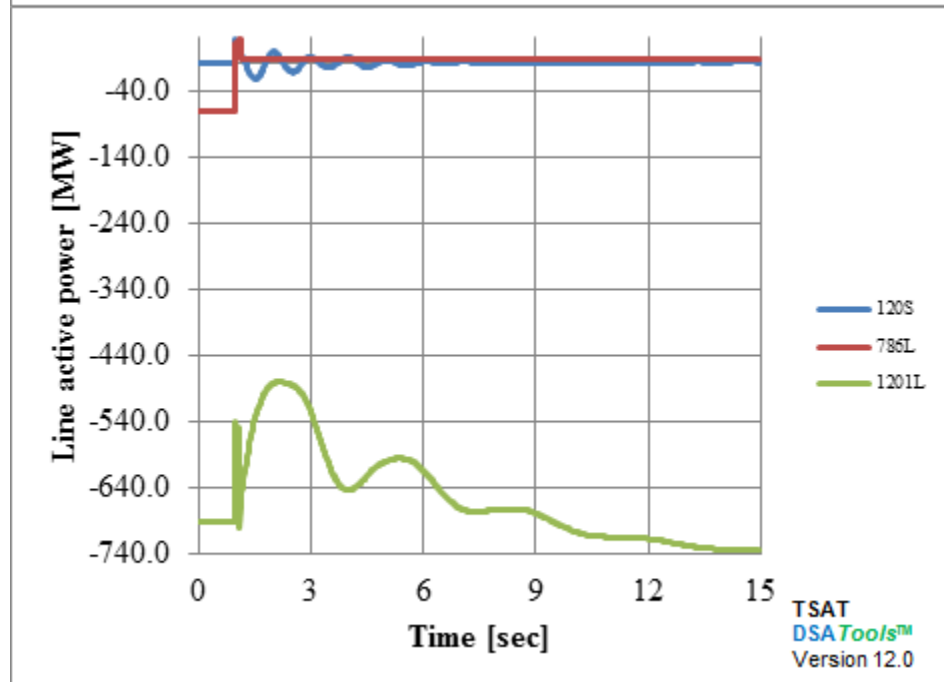
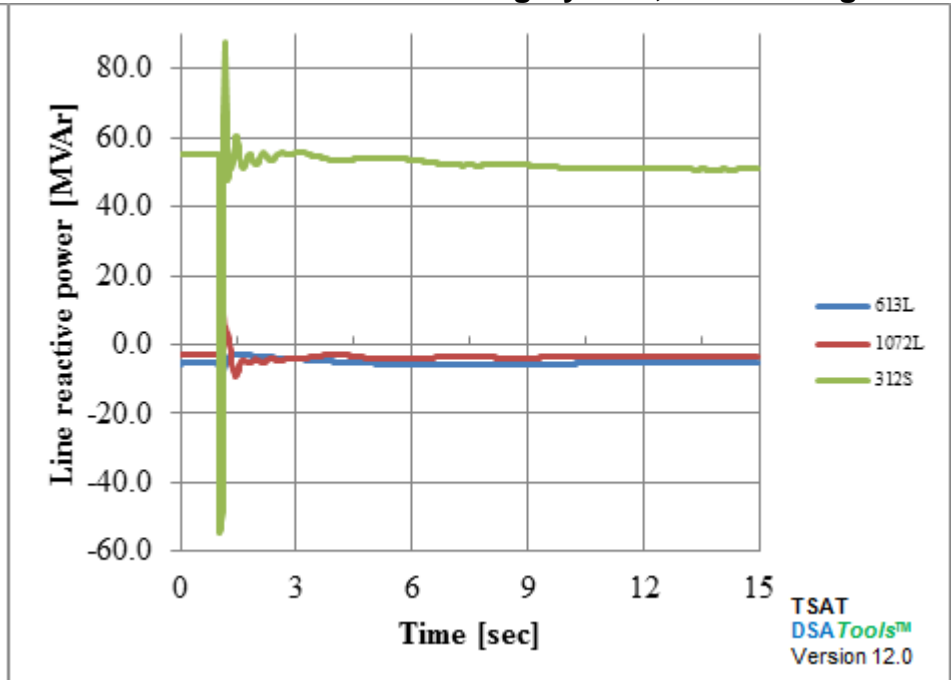
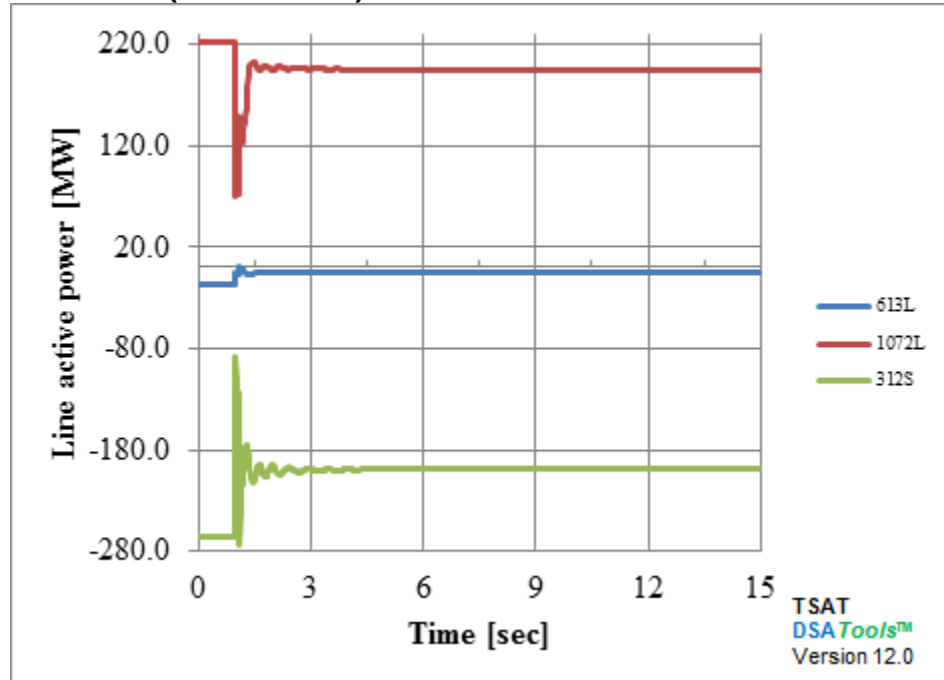
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Light 2014



16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Light 2014





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**Riverview WAGF**

Attachment C2

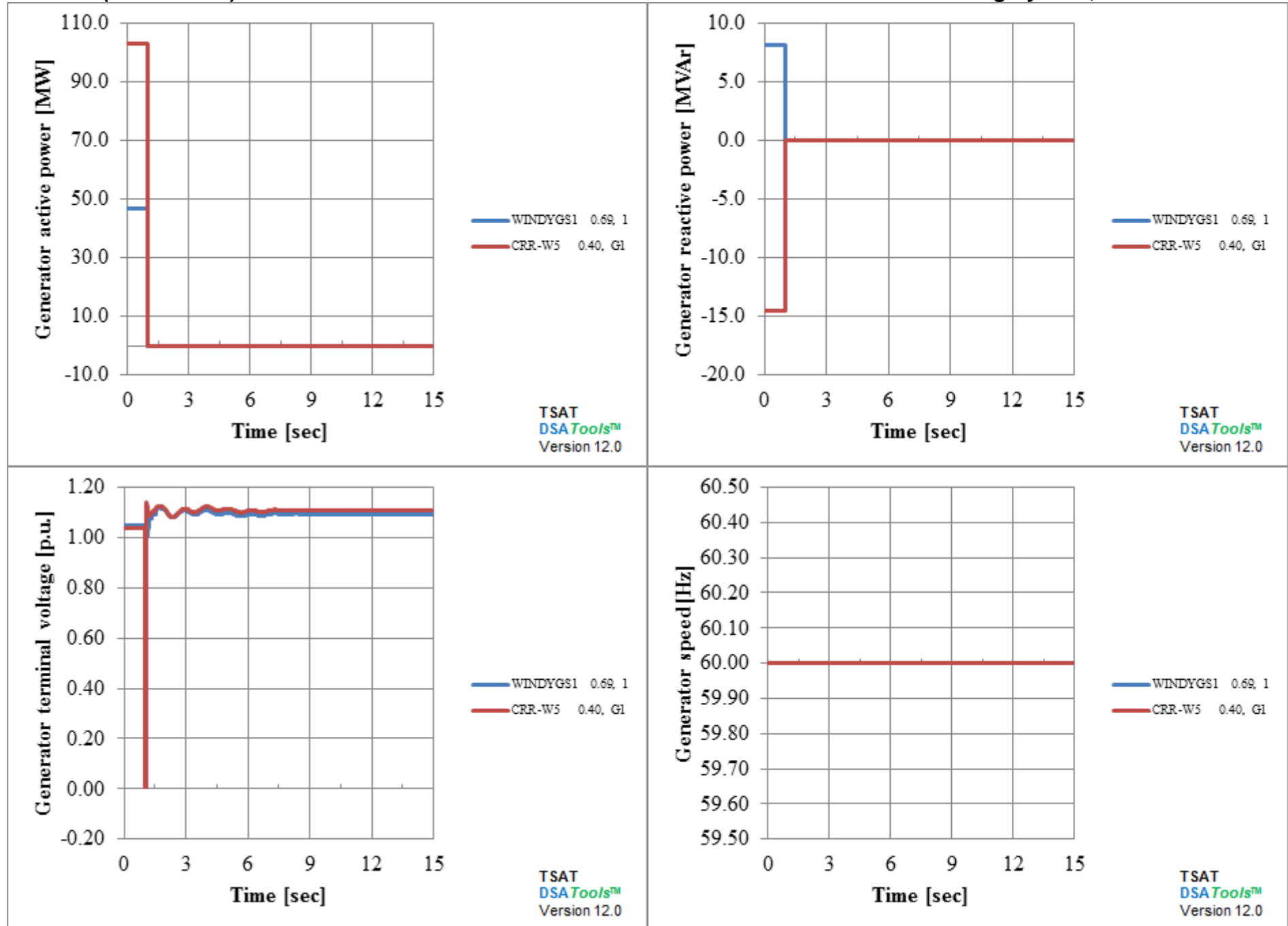
Pre-Connection Transient Stability Results

Part 2

2014 Summer Peak Scenario

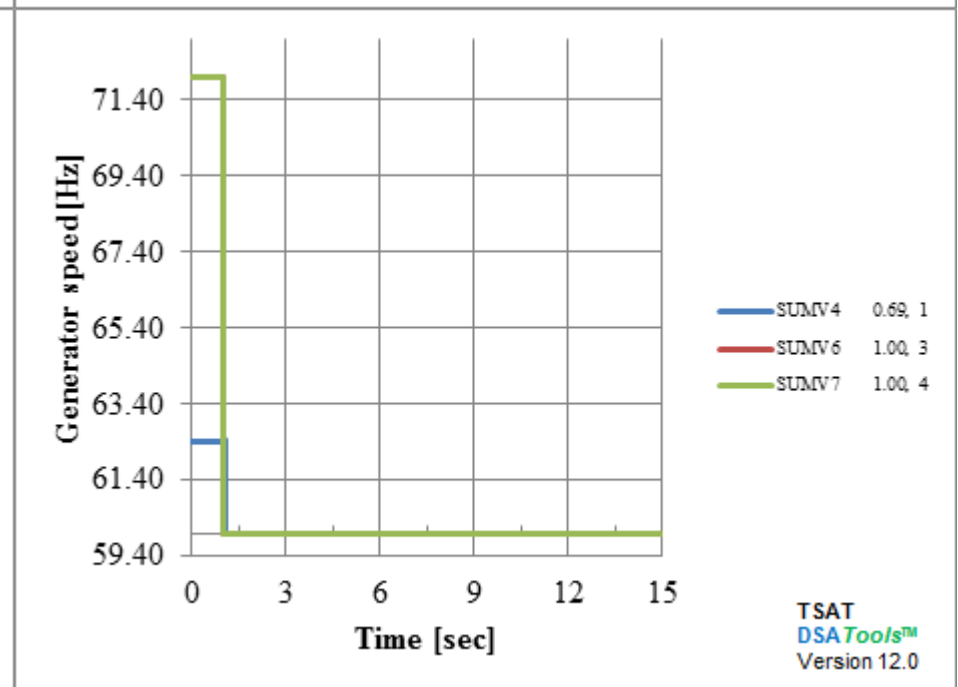
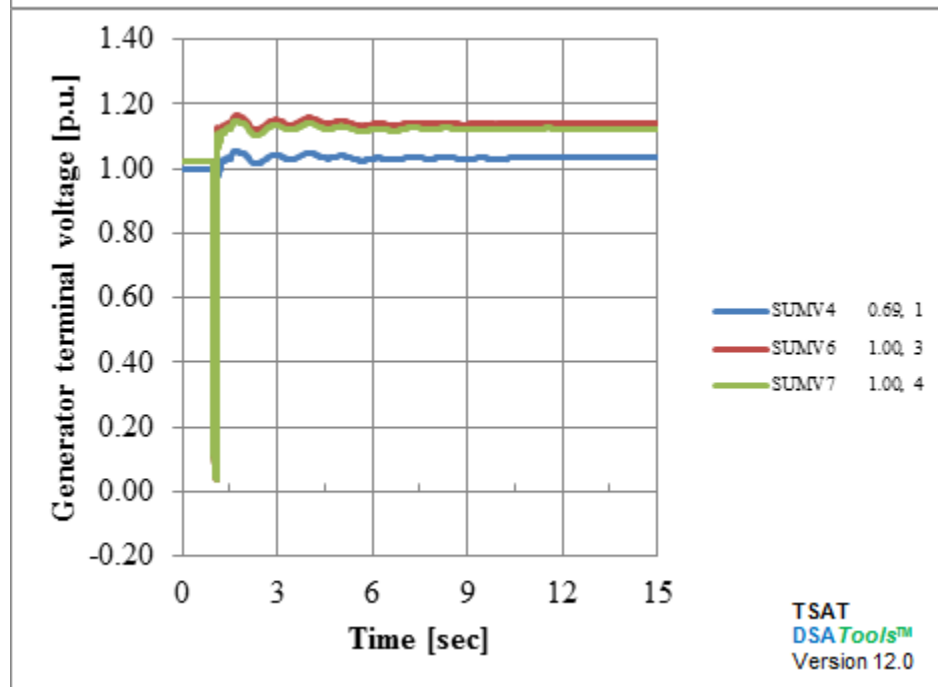
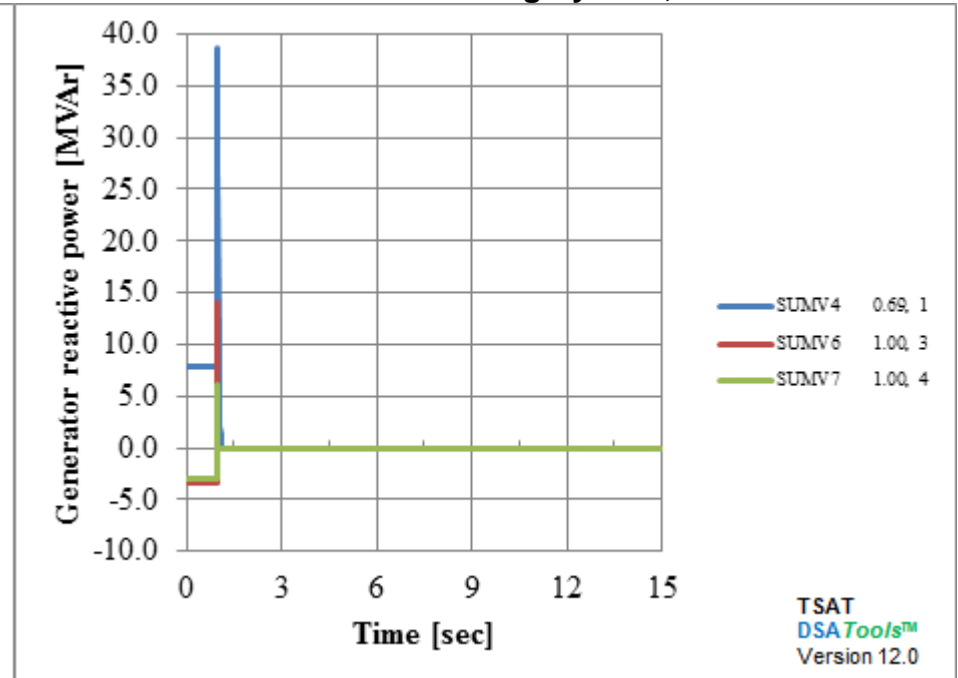
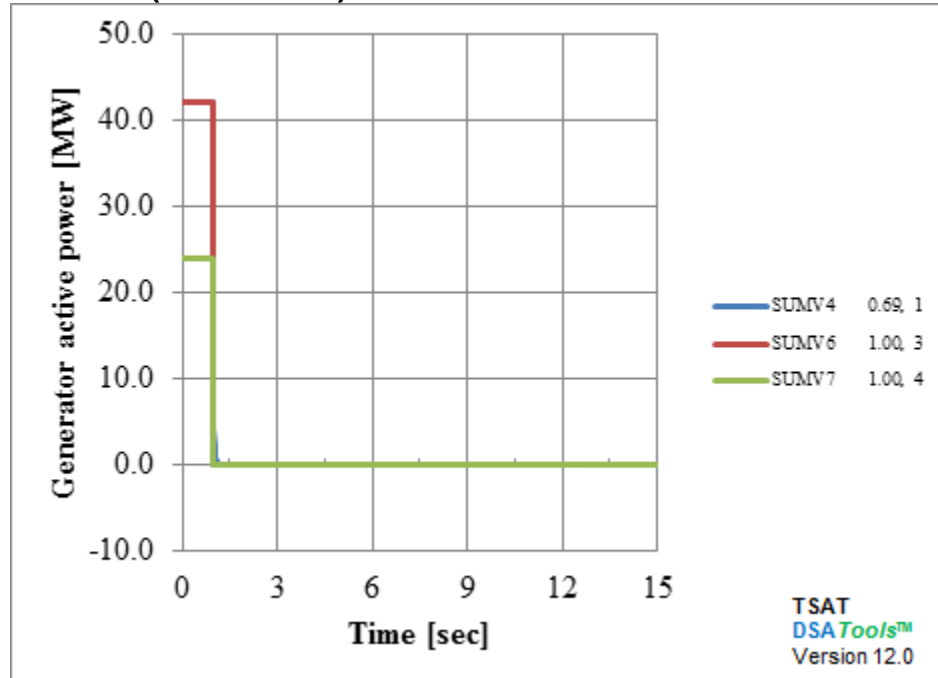
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Peak 2014



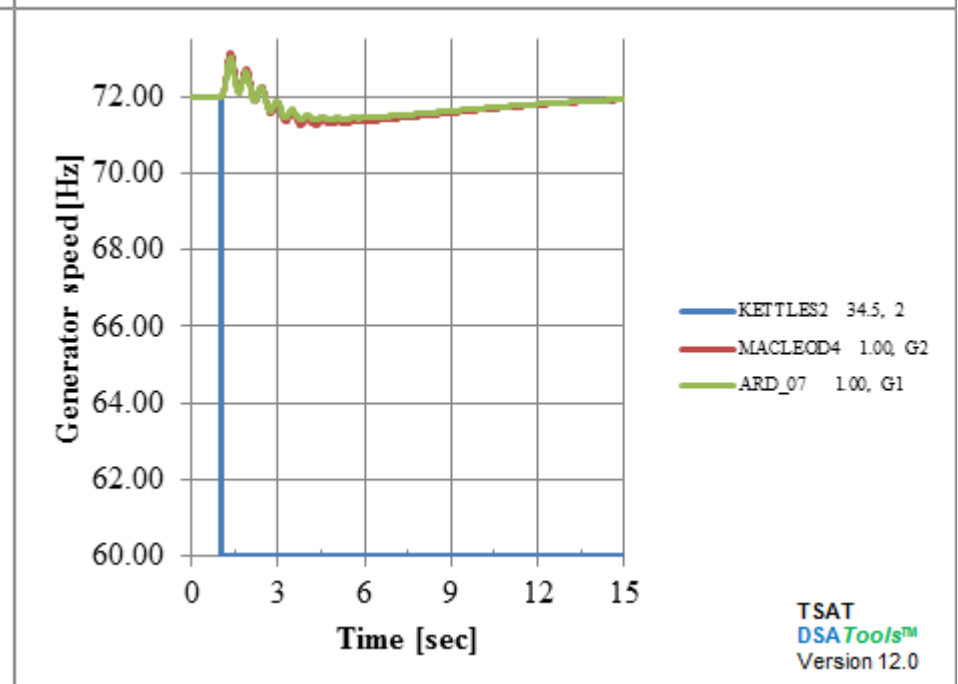
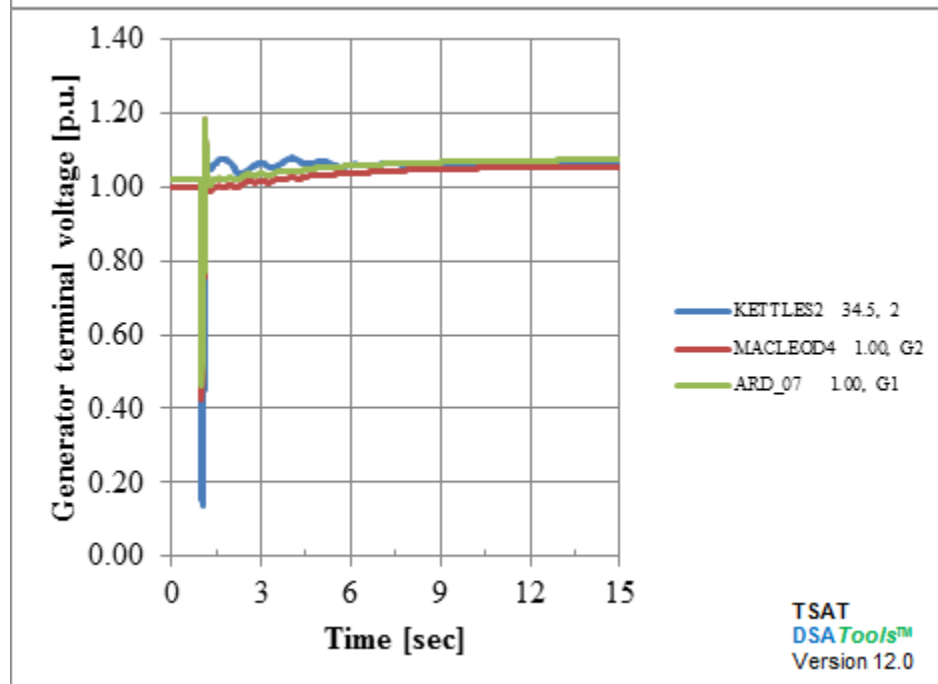
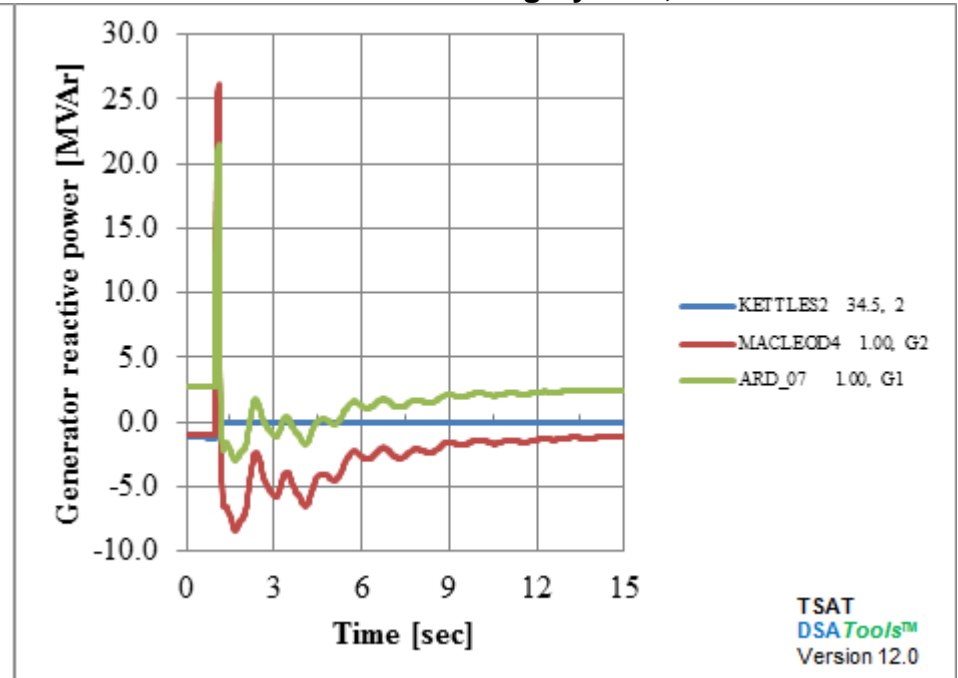
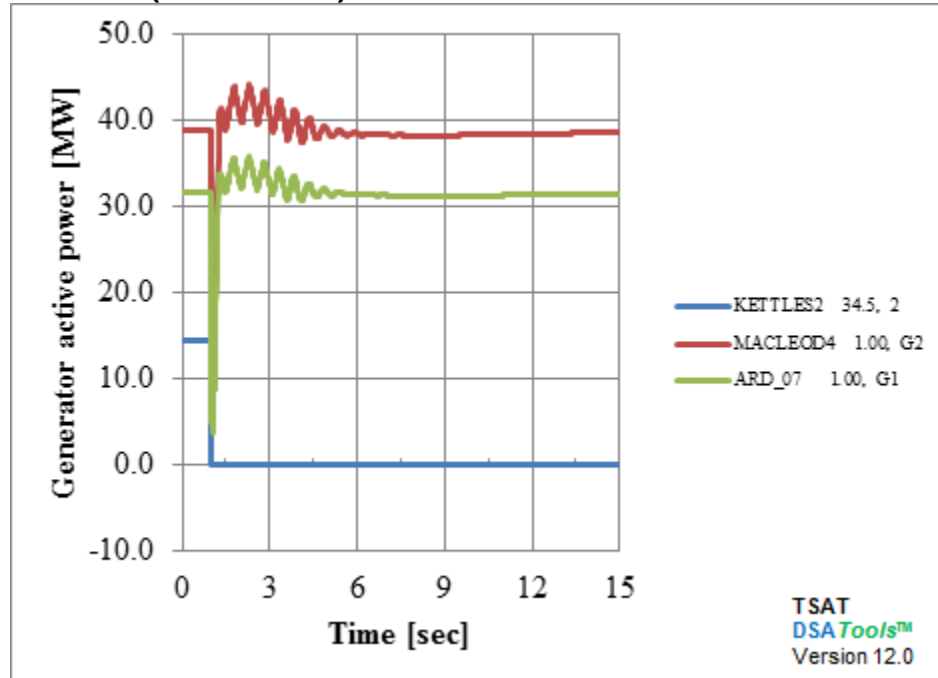
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Peak 2014



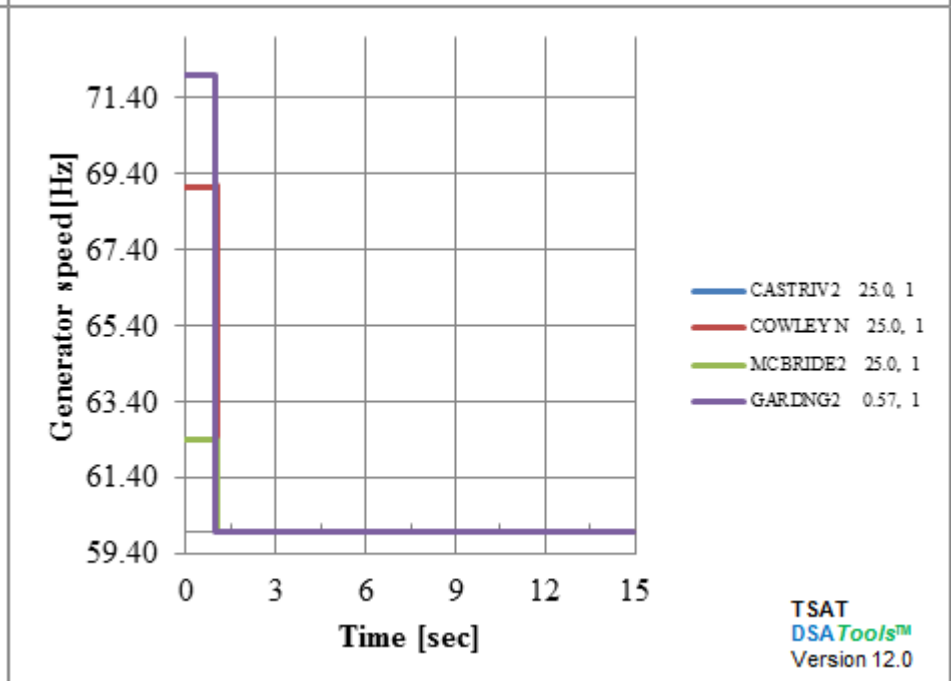
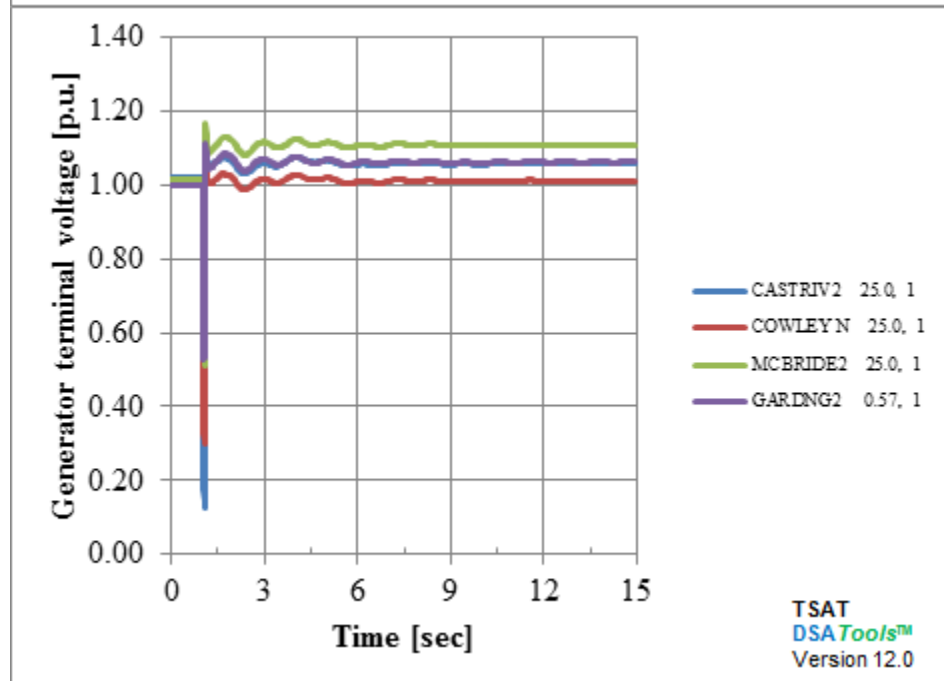
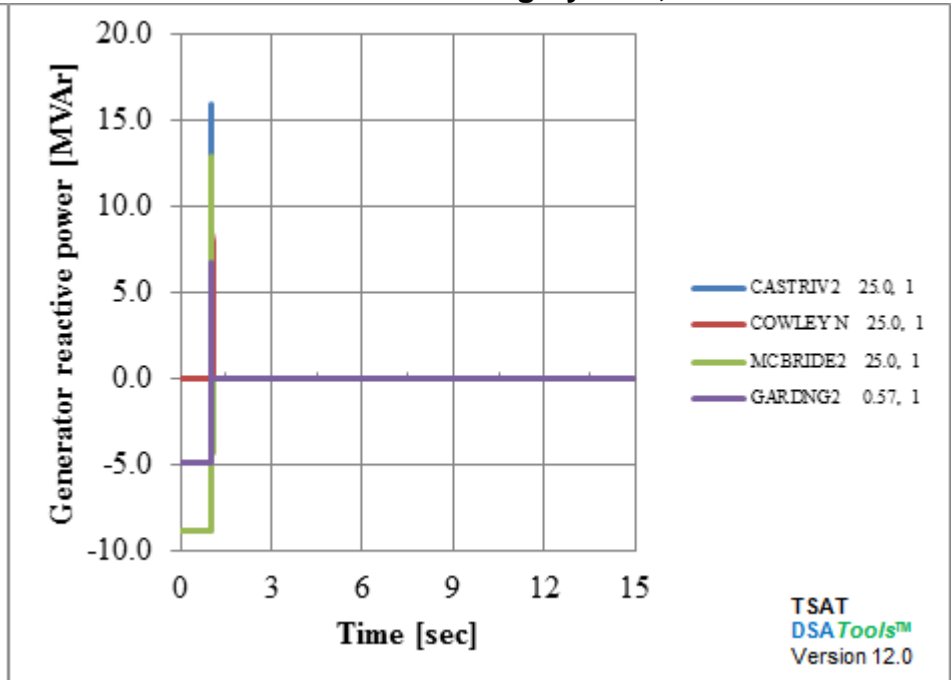
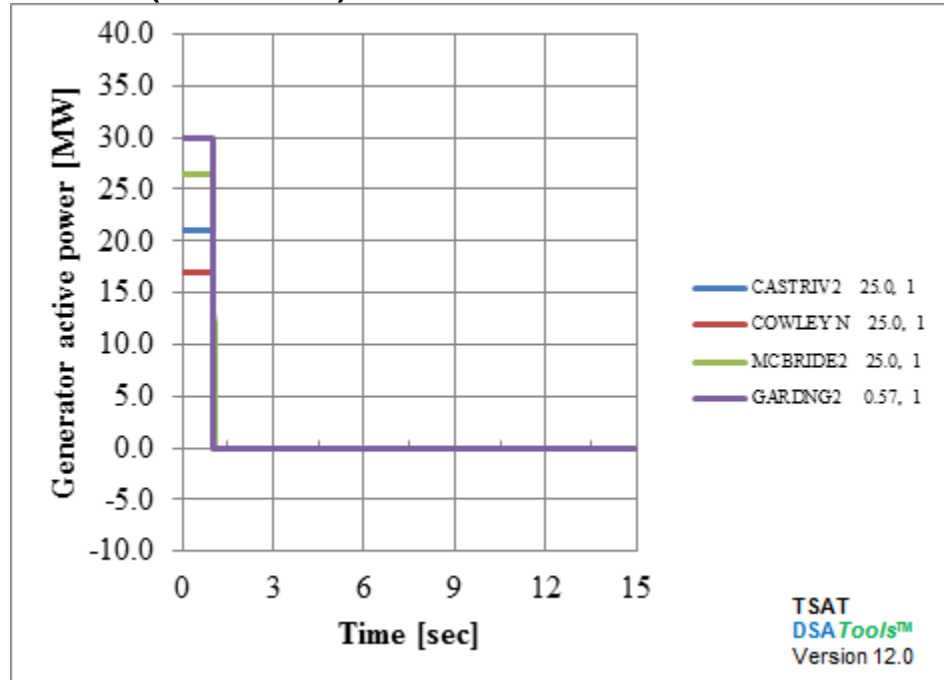
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Peak 2014



1 -- 994L (103S - 312S) NEAR 103S

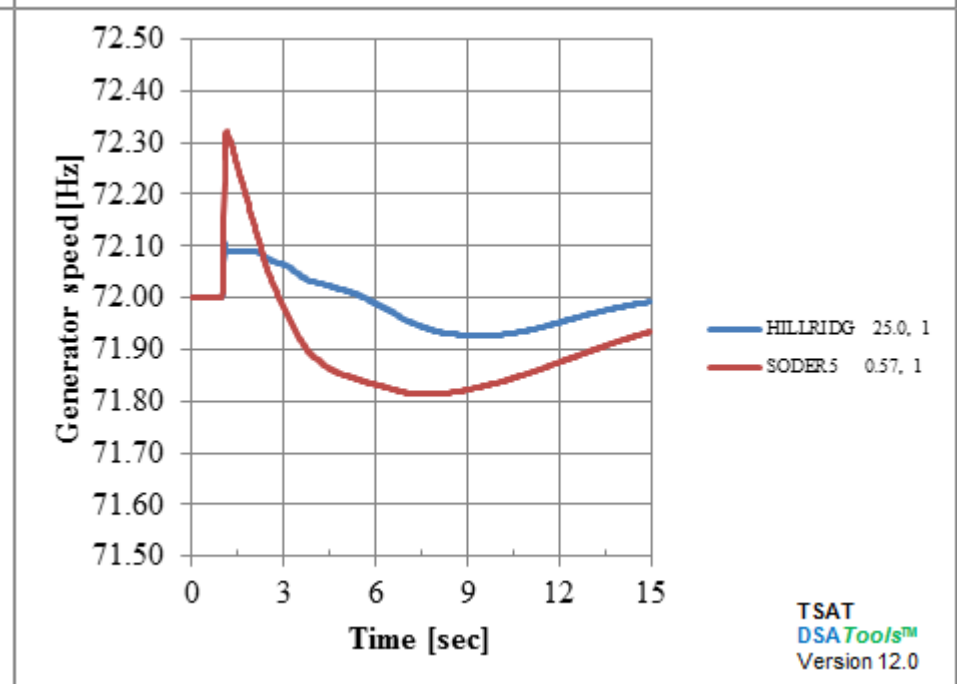
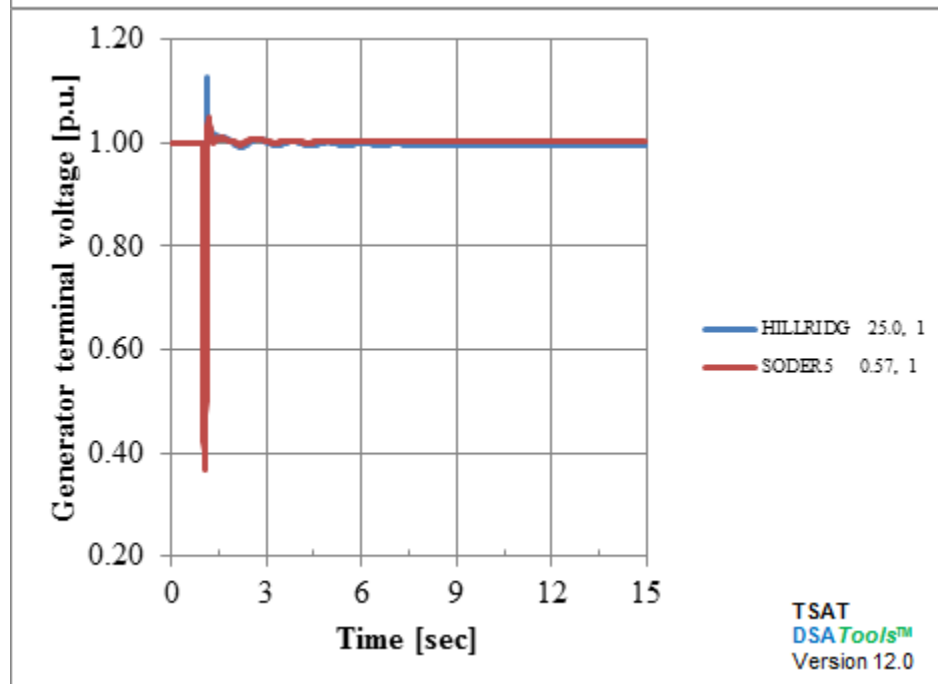
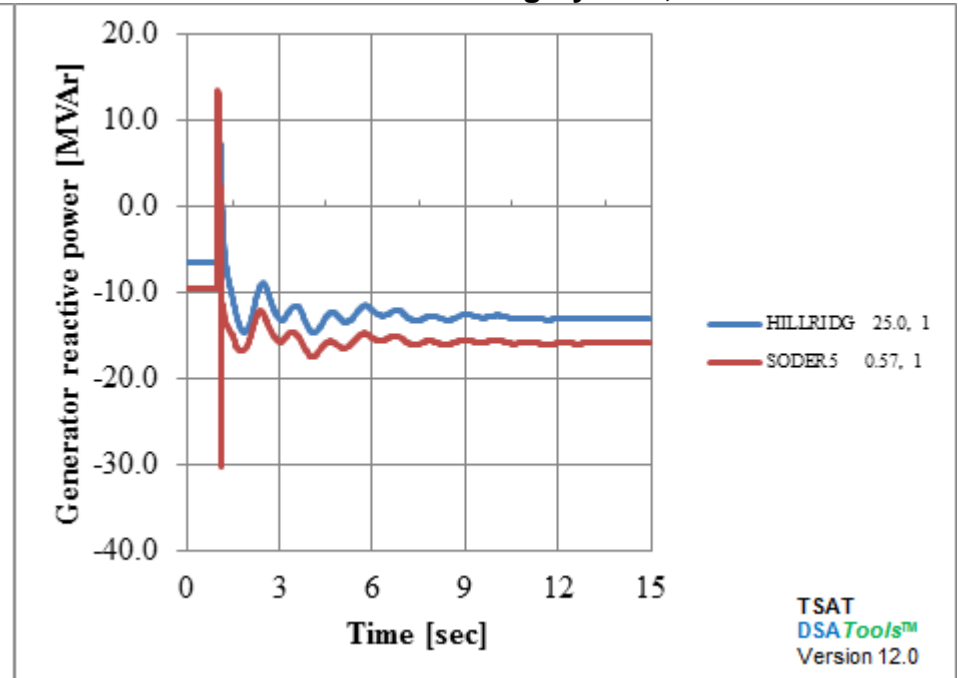
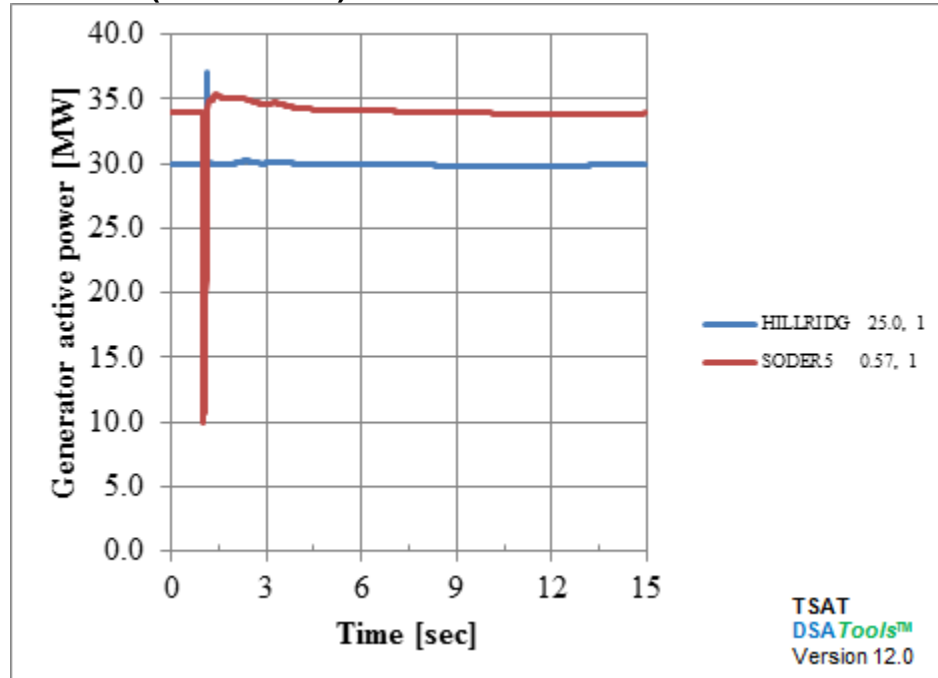
Existing System, Summer Peak 2014





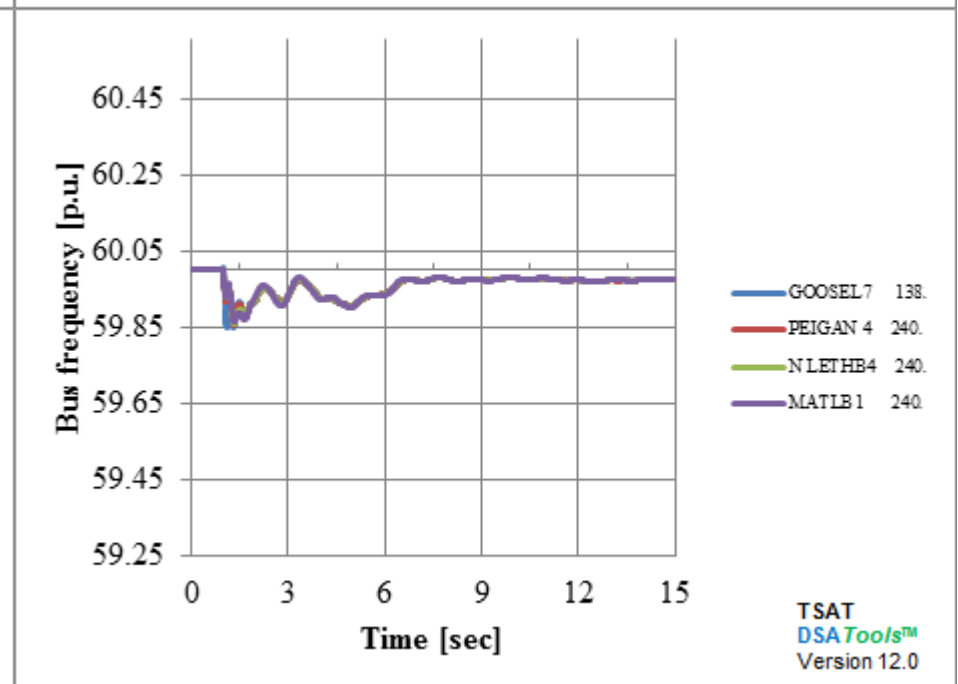
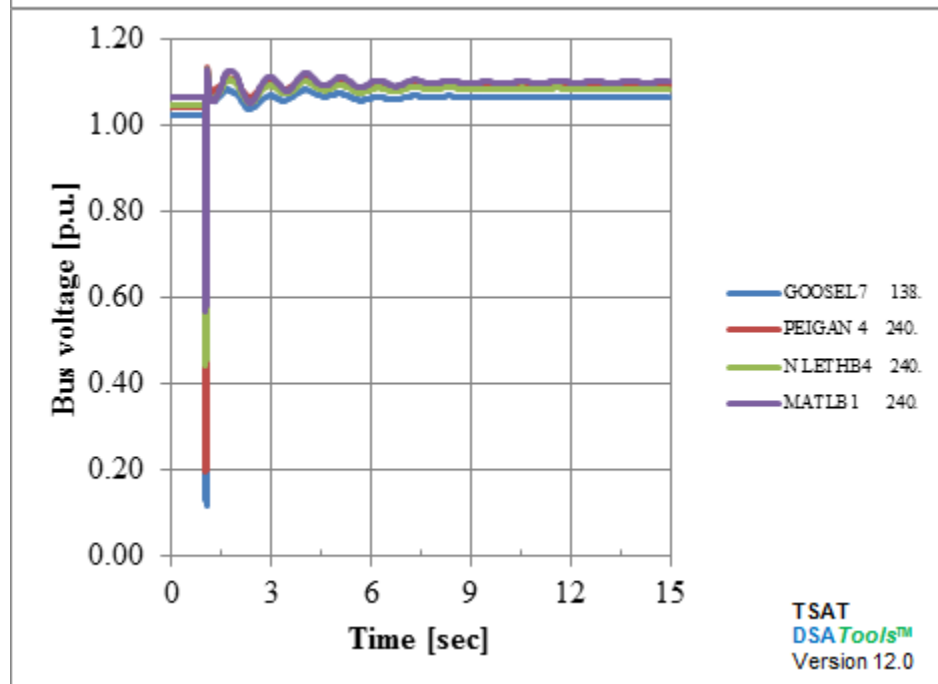
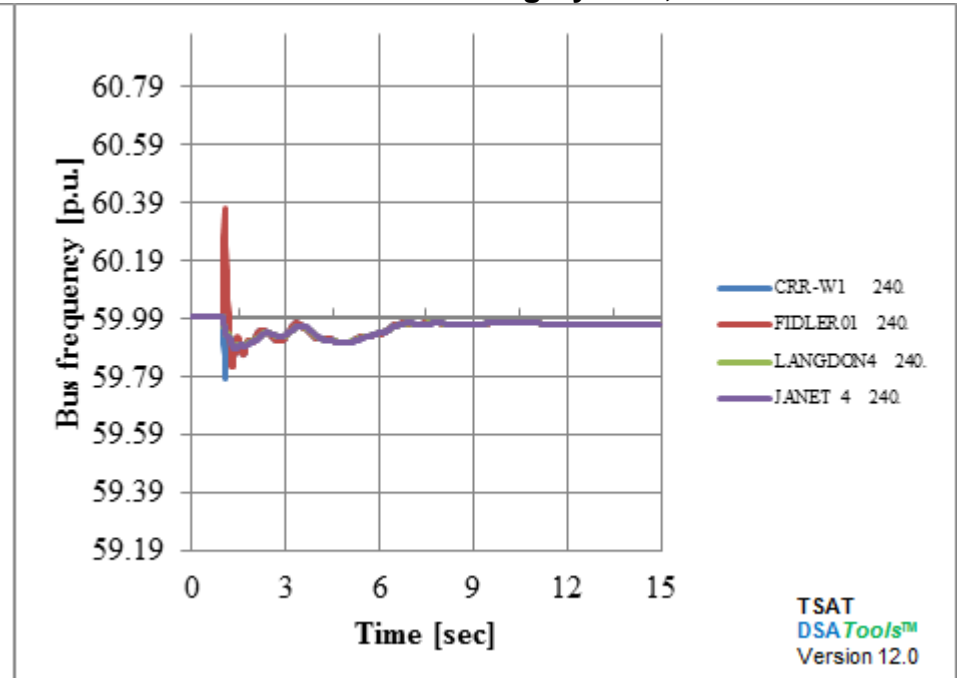
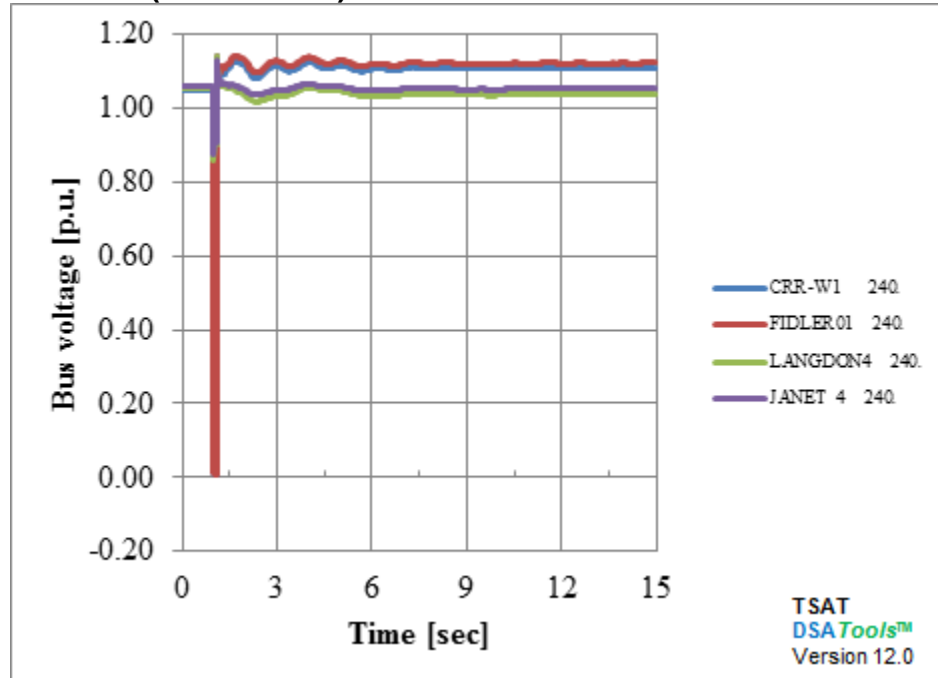
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Peak 2014



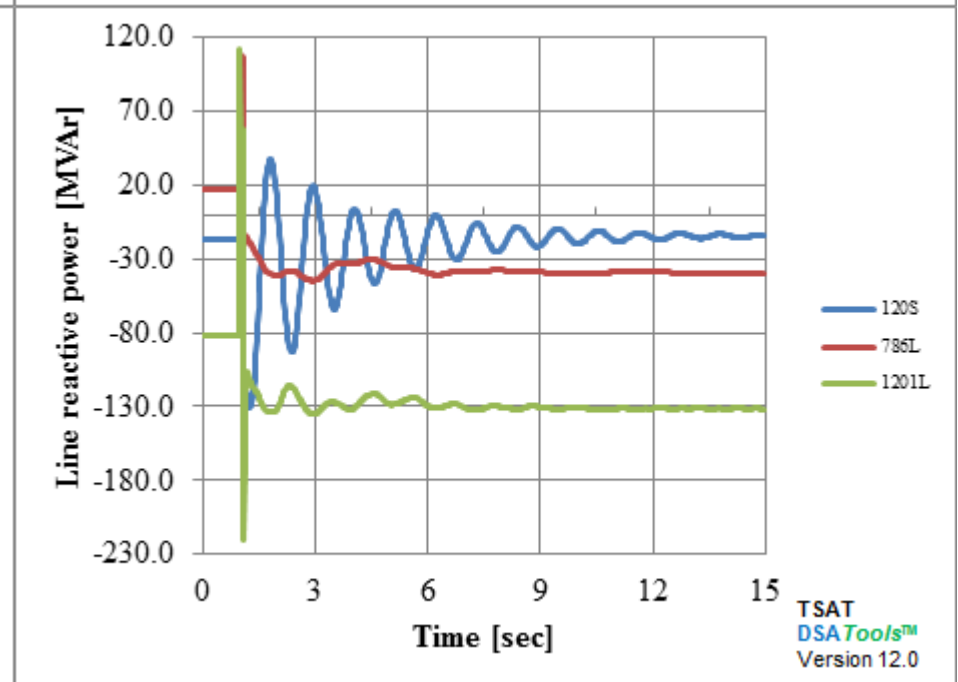
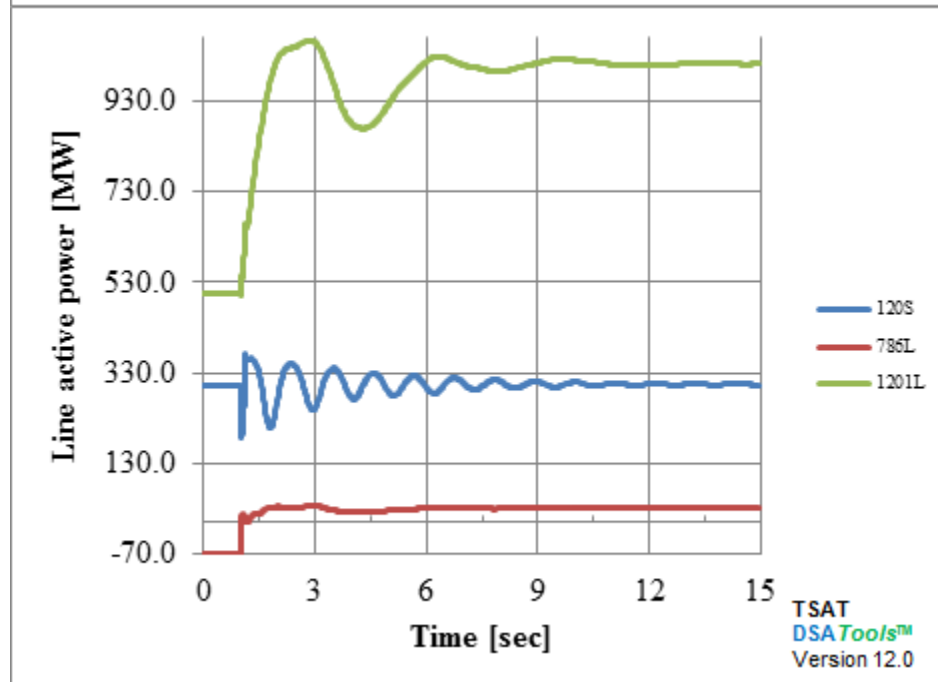
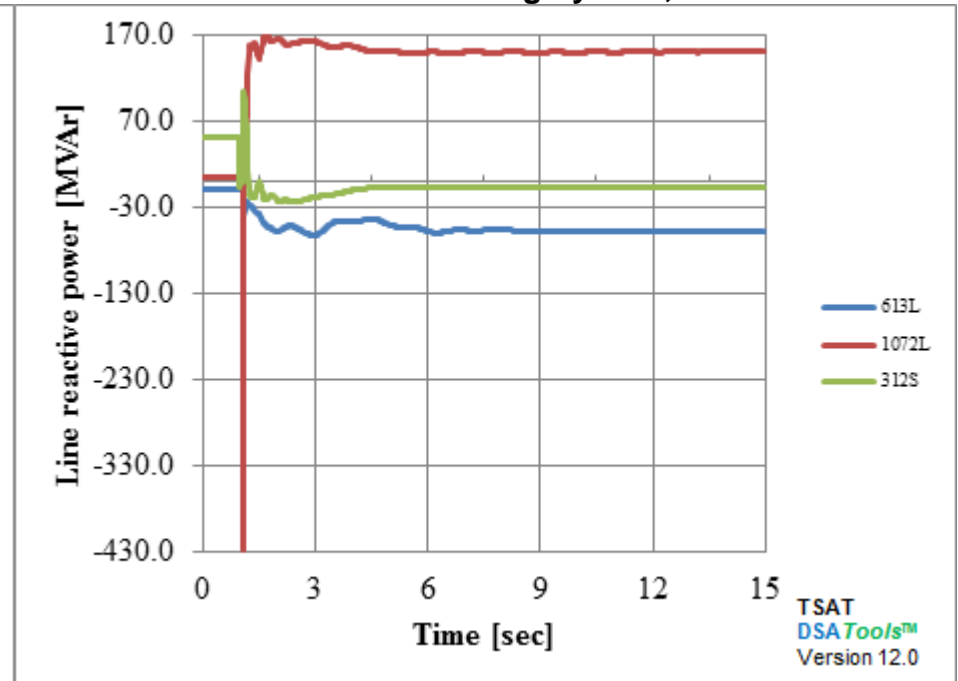
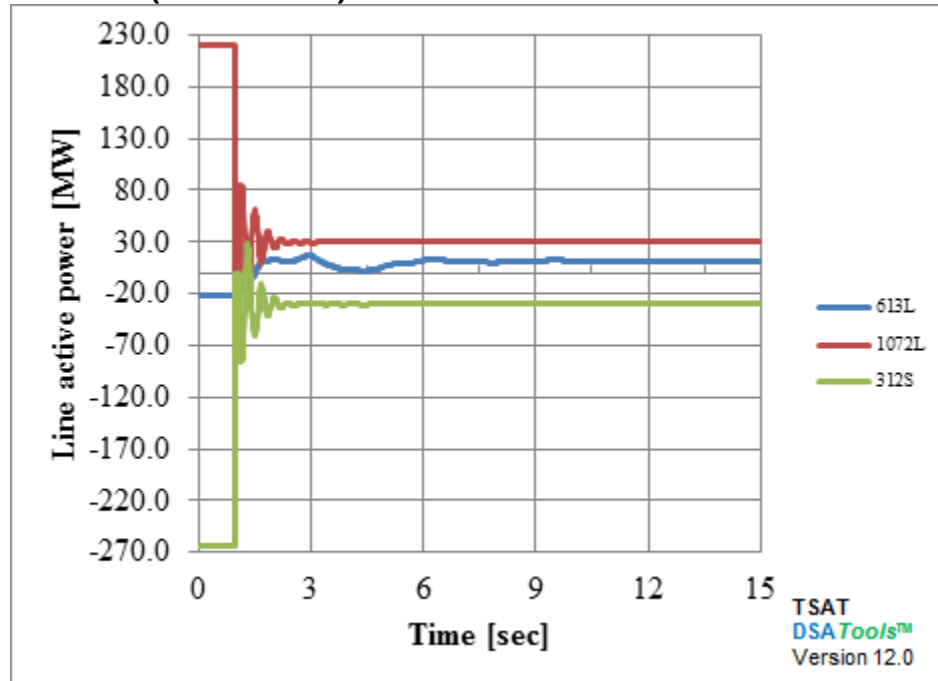
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Peak 2014



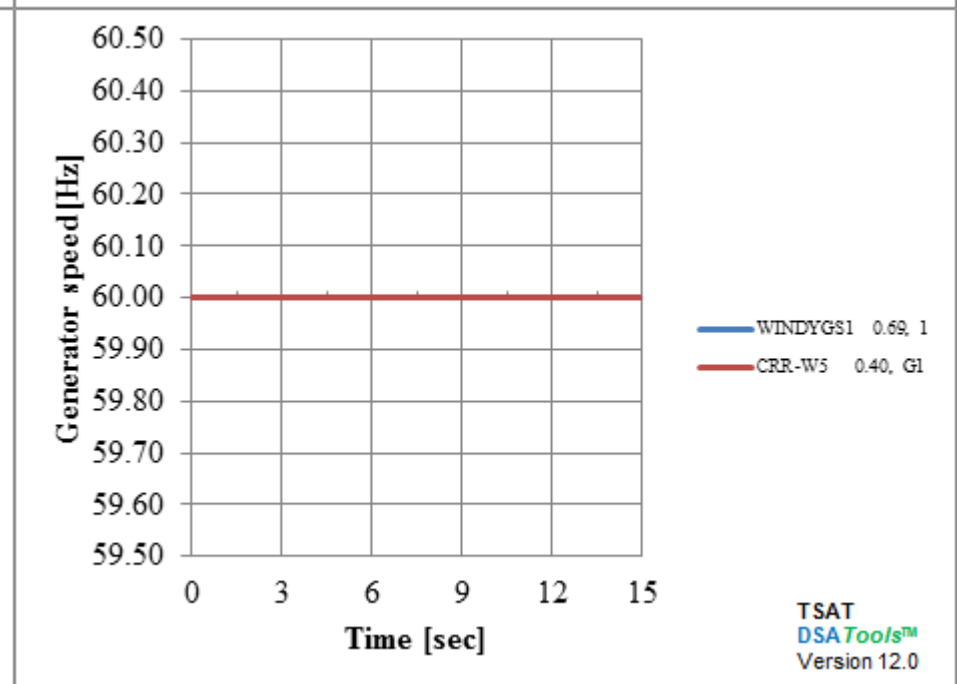
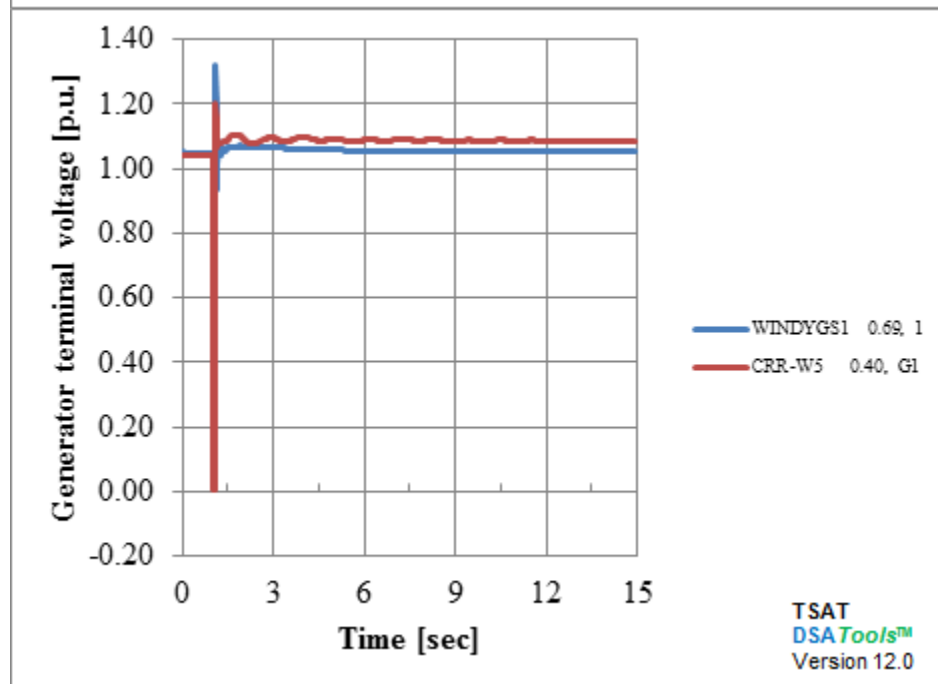
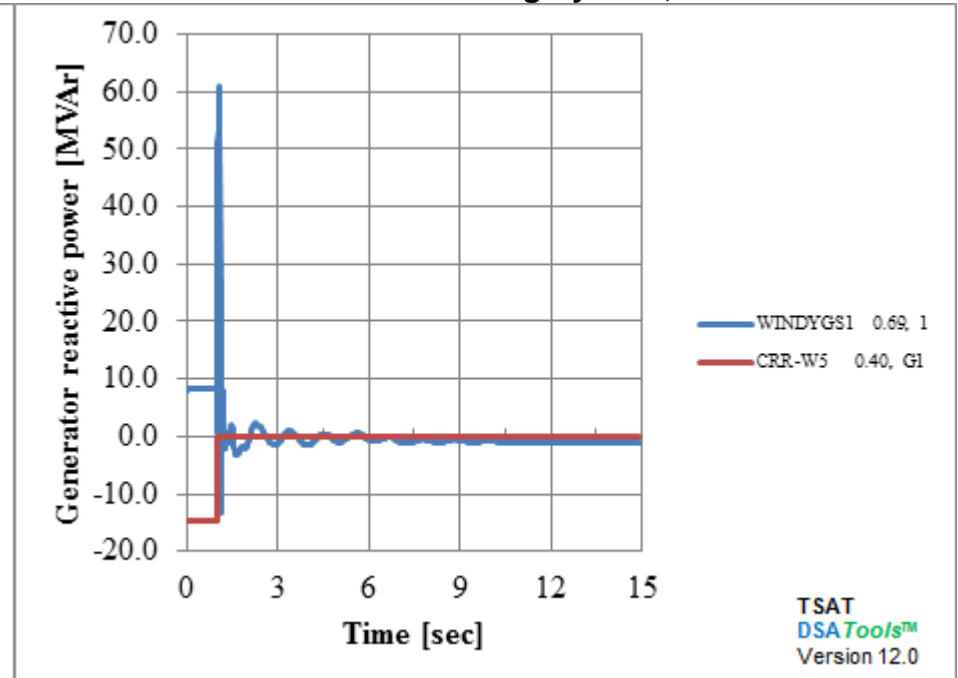
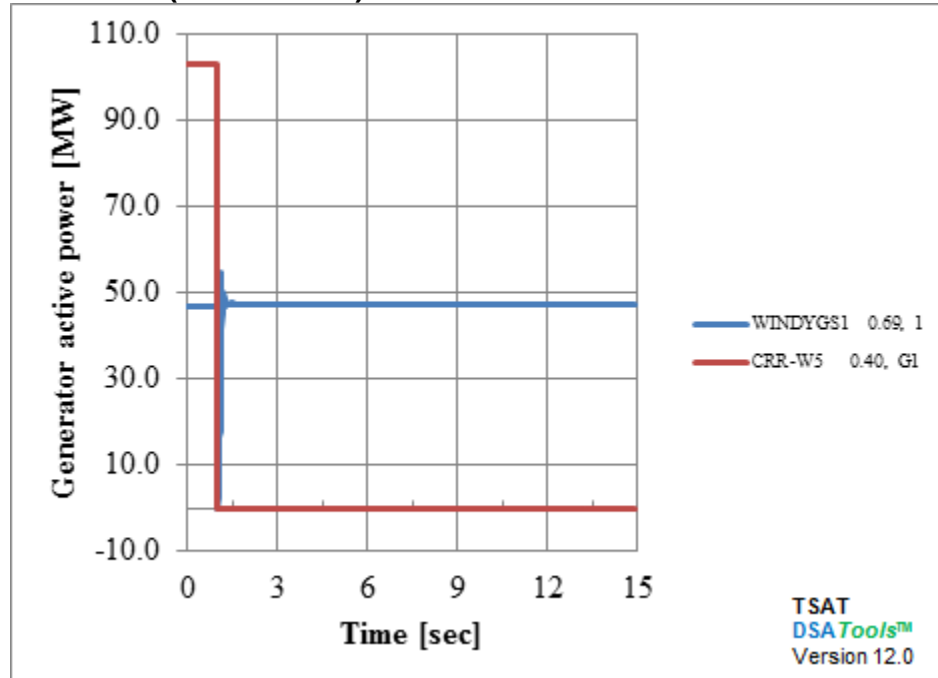
1 -- 994L (103S - 312S) NEAR 103S

Existing System, Summer Peak 2014



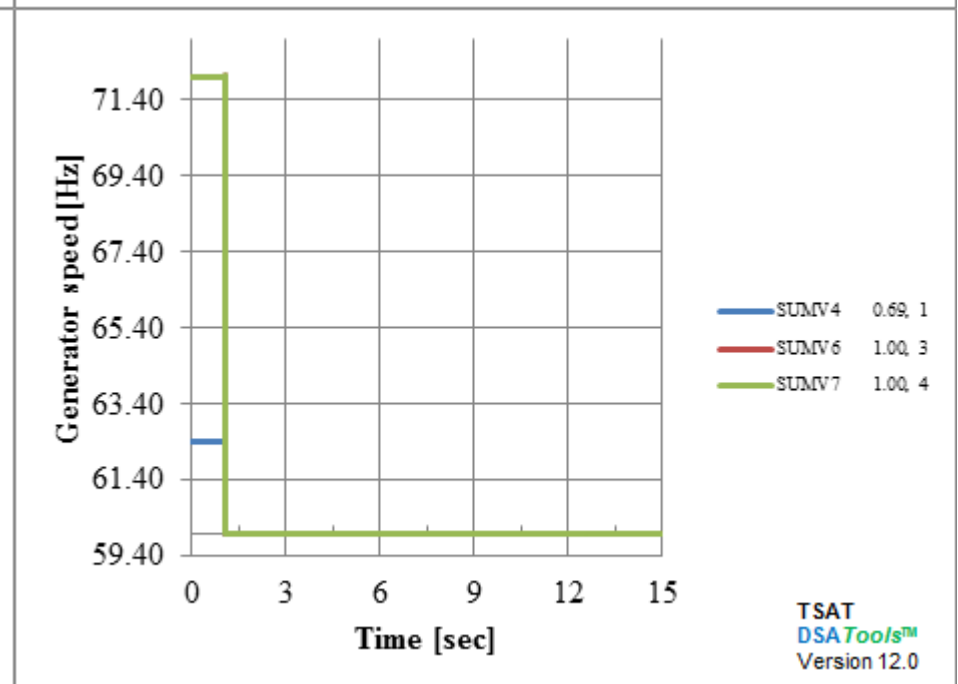
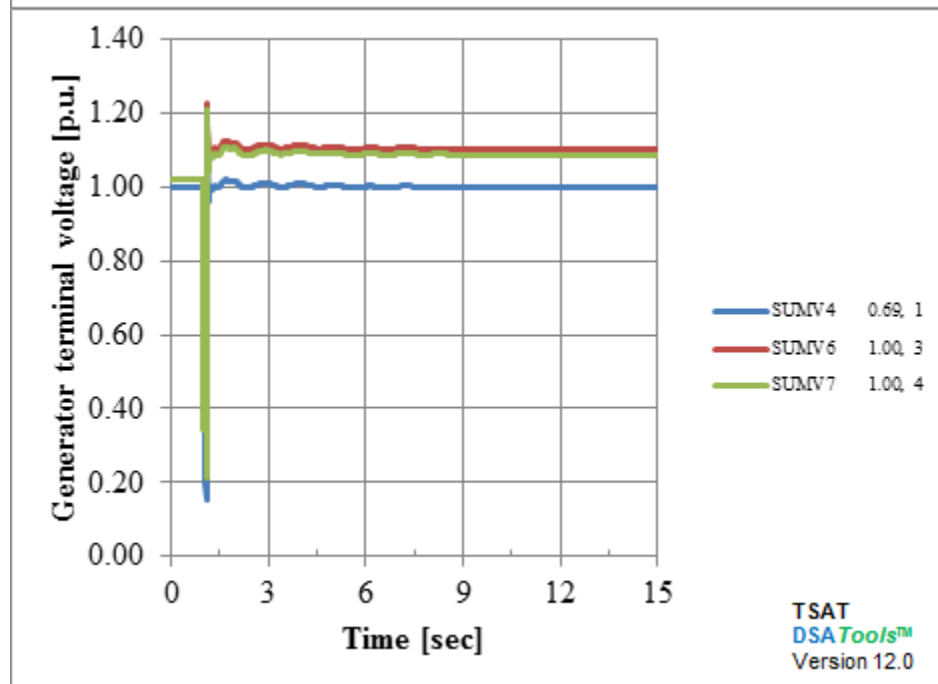
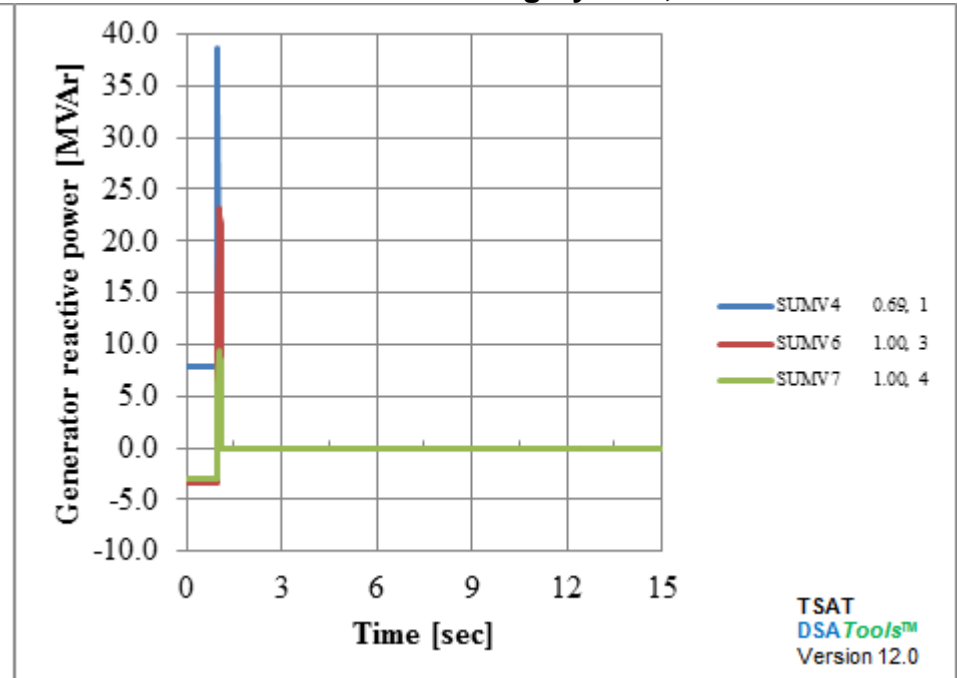
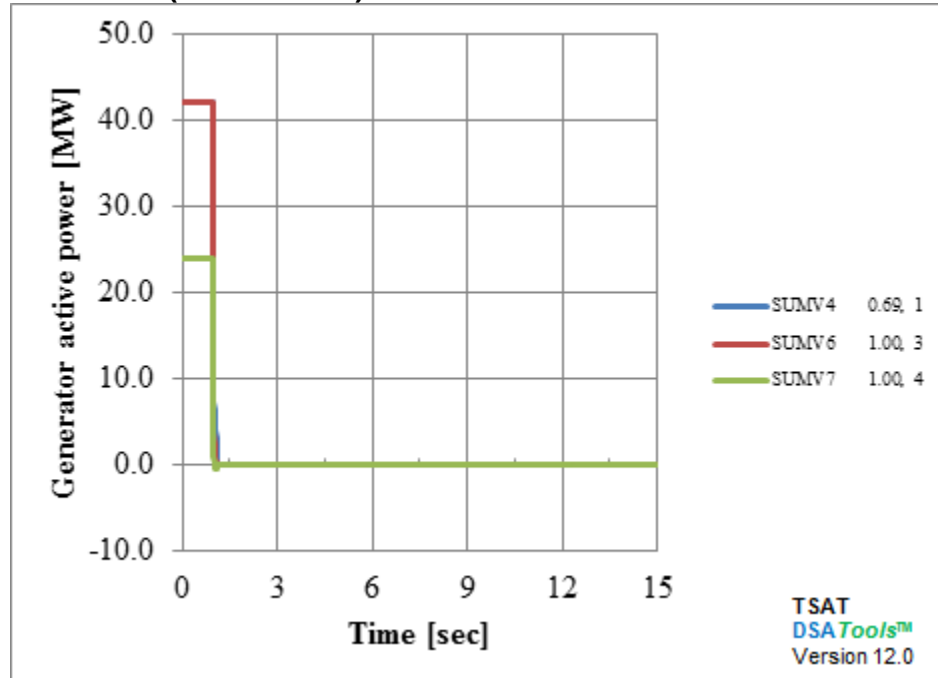
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Peak 2014



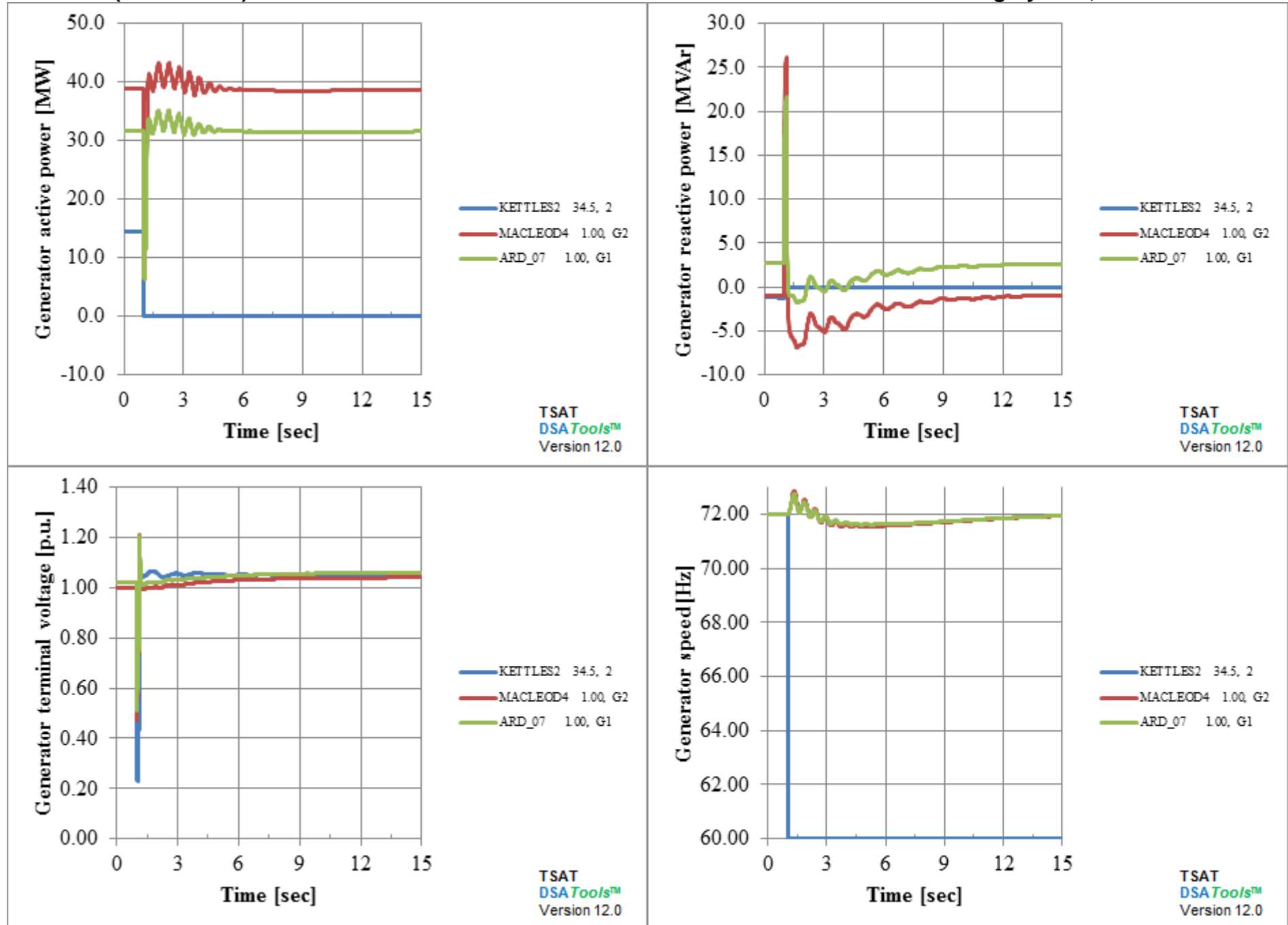
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Peak 2014



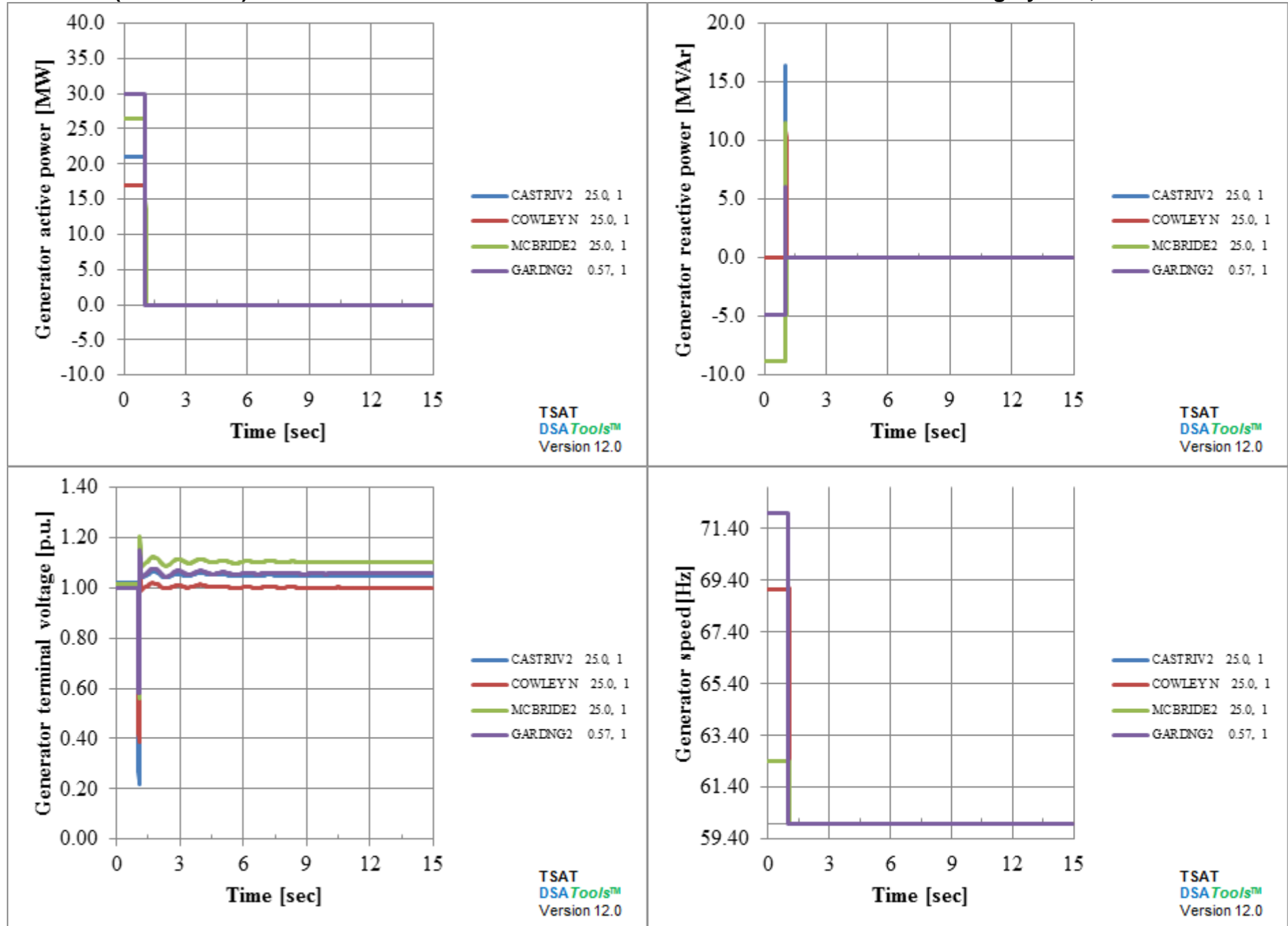
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Peak 2014



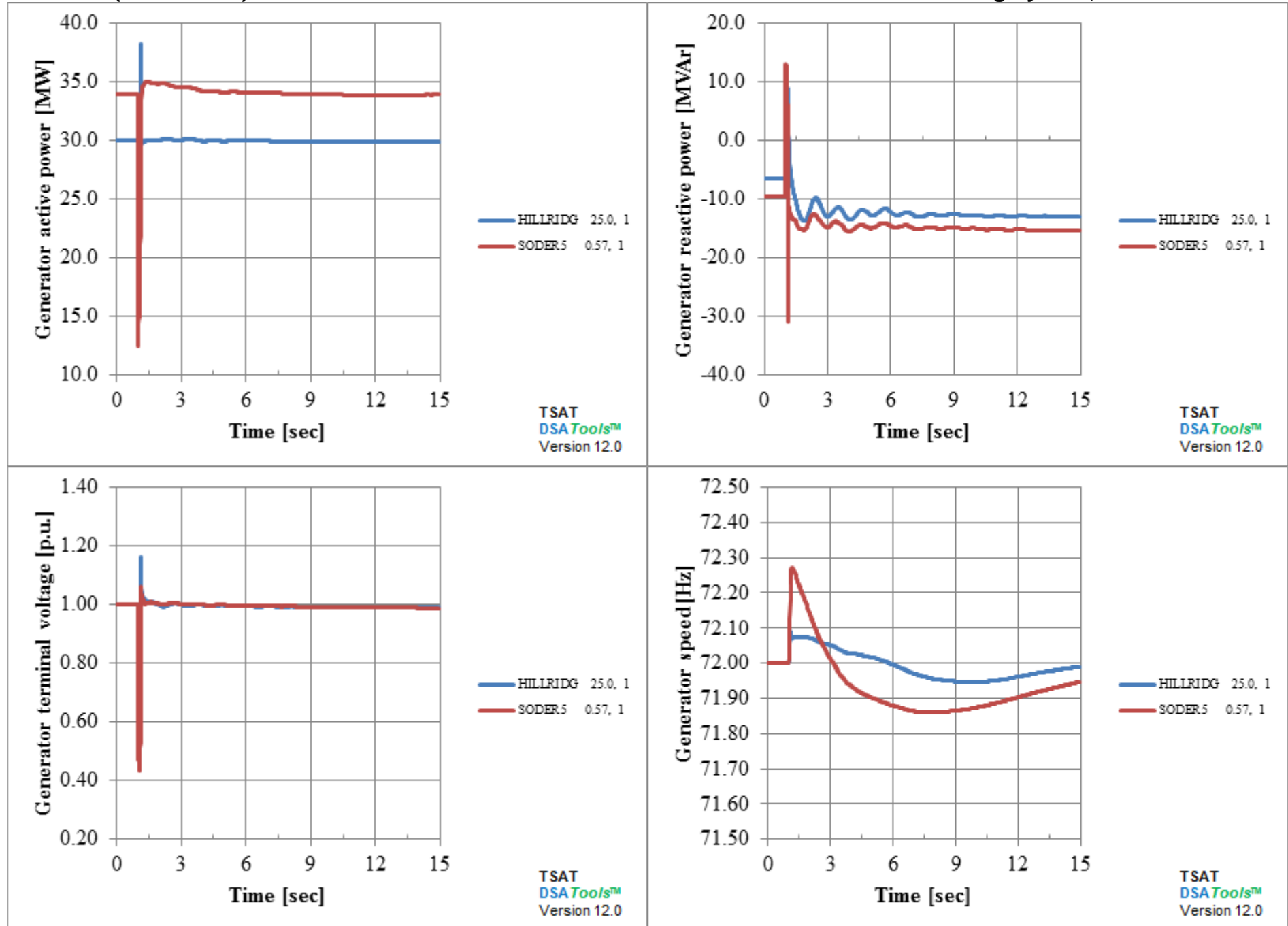
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Peak 2014



2 -- 1071L (205S - 312S) NEAR 205S

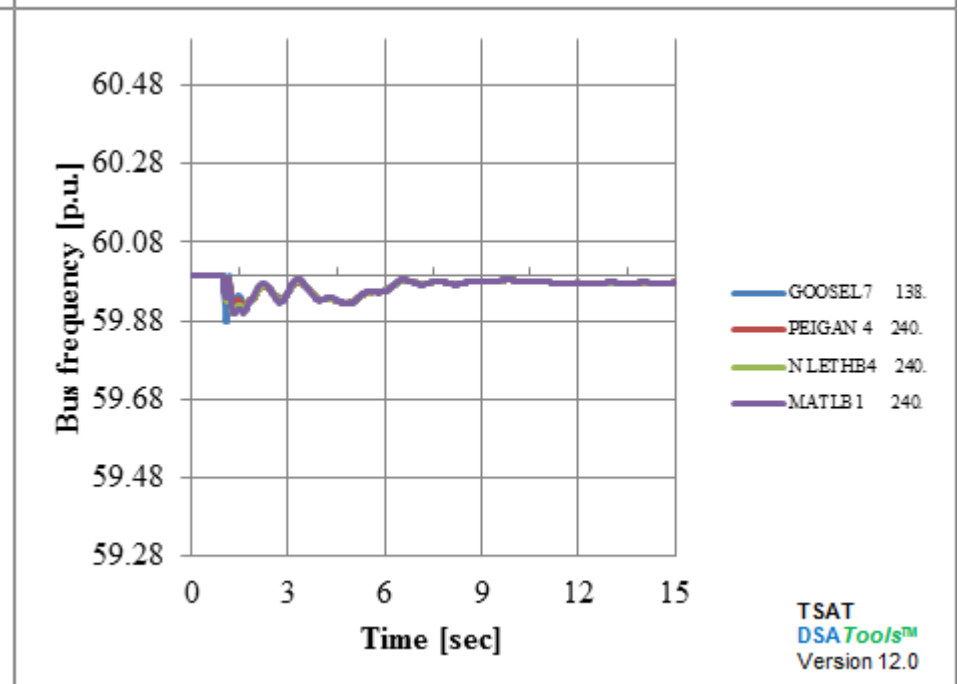
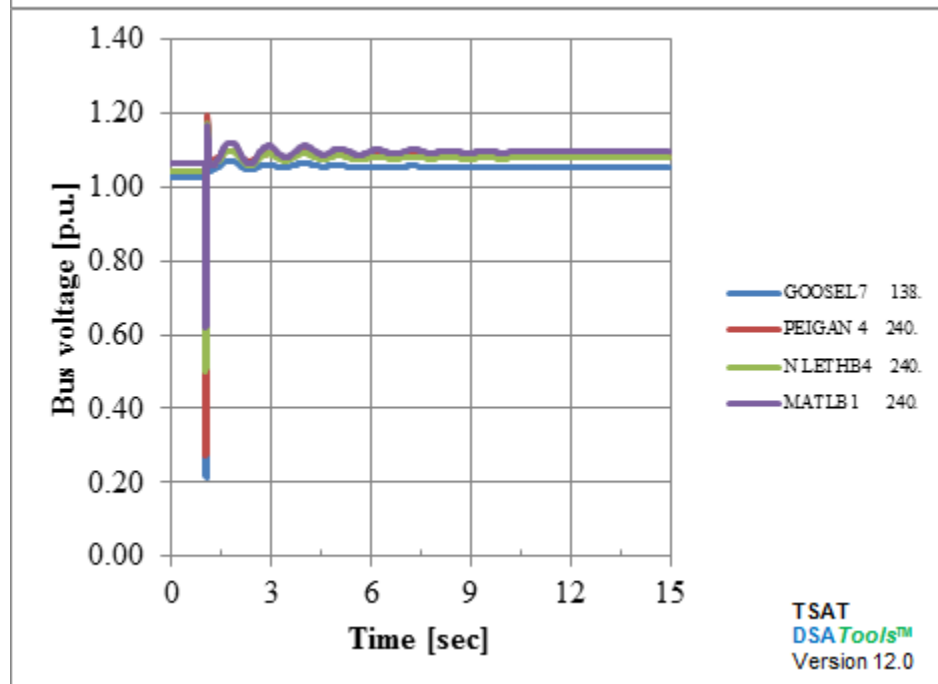
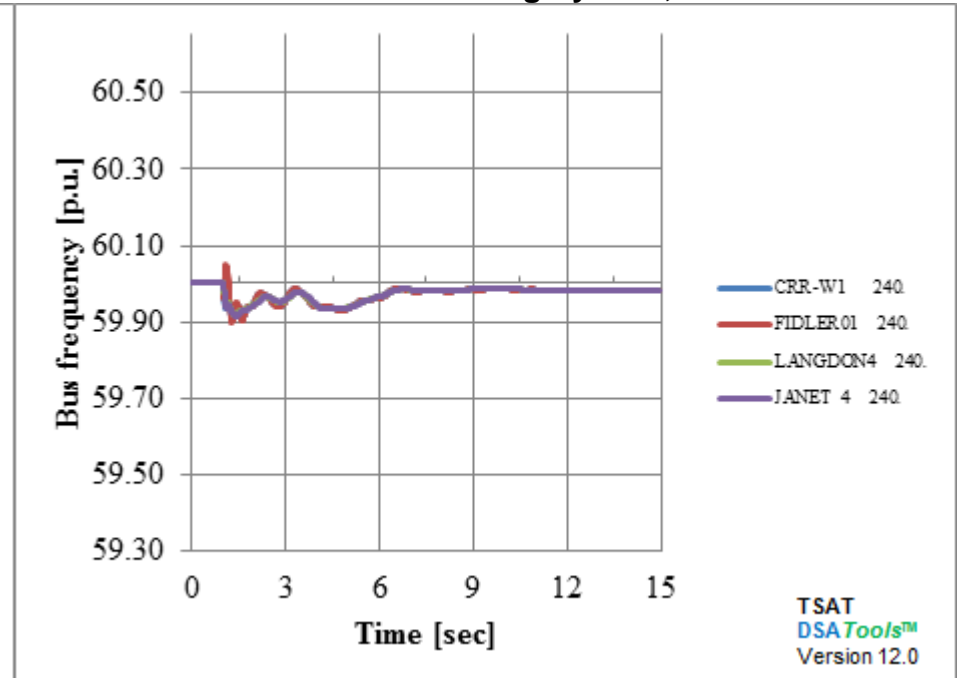
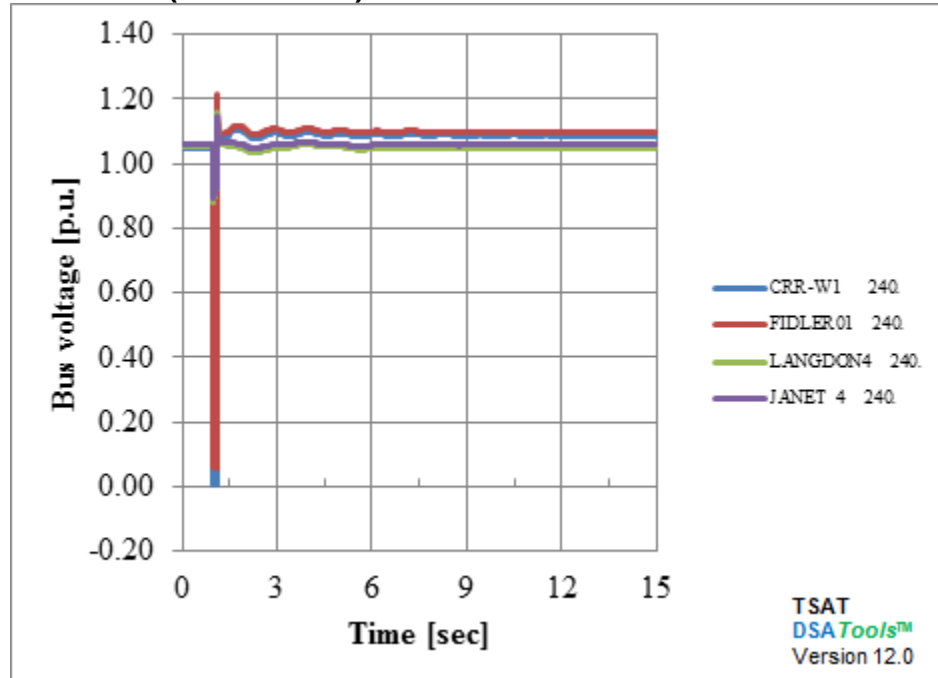
Existing System, Summer Peak 2014





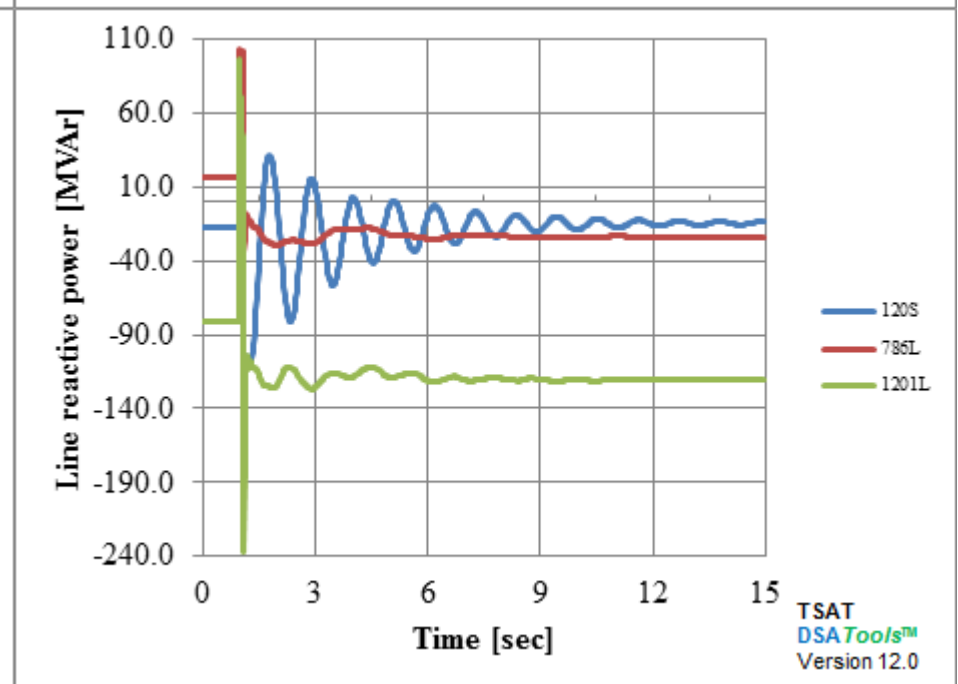
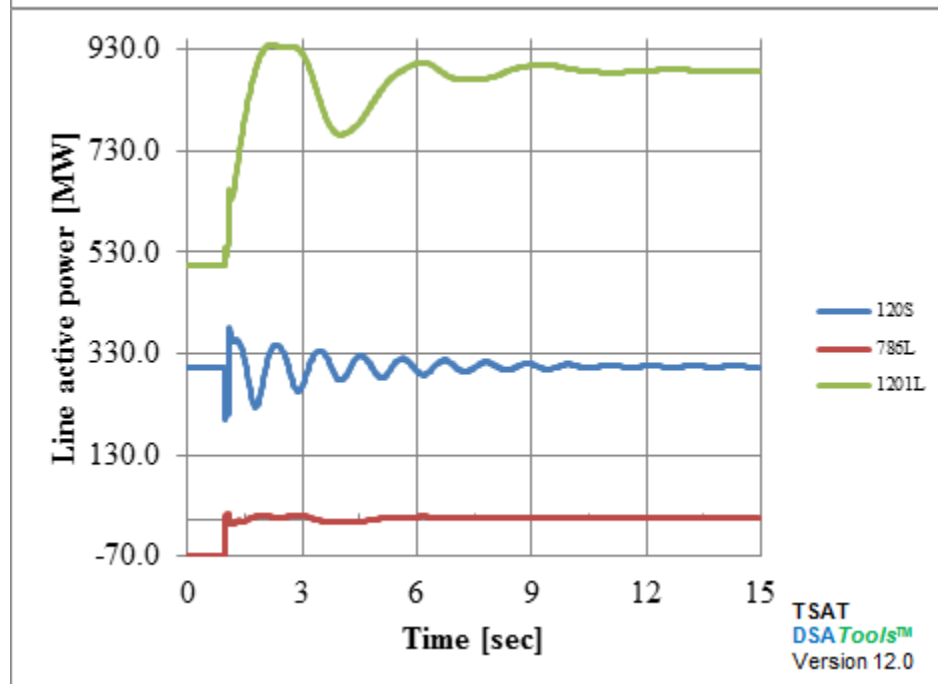
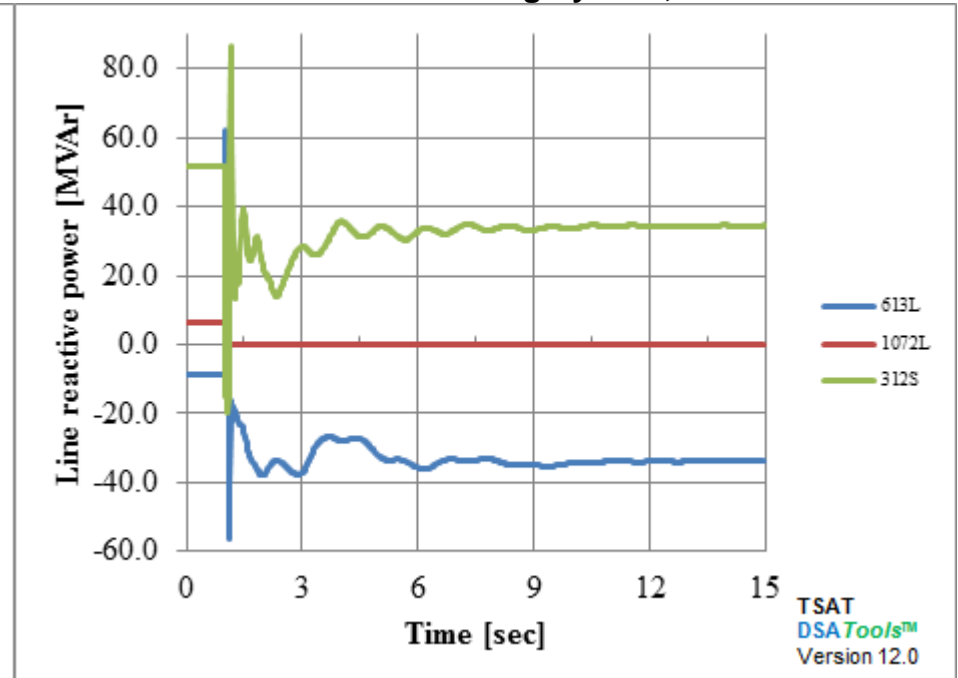
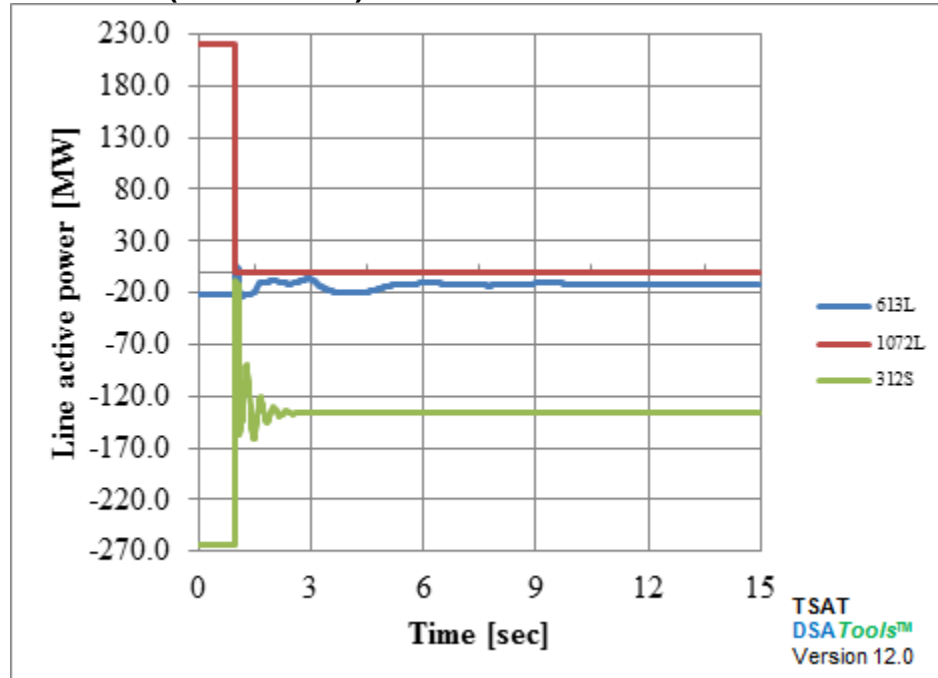
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Peak 2014



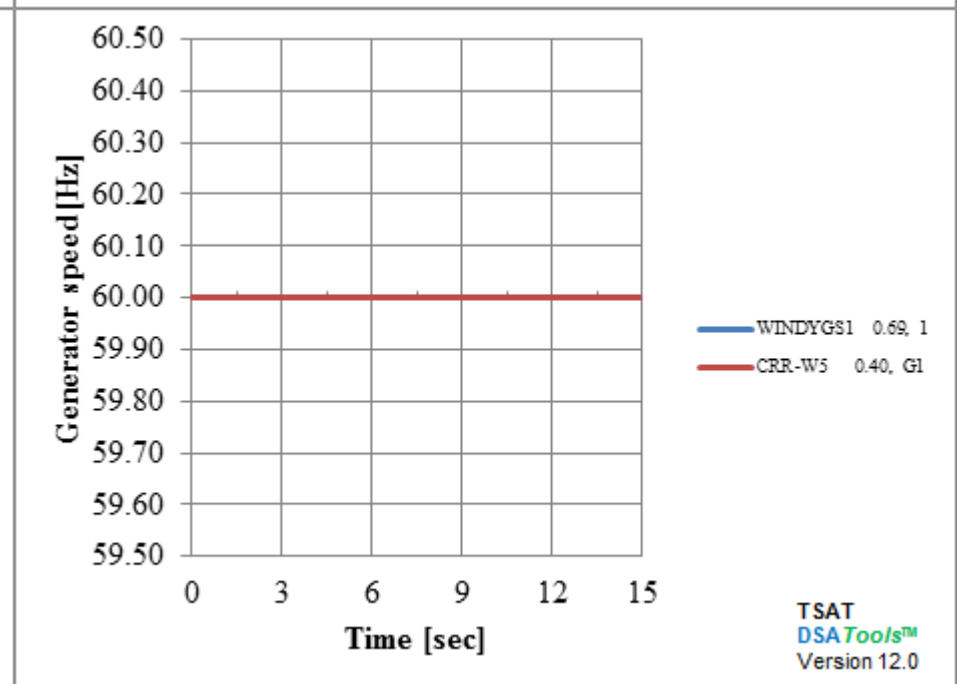
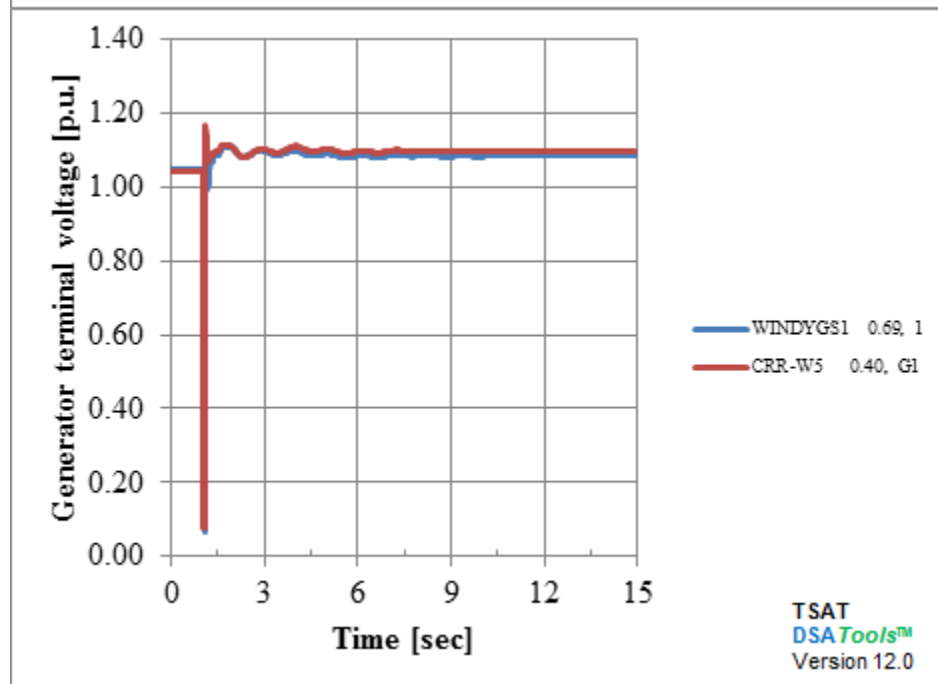
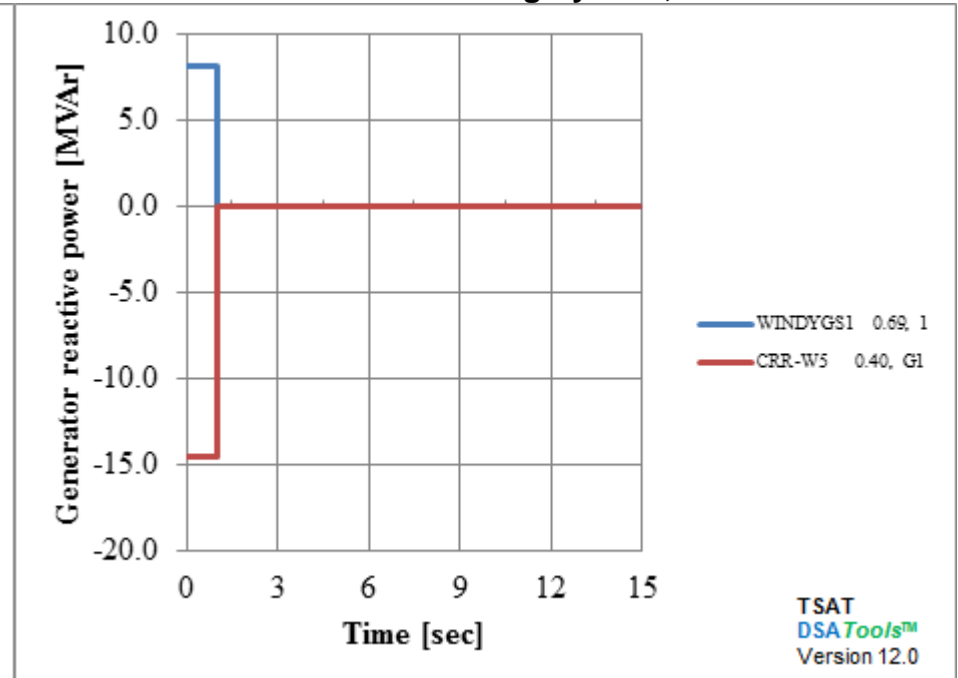
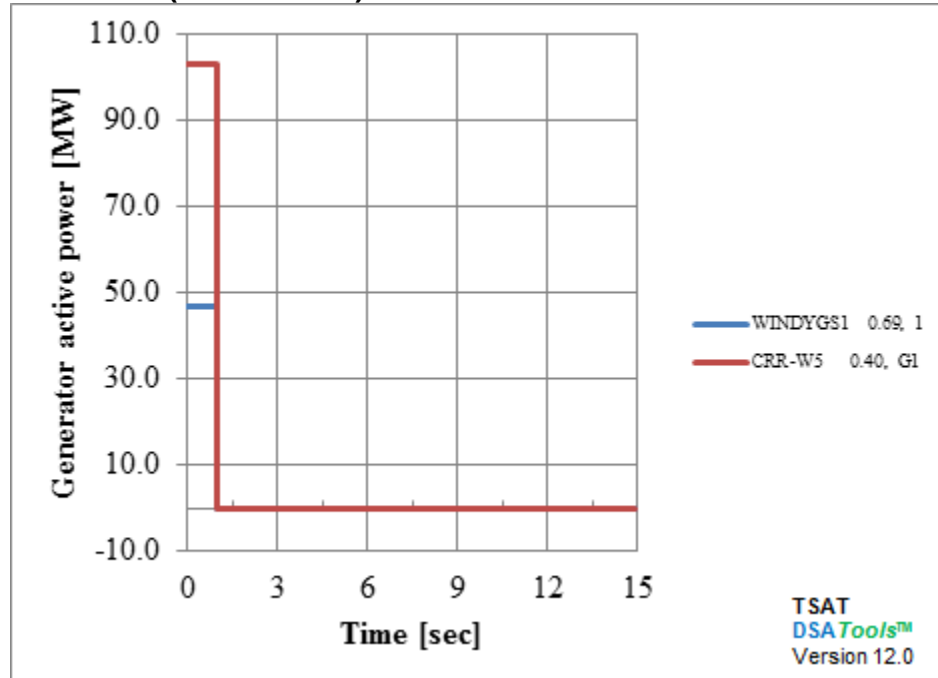
2 -- 1071L (205S - 312S) NEAR 205S

Existing System, Summer Peak 2014



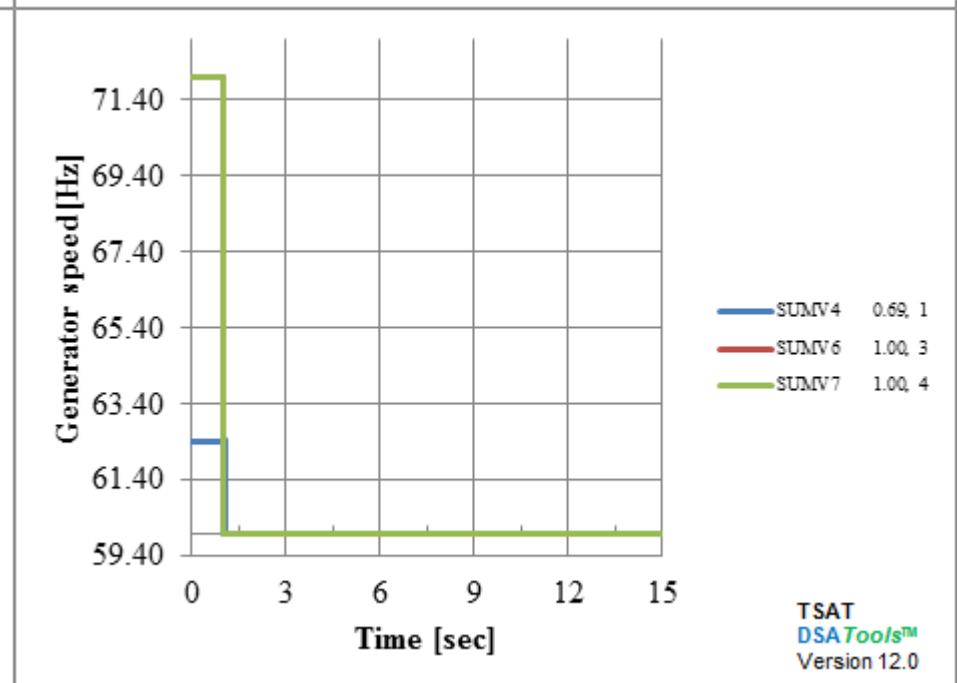
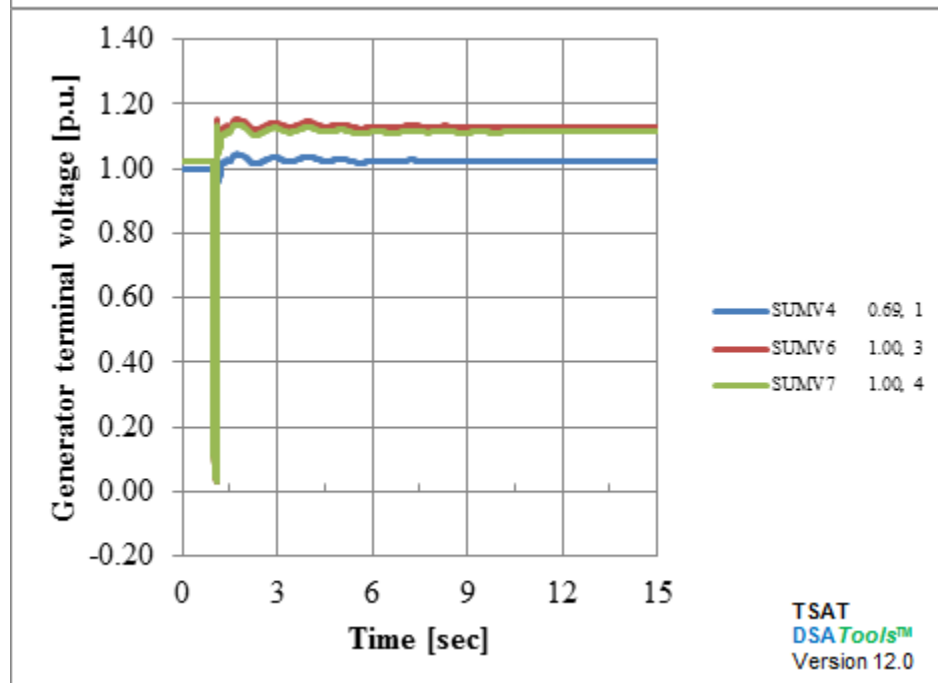
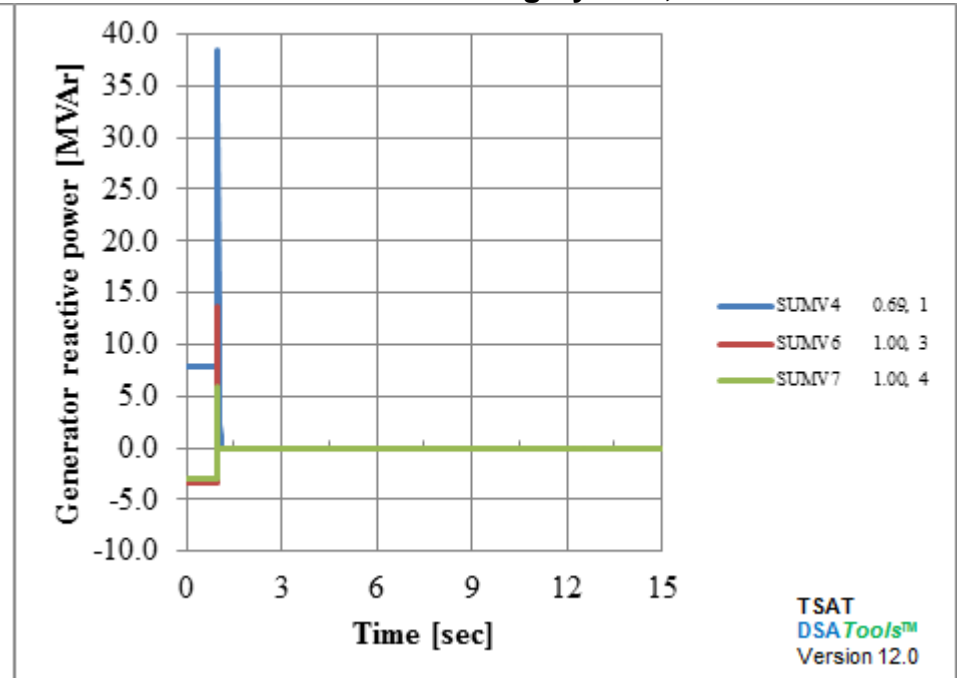
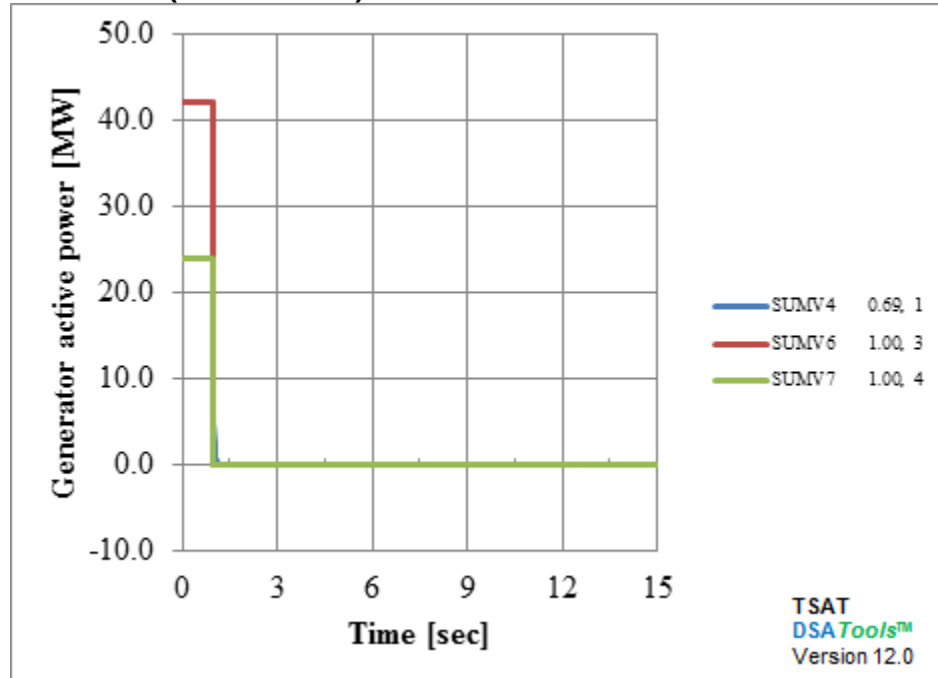
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Peak 2014



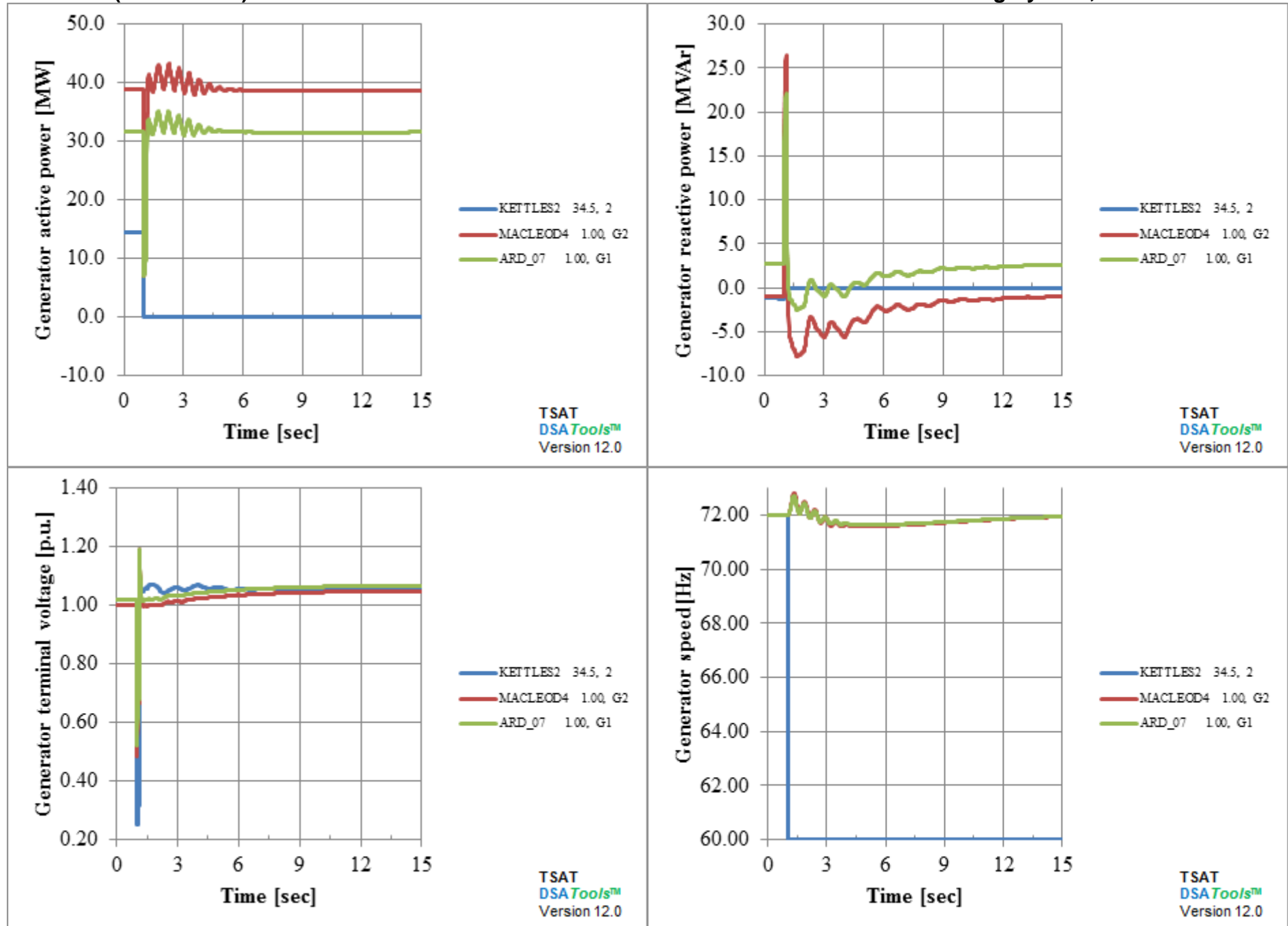
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Existing System, Summer Peak 2014



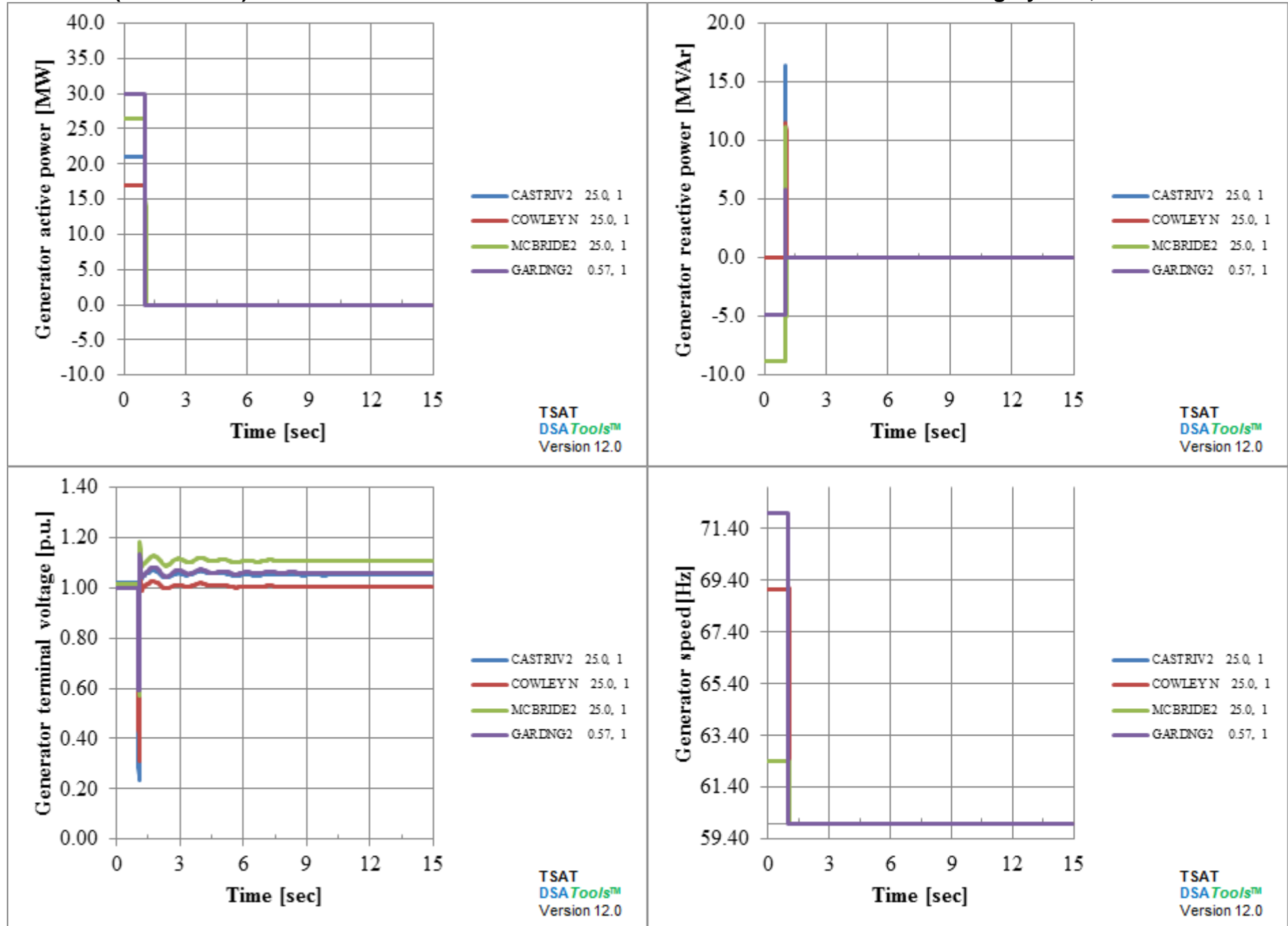
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Peak 2014



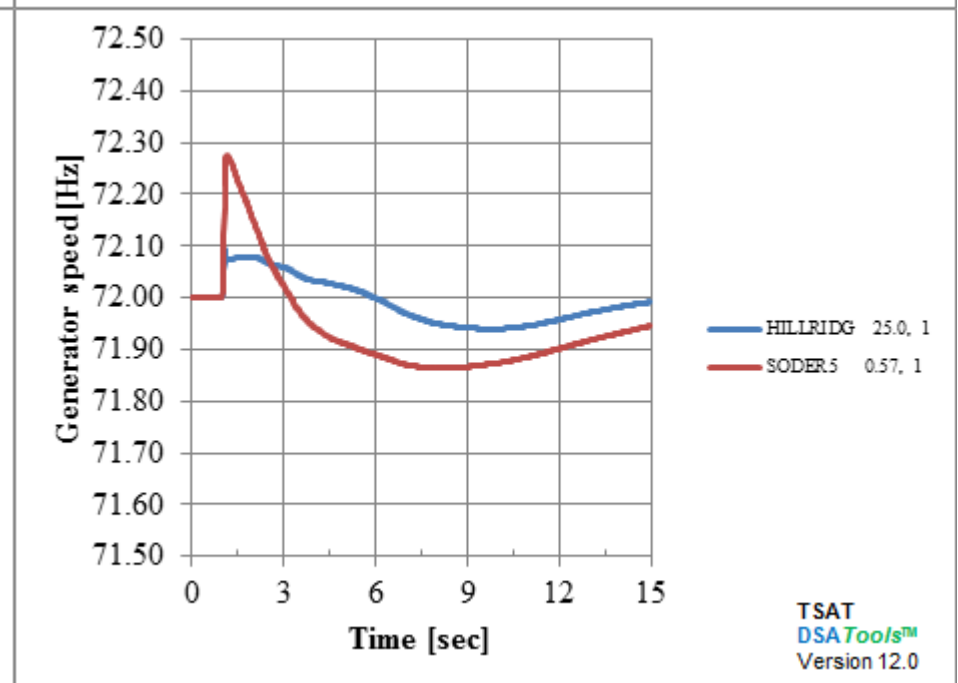
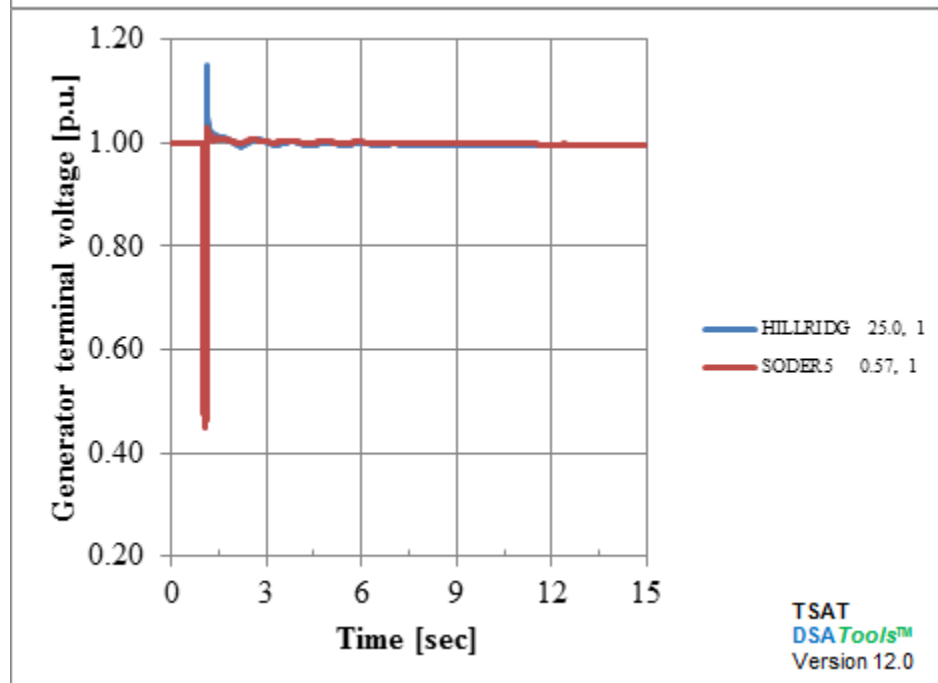
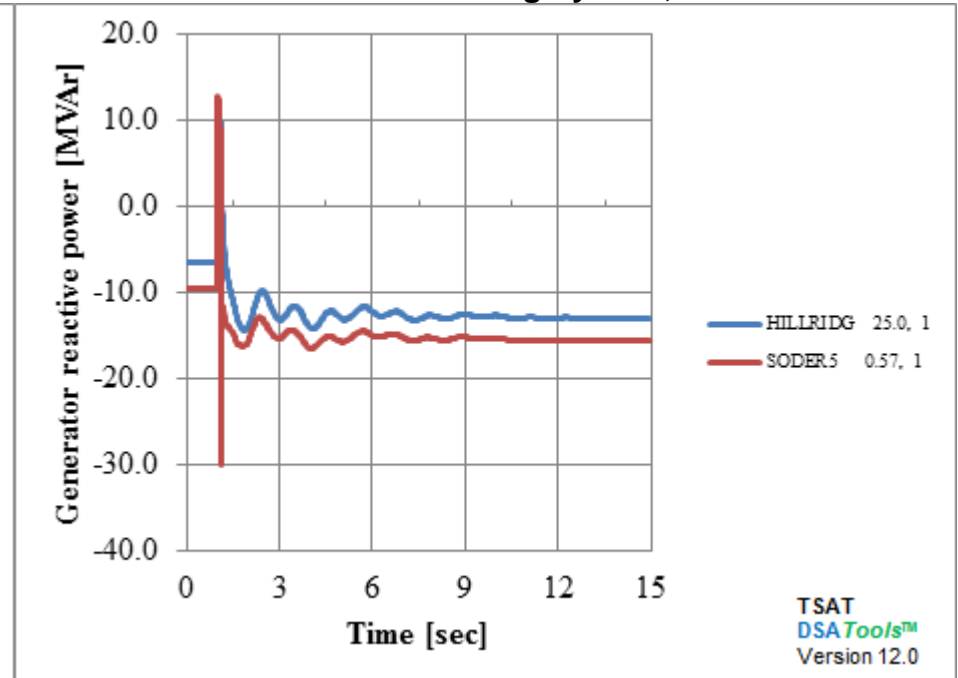
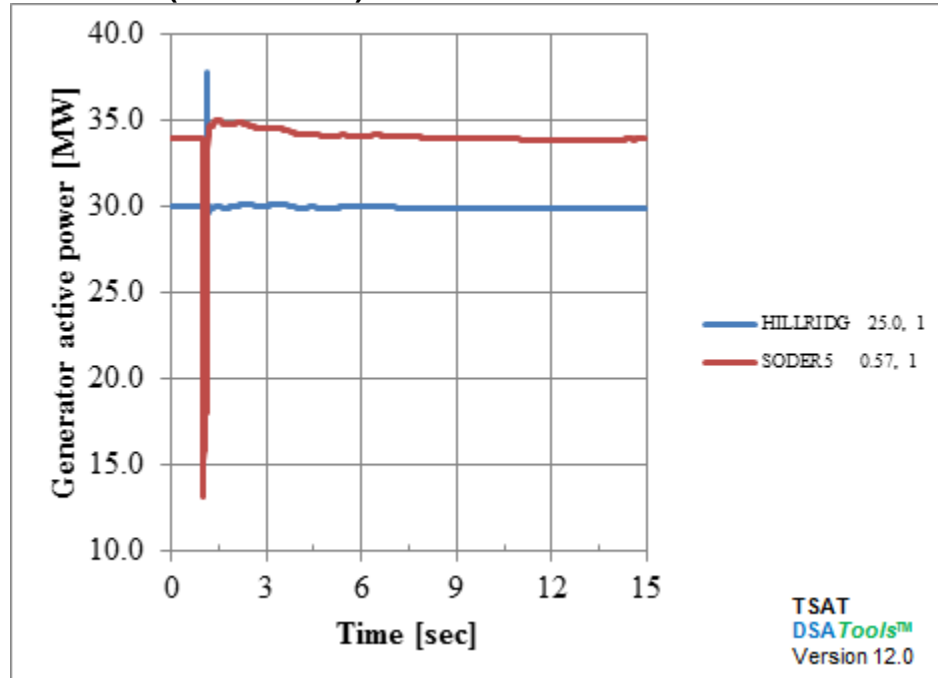
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Peak 2014



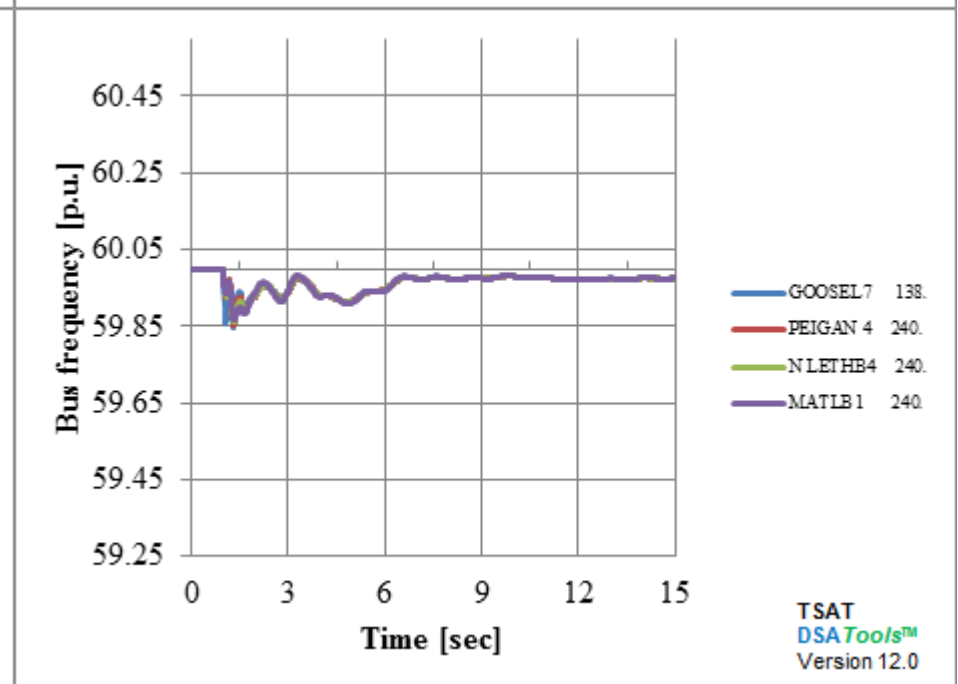
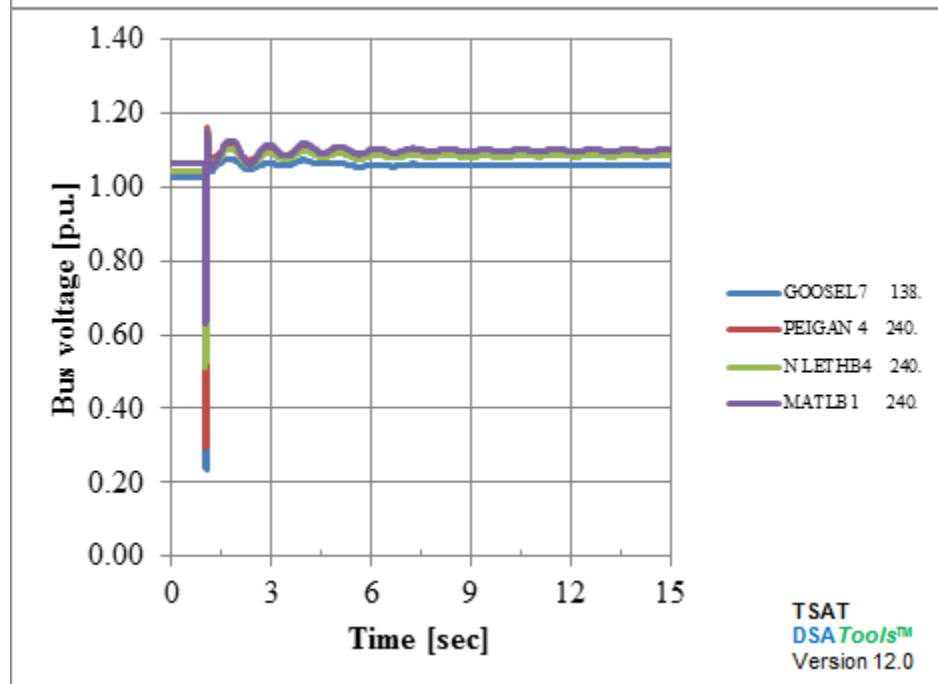
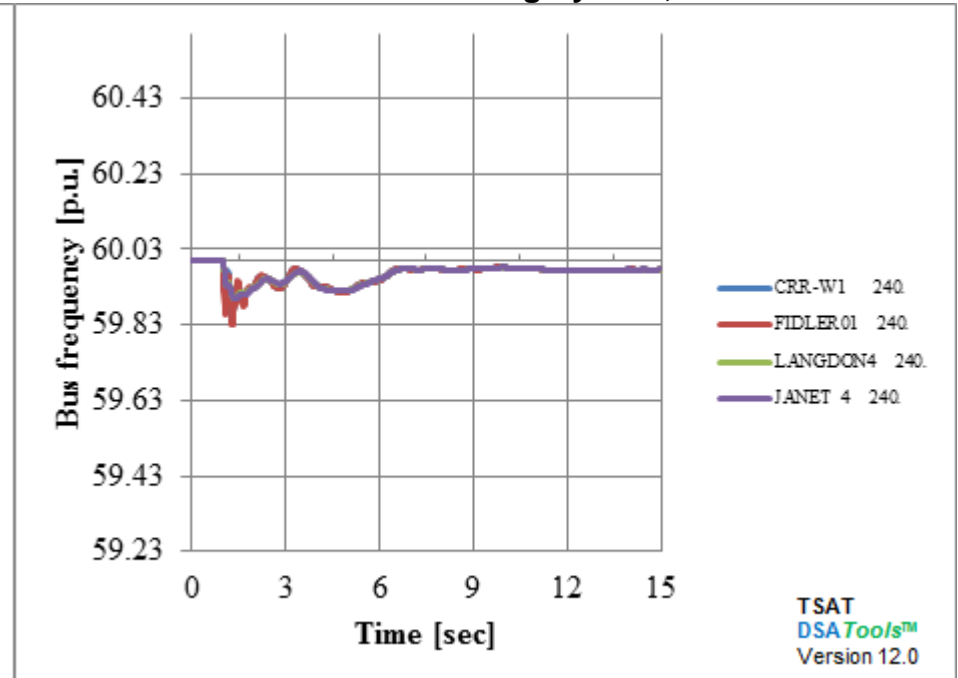
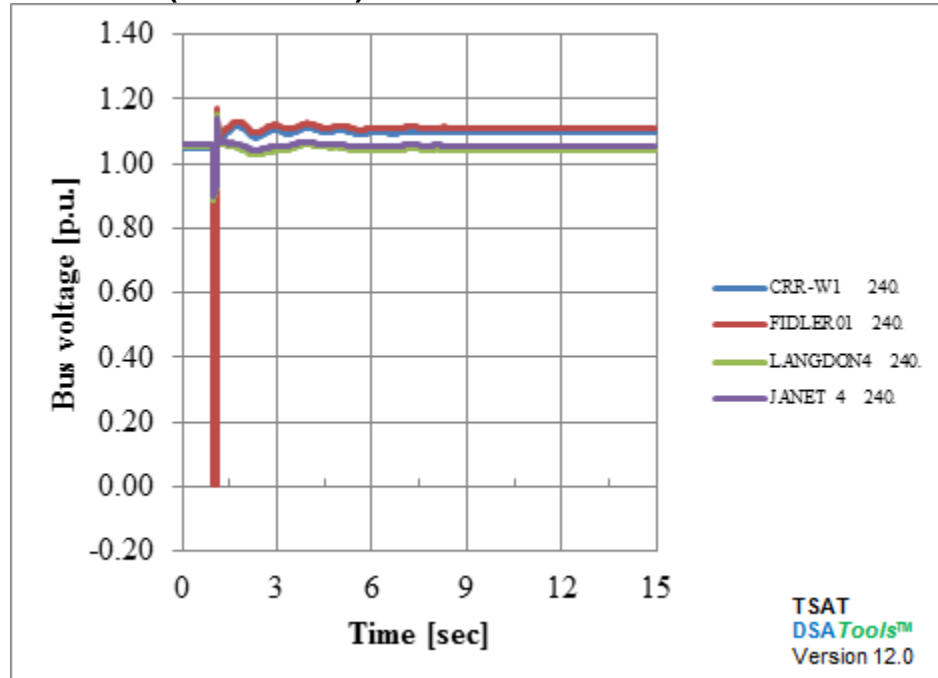
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Peak 2014



3 -- 1071L (205S - 312S) NEAR 312S

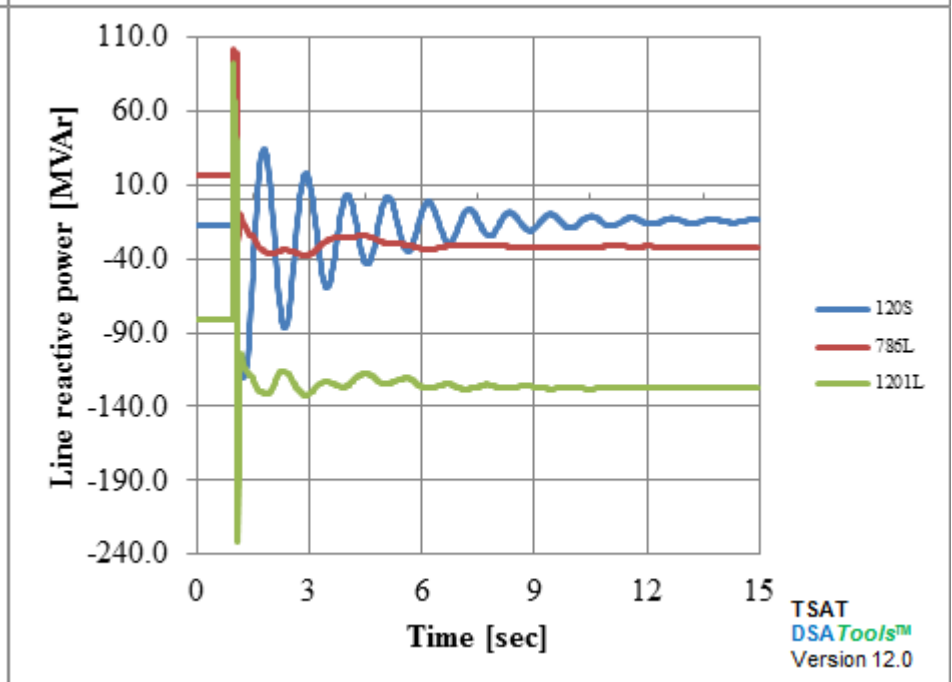
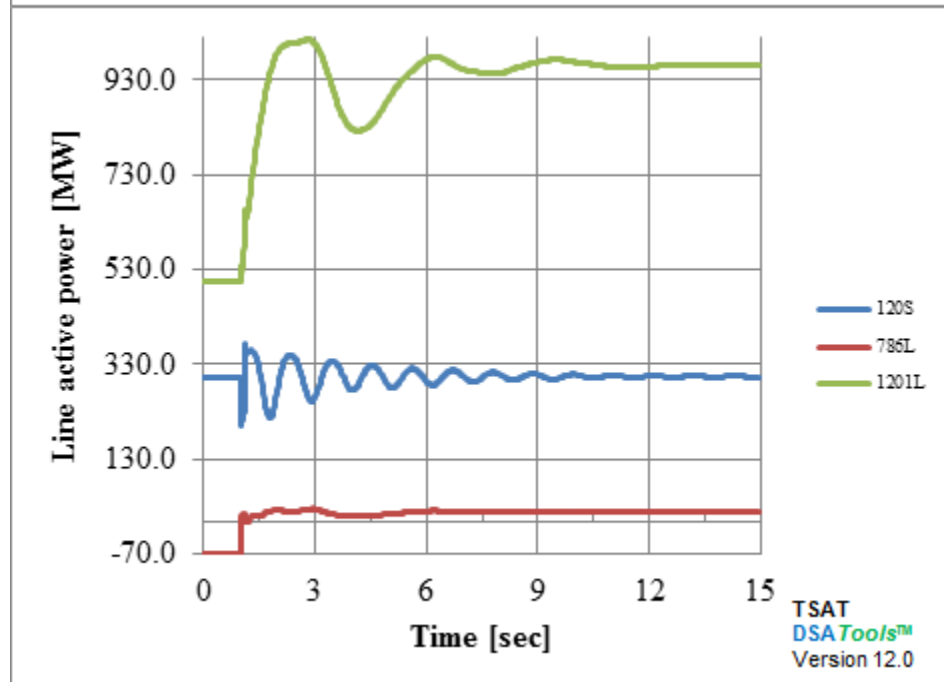
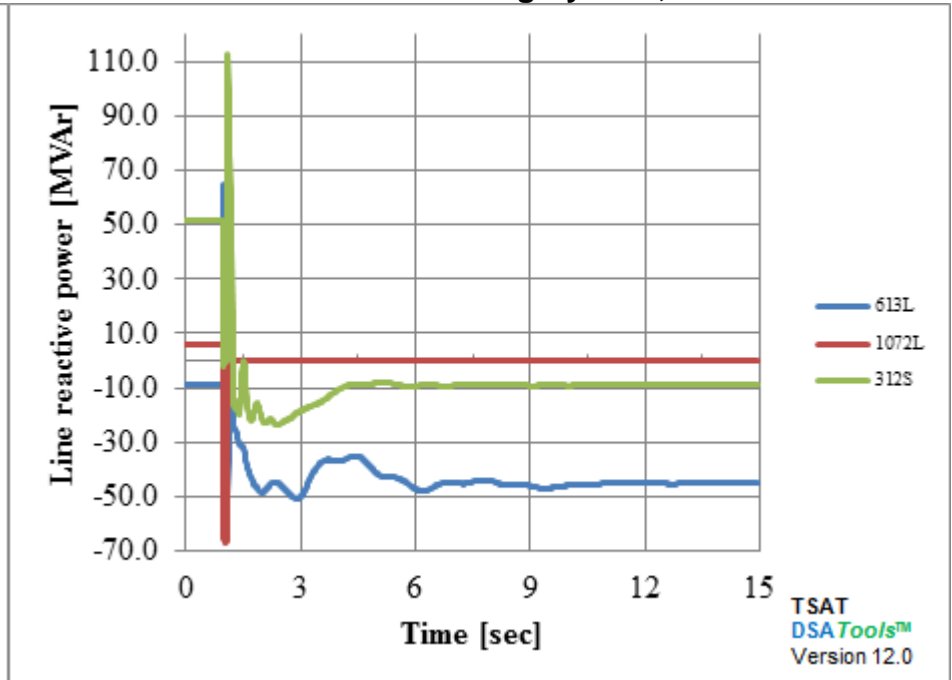
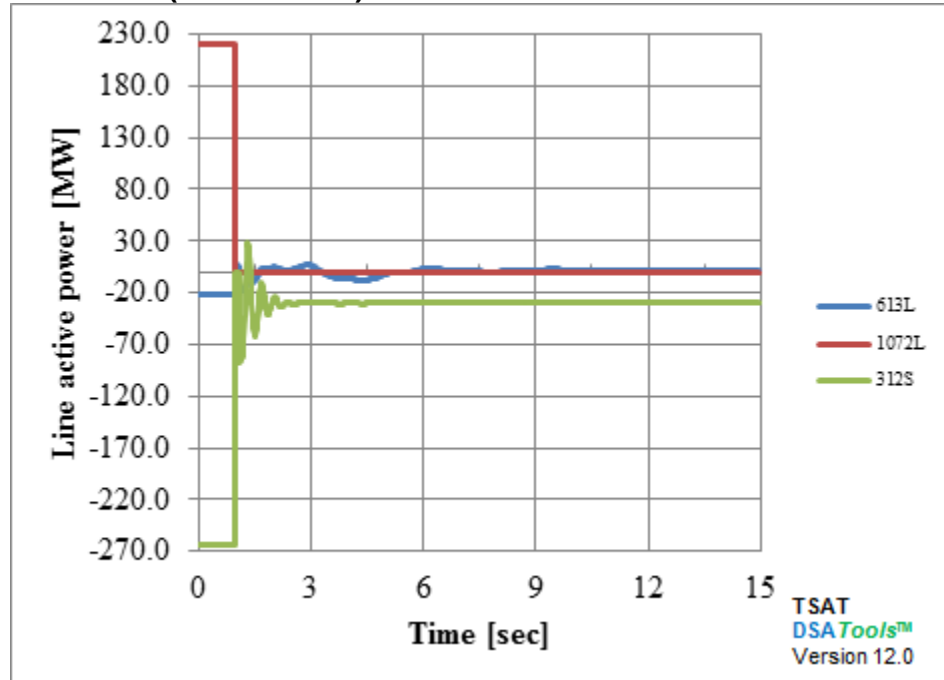
Existing System, Summer Peak 2014





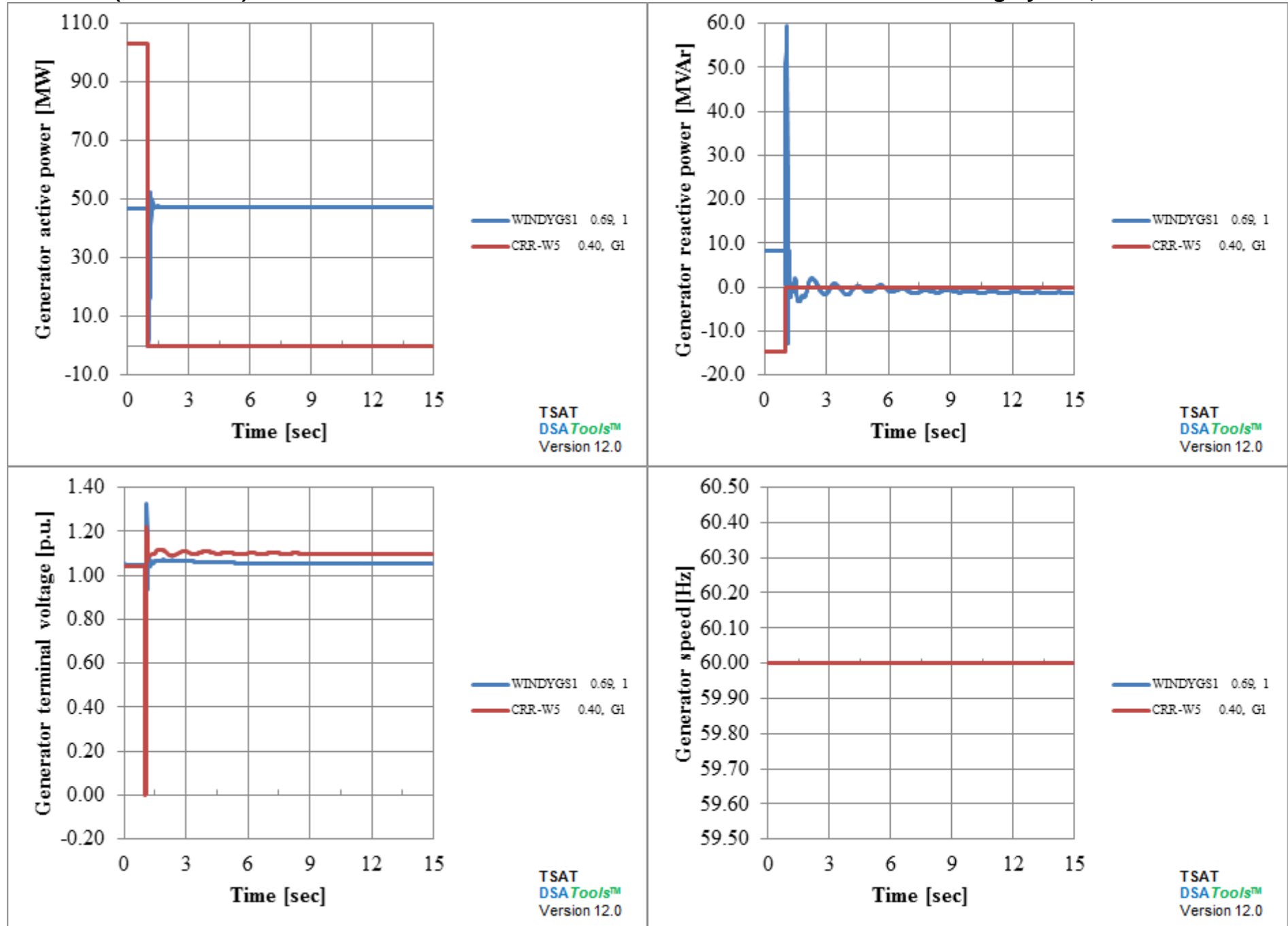
3 -- 1071L (205S - 312S) NEAR 312S

Existing System, Summer Peak 2014



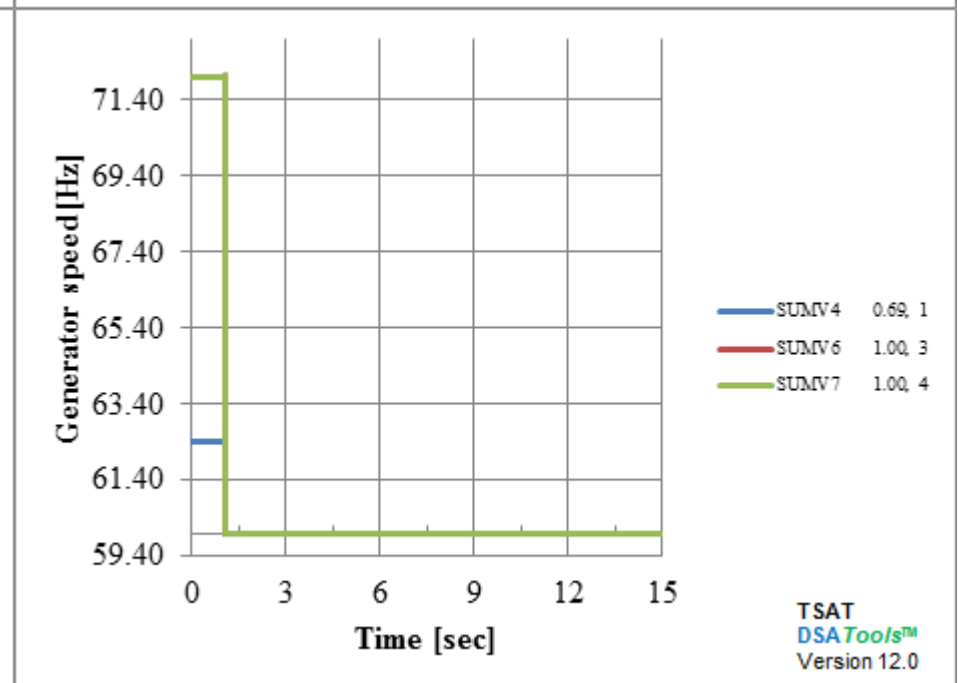
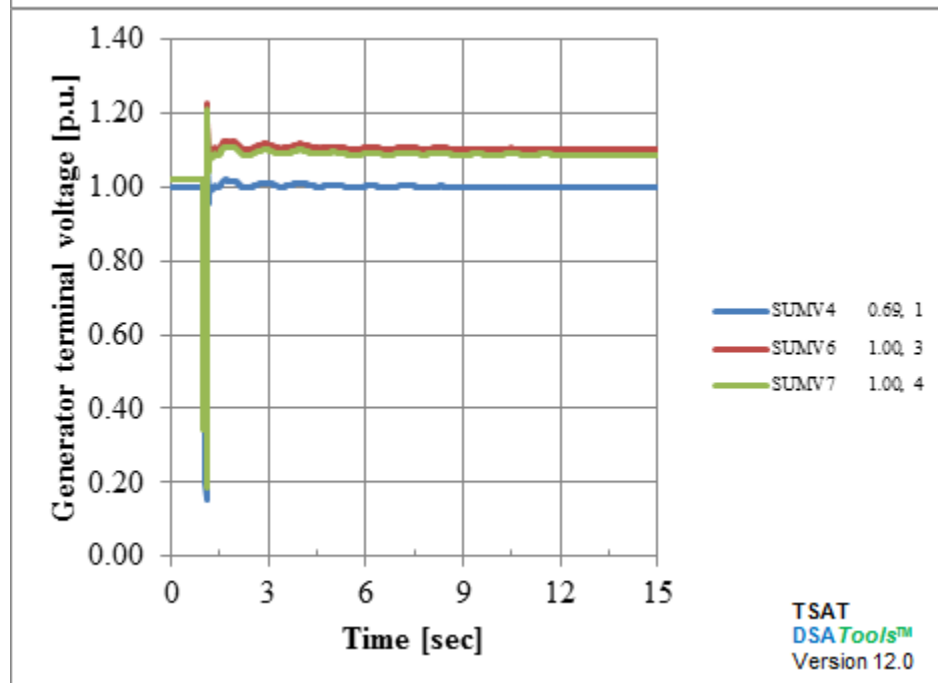
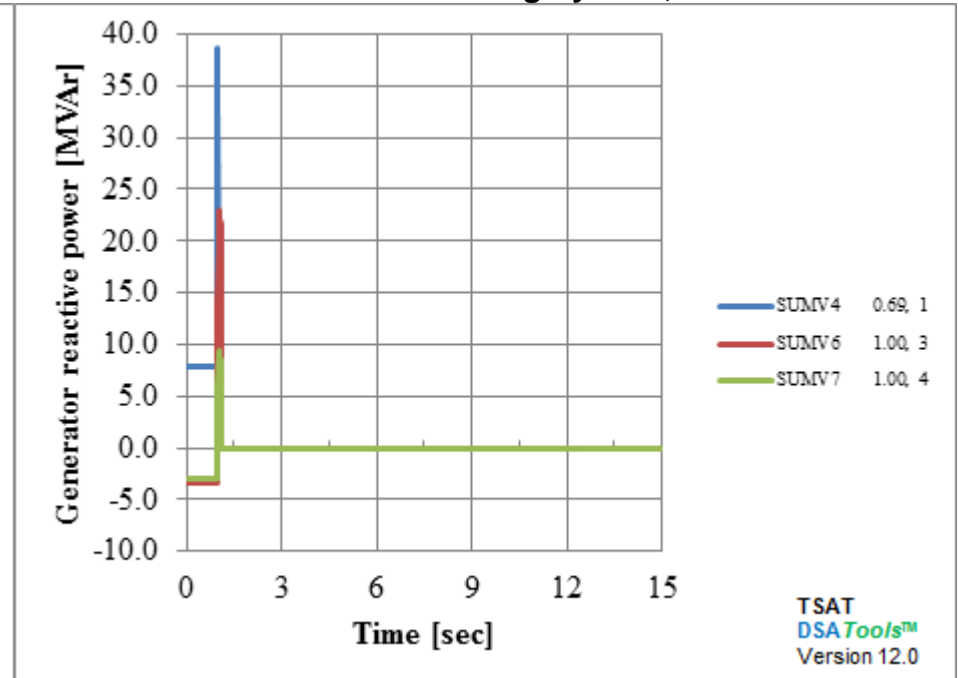
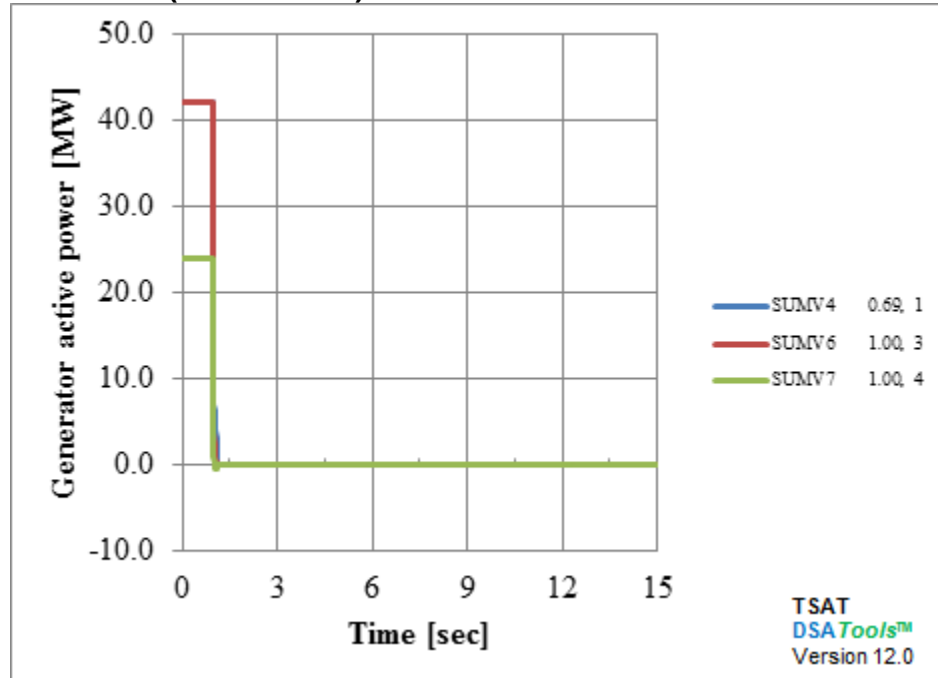
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Peak 2014



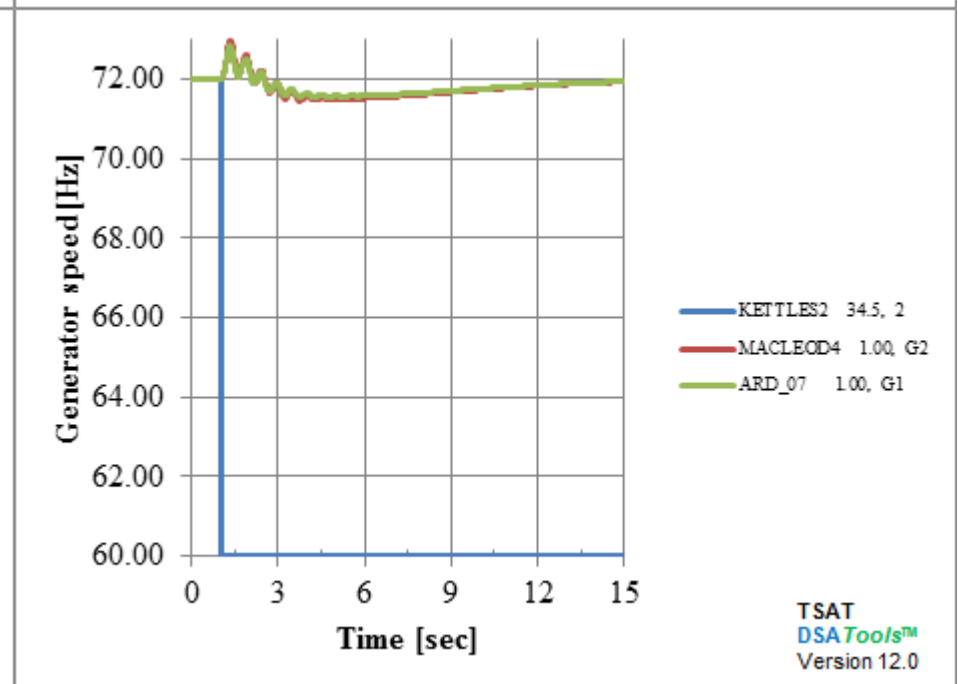
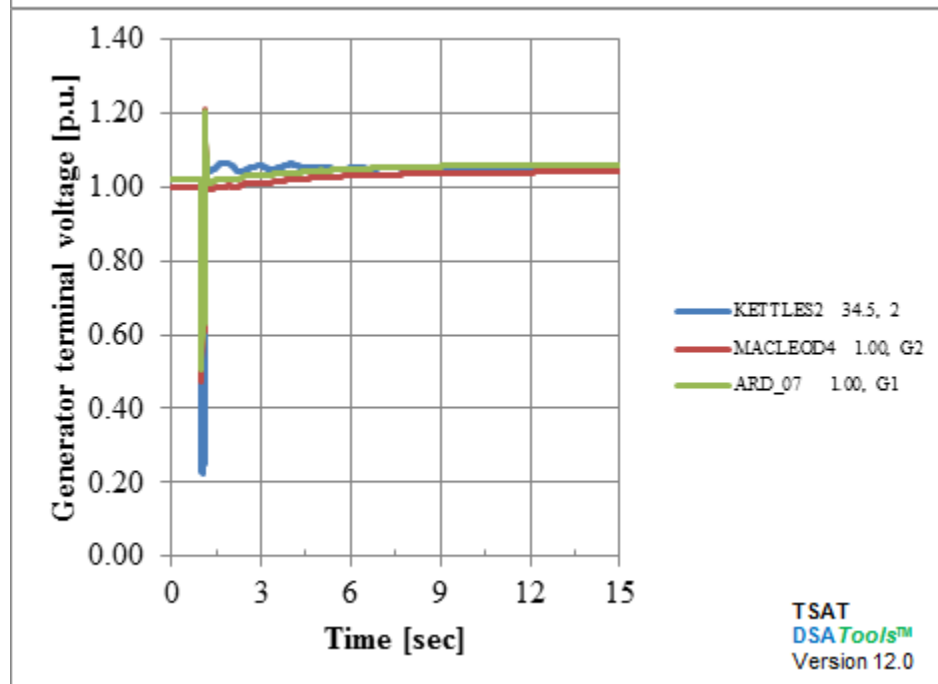
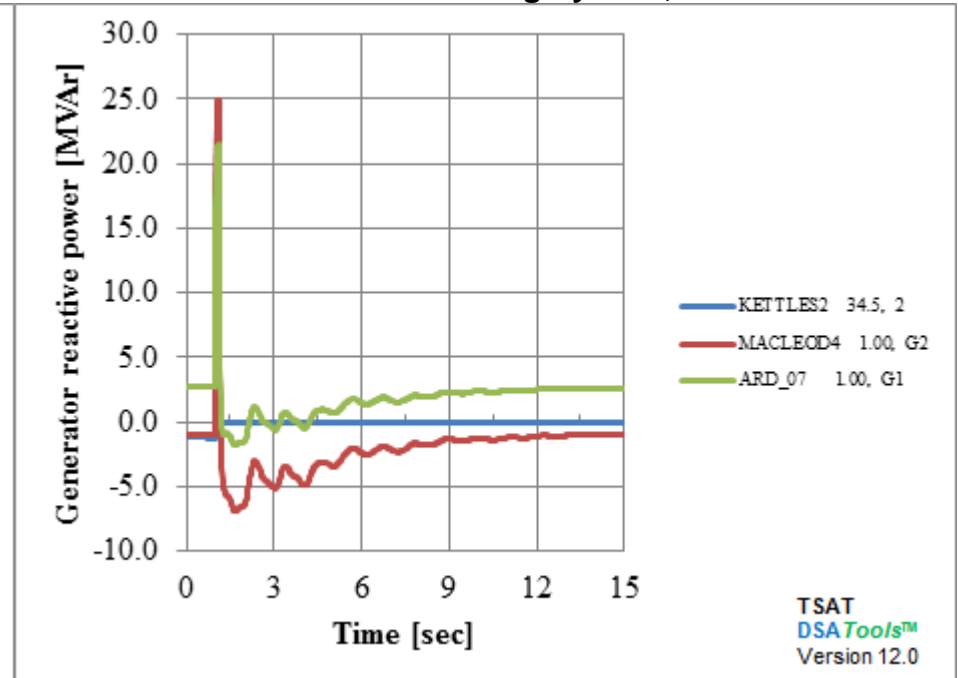
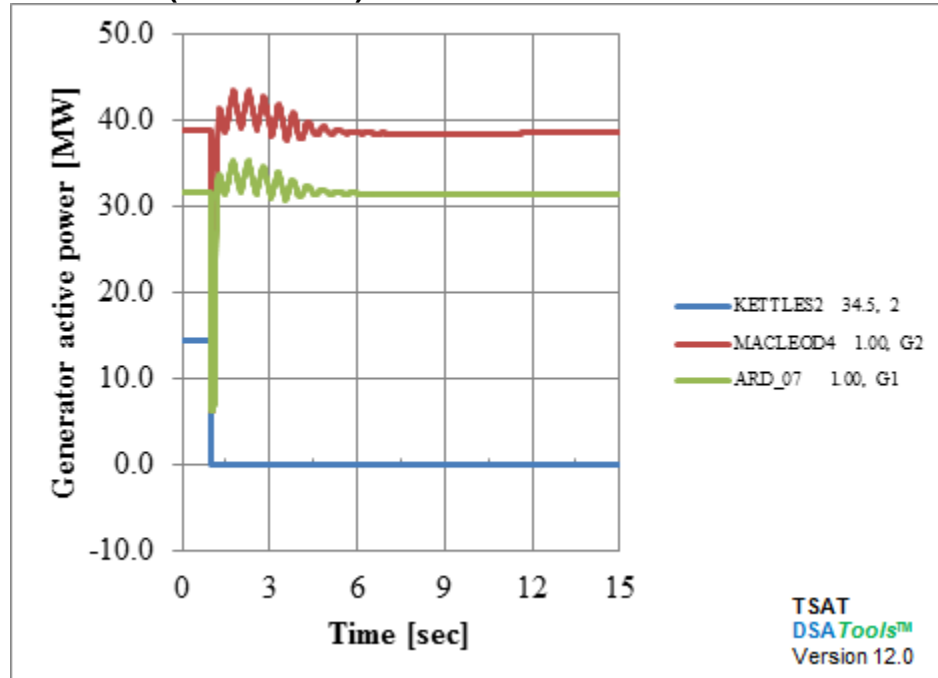
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Peak 2014



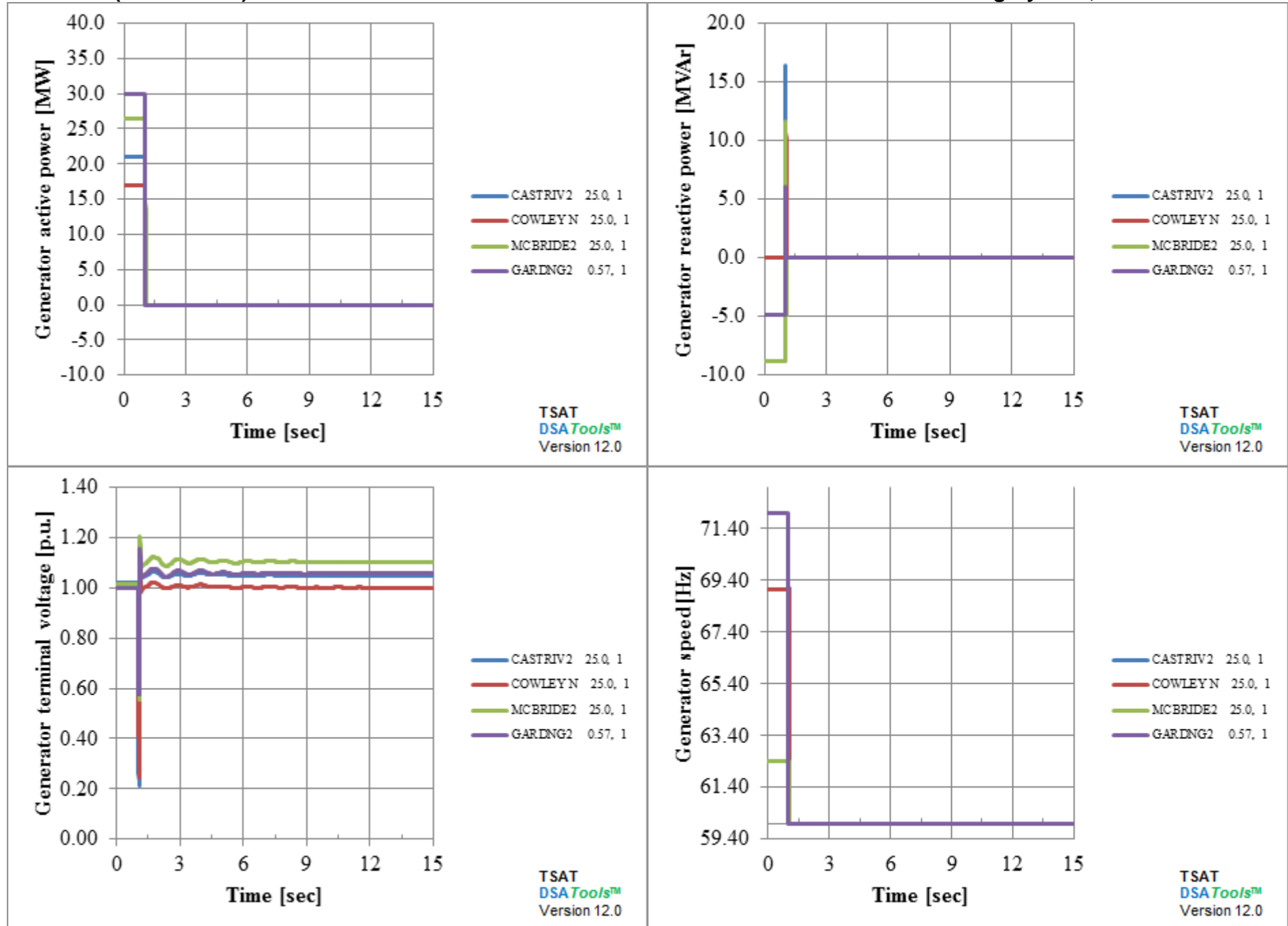
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Peak 2014



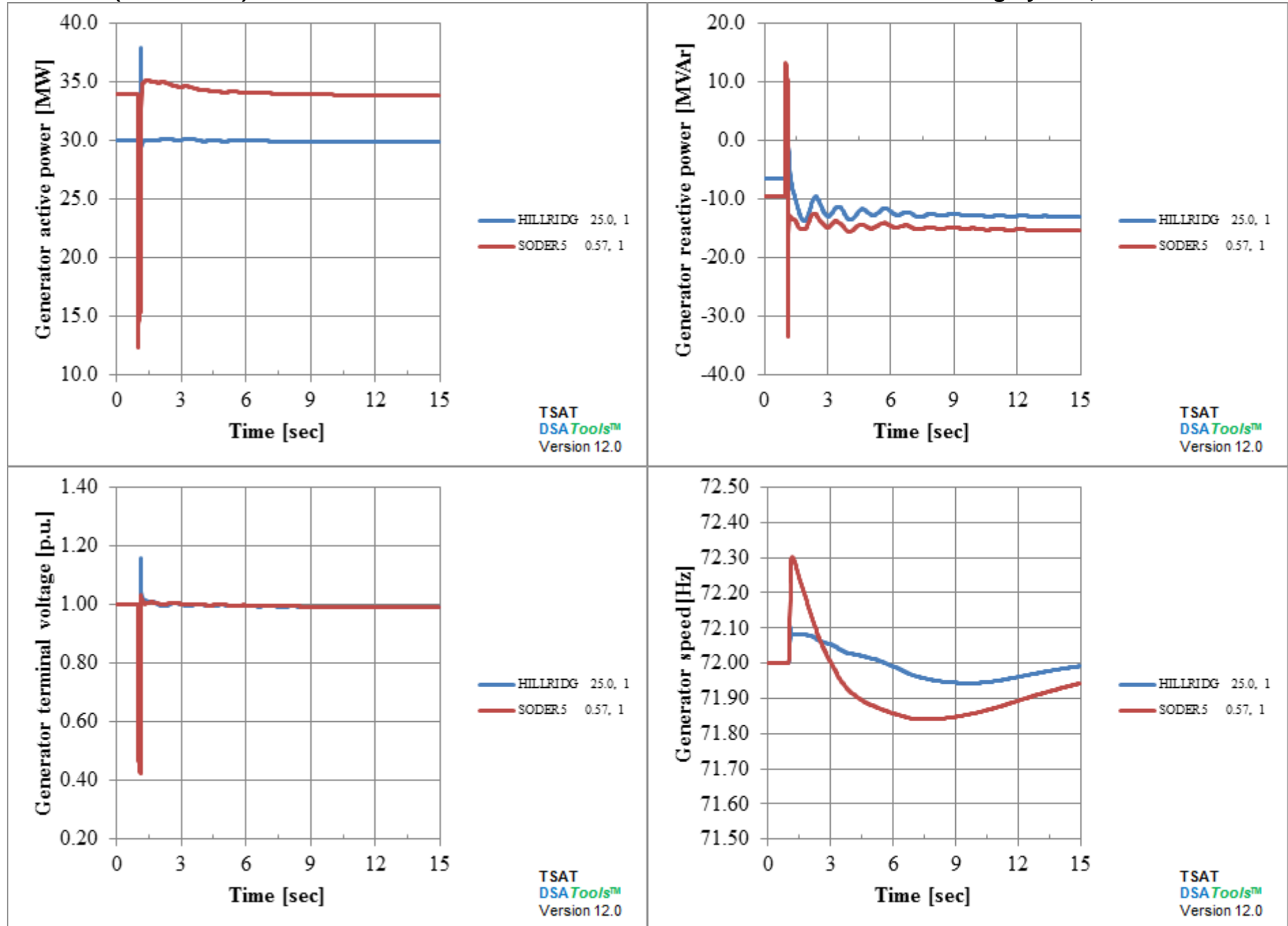
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Peak 2014



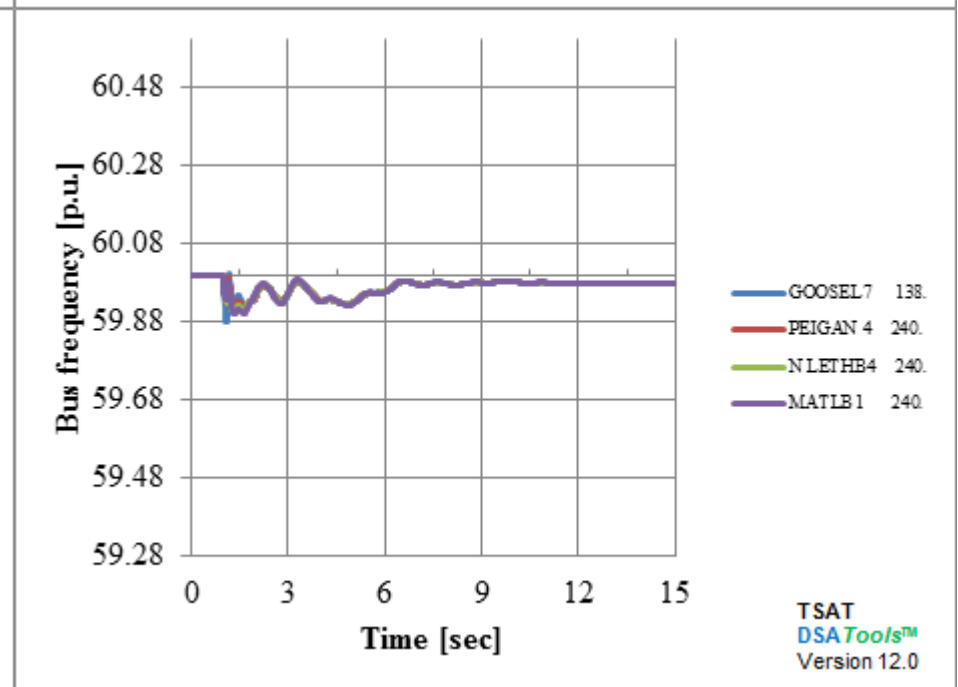
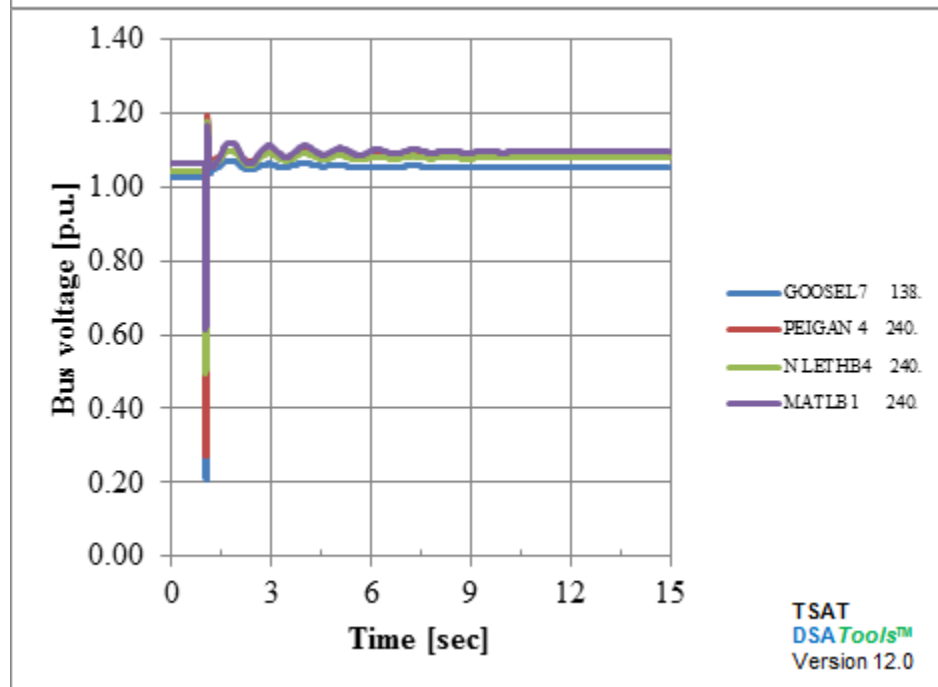
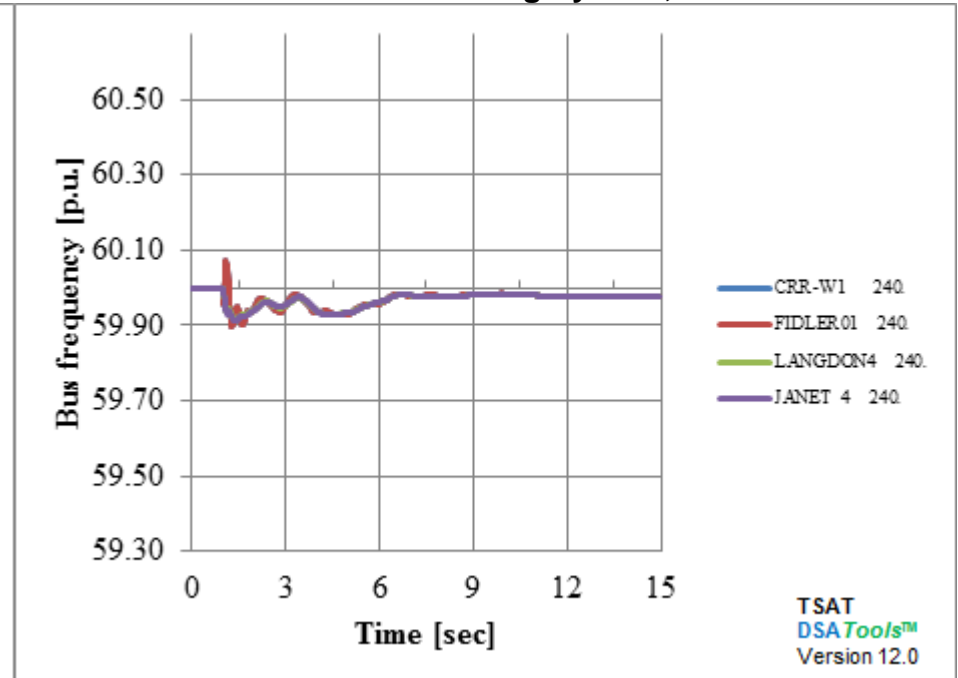
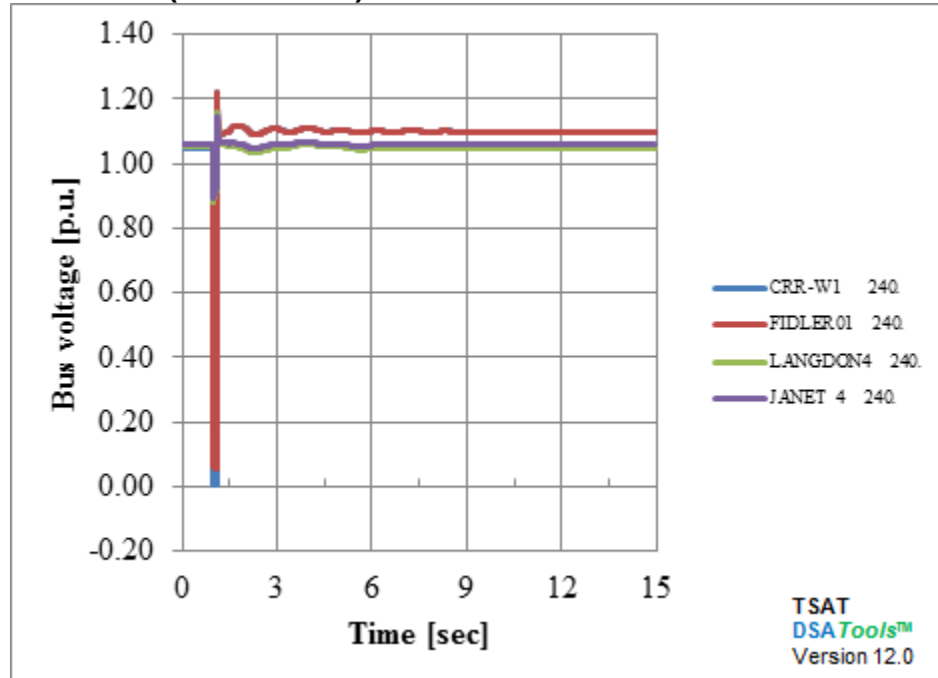
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Peak 2014



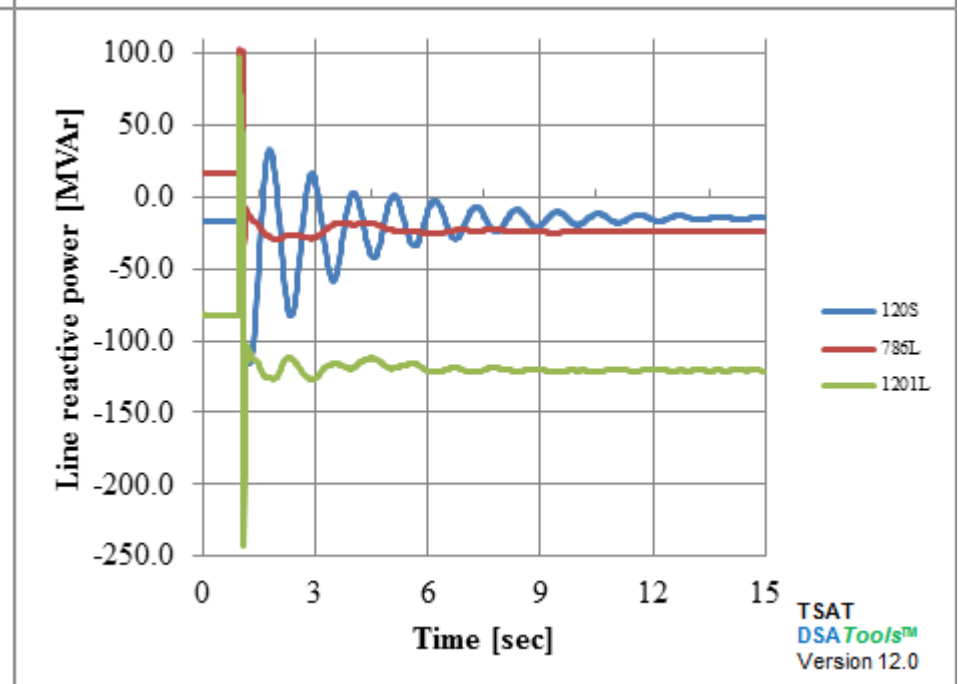
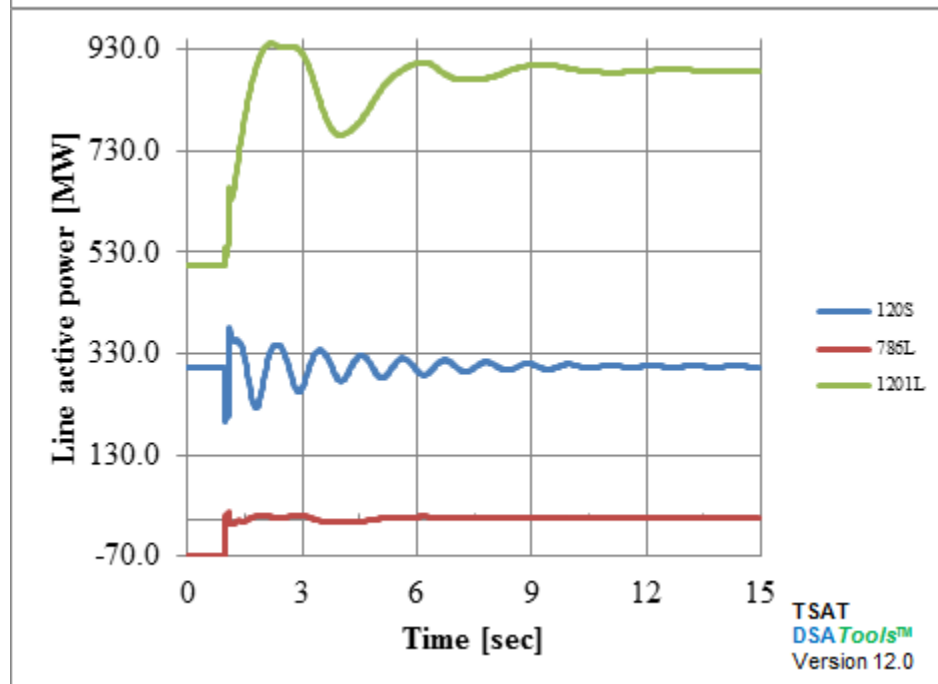
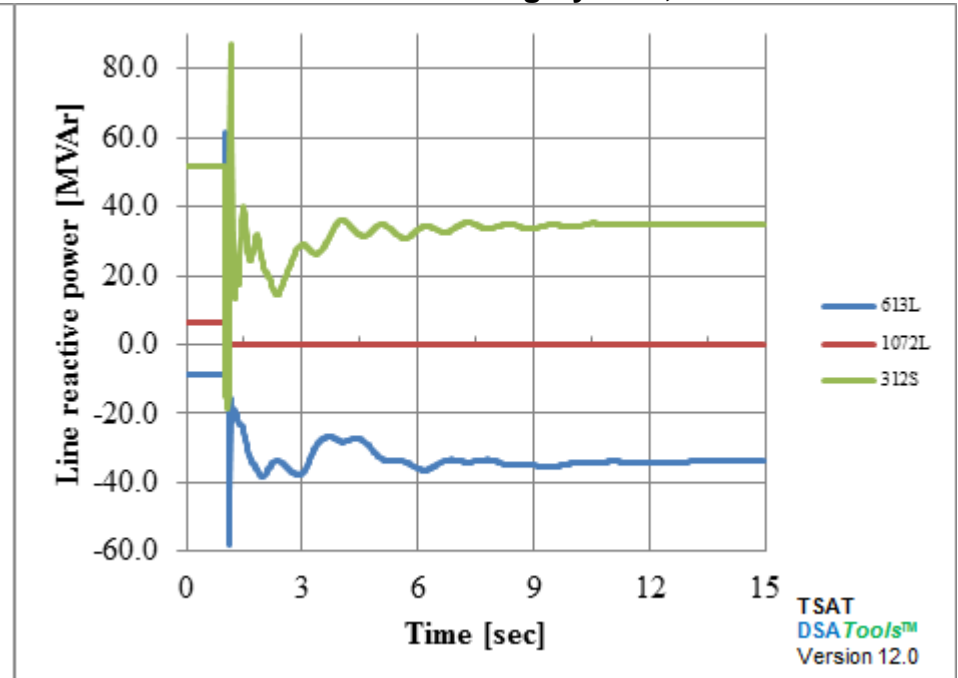
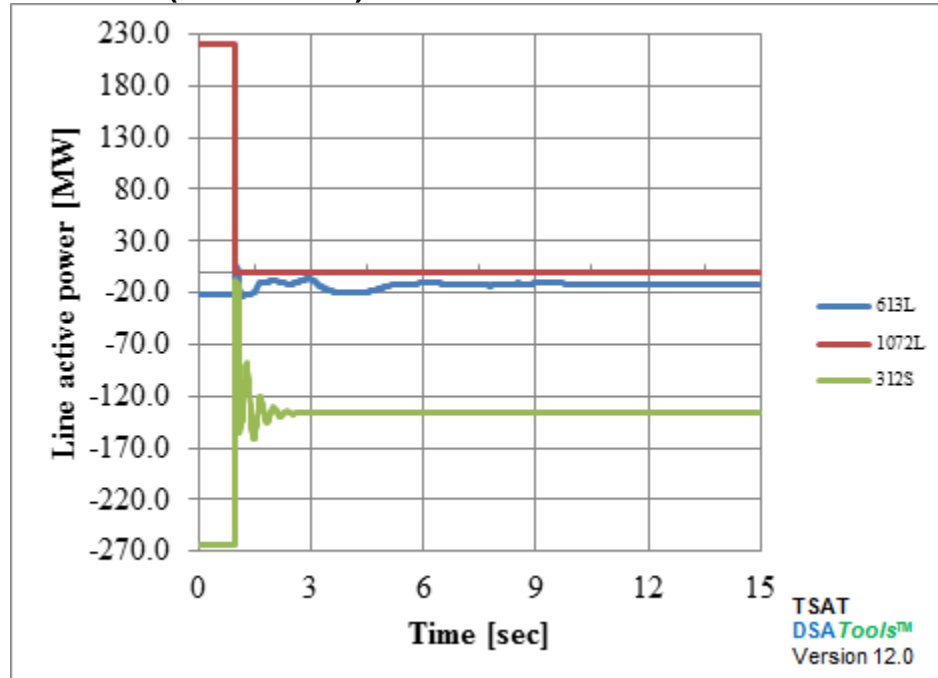
4 -- 1072L (205S - 103S) NEAR 205S

Existing System, Summer Peak 2014



4 -- 1072L (205S - 103S) NEAR 205S

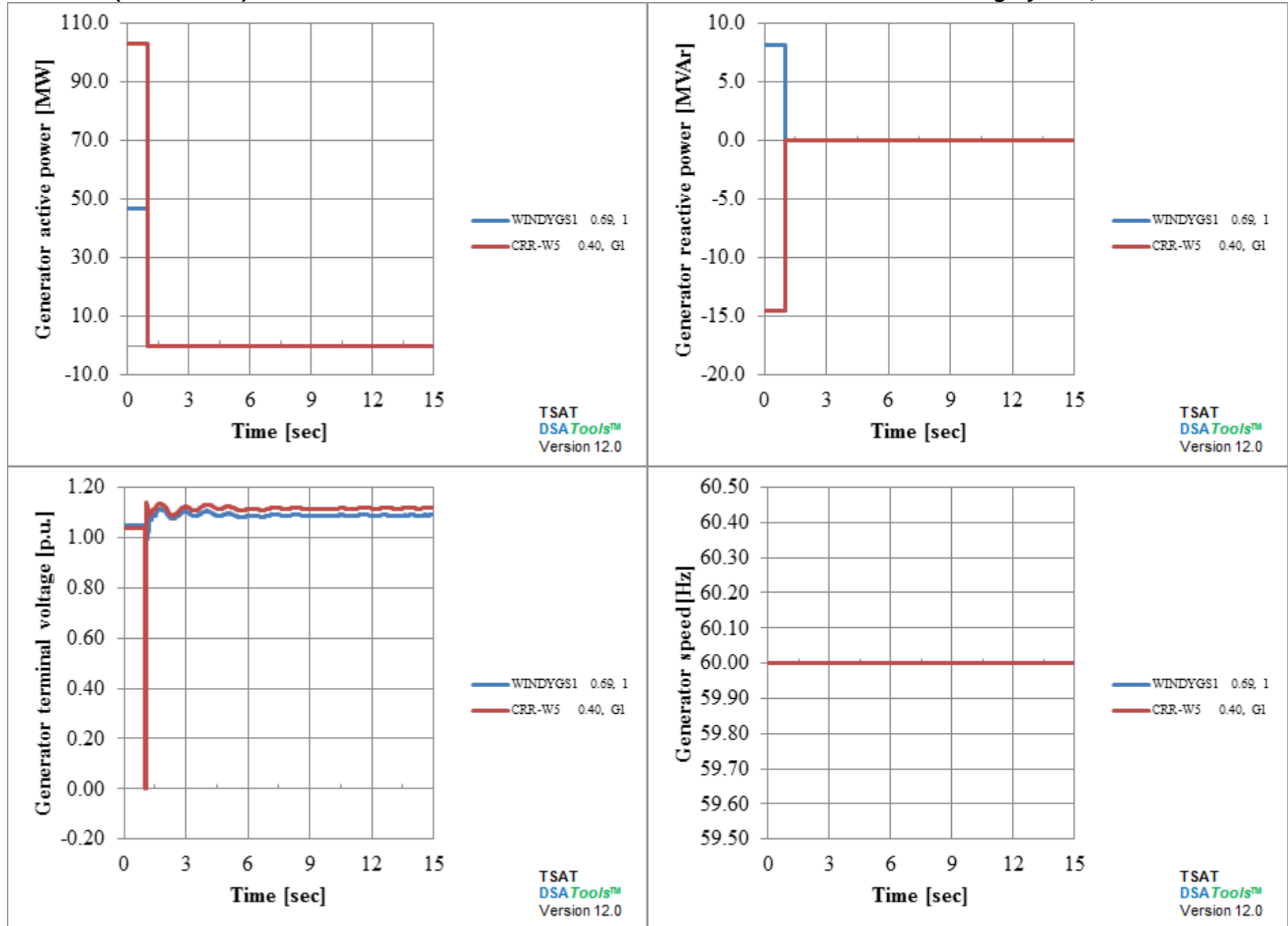
Existing System, Summer Peak 2014





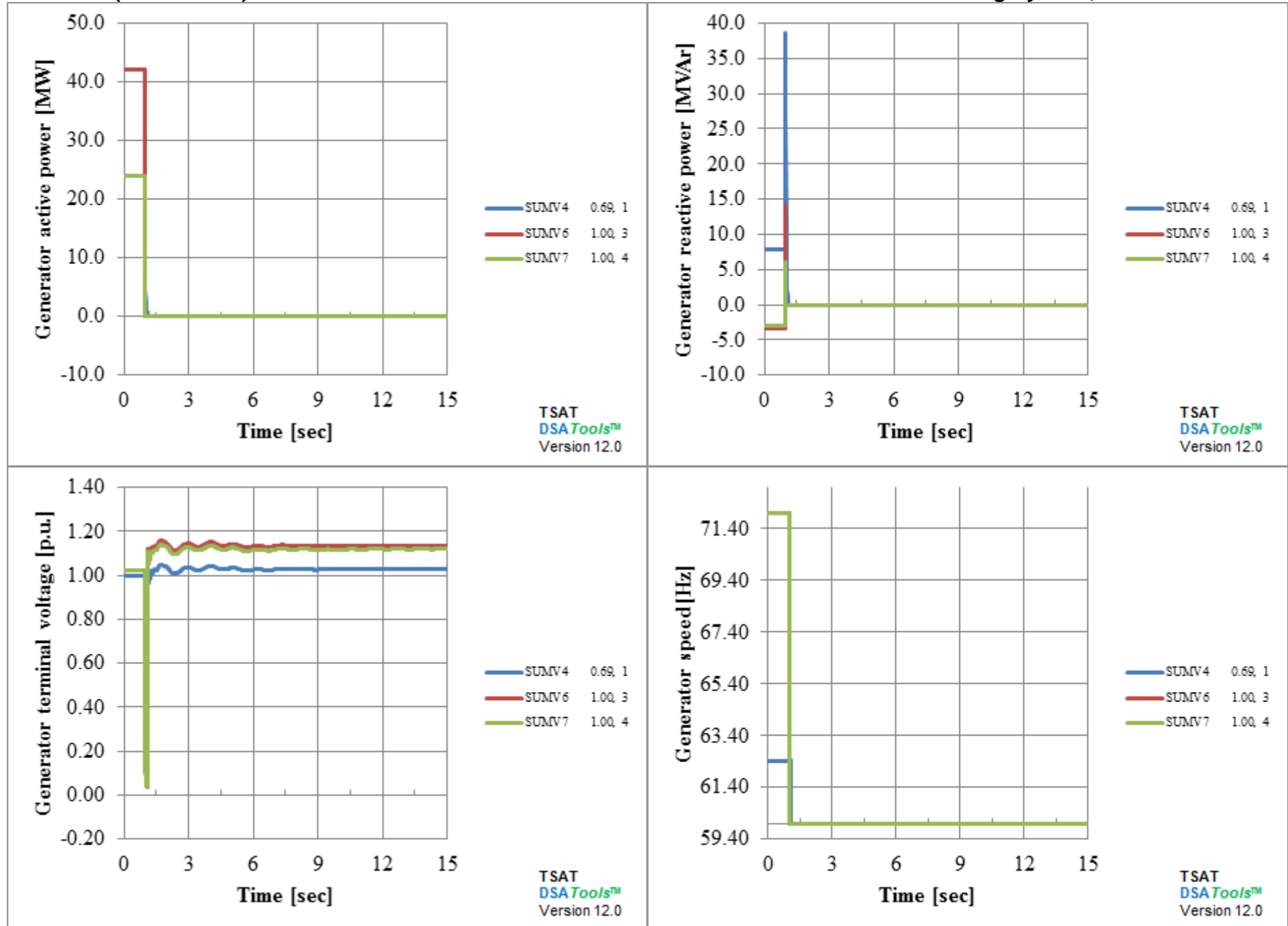
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



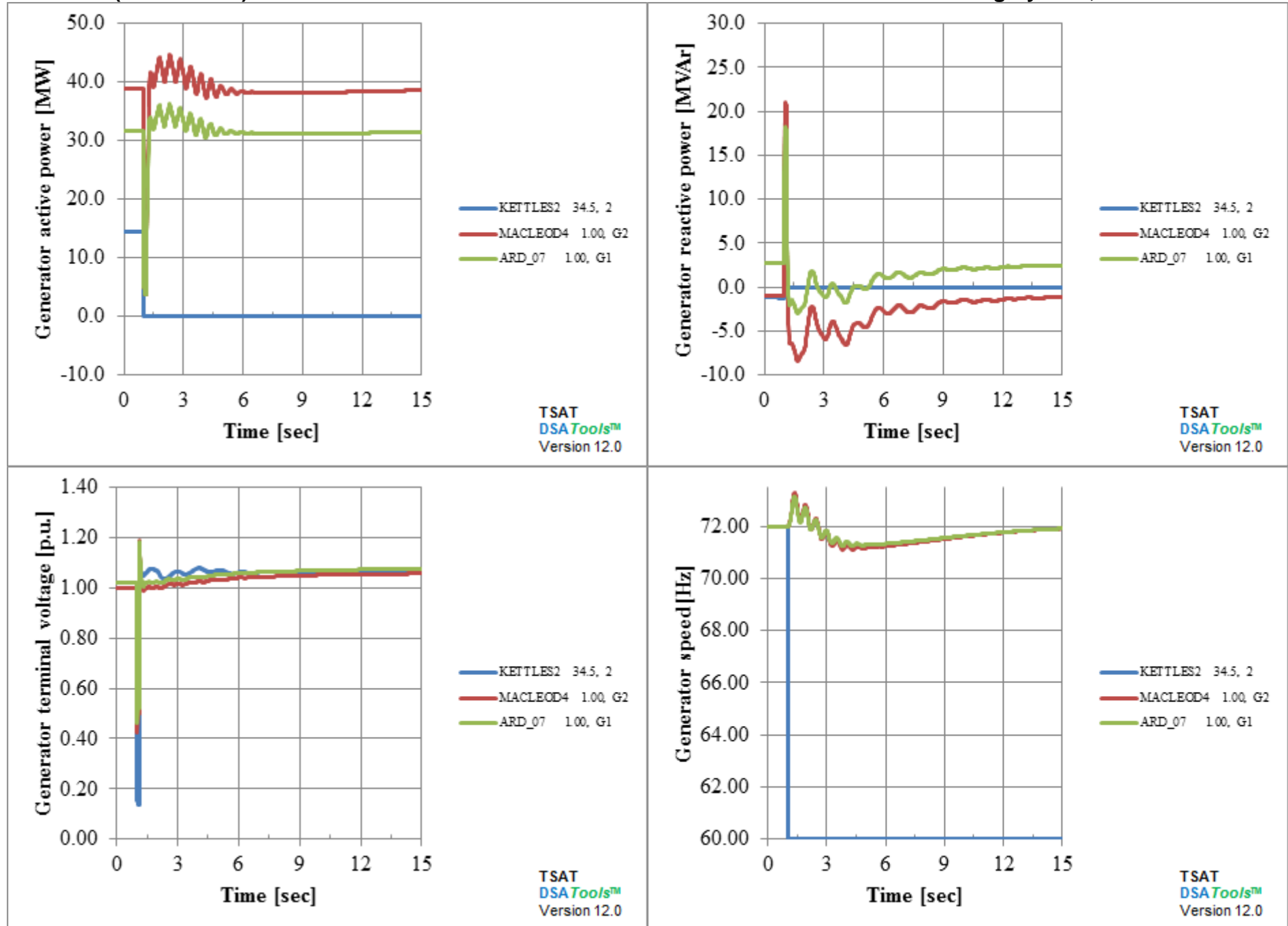
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



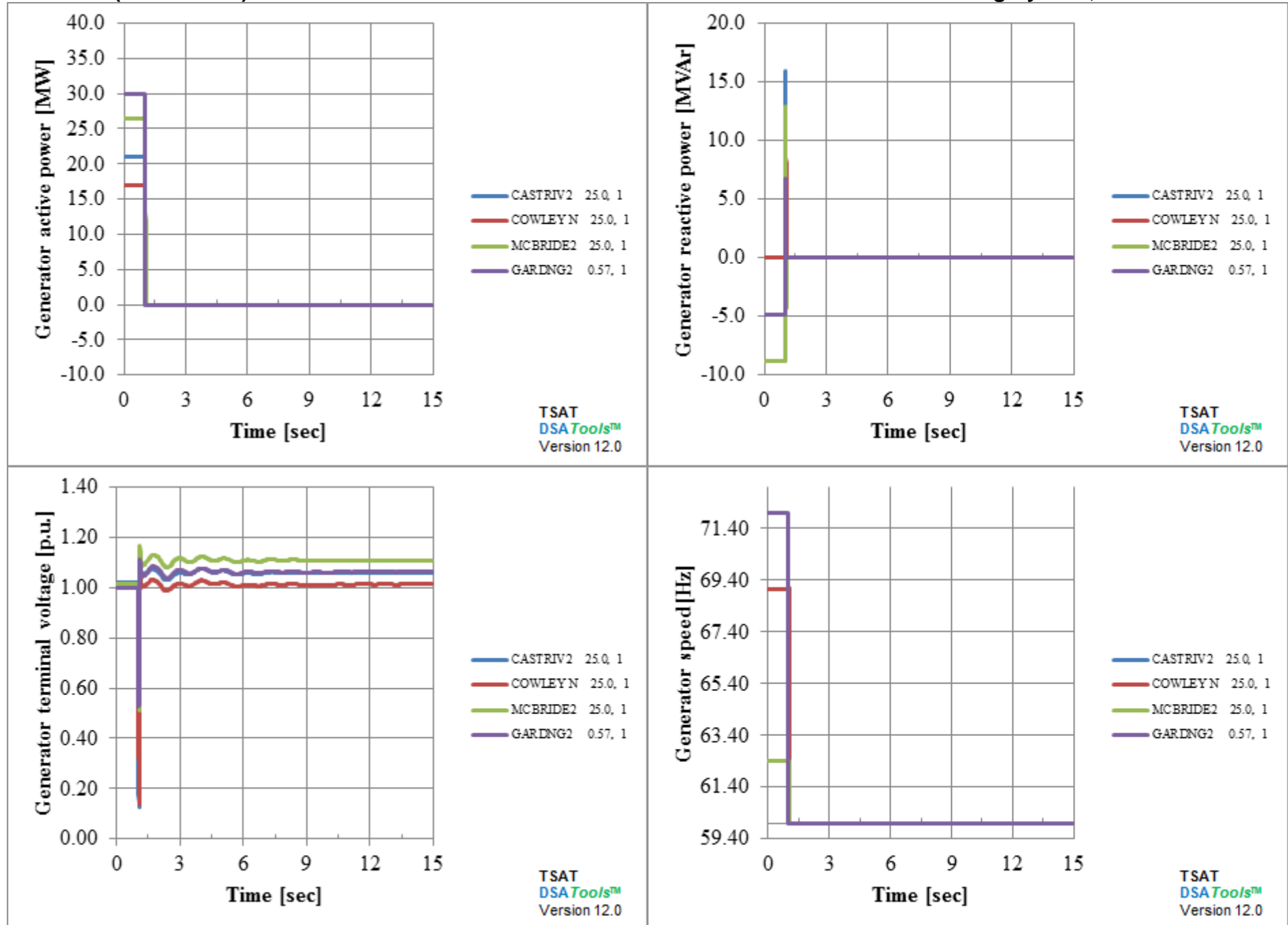
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



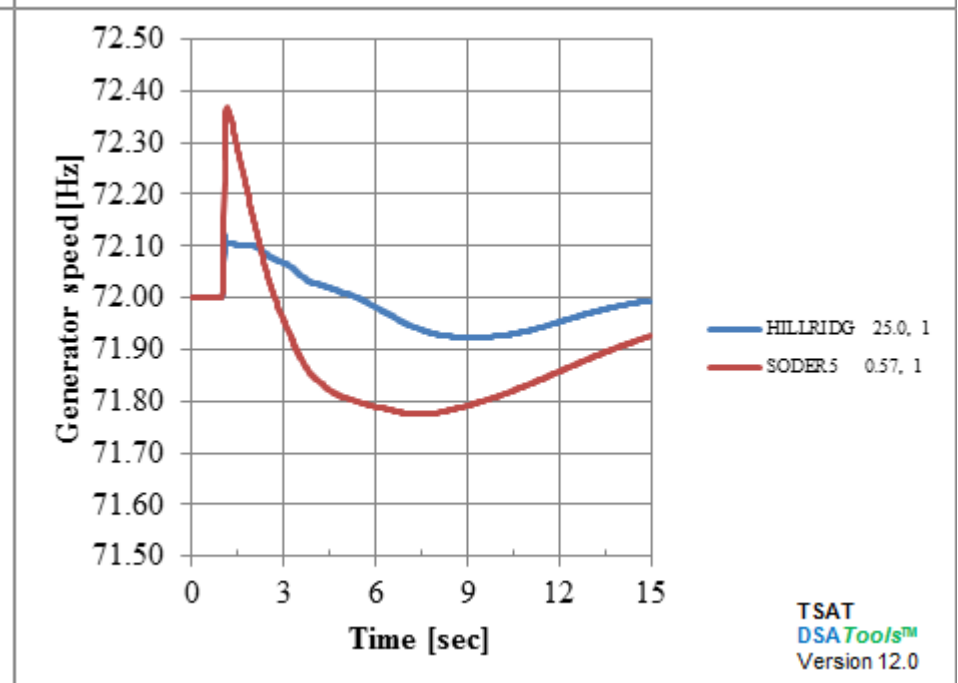
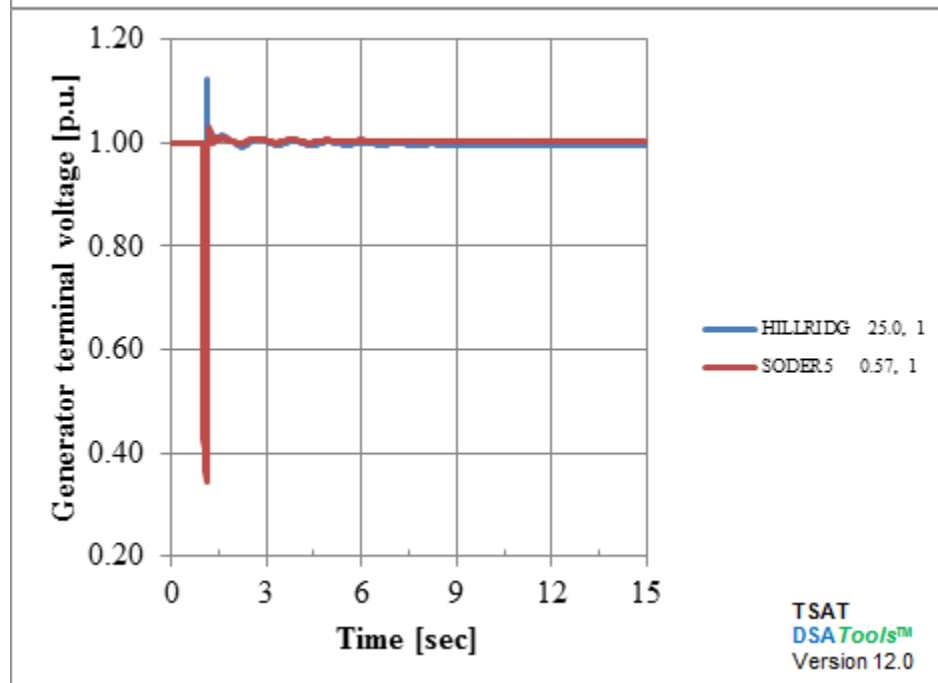
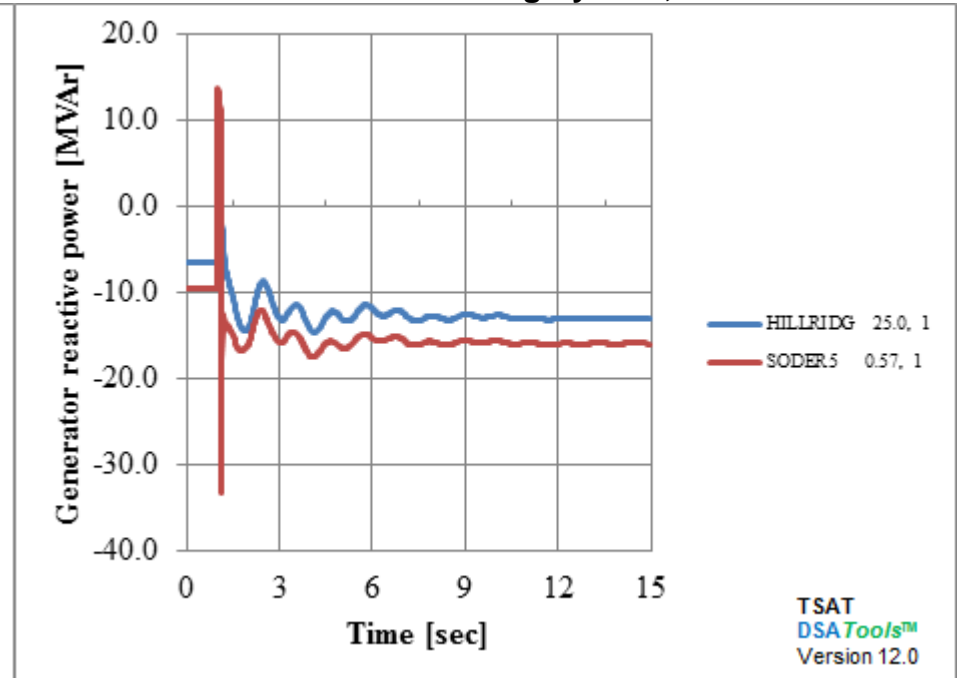
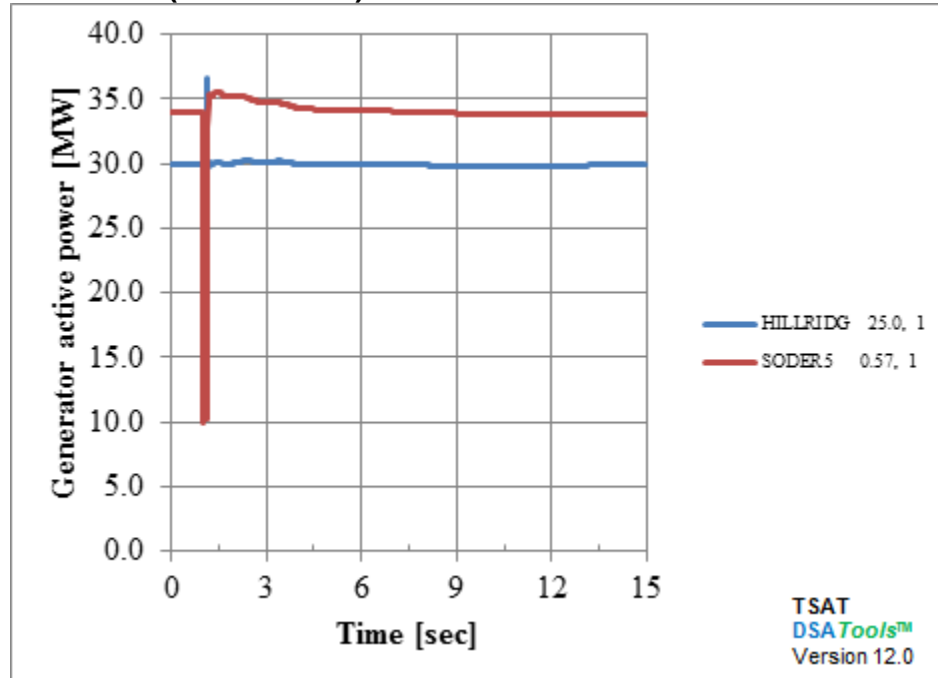
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



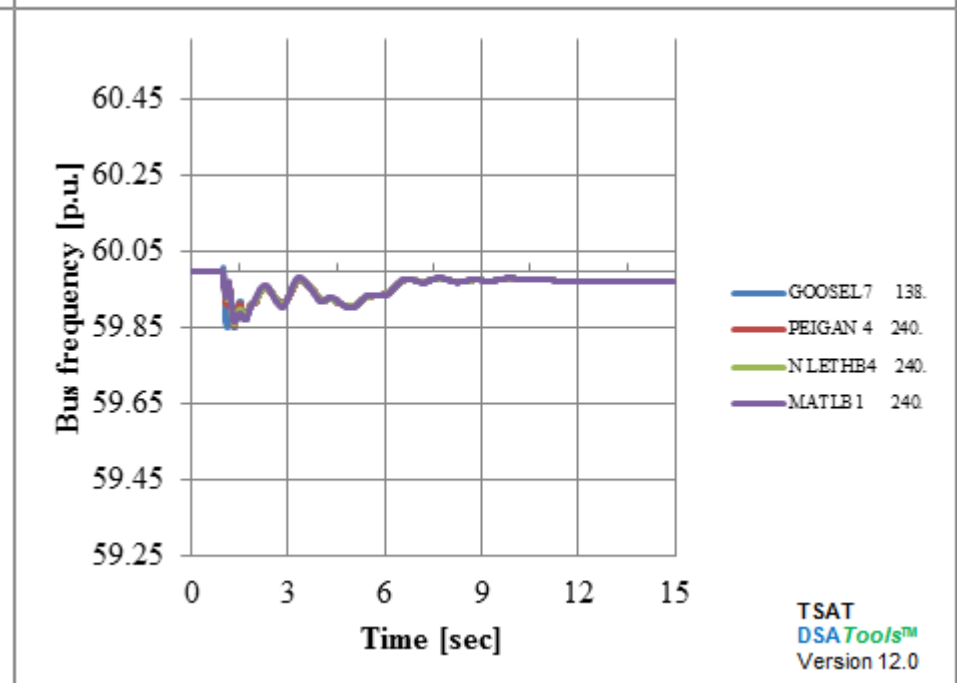
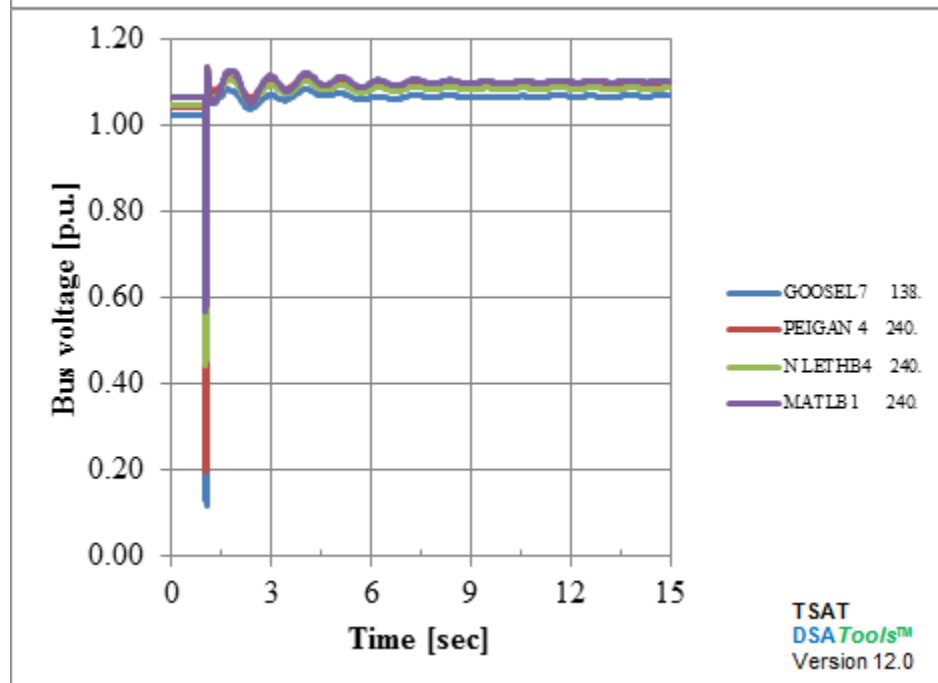
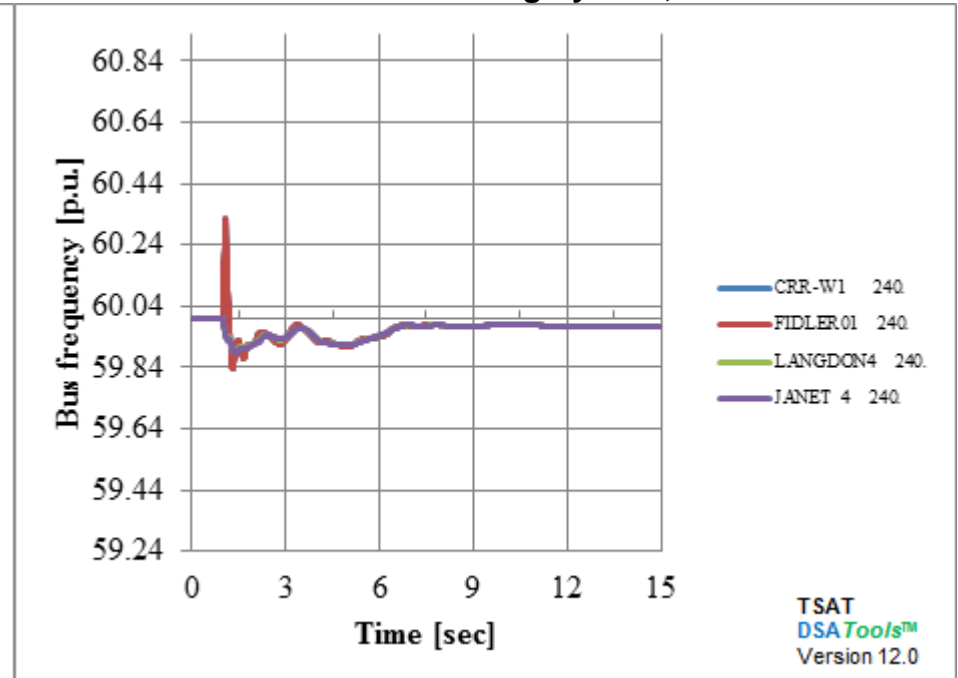
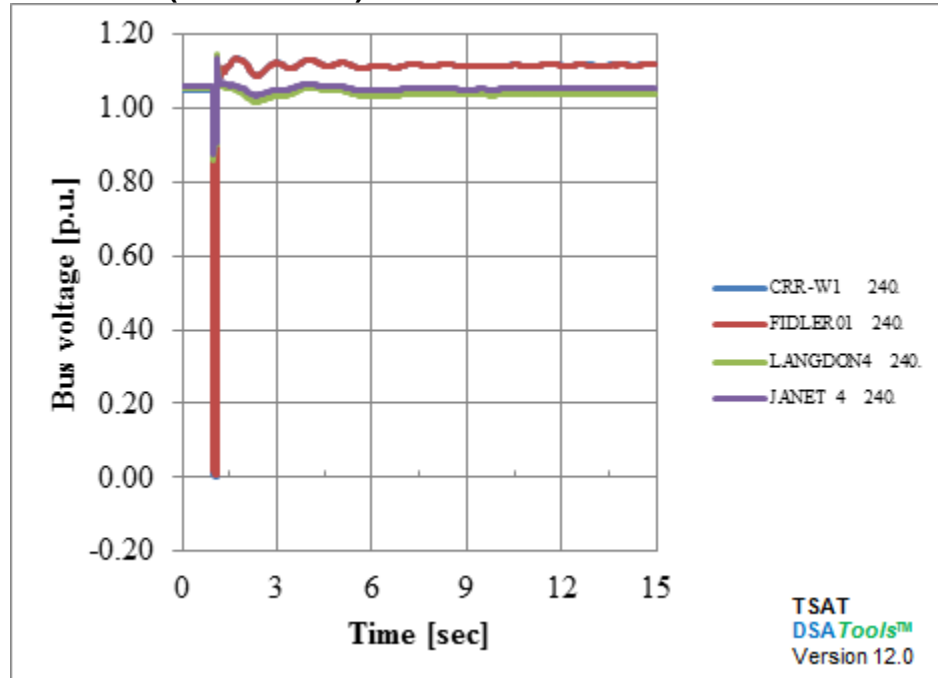
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



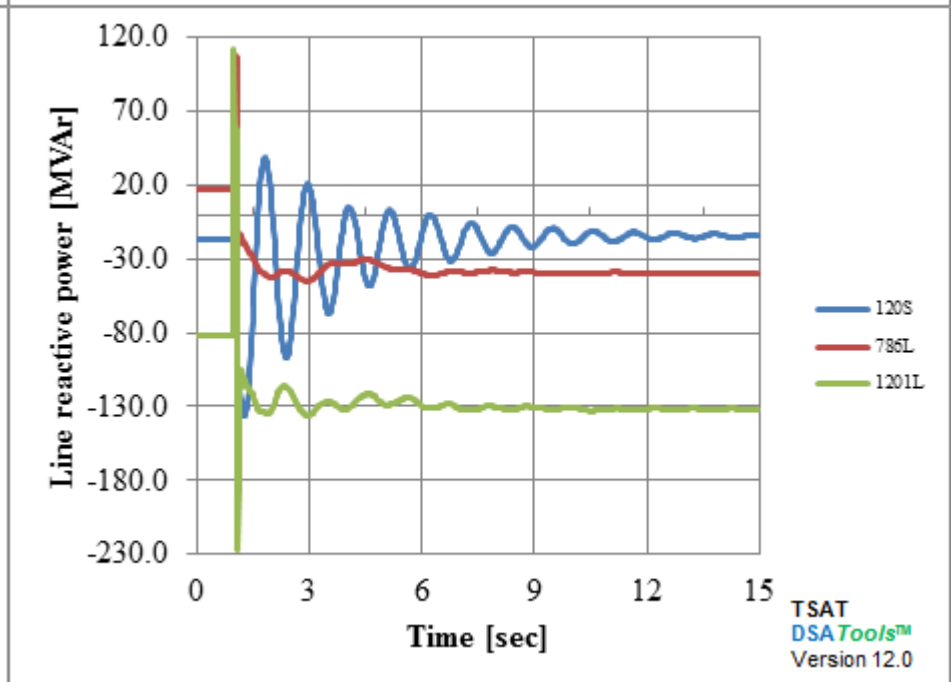
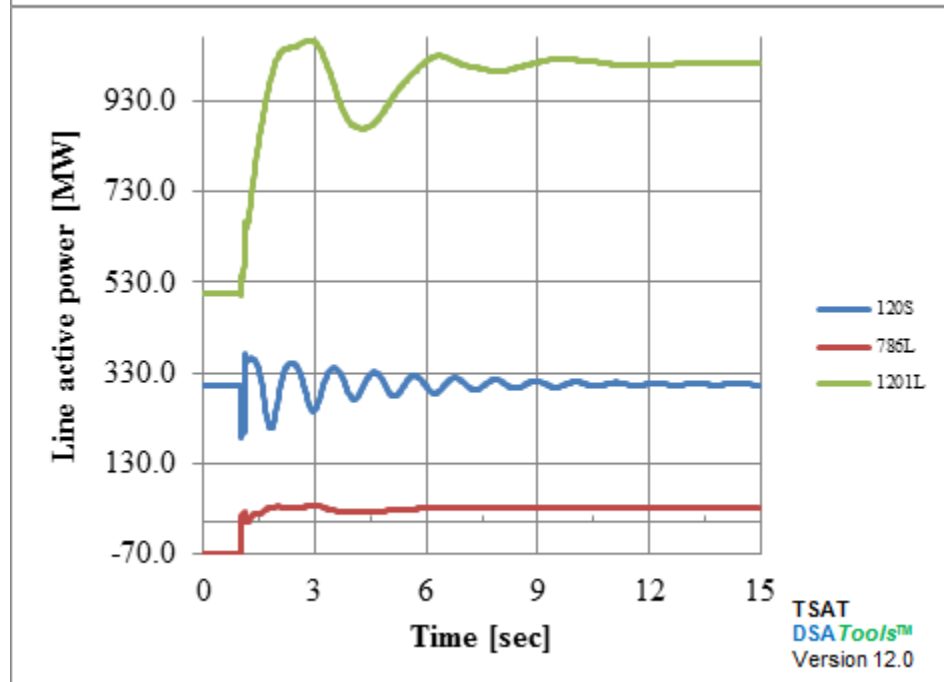
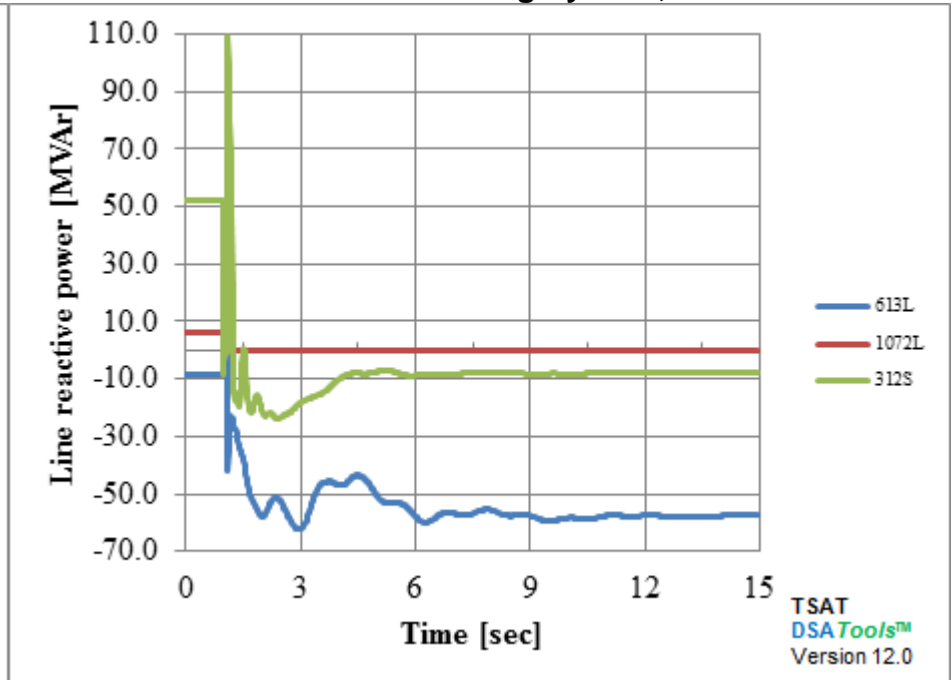
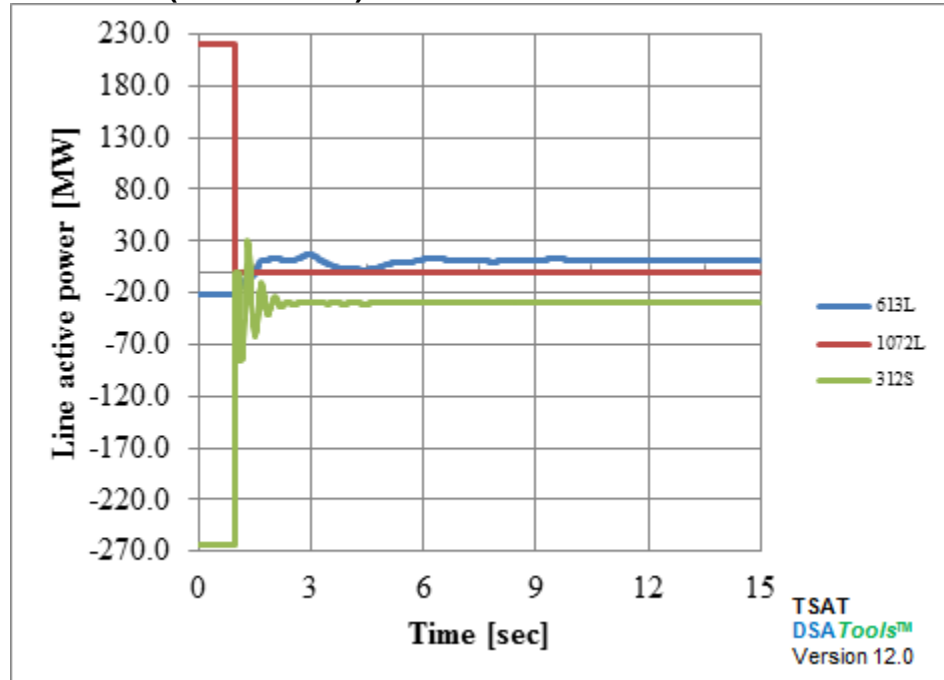
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



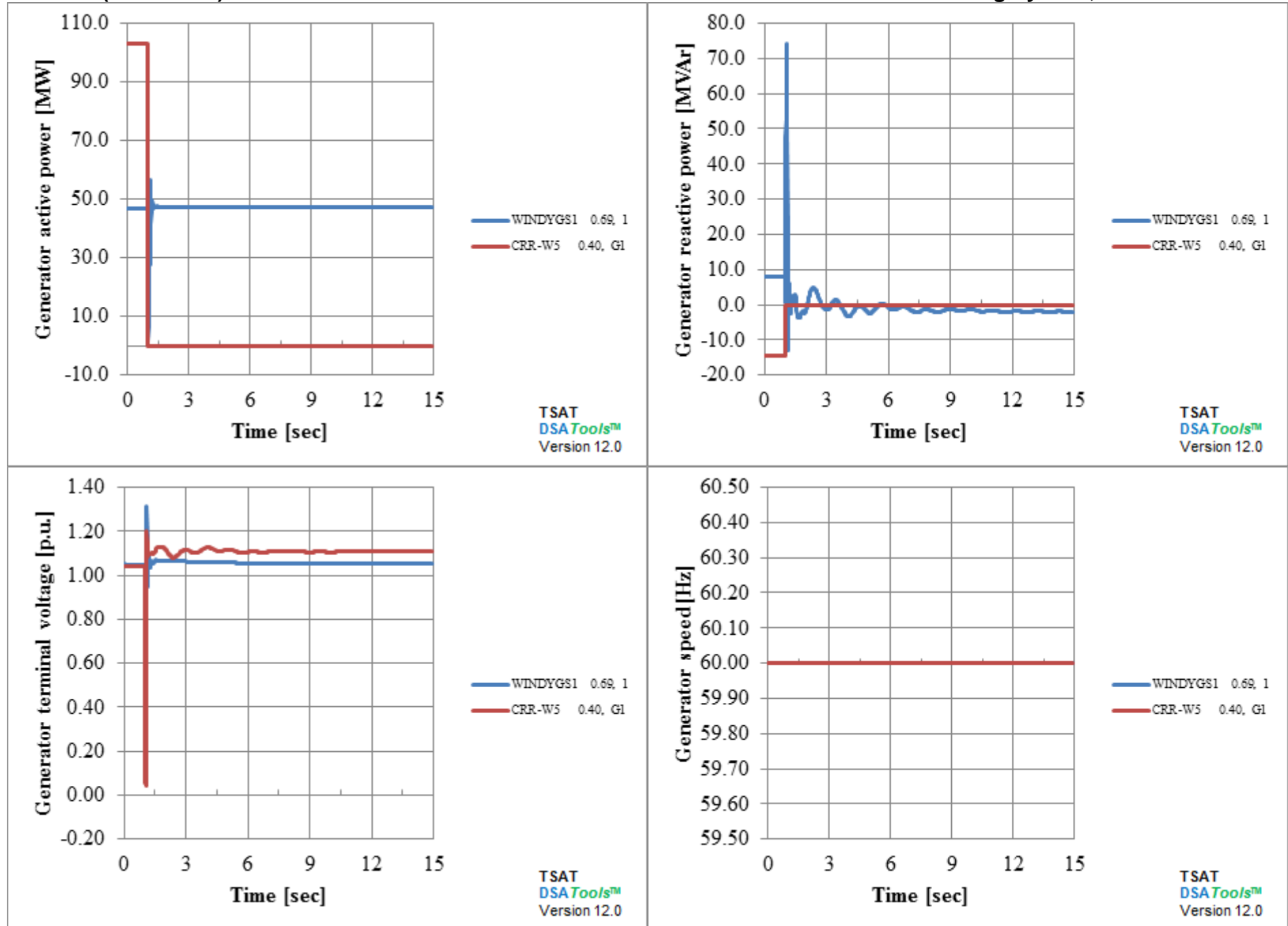
5 -- 1072L (205S - 103S) NEAR 103S

Existing System, Summer Peak 2014



6 -- 956L (59S - 103S) NEAR 59S

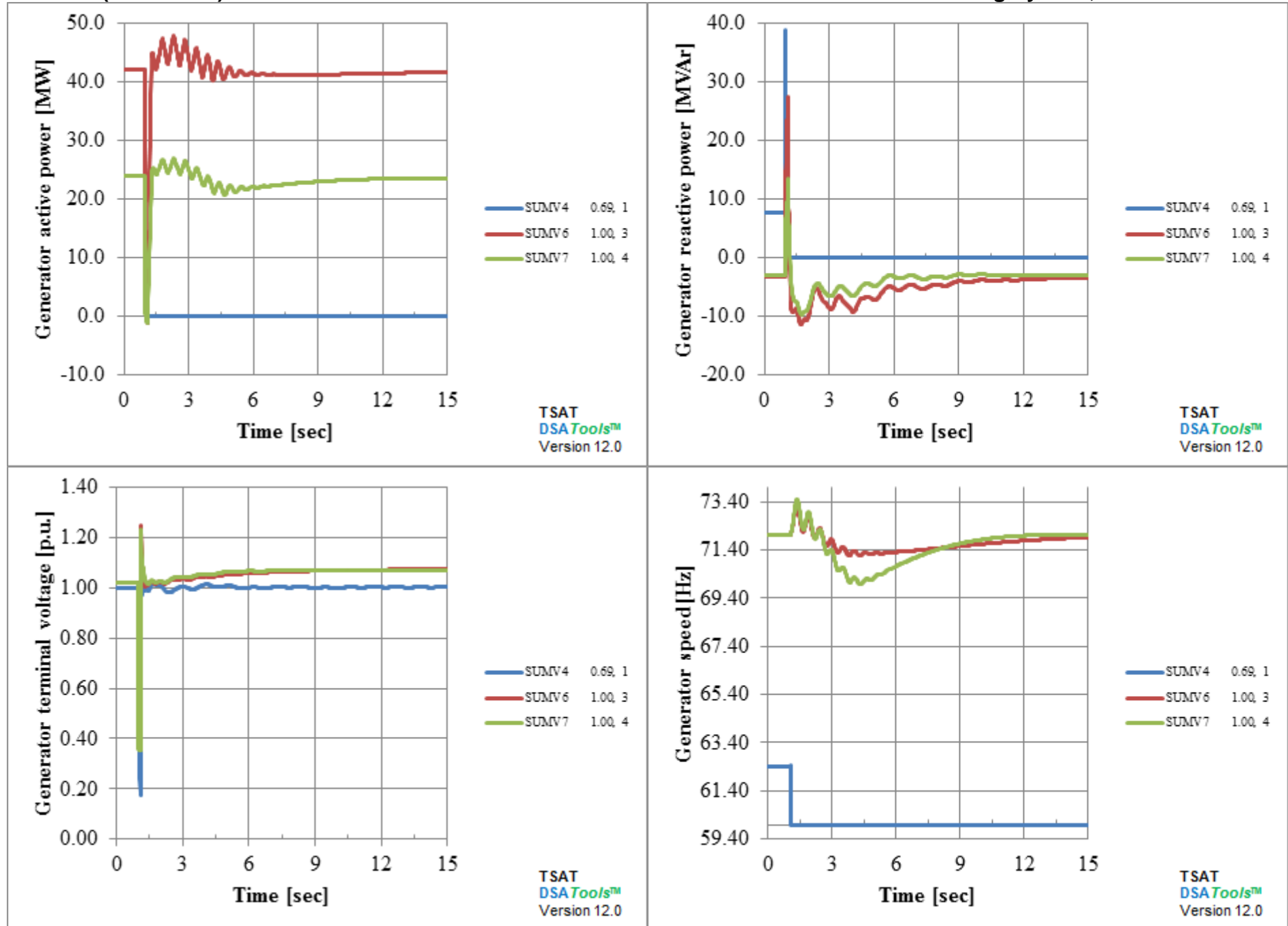
Existing System, Summer Peak 2014





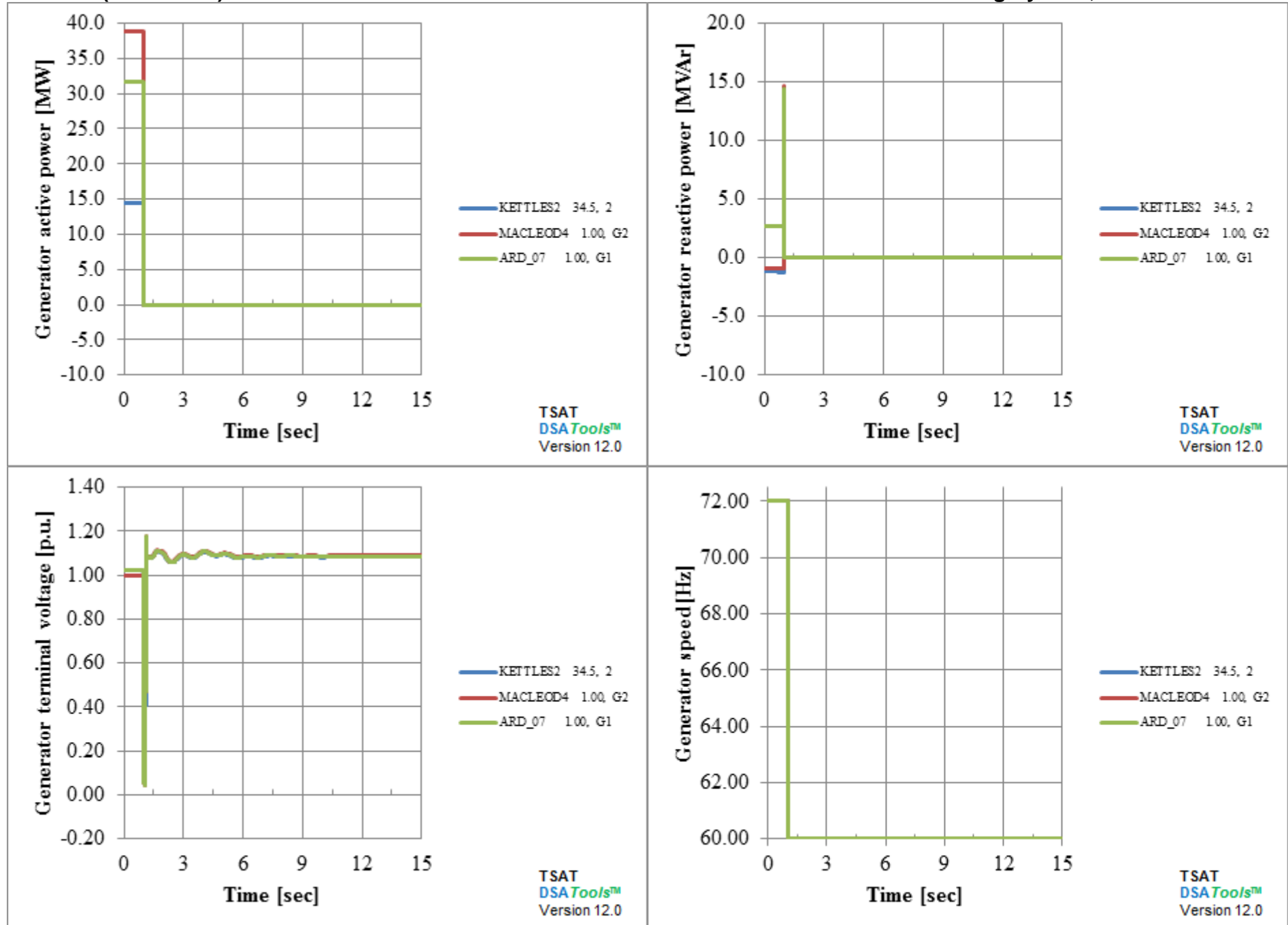
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



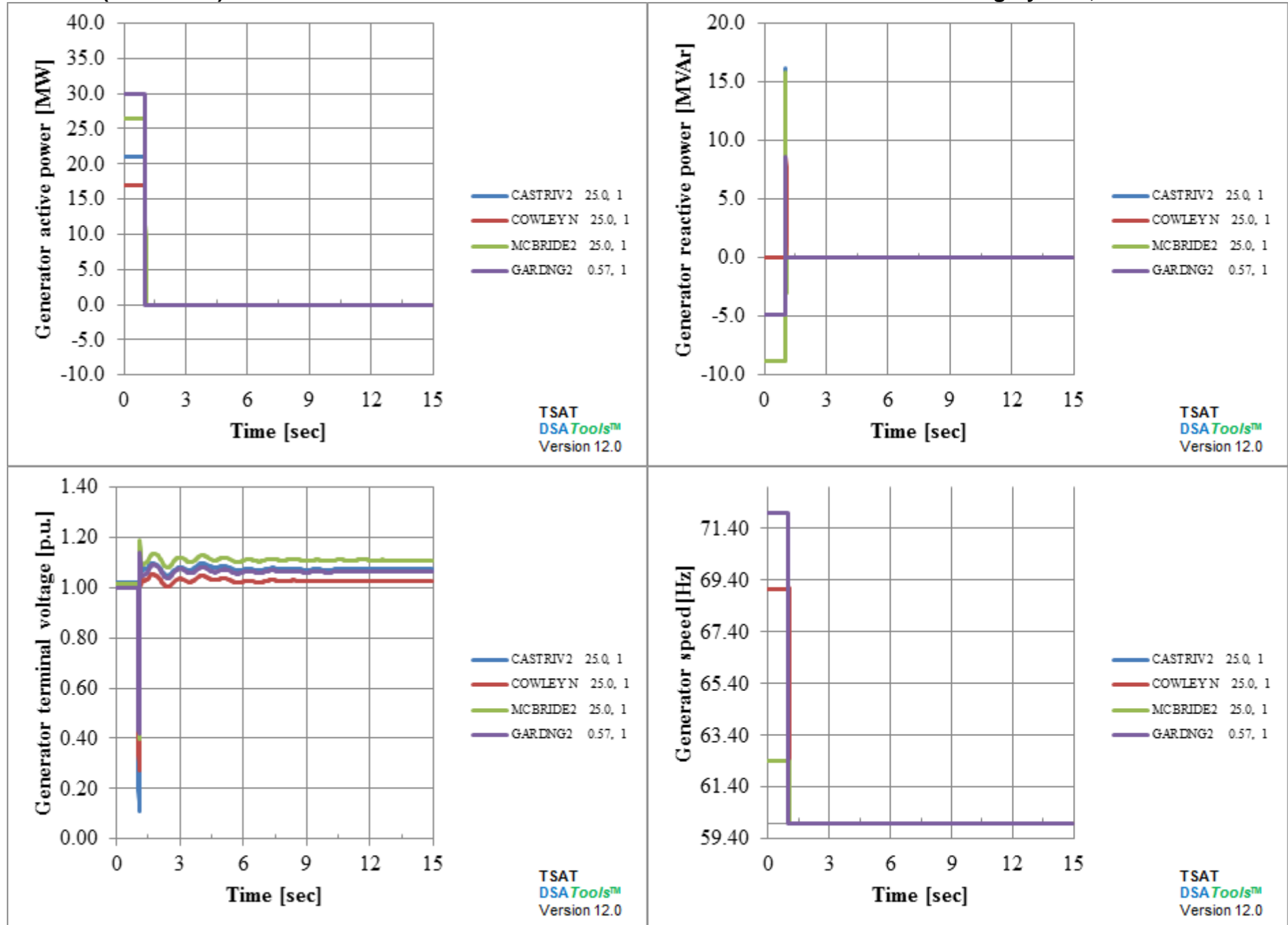
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



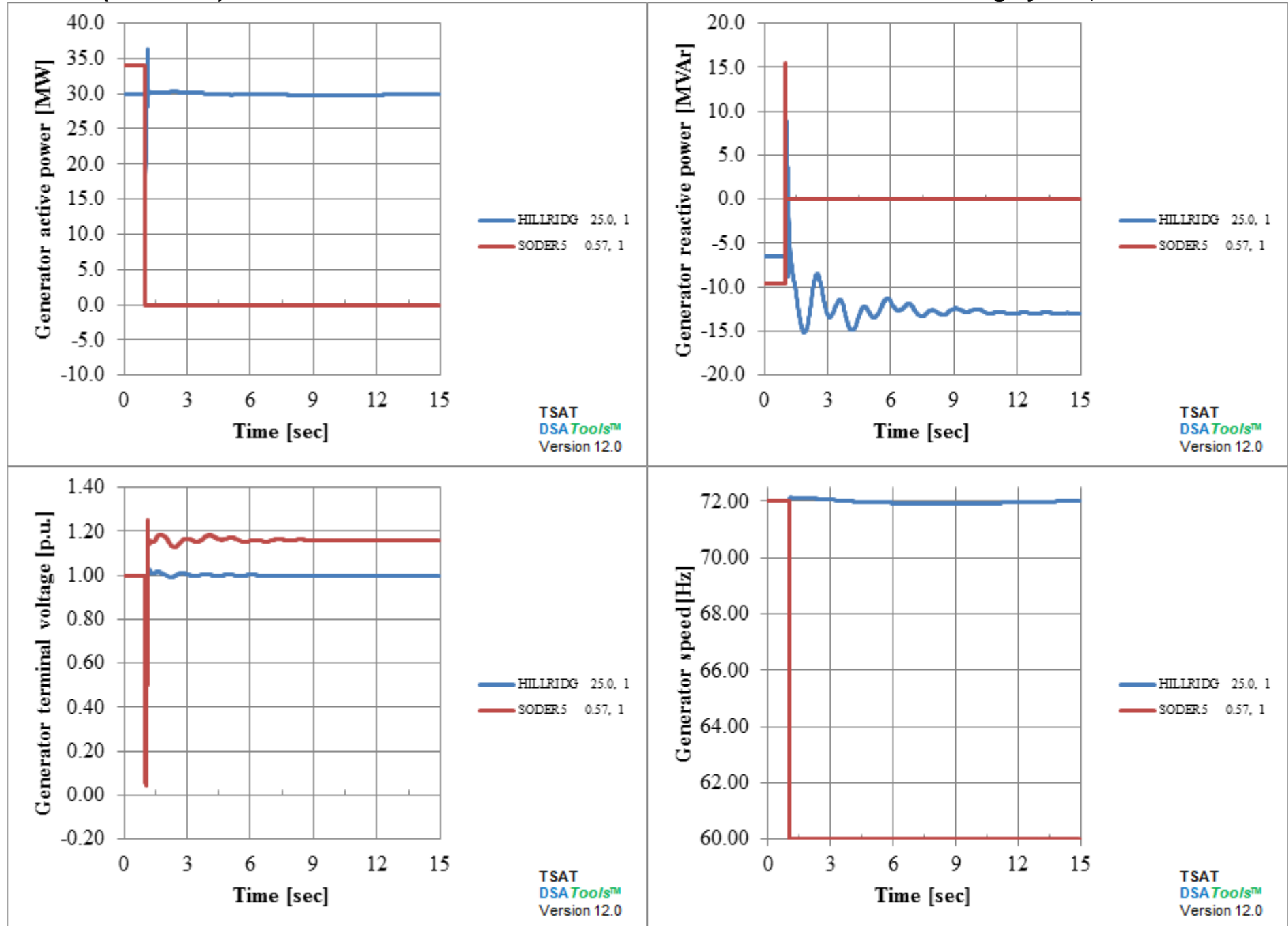
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



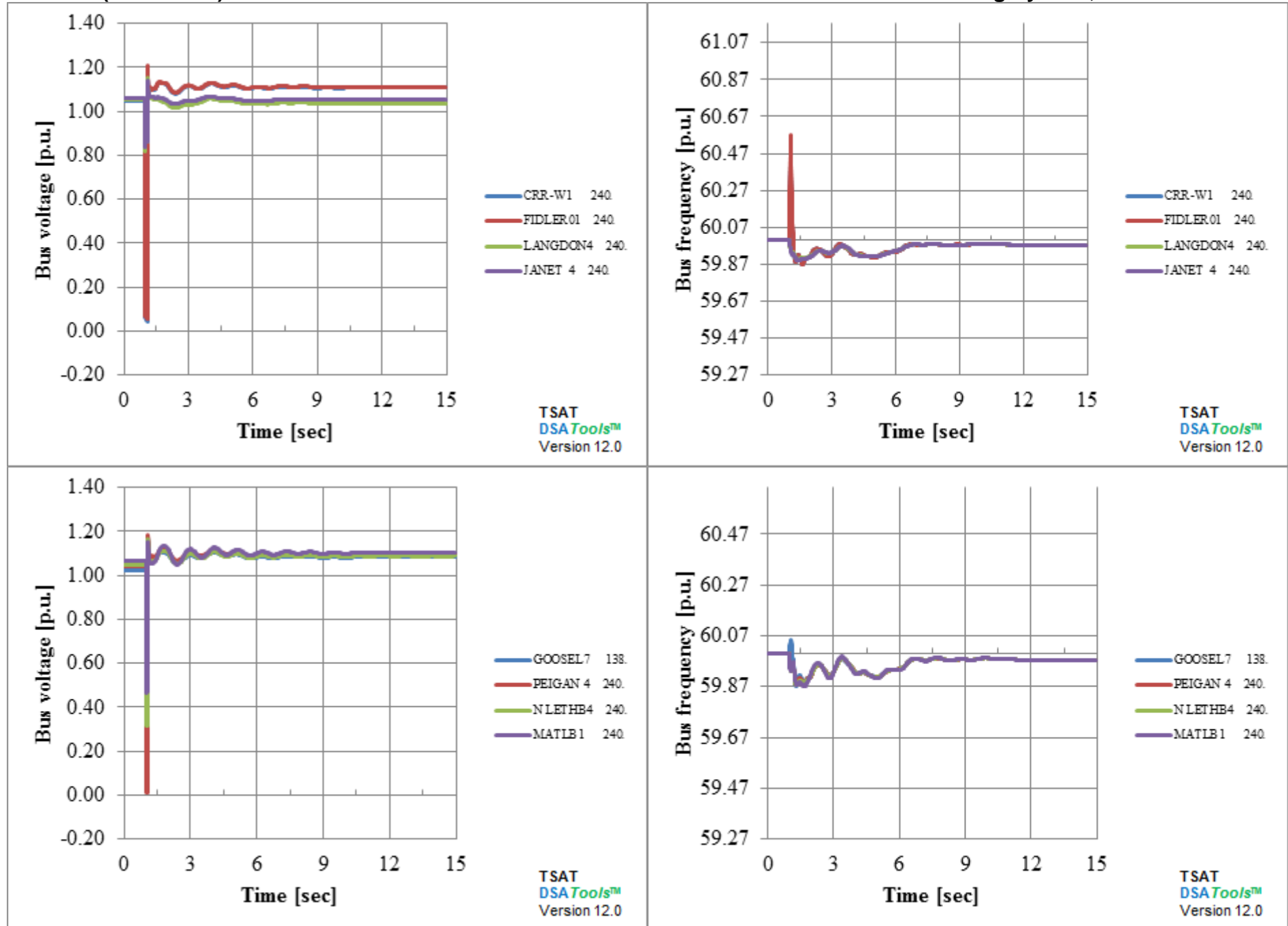
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



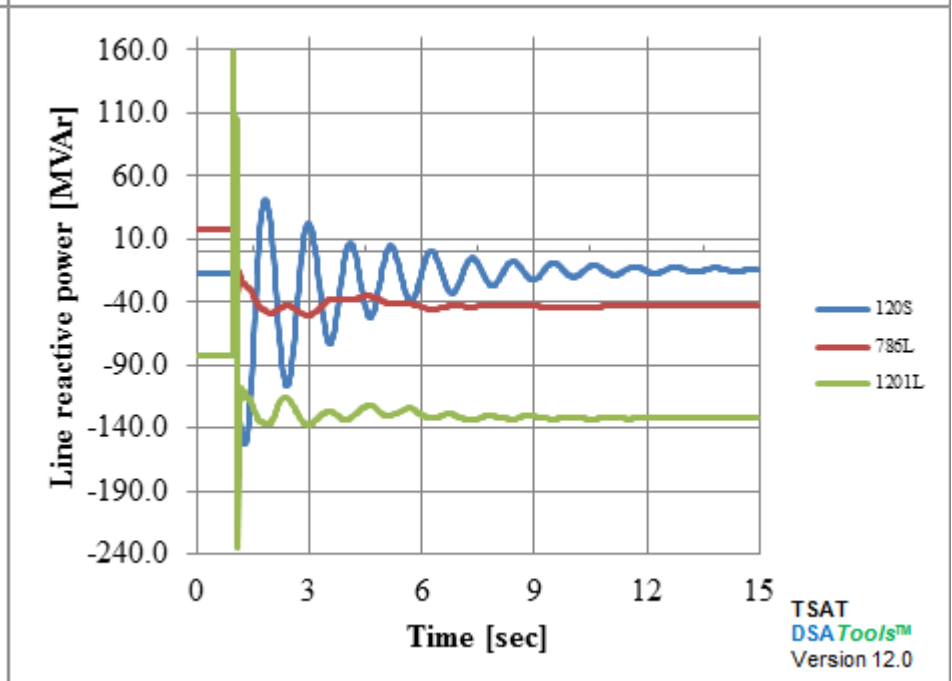
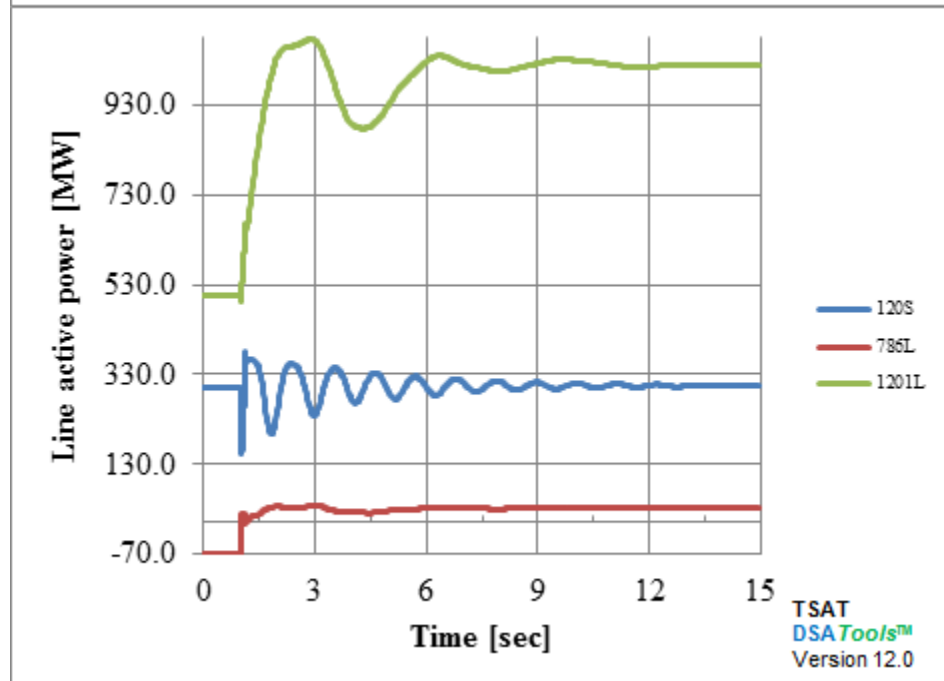
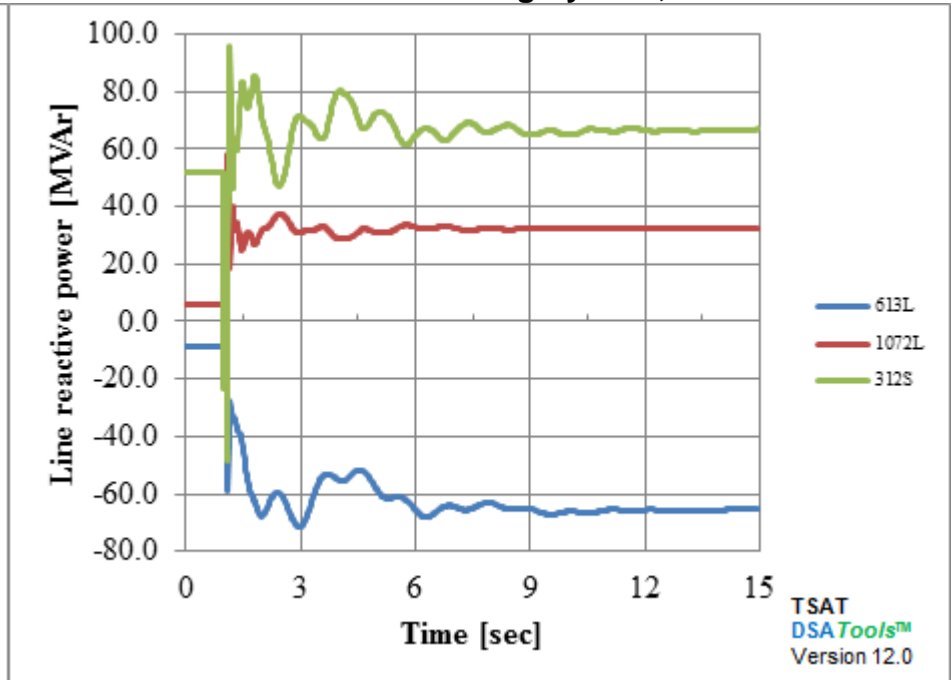
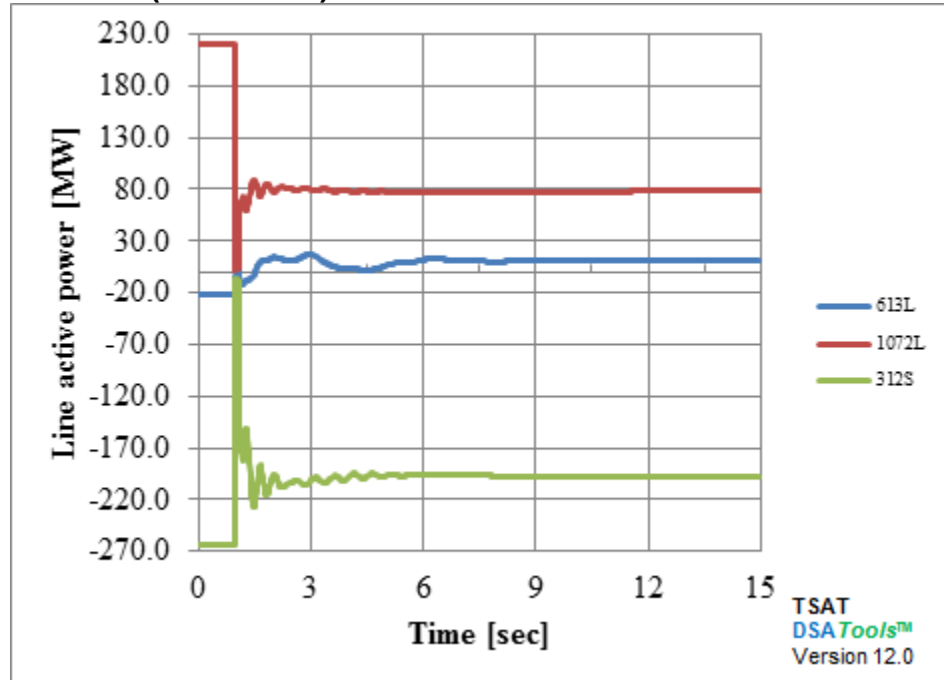
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



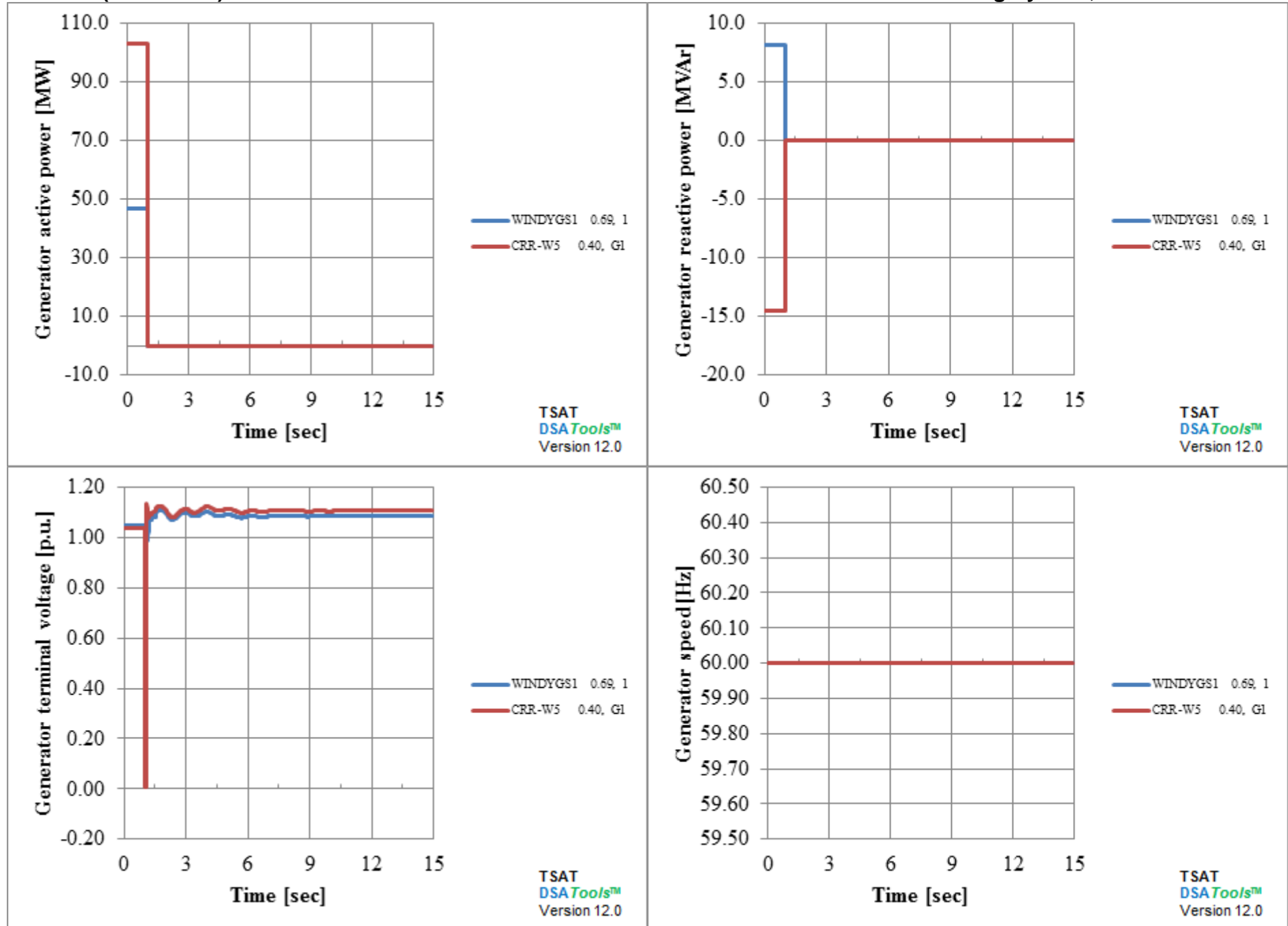
6 -- 956L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



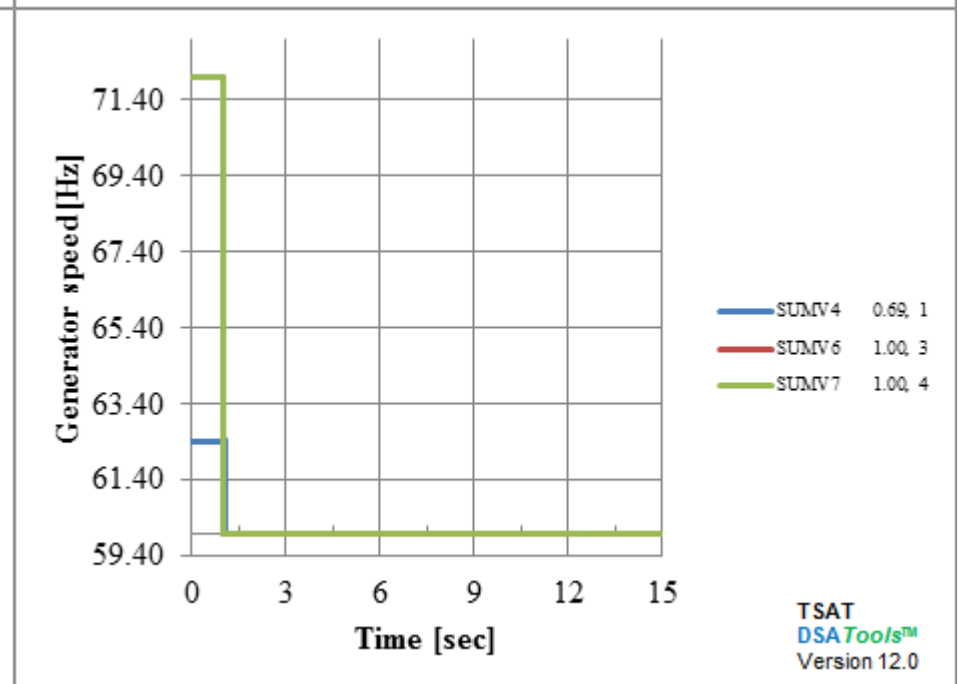
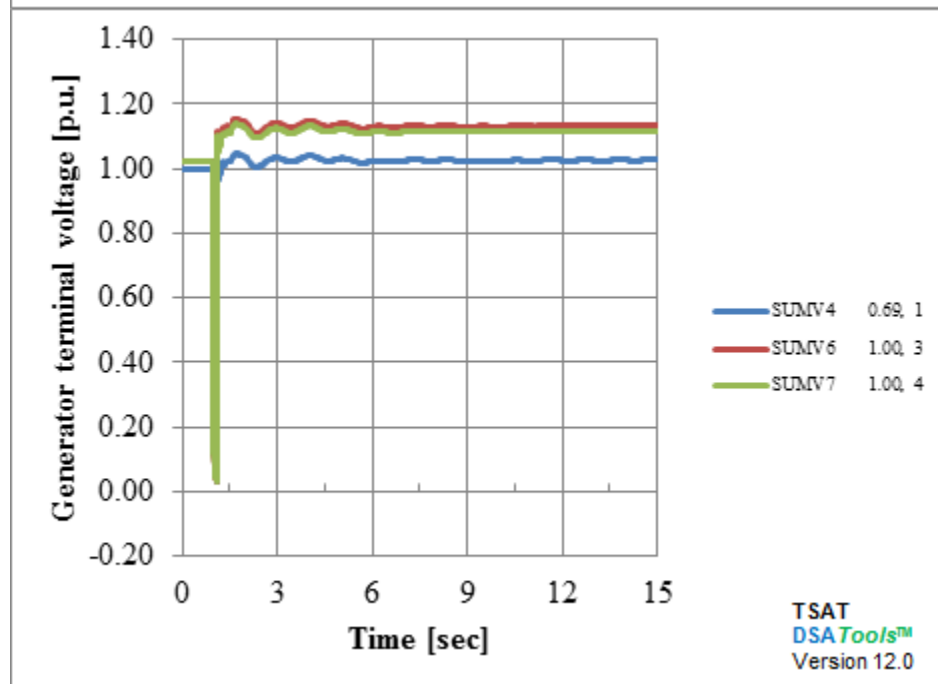
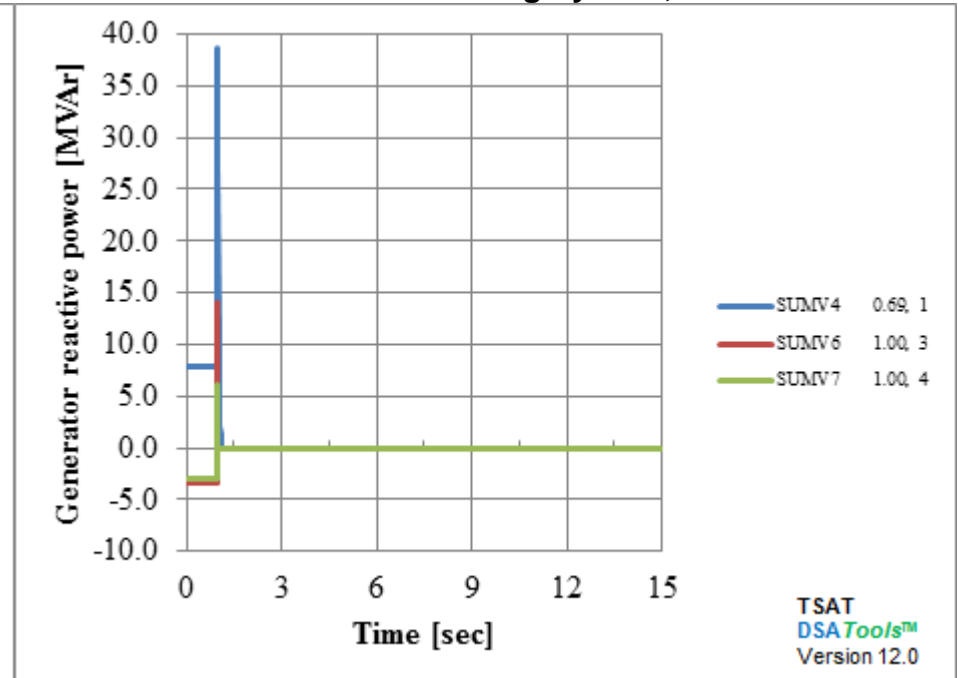
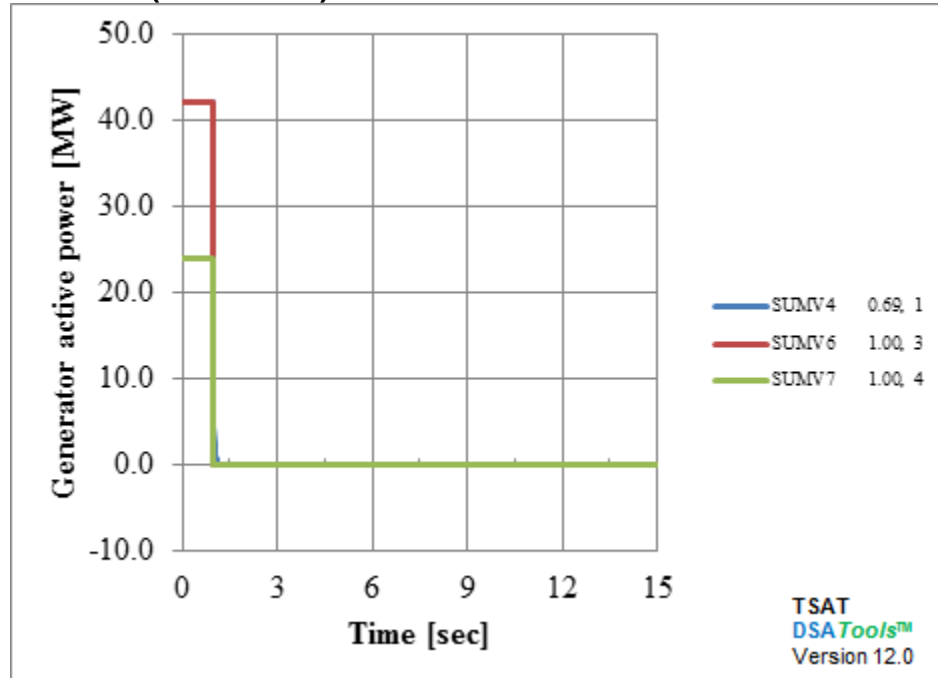
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



7 -- 956L (59S - 103S) NEAR 103S

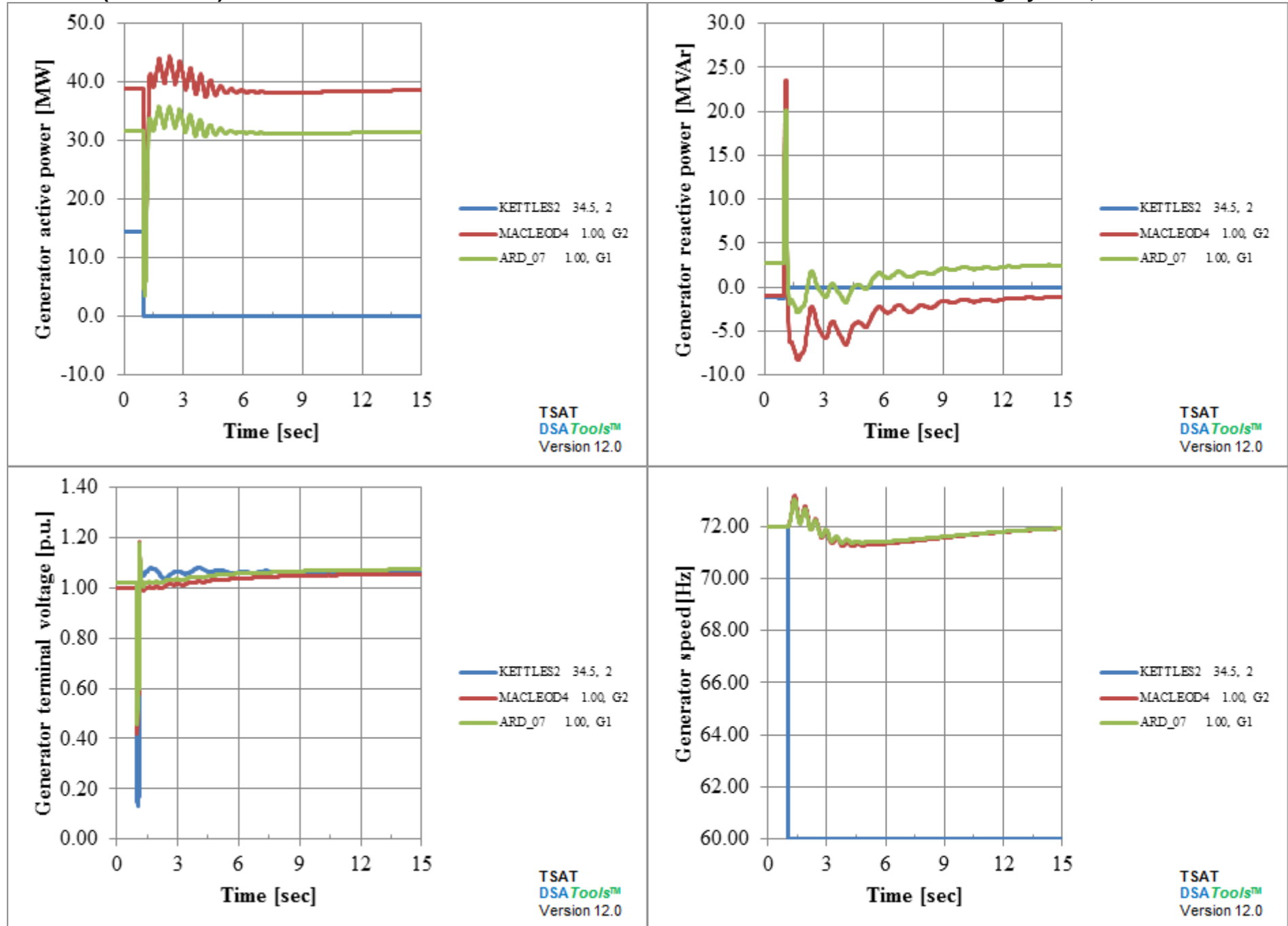
Existing System, Summer Peak 2014





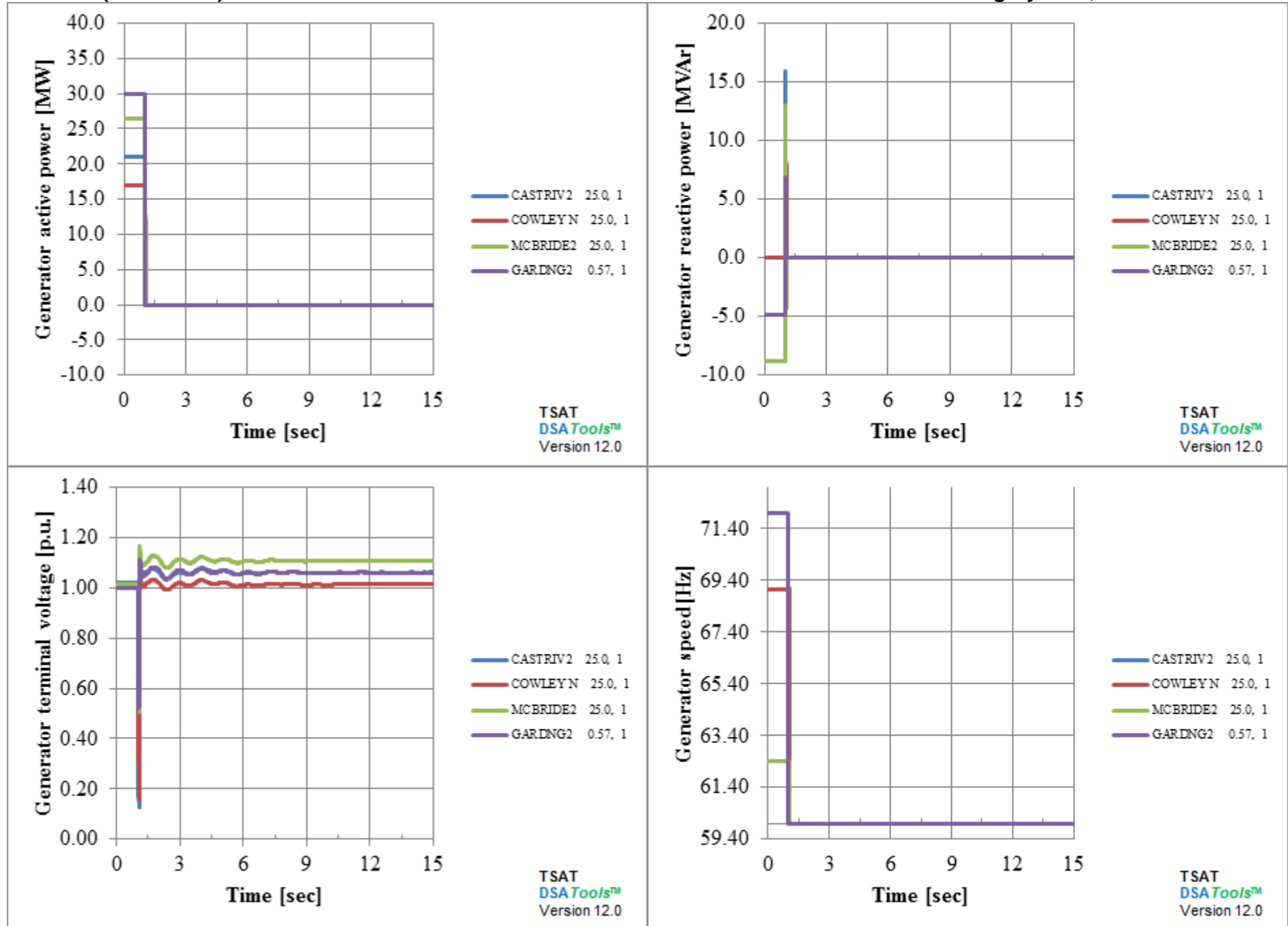
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



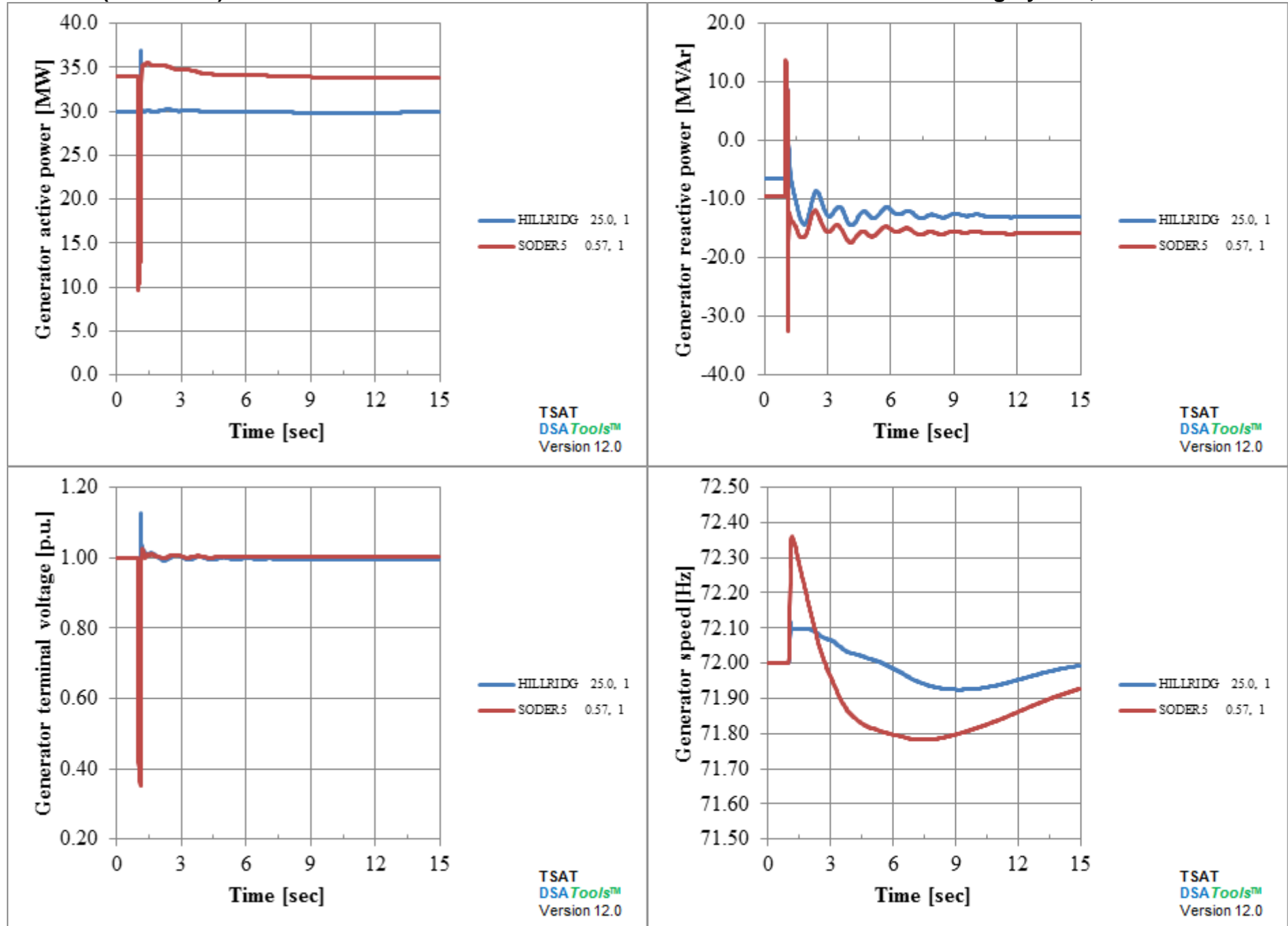
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



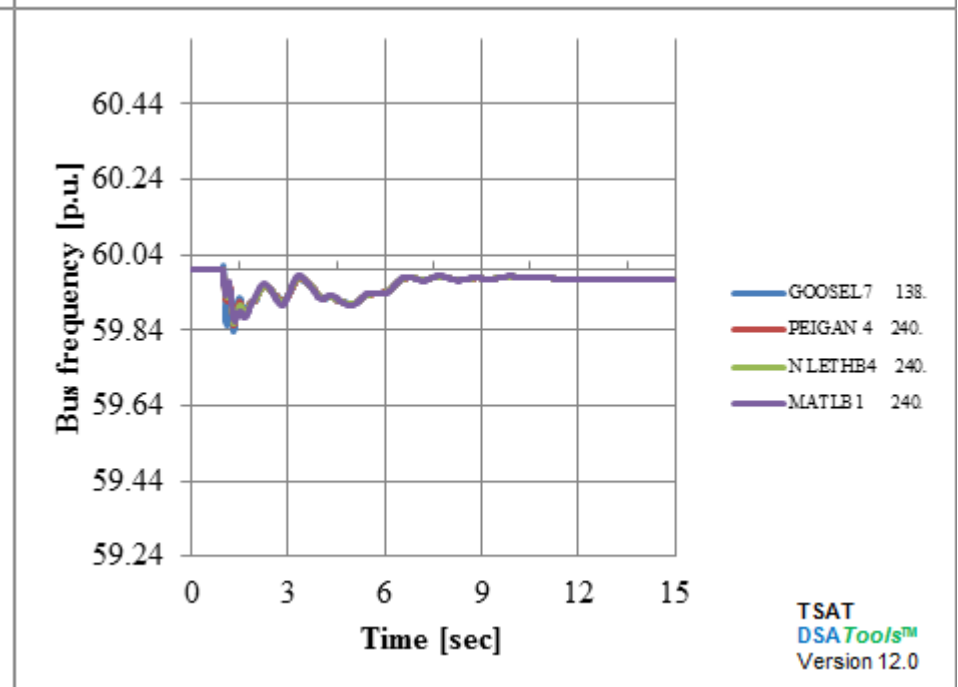
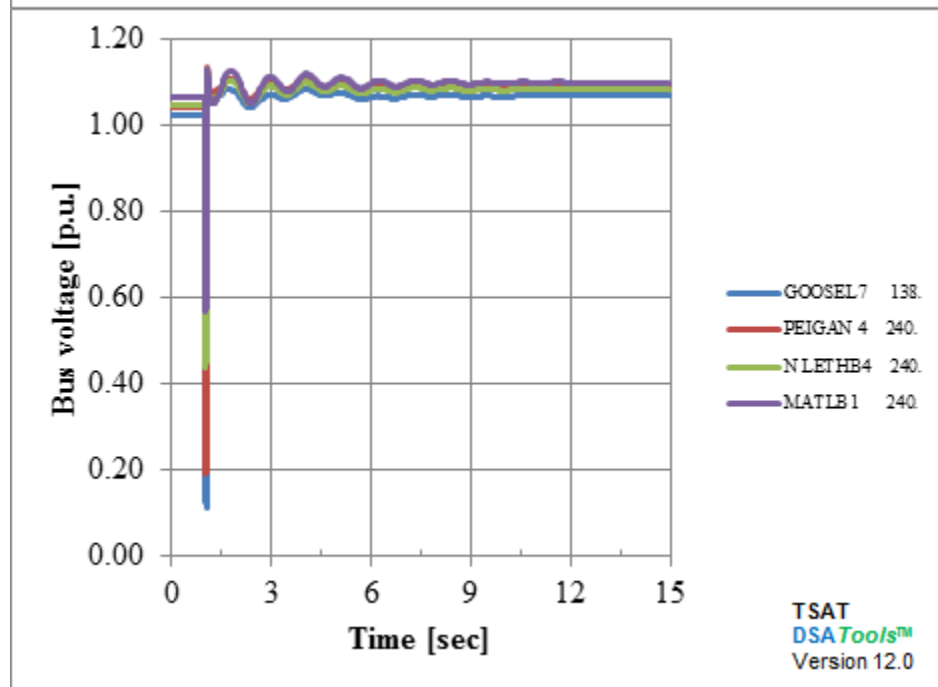
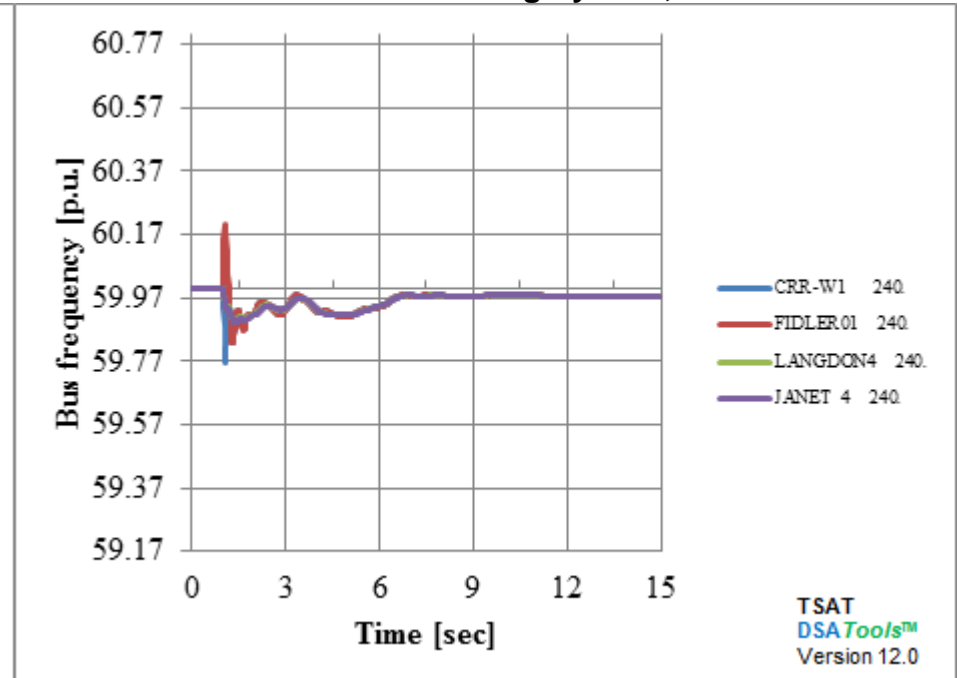
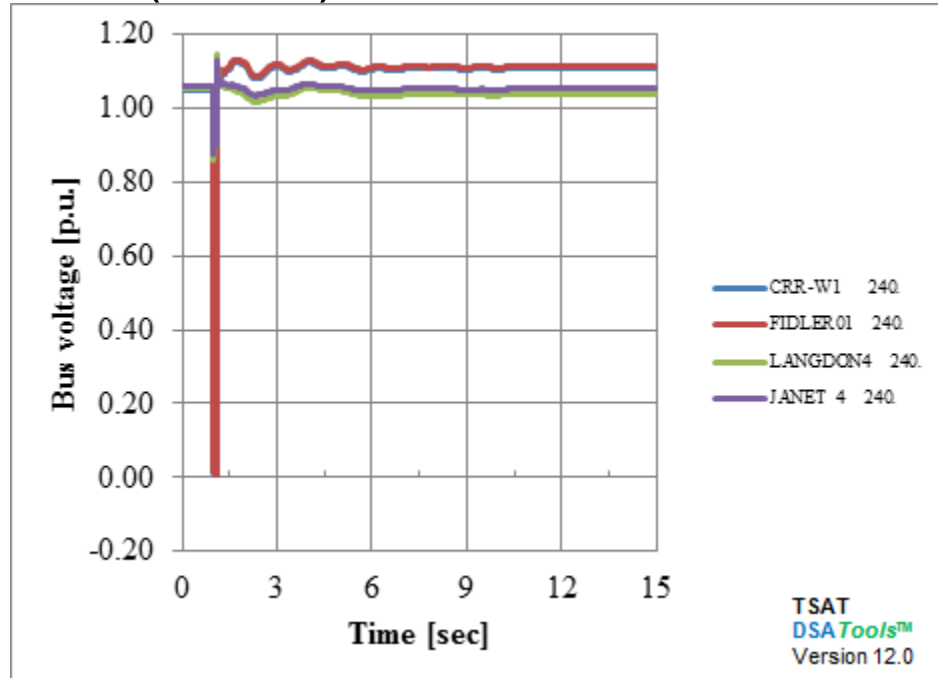
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



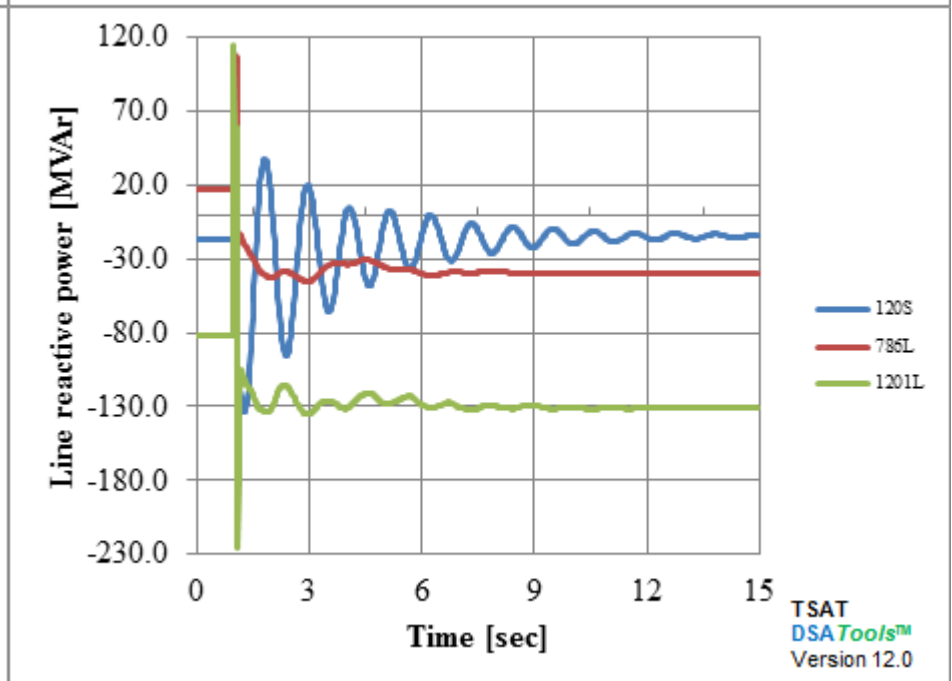
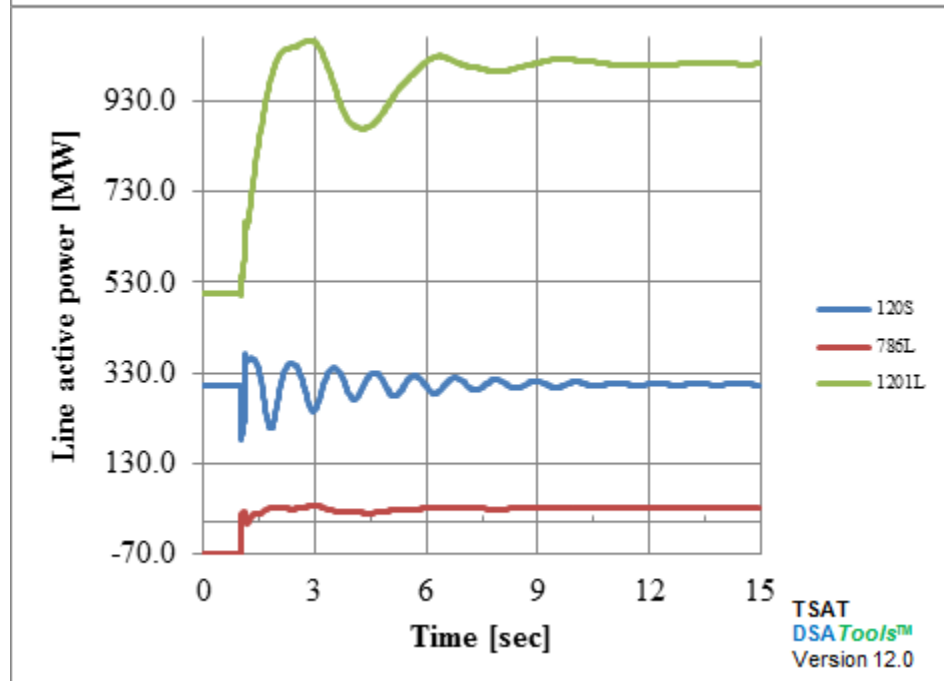
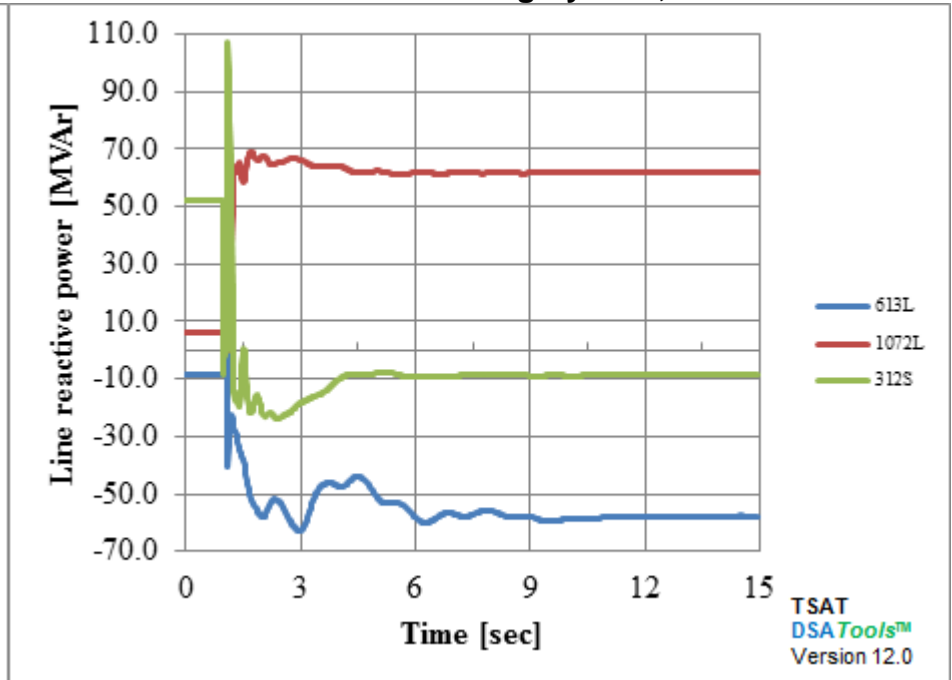
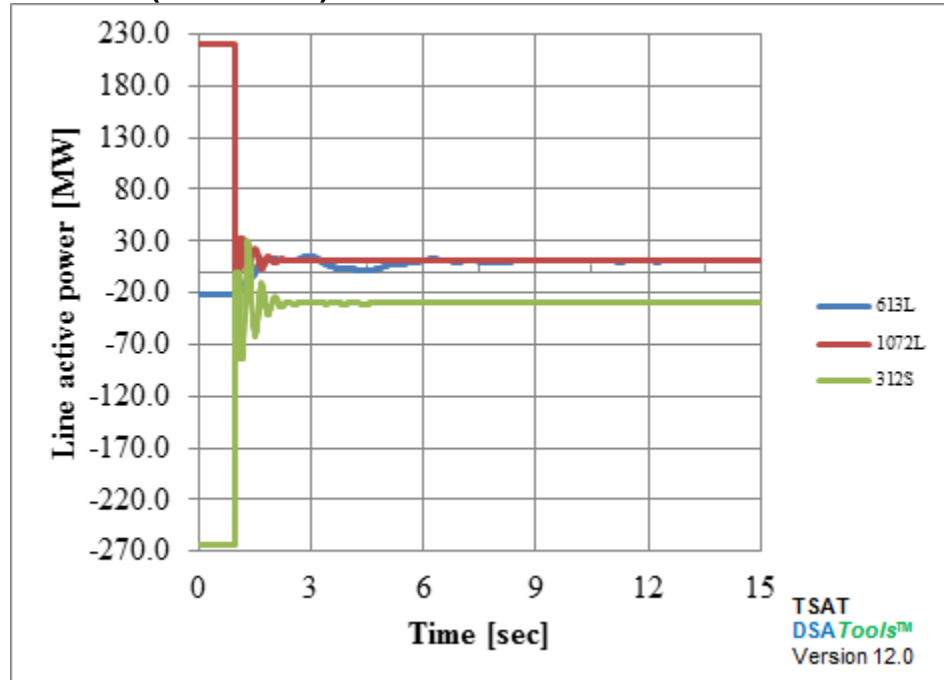
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



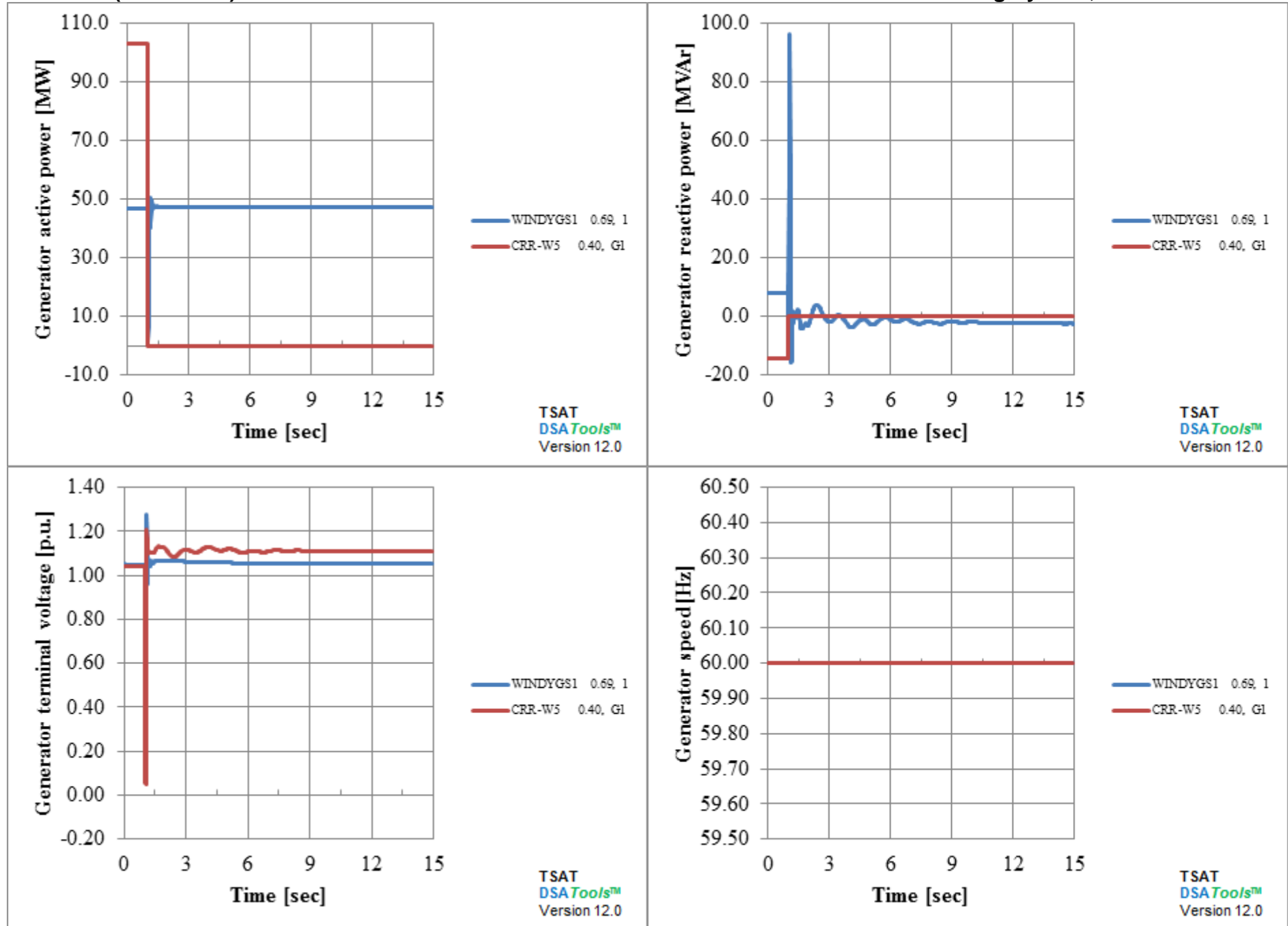
7 -- 956L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



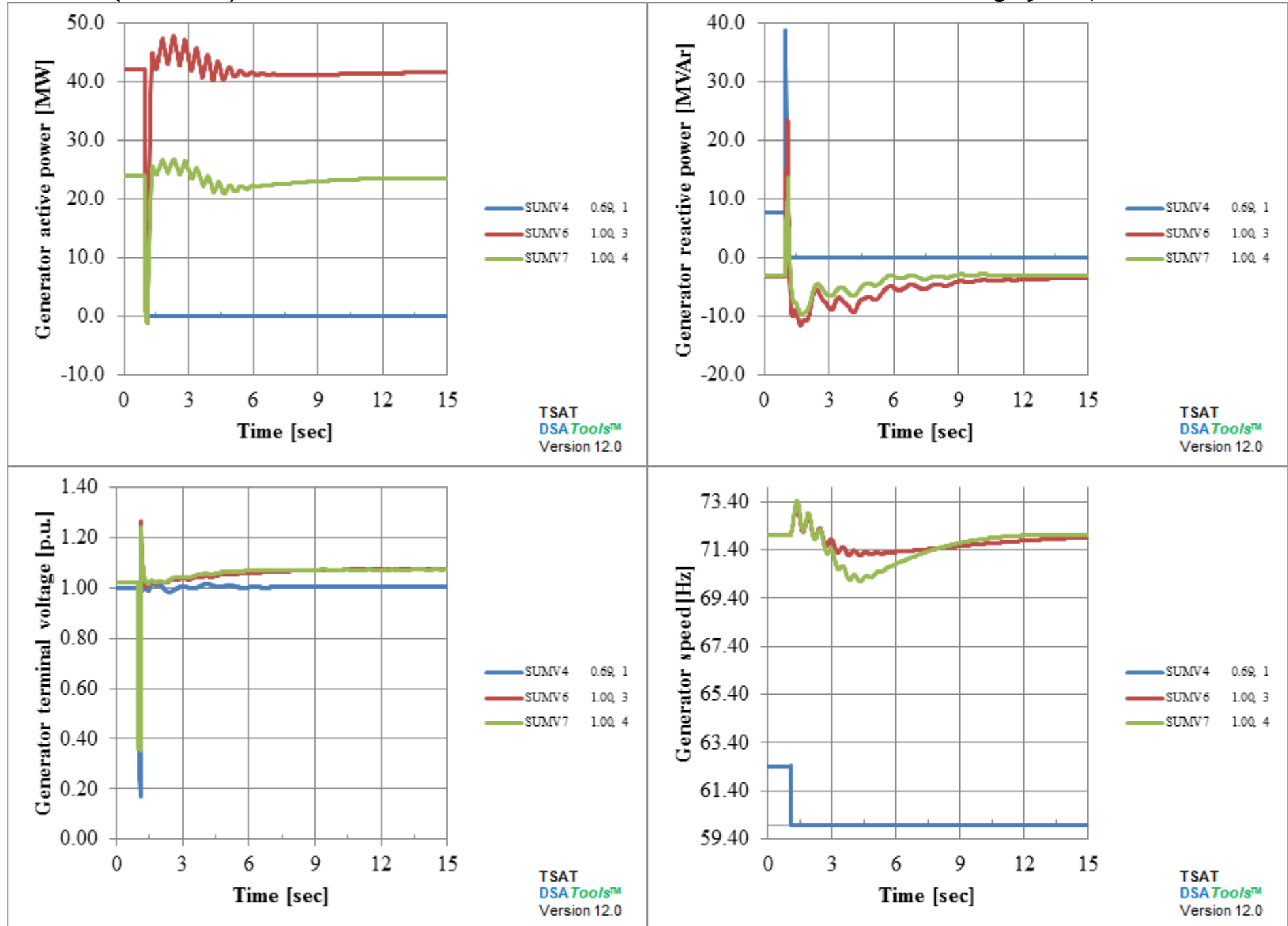
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Peak 2014



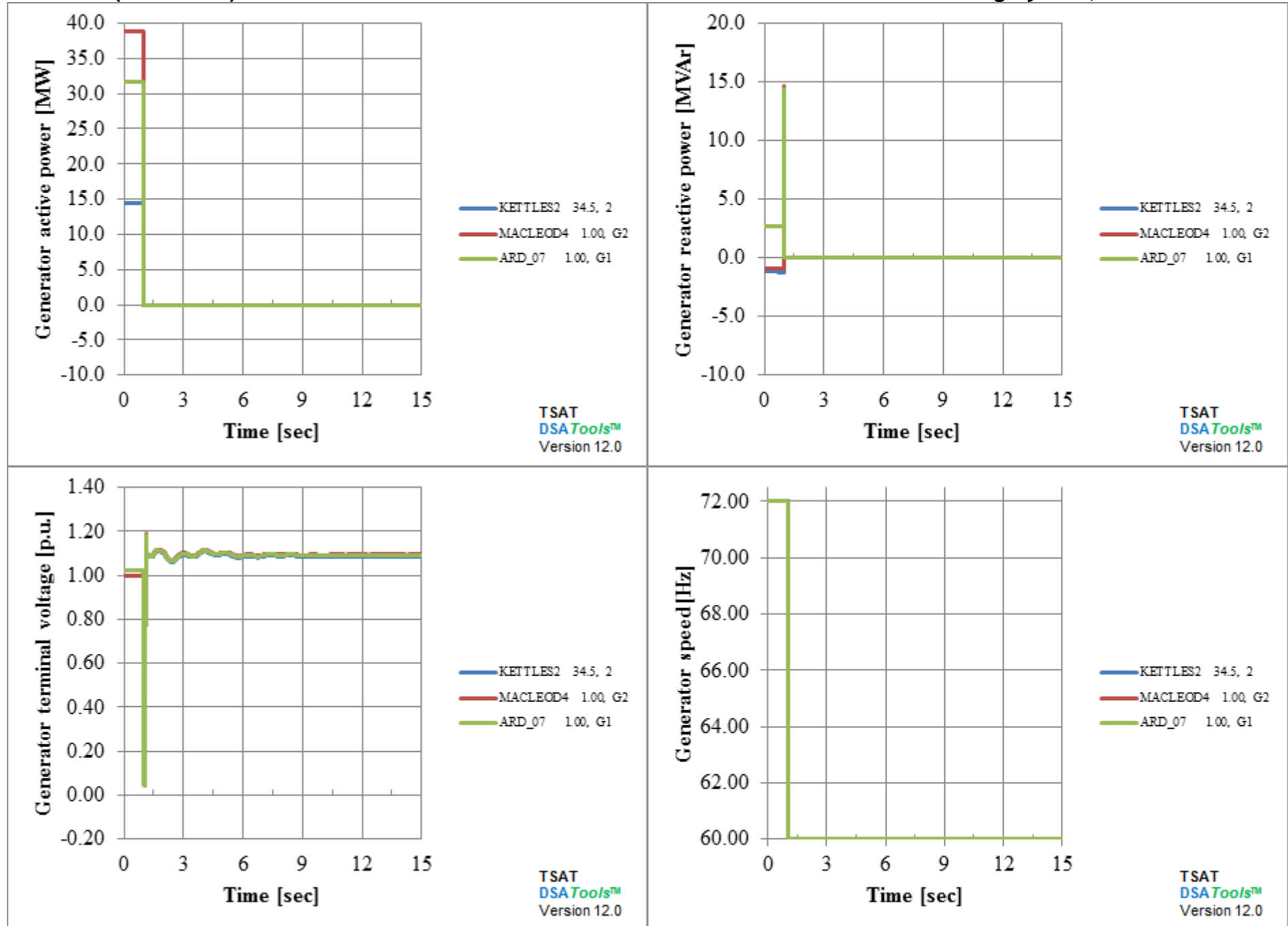
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Peak 2014



8 -- 1084L (59S - 246S) NEAR 59S

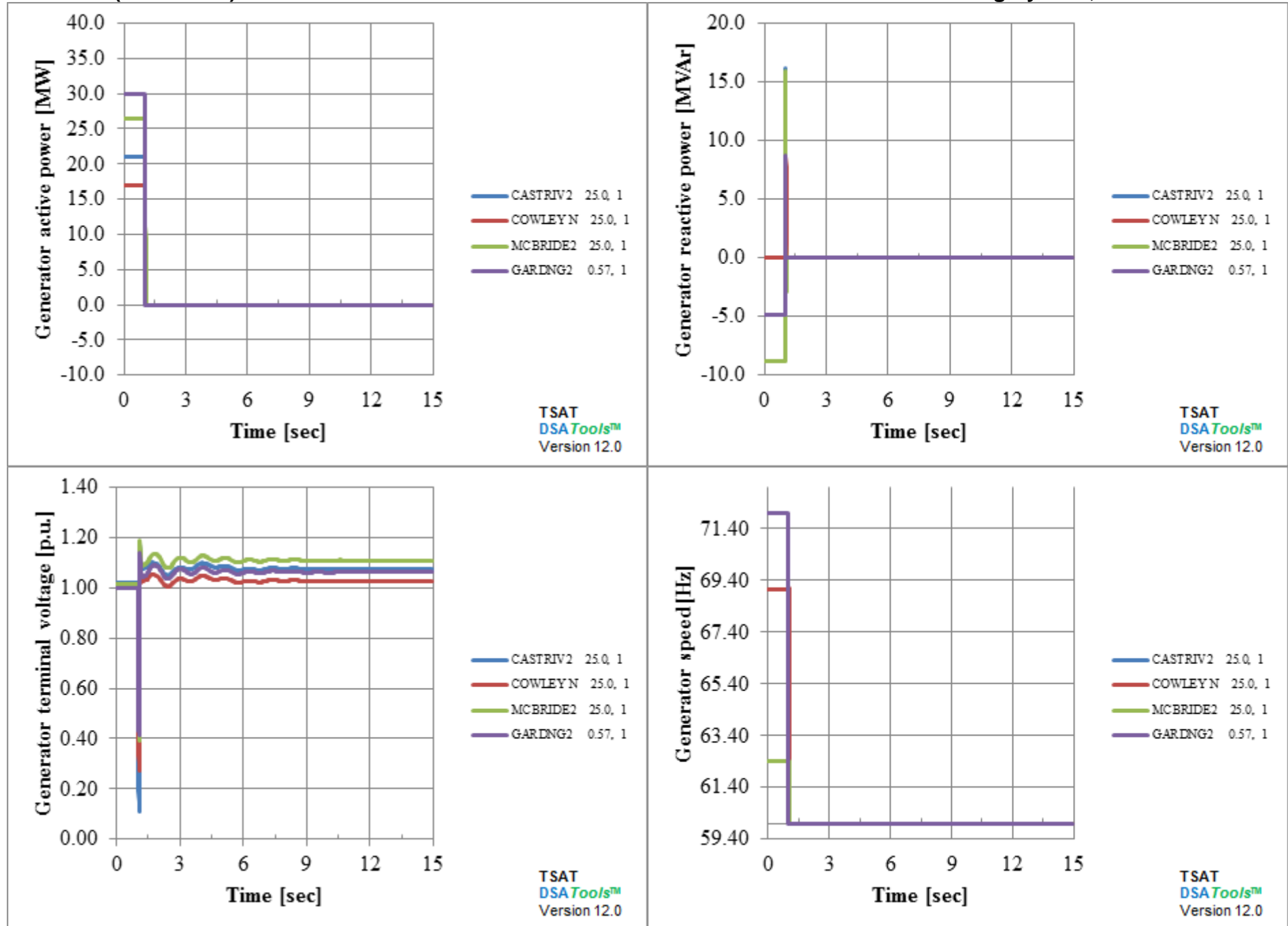
Existing System, Summer Peak 2014





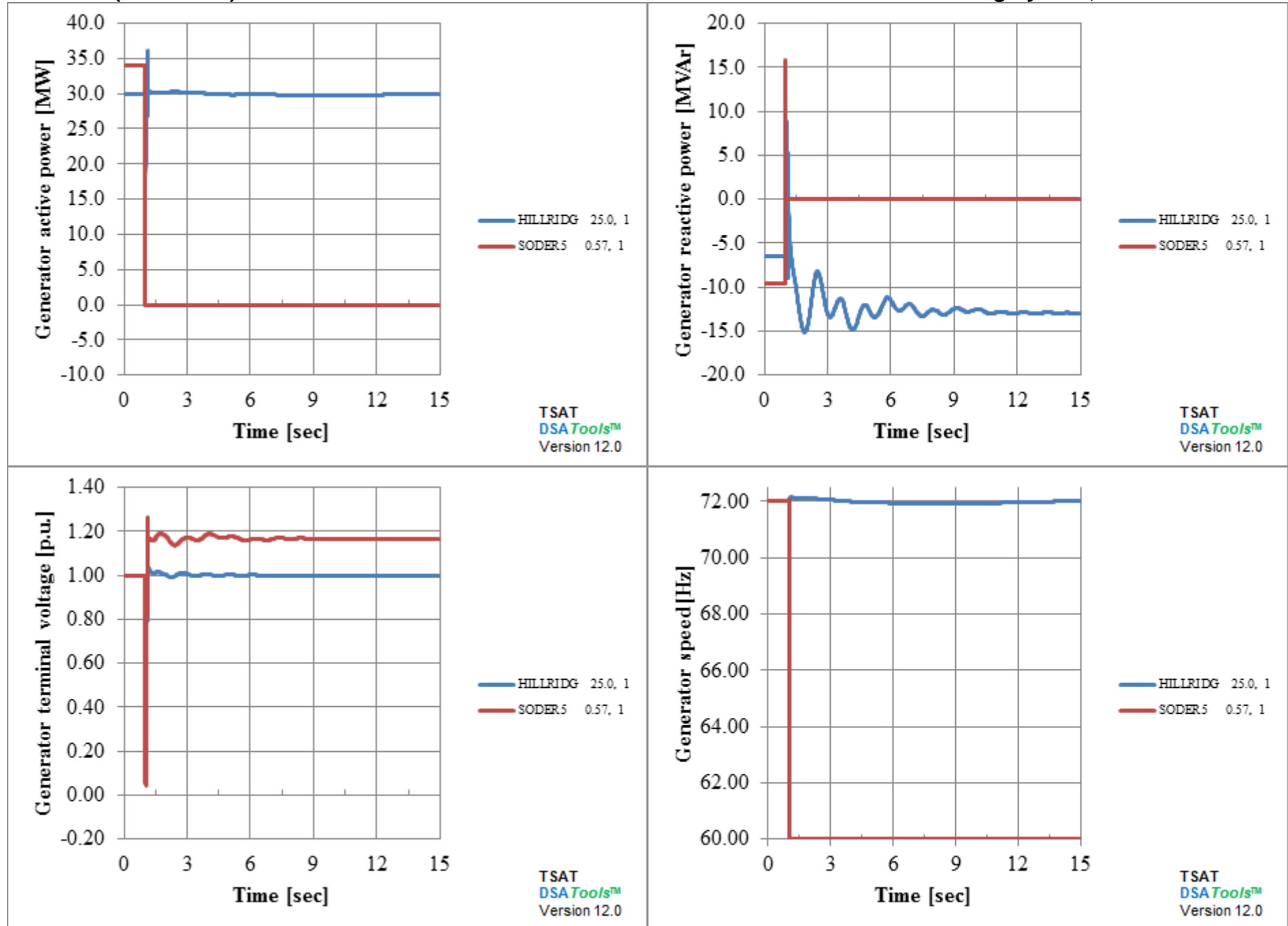
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Peak 2014



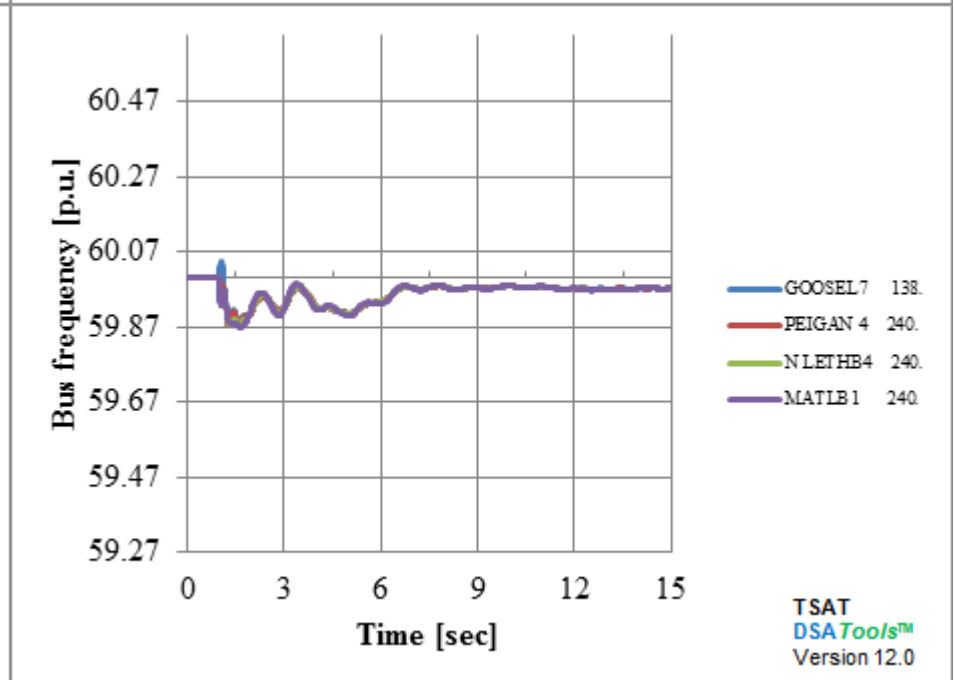
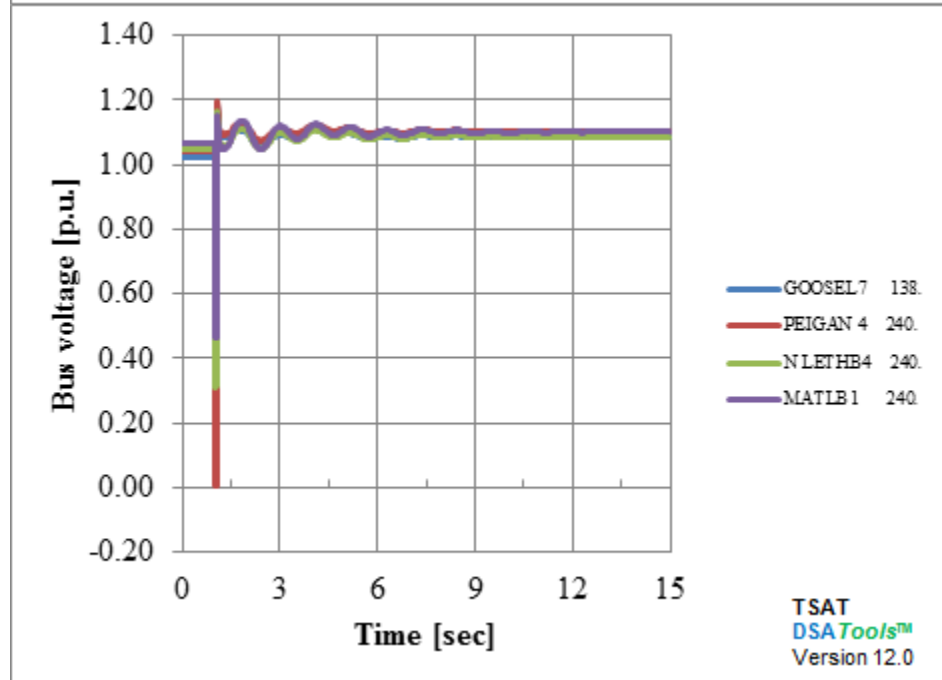
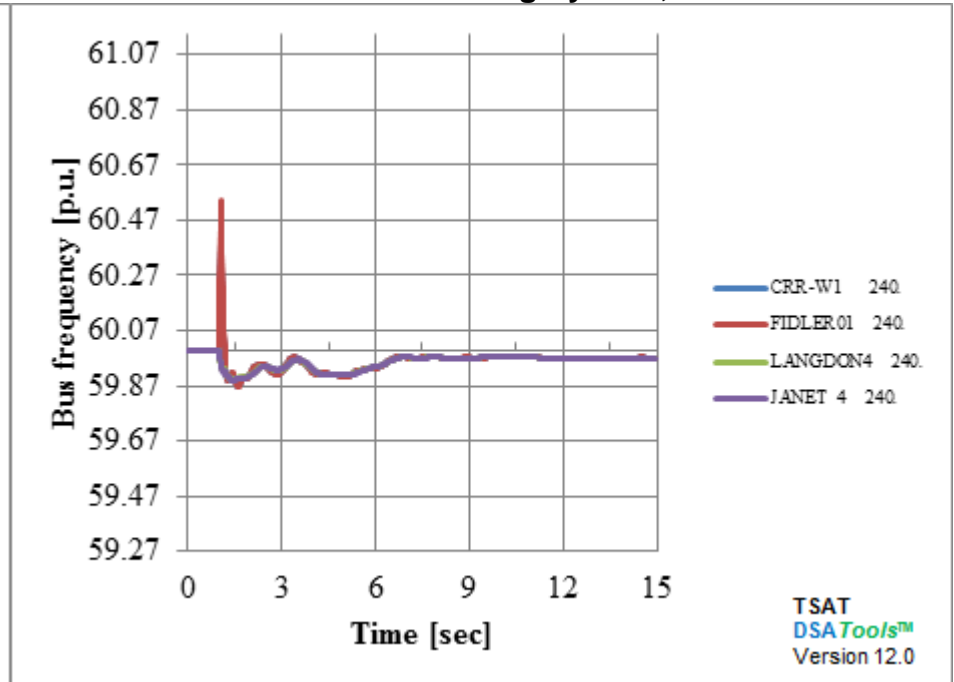
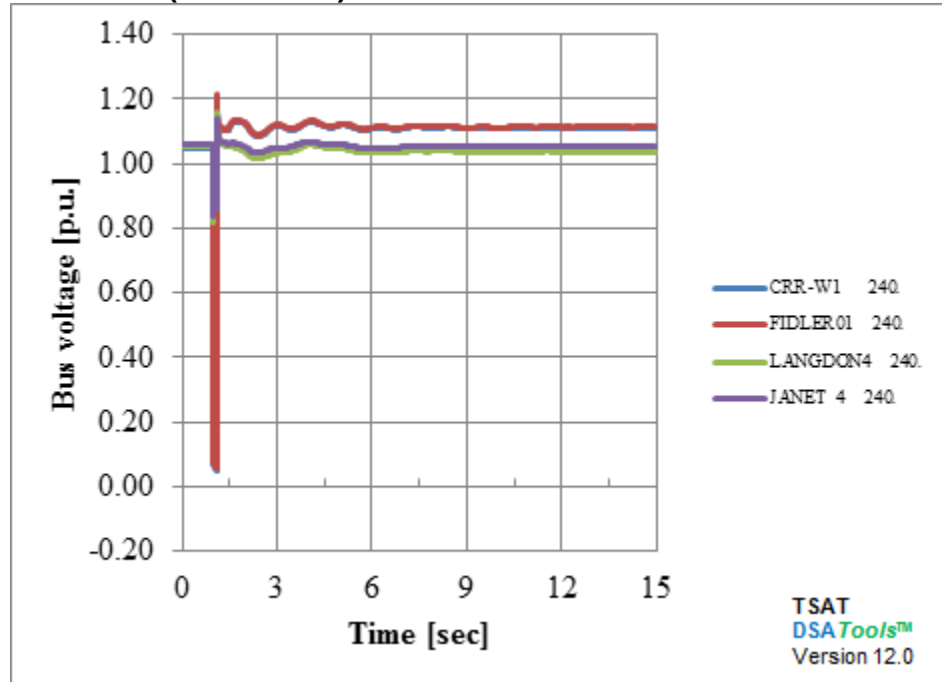
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Peak 2014



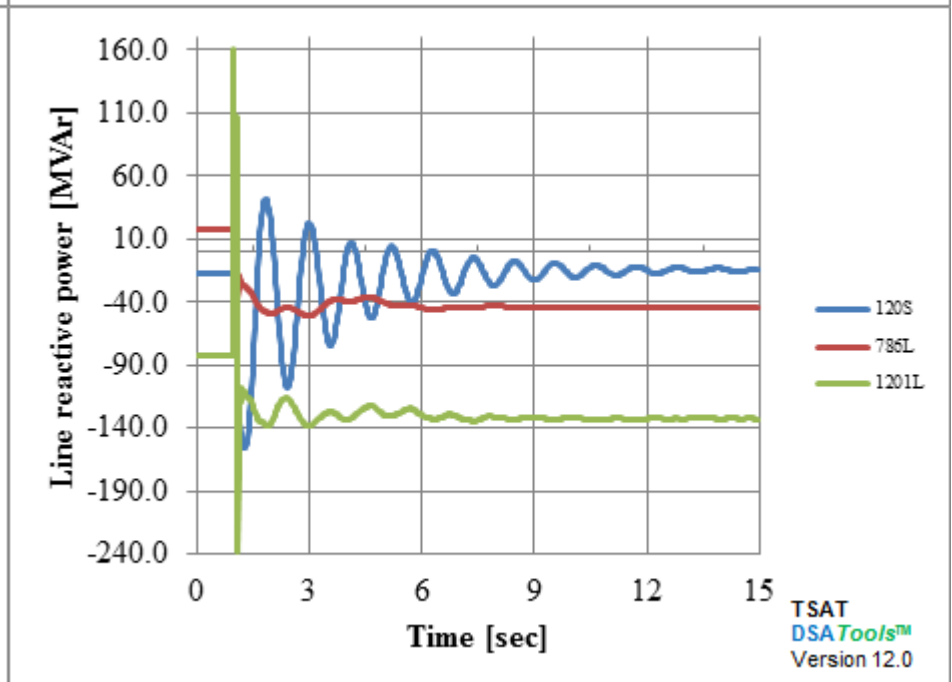
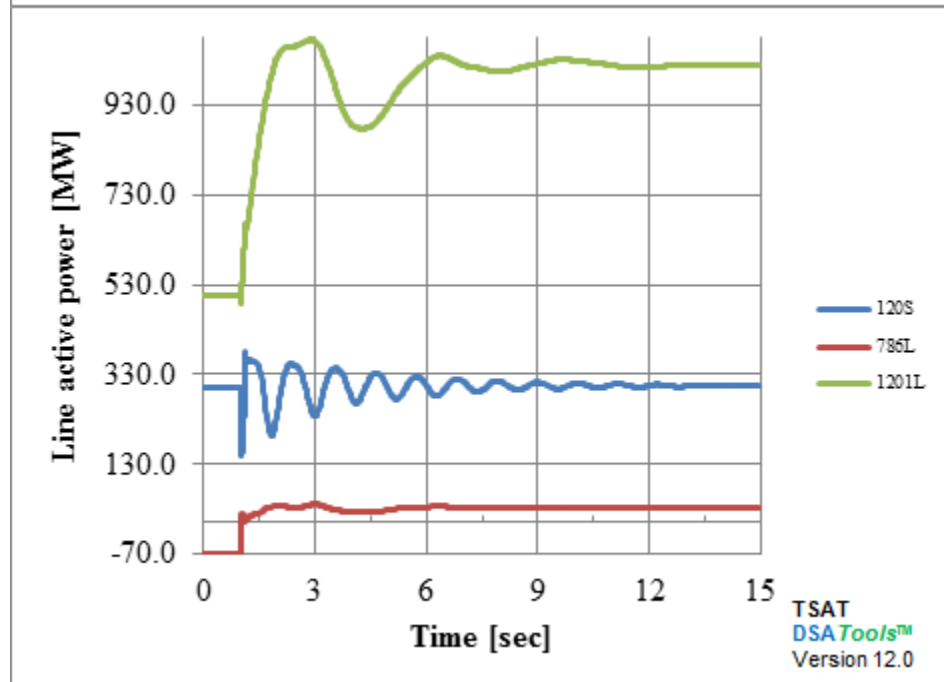
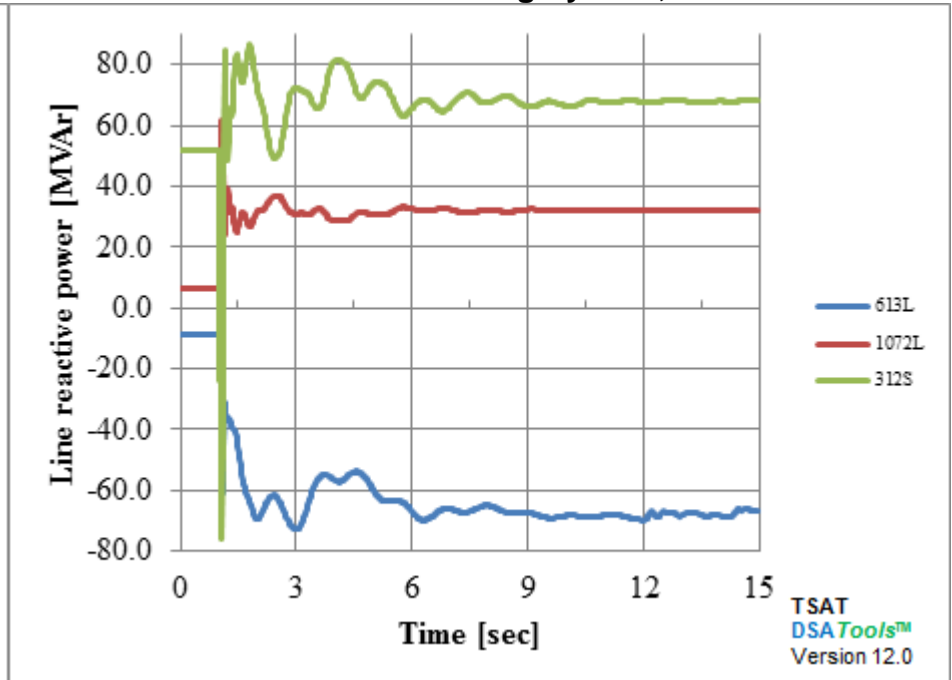
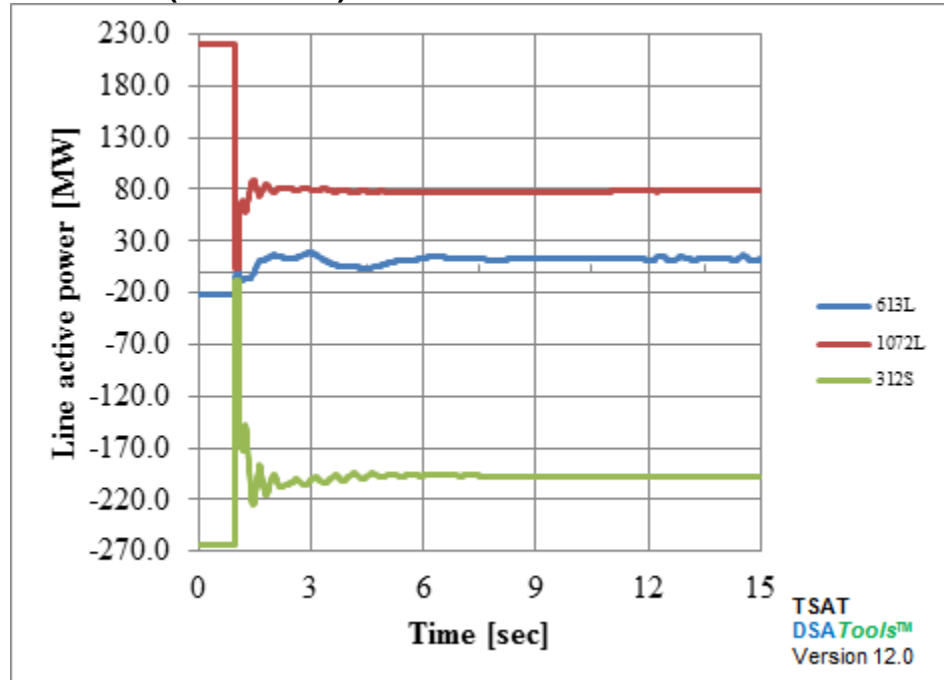
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Peak 2014



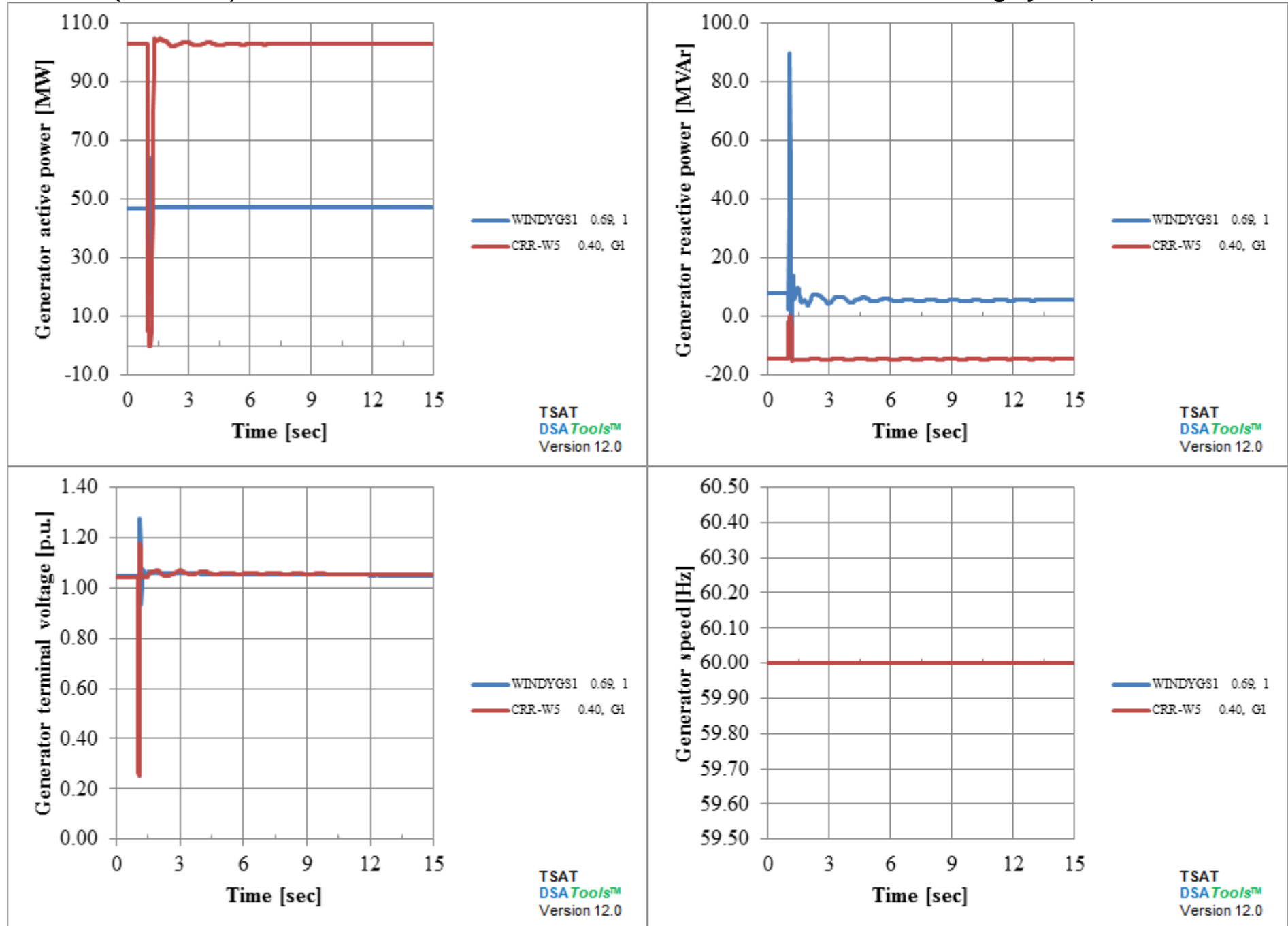
8 -- 1084L (59S - 246S) NEAR 59S

Existing System, Summer Peak 2014



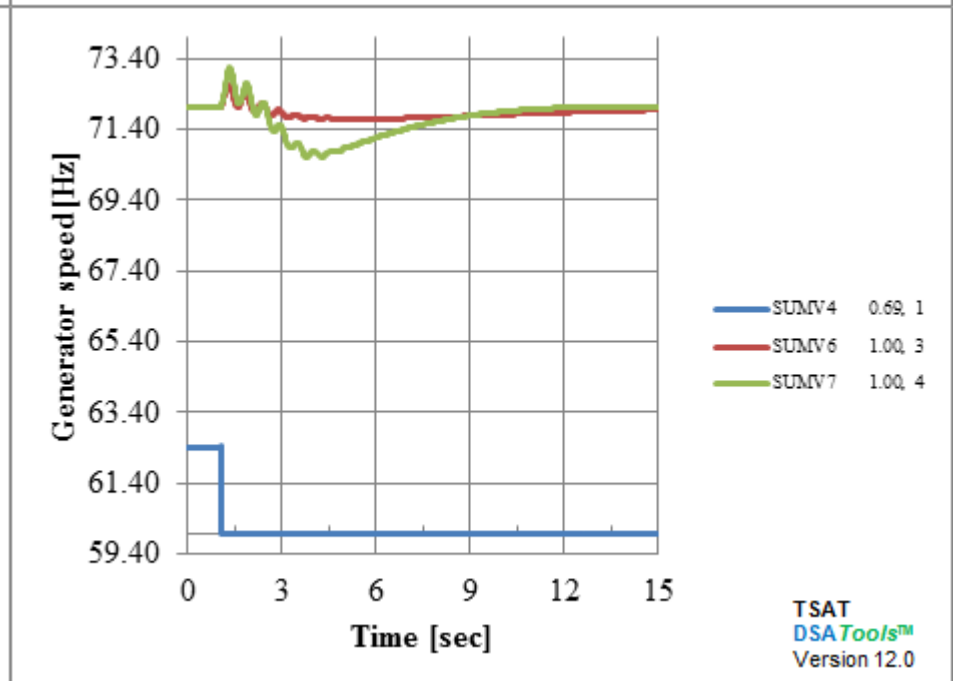
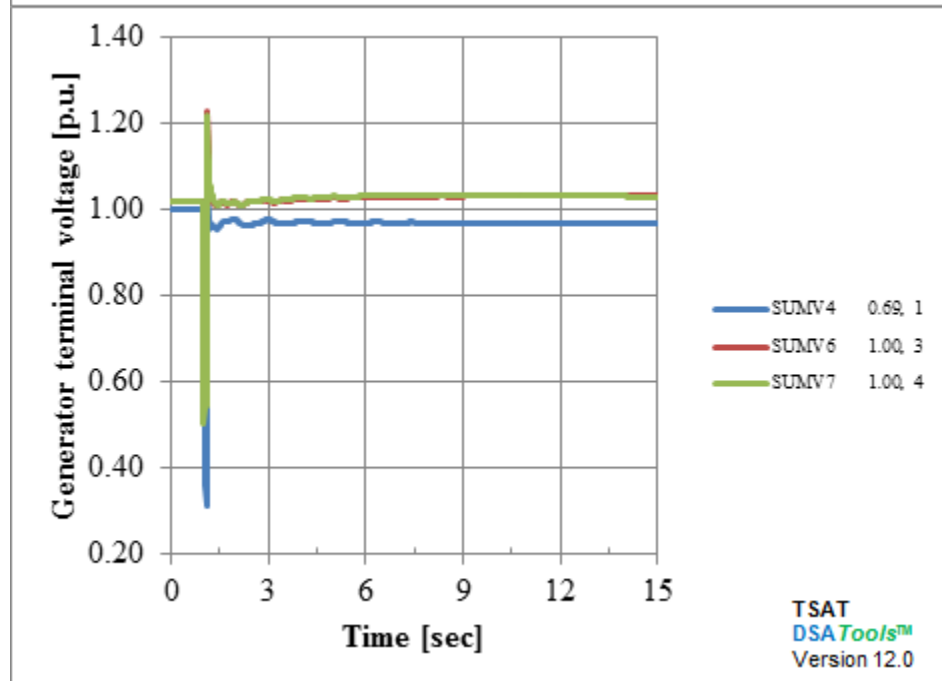
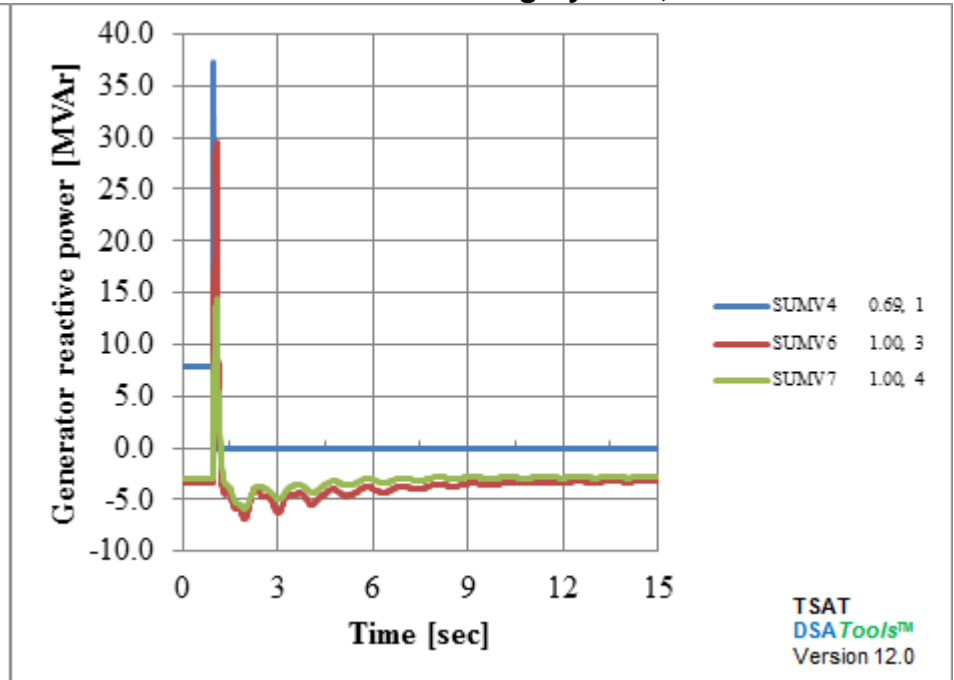
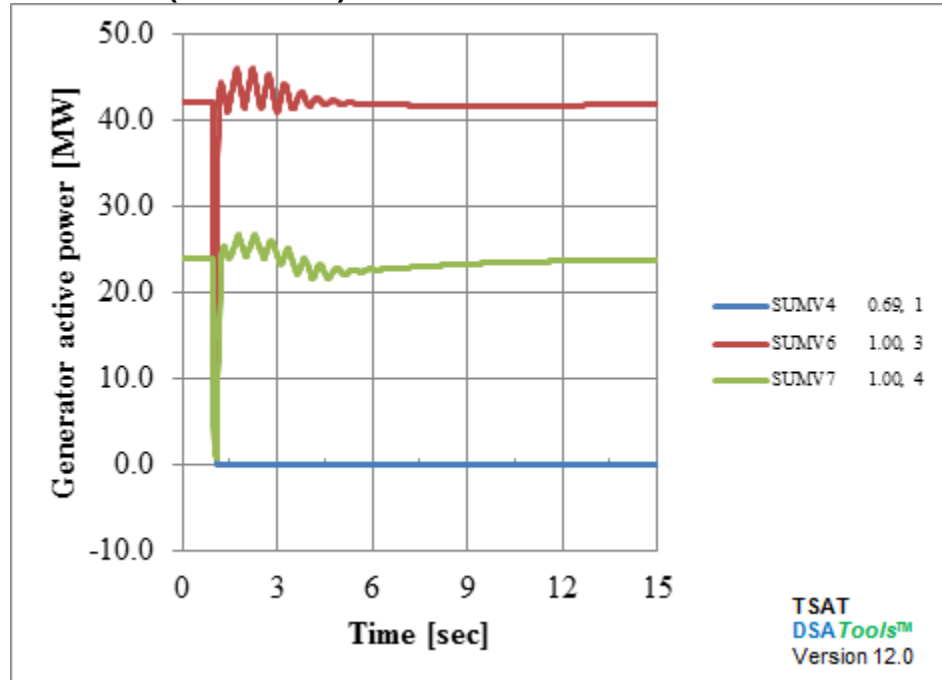
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Peak 2014



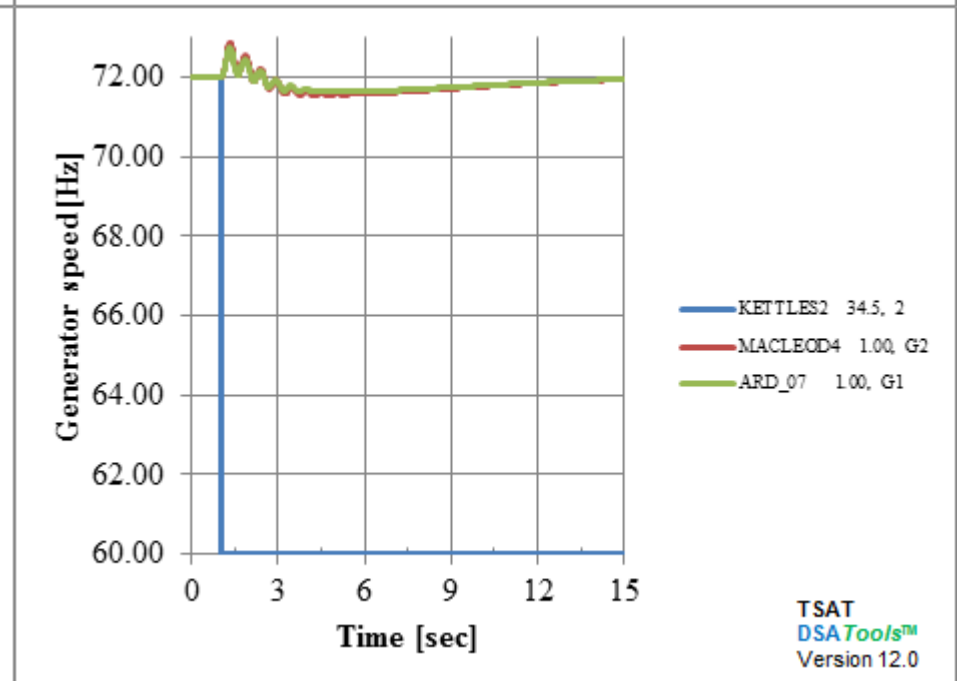
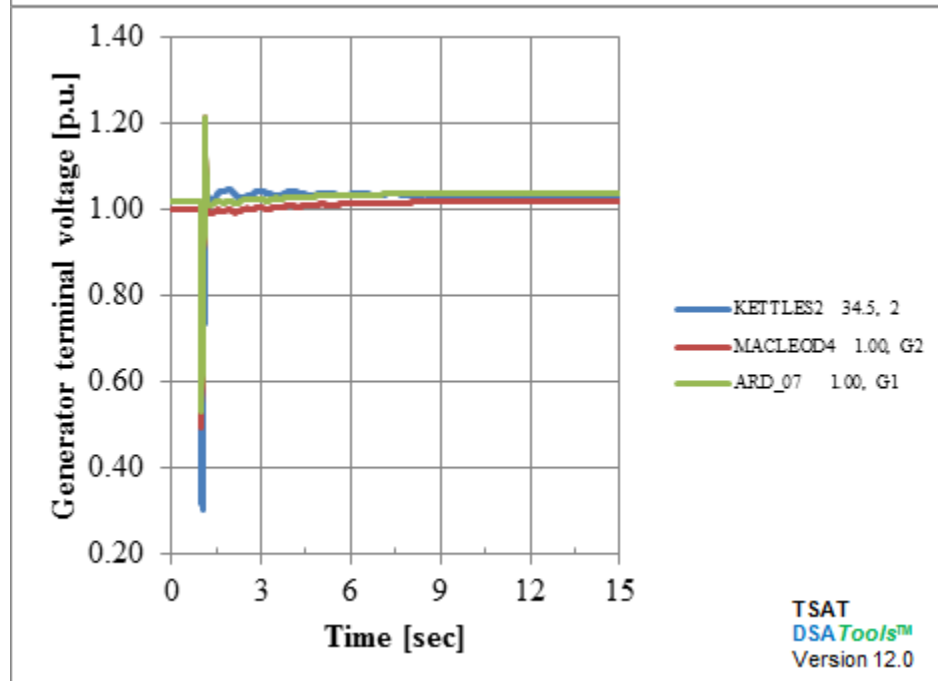
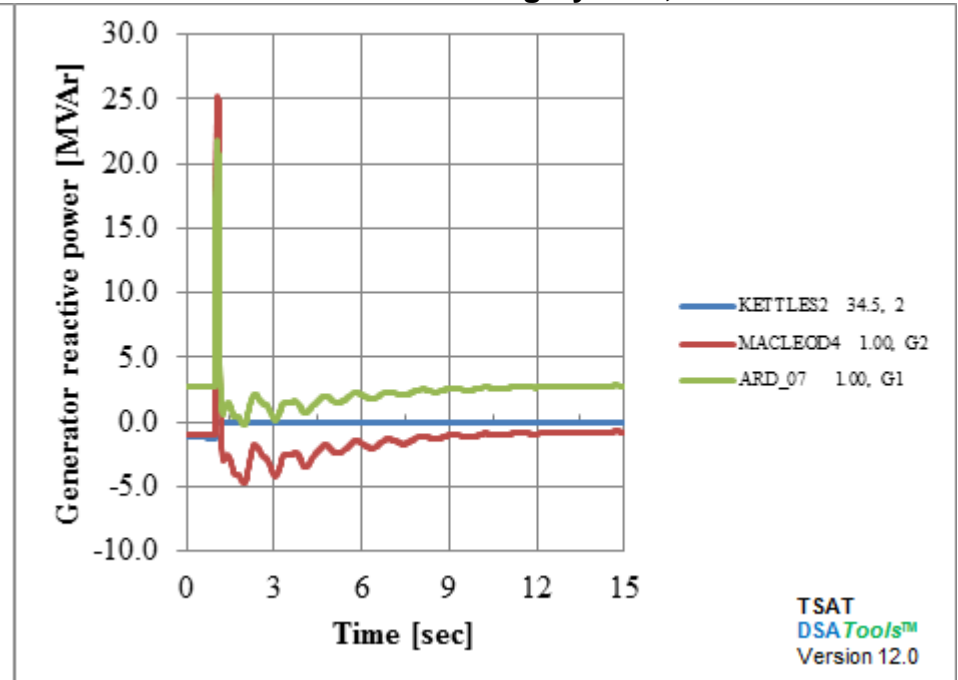
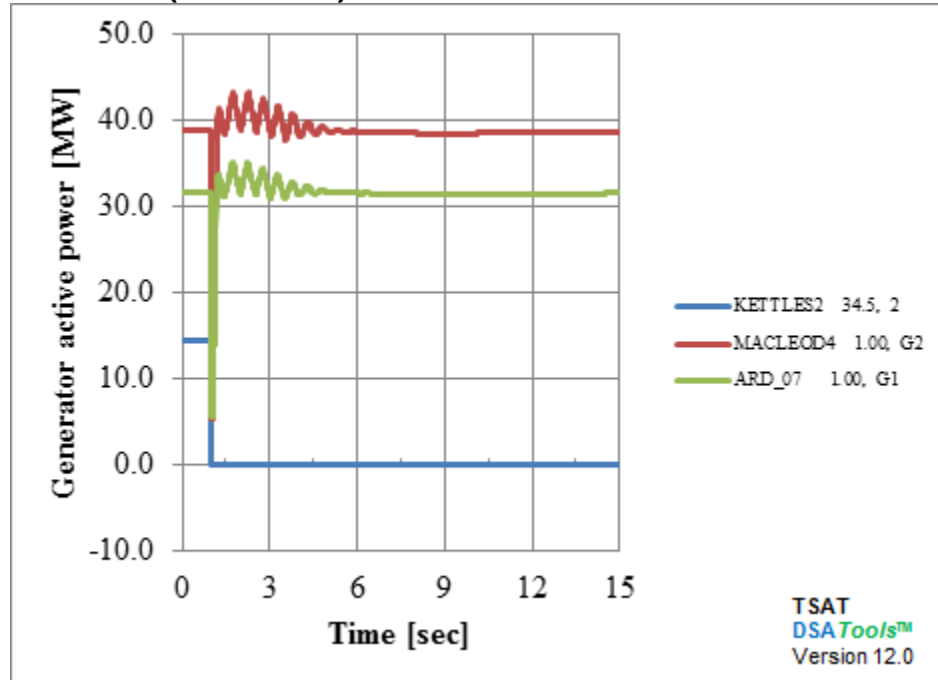
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Peak 2014



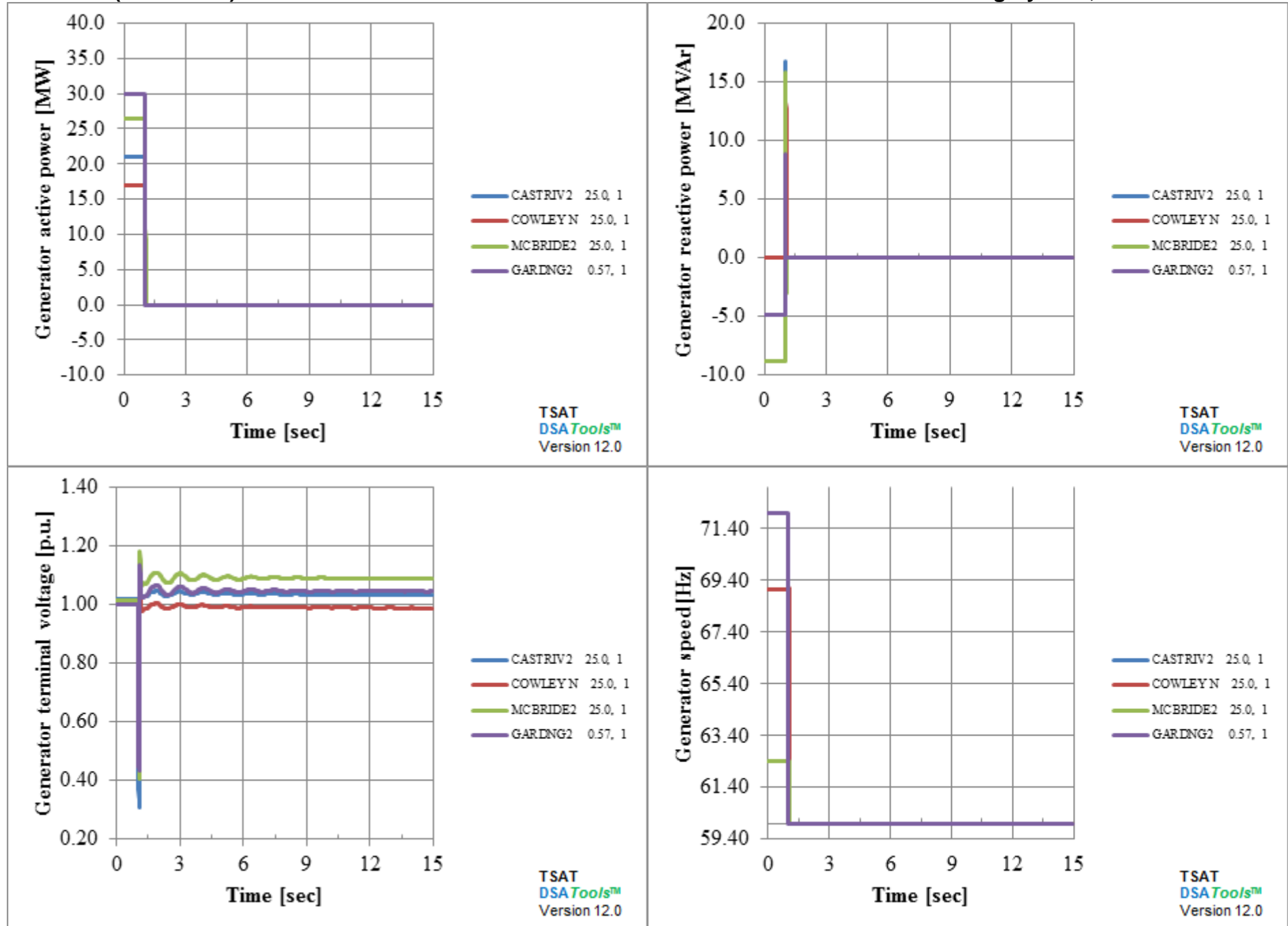
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Peak 2014



9 -- 1084L (59S - 246S) NEAR 246S

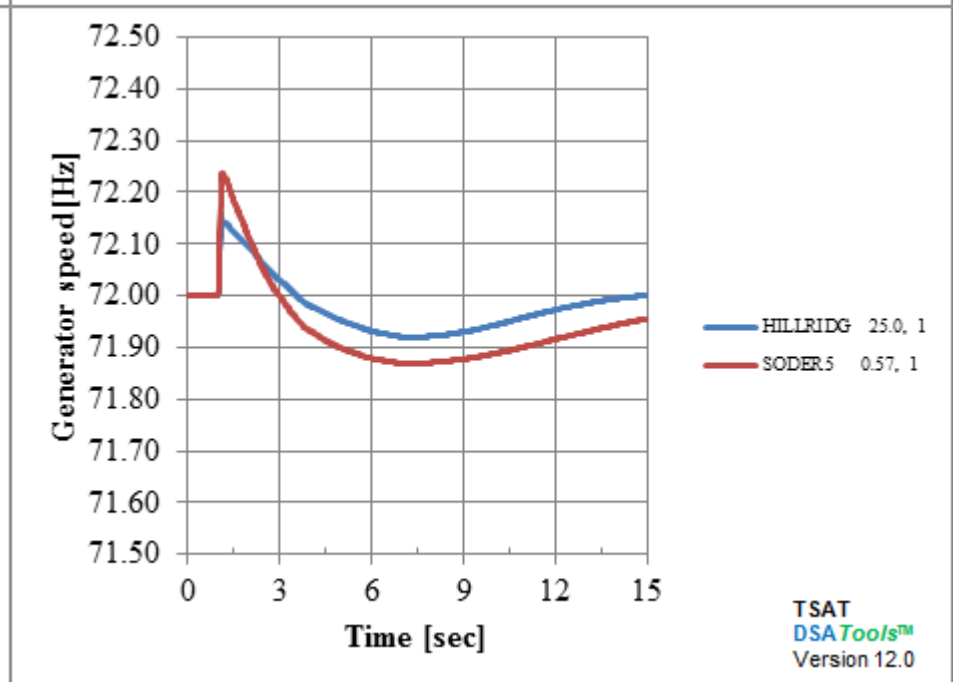
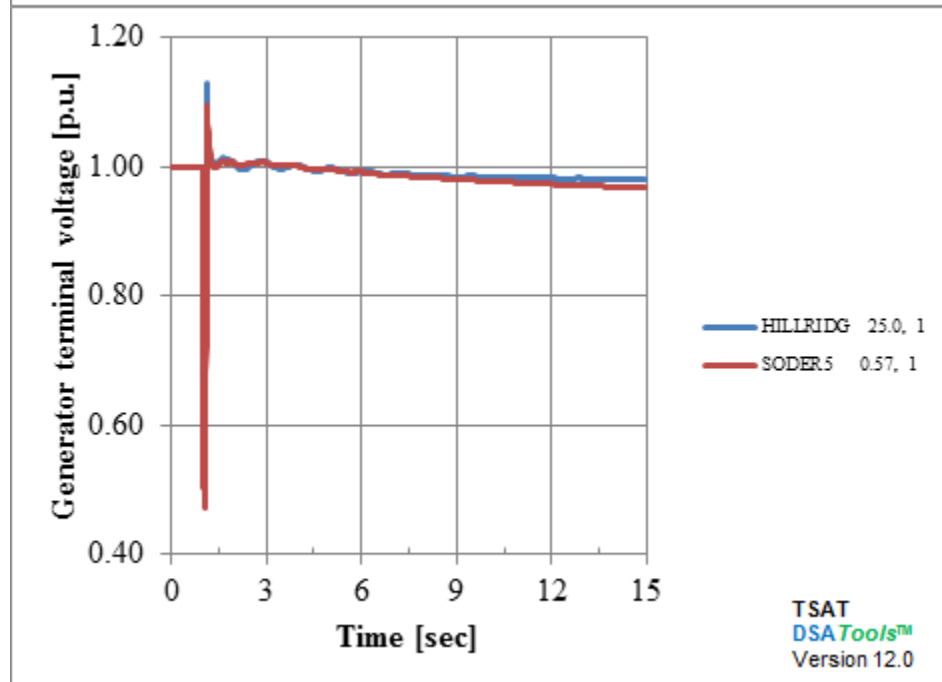
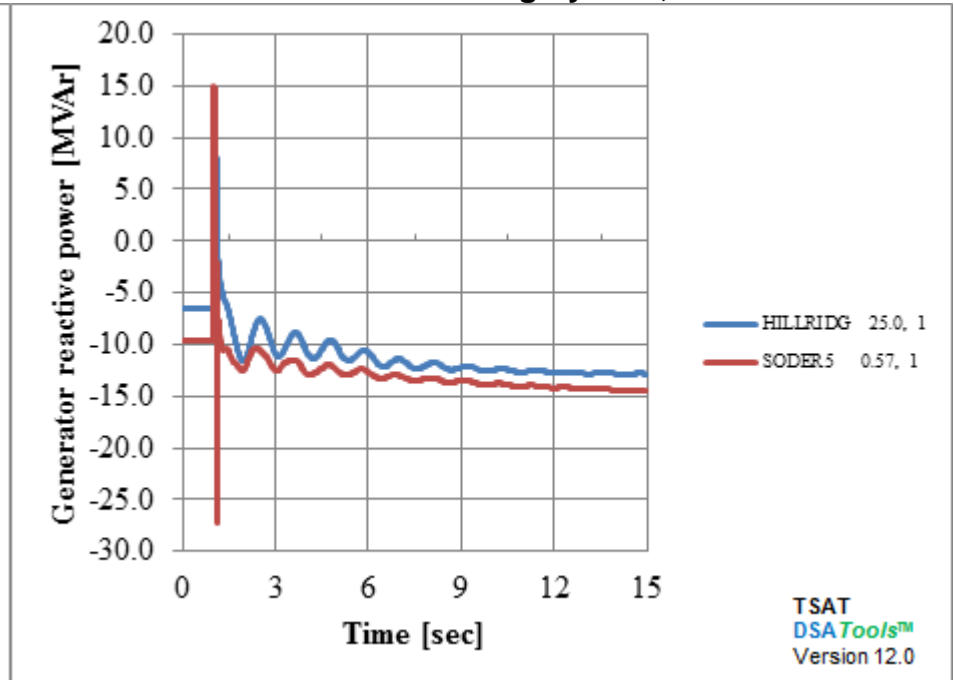
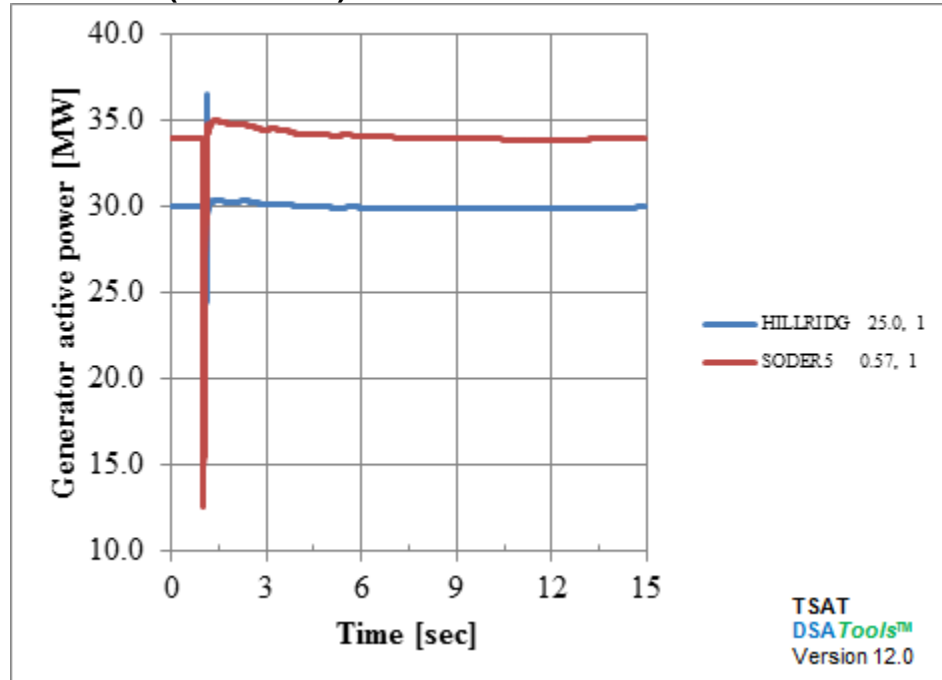
Existing System, Summer Peak 2014





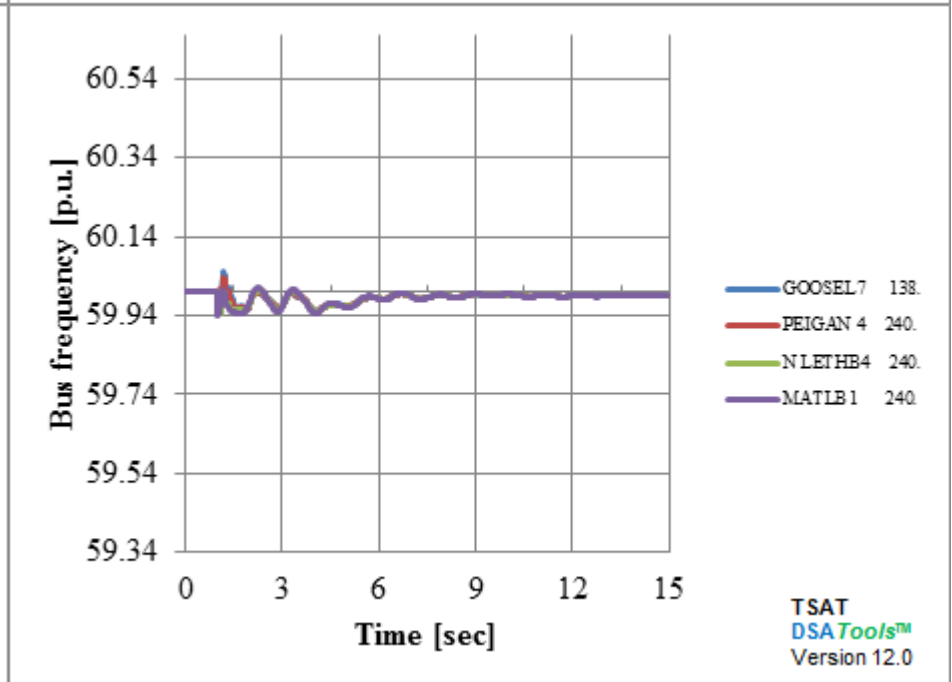
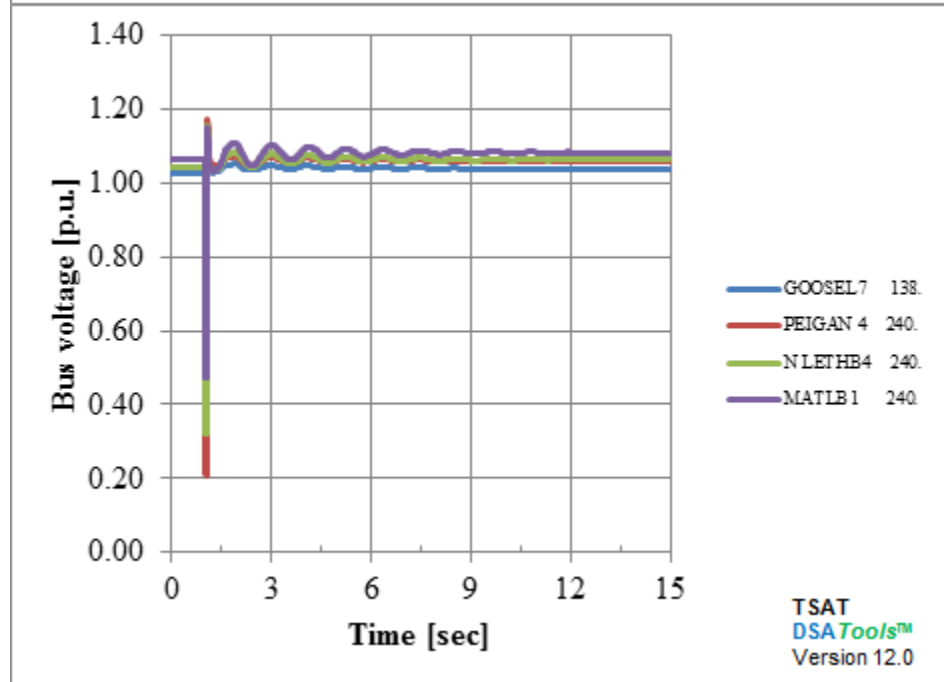
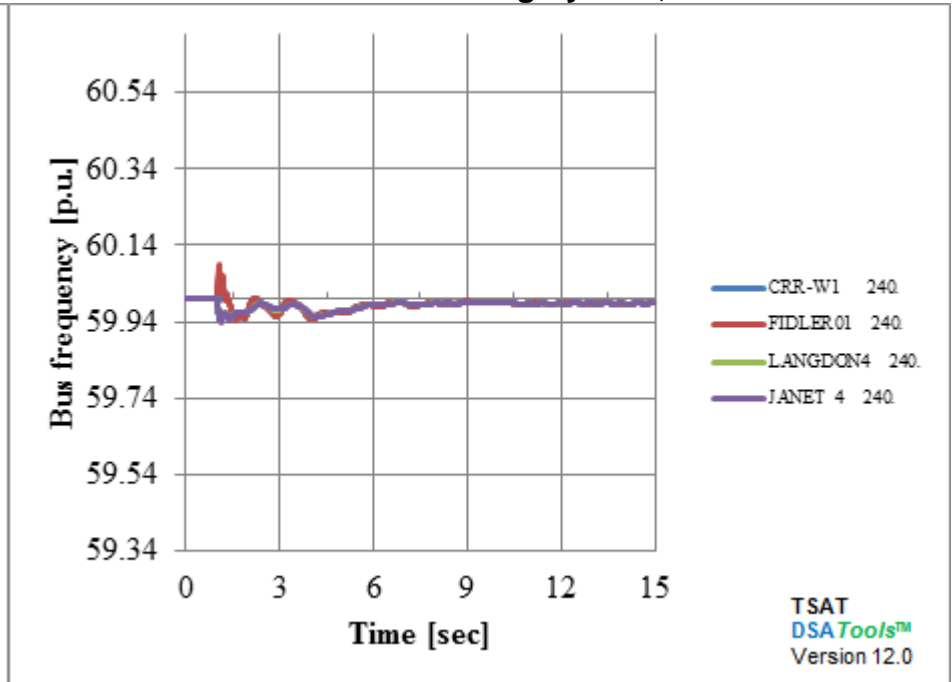
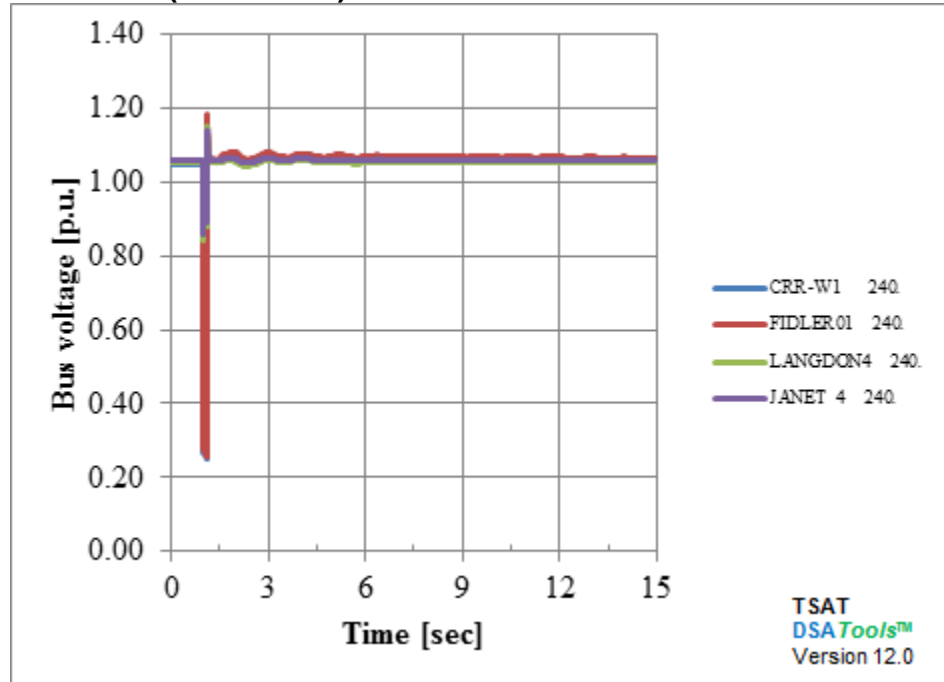
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Peak 2014



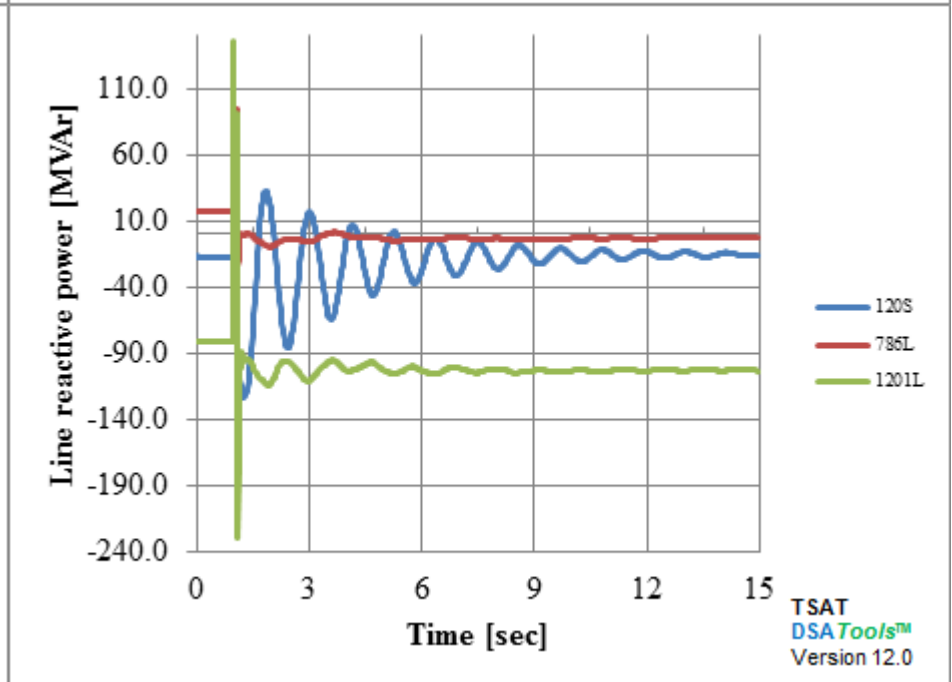
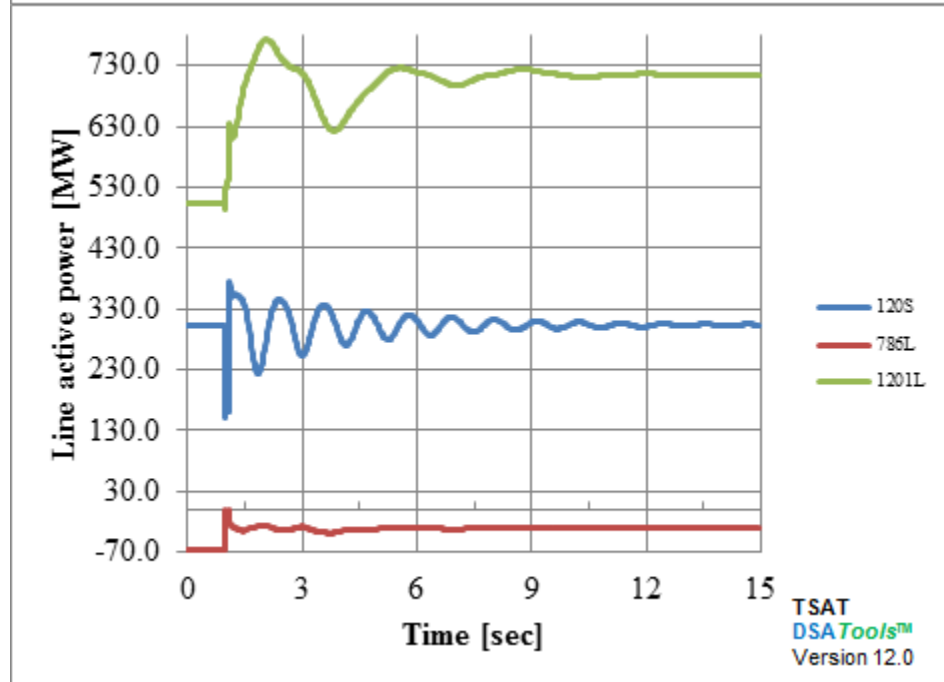
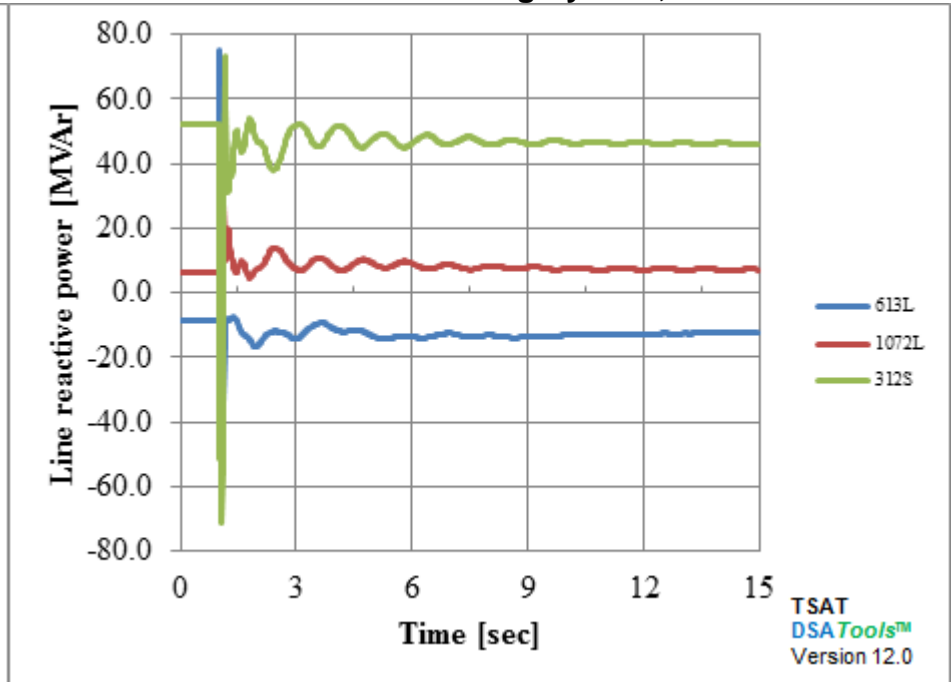
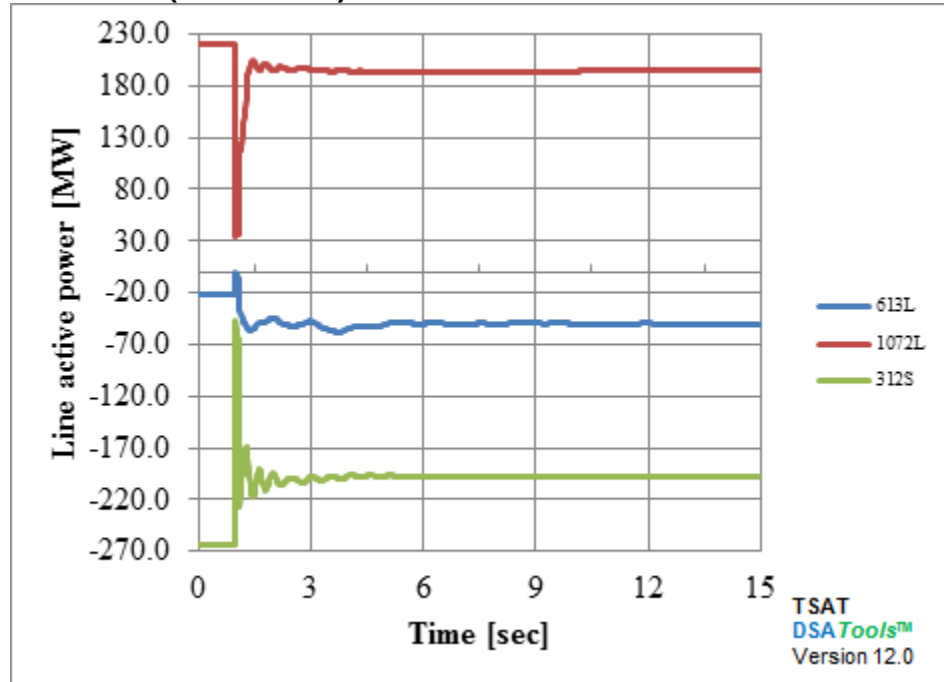
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Peak 2014



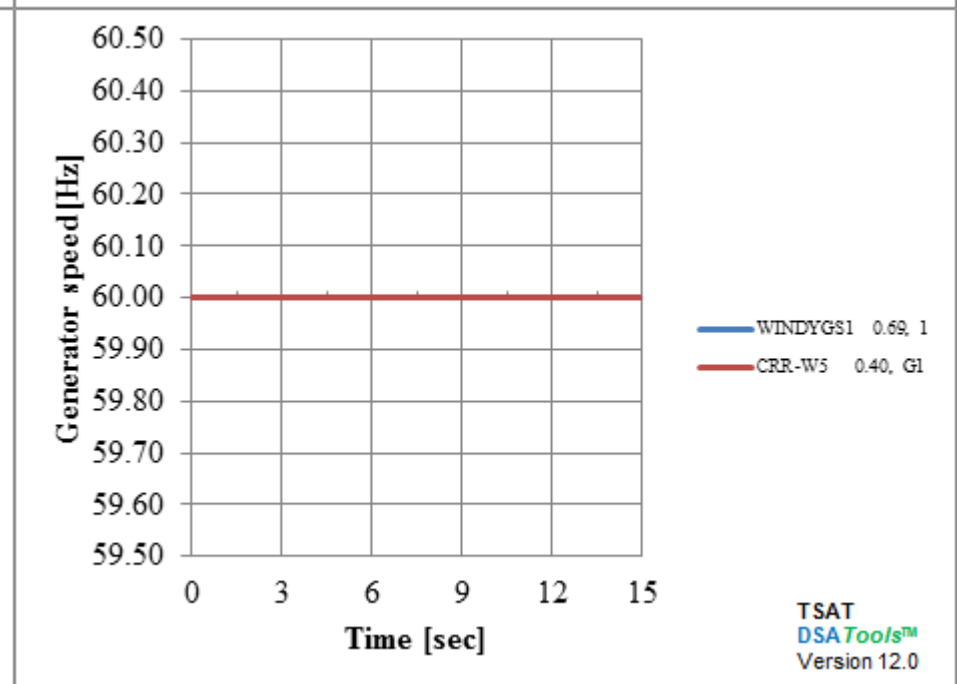
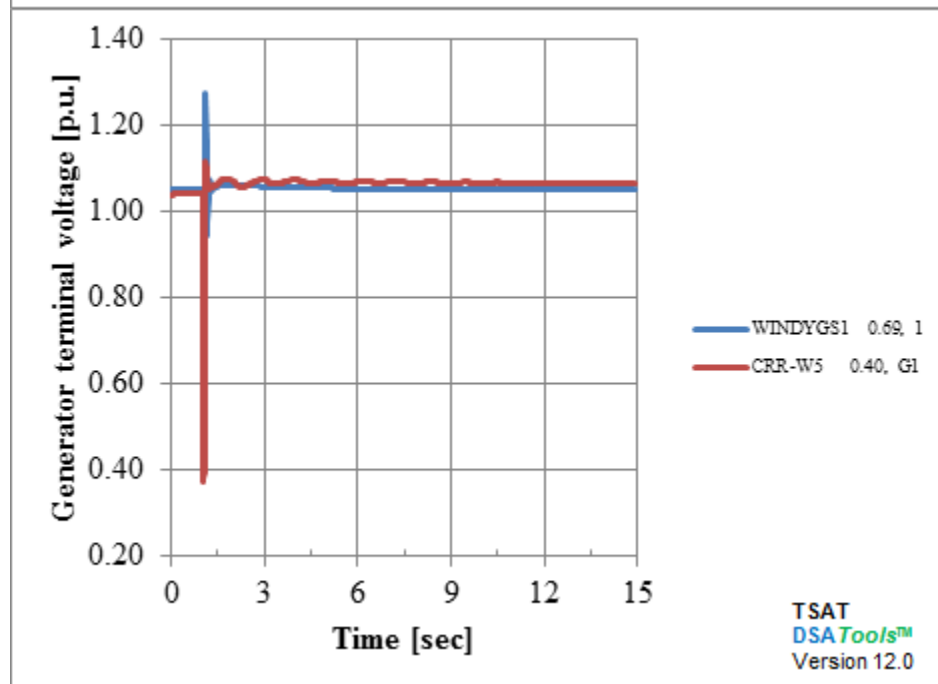
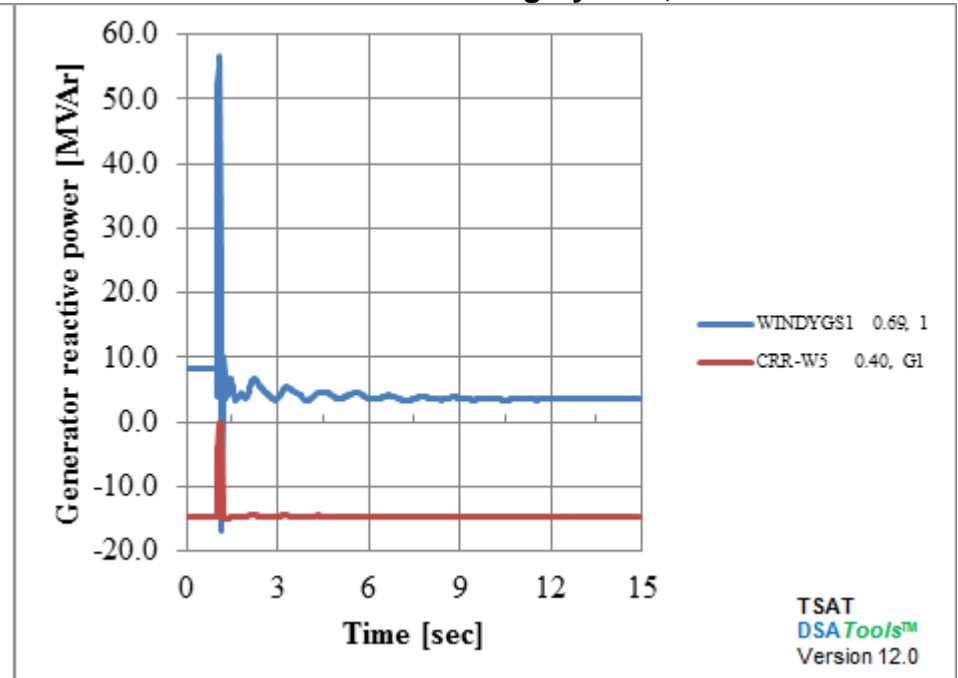
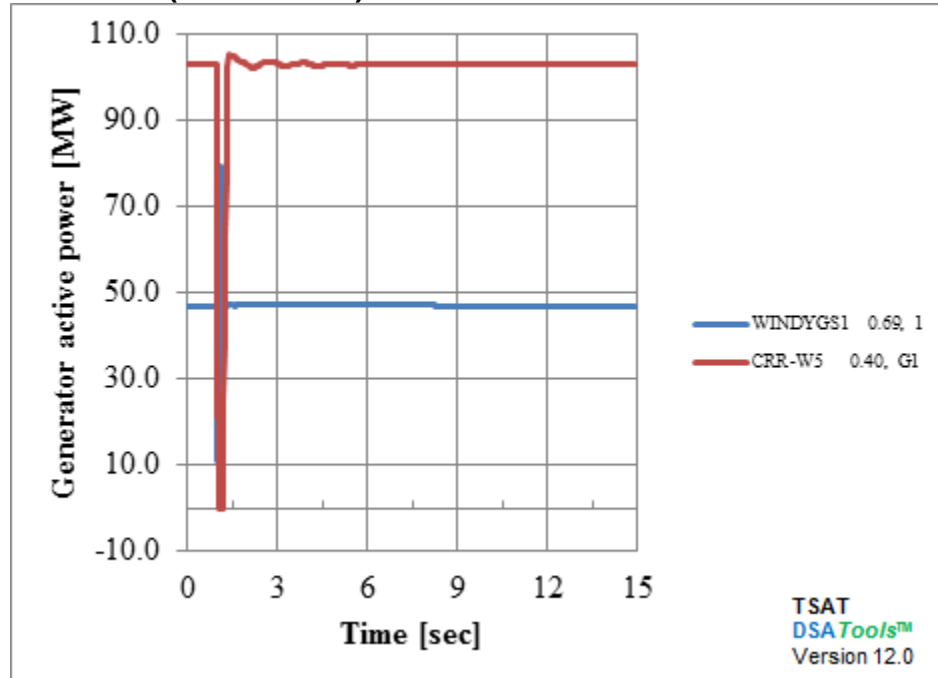
9 -- 1084L (59S - 246S) NEAR 246S

Existing System, Summer Peak 2014



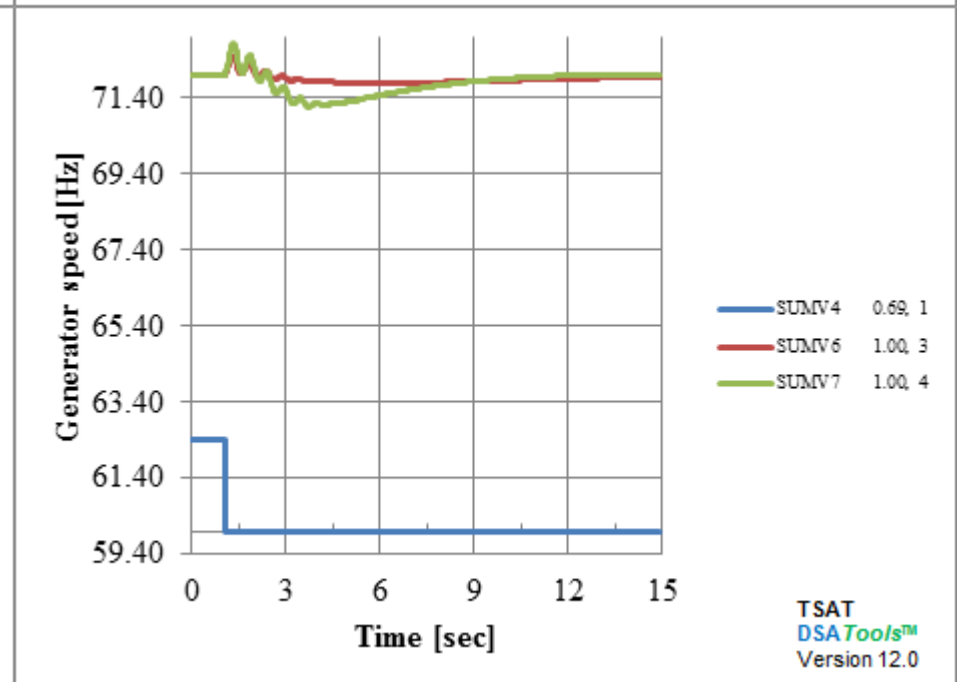
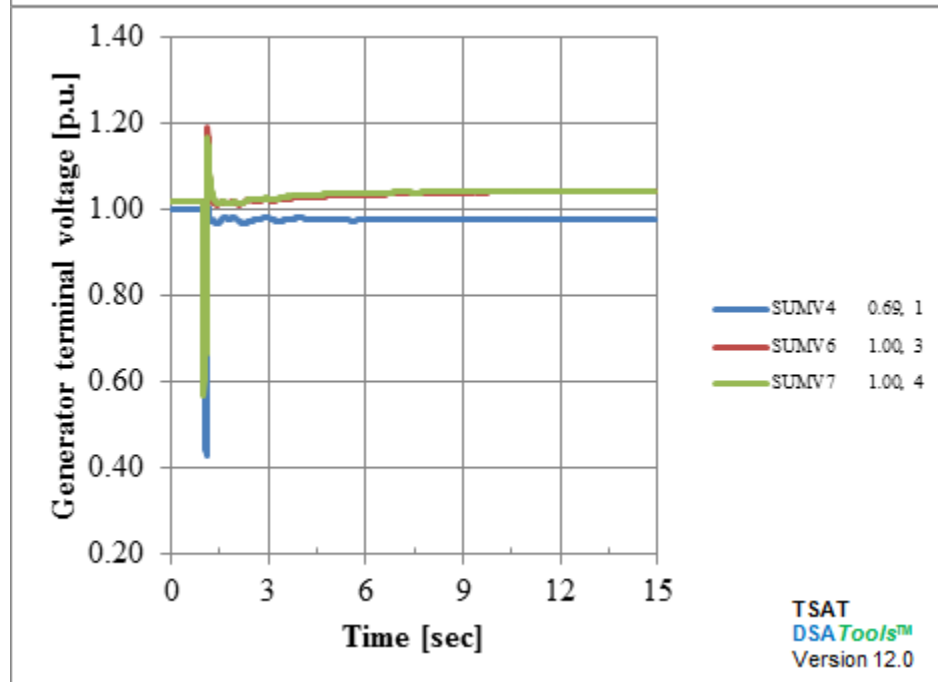
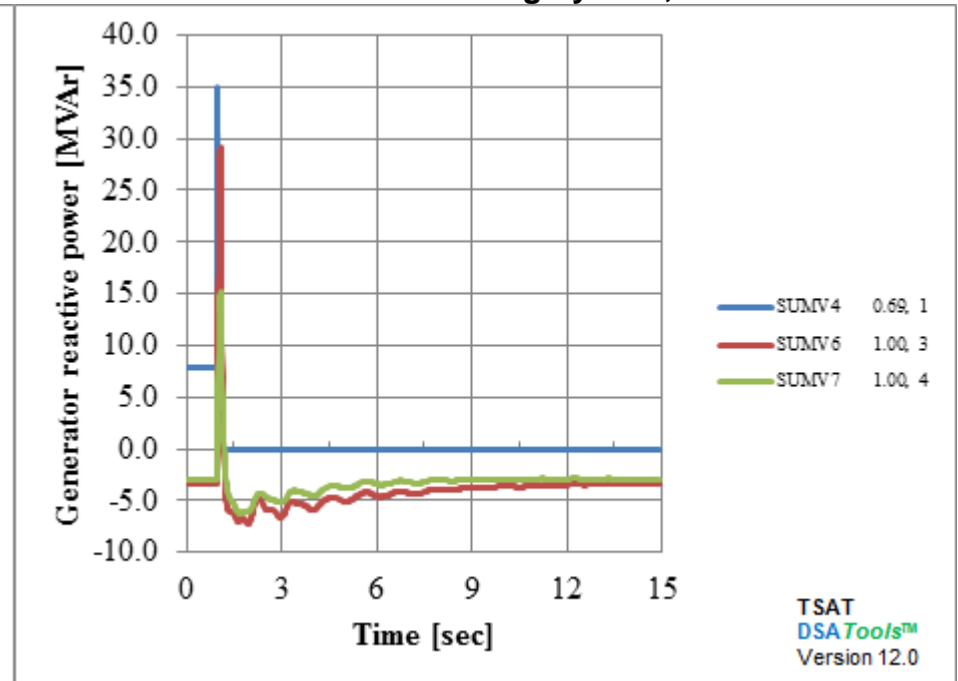
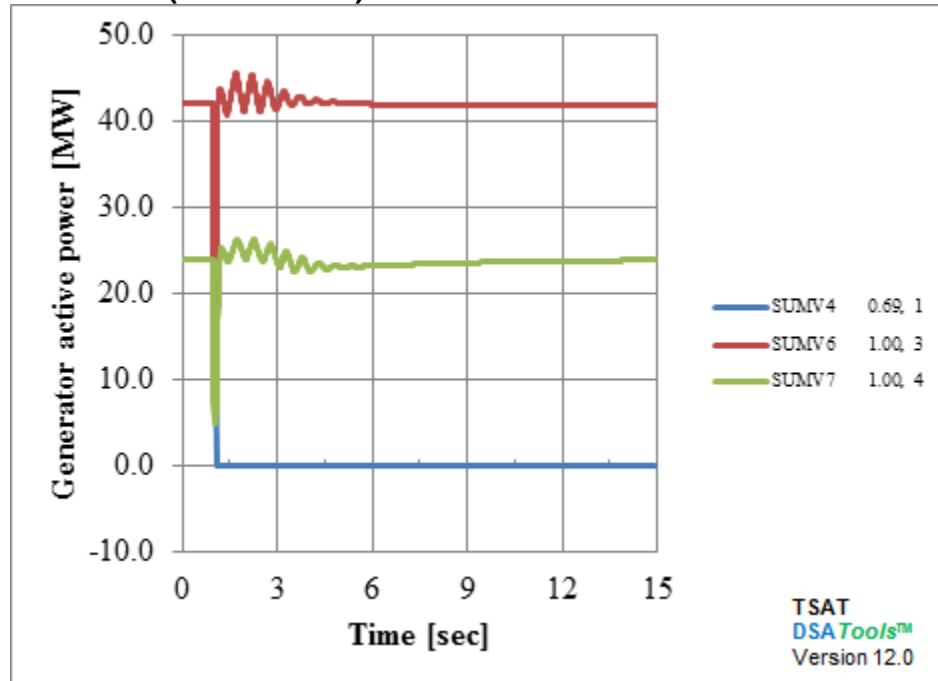
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Peak 2014



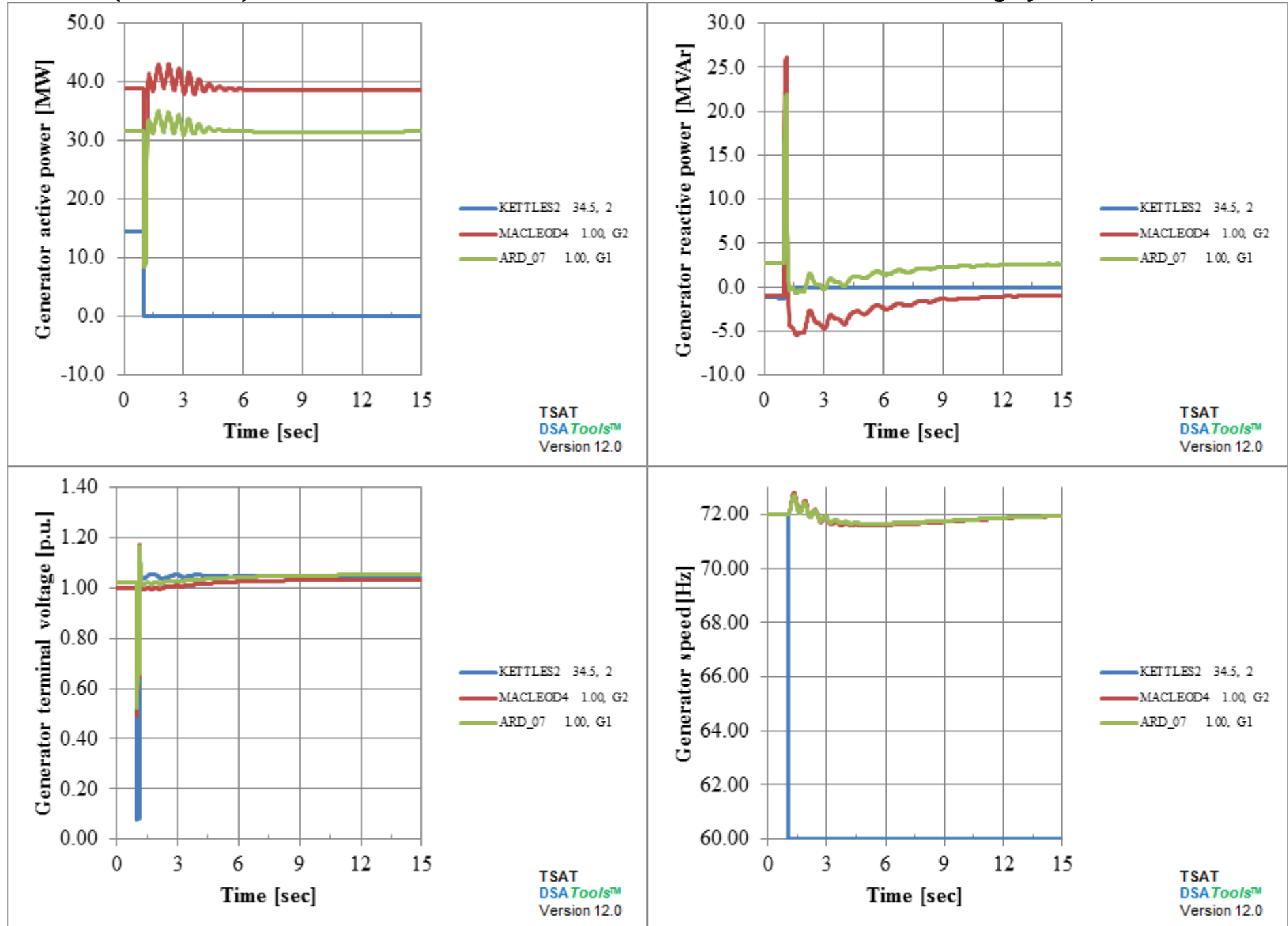
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Peak 2014



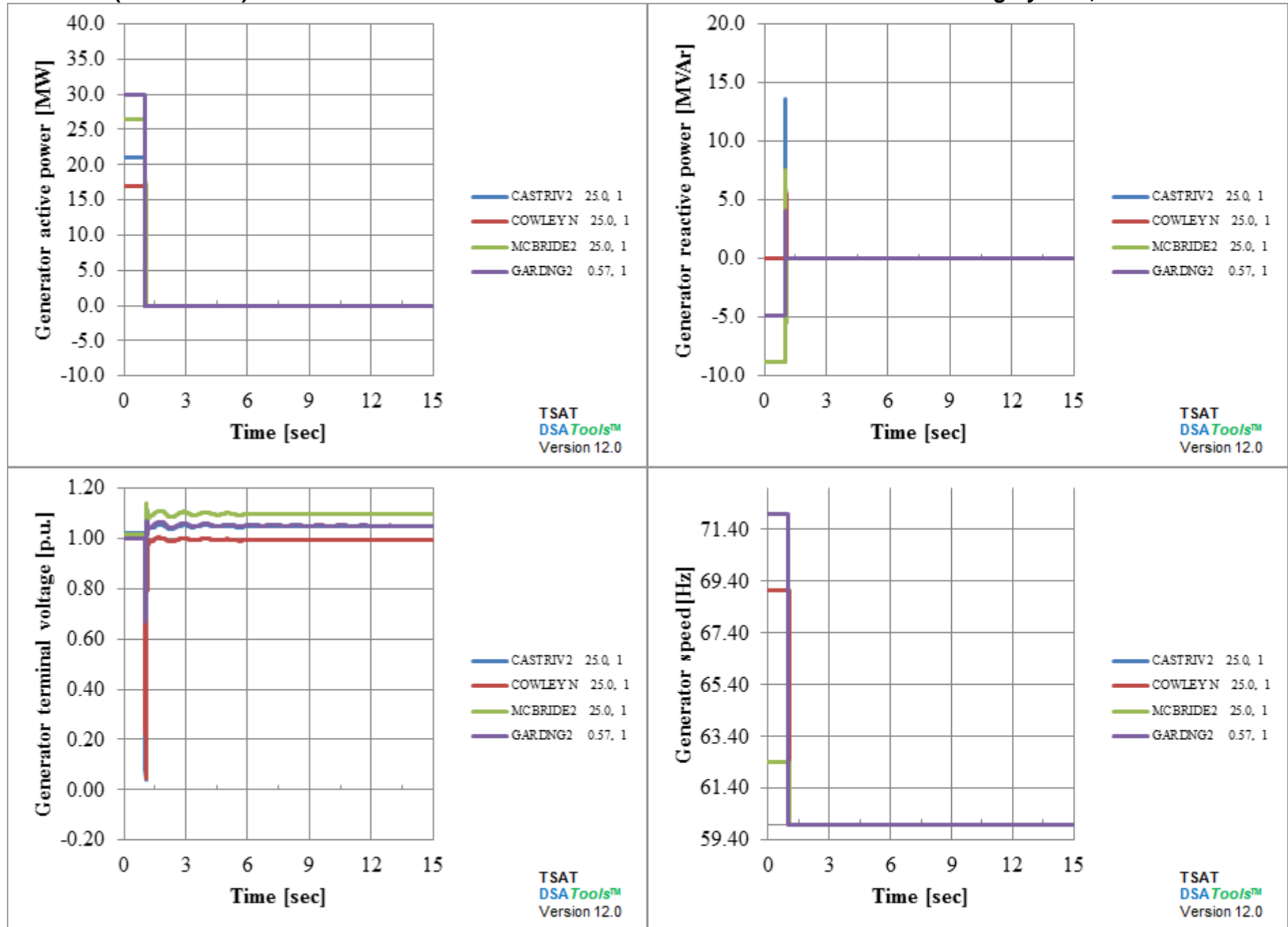
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Peak 2014



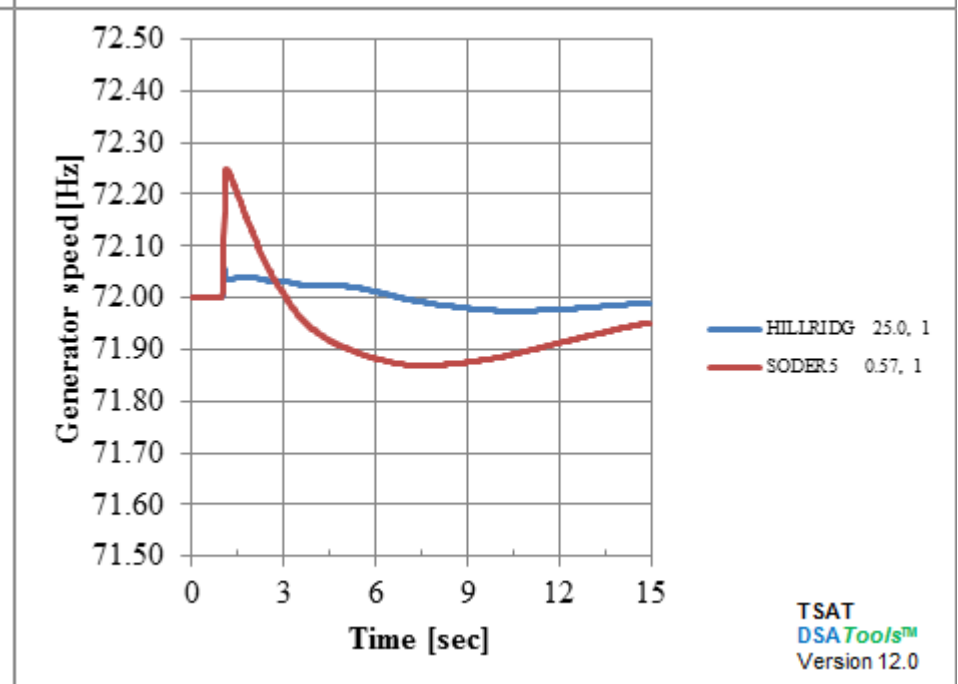
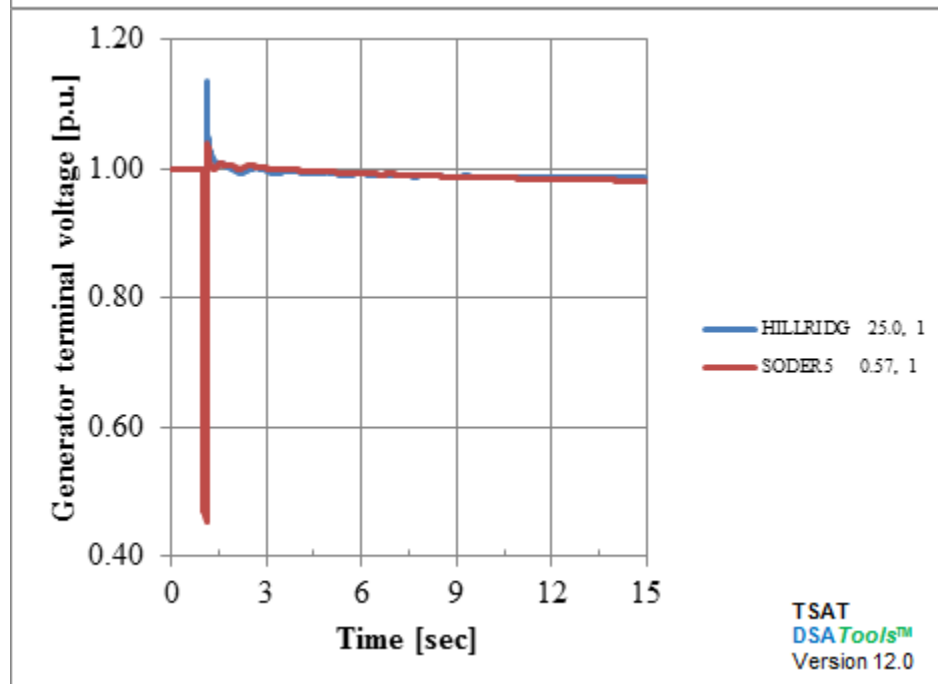
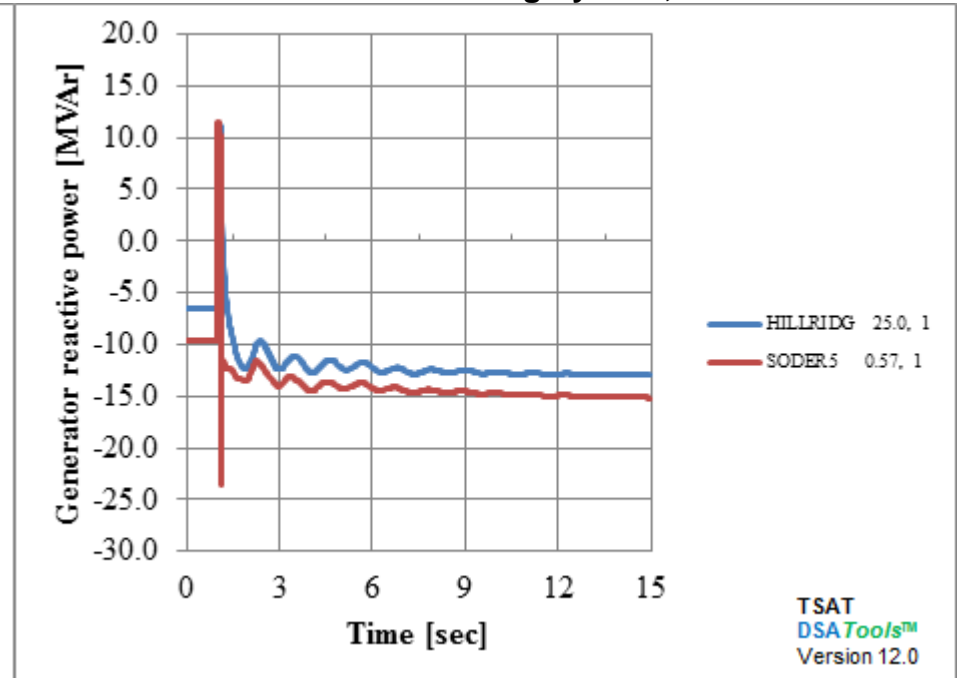
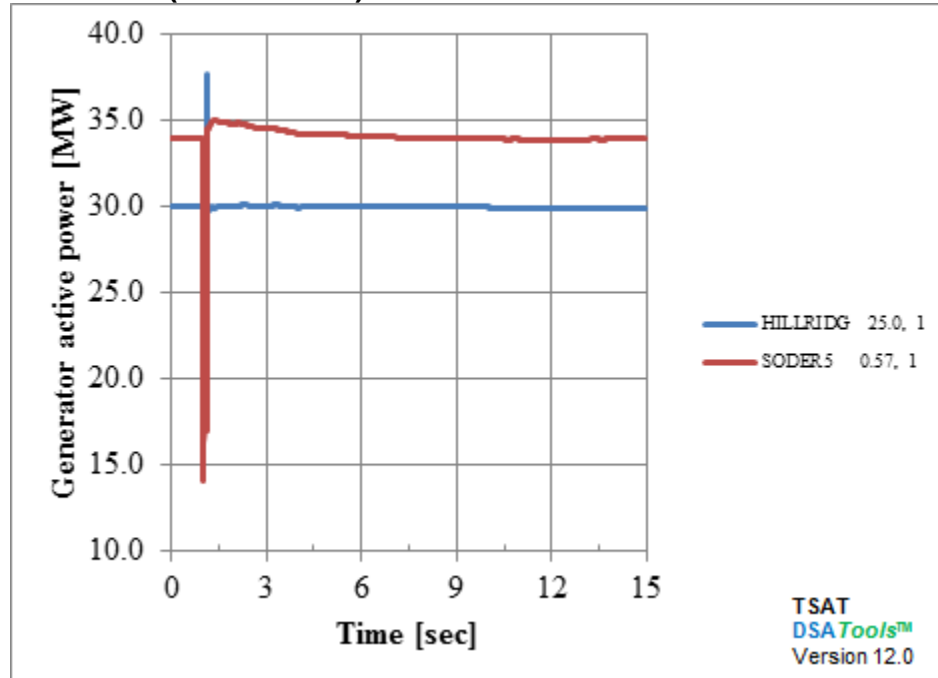
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Peak 2014



10 -- 164L (103S - 415S) NEAR 103S

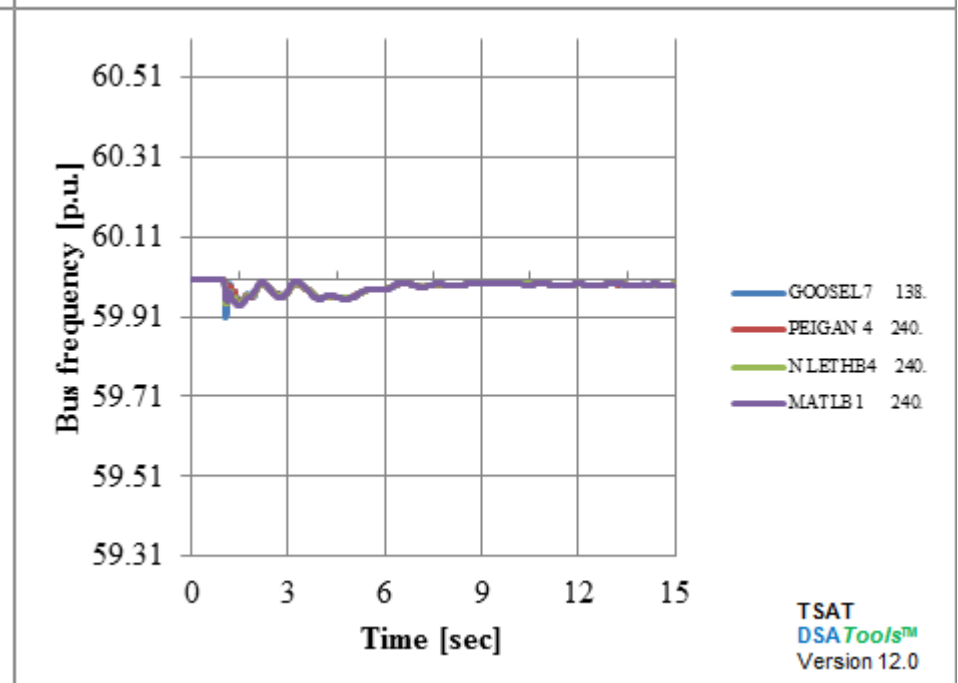
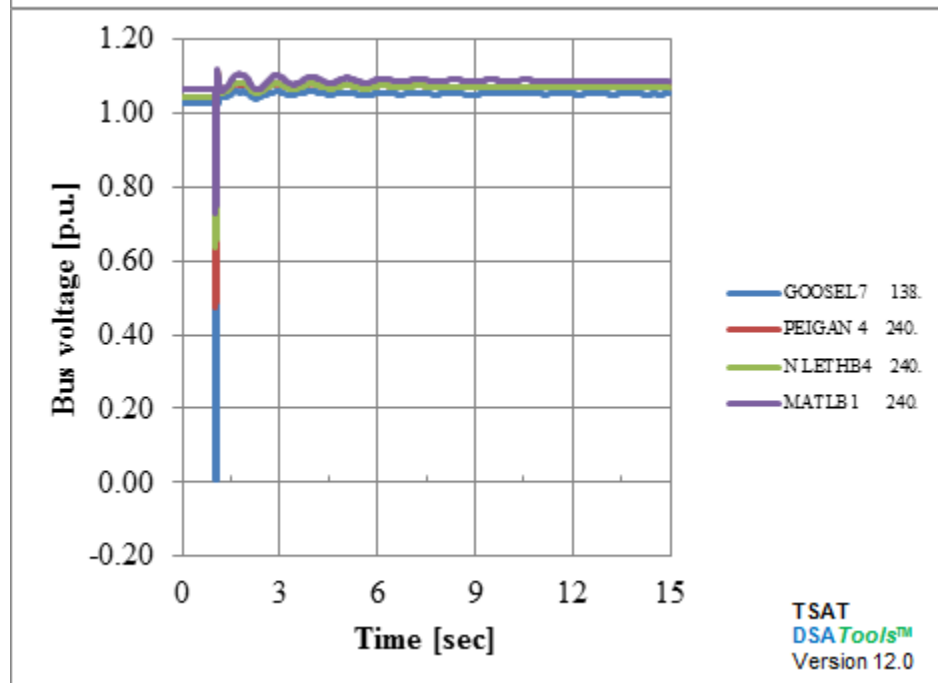
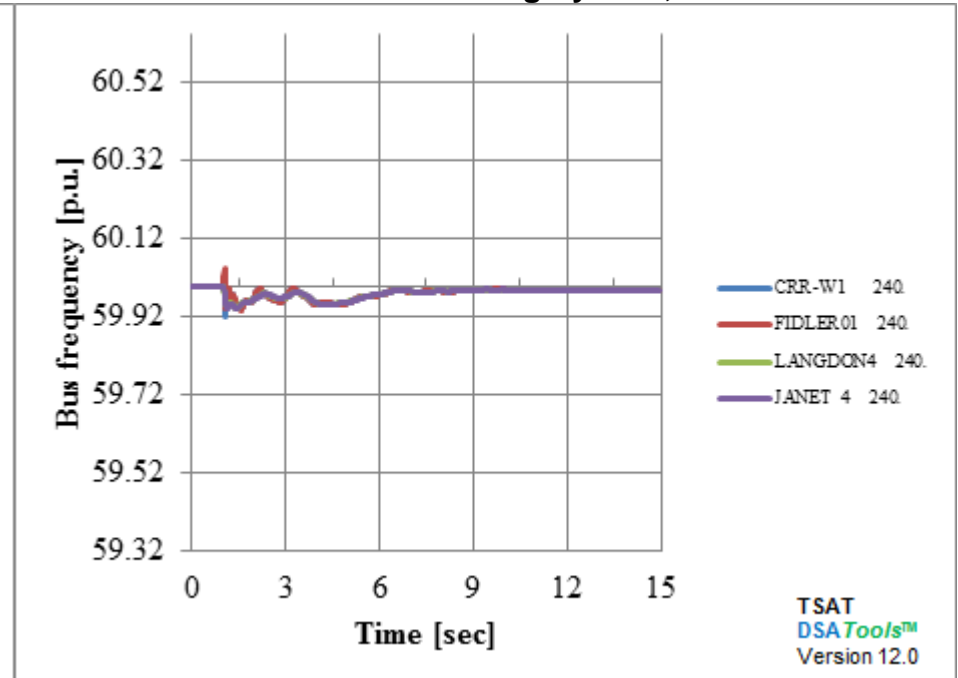
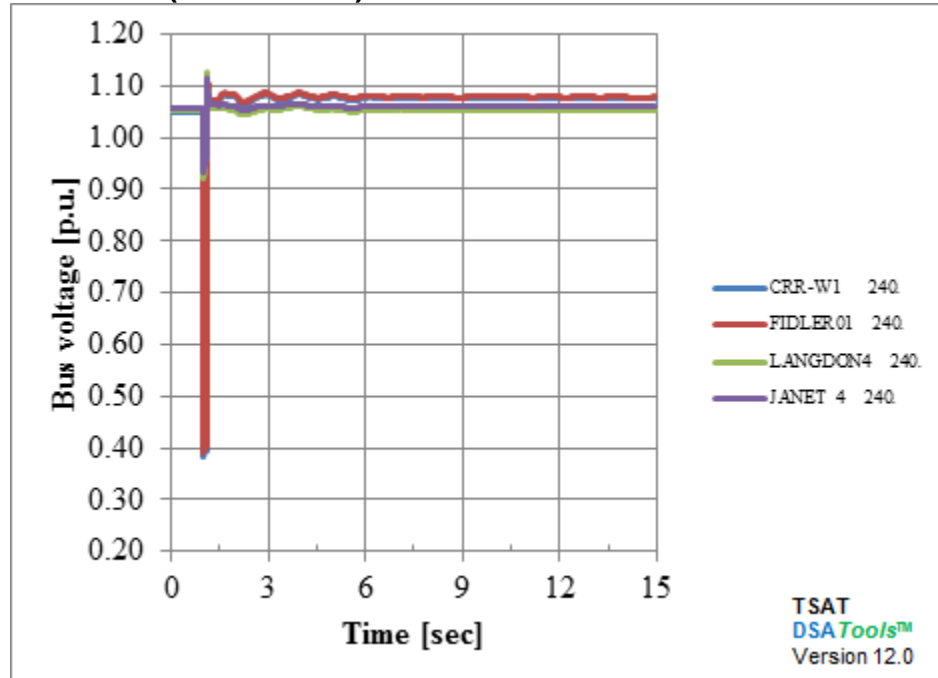
Existing System, Summer Peak 2014





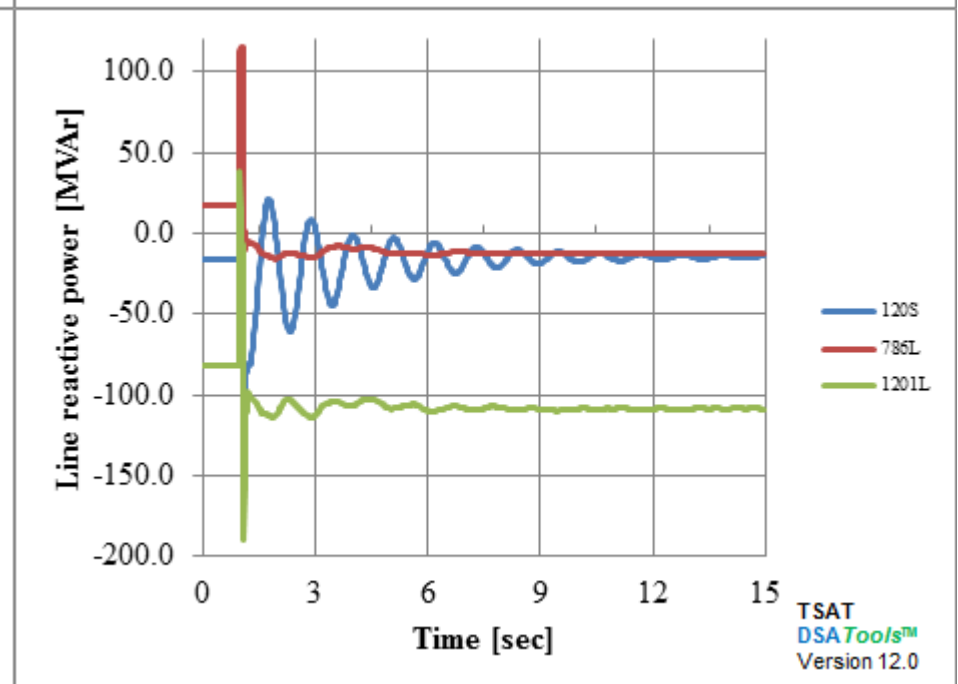
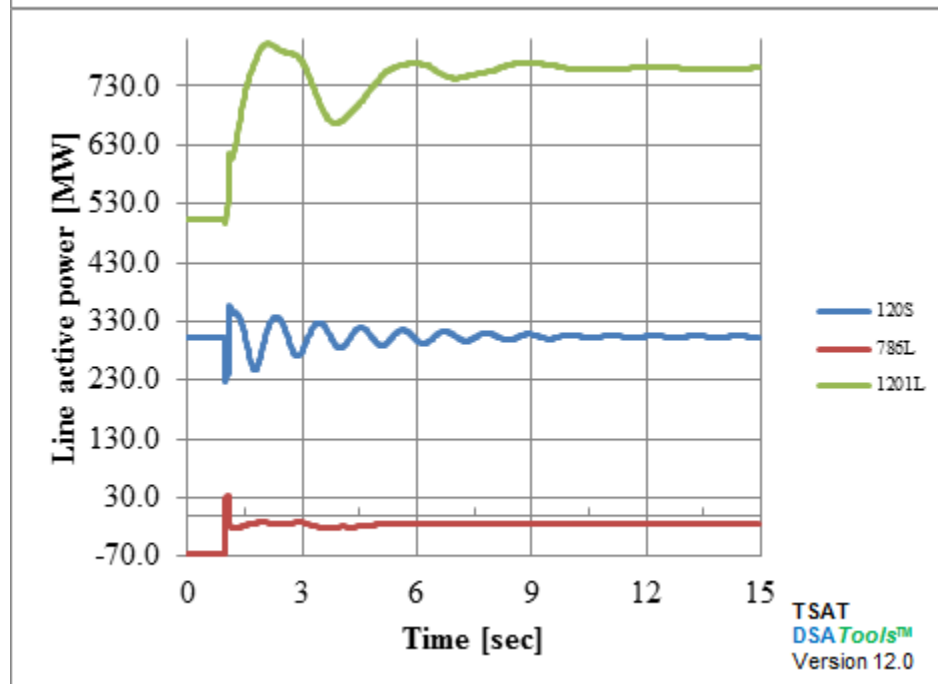
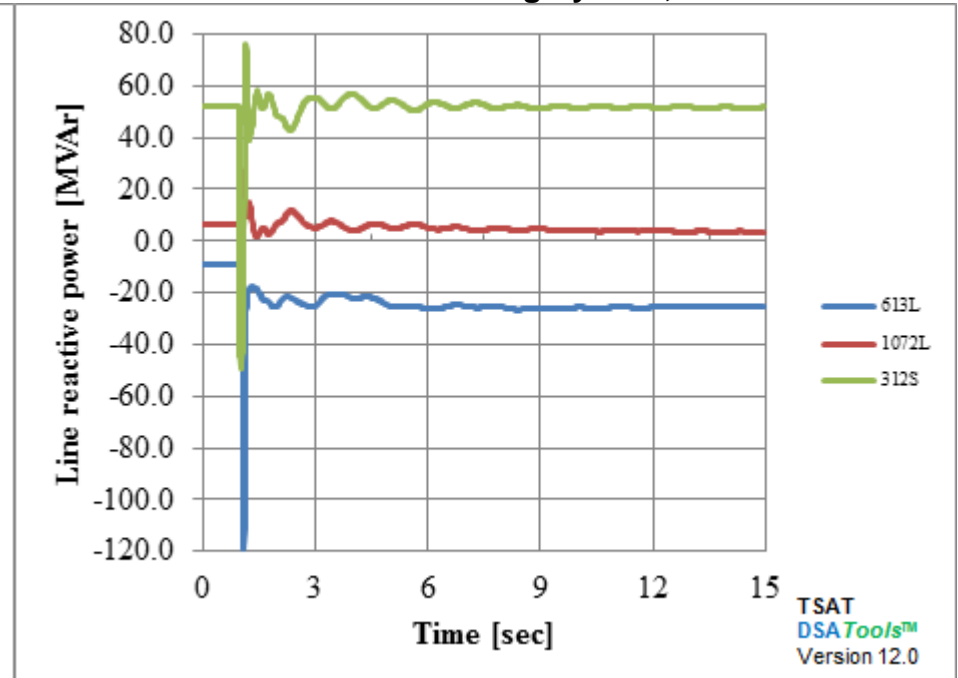
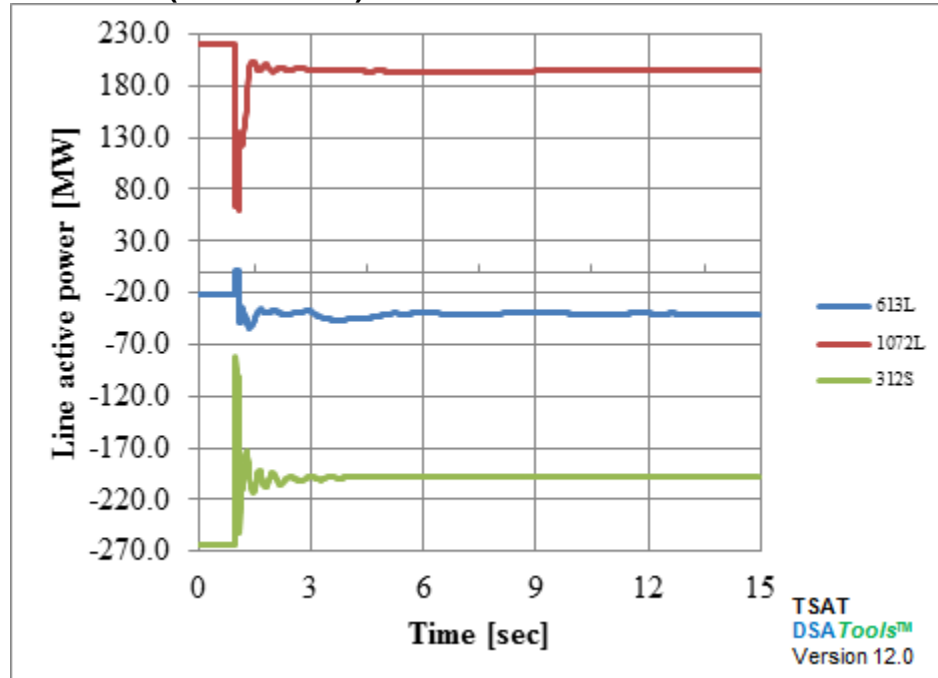
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Peak 2014



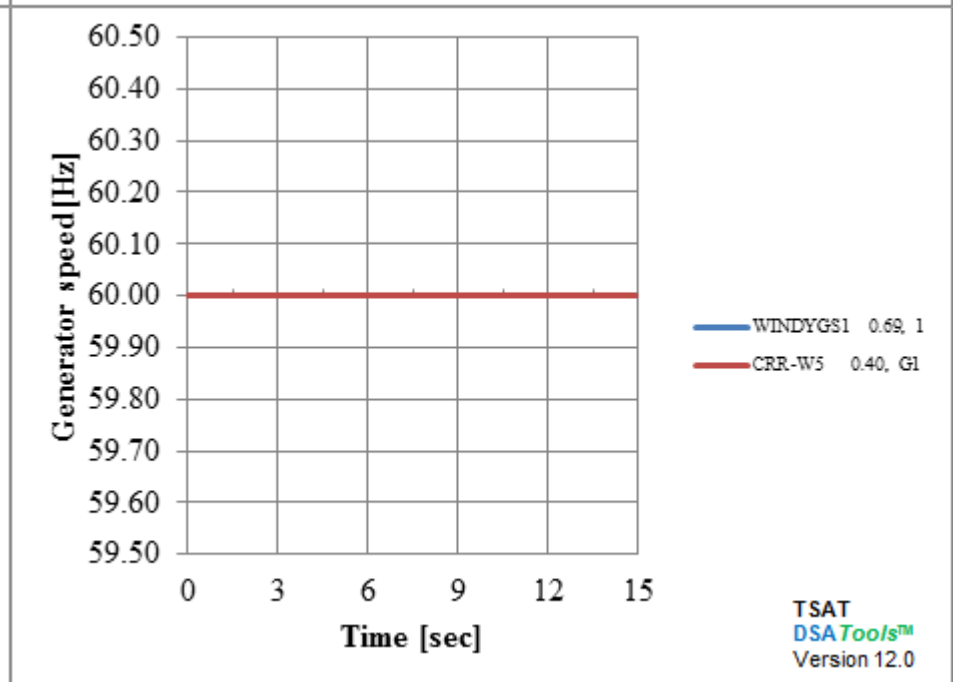
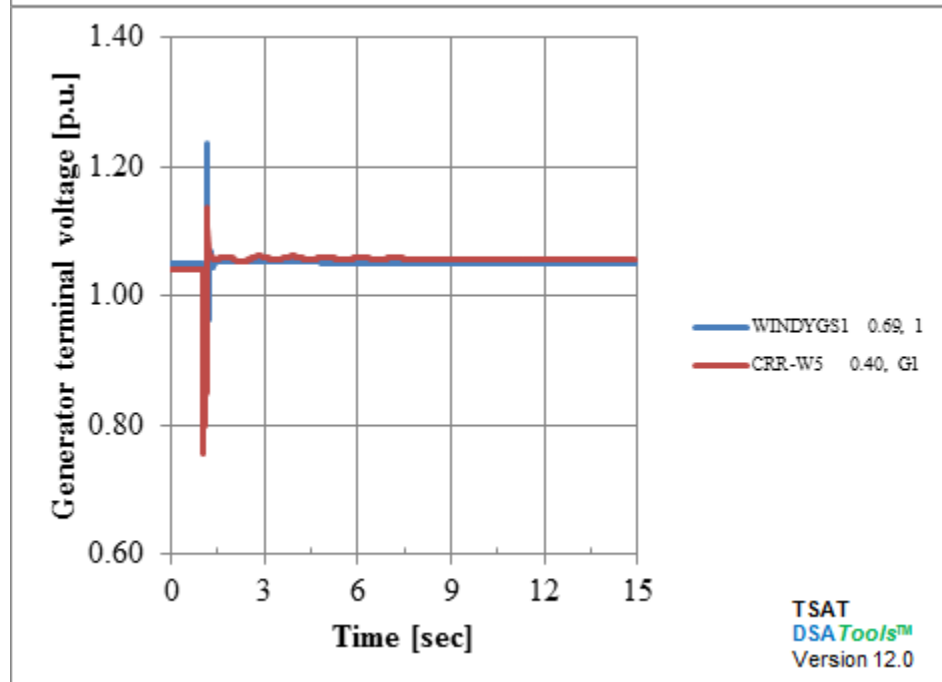
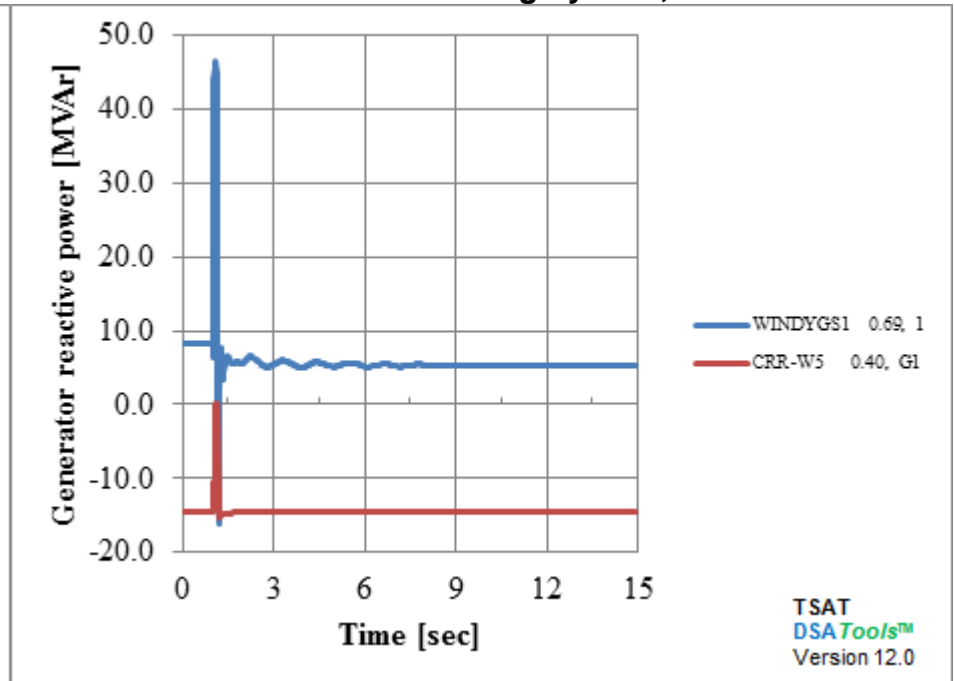
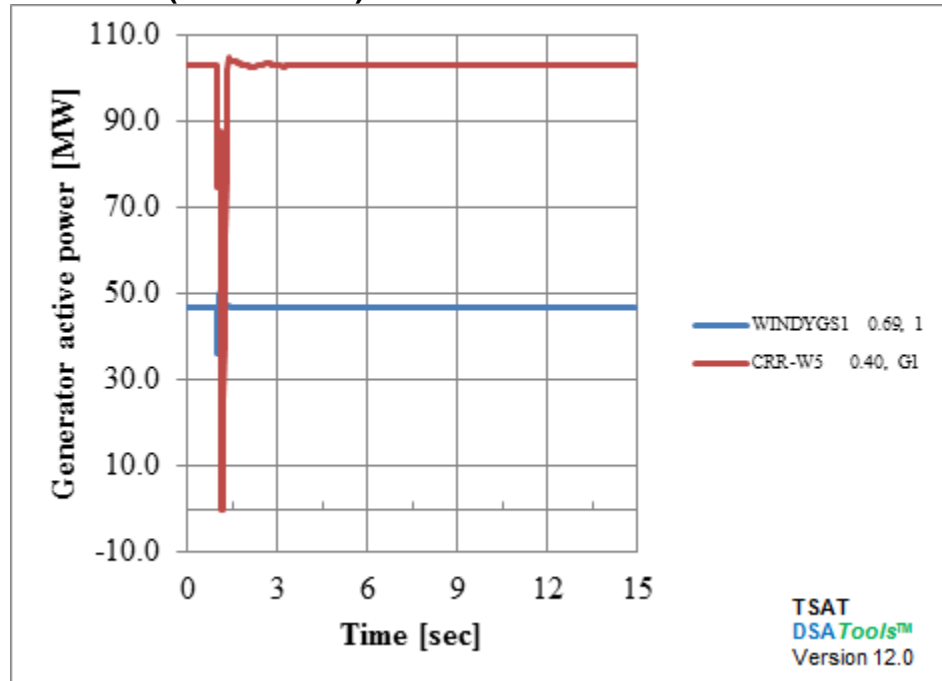
10 -- 164L (103S - 415S) NEAR 103S

Existing System, Summer Peak 2014



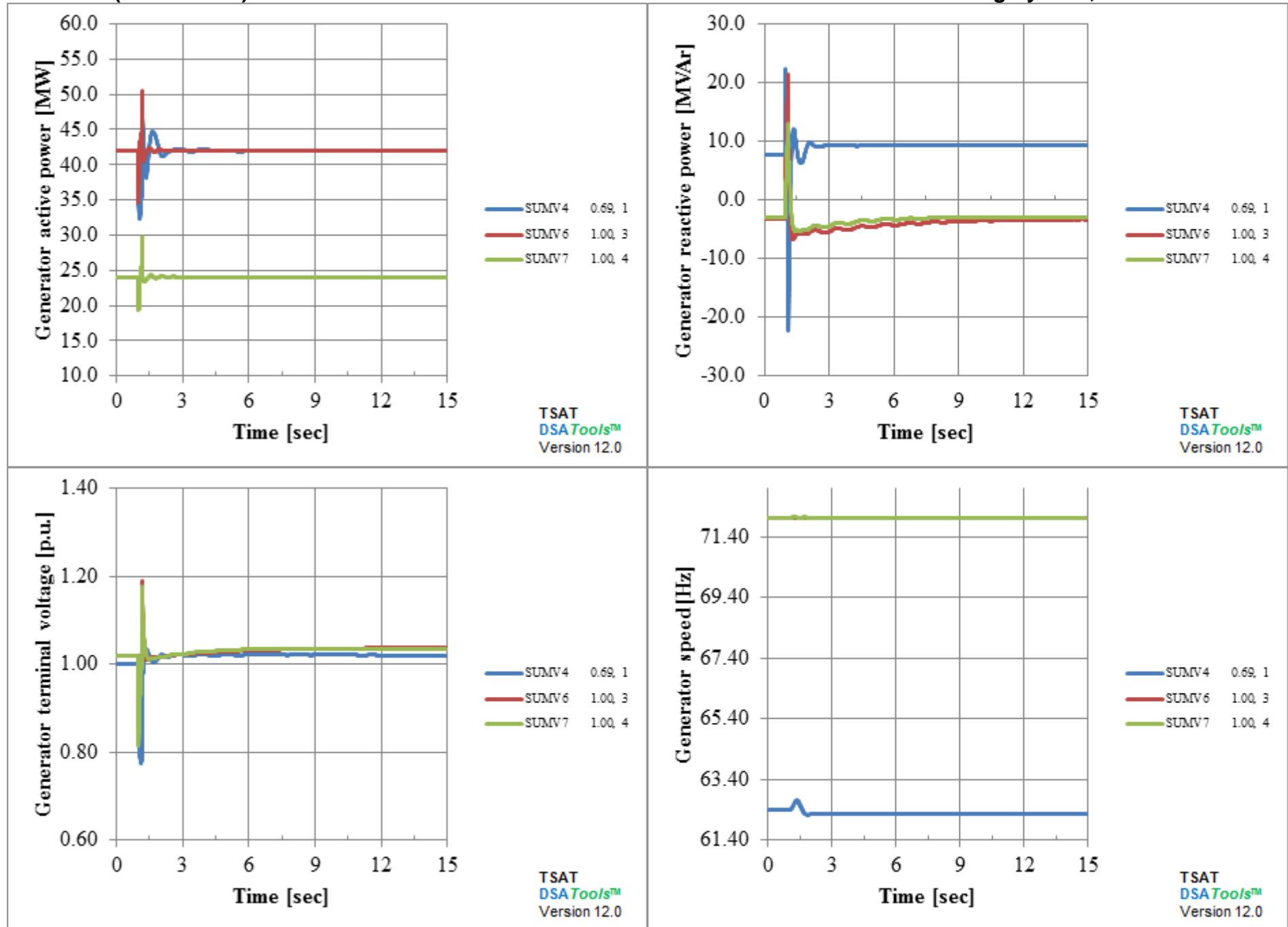
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Peak 2014



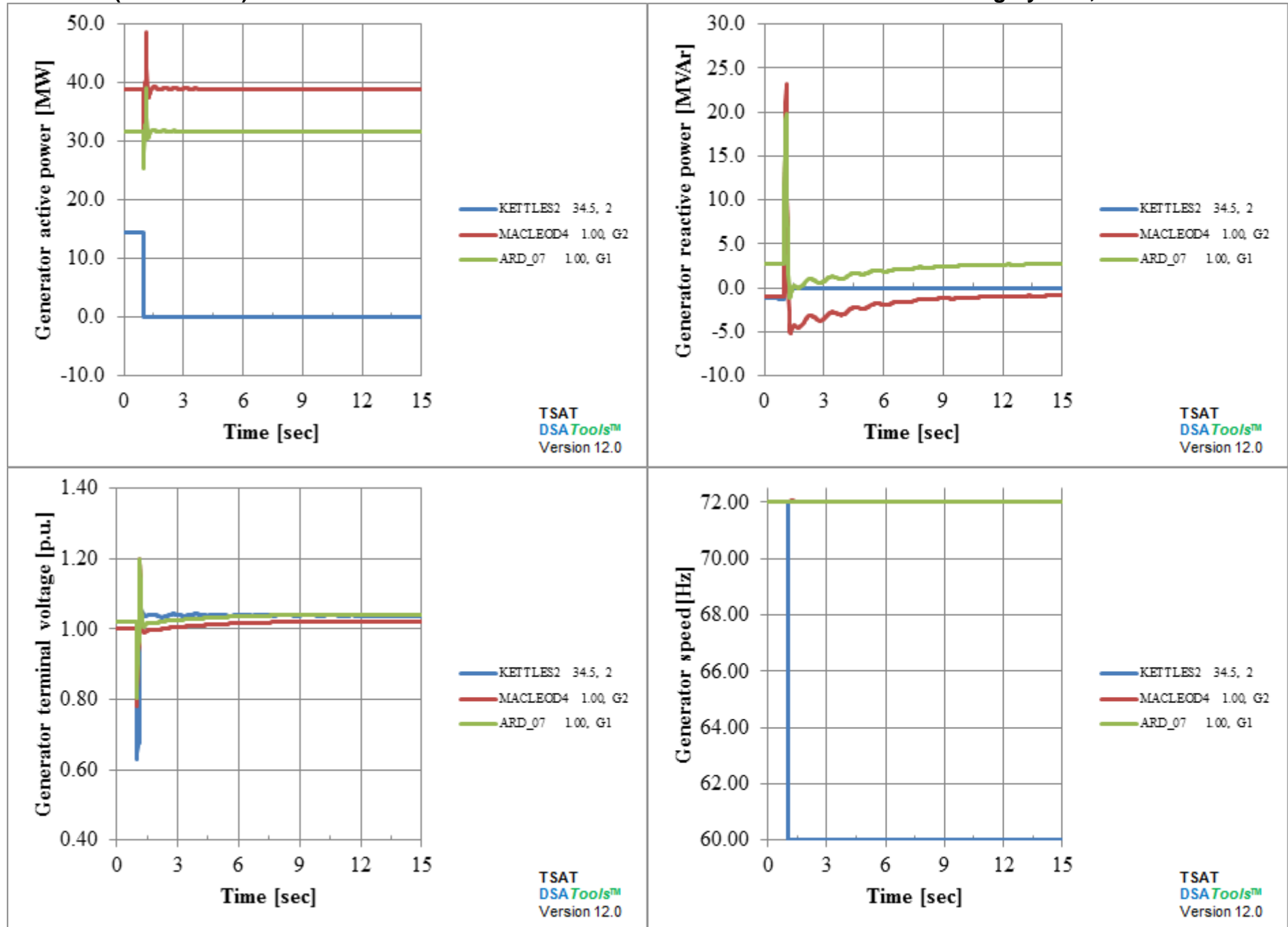
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Peak 2014



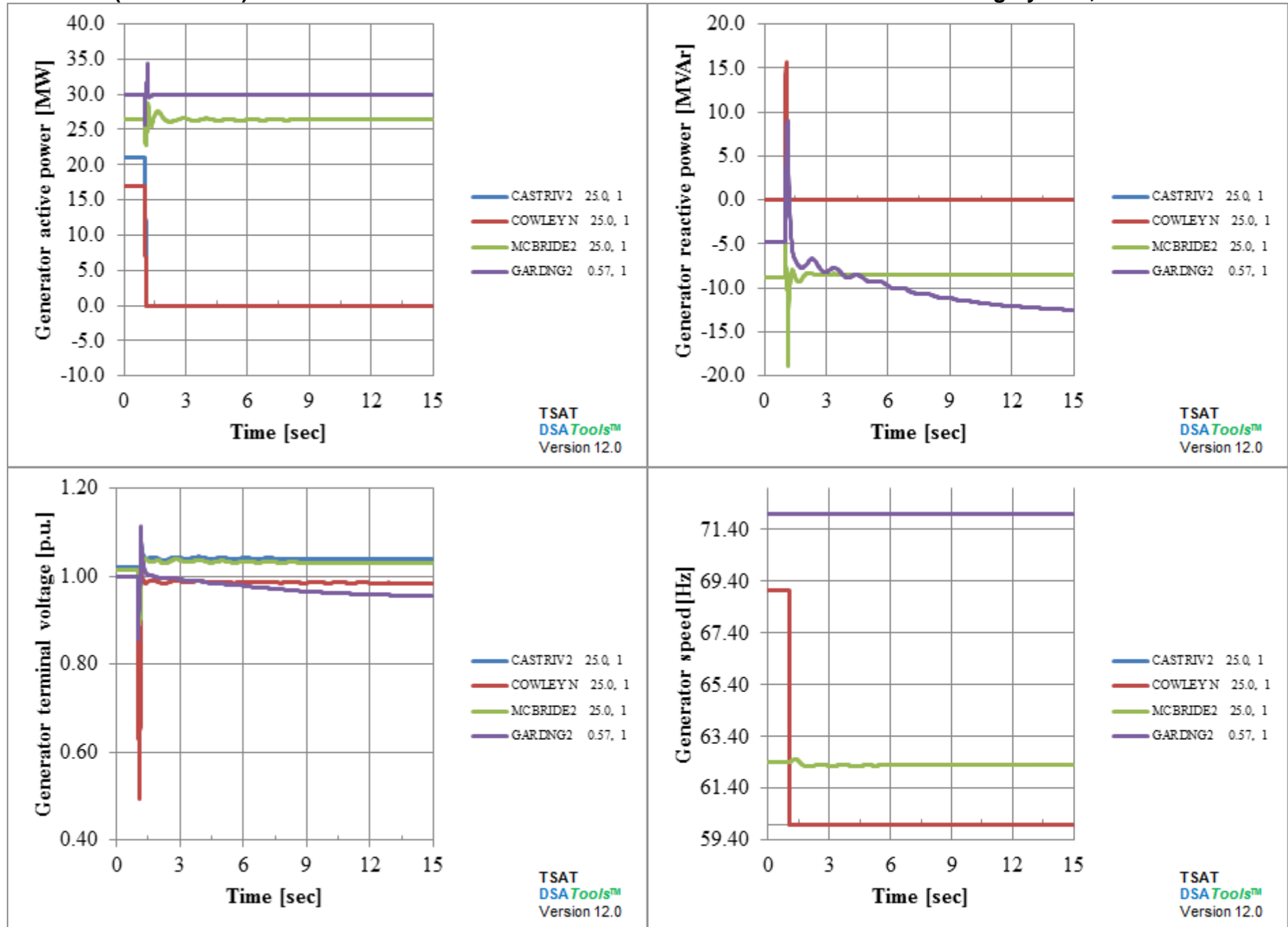
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Peak 2014



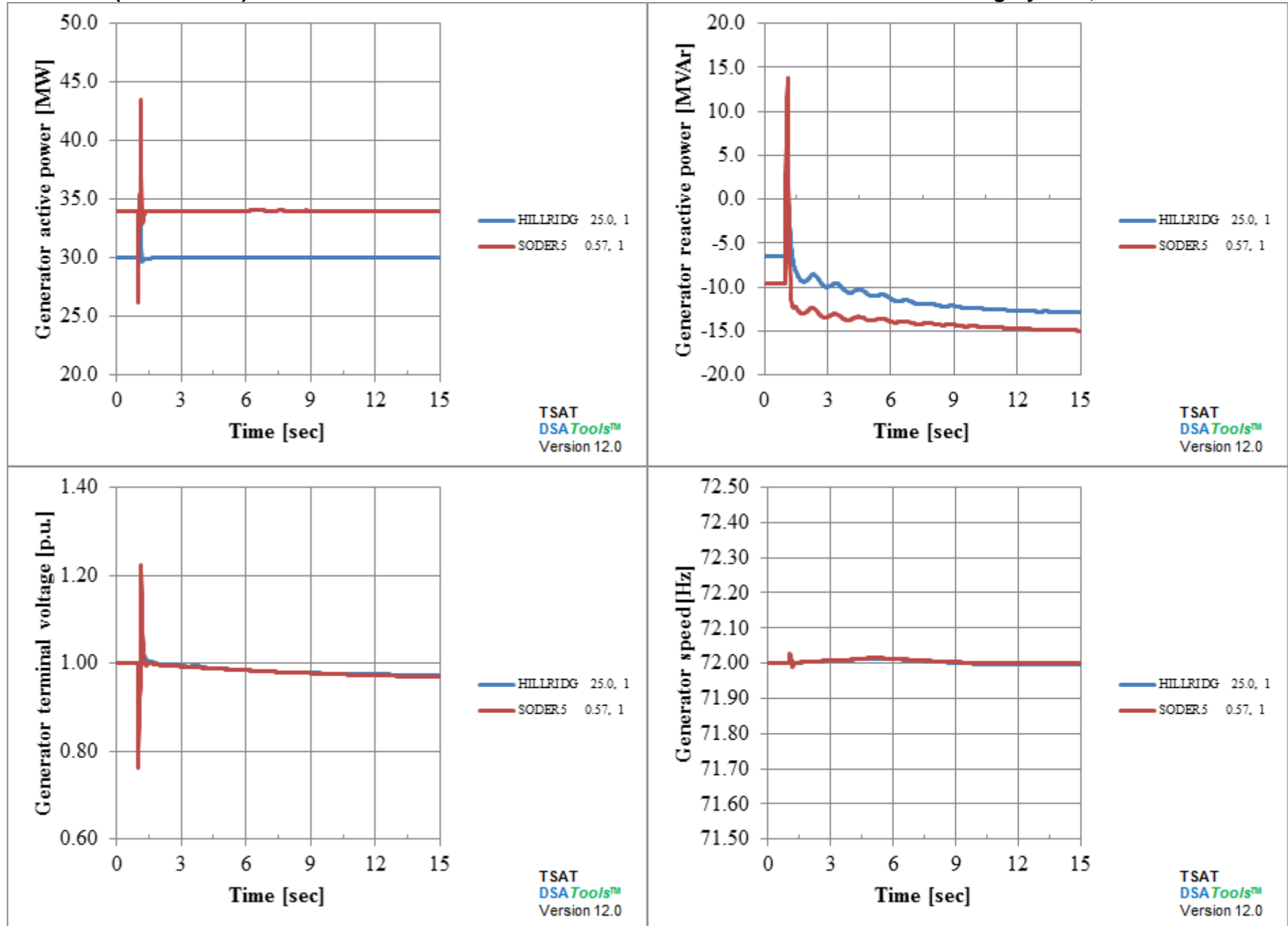
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Peak 2014



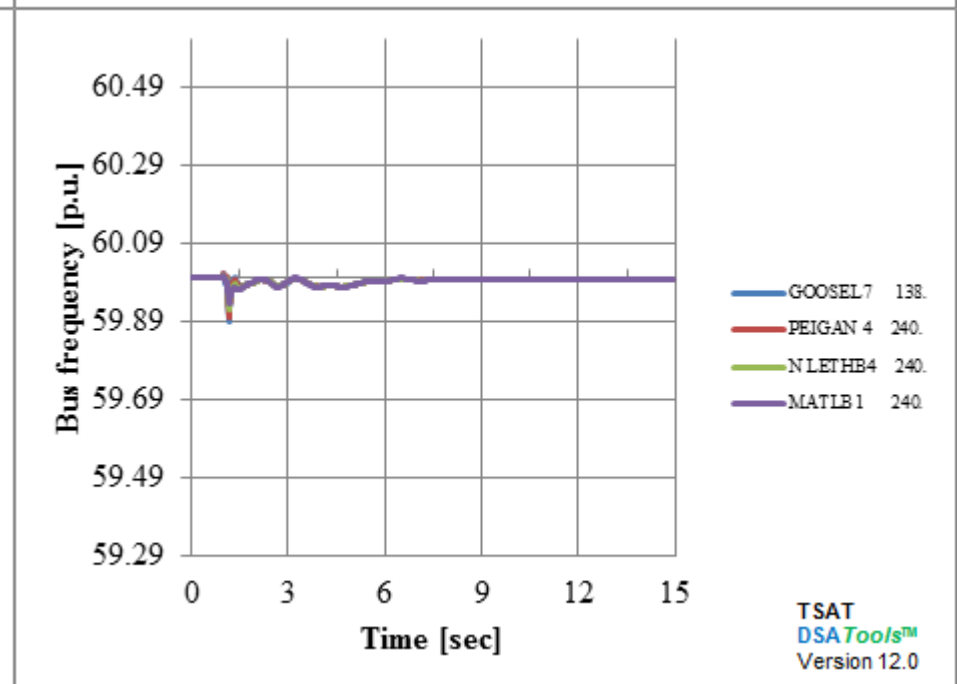
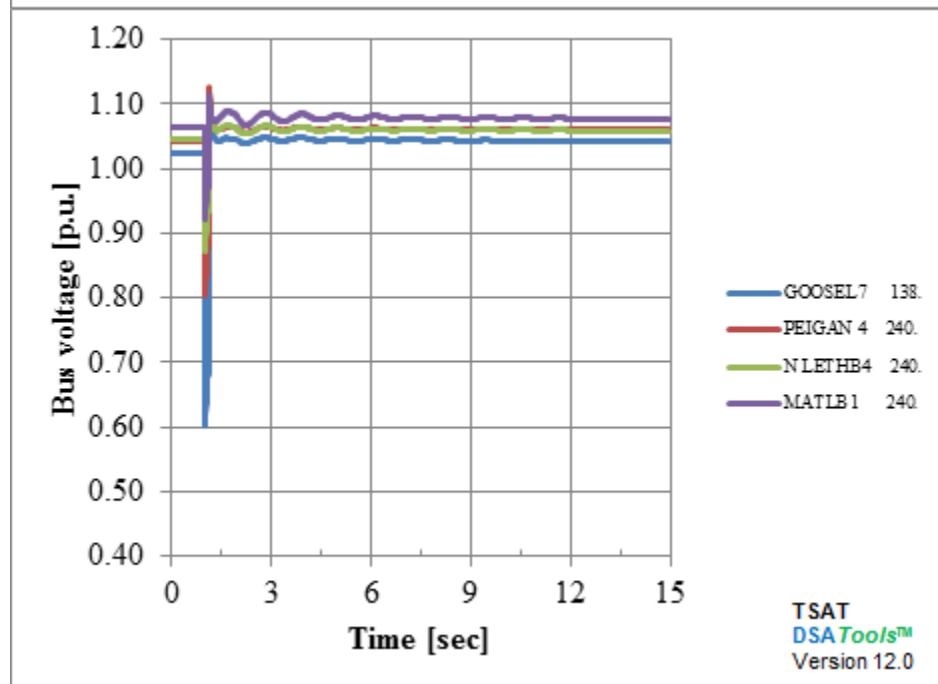
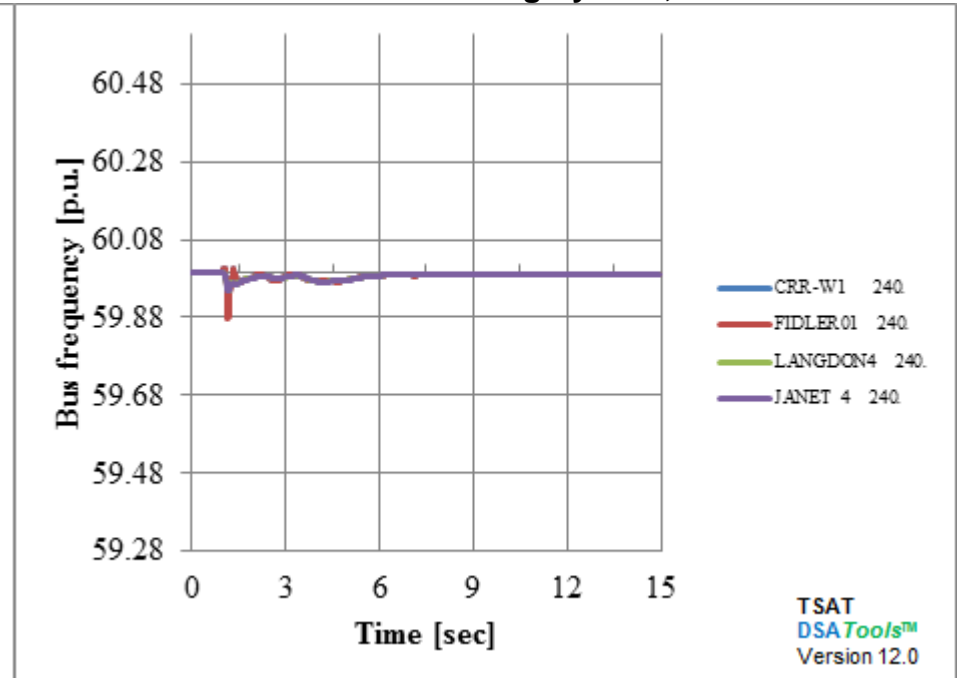
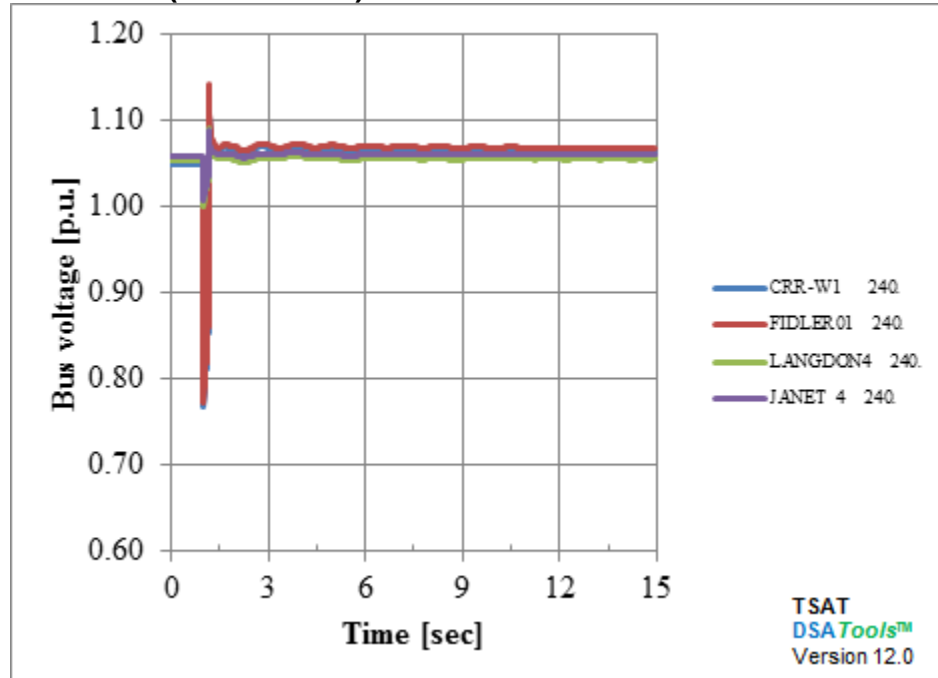
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Peak 2014



11 -- 164L (103S - 415S) NEAR 415S

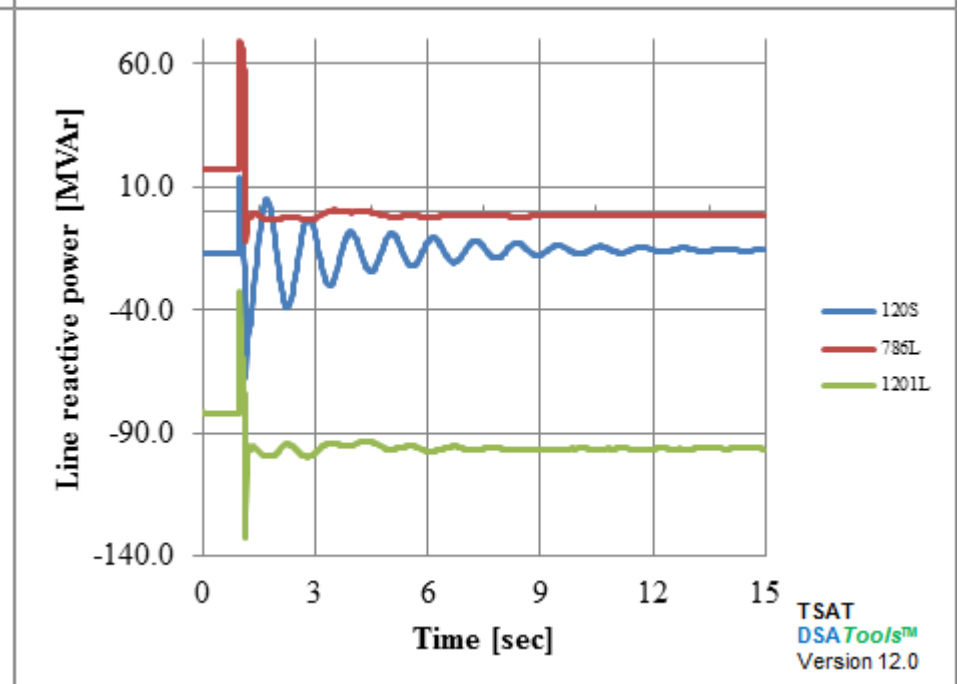
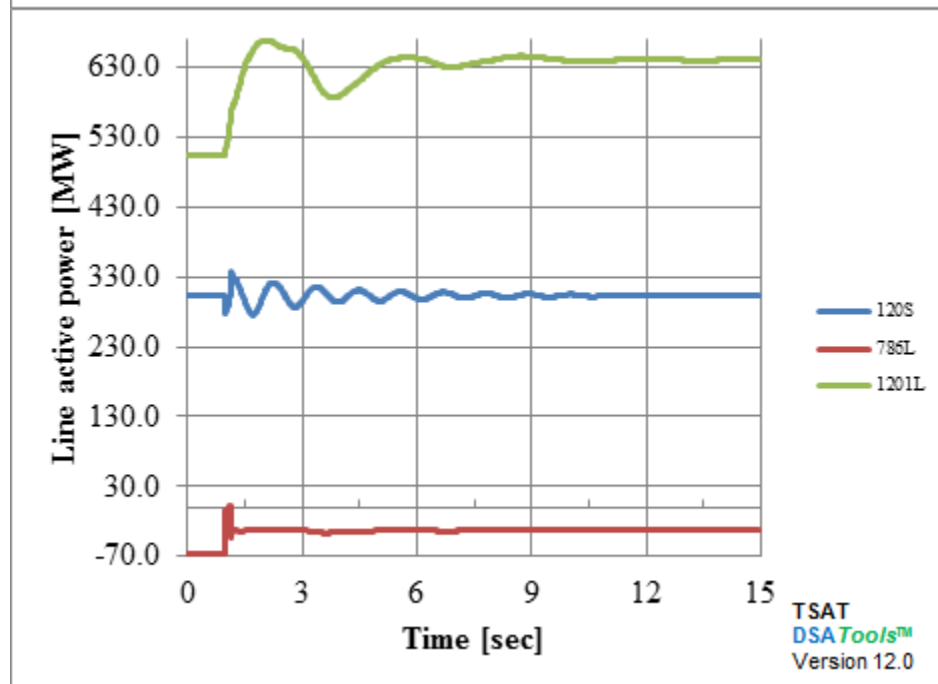
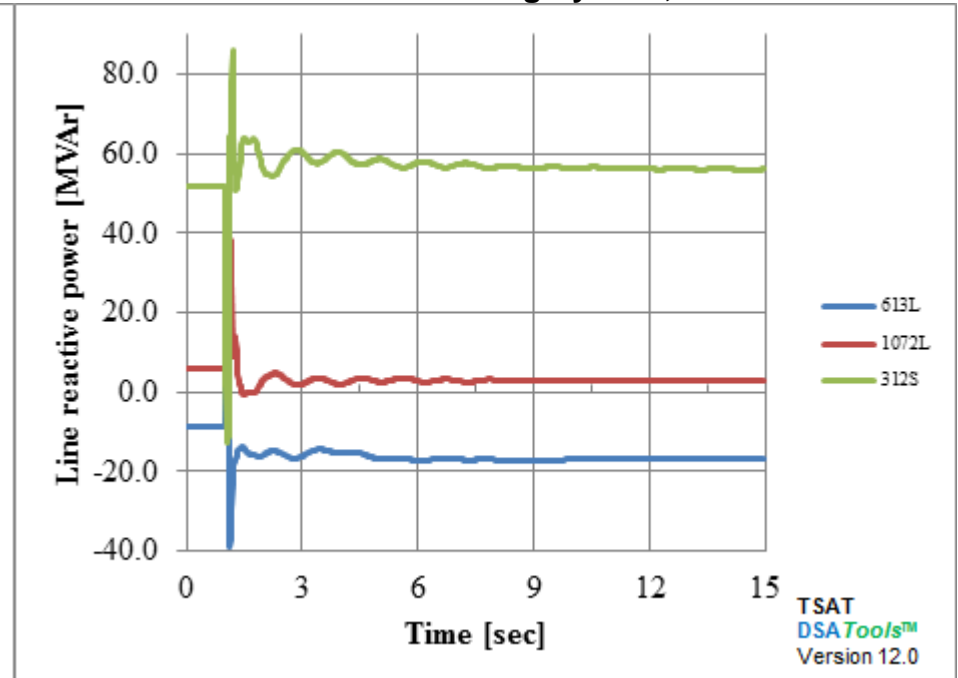
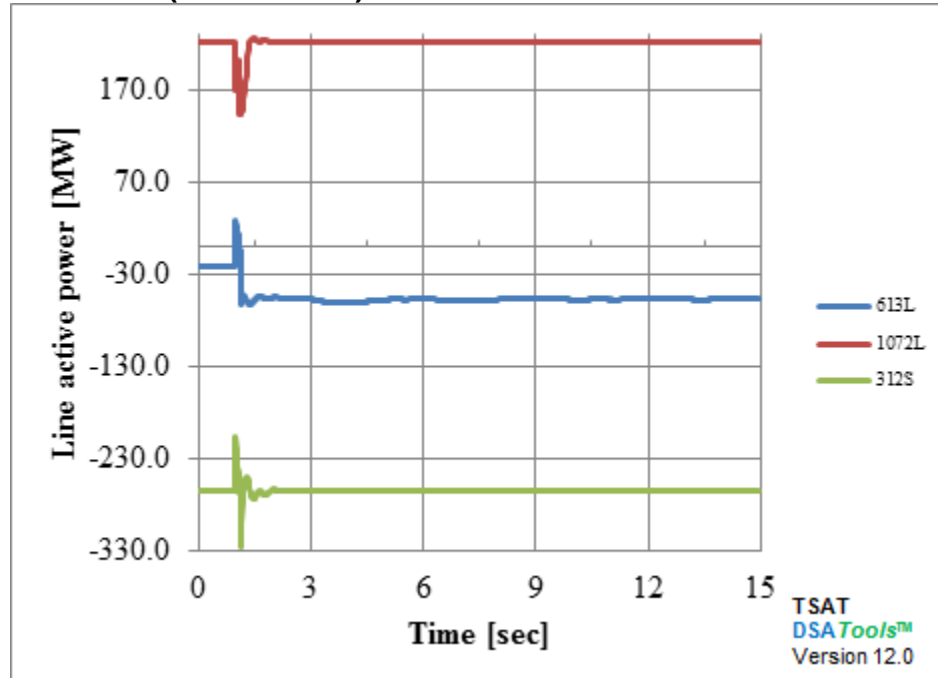
Existing System, Summer Peak 2014





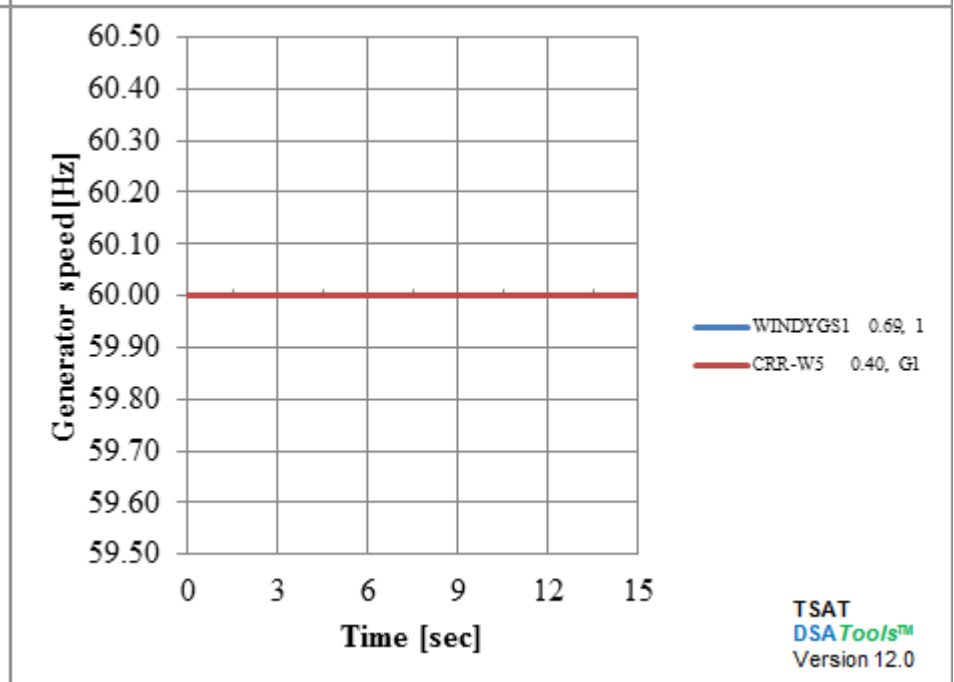
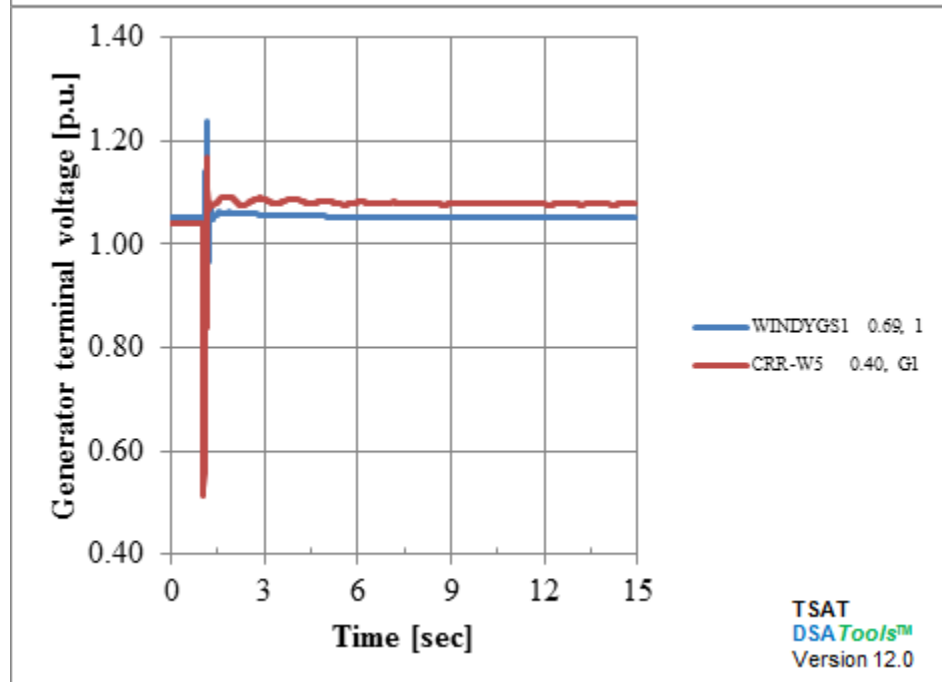
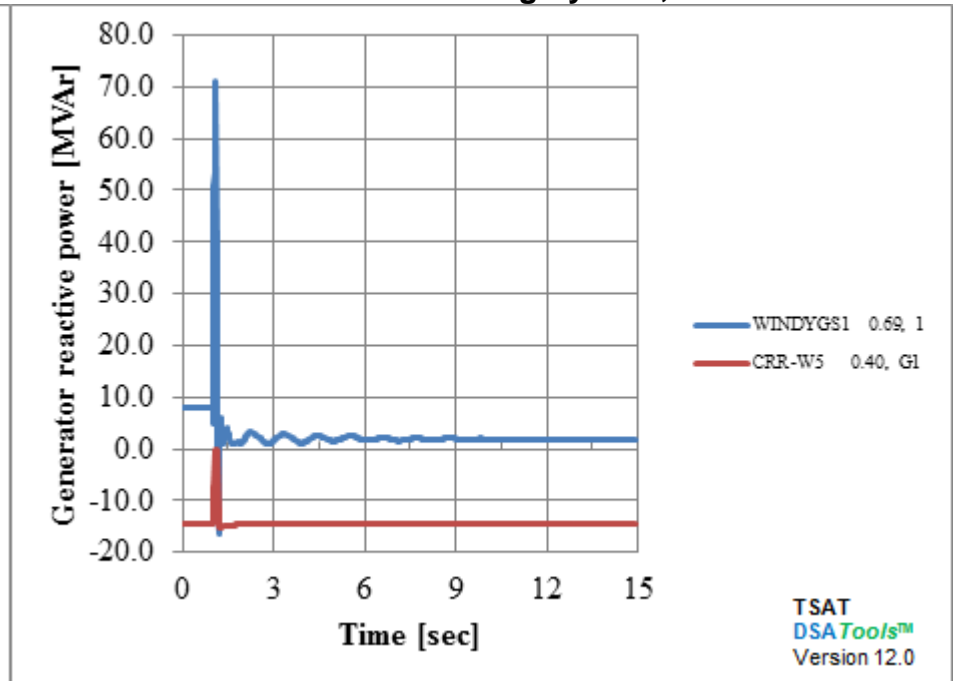
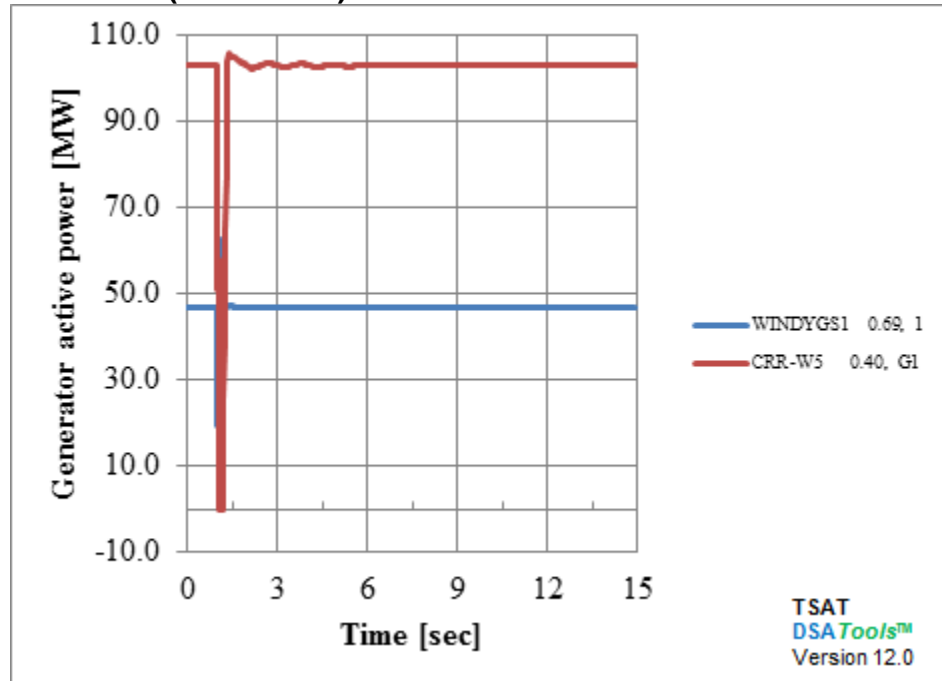
11 -- 164L (103S - 415S) NEAR 415S

Existing System, Summer Peak 2014



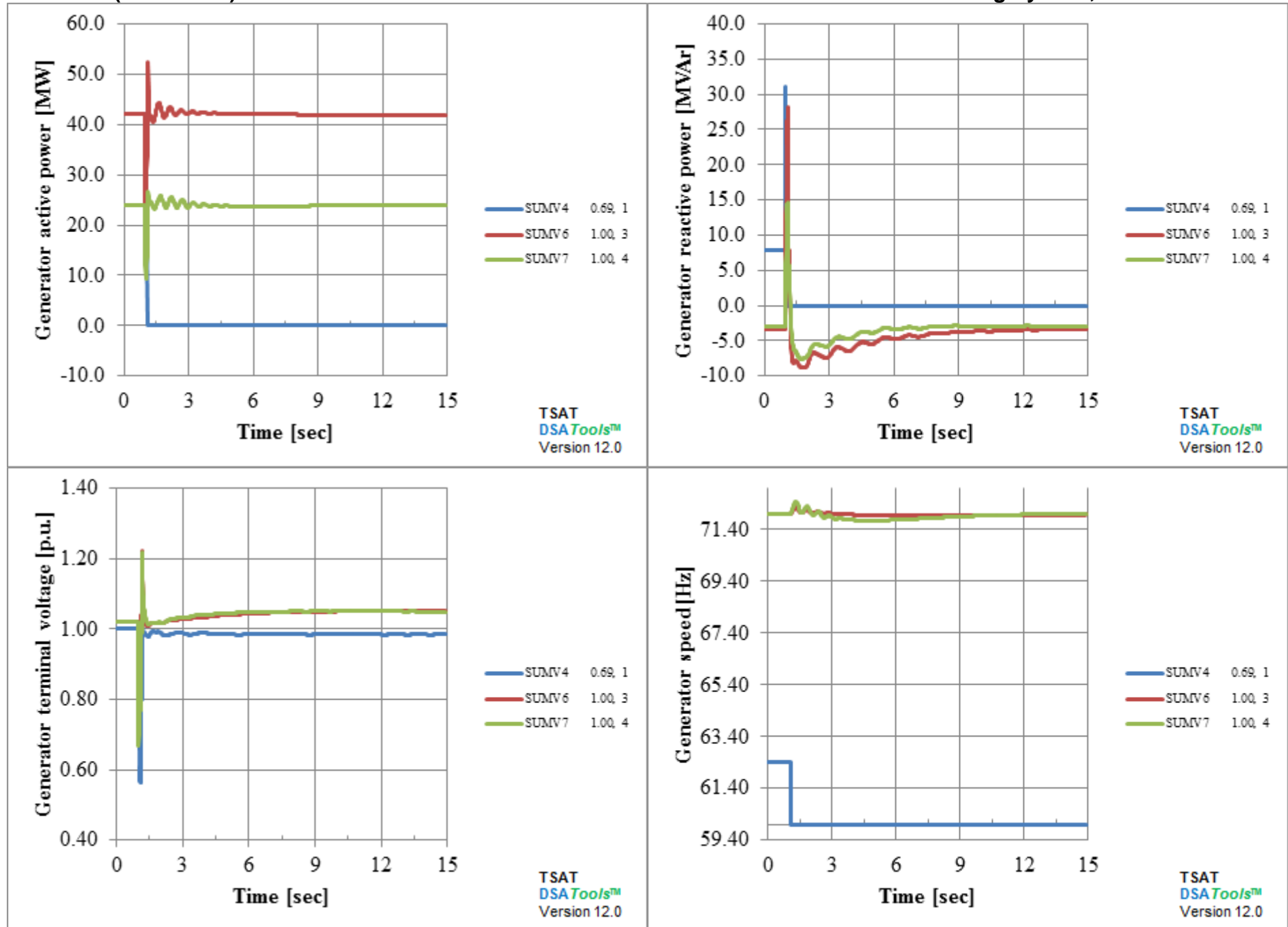
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



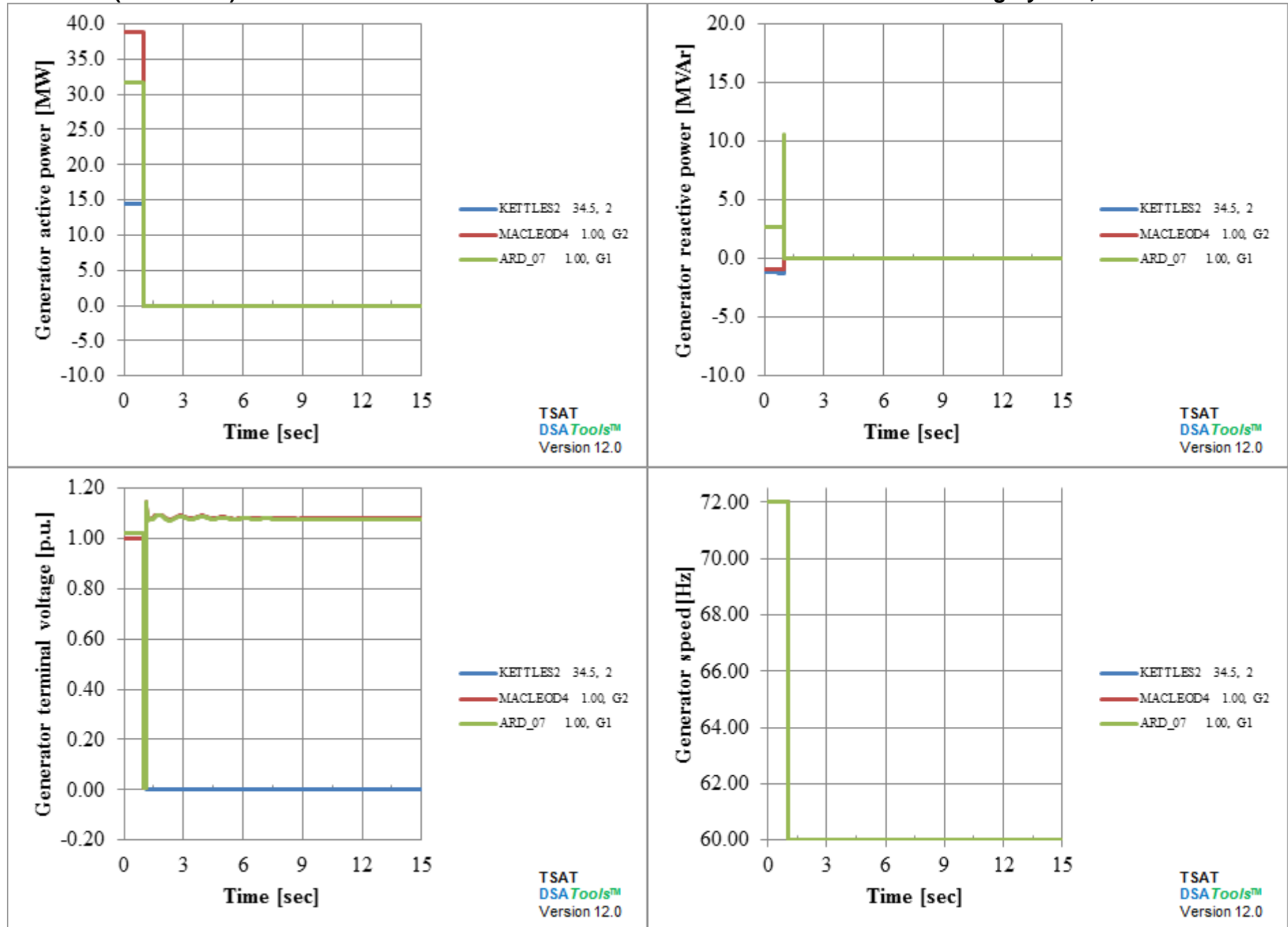
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



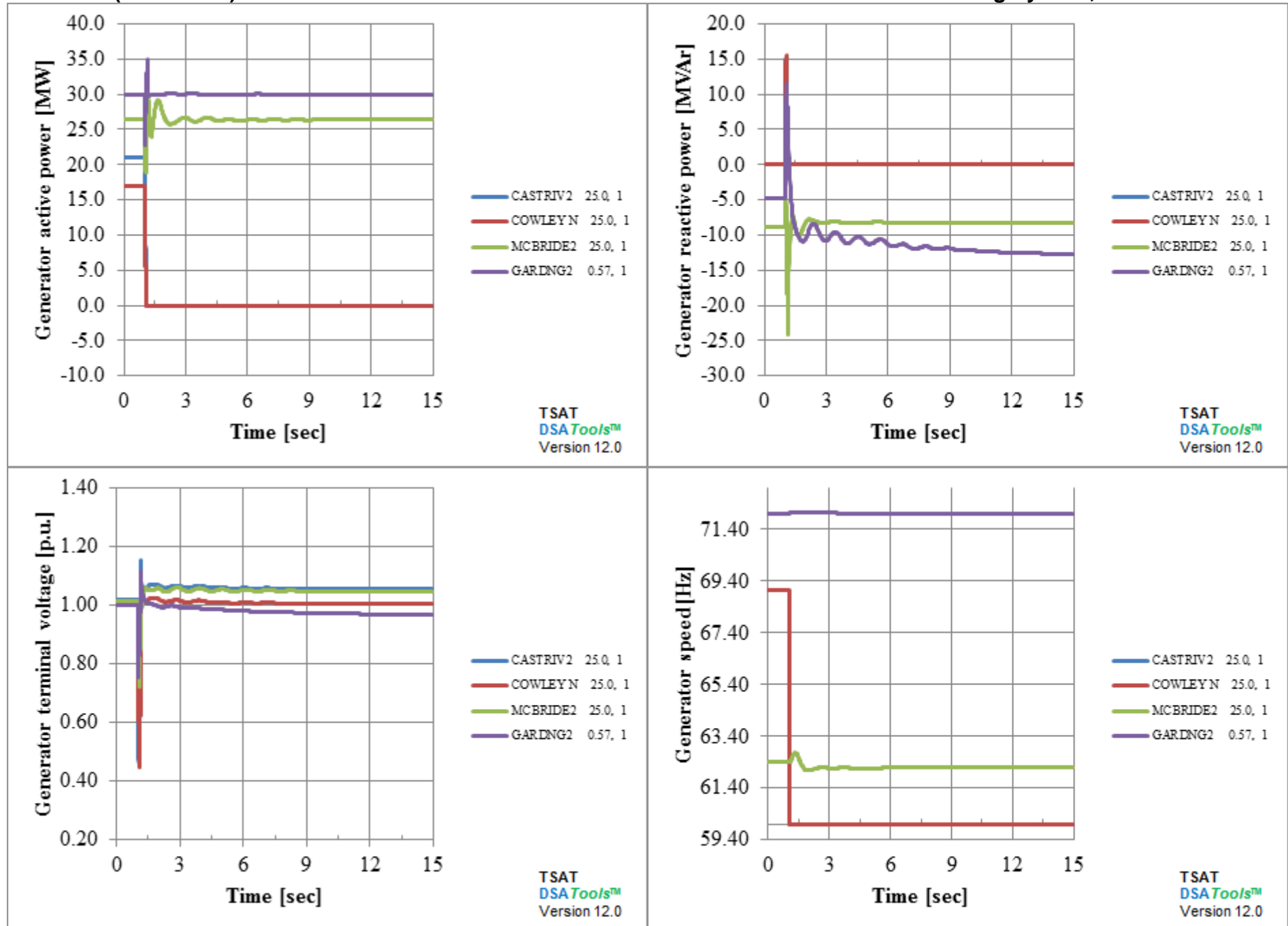
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



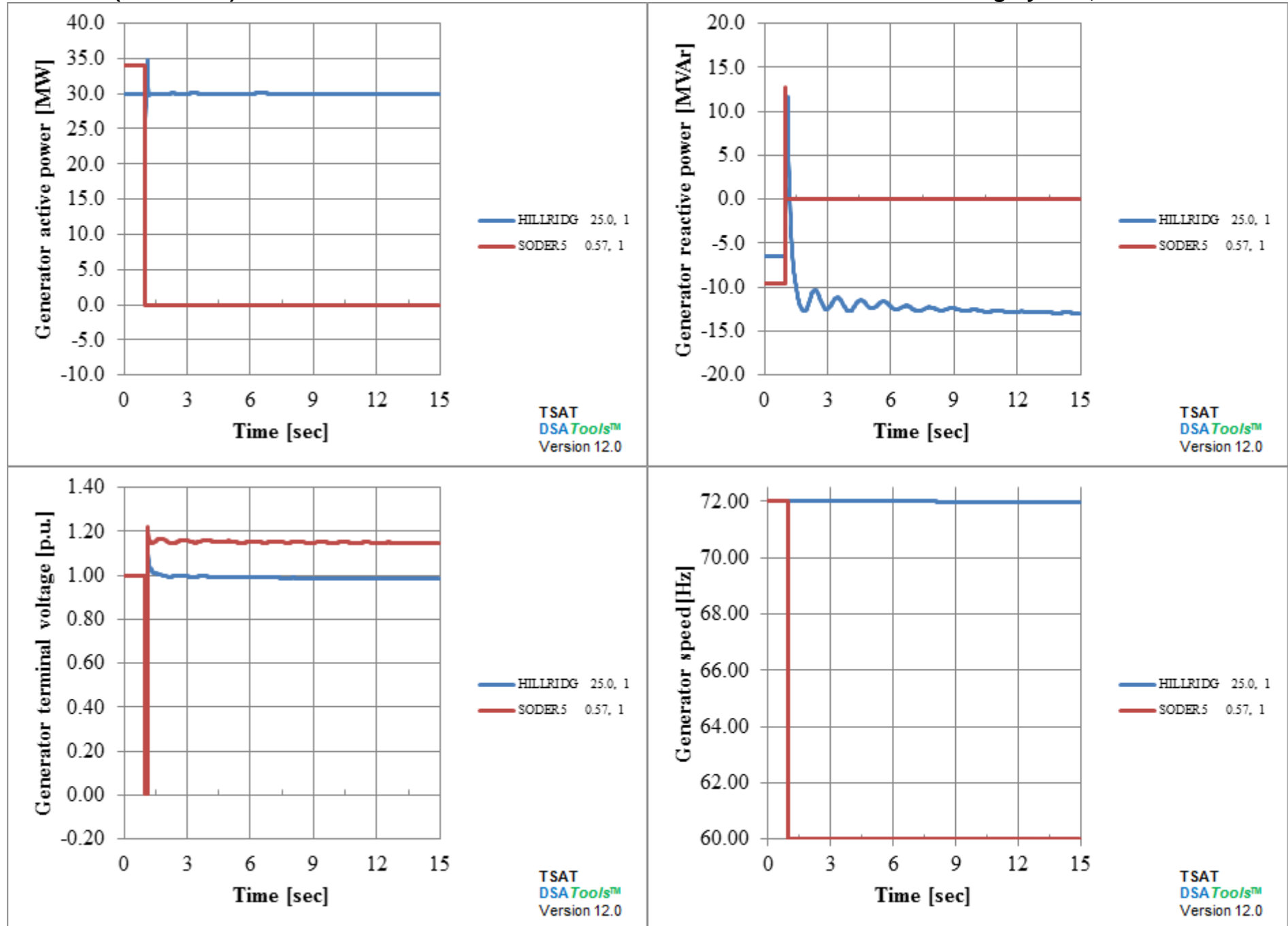
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



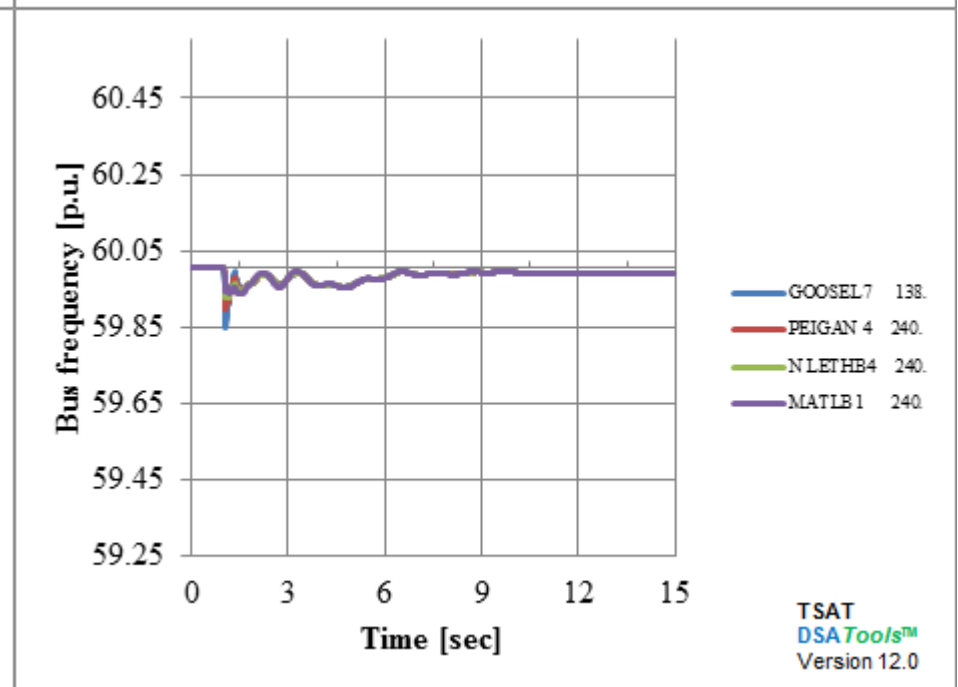
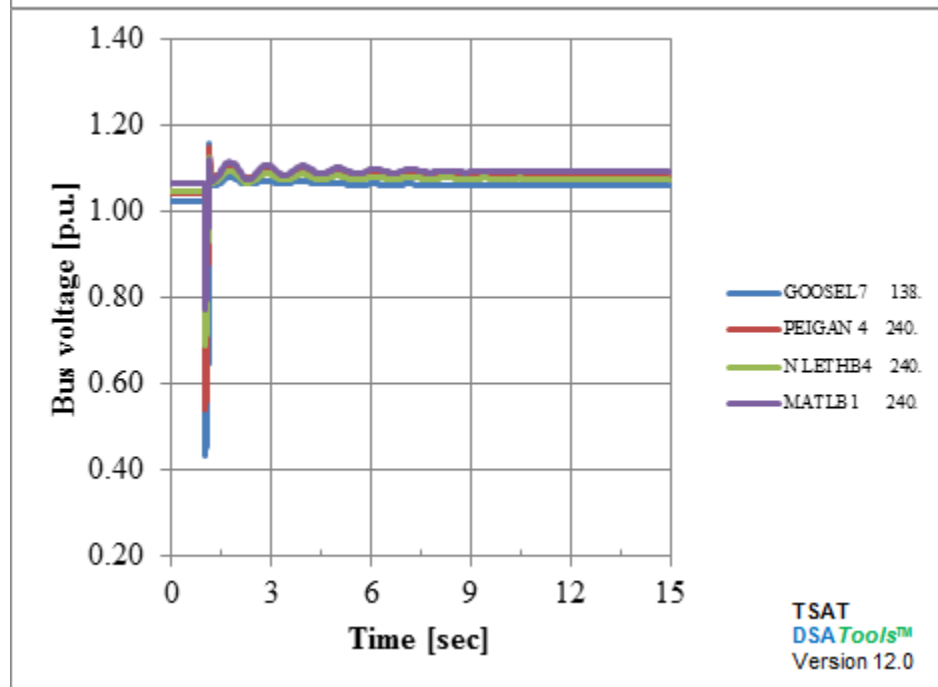
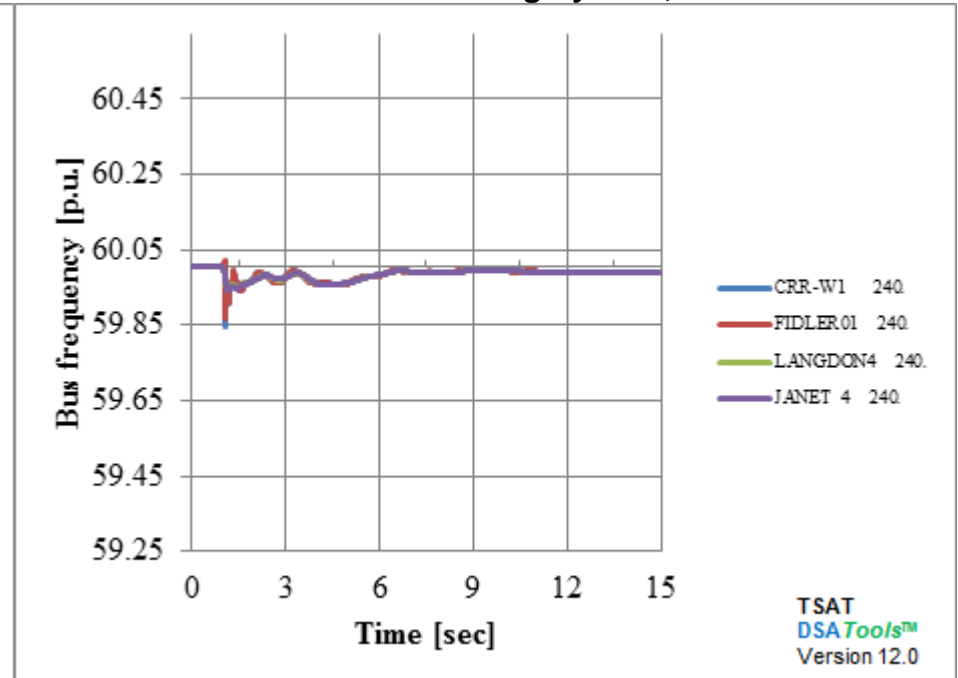
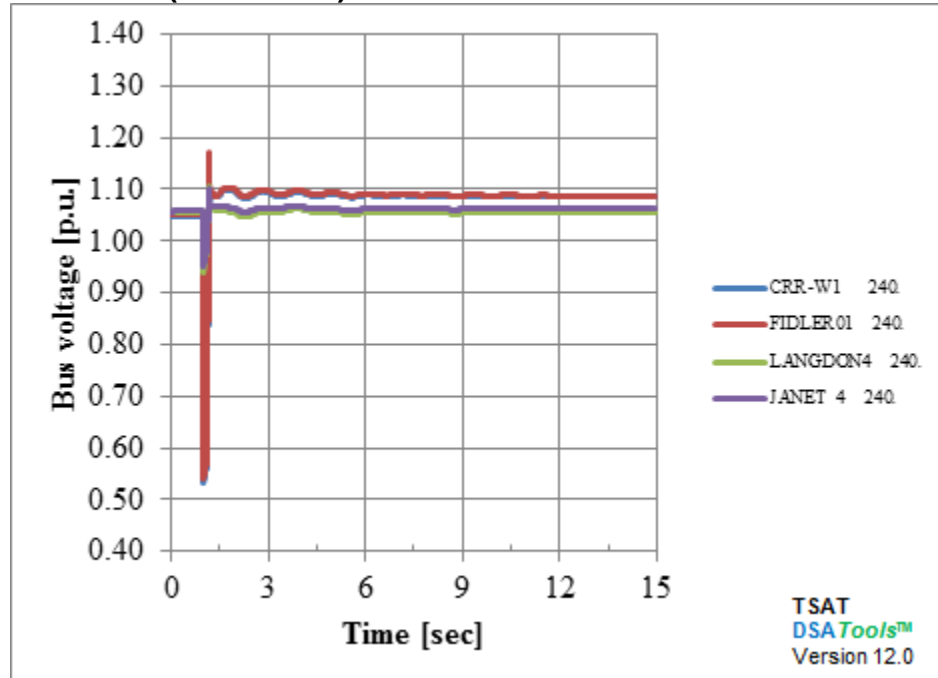
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



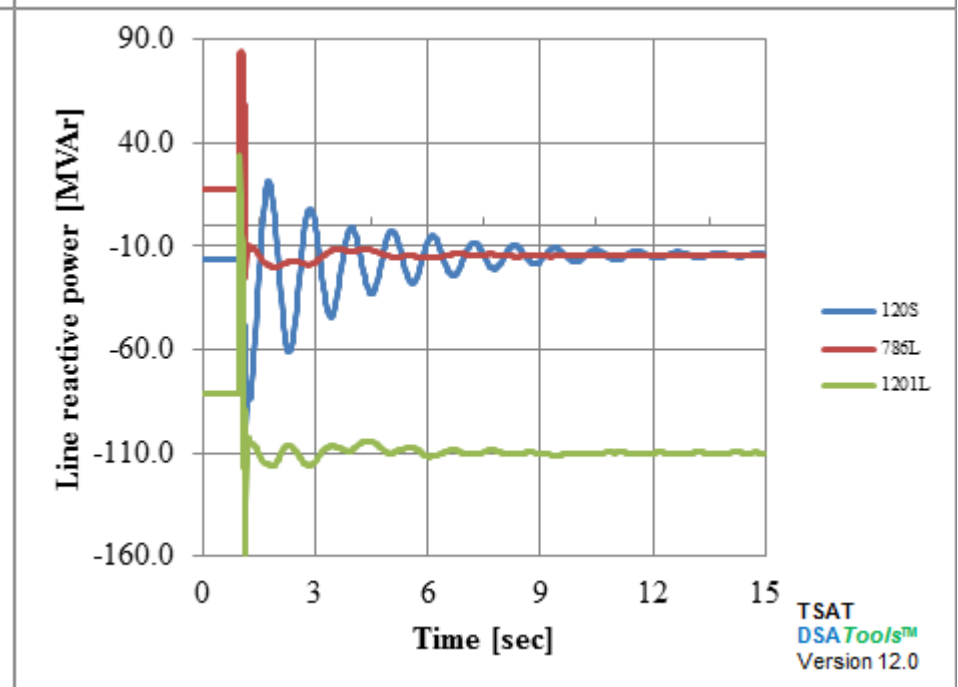
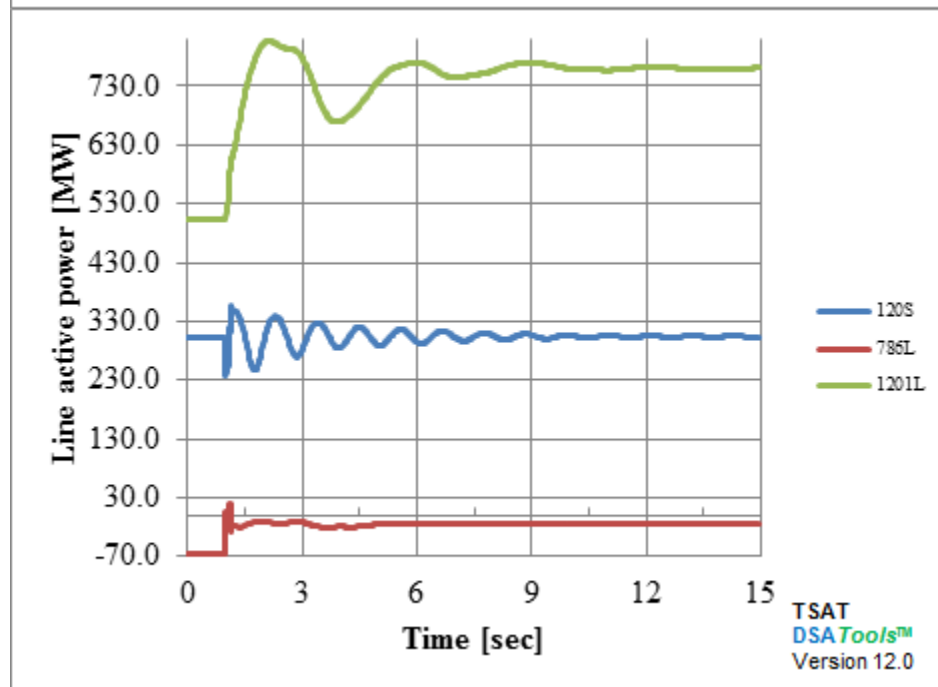
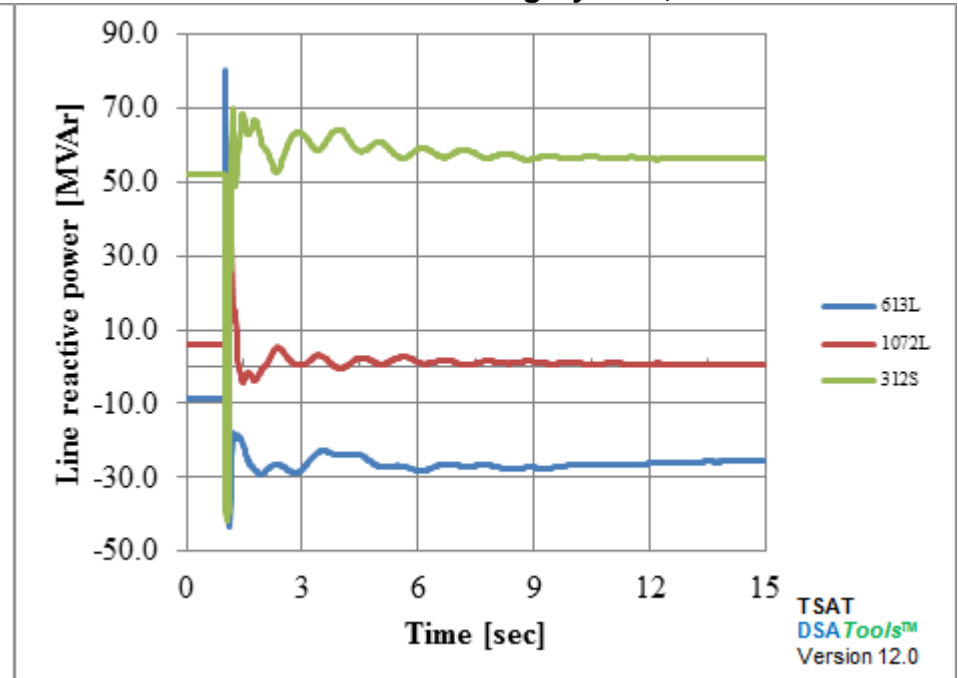
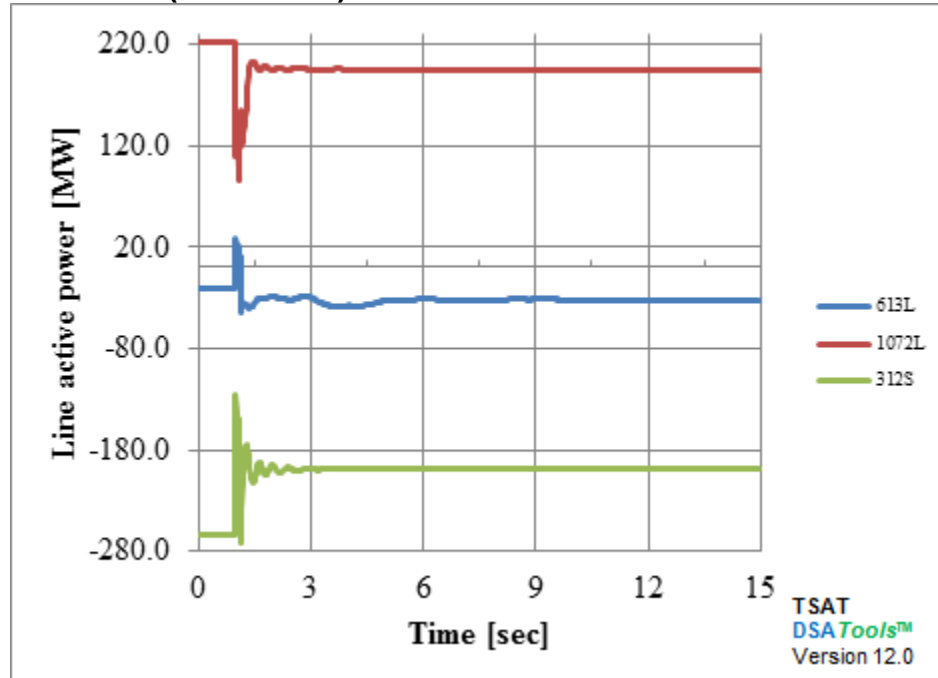
12 -- 616L (59S - 103S) NEAR 59S

Existing System, Summer Peak 2014



12 -- 616L (59S - 103S) NEAR 59S

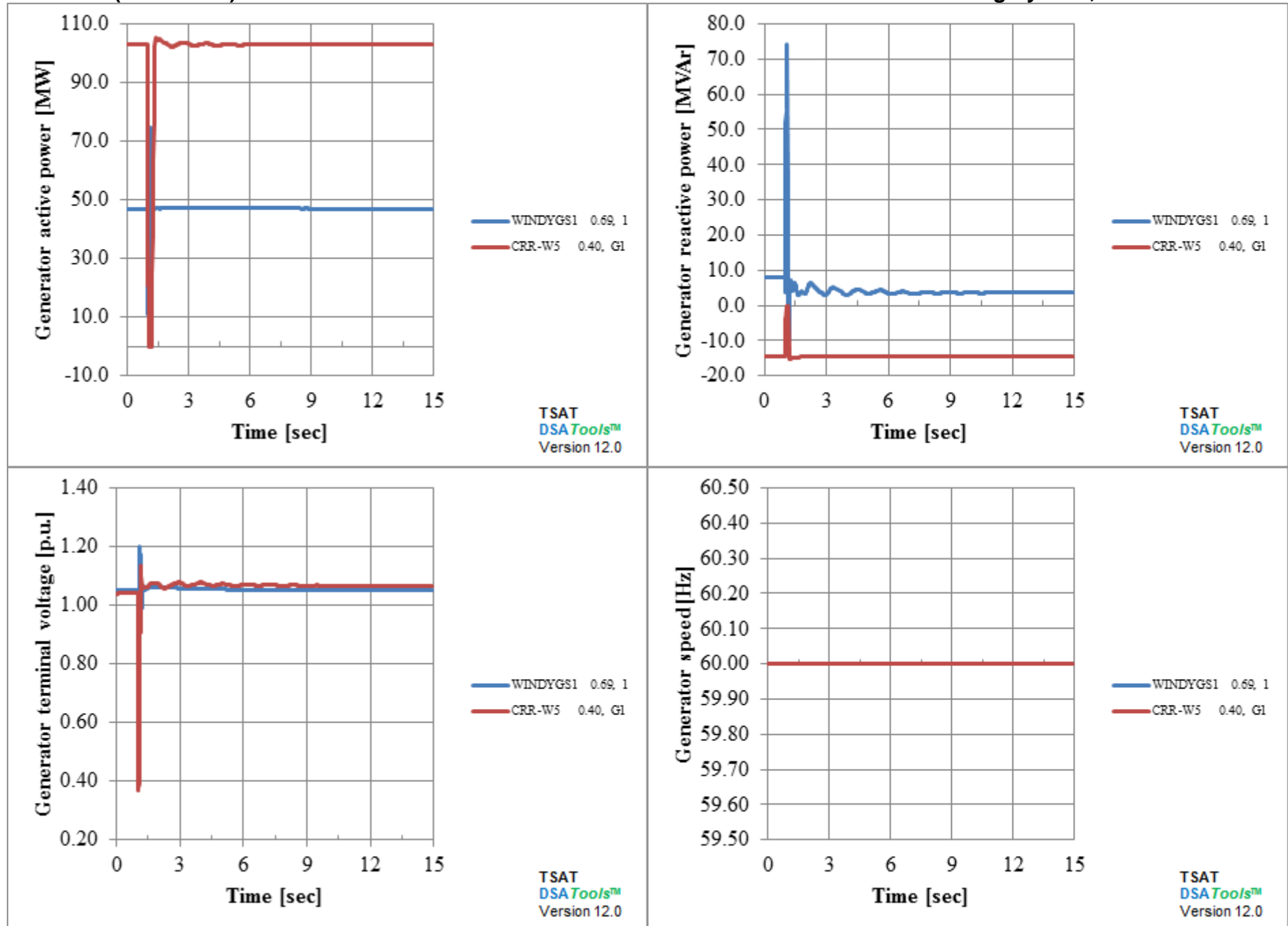
Existing System, Summer Peak 2014





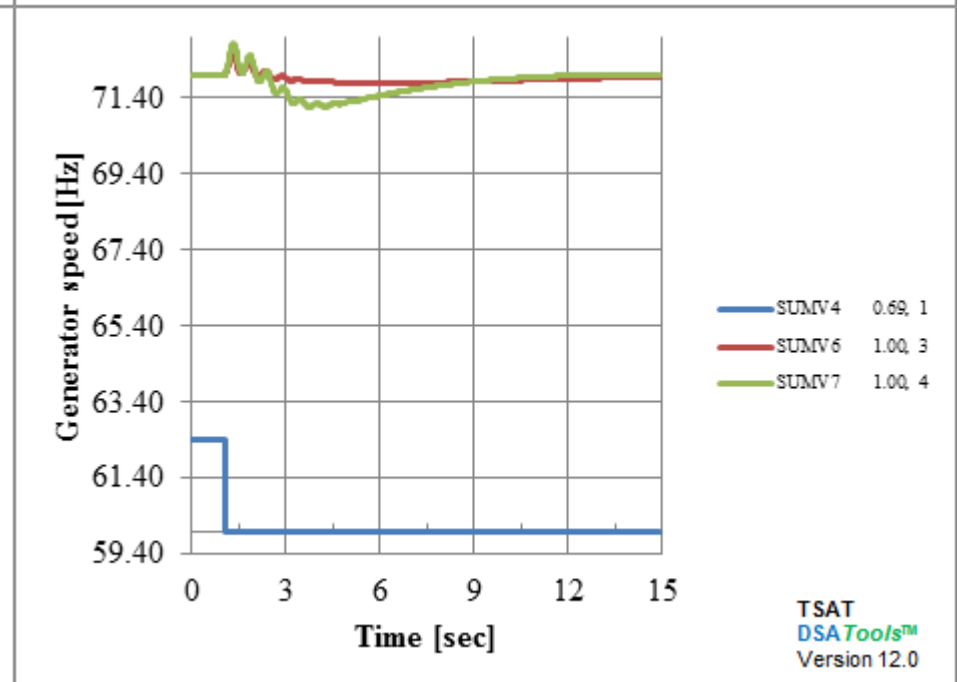
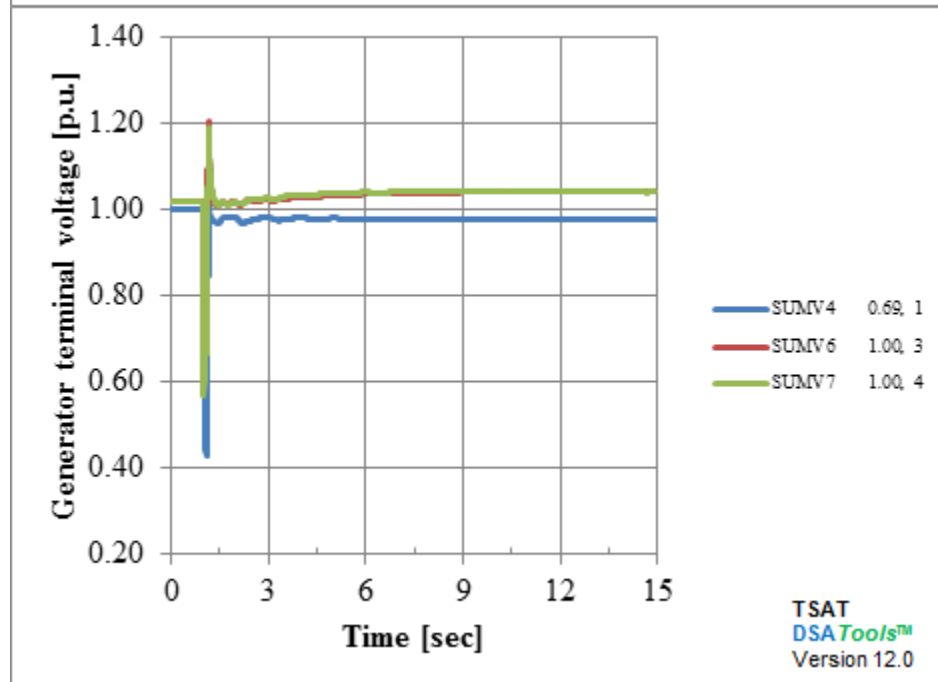
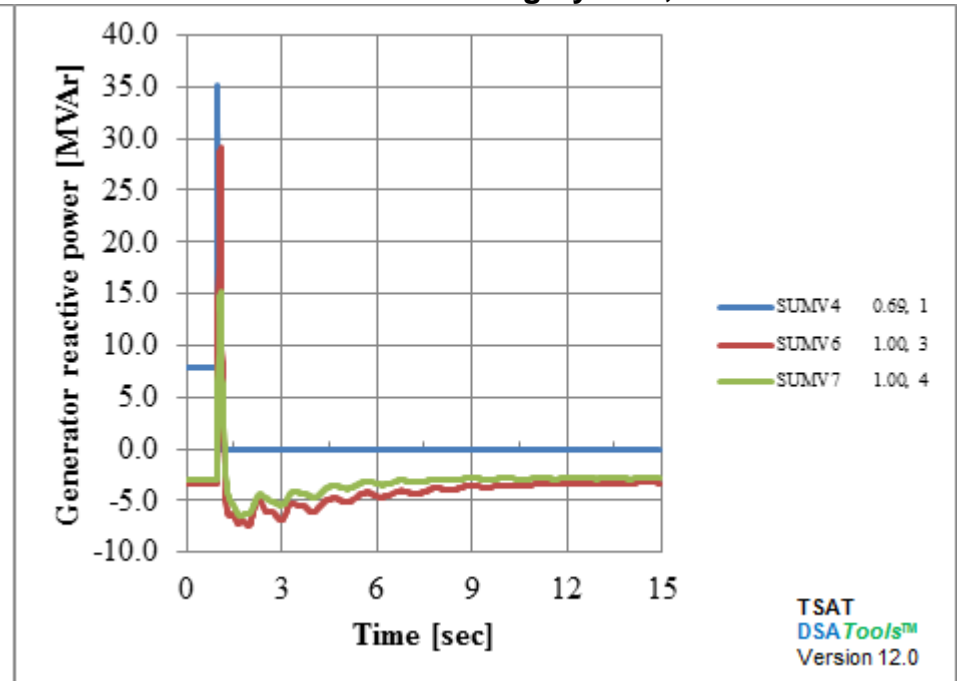
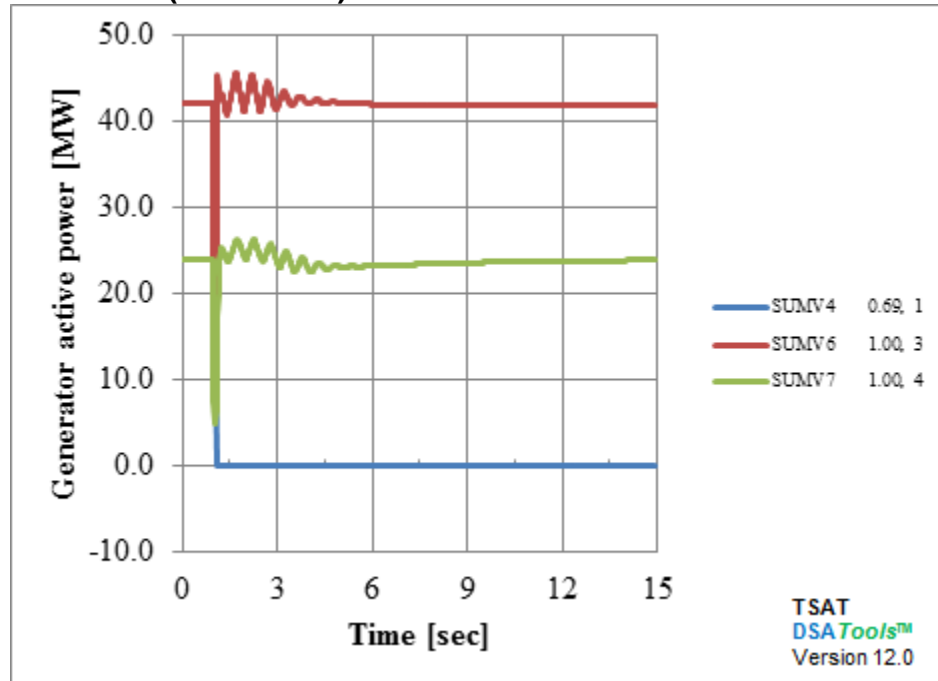
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Existing System, Summer Peak 2014



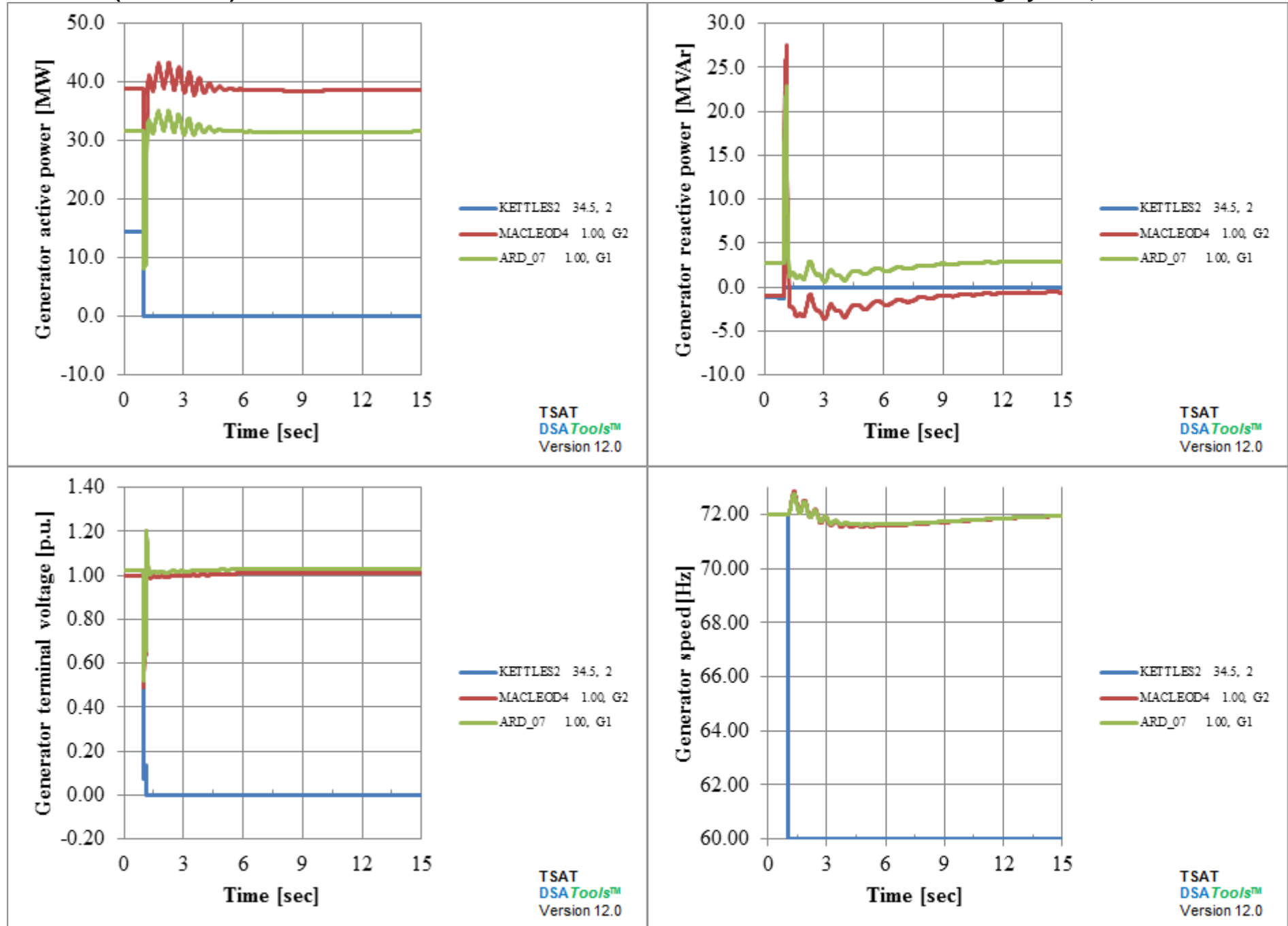
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



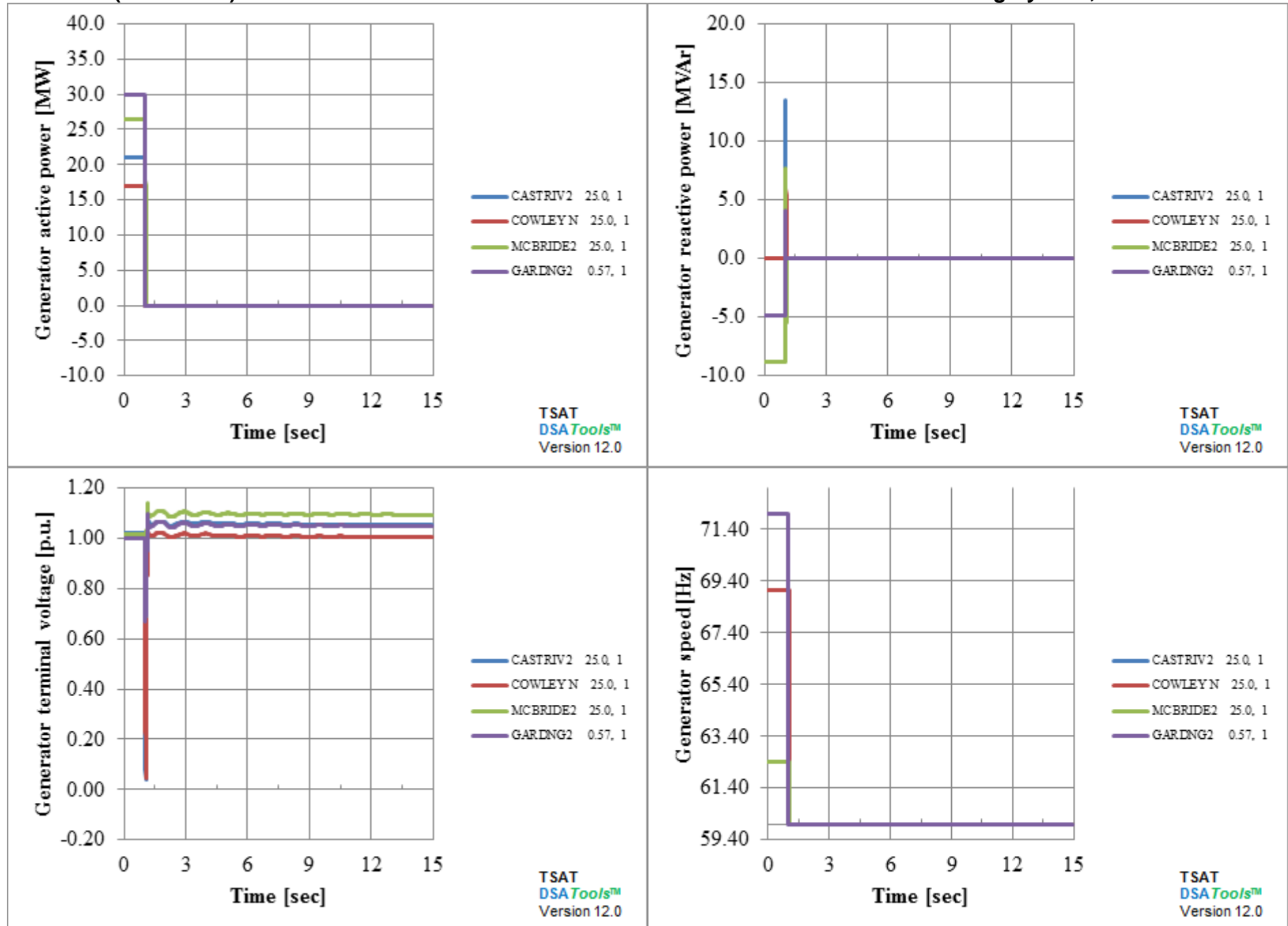
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



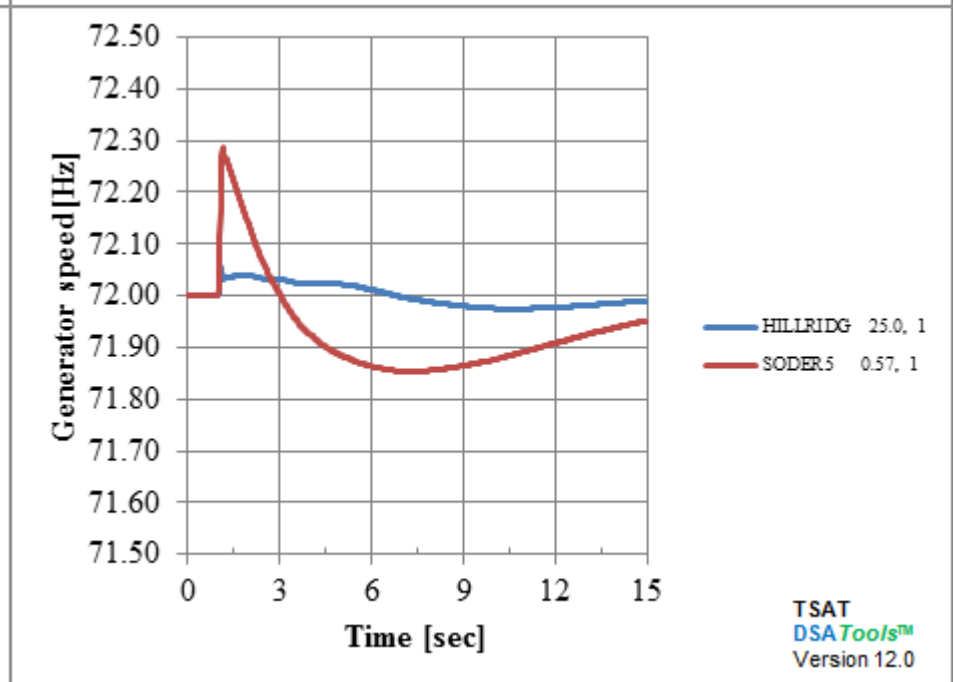
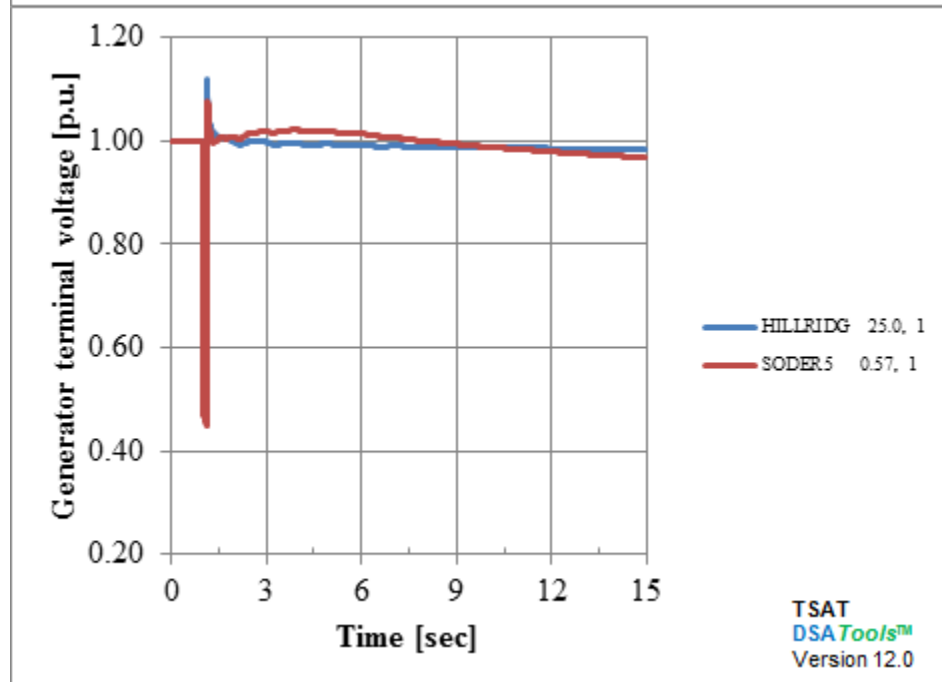
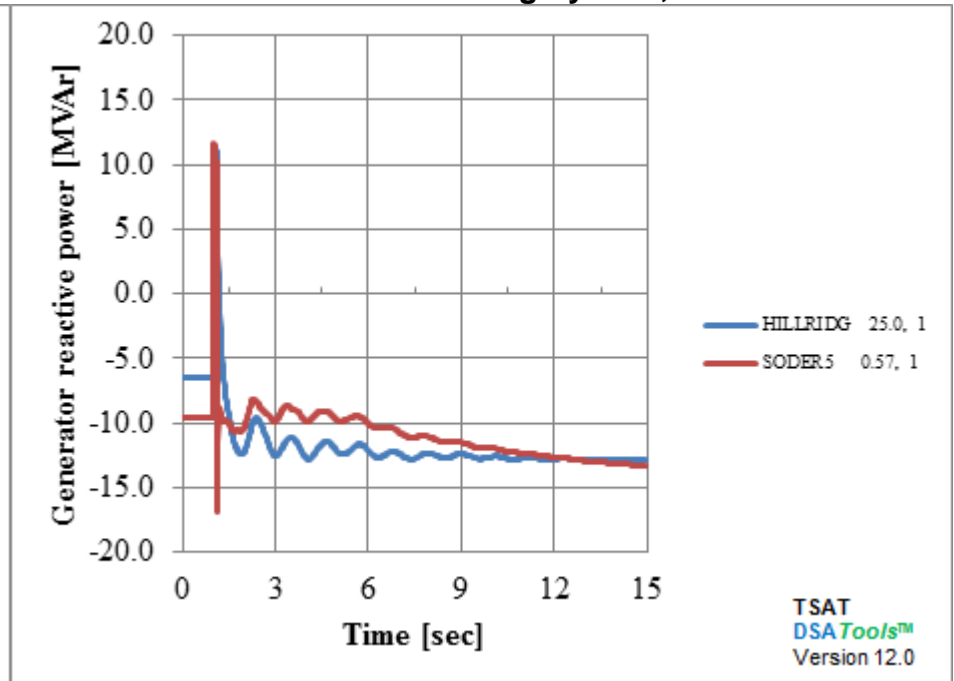
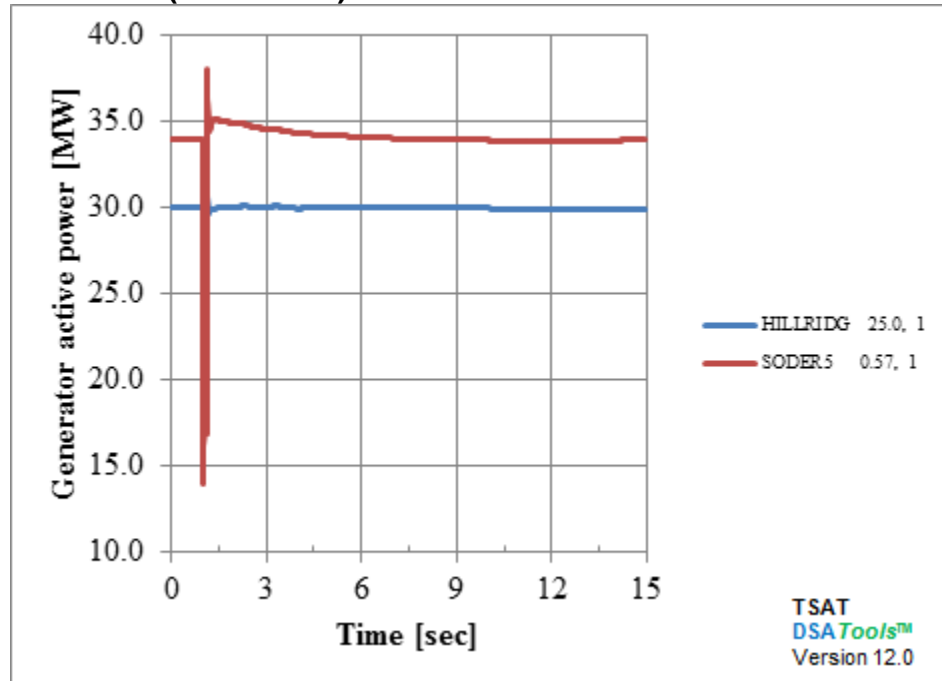
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



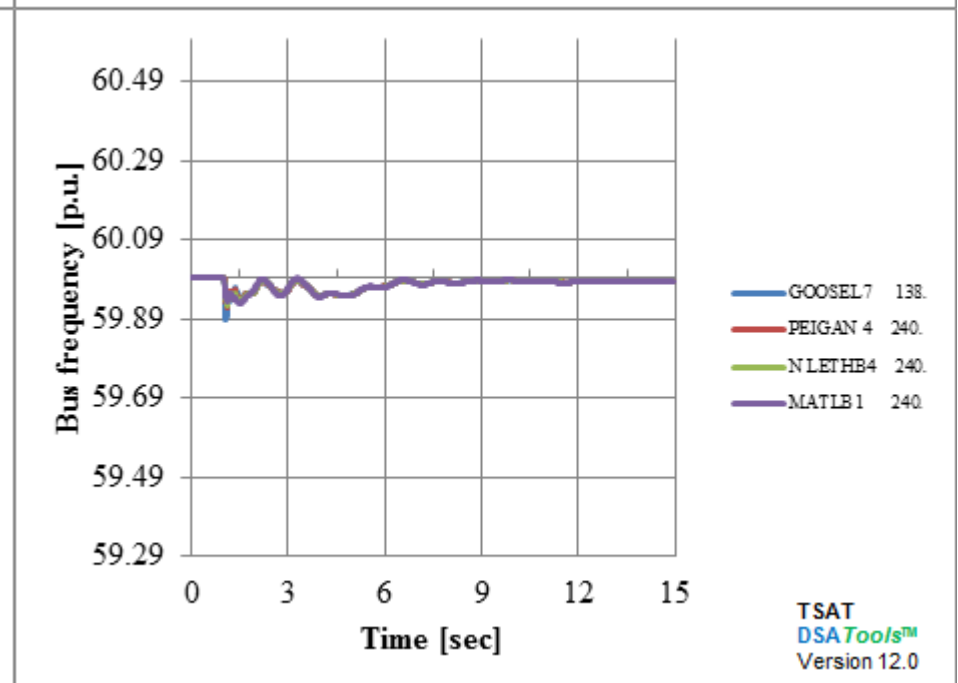
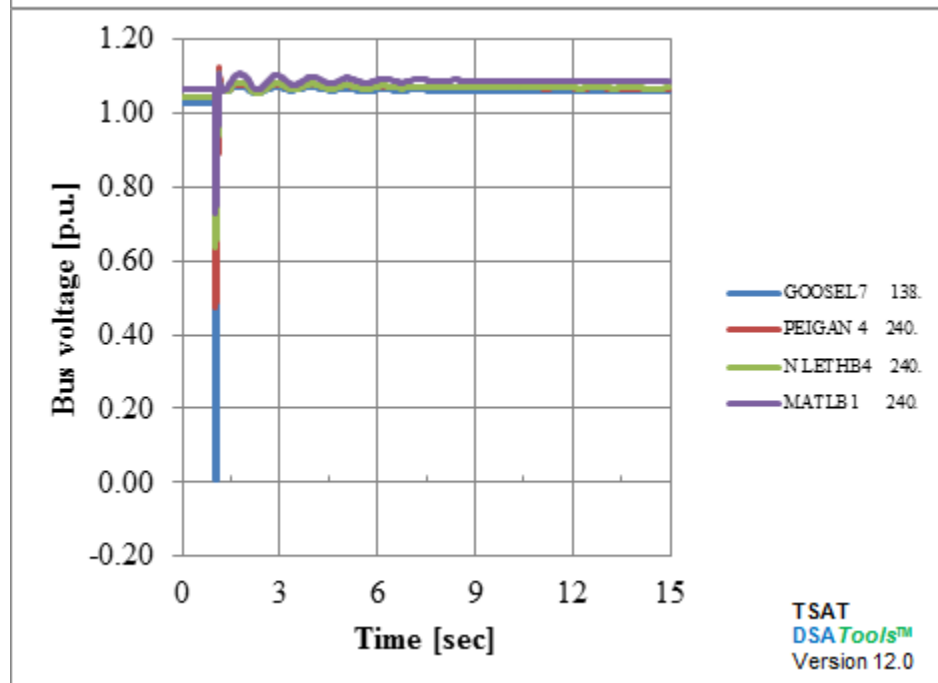
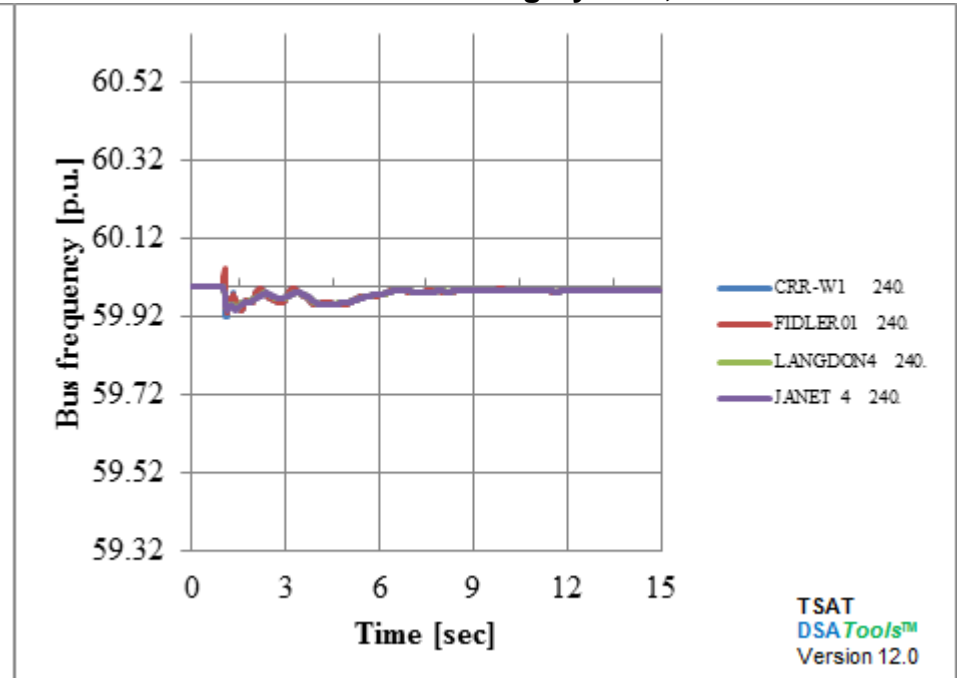
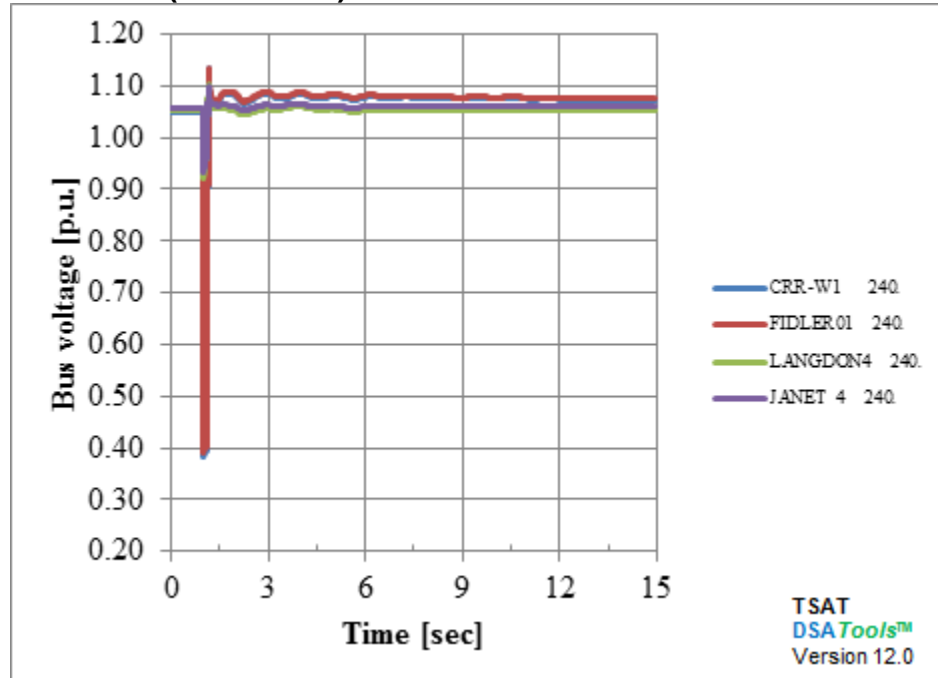
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



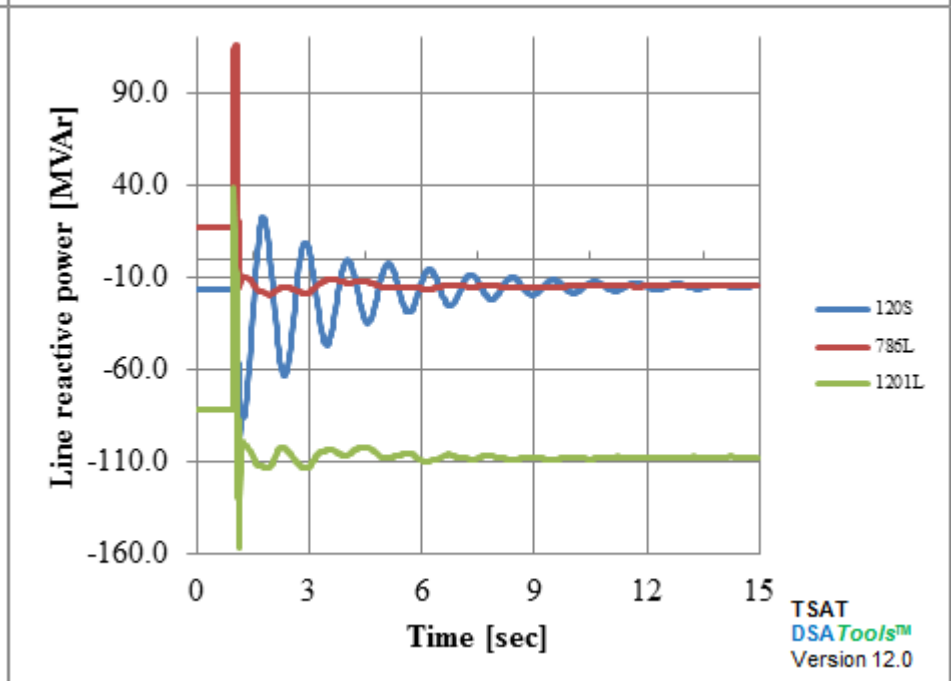
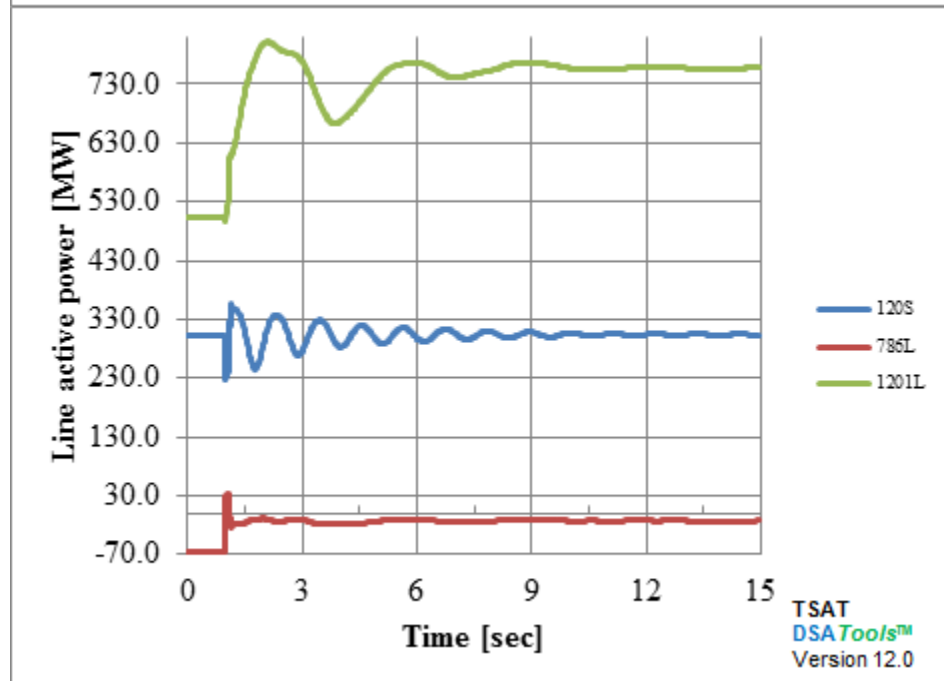
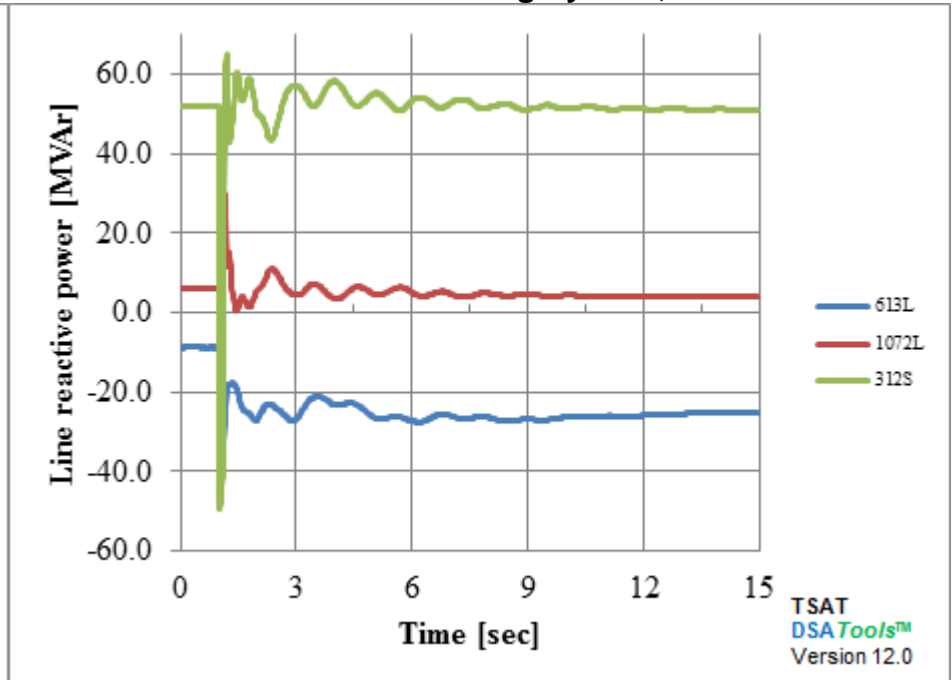
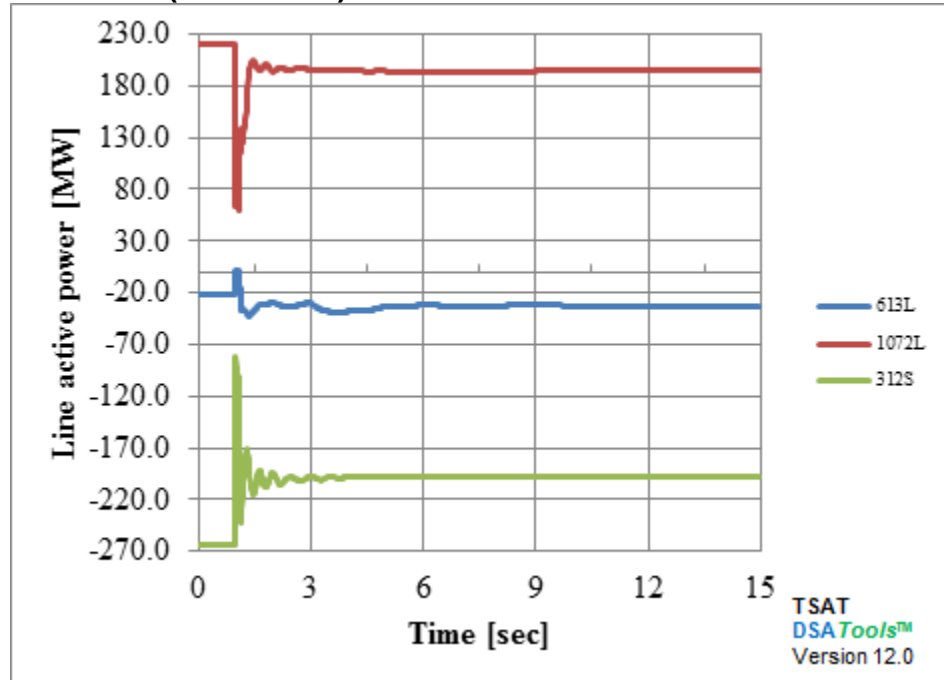
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



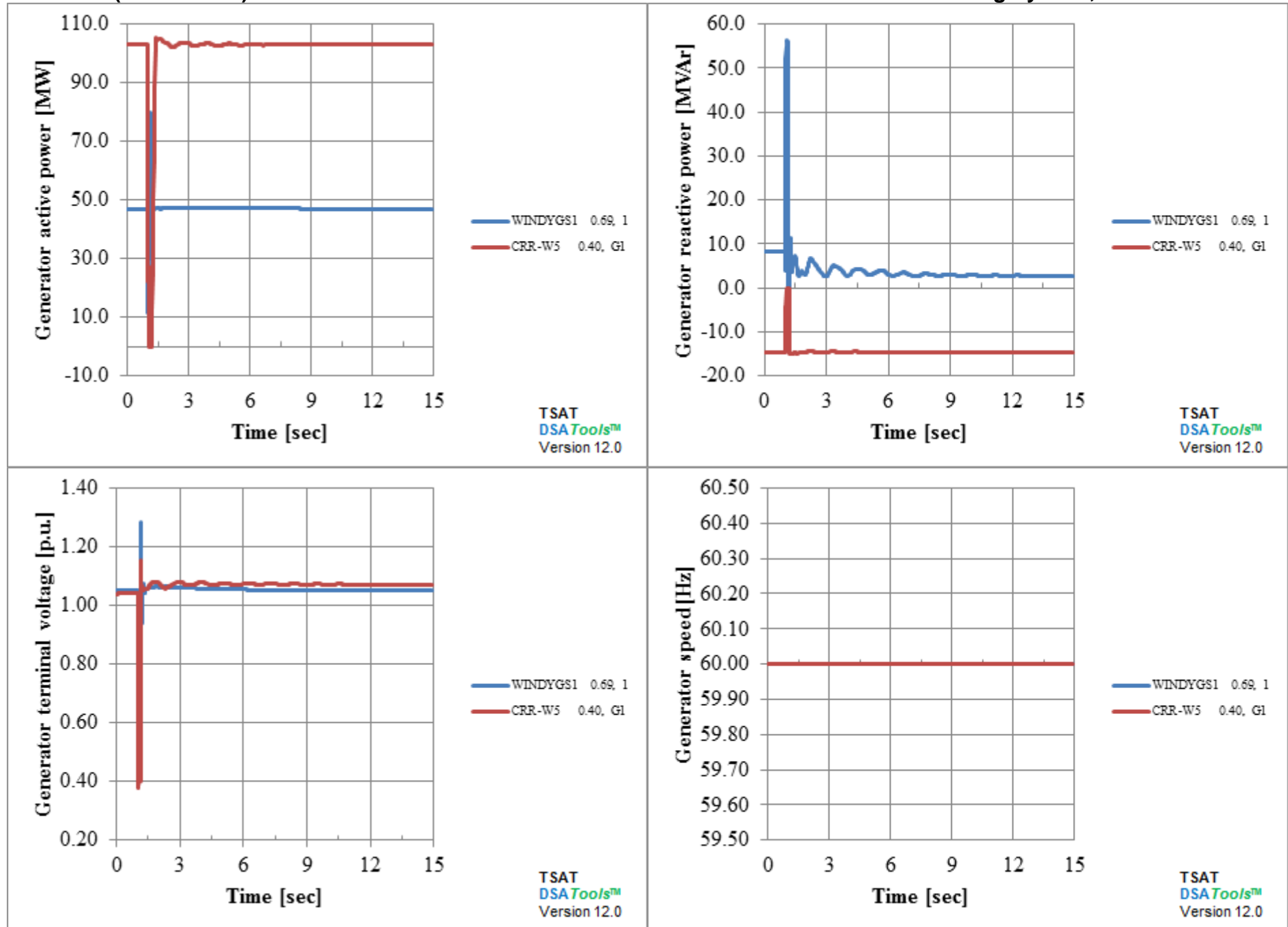
13 -- 616L (59S - 103S) NEAR 103S

Existing System, Summer Peak 2014



14 -- 613L (396S - 103S) NEAR 396S

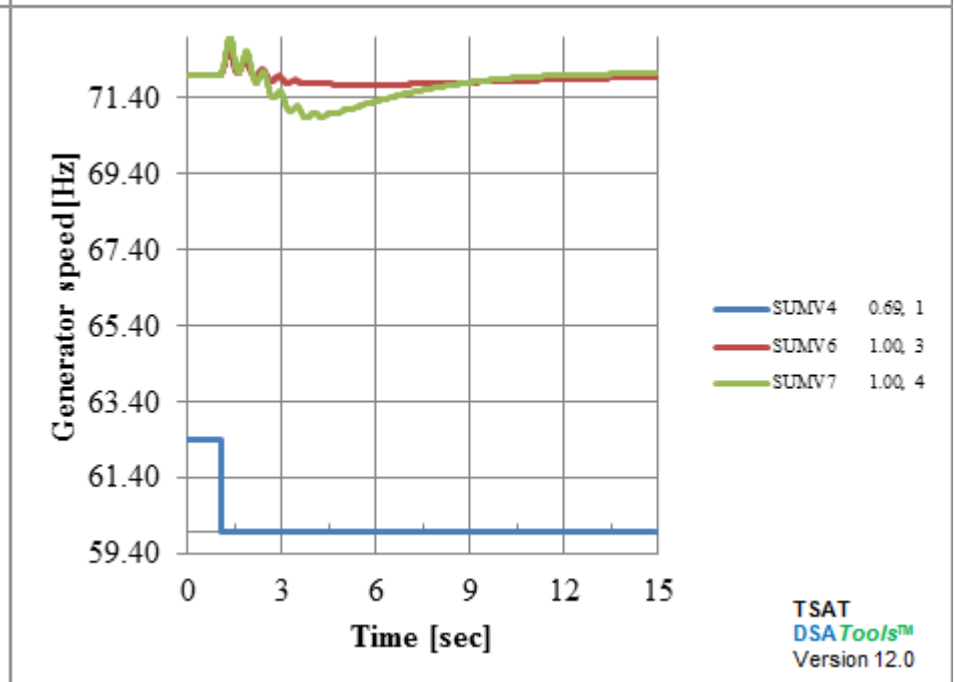
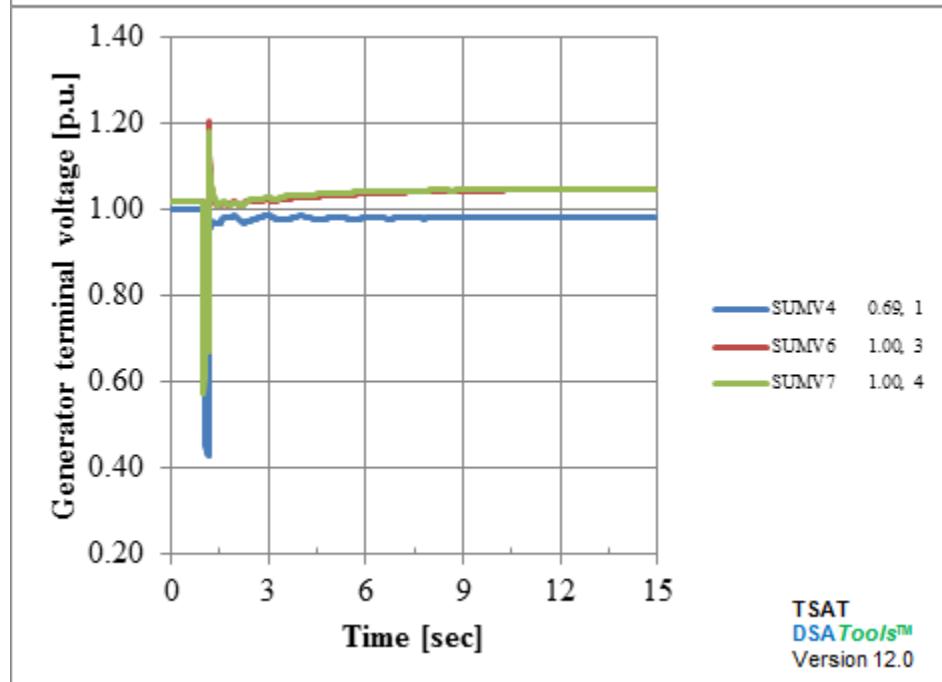
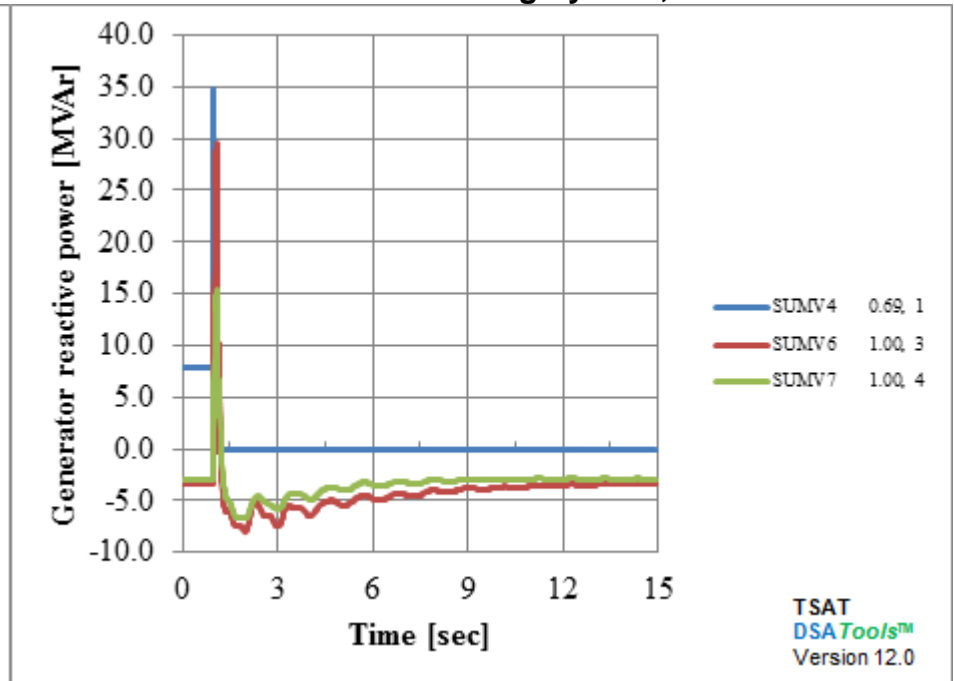
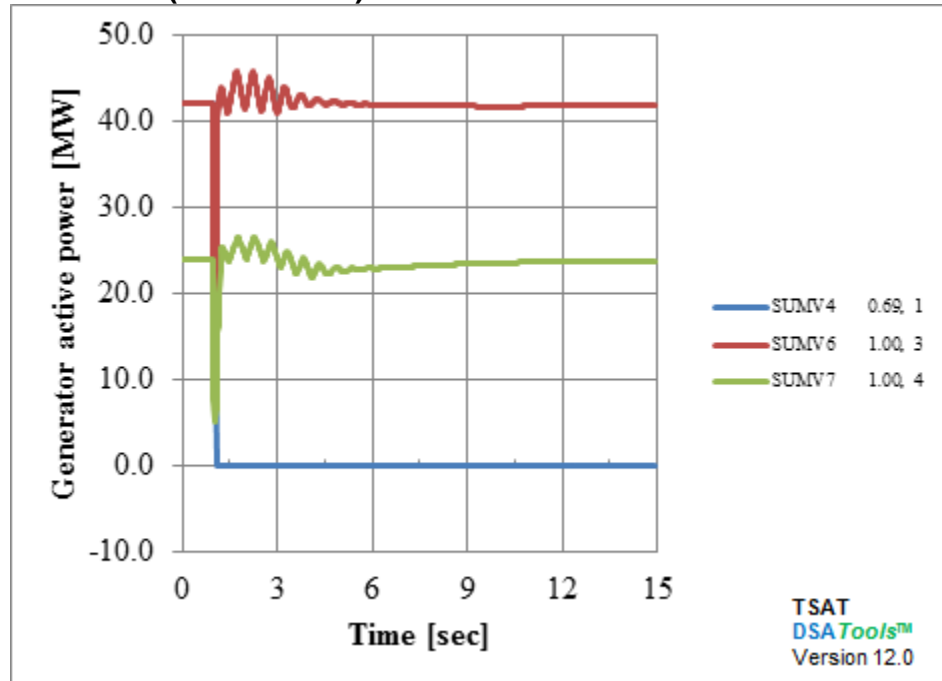
Existing System, Summer Peak 2014





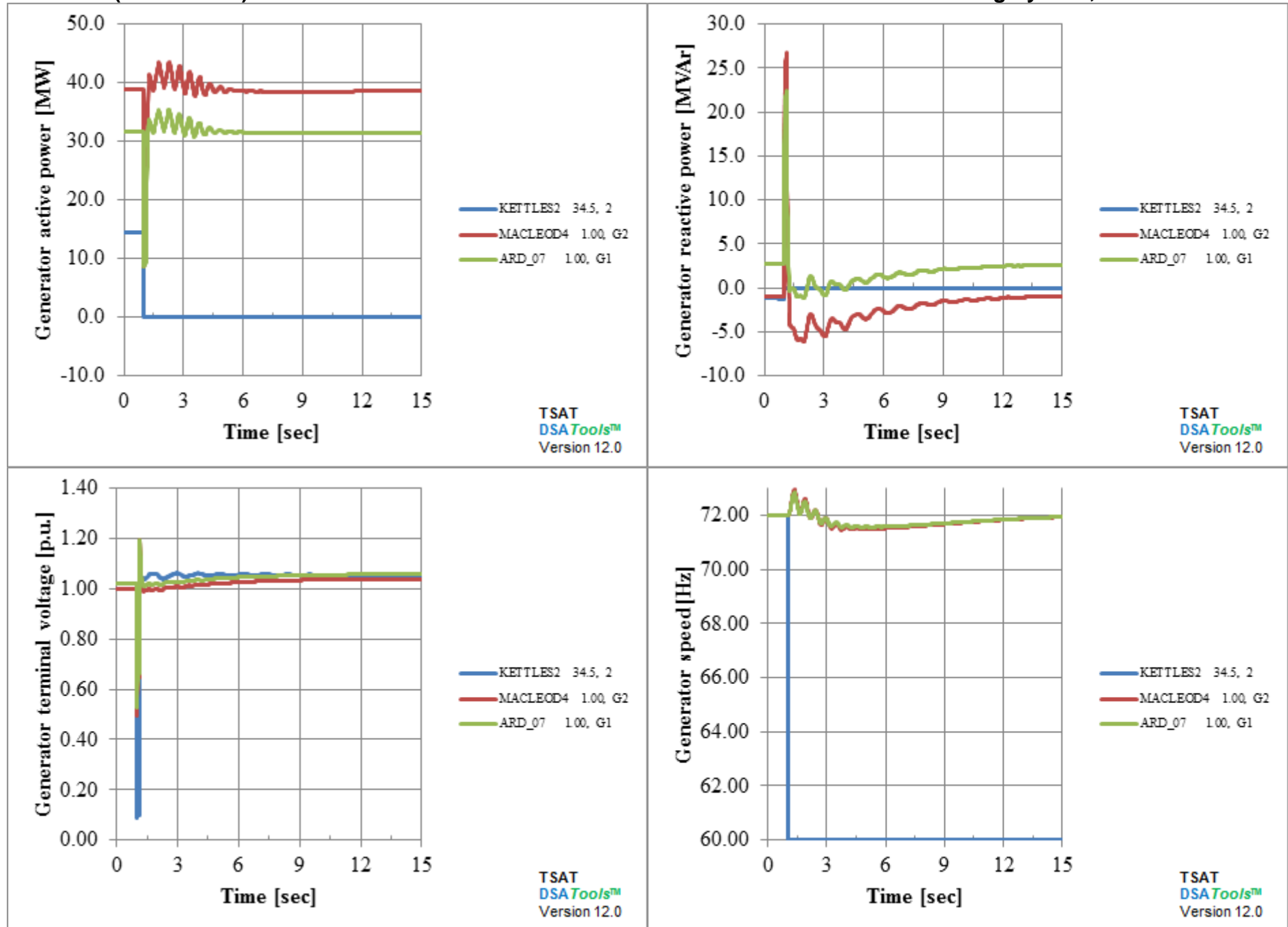
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Peak 2014



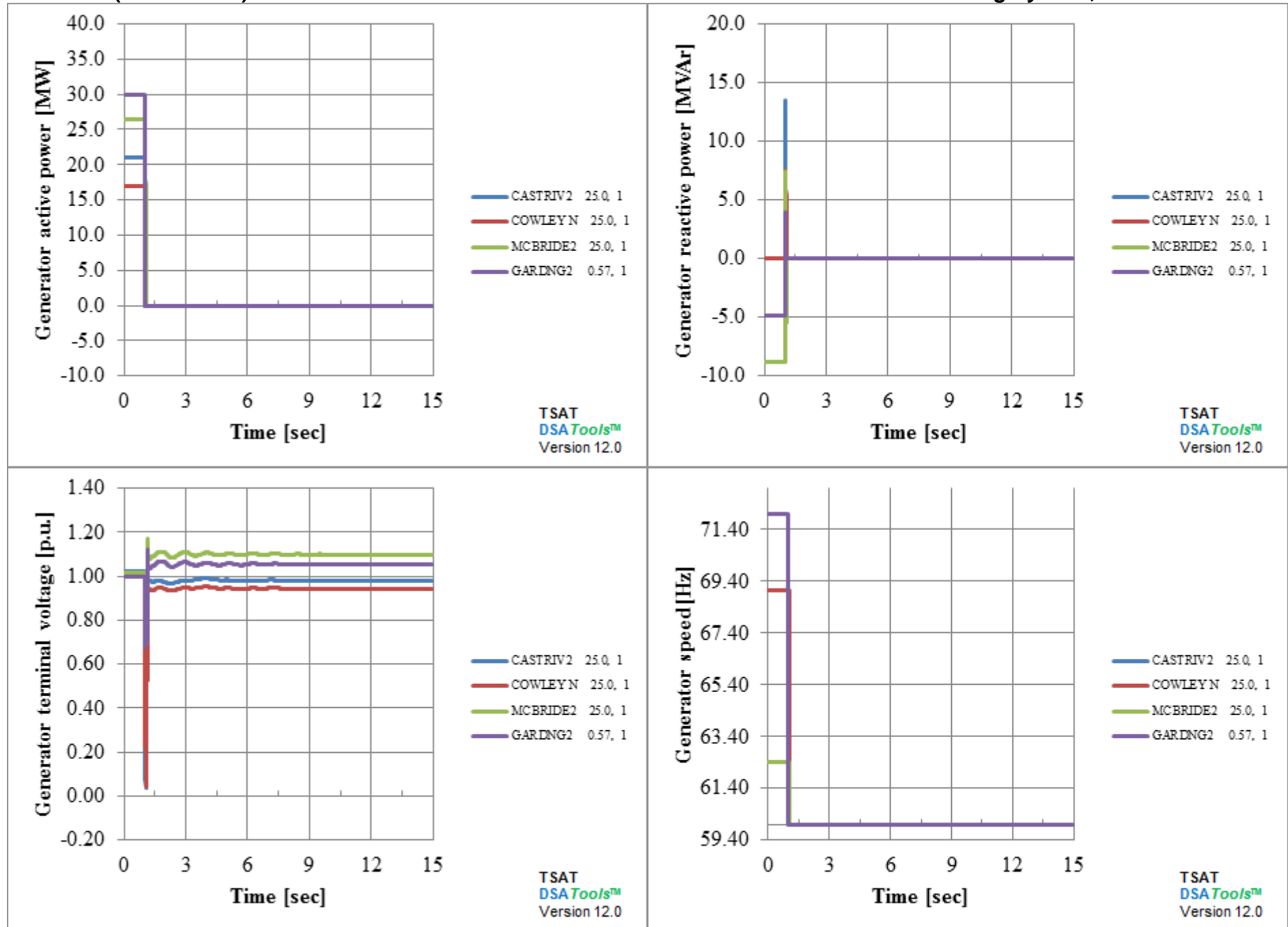
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Peak 2014



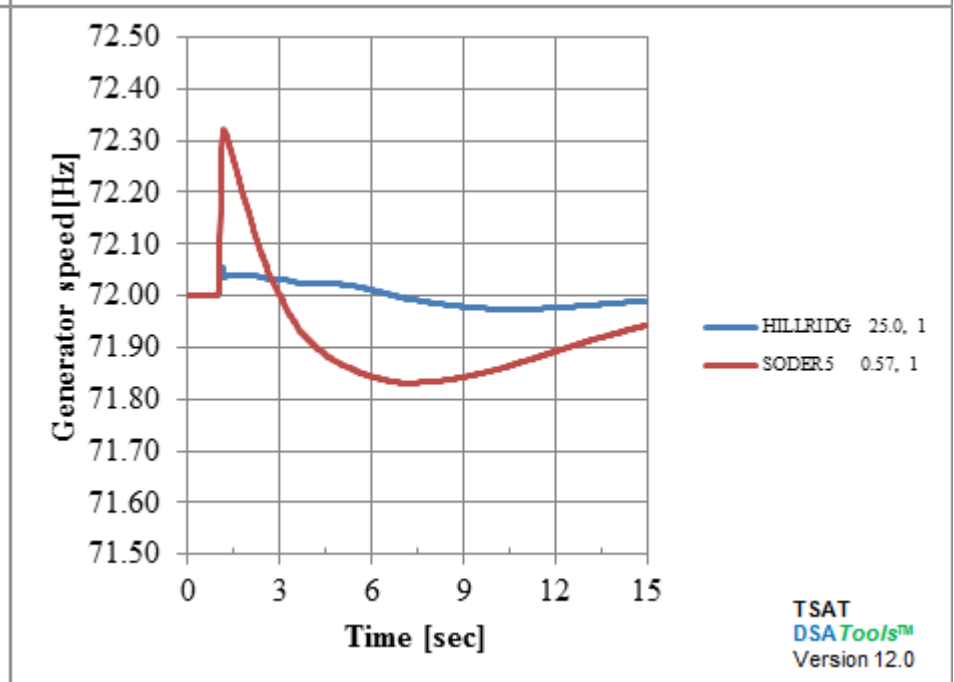
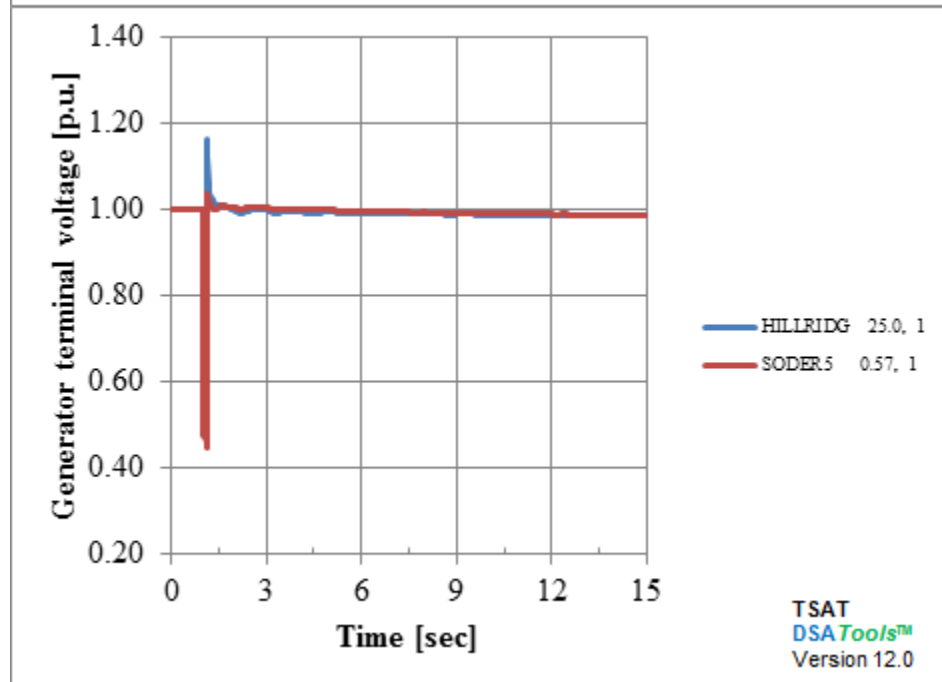
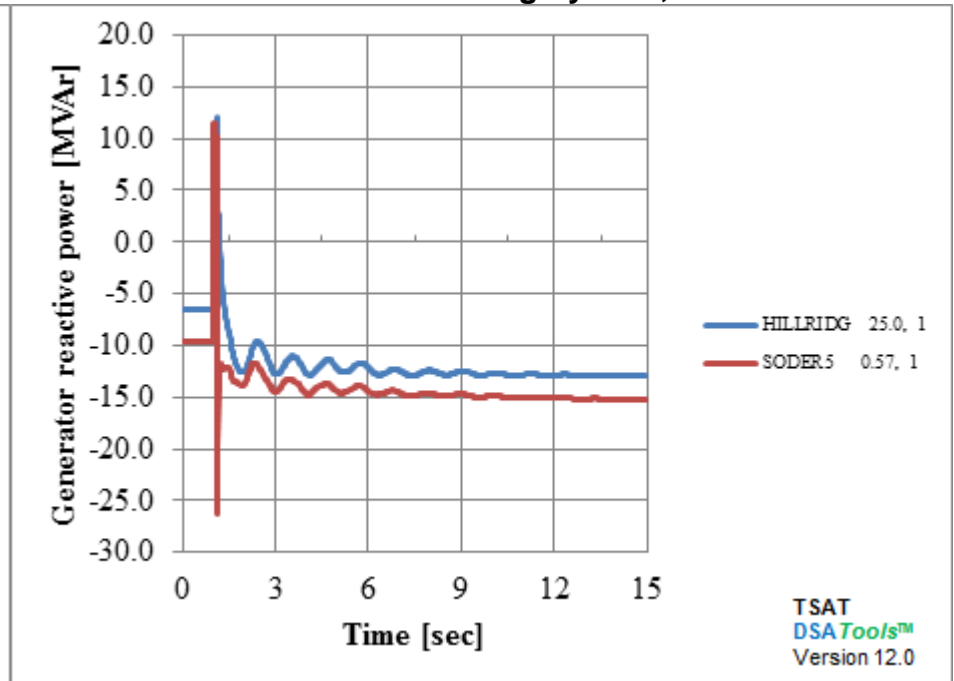
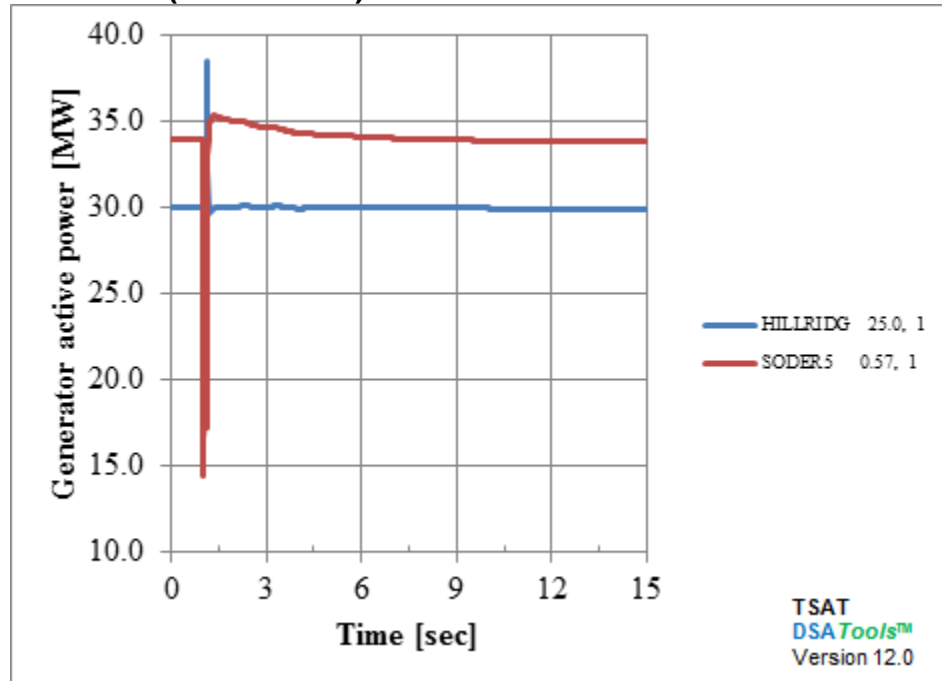
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Peak 2014



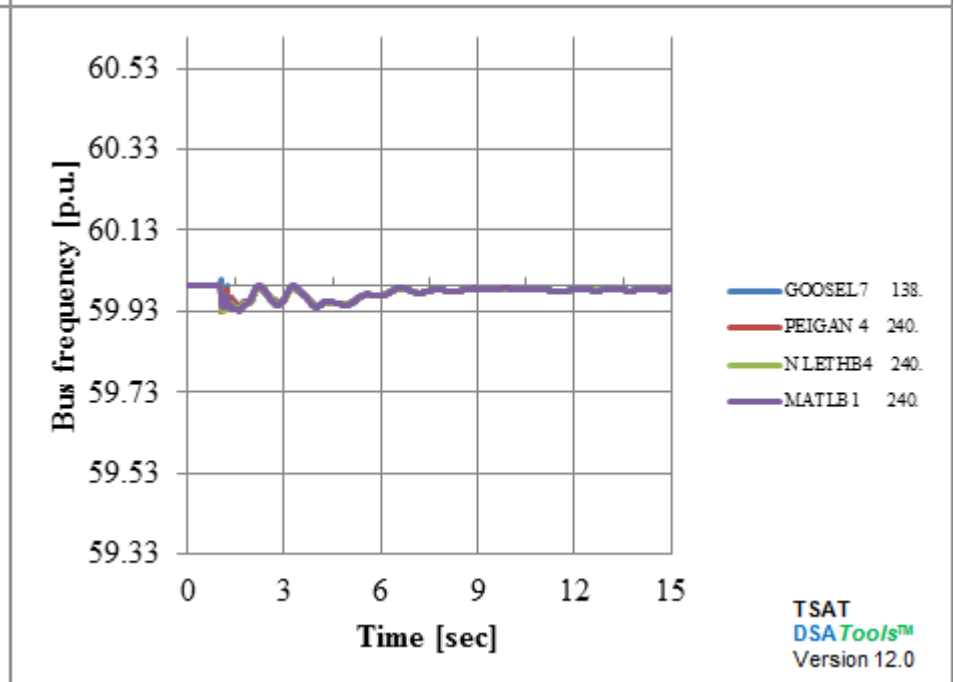
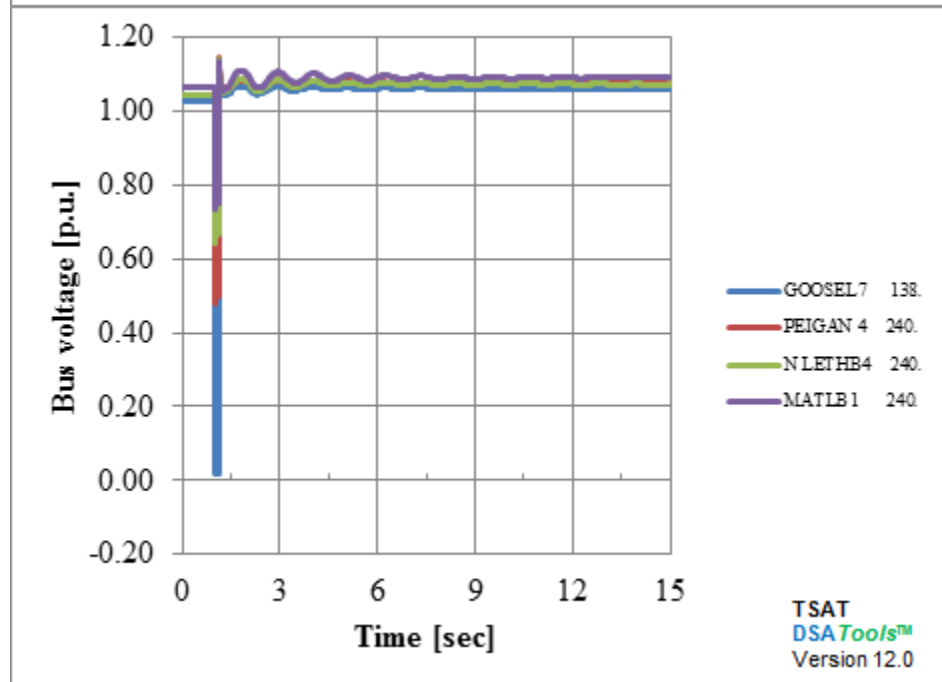
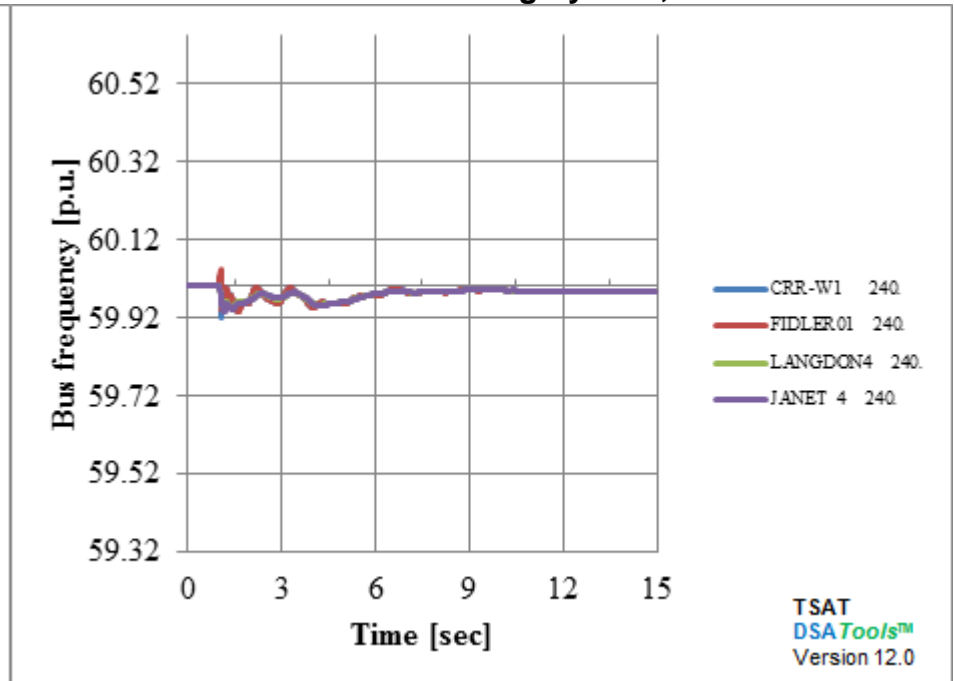
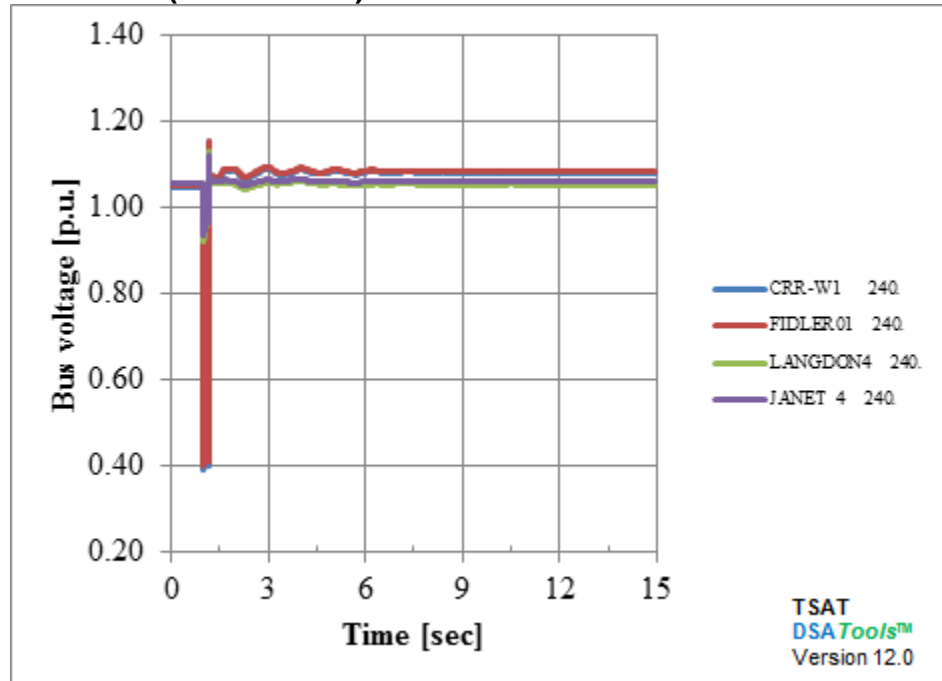
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Peak 2014



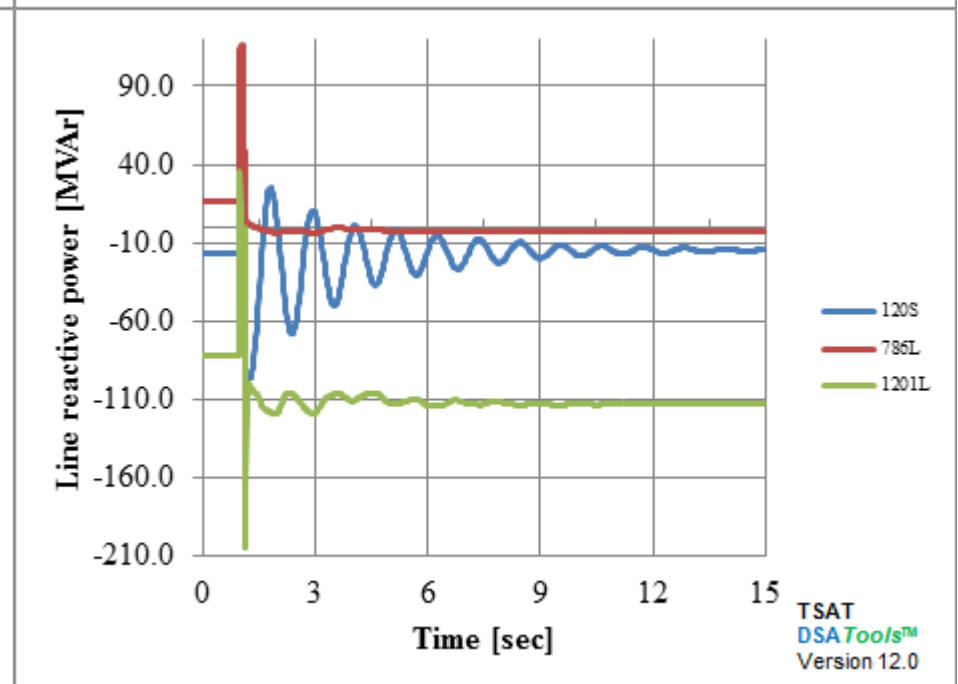
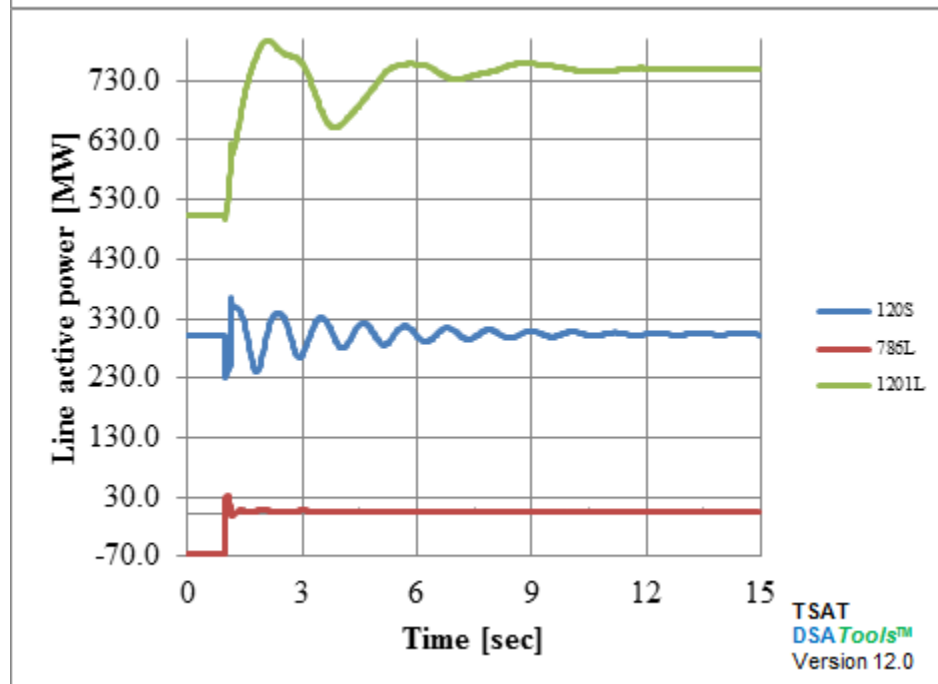
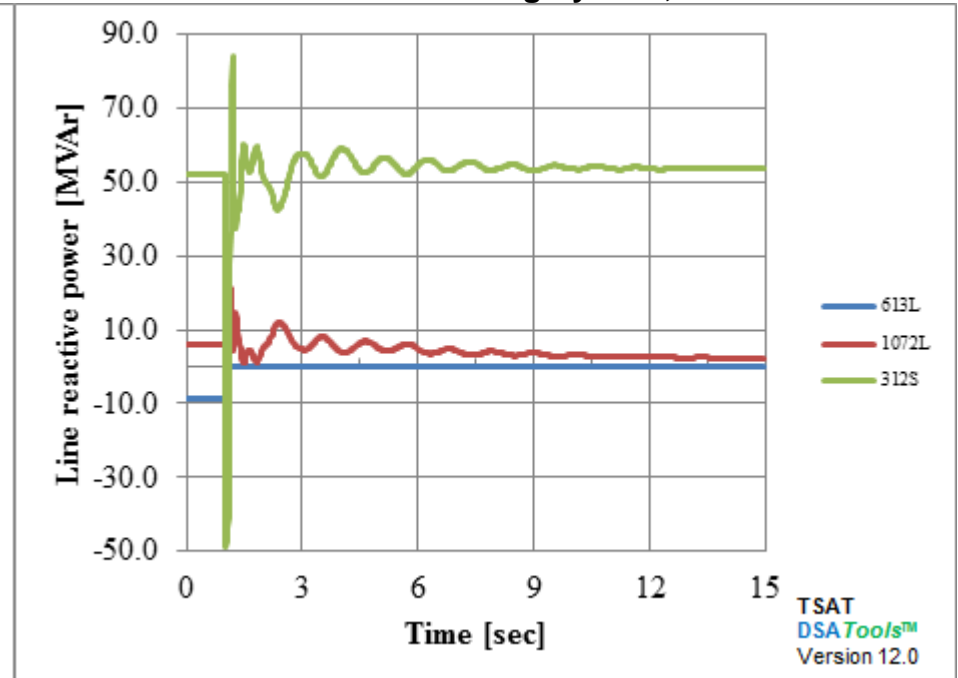
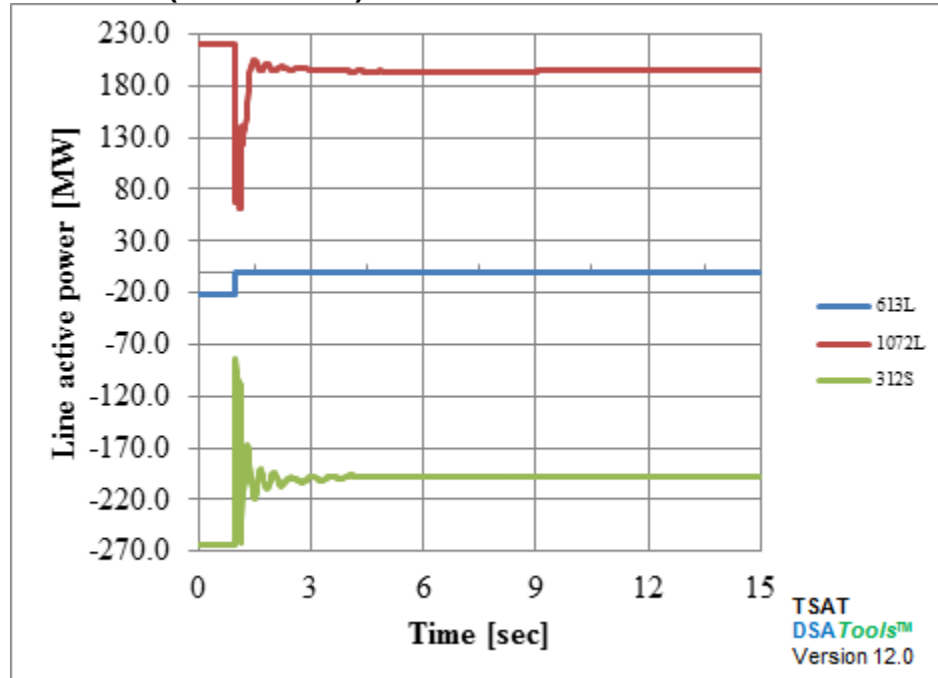
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Peak 2014



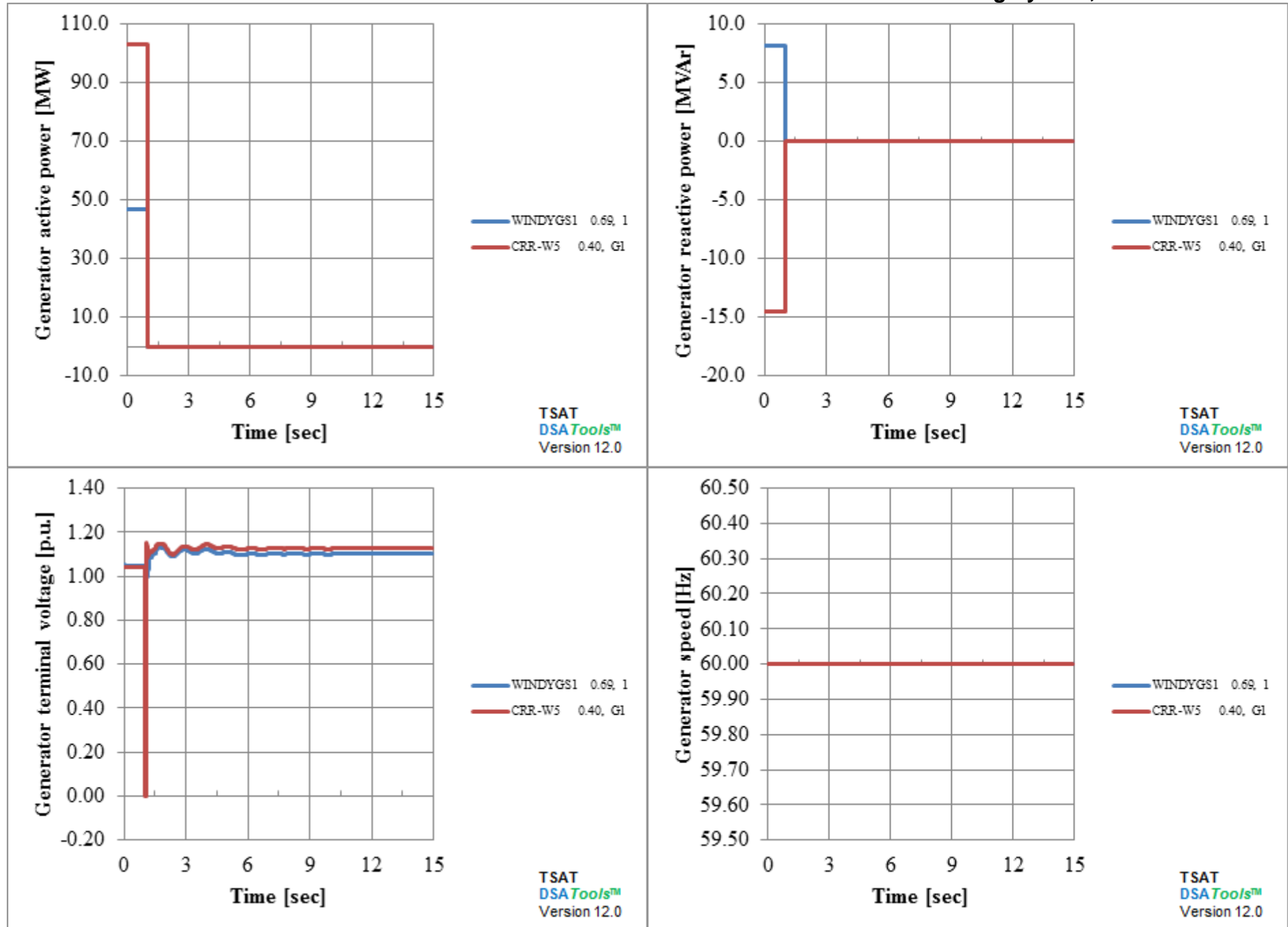
14 -- 613L (396S - 103S) NEAR 396S

Existing System, Summer Peak 2014



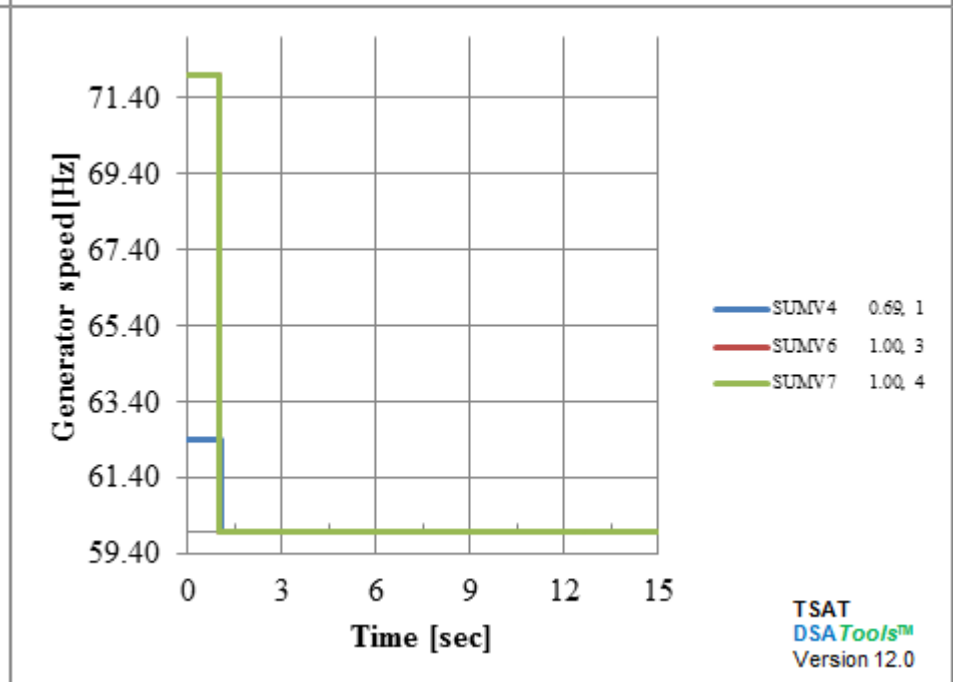
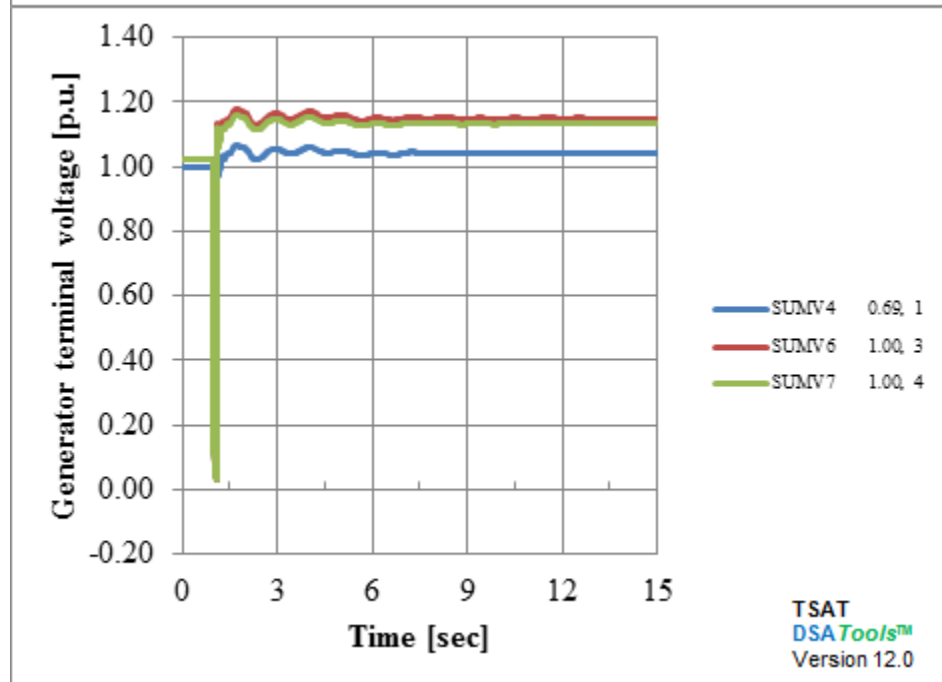
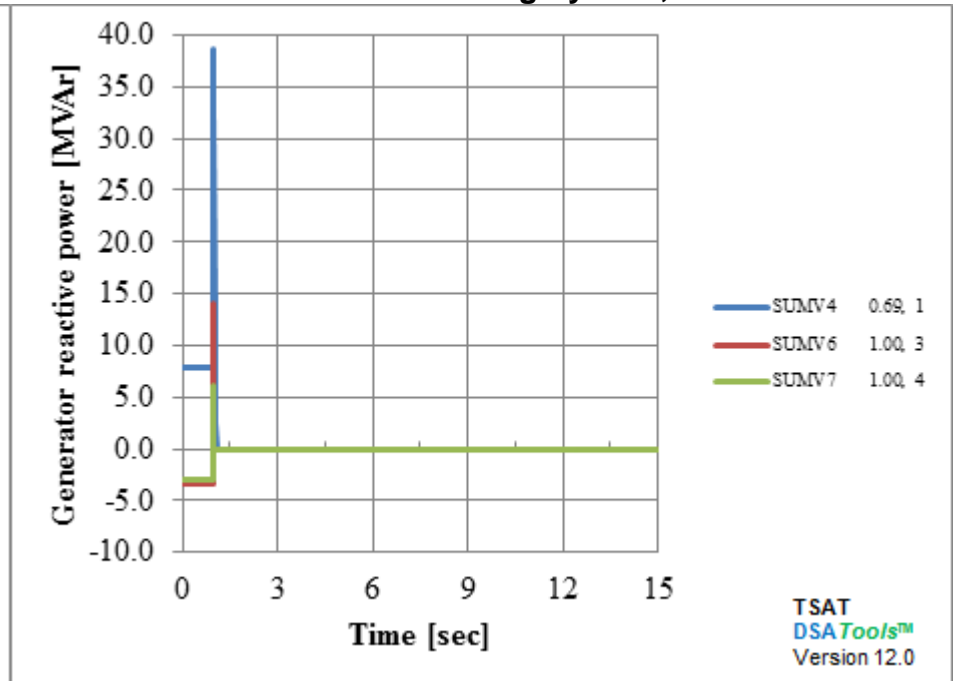
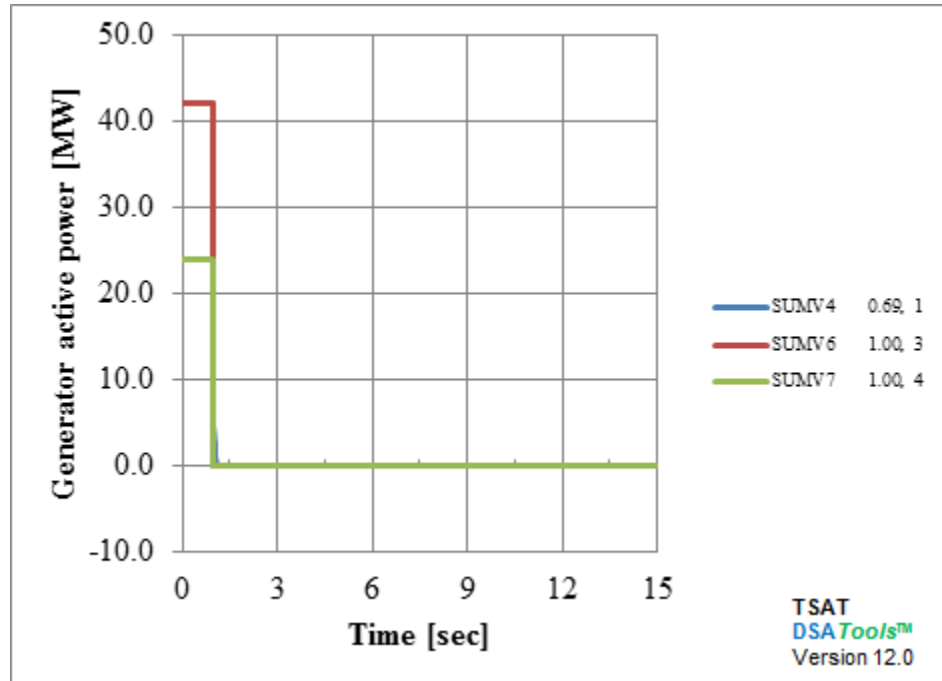
15 -- 103S 240KV-138KV

Existing System, Summer Peak 2014



15 -- 103S 240KV-138KV

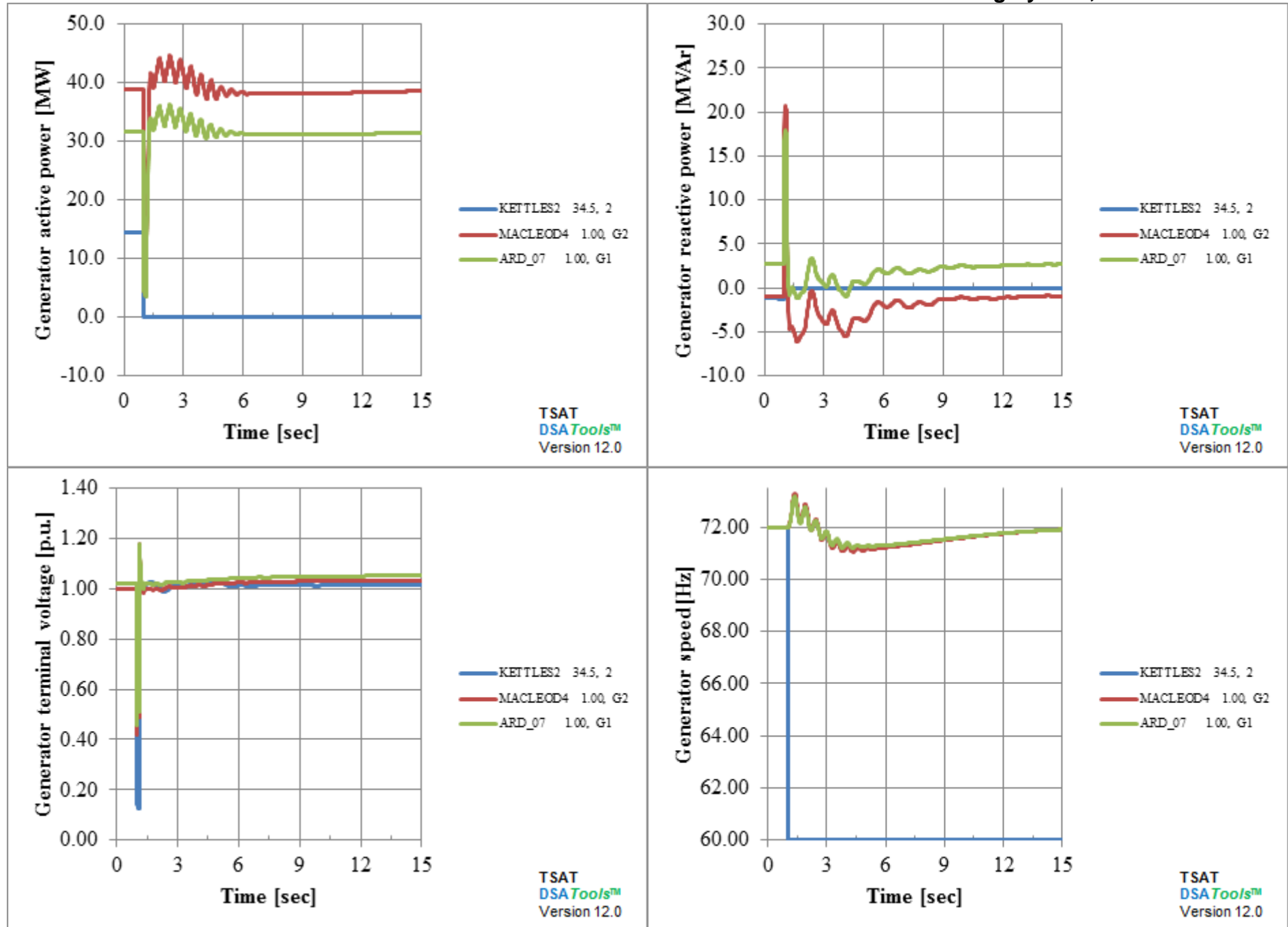
Existing System, Summer Peak 2014





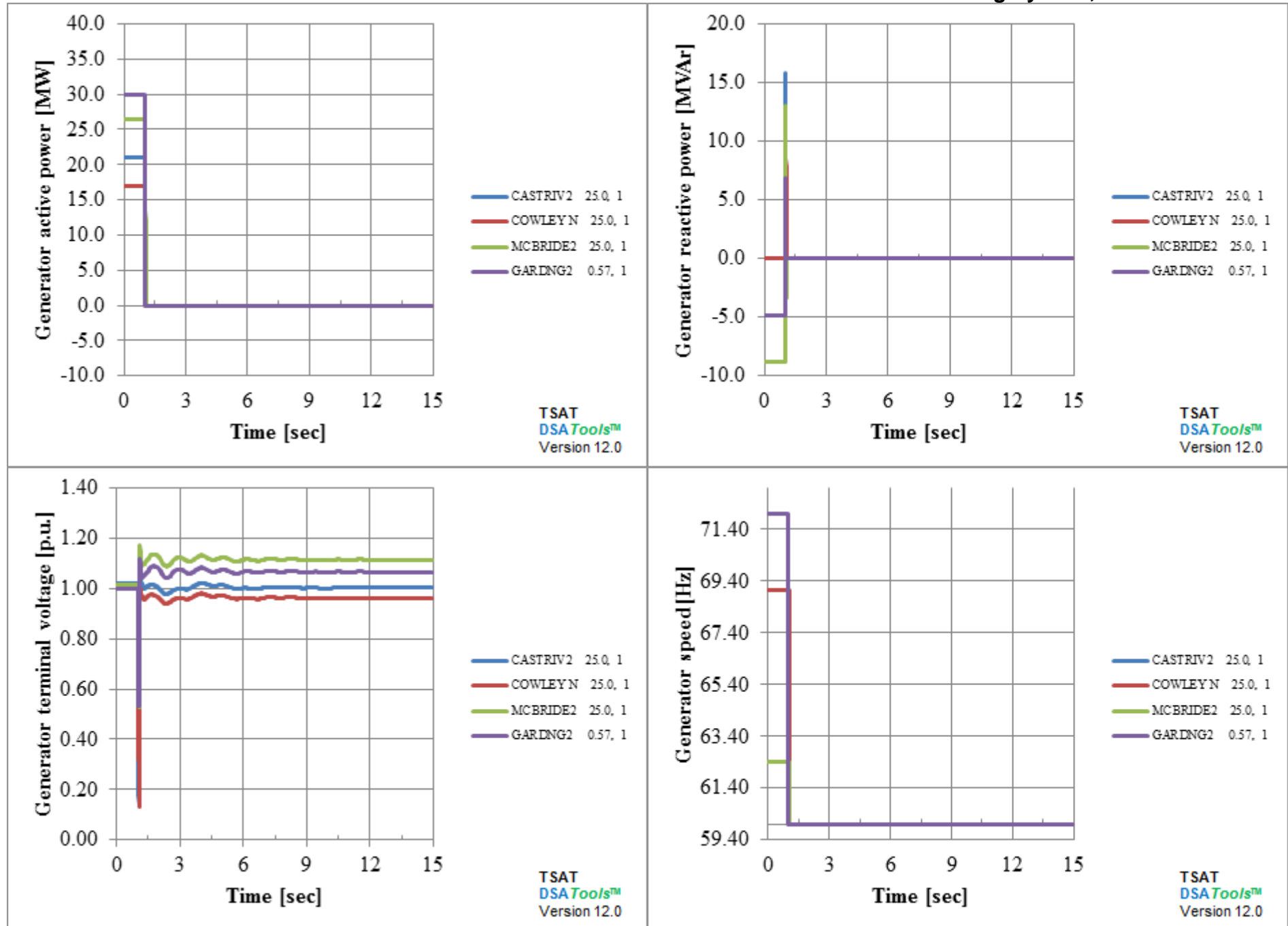
15 -- 103S 240KV-138KV

Existing System, Summer Peak 2014



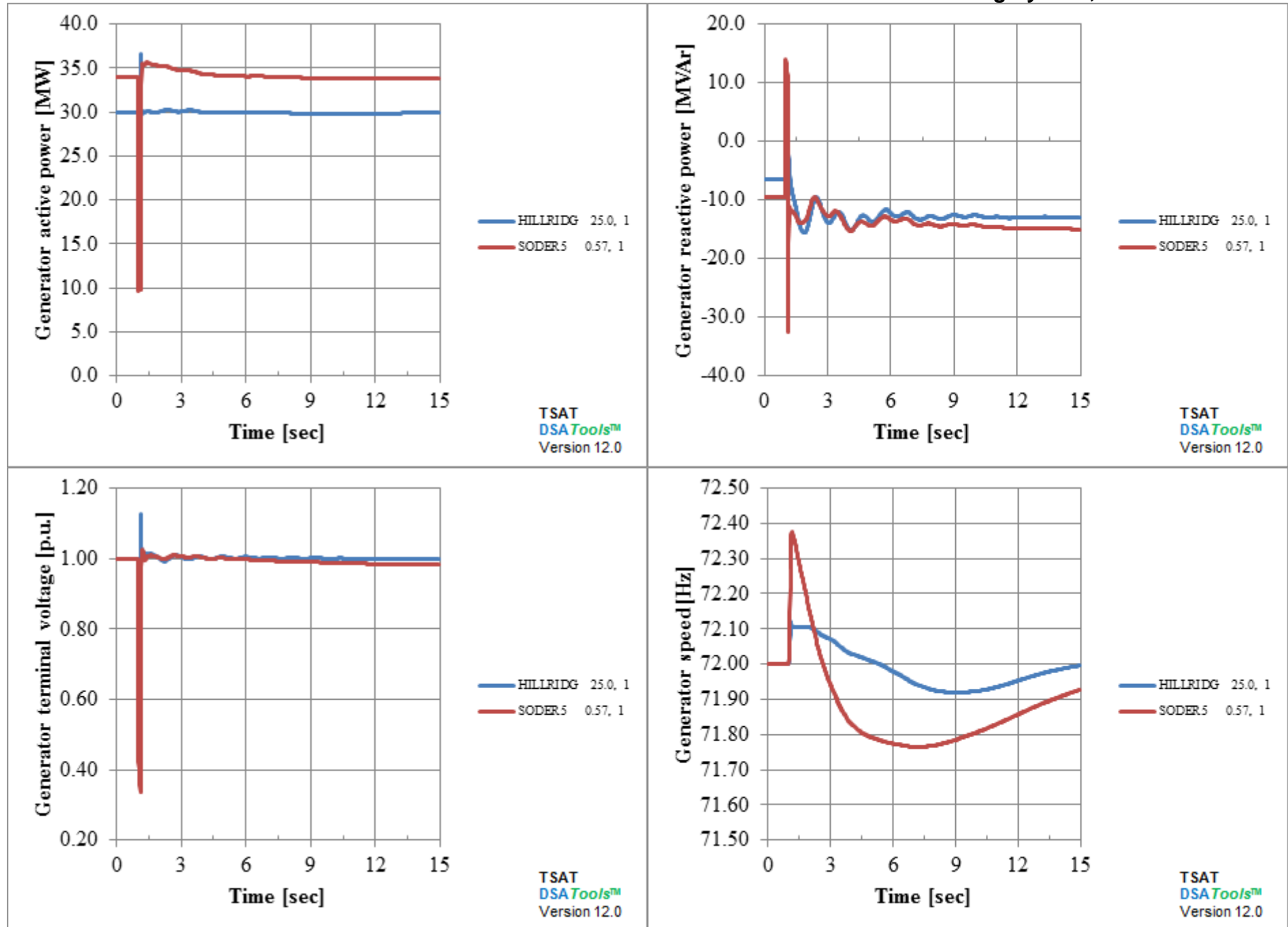
15 -- 103S 240KV-138KV

Existing System, Summer Peak 2014



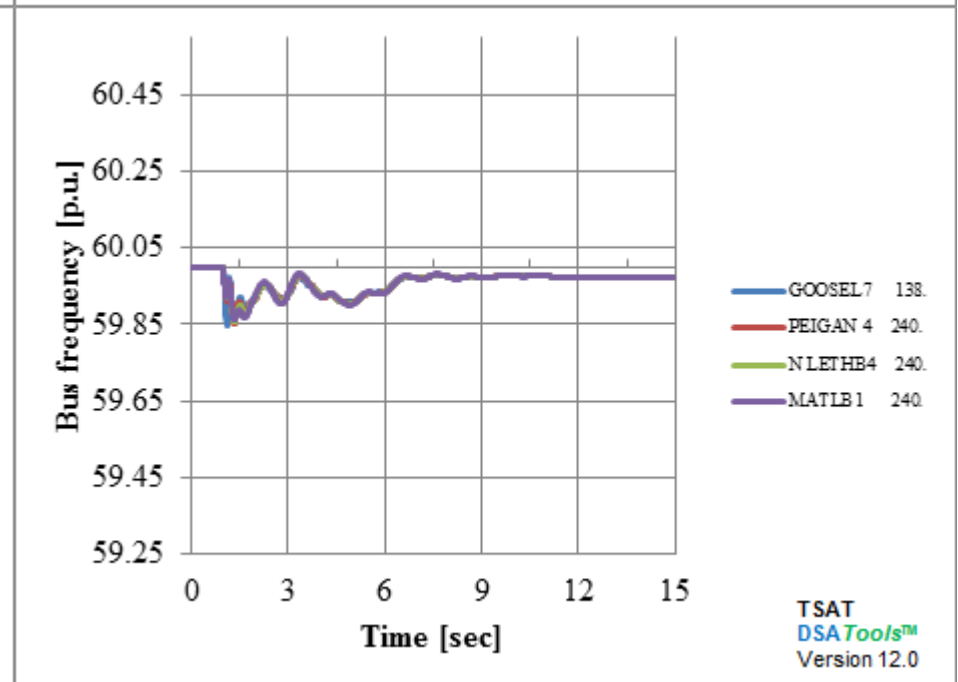
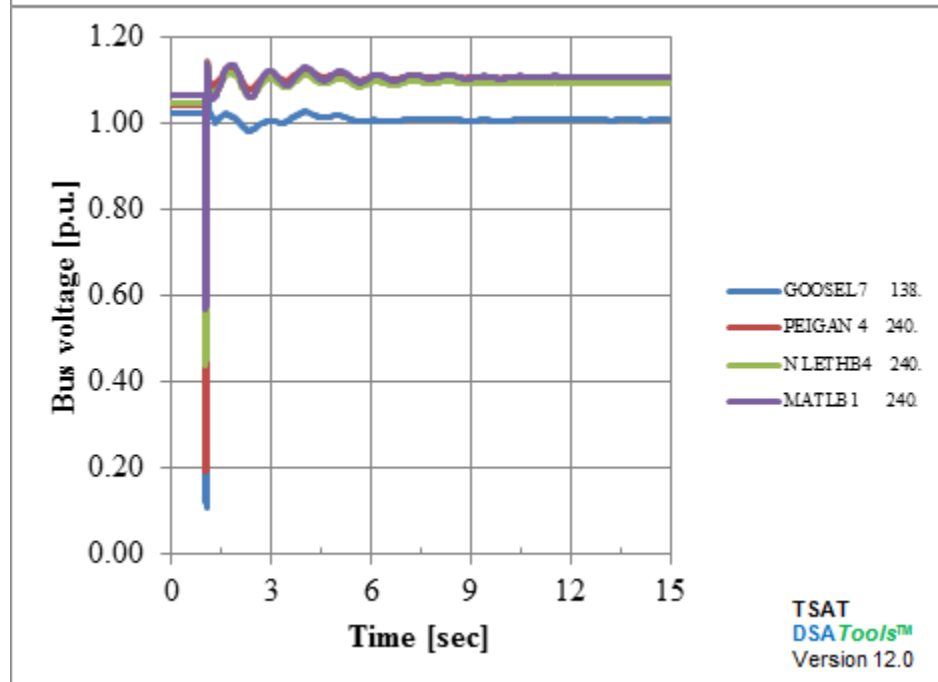
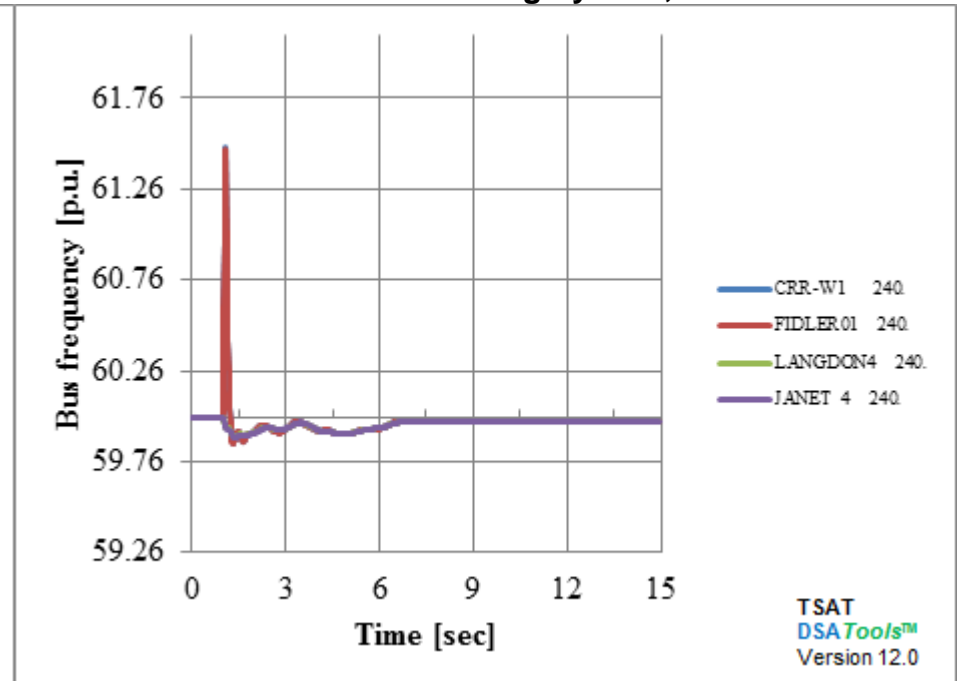
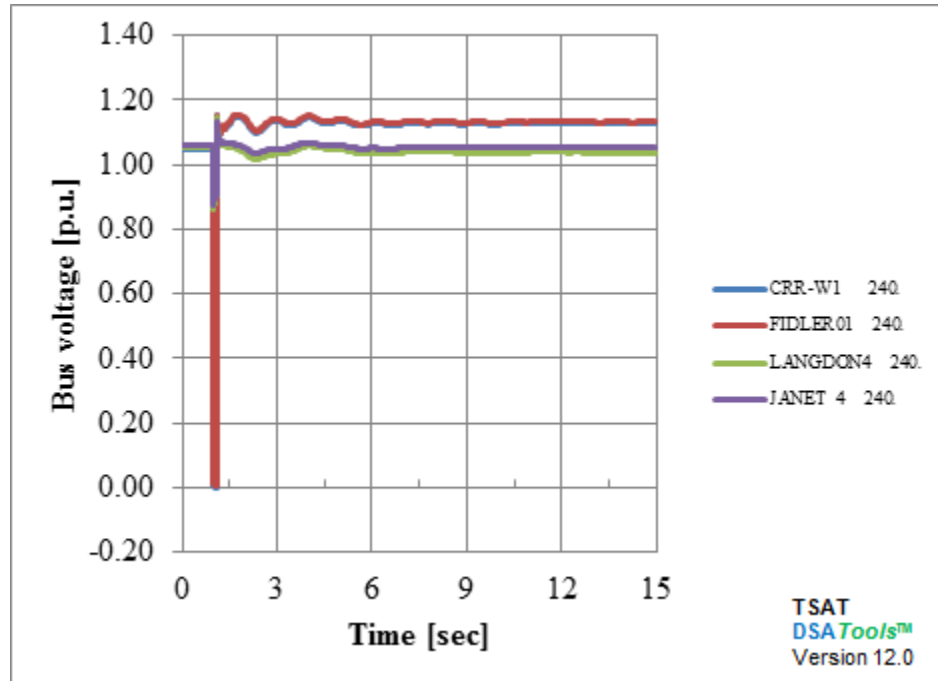
15 -- 103S 240KV-138KV

Existing System, Summer Peak 2014



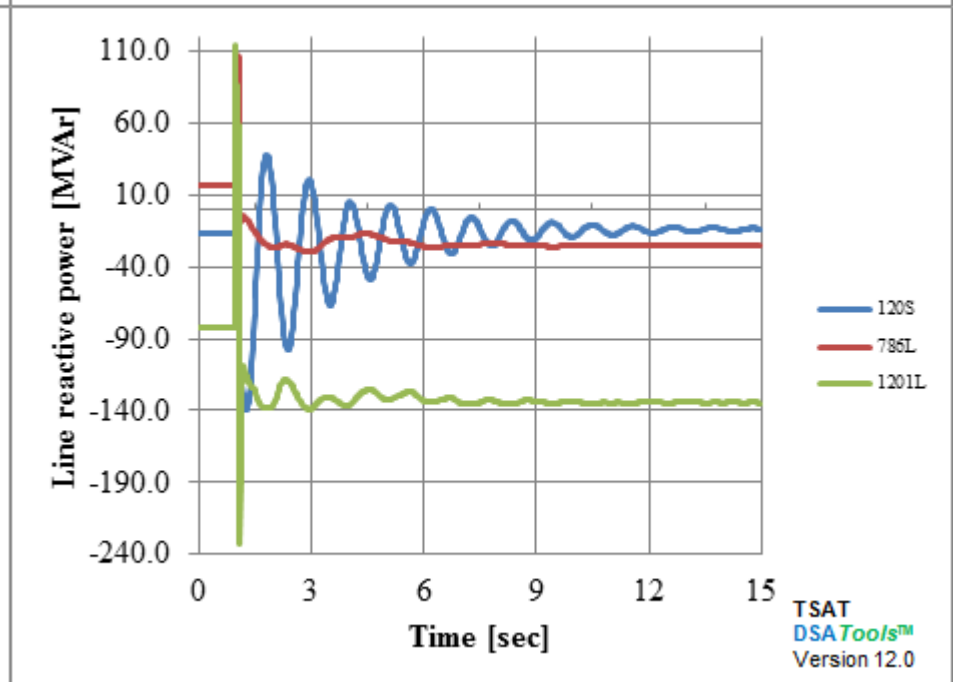
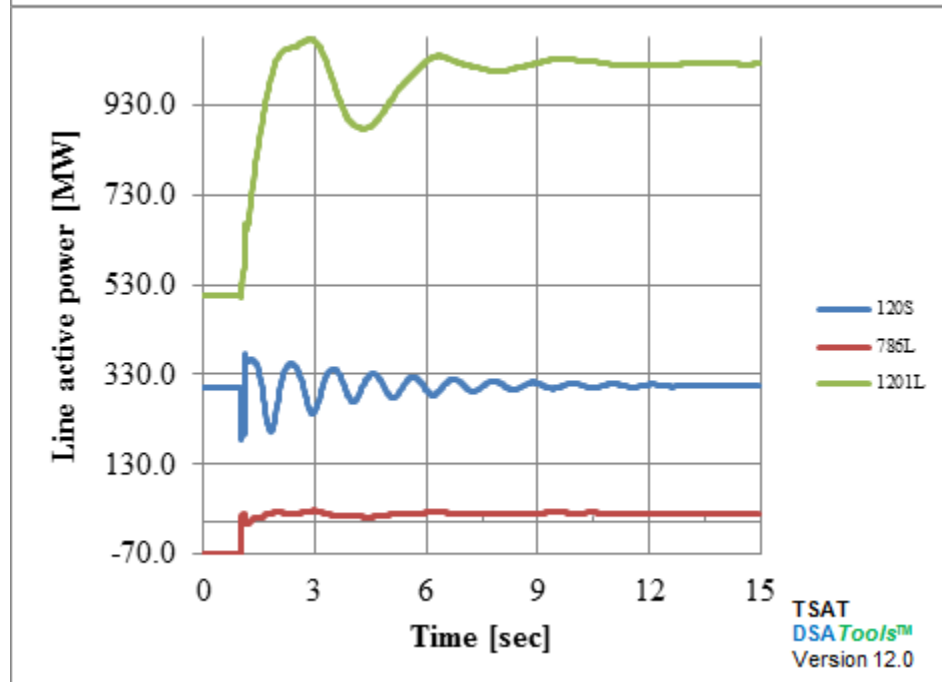
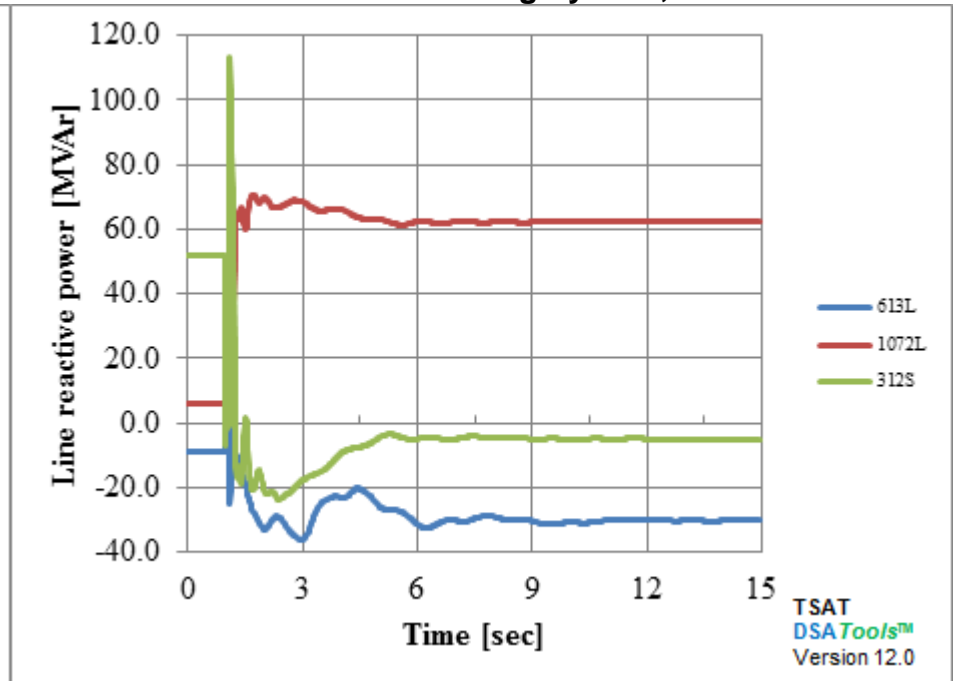
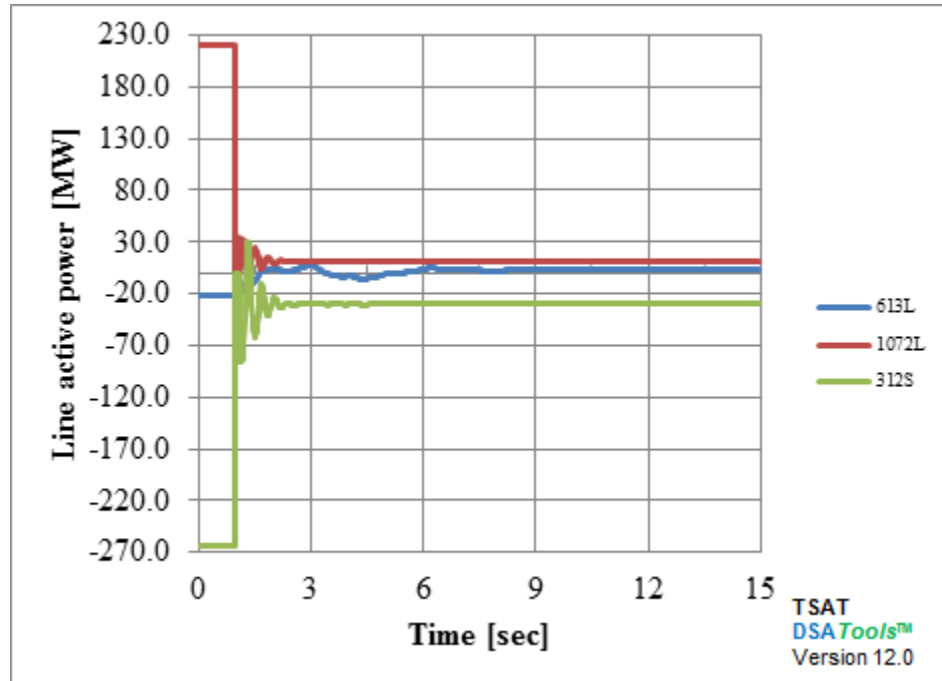
15 -- 103S 240KV-138KV

Existing System, Summer Peak 2014



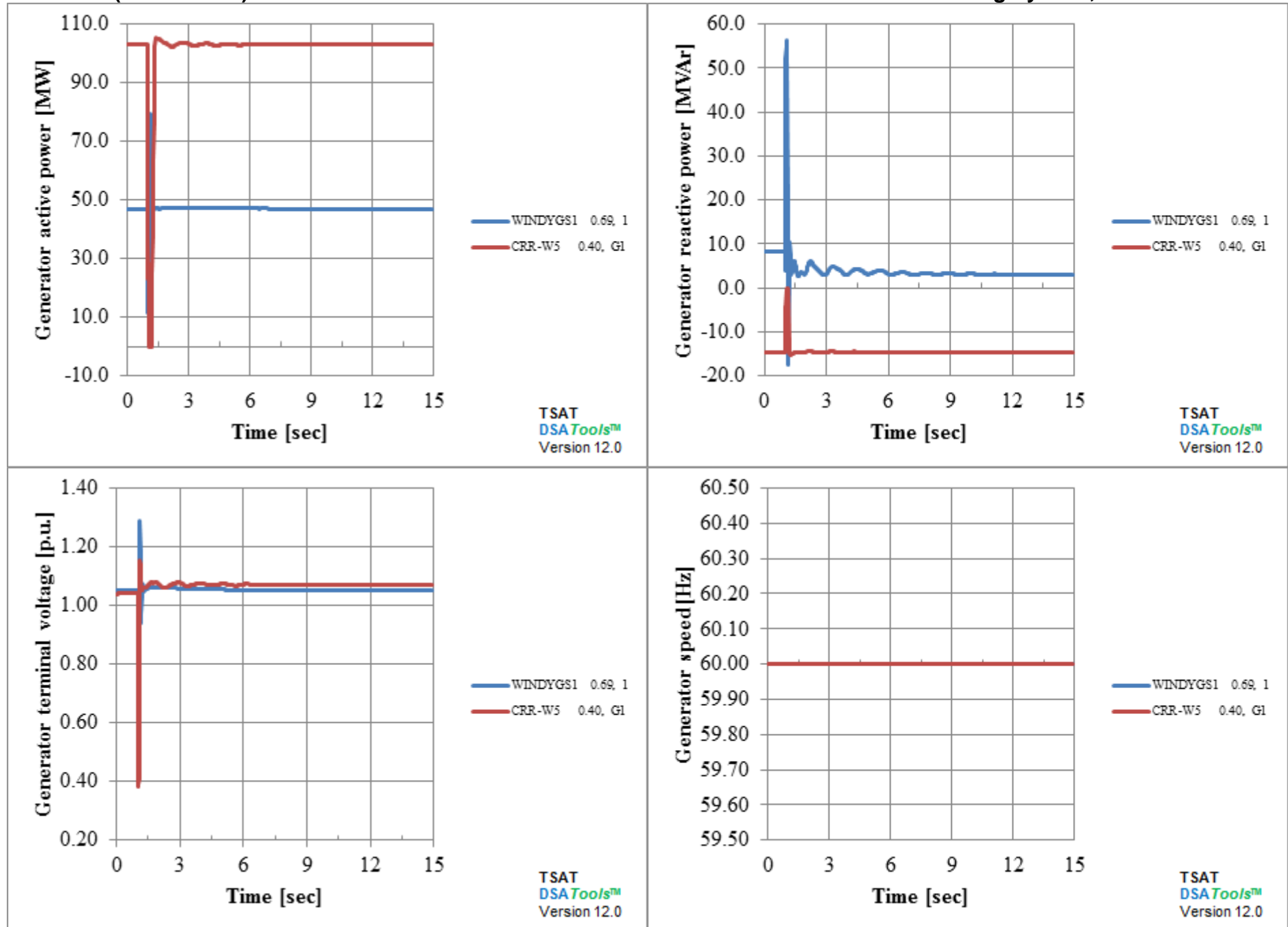
15 -- 103S 240KV-138KV

Existing System, Summer Peak 2014



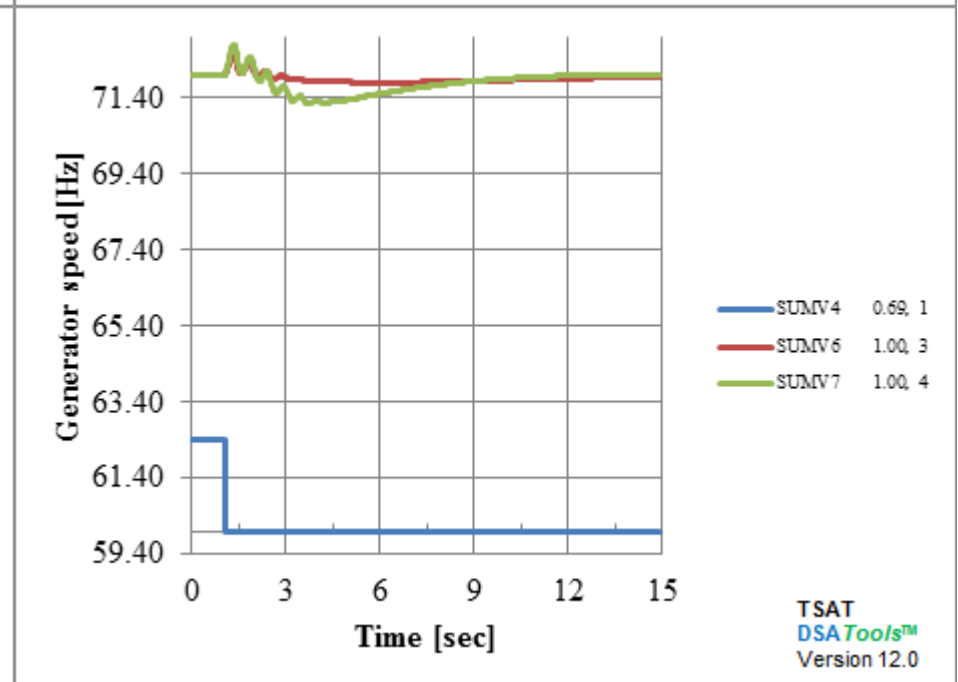
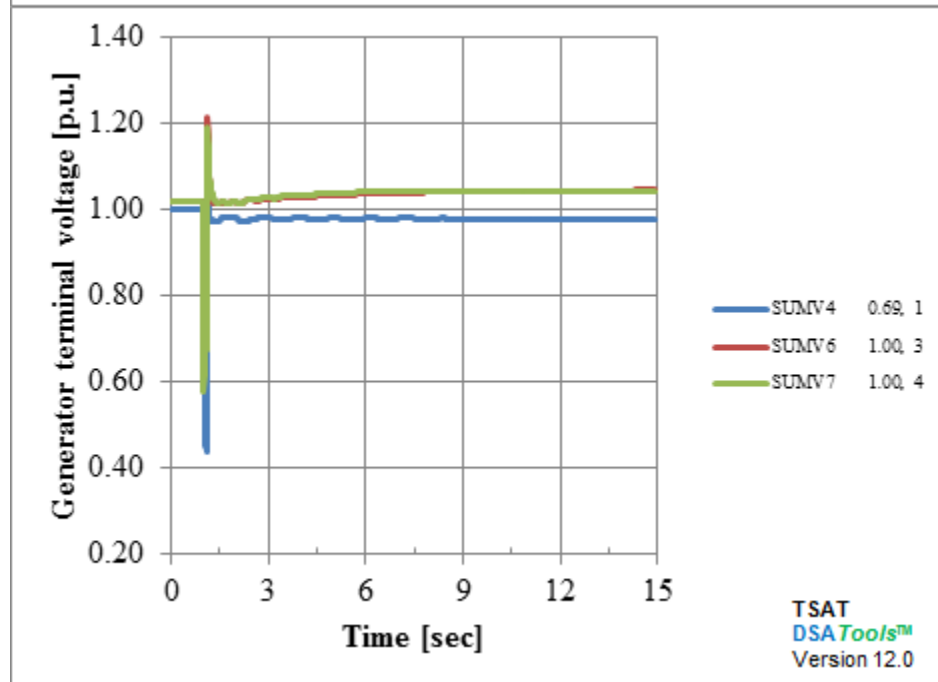
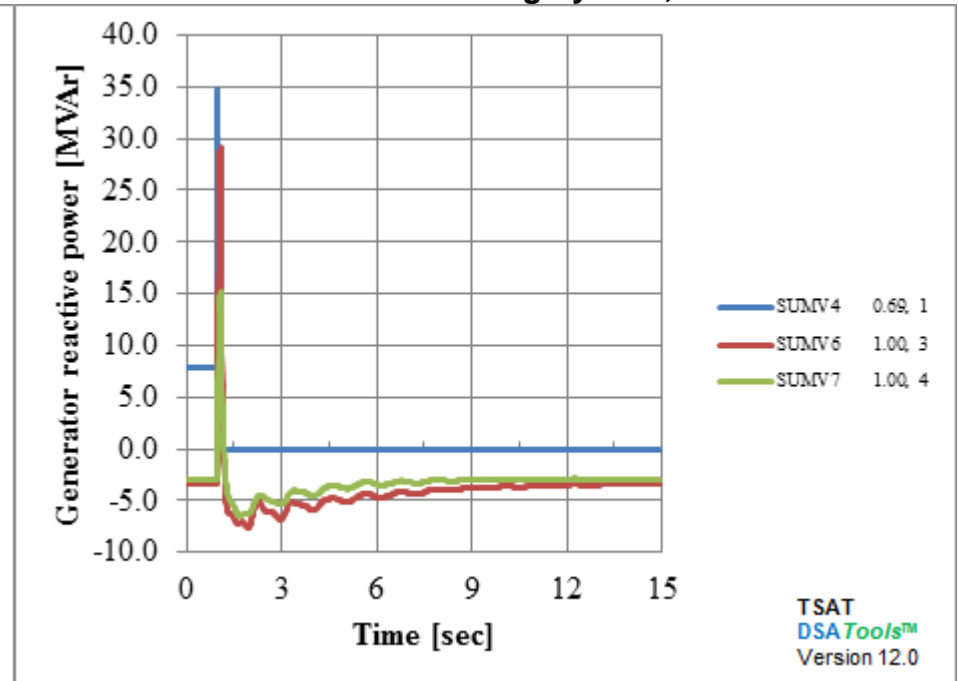
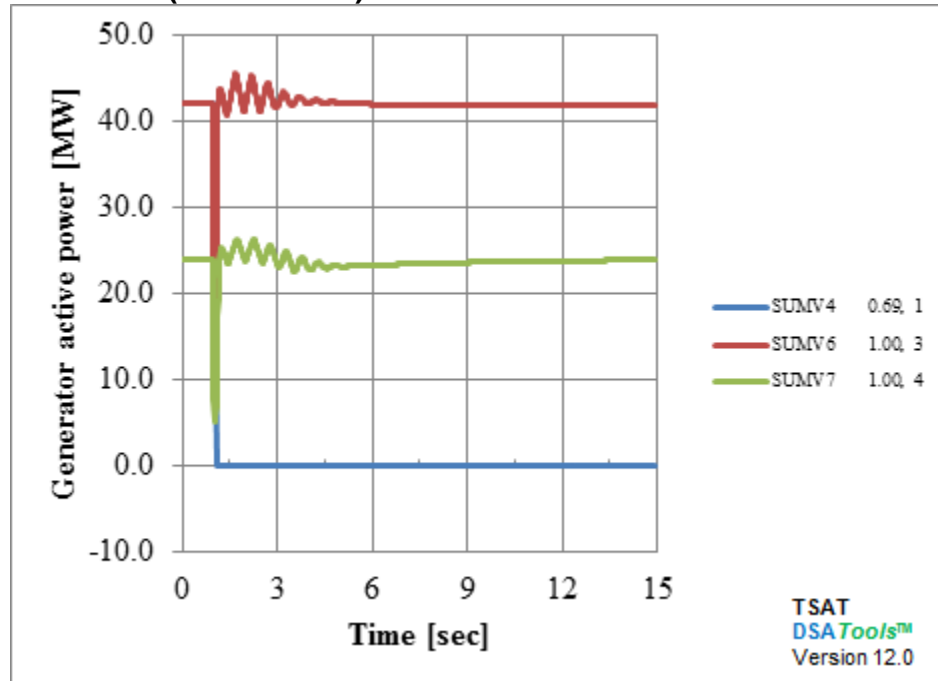
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Peak 2014



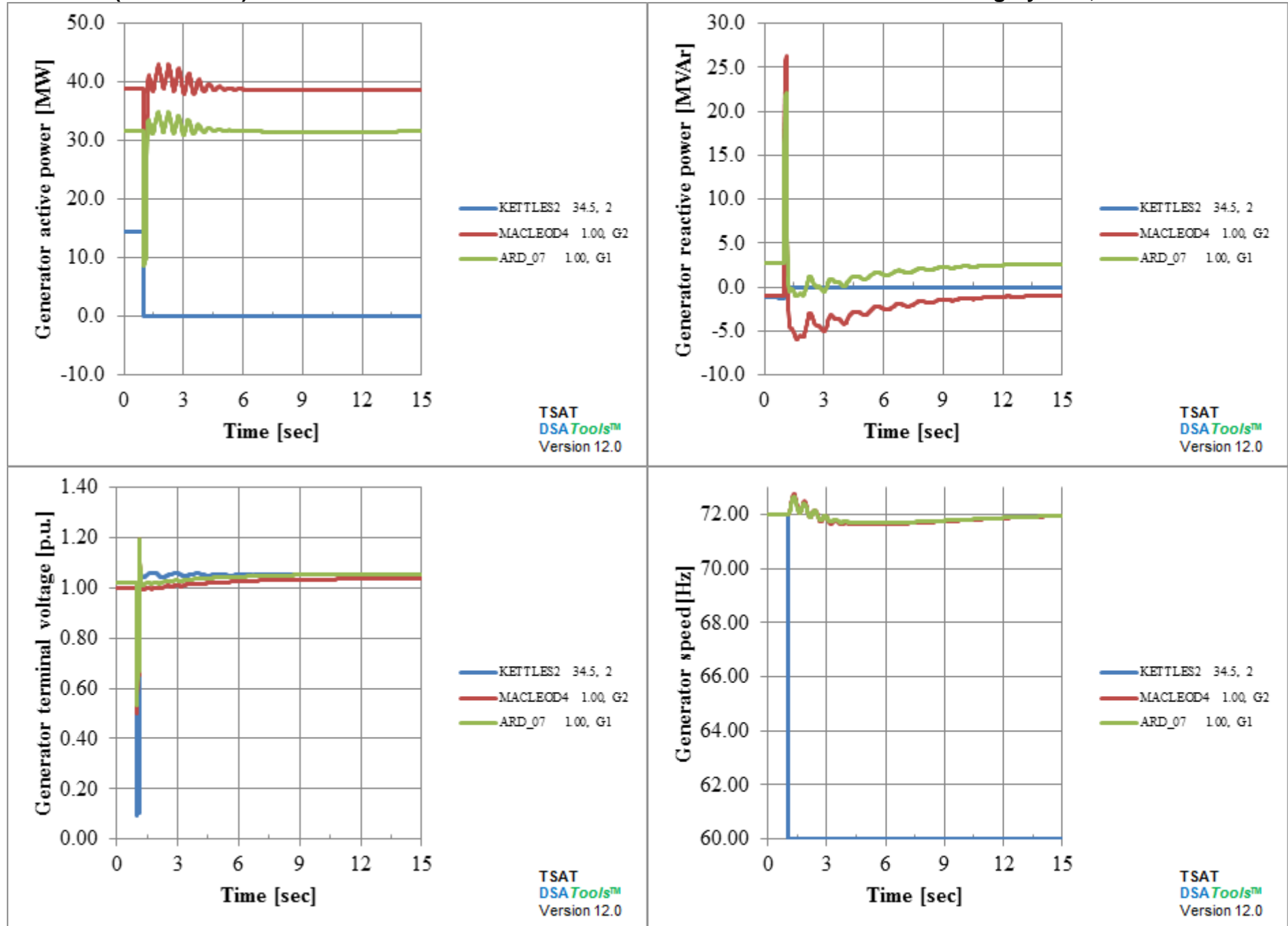
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Peak 2014



16 -- 412L (396S - 632S) NEAR 396S

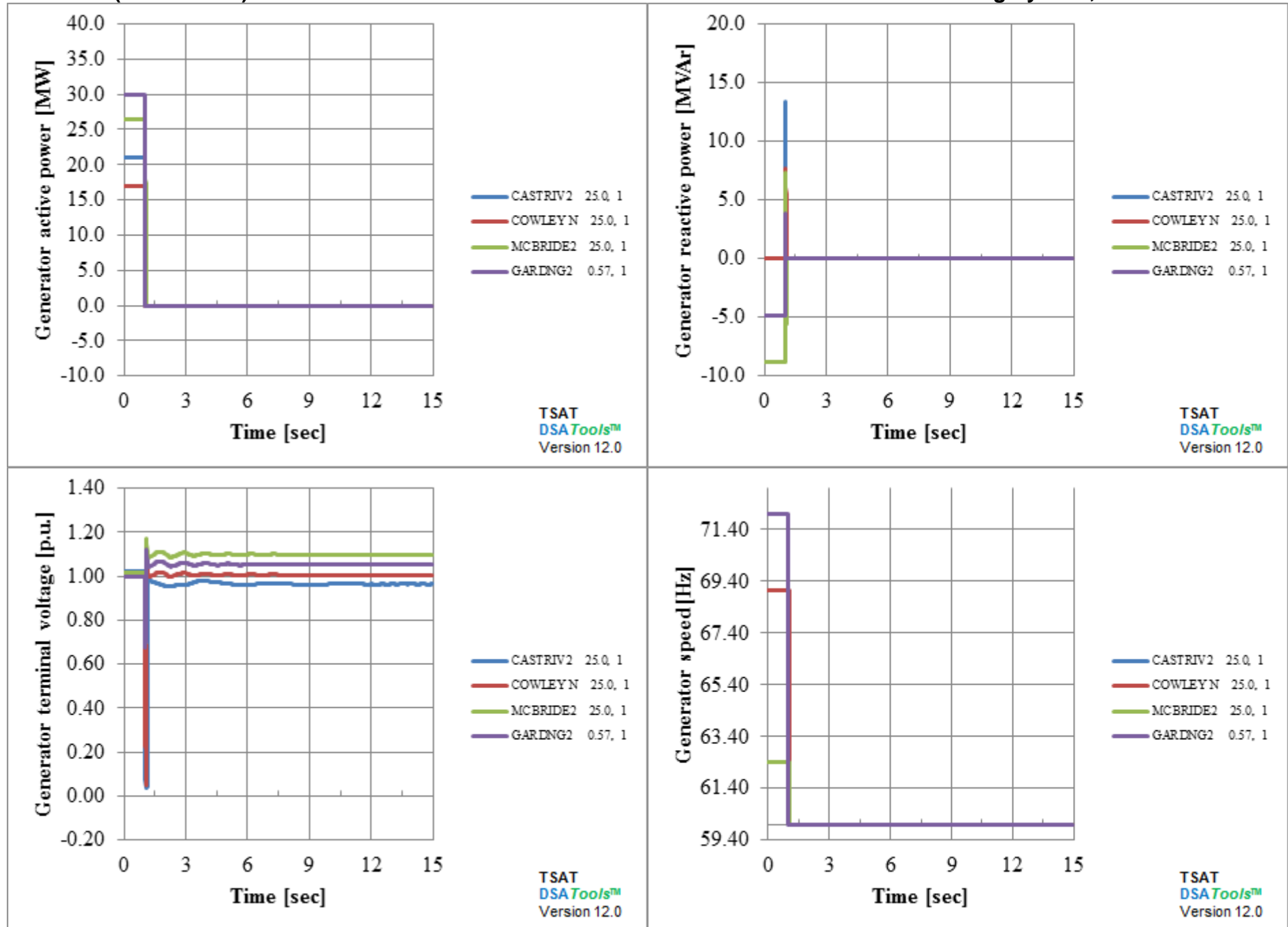
Existing System, Summer Peak 2014





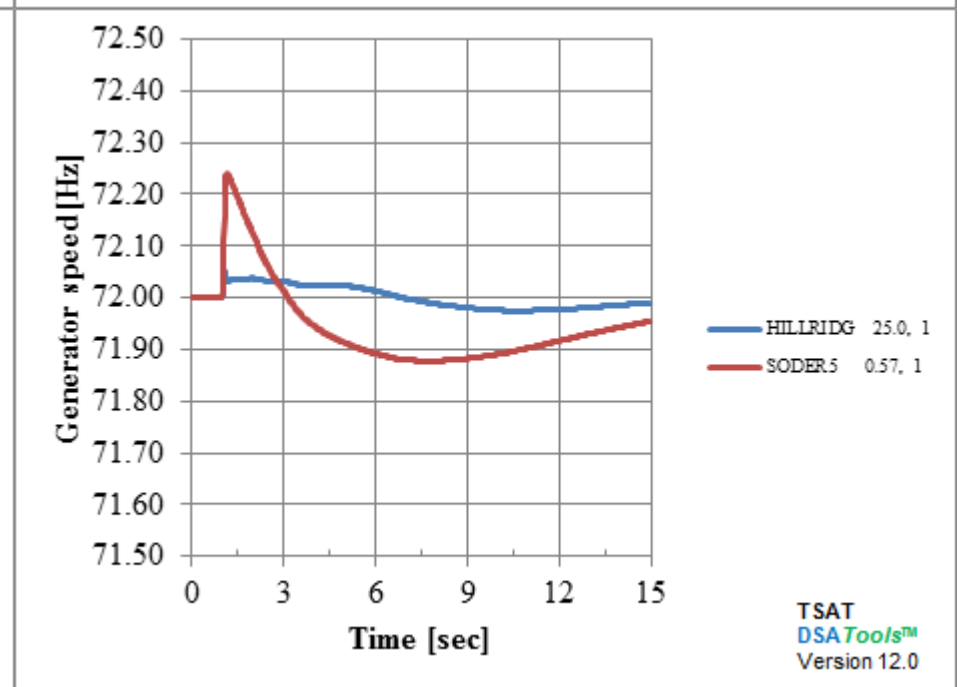
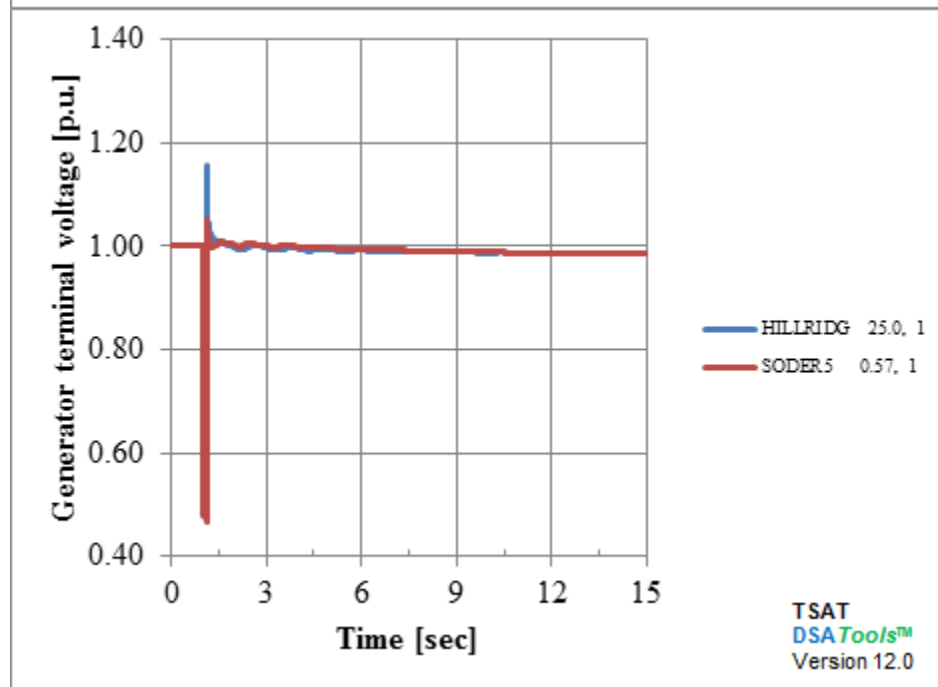
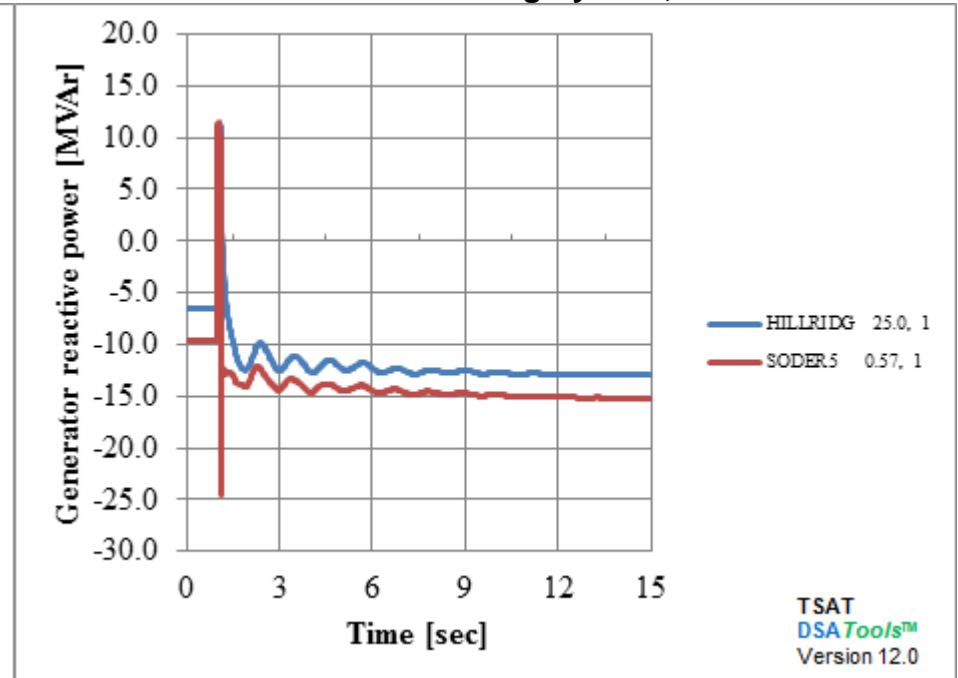
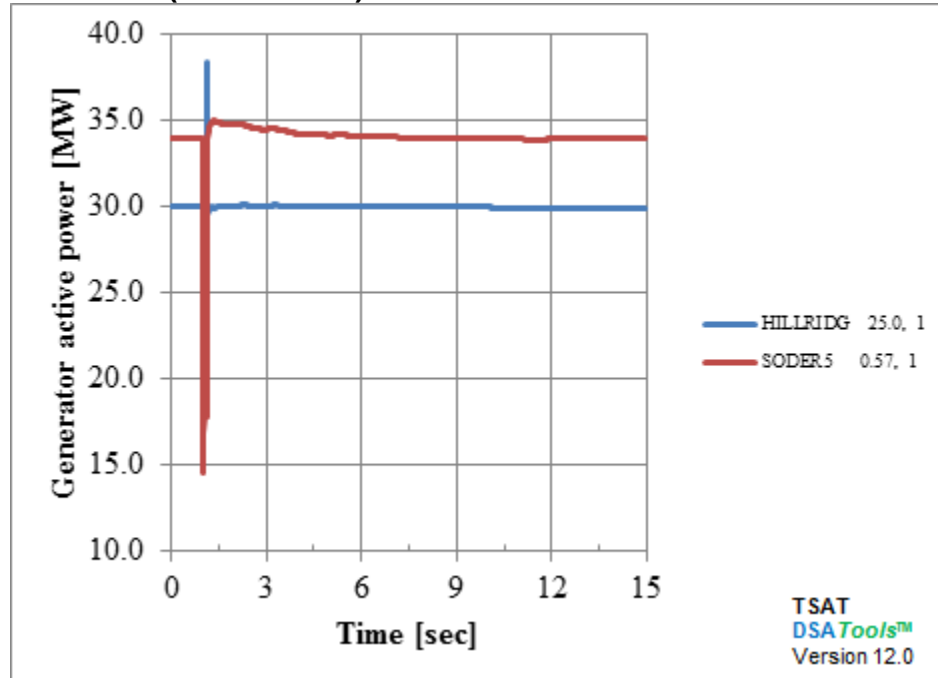
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Peak 2014



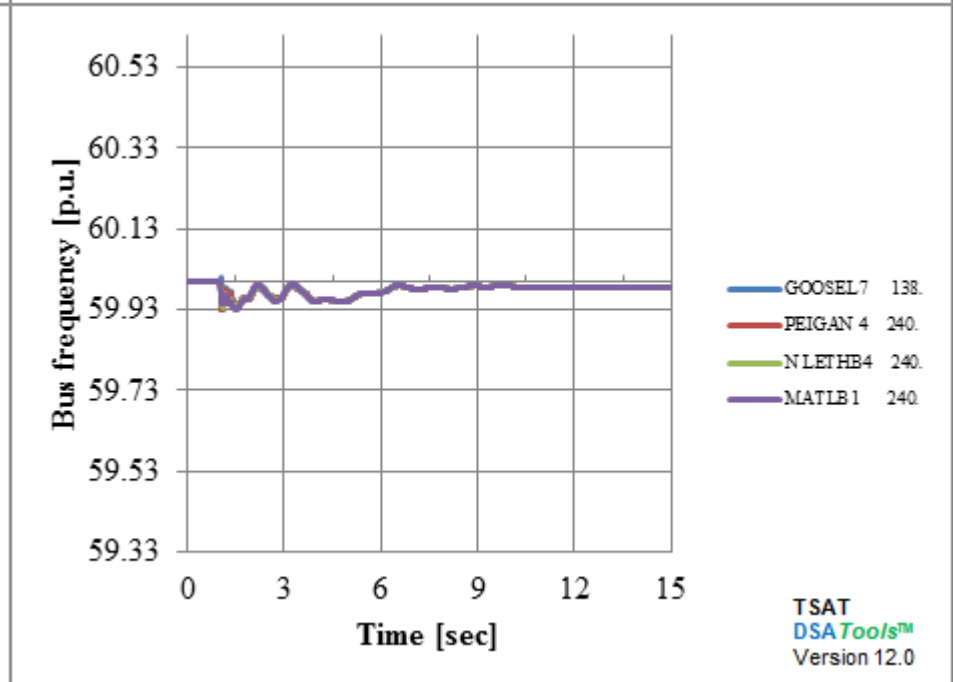
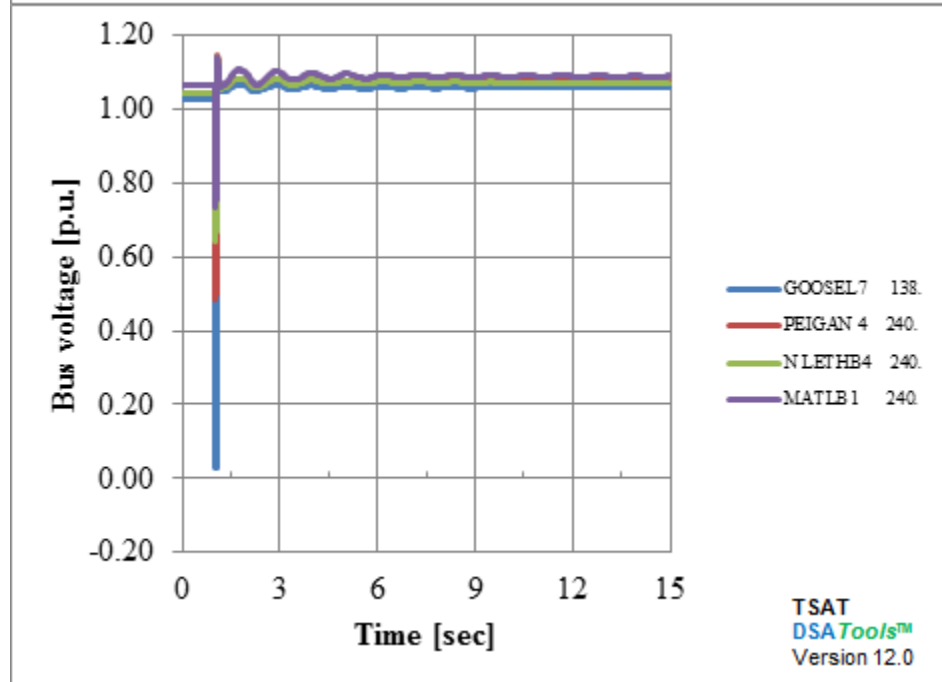
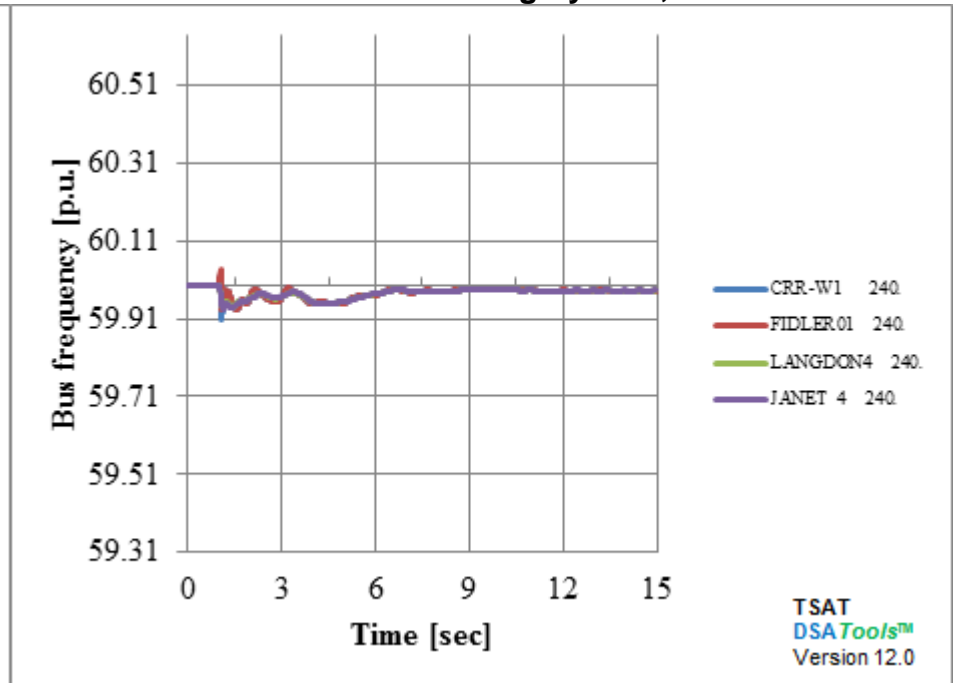
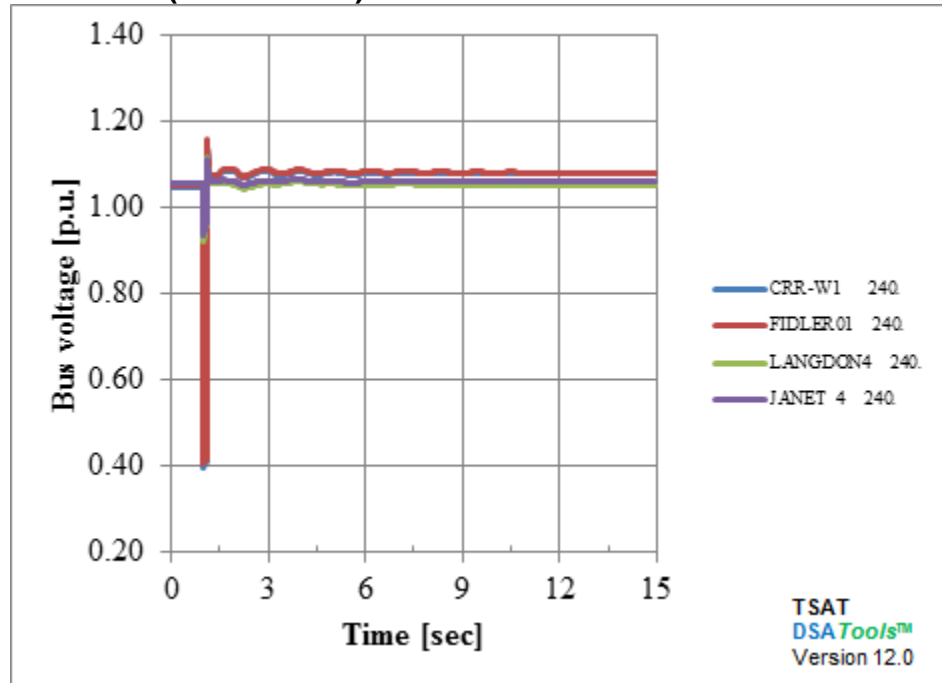
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Peak 2014



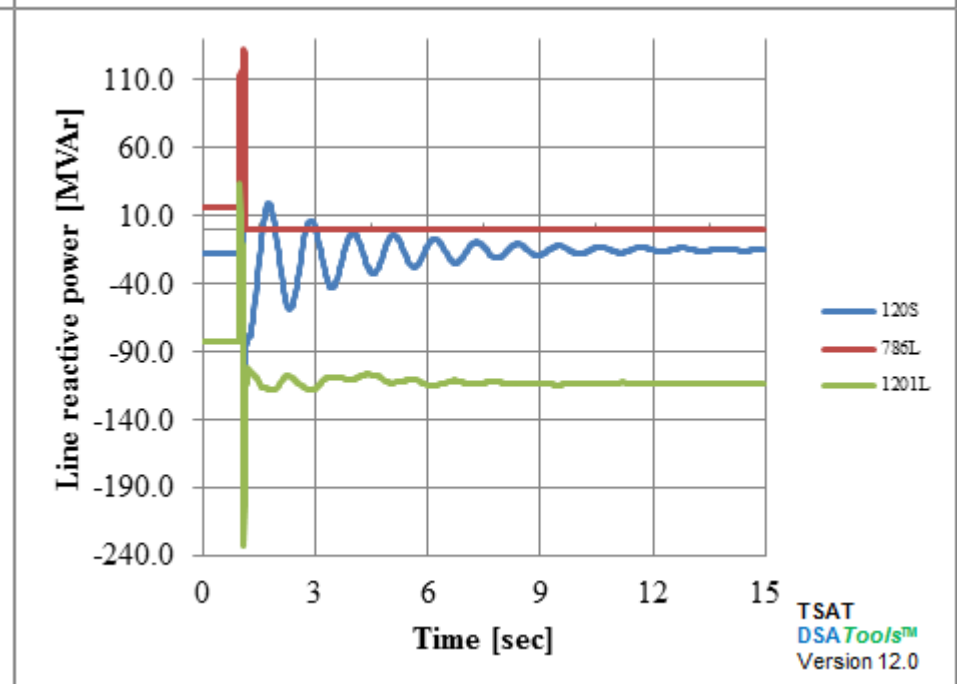
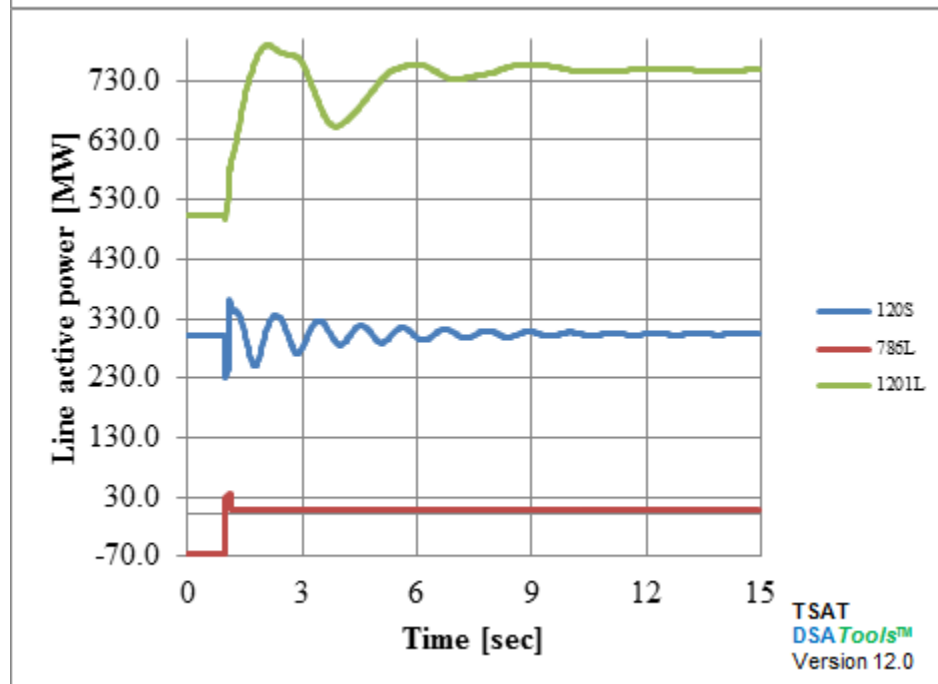
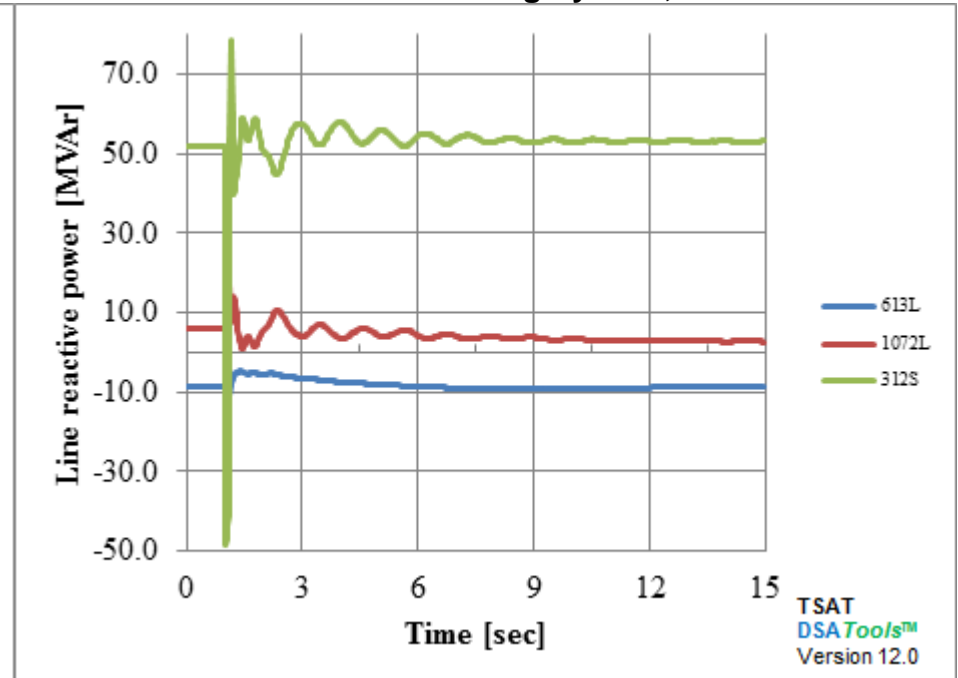
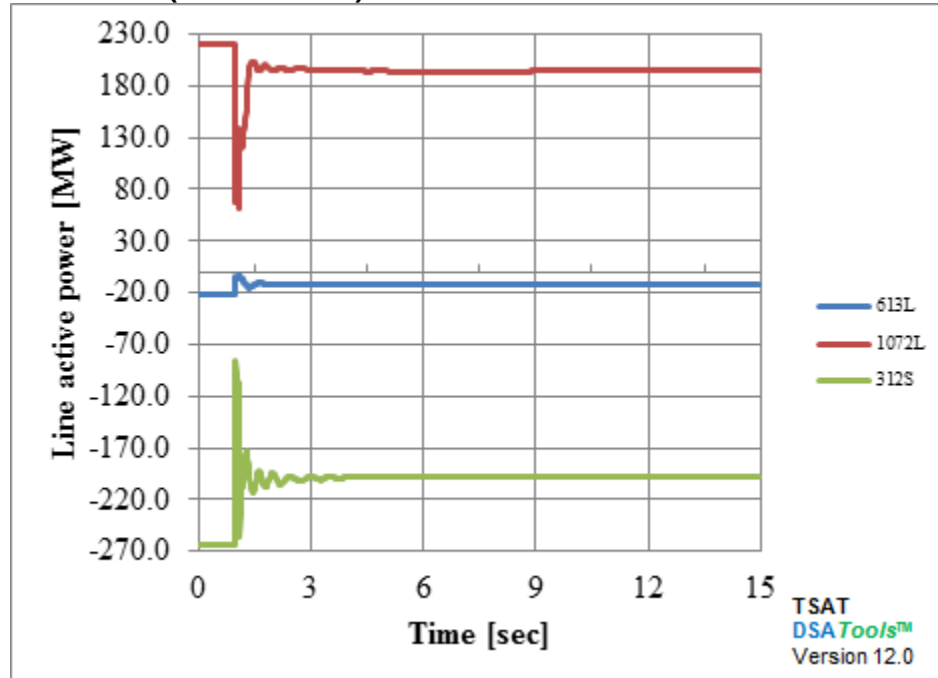
16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Peak 2014



16 -- 412L (396S - 632S) NEAR 396S

Existing System, Summer Peak 2014





P524

**Riverview WAGF**

Attachment D

Post-Connection Power Flow Single Line Diagrams

2014 and 2017 Summer Light and Peak Scenarios

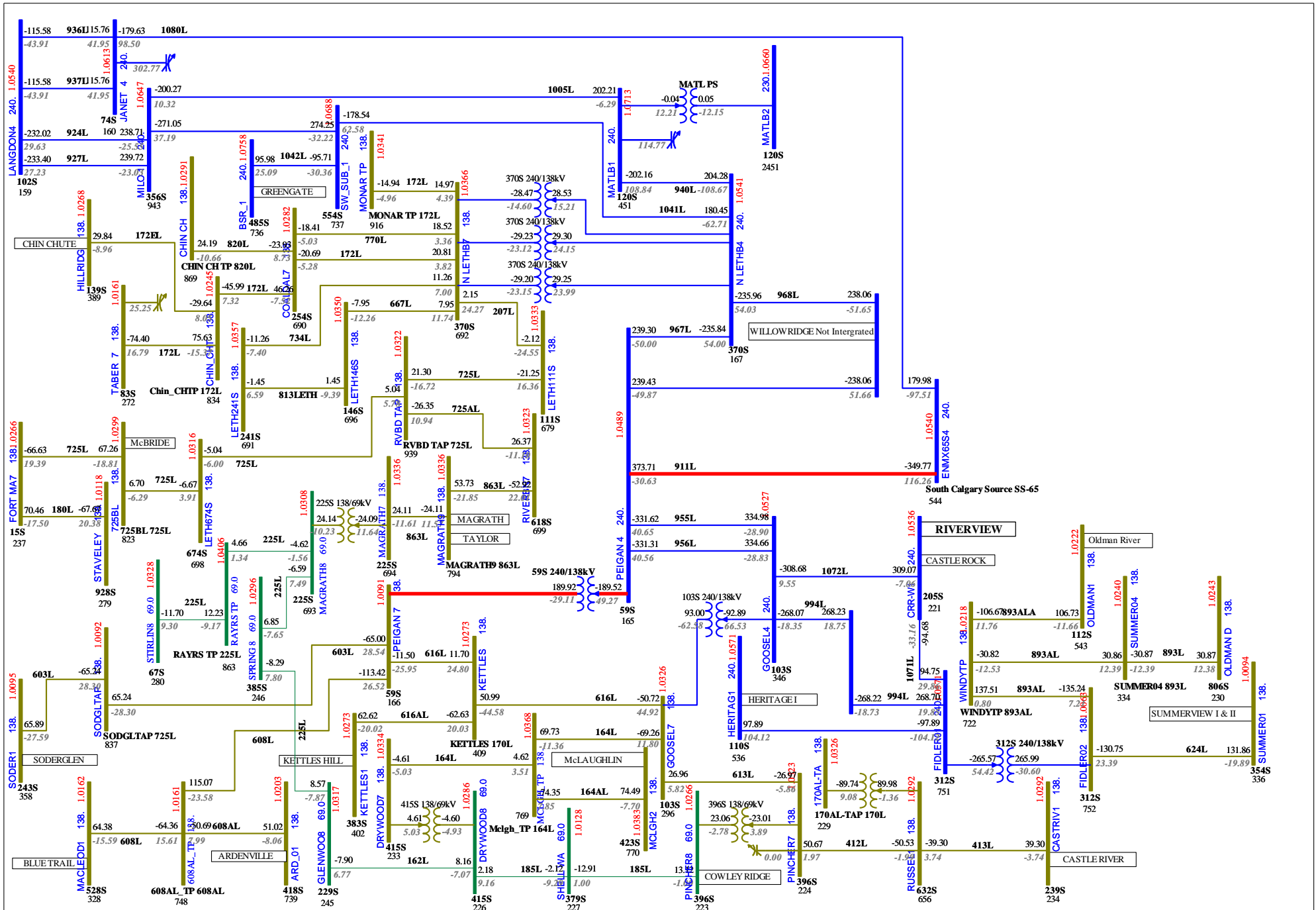


Figure D-1-1 Base Case

Overload 911L (59S-S, Calgary Source SS-65)  
59S 240/138kV T1 (59S-59S)

### Riverview (P524)

2014 Summer Light  
P524 Integrated

69 kV  
138 kV  
240 kV  
Overload



WAGF	
MW	69.11
MVAR	-34.10





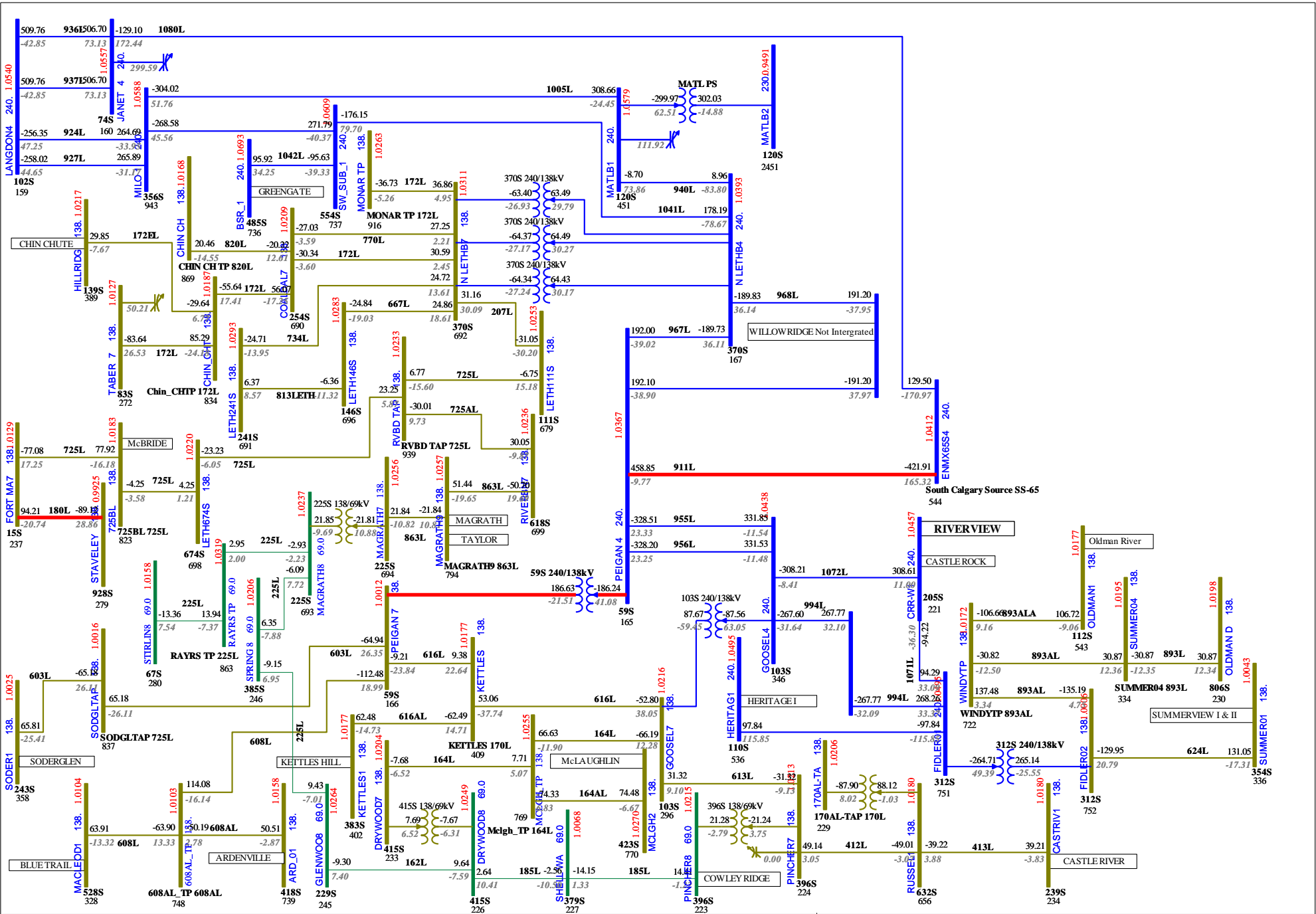


Figure D-3-1 Base Case  
 Overload 911L (59S-S. Calgary Source SS-65)  
 180L (15S-928S)  
 59S 240/138kV T1 (59S-59S)

### Riverview (P524)

2014 Summer Peak  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<input type="checkbox"/>
138 kV	<span style="color: blue;">—</span>	MW	69.11
240 kV	<span style="color: yellow;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

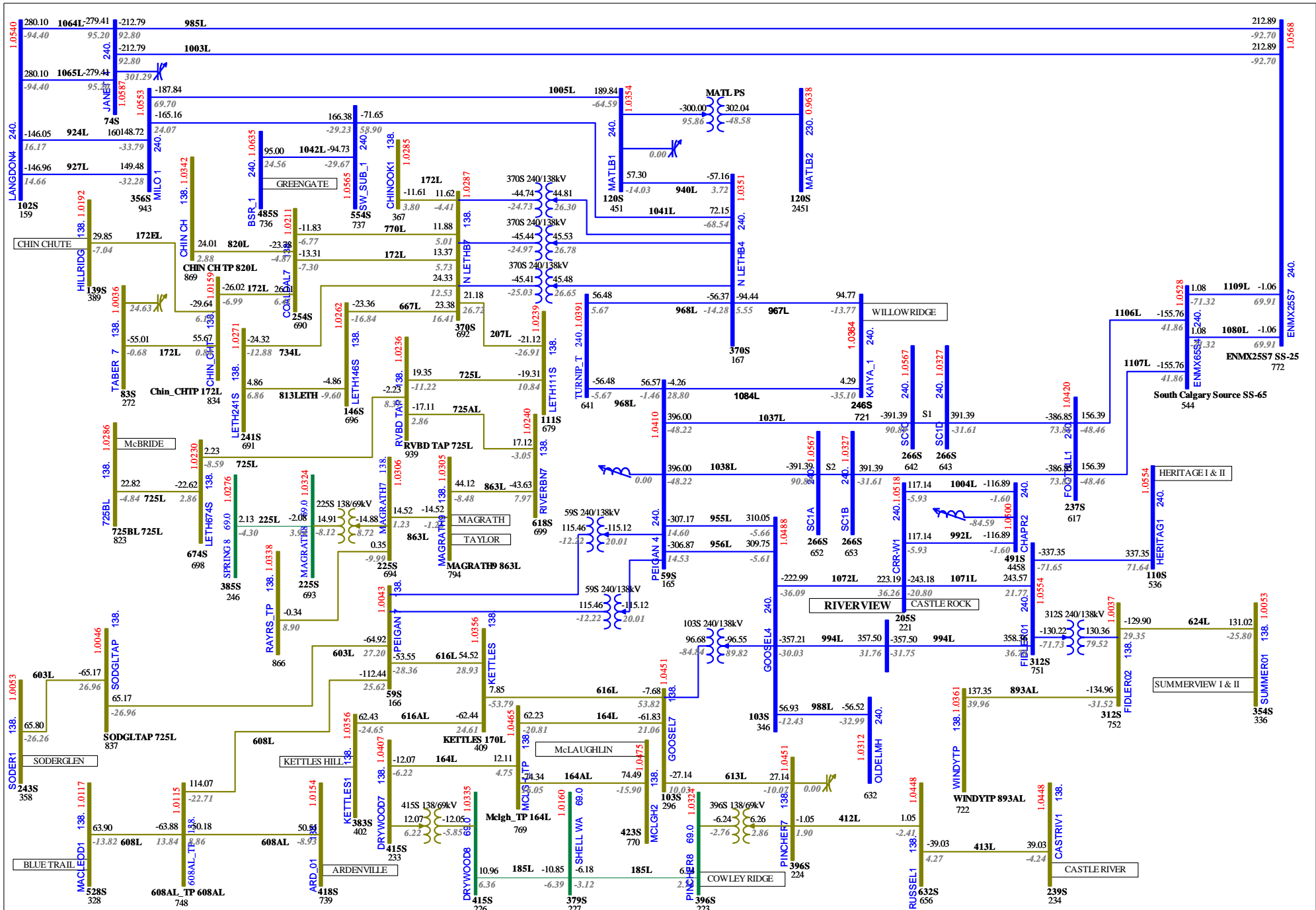


Figure D-4-1 Base Case

### Riverview (P524)

2017 Summer Peak  
P524 Integrated

69 kV	<span style="color: red;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: green;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

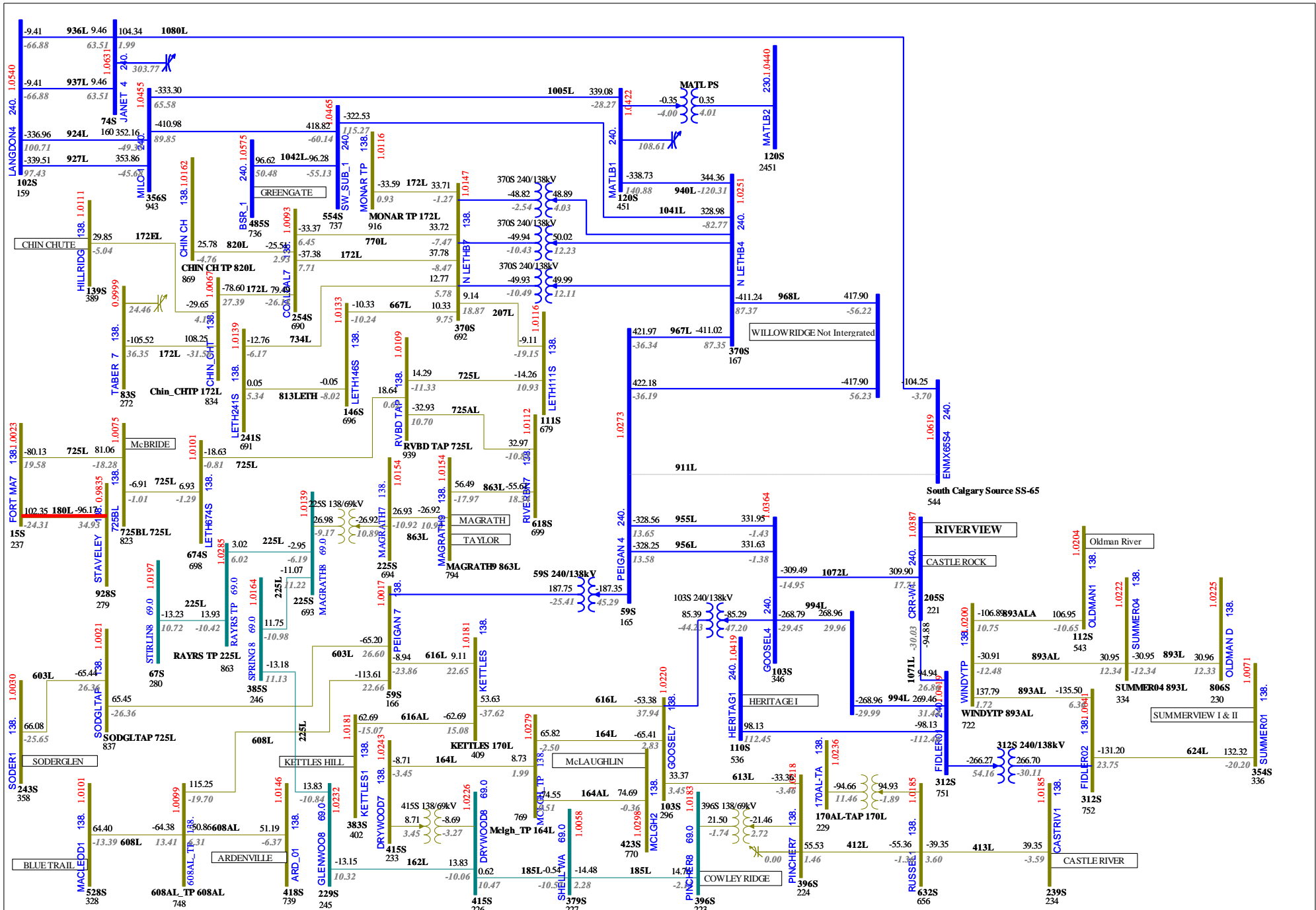


Figure D-5-1 Contingency: 911L (59S-S. Calgary Source SS-65)  
 Overload: 180L (15S-928S)

Riverview (P524)  
 2014 Summer Light  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

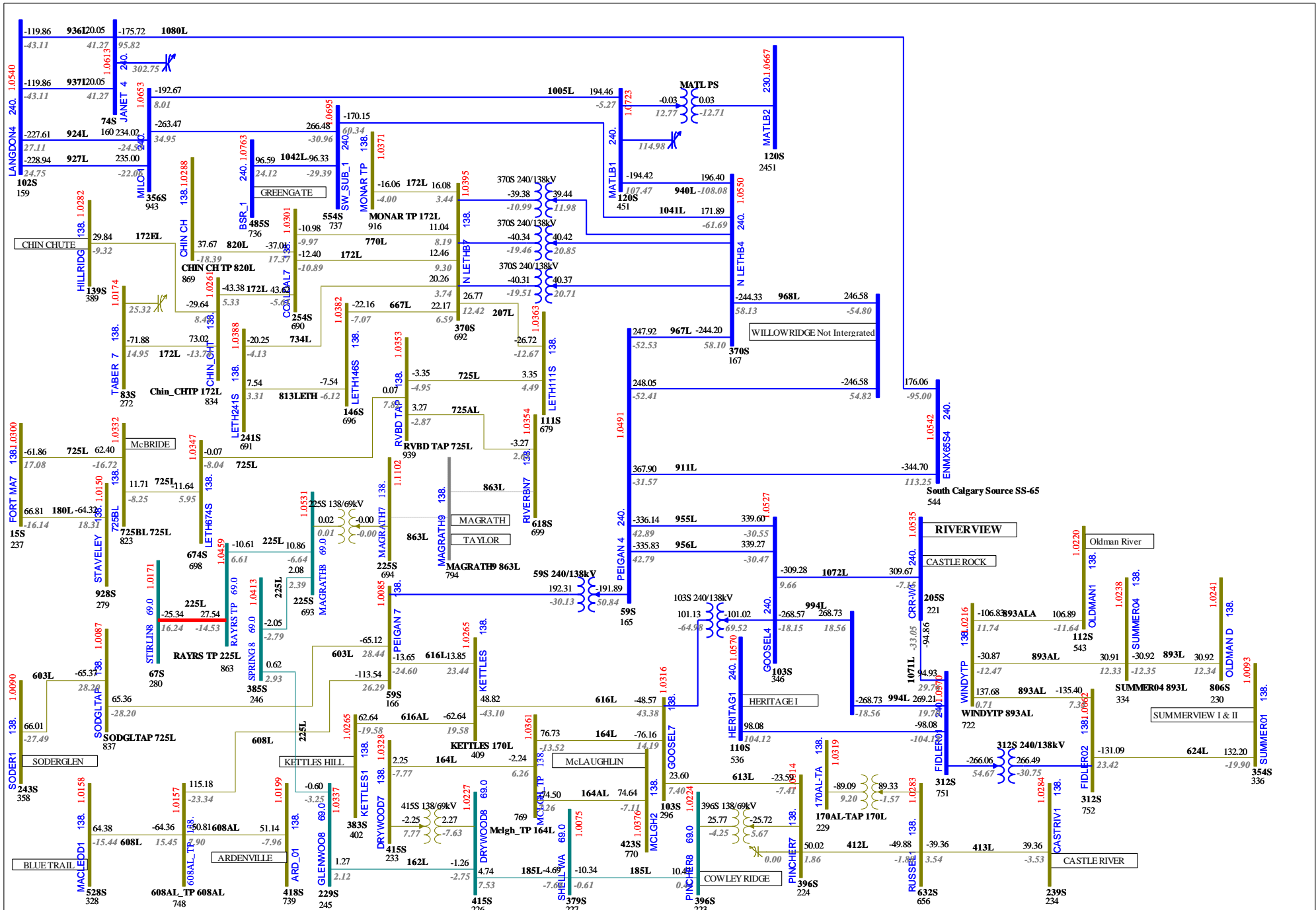


Figure D-5-2 Contingency: 863L (225S-618S)  
 Overload: 225L (67S-RAYS TP 225L)

Riverview (P524)  
 2014 Summer Light  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

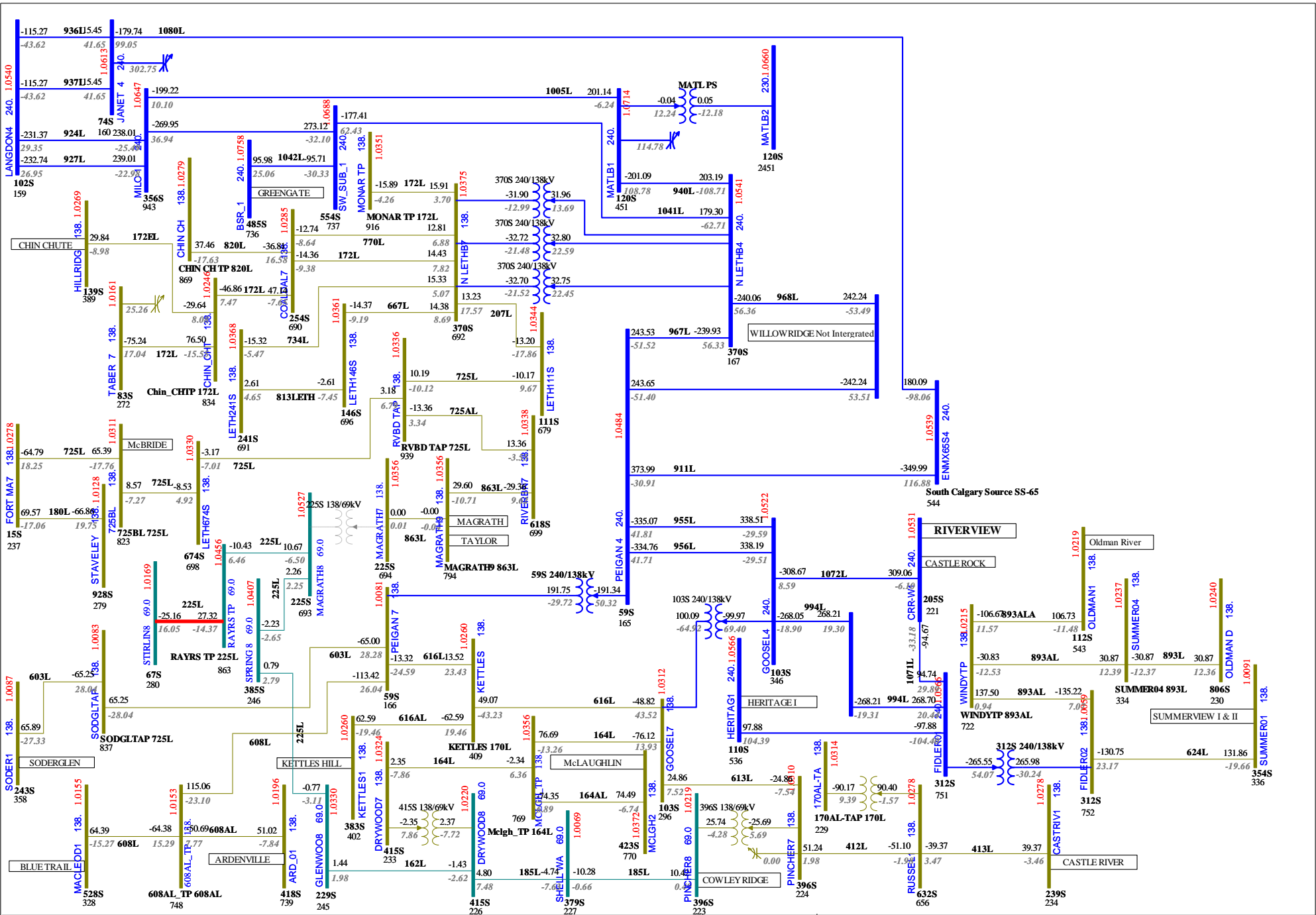


Figure D-5-3 Contingency: 225S 138/69kV T1 (225S-225S)  
 Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Light  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

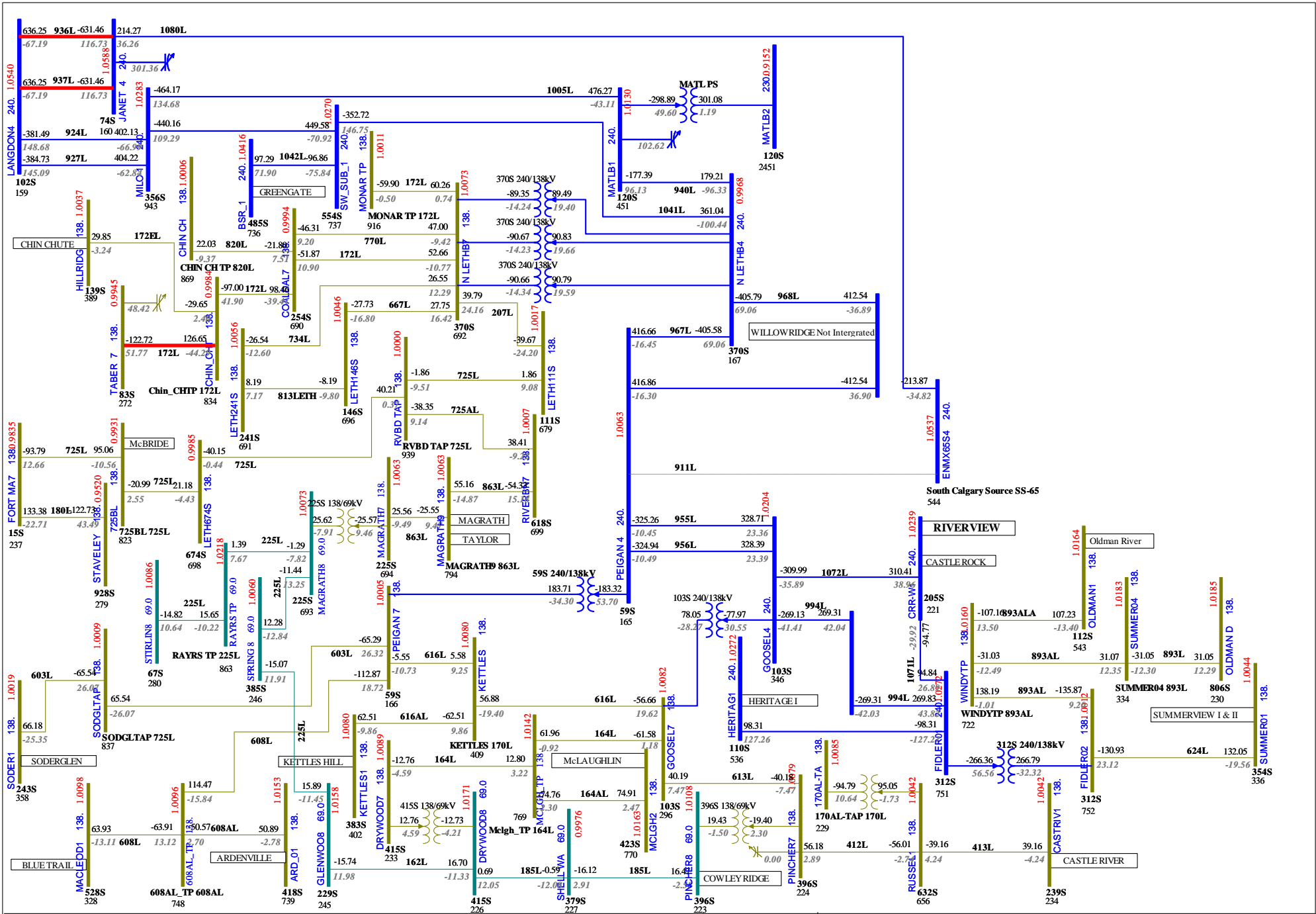


Figure D-6-1 Contingency: 911L (59S-S, Calgary Source SS-65)  
 Overload: 936L (102S-74S)  
 937L (102S-74S)  
 172L (83S- CHIN\_CHTP 172L)

### Riverview (P524)

2014 Summer Peak  
 P524 Integrated

69 kV		WAGF	
138 kV		MW	69.11
240 kV		MVAR	-34.10
Overload			

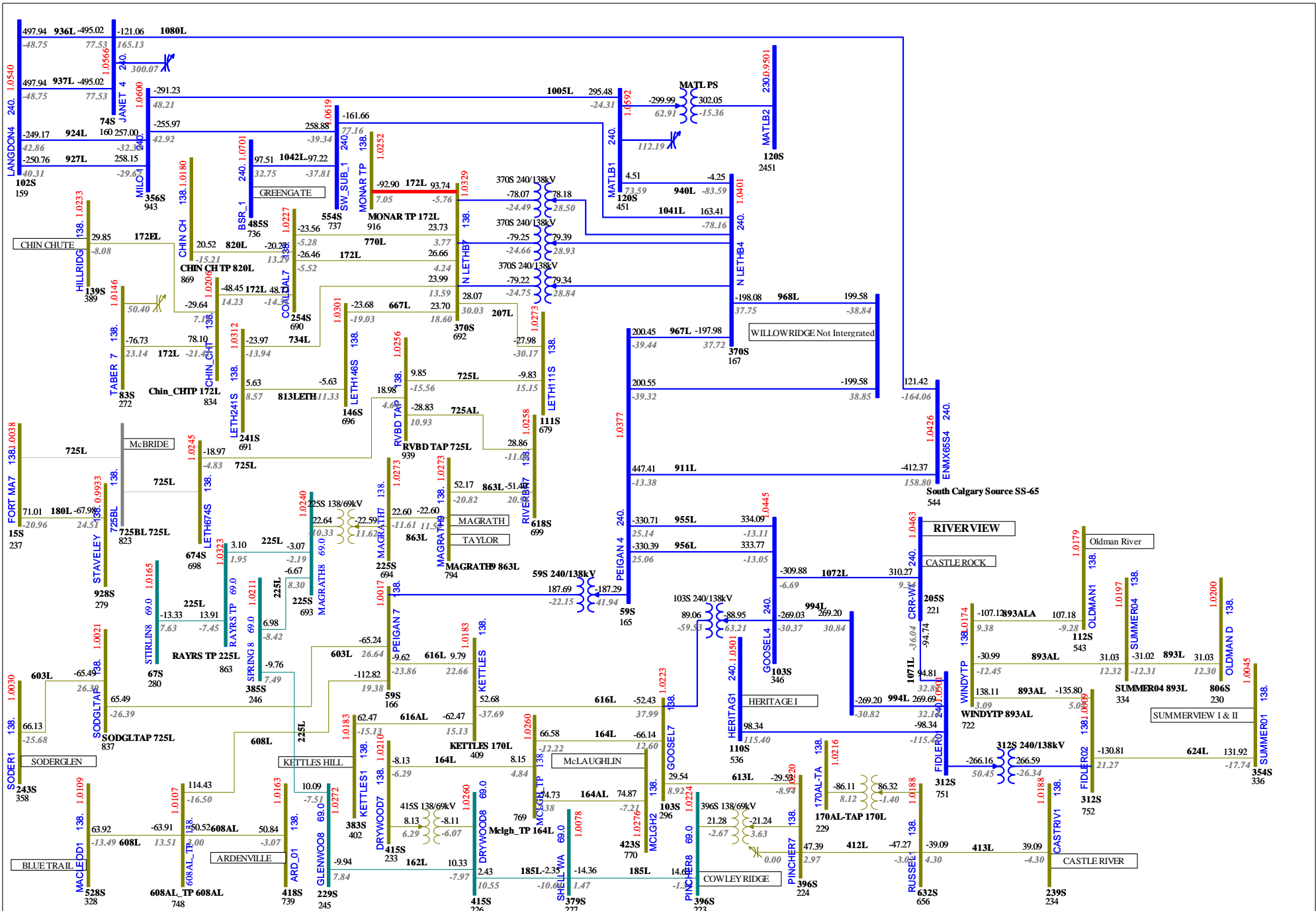


Figure D-6-2 Contingency: 725L (15S-674S)  
 Overload: 172L (370S- MONAR TP 172L)

### Riverview (P524)

2014 Summer Peak  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

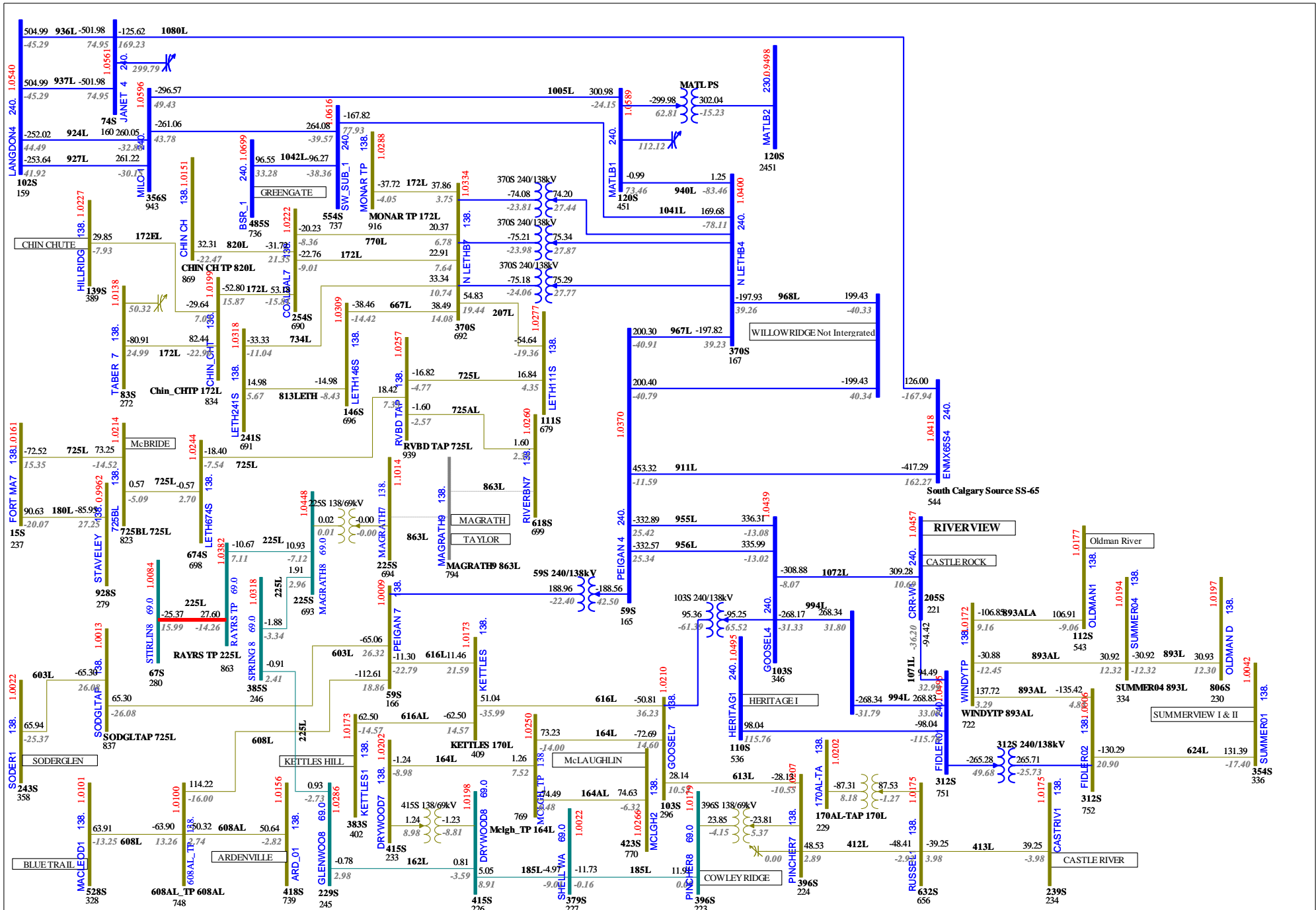


Figure D-6-3 Contingency: 863L (225S-618S)  
 Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Peak  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<input type="text"/>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



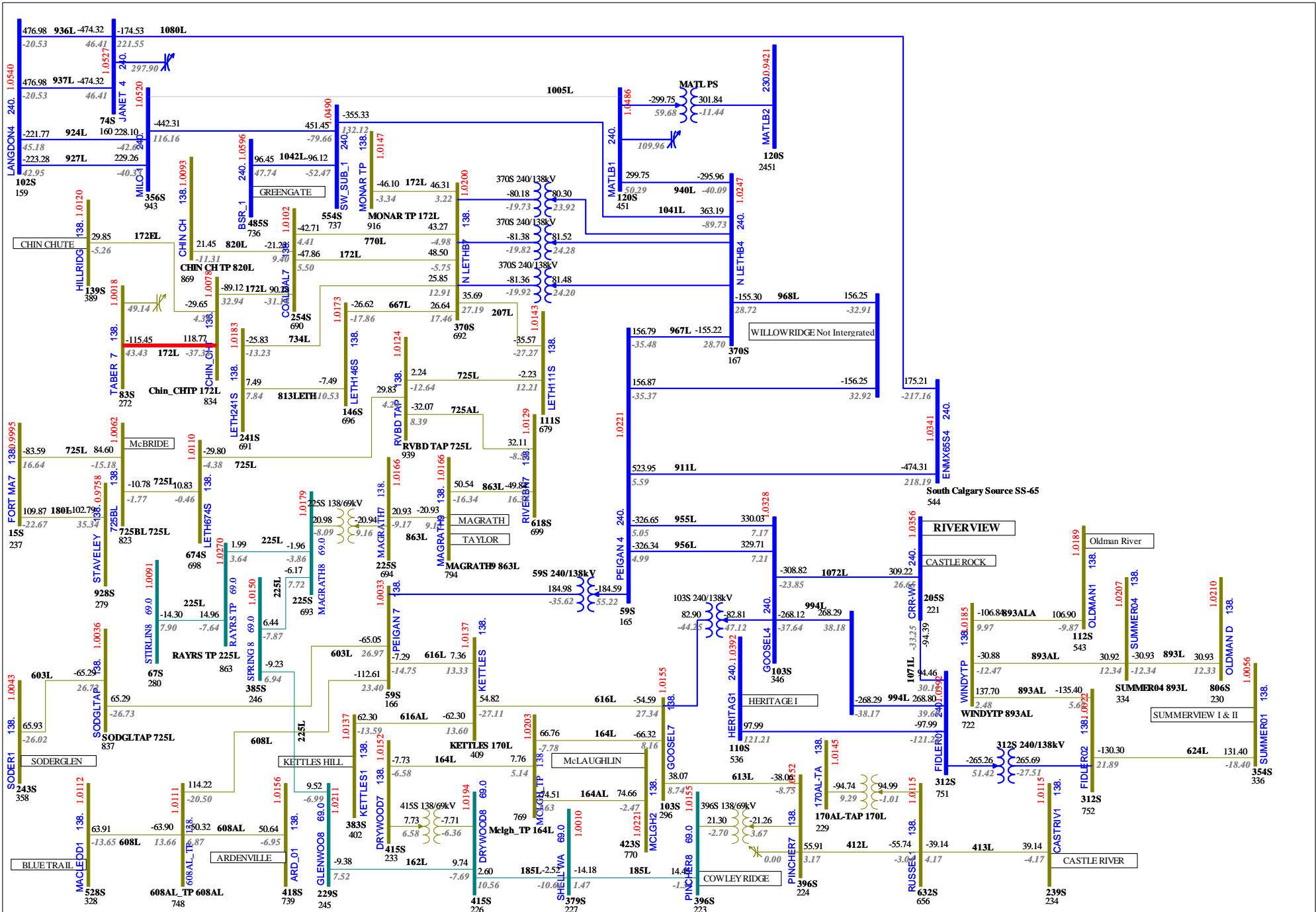


Figure D-6-4 Contingency: 1005L (120S-356S)  
 Overload: 172L (83S- CHN\_CHTP 172L)

### Riverview (P524)

2014 Summer Peak  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<input type="text"/>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

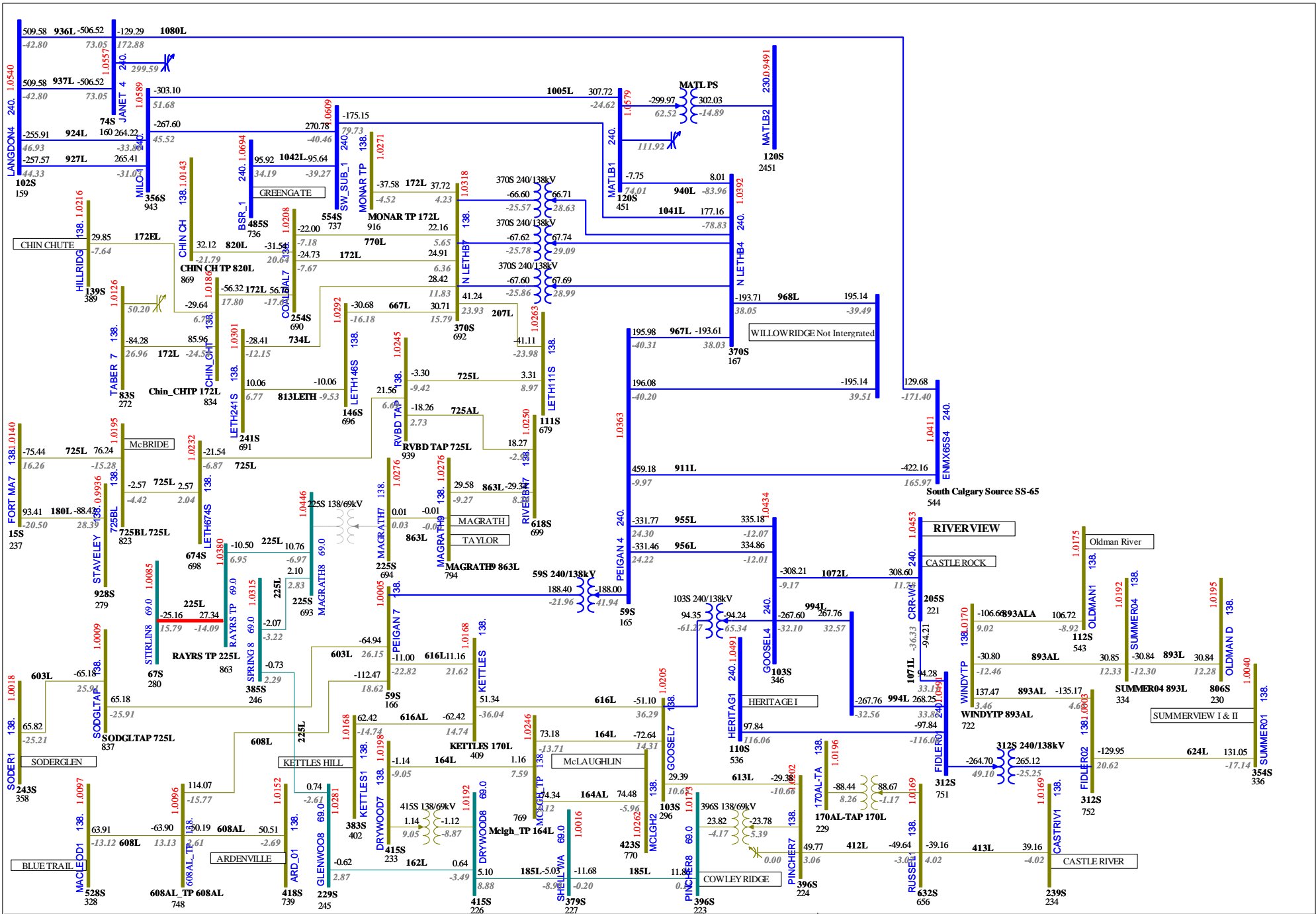


Figure D-6-5 Contingency: 225S 138/69kV T1 (225S-225S)  
 Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Peak  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



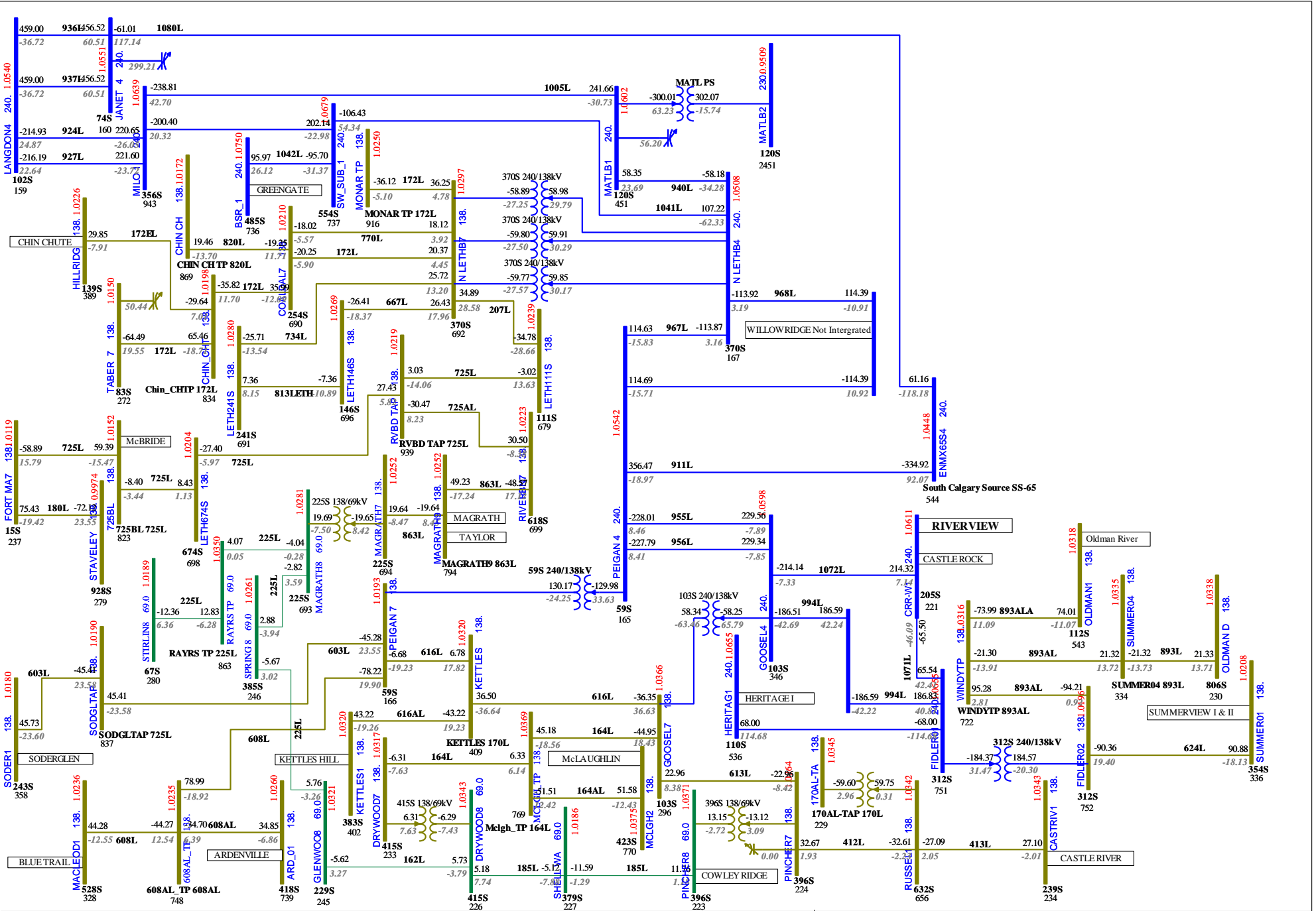


Figure D-8-1 Base Case

**Riverview (P524)**  
 2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<input type="checkbox"/>
138 kV	<span style="color: blue;">—</span>	MW	69.11
240 kV	<span style="color: yellow;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

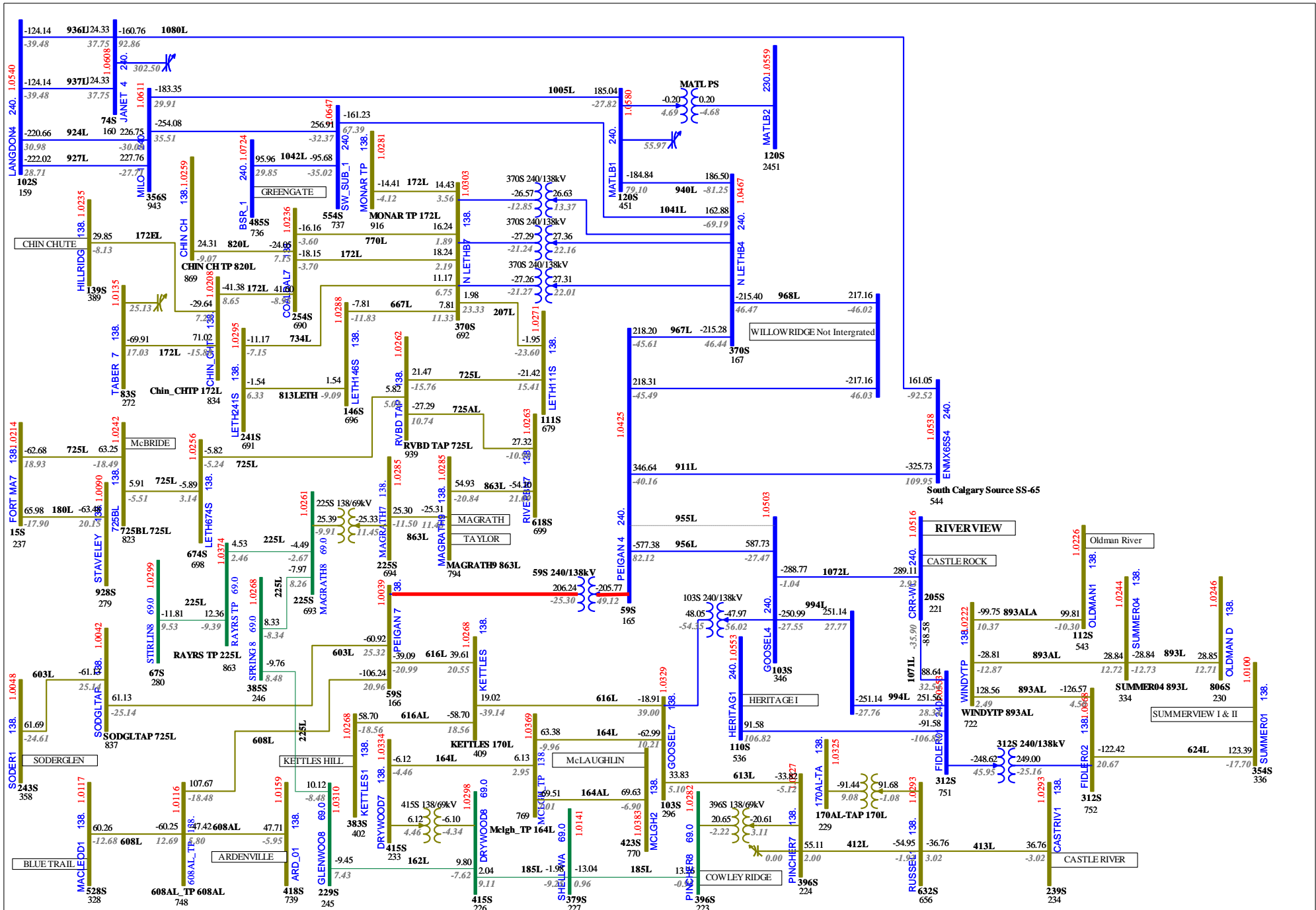


Figure D-9-1 Contingency: 955L (59S-103S)  
 Overload: 59S 240/138kV T1 (59S-59S)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

<p>69 kV <span style="color: green;">—</span></p> <p>138 kV <span style="color: yellow;">—</span></p> <p>240 kV <span style="color: blue;">—</span></p> <p>Overload <span style="color: red;">—</span></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">WAGF</td> <td style="width: 50%;"></td> </tr> <tr> <td>MW</td> <td style="text-align: center;">69.11</td> </tr> <tr> <td>MVAR</td> <td style="text-align: center;">-34.10</td> </tr> </table>	WAGF		MW	69.11	MVAR	-34.10
WAGF							
MW	69.11						
MVAR	-34.10						

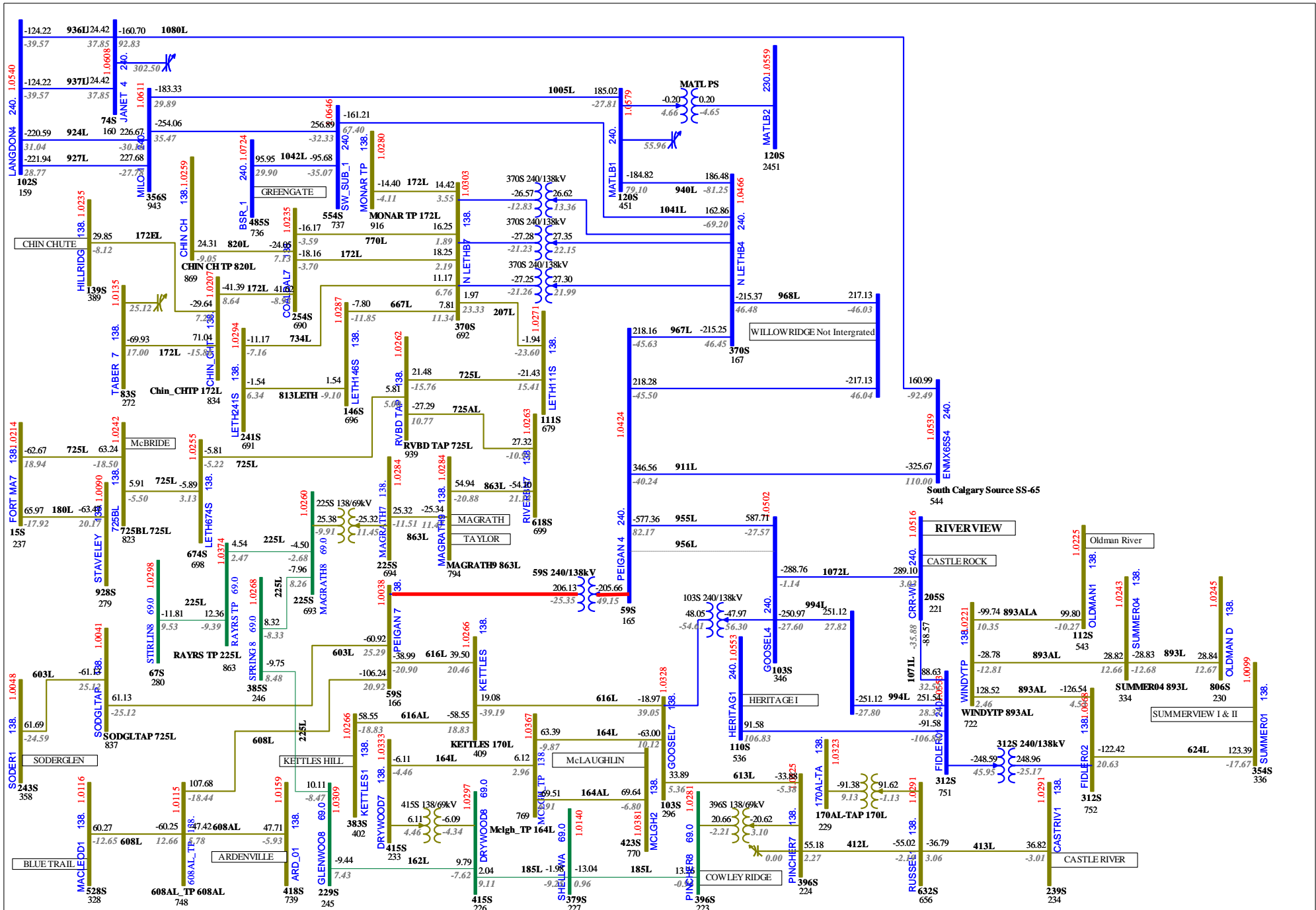


Figure D-9-2 Contingency: 956L (59S-103S)  
 Overload: 59S 240/138kV T1 (59S-59S)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

69 kV  
 138 kV  
 240 kV  
 Overload

WAGF	
MW	69.11
MVAR	-34.10



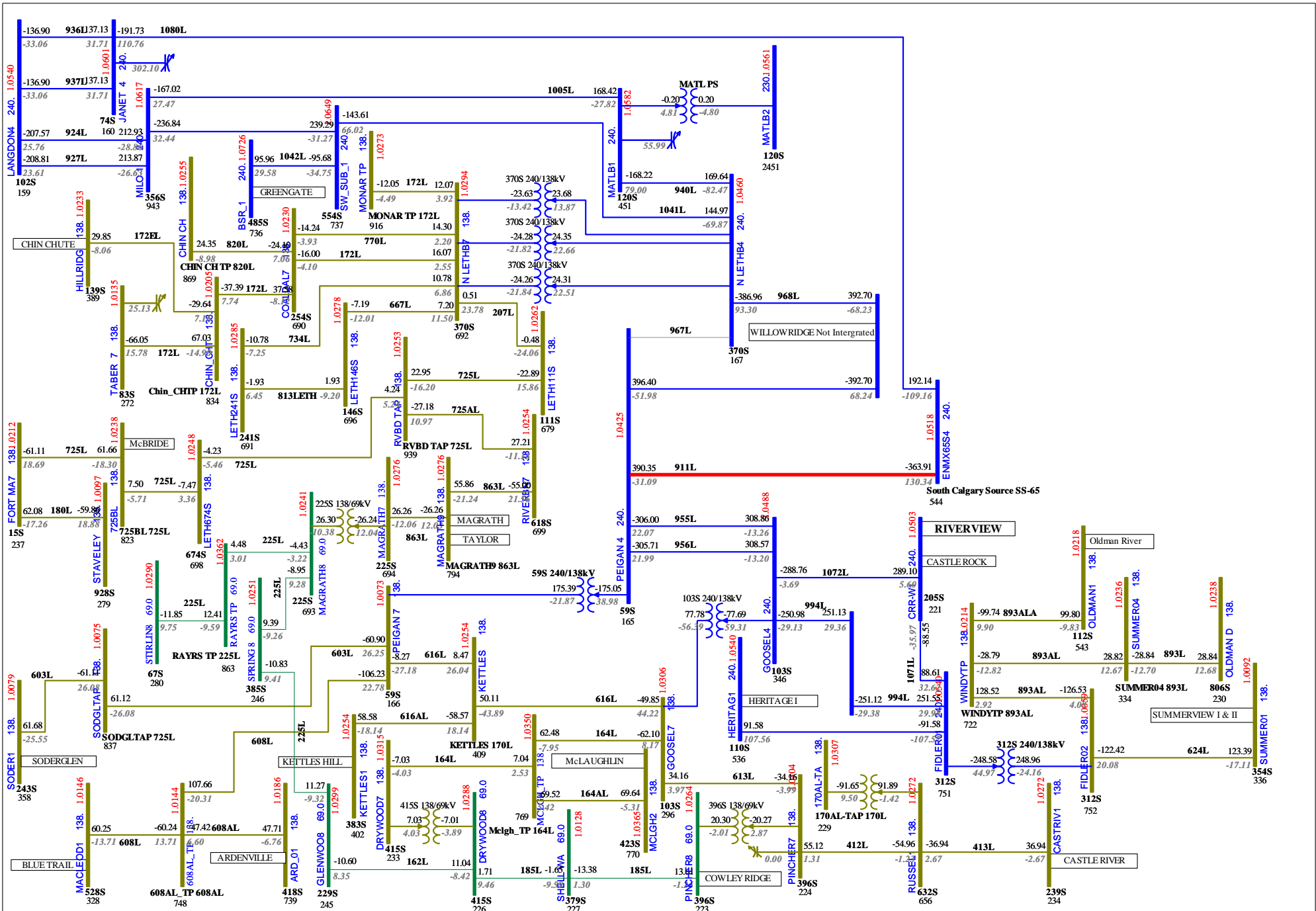


Figure D-9-4 Contingency: 967L (59S-370S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

<p>69 kV <span style="color: green;">—</span></p> <p>138 kV <span style="color: yellow;">—</span></p> <p>240 kV <span style="color: blue;">—</span></p> <p>Overload <span style="color: red;">—</span></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">WAGF</td> <td style="width: 50%;"></td> </tr> <tr> <td>MW</td> <td style="text-align: center;">69.11</td> </tr> <tr> <td>MVAR</td> <td style="text-align: center;">-34.10</td> </tr> </table>	WAGF		MW	69.11	MVAR	-34.10
WAGF							
MW	69.11						
MVAR	-34.10						



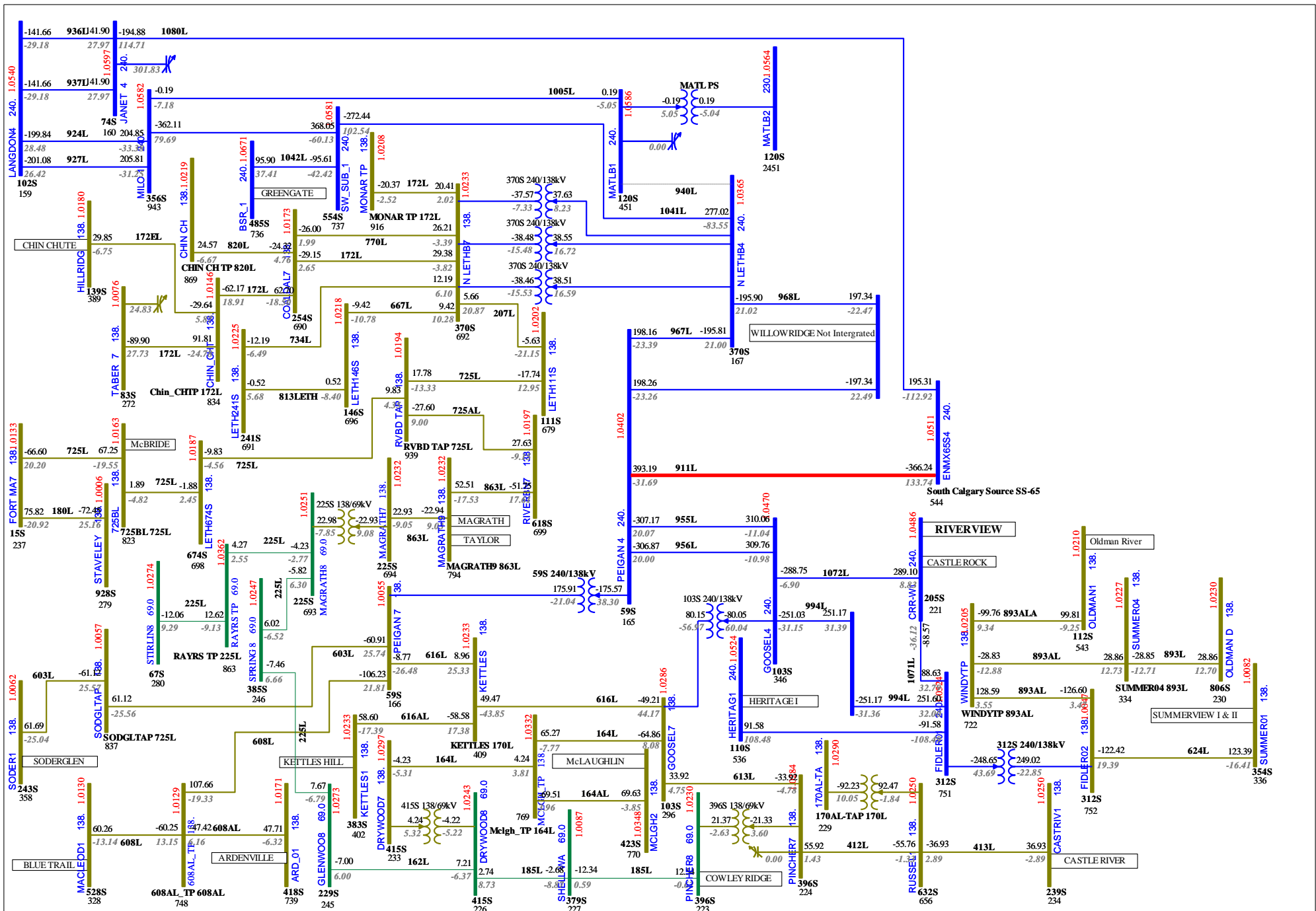


Figure D-9-5 Contingency: 940L (370S-120S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

<p>69 kV <span style="color: green;">—</span></p> <p>138 kV <span style="color: yellow;">—</span></p> <p>240 kV <span style="color: blue;">—</span></p> <p>Overload <span style="color: red;">—</span></p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">WAGF</td> <td style="width: 50%;"></td> </tr> <tr> <td>MW</td> <td style="text-align: center;">69.11</td> </tr> <tr> <td>MVAR</td> <td style="text-align: center;">-34.10</td> </tr> </table>	WAGF		MW	69.11	MVAR	-34.10
WAGF							
MW	69.11						
MVAR	-34.10						

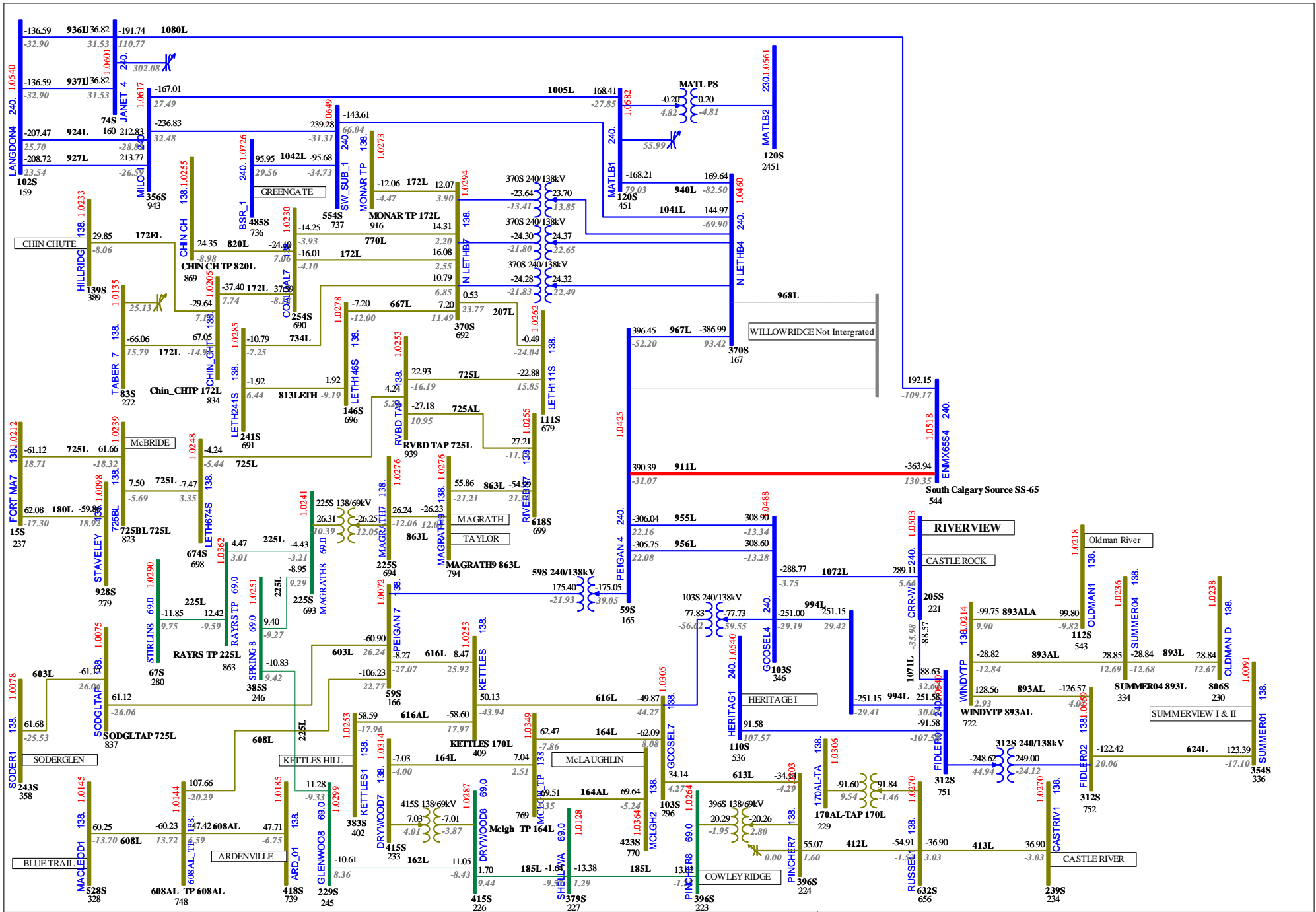
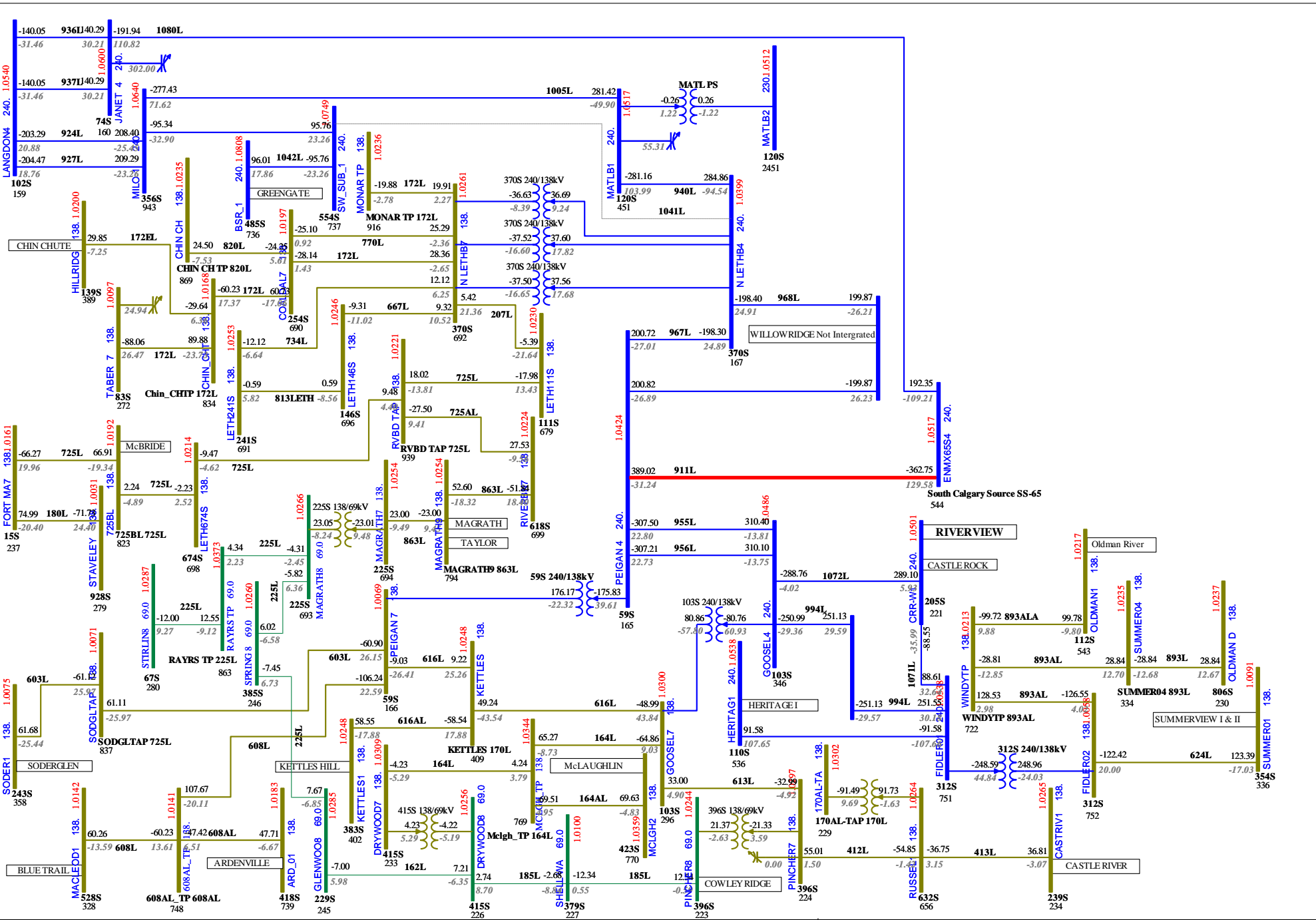


Figure D-9-6 Contingency: 968L (59S-370S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

**Riverview (P524)**  
 2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



**Figure D-9-7** Contingency: 1041L (370S-554S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

**Riverview (P524)**  
 2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated



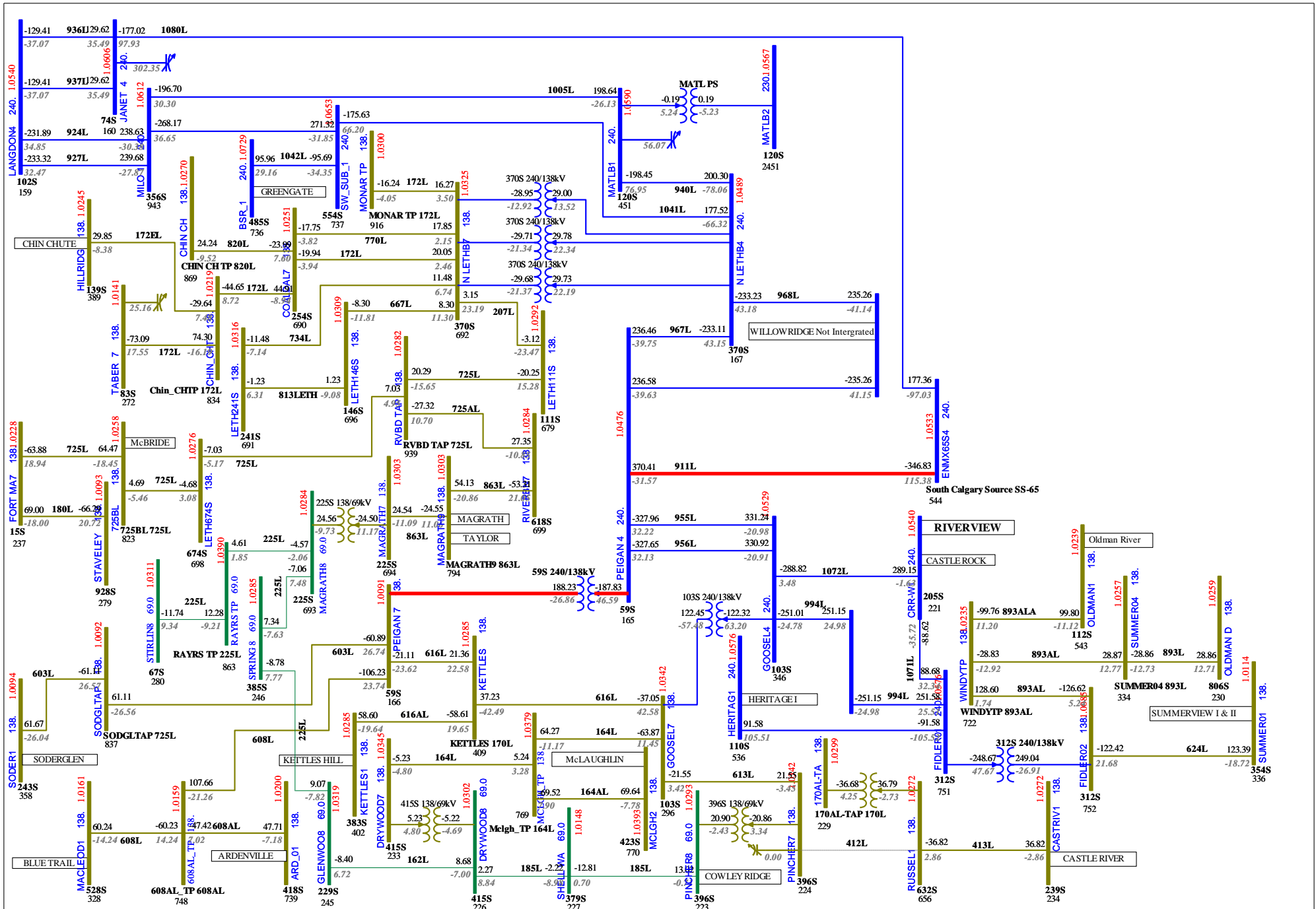


Figure D-9-8 Contingency: 412L (396S-632S)  
 Overload: 911L (59S-S. Calg. Source SS-65)  
 59S 240/138kV T1 (59S-59S)

**Riverview (P524)**  
 2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

69 kV —  
 138 kV —  
 240 kV —  
 Overload —

WAGF	
MW	69.11
MVAR	-34.10

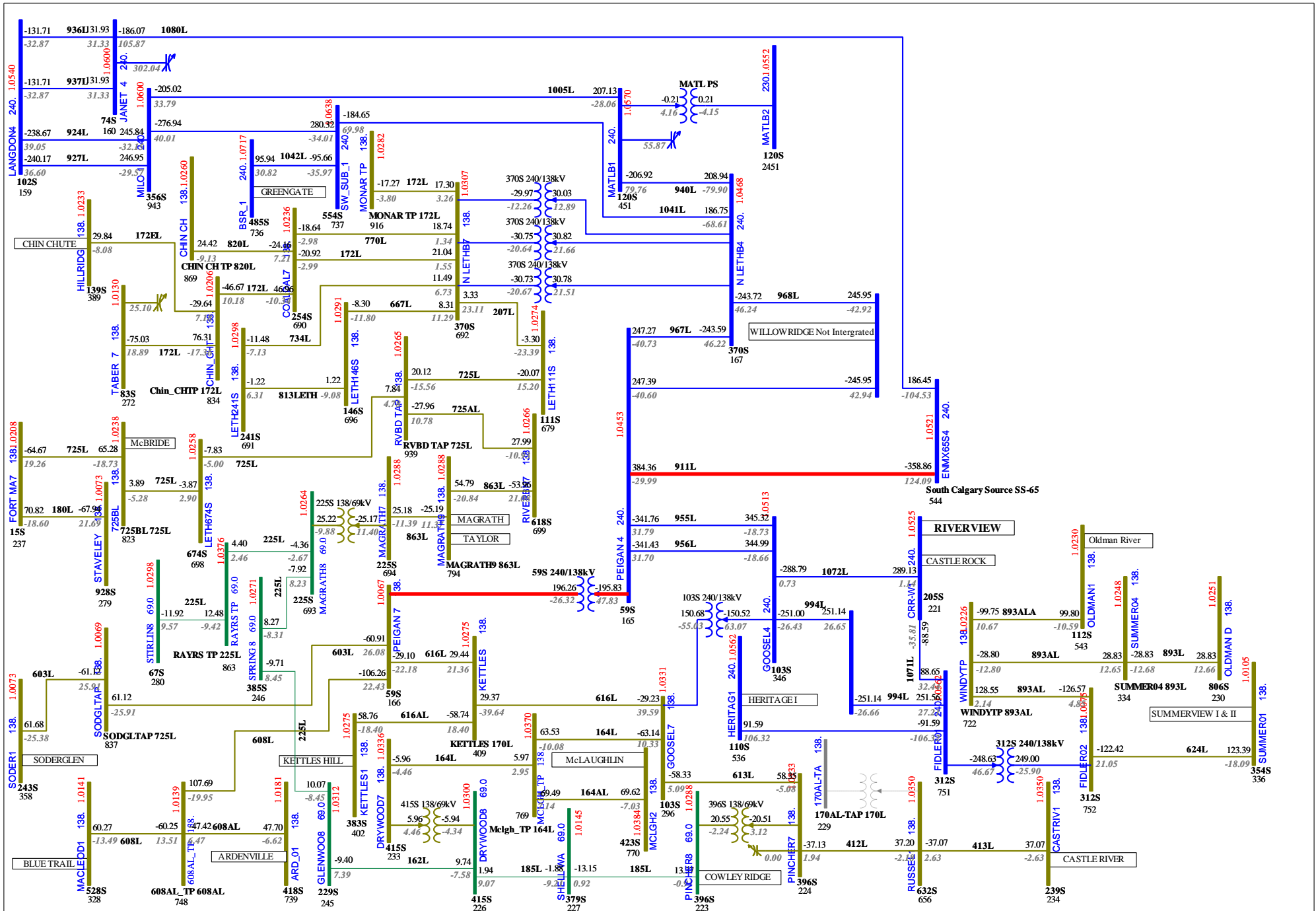


Figure D-9-9 Contingency: 170L (799S-632S)  
 Overload: 911L (59S-S. Calg. Source SS-65)  
 59S 240/138kV T1 (59S-59S)

Riverview (P524)  
 2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

69 kV	—	WAGF	—
138 kV	—	MW	69.11
240 kV	—	MVAR	-34.10
Overload	—		

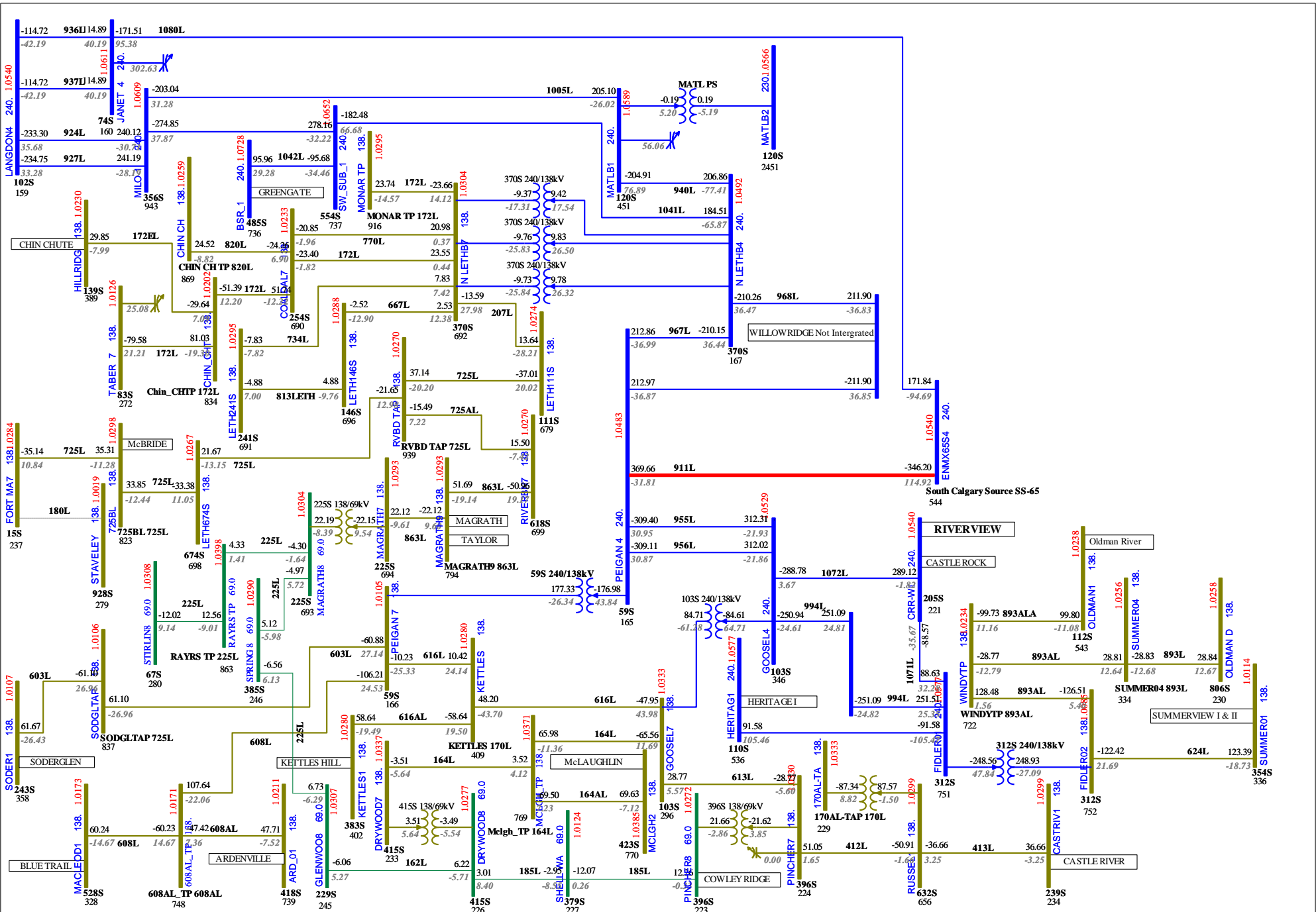


Figure D-9-10 Contingency: 180L (15S-928S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

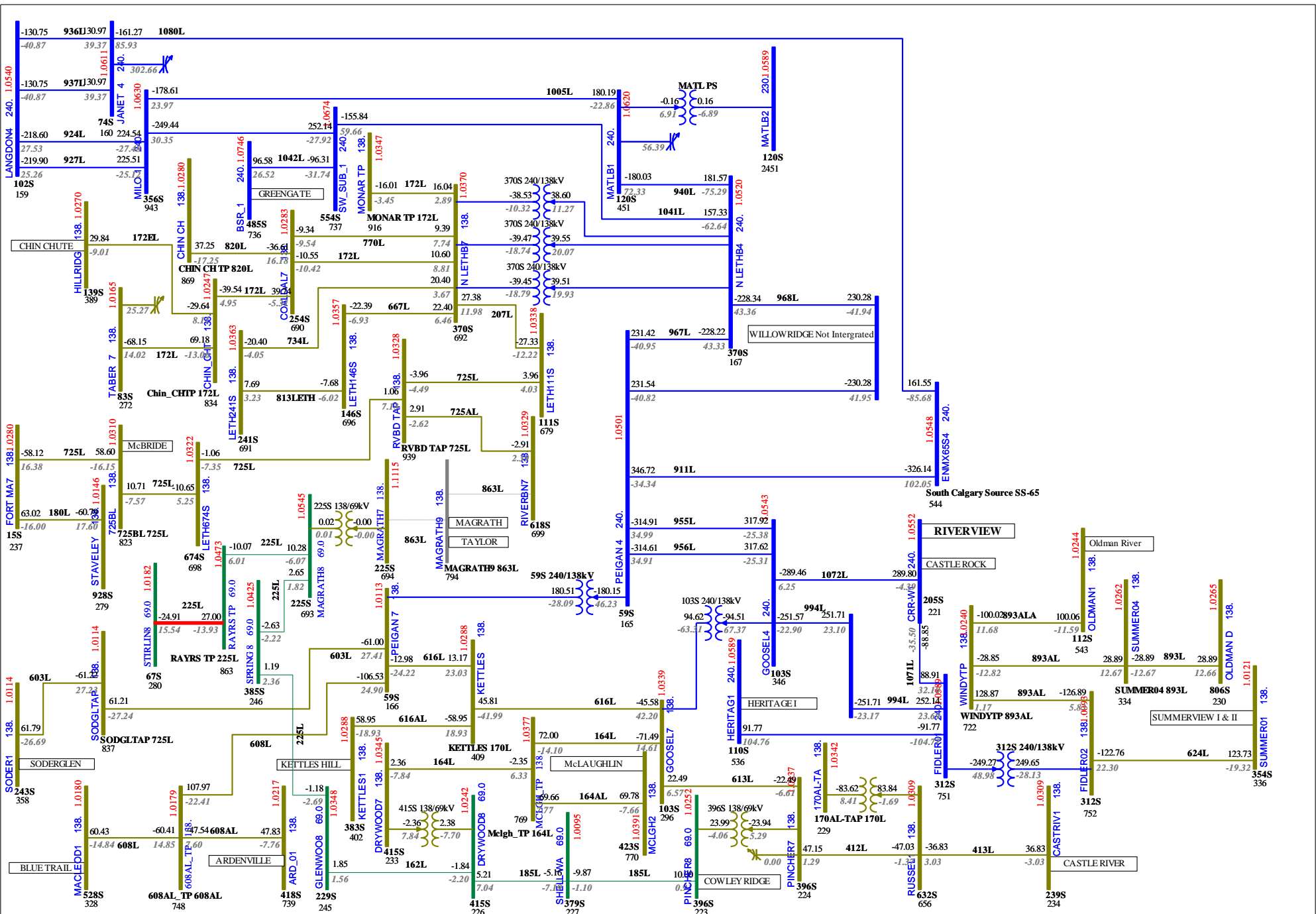


Figure D-9-11 Contingency: 863L (225S-618S)

Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
P524 Integrated

- 69 kV
- 138 kV
- 240 kV
- Overload

WAGF	
MW	69.11
MVAR	-34.10

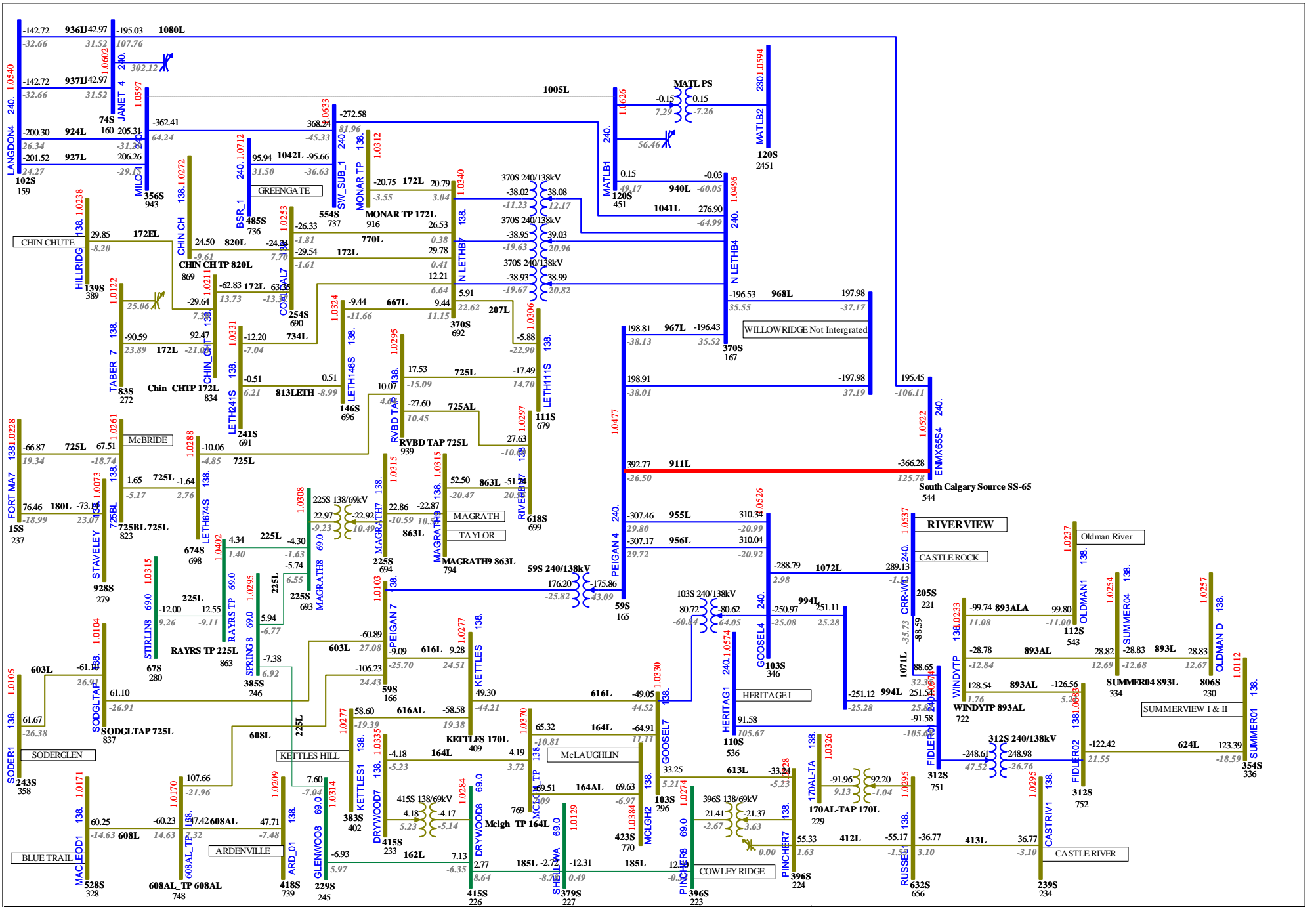


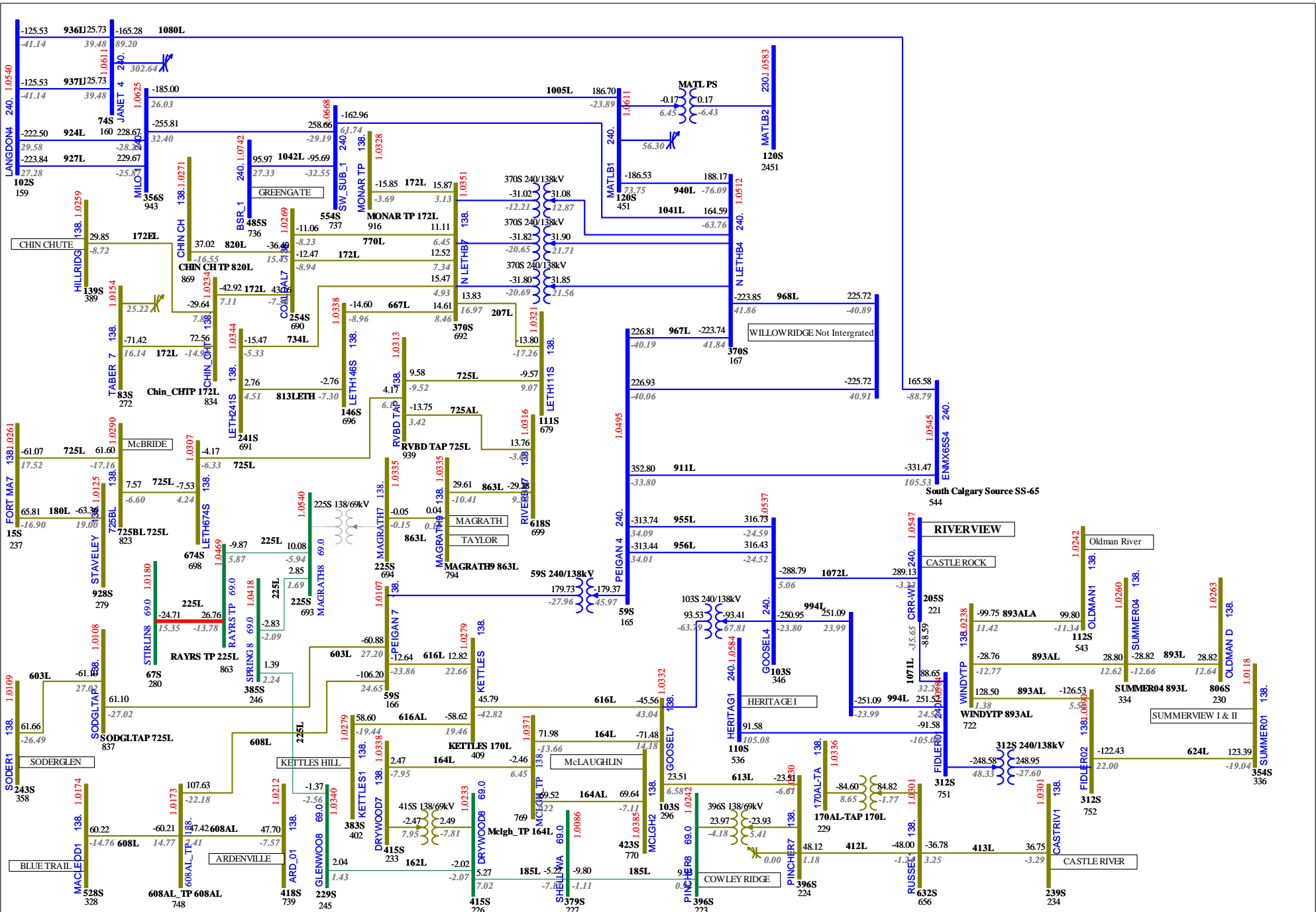
Figure D-9-12 Contingency: 1005L (120S-356S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

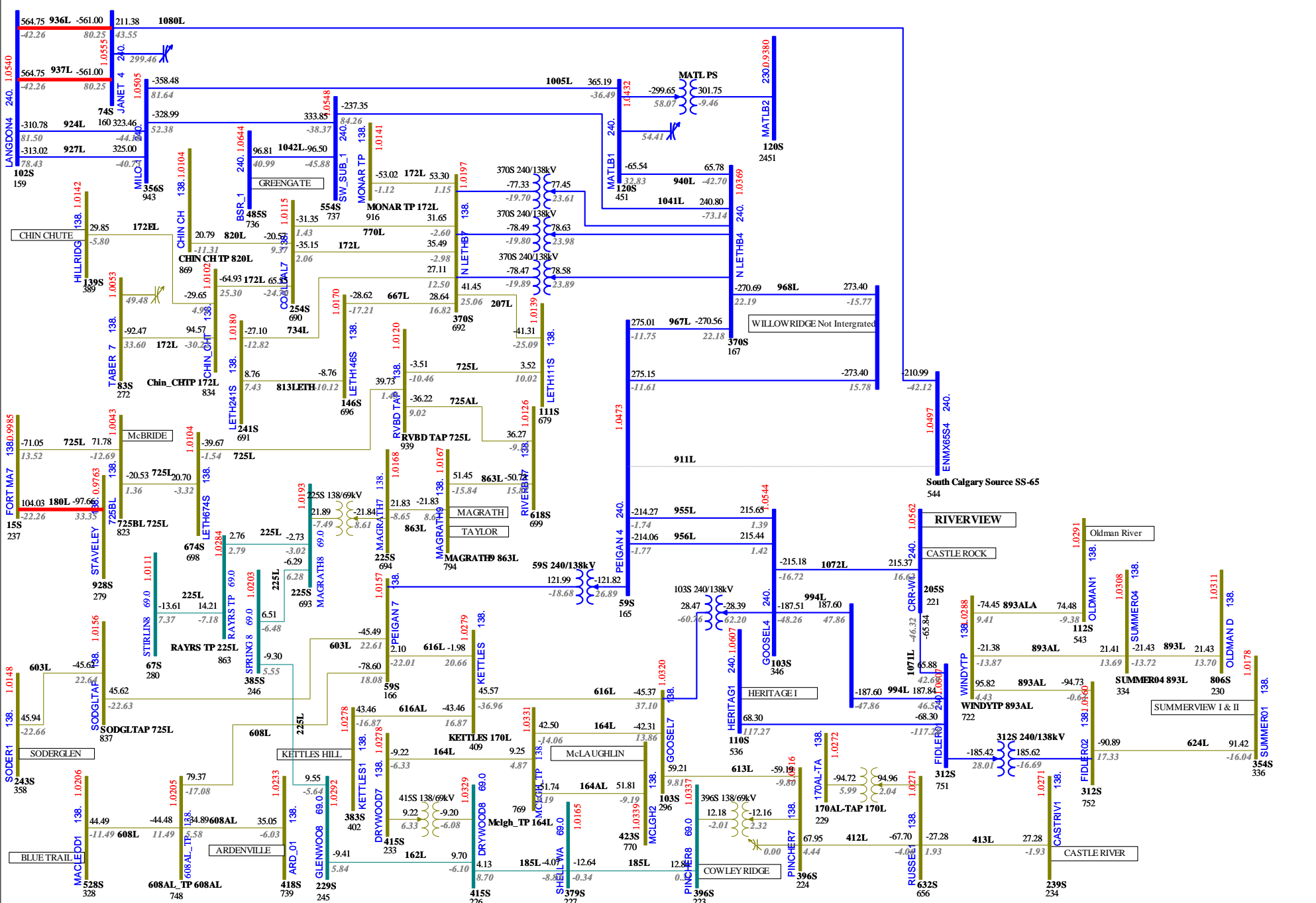




**Figure D-9-13** Contingency: 225S 138/69kV T1 (225S-225S)  
 Overload: 225L (67S-RAYRS TP 225L)

**Riverview (P524)**  
 2014 Summer Light after Removing N-0 Overloads  
 P524 Integrated

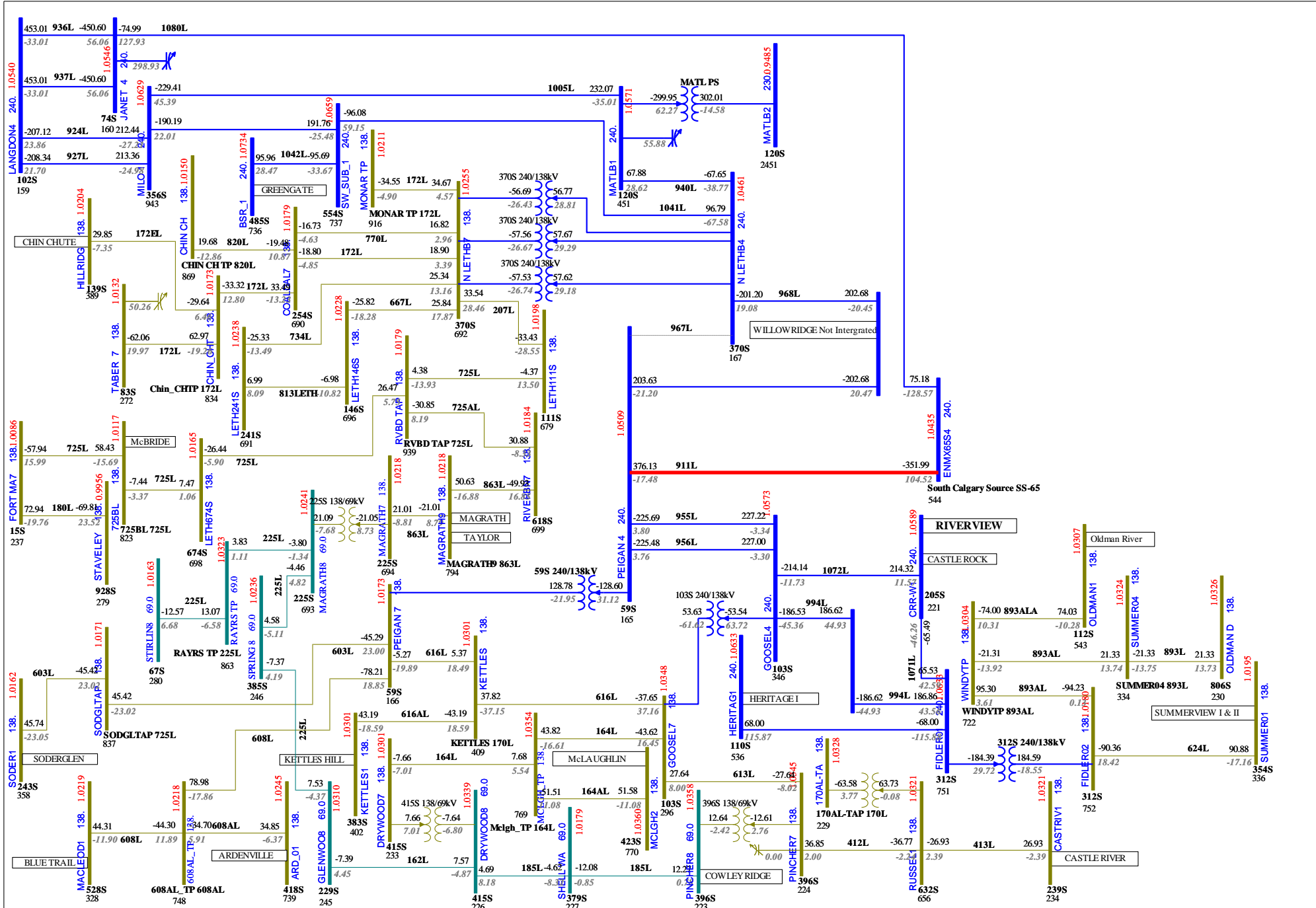
69 kV	<span style="color: red;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
138 kV	<span style="color: green;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



**Figure D-10-1** Contingency: 911L (59S-S. Calg. Source SS-65)  
 Overload: 936L (102S-74S)  
 937L (102S-74S)  
 180L (15S-928S)

**Riverview (P524)**  
 2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		



**Figure D-10-2** Contingency: 967L (59S-370S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	<b>69.11</b>
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

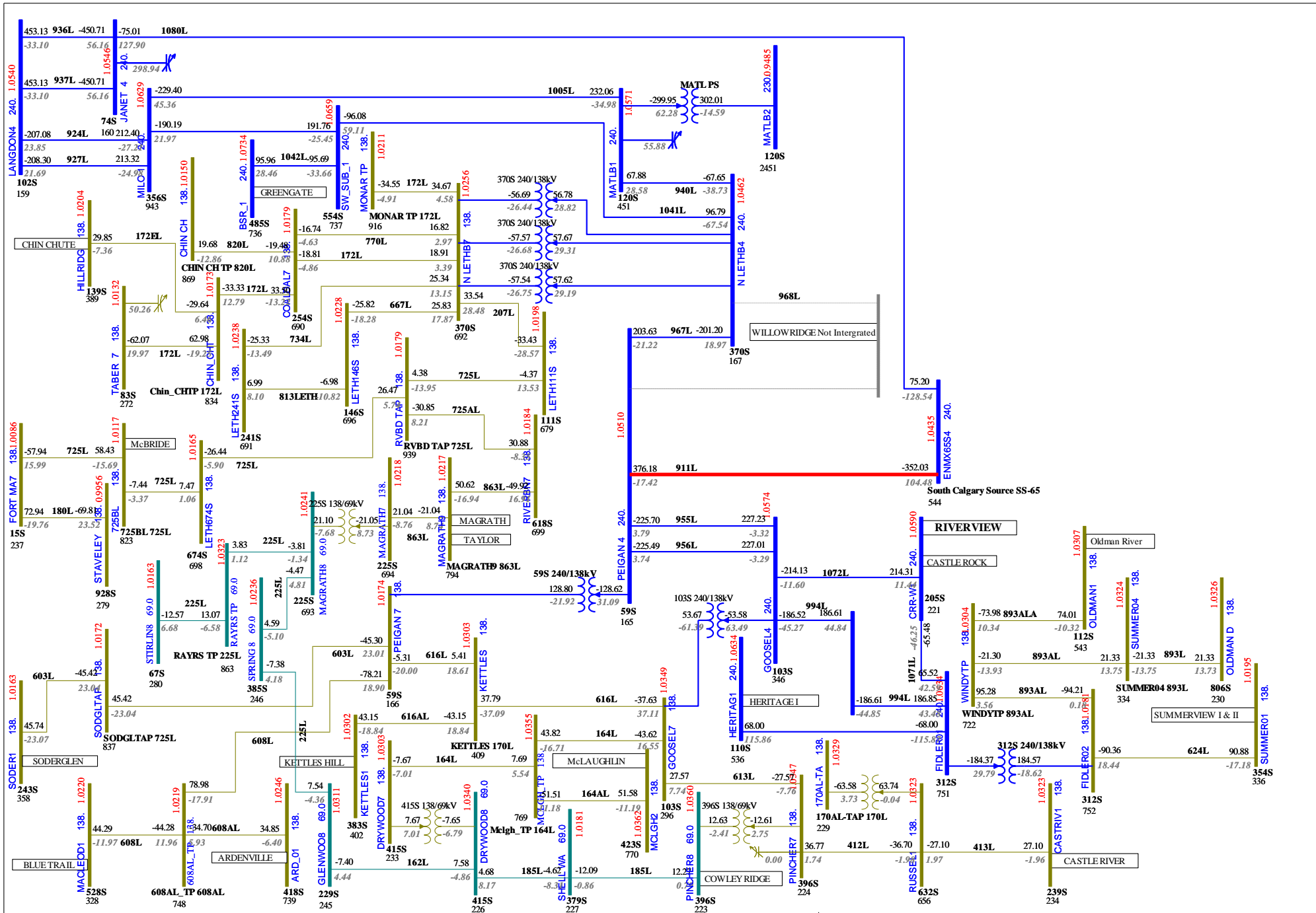


Figure D-10-3 Contingency: 968L (59S-370S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	<b>69.11</b>
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

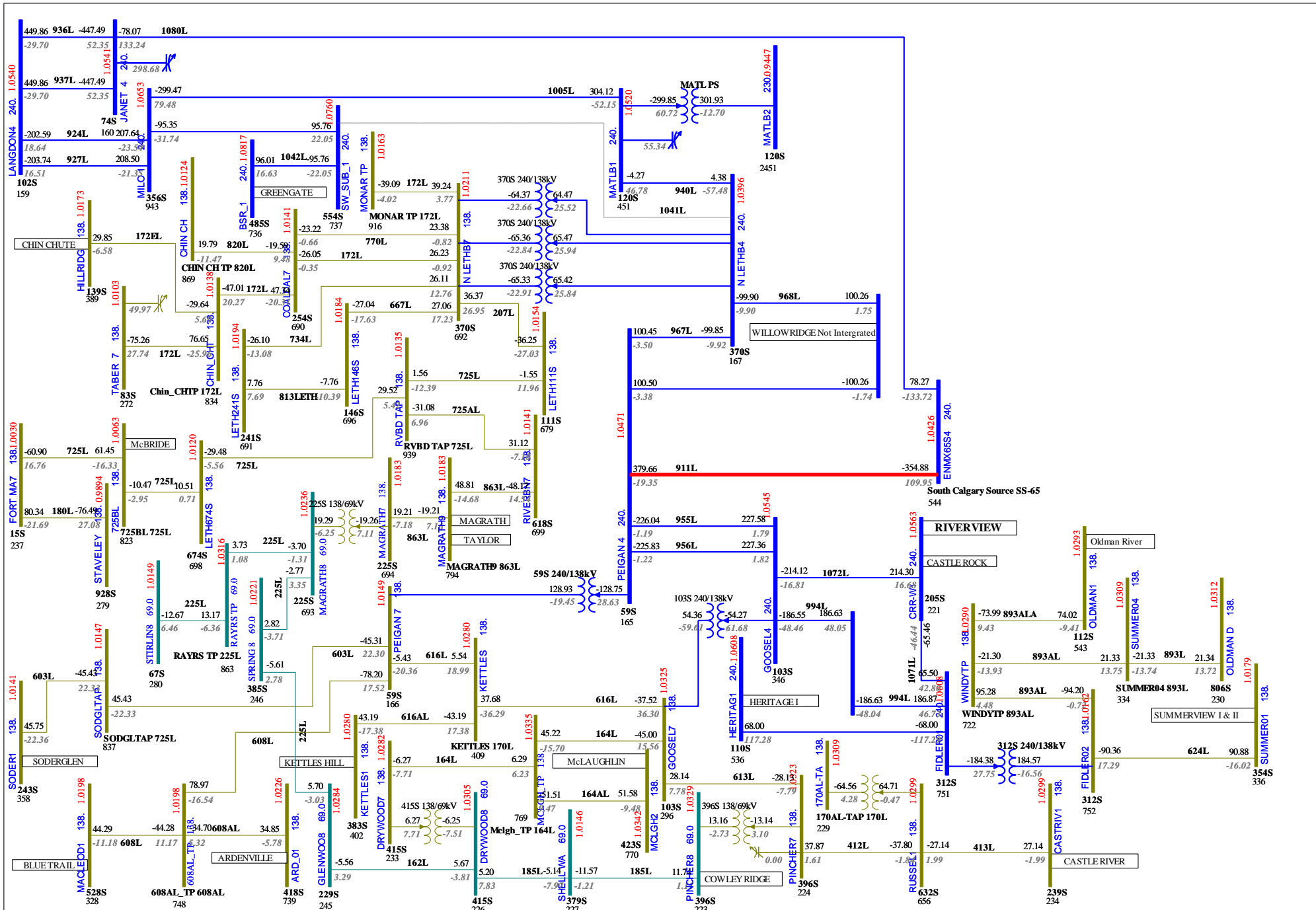


Figure D-10-4 Contingency: 1041L (370S-554S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

<p>69 kV <span style="color: green;">—</span></p> <p>138 kV <span style="color: yellow;">—</span></p> <p>240 kV <span style="color: blue;">—</span></p> <p>Overload <span style="color: red;">—</span></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">WAGF</td> <td style="width: 50%;"></td> </tr> <tr> <td>MW</td> <td style="text-align: center;">69.11</td> </tr> <tr> <td>MVAR</td> <td style="text-align: center;">-34.10</td> </tr> </table>	WAGF		MW	69.11	MVAR	-34.10
WAGF							
MW	69.11						
MVAR	-34.10						

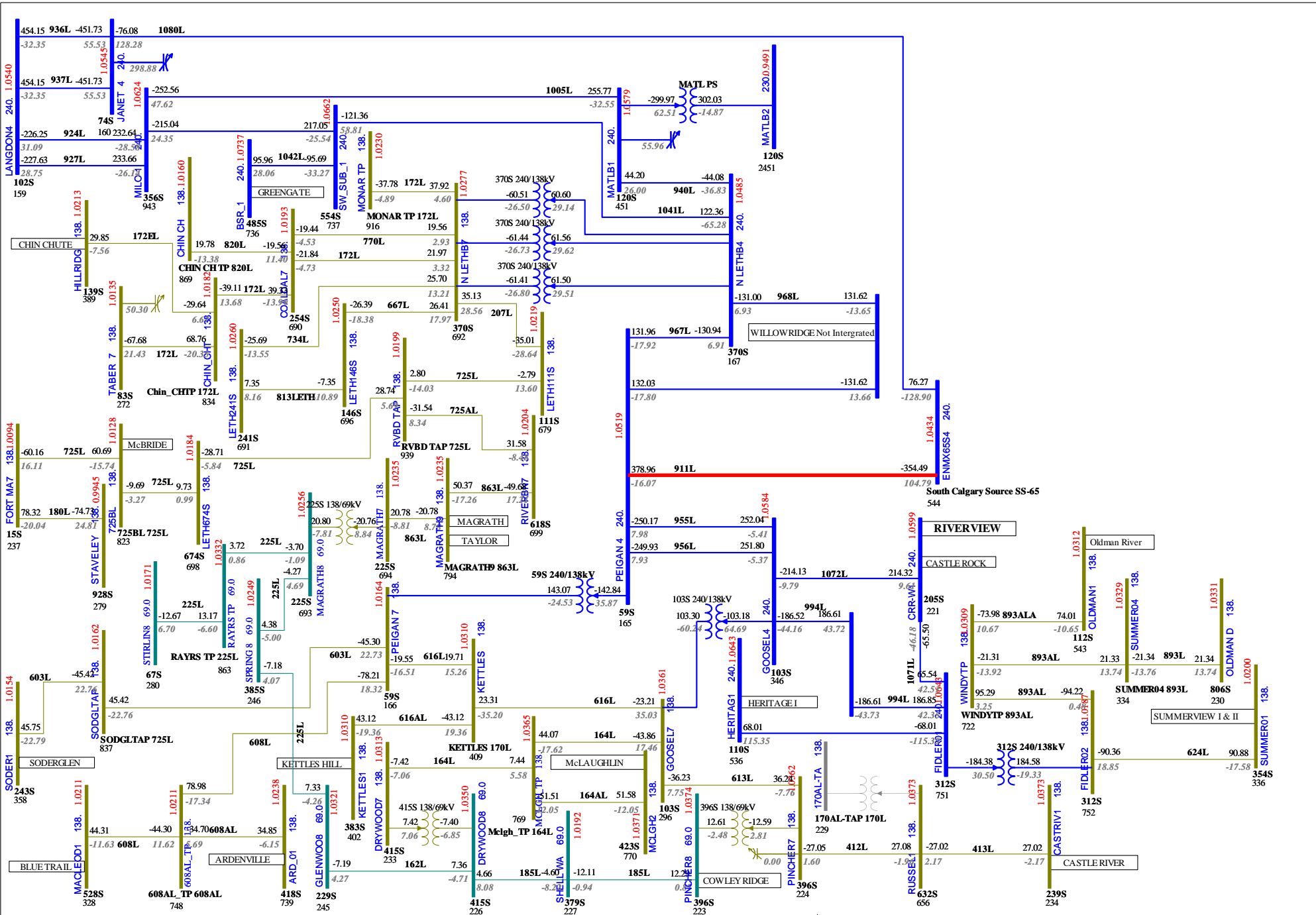


Figure D-10-5 Contingency: 170L (799S-632S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

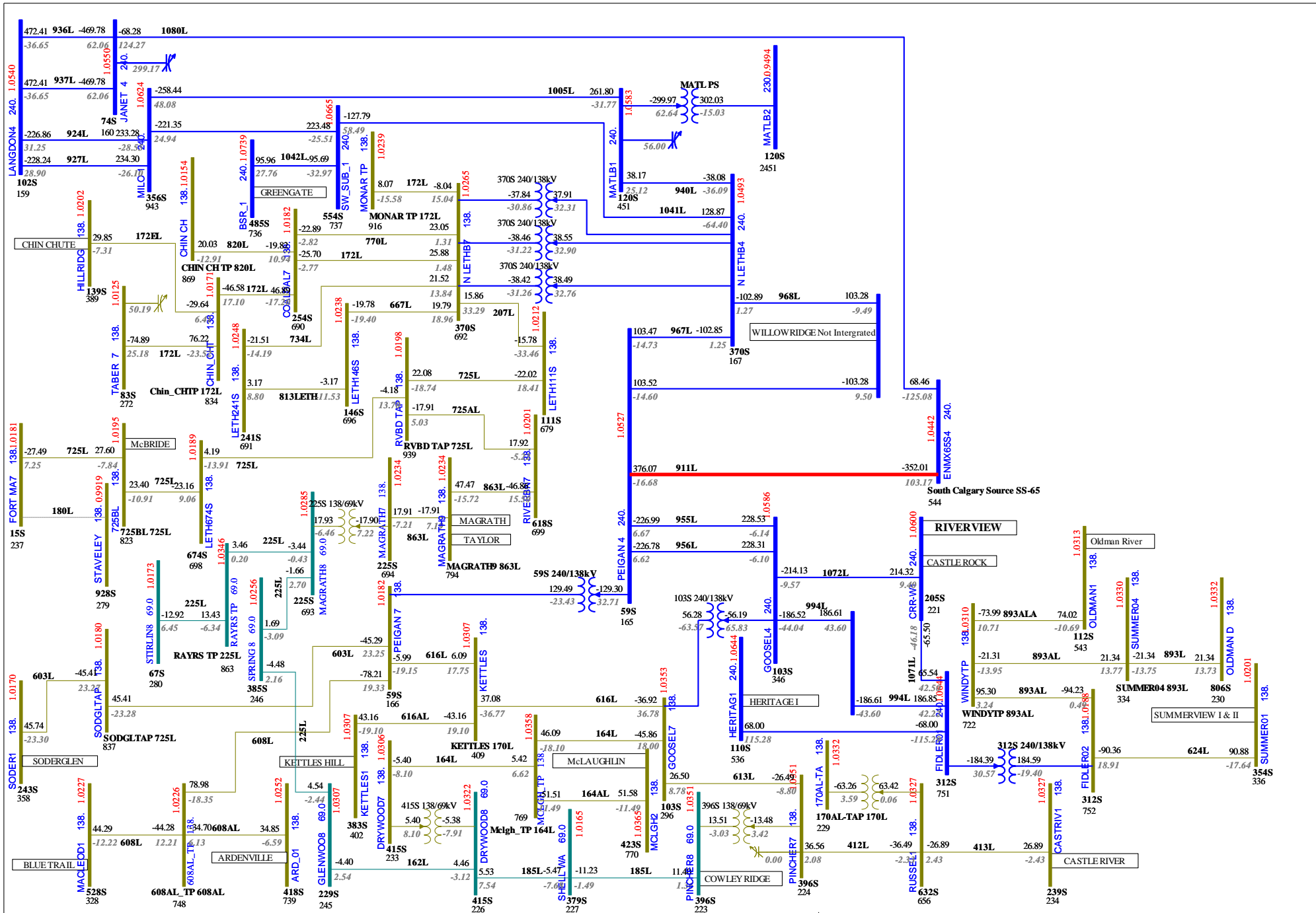


Figure D-10-6 Contingency: 180L (15S-928S)  
 Overload: 911L (59S-S. Calg. Source SS-65)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

69 kV	<span style="color: green;">—</span>	WAGF	<input type="text"/>
138 kV	<span style="color: yellow;">—</span>	MW	69.11
240 kV	<span style="color: blue;">—</span>	MVAR	-34.10
Overload	<span style="color: red;">—</span>		

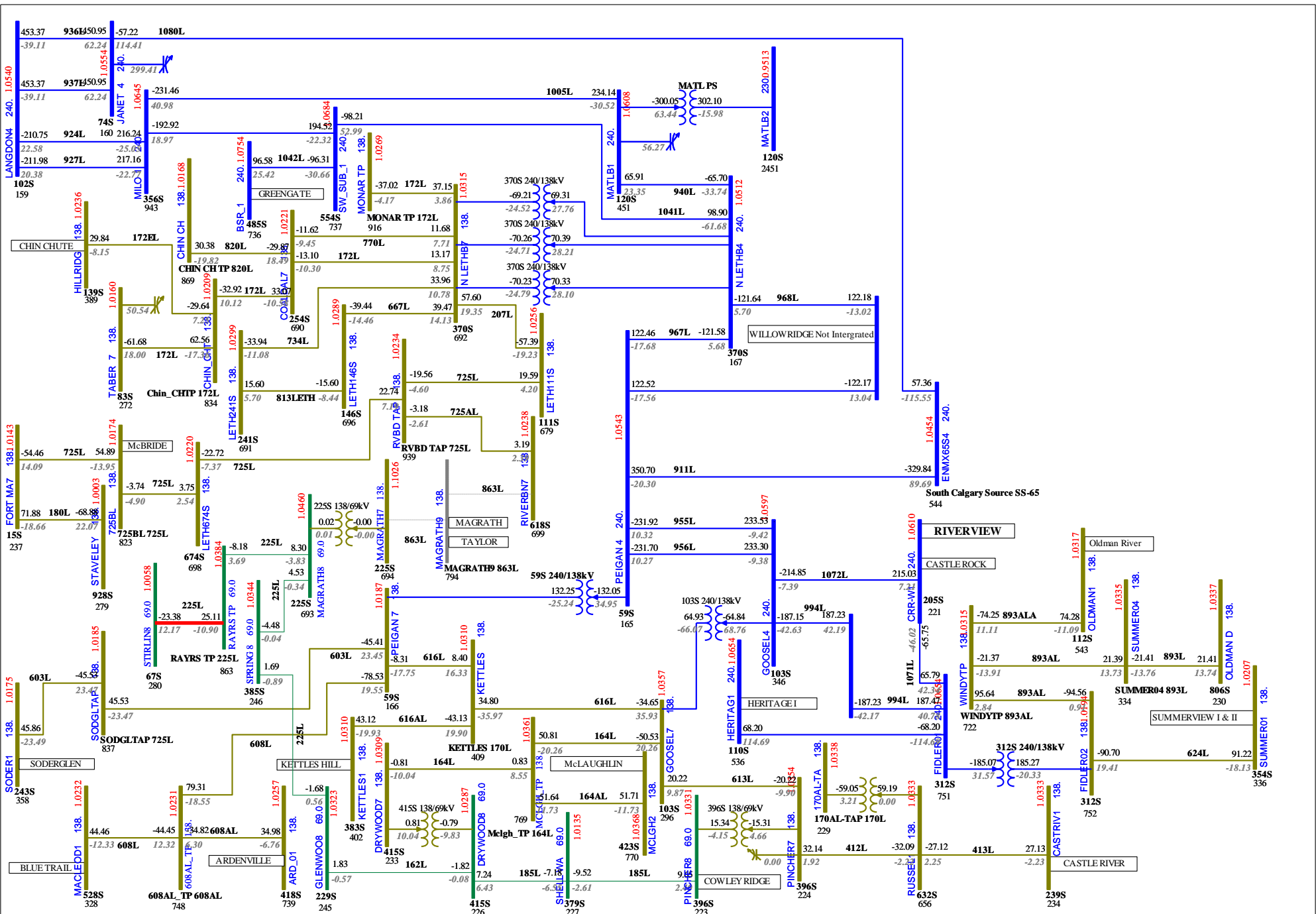


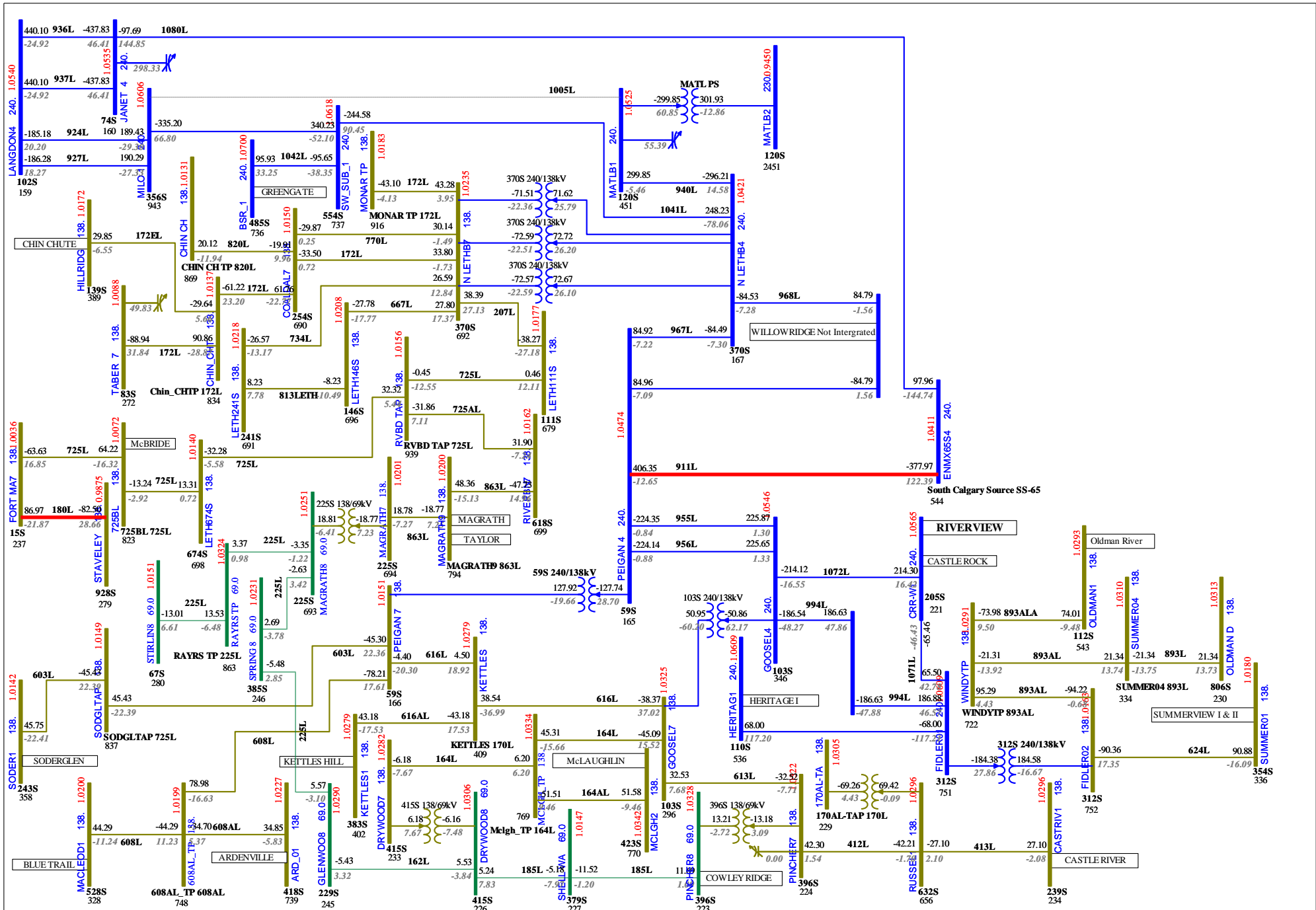
Figure D-10-7 Contingency: 863L (225S-618S)  
 Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

<span style="color: green;">—</span> 69 kV	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> WAGF
<span style="color: yellow;">—</span> 138 kV	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> MW <b>69.11</b>
<span style="color: blue;">—</span> 240 kV	<span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> MVAR <b>-34.10</b>
<span style="color: red;">—</span> Overload	





**Figure D-10-8** Contingency: 1005L (120S-356S)  
 Overload: 911L (59S-S. Calg. Source SS-65)  
 180L (15S-928S)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
 P524 Integrated

<p>69 kV <span style="color: green;">—</span></p> <p>138 kV <span style="color: yellow;">—</span></p> <p>240 kV <span style="color: blue;">—</span></p> <p>Overload <span style="color: red;">—</span></p>	<p>WAGF <span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span></p> <p>MW <span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> 69.11</p> <p>MVAR <span style="border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> -34.10</p>
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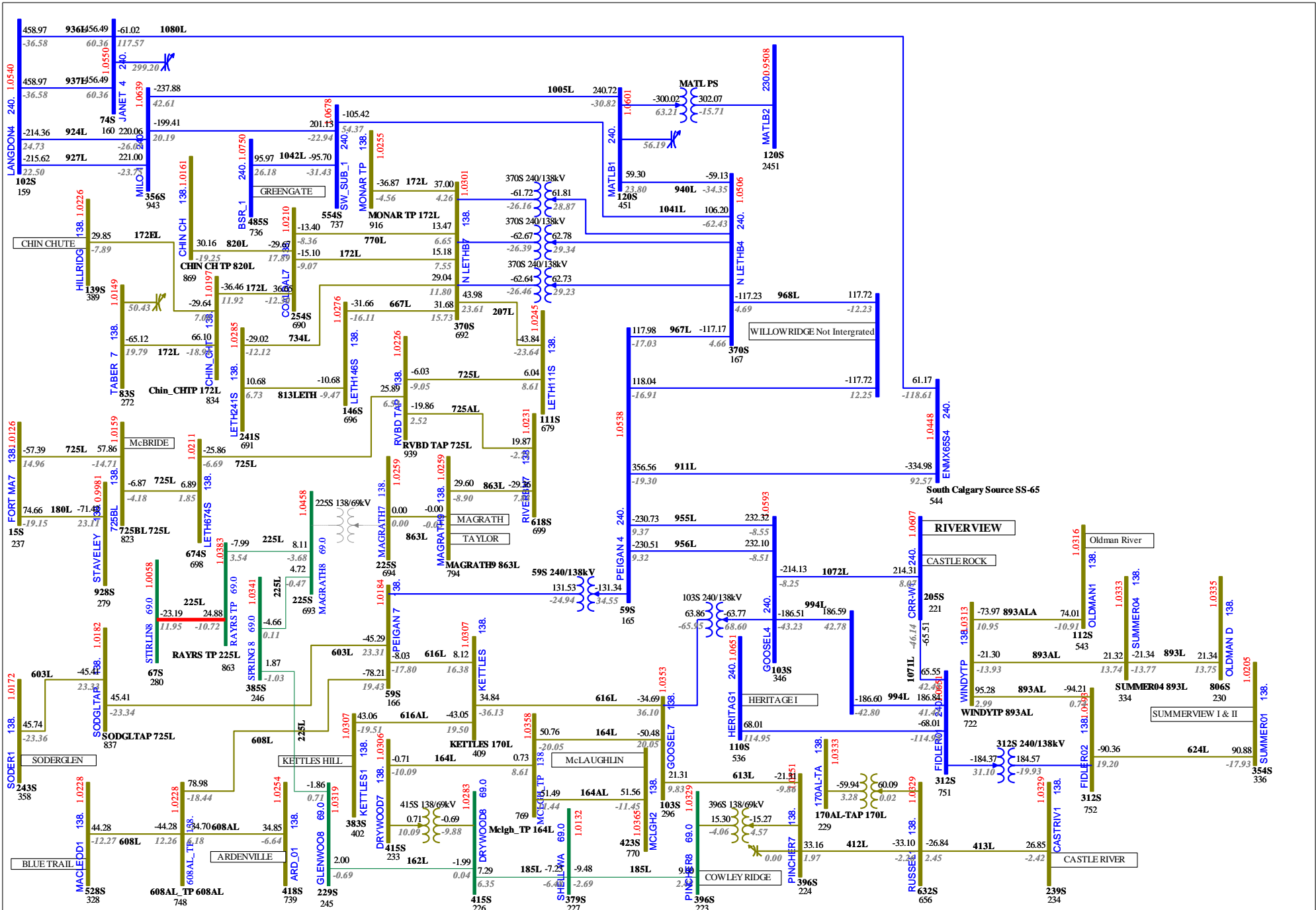


Figure D-10-9 Contingency: 225S 138/69kV T1 (225S-225S)

Overload: 225L (67S-RAYRS TP 225L)

### Riverview (P524)

2014 Summer Peak after Removing N-0 Overloads  
P524 Integrated

69 kV  
138 kV  
240 kV  
Overload



WAGF	
MW	69.11
MVAR	-34.10

P524

**Riverview WAGF**

Attachment E1

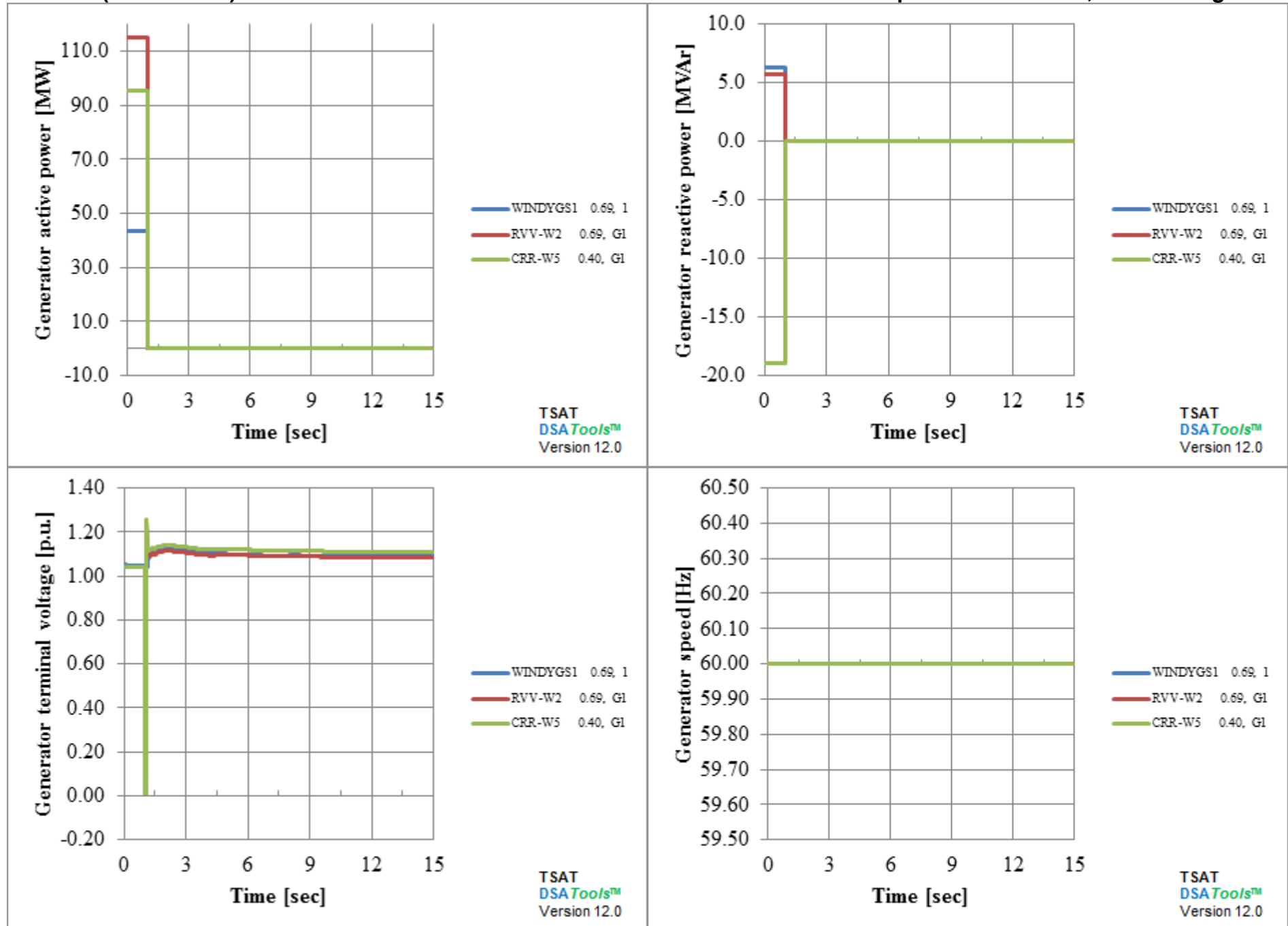
Post-Connection Transient Stability Results

Part 1

2014 Summer Light Scenario

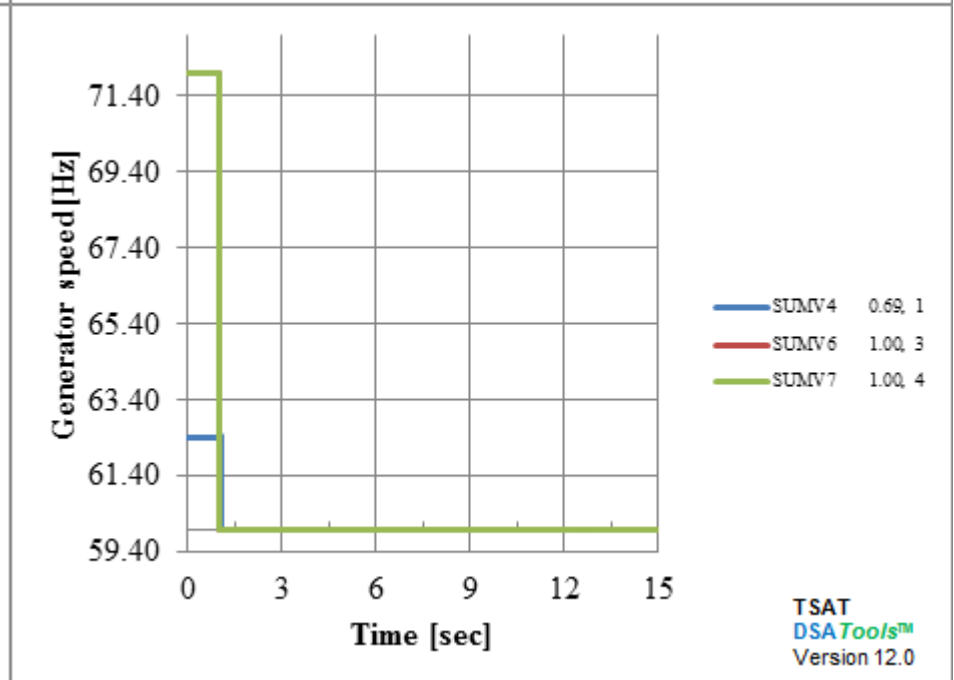
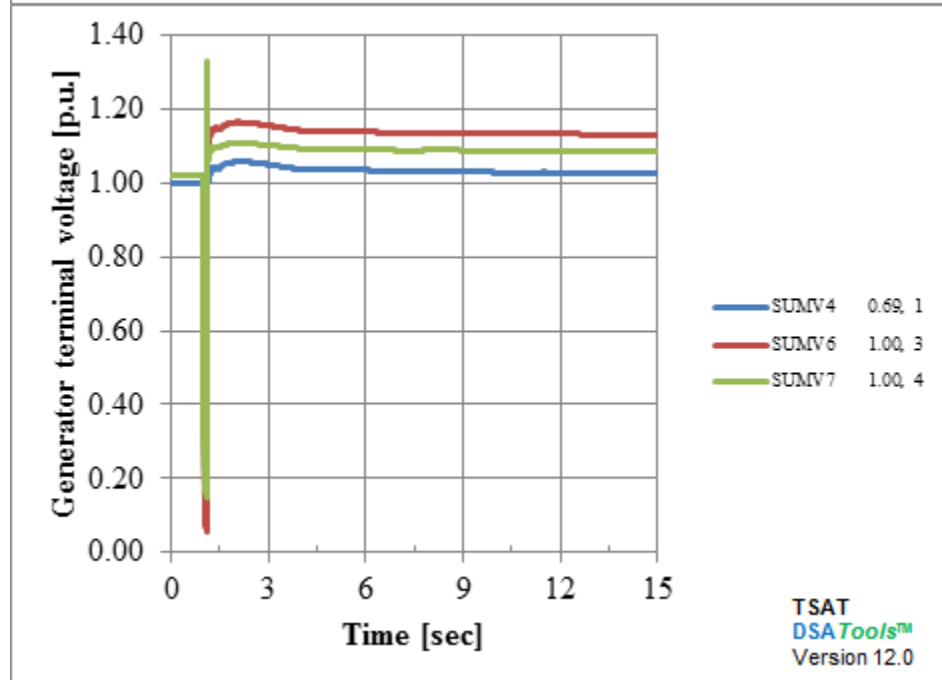
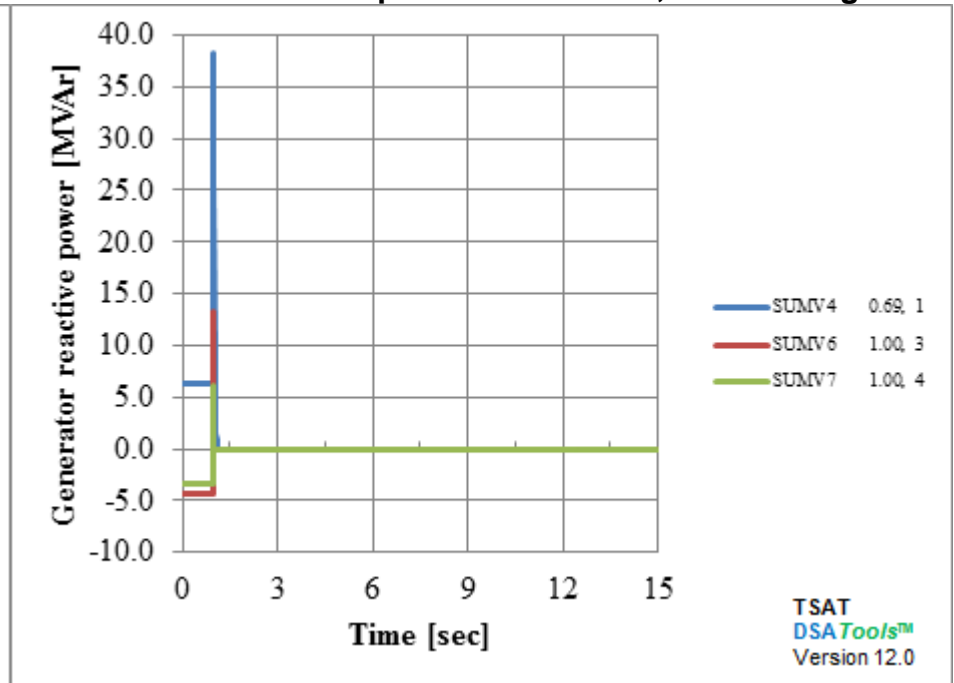
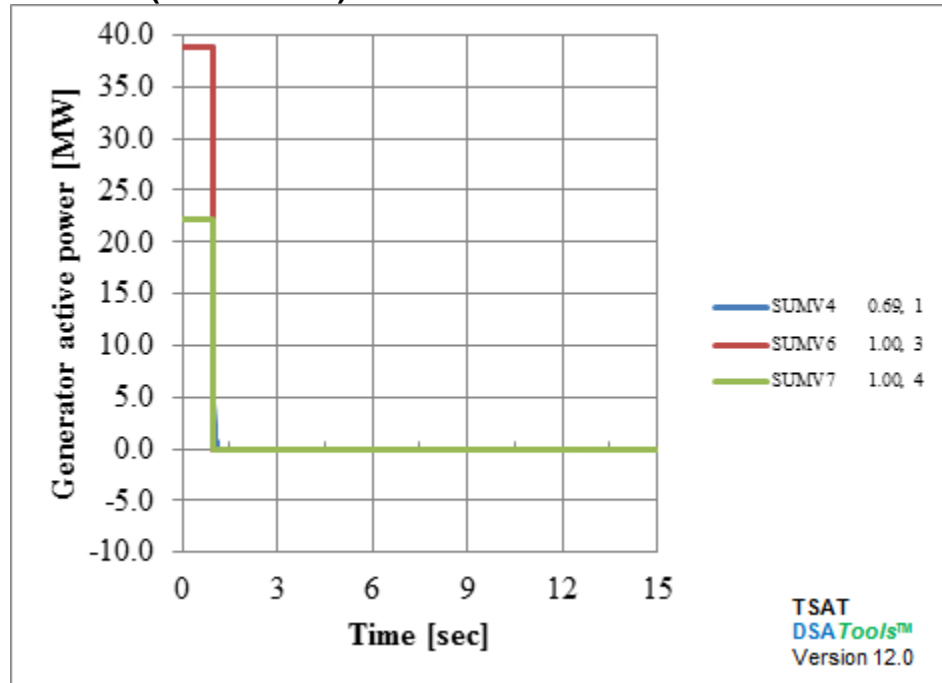
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Light 2014



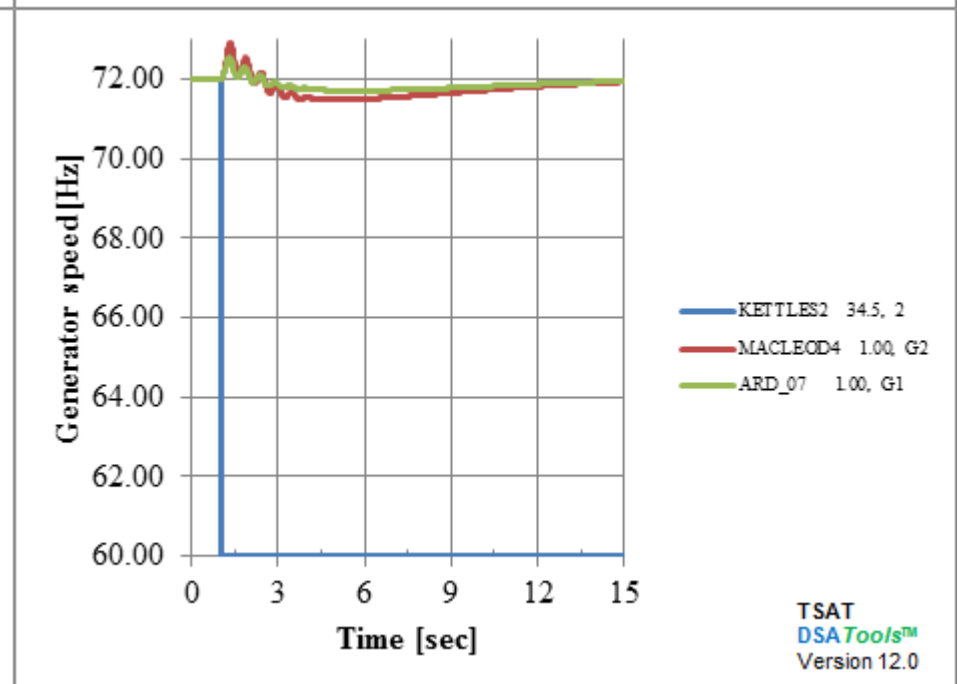
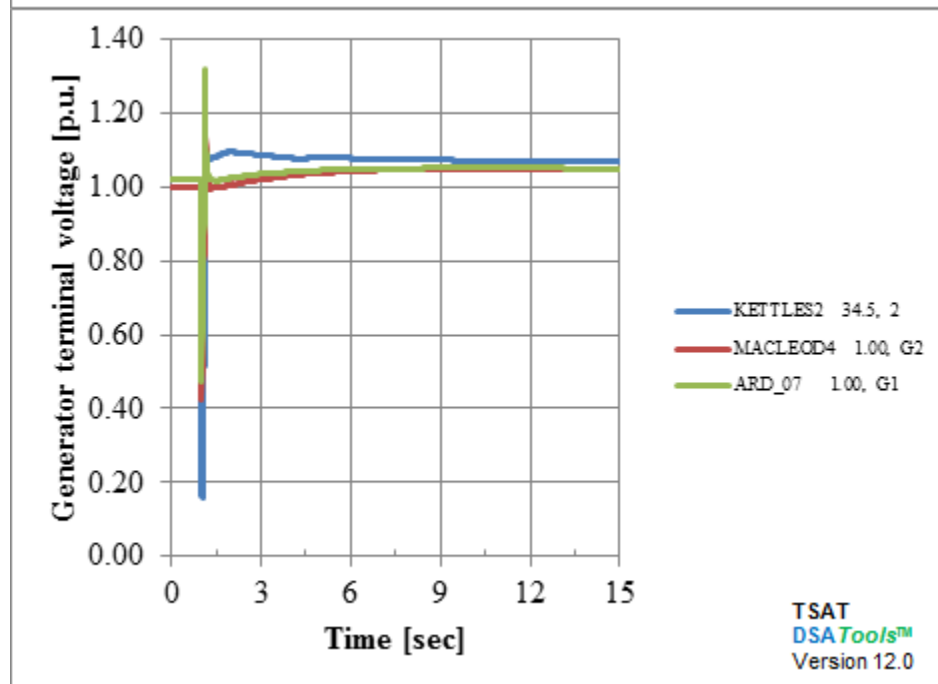
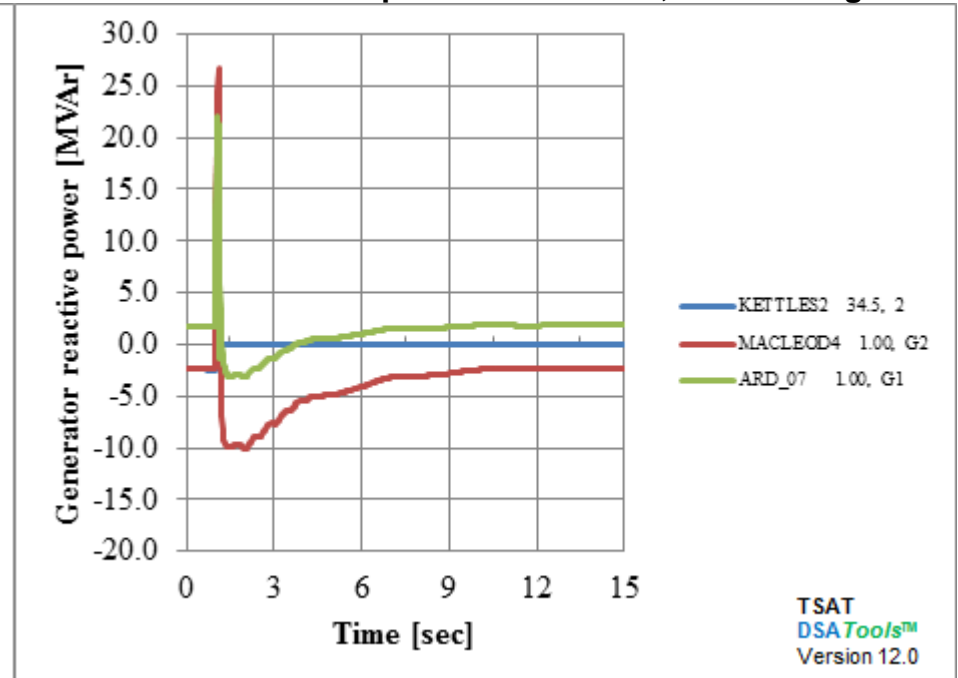
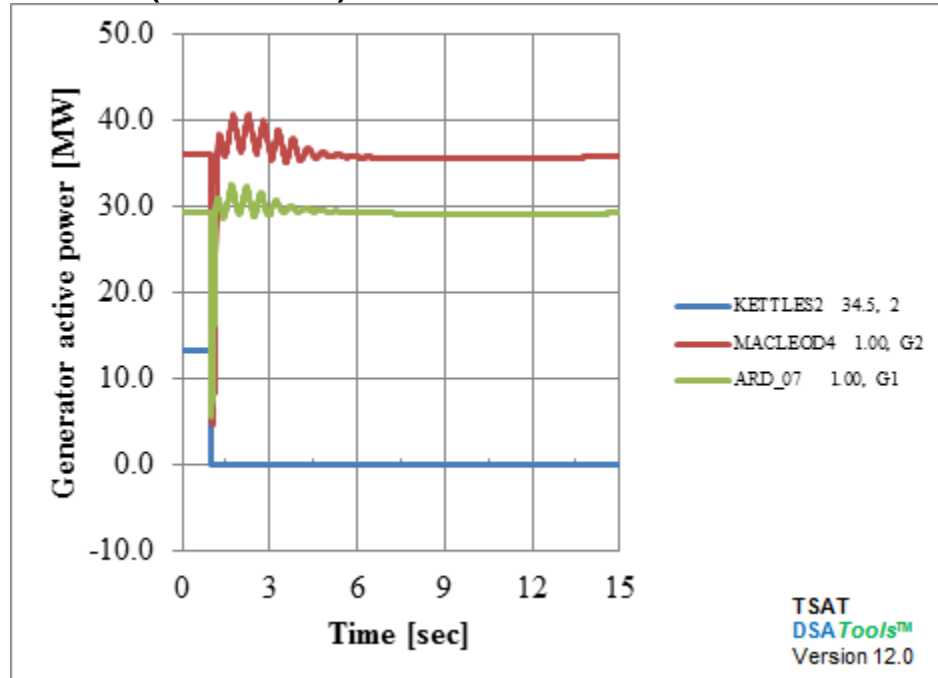
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Light 2014



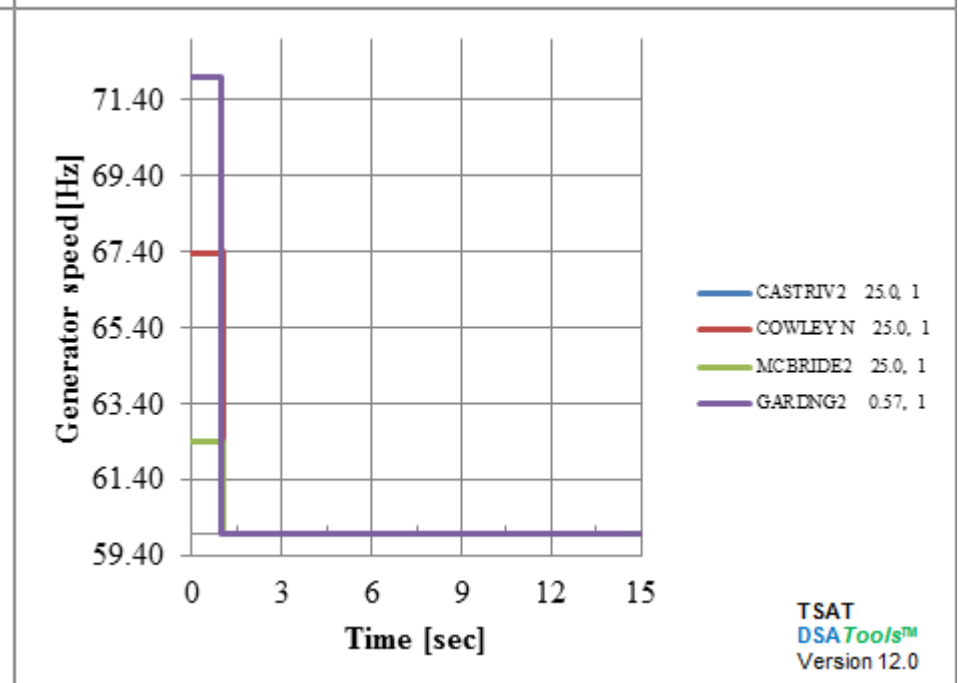
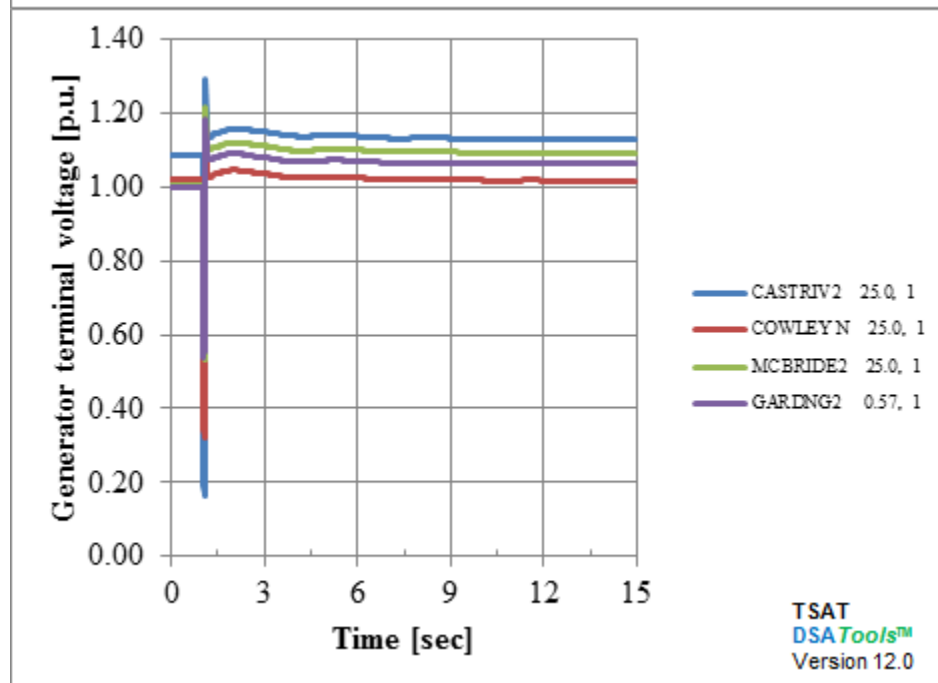
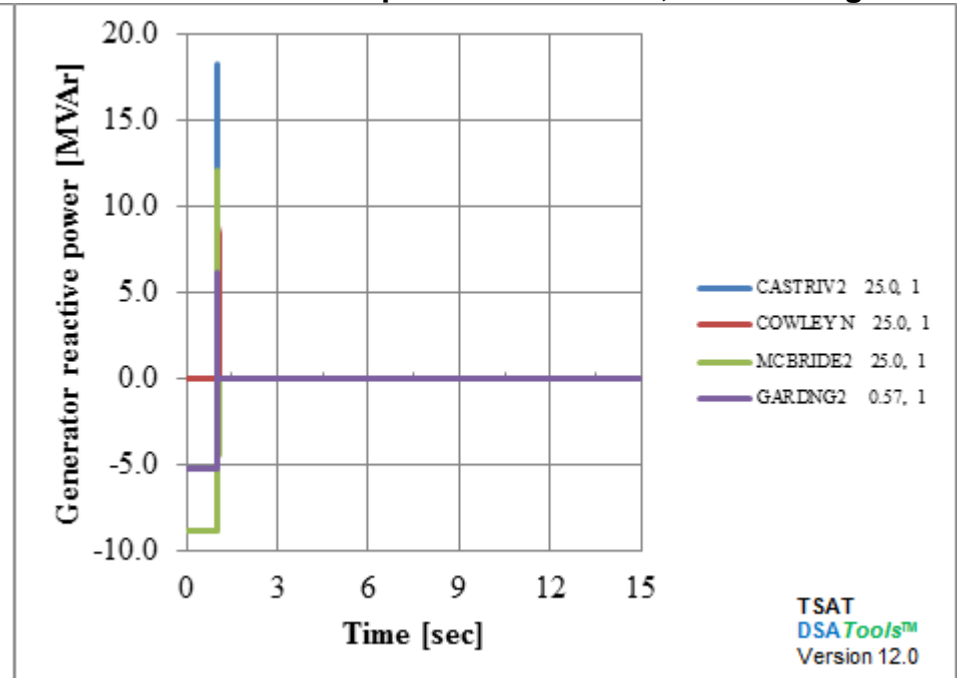
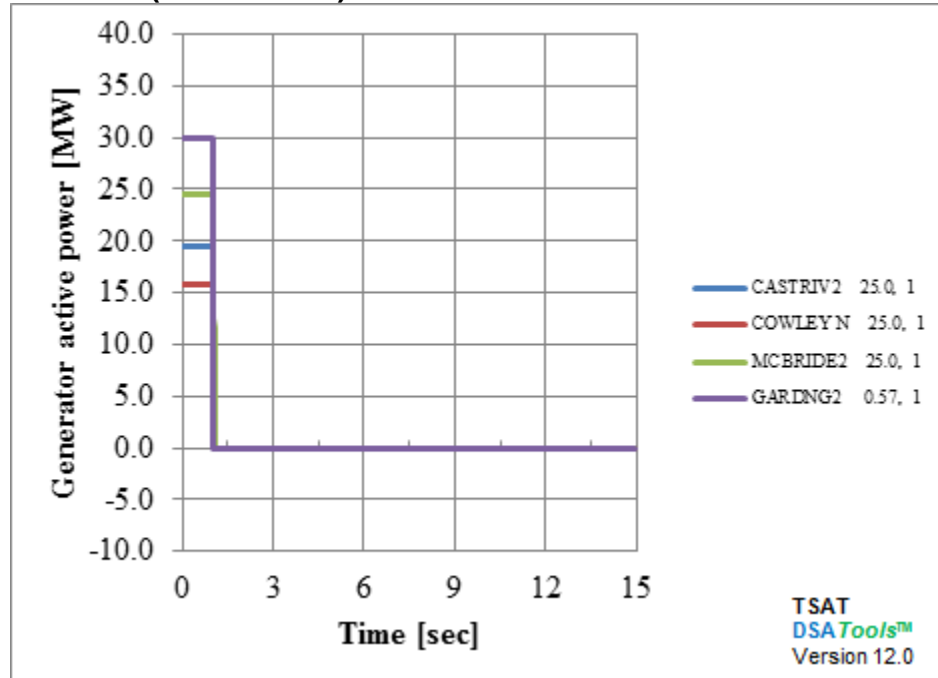
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Light 2014



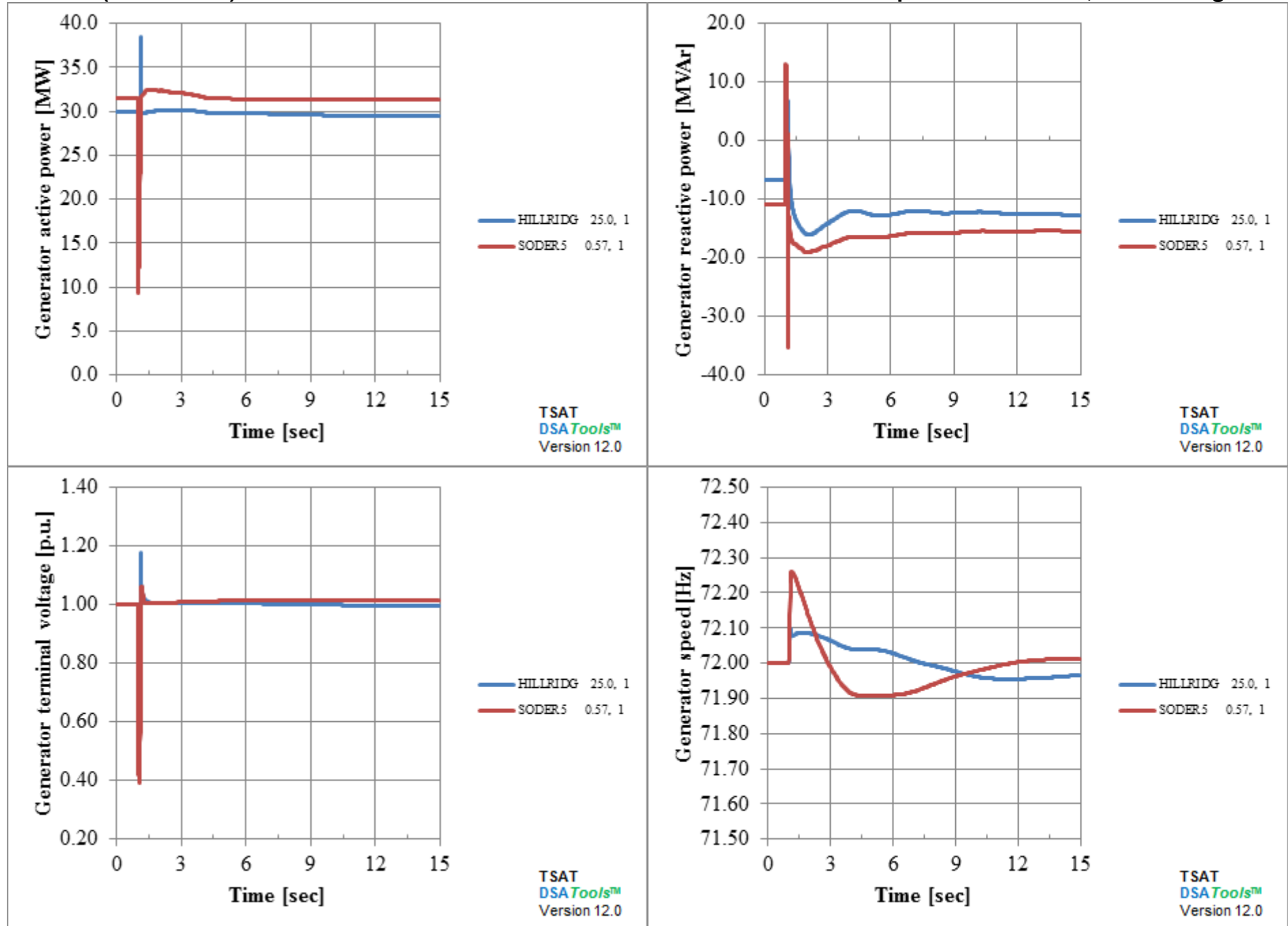
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Light 2014



1 -- 994L (103S - 312S) NEAR 103S

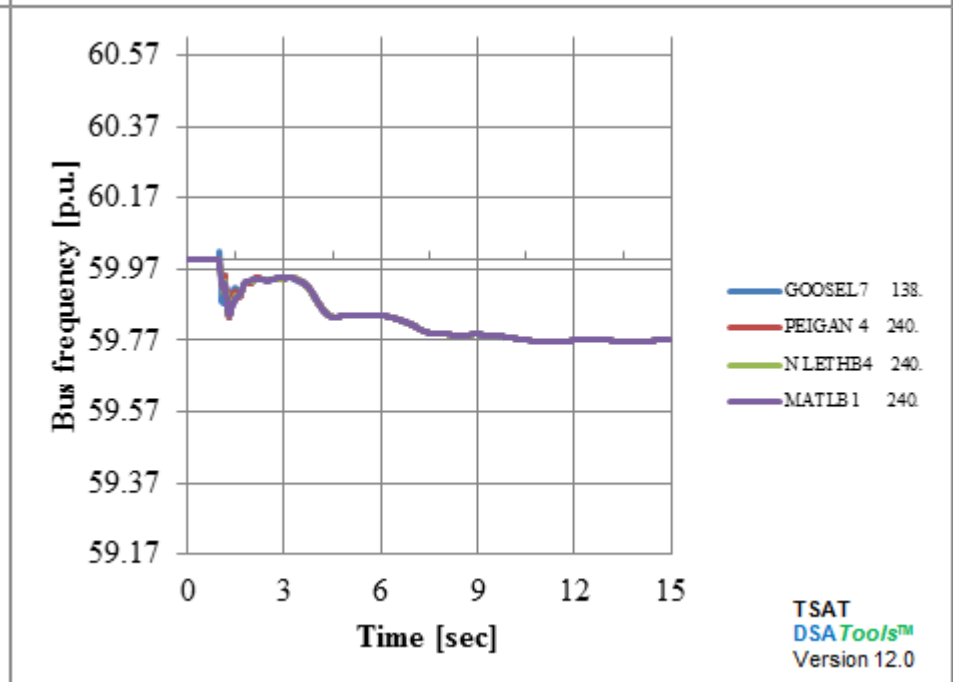
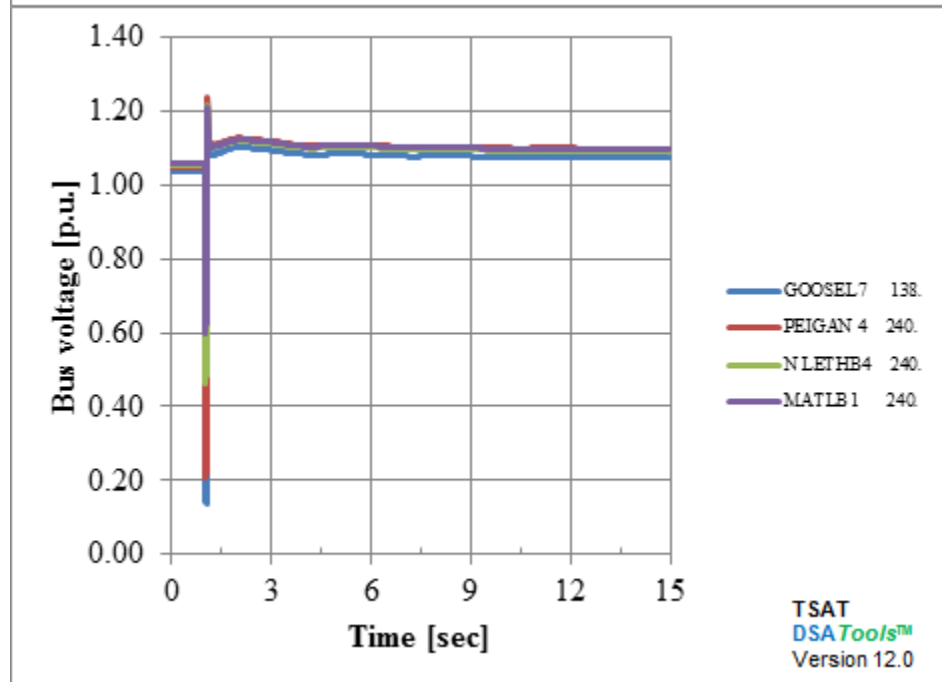
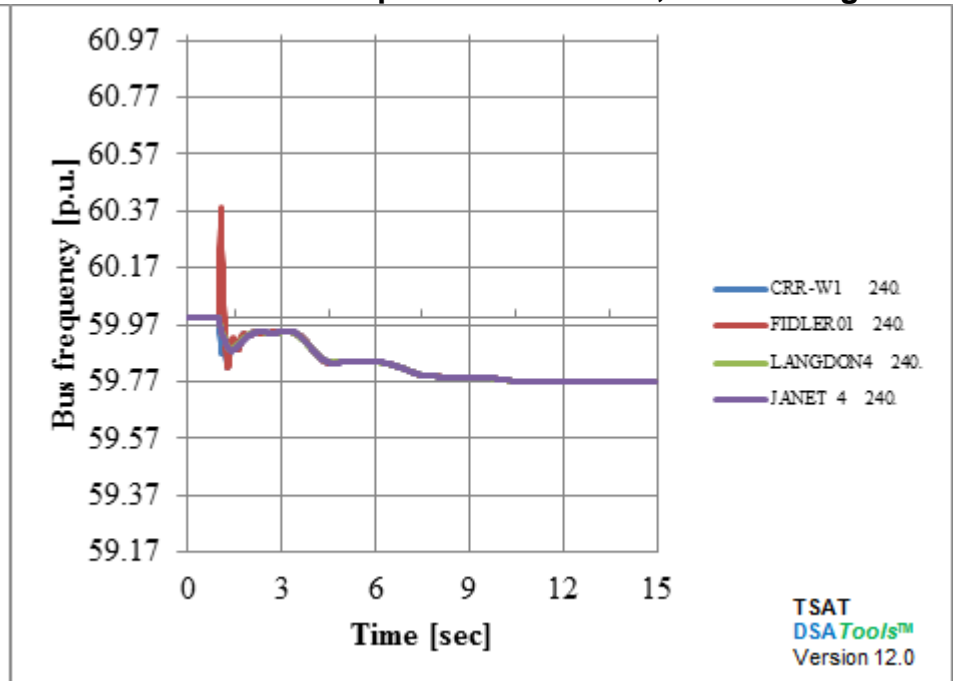
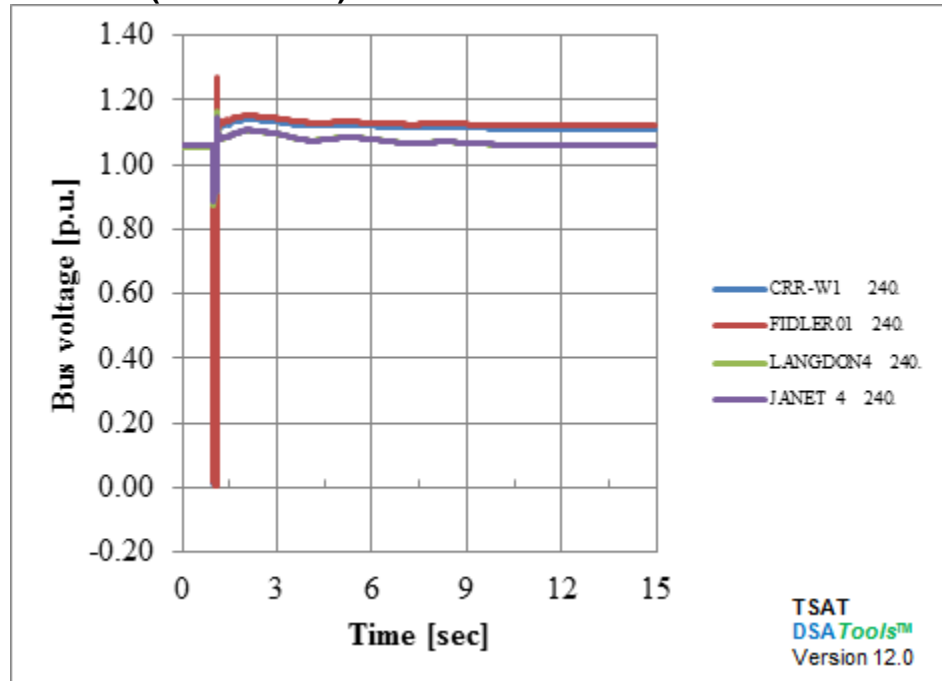
Proposed Connection, Summer Light 2014





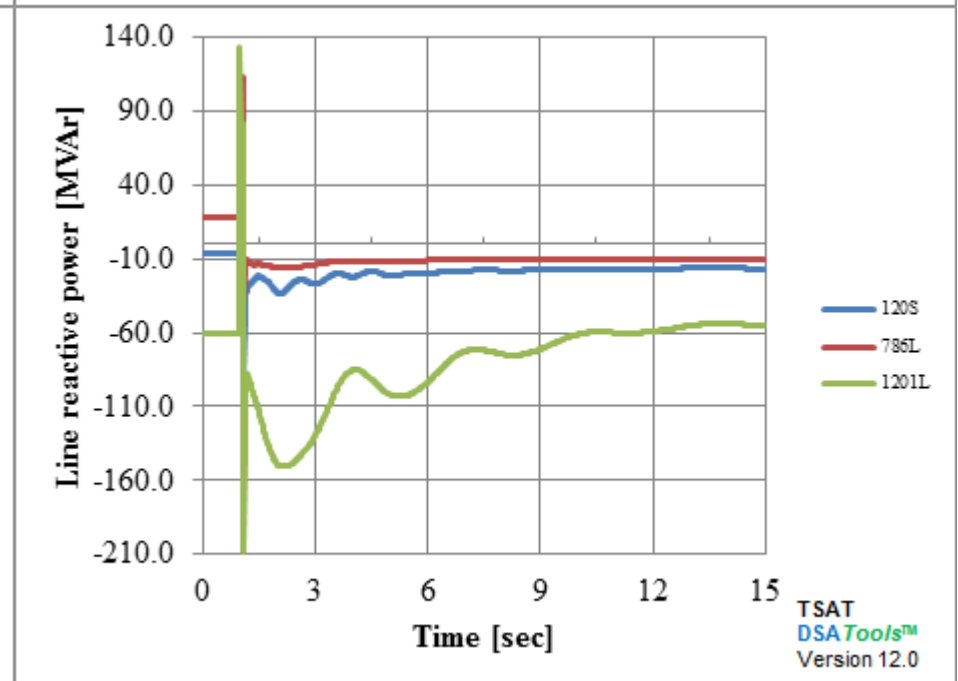
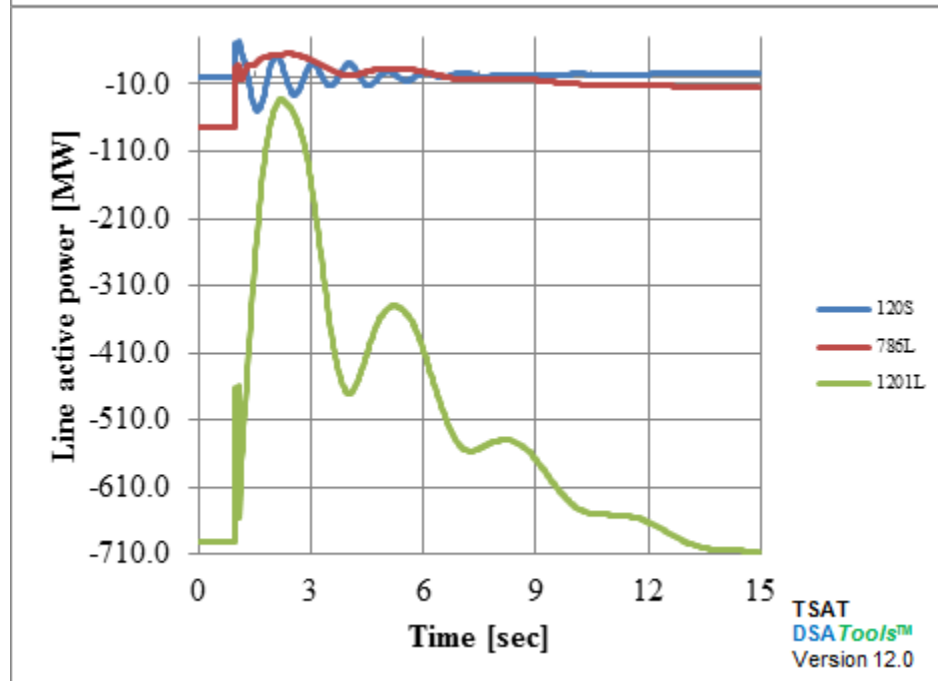
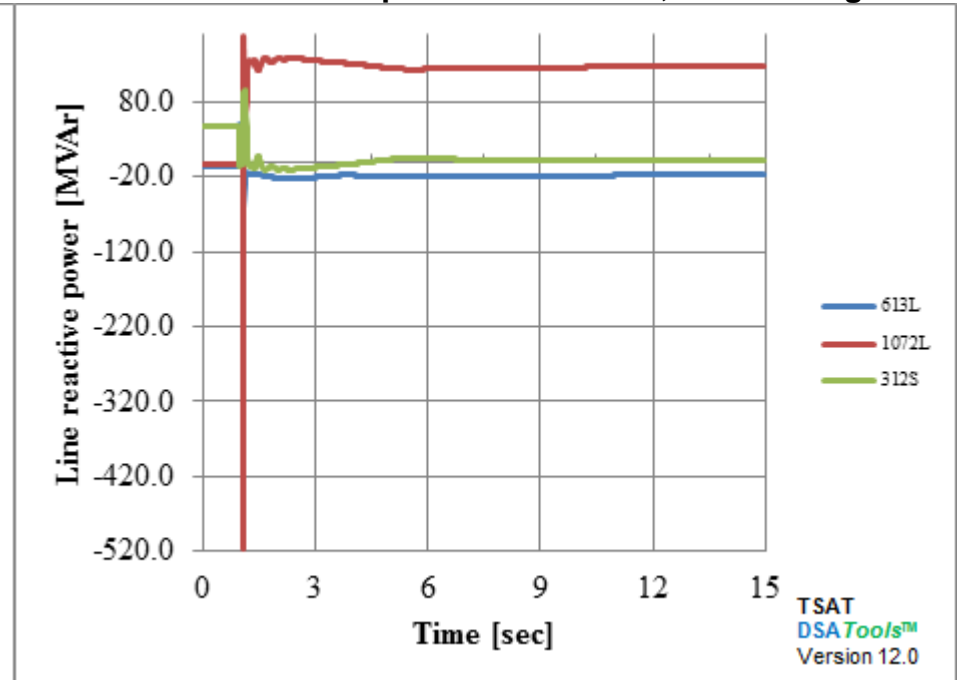
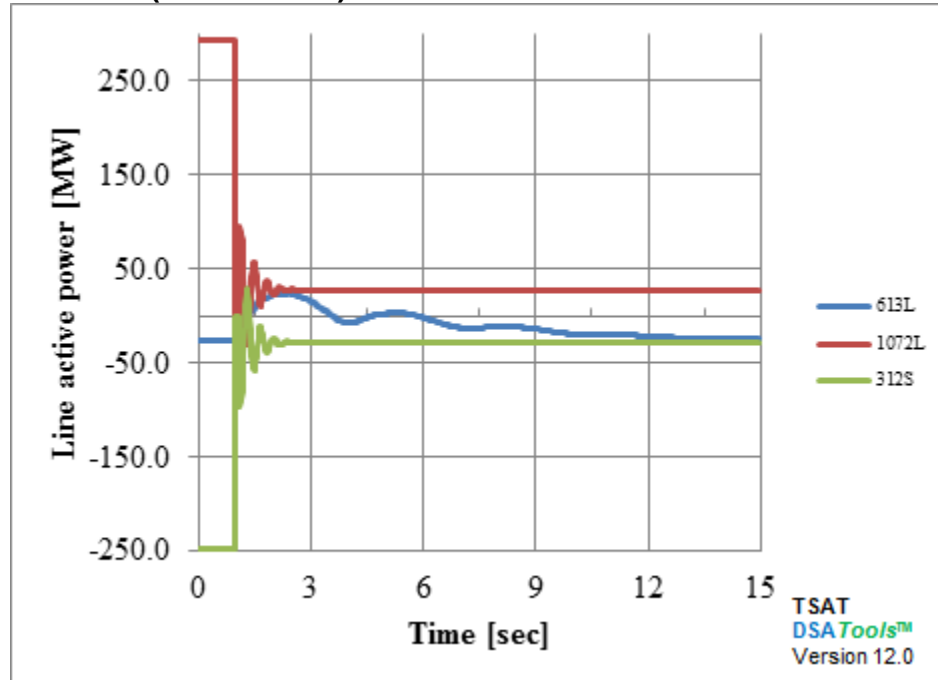
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Light 2014



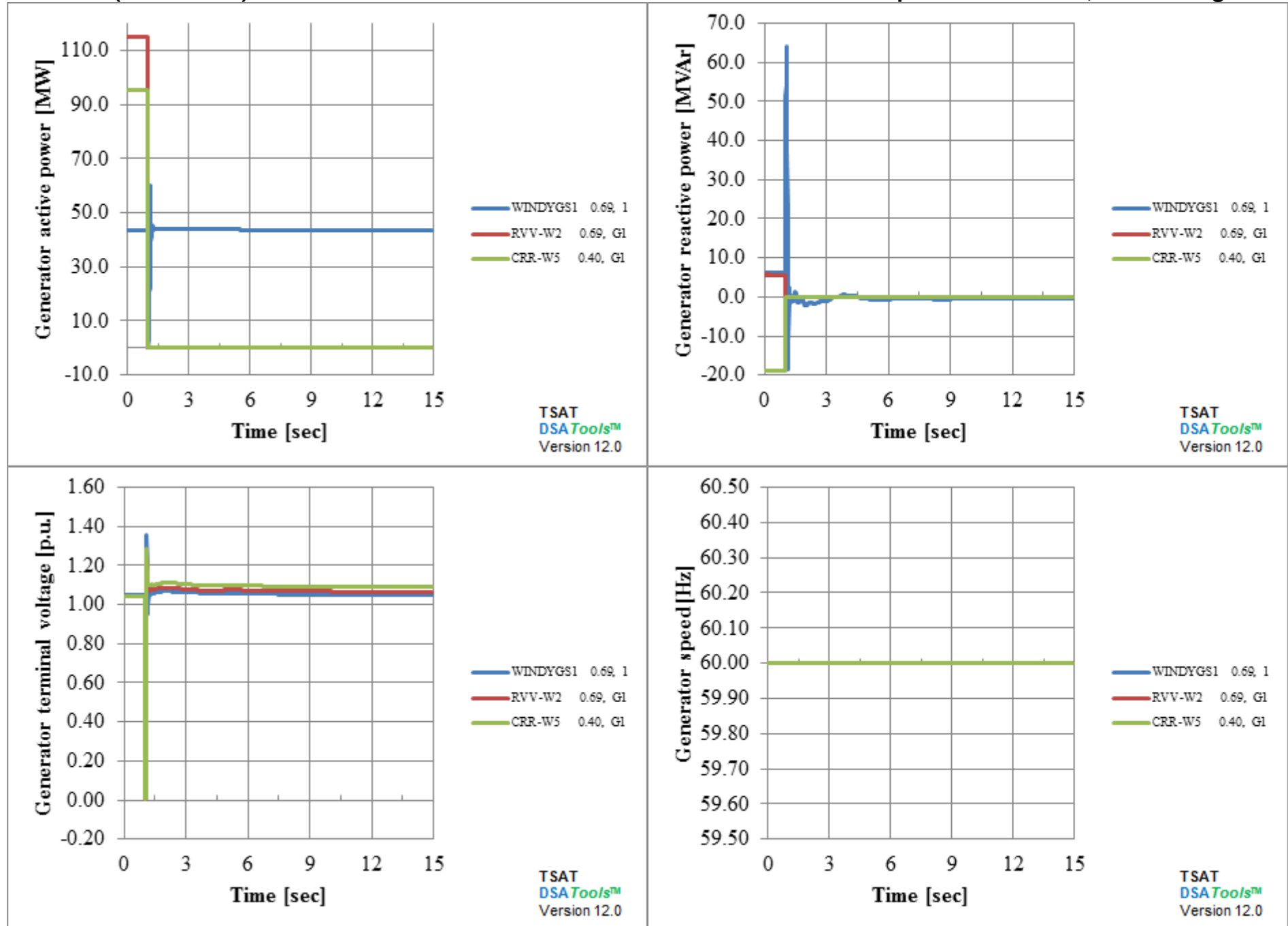
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Light 2014



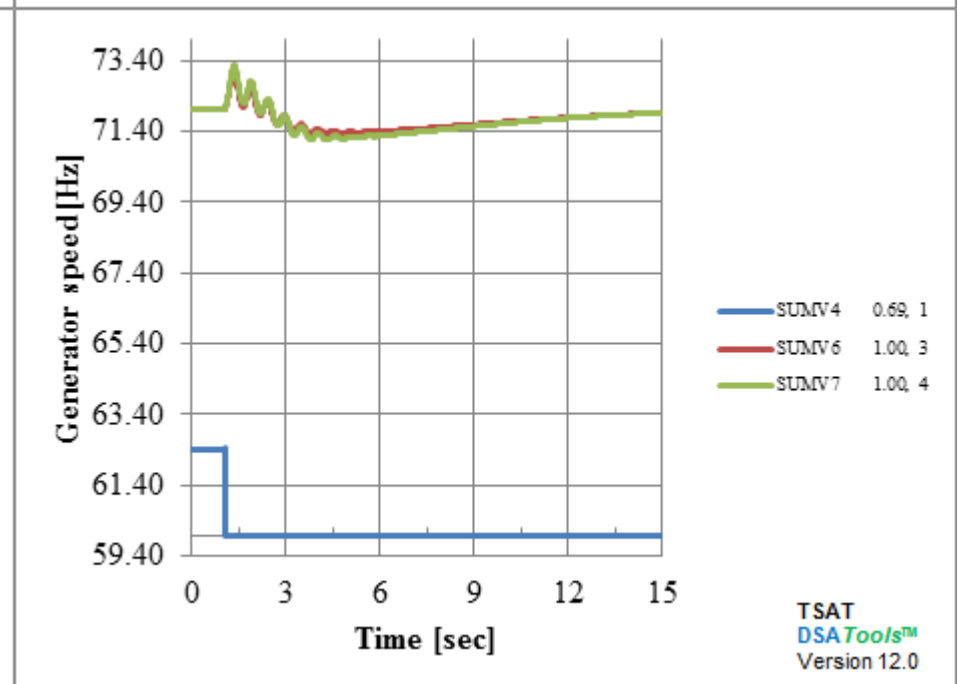
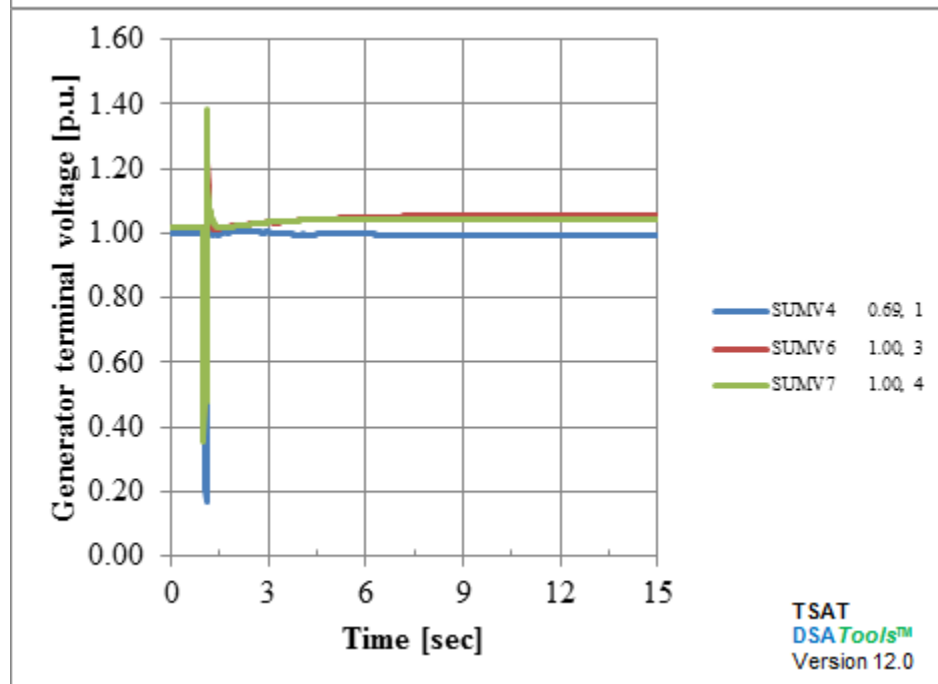
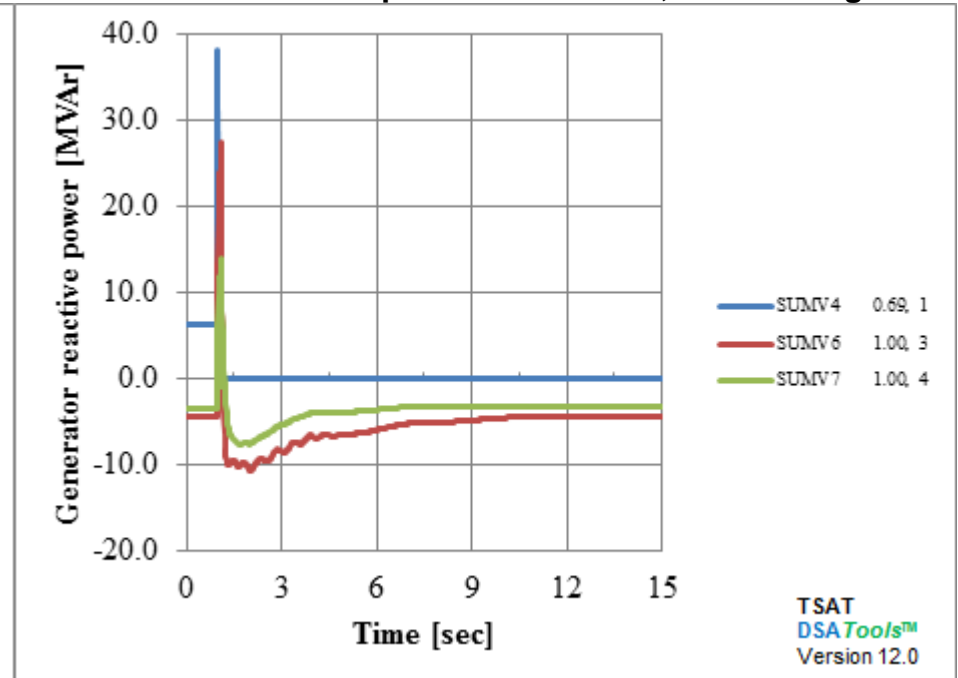
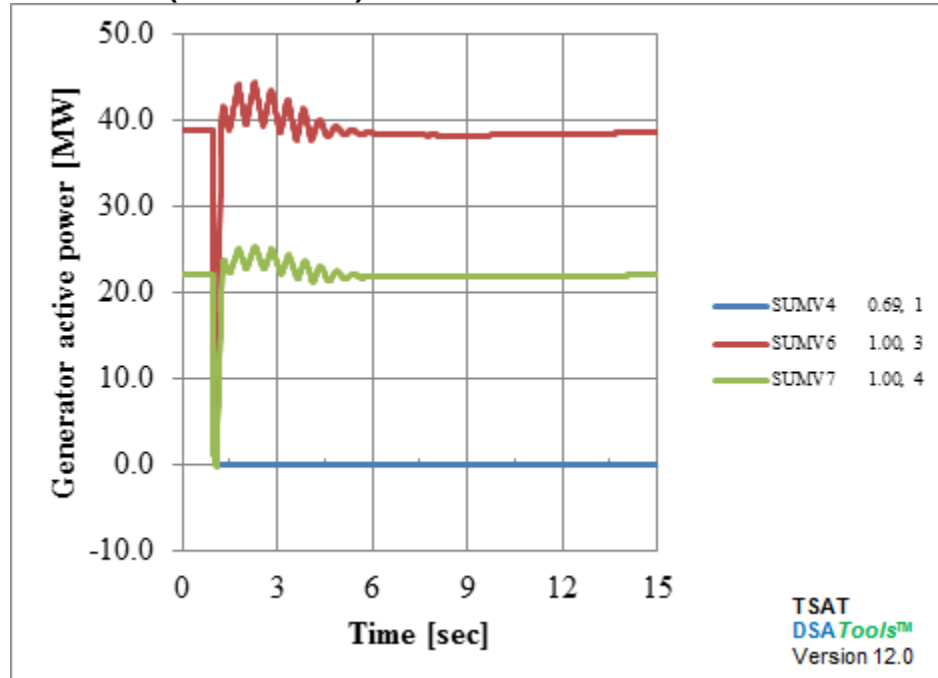
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Light 2014



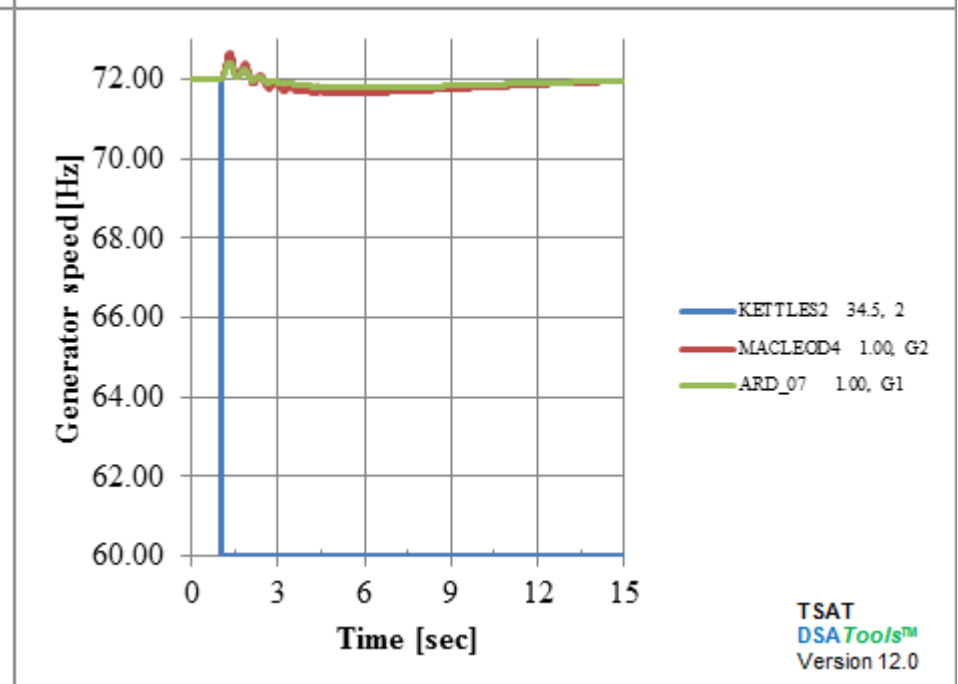
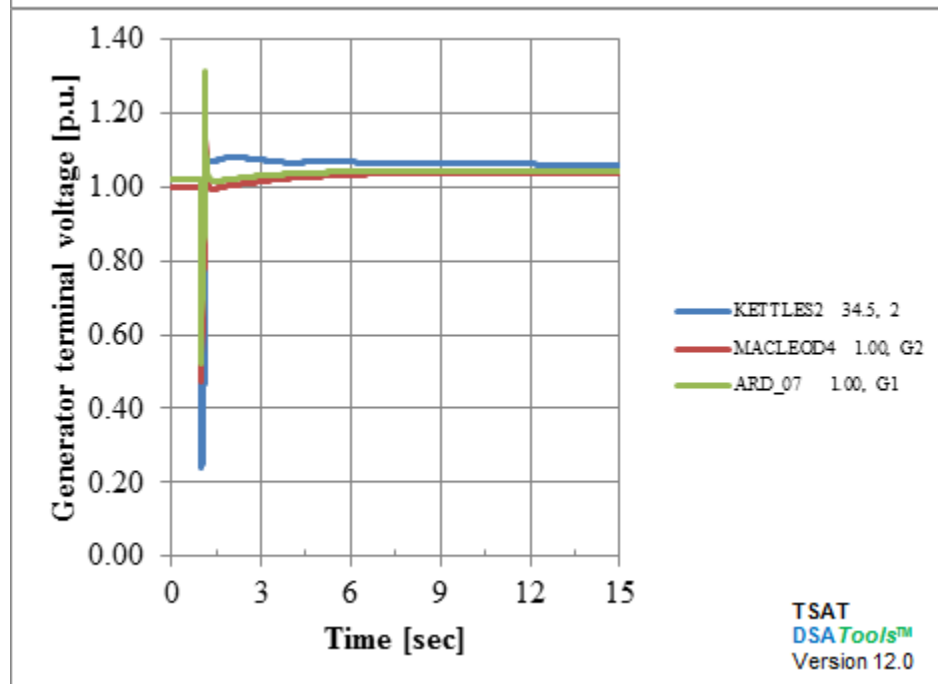
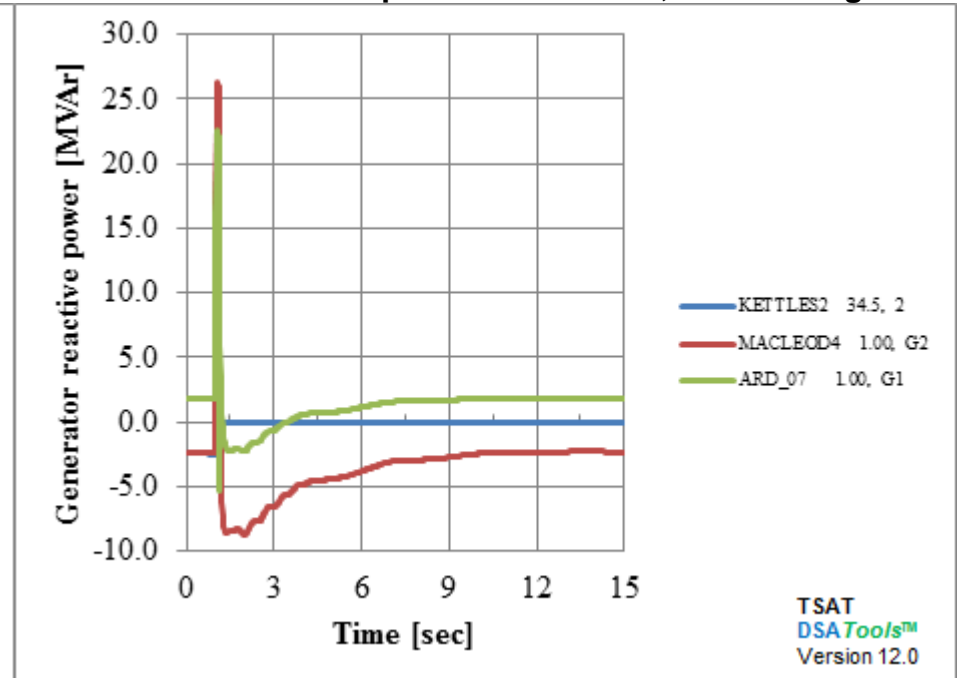
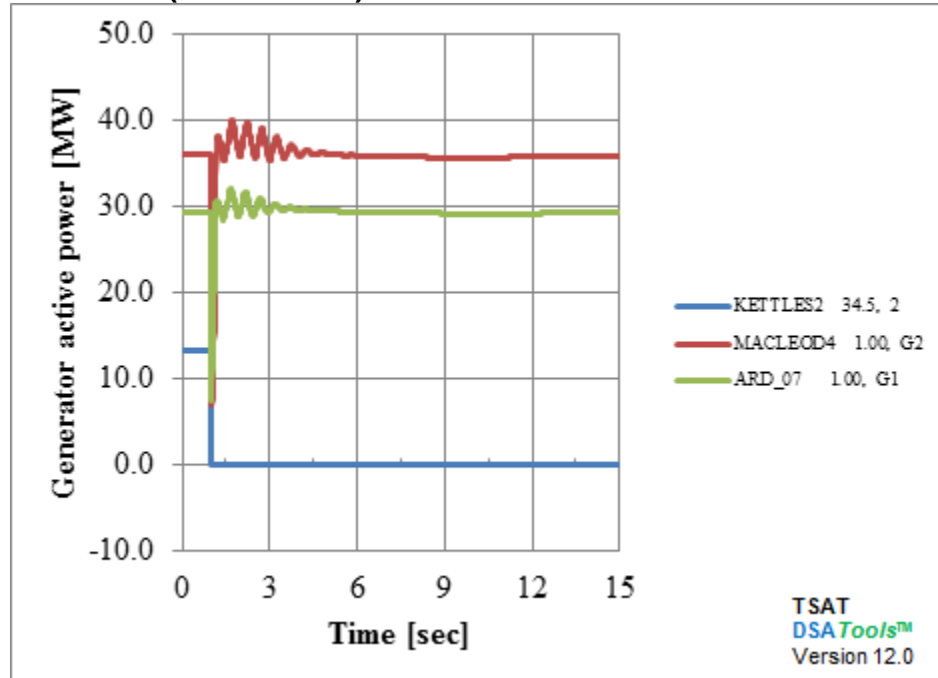
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Light 2014



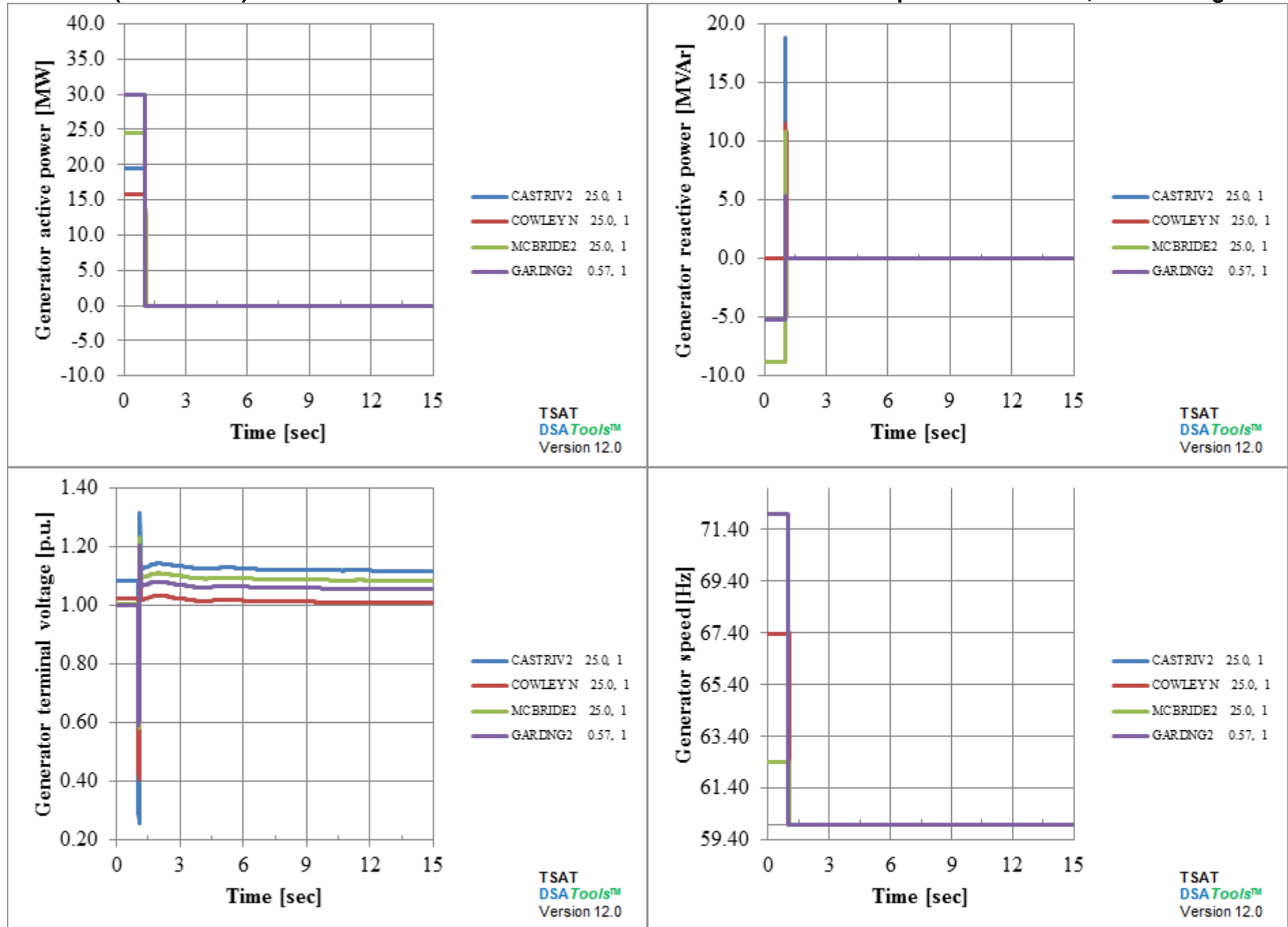
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Light 2014



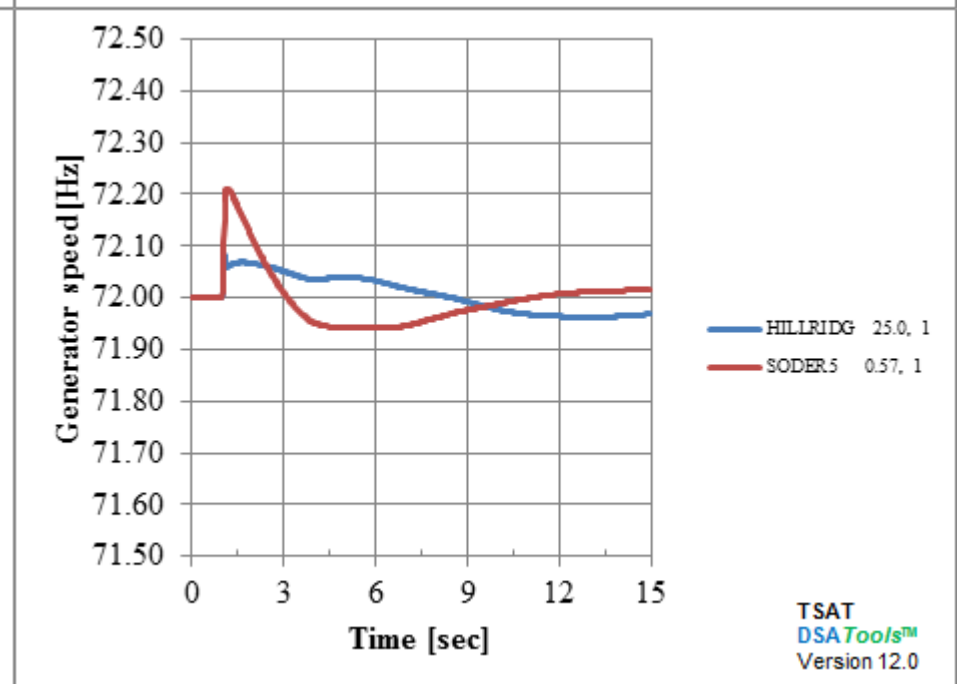
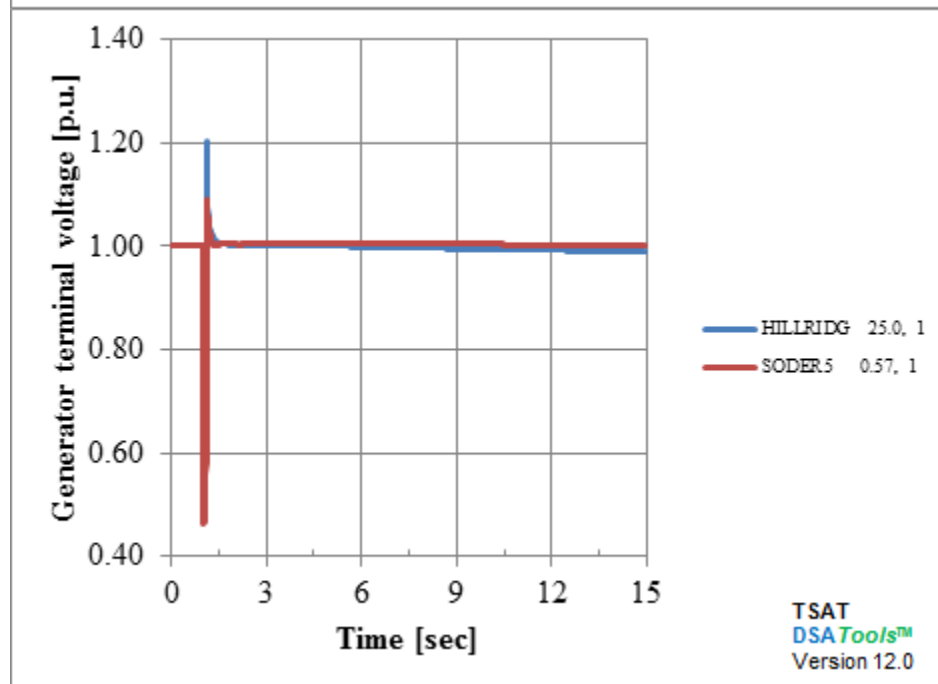
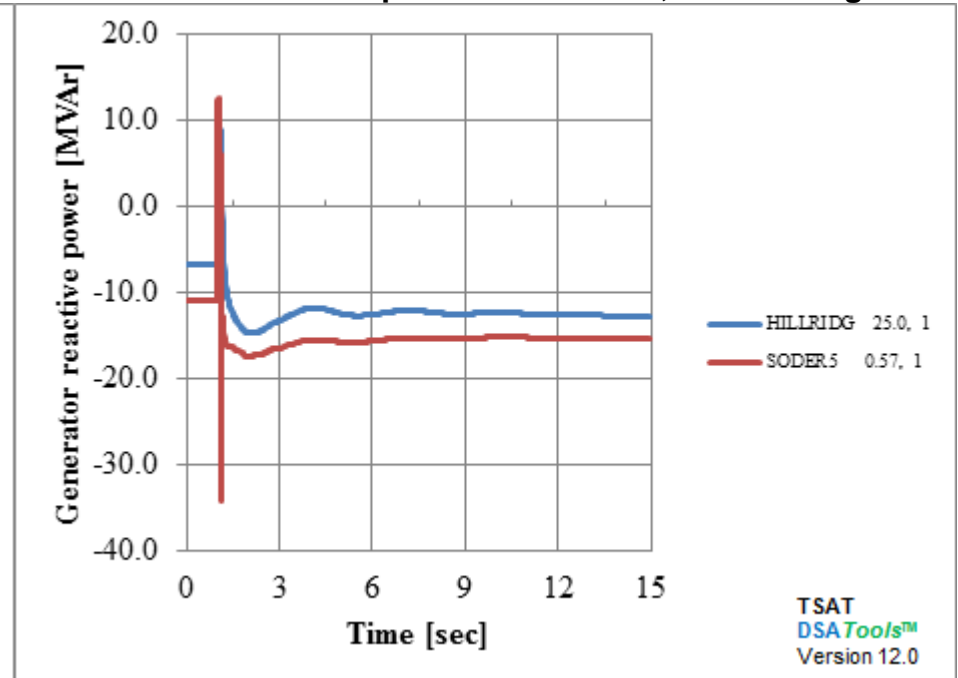
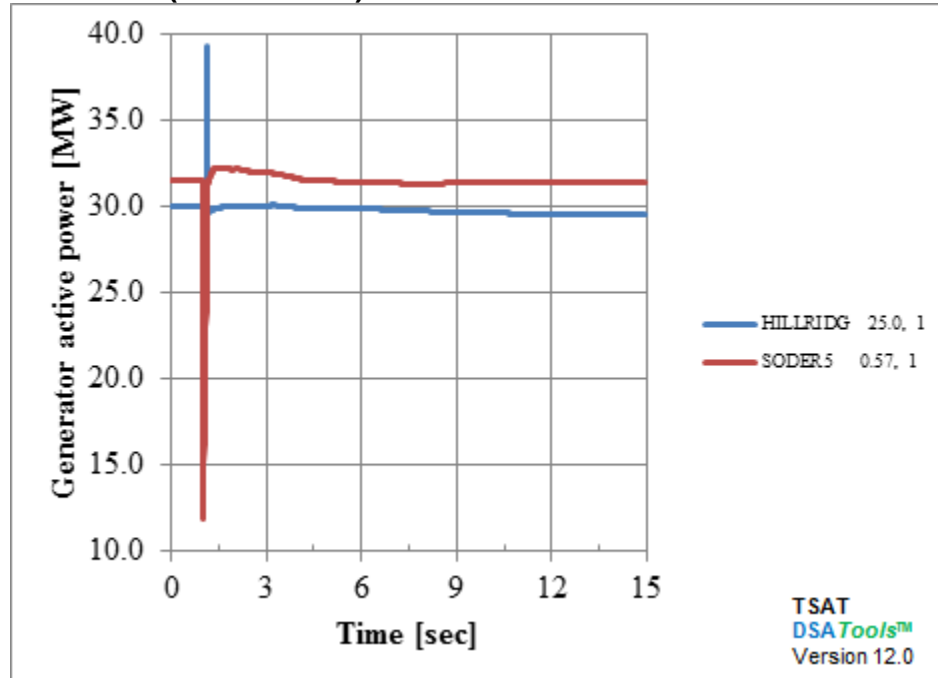
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Light 2014



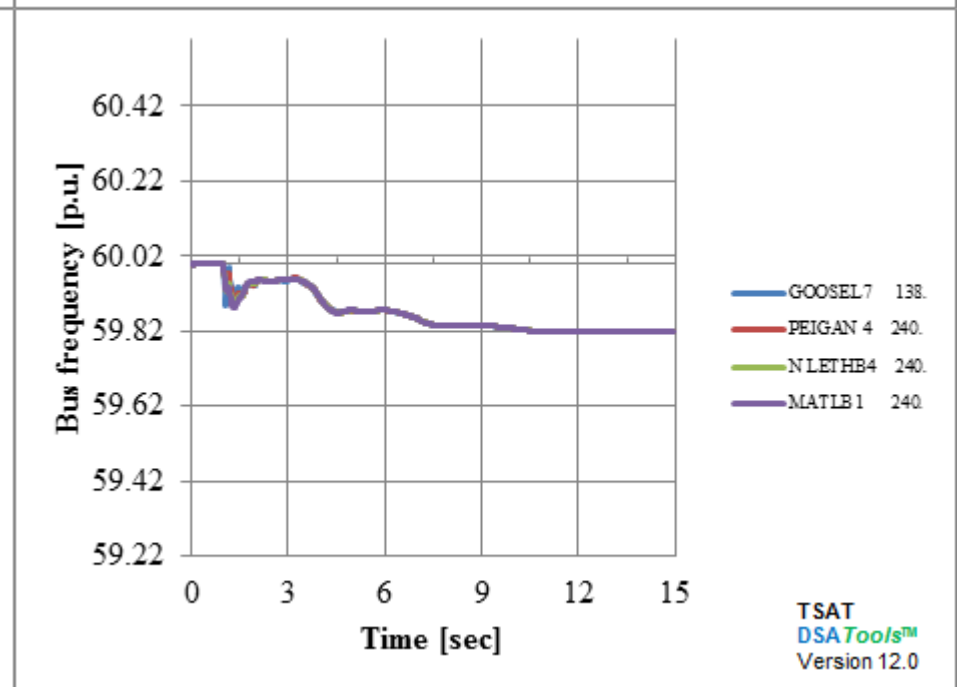
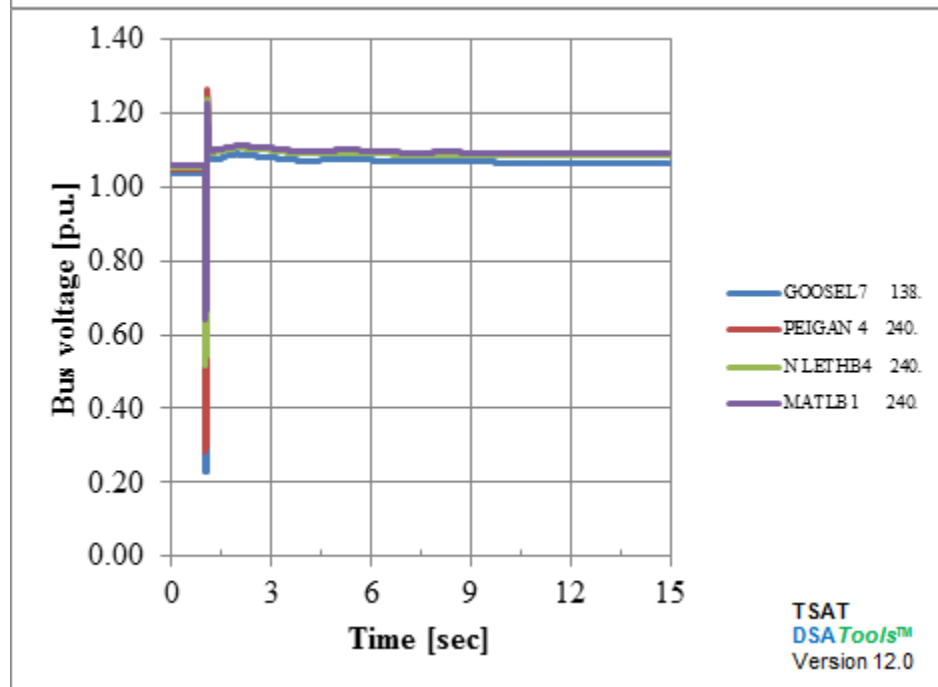
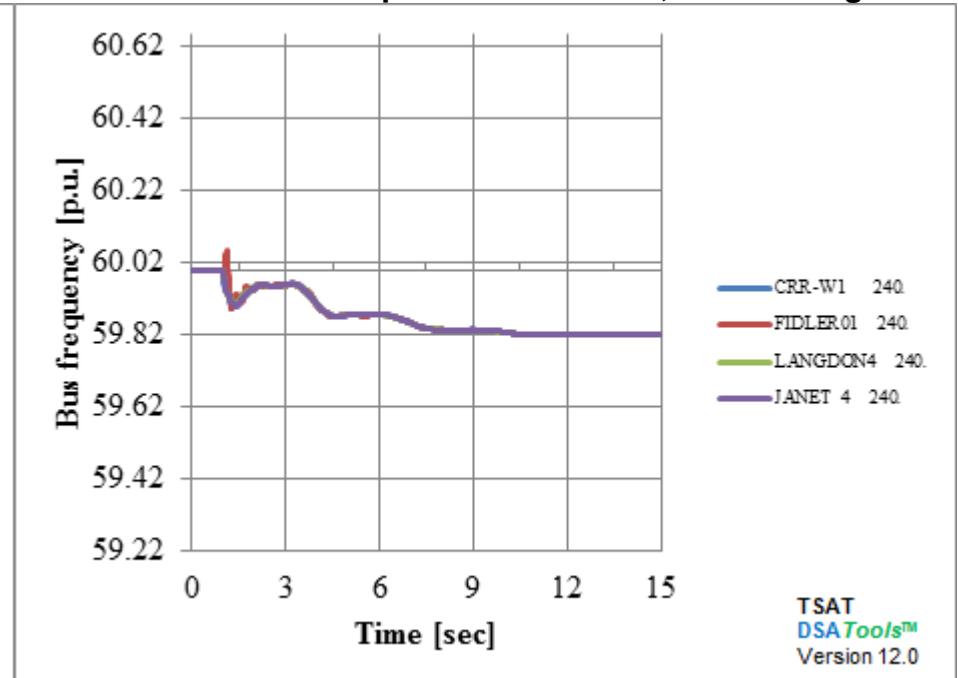
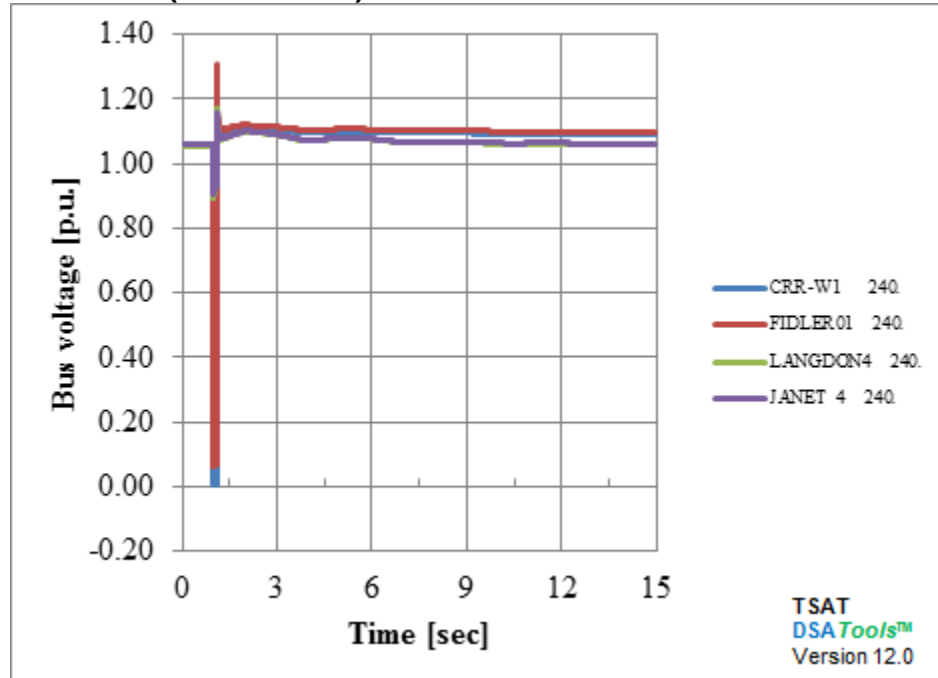
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Light 2014



2 -- 1071L (205S - 312S) NEAR 205S

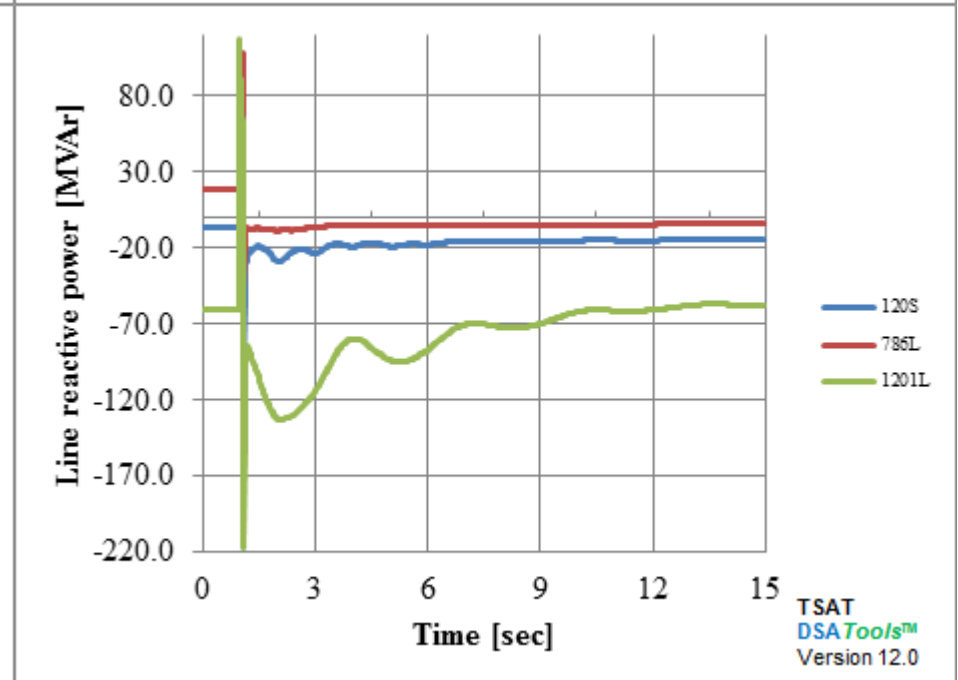
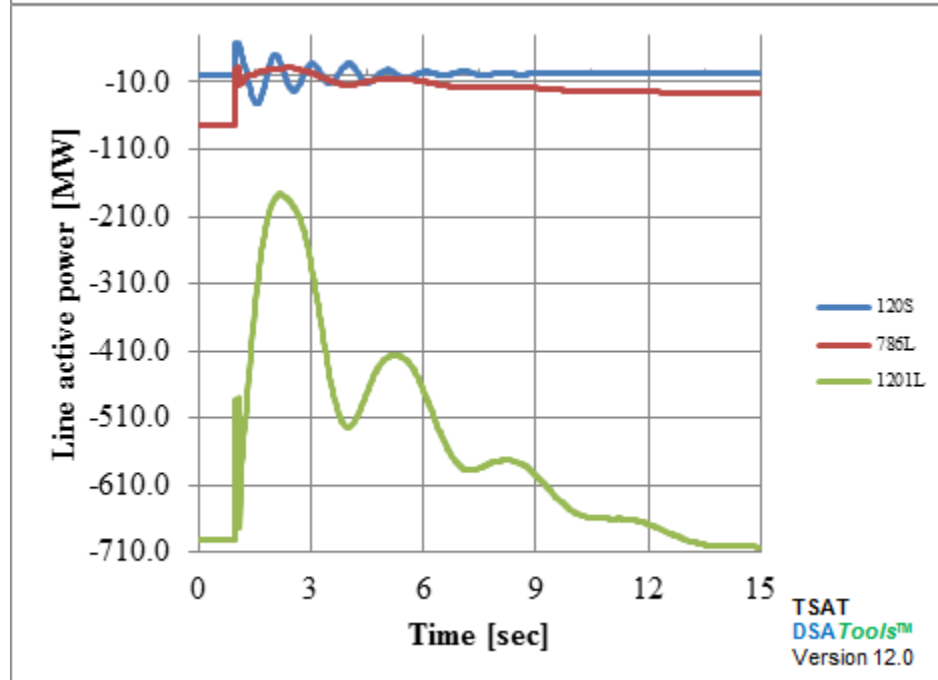
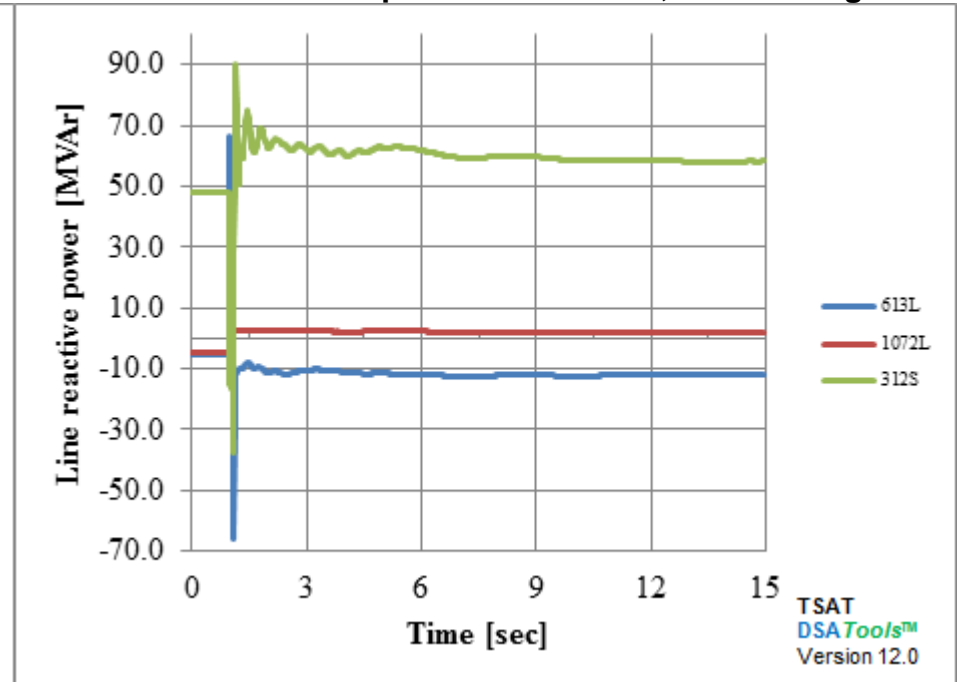
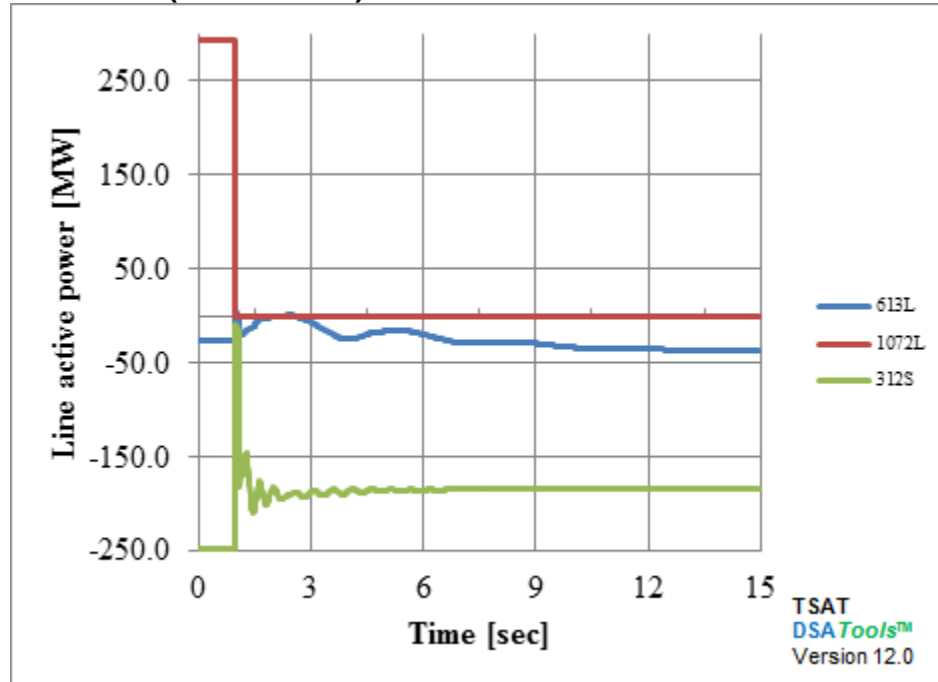
Proposed Connection, Summer Light 2014





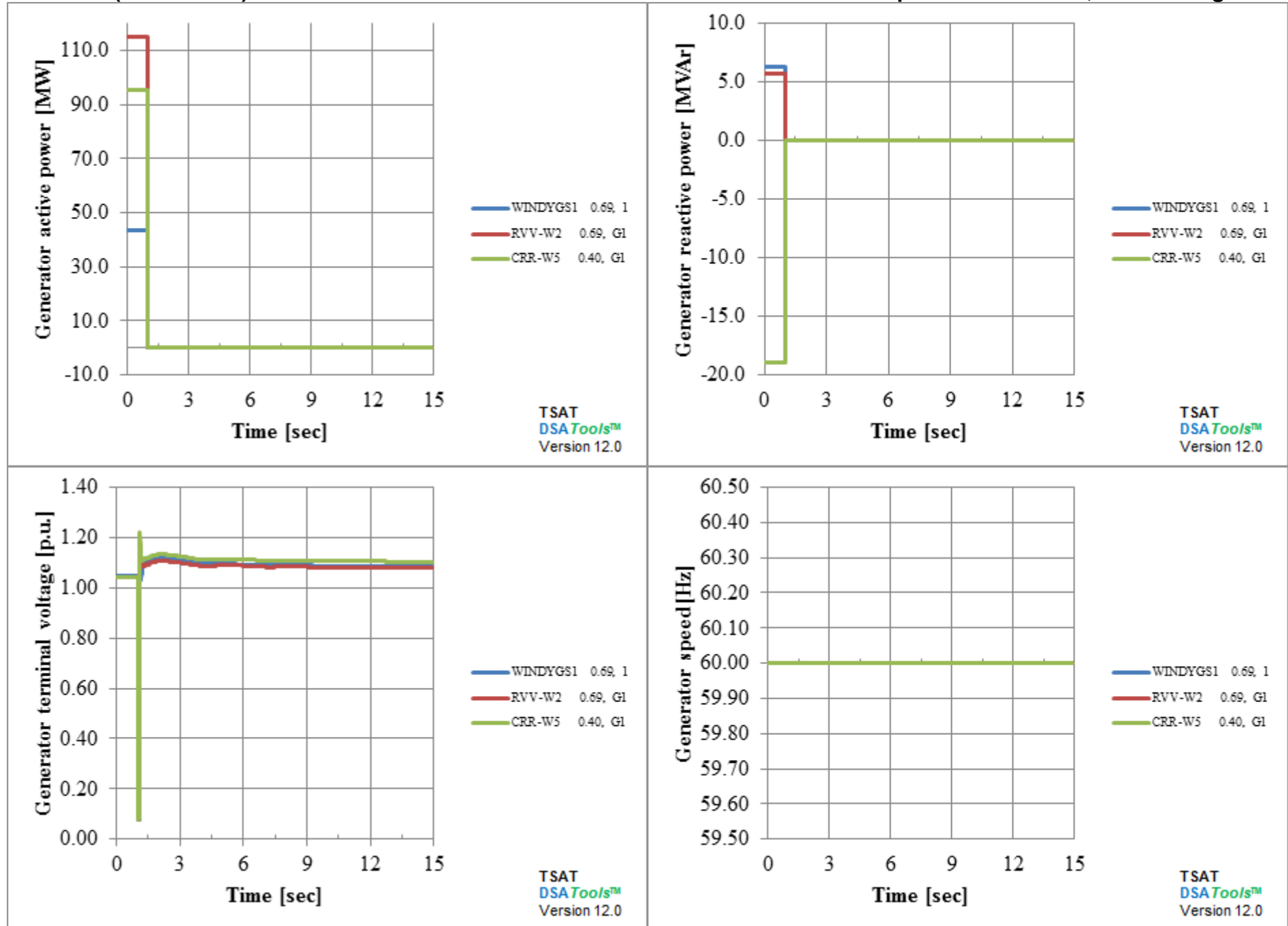
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Light 2014



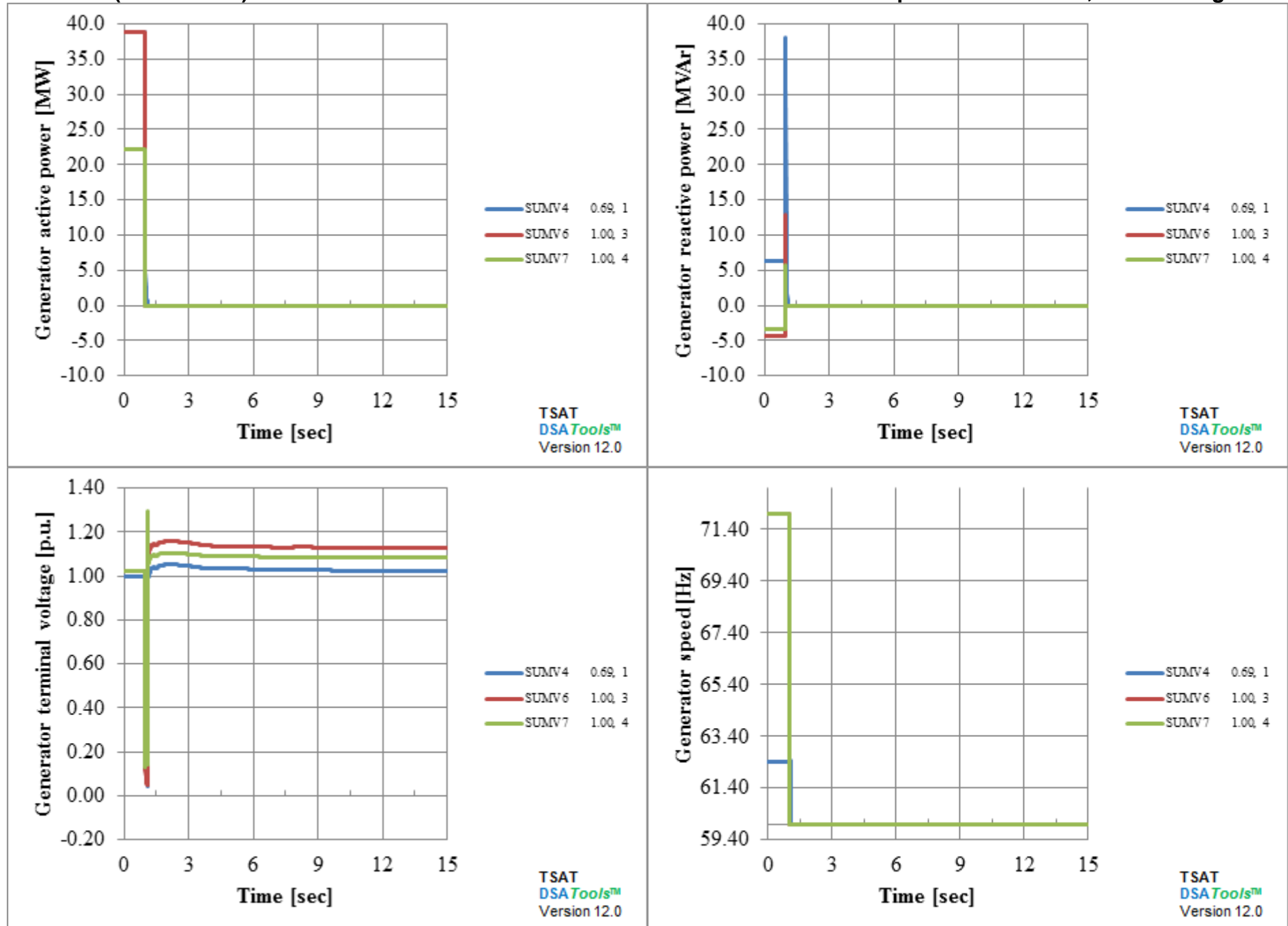
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Light 2014



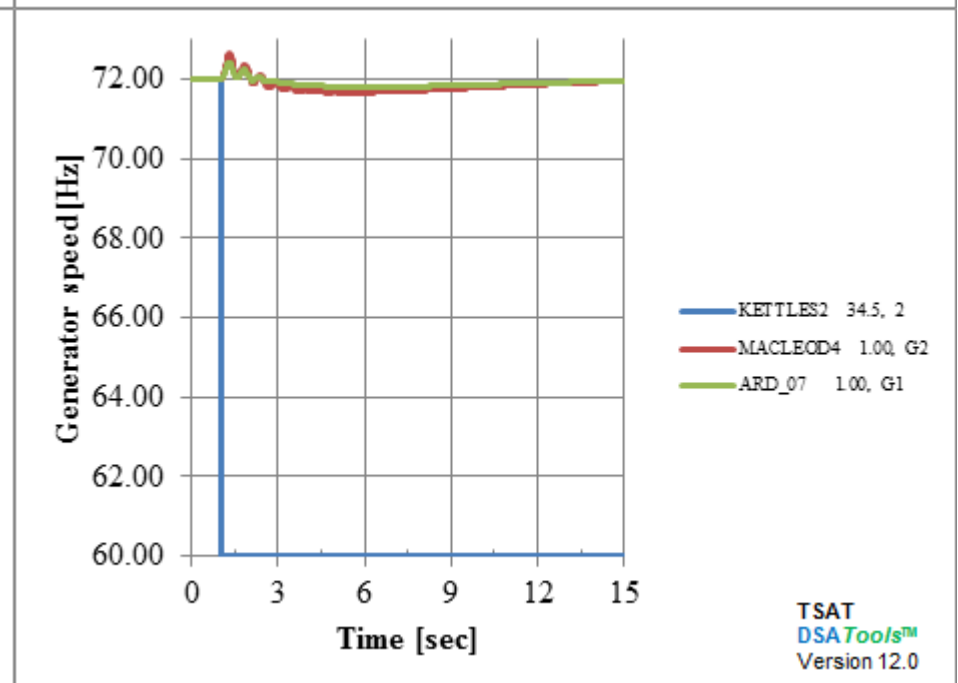
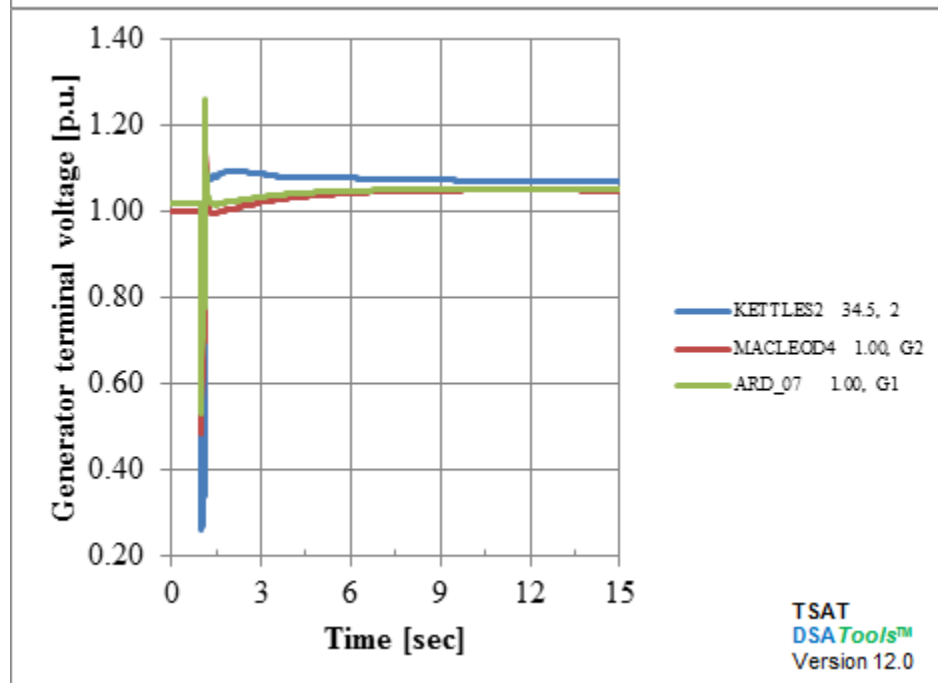
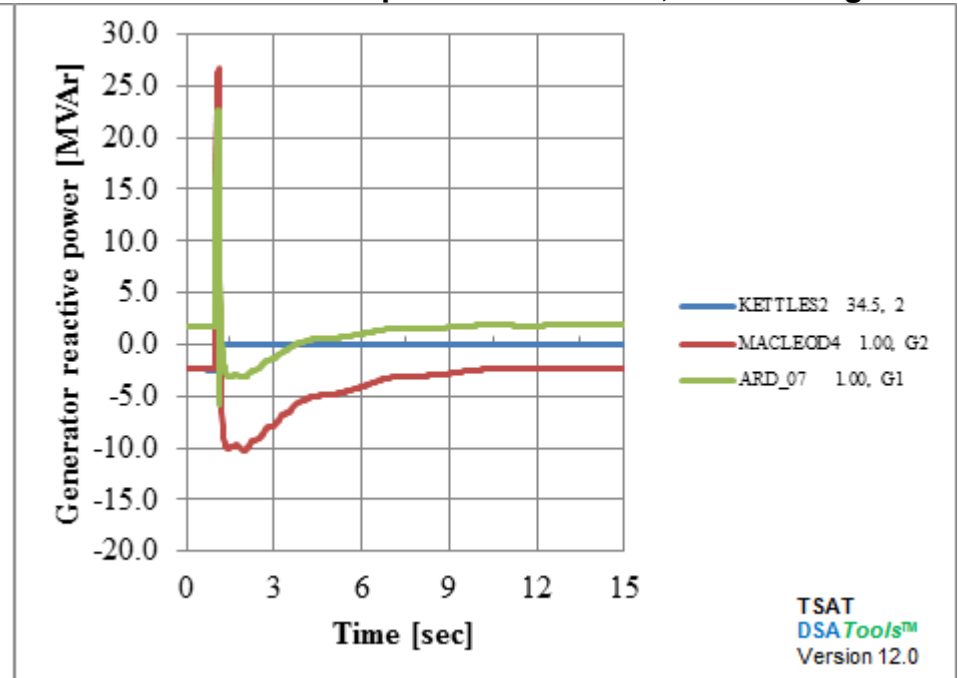
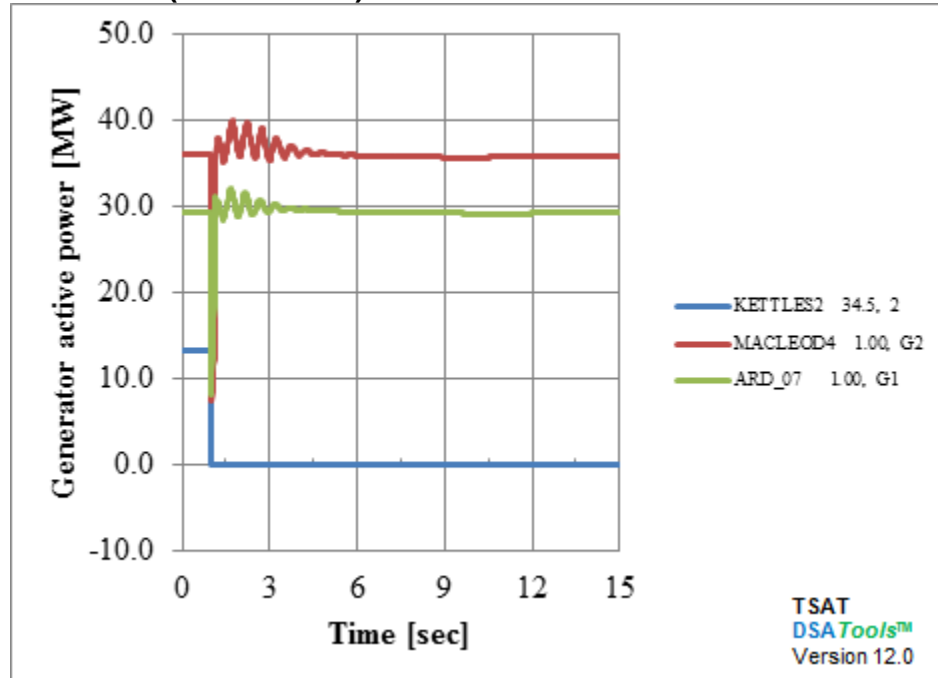
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Light 2014



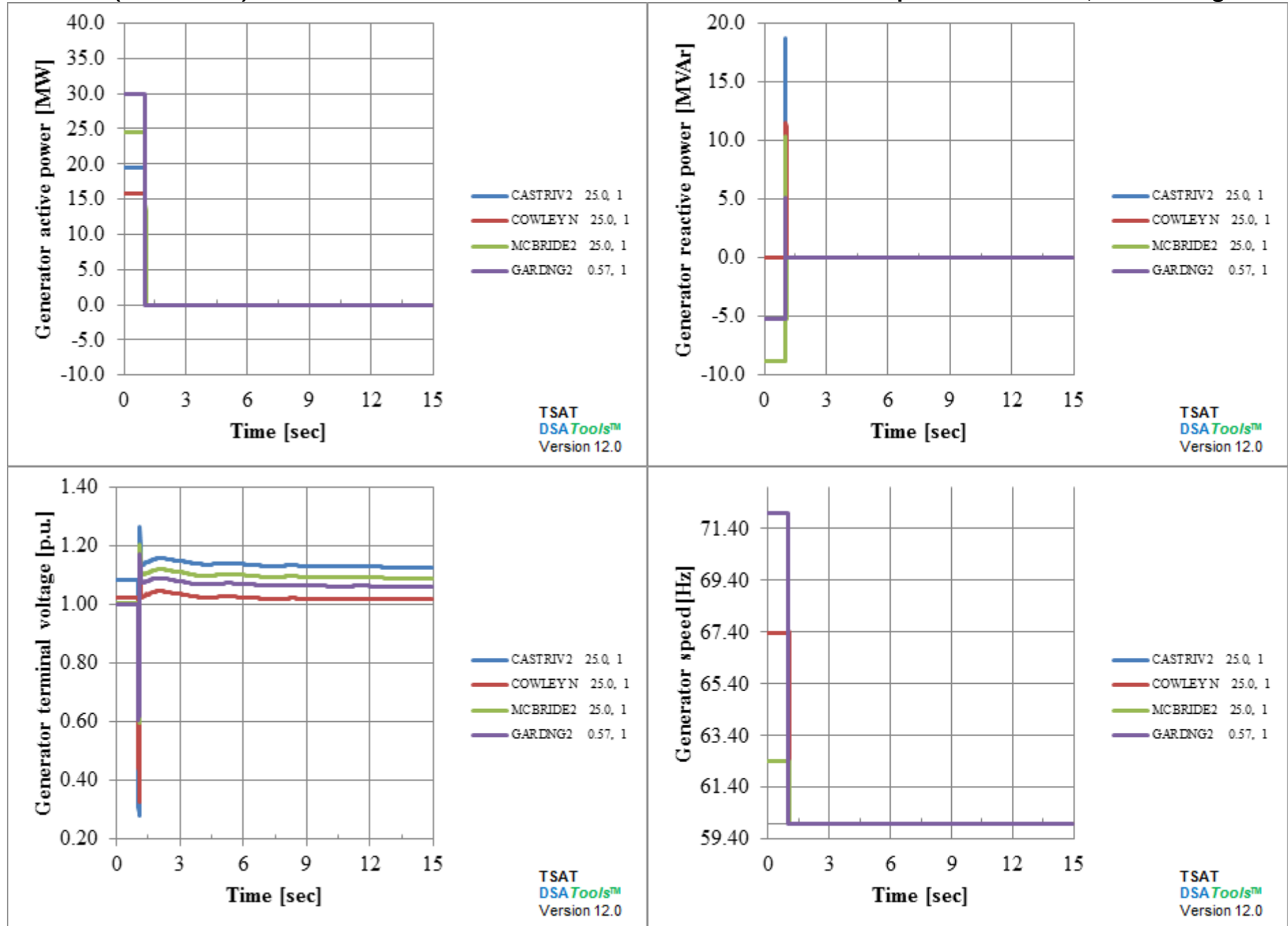
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Light 2014



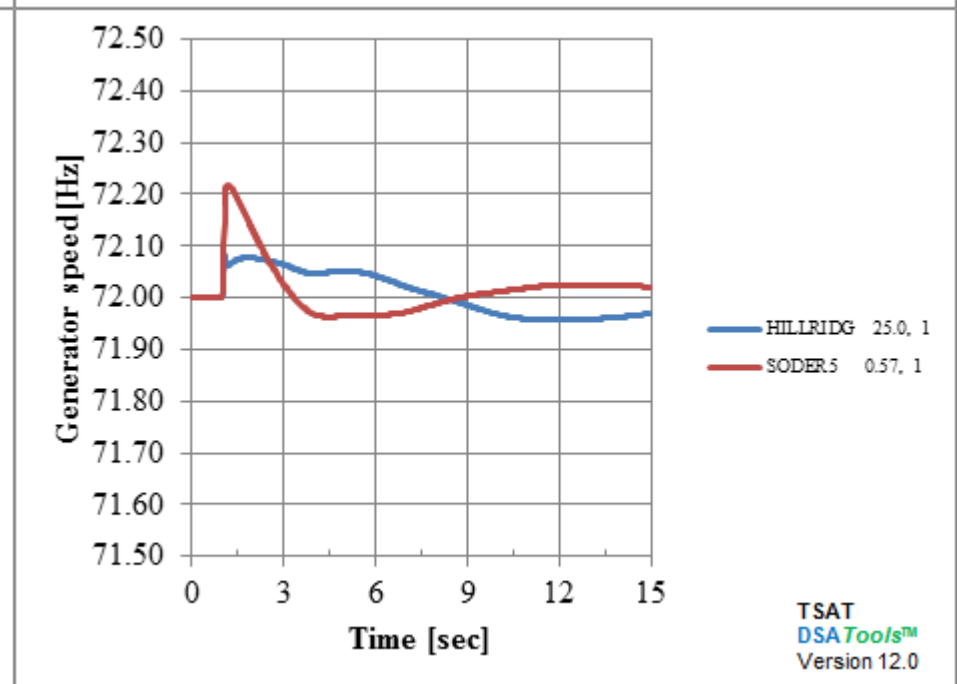
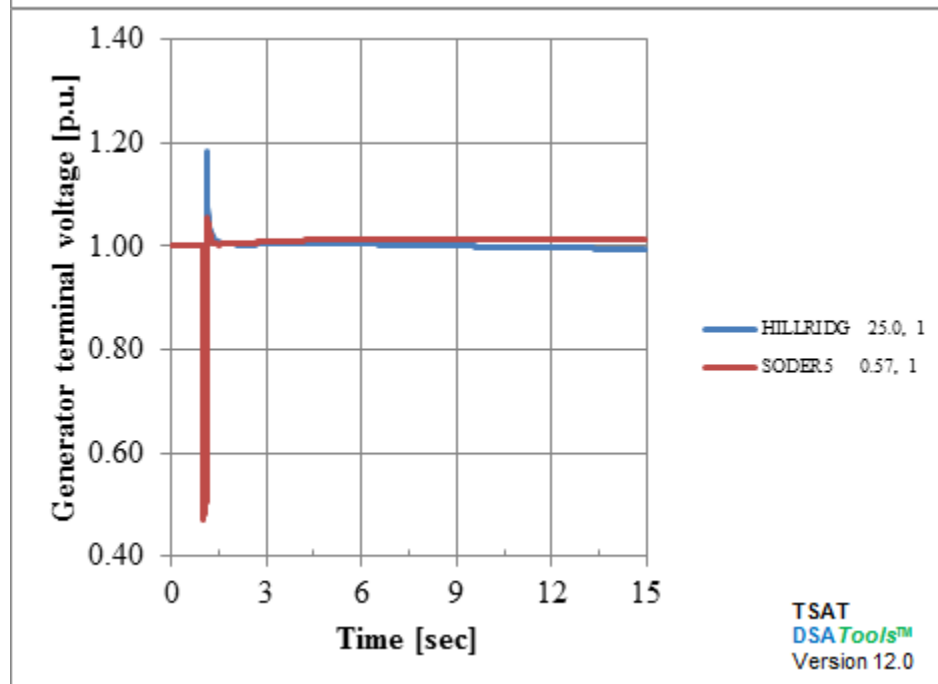
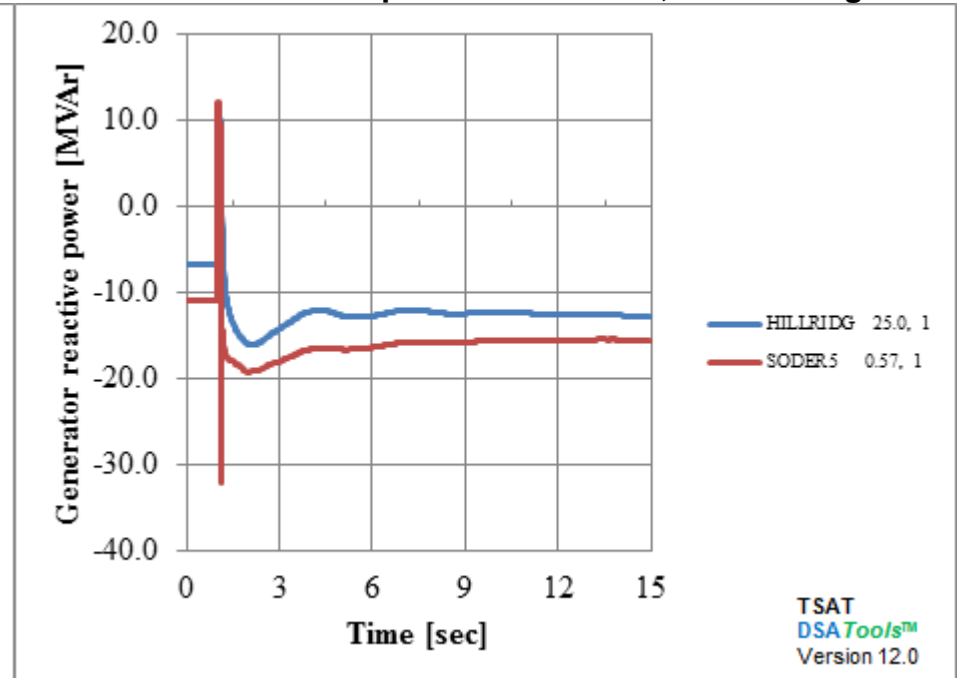
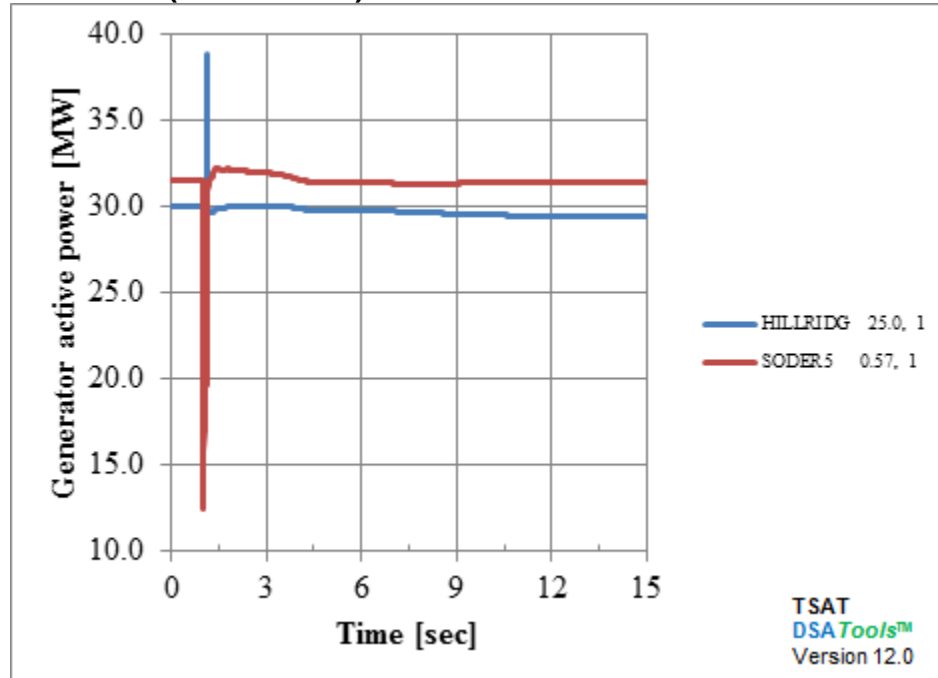
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Light 2014



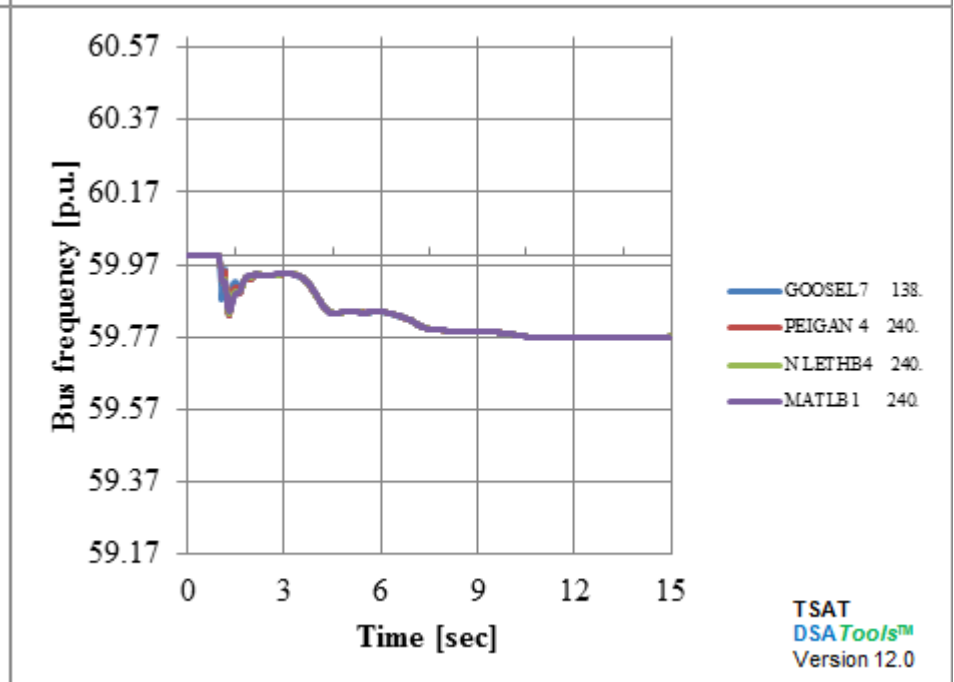
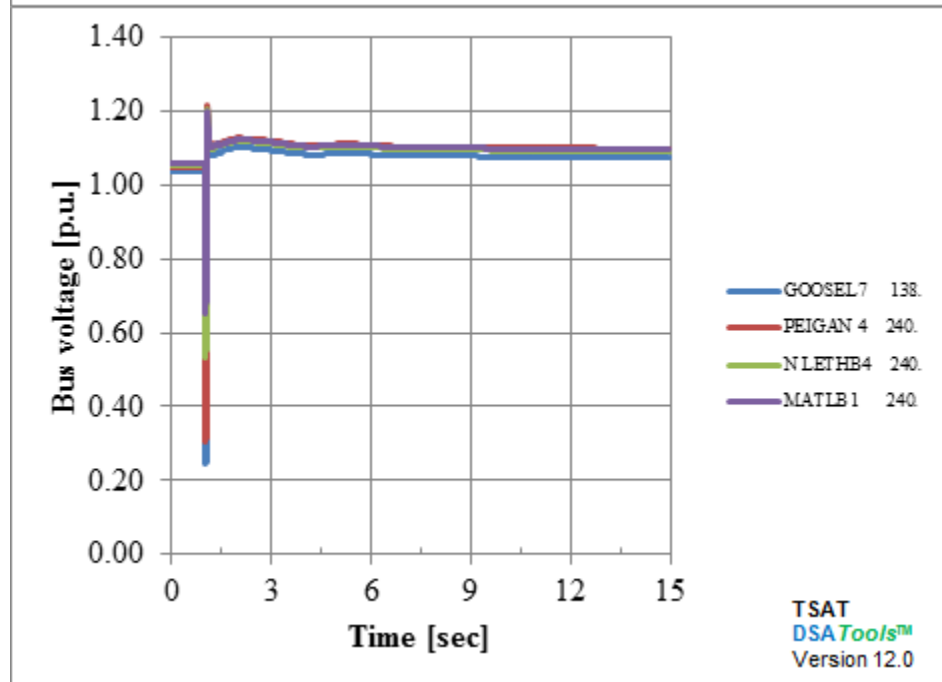
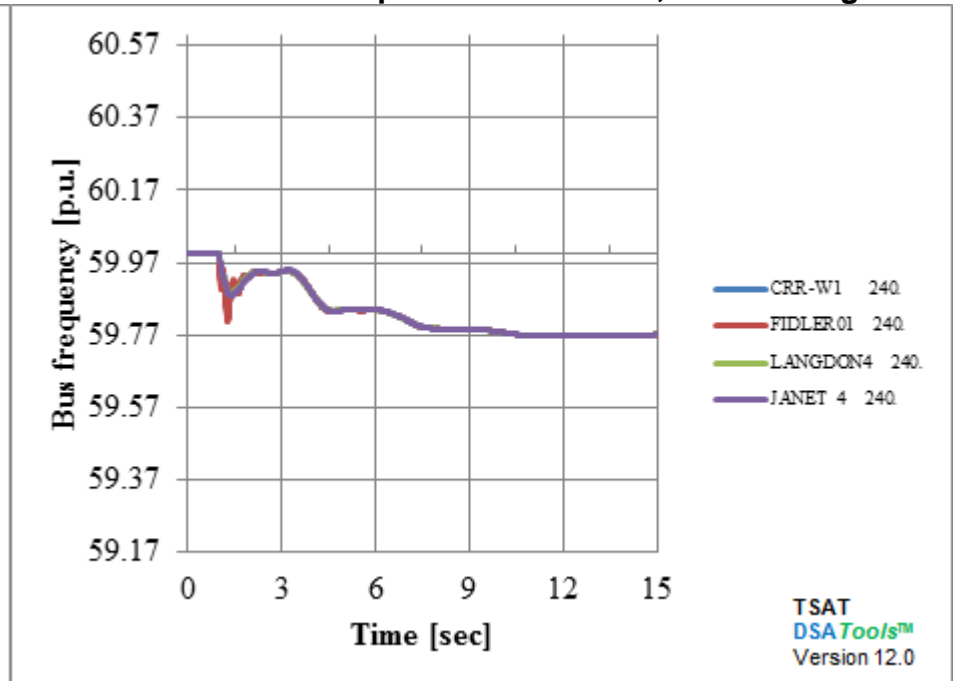
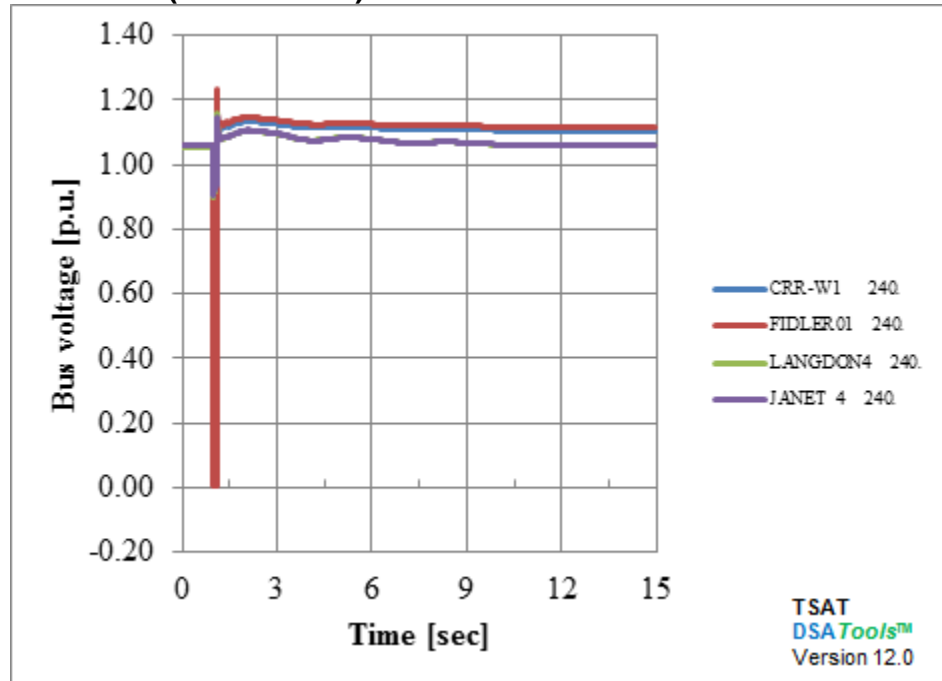
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Light 2014



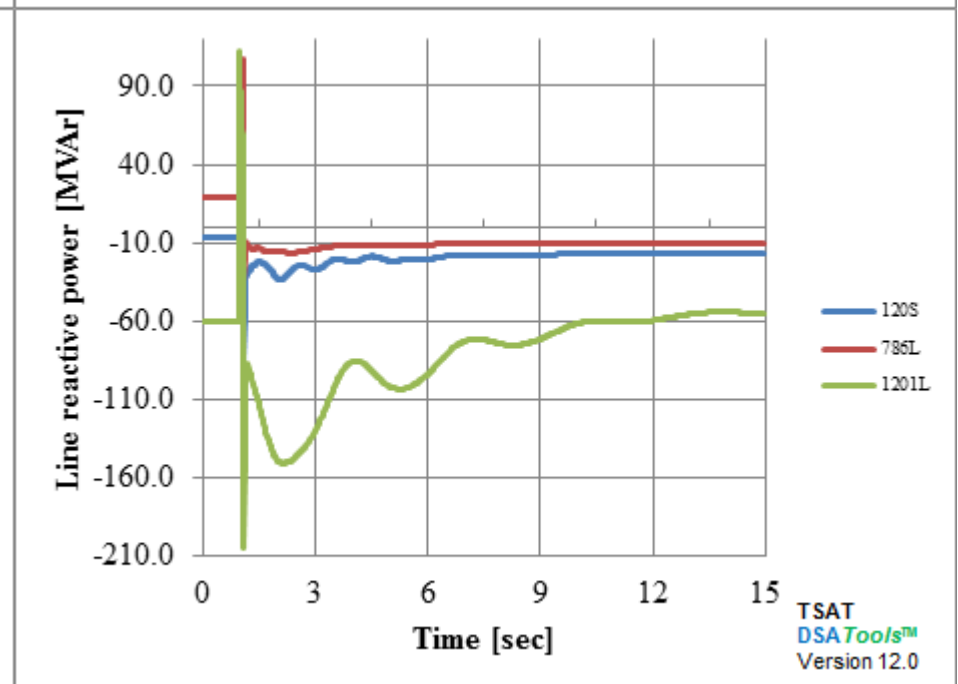
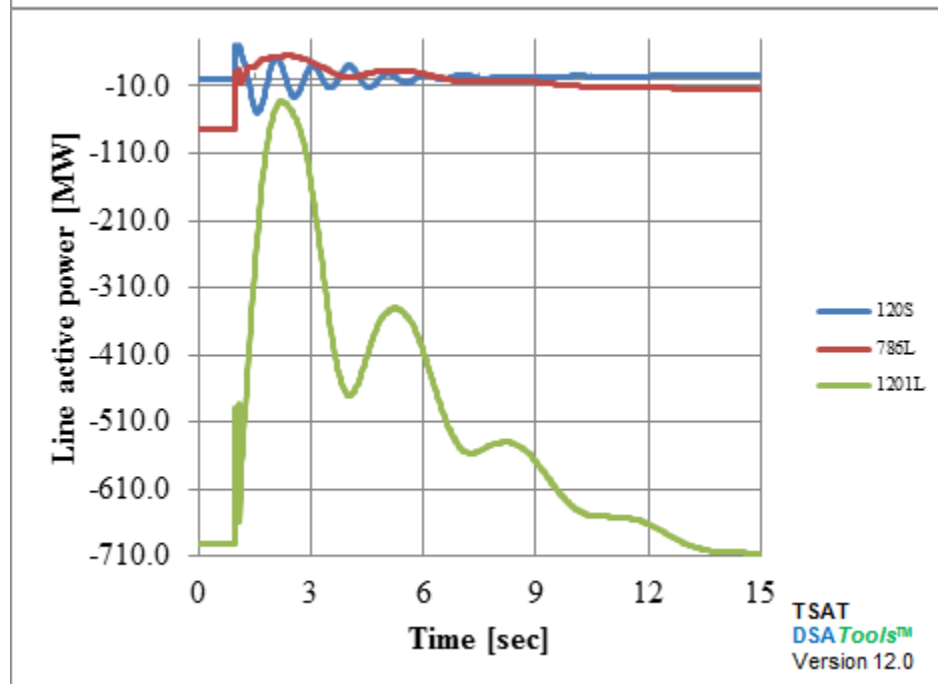
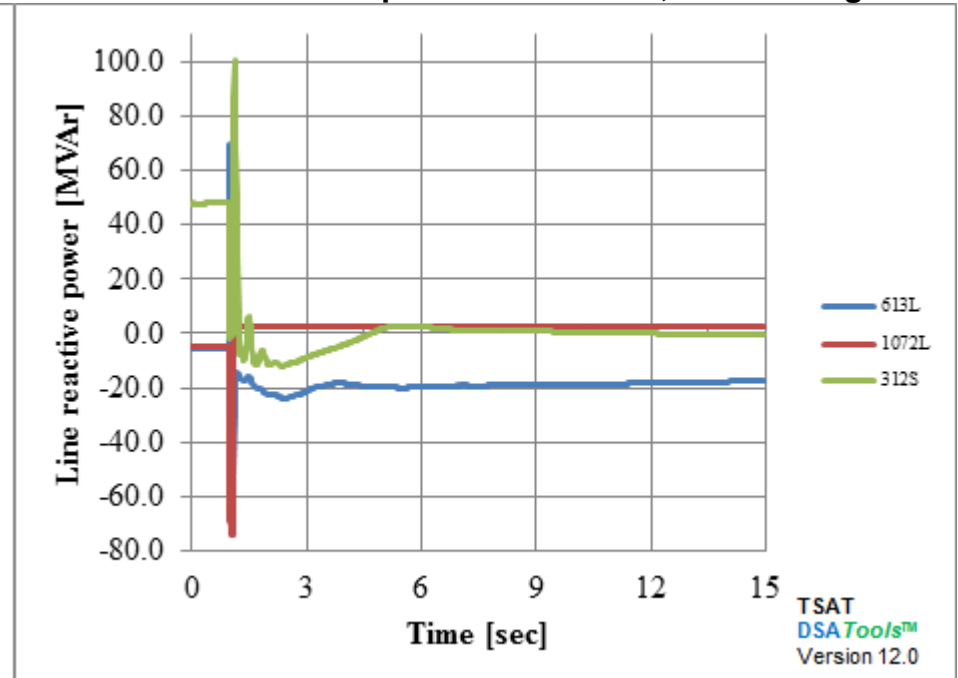
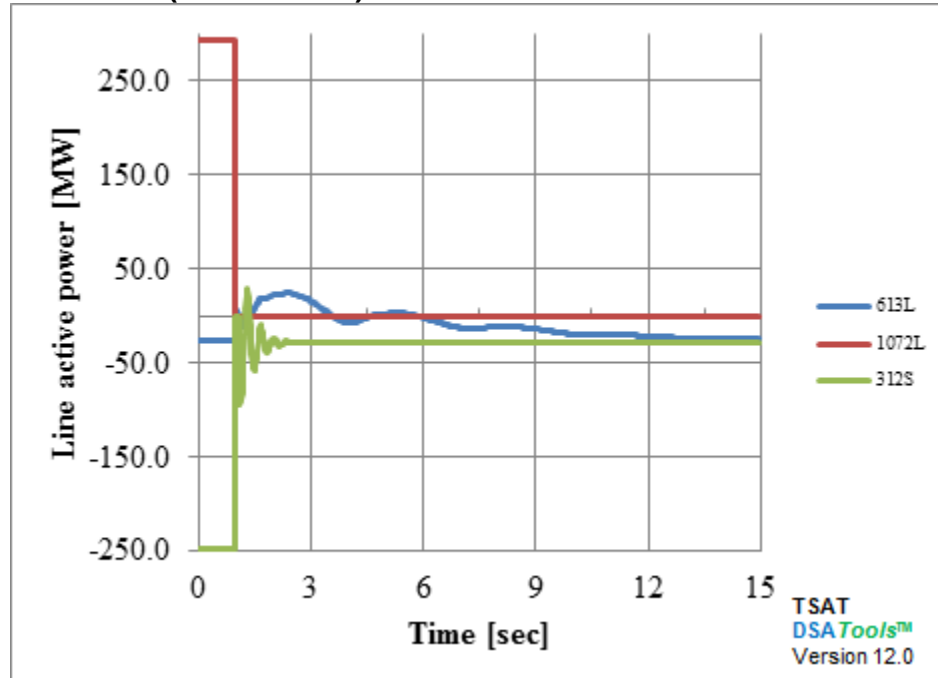
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Light 2014



3 -- 1071L (205S - 312S) NEAR 312S

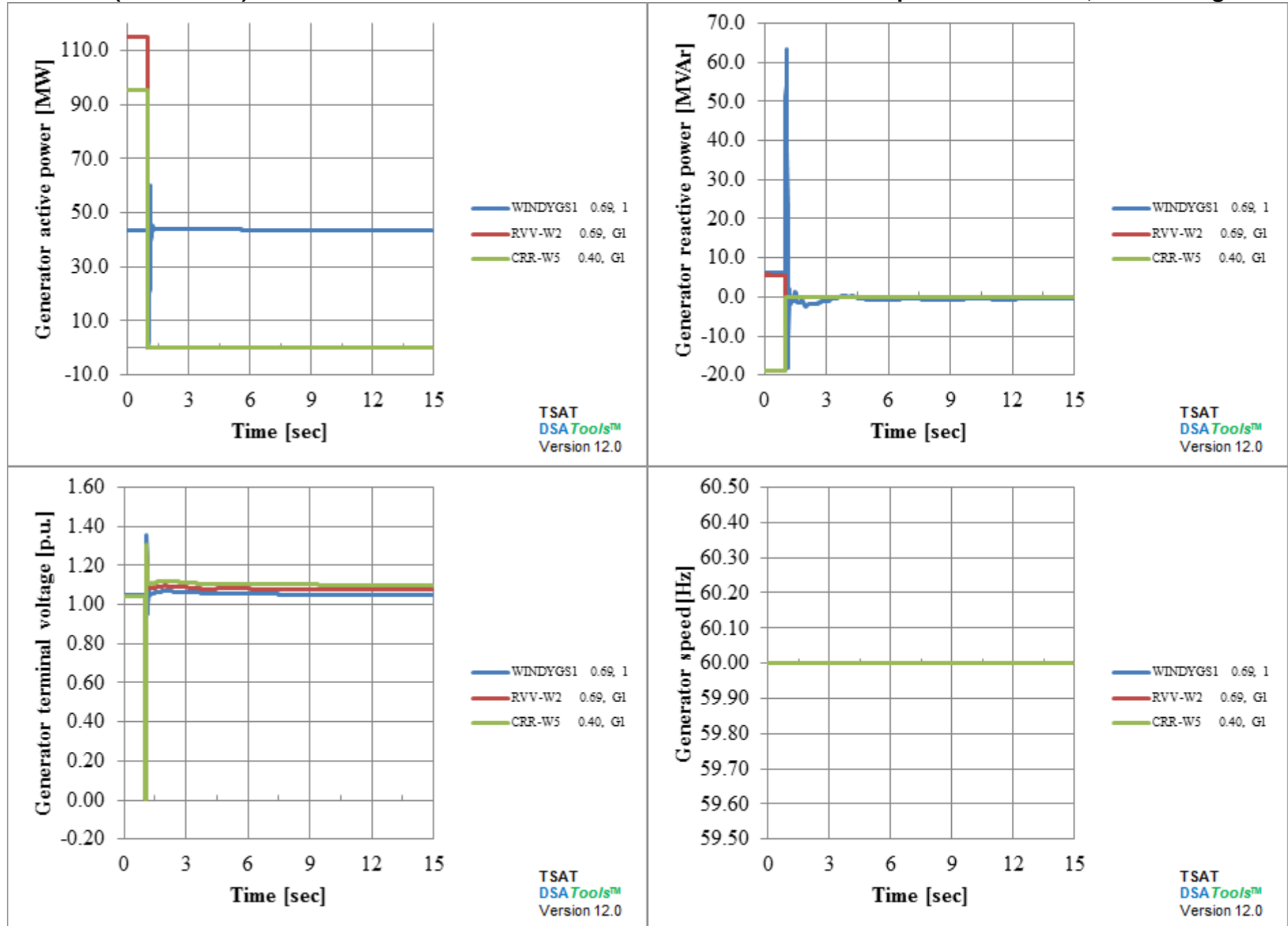
Proposed Connection, Summer Light 2014





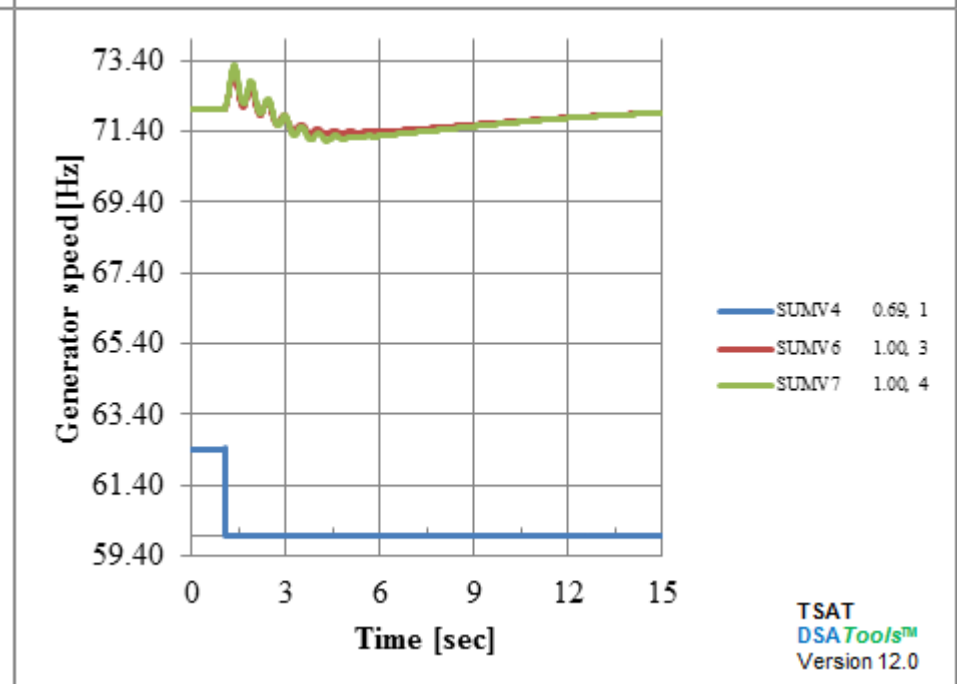
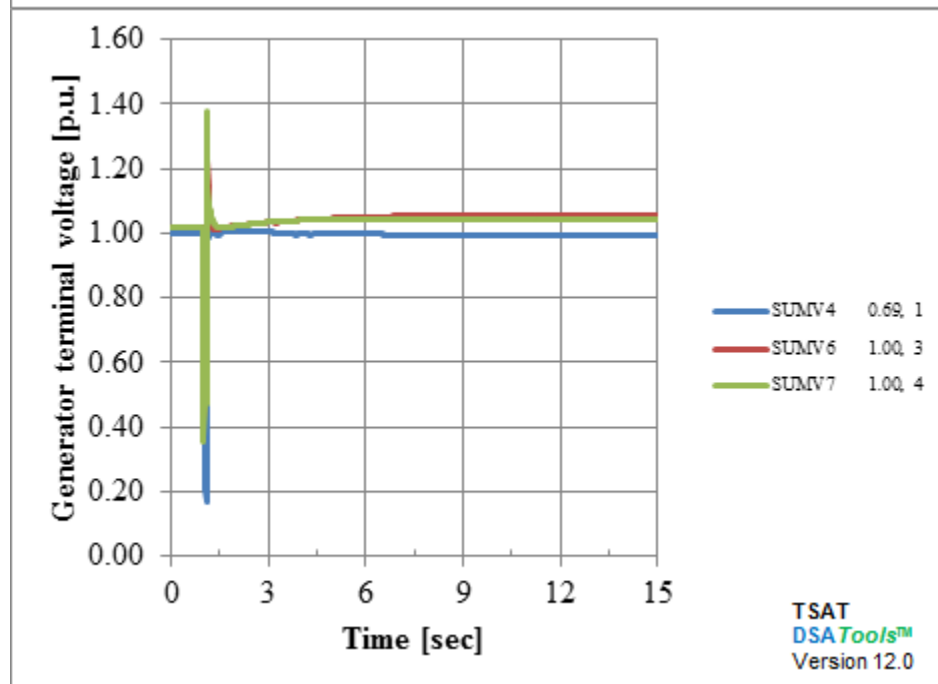
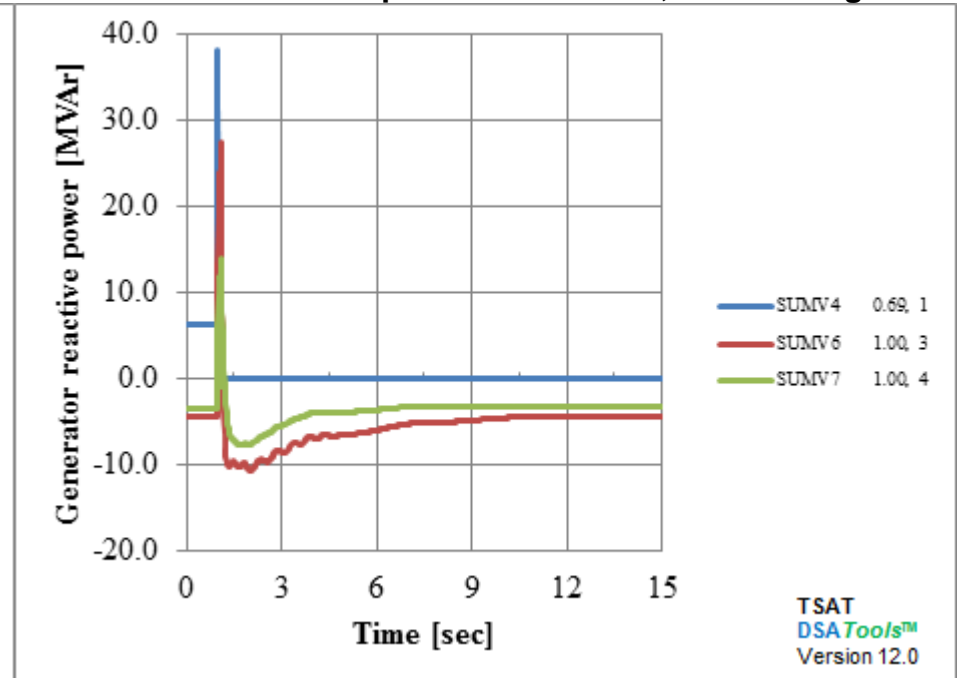
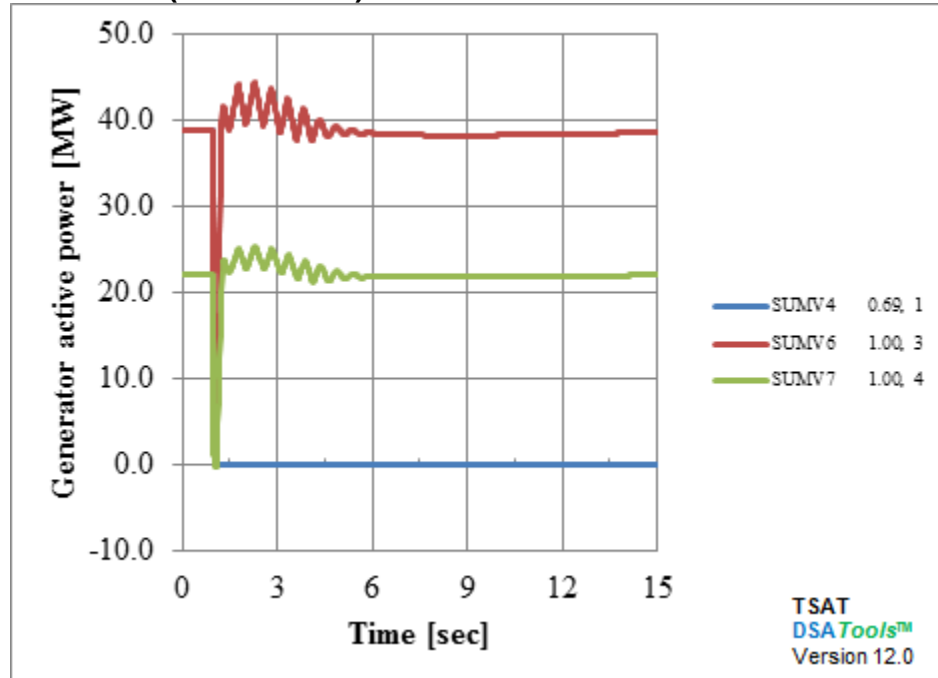
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



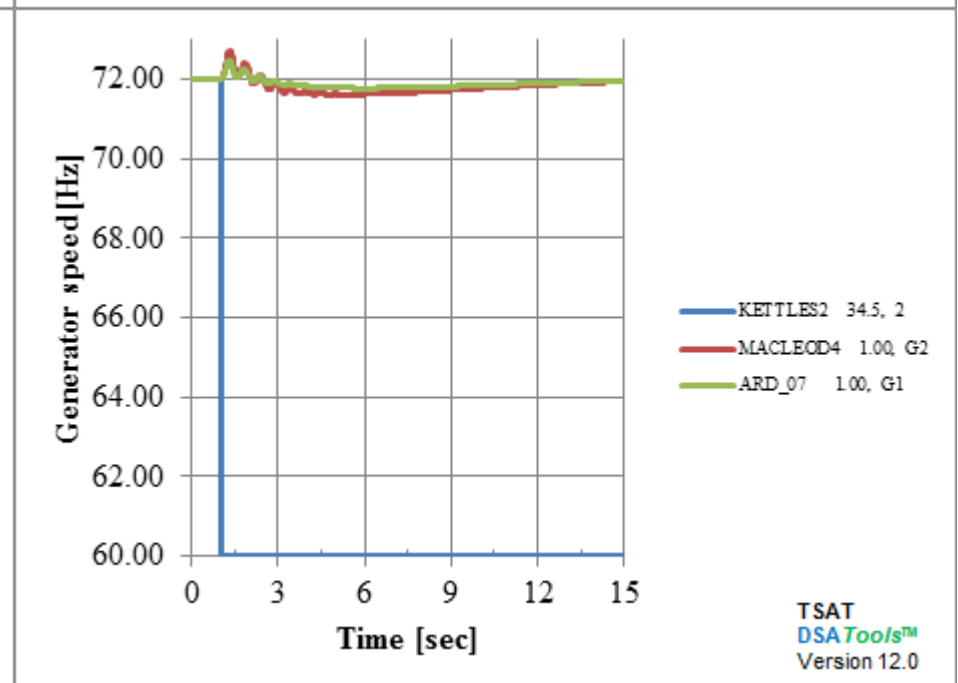
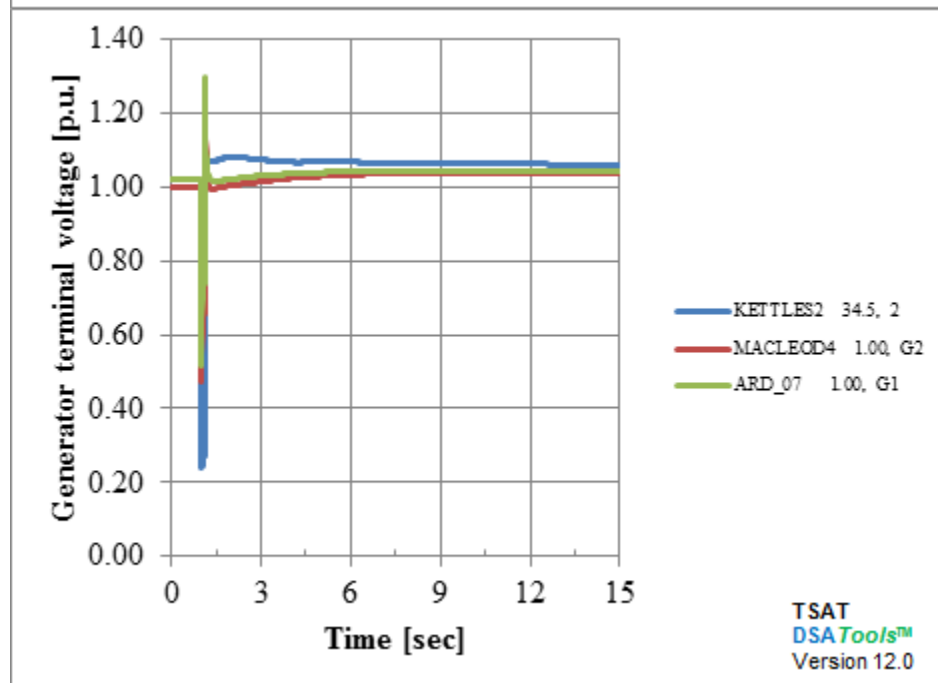
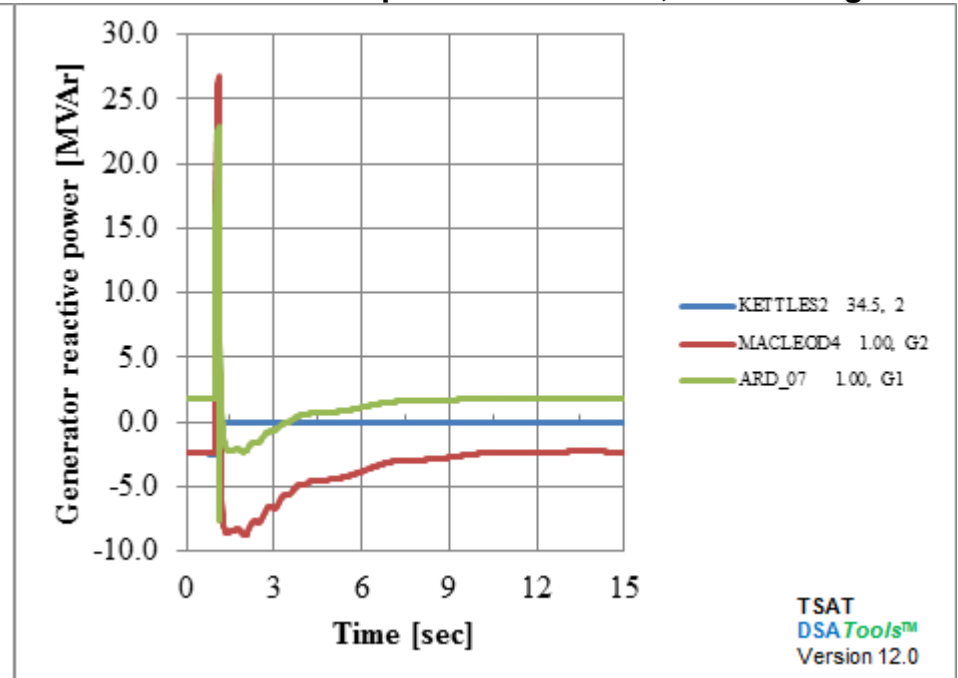
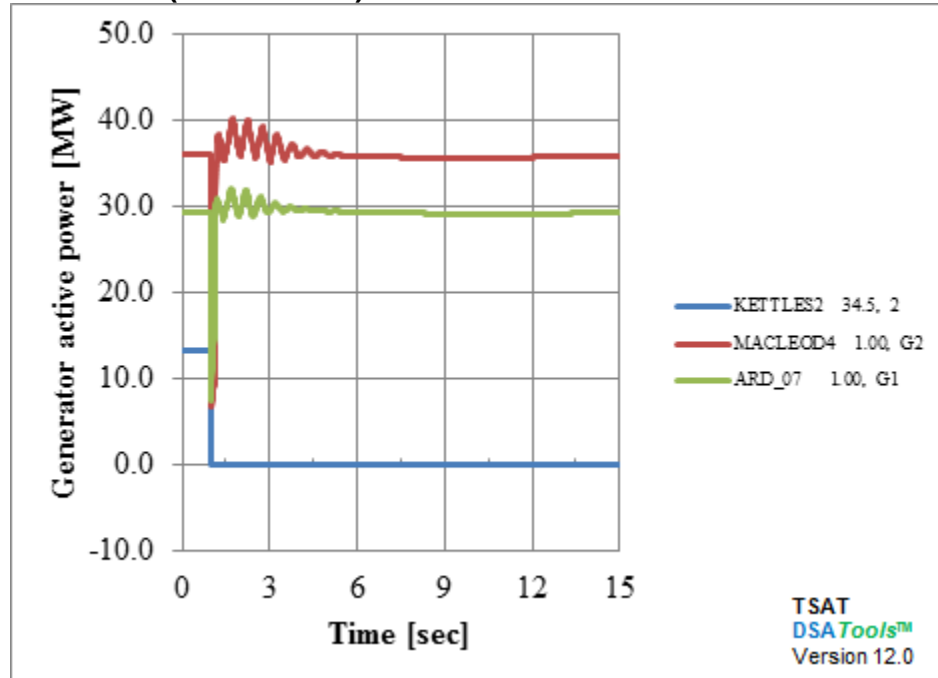
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



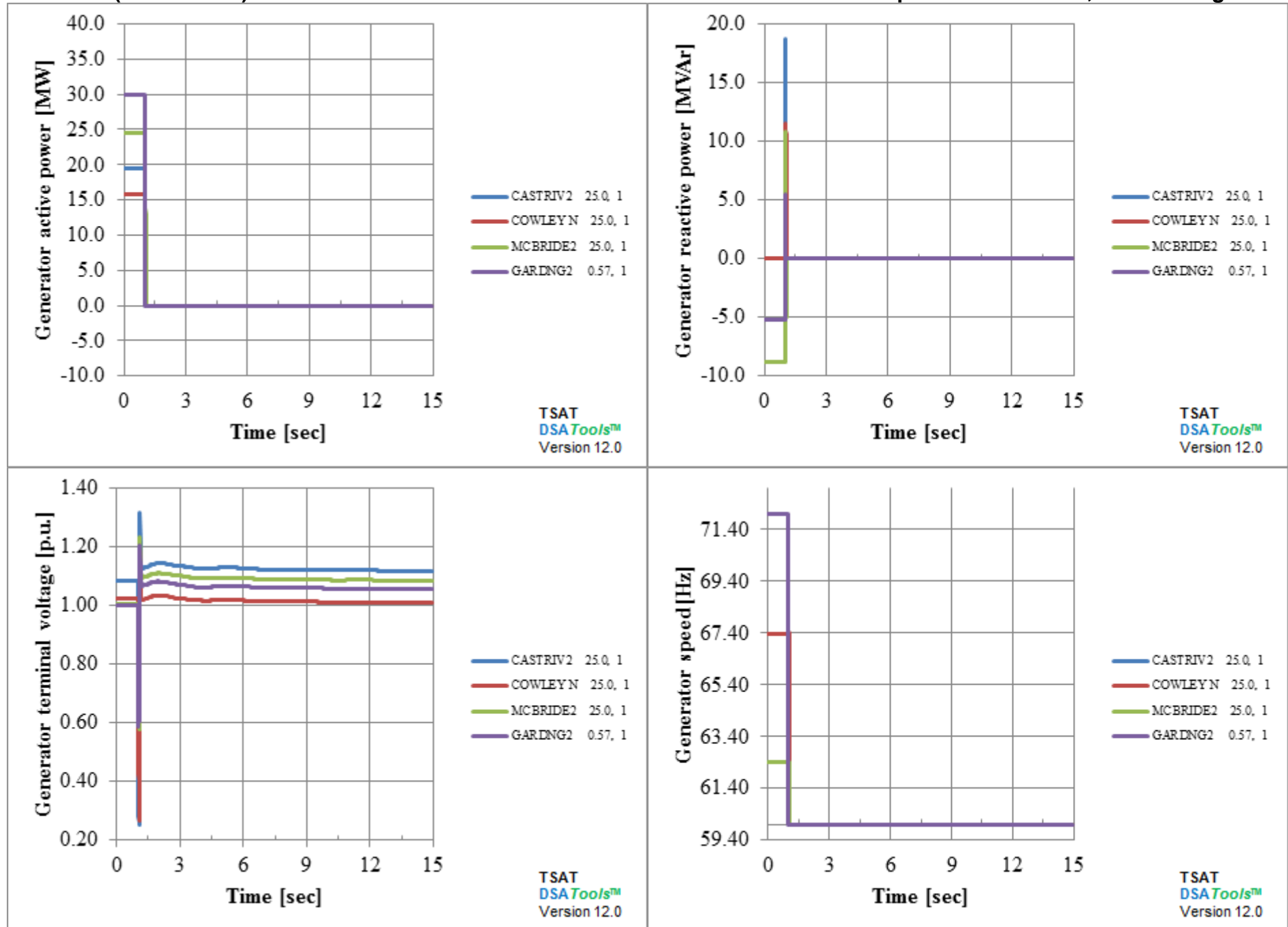
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



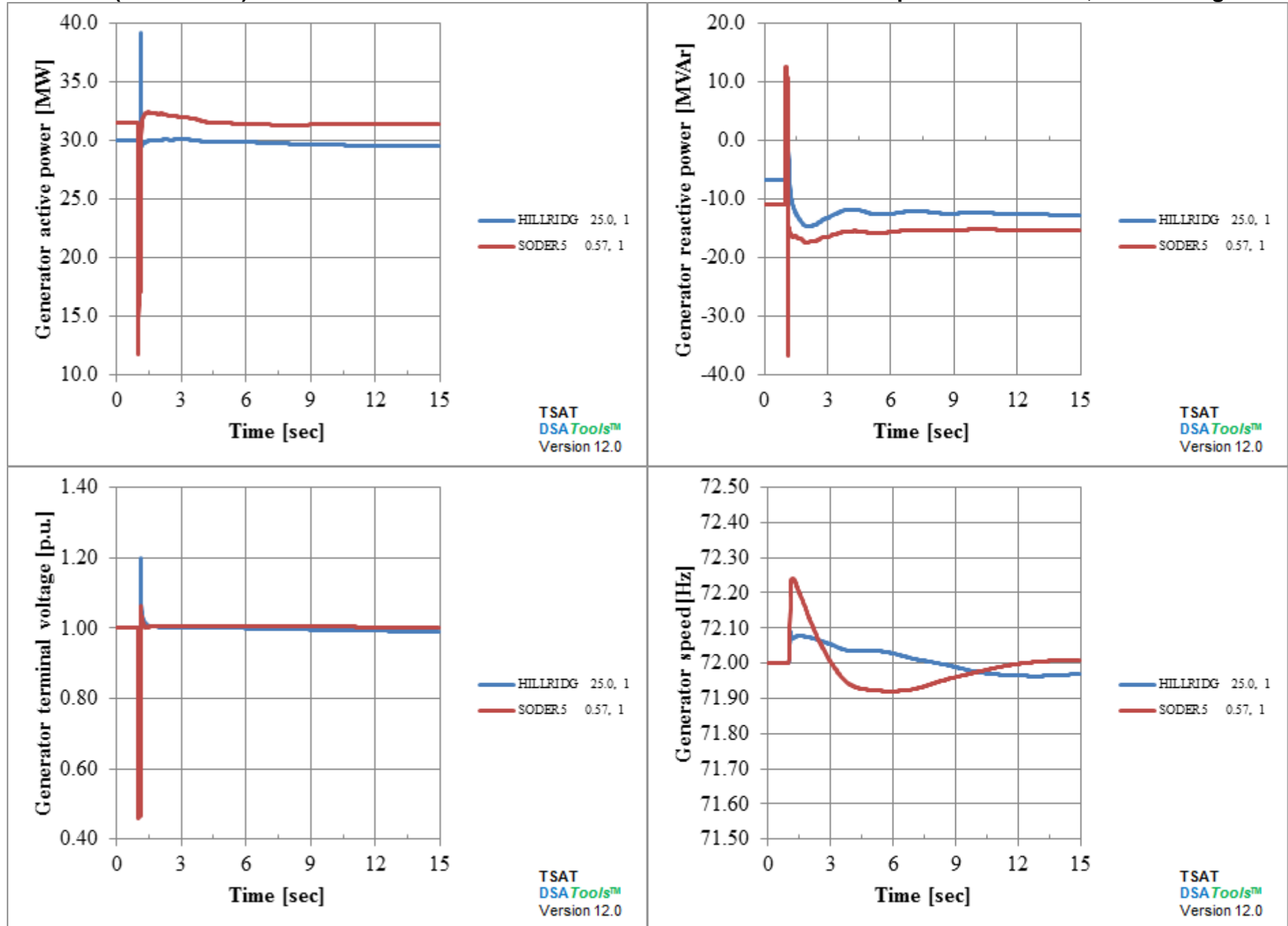
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



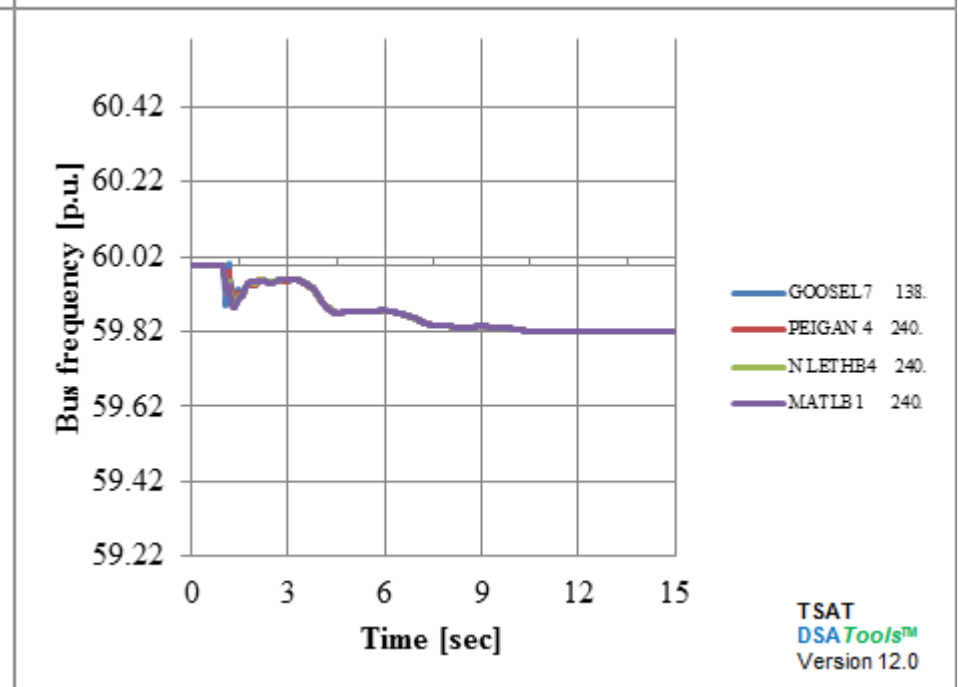
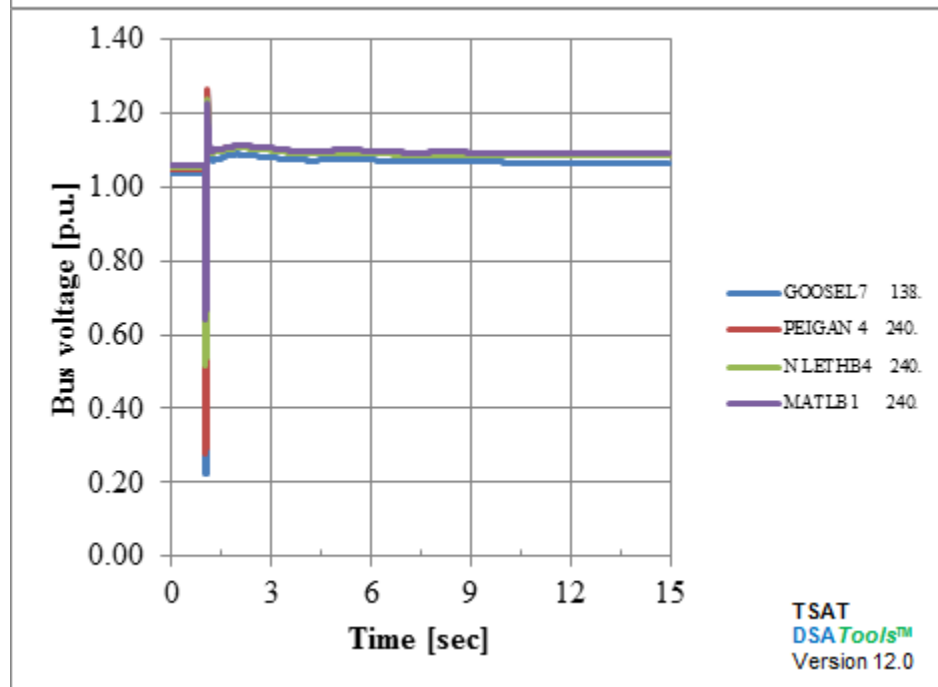
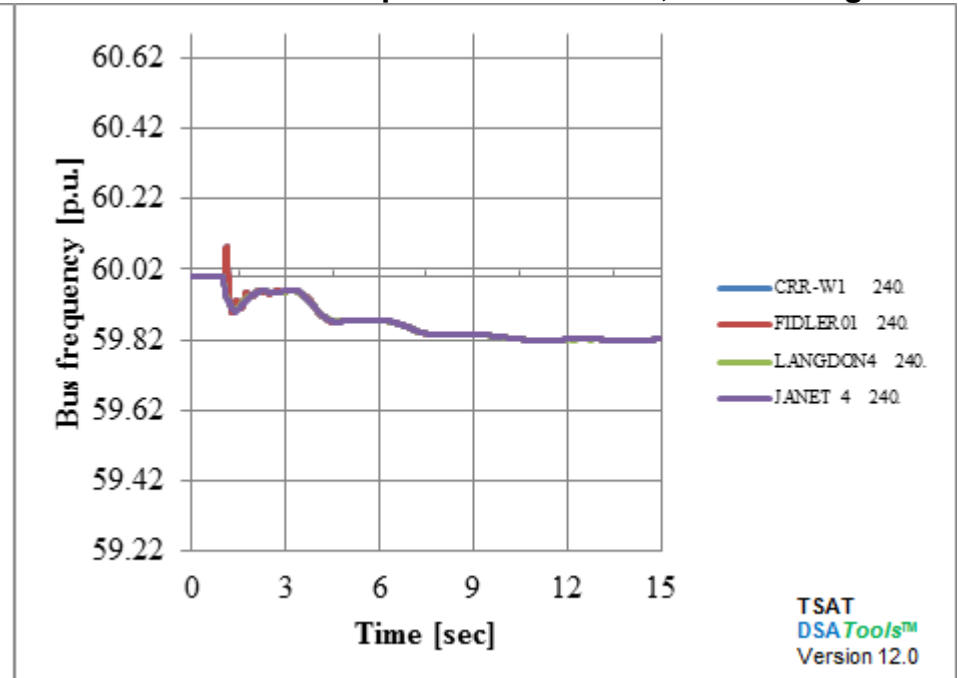
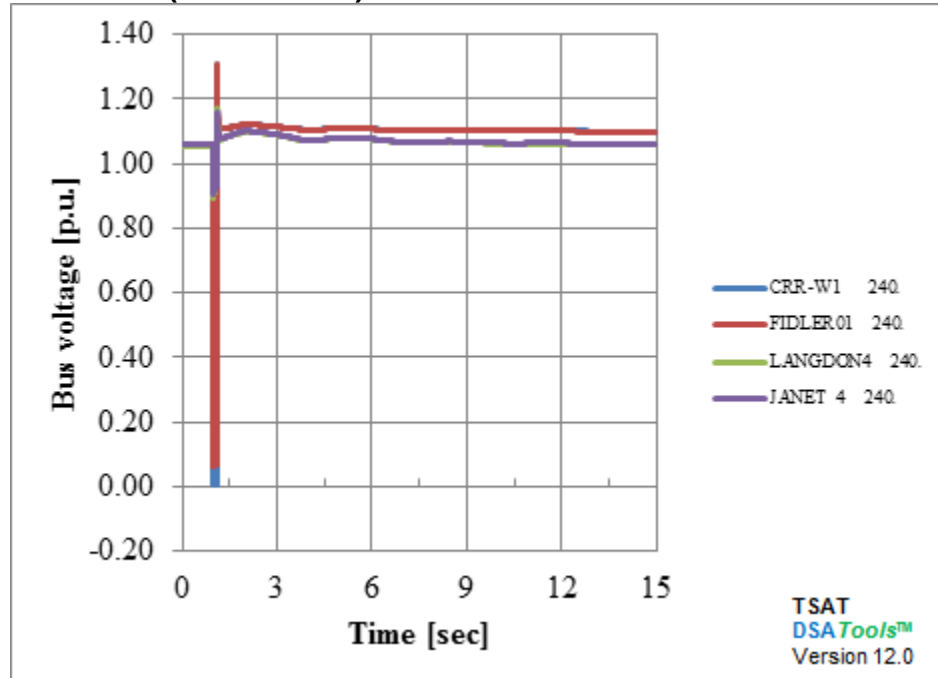
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



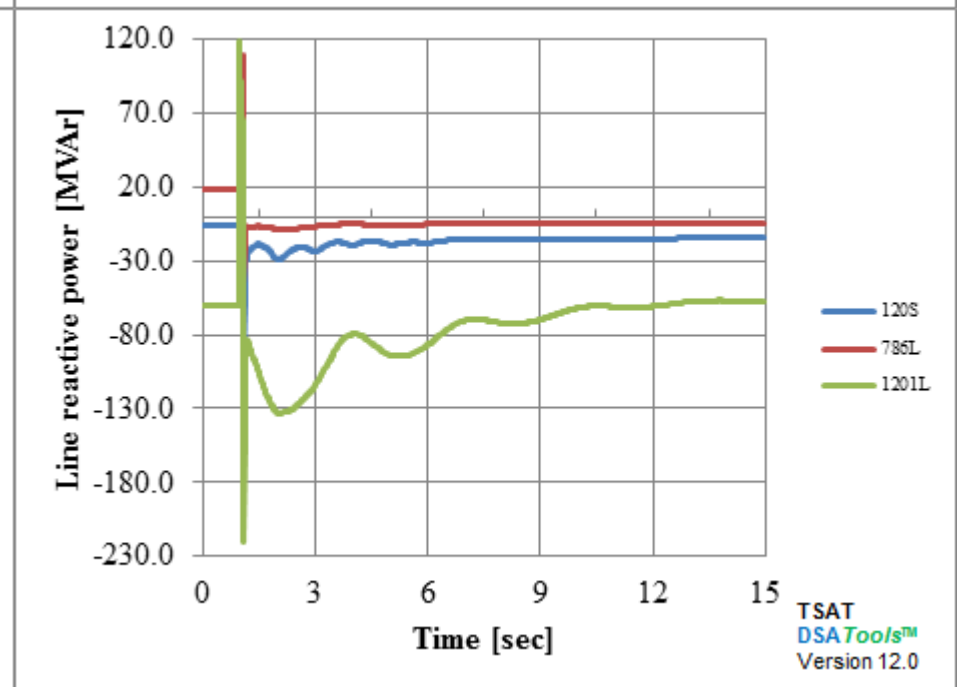
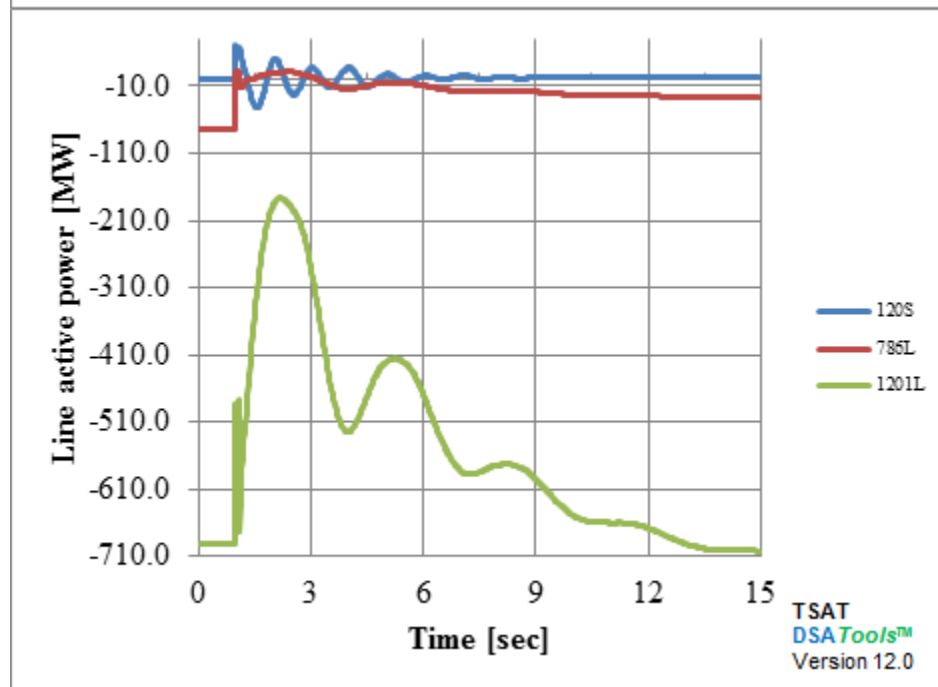
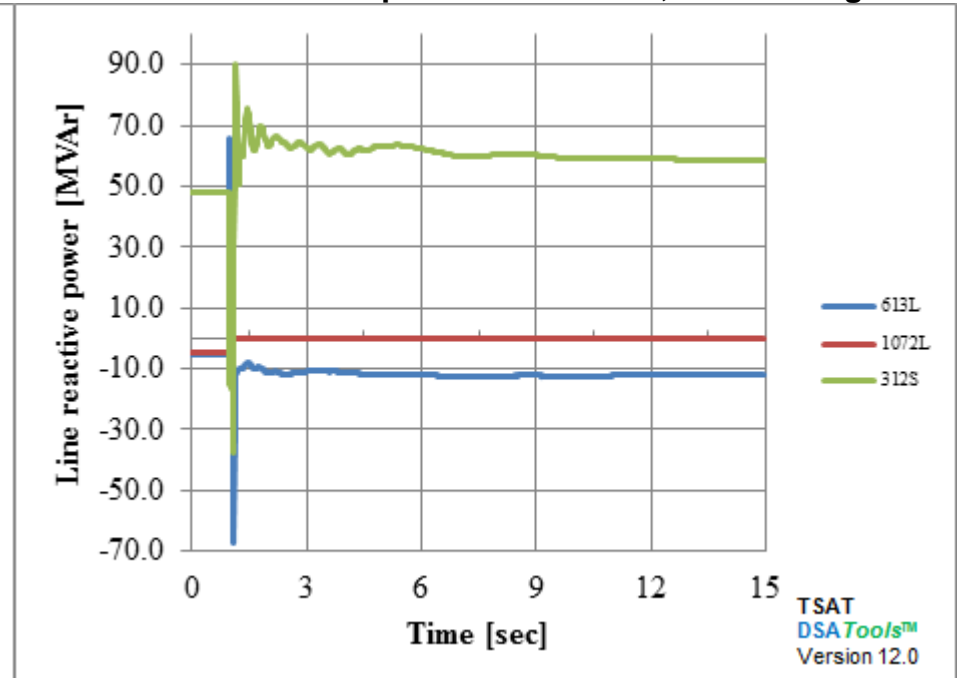
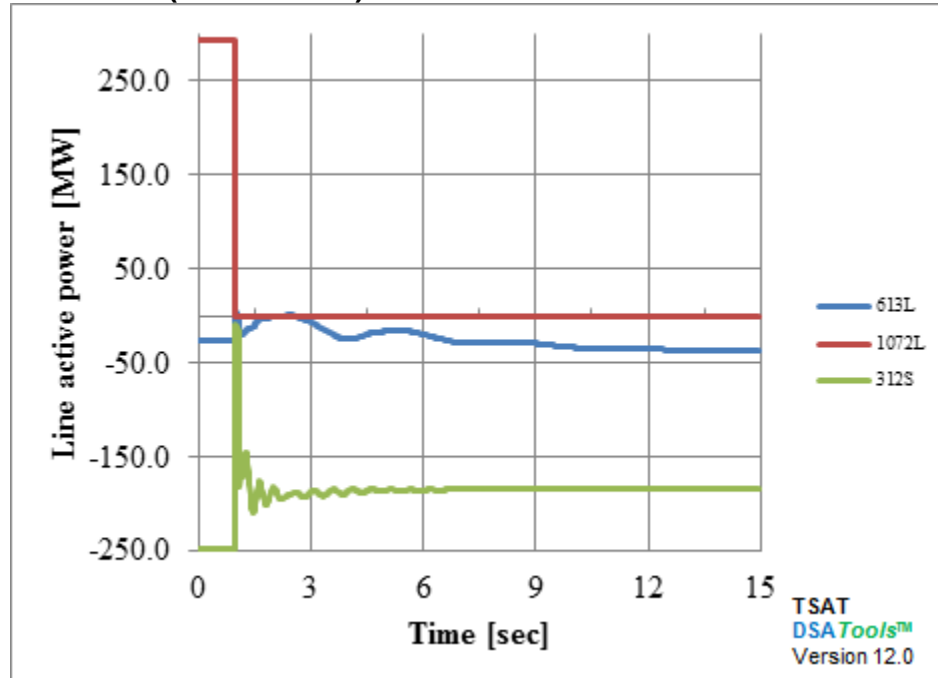
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



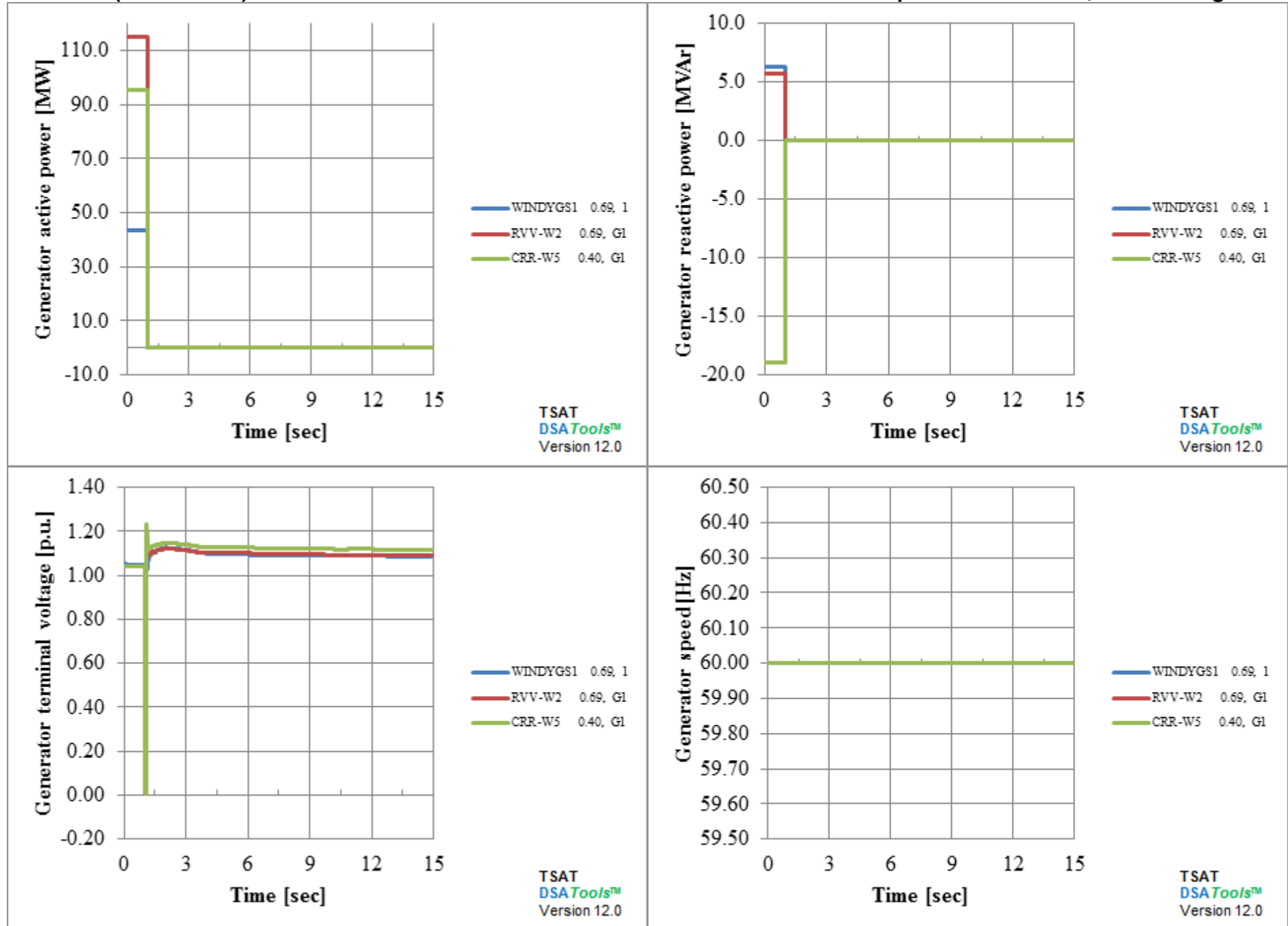
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Light 2014



5 -- 1072L (205S - 103S) NEAR 103S

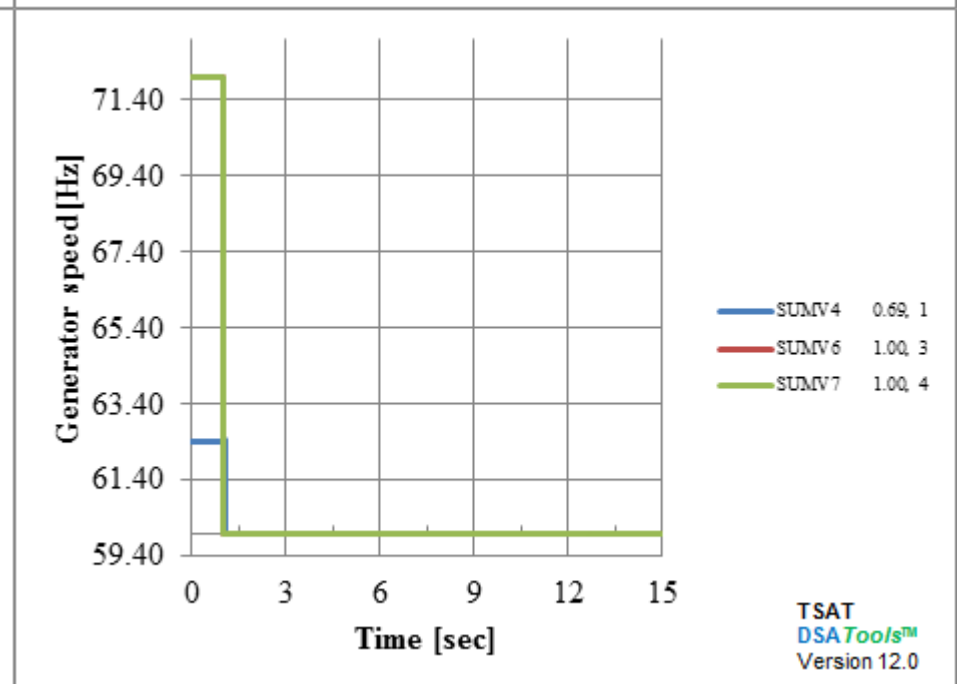
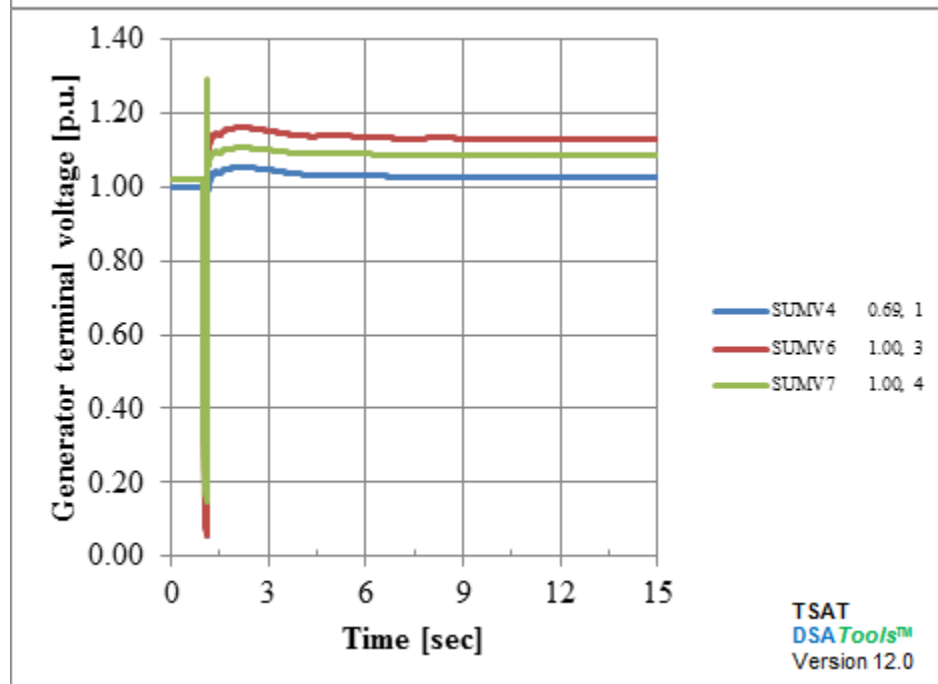
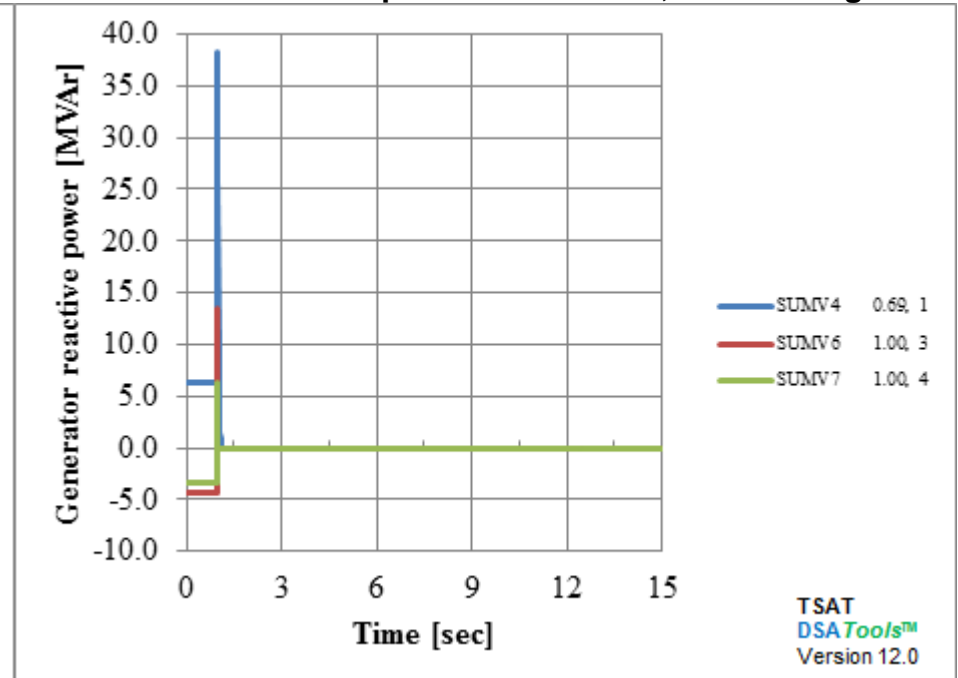
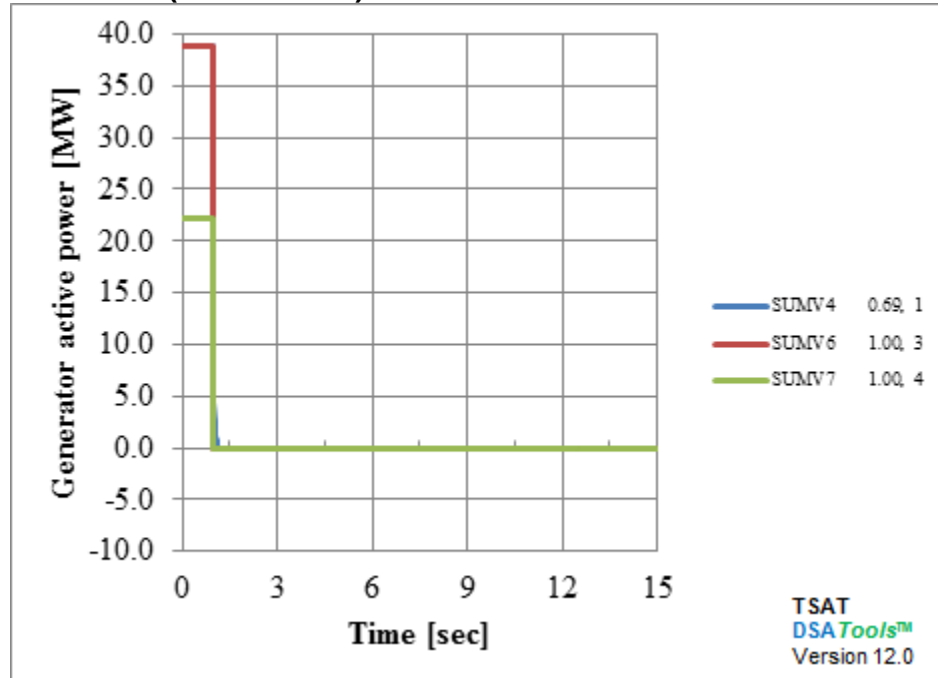
Proposed Connection, Summer Light 2014





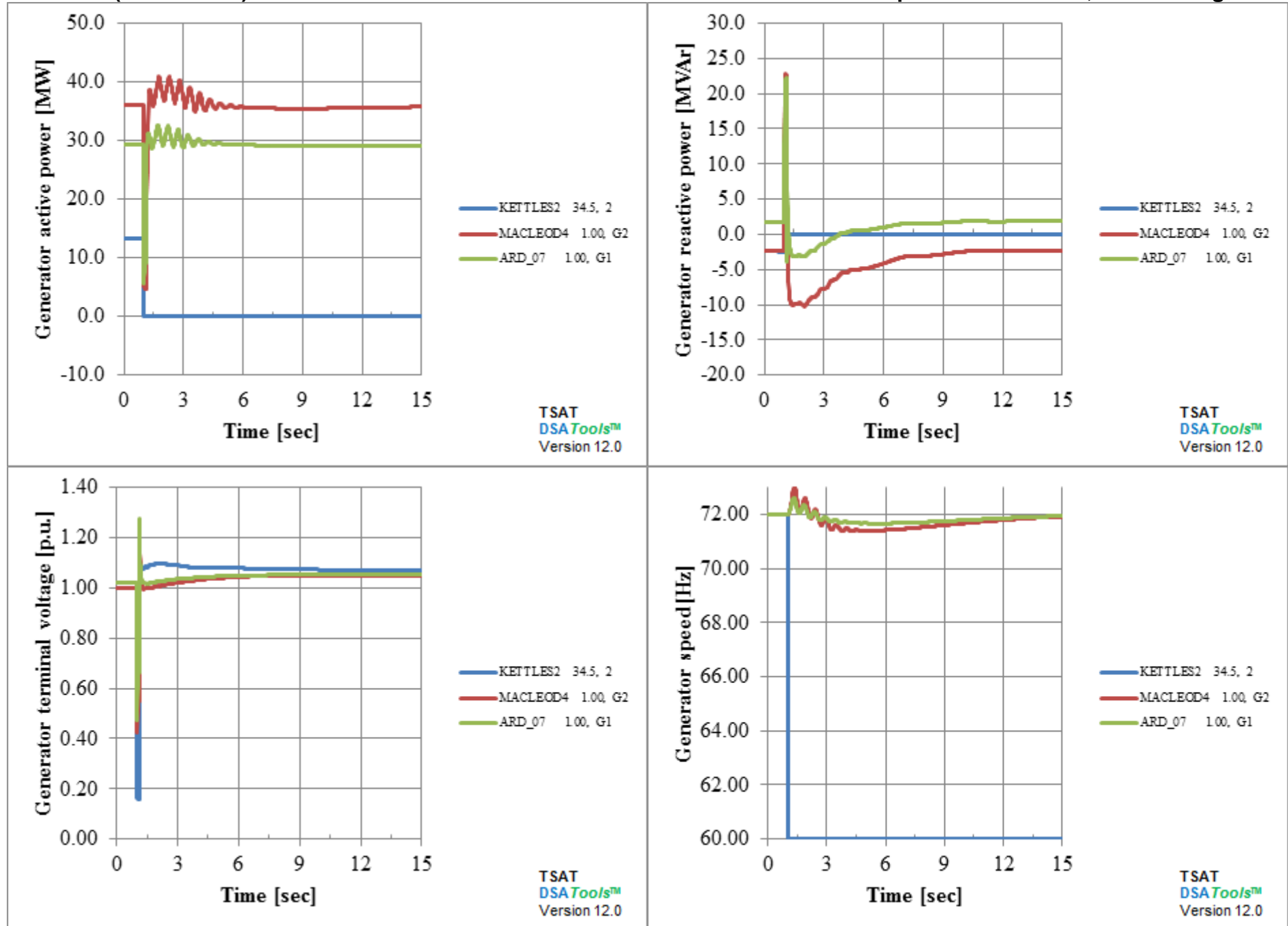
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



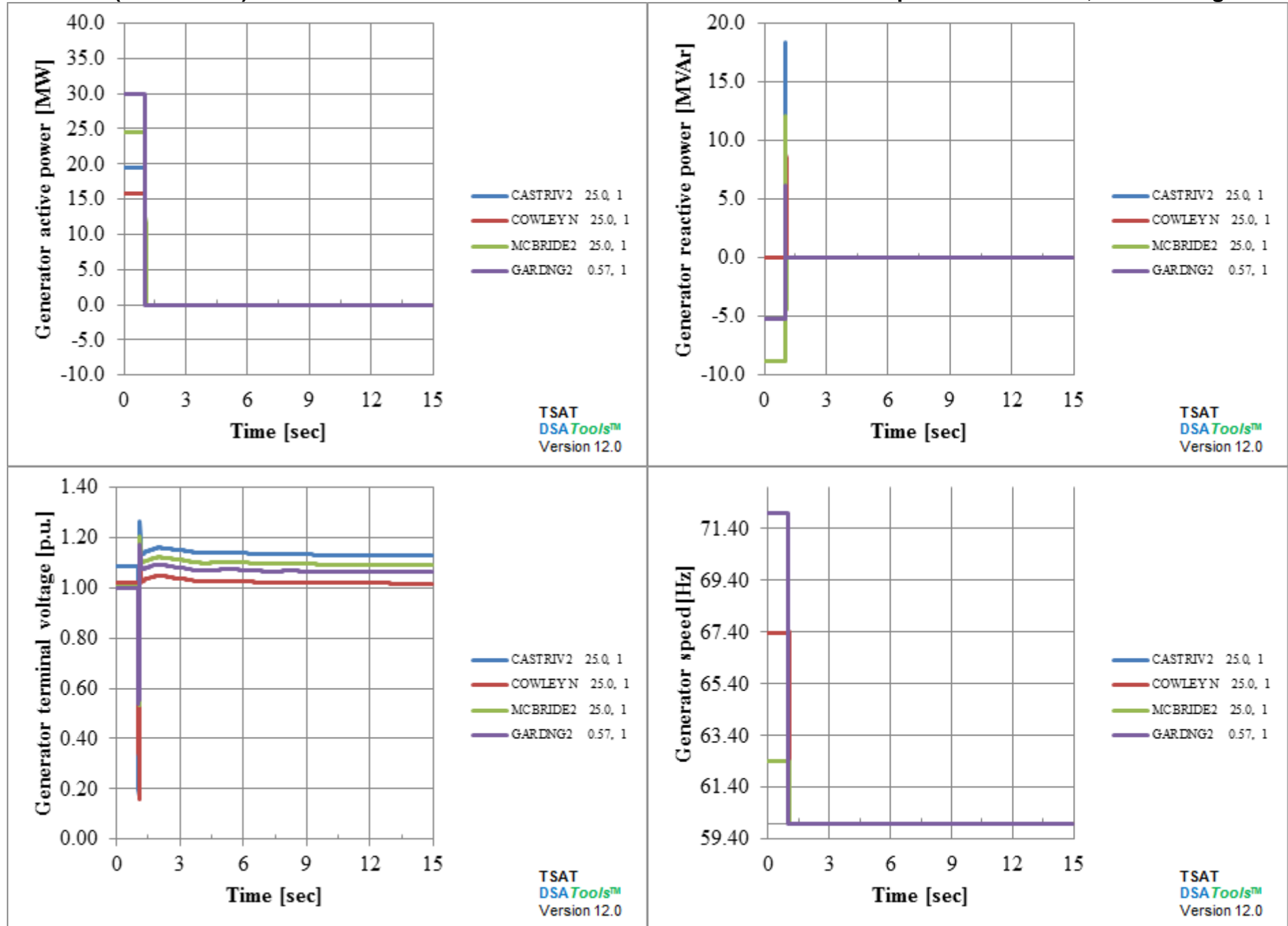
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



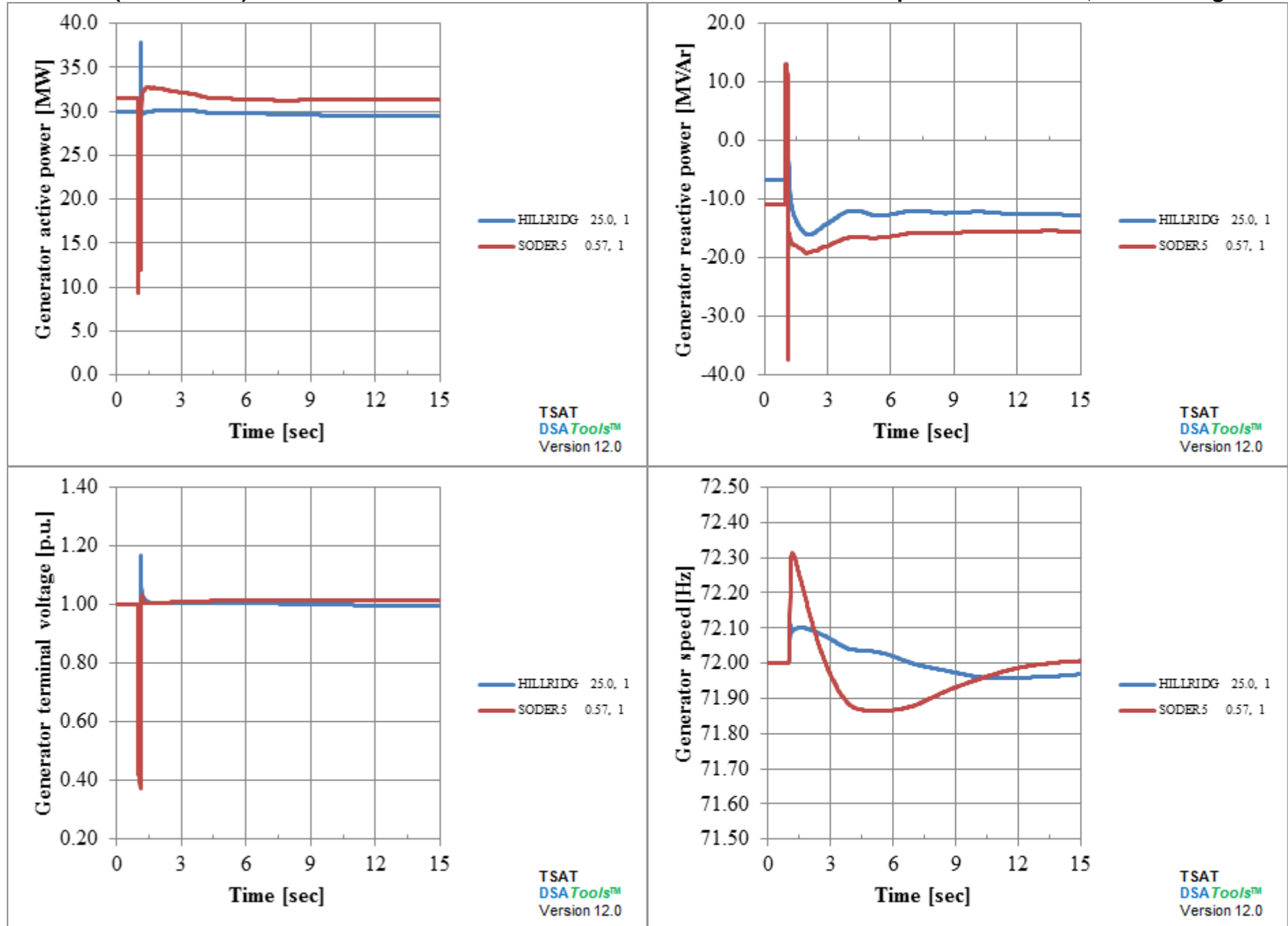
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



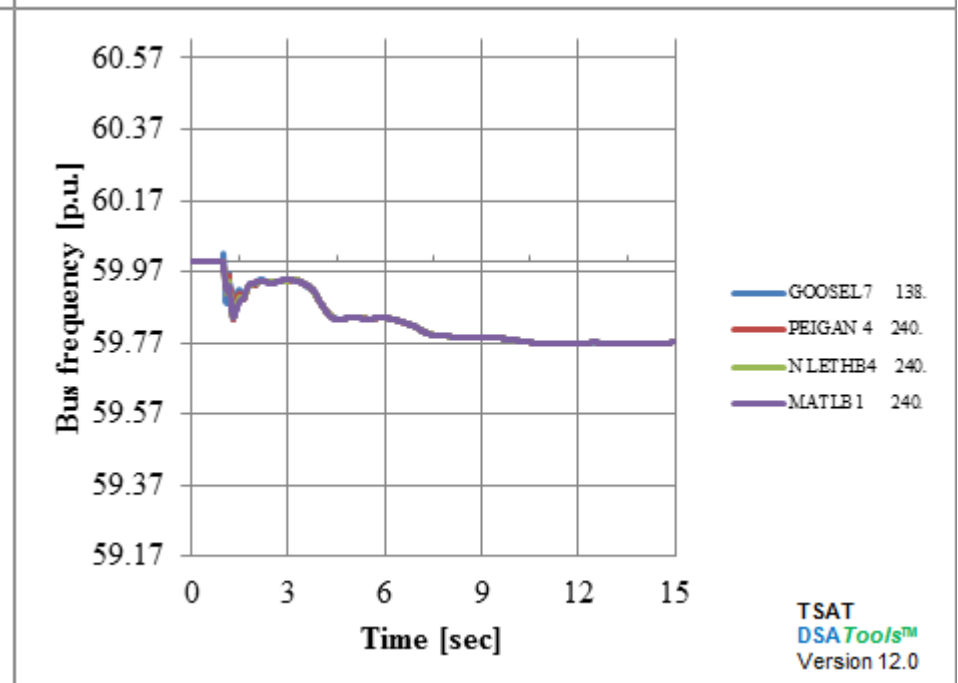
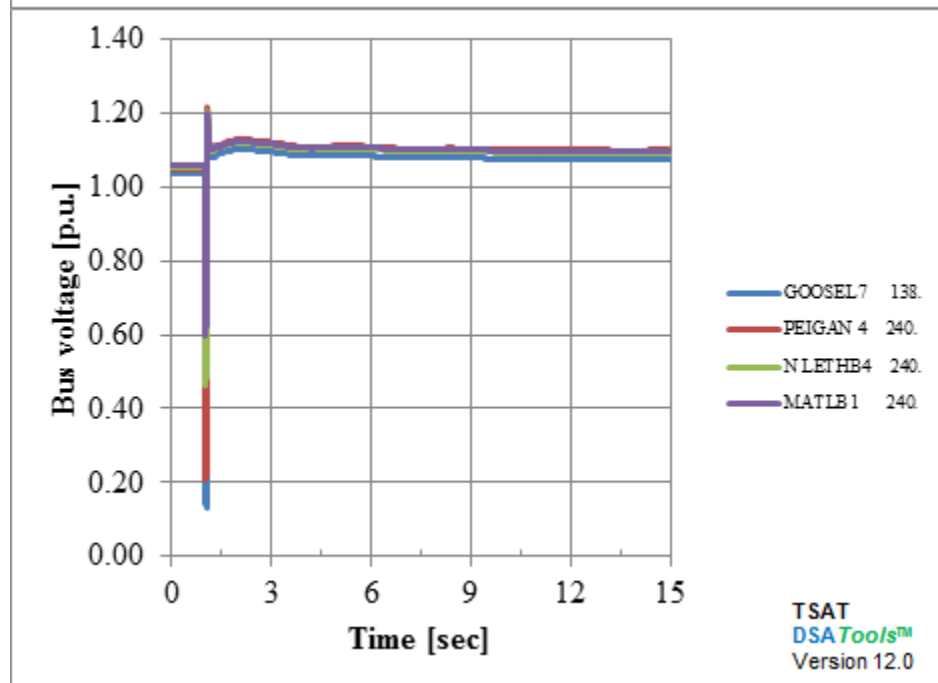
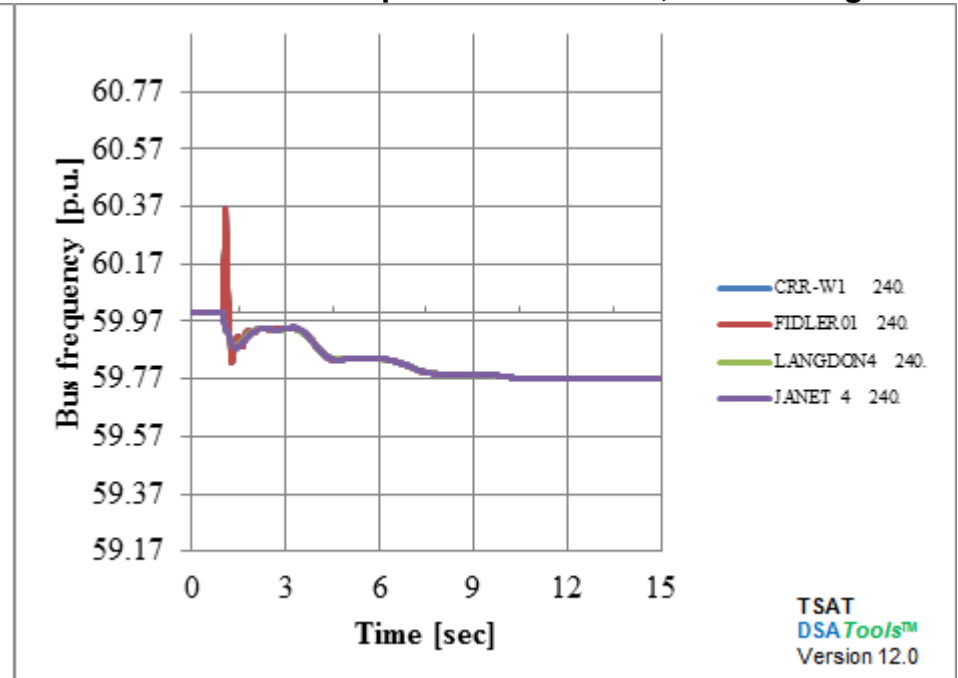
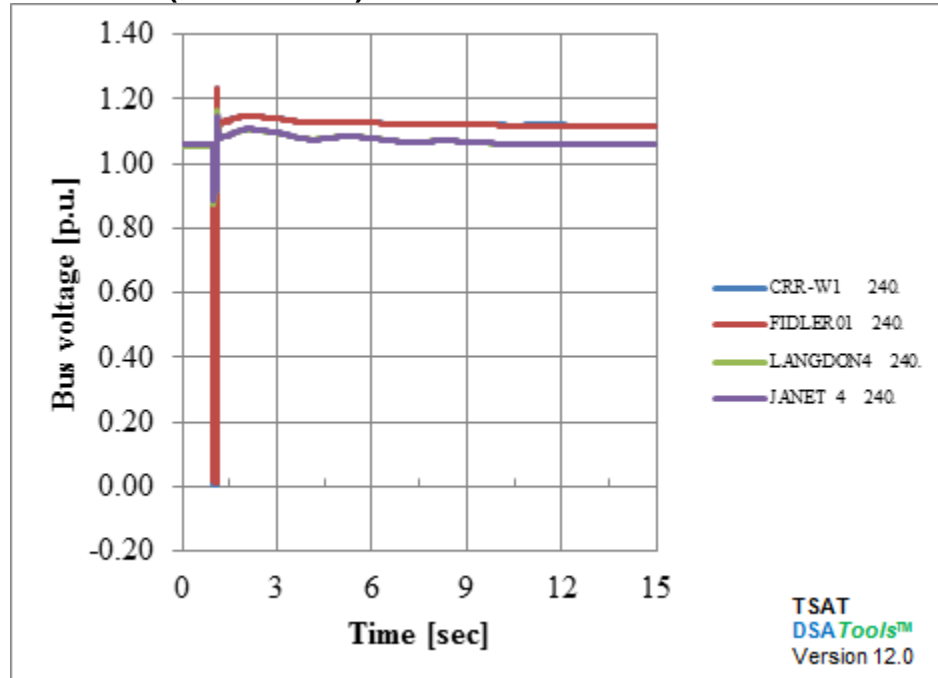
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



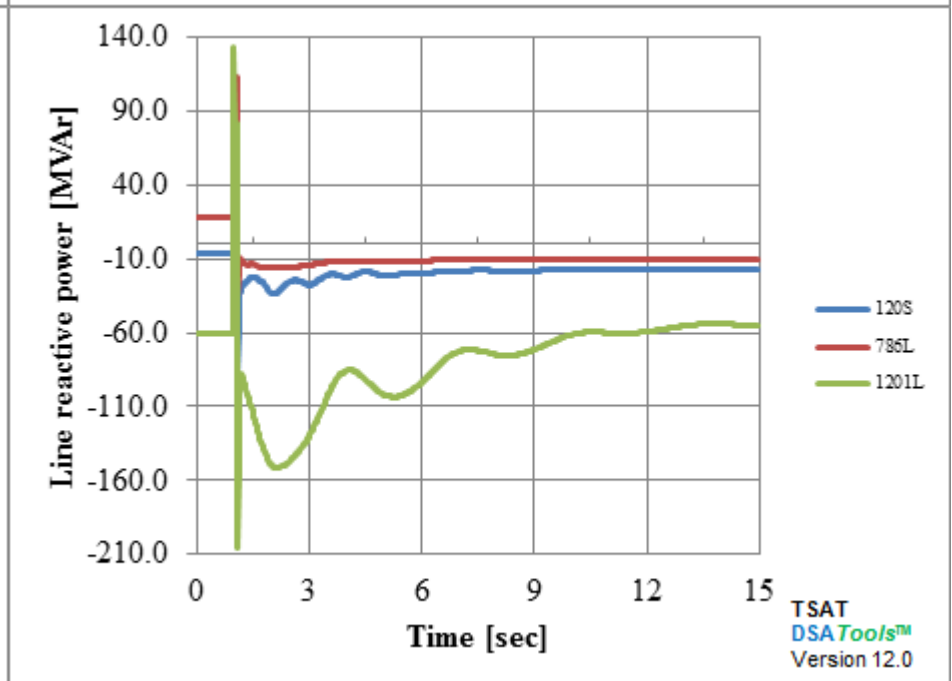
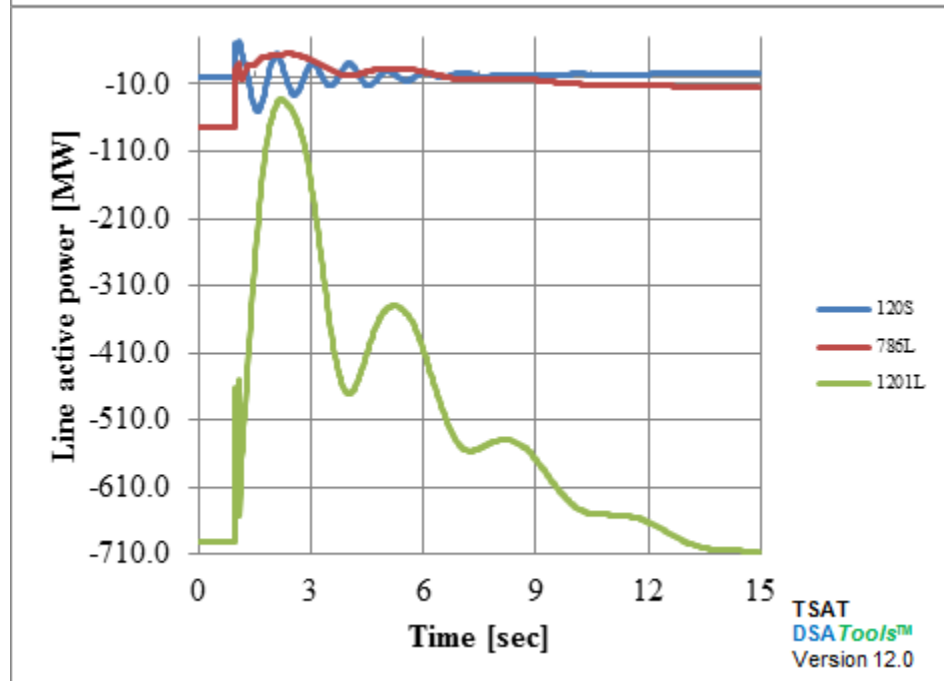
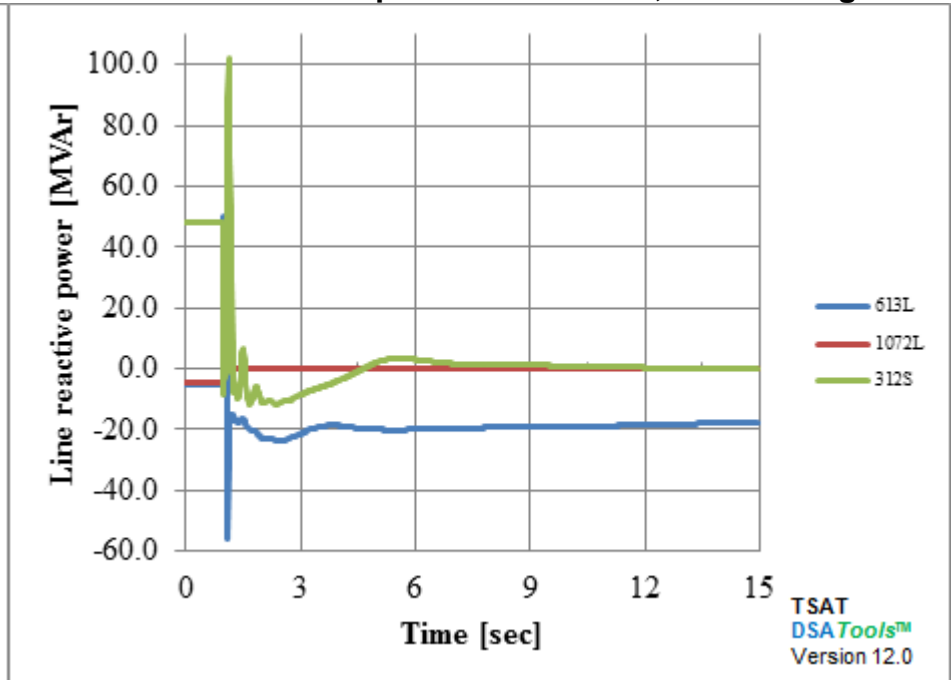
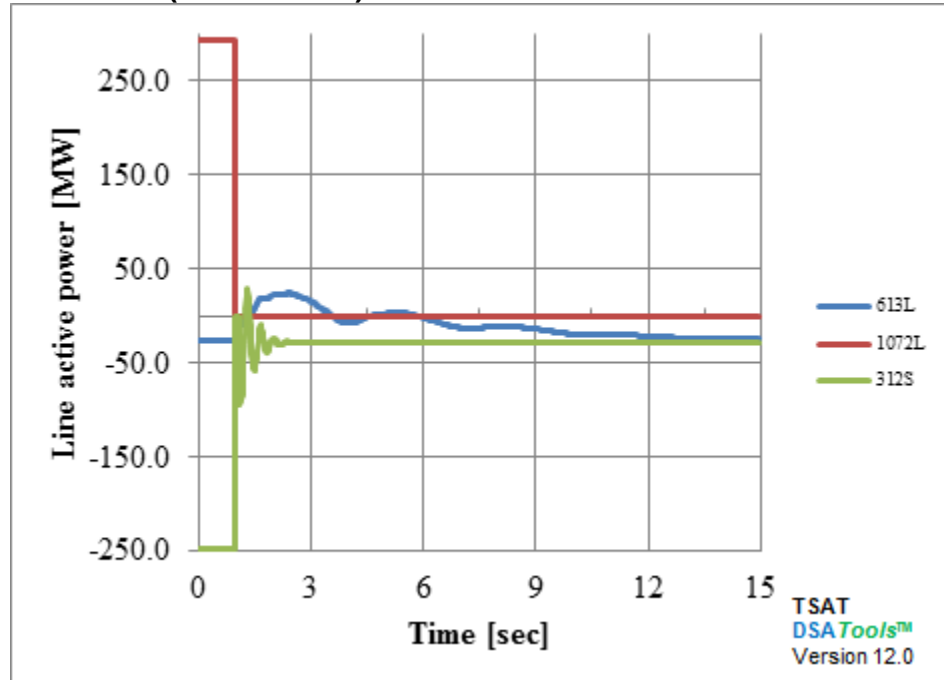
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



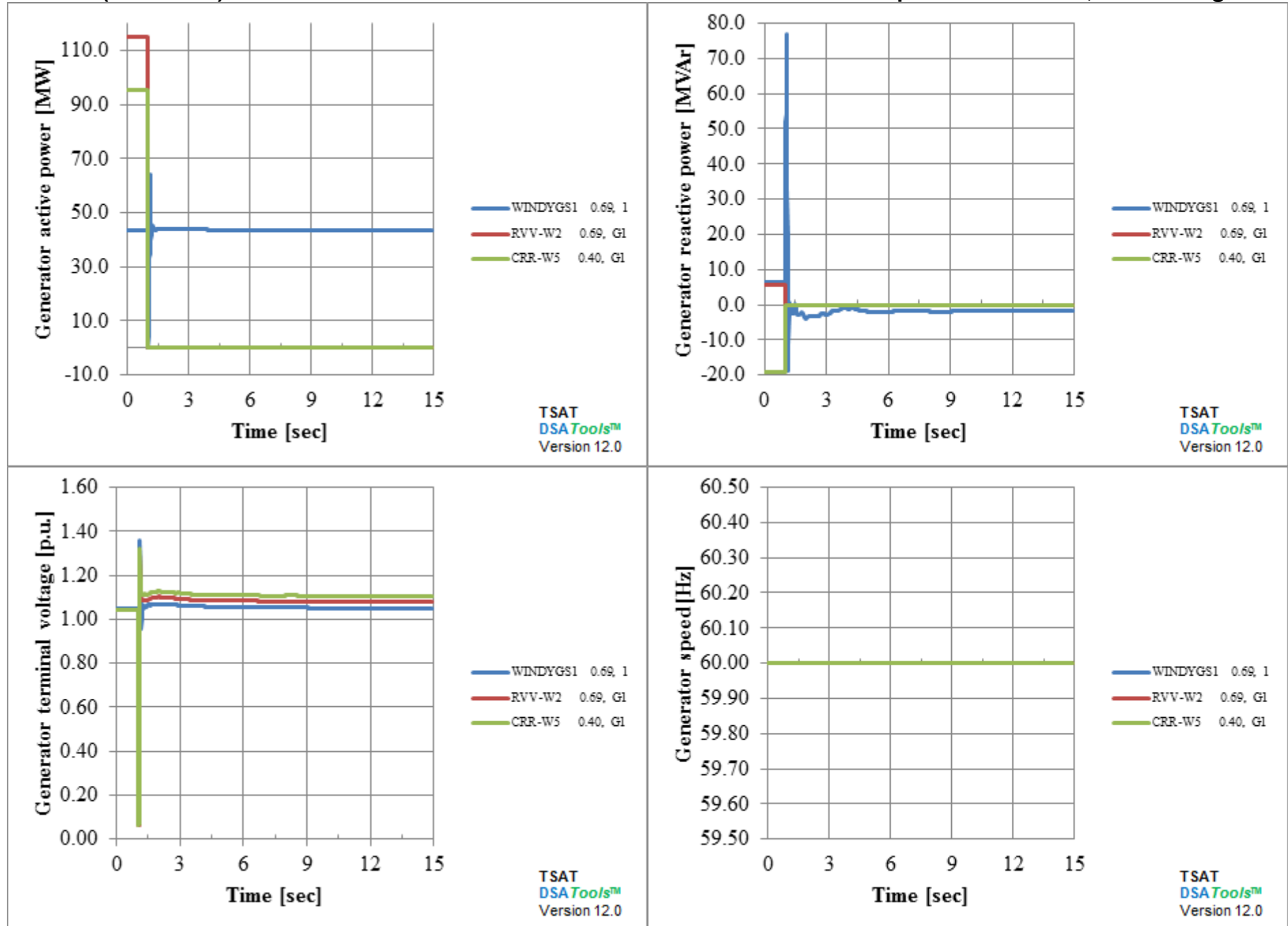
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



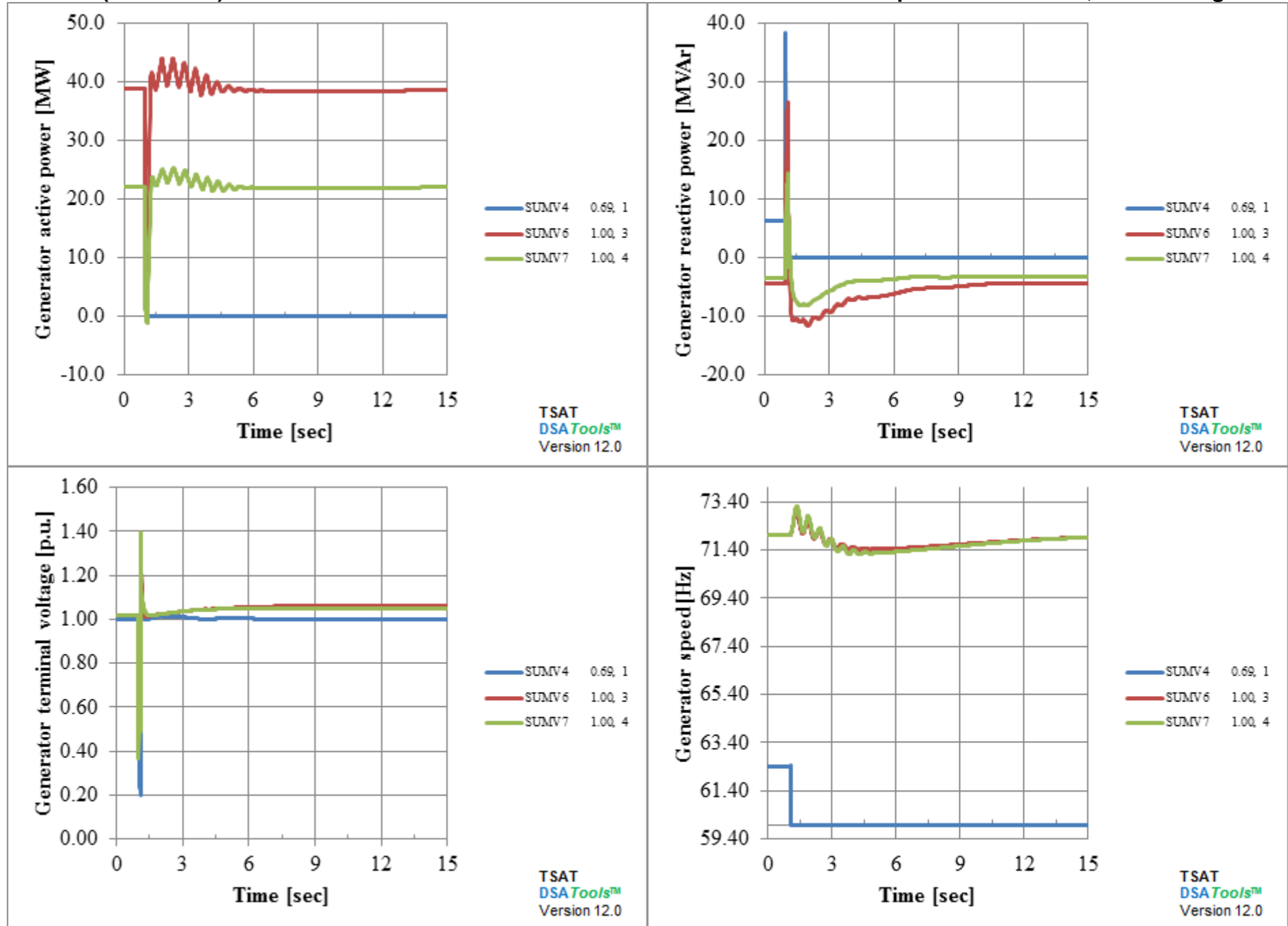
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



6 -- 956L (59S - 103S) NEAR 59S

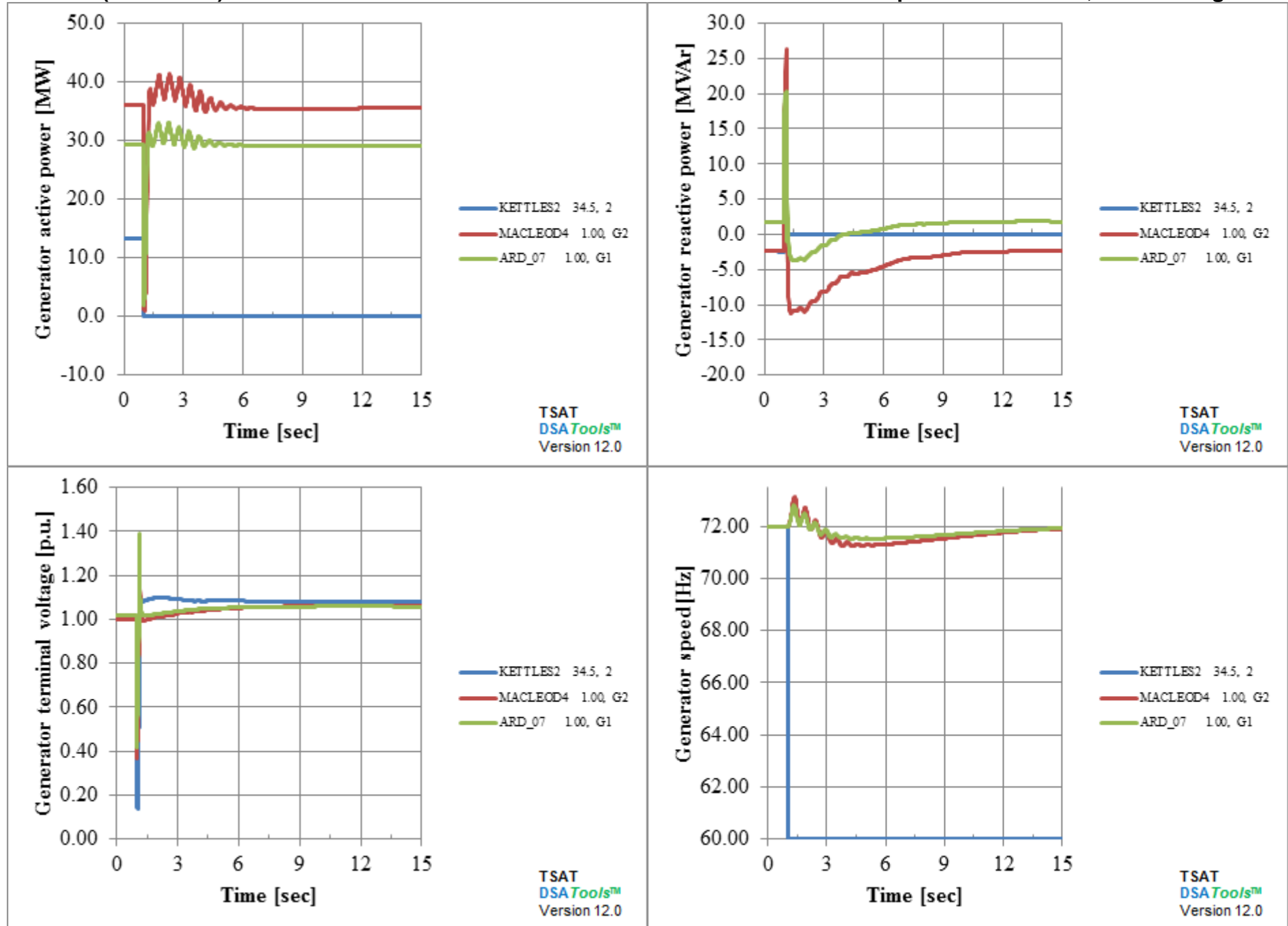
Proposed Connection, Summer Light 2014





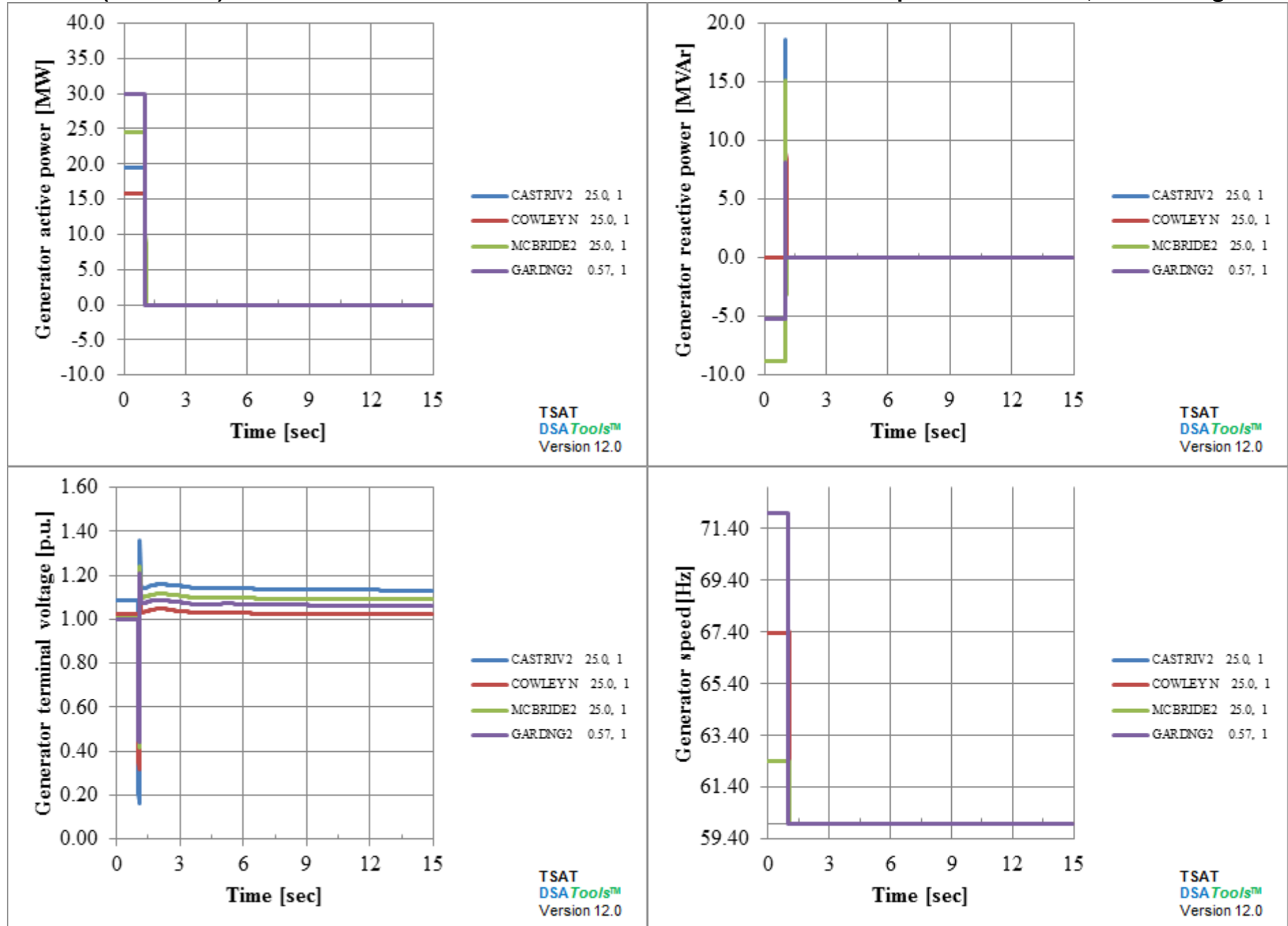
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



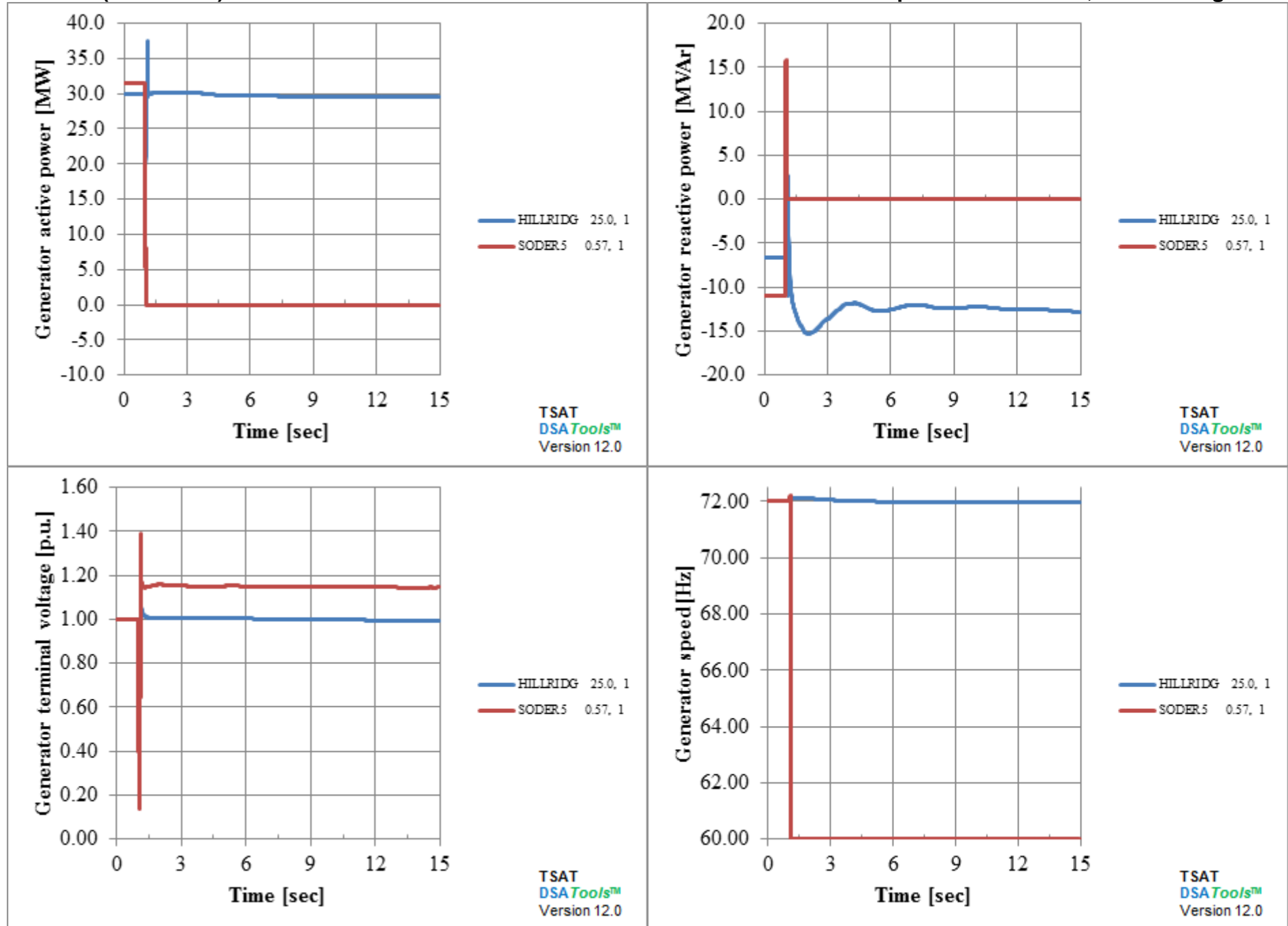
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



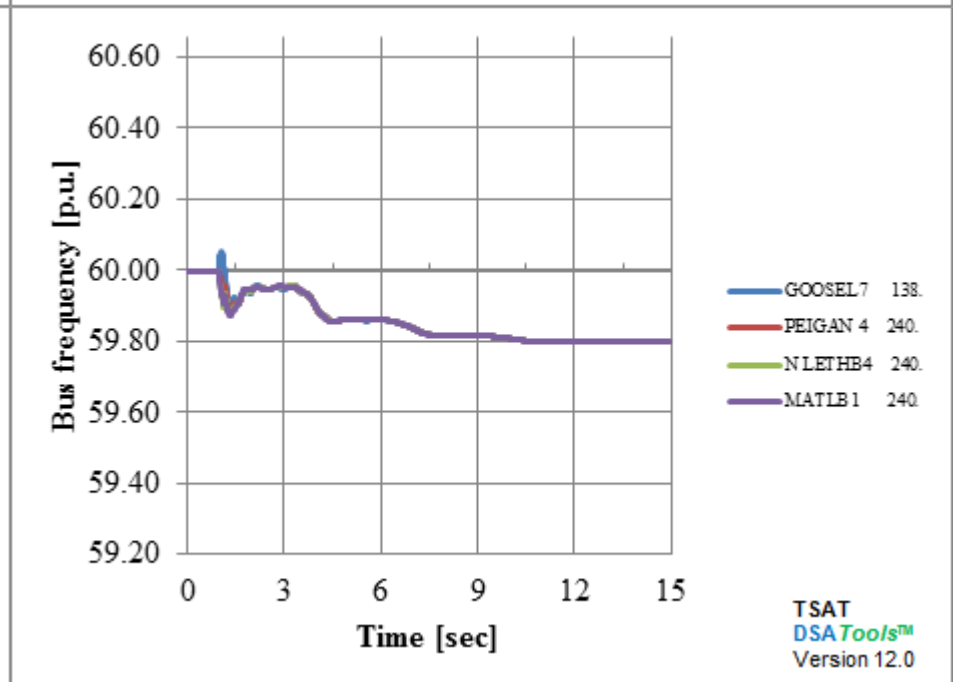
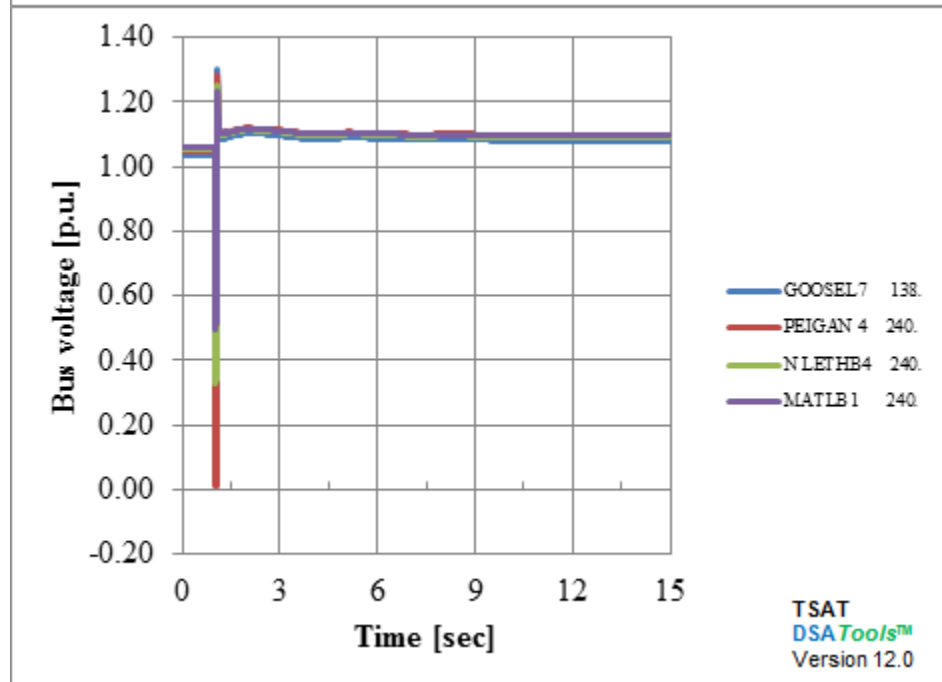
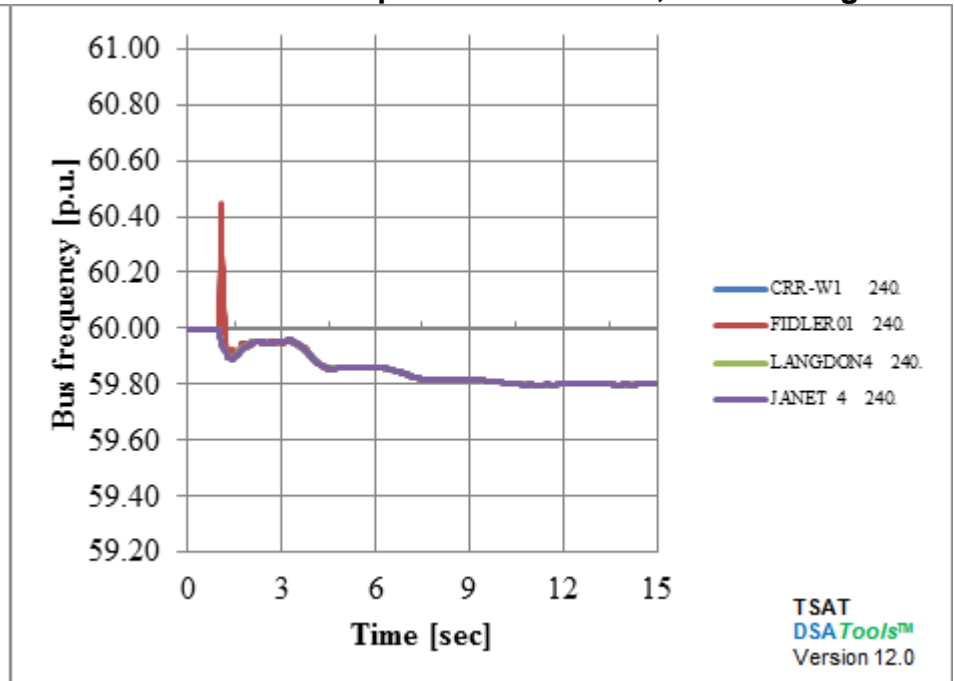
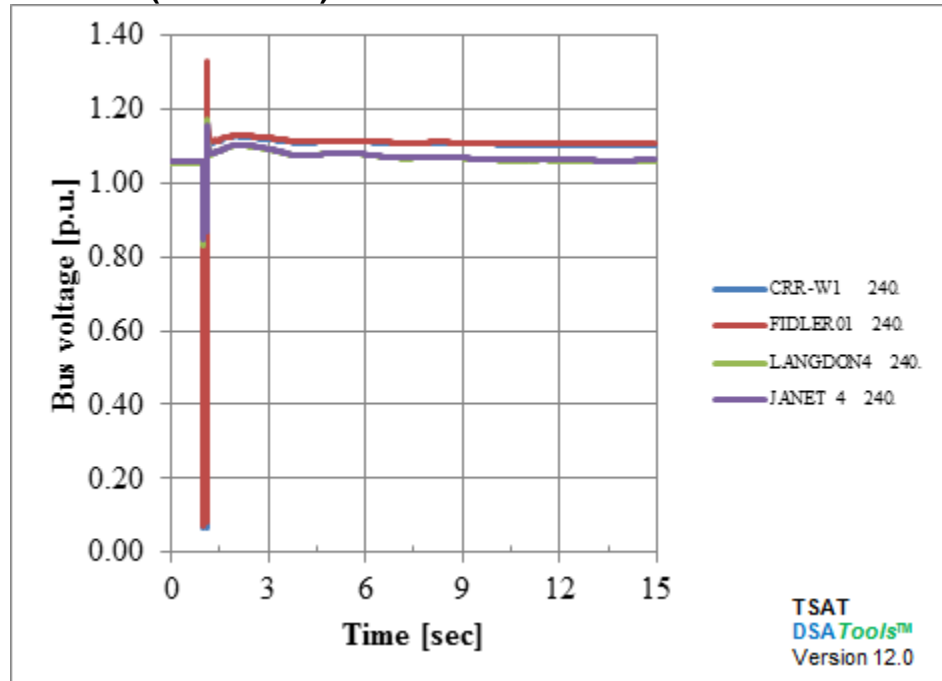
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



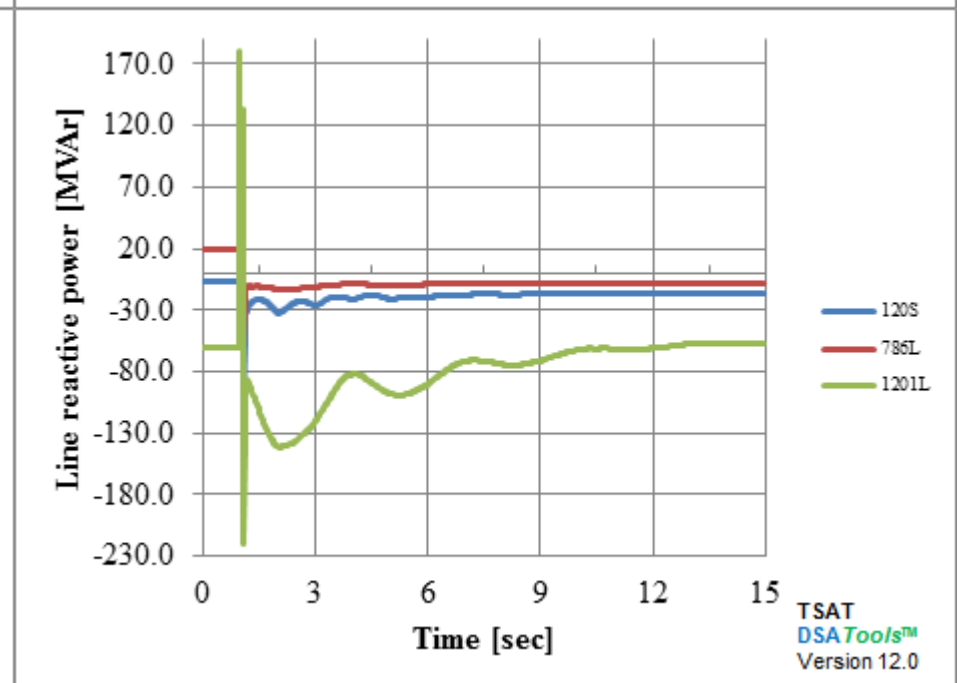
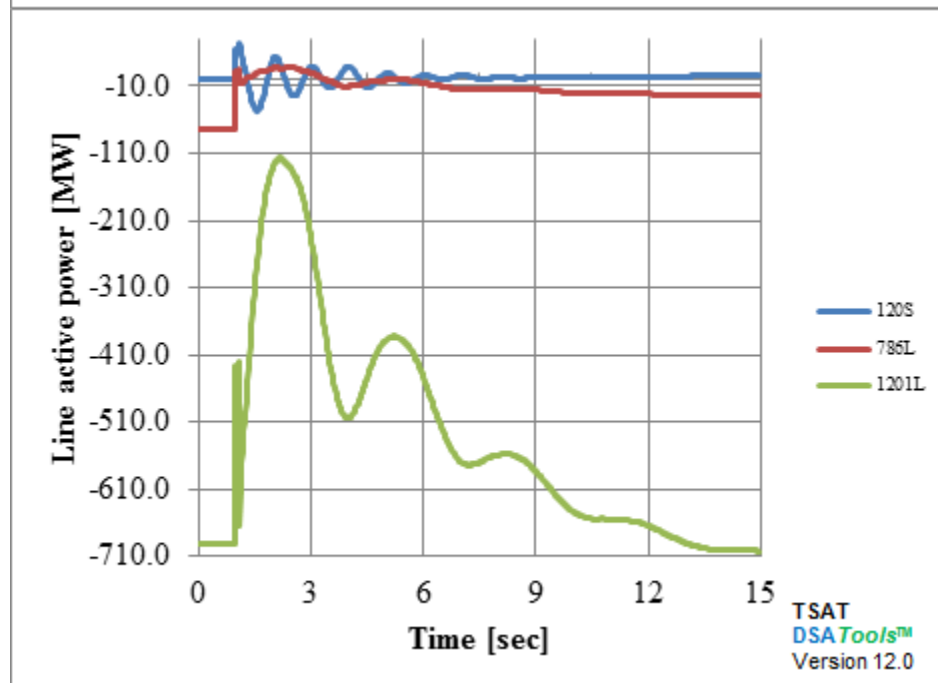
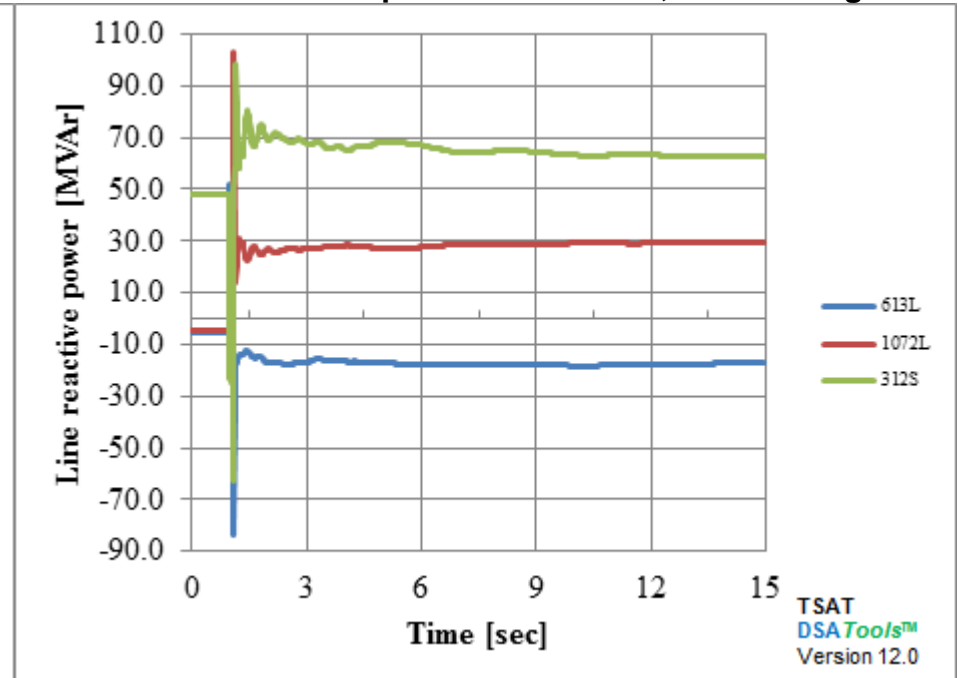
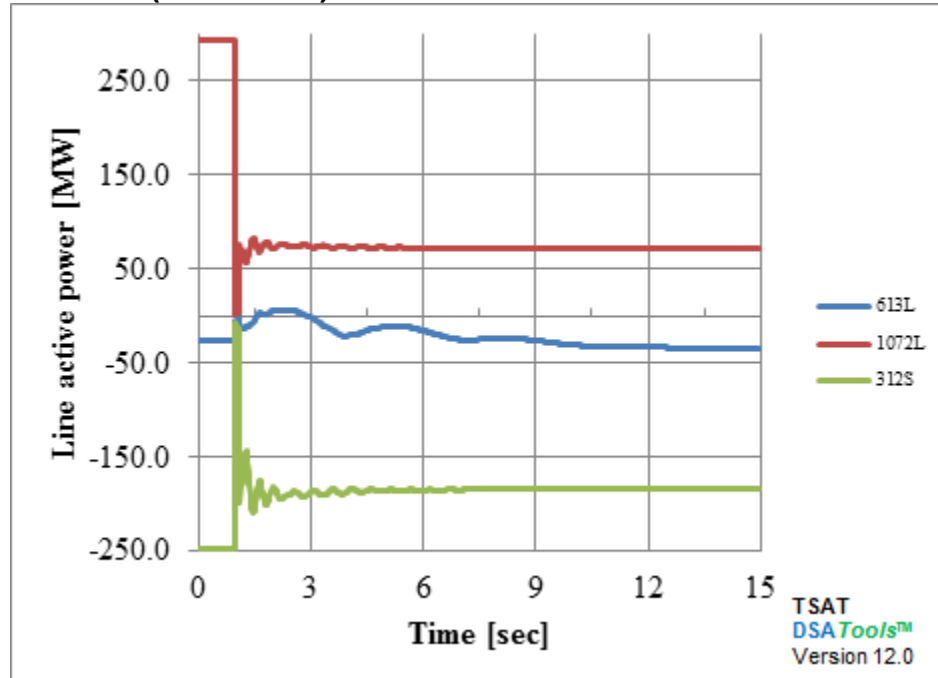
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



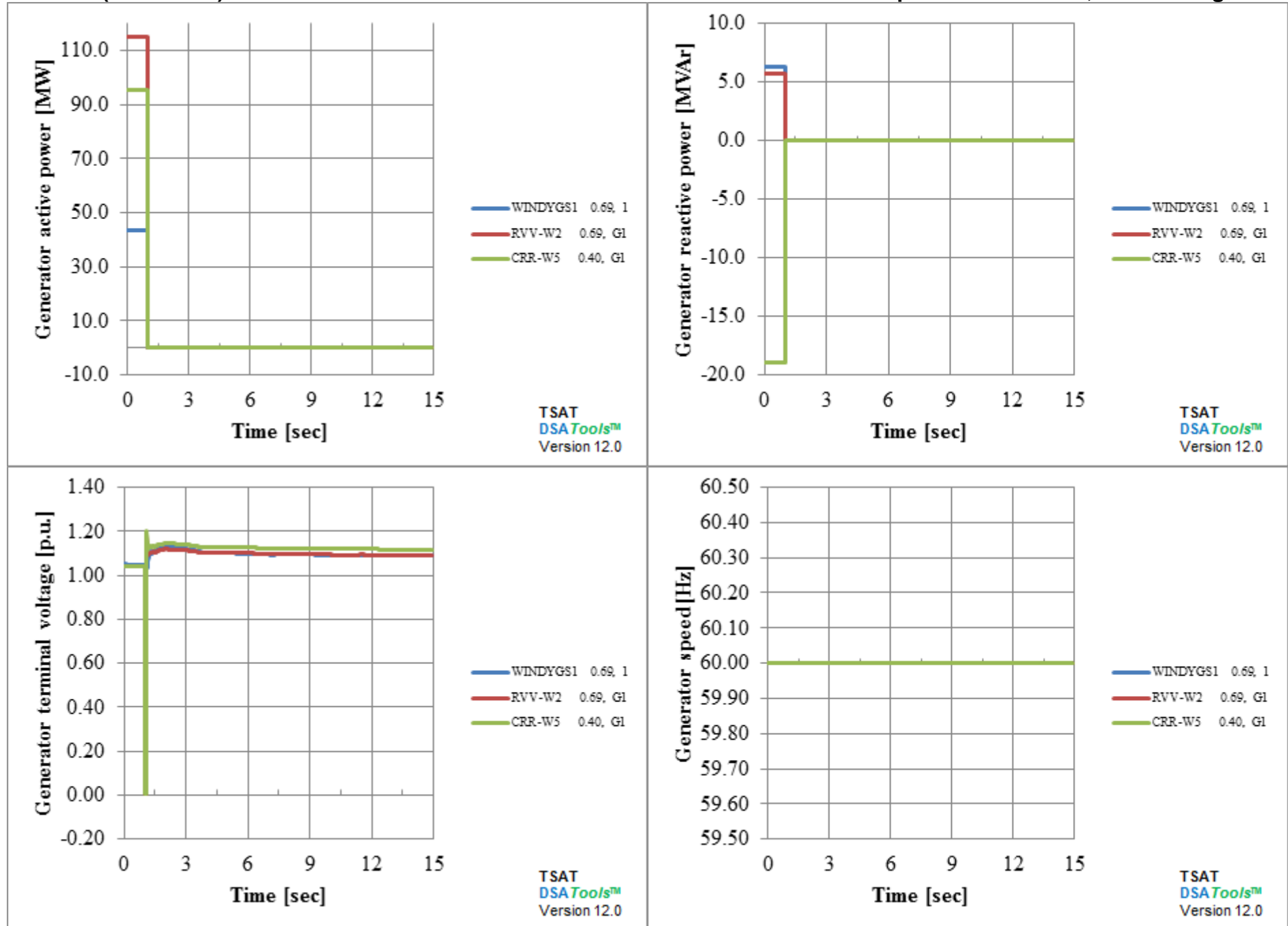
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



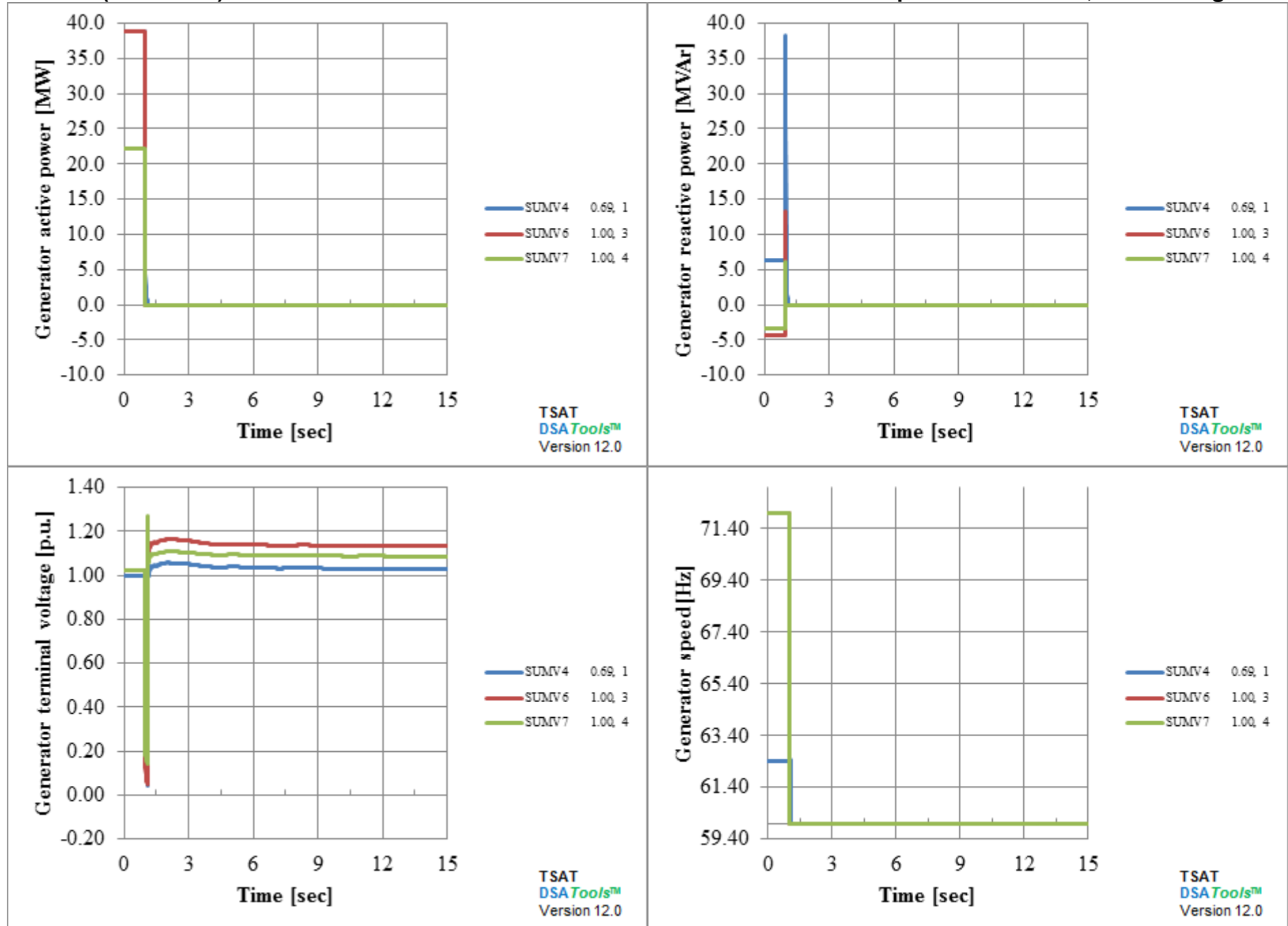
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



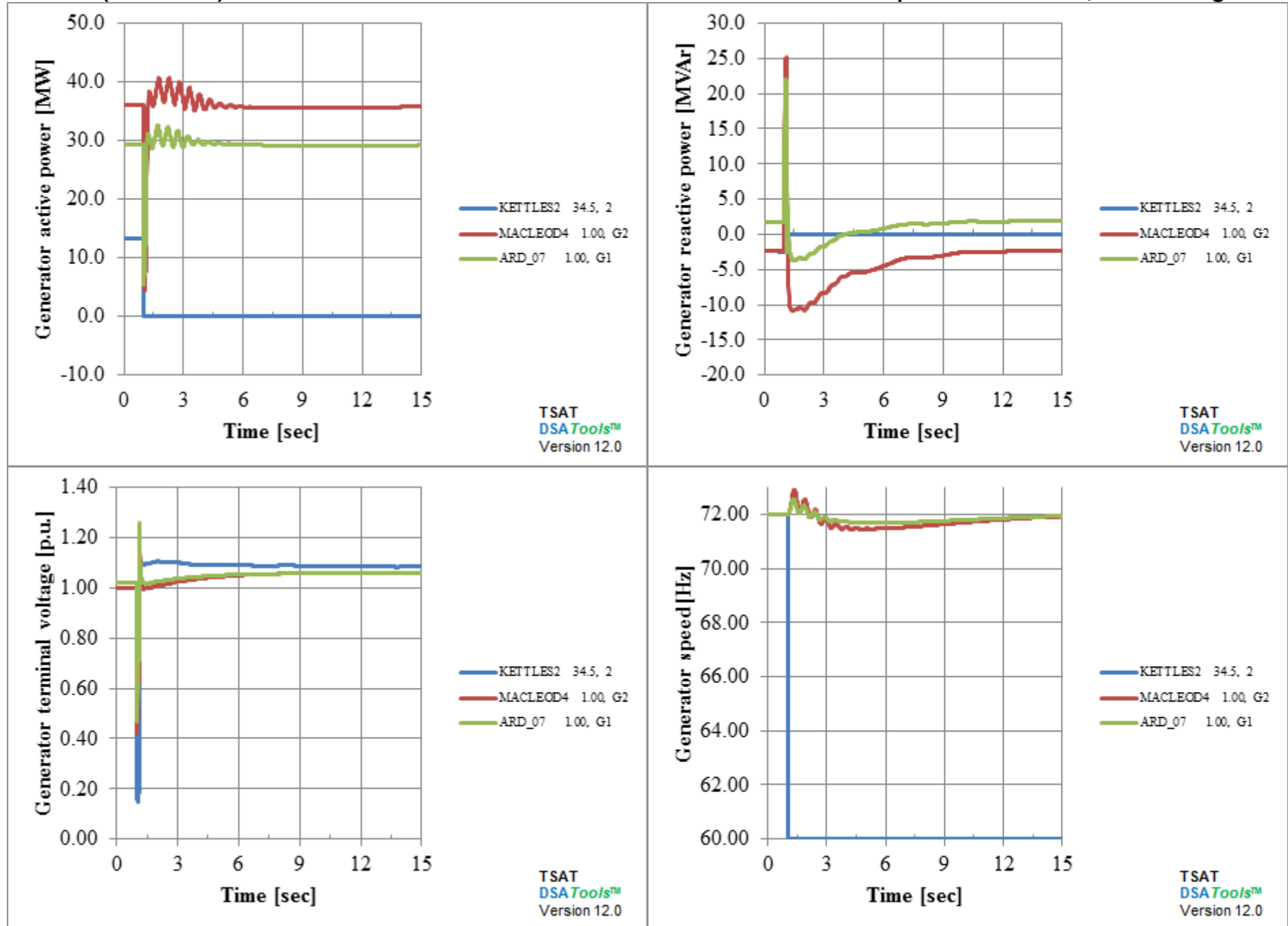
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



7 -- 956L (59S - 103S) NEAR 103S

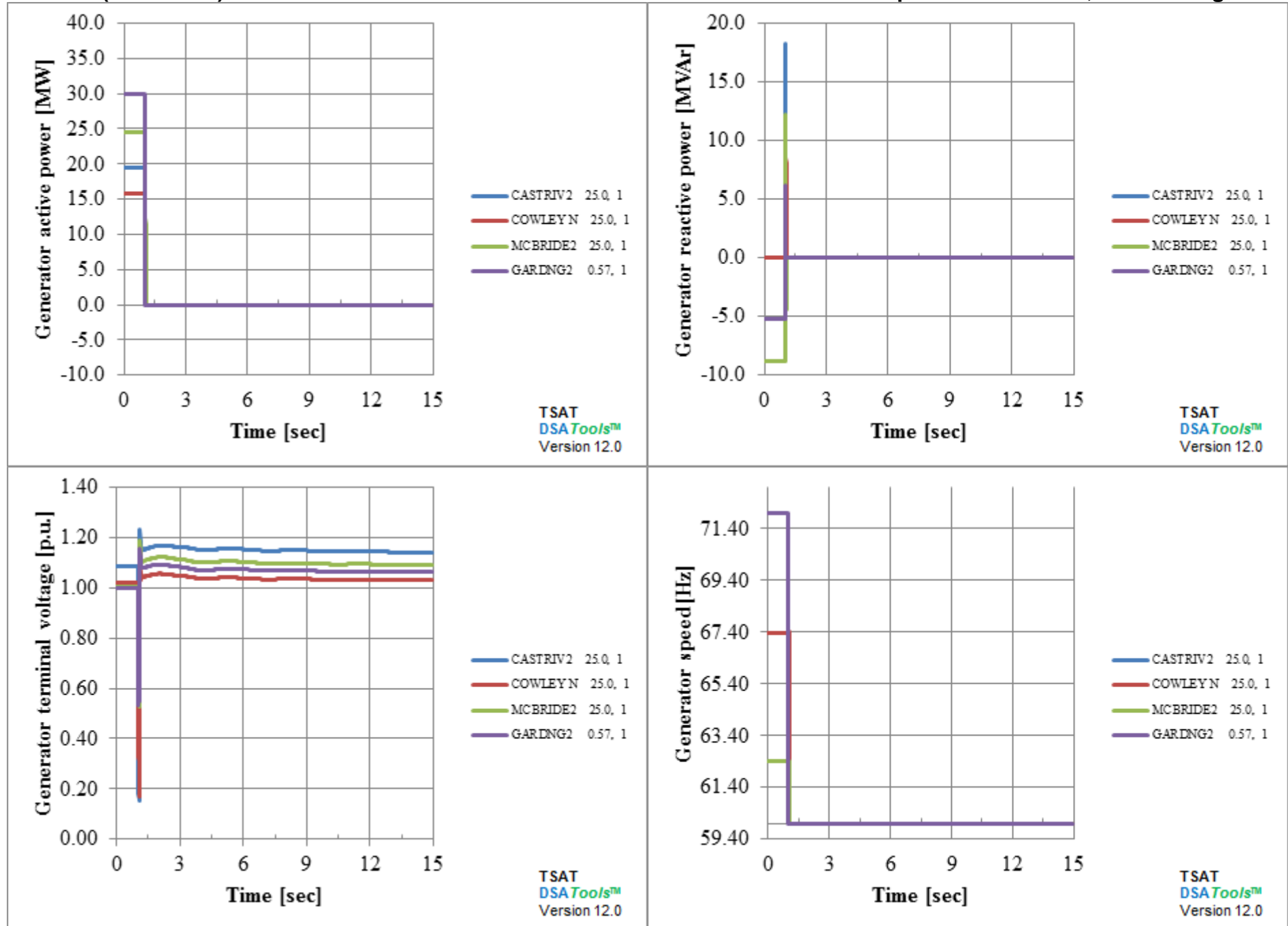
Proposed Connection, Summer Light 2014





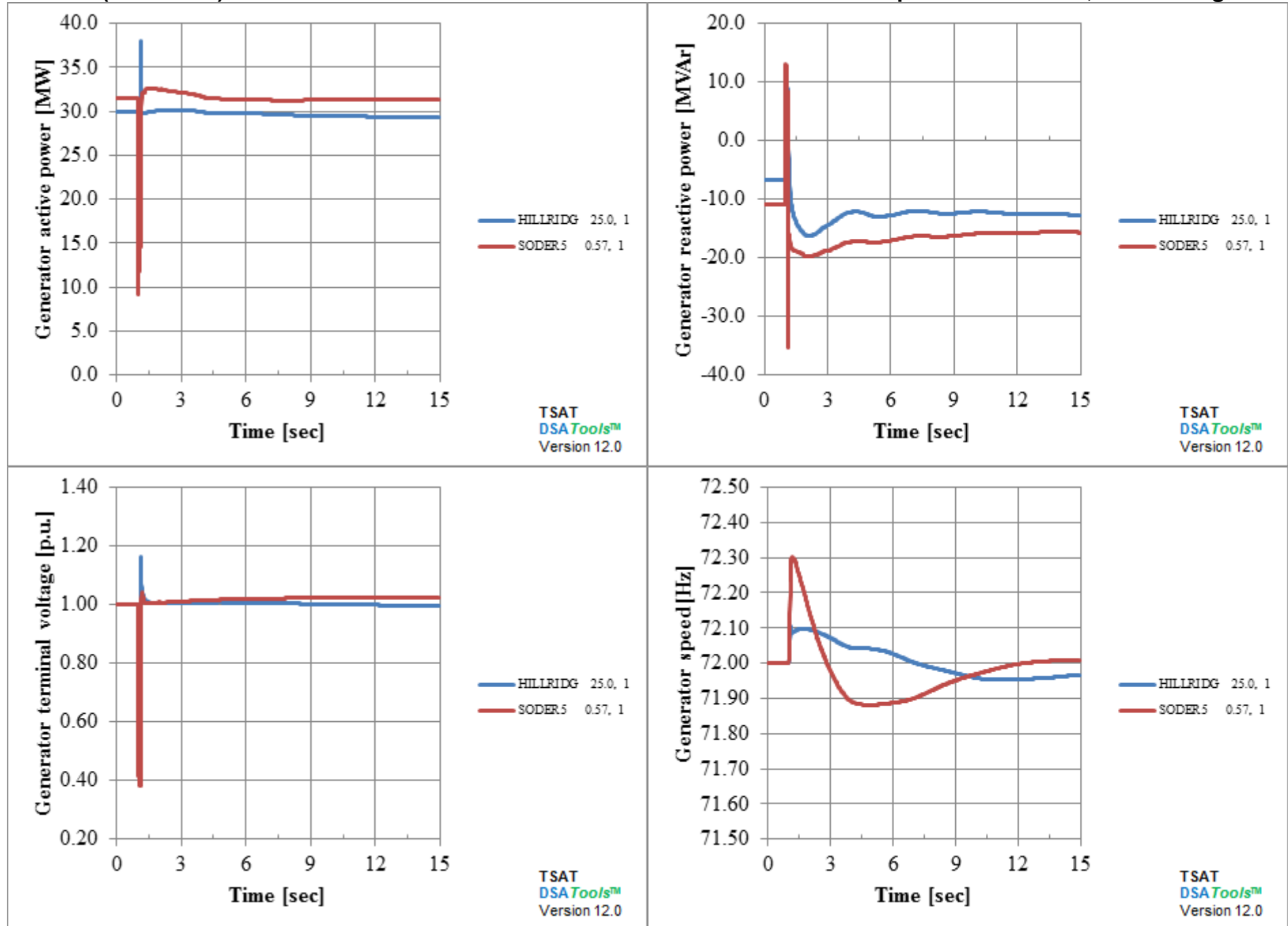
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



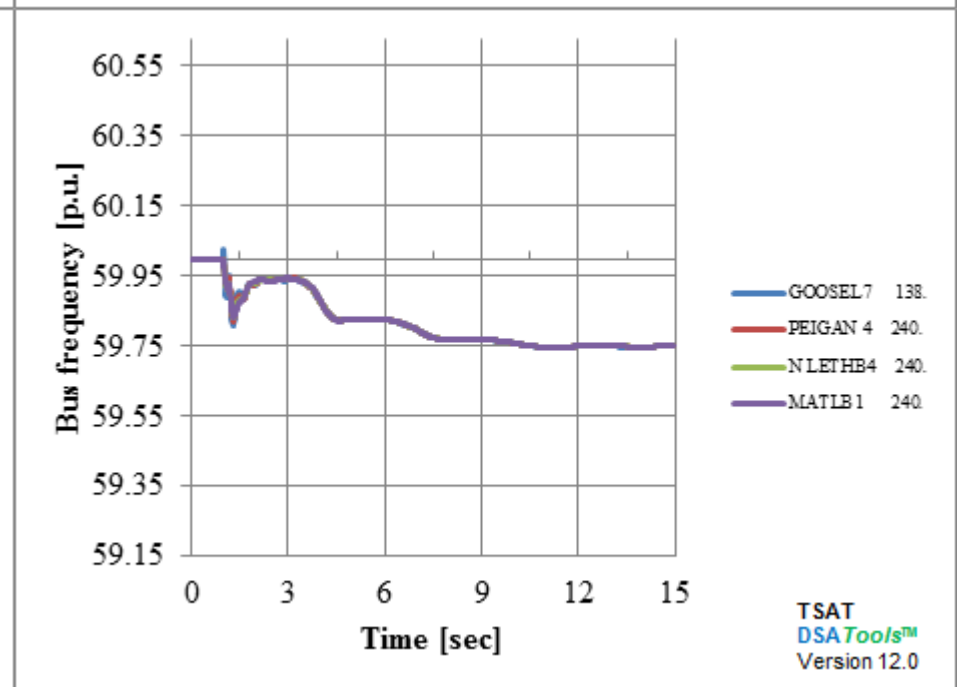
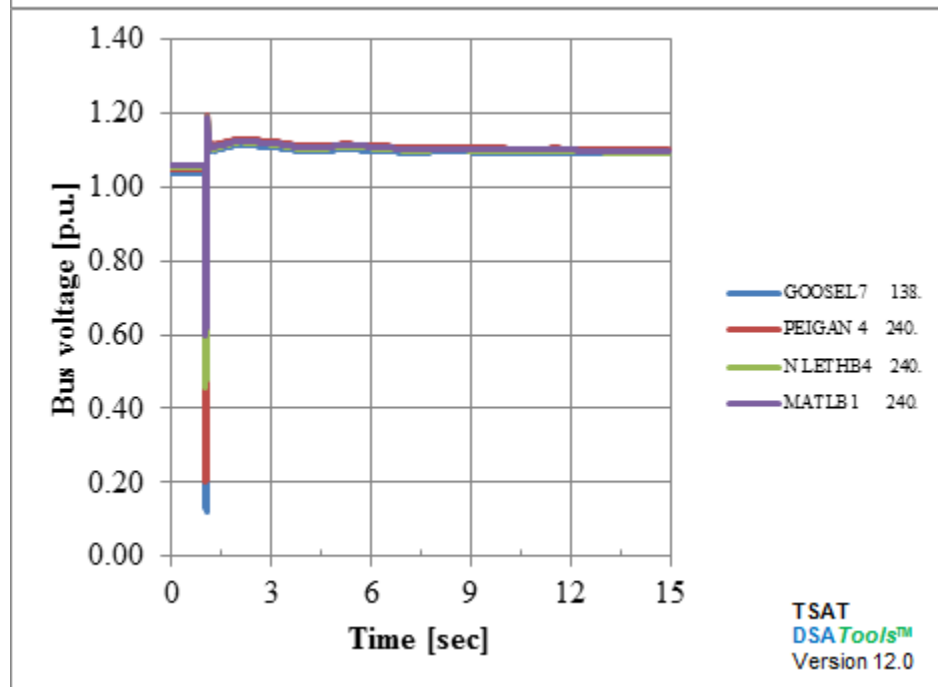
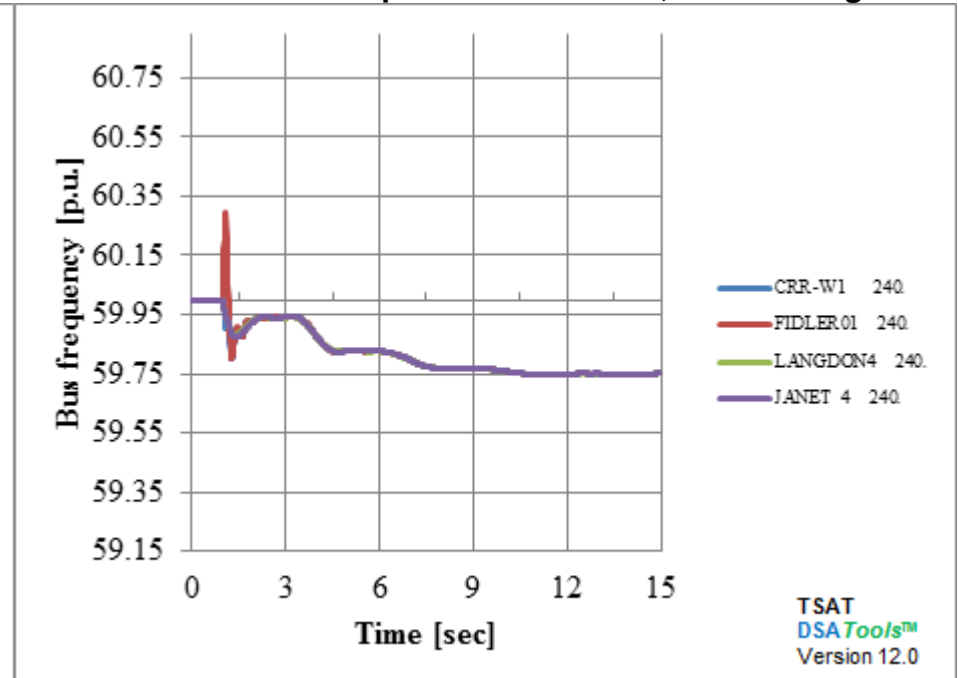
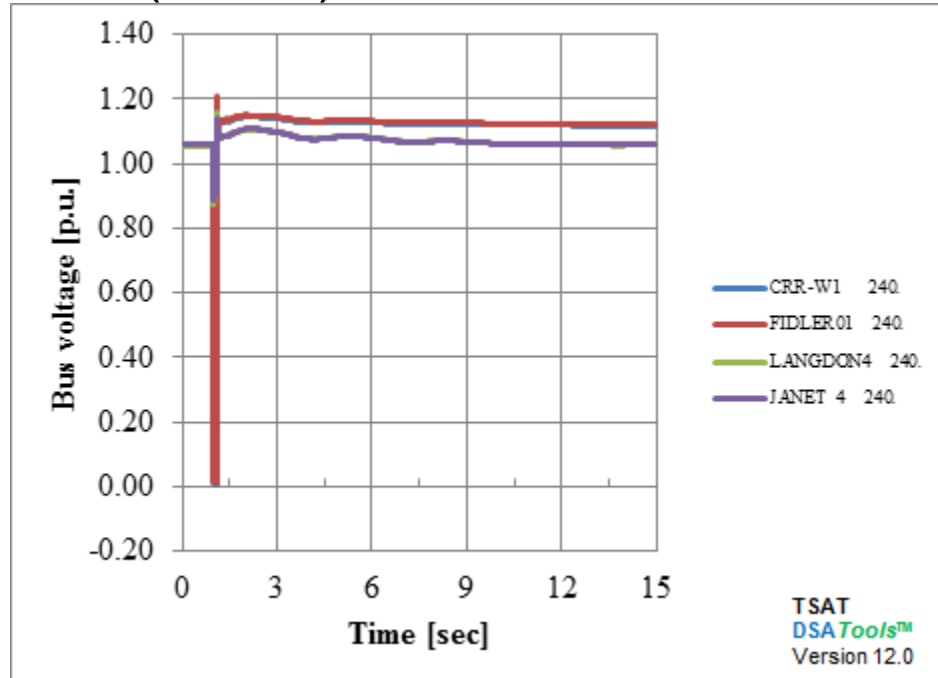
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



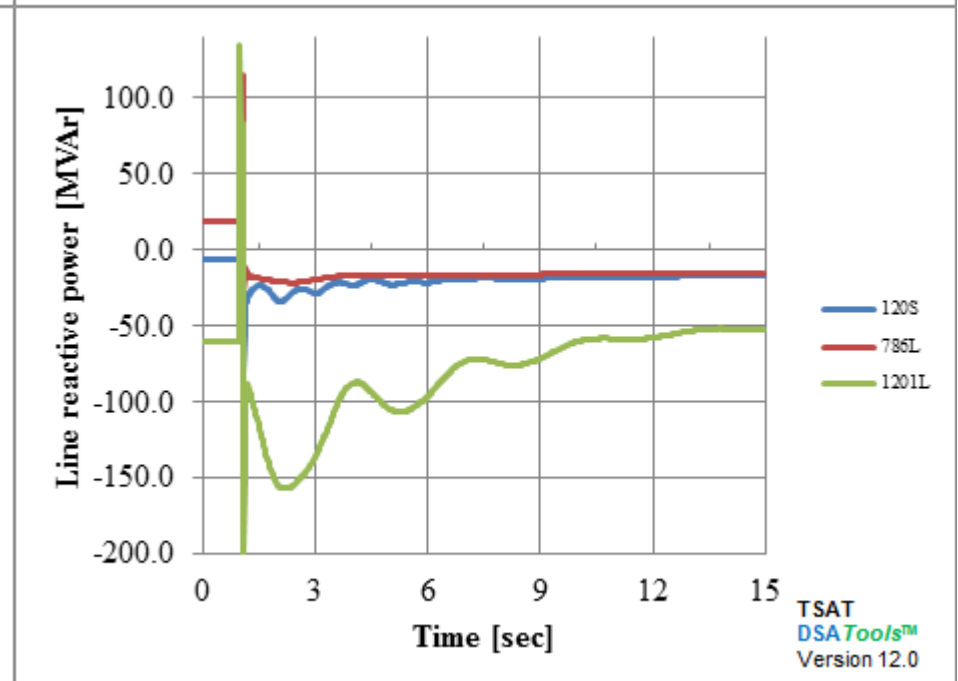
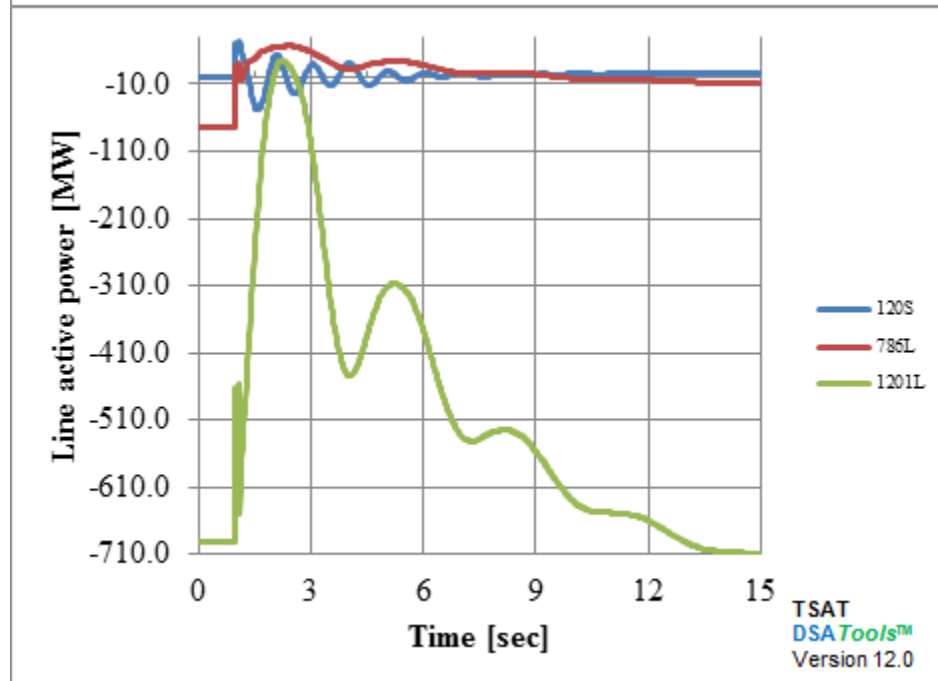
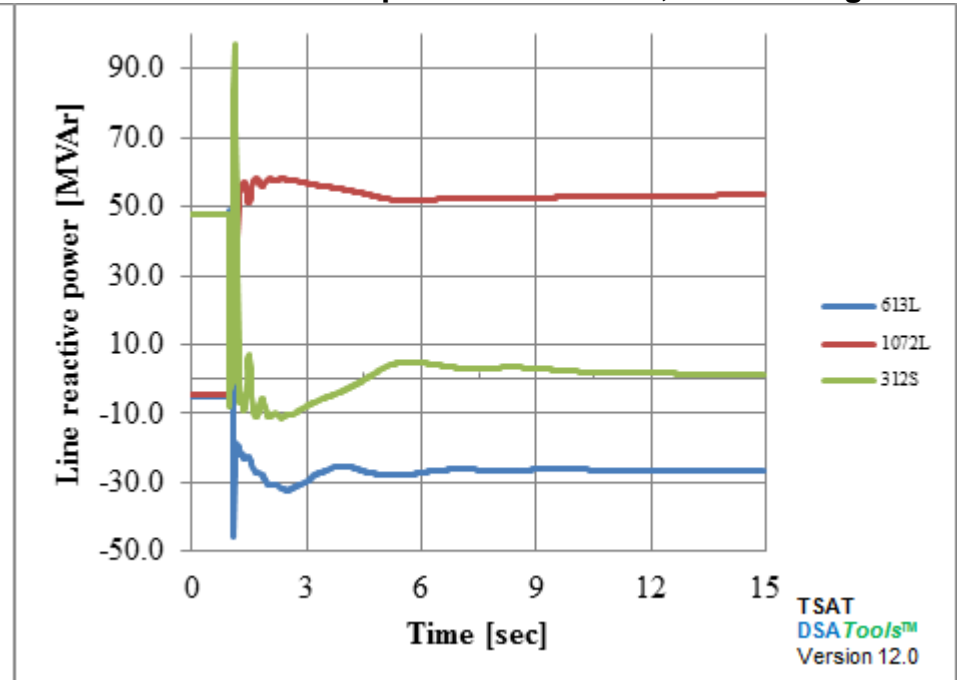
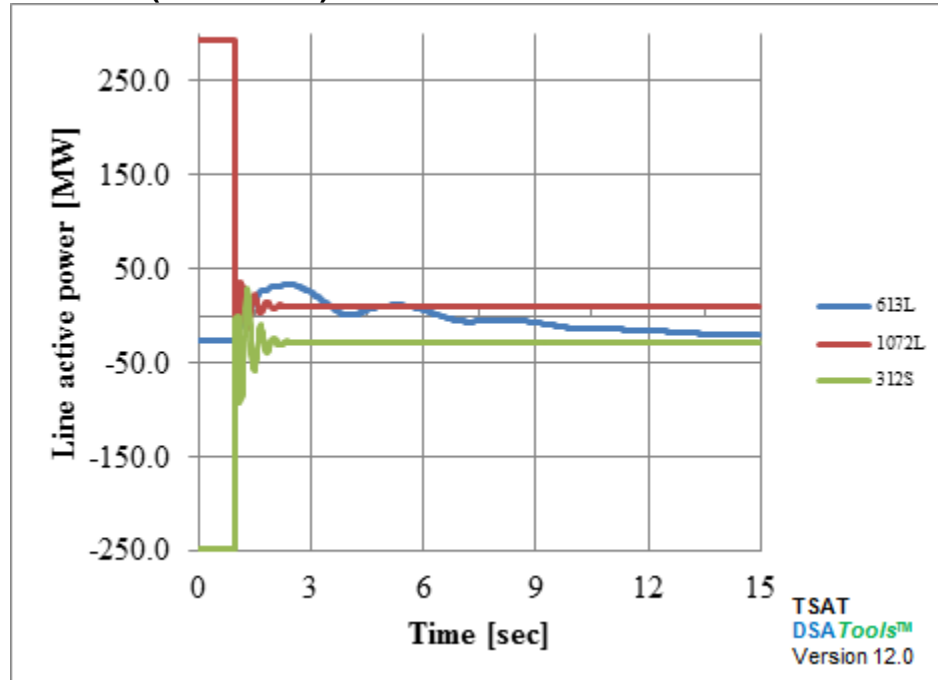
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



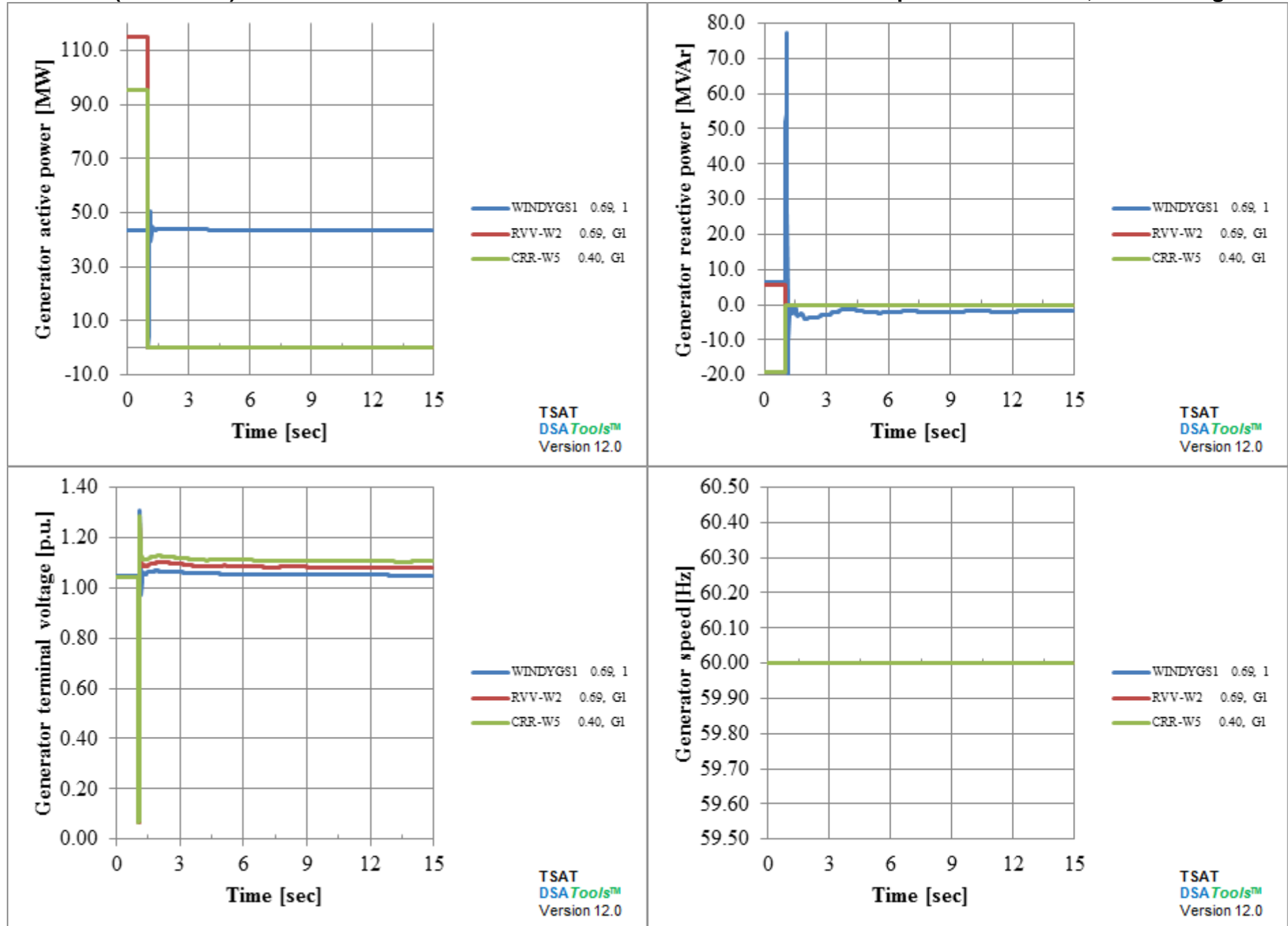
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



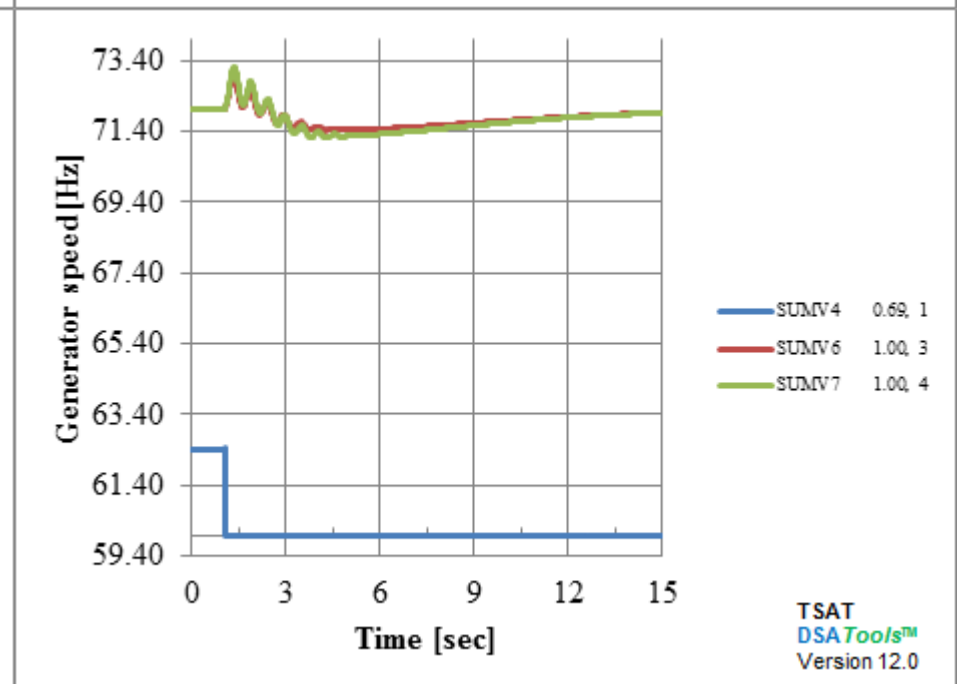
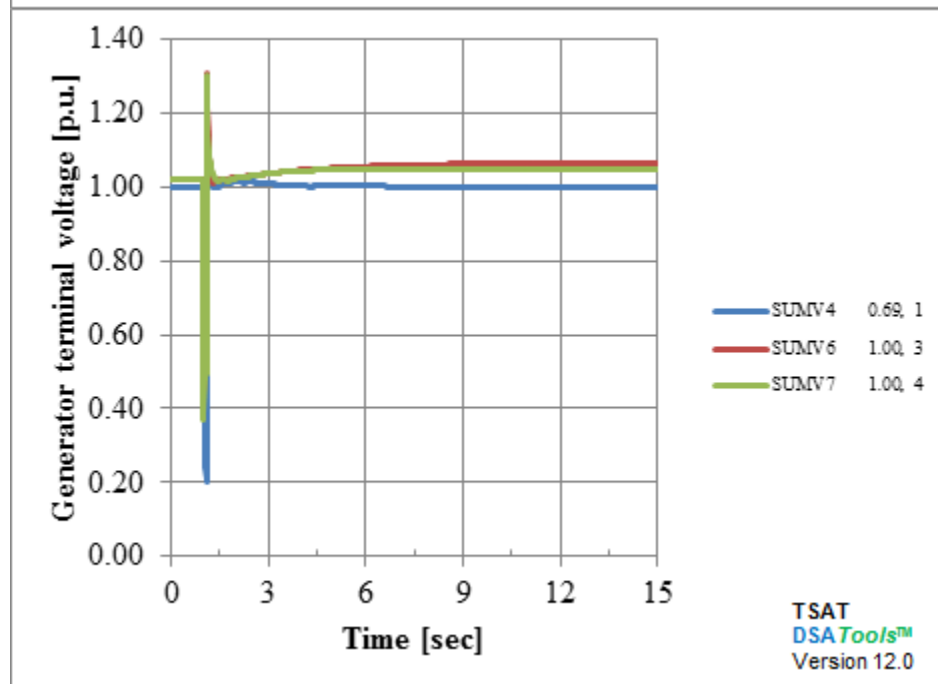
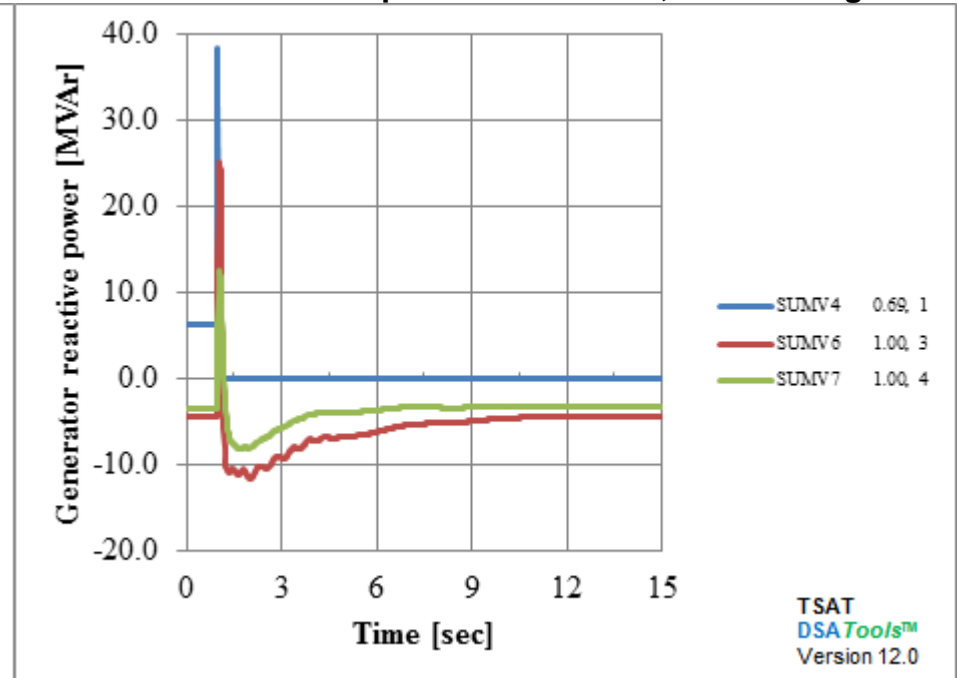
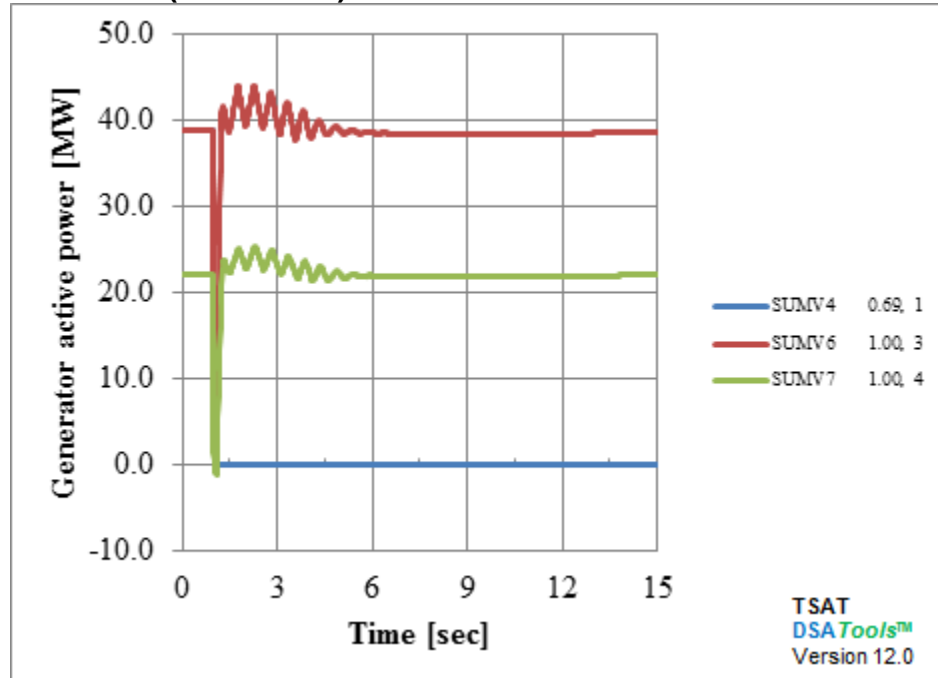
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Light 2014



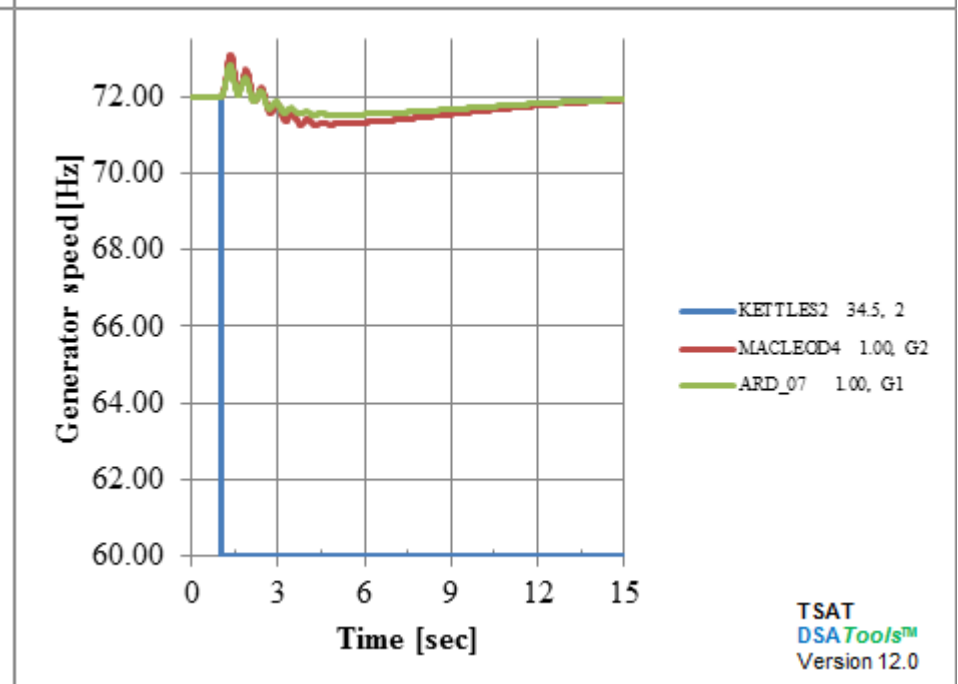
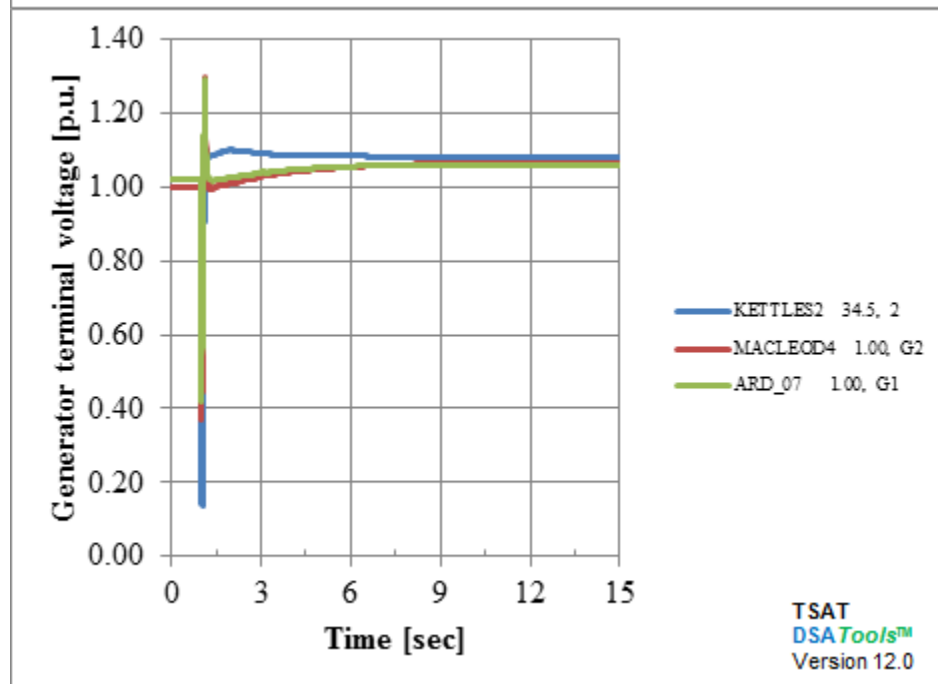
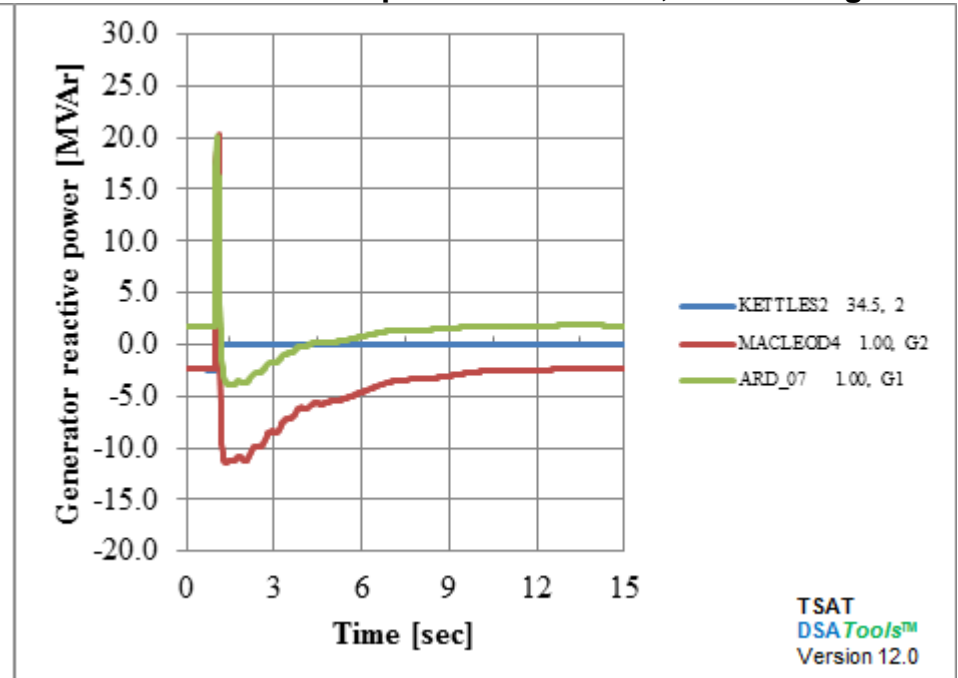
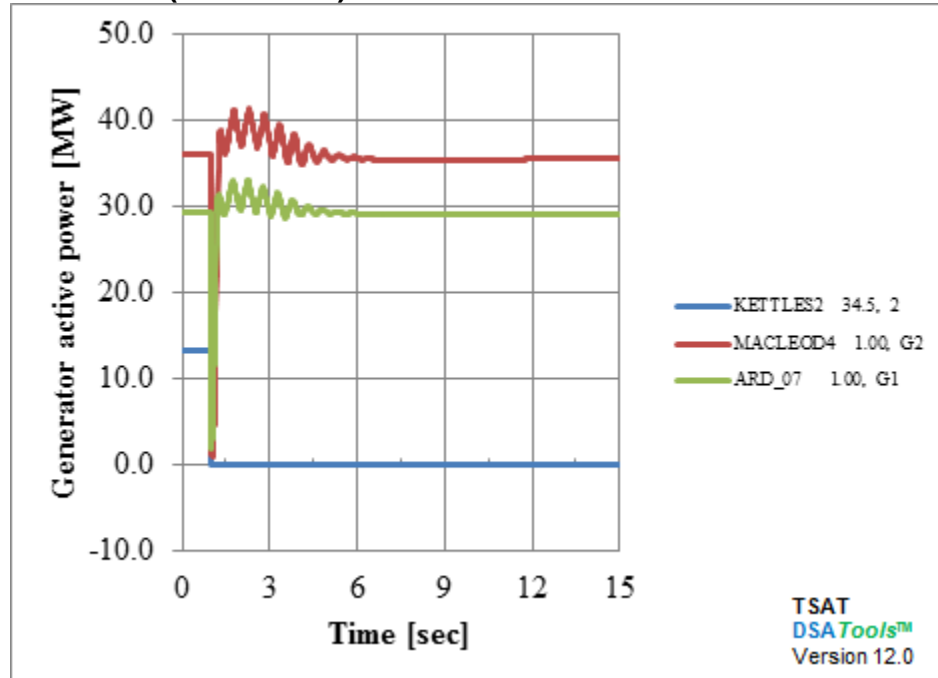
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Light 2014



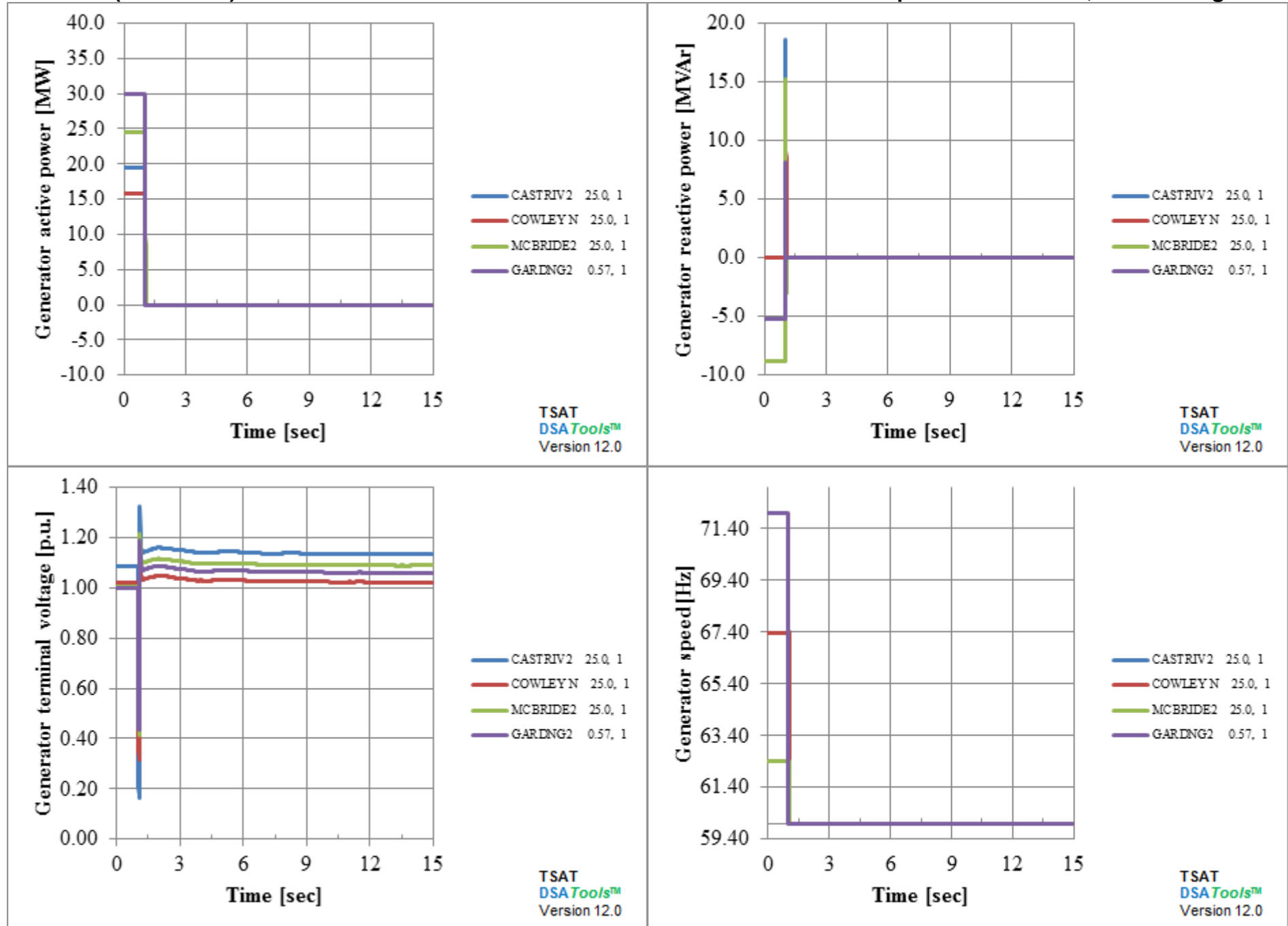
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Light 2014



8 -- 1084L (59S - 246S) NEAR 59S

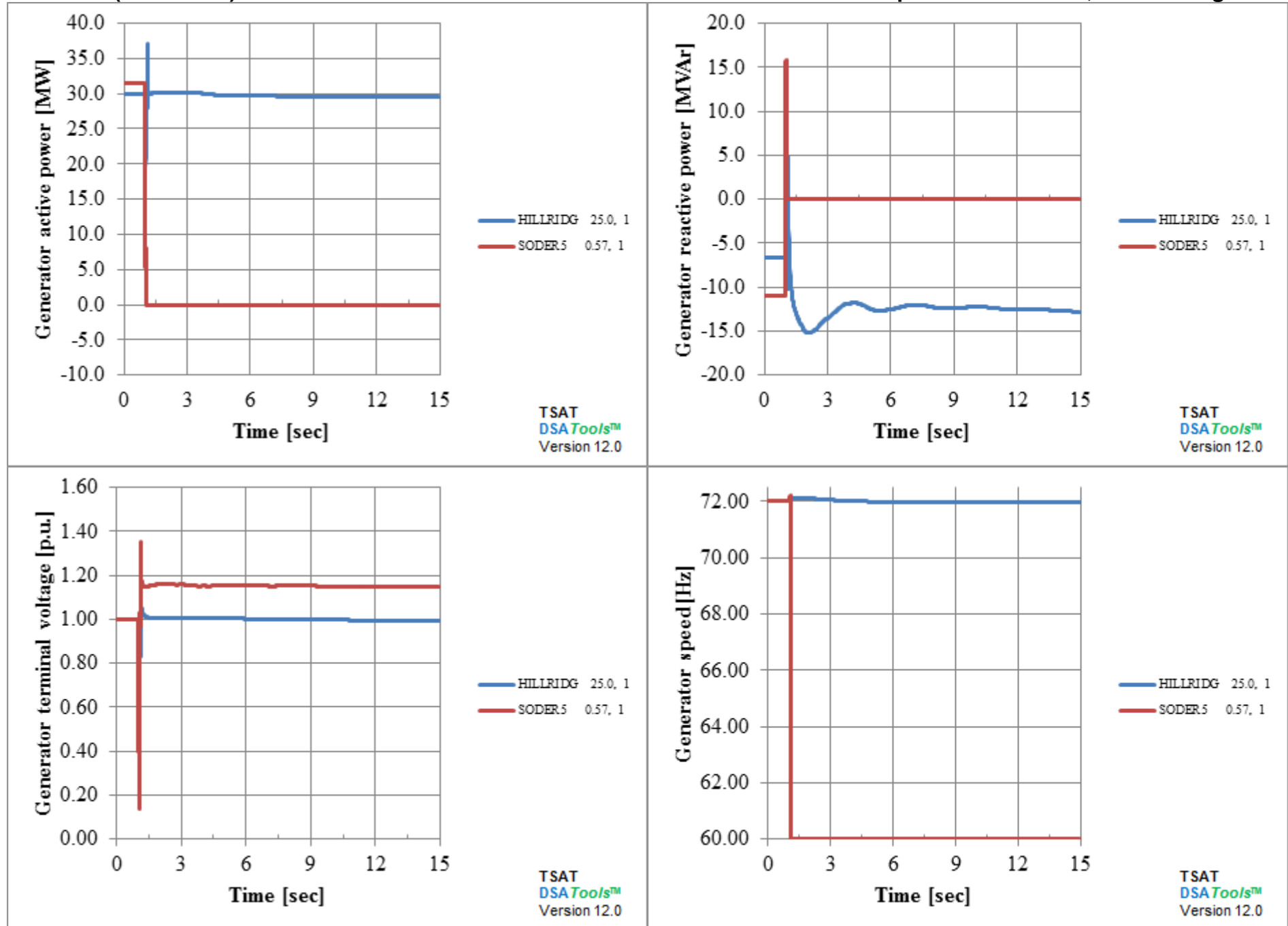
Proposed Connection, Summer Light 2014





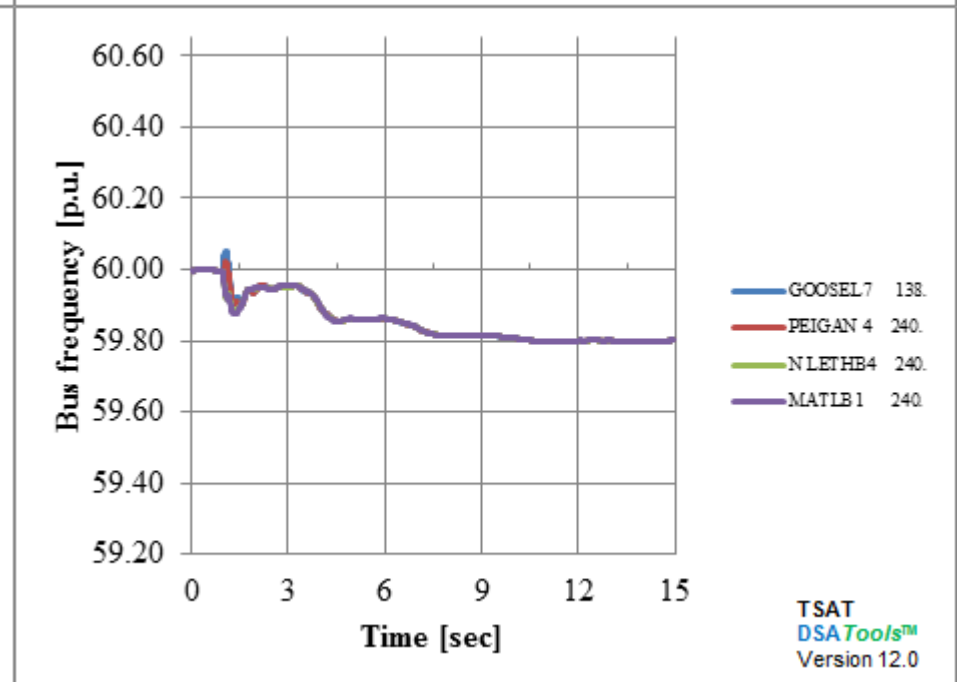
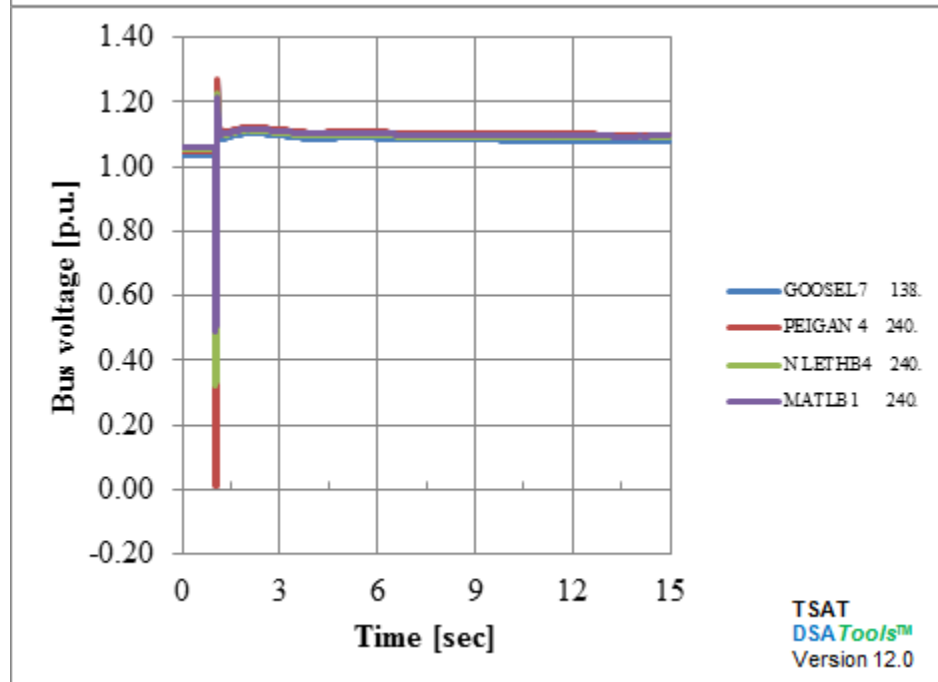
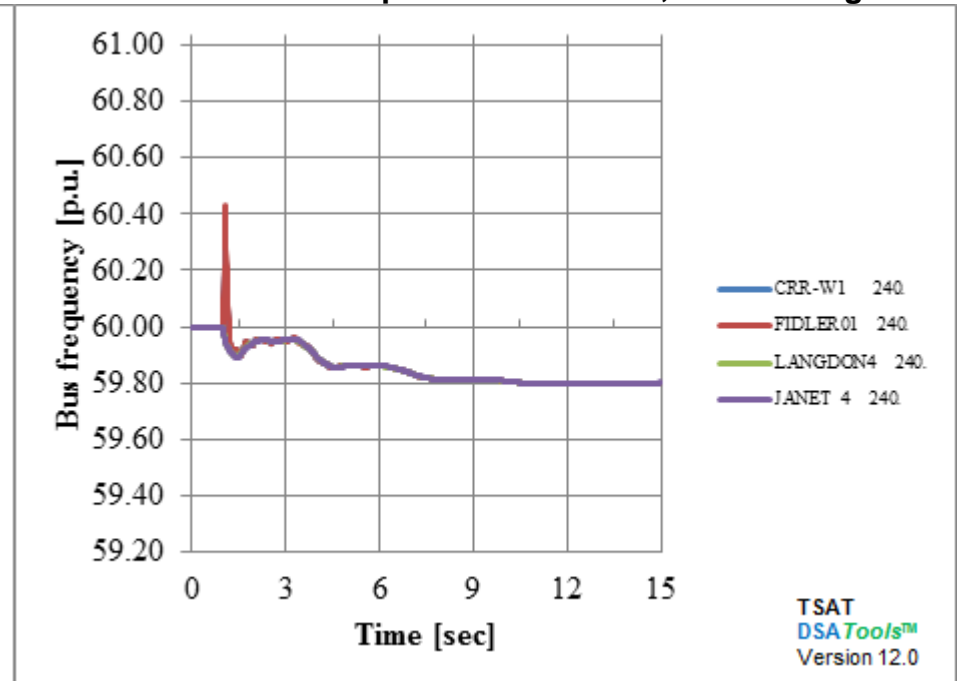
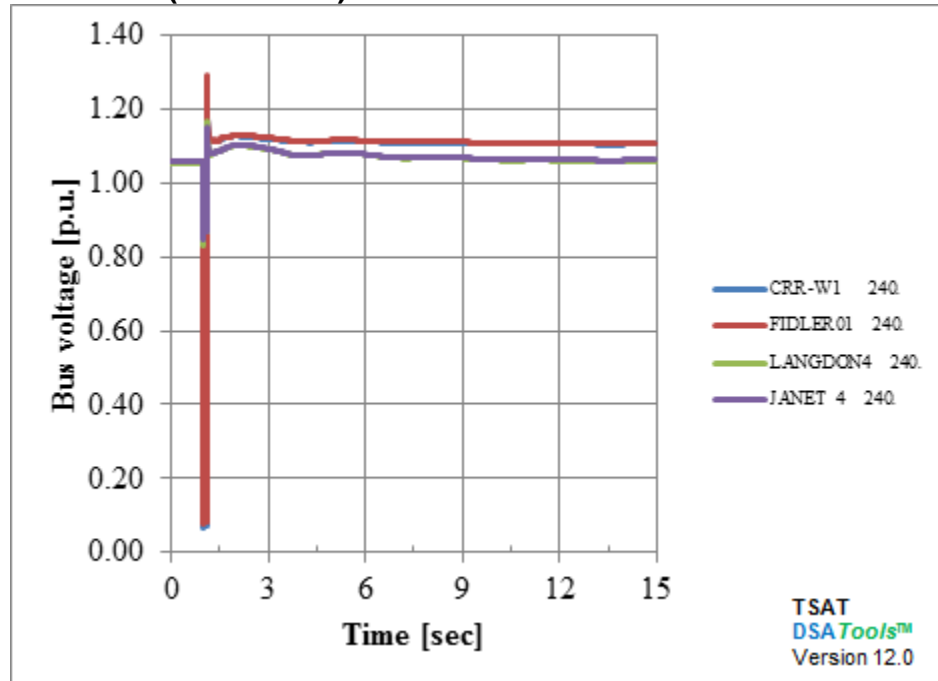
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Light 2014



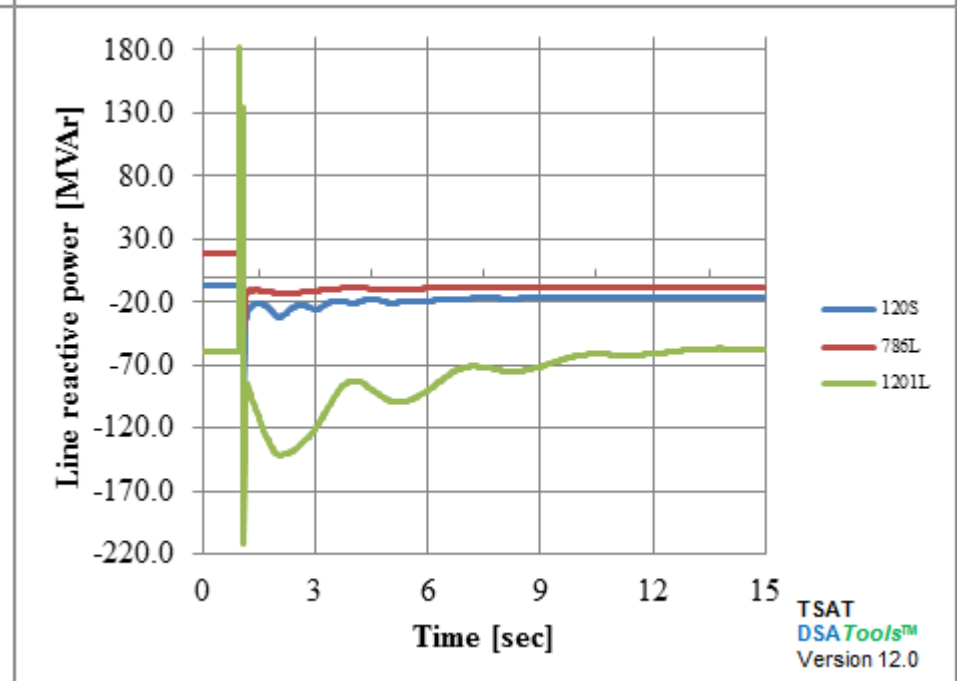
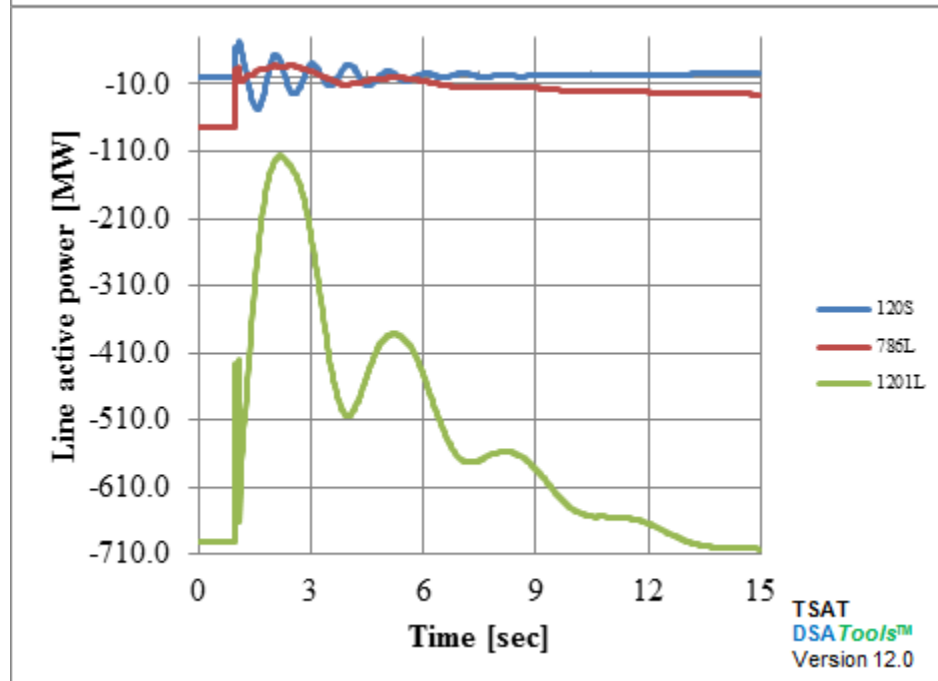
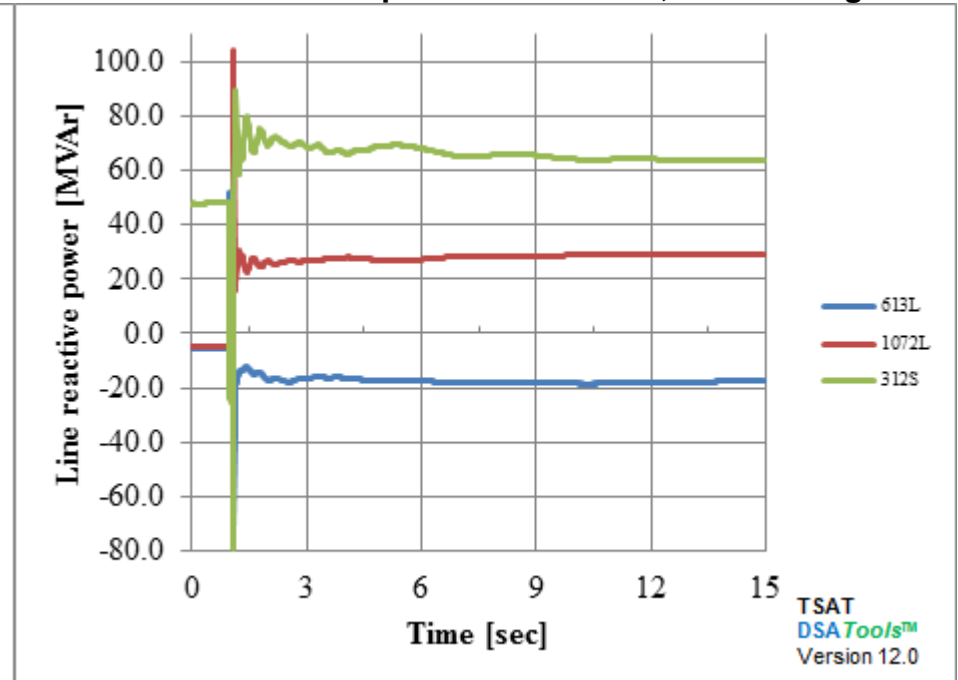
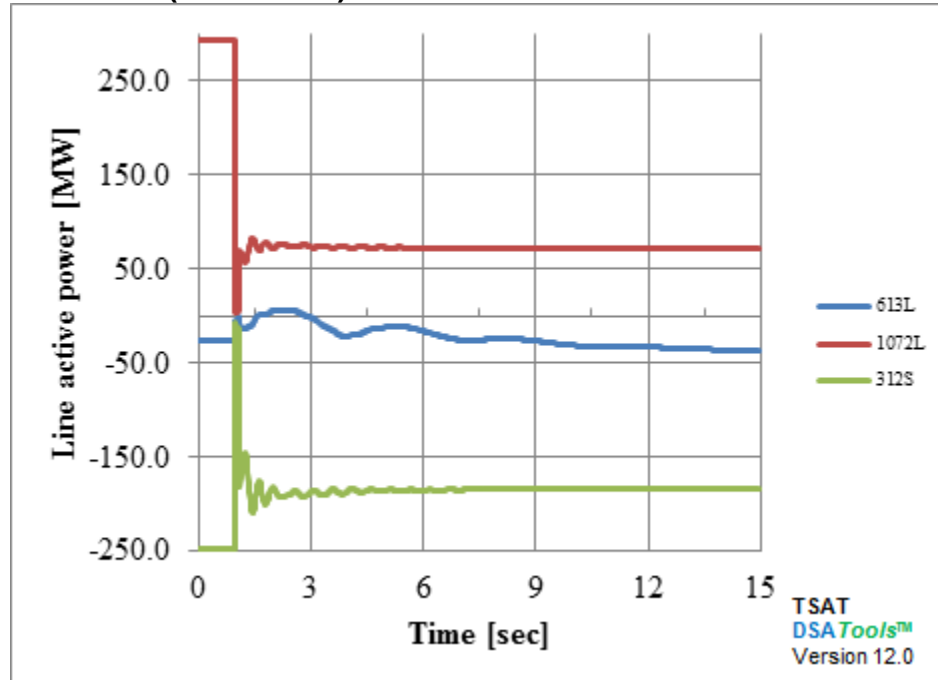
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Light 2014



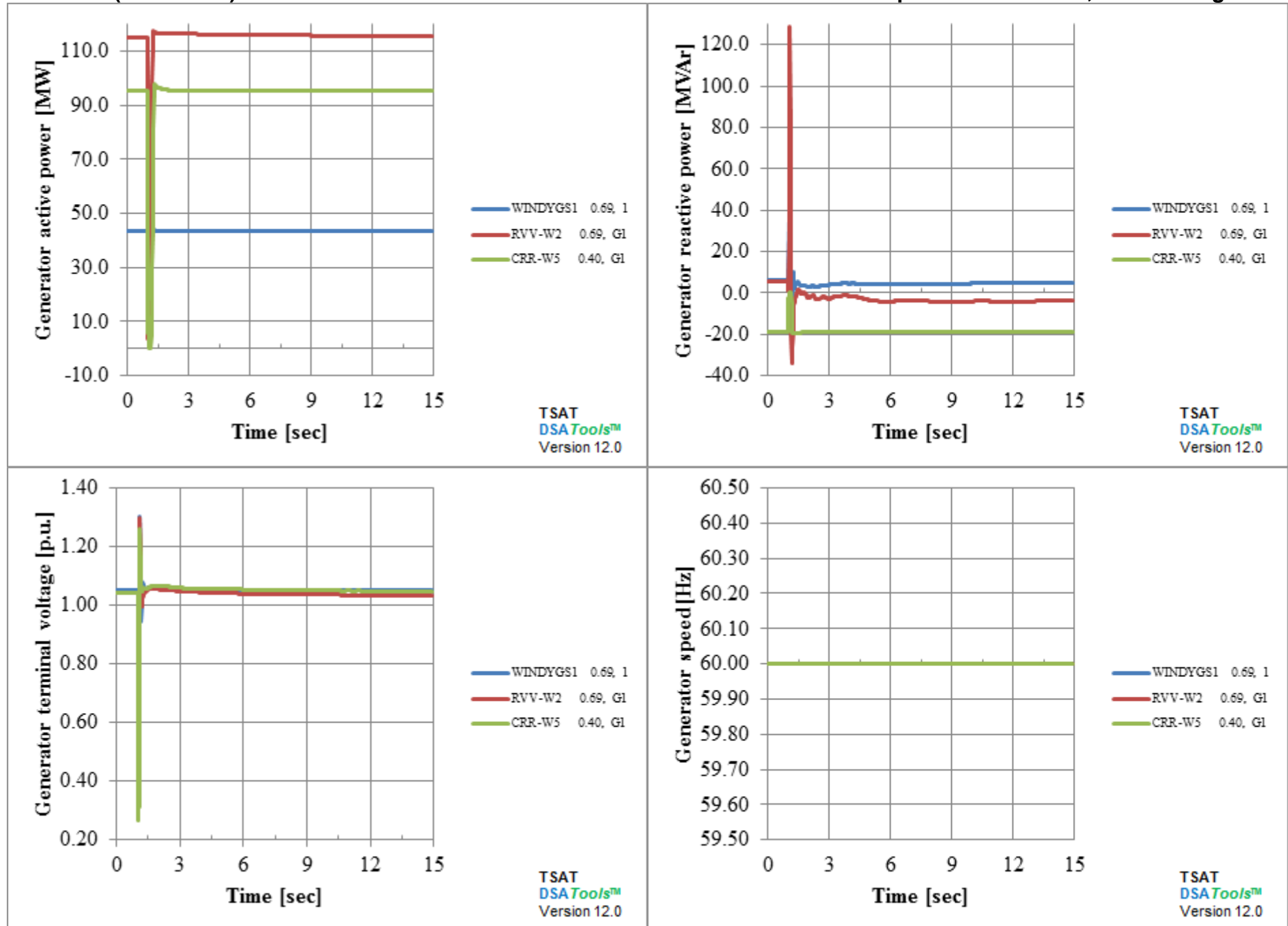
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Light 2014



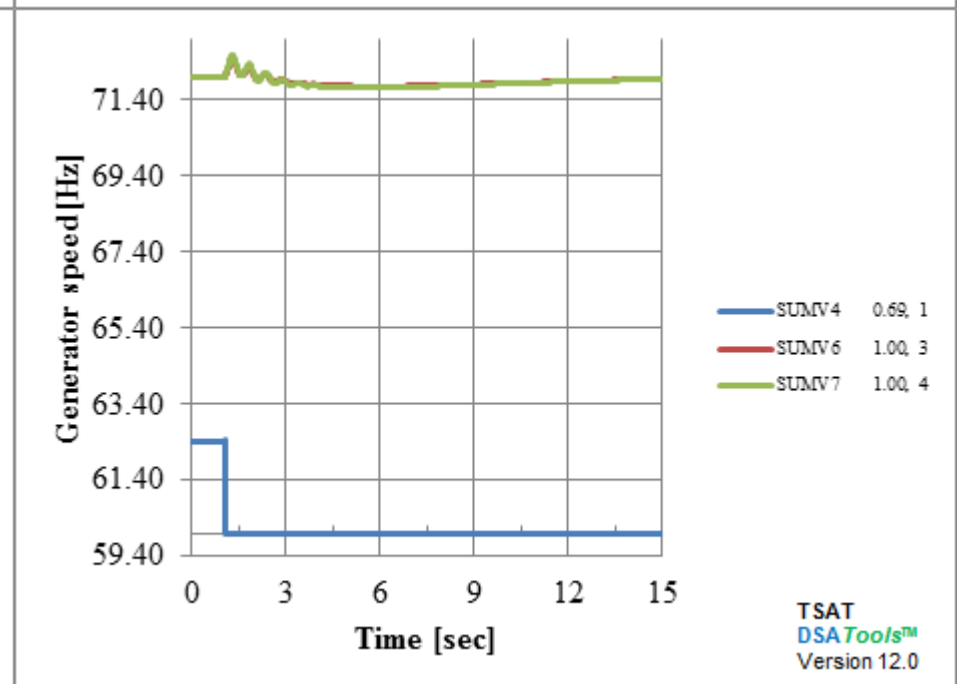
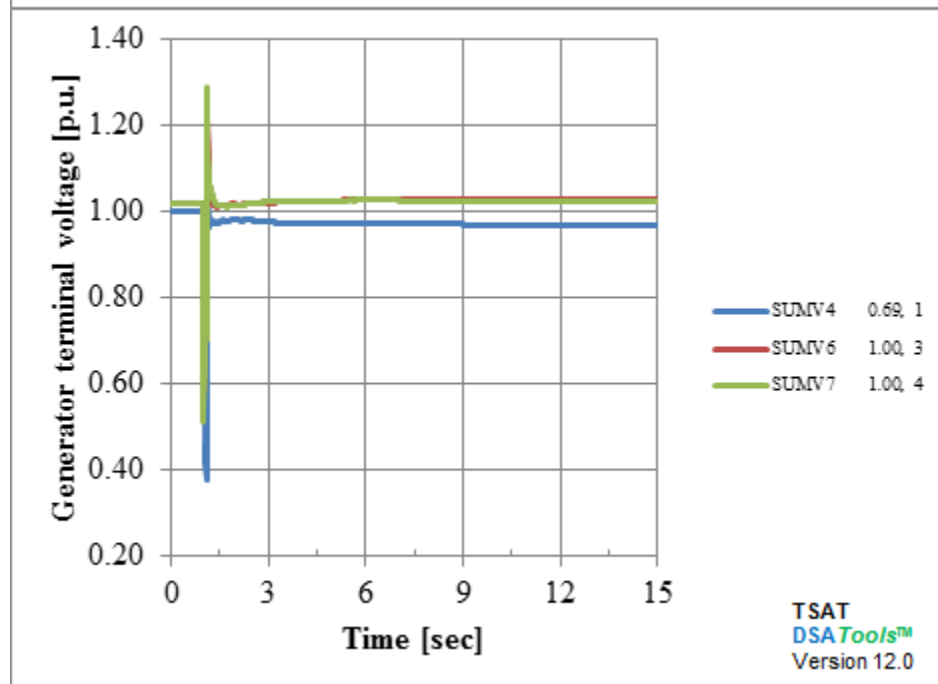
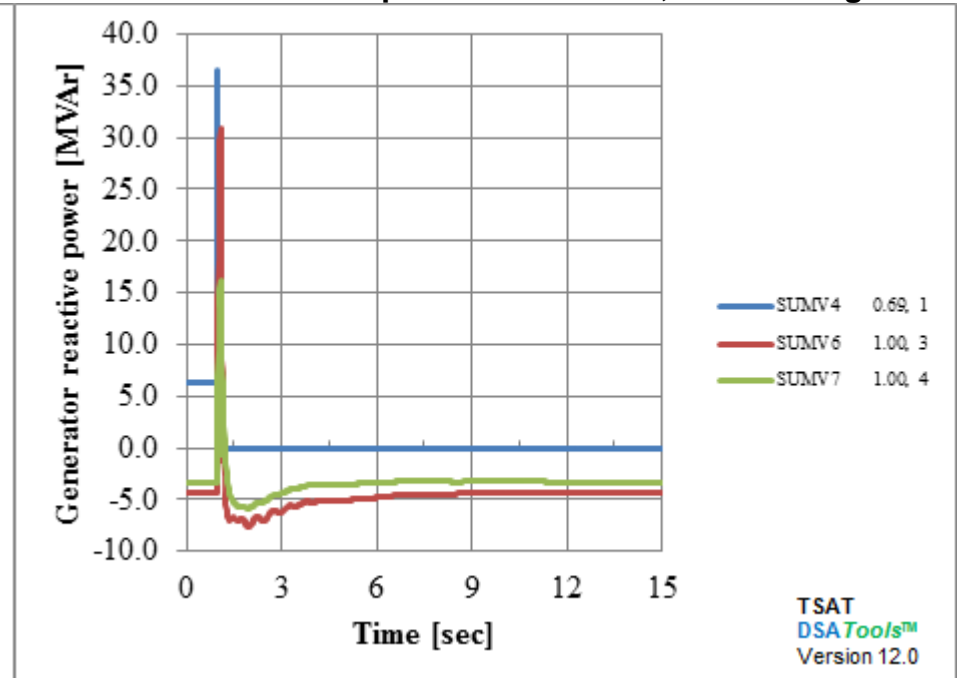
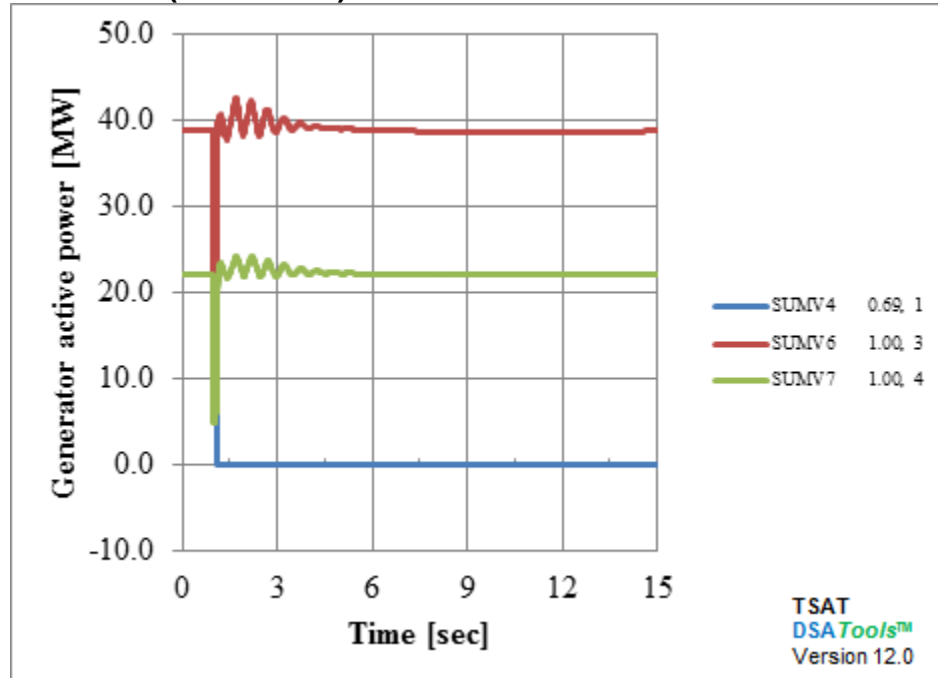
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Light 2014



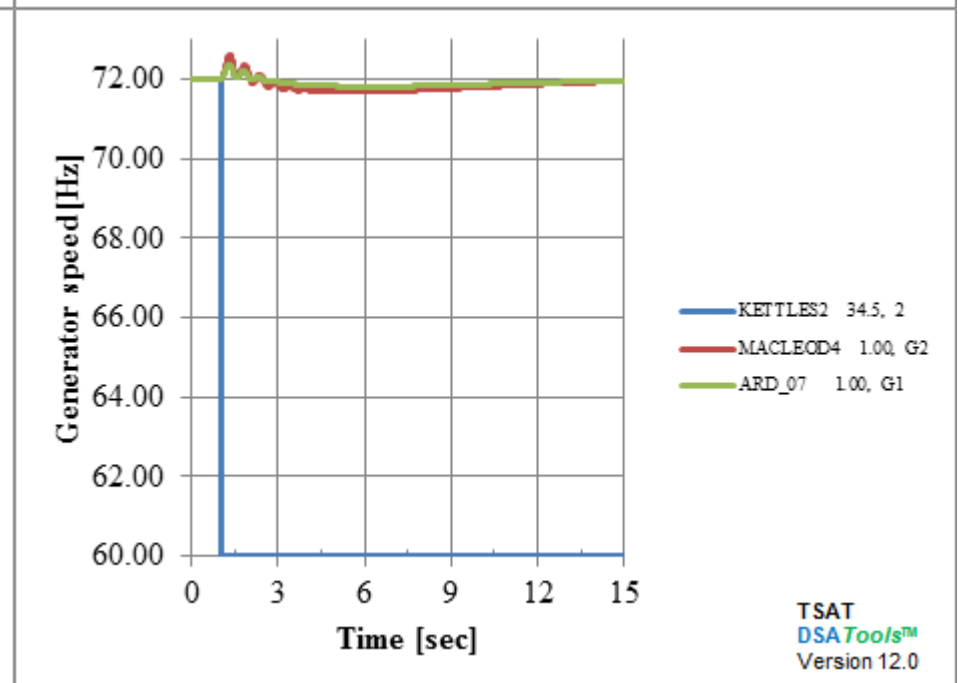
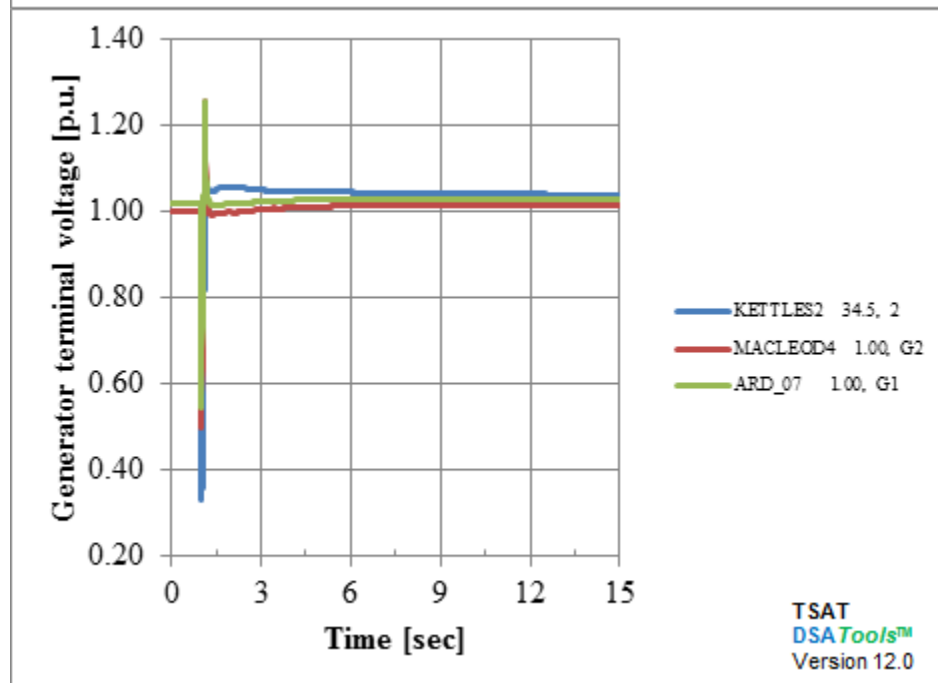
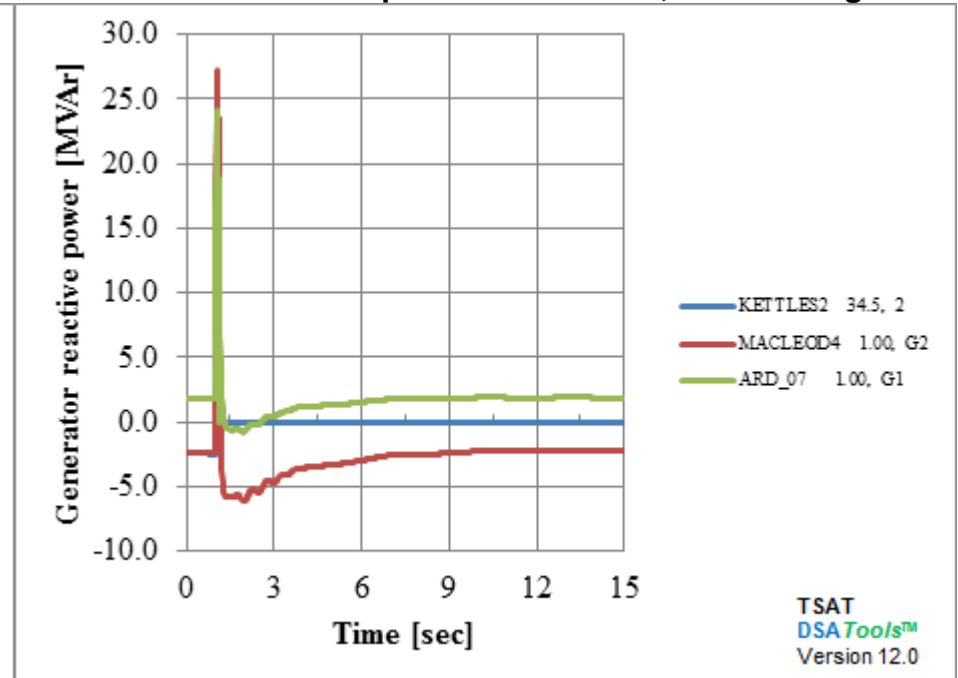
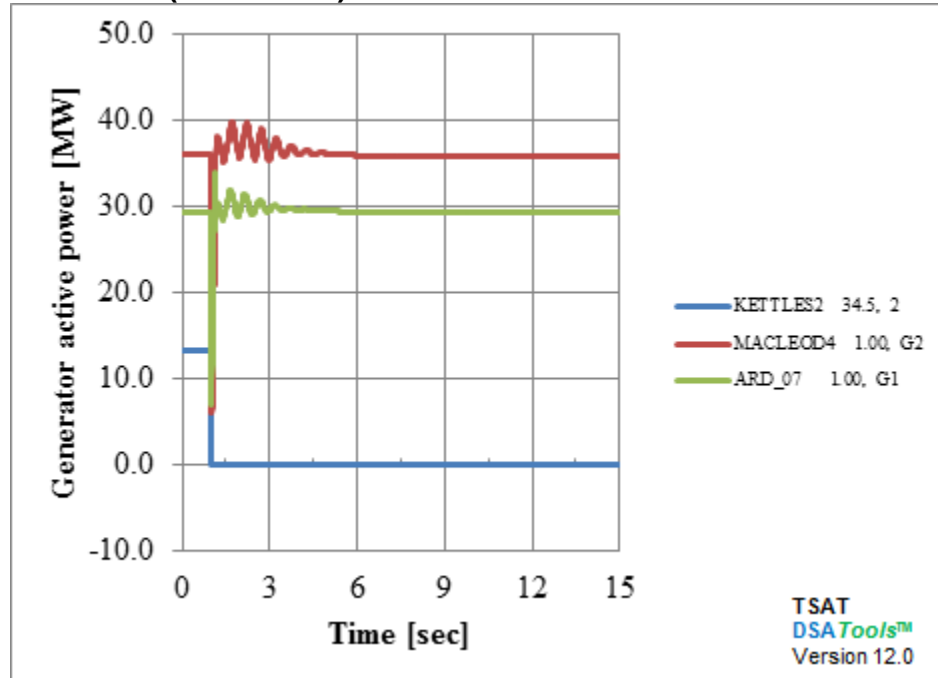
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Light 2014



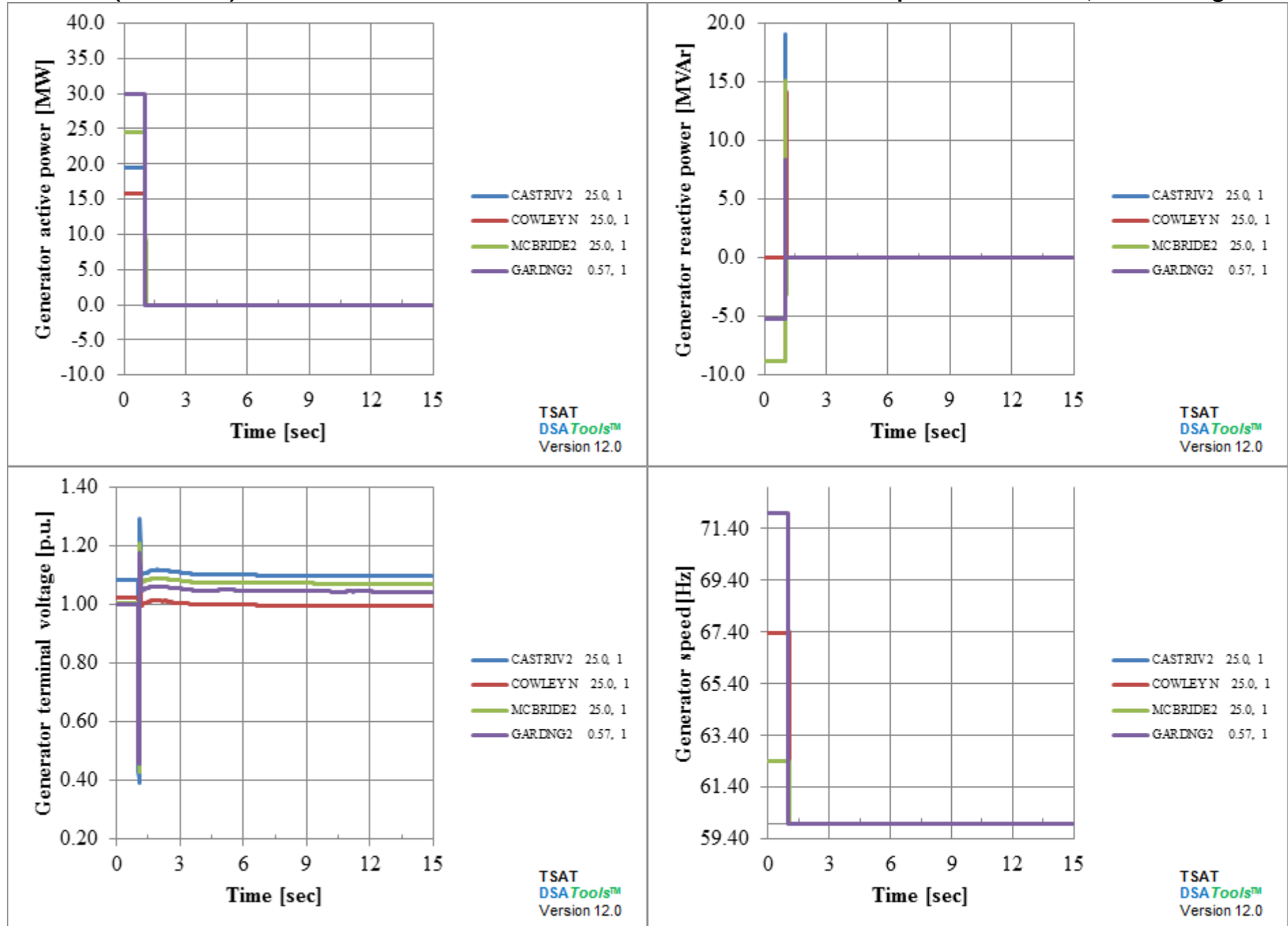
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Light 2014



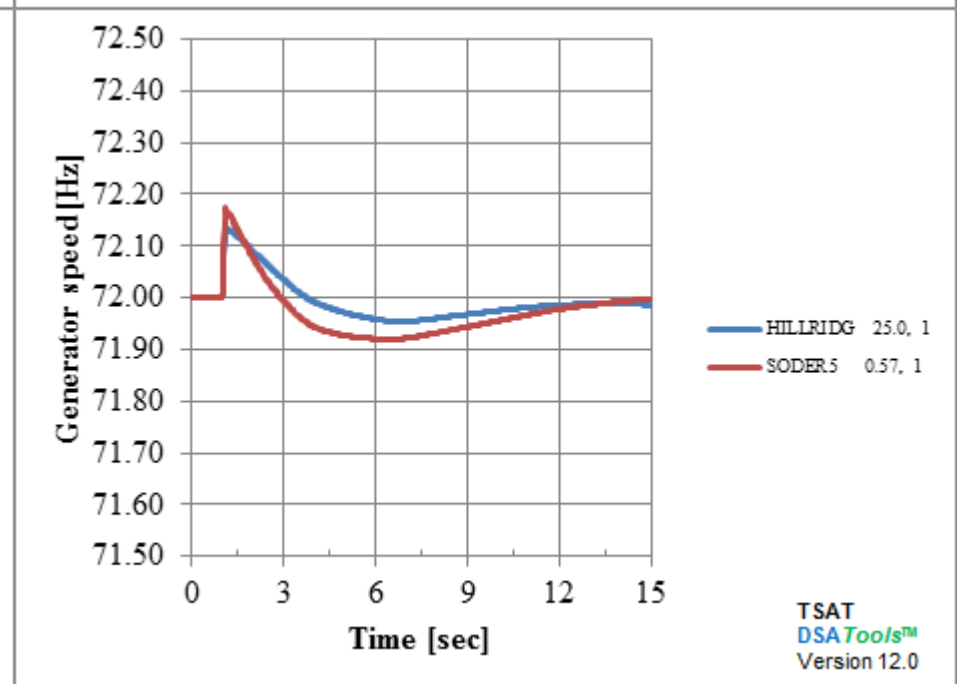
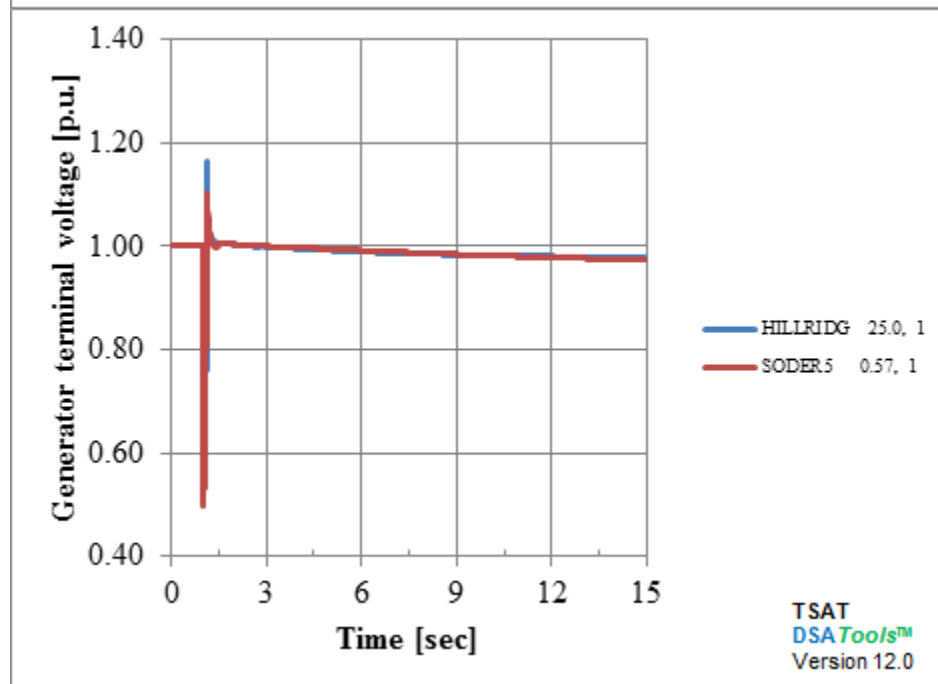
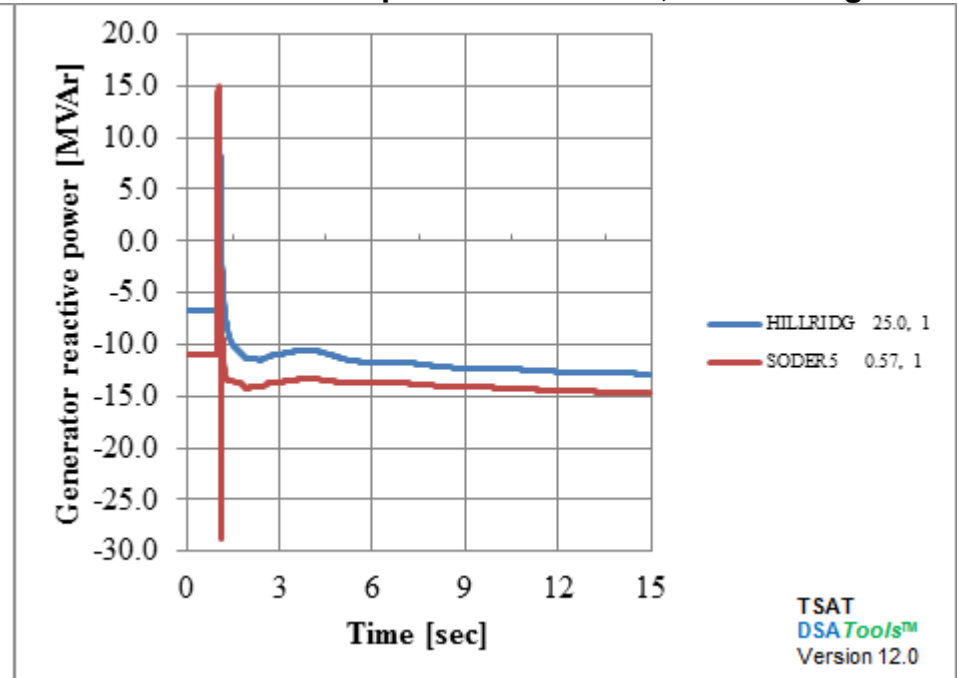
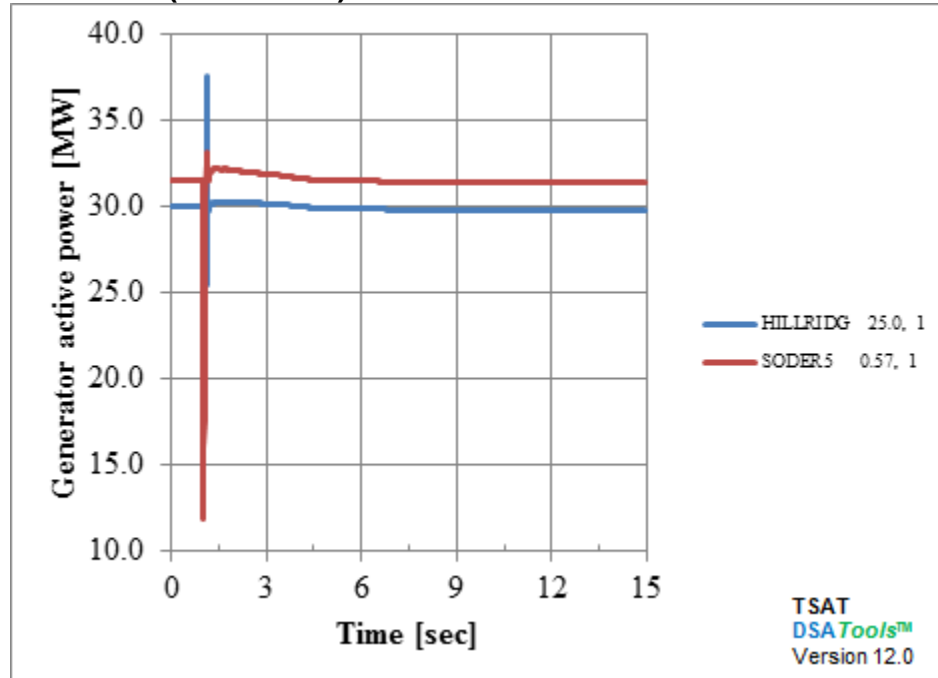
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Light 2014



9 -- 1084L (59S - 246S) NEAR 246S

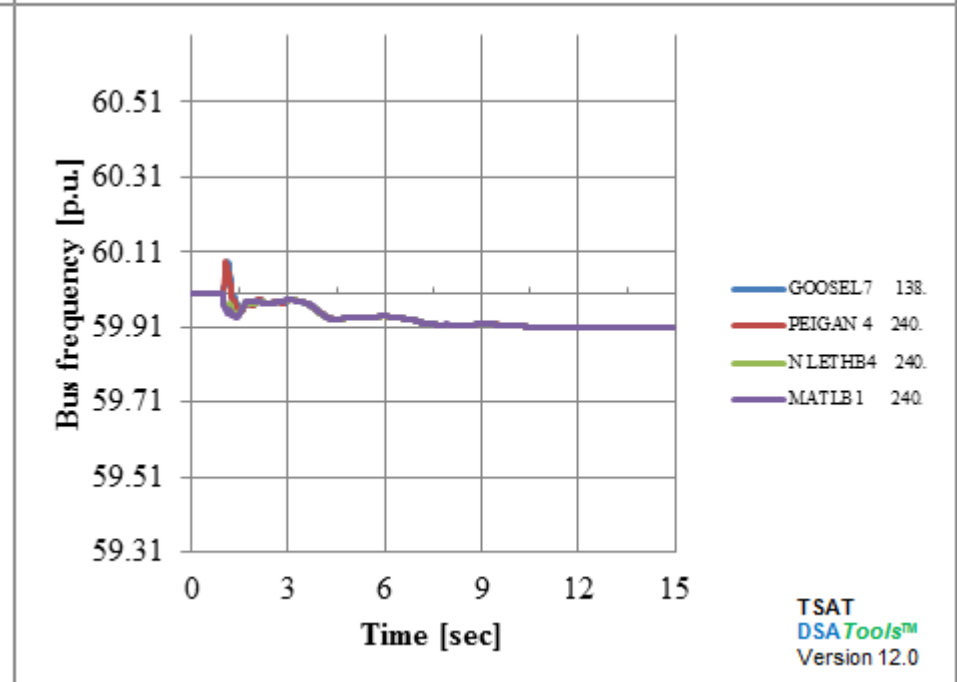
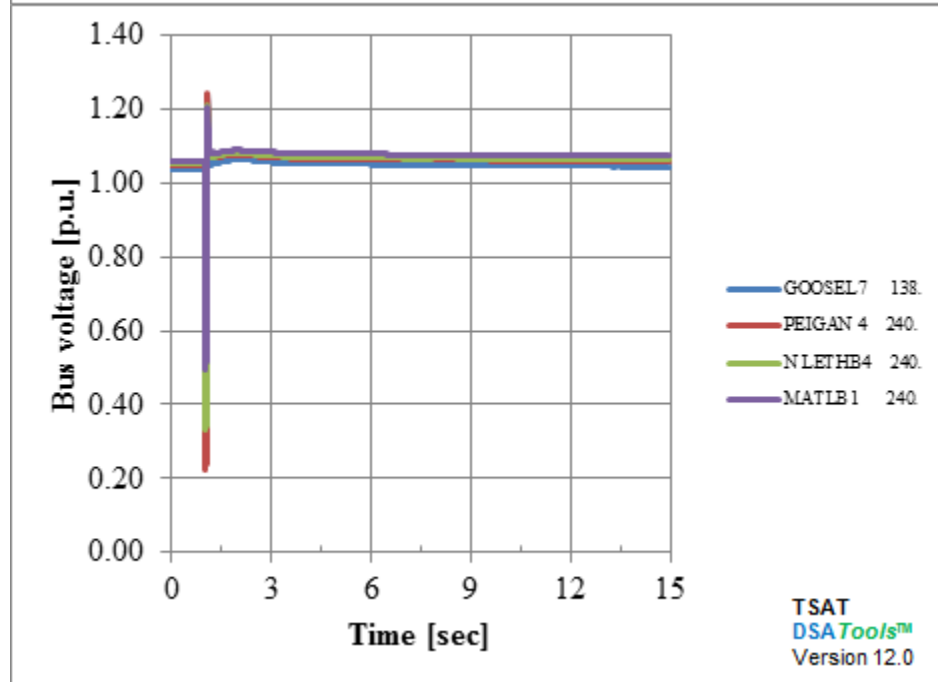
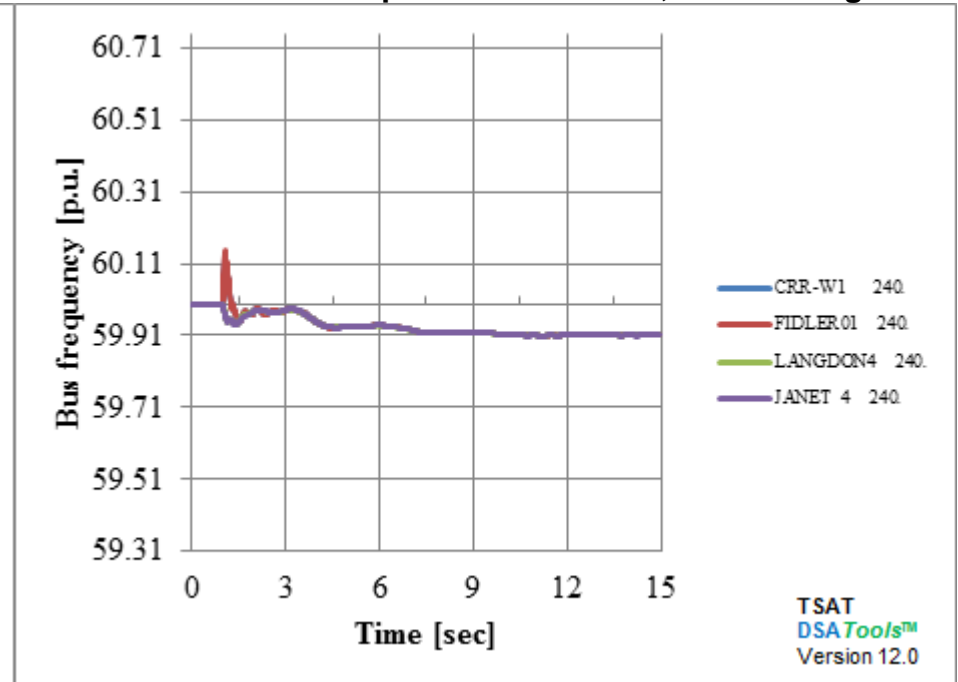
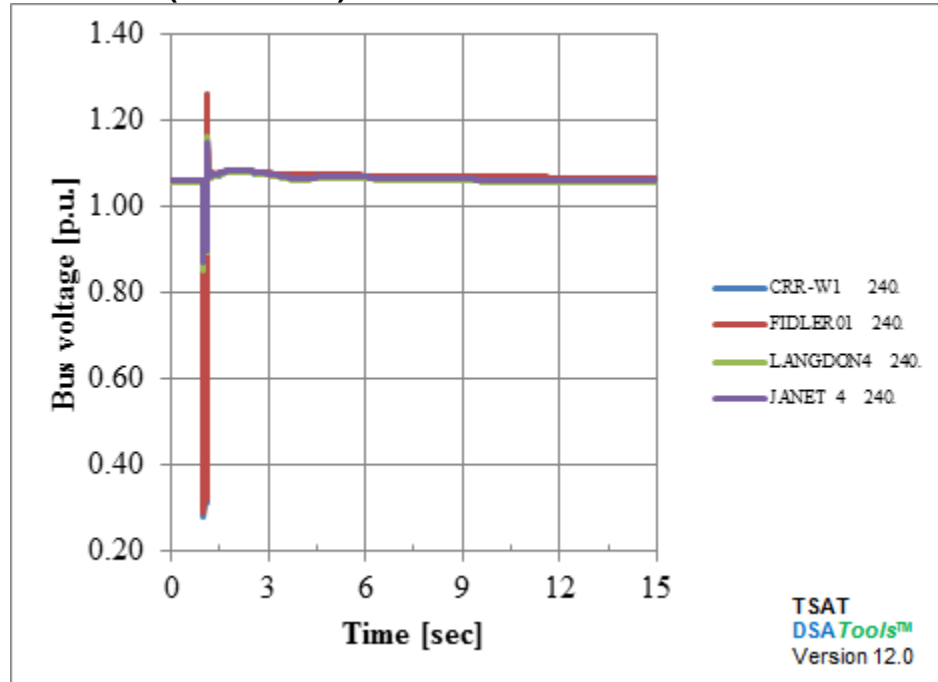
Proposed Connection, Summer Light 2014





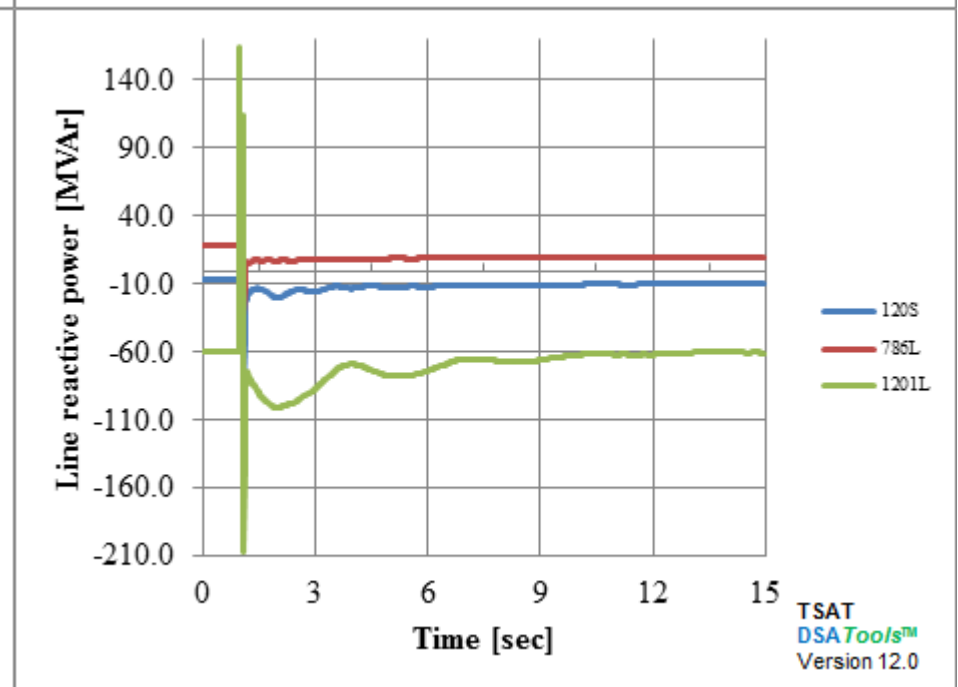
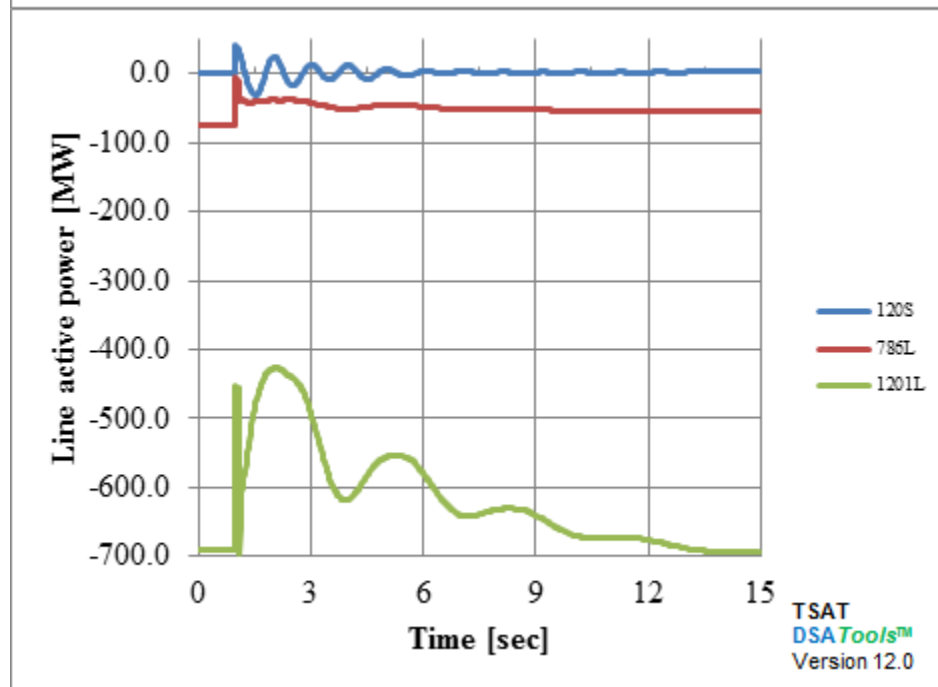
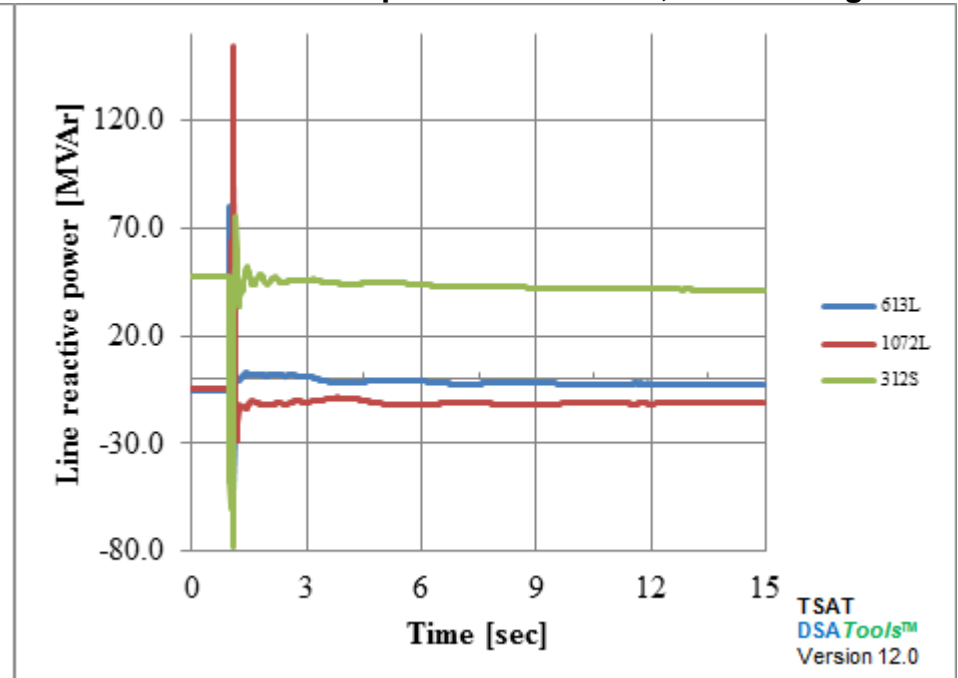
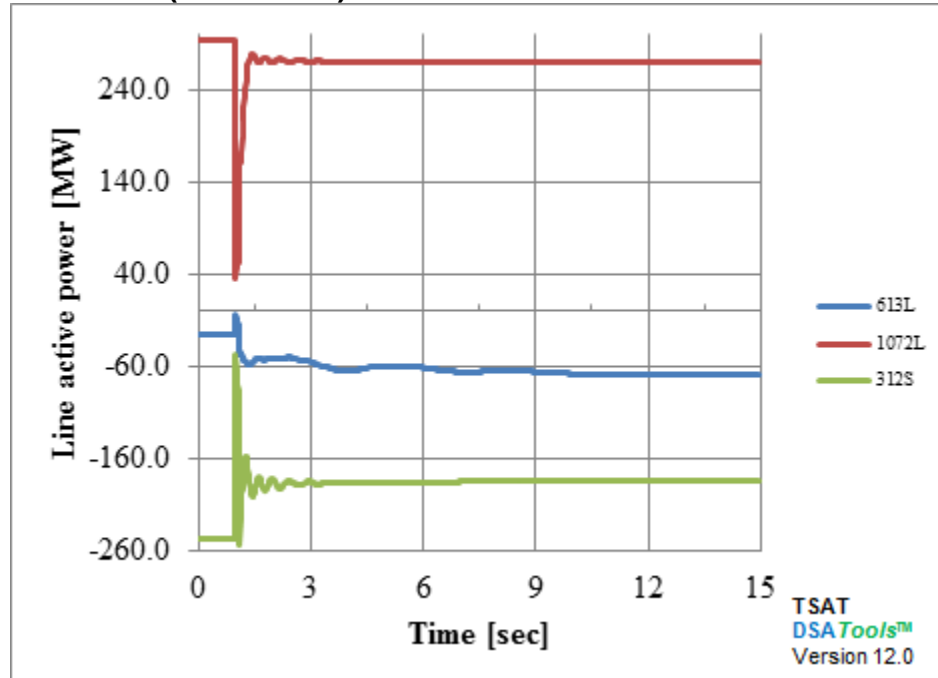
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Light 2014



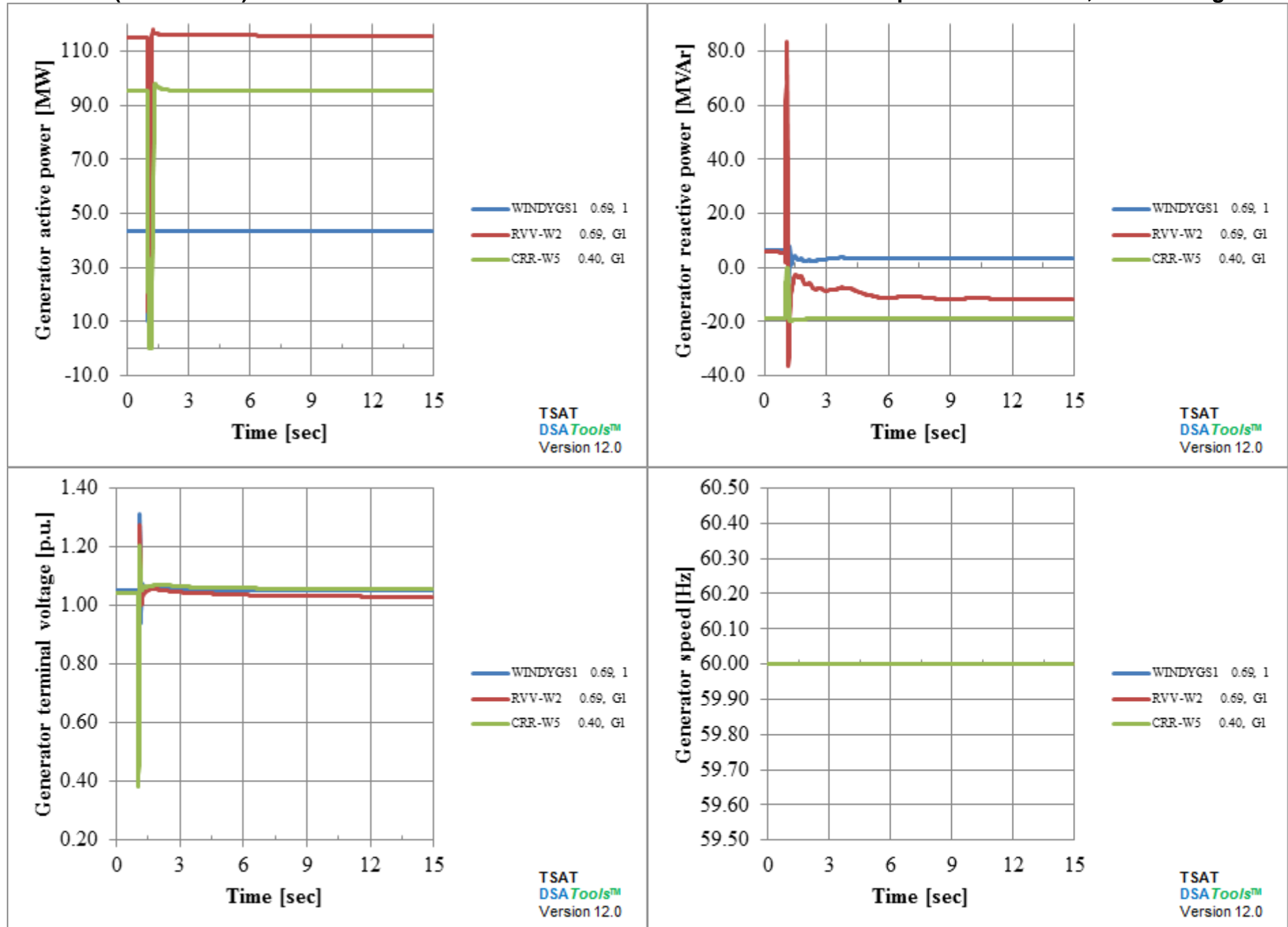
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Light 2014



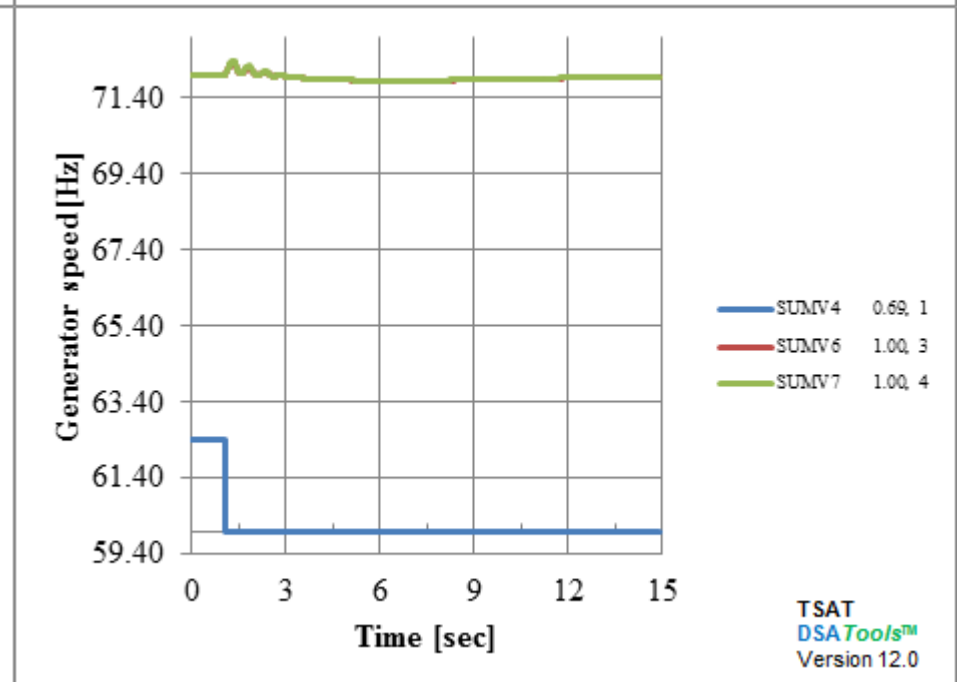
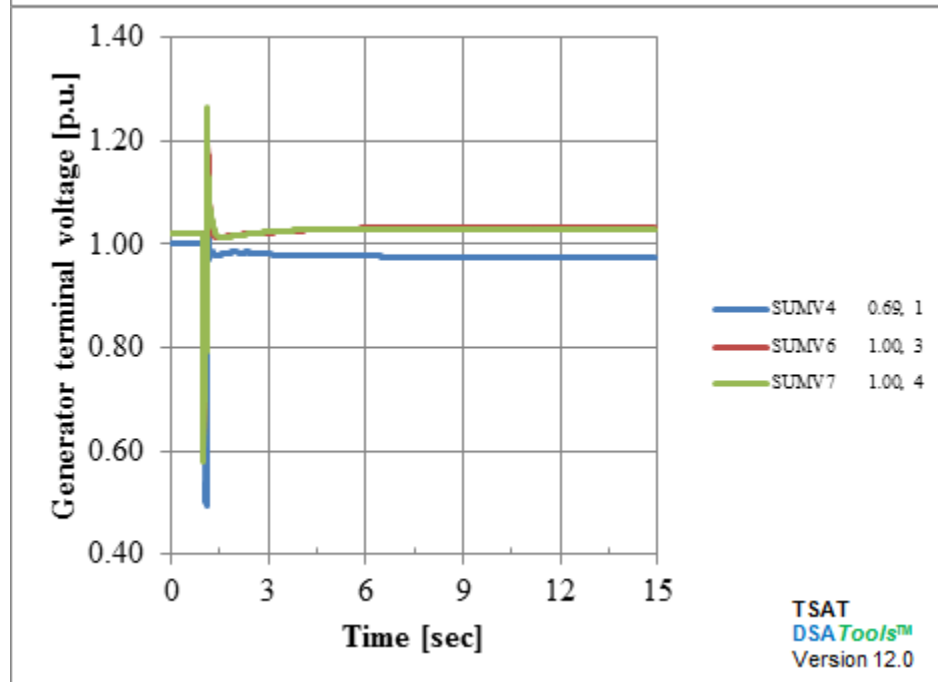
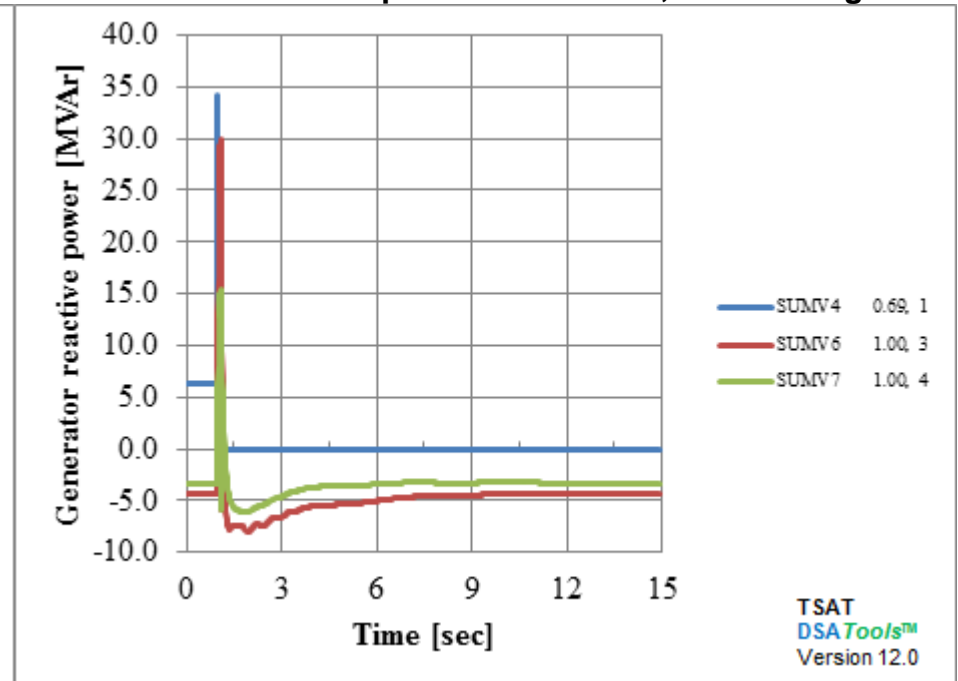
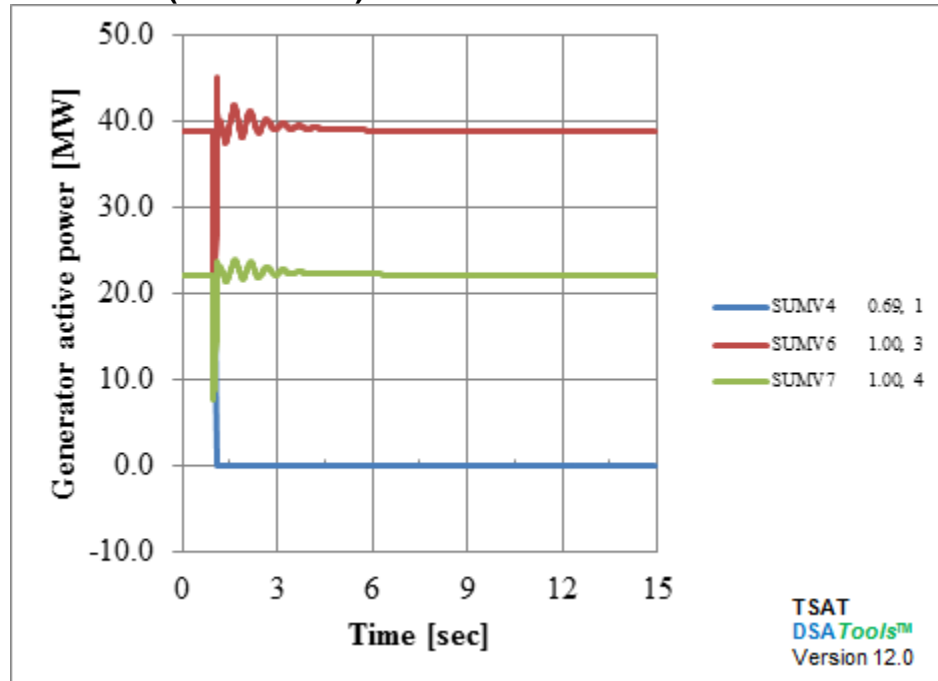
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Light 2014



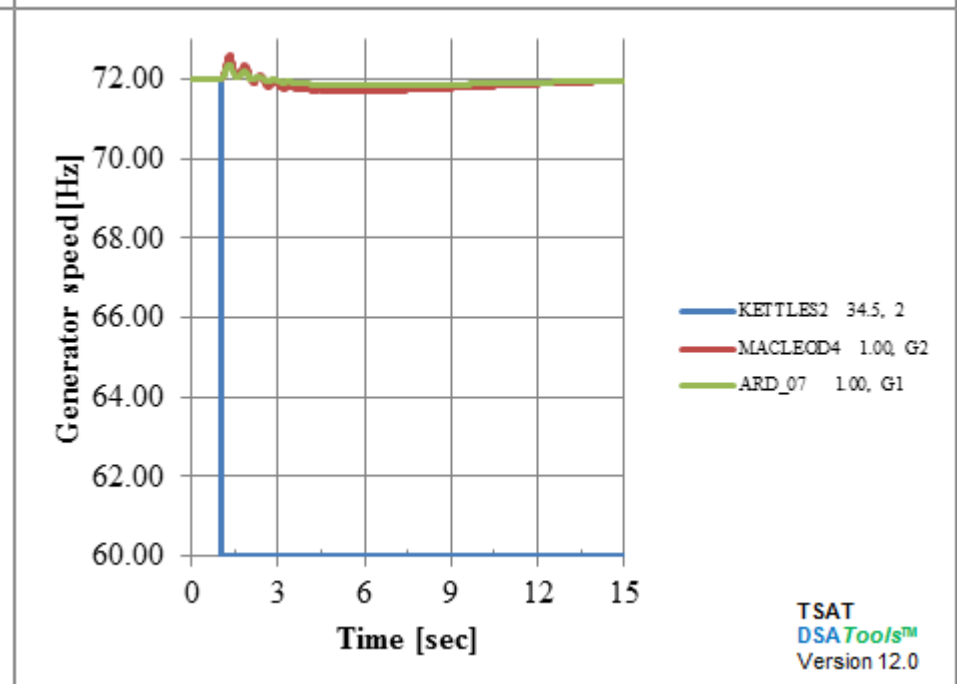
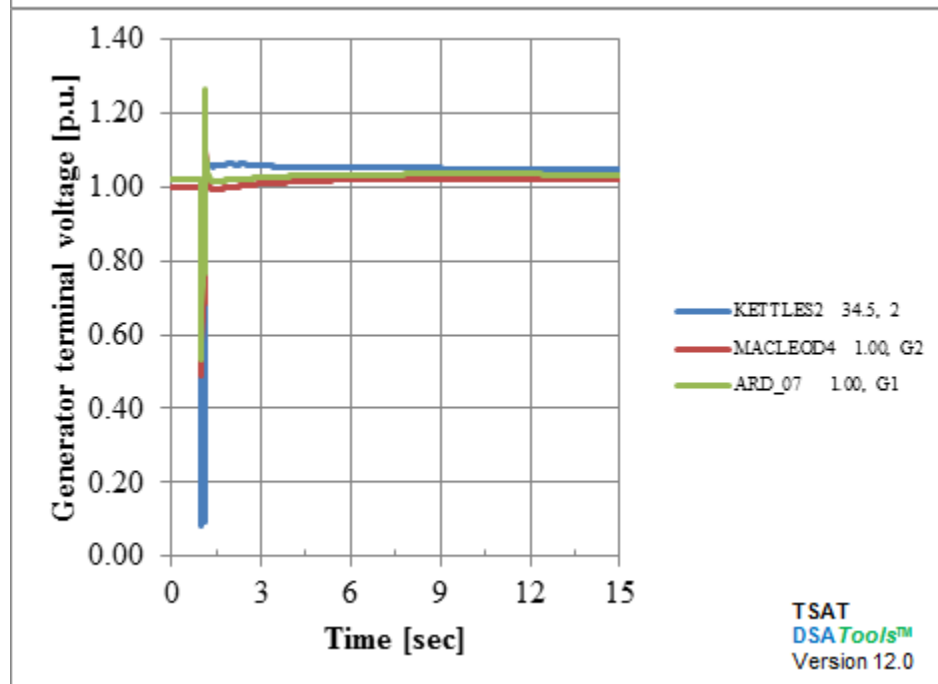
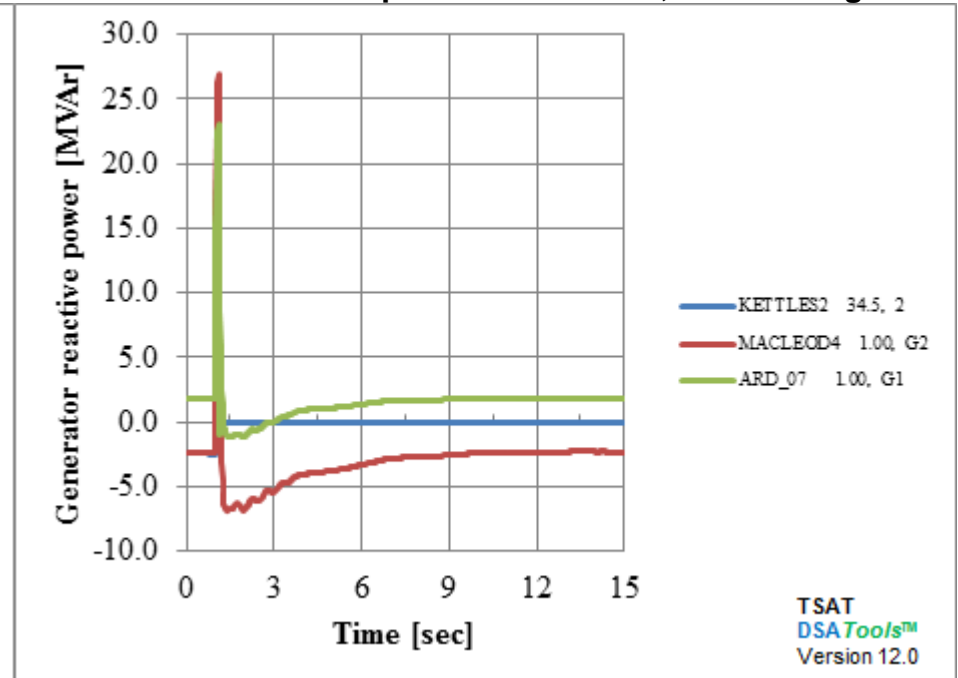
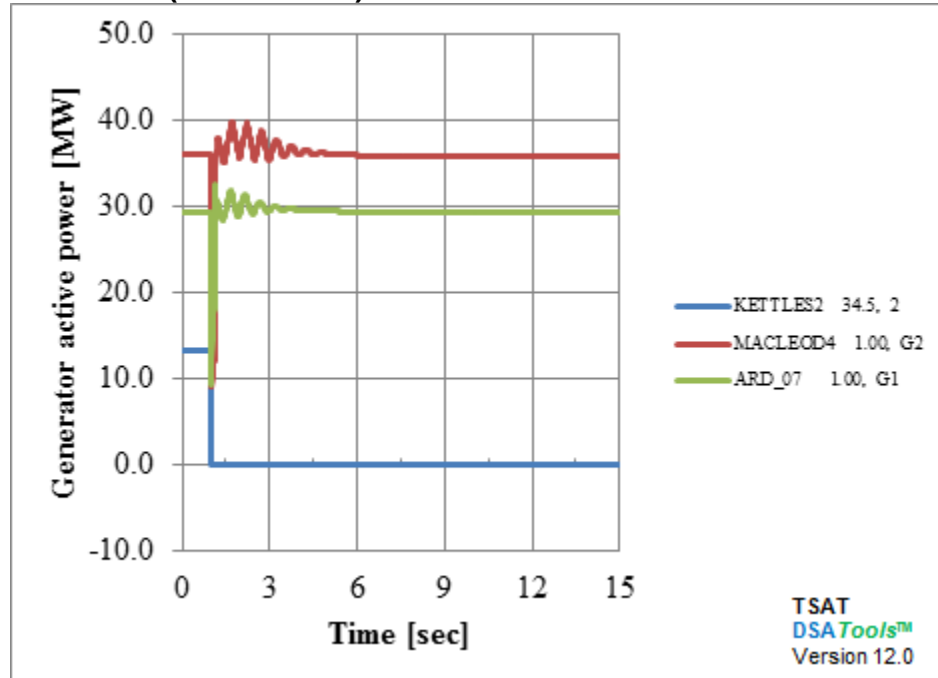
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Light 2014



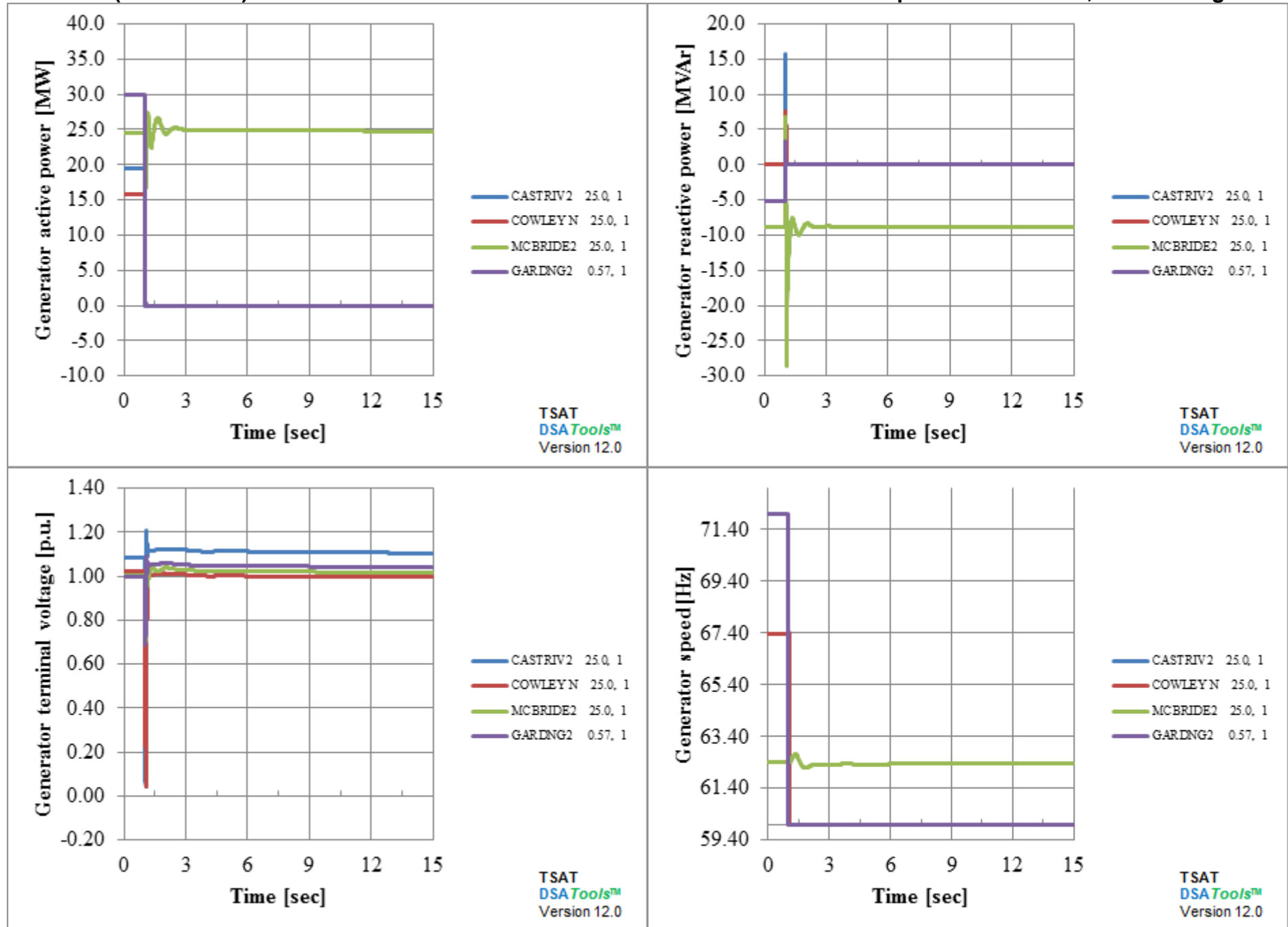
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Light 2014



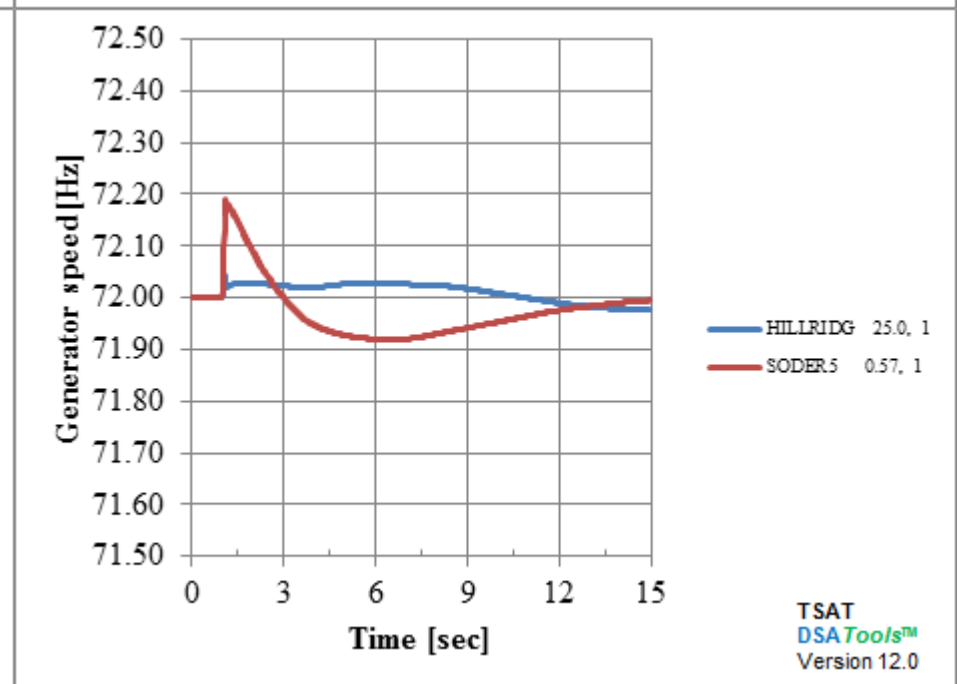
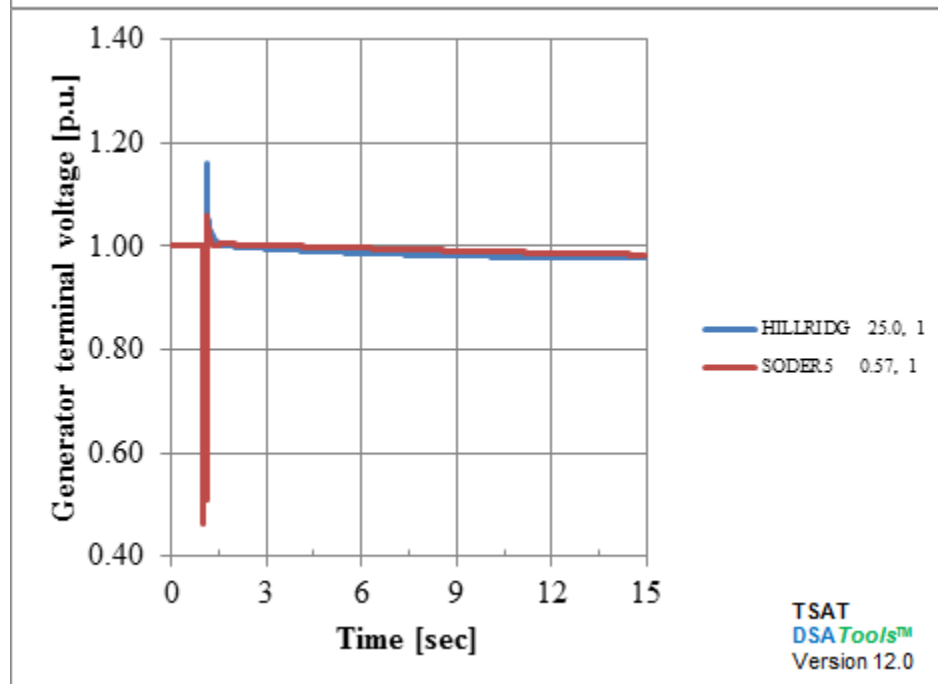
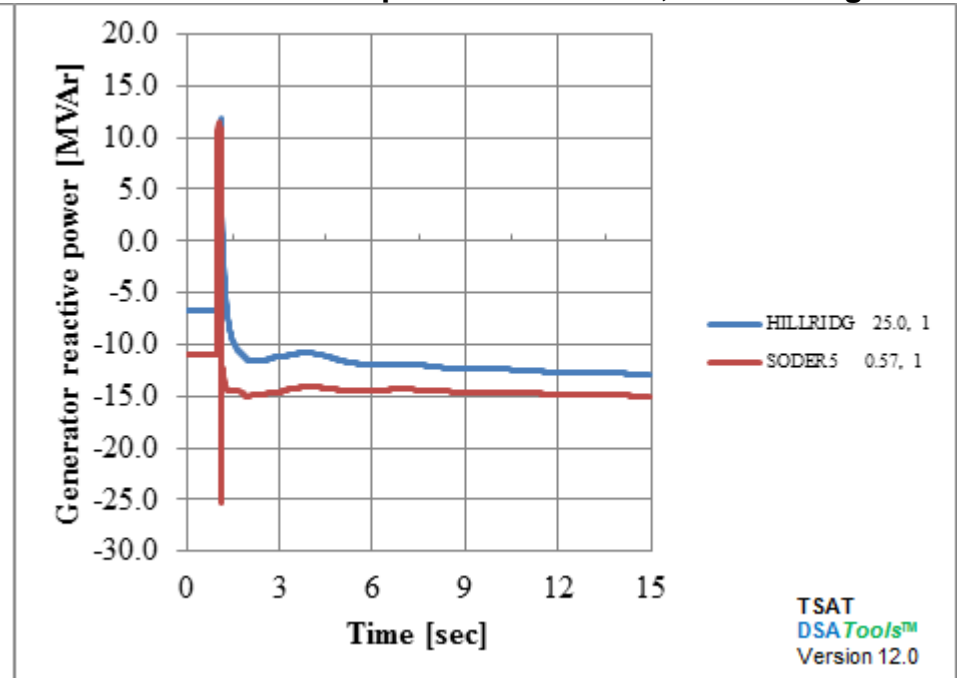
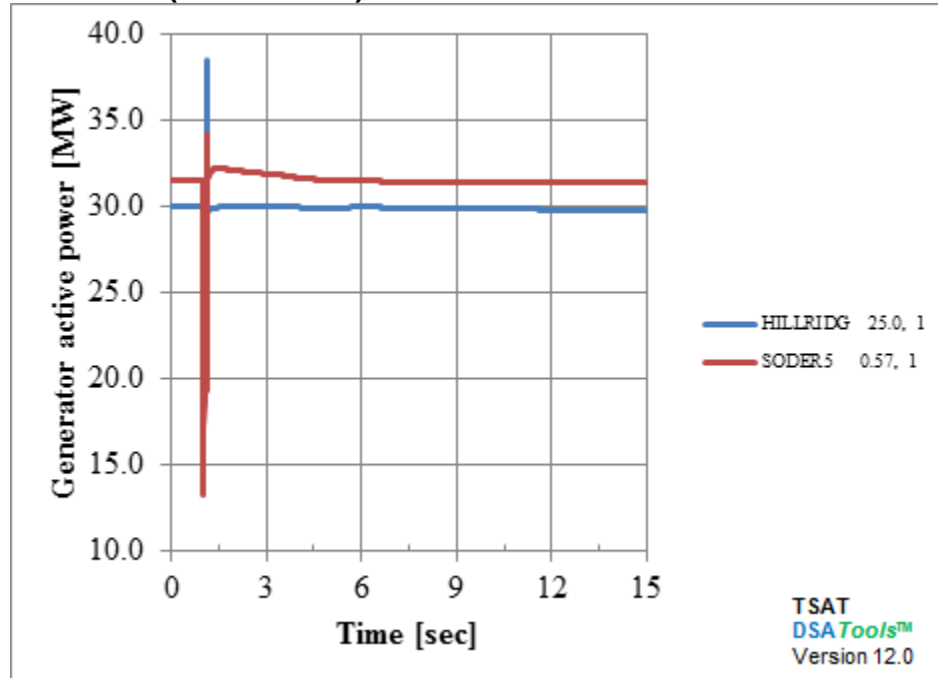
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Light 2014



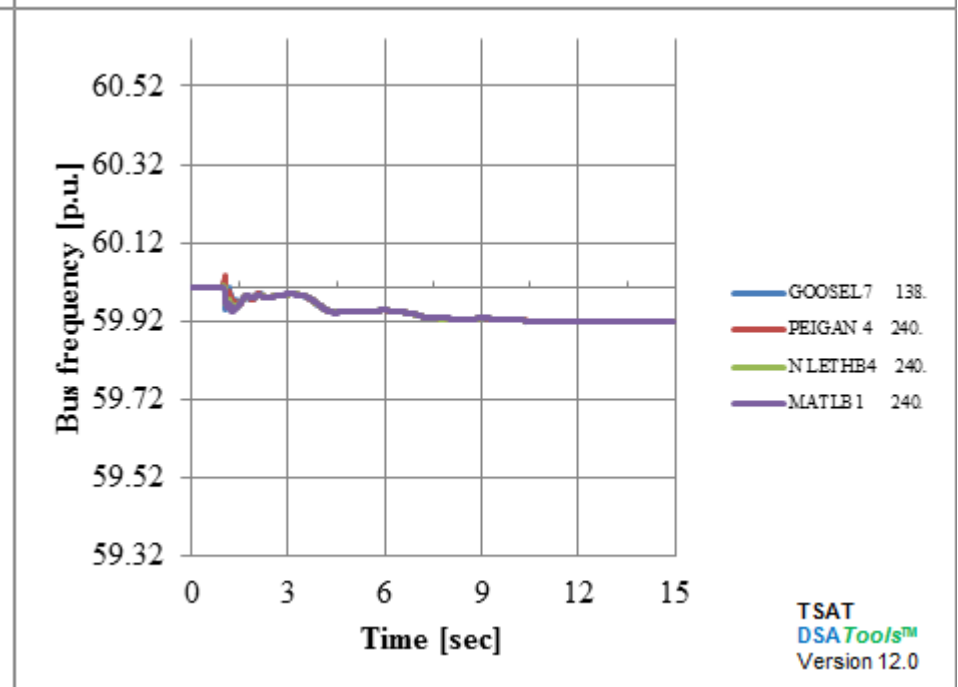
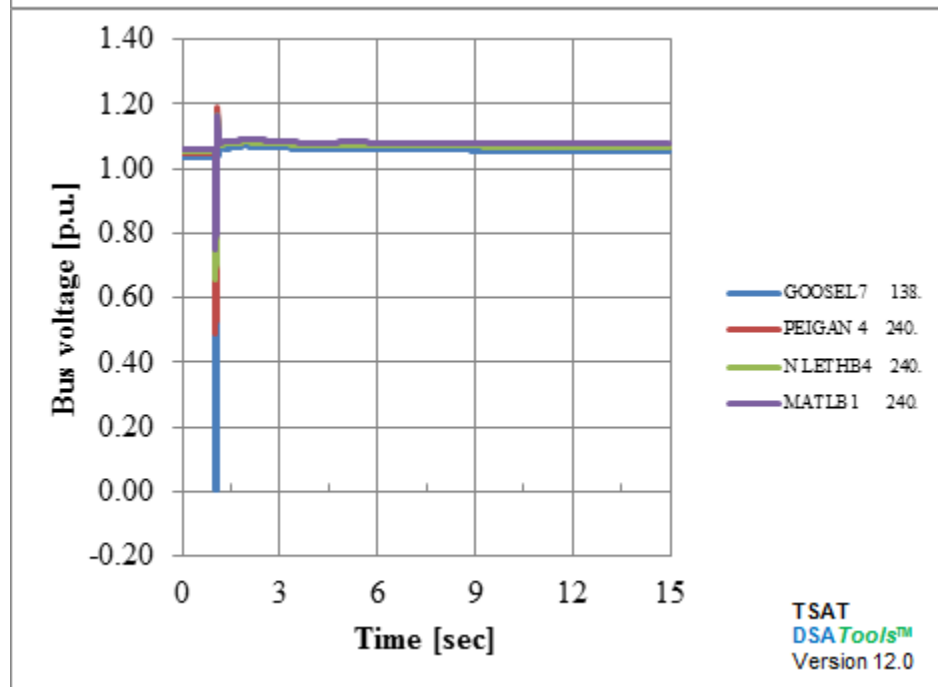
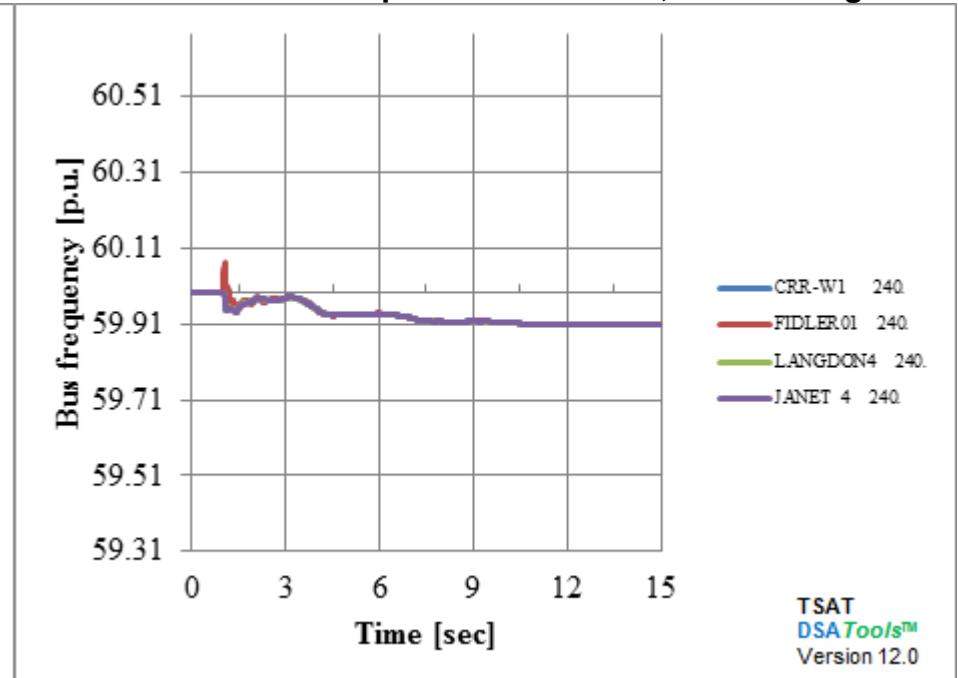
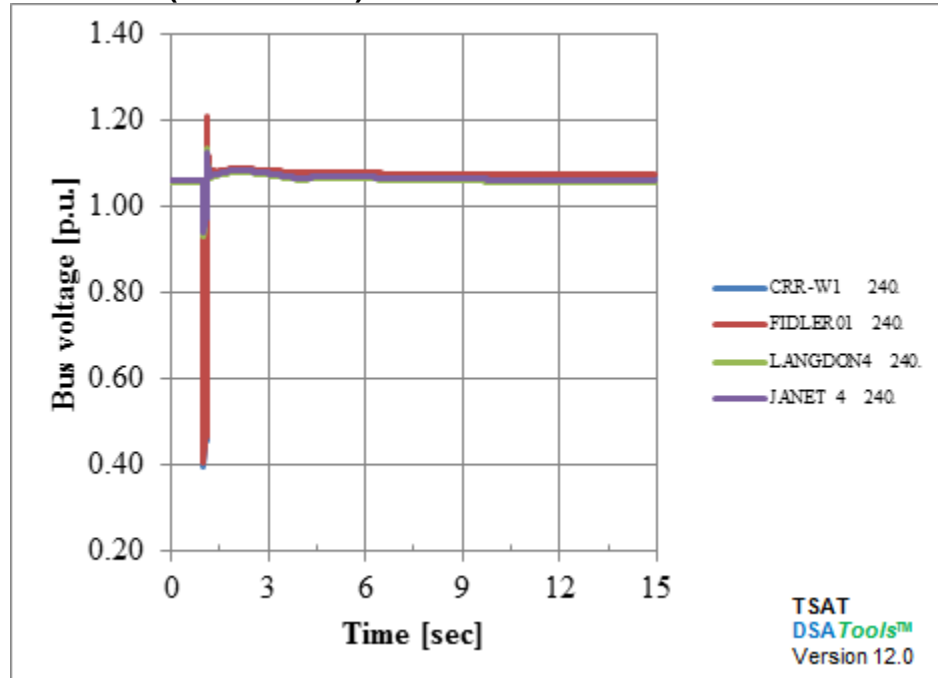
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Light 2014



10 -- 164L (103S - 415S) NEAR 103S

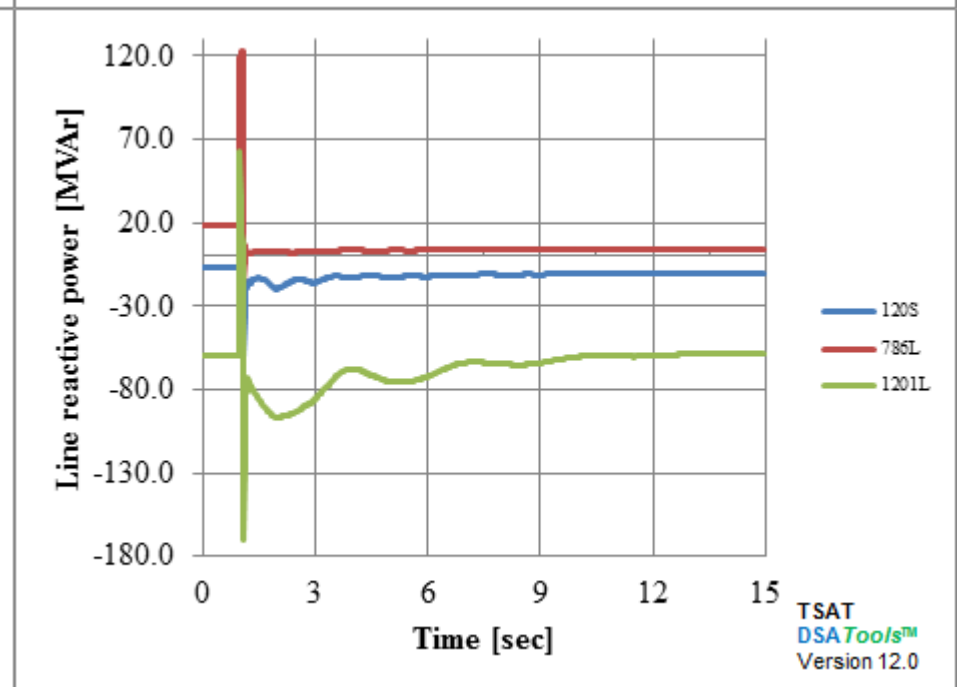
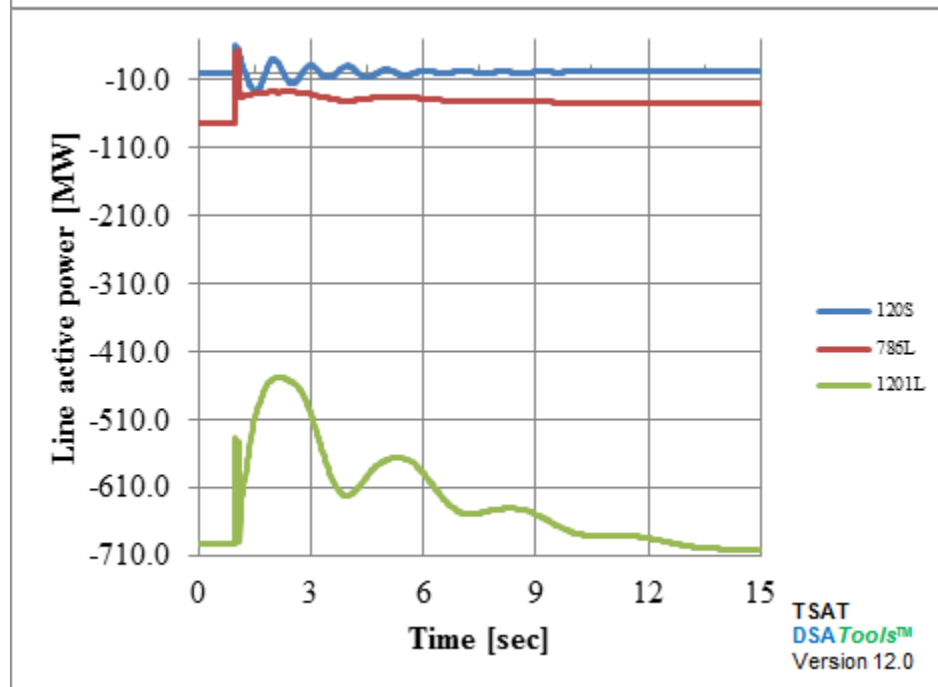
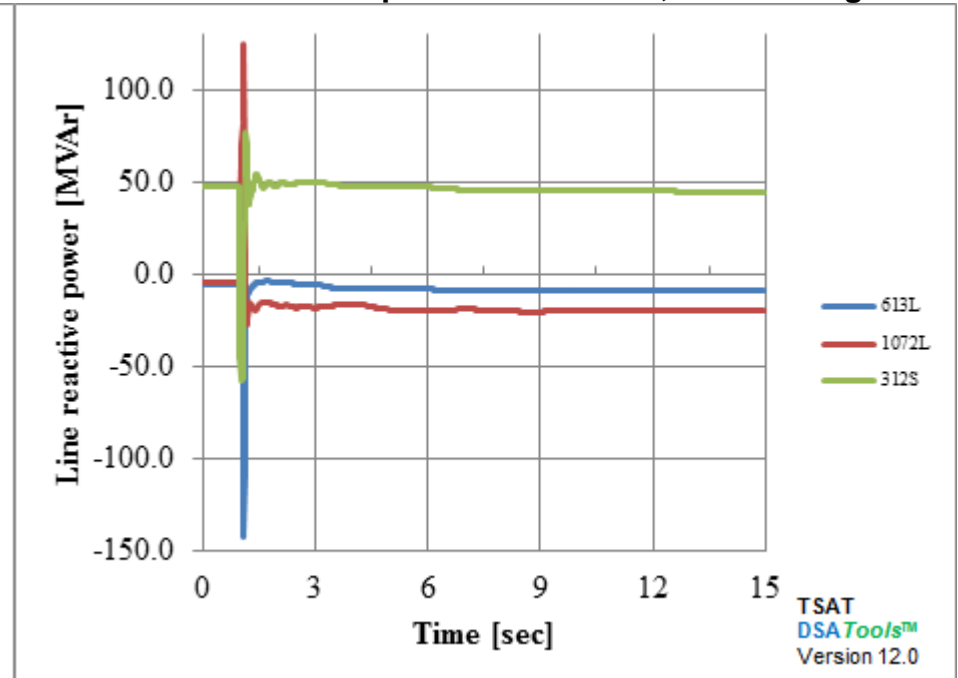
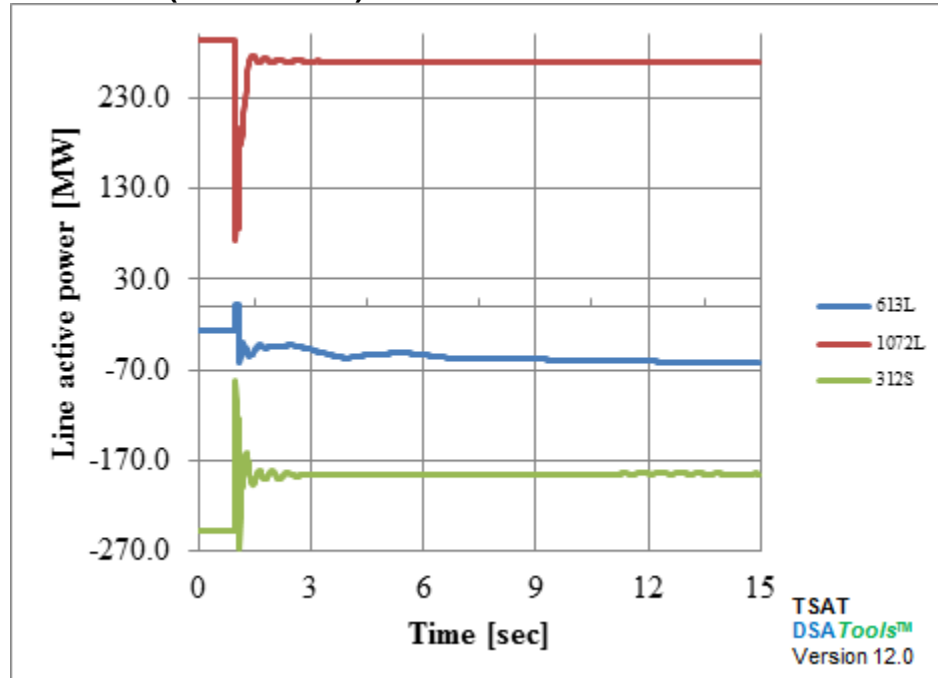
Proposed Connection, Summer Light 2014





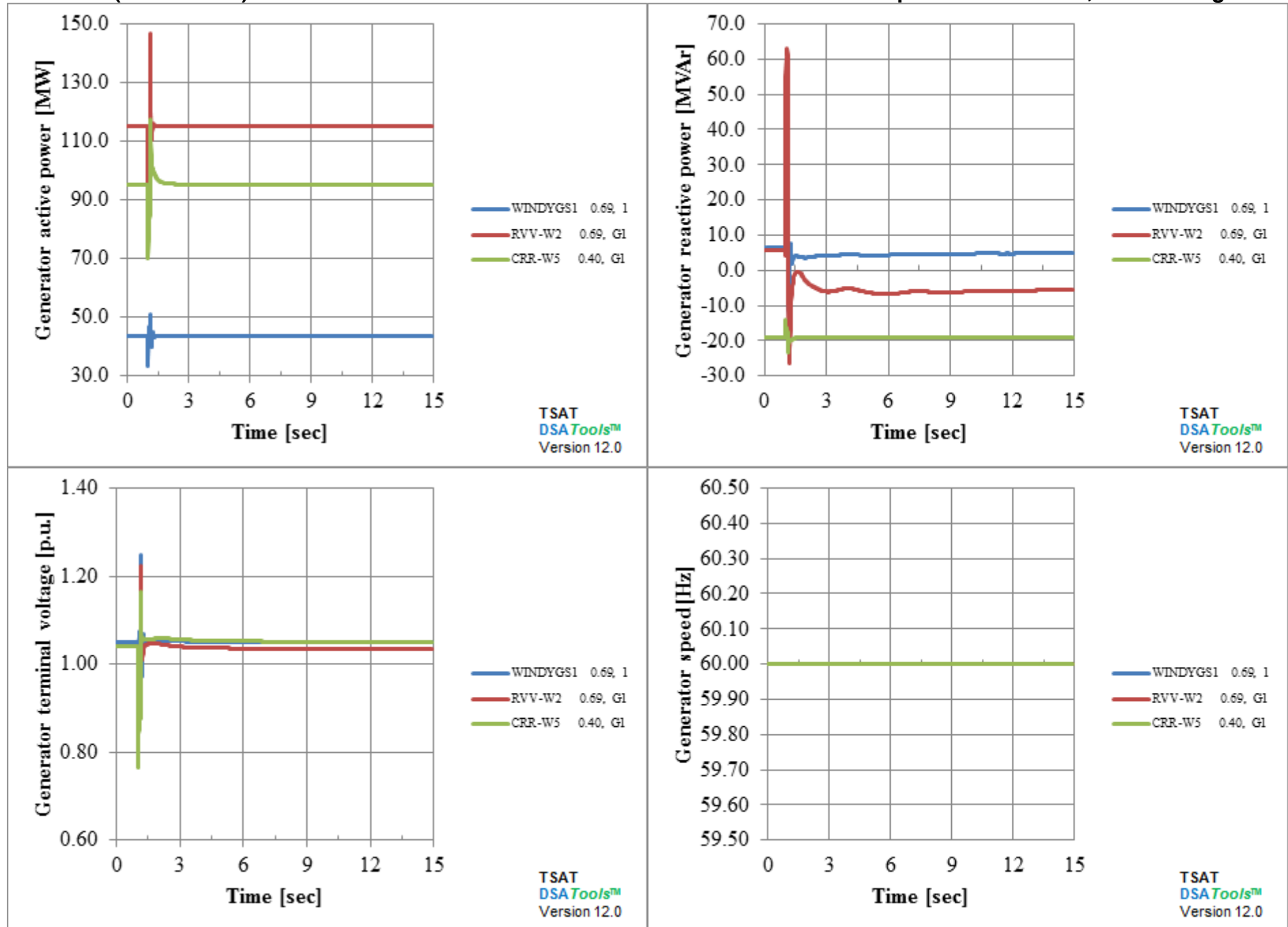
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Light 2014



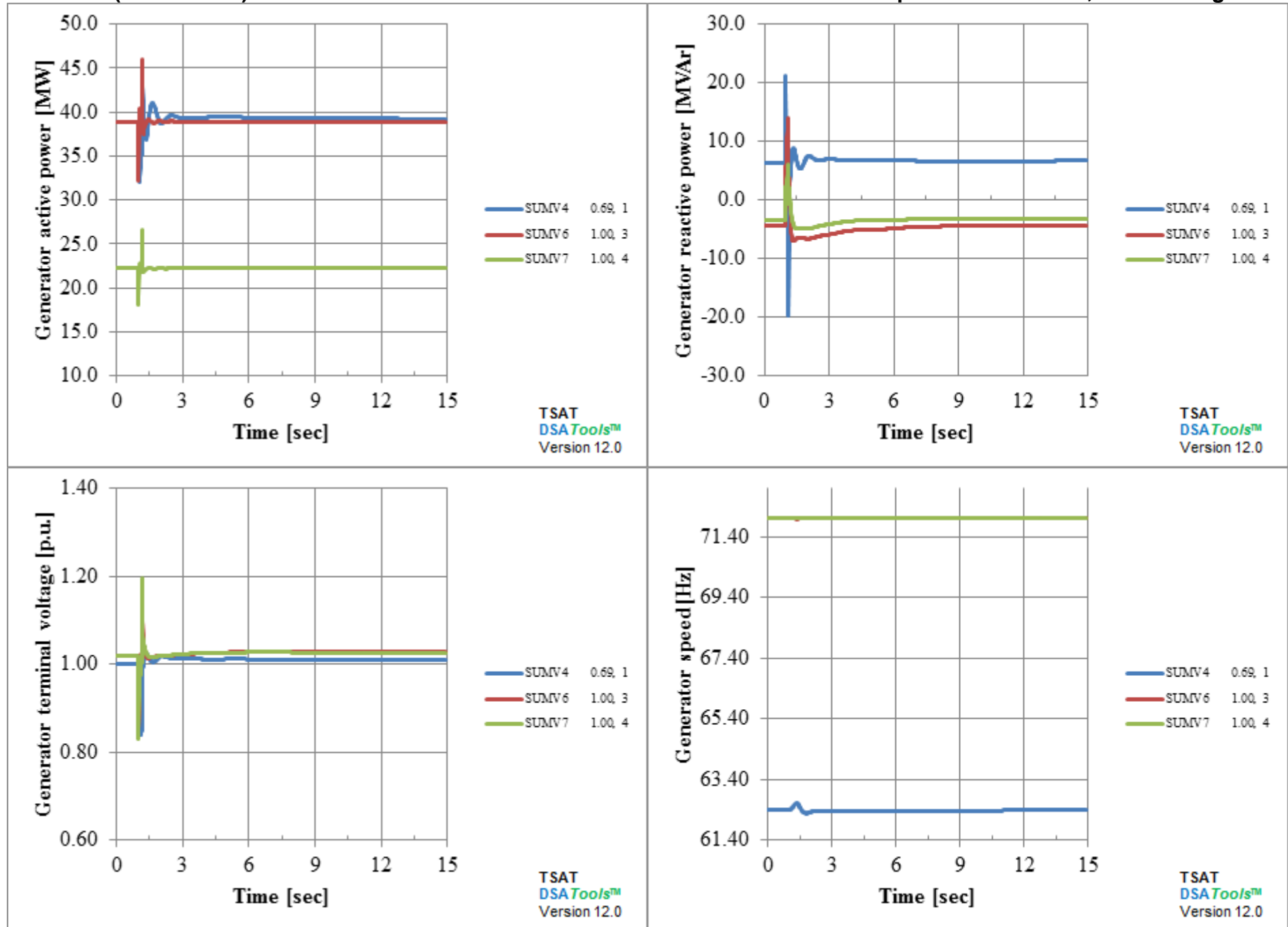
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Light 2014



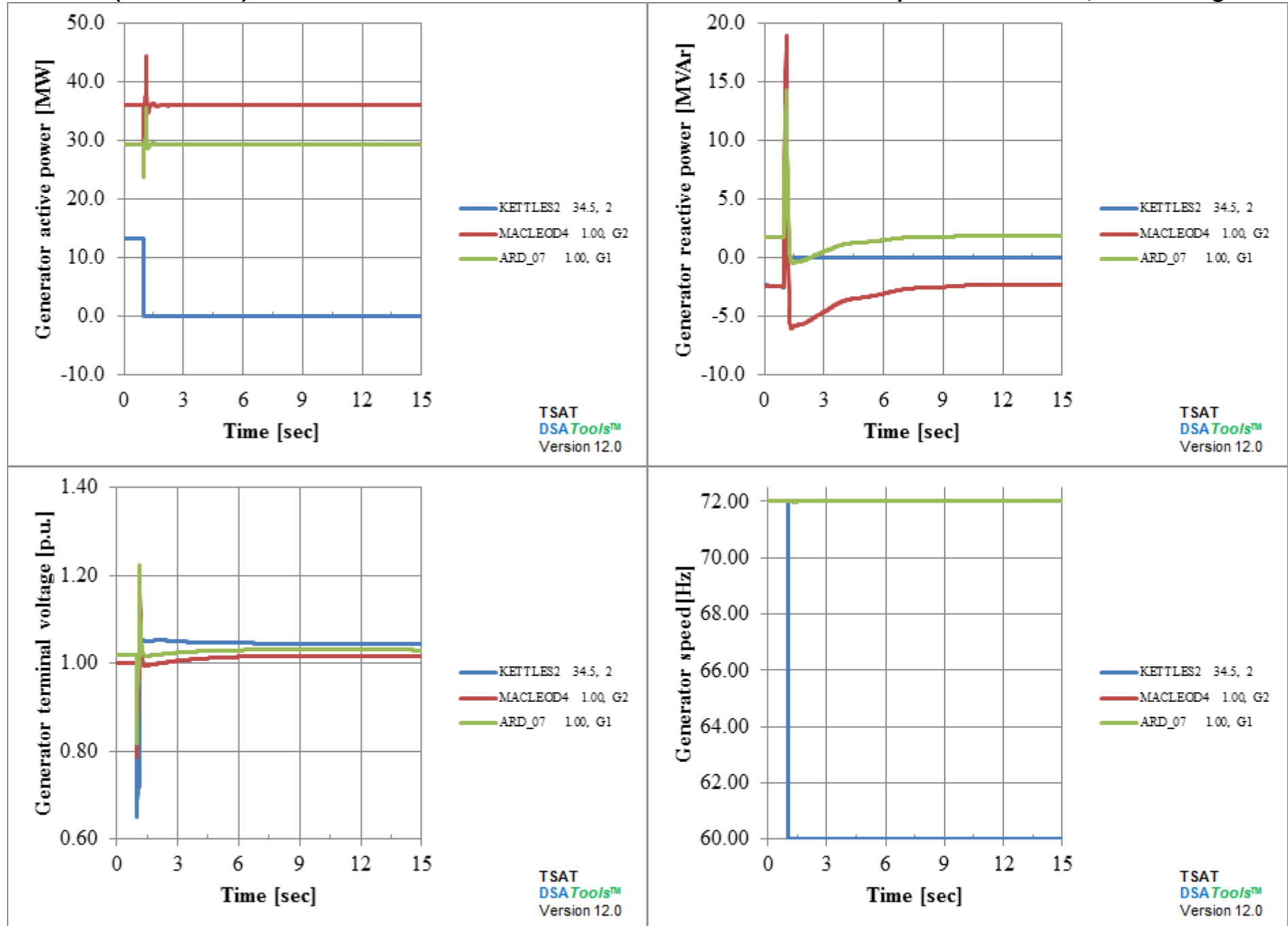
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Light 2014



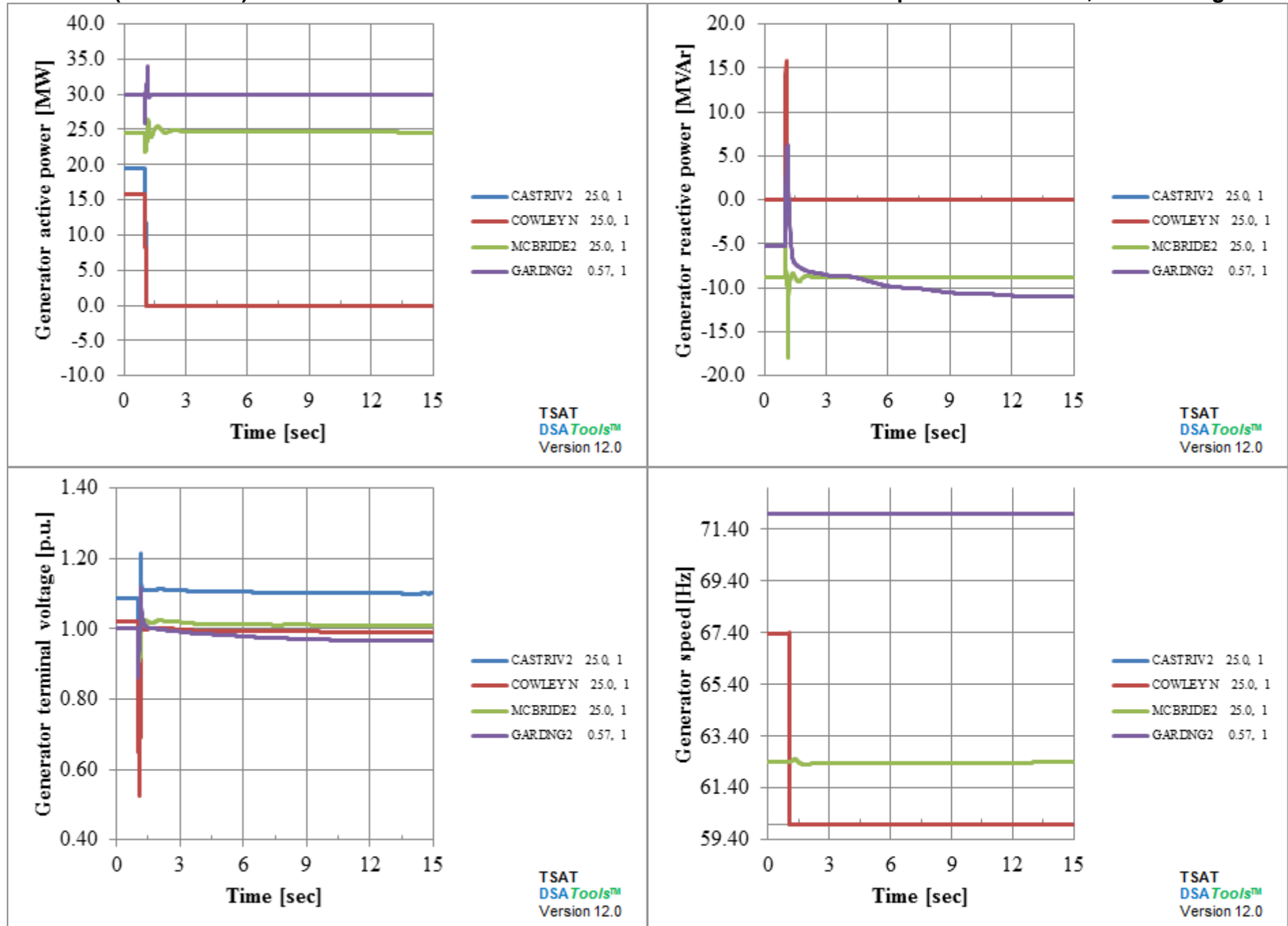
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Light 2014



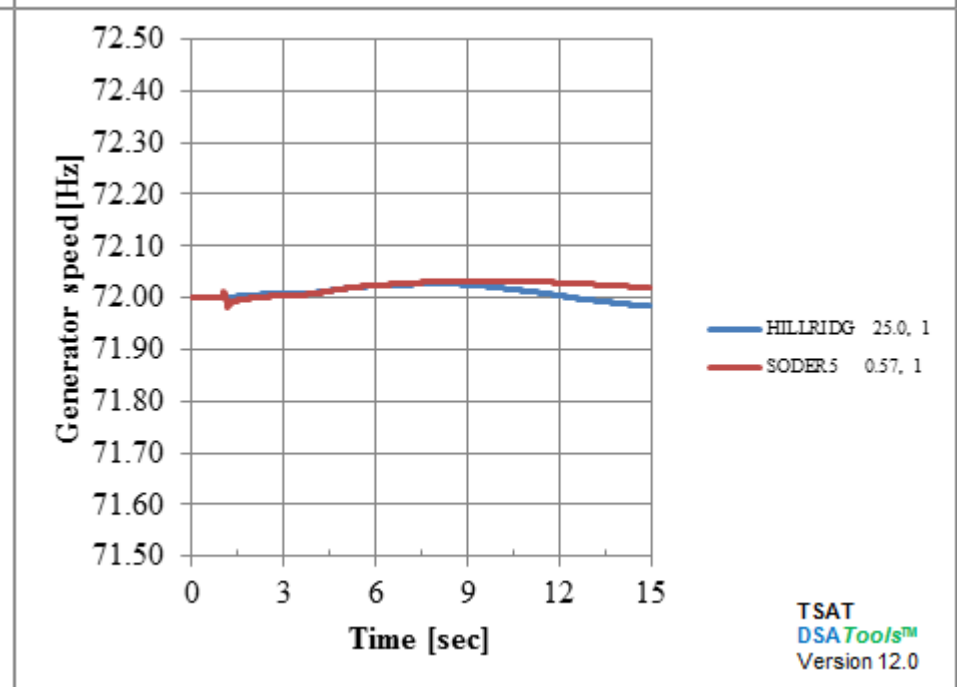
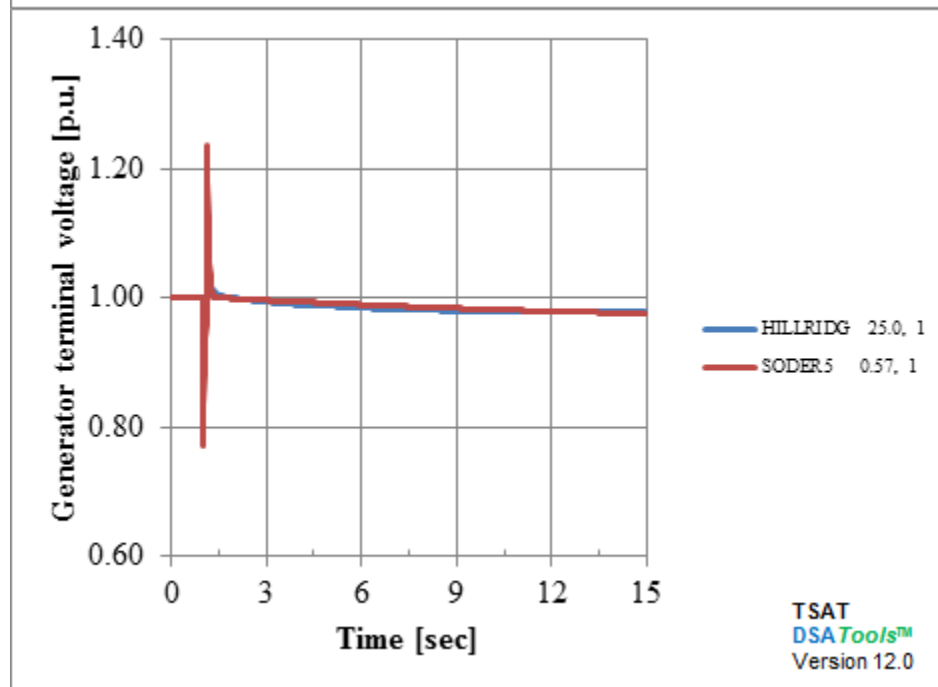
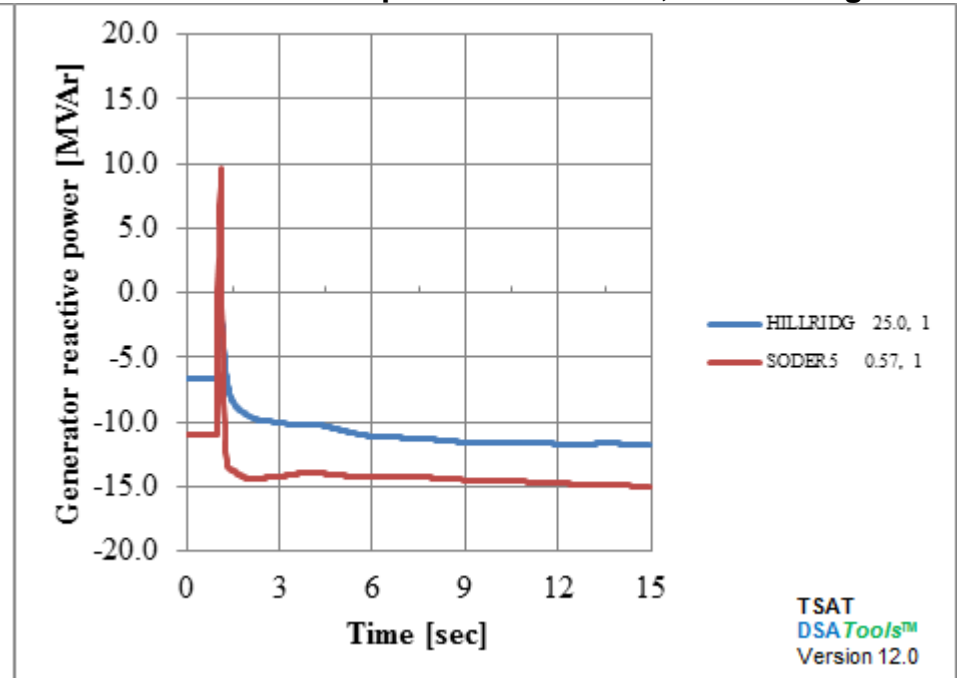
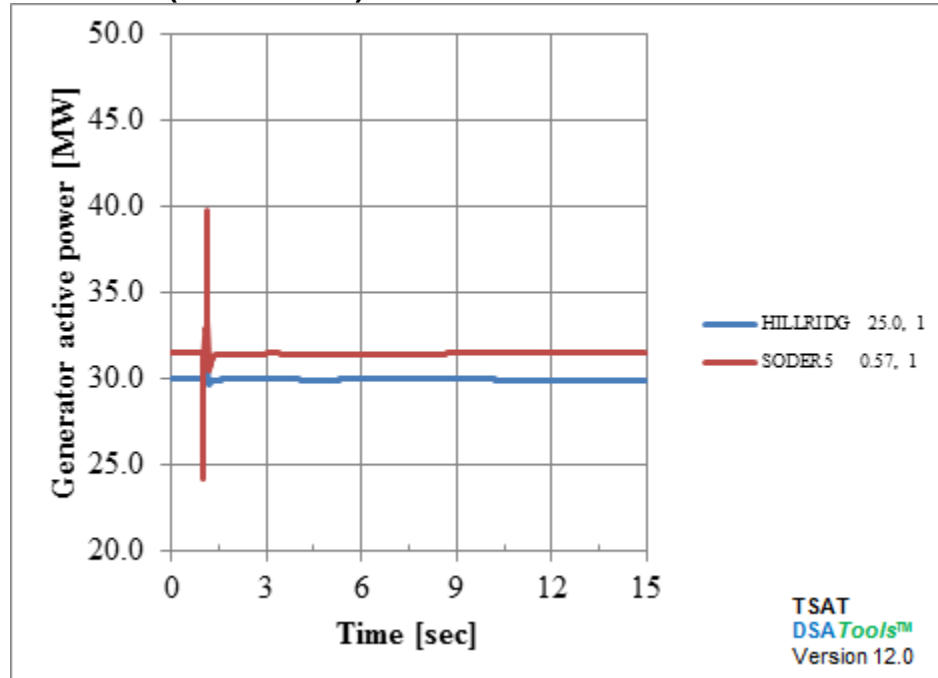
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Light 2014



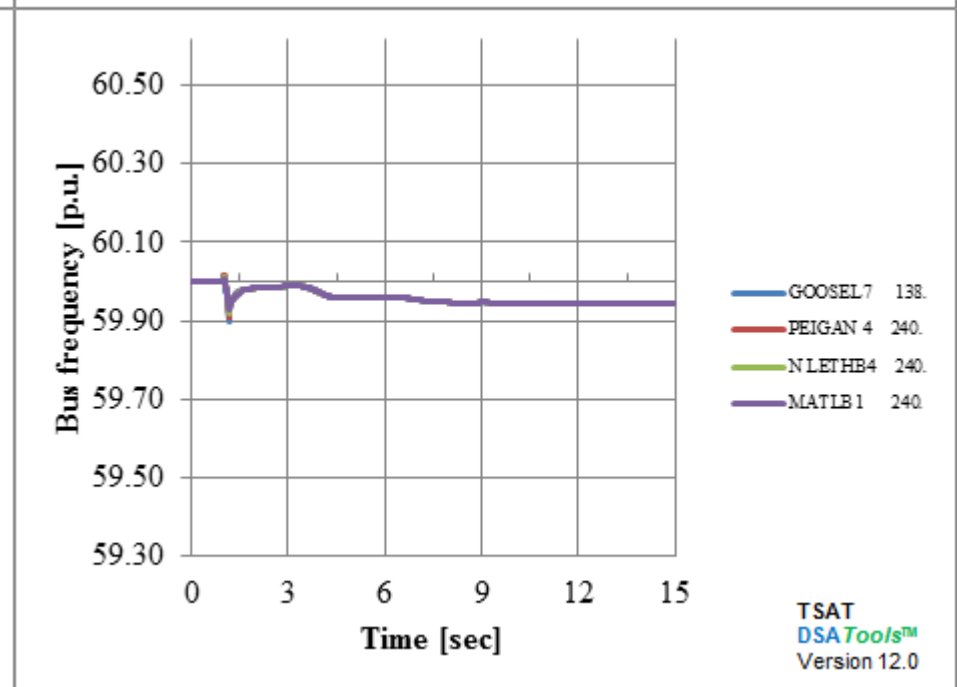
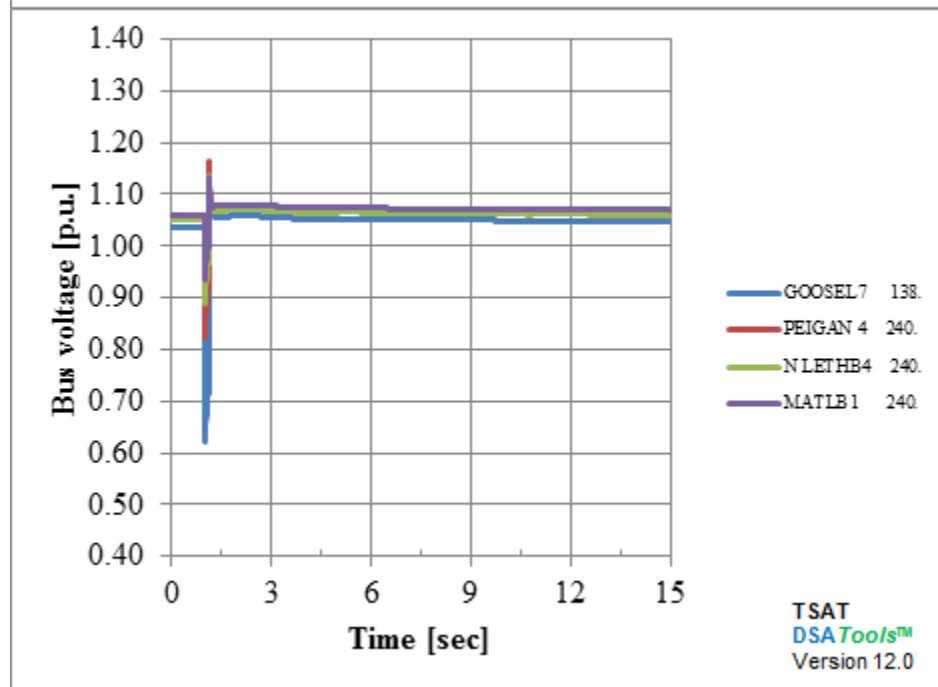
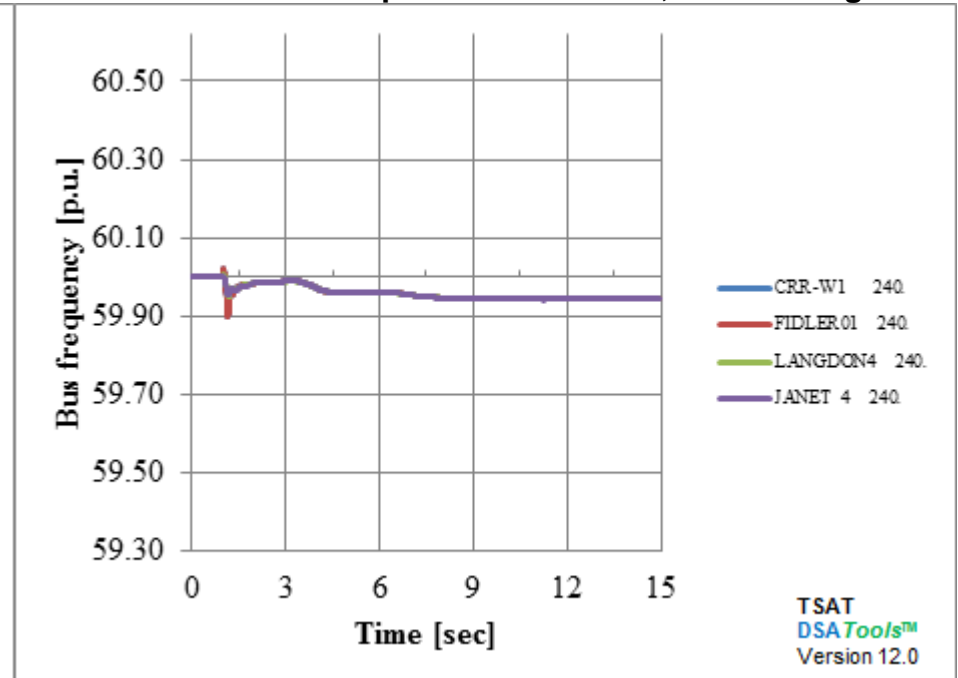
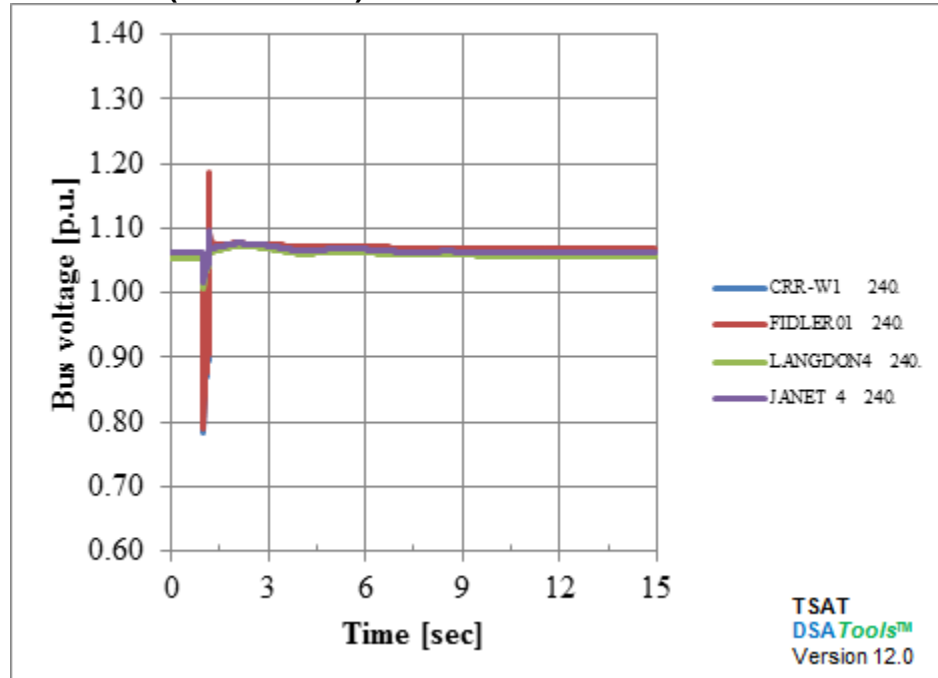
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Light 2014



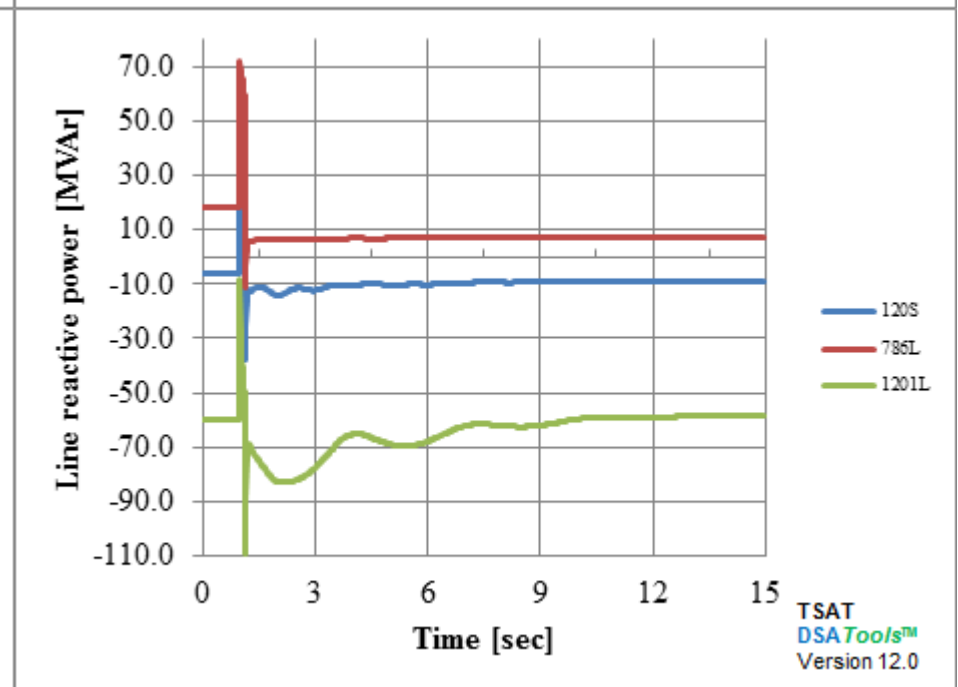
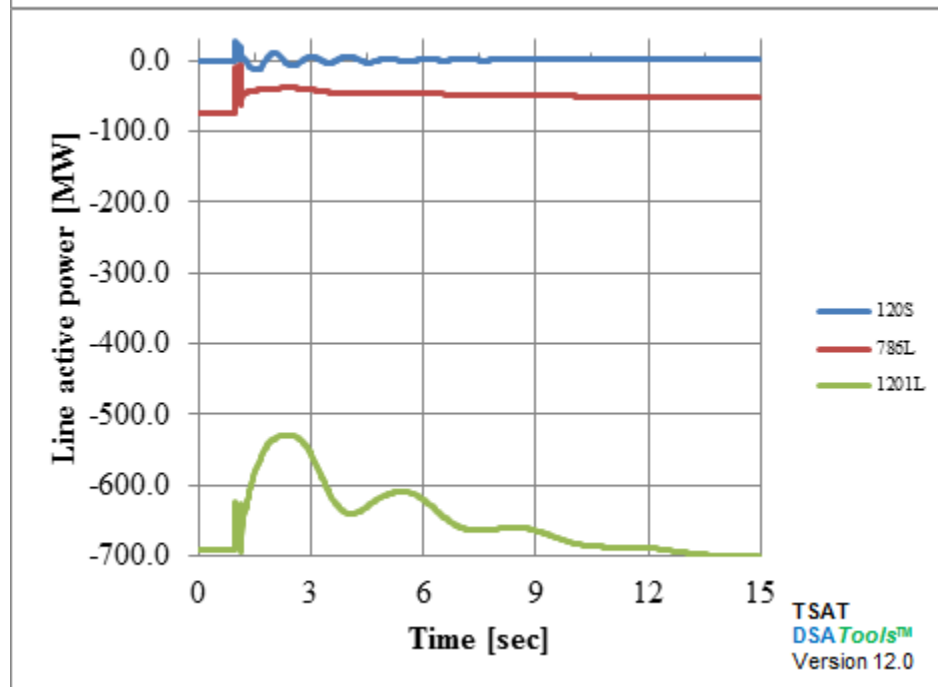
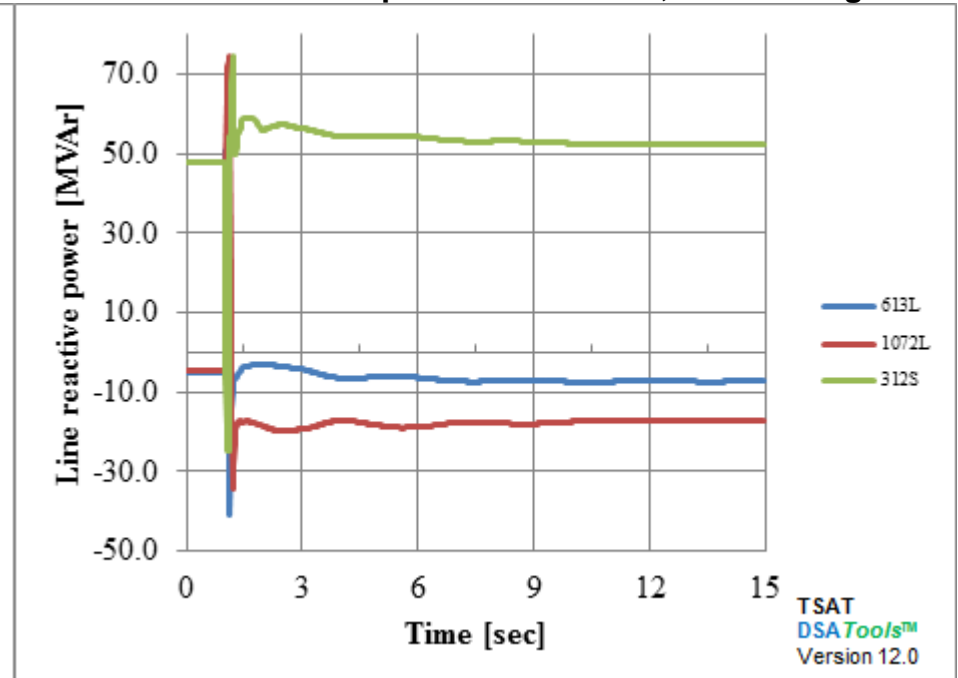
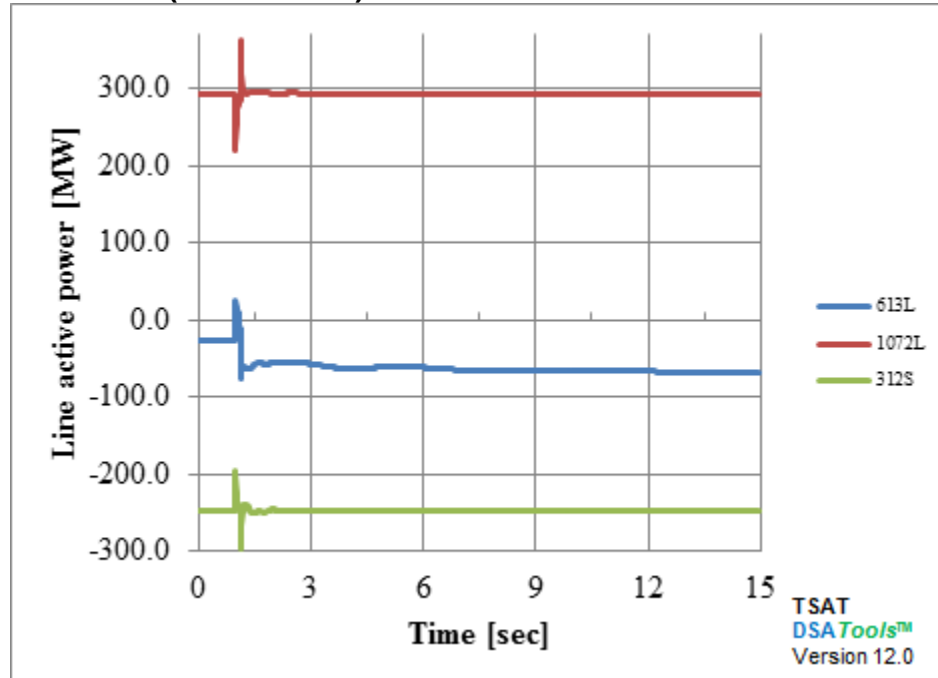
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Light 2014



11 -- 164L (103S - 415S) NEAR 415S

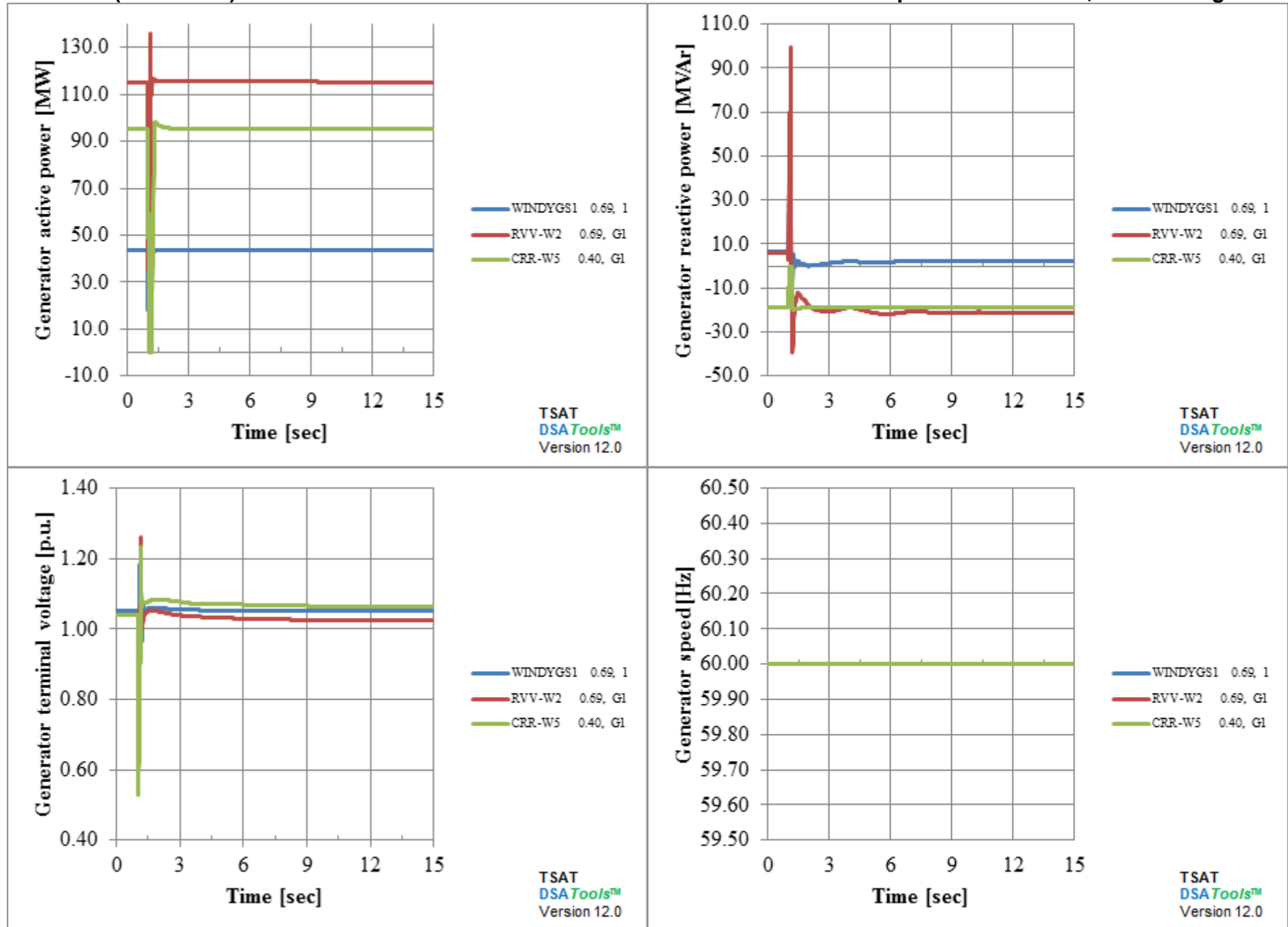
Proposed Connection, Summer Light 2014





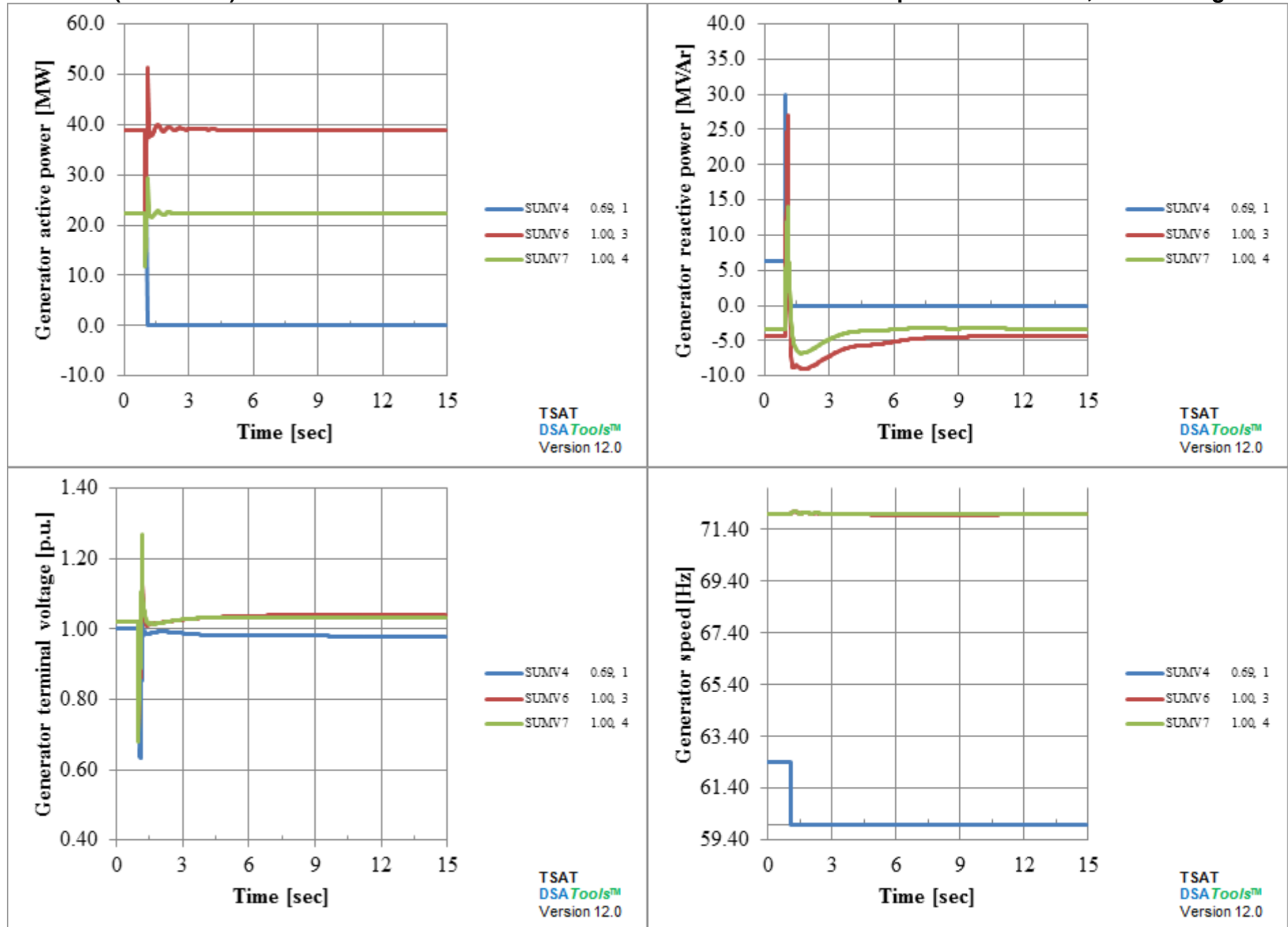
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



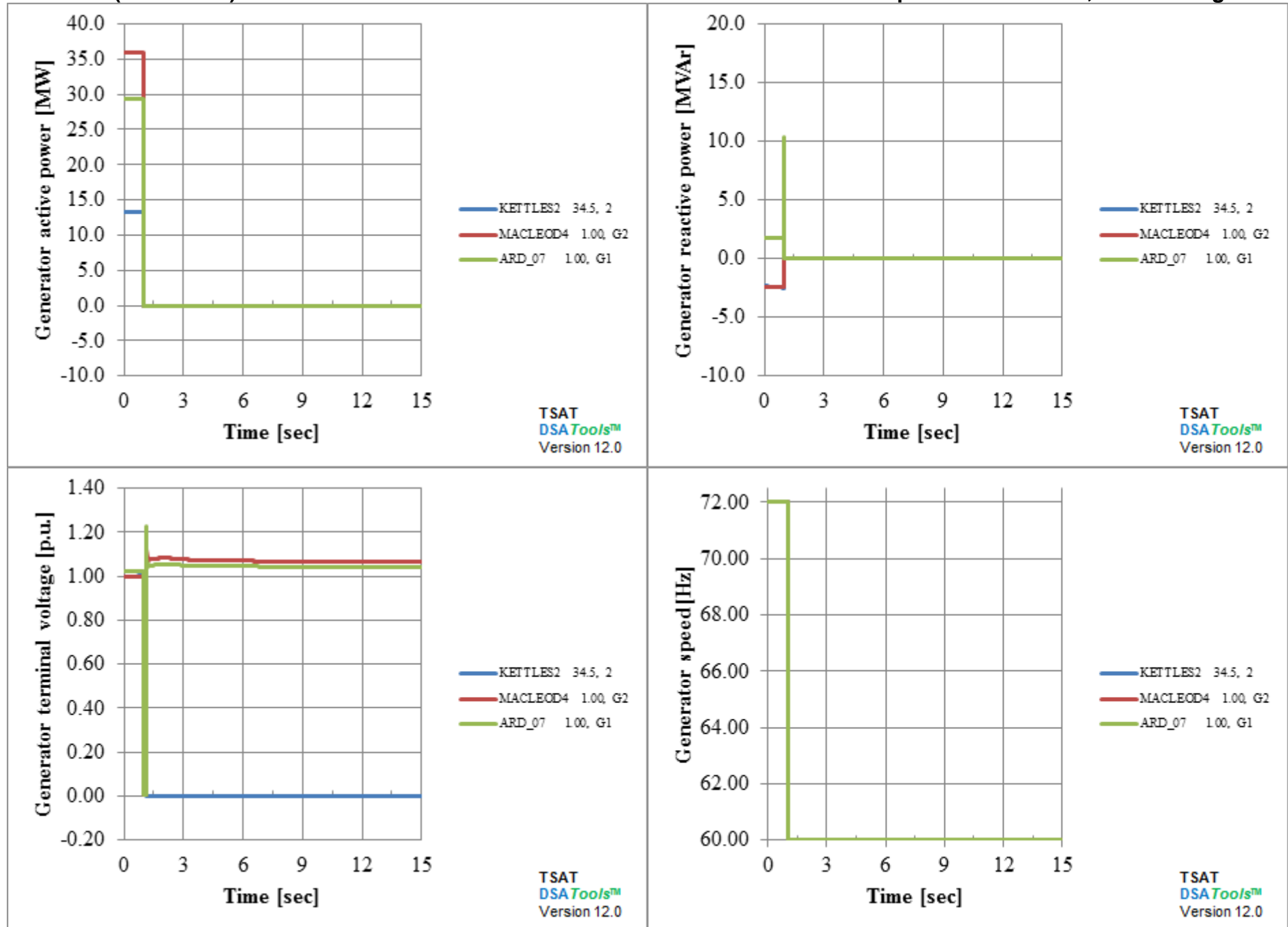
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



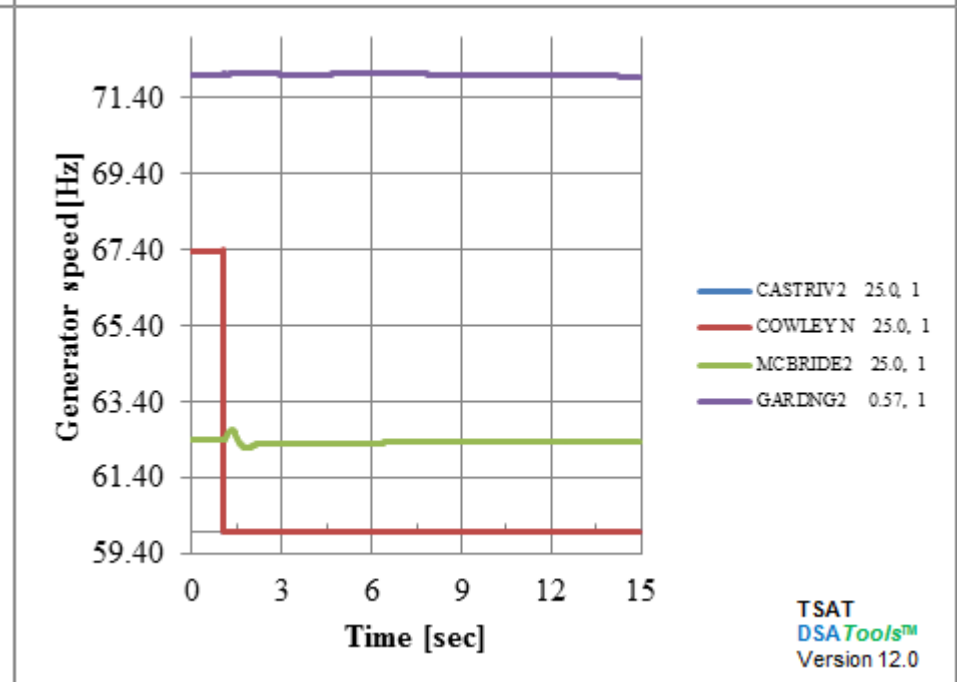
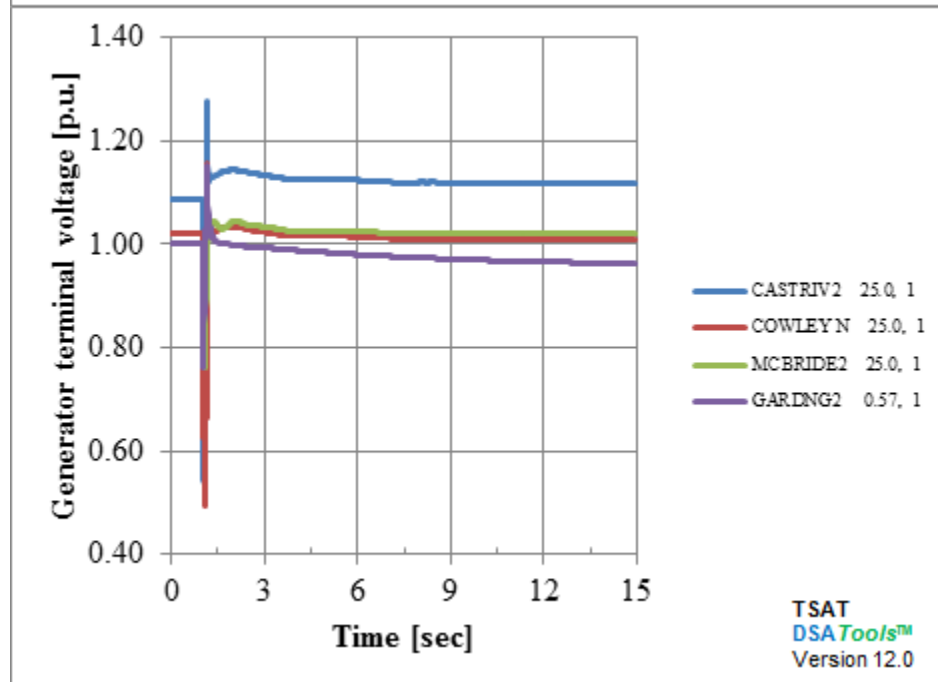
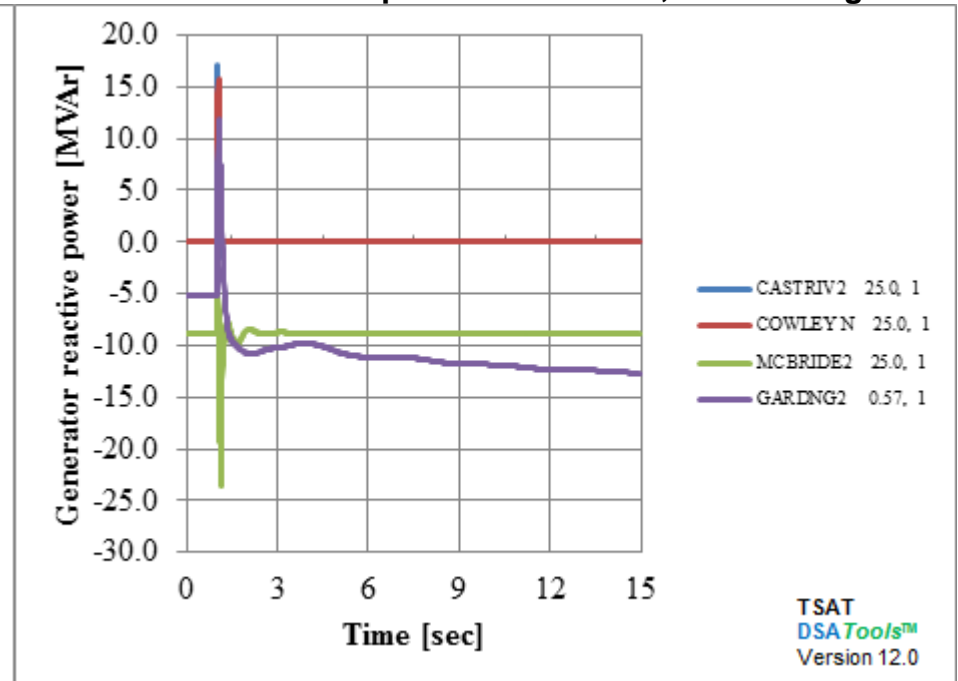
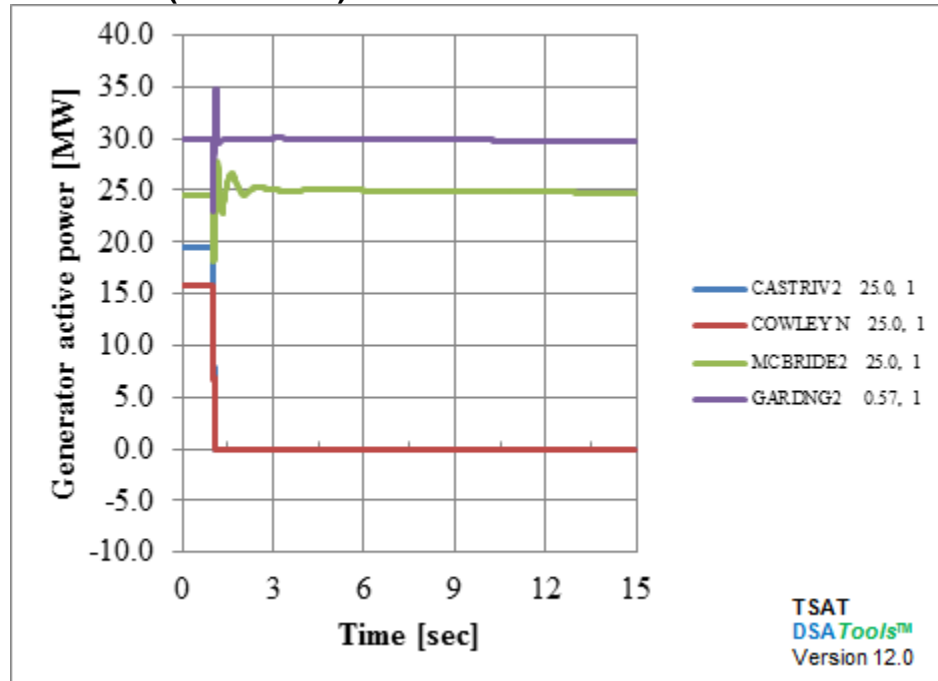
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



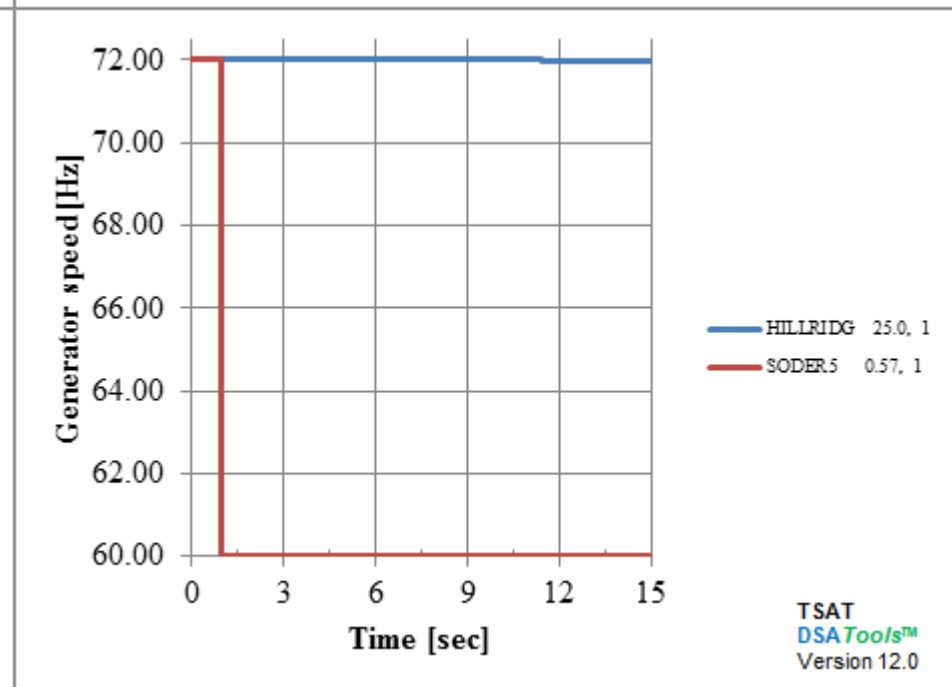
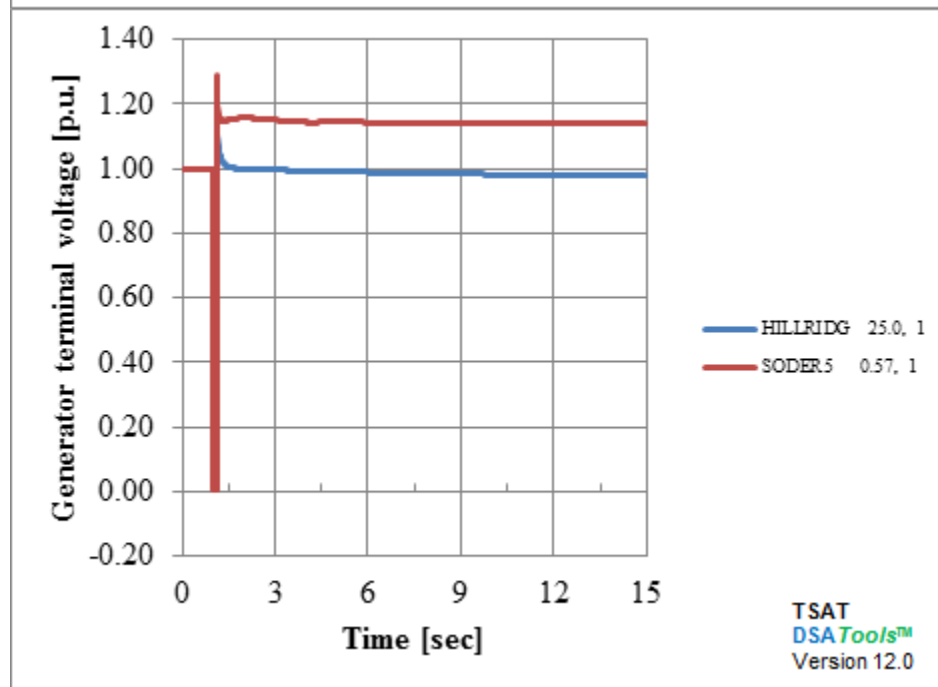
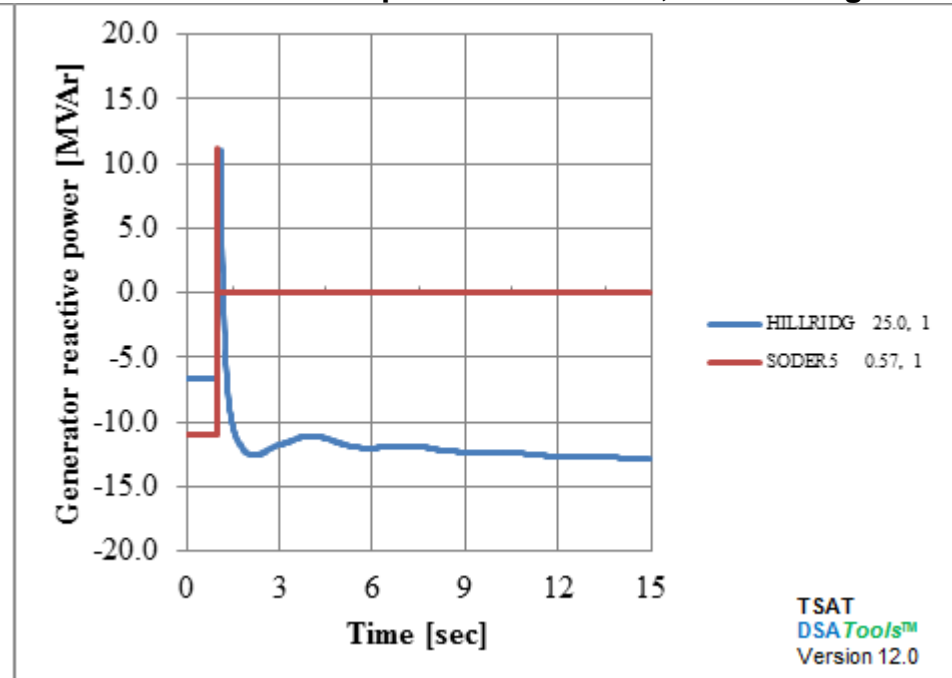
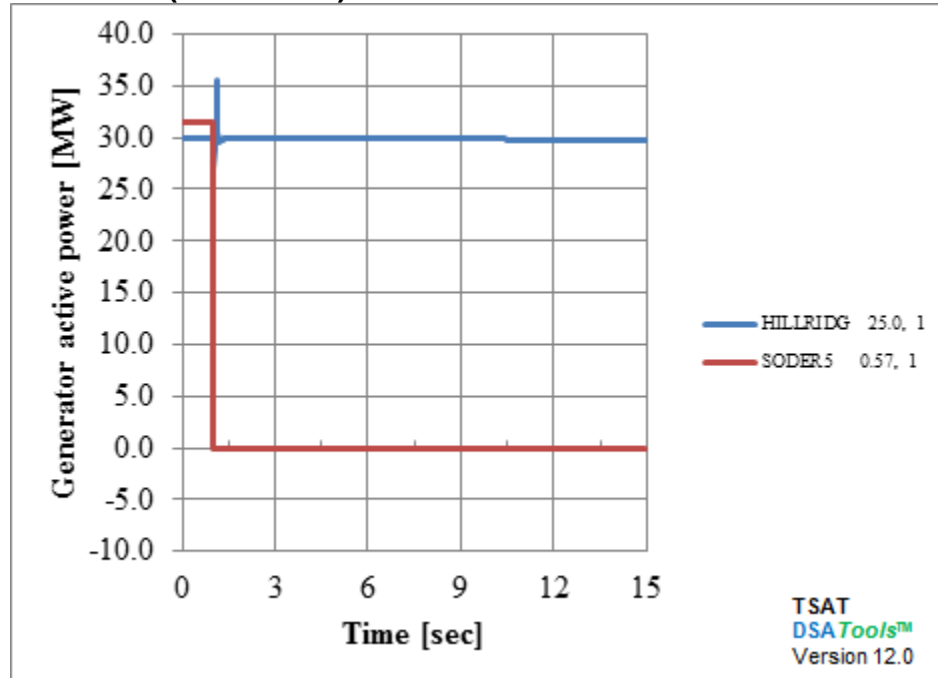
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



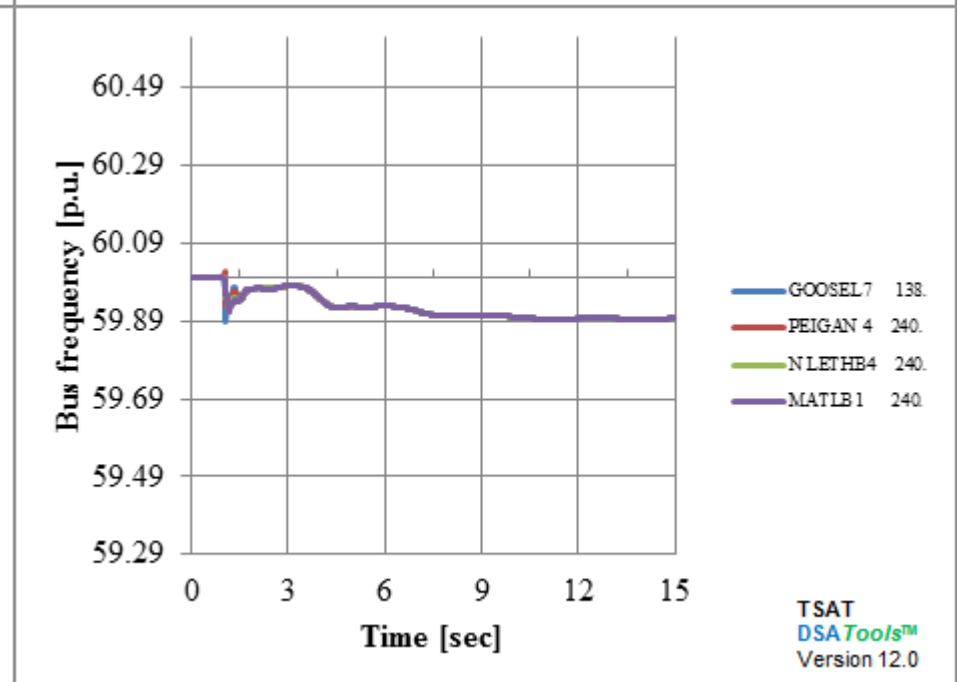
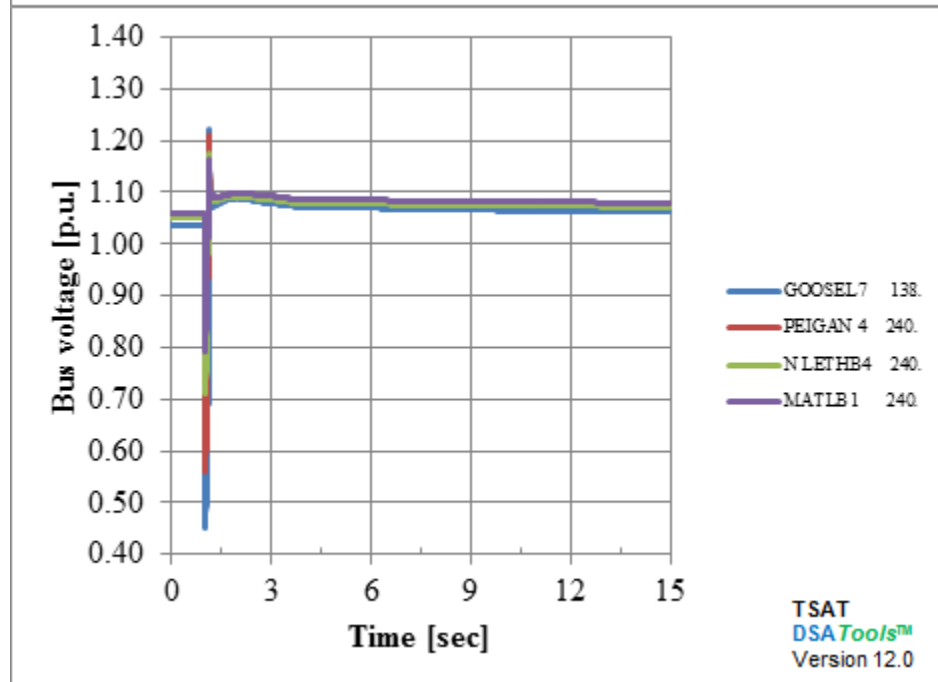
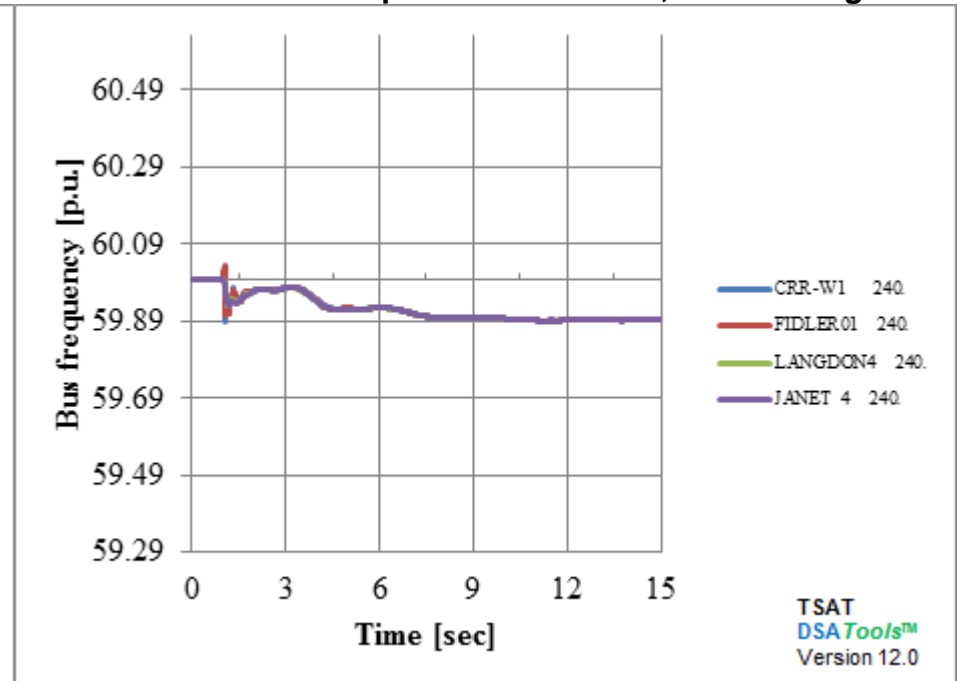
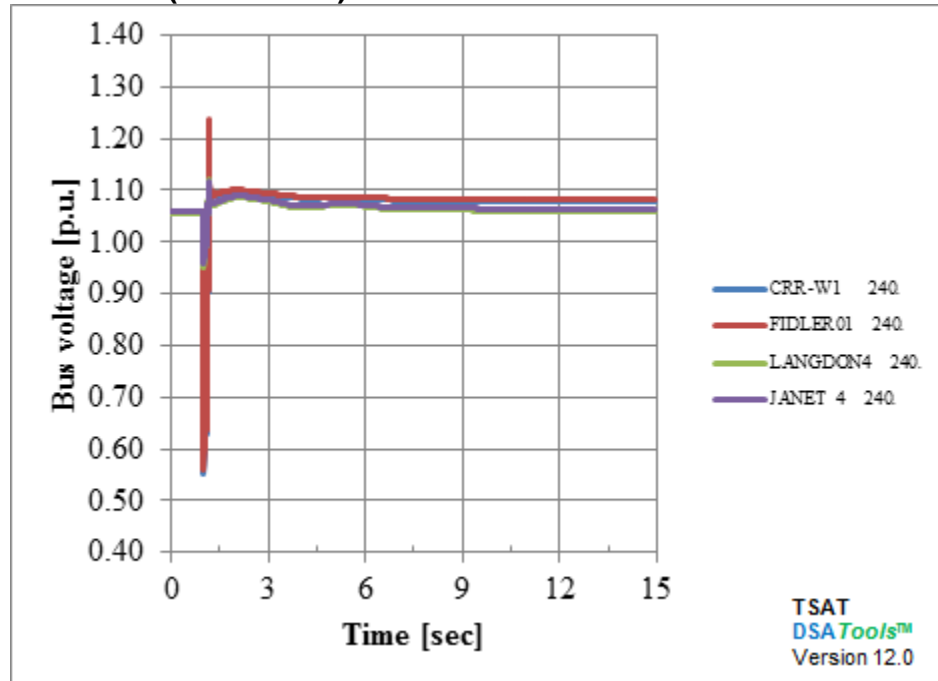
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



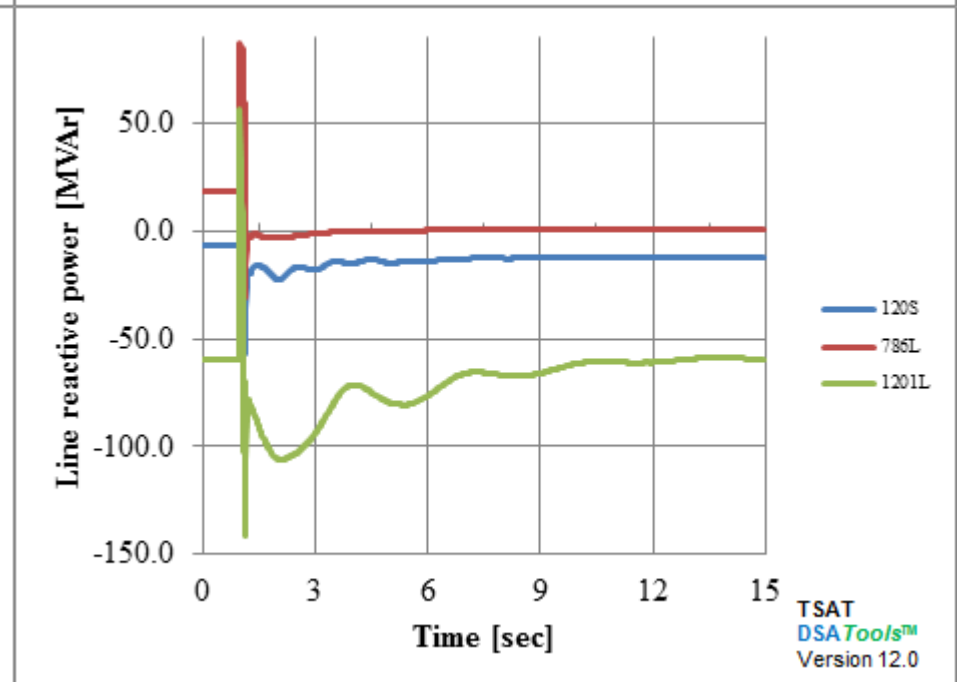
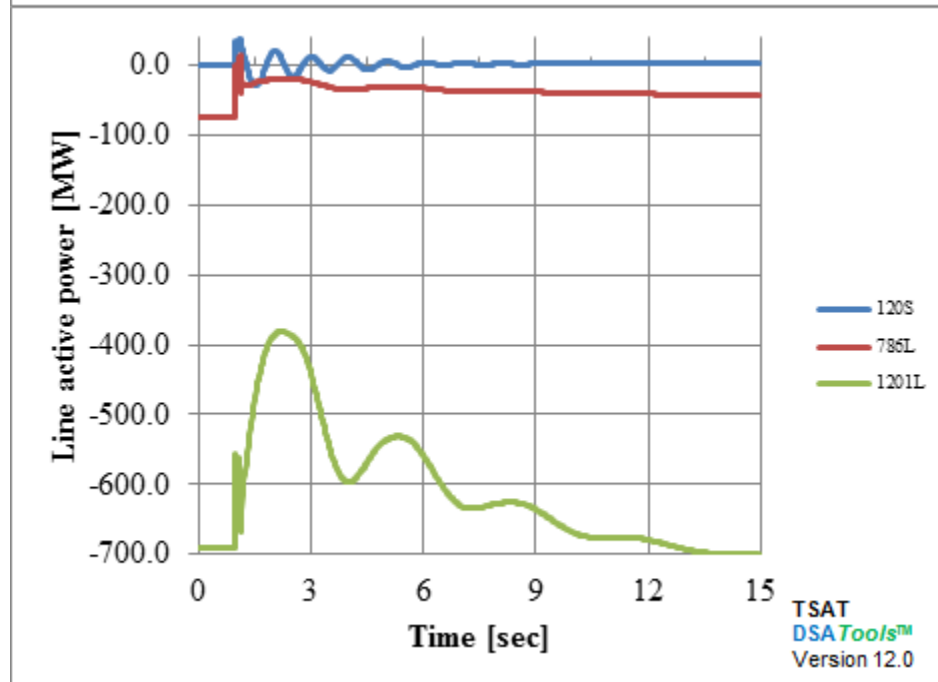
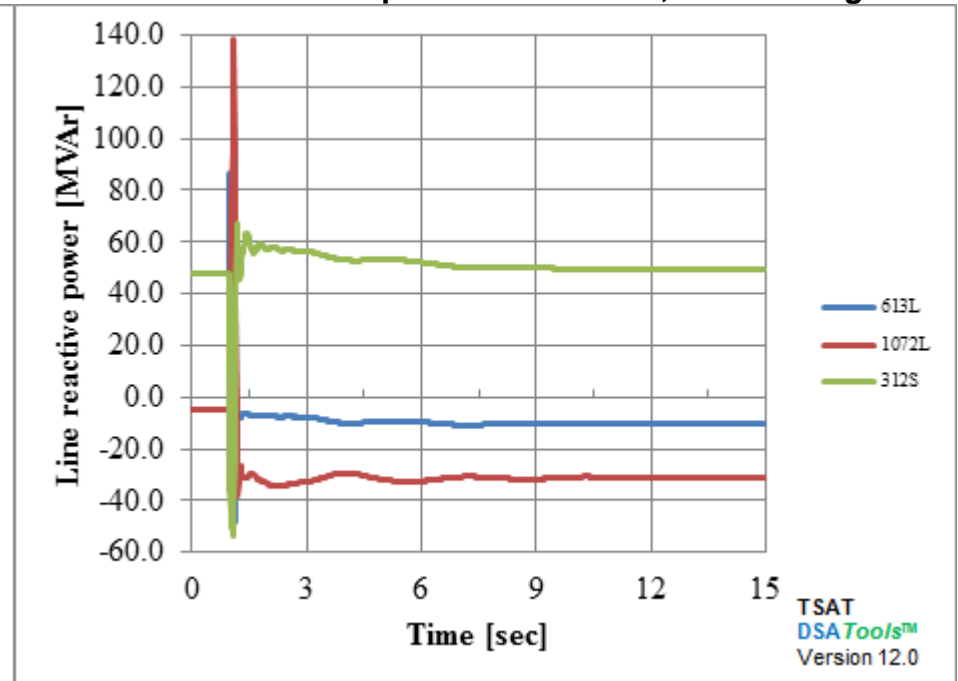
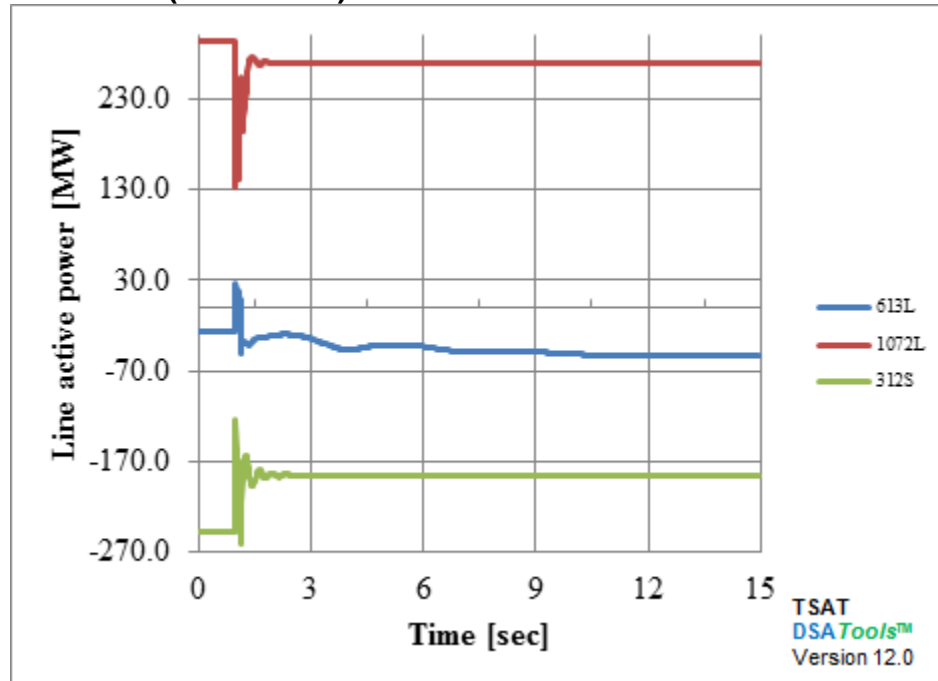
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



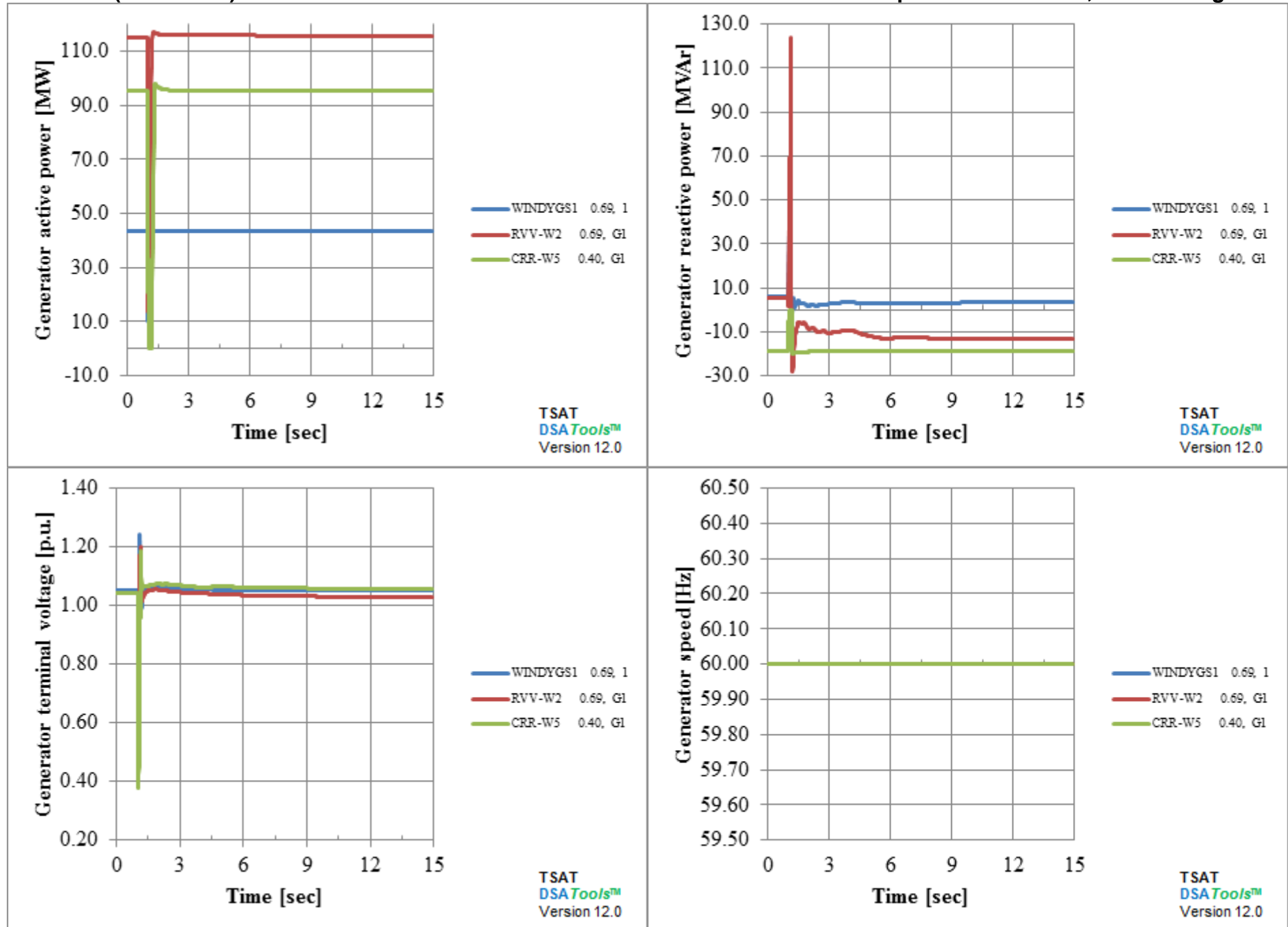
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Light 2014



13 -- 616L (59S - 103S) NEAR 103S

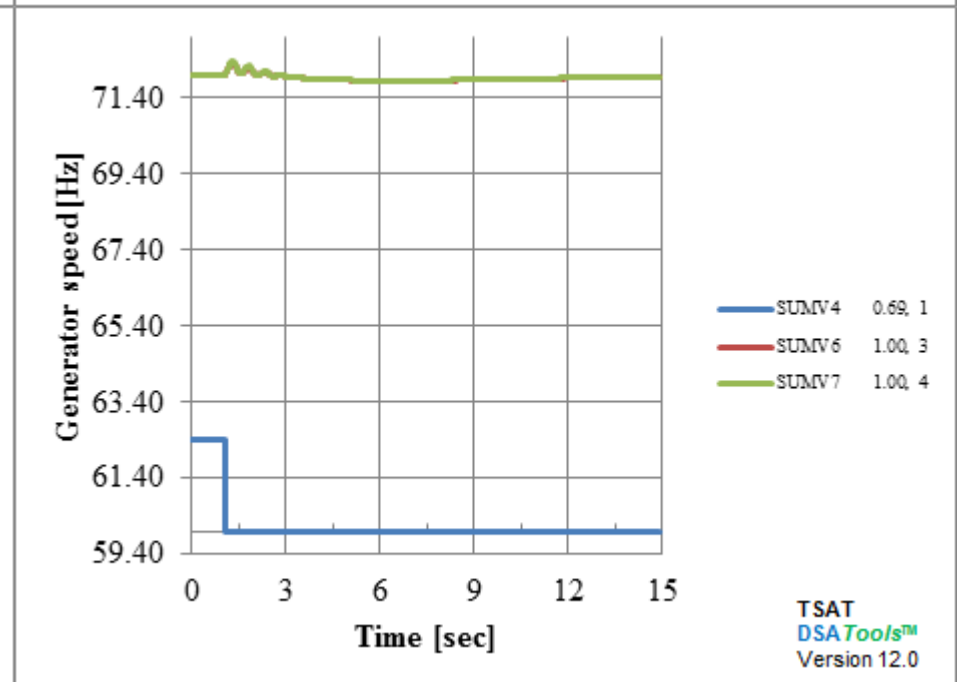
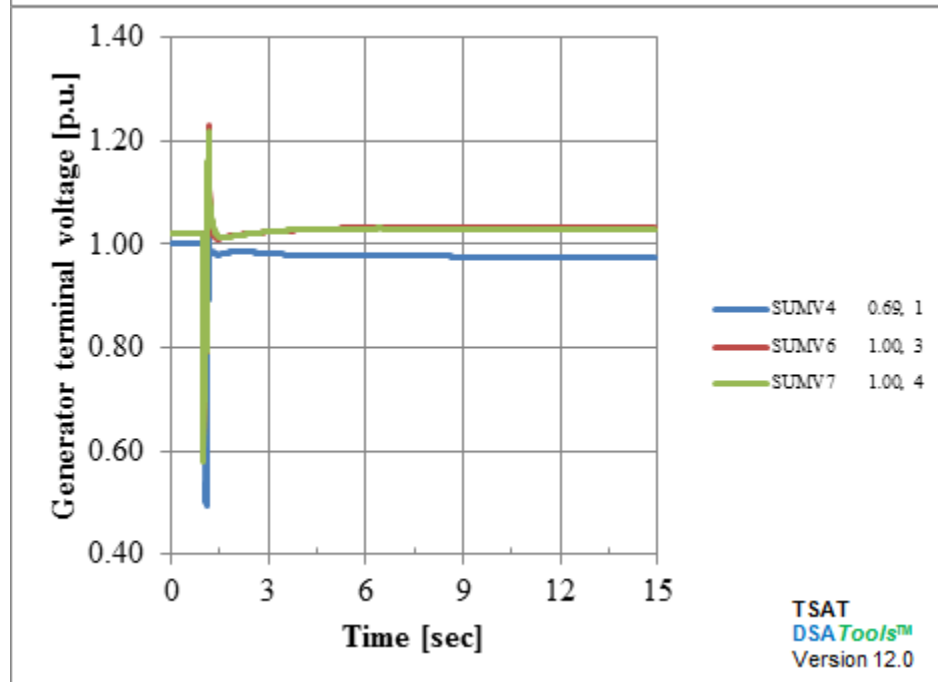
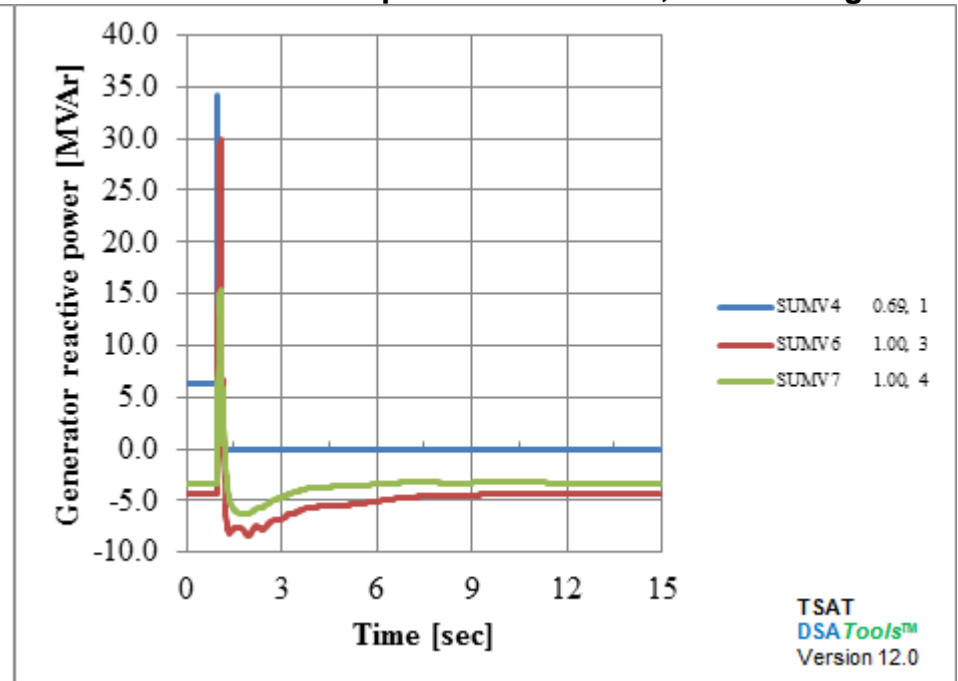
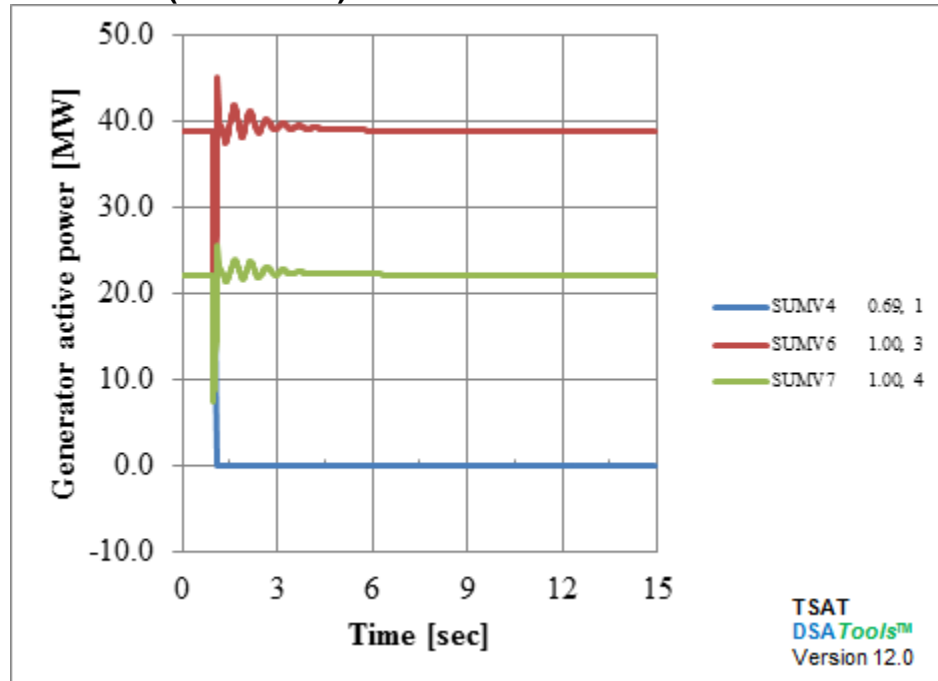
Proposed Connection, Summer Light 2014





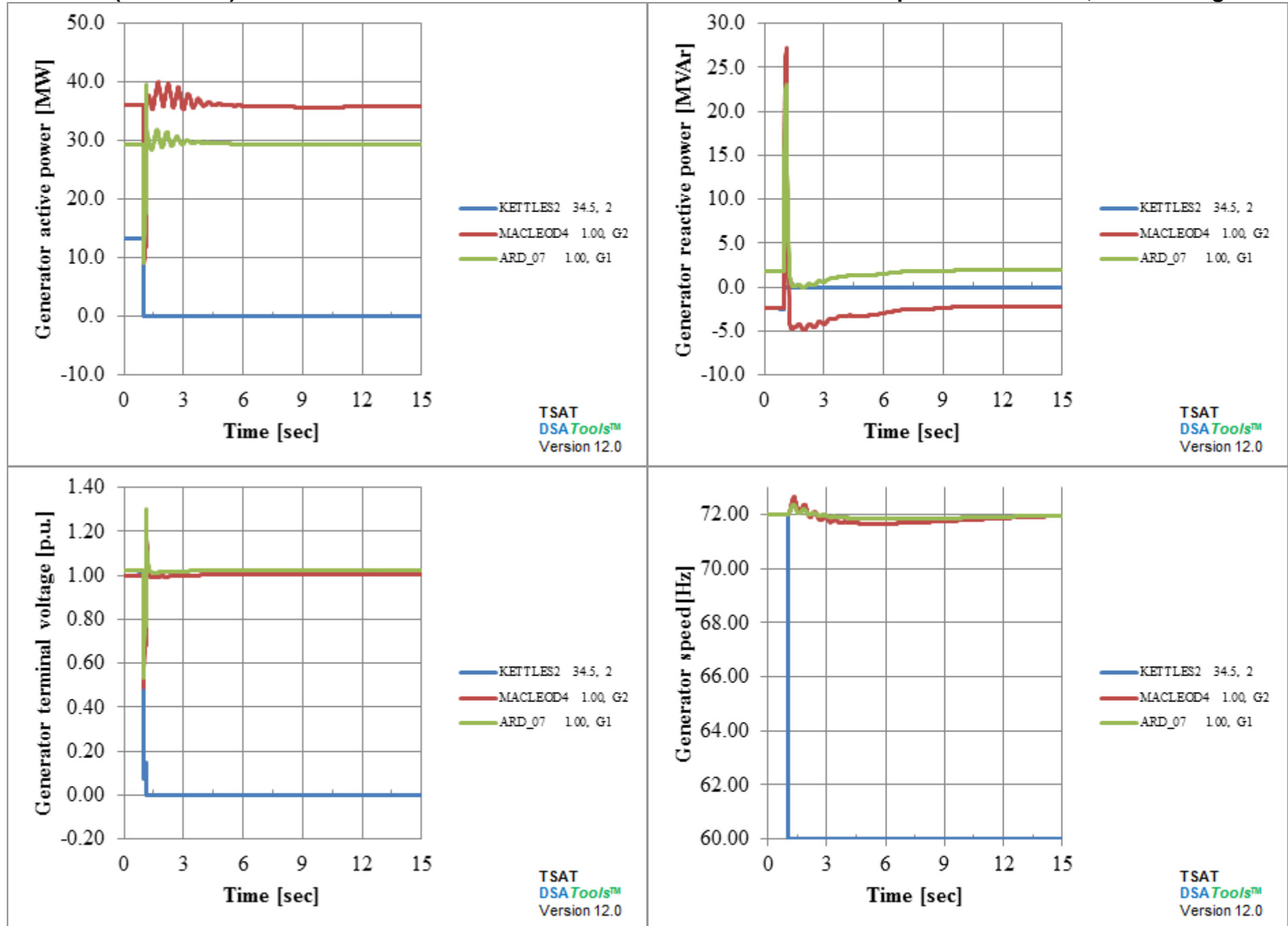
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



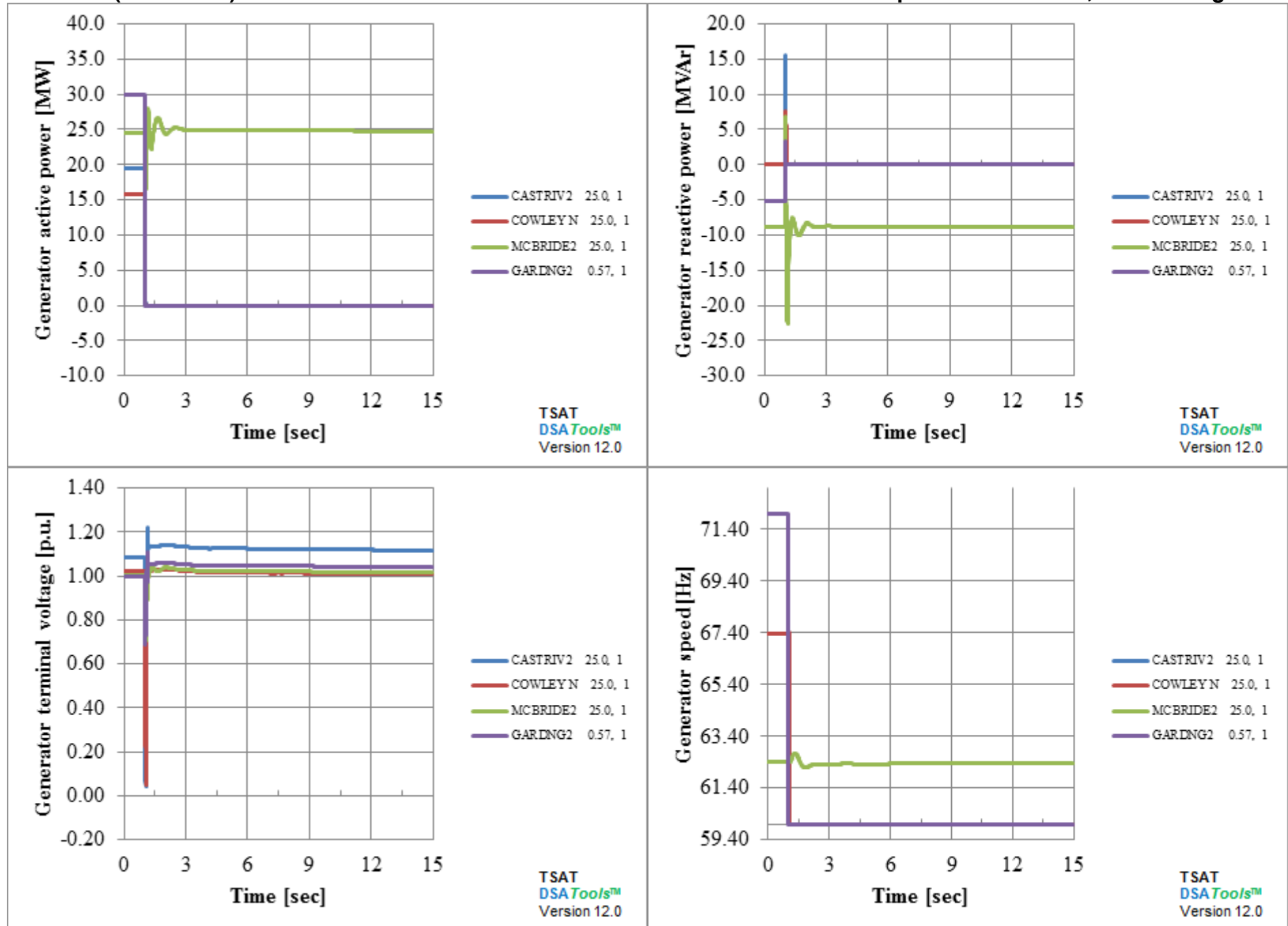
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



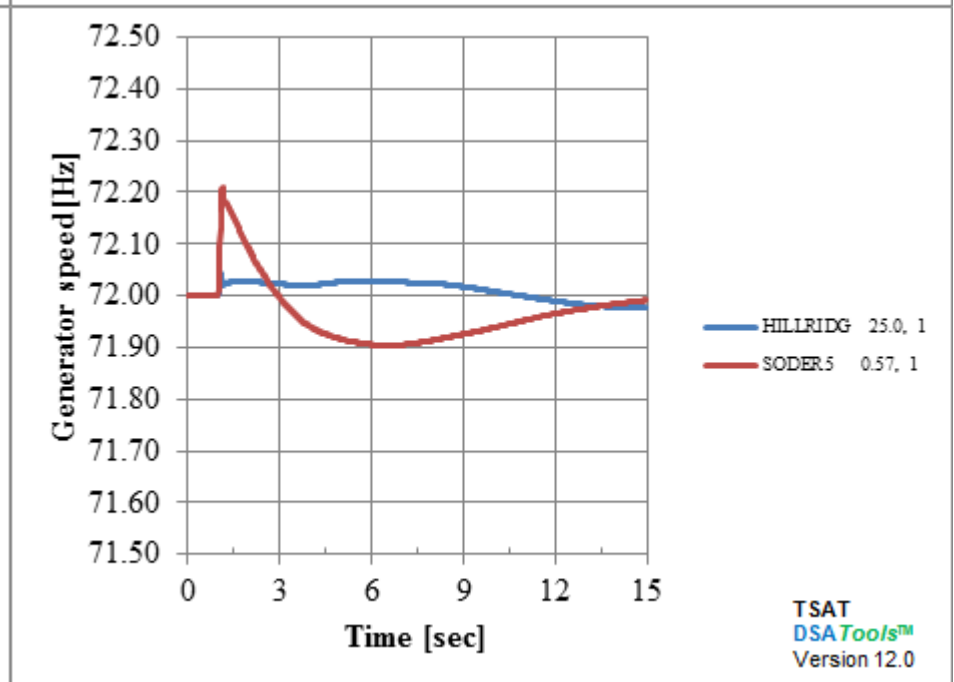
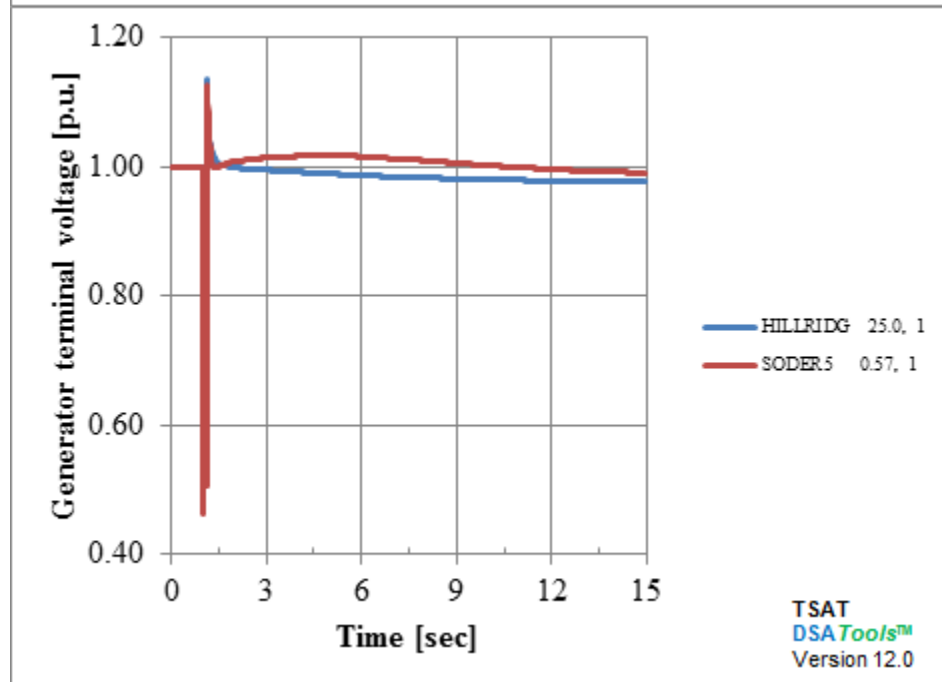
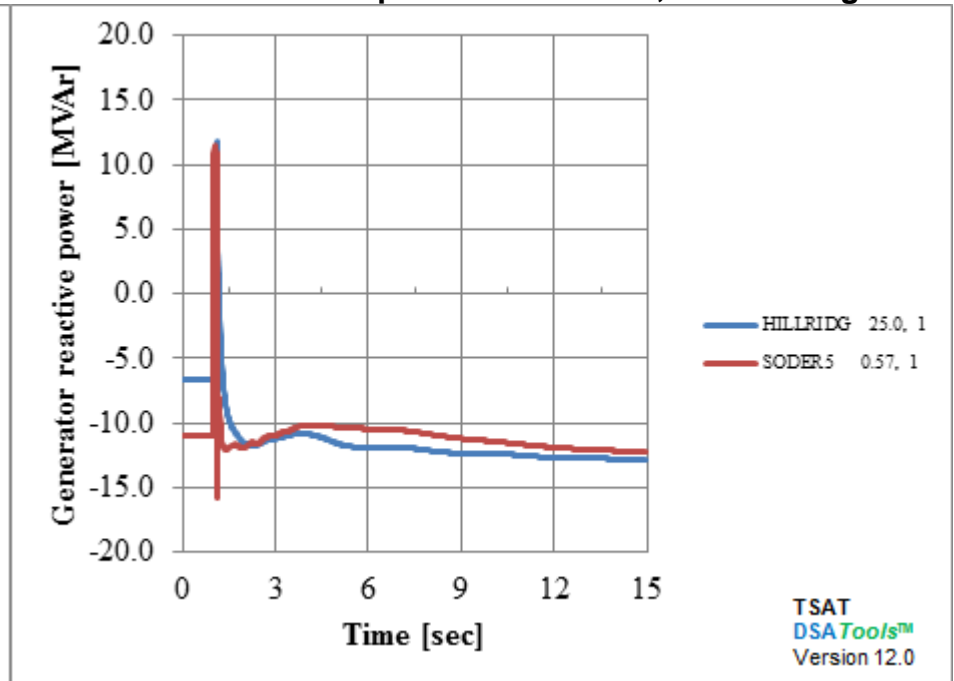
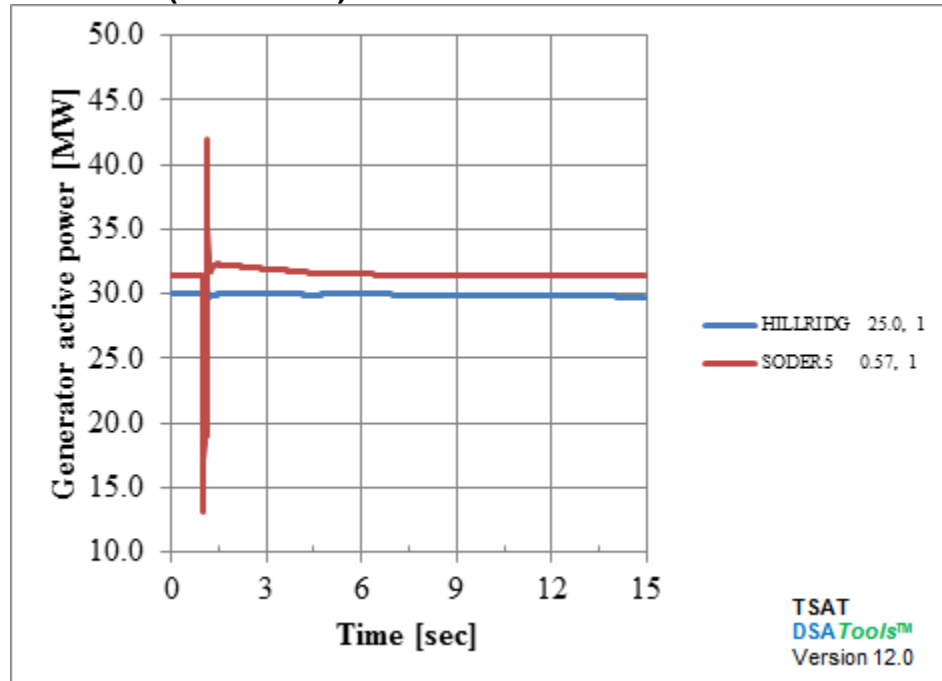
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



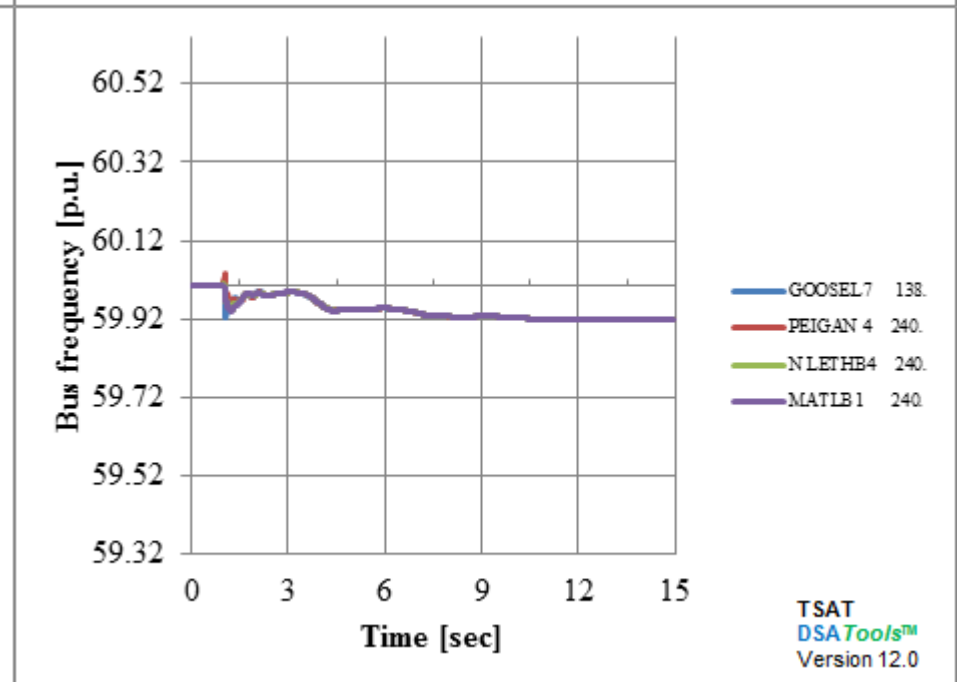
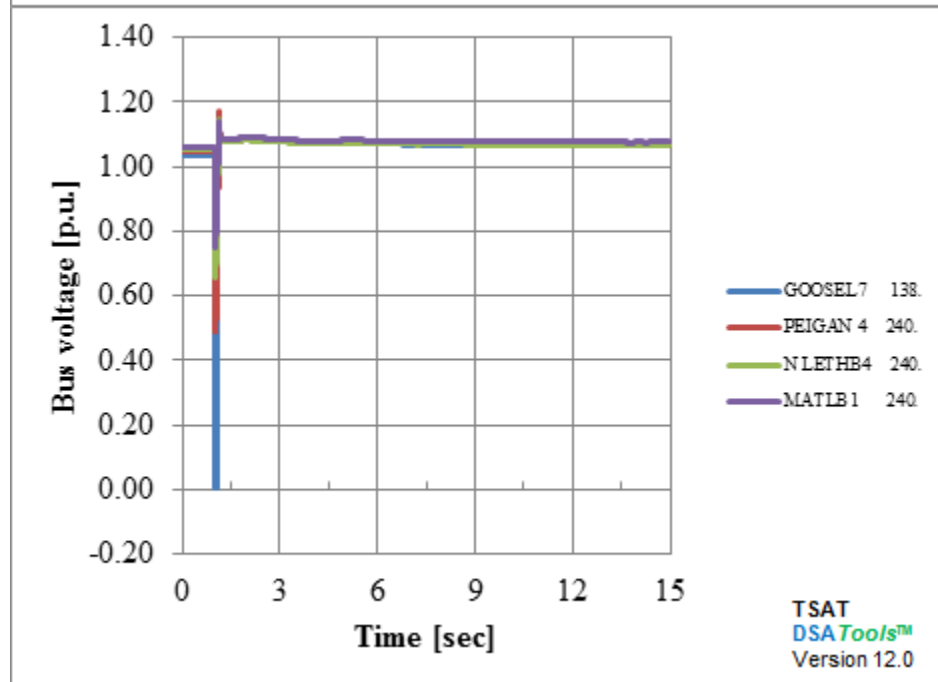
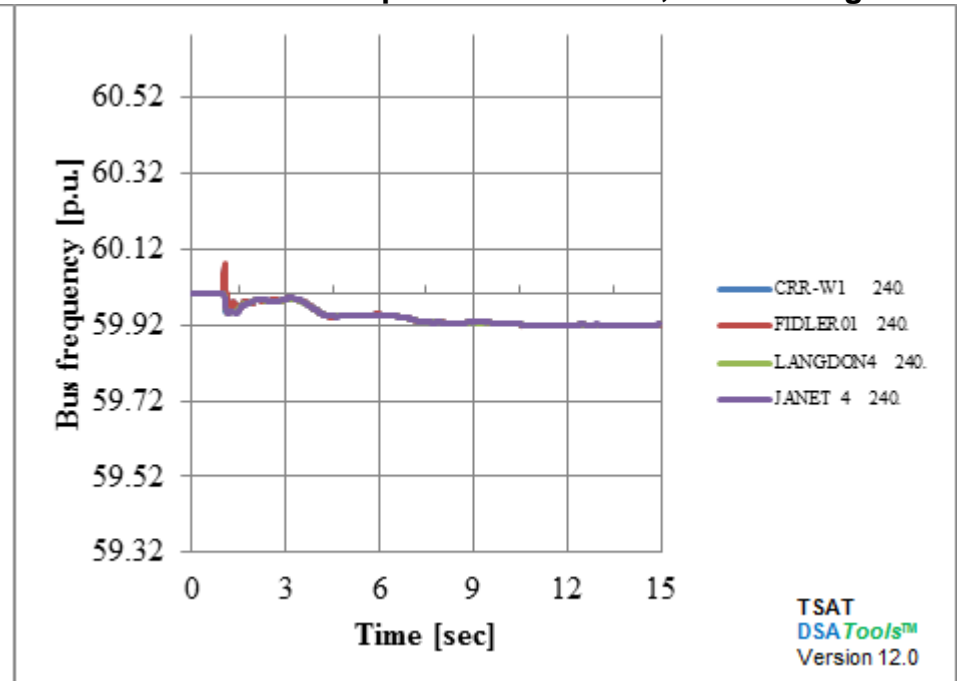
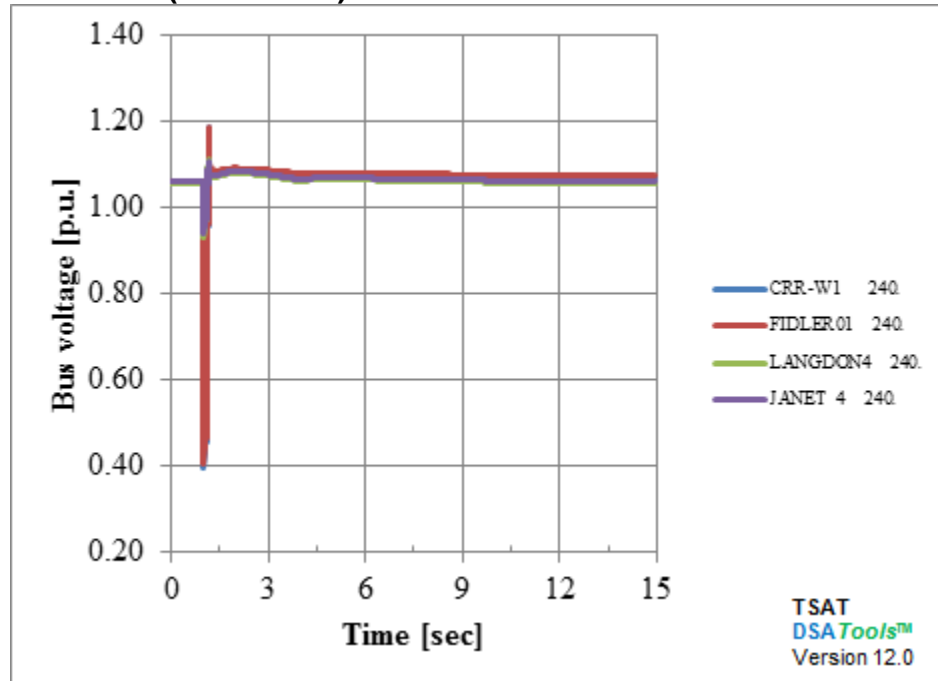
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



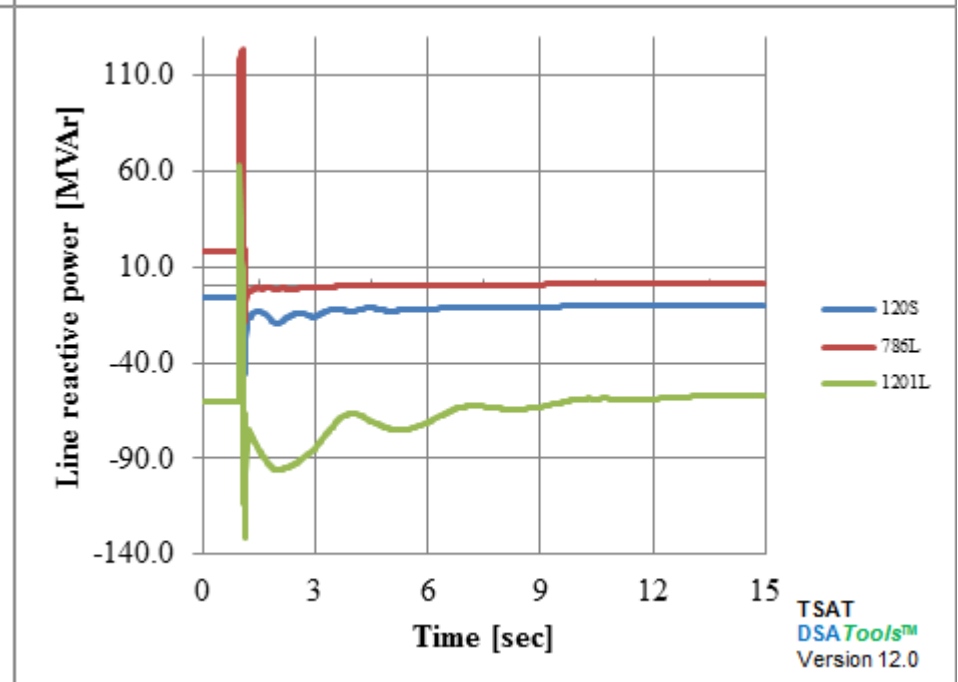
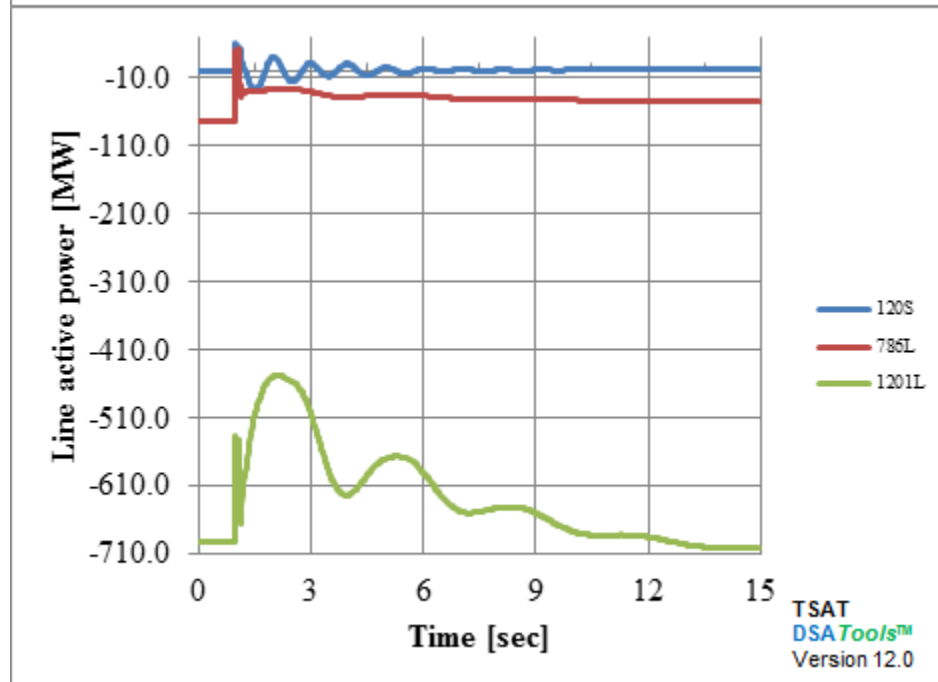
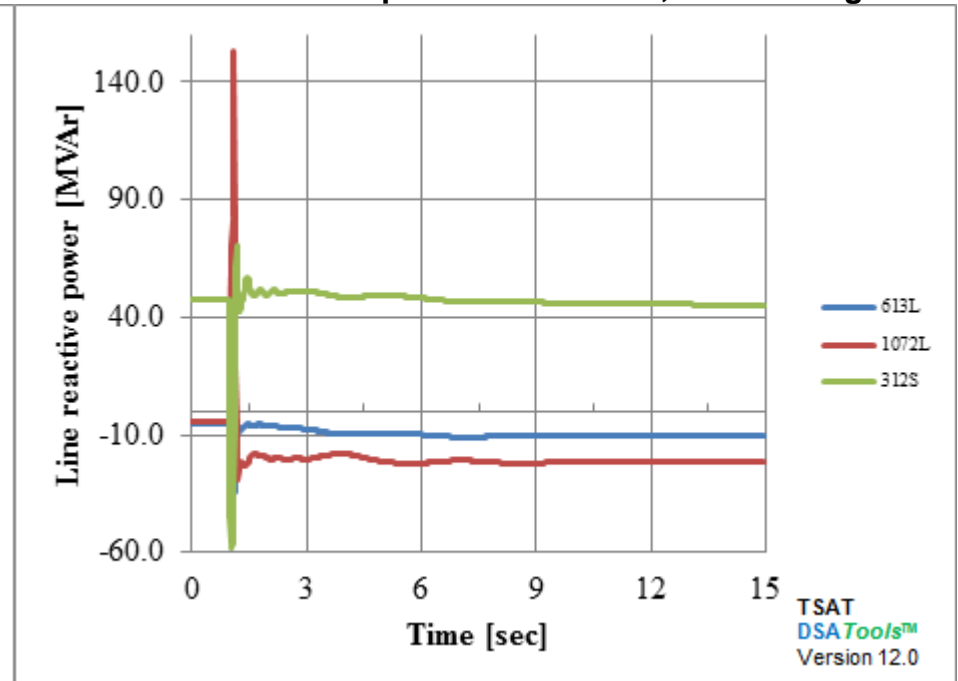
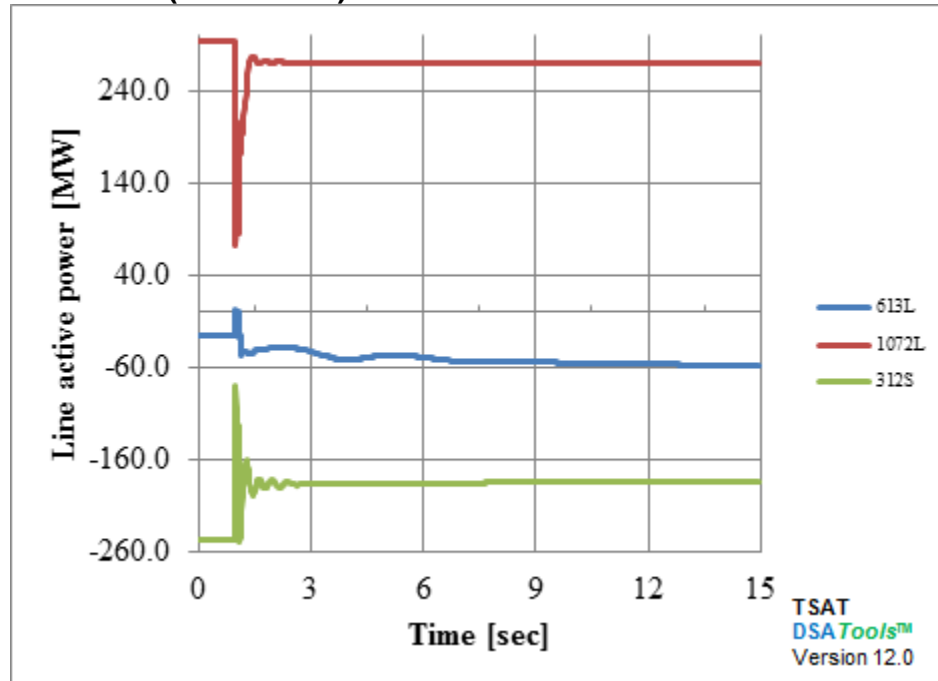
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



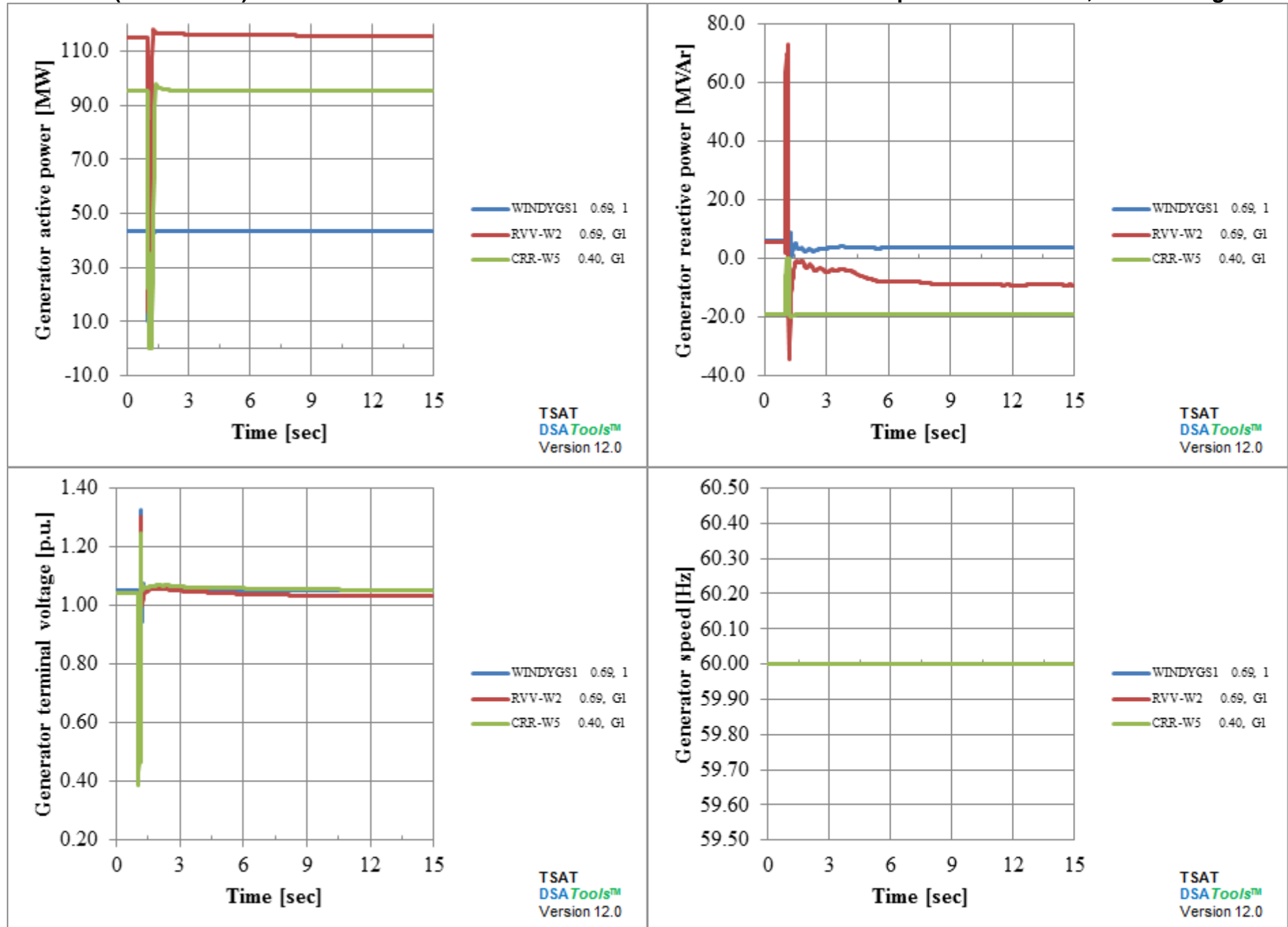
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Light 2014



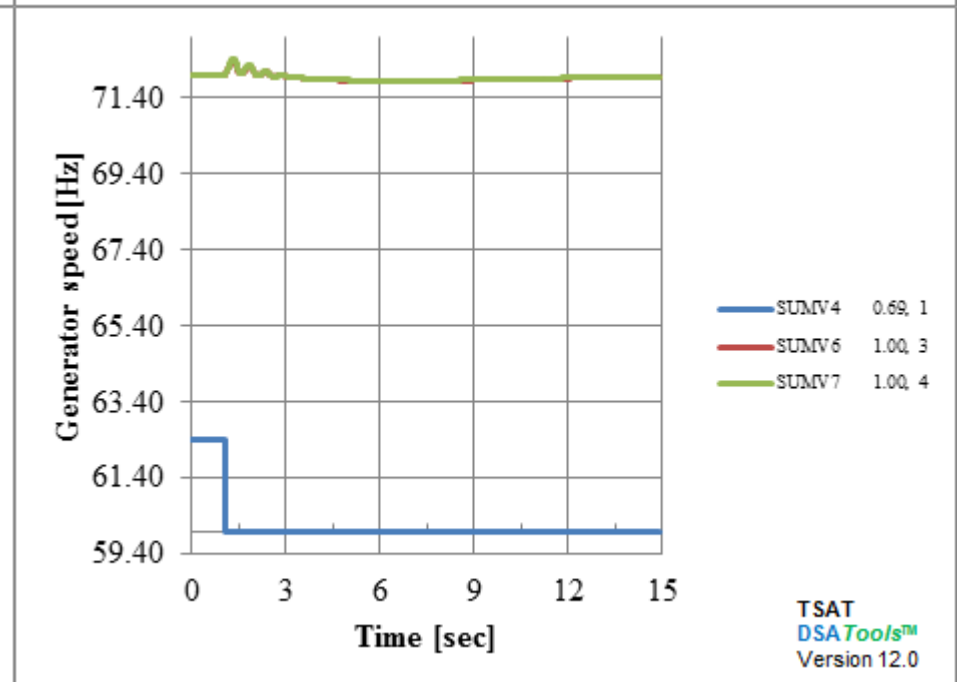
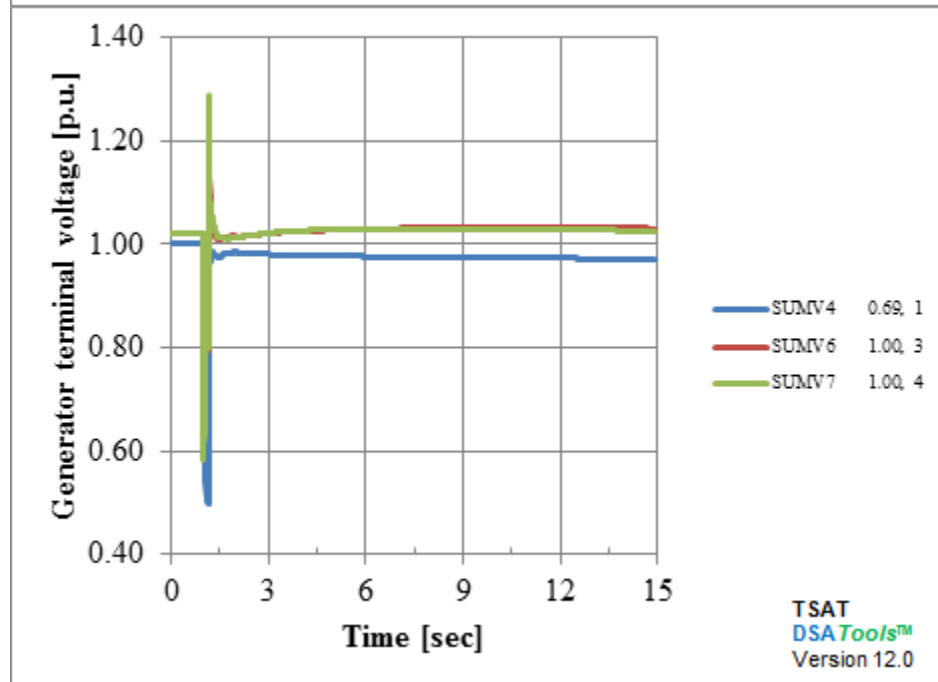
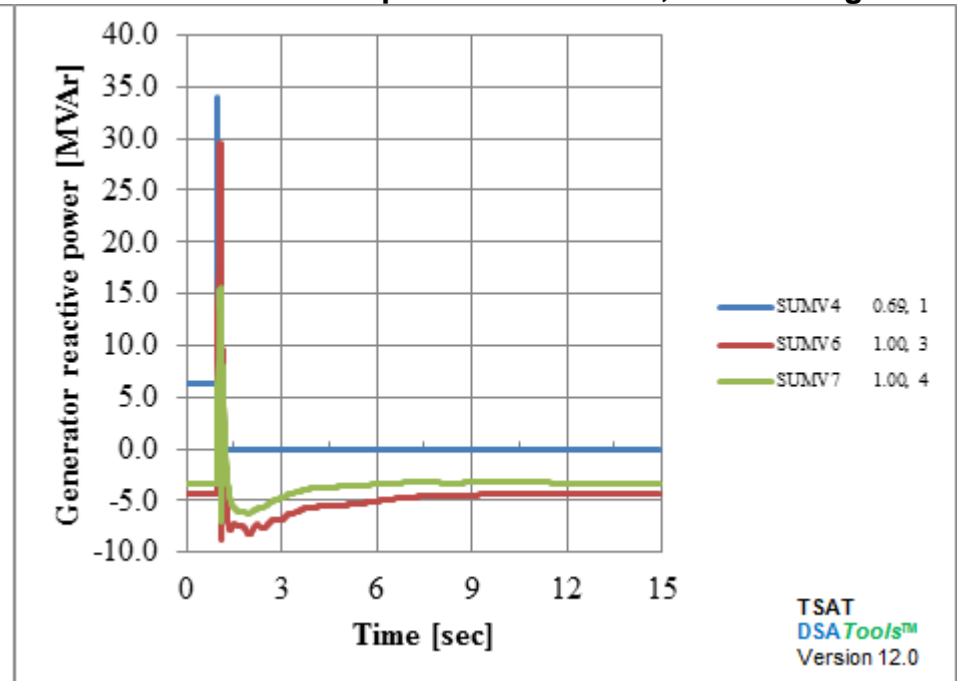
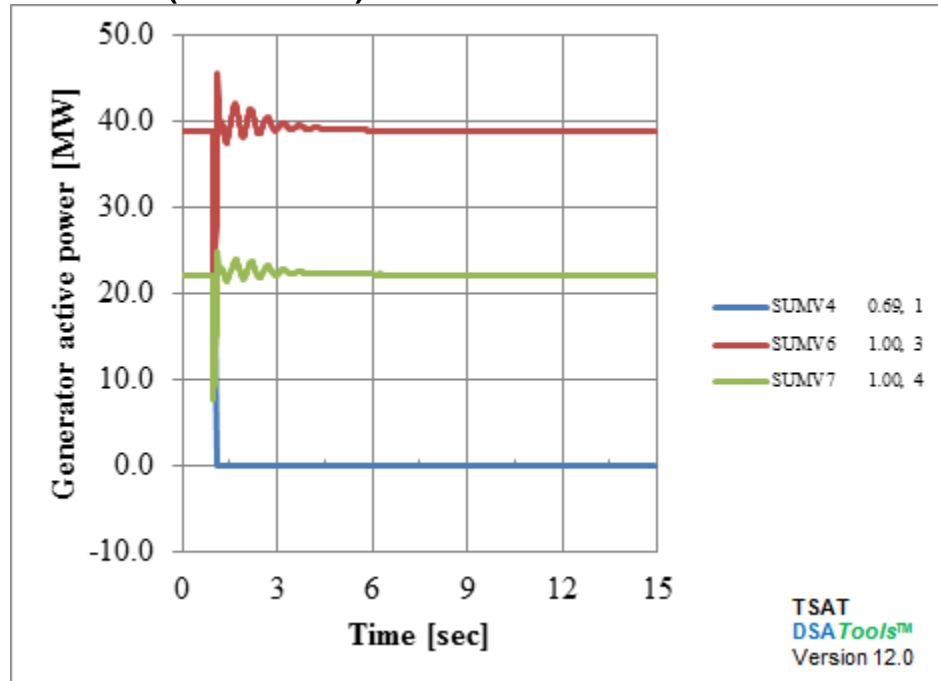
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Light 2014



14 -- 613L (396S - 103S) NEAR 396S

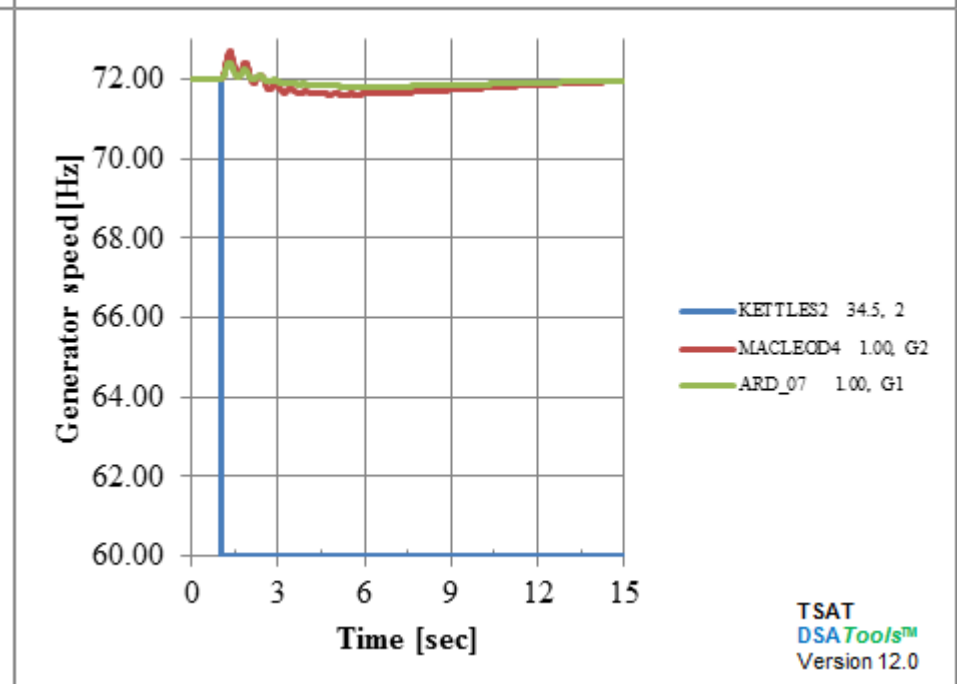
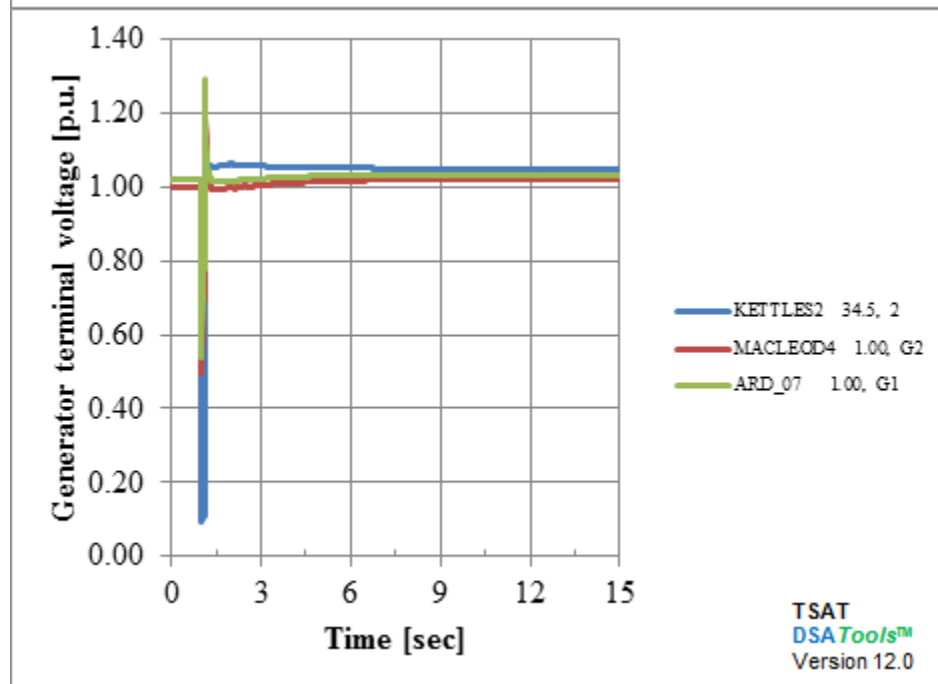
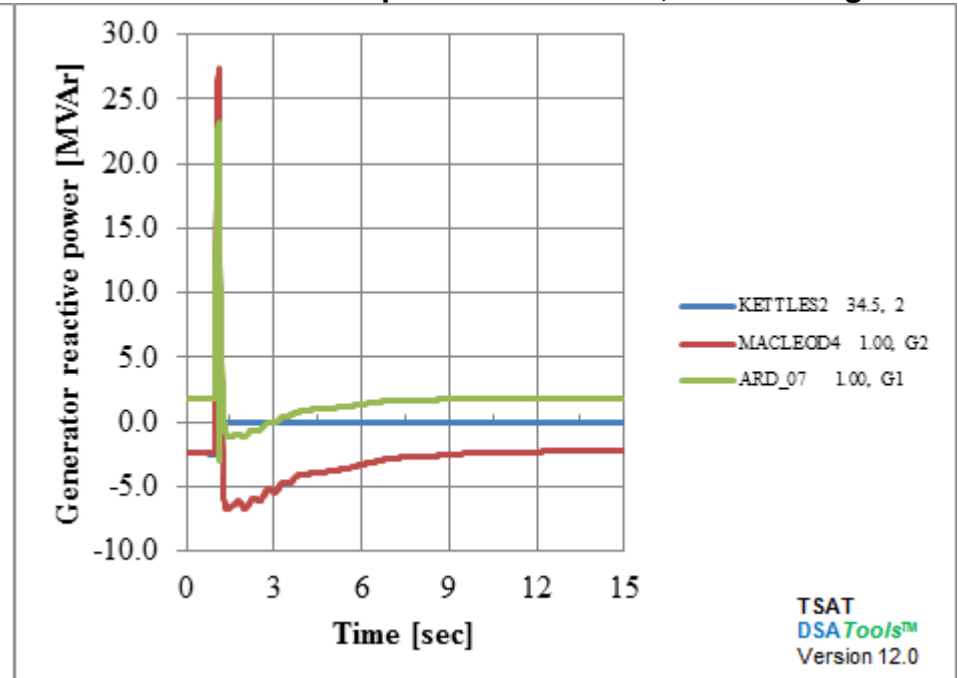
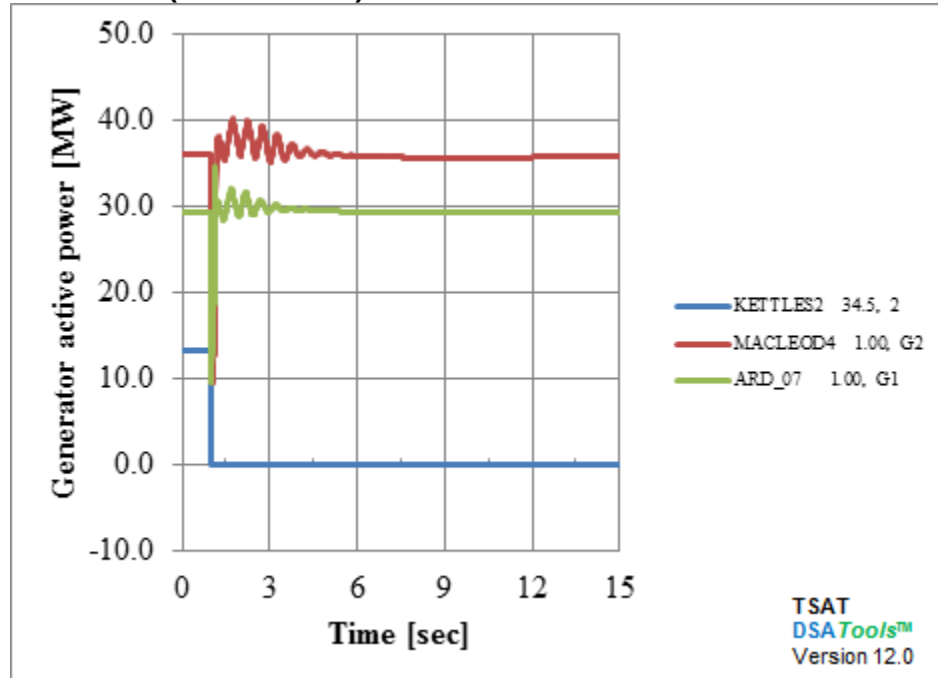
Proposed Connection, Summer Light 2014





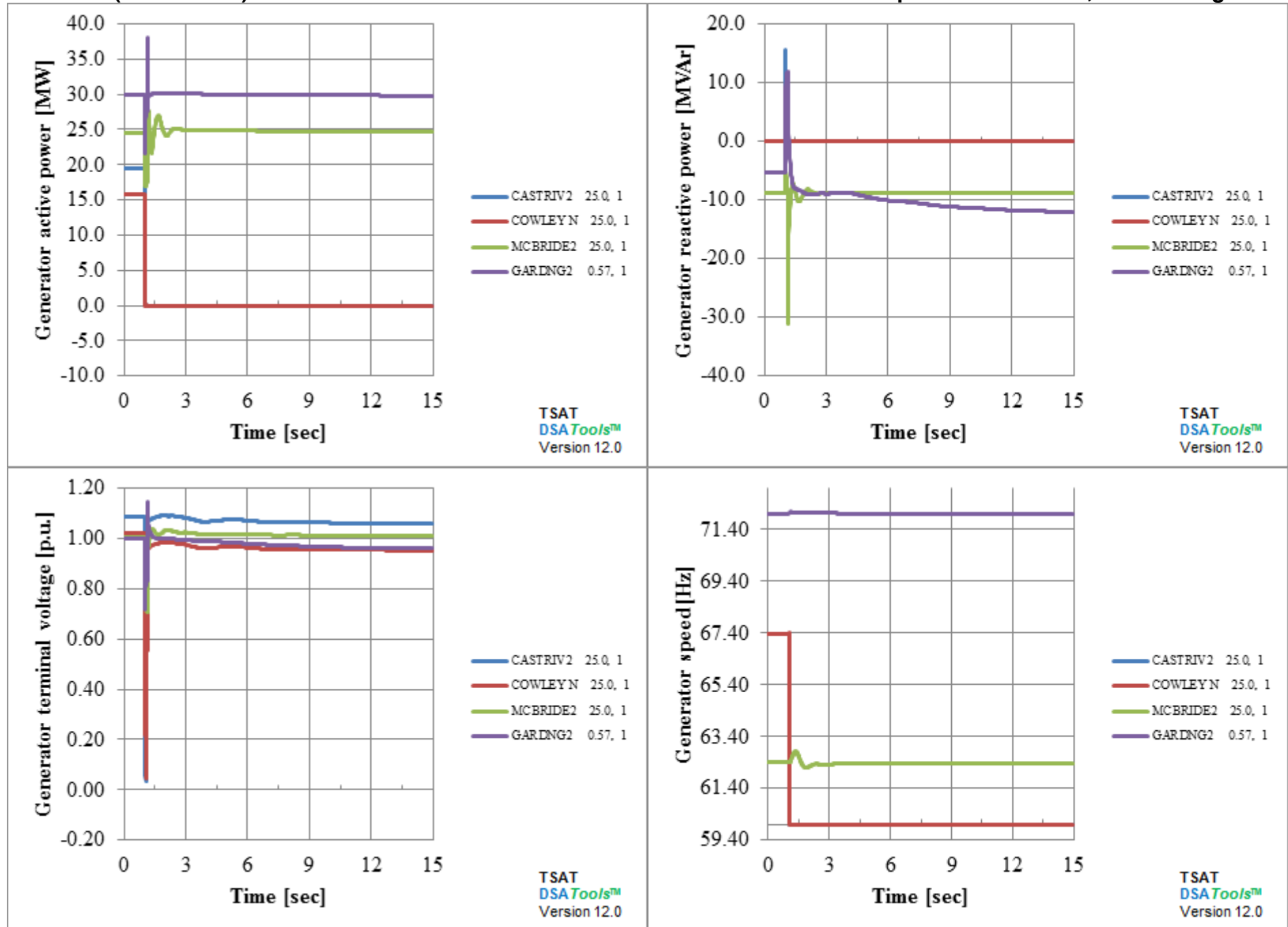
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Light 2014



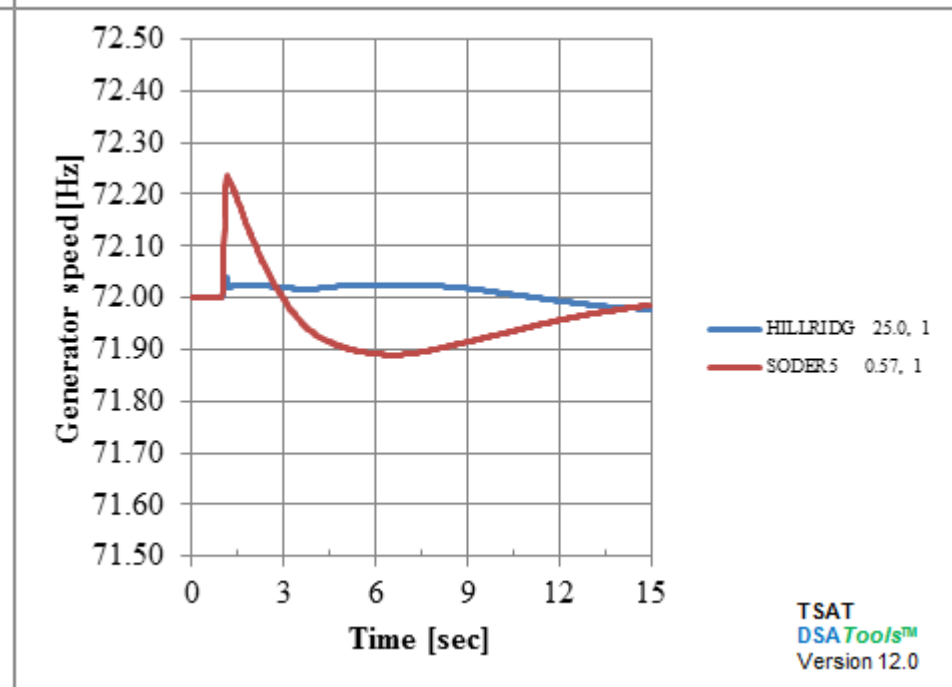
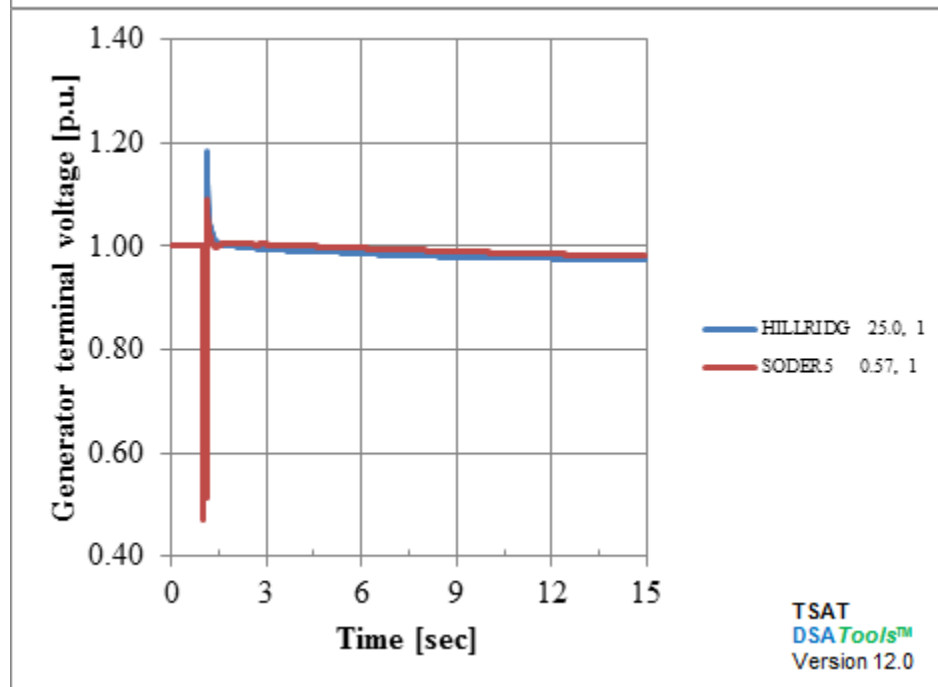
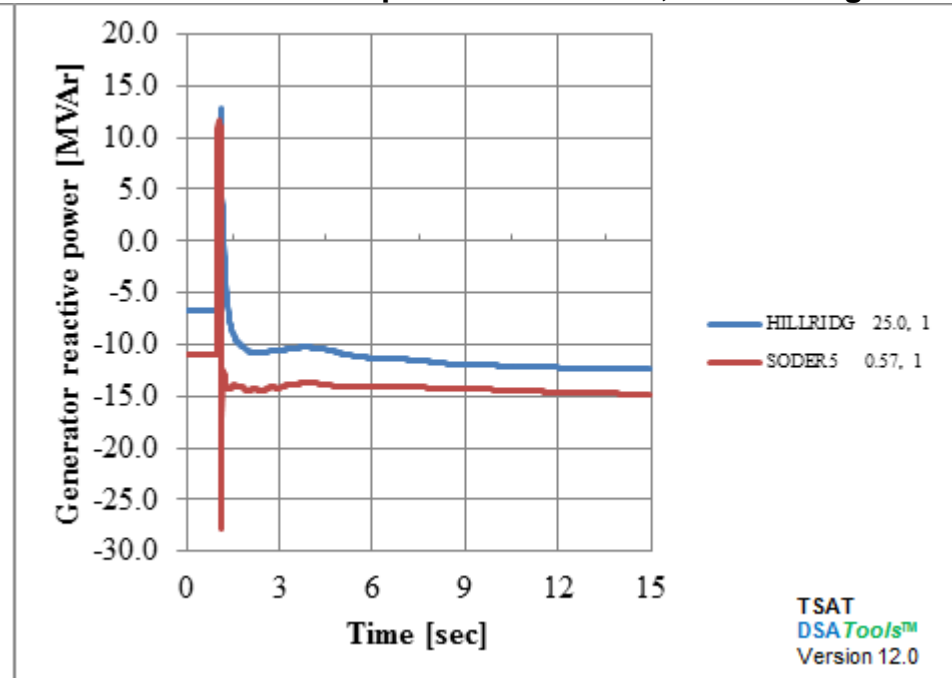
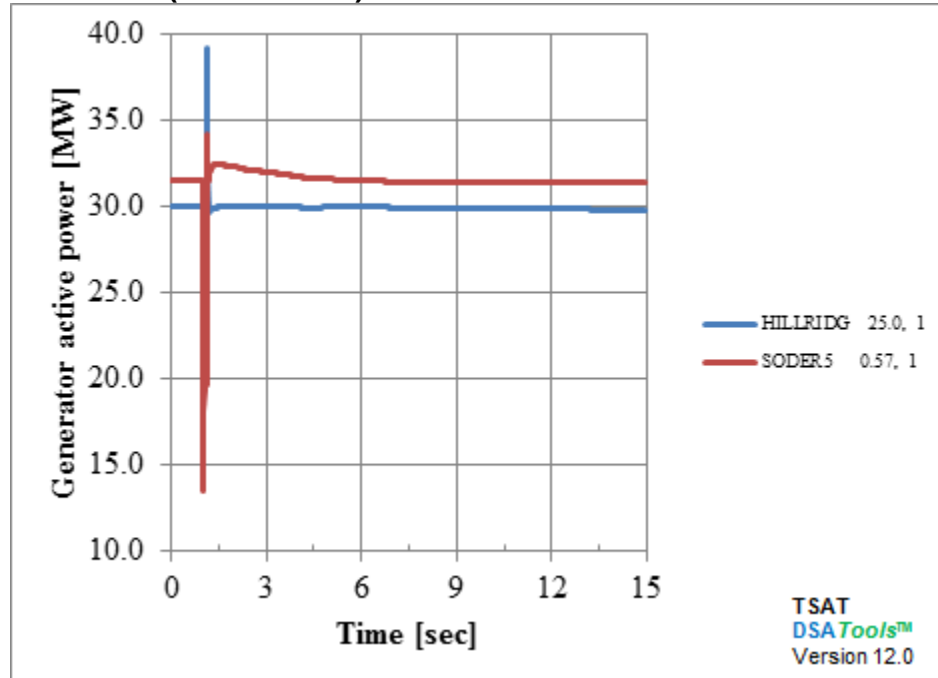
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Light 2014



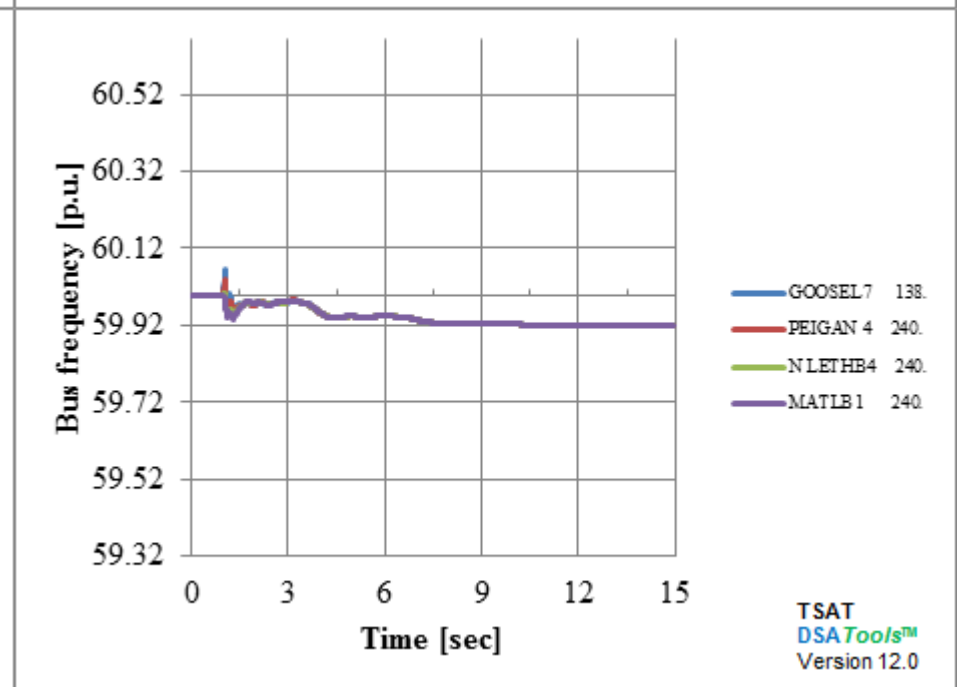
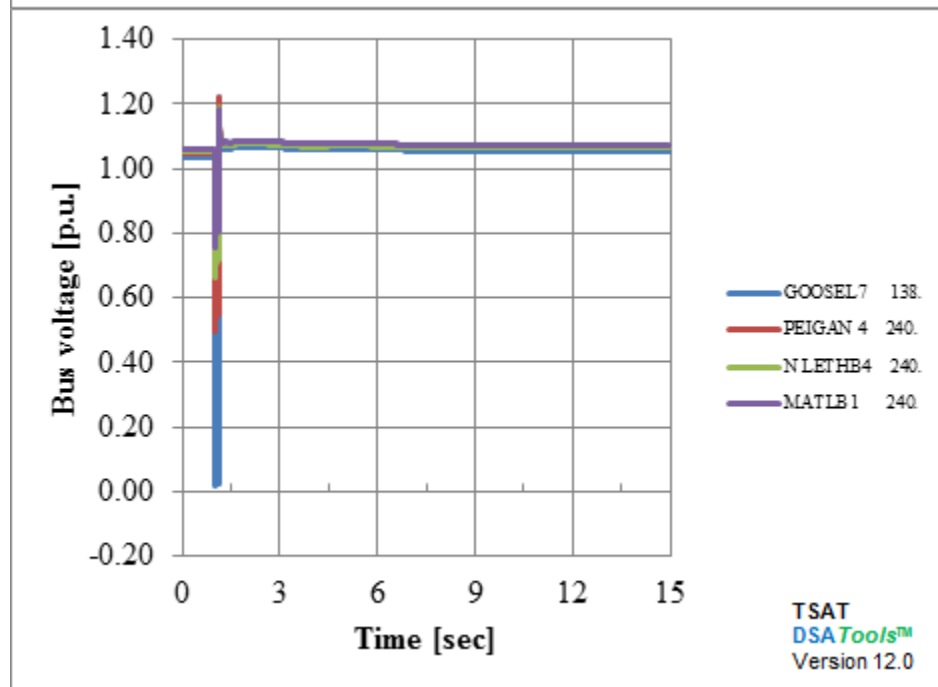
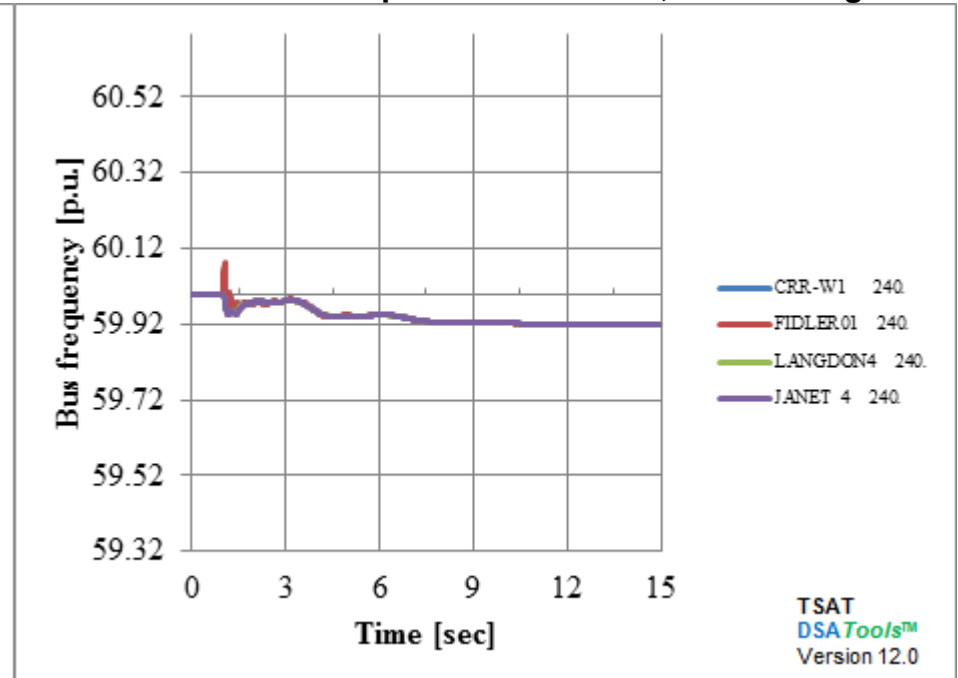
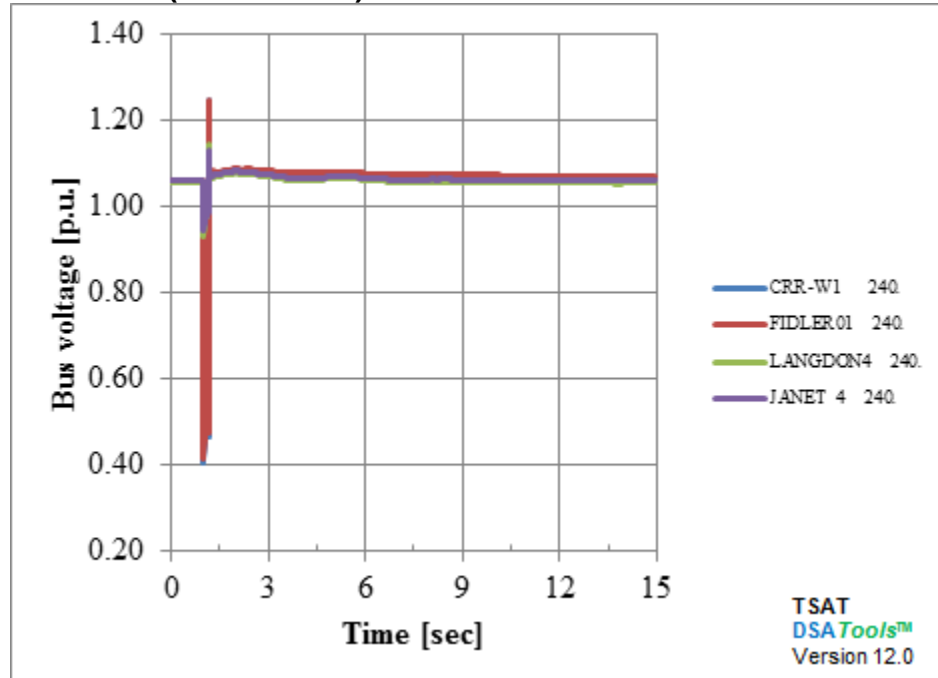
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Light 2014



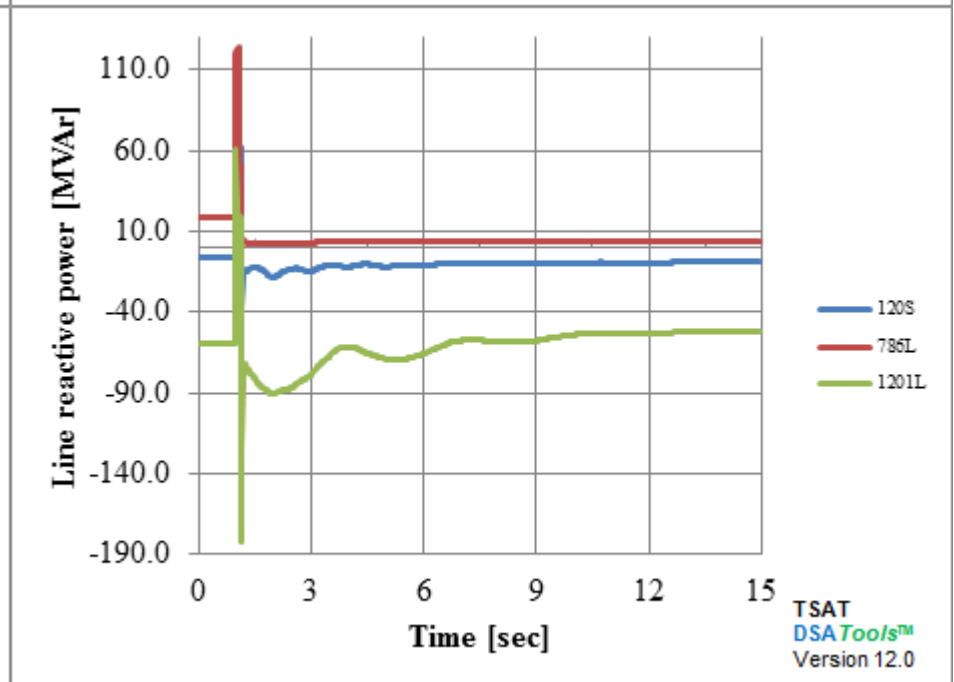
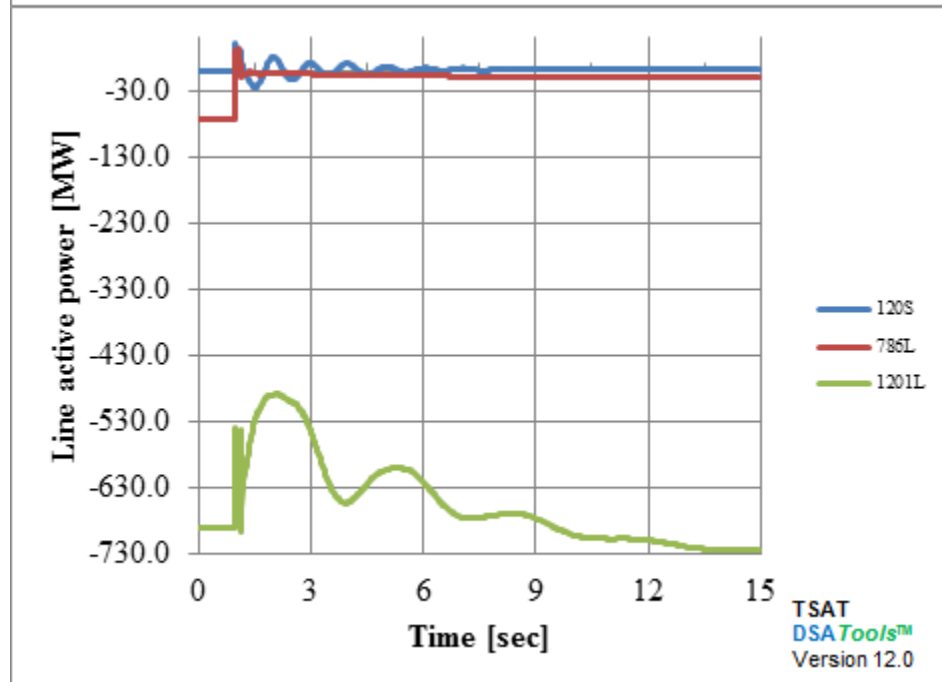
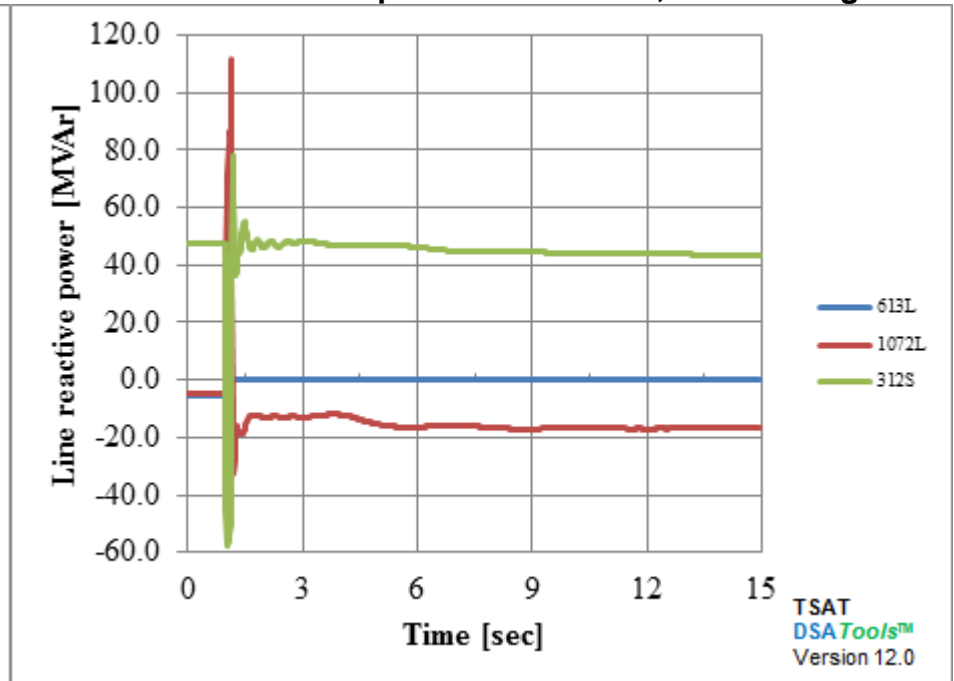
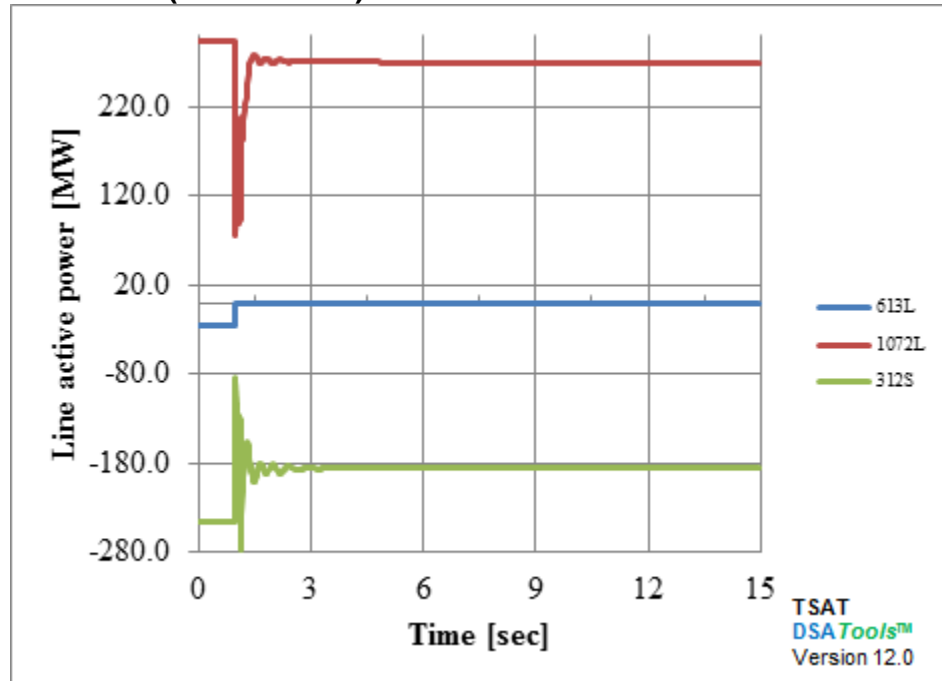
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Light 2014



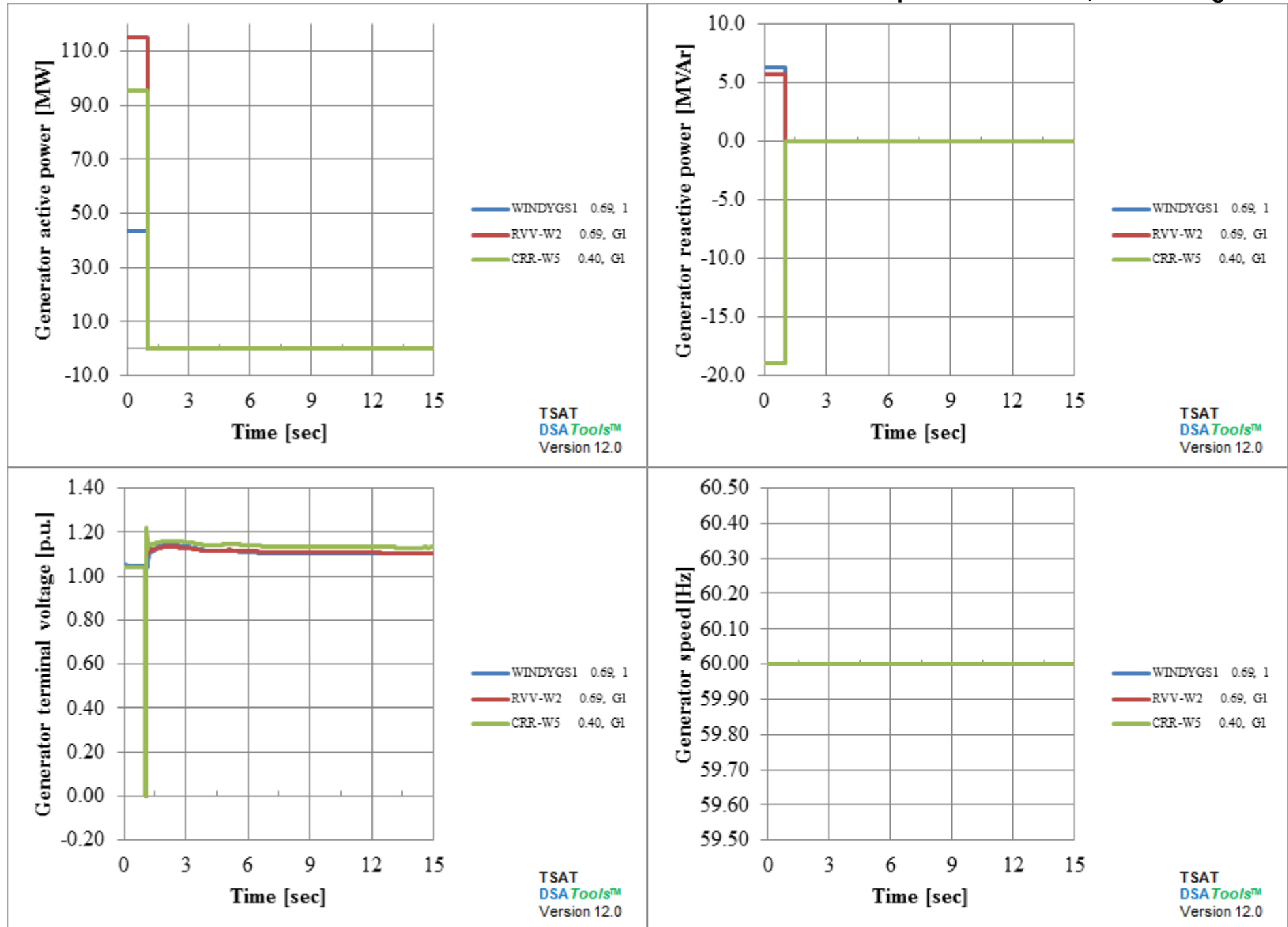
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Proposed Connection, Summer Light 2014



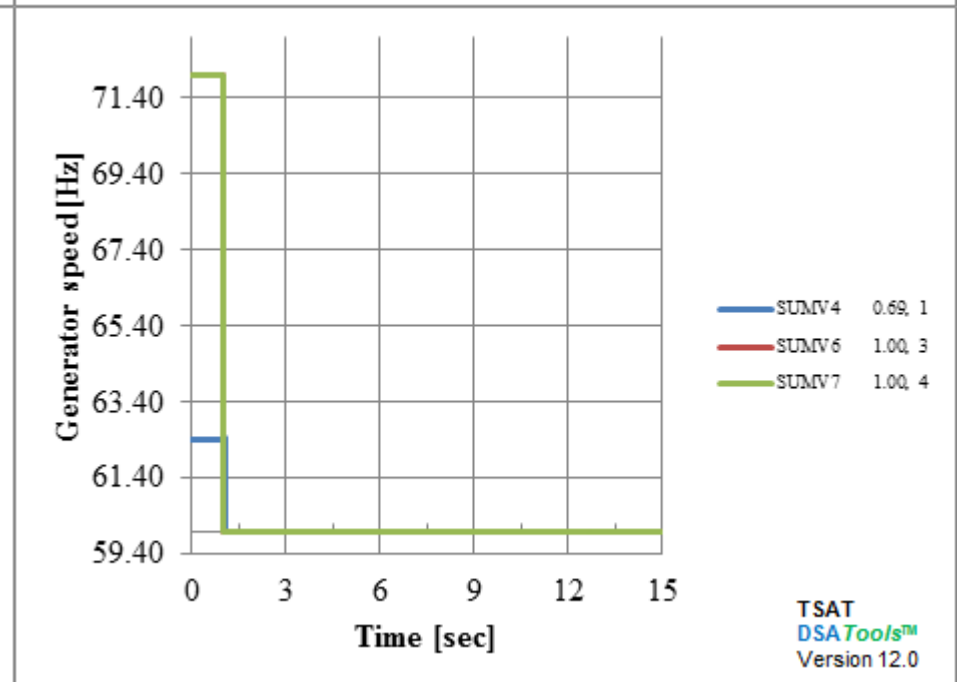
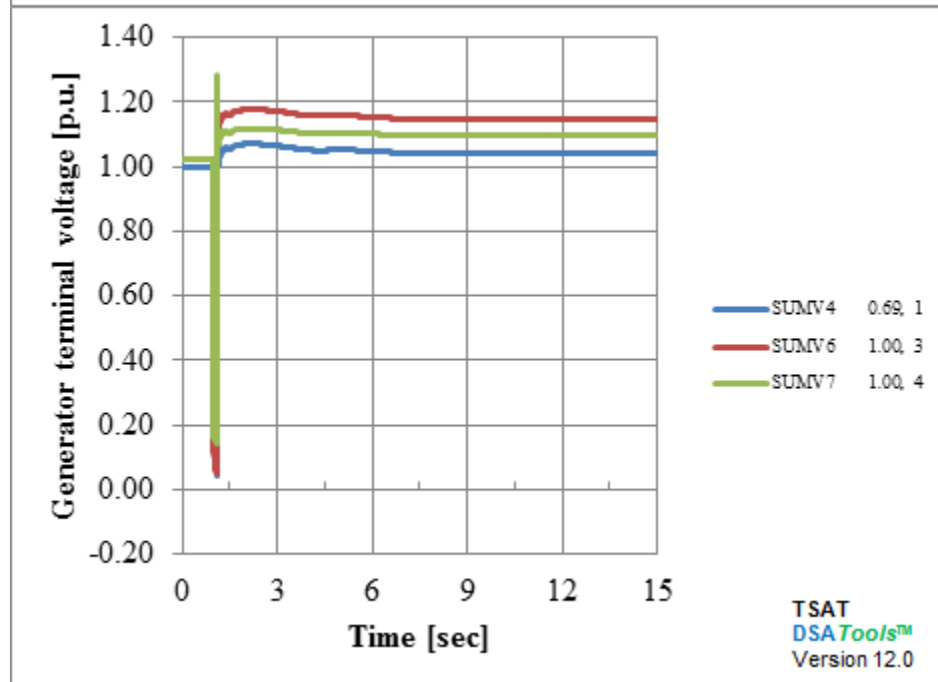
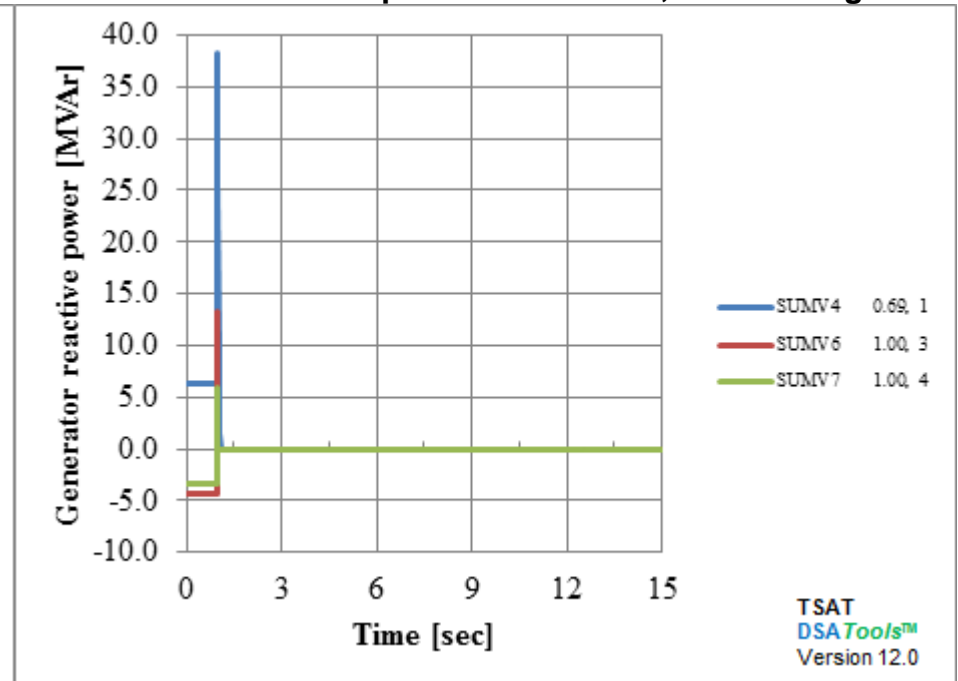
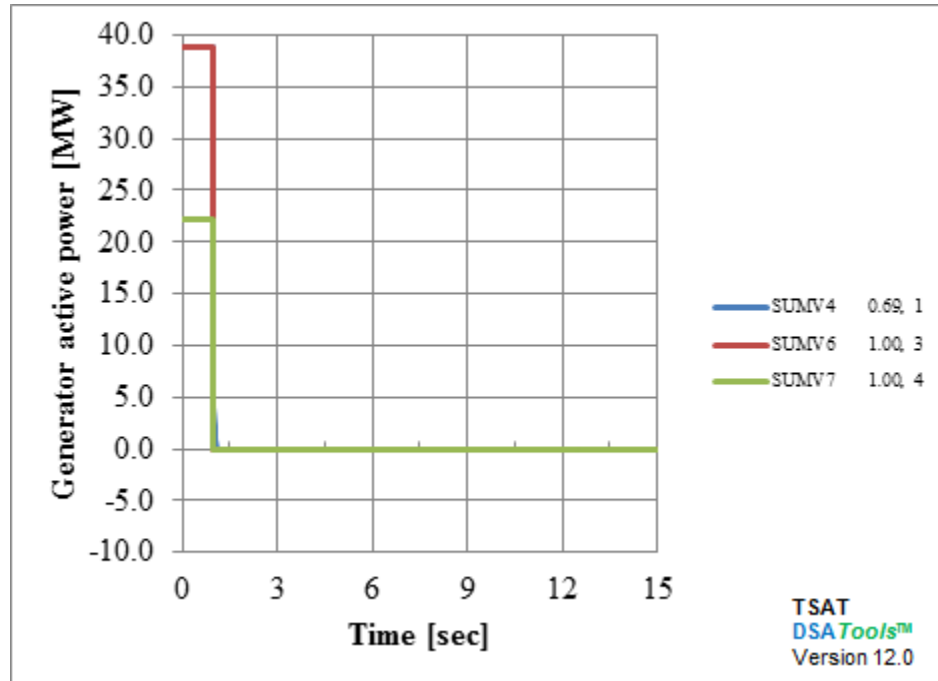
15 -- 103S 240KV-138KV

Proposed Connection, Summer Light 2014



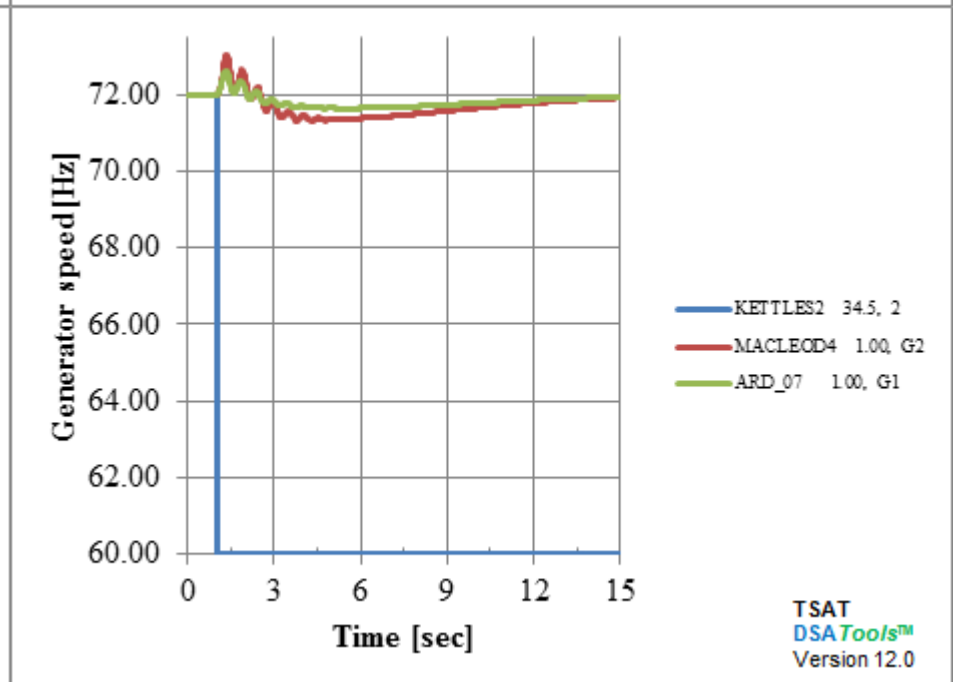
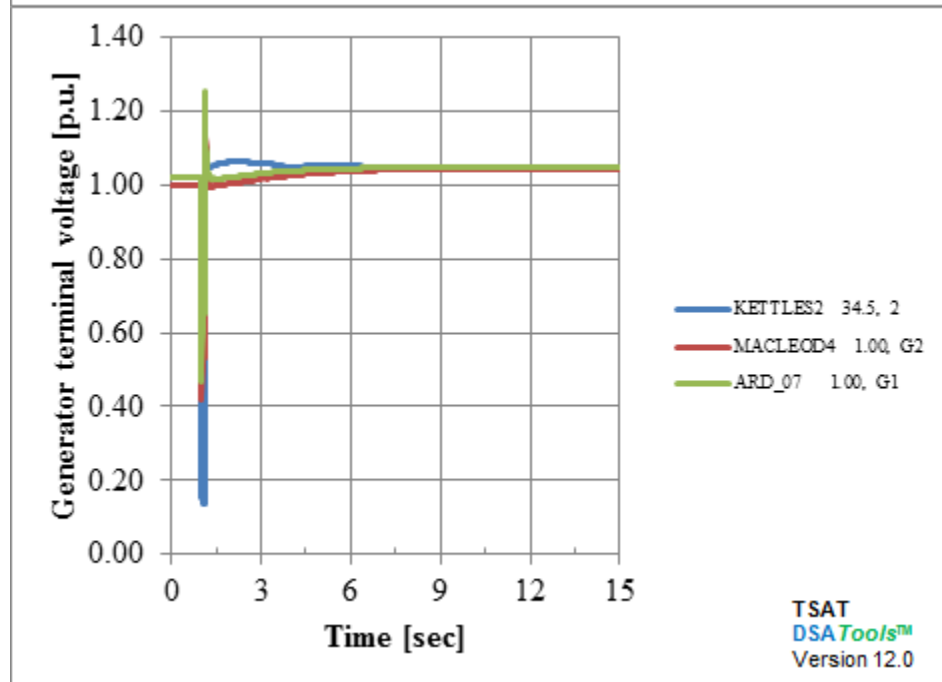
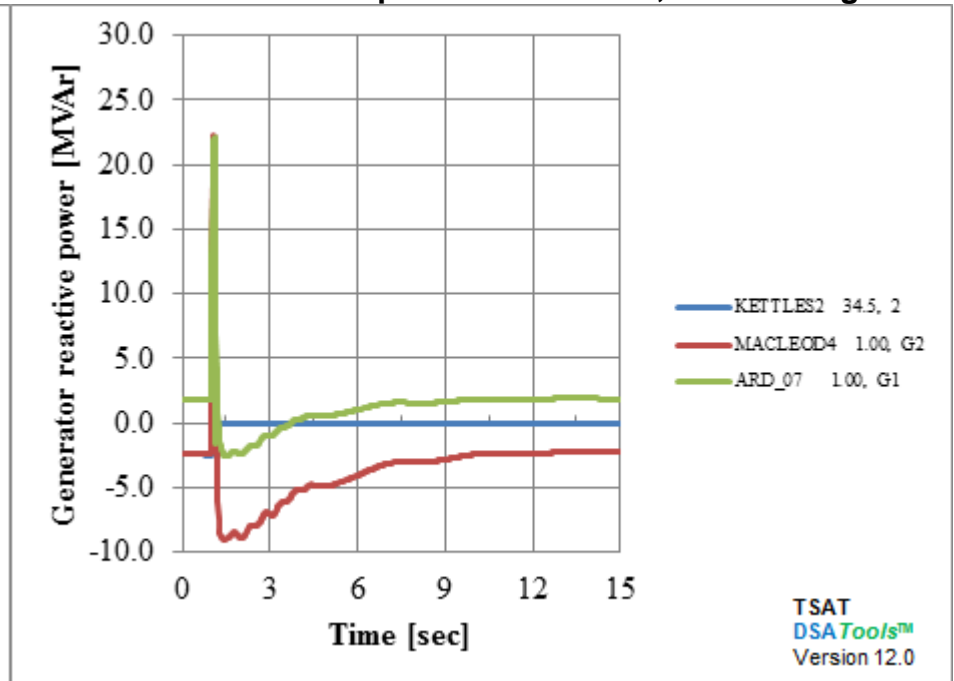
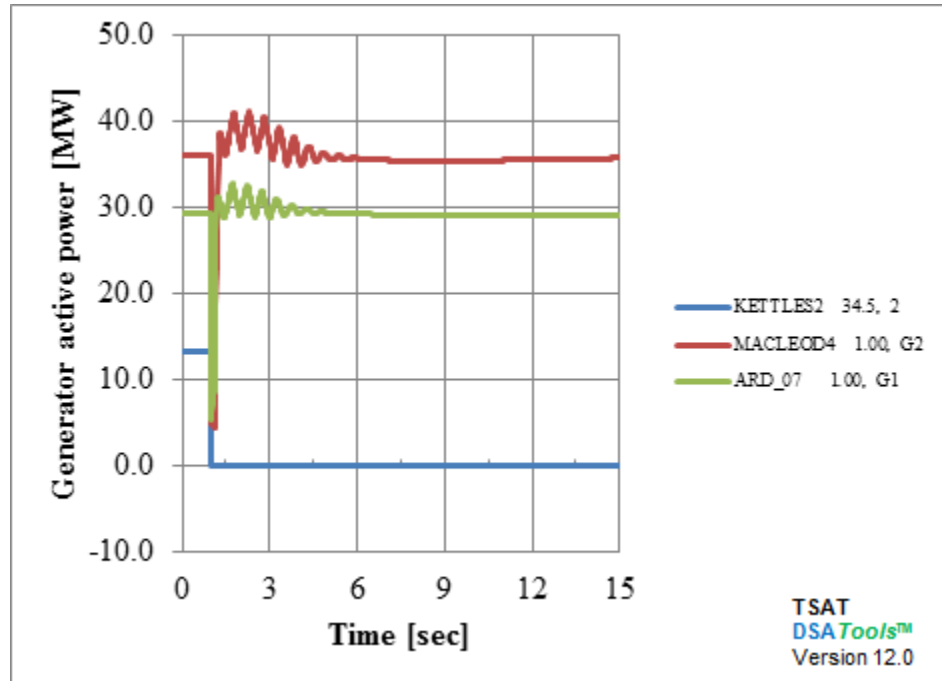
15 -- 103S 240KV-138KV

Proposed Connection, Summer Light 2014



15 -- 103S 240KV-138KV

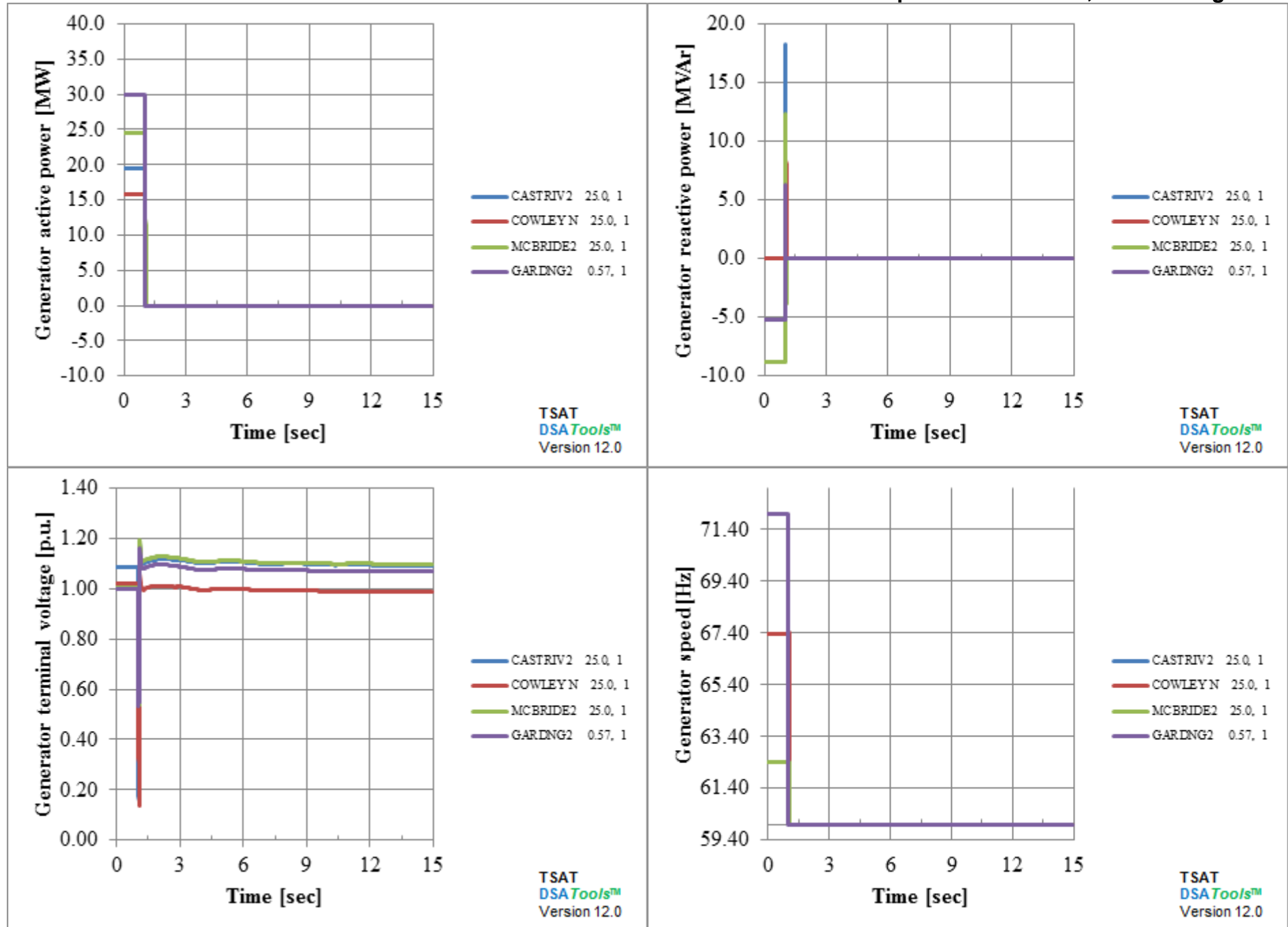
Proposed Connection, Summer Light 2014





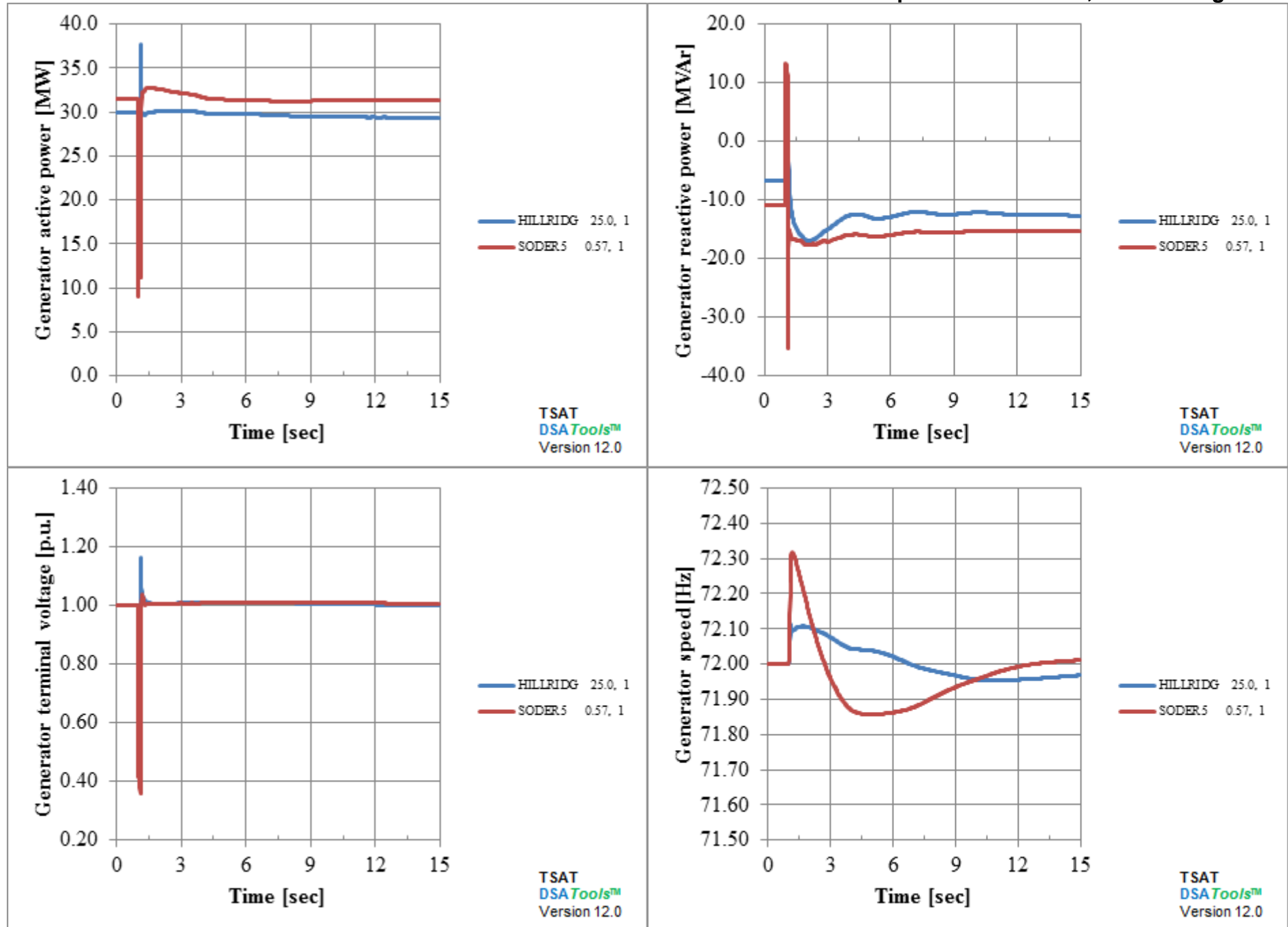
15 -- 103S 240KV-138KV

Proposed Connection, Summer Light 2014



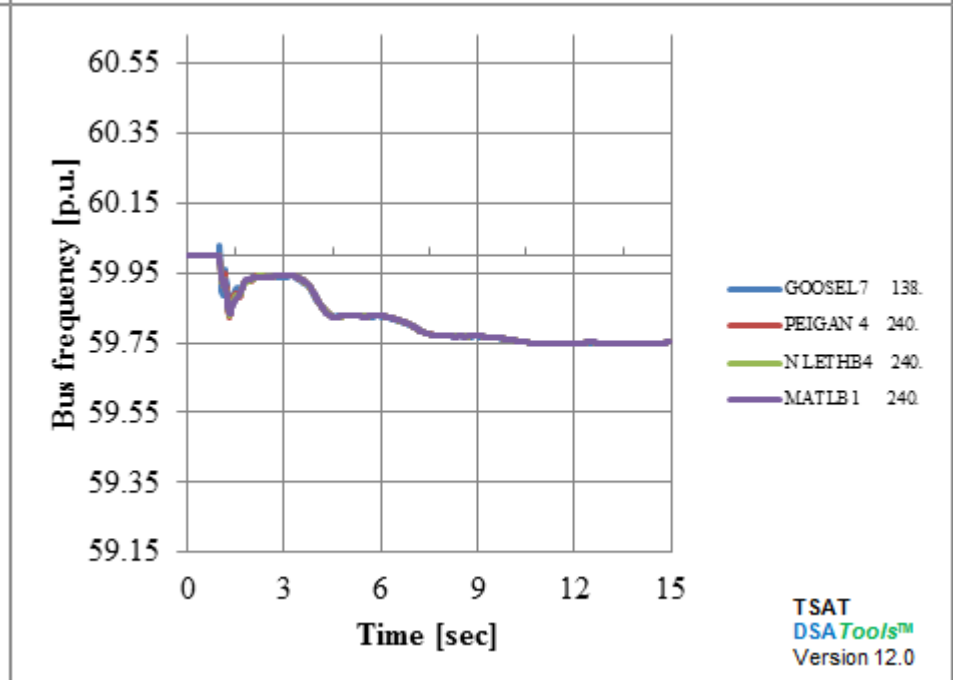
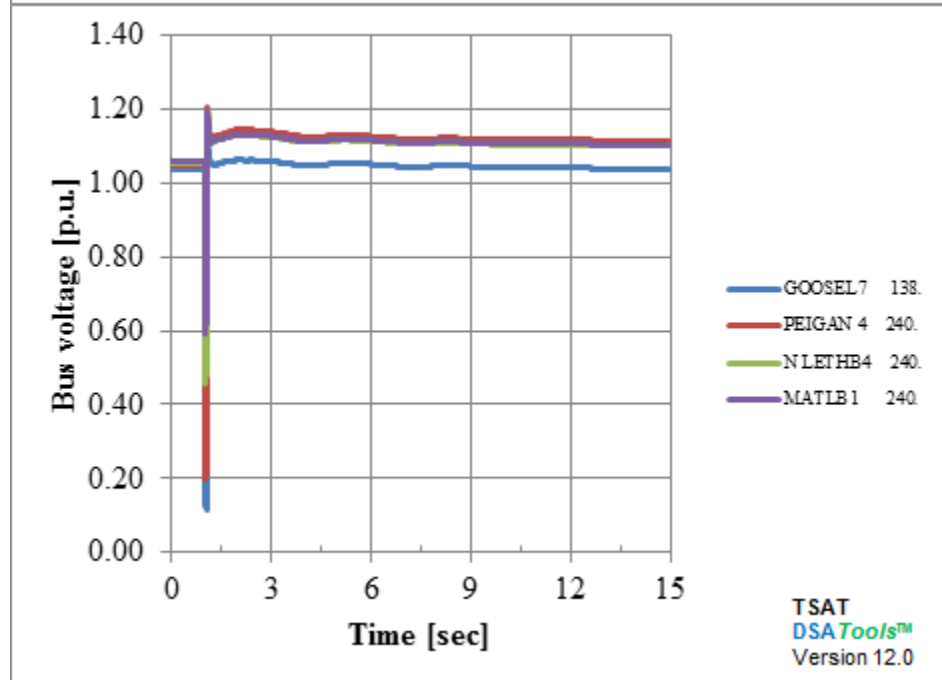
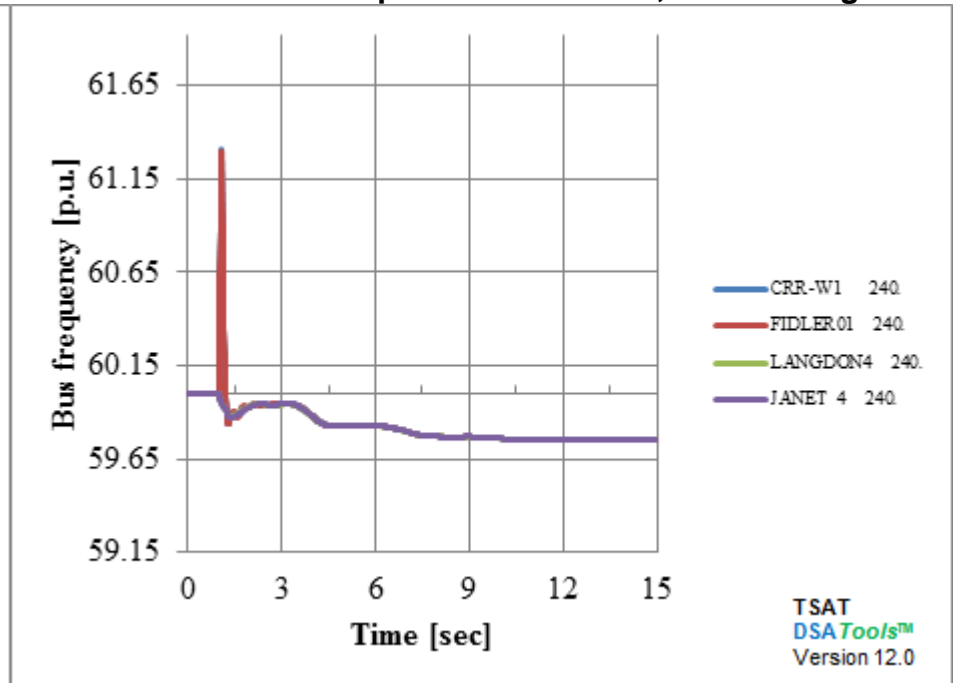
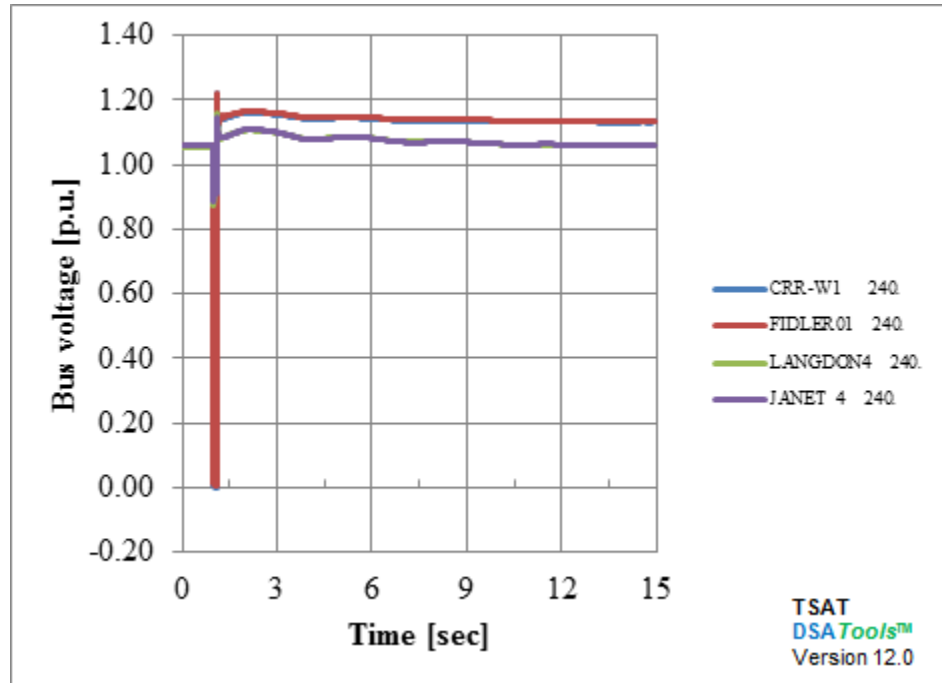
15 -- 103S 240KV-138KV

Proposed Connection, Summer Light 2014



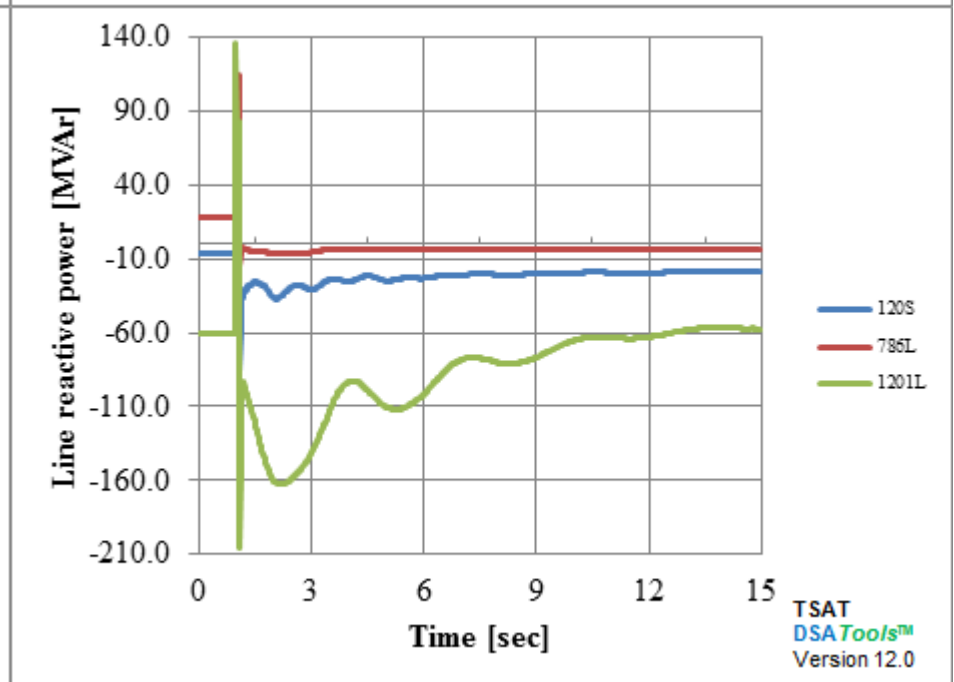
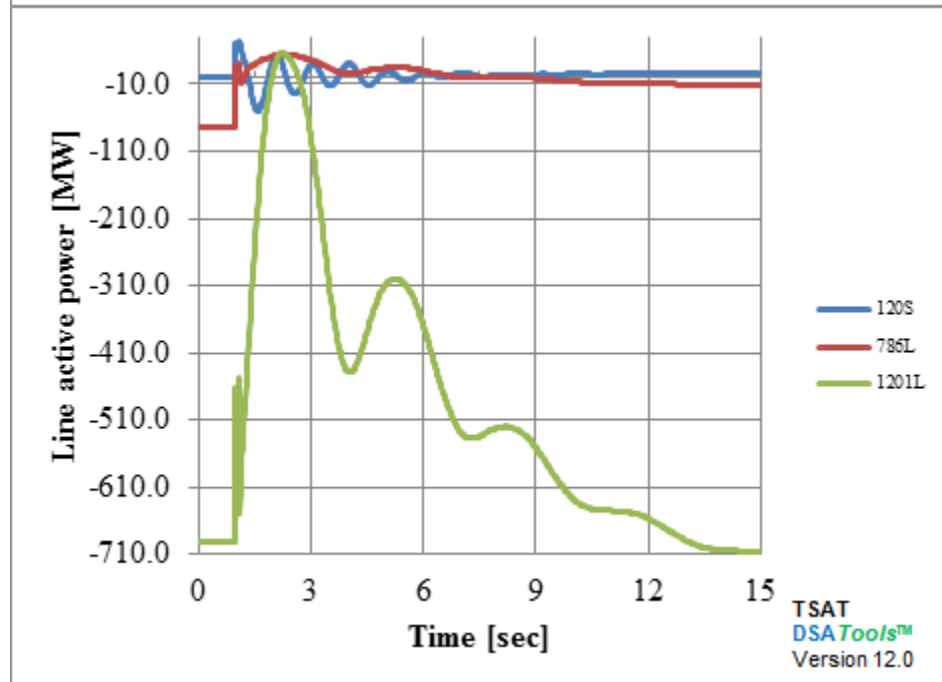
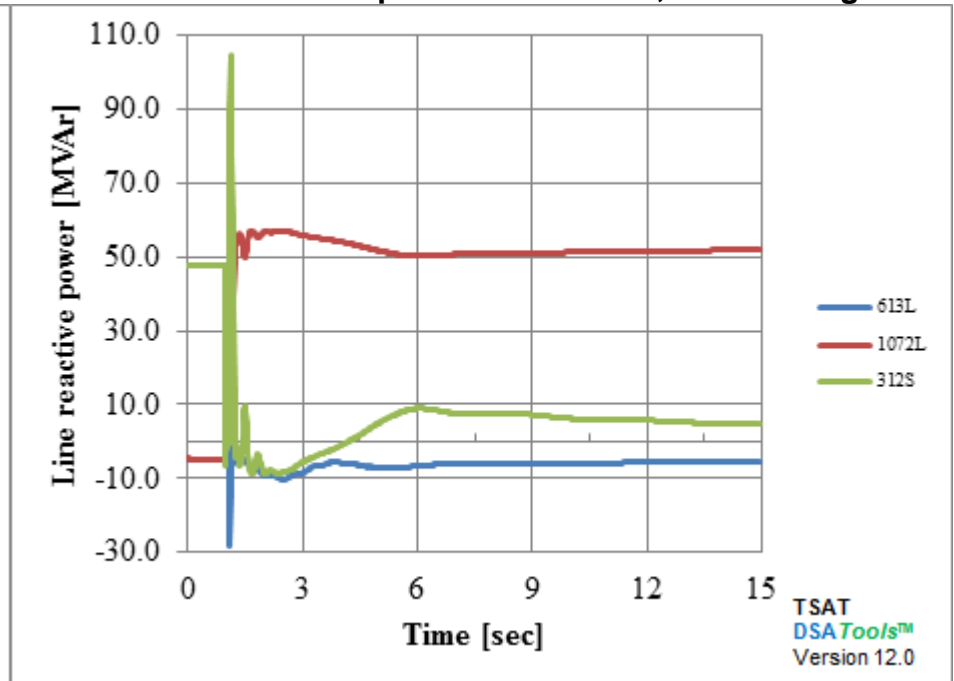
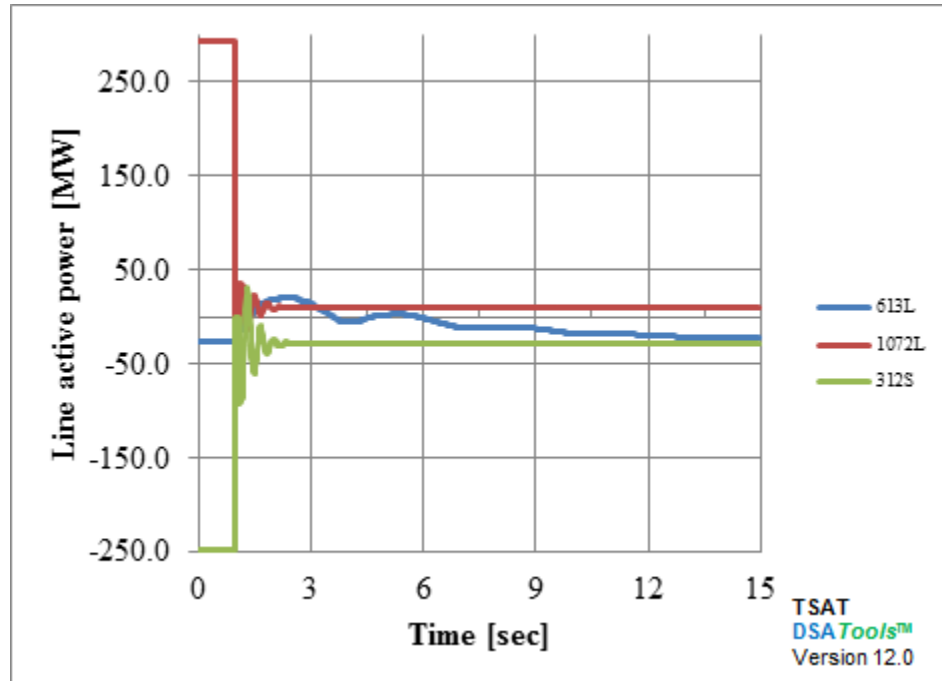
15 -- 103S 240KV-138KV

Proposed Connection, Summer Light 2014



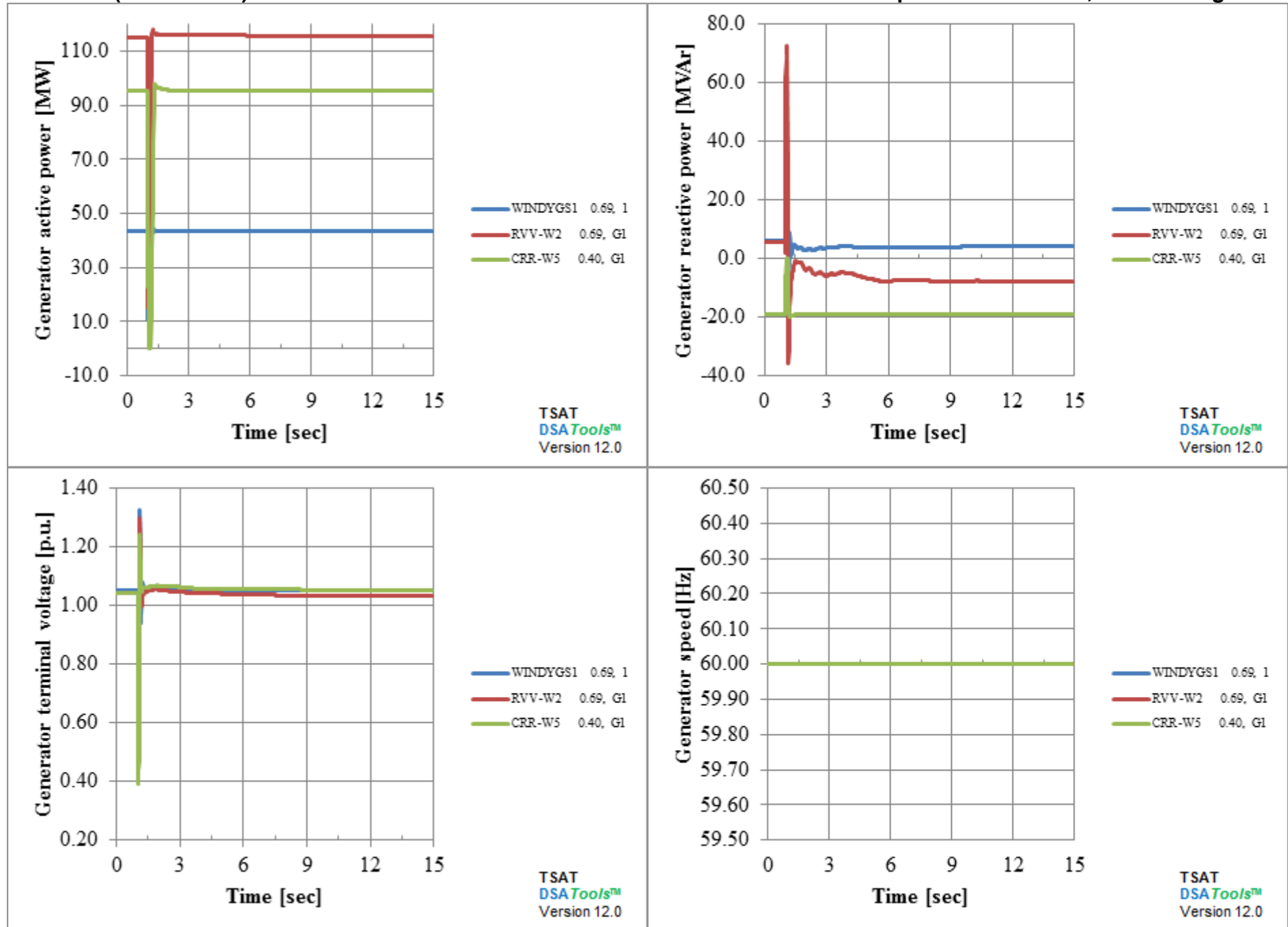
15 -- 103S 240KV-138KV

Proposed Connection, Summer Light 2014



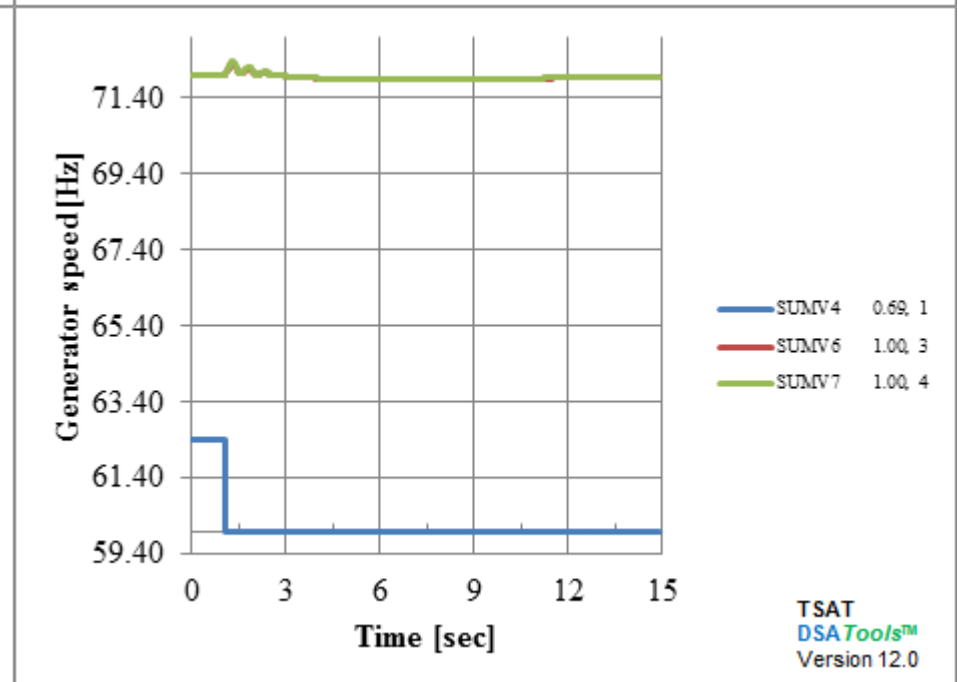
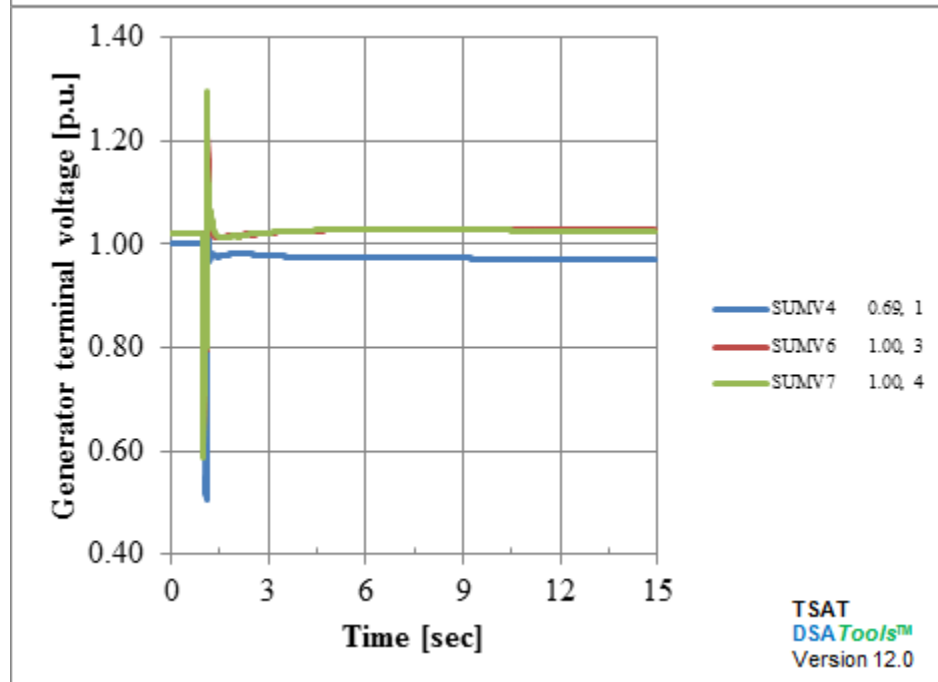
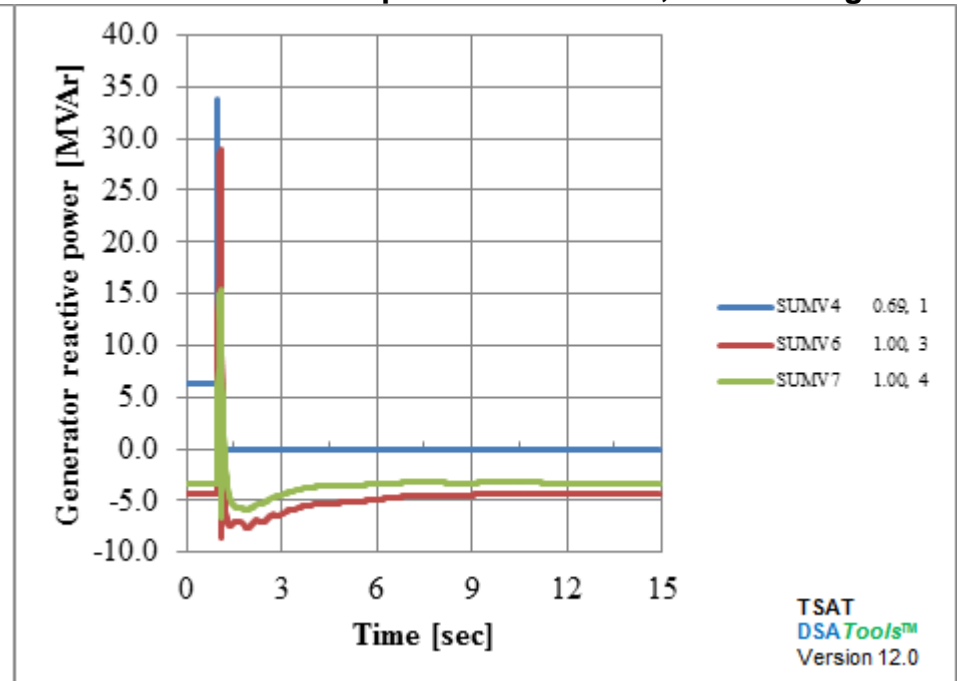
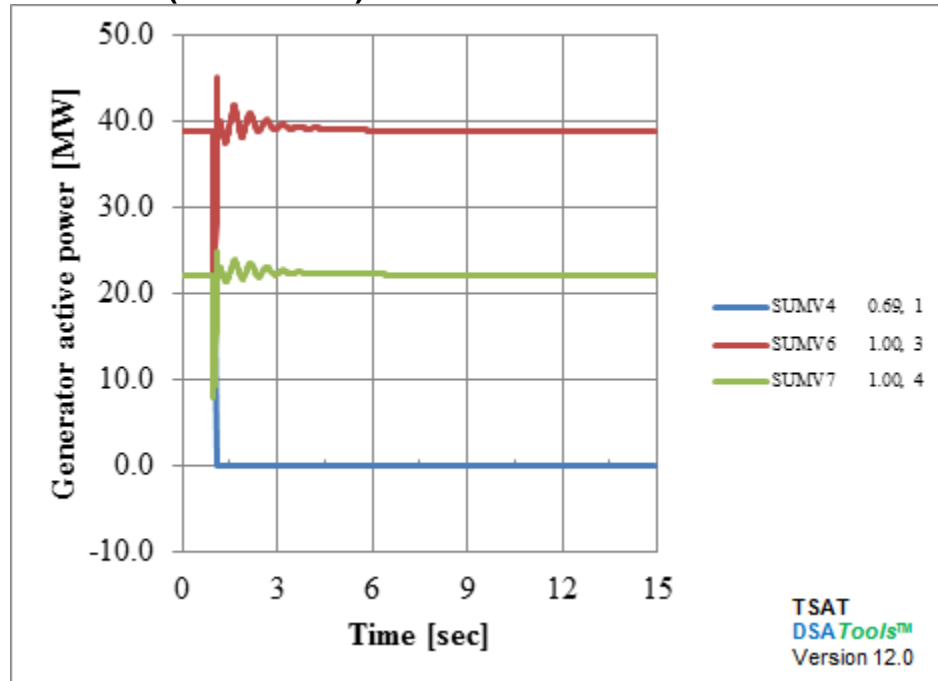
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Light 2014



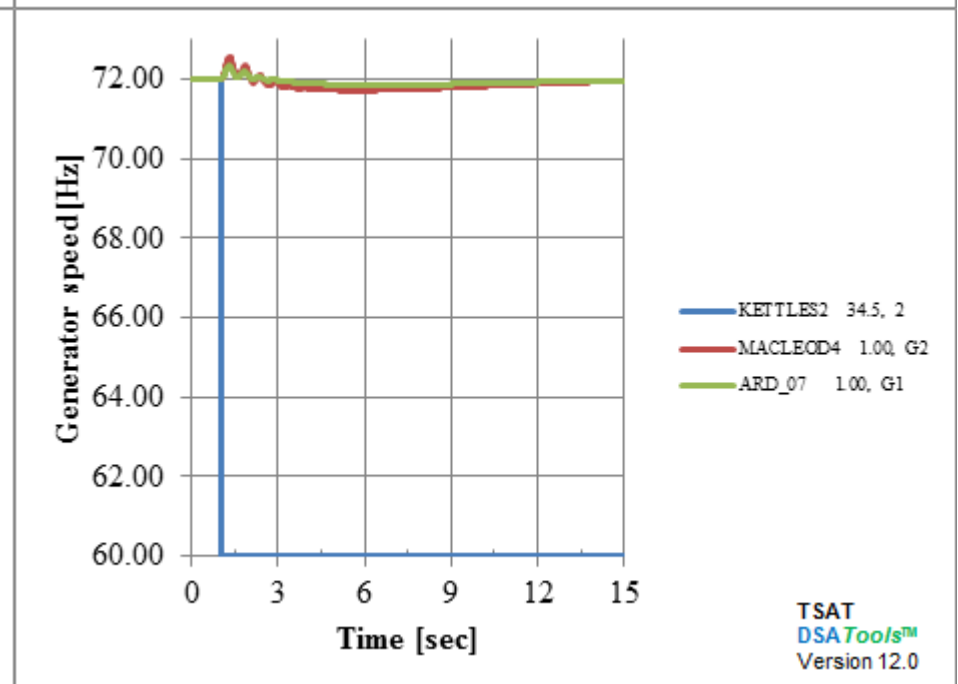
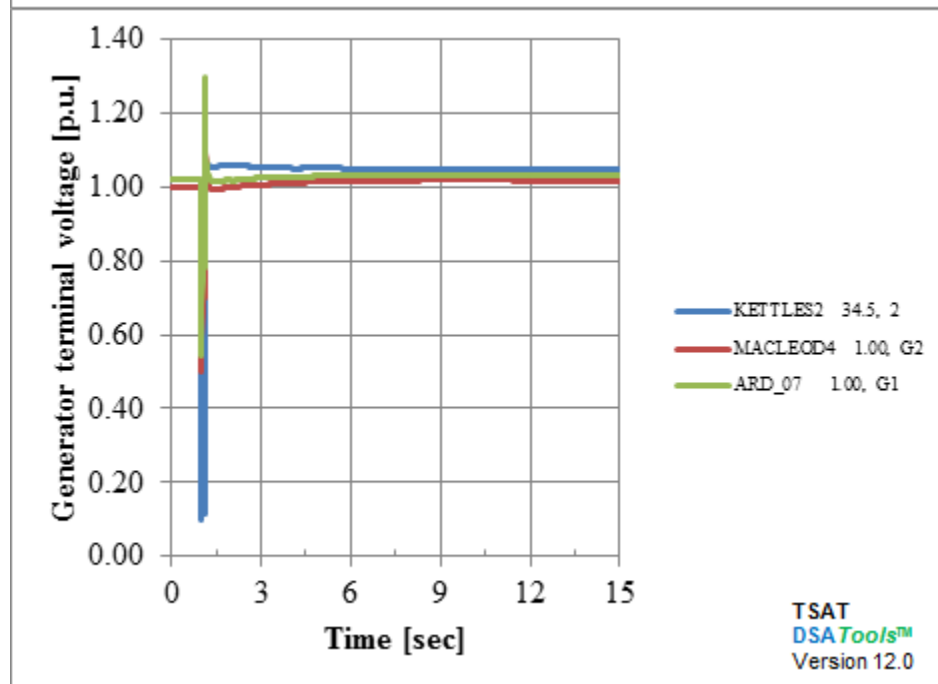
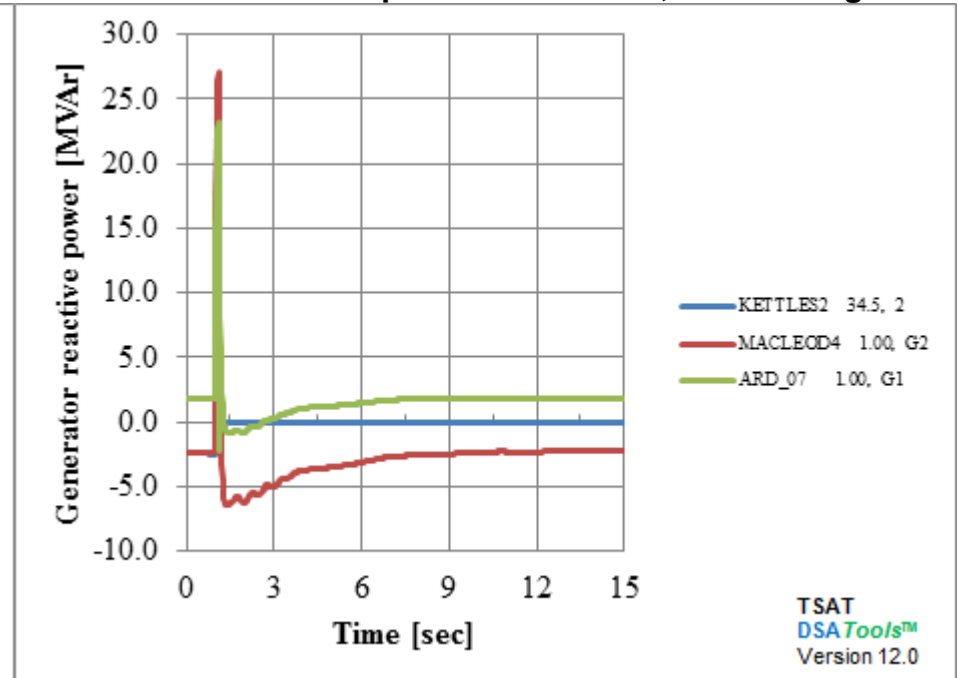
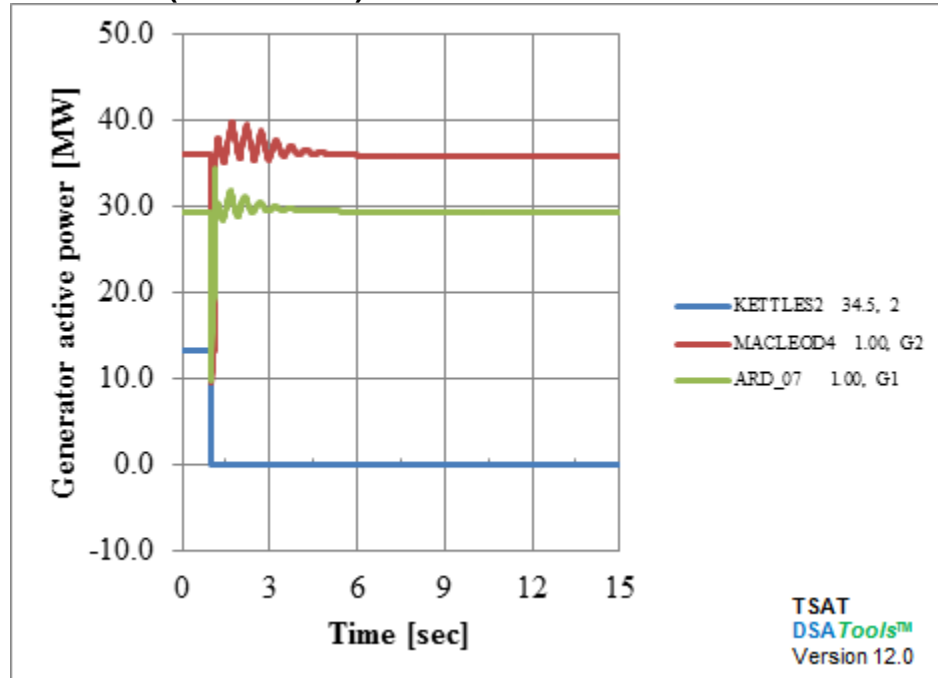
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Light 2014



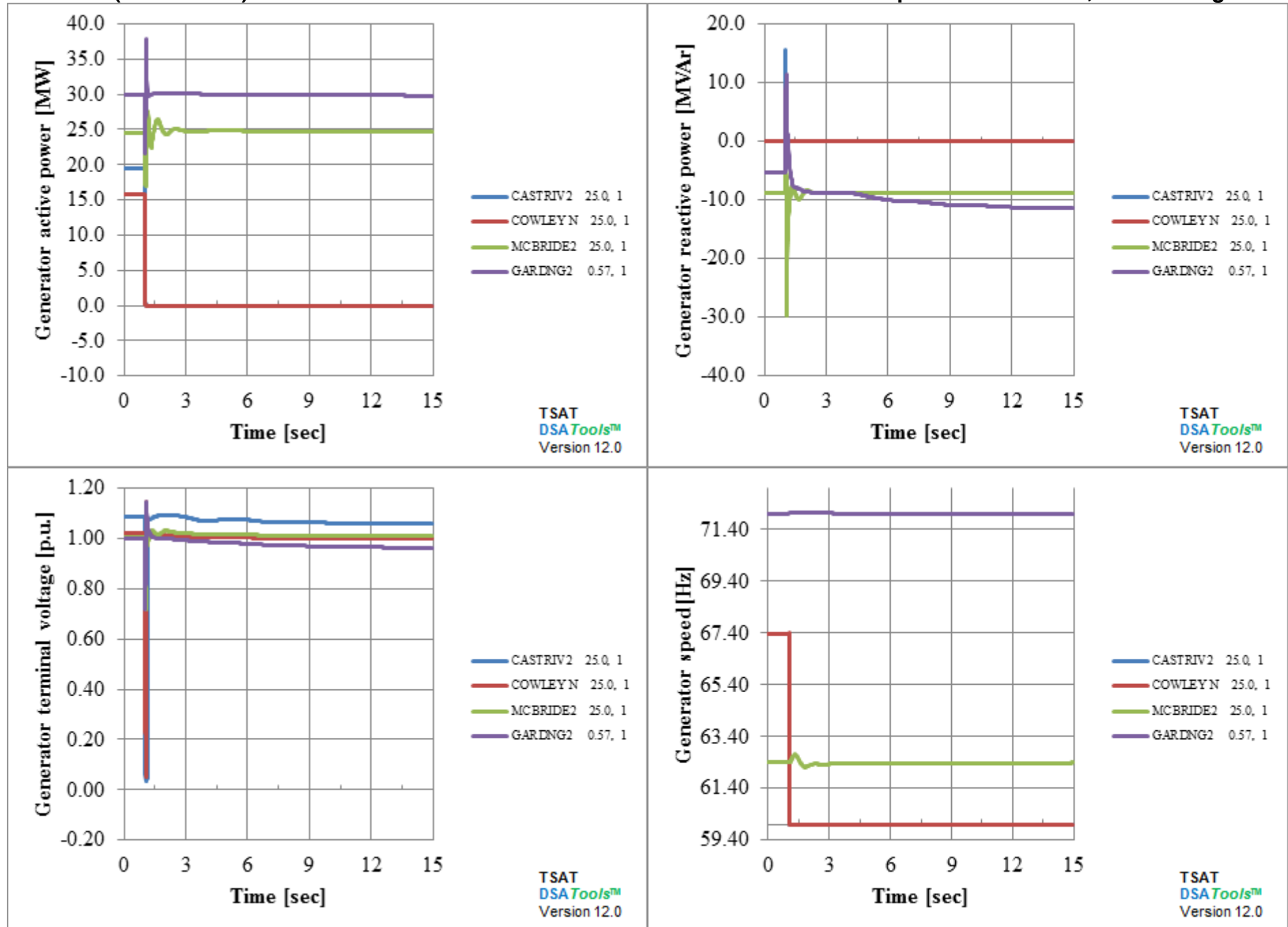
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Light 2014



16 -- 412L (396S - 632S) NEAR 396S

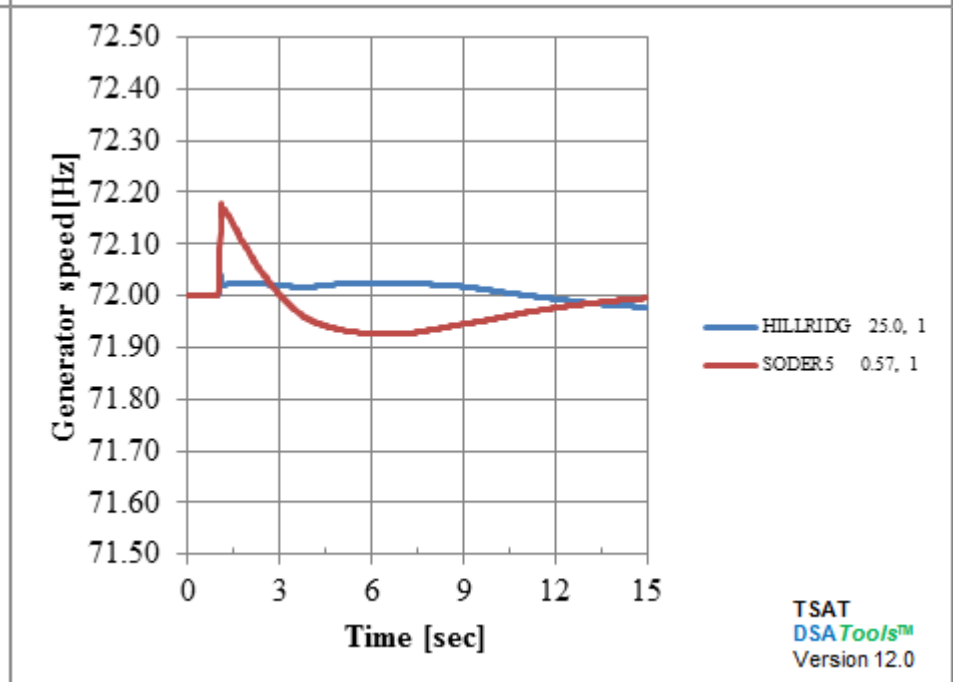
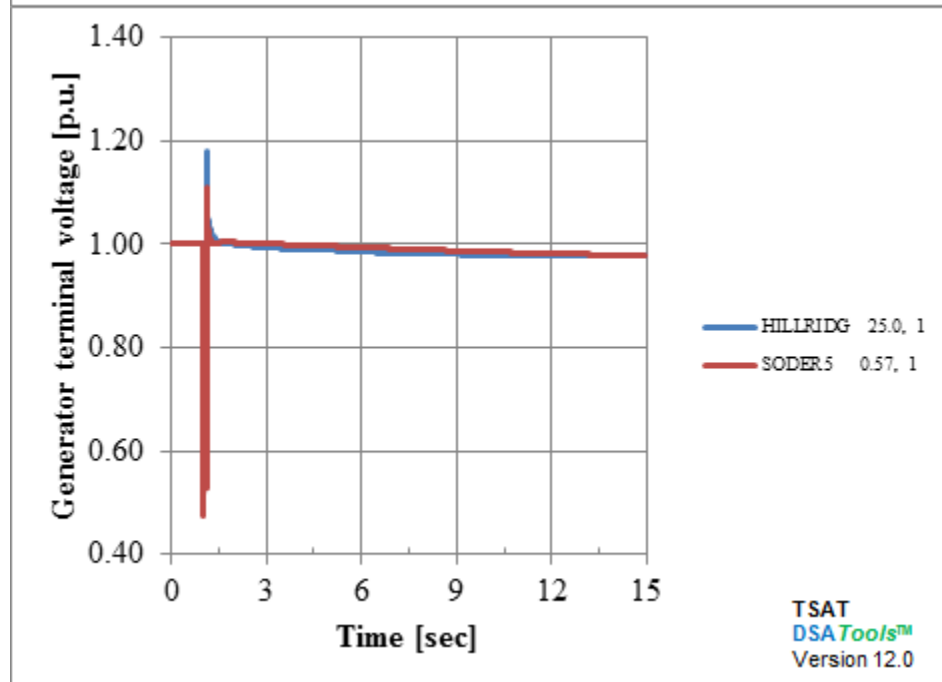
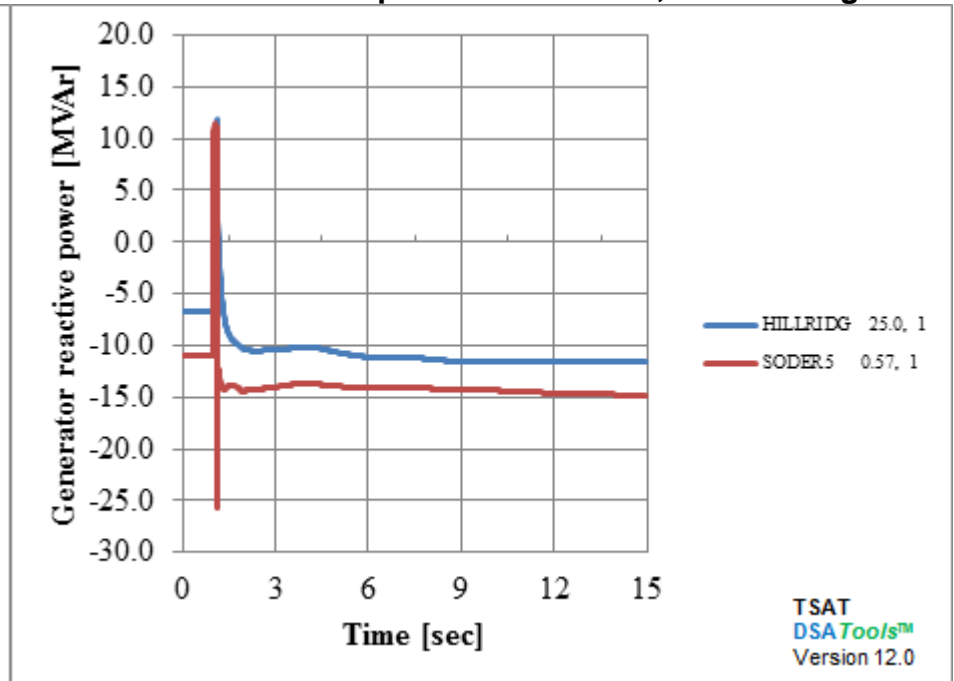
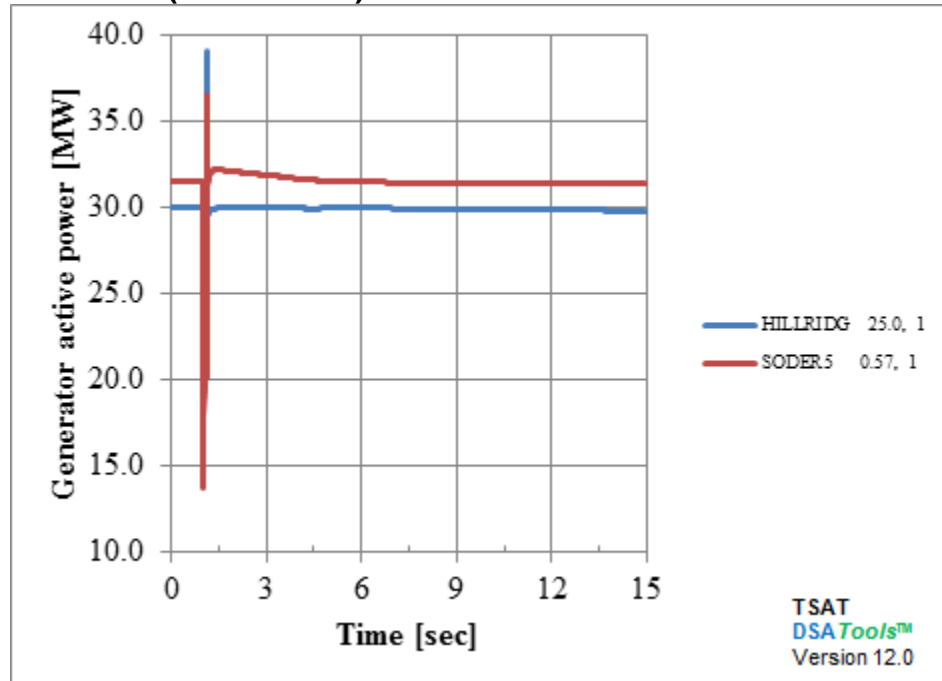
Proposed Connection, Summer Light 2014





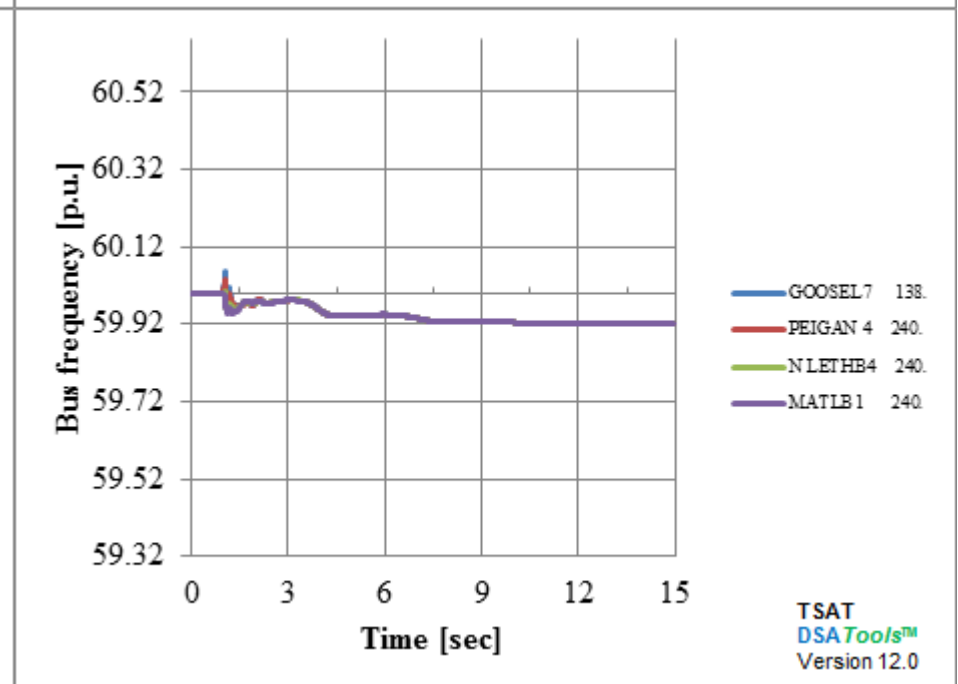
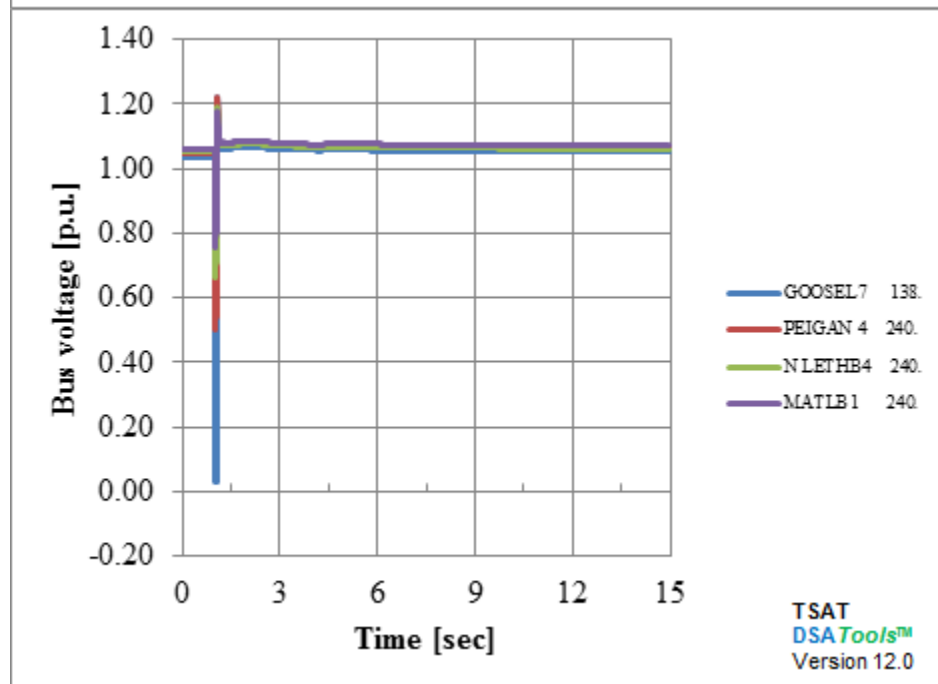
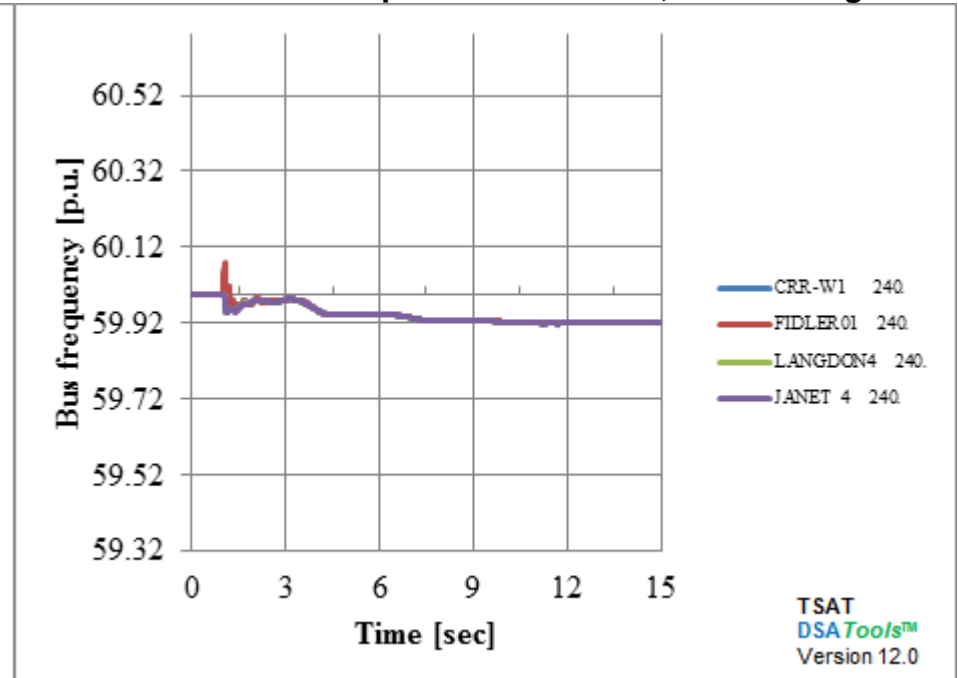
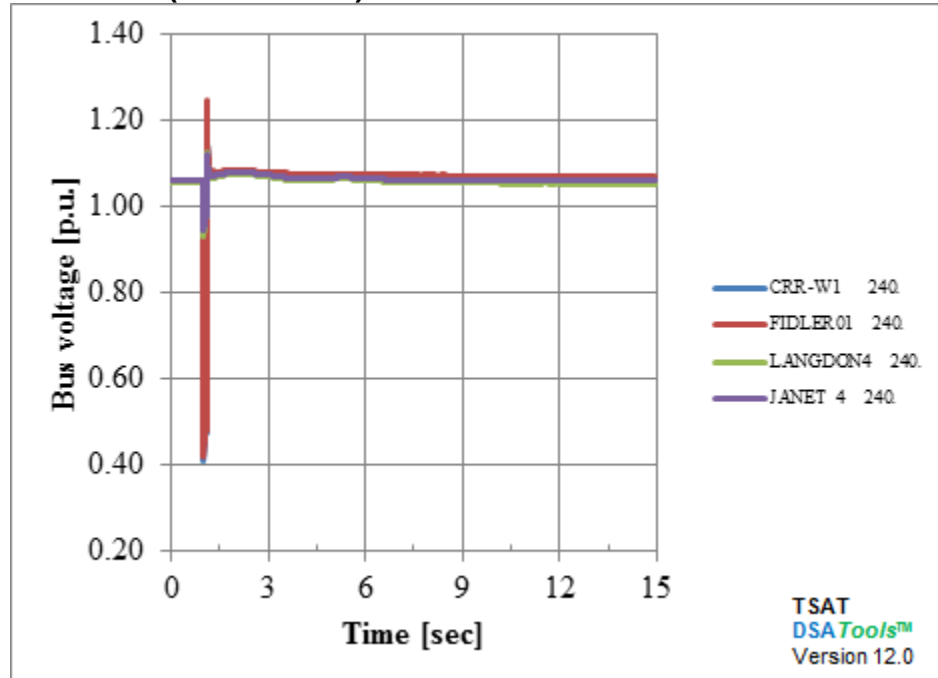
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Light 2014



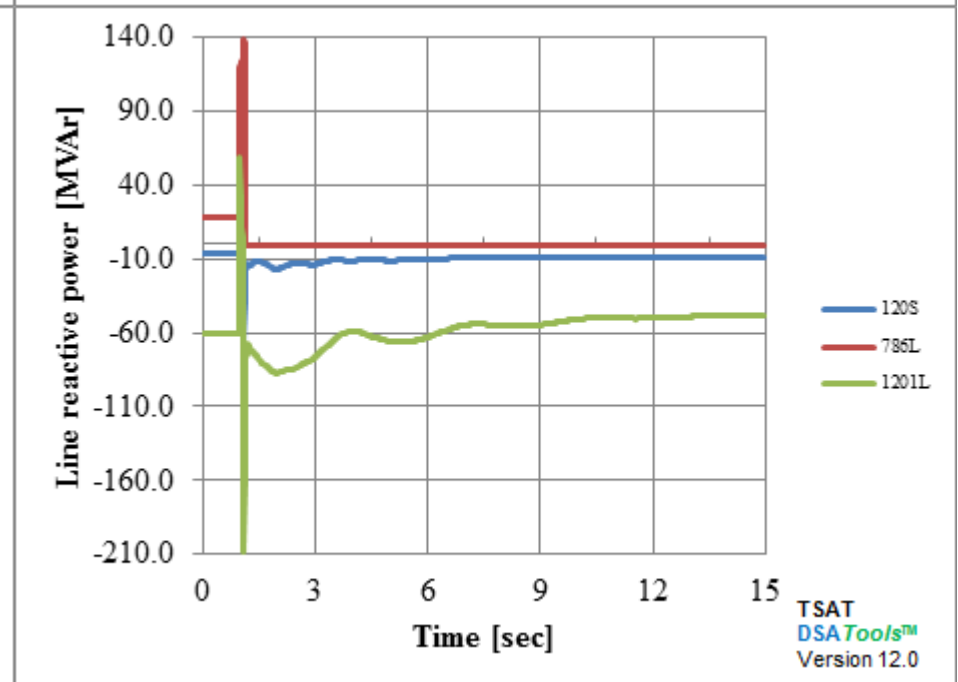
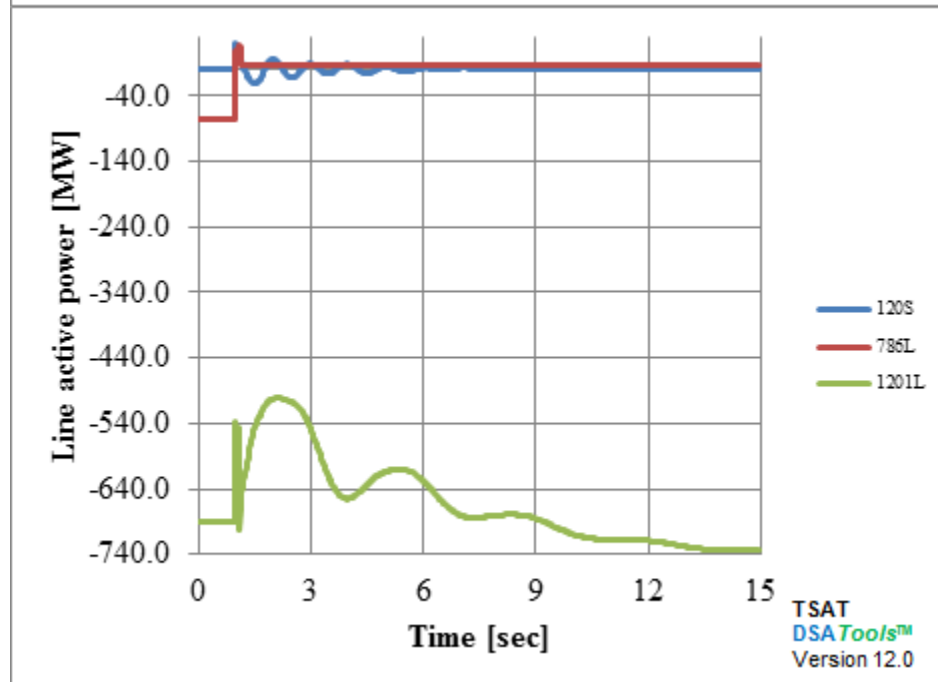
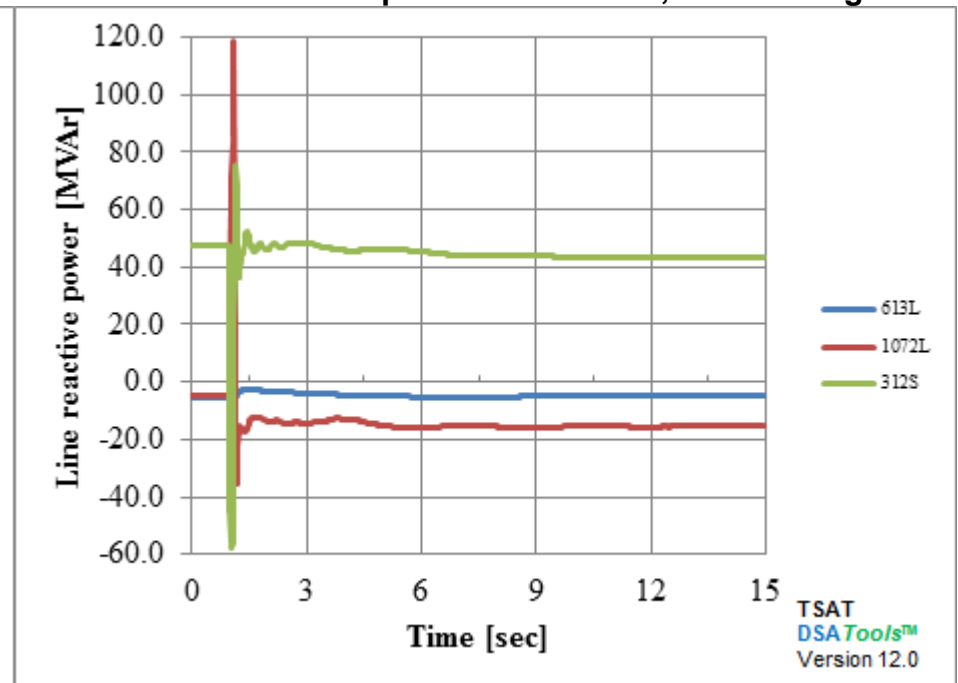
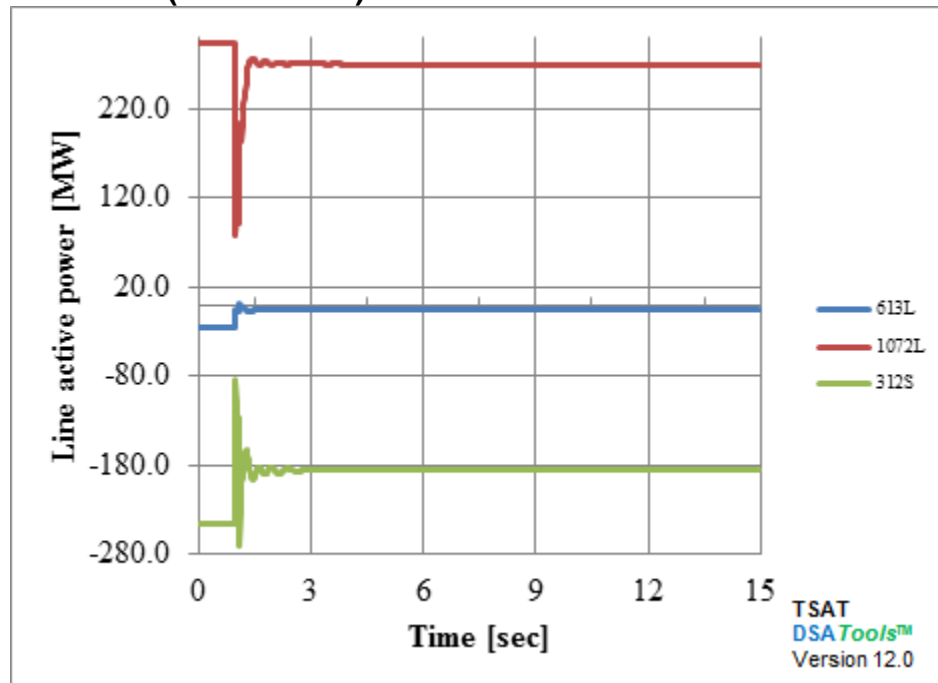
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Light 2014



16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Light 2014





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**Riverview WAGF**

Attachment E2

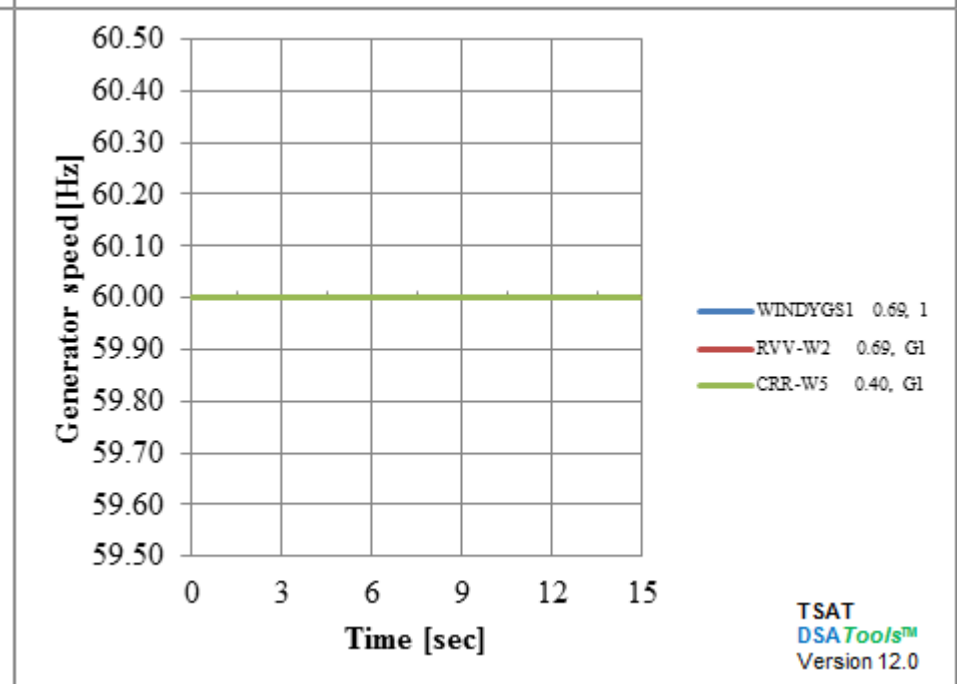
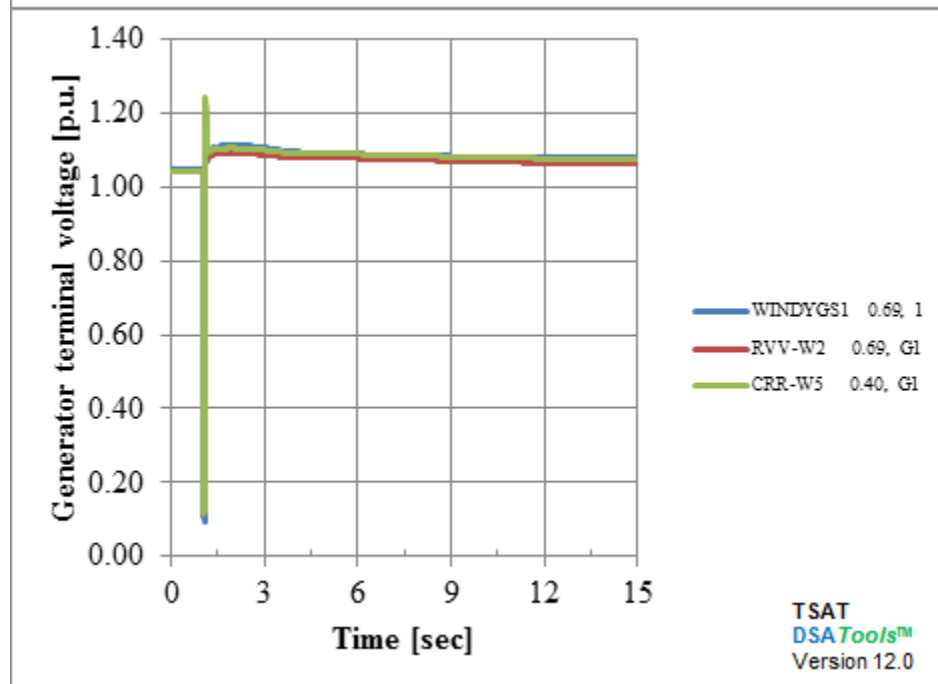
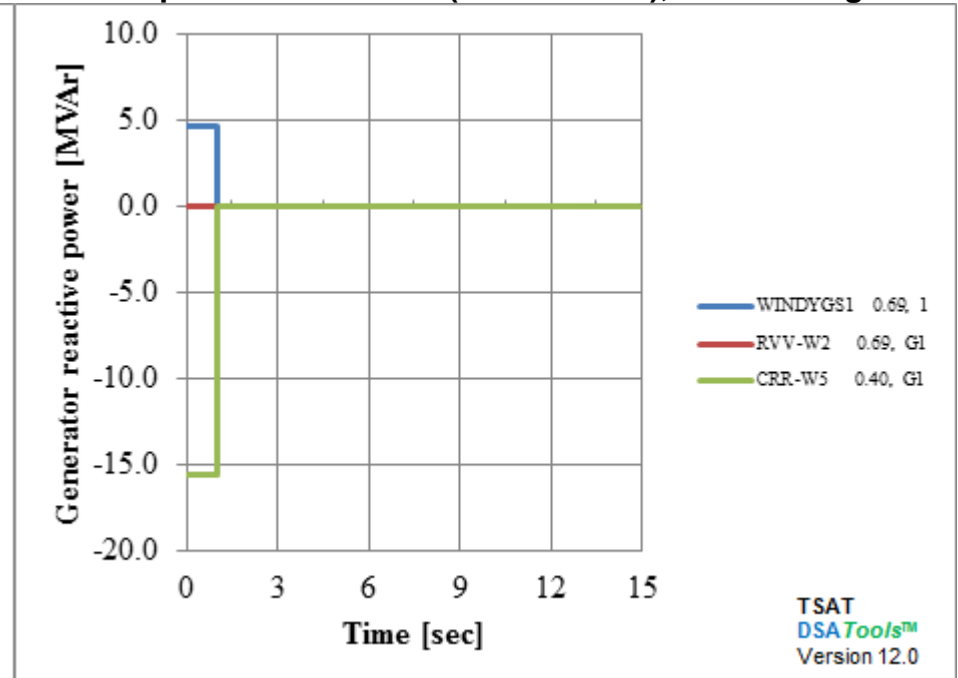
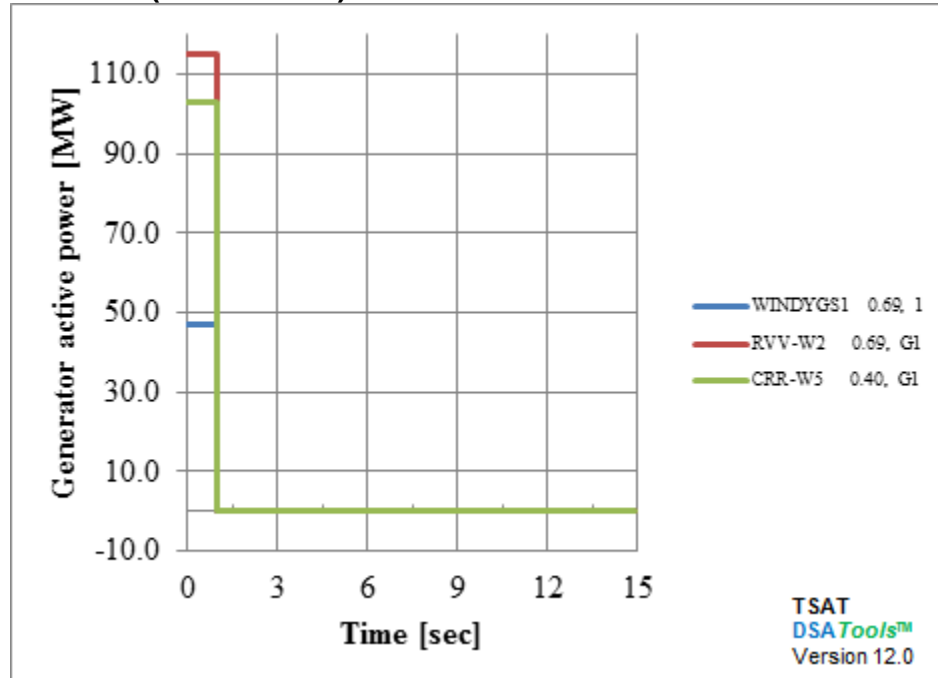
Post-Connection Transient Stability Results

Part 2

2017 Summer Light Scenario

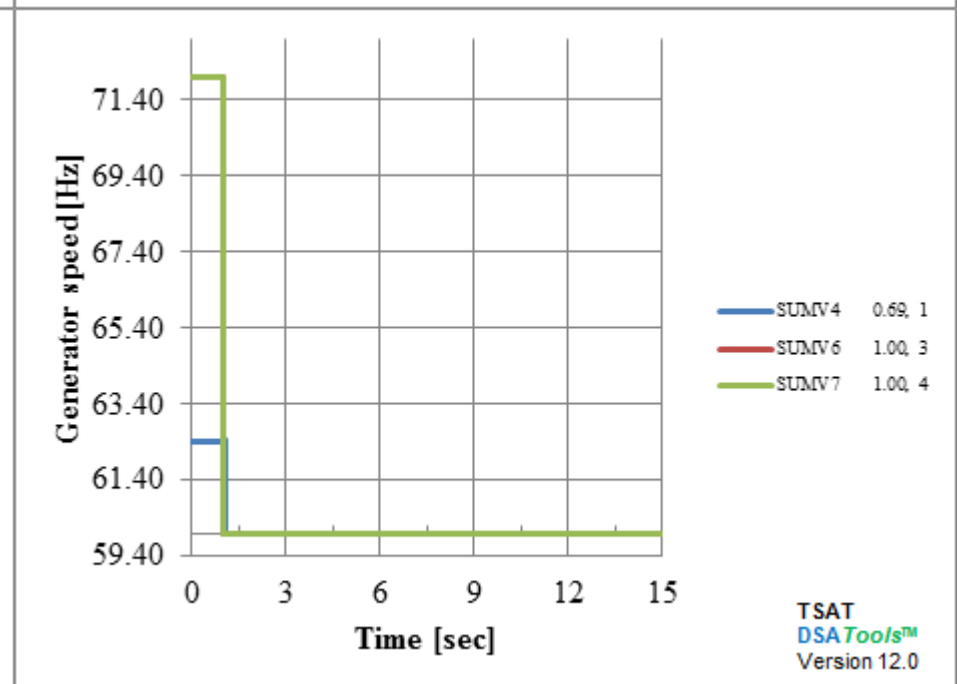
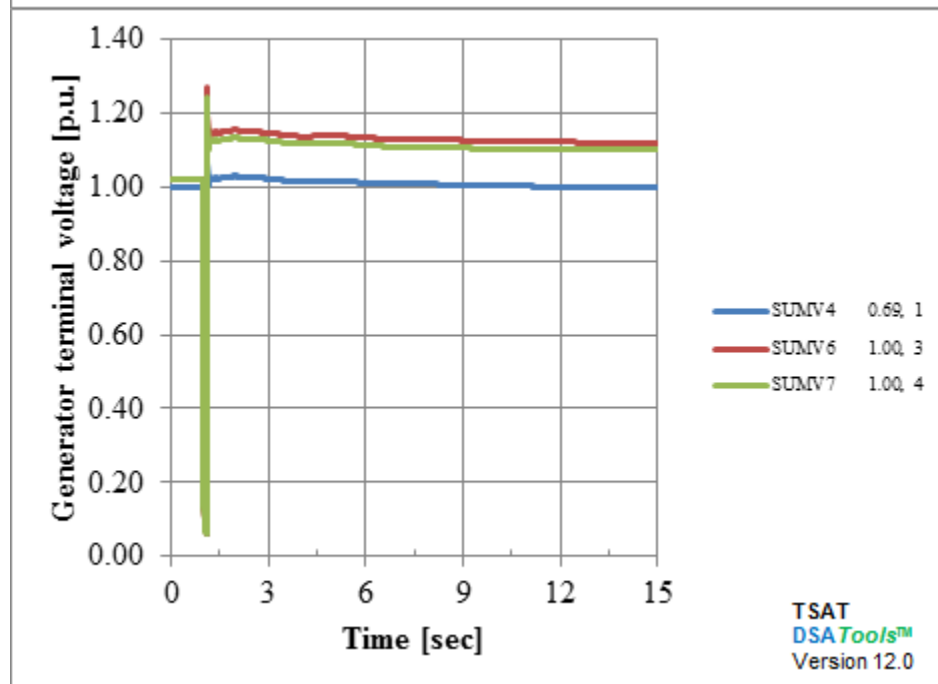
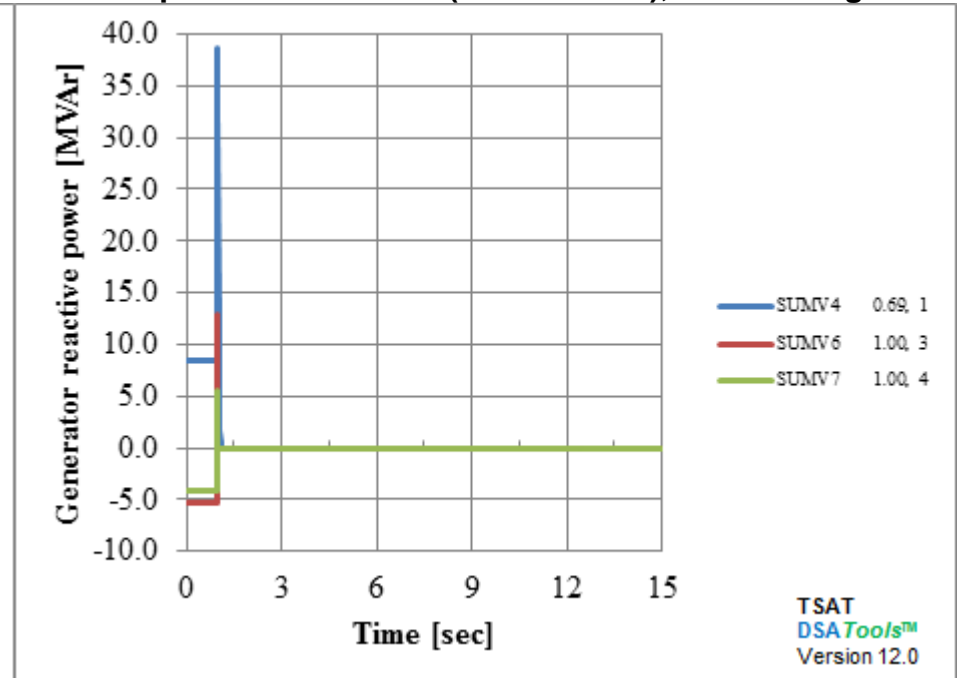
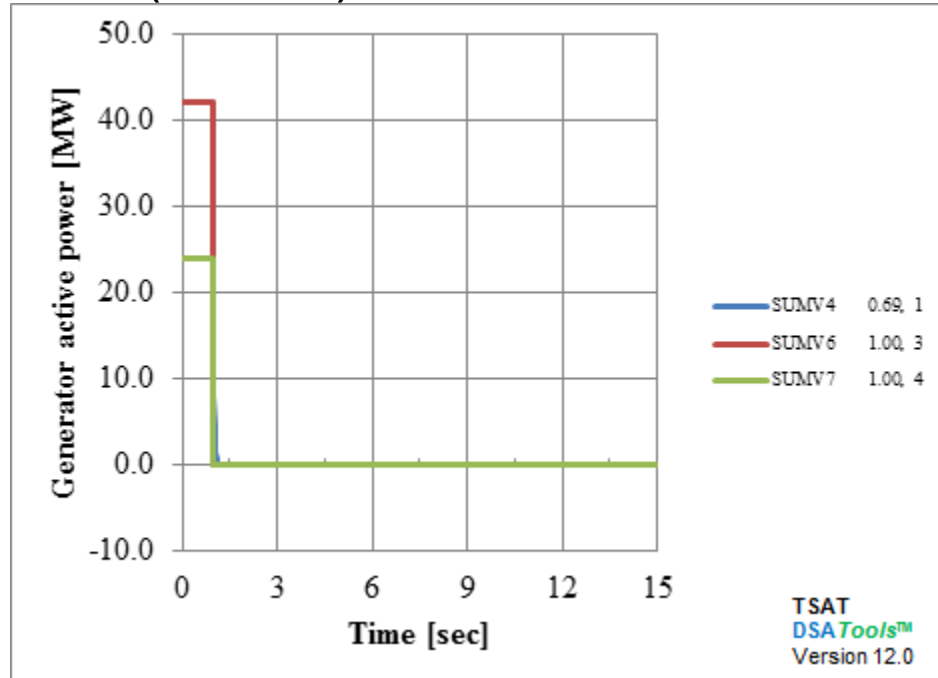
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



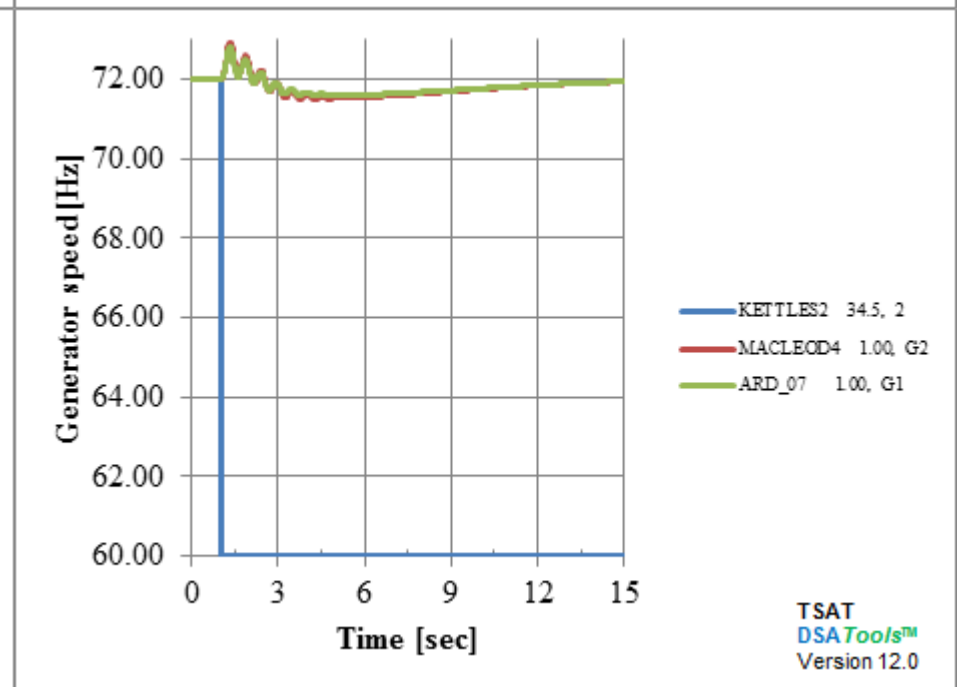
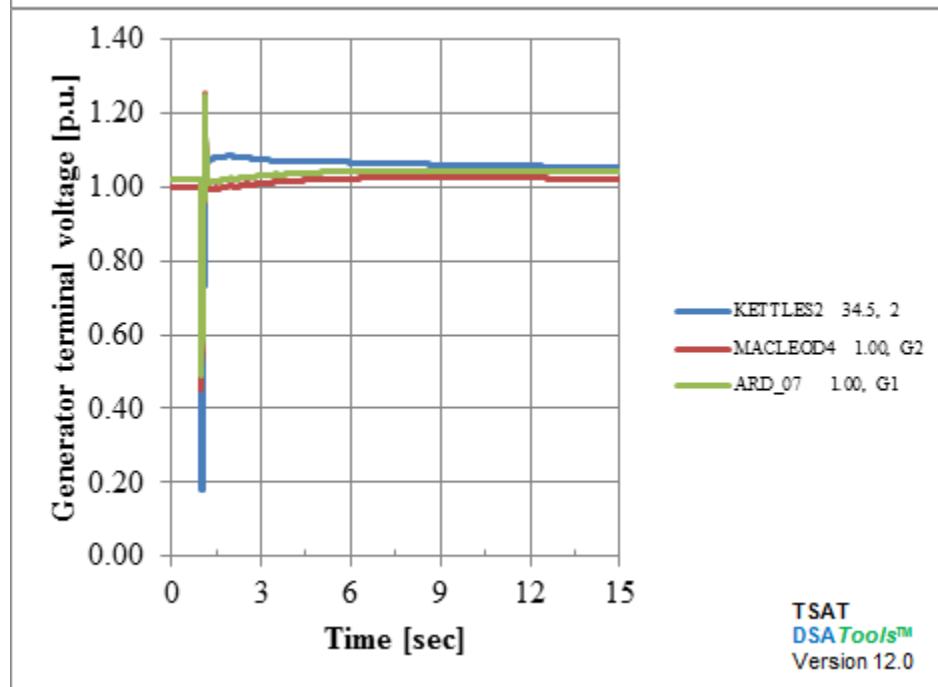
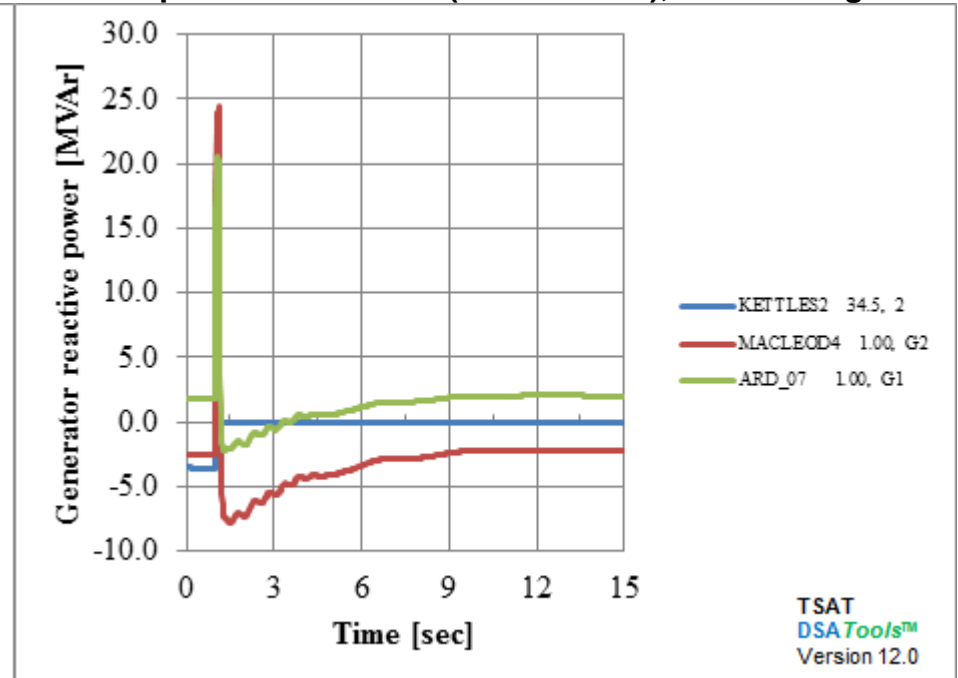
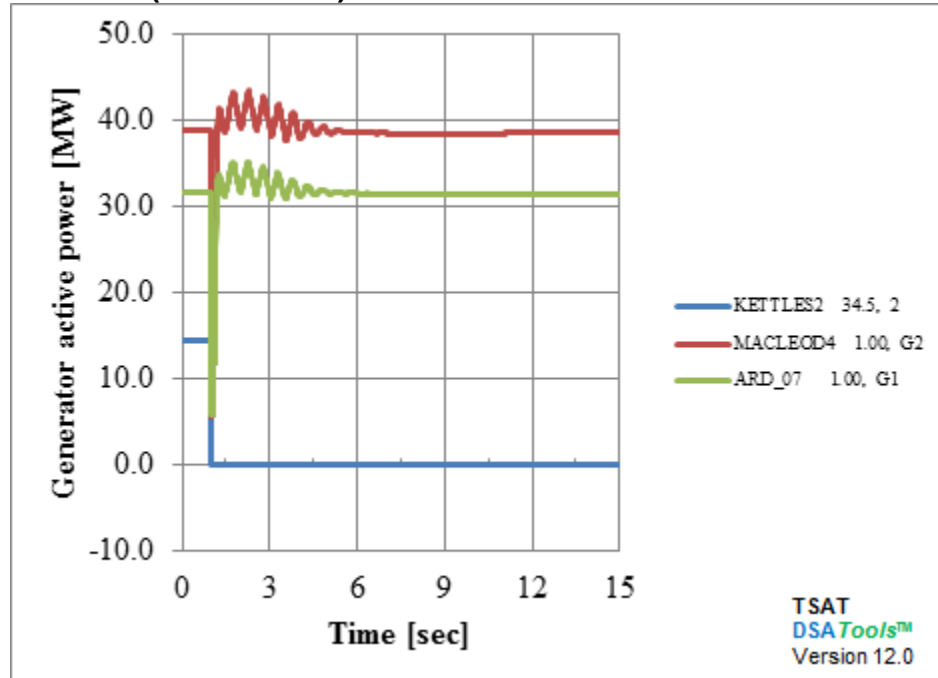
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



1 -- 994L (103S - 312S) NEAR 103S

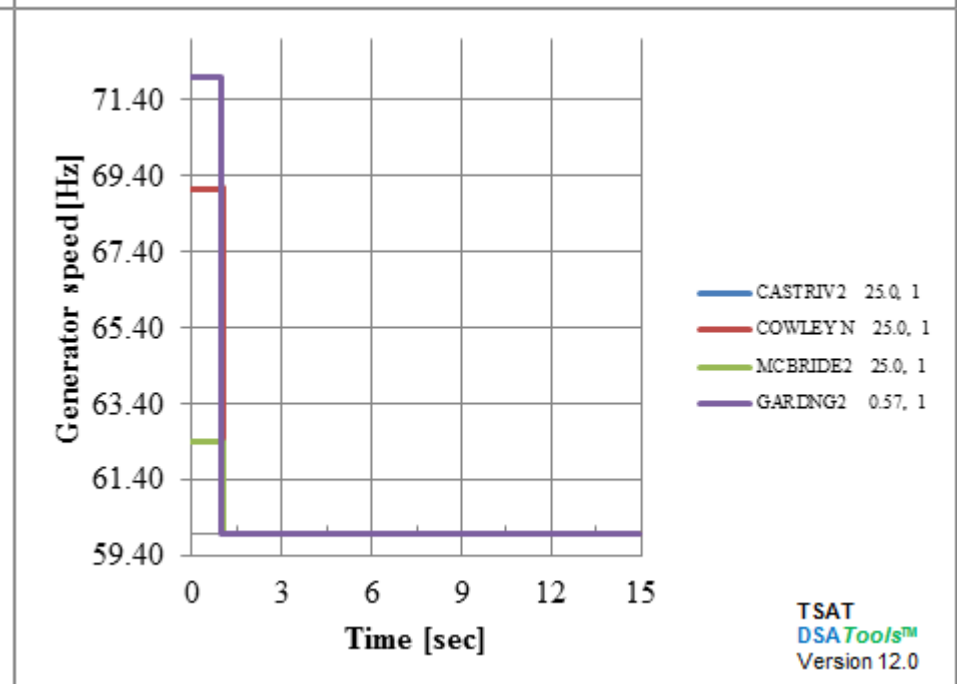
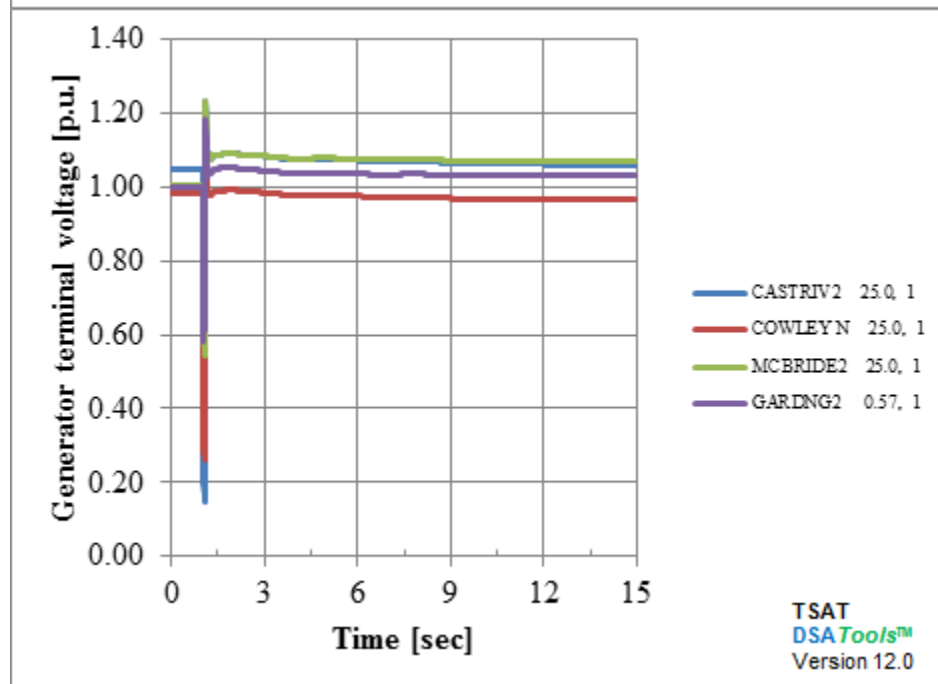
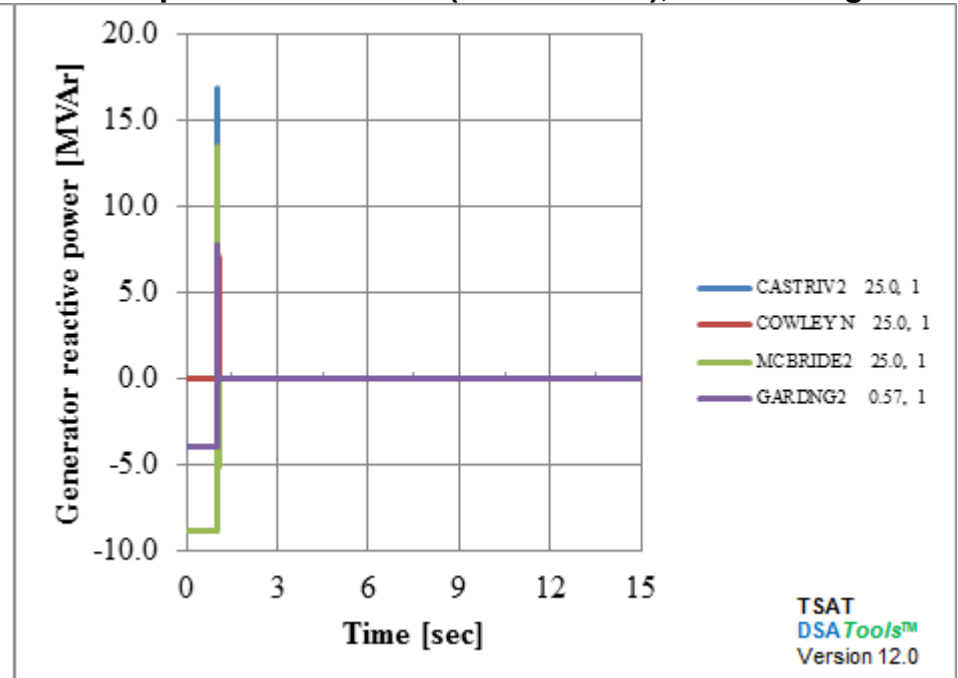
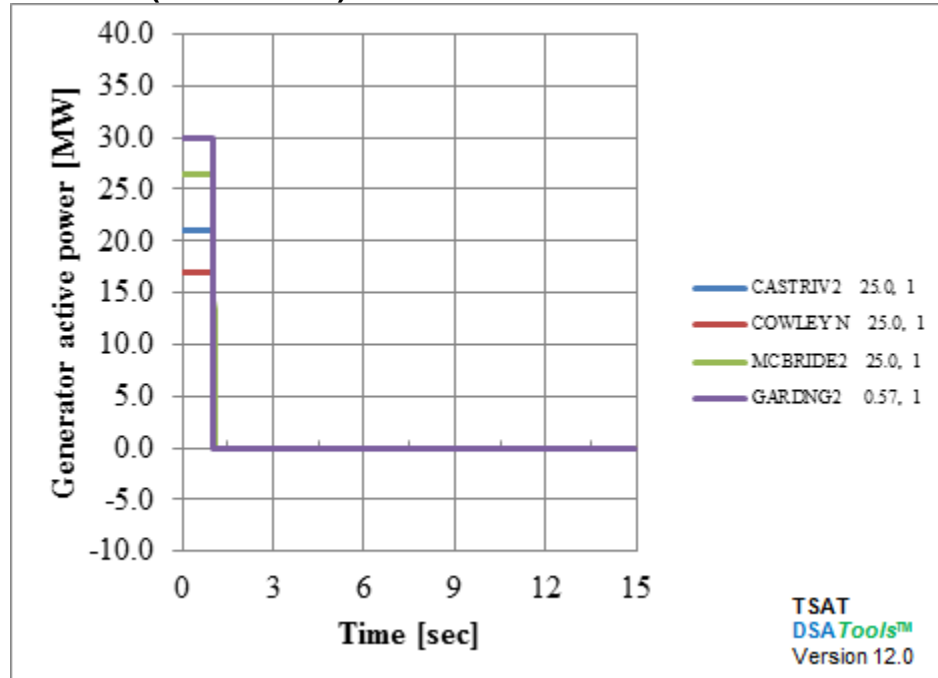
Proposed Connection (Alternative 2), Summer Light 2017





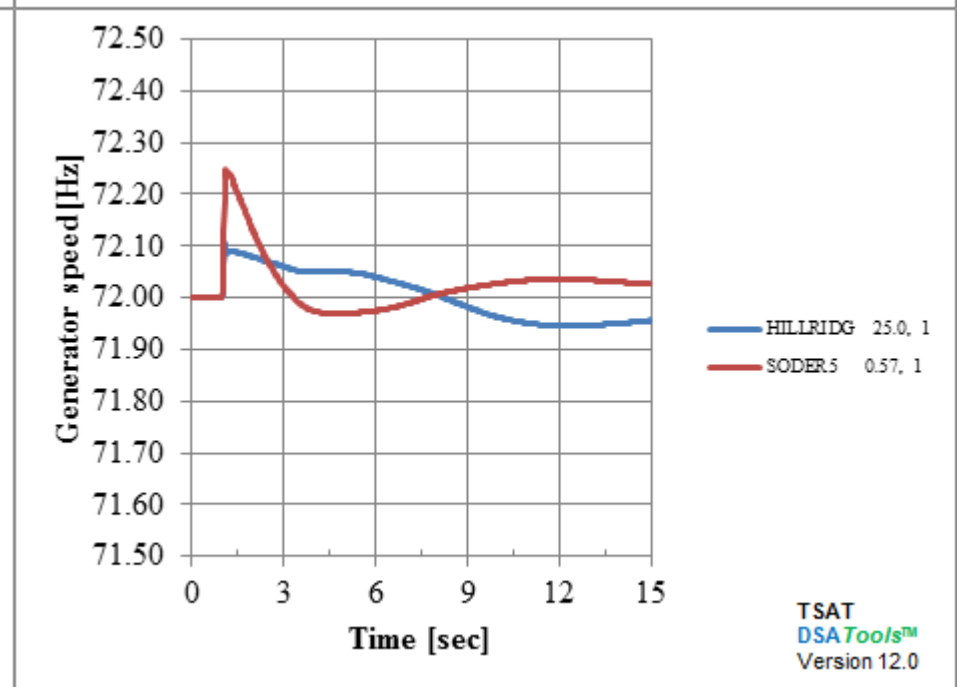
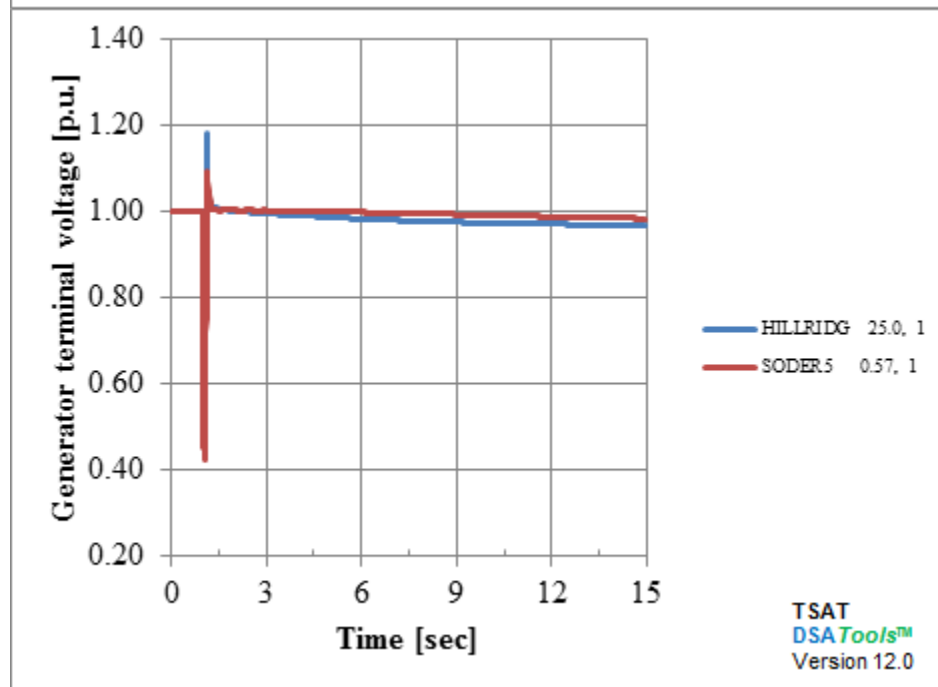
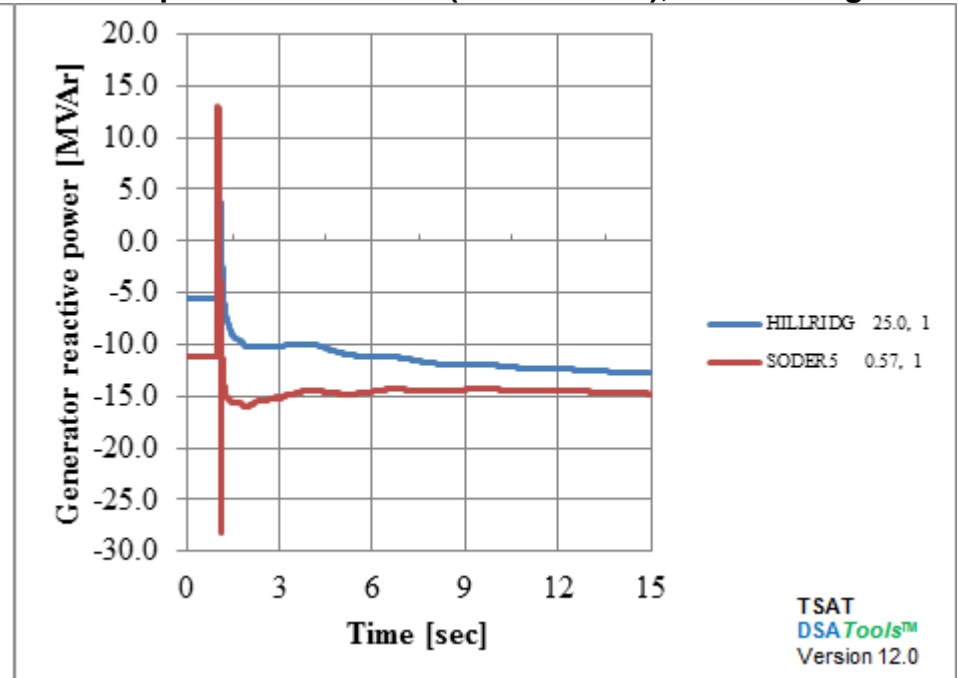
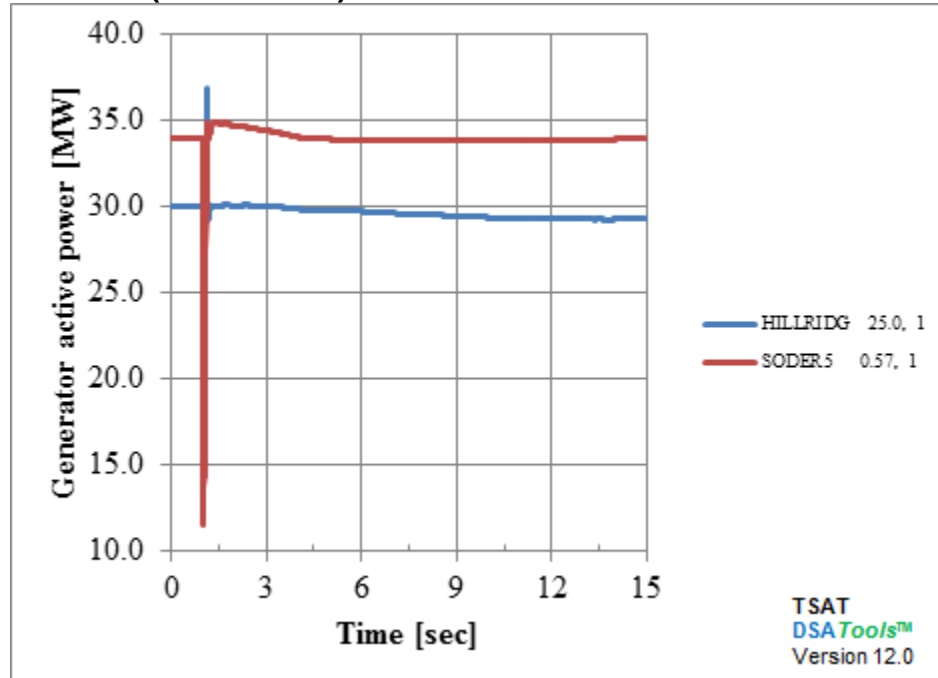
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



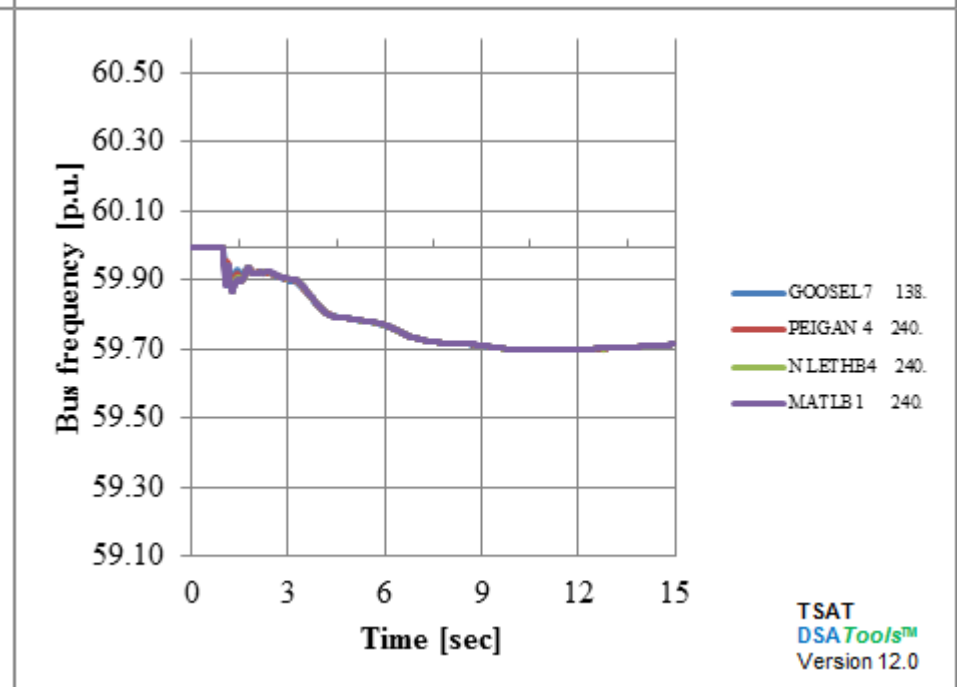
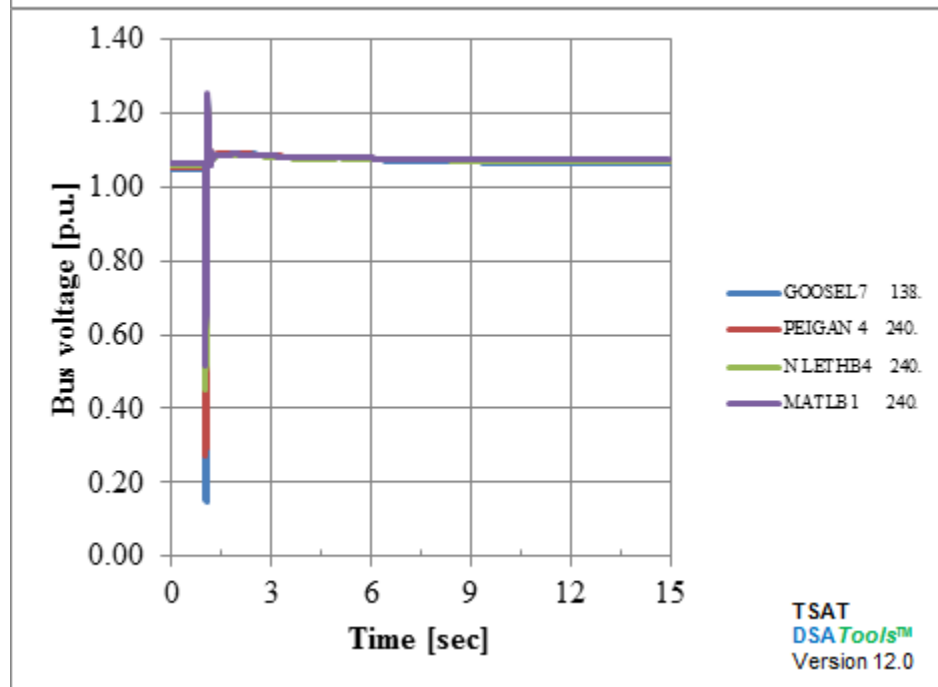
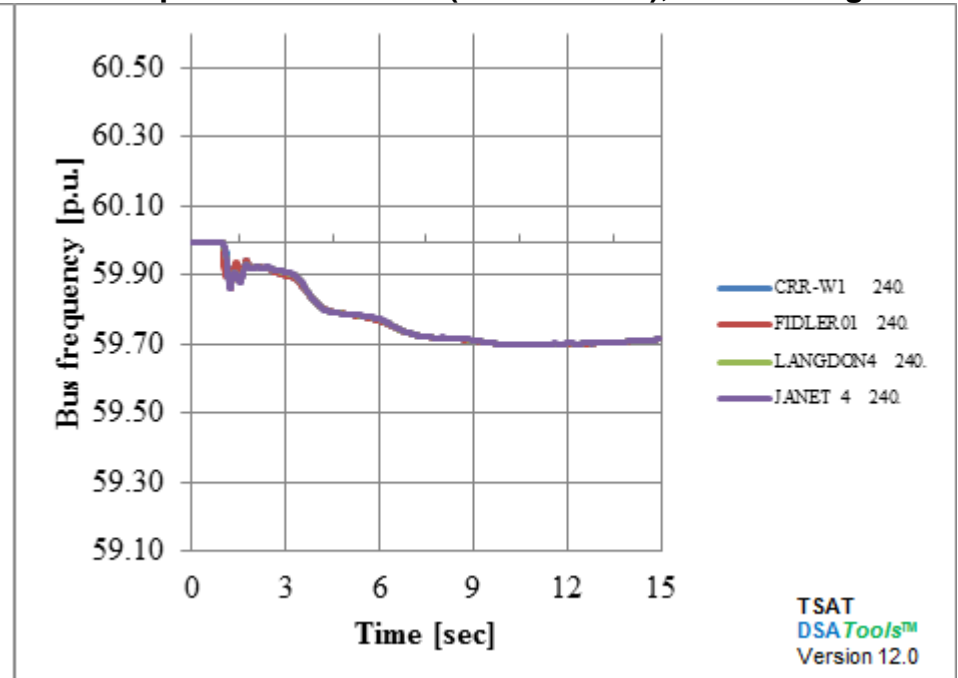
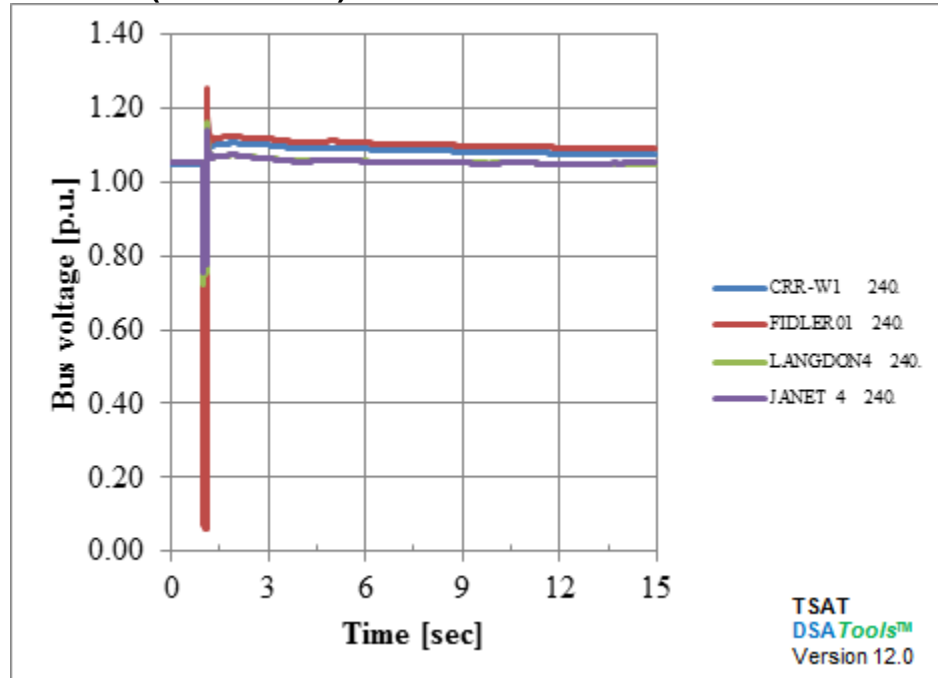
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



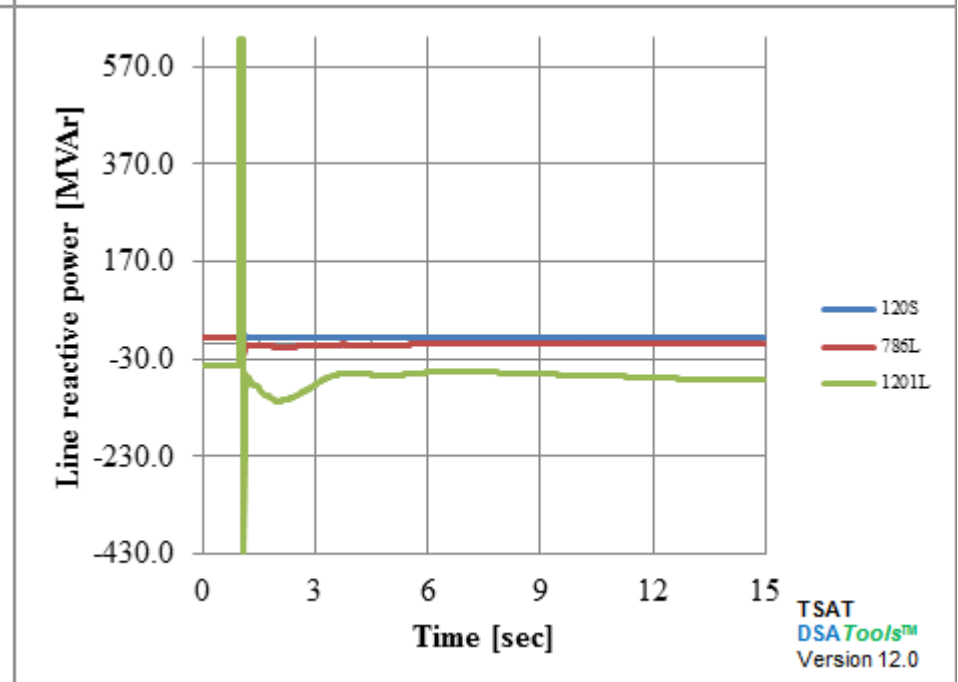
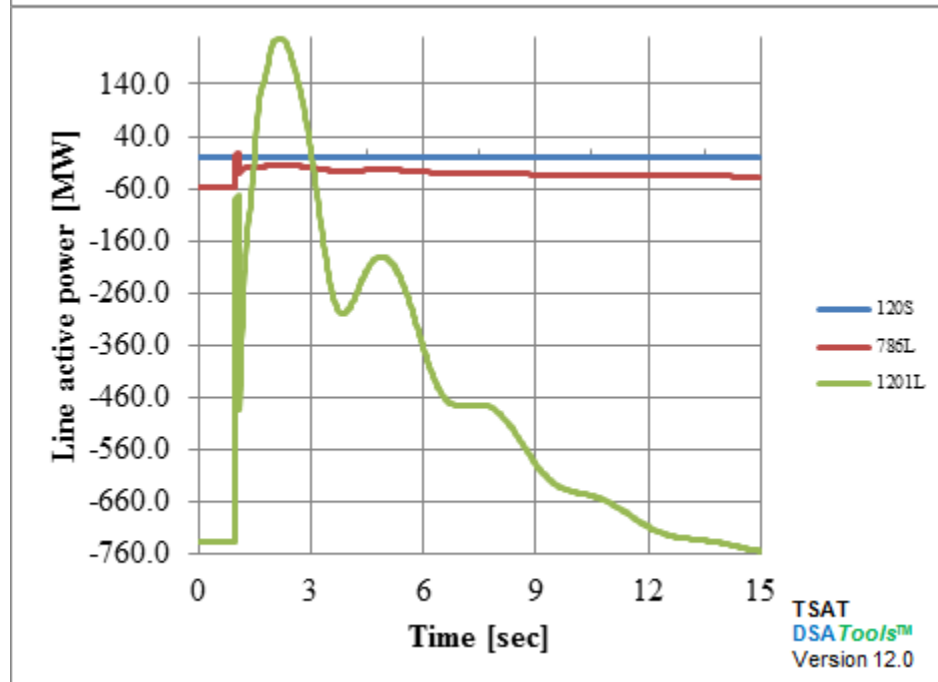
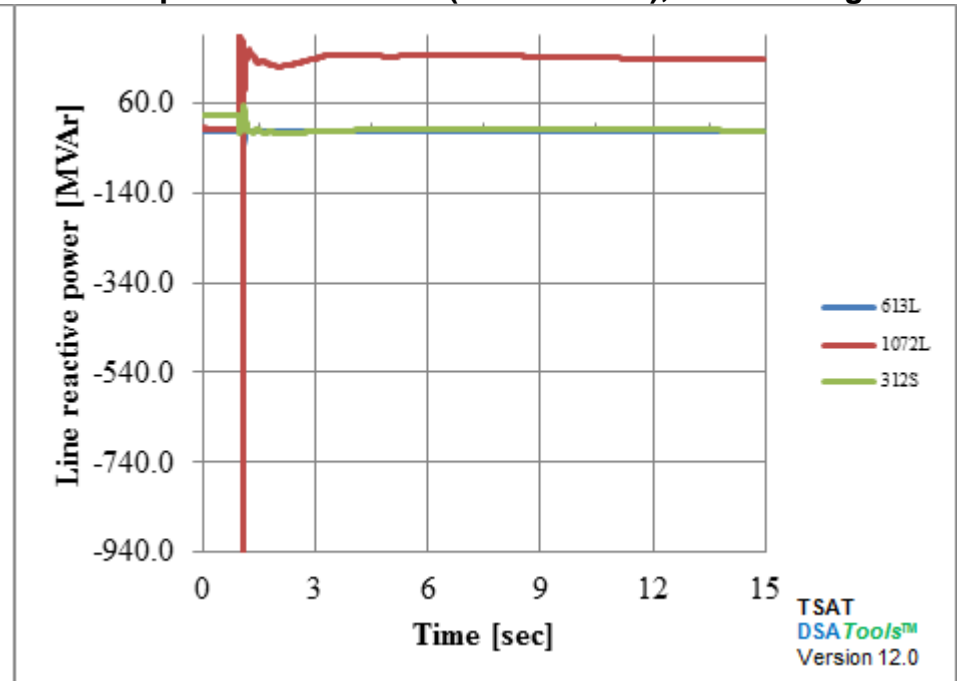
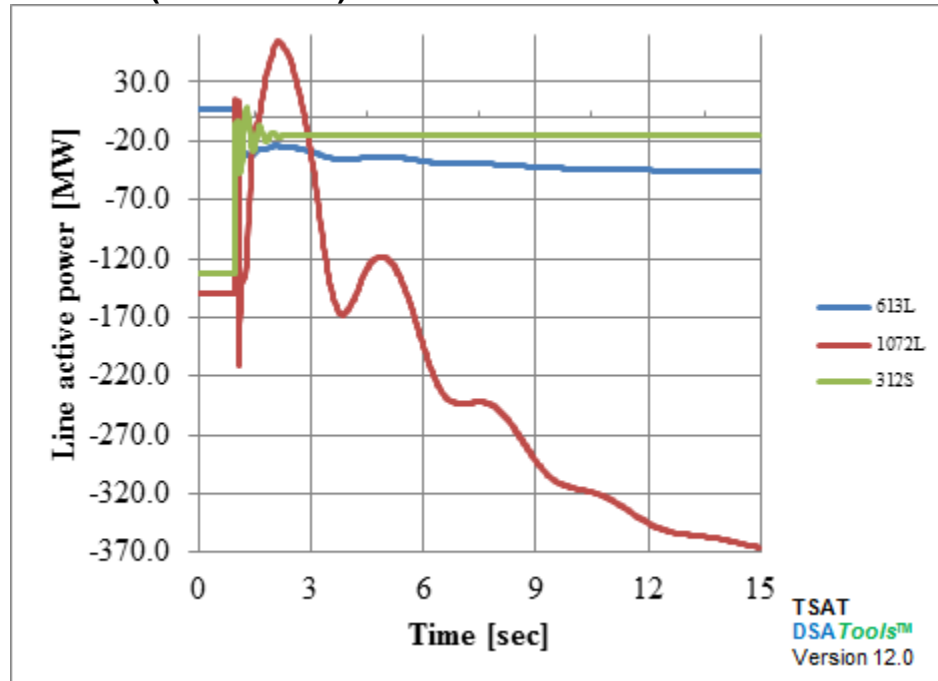
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



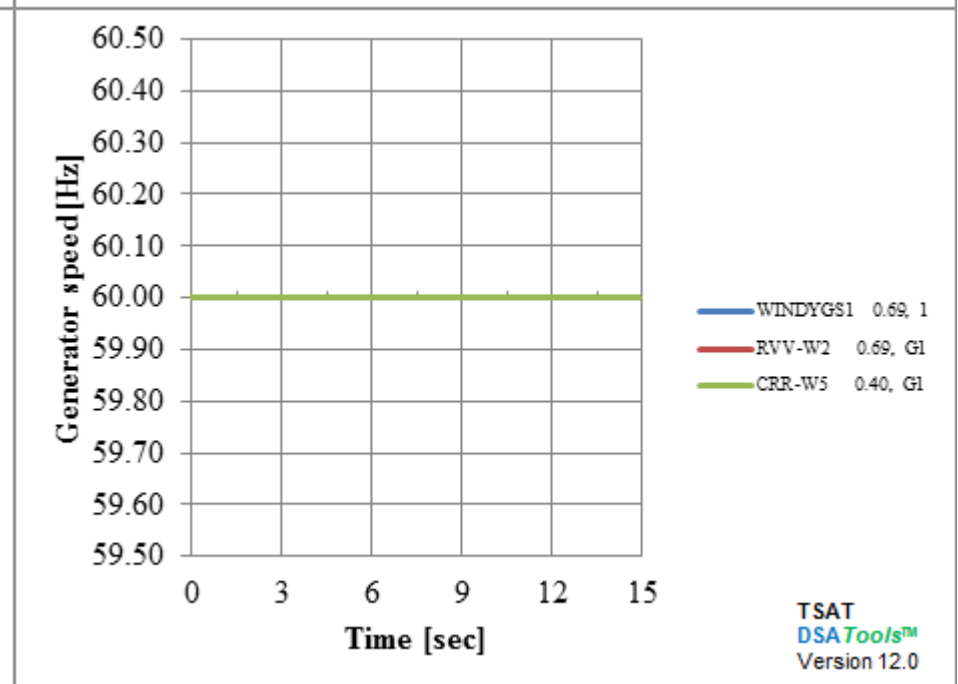
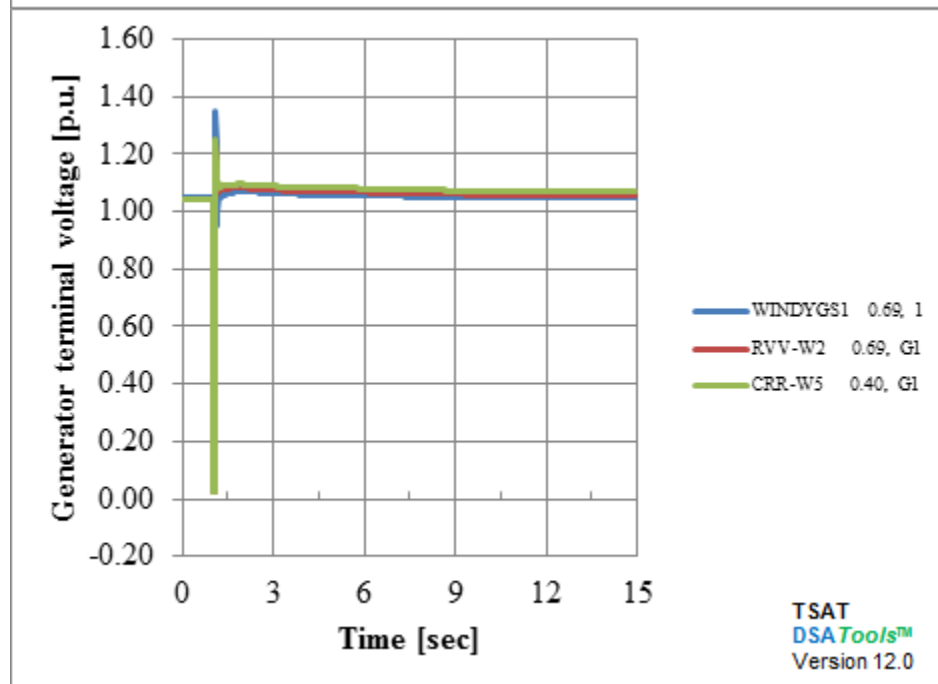
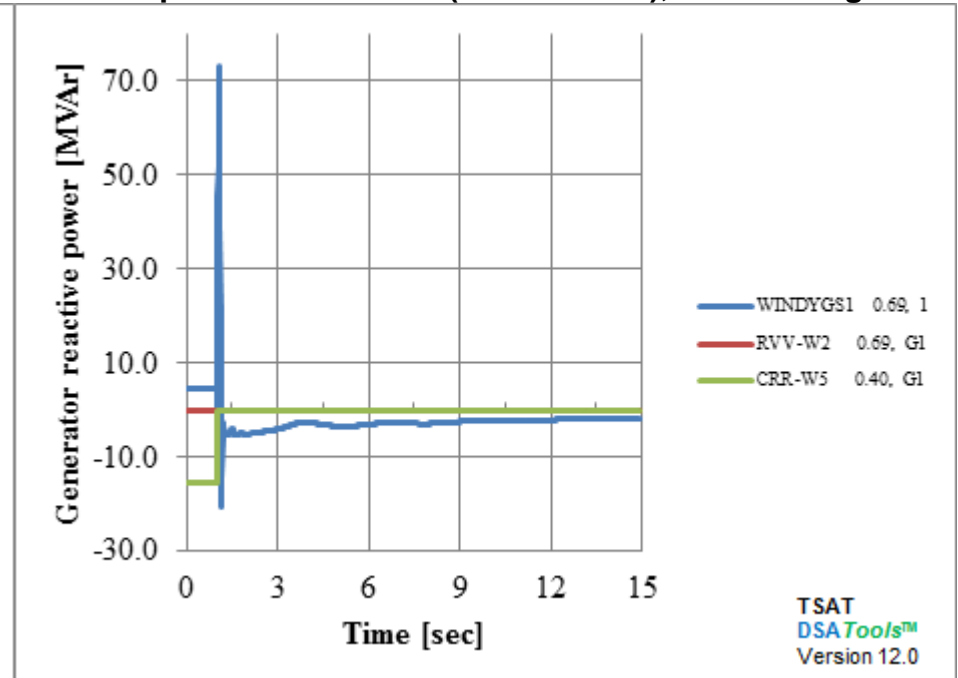
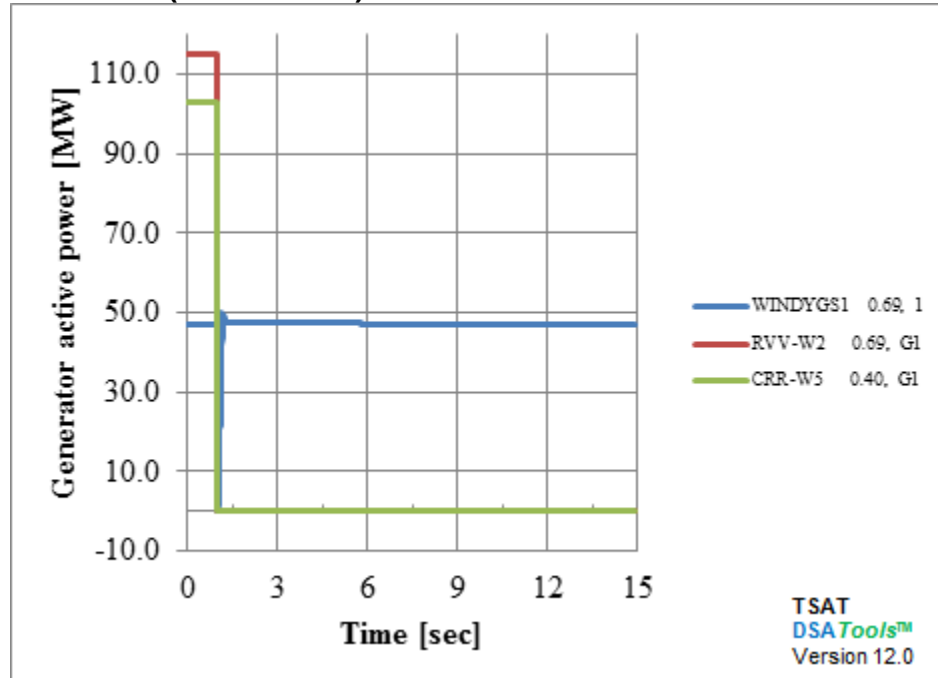
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



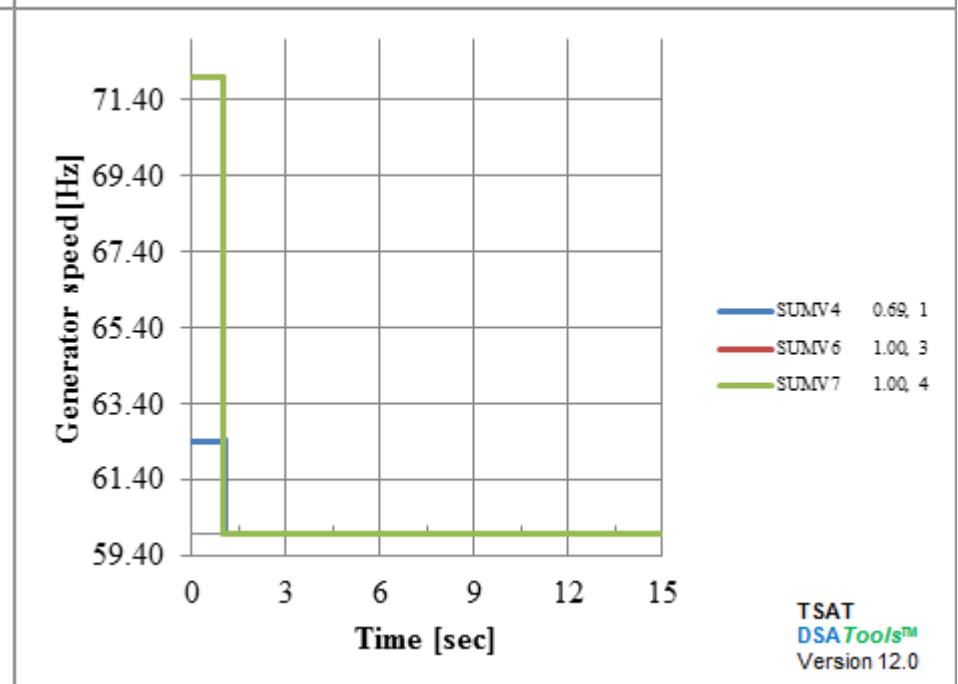
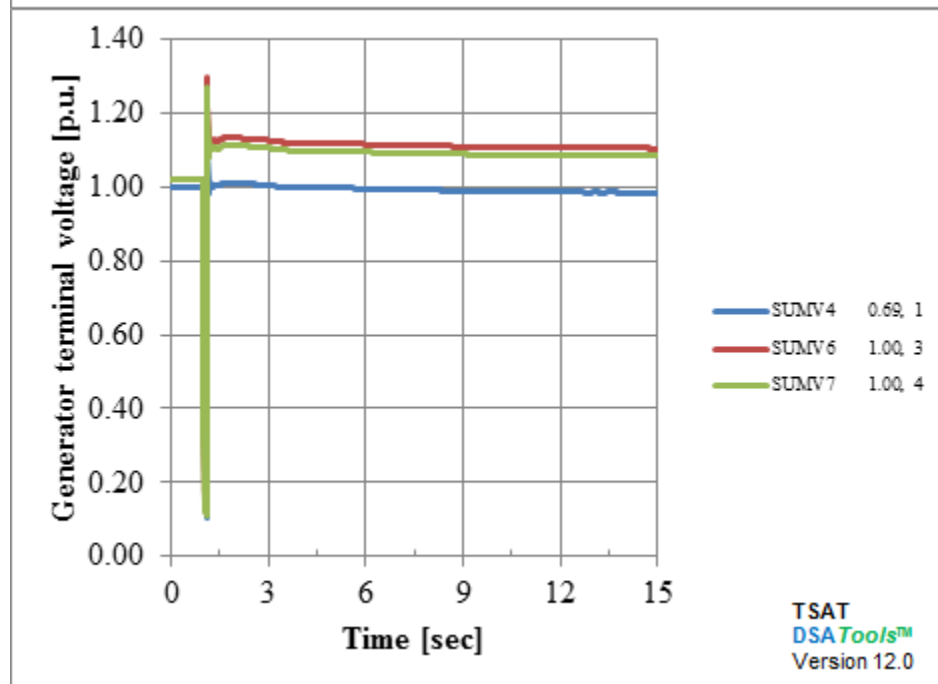
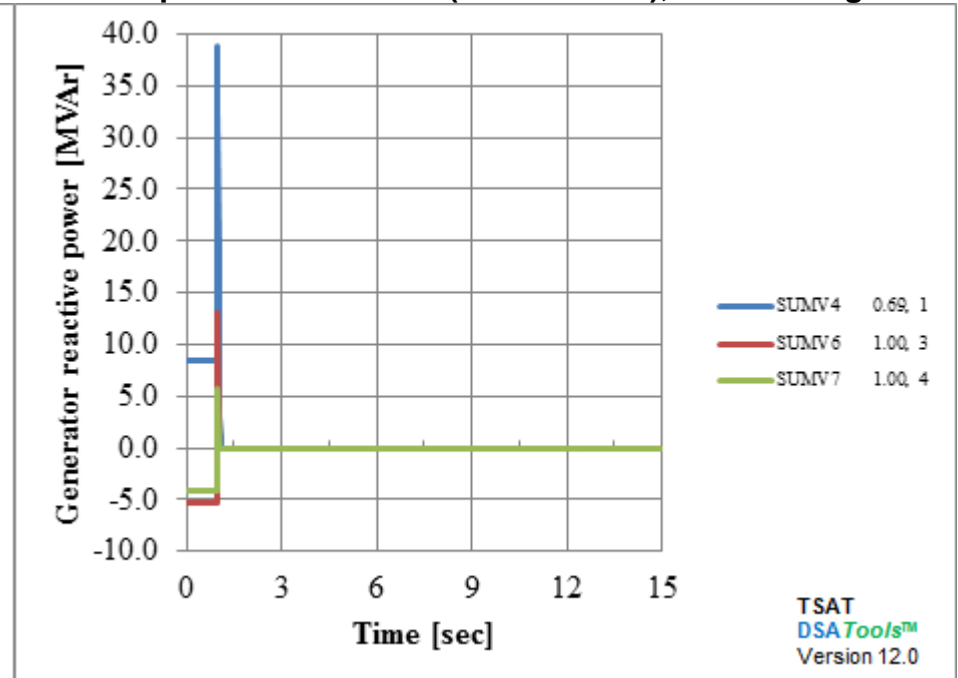
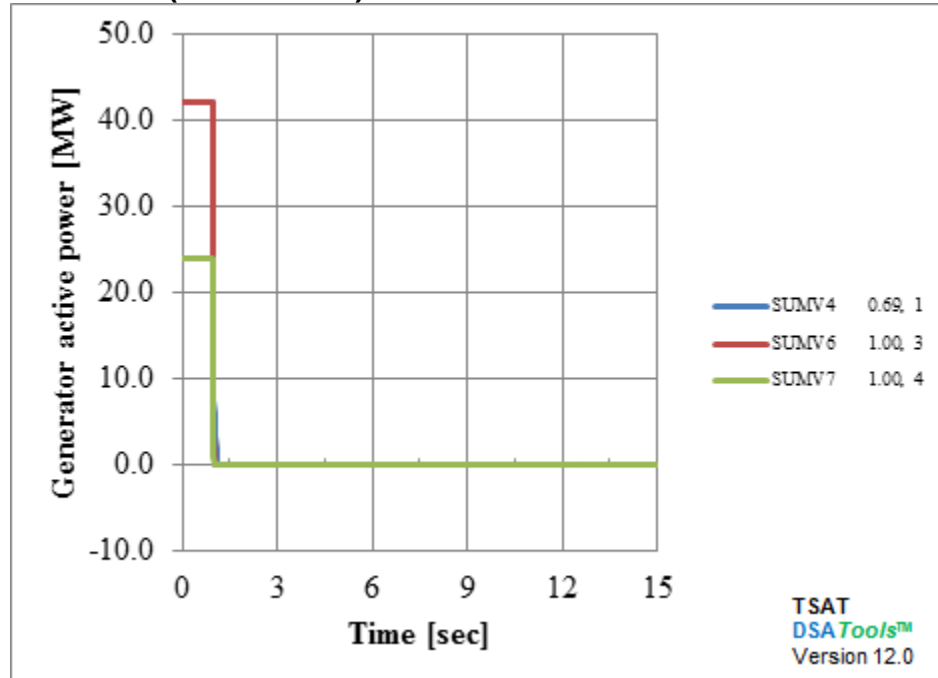
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



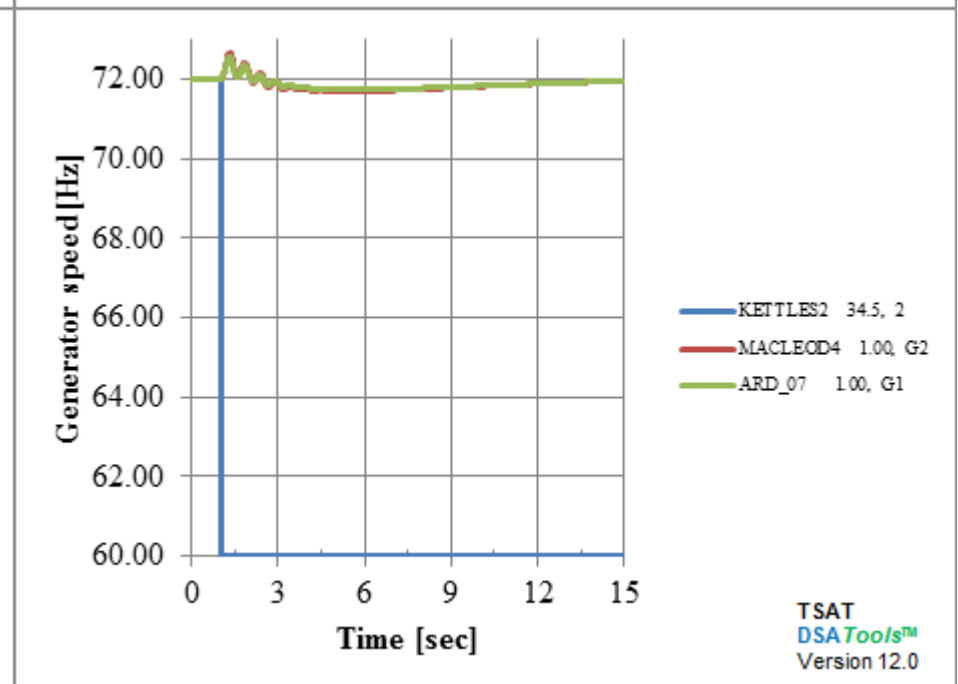
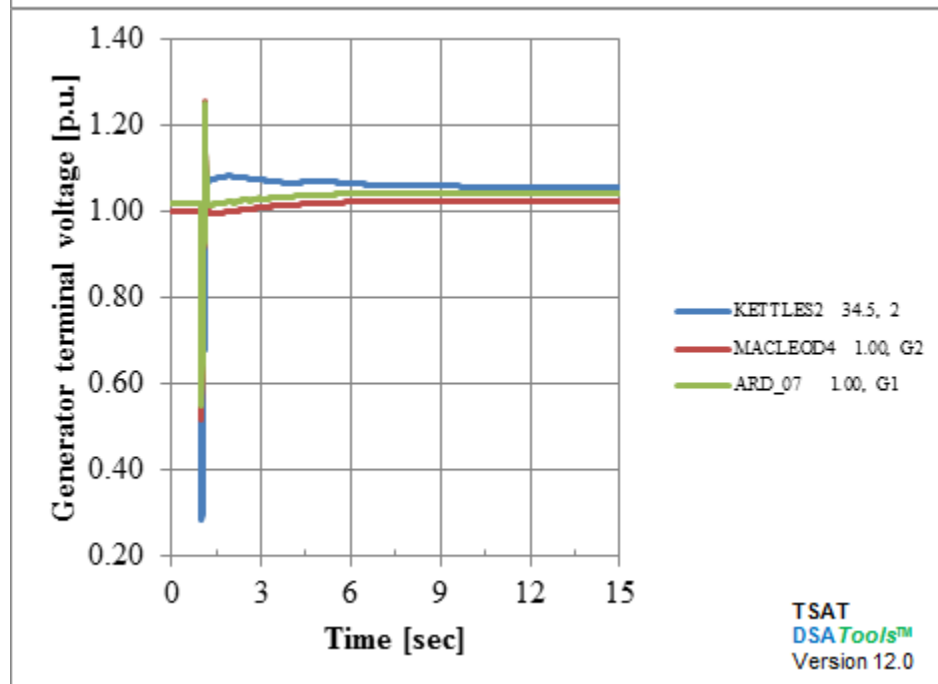
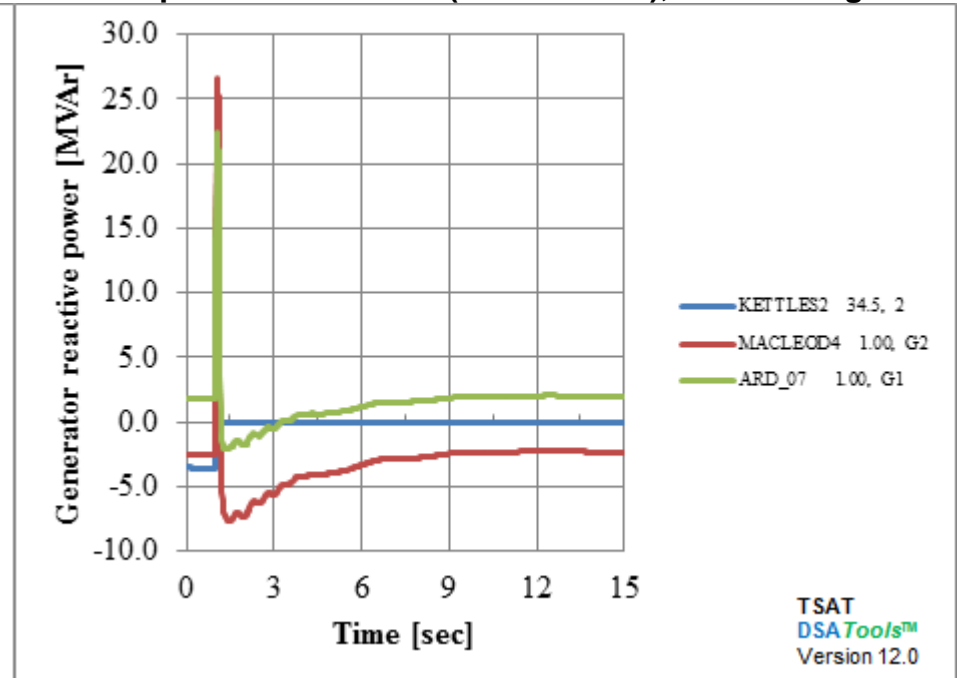
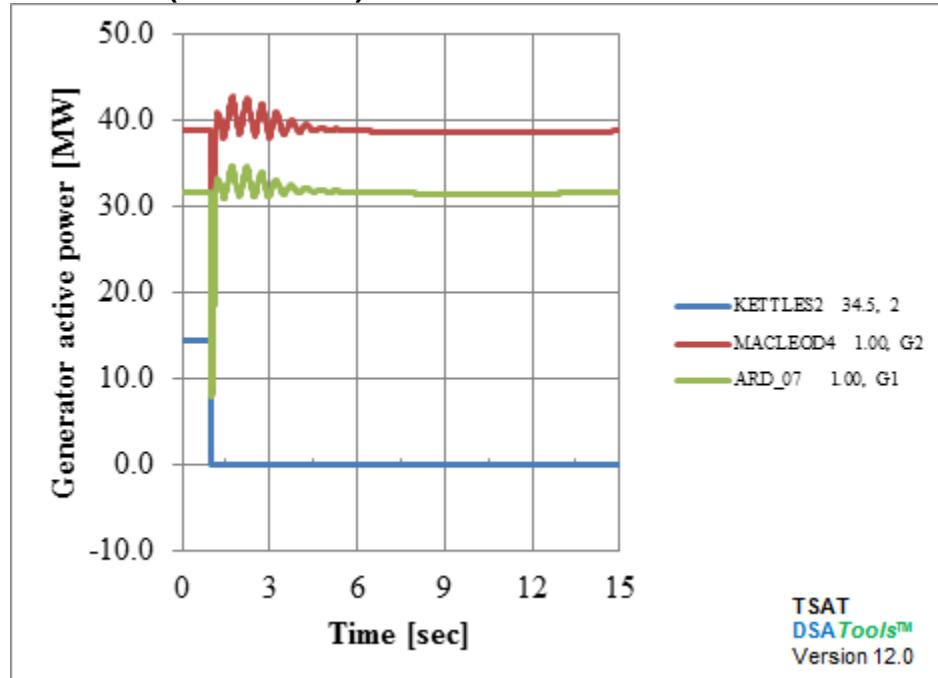
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



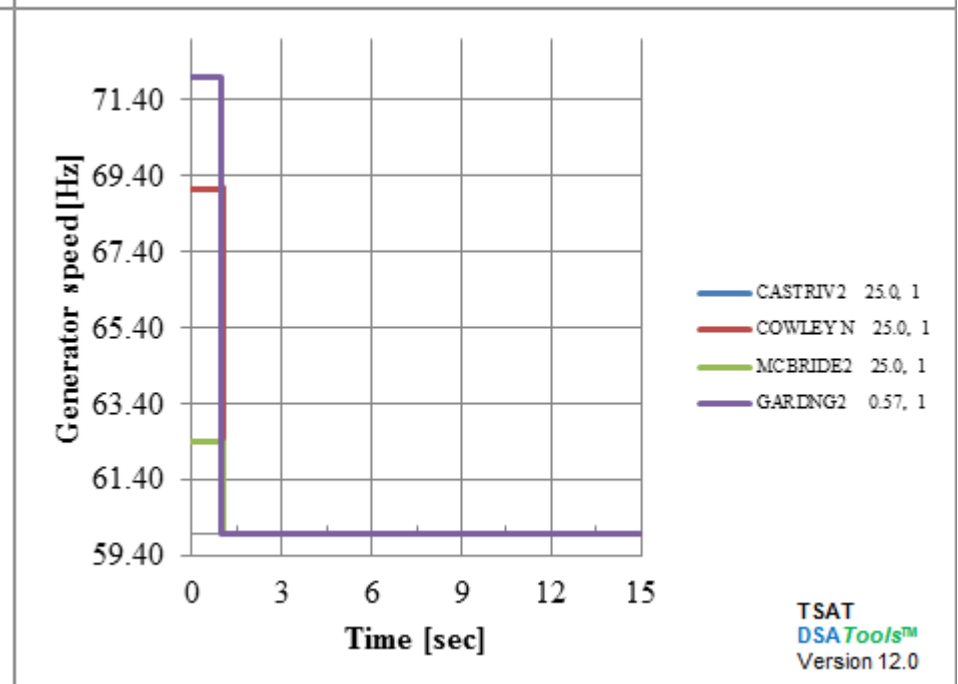
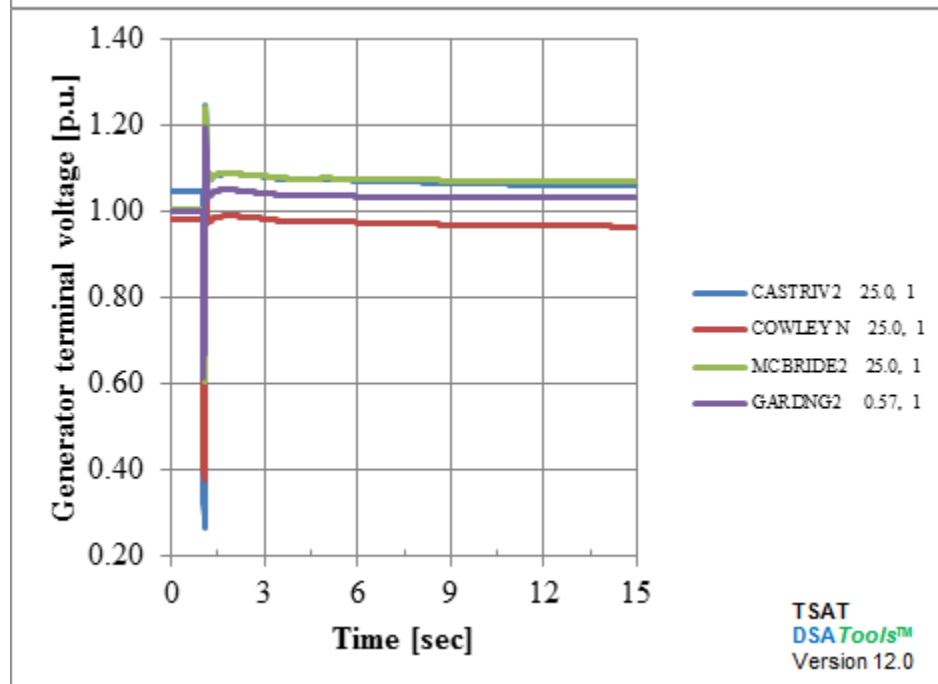
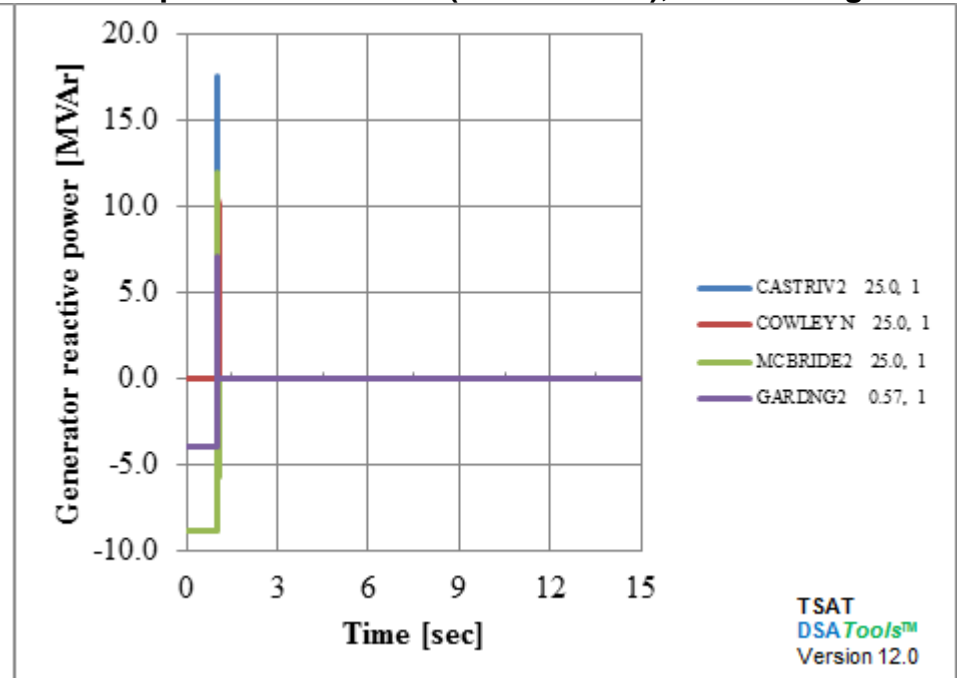
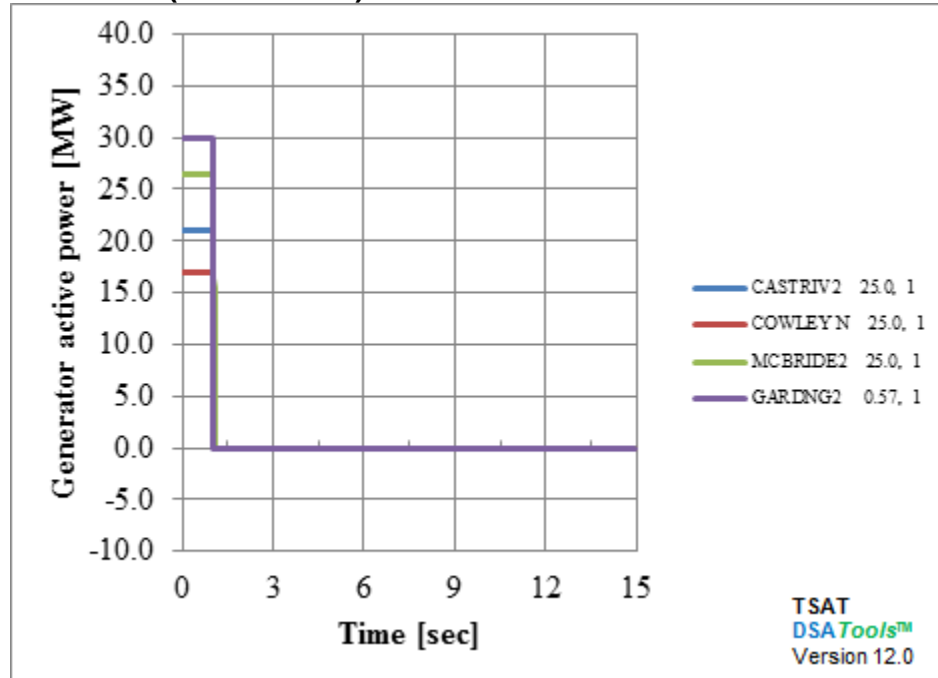
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



2 -- 1071L (205S - 312S) NEAR 205S

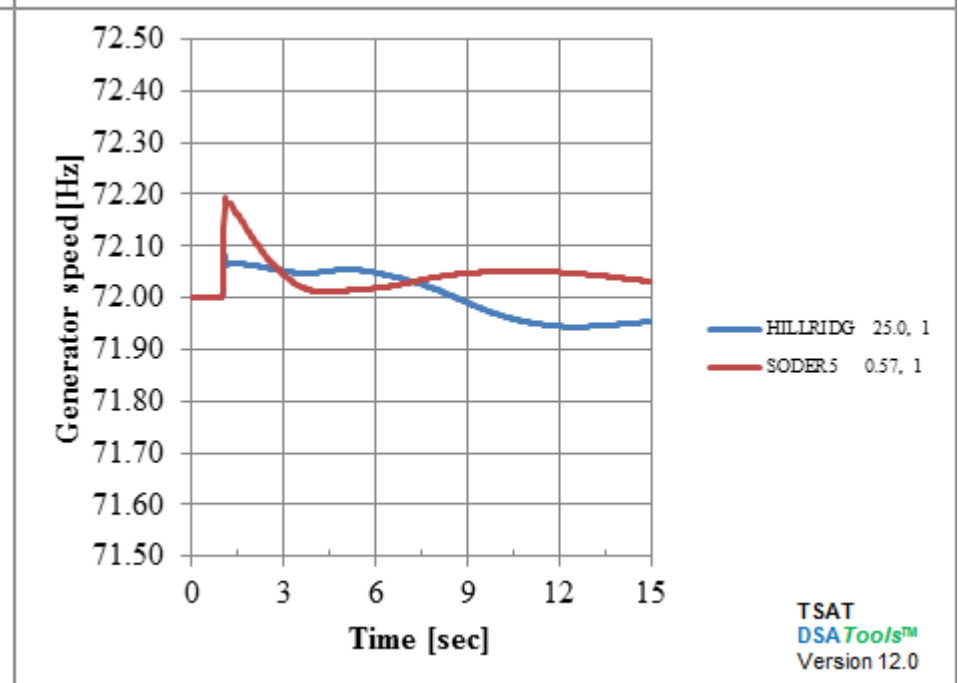
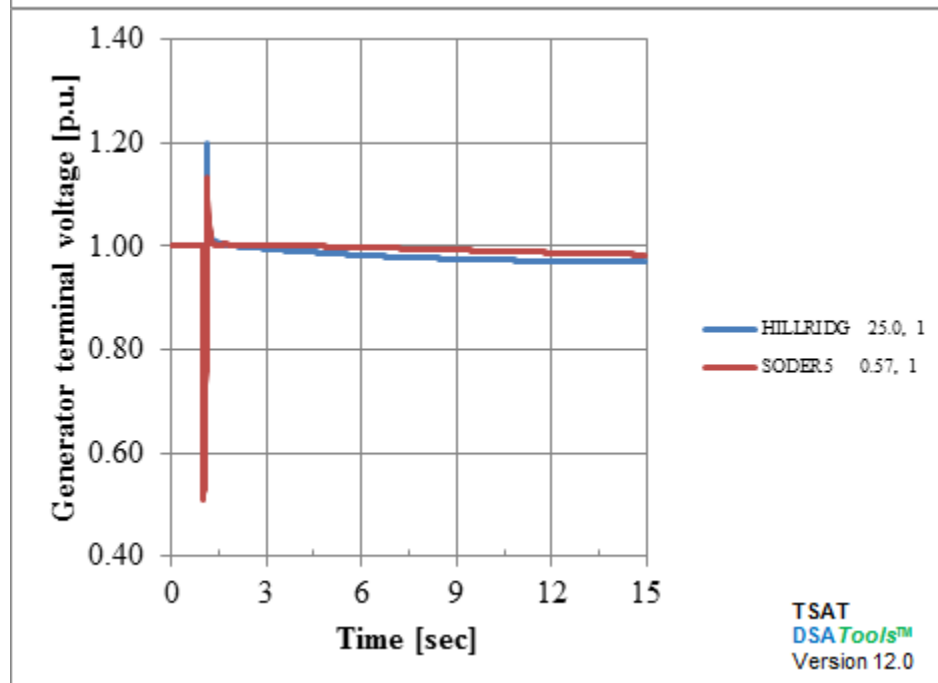
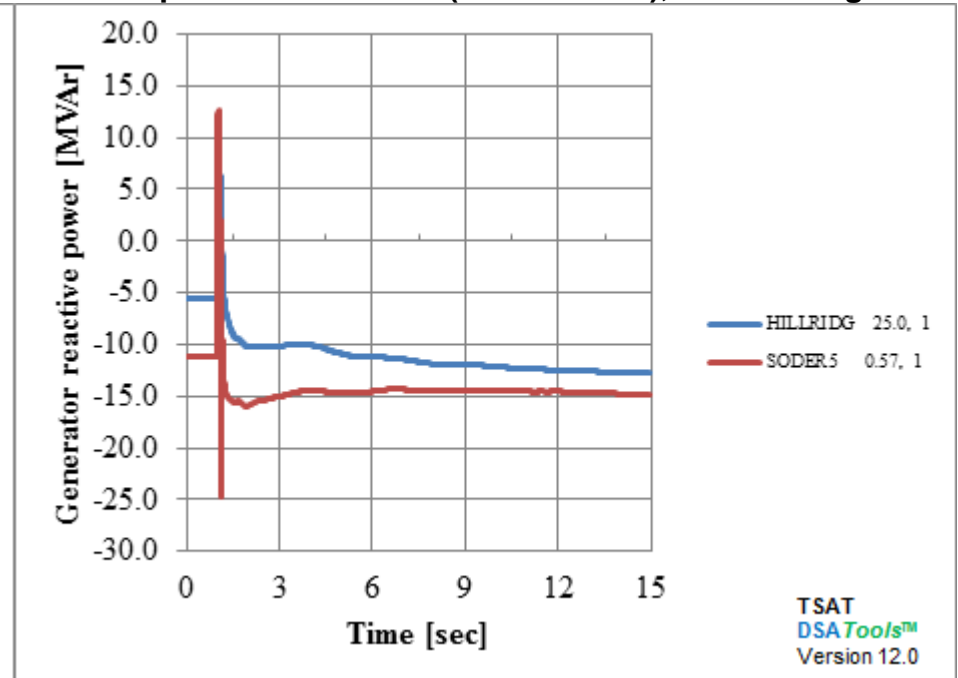
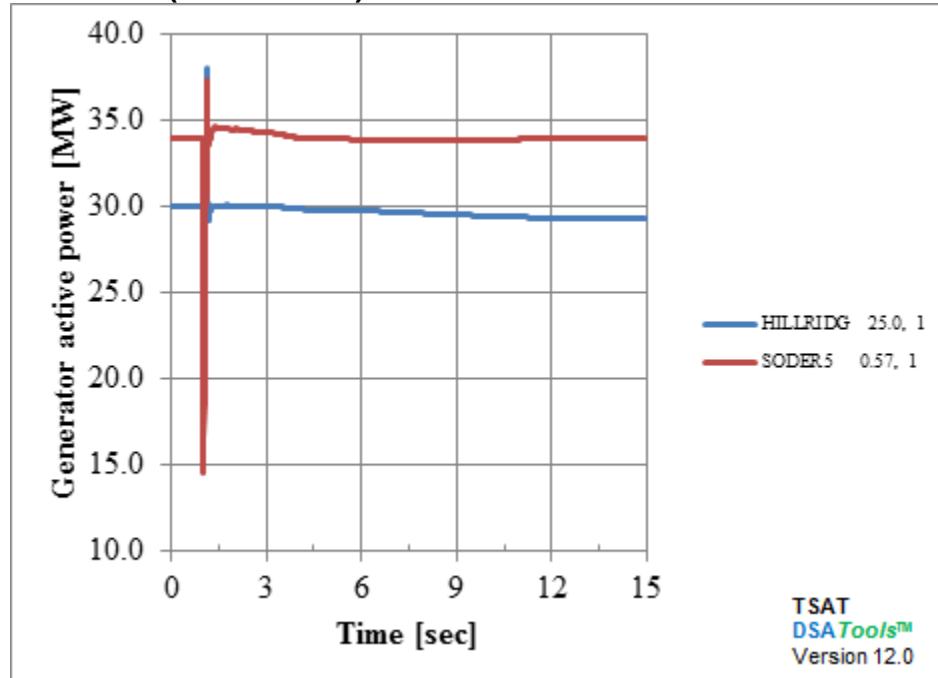
Proposed Connection (Alternative 2), Summer Light 2017





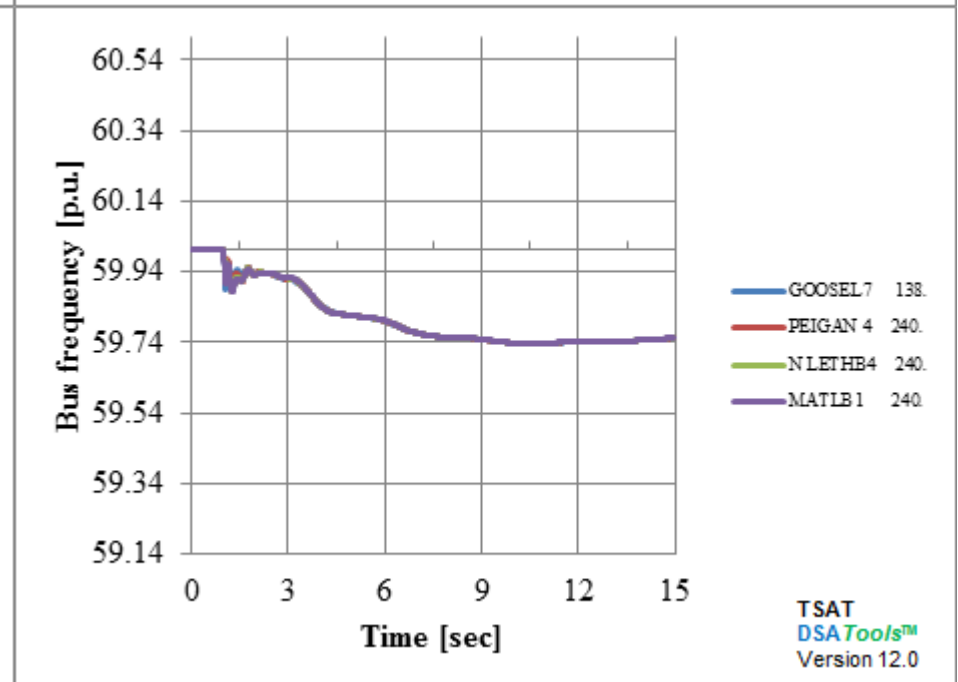
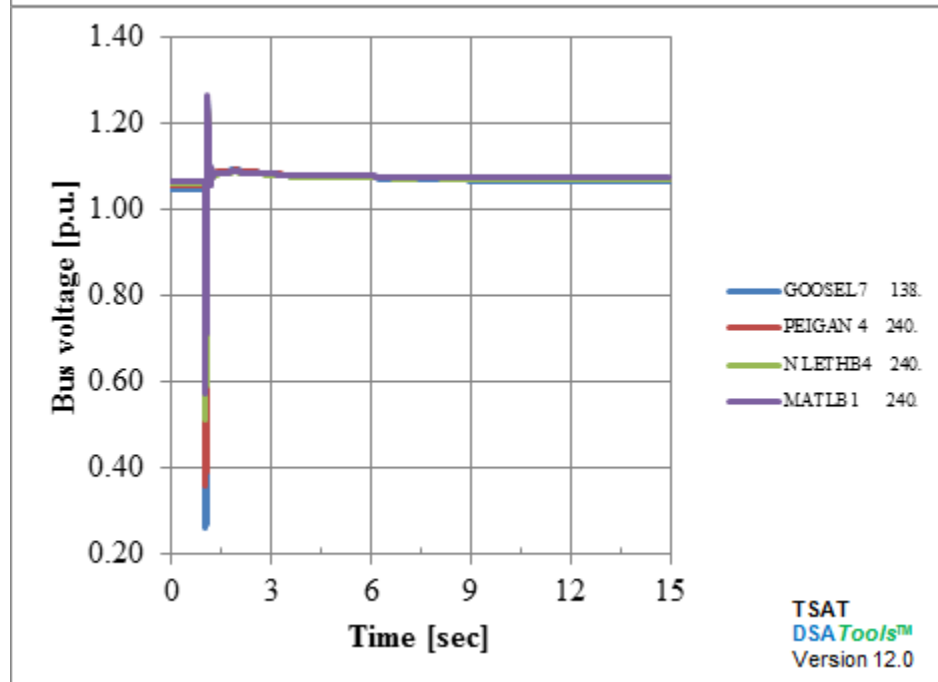
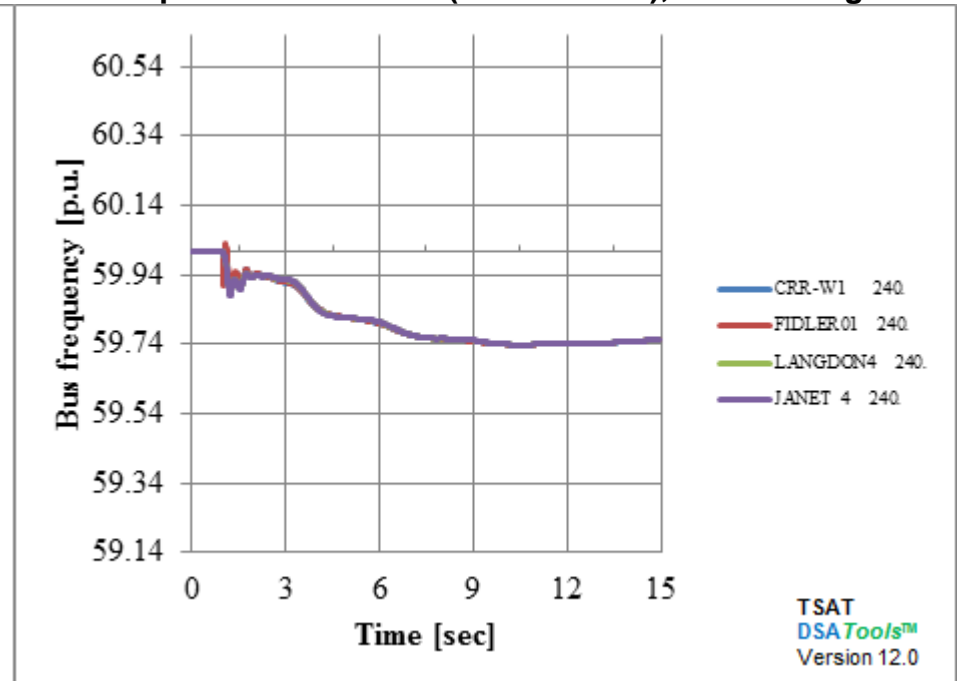
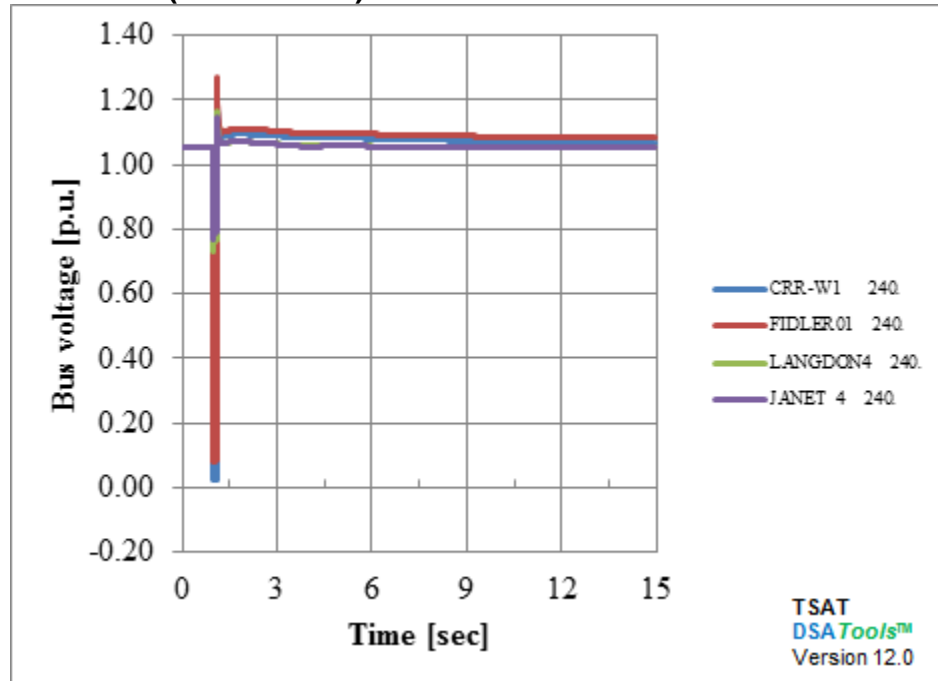
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



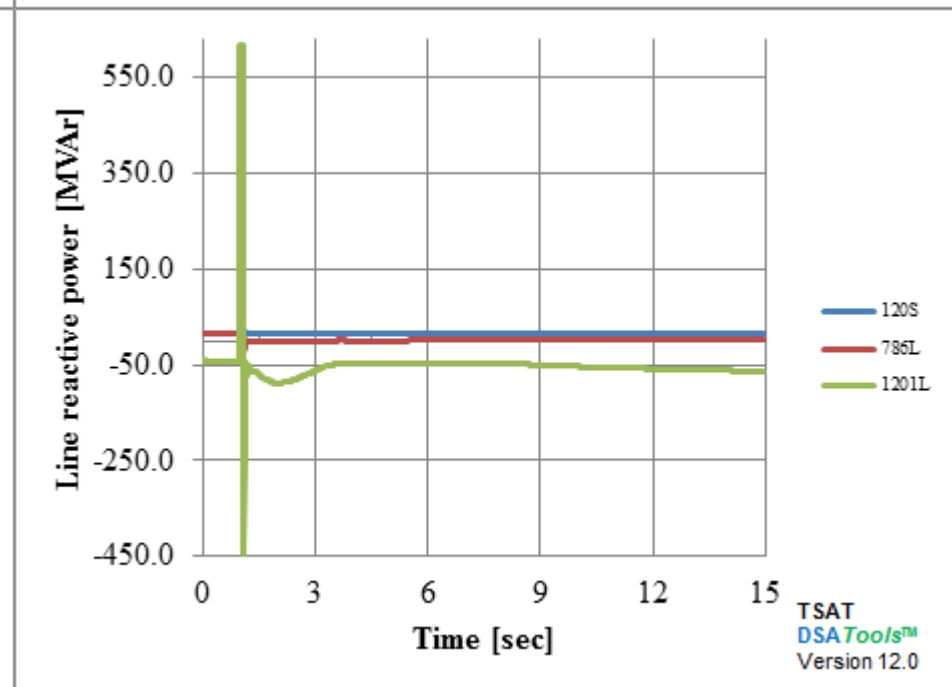
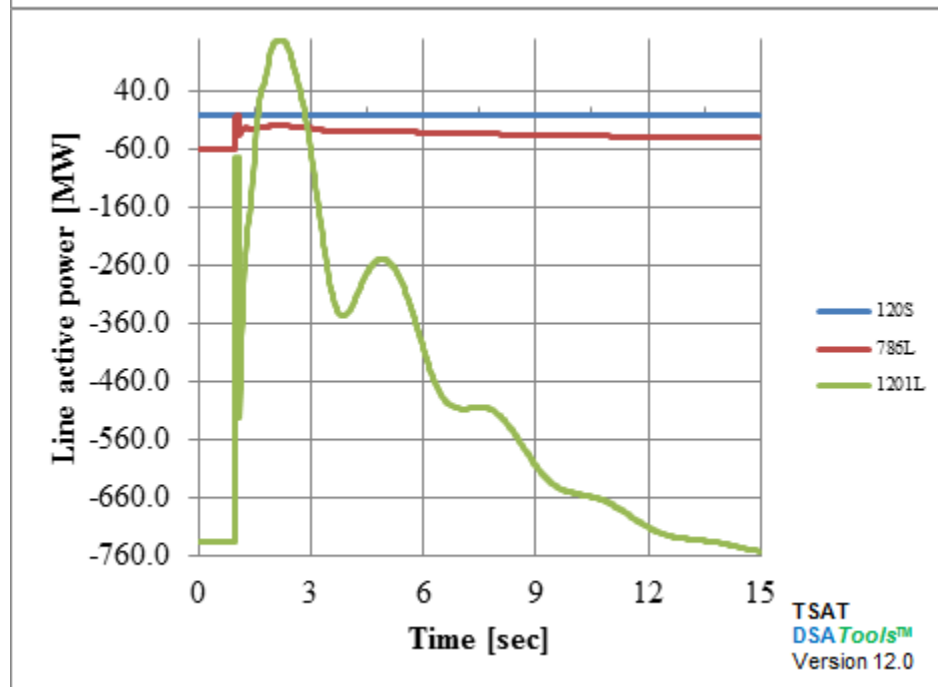
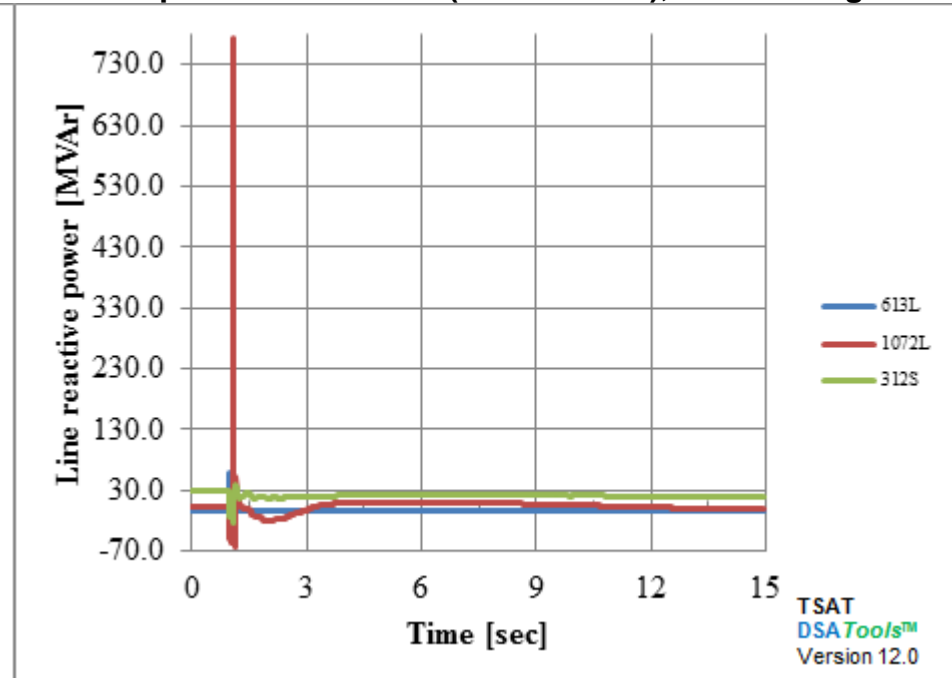
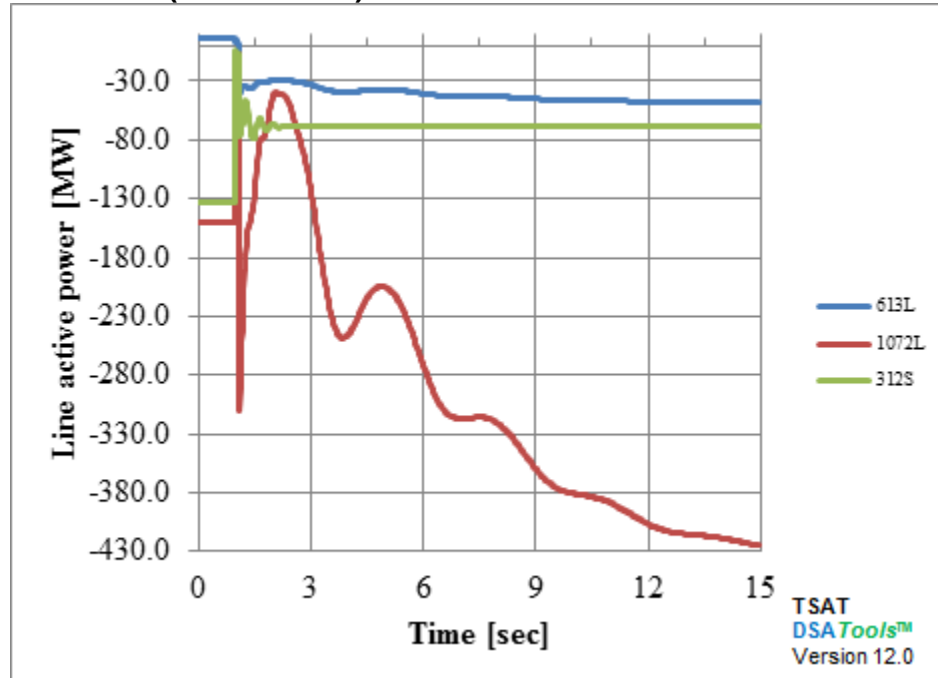
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



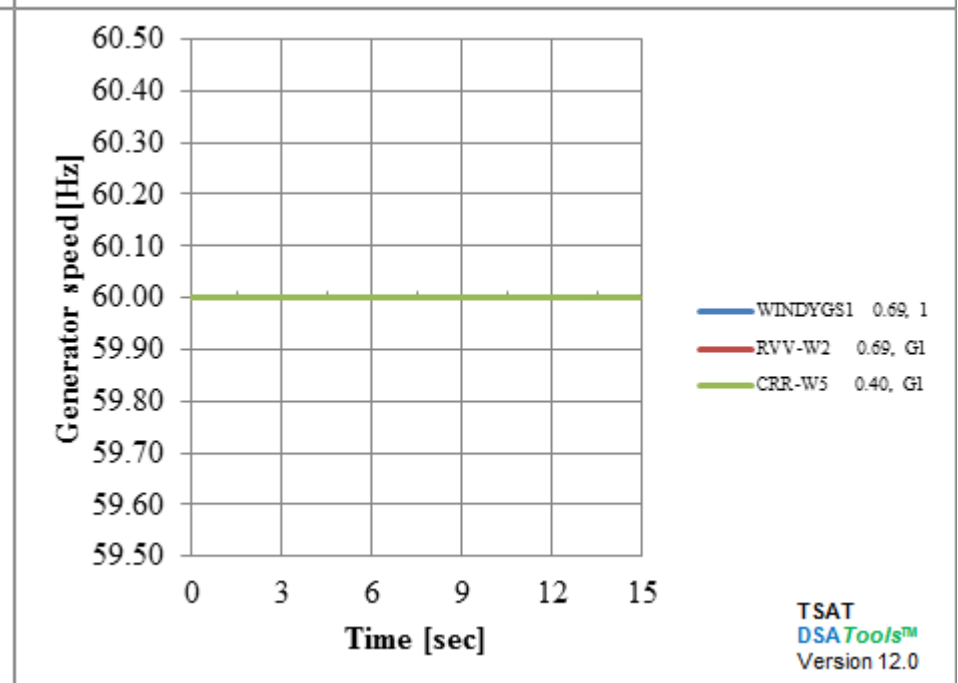
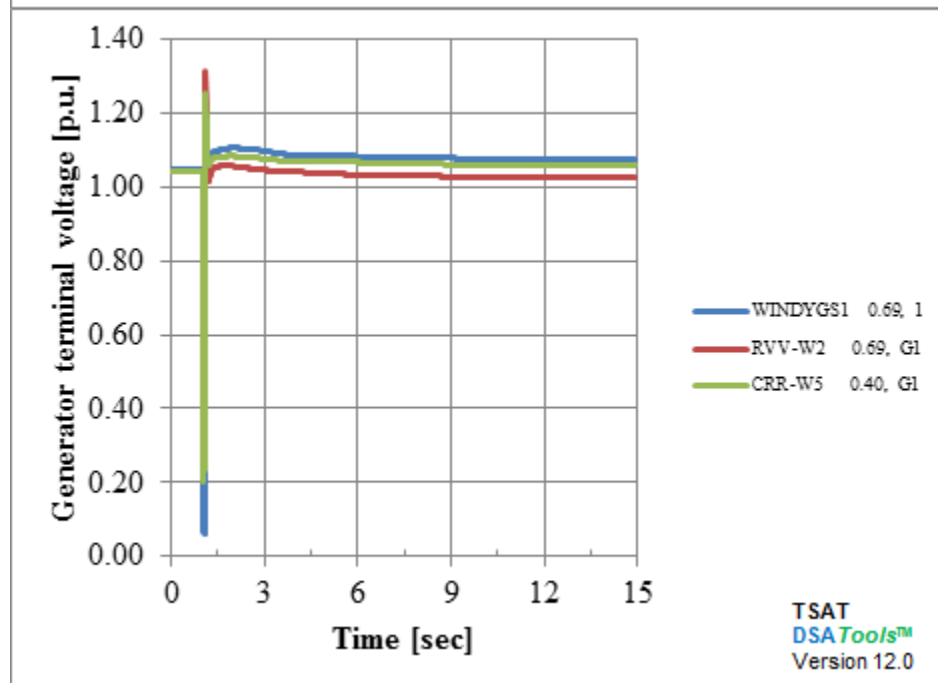
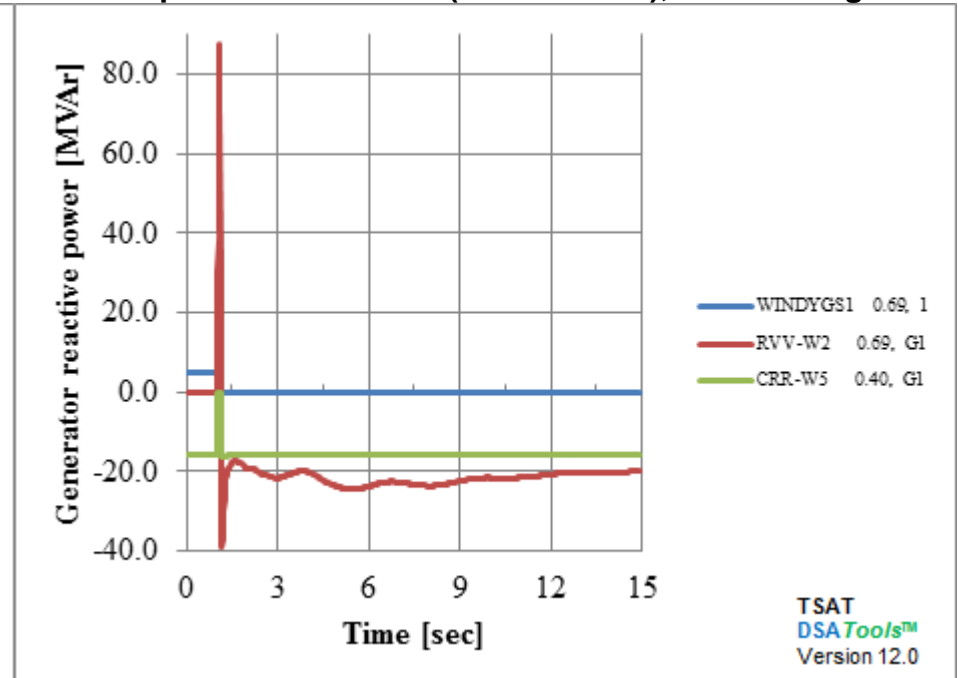
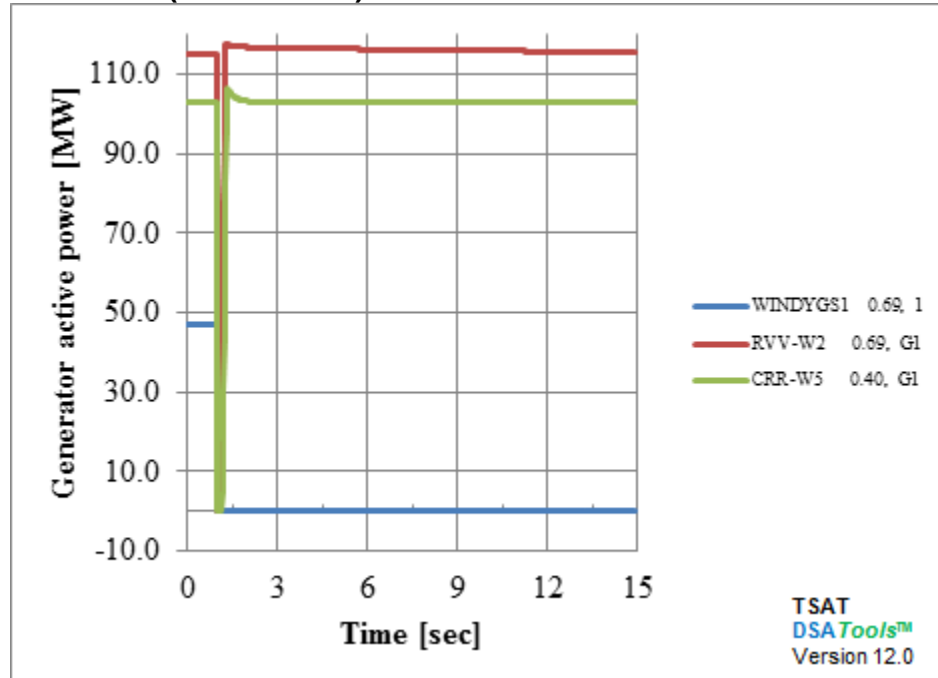
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



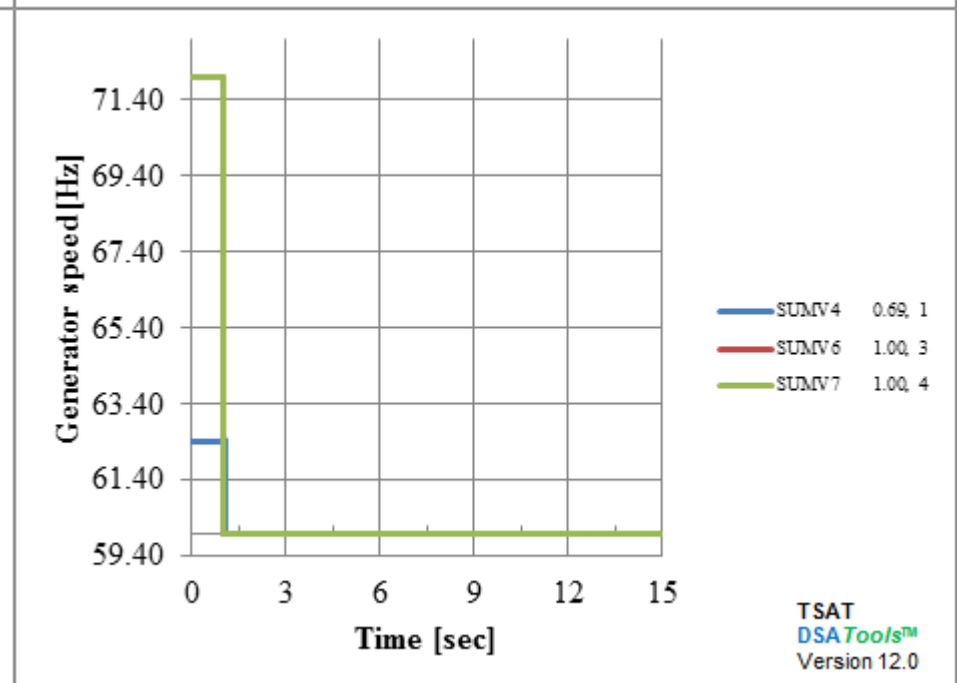
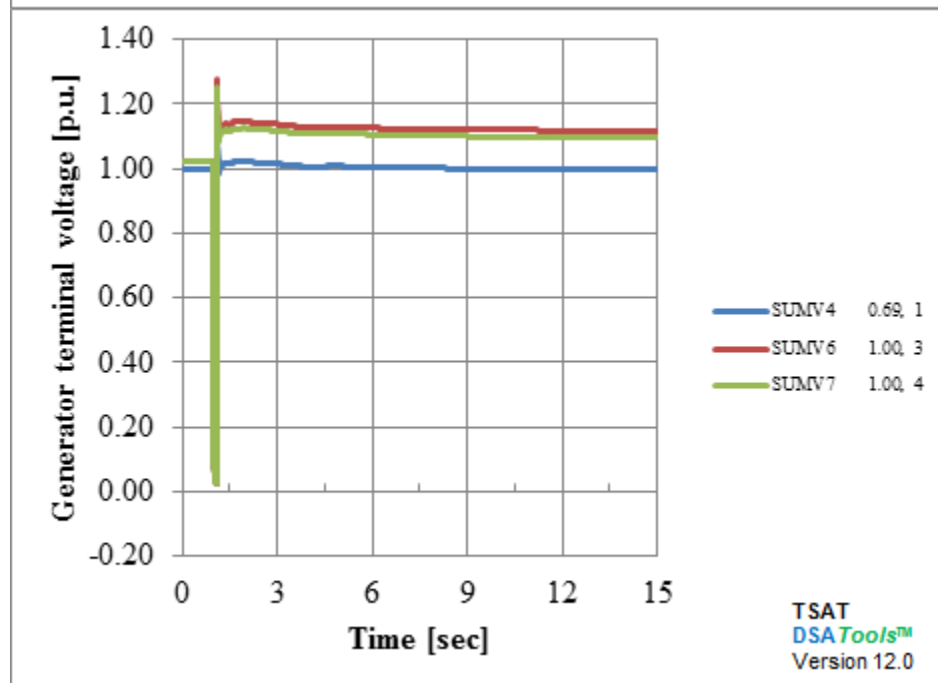
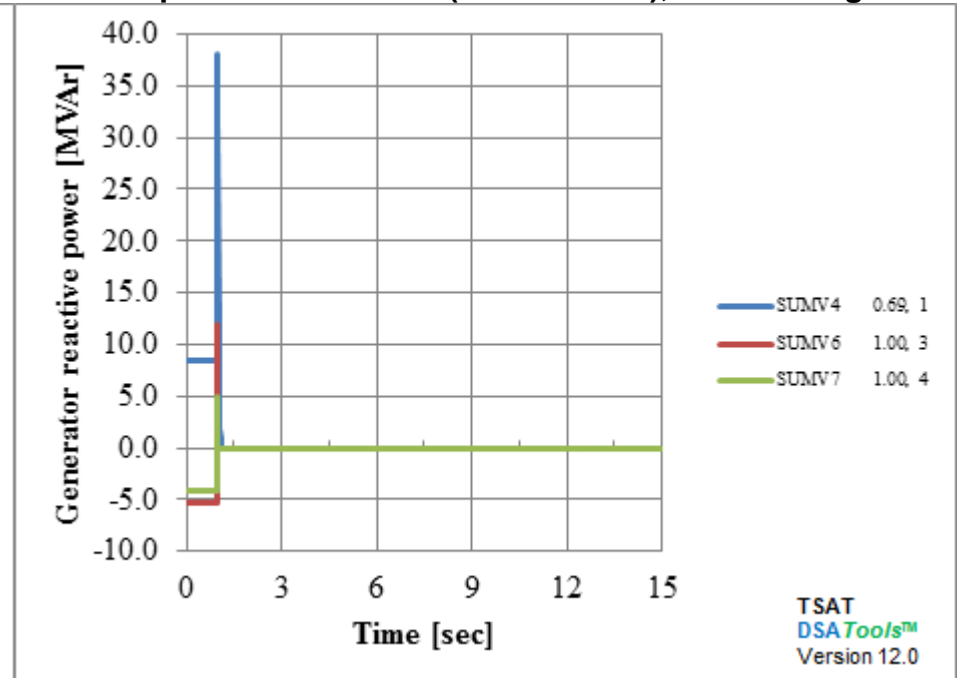
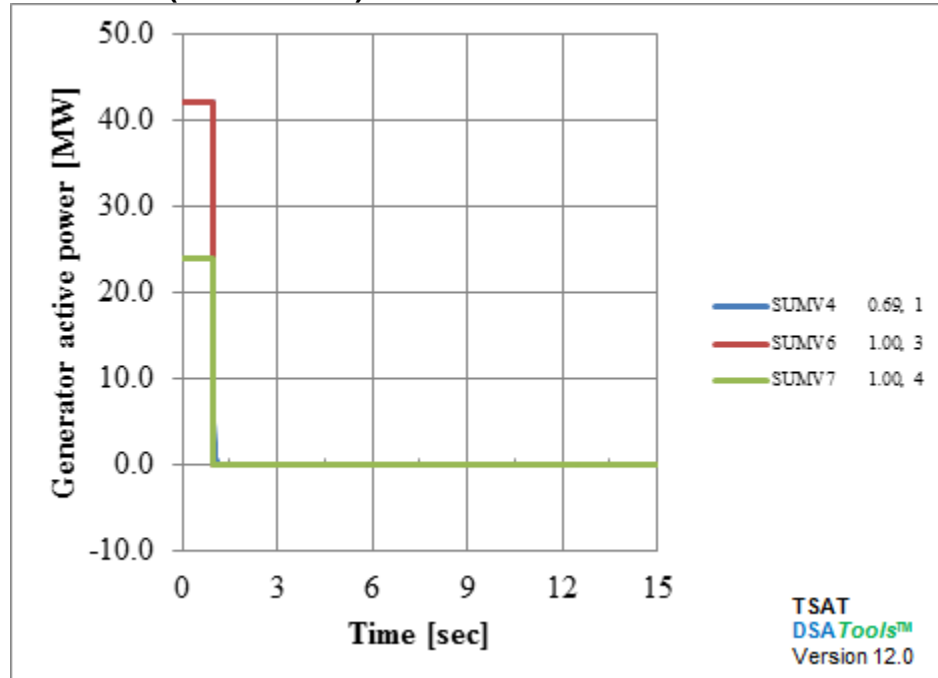
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Light 2017



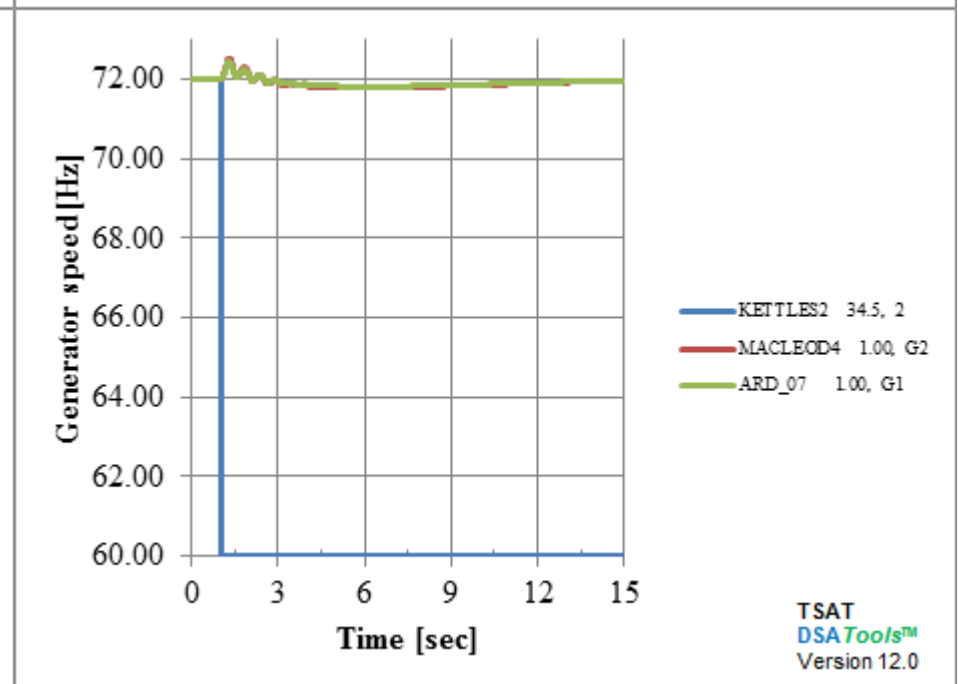
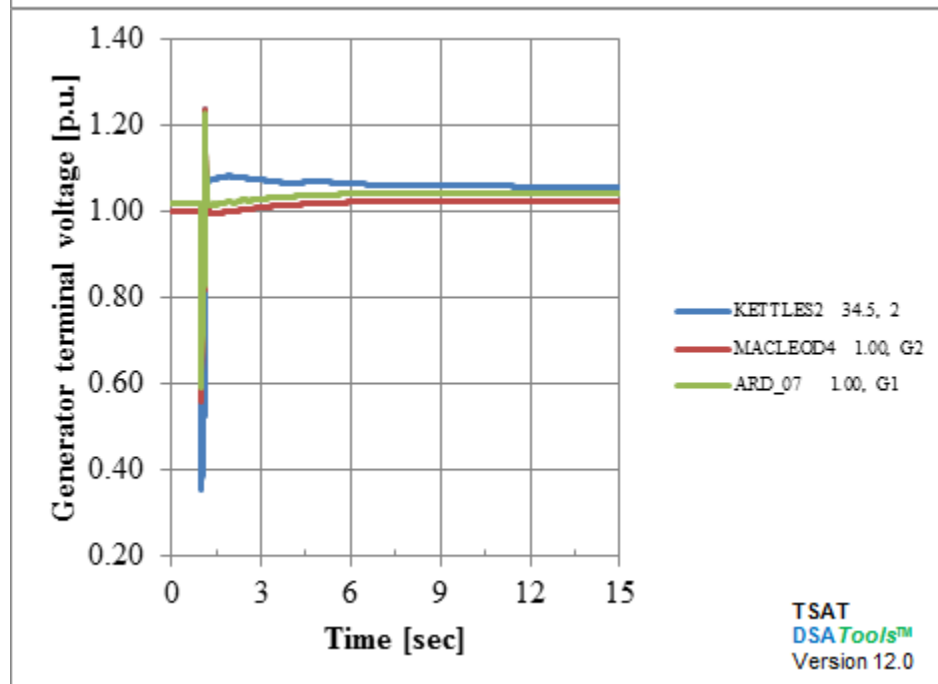
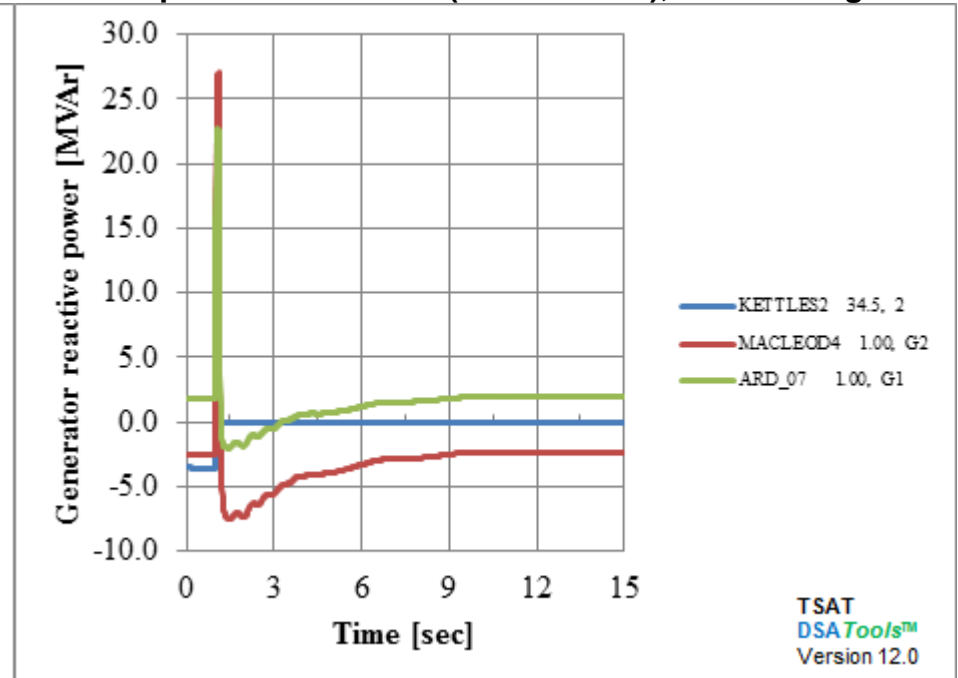
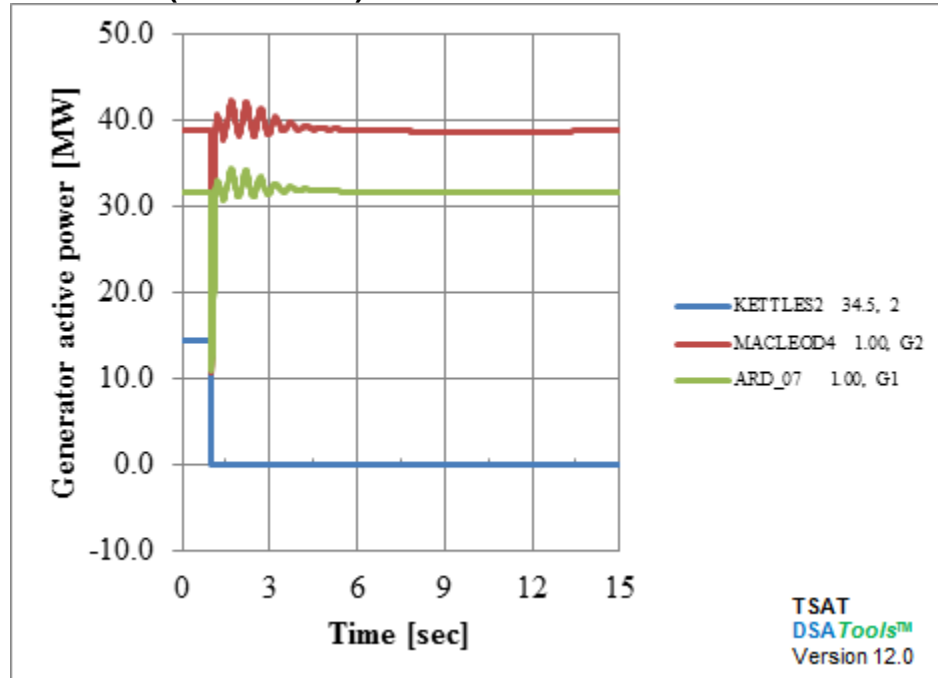
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Light 2017



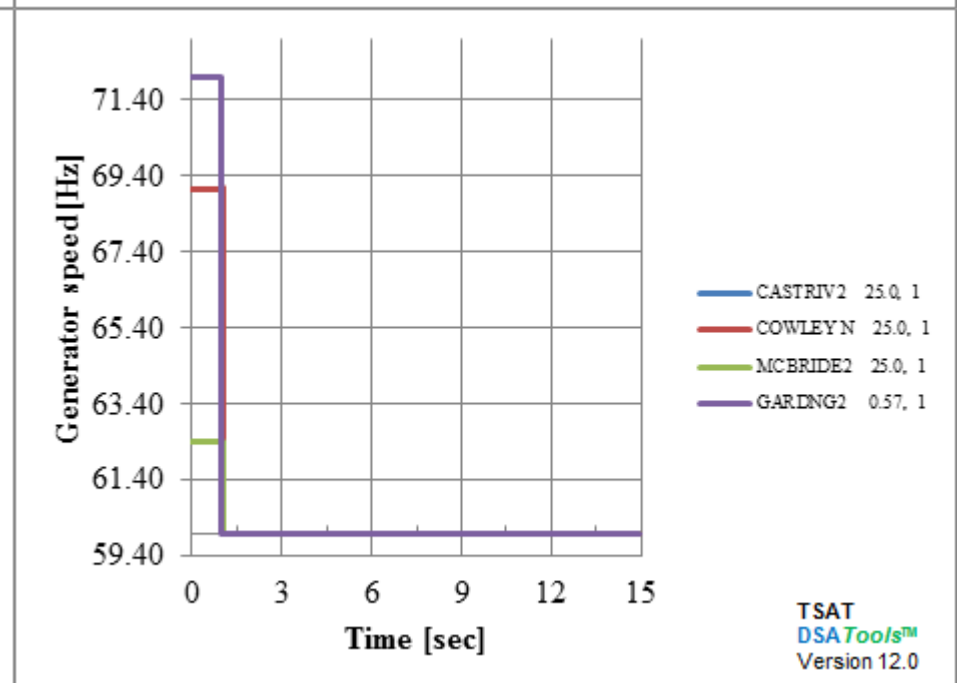
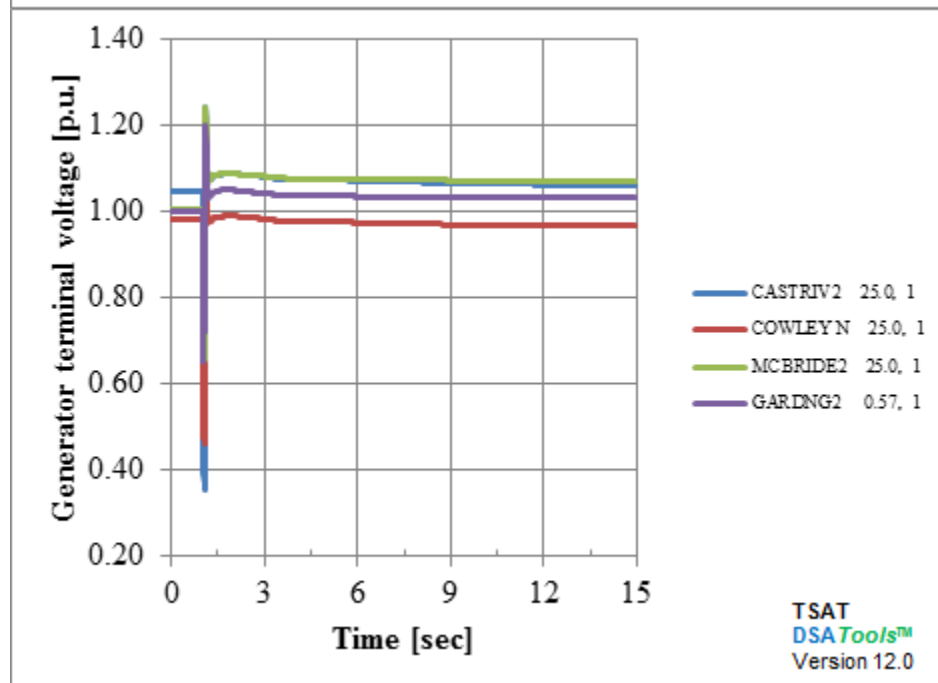
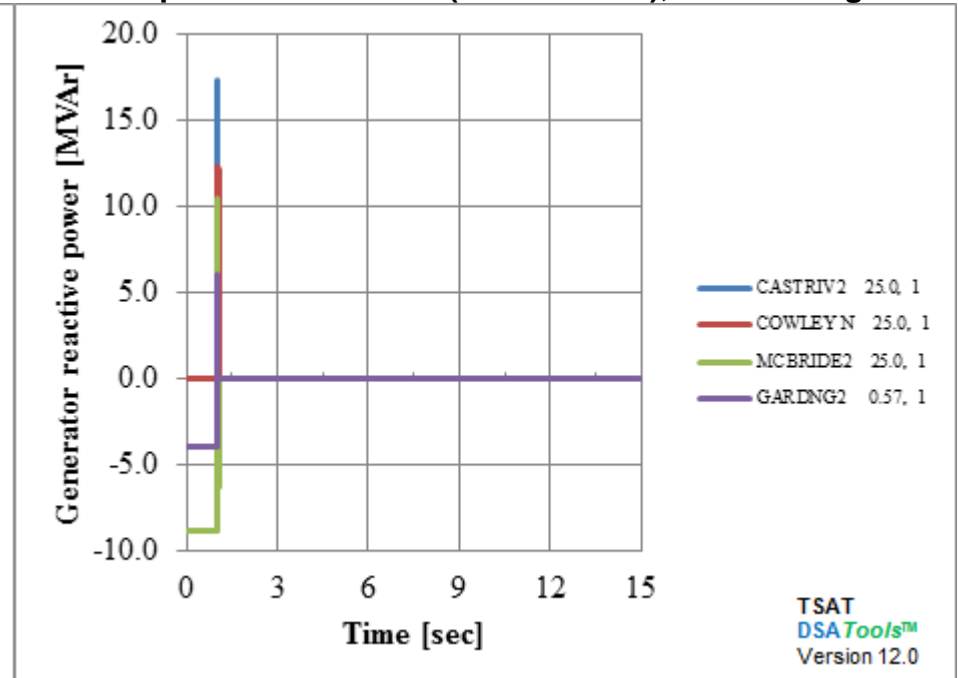
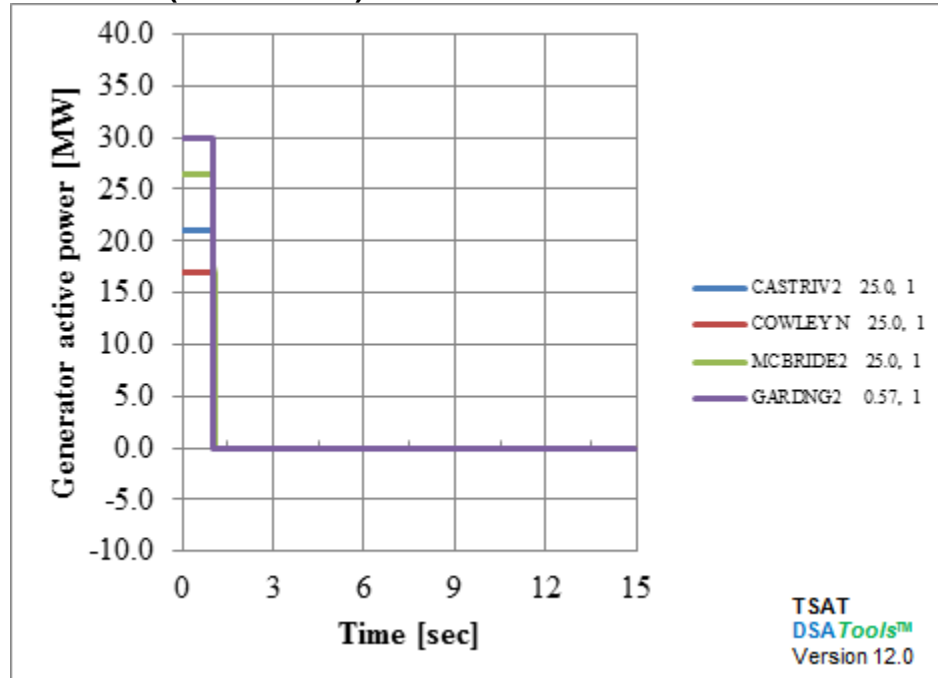
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Light 2017



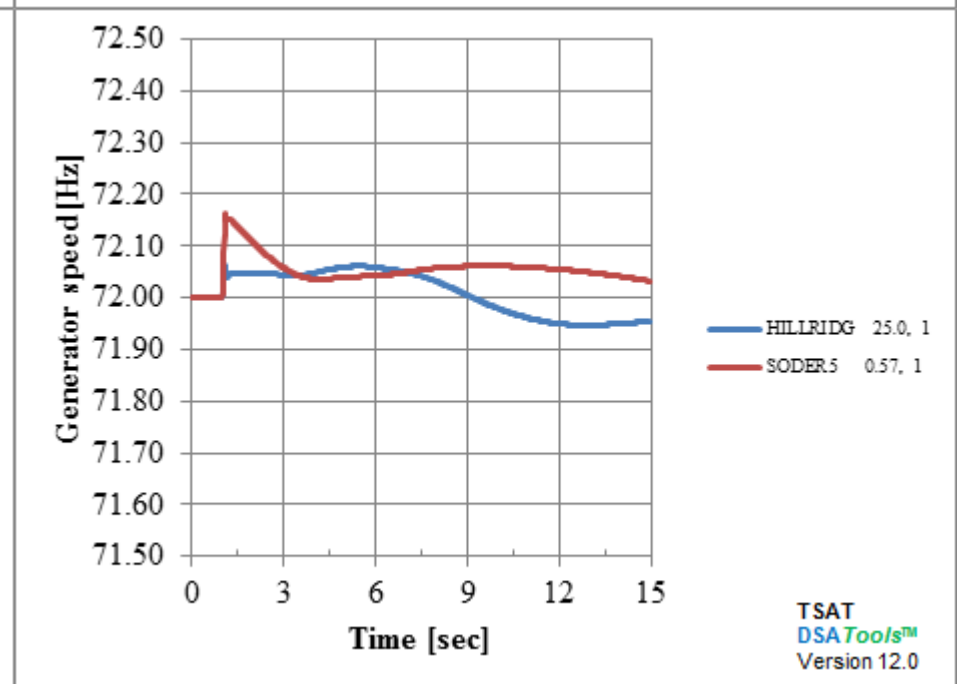
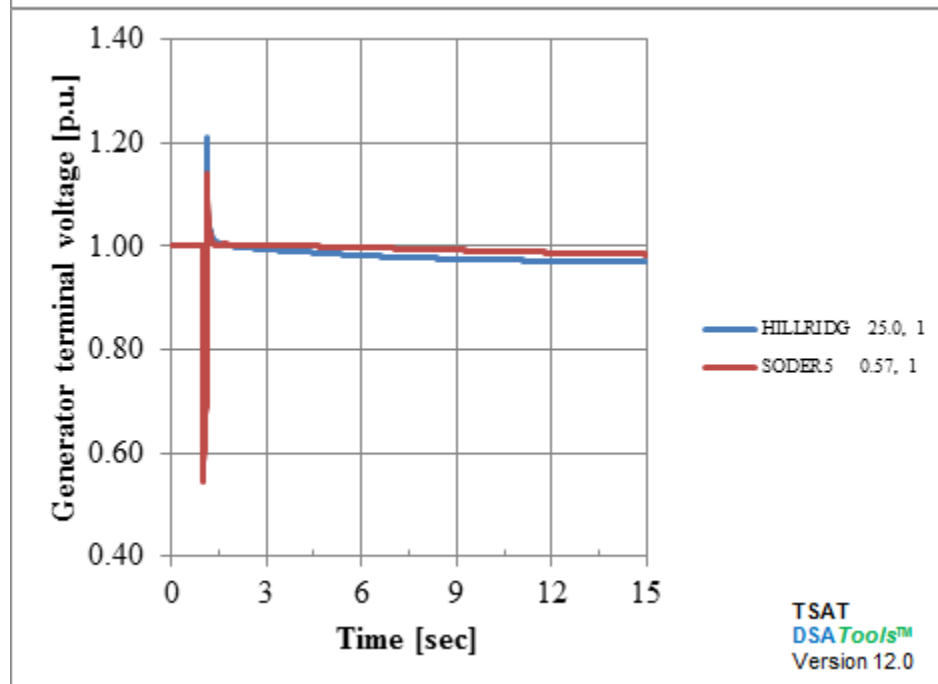
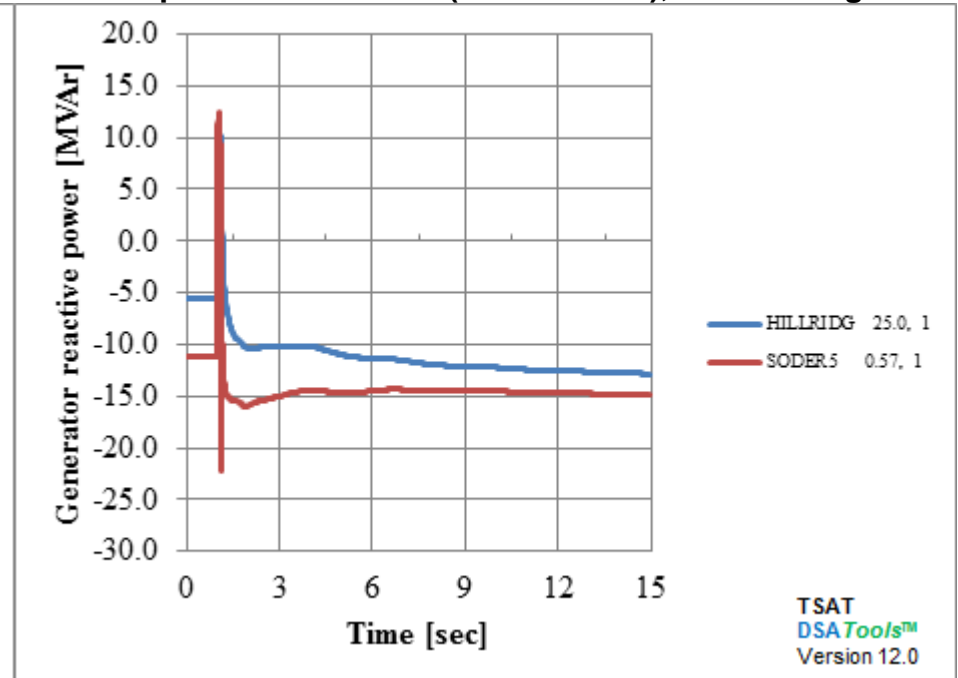
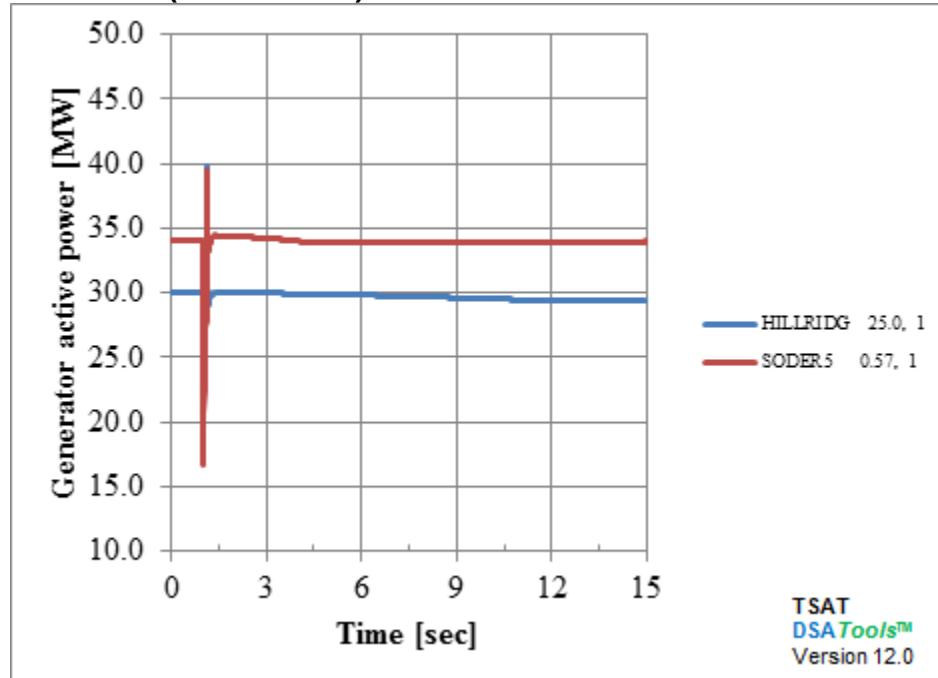
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Light 2017



3 -- 1071L (205S - 312S) NEAR 312S

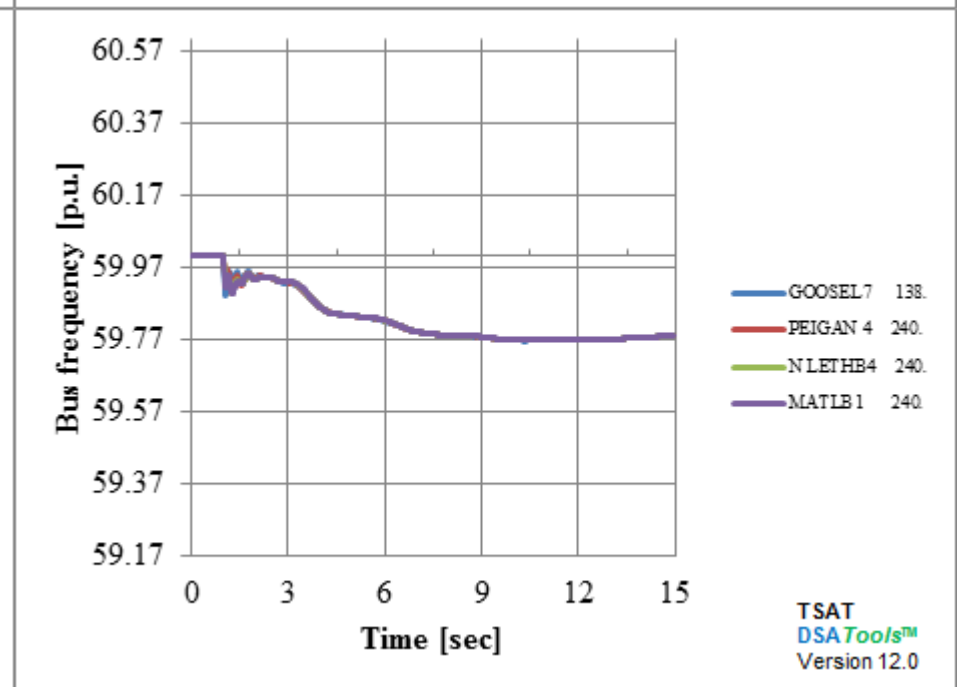
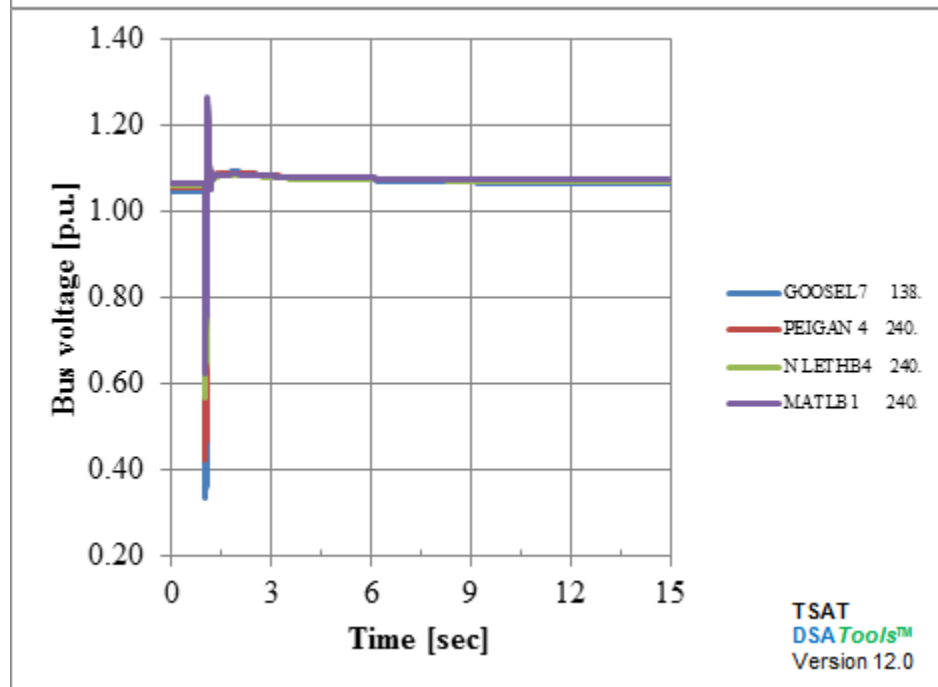
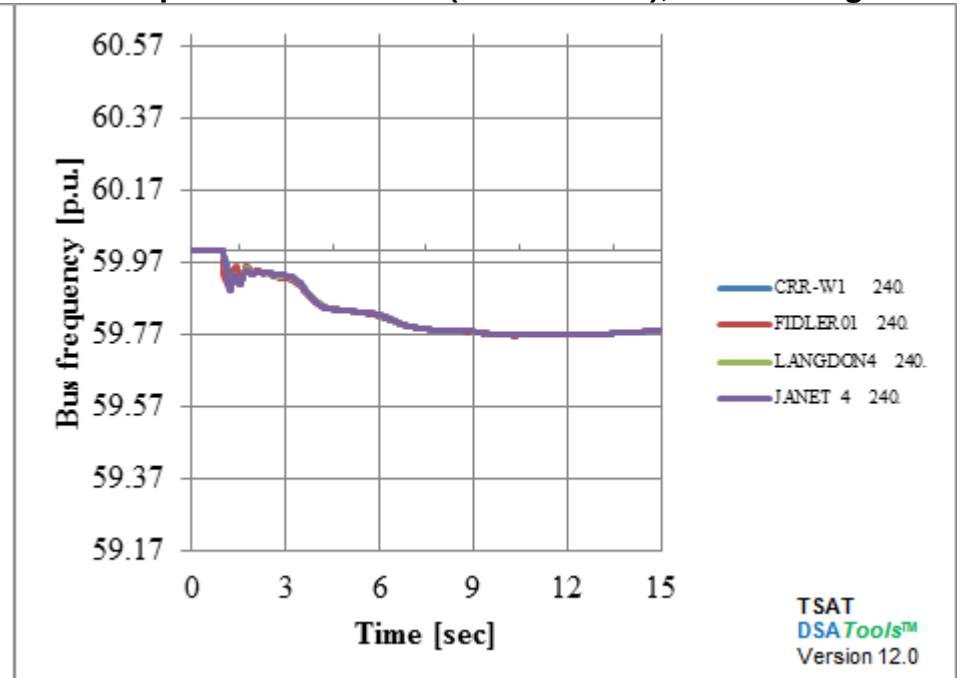
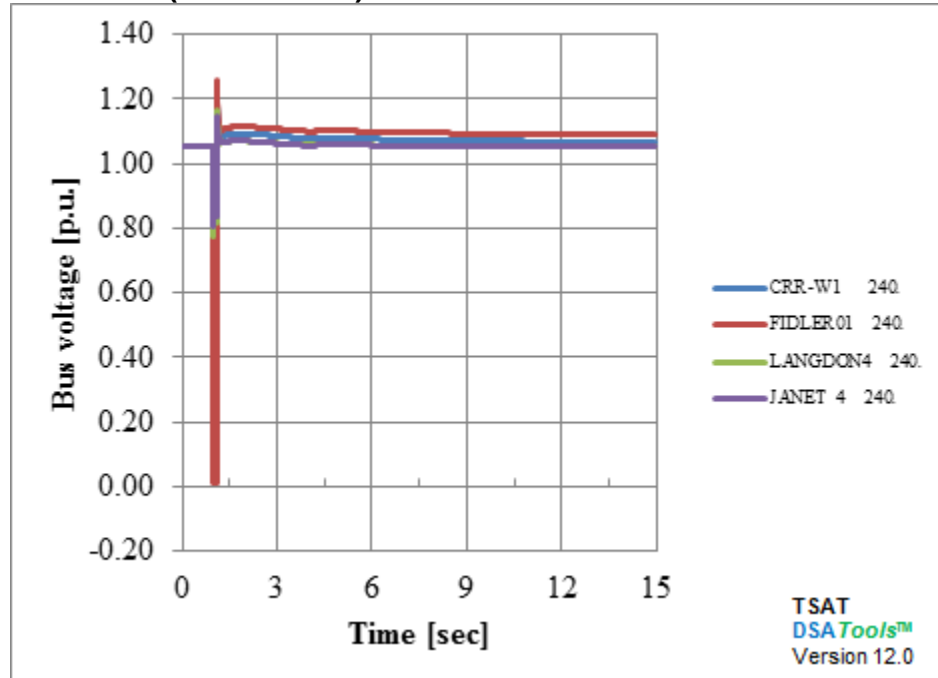
Proposed Connection (Alternative 2), Summer Light 2017





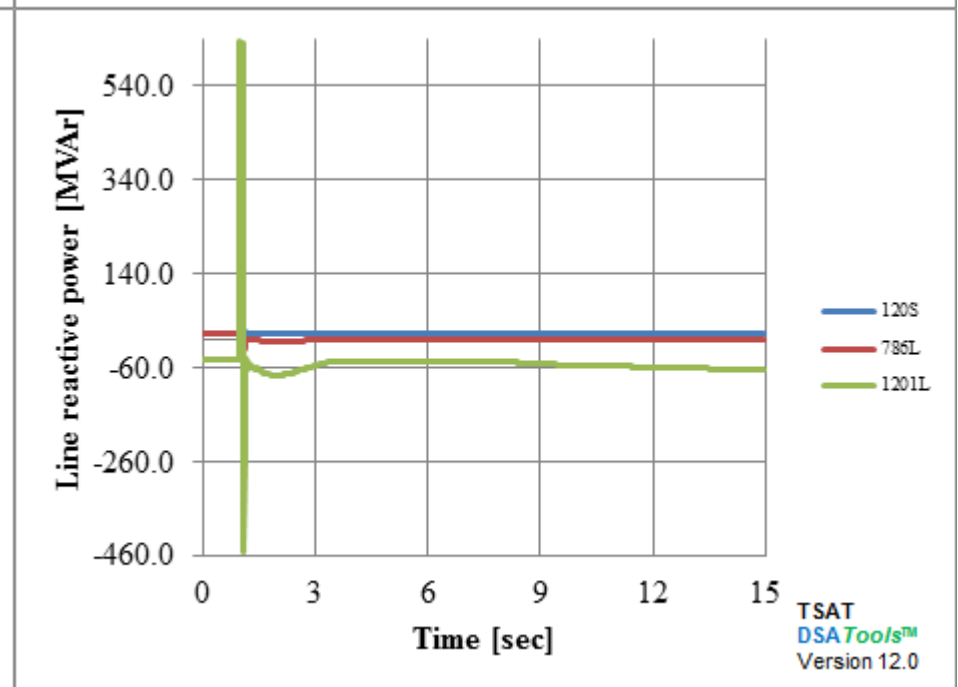
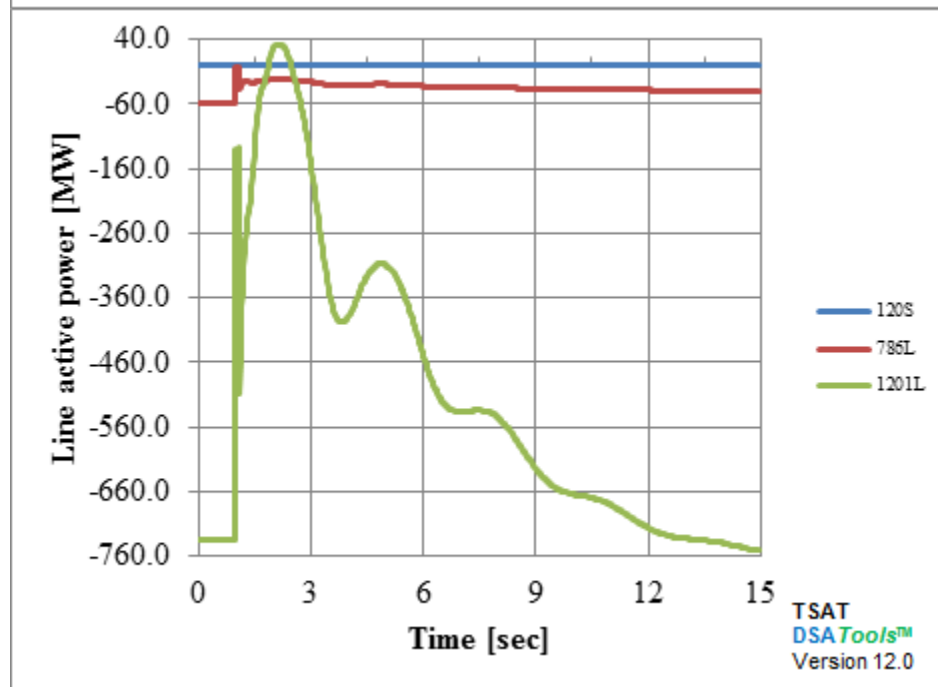
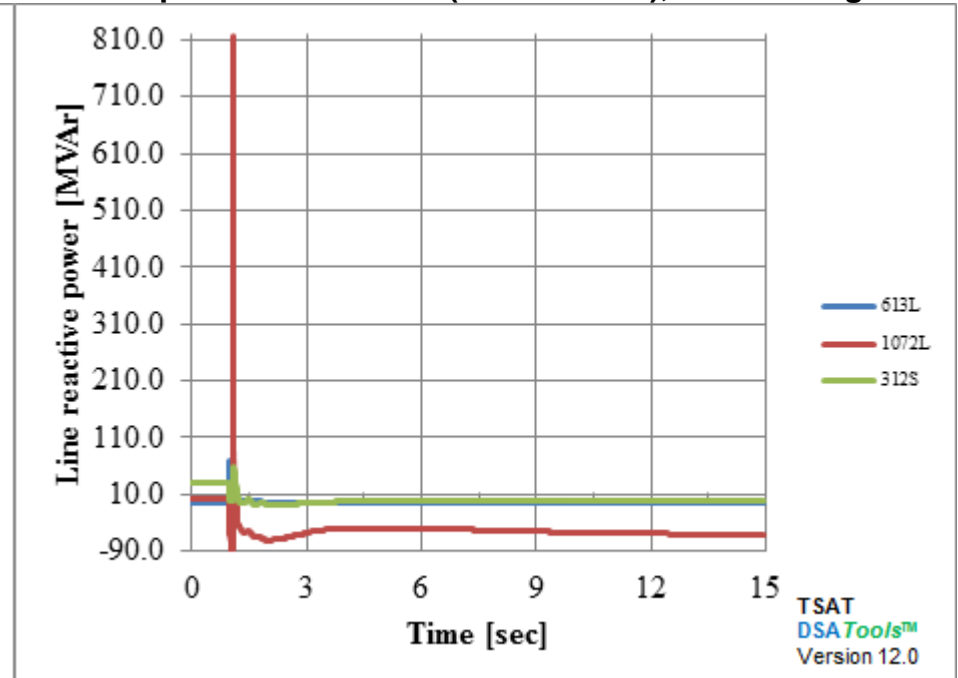
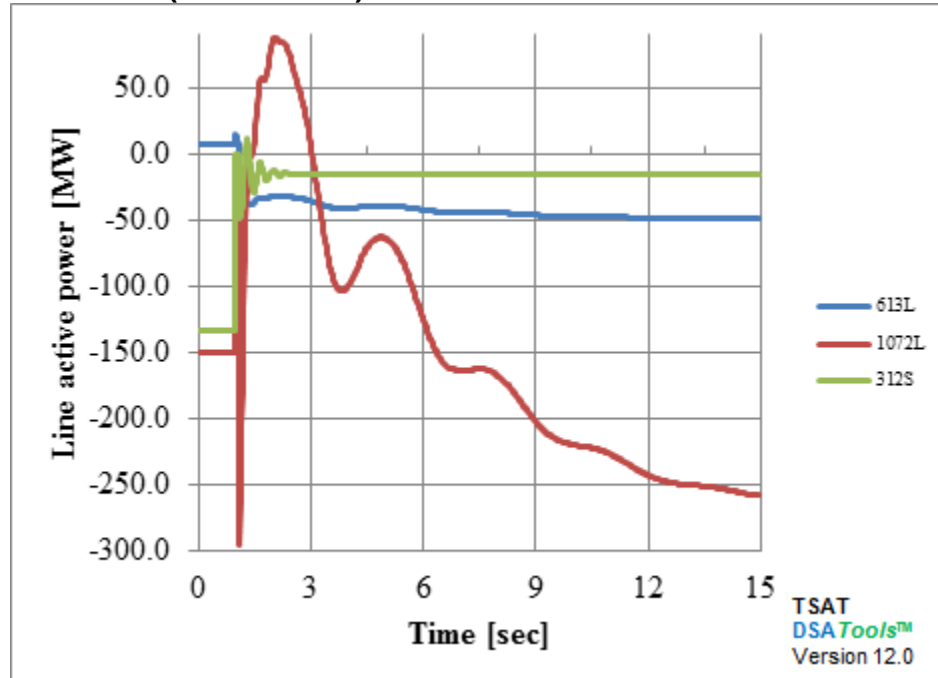
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Light 2017



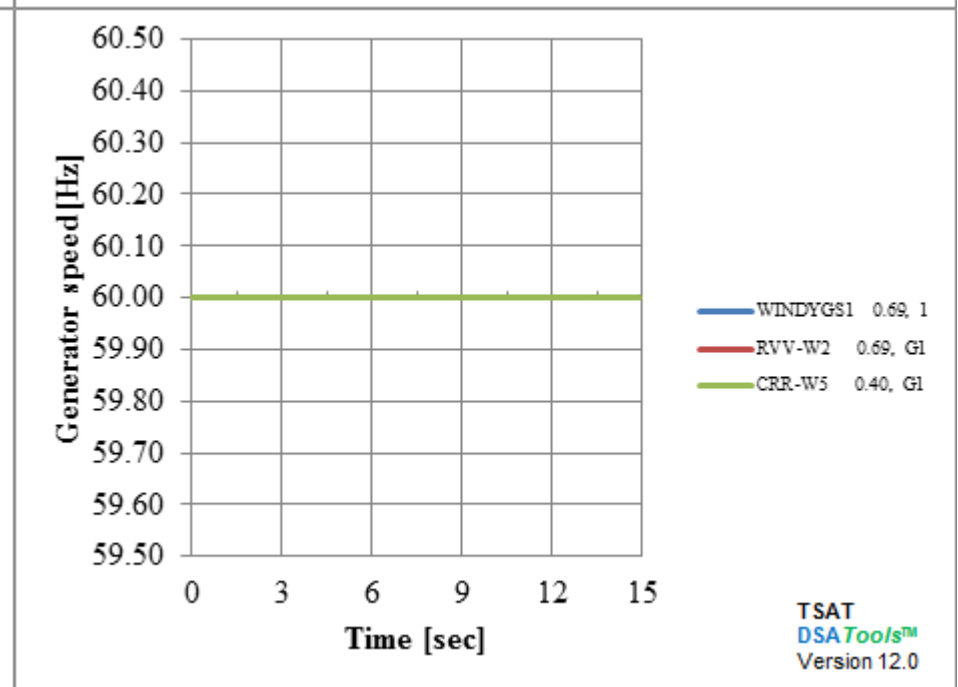
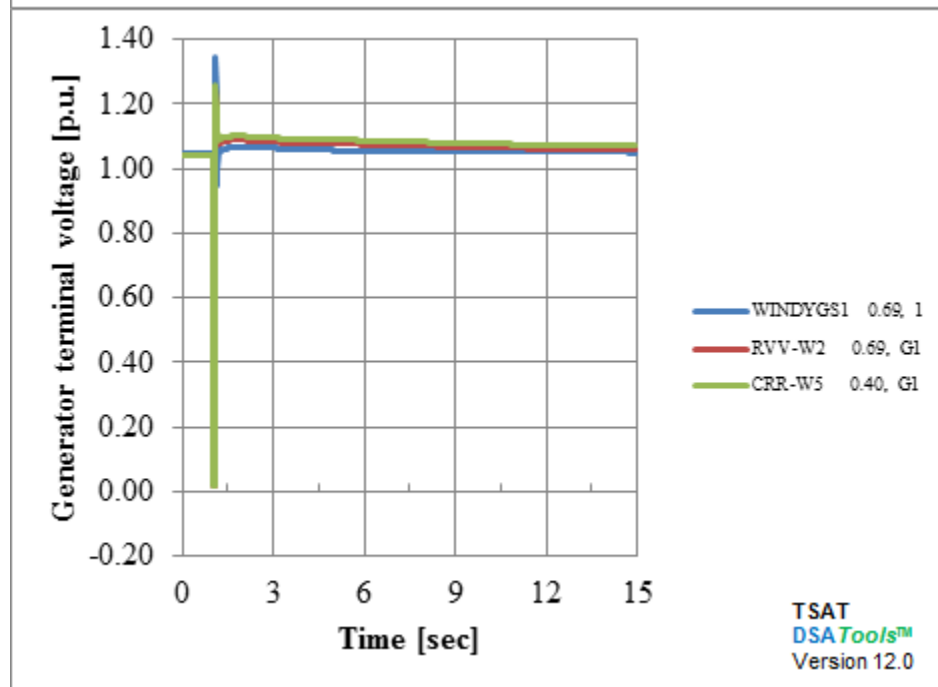
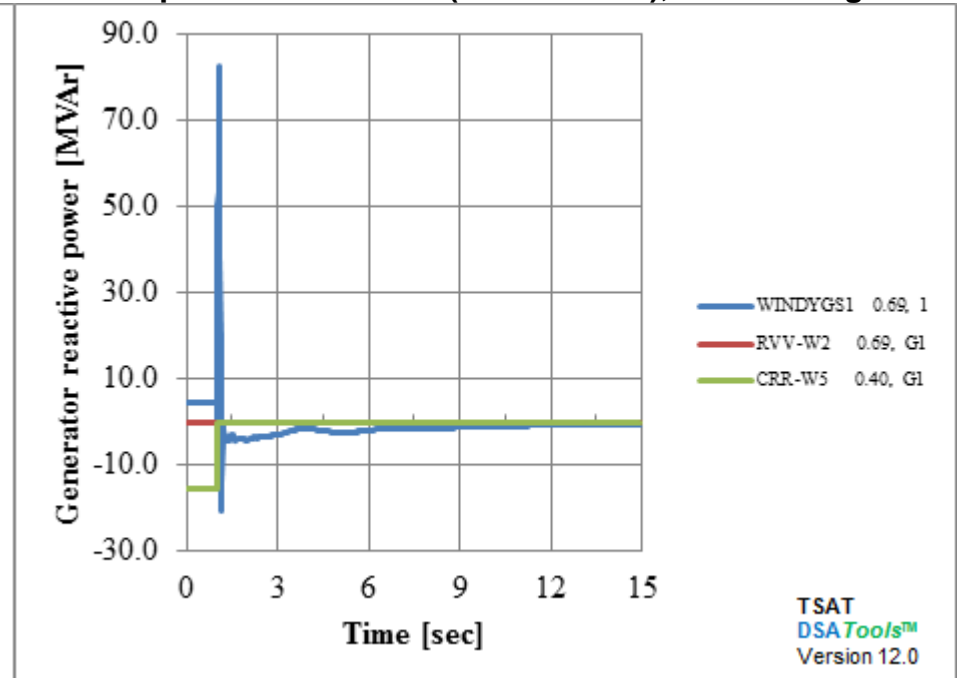
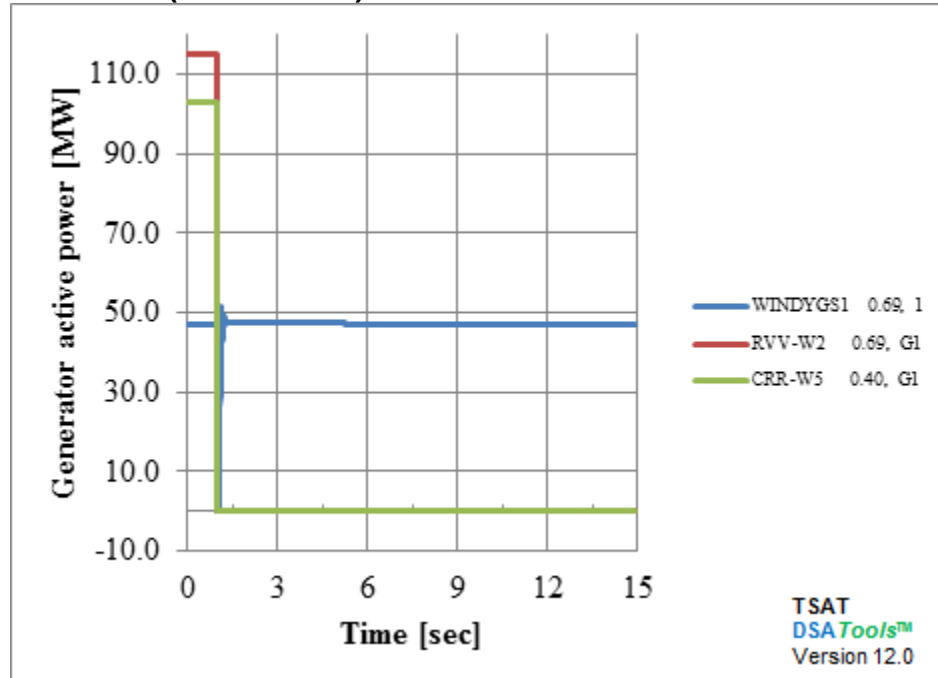
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Light 2017



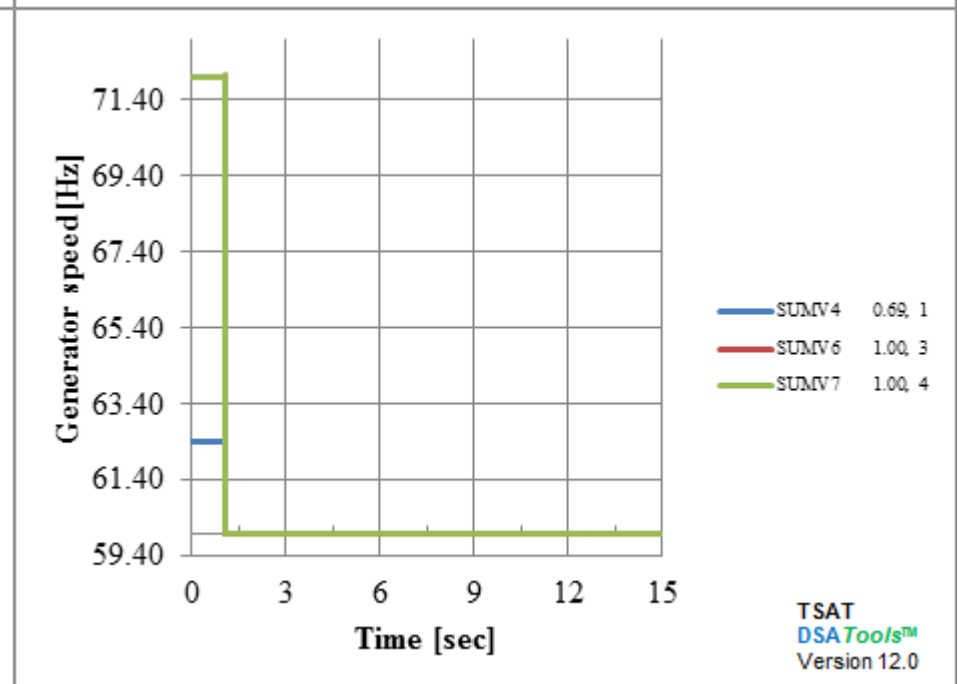
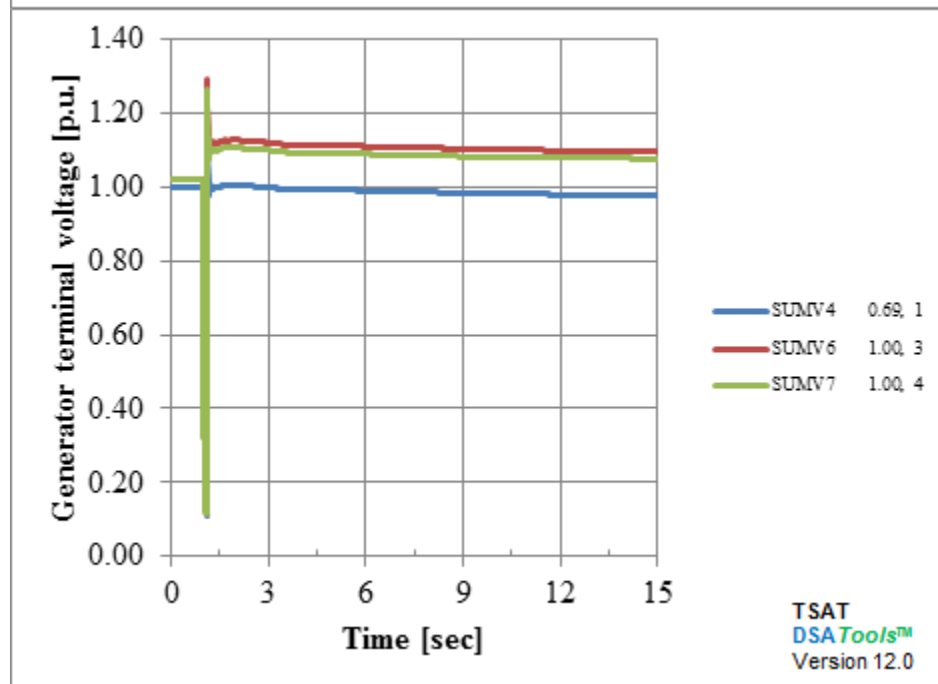
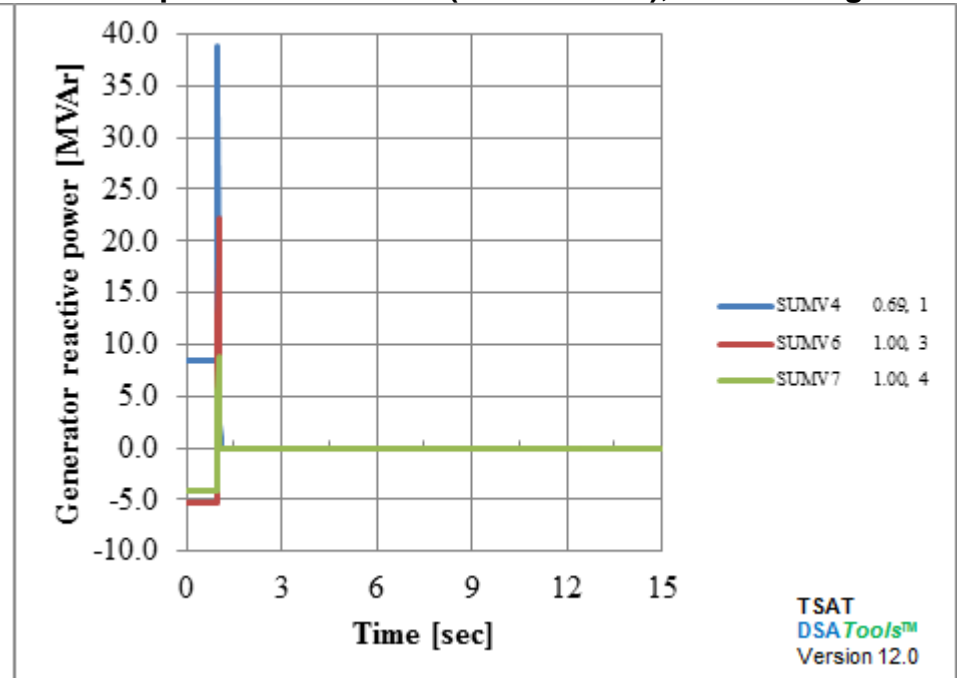
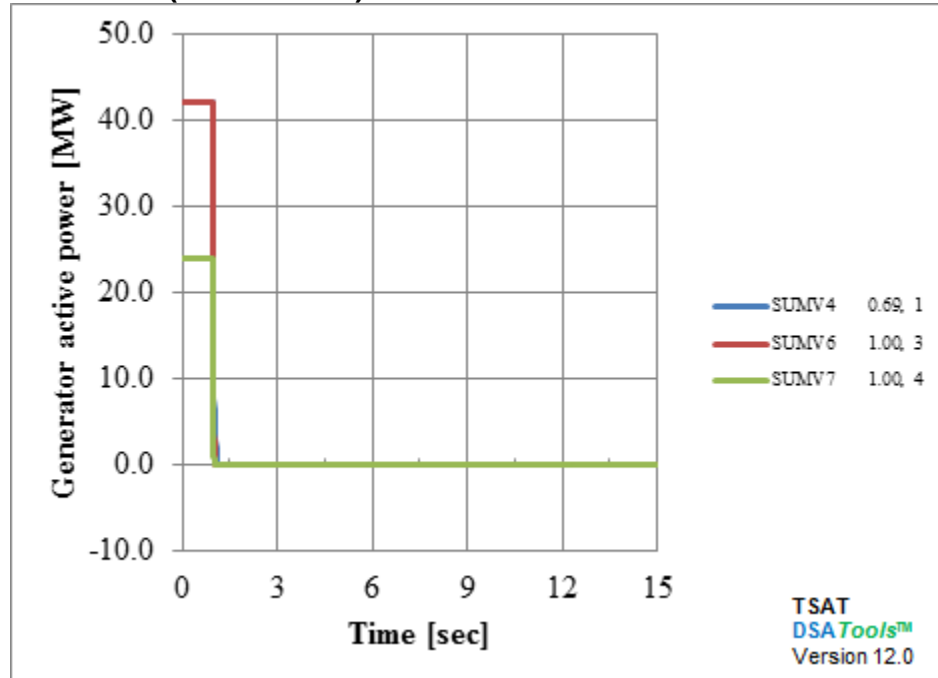
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



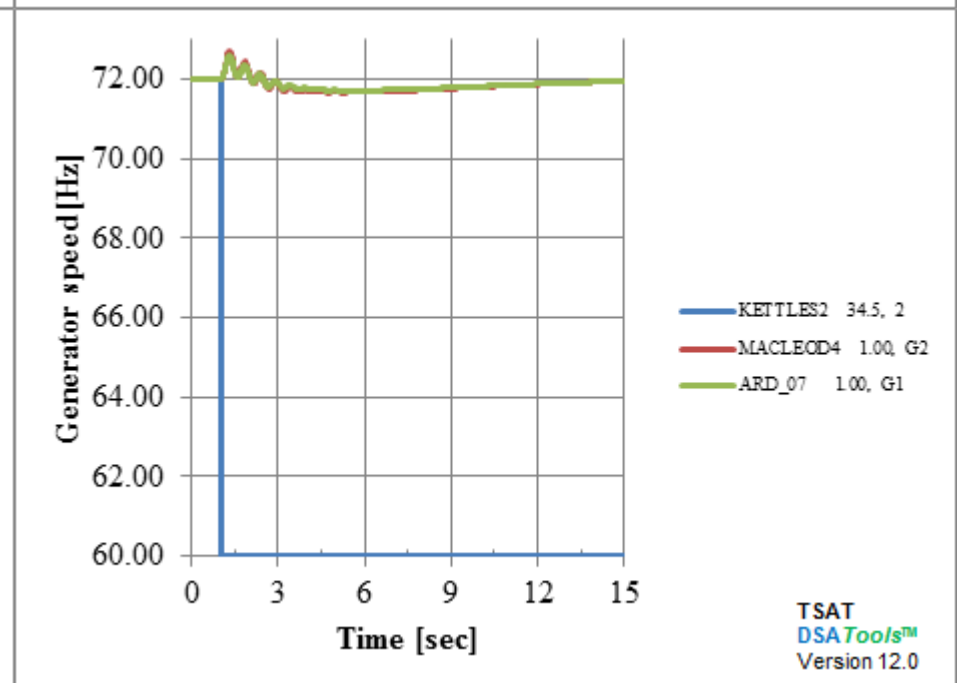
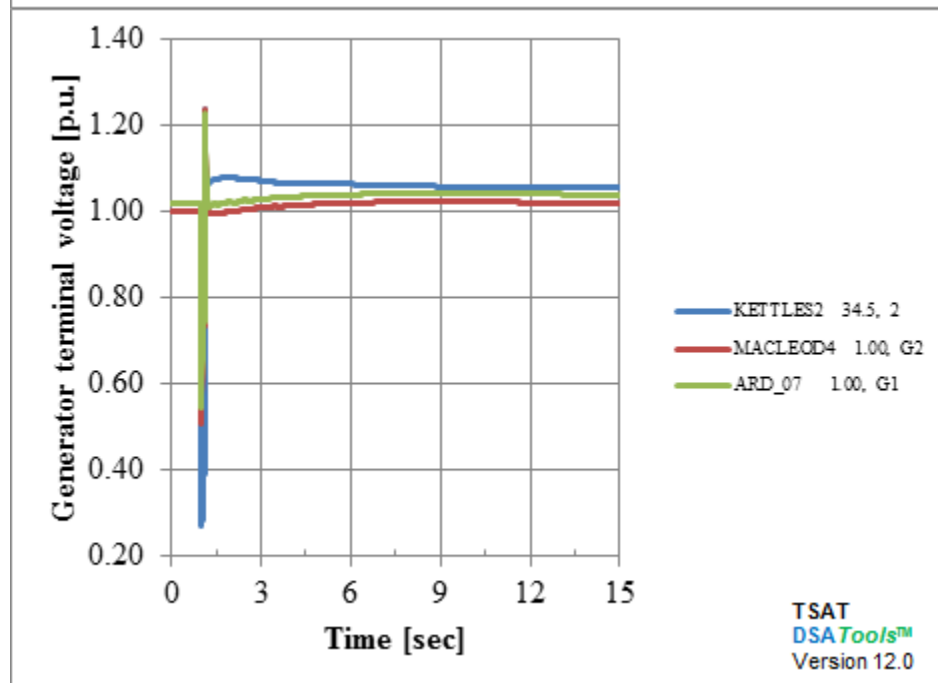
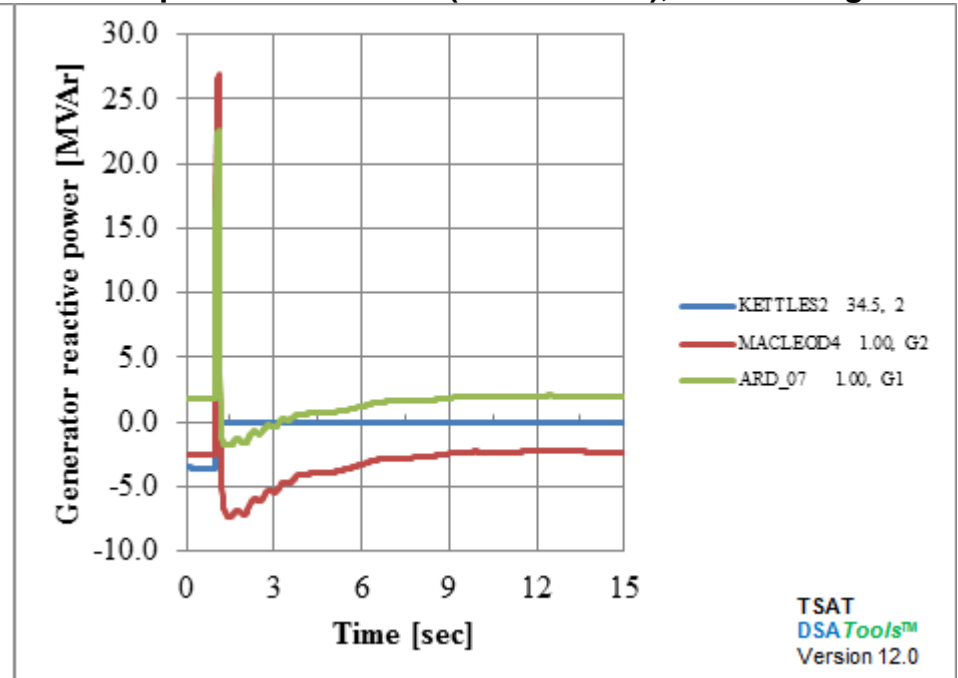
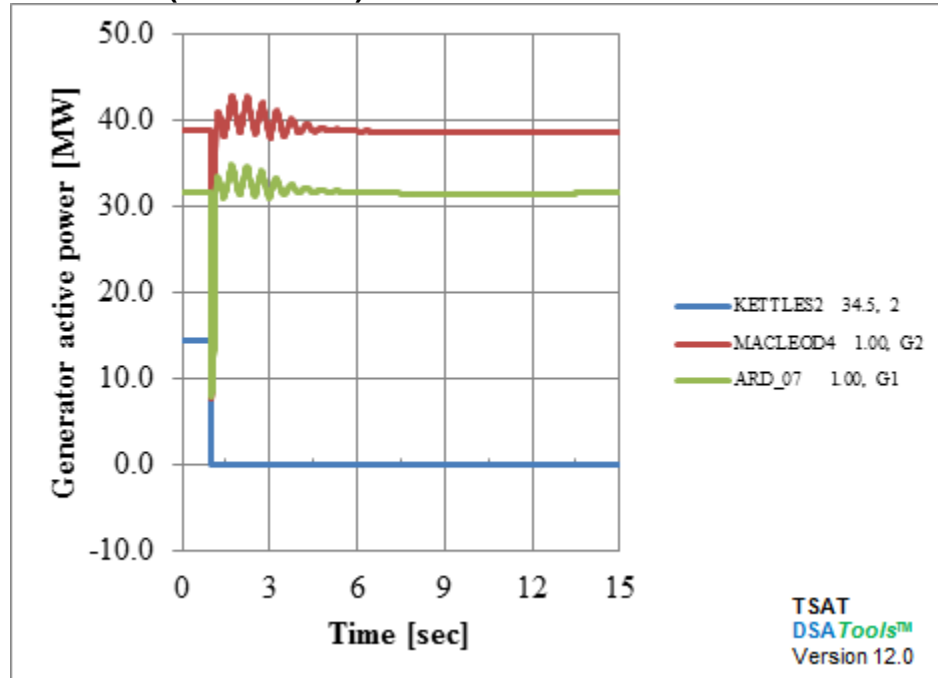
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



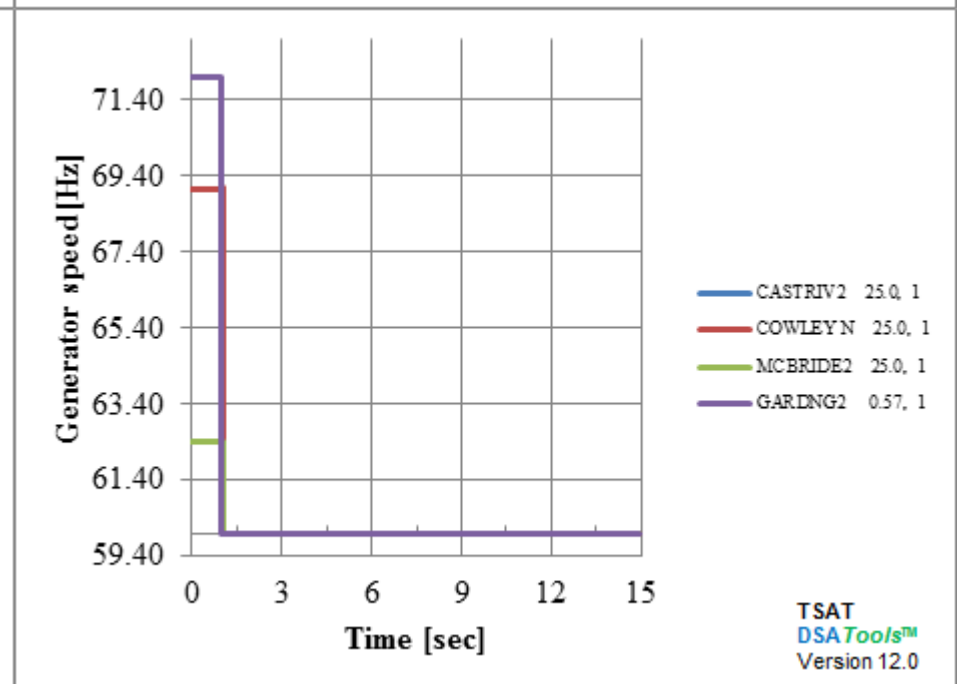
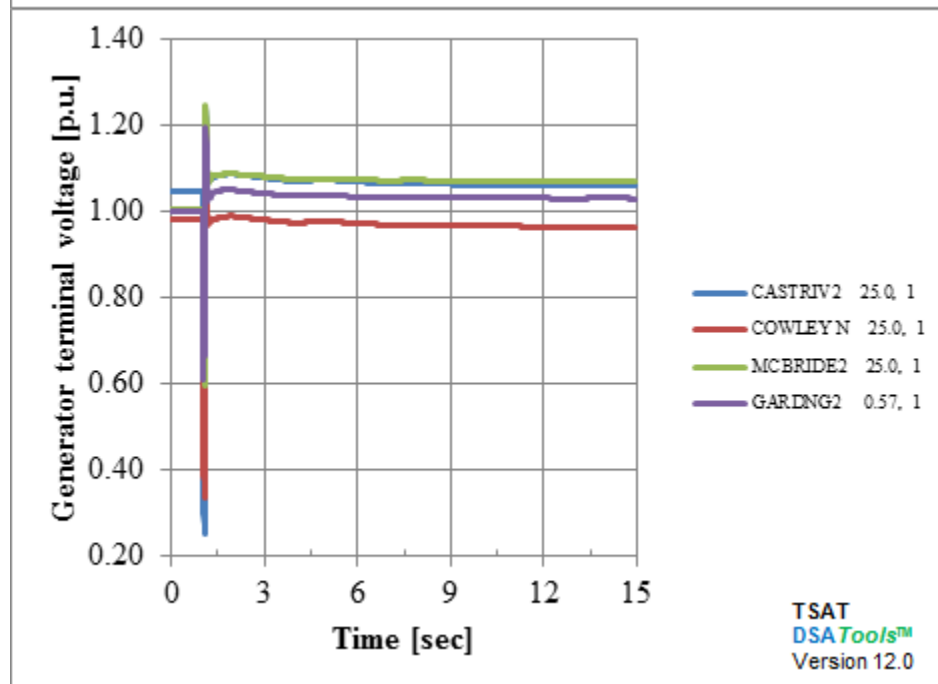
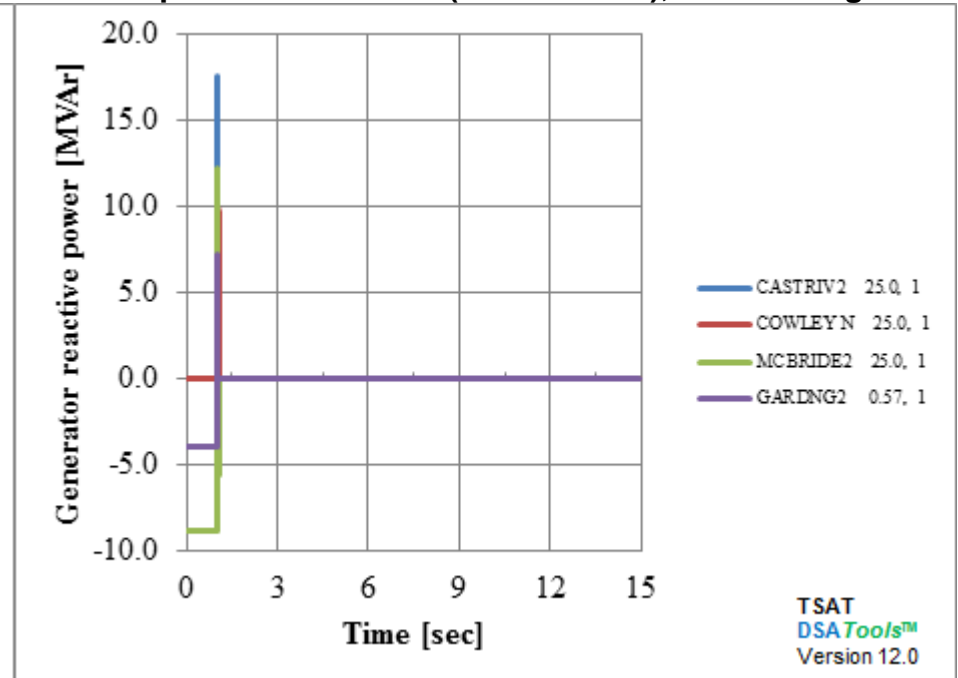
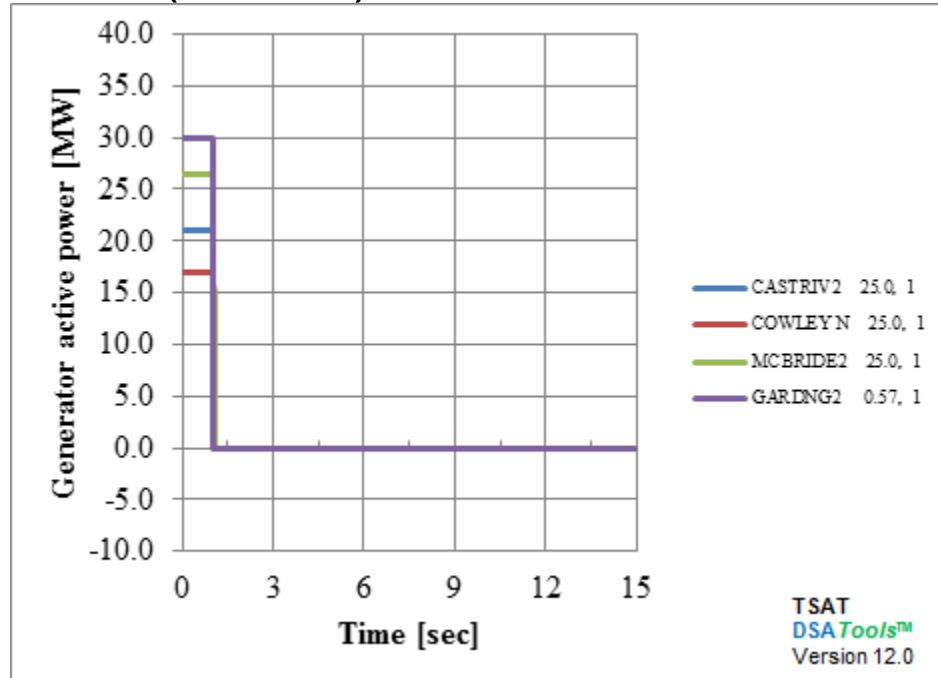
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



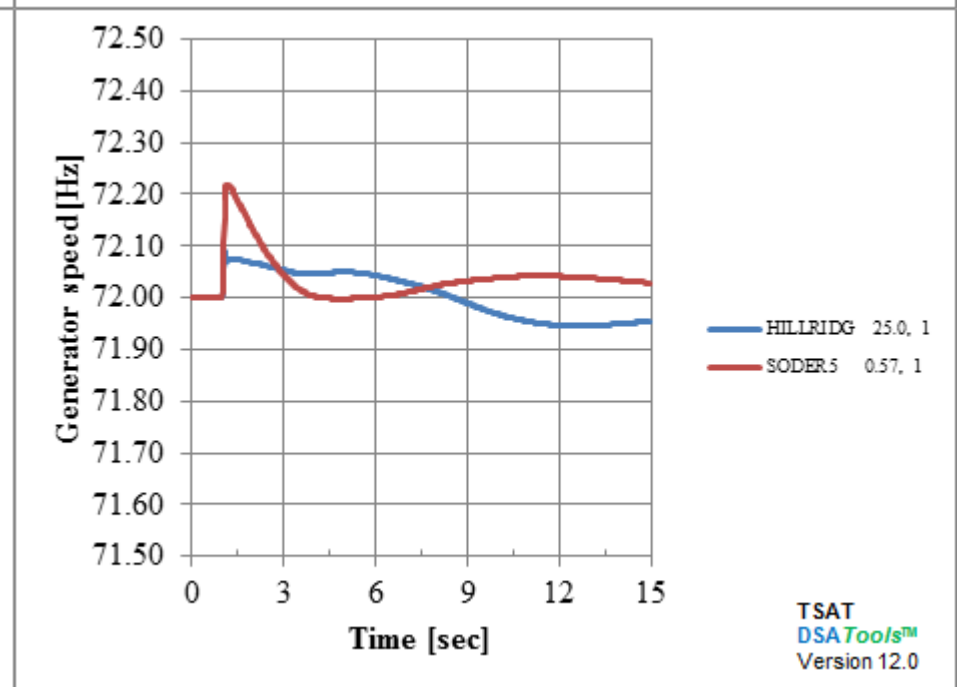
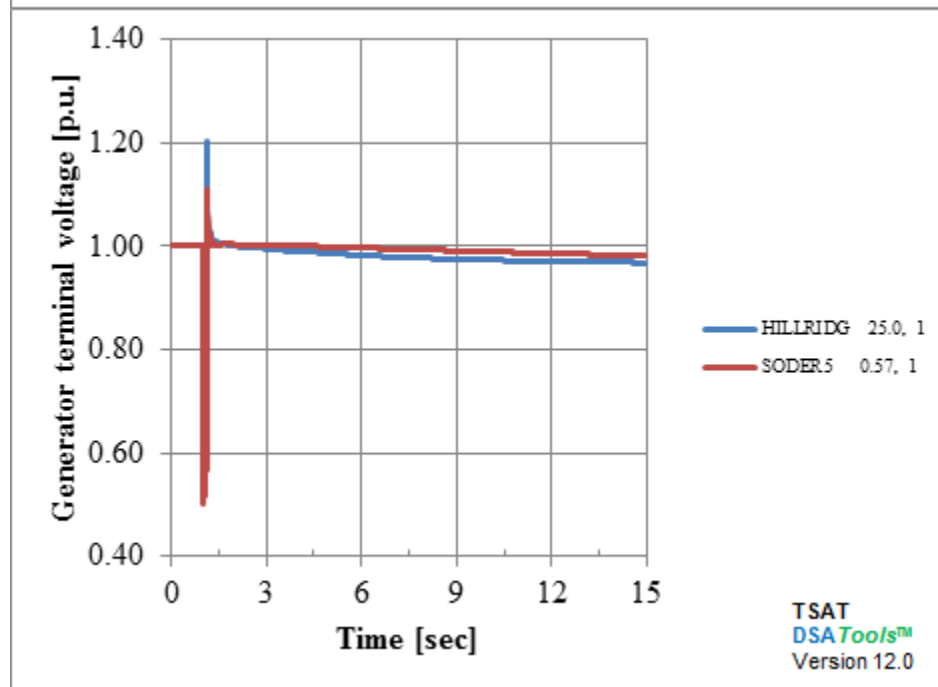
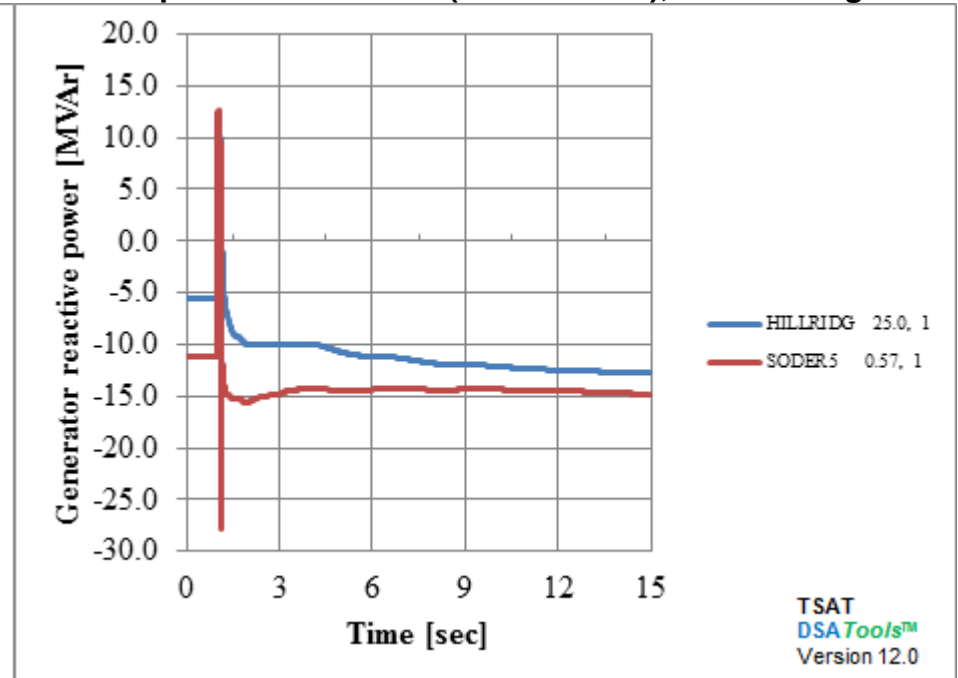
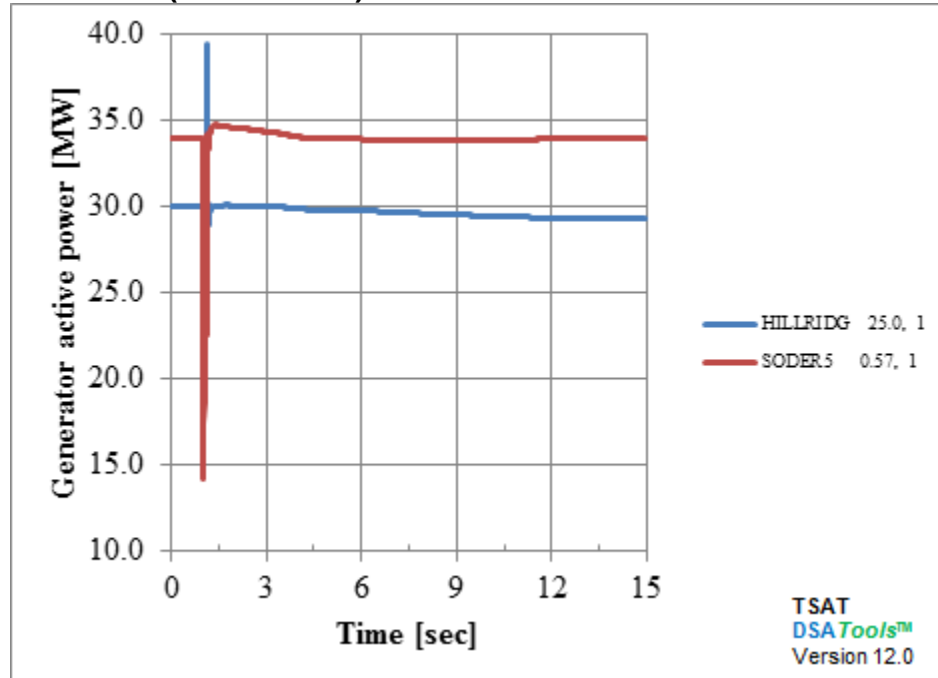
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



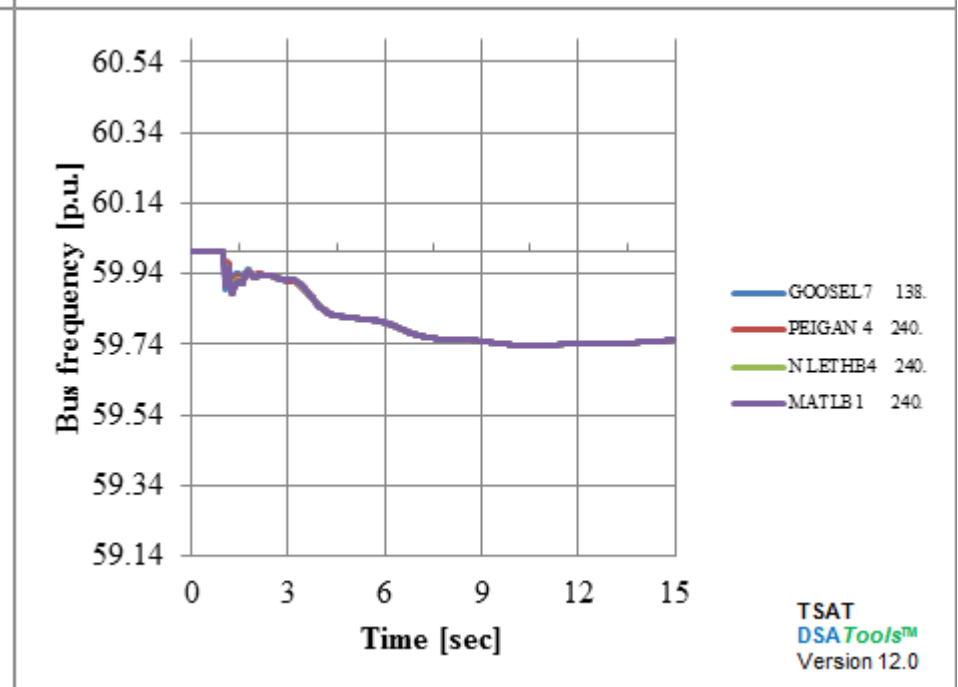
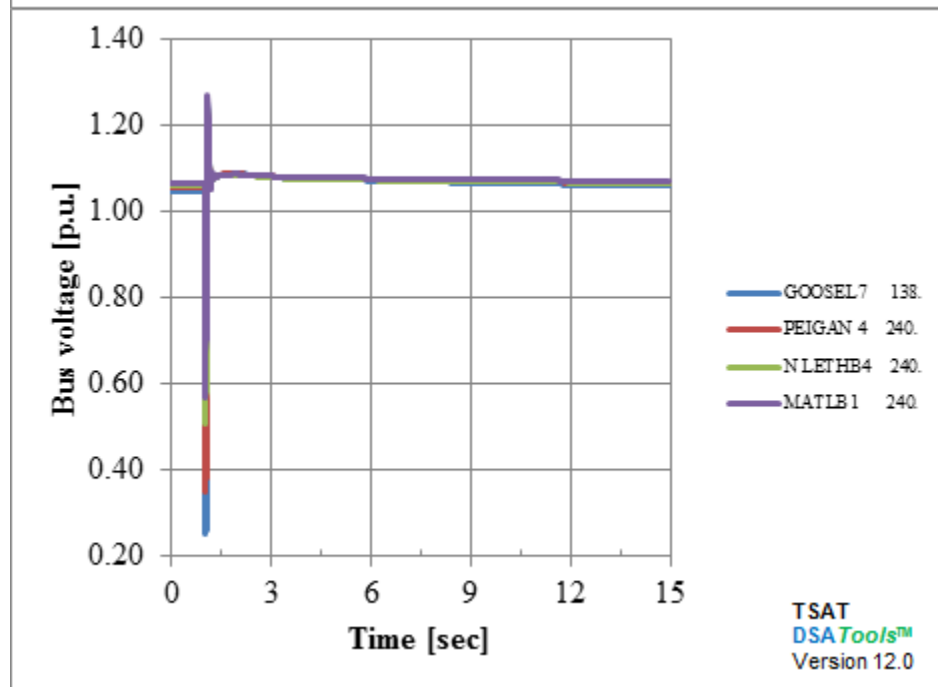
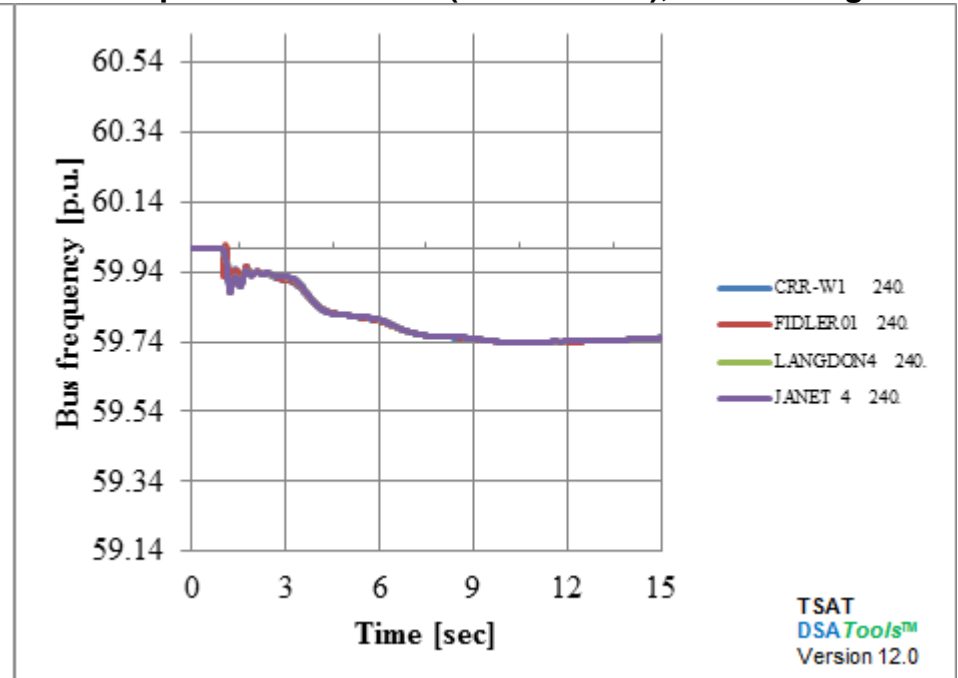
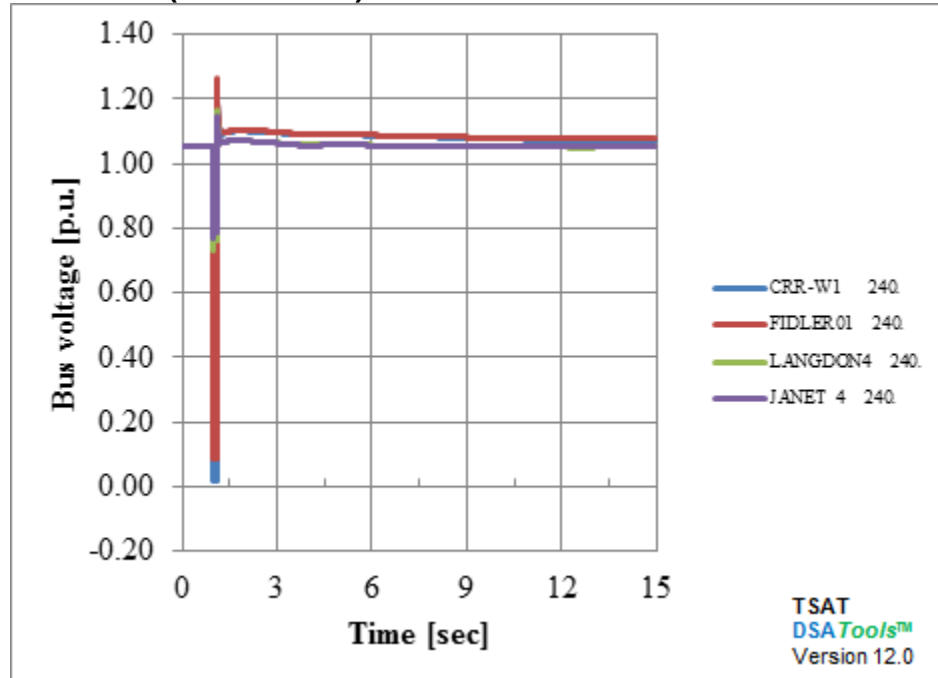
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



4 -- 1072L (205S - 103S) NEAR 205S

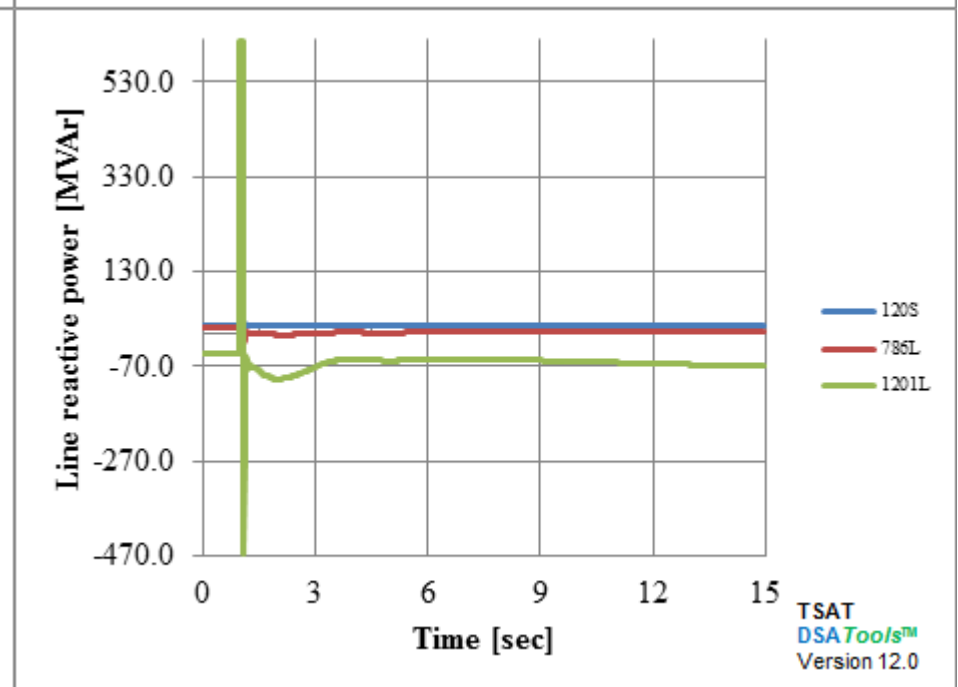
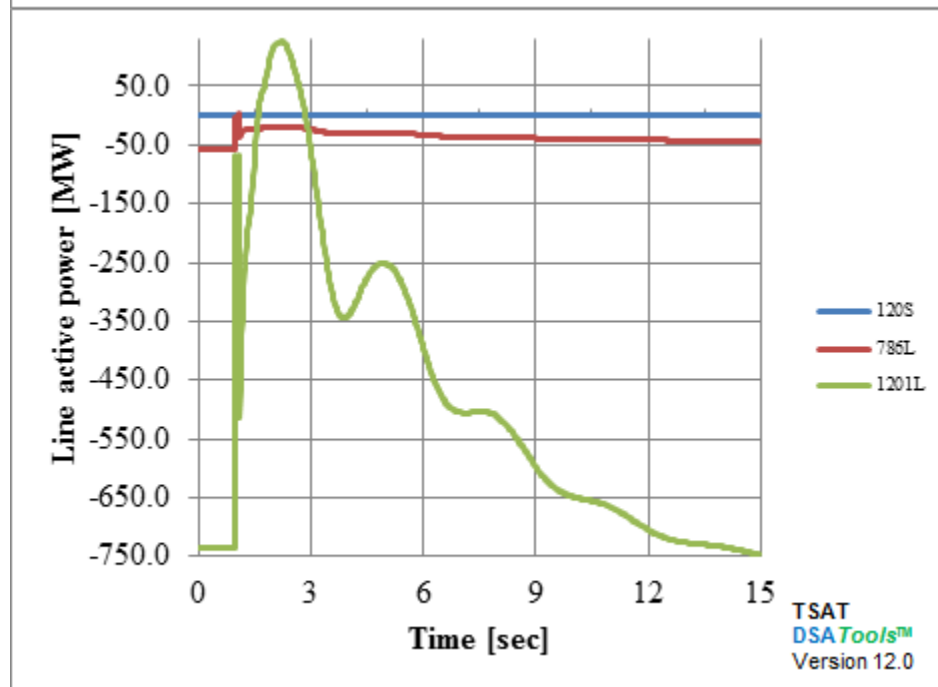
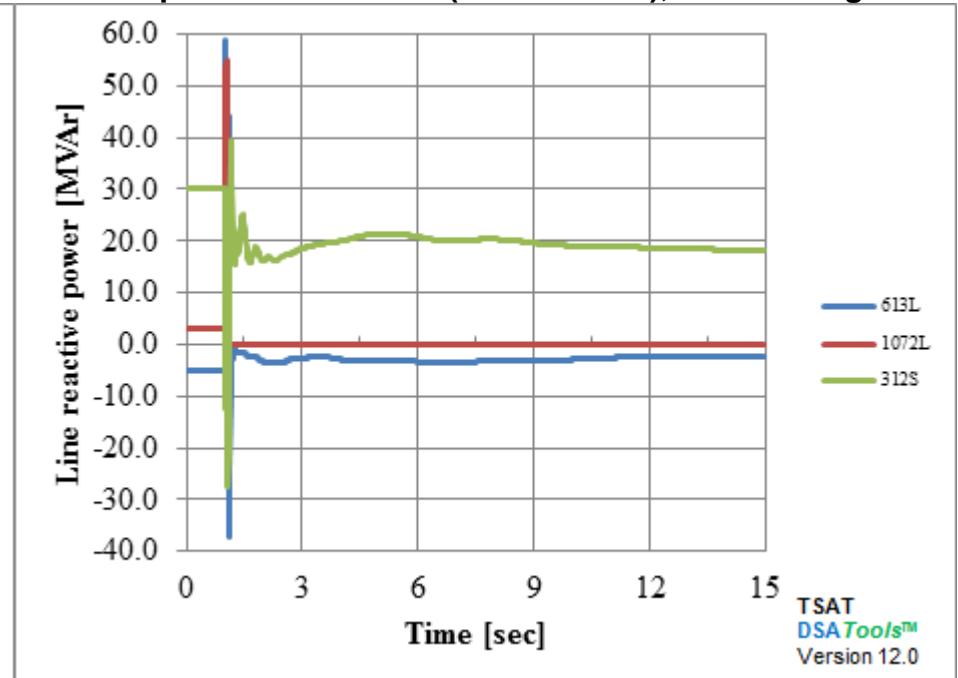
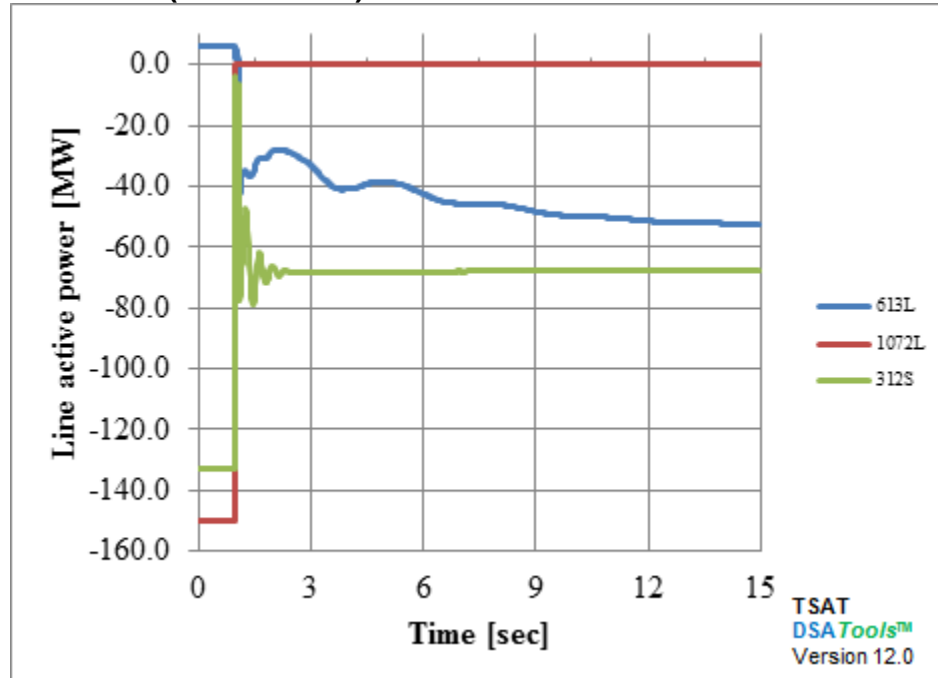
Proposed Connection (Alternative 2), Summer Light 2017





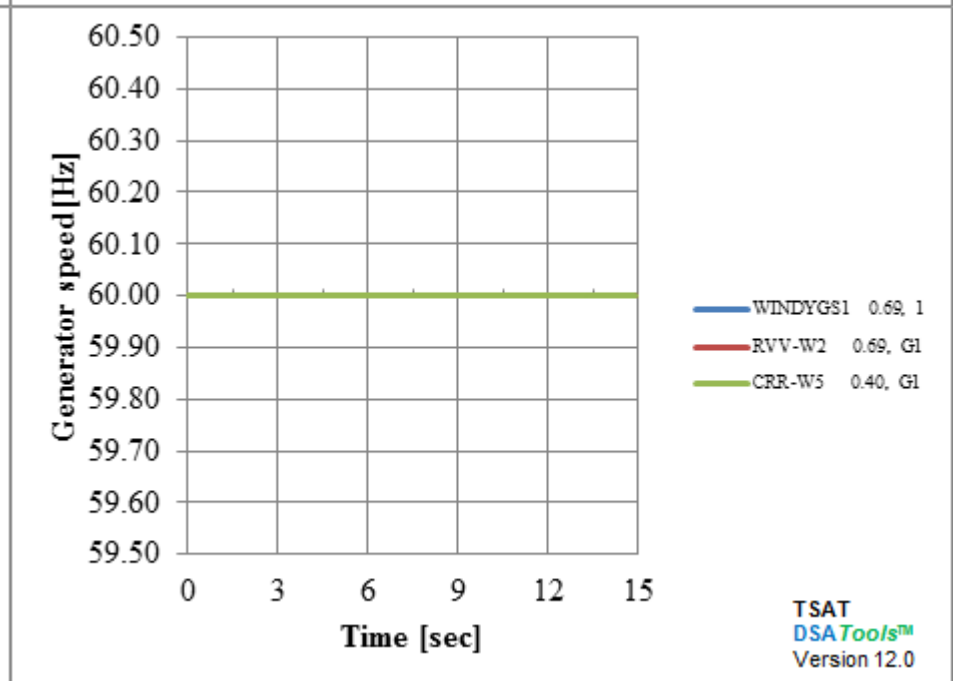
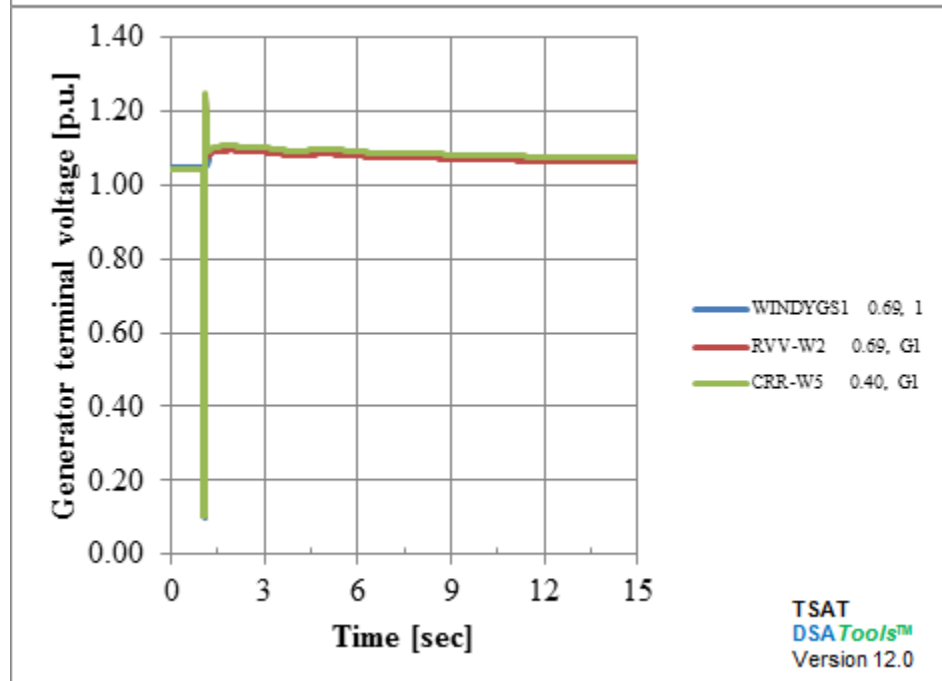
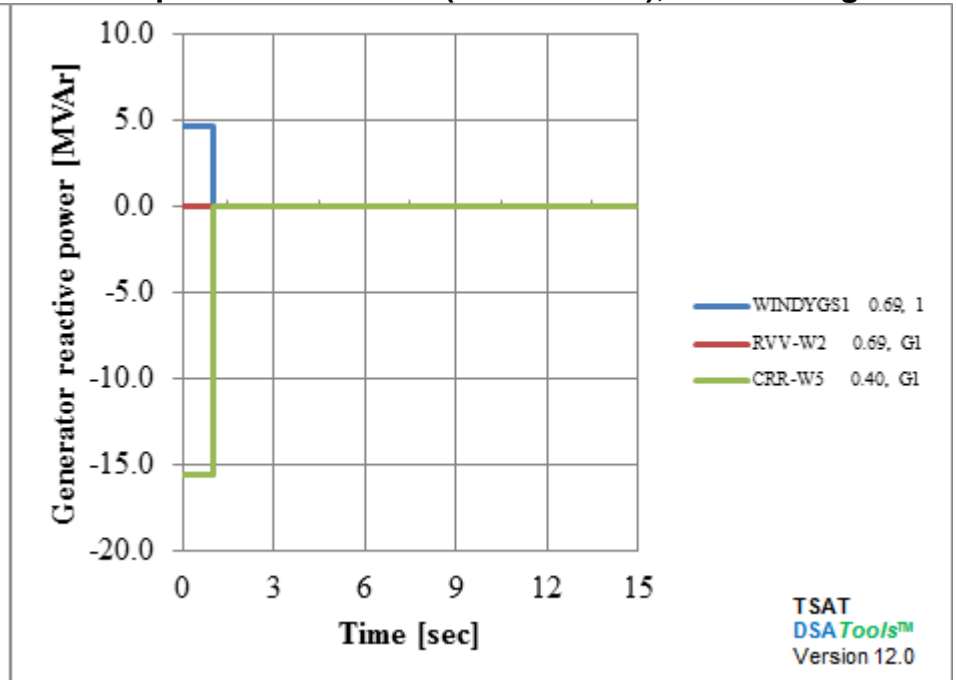
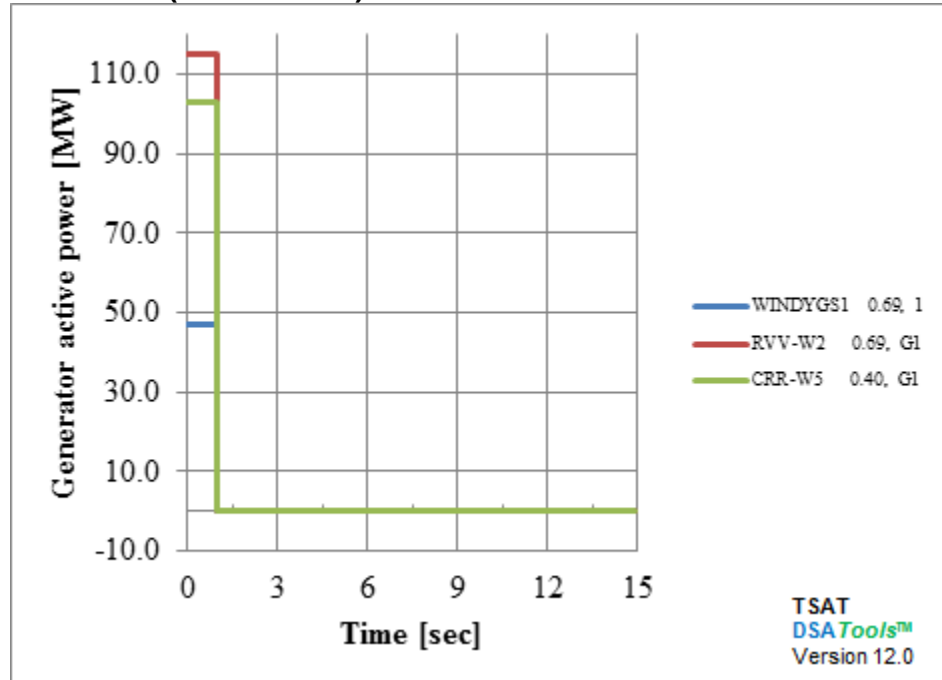
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Light 2017



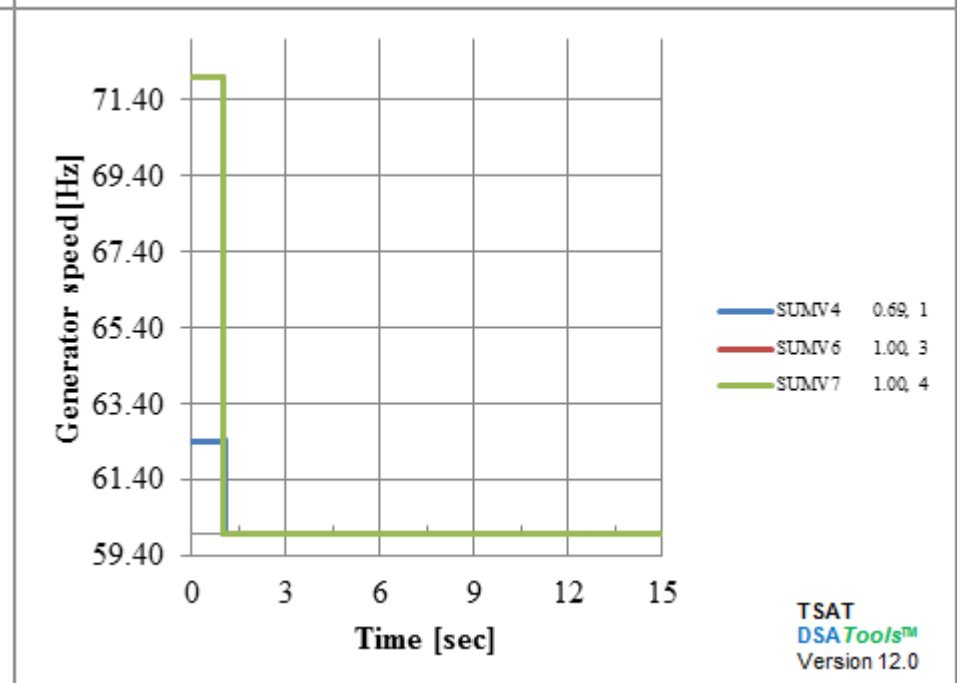
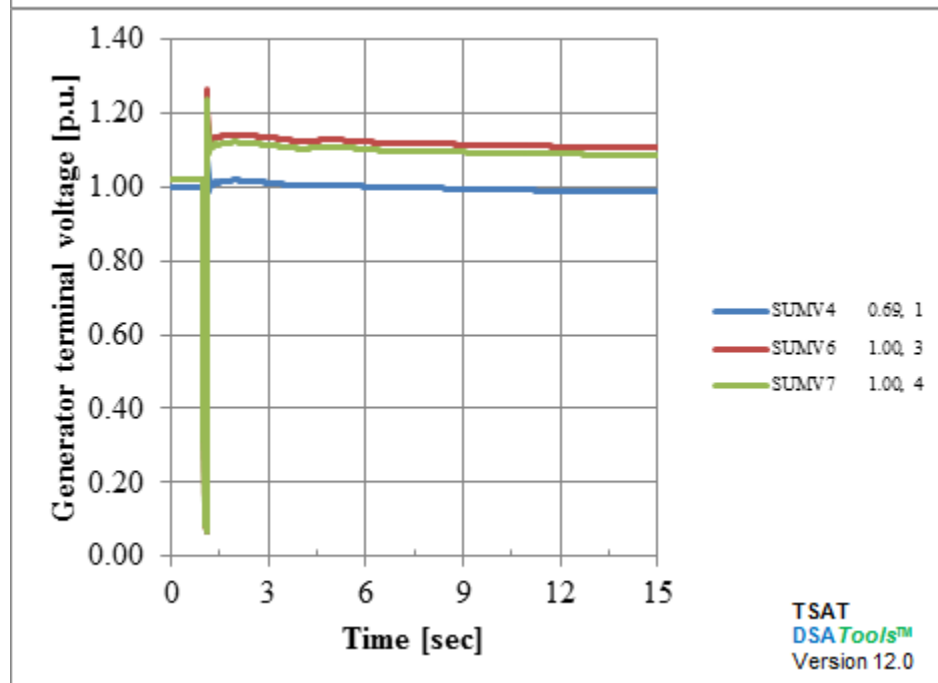
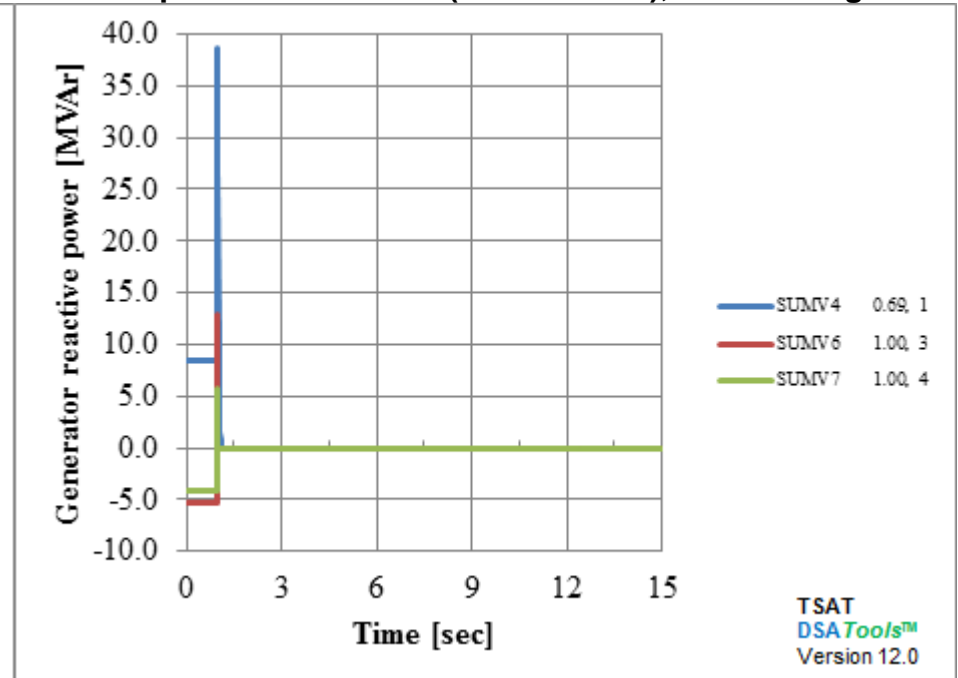
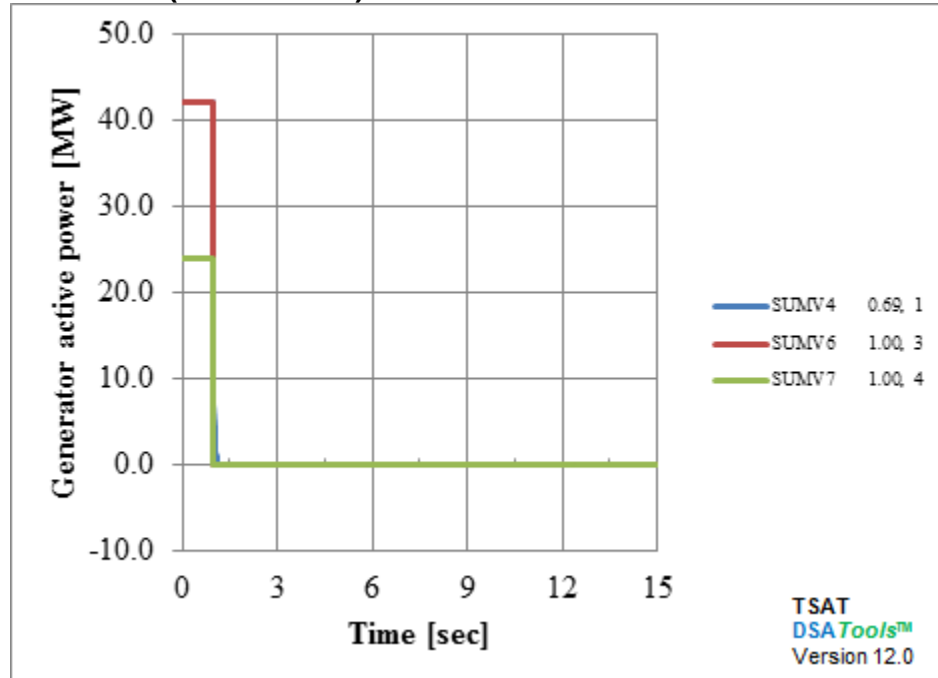
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



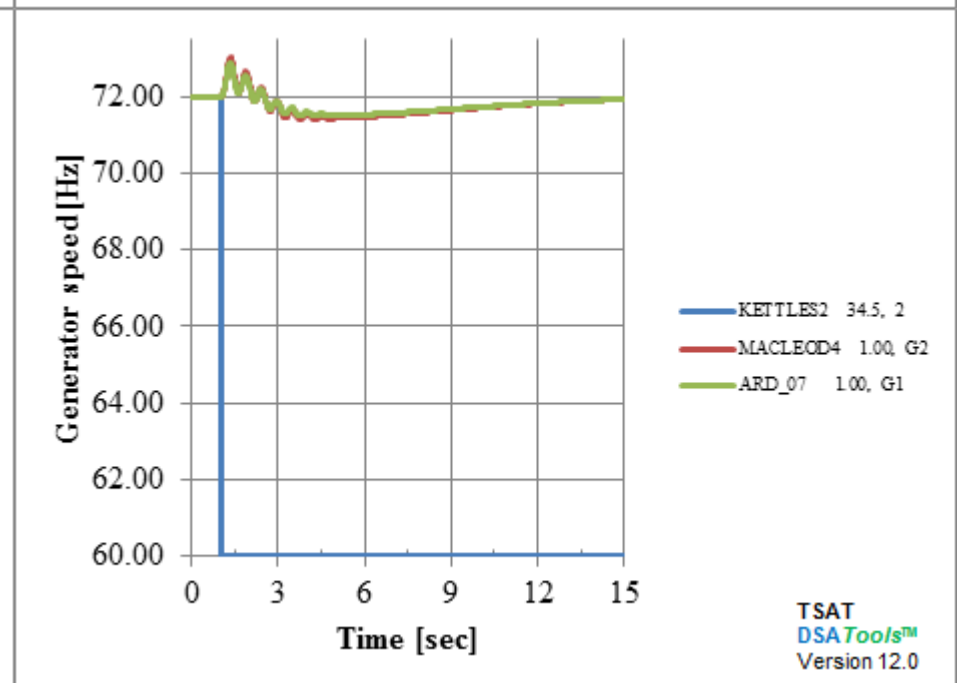
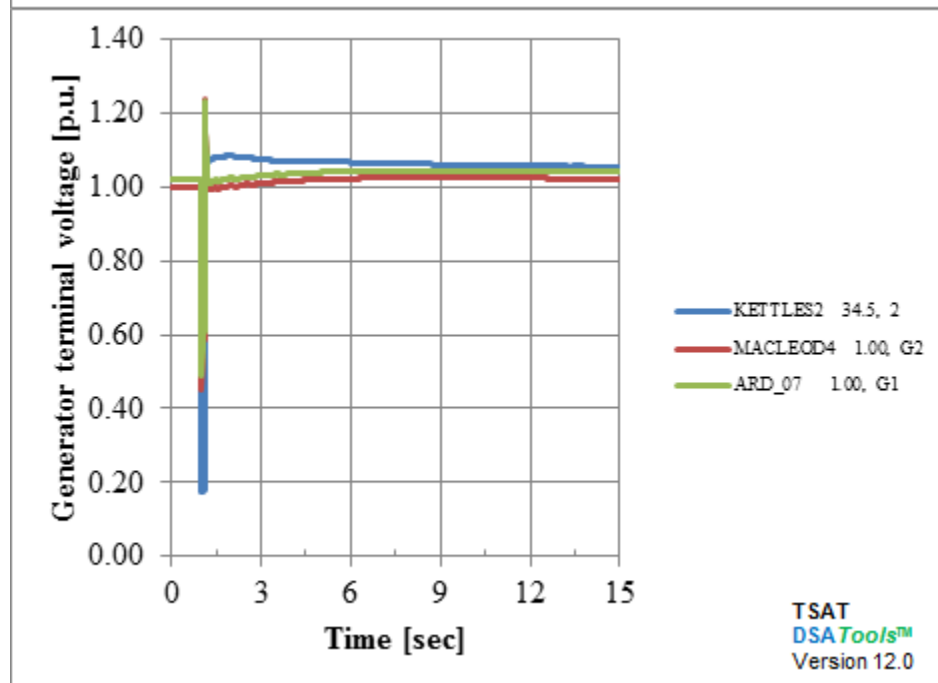
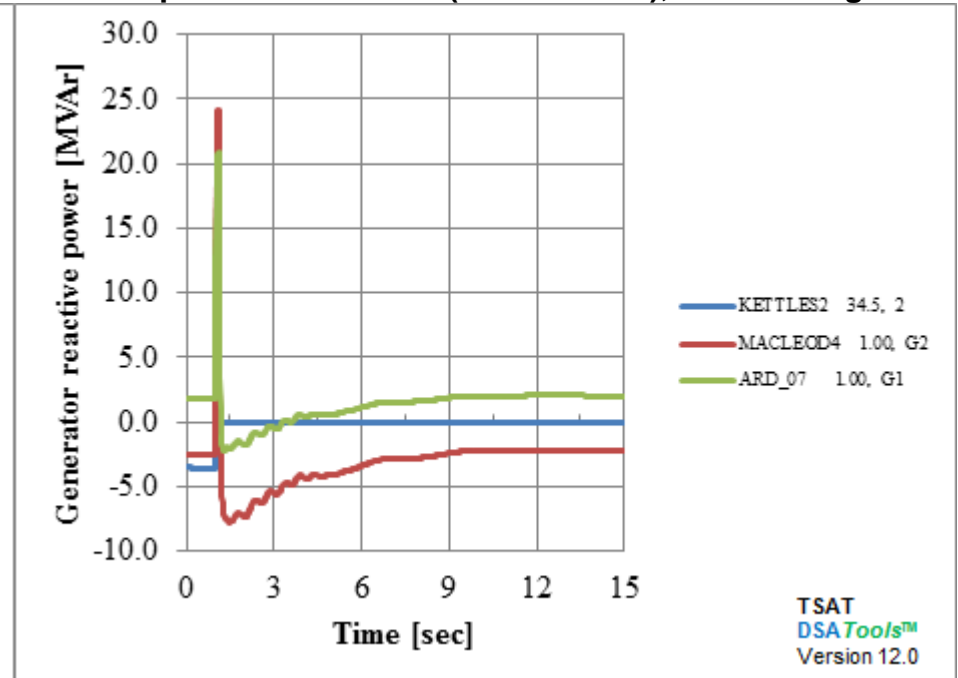
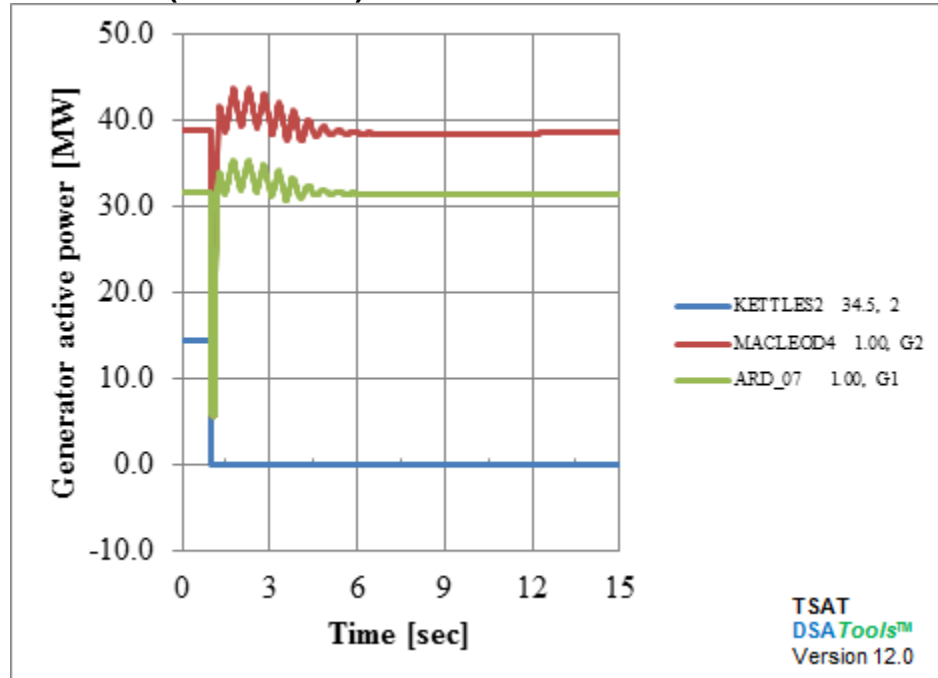
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



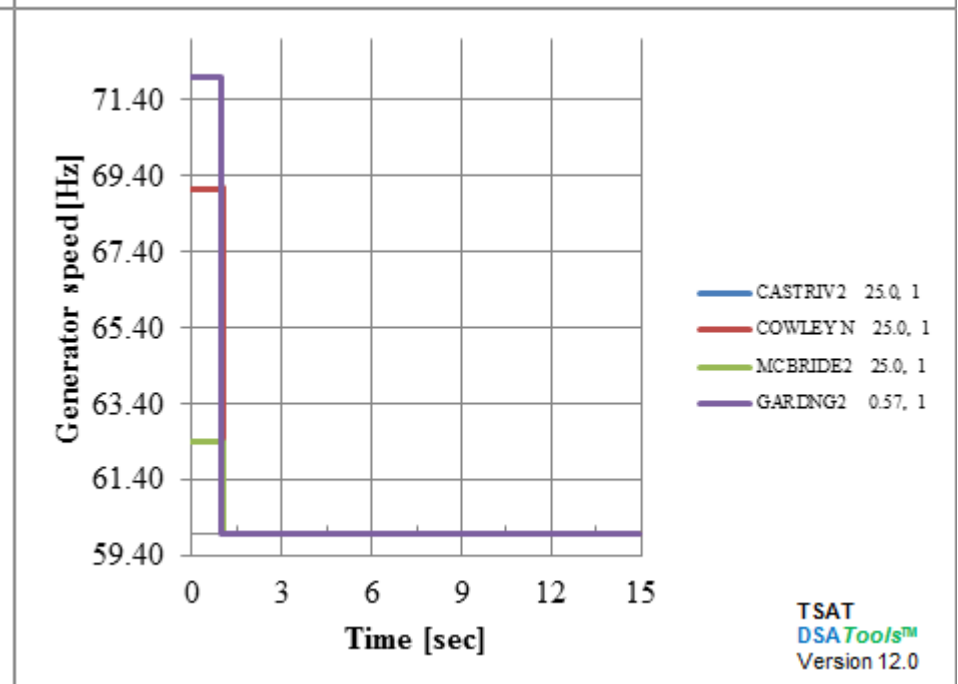
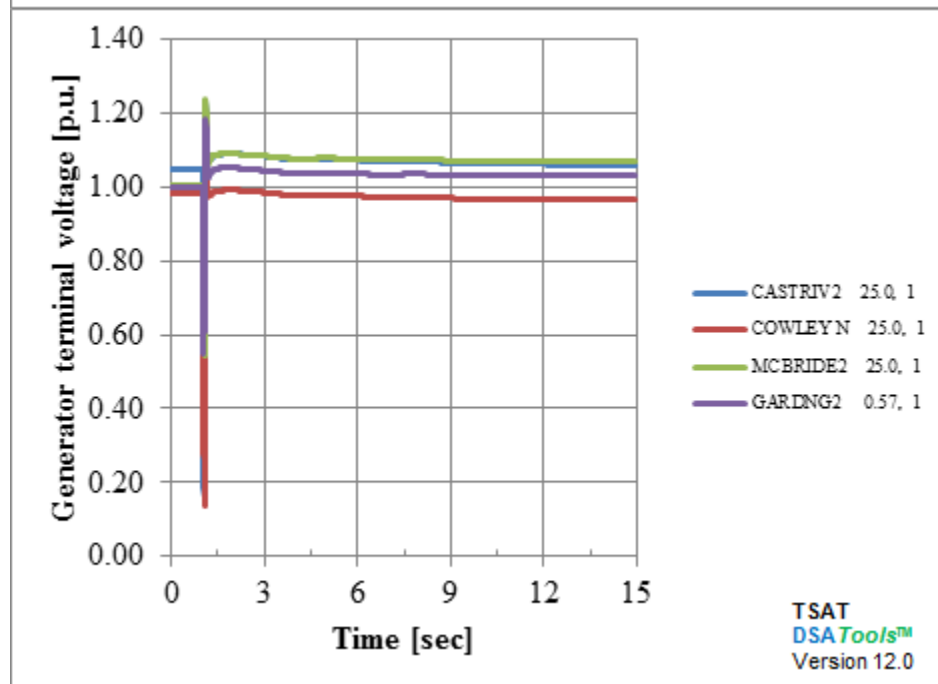
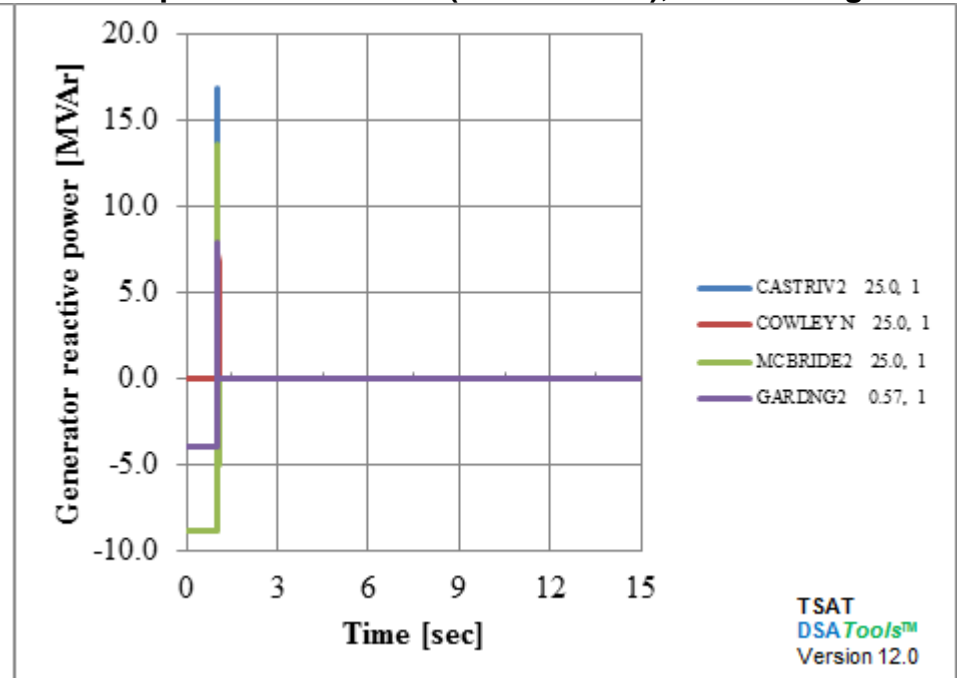
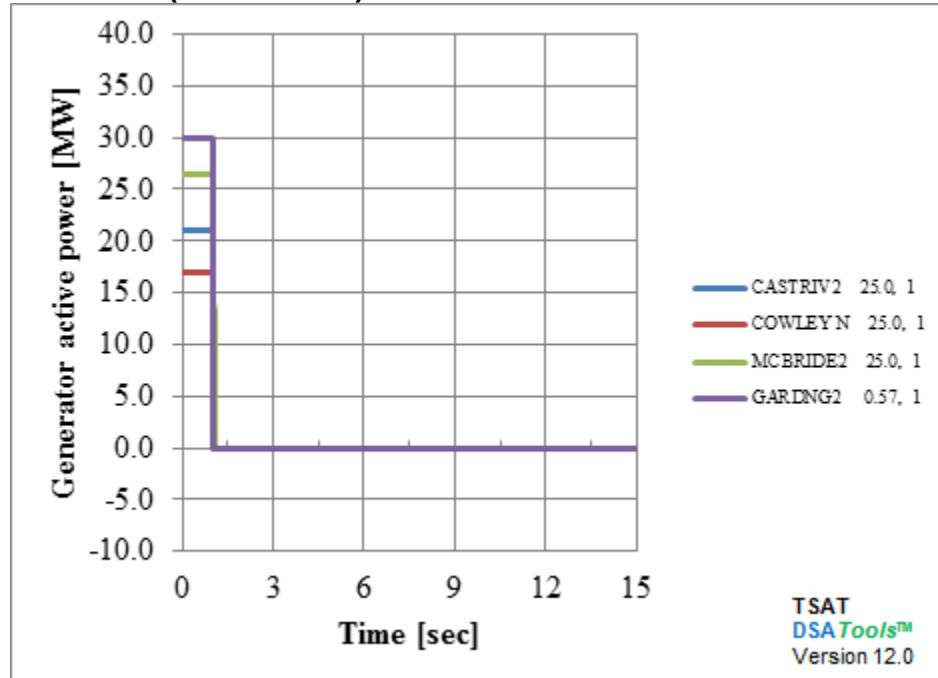
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



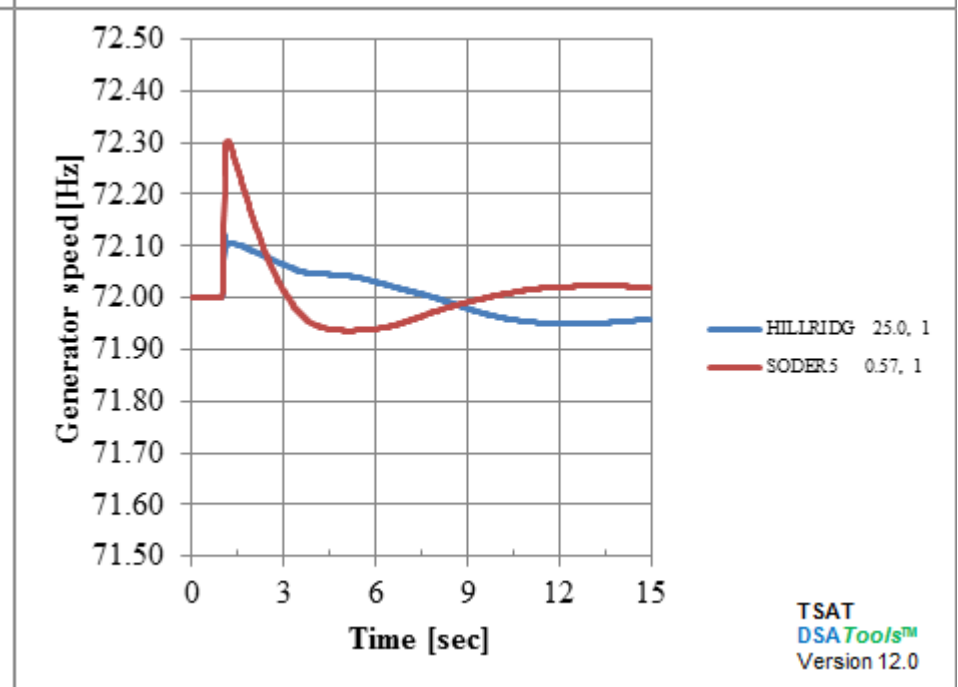
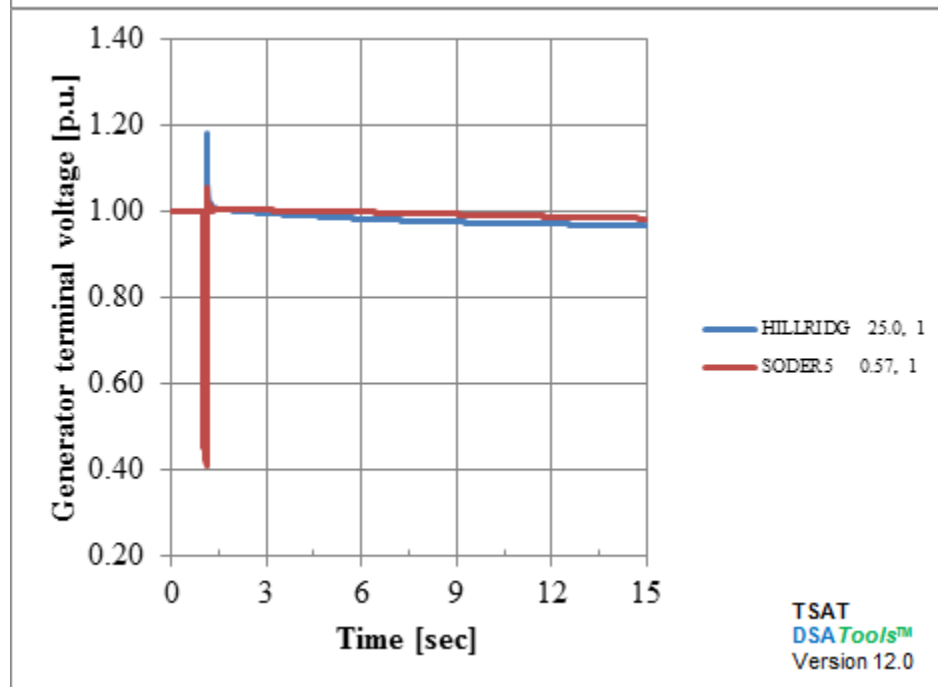
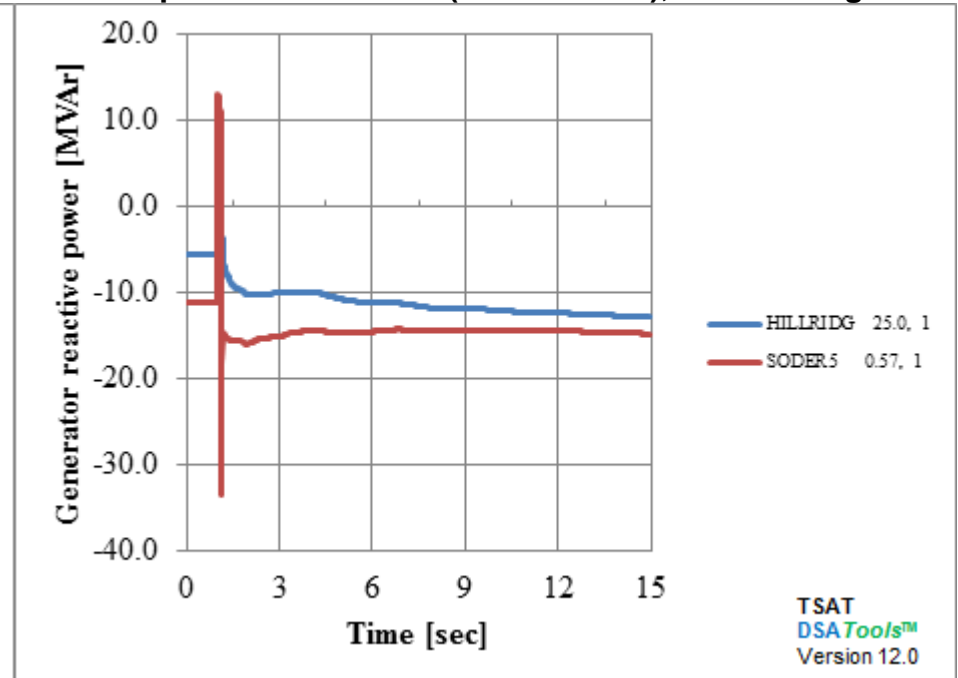
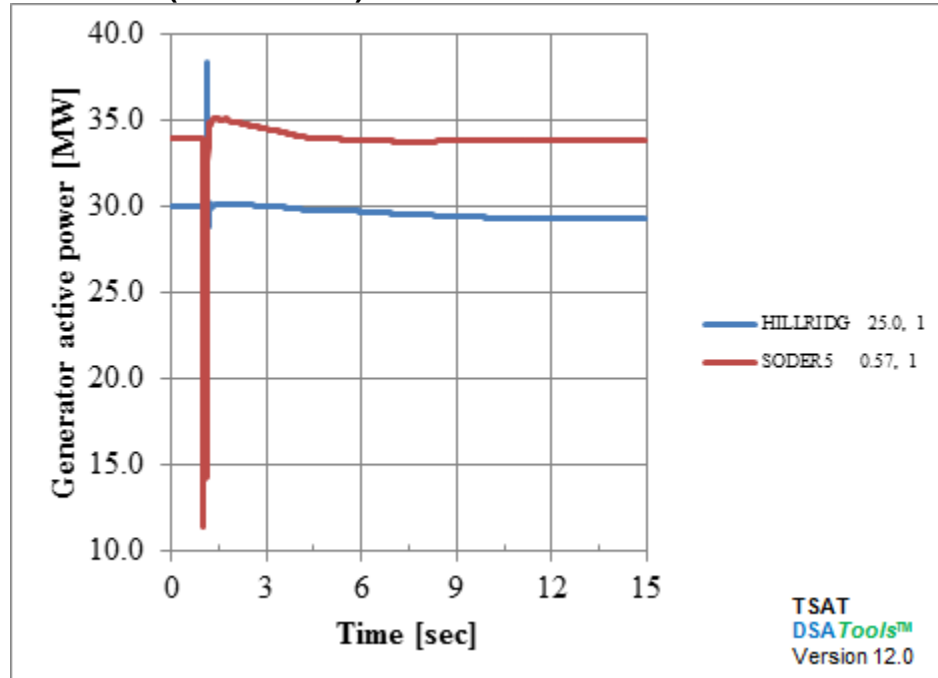
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



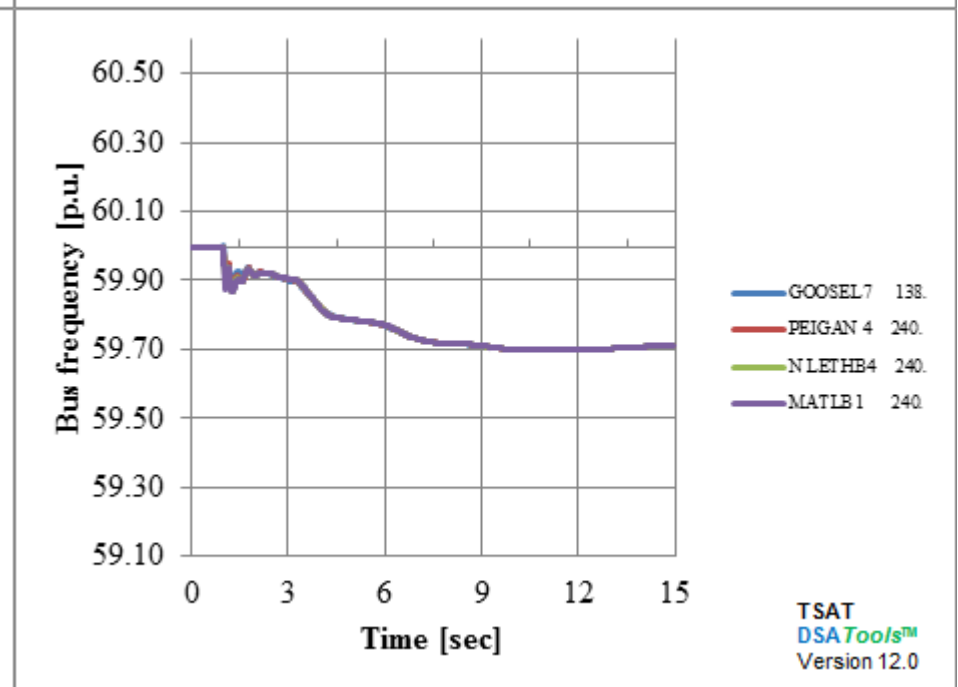
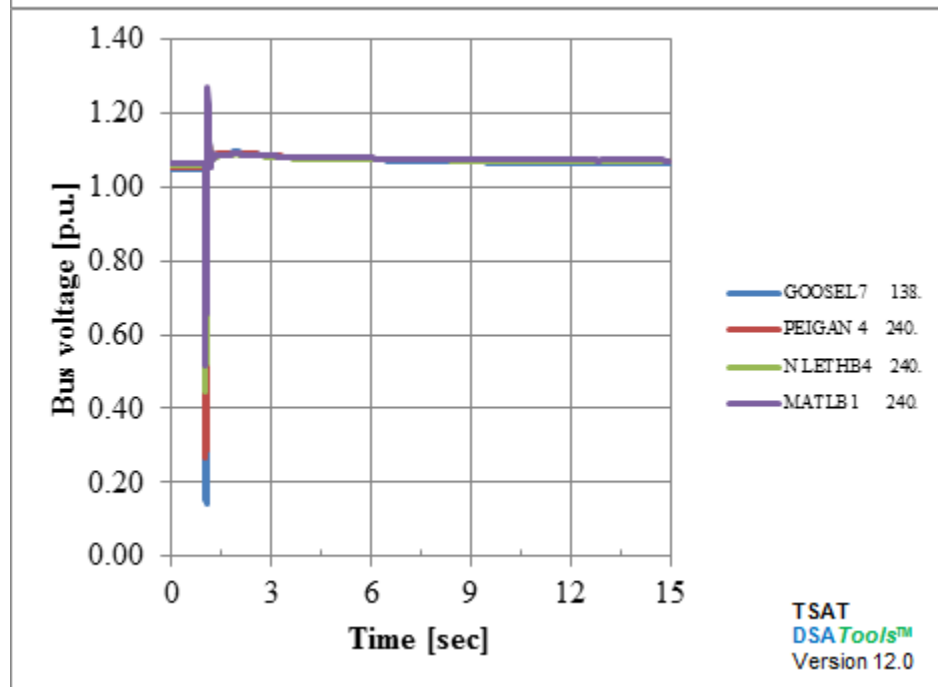
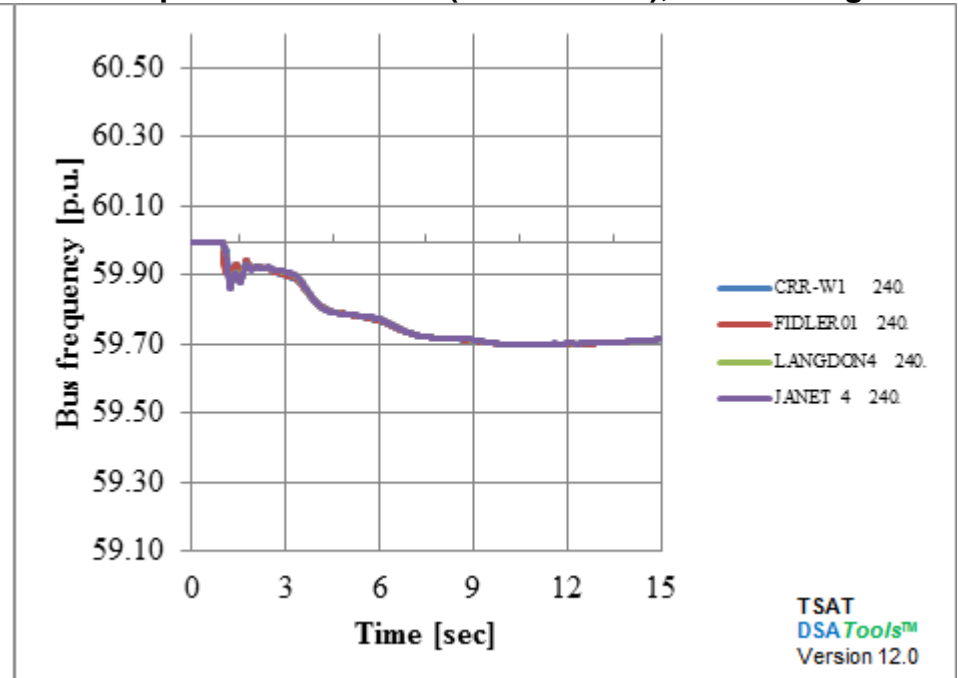
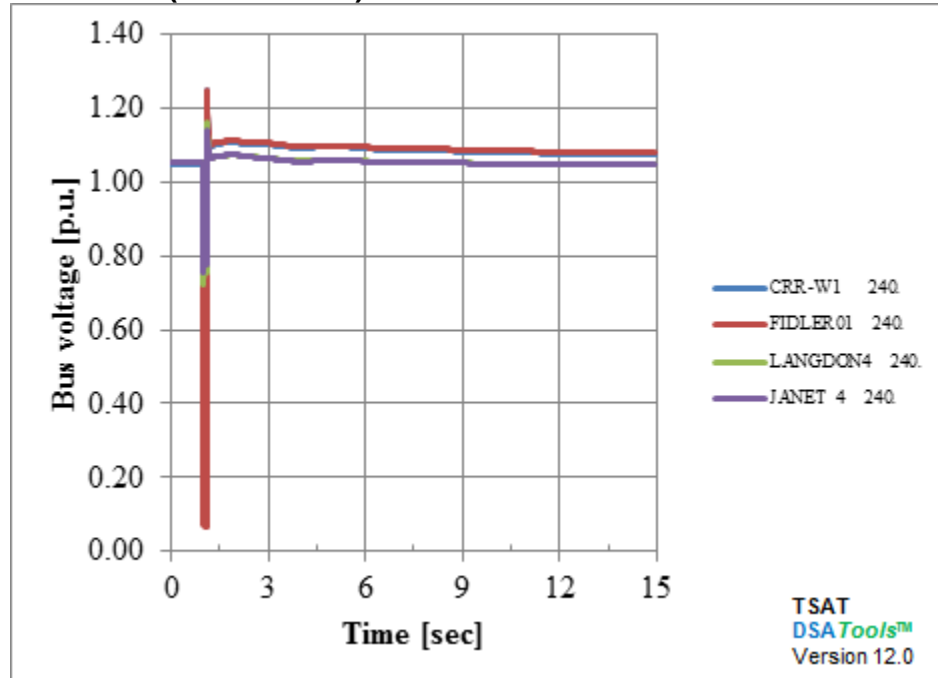
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



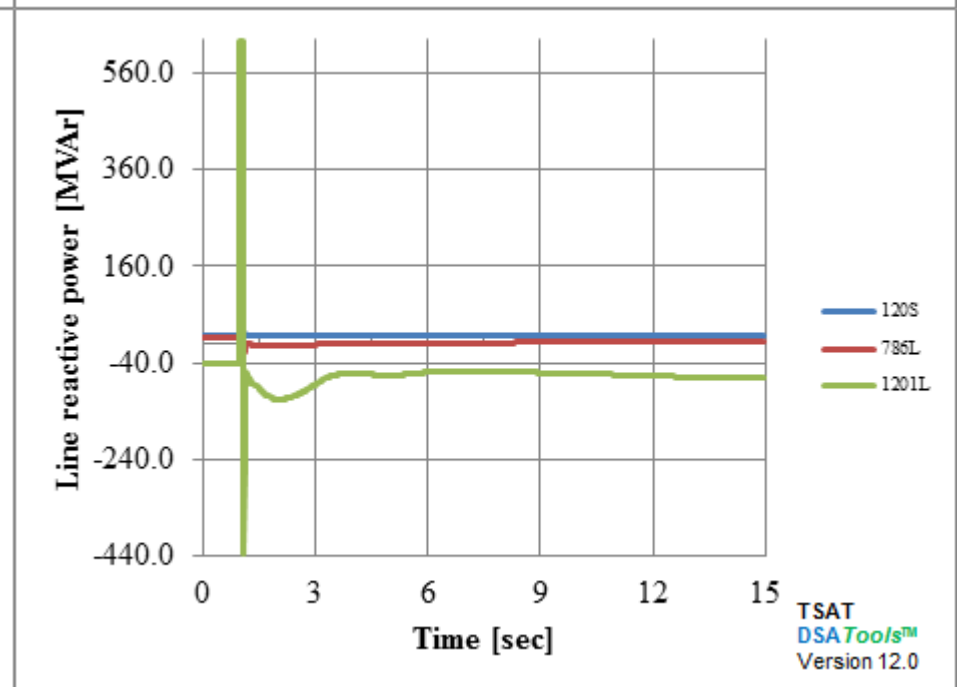
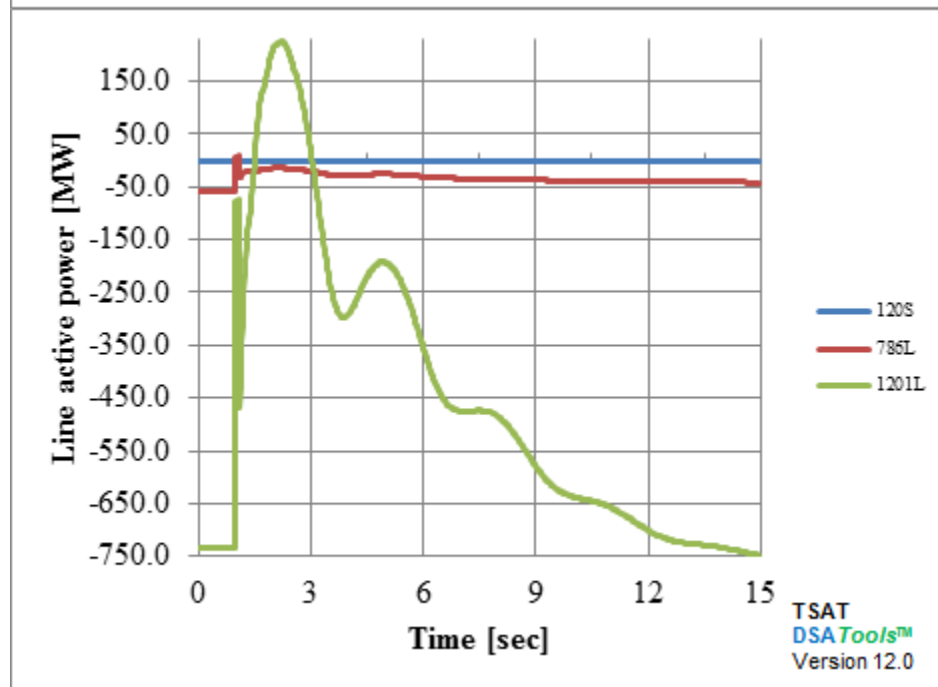
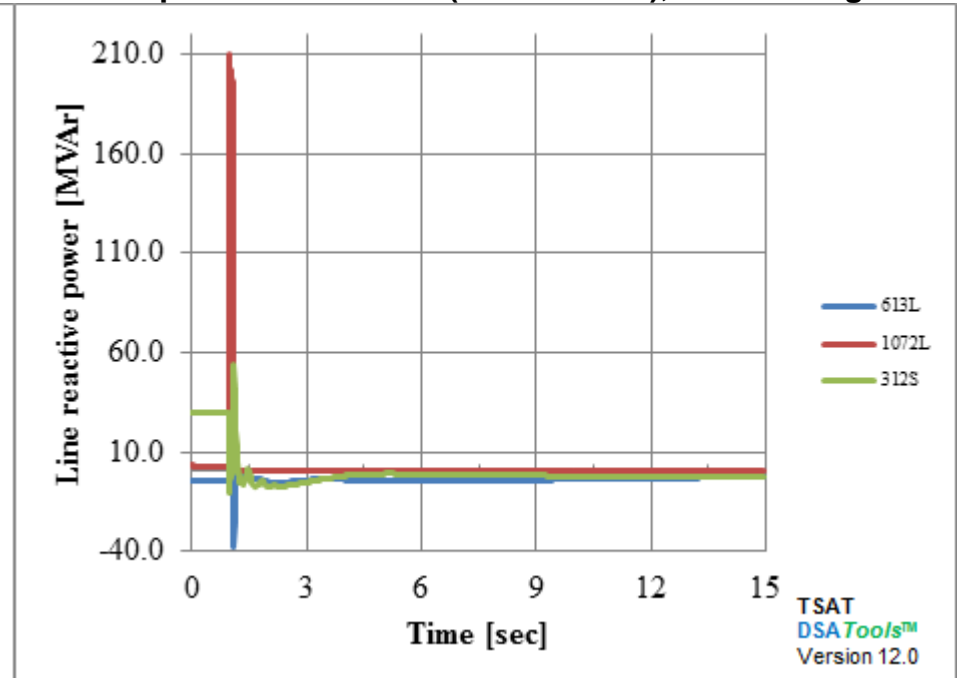
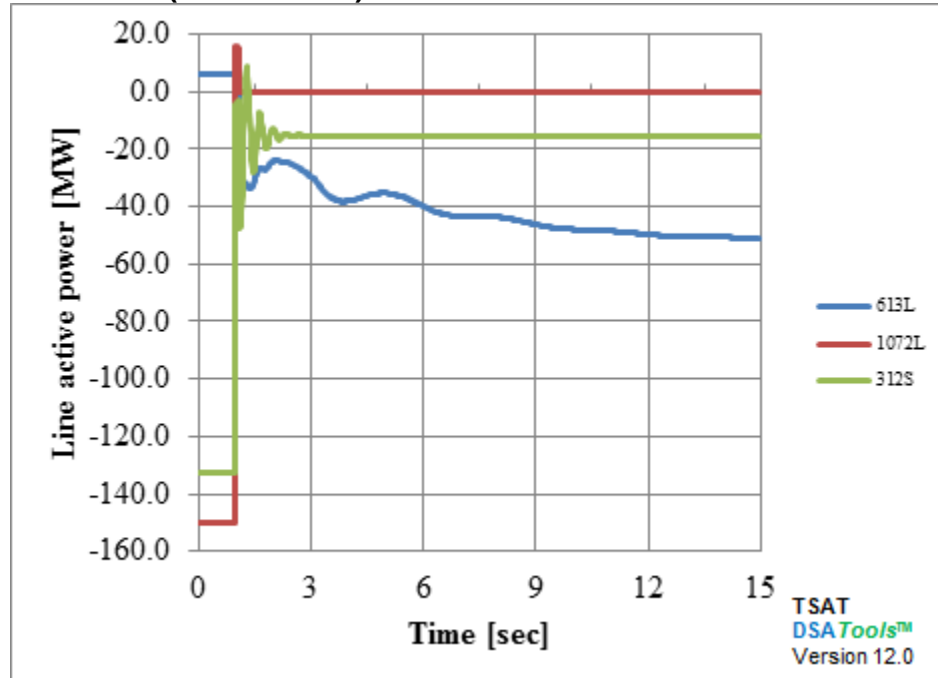
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



5 -- 1072L (205S - 103S) NEAR 103S

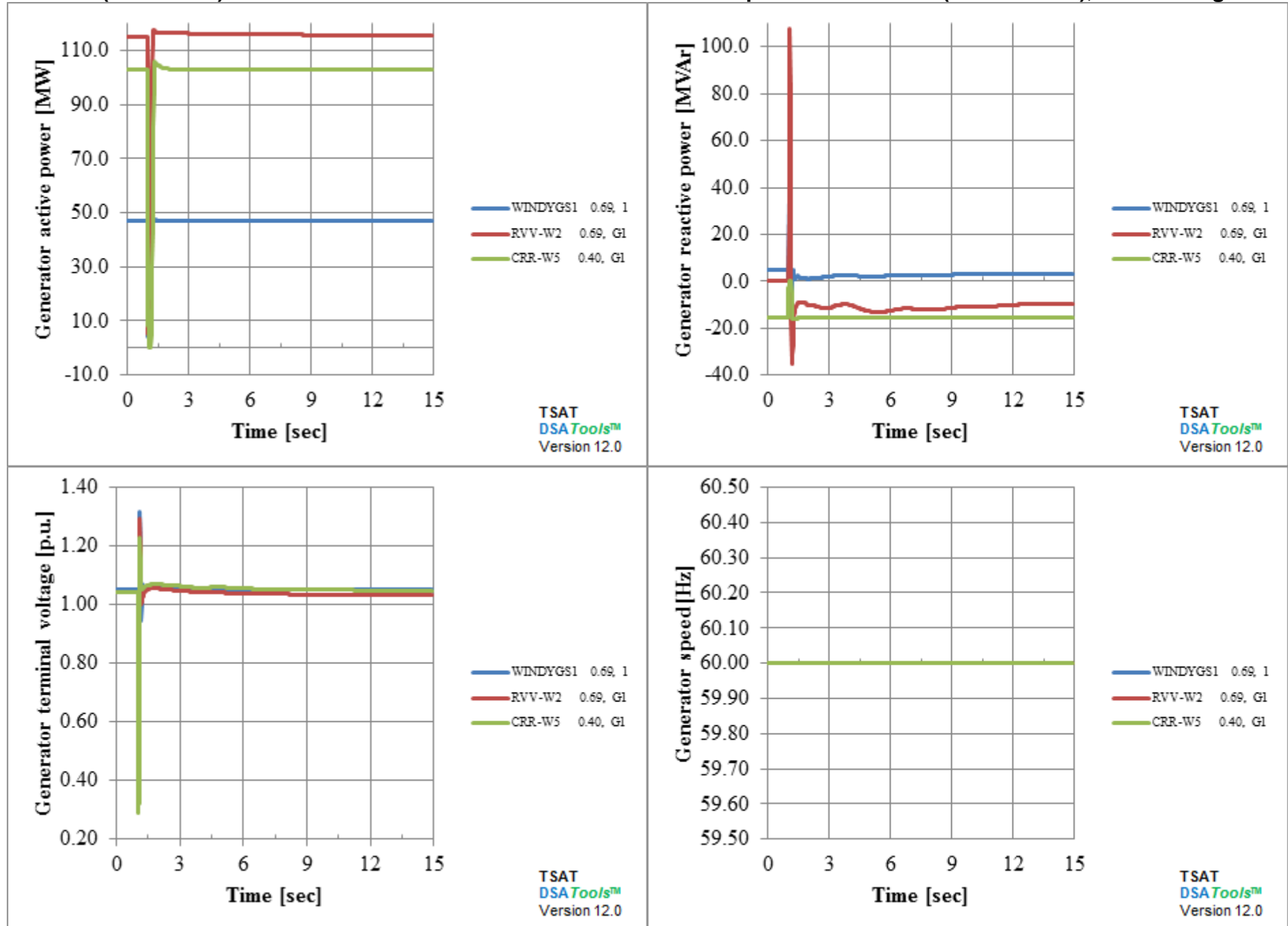
Proposed Connection (Alternative 2), Summer Light 2017





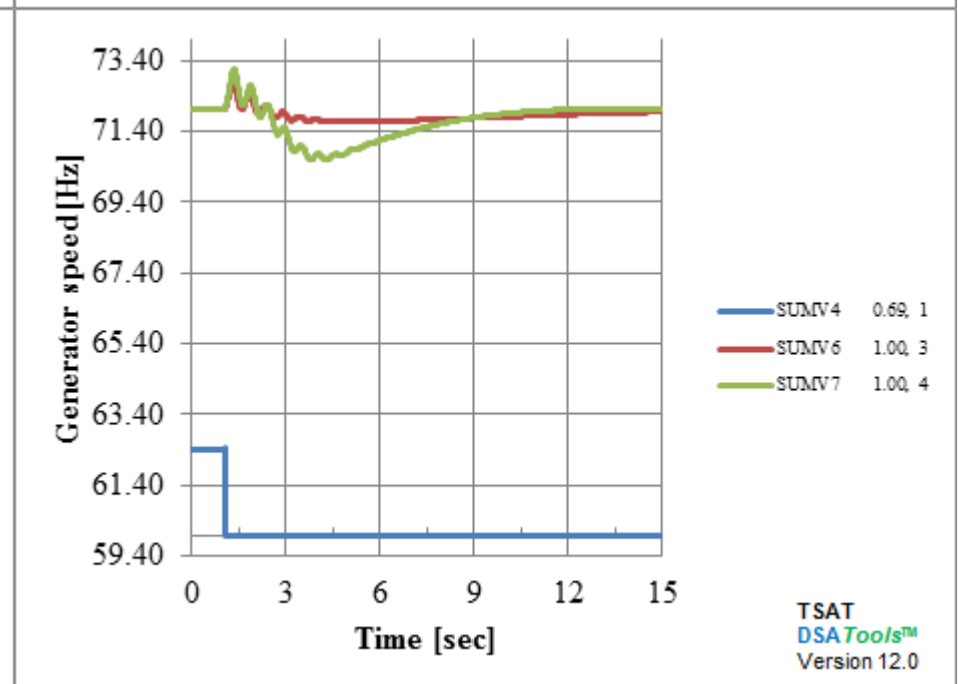
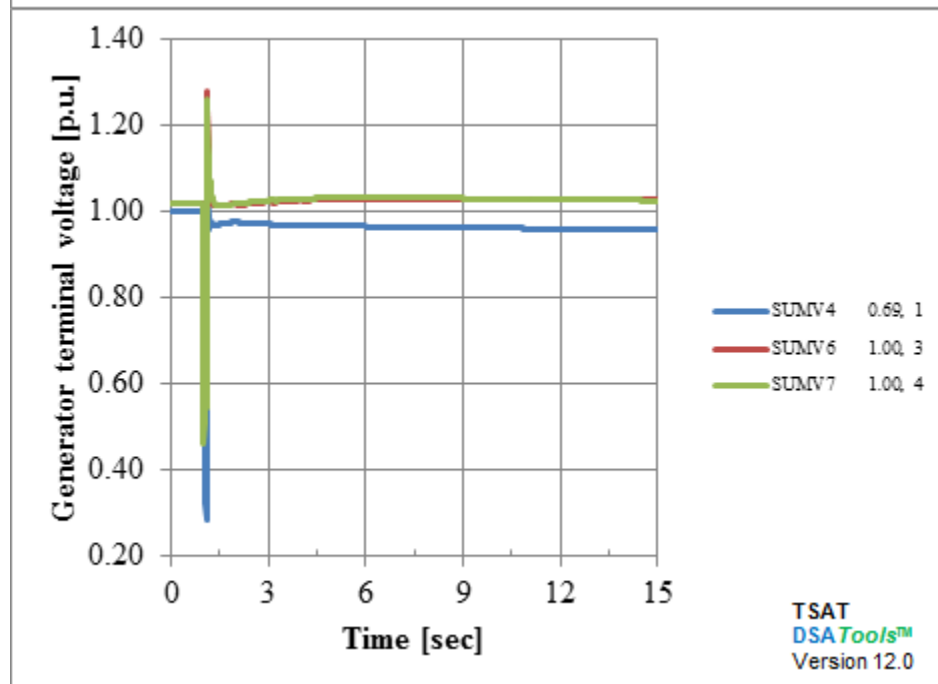
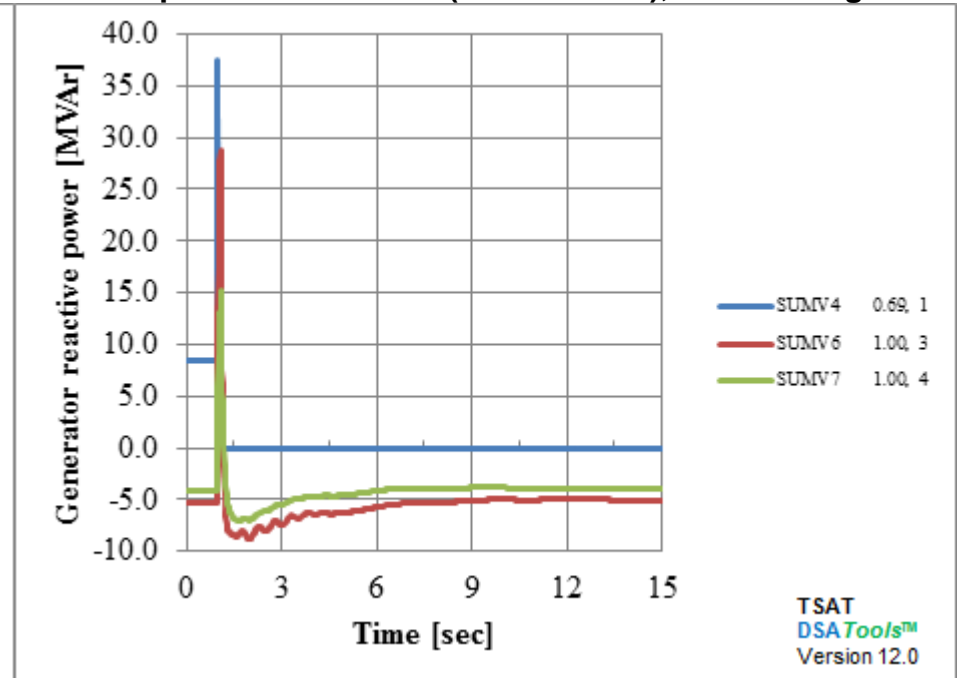
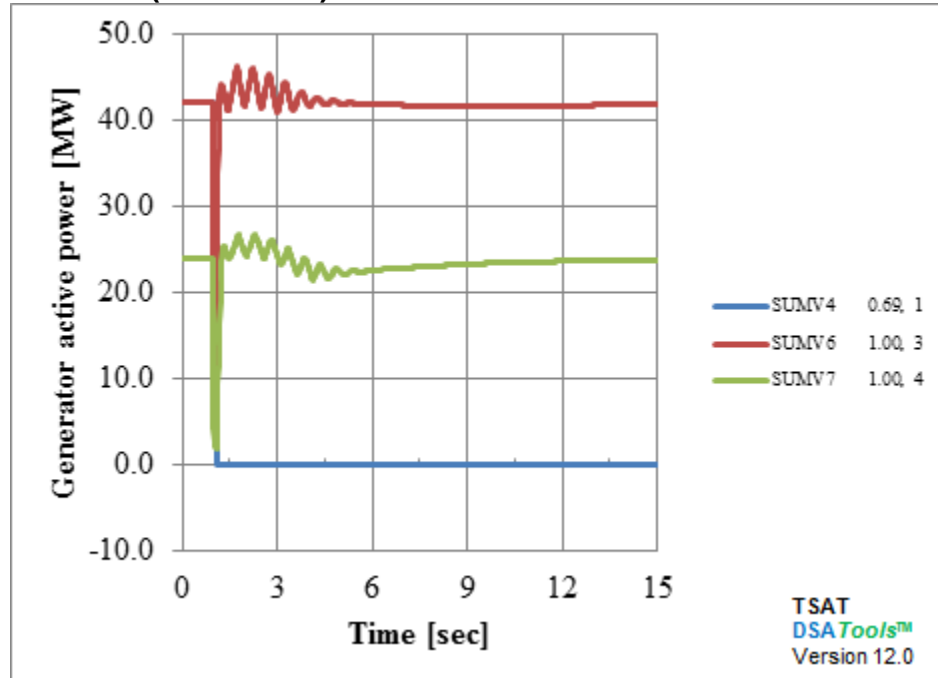
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



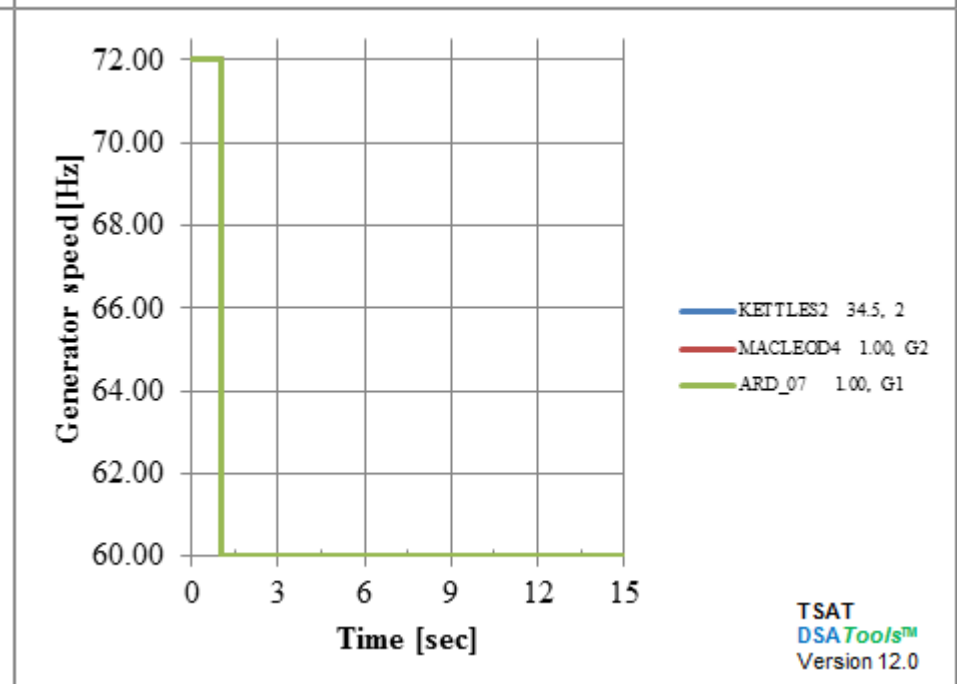
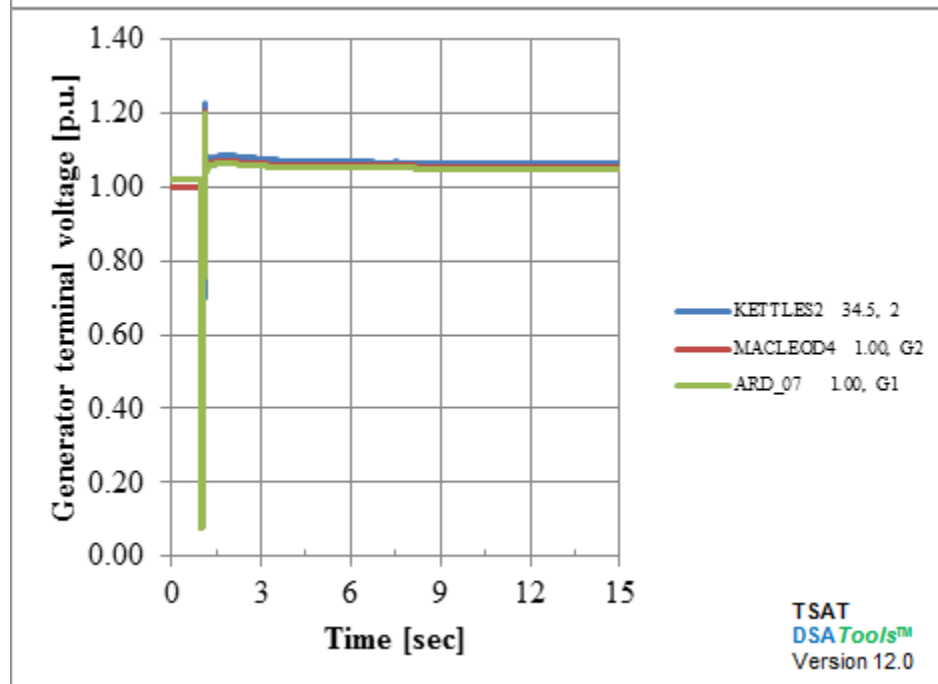
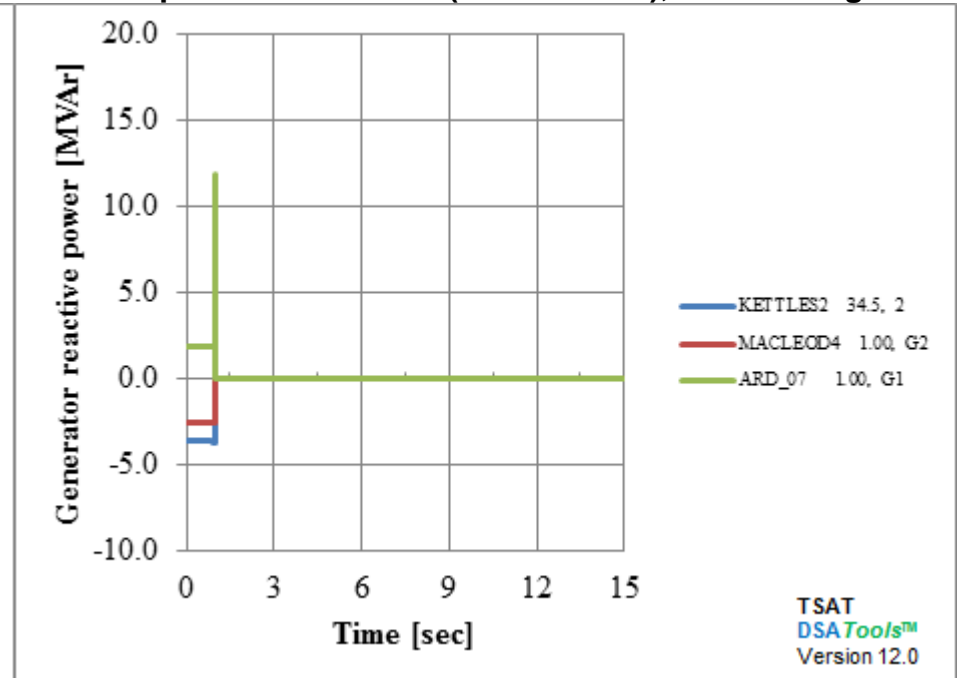
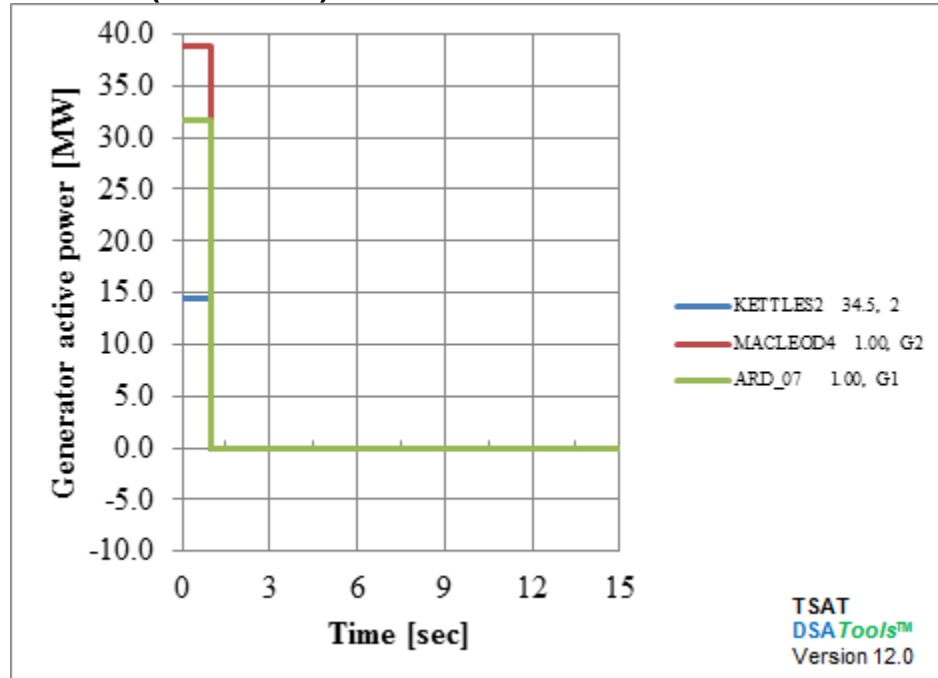
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



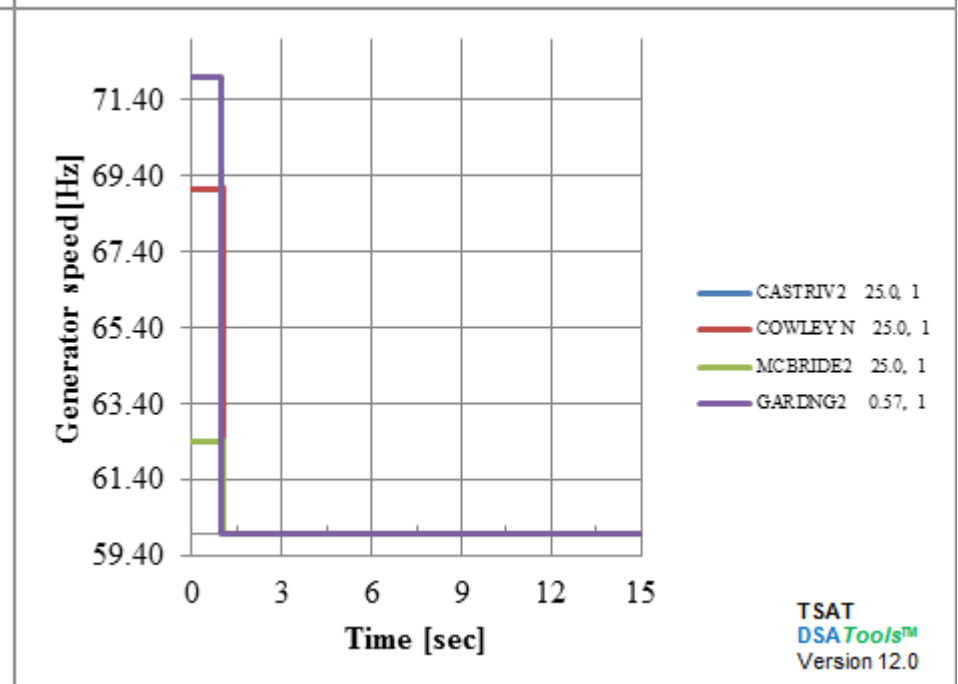
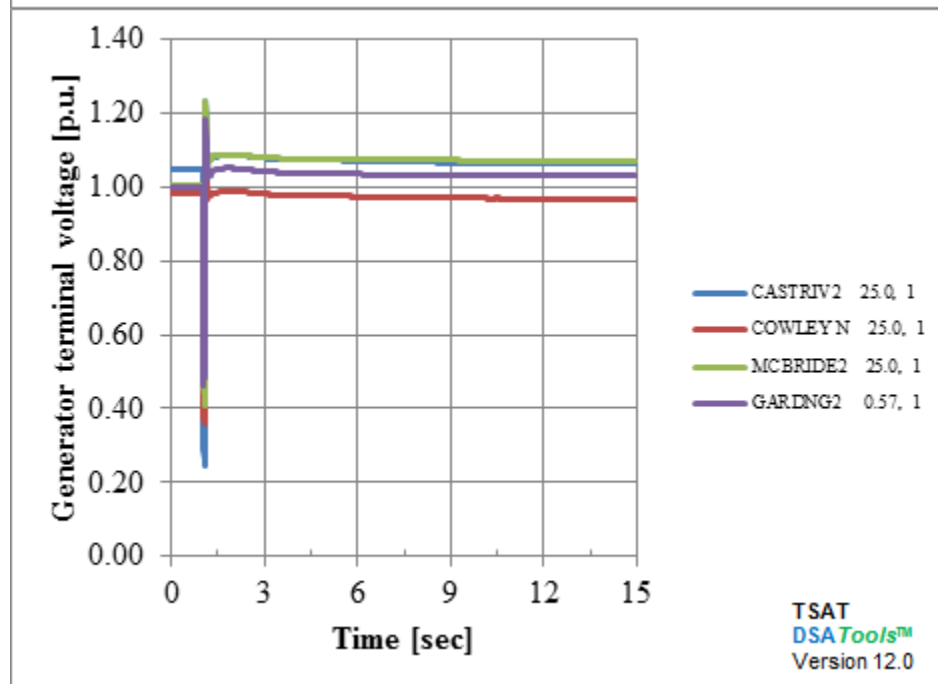
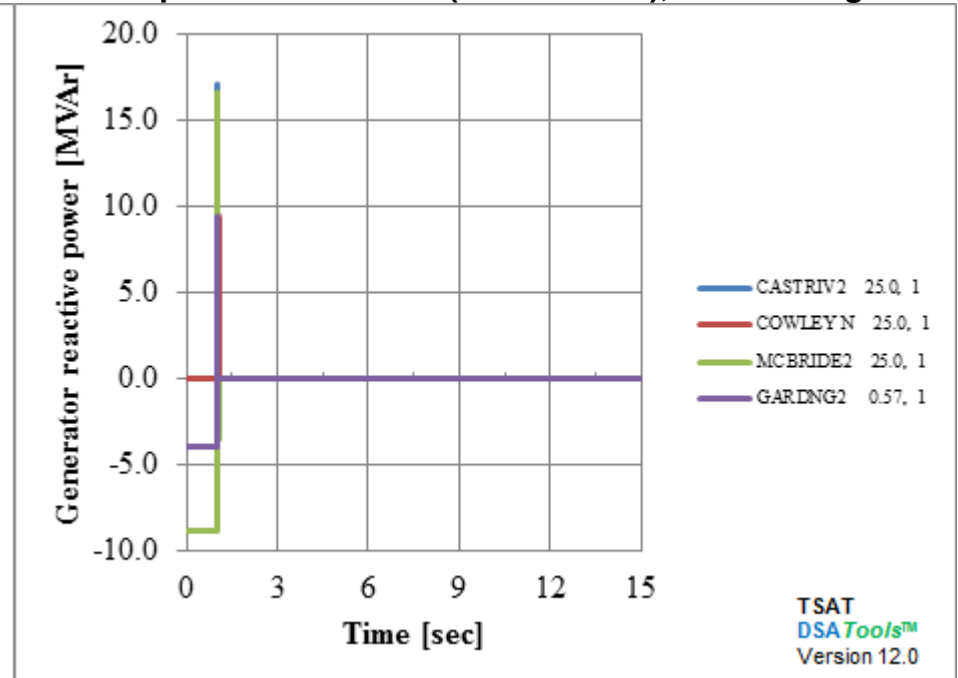
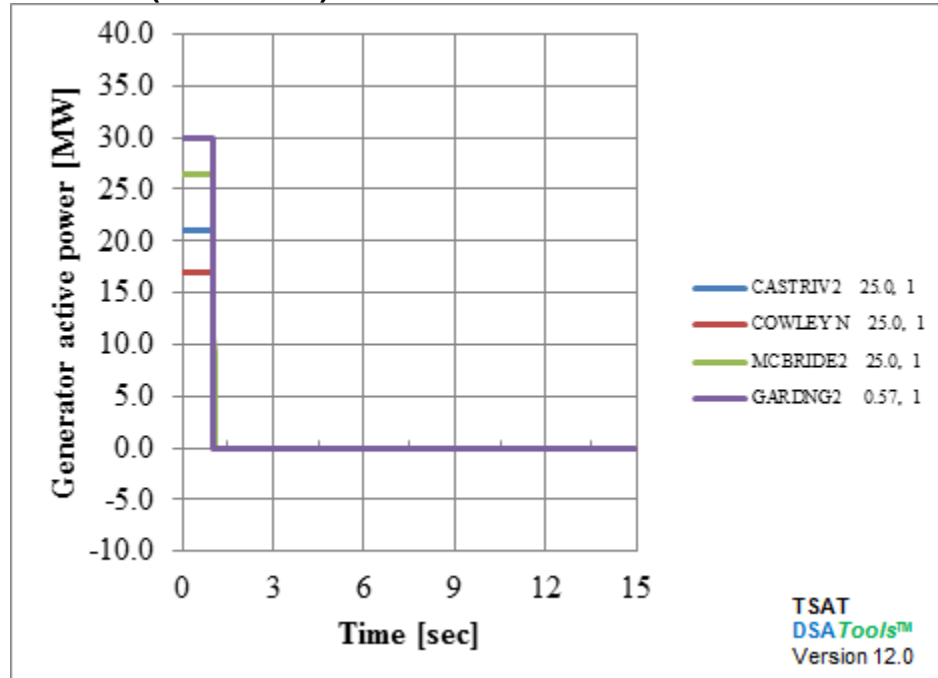
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



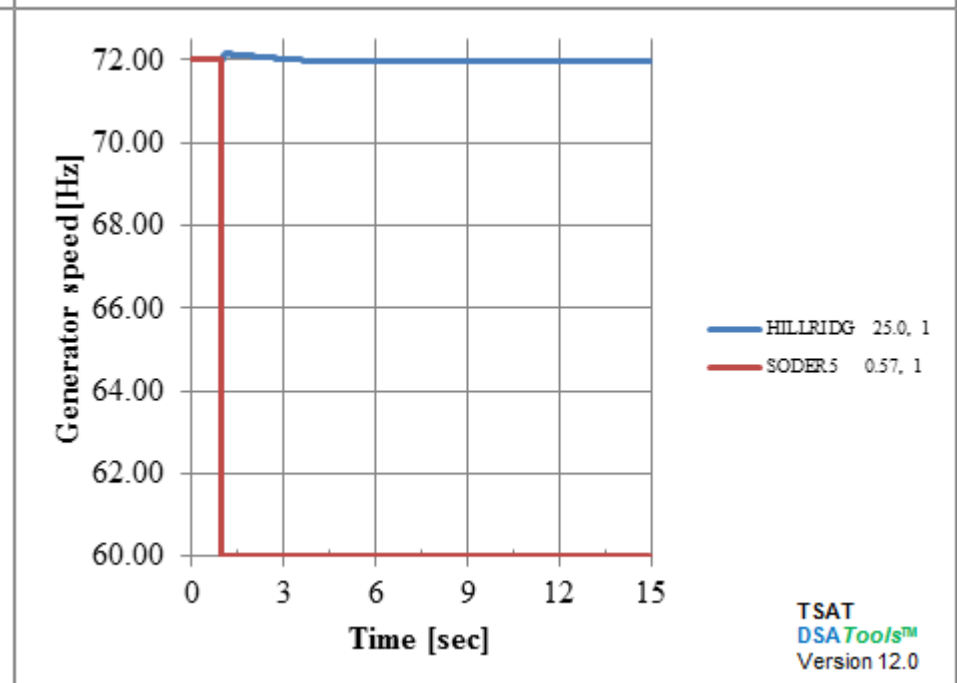
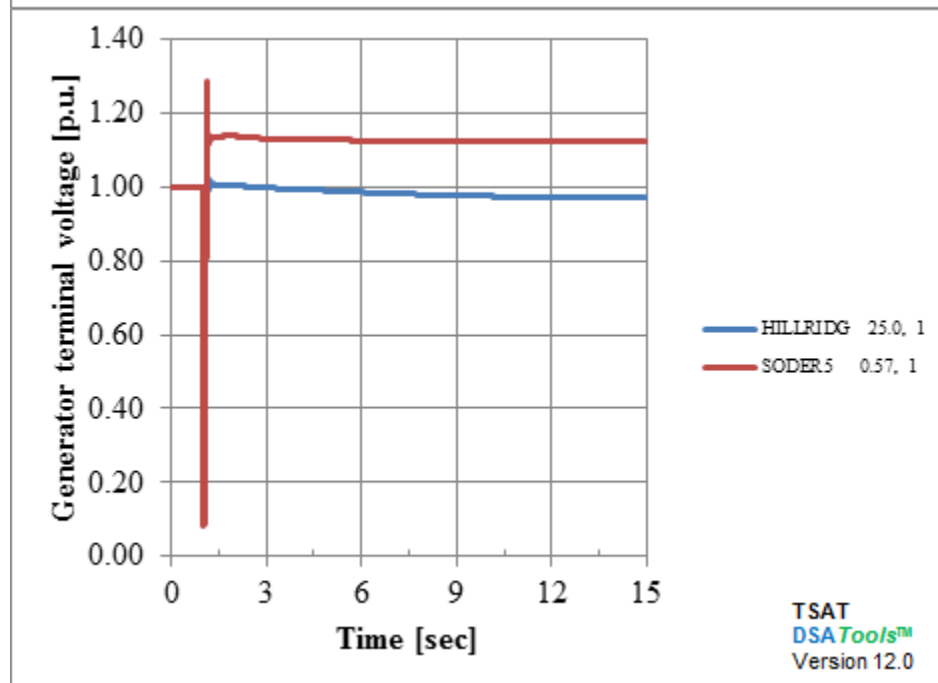
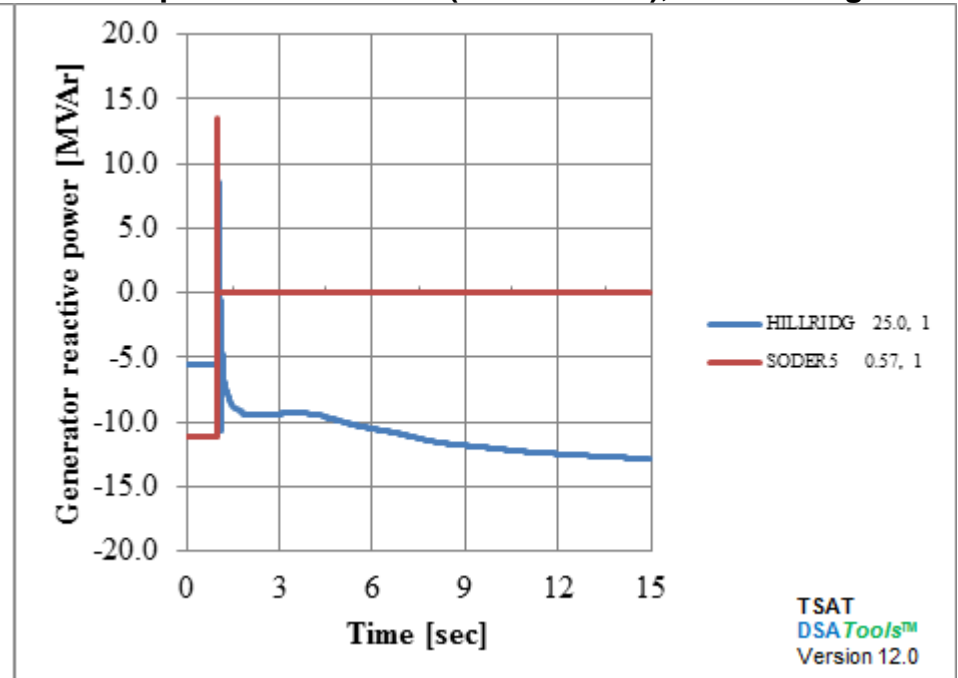
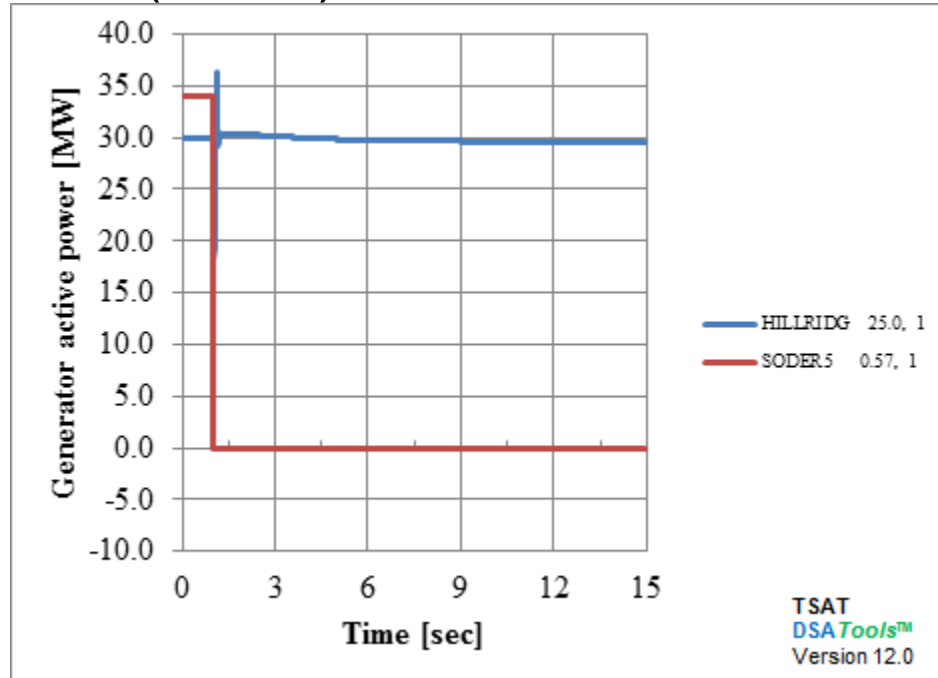
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



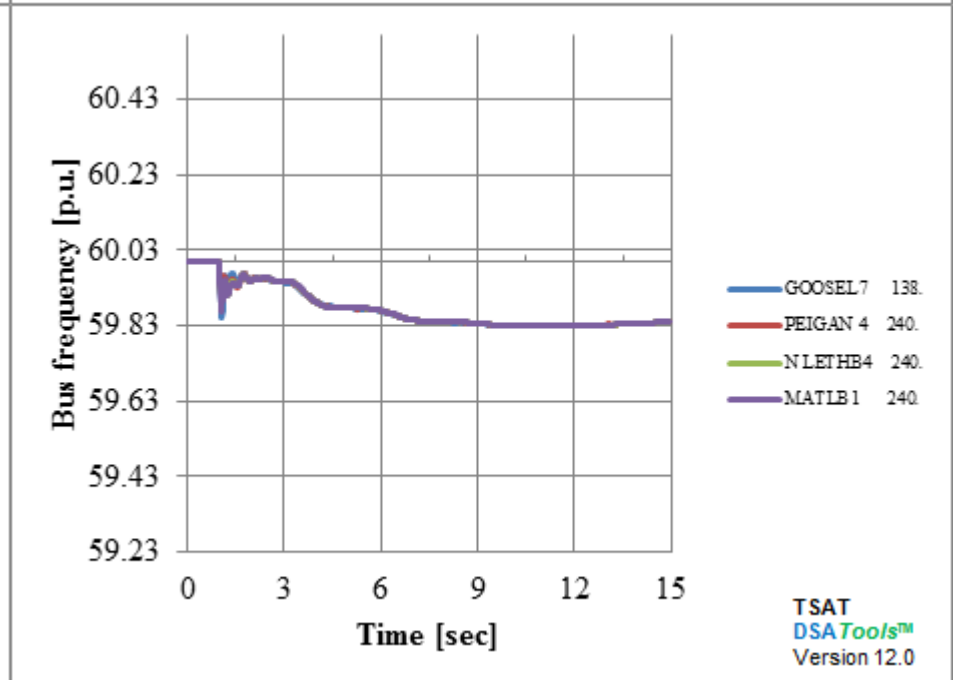
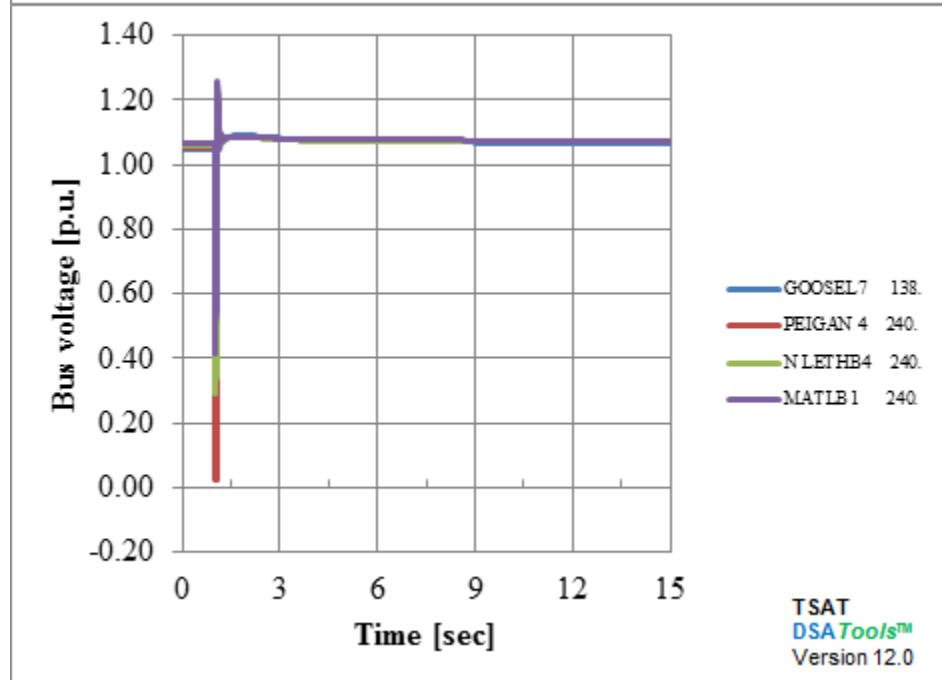
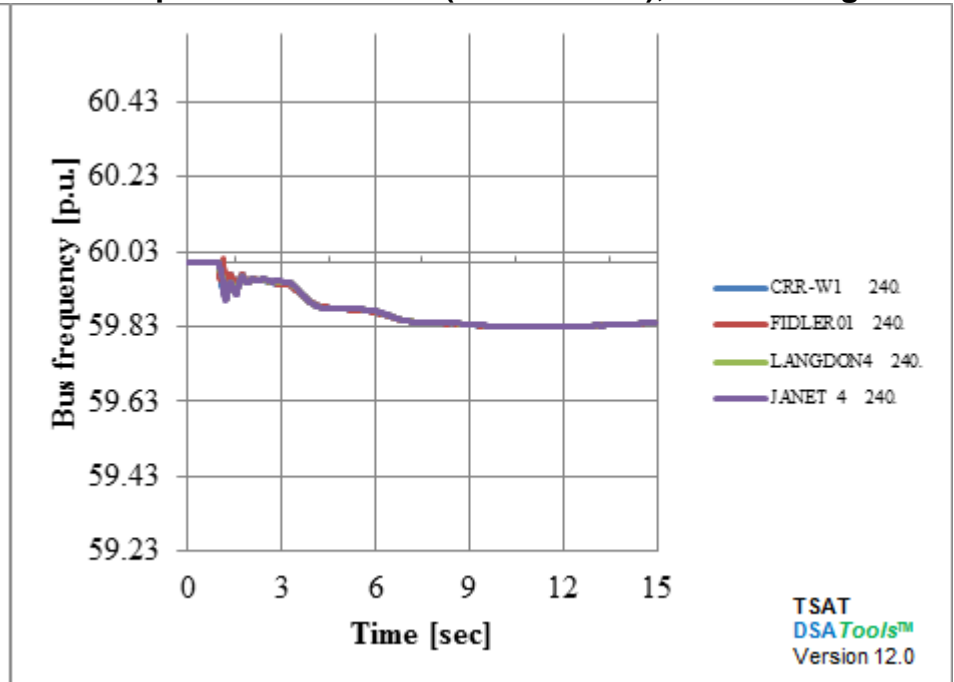
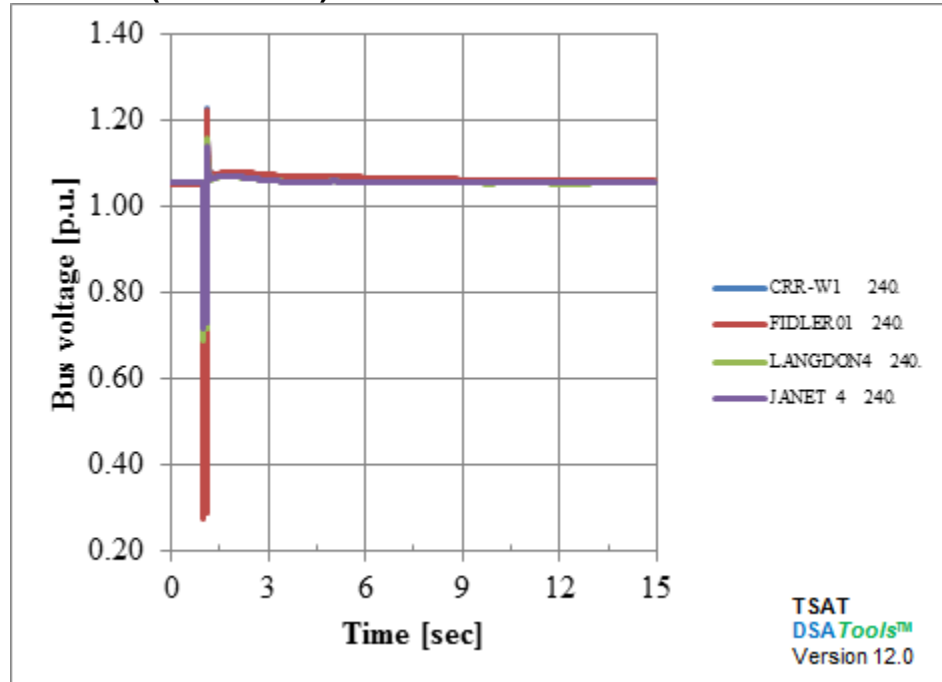
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



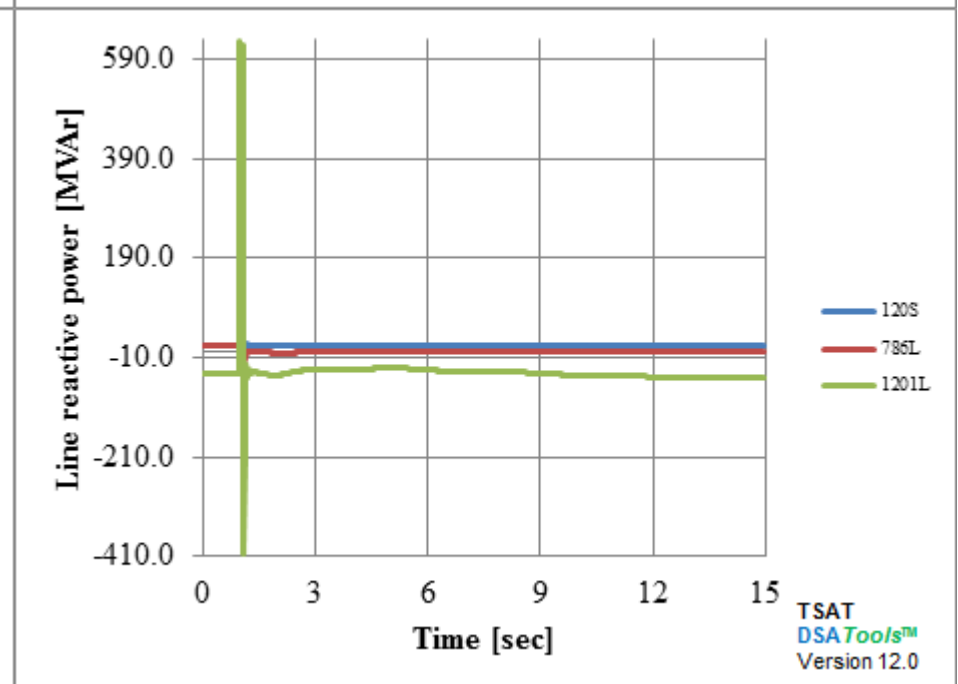
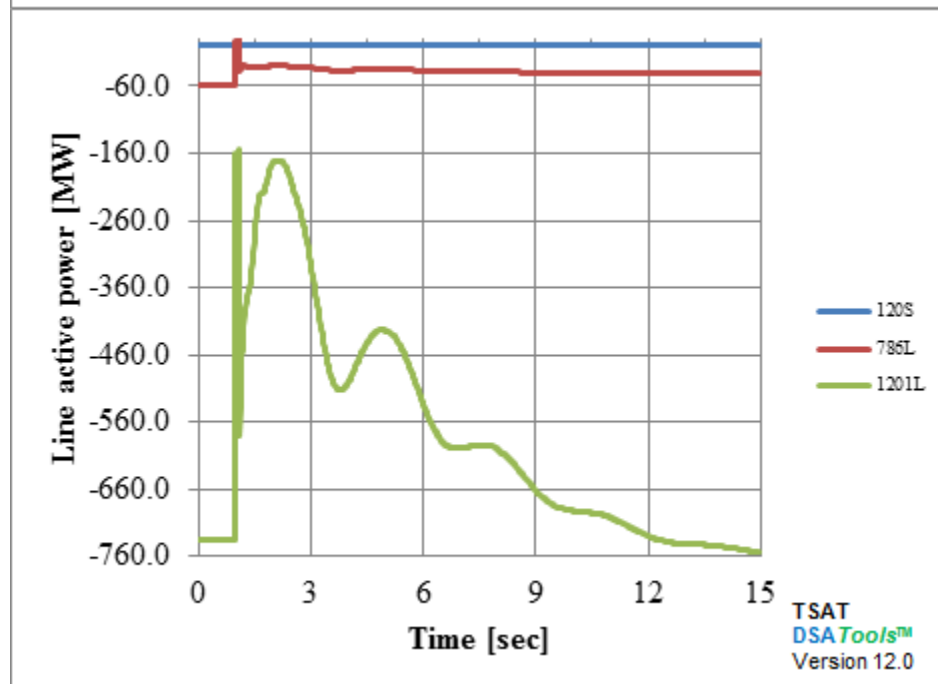
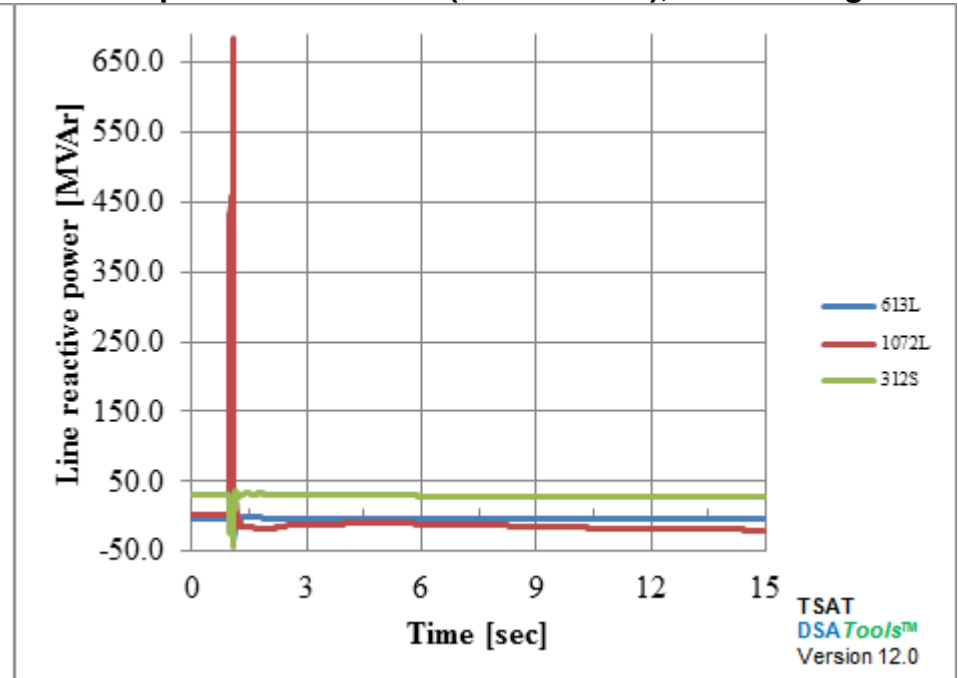
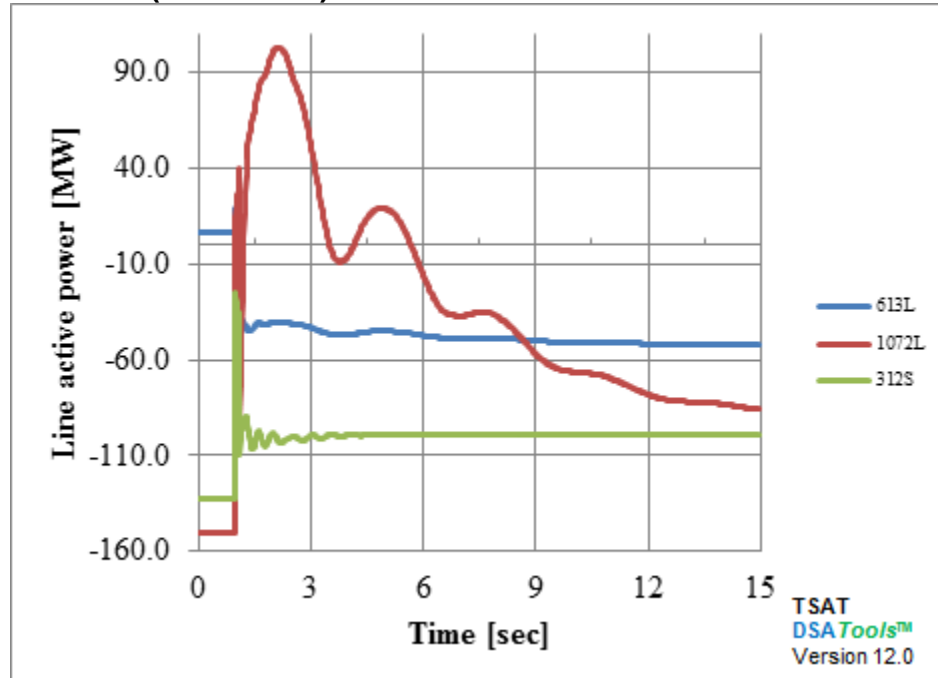
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



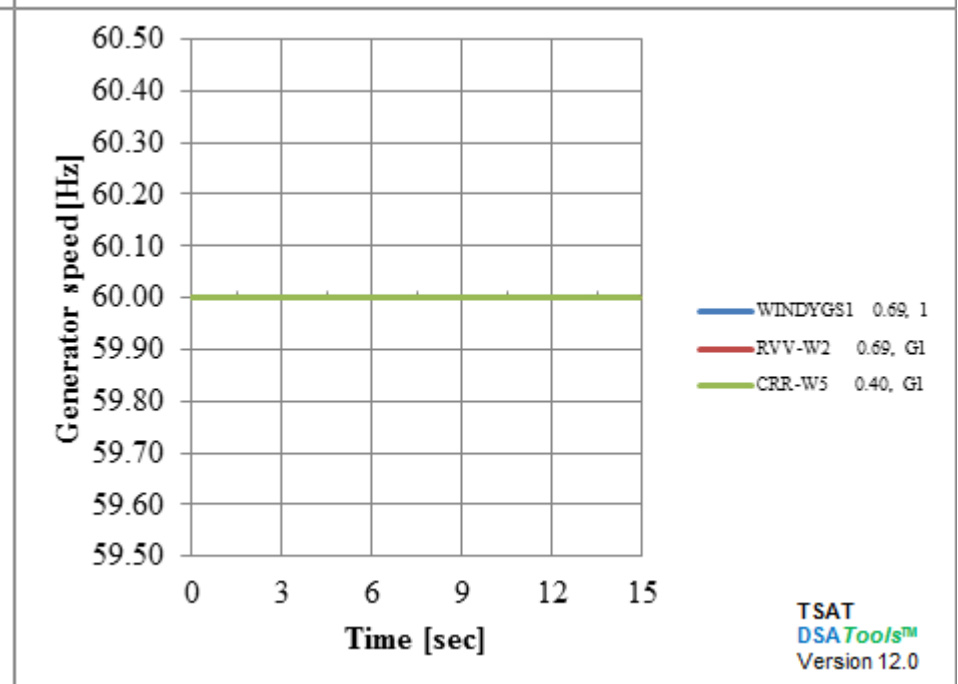
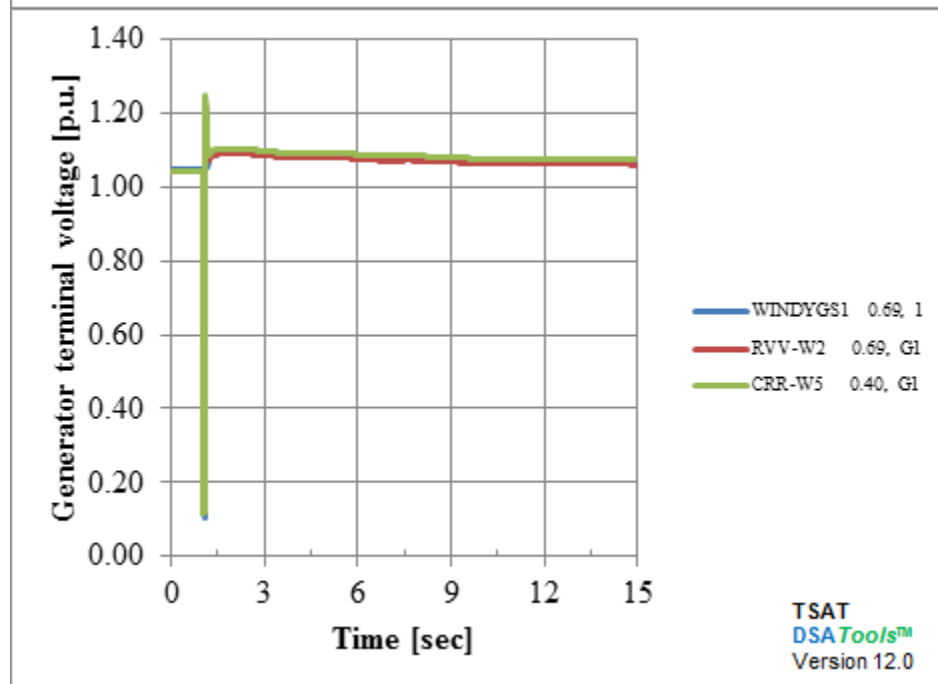
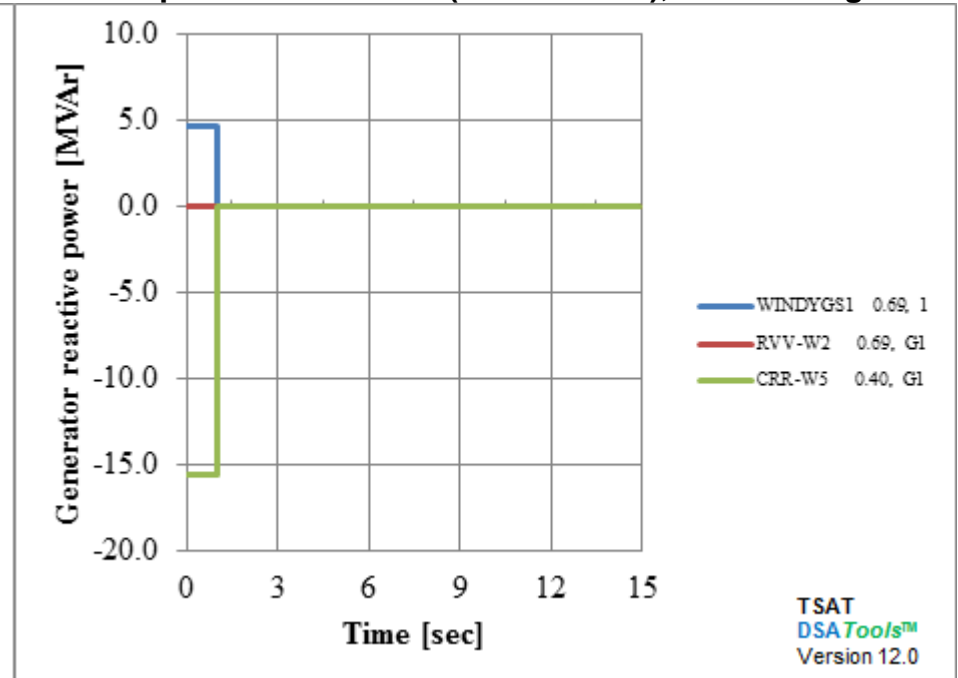
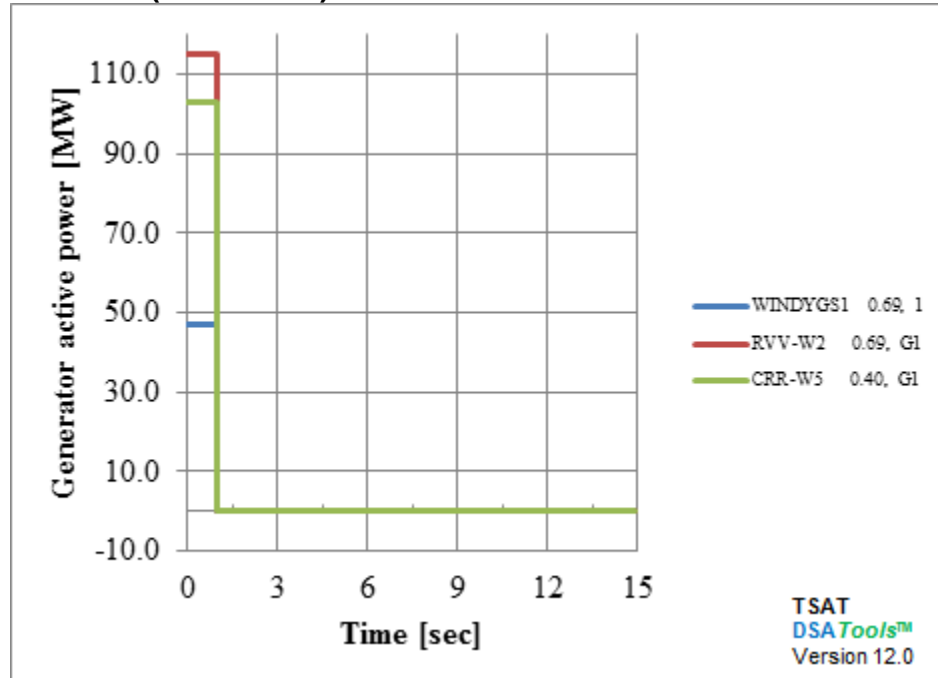
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



7 -- 956L (59S - 103S) NEAR 103S

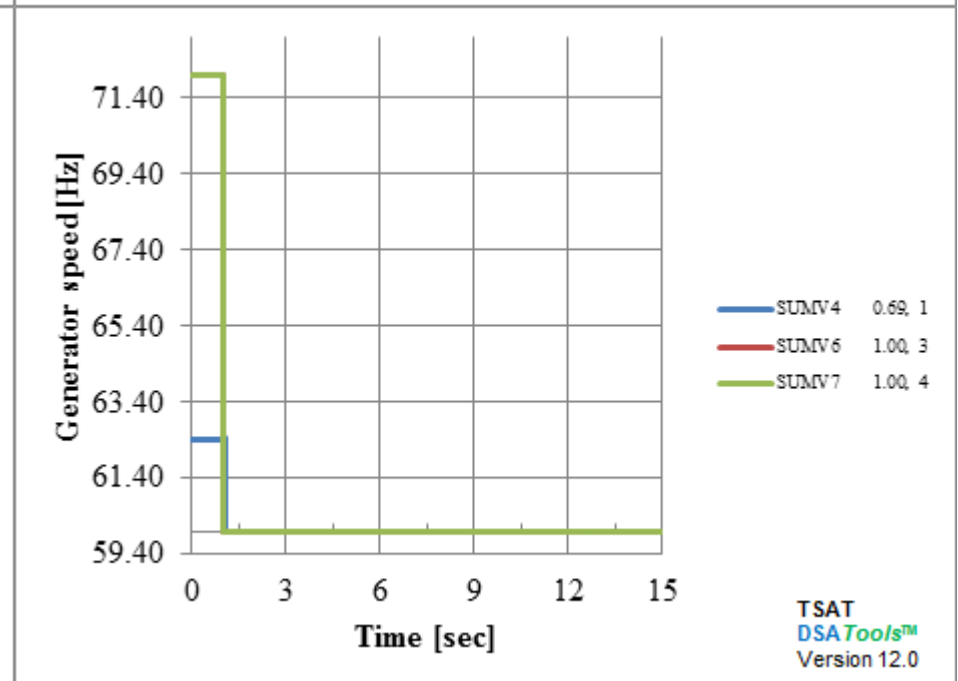
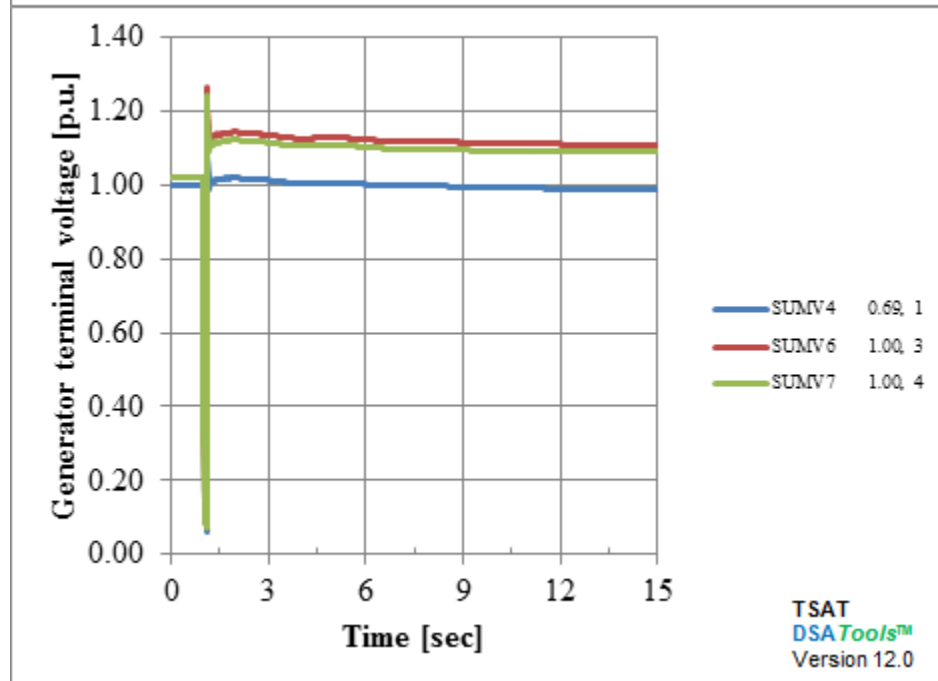
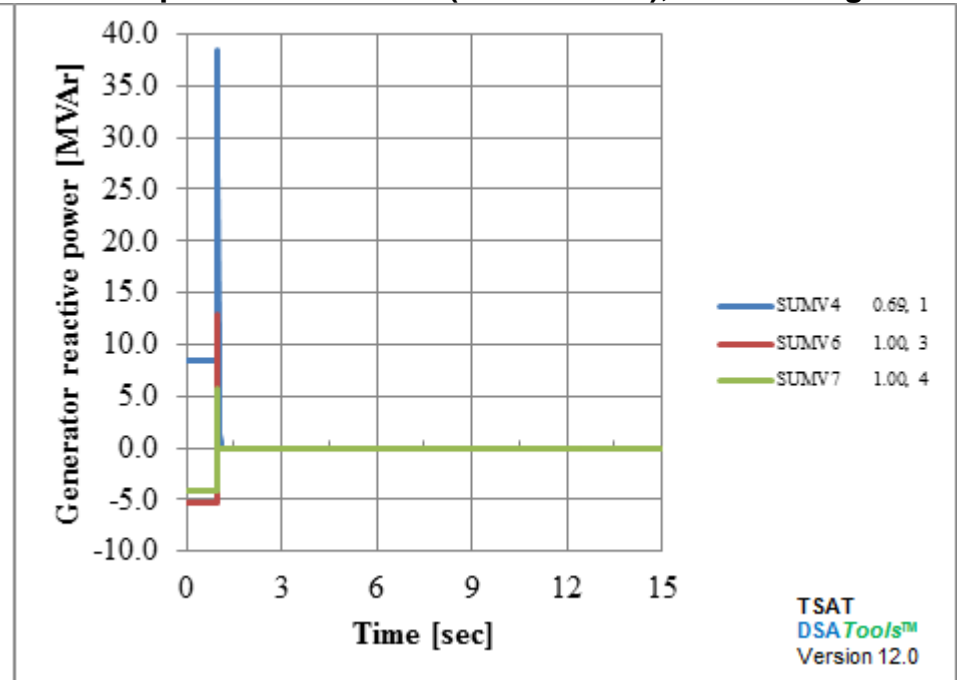
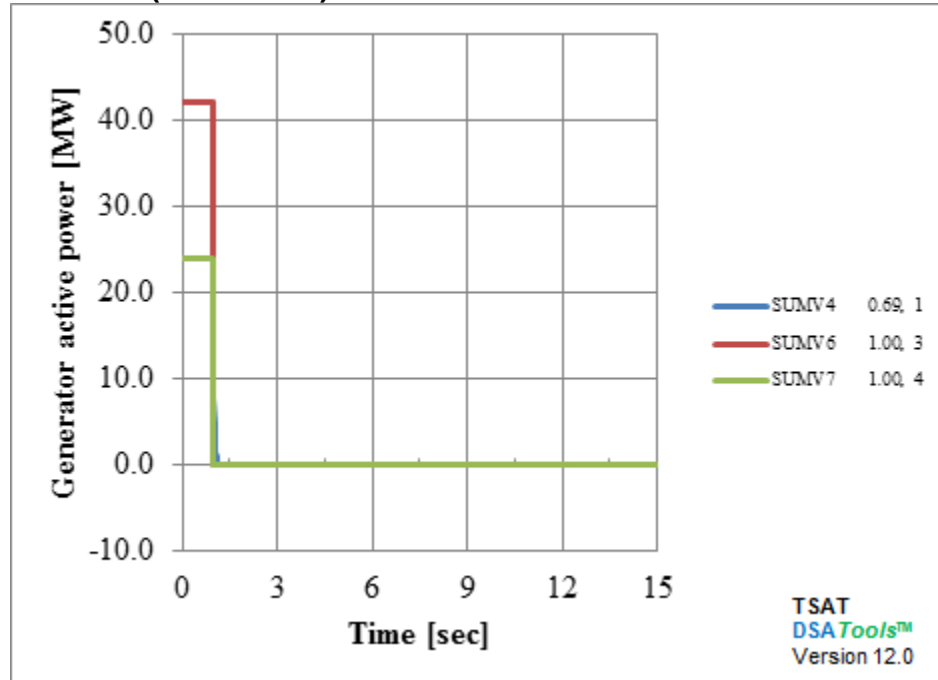
Proposed Connection (Alternative 2), Summer Light 2017





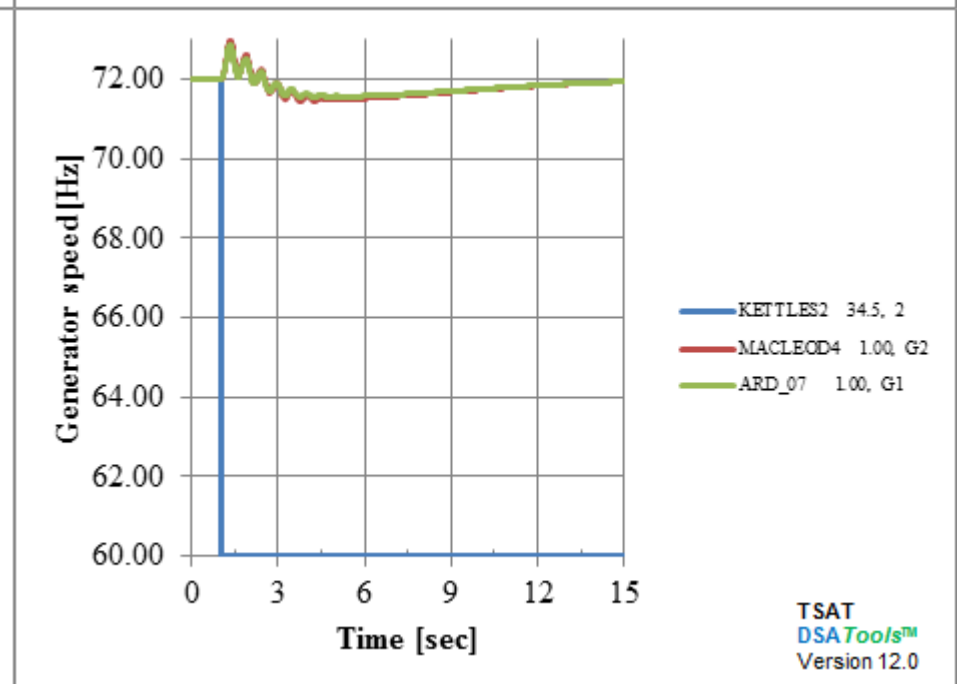
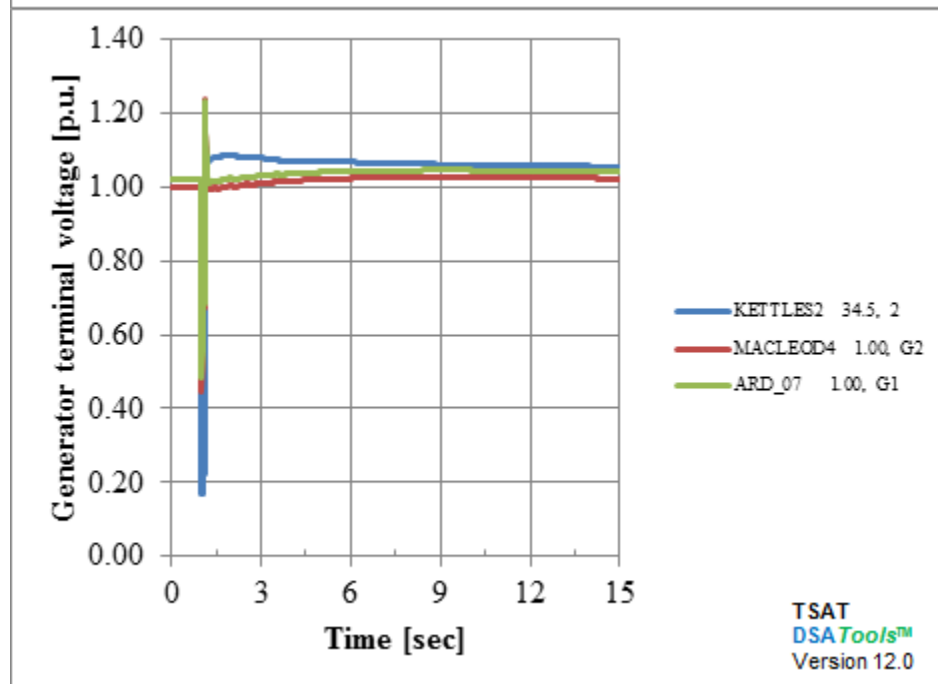
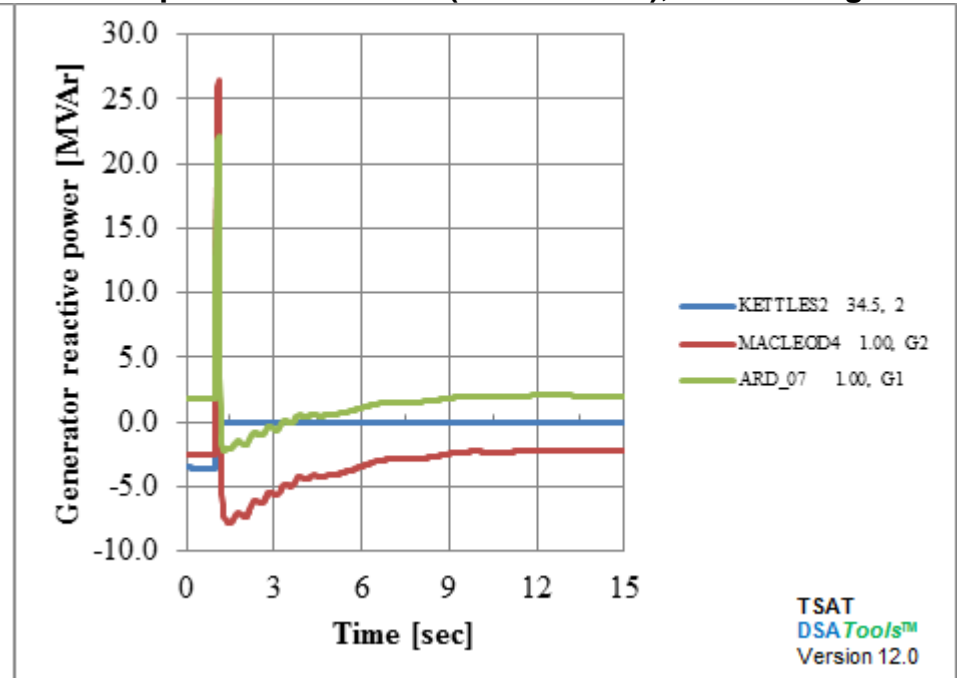
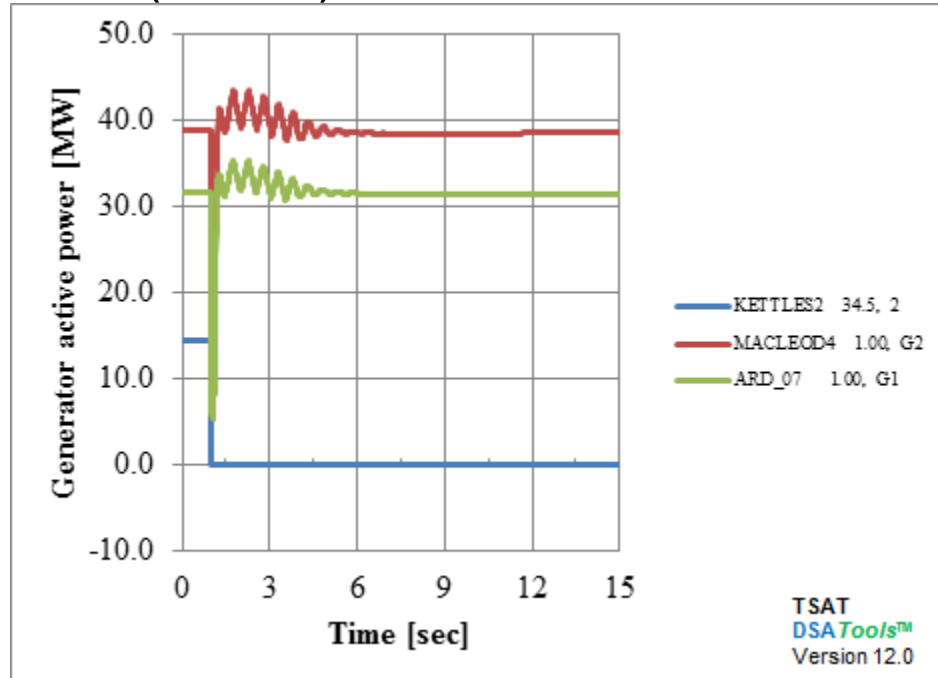
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



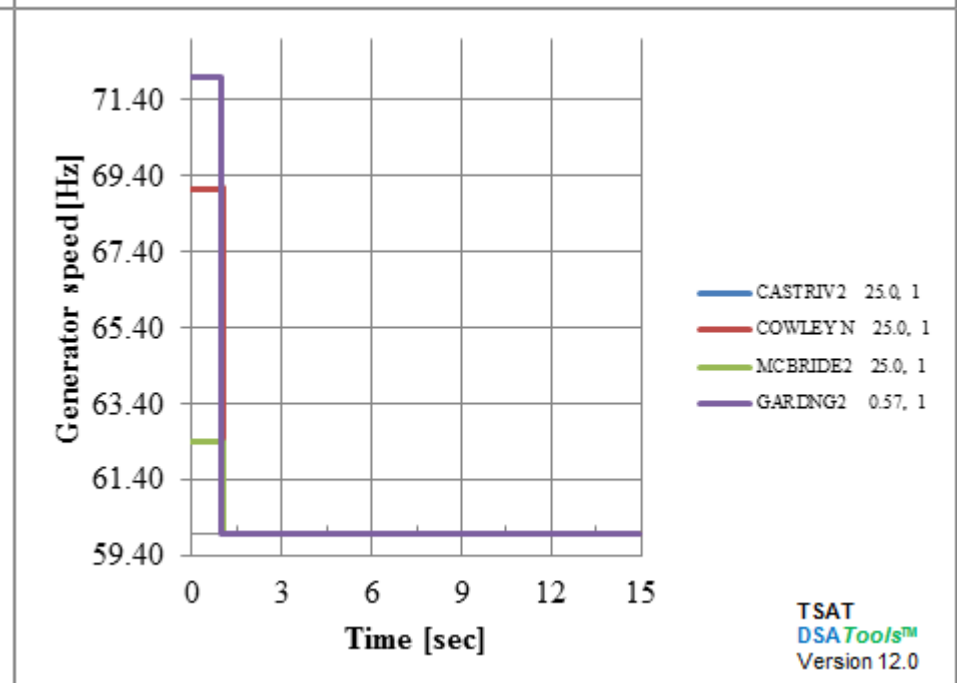
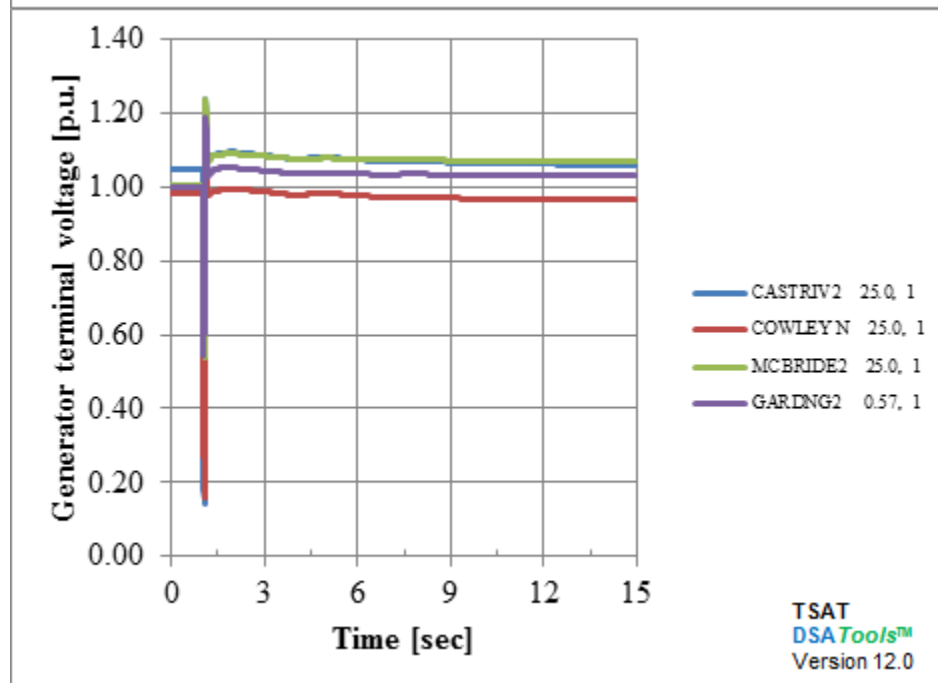
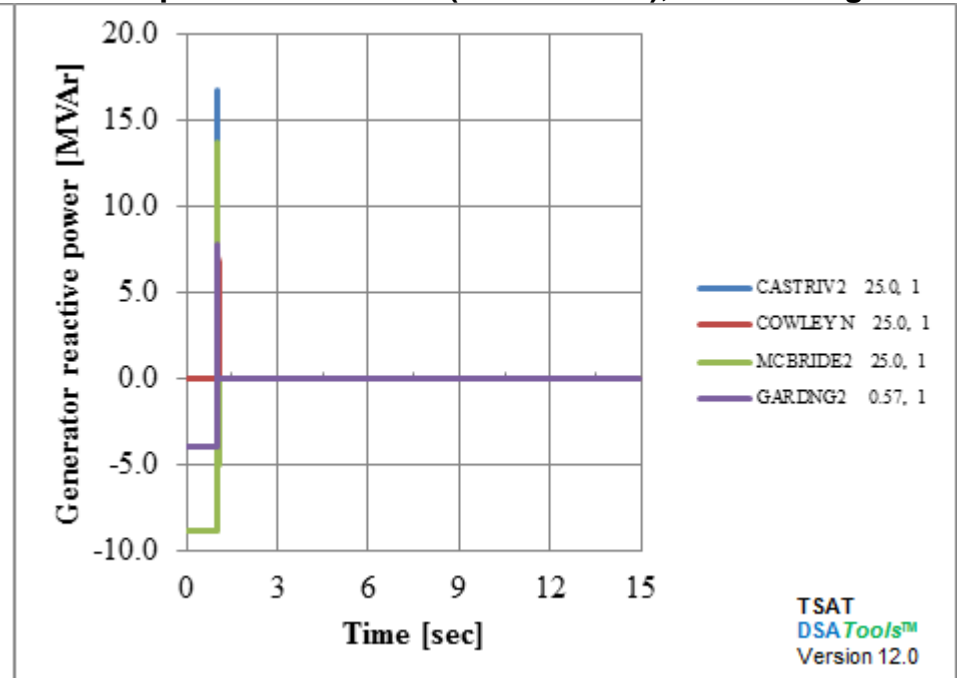
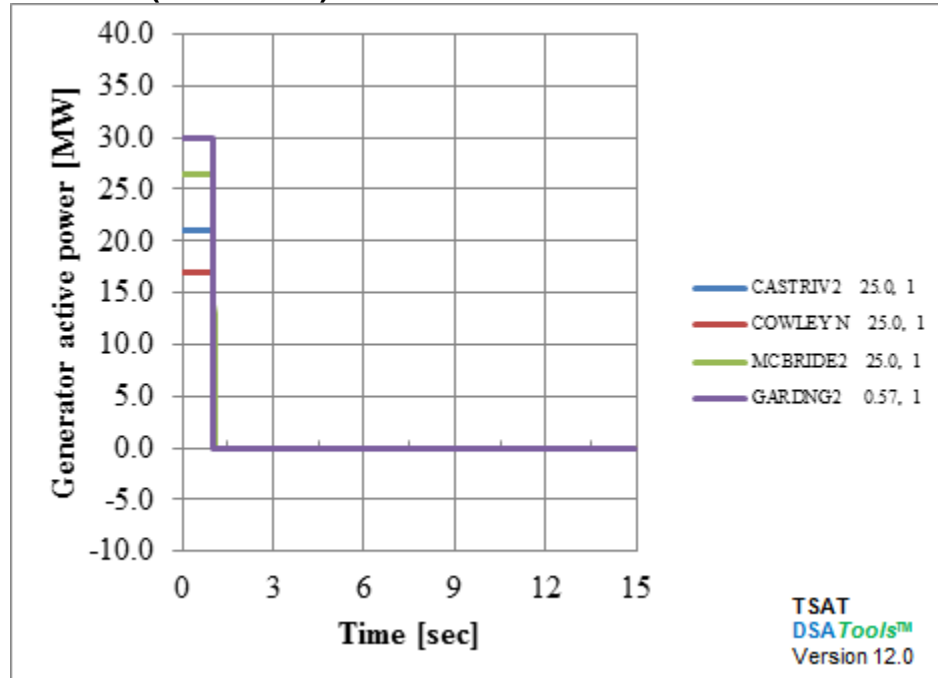
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



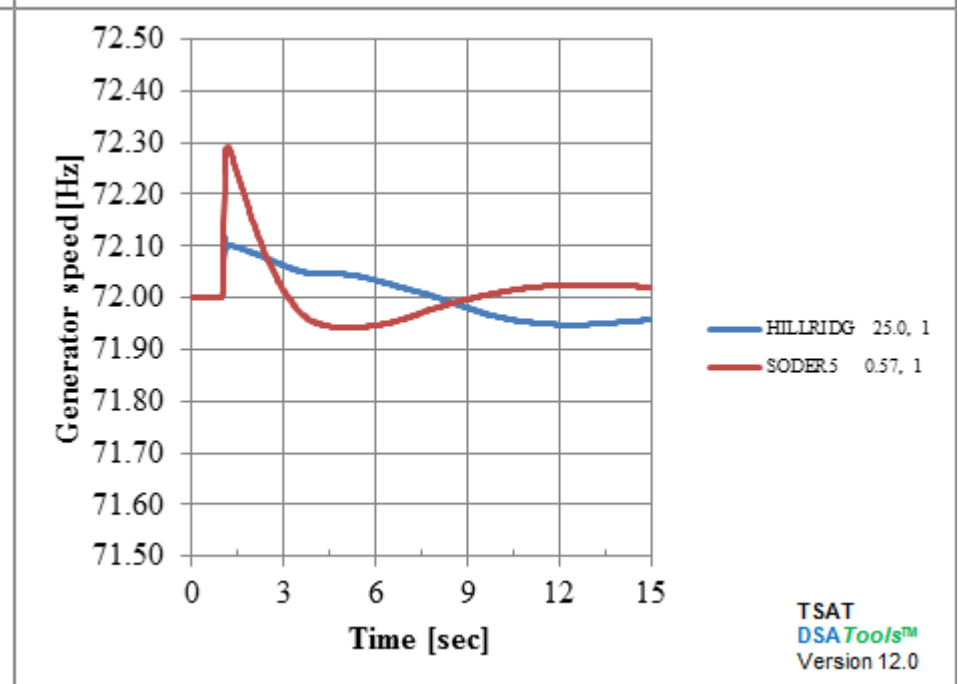
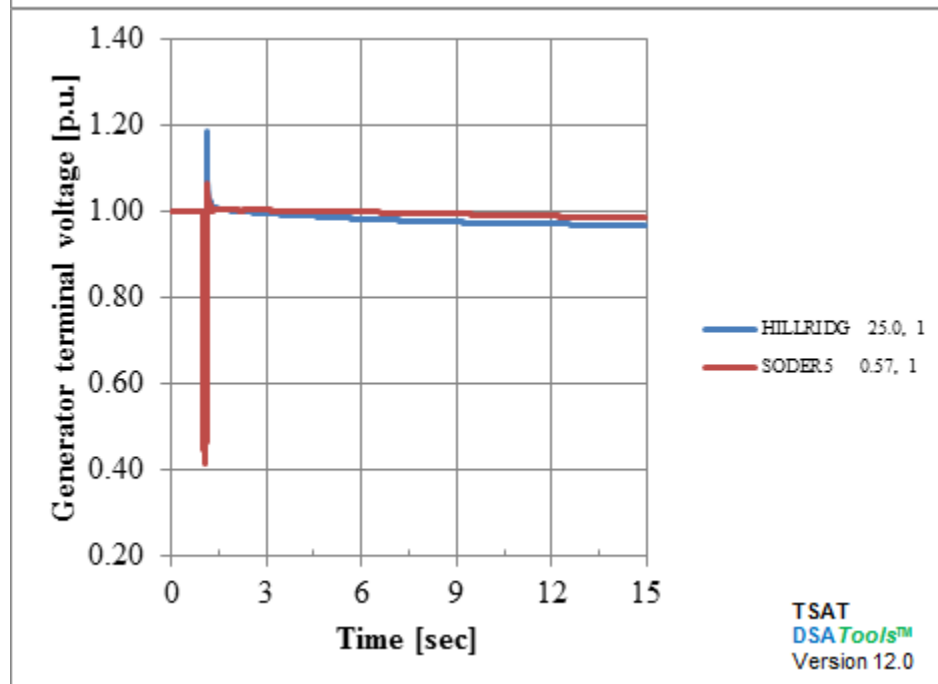
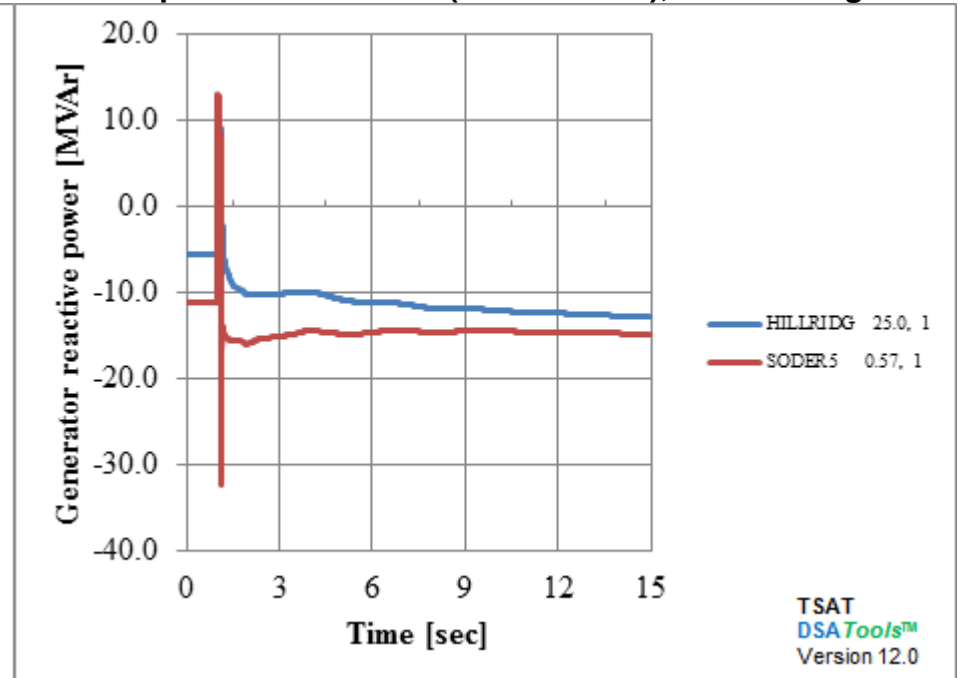
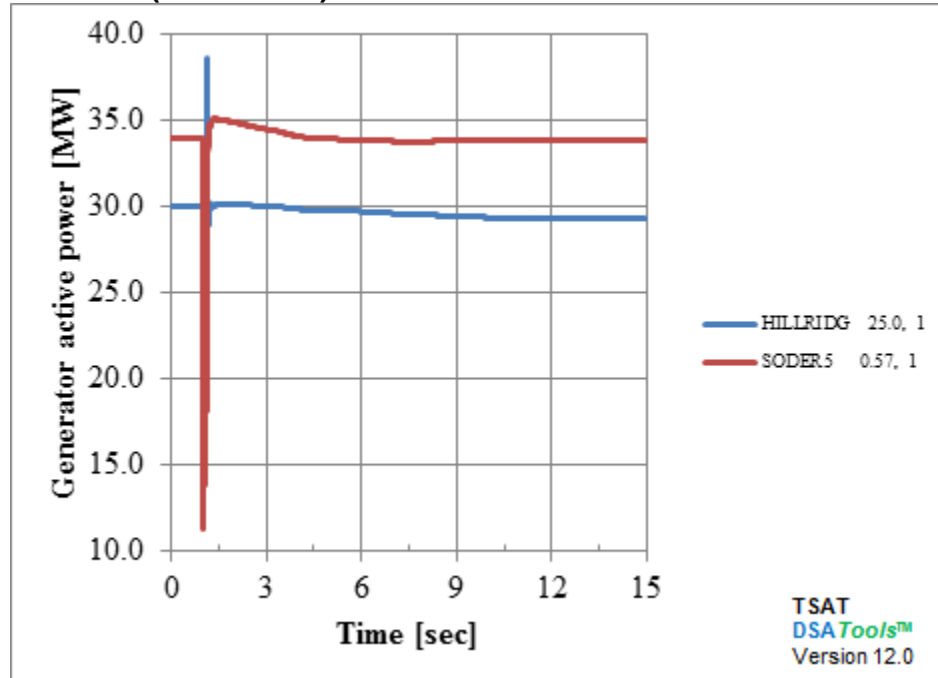
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



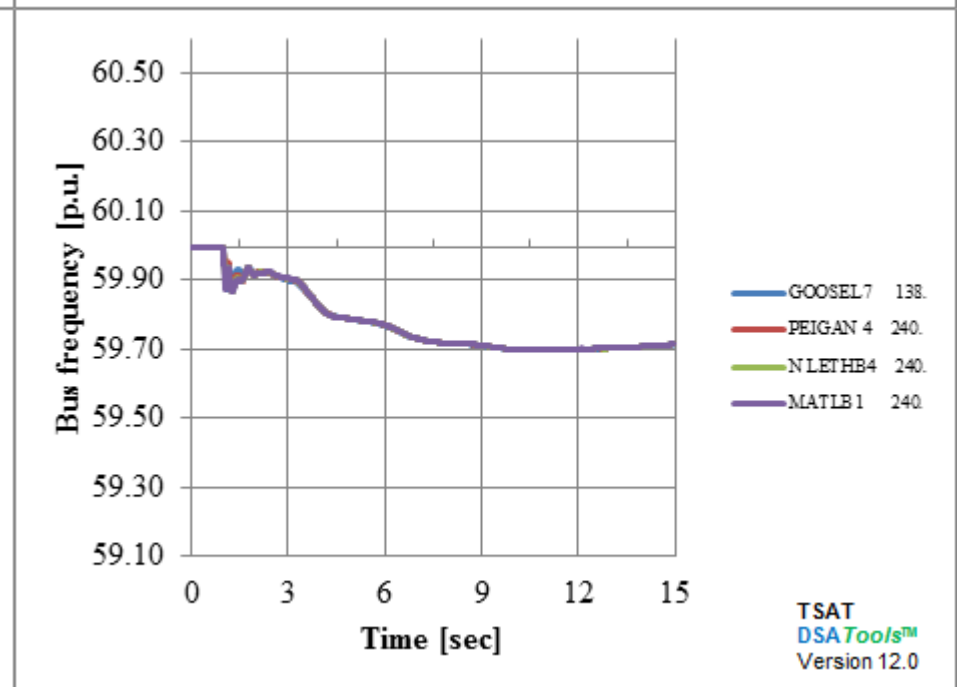
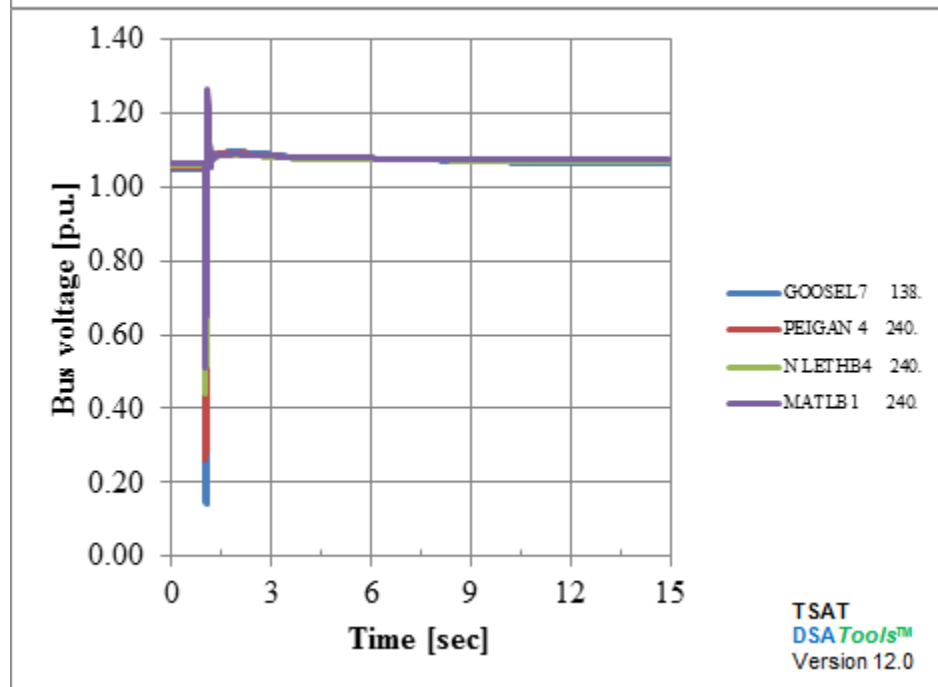
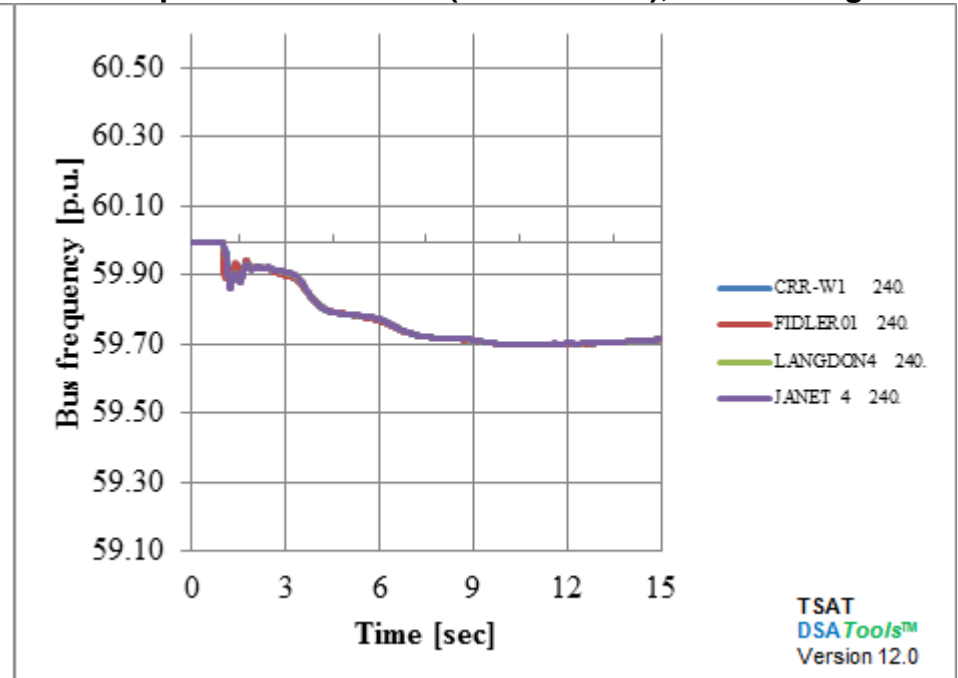
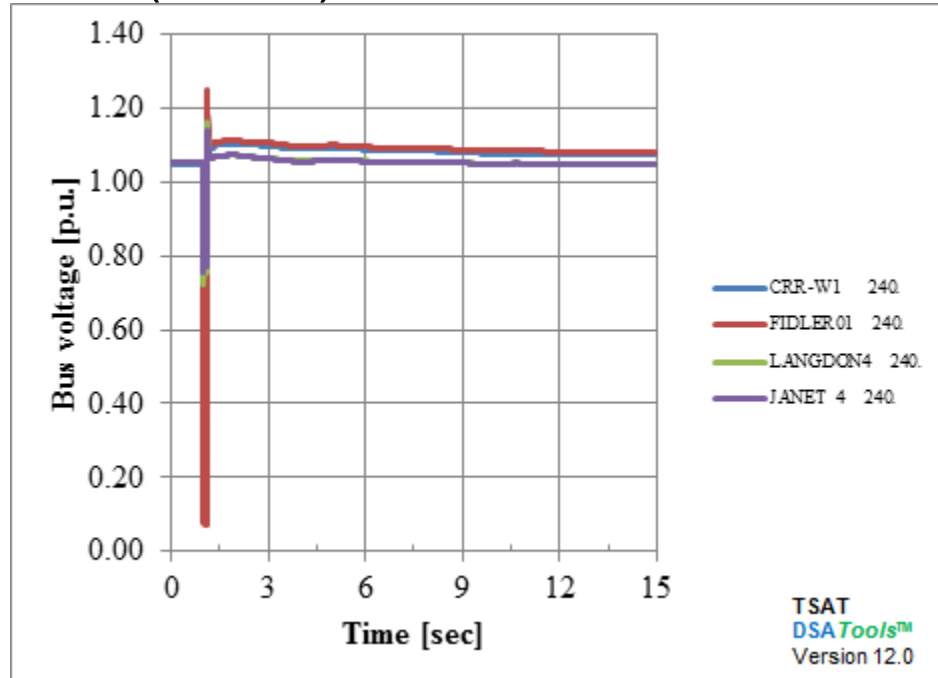
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



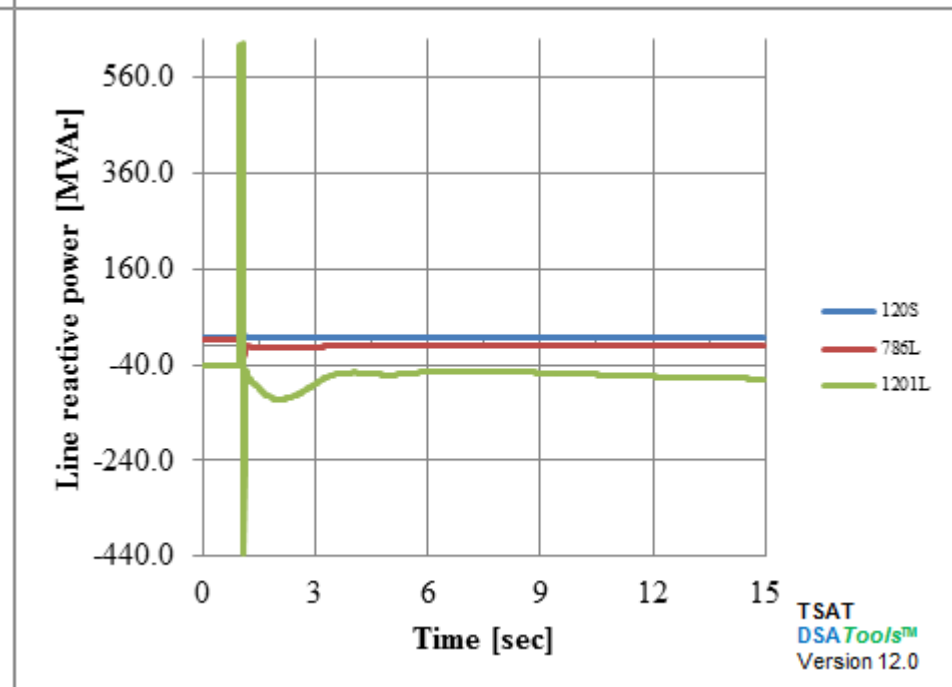
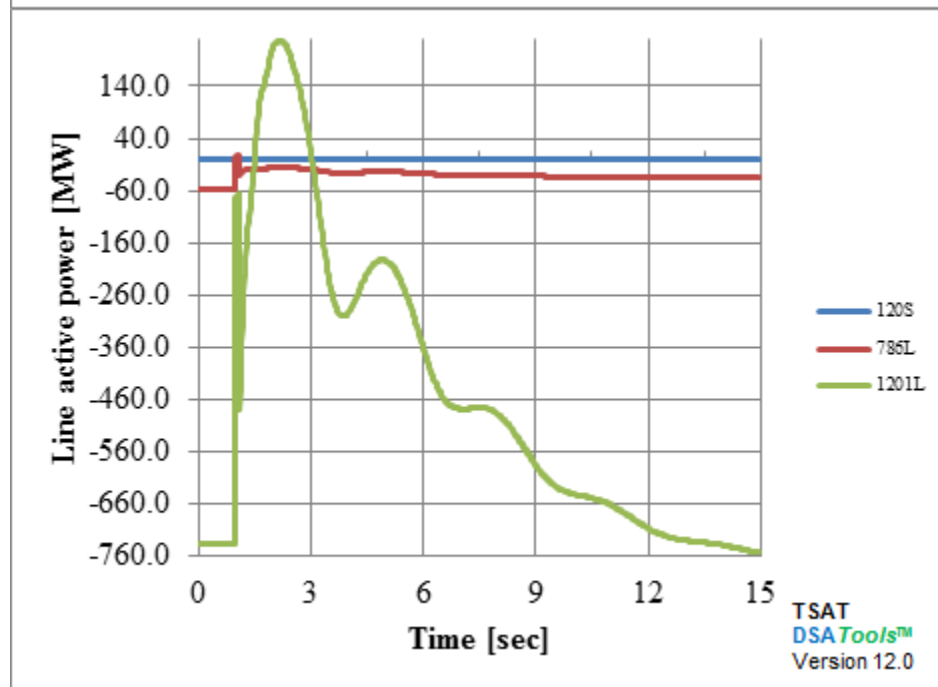
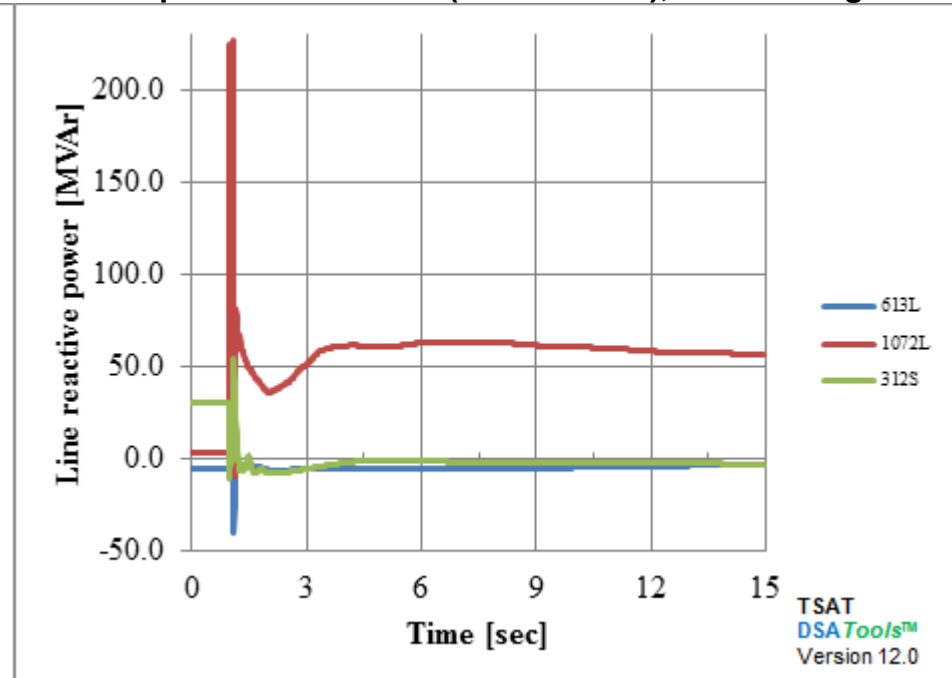
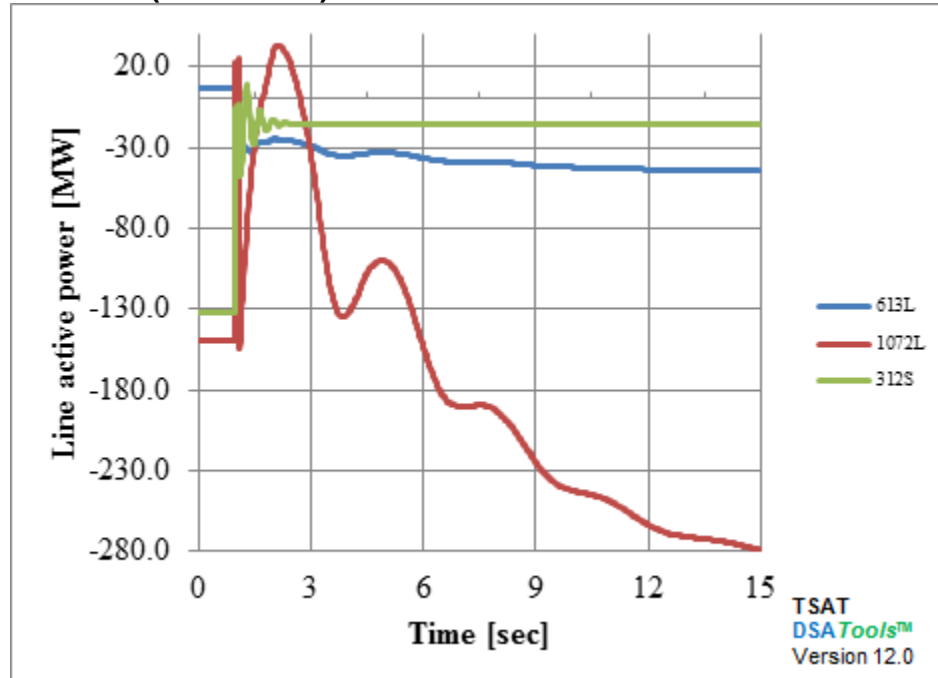
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



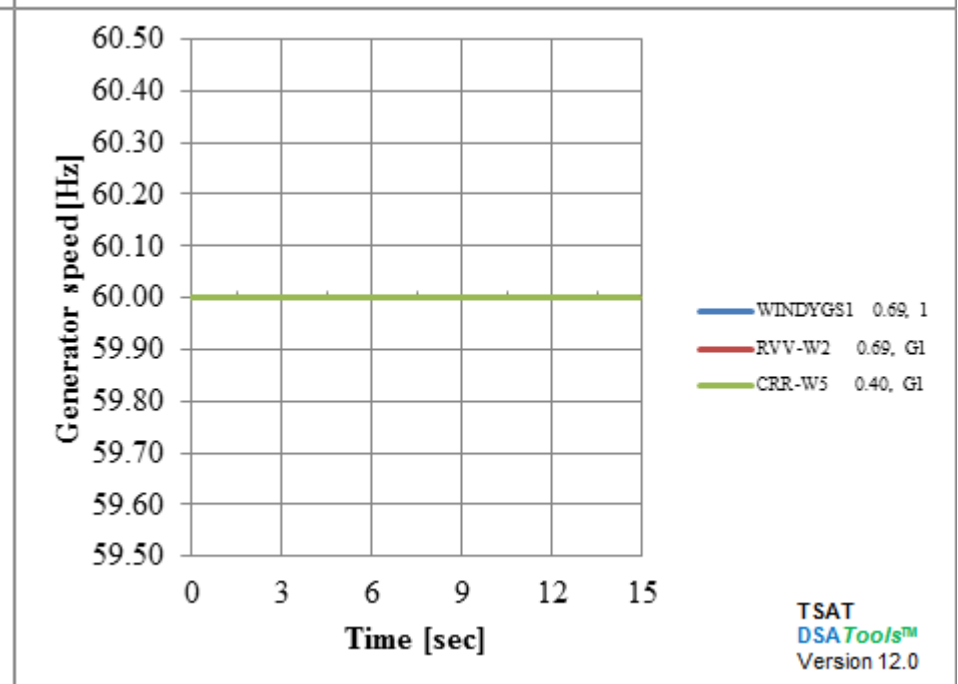
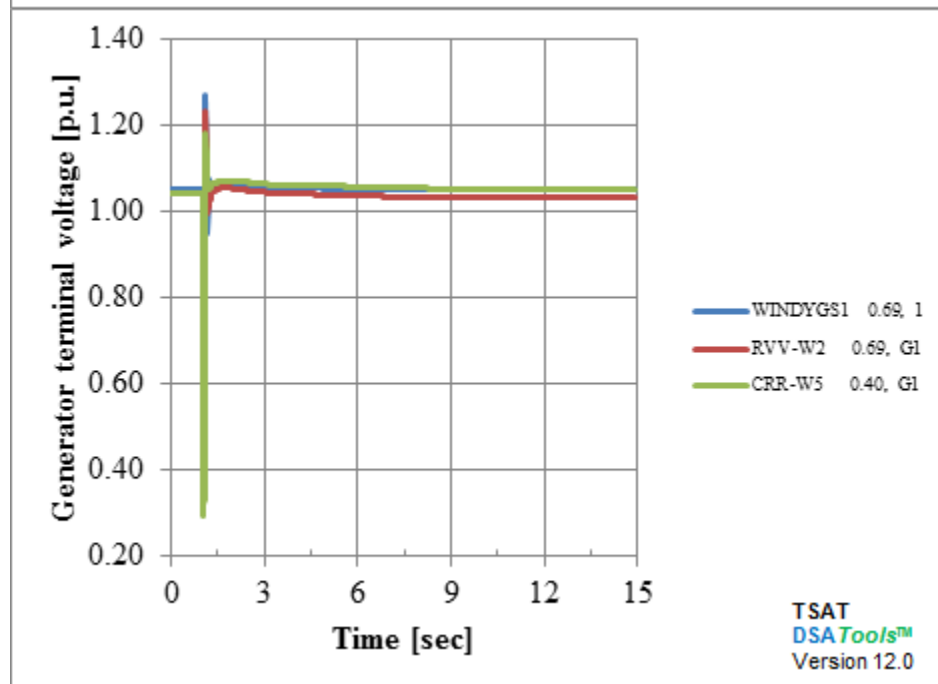
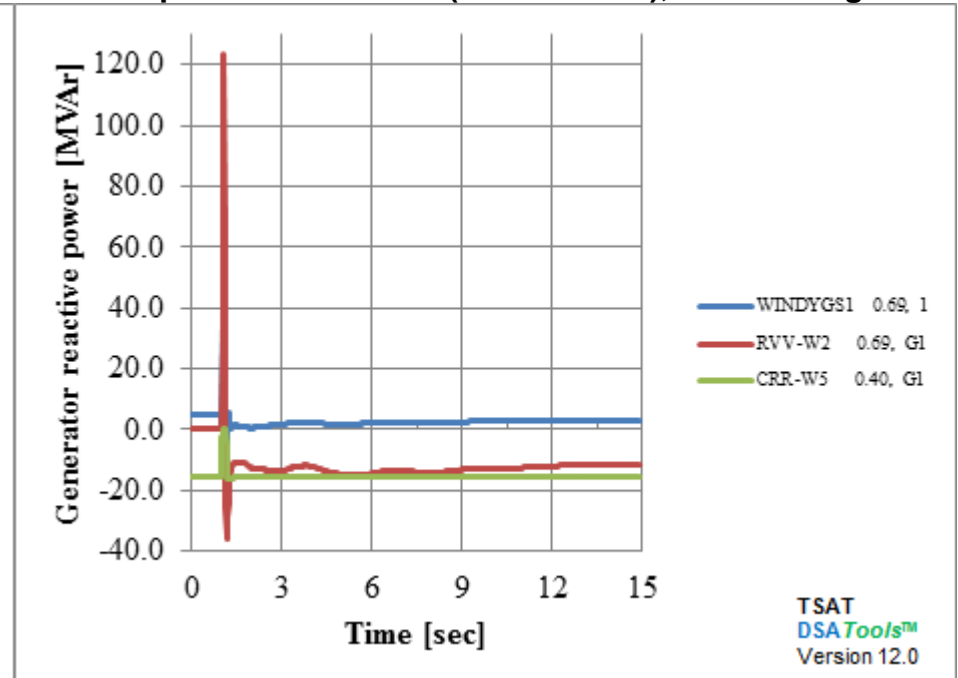
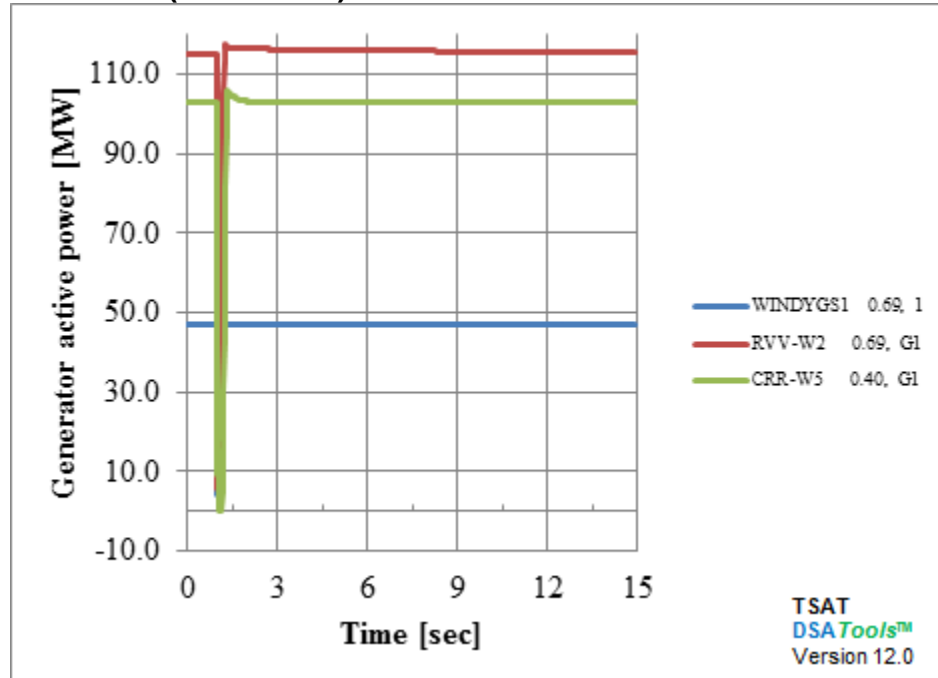
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



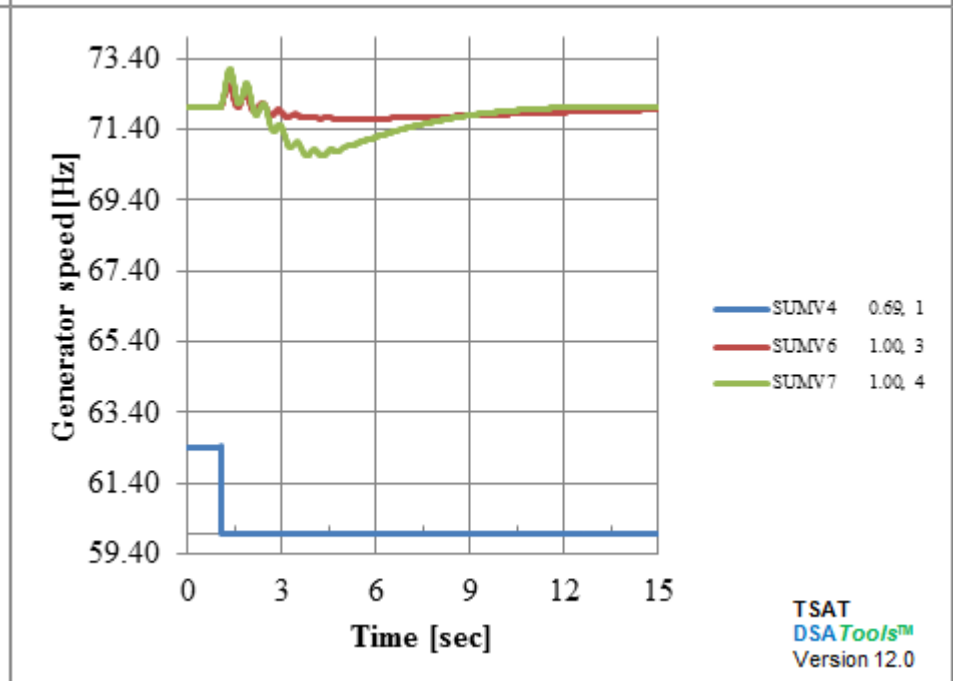
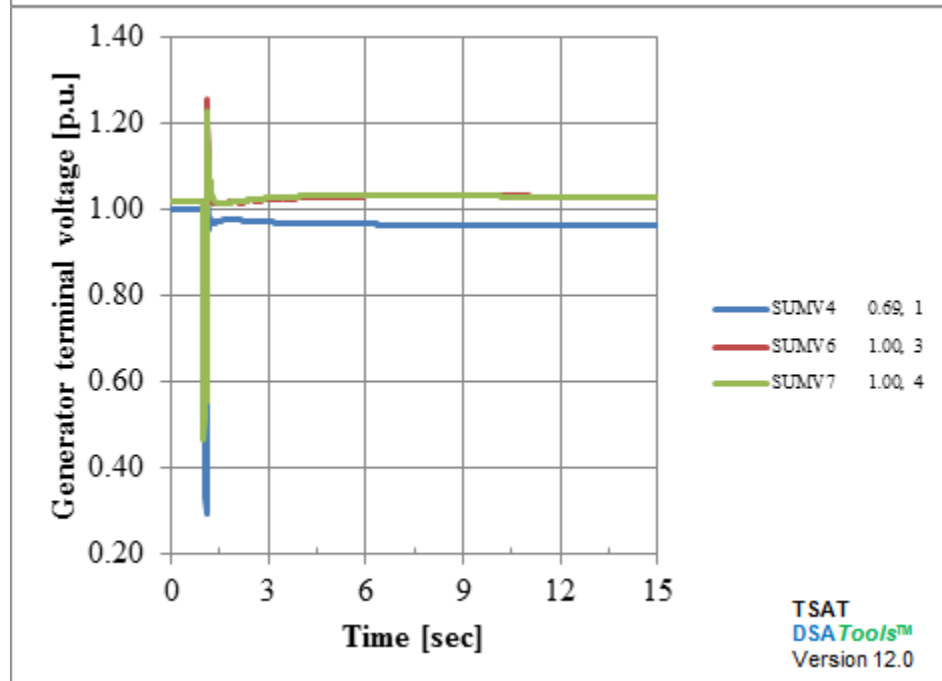
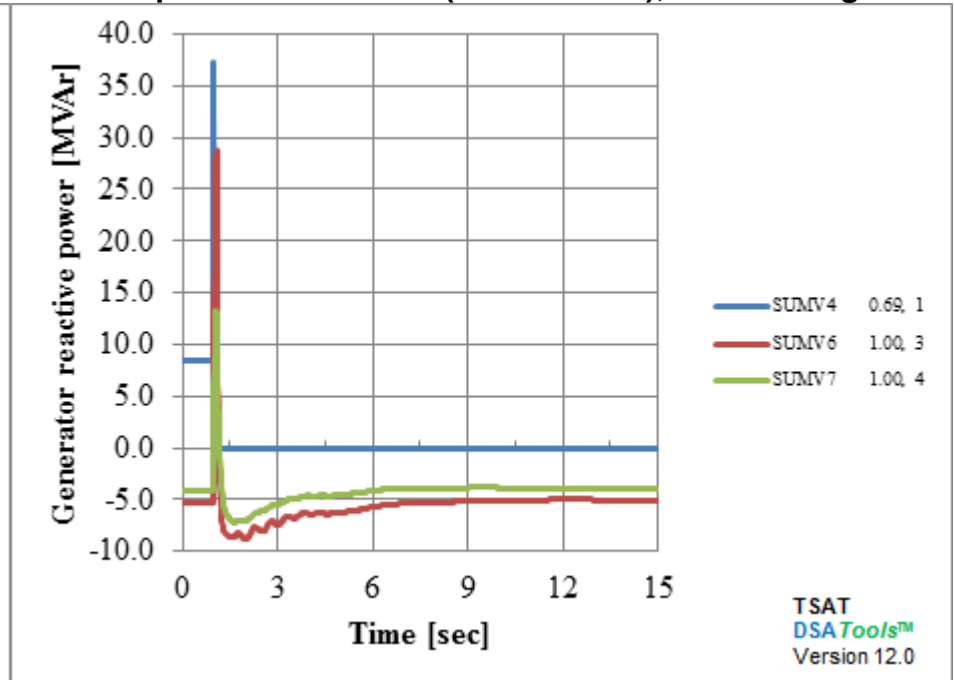
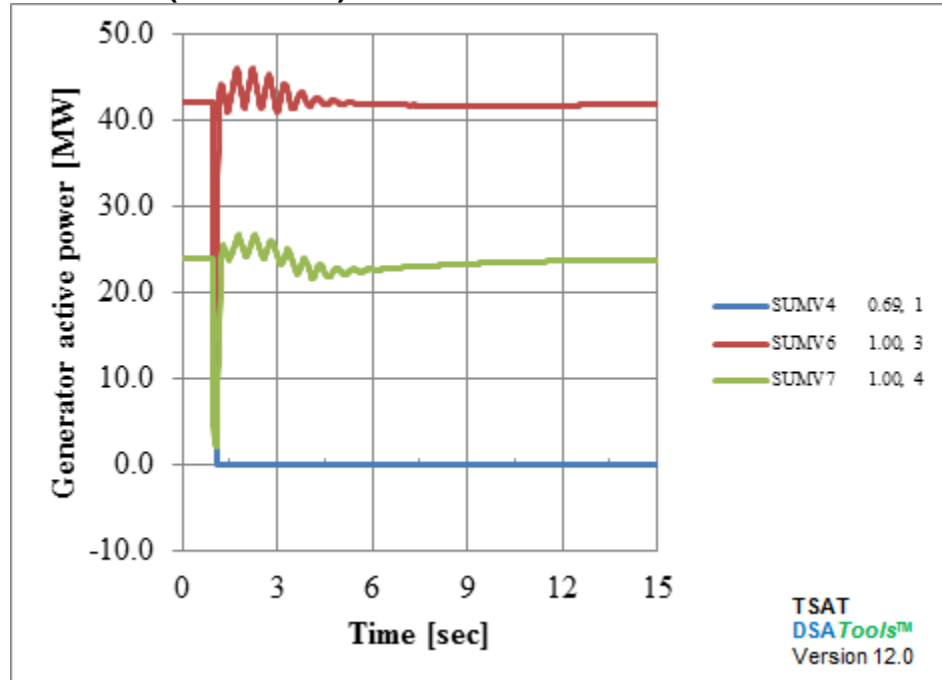
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



8 -- 1084L (59S - 246S) NEAR 59S

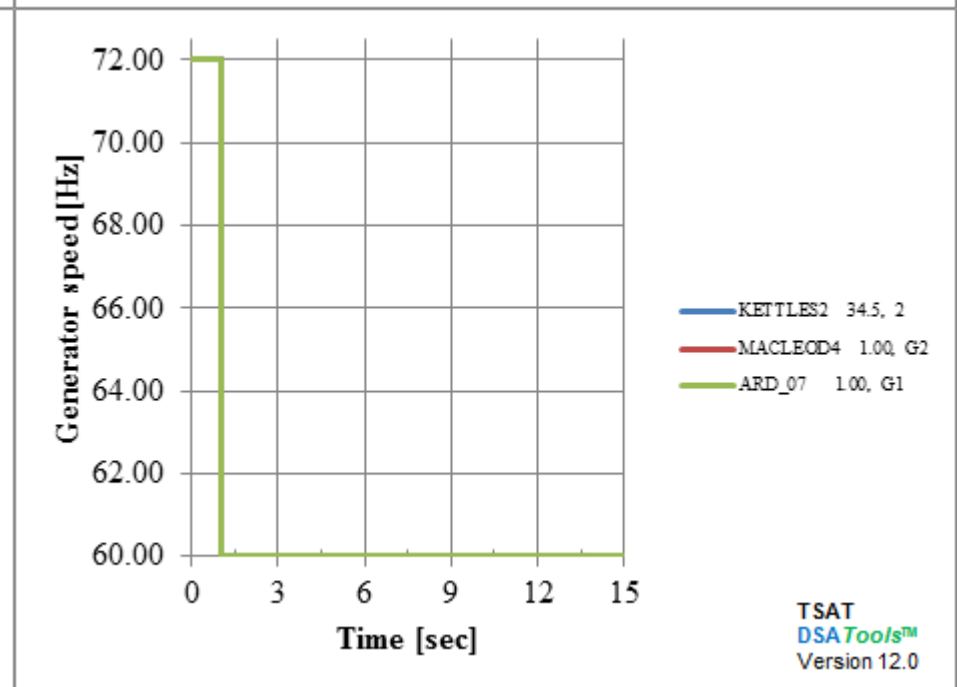
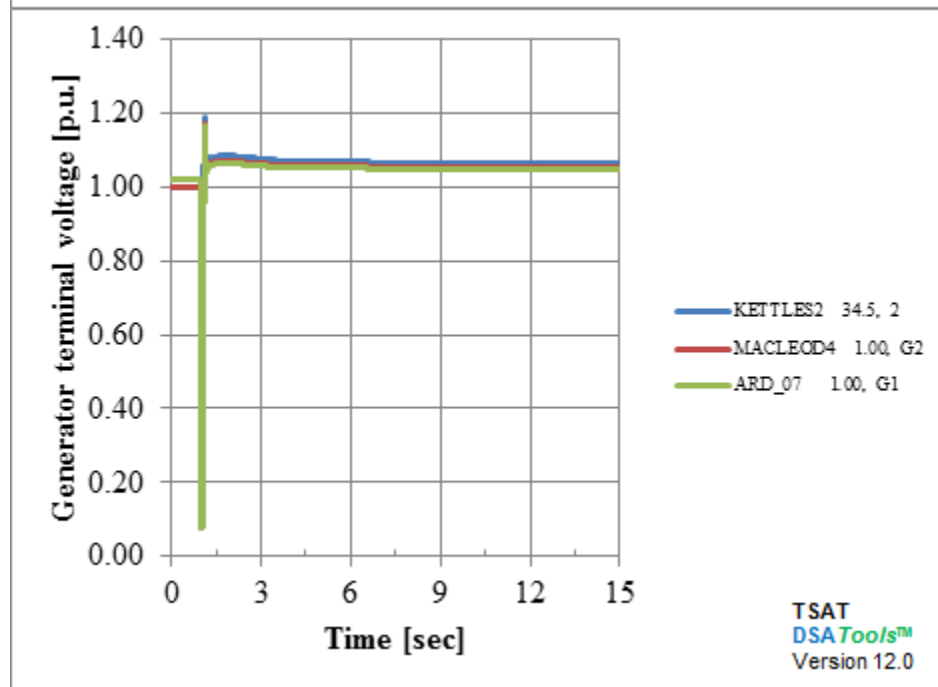
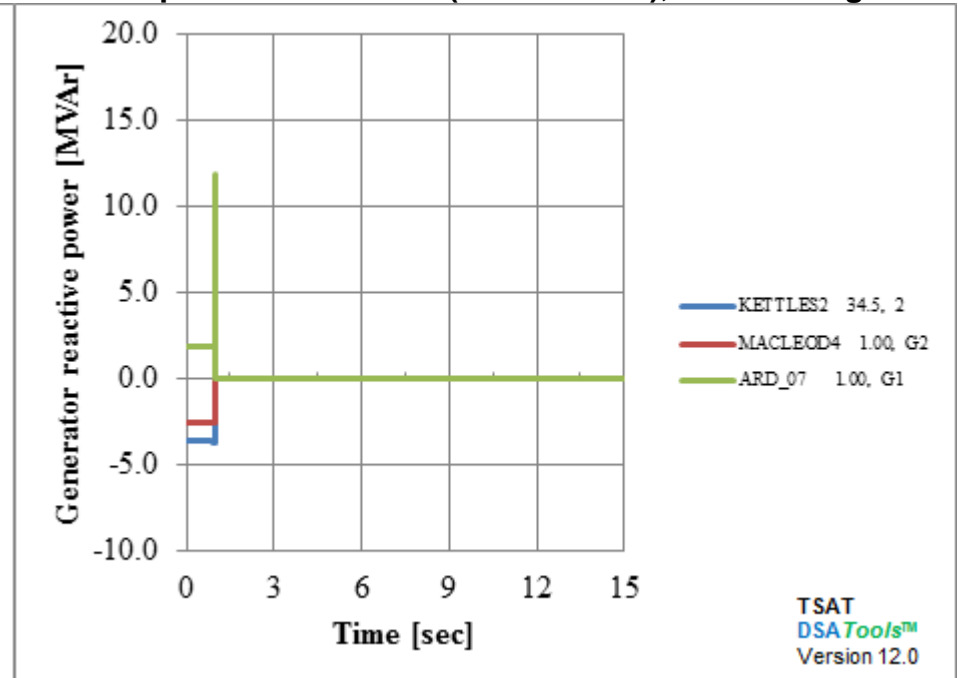
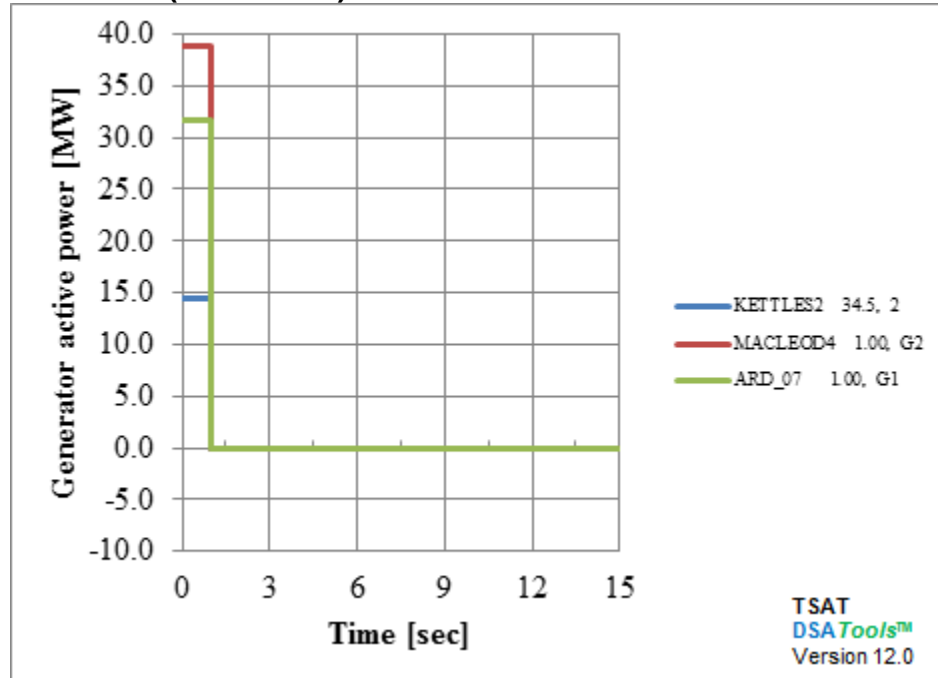
Proposed Connection (Alternative 2), Summer Light 2017





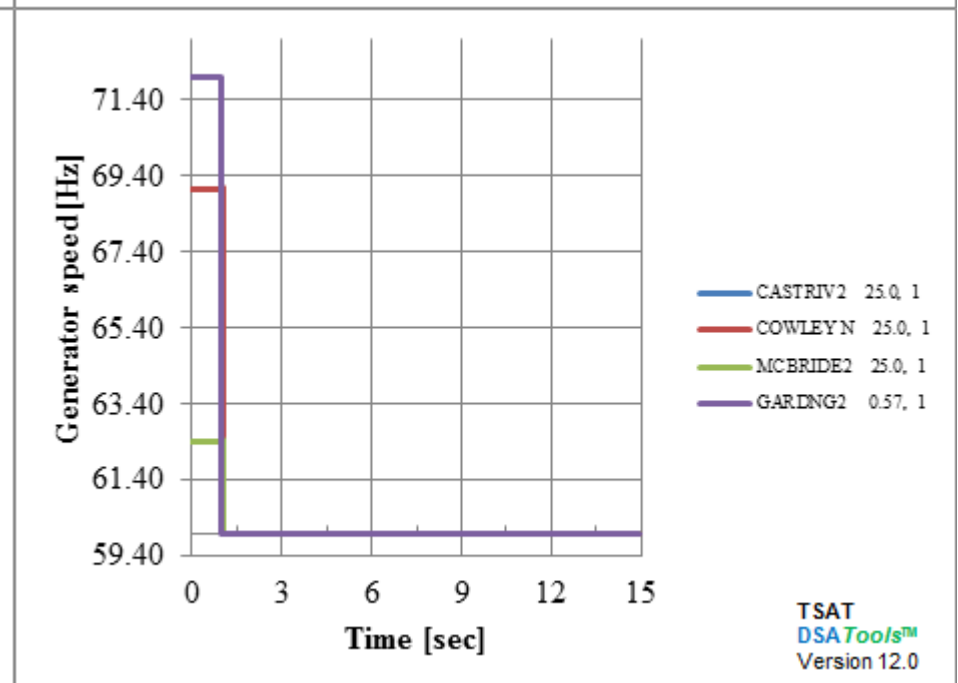
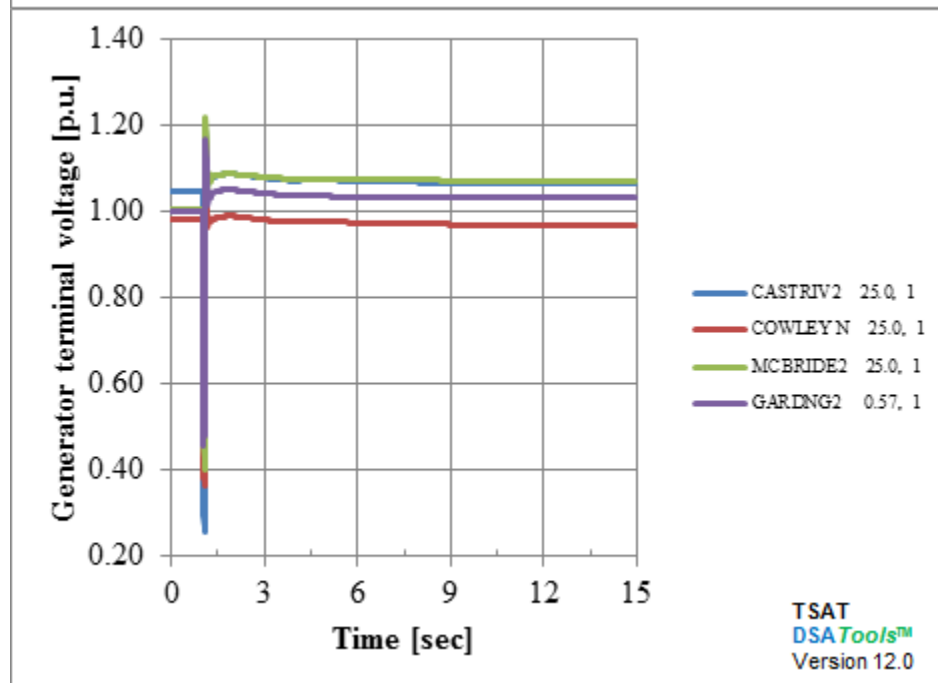
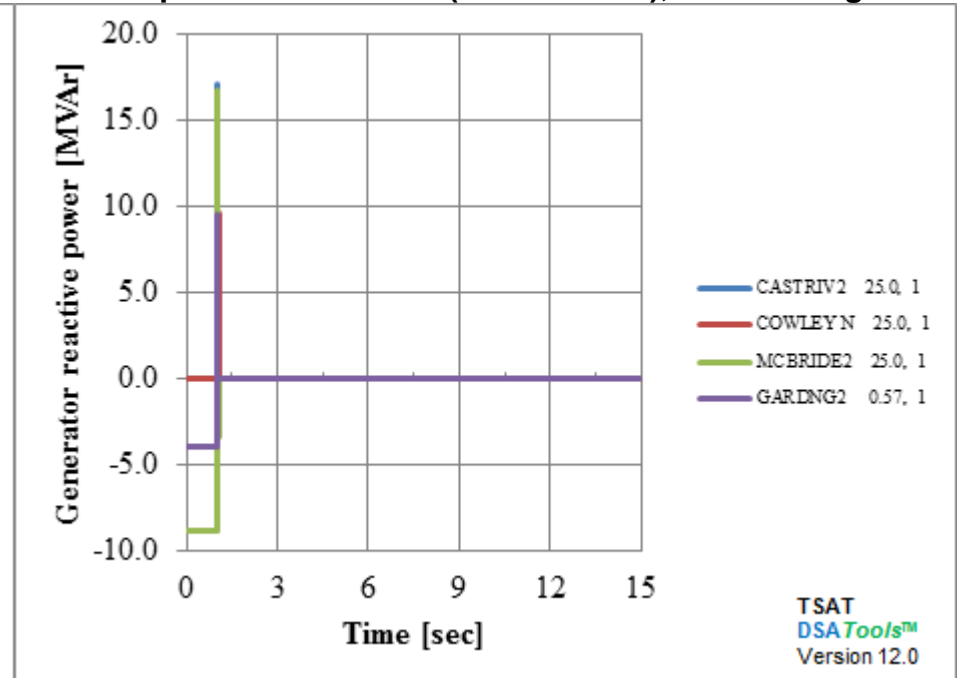
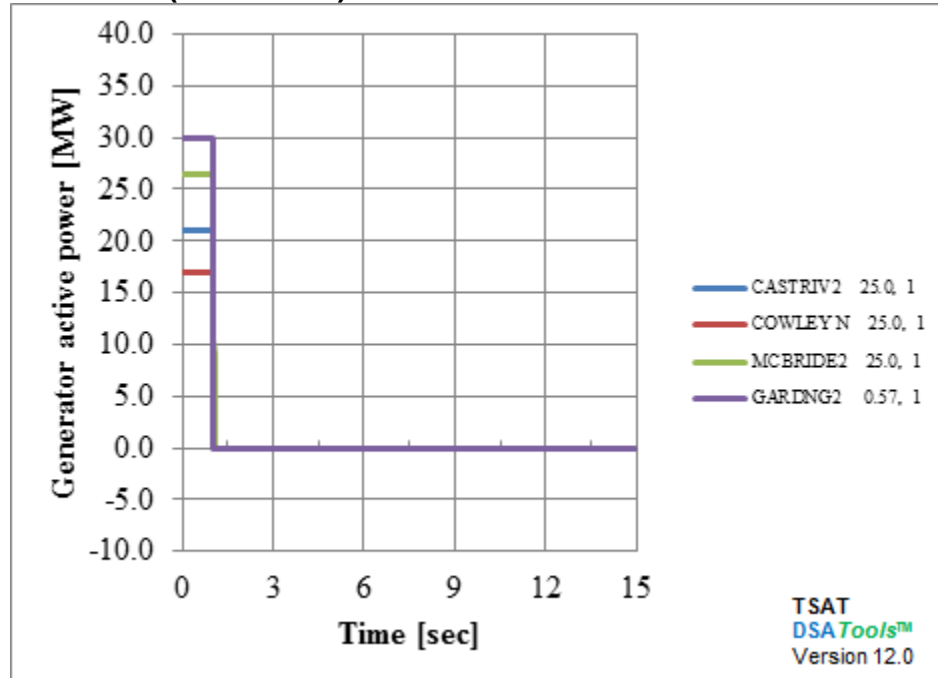
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



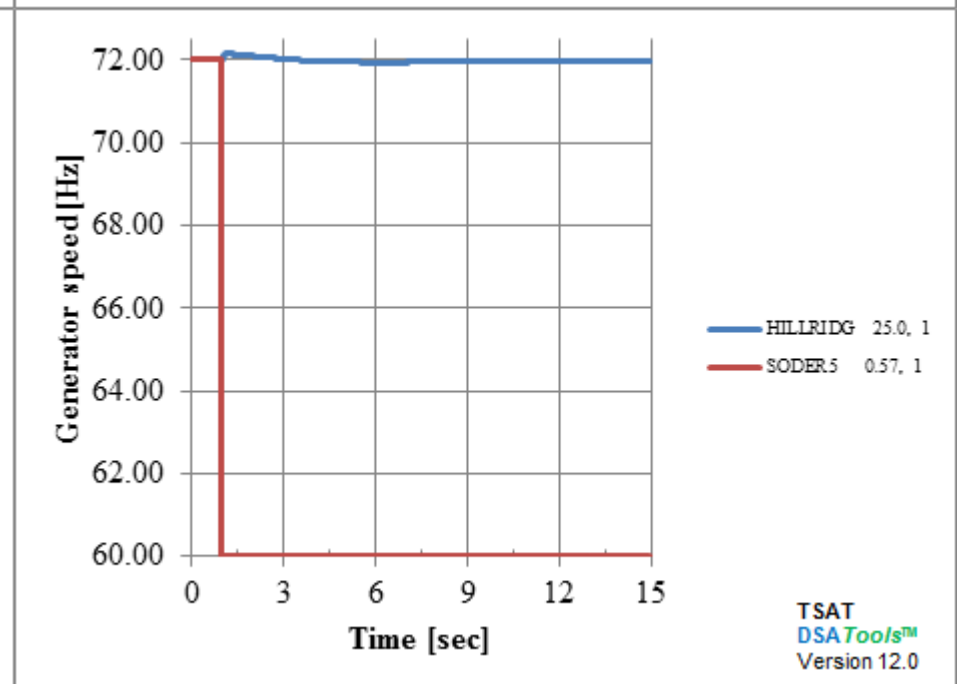
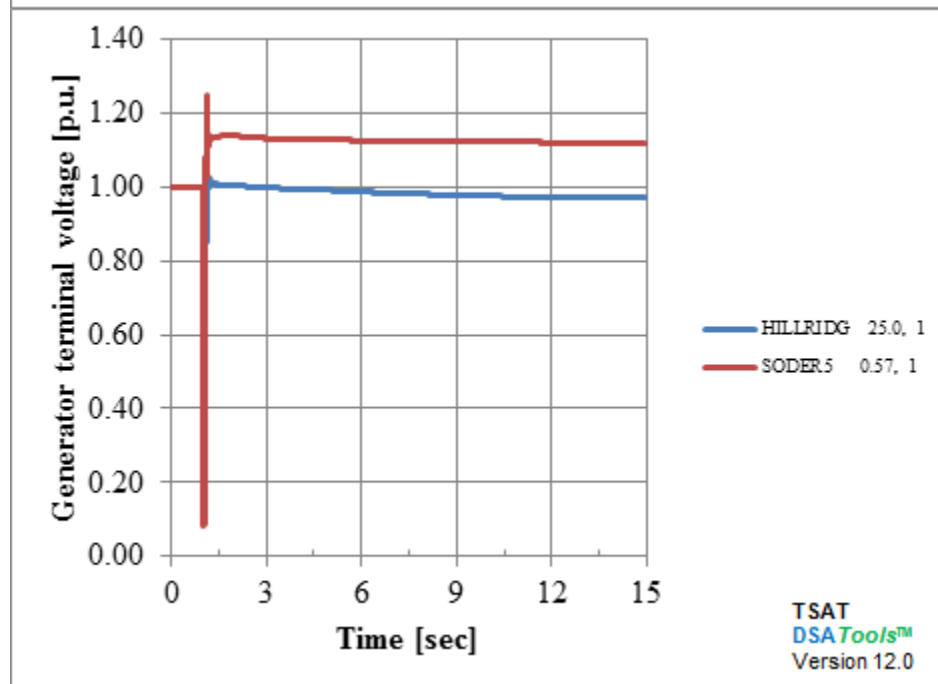
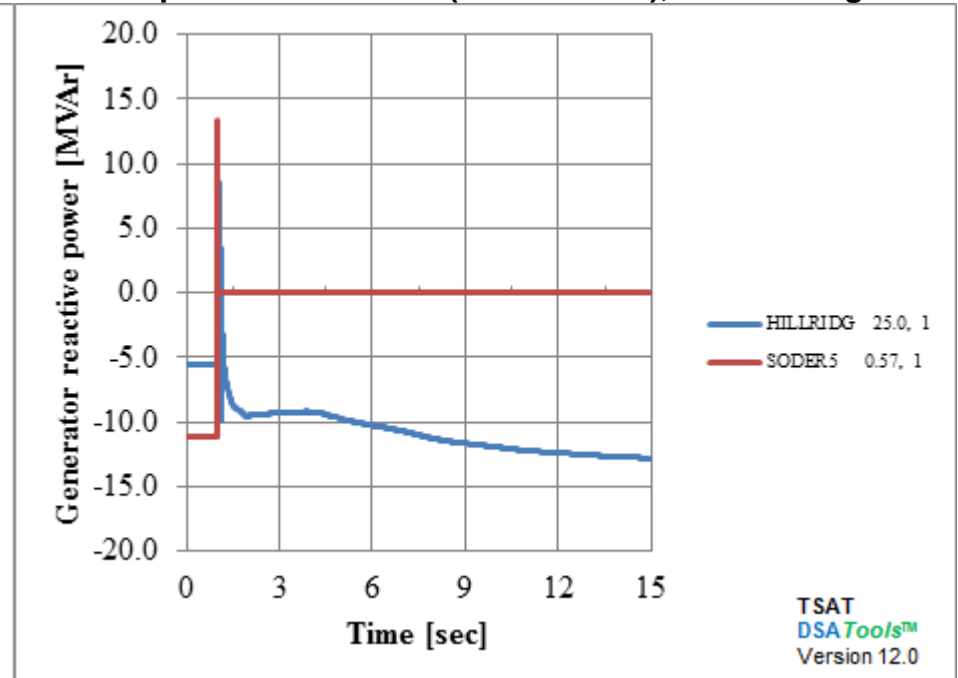
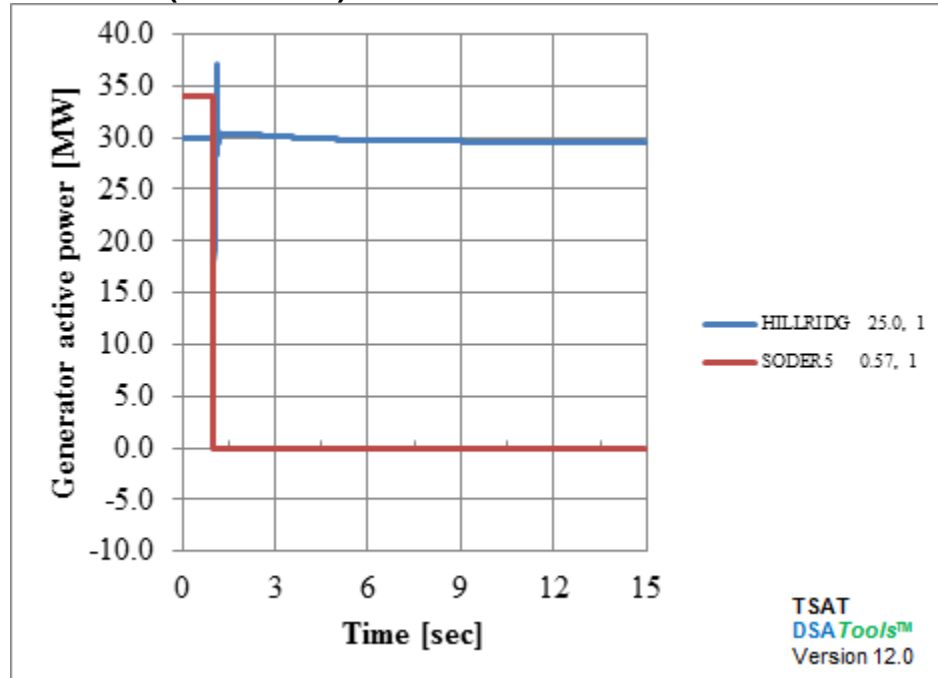
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



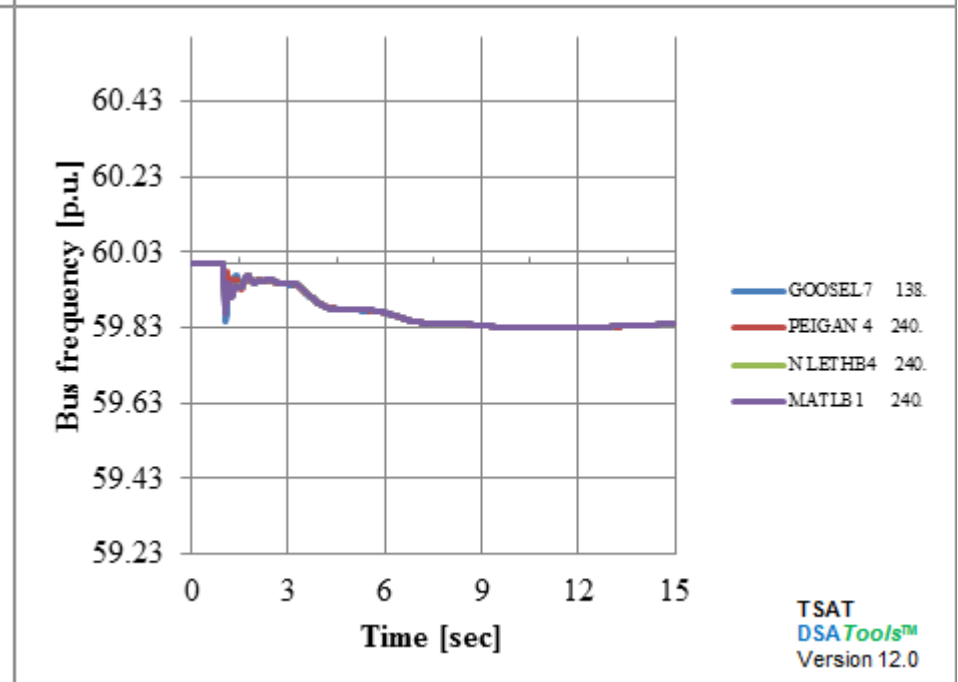
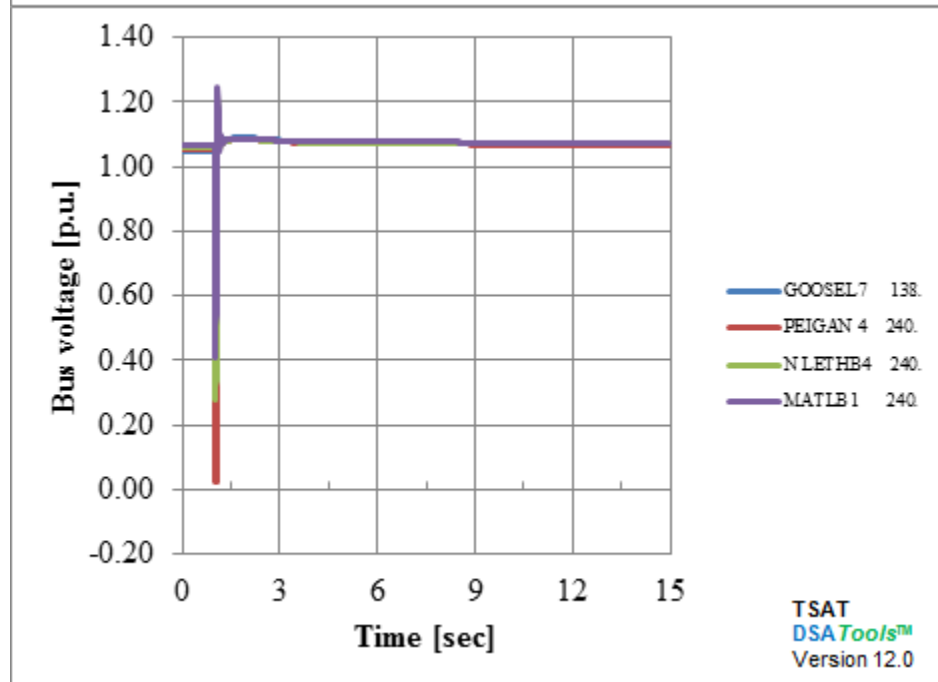
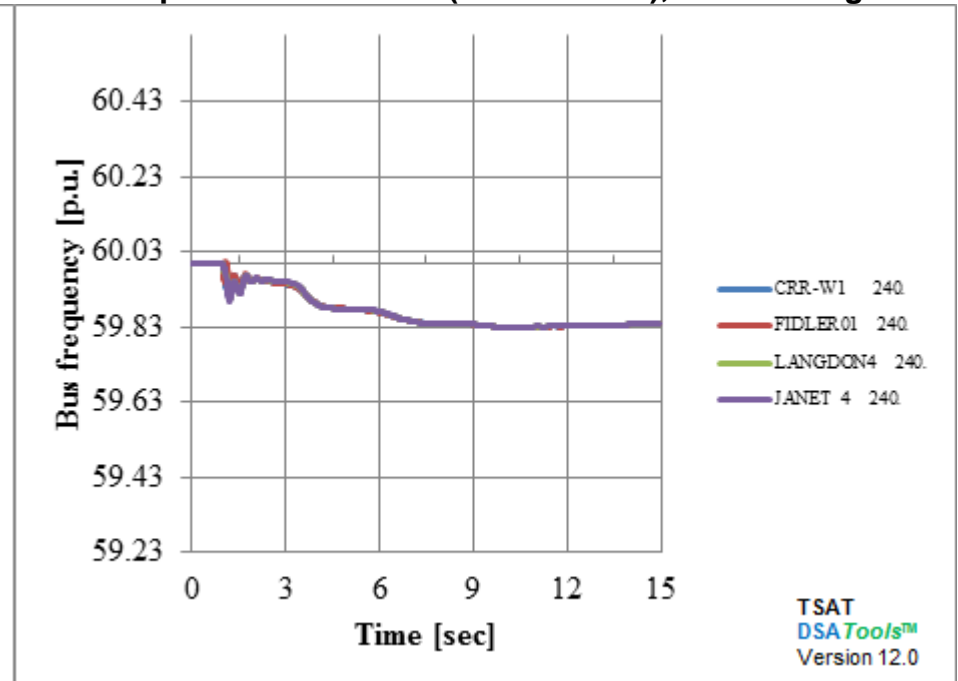
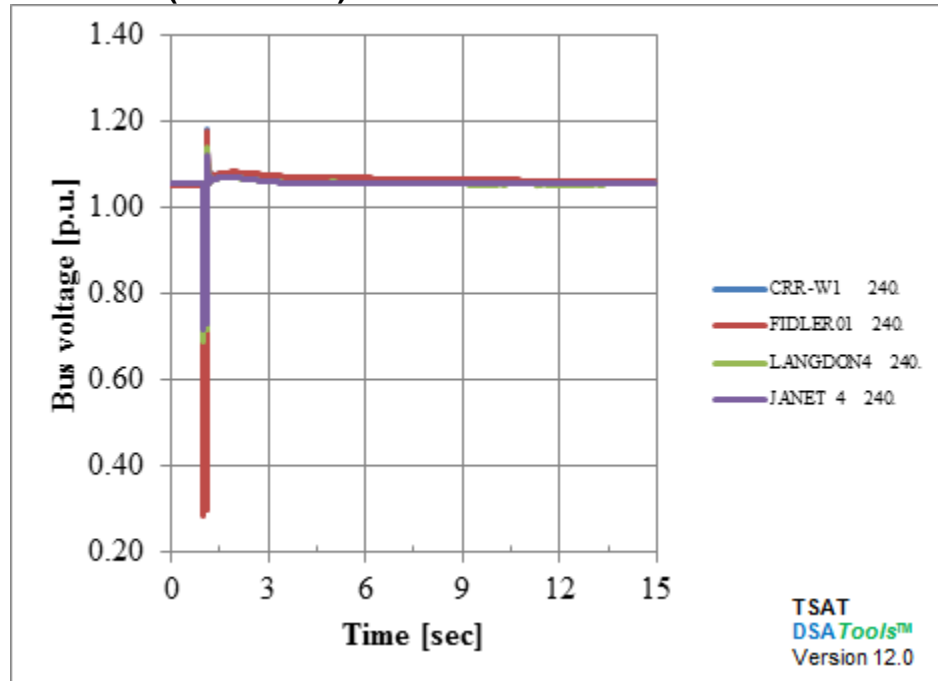
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



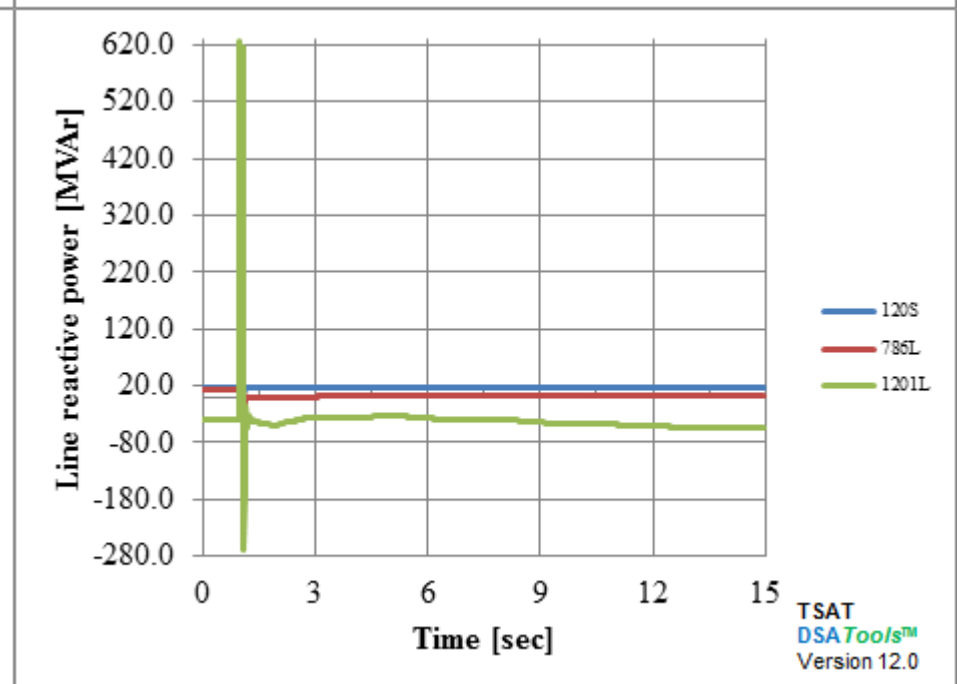
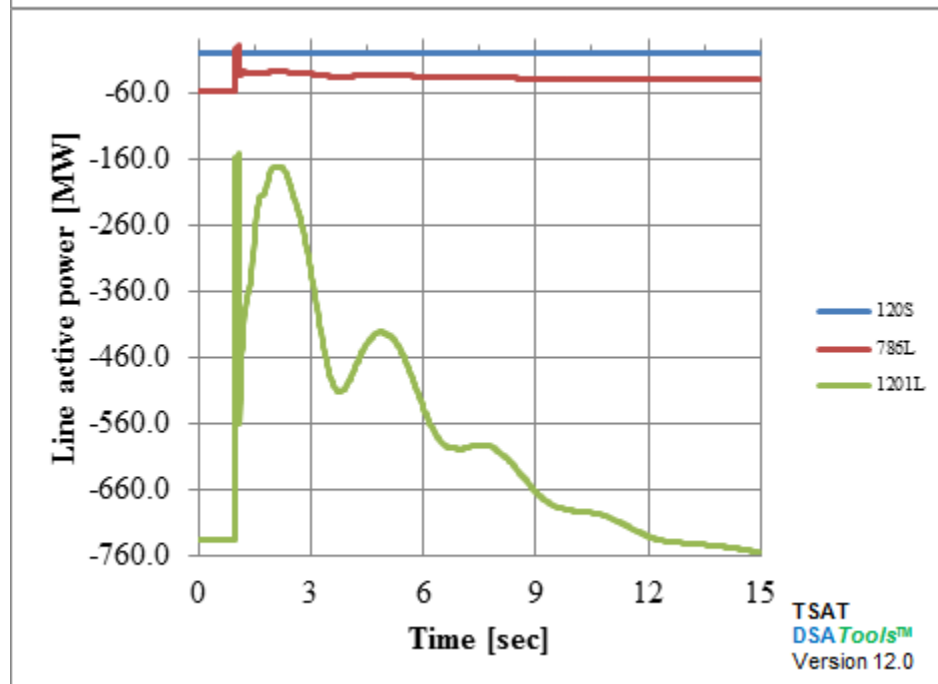
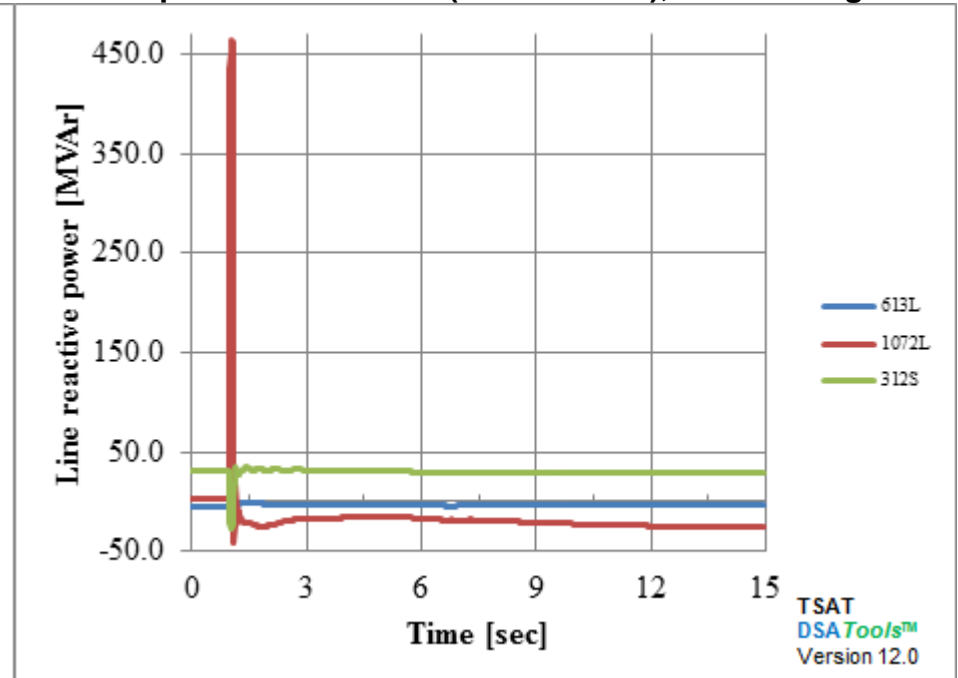
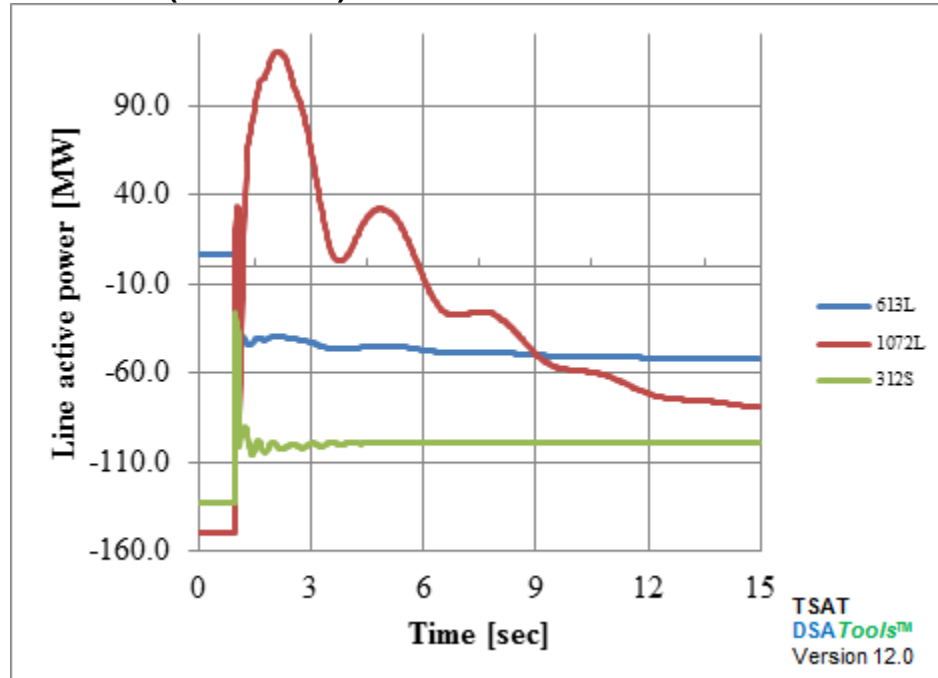
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



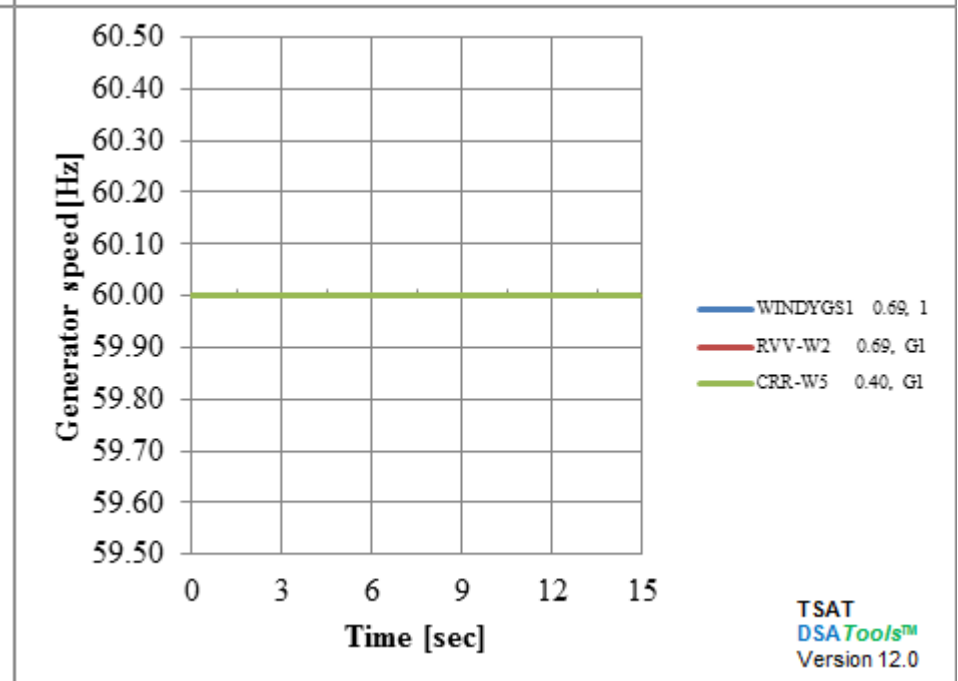
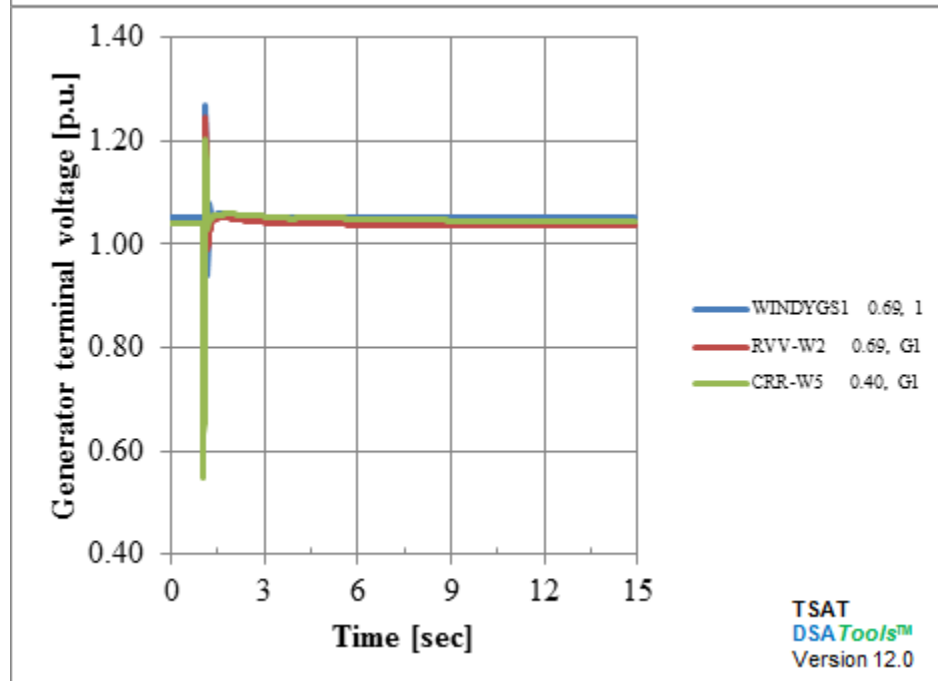
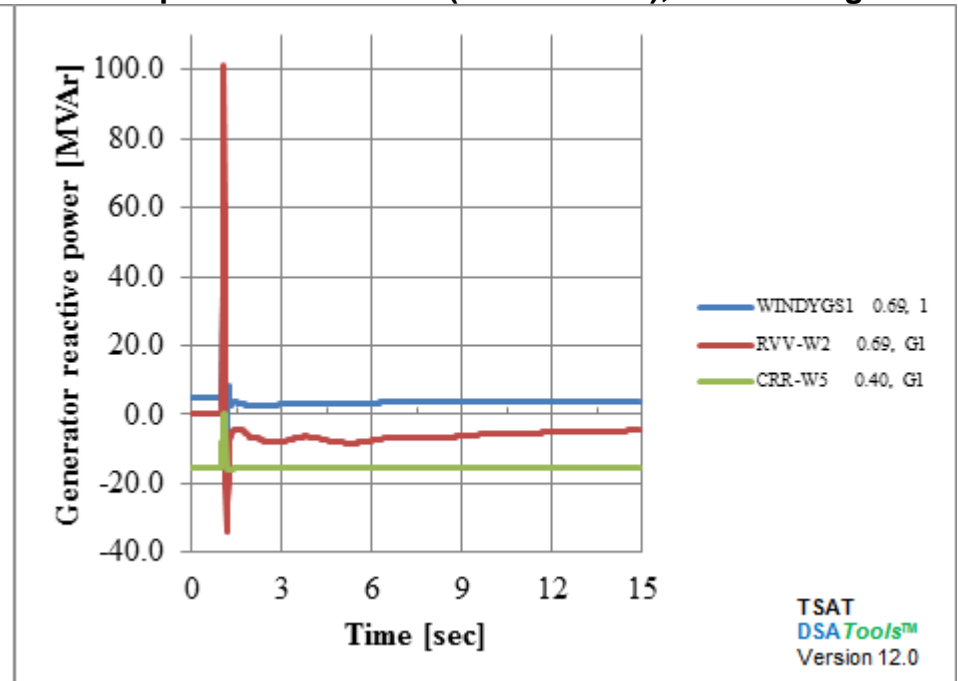
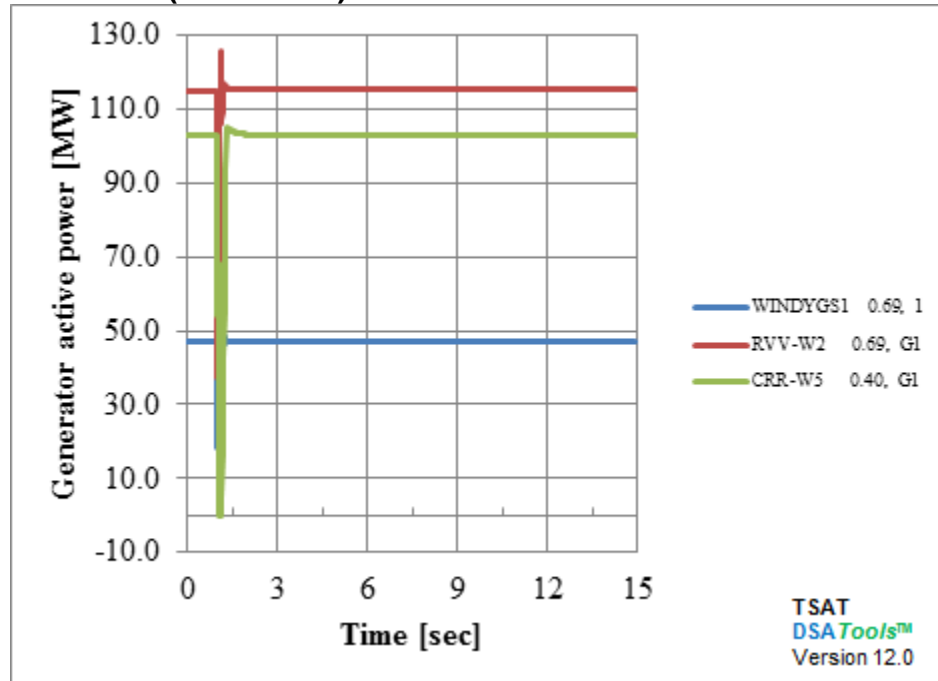
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



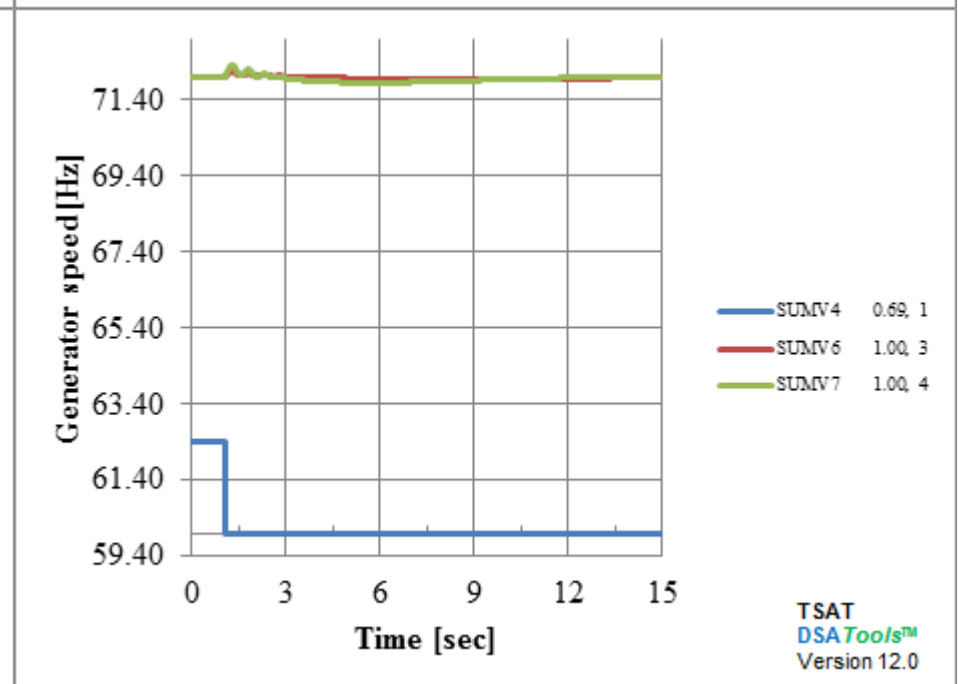
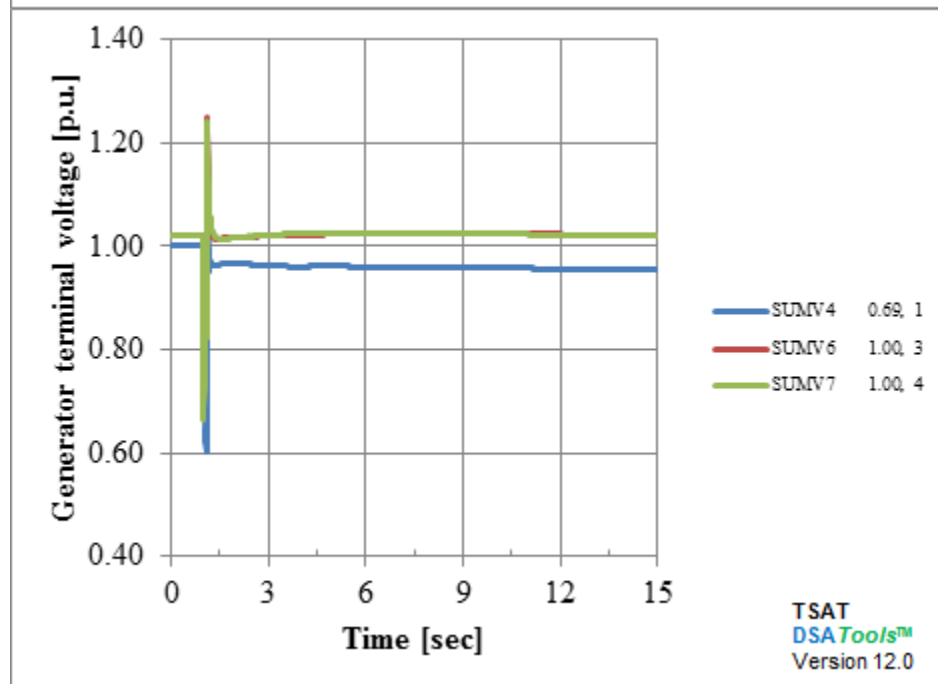
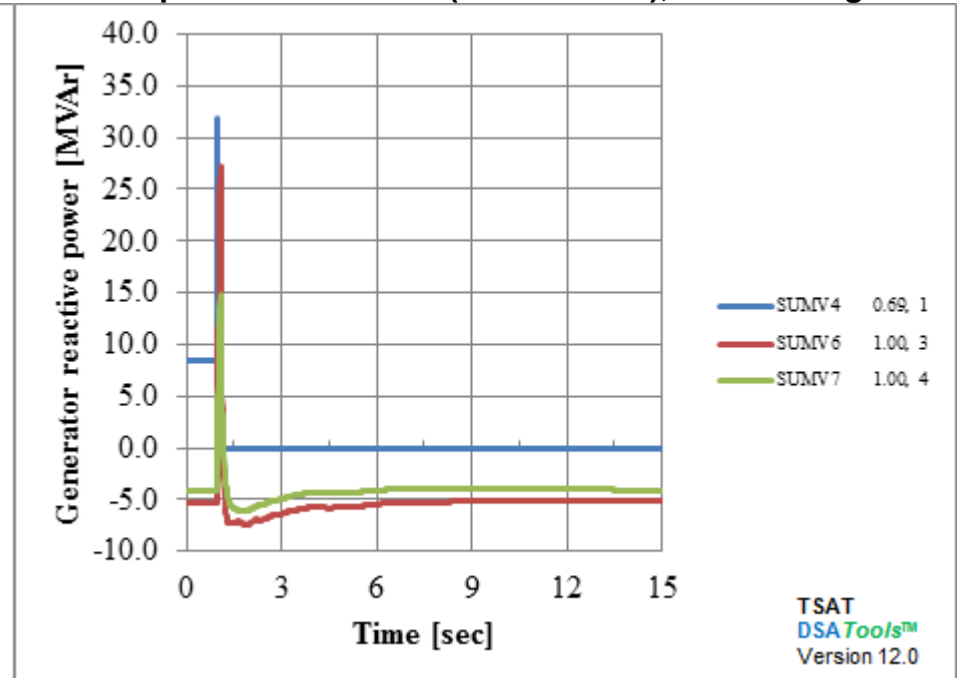
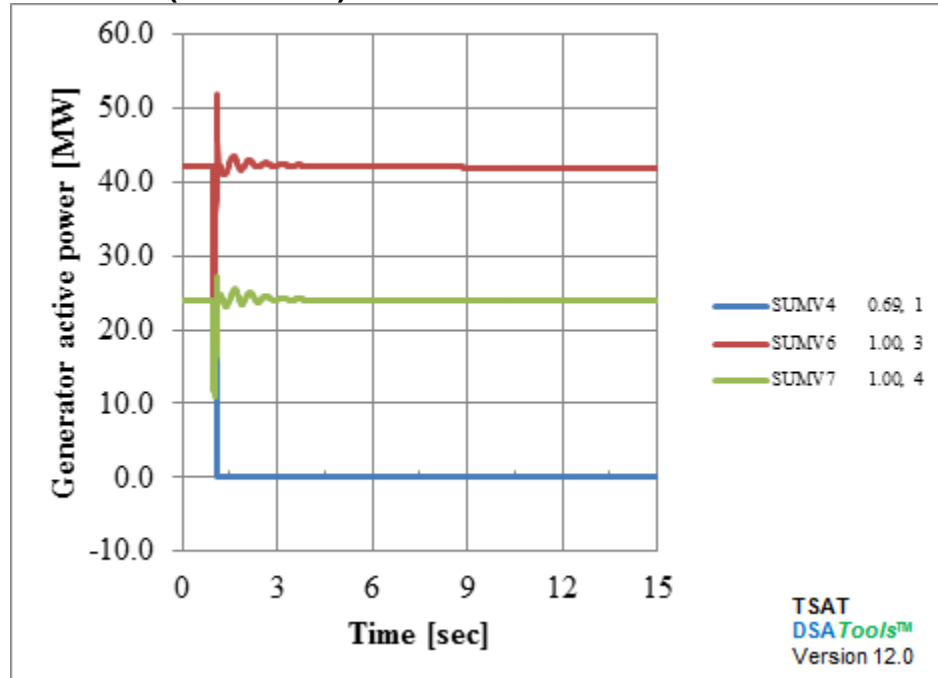
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Light 2017



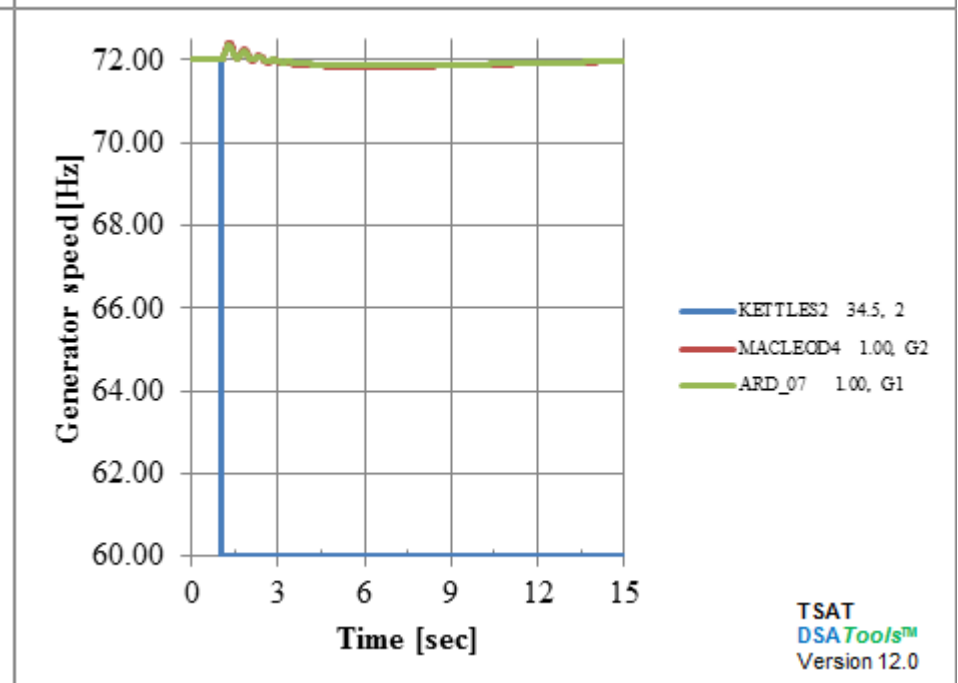
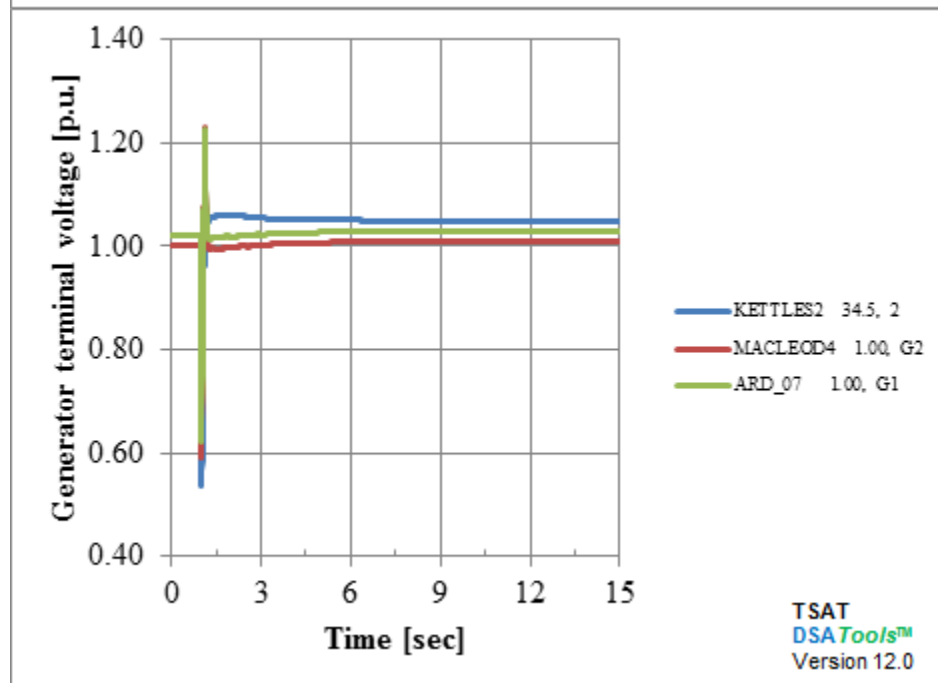
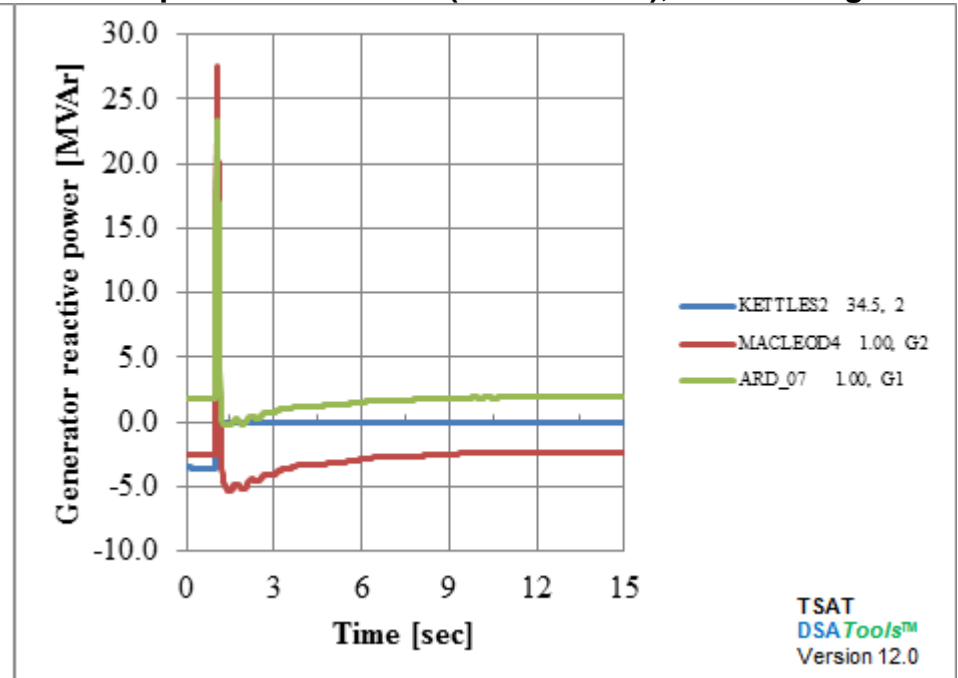
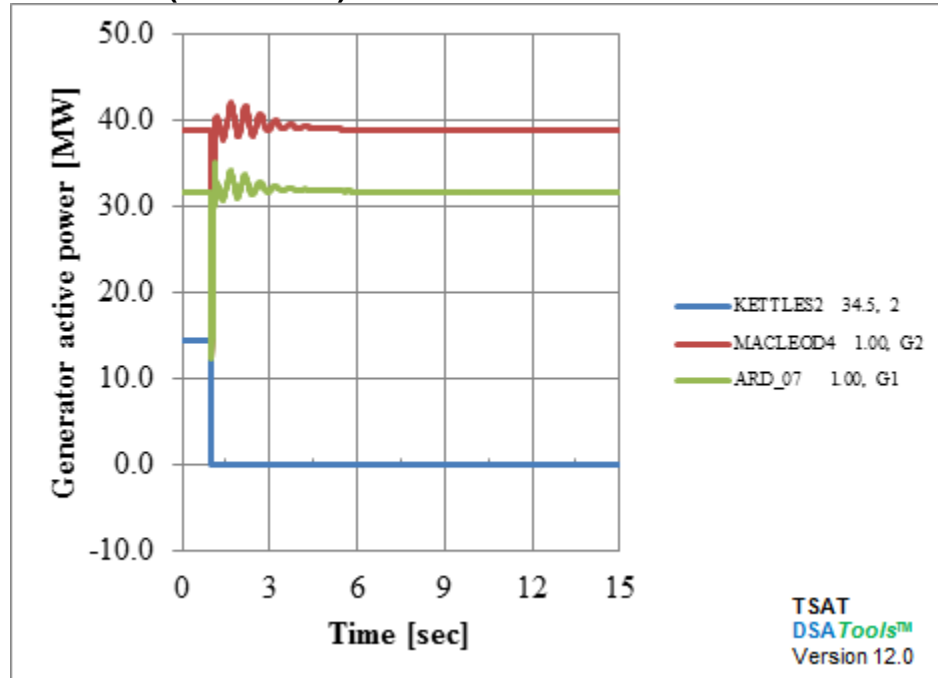
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Light 2017



9 -- 1084L (59S - 246S) NEAR 246S

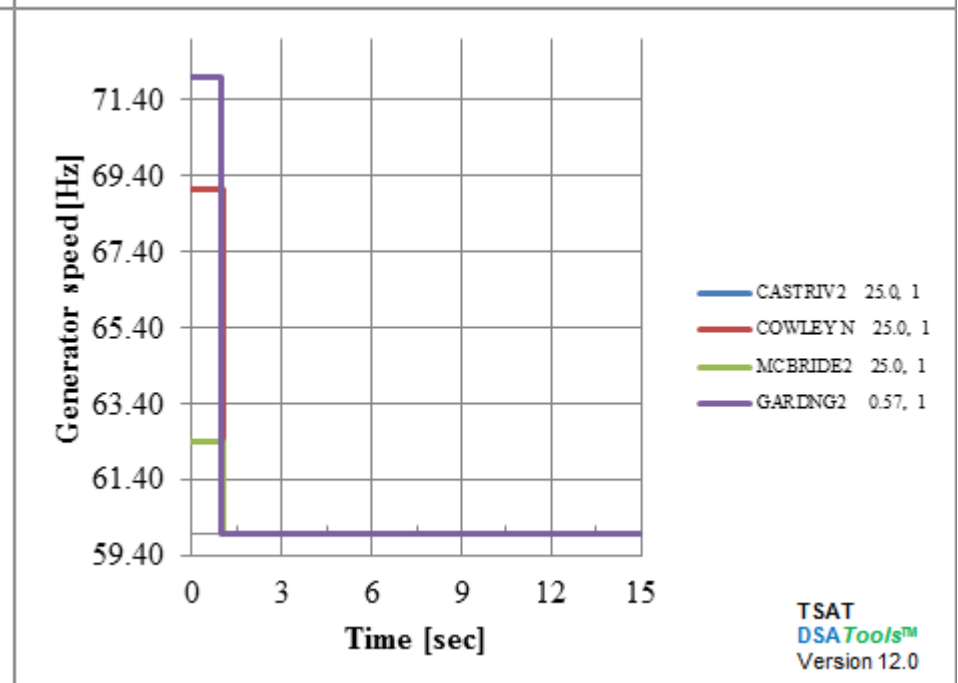
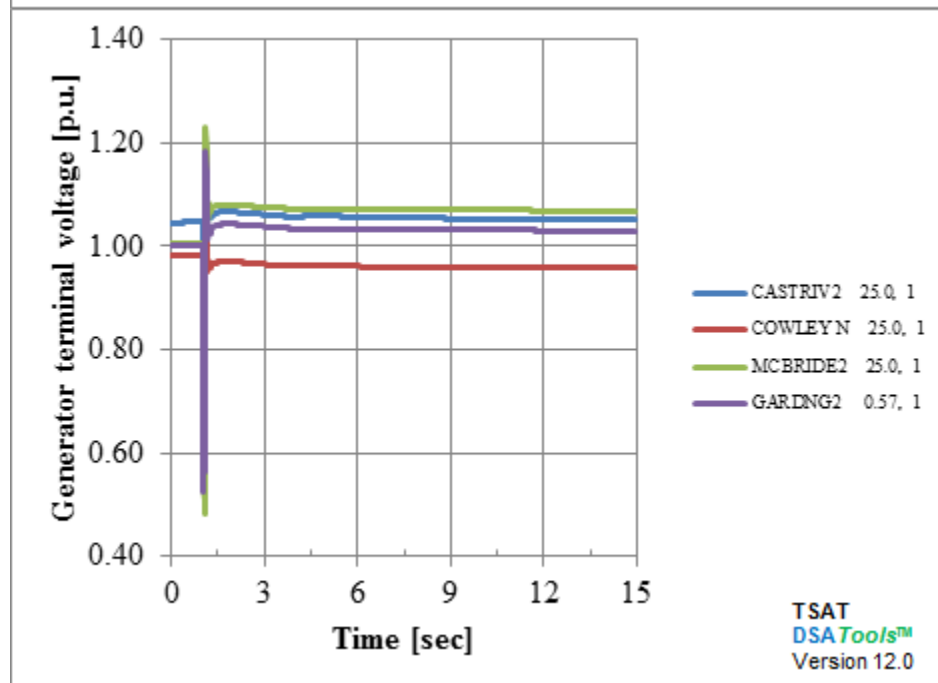
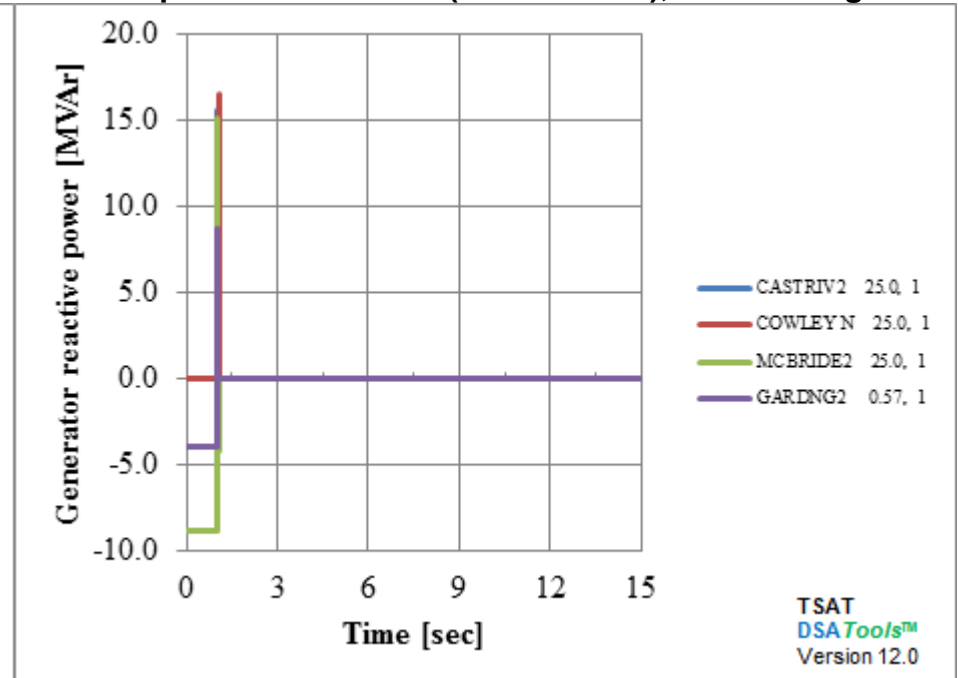
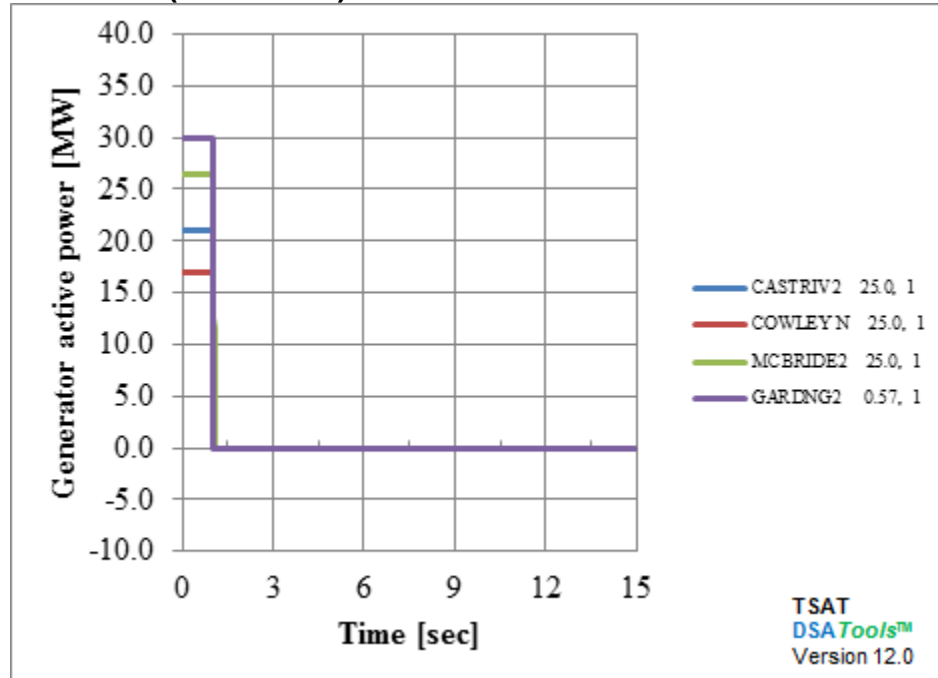
Proposed Connection (Alternative 2), Summer Light 2017





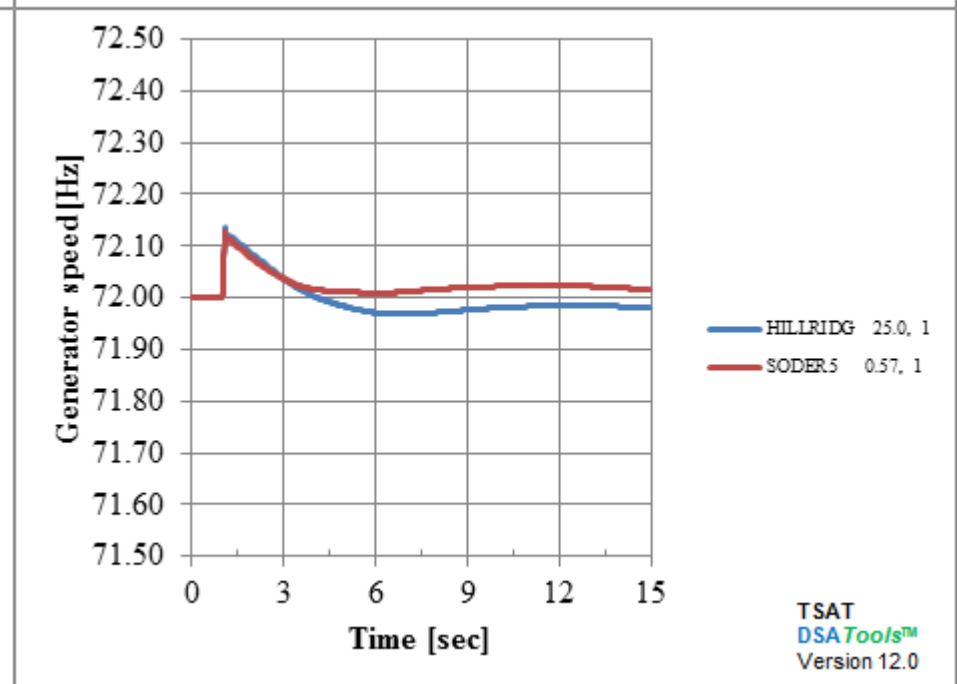
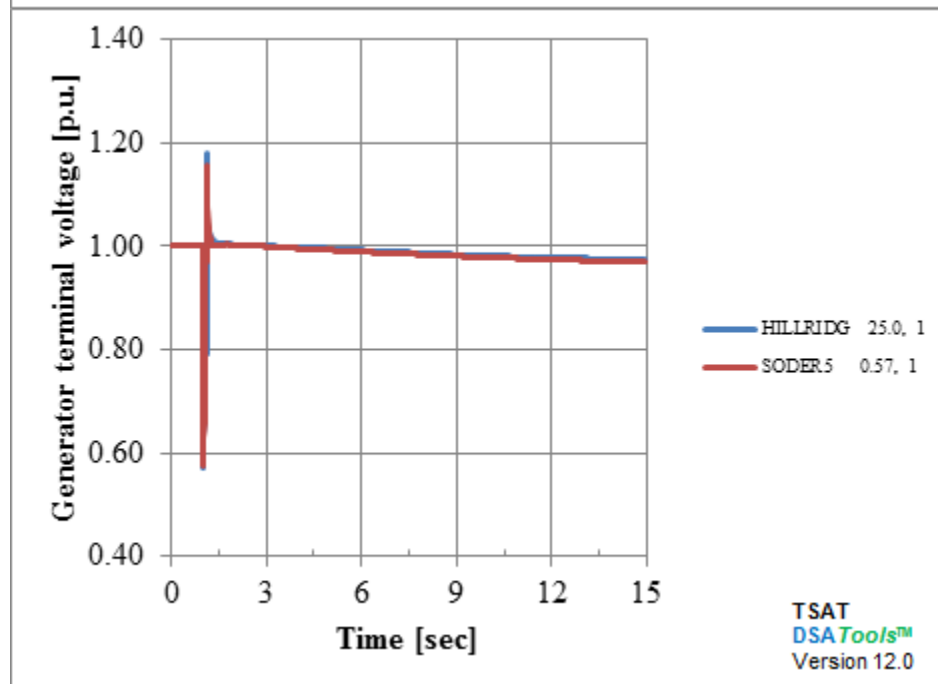
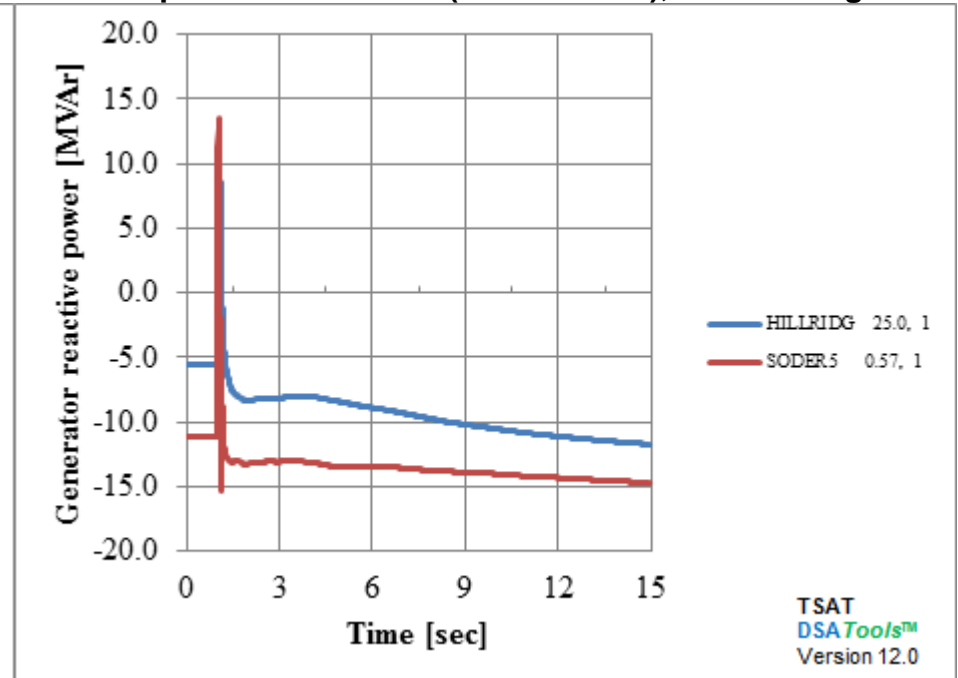
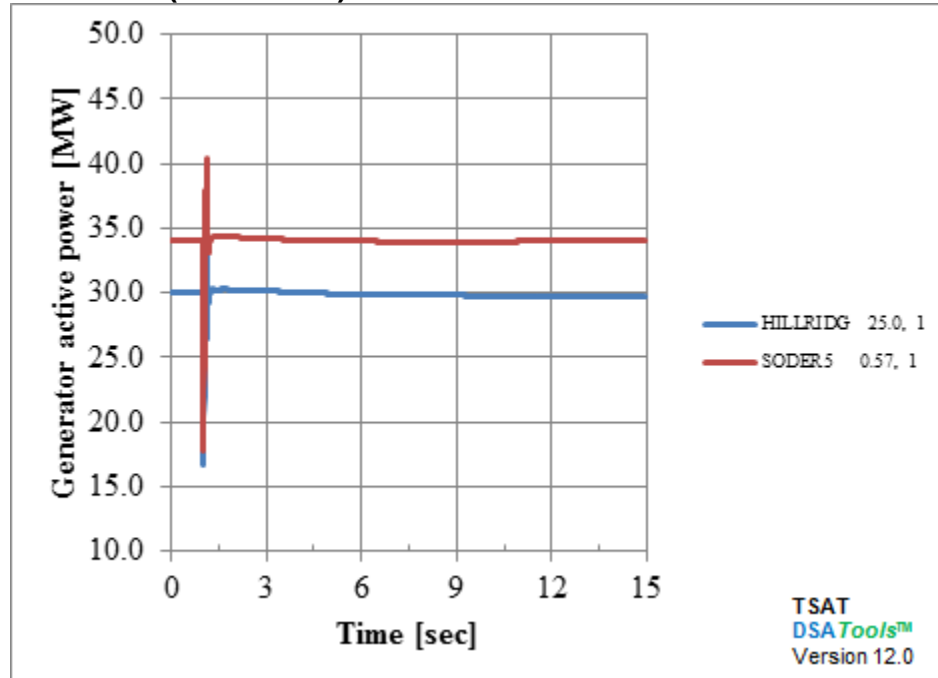
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Light 2017



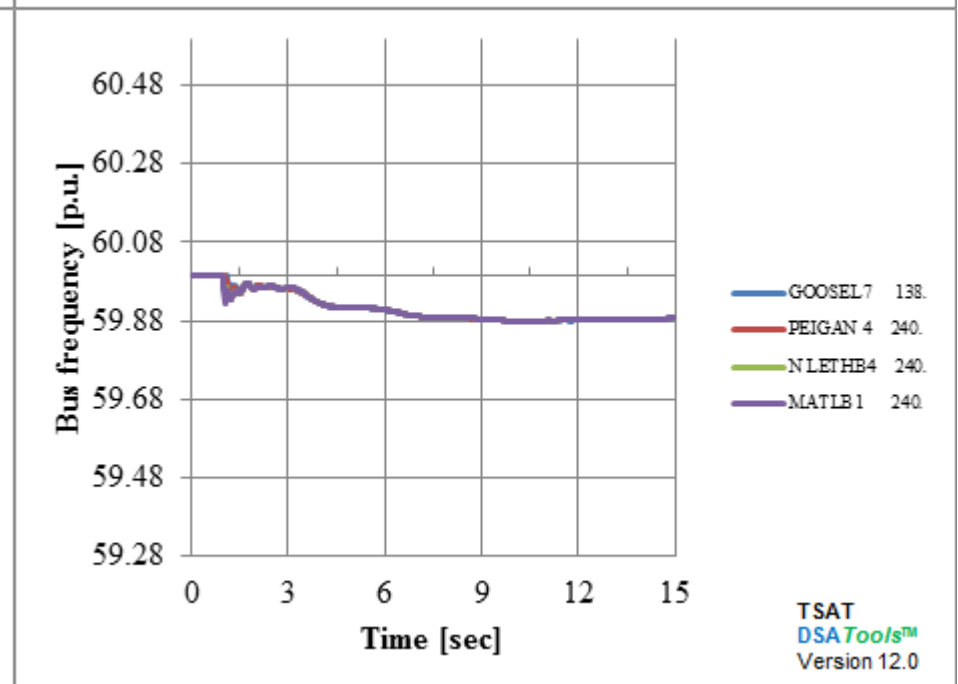
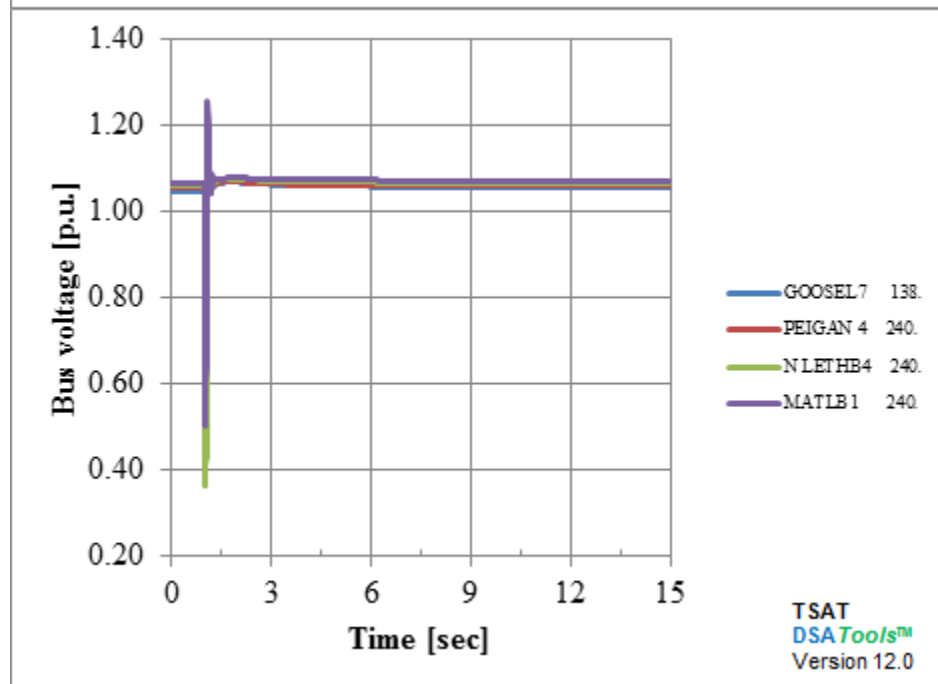
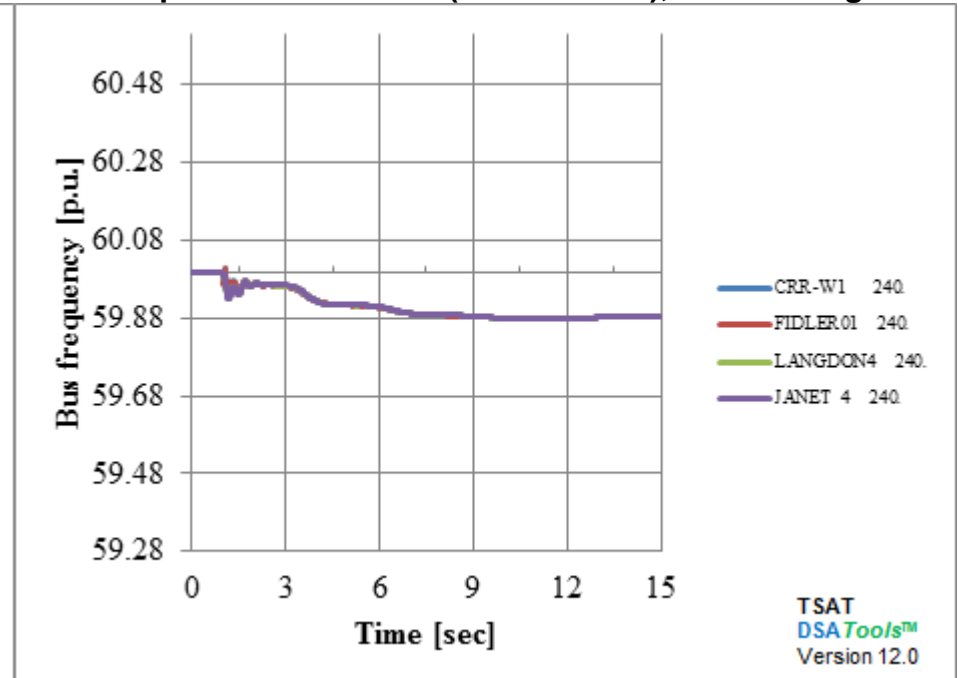
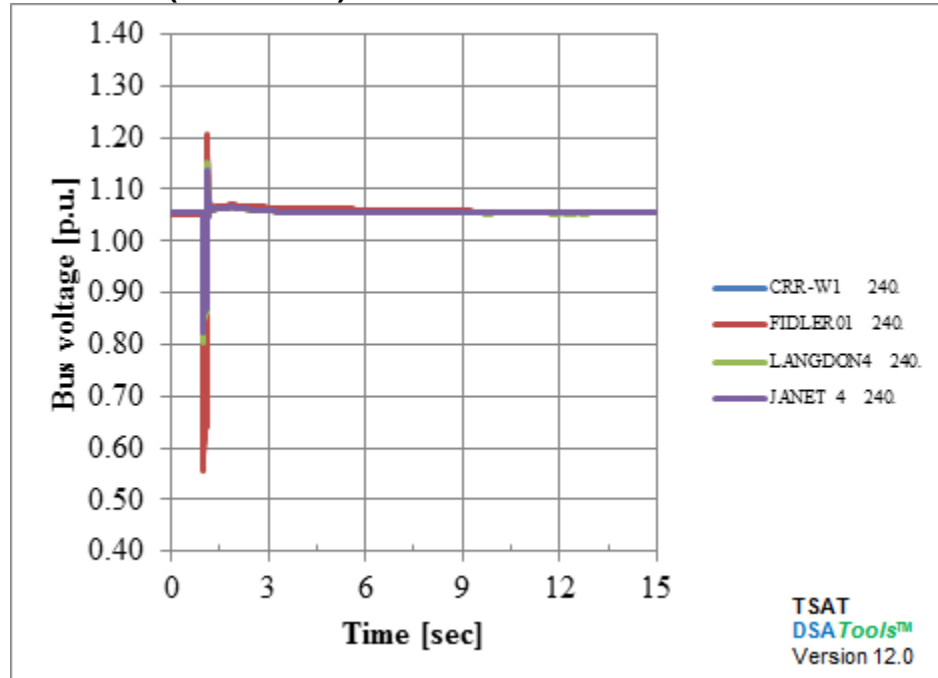
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Light 2017



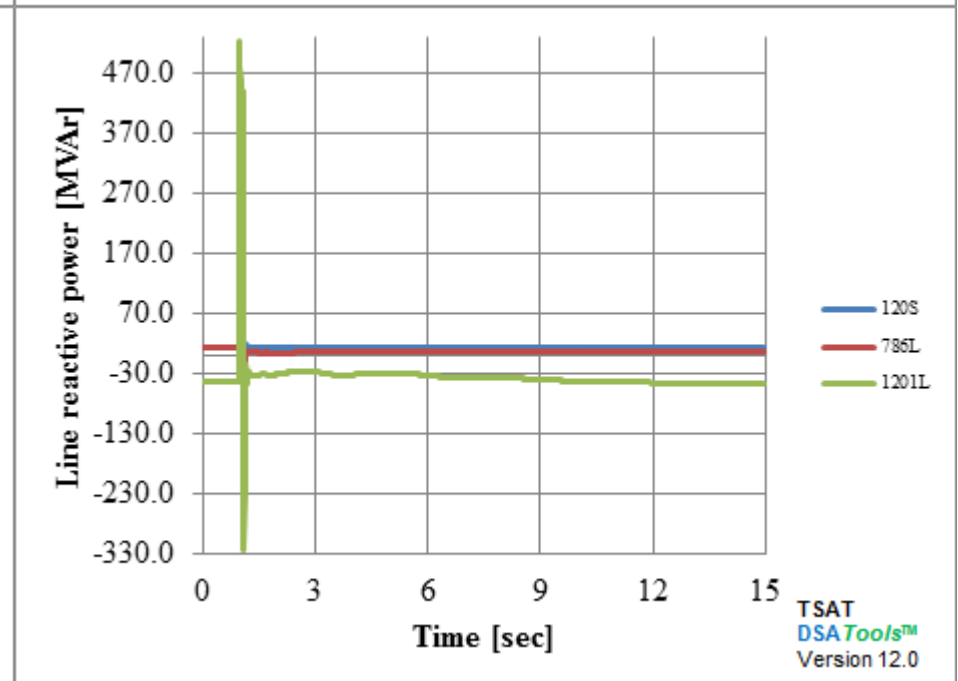
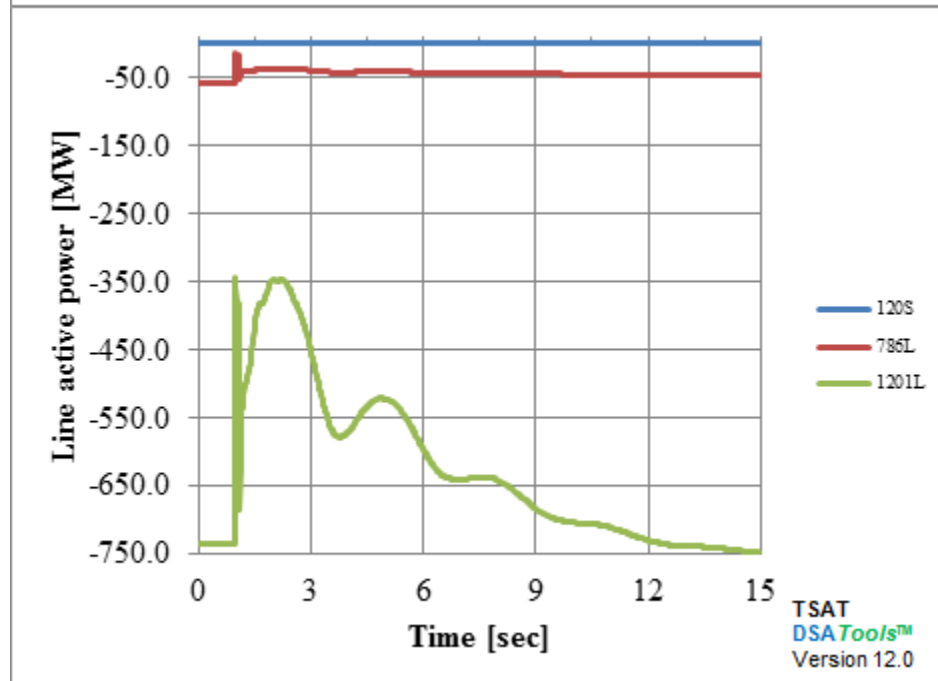
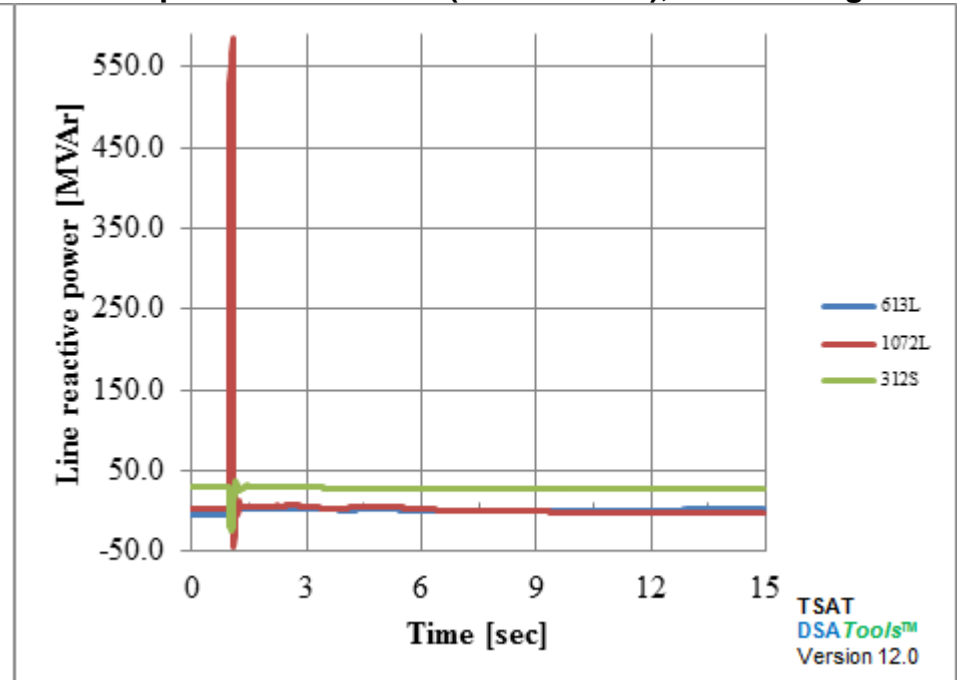
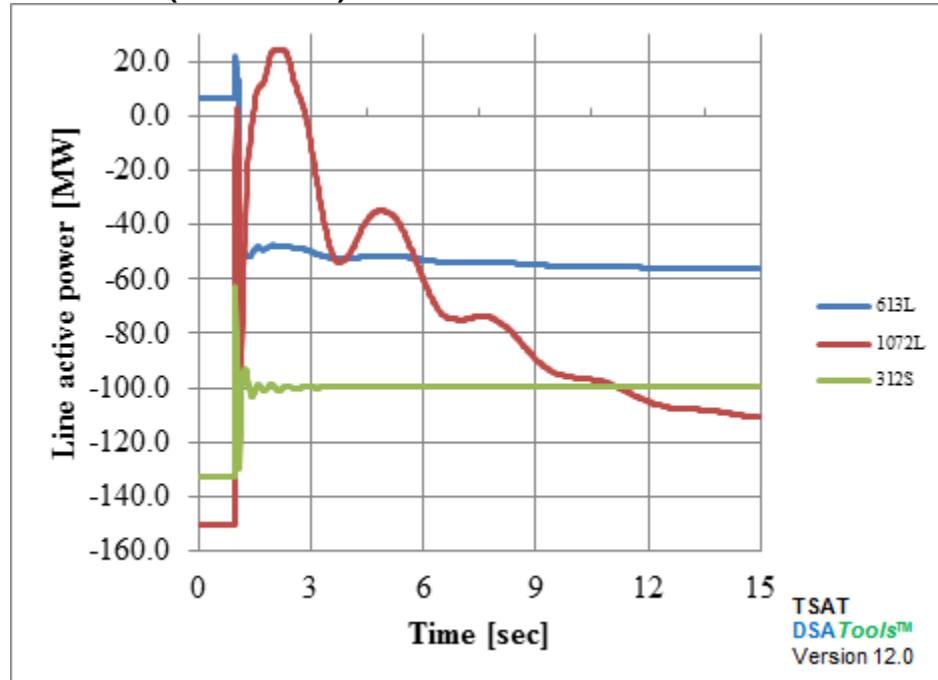
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Light 2017



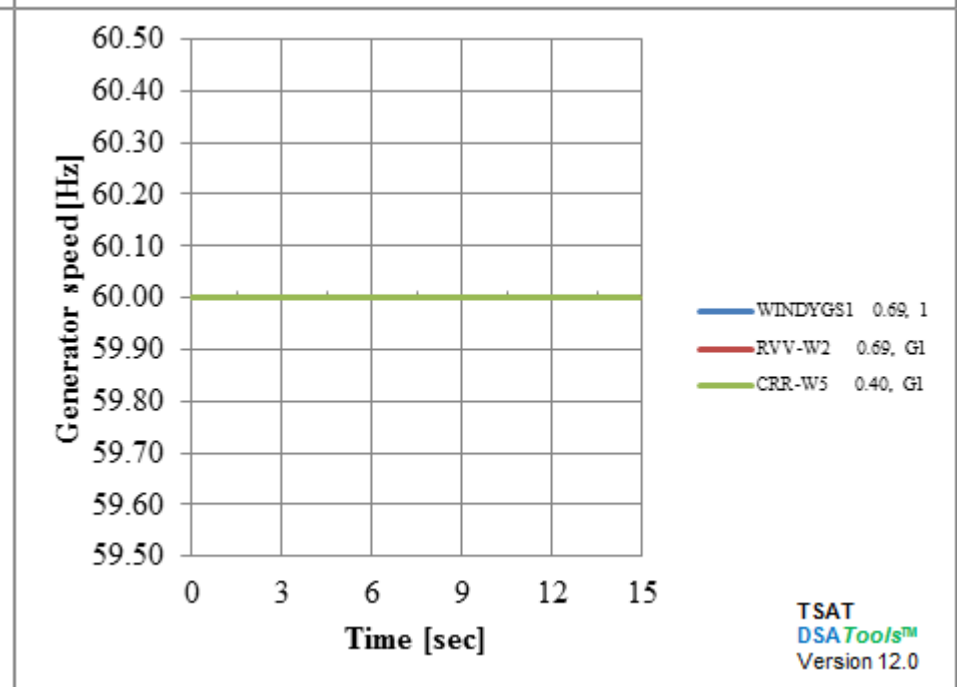
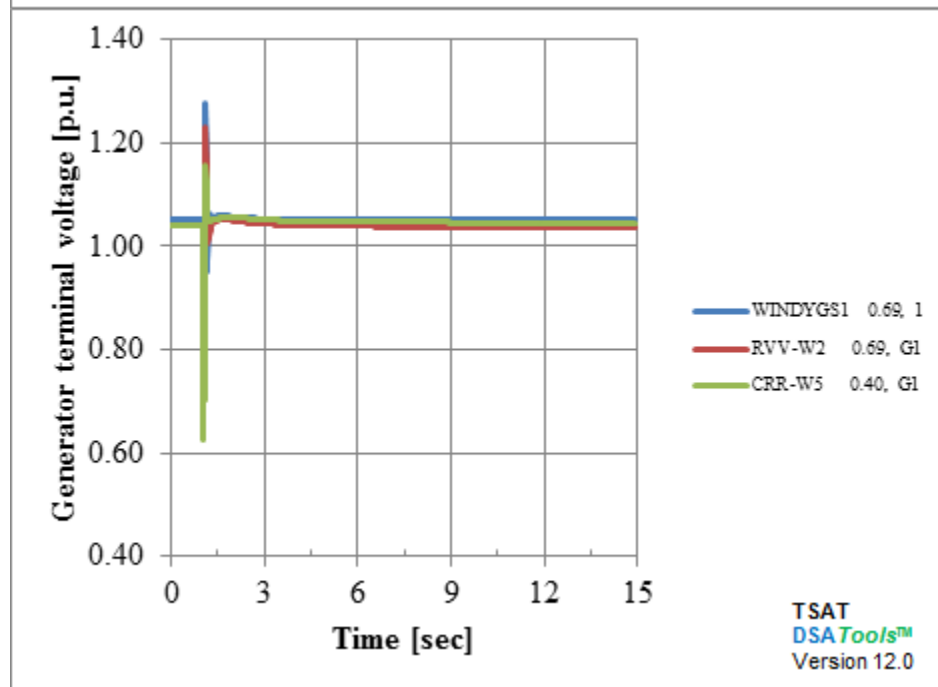
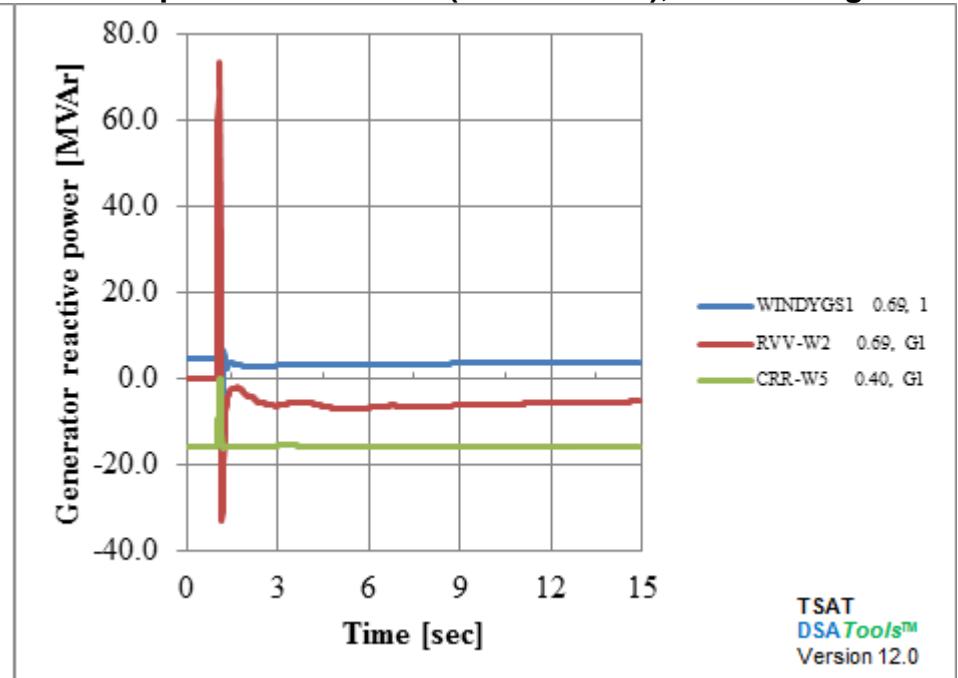
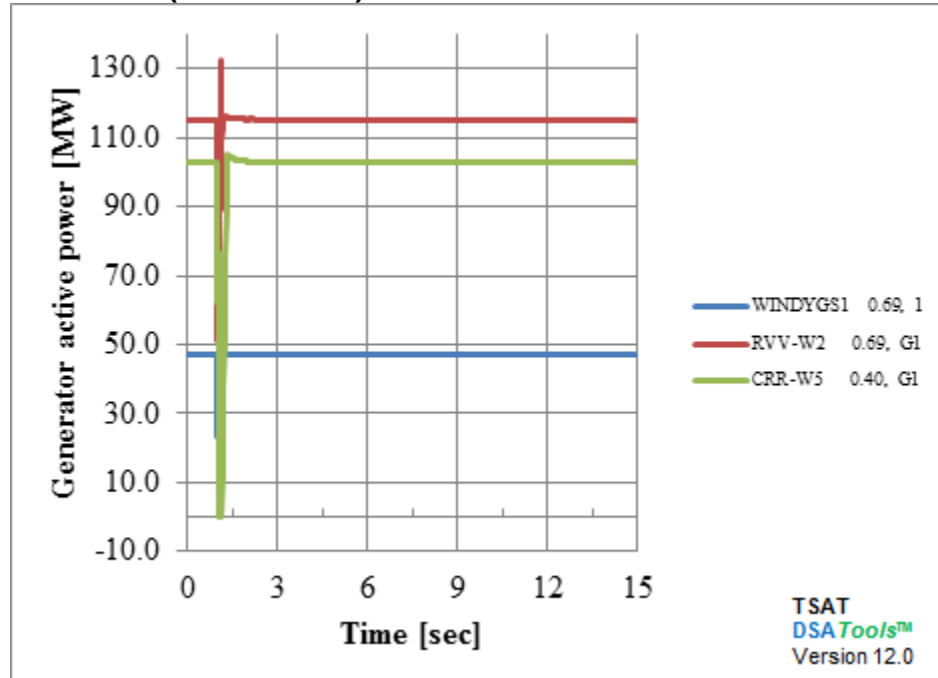
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Light 2017



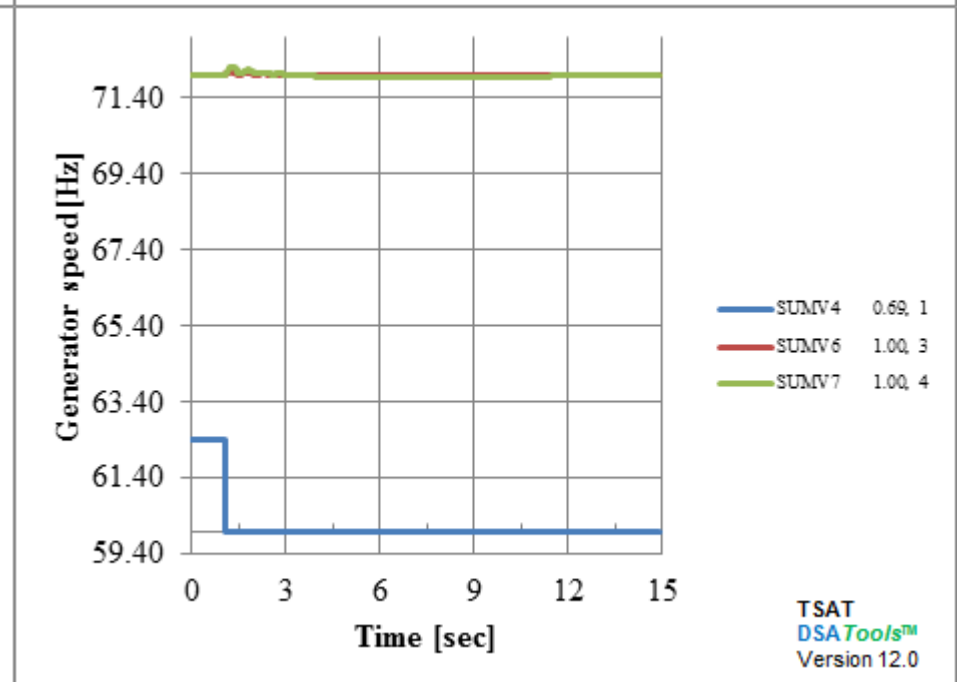
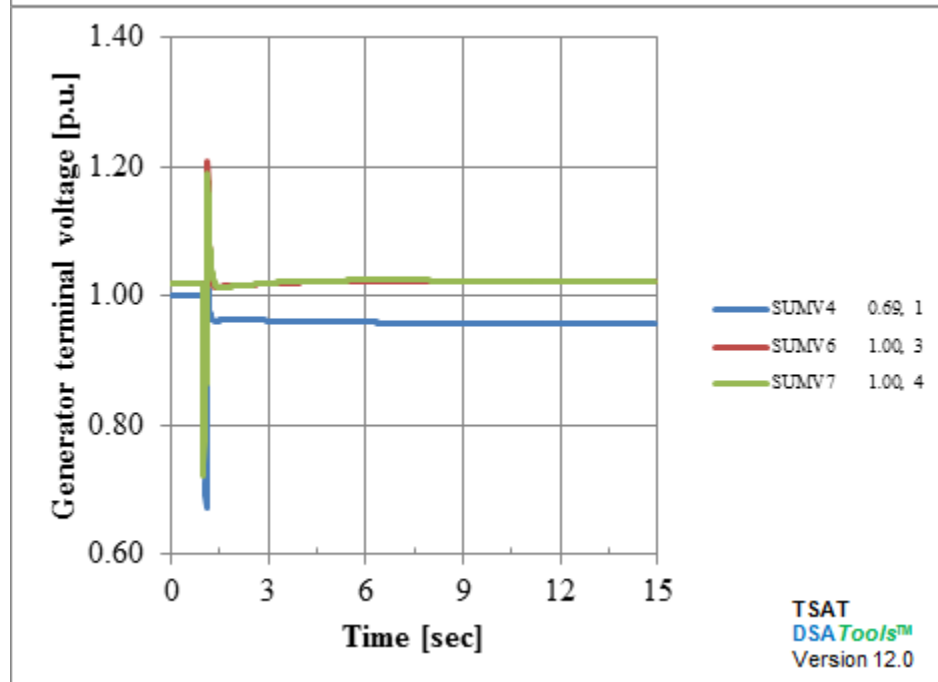
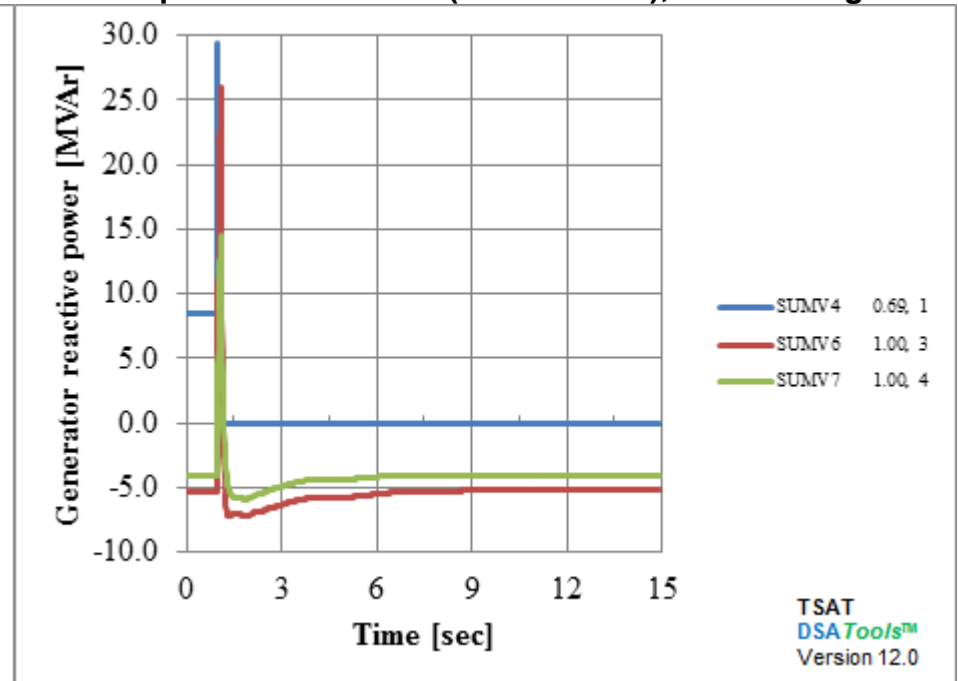
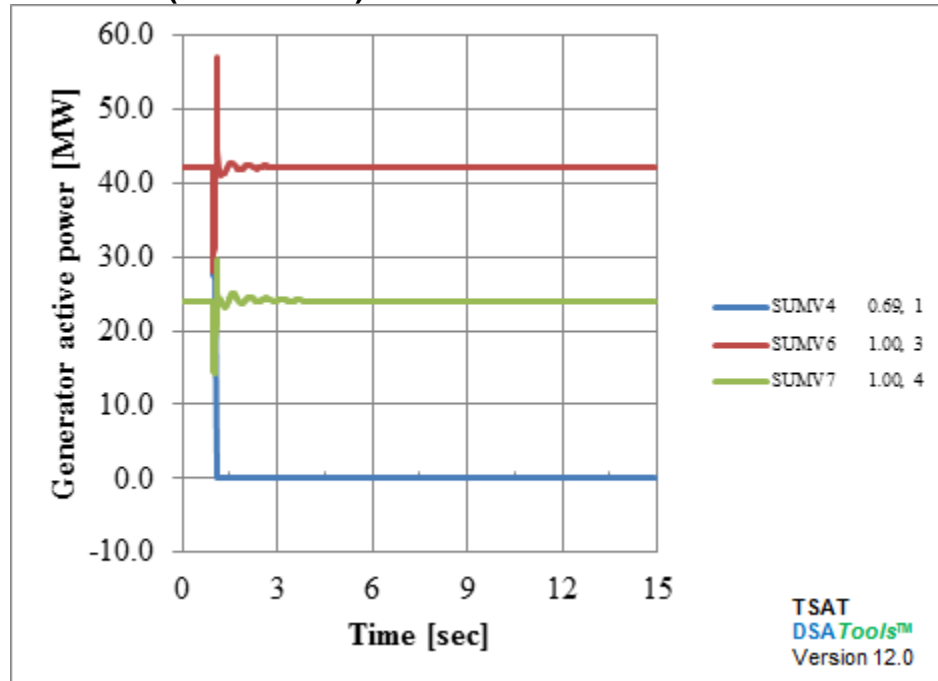
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



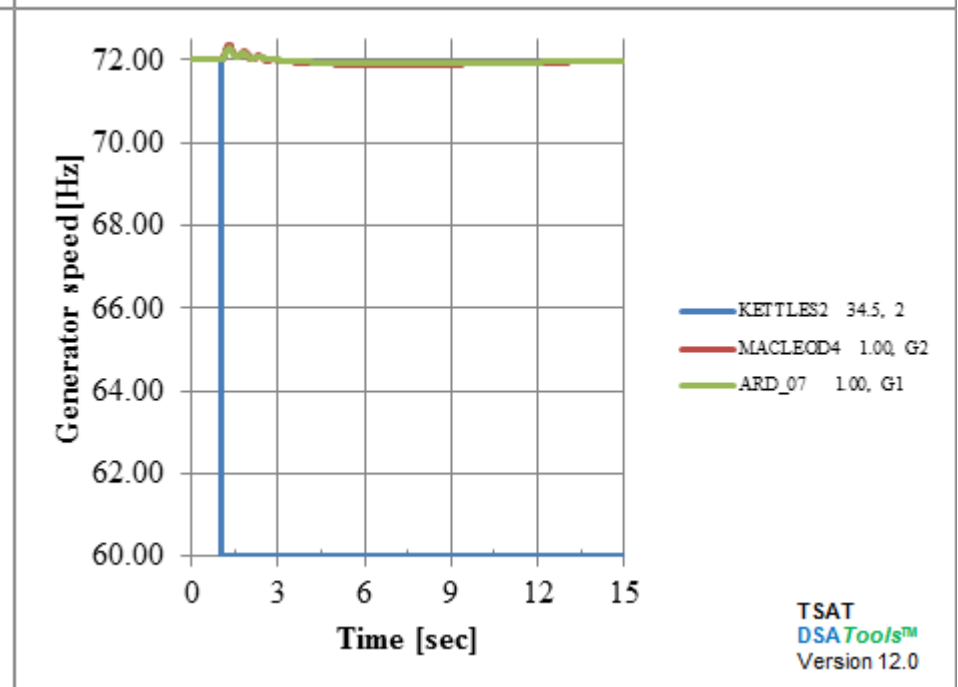
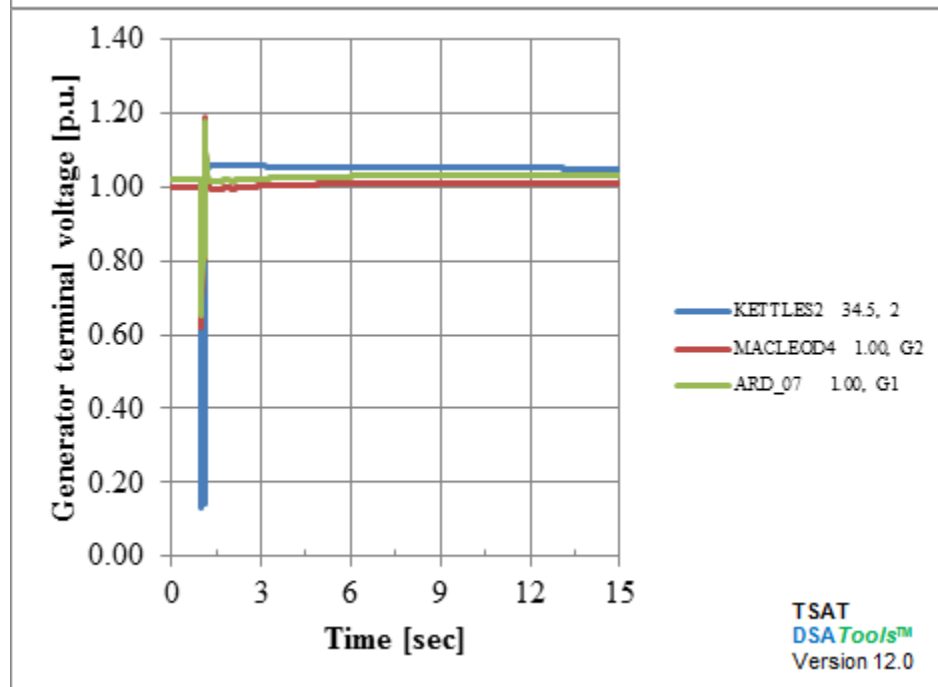
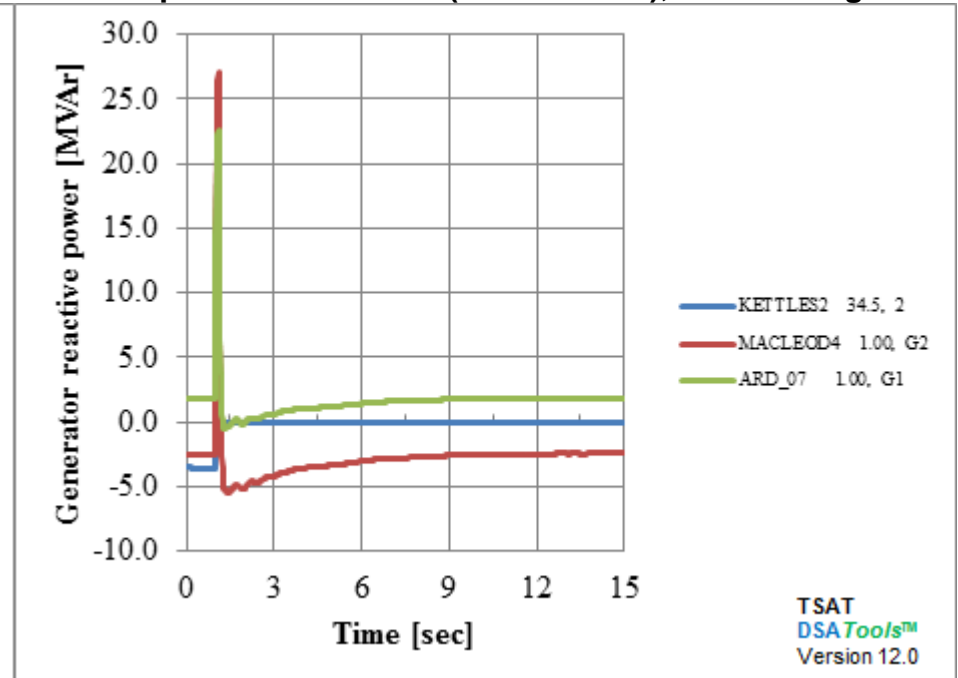
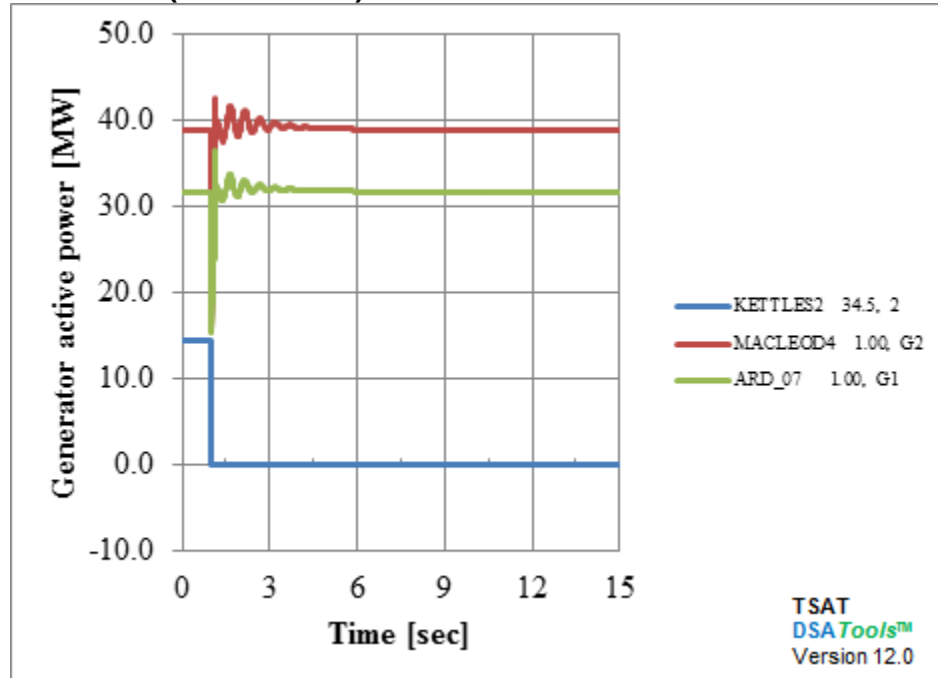
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



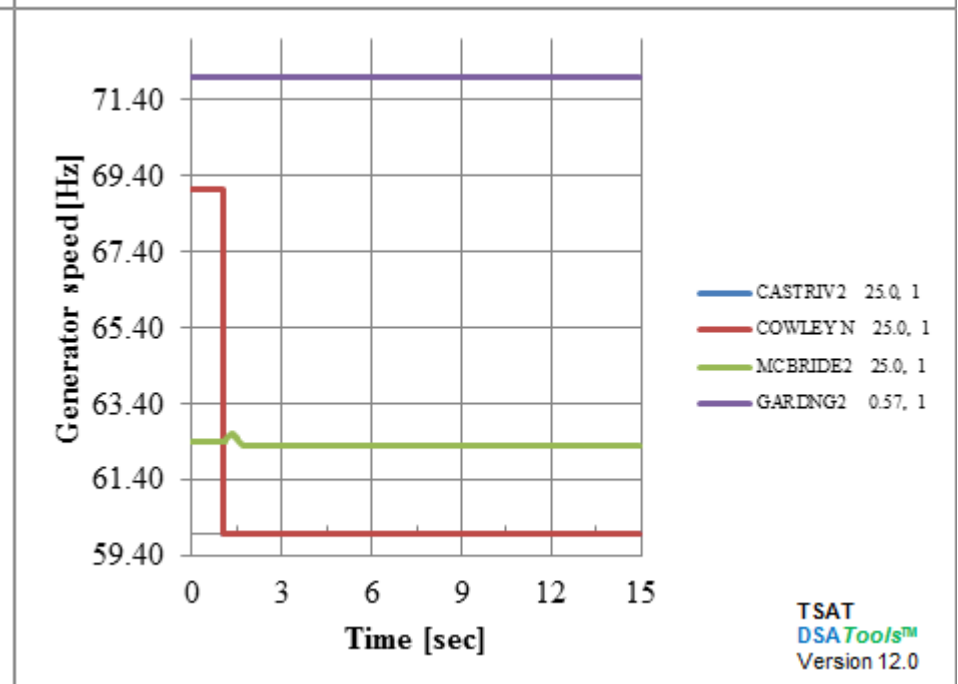
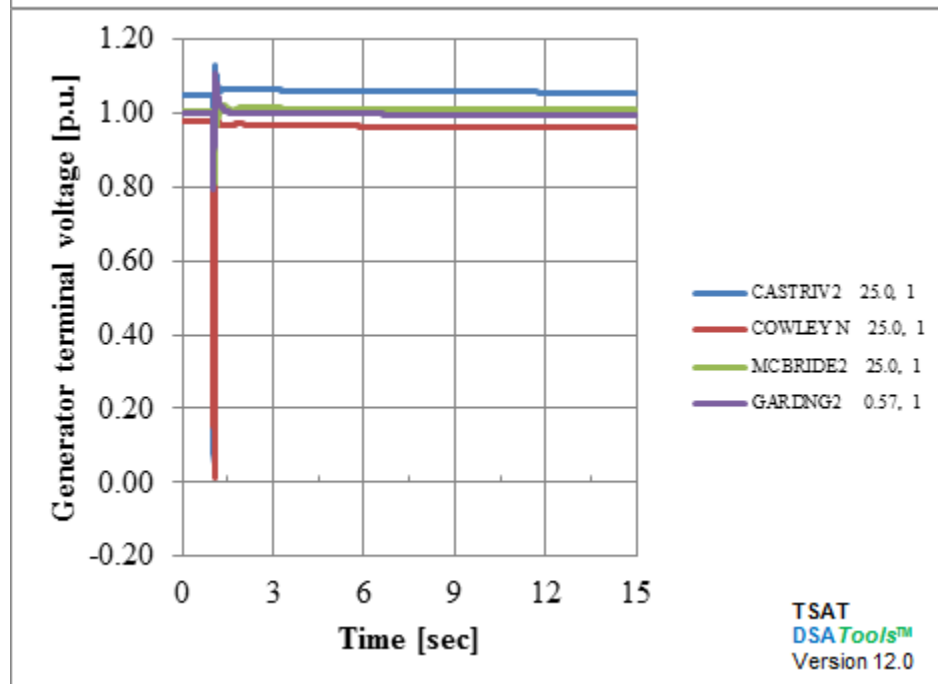
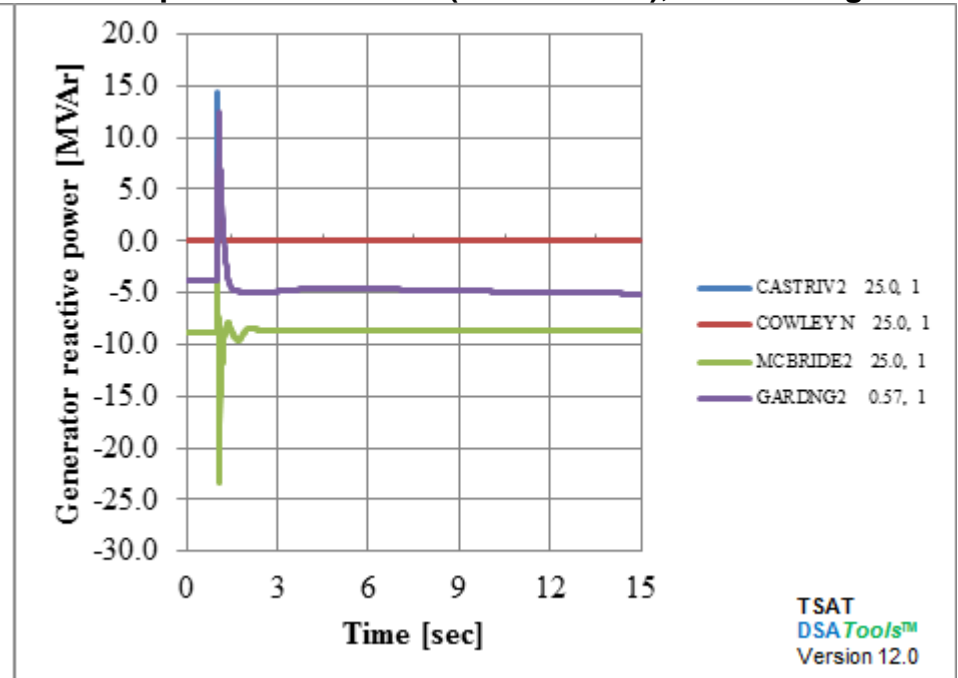
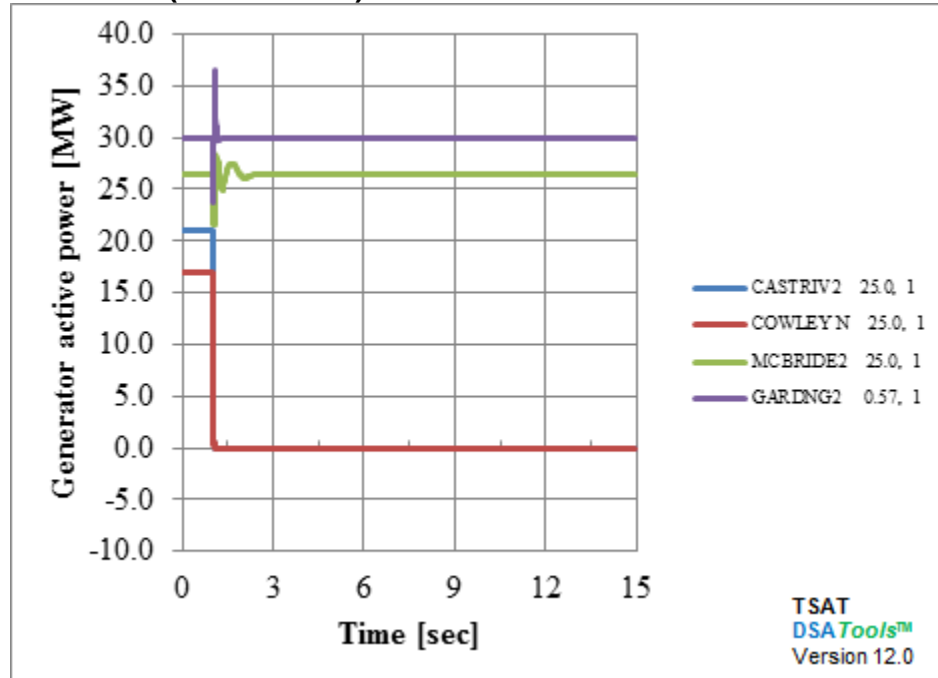
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



10 -- 164L (103S - 415S) NEAR 103S

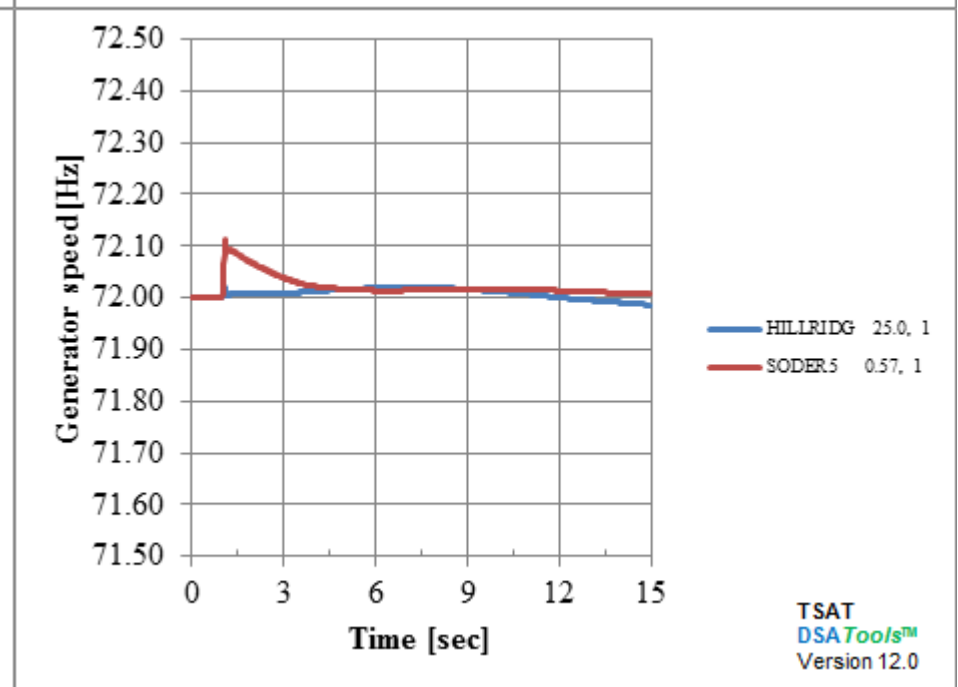
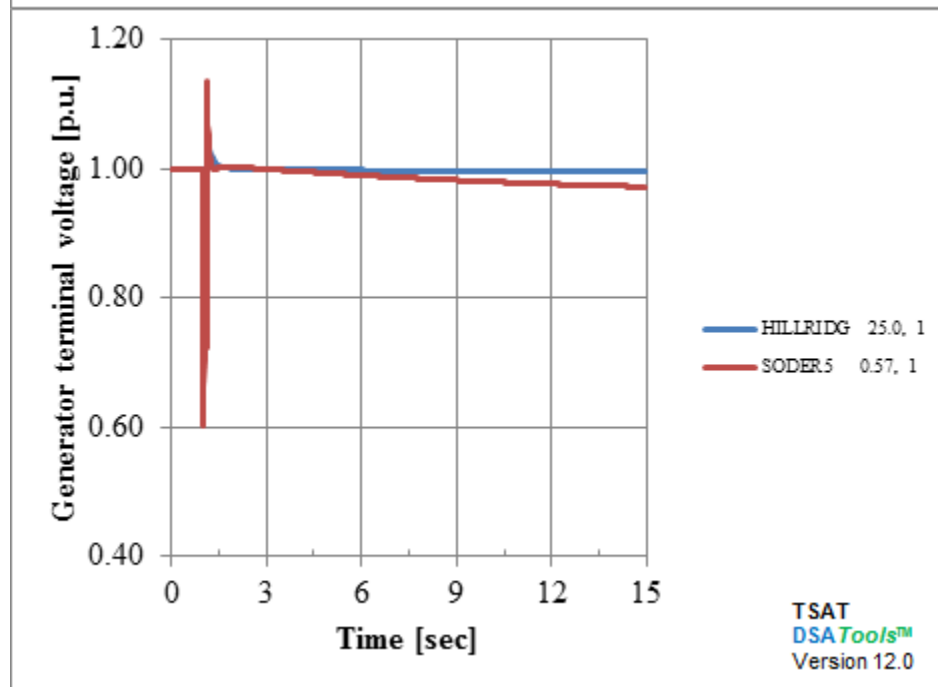
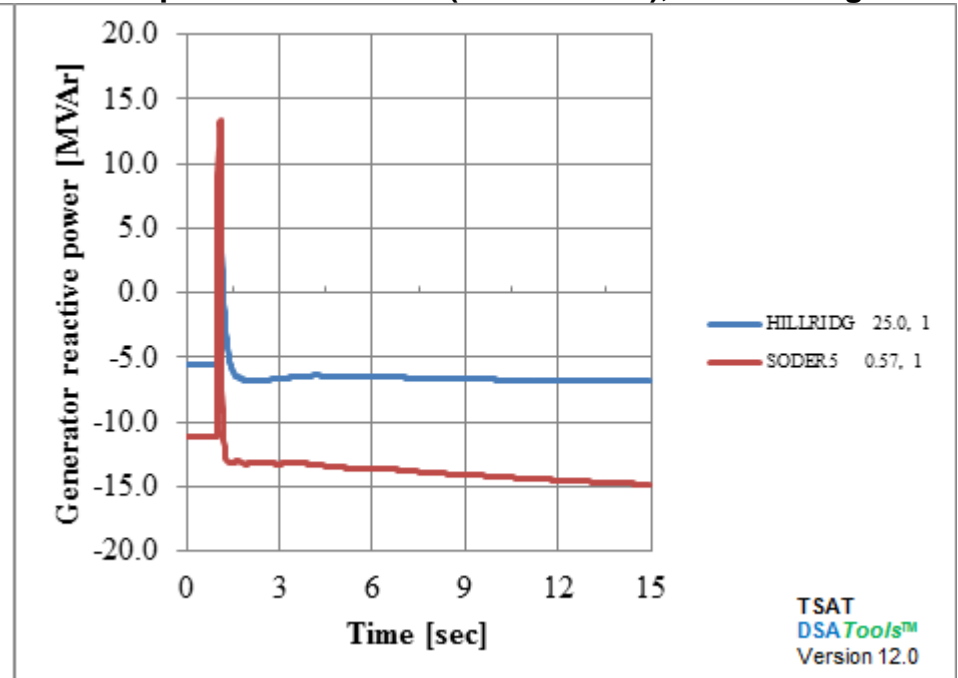
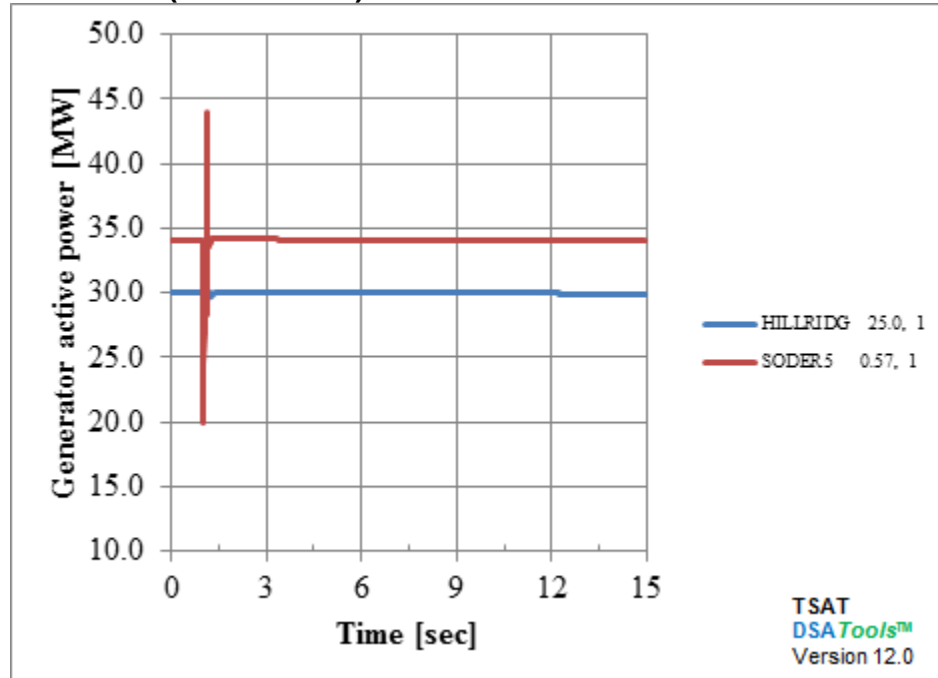
Proposed Connection (Alternative 2), Summer Light 2017





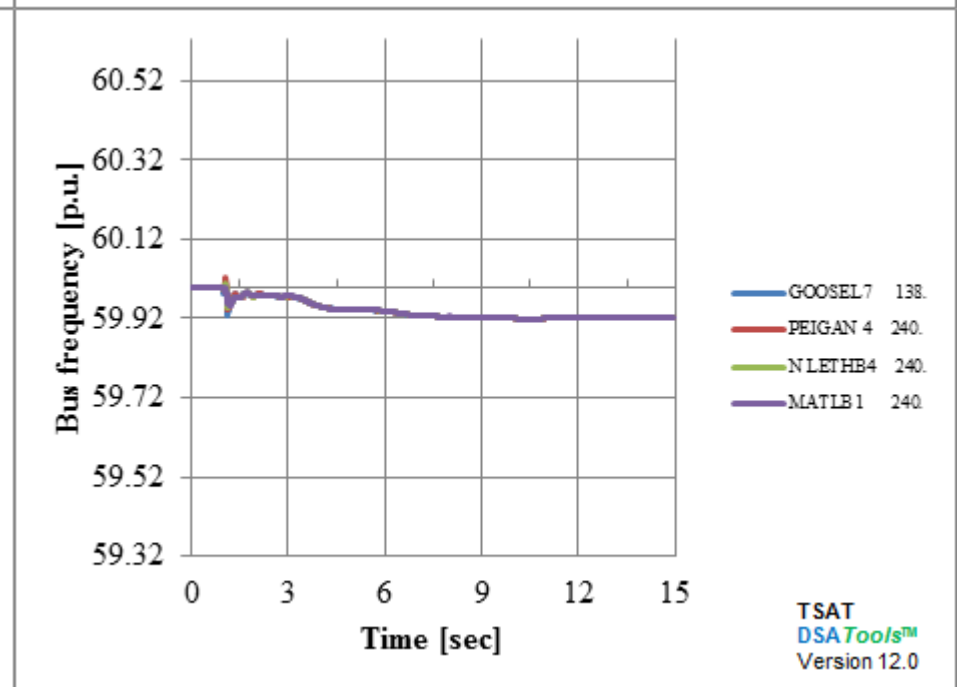
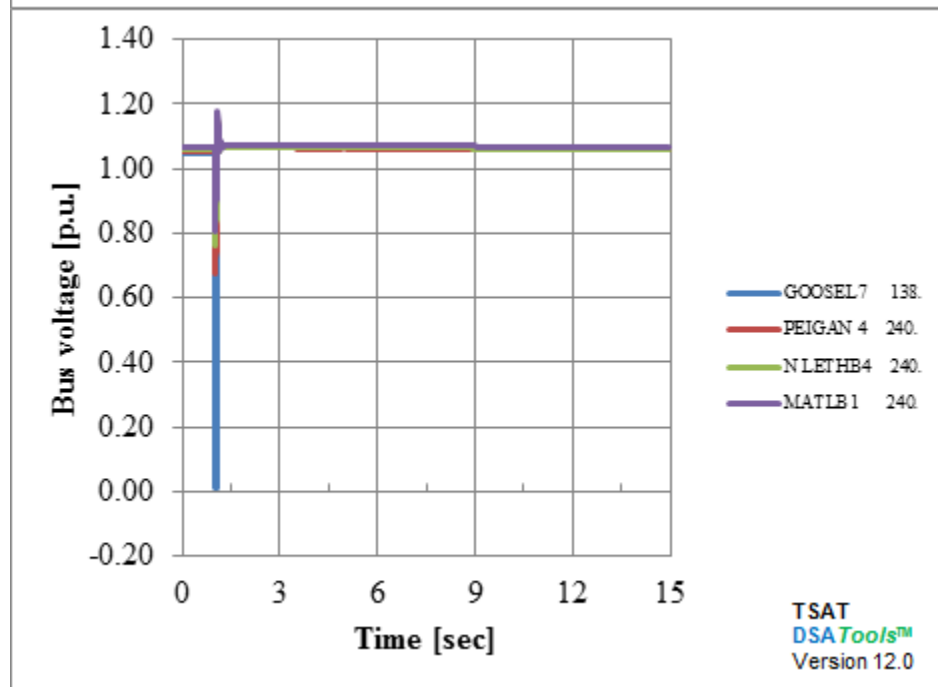
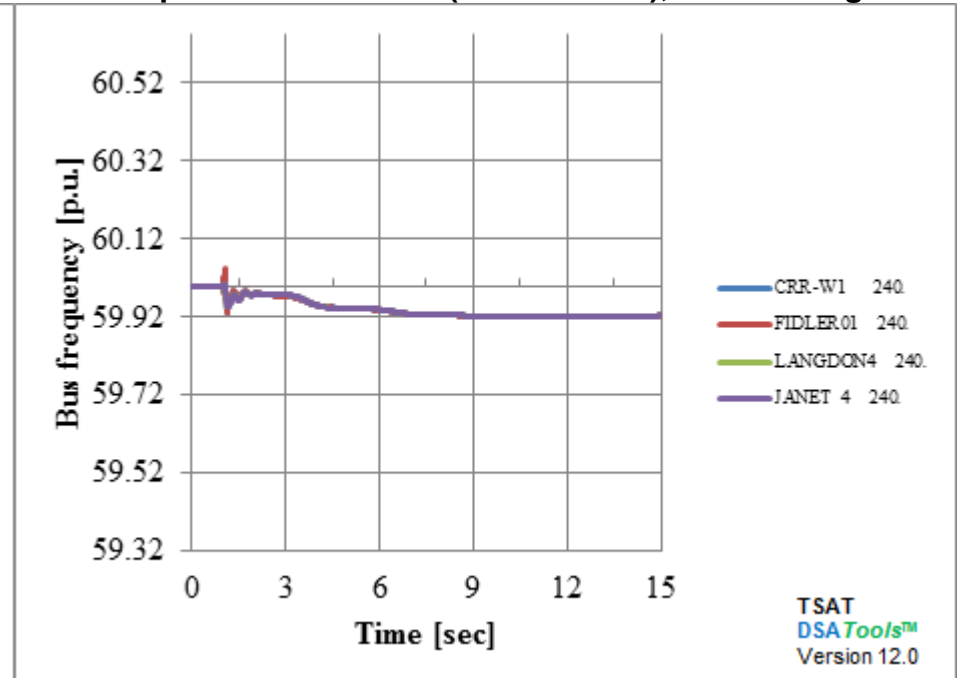
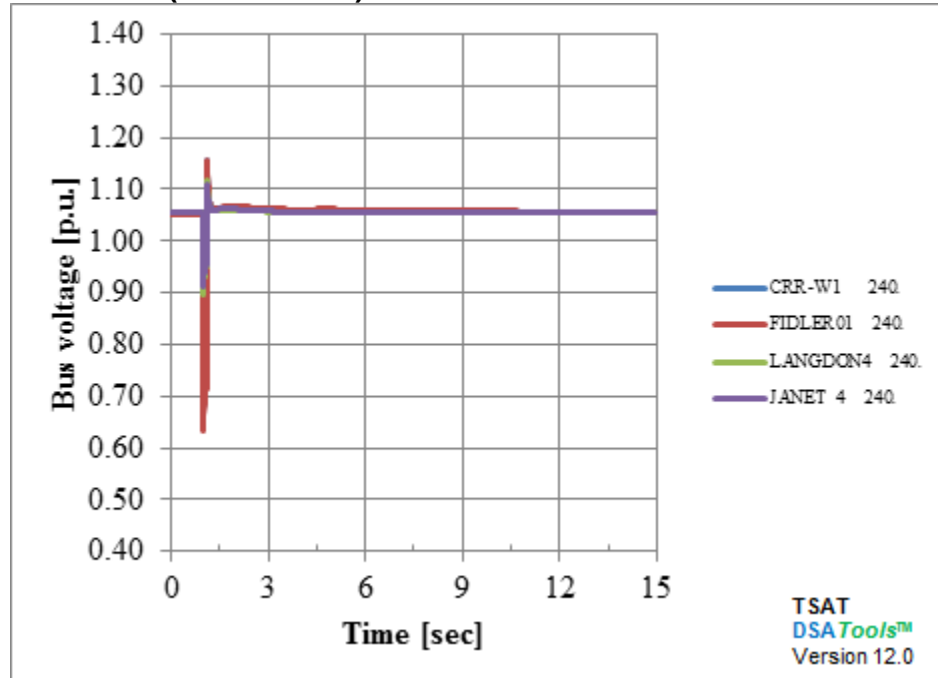
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



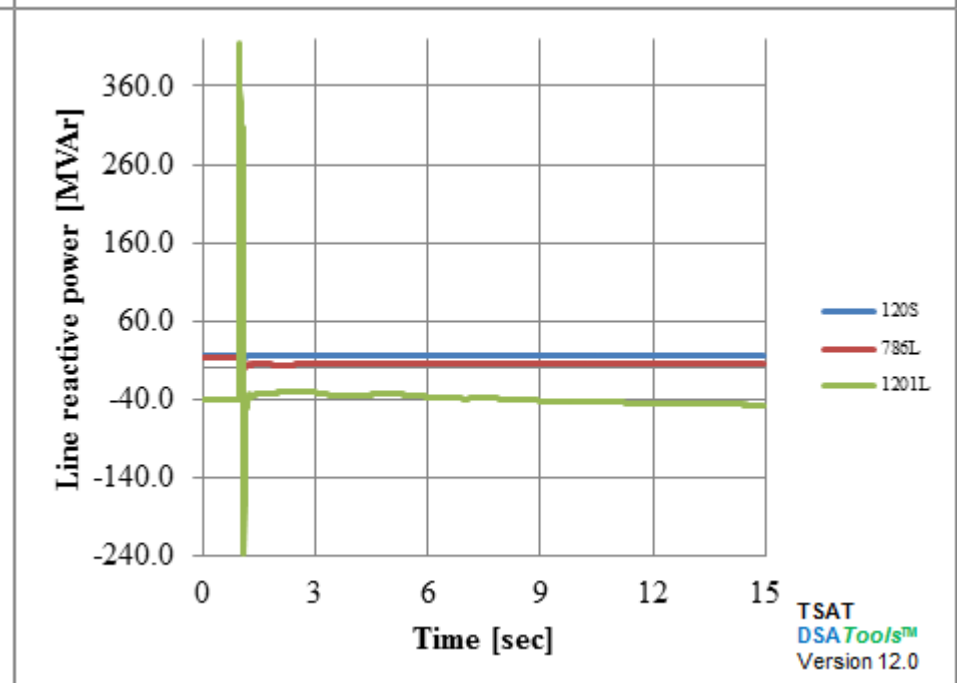
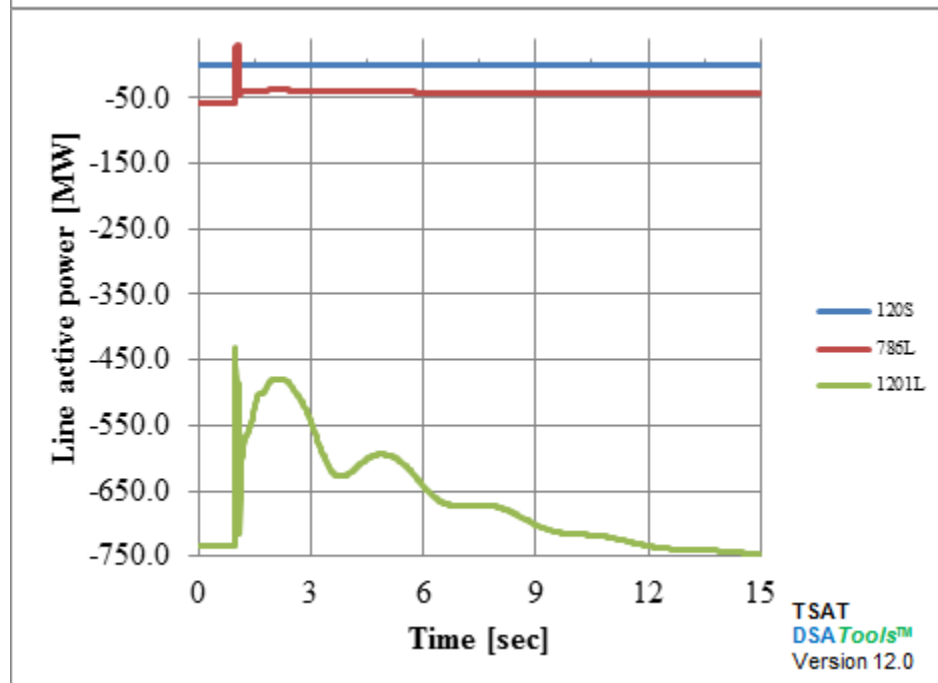
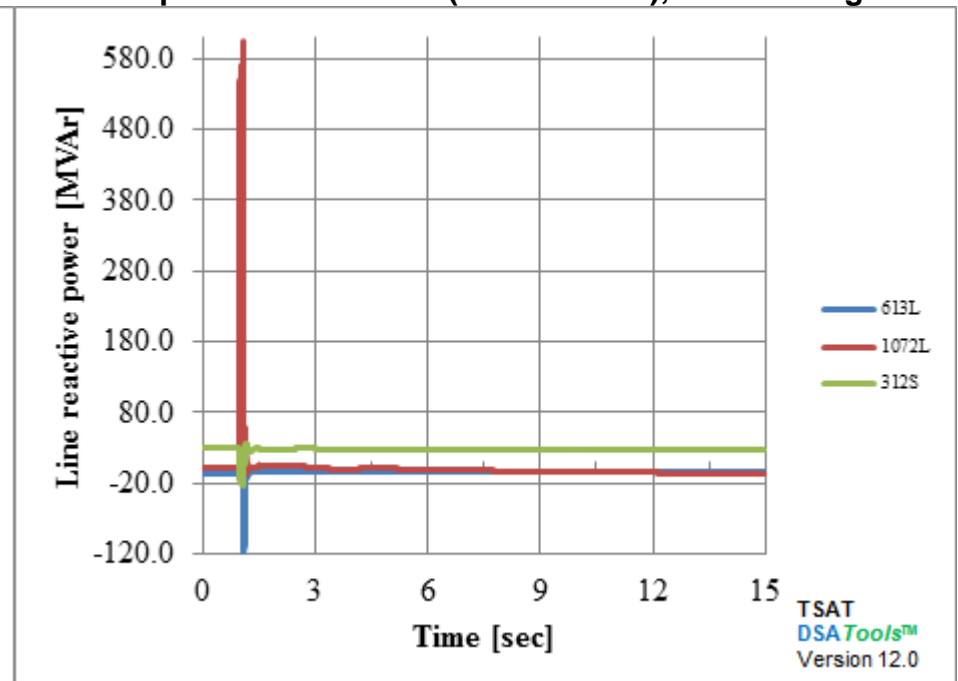
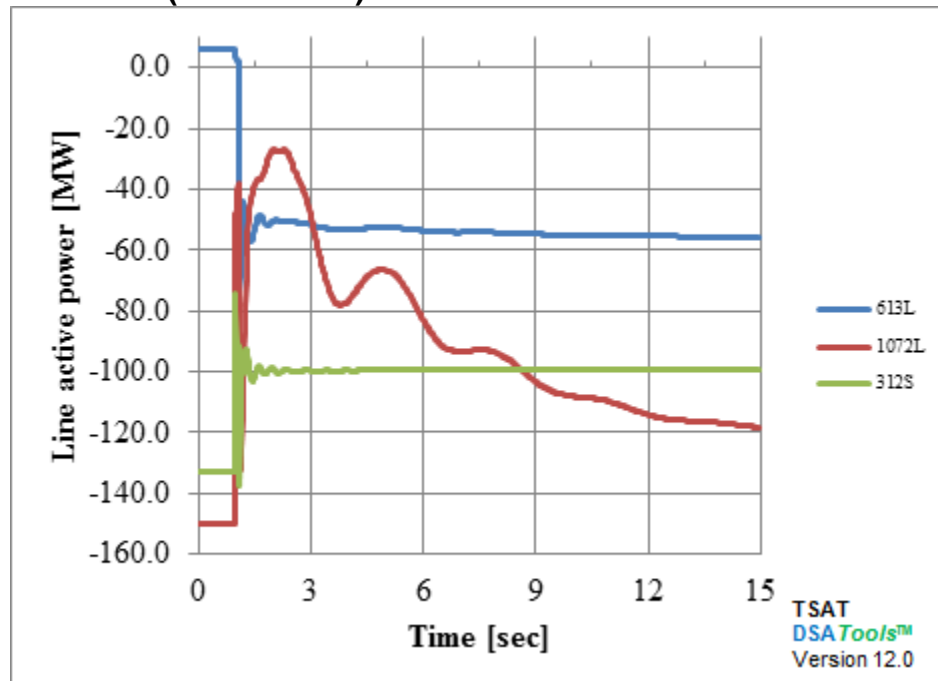
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



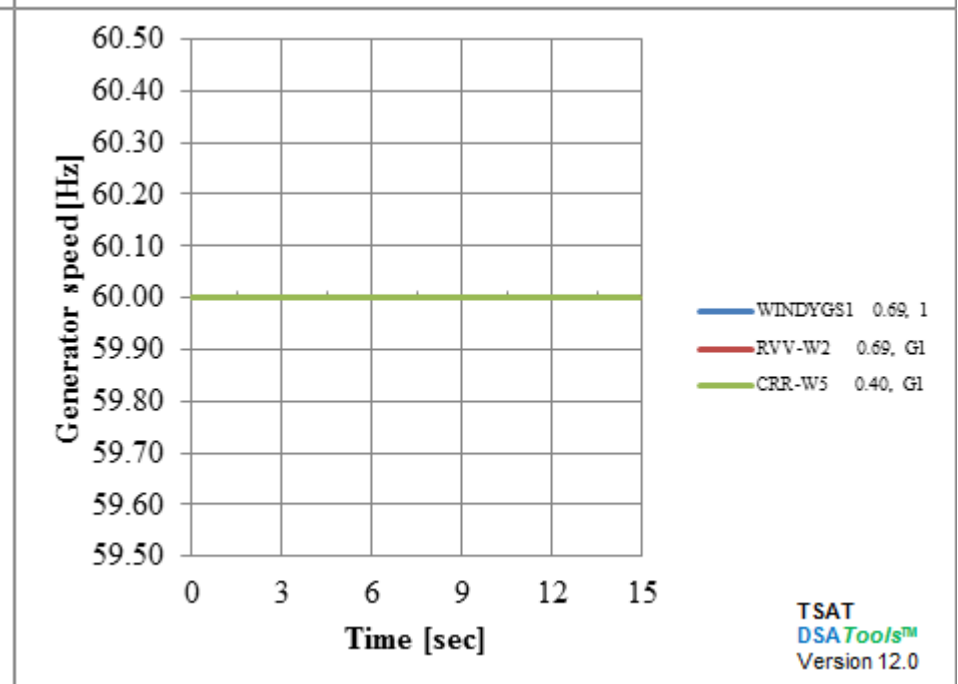
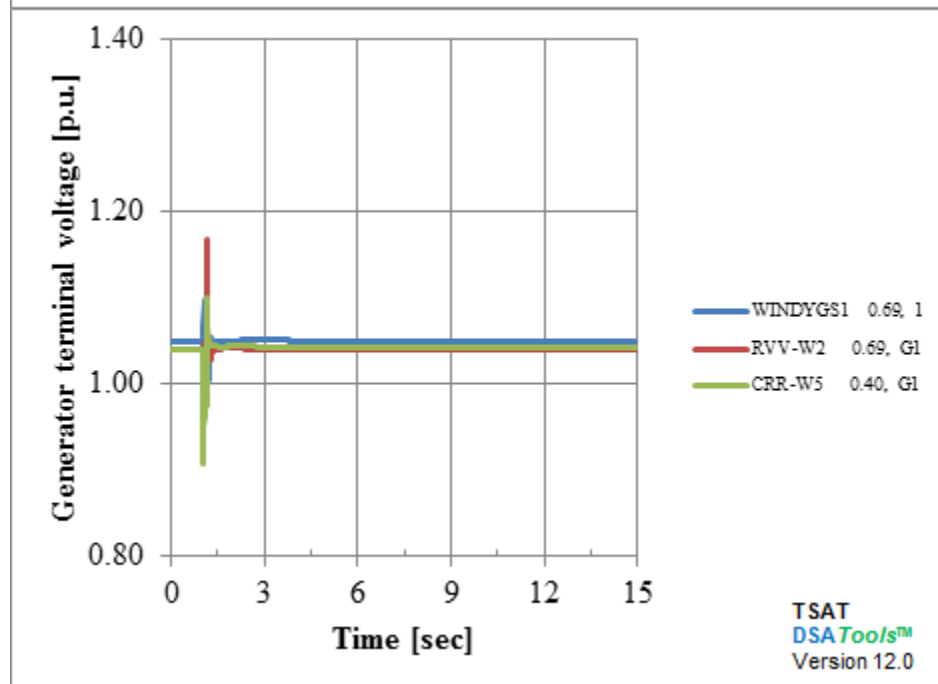
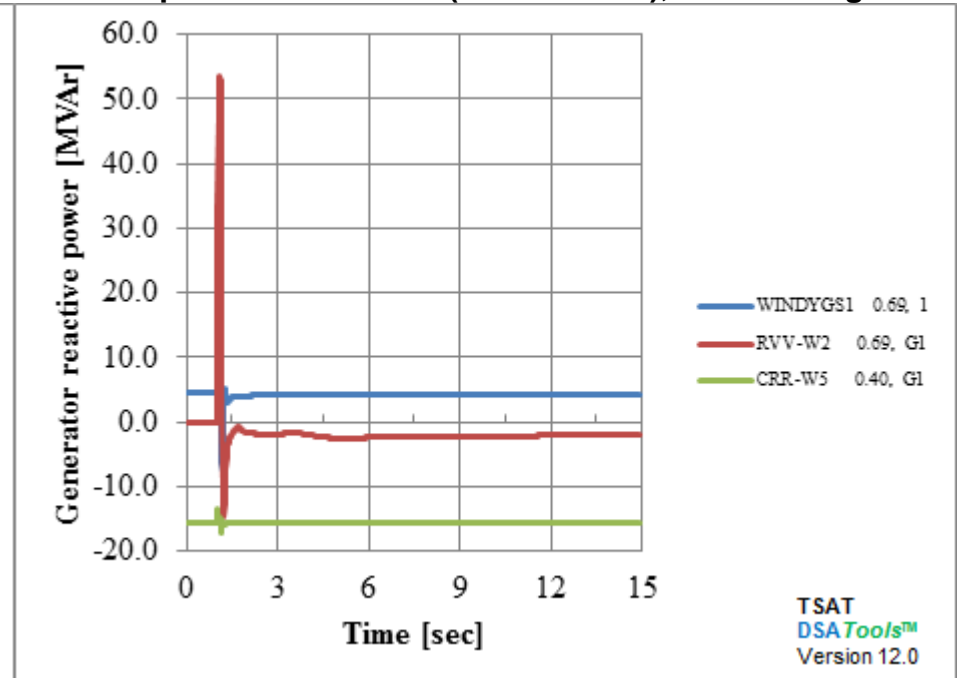
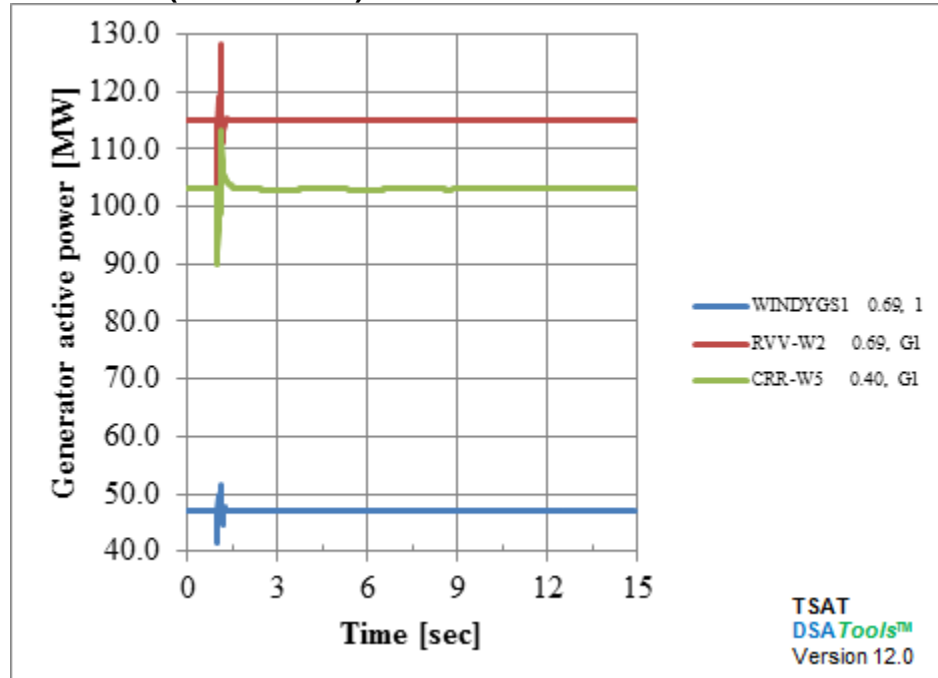
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



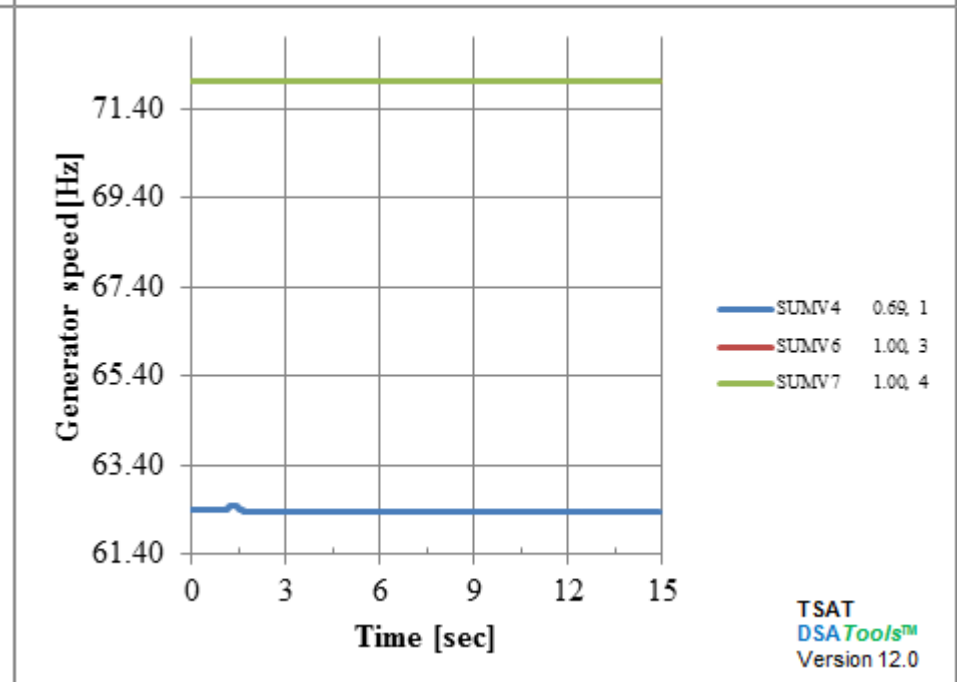
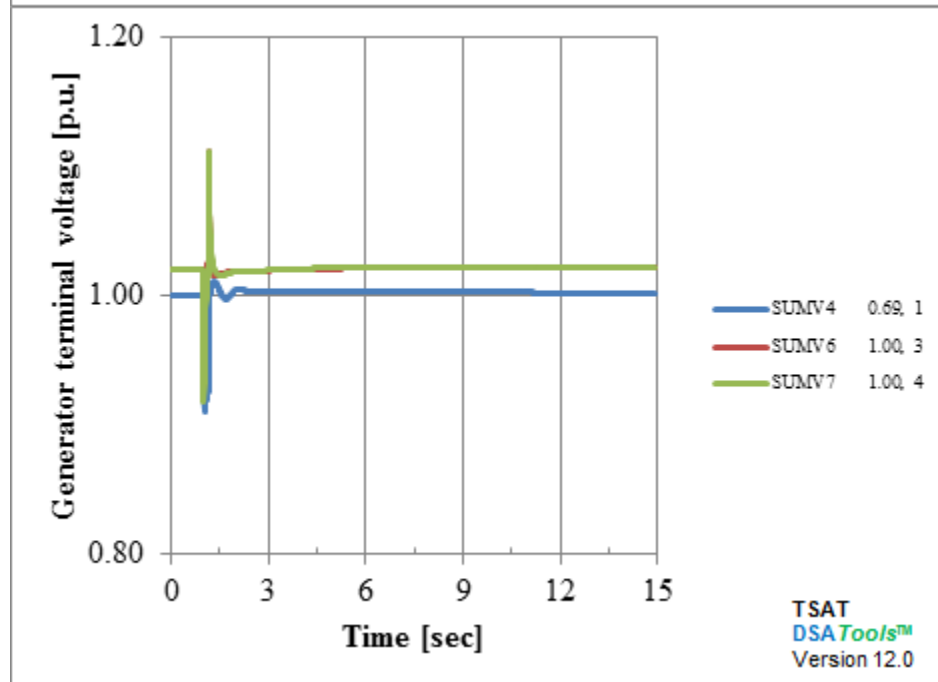
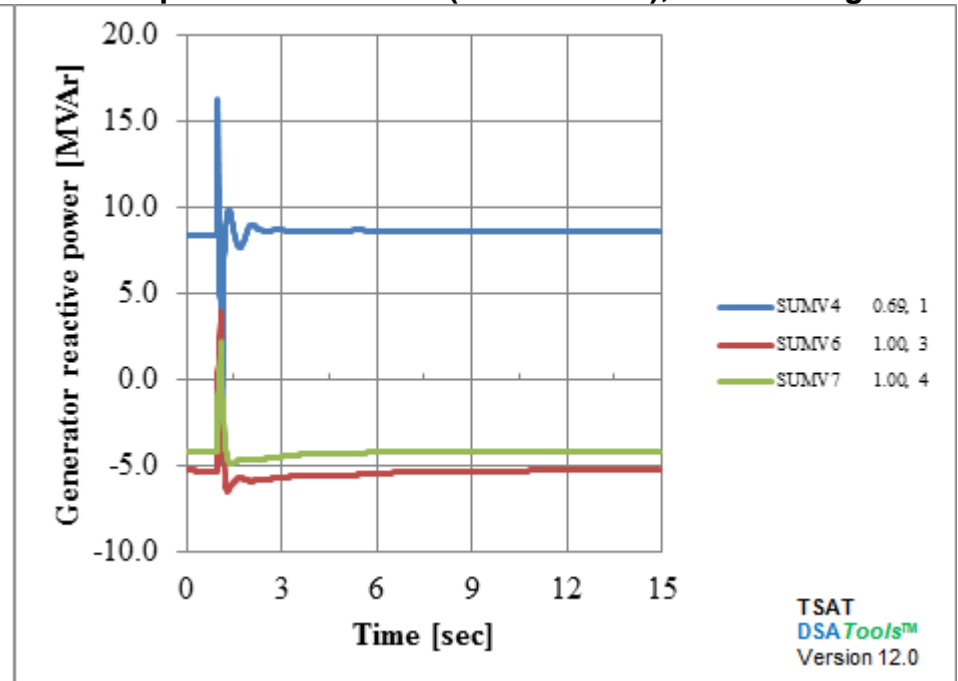
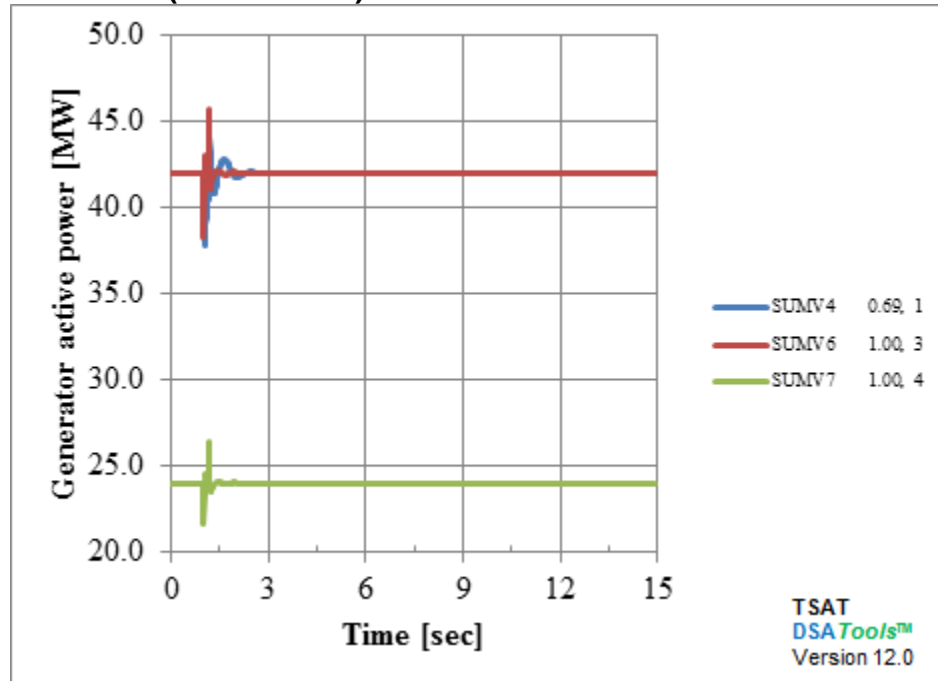
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Light 2017



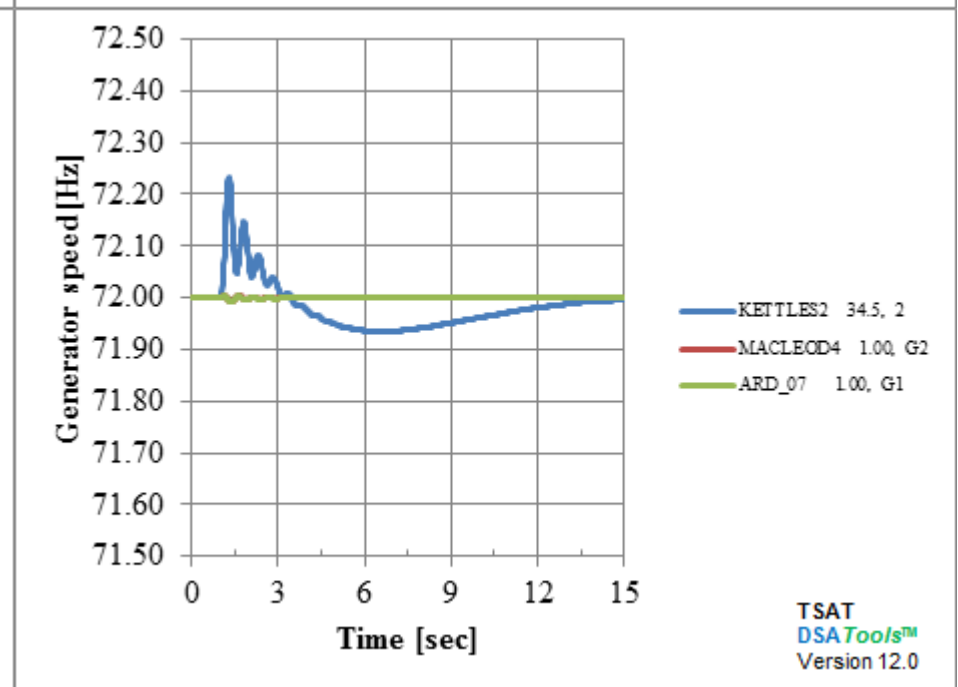
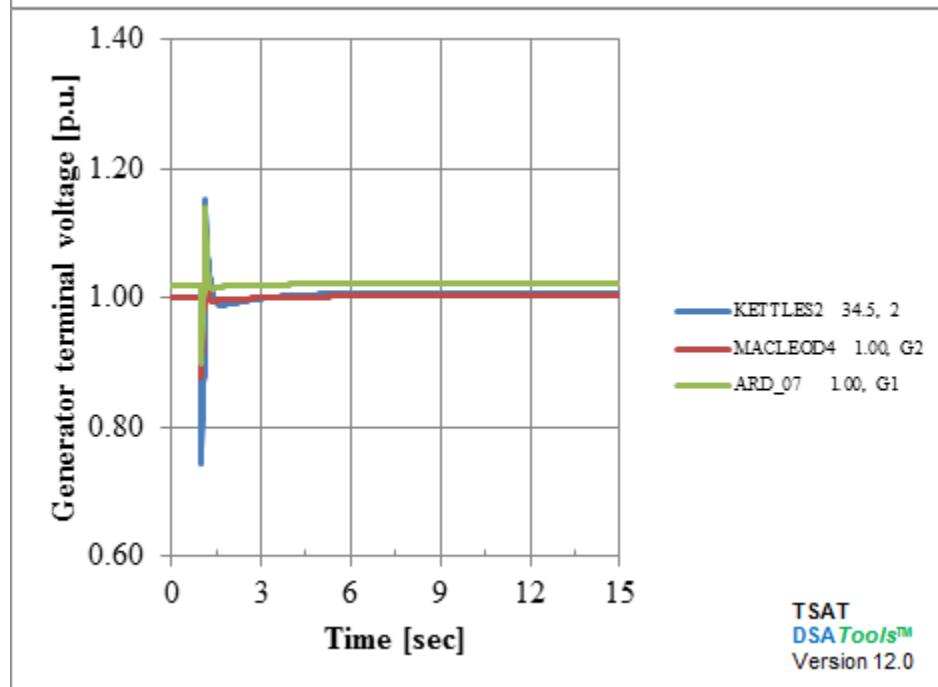
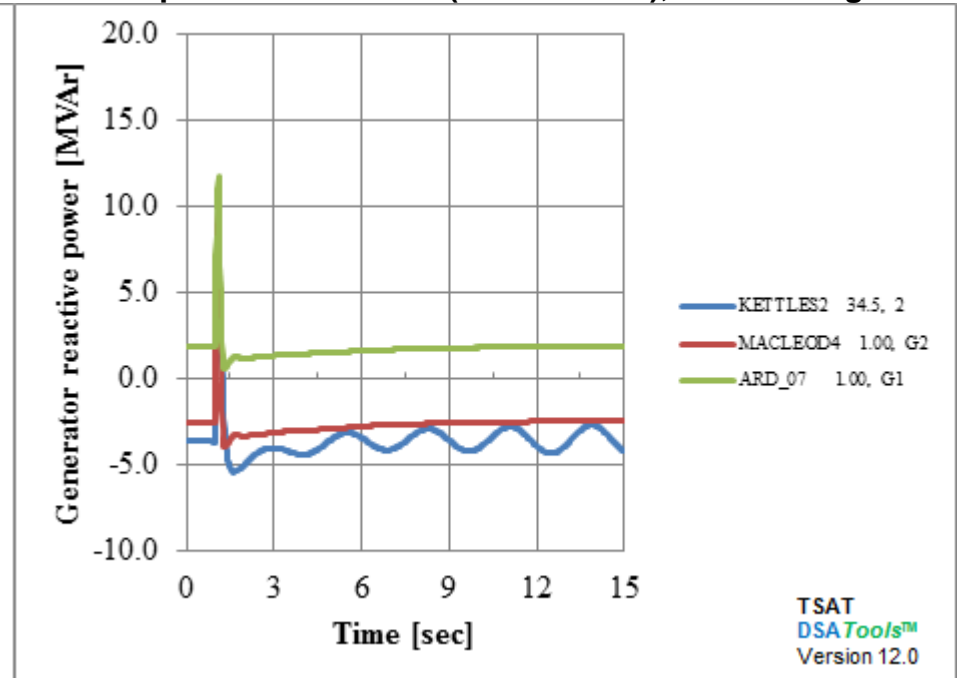
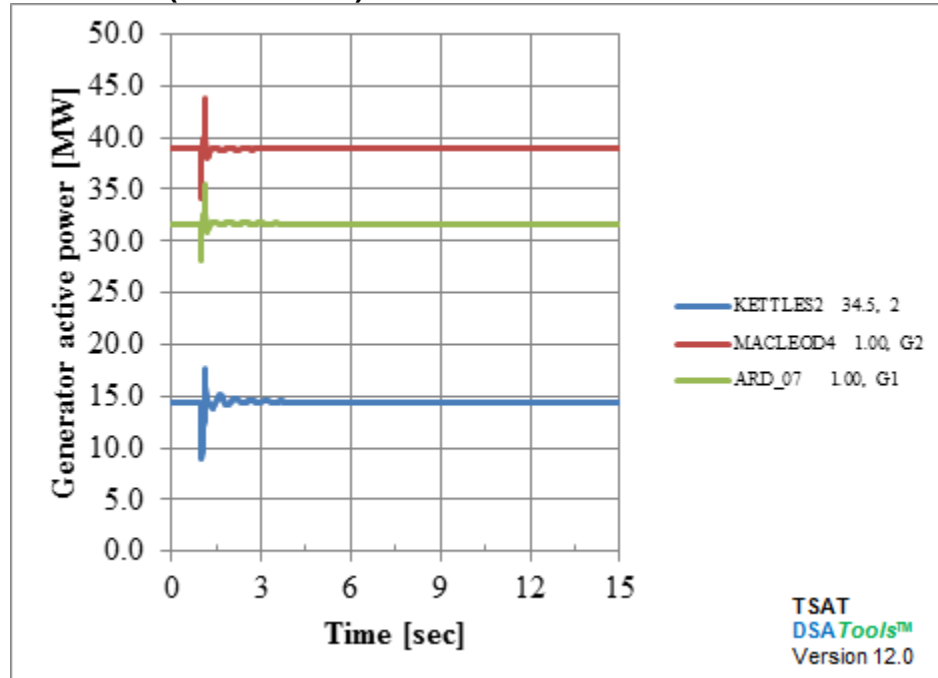
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Light 2017



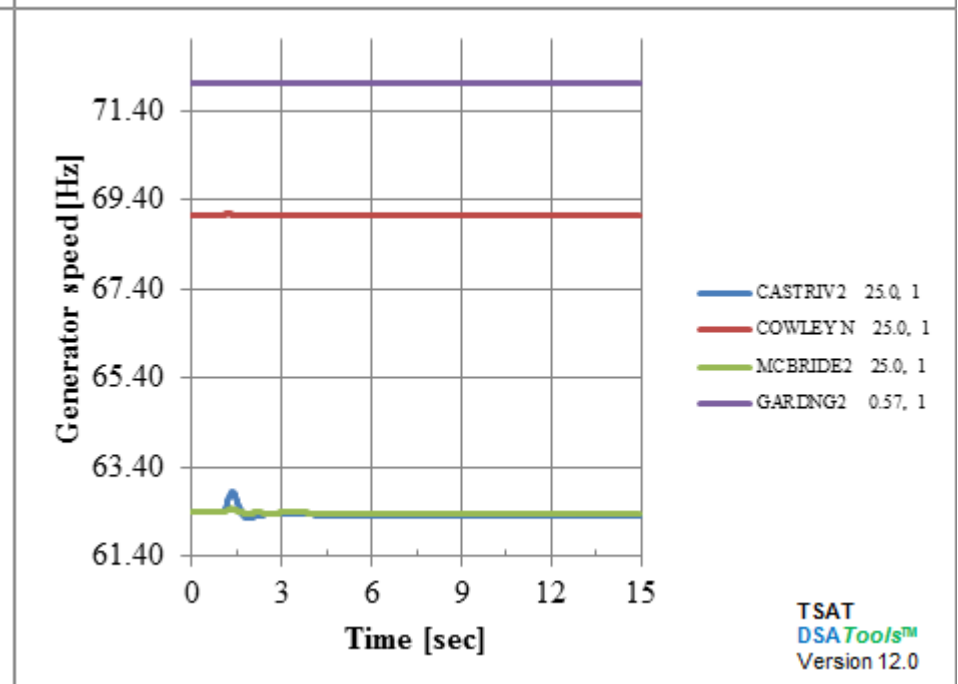
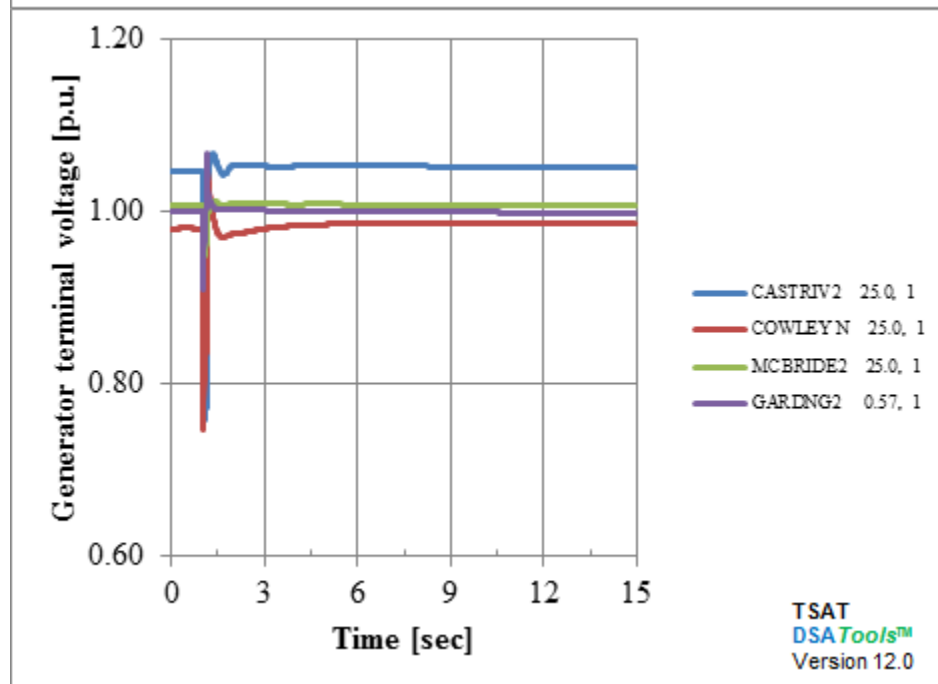
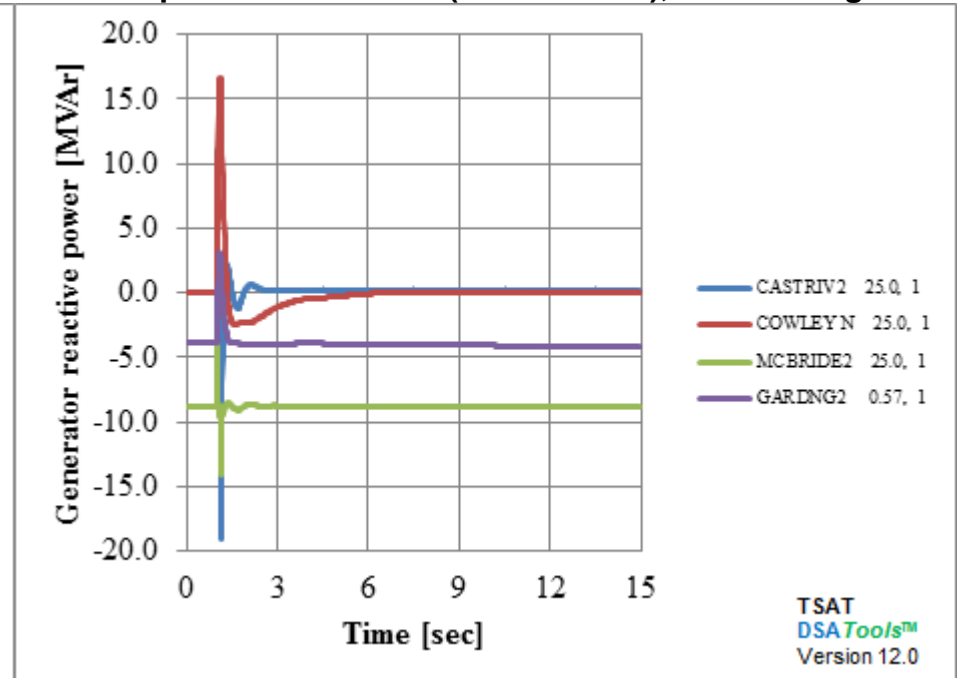
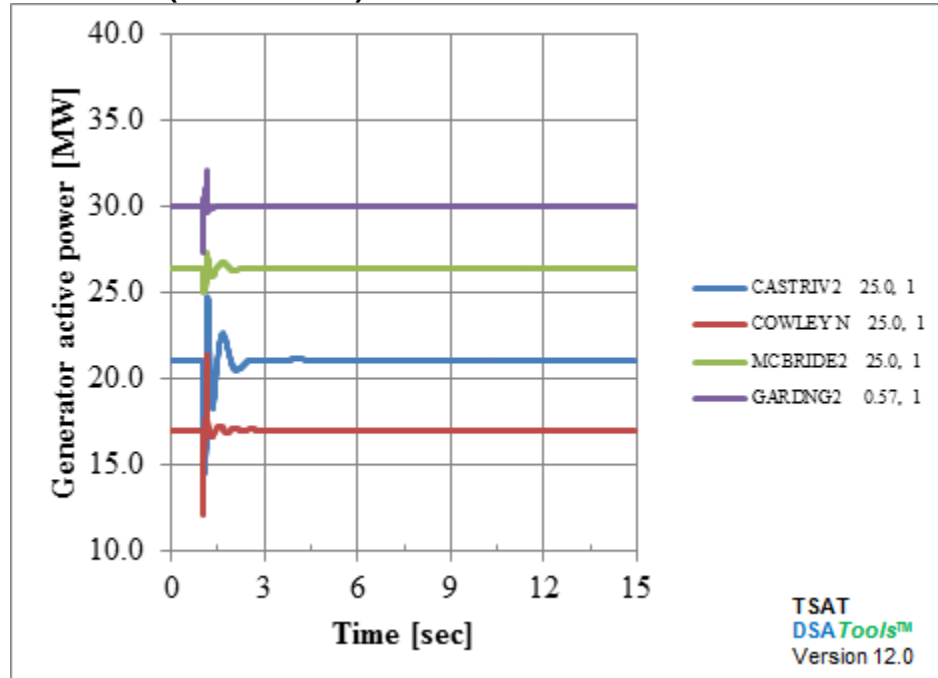
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Light 2017



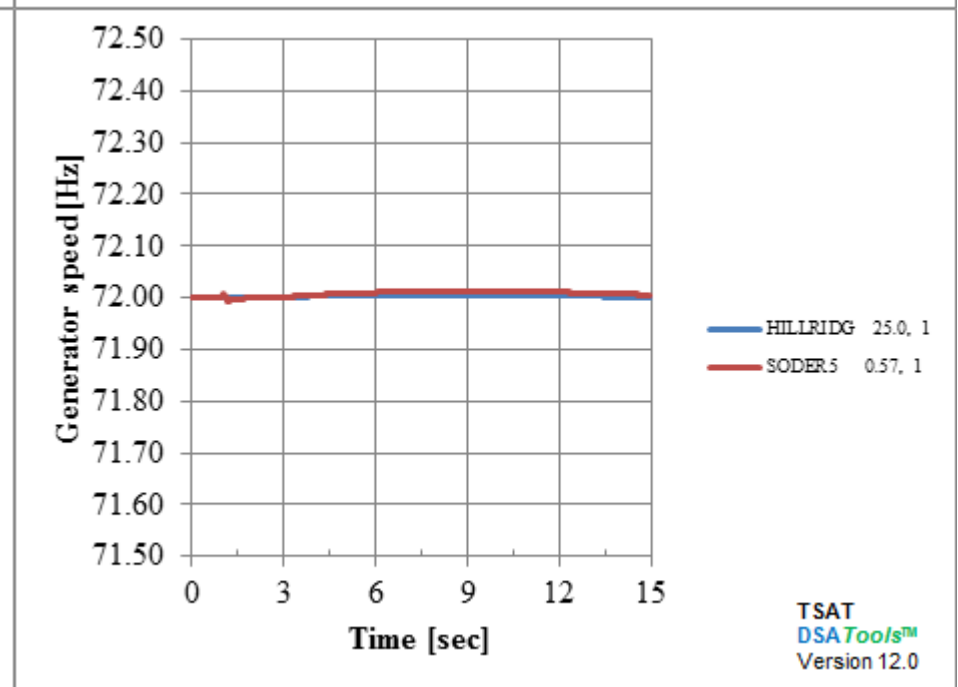
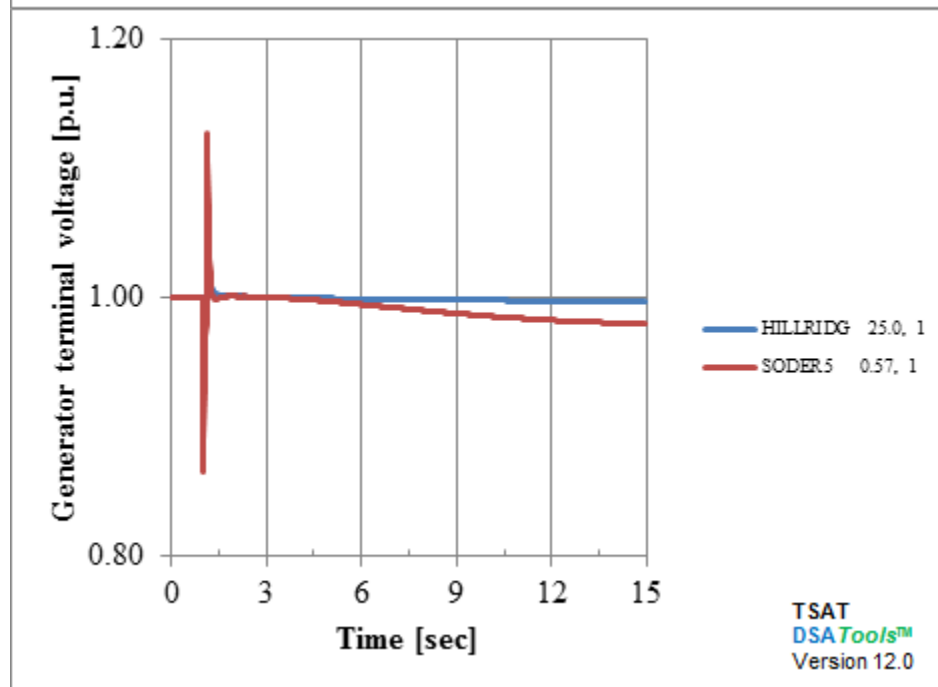
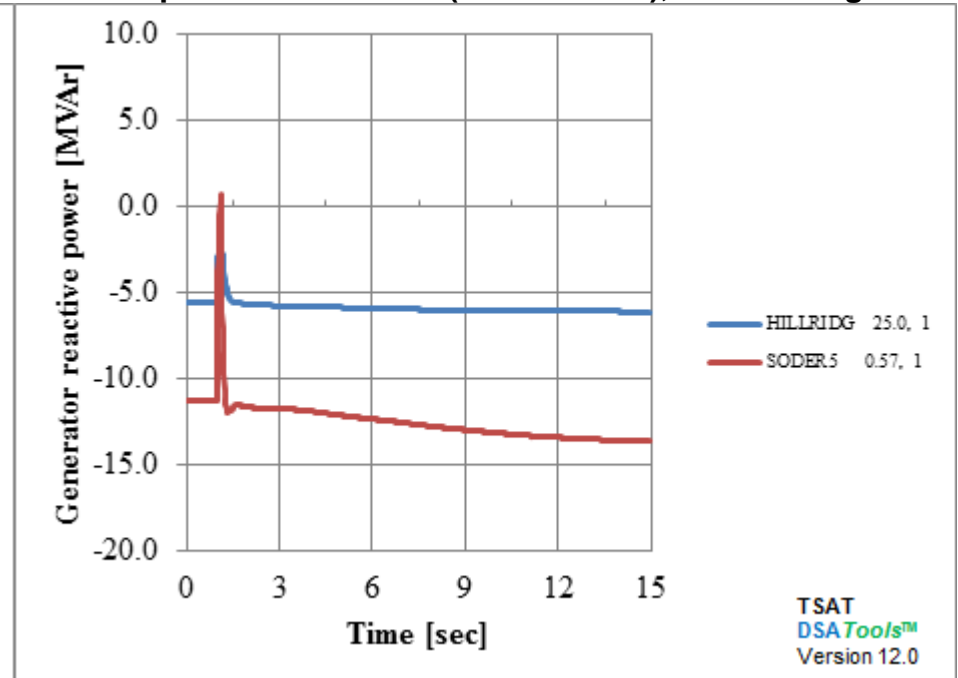
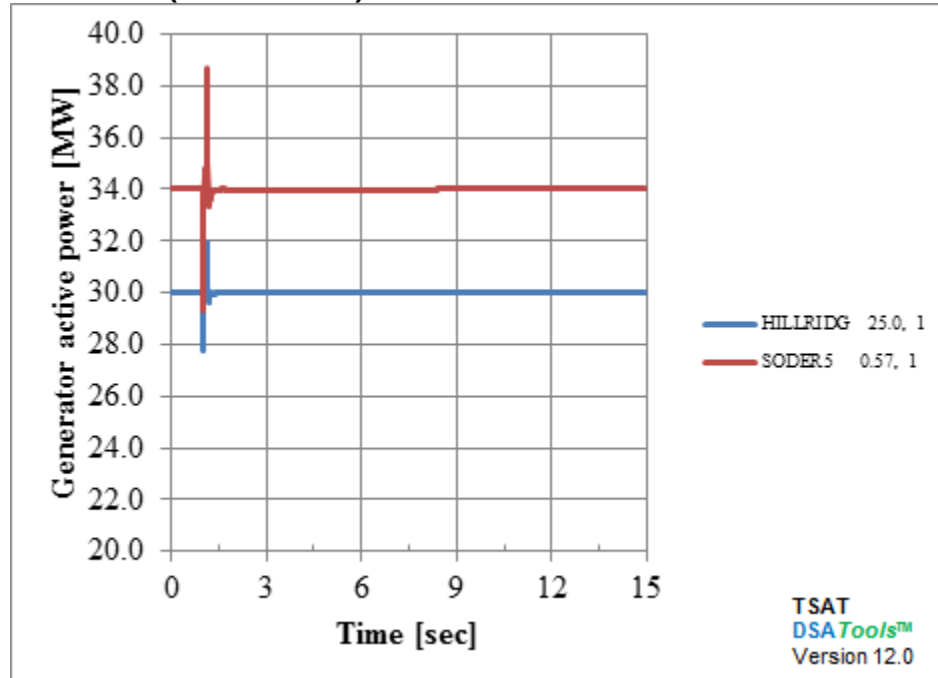
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Light 2017



11 -- 164L (103S - 415S) NEAR 415S

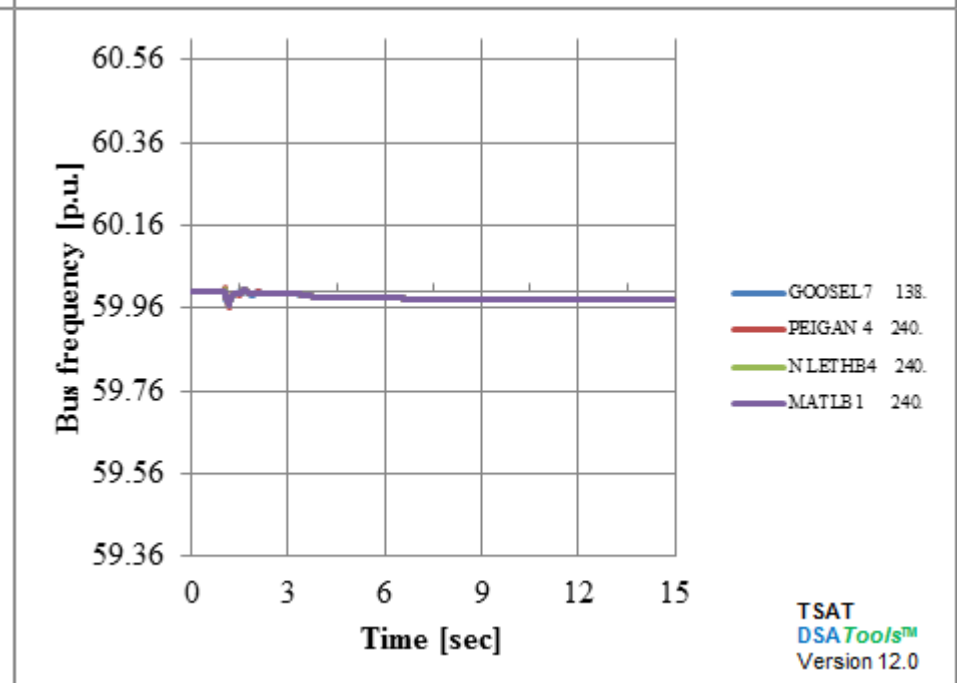
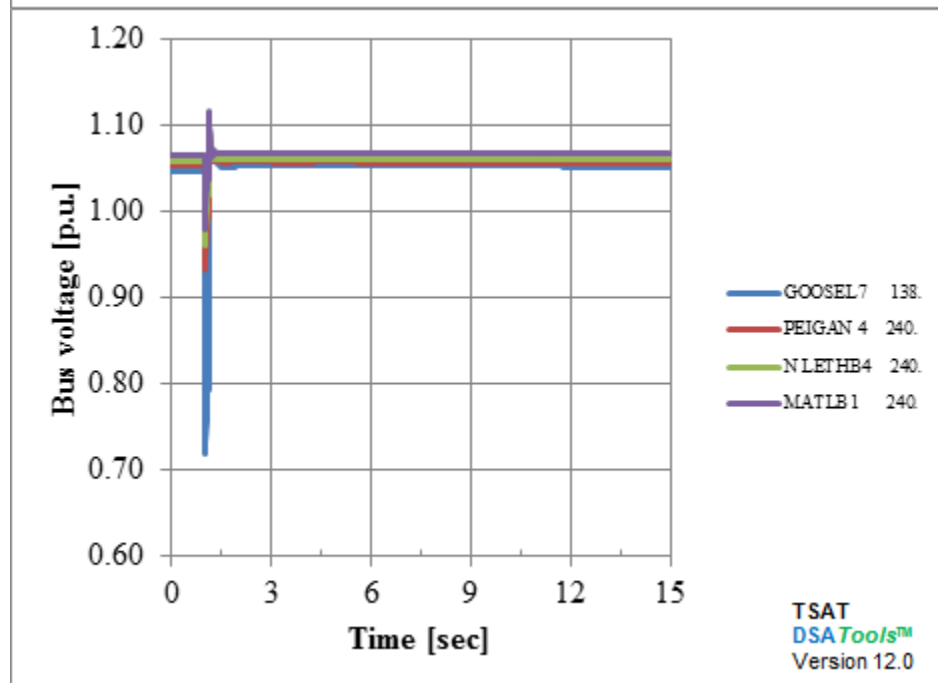
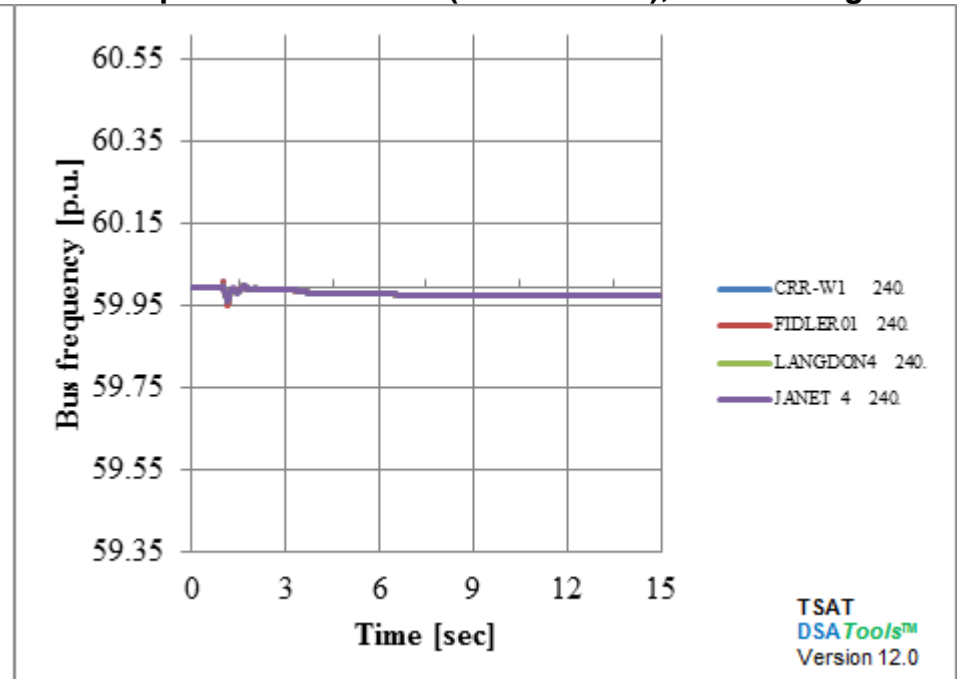
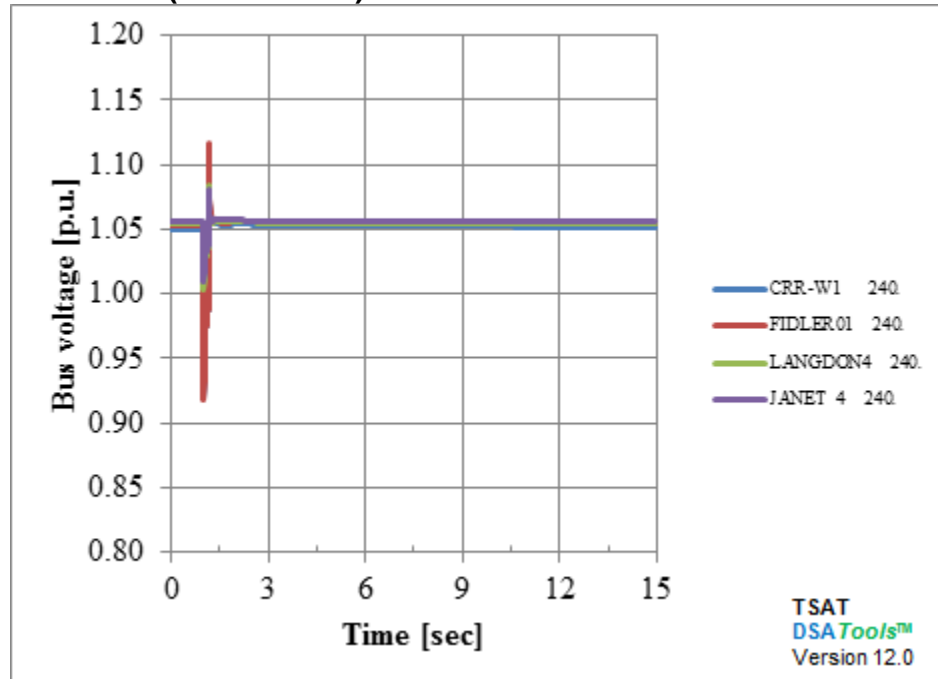
Proposed Connection (Alternative 2), Summer Light 2017





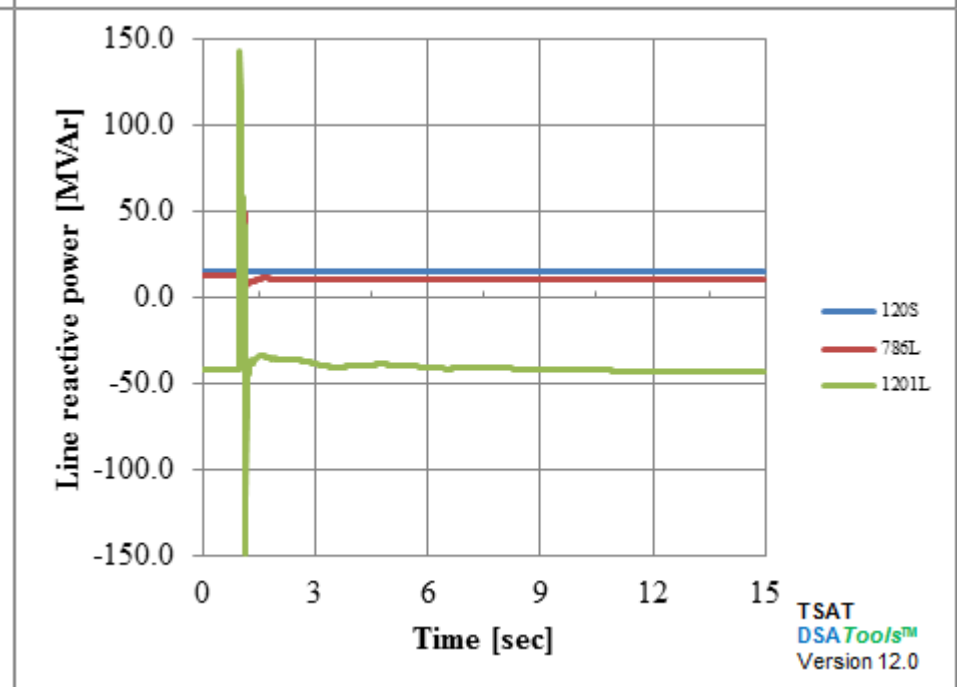
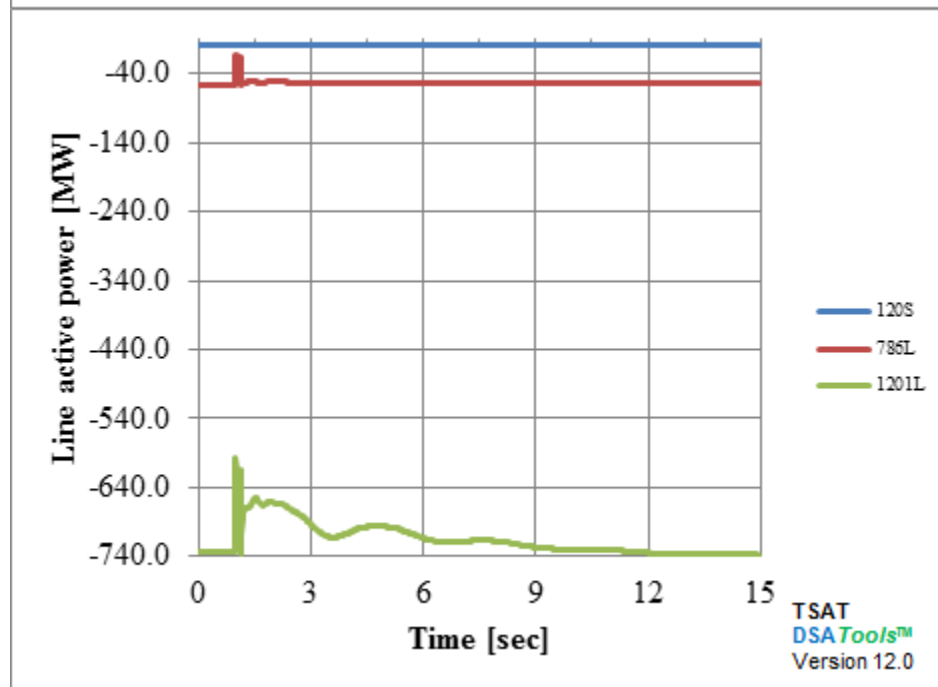
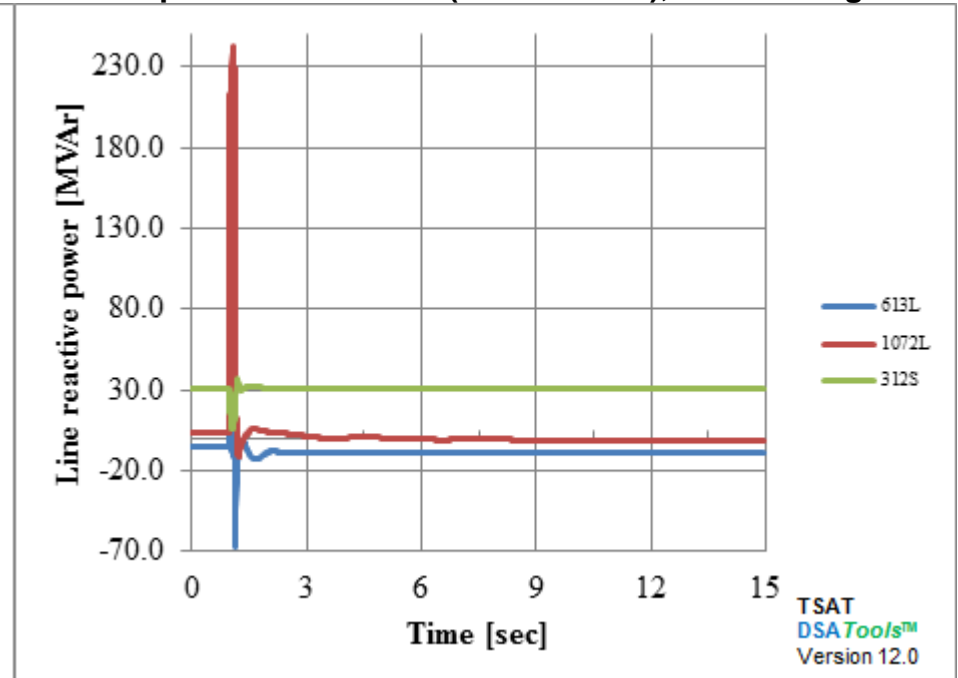
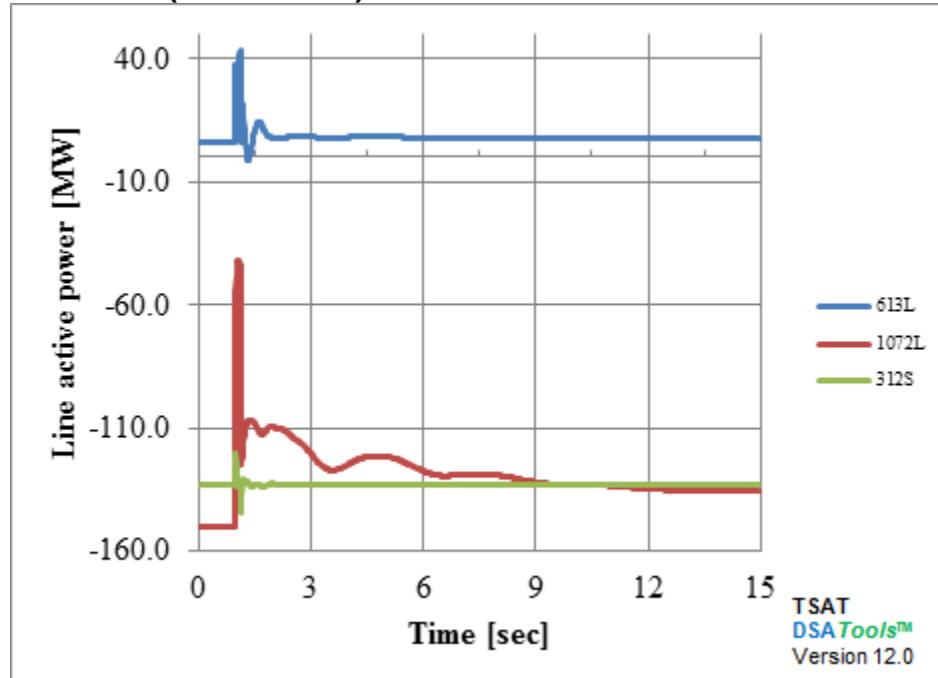
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Light 2017



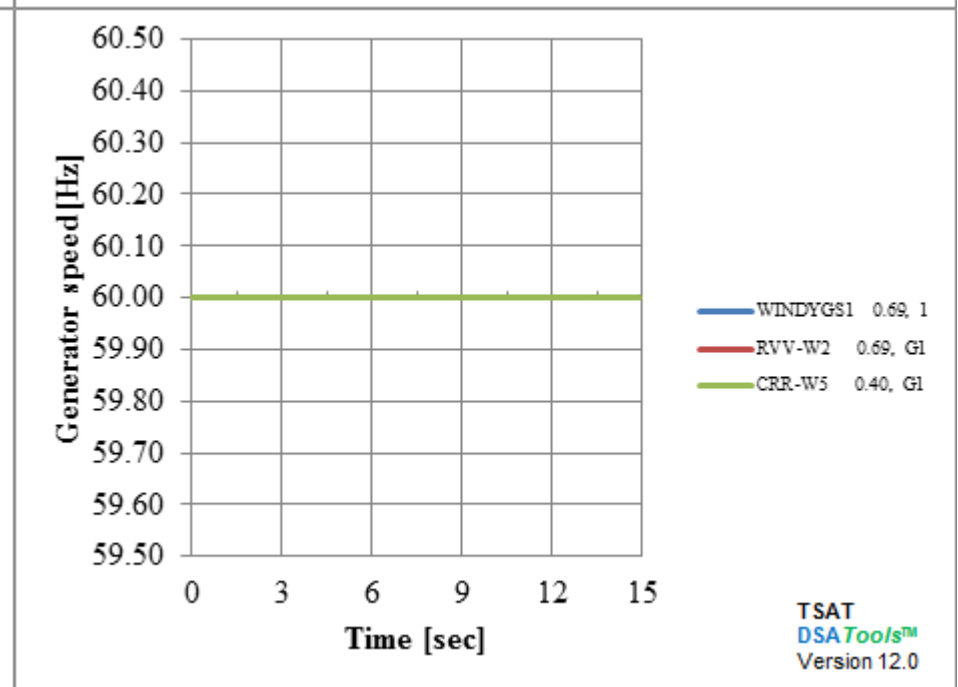
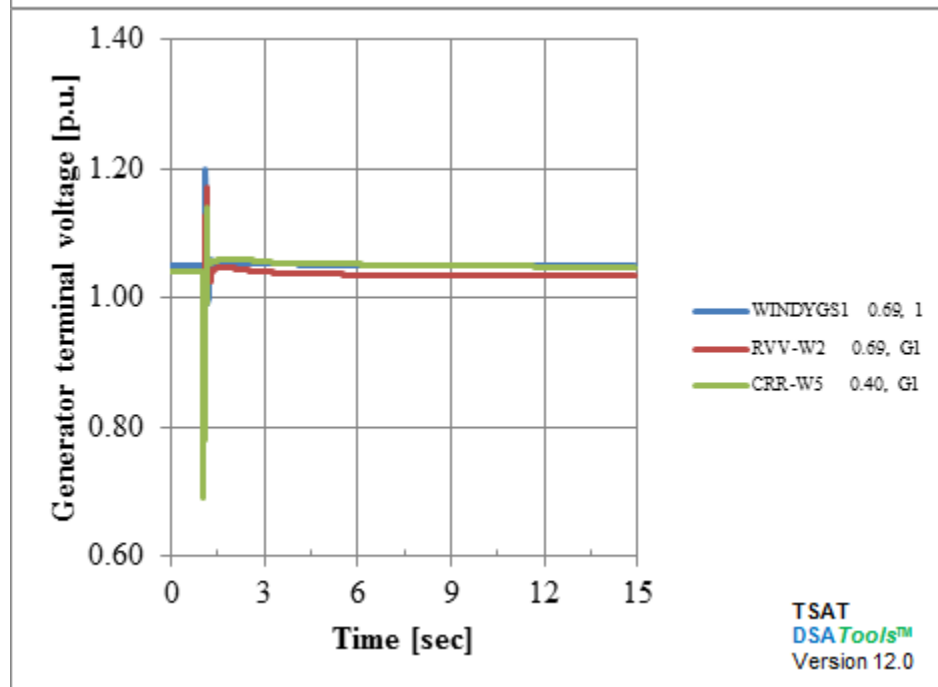
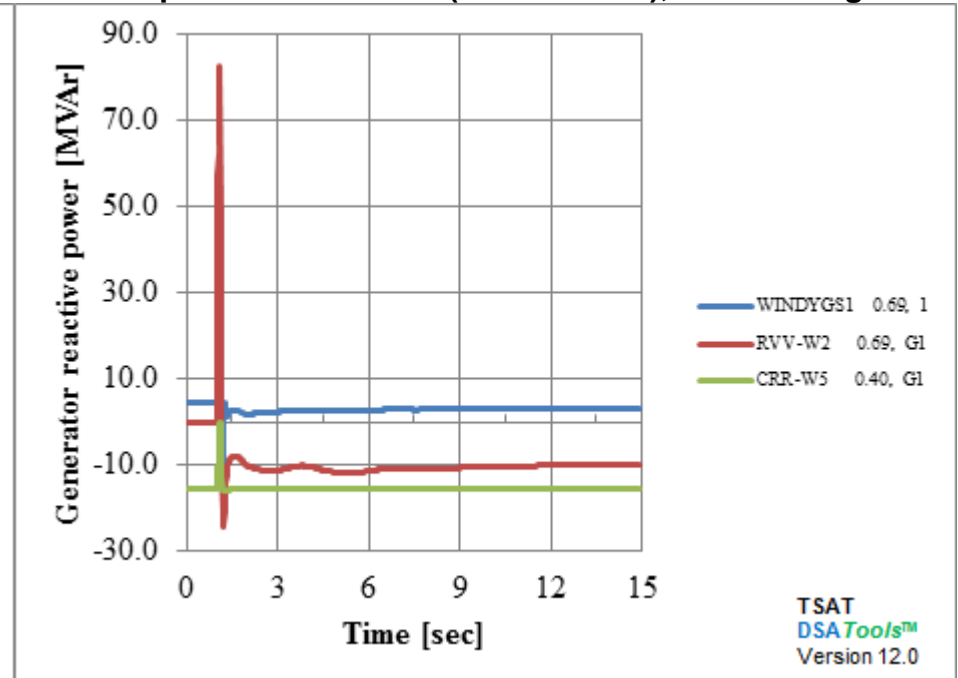
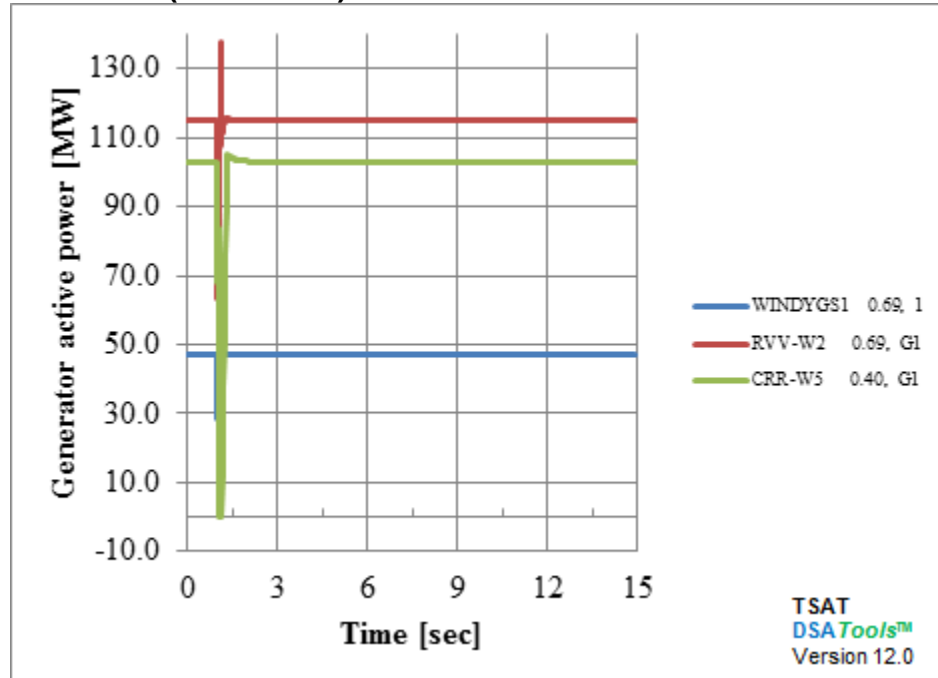
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Light 2017



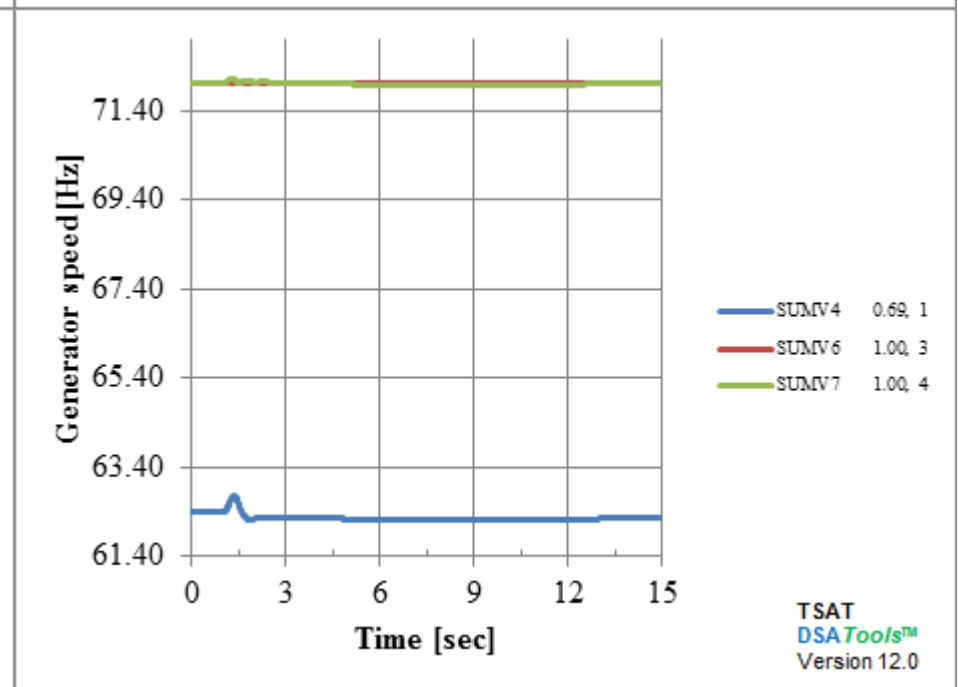
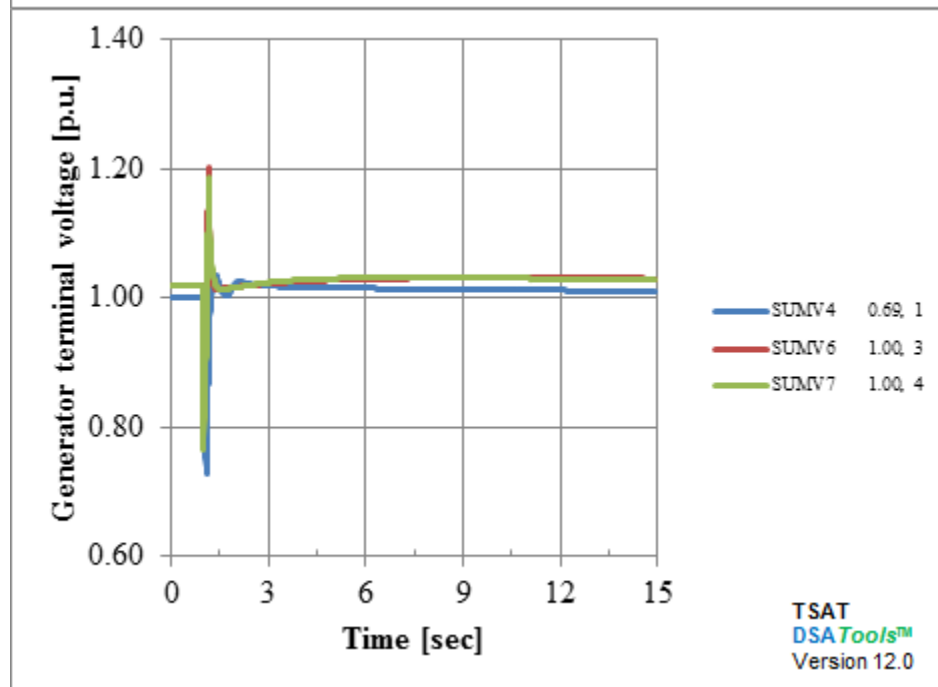
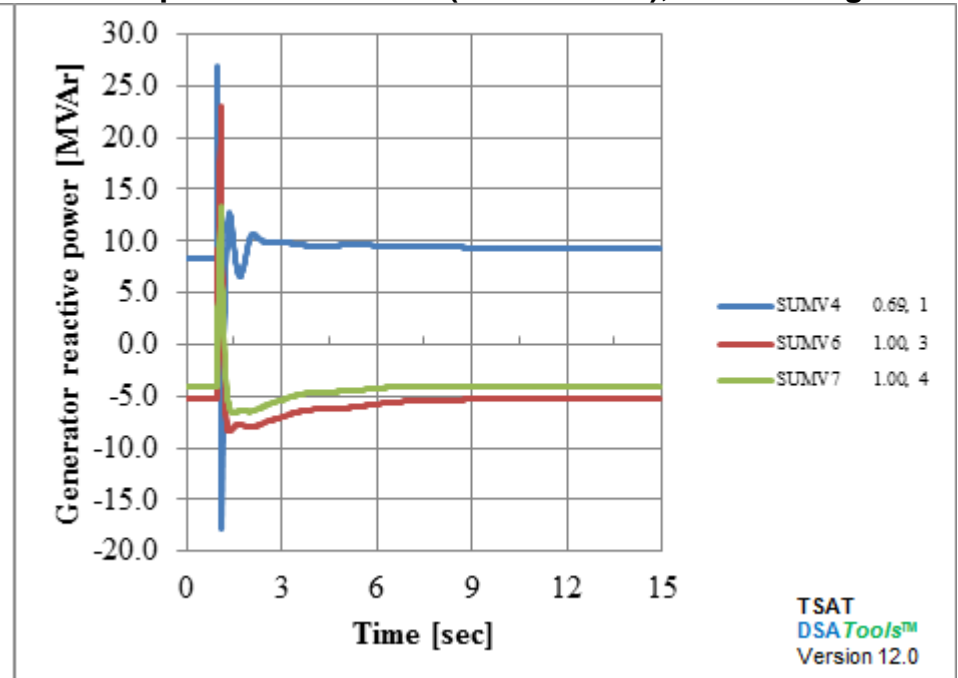
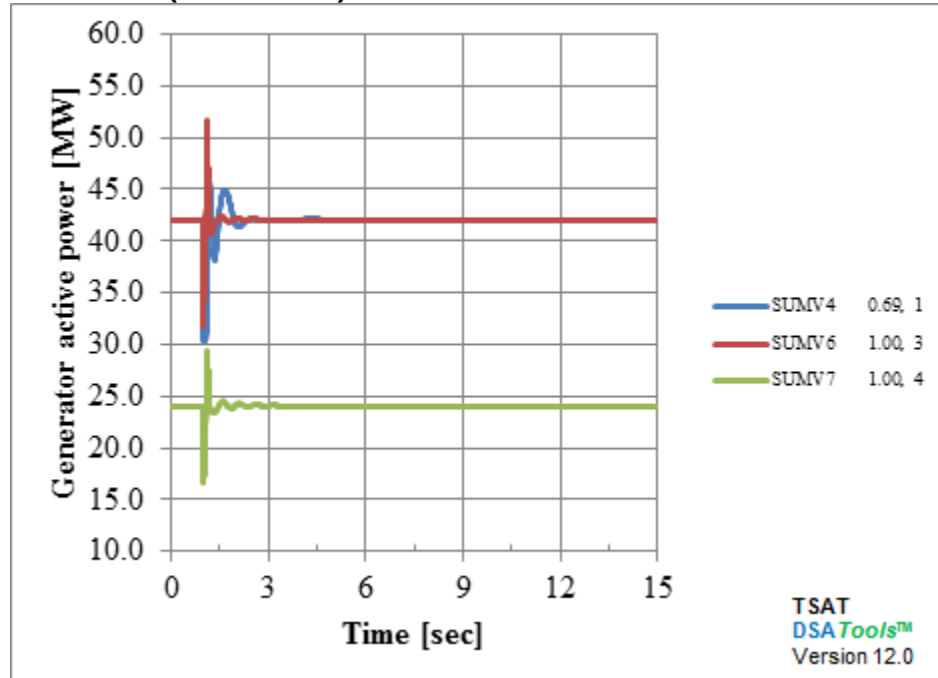
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



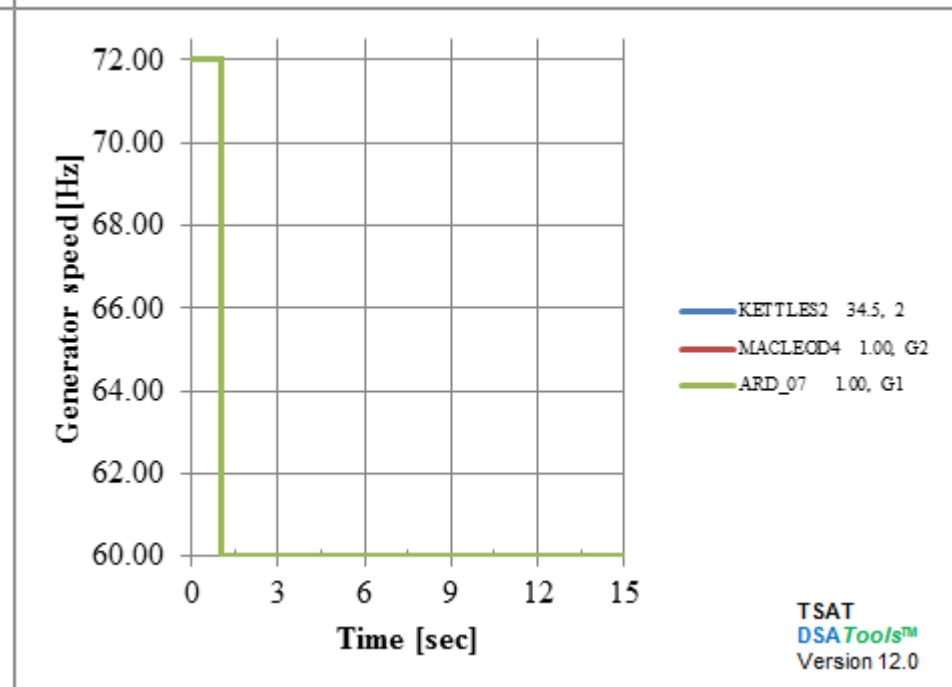
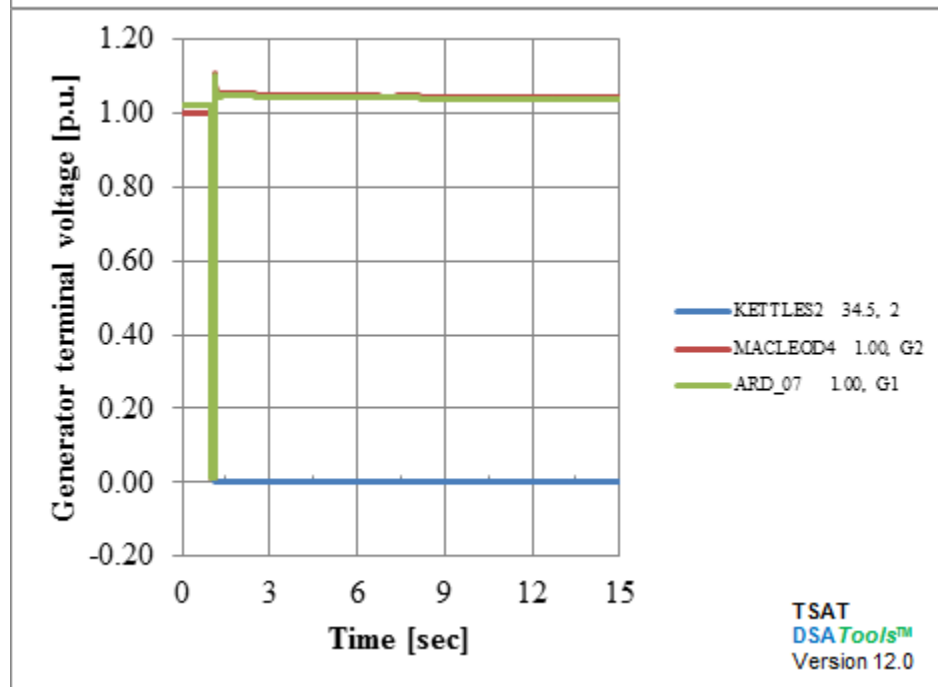
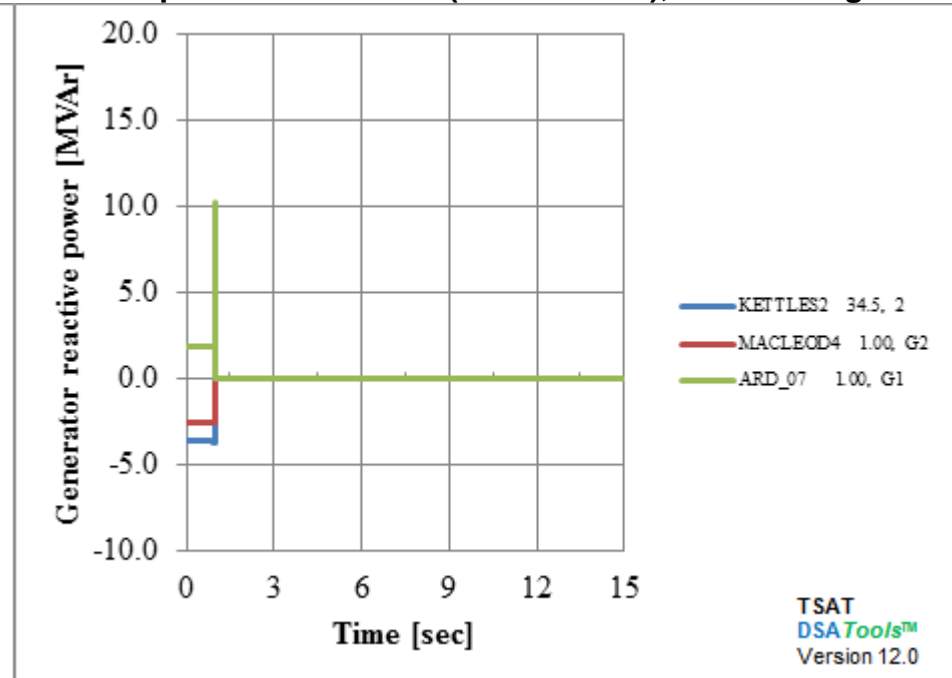
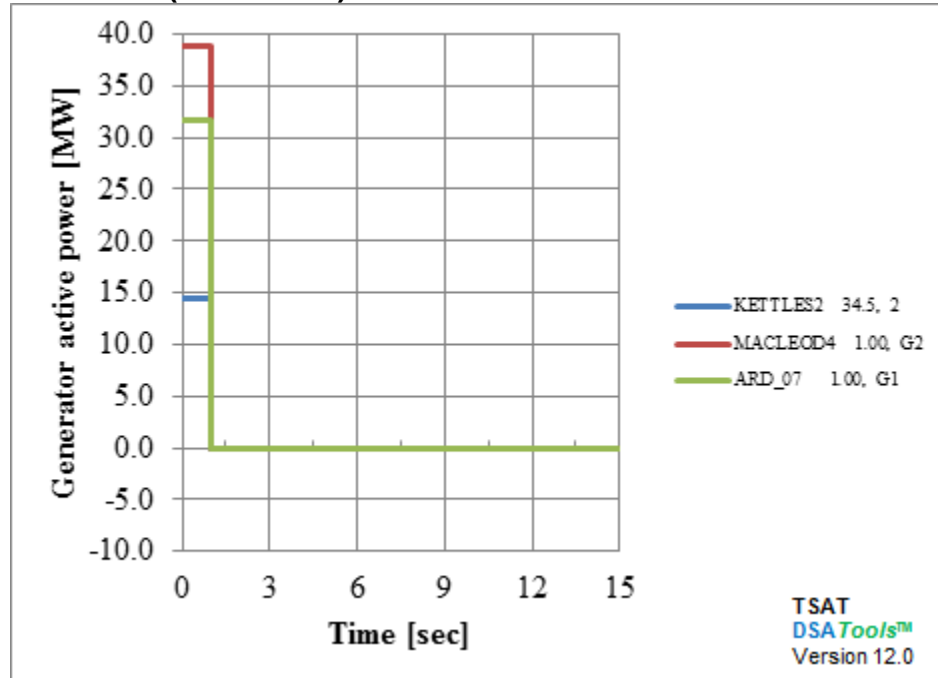
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



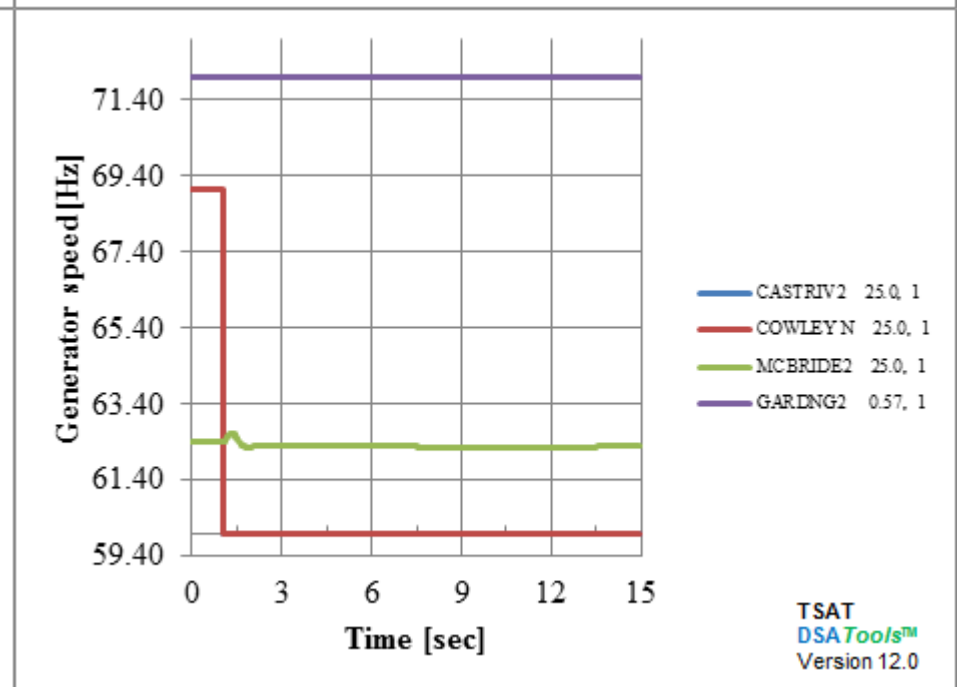
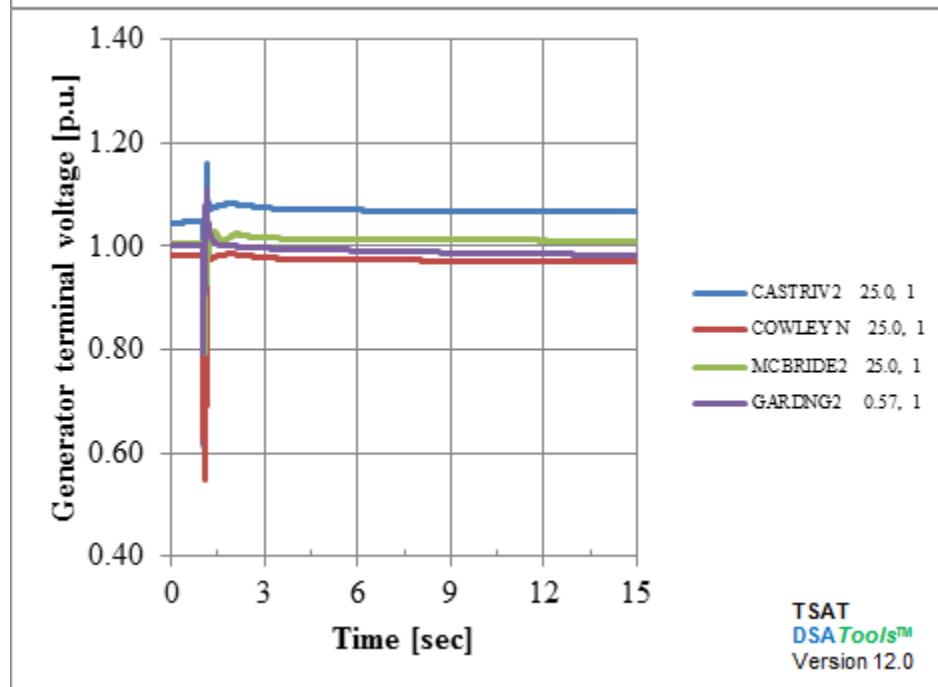
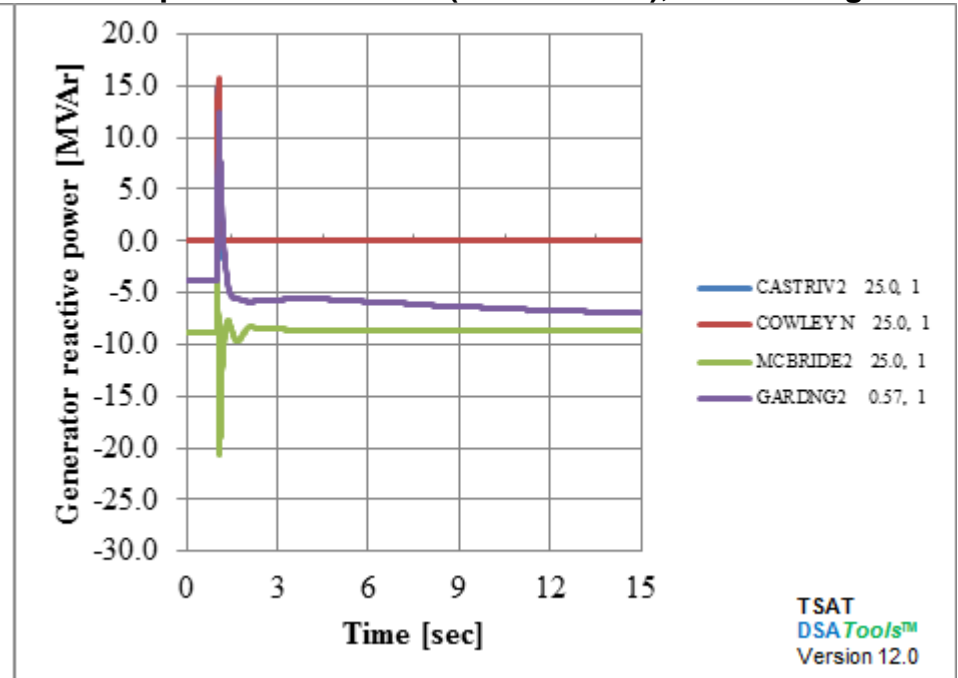
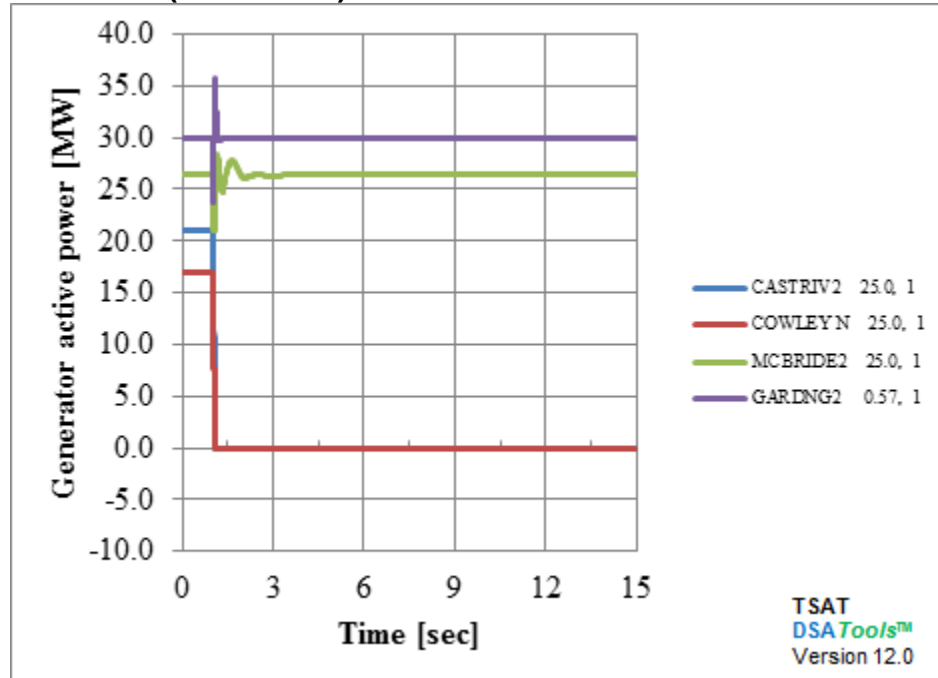
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



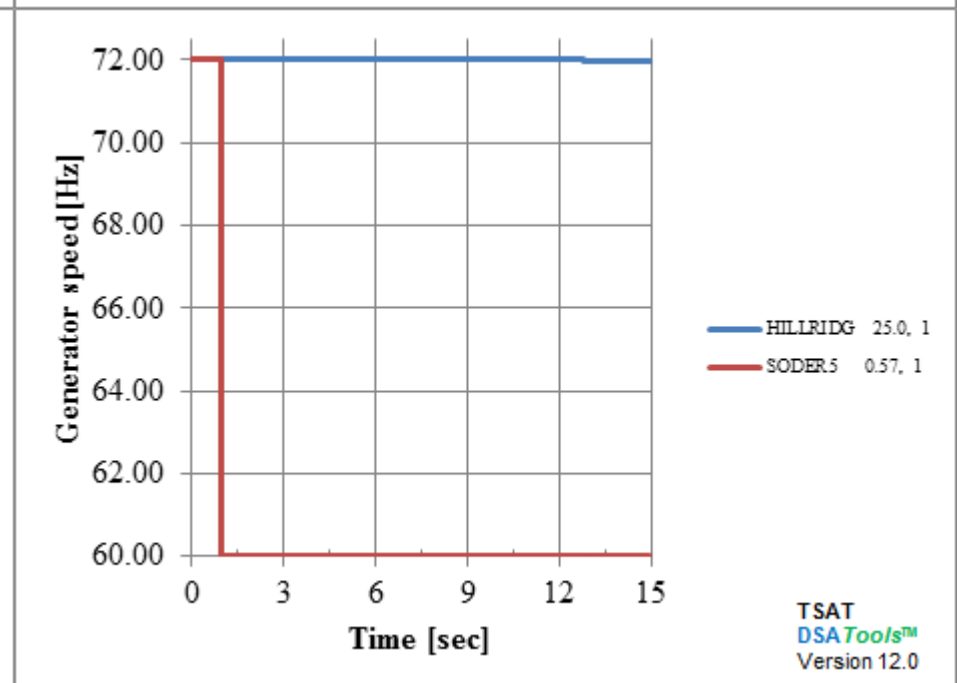
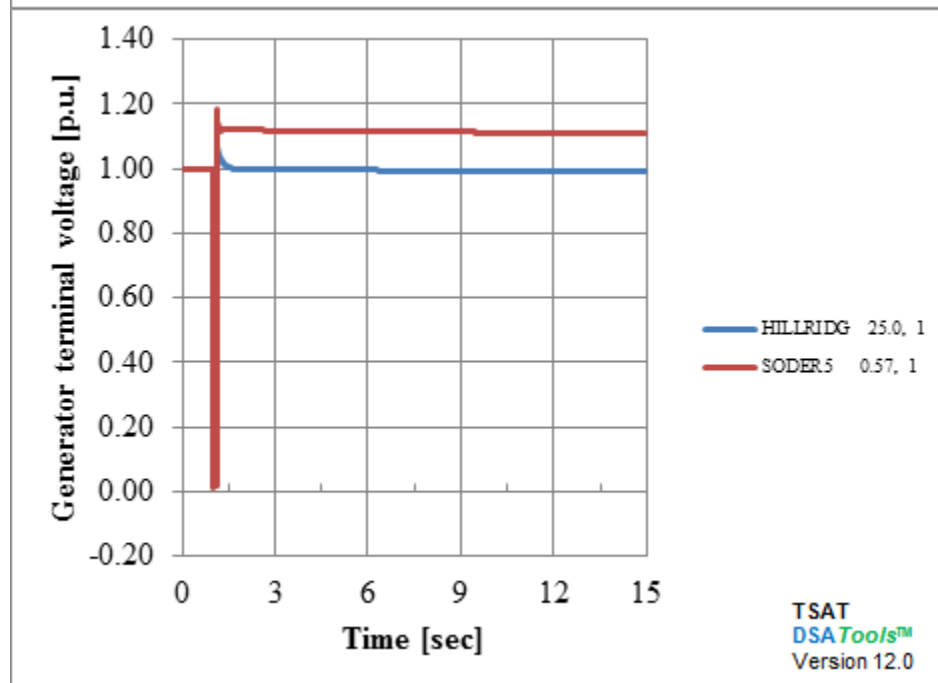
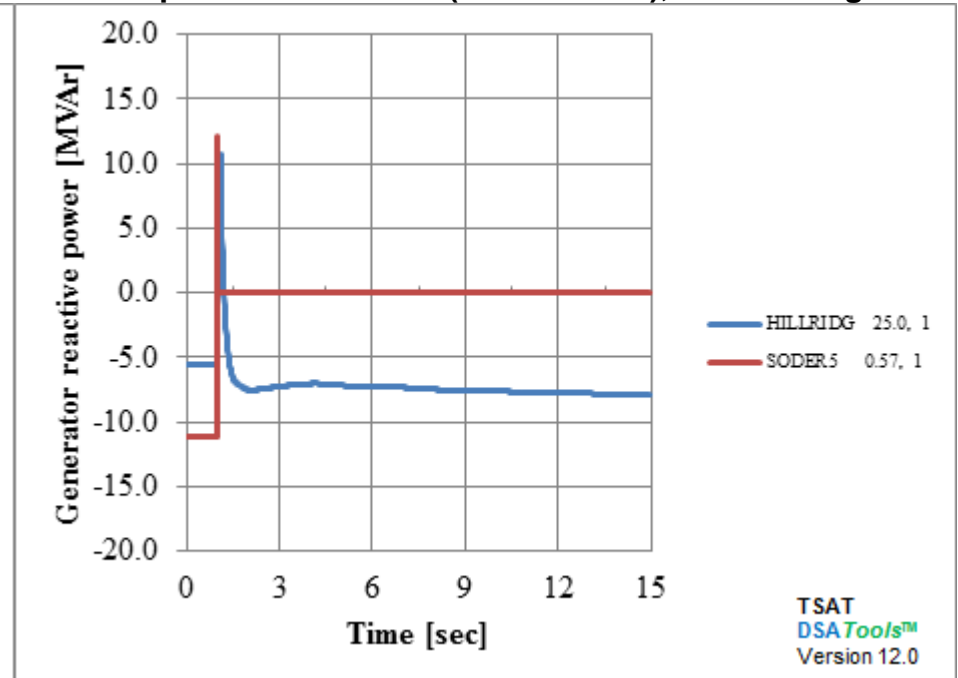
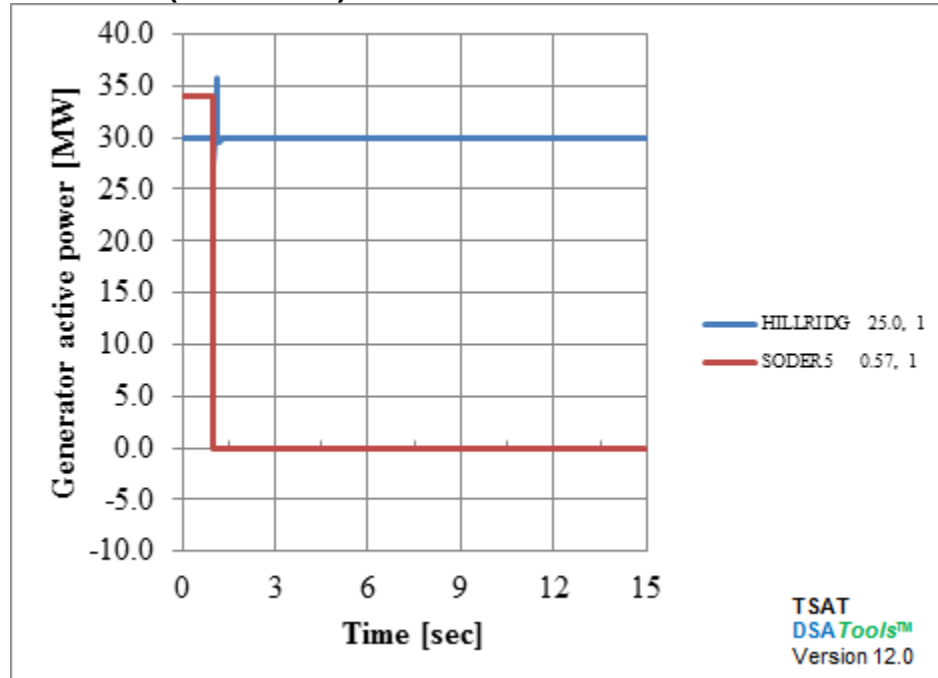
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



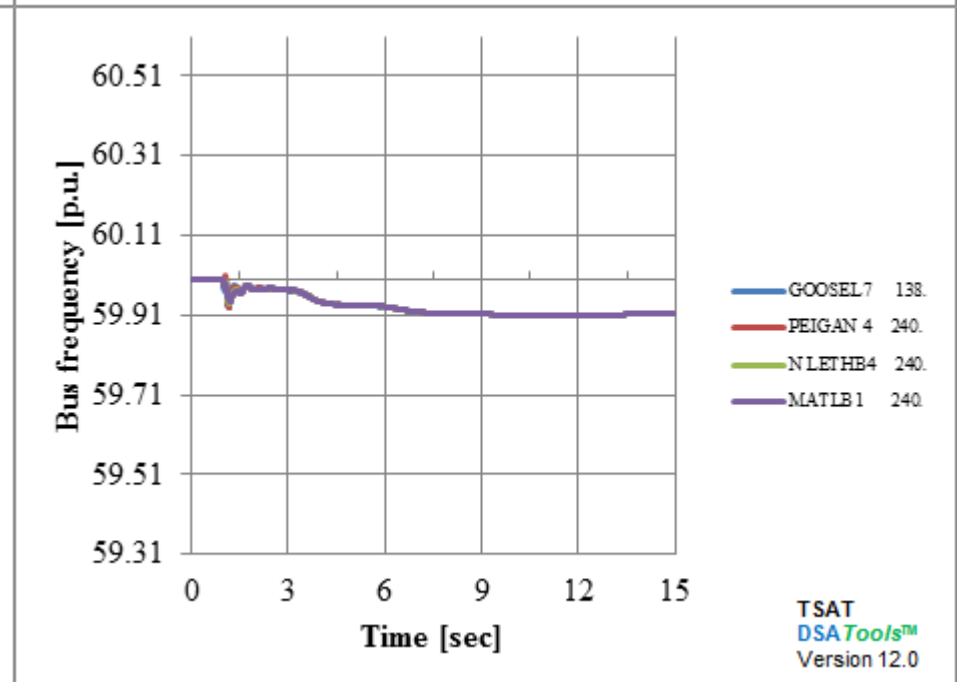
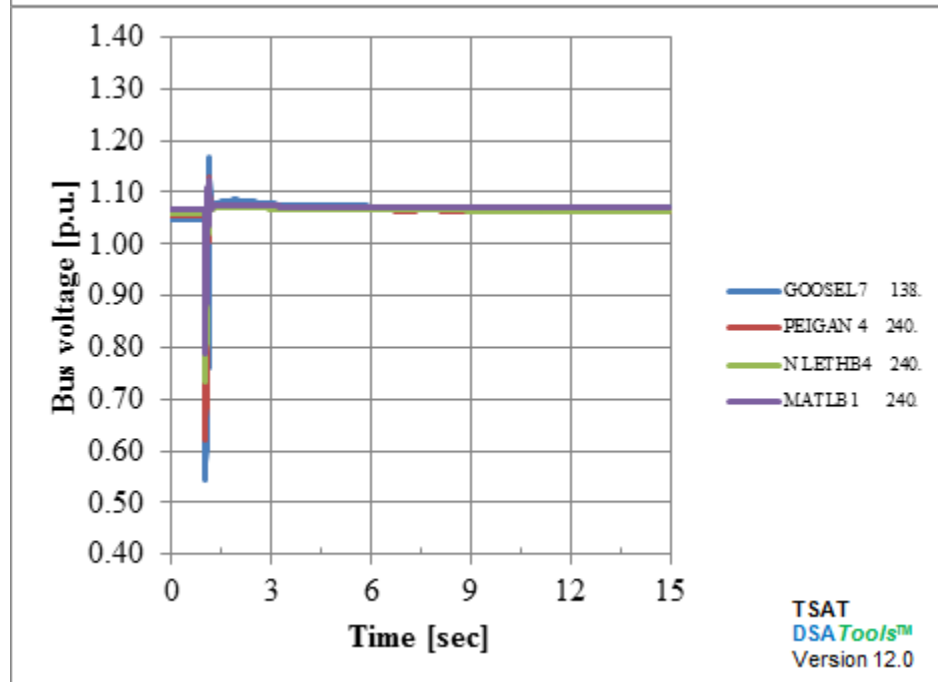
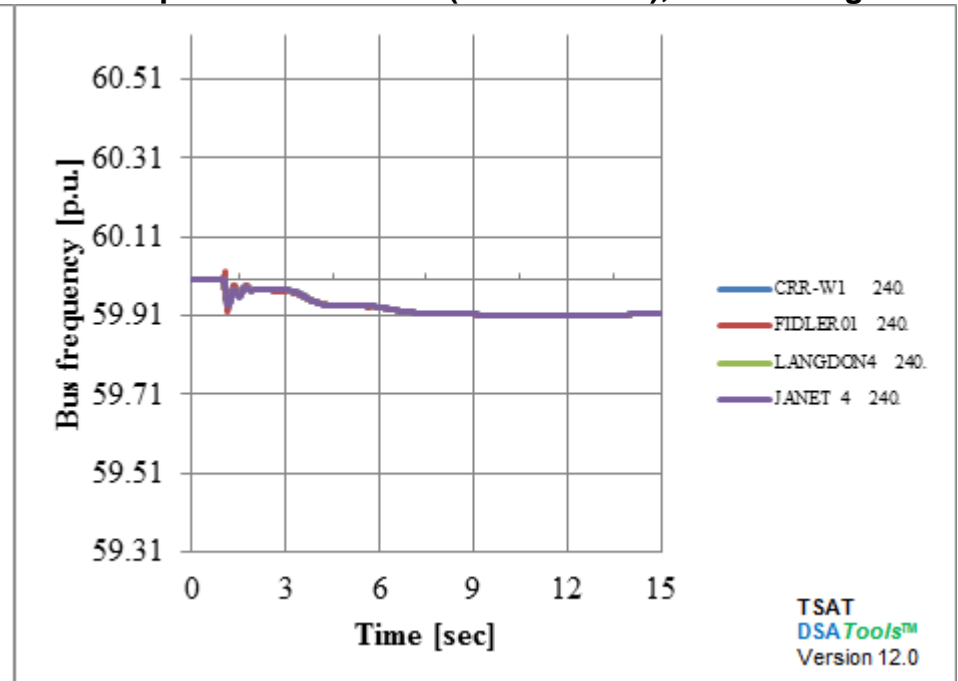
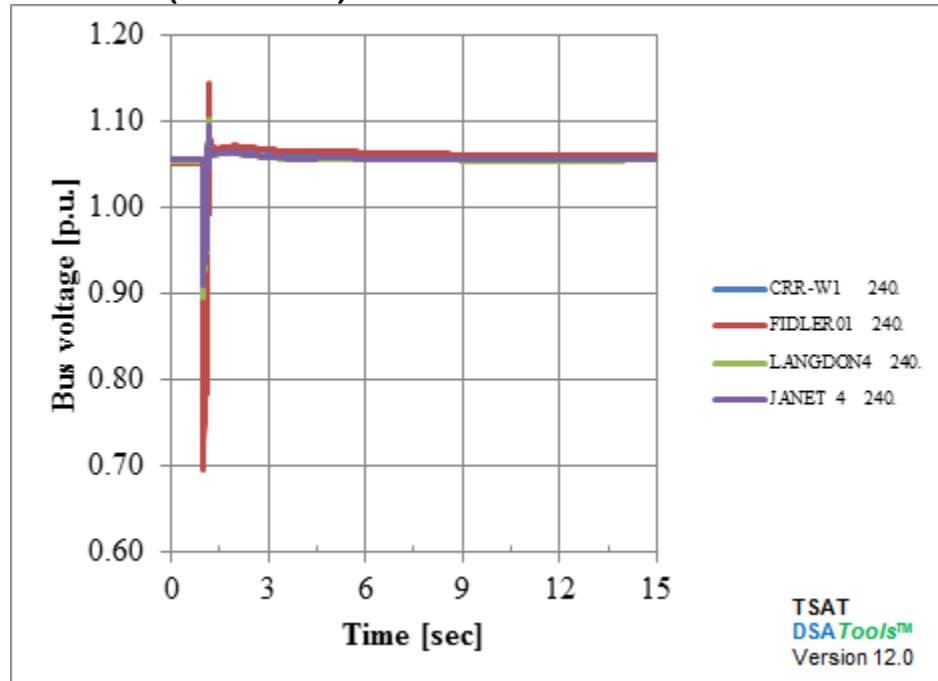
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



12 -- 616L (59S - 103S) NEAR 59S

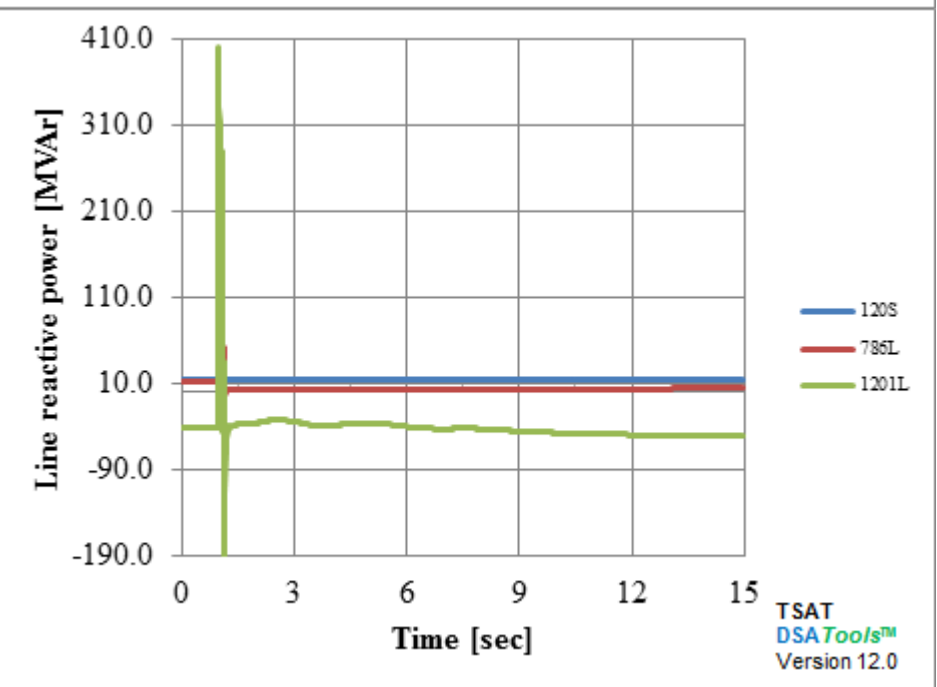
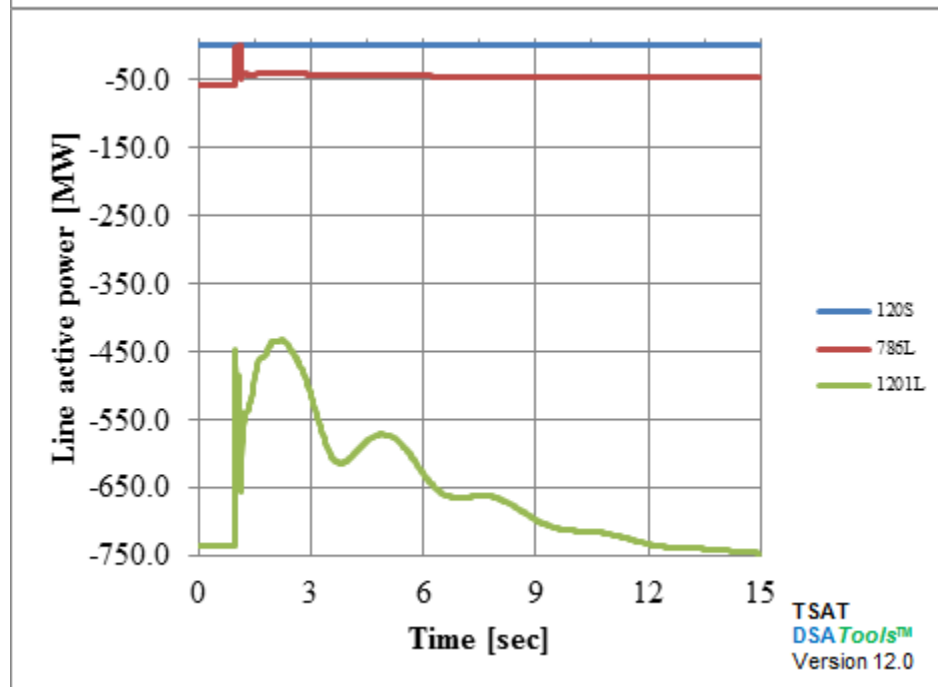
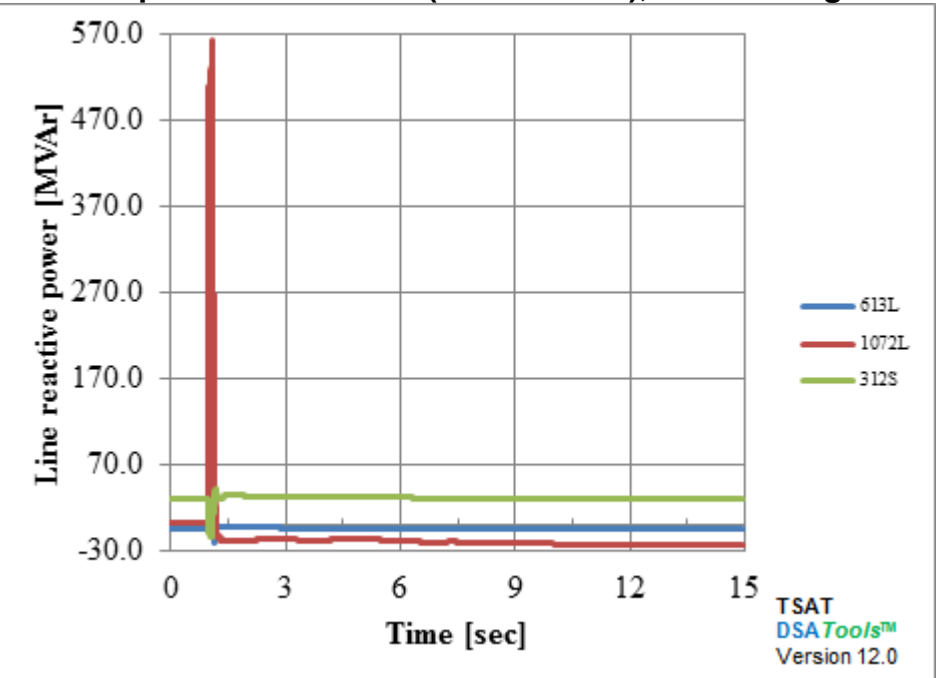
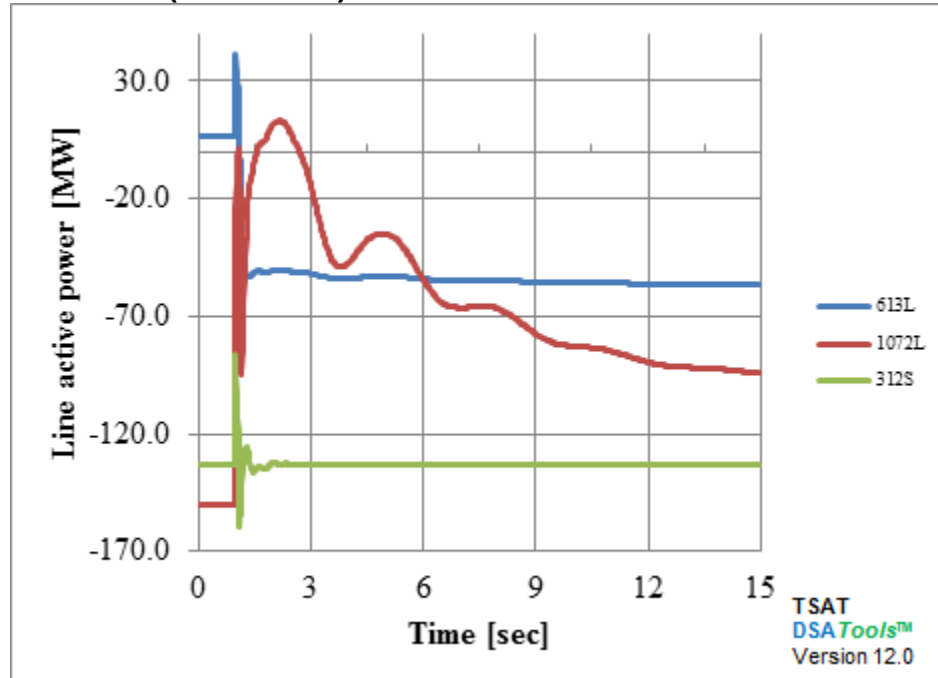
Proposed Connection (Alternative 2), Summer Light 2017





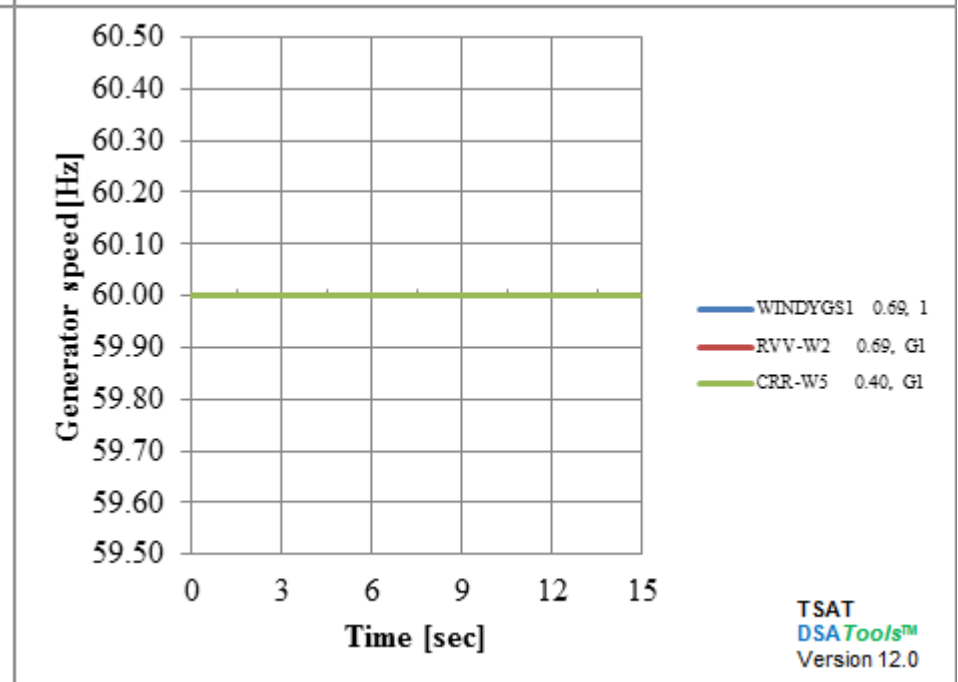
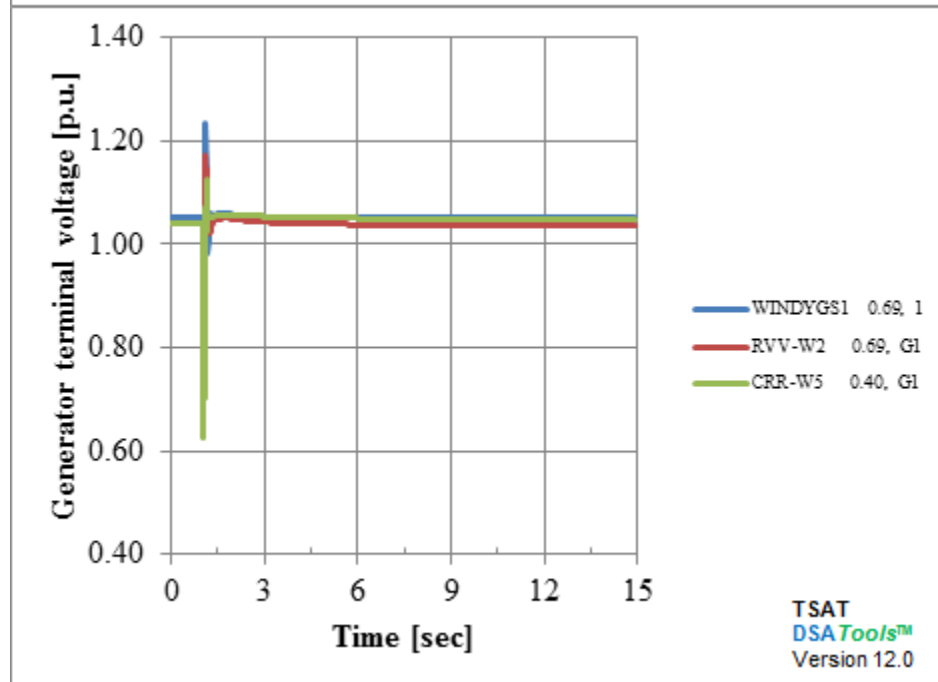
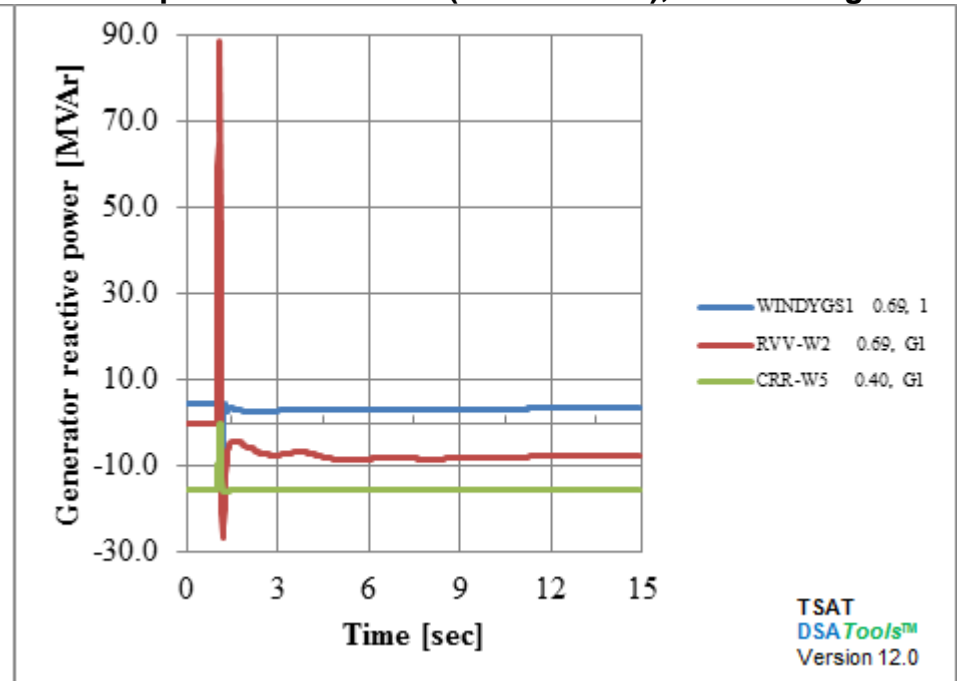
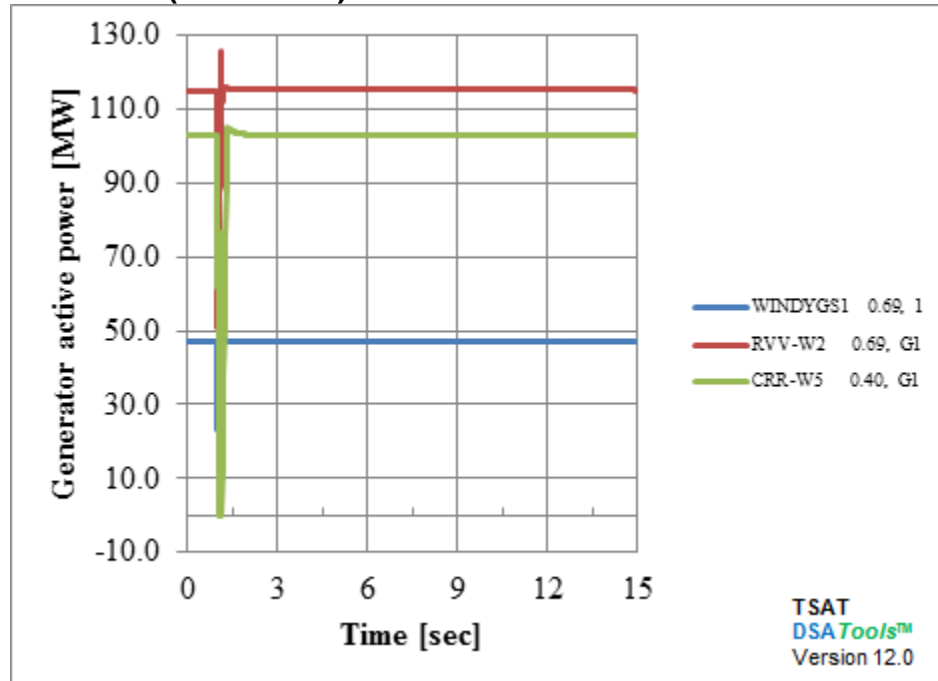
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Light 2017



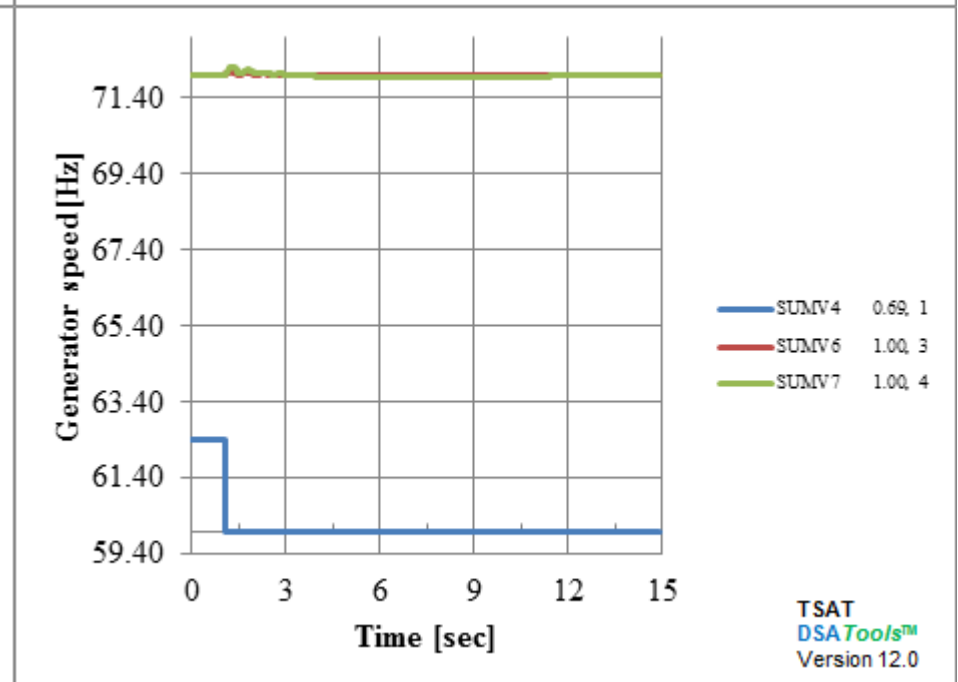
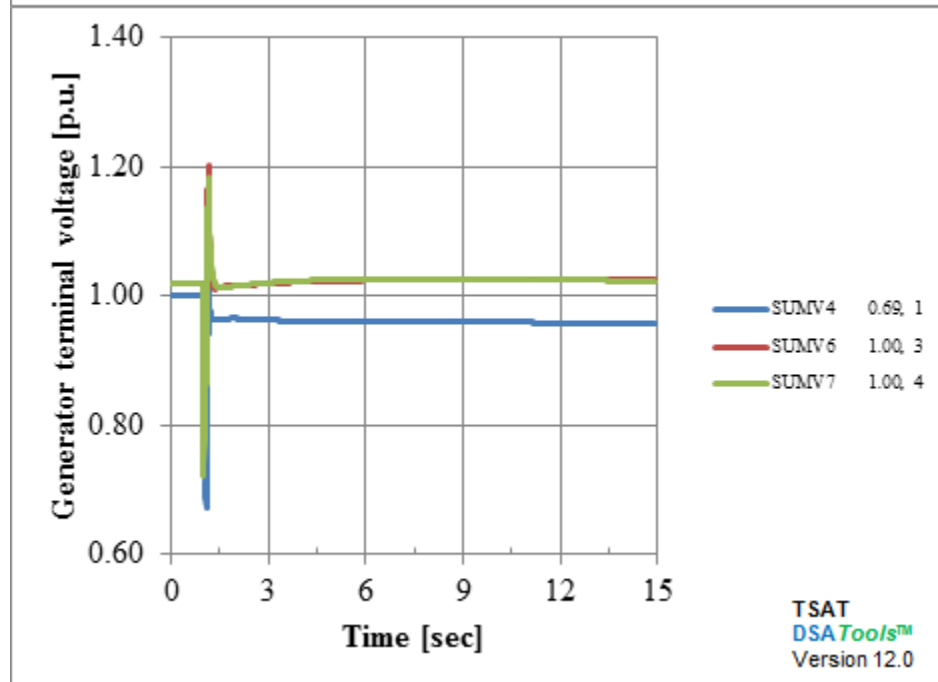
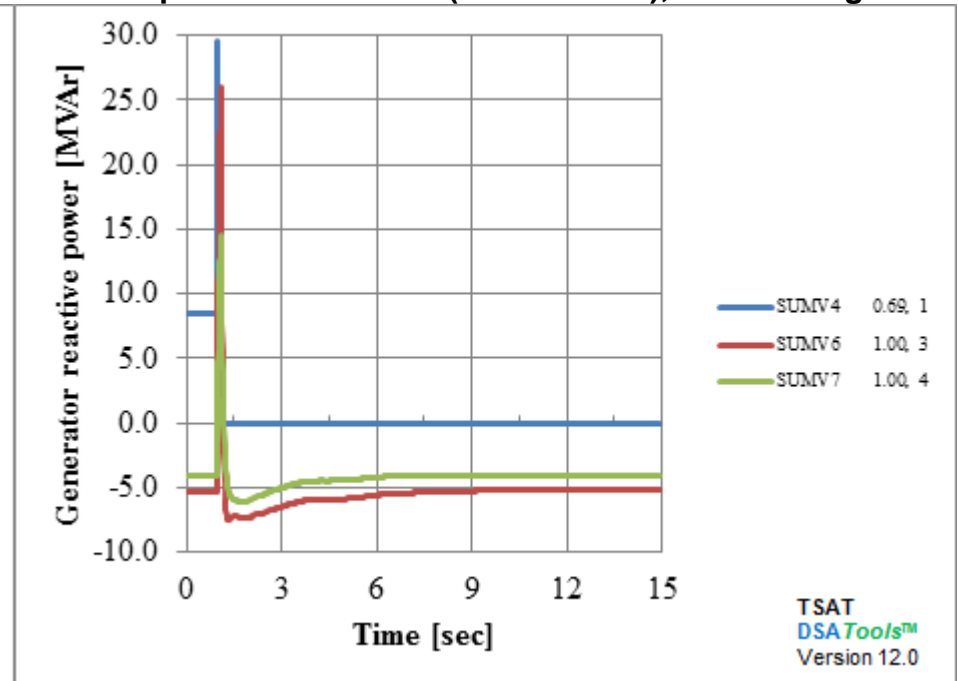
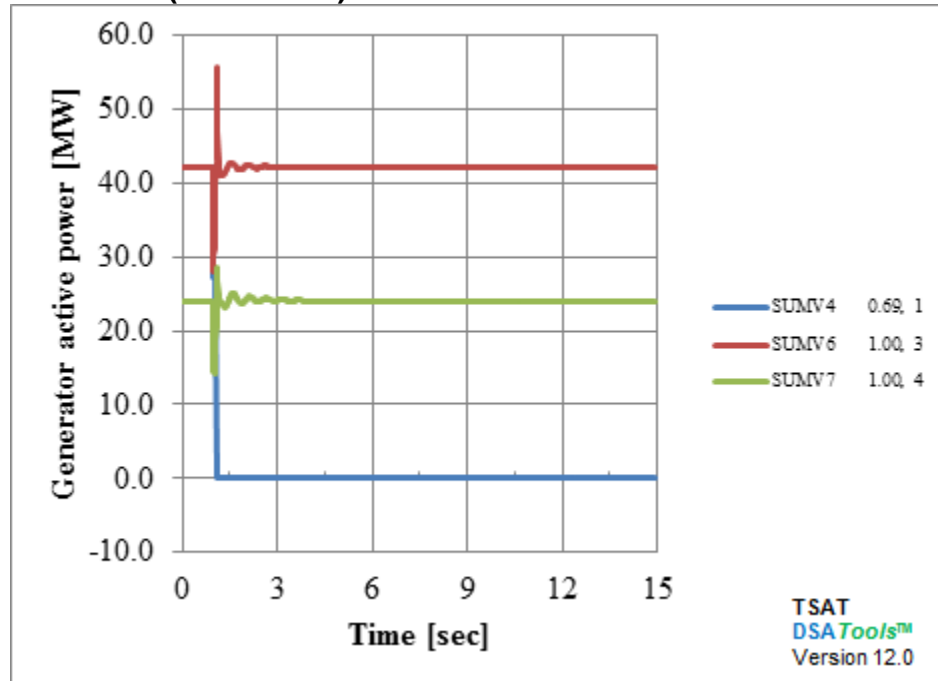
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



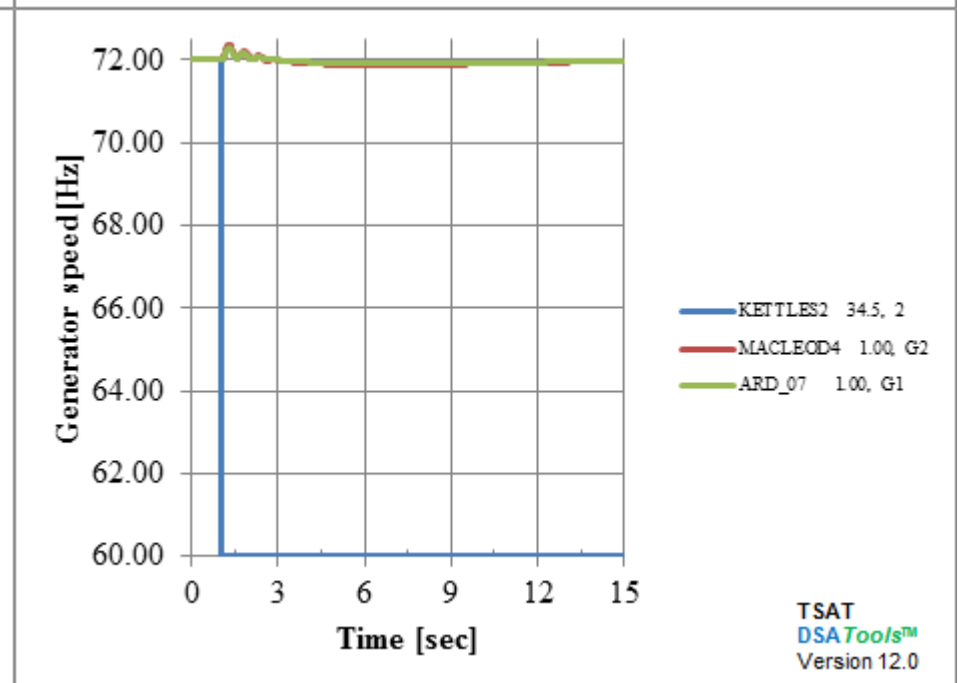
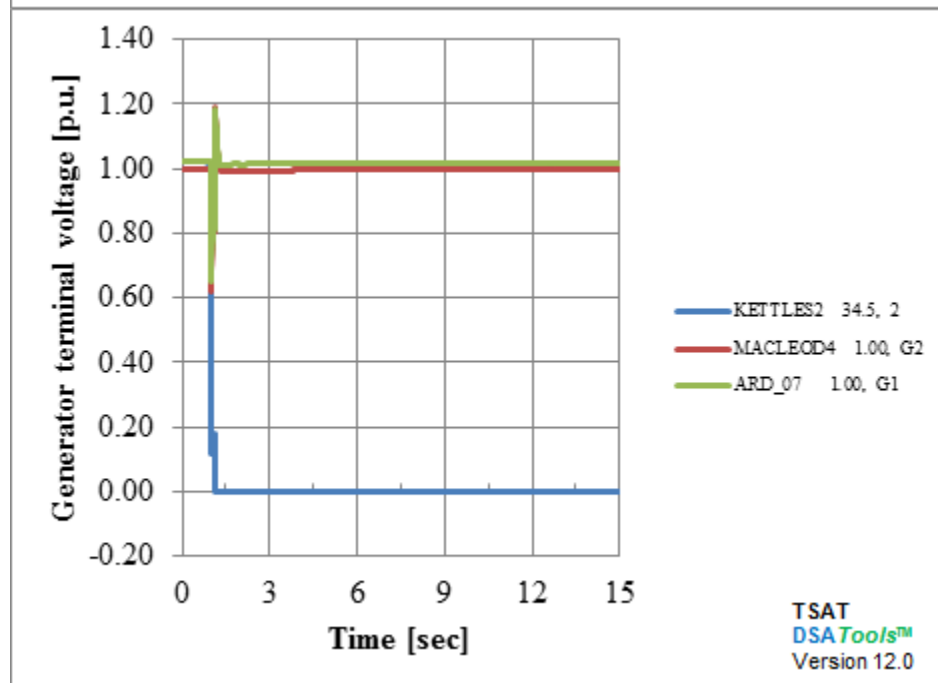
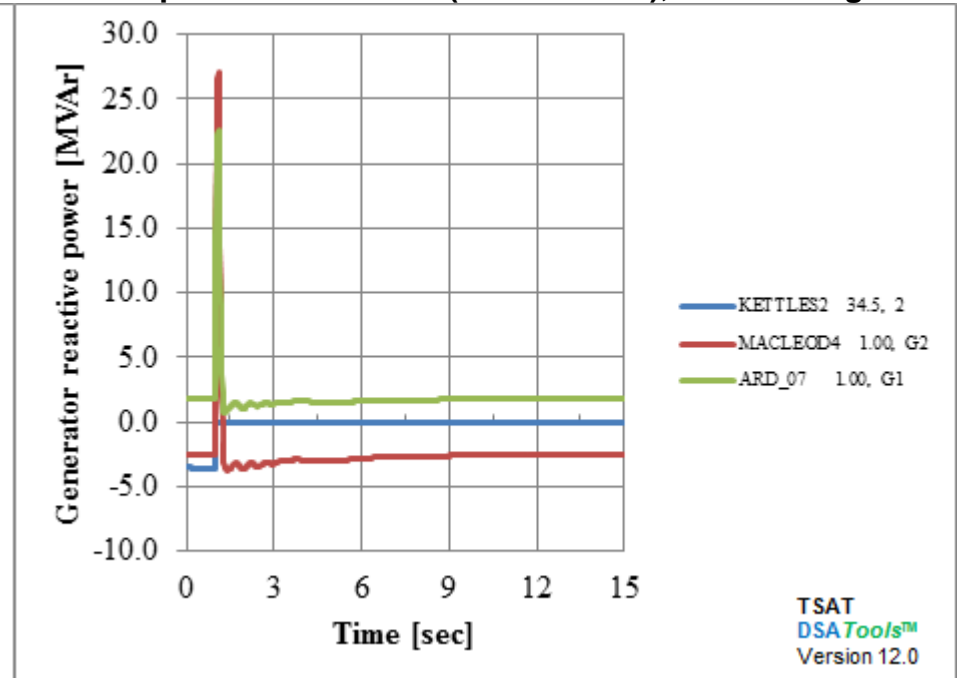
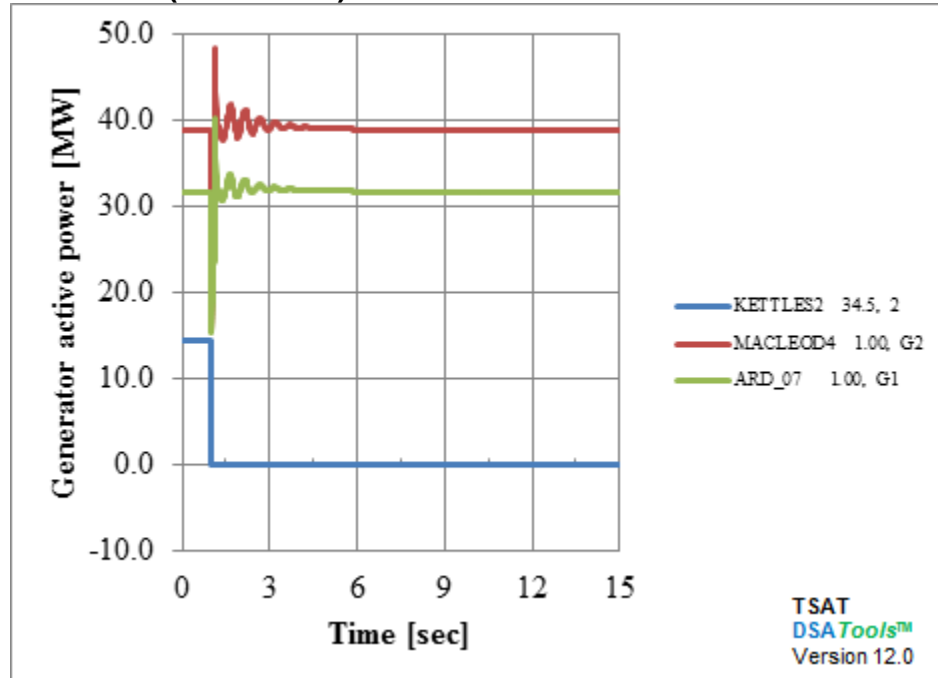
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



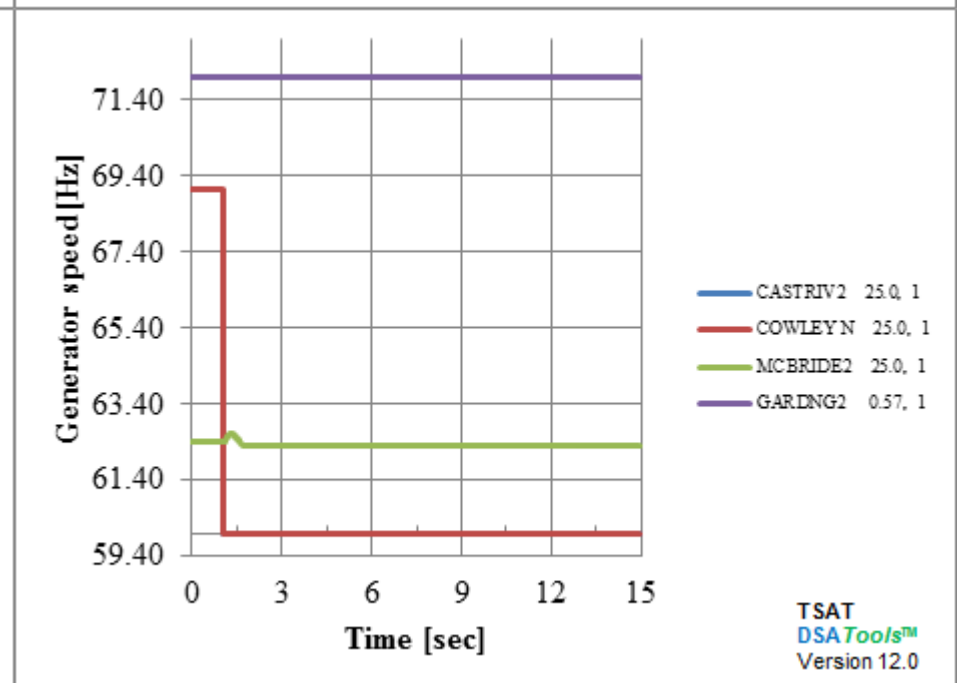
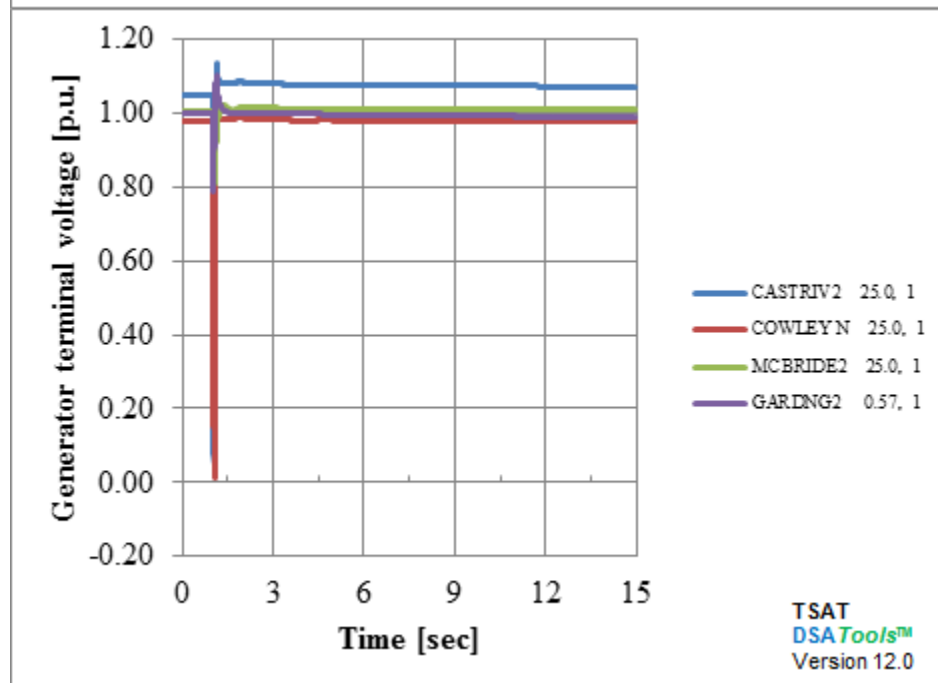
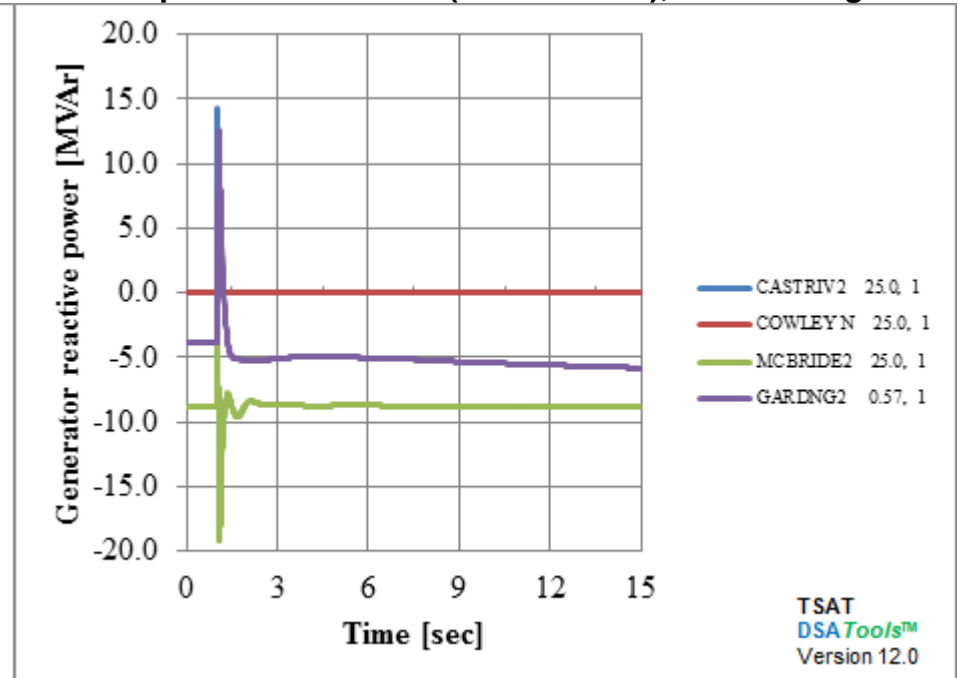
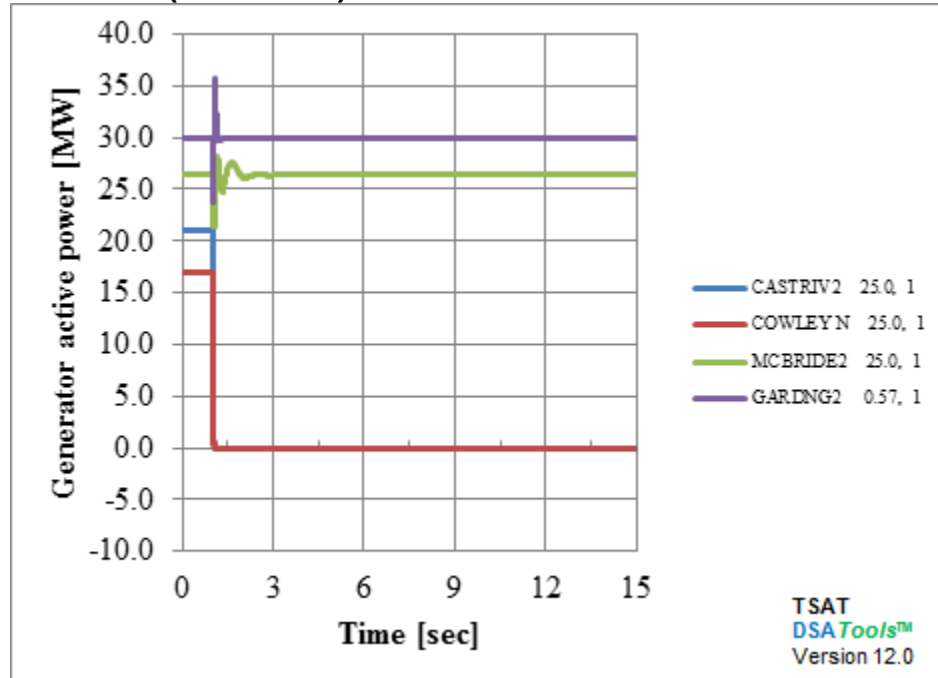
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



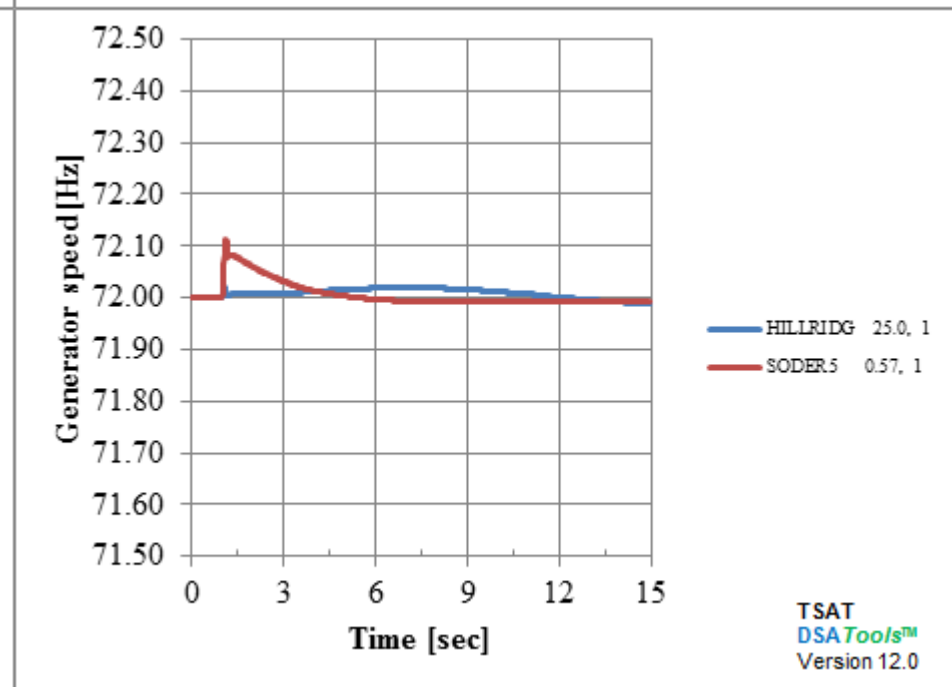
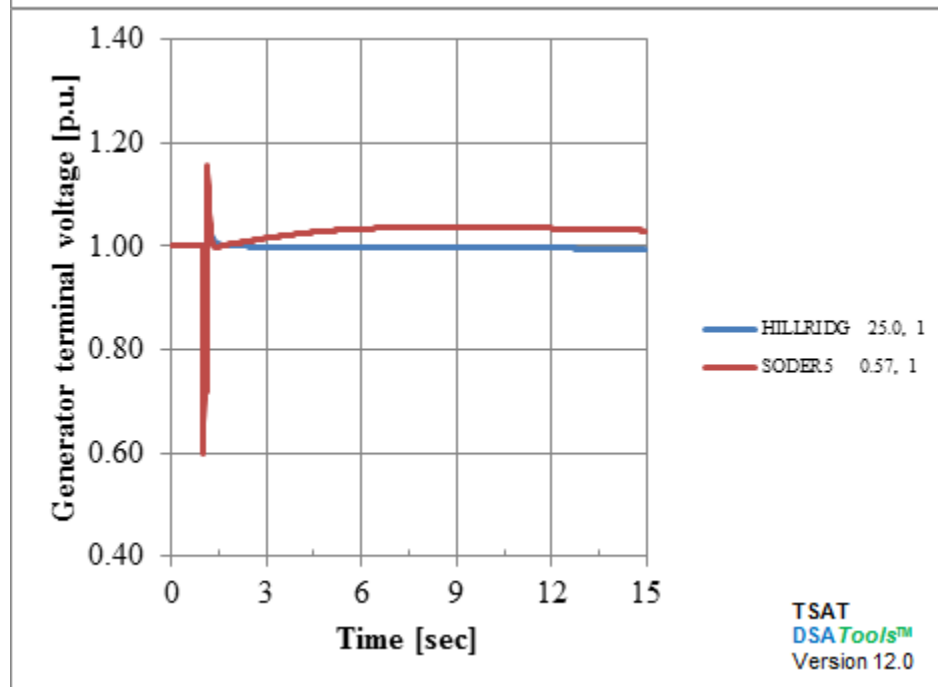
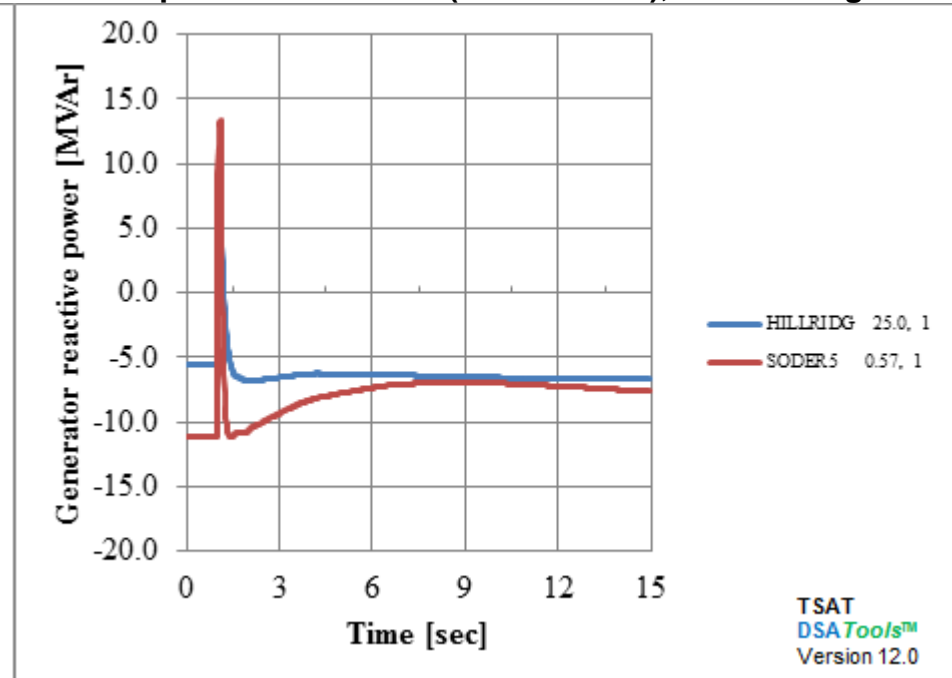
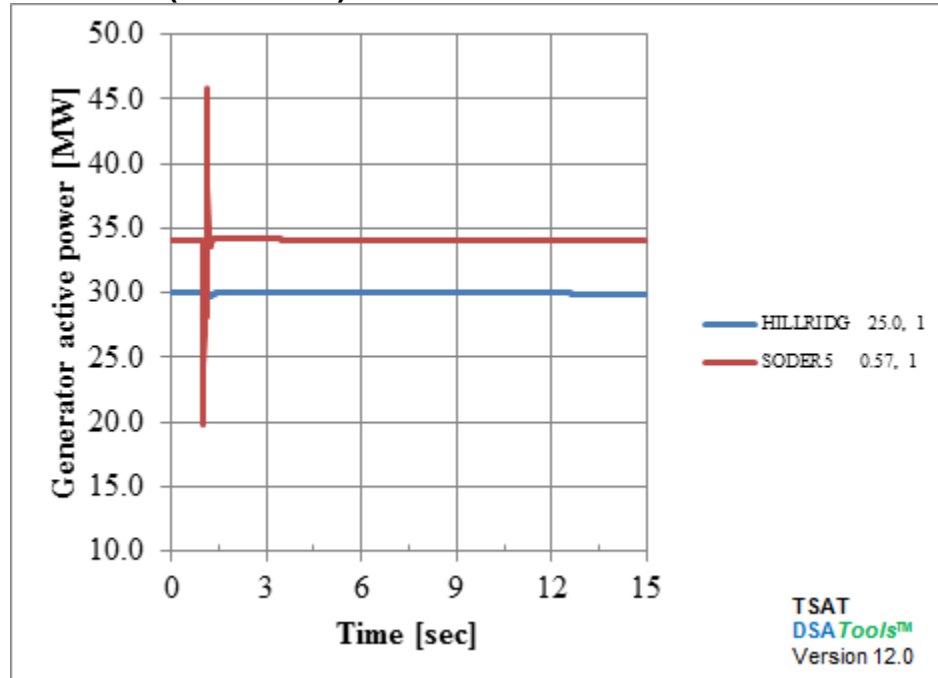
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



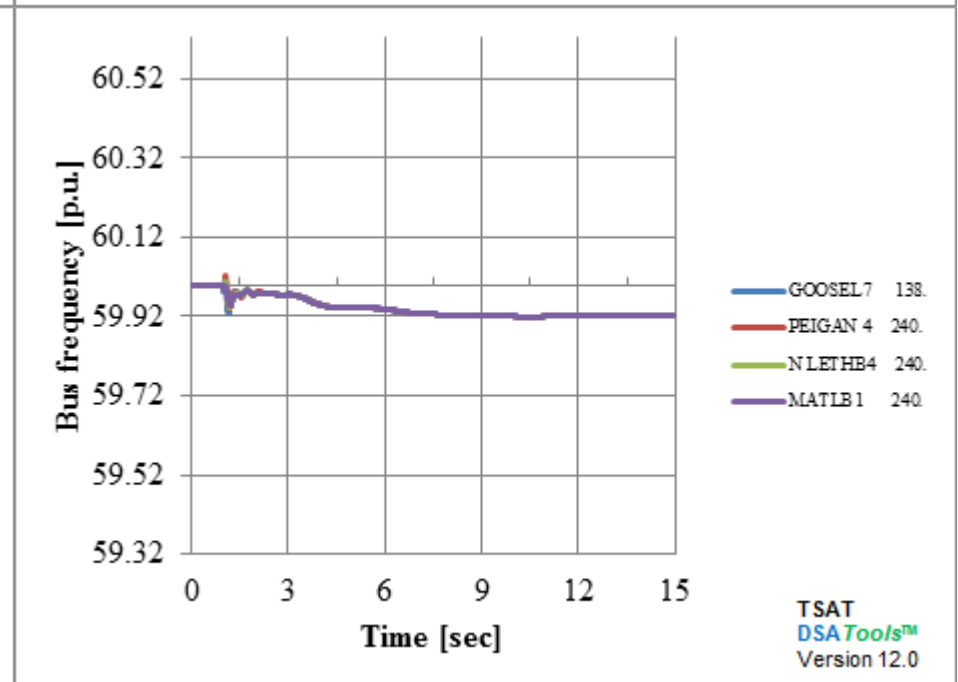
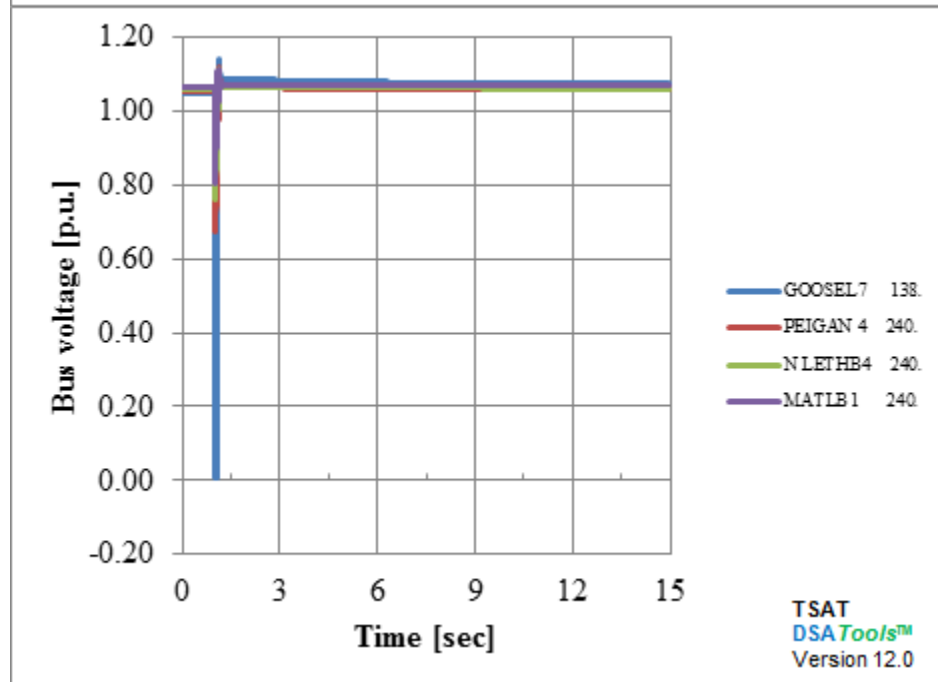
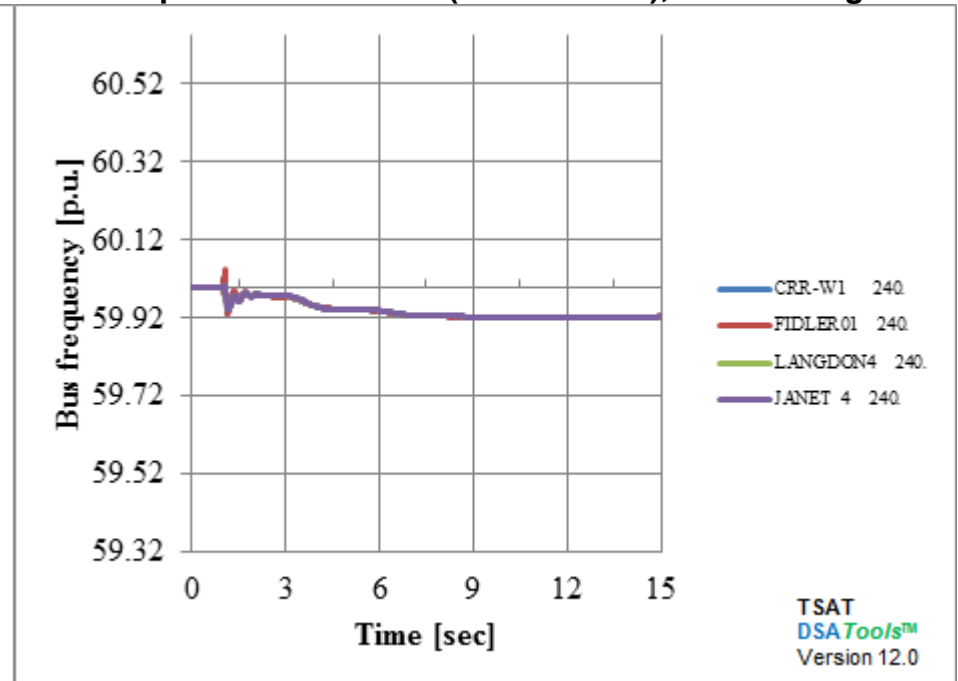
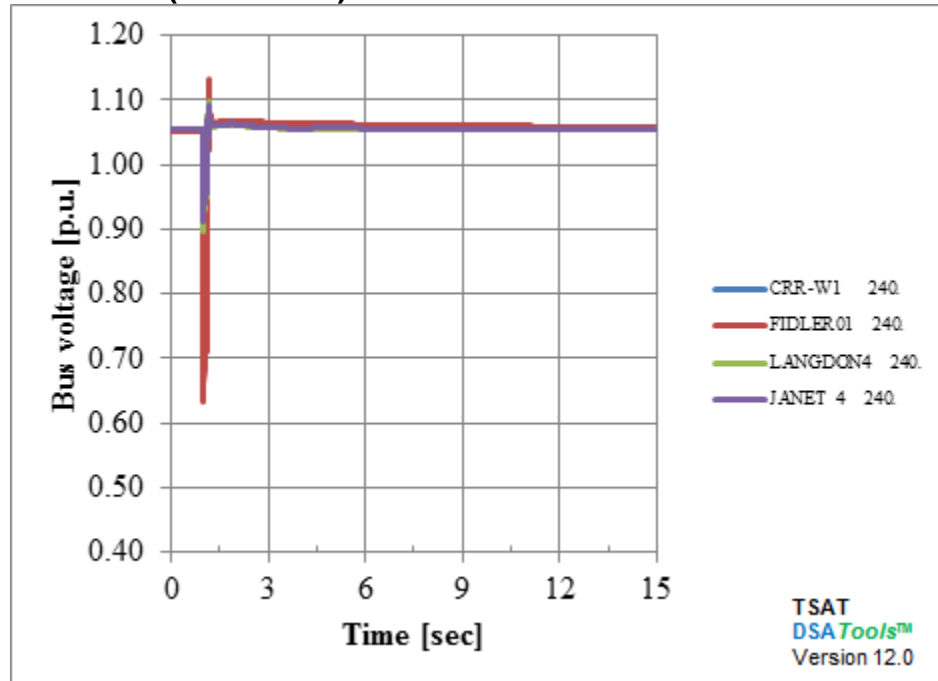
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



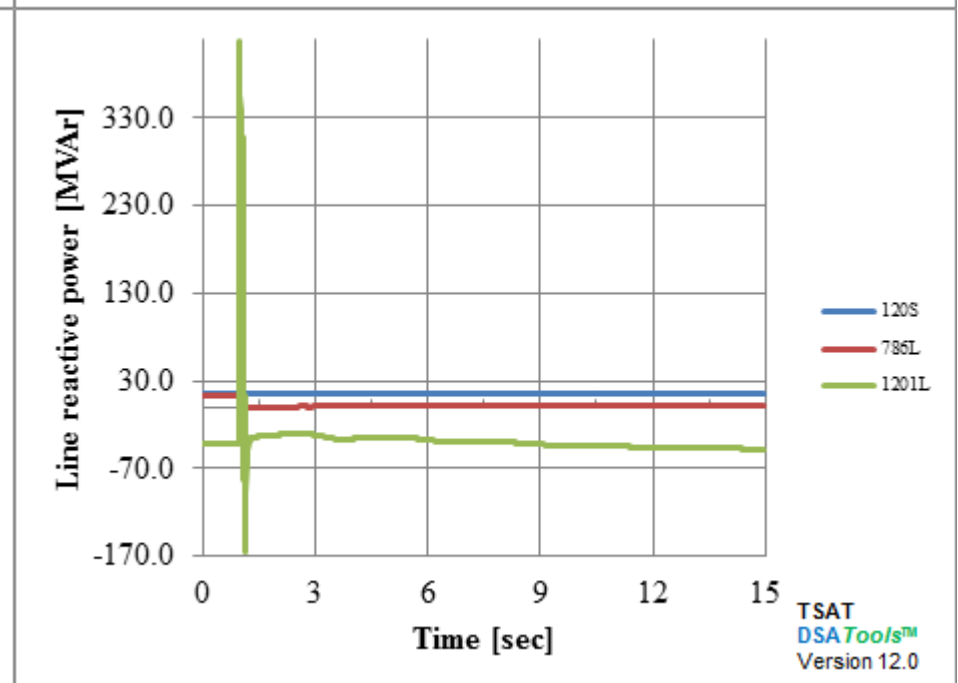
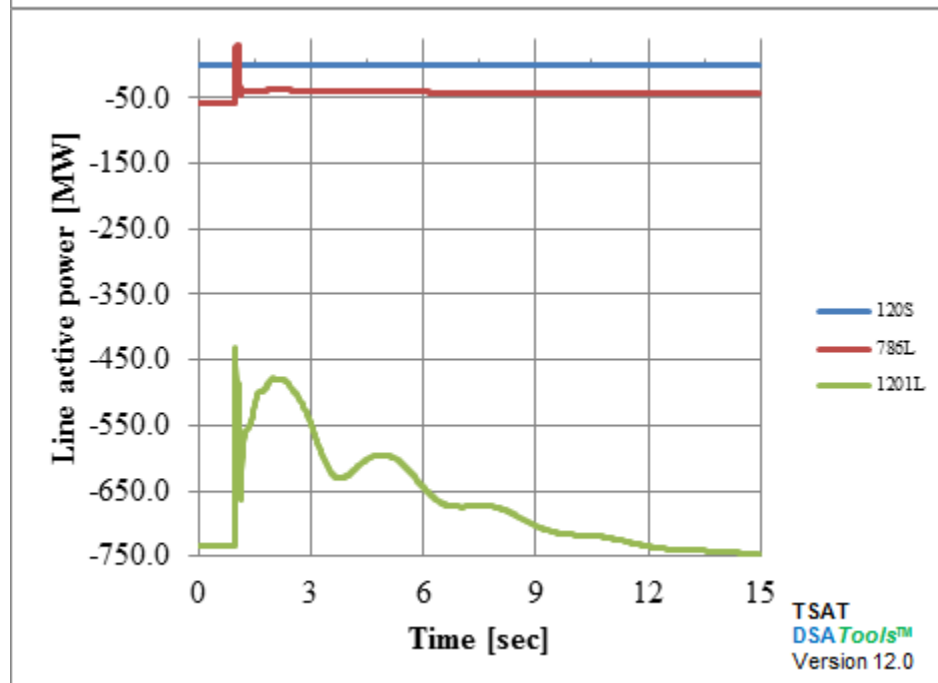
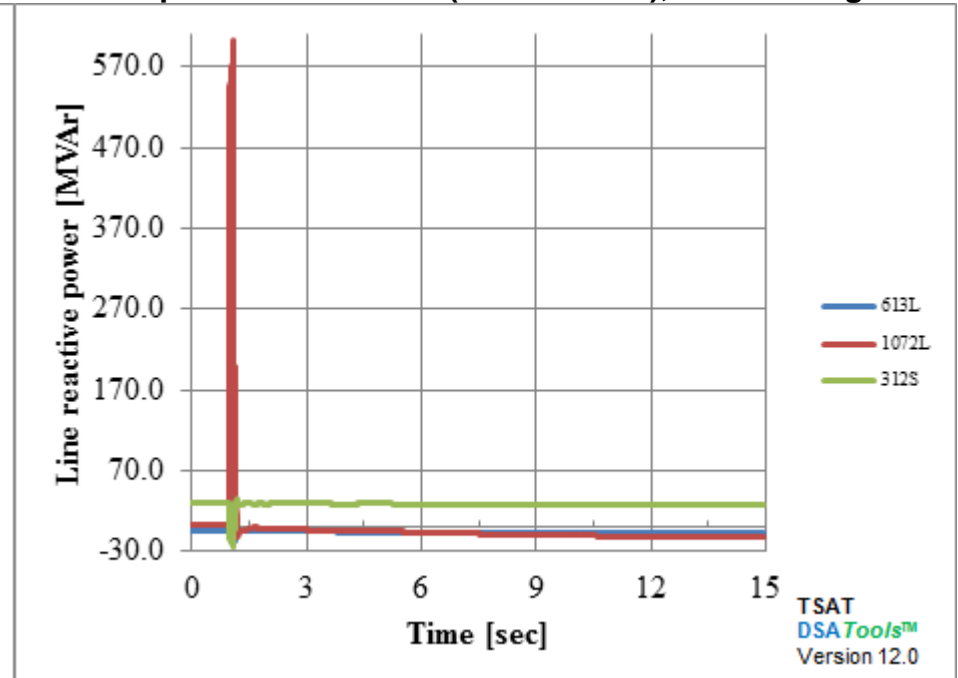
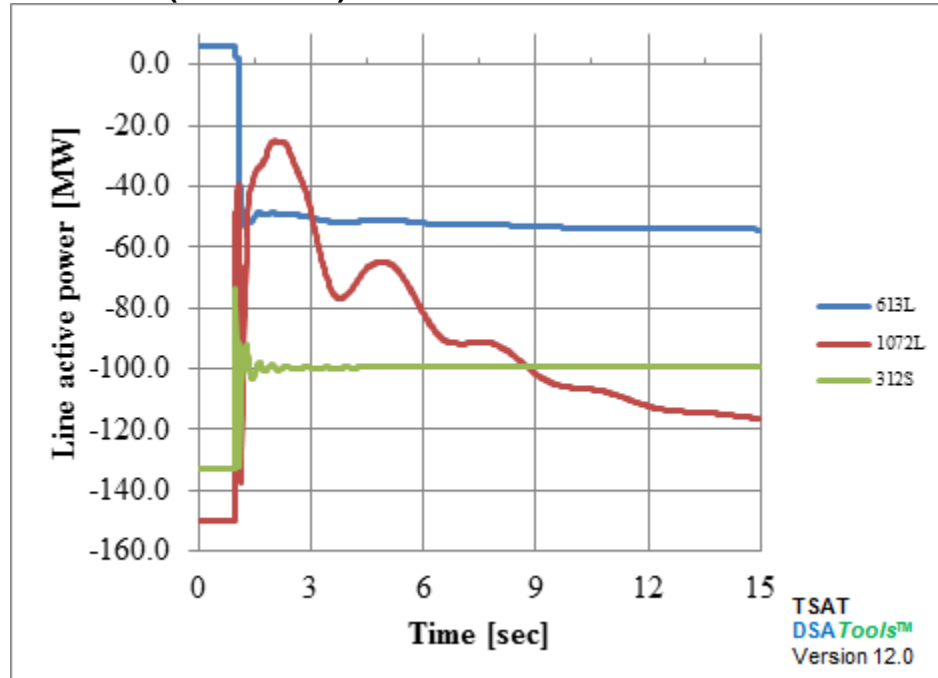
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Light 2017



13 -- 616L (59S - 103S) NEAR 103S

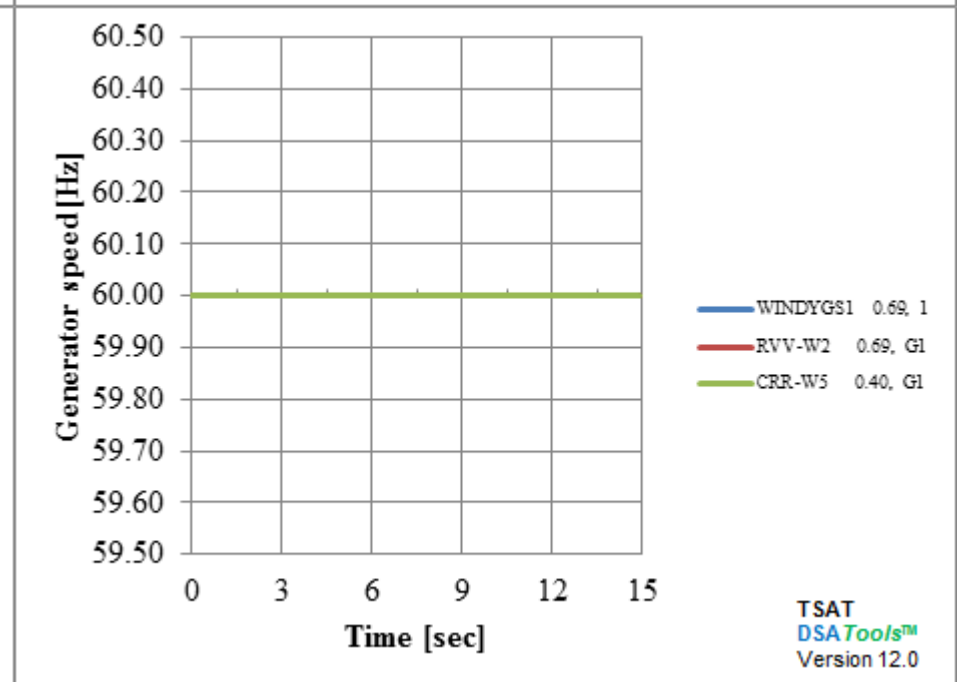
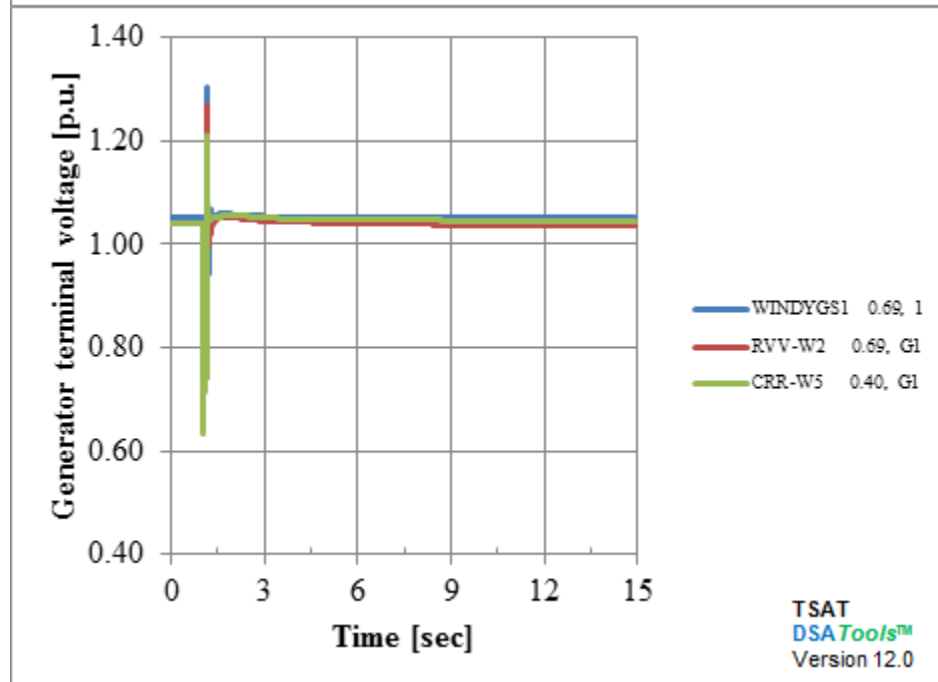
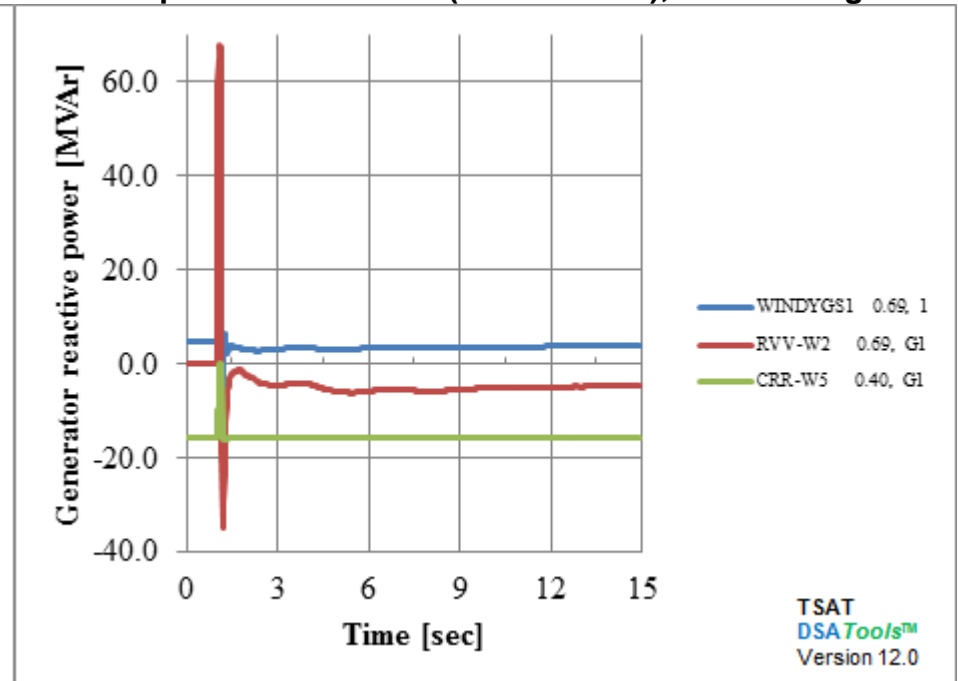
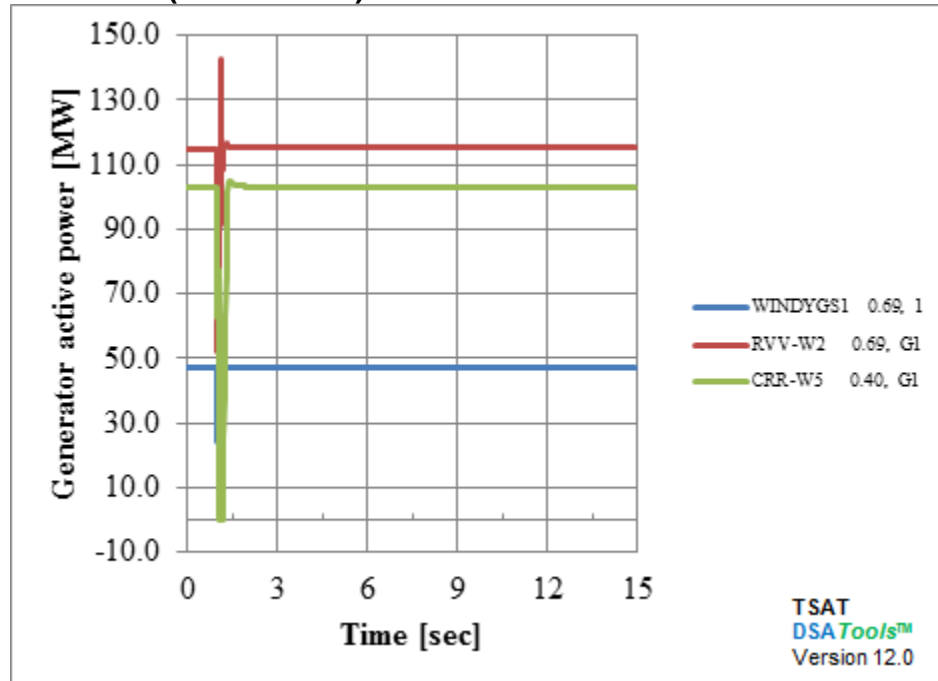
Proposed Connection (Alternative 2), Summer Light 2017





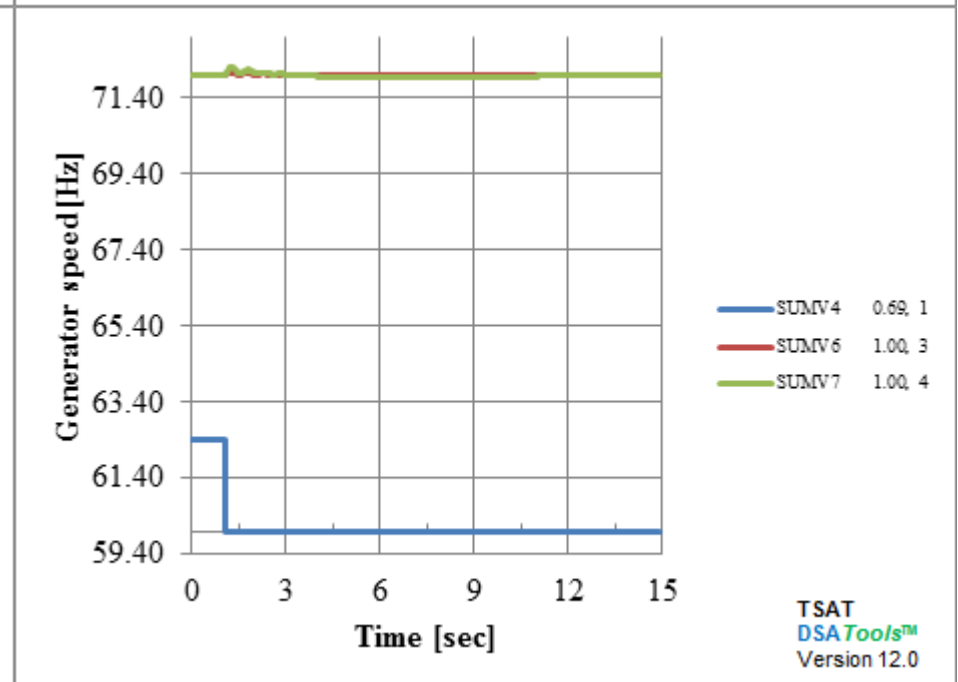
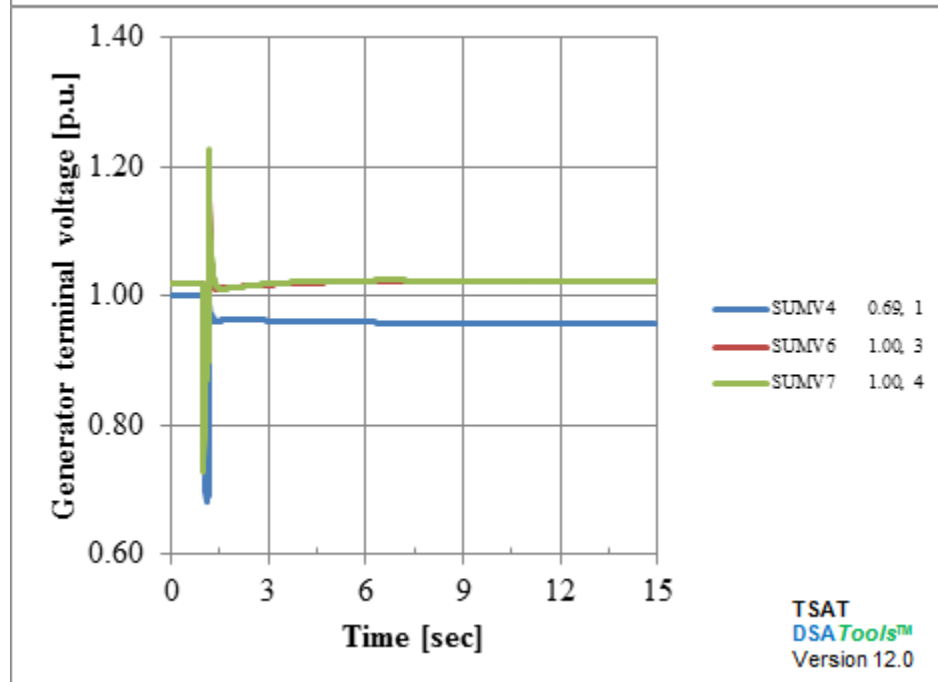
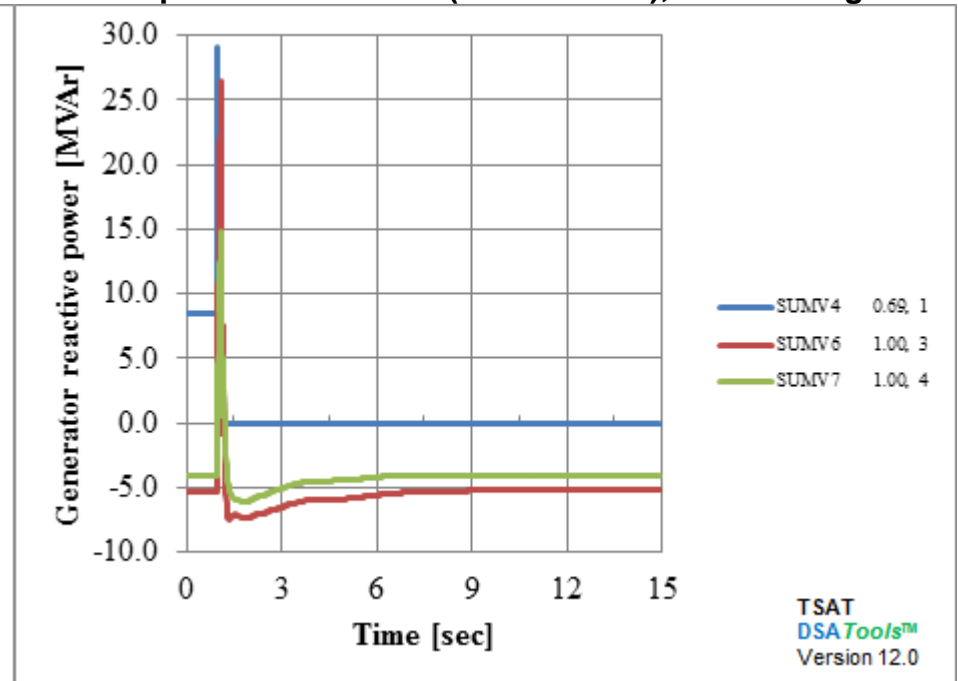
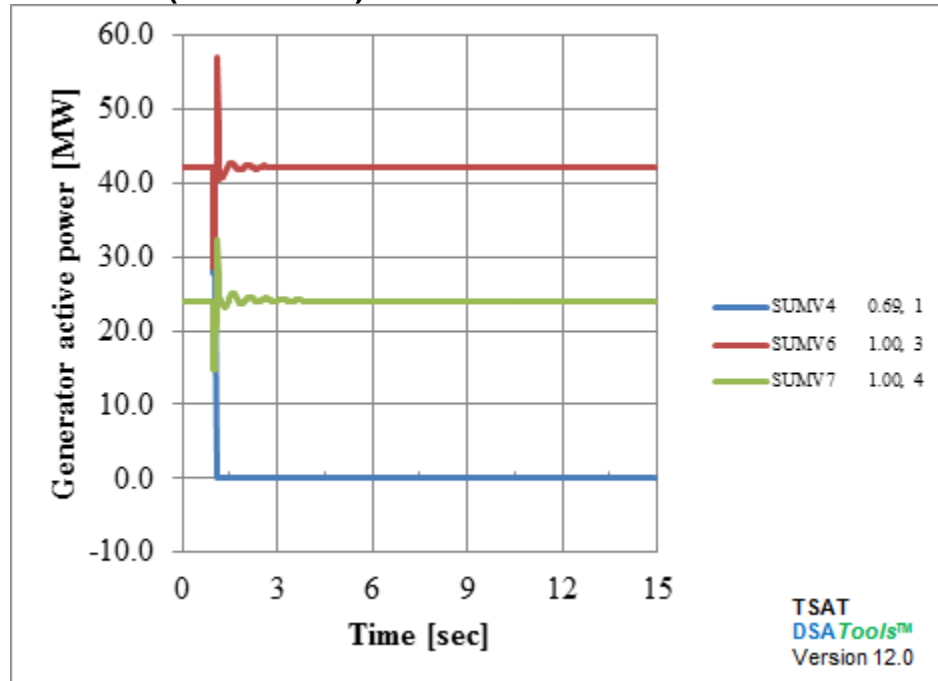
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



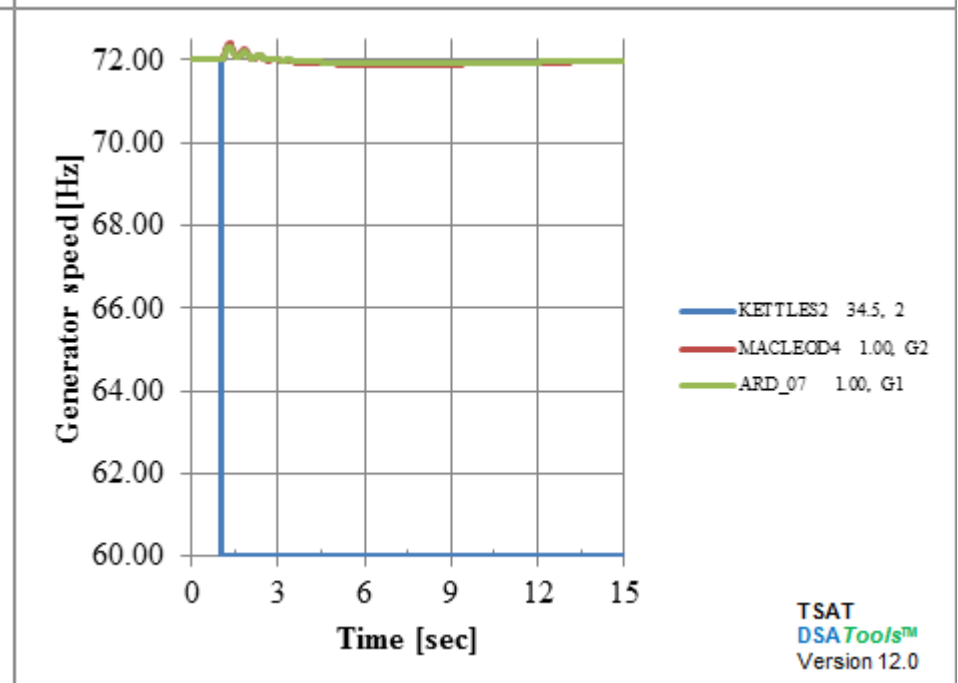
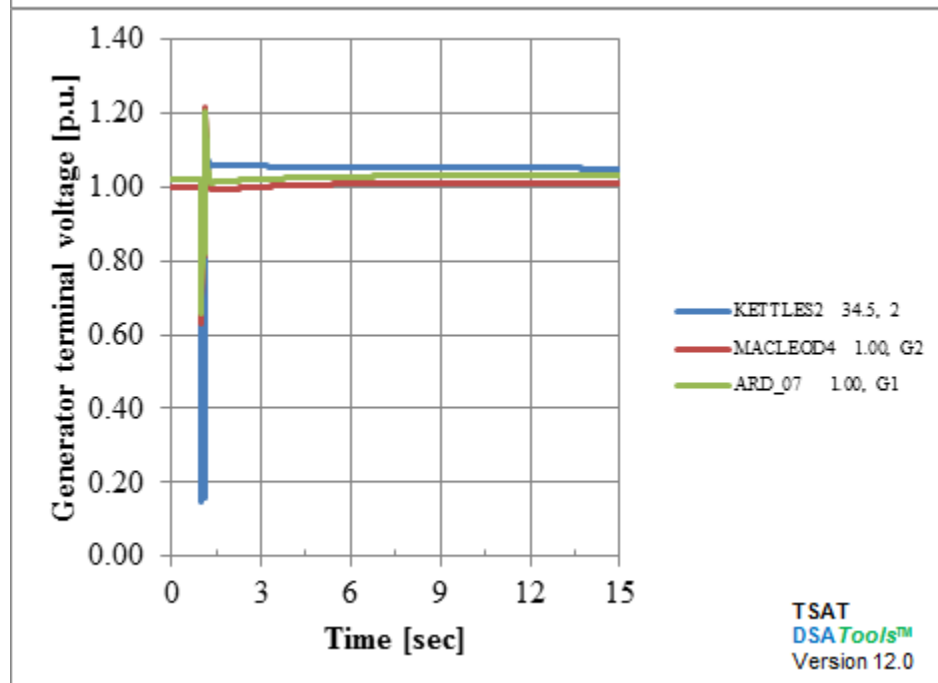
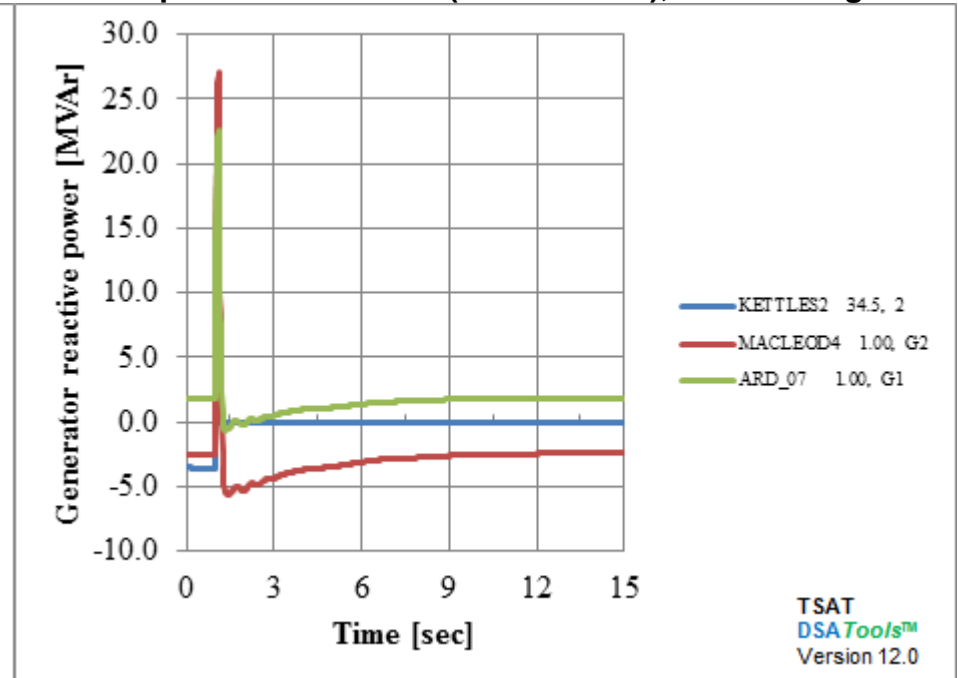
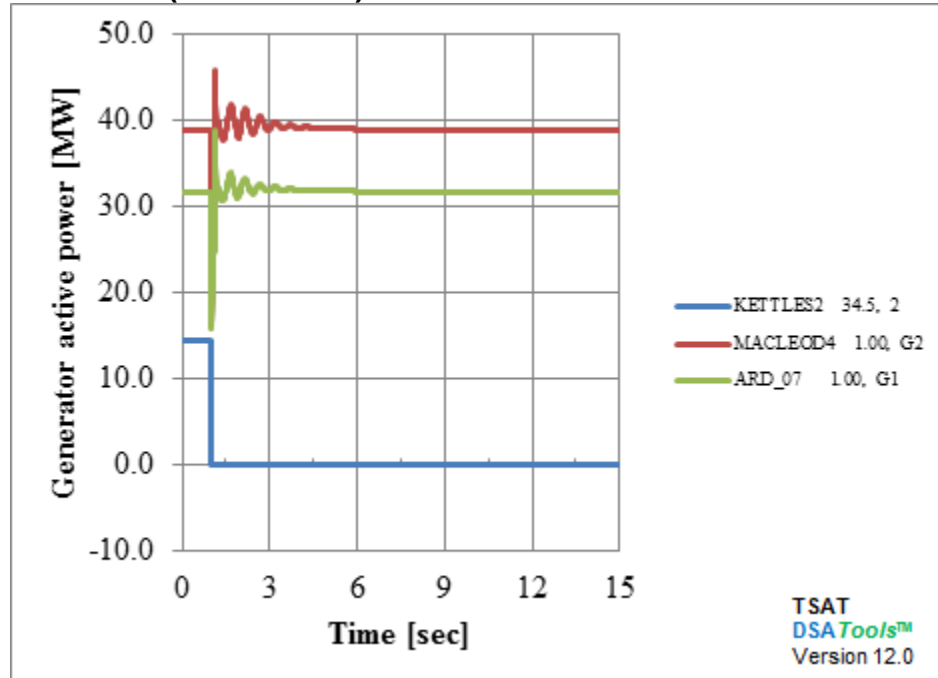
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



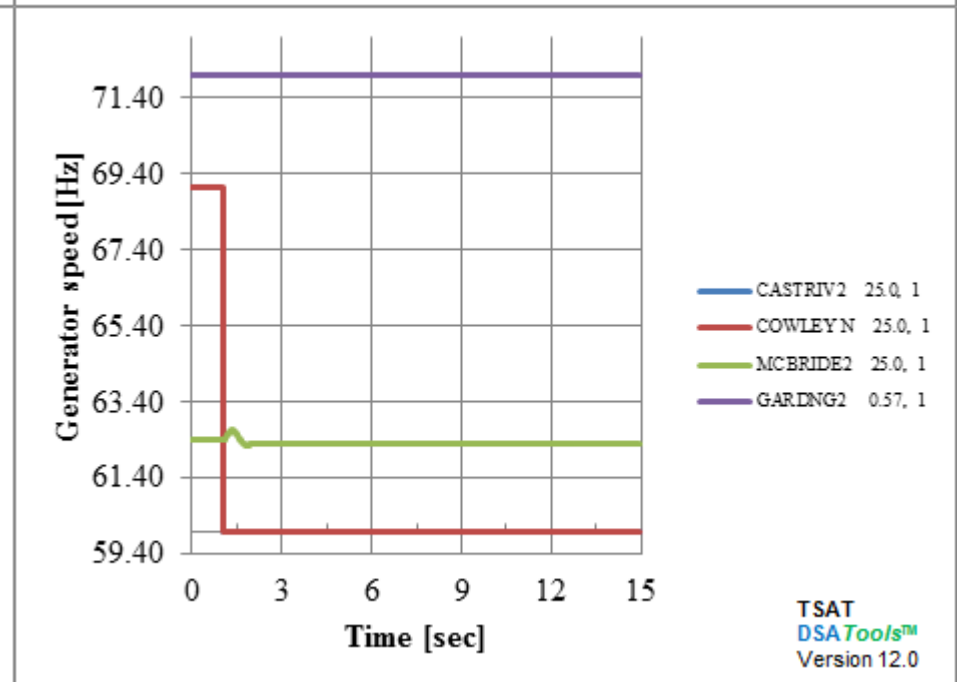
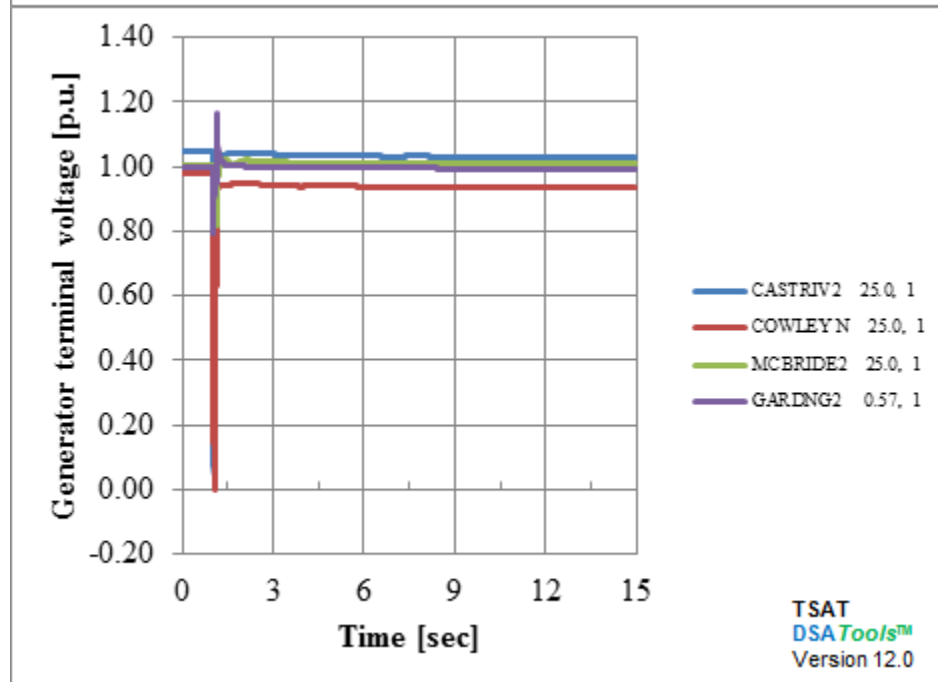
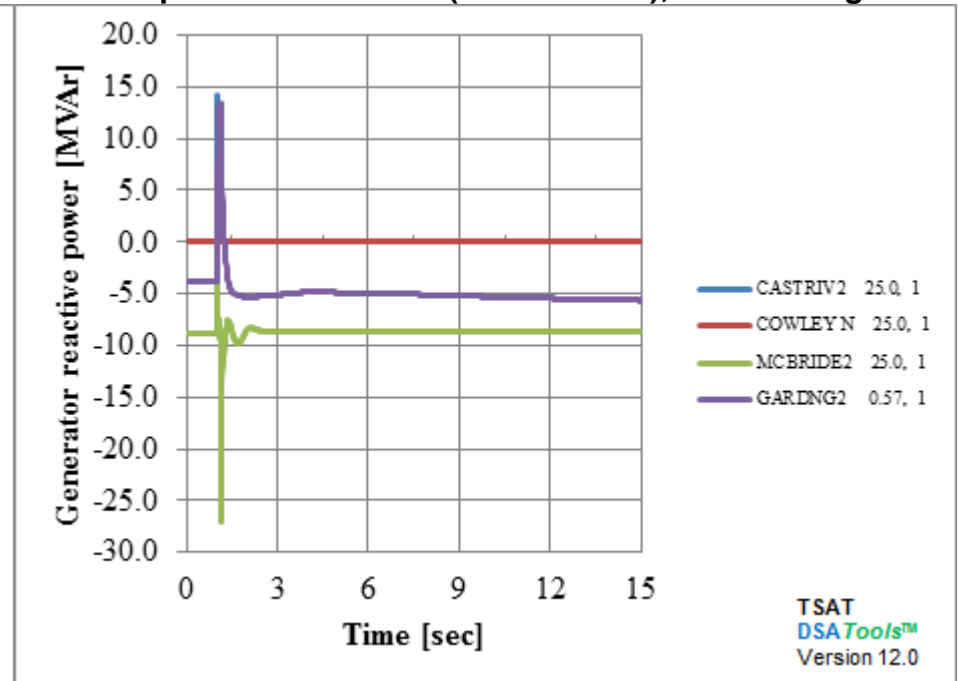
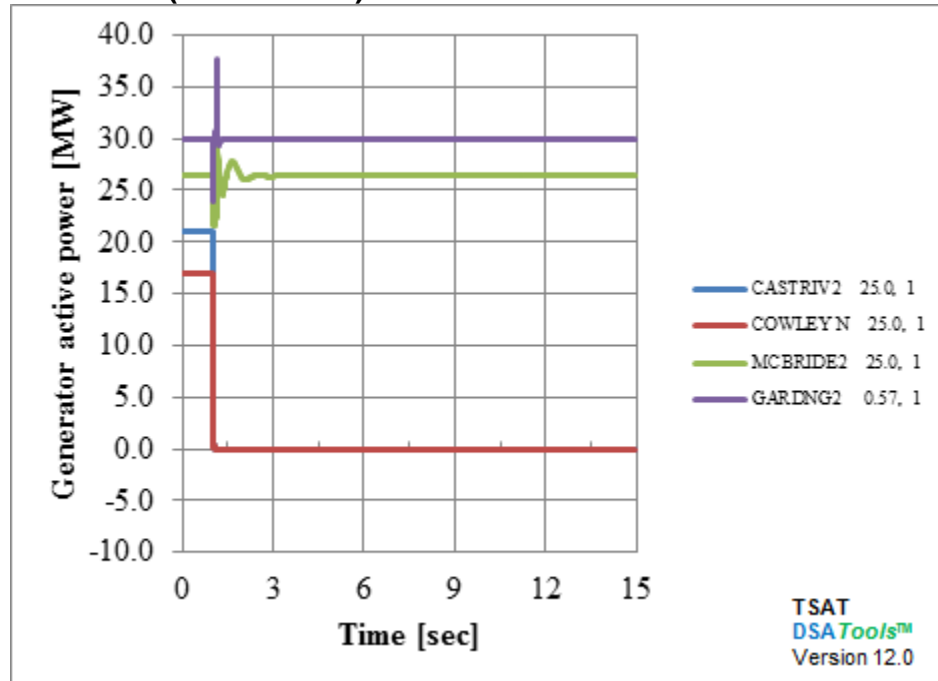
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



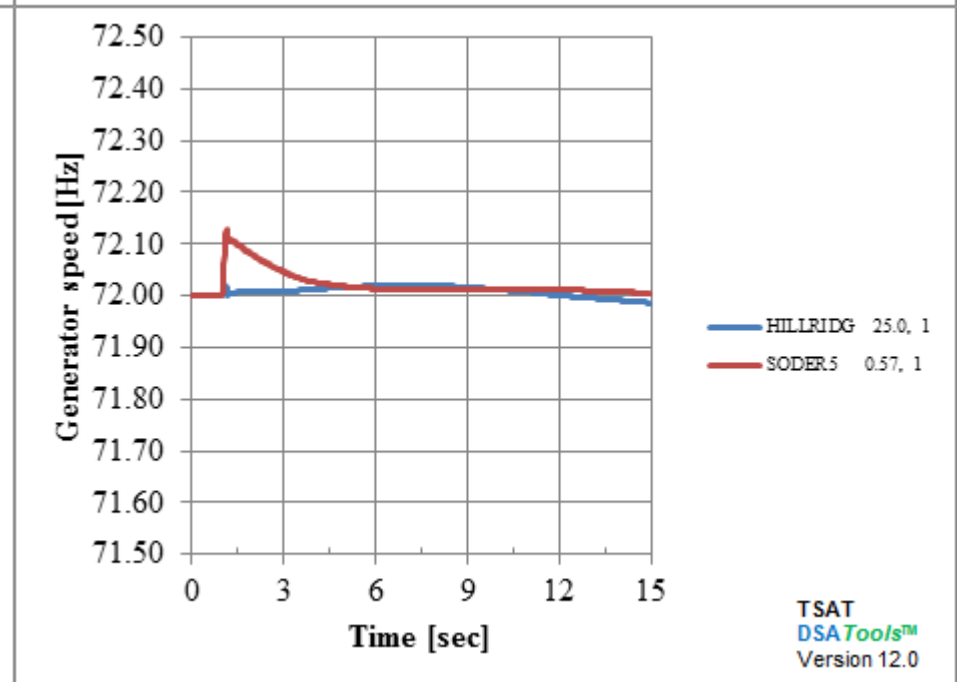
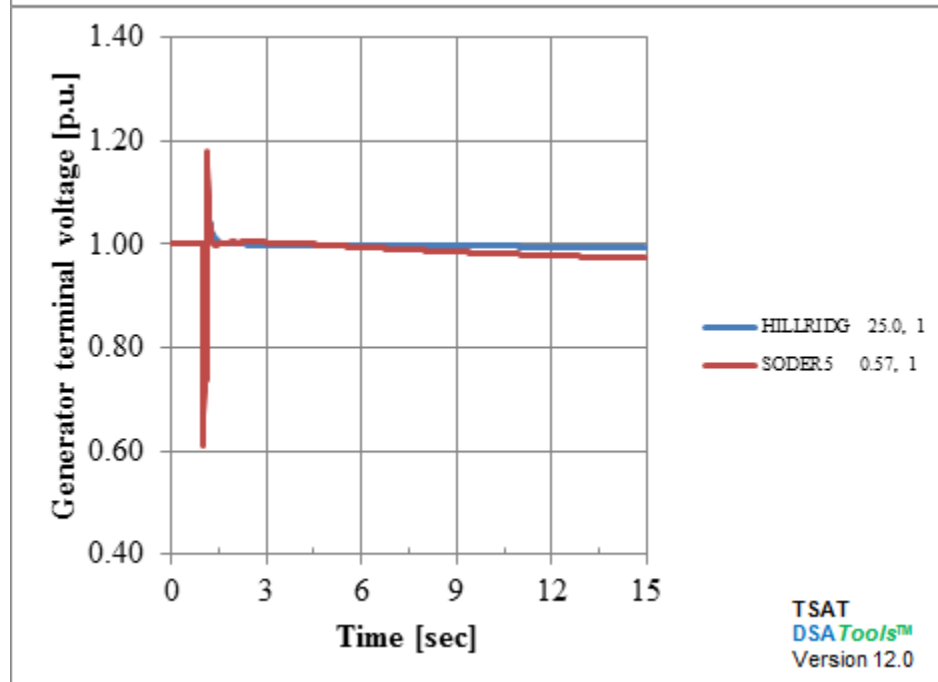
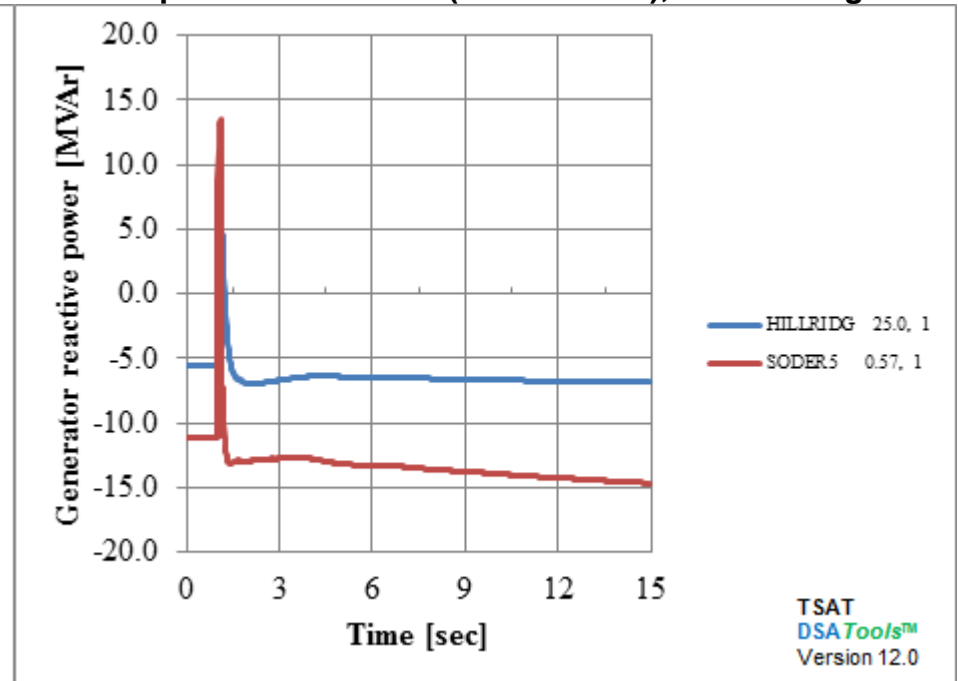
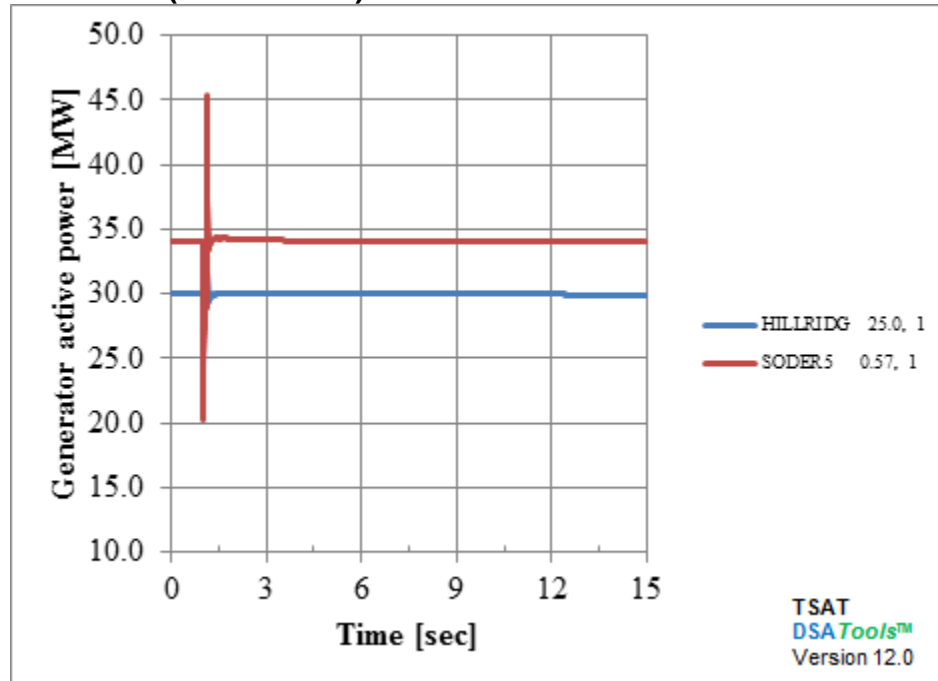
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



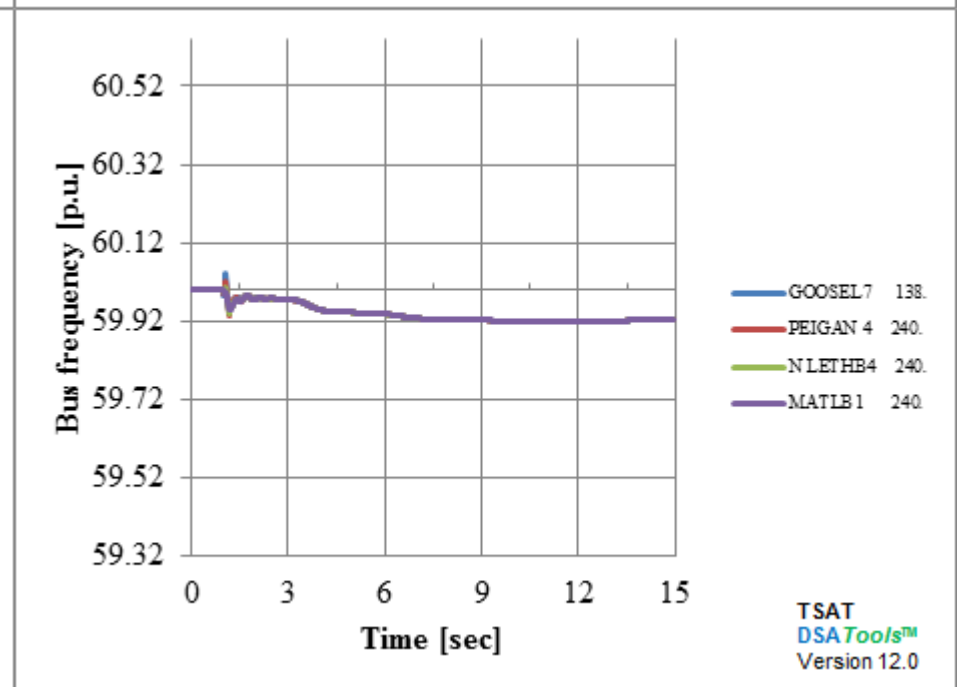
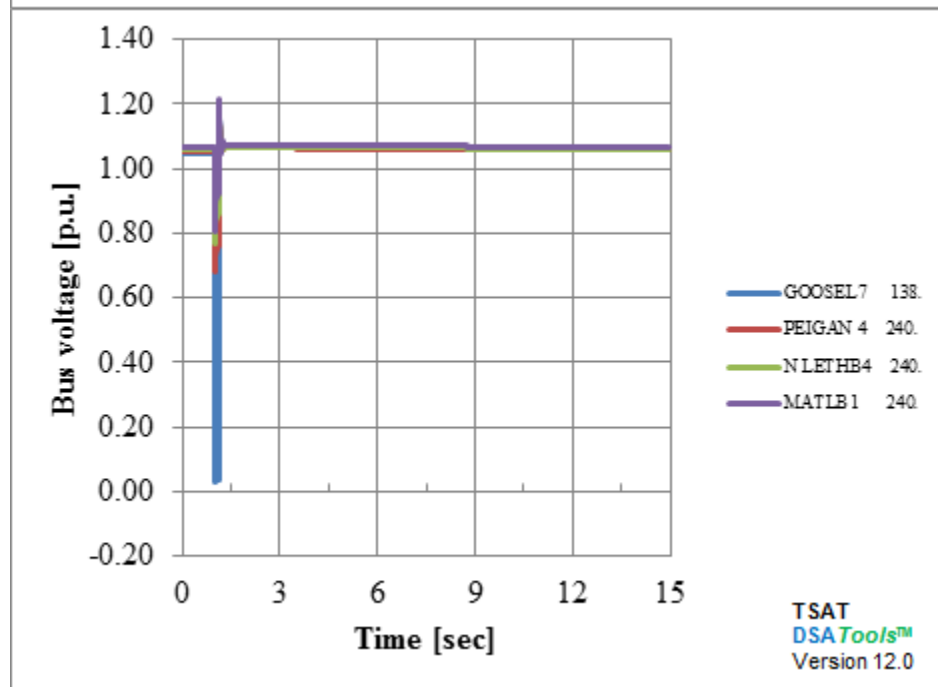
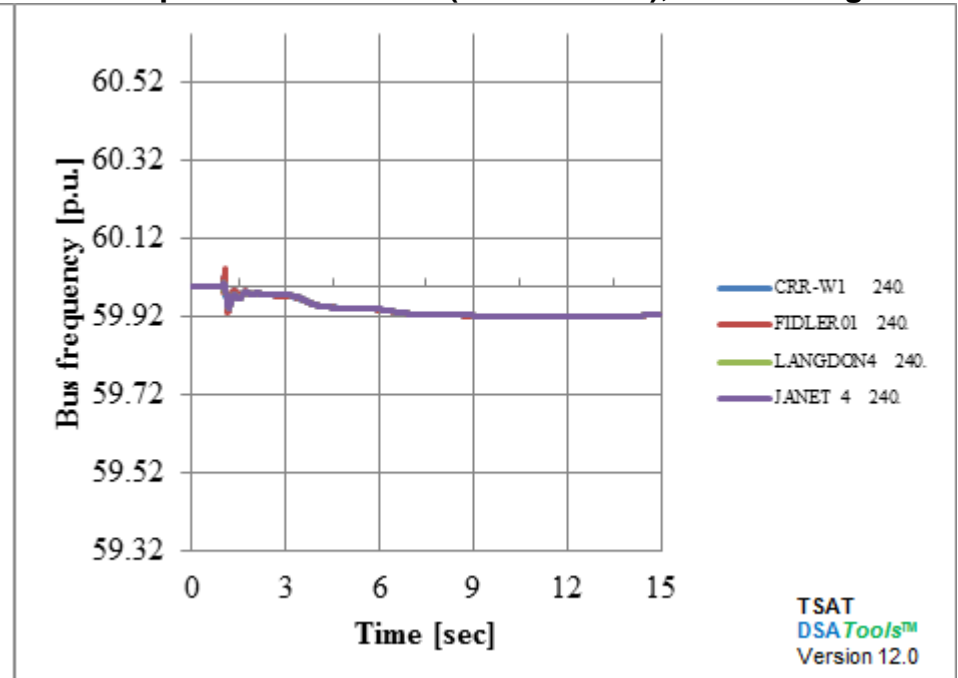
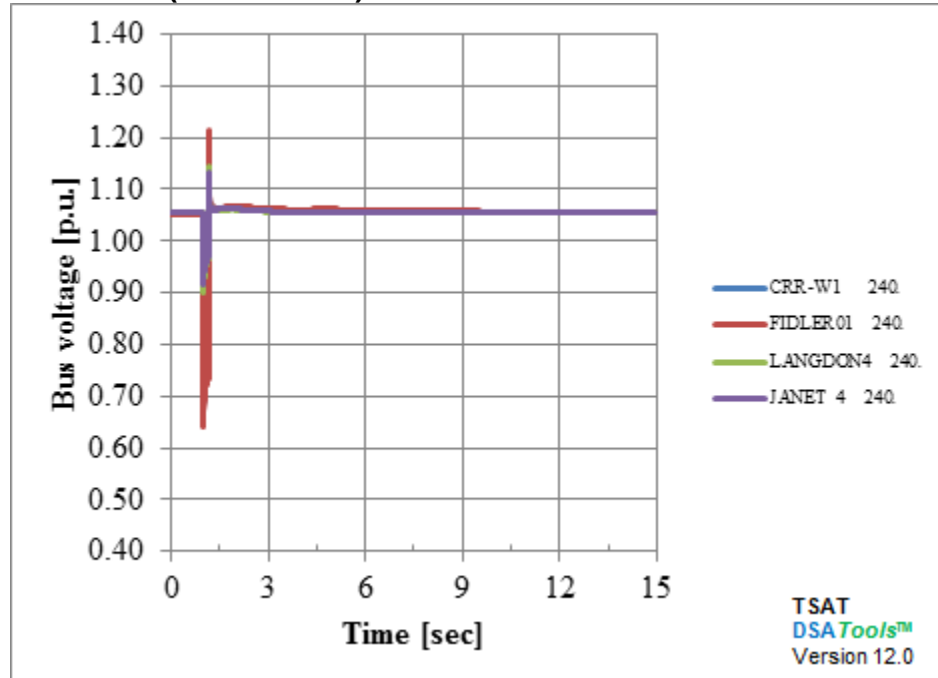
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



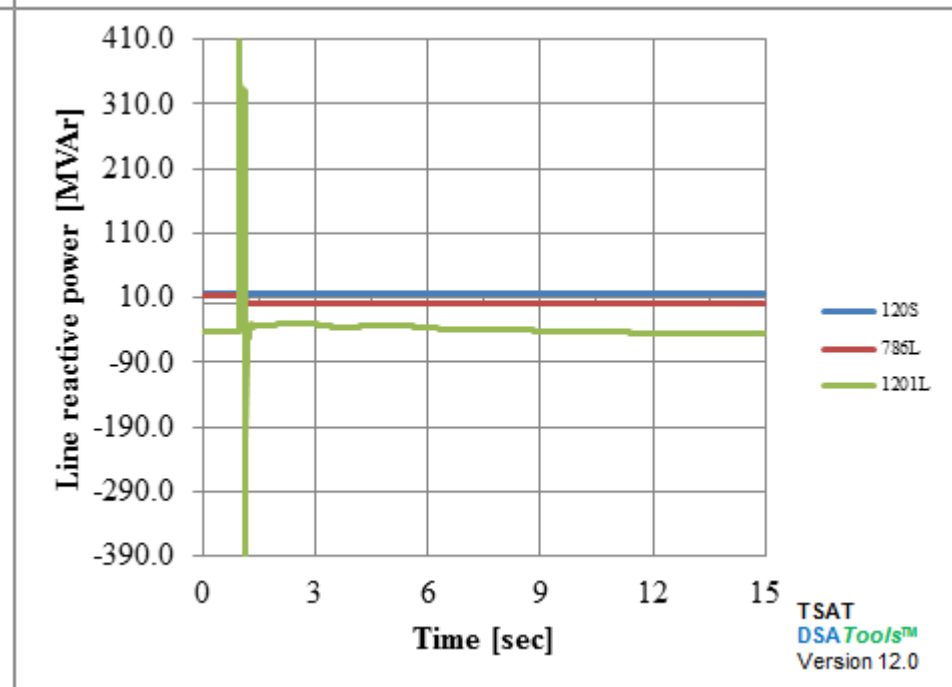
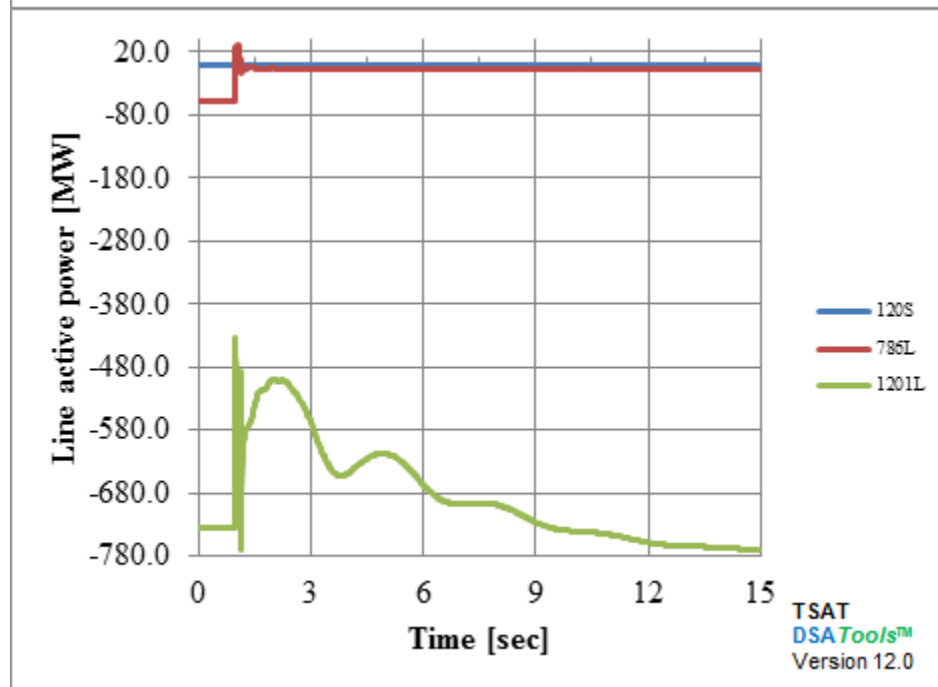
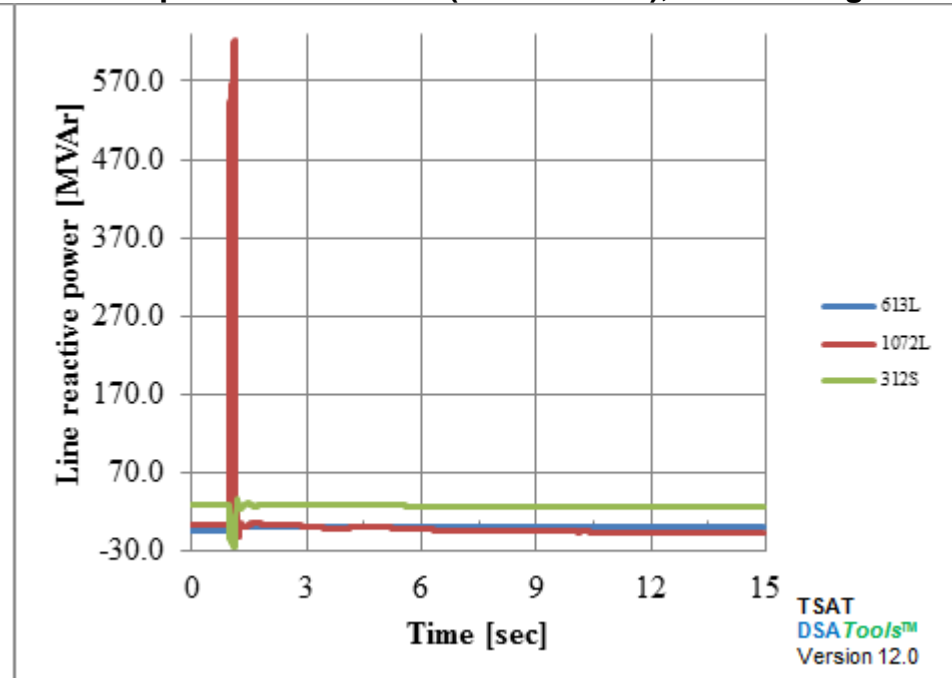
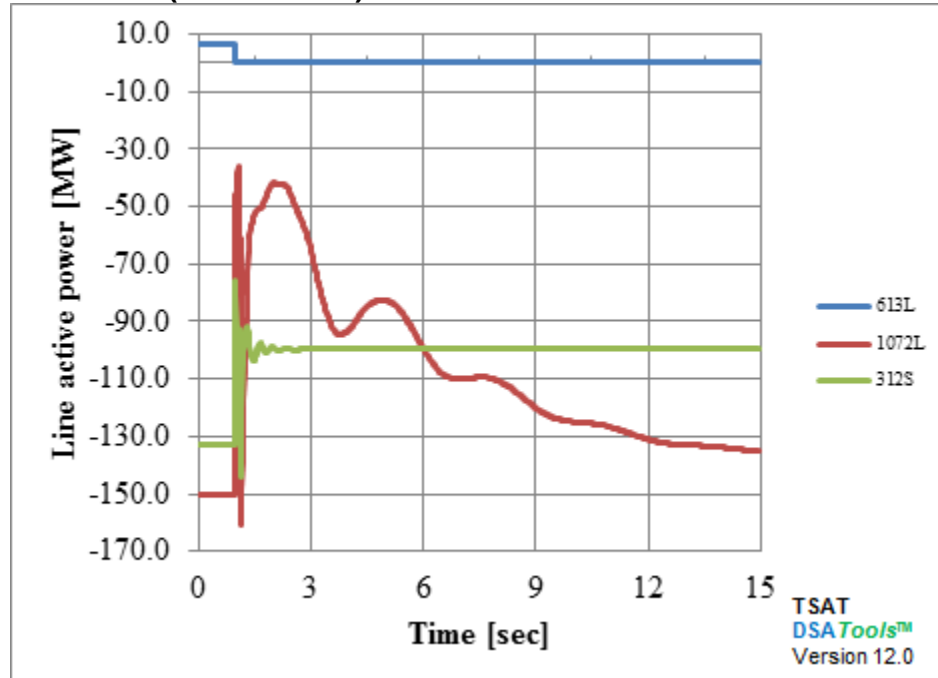
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



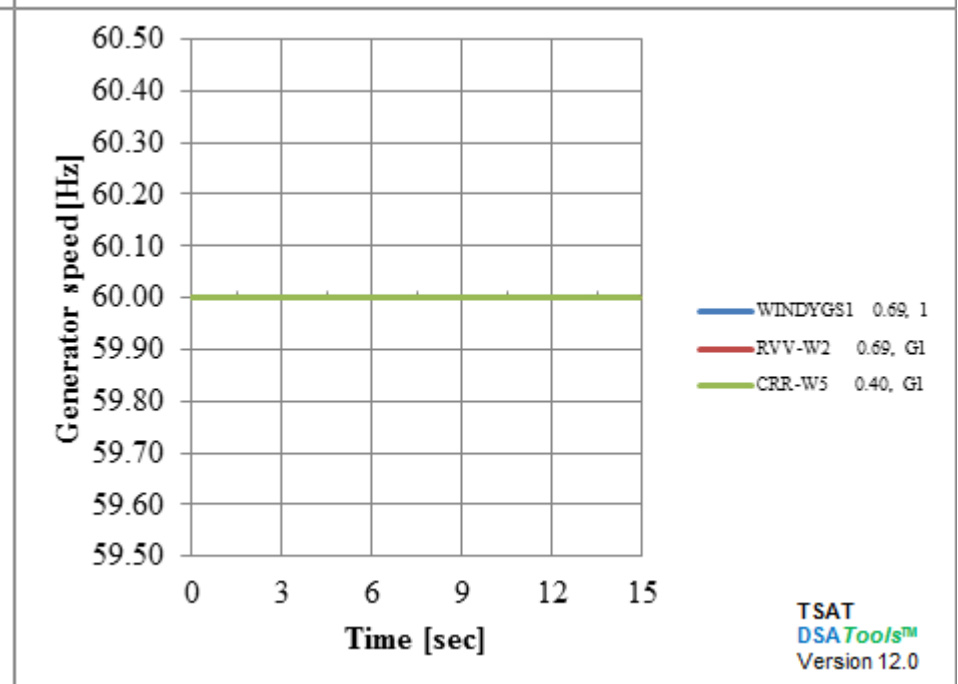
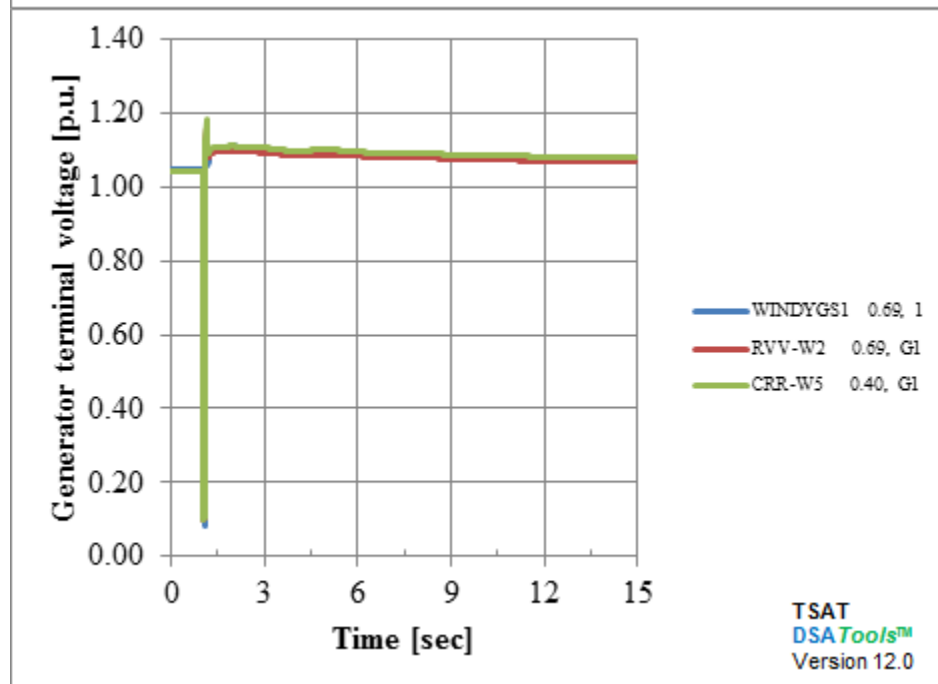
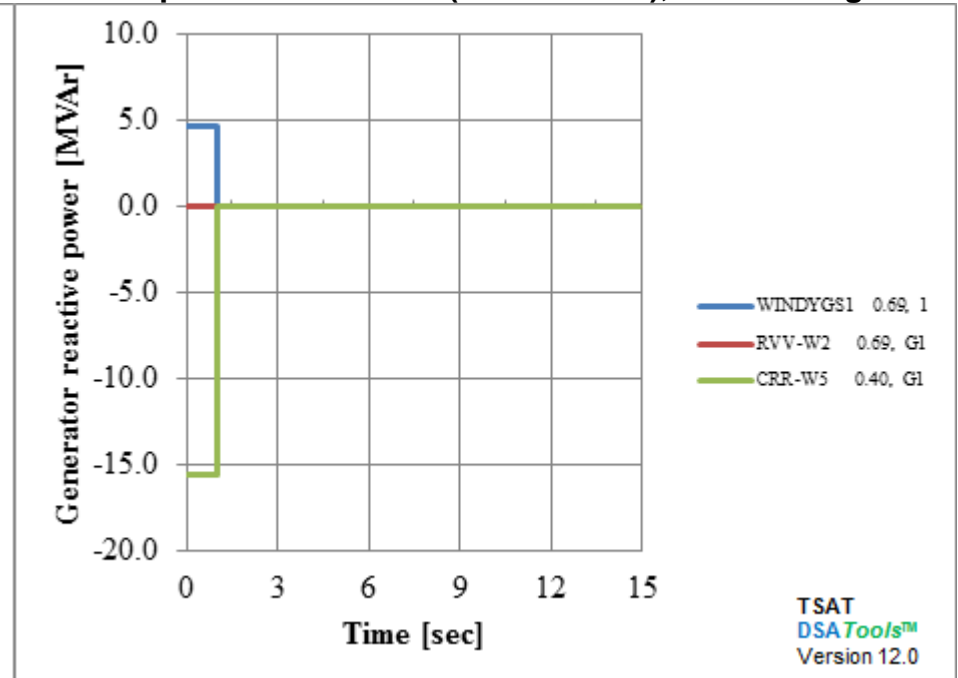
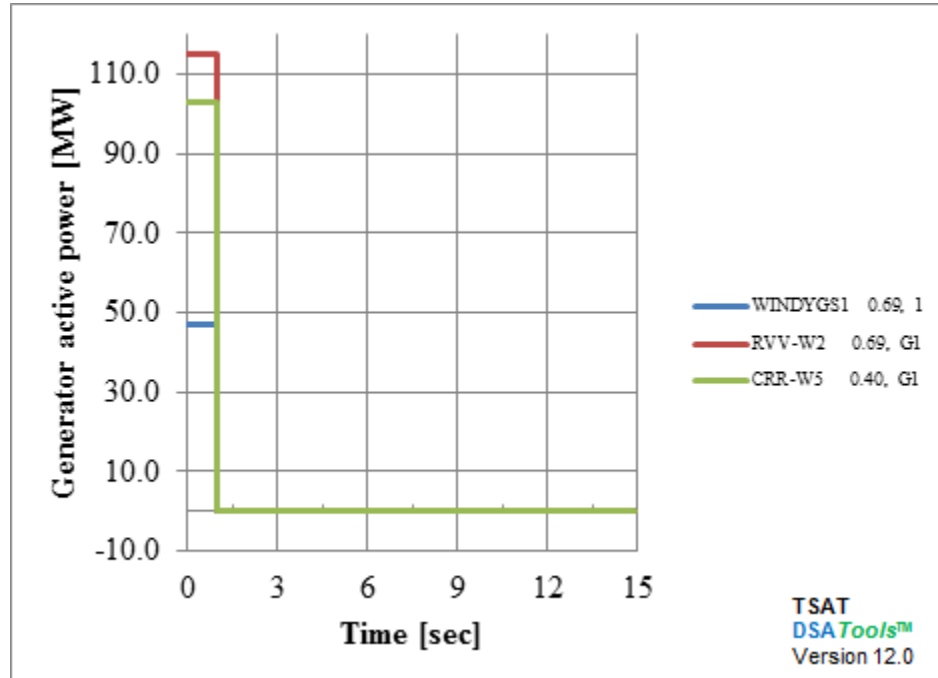
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



15 -- 103S 240KV-138KV

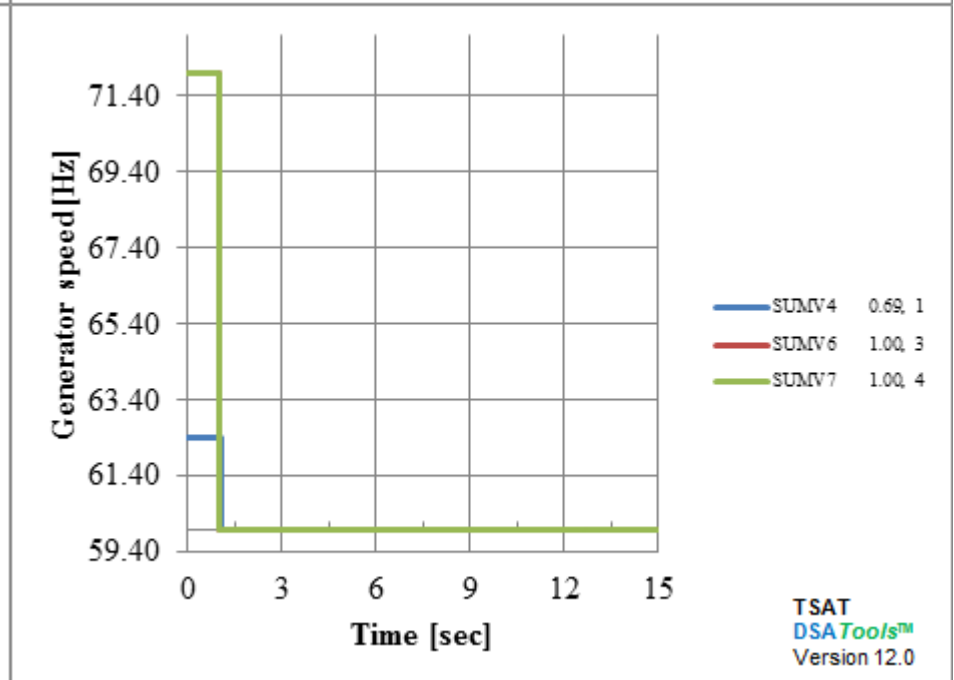
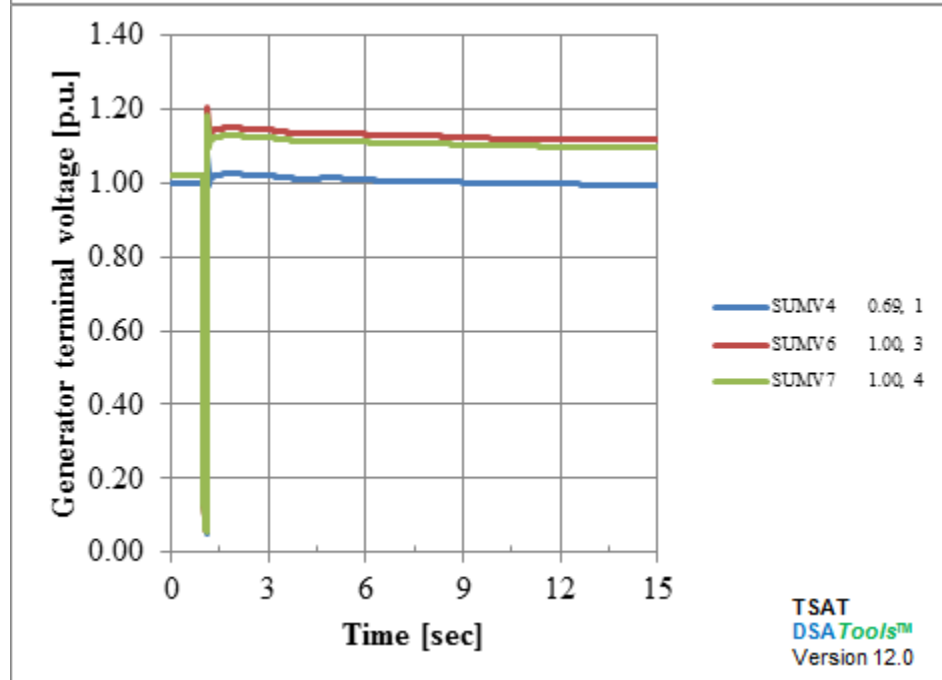
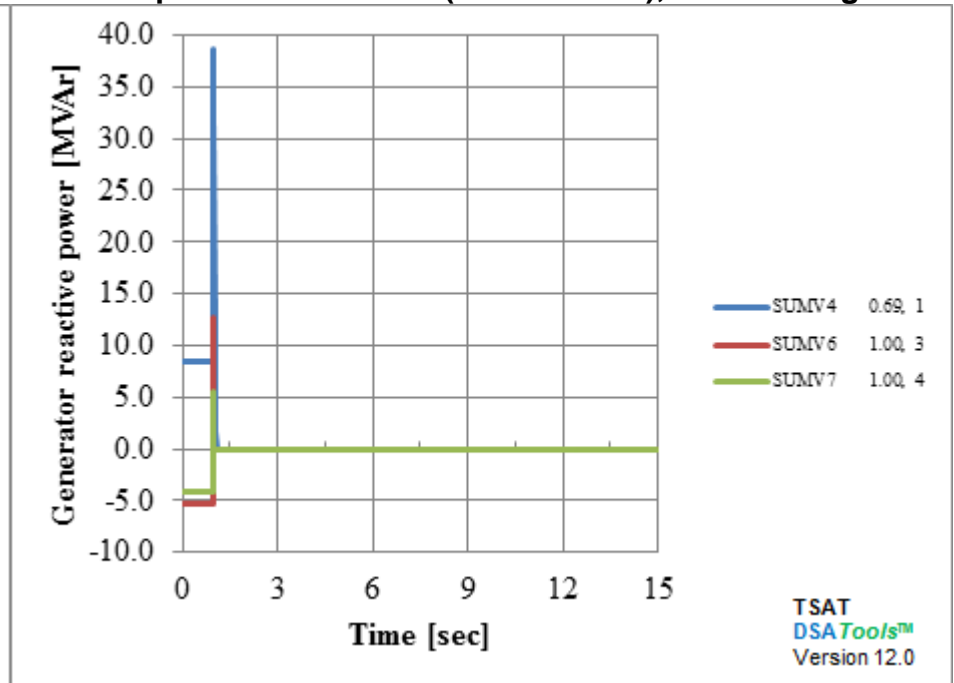
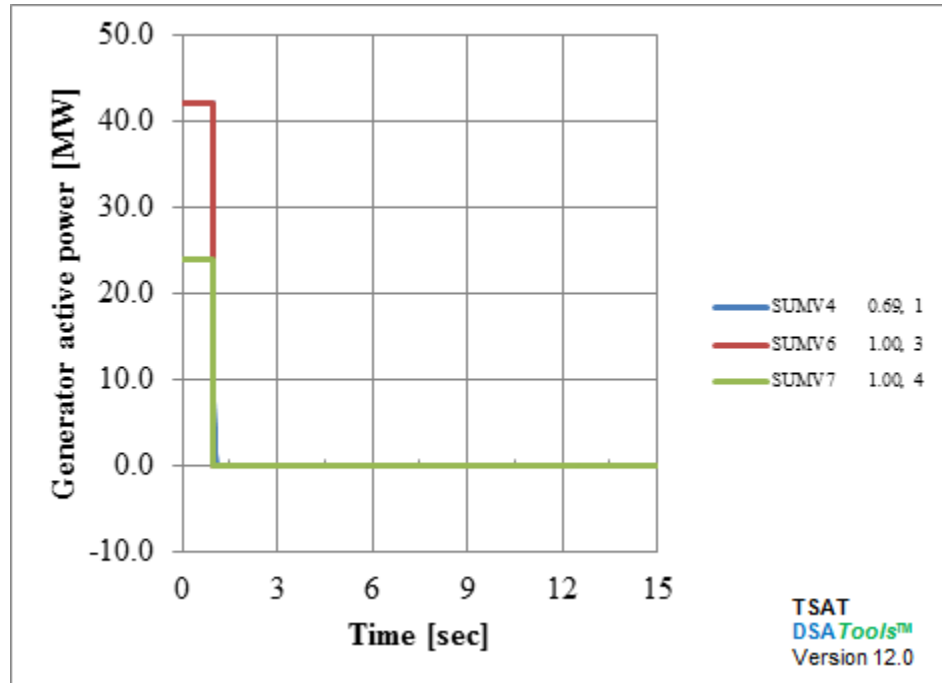
Proposed Connection (Alternative 2), Summer Light 2017





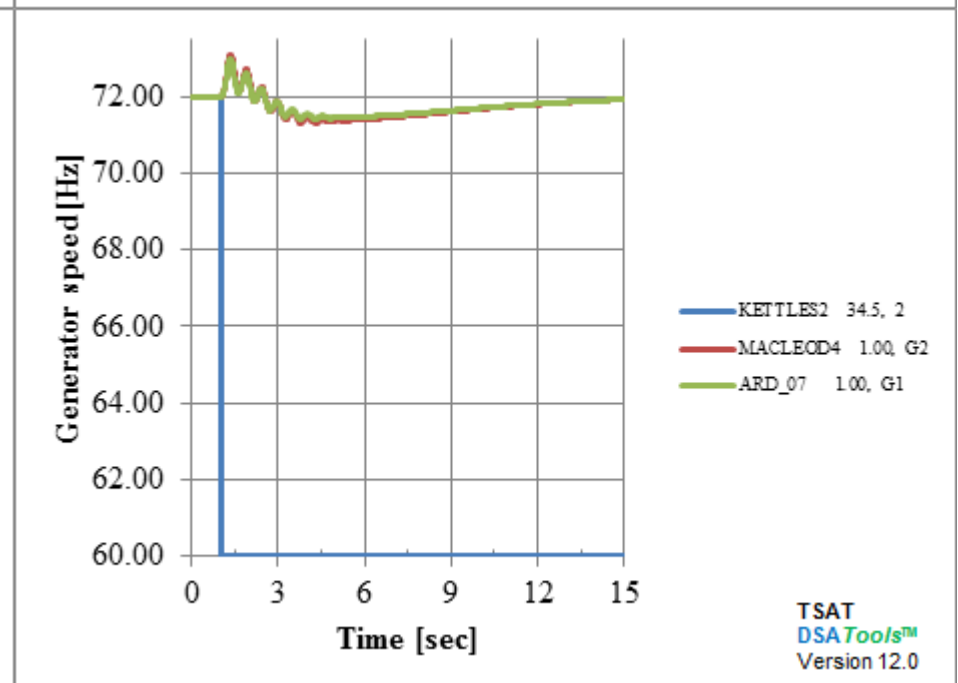
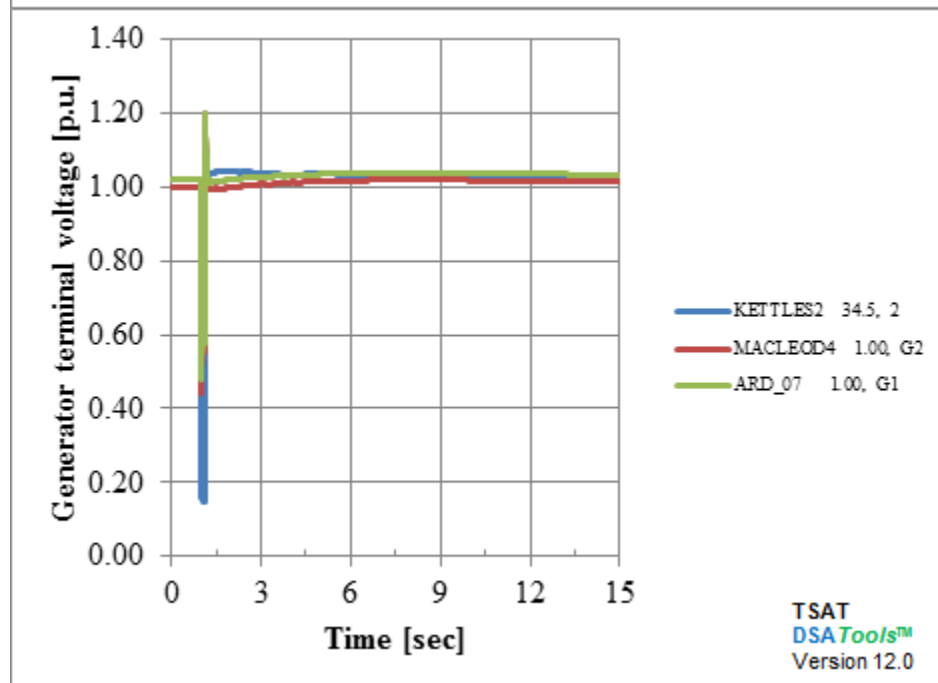
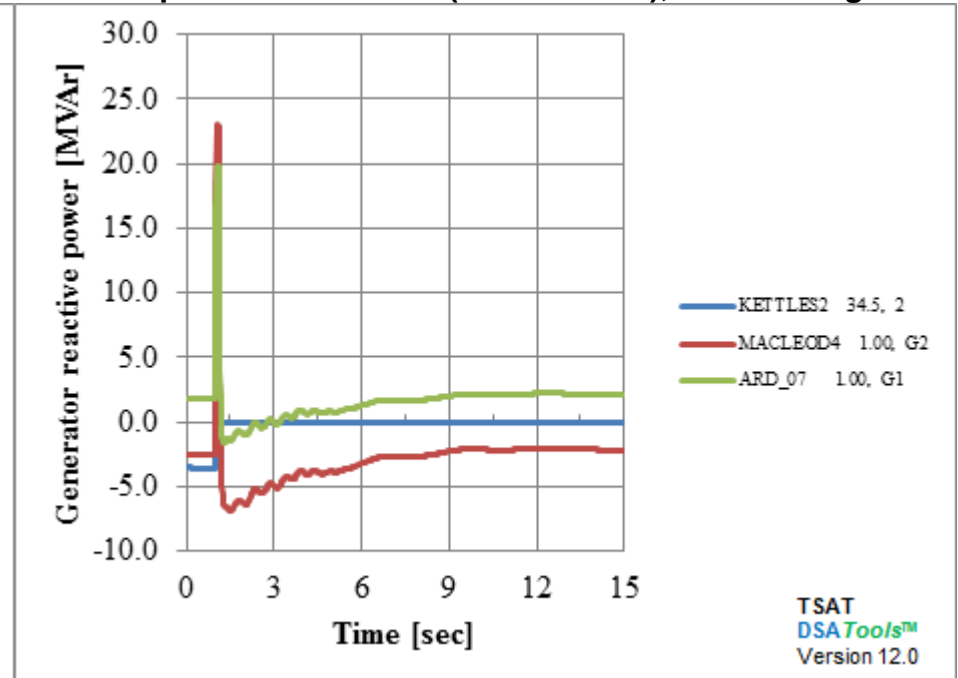
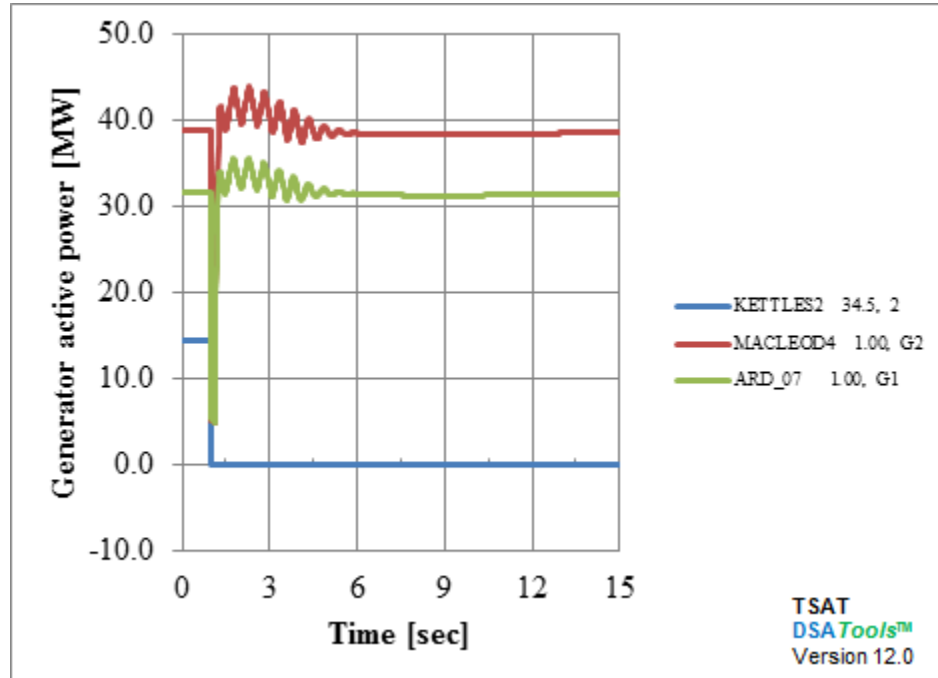
15 -- 103S 240KV-138KV

Proposed Connection (Alternative 2), Summer Light 2017



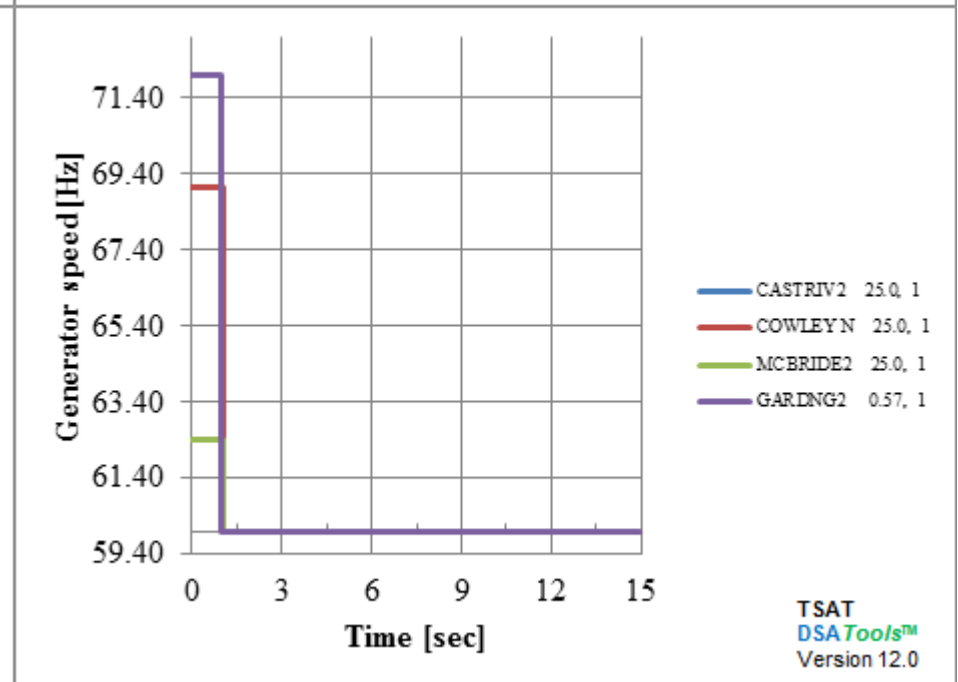
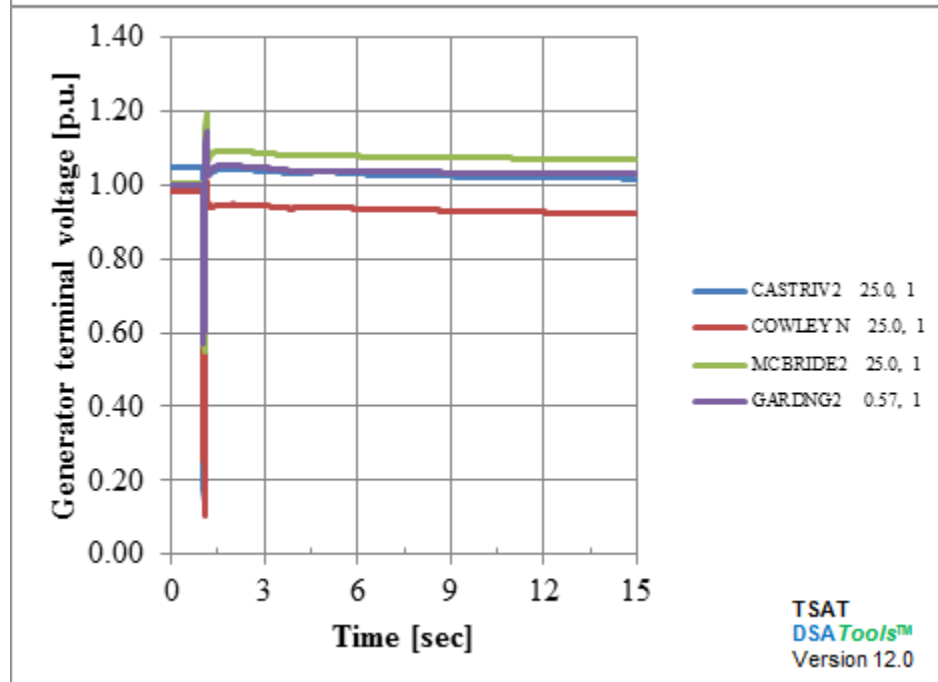
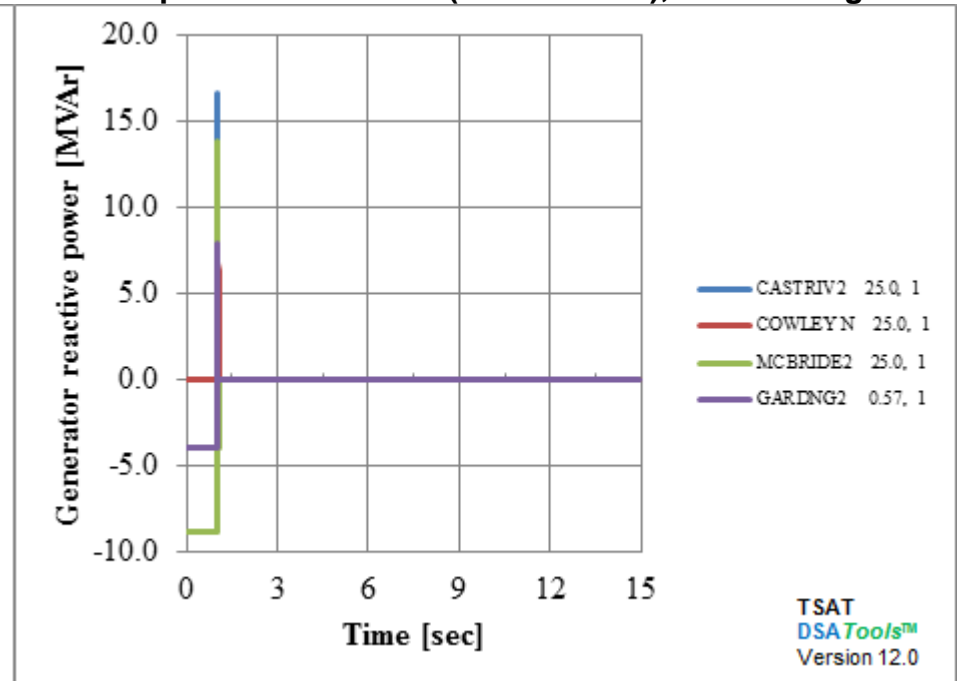
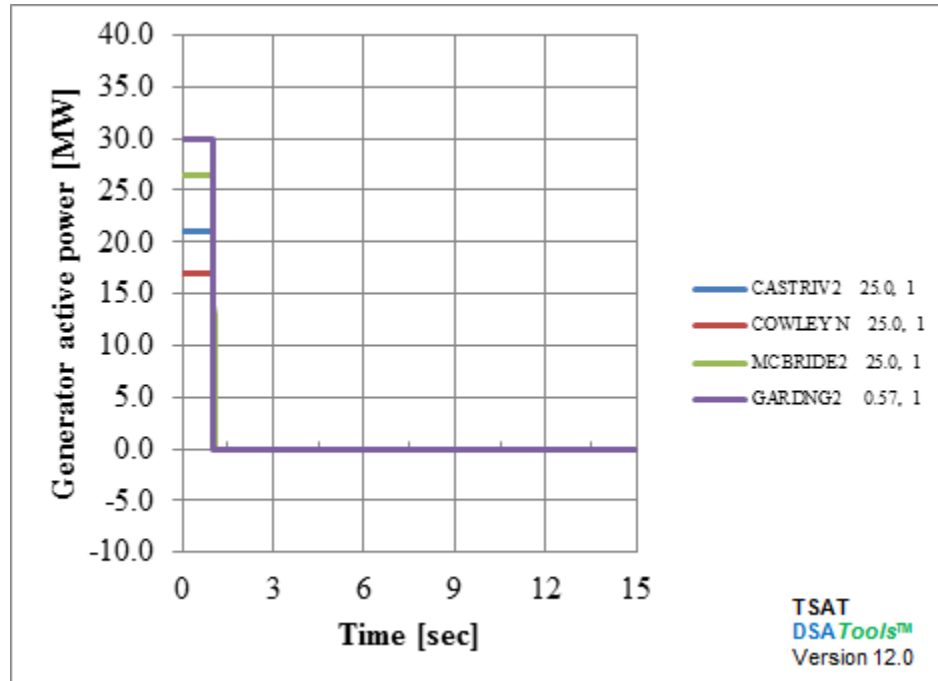
15 -- 103S 240KV-138KV

Proposed Connection (Alternative 2), Summer Light 2017



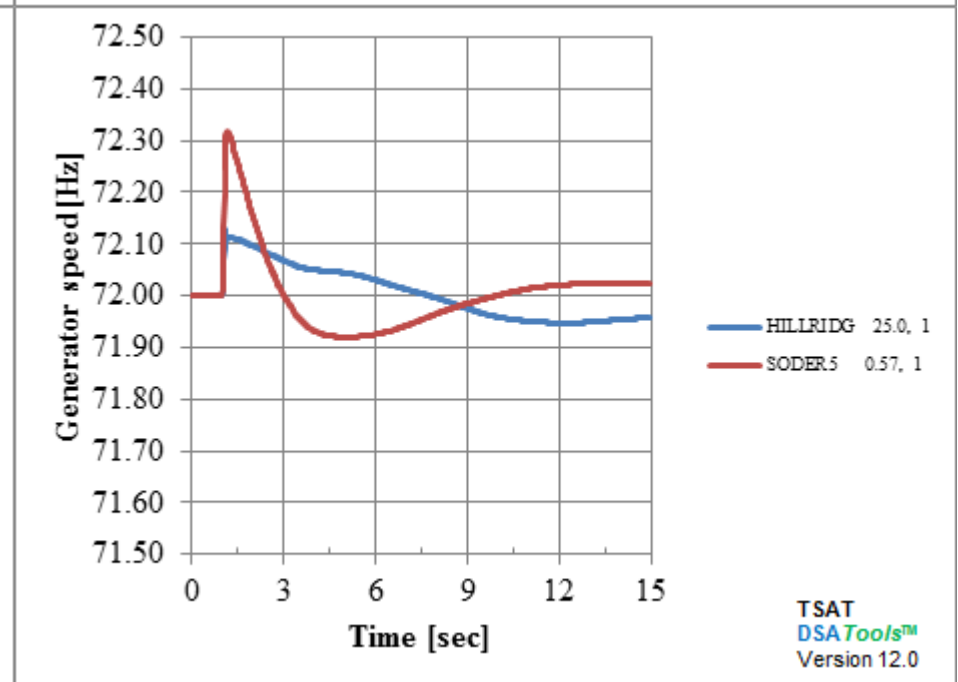
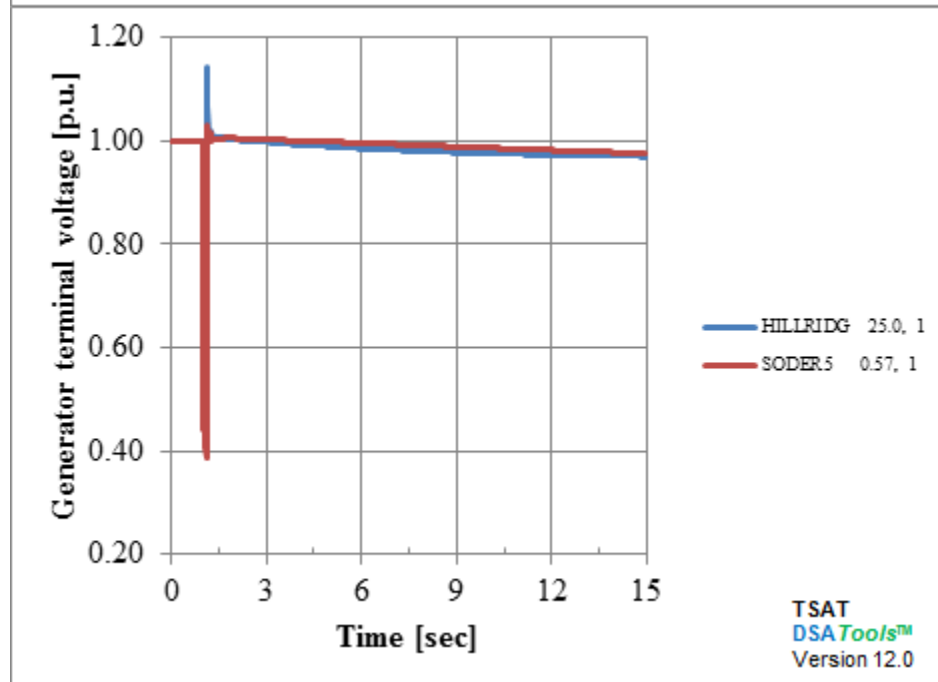
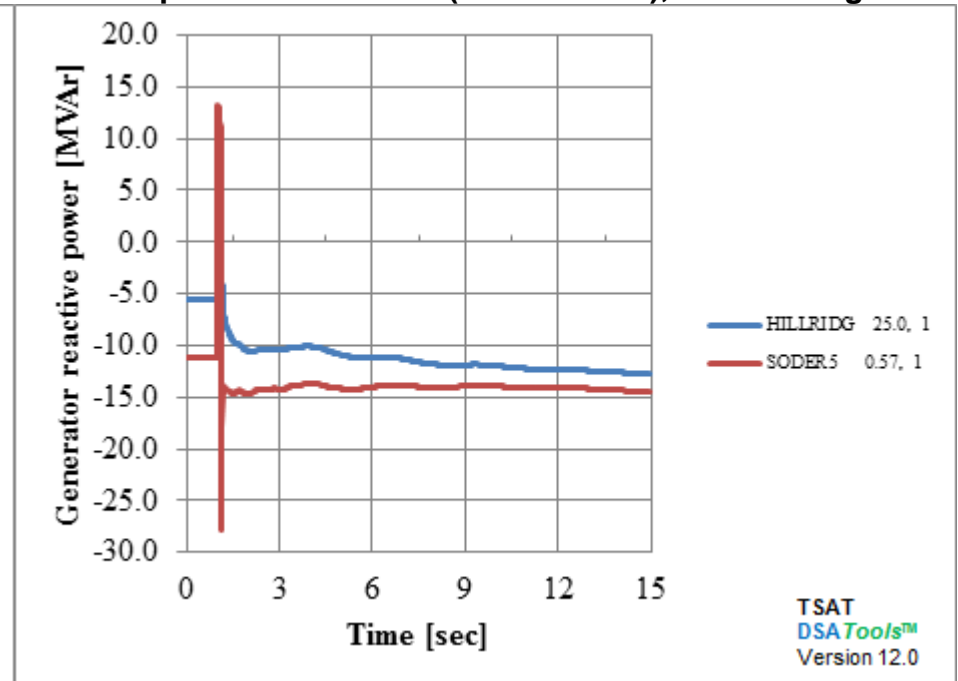
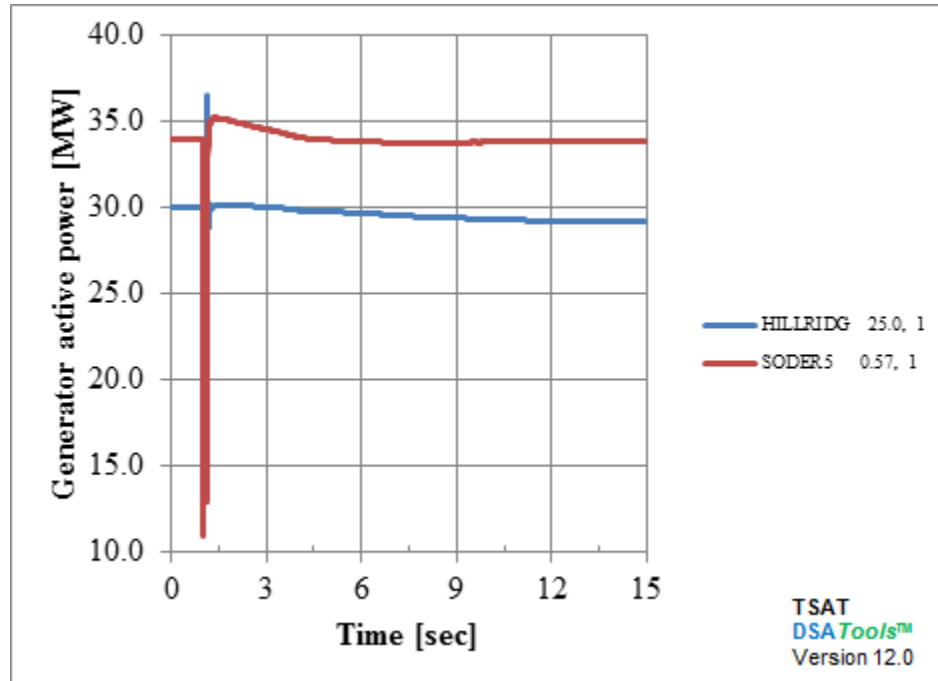
15 -- 103S 240KV-138KV

Proposed Connection (Alternative 2), Summer Light 2017



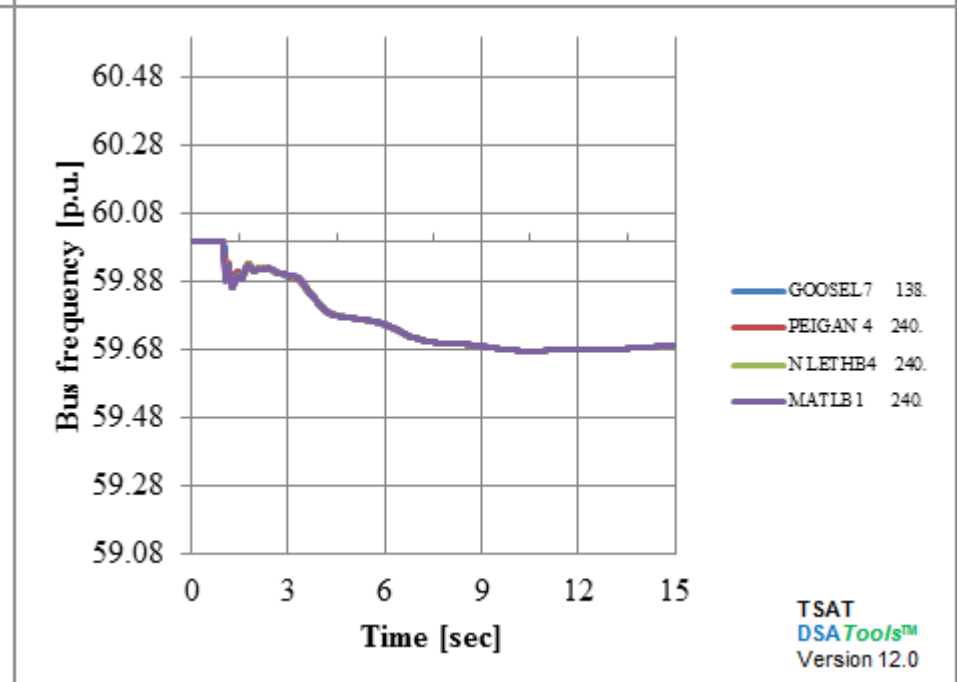
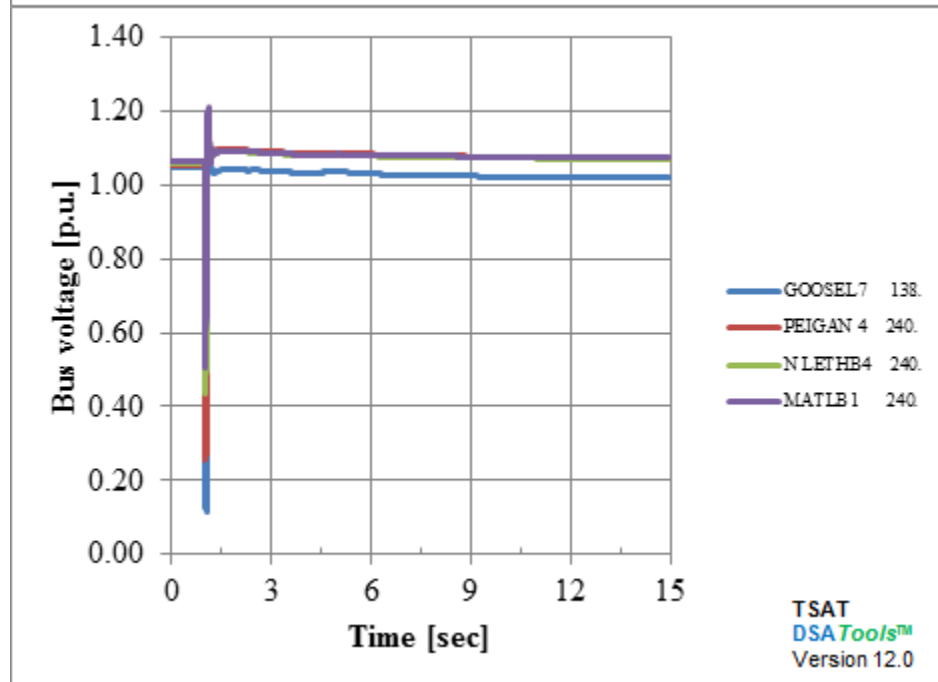
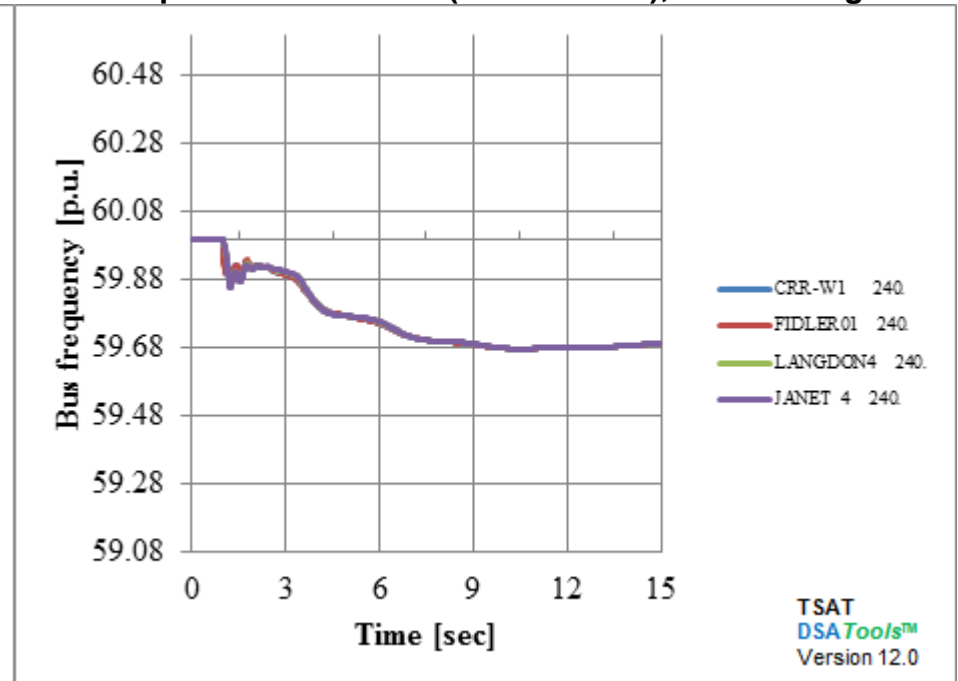
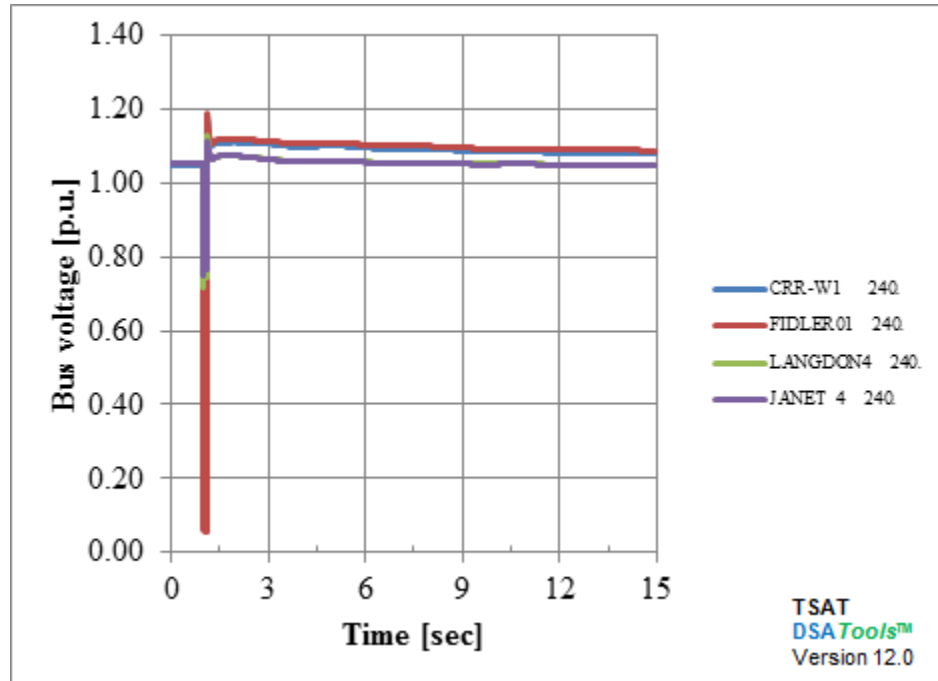
15 -- 103S 240KV-138KV

Proposed Connection (Alternative 2), Summer Light 2017



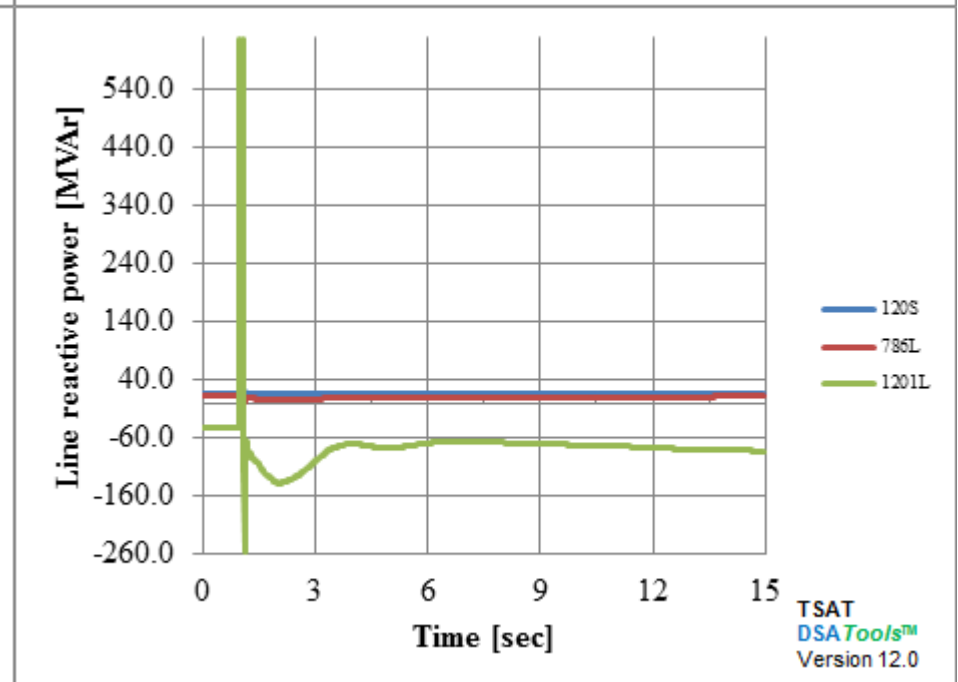
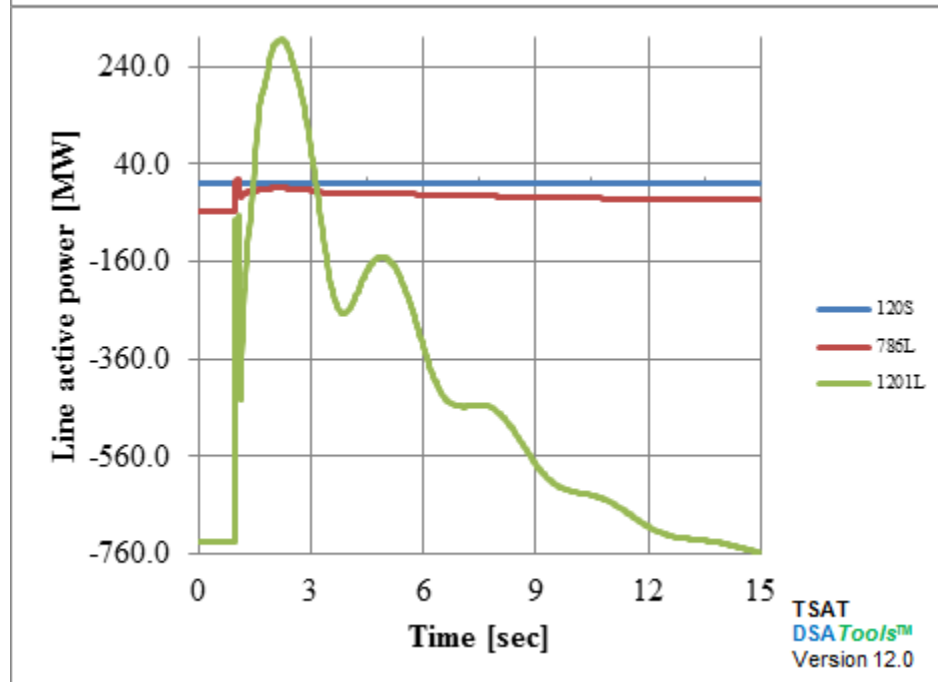
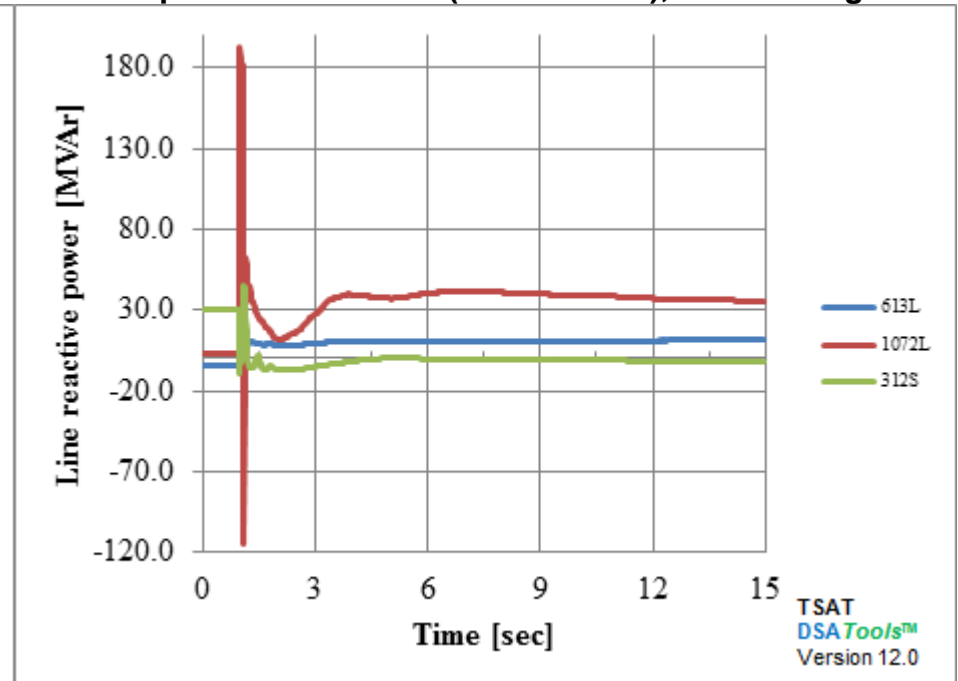
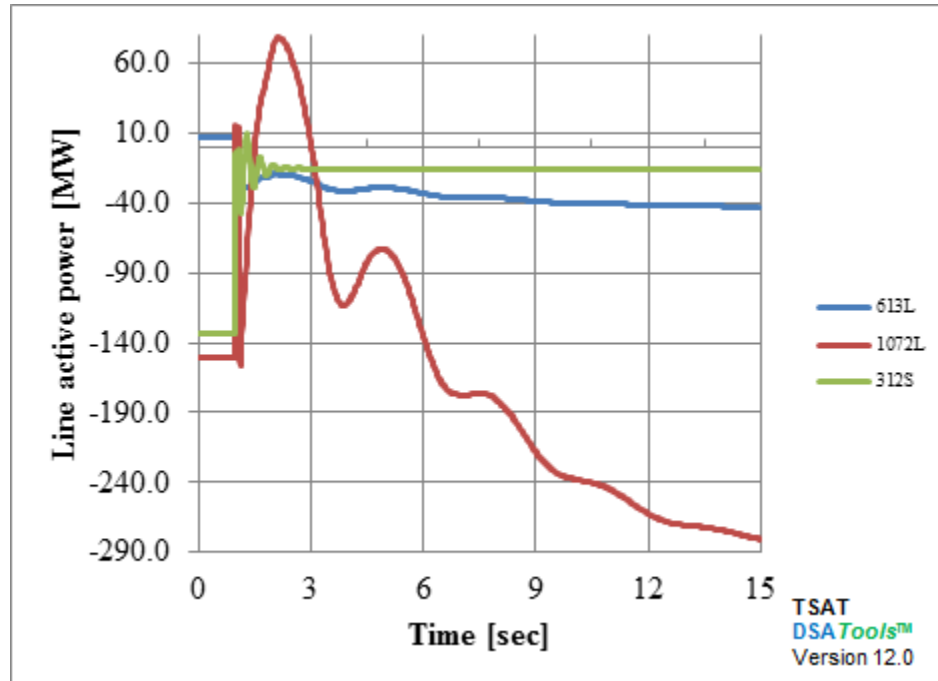
15 -- 103S 240KV-138KV

Proposed Connection (Alternative 2), Summer Light 2017



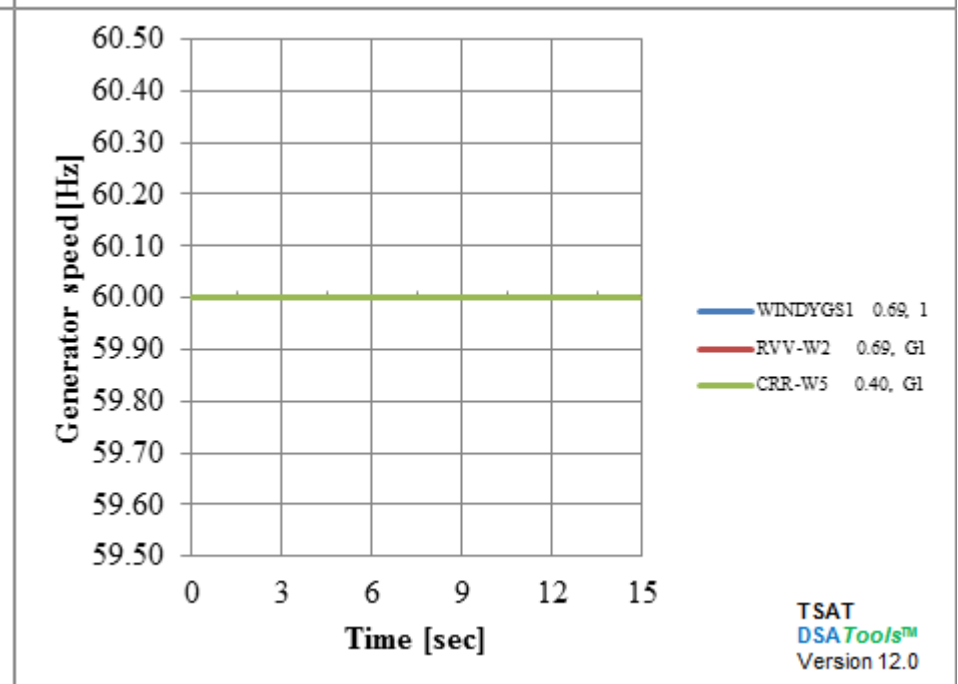
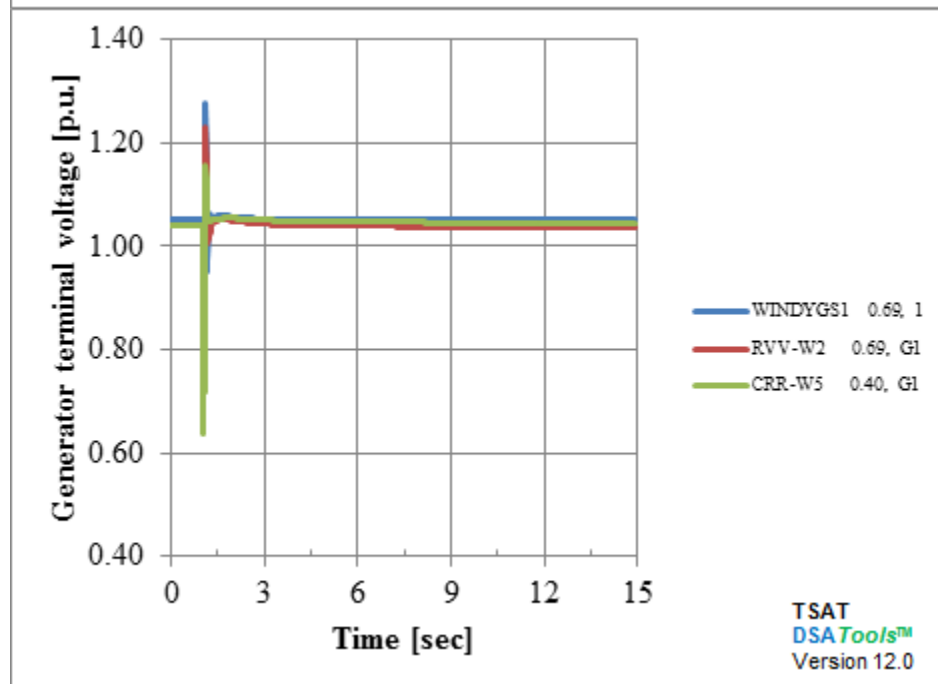
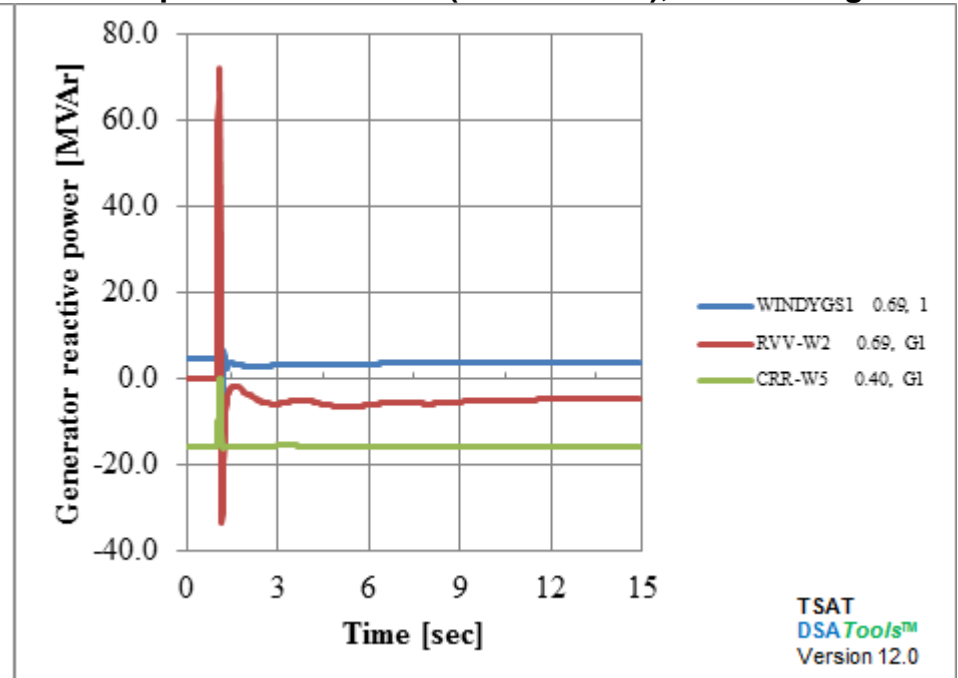
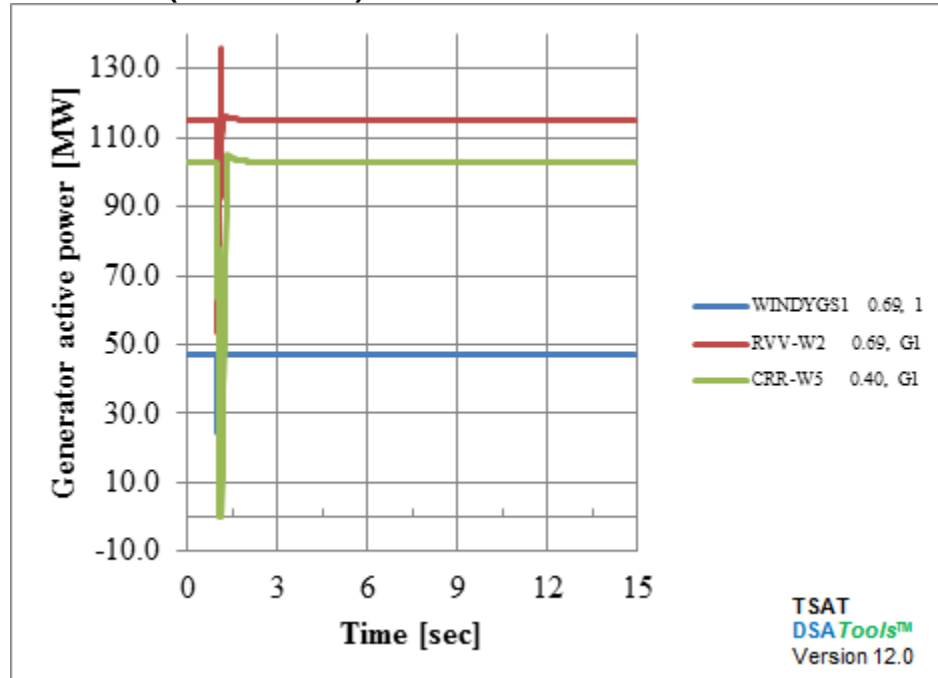
15 -- 103S 240KV-138KV

Proposed Connection (Alternative 2), Summer Light 2017



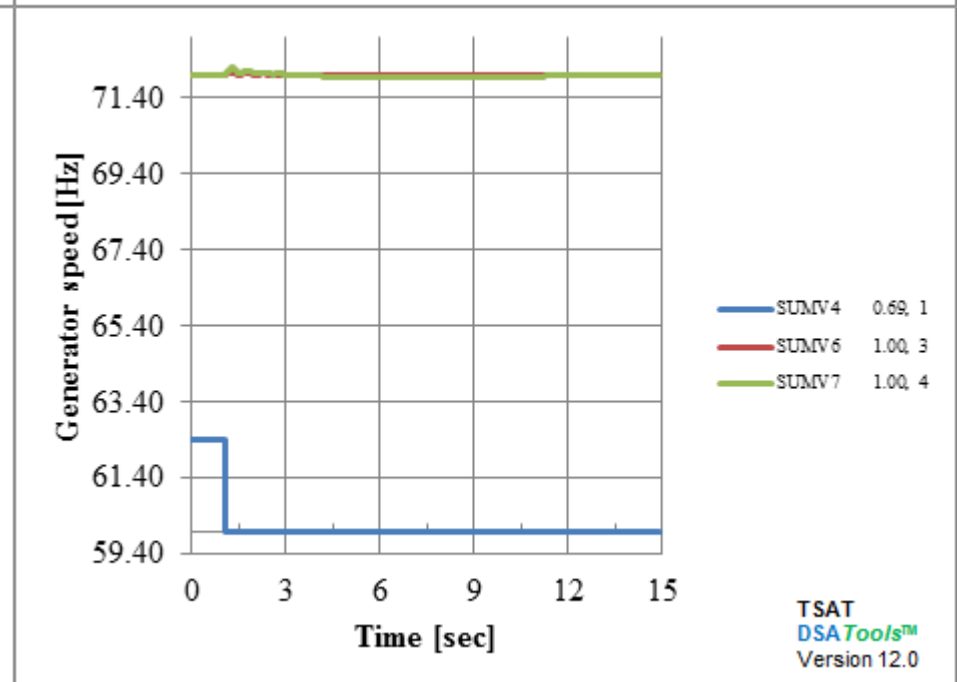
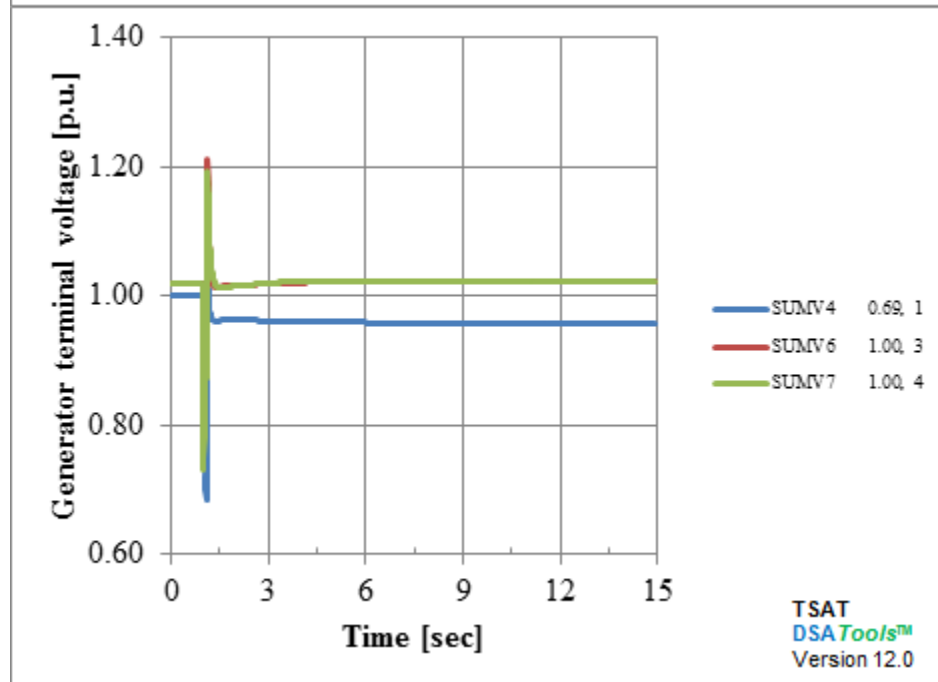
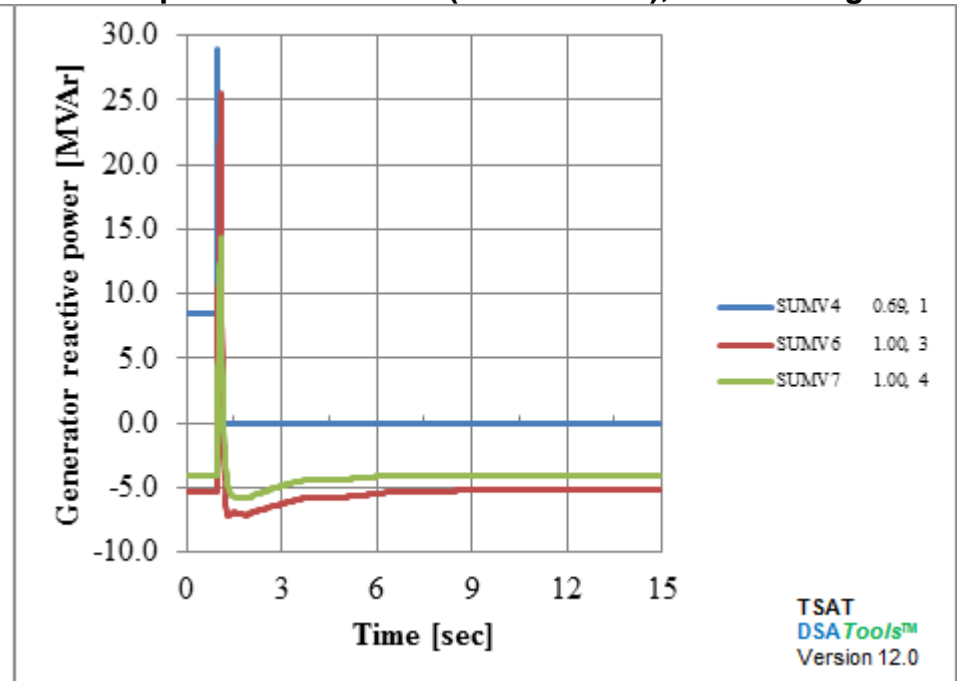
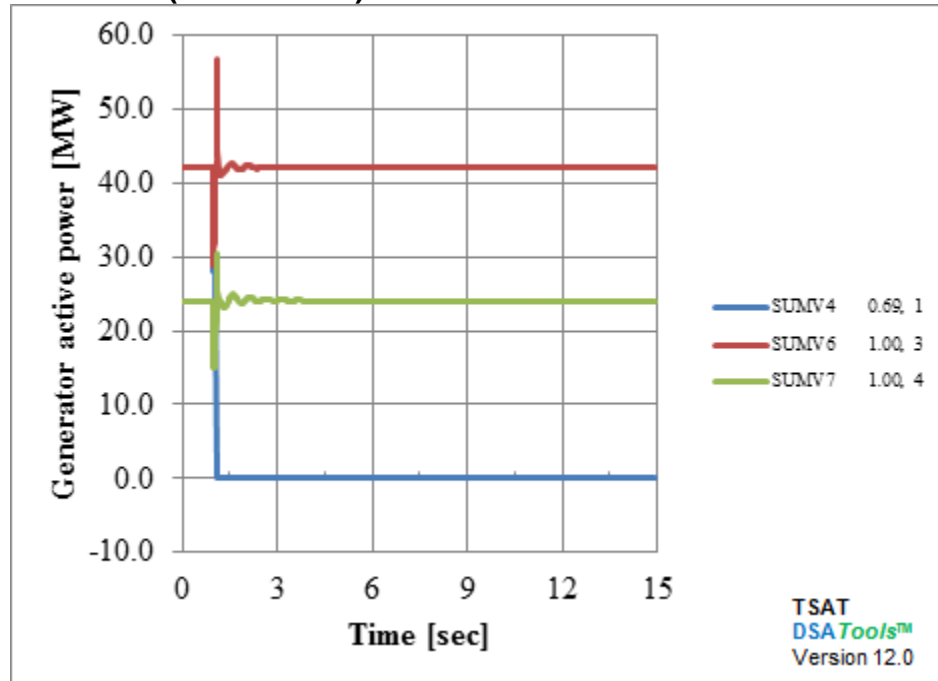
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



16 -- 412L (396S - 632S) NEAR 396S

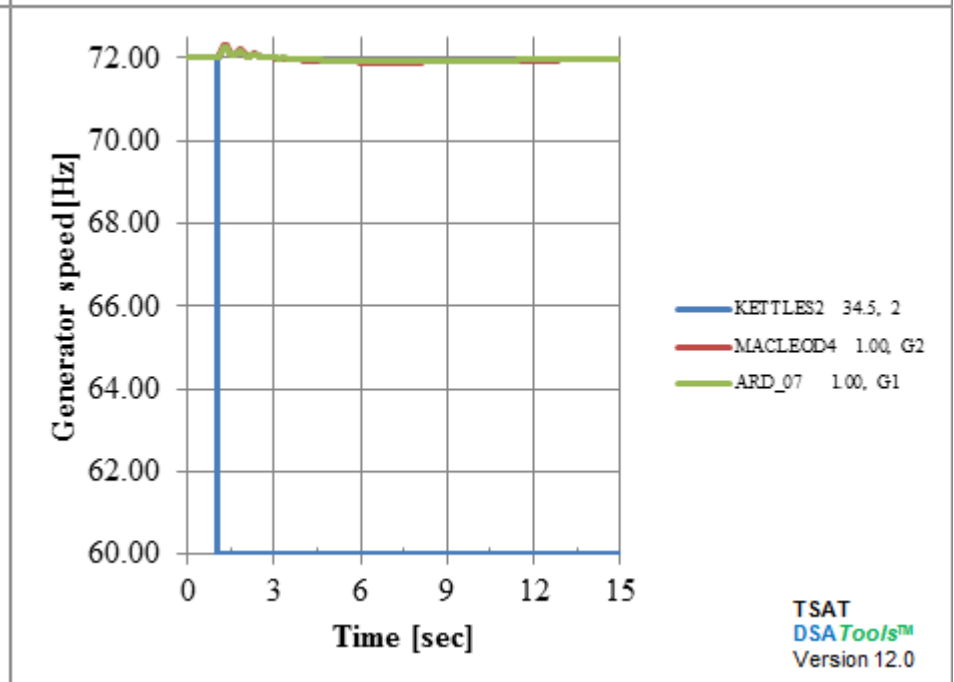
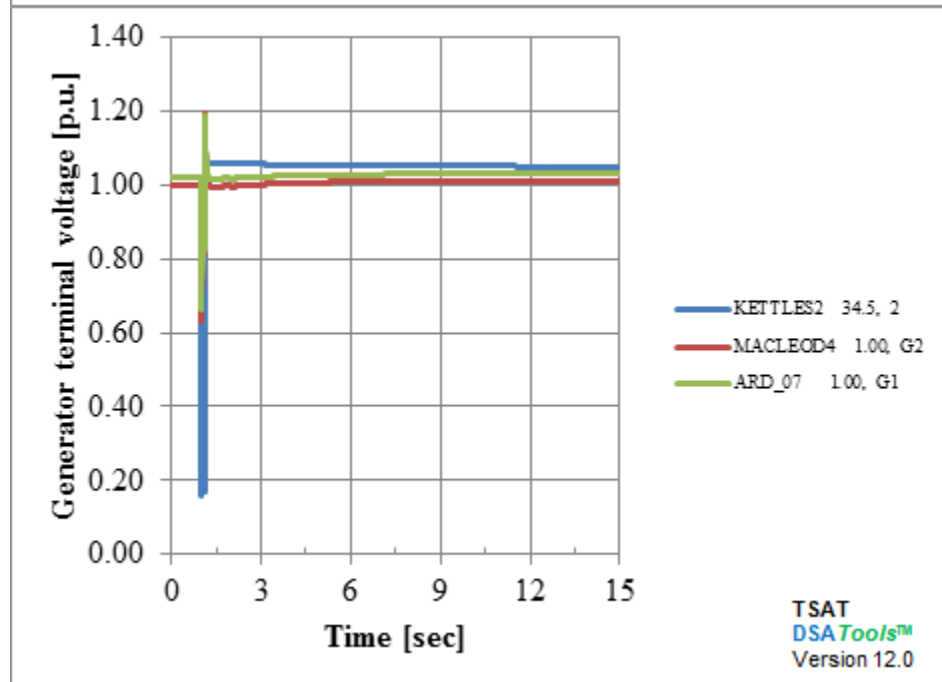
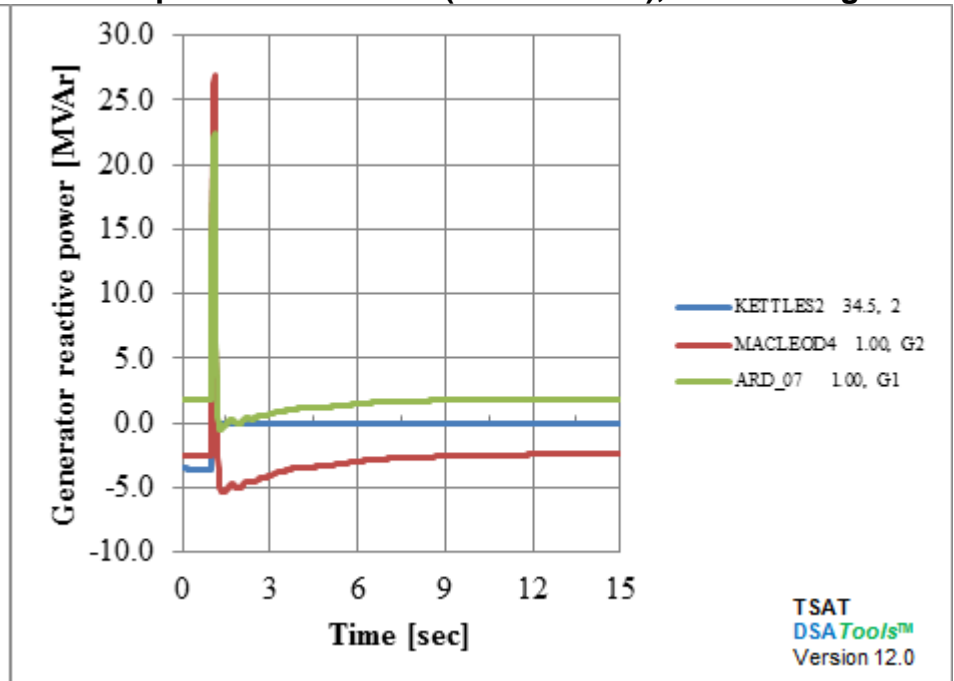
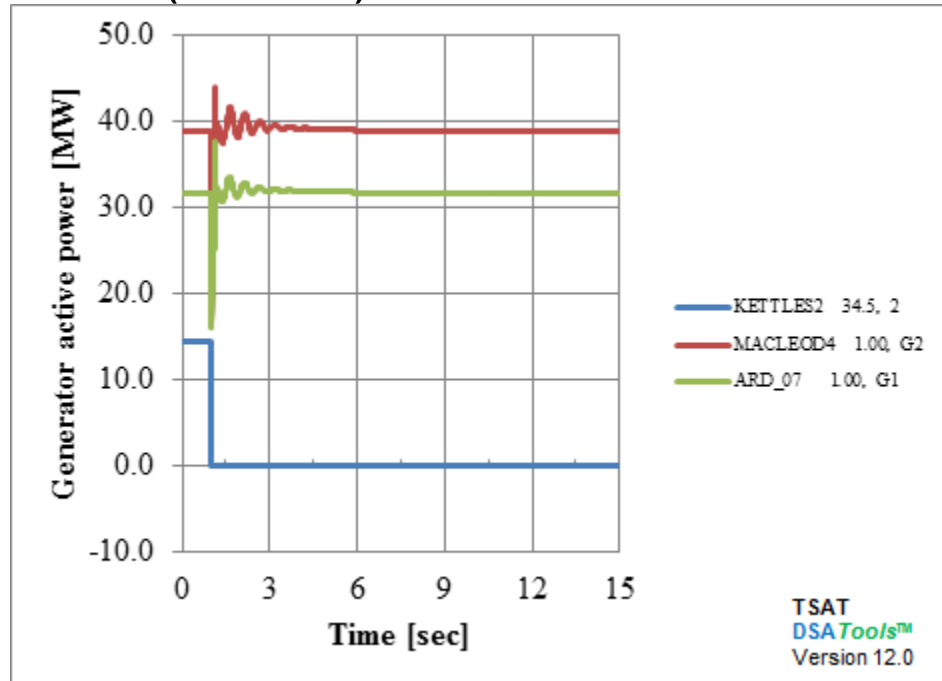
Proposed Connection (Alternative 2), Summer Light 2017





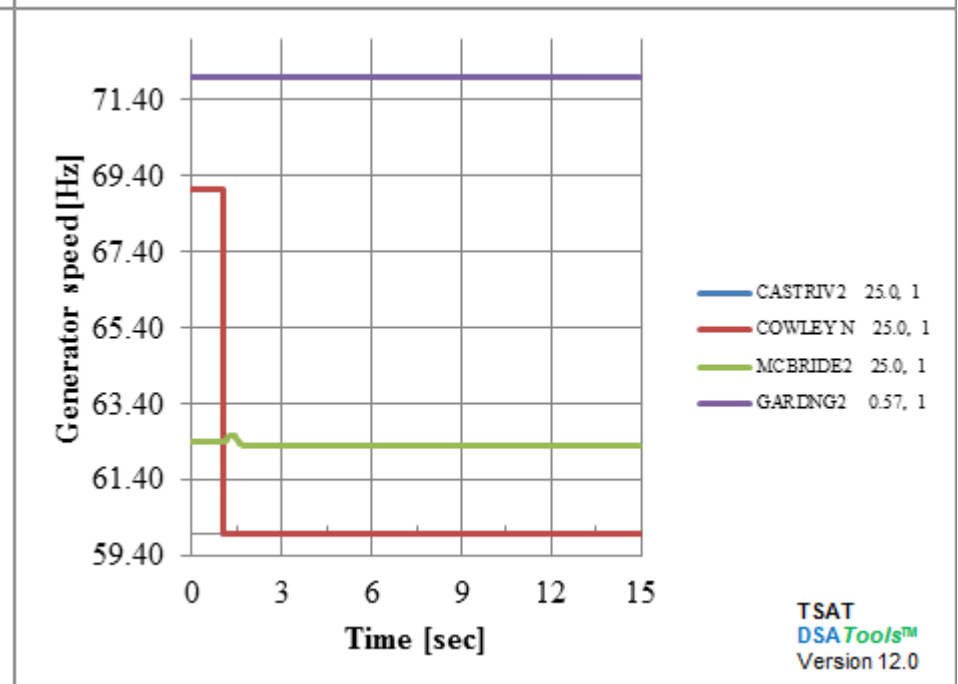
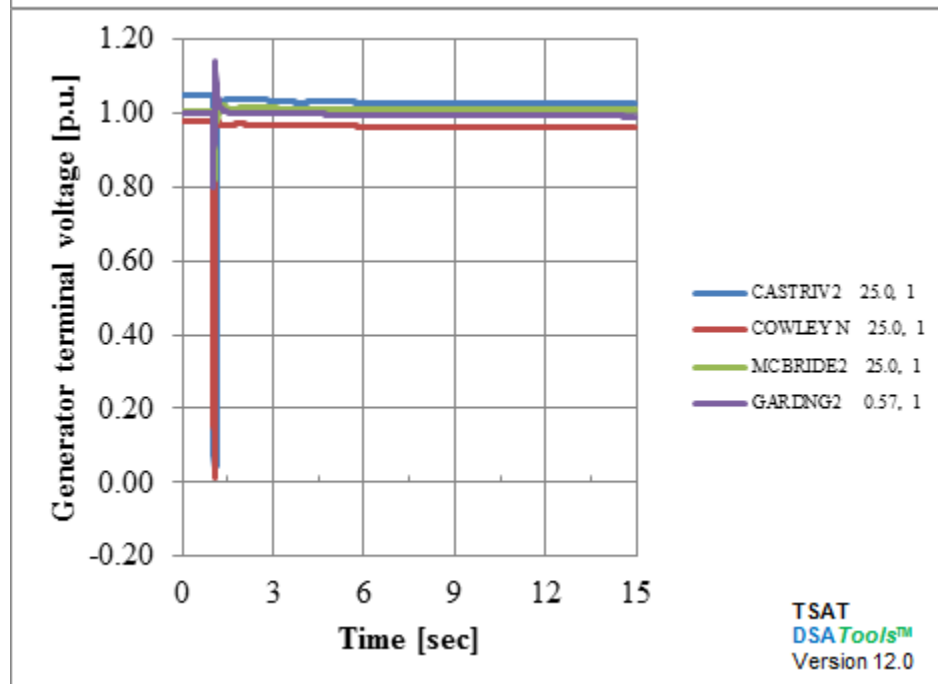
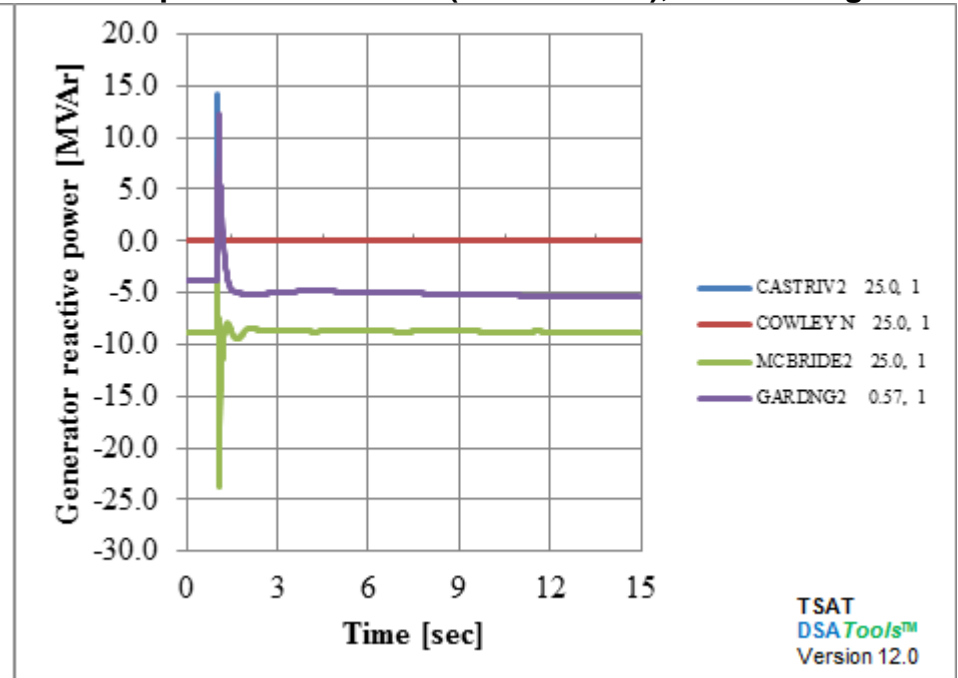
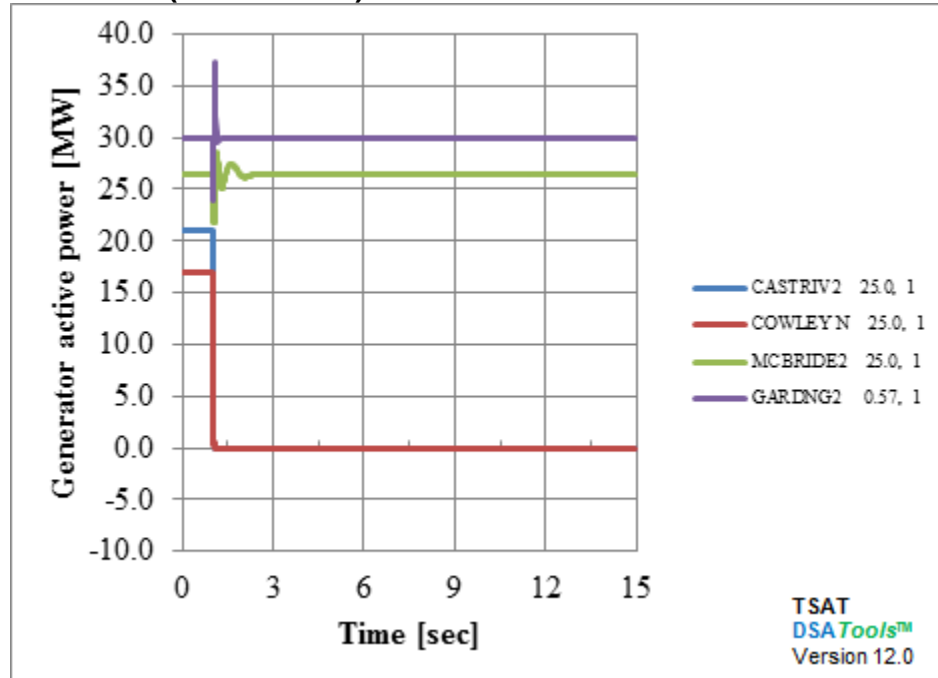
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



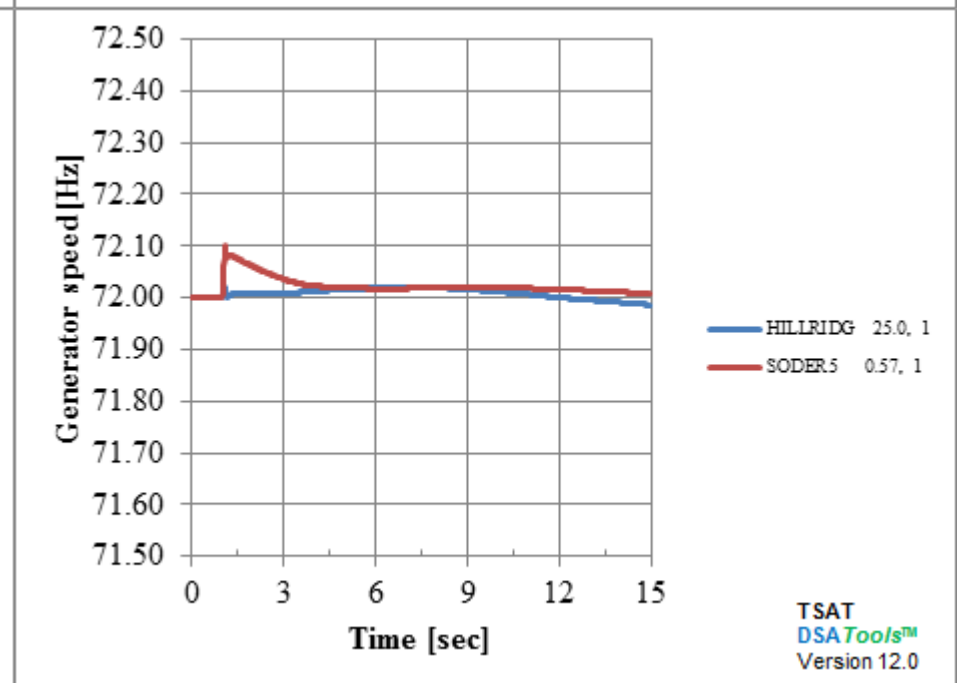
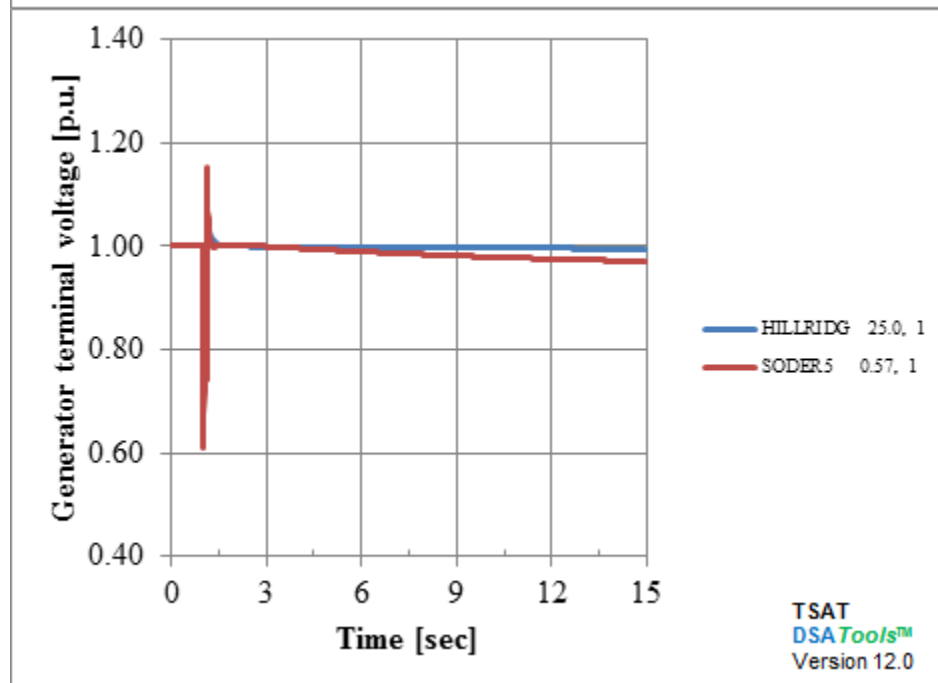
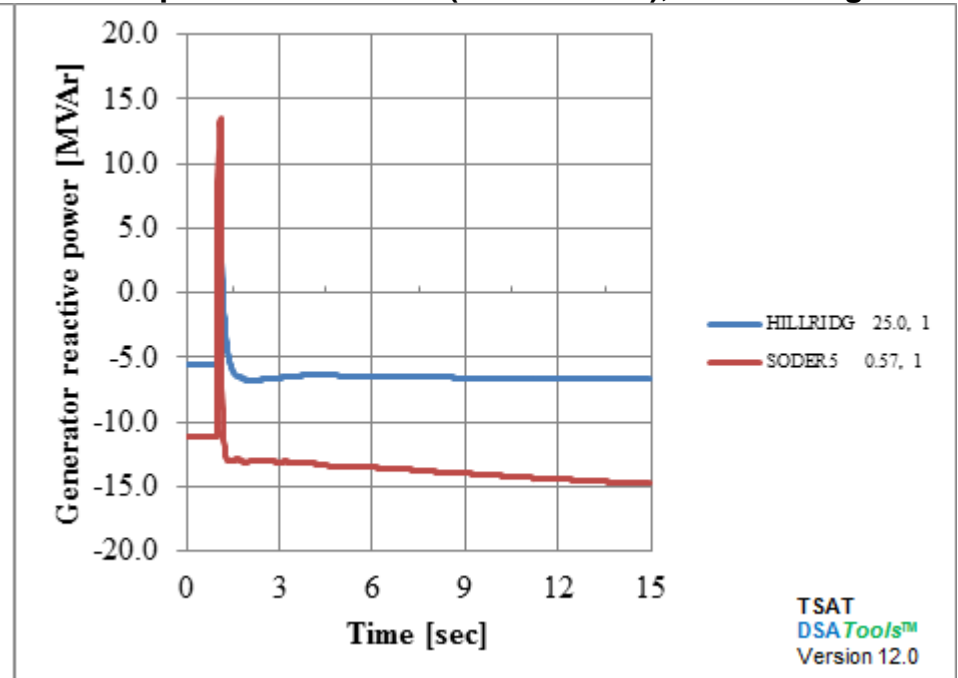
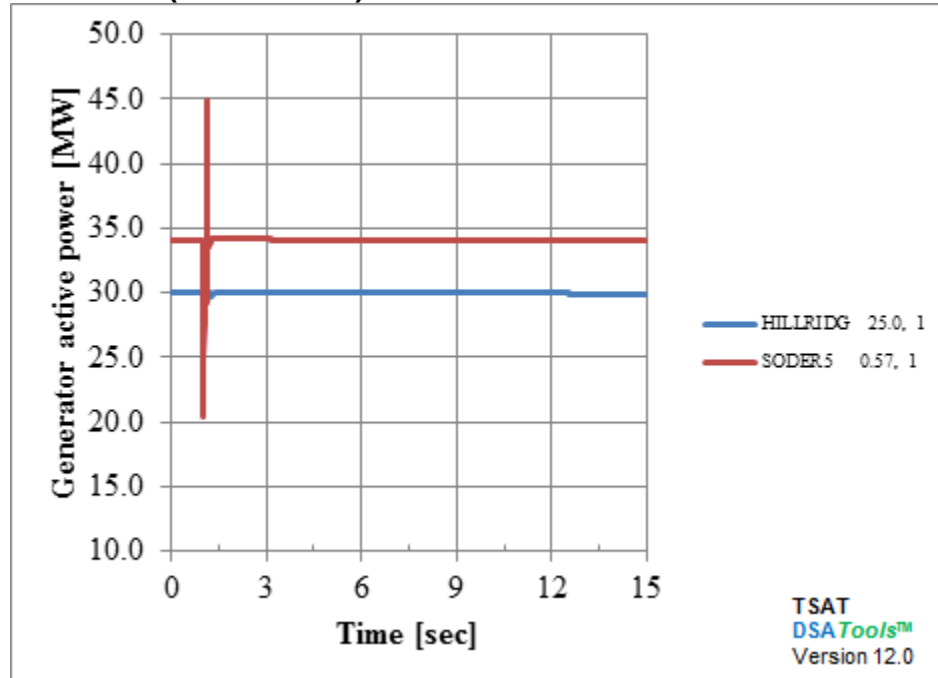
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



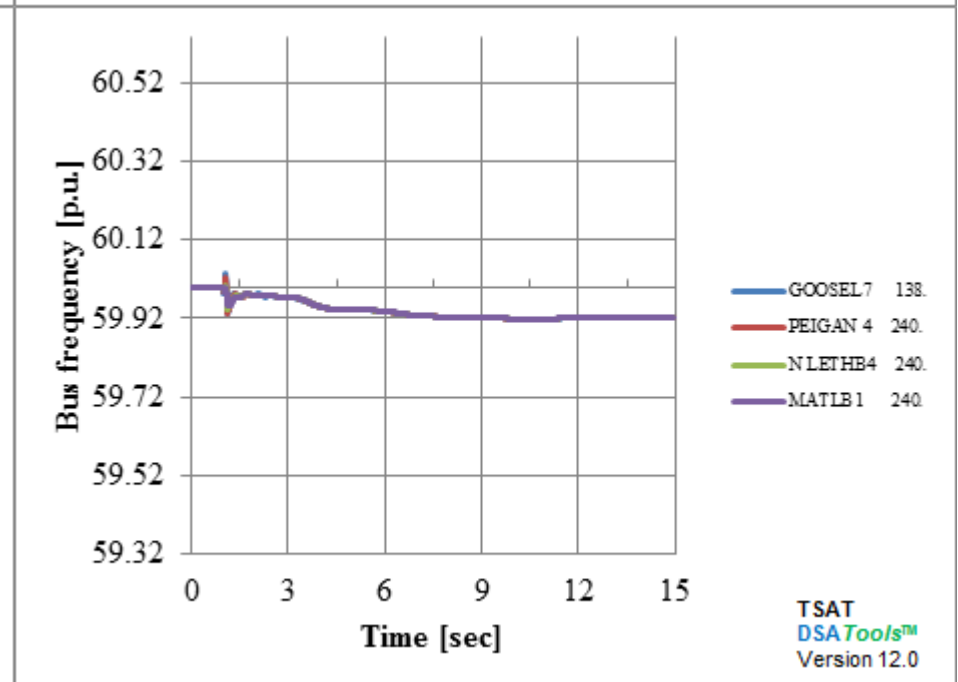
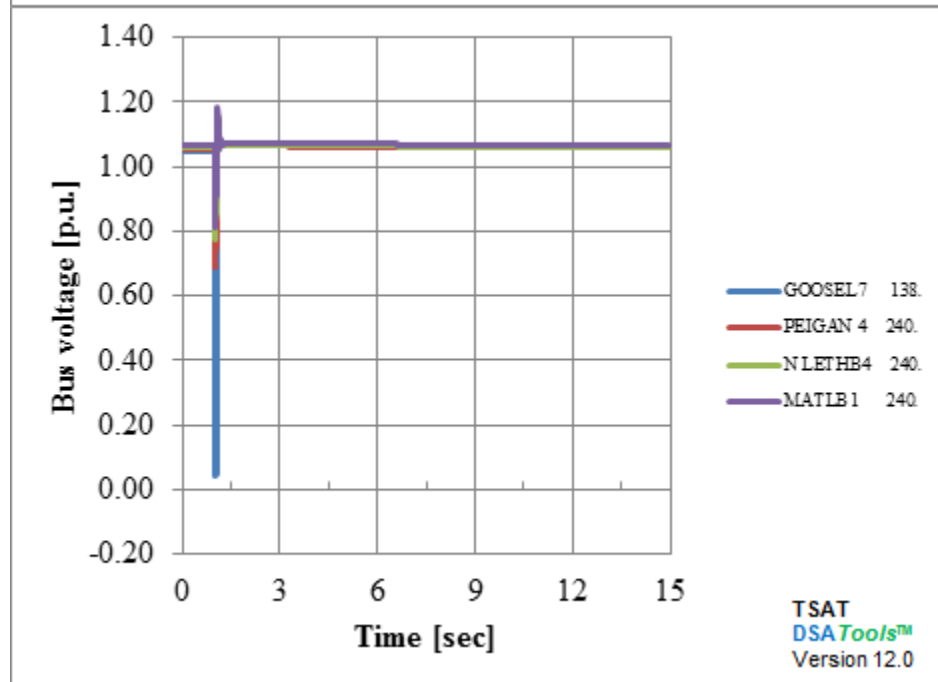
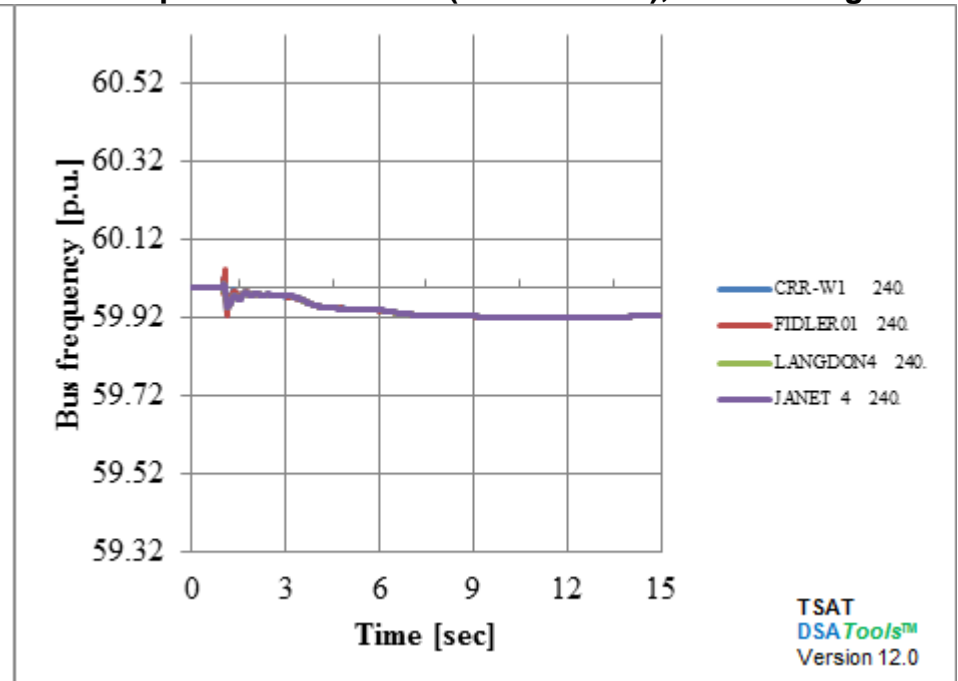
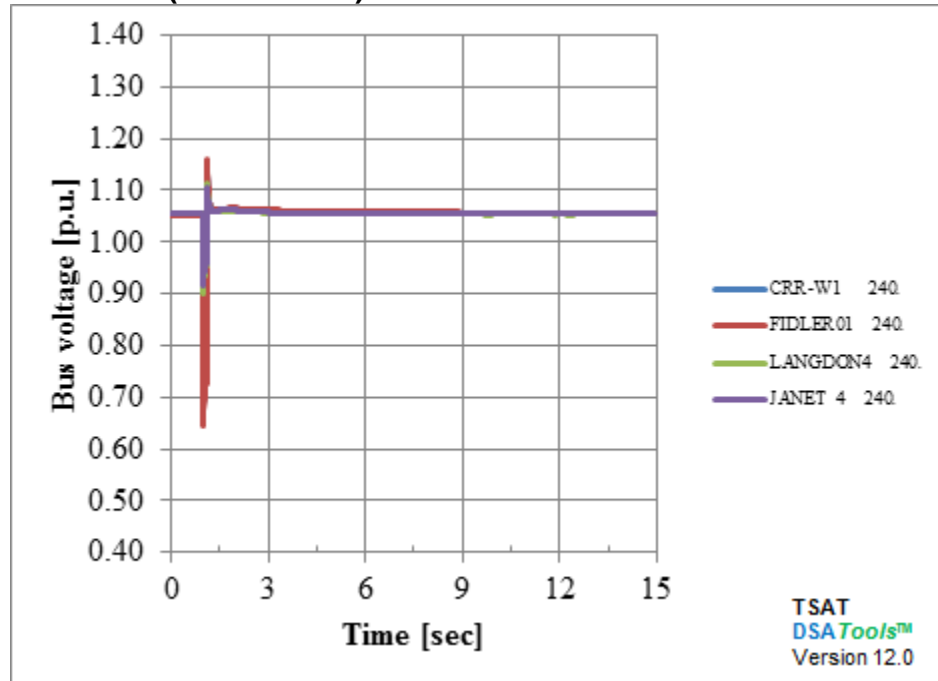
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



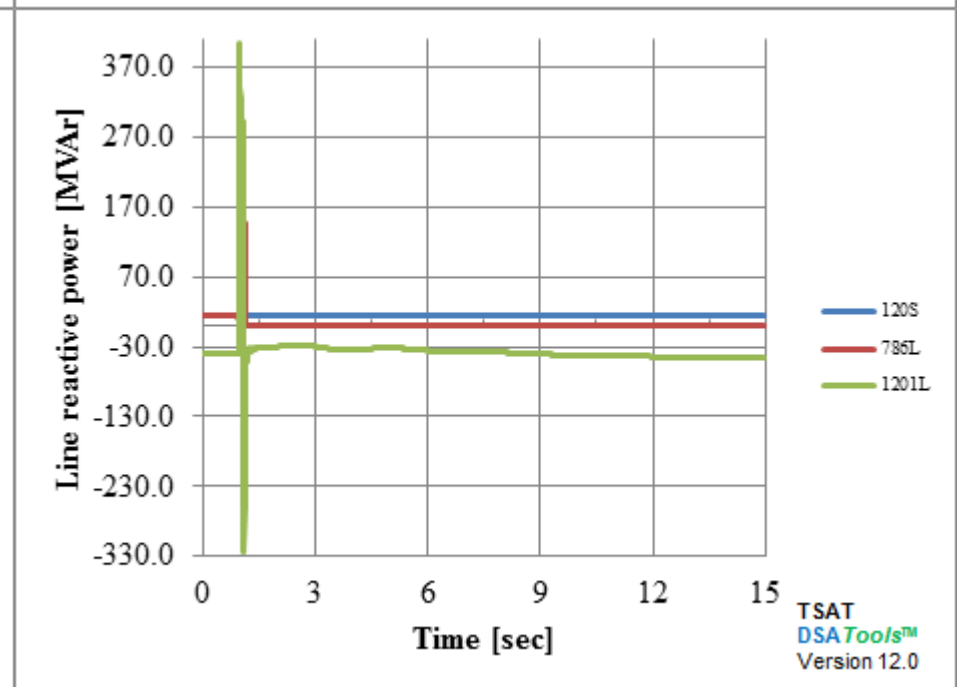
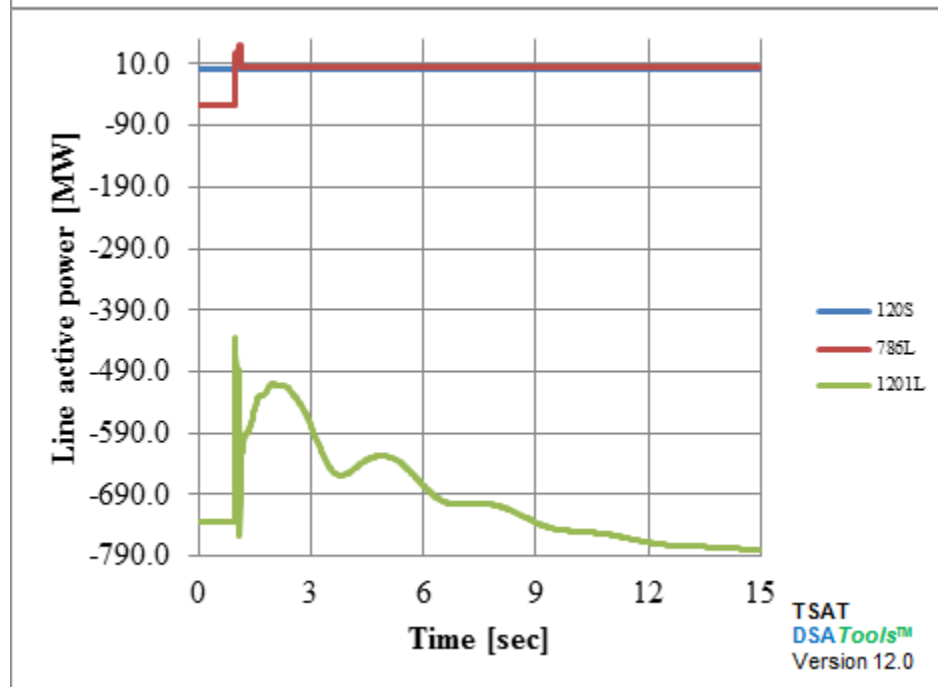
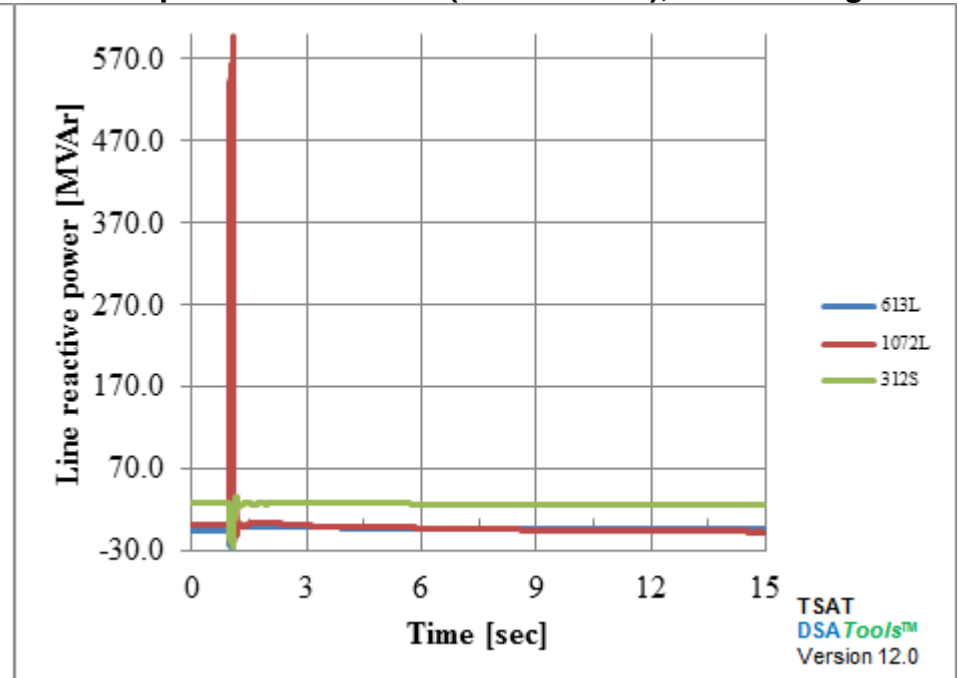
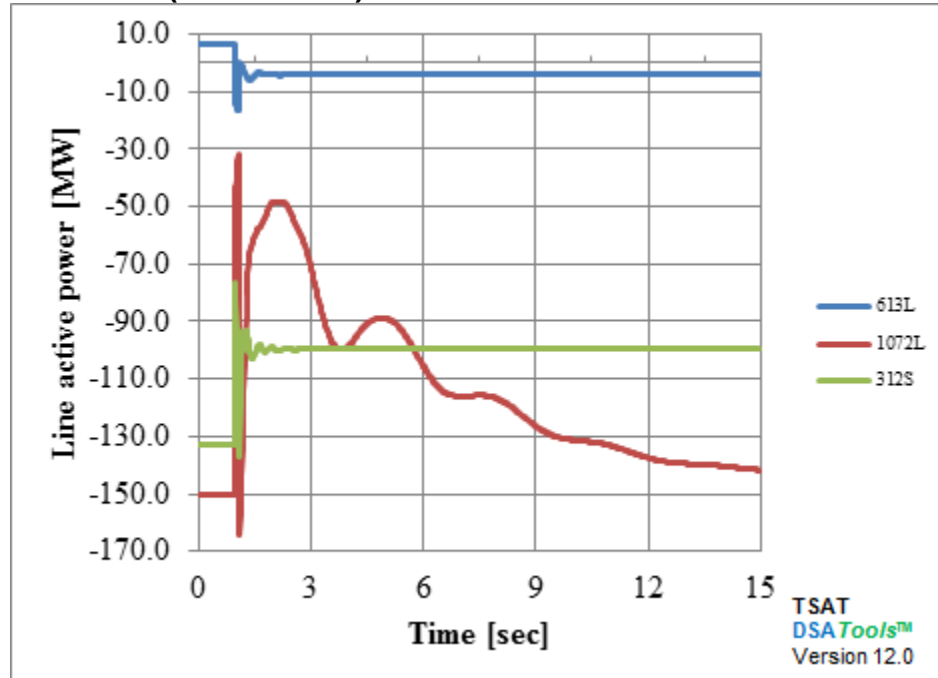
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017



16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Light 2017





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**Riverview WAGF**

Attachment E3

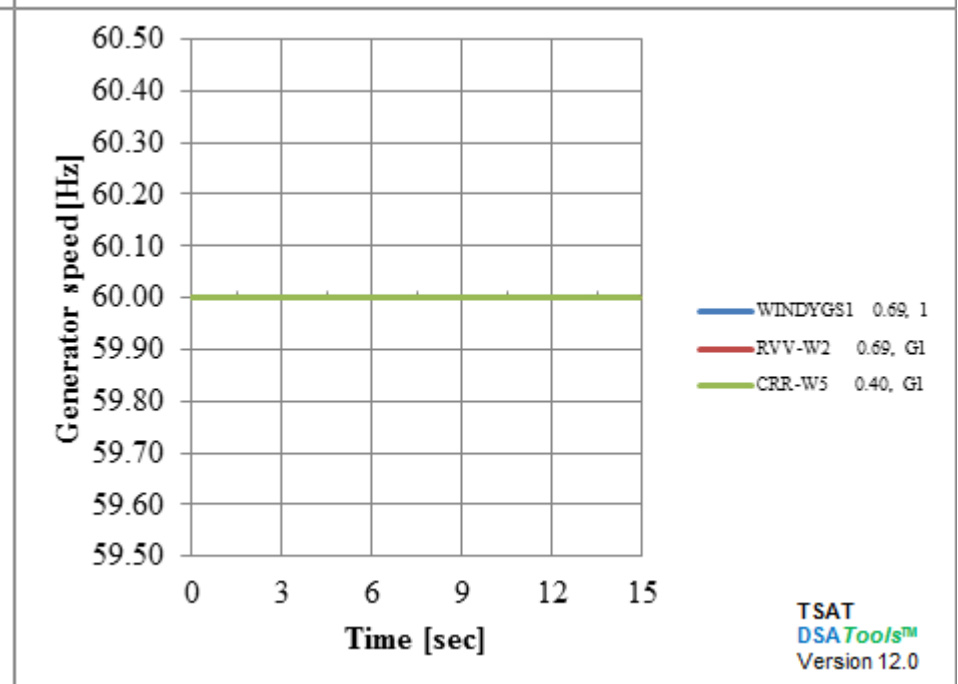
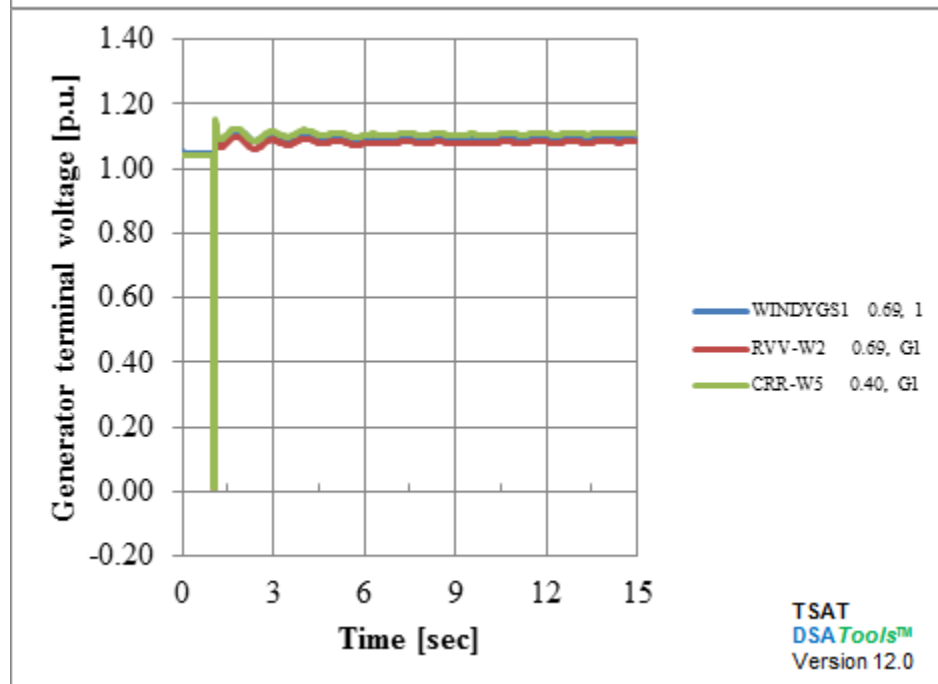
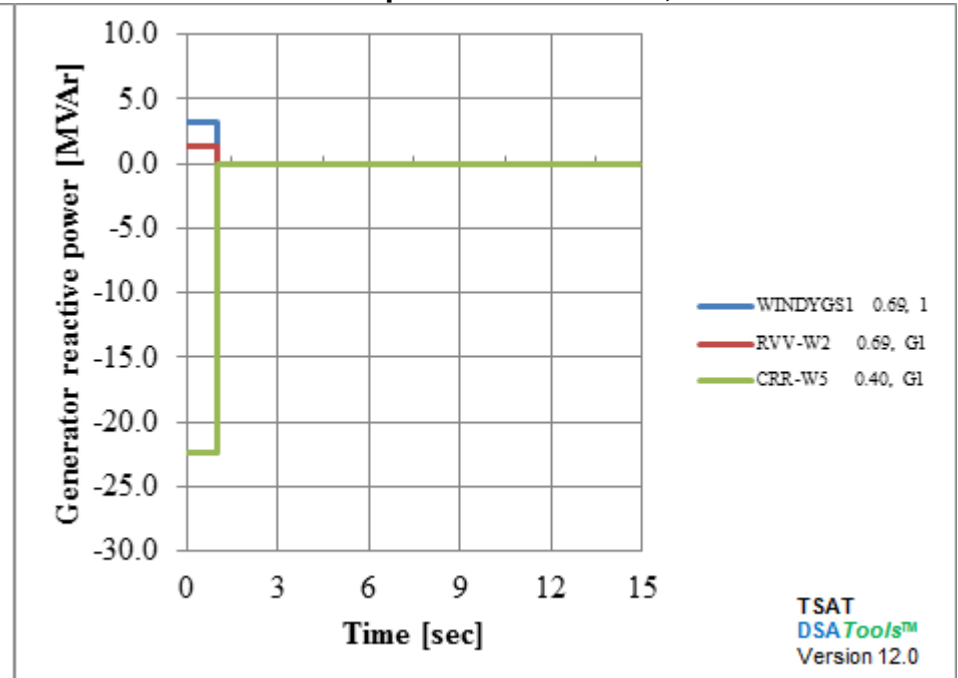
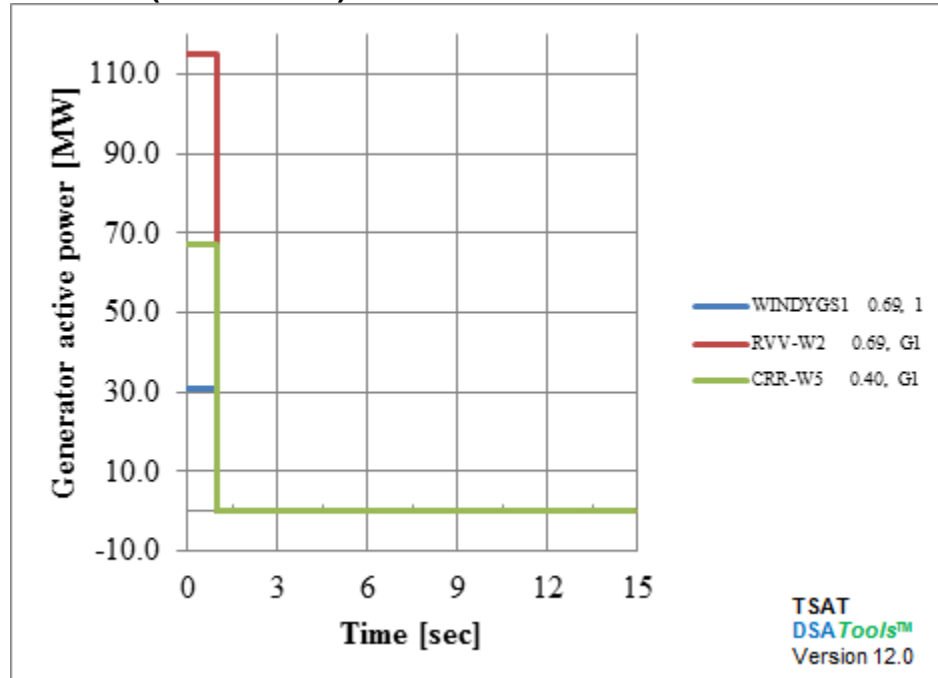
Post-Connection Transient Stability Results

Part 3

2014 Summer Peak Scenario

1 -- 994L (103S - 312S) NEAR 103S

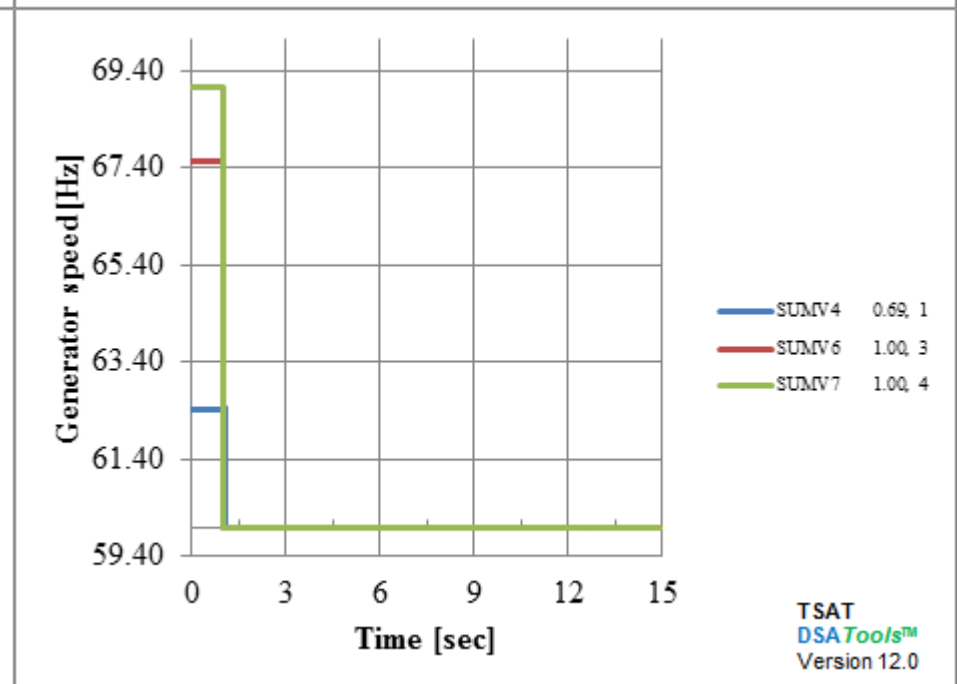
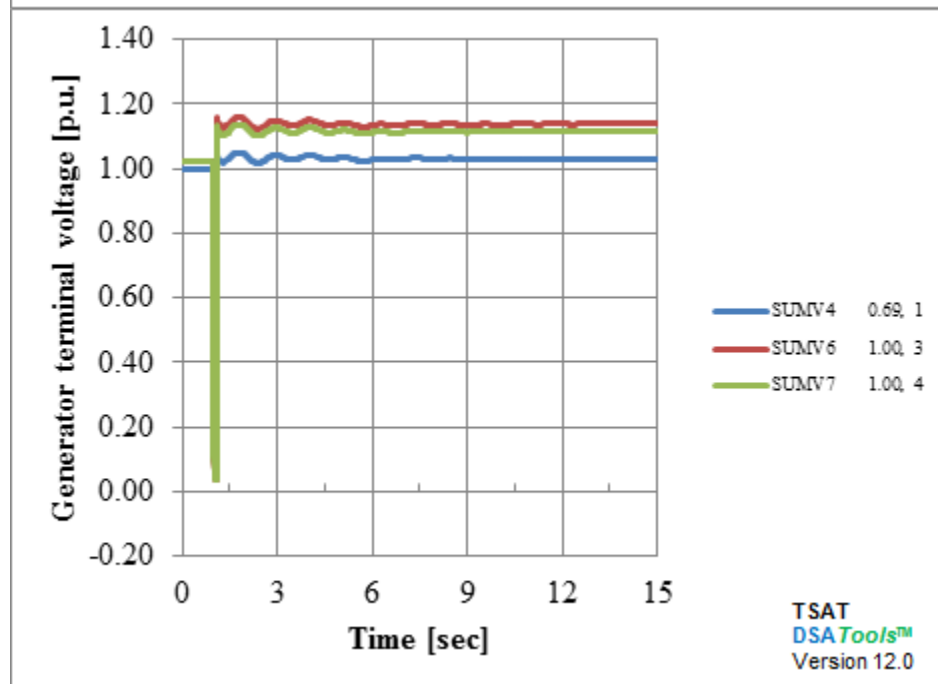
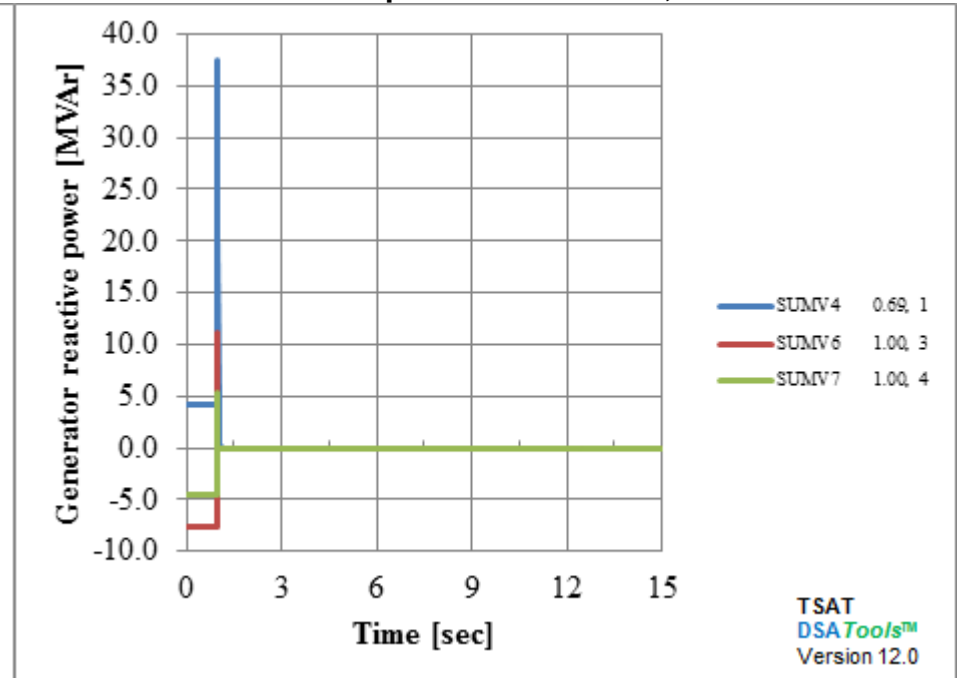
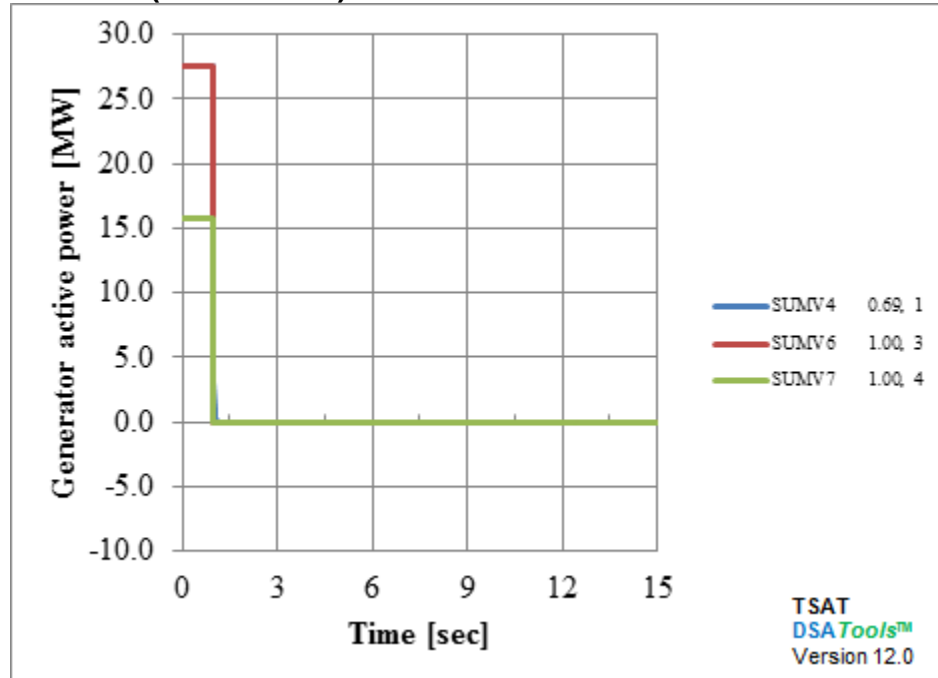
Proposed Connection, Summer Peak 2014





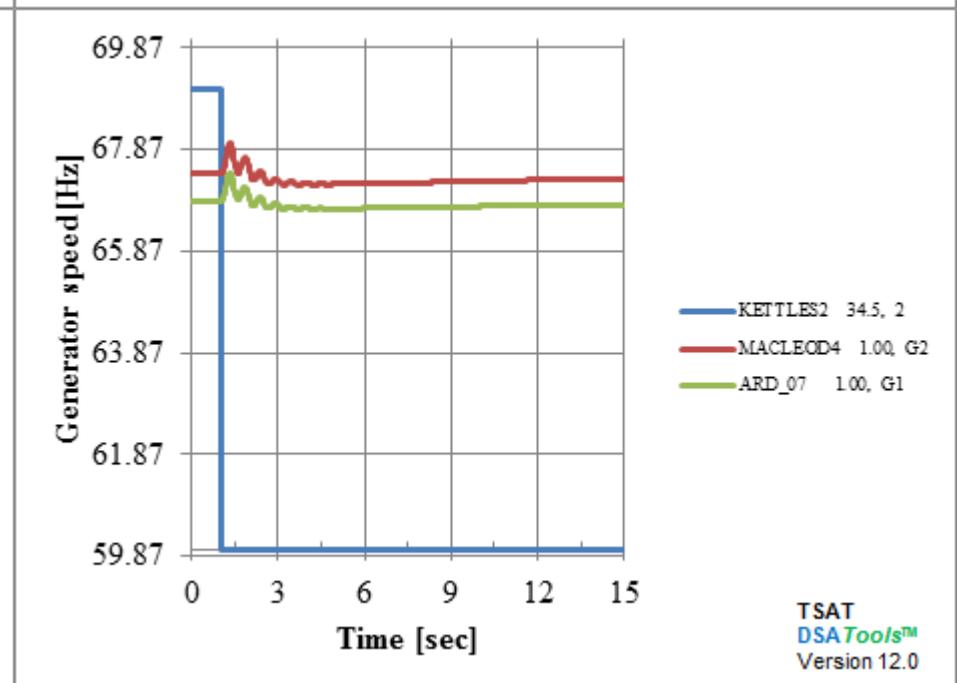
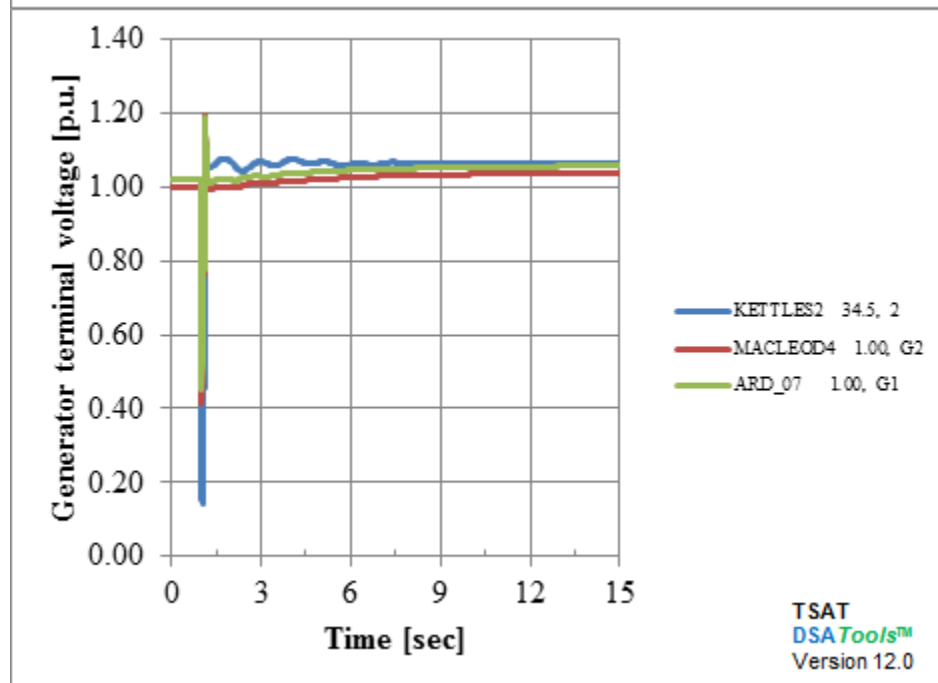
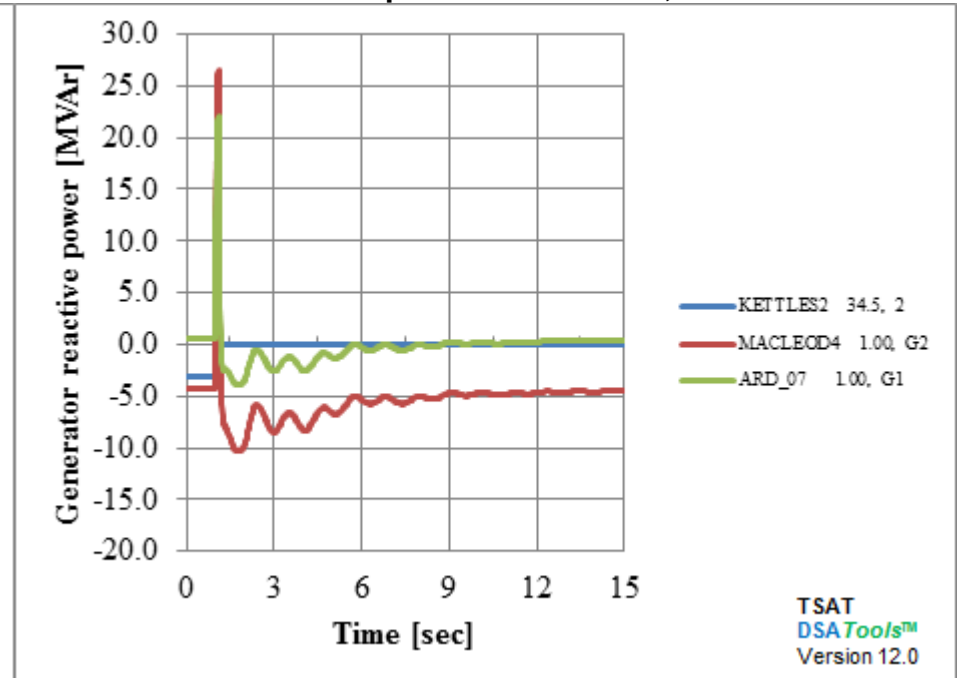
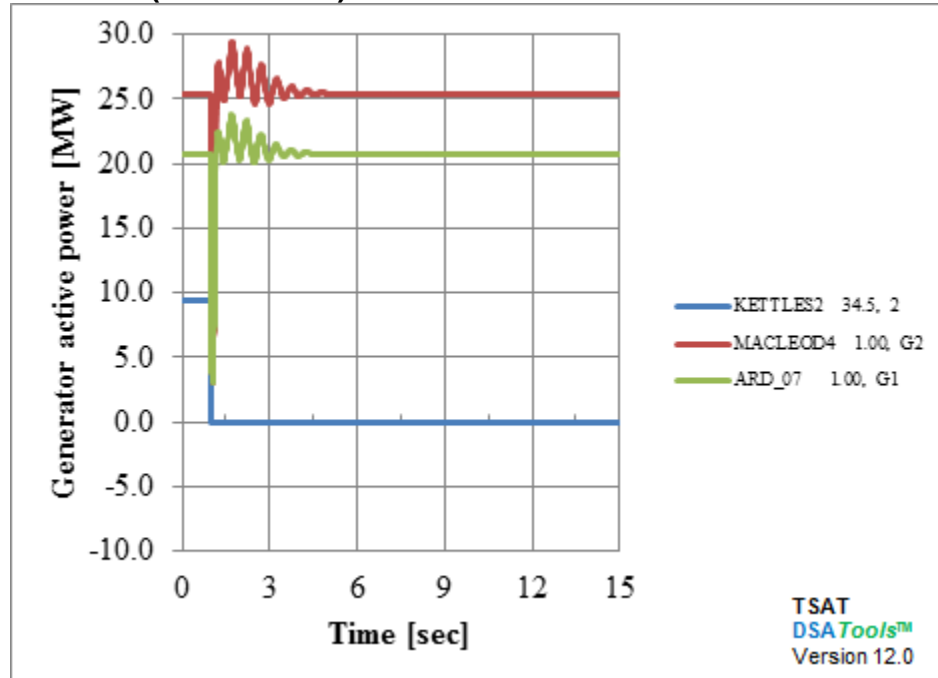
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Peak 2014



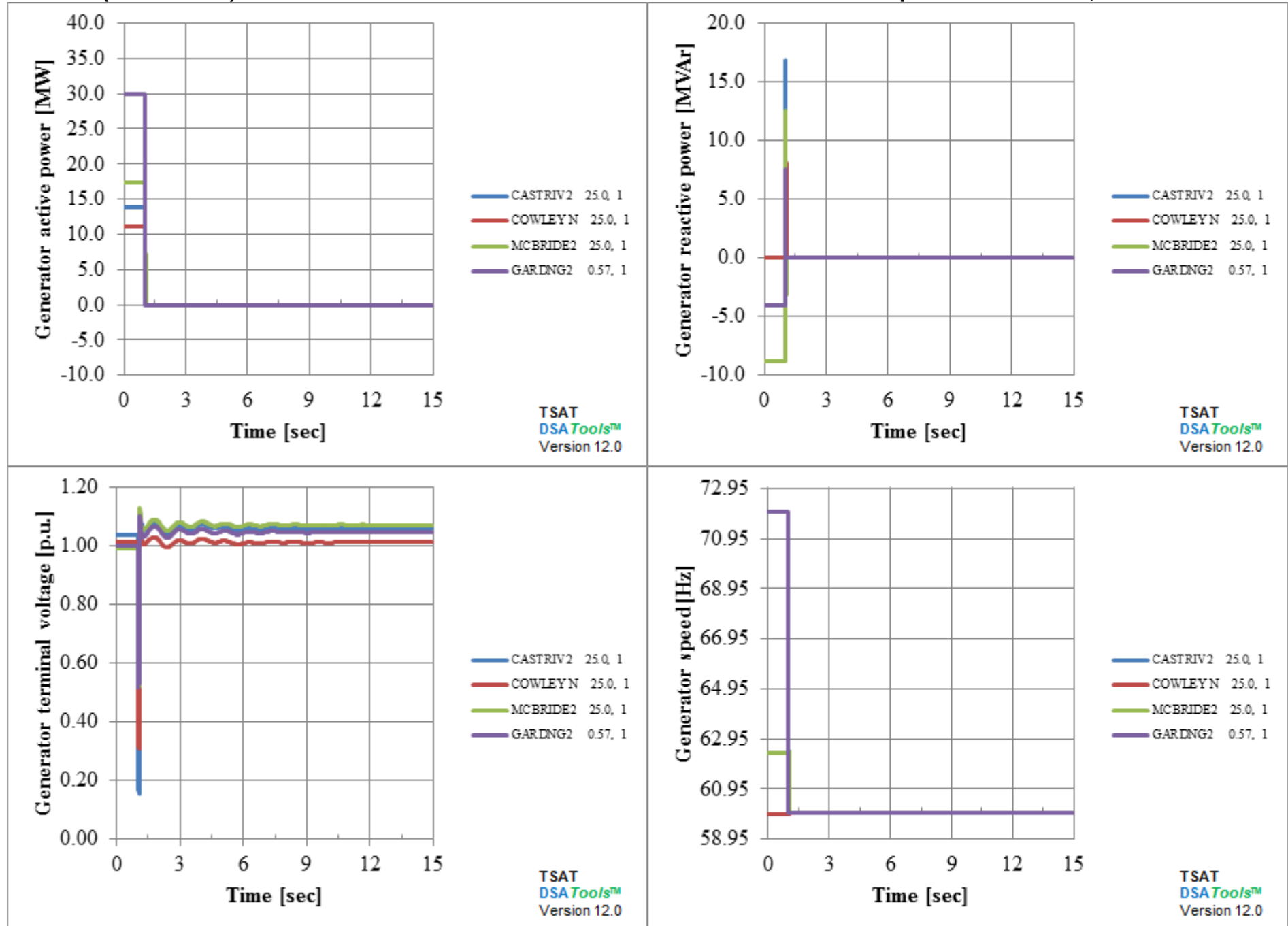
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Peak 2014



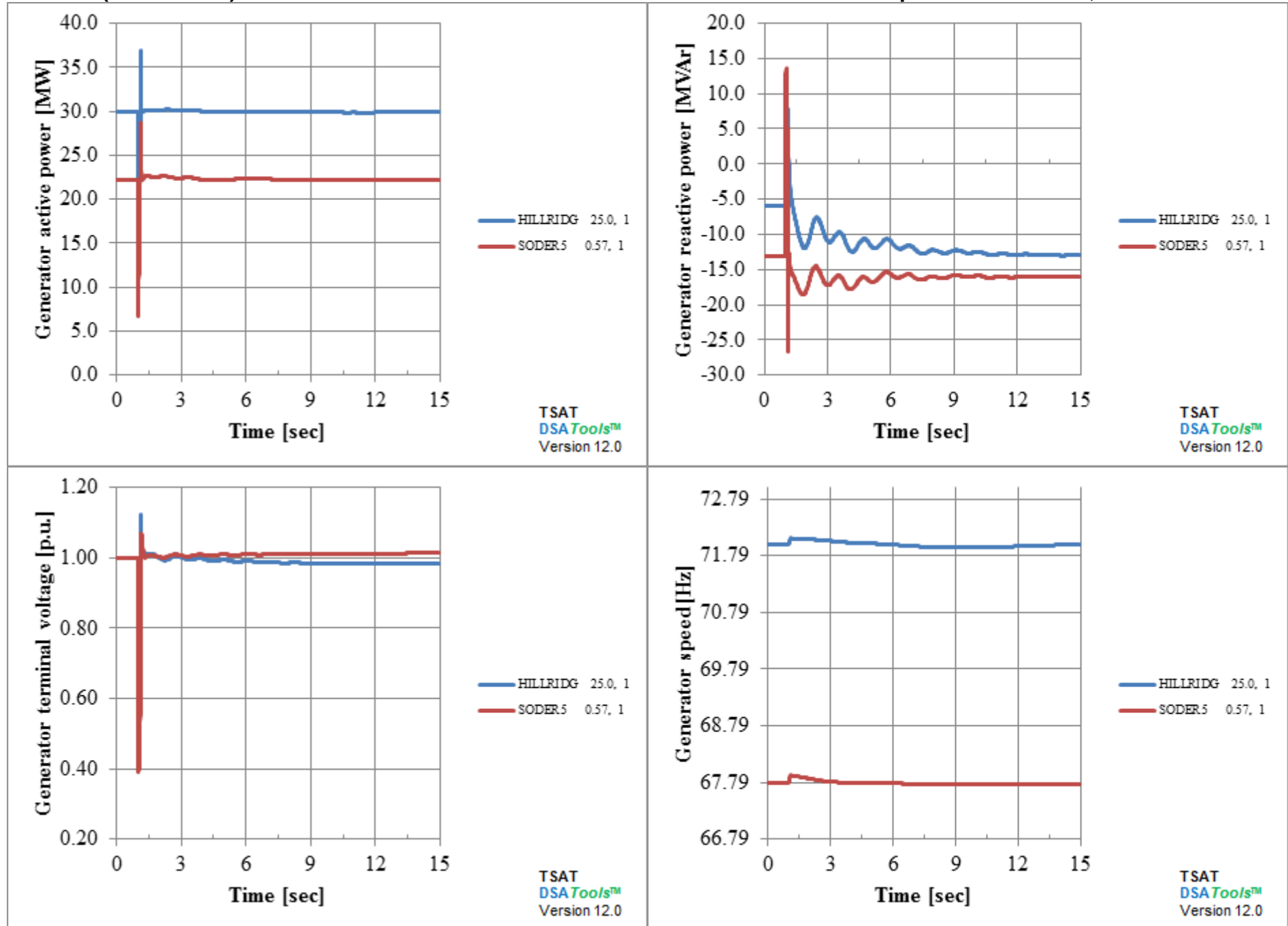
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Peak 2014



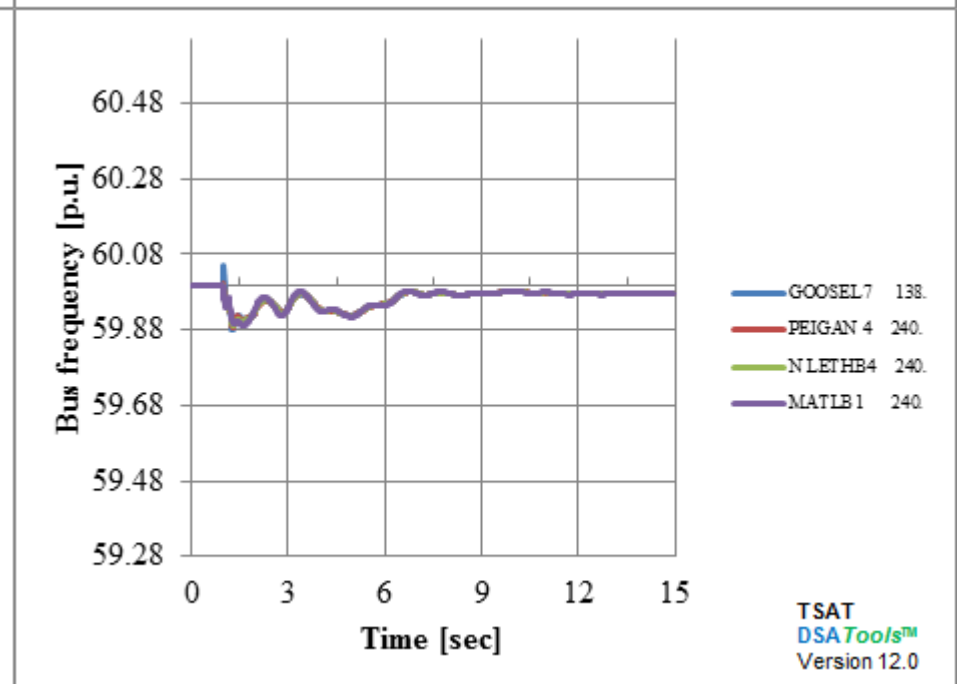
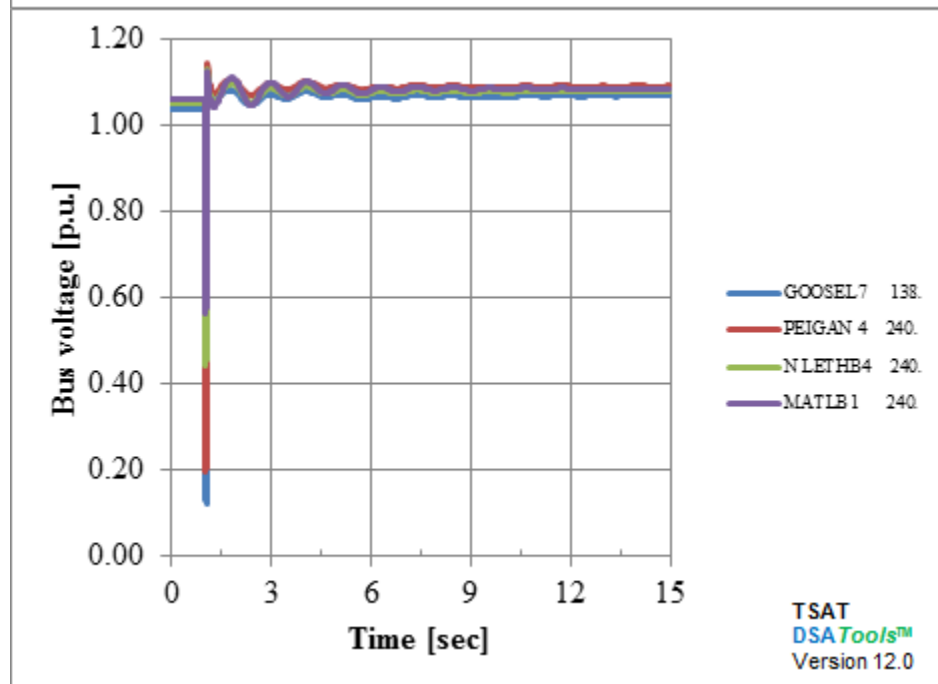
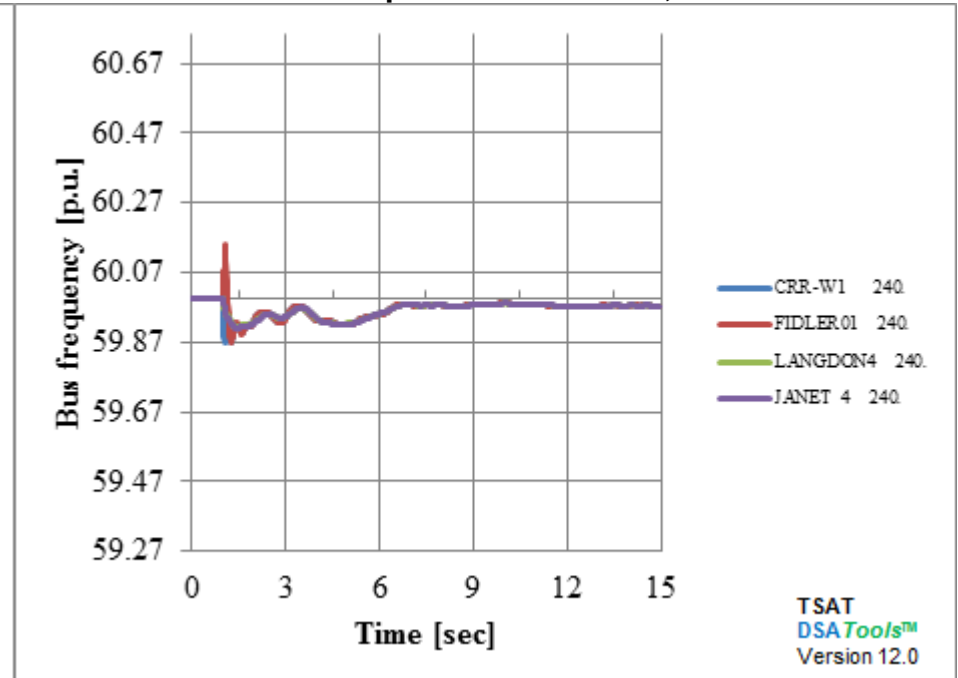
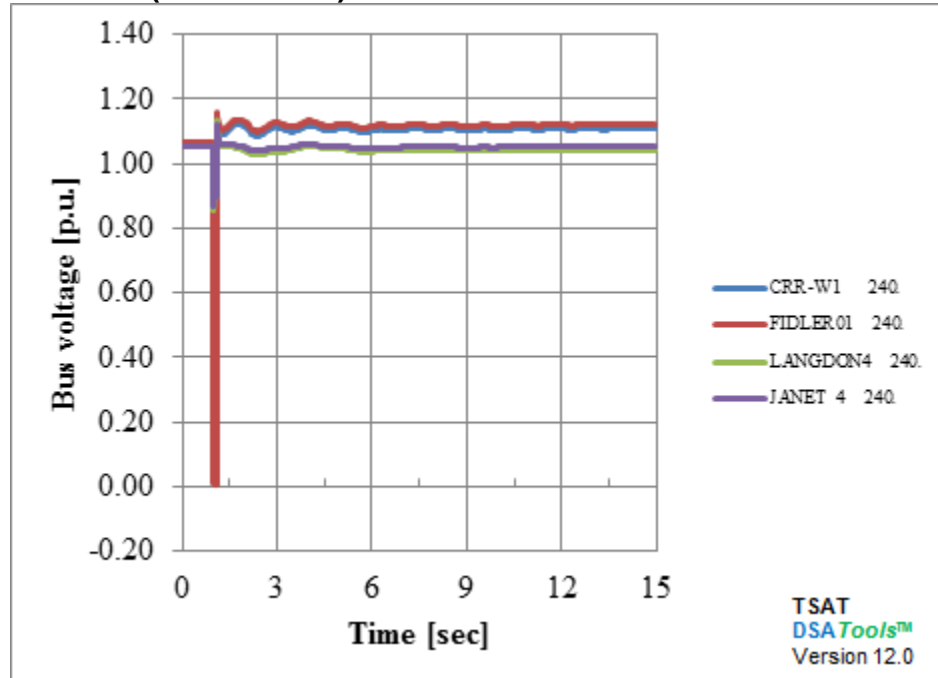
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Peak 2014



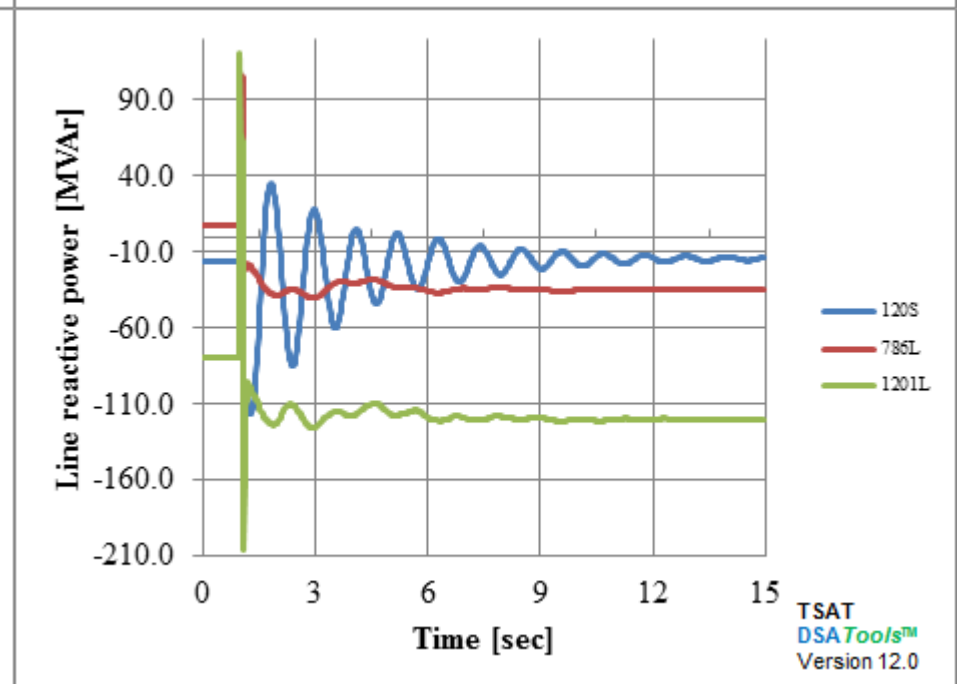
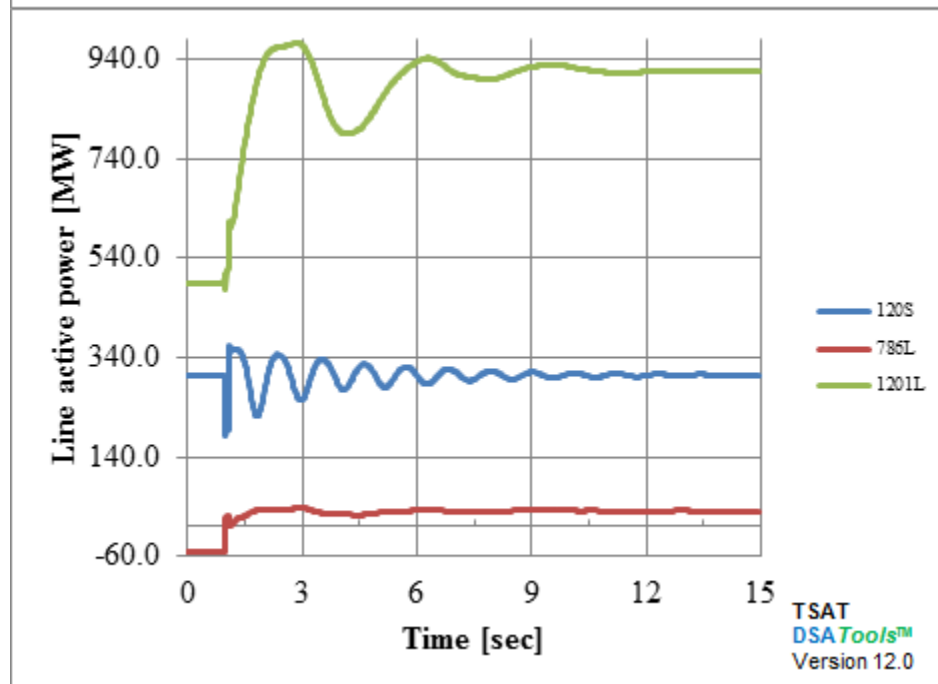
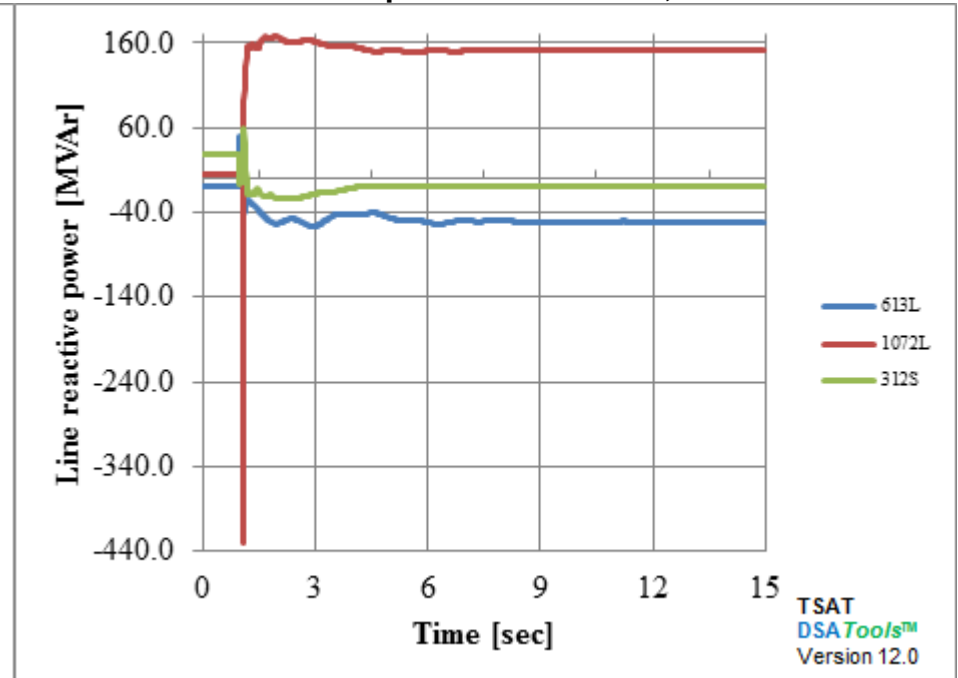
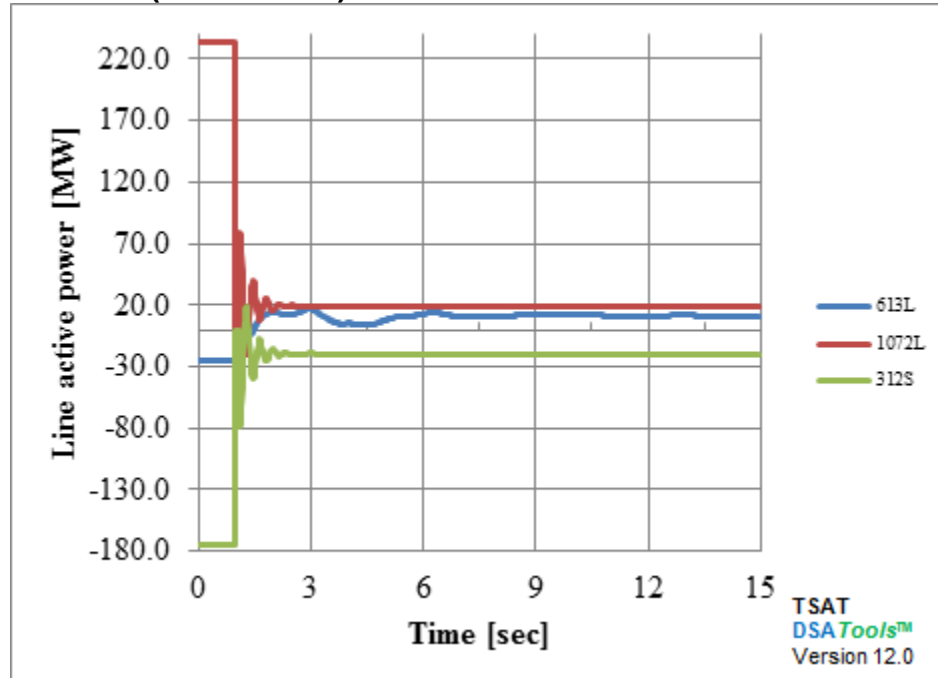
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Peak 2014



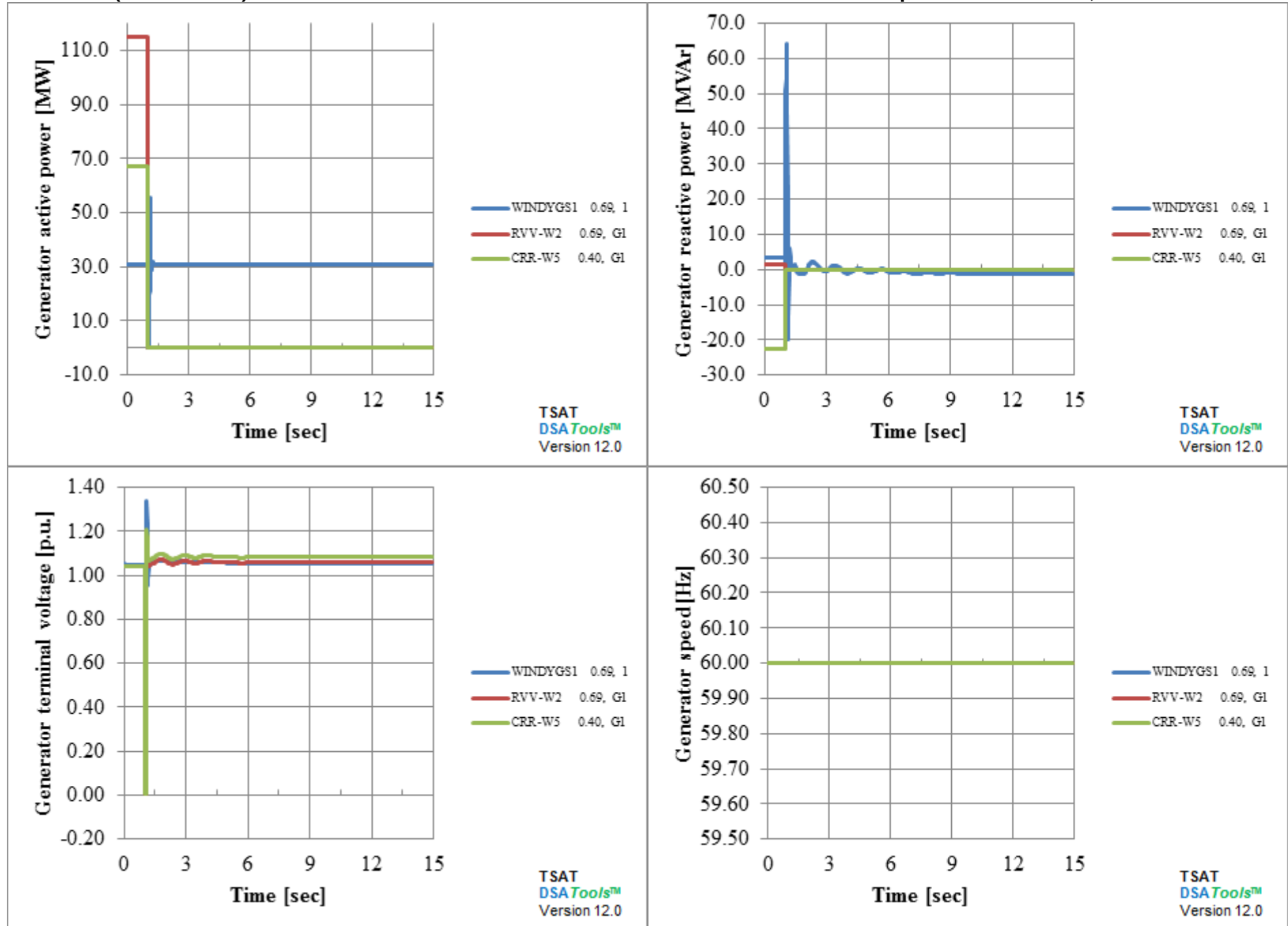
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection, Summer Peak 2014



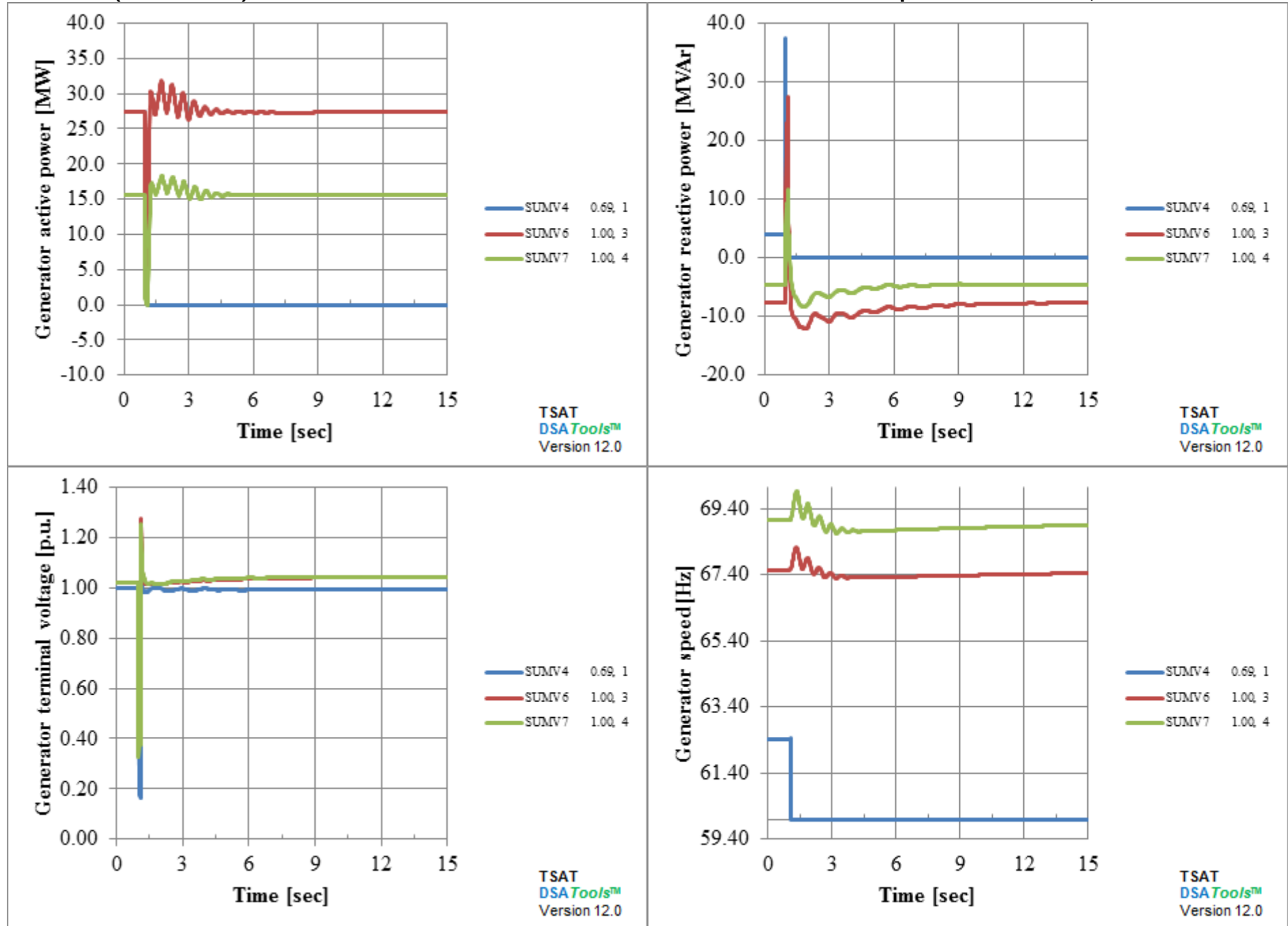
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Peak 2014



2 -- 1071L (205S - 312S) NEAR 205S

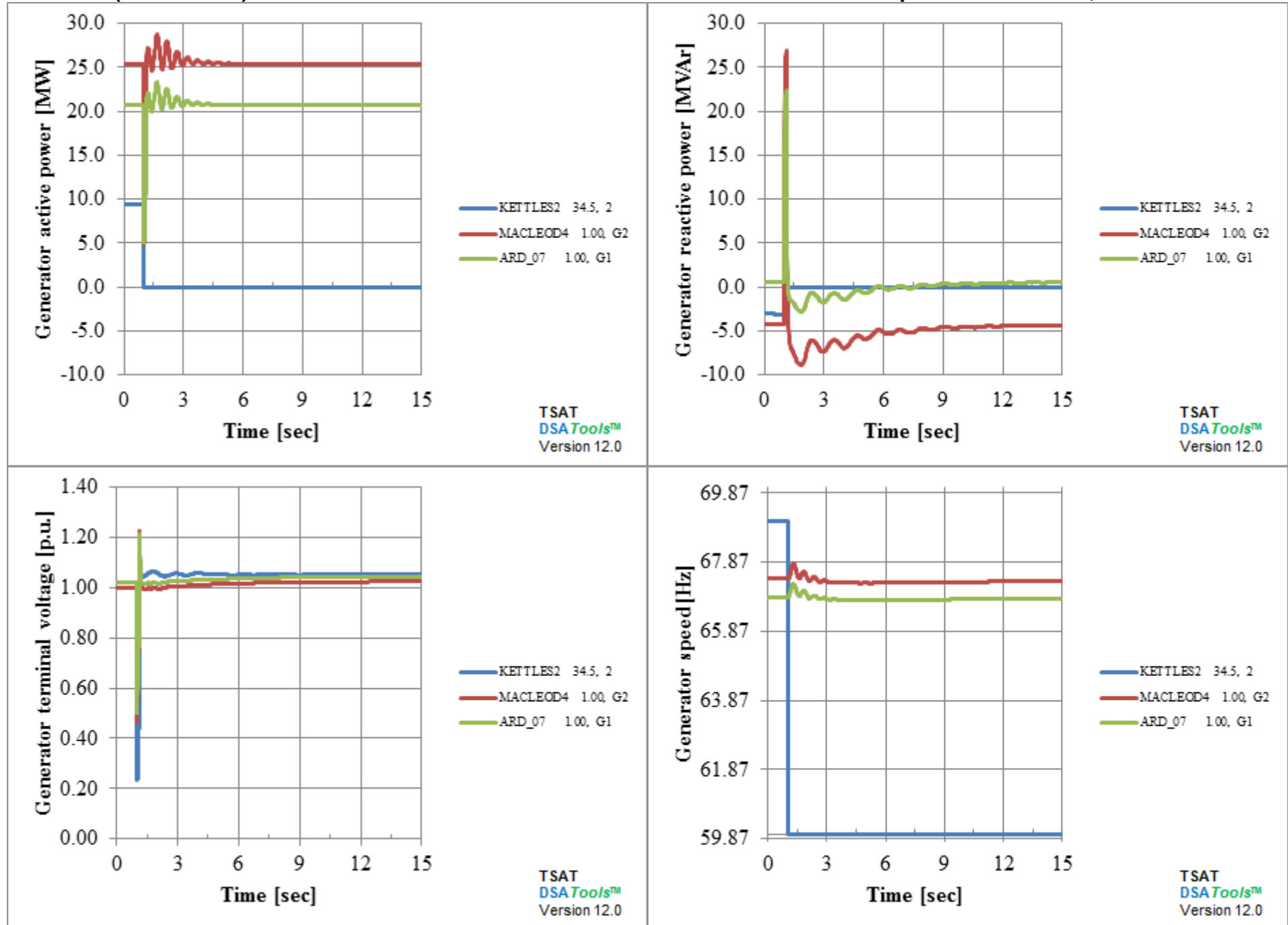
Proposed Connection, Summer Peak 2014





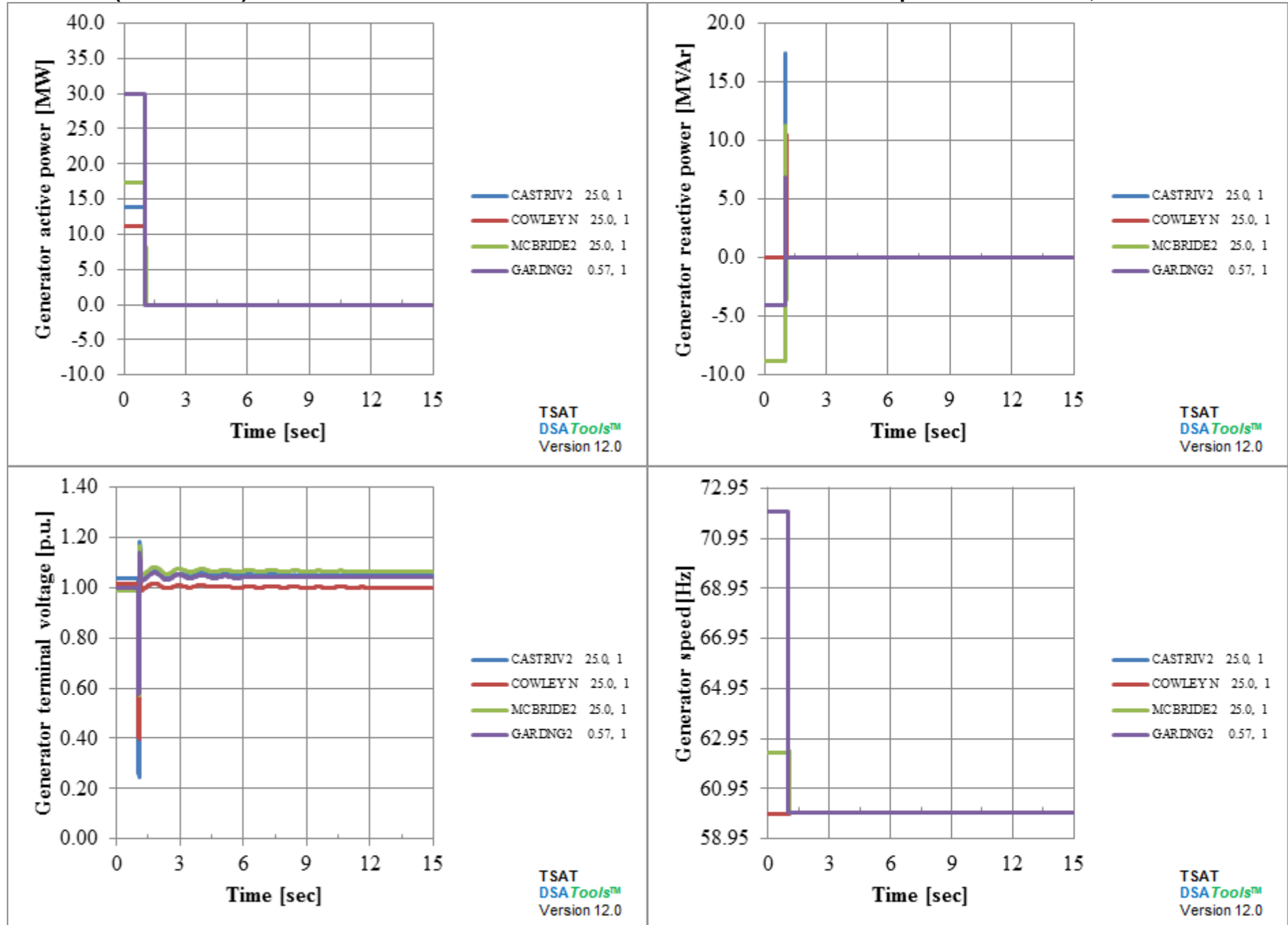
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Peak 2014



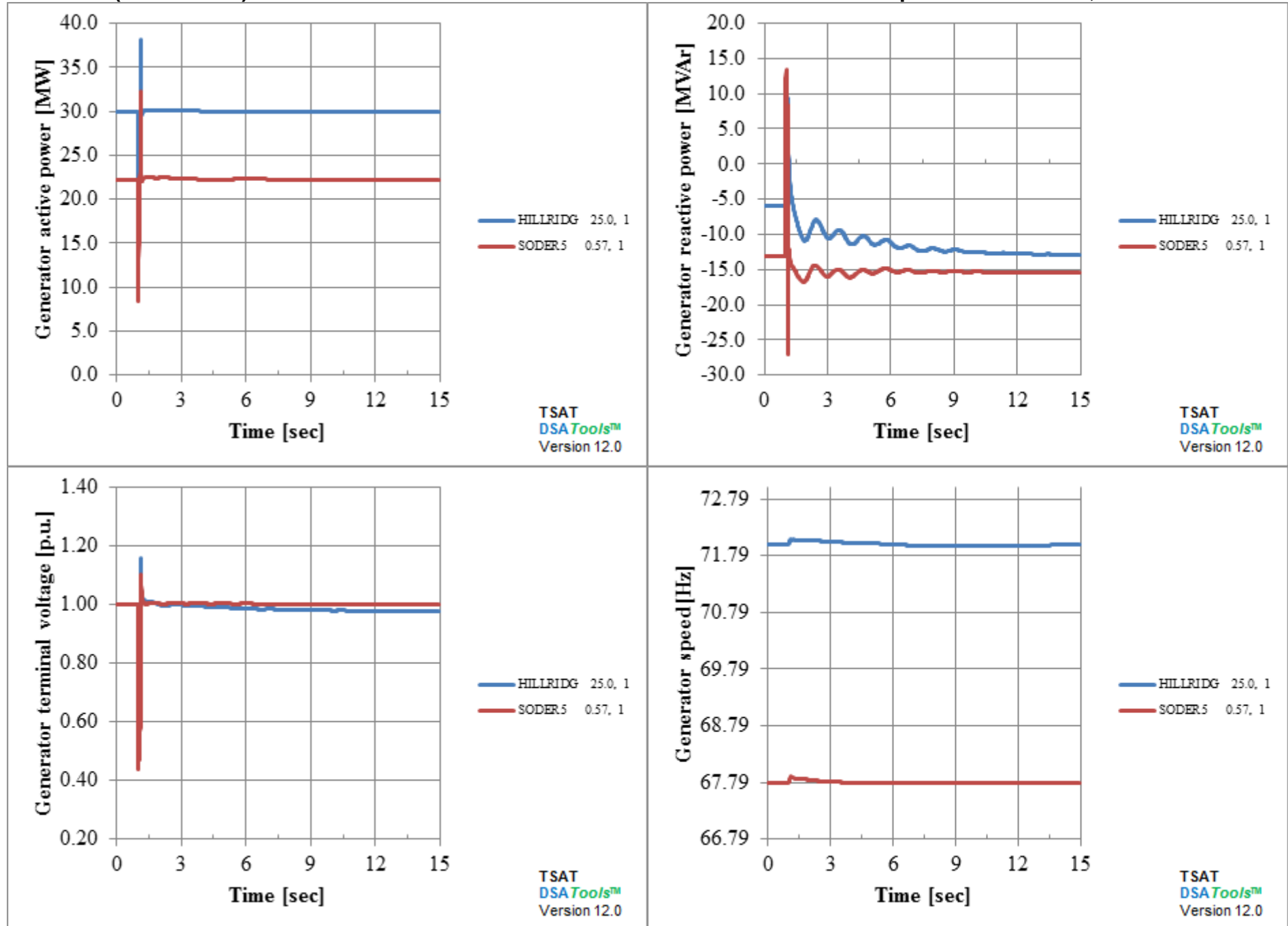
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Peak 2014



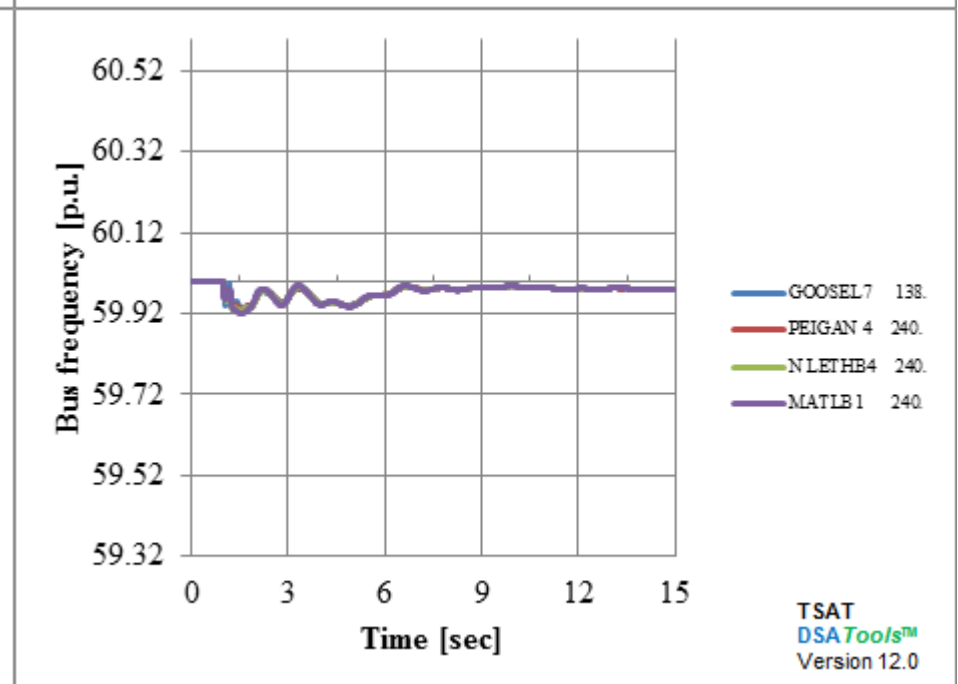
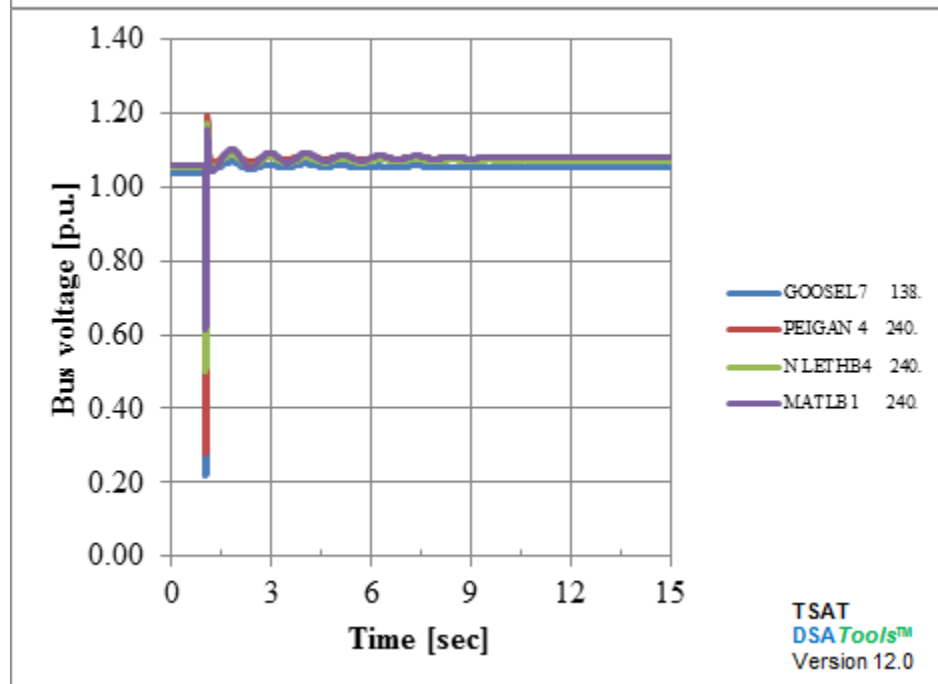
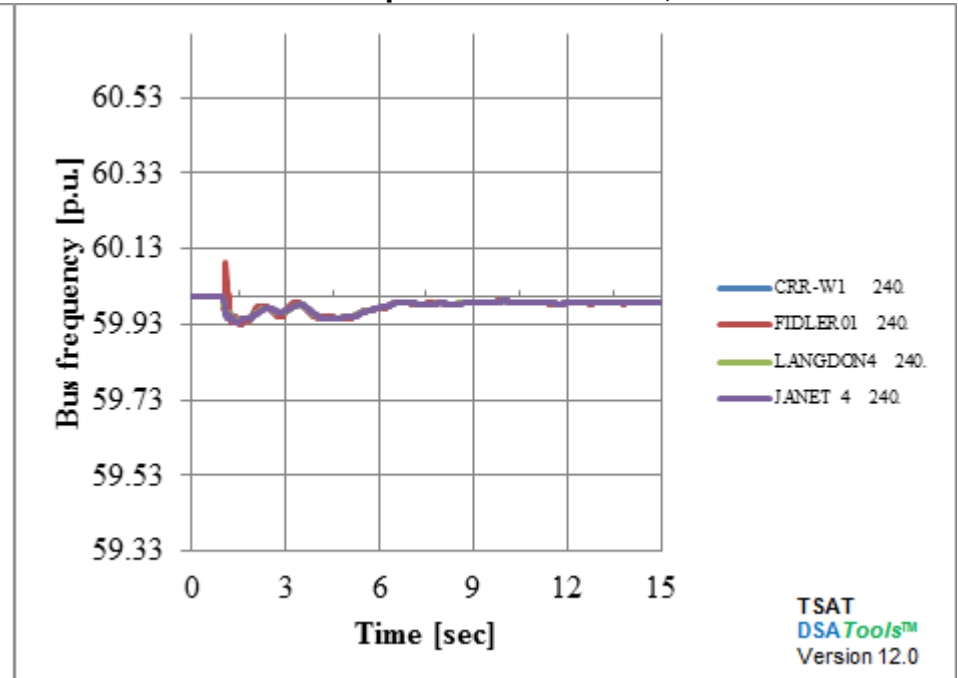
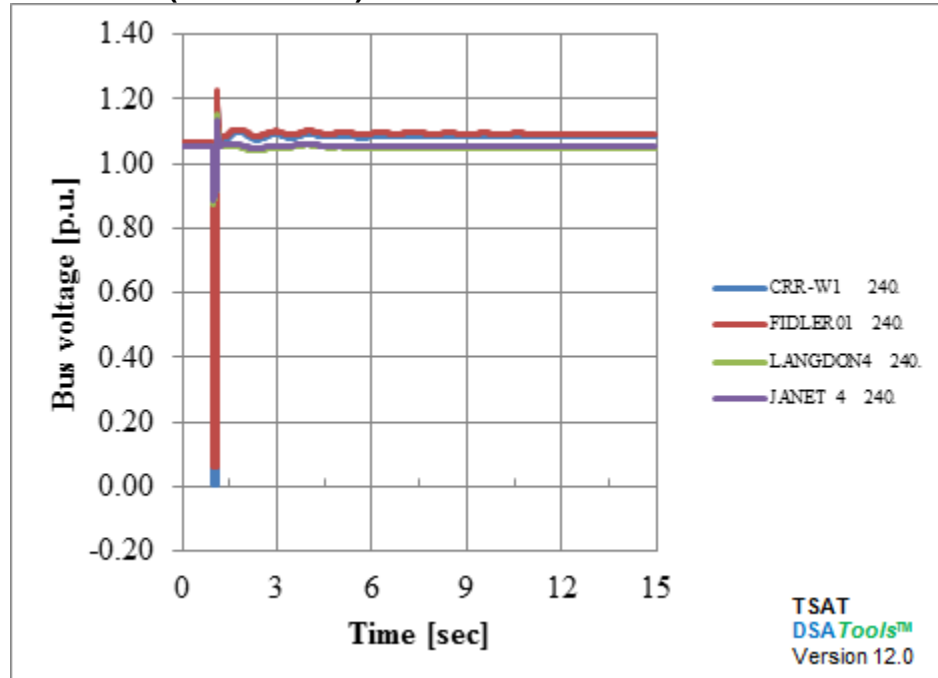
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Proposed Connection, Summer Peak 2014



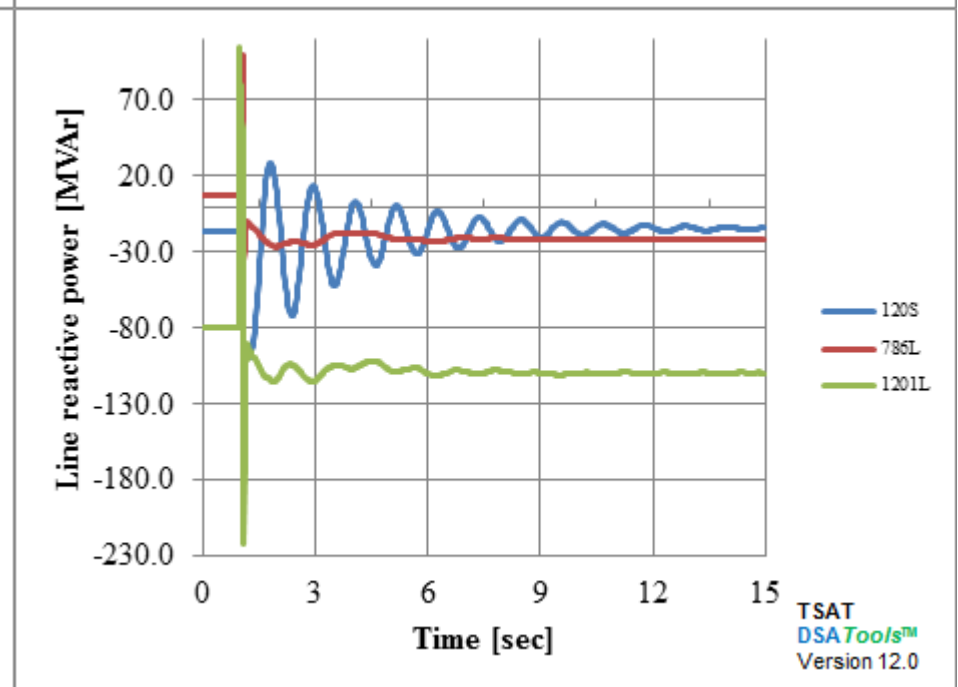
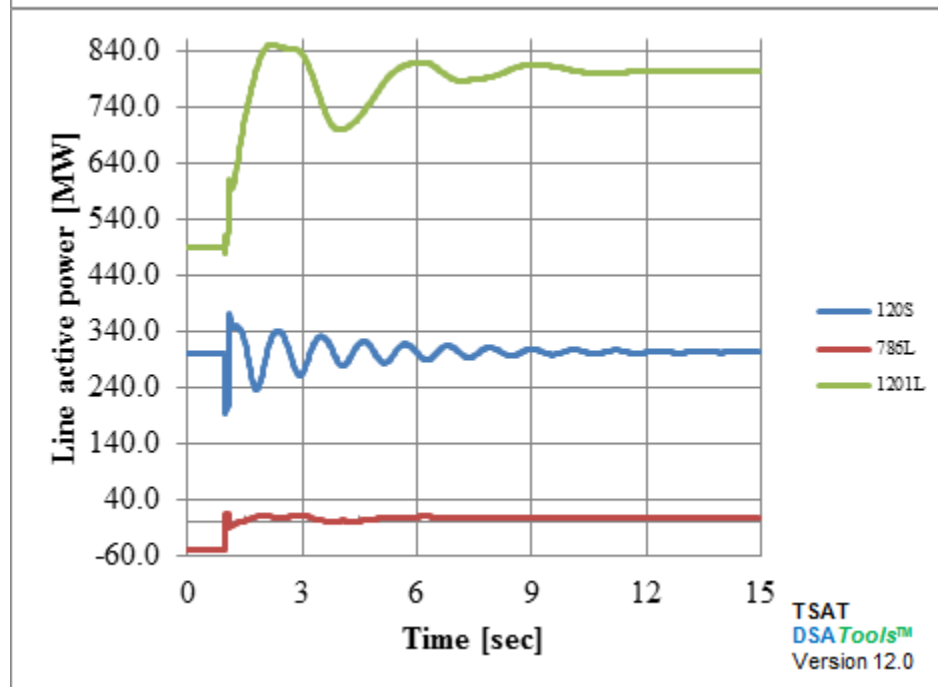
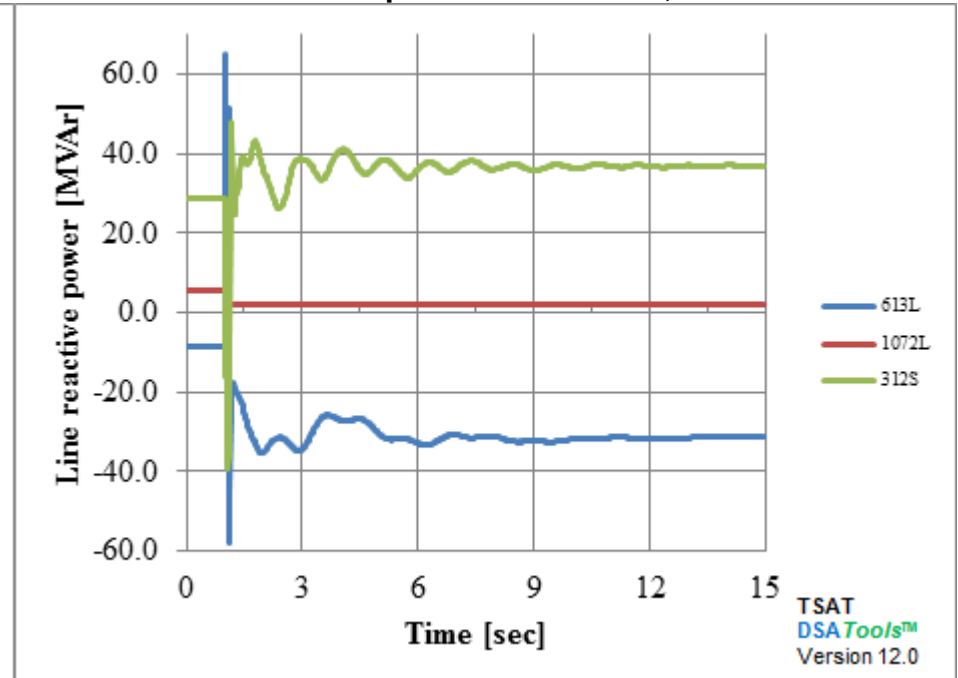
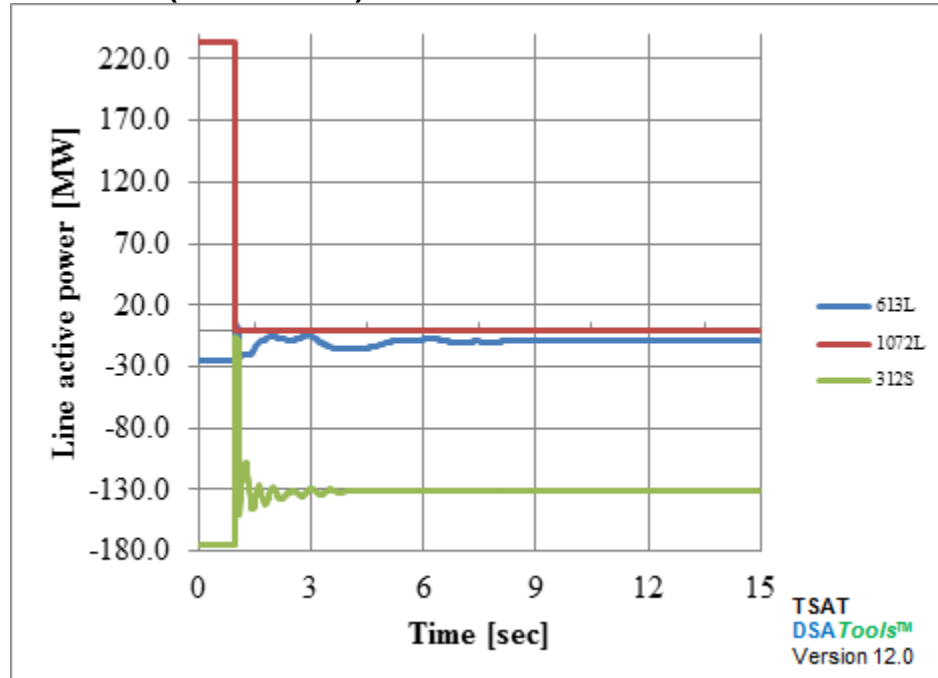
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Peak 2014



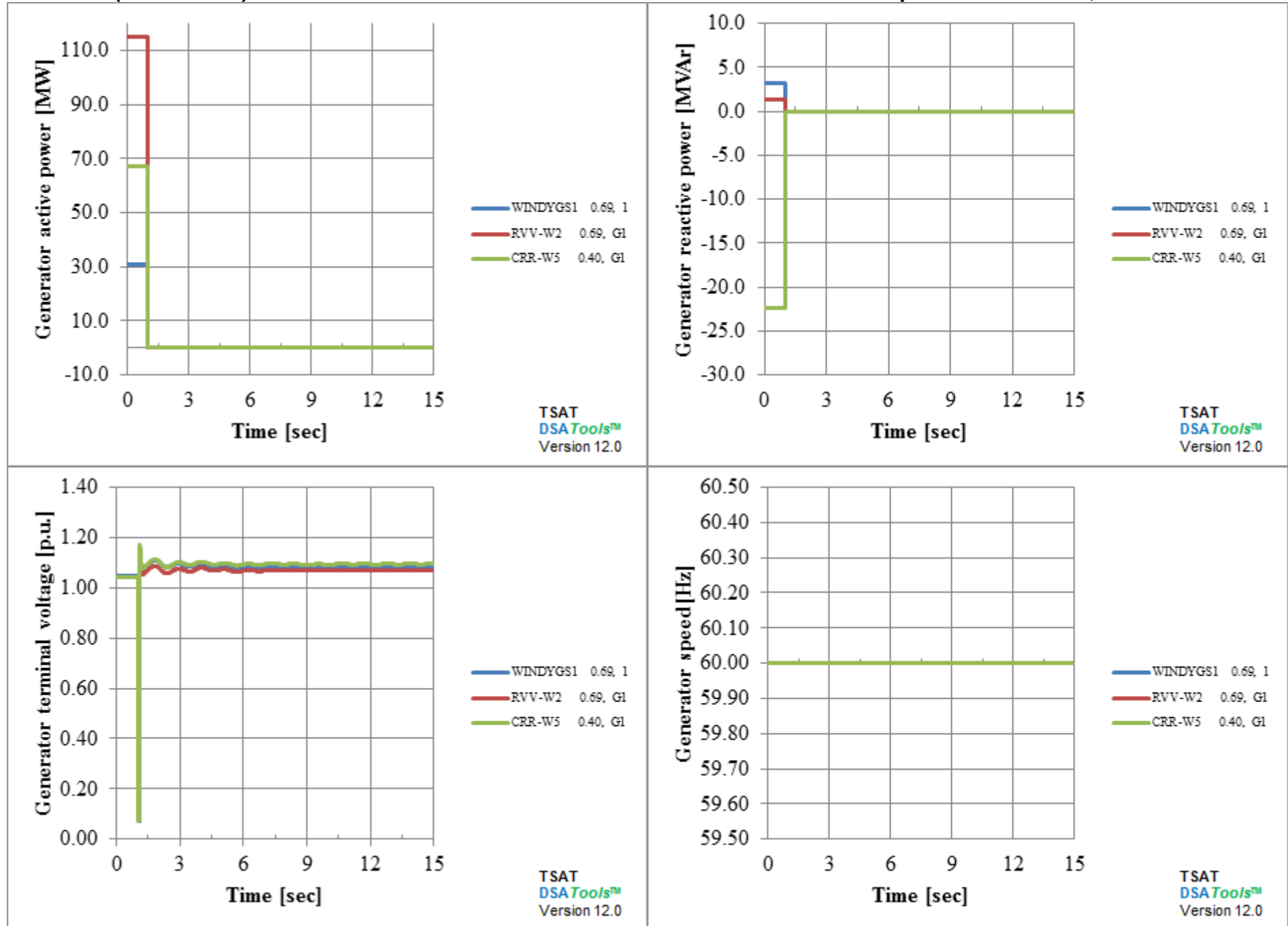
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection, Summer Peak 2014



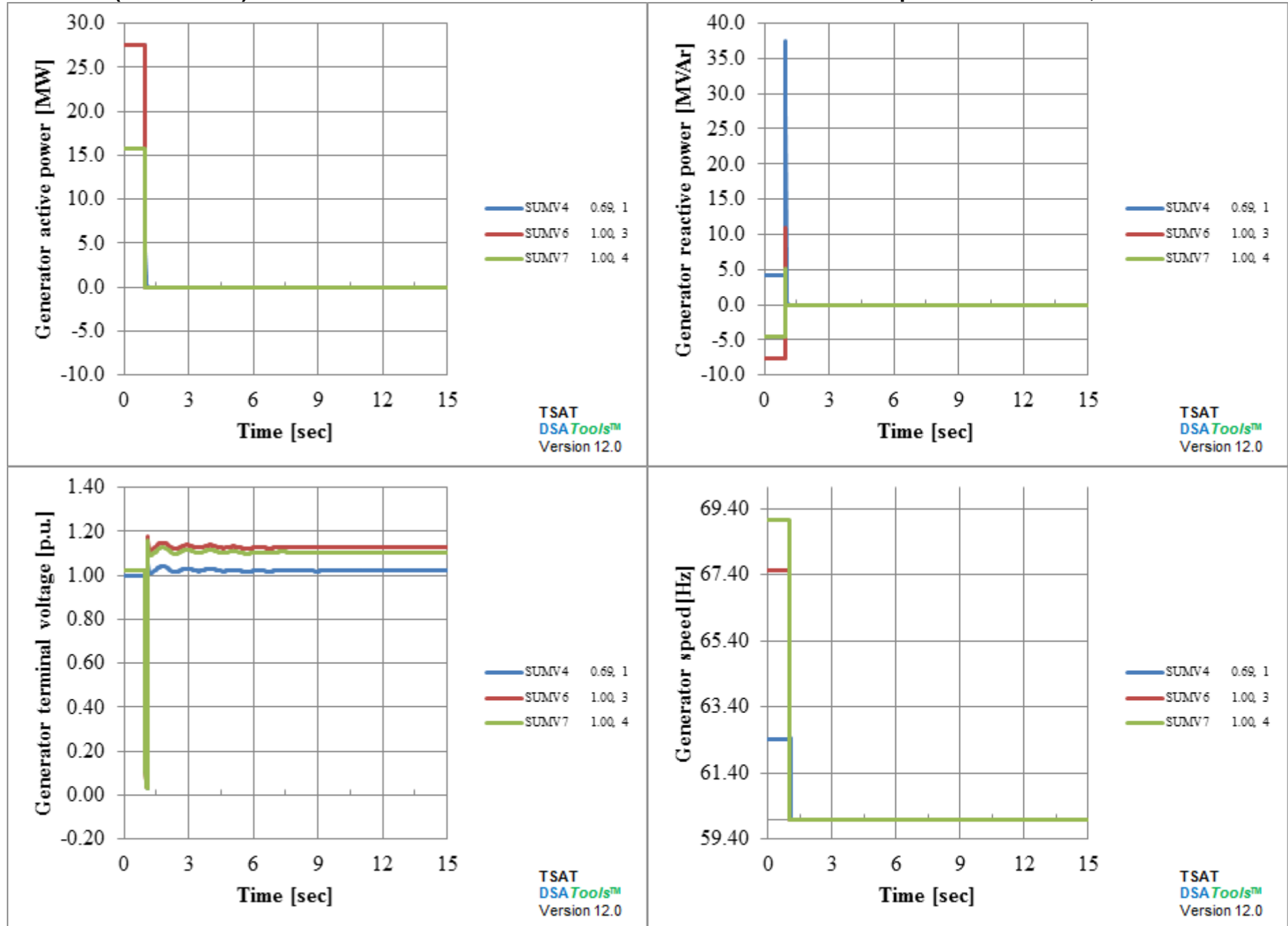
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Peak 2014



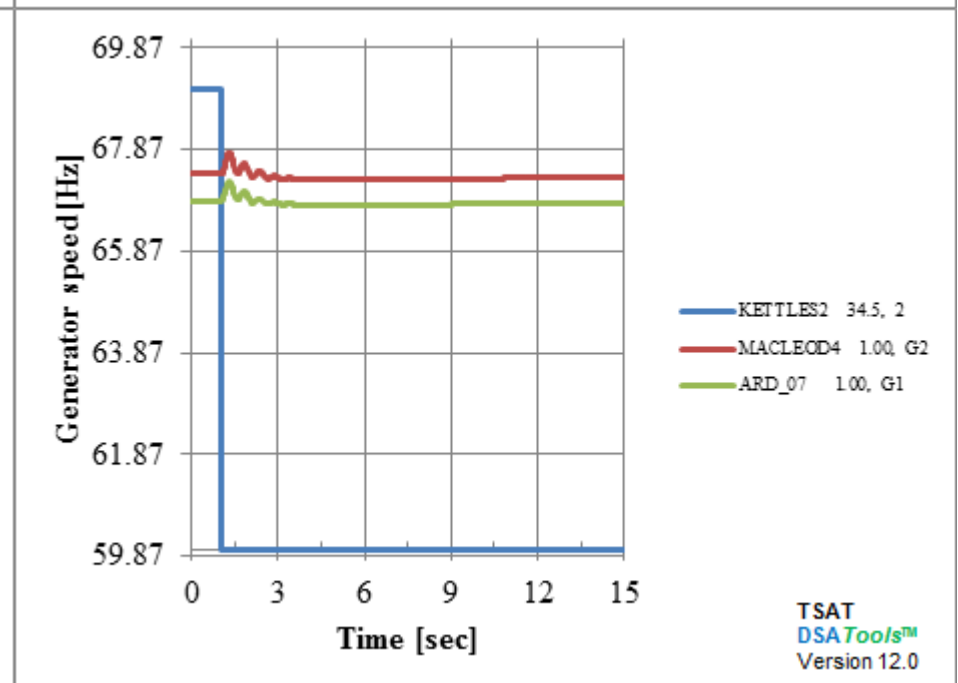
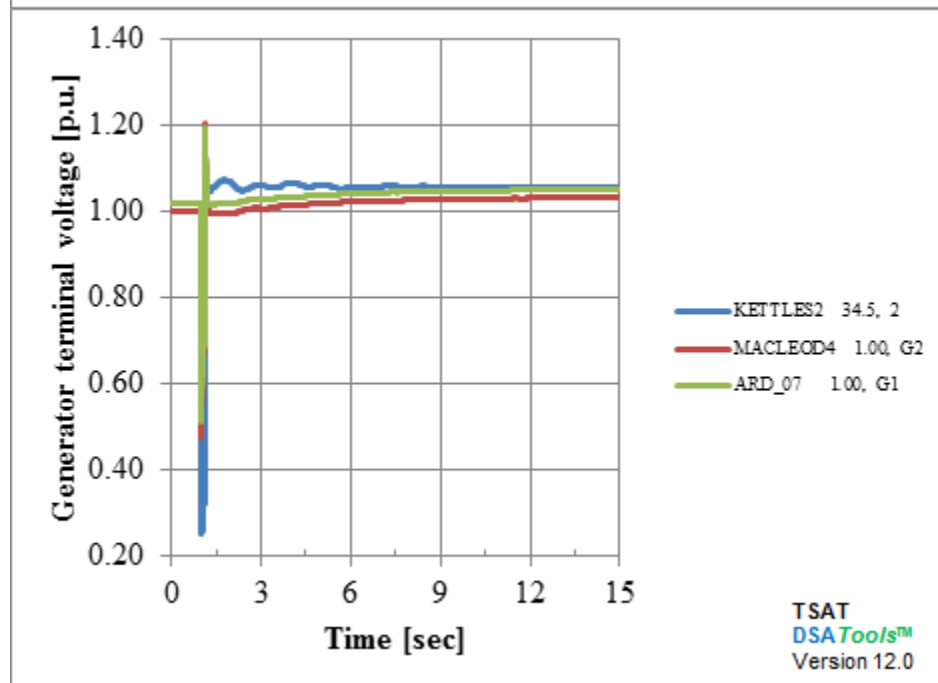
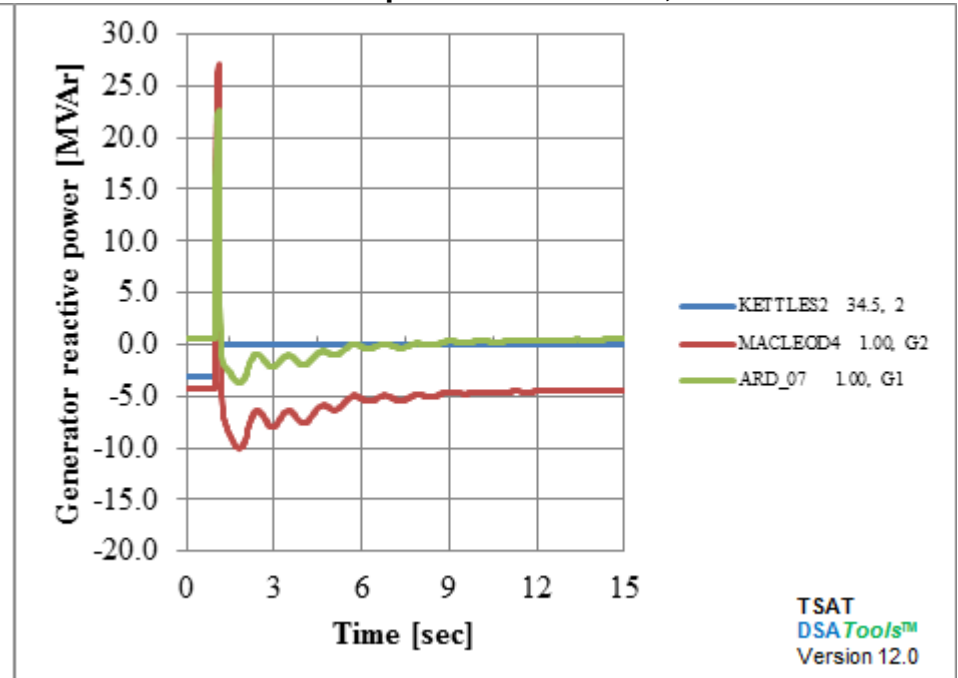
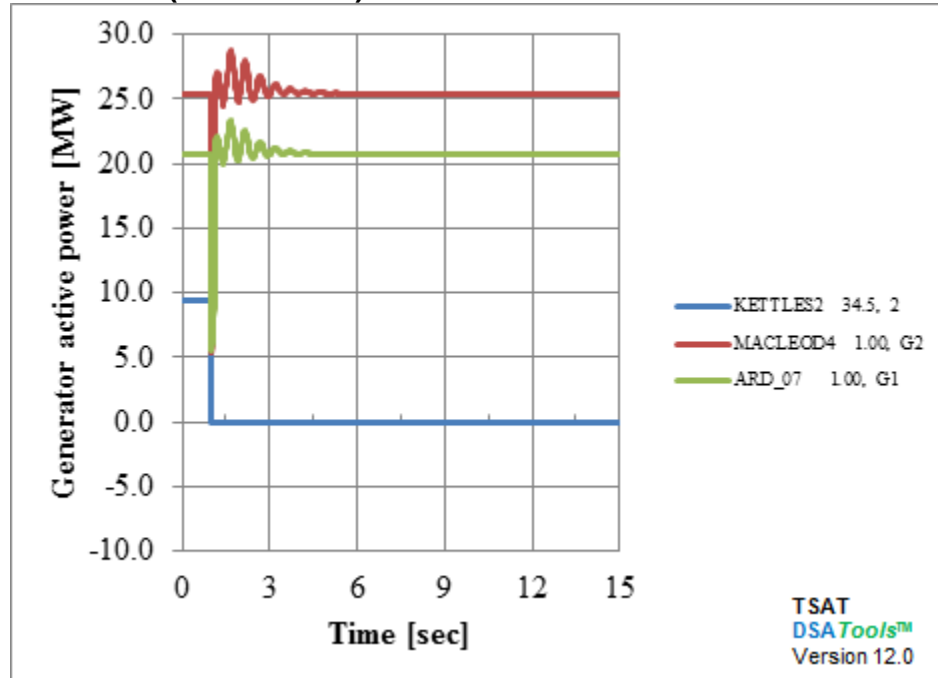
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Peak 2014



3 -- 1071L (205S - 312S) NEAR 312S

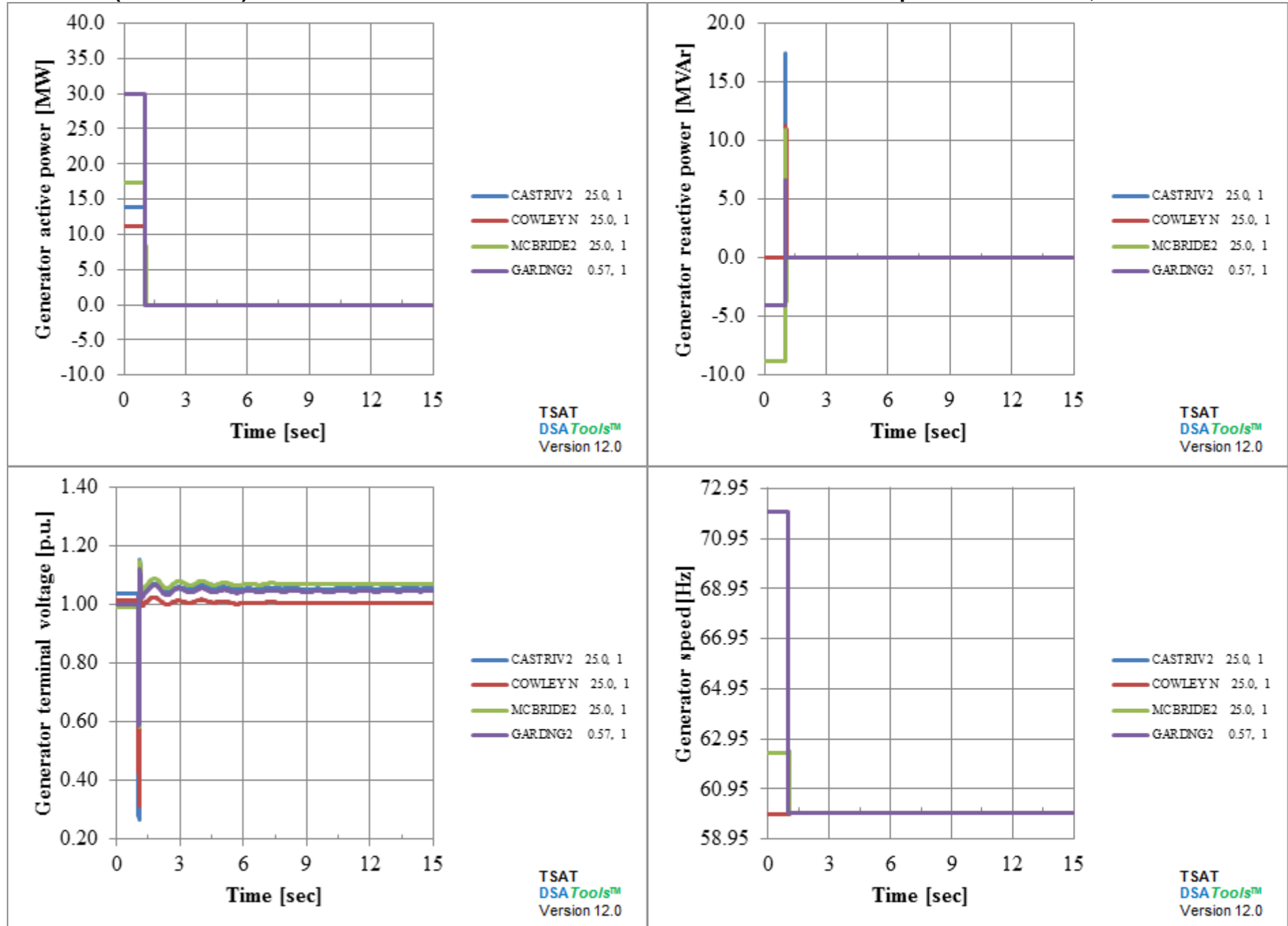
Proposed Connection, Summer Peak 2014





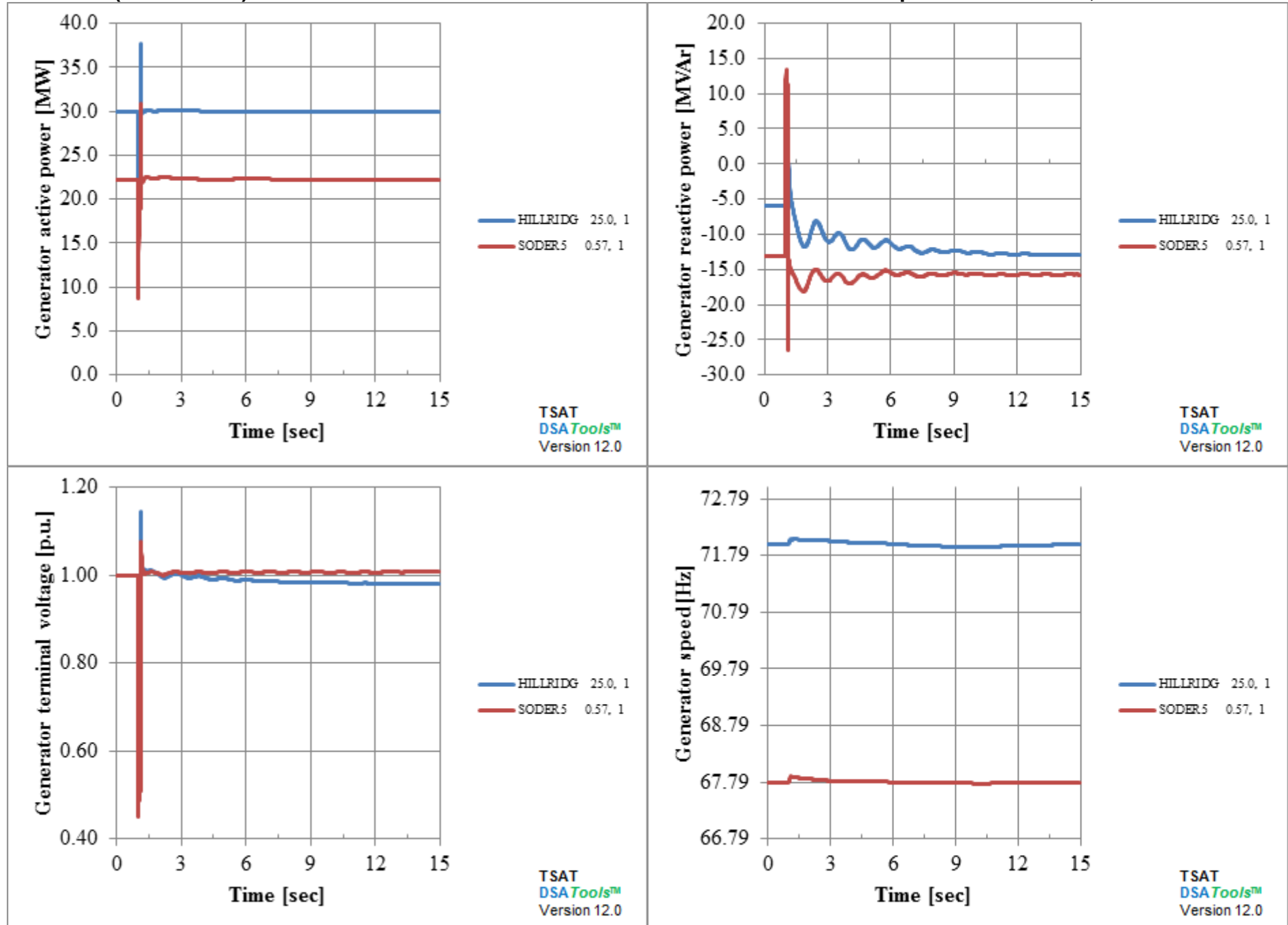
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Peak 2014



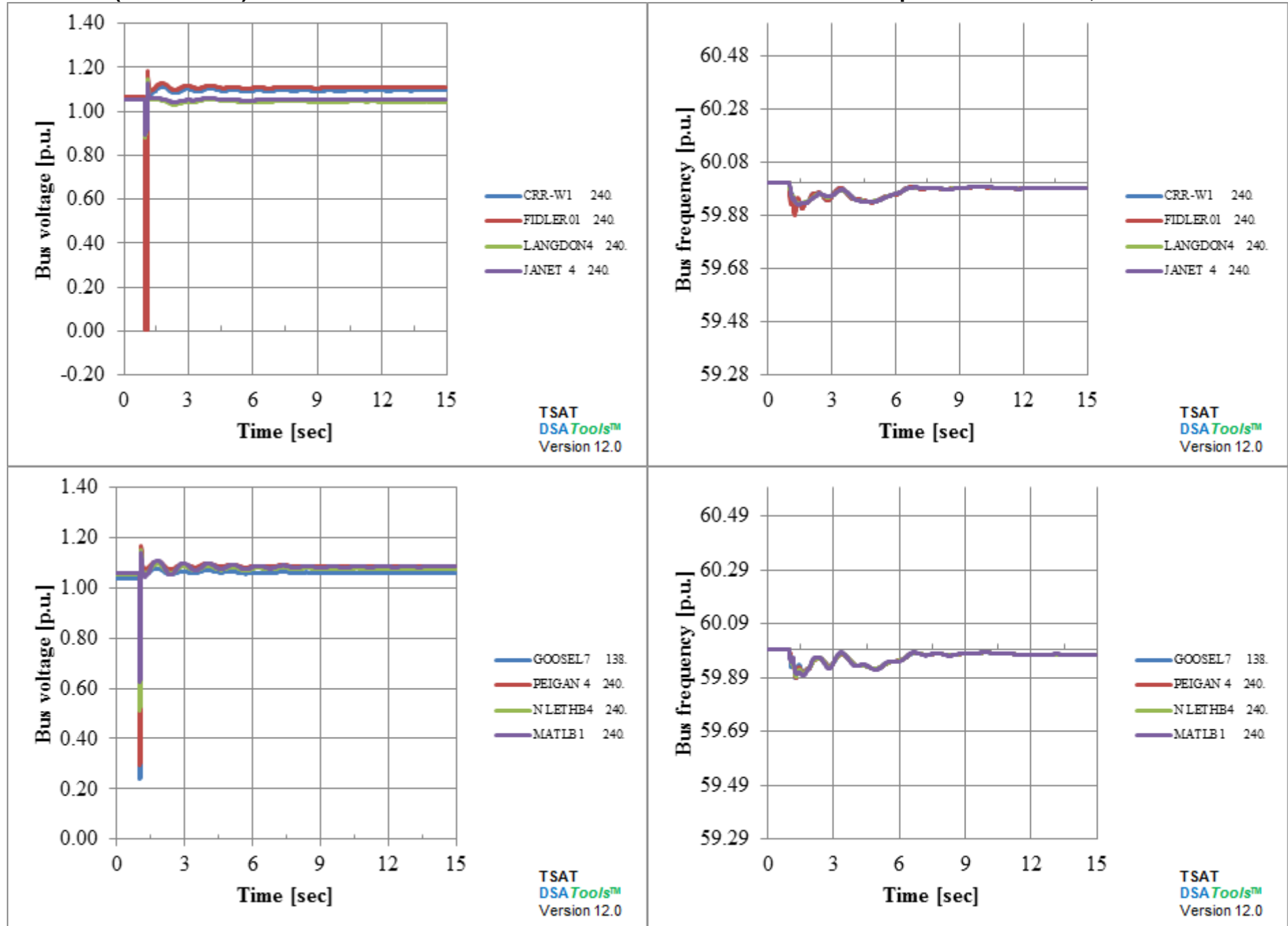
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Peak 2014



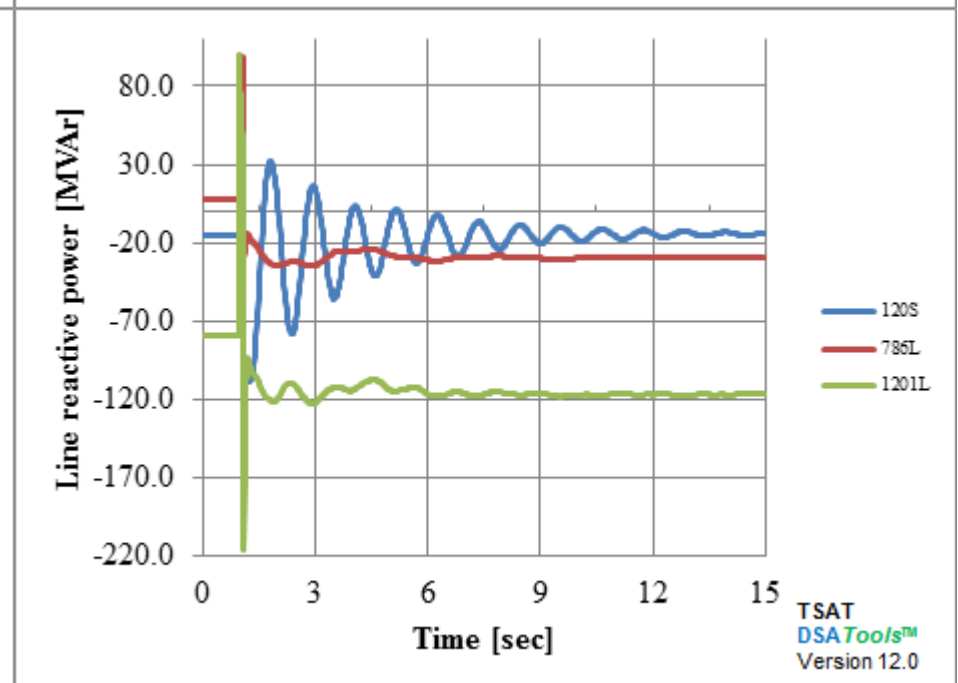
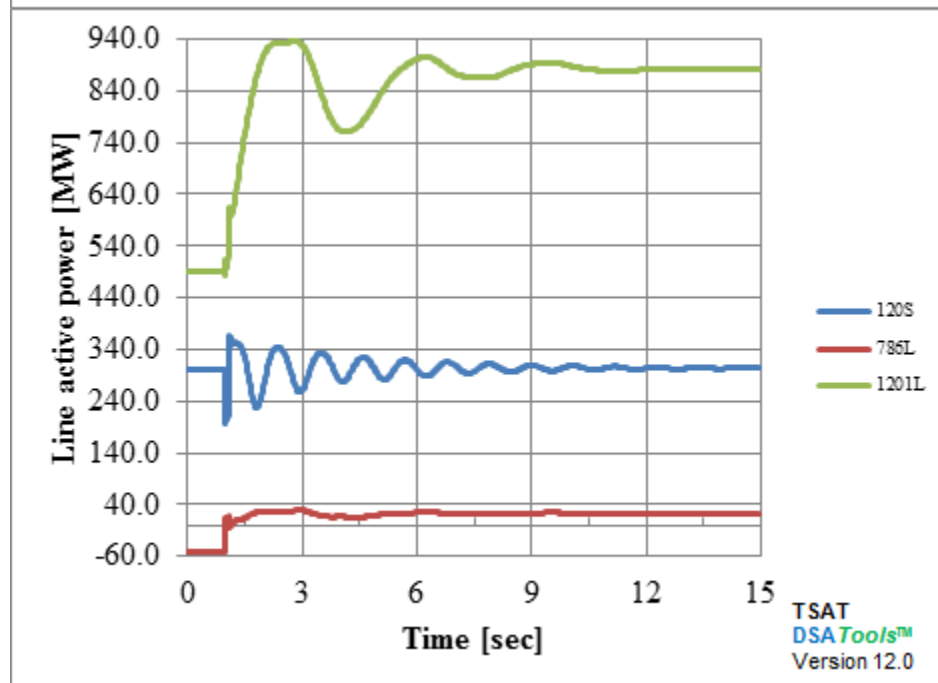
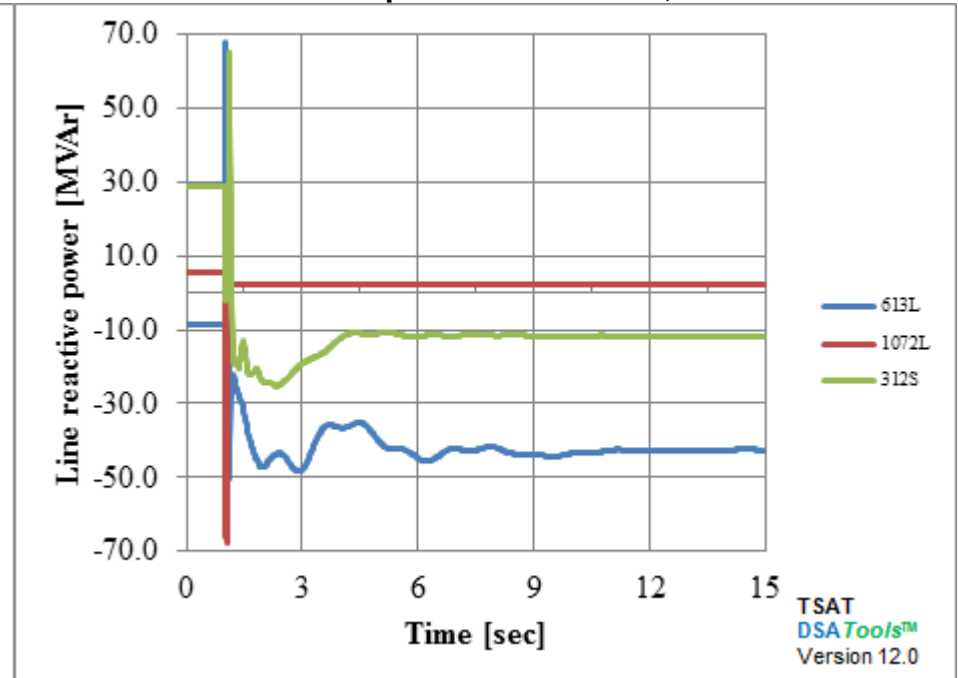
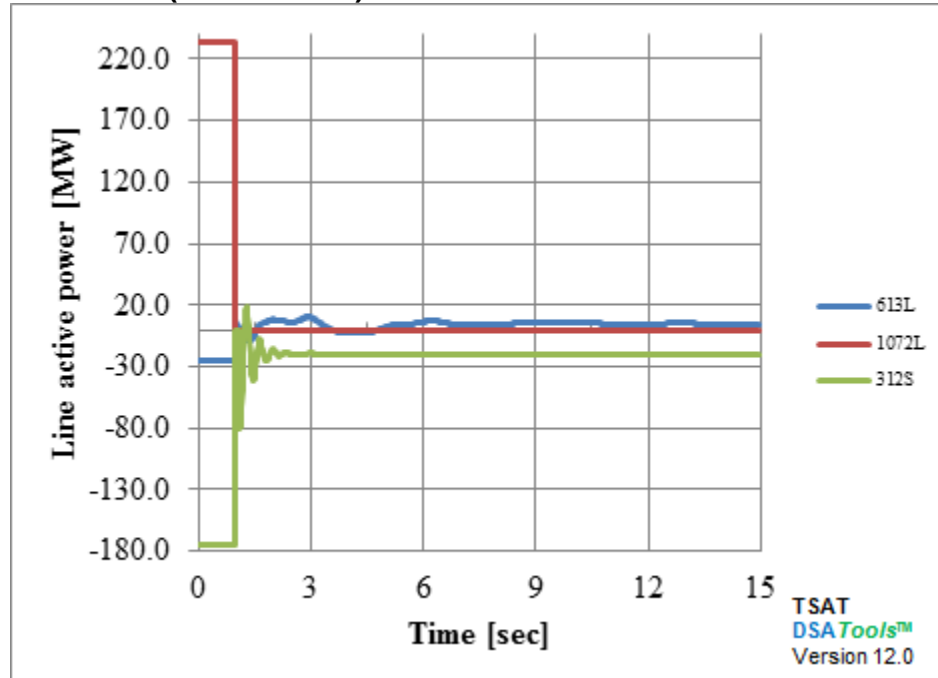
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Peak 2014



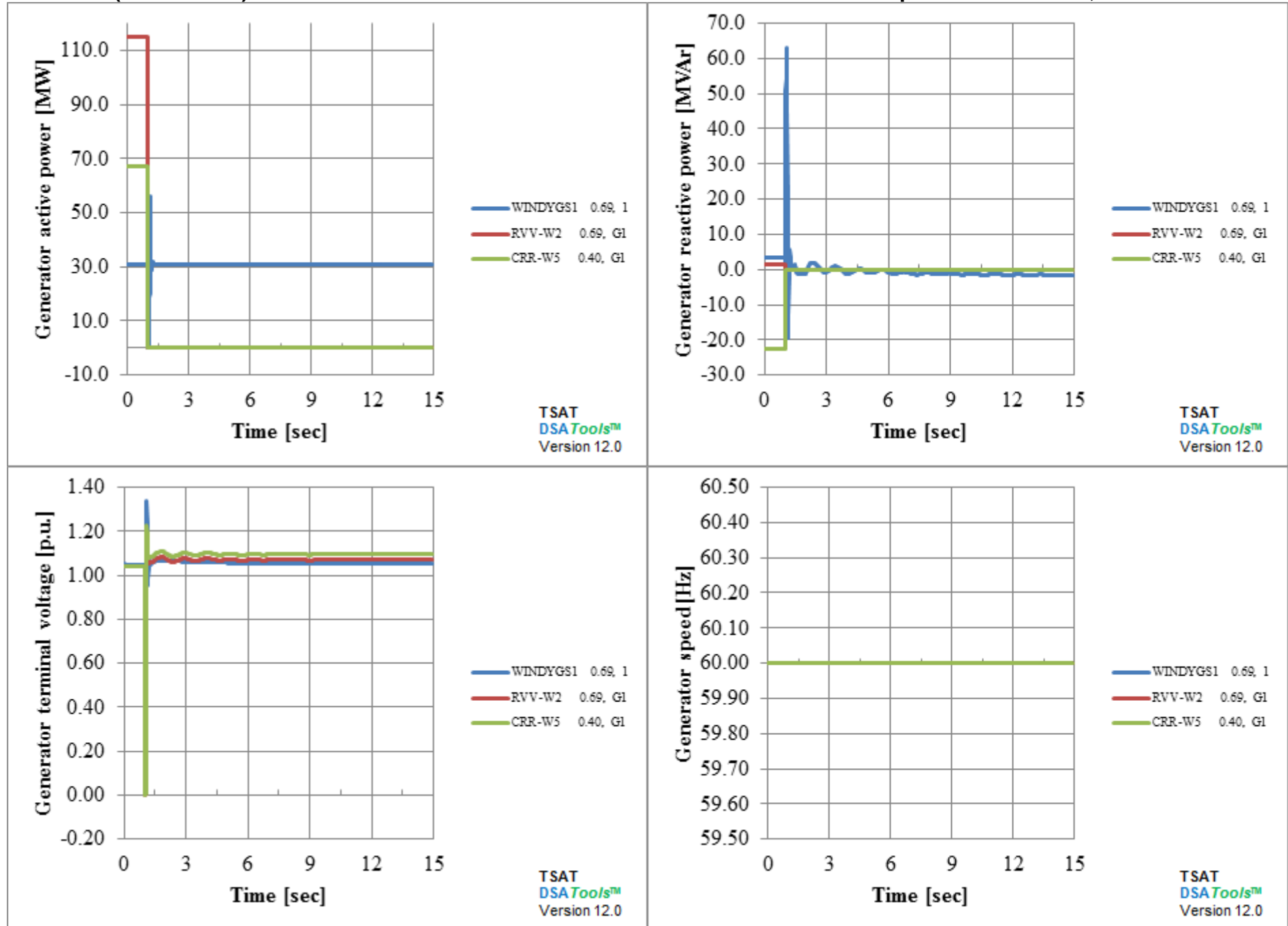
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection, Summer Peak 2014



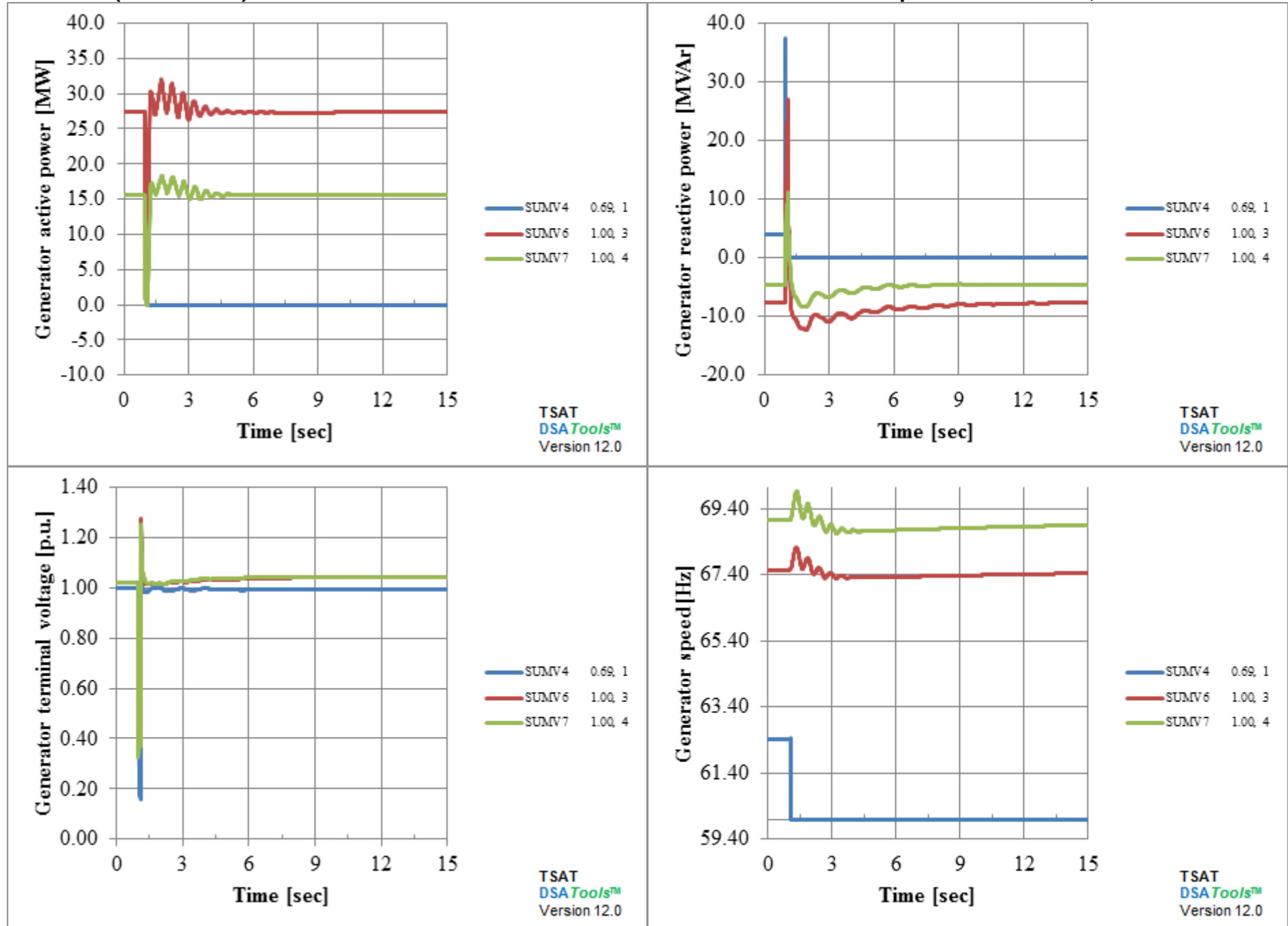
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Peak 2014



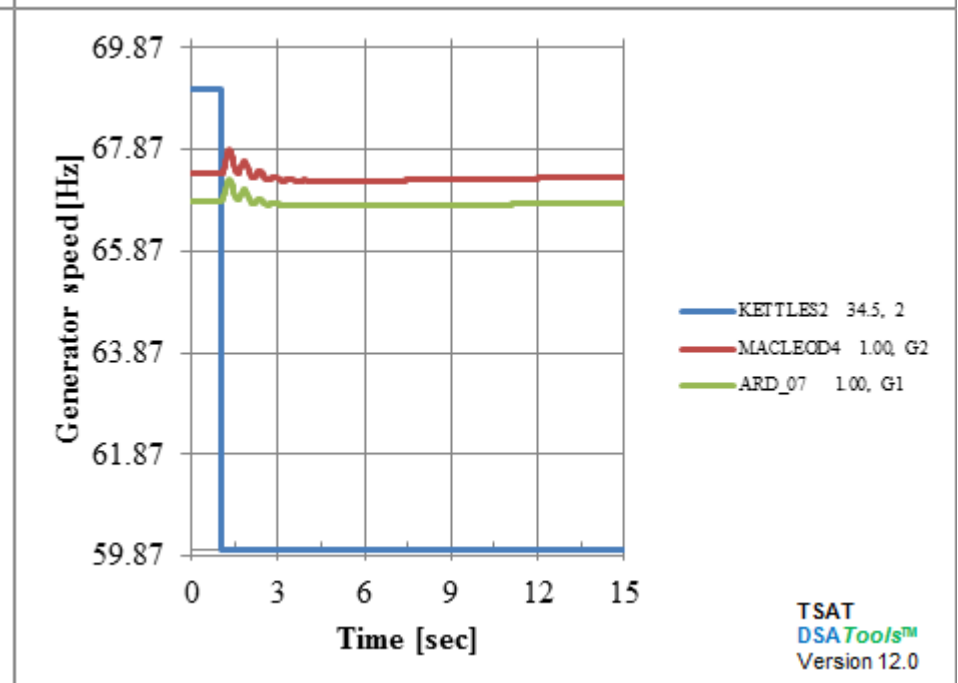
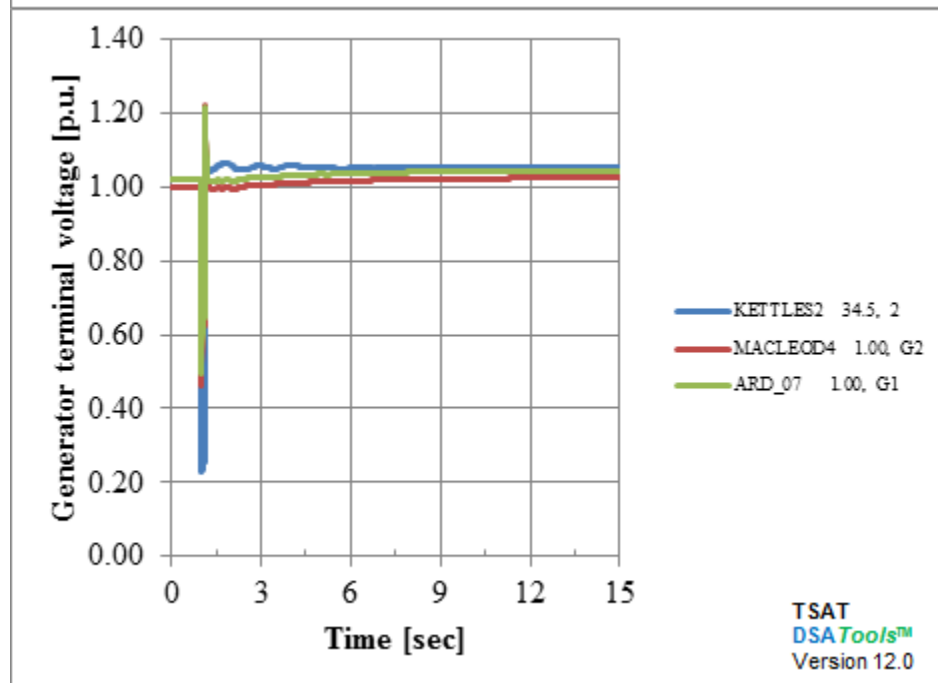
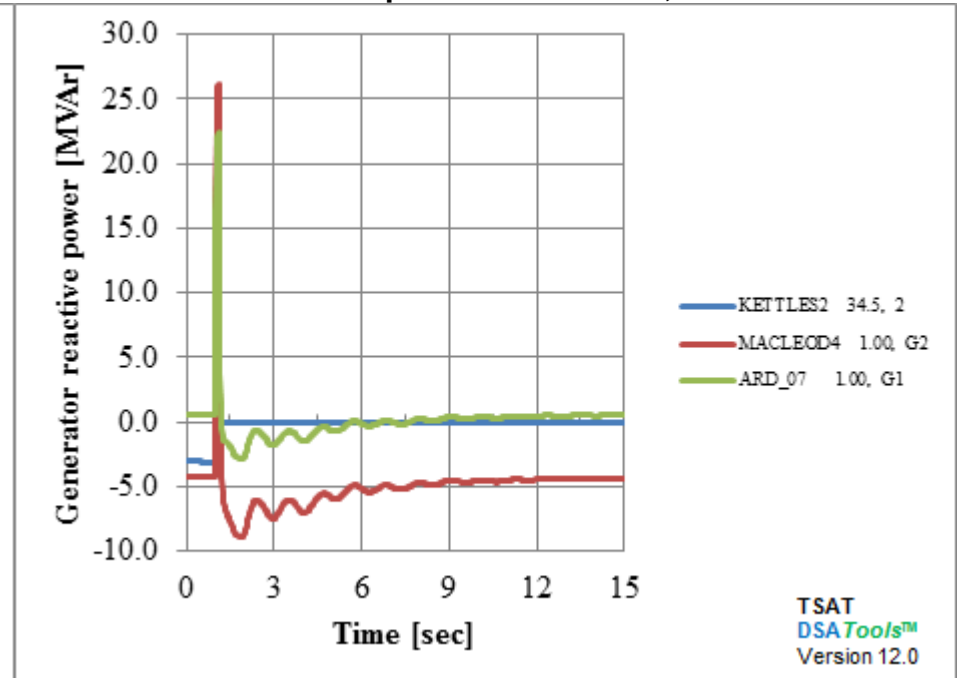
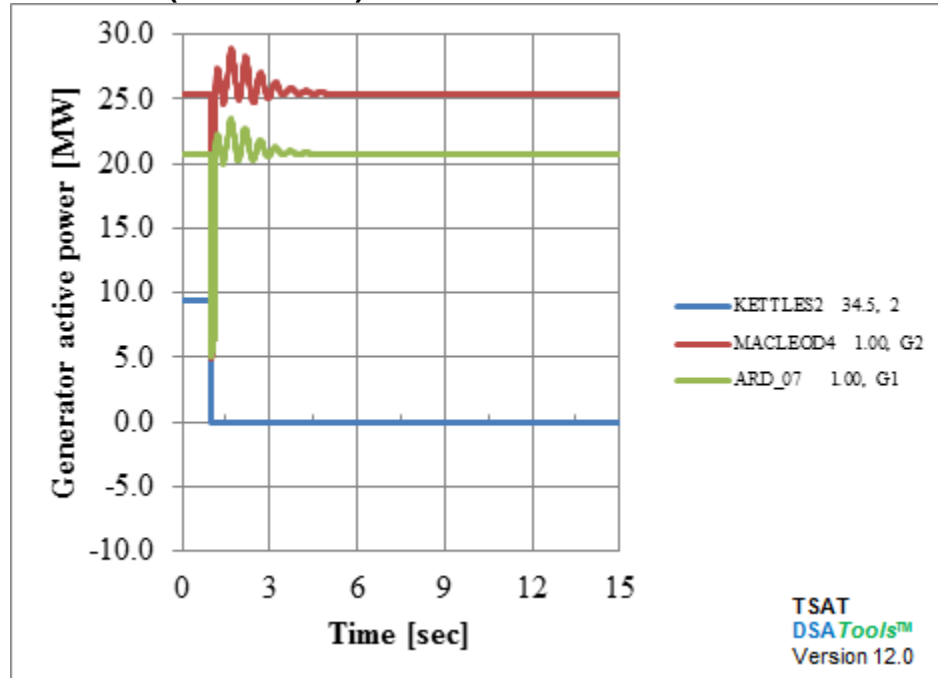
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Peak 2014



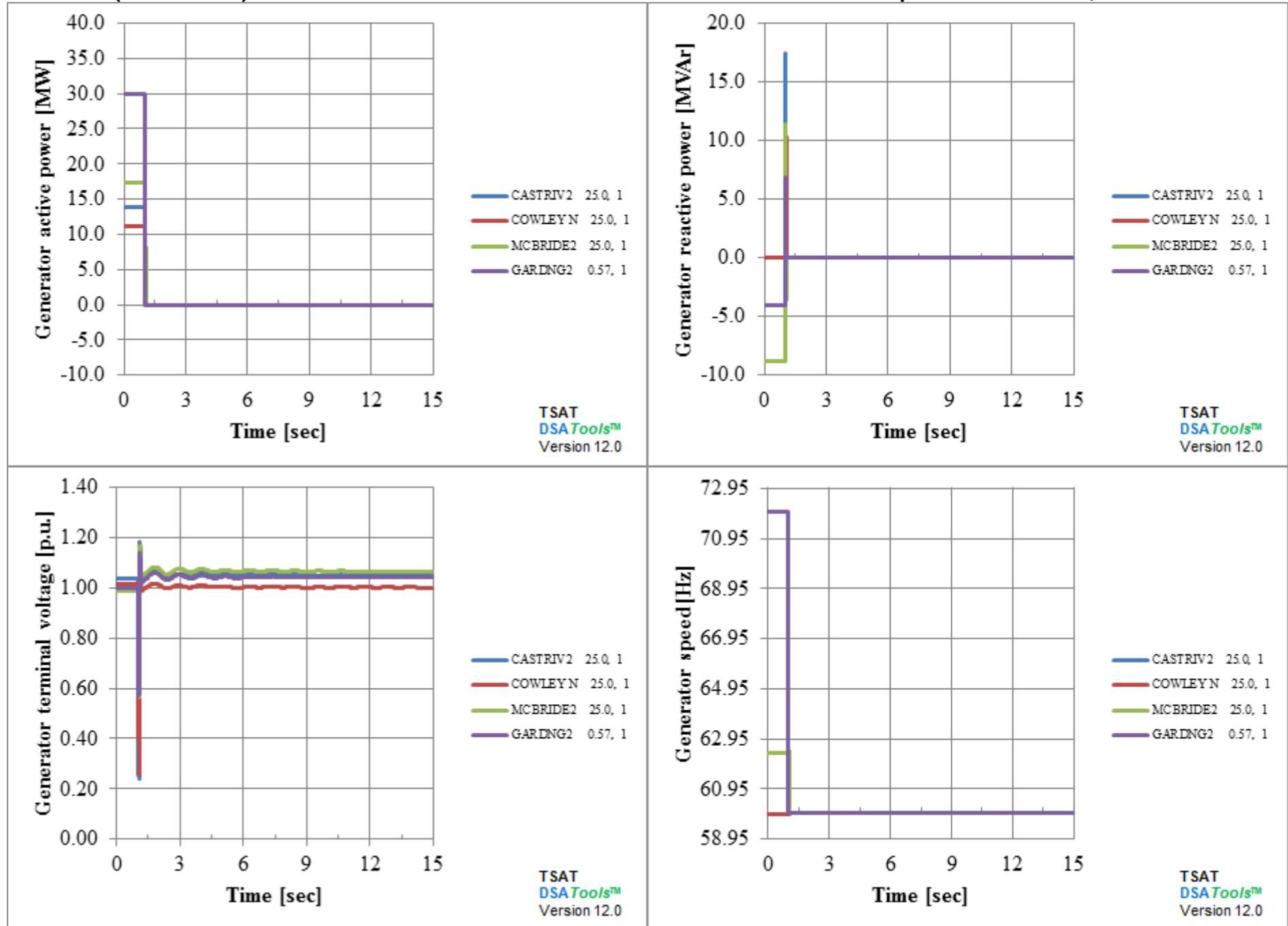
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Peak 2014



4 -- 1072L (205S - 103S) NEAR 205S

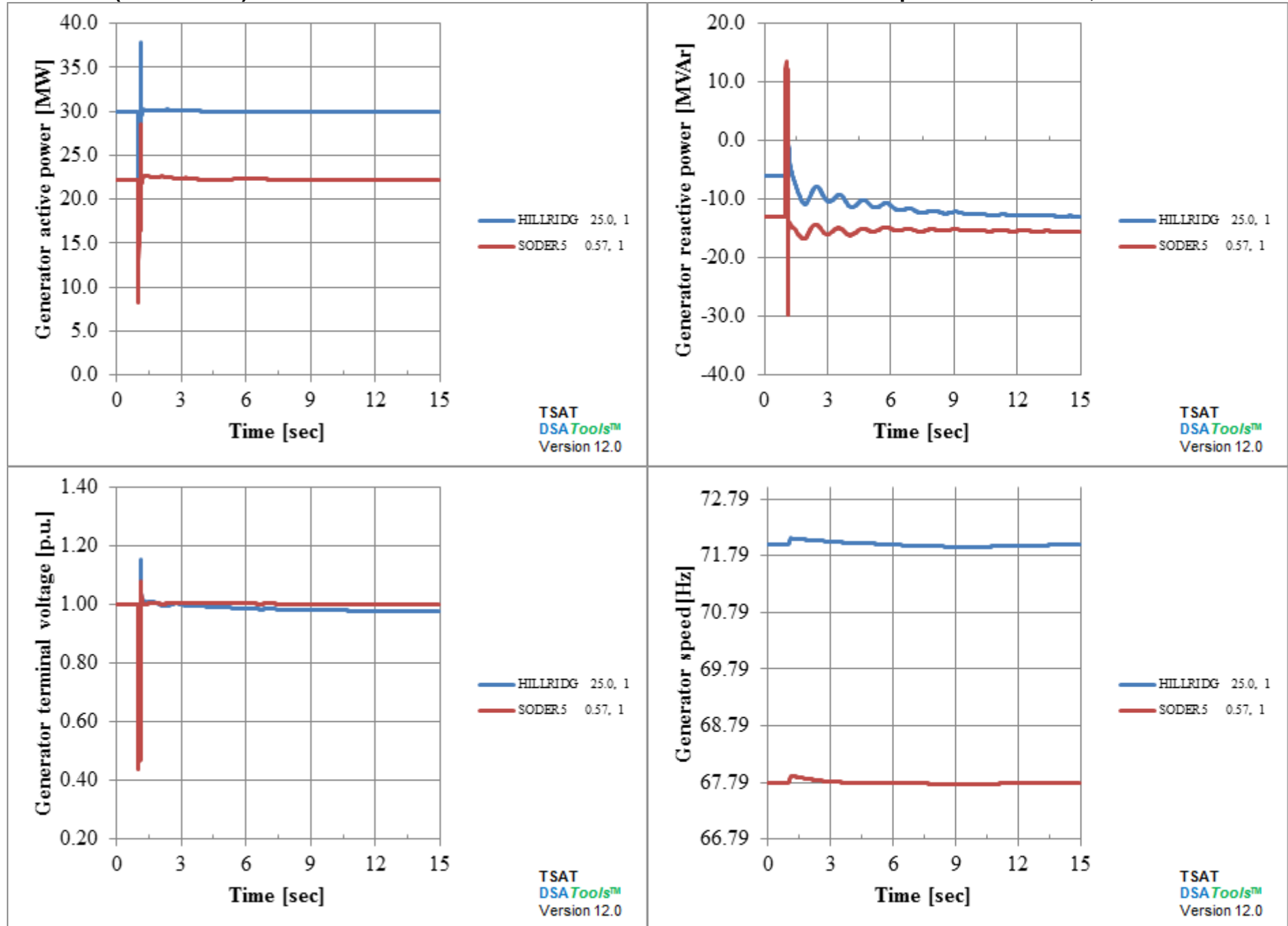
Proposed Connection, Summer Peak 2014





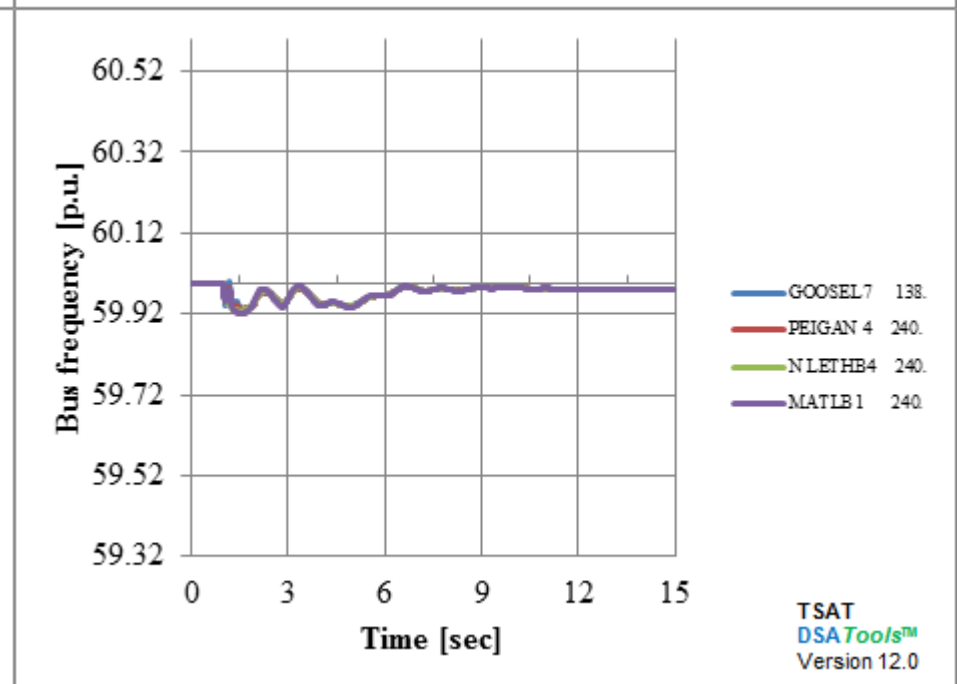
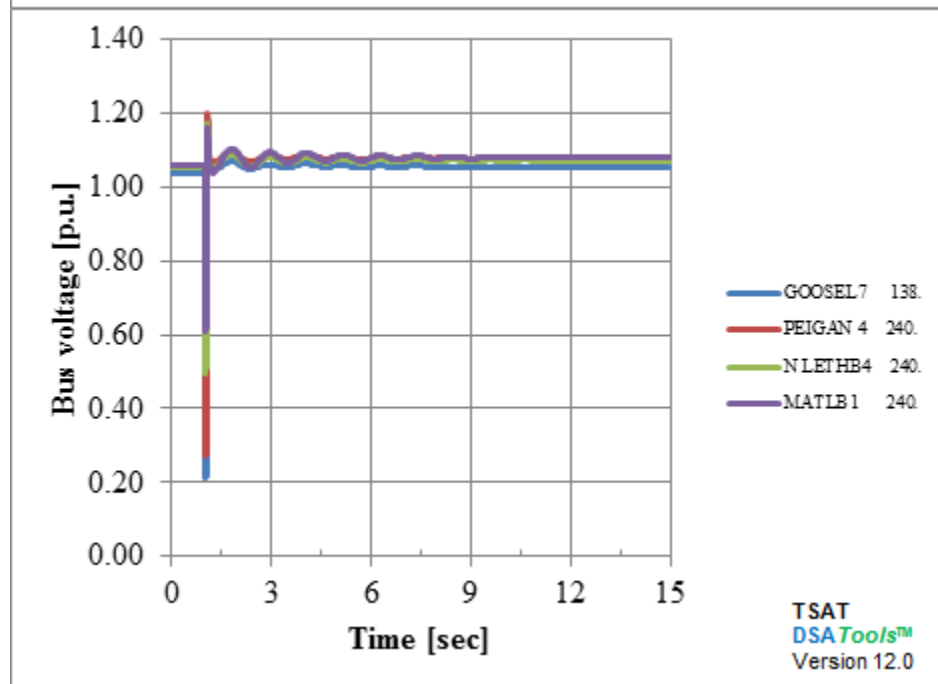
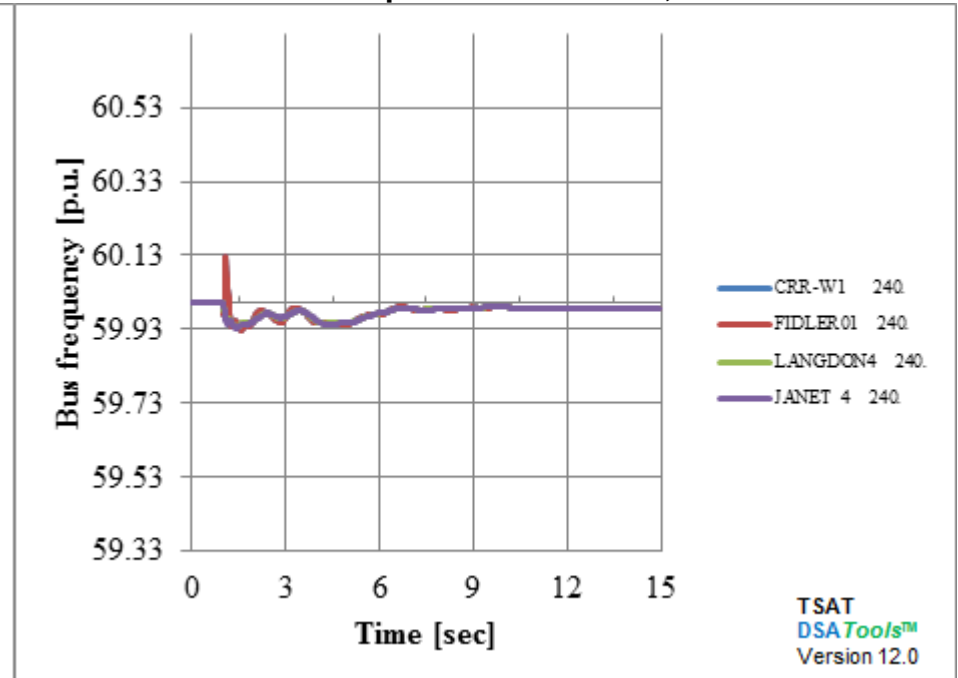
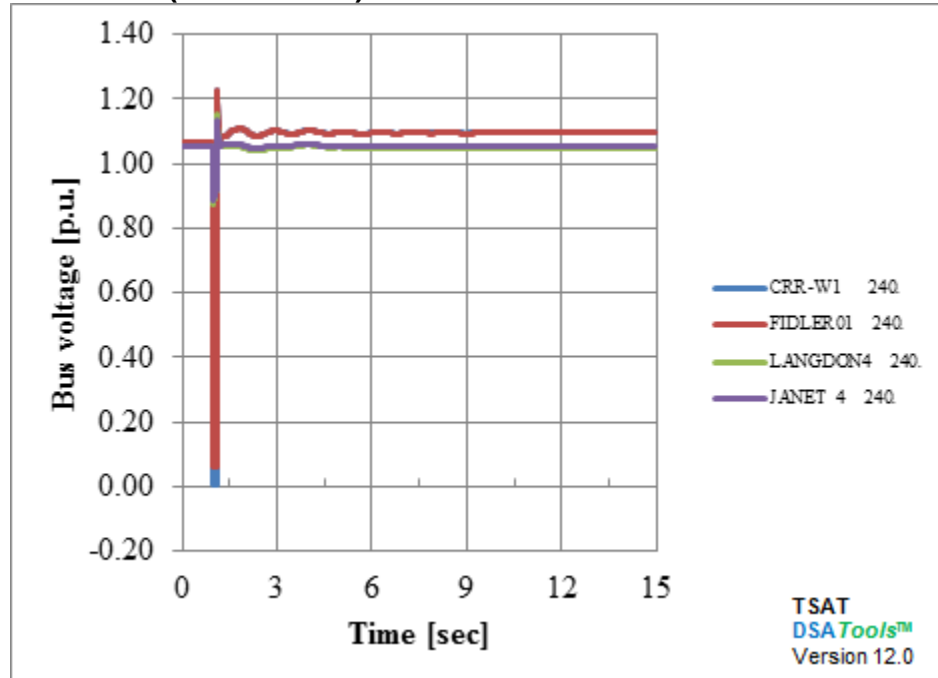
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Peak 2014



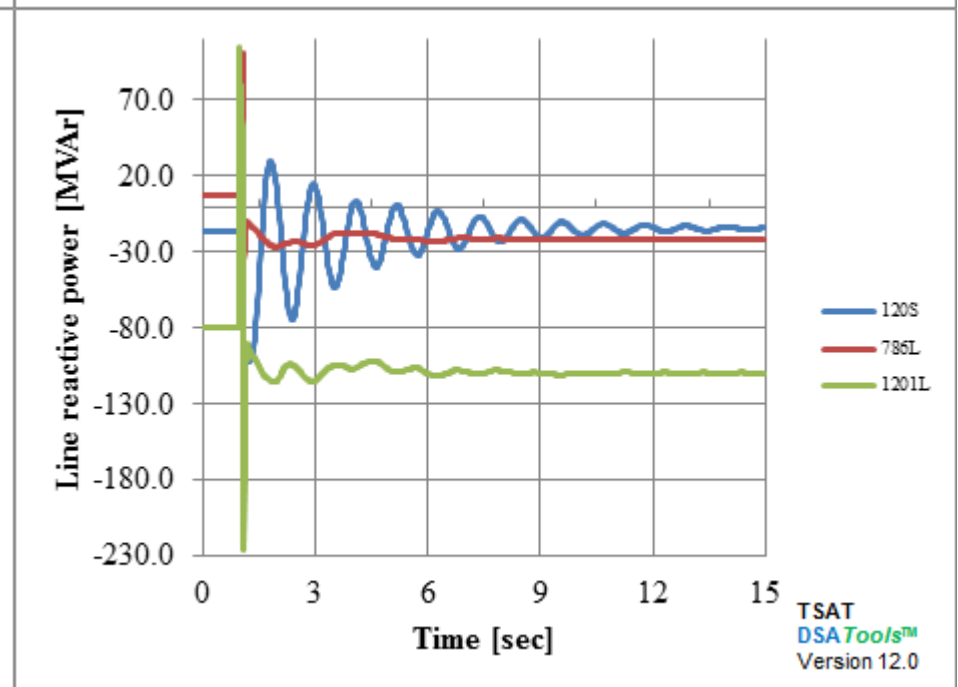
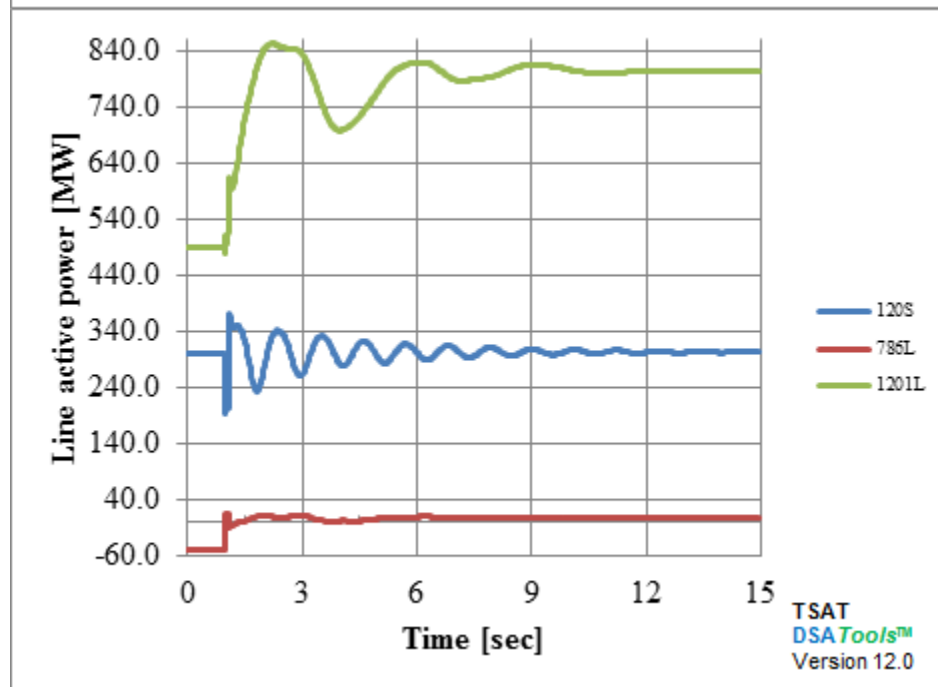
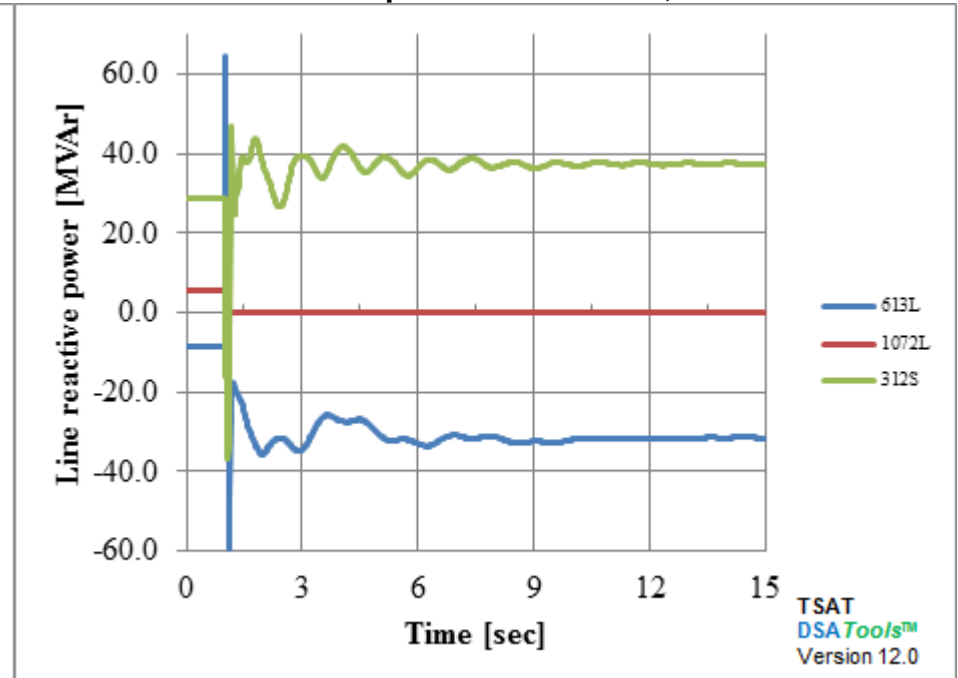
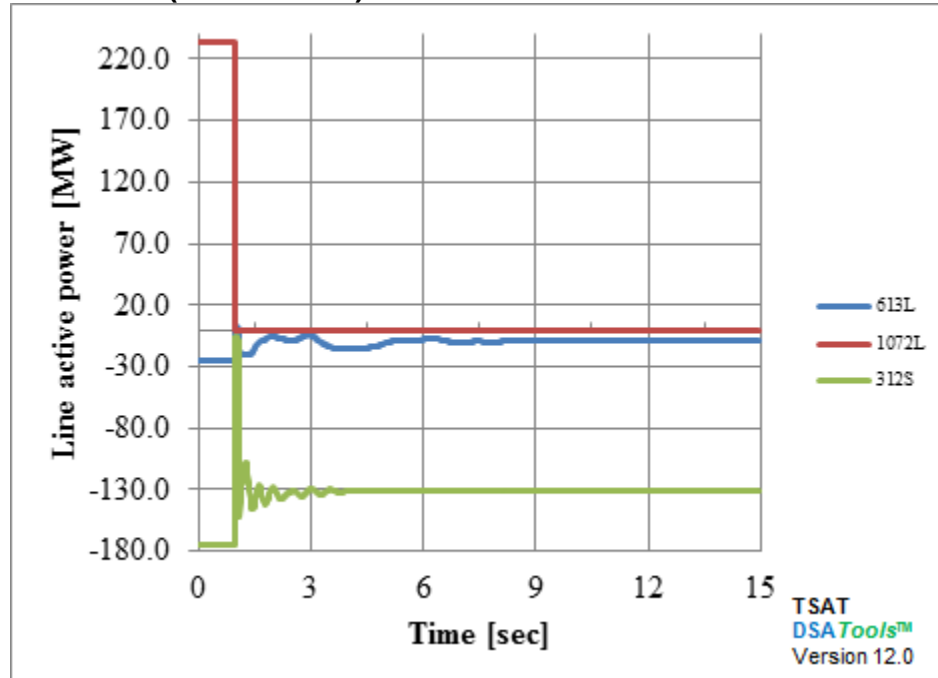
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Peak 2014



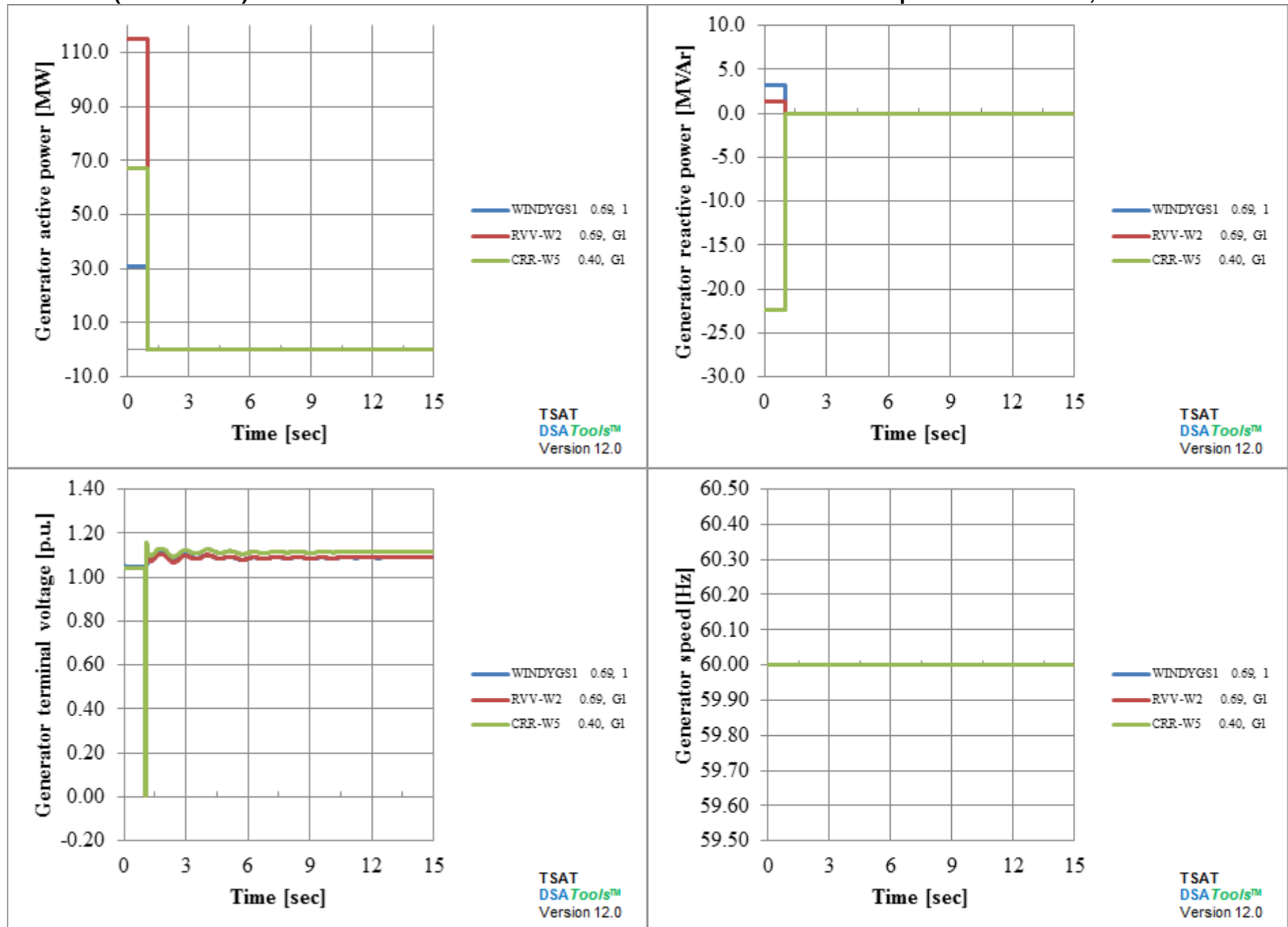
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection, Summer Peak 2014



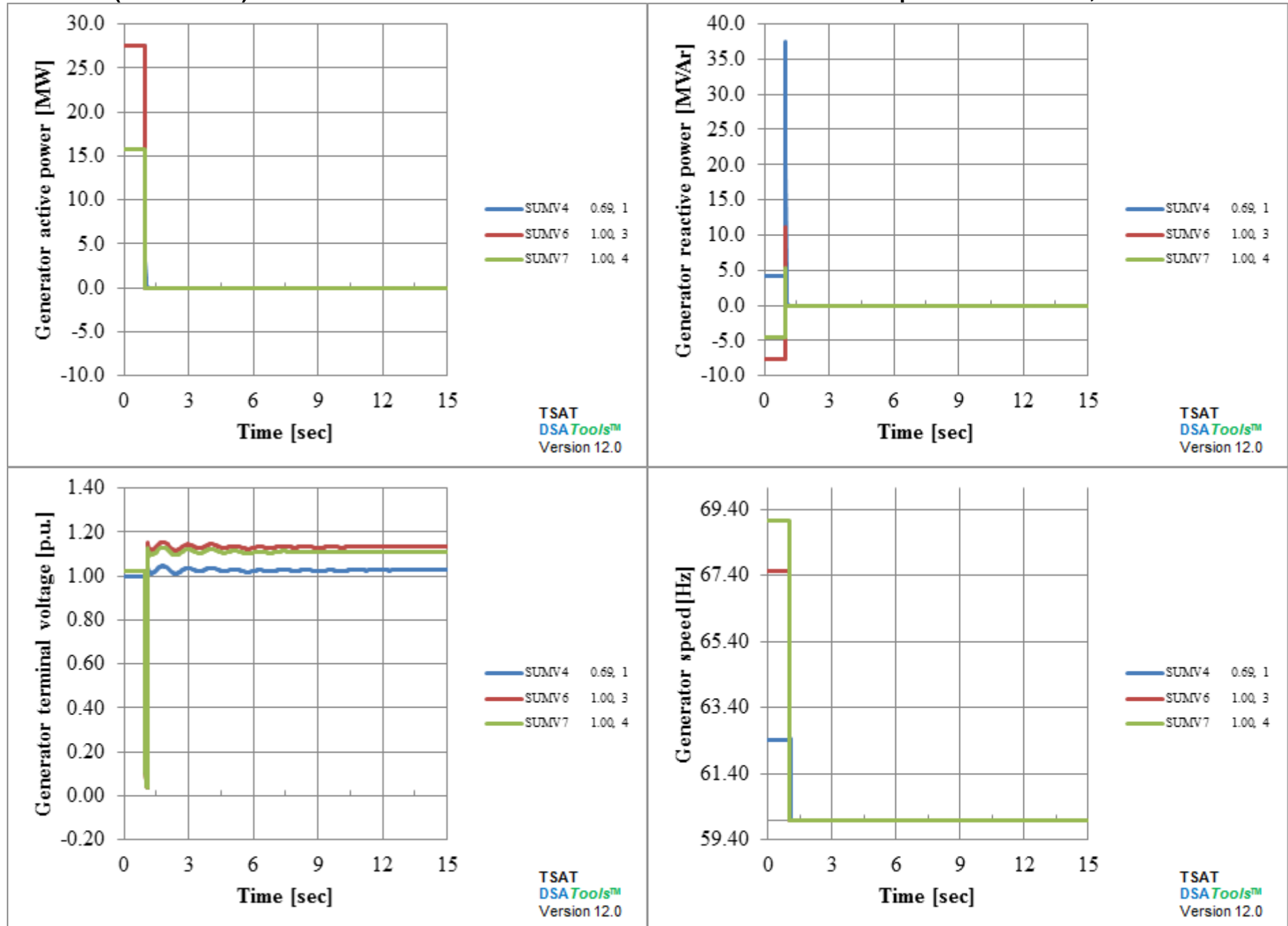
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



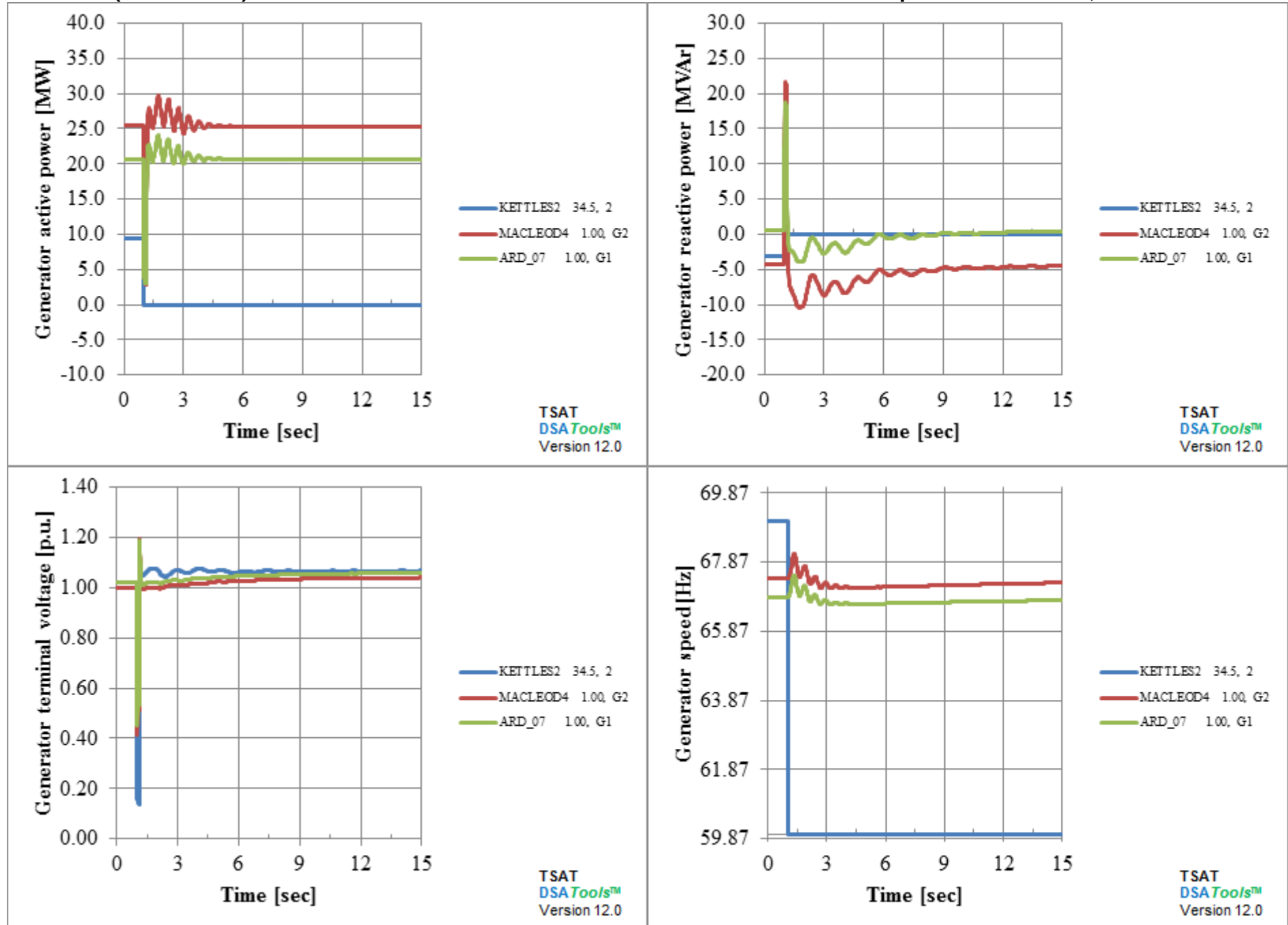
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



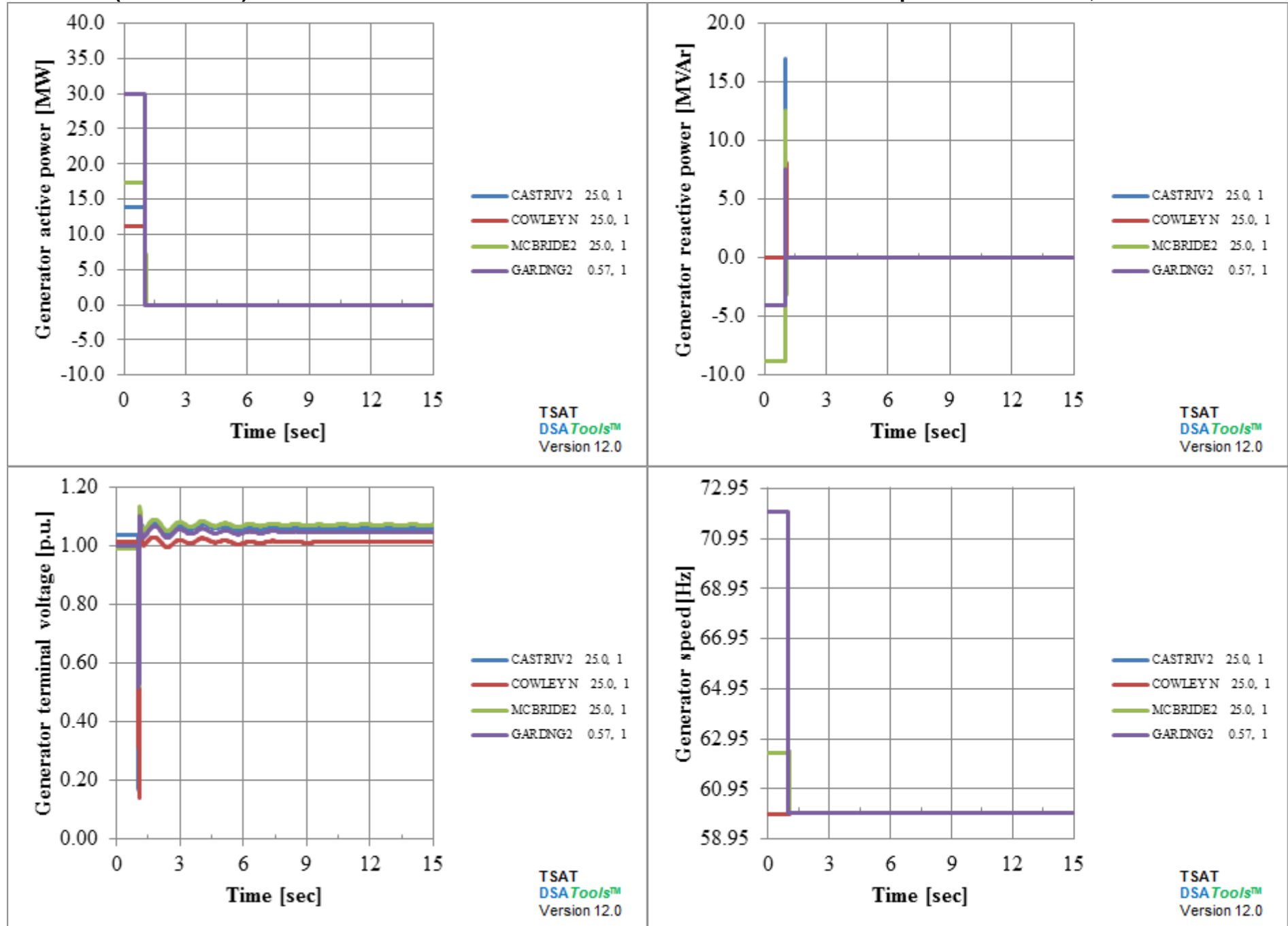
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



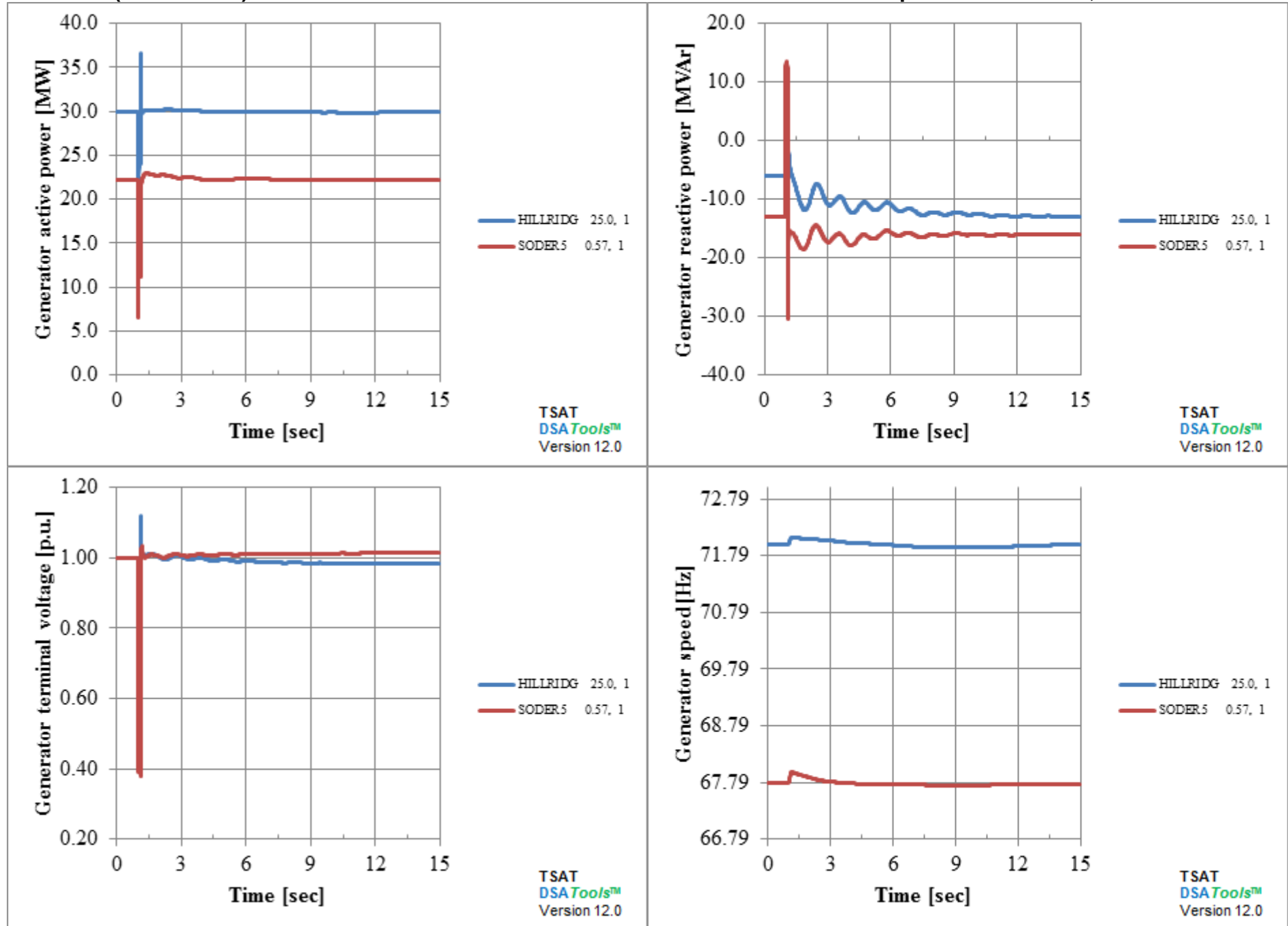
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



5 -- 1072L (205S - 103S) NEAR 103S

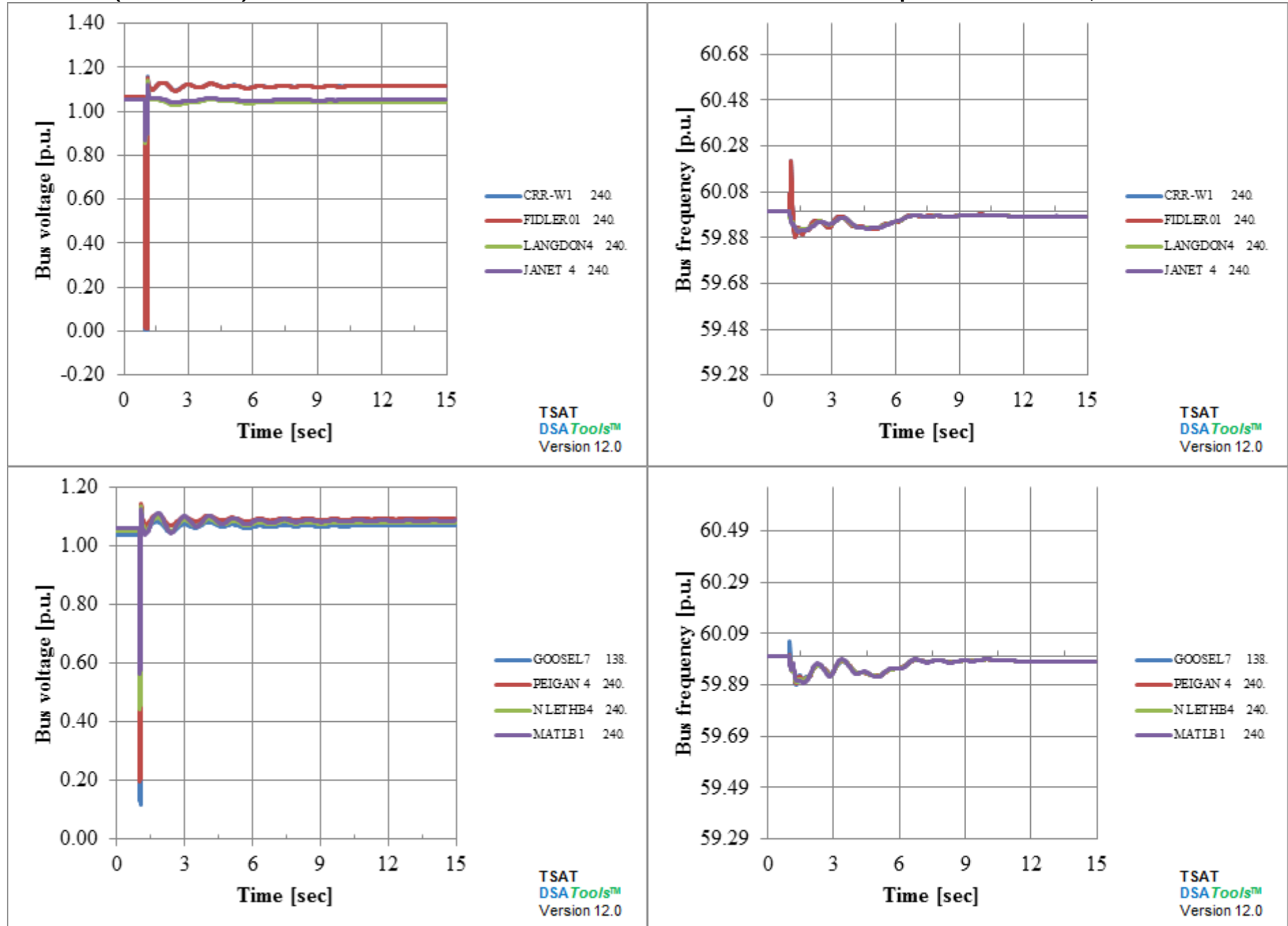
Proposed Connection, Summer Peak 2014





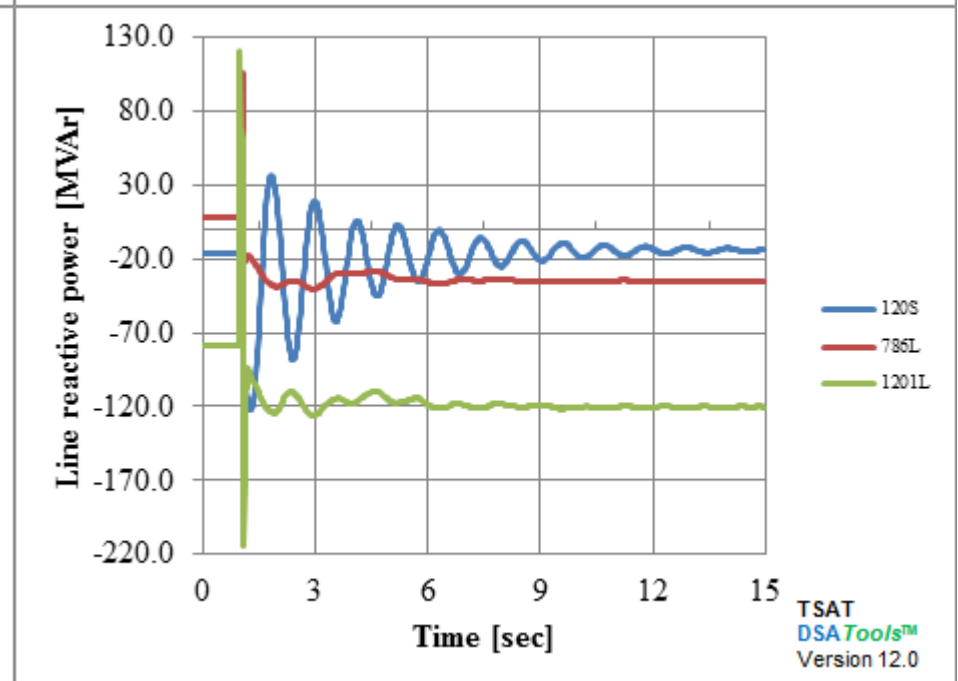
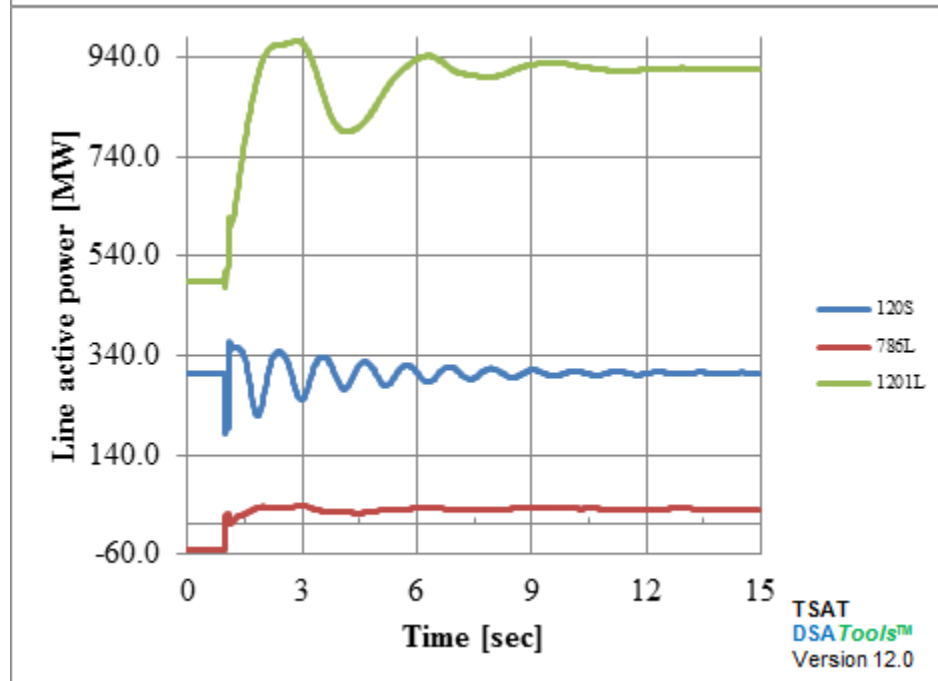
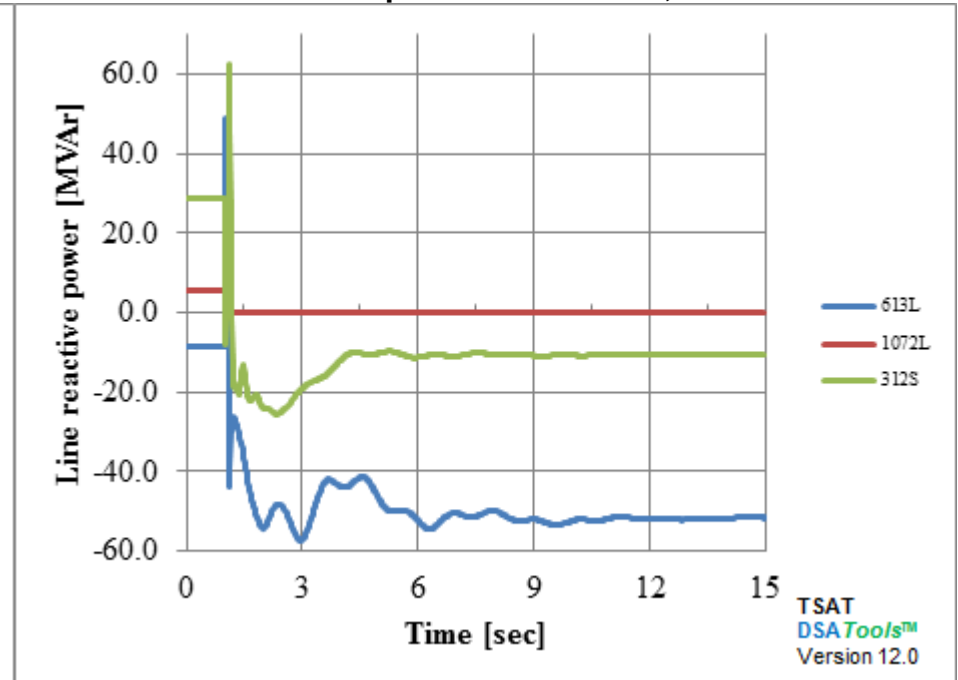
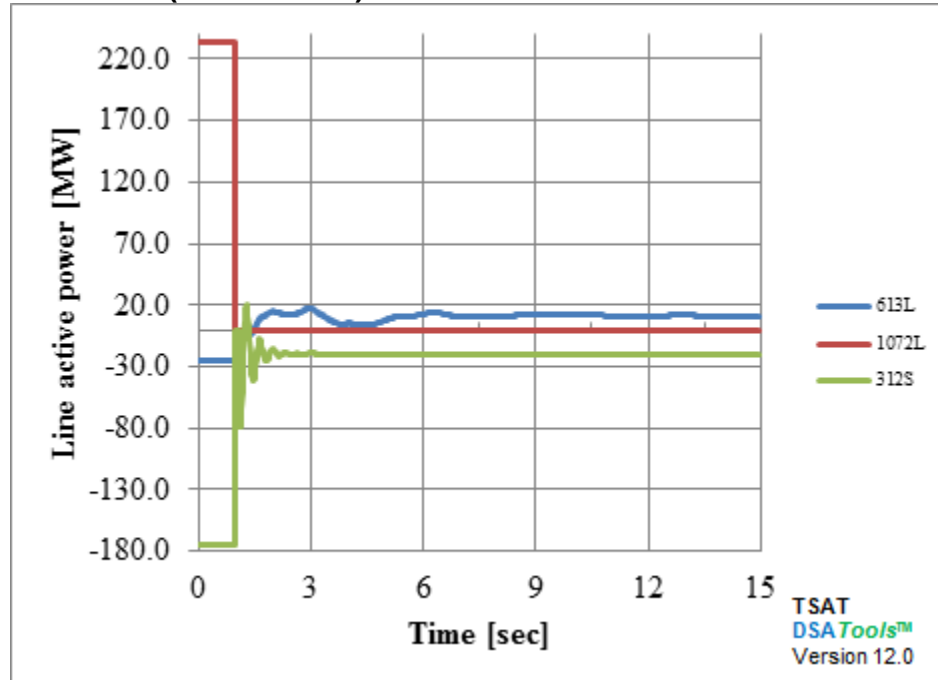
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



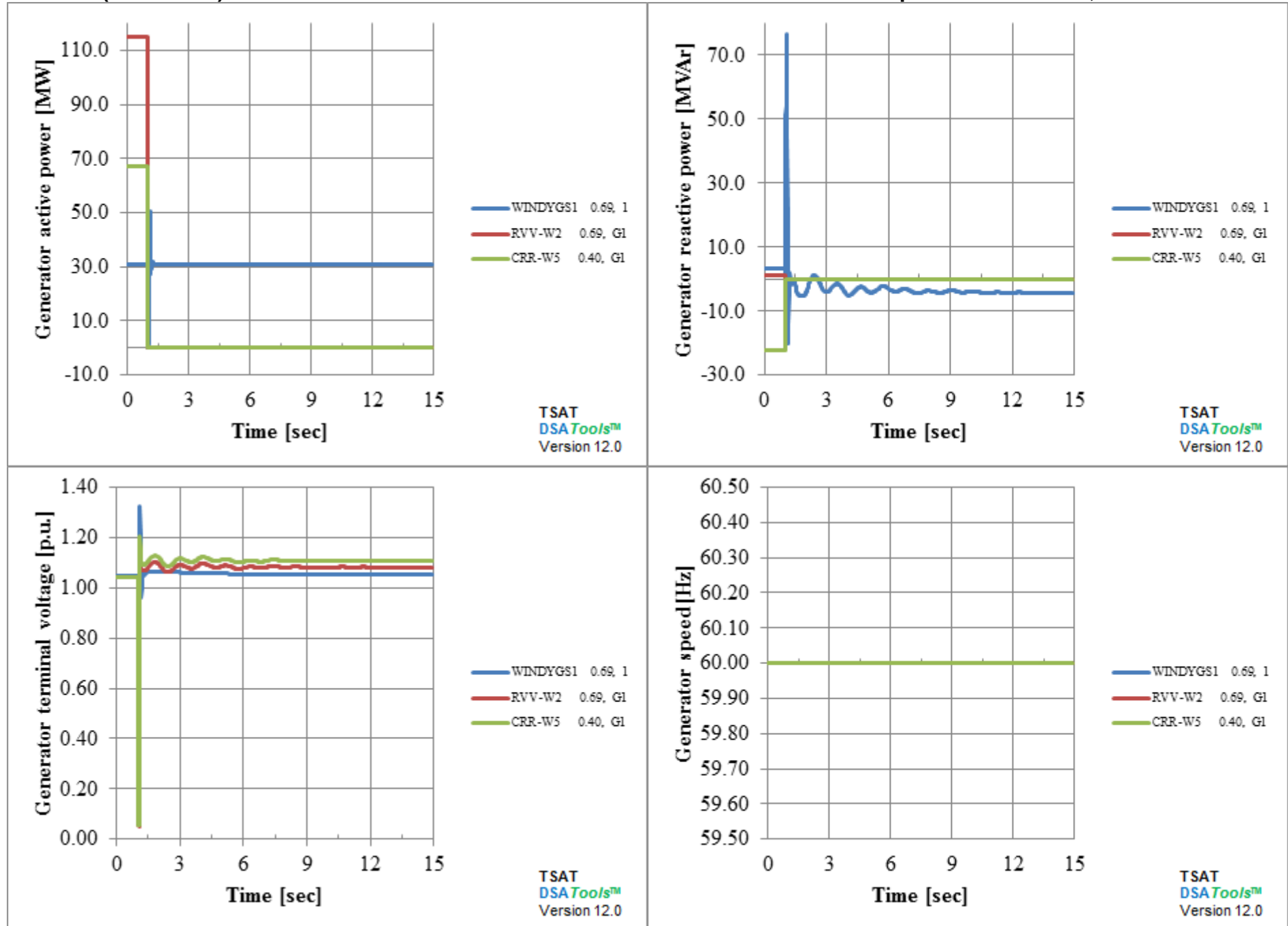
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



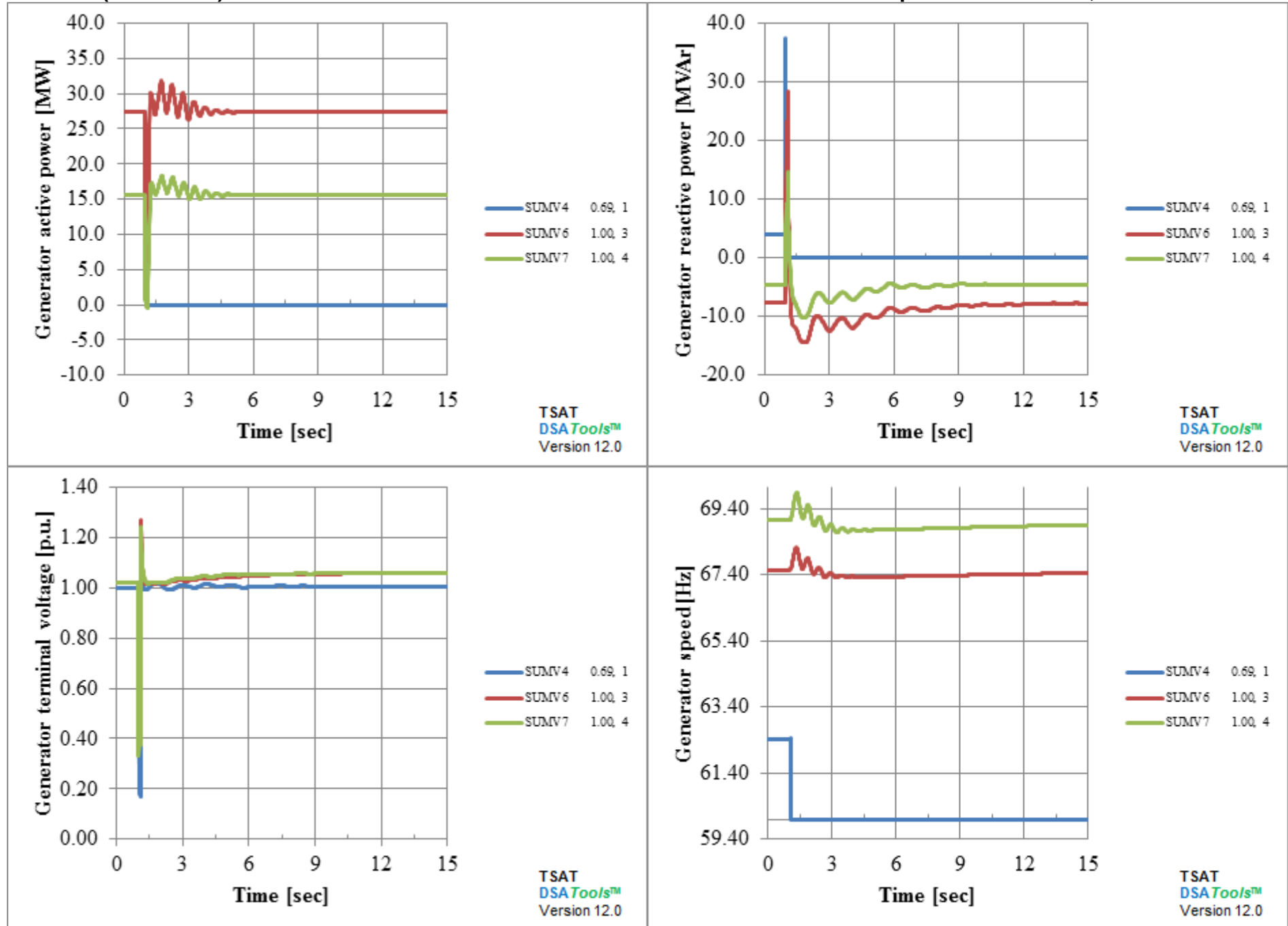
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



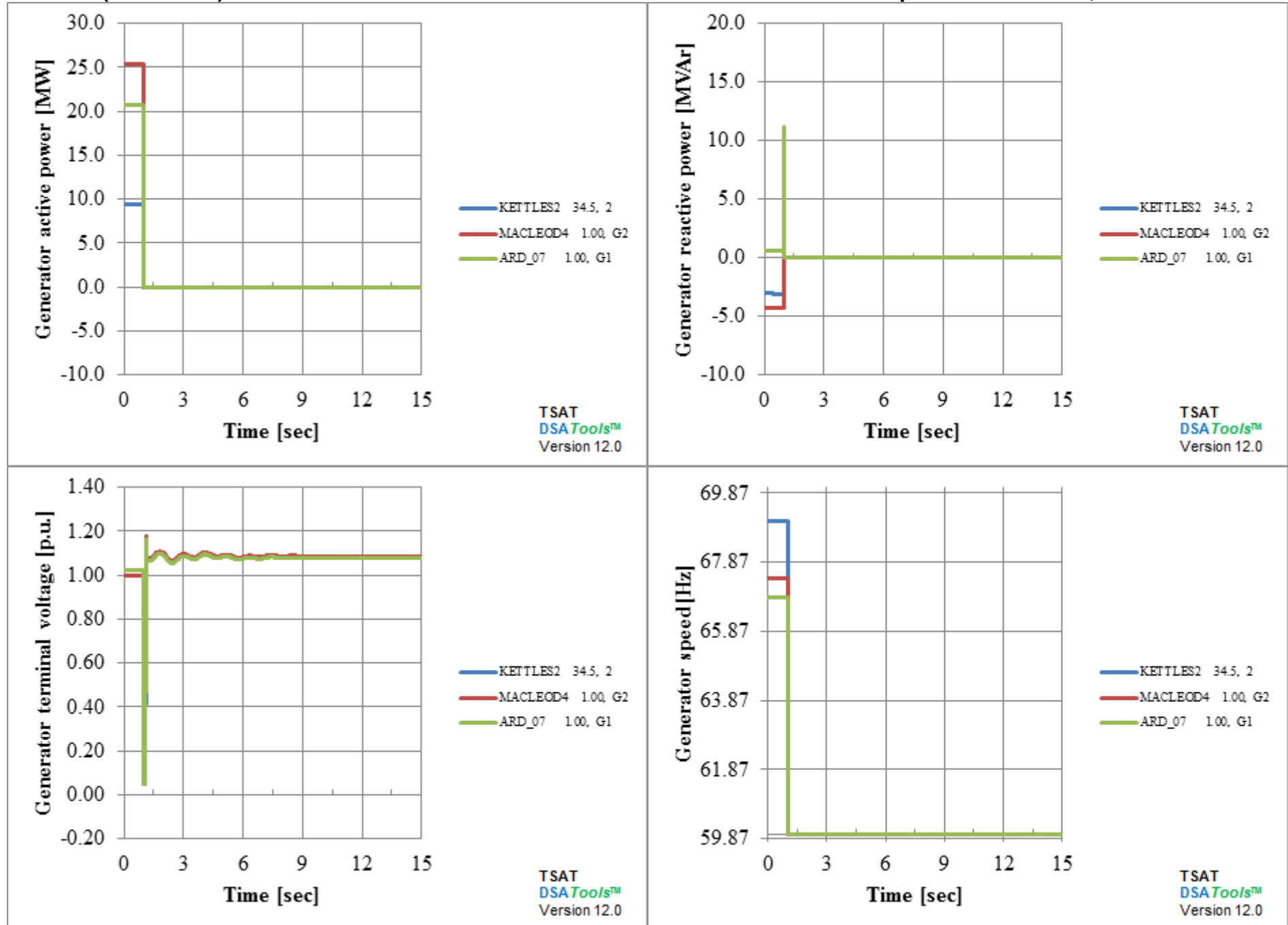
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



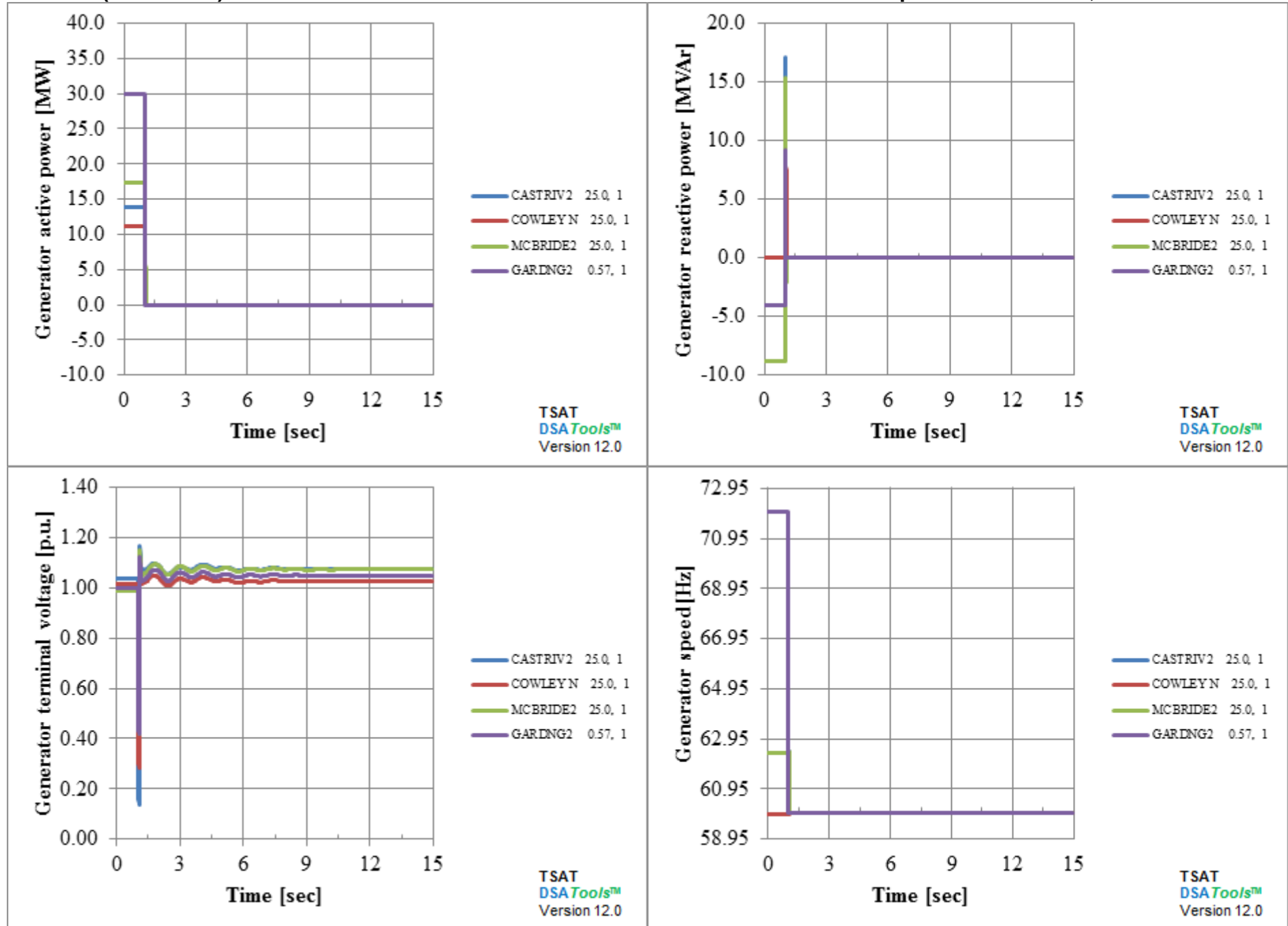
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



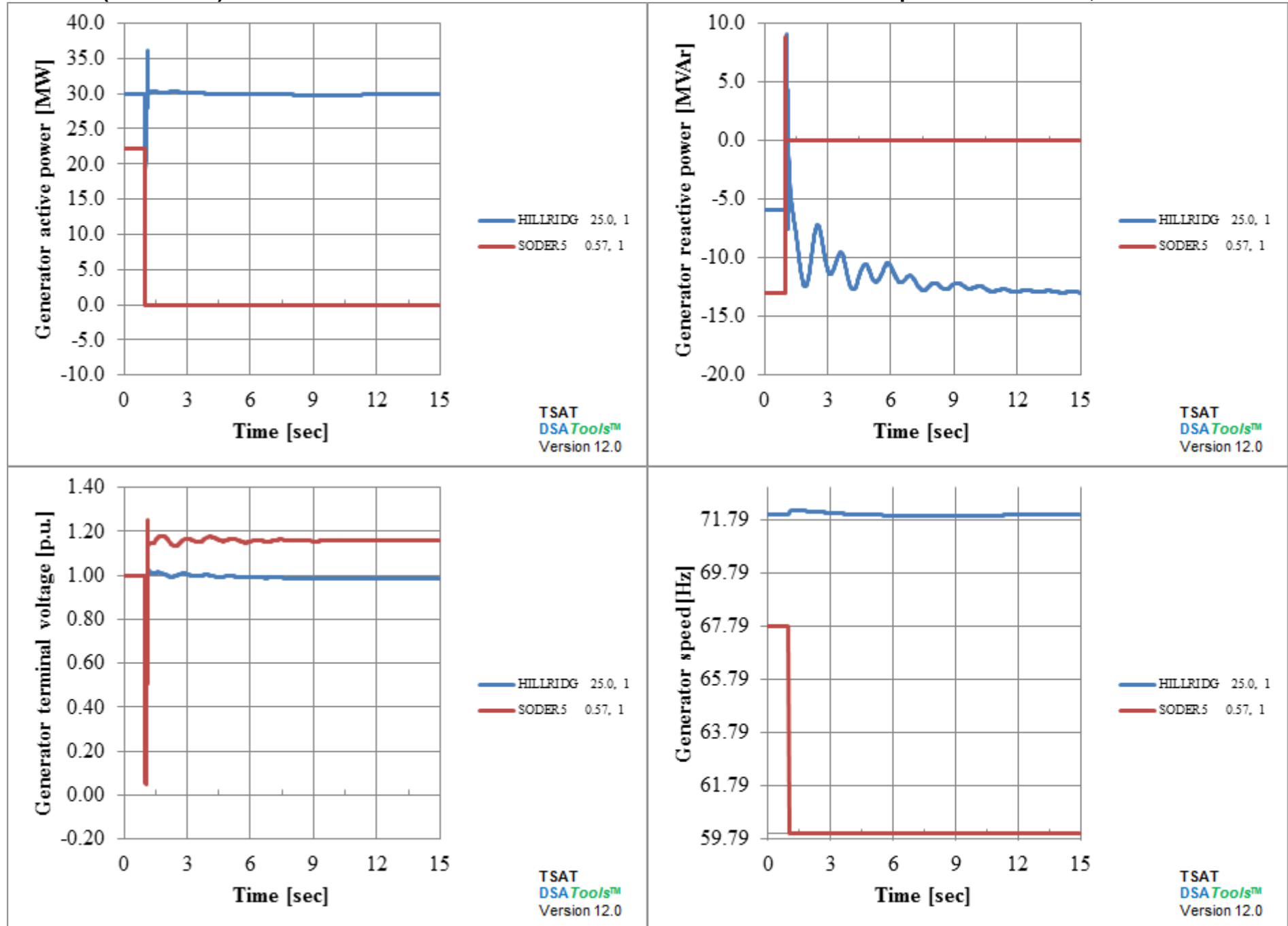
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



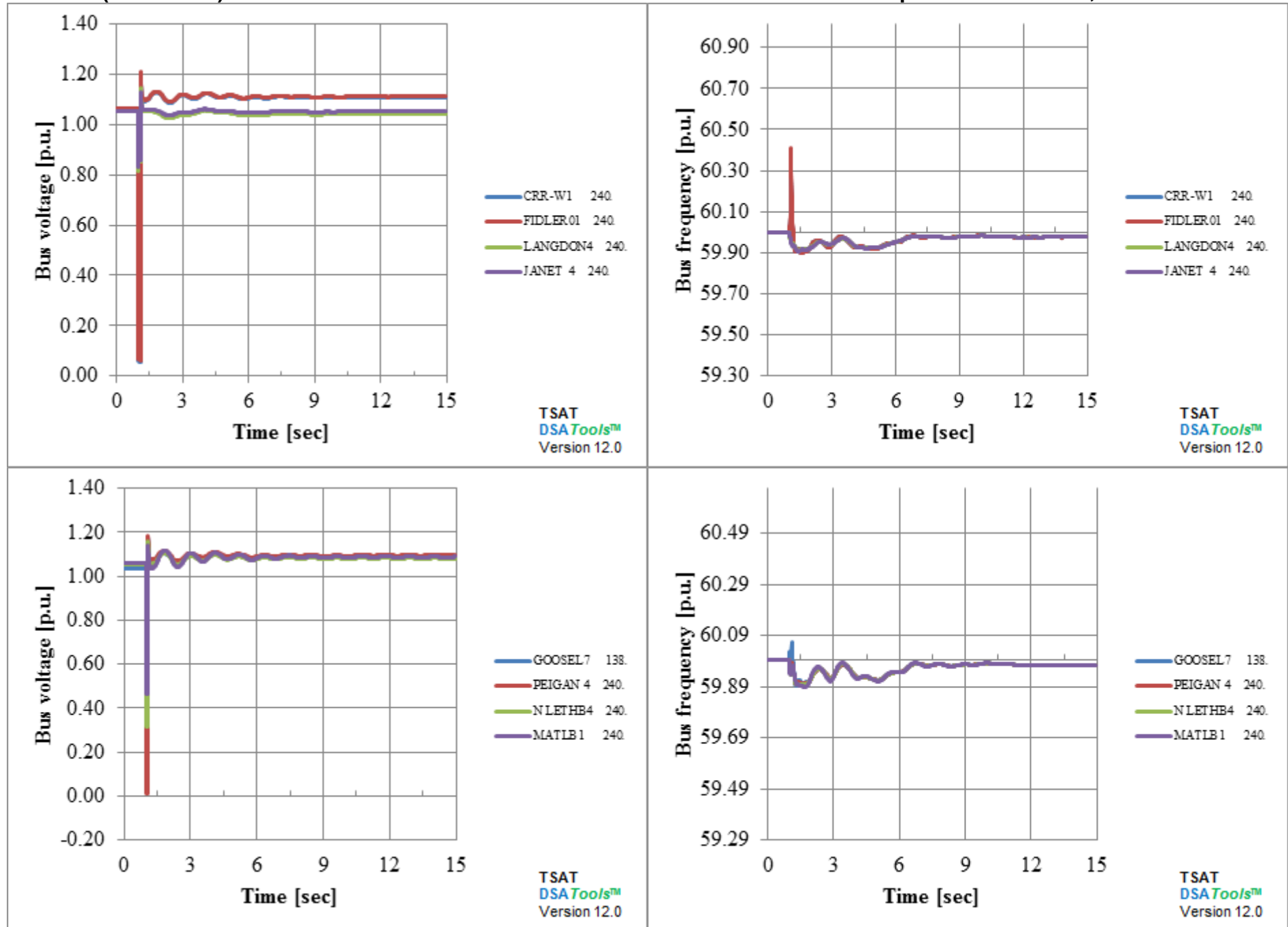
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



6 -- 956L (59S - 103S) NEAR 59S

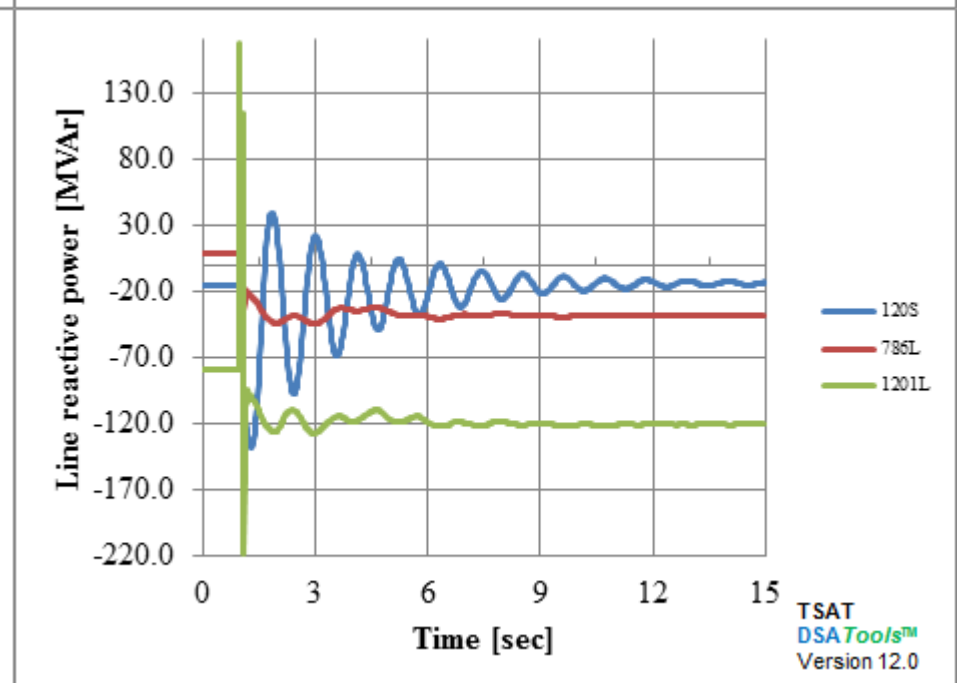
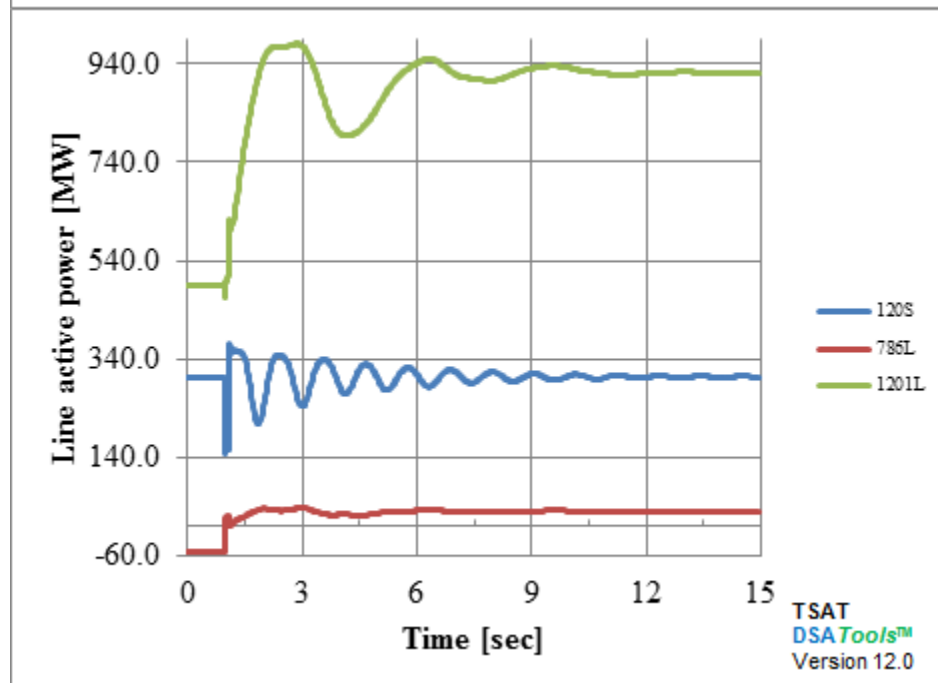
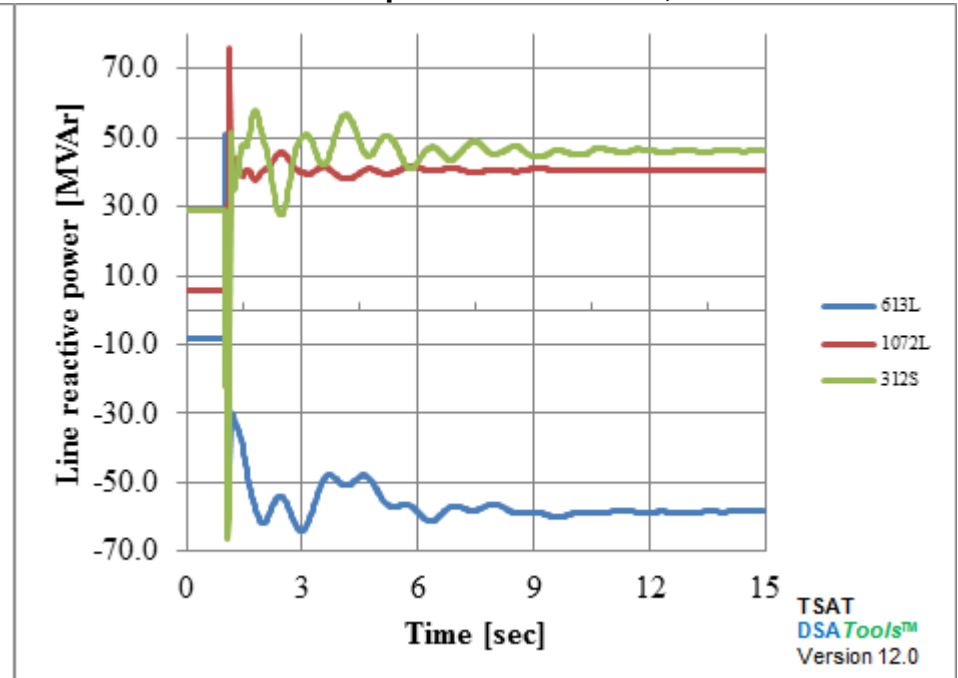
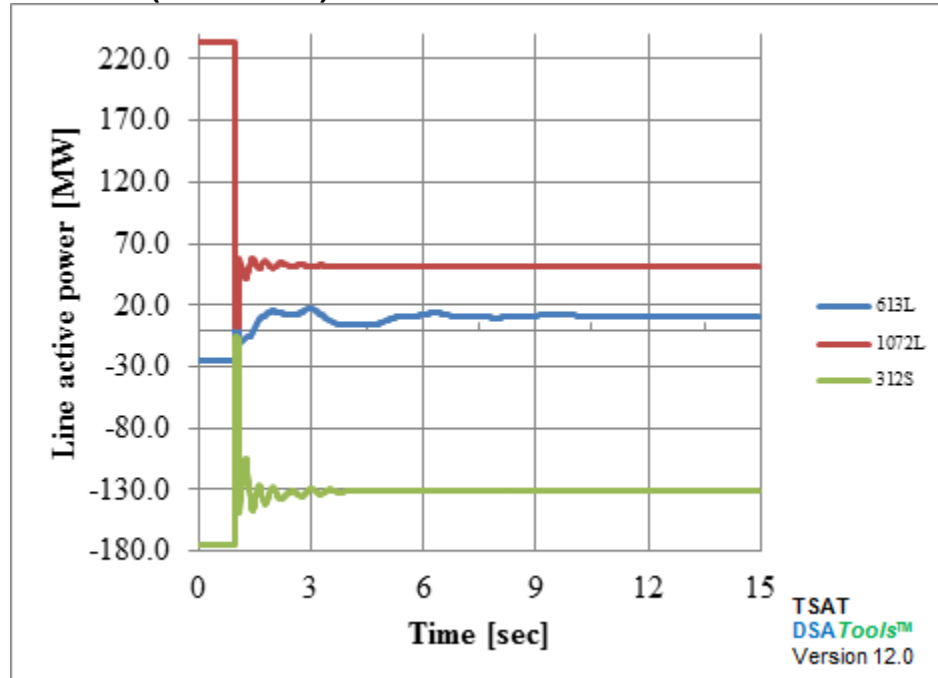
Proposed Connection, Summer Peak 2014





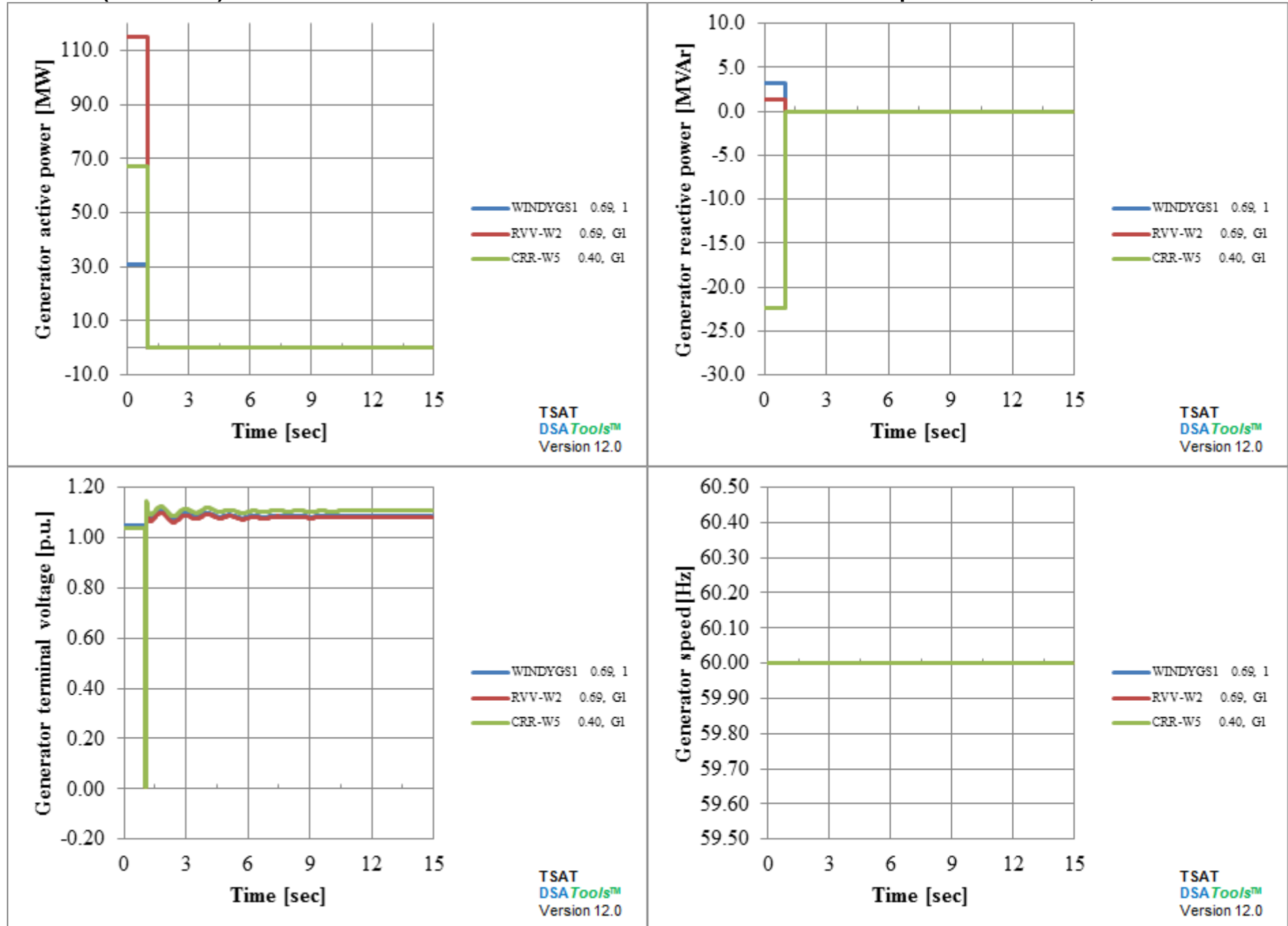
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



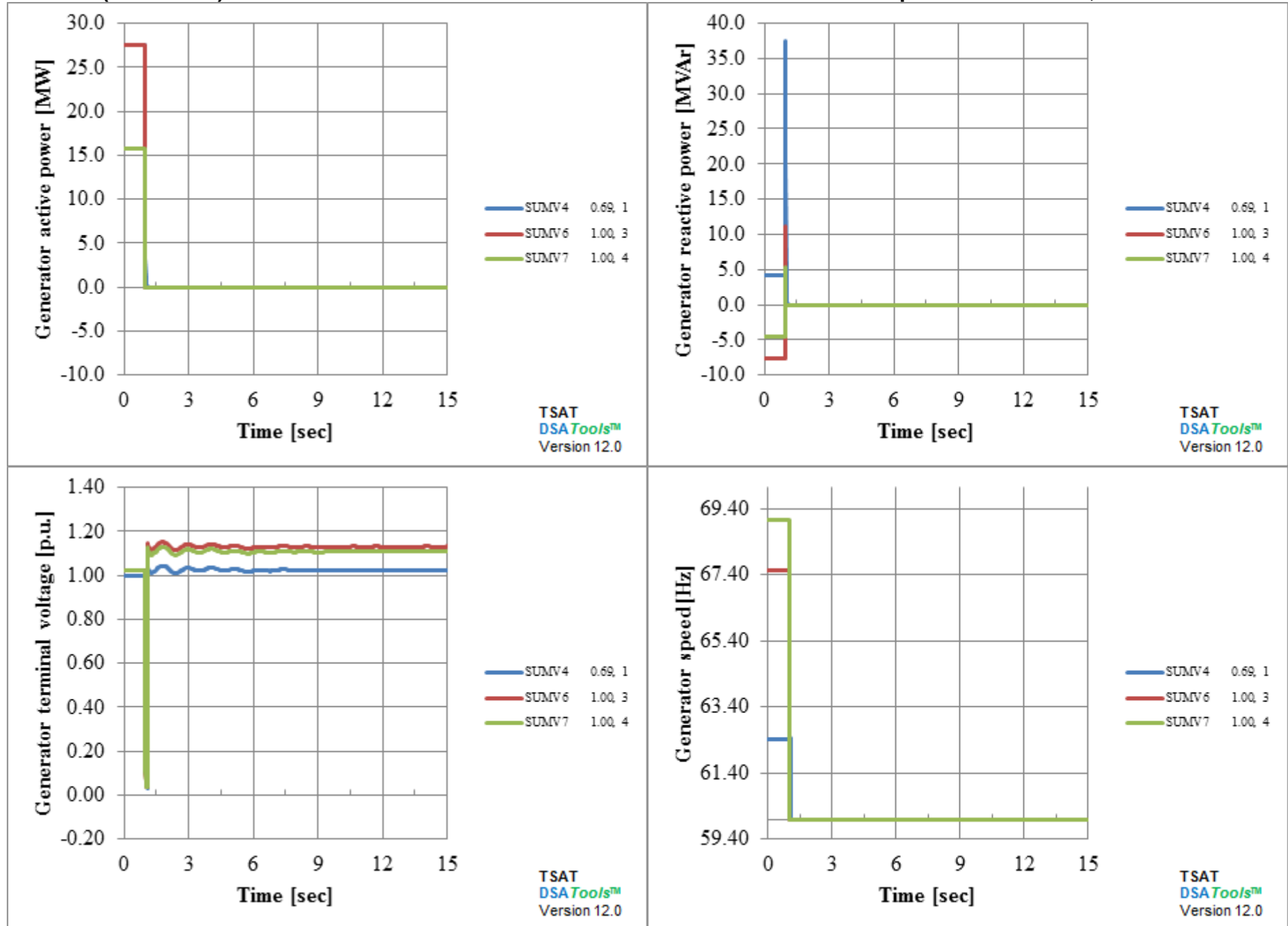
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



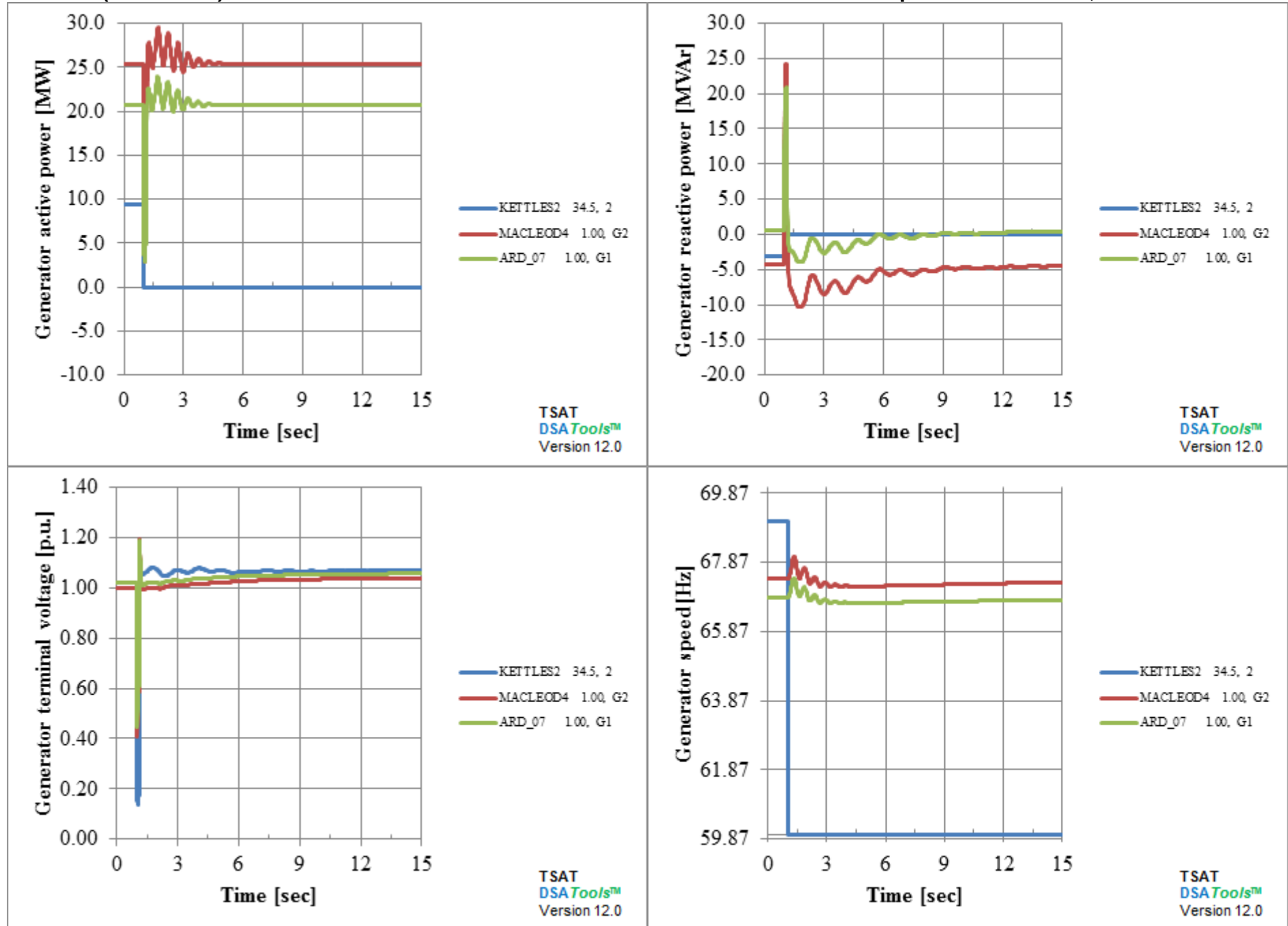
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



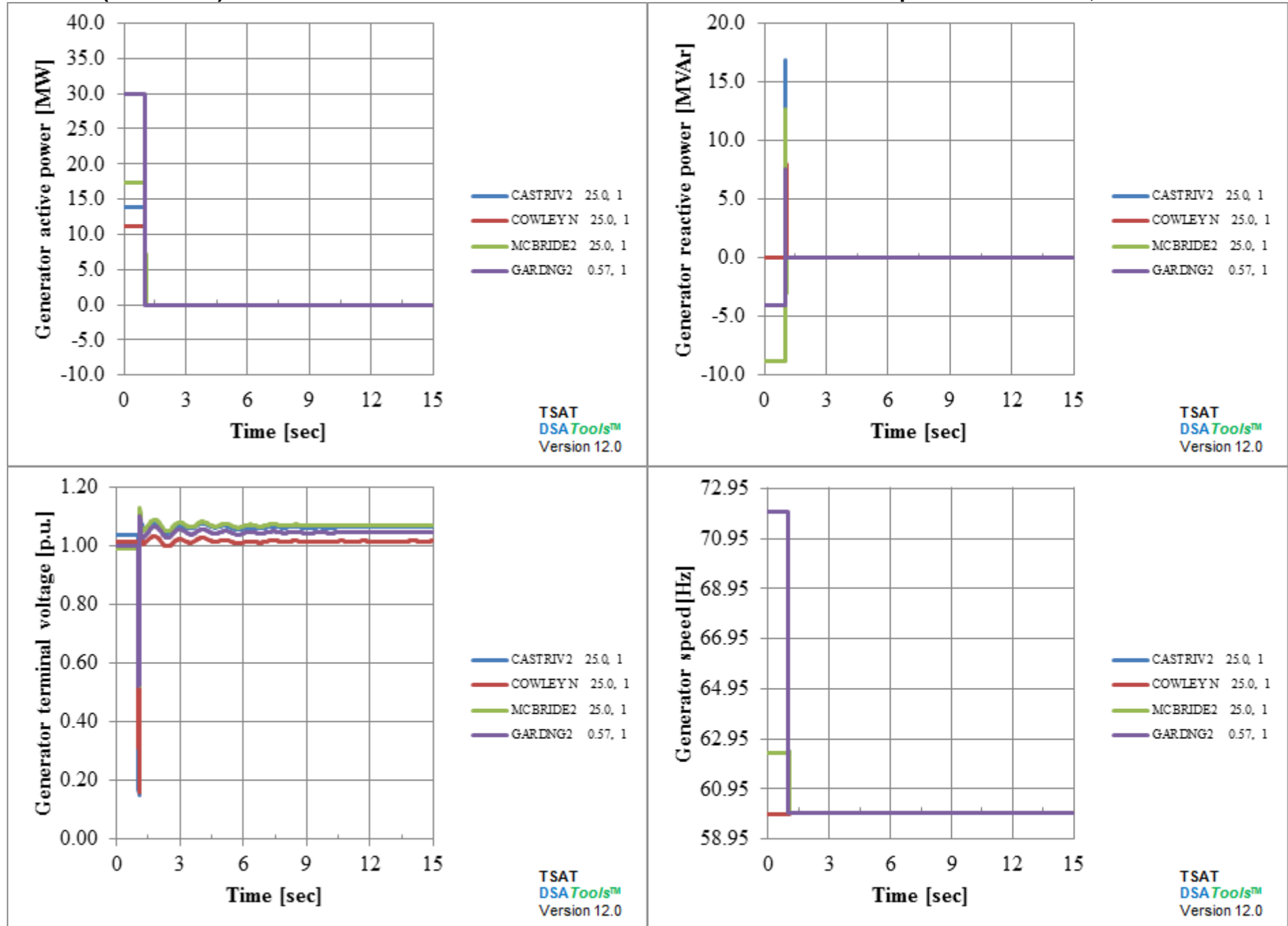
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



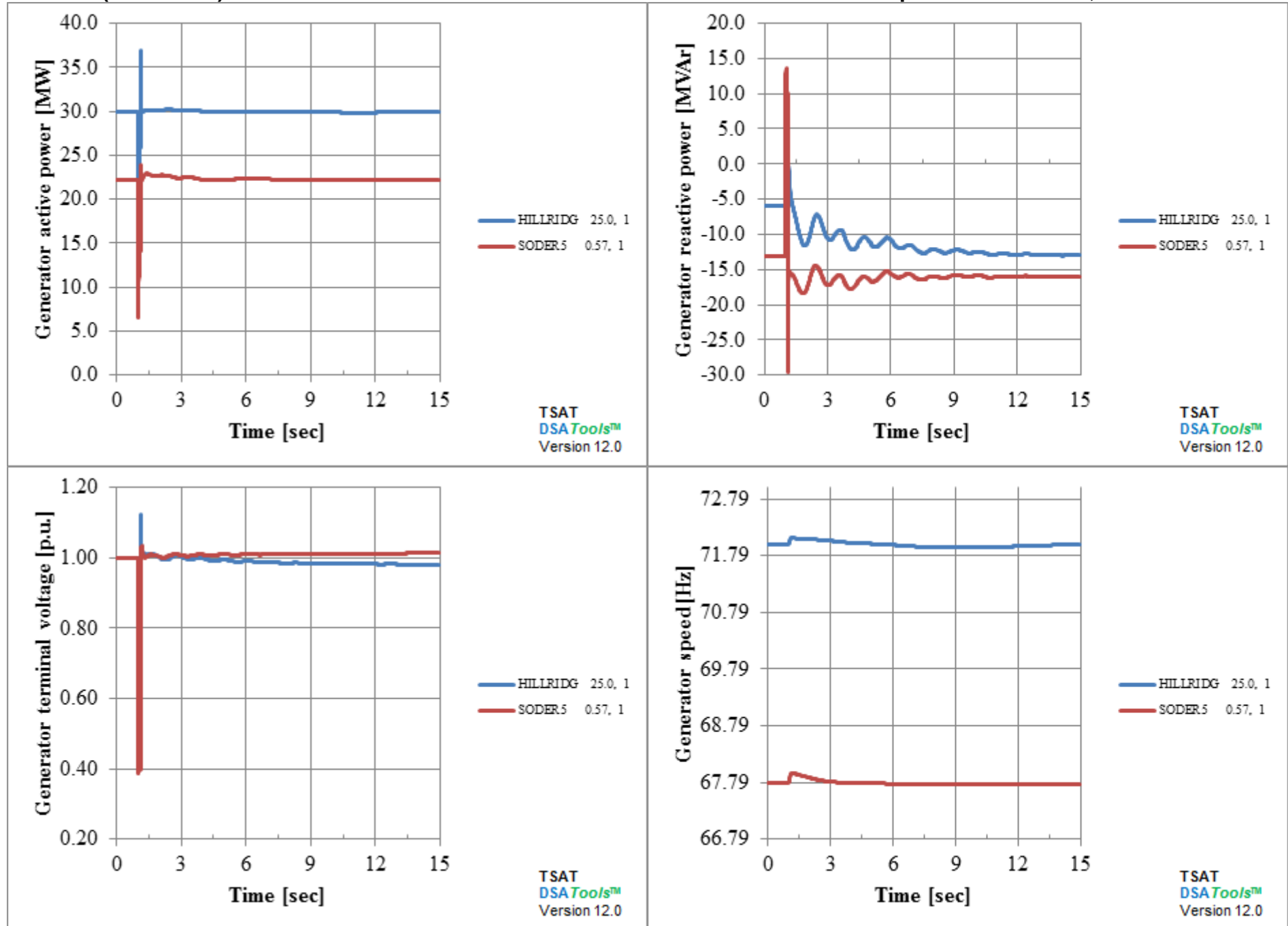
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



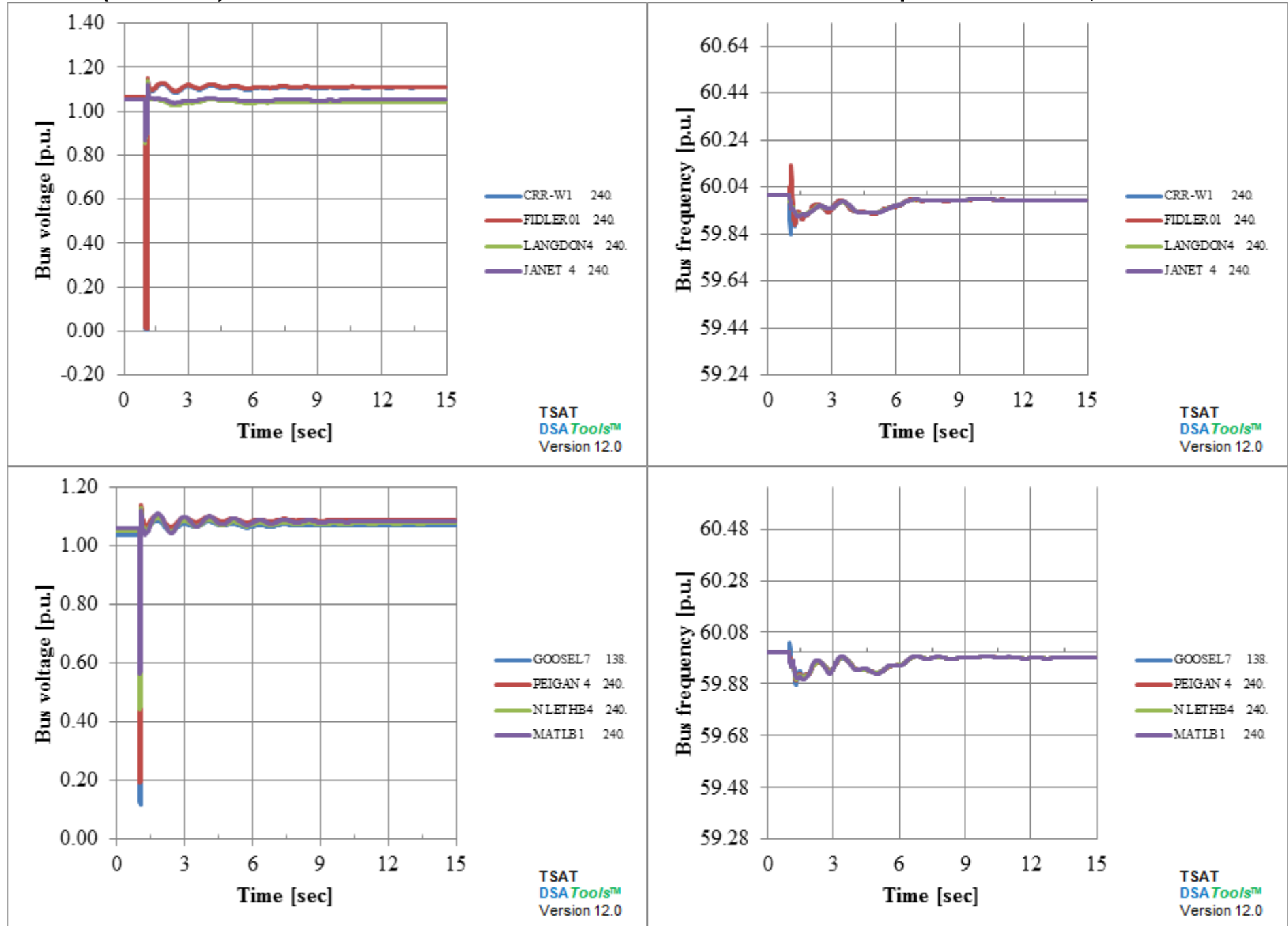
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



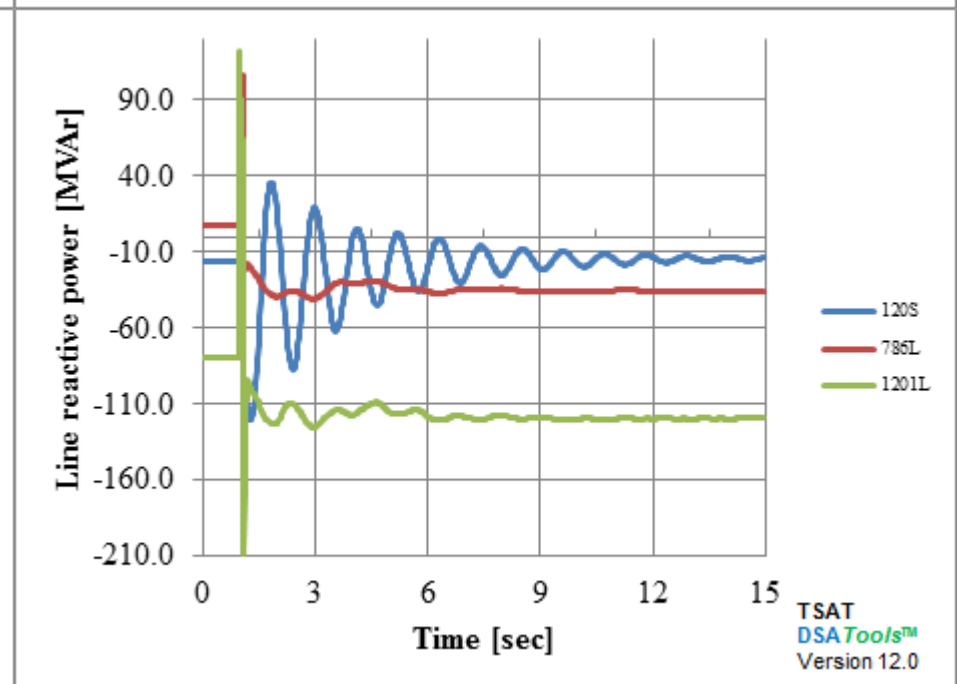
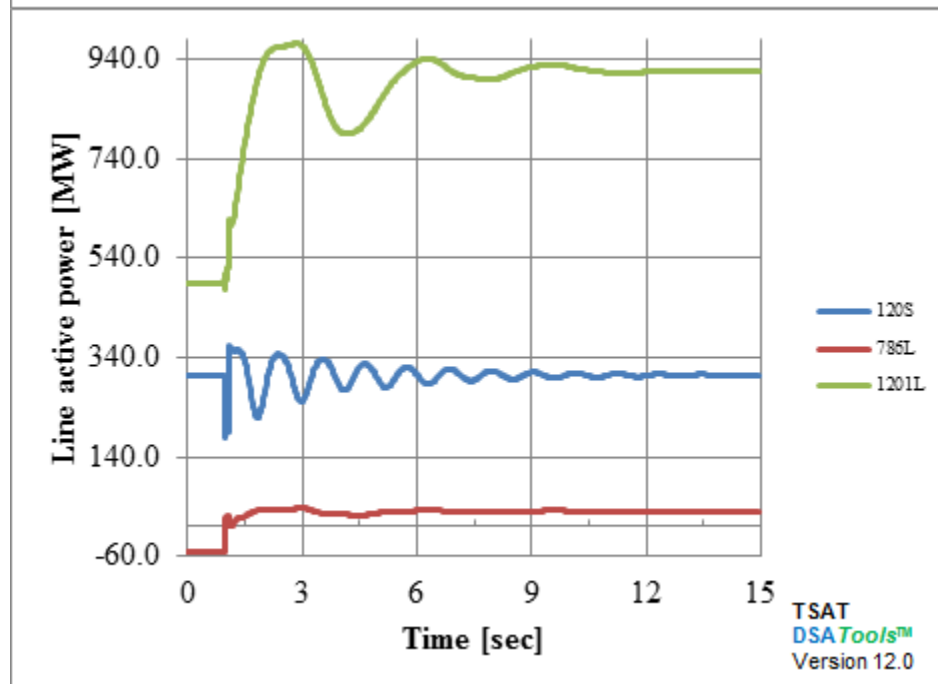
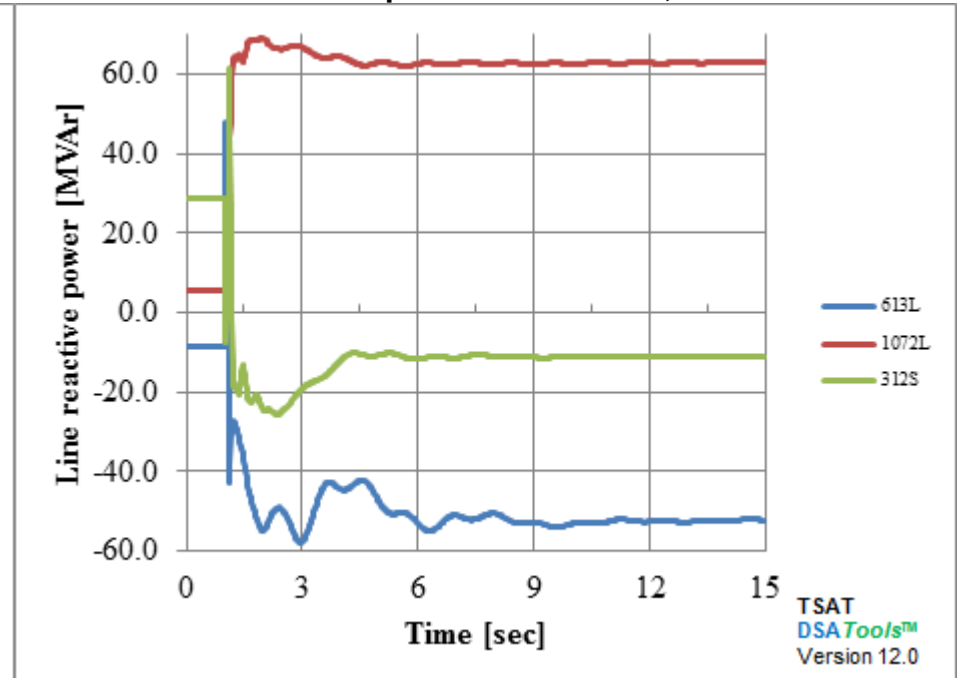
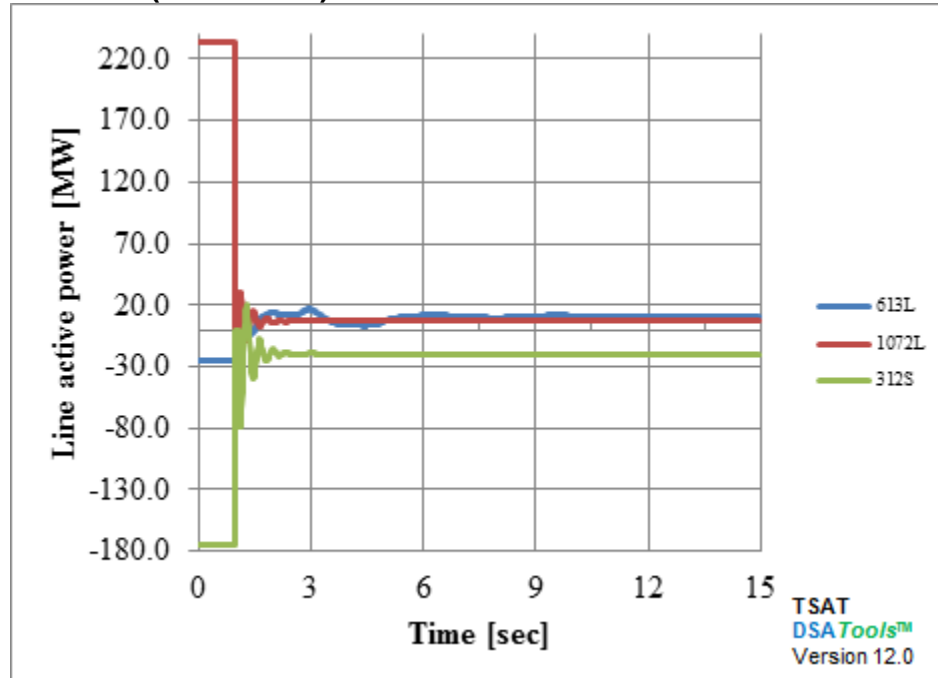
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



7 -- 956L (59S - 103S) NEAR 103S

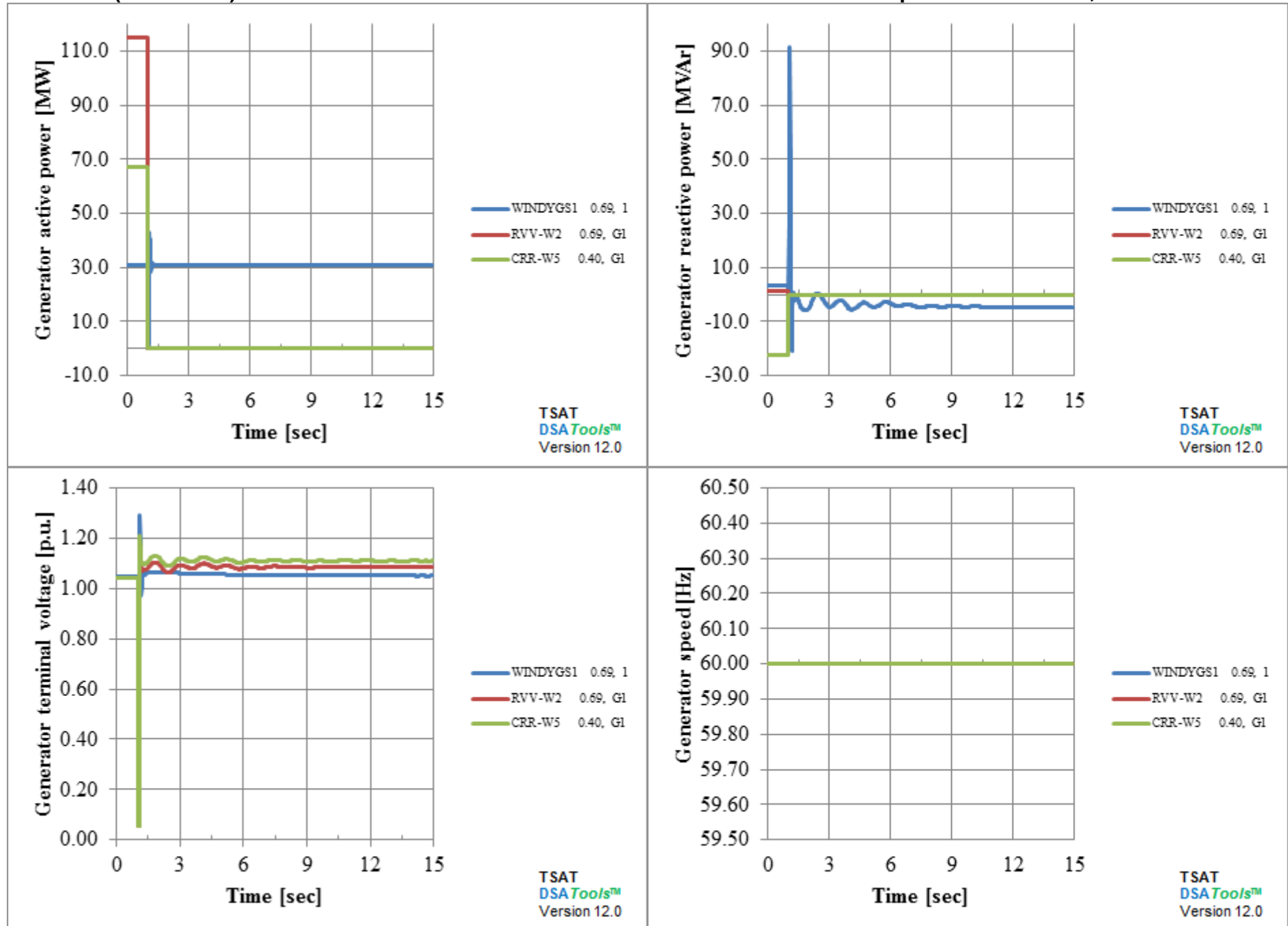
Proposed Connection, Summer Peak 2014





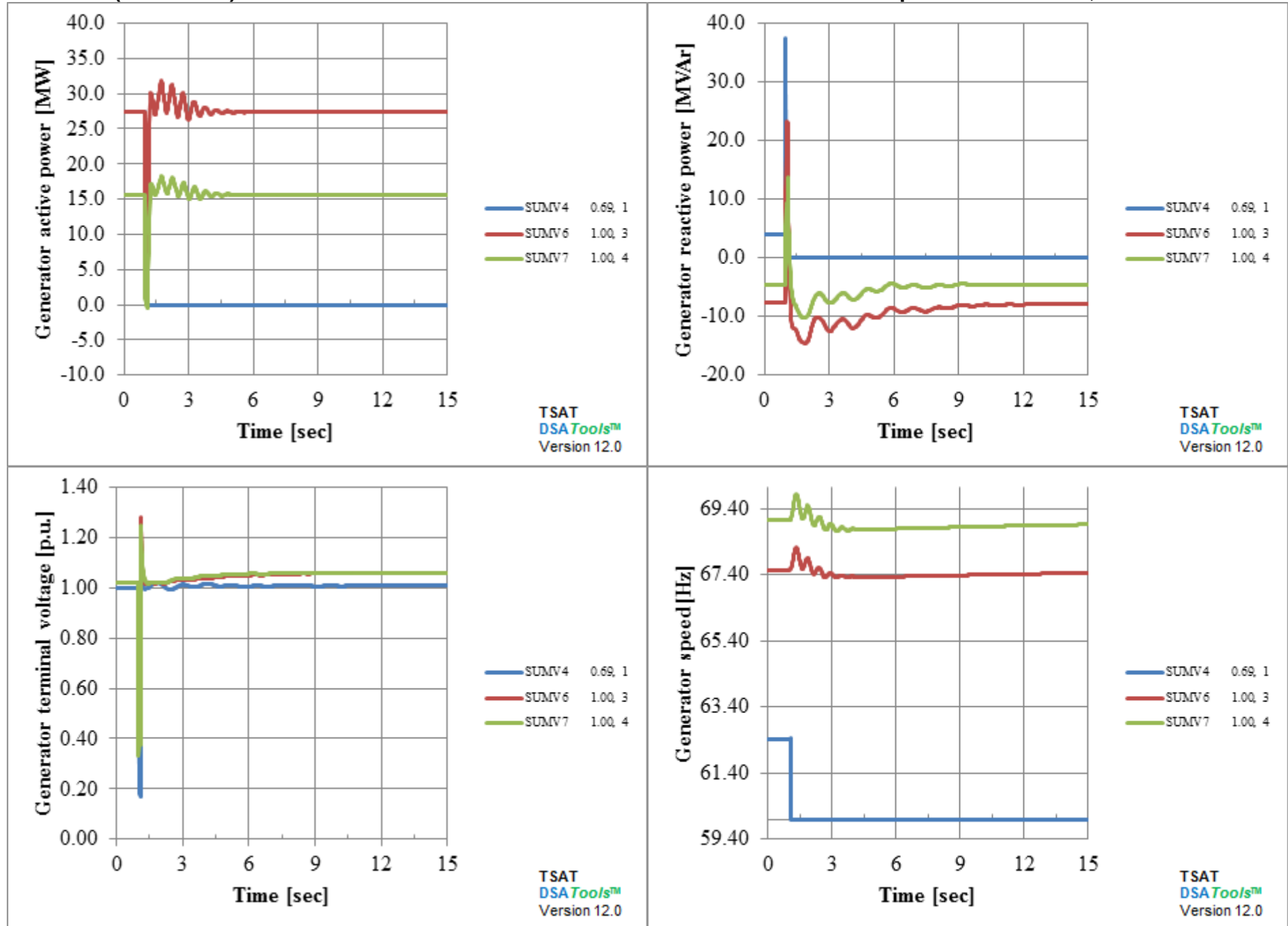
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



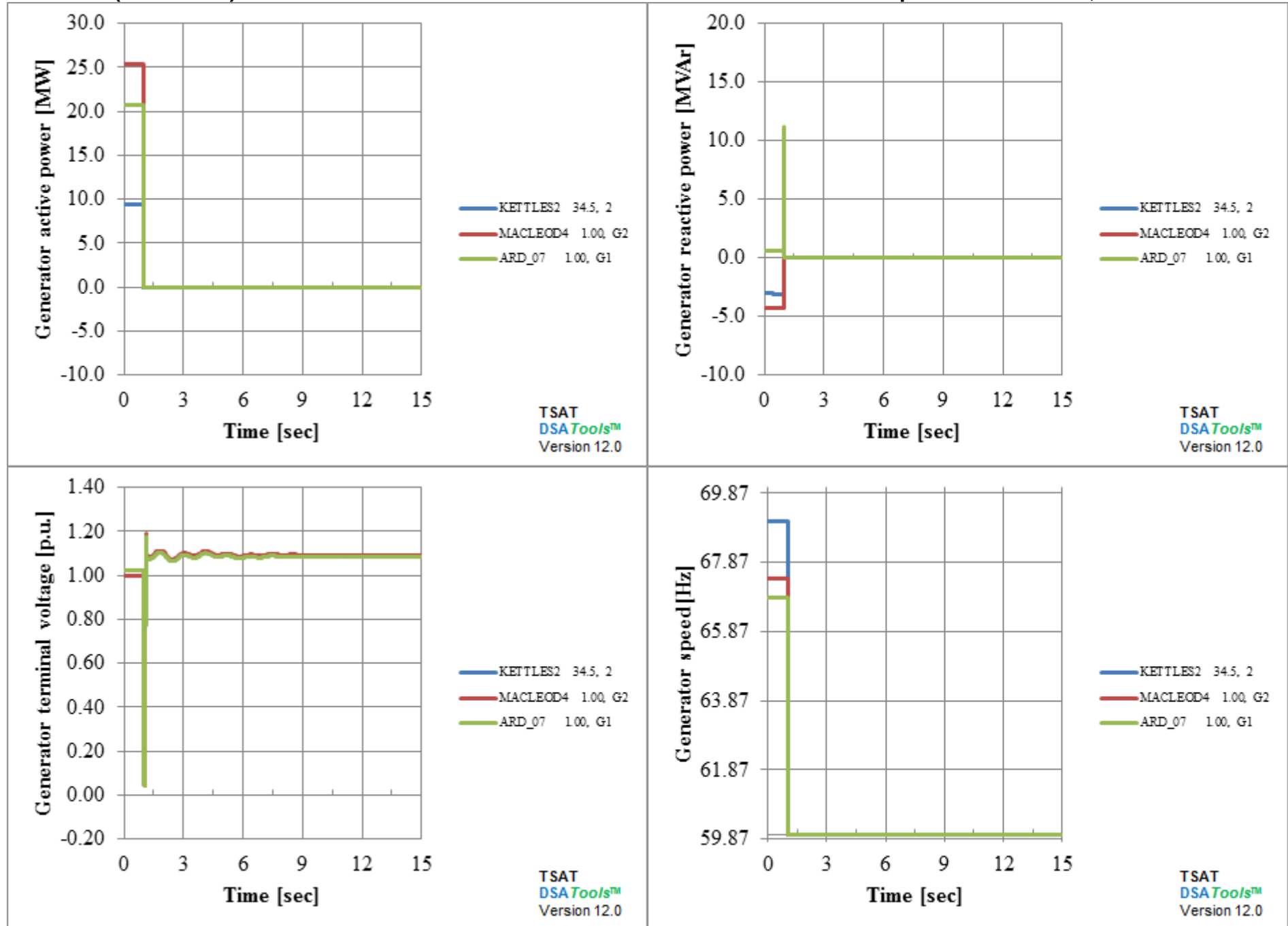
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



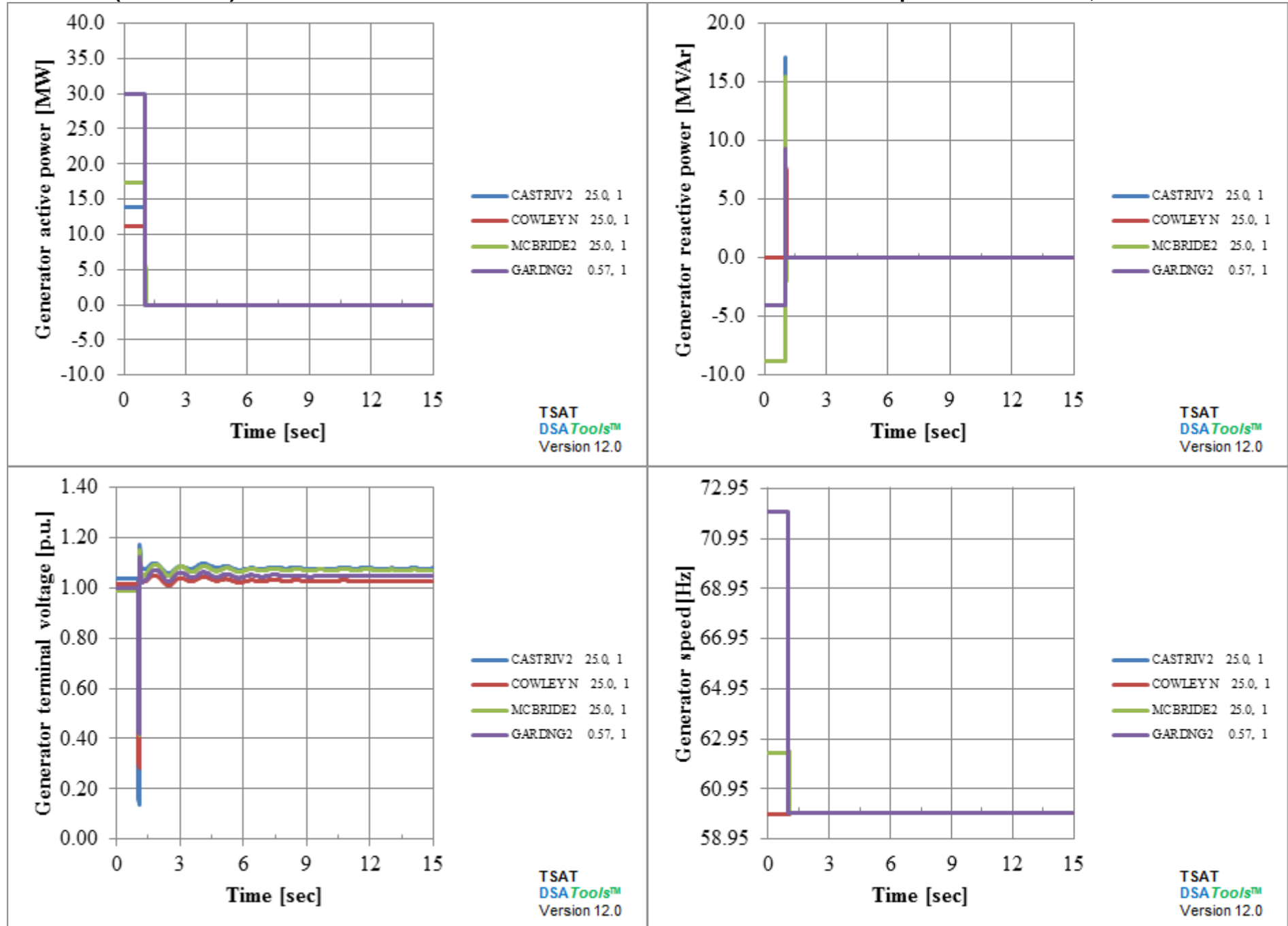
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



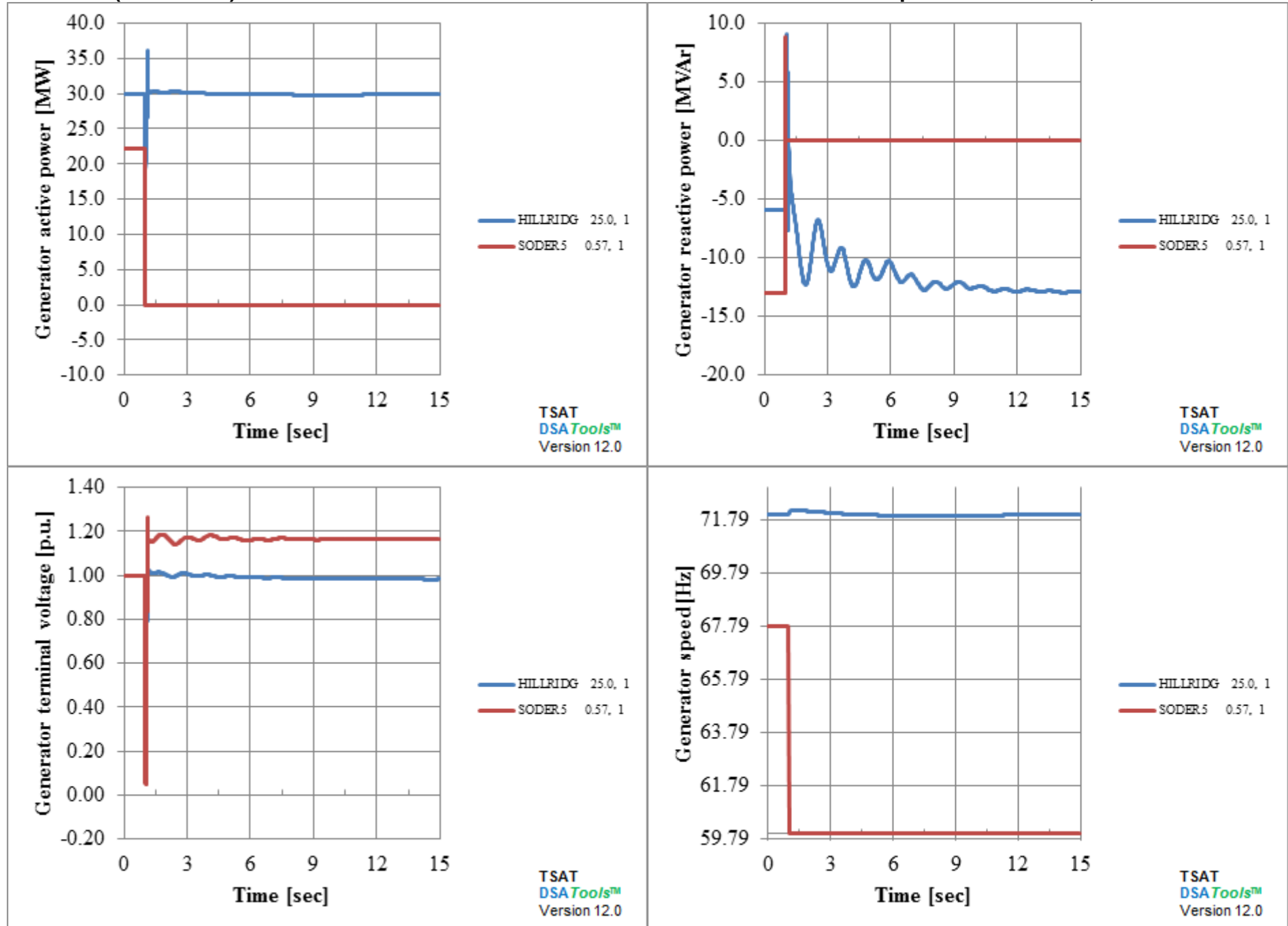
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



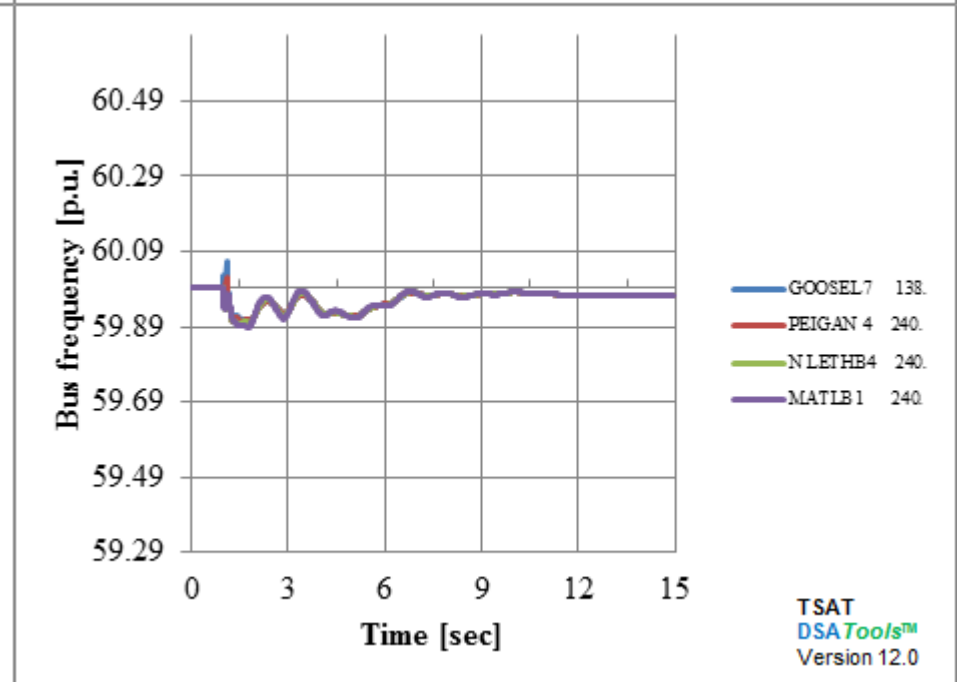
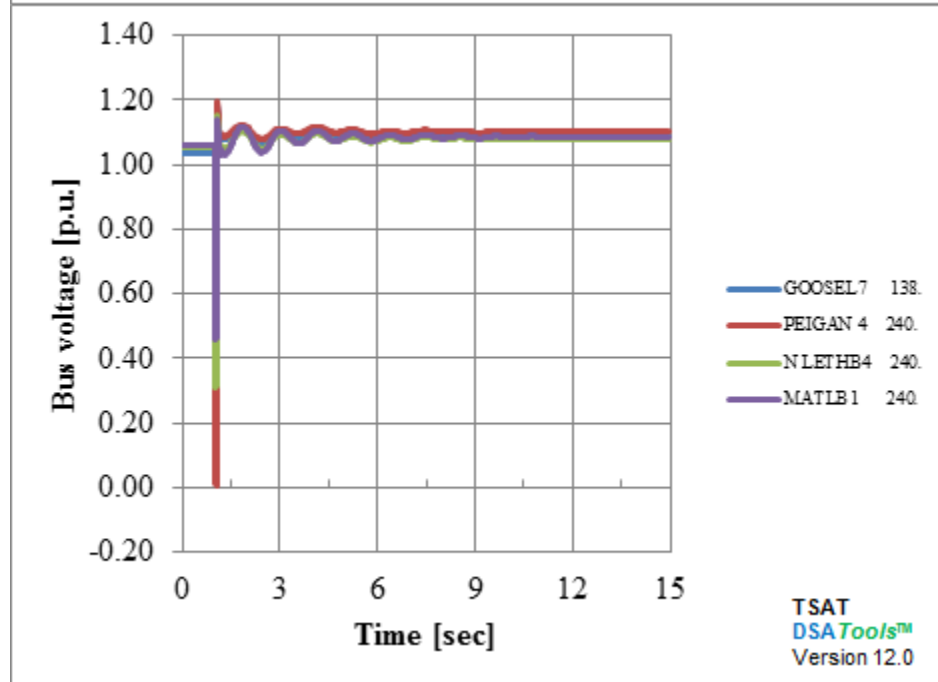
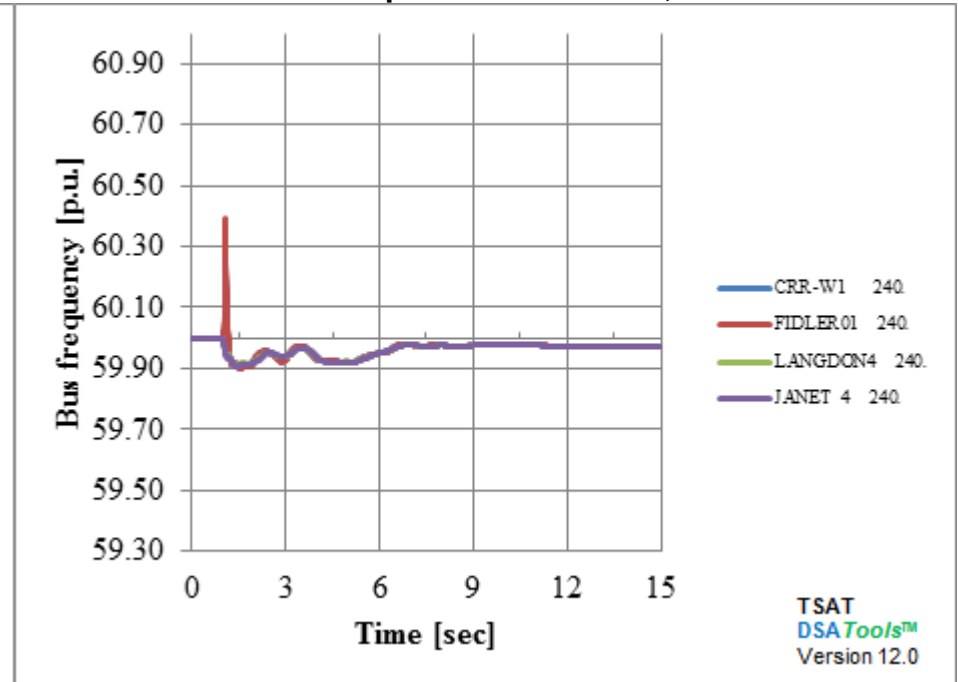
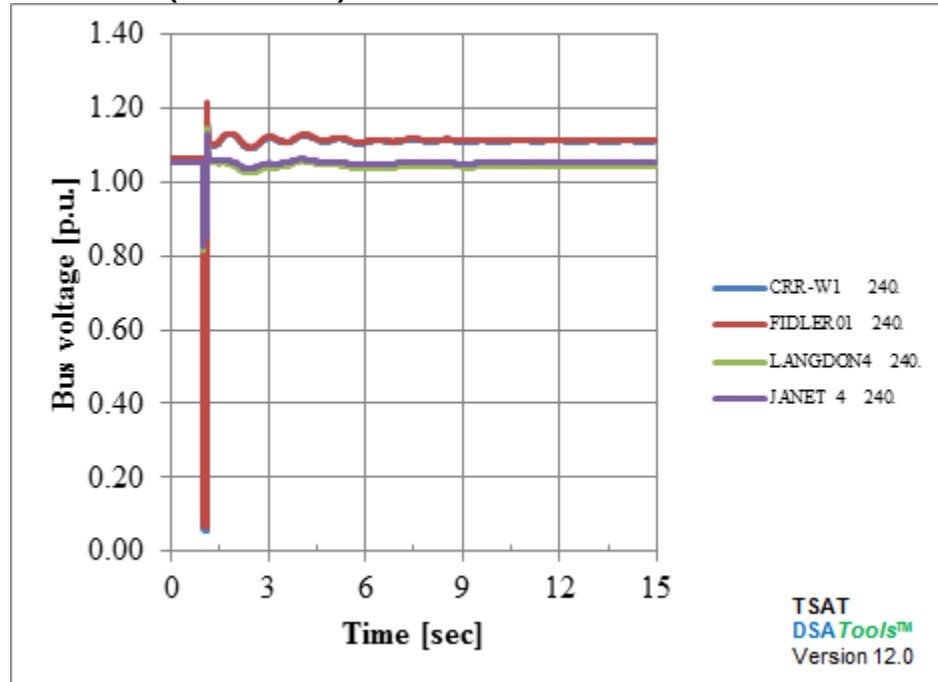
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



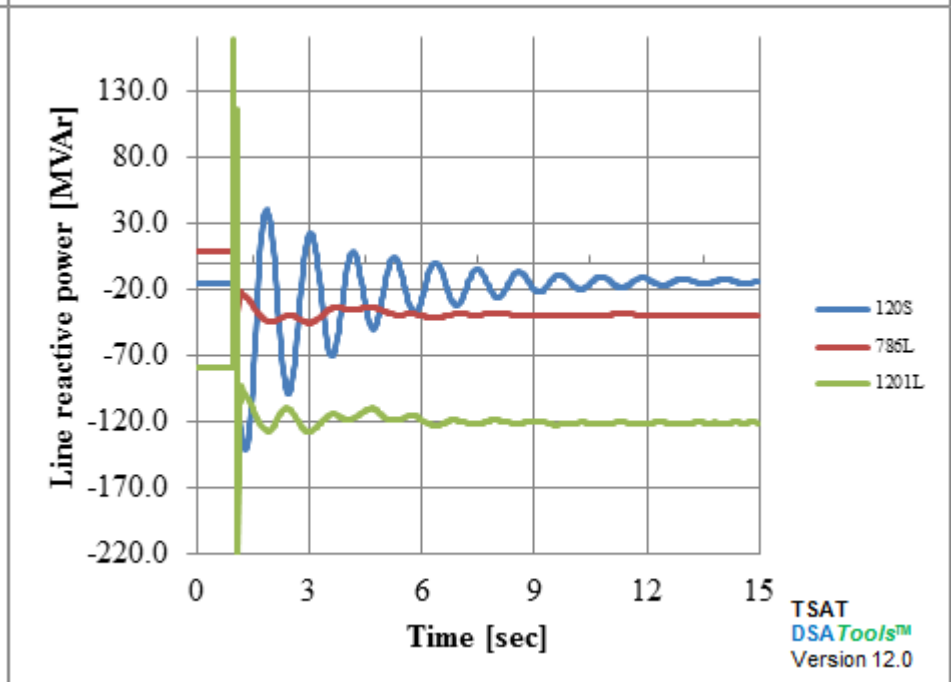
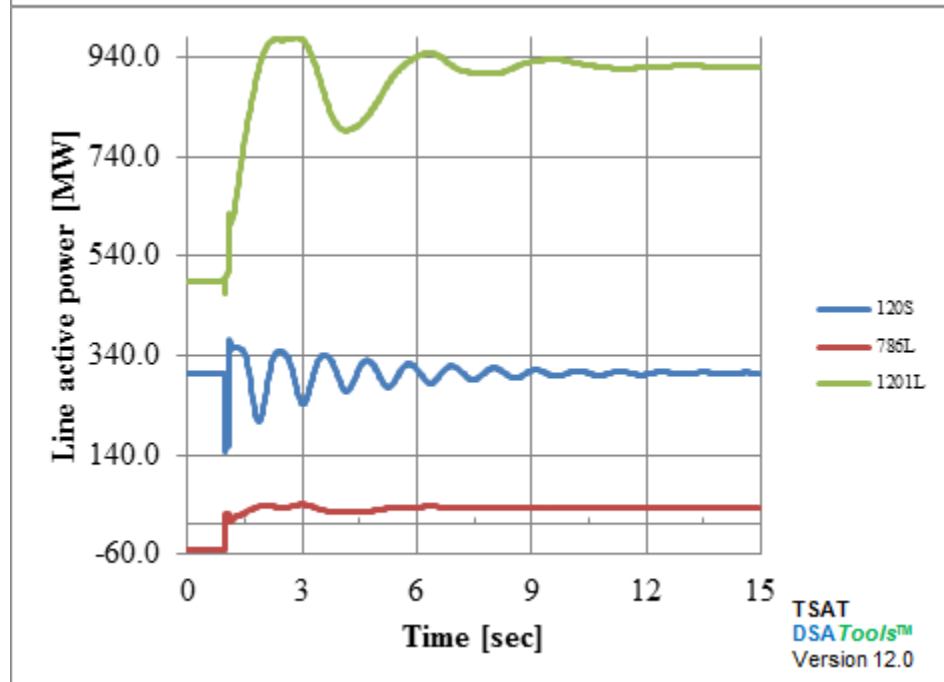
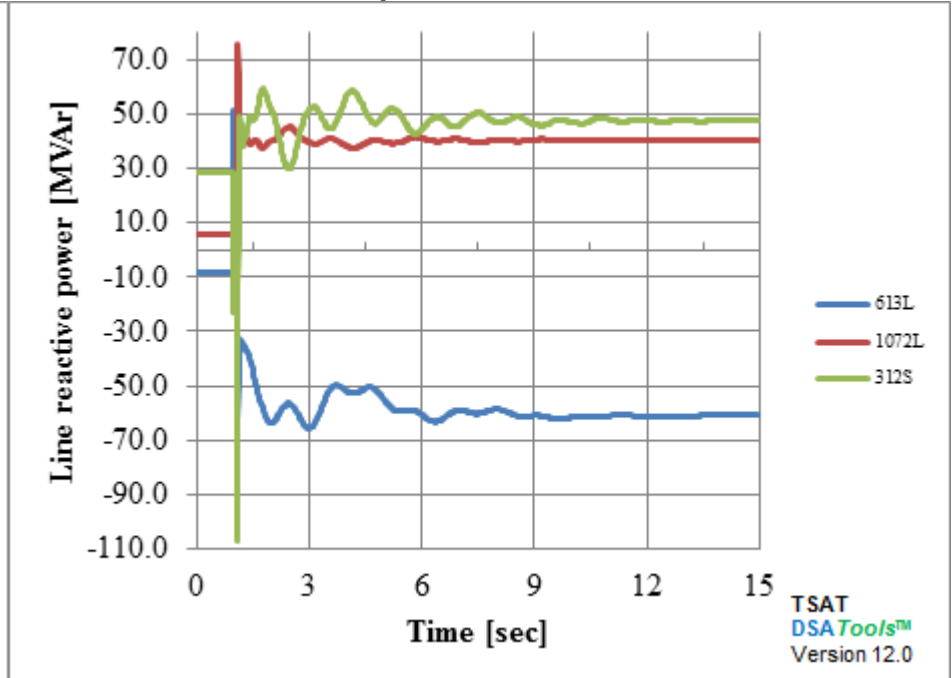
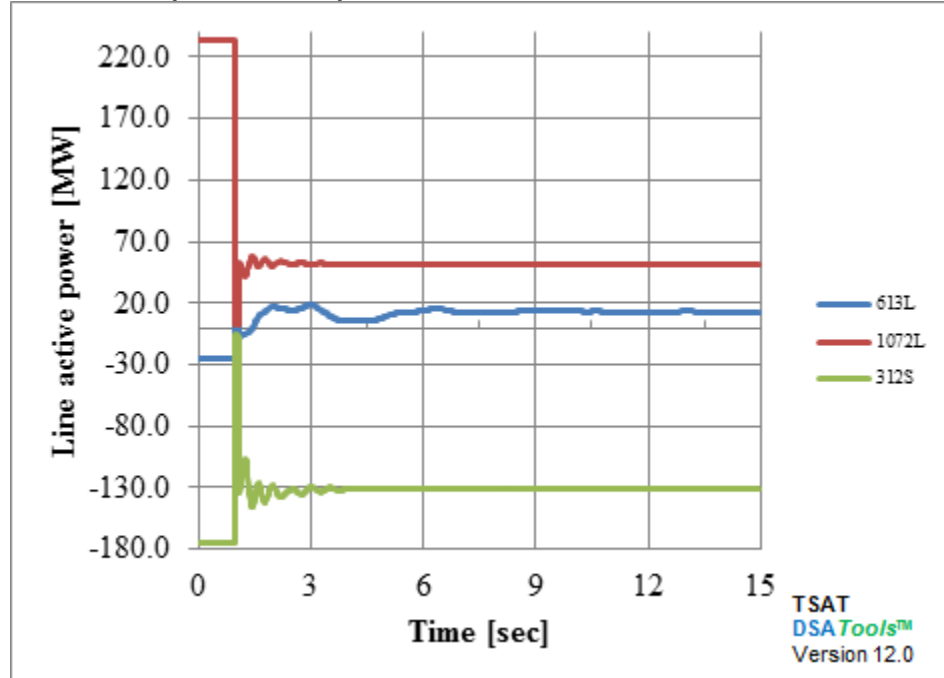
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



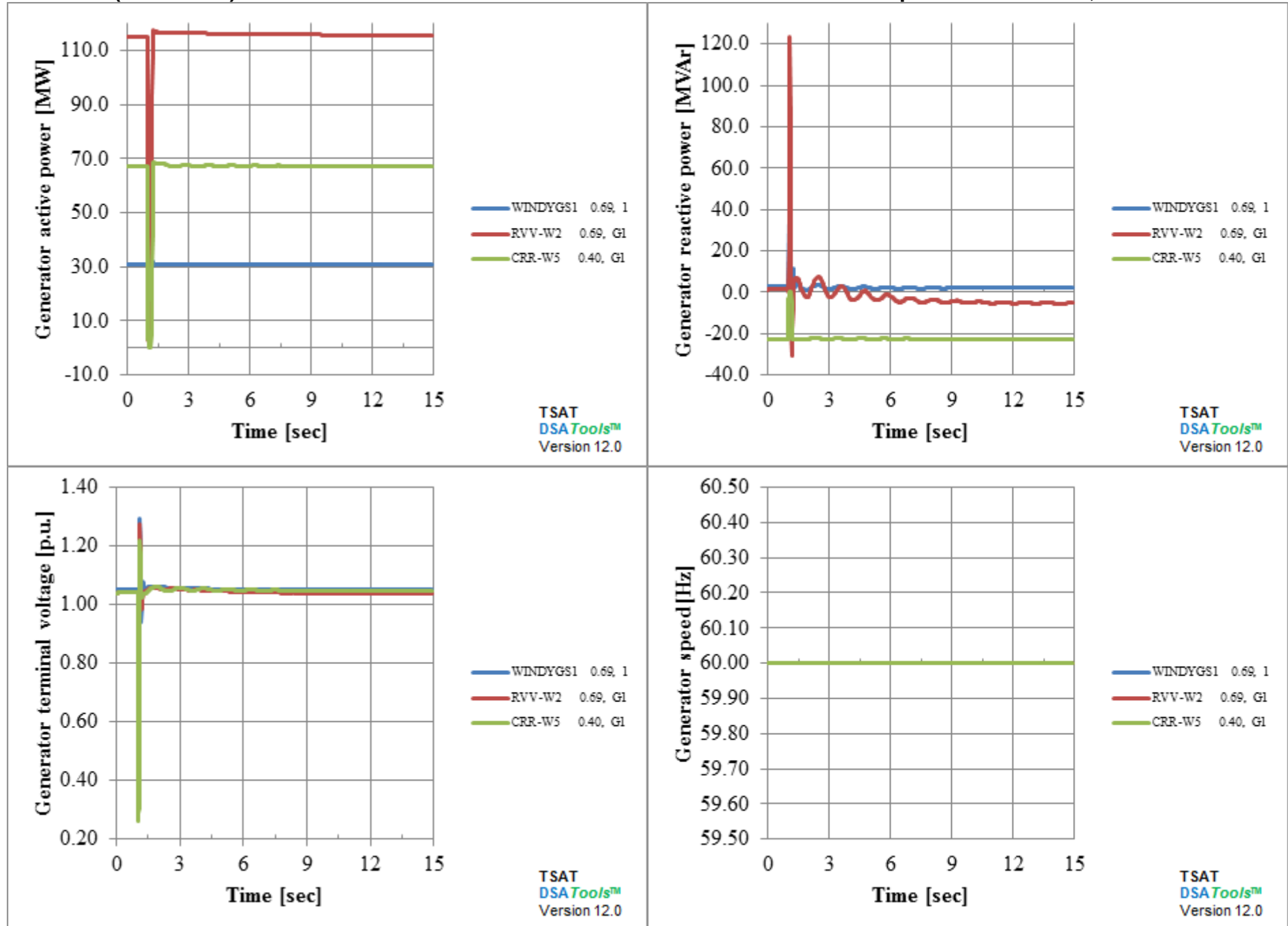
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection, Summer Peak 2014



9 -- 1084L (59S - 246S) NEAR 246S

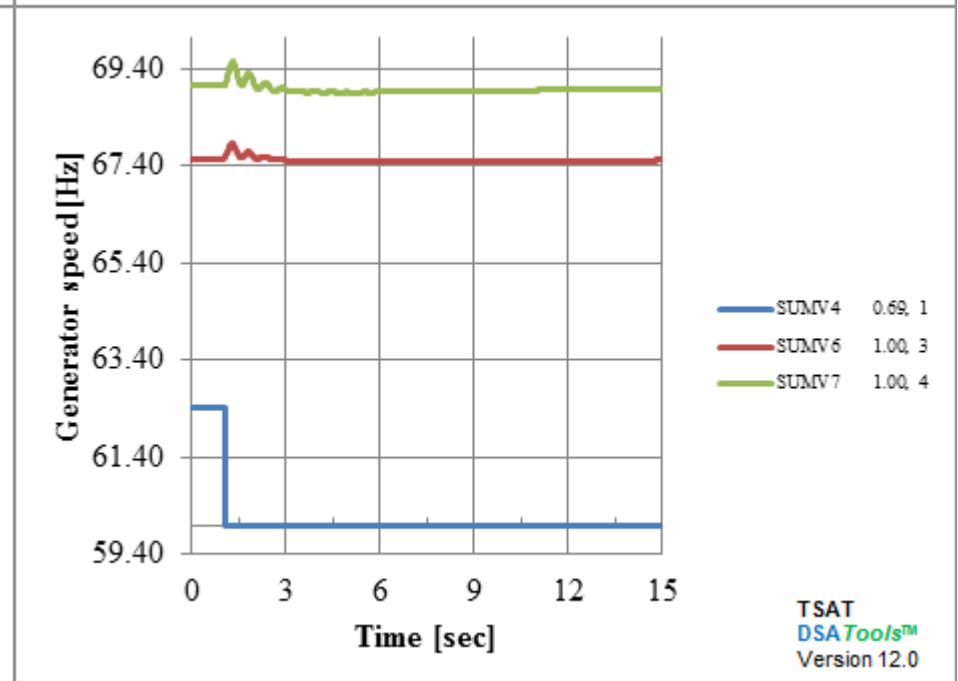
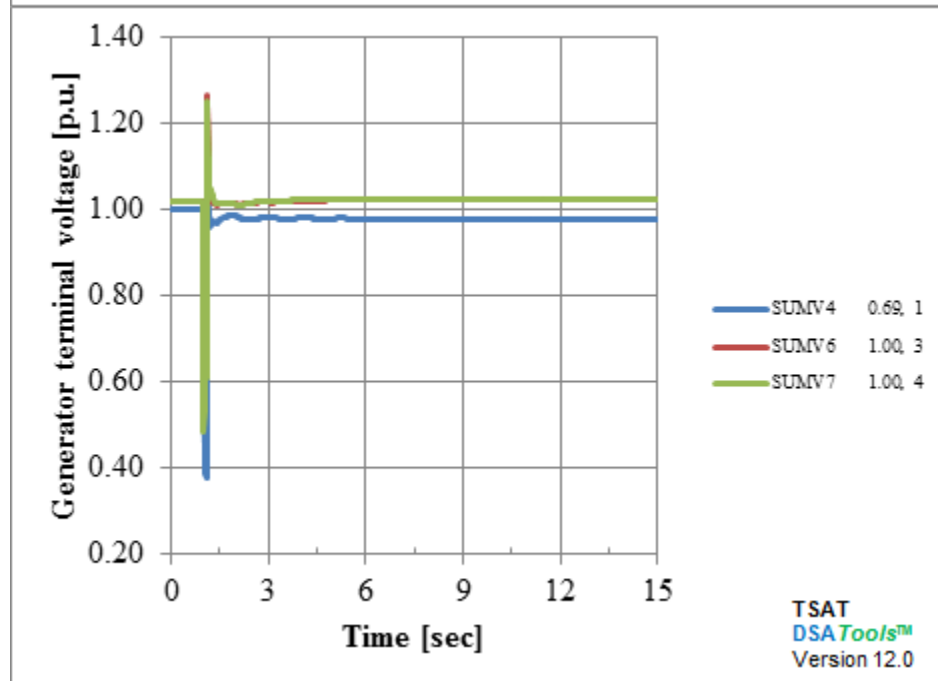
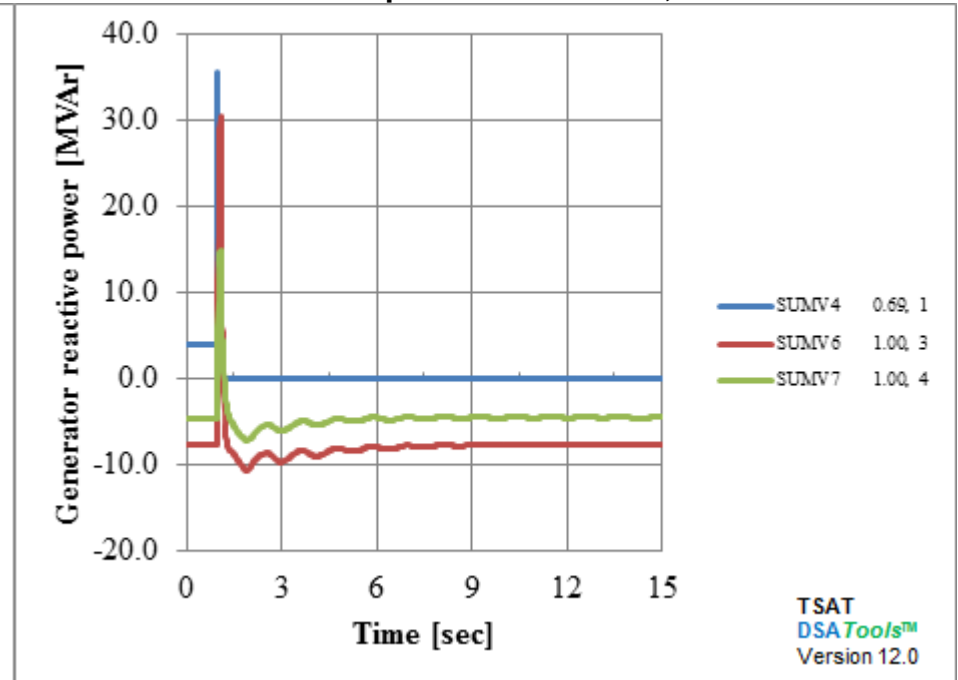
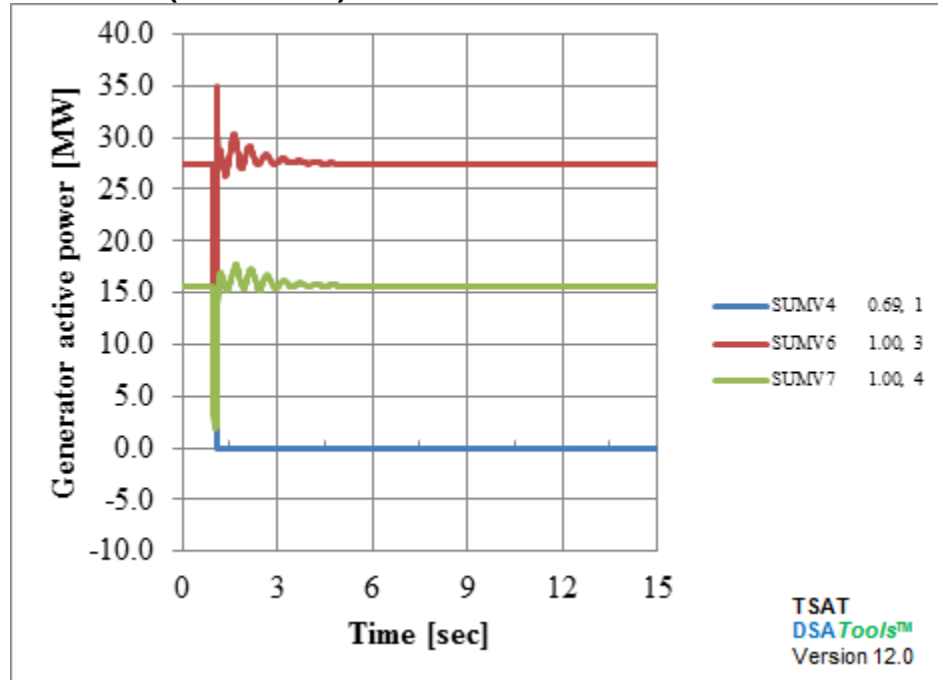
Proposed Connection, Summer Peak 2014





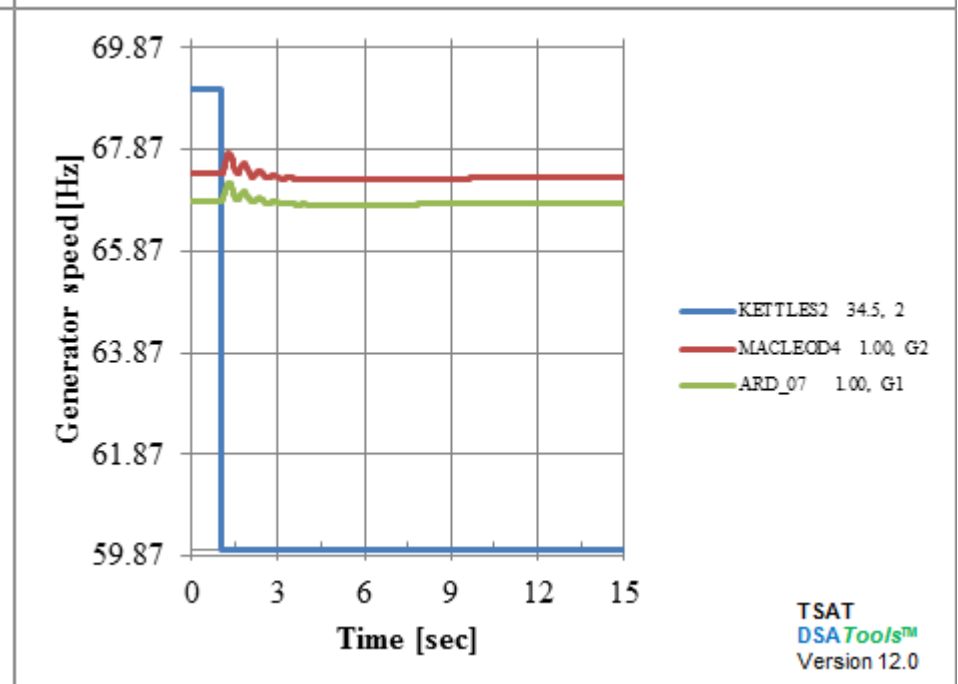
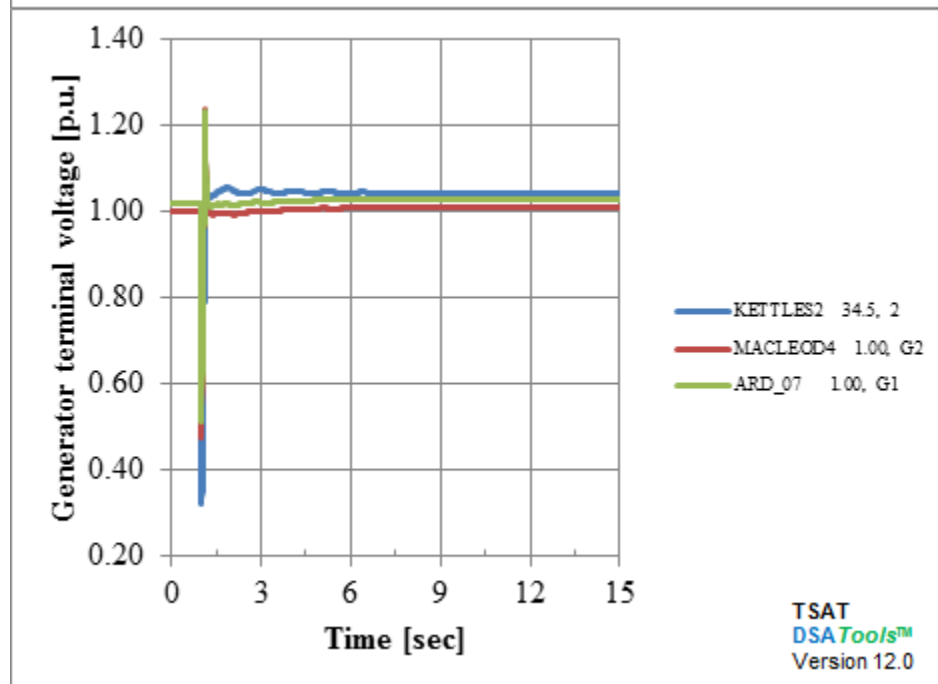
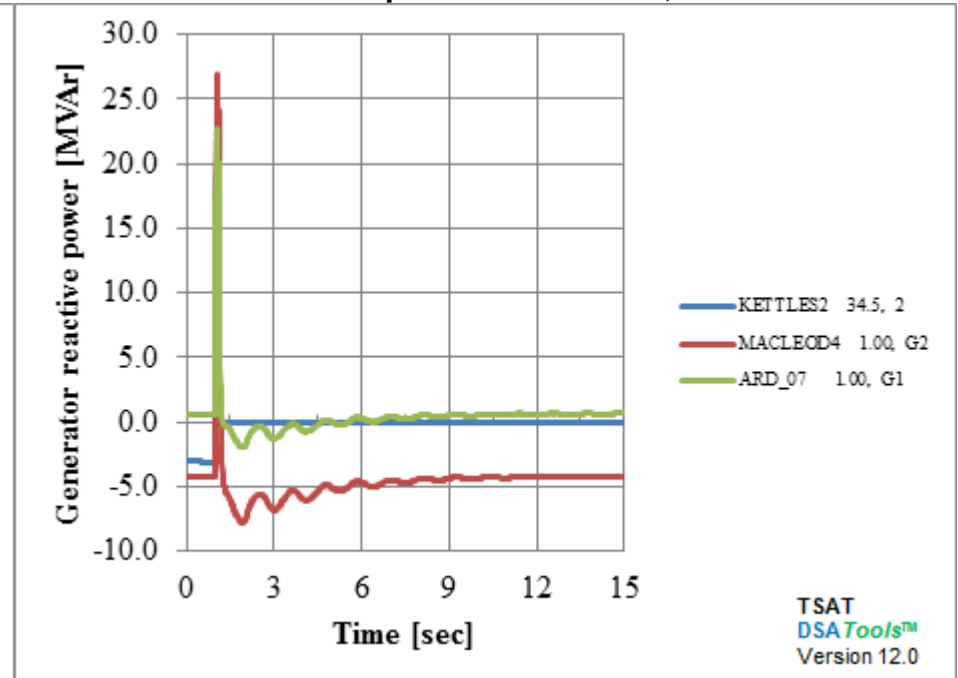
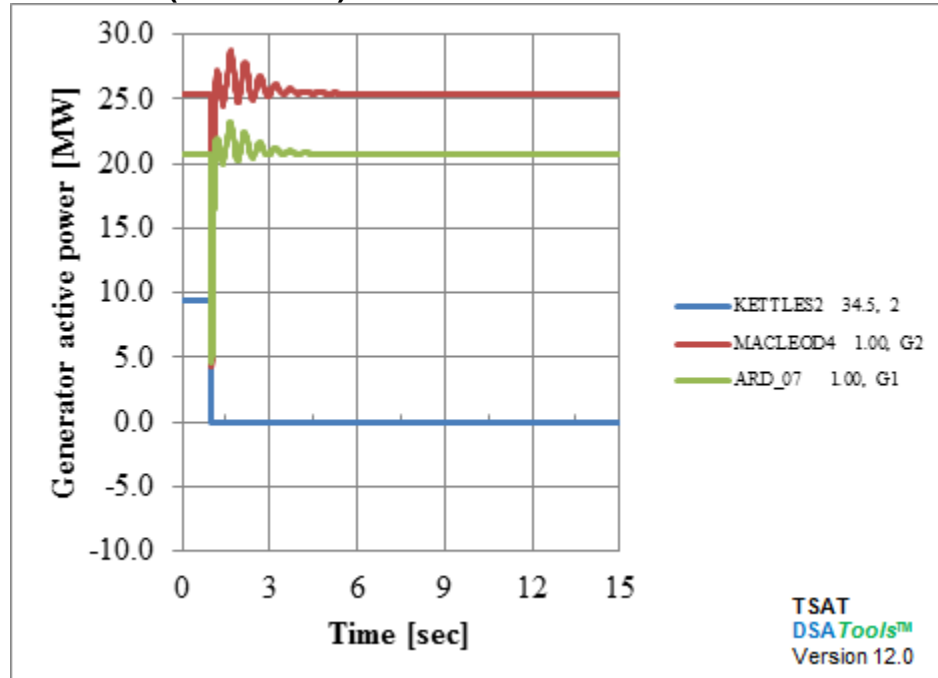
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Peak 2014



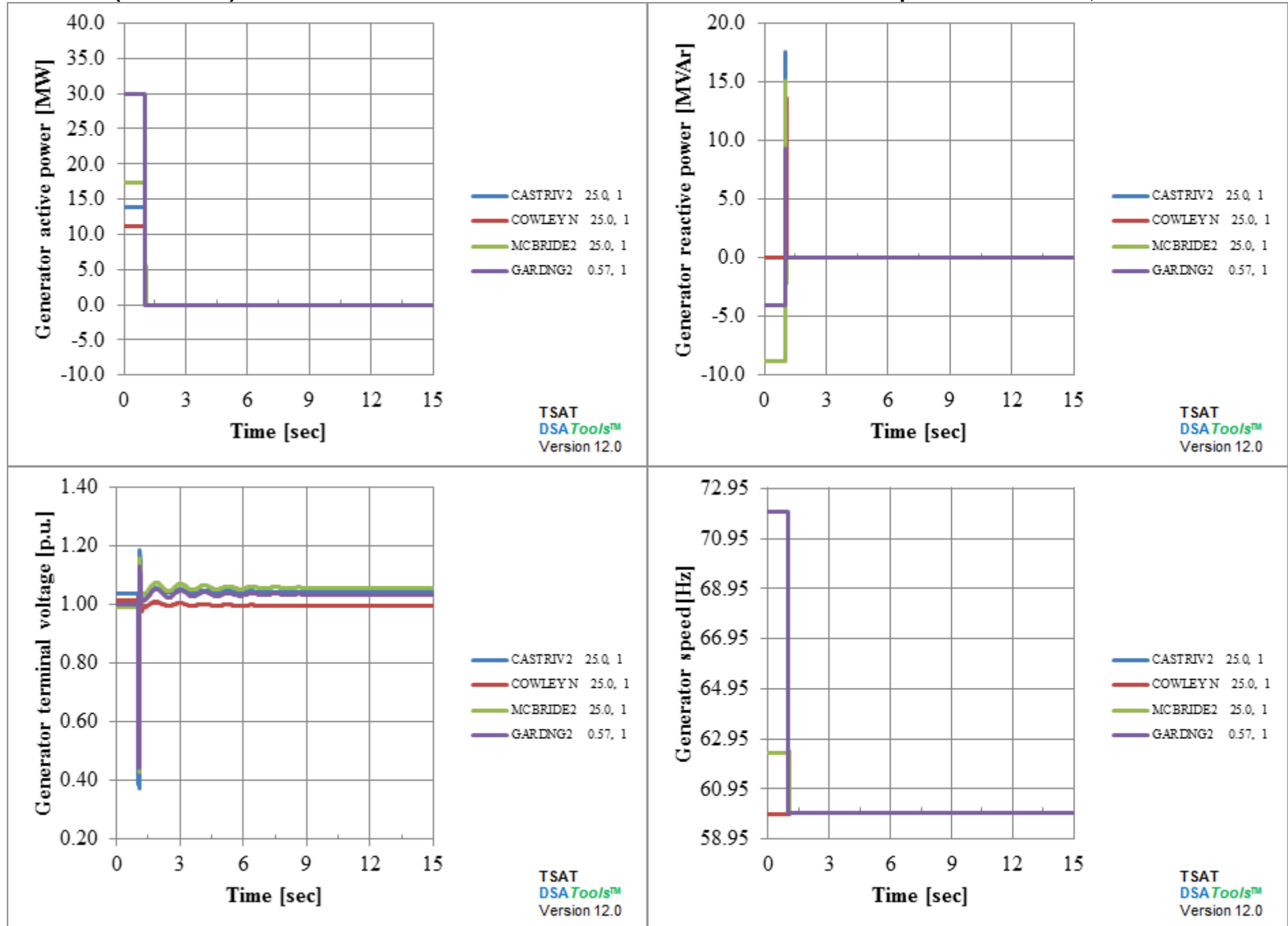
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Peak 2014



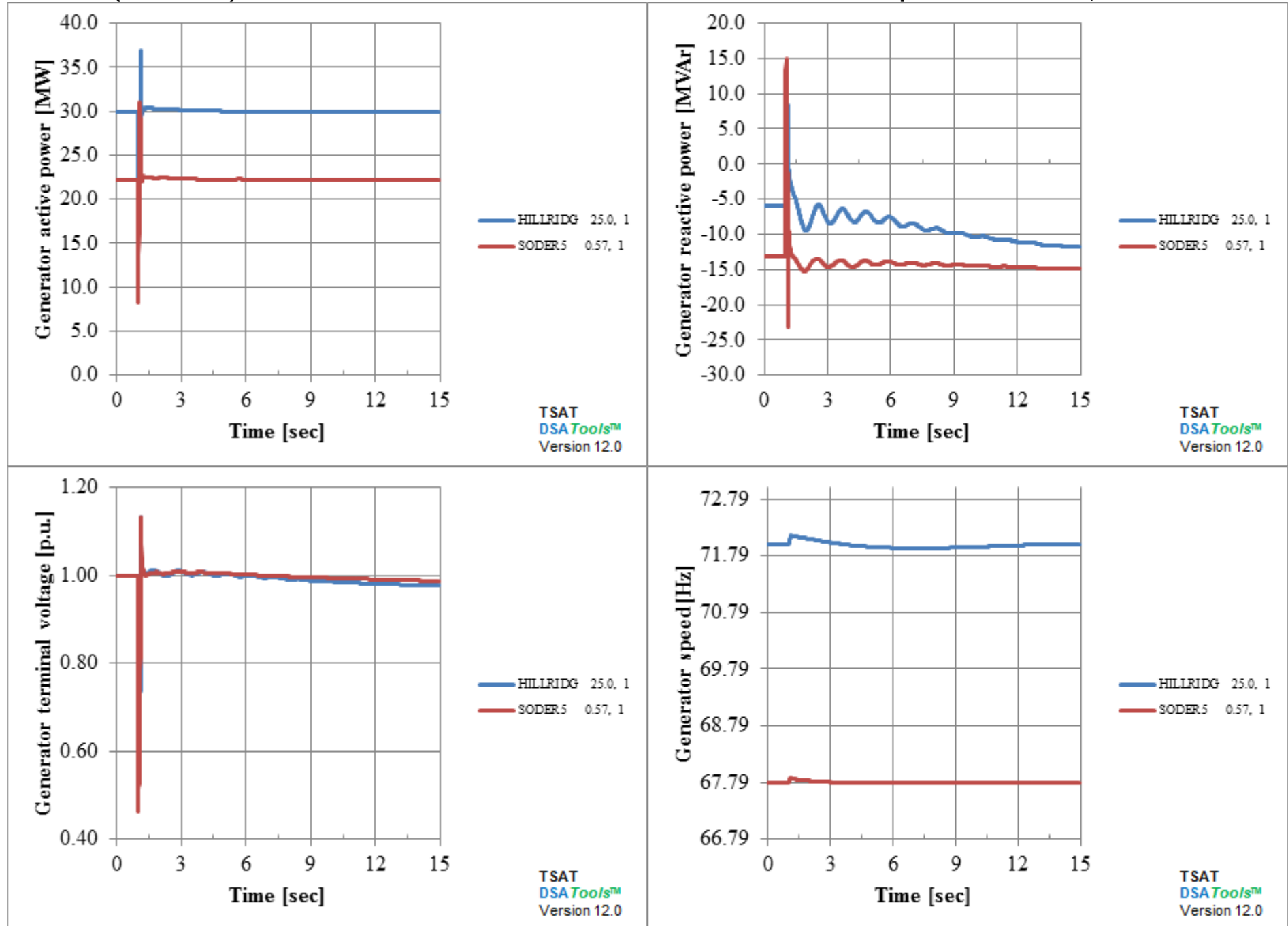
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Peak 2014



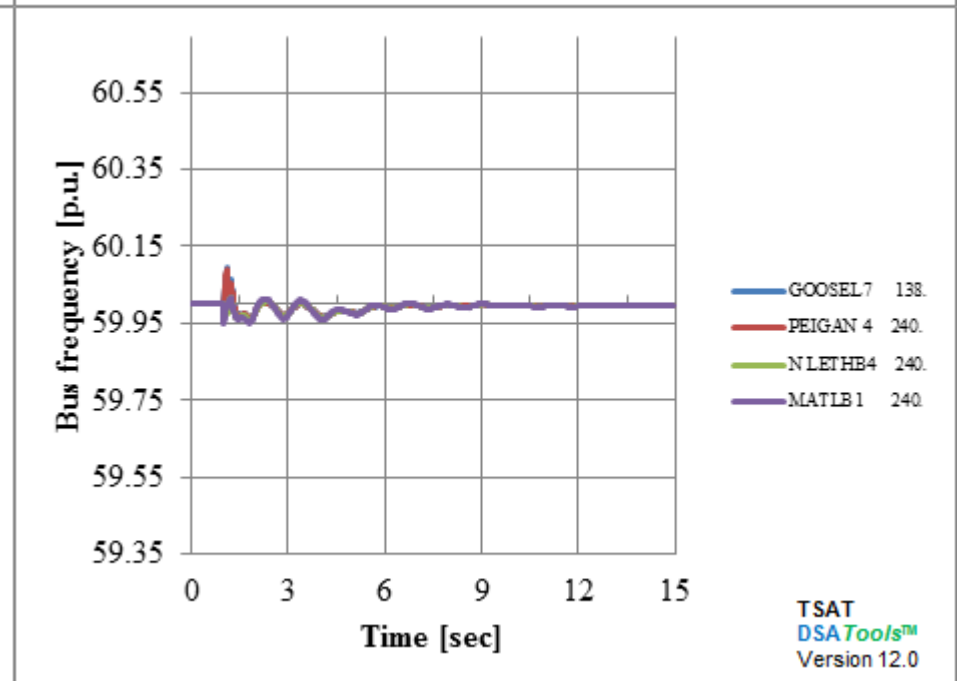
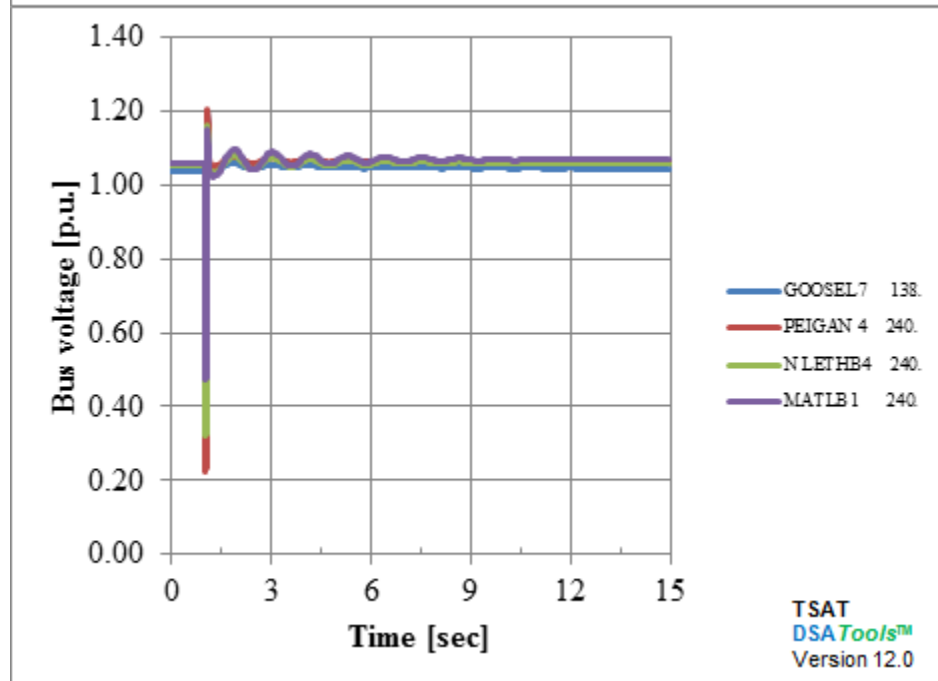
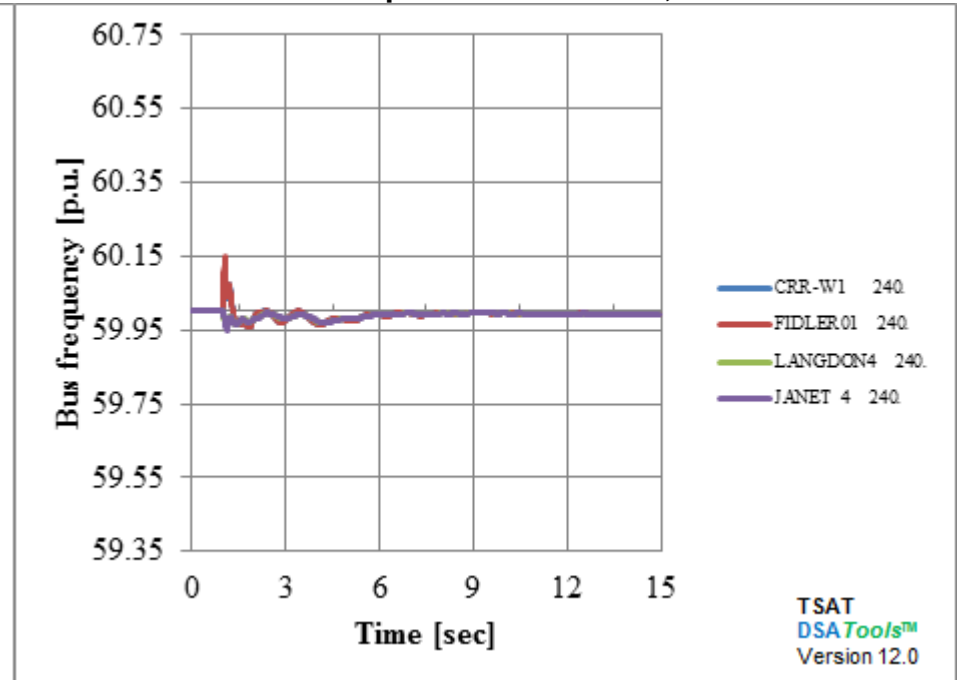
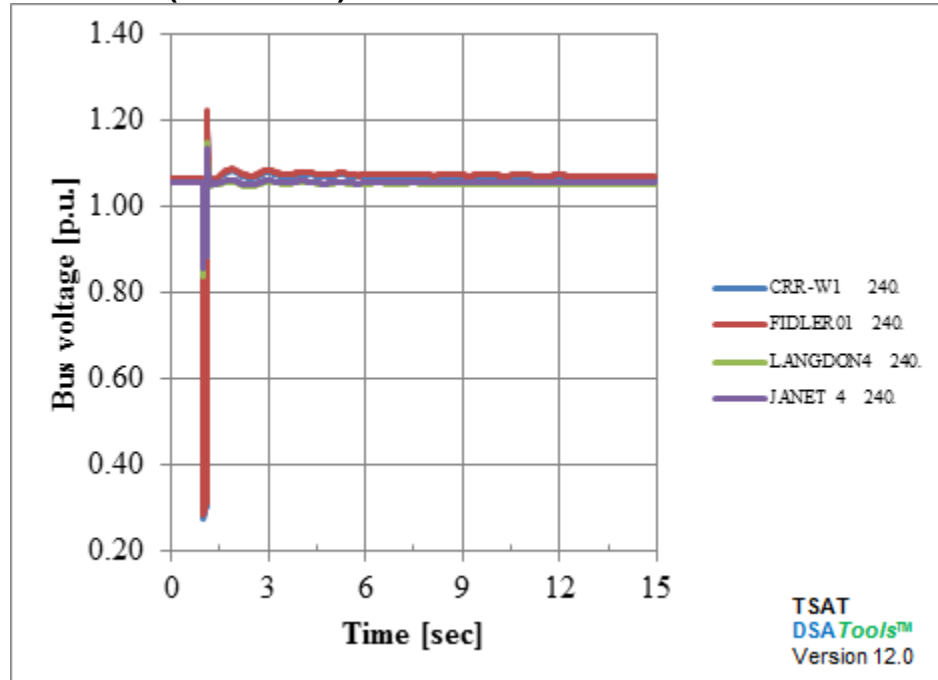
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Peak 2014



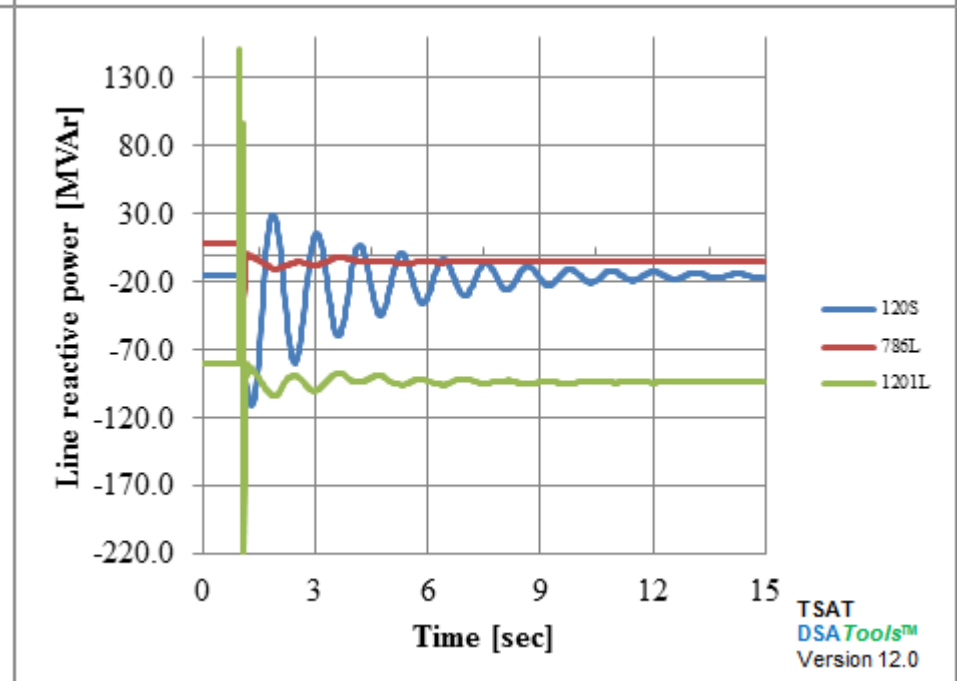
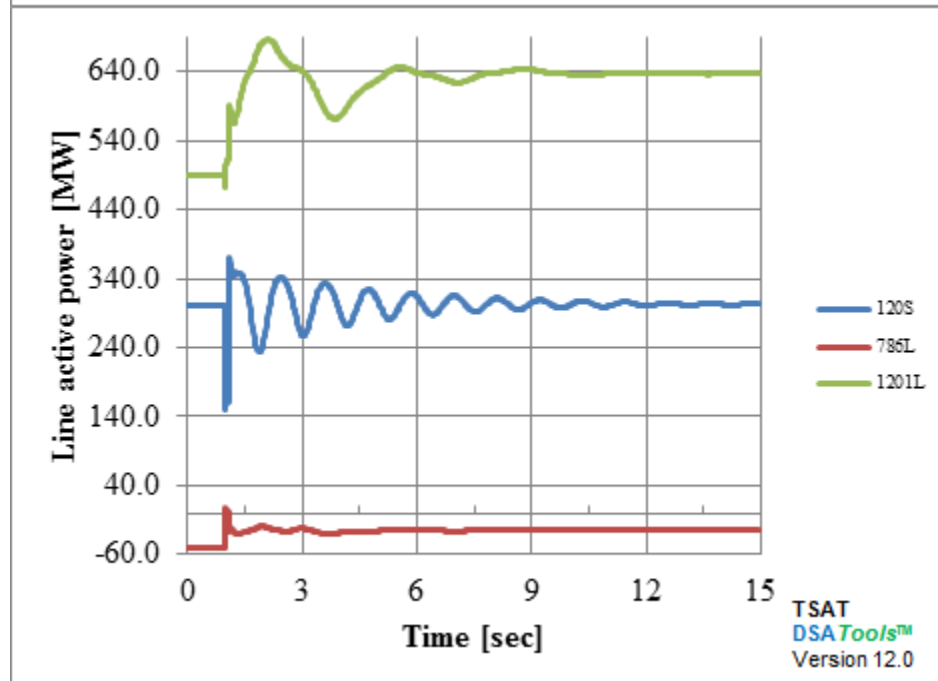
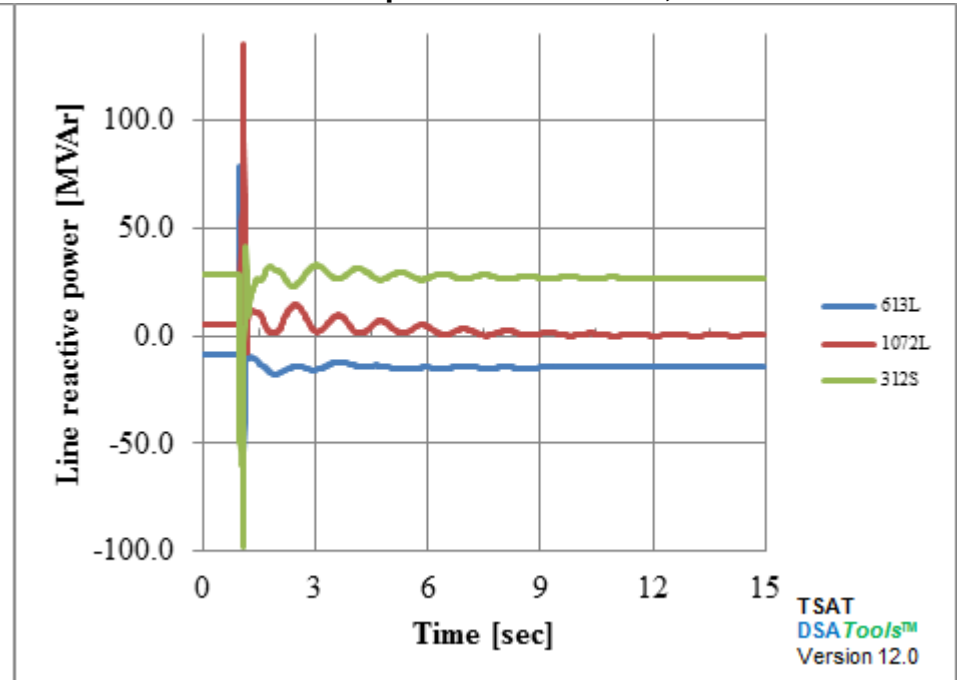
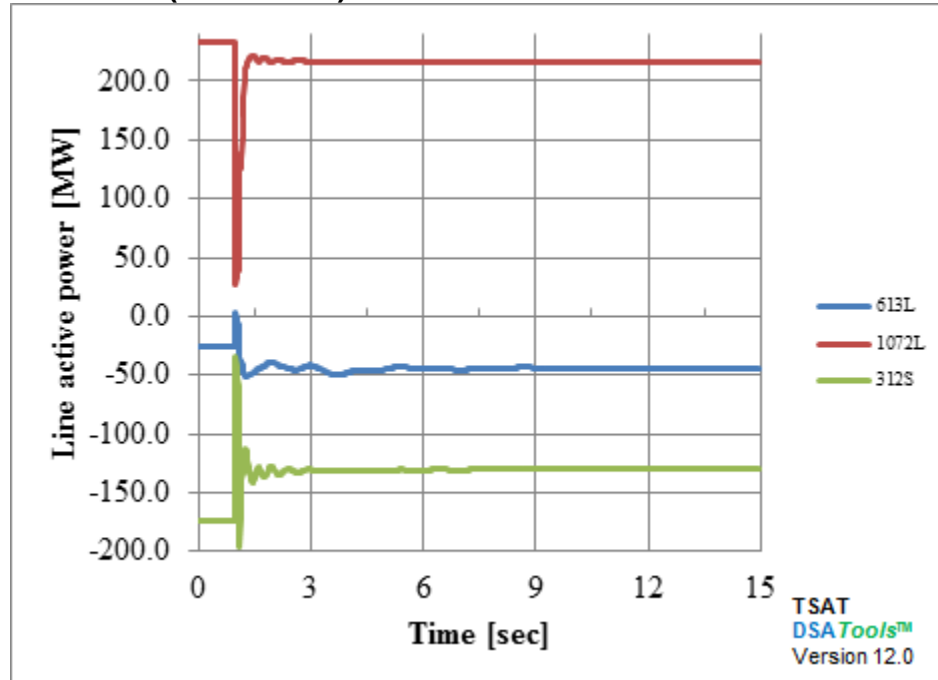
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Peak 2014



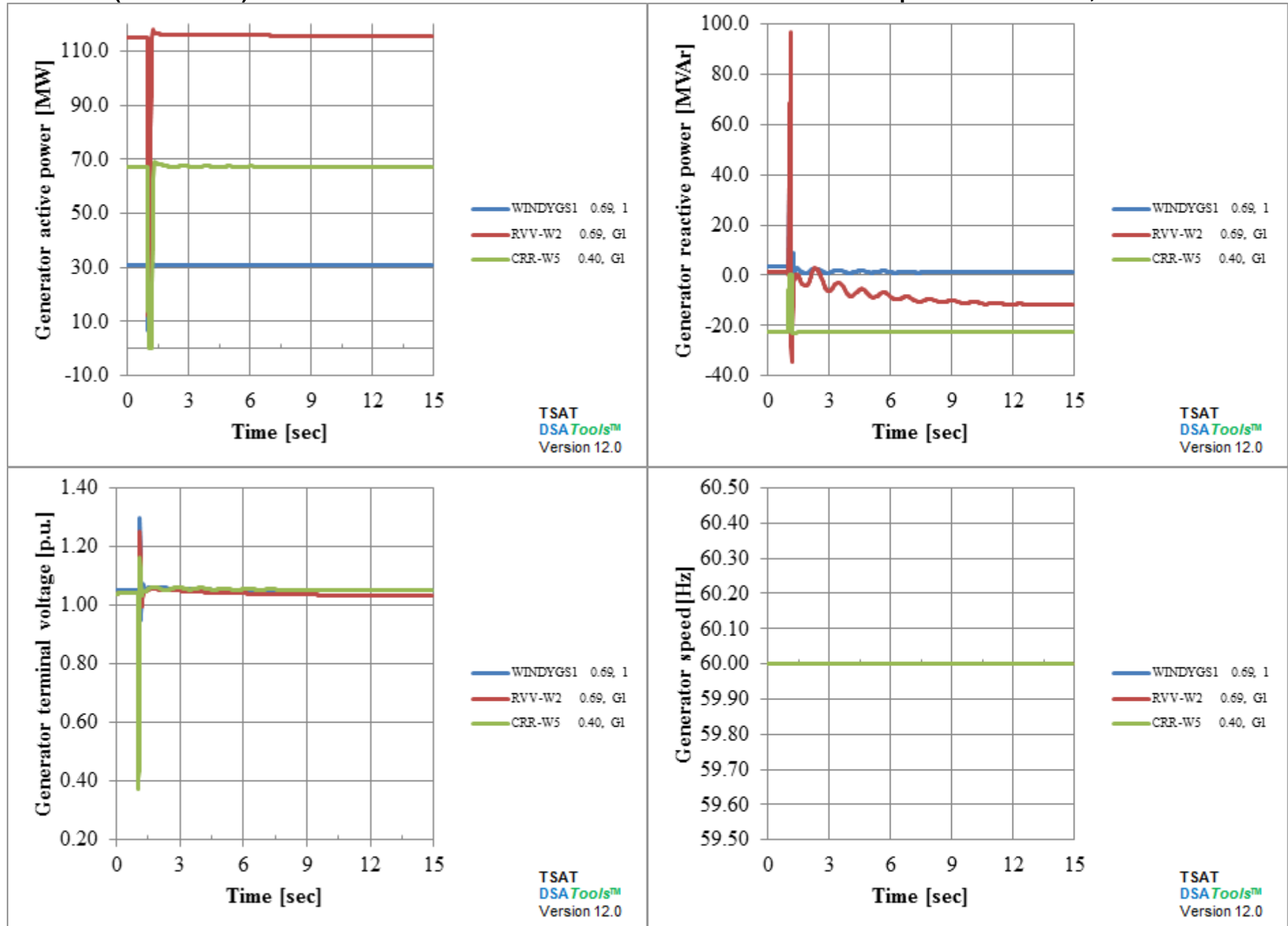
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection, Summer Peak 2014



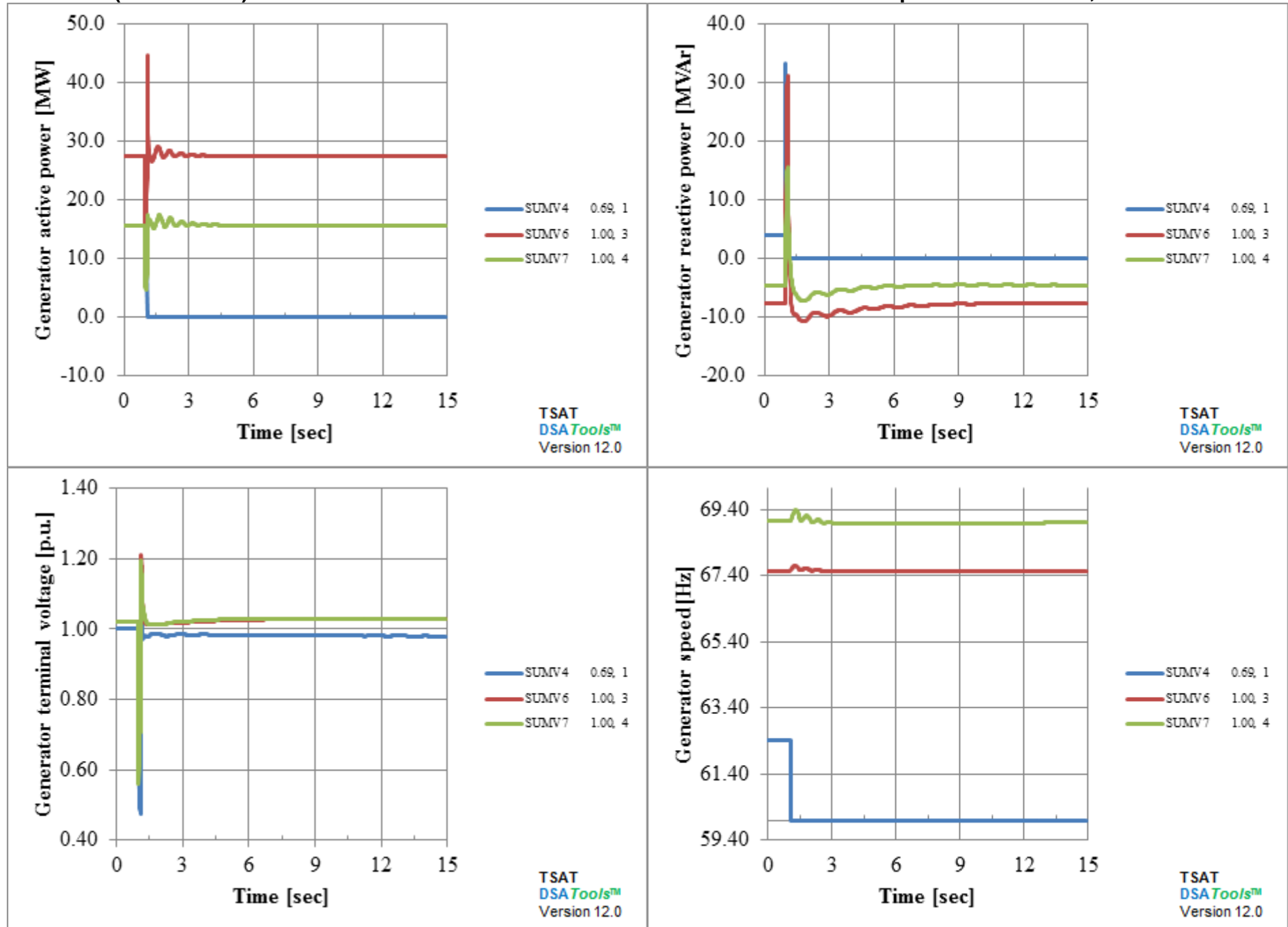
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Peak 2014



10 -- 164L (103S - 415S) NEAR 103S

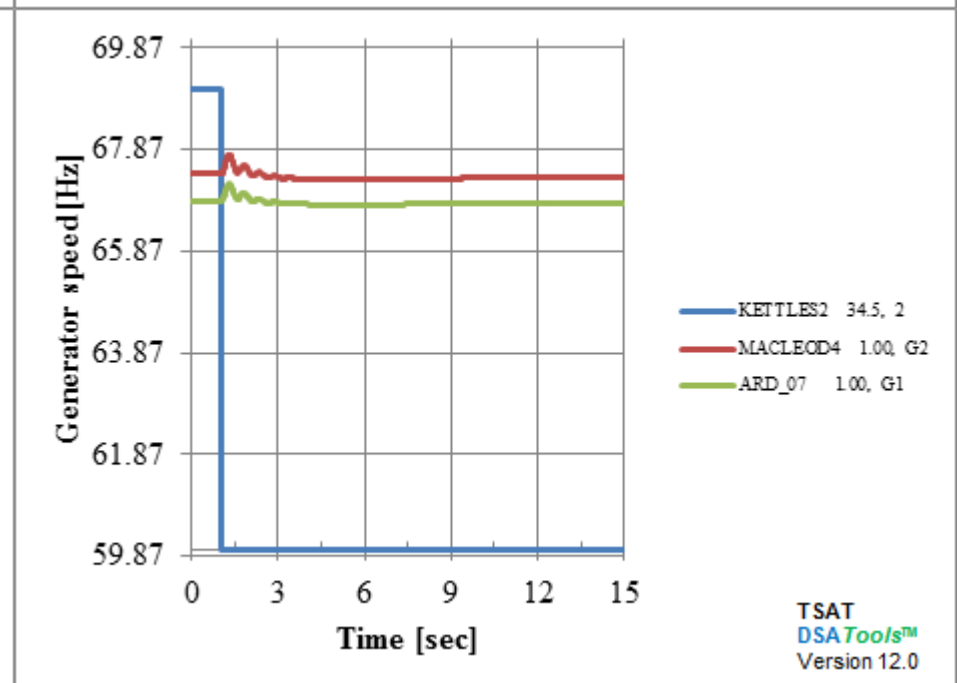
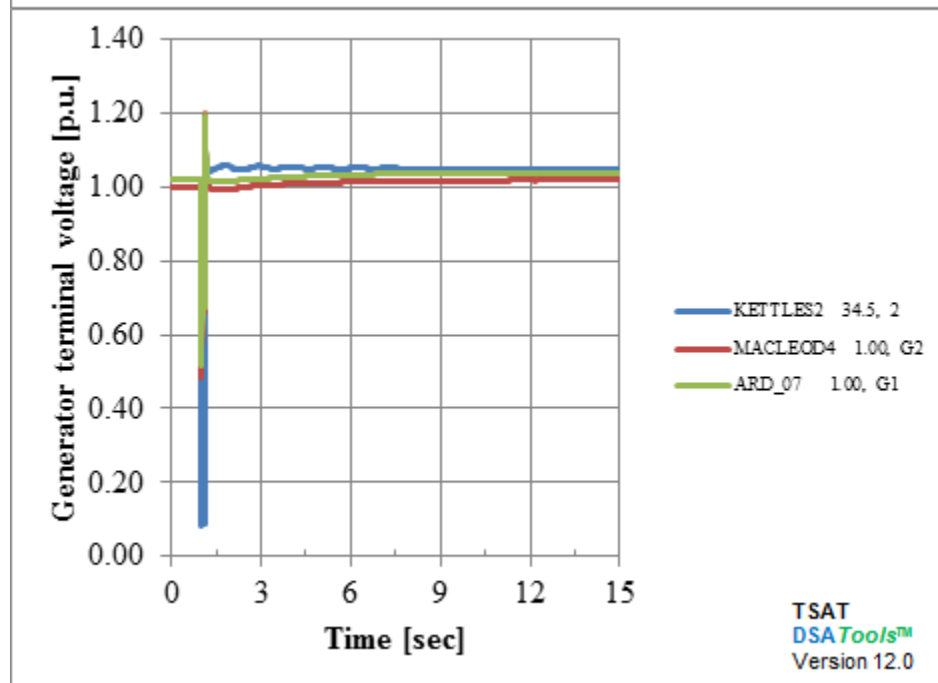
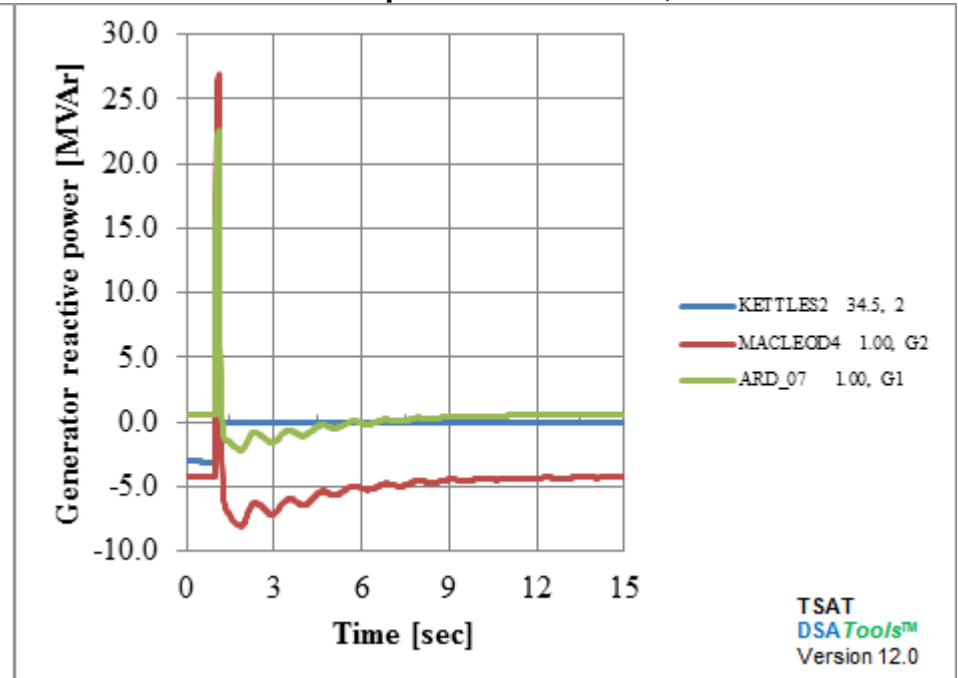
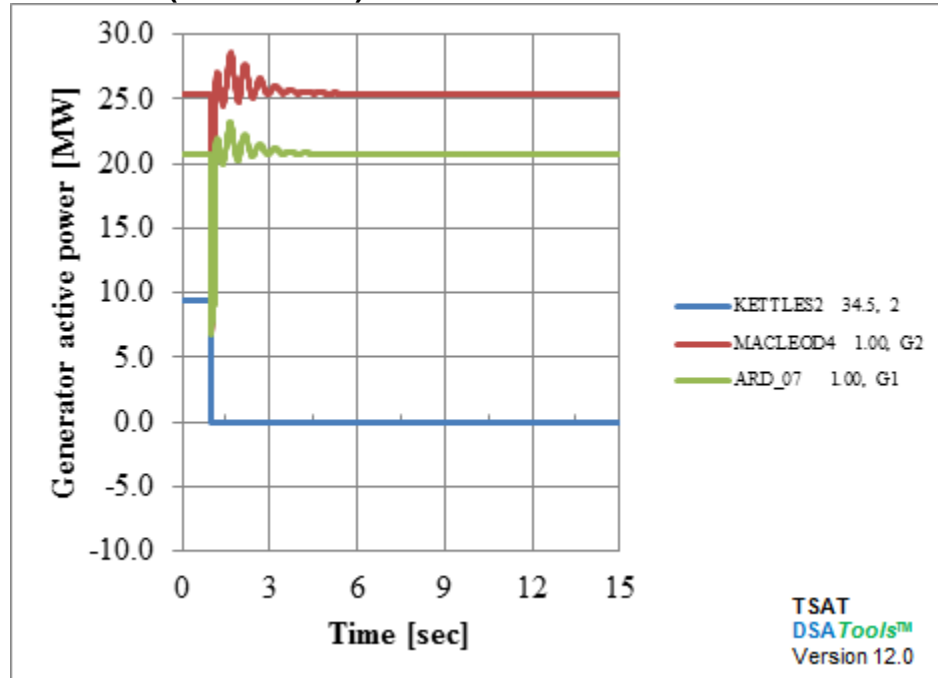
Proposed Connection, Summer Peak 2014





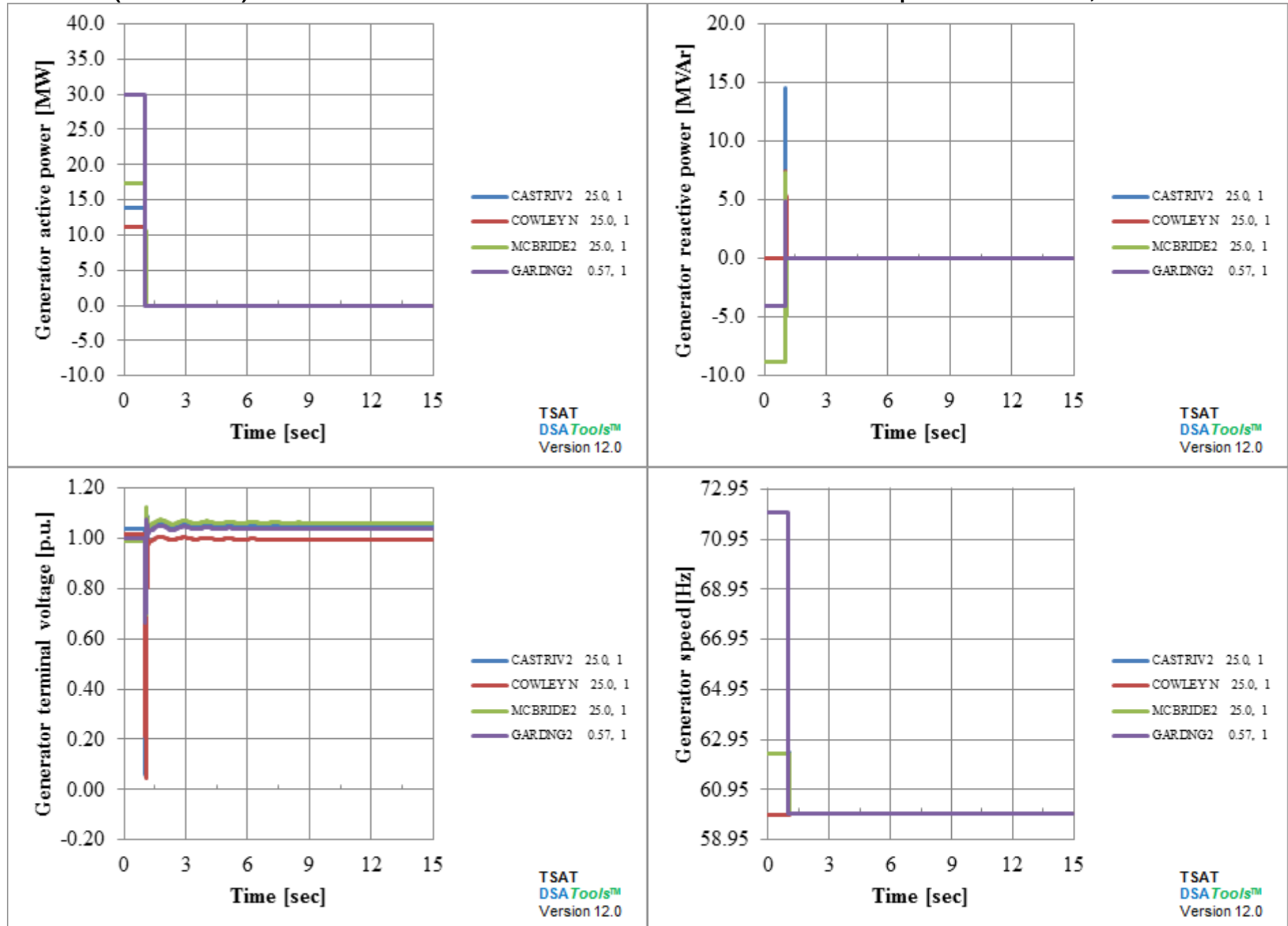
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Peak 2014



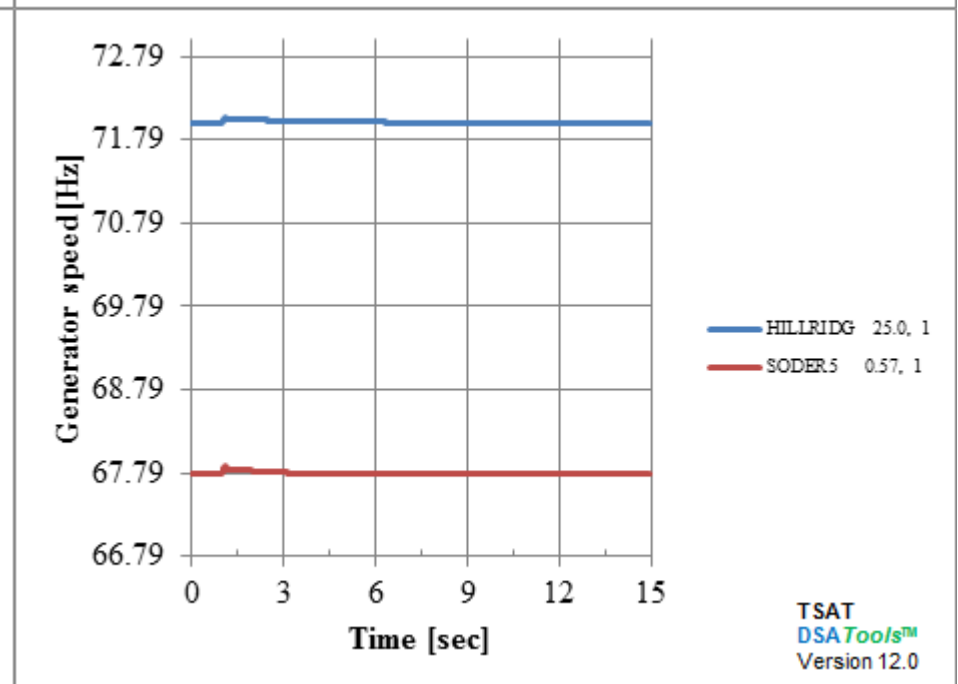
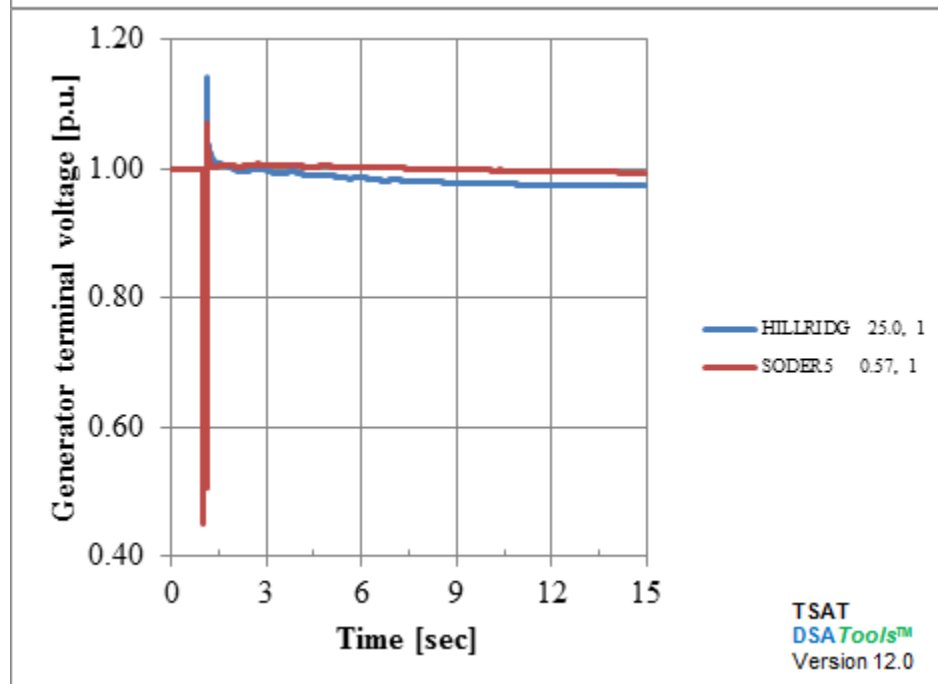
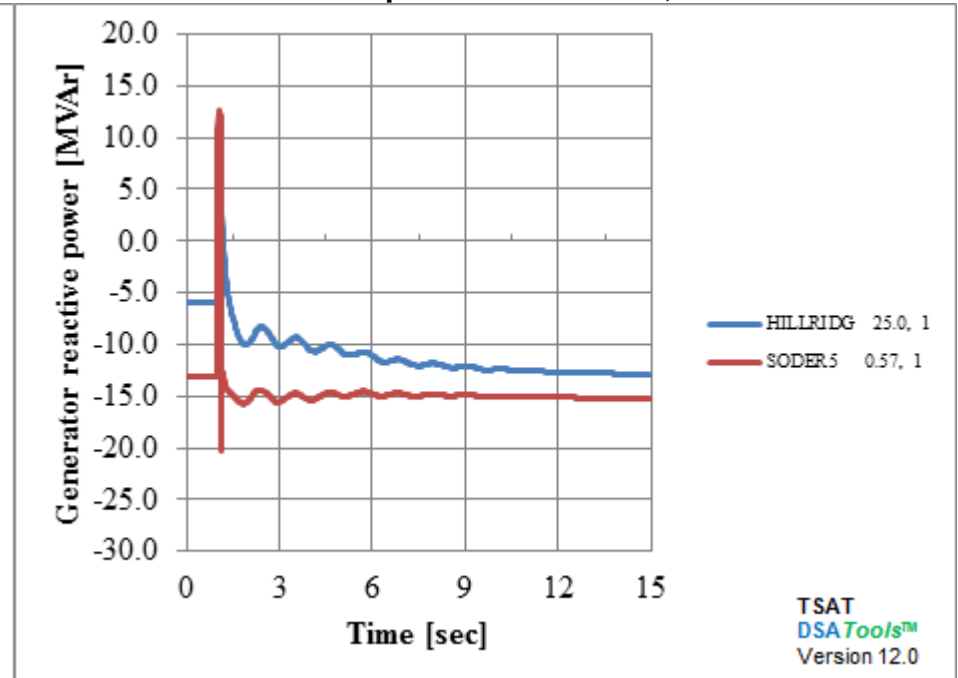
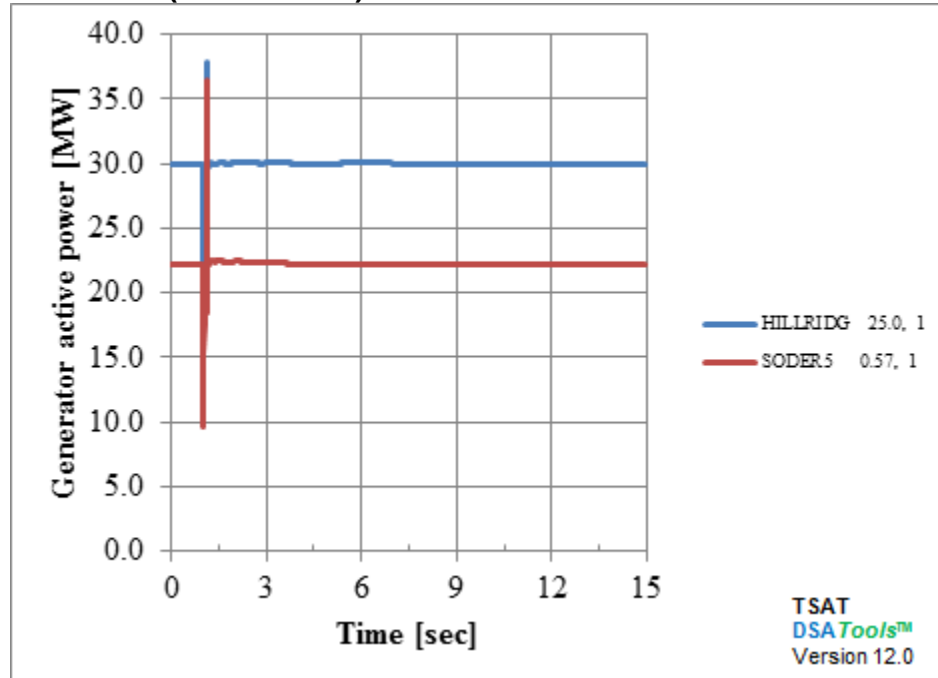
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Peak 2014



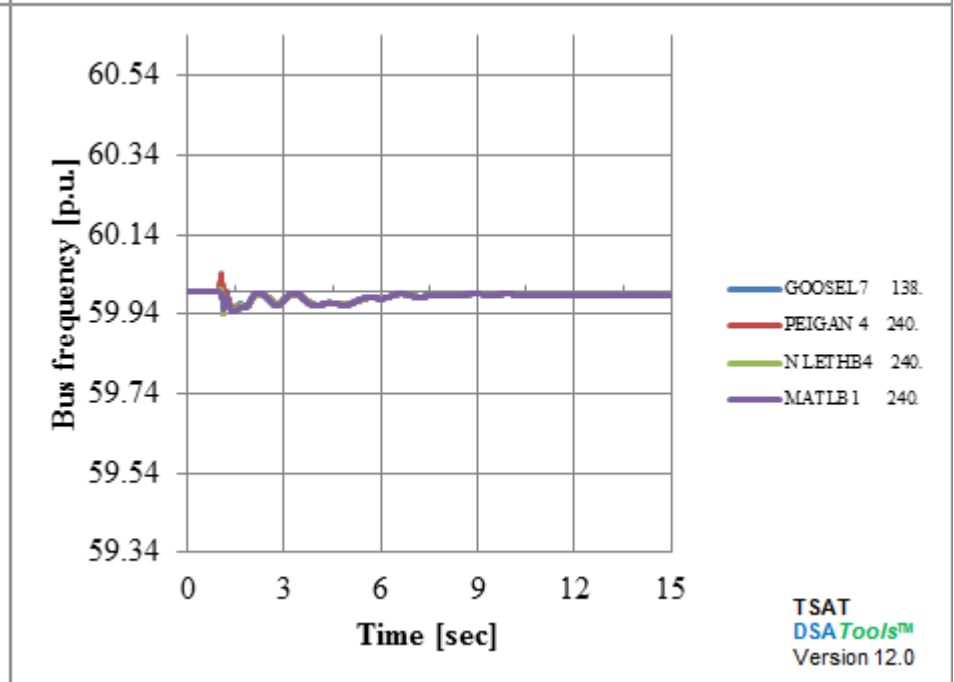
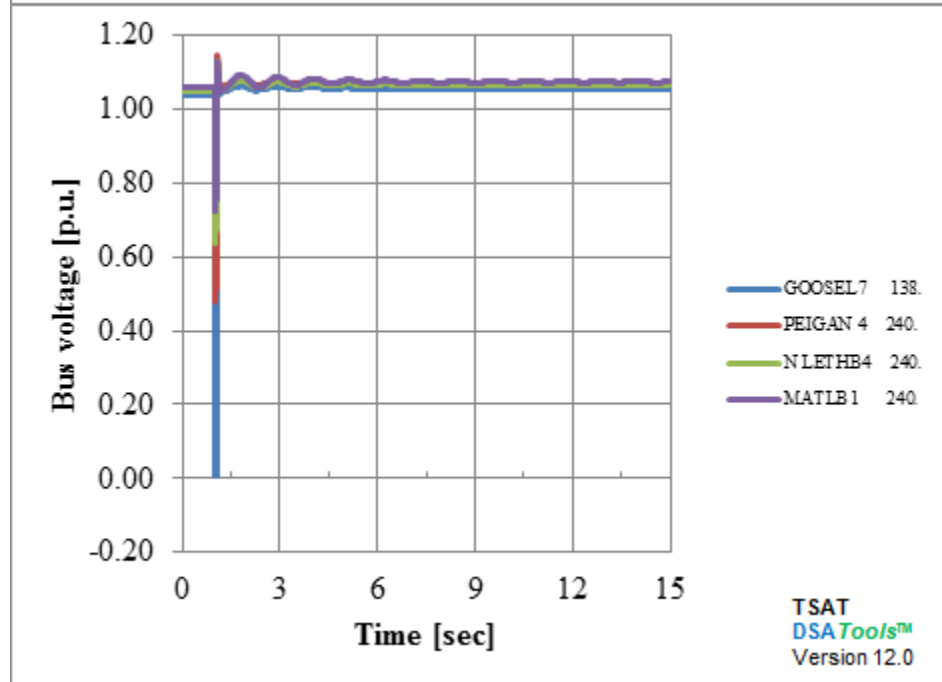
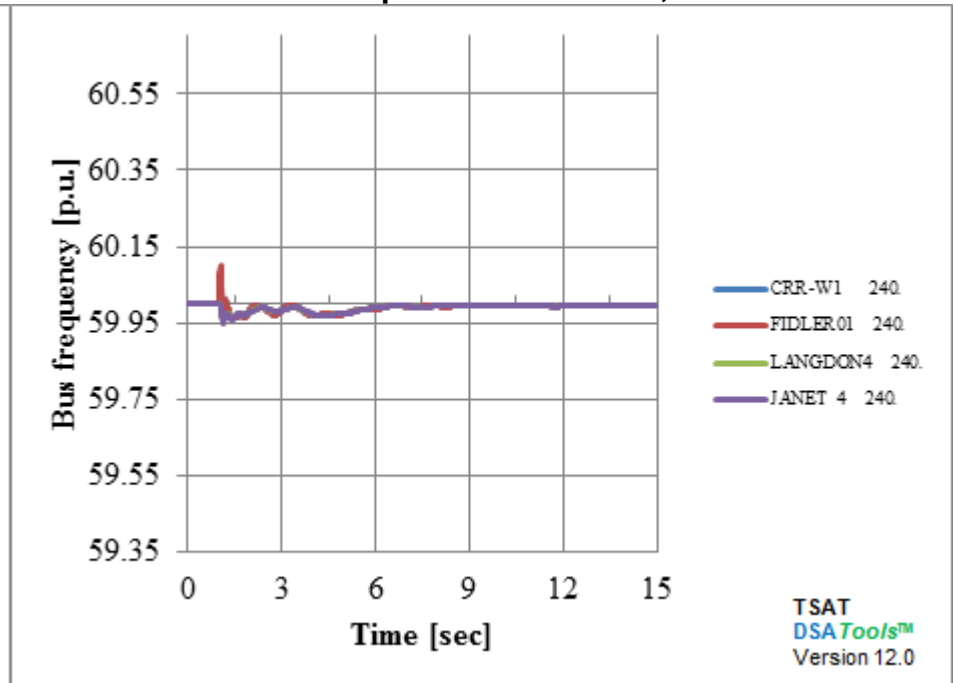
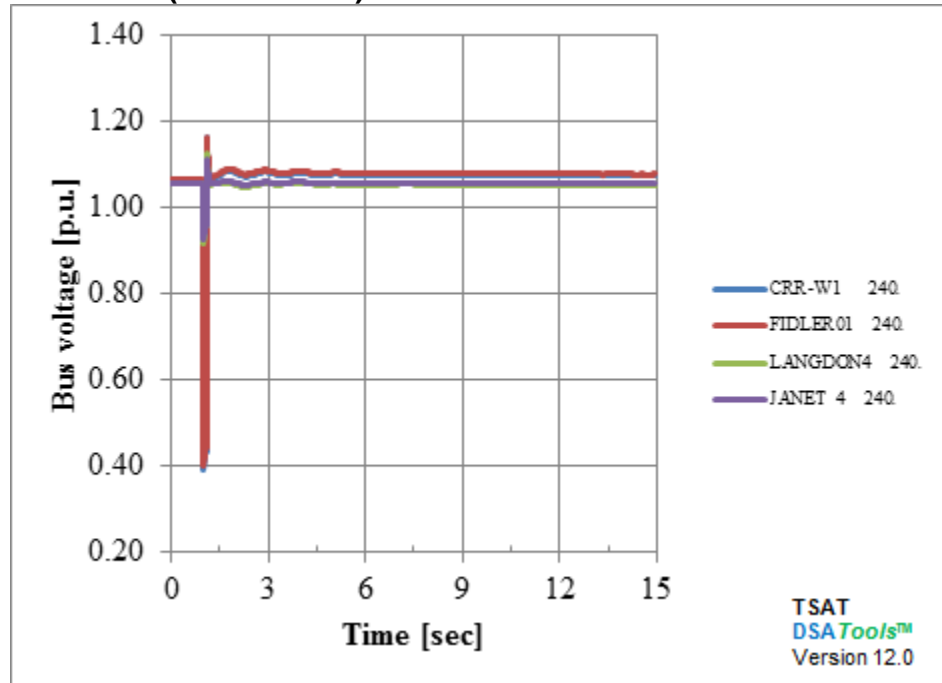
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Peak 2014



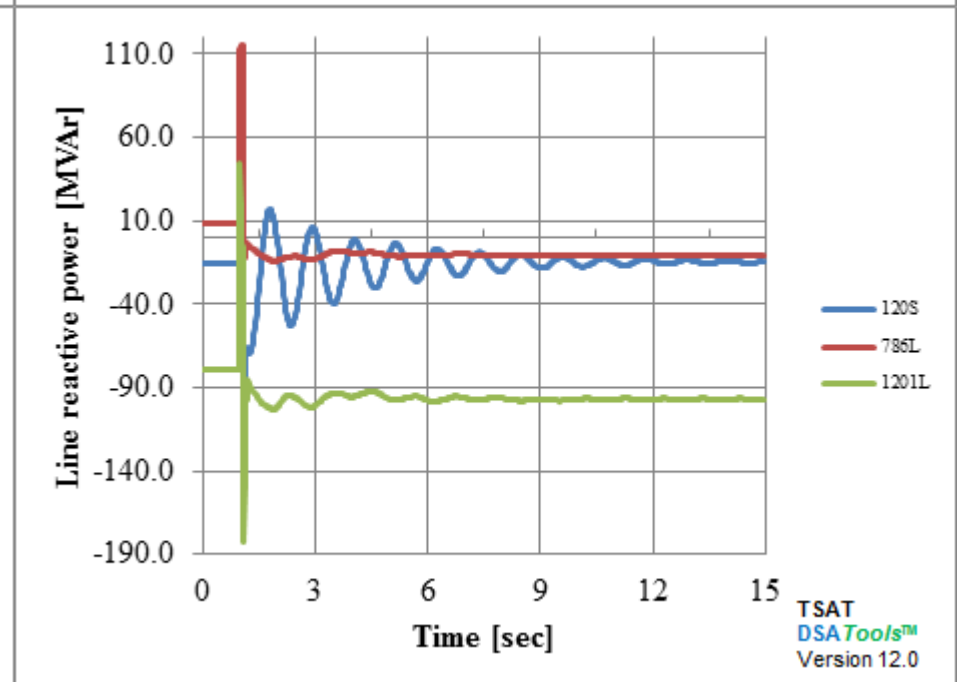
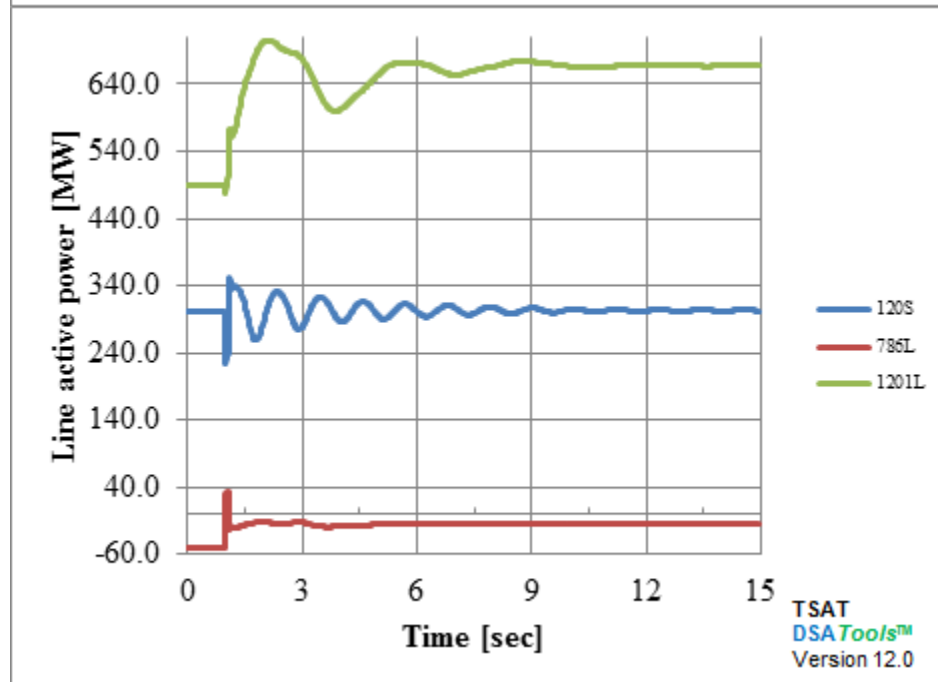
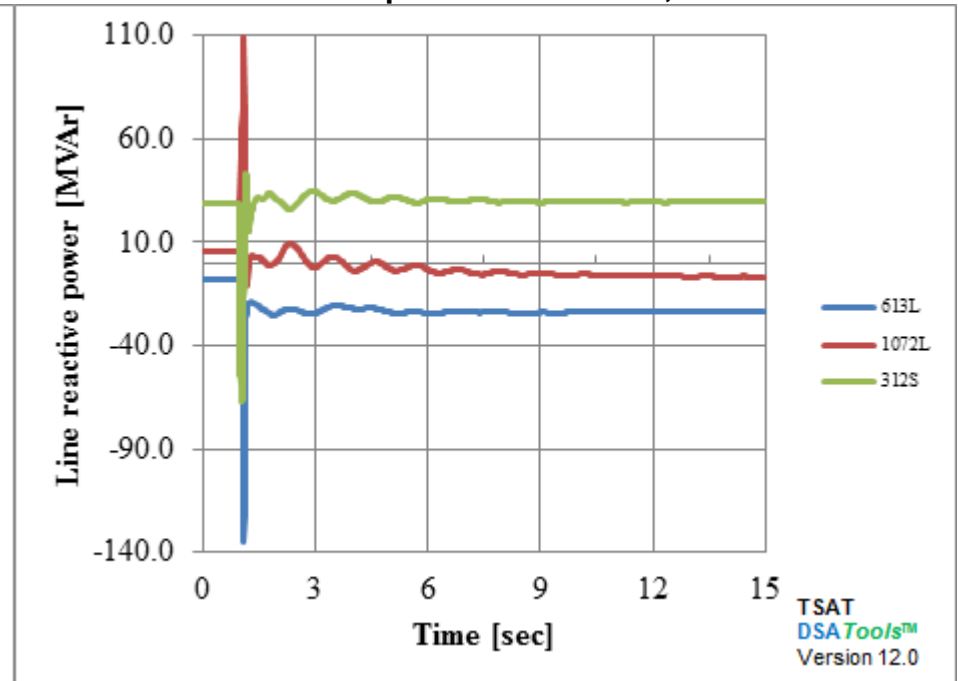
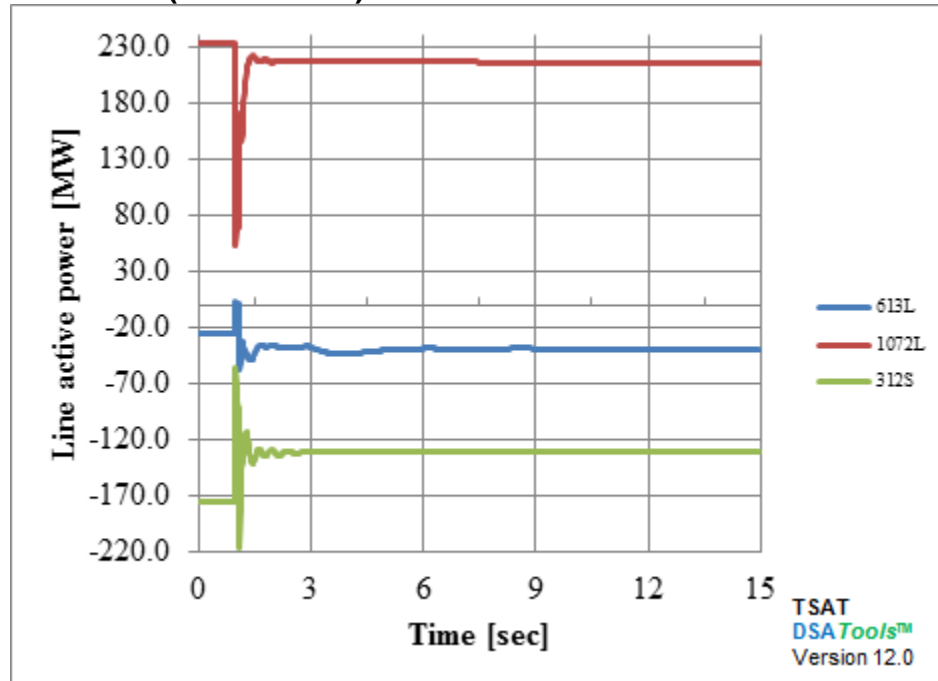
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Peak 2014



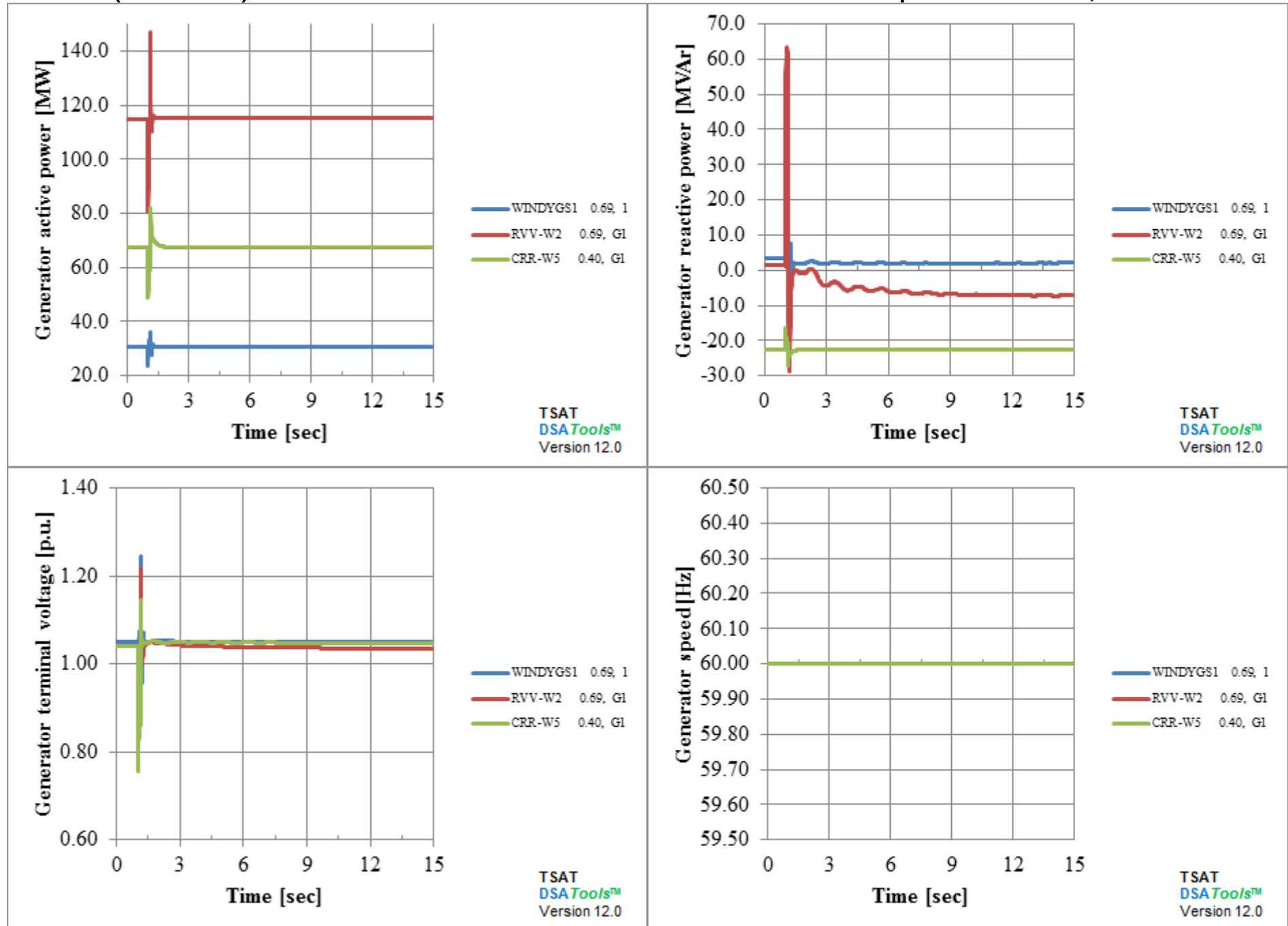
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection, Summer Peak 2014



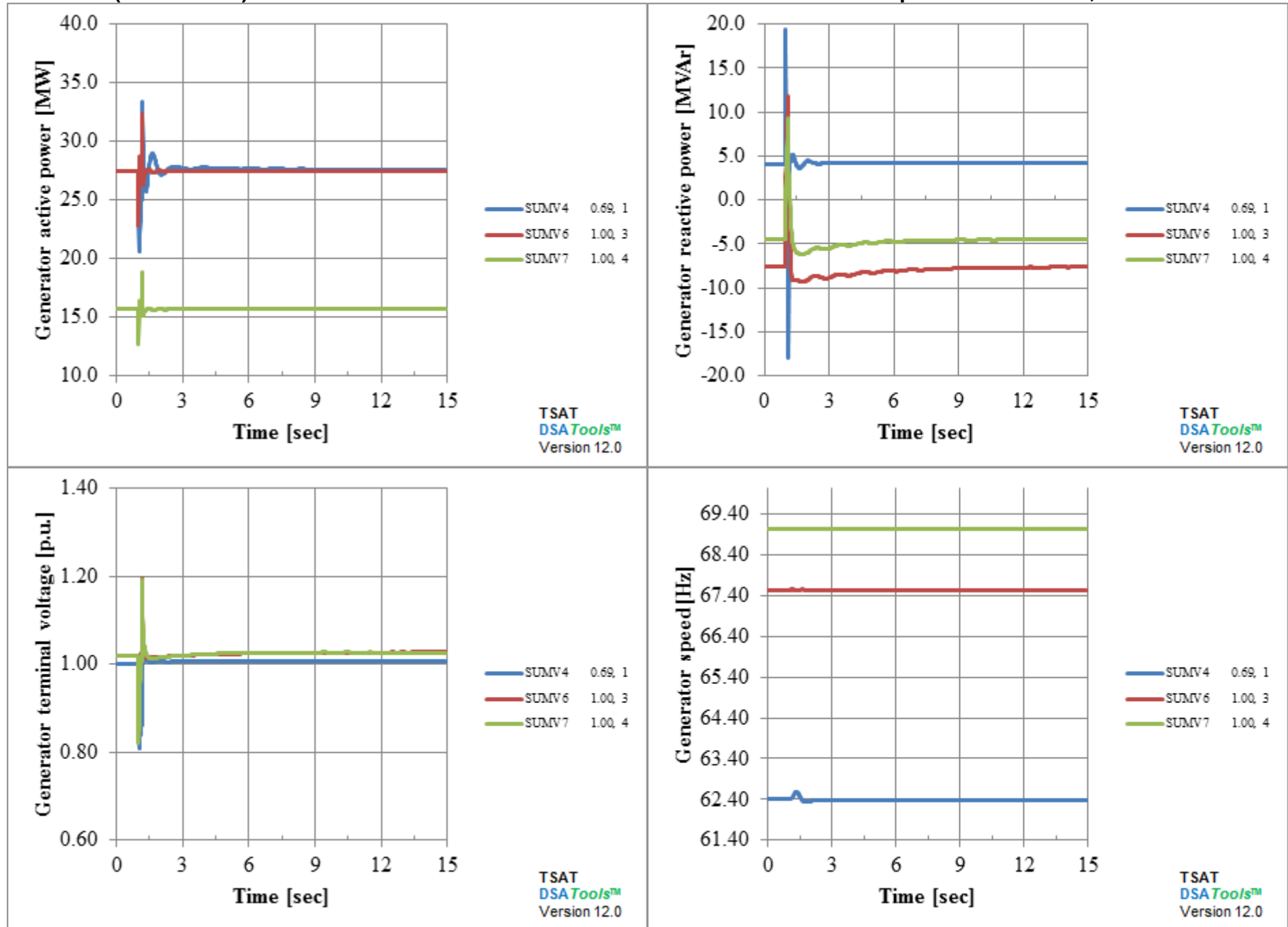
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Peak 2014



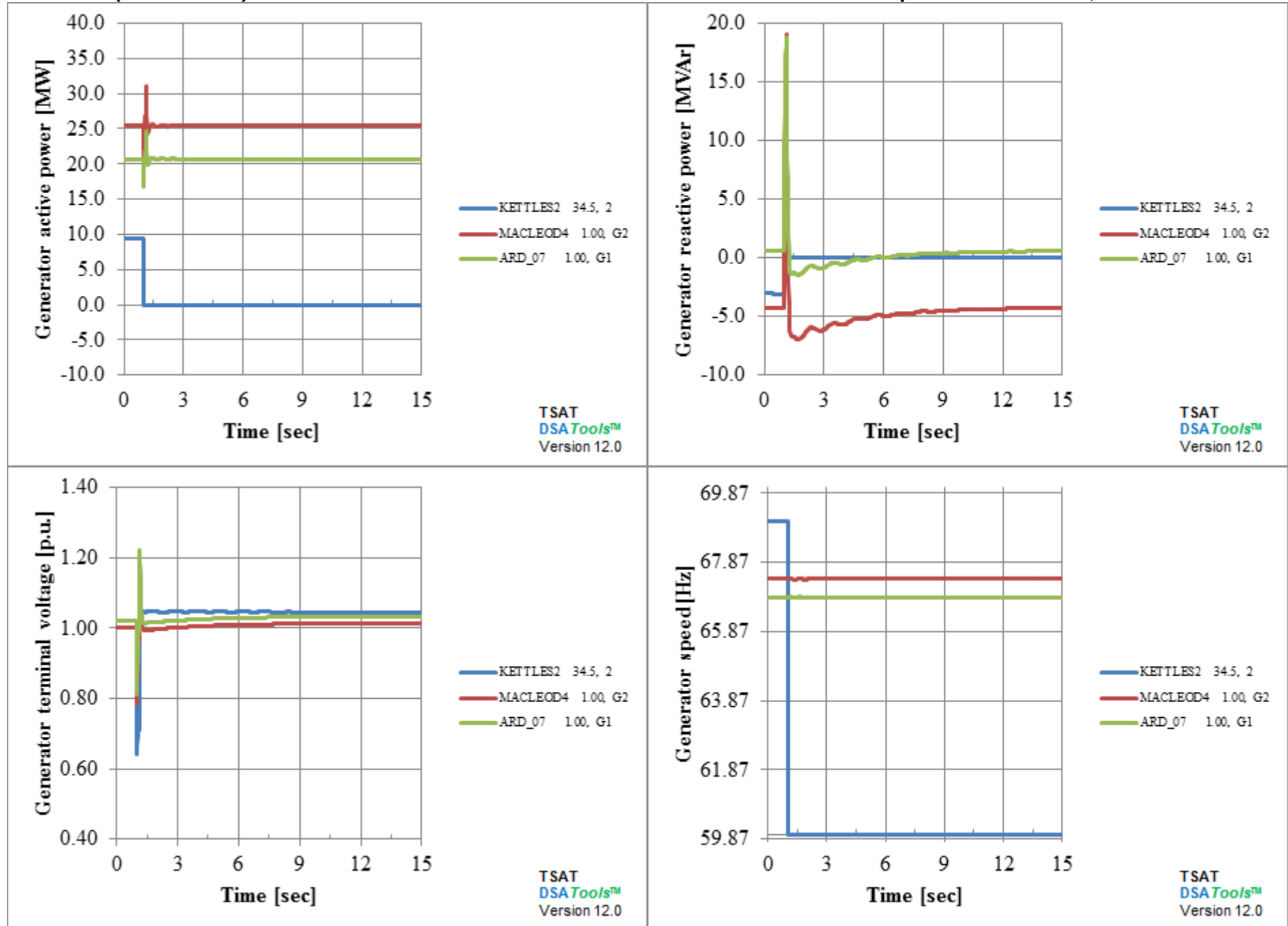
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Peak 2014



11 -- 164L (103S - 415S) NEAR 415S

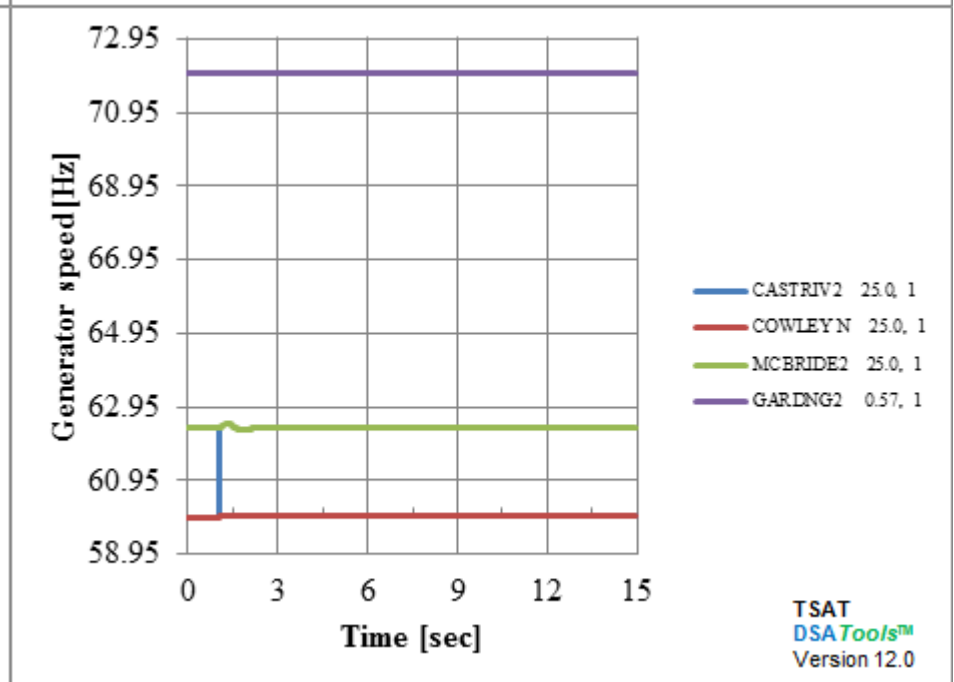
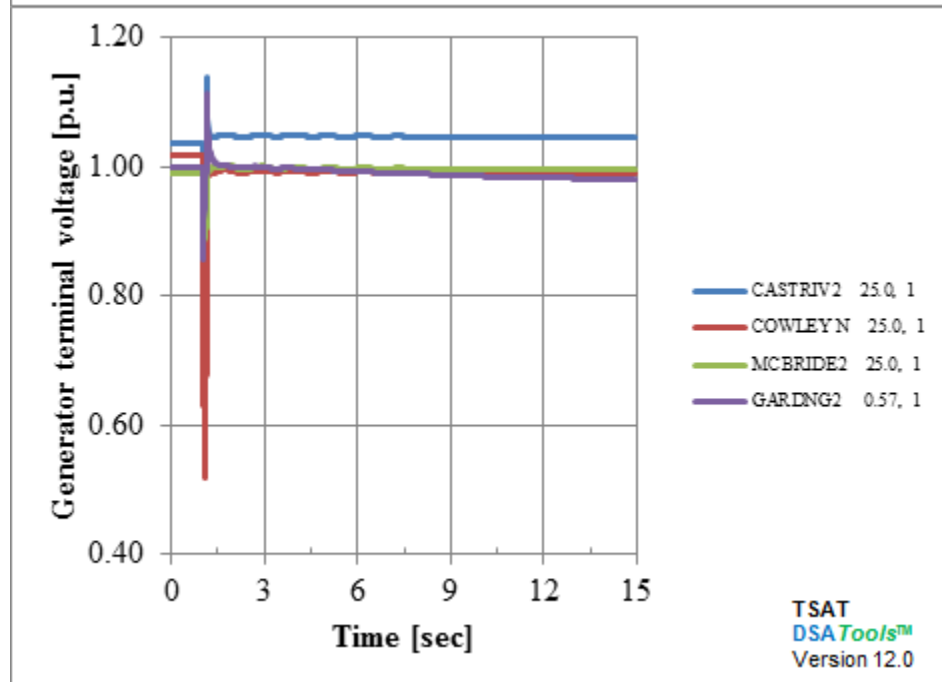
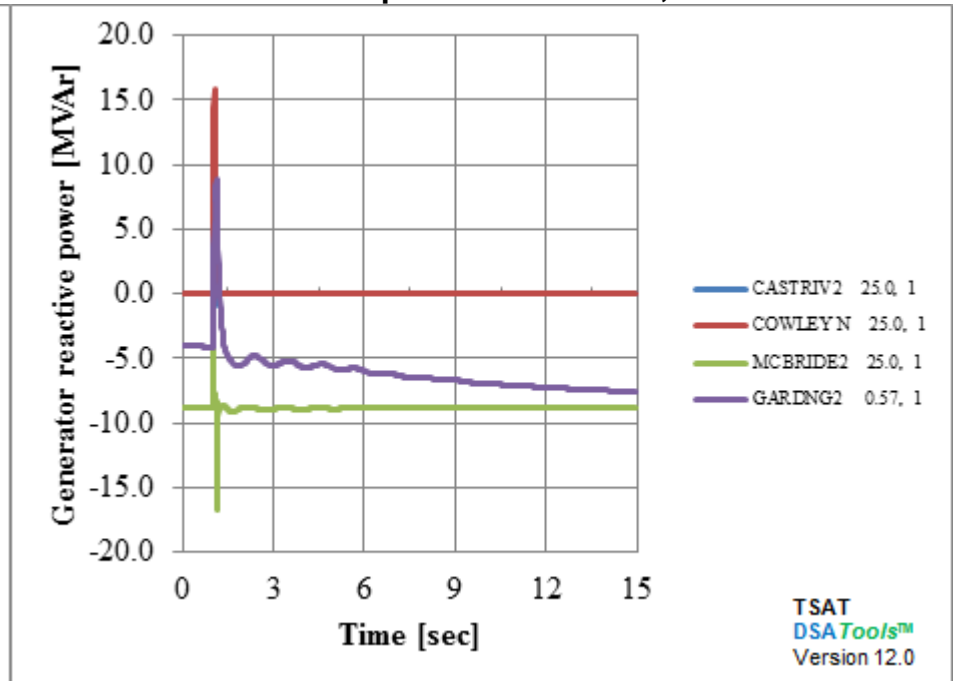
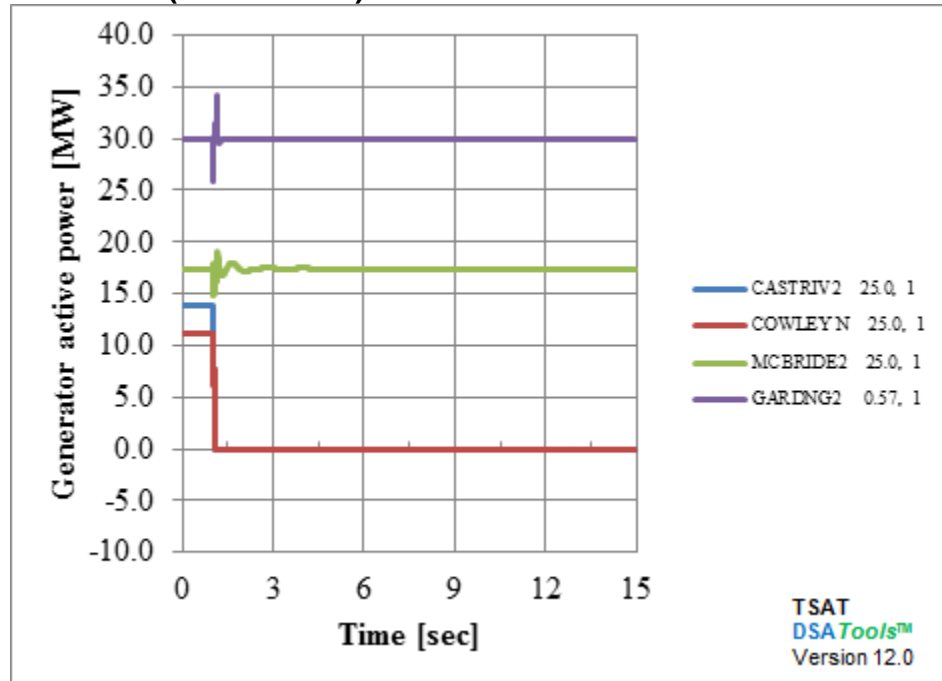
Proposed Connection, Summer Peak 2014





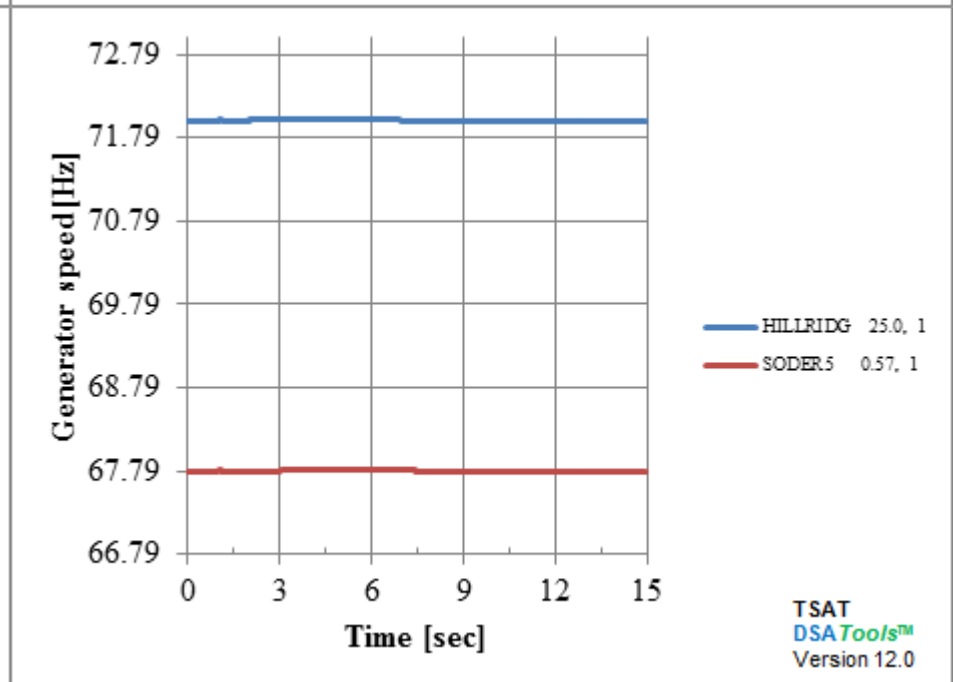
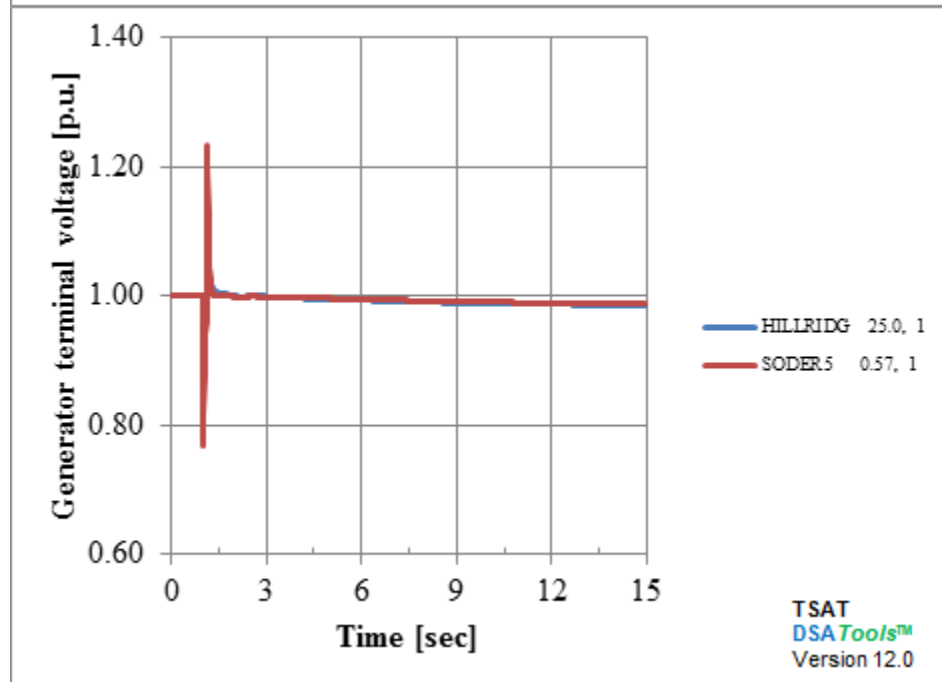
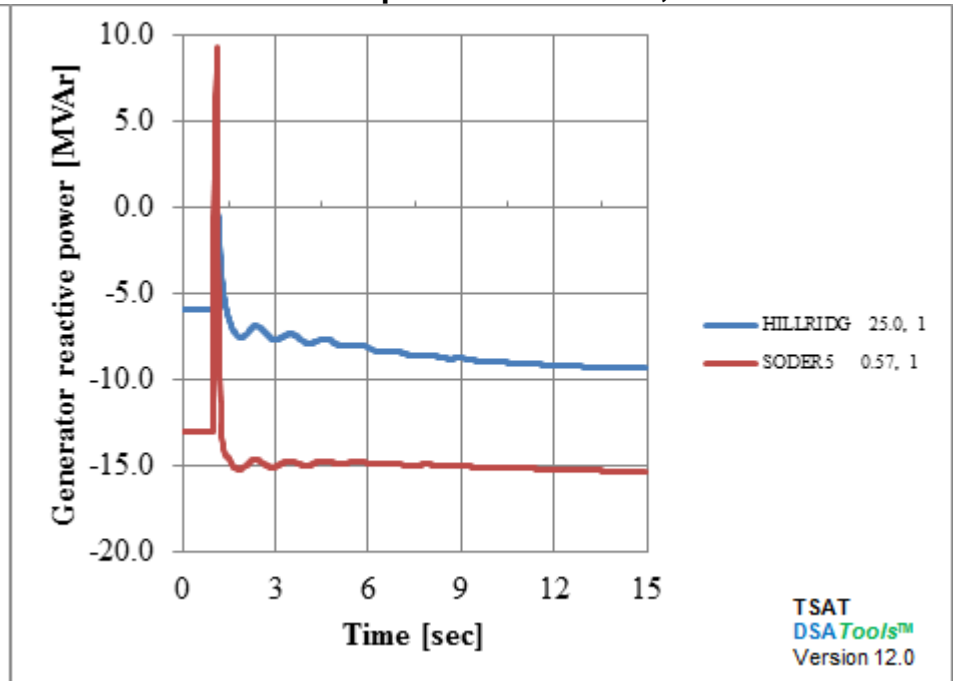
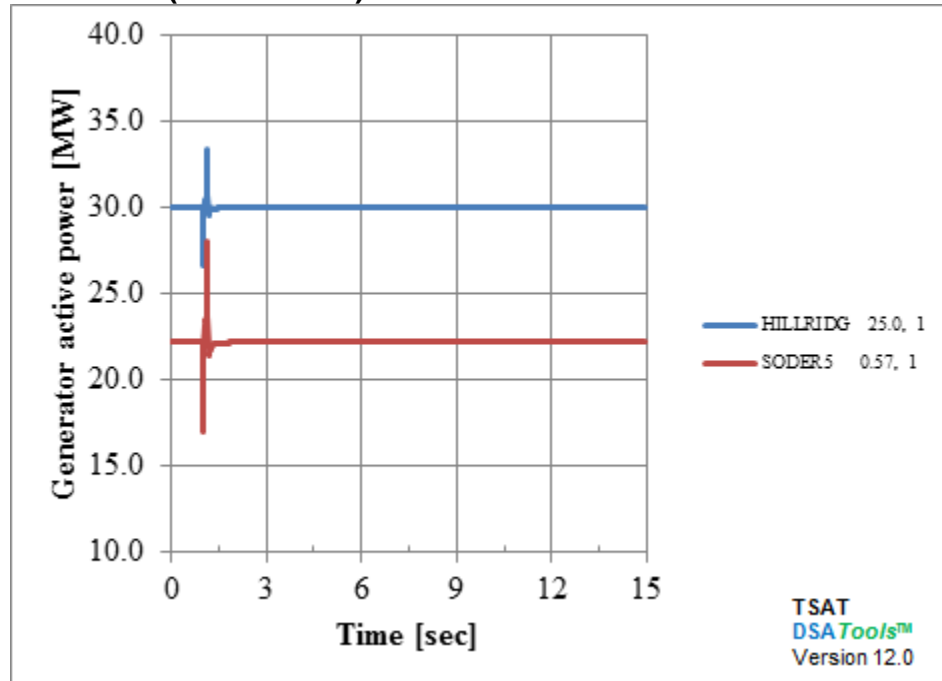
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Peak 2014



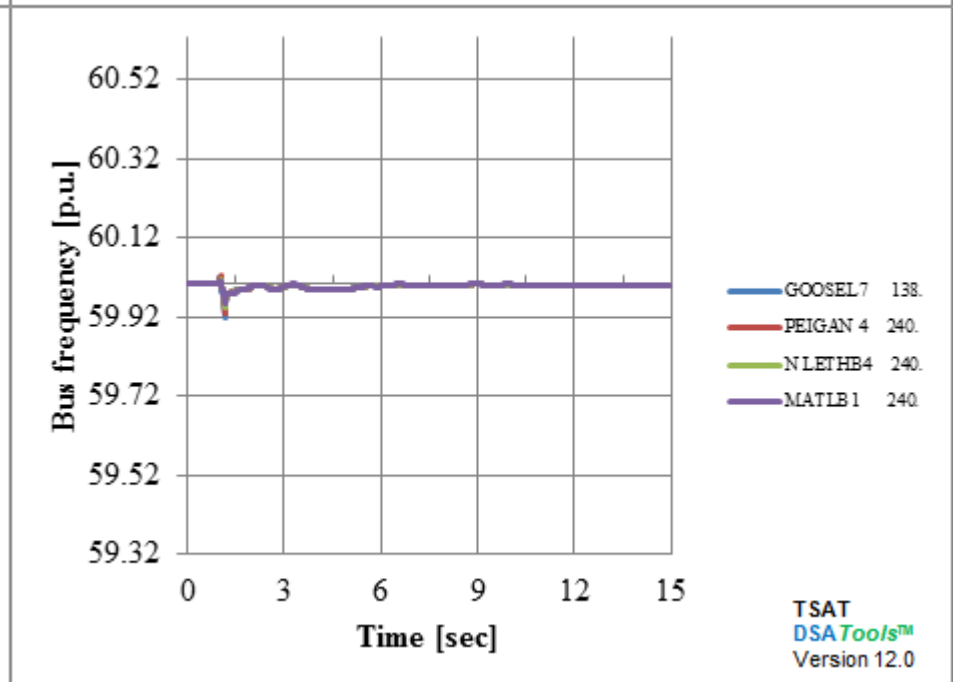
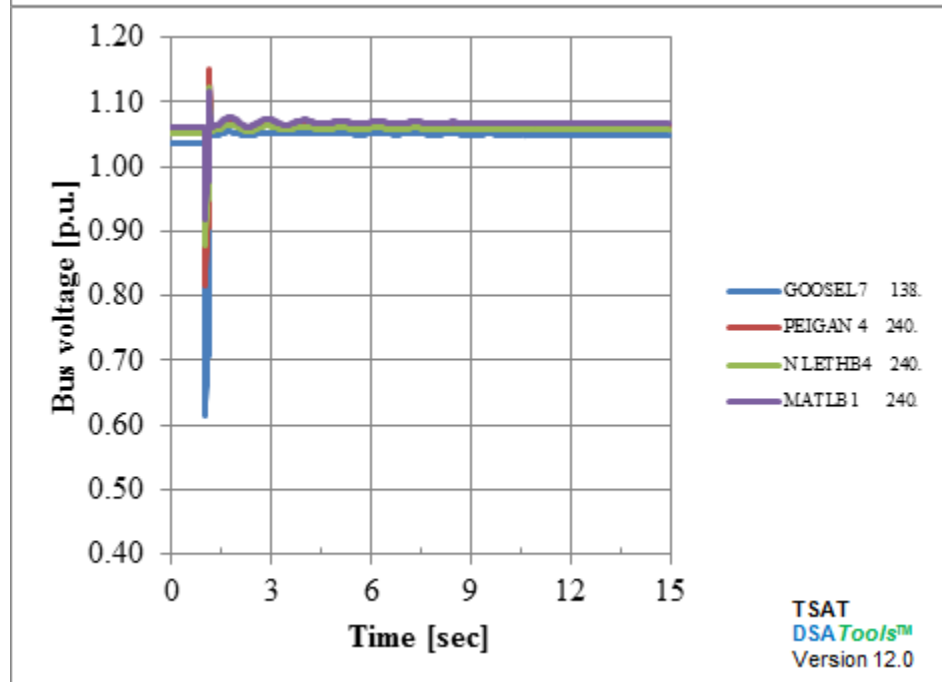
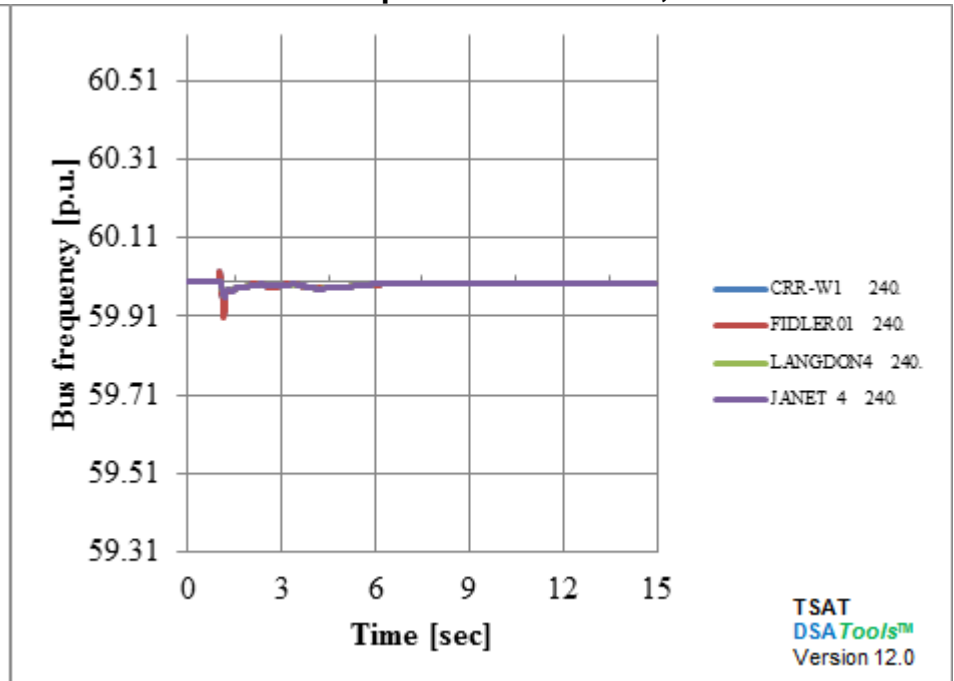
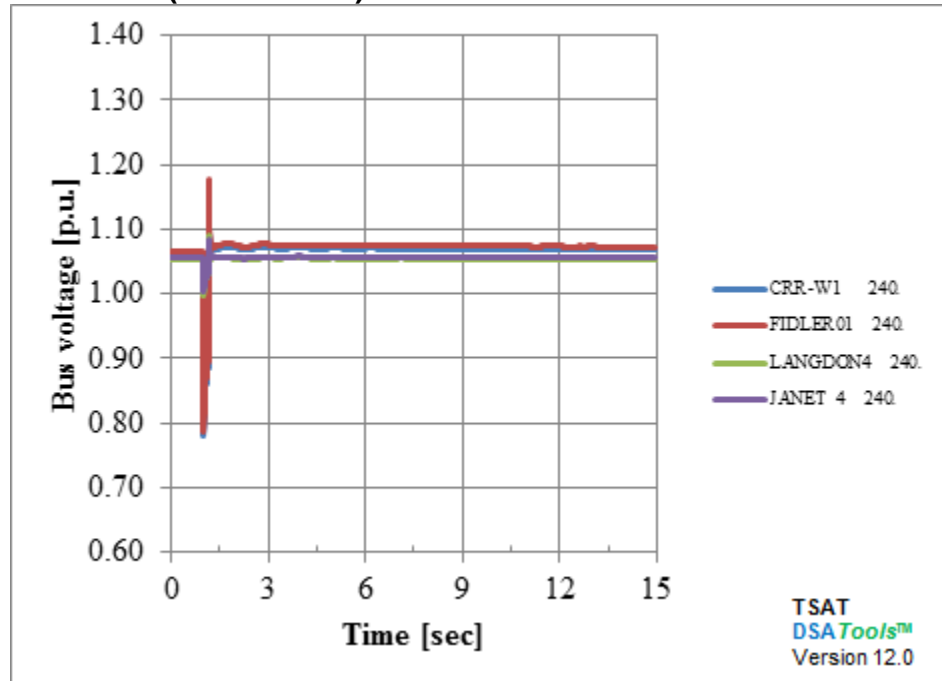
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Peak 2014



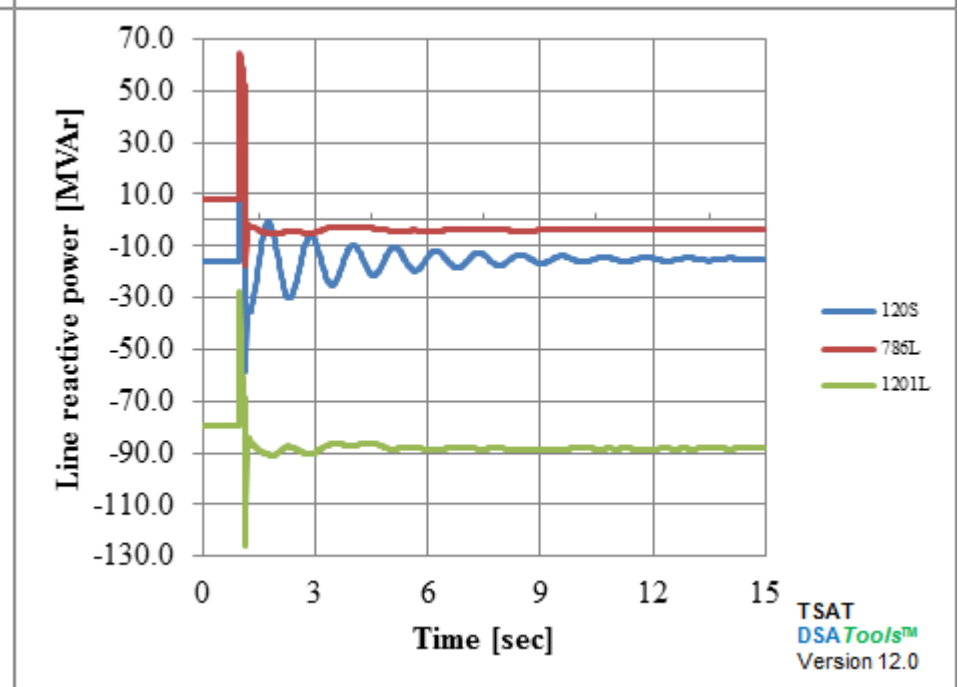
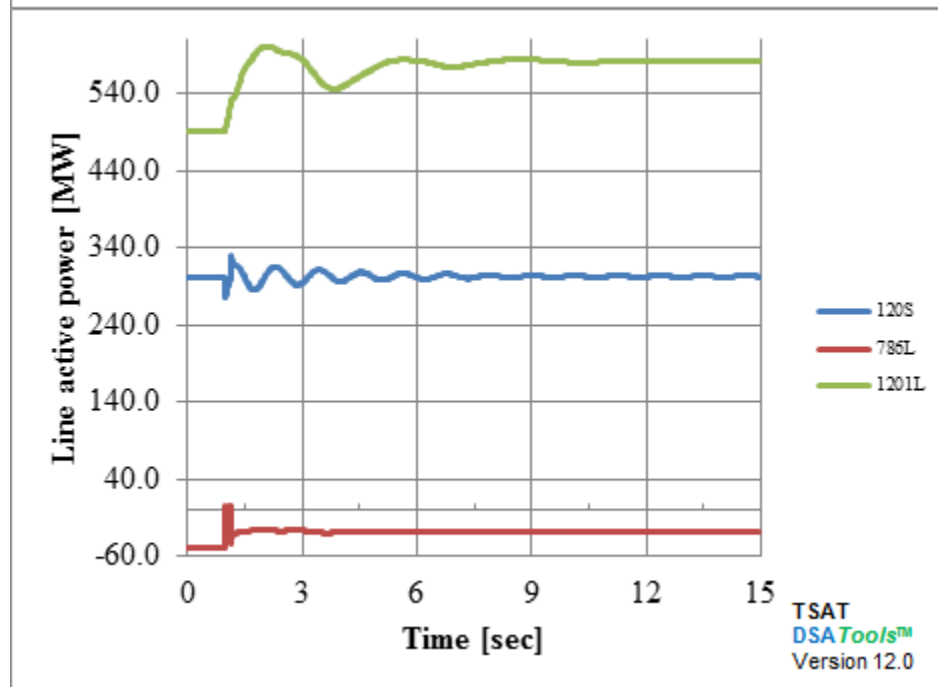
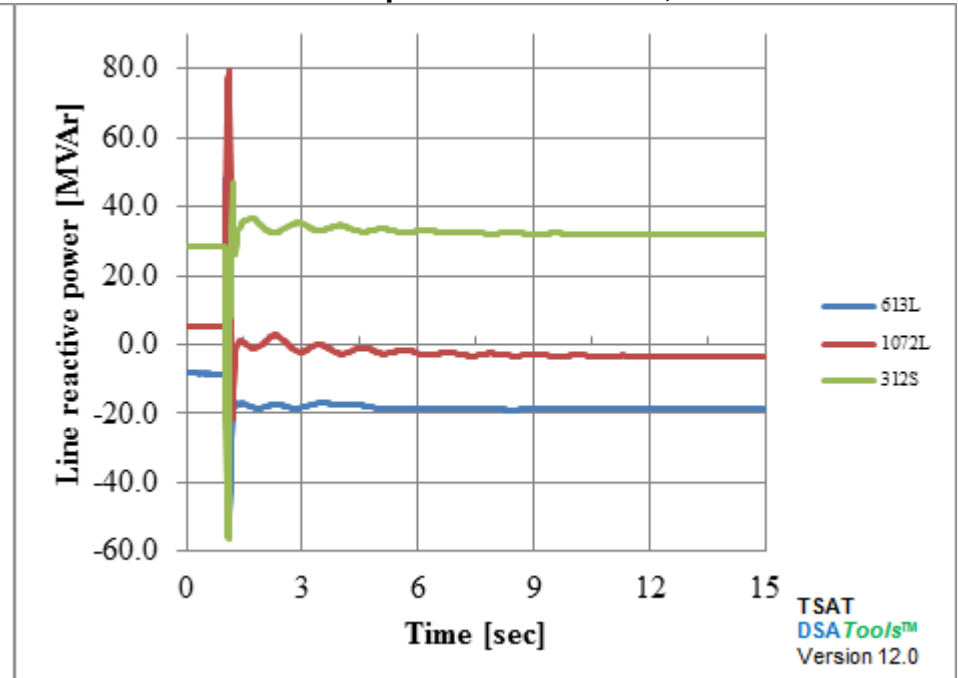
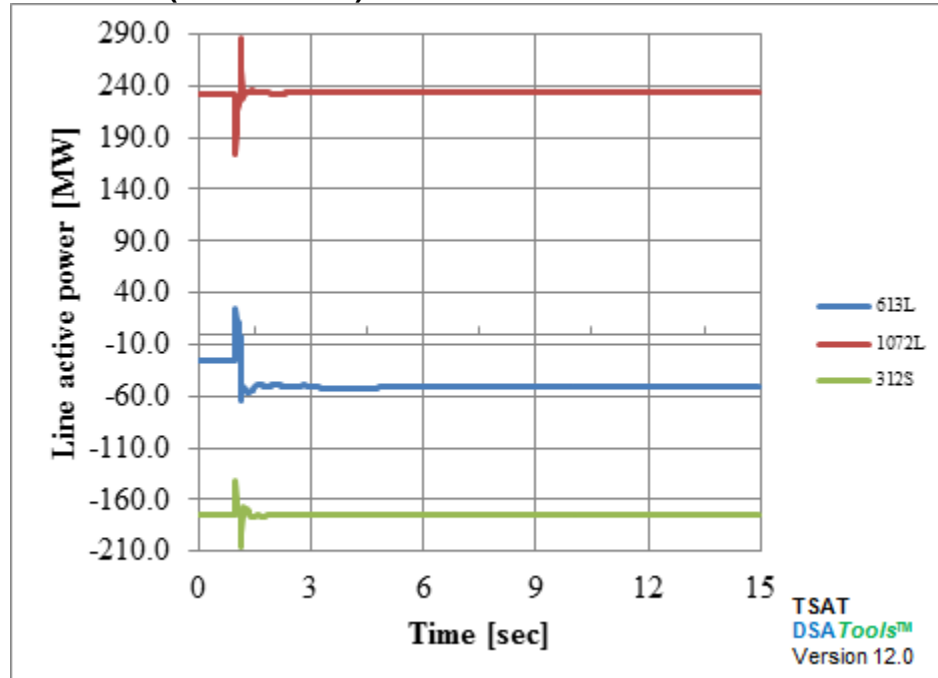
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Peak 2014



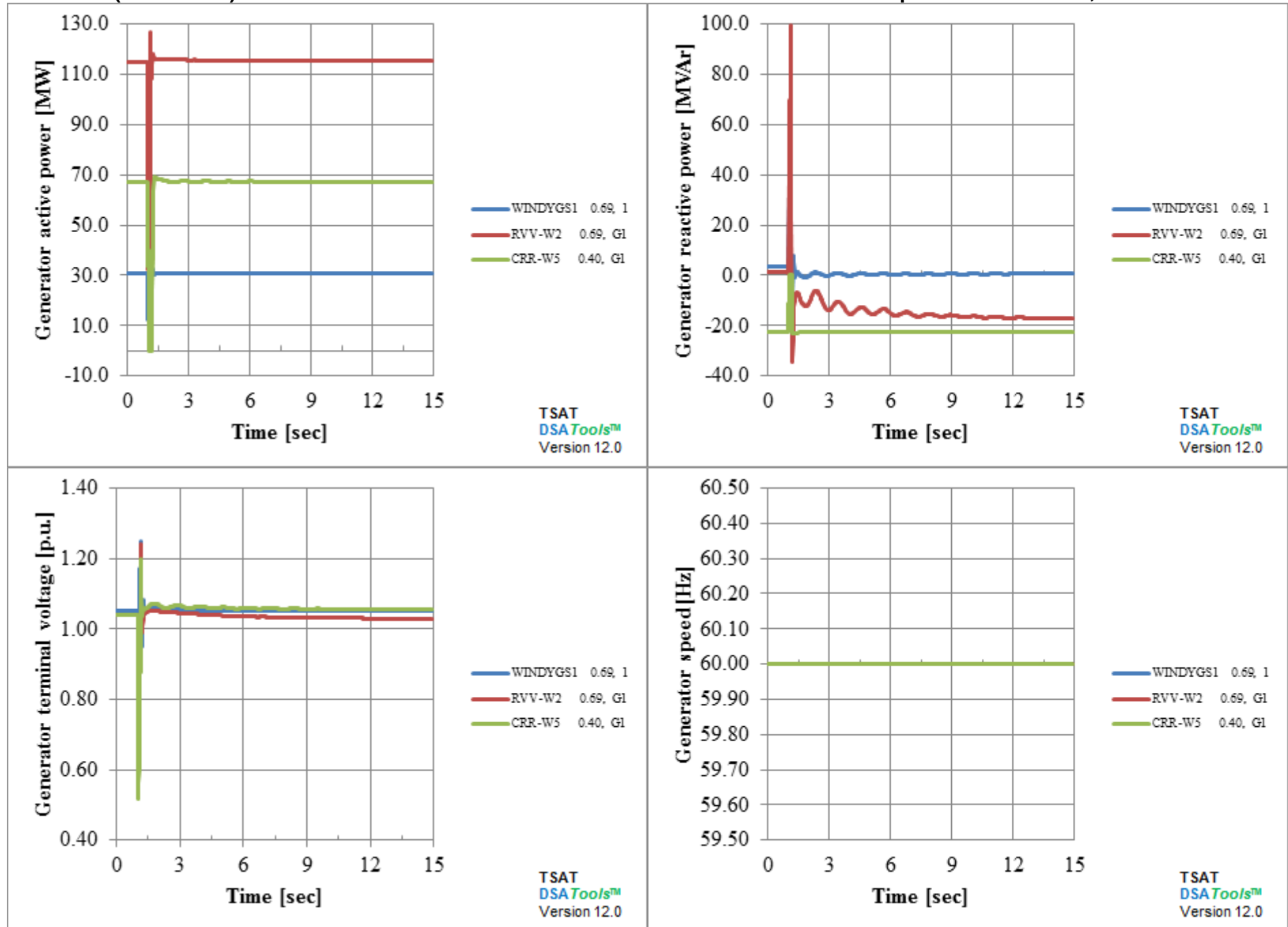
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection, Summer Peak 2014



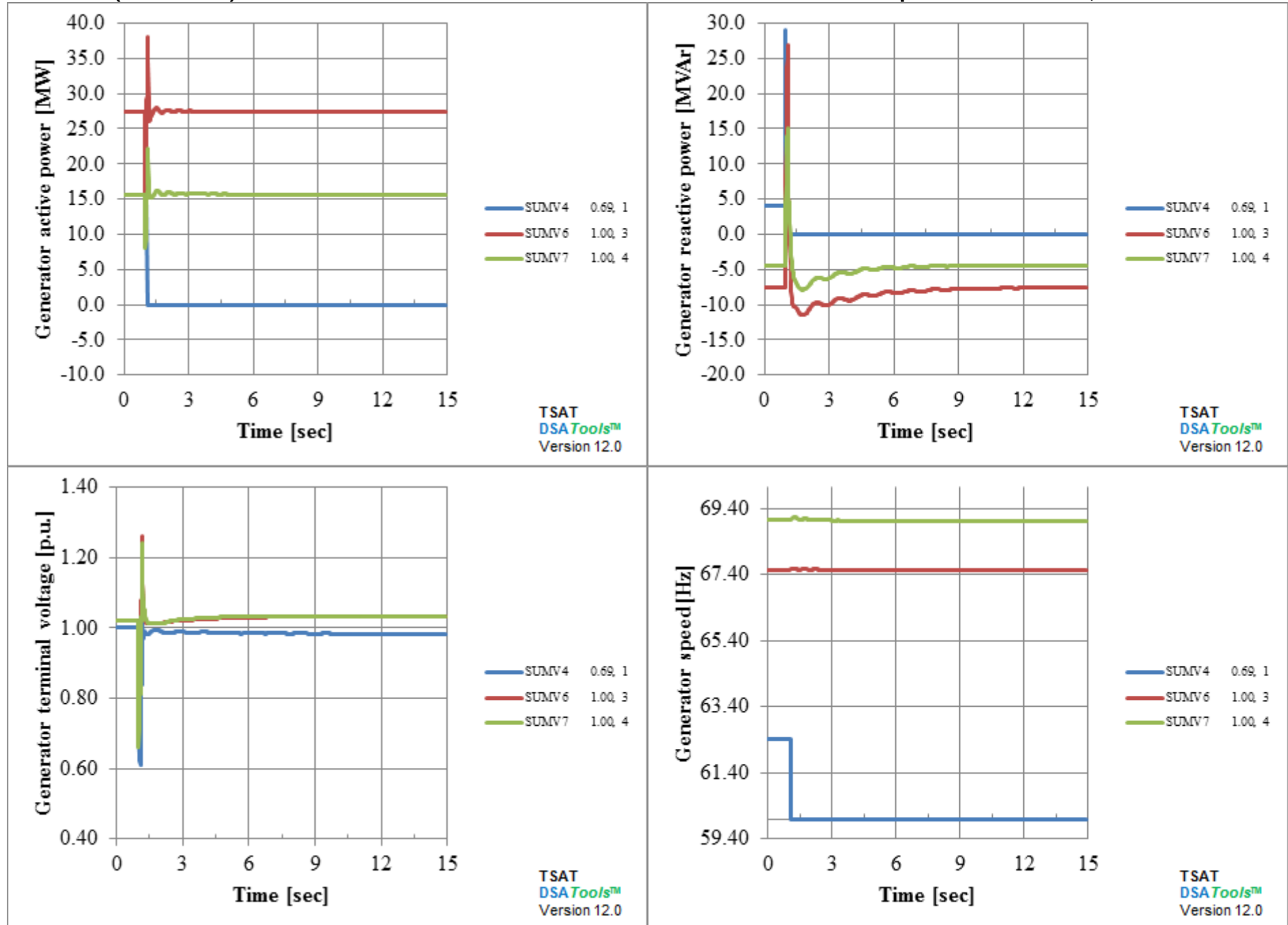
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



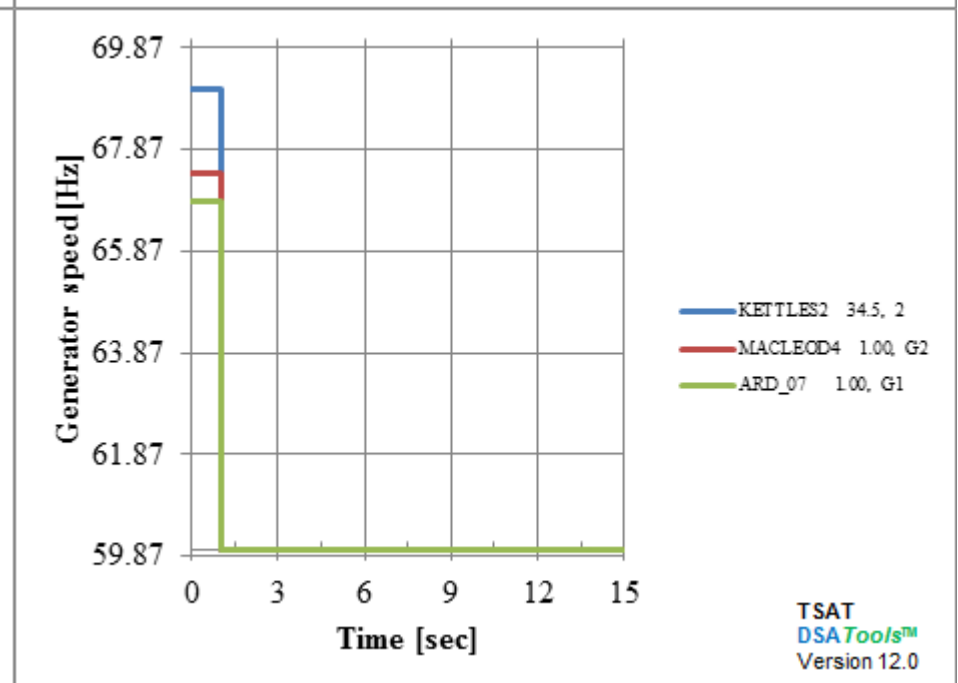
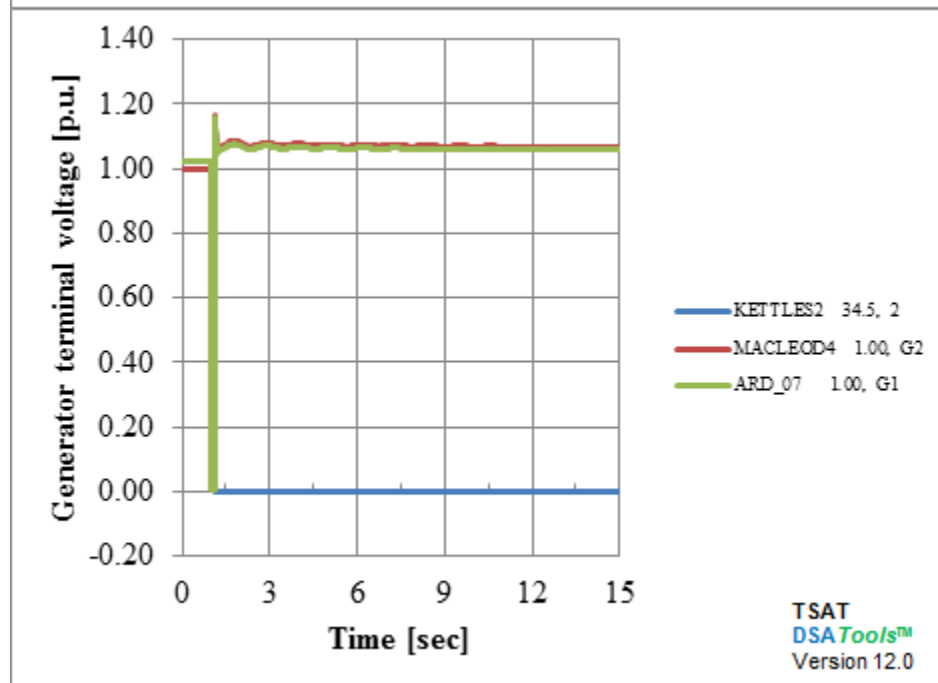
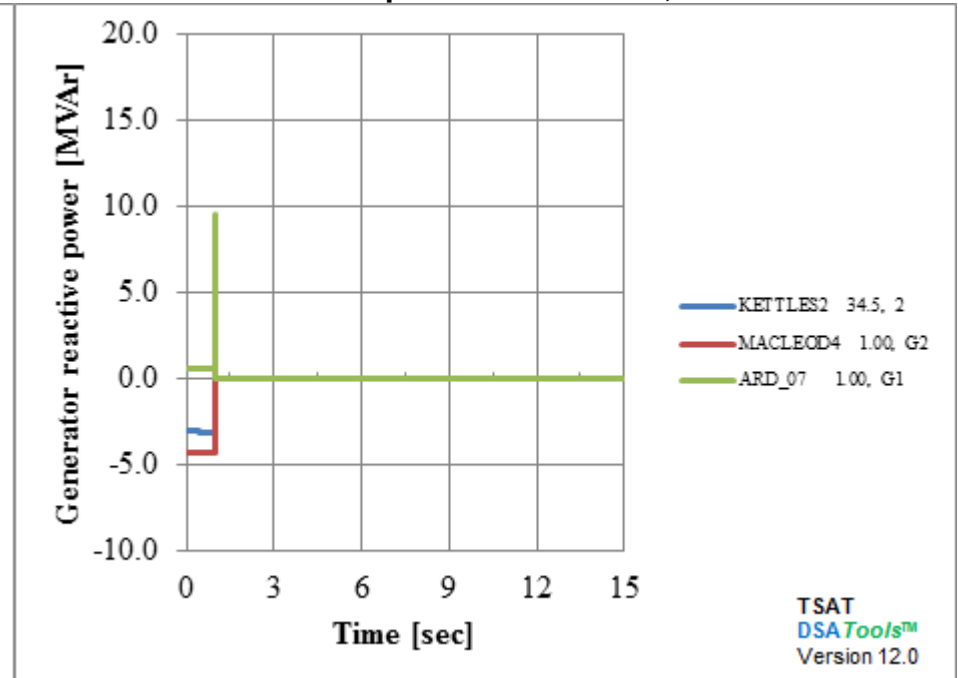
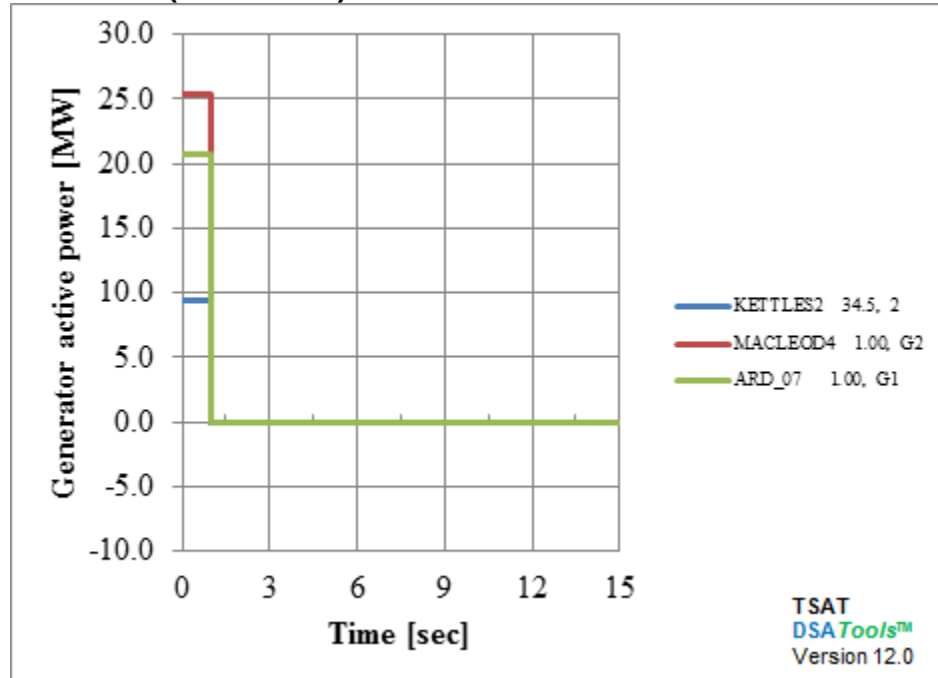
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



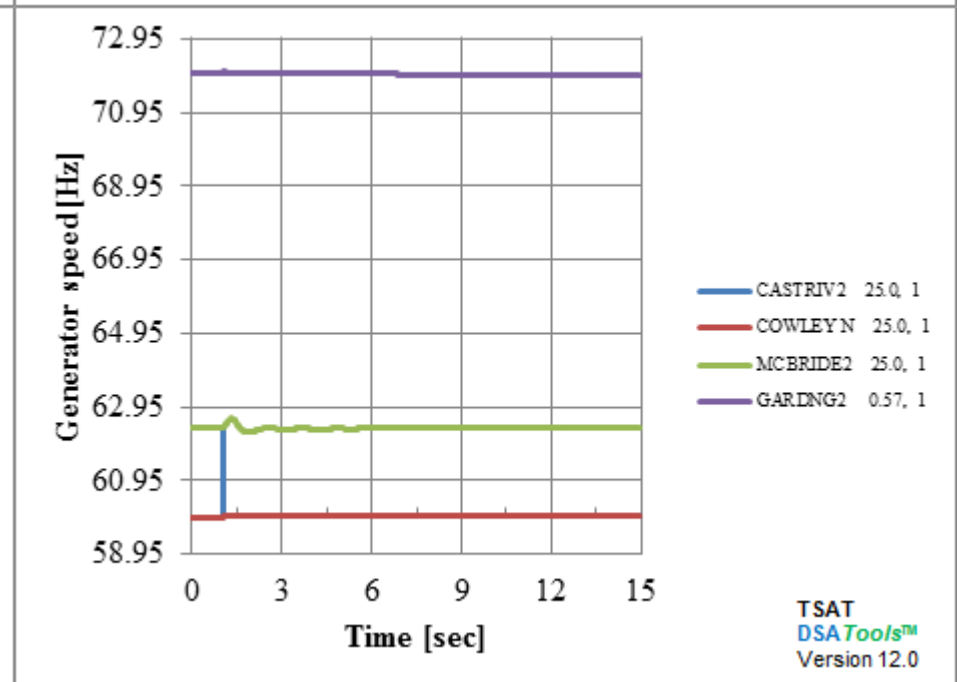
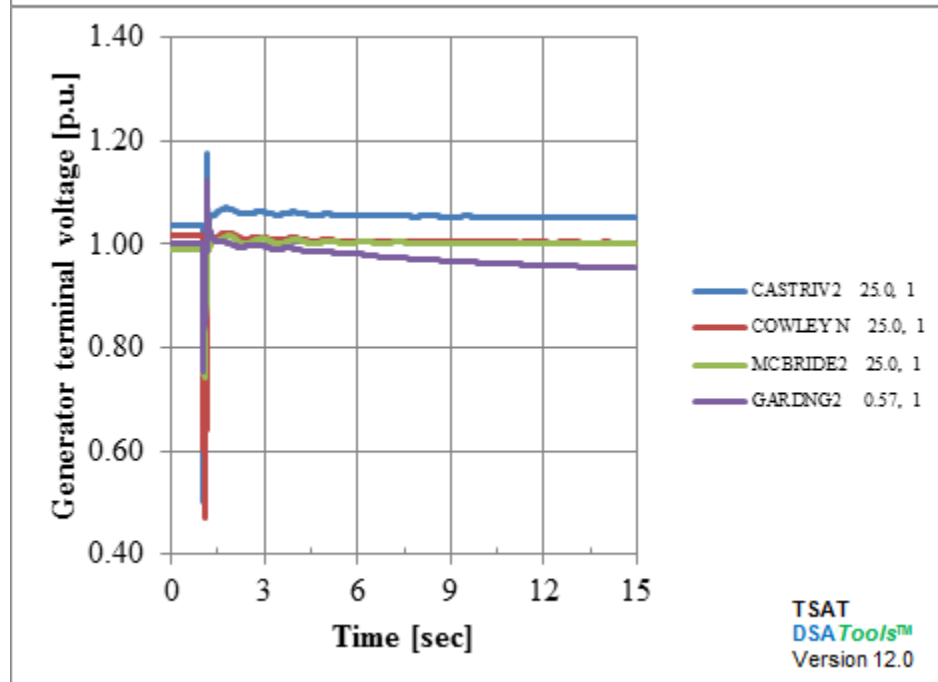
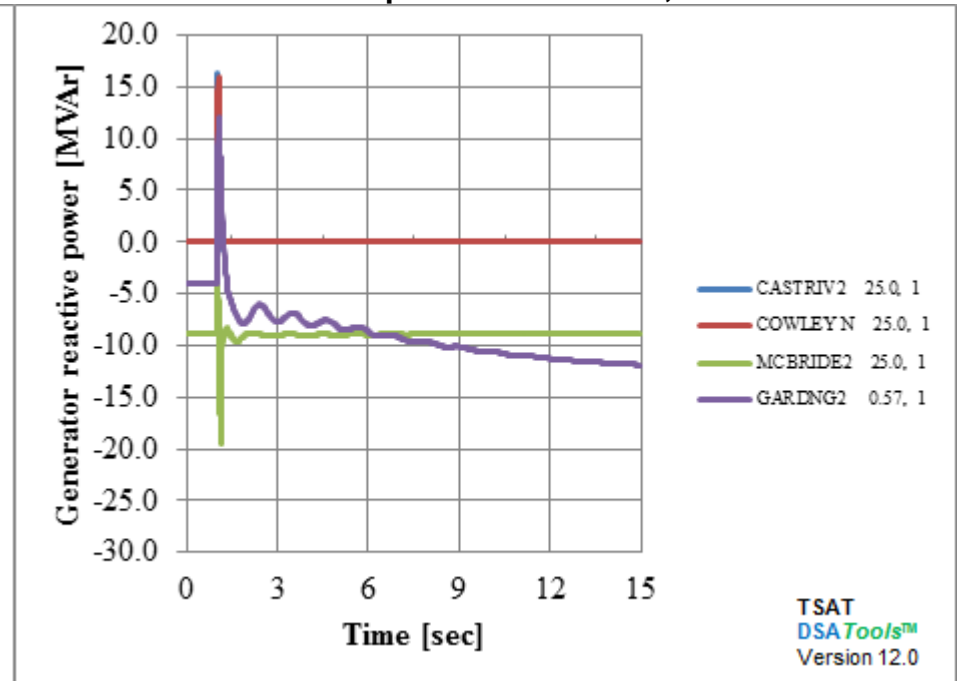
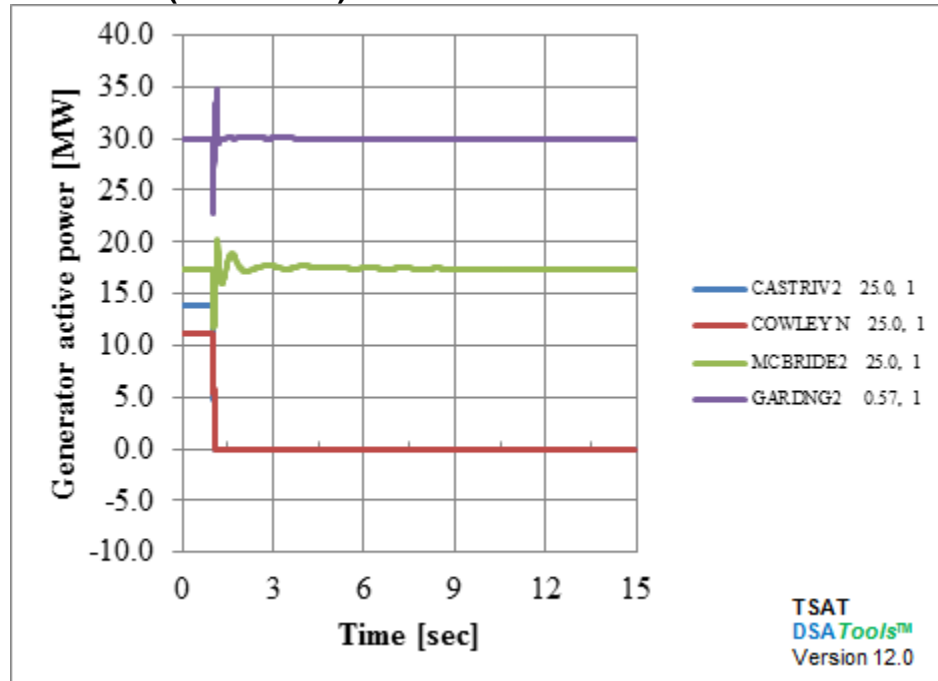
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



12 -- 616L (59S - 103S) NEAR 59S

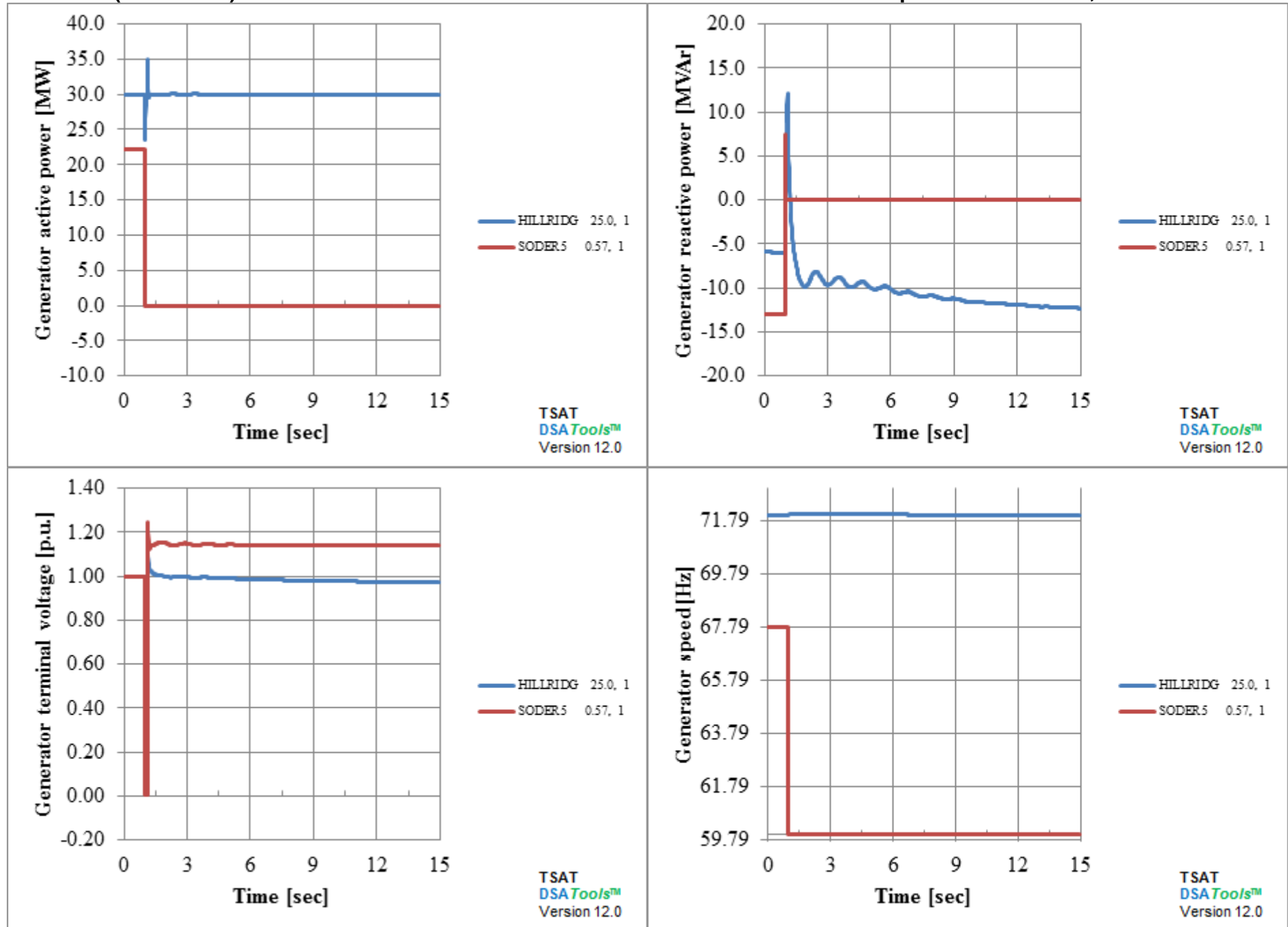
Proposed Connection, Summer Peak 2014





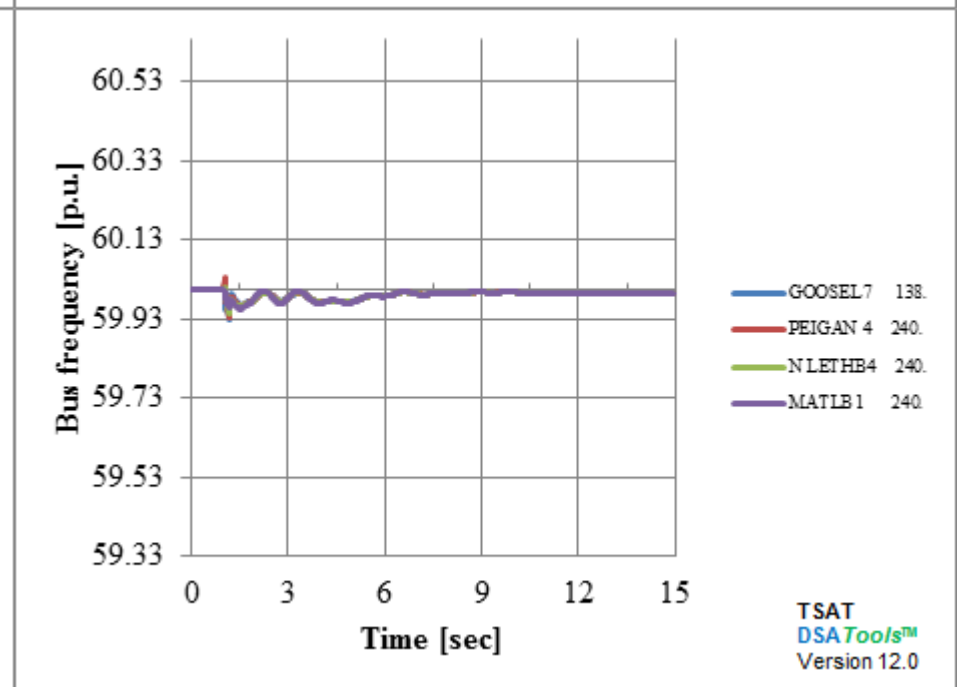
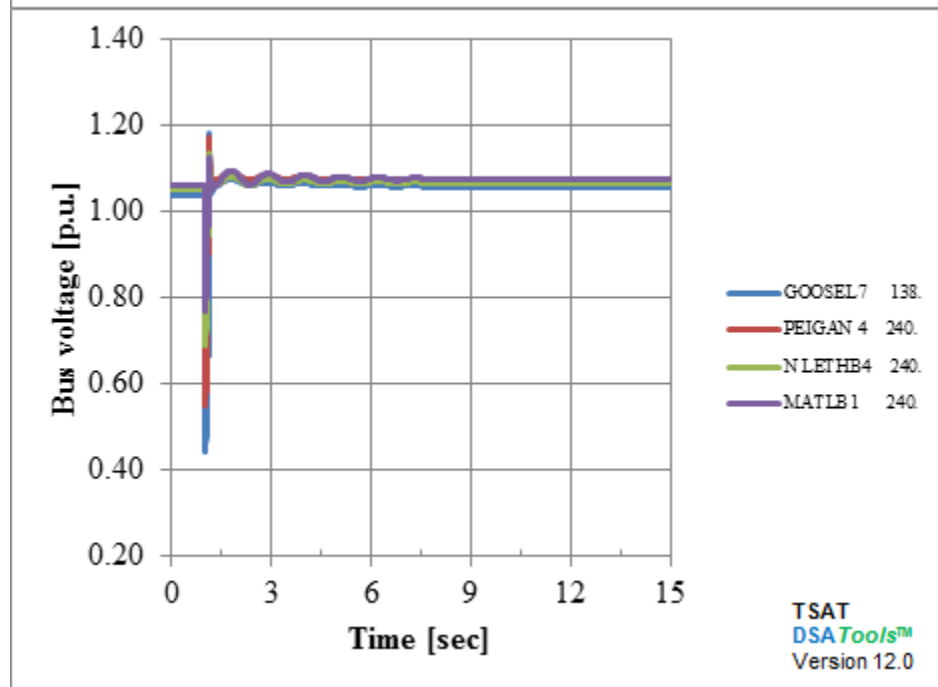
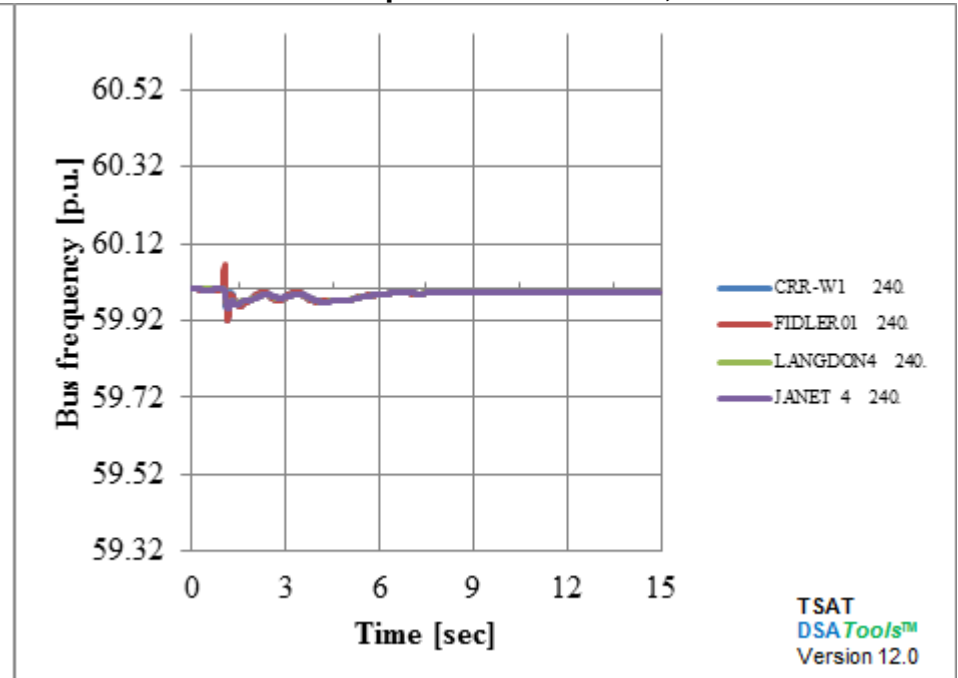
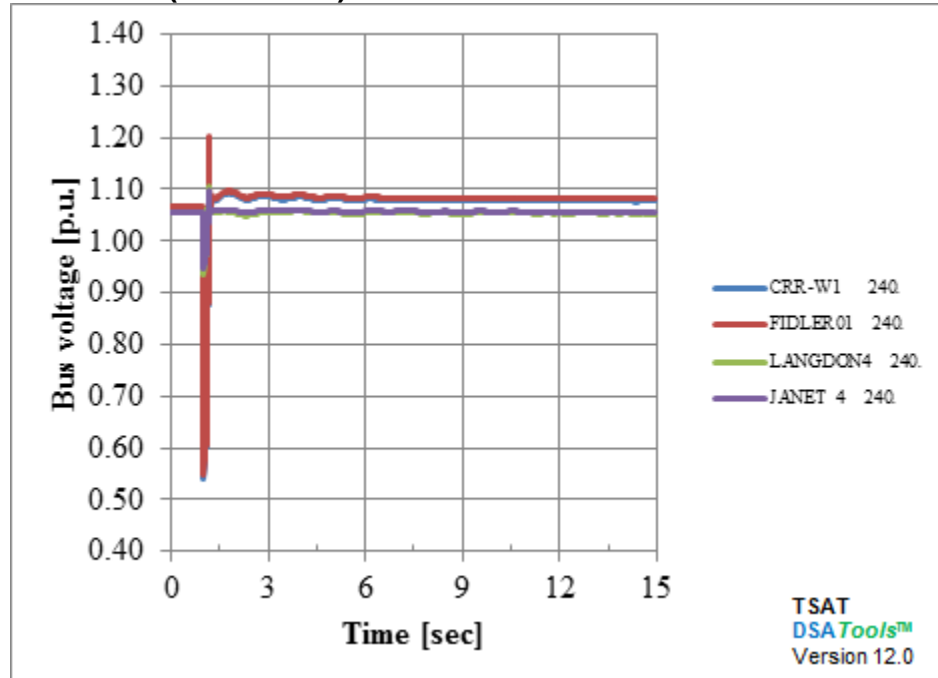
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



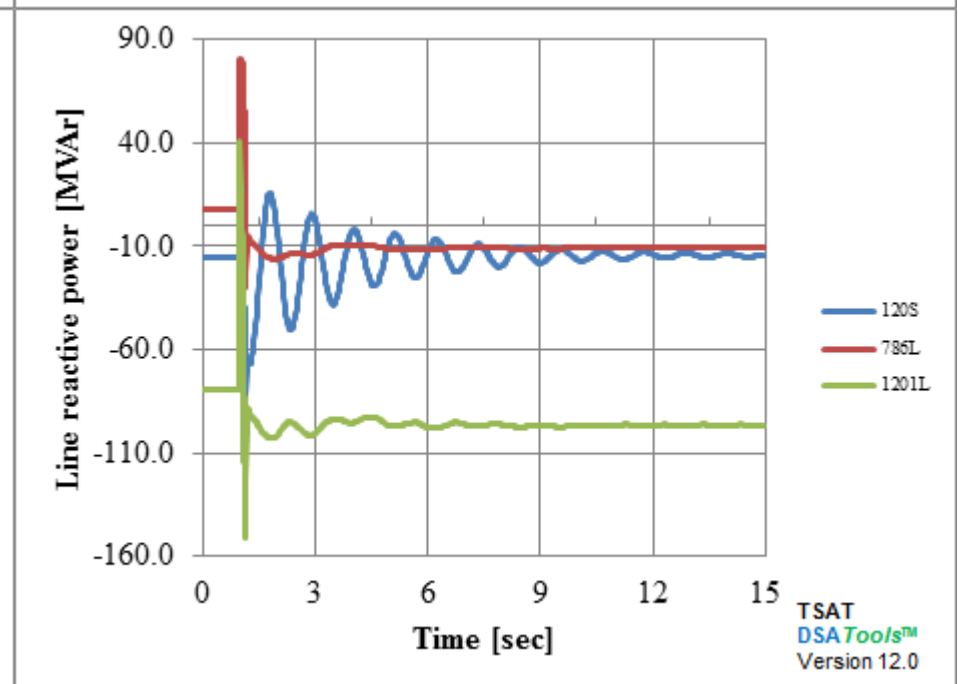
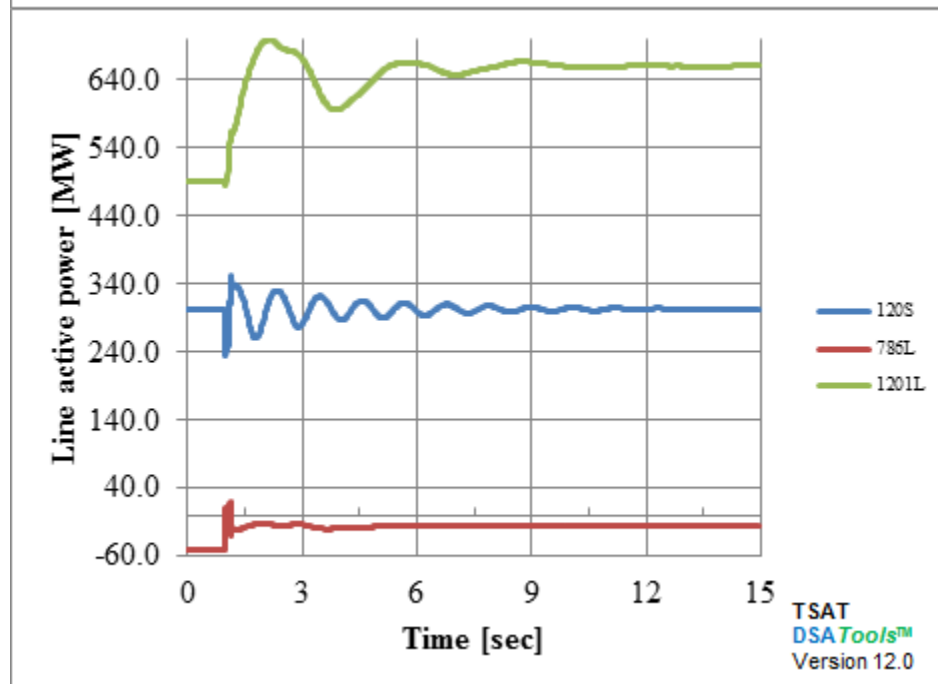
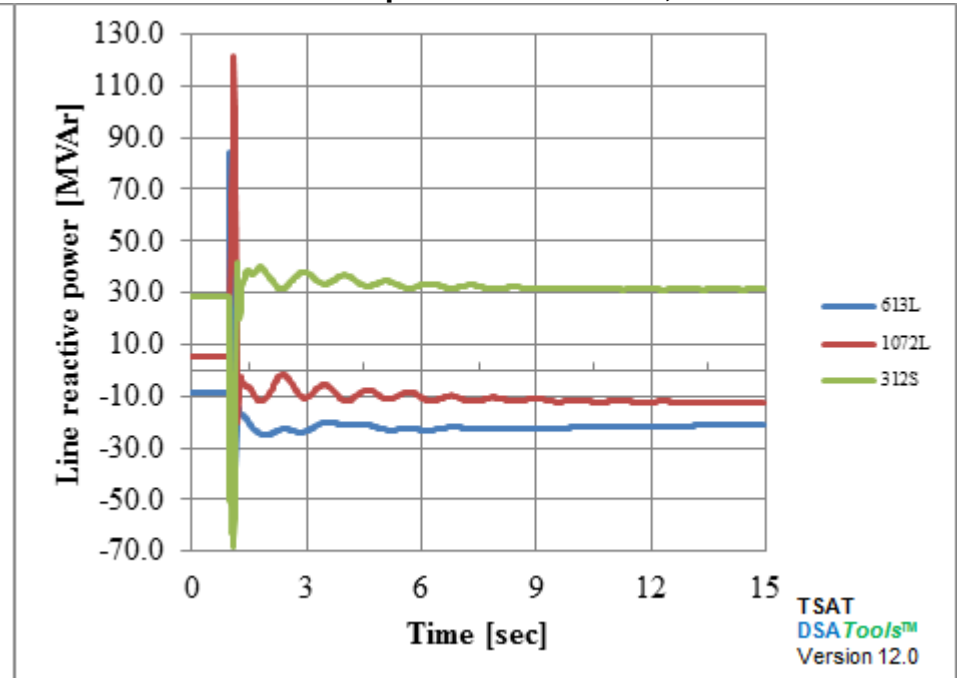
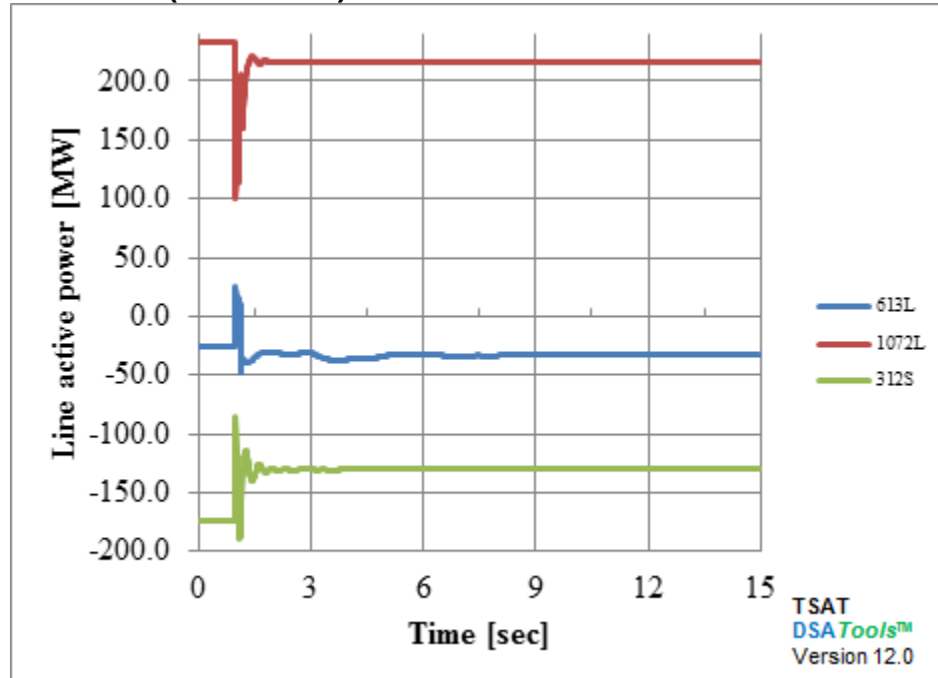
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



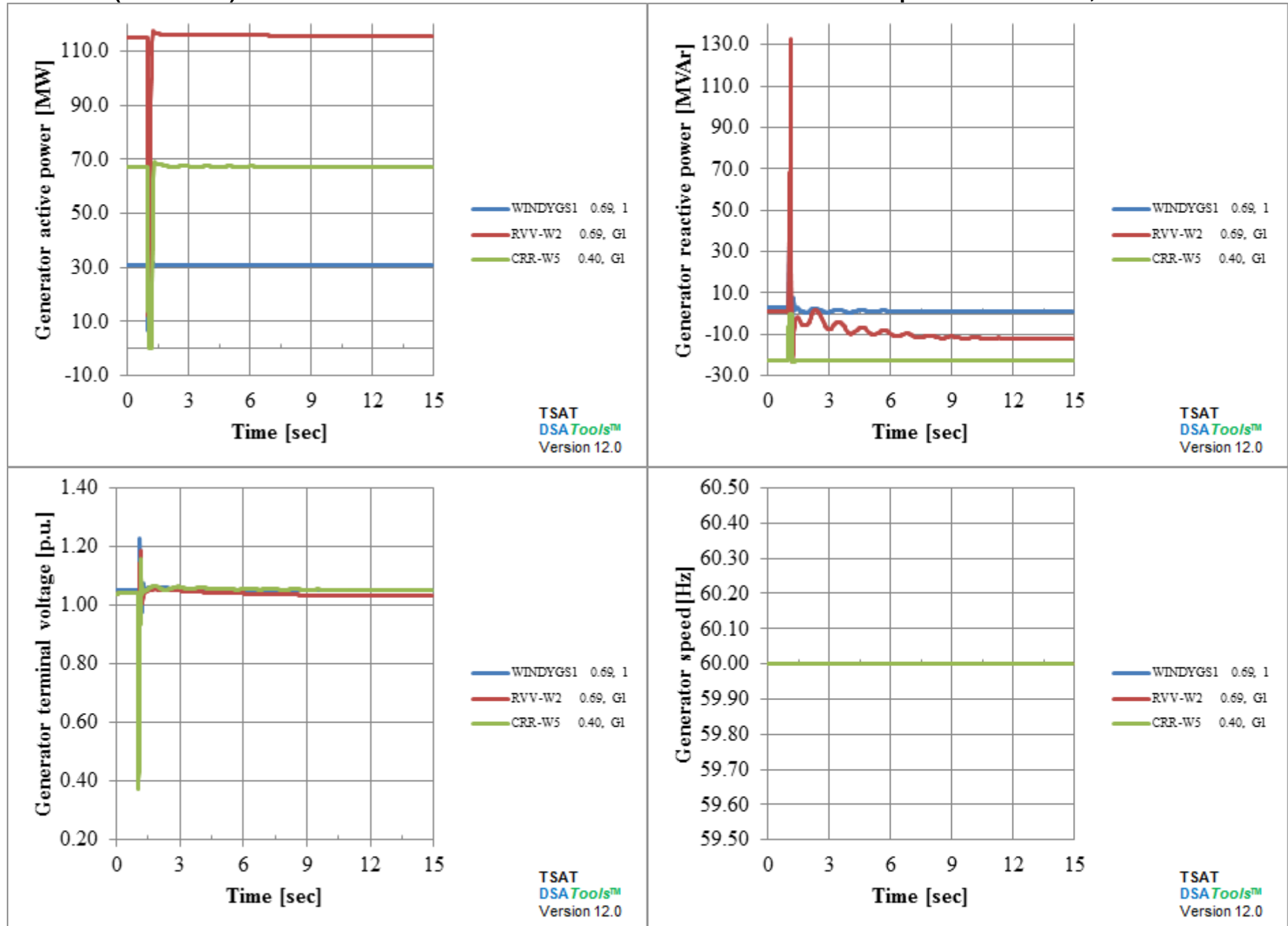
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection, Summer Peak 2014



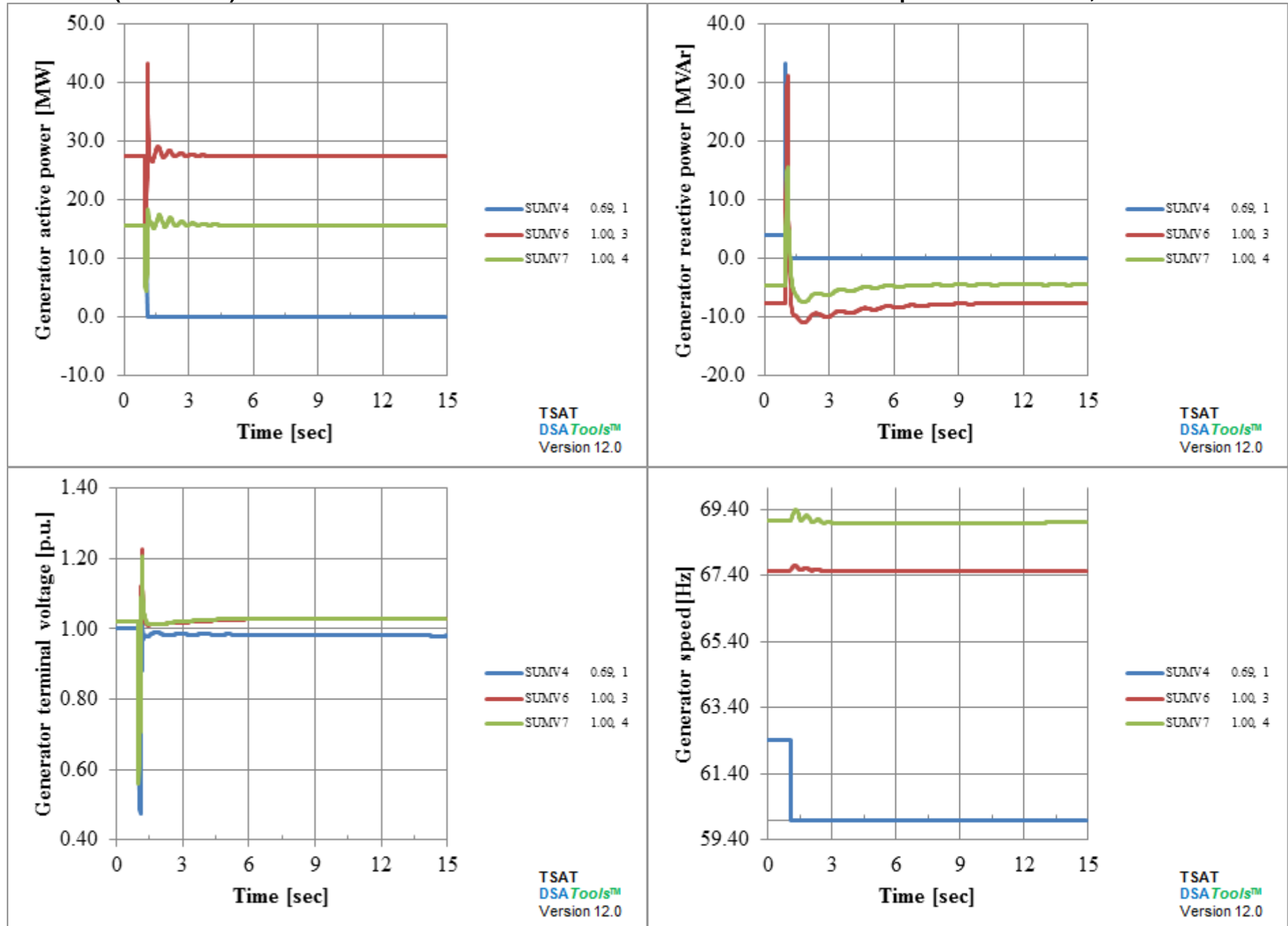
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



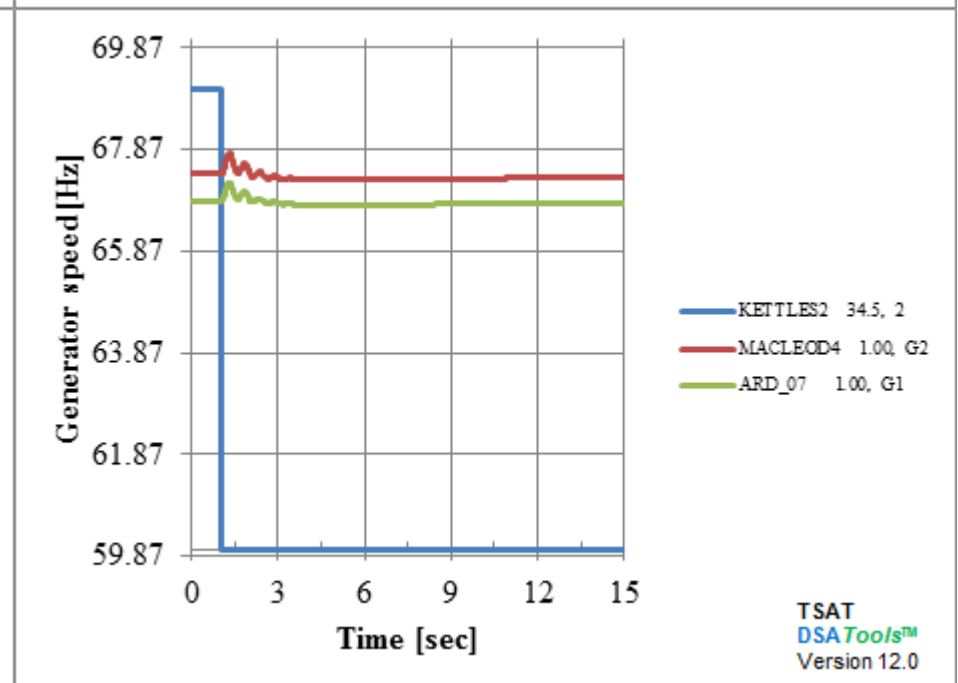
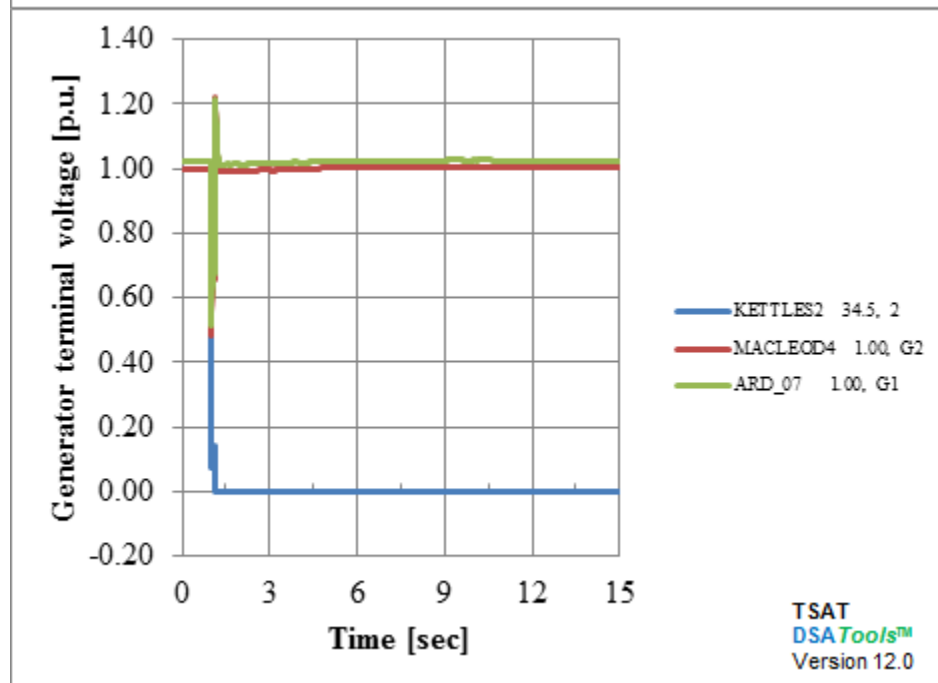
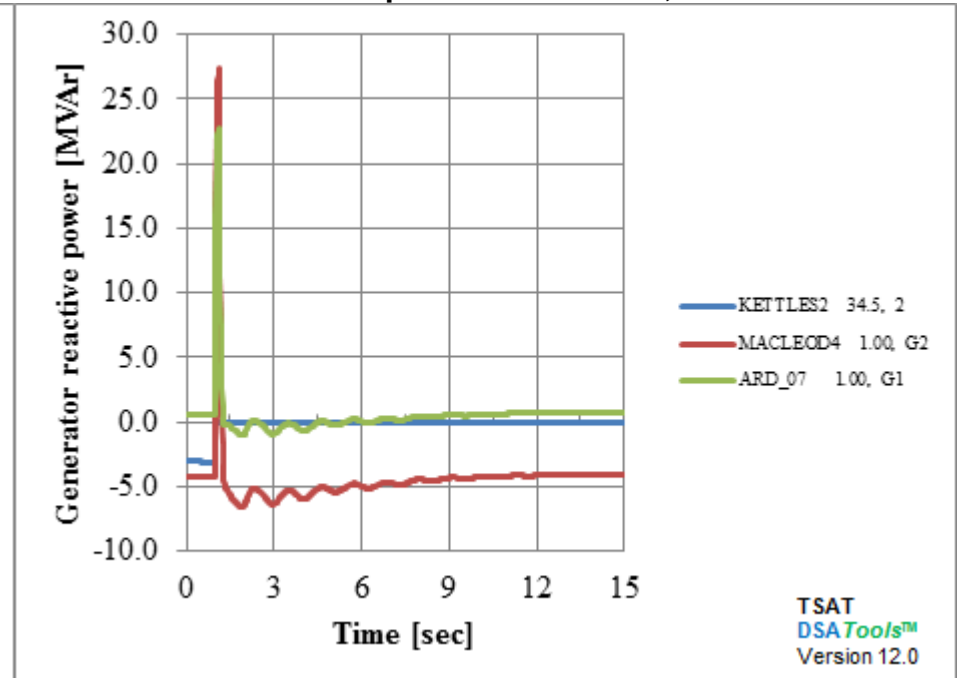
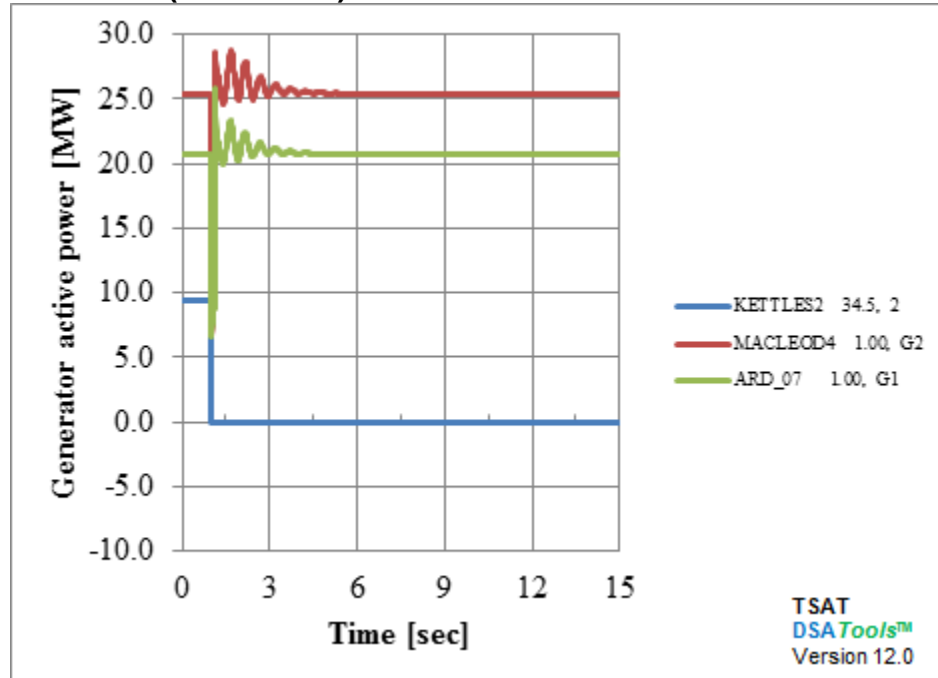
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



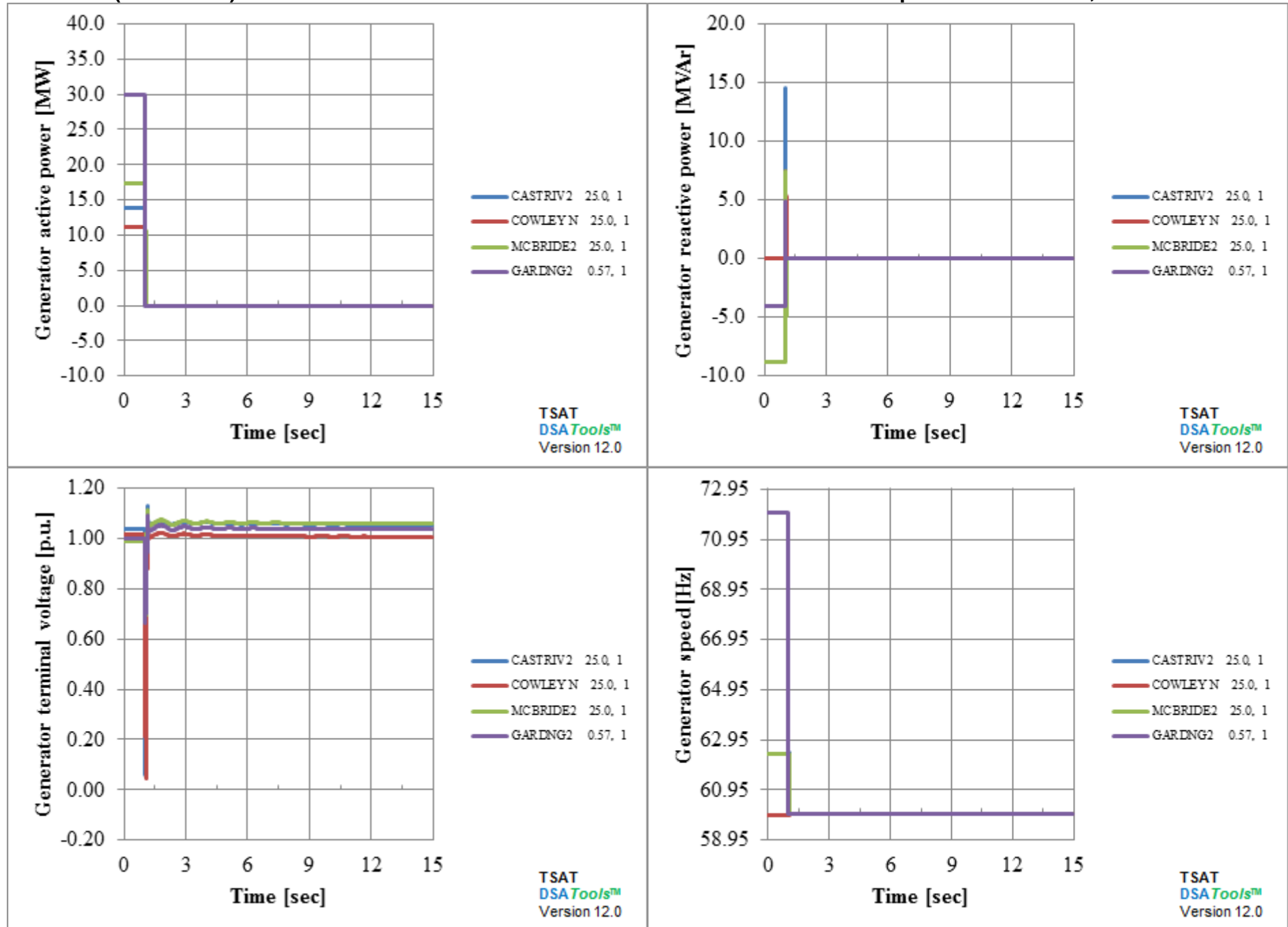
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



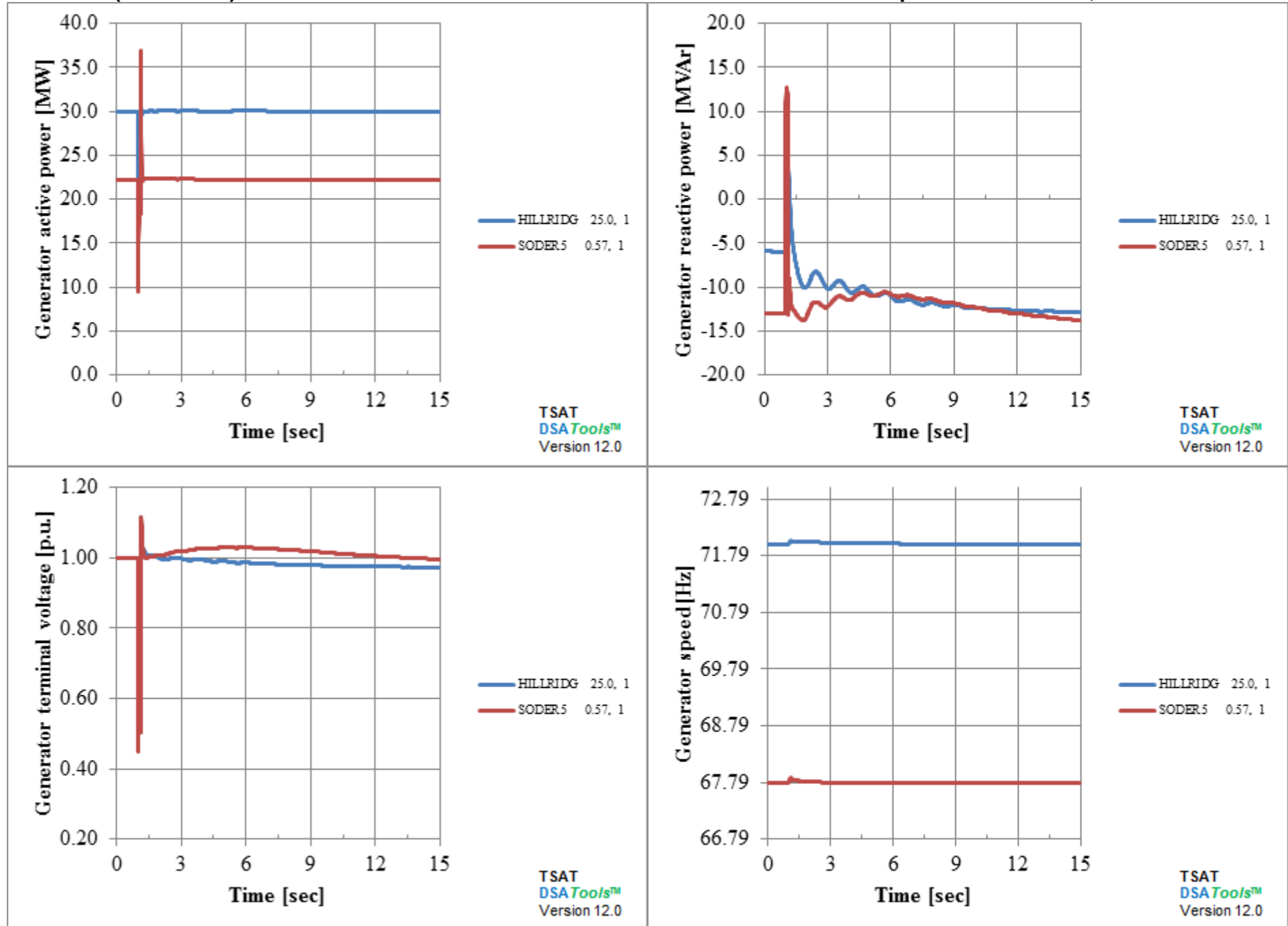
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



13 -- 616L (59S - 103S) NEAR 103S

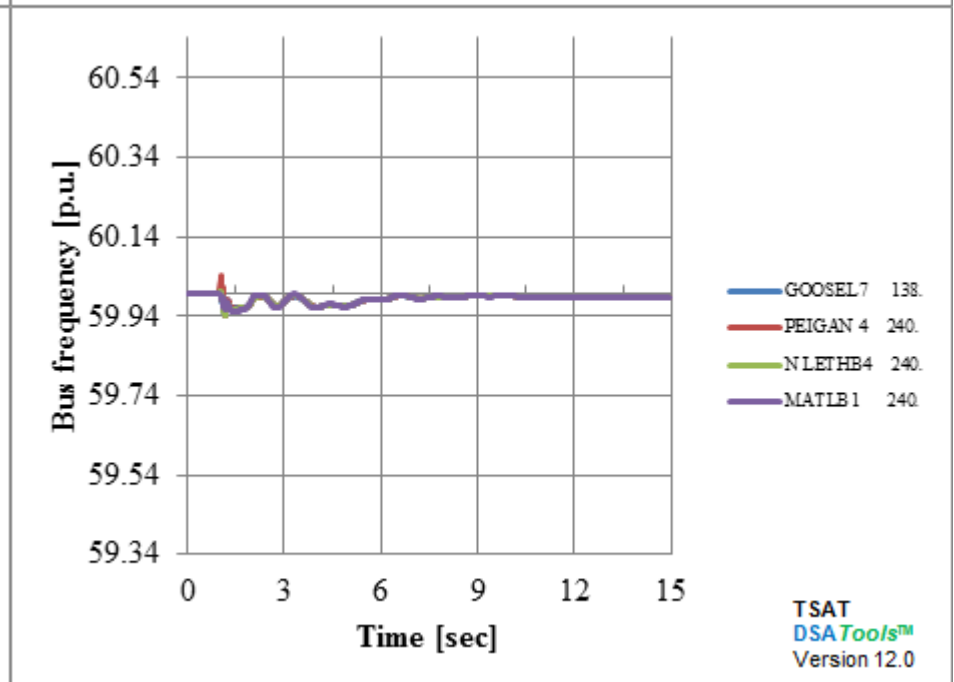
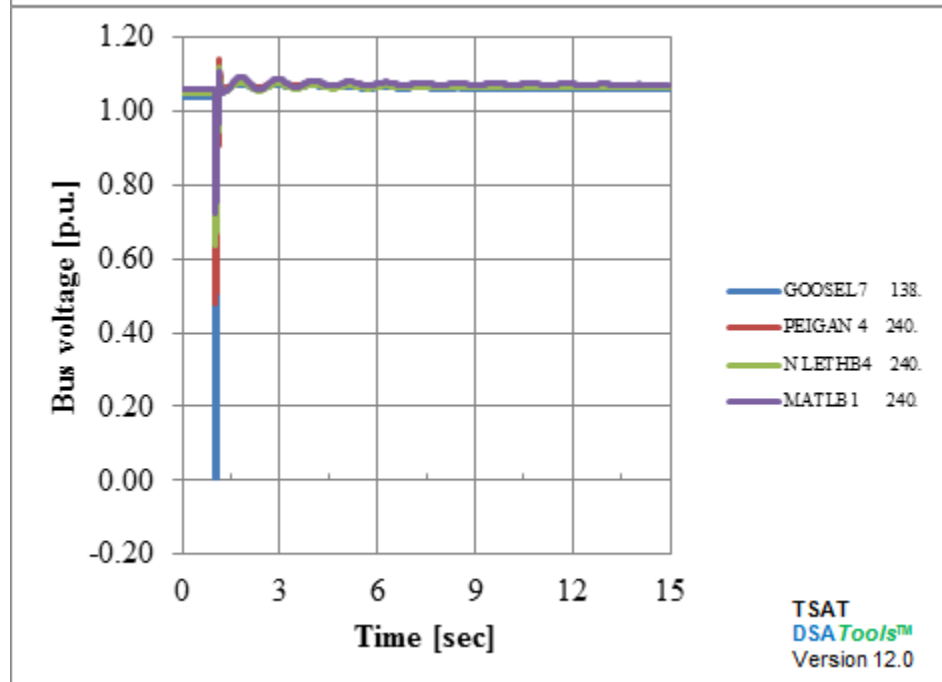
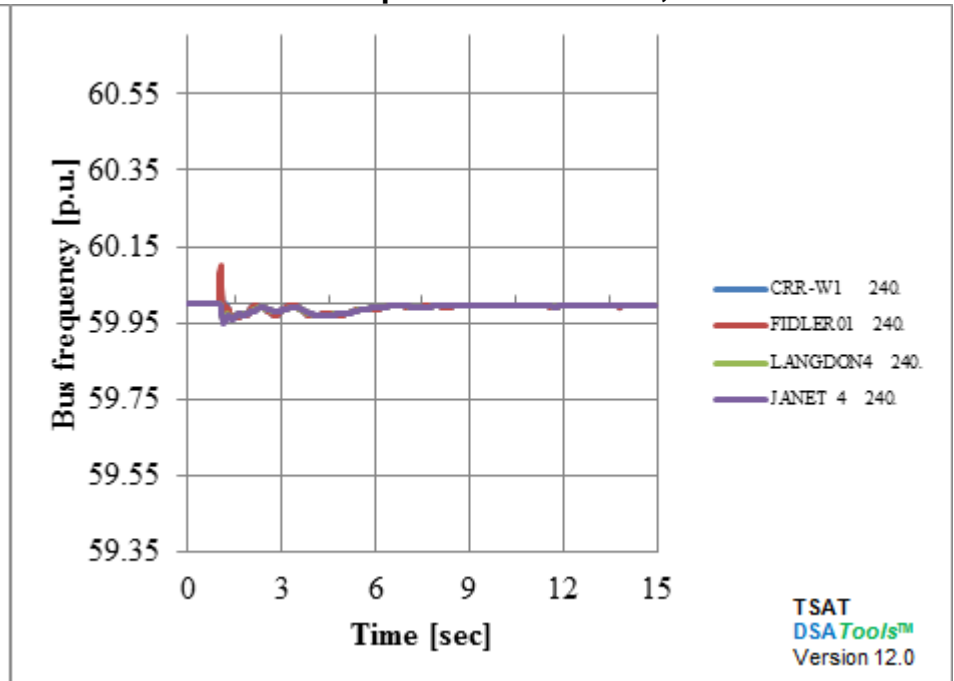
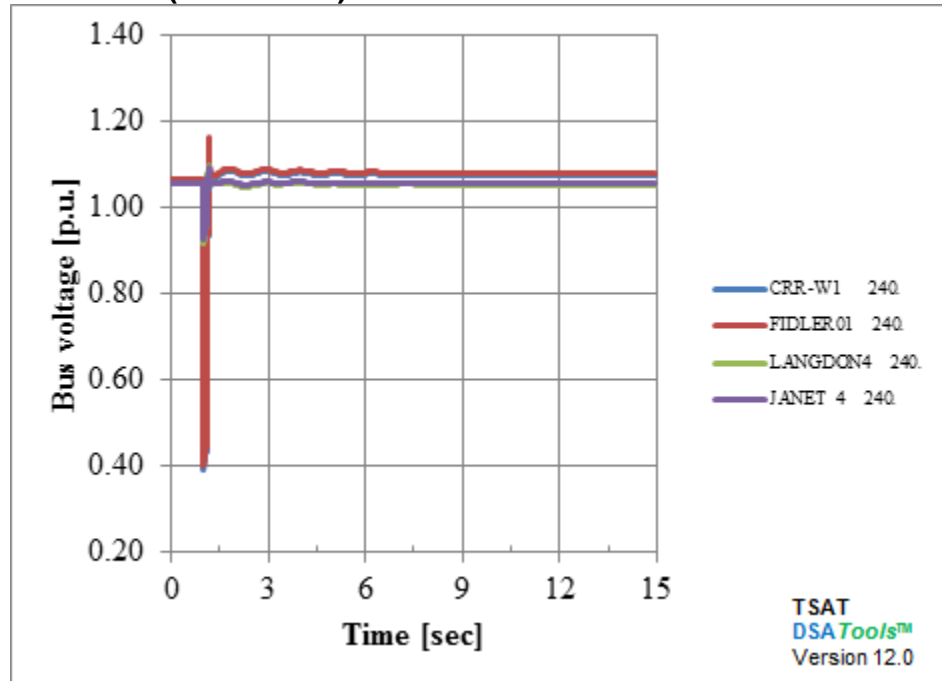
Proposed Connection, Summer Peak 2014





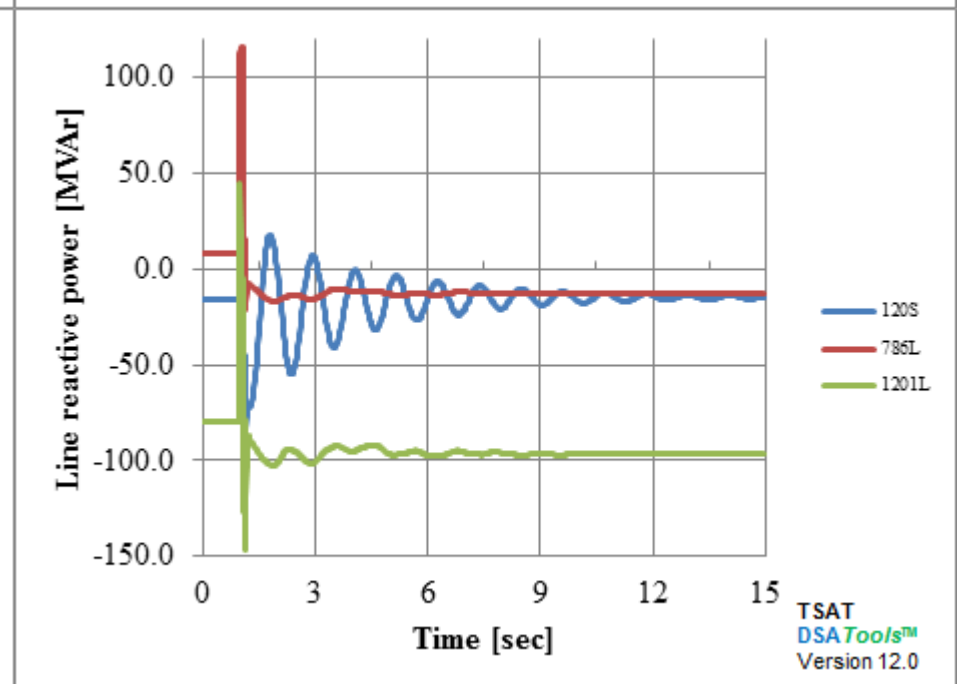
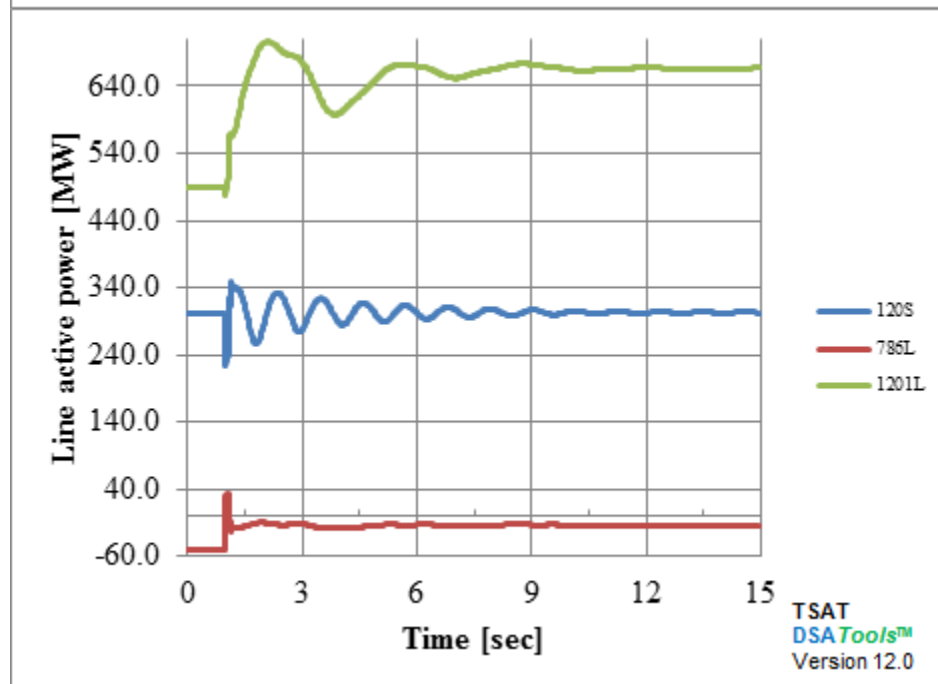
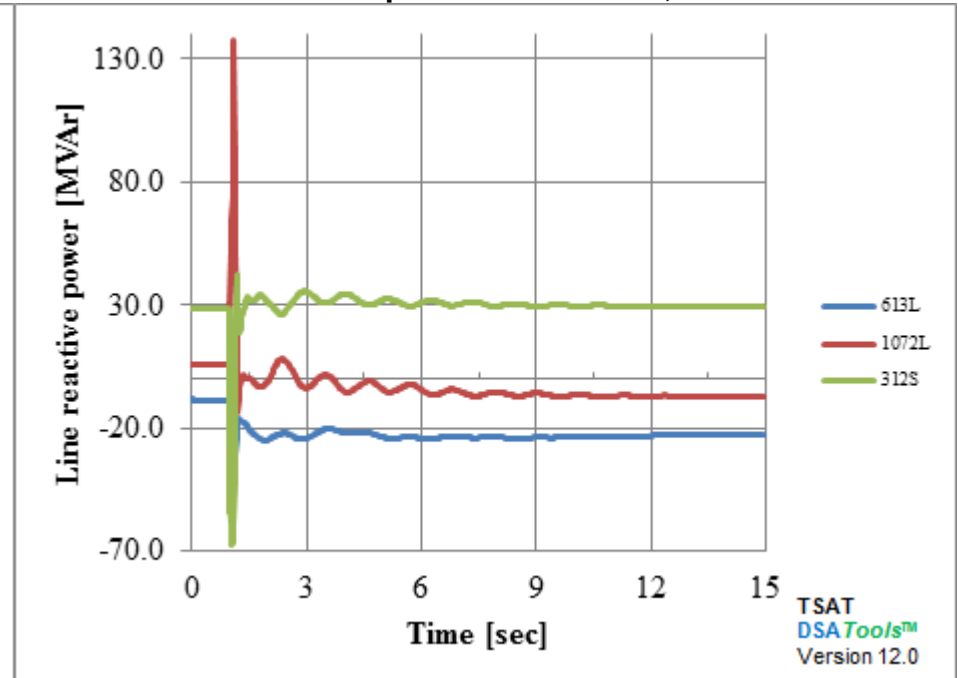
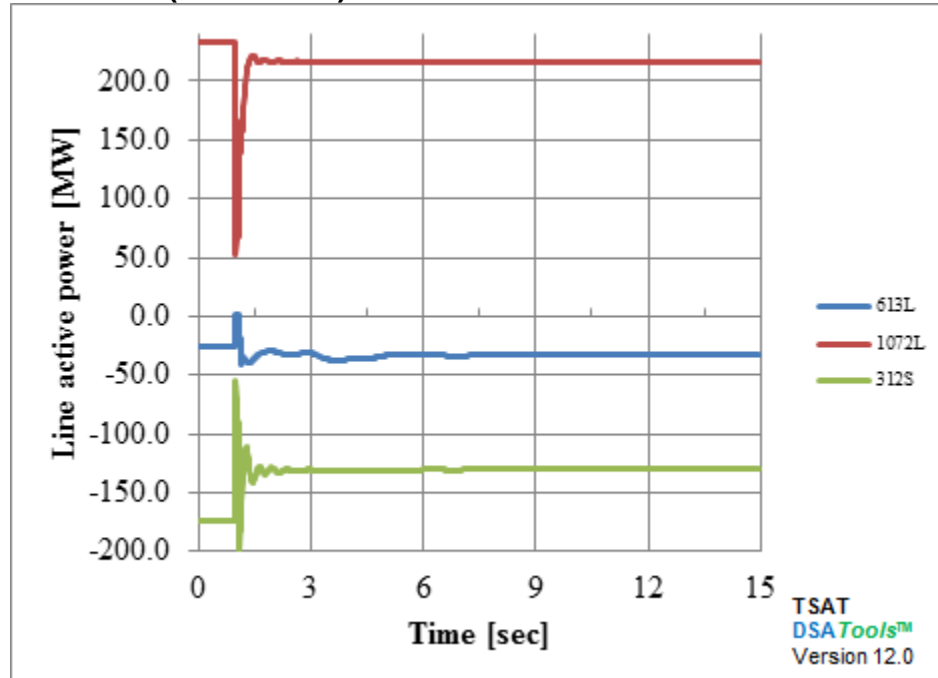
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



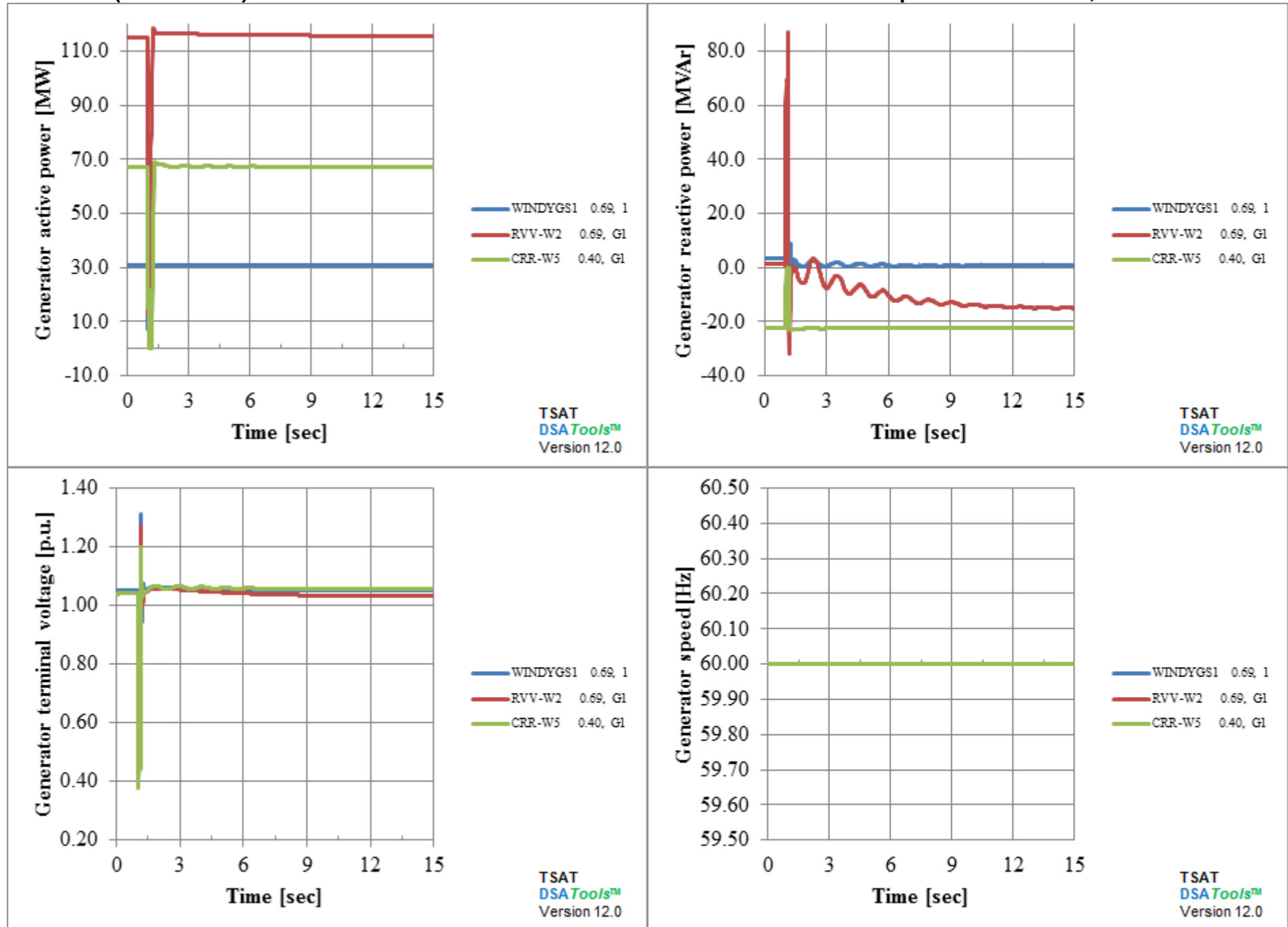
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection, Summer Peak 2014



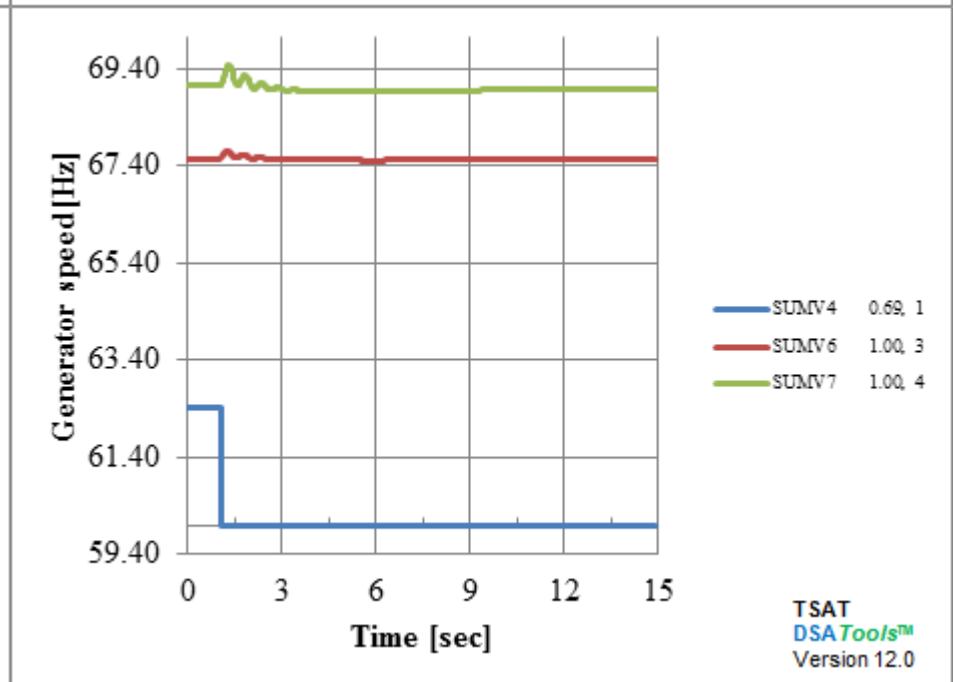
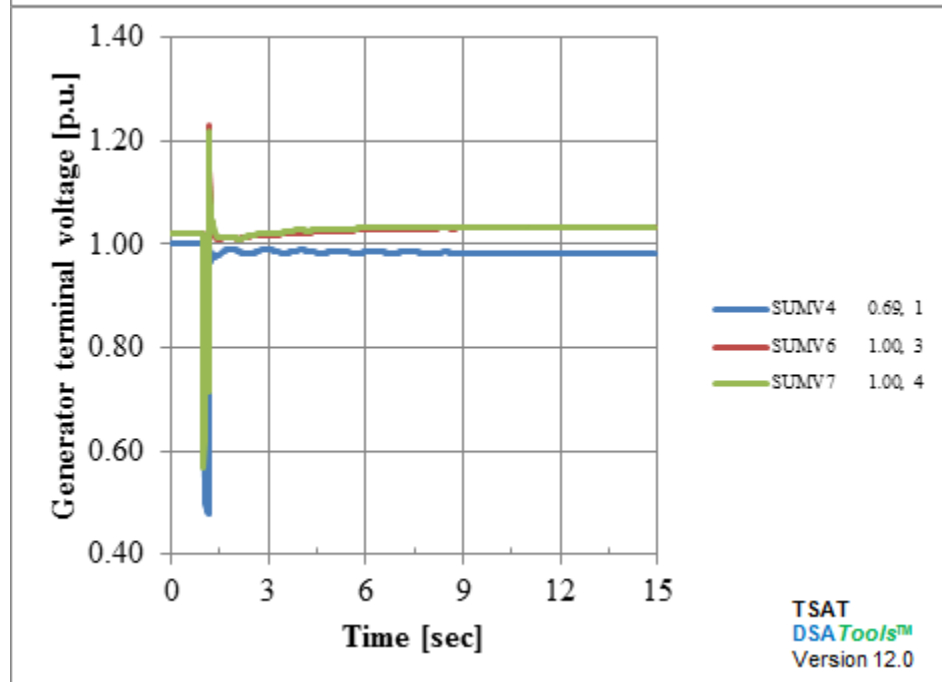
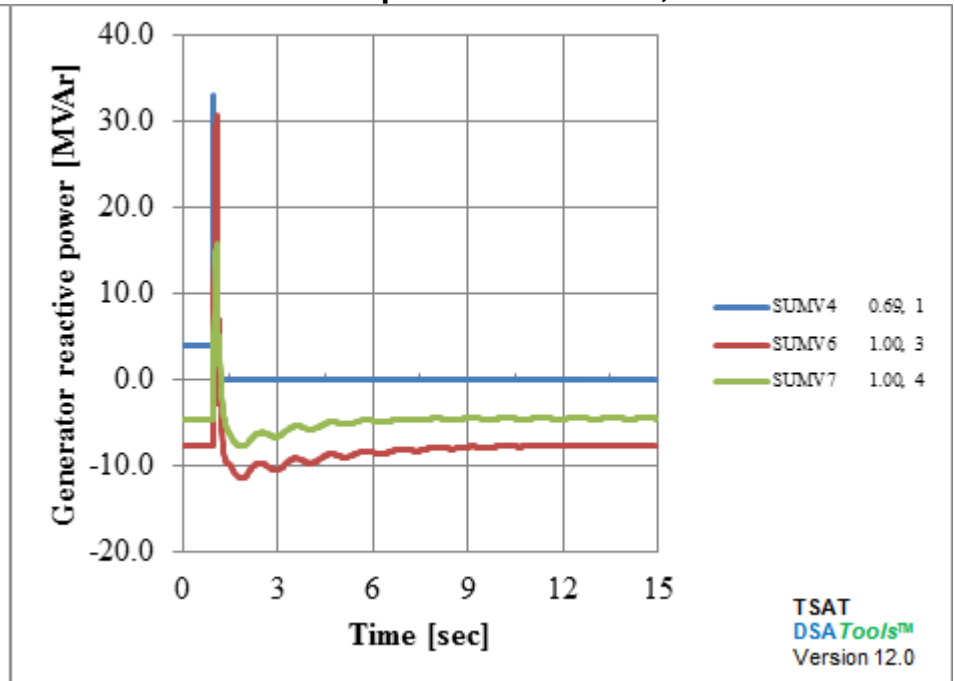
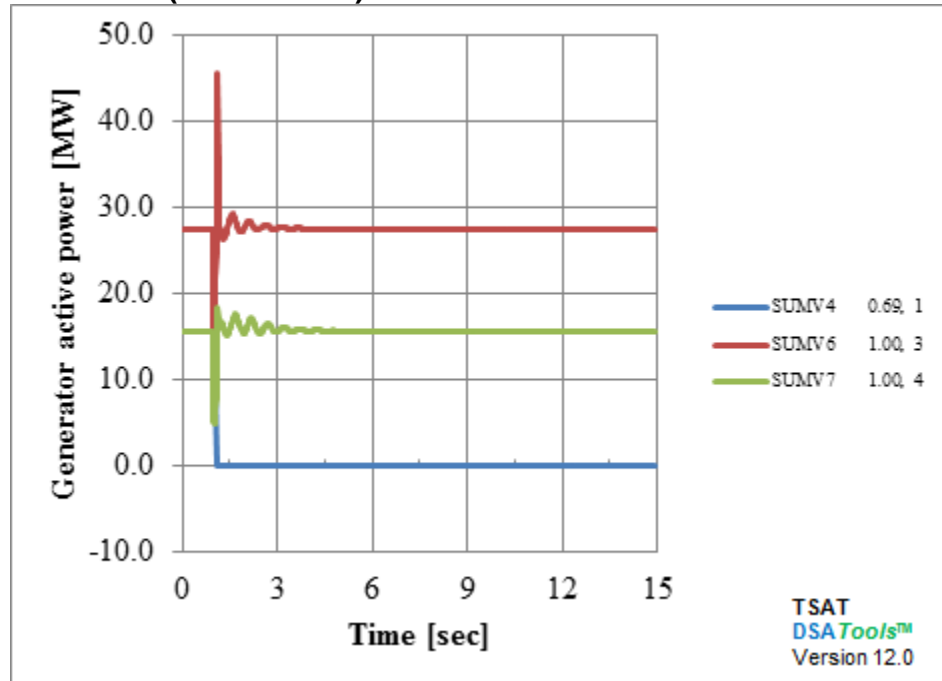
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Peak 2014



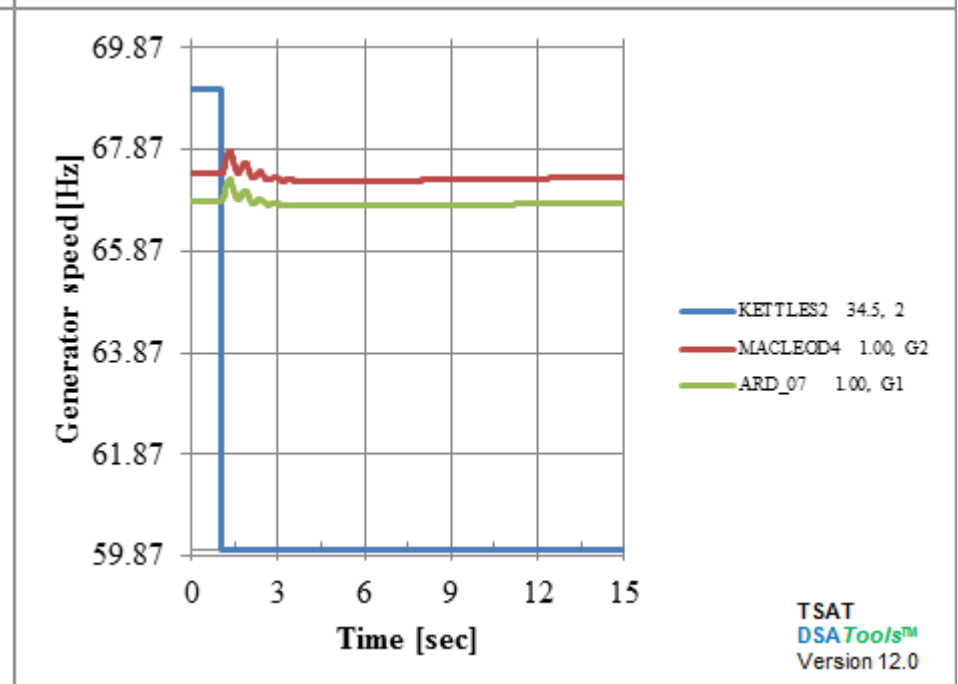
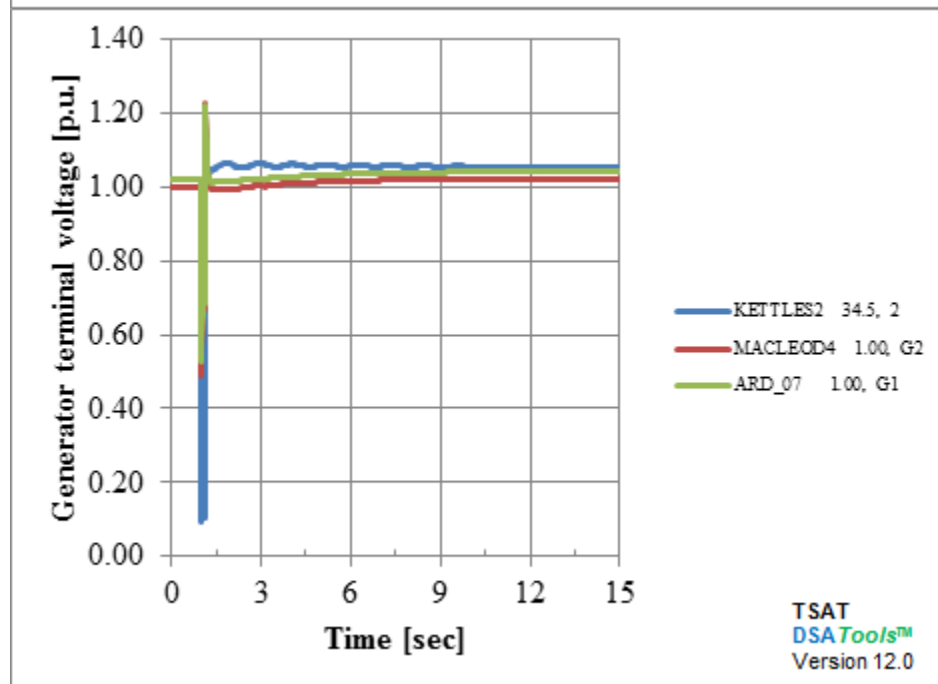
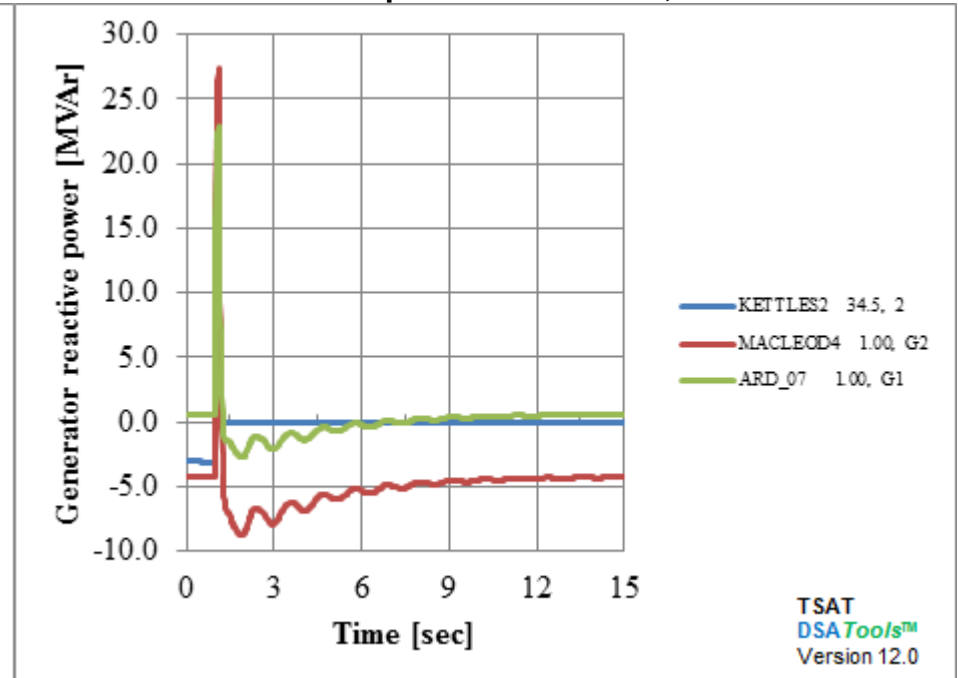
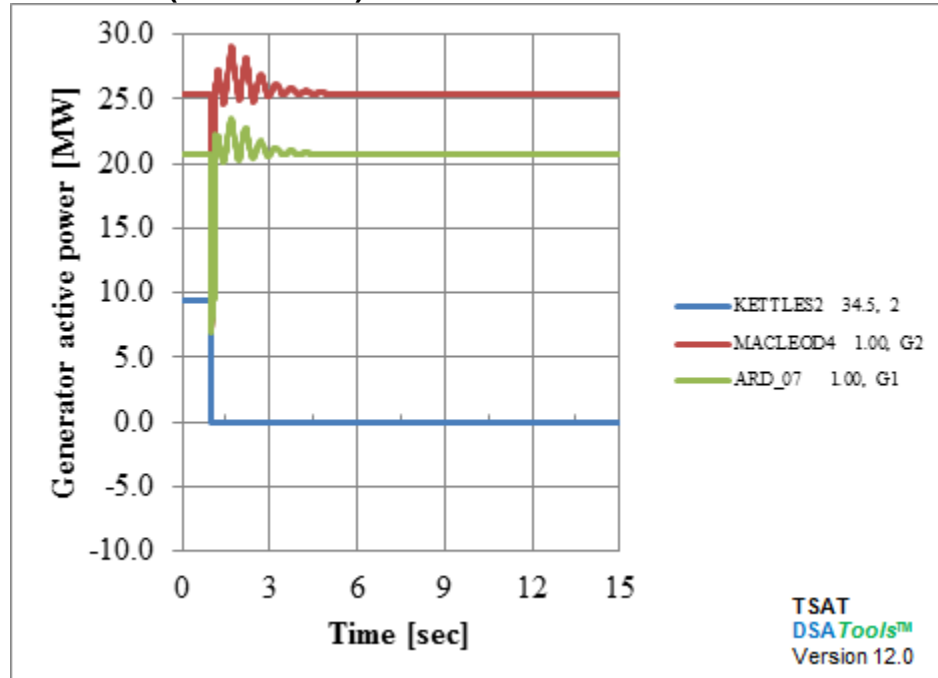
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Peak 2014



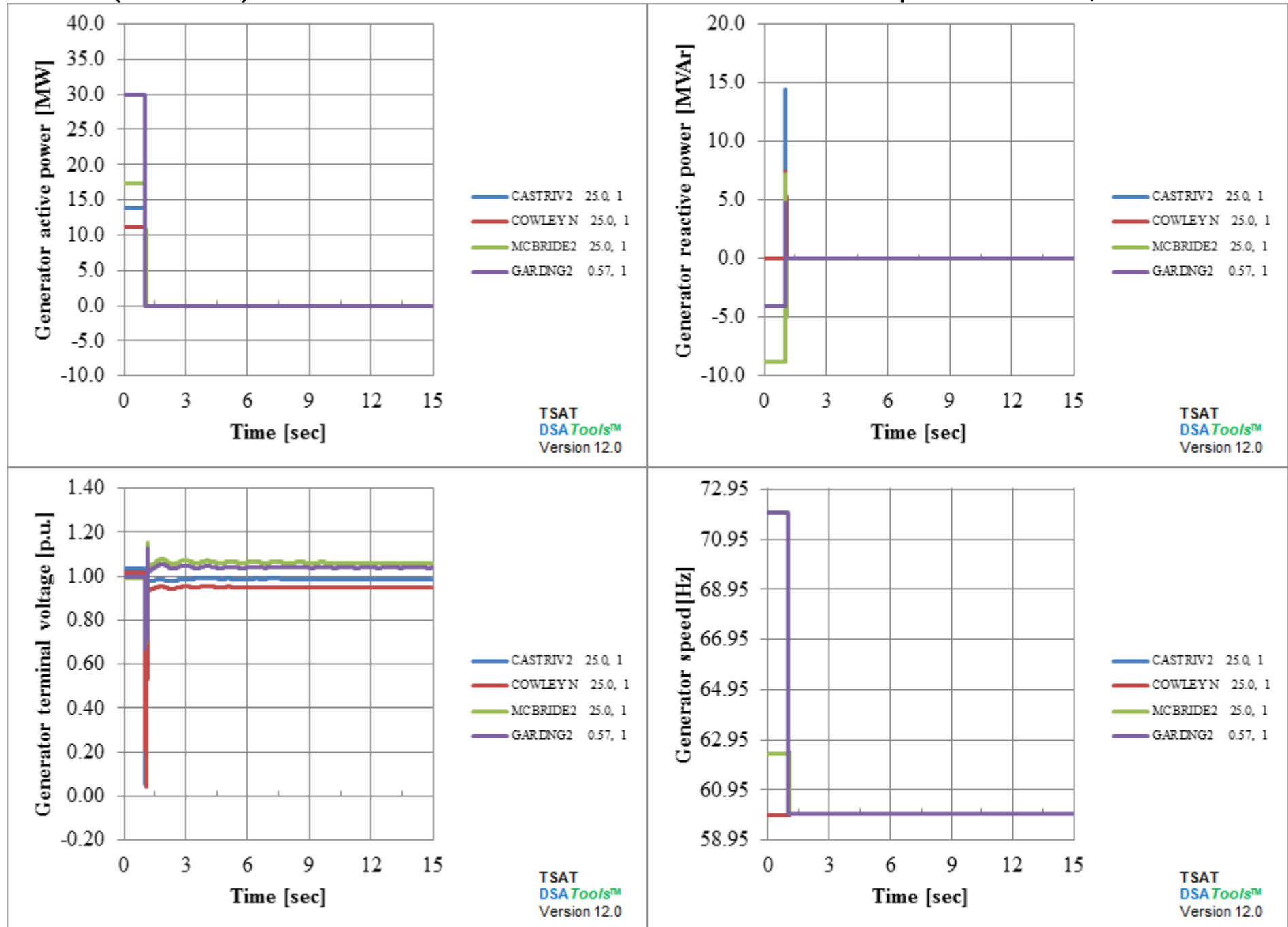
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Peak 2014



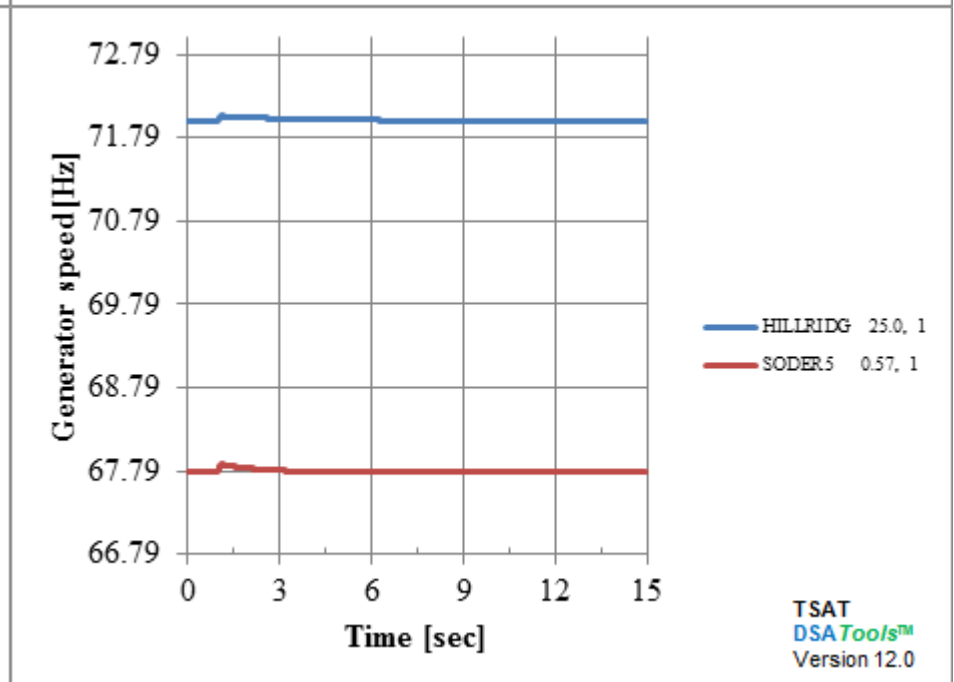
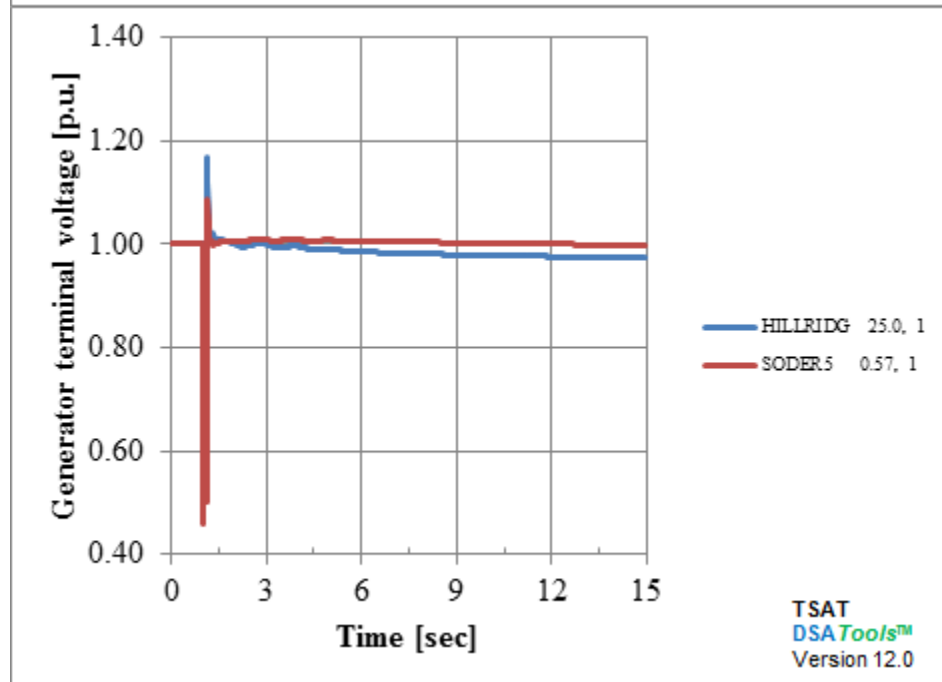
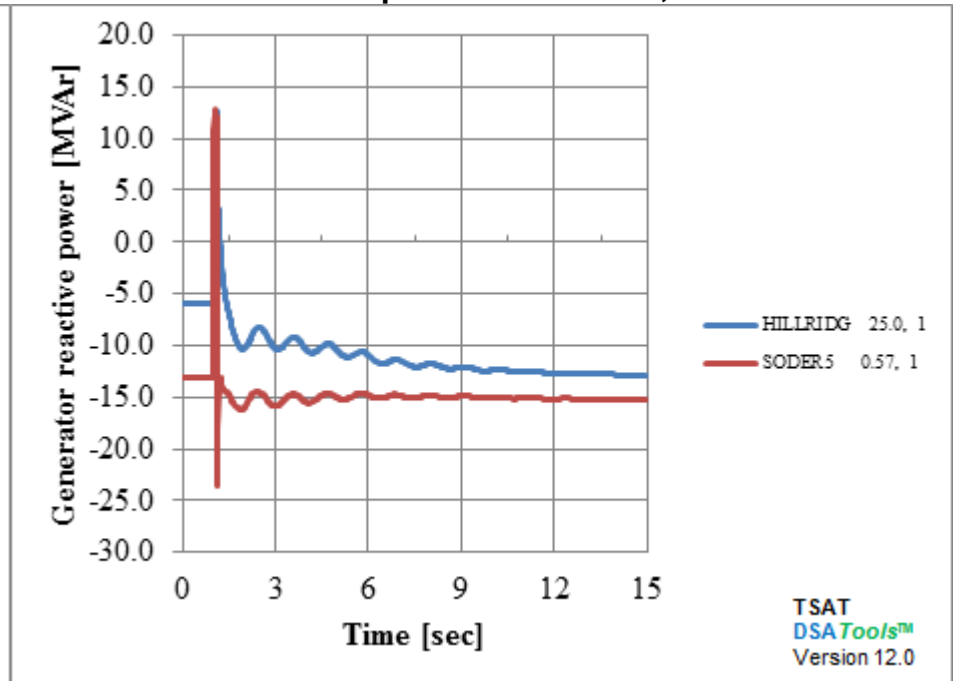
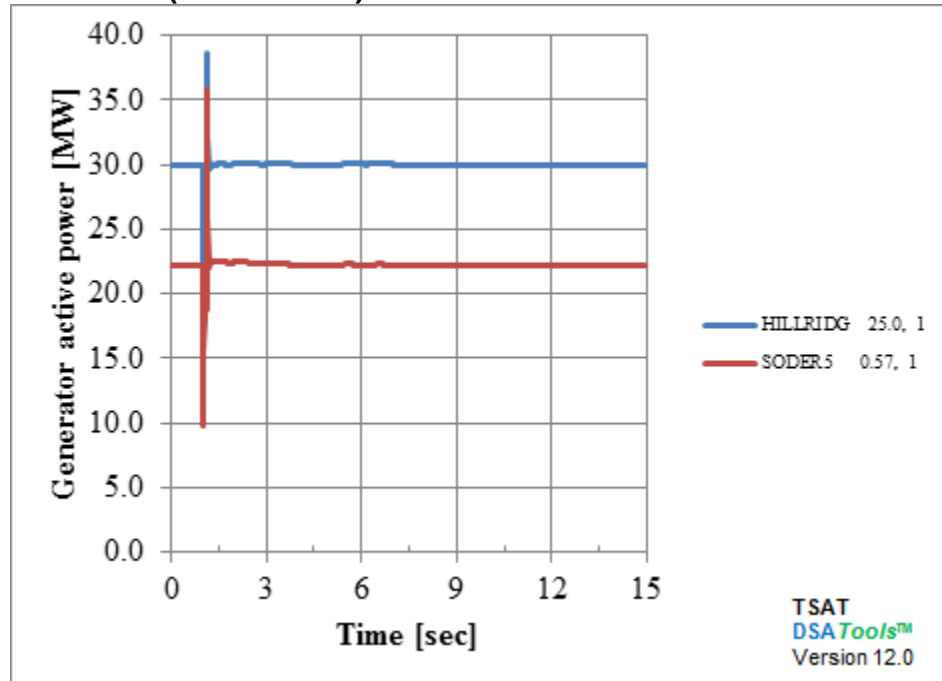
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Peak 2014



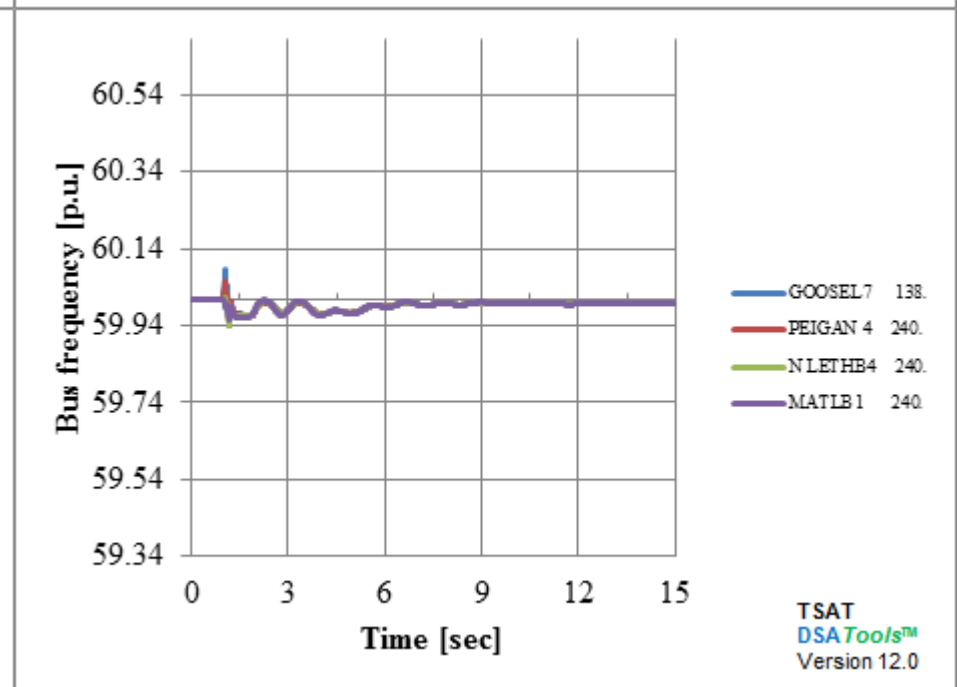
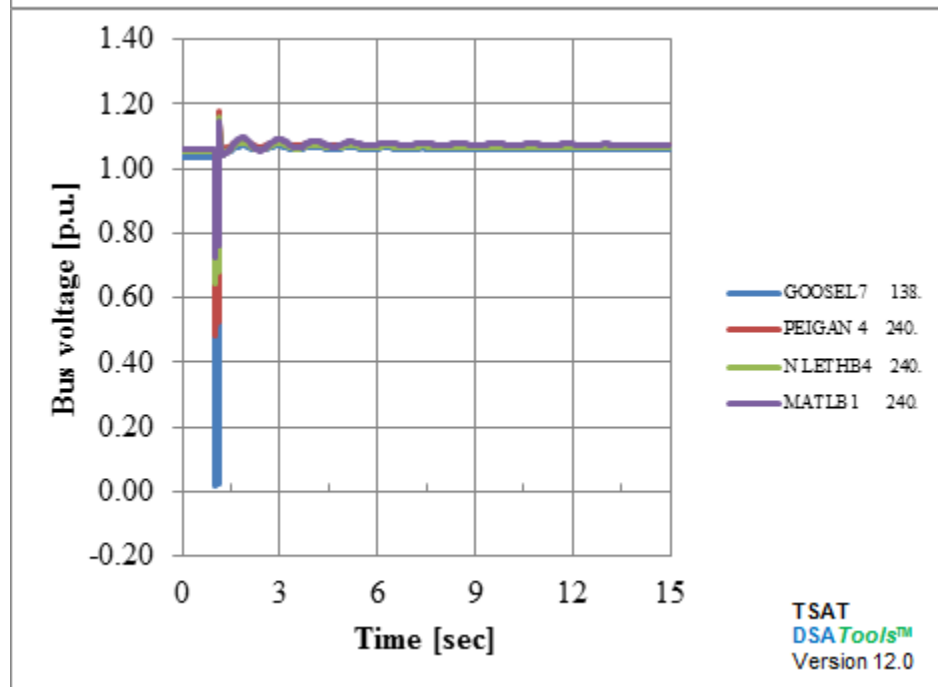
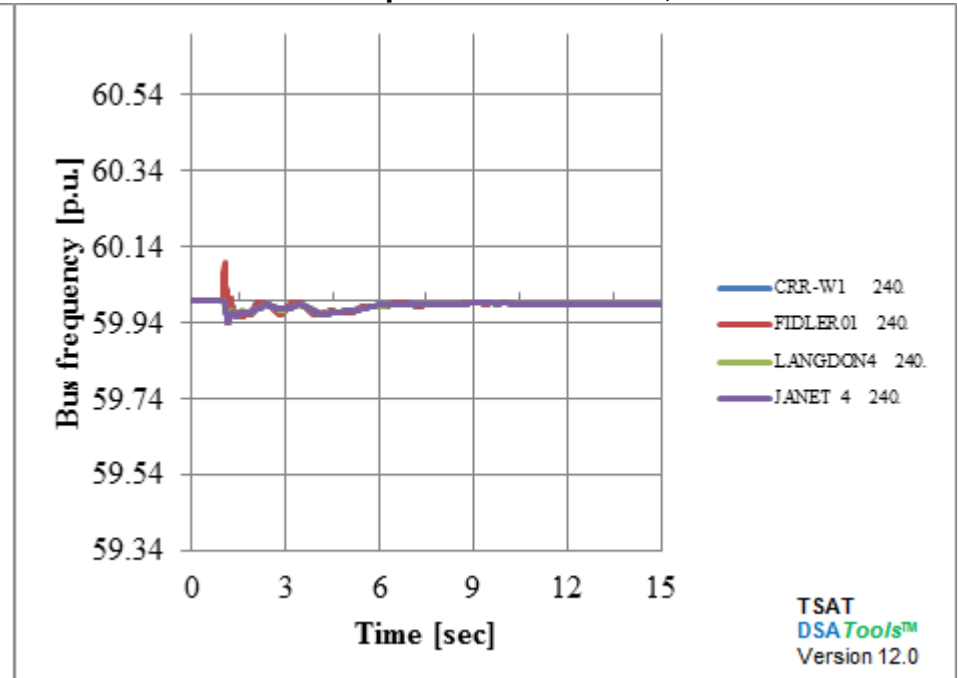
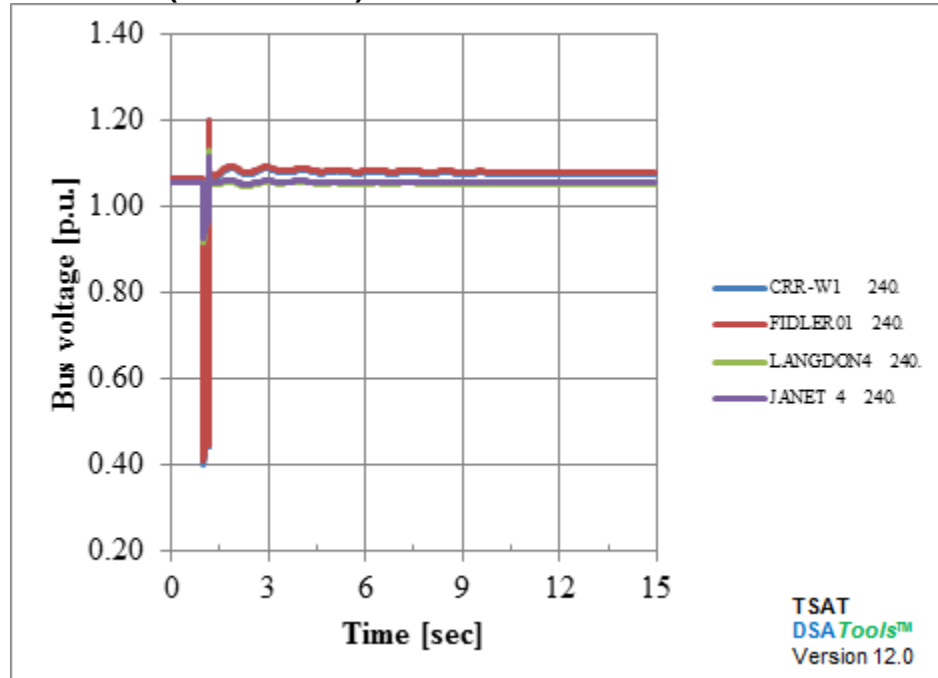
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Peak 2014



14 -- 613L (396S - 103S) NEAR 396S

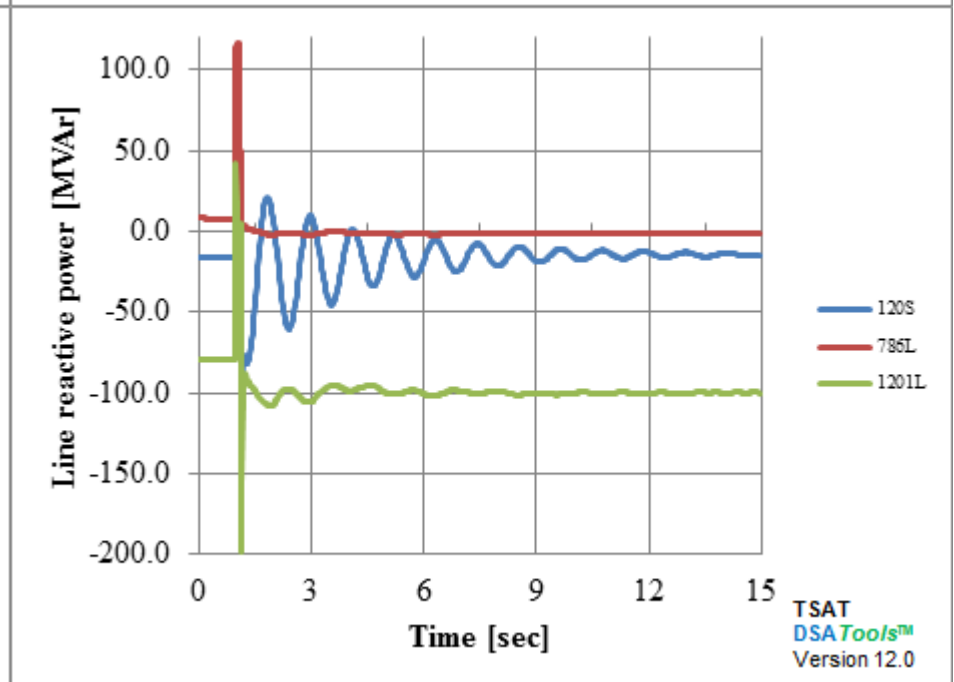
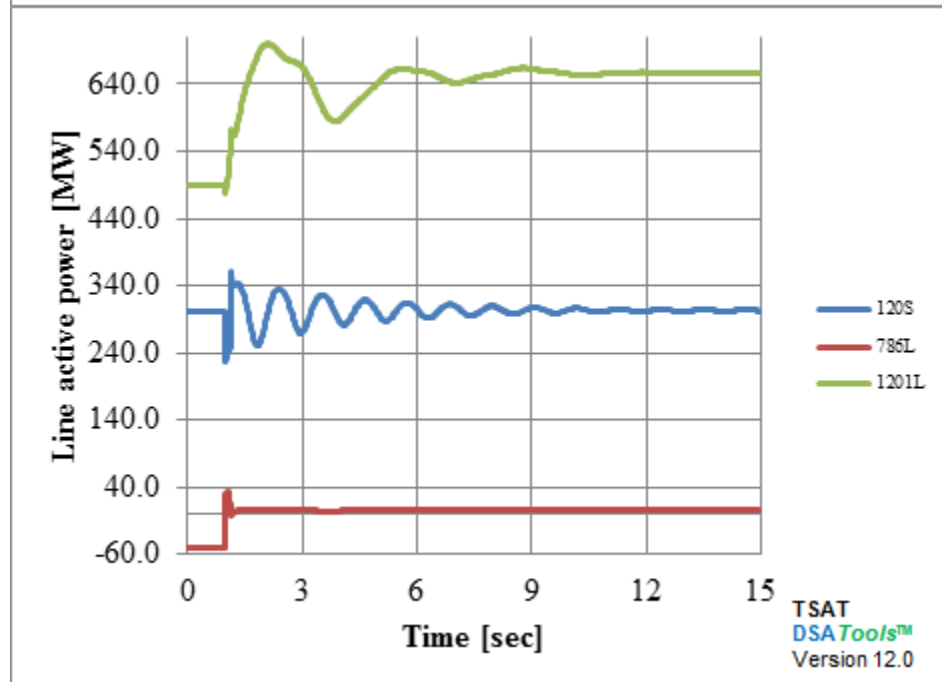
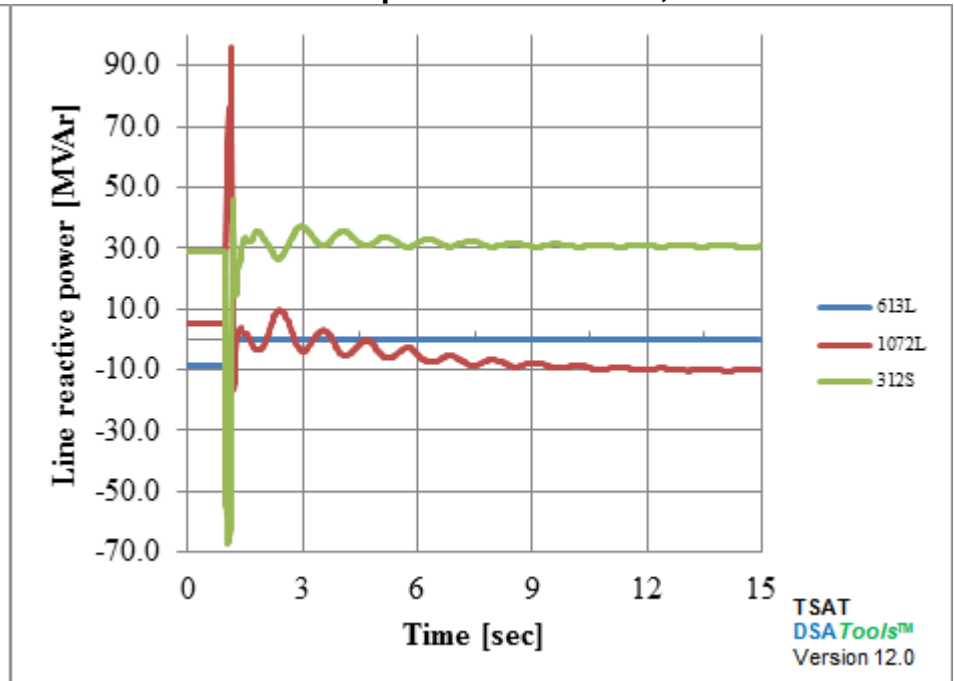
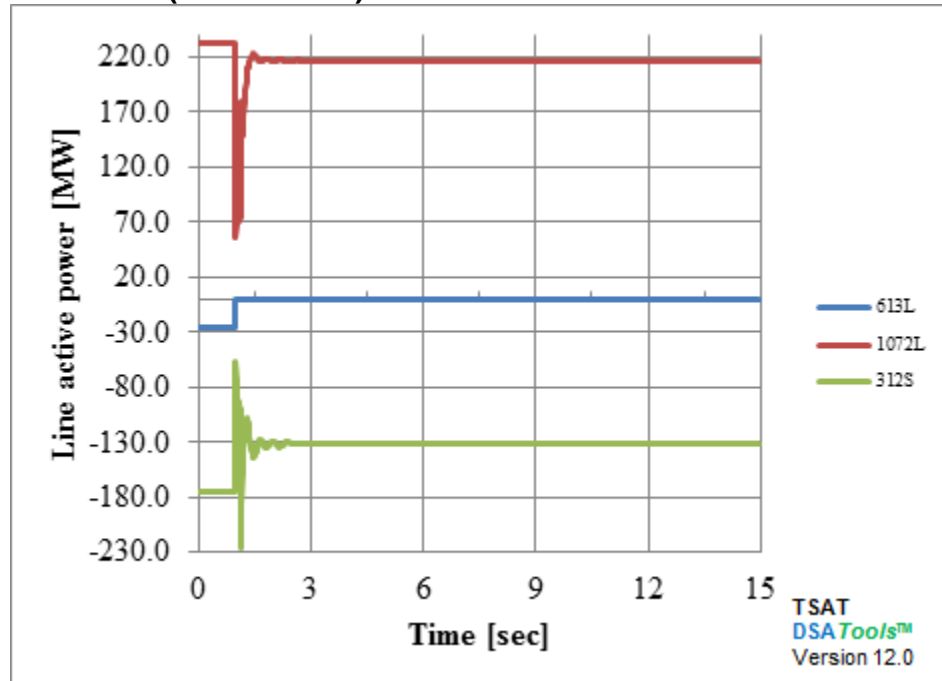
Proposed Connection, Summer Peak 2014





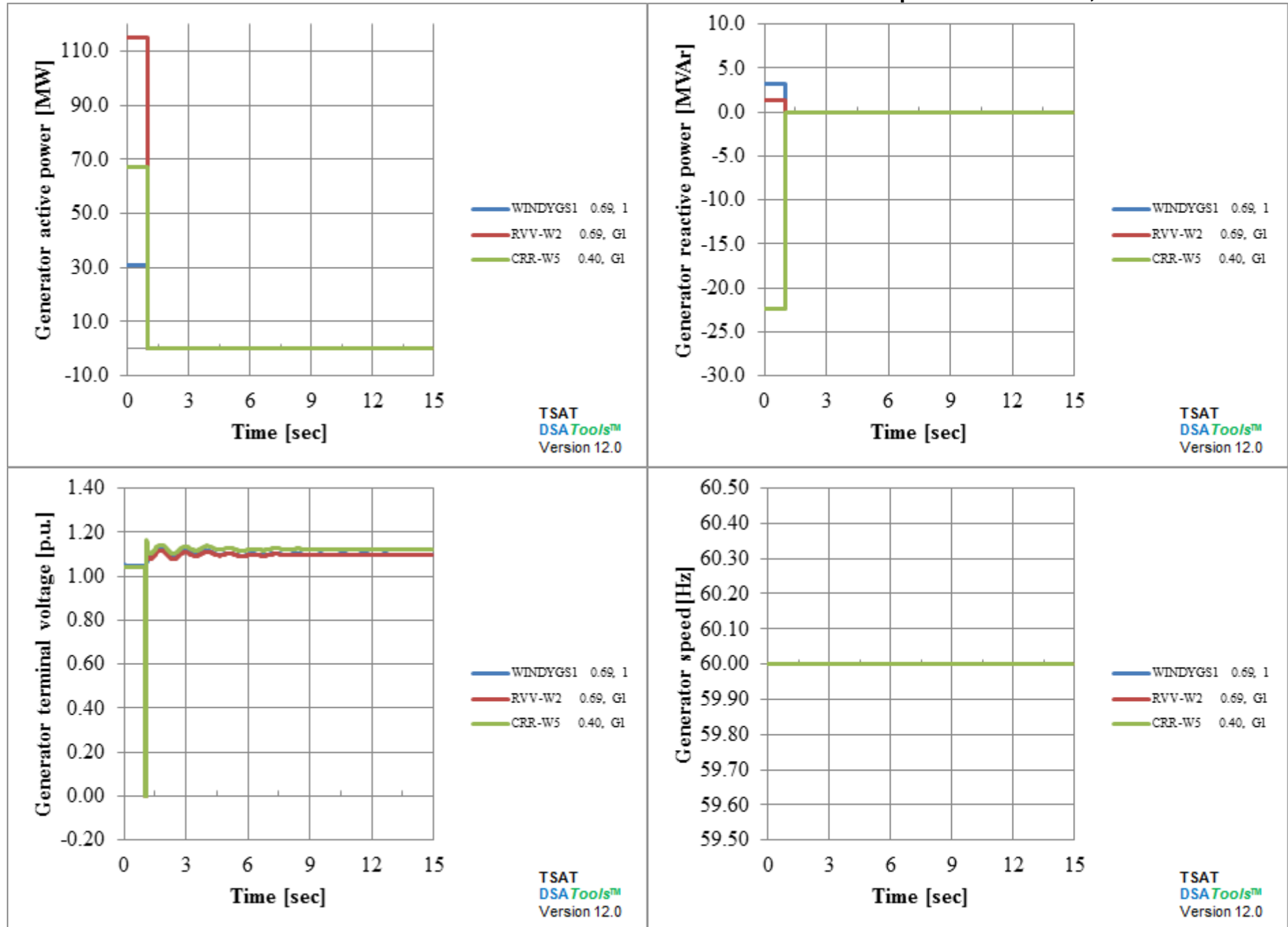
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection, Summer Peak 2014



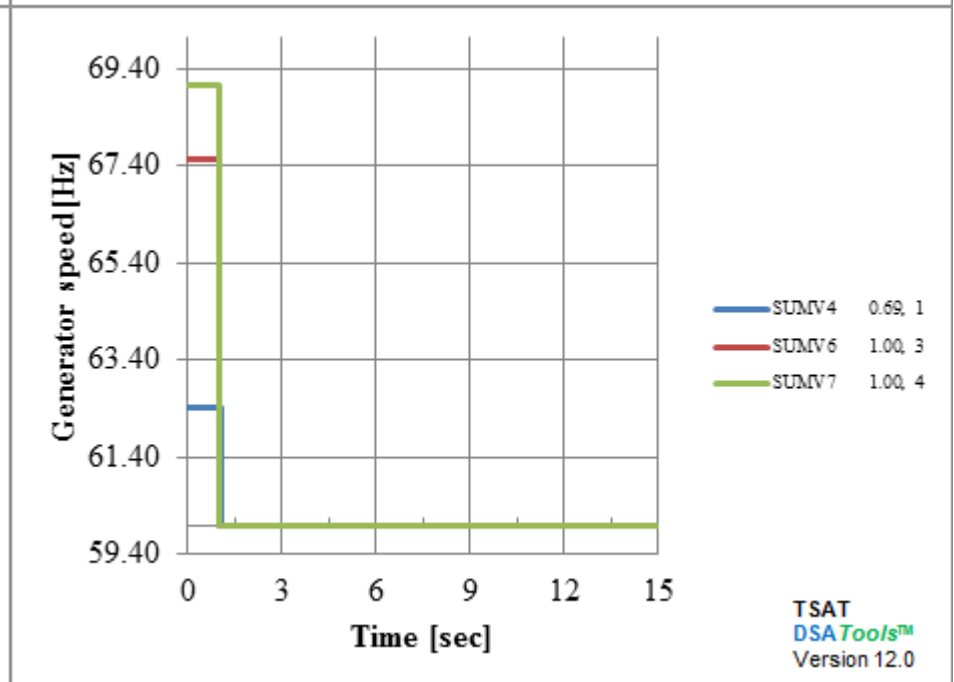
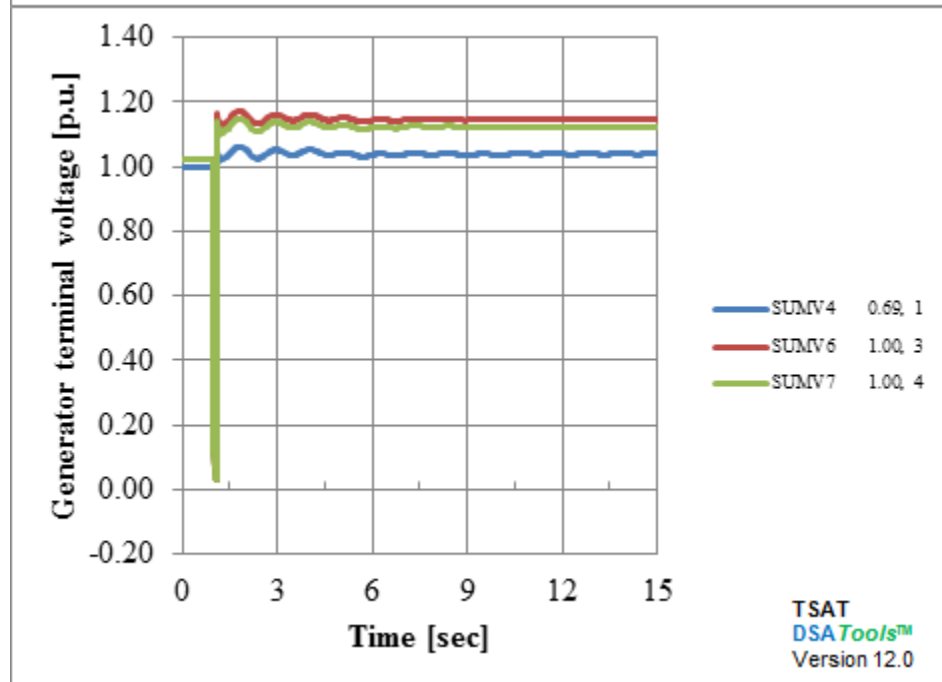
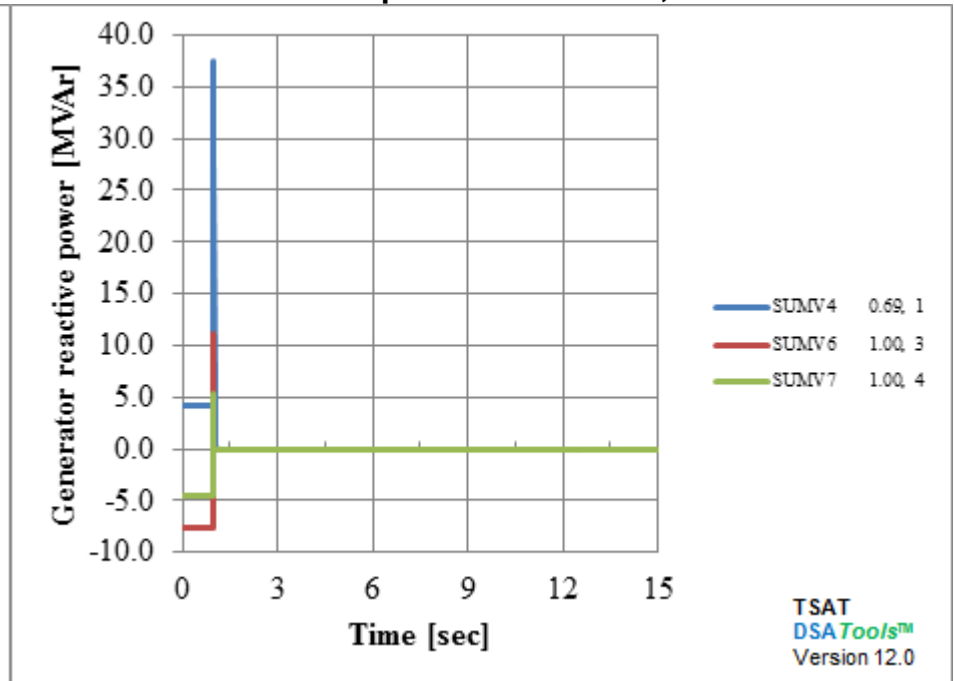
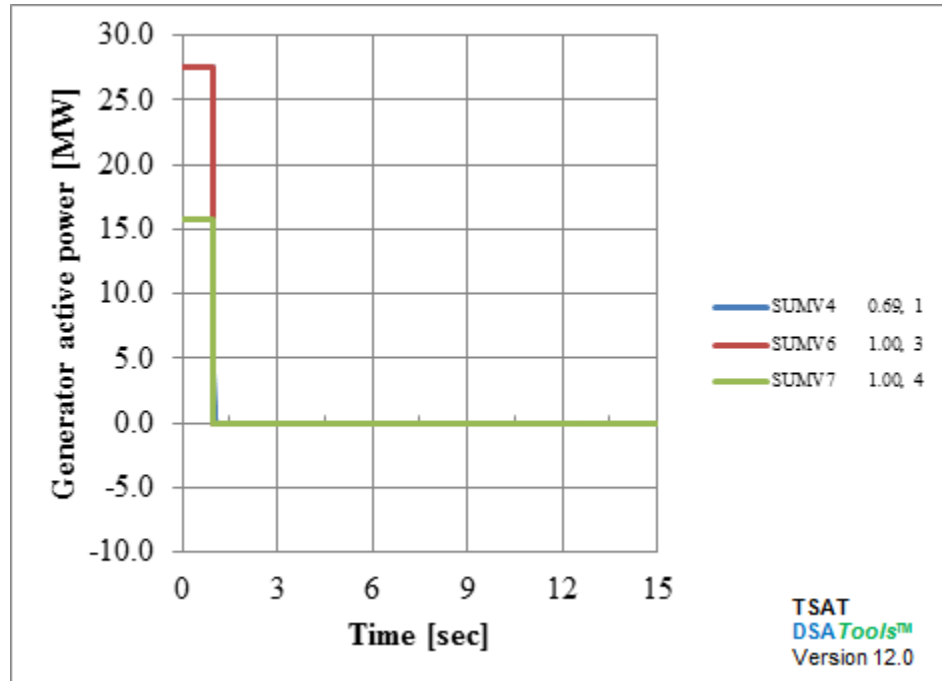
15 -- 103S 240KV-138KV

Proposed Connection, Summer Peak 2014



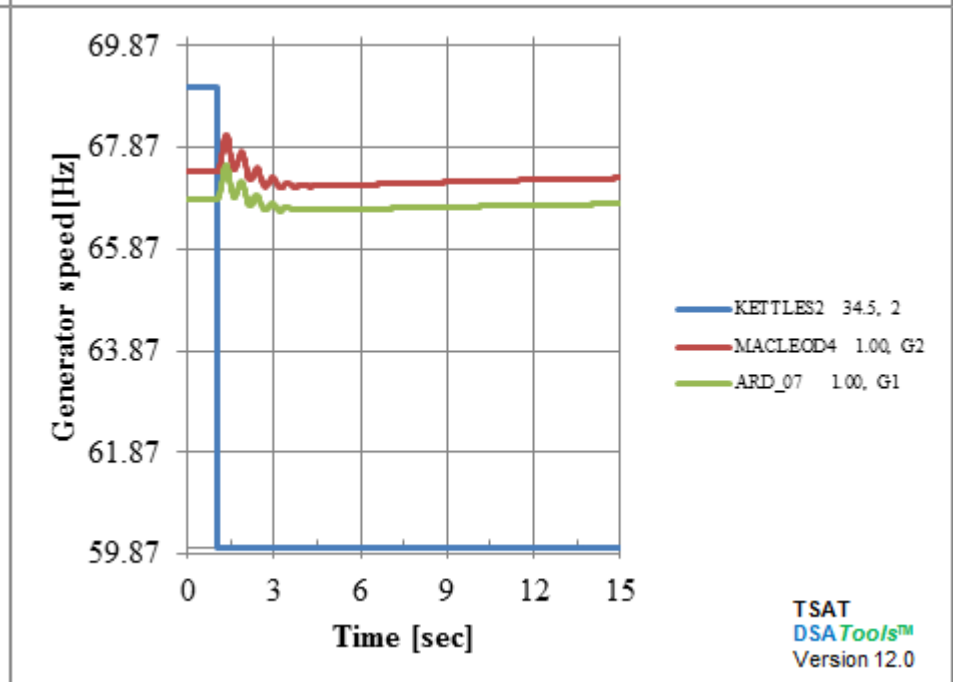
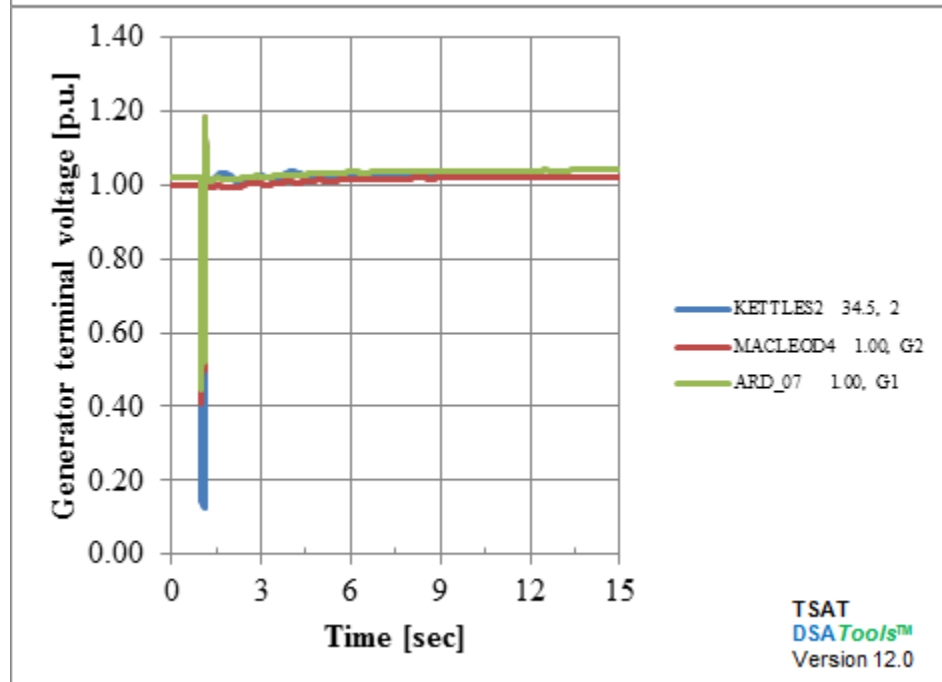
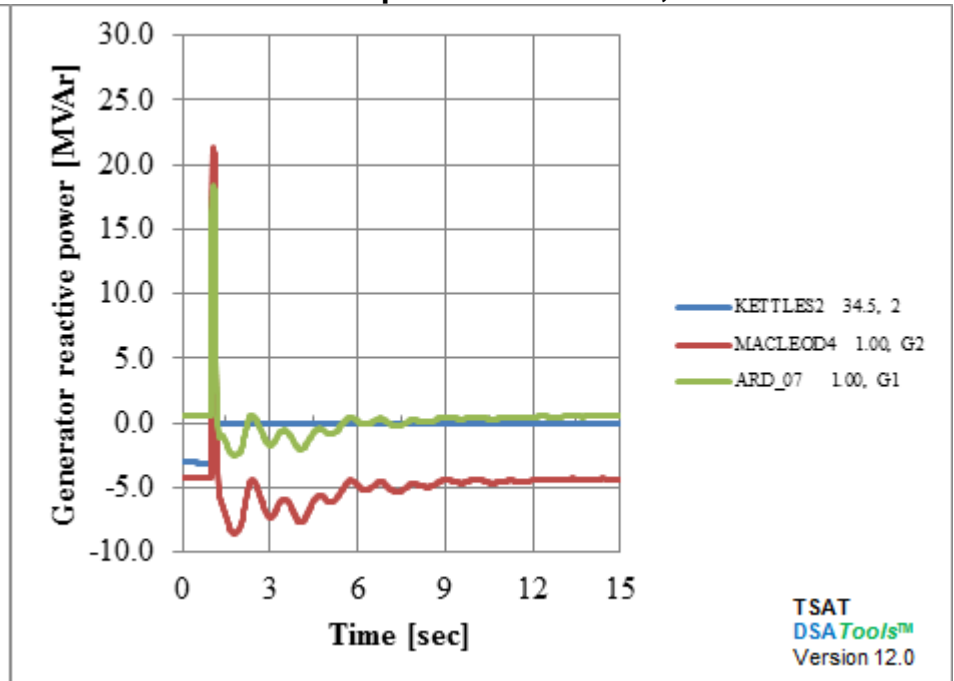
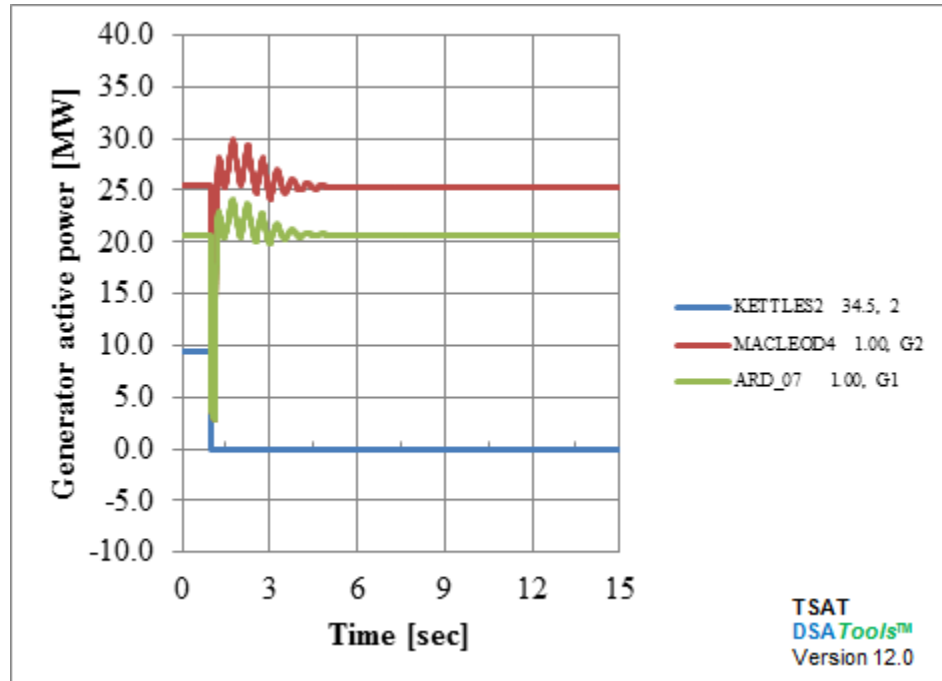
15 -- 103S 240KV-138KV

Proposed Connection, Summer Peak 2014



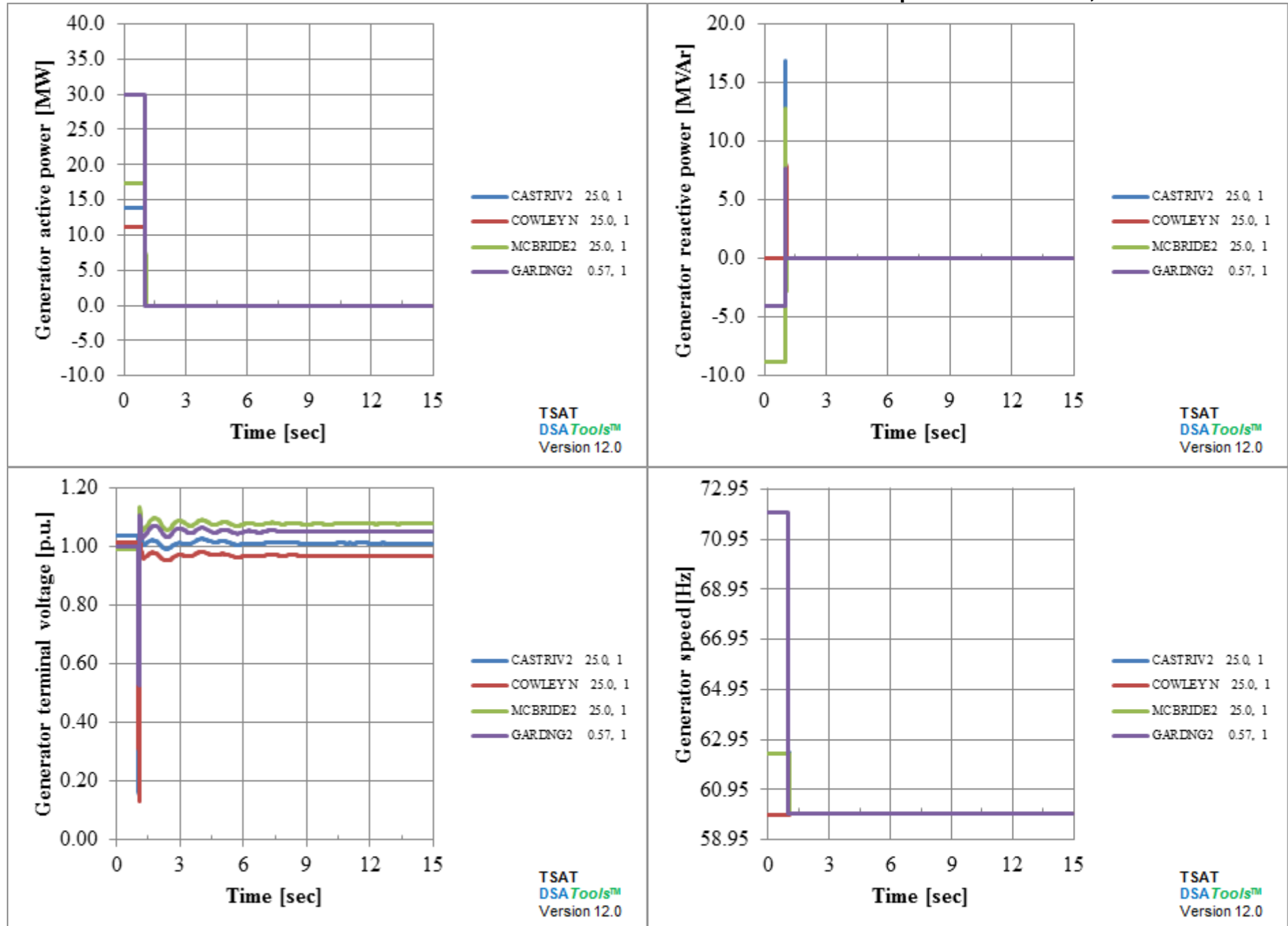
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Proposed Connection, Summer Peak 2014



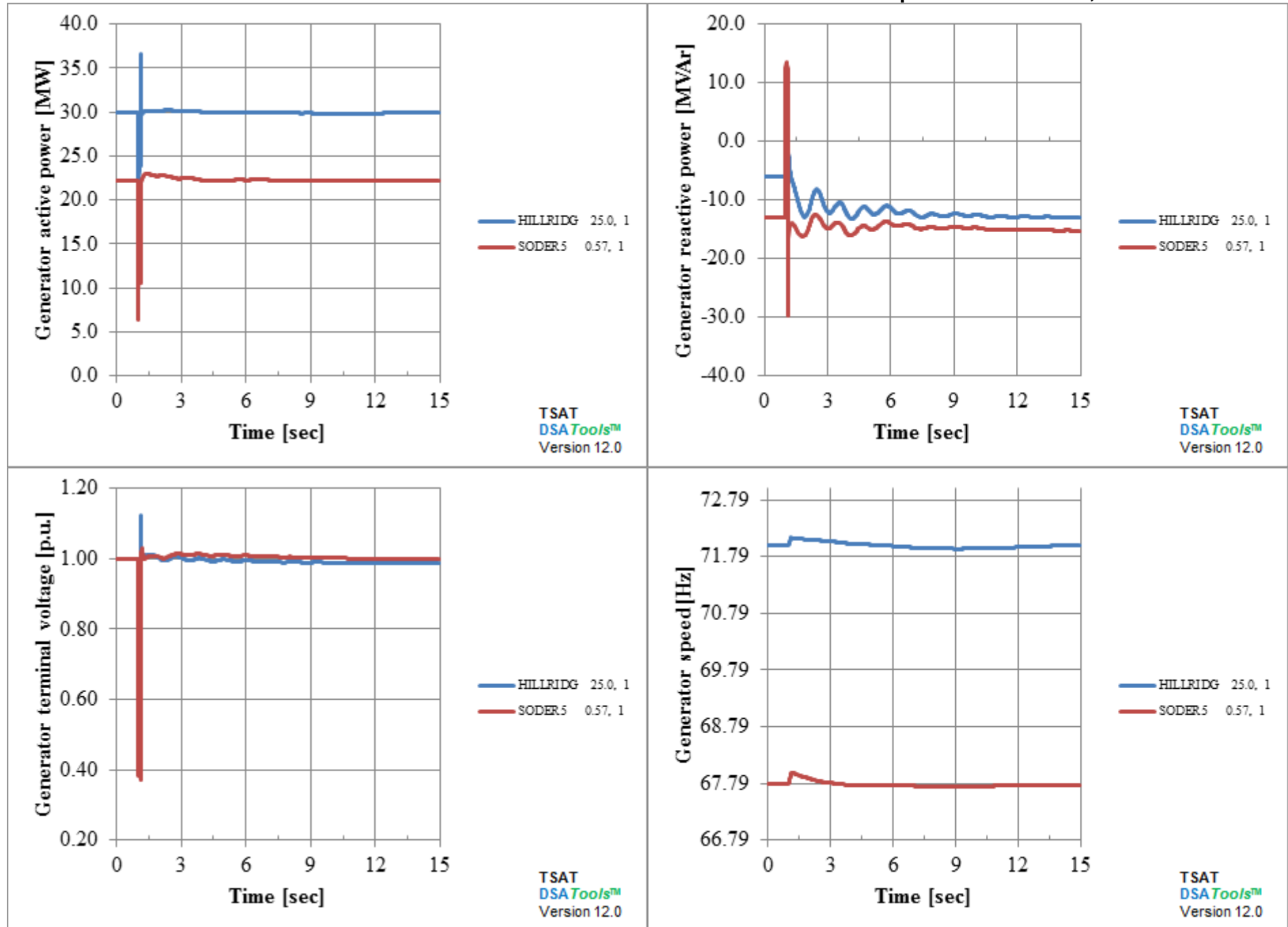
15 -- 103S 240KV-138KV

Proposed Connection, Summer Peak 2014



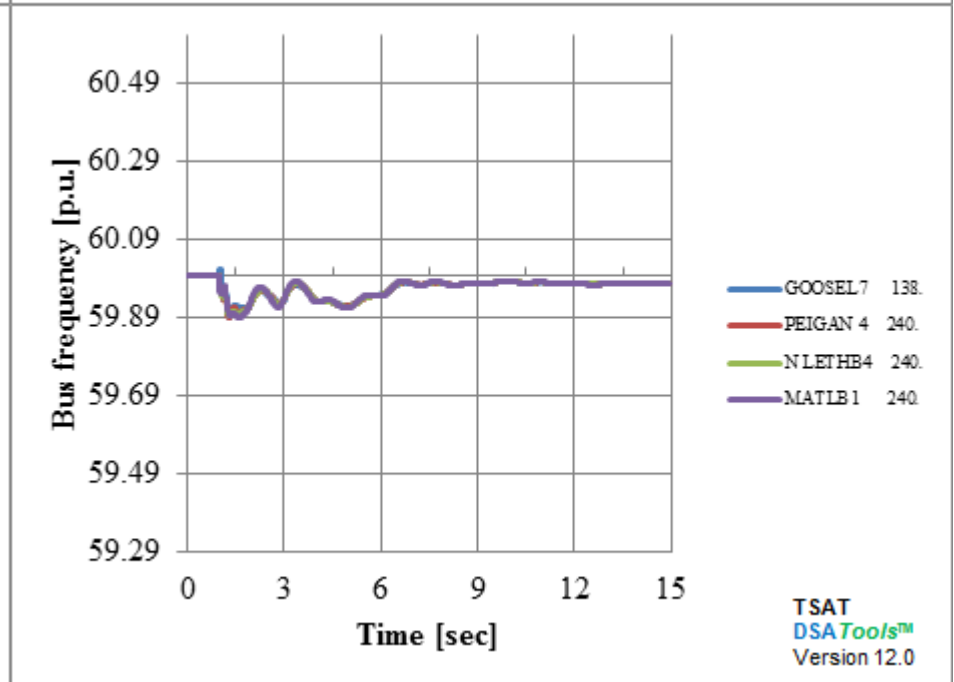
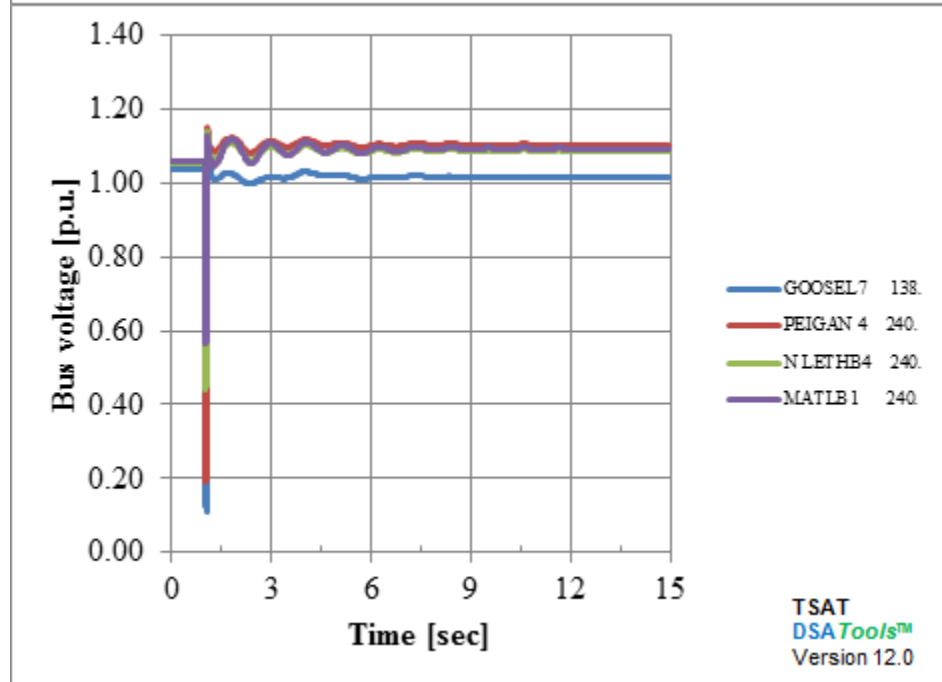
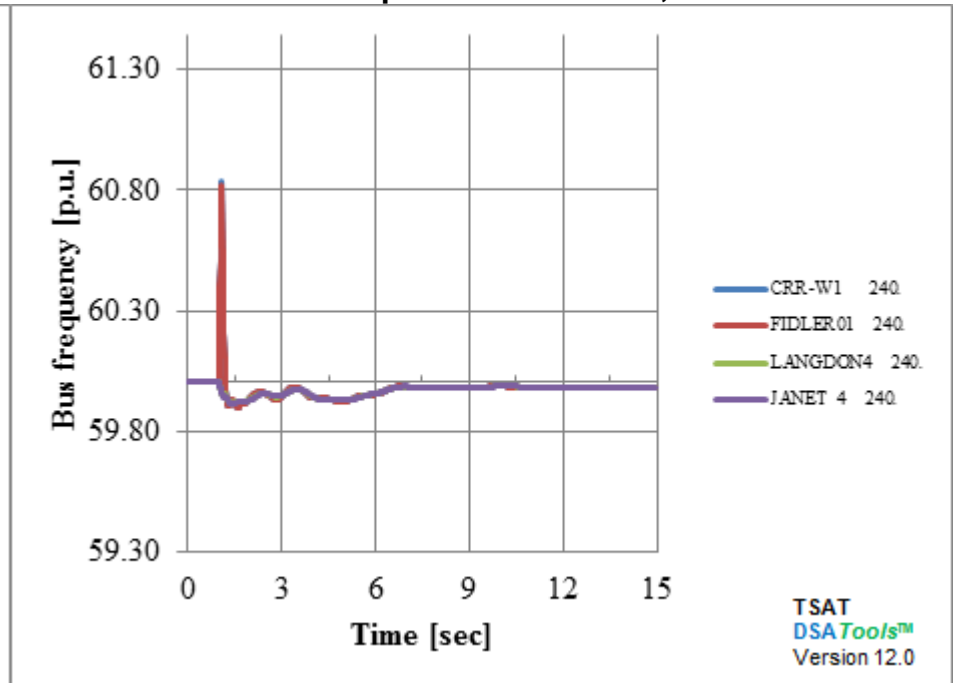
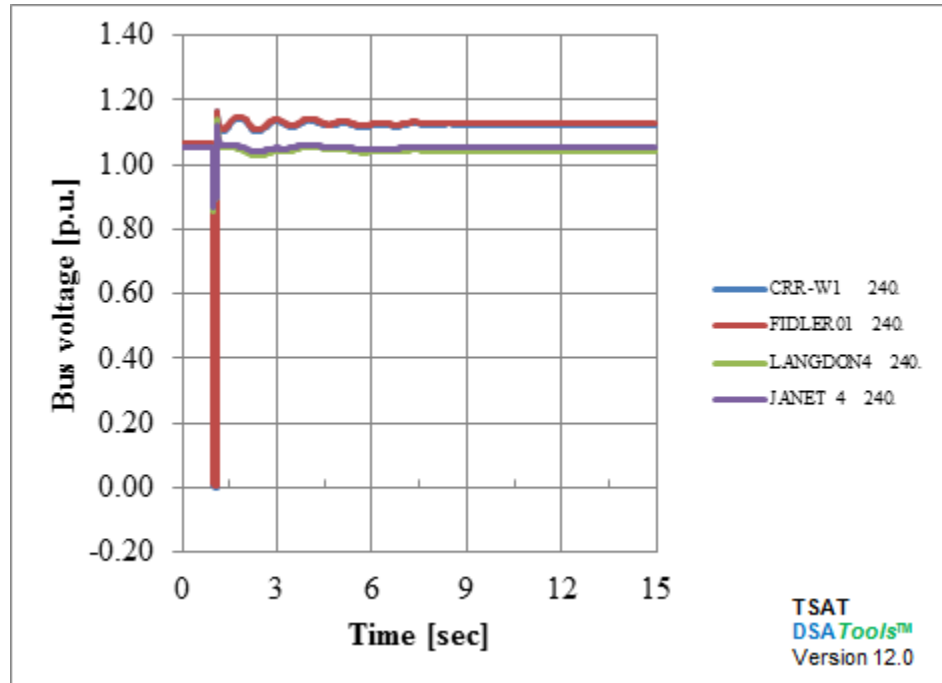
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Proposed Connection, Summer Peak 2014



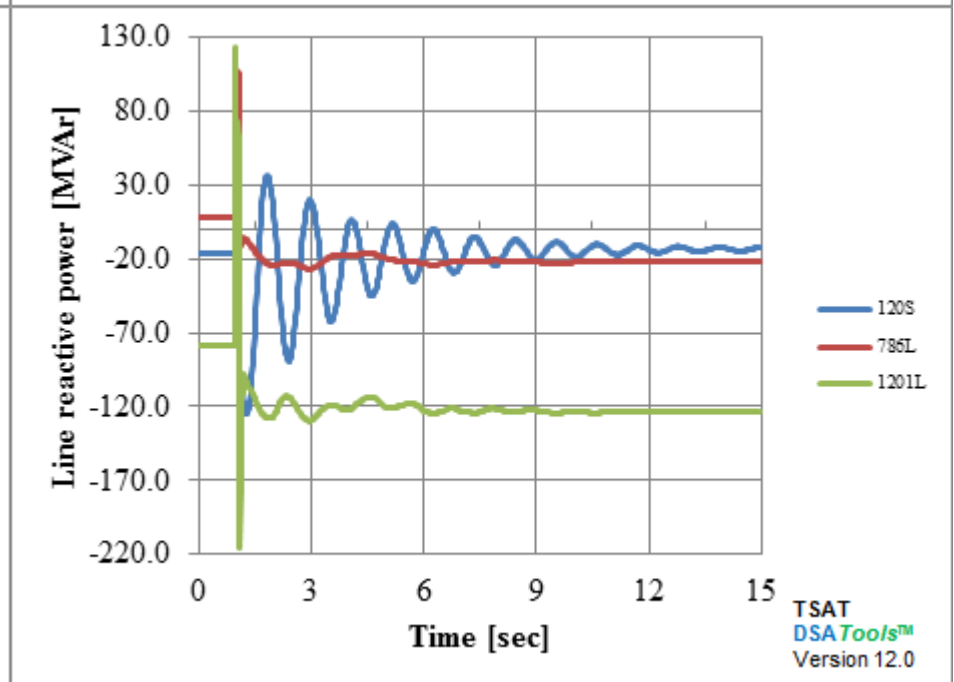
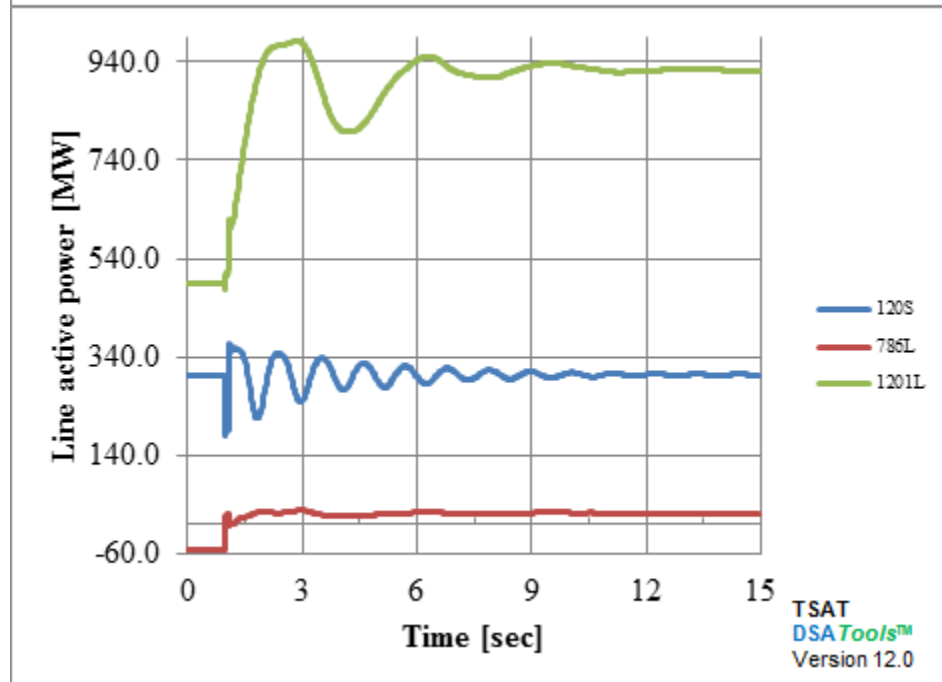
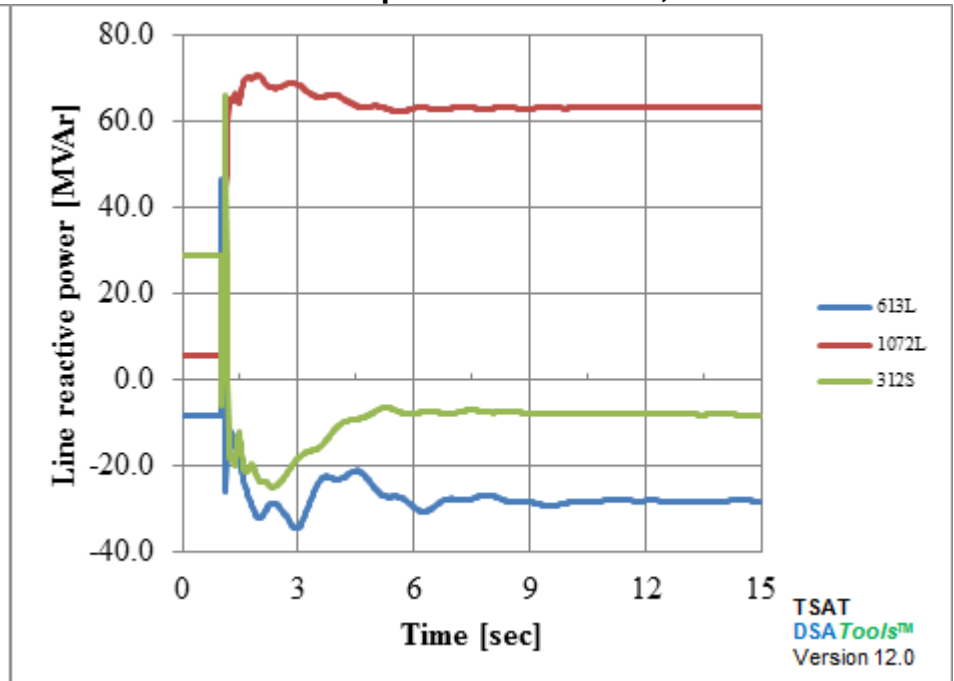
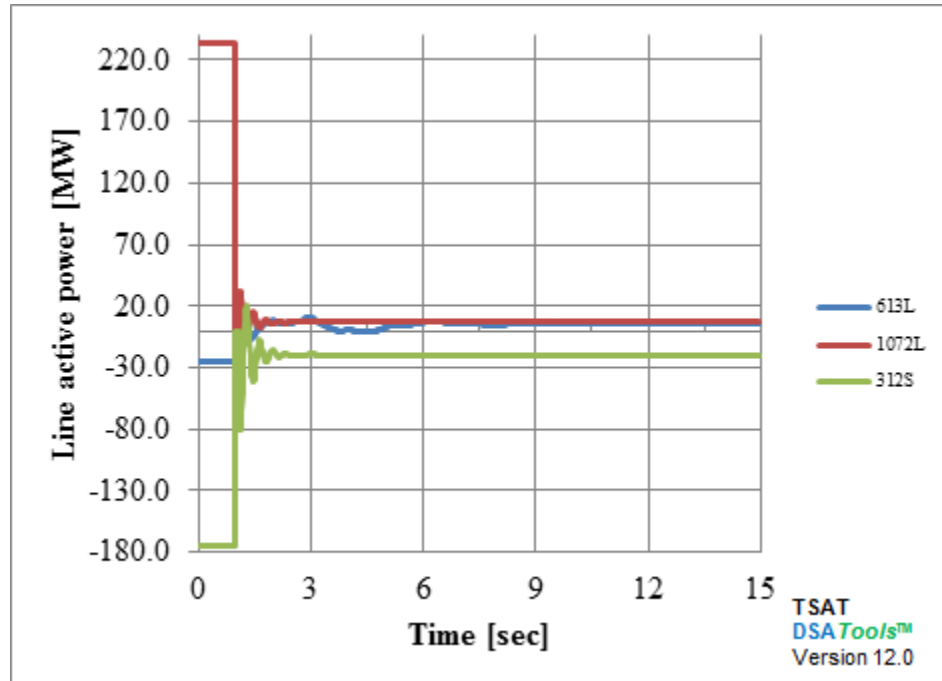
15 -- 103S 240KV-138KV

Proposed Connection, Summer Peak 2014



15 -- 103S 240KV-138KV

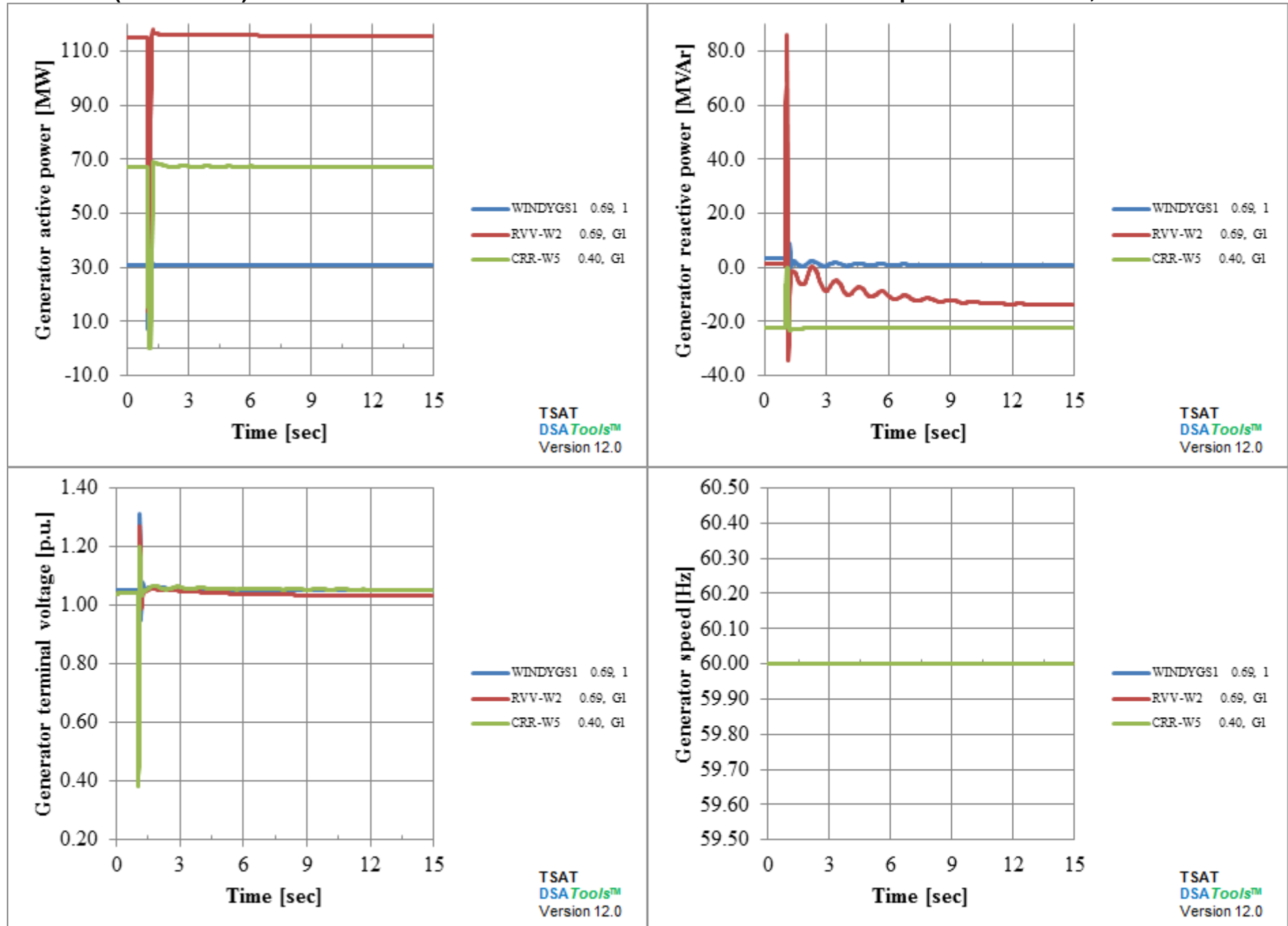
Proposed Connection, Summer Peak 2014





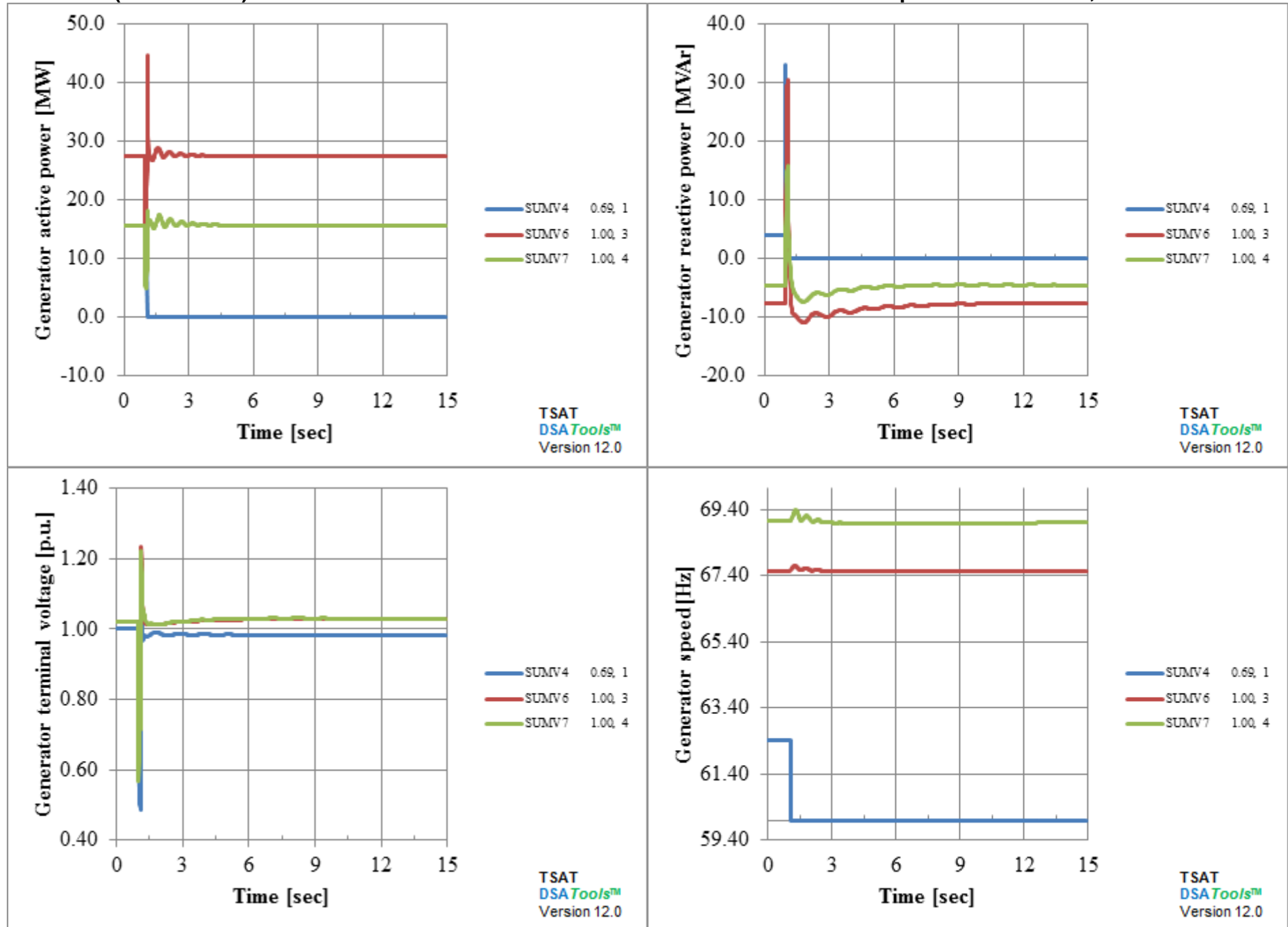
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014



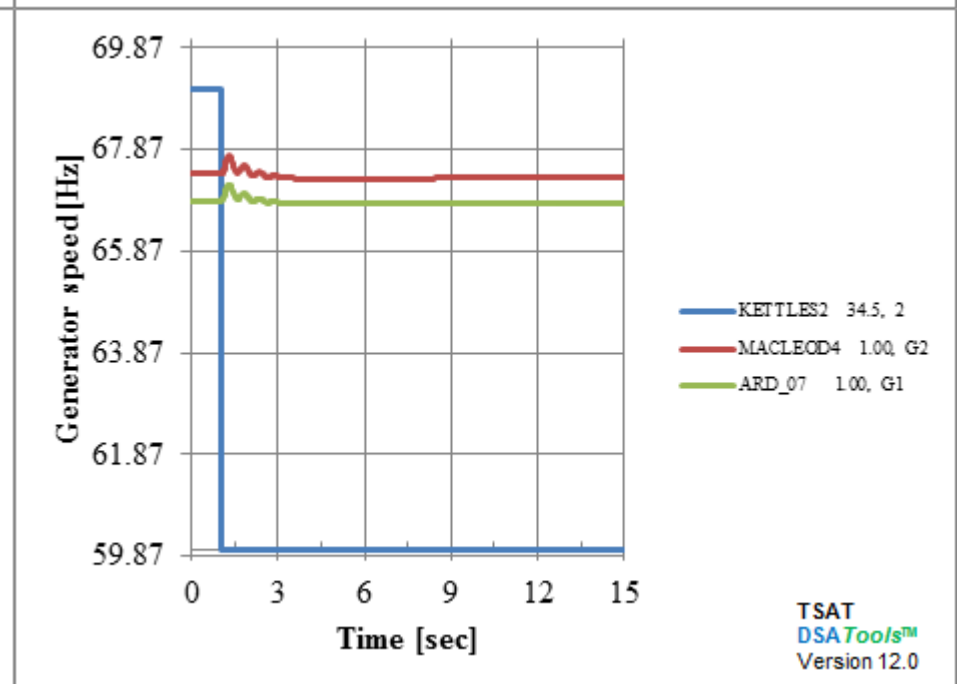
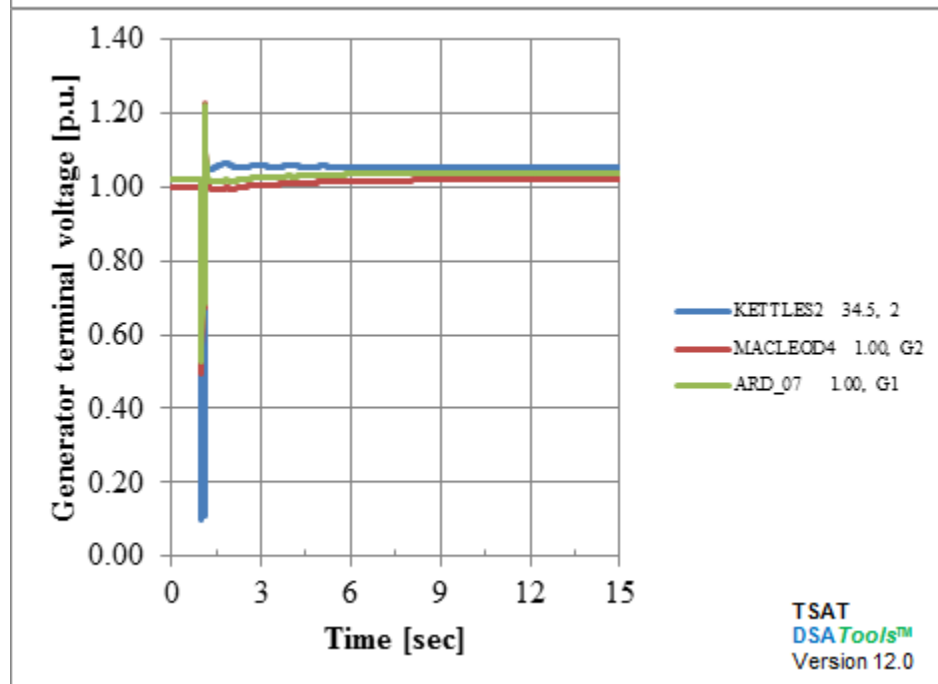
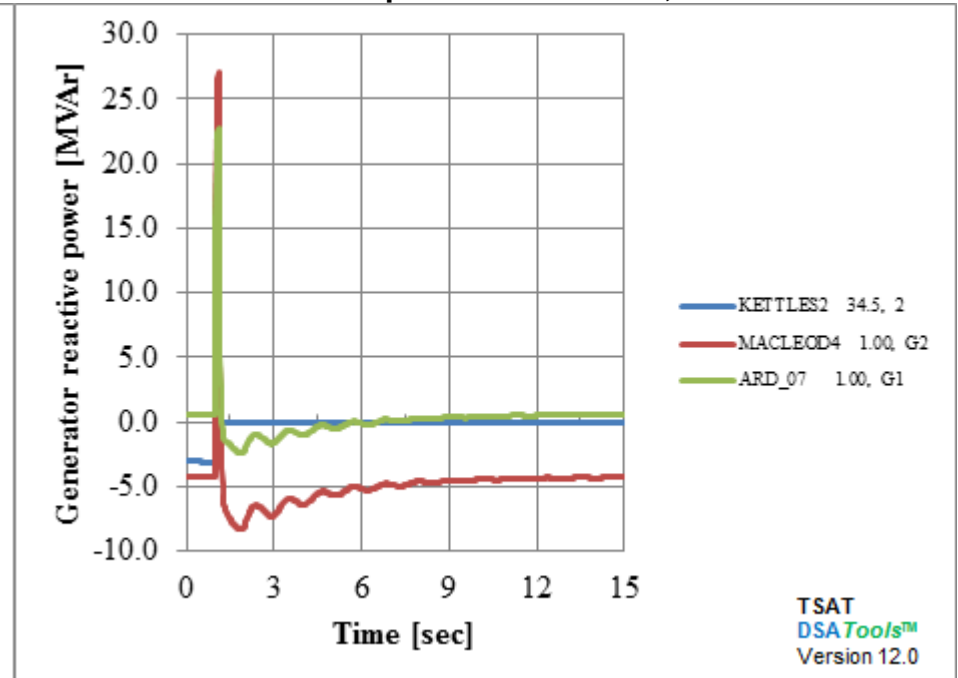
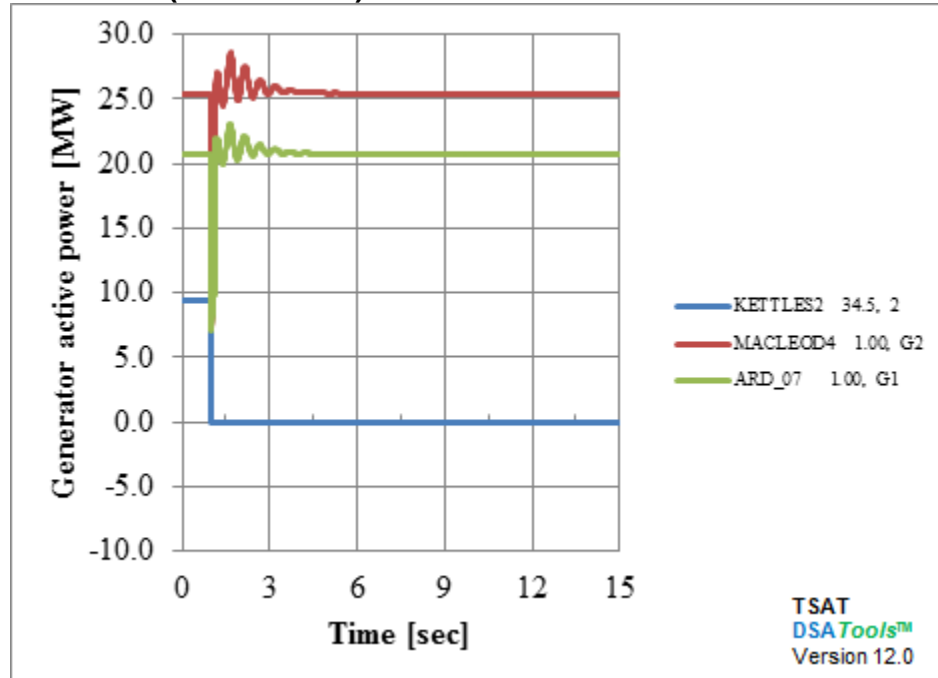
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014



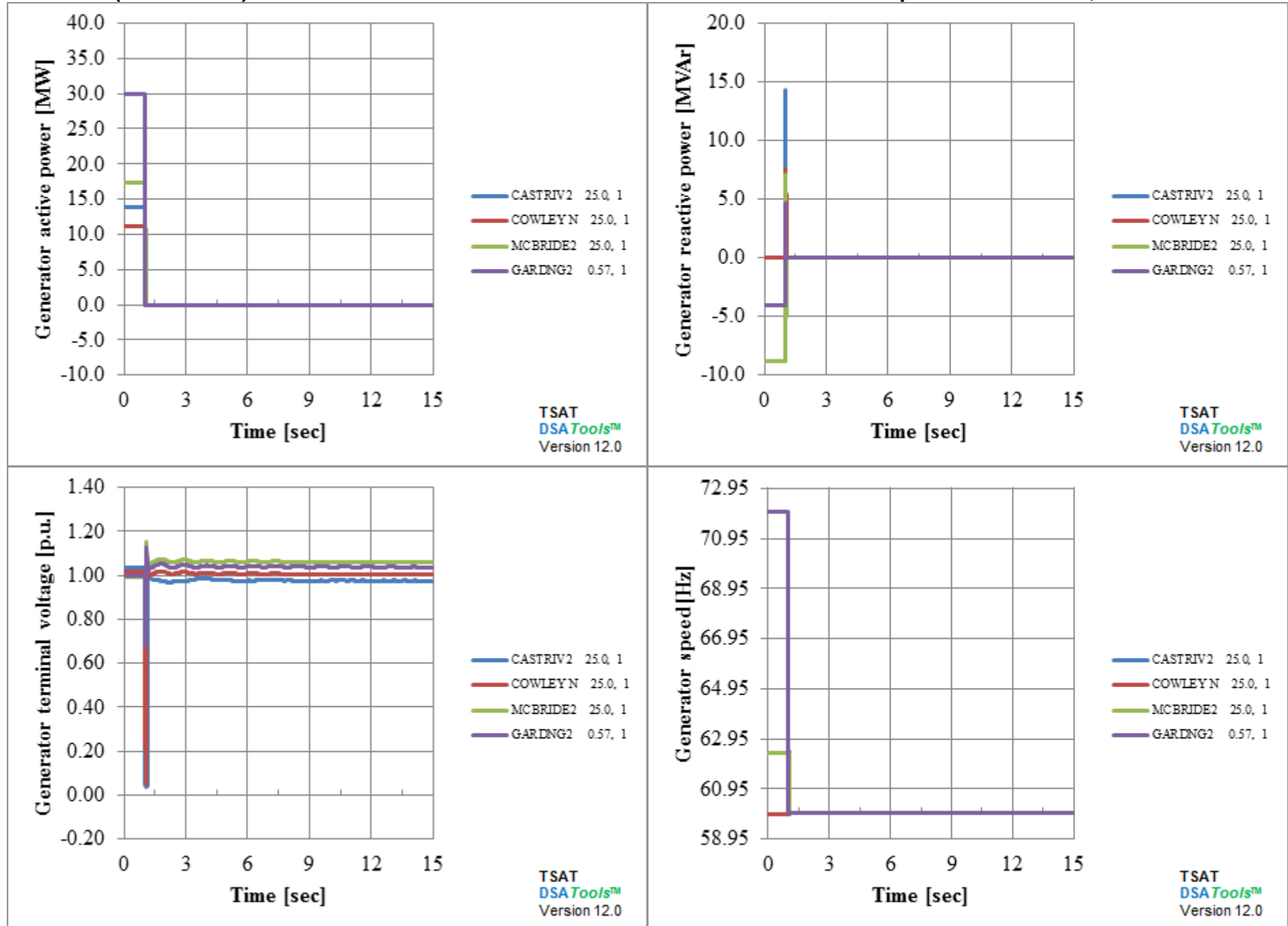
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014



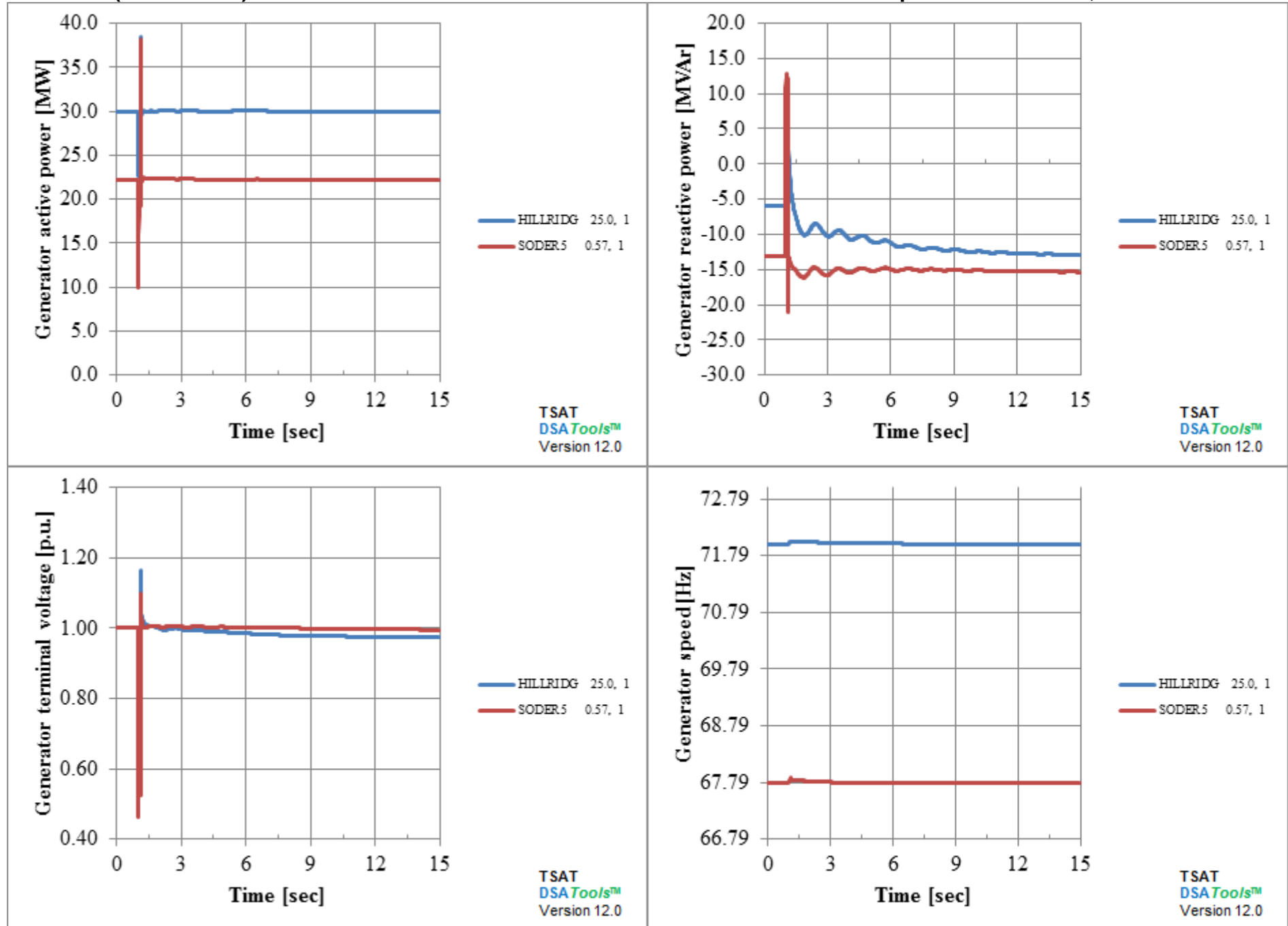
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014



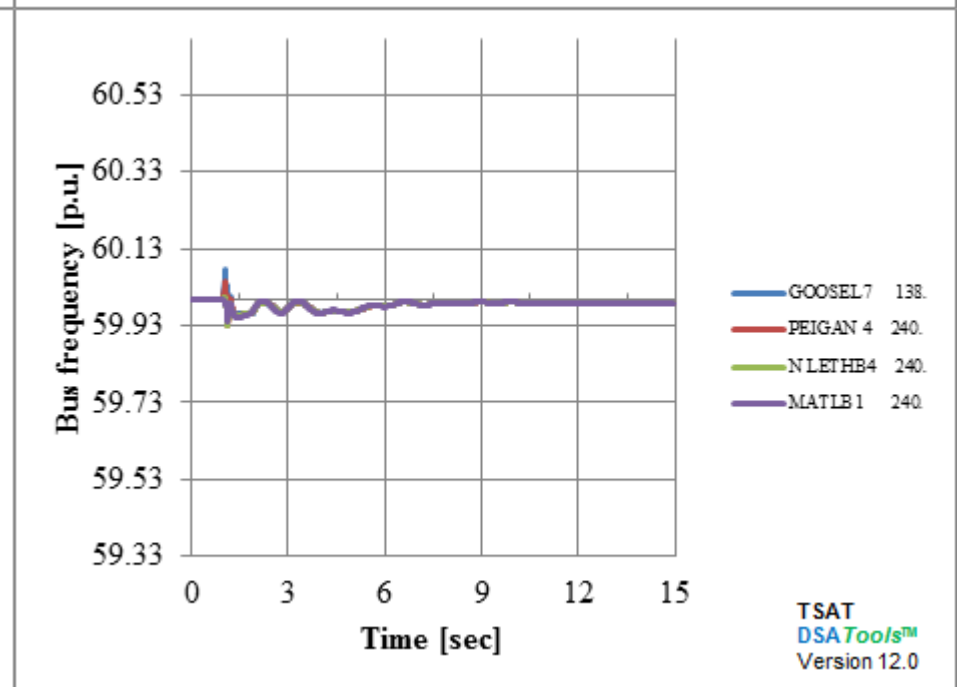
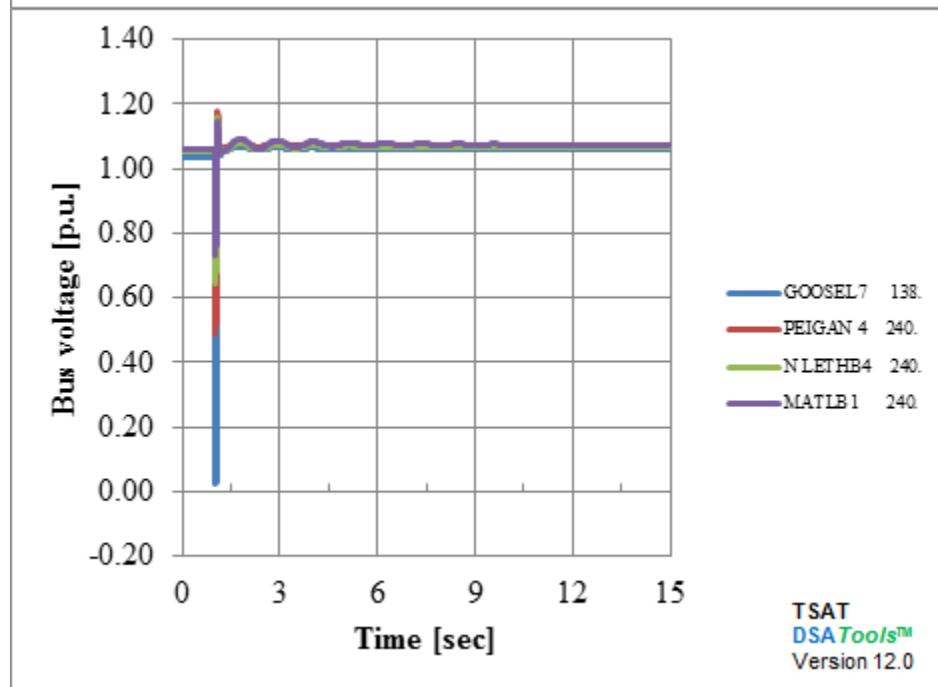
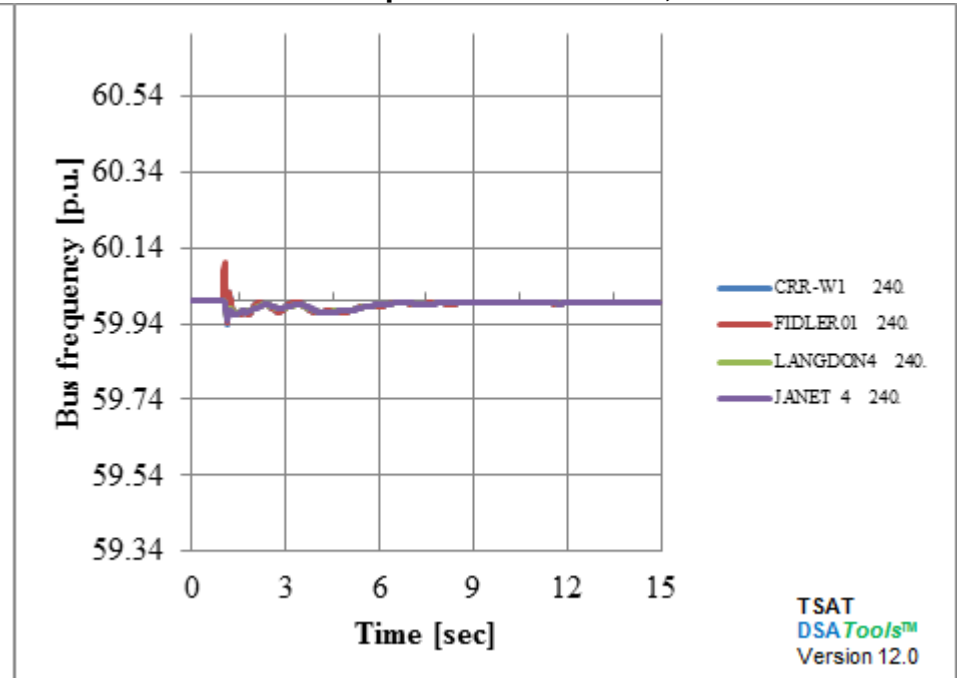
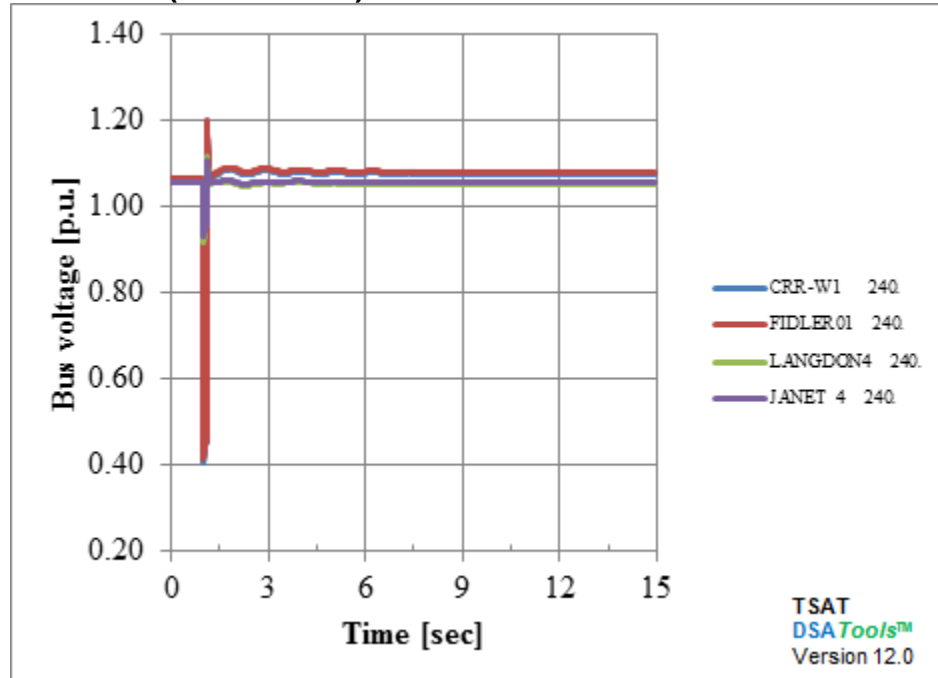
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014



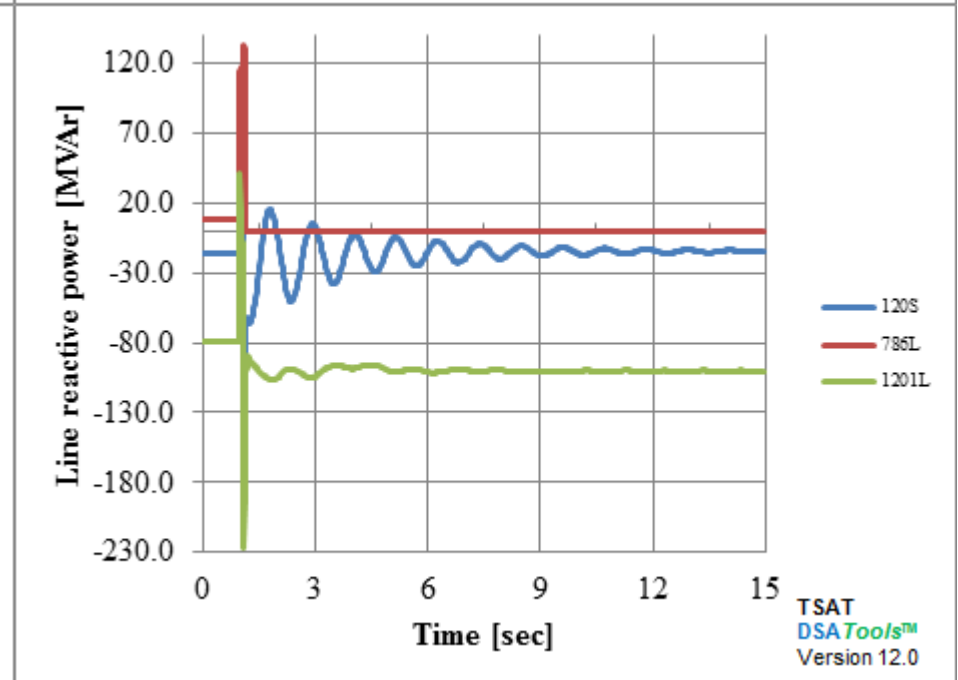
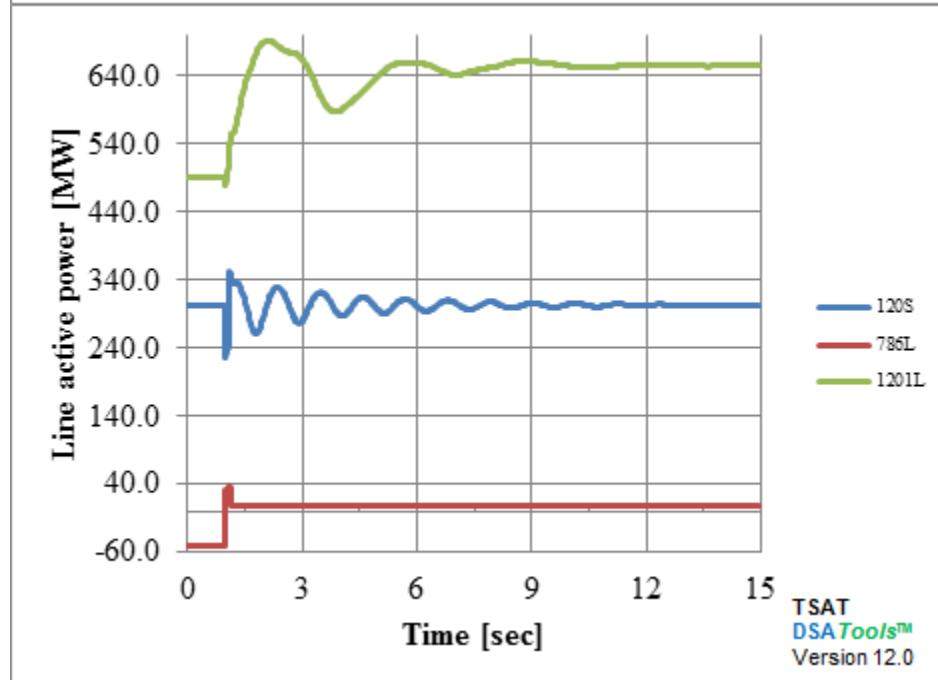
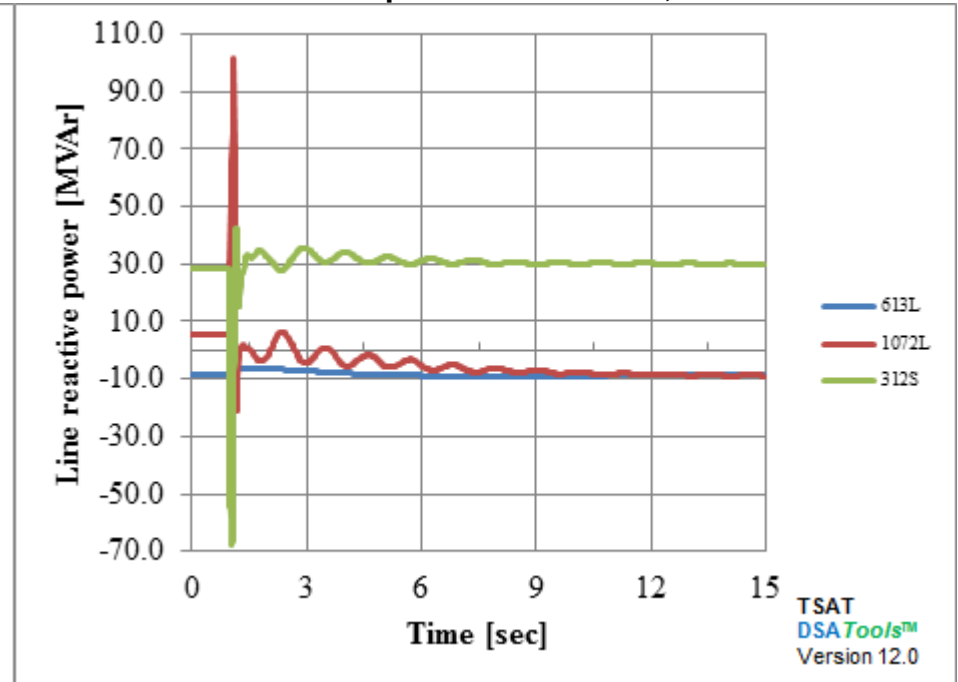
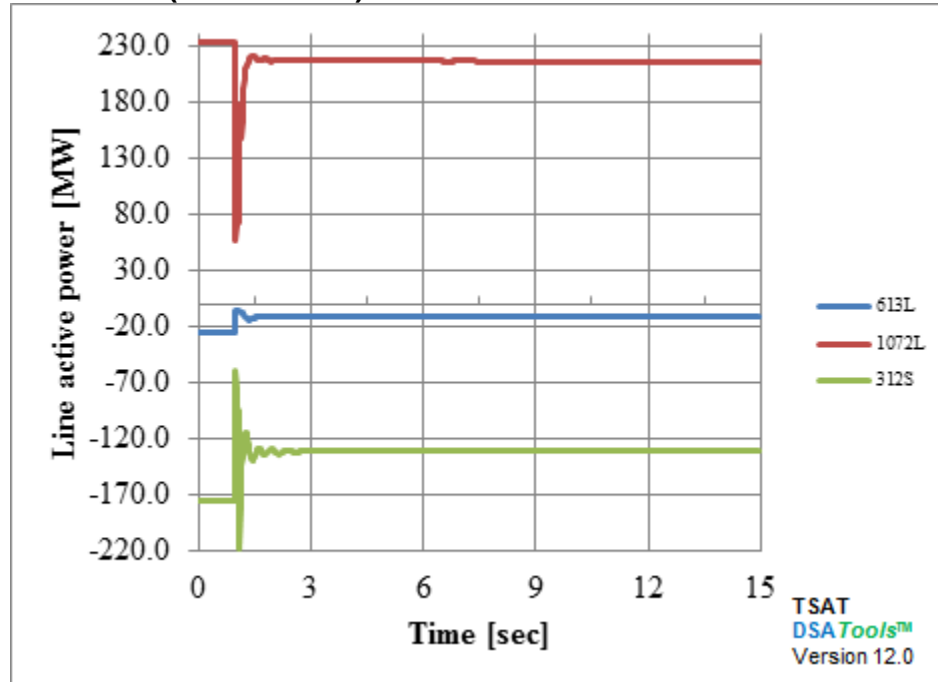
16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014



16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection, Summer Peak 2014







P524

**Riverview WAGF**

Attachment E4

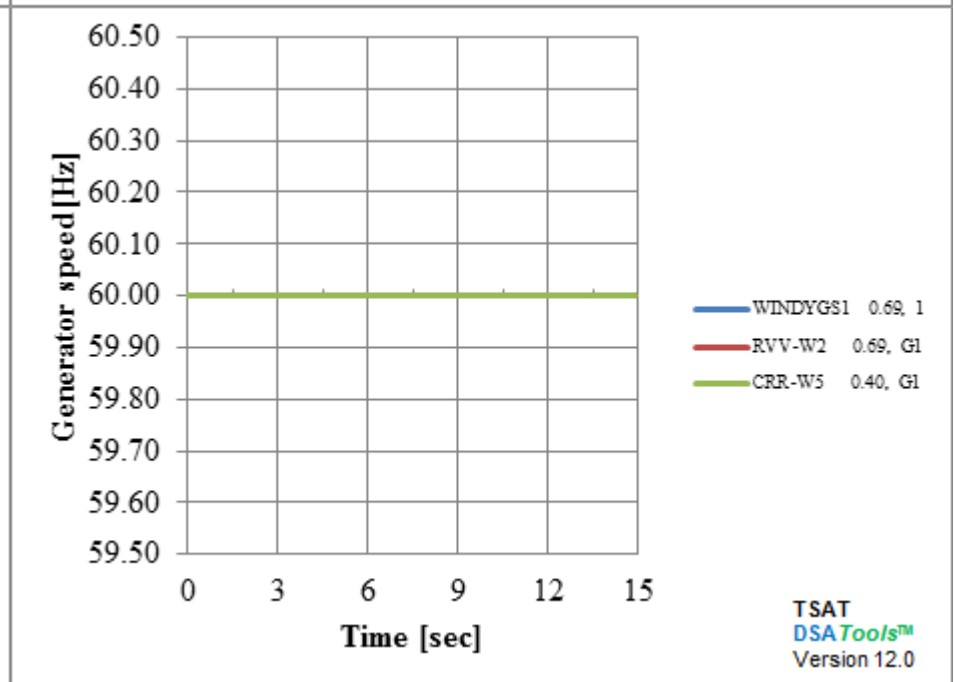
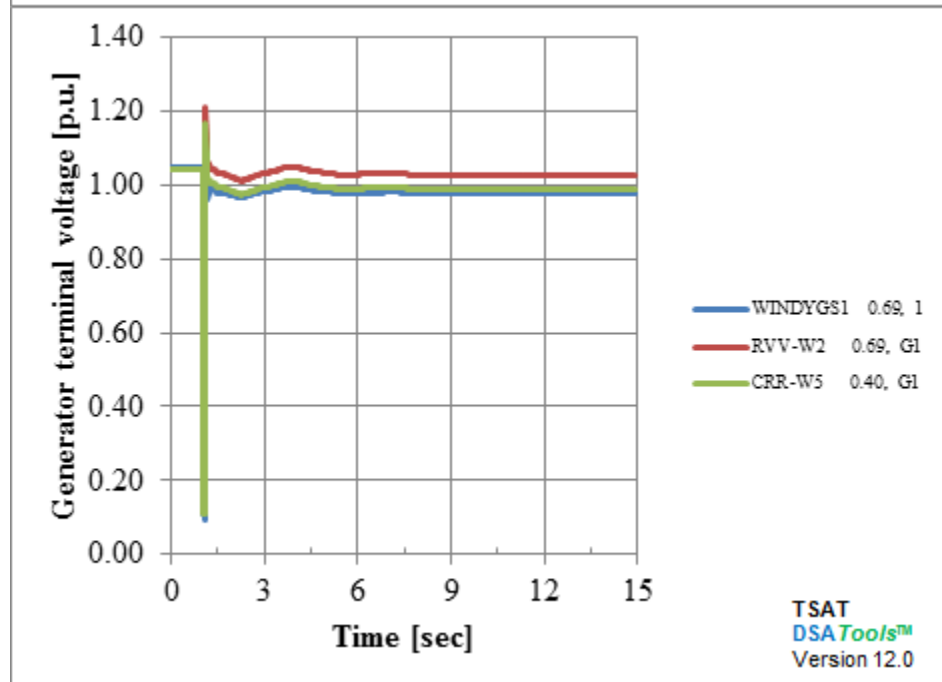
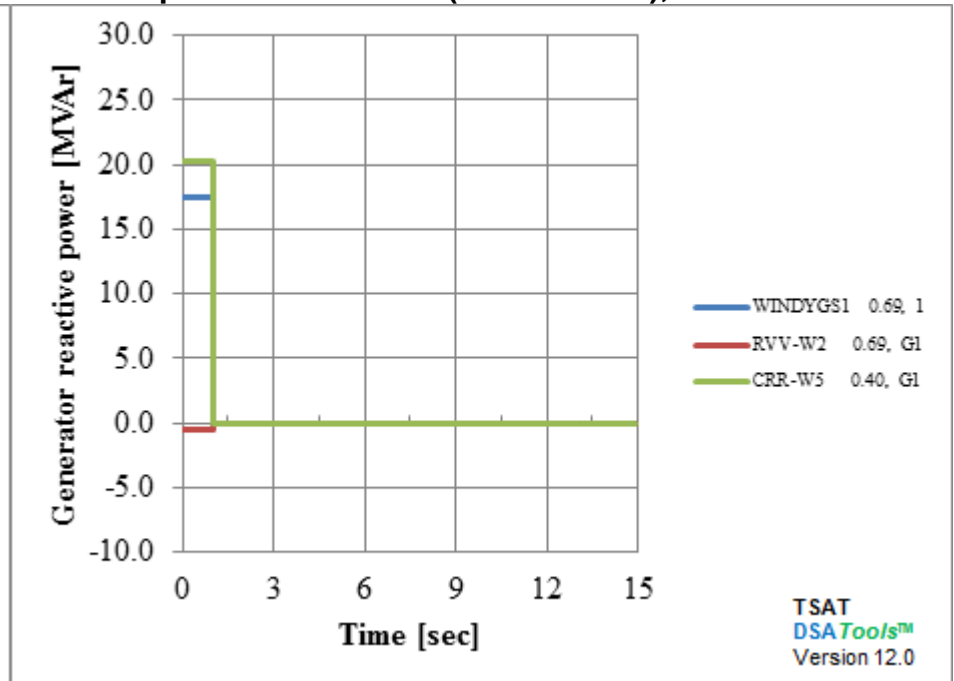
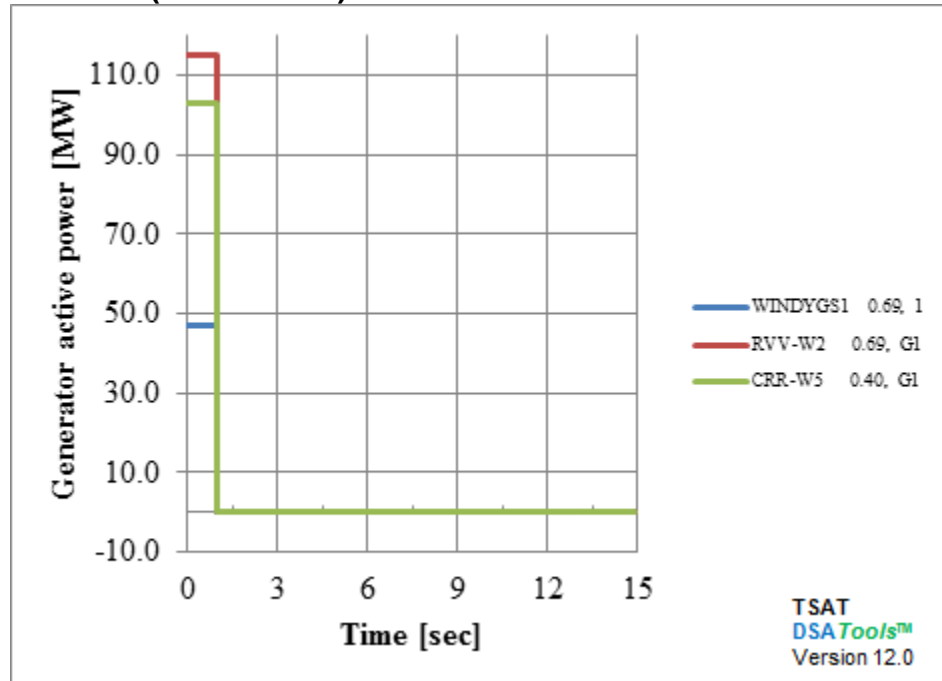
Post-Connection Transient Stability Results

Part 4

2017 Summer Peak Scenario

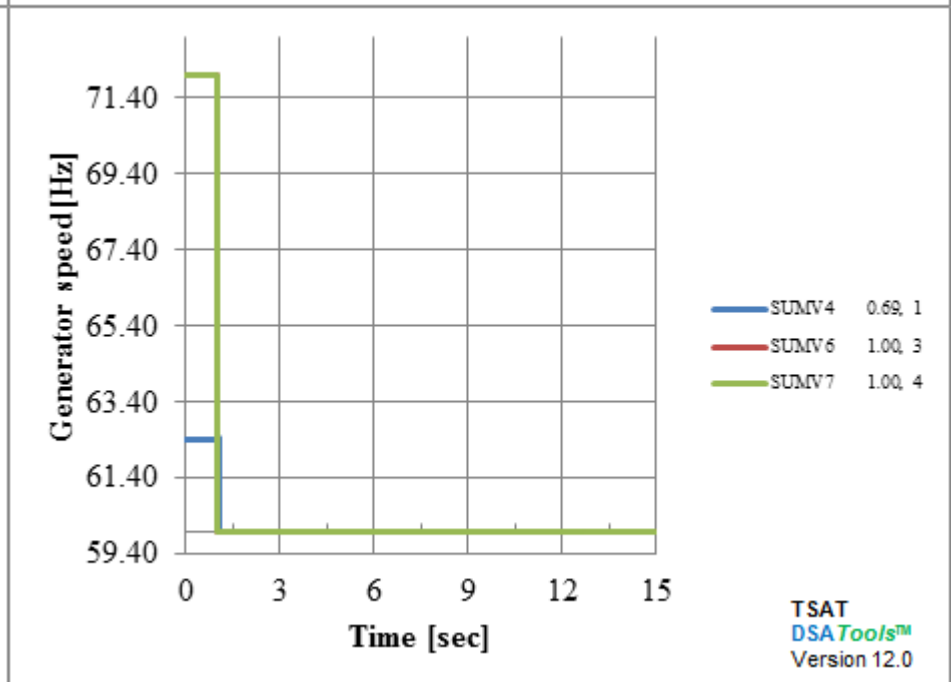
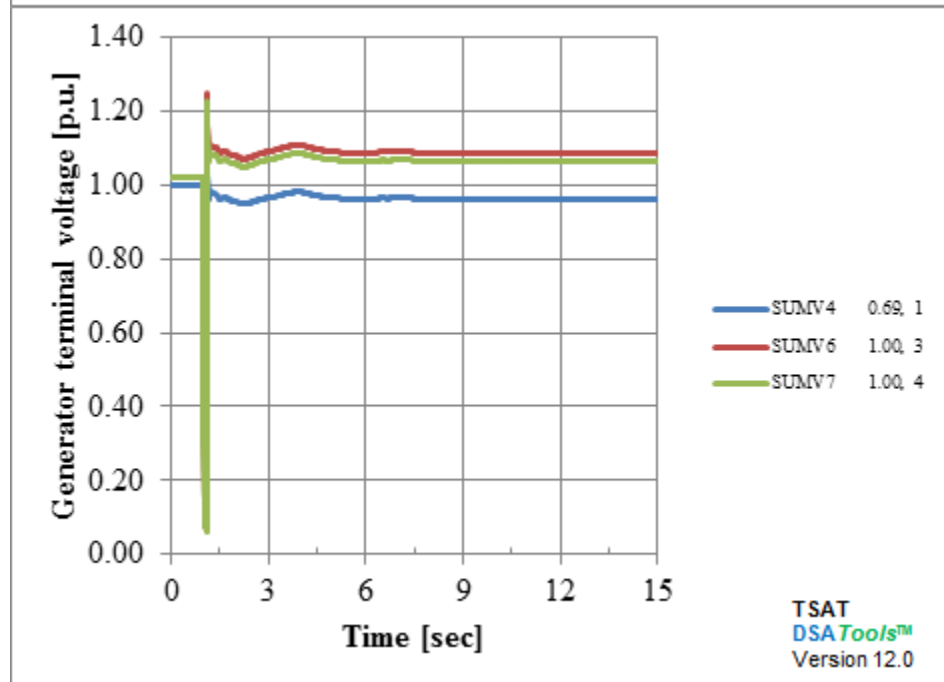
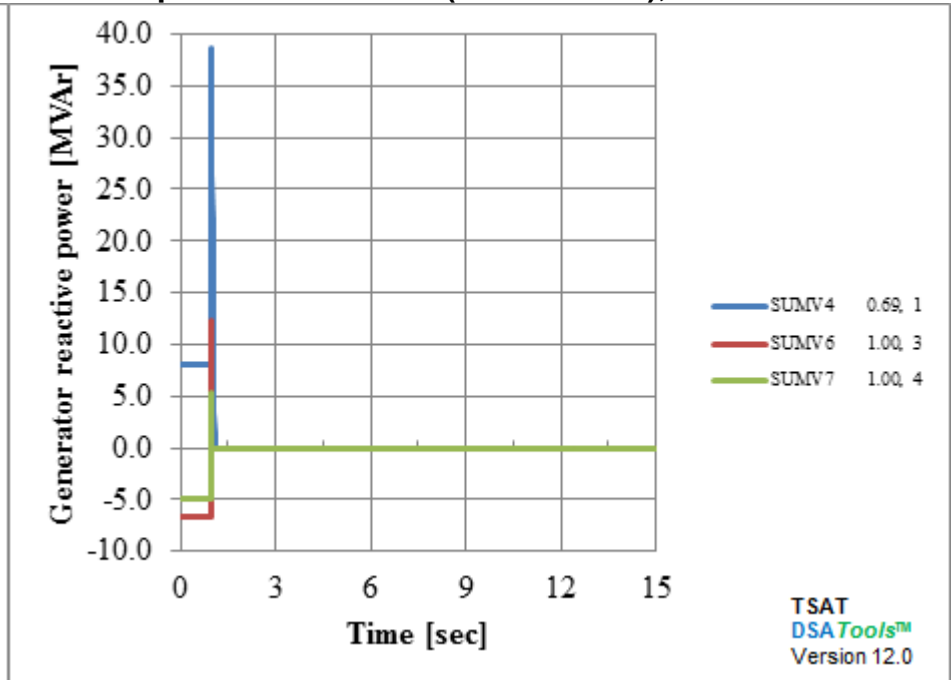
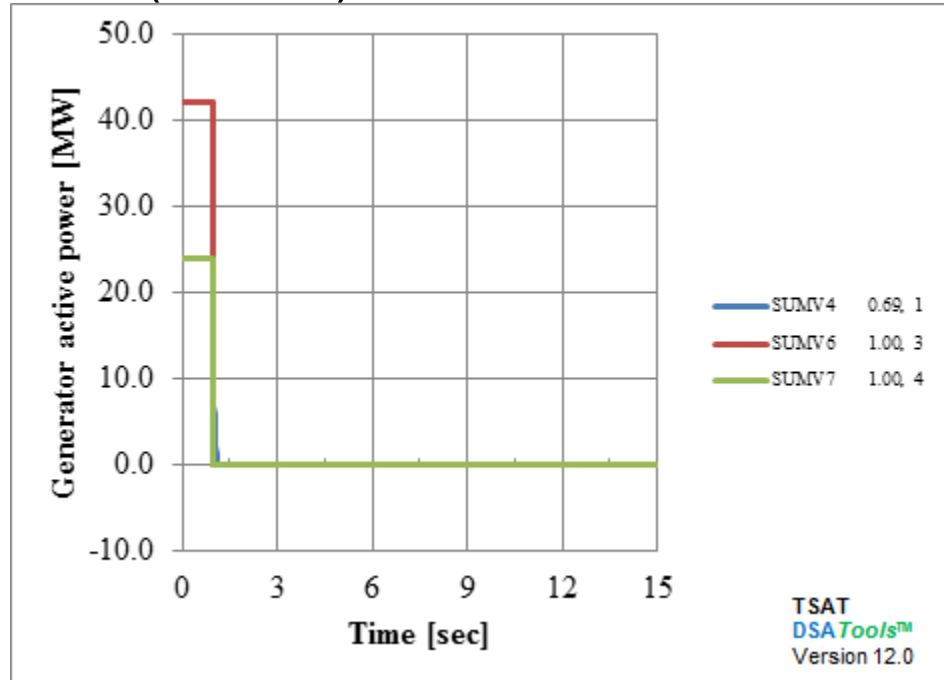
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



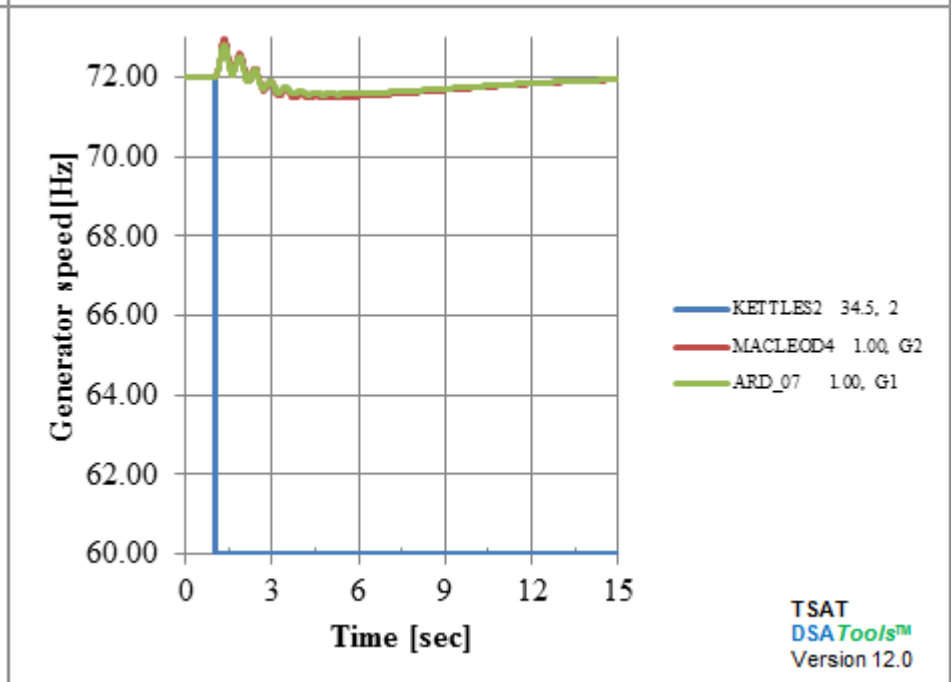
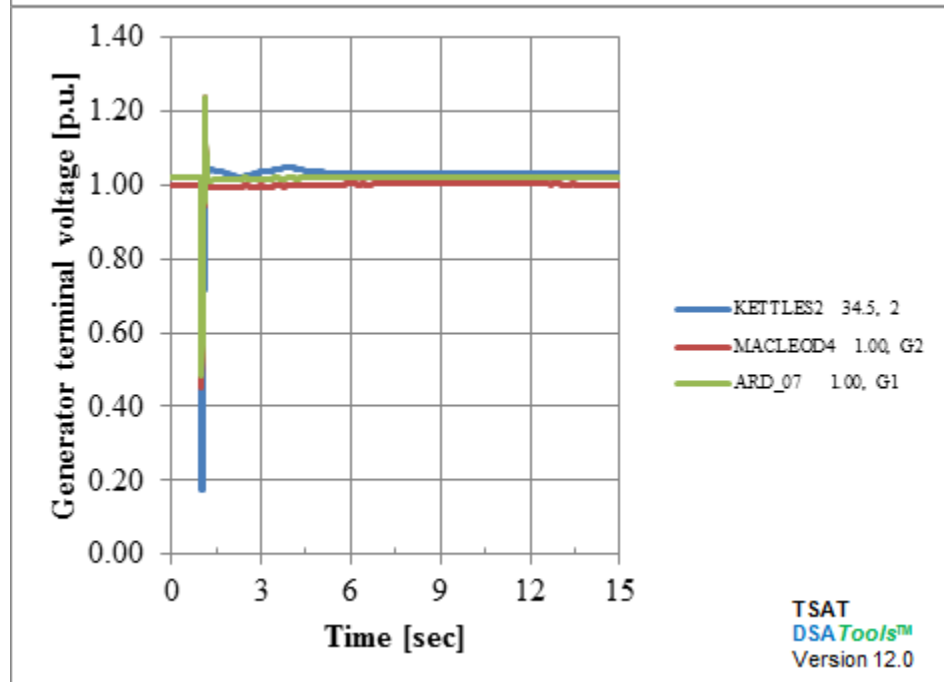
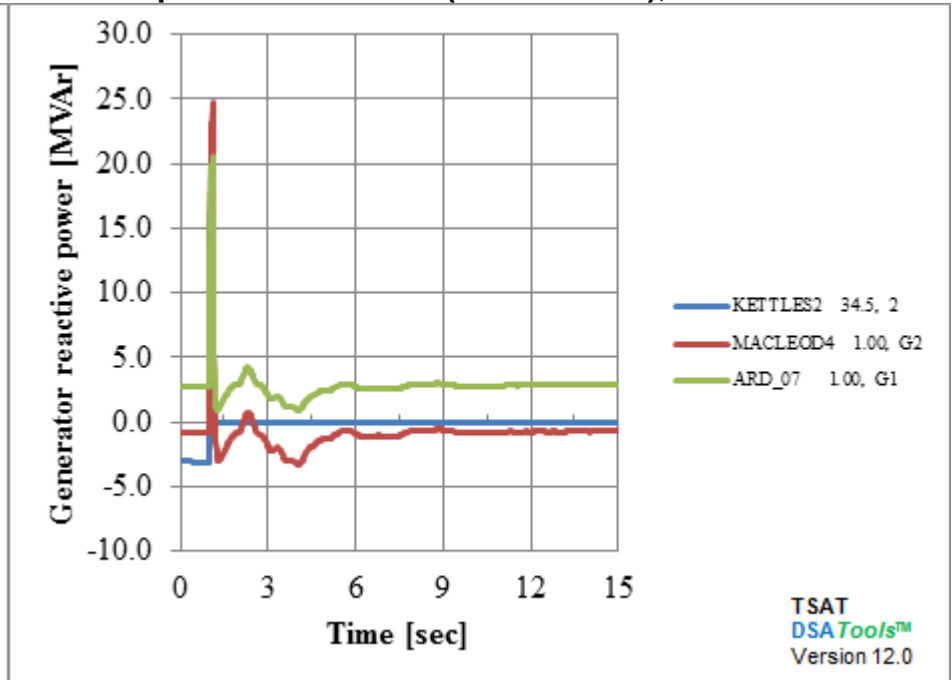
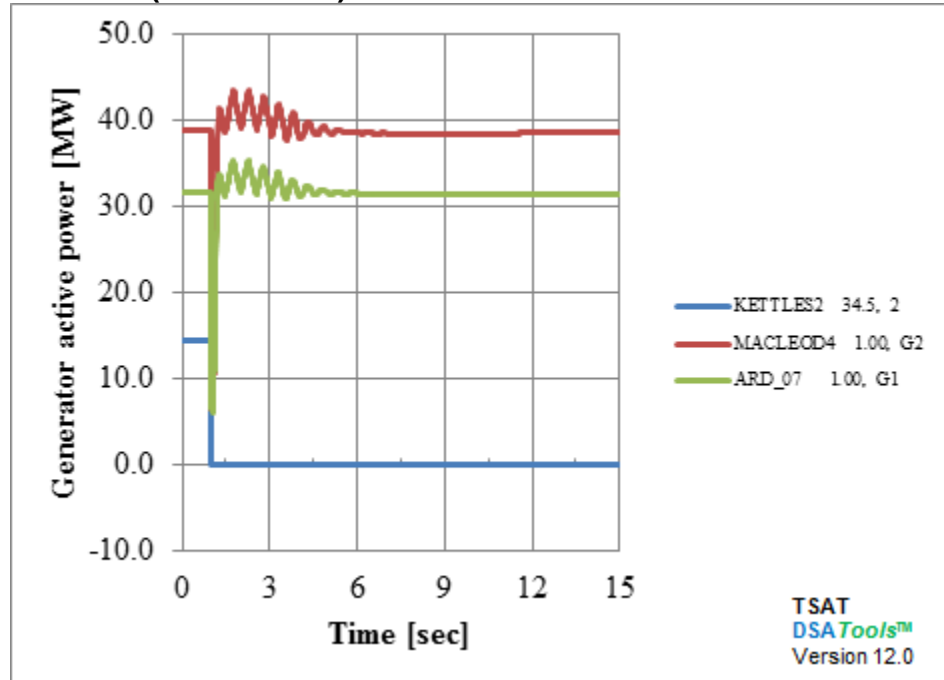
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



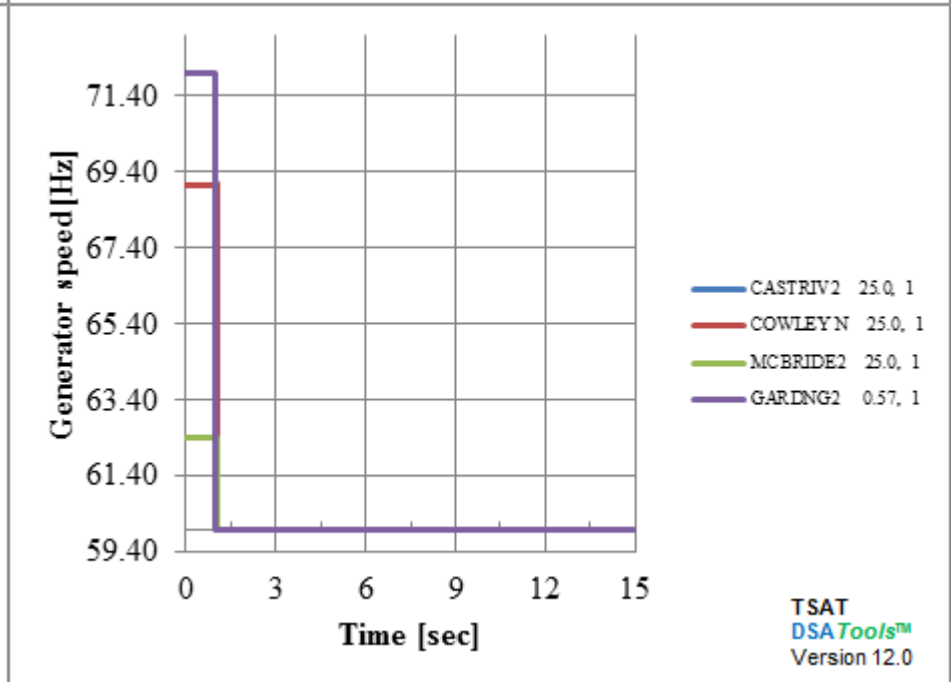
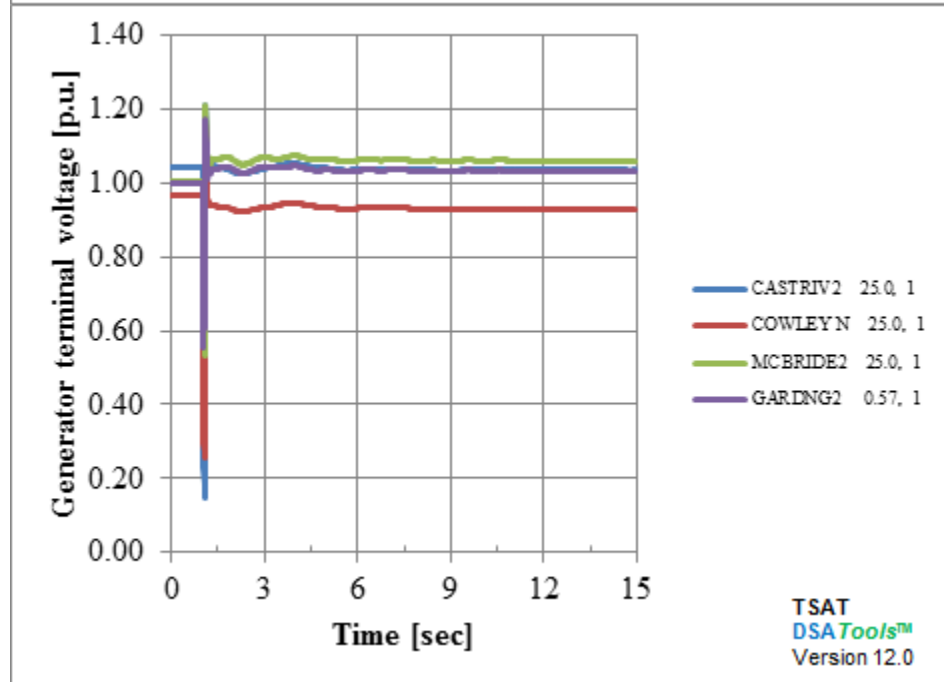
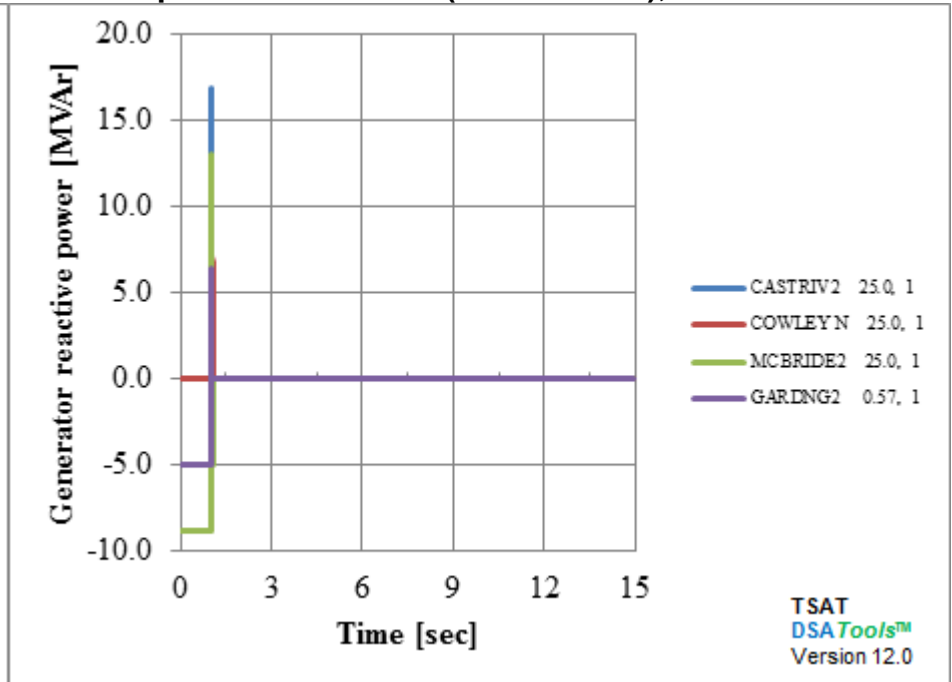
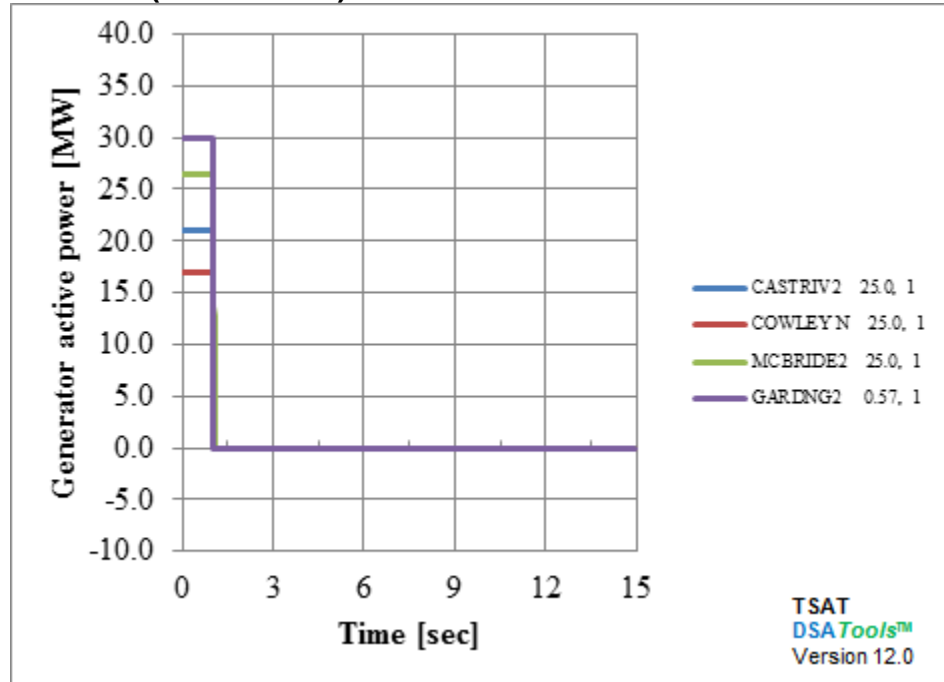
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



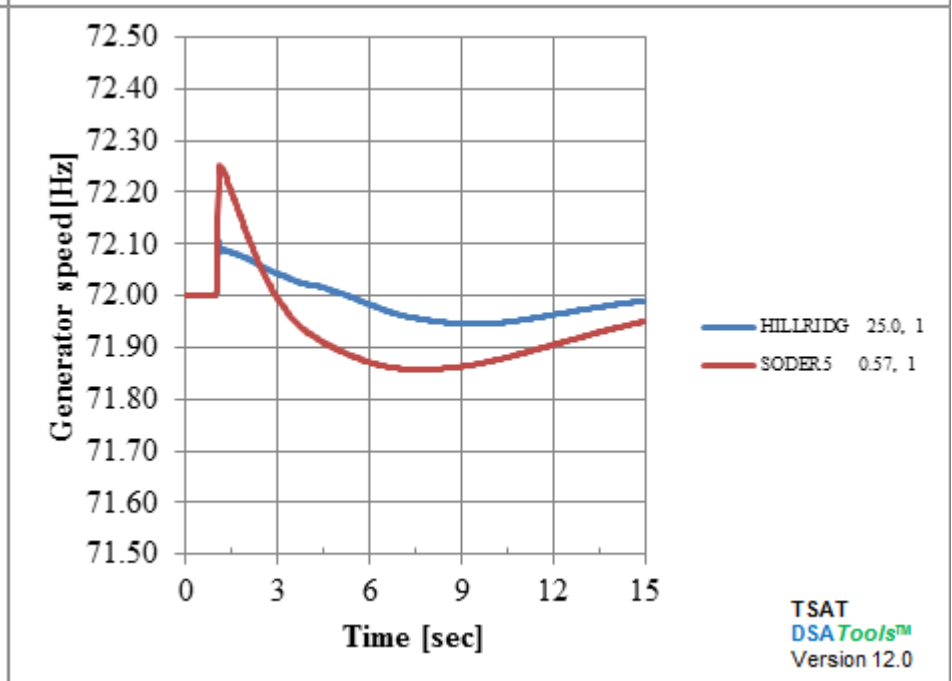
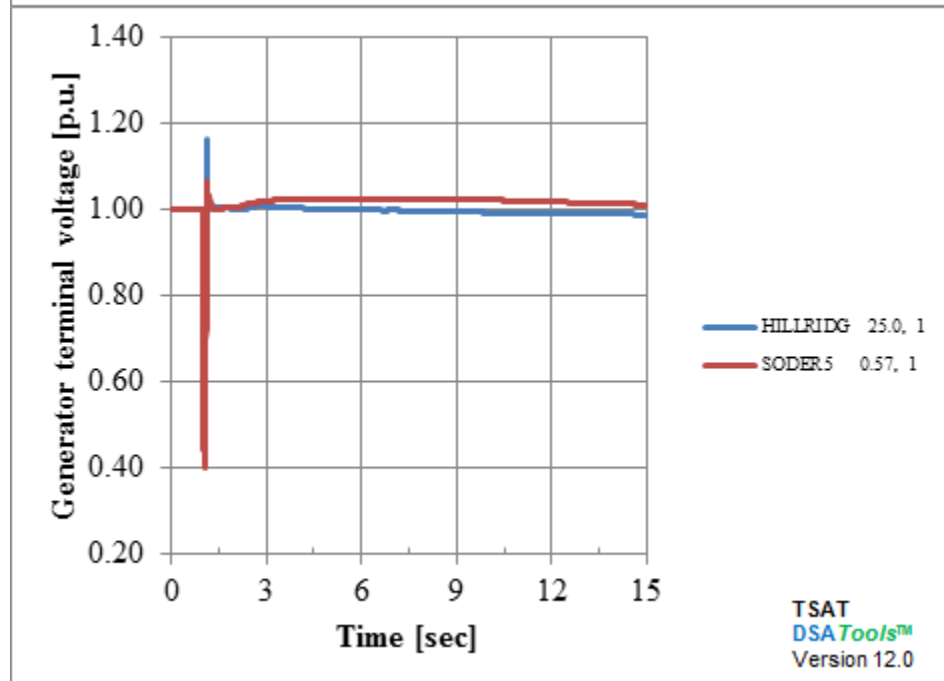
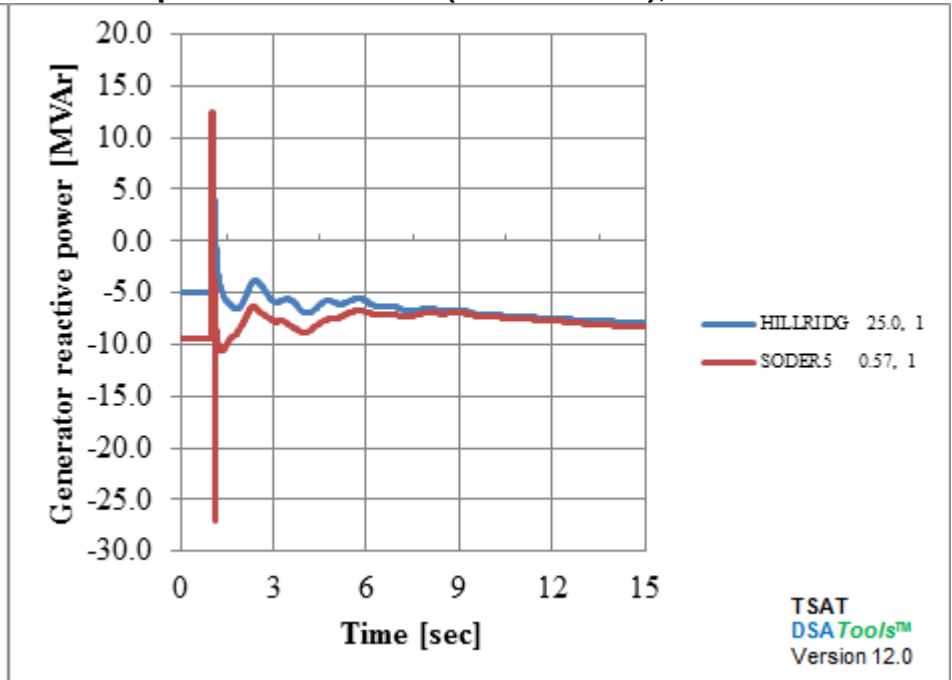
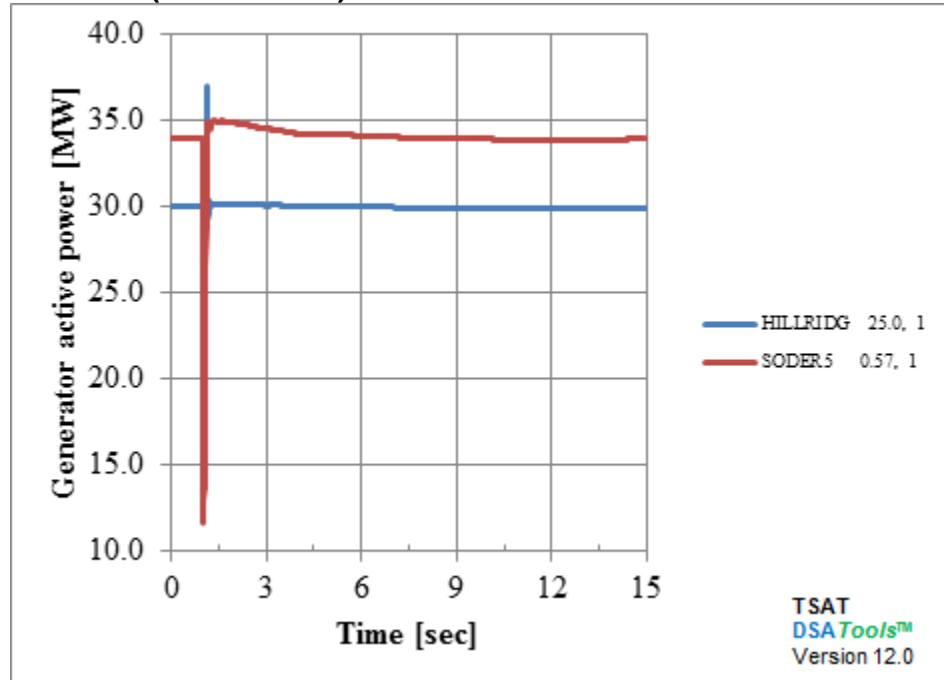
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



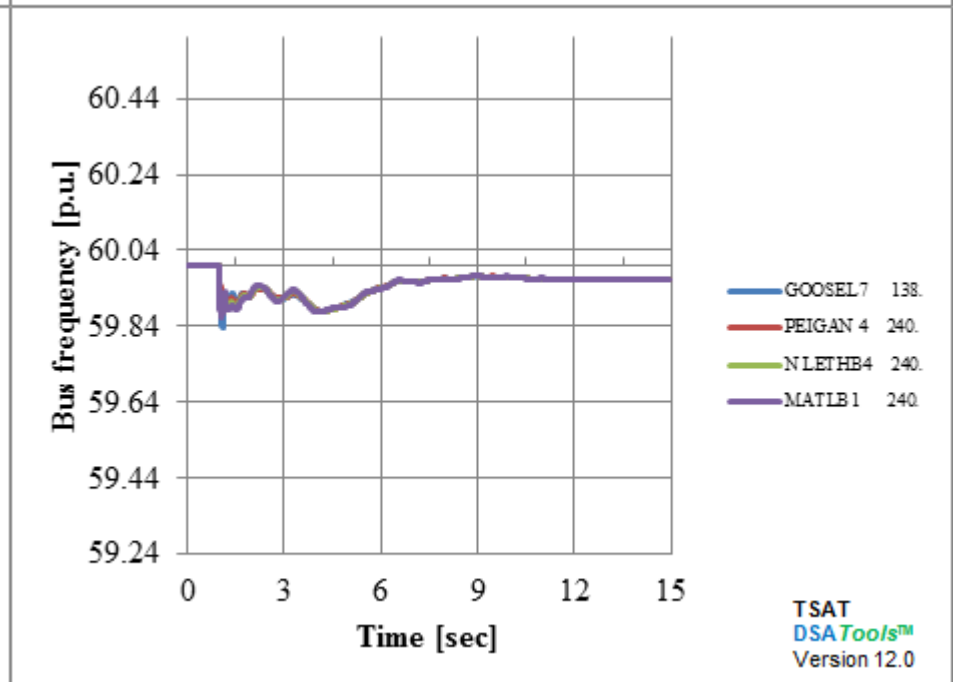
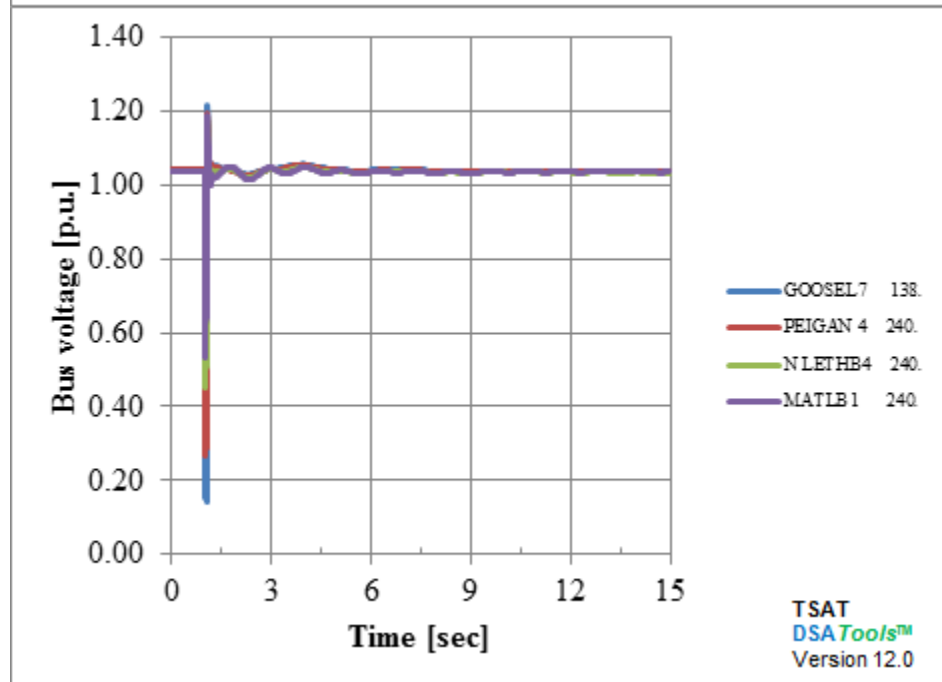
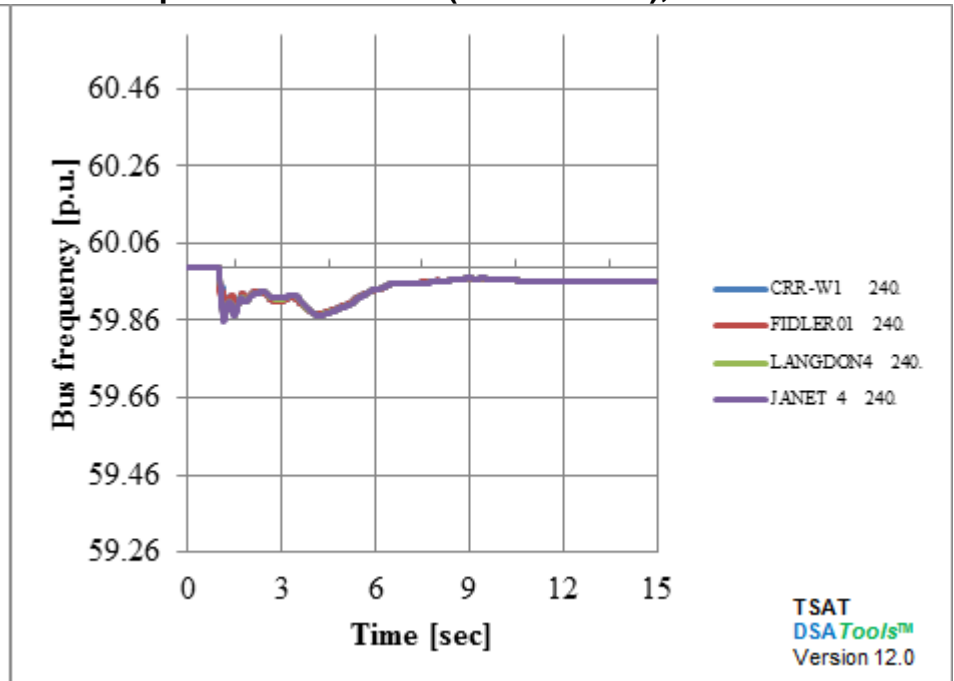
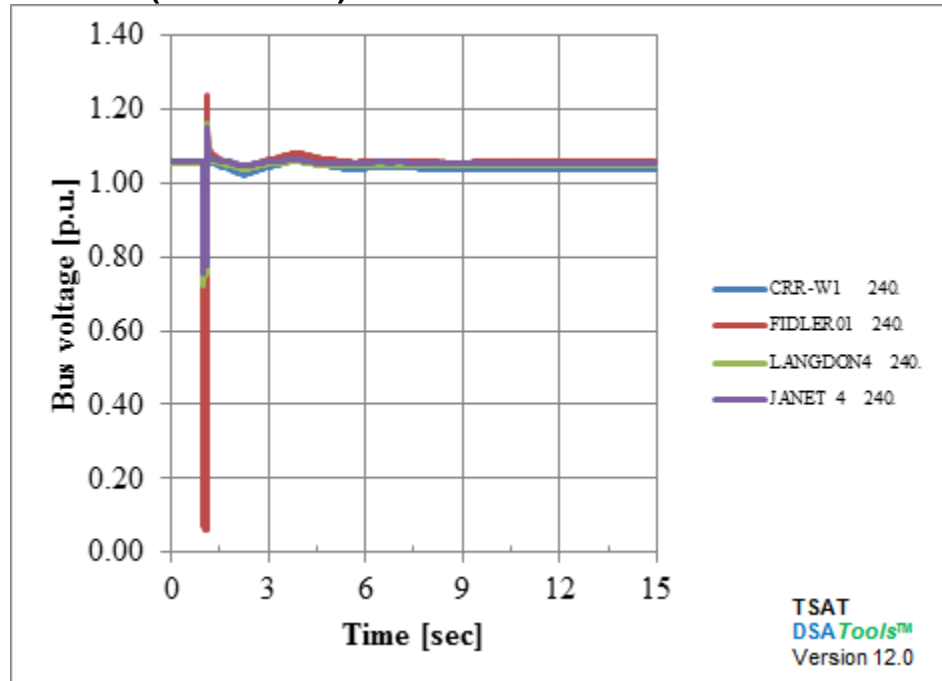
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



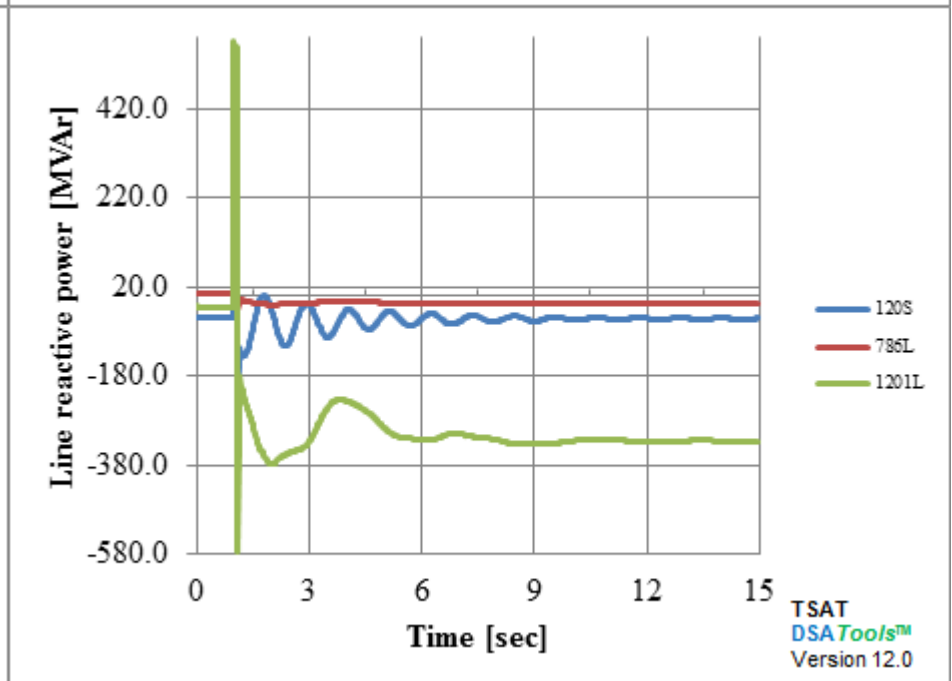
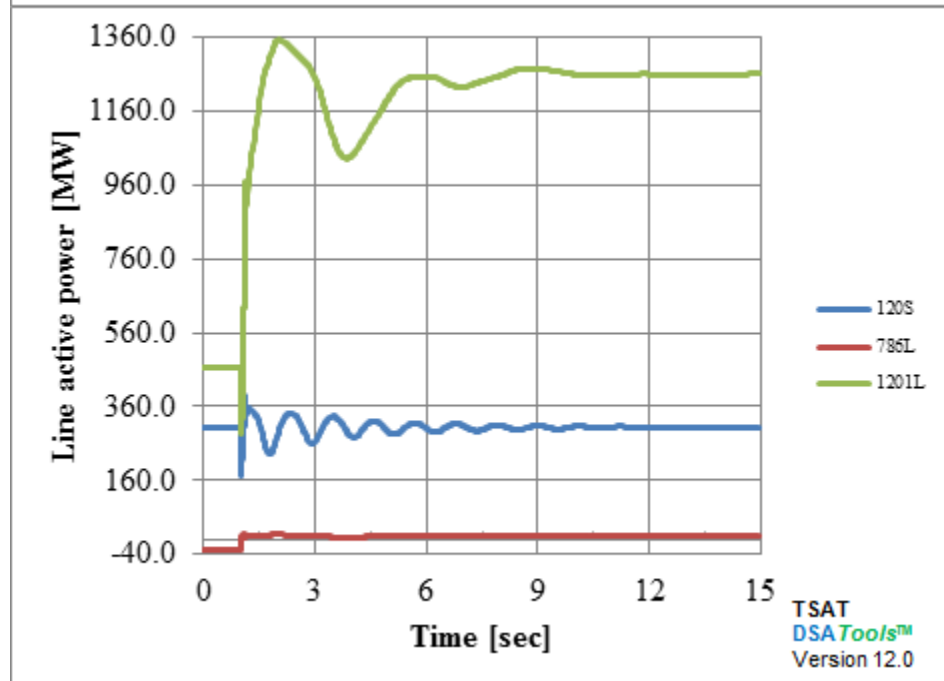
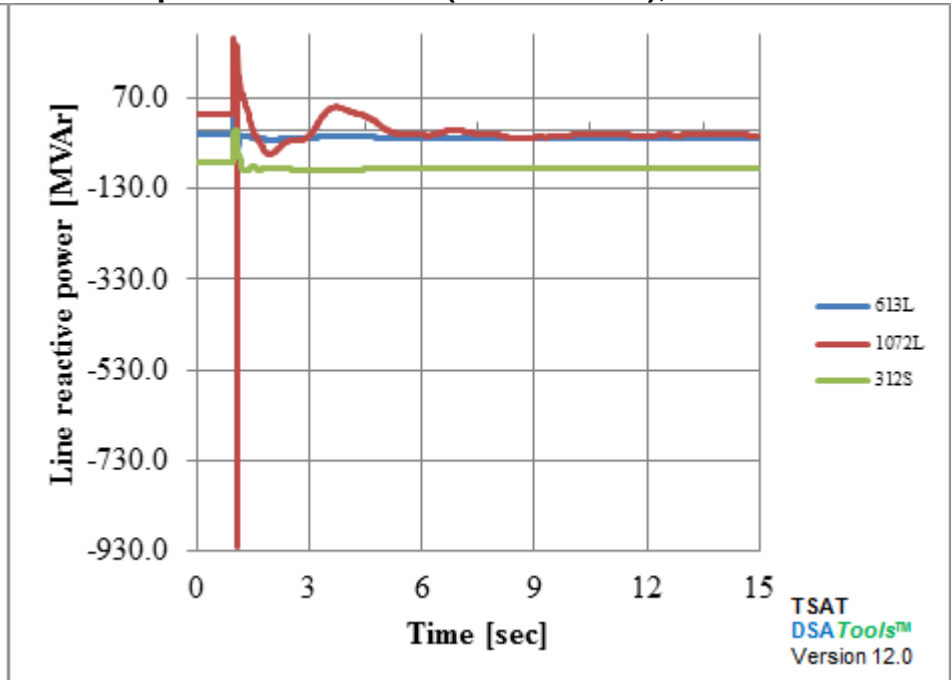
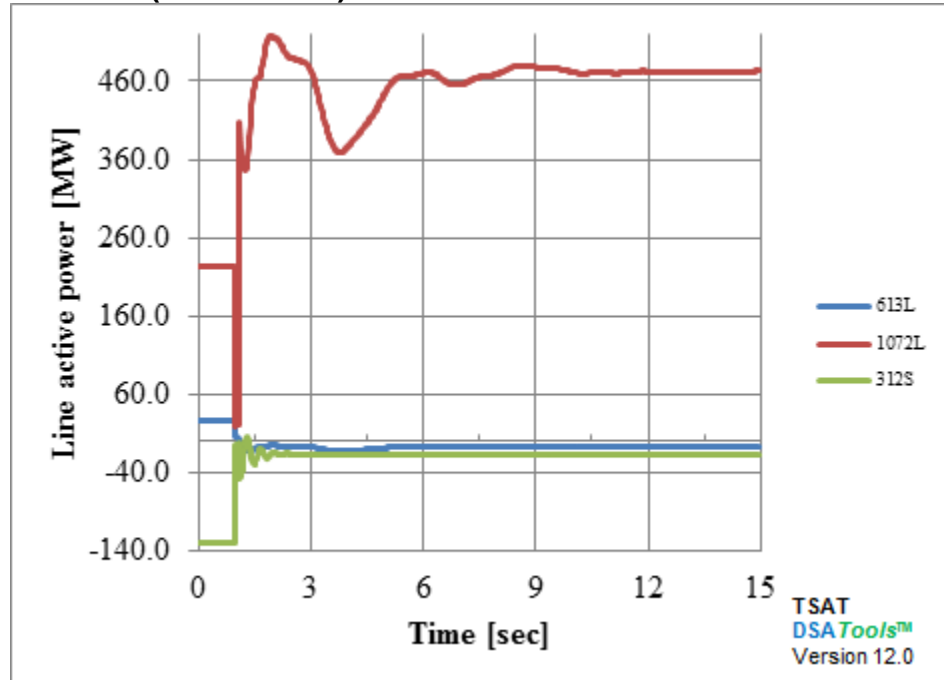
1 -- 994L (103S - 312S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



1 -- 994L (103S - 312S) NEAR 103S

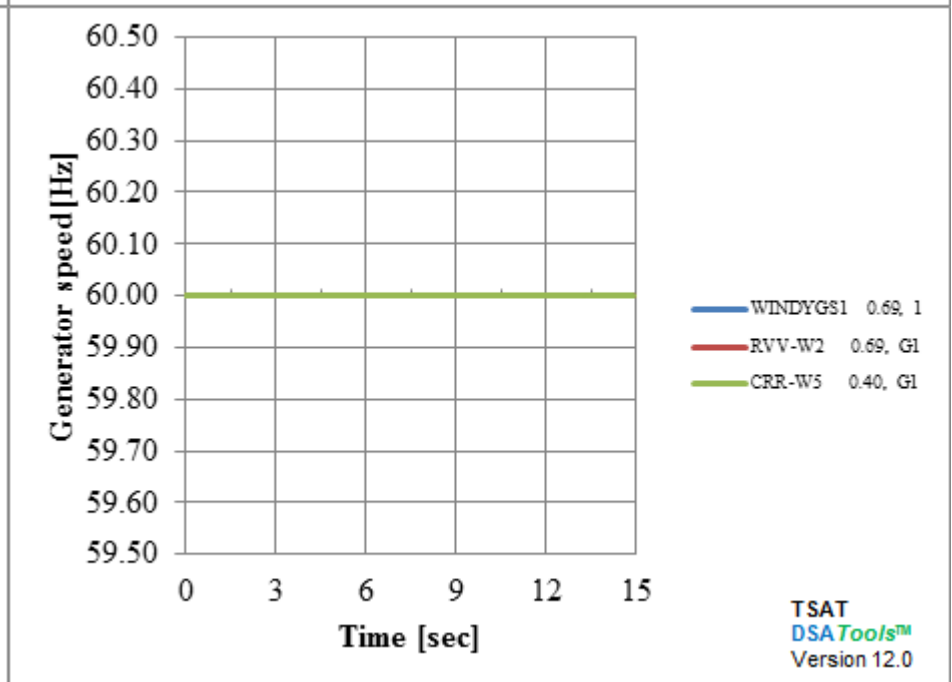
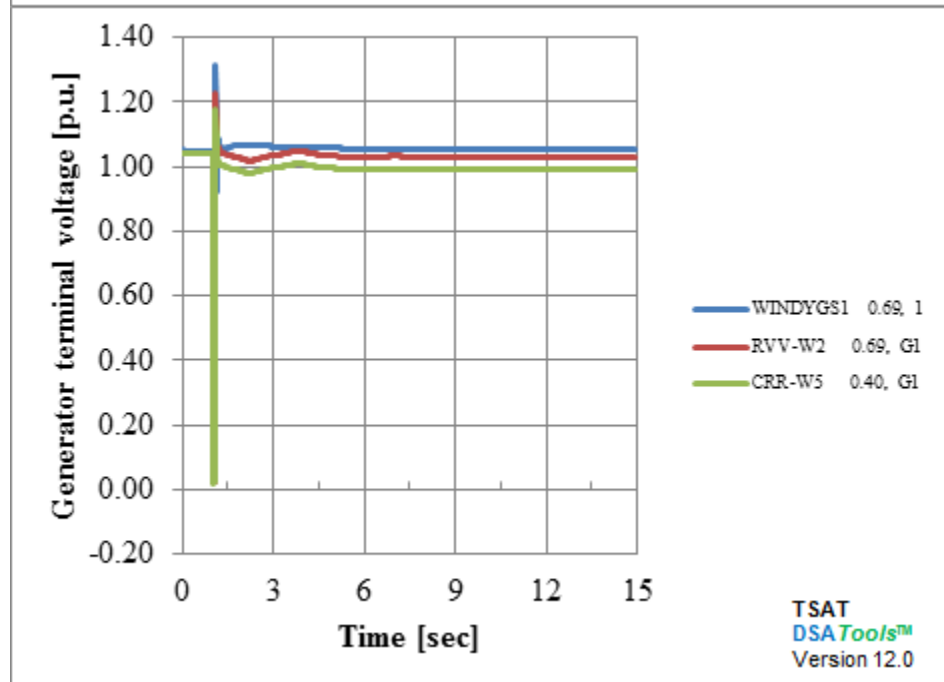
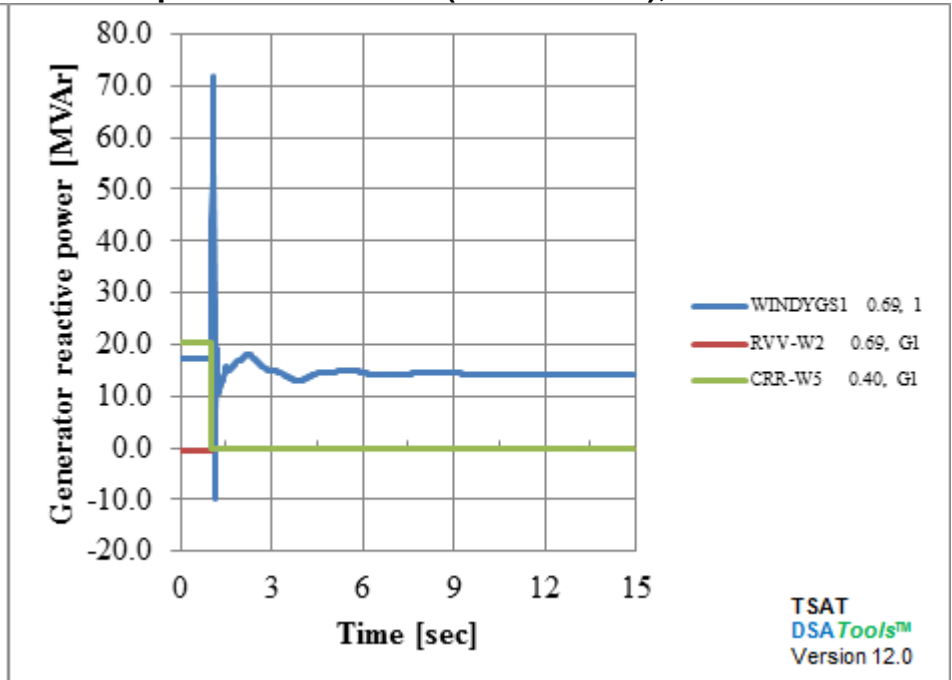
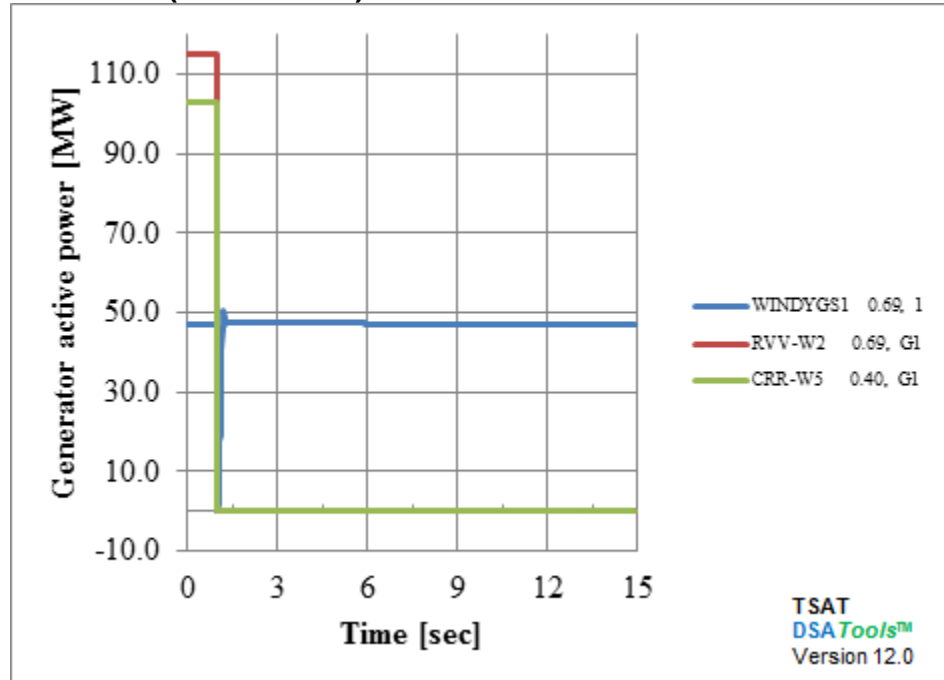
Proposed Connection (Alternative 2), Summer Peak 2017





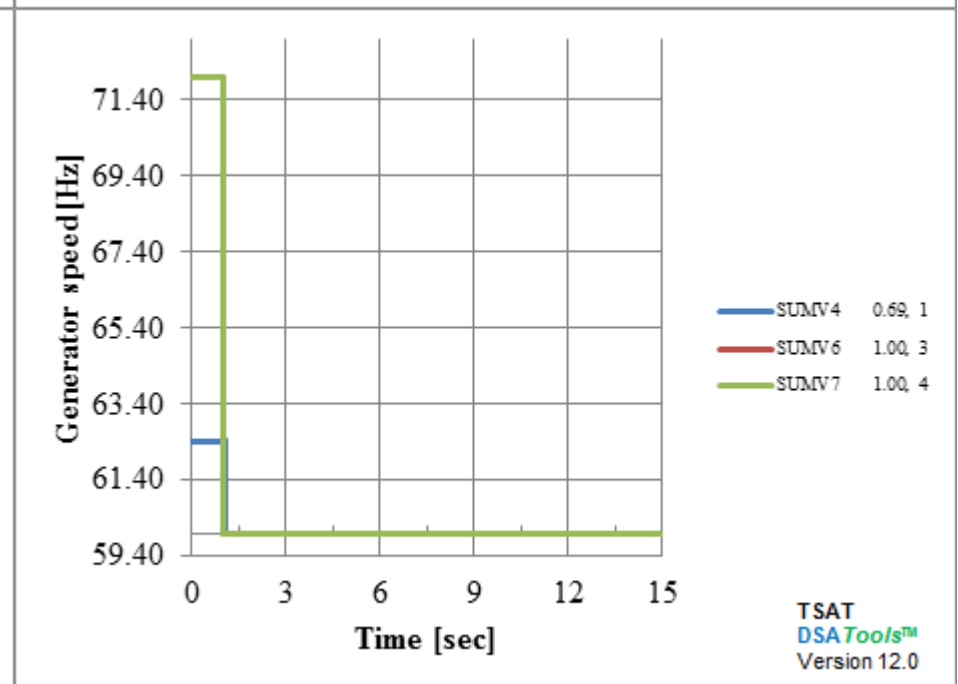
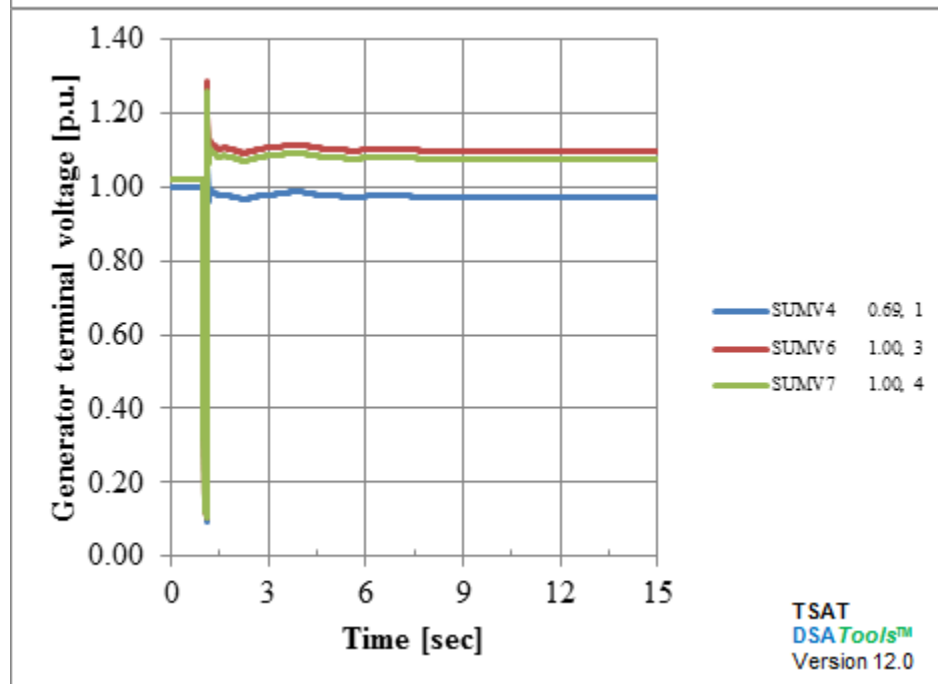
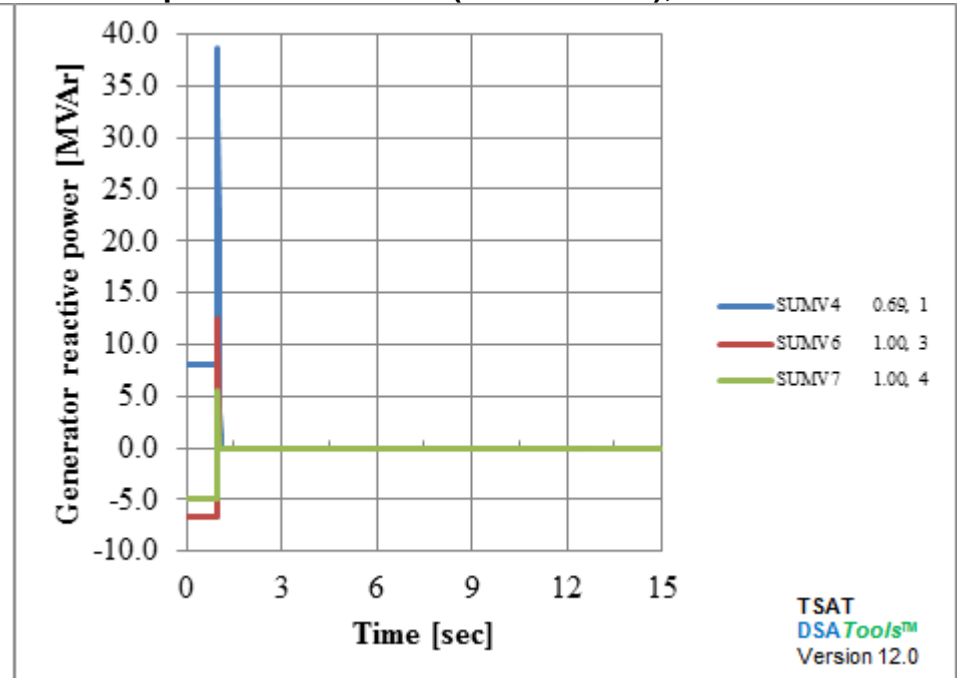
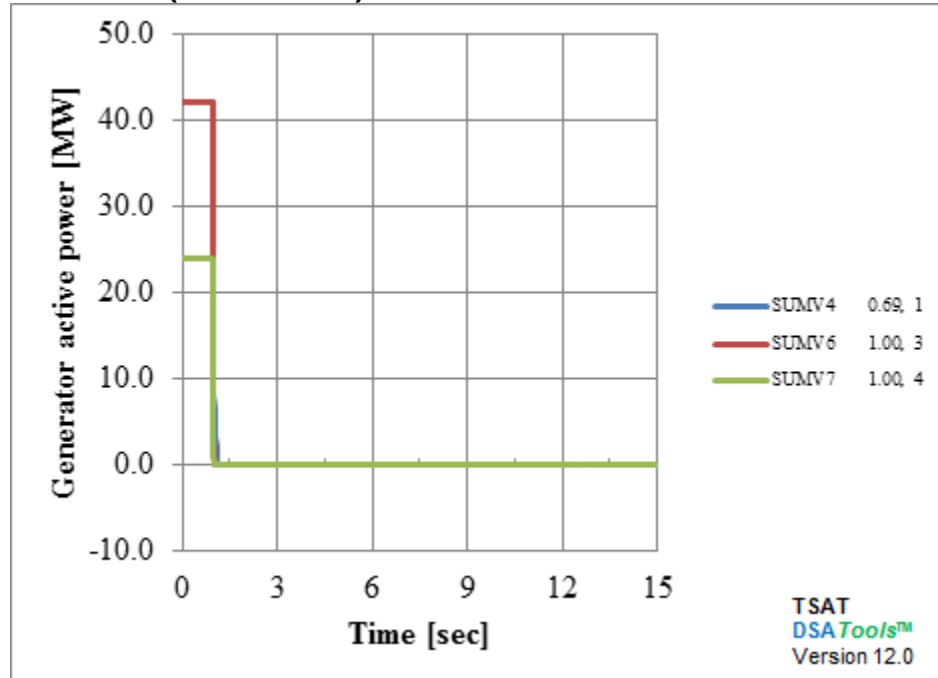
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



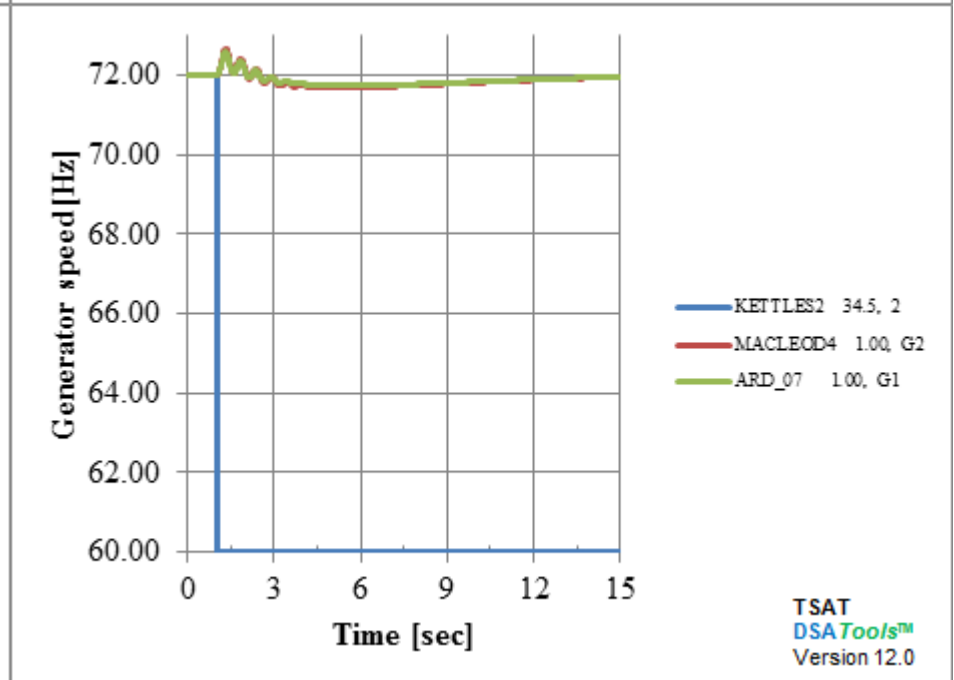
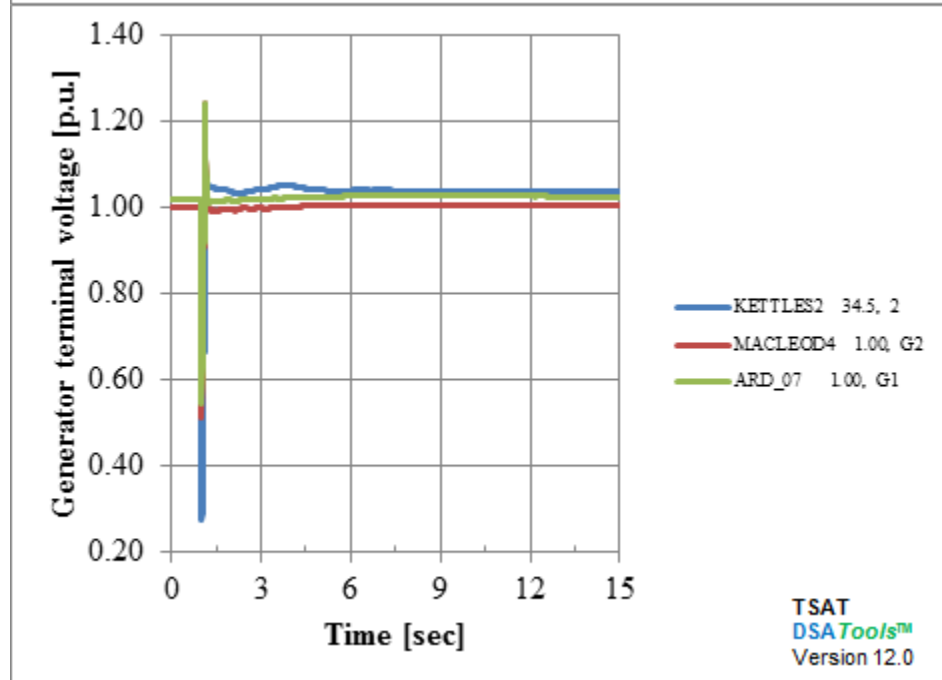
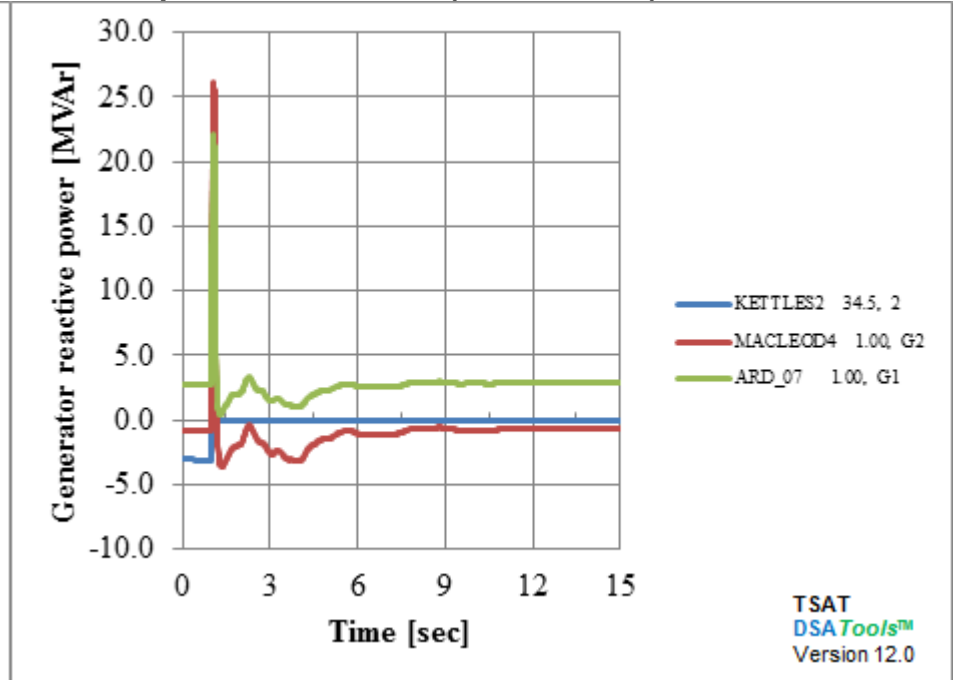
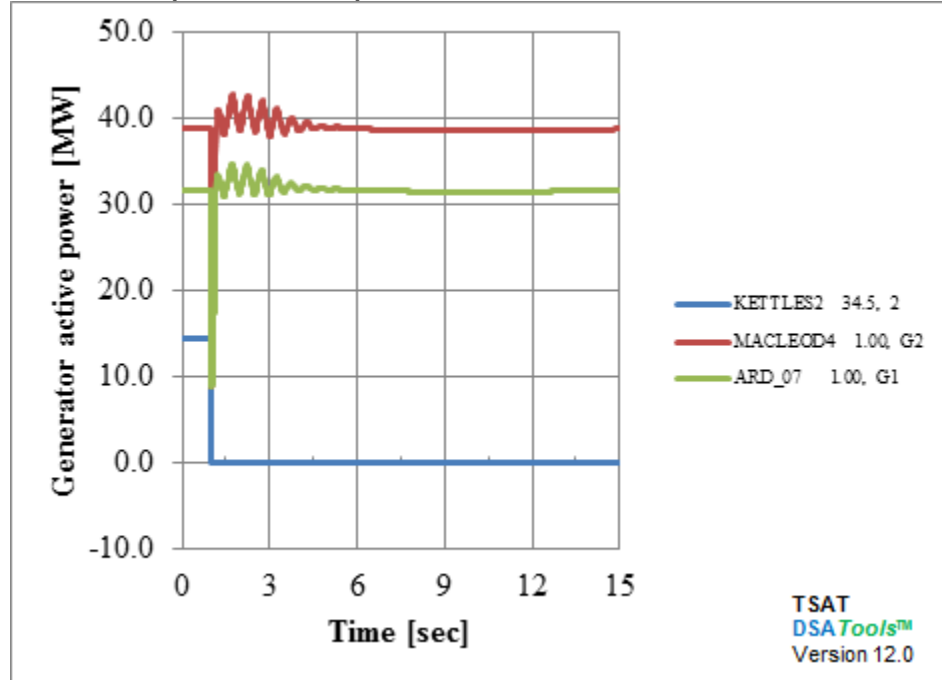
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



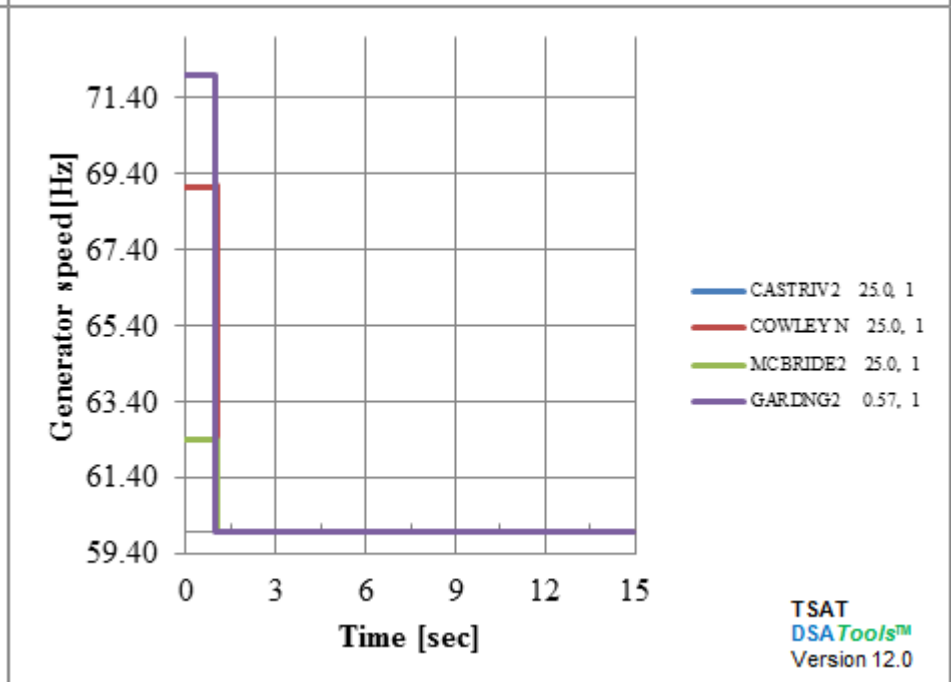
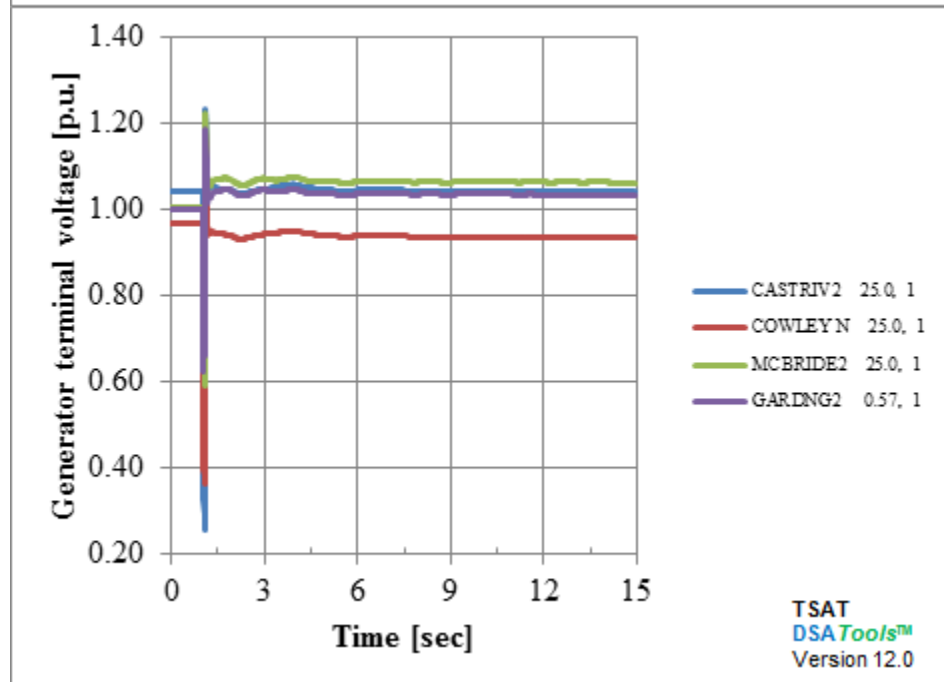
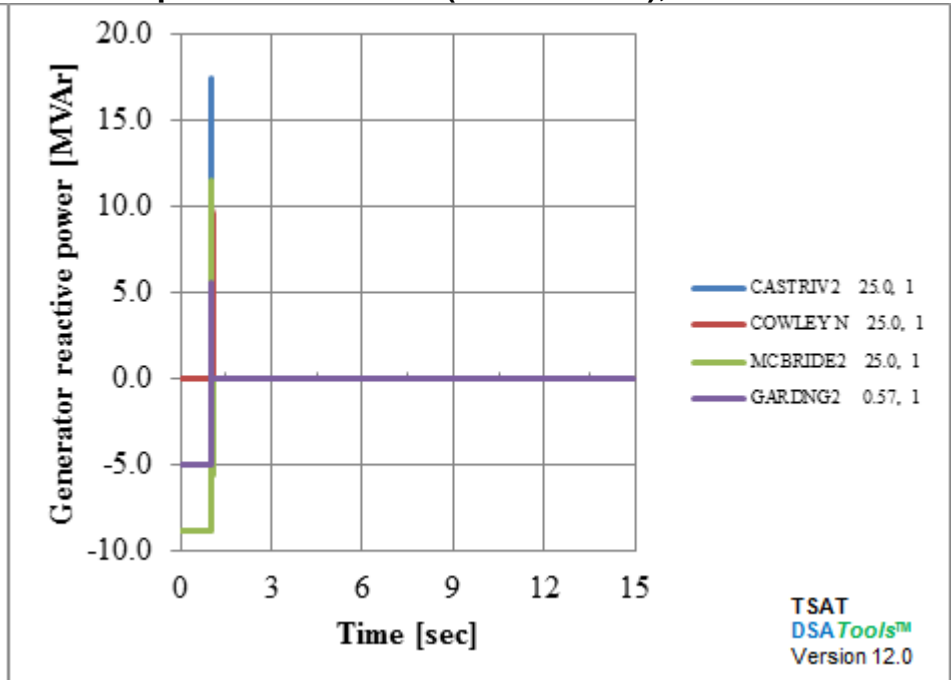
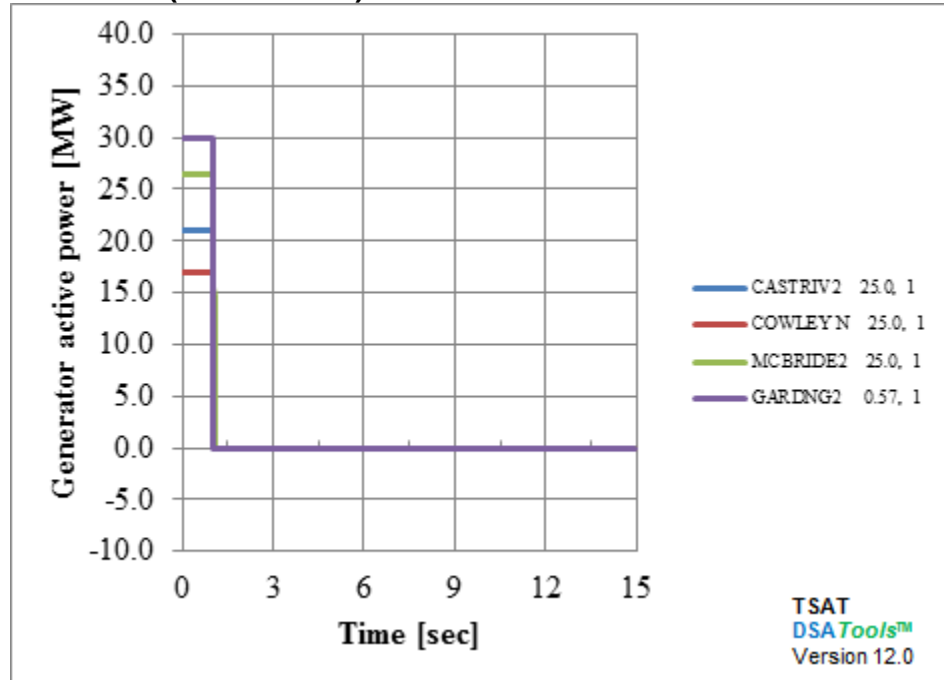
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



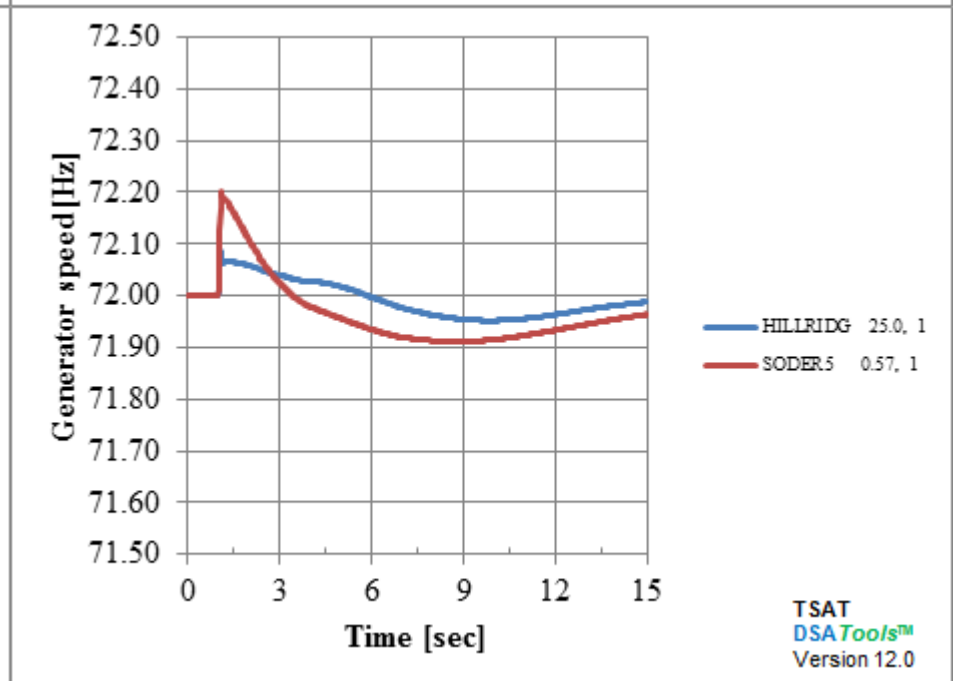
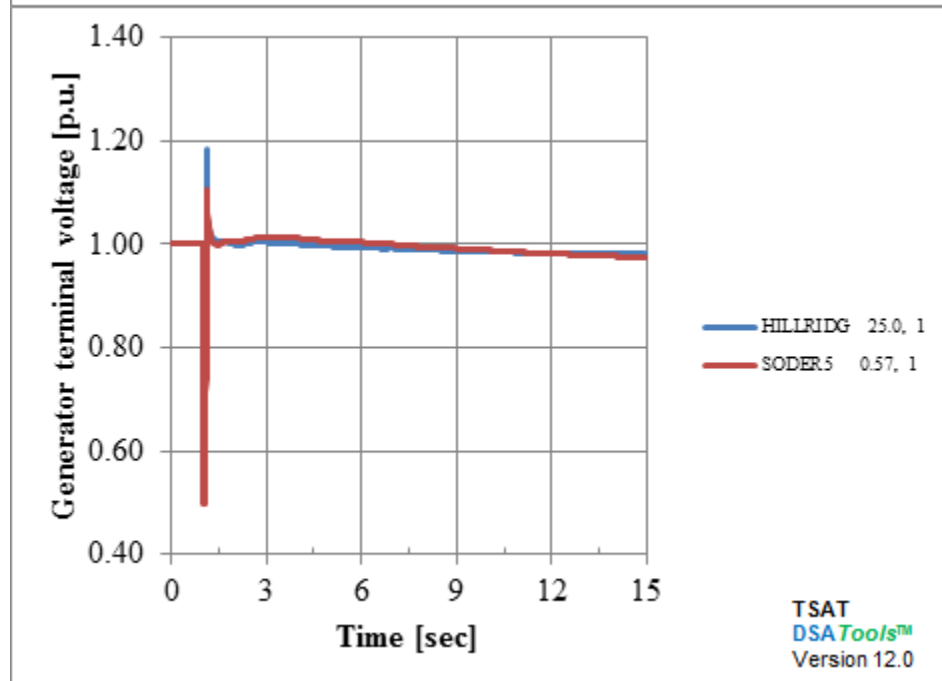
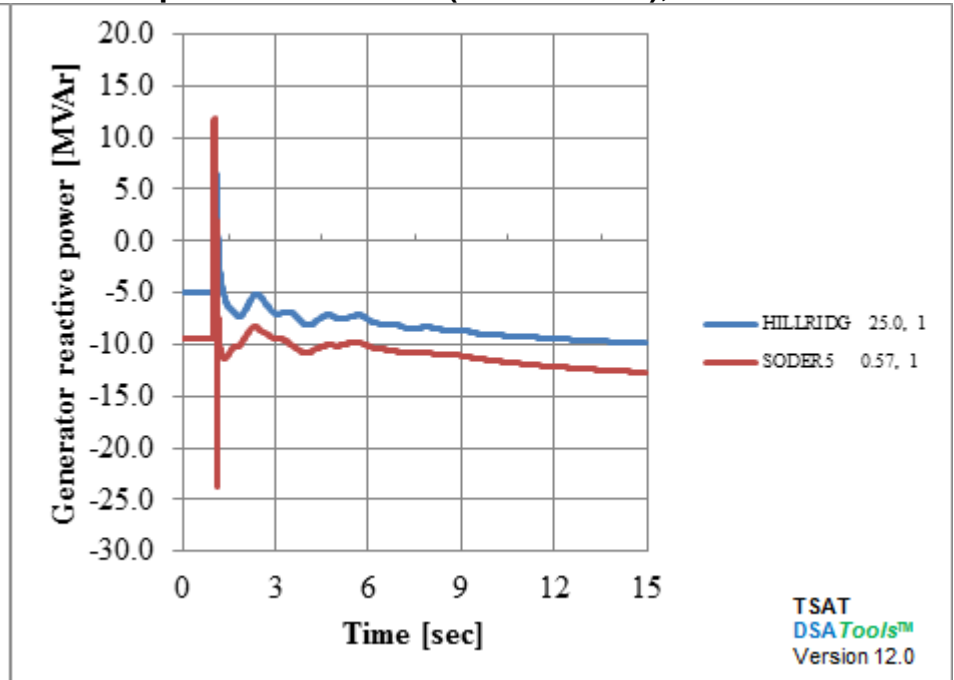
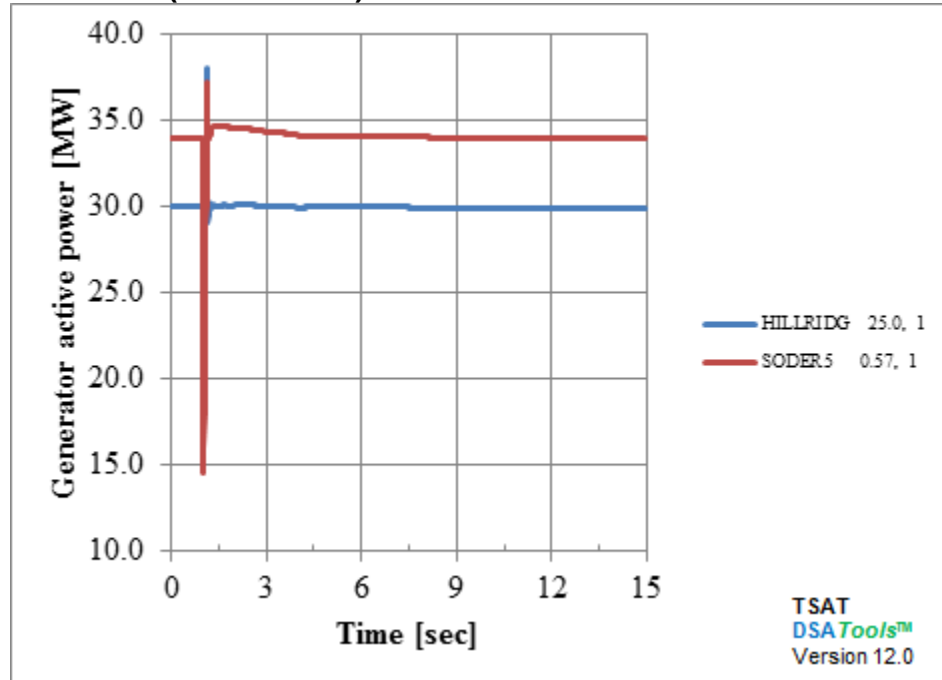
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



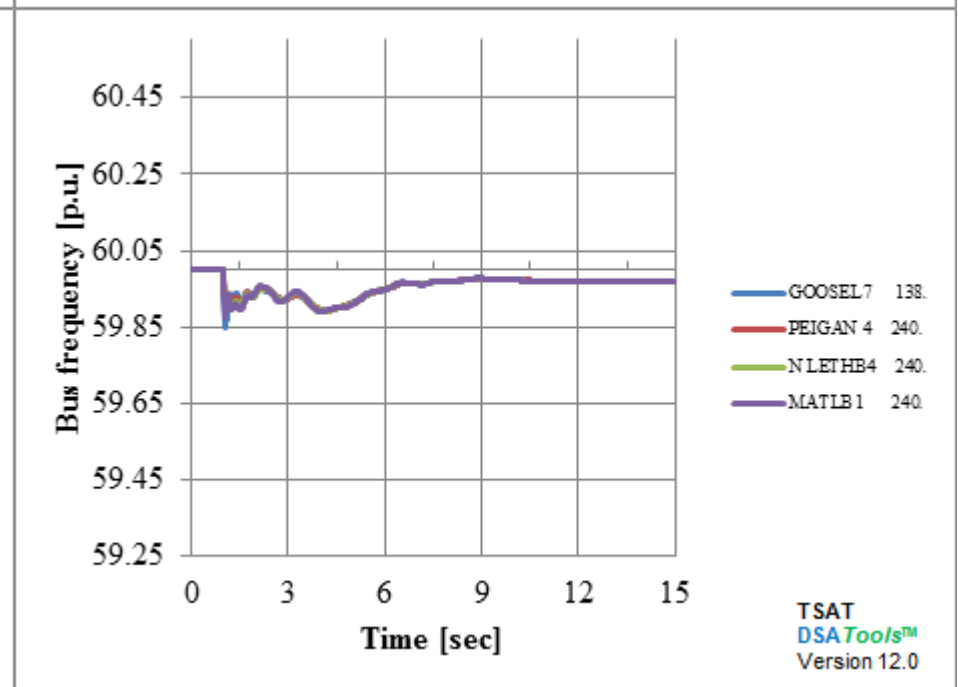
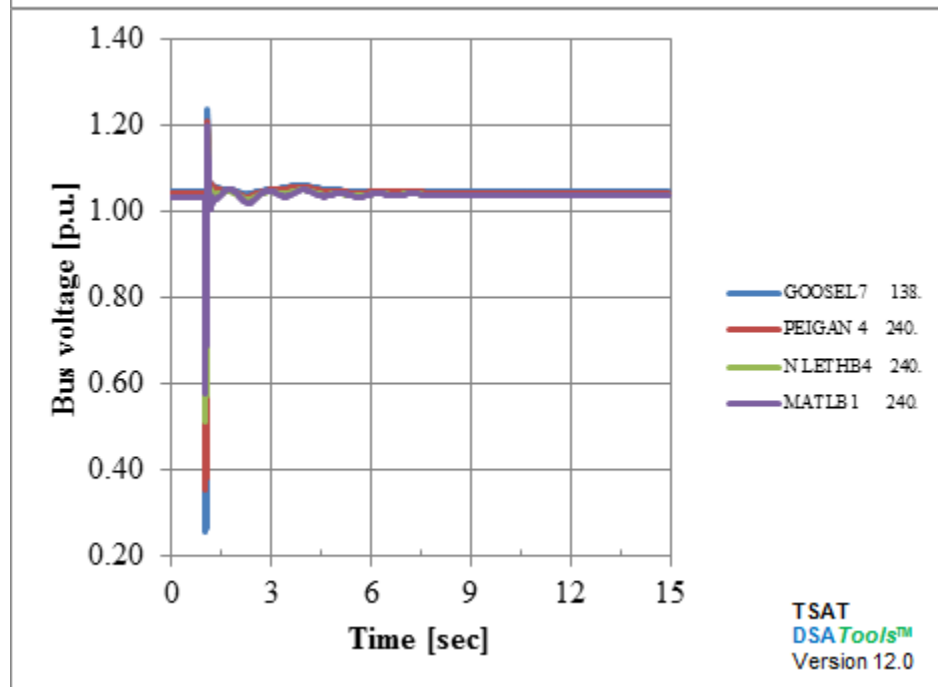
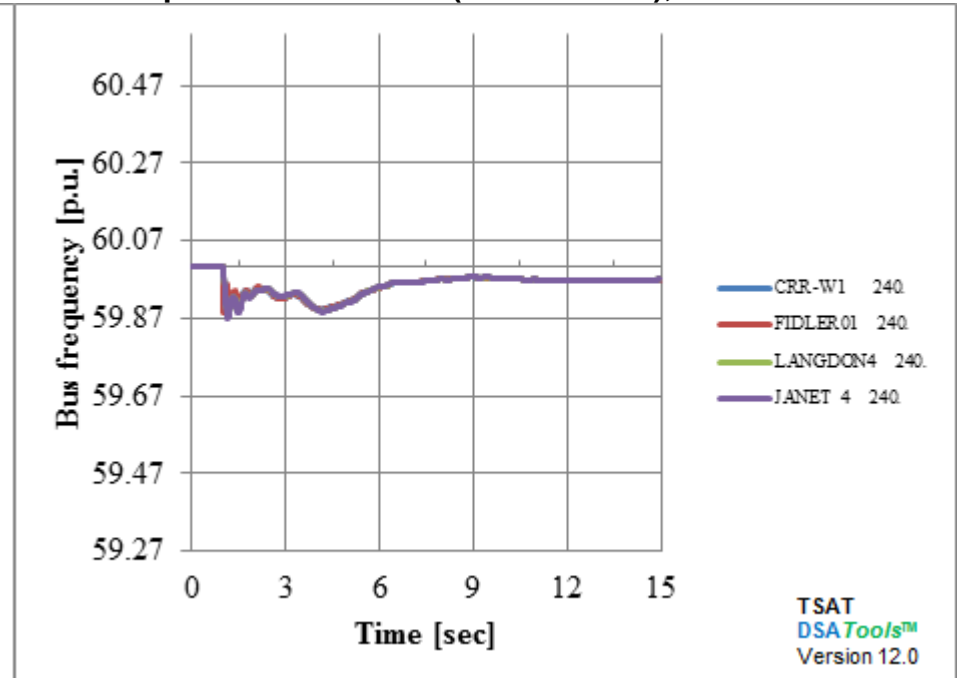
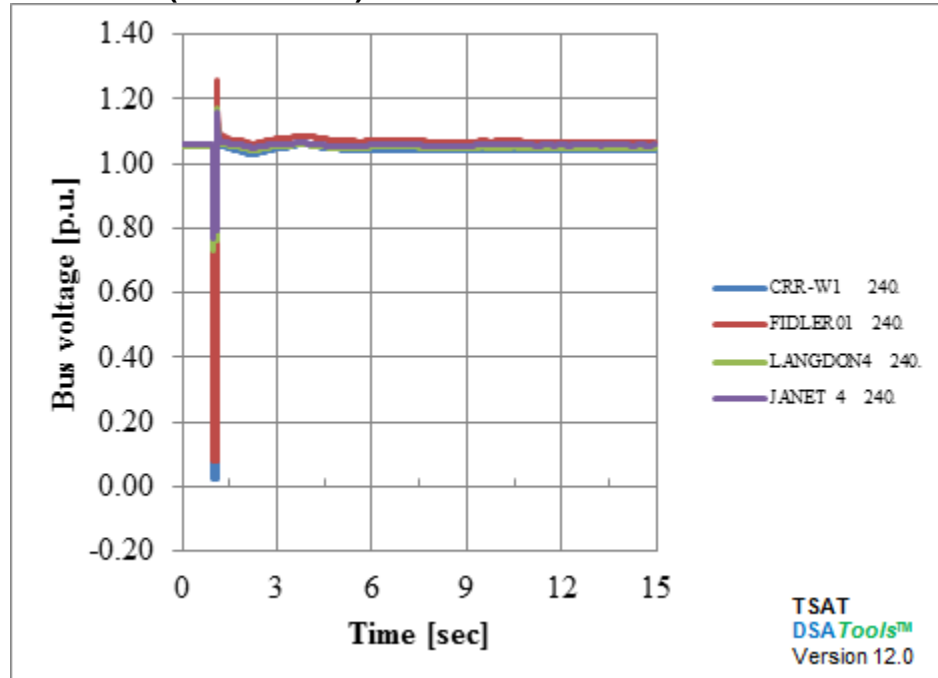
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



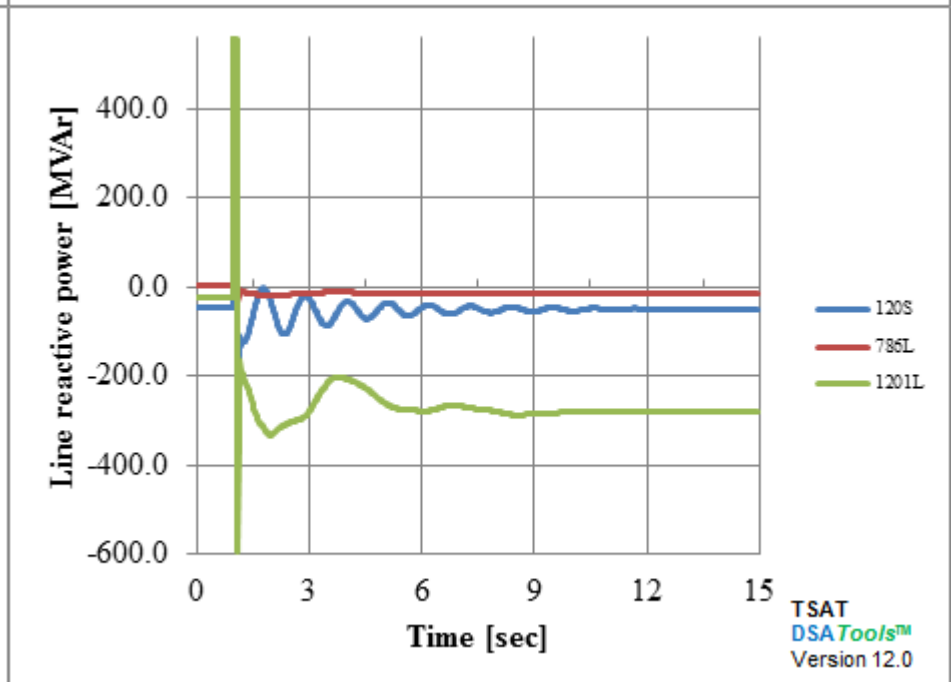
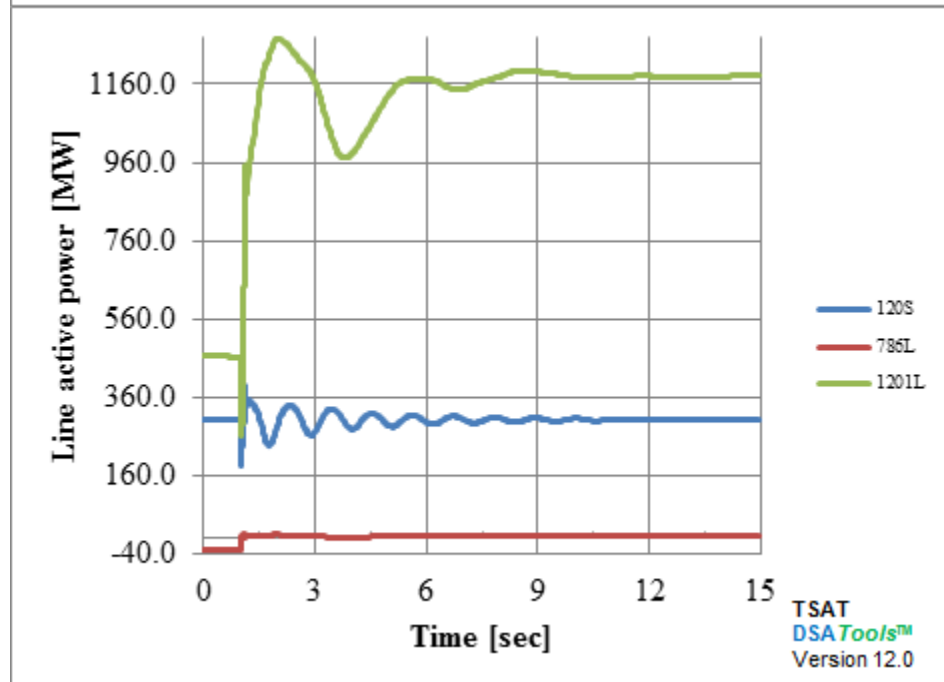
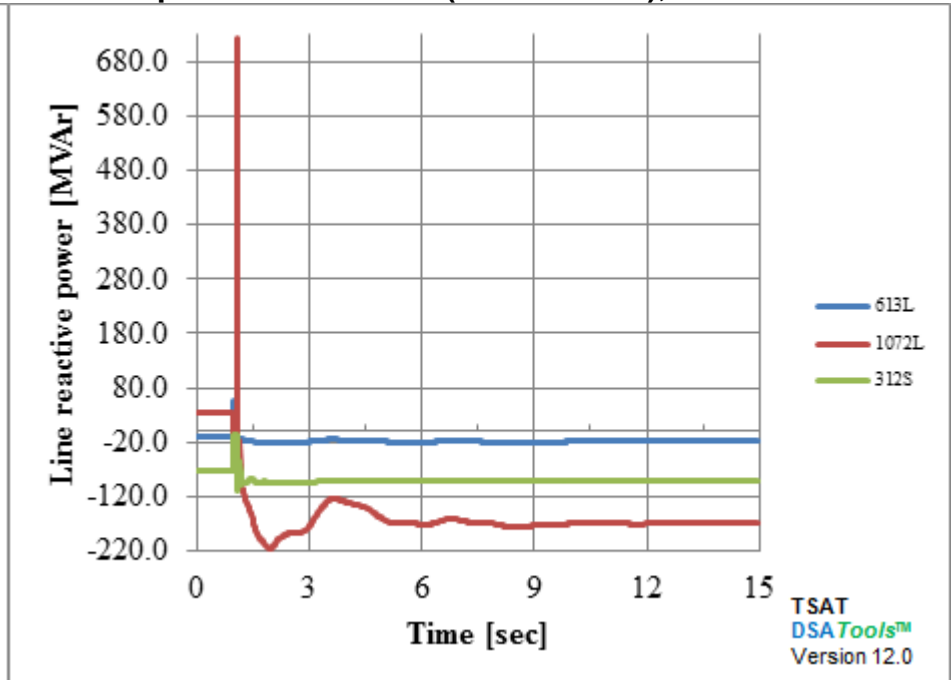
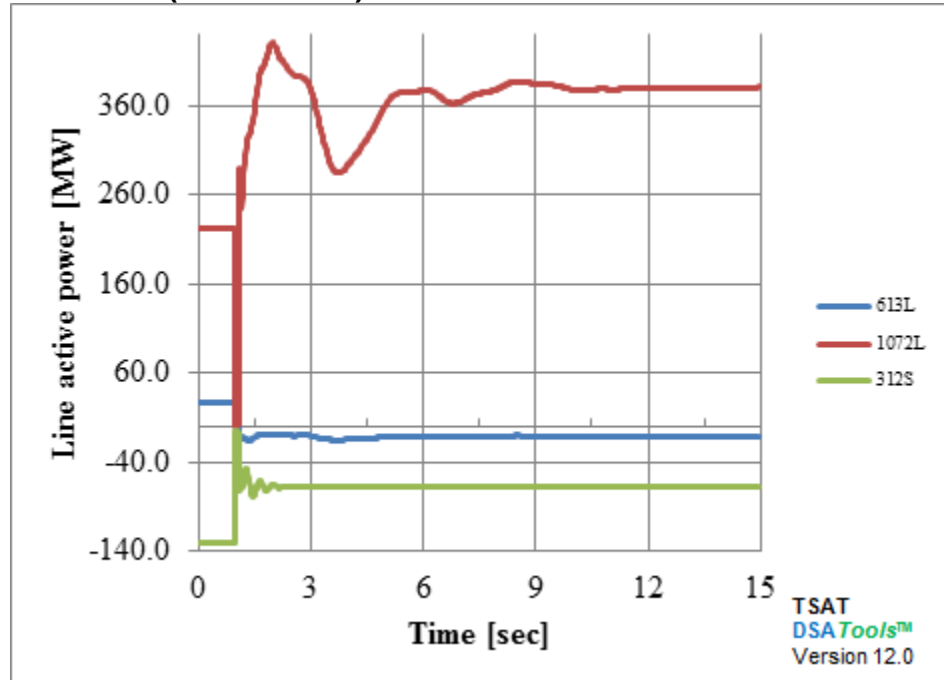
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



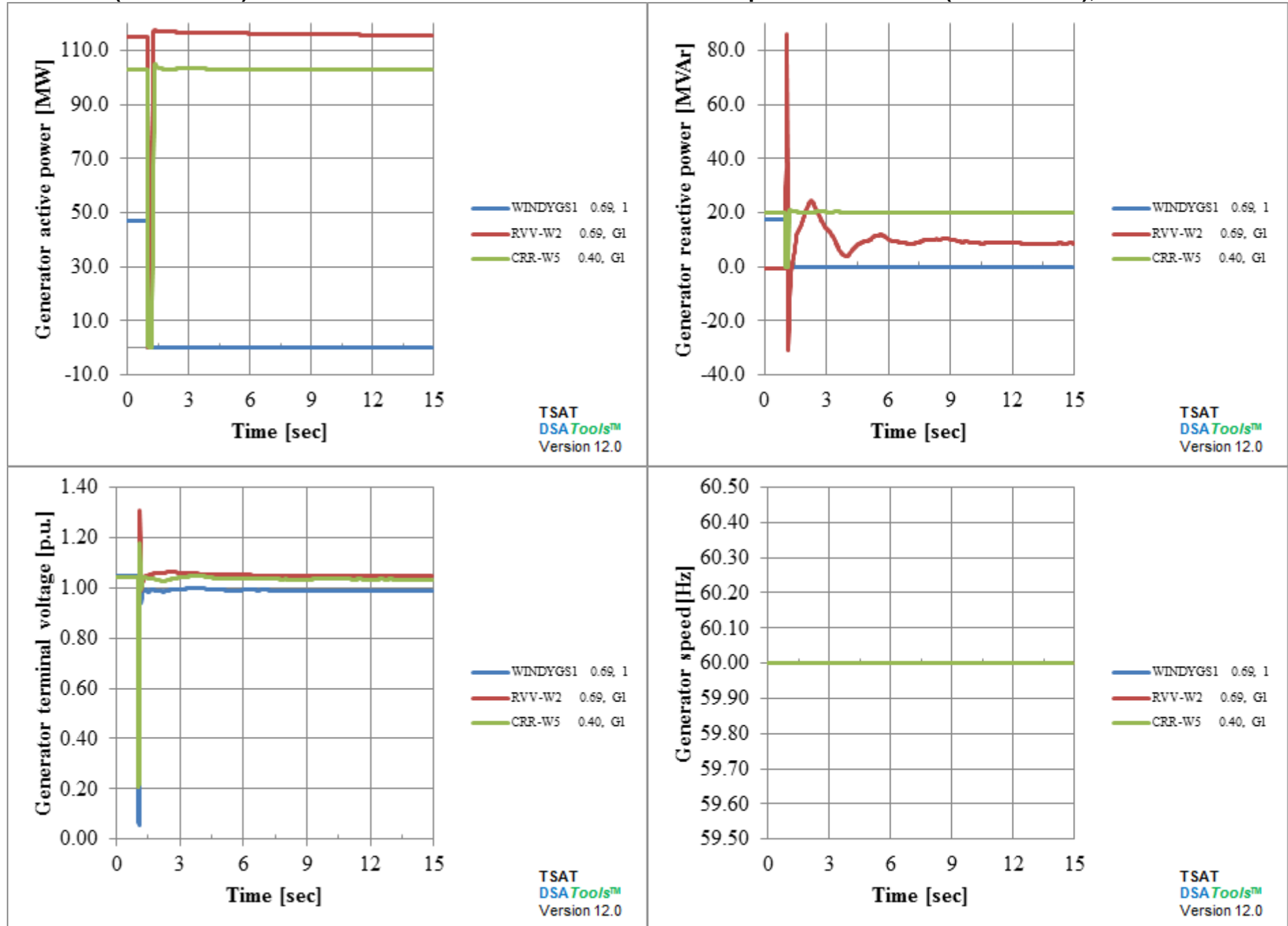
2 -- 1071L (205S - 312S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



3 -- 1071L (205S - 312S) NEAR 312S

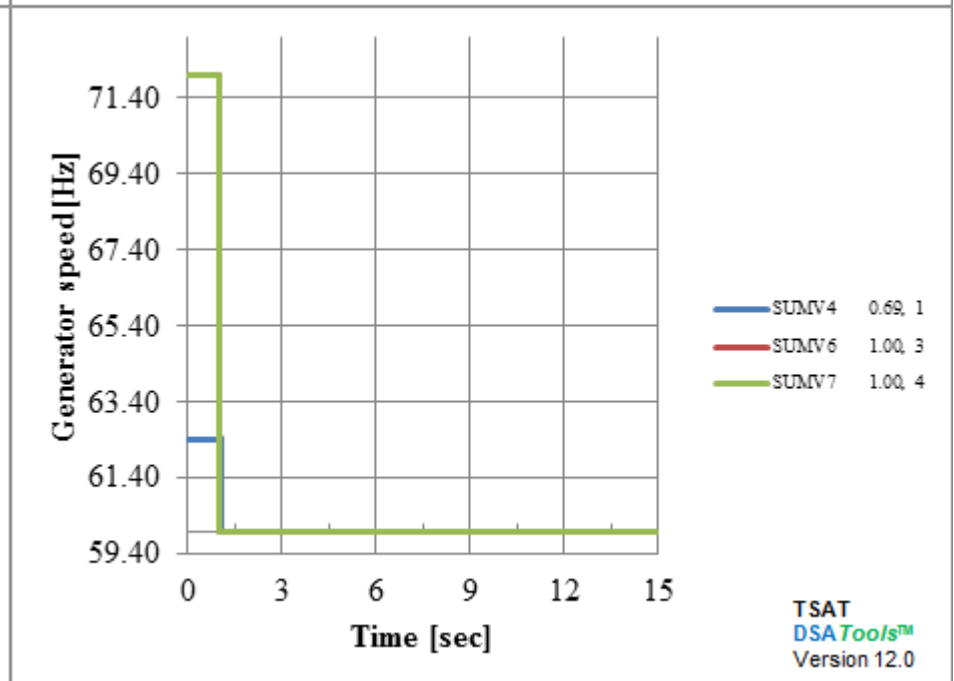
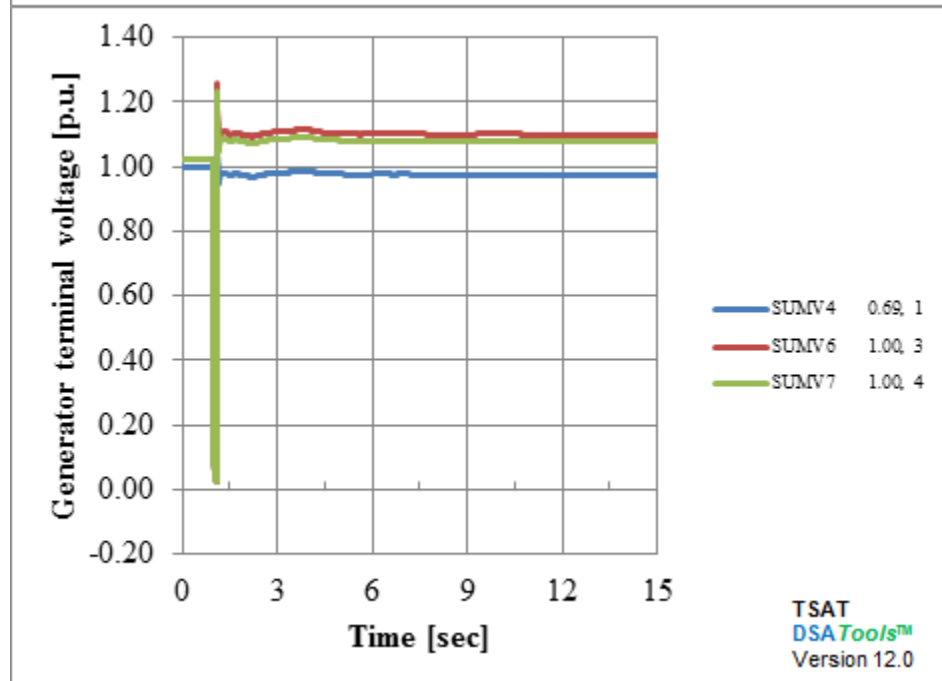
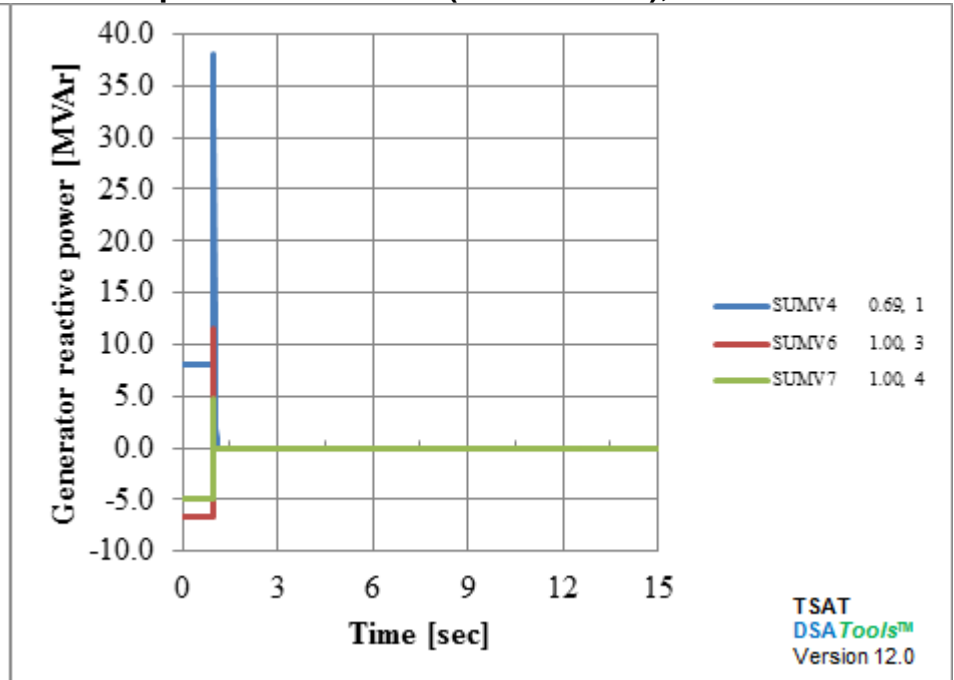
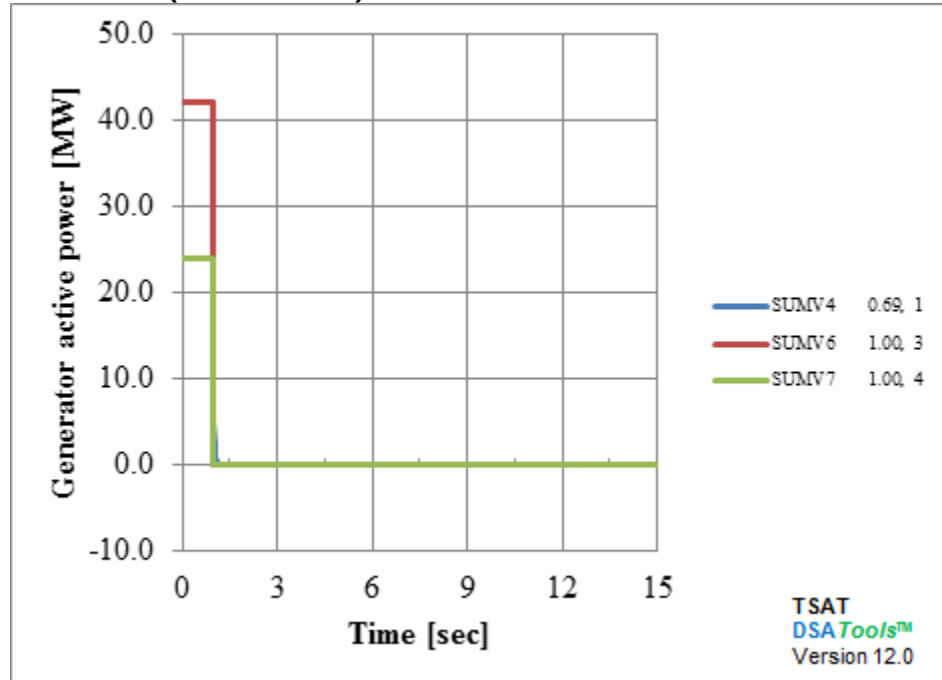
Proposed Connection (Alternative 2), Summer Peak 2017





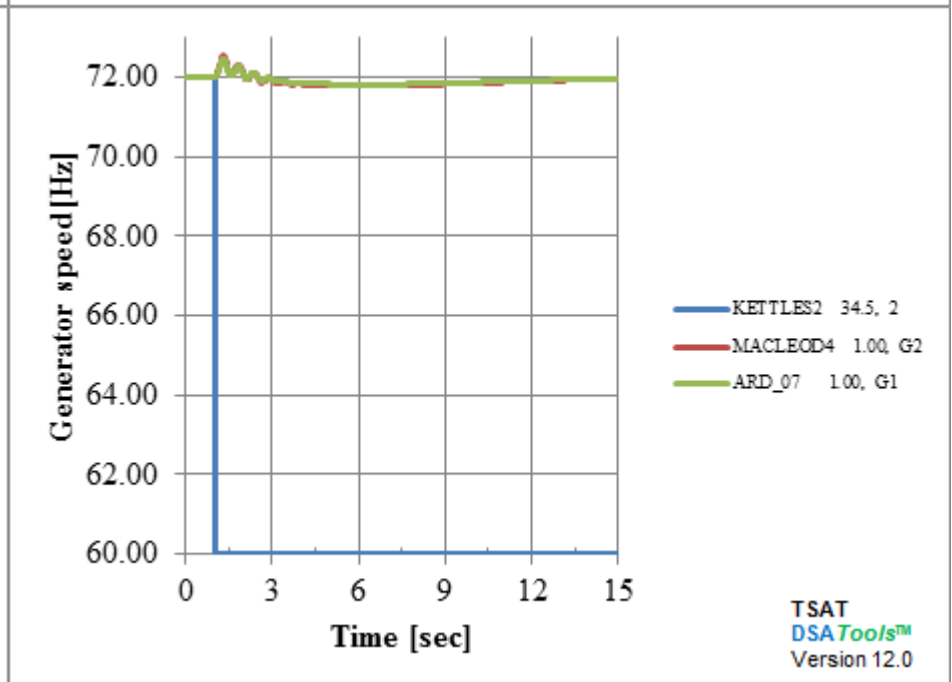
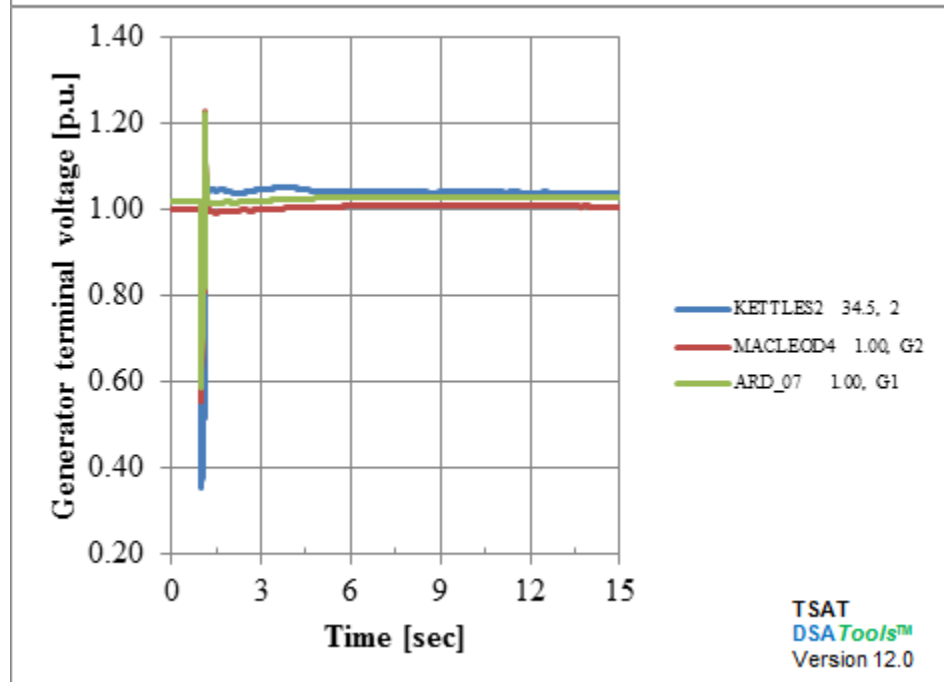
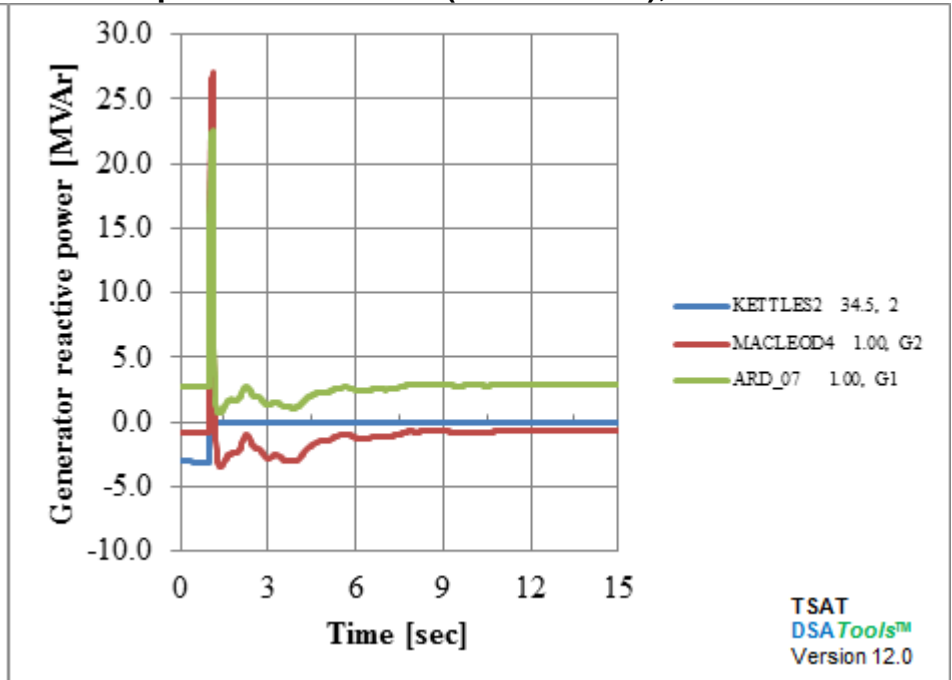
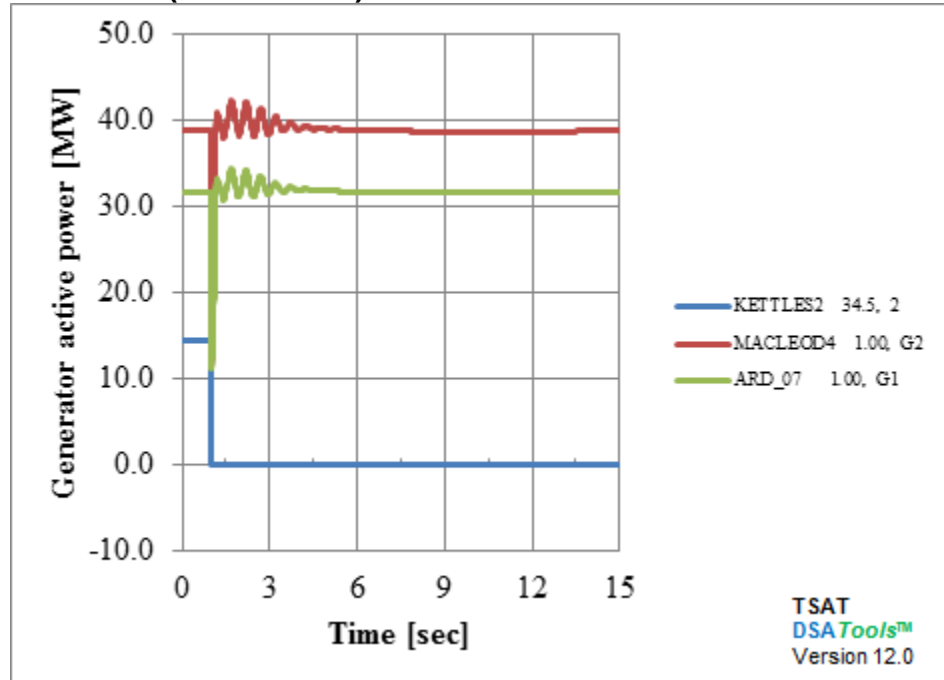
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Peak 2017



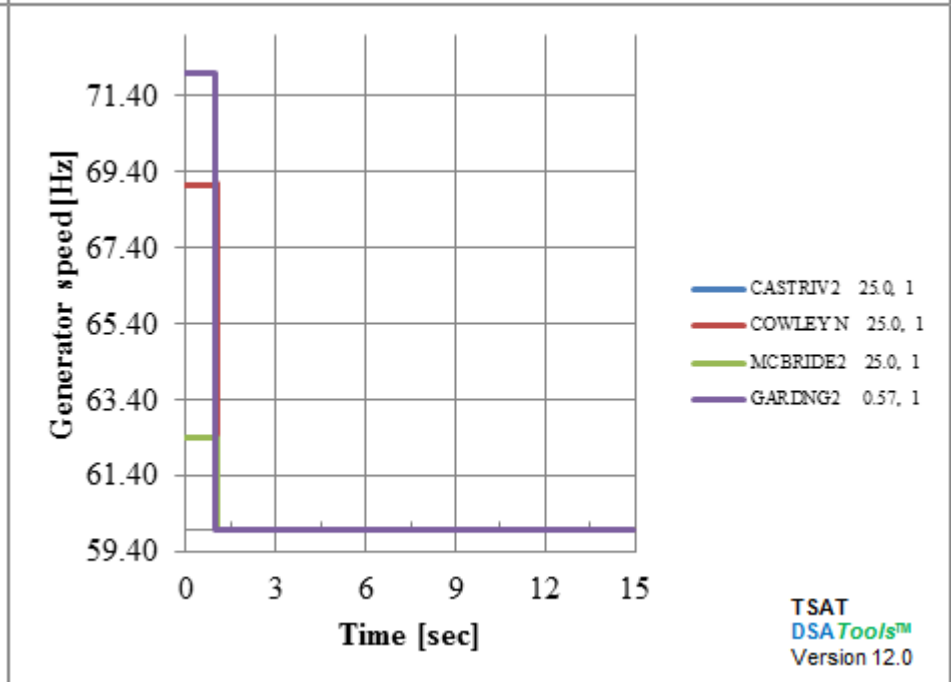
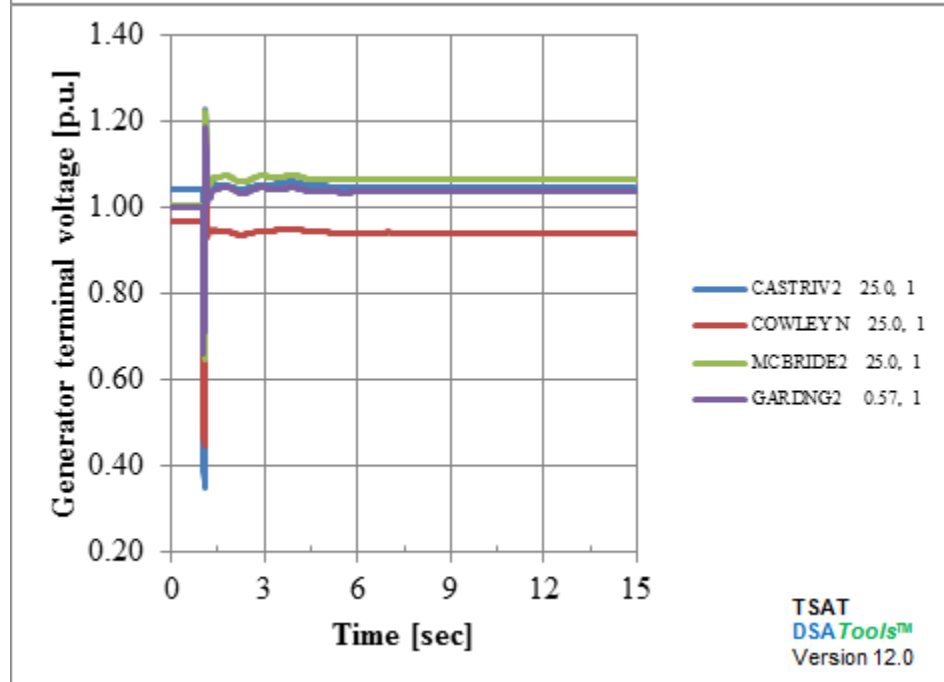
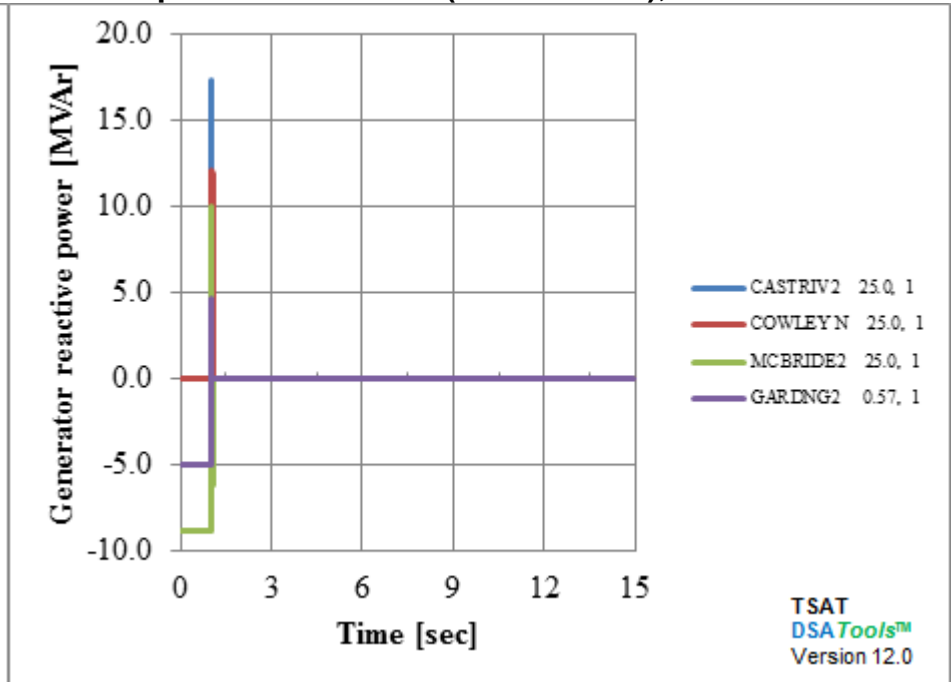
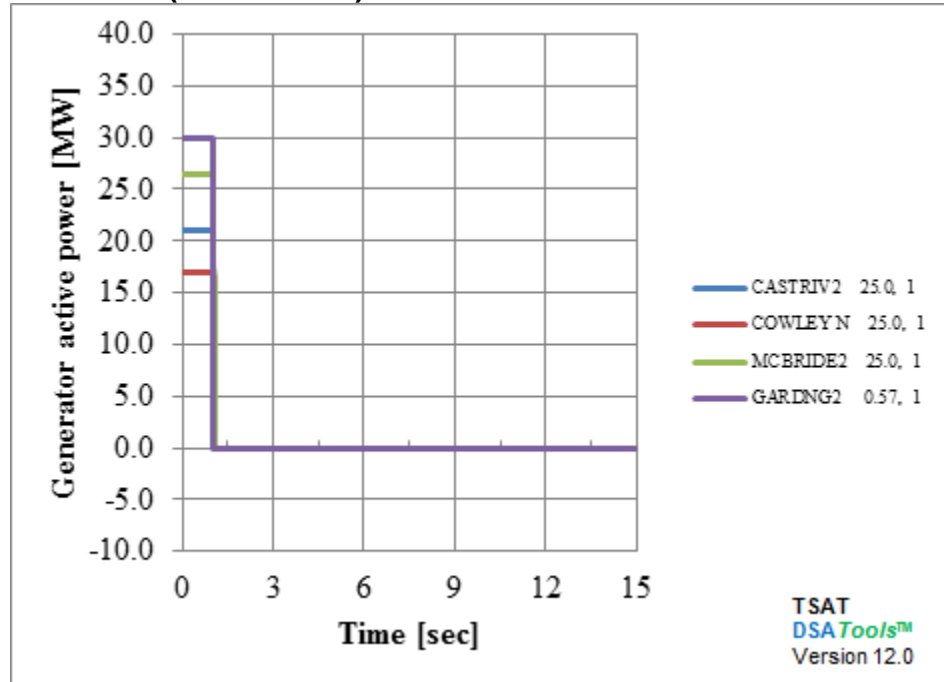
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Peak 2017



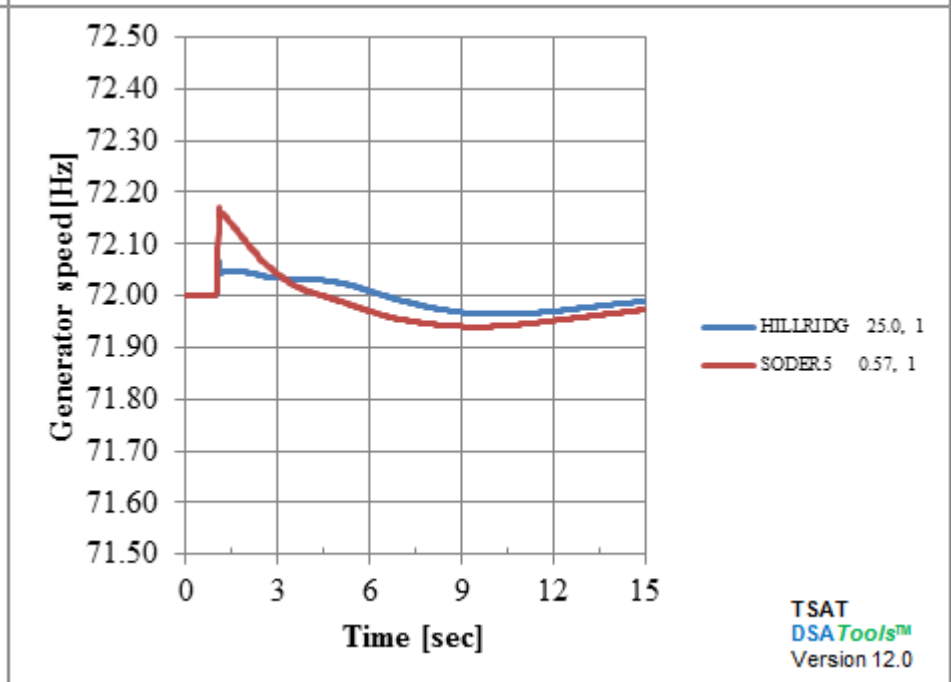
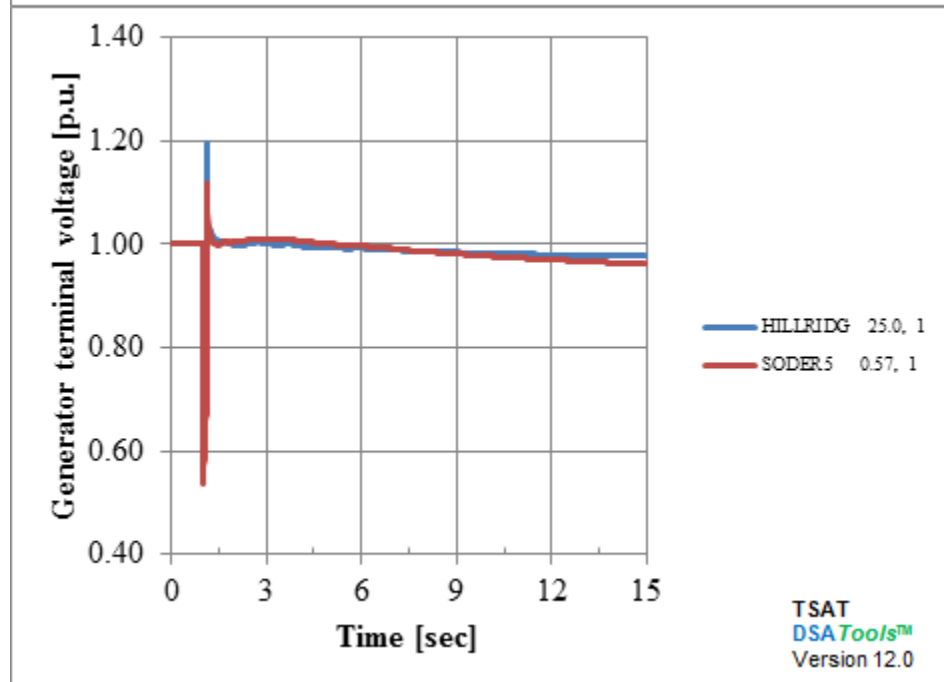
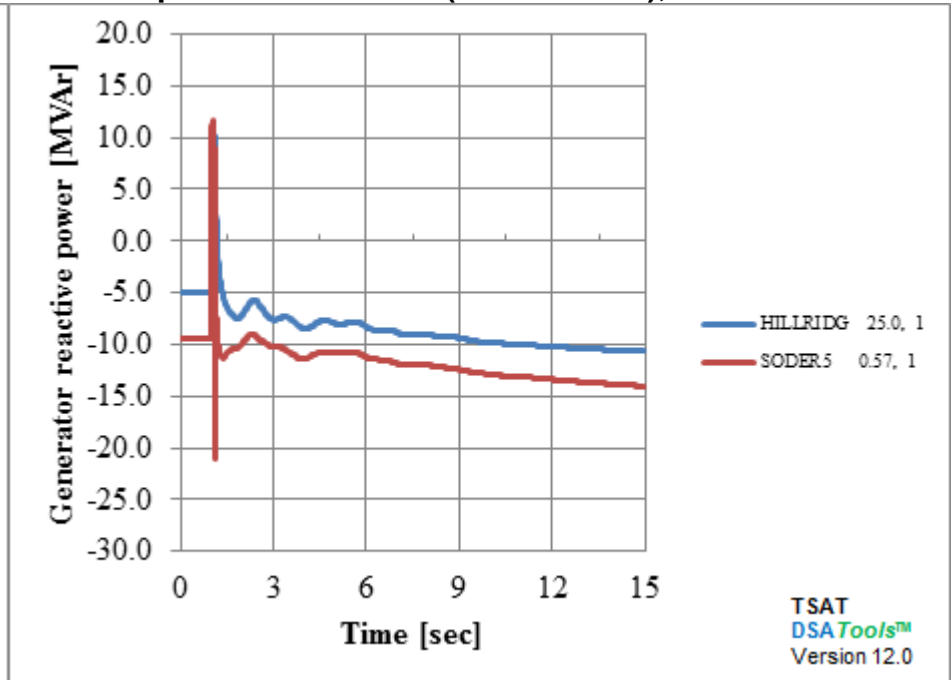
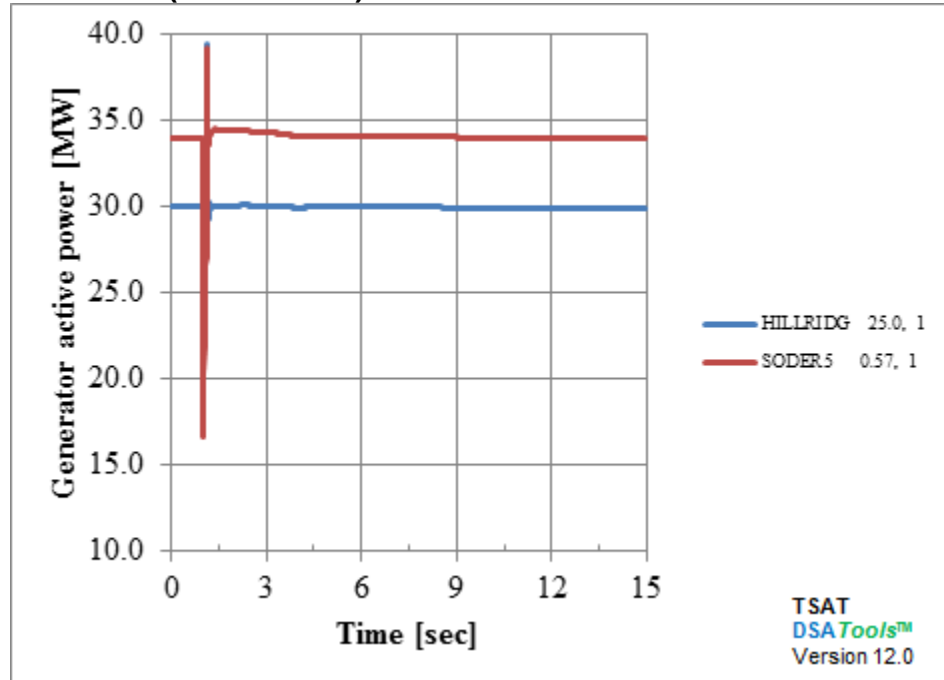
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Peak 2017



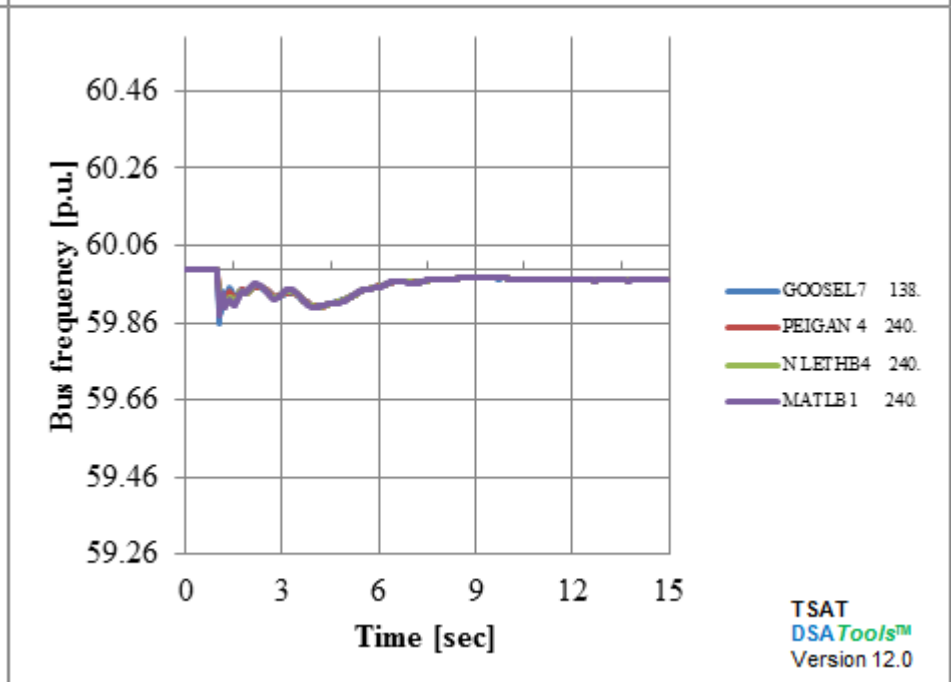
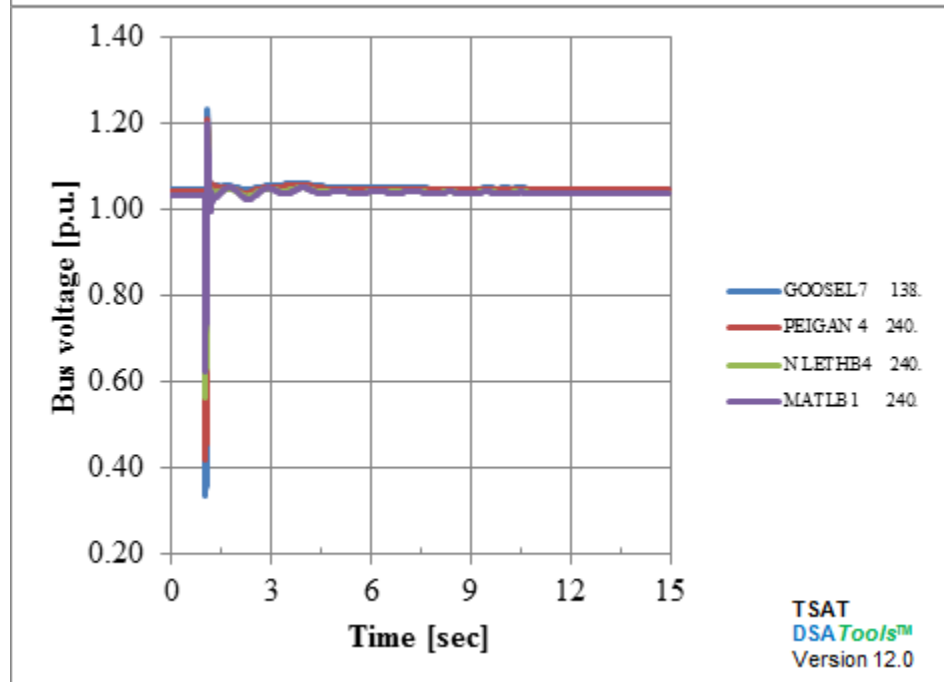
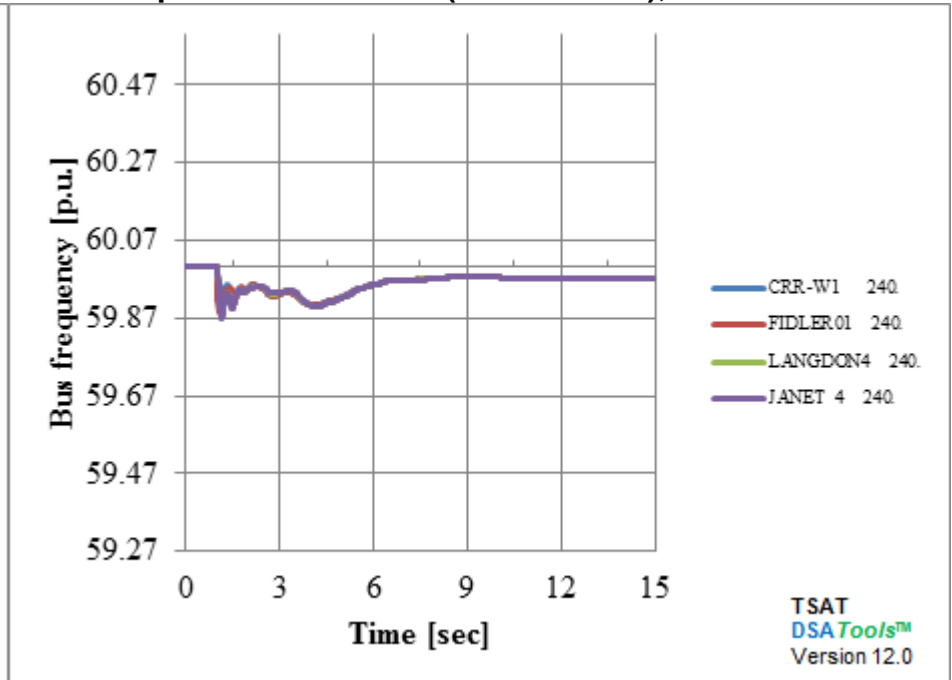
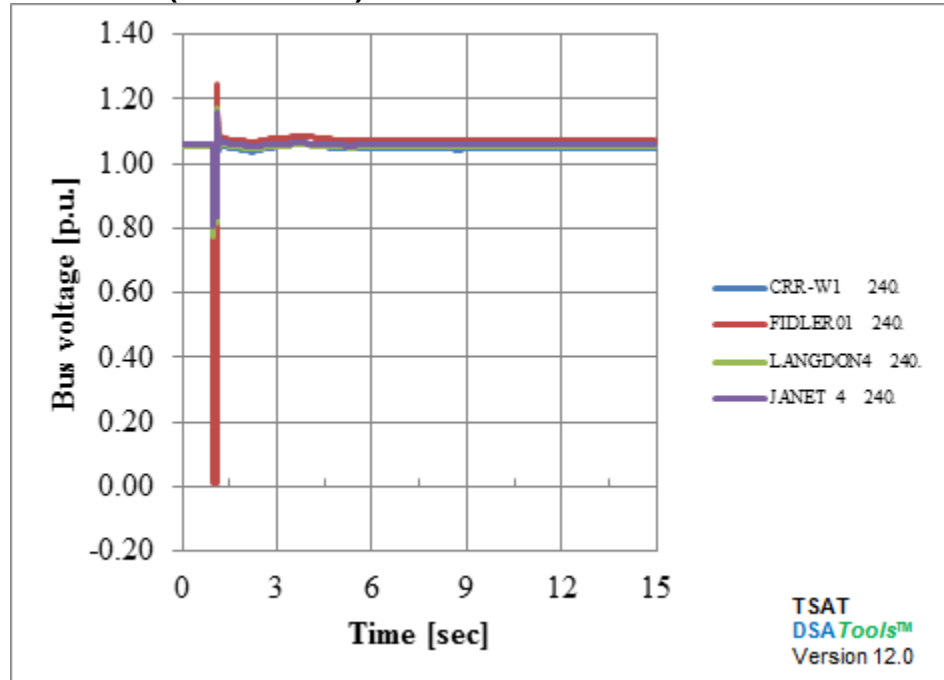
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Peak 2017



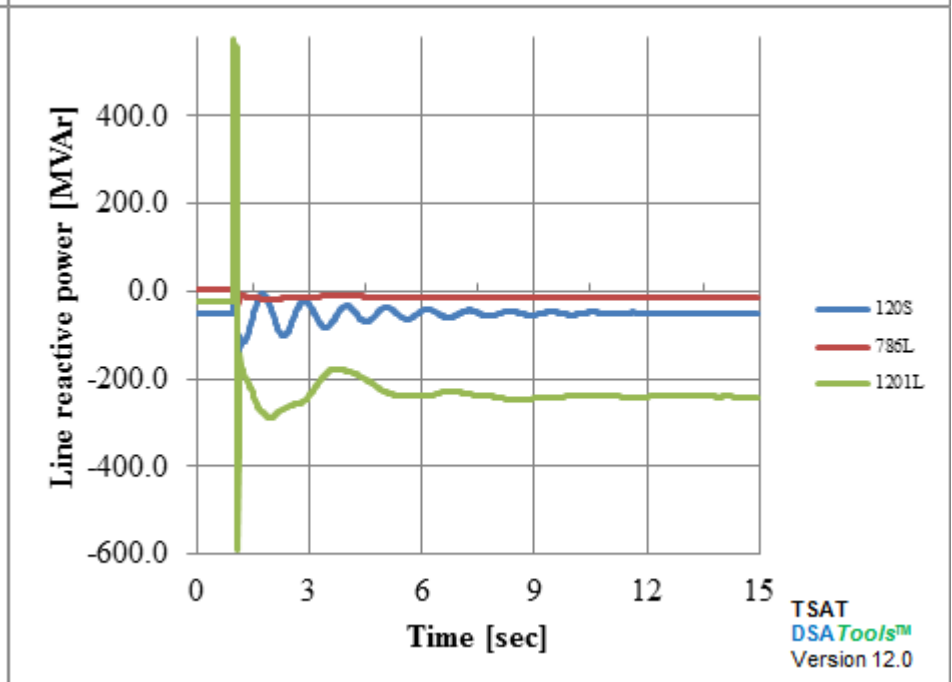
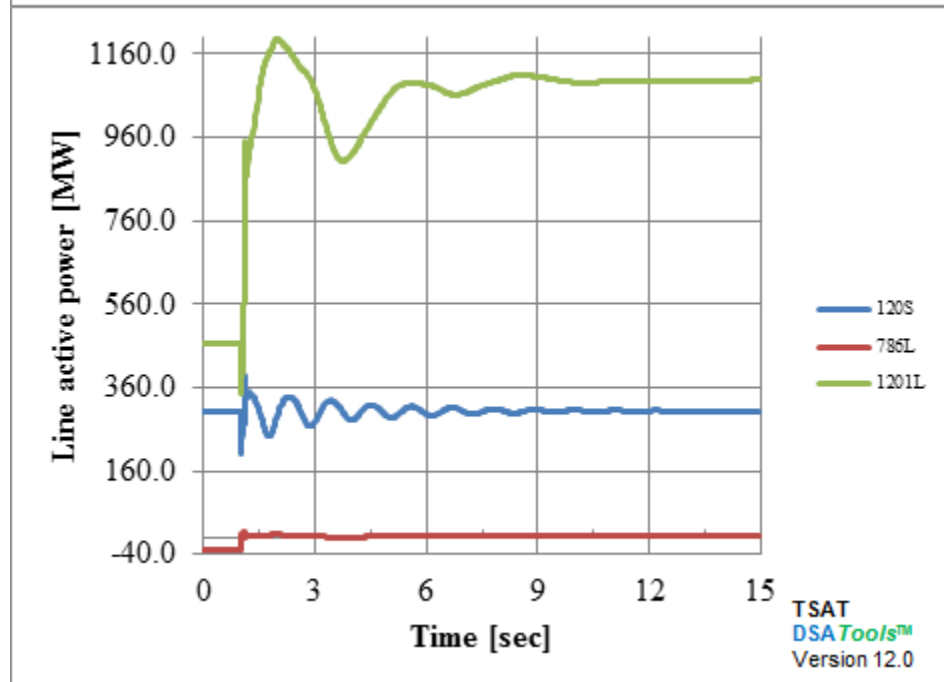
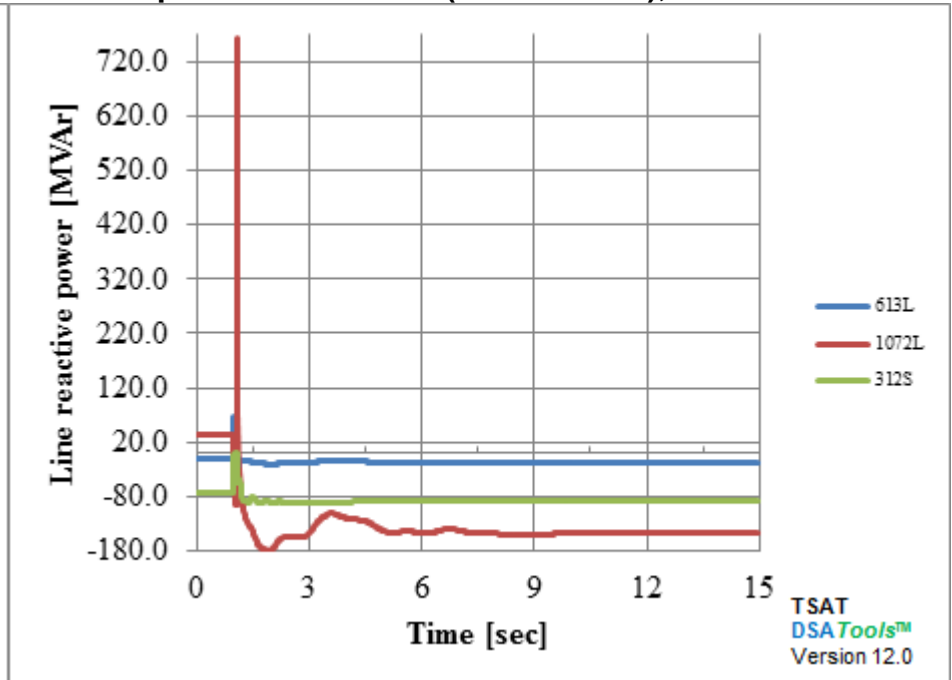
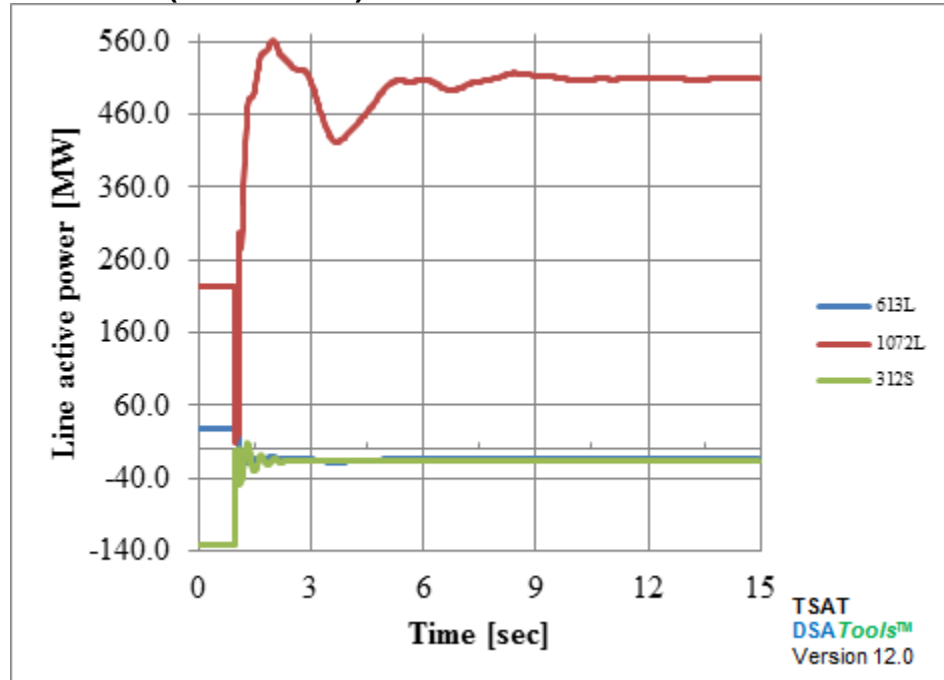
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Peak 2017



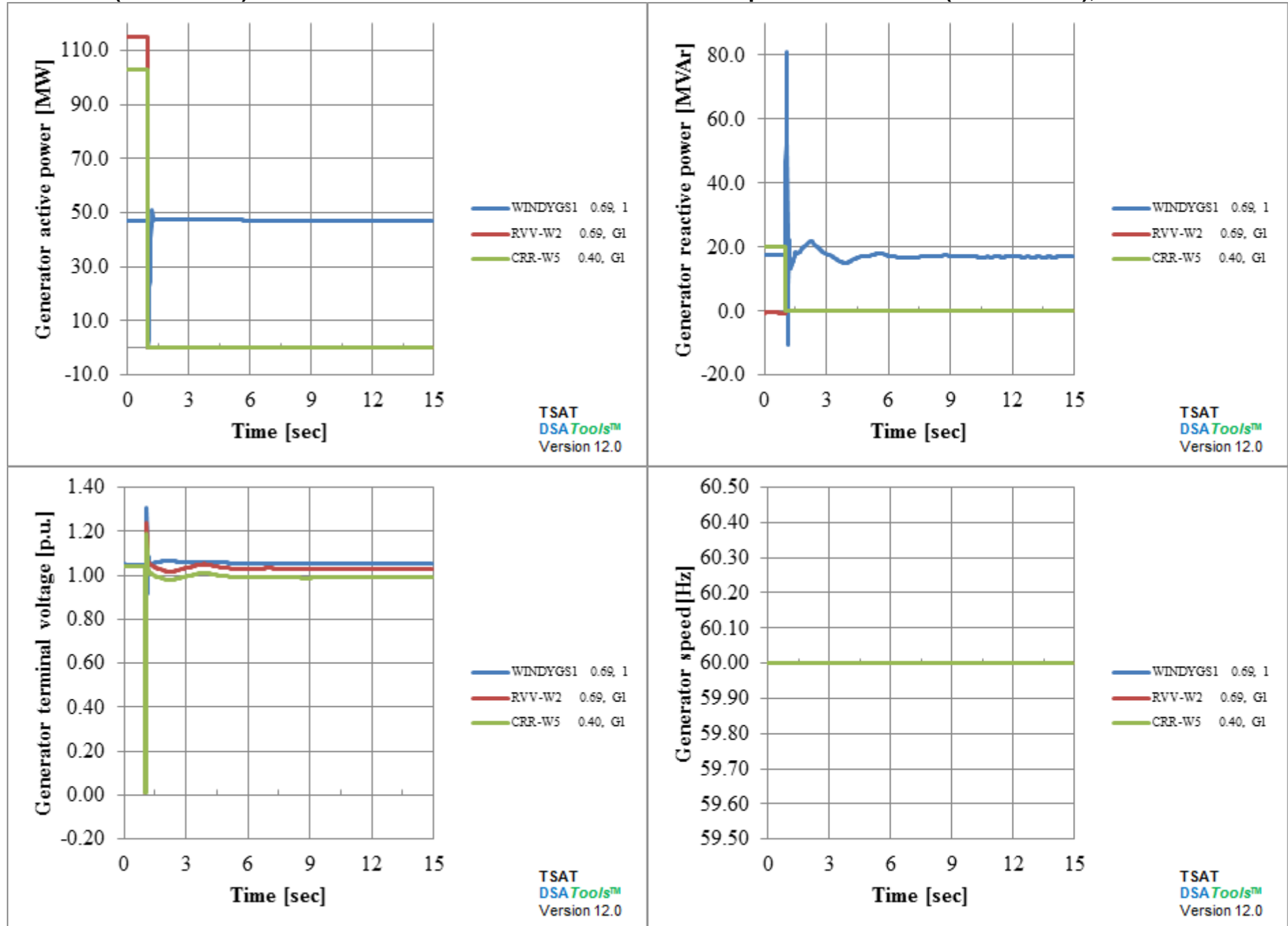
3 -- 1071L (205S - 312S) NEAR 312S

Proposed Connection (Alternative 2), Summer Peak 2017



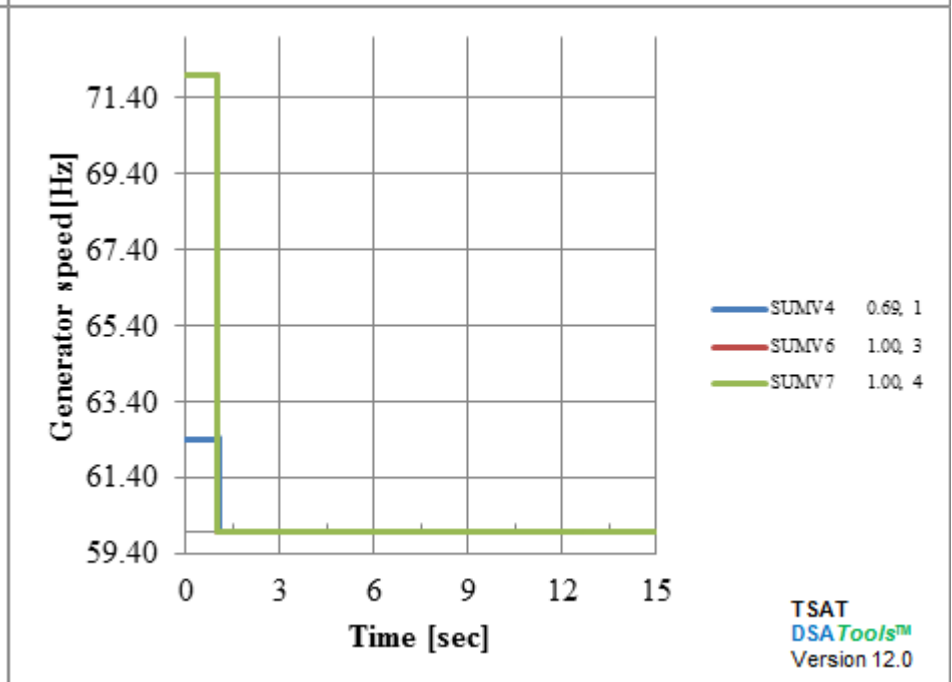
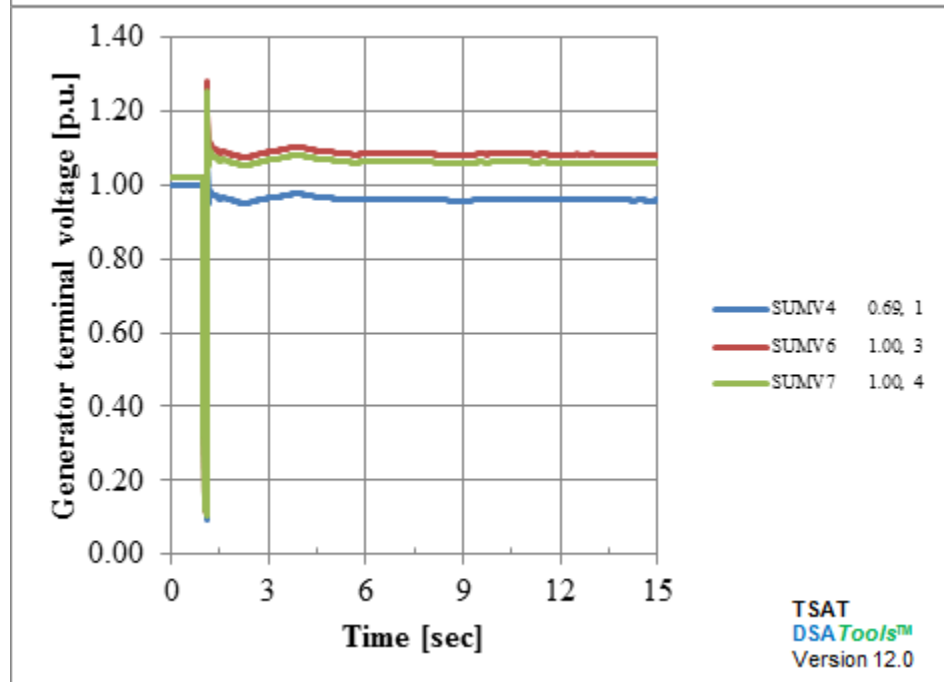
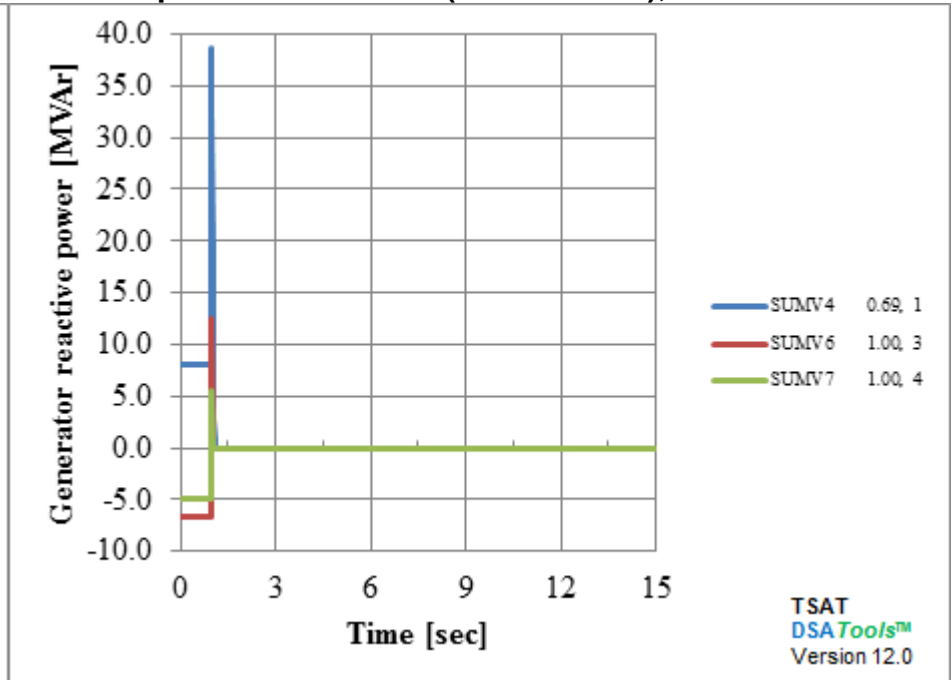
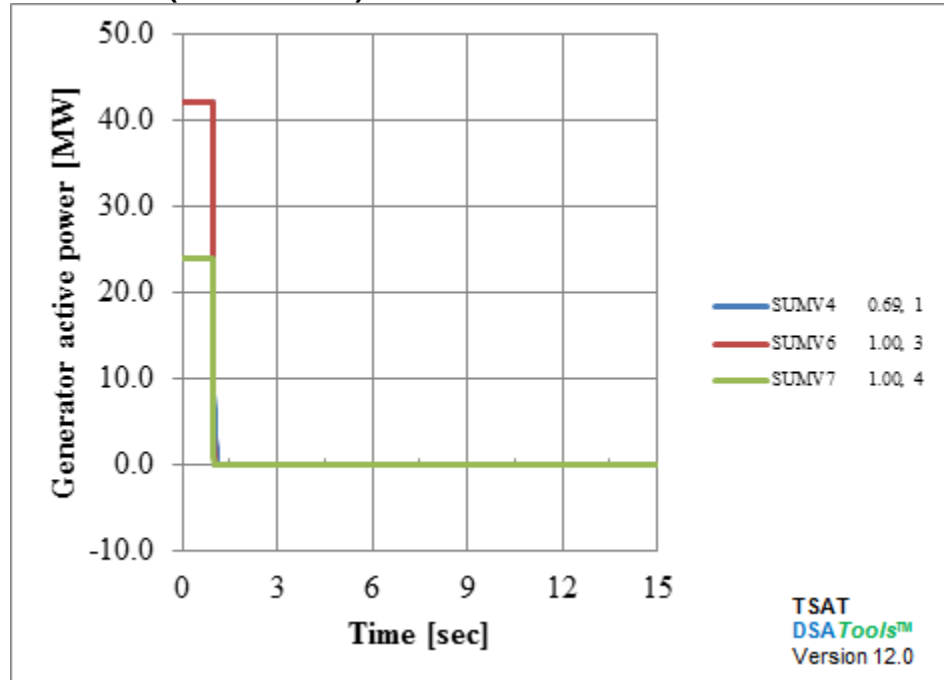
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



4 -- 1072L (205S - 103S) NEAR 205S

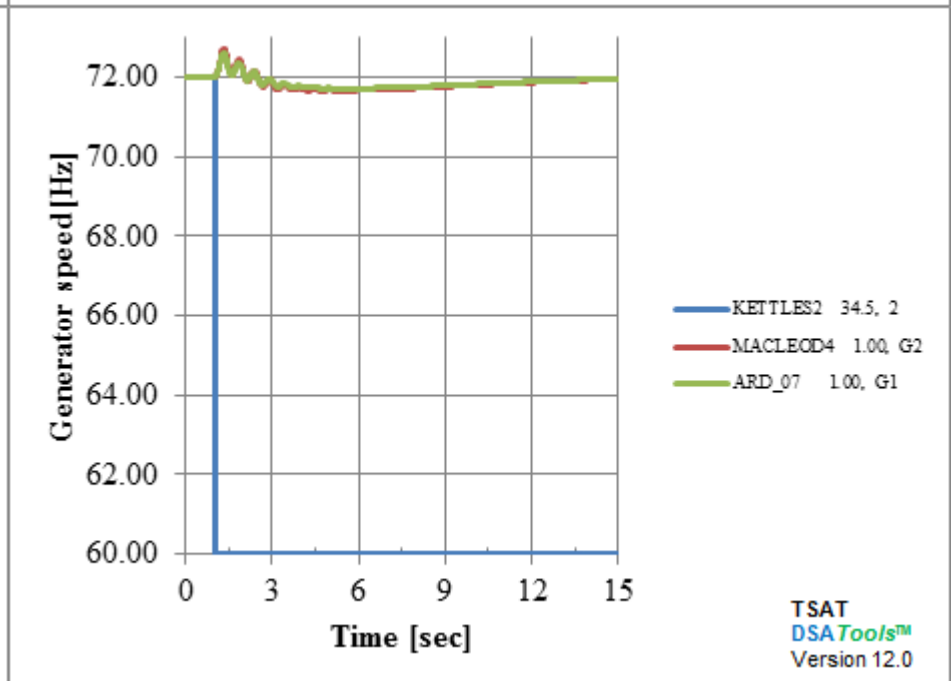
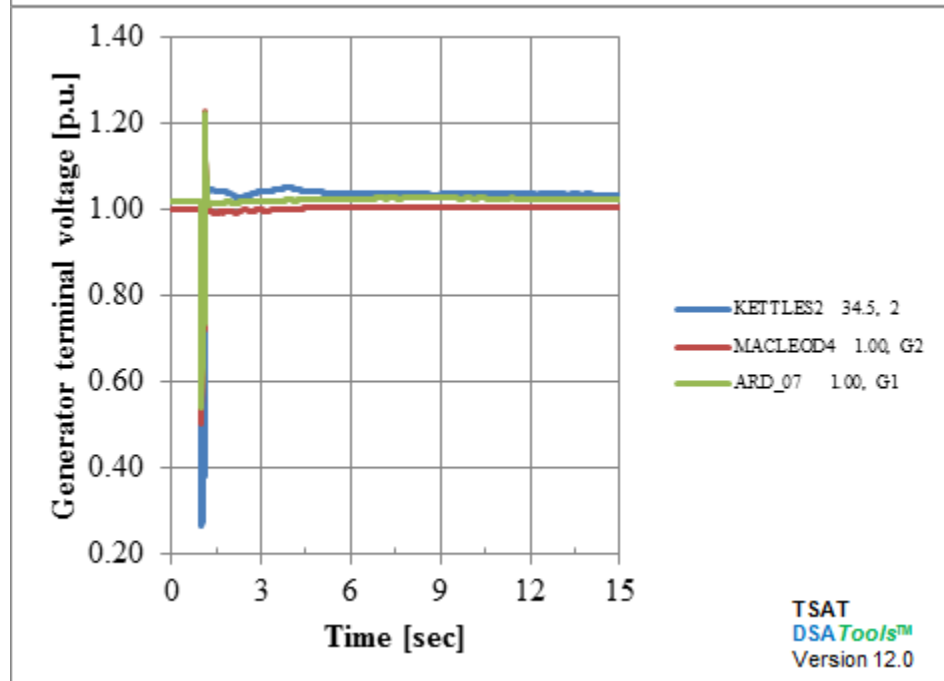
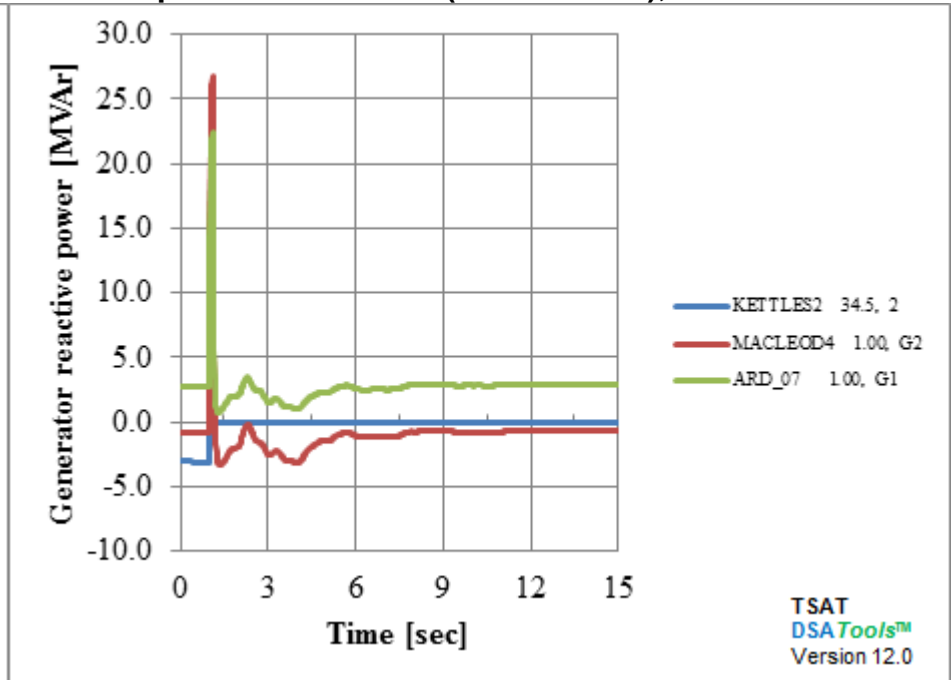
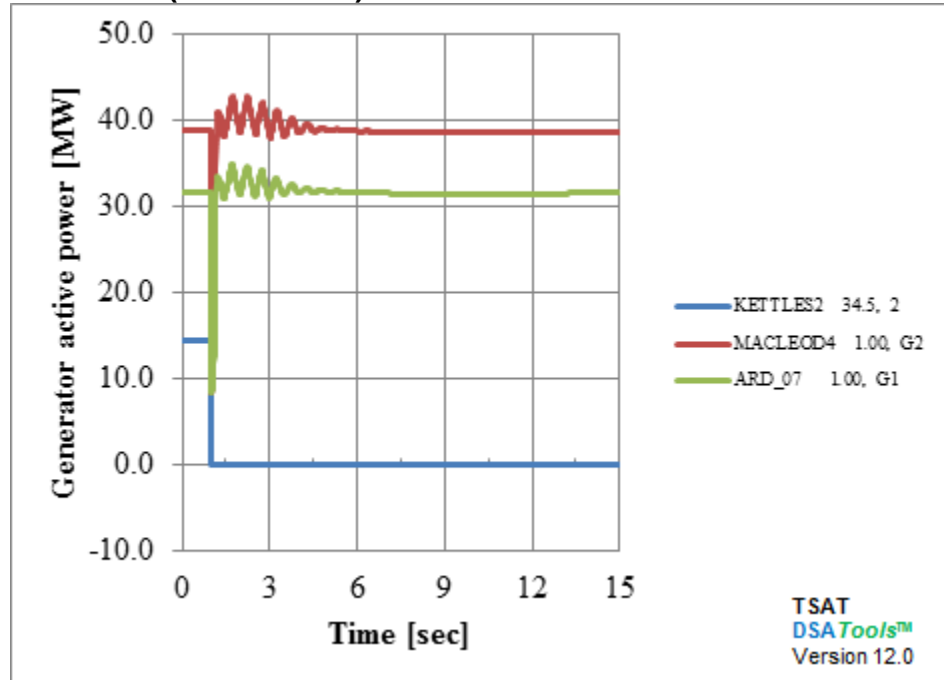
Proposed Connection (Alternative 2), Summer Peak 2017





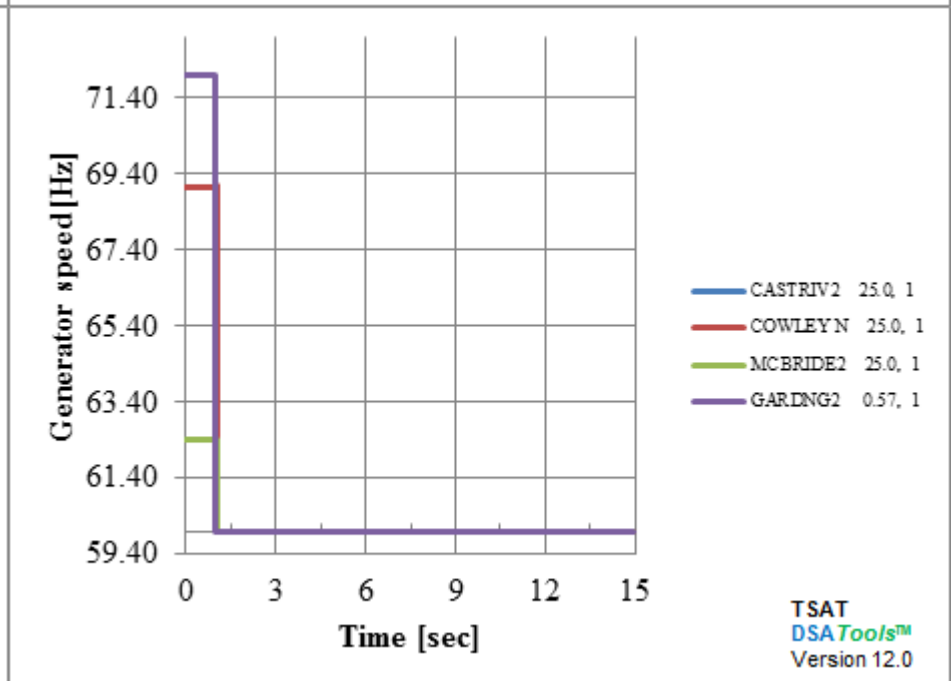
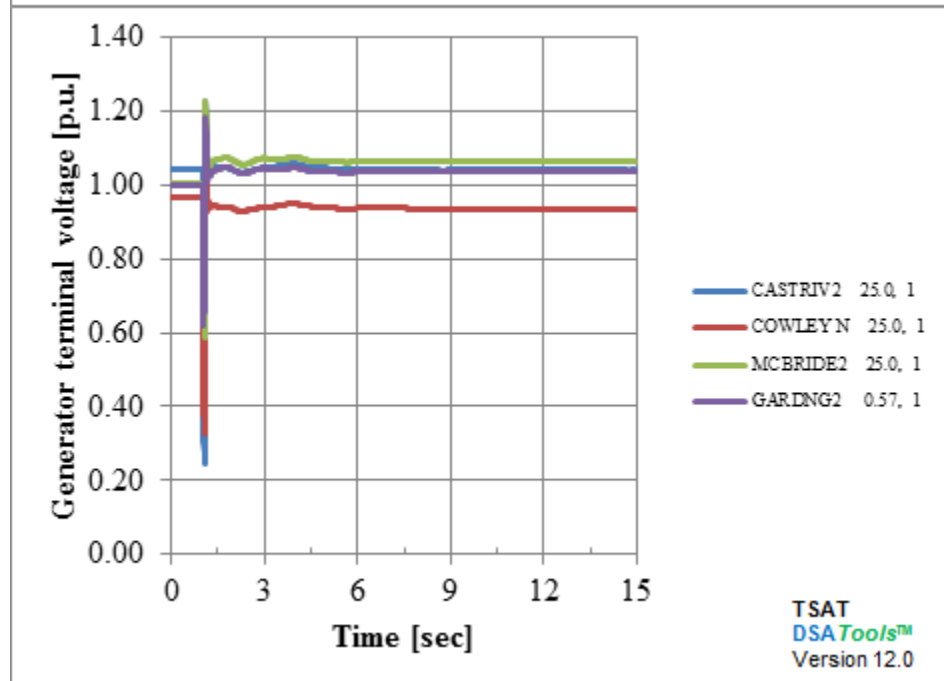
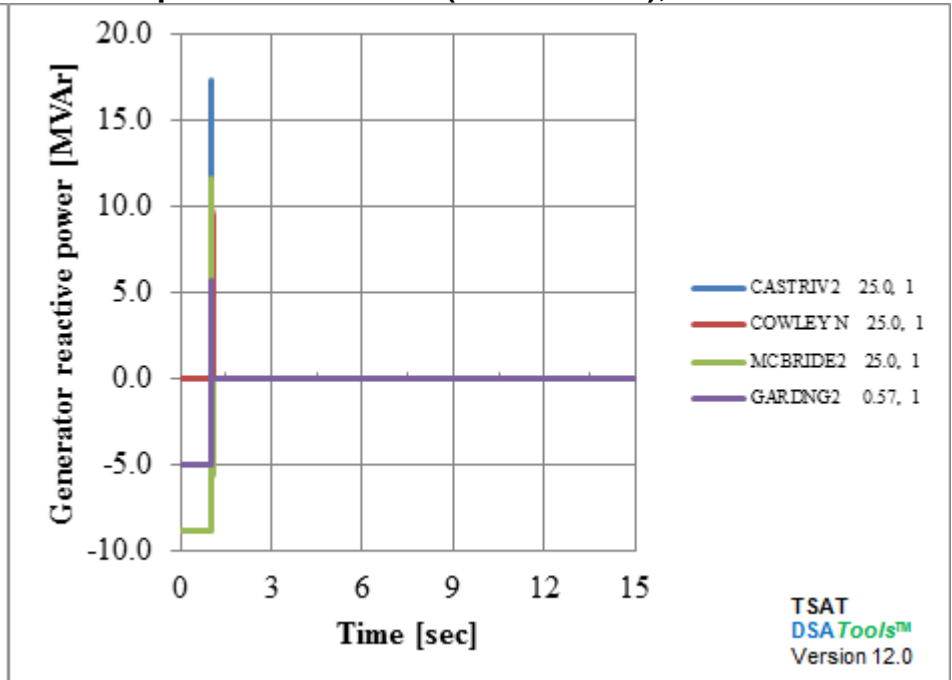
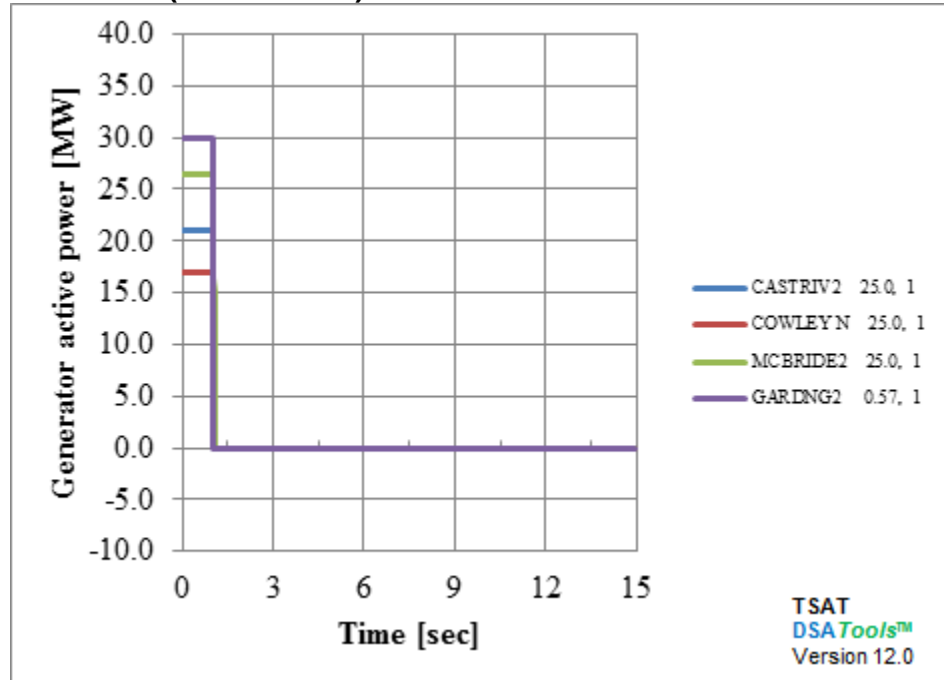
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



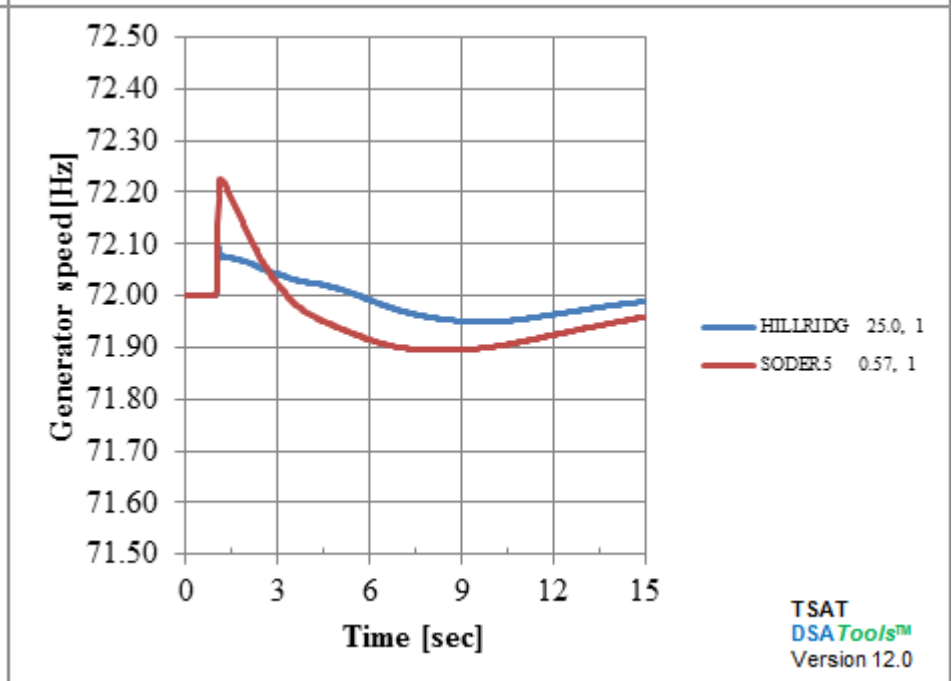
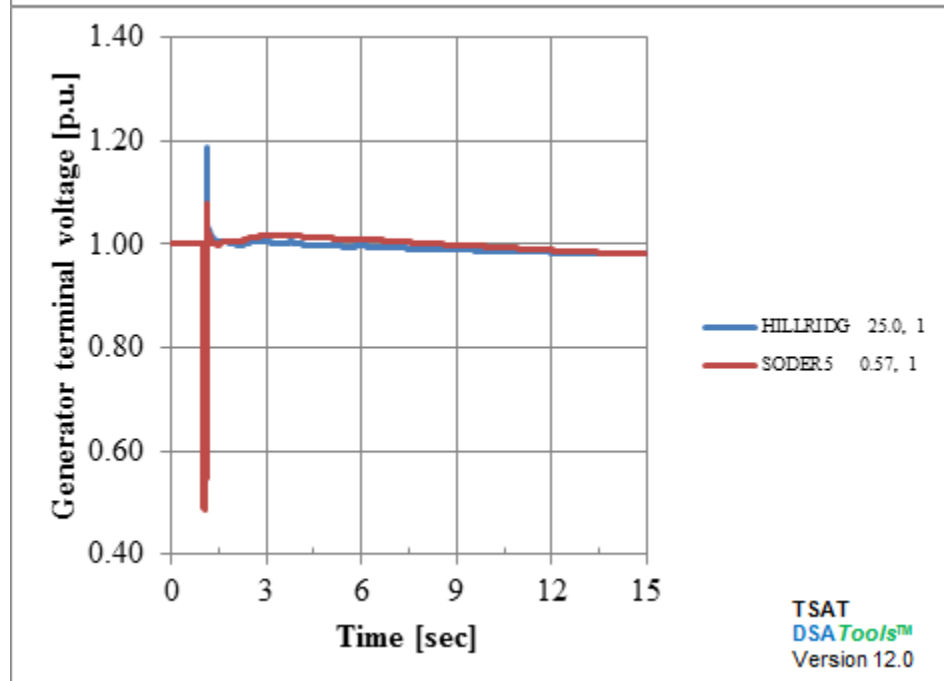
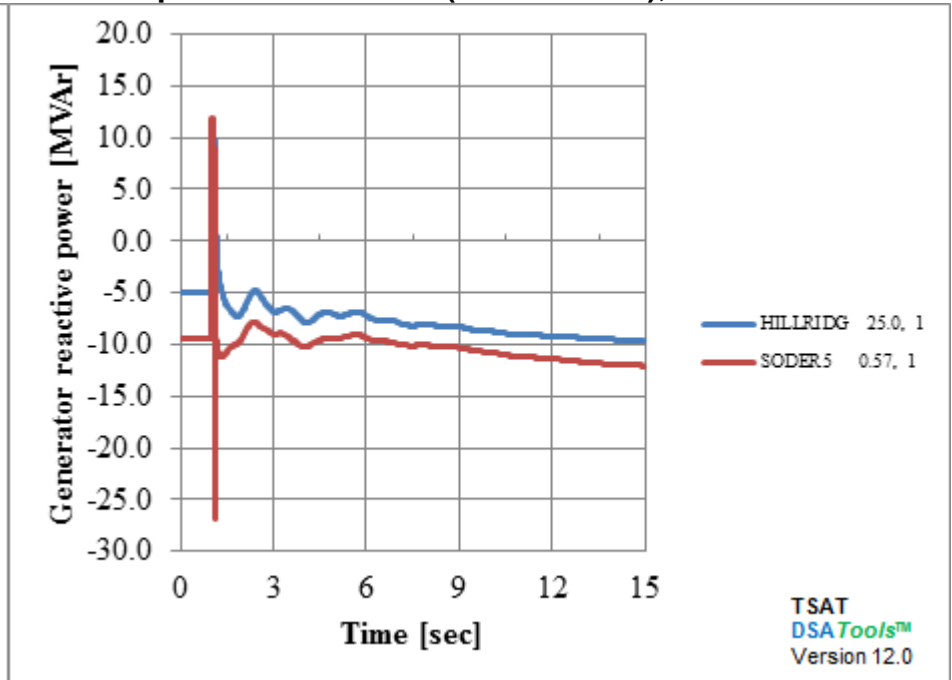
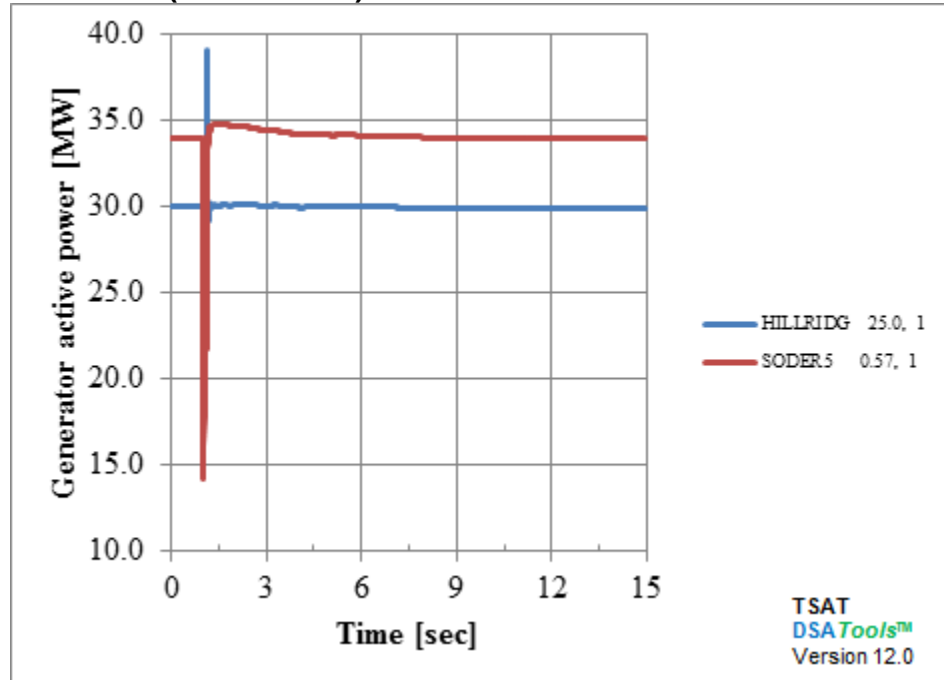
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



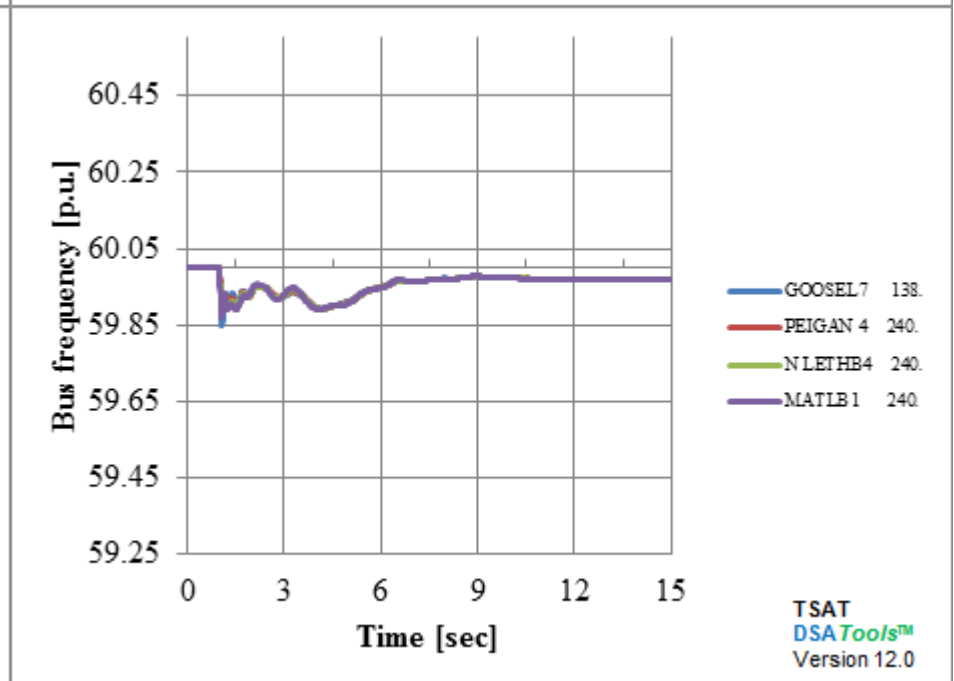
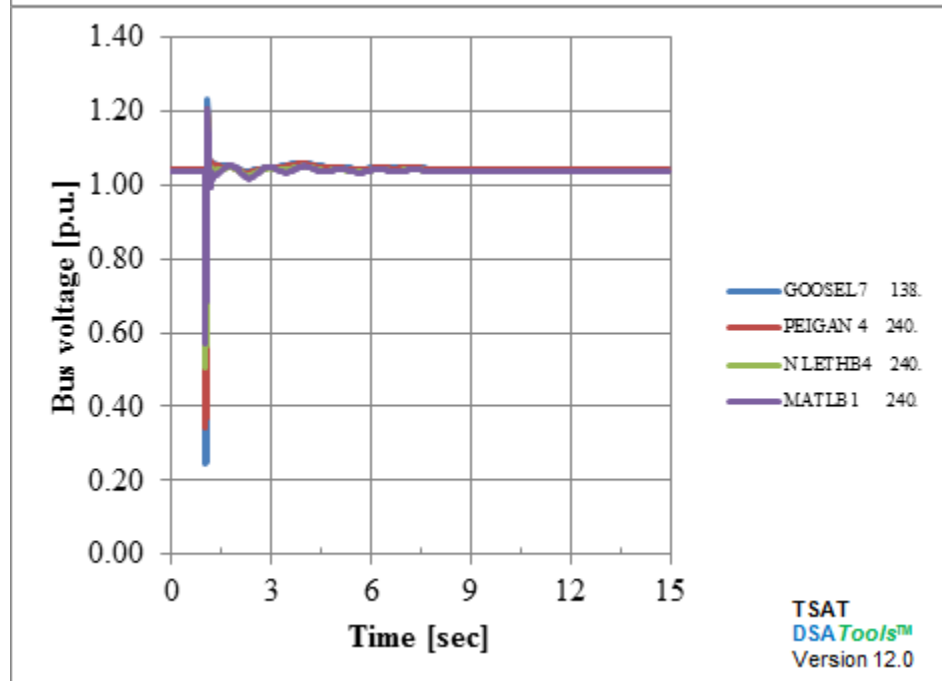
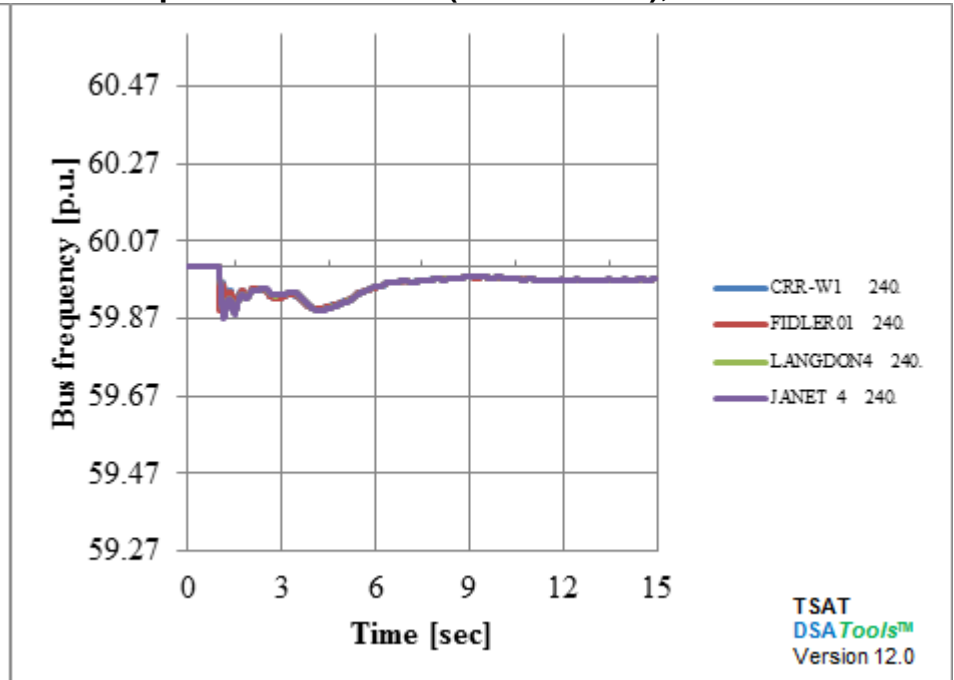
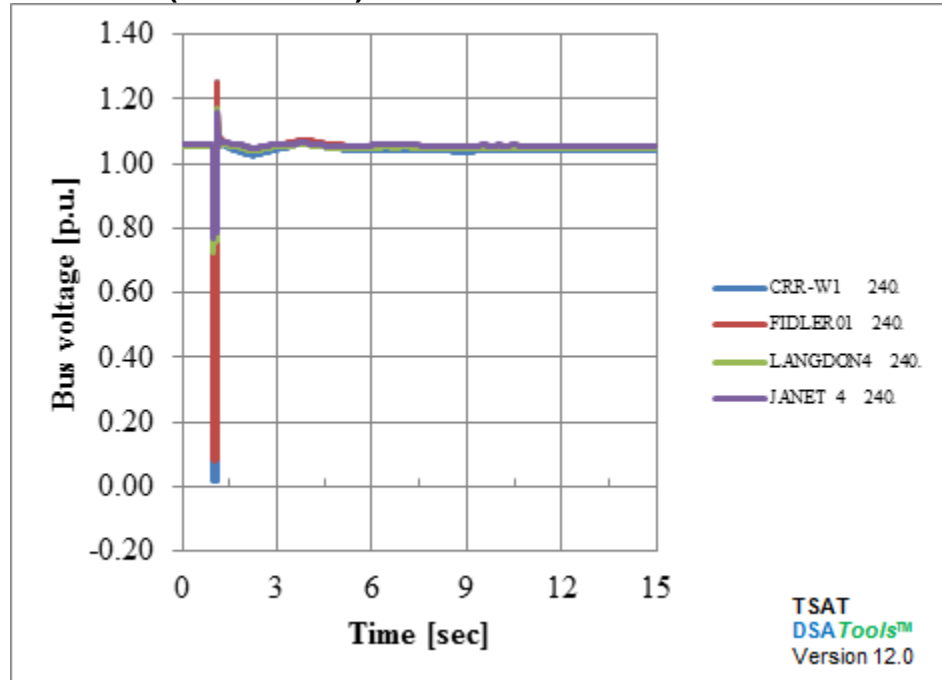
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



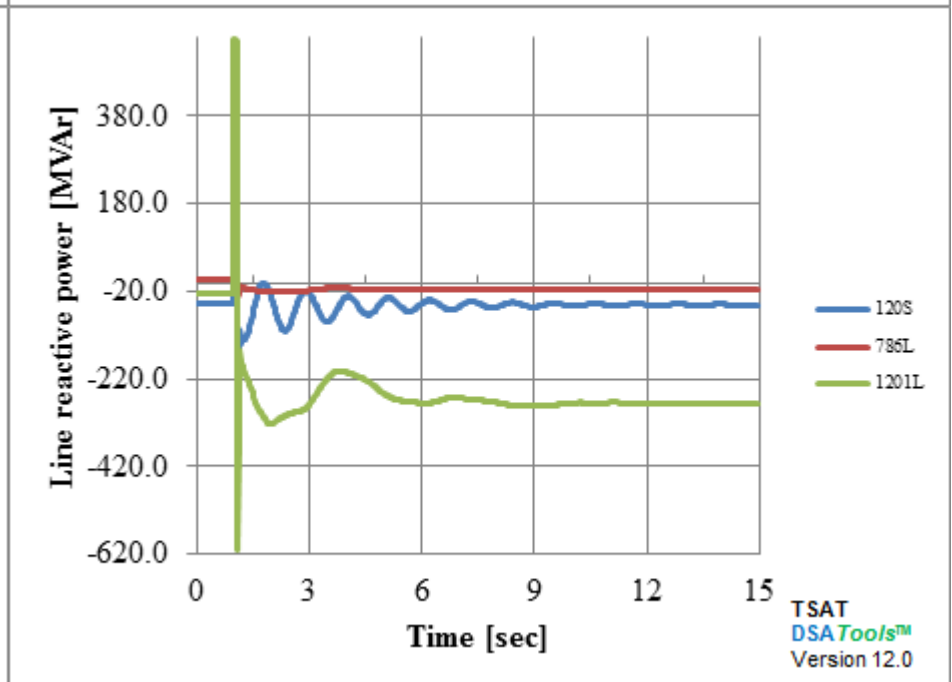
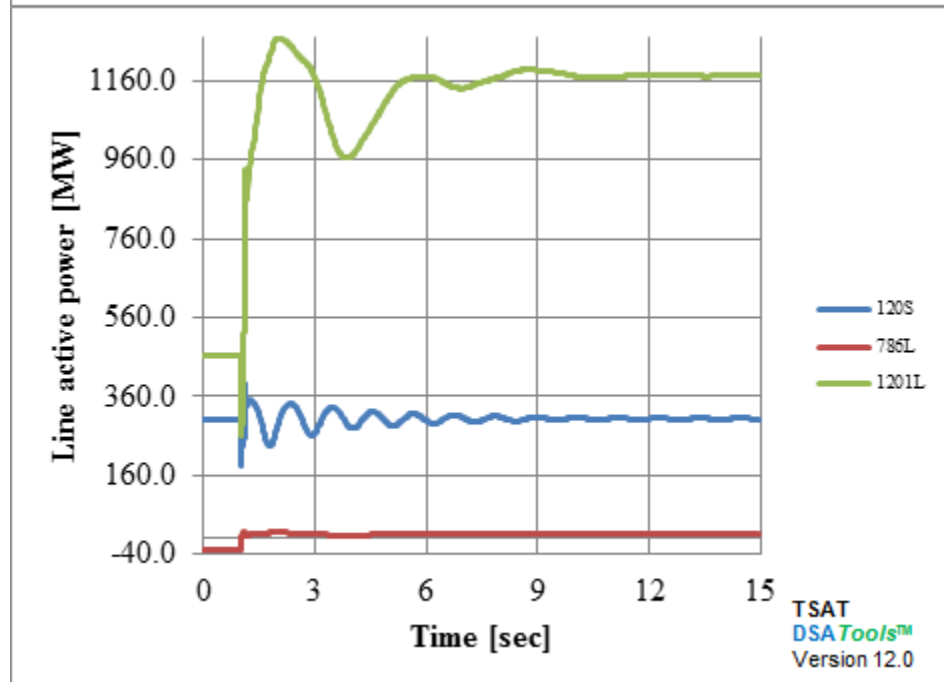
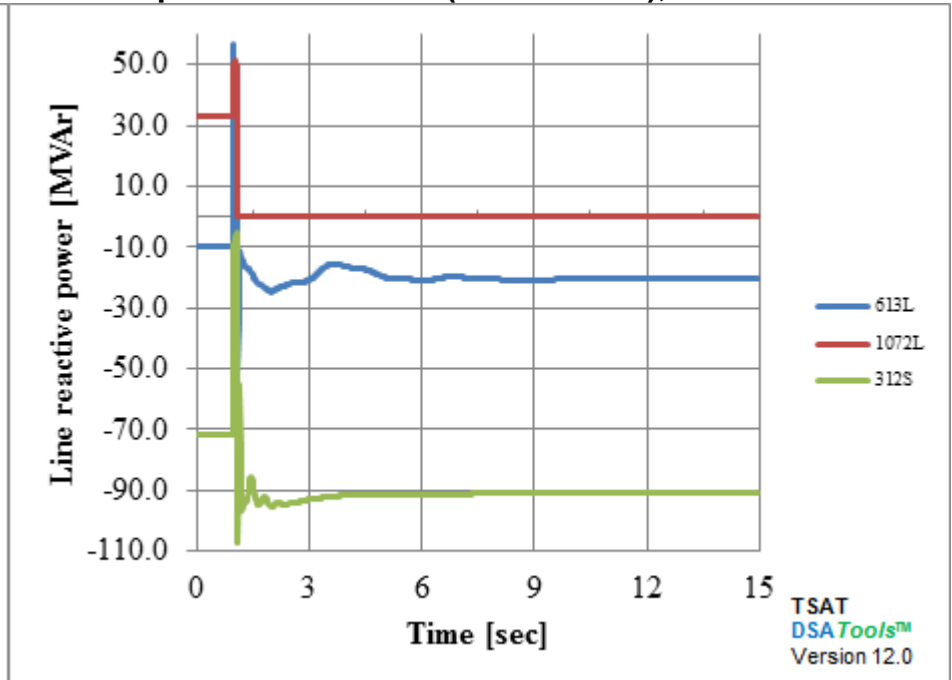
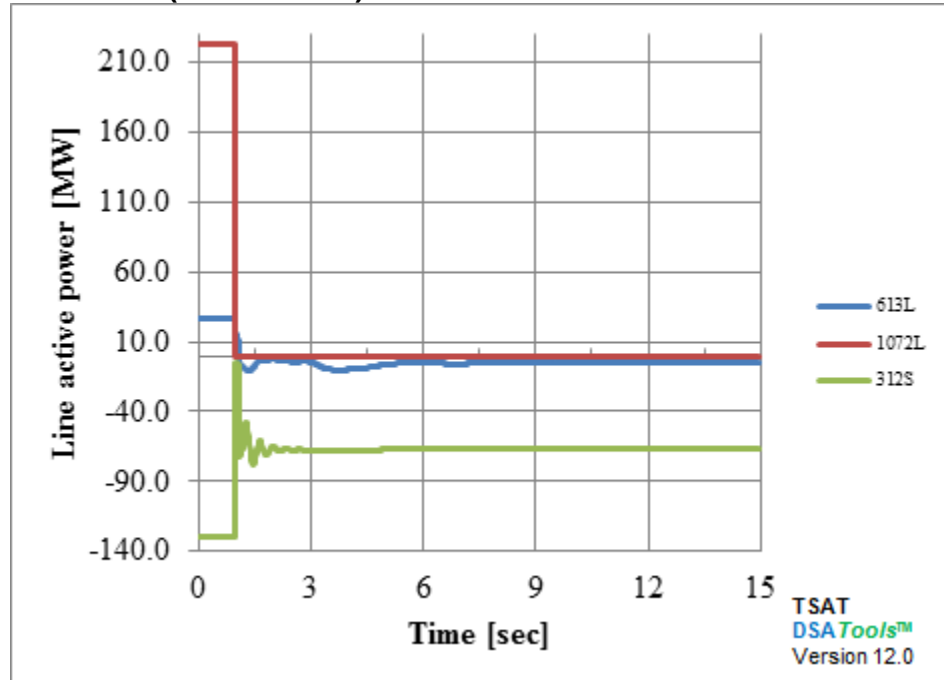
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



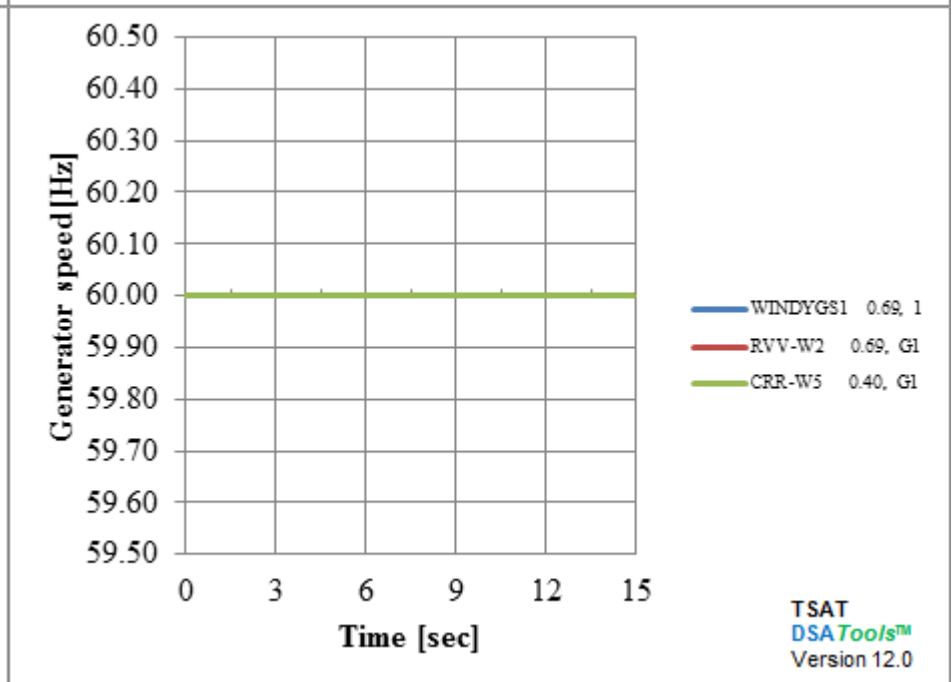
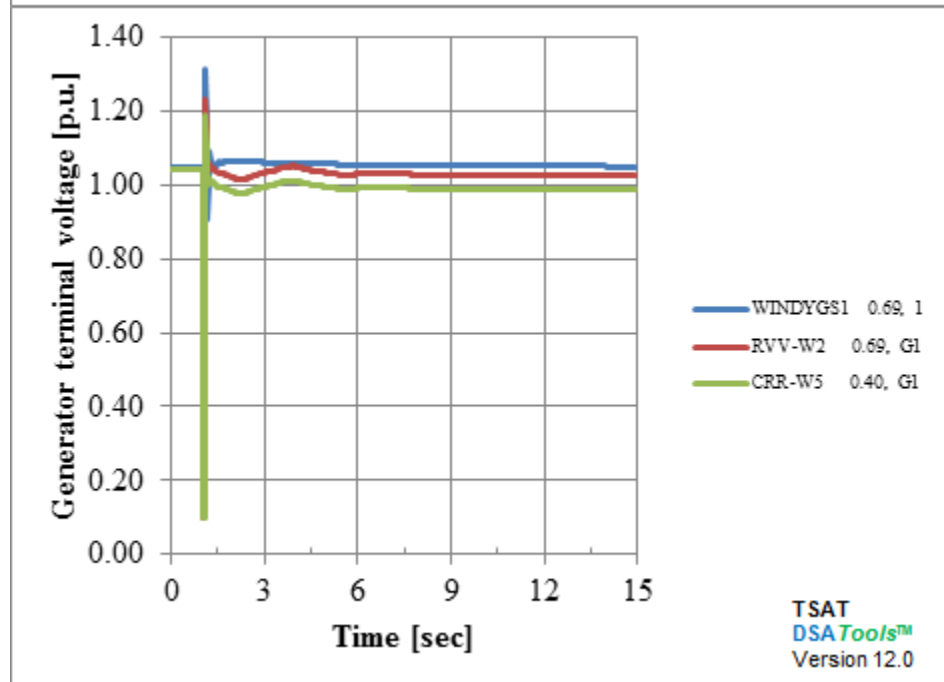
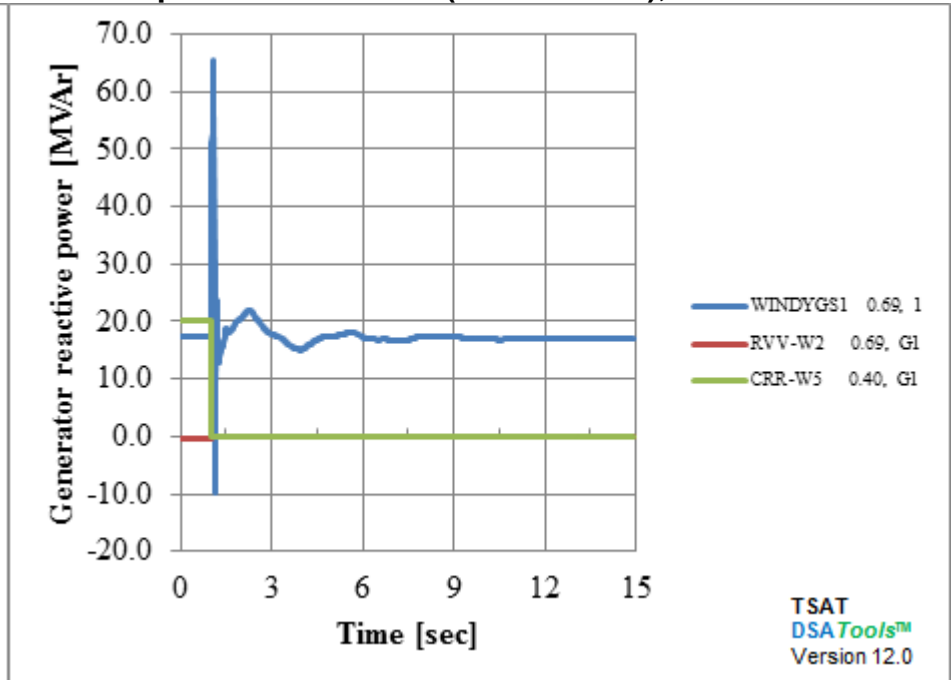
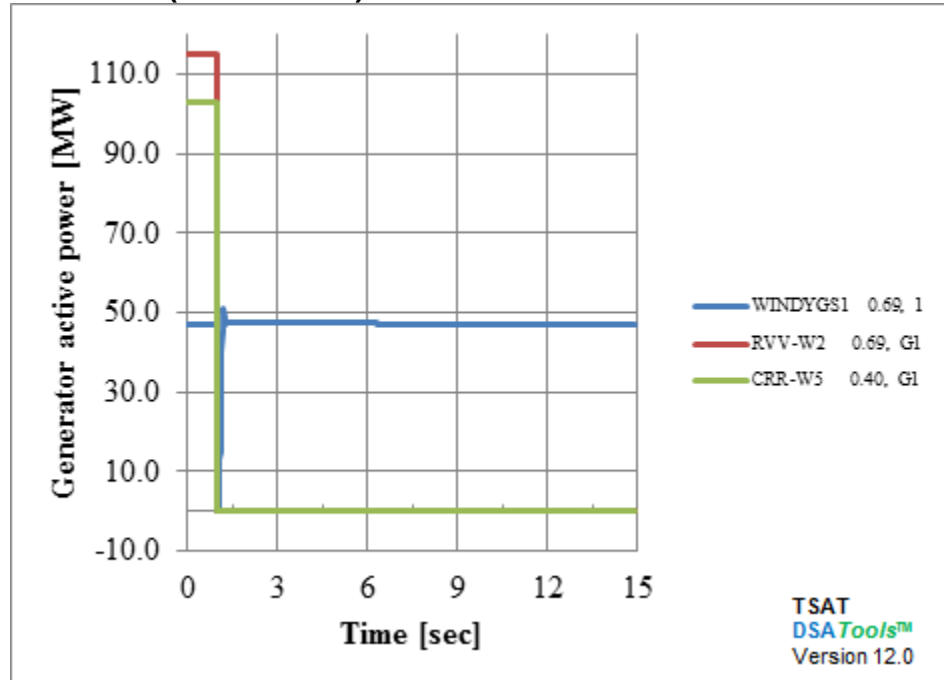
4 -- 1072L (205S - 103S) NEAR 205S

Proposed Connection (Alternative 2), Summer Peak 2017



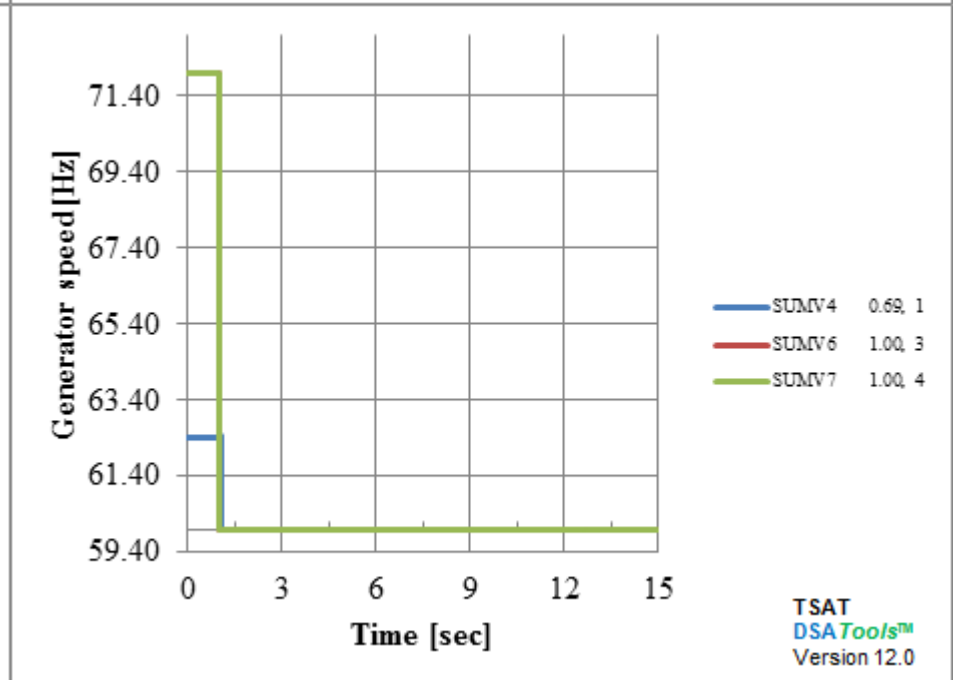
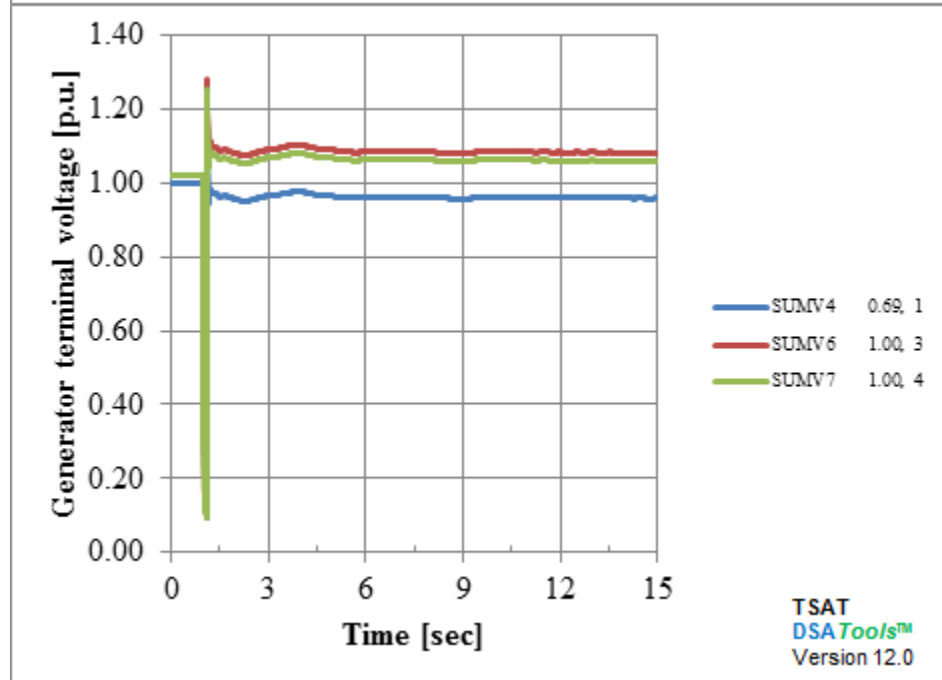
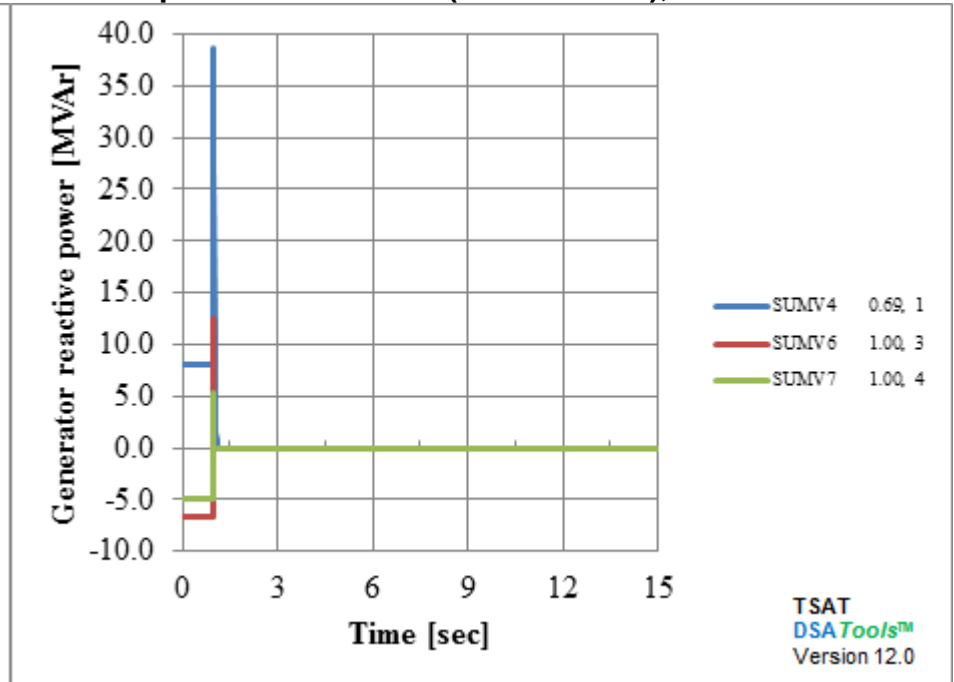
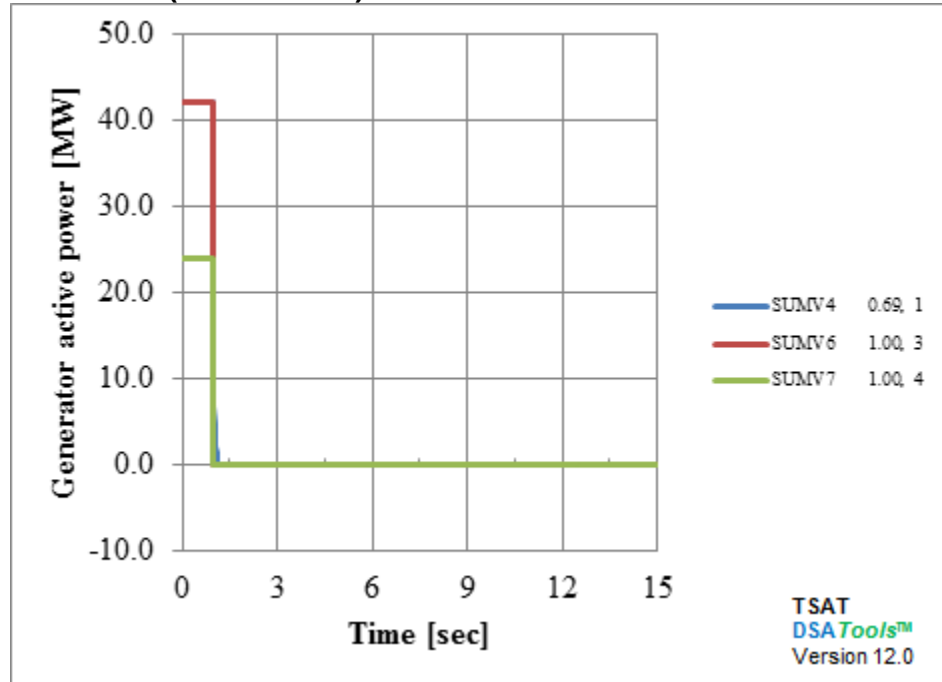
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



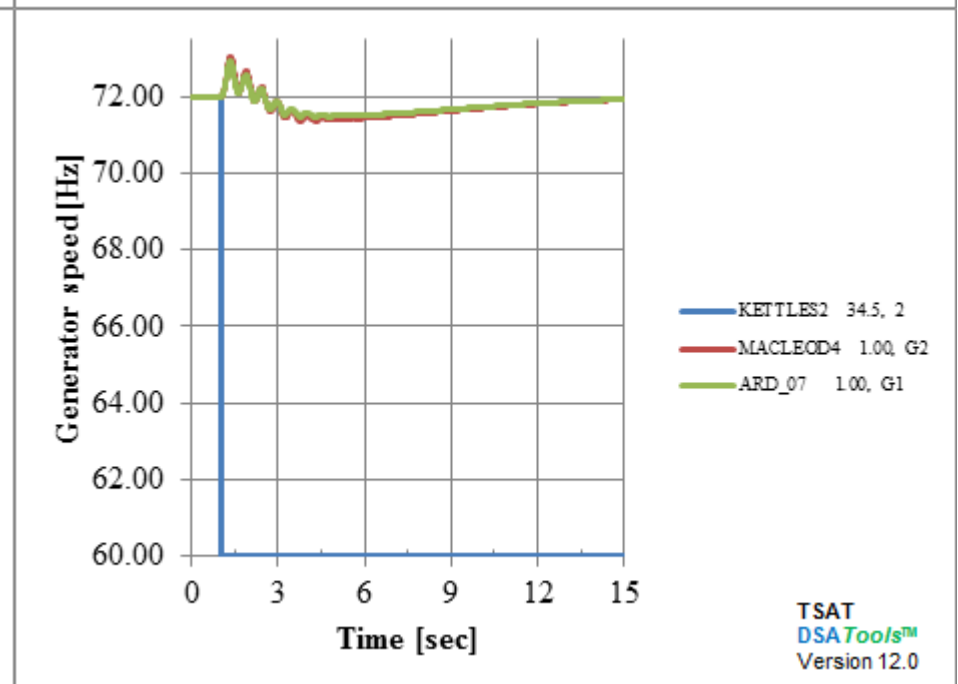
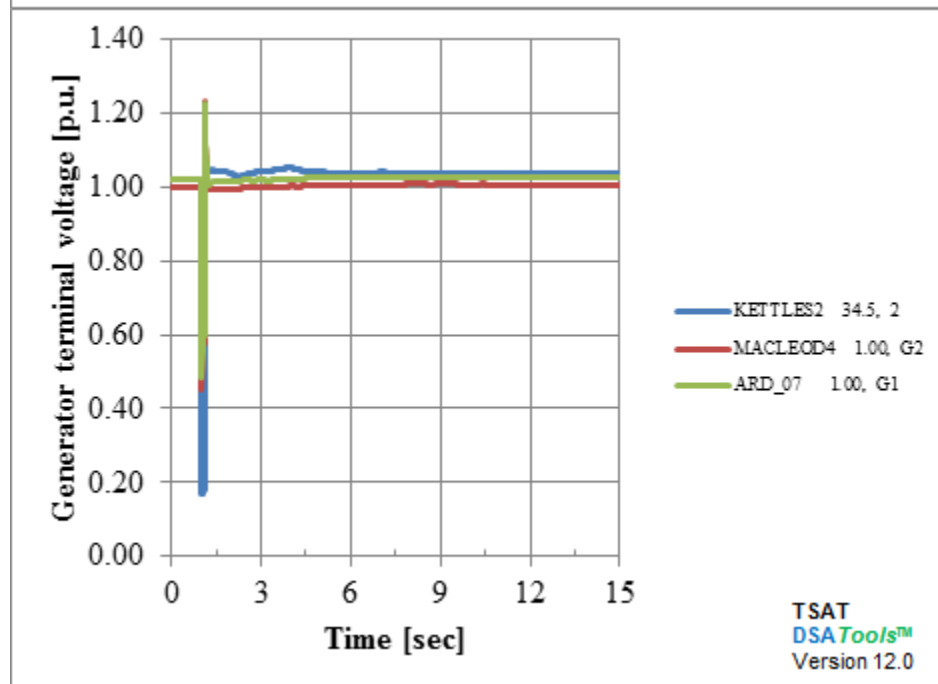
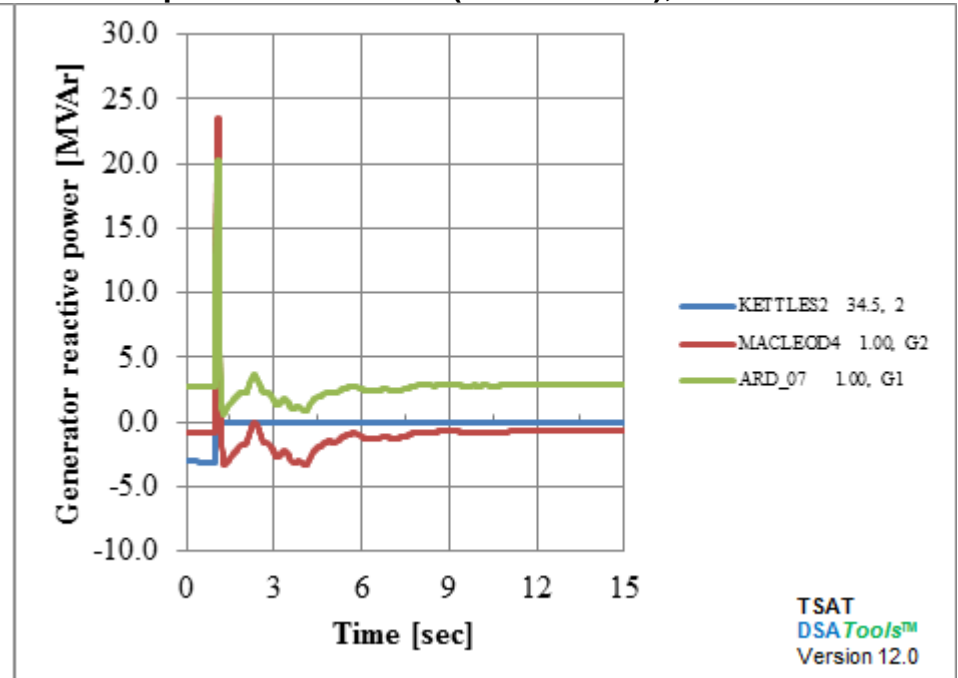
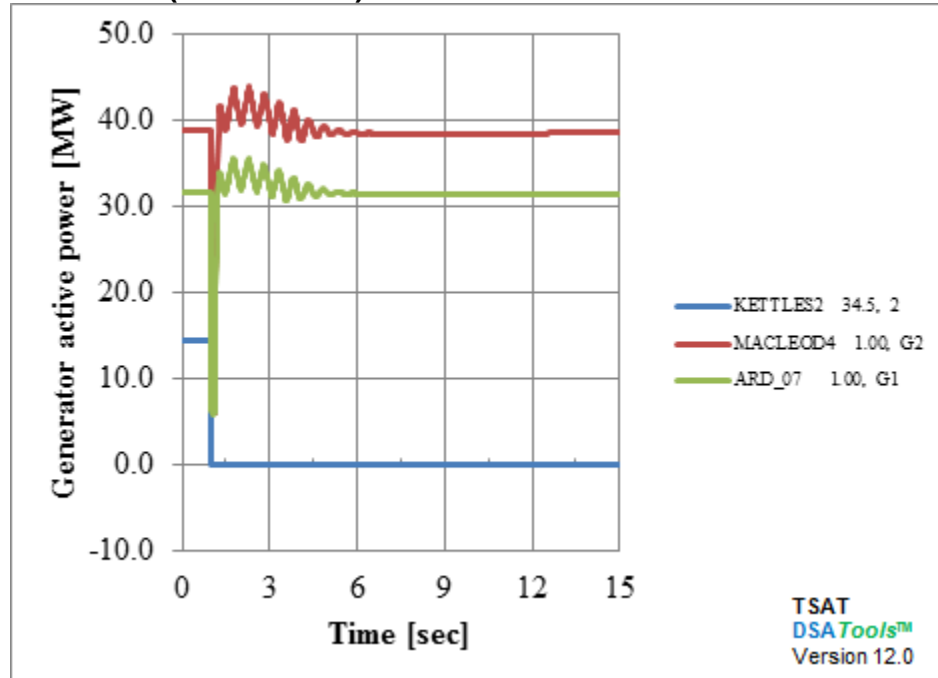
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



5 -- 1072L (205S - 103S) NEAR 103S

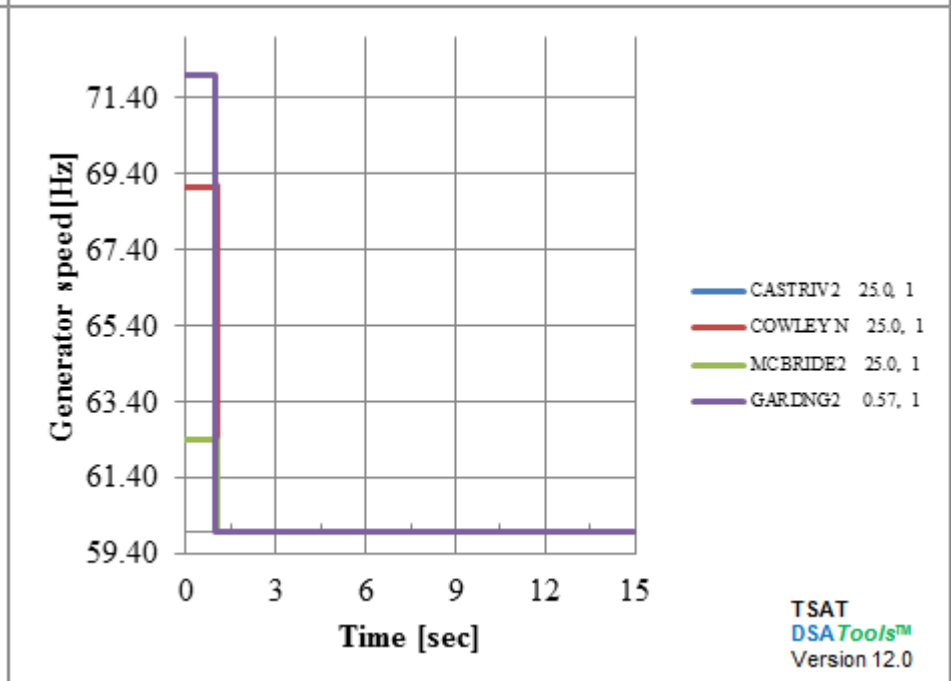
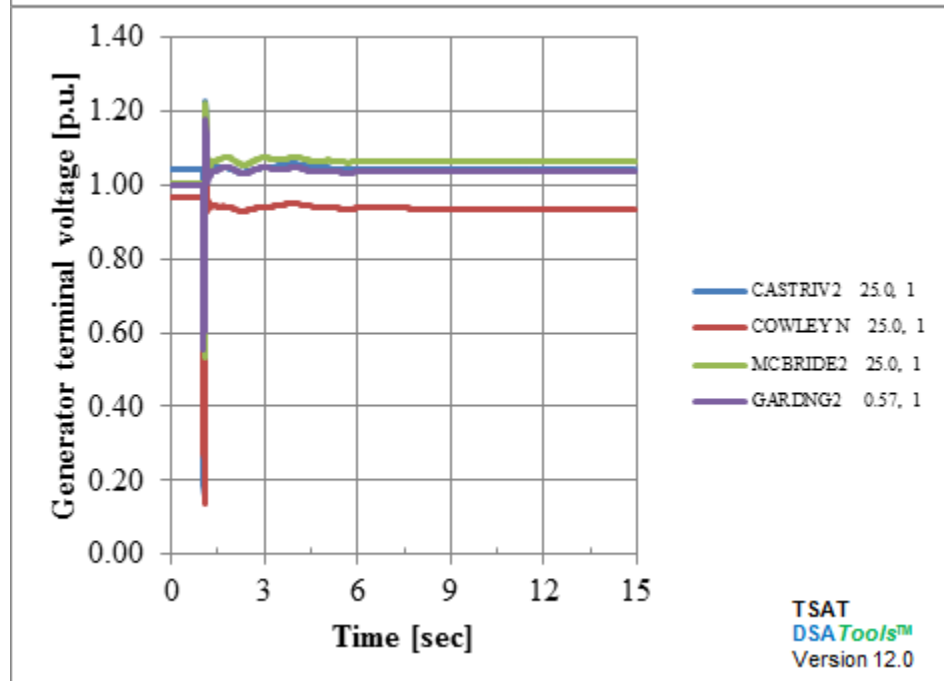
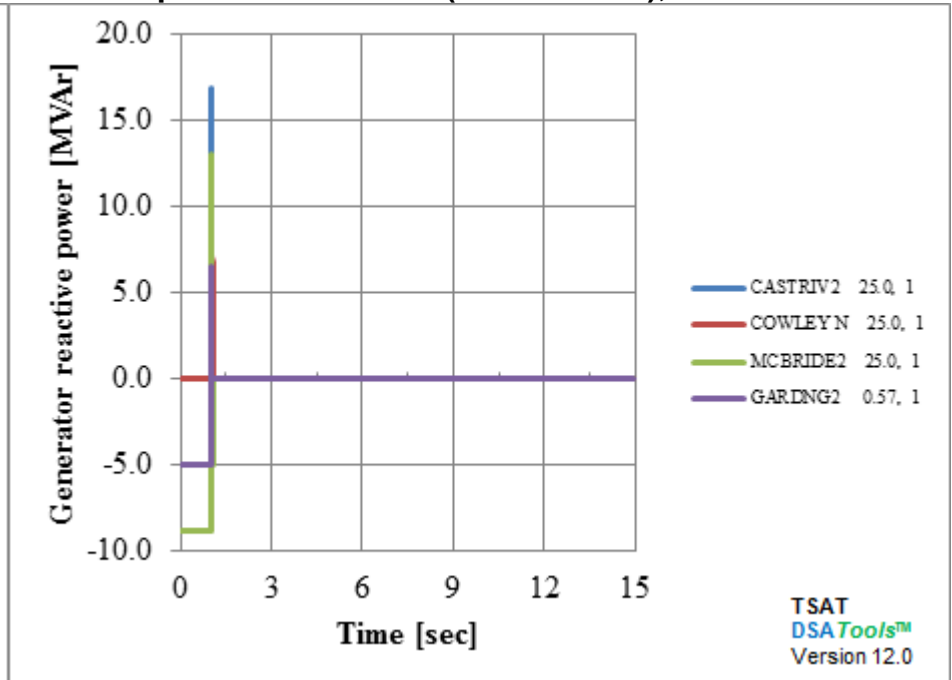
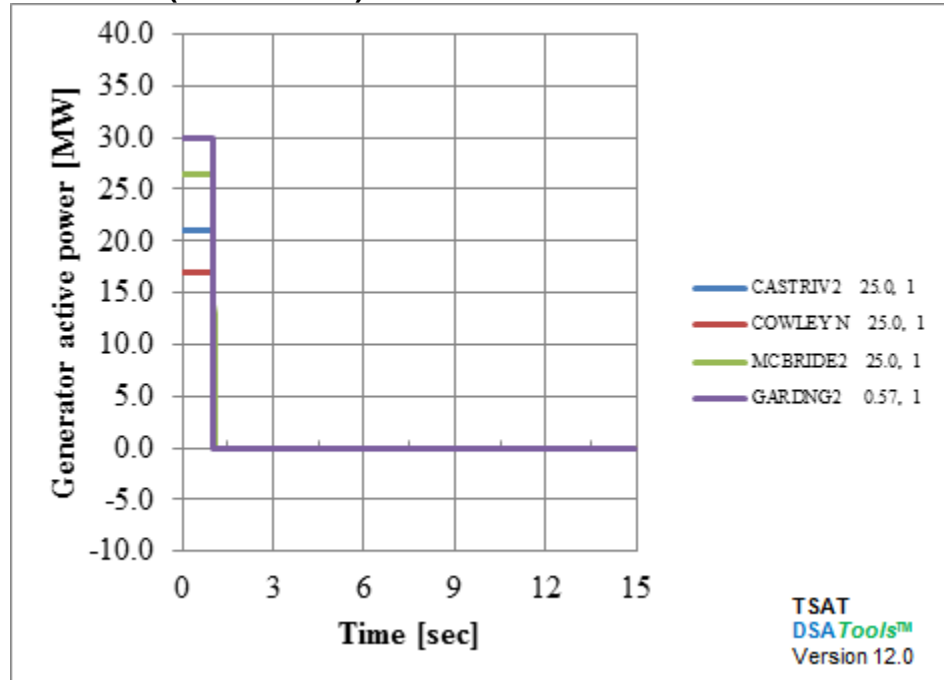
Proposed Connection (Alternative 2), Summer Peak 2017





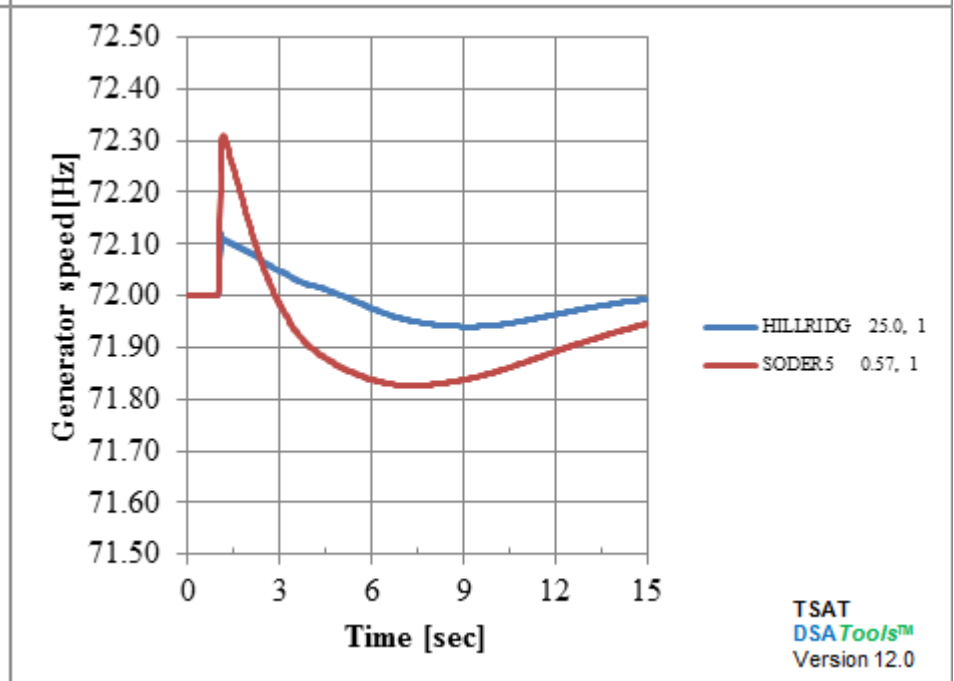
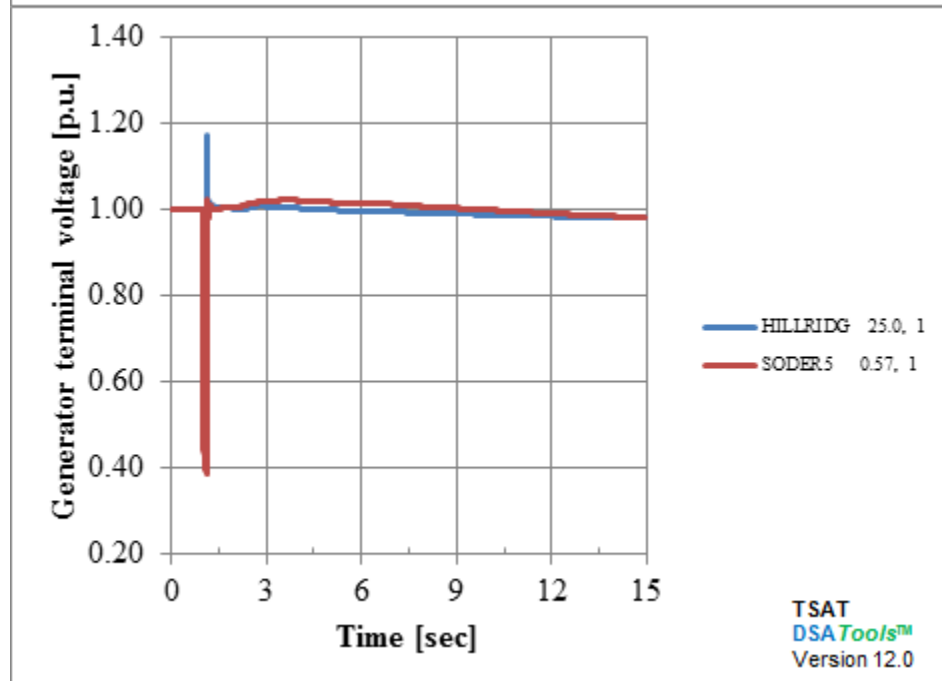
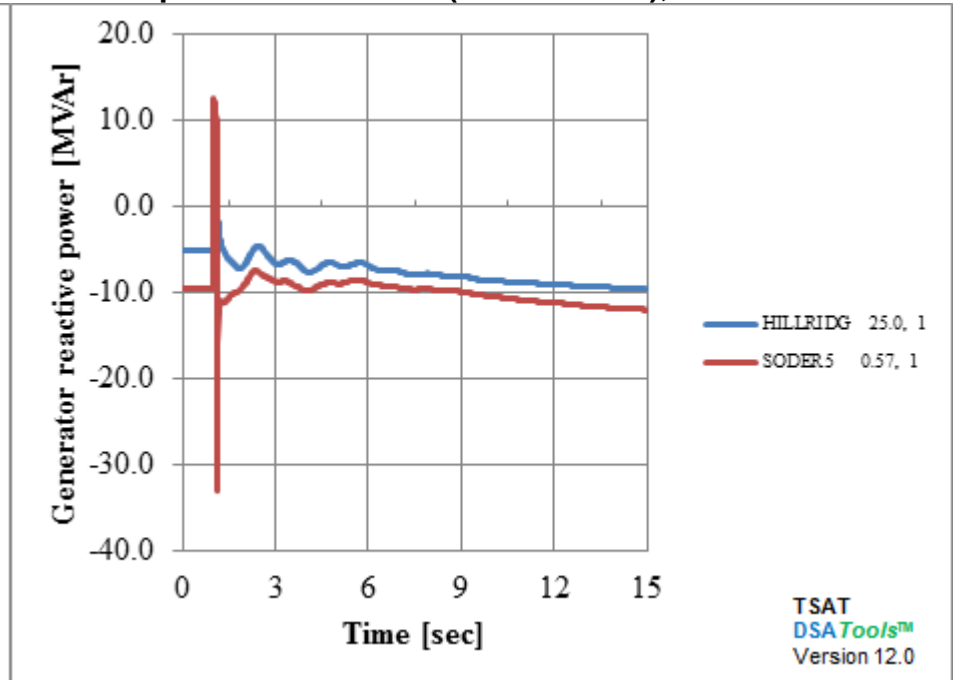
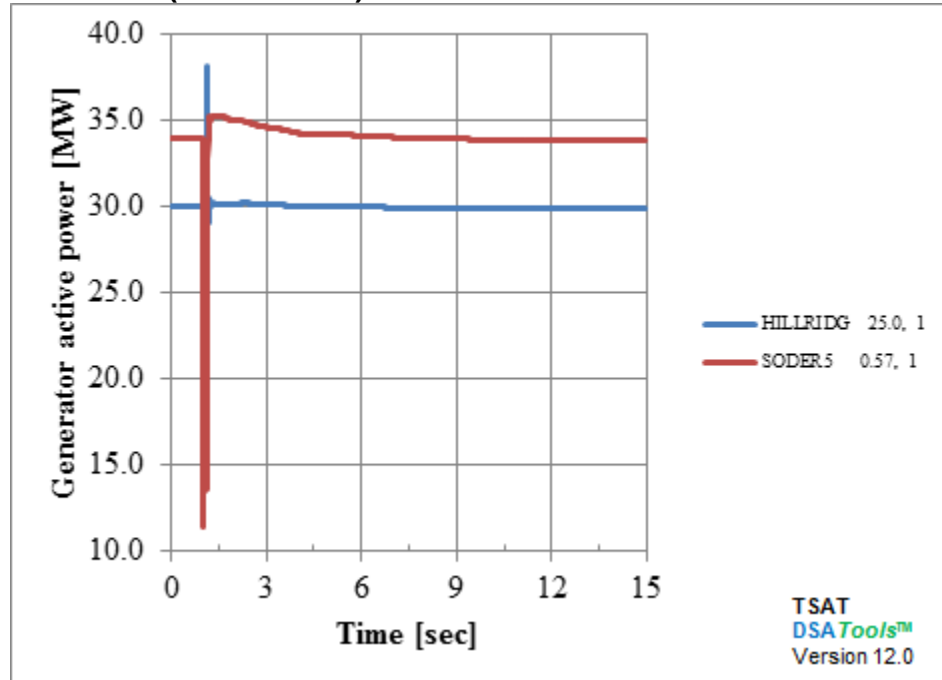
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



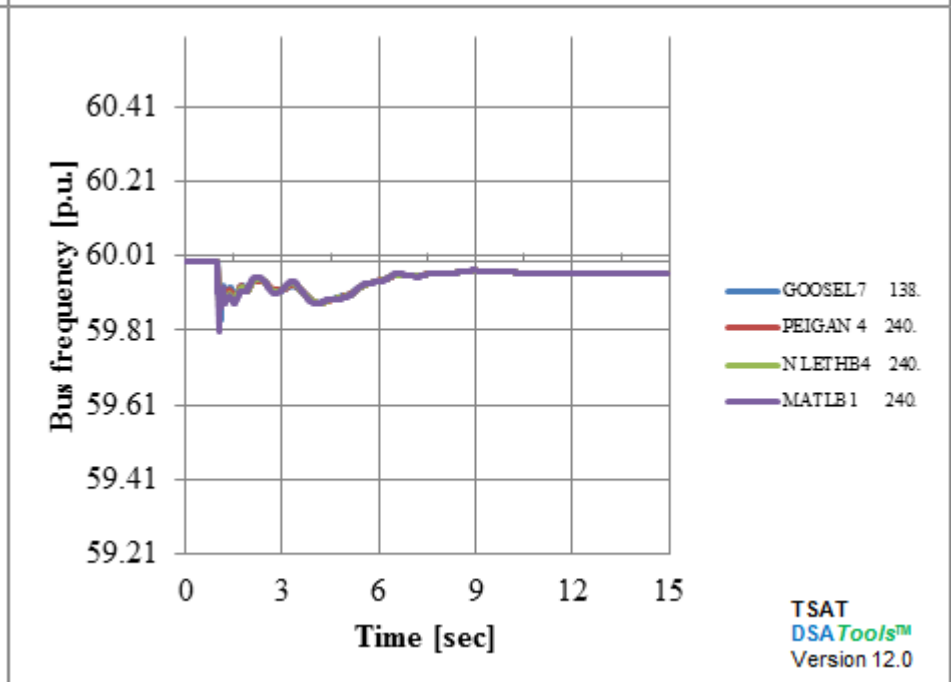
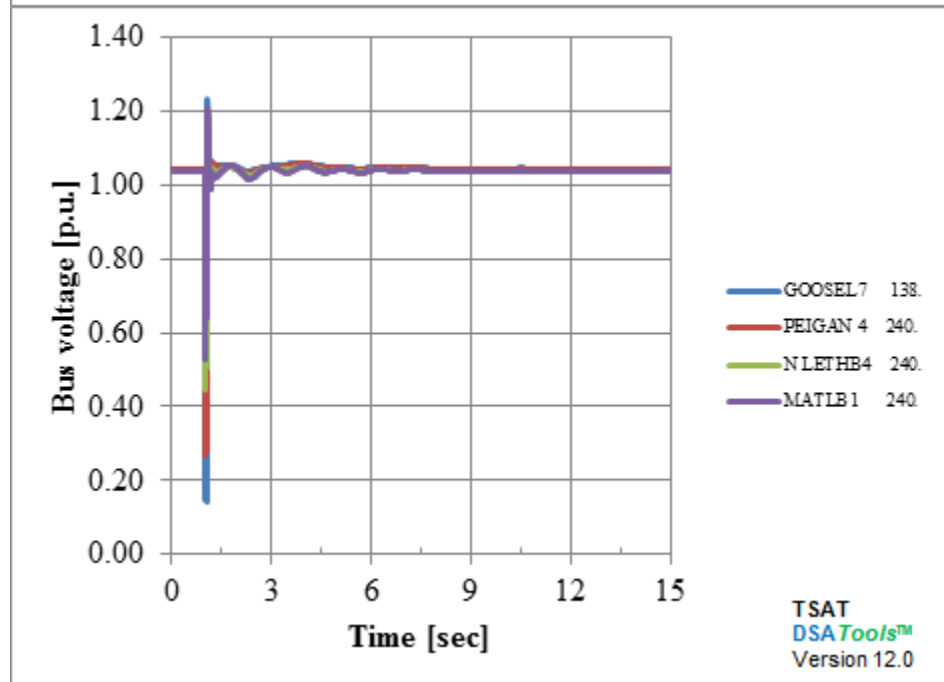
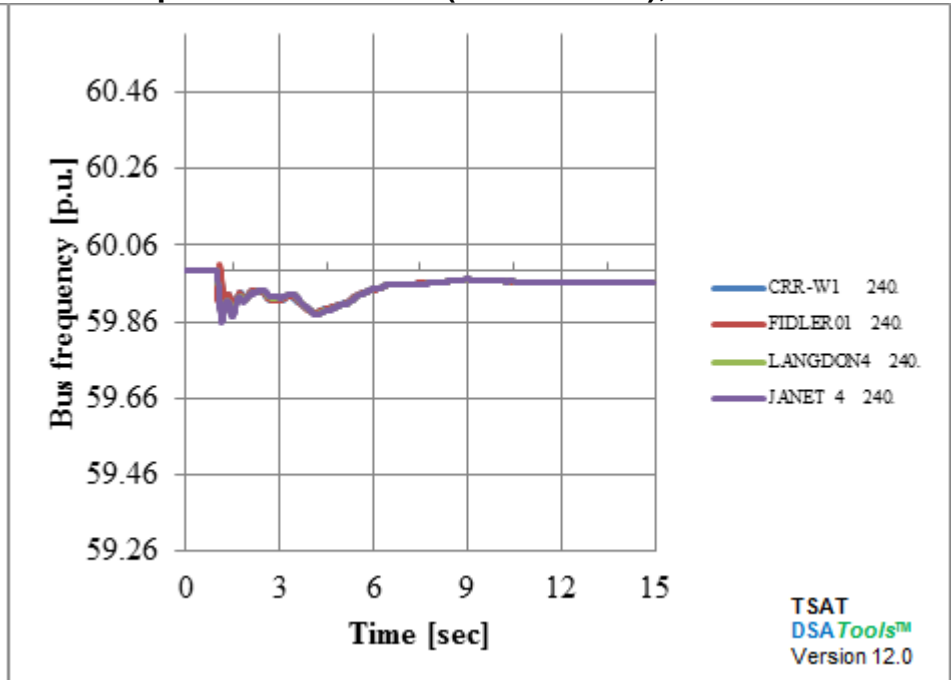
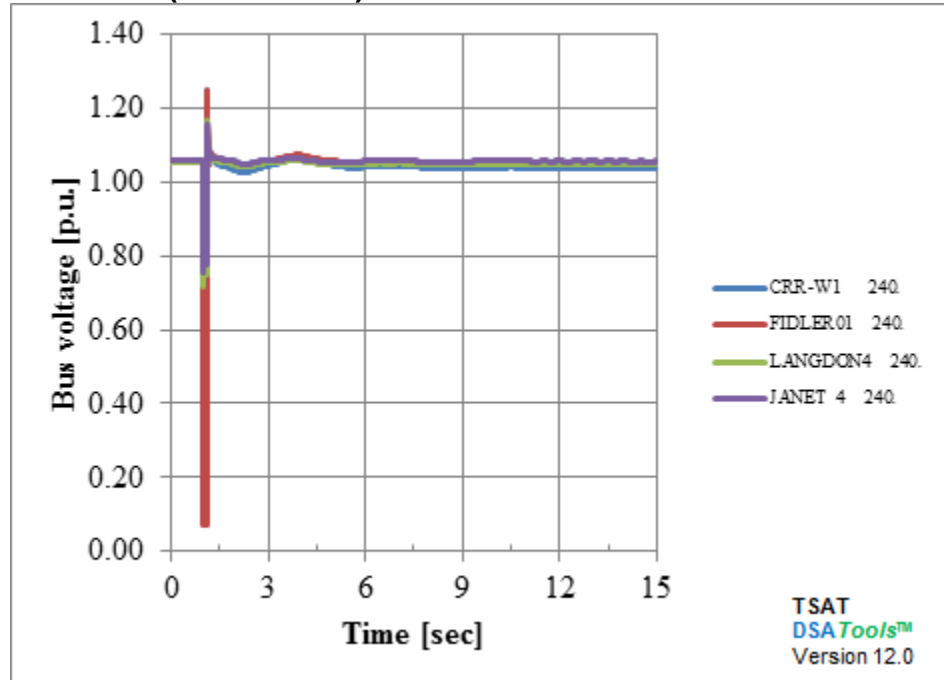
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



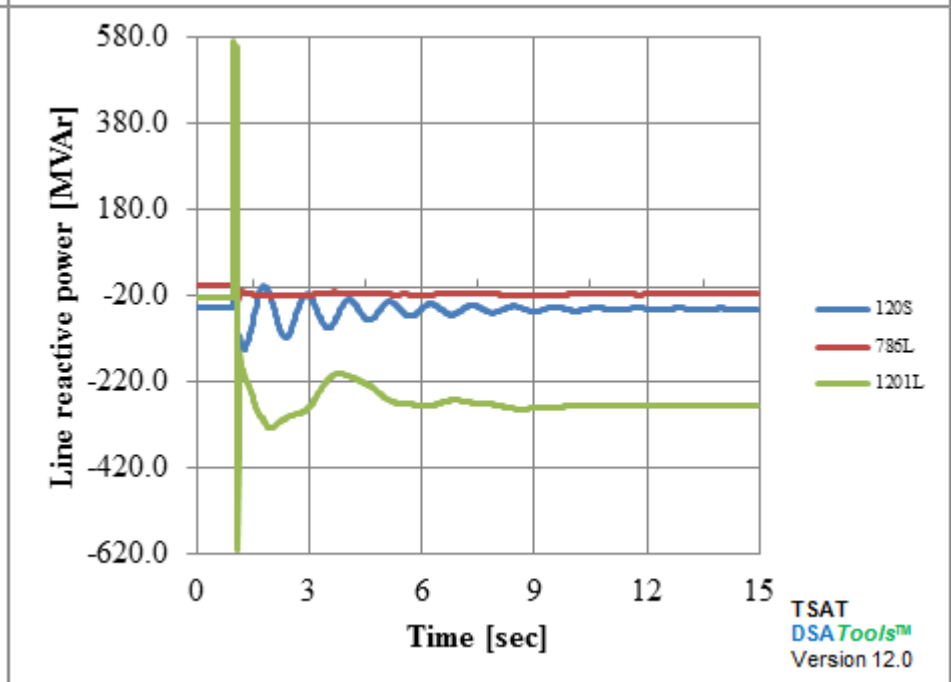
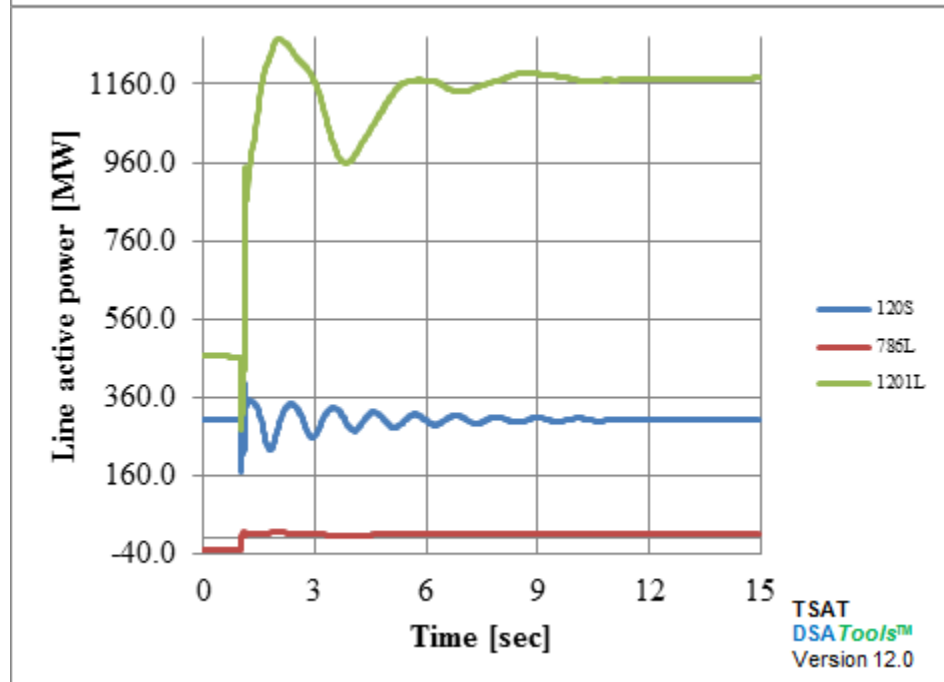
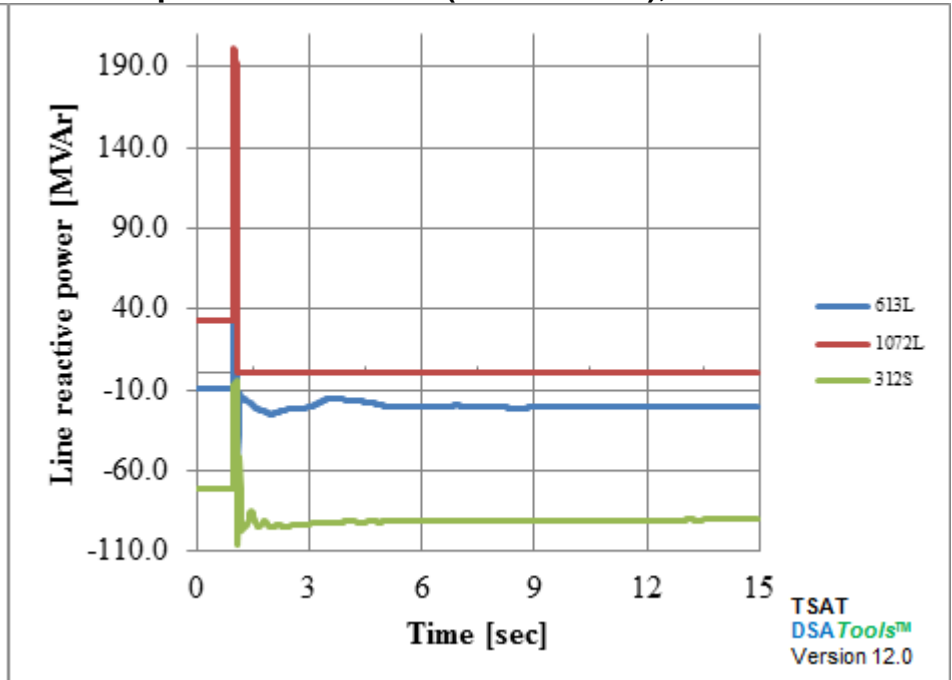
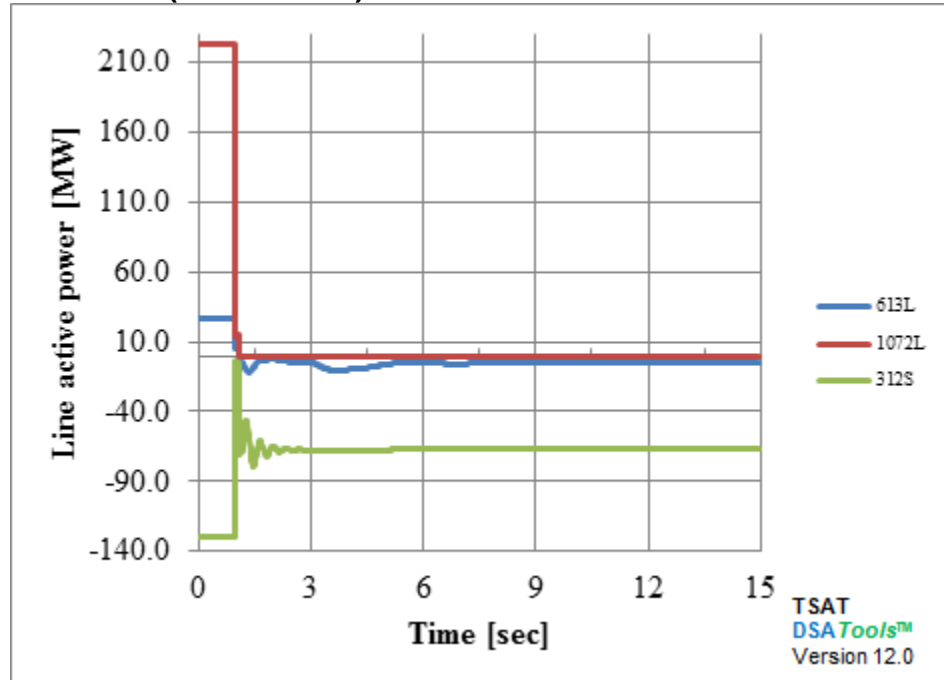
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



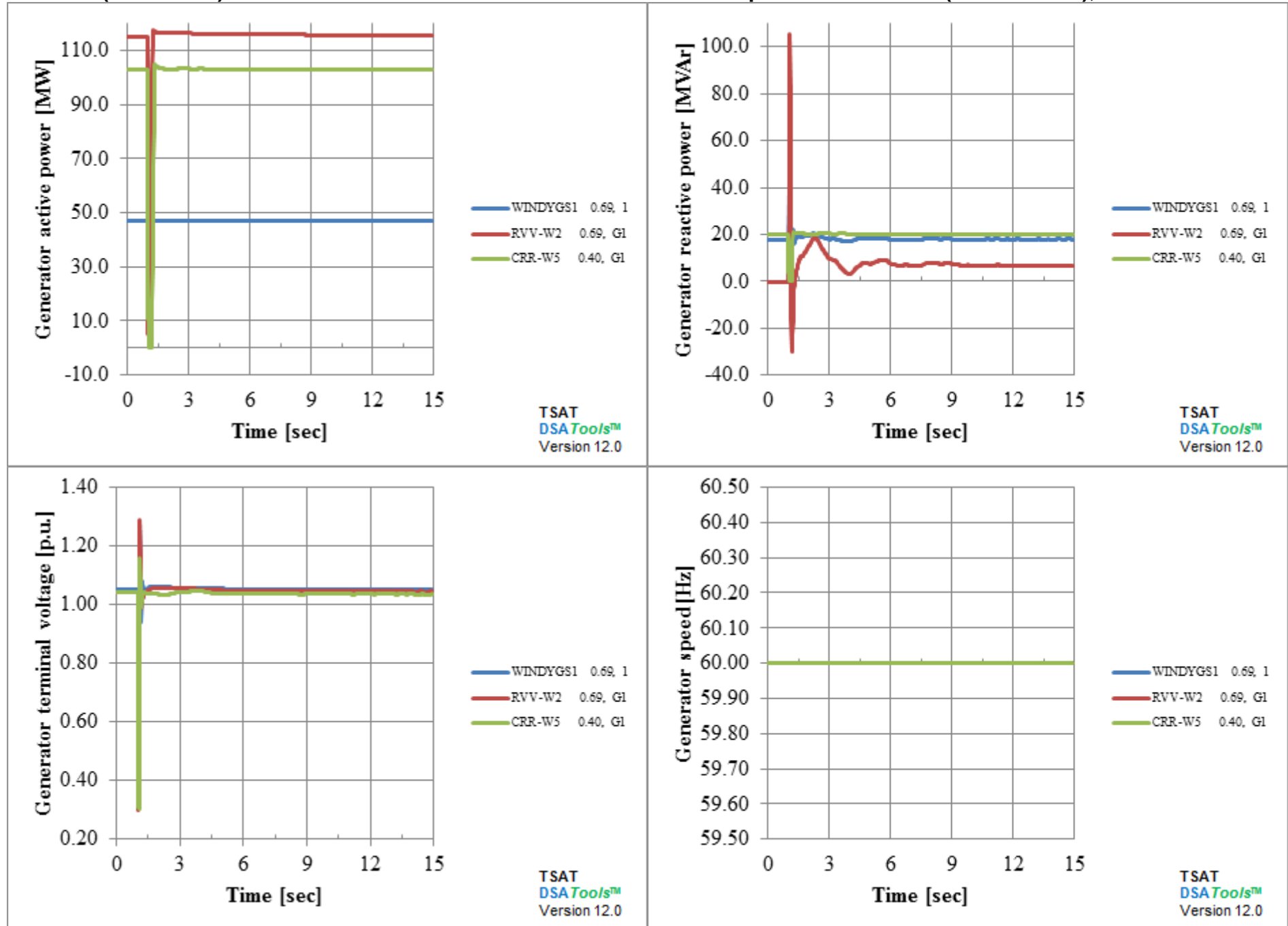
5 -- 1072L (205S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



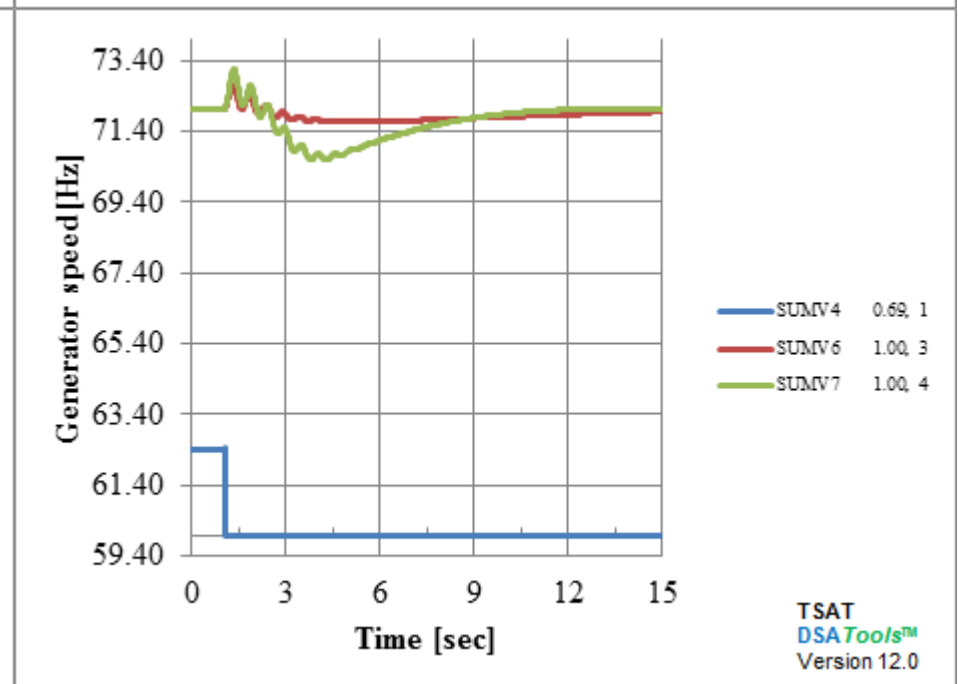
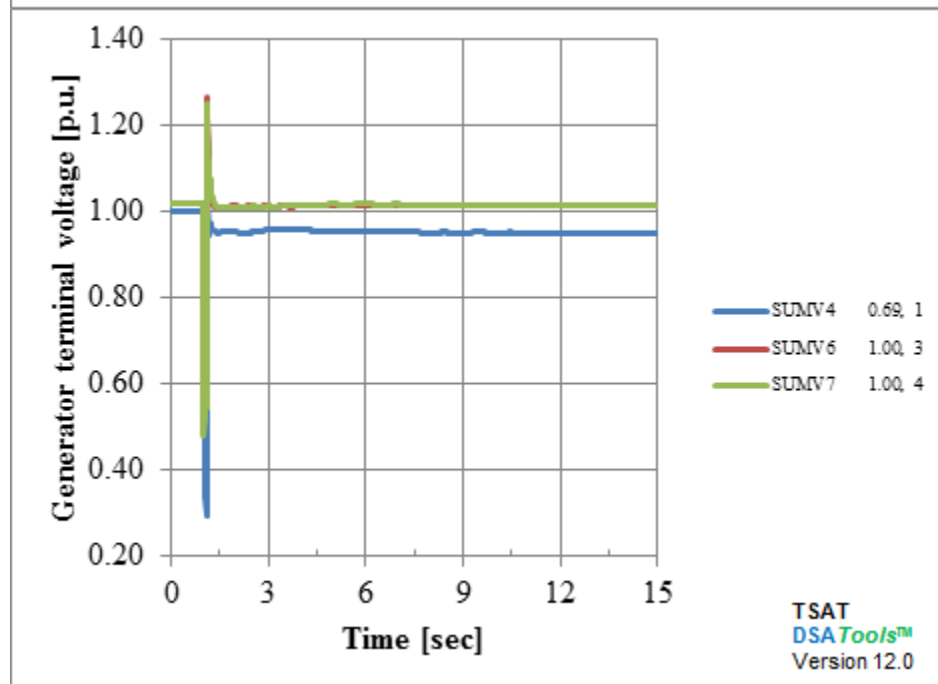
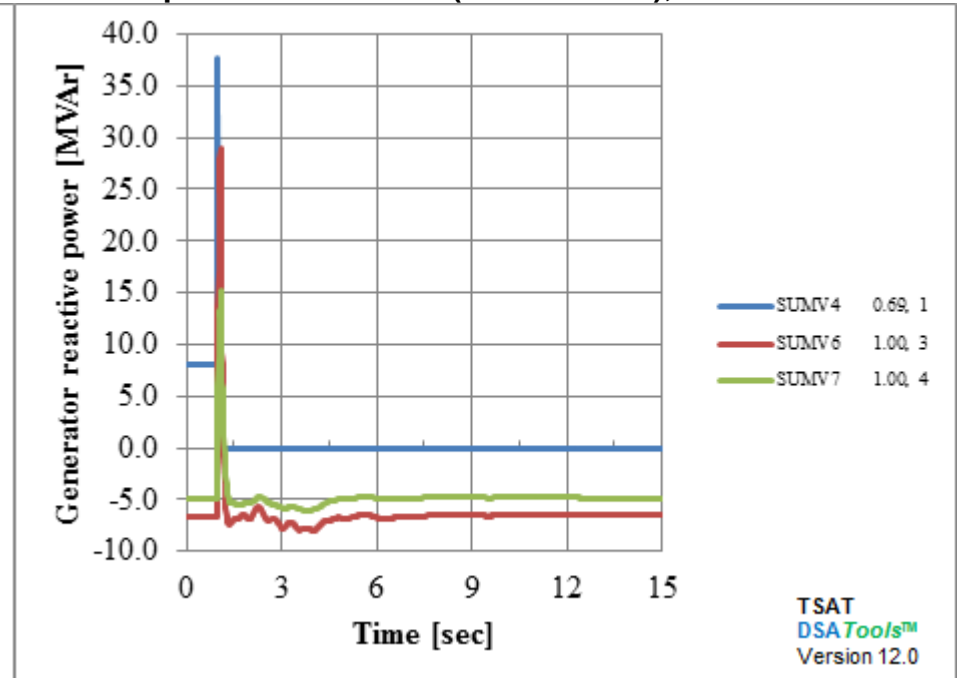
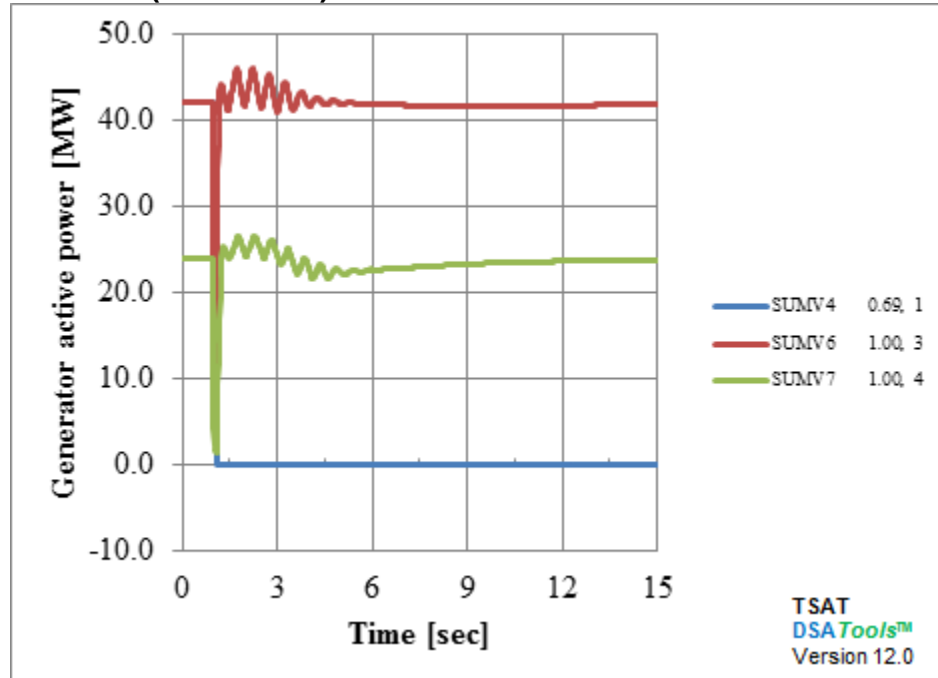
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



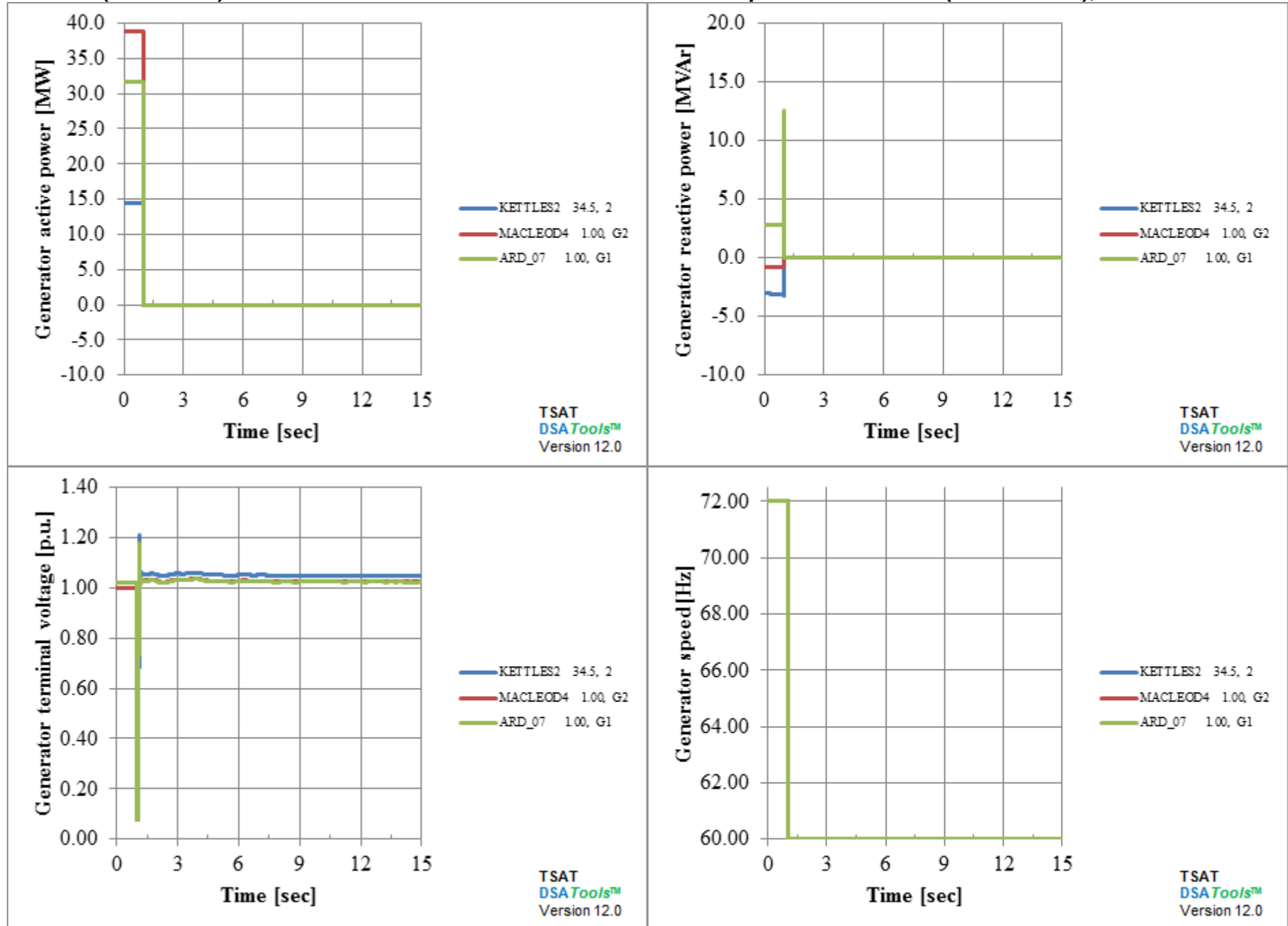
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



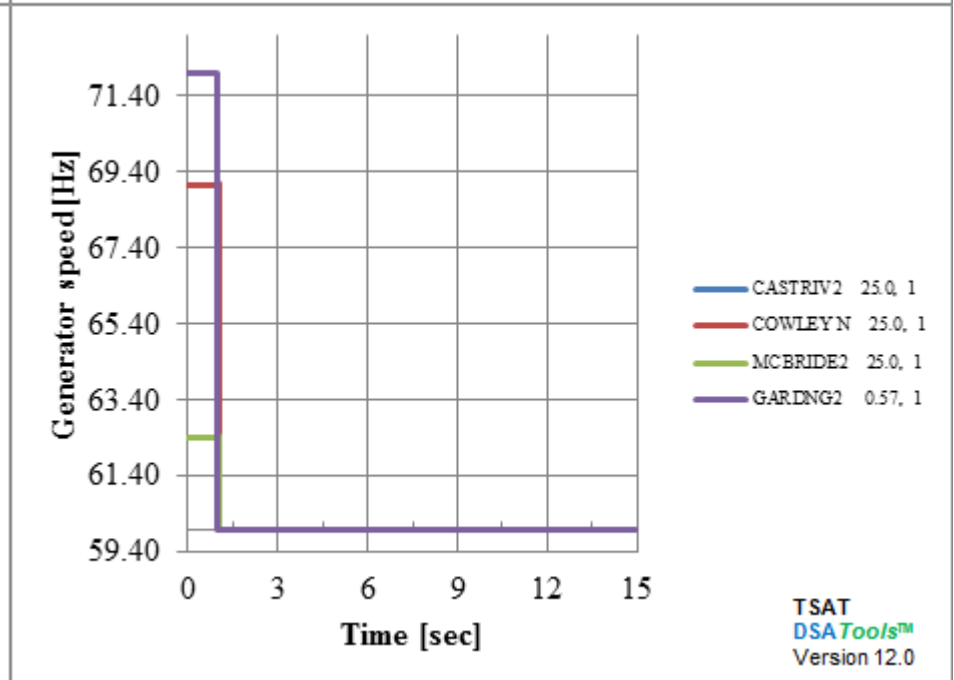
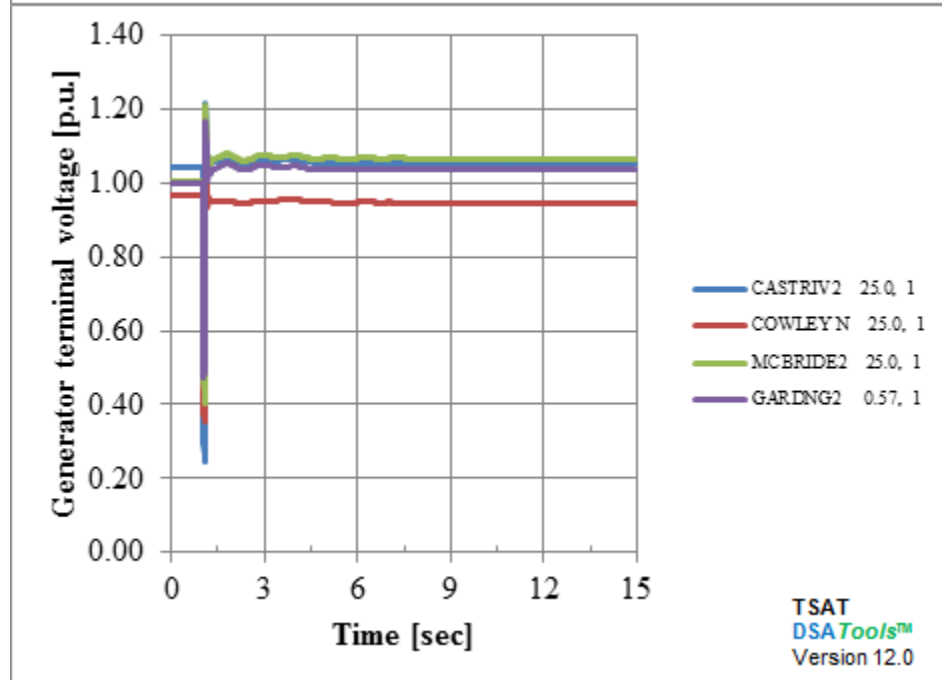
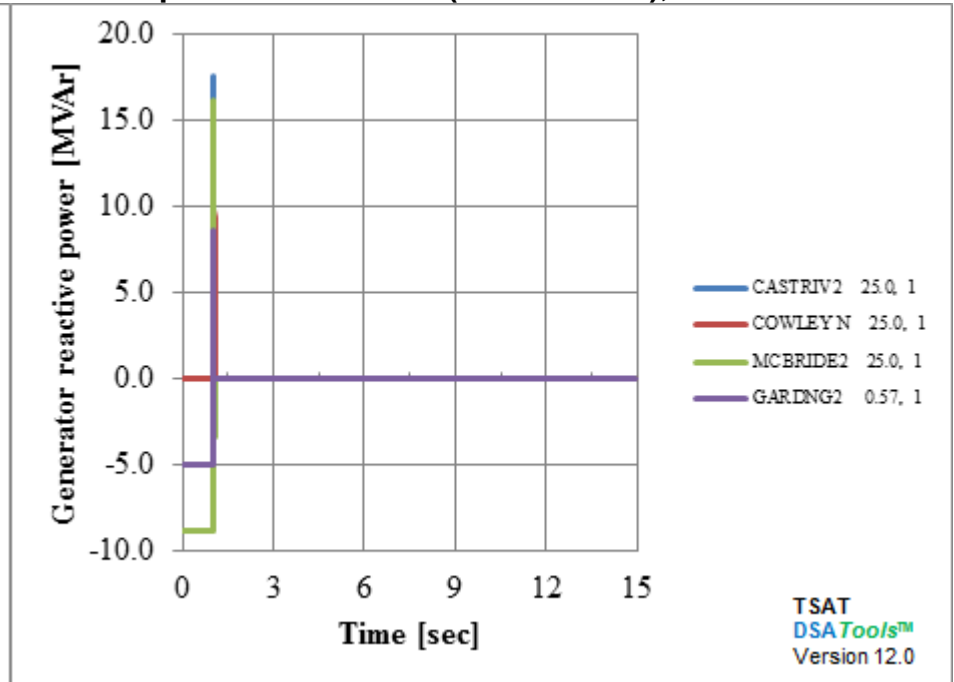
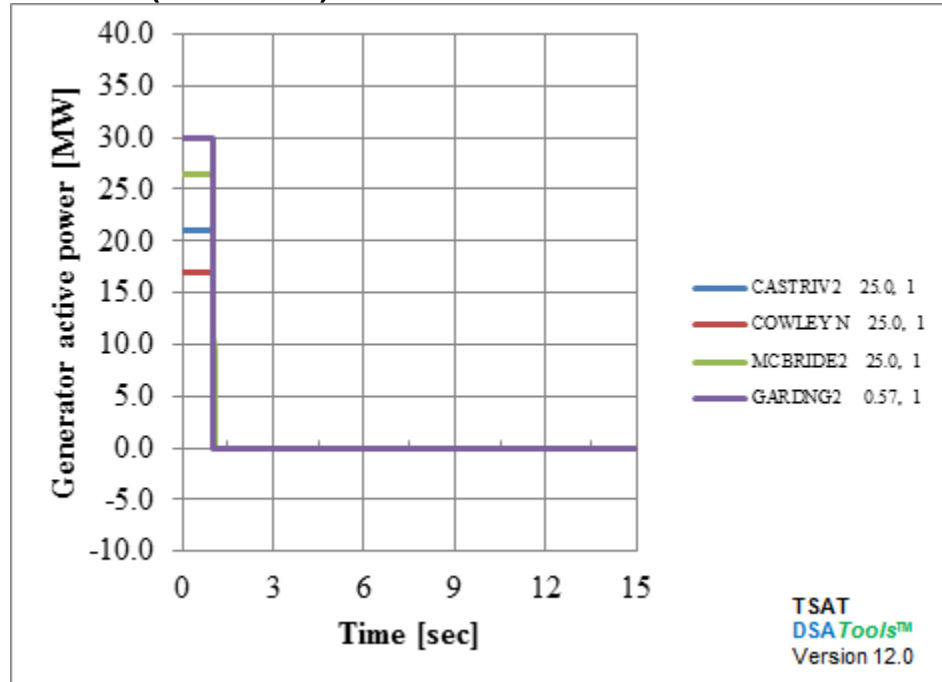
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



6 -- 956L (59S - 103S) NEAR 59S

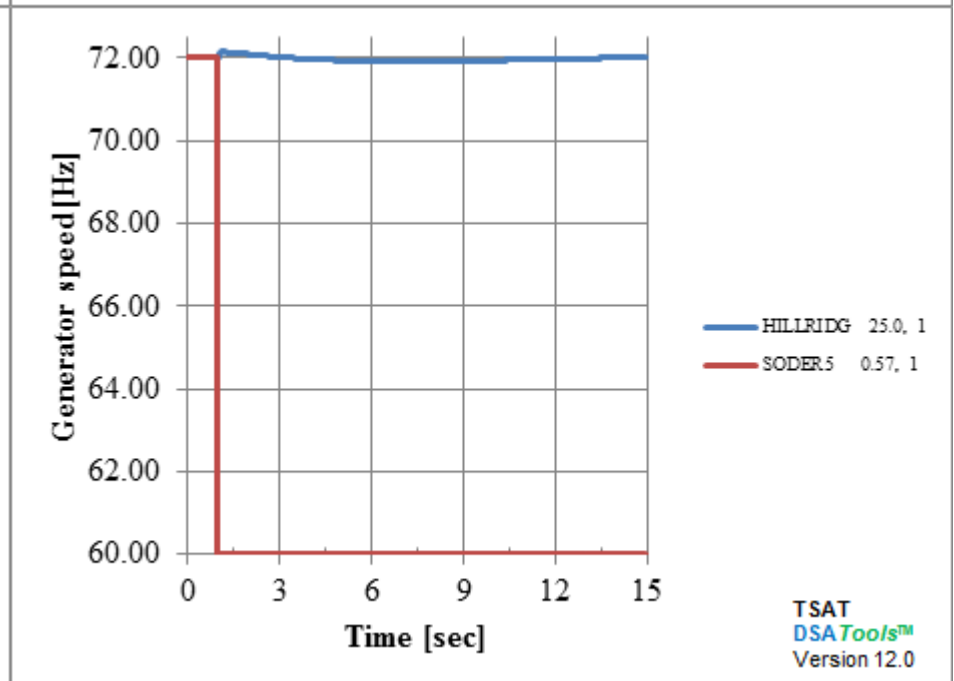
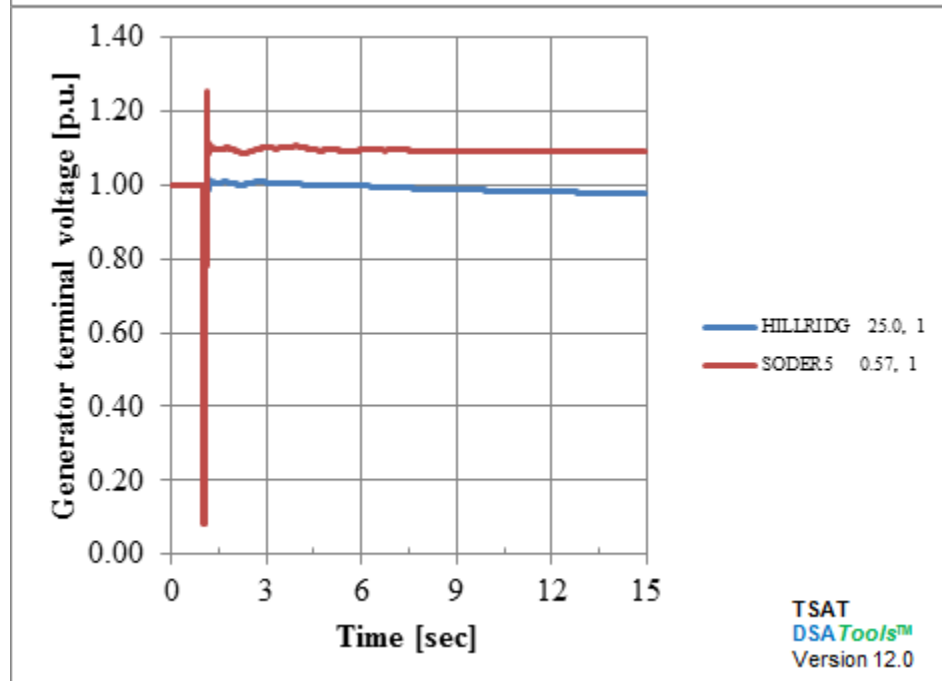
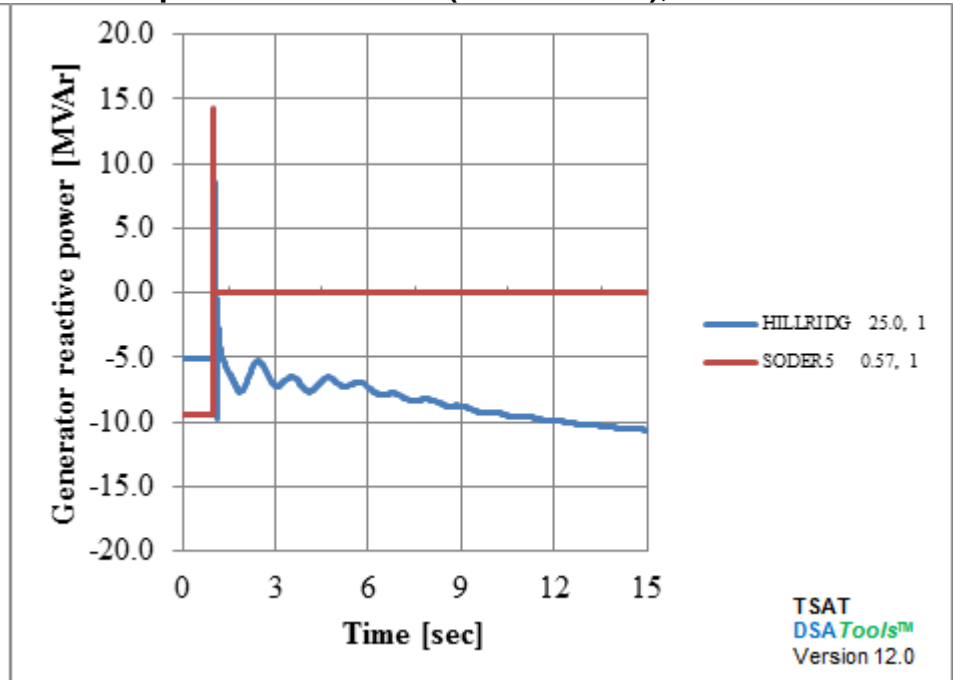
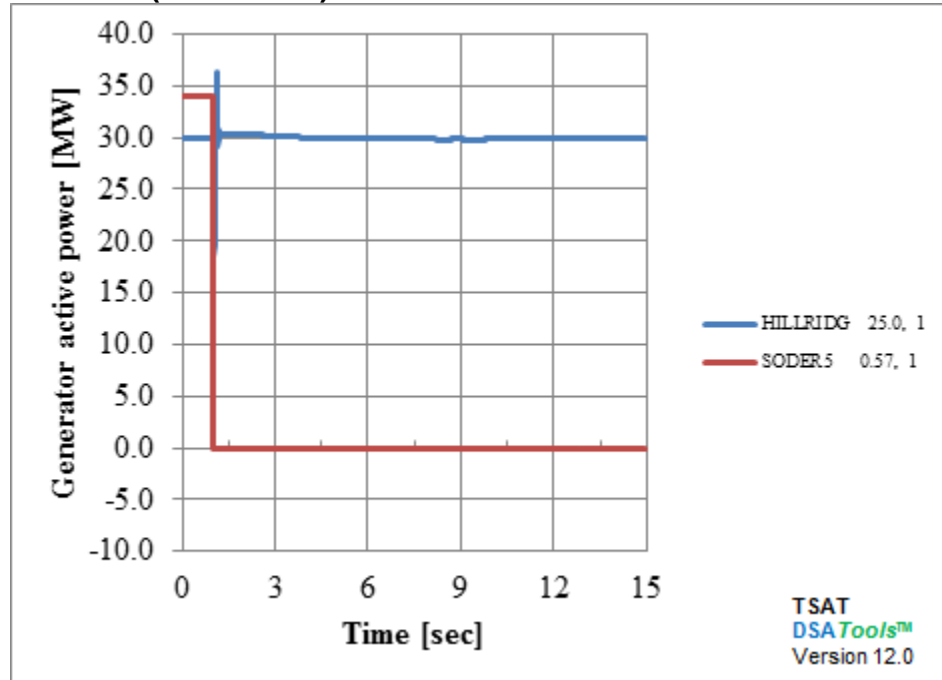
Proposed Connection (Alternative 2), Summer Peak 2017





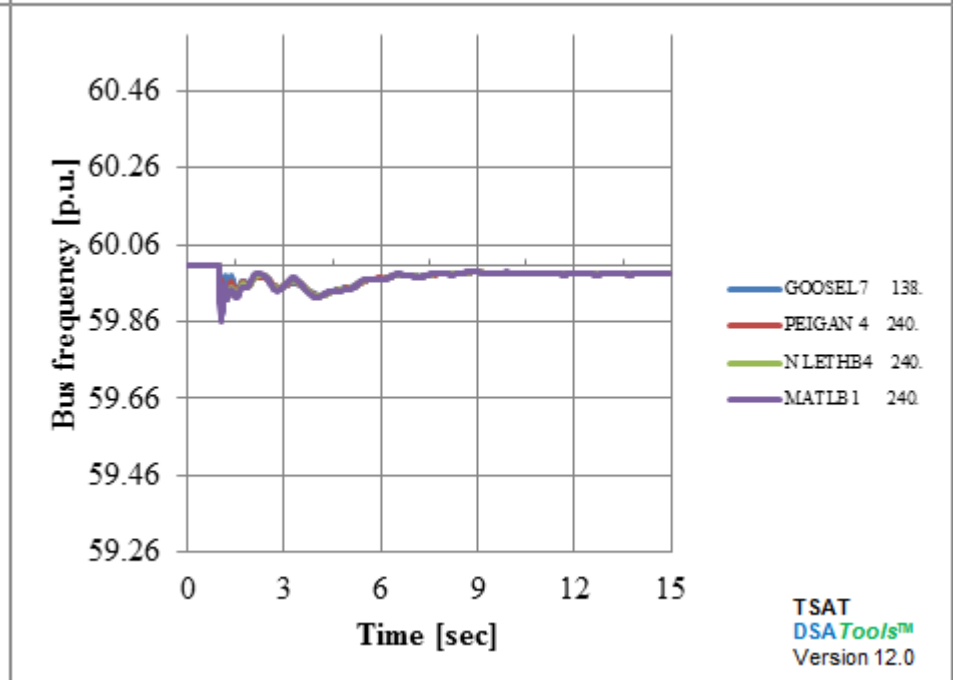
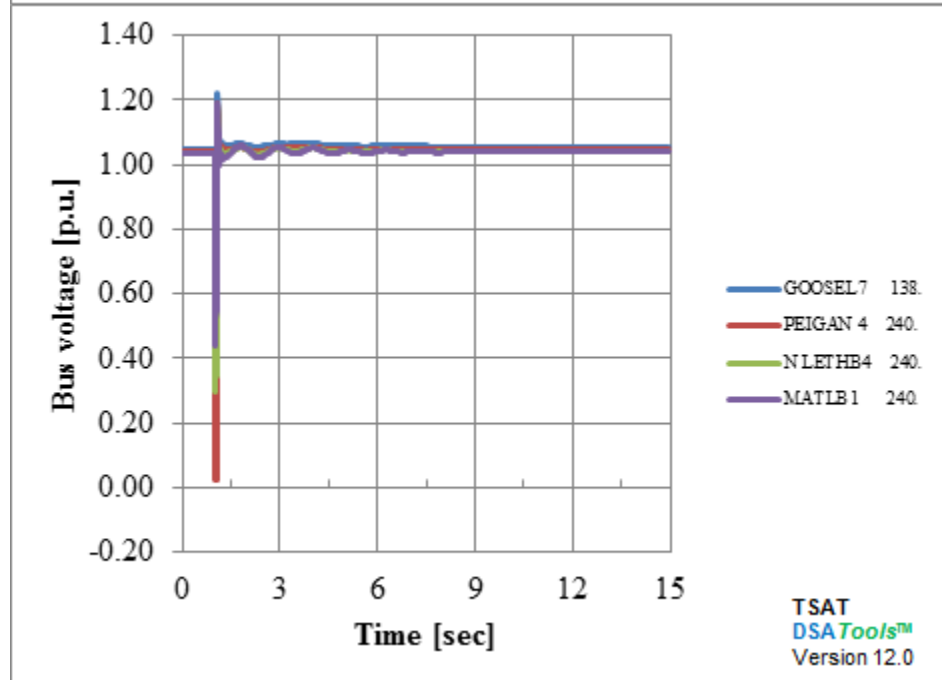
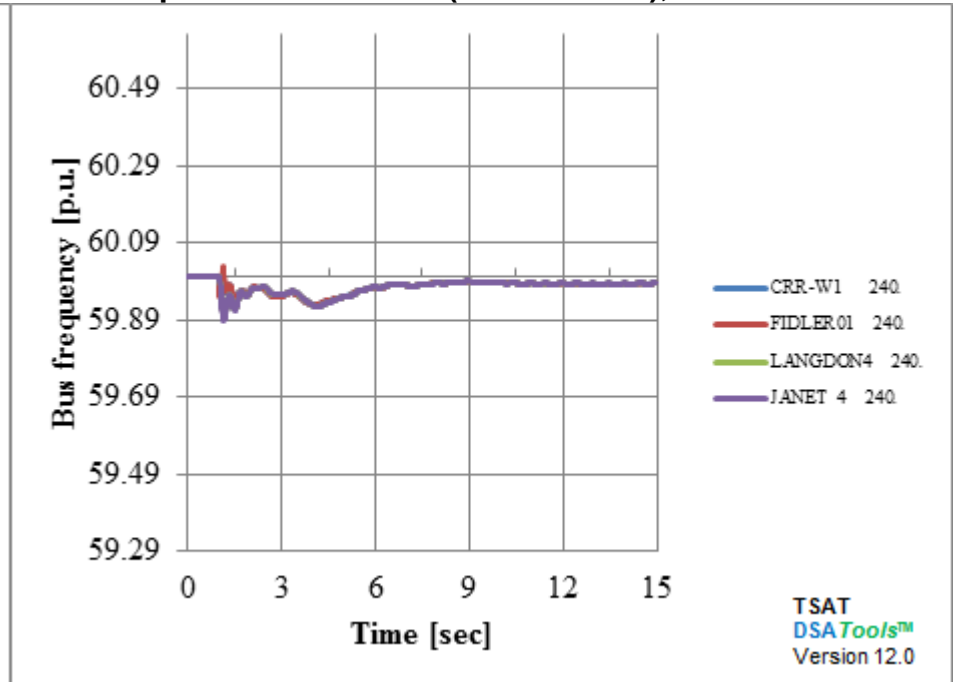
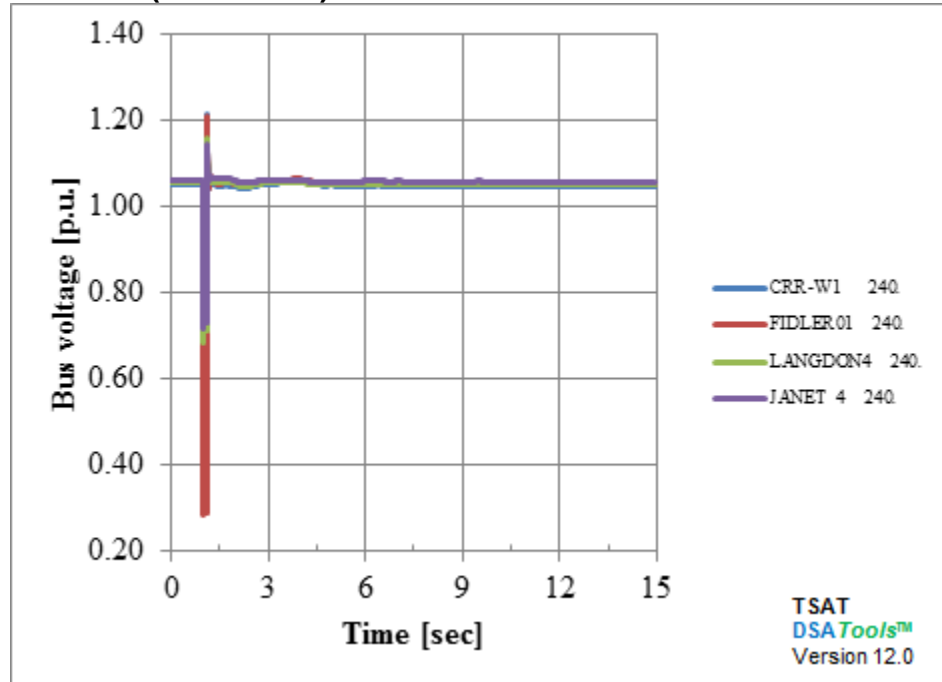
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



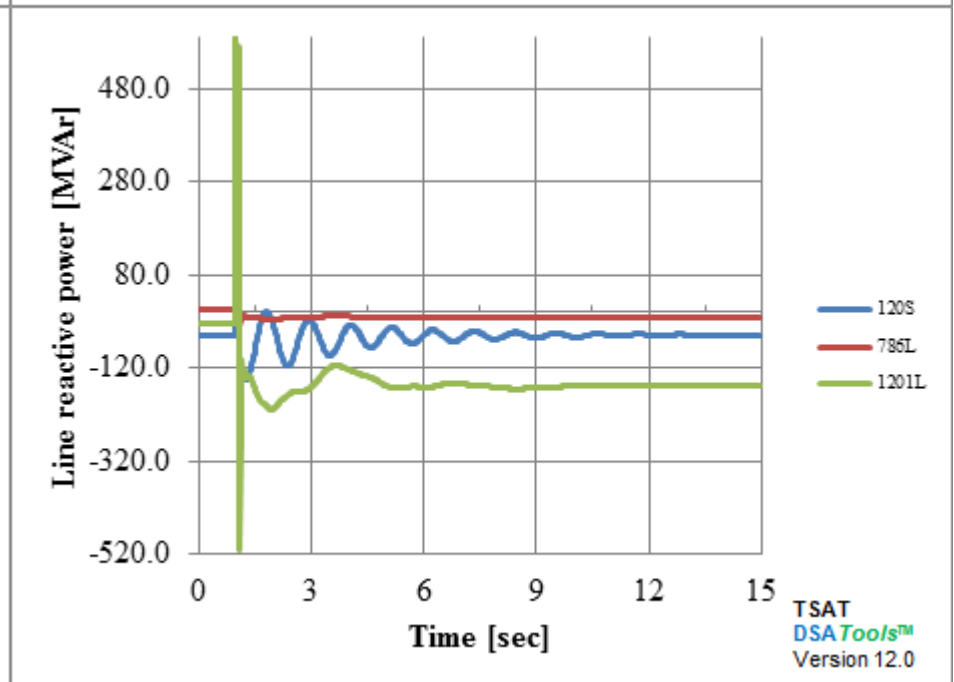
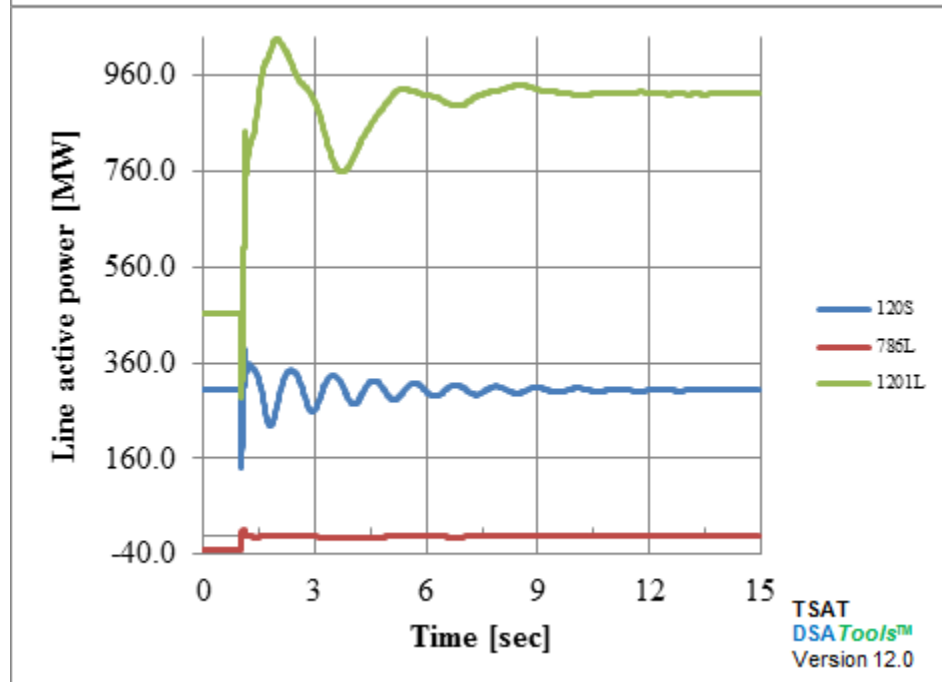
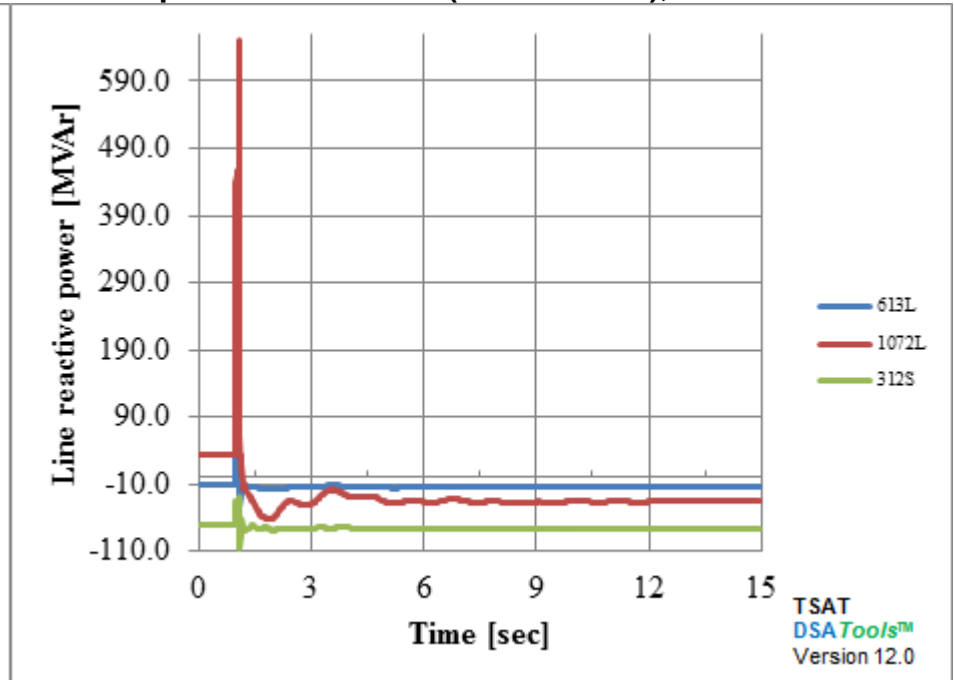
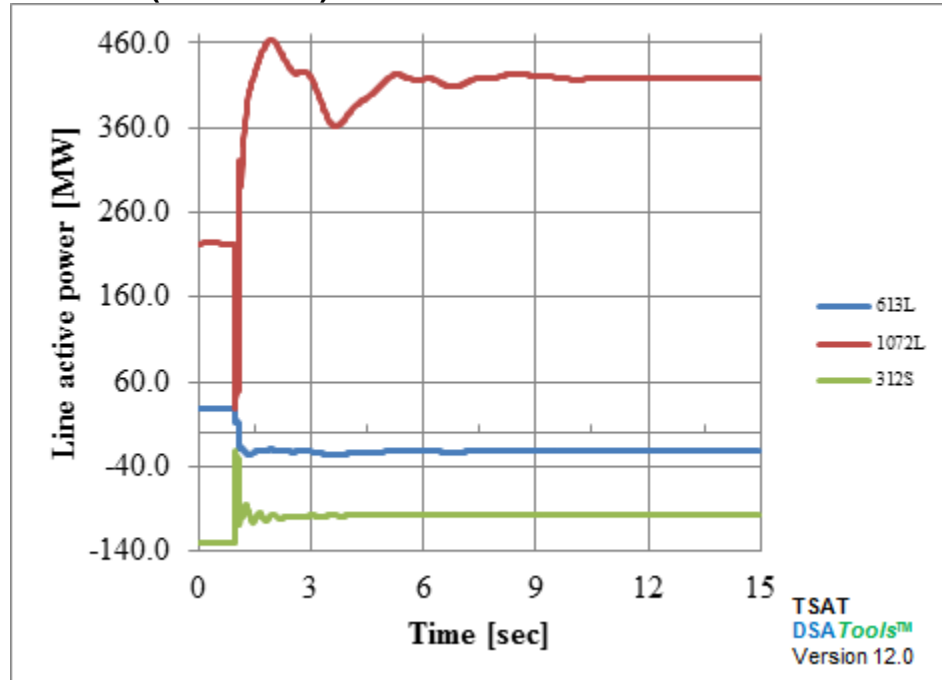
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



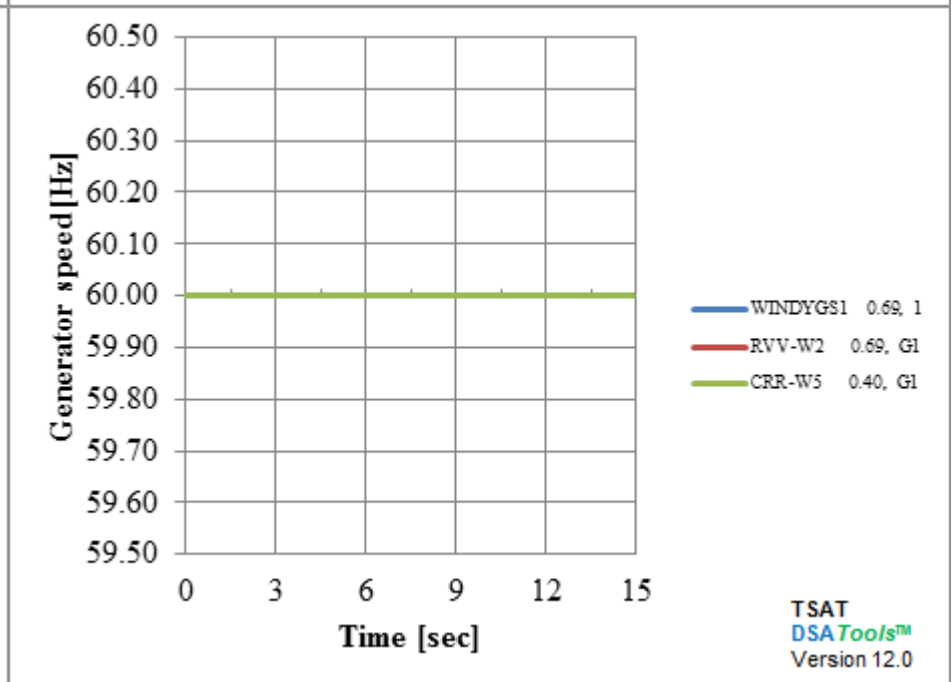
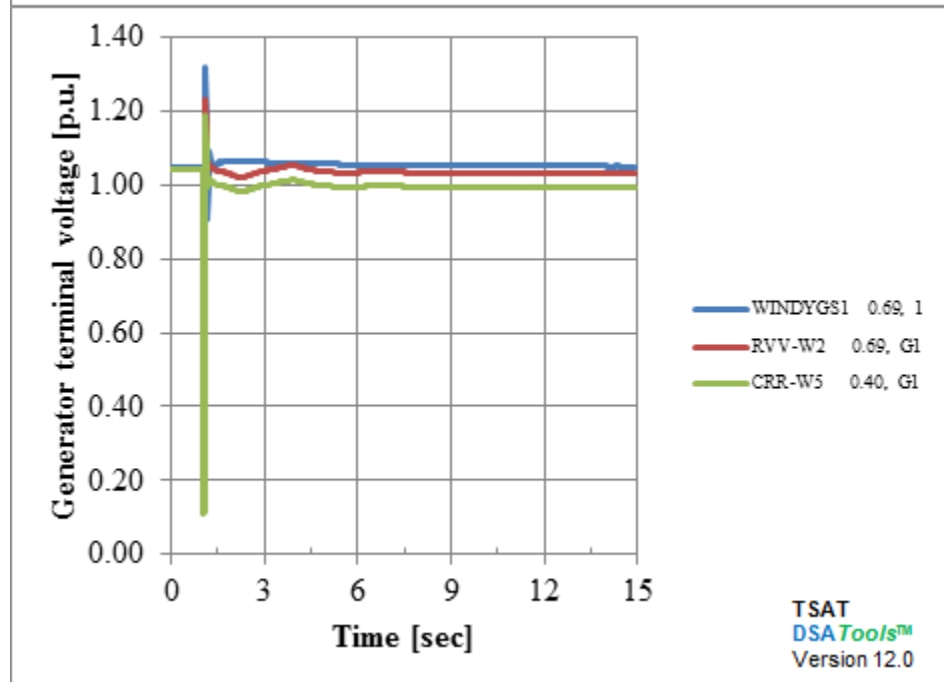
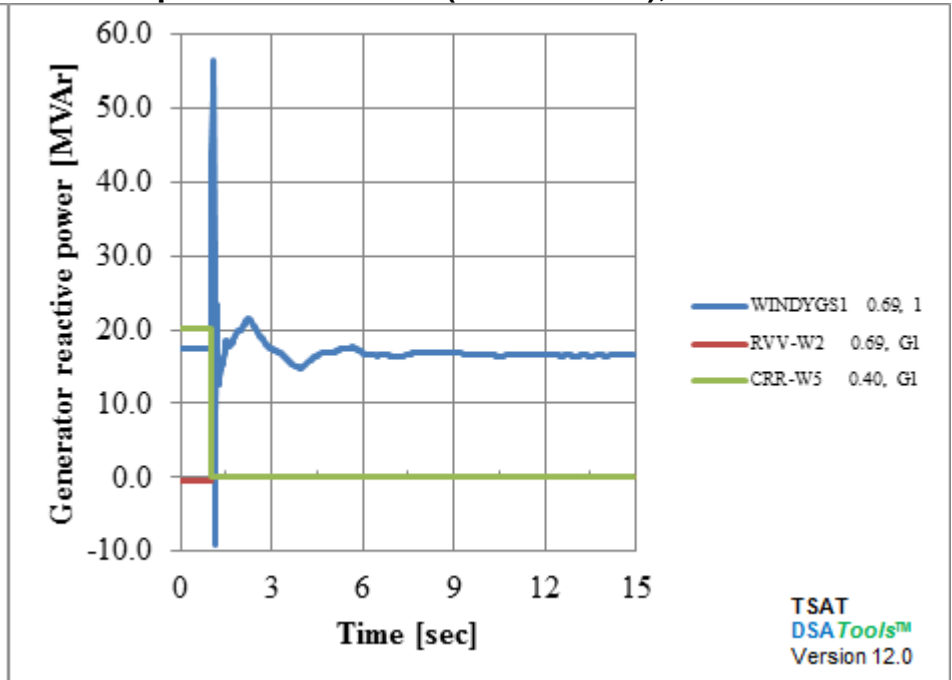
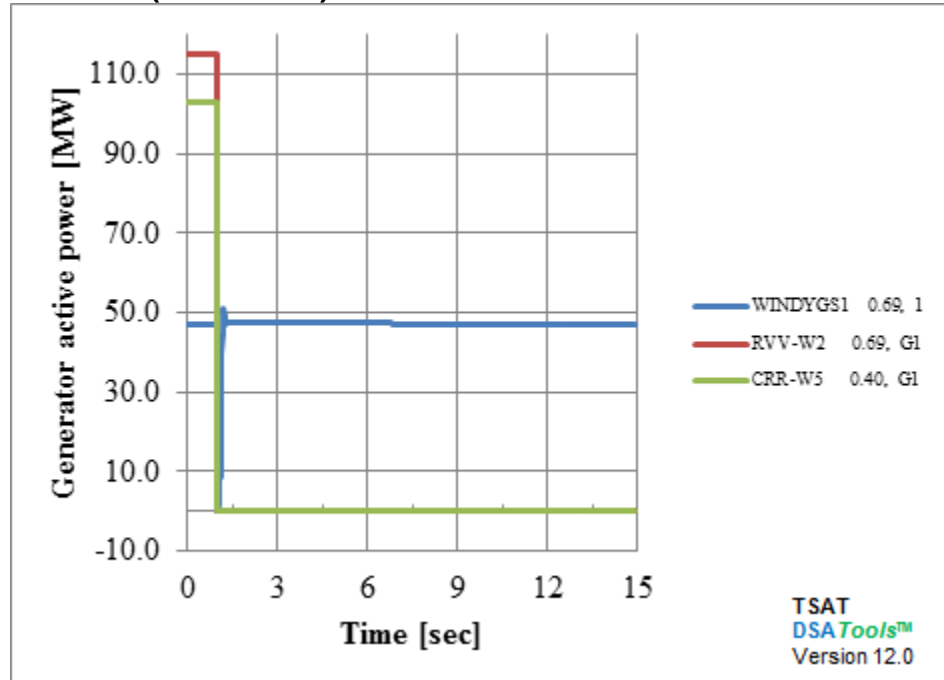
6 -- 956L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



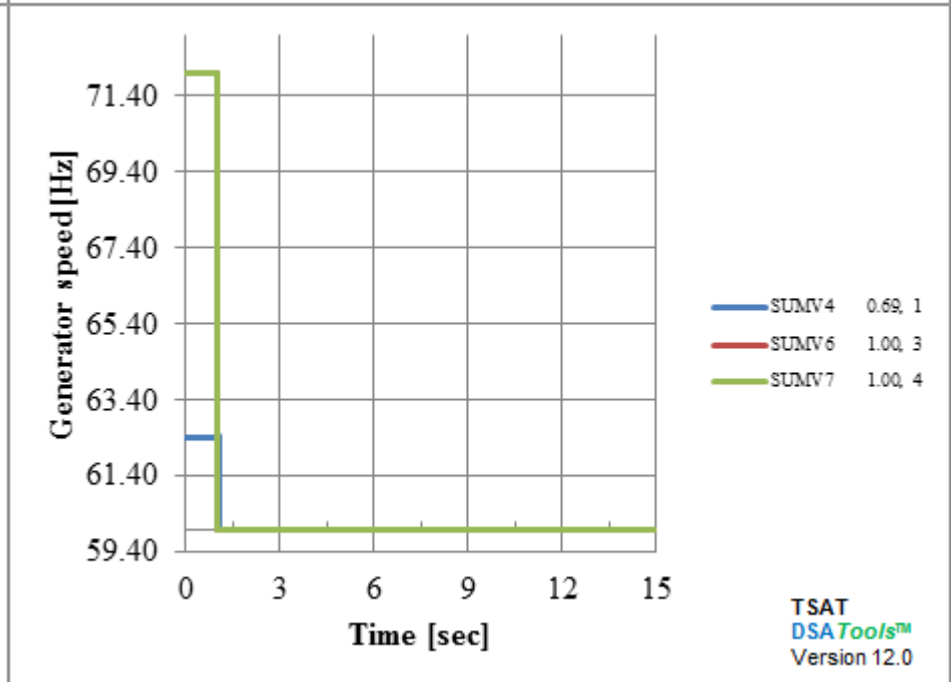
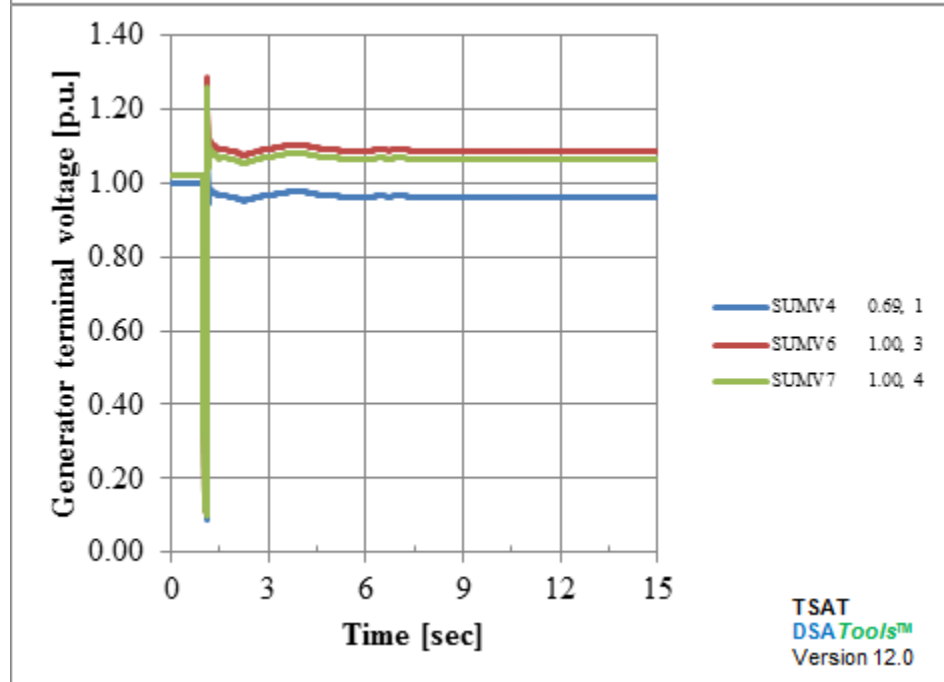
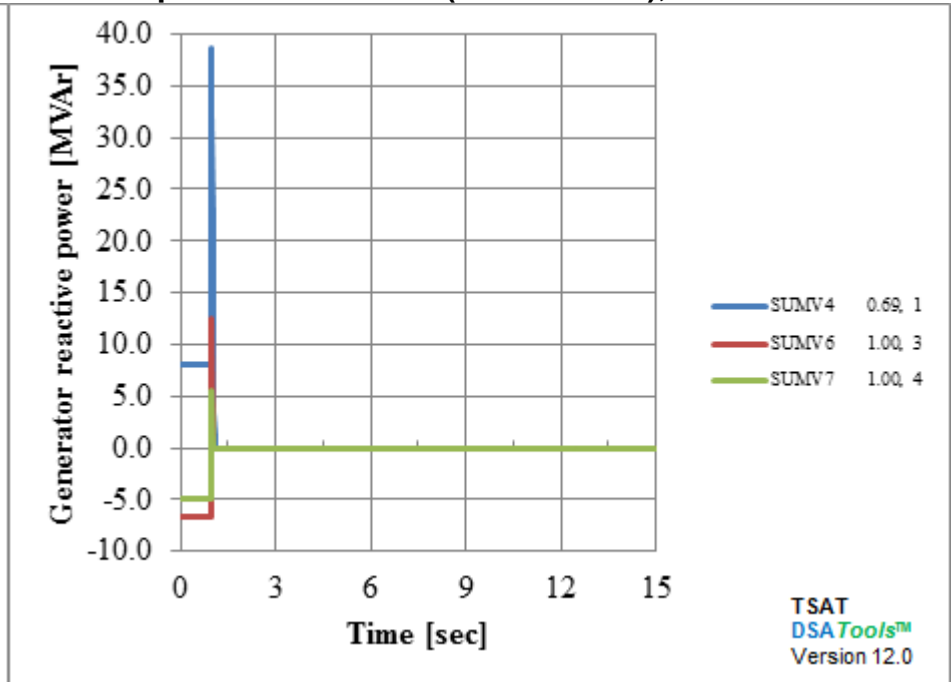
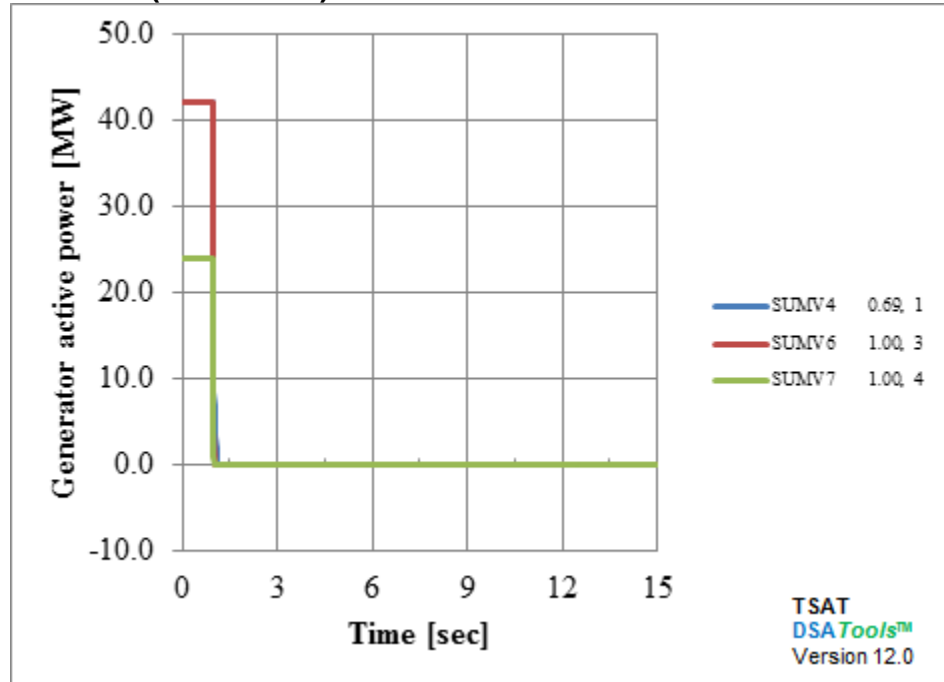
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



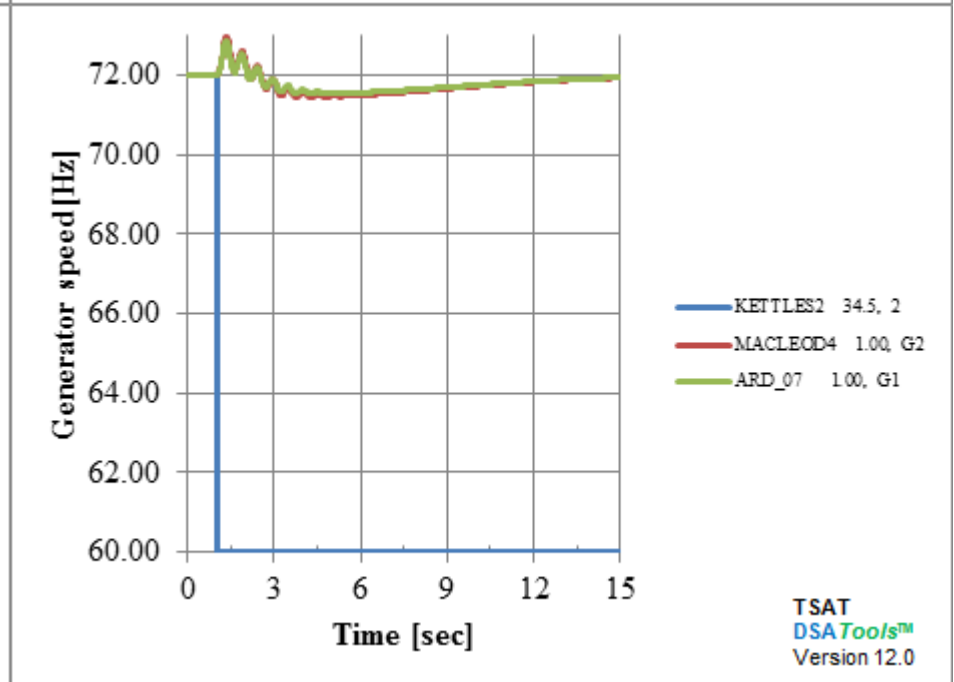
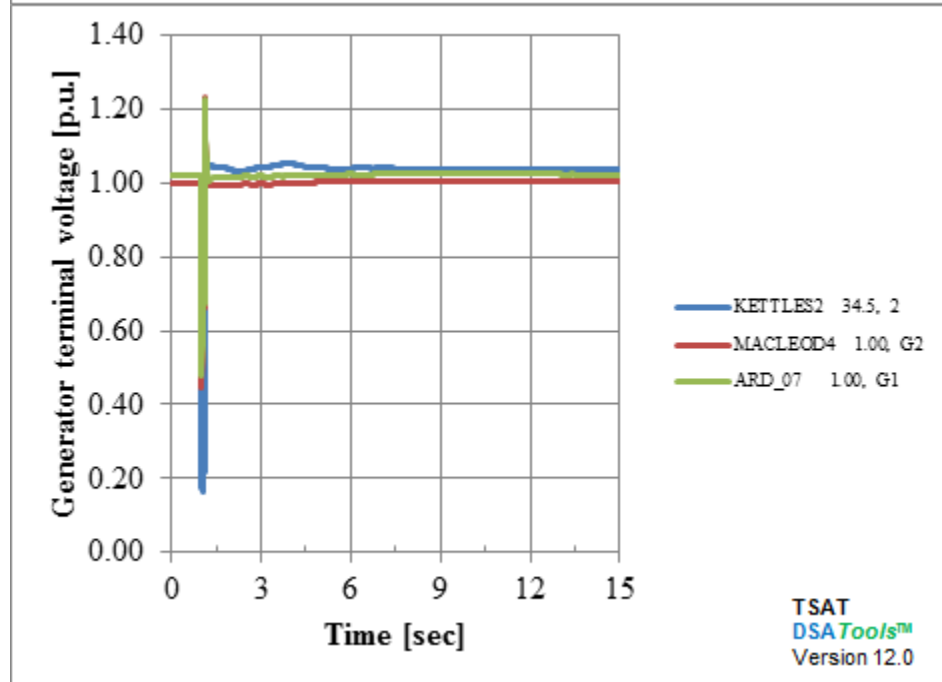
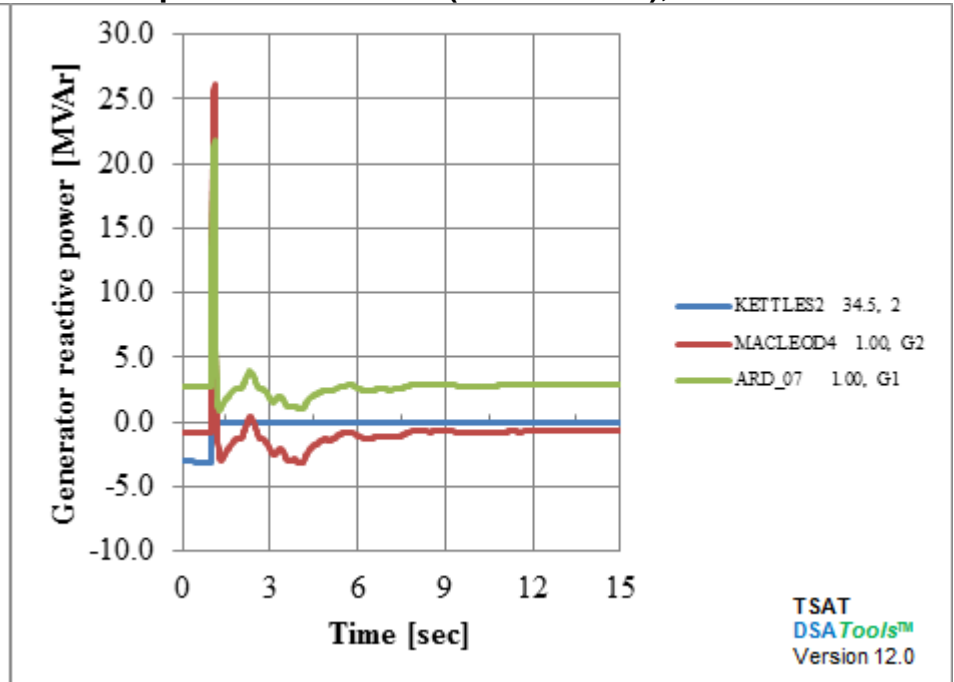
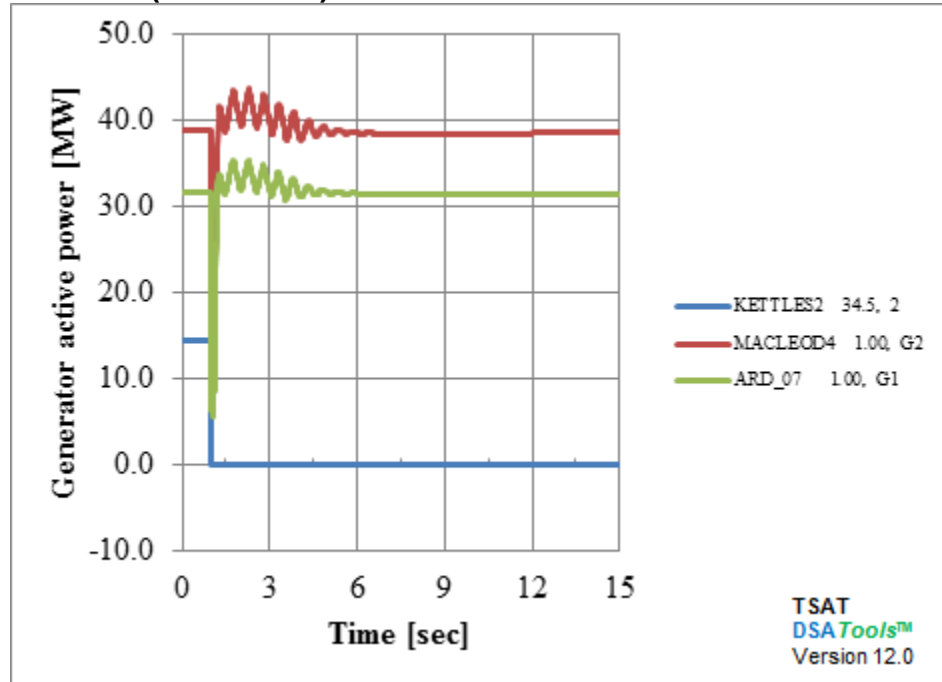
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



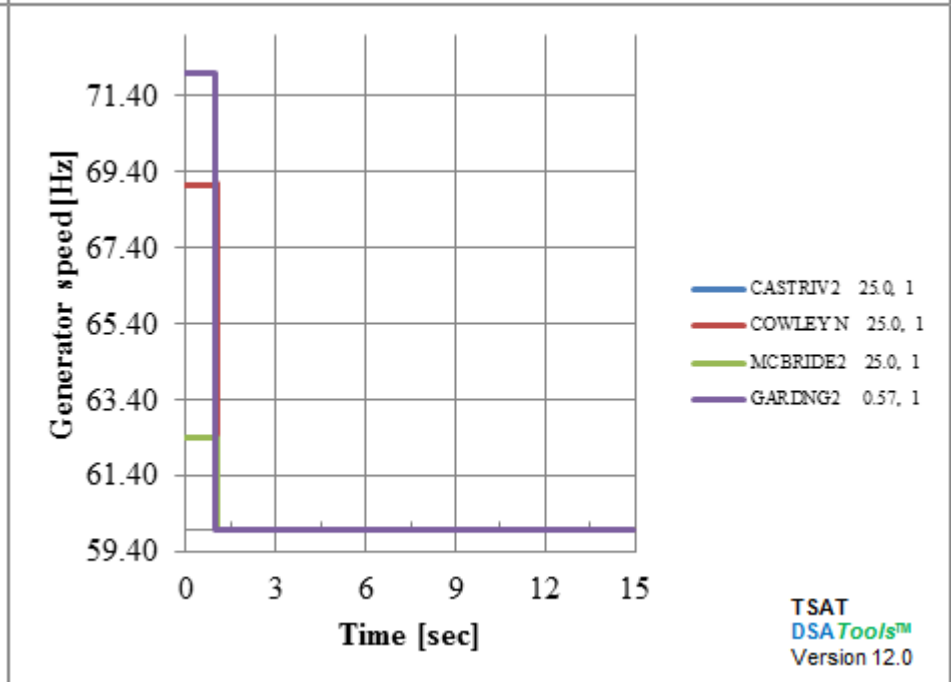
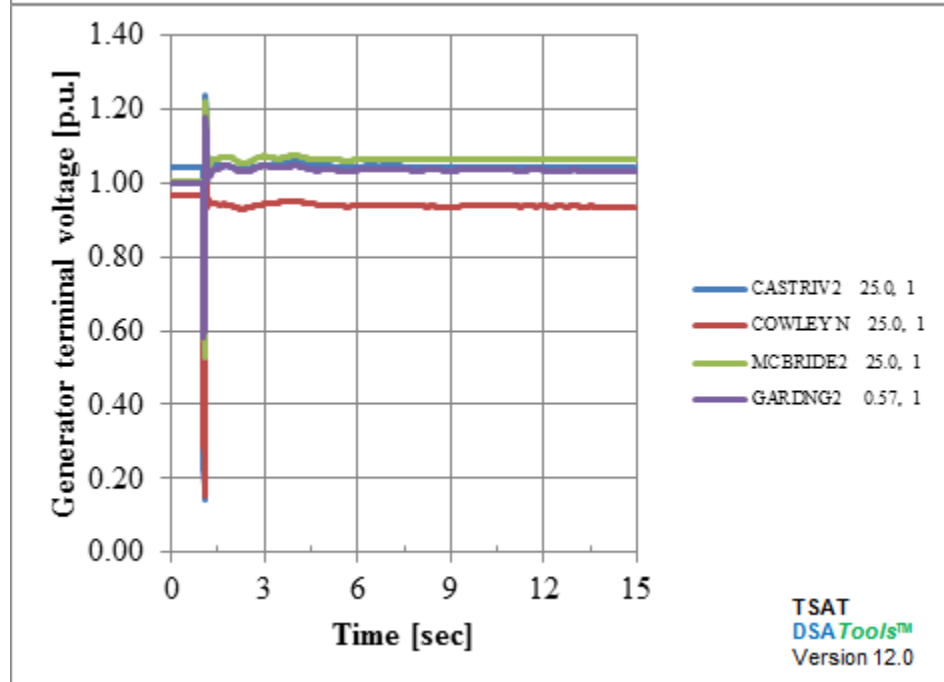
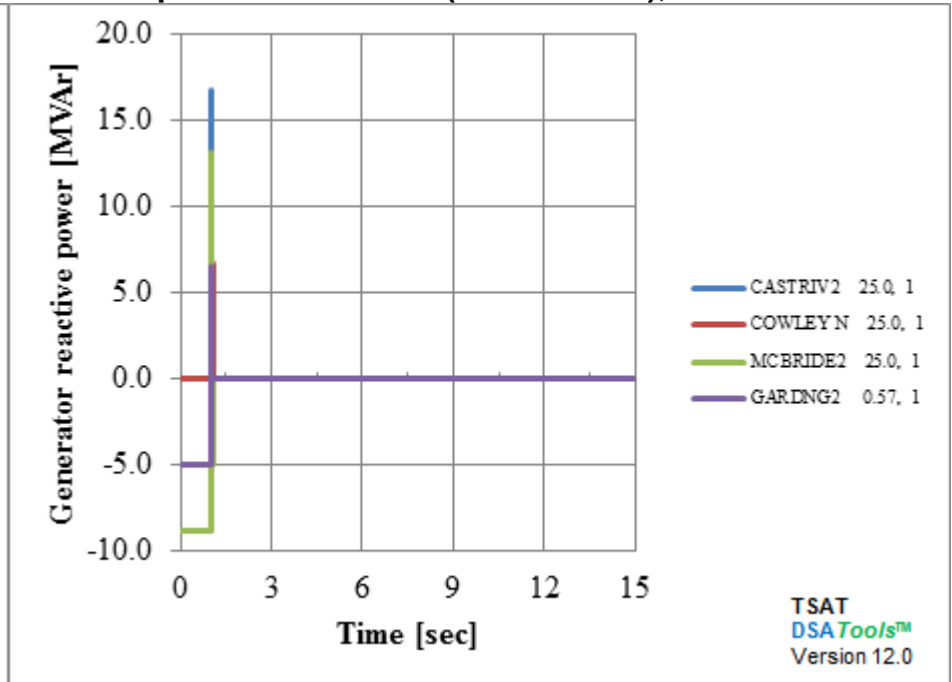
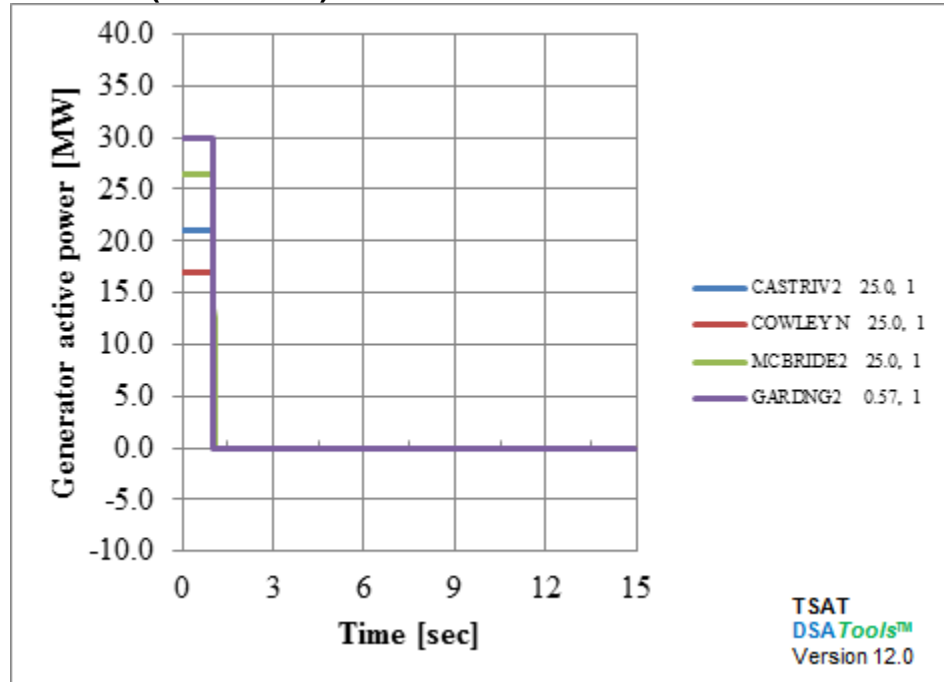
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



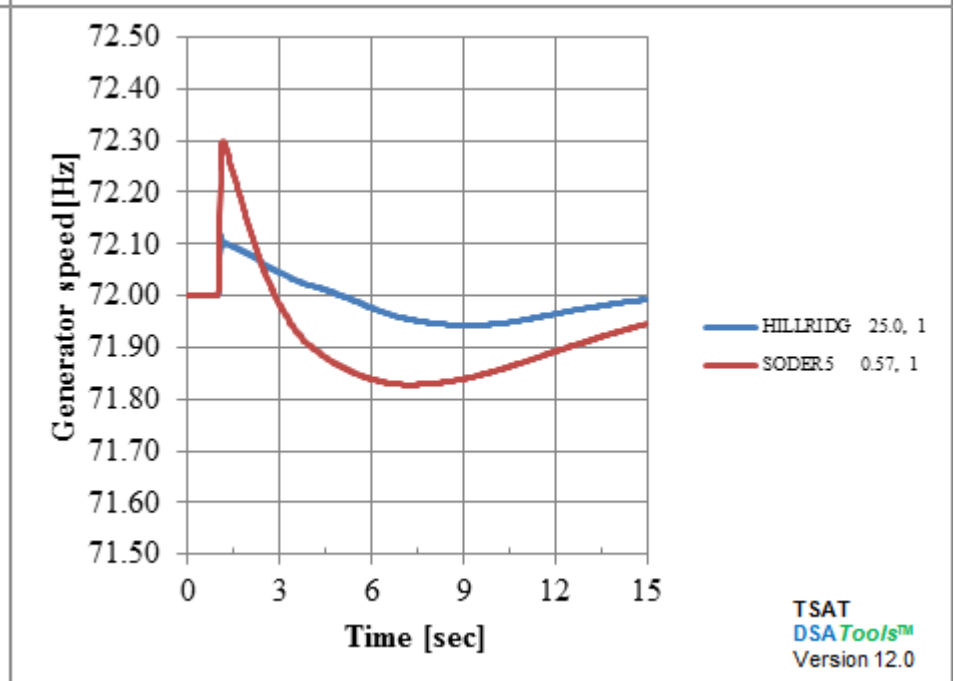
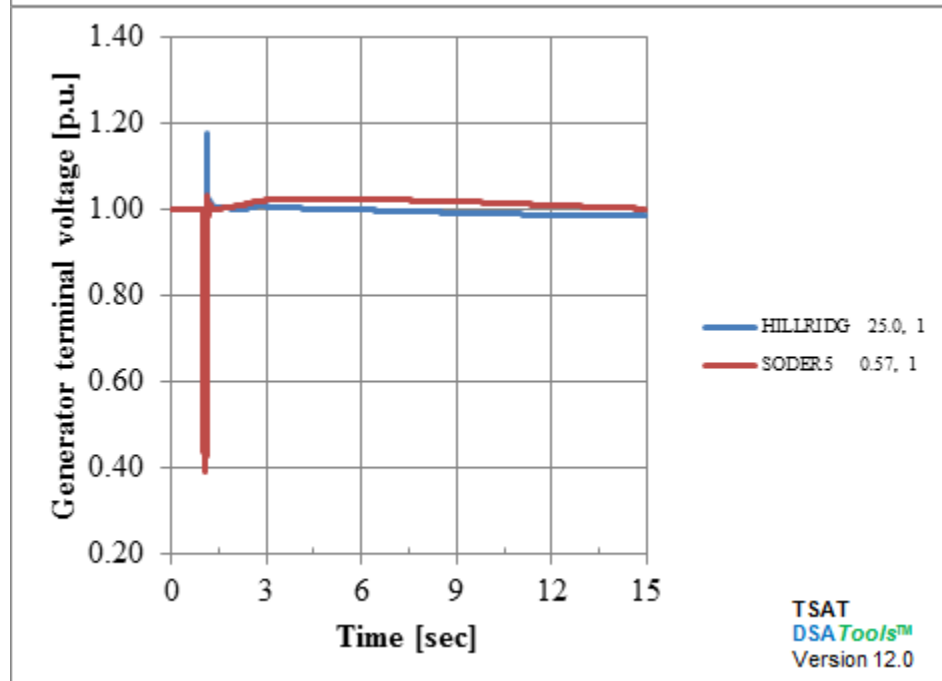
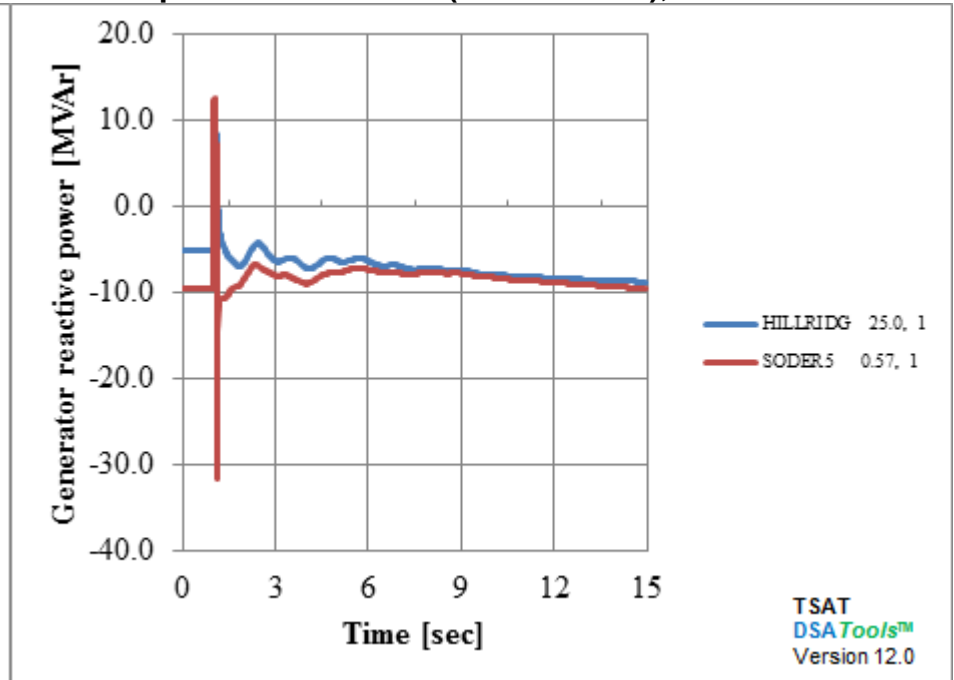
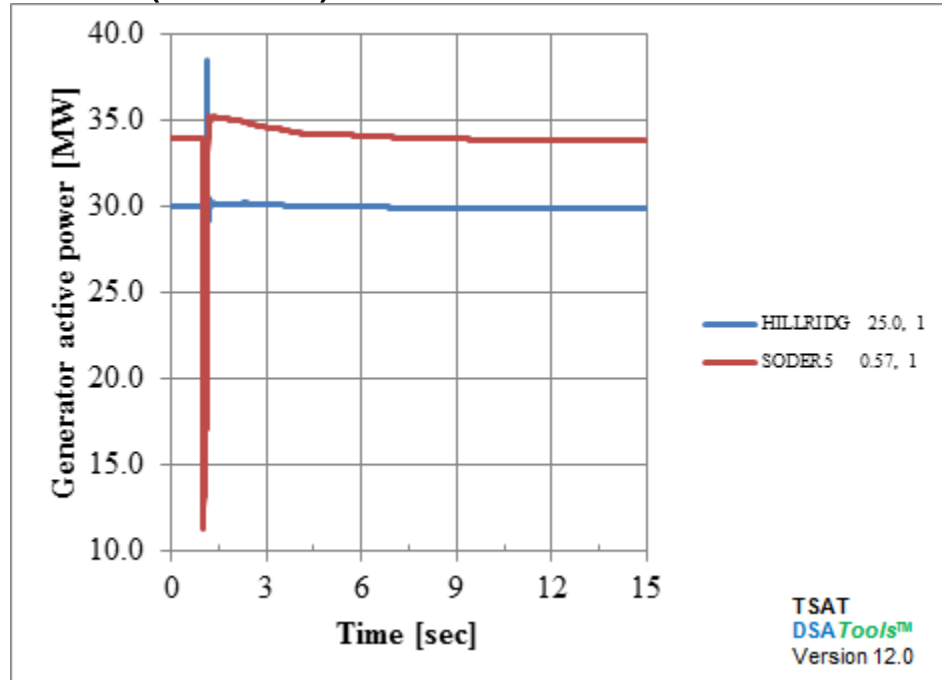
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



7 -- 956L (59S - 103S) NEAR 103S

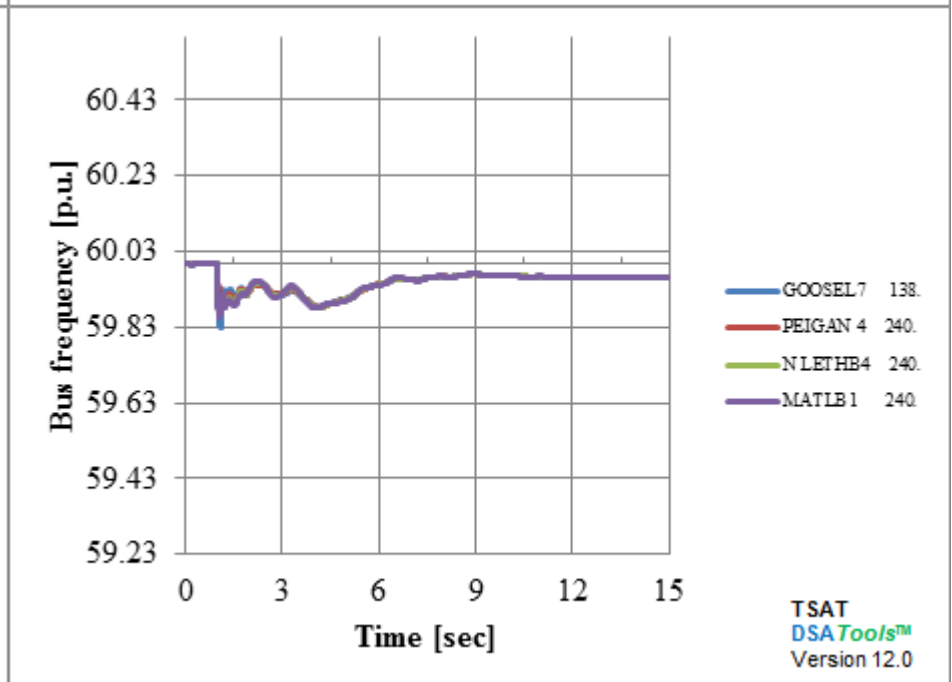
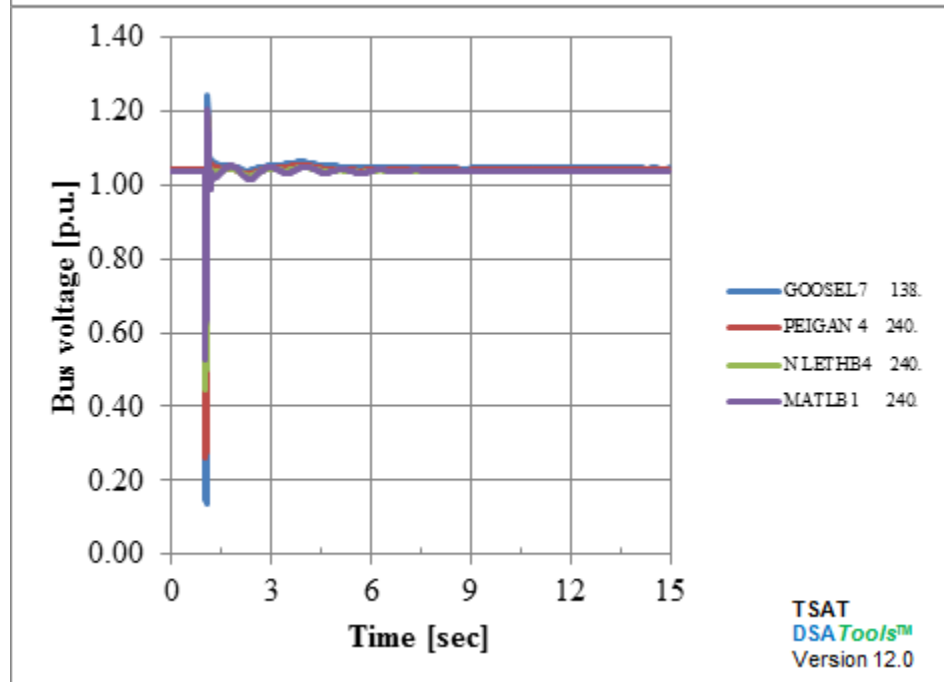
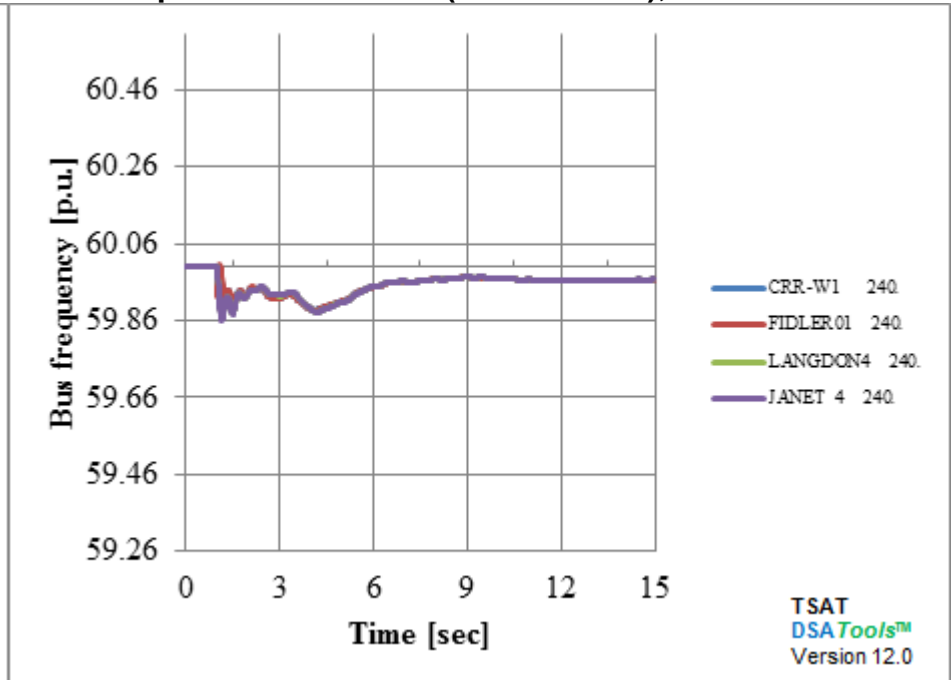
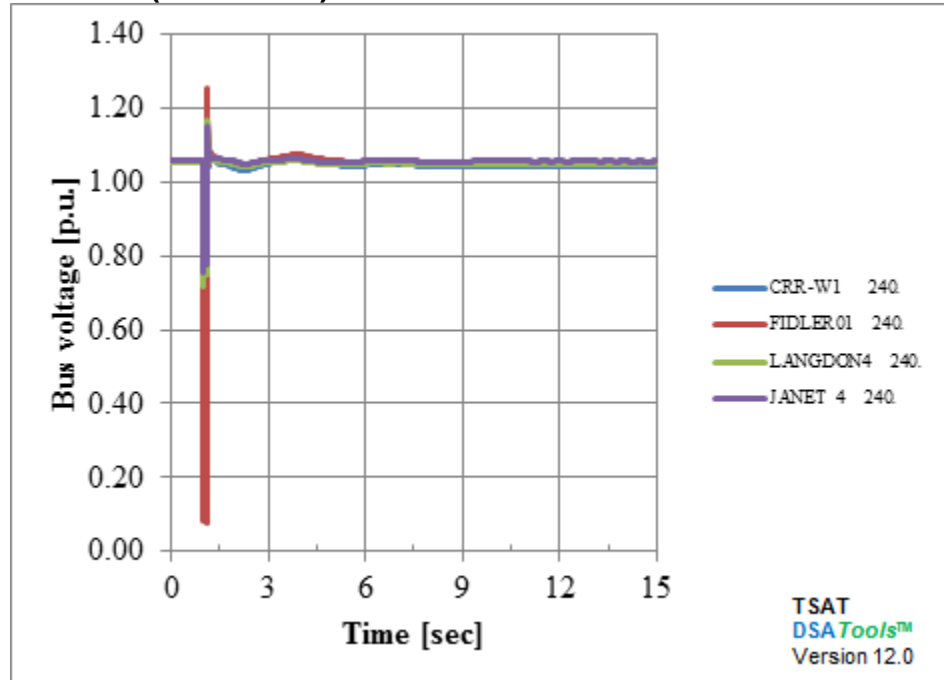
Proposed Connection (Alternative 2), Summer Peak 2017





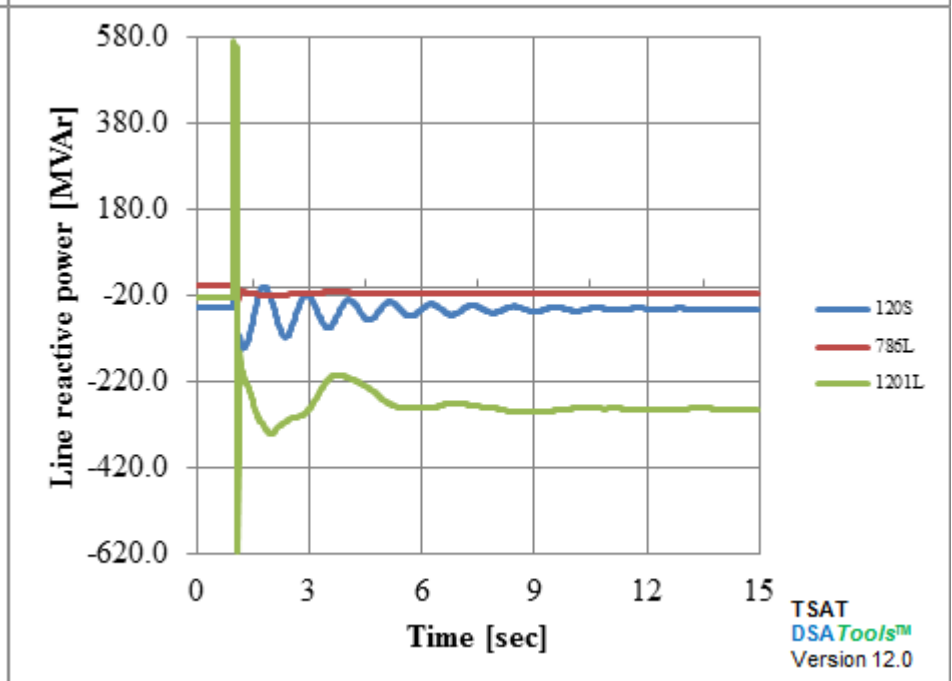
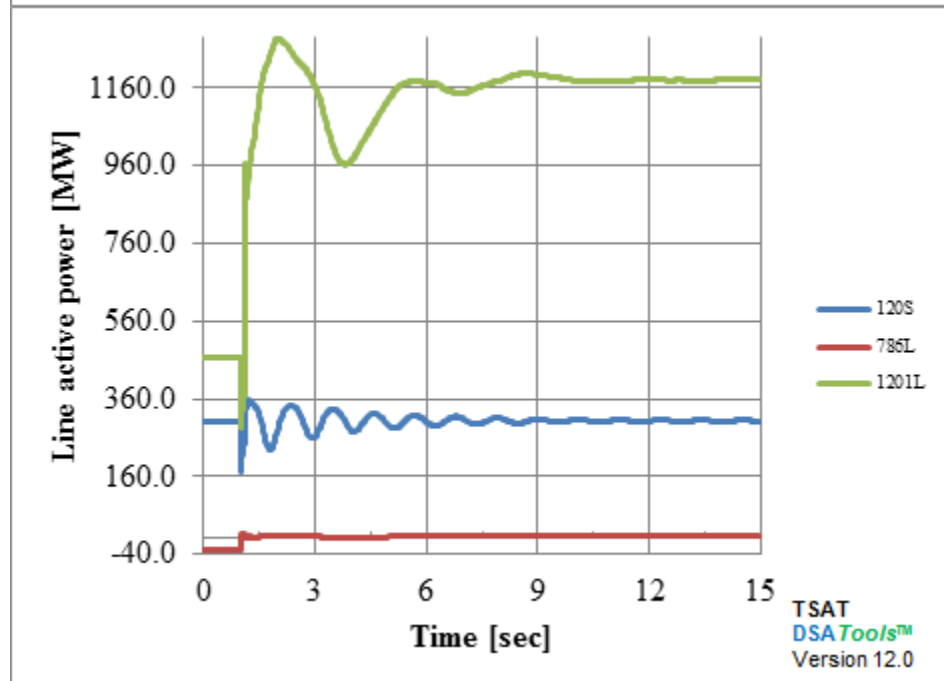
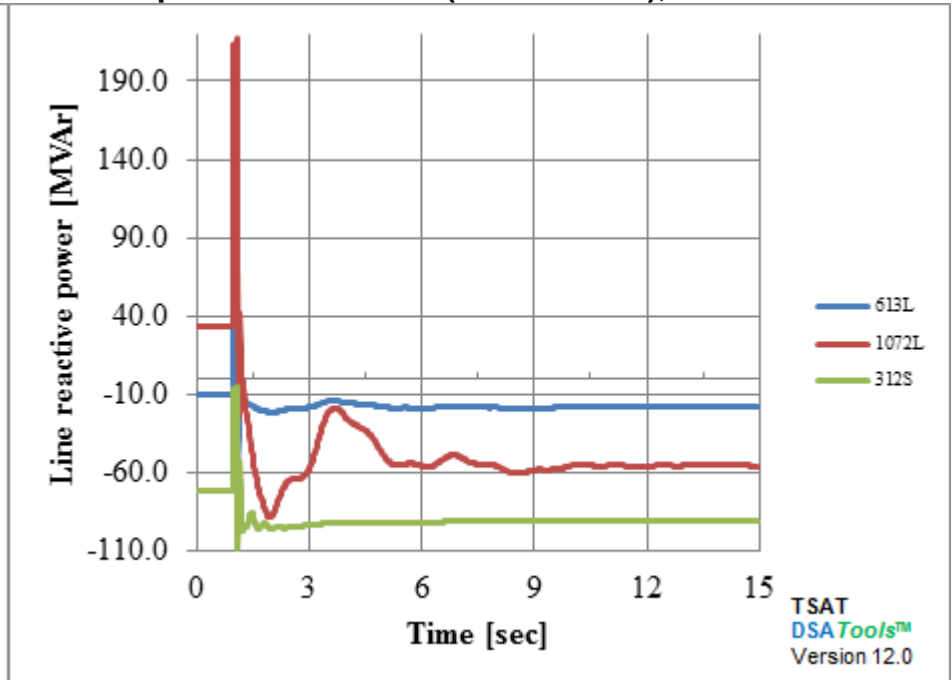
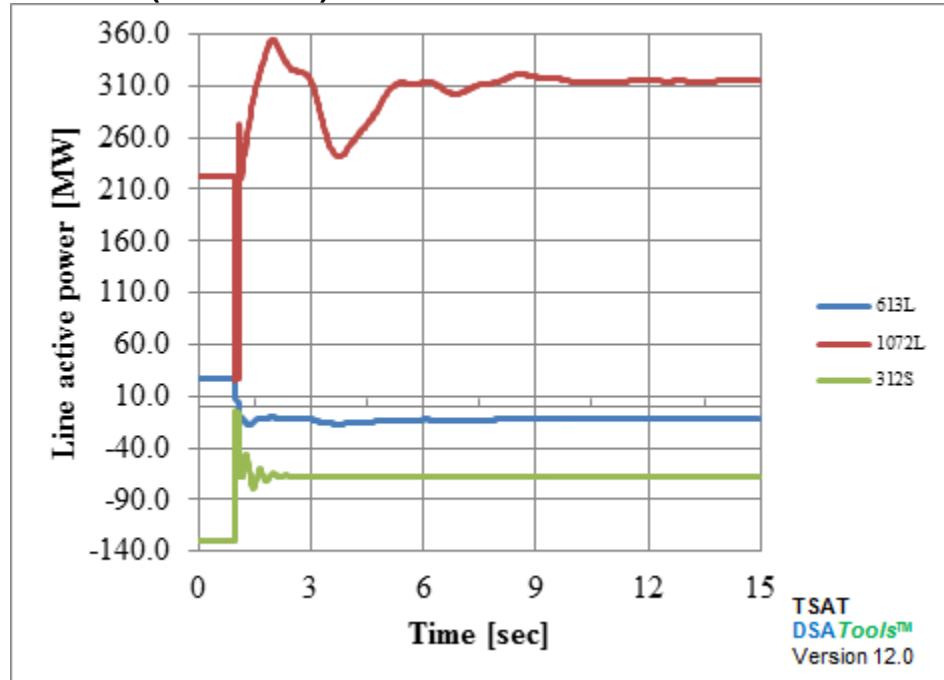
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



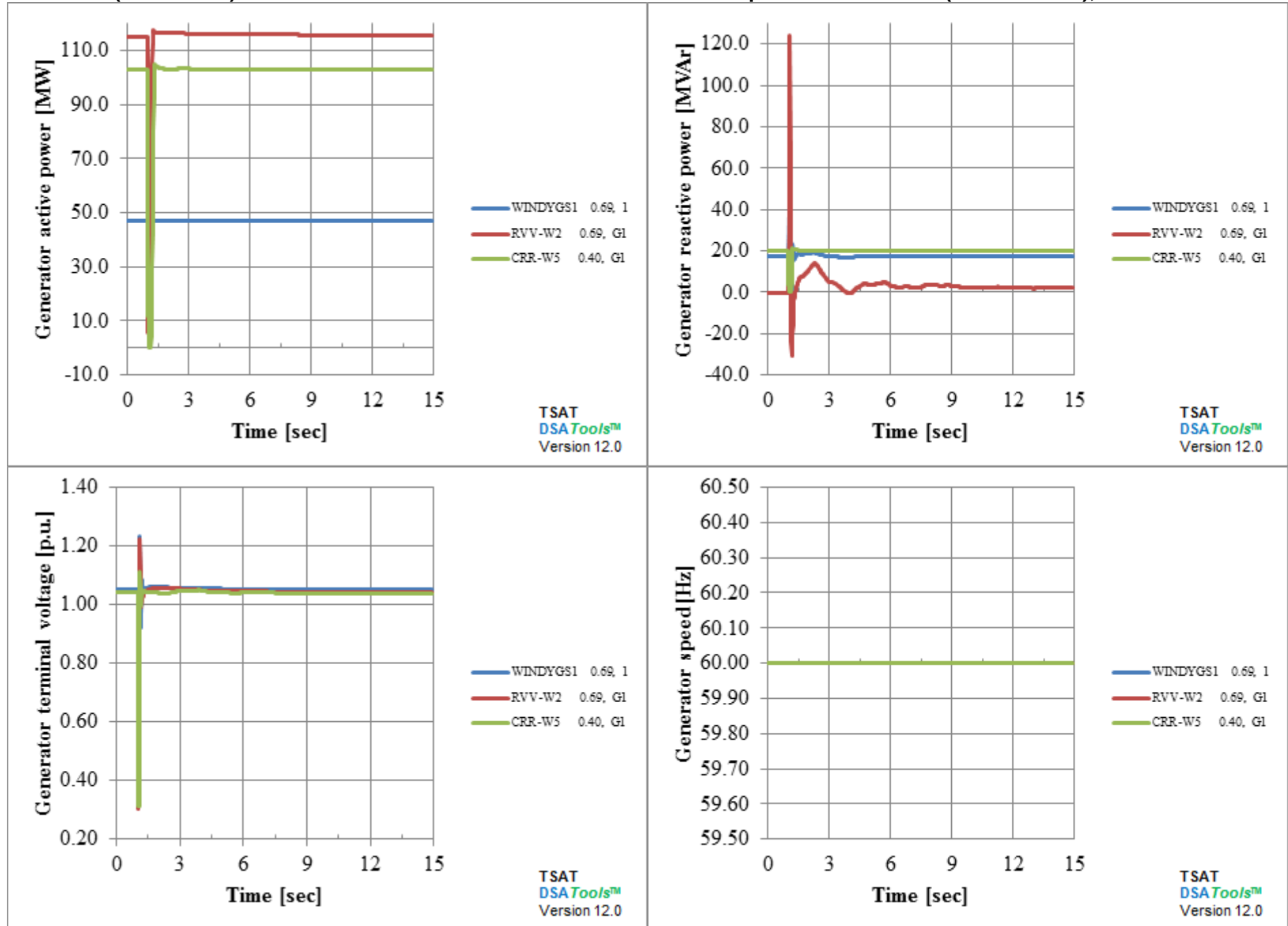
7 -- 956L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



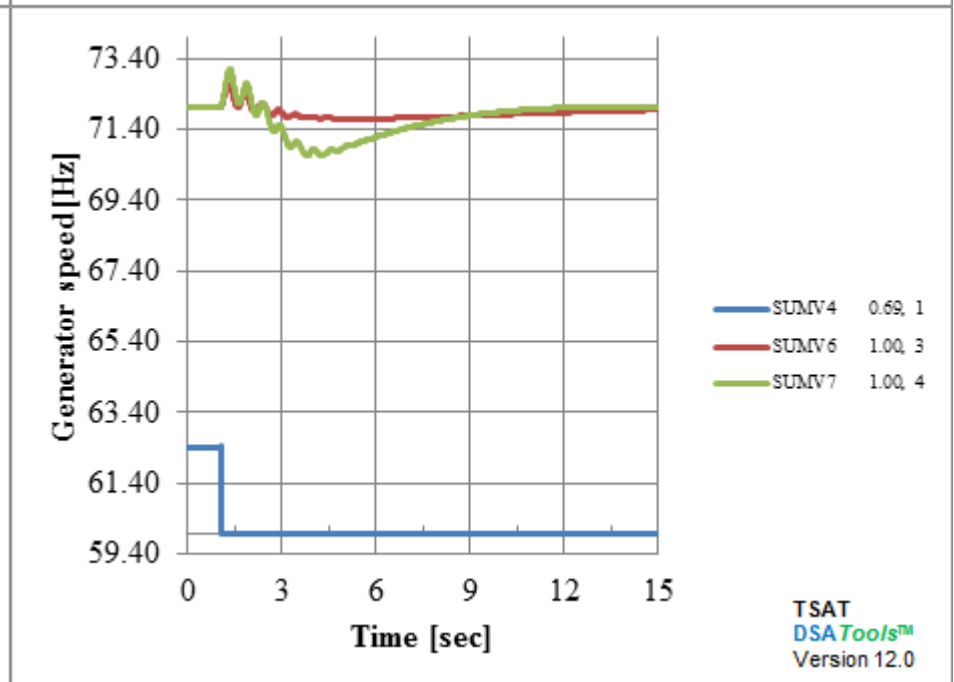
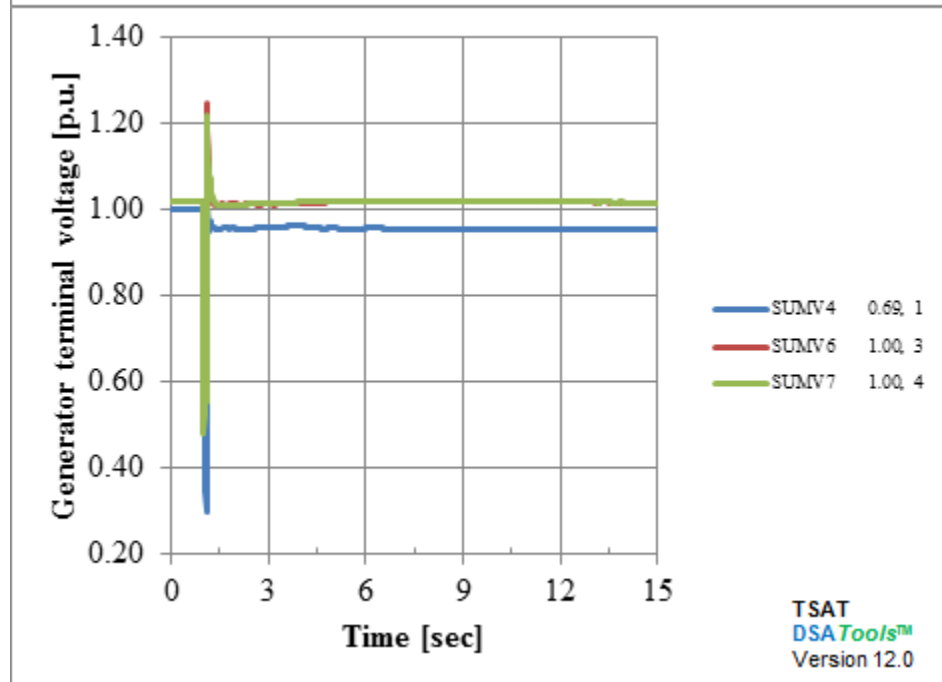
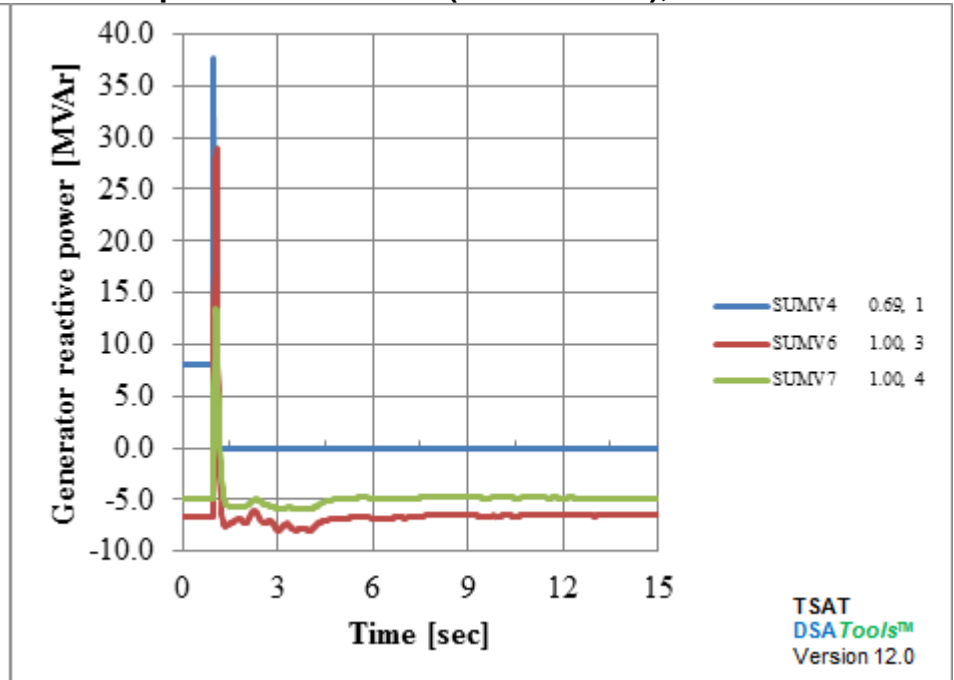
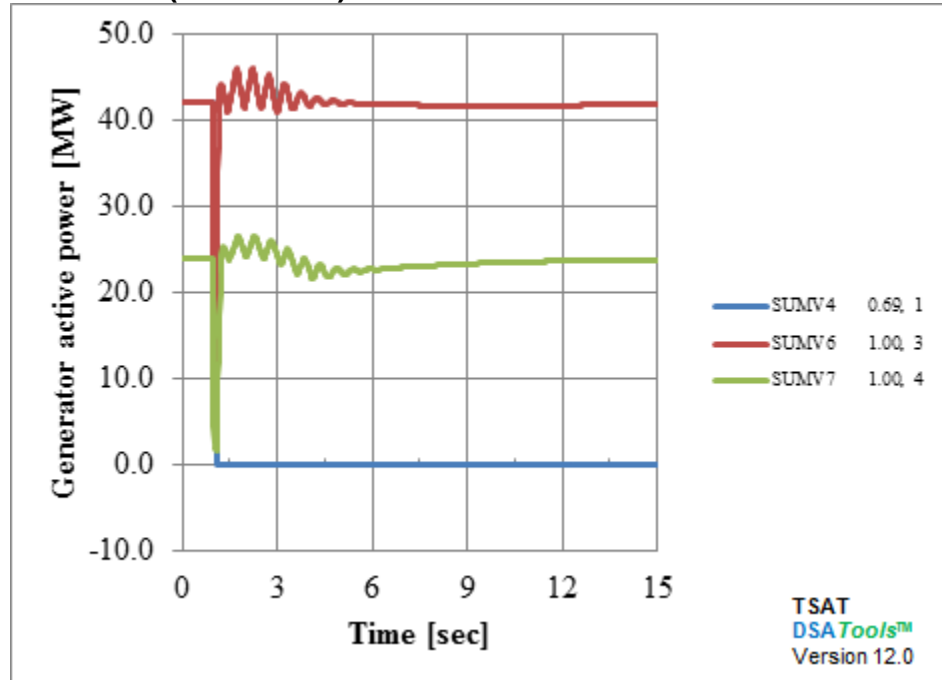
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



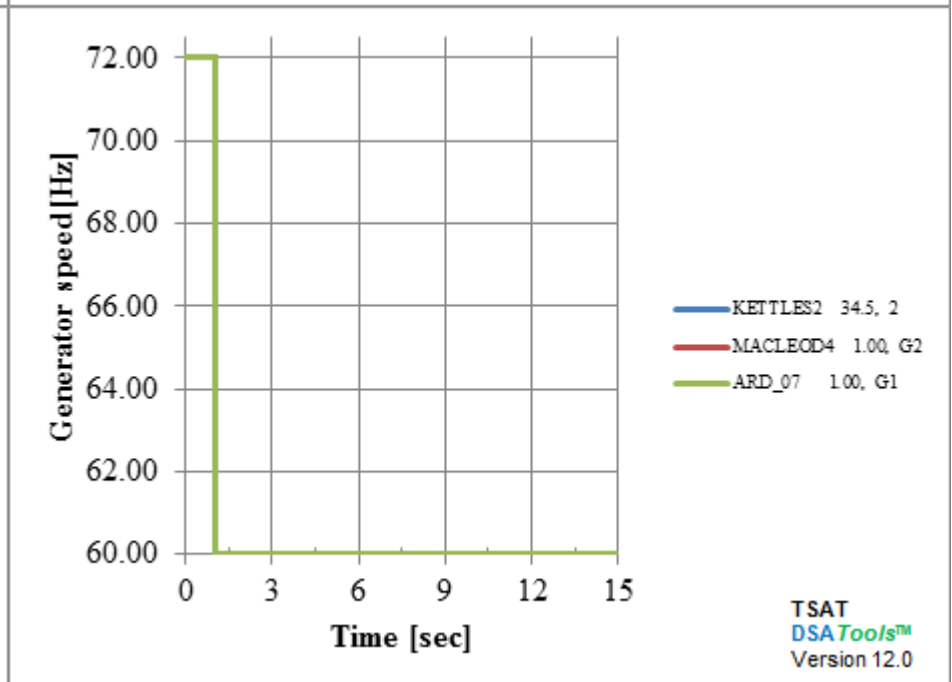
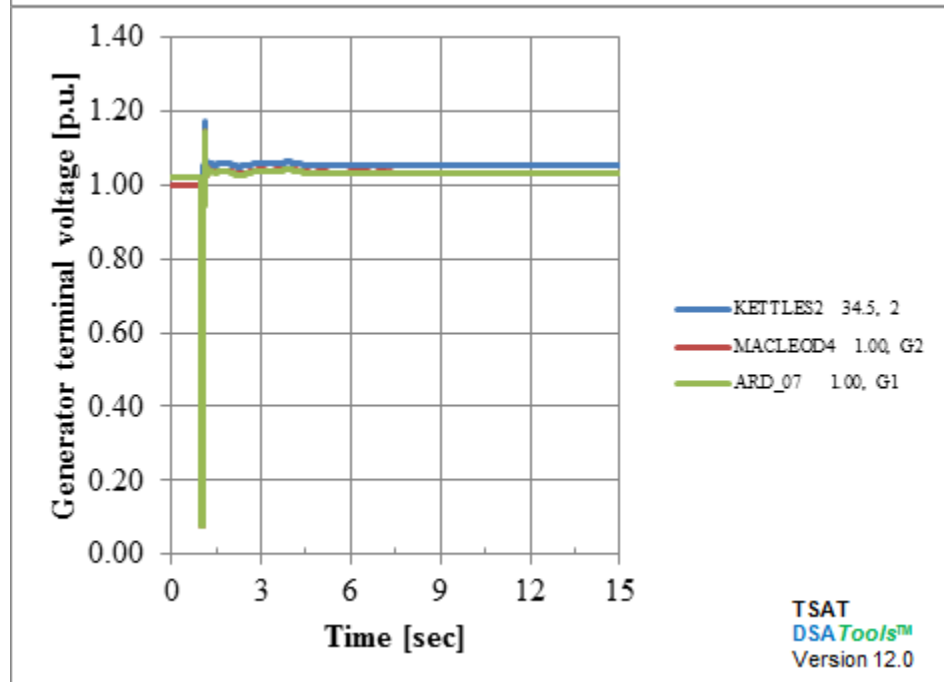
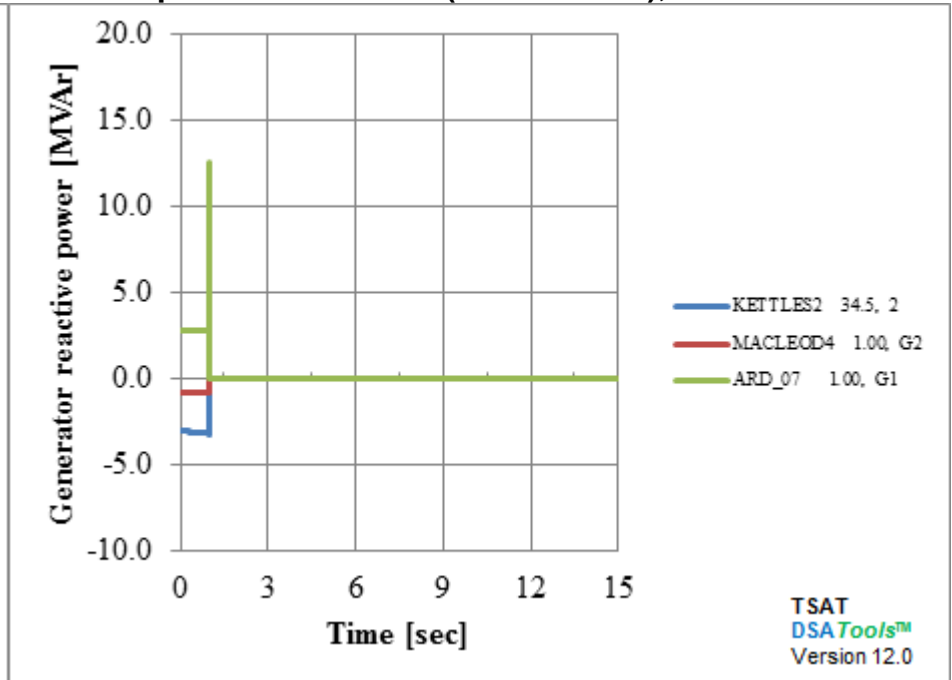
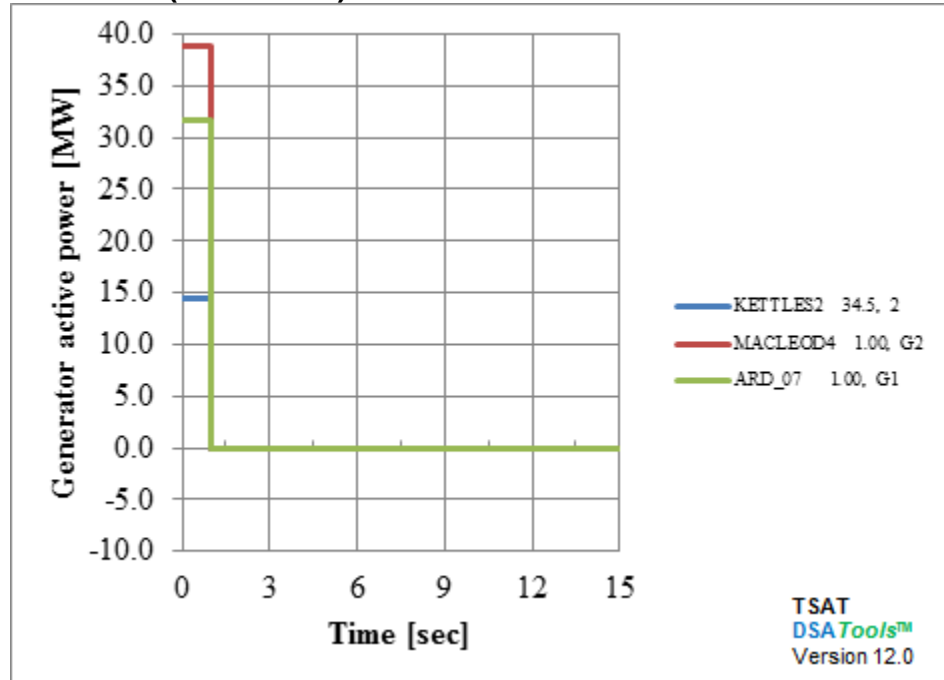
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



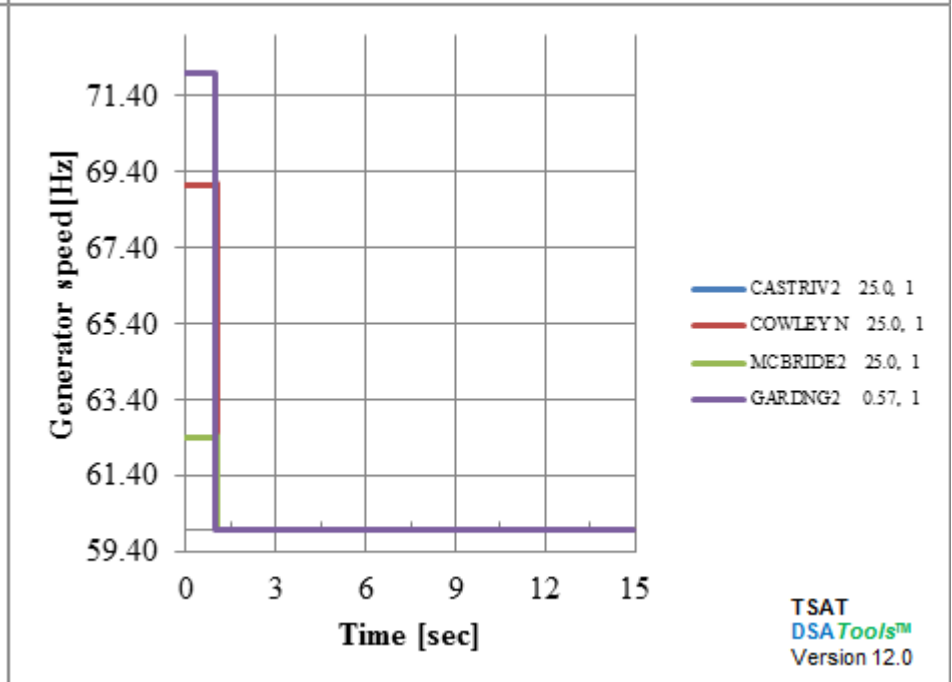
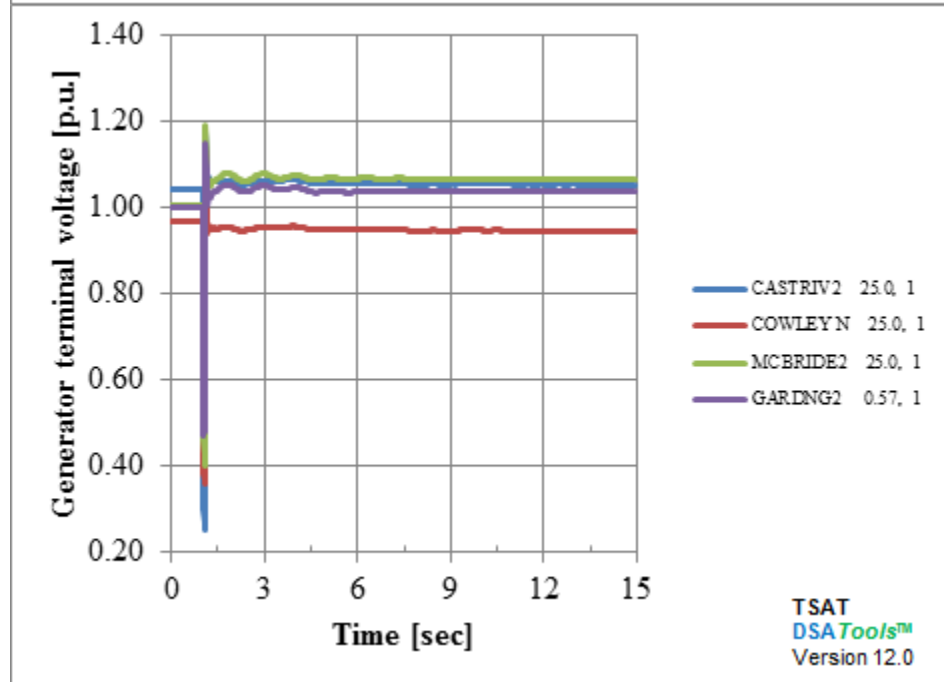
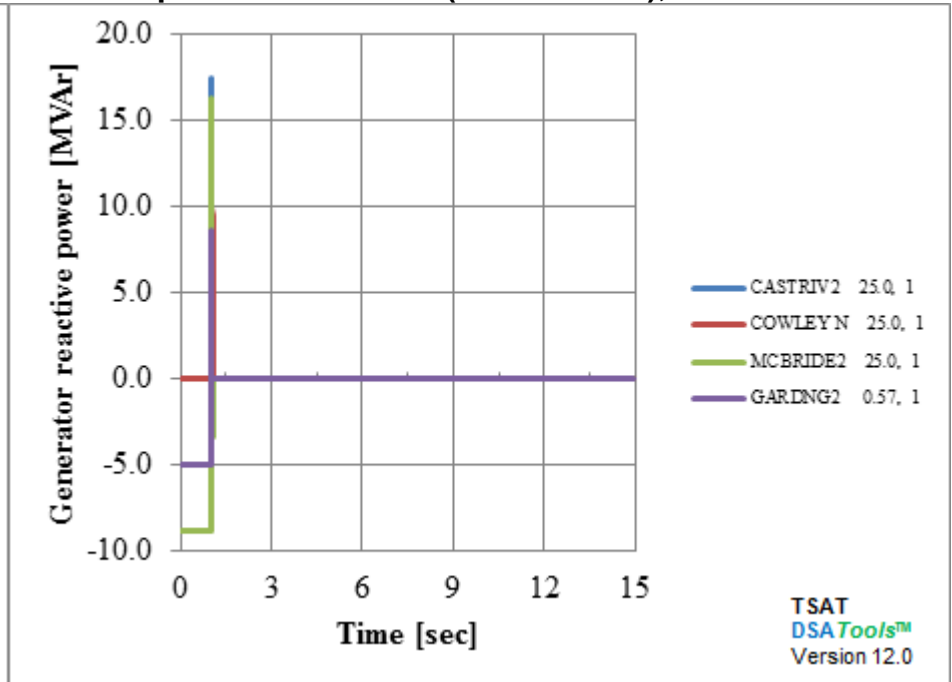
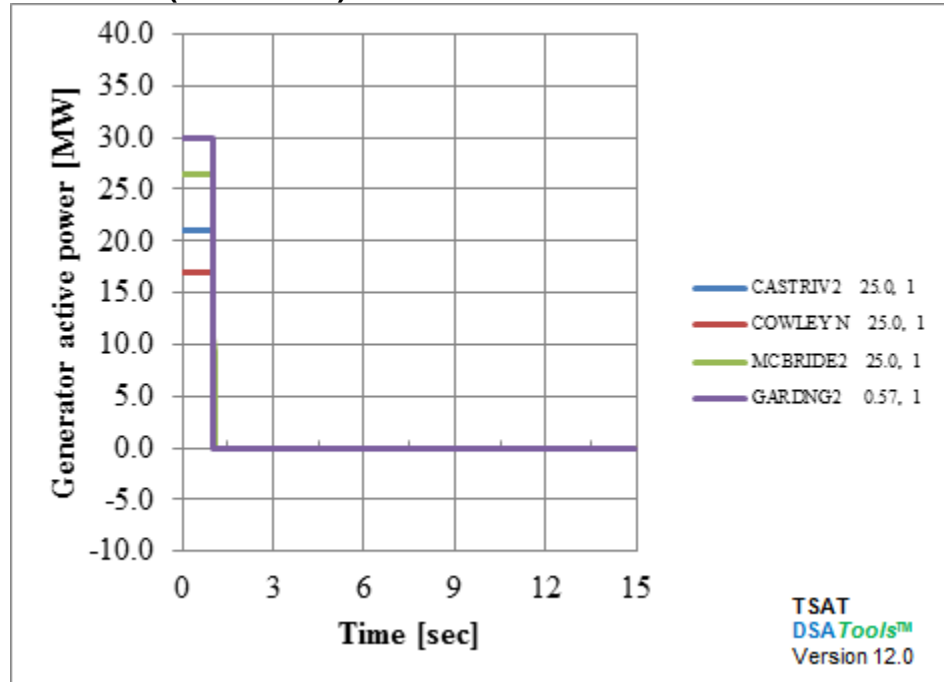
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



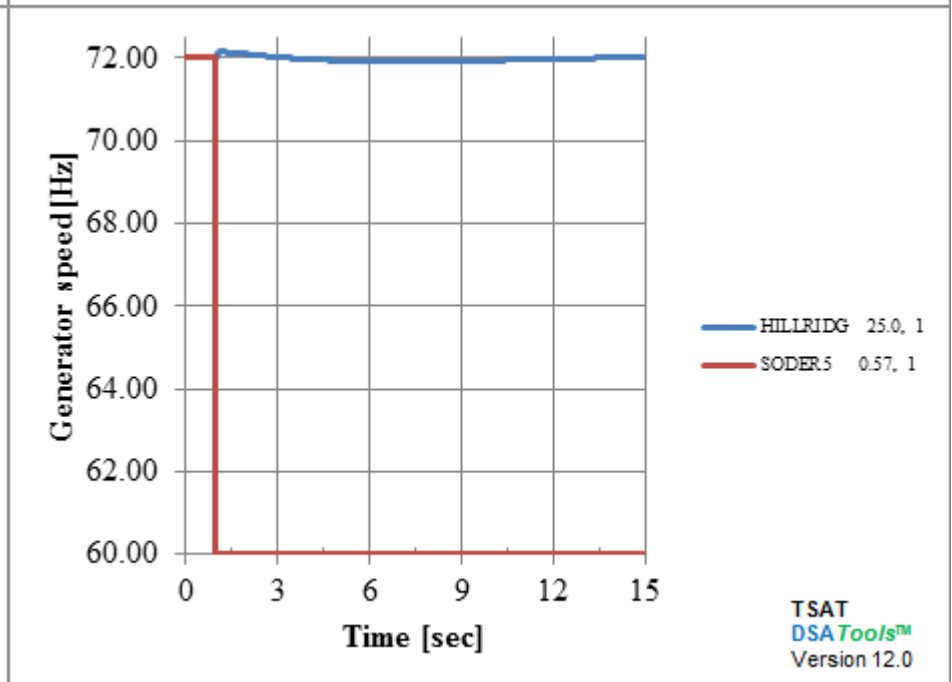
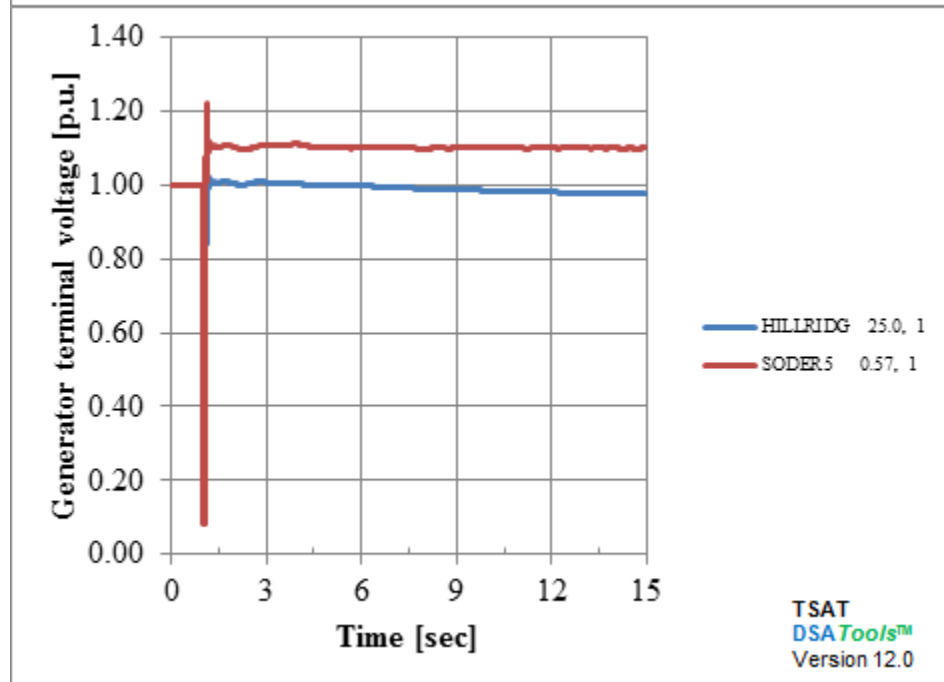
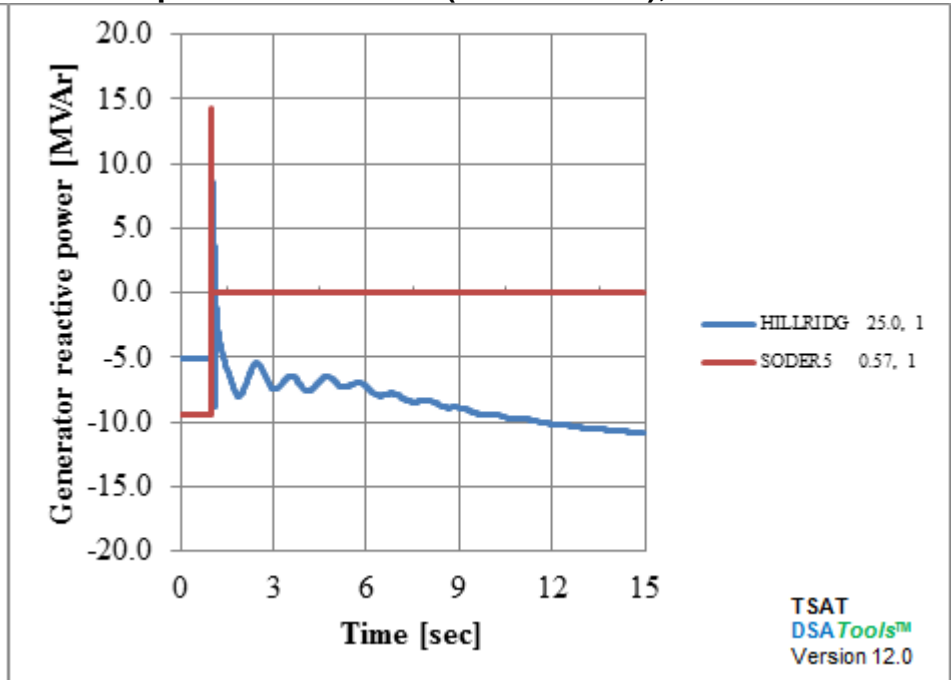
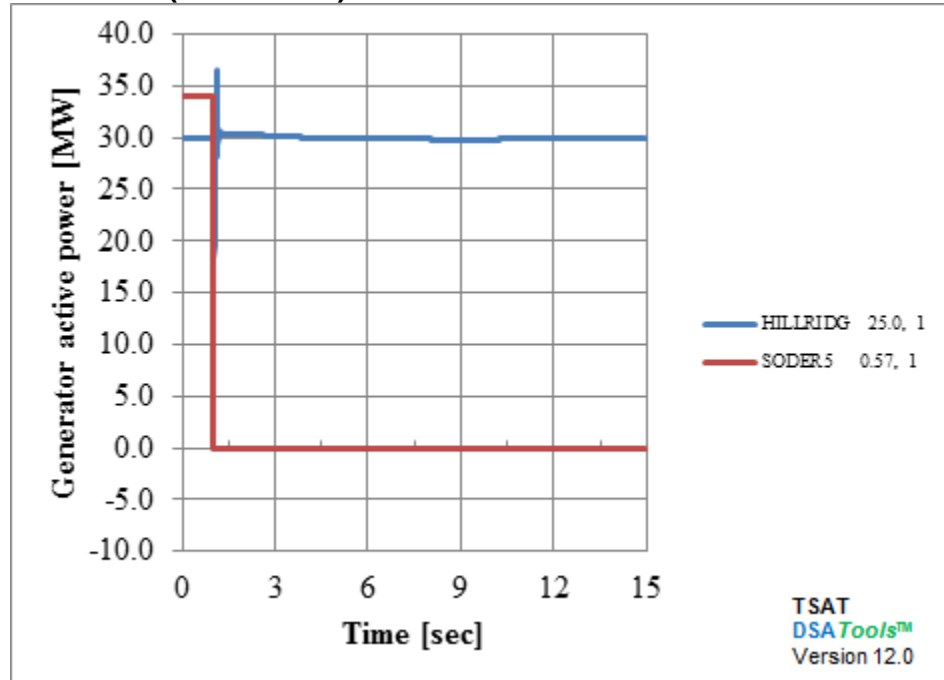
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



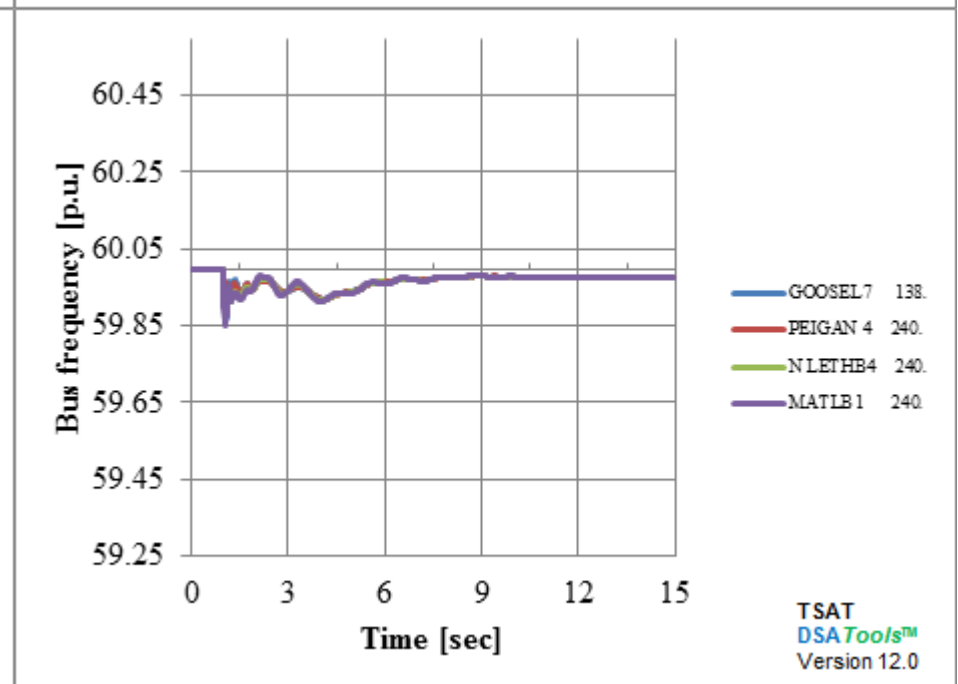
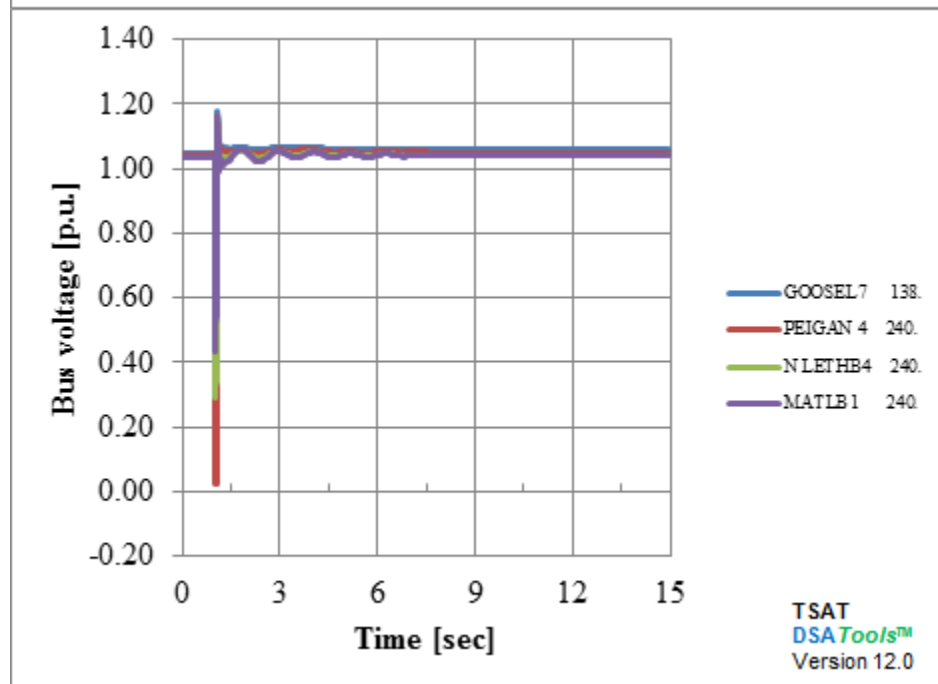
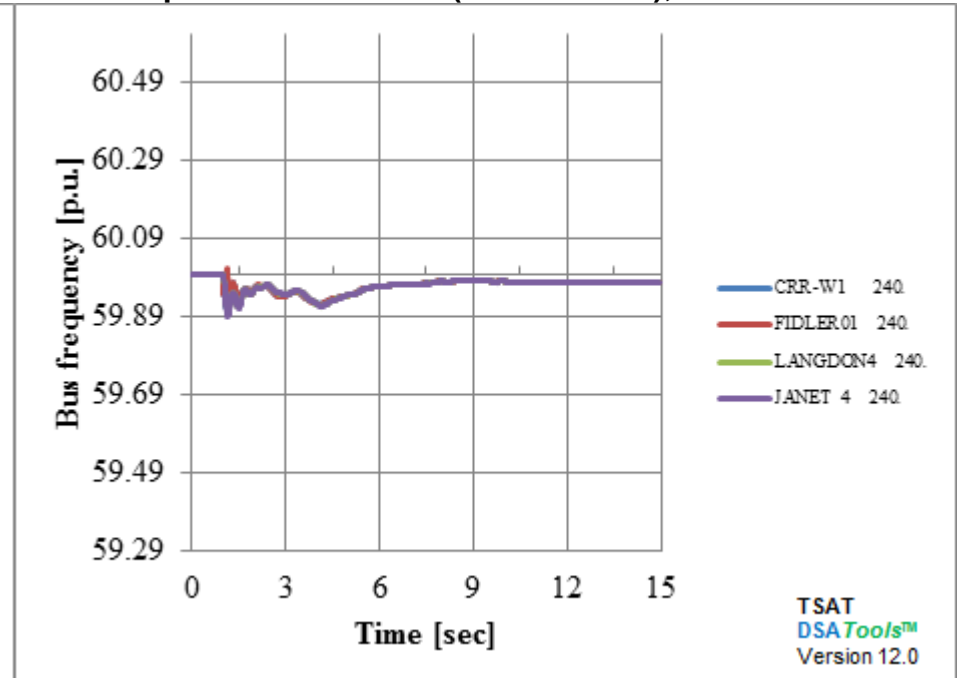
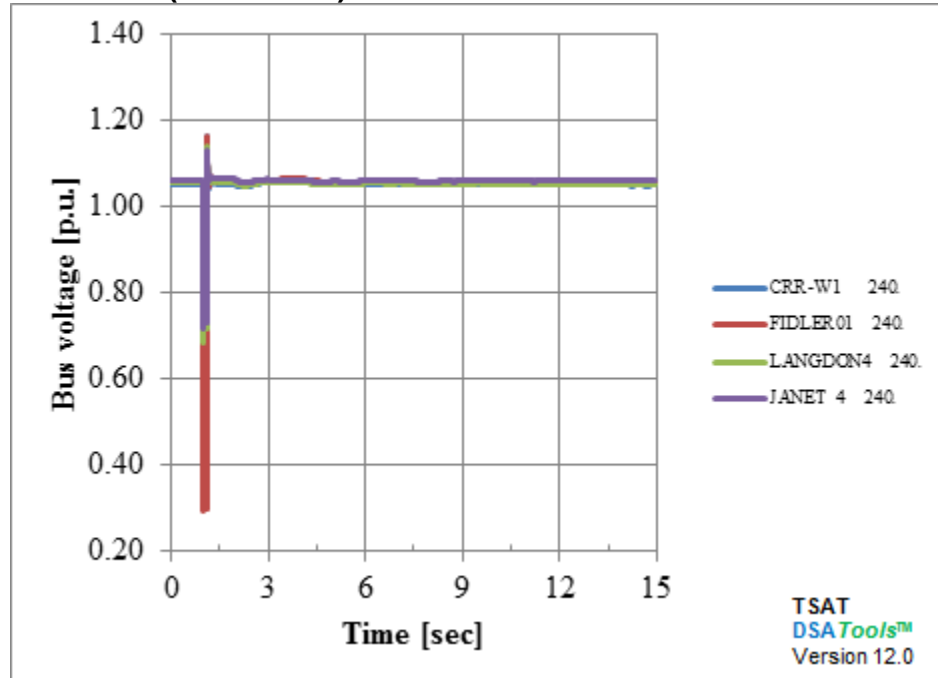
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



8 -- 1084L (59S - 246S) NEAR 59S

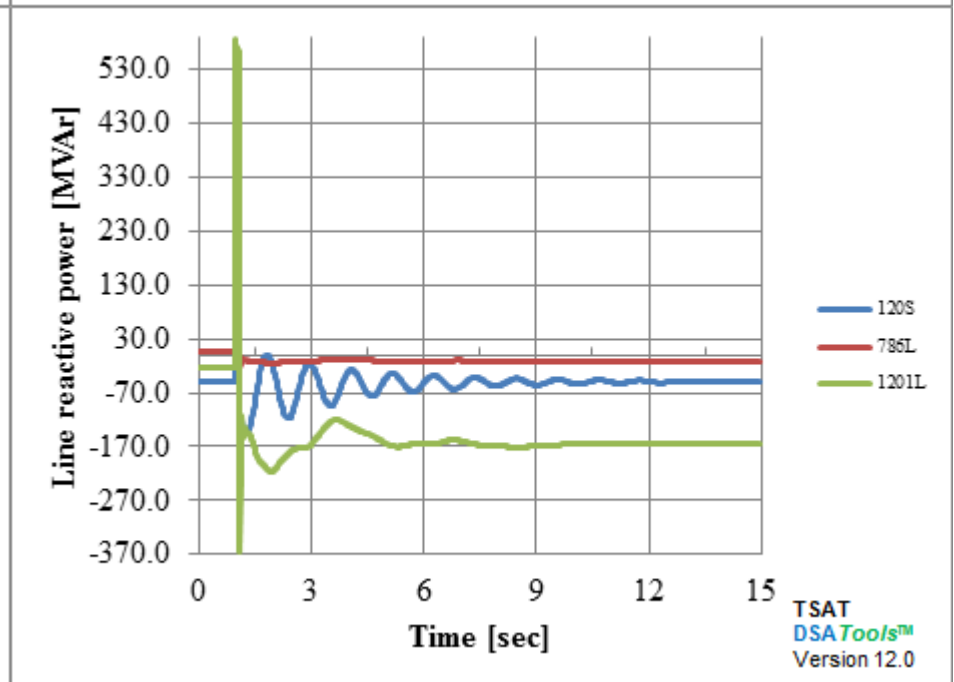
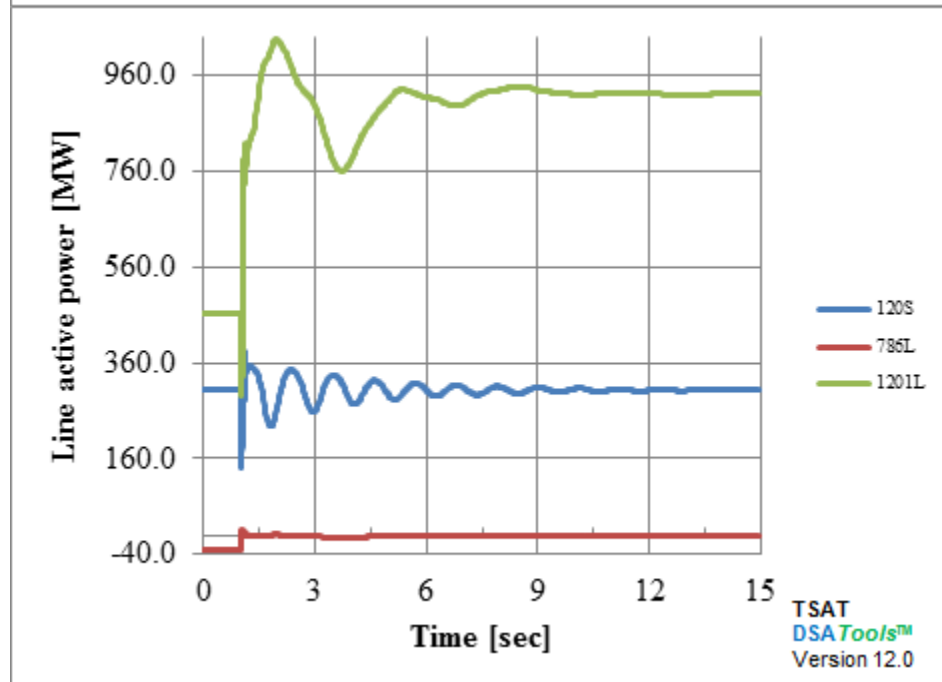
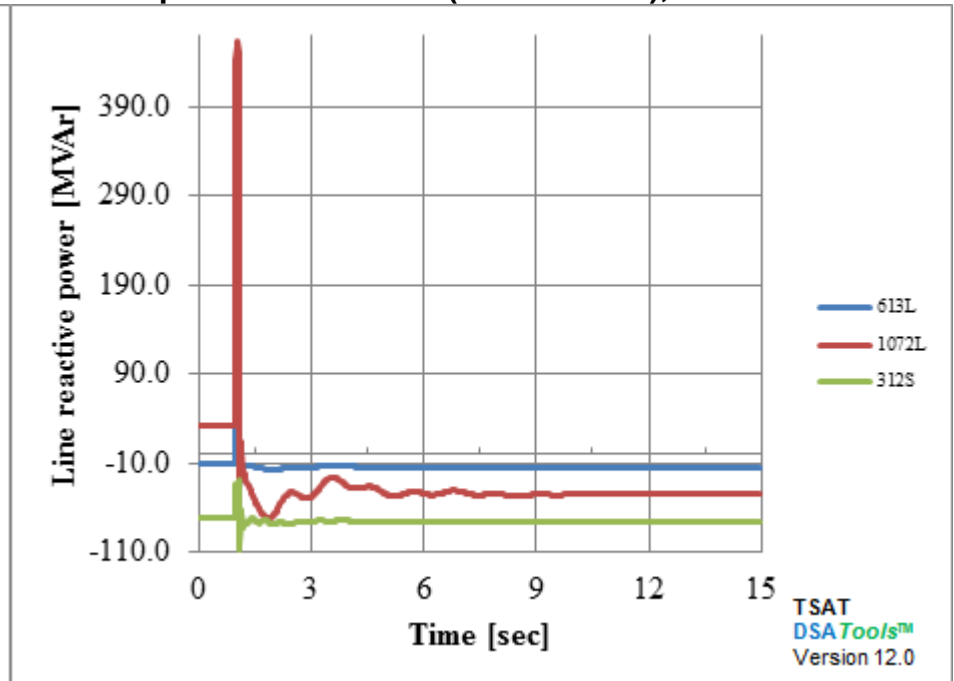
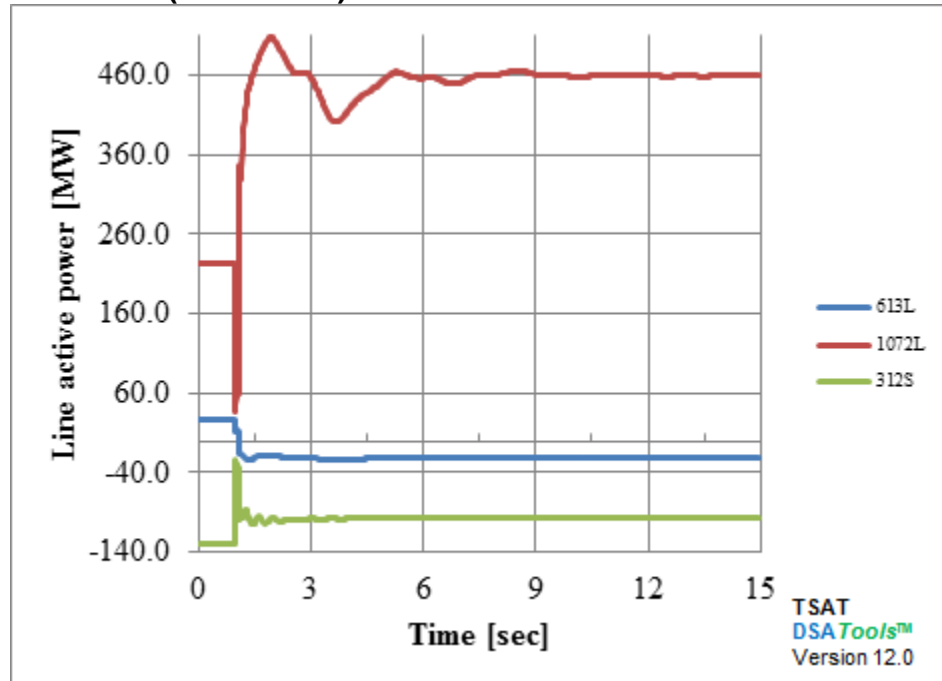
Proposed Connection (Alternative 2), Summer Peak 2017





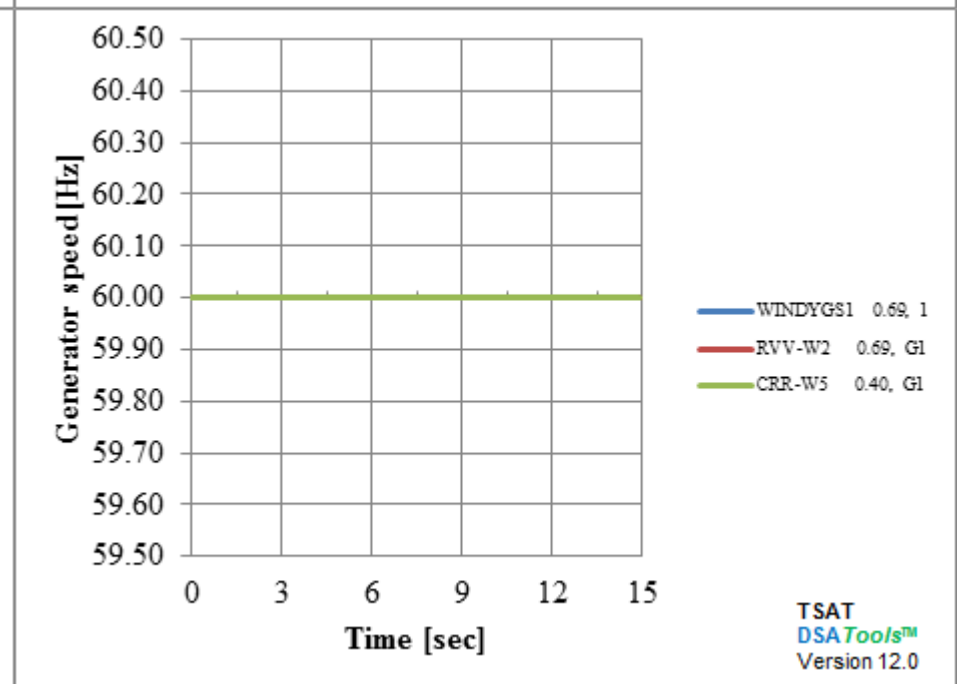
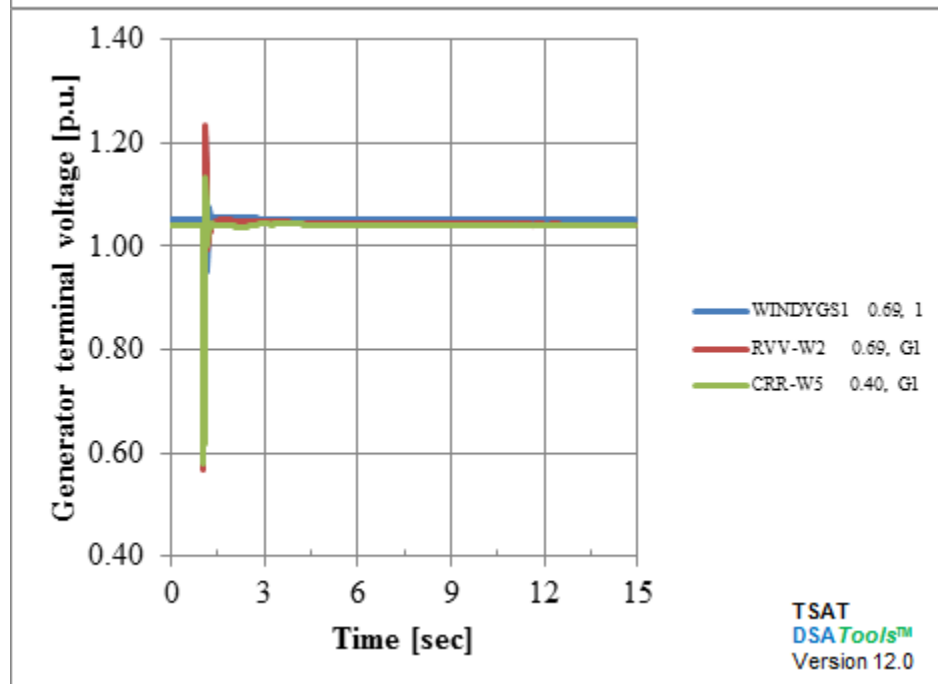
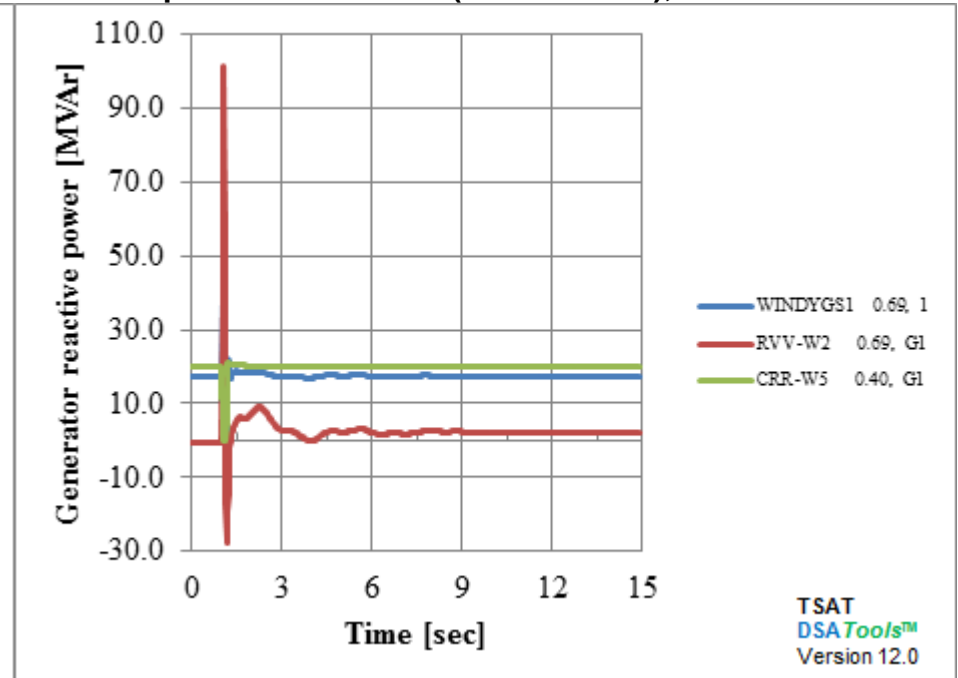
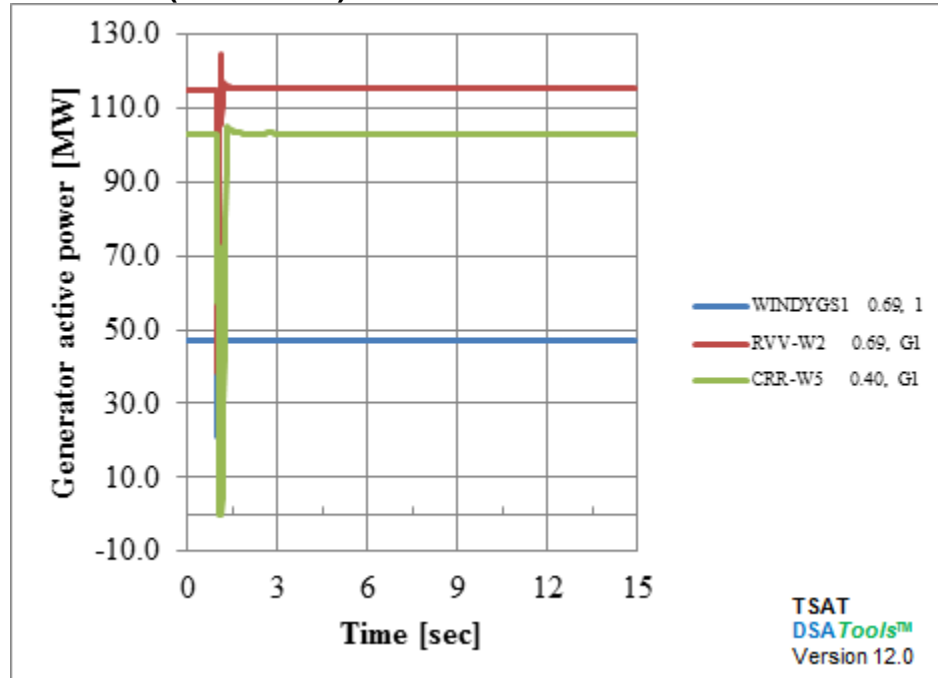
8 -- 1084L (59S - 246S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



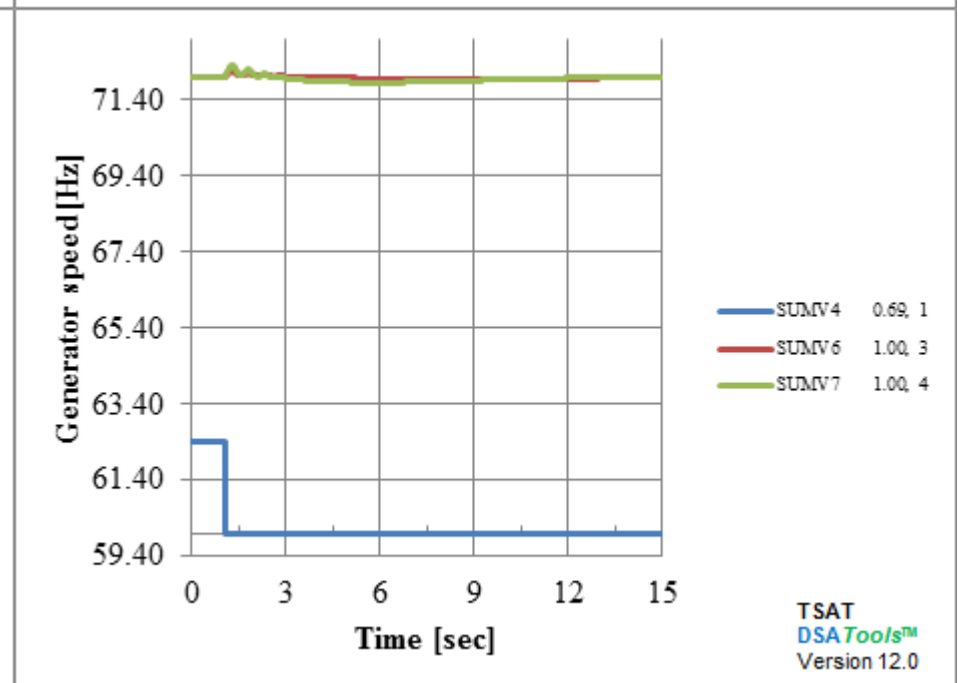
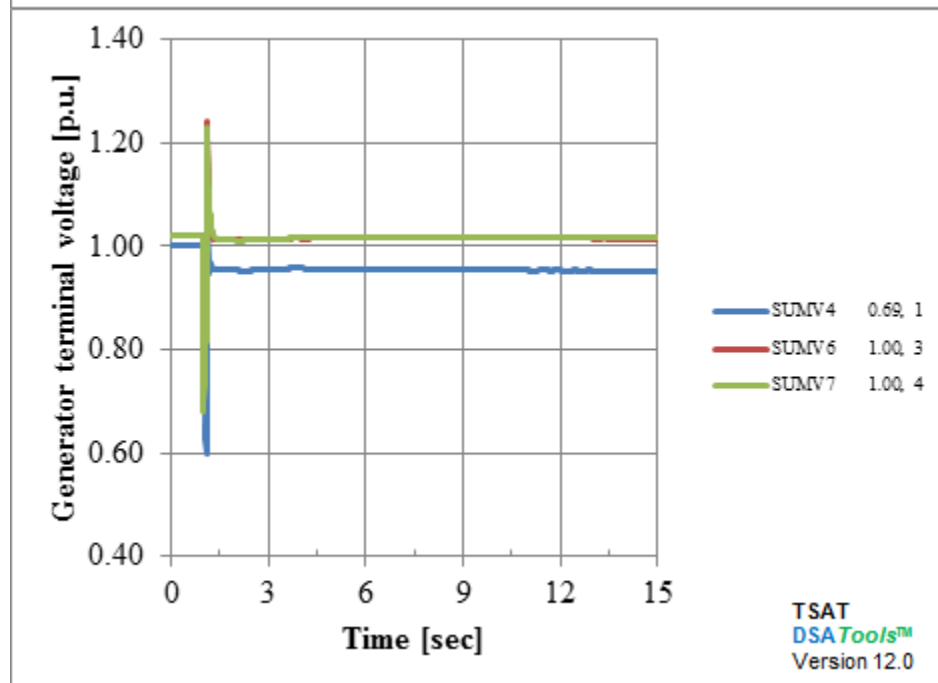
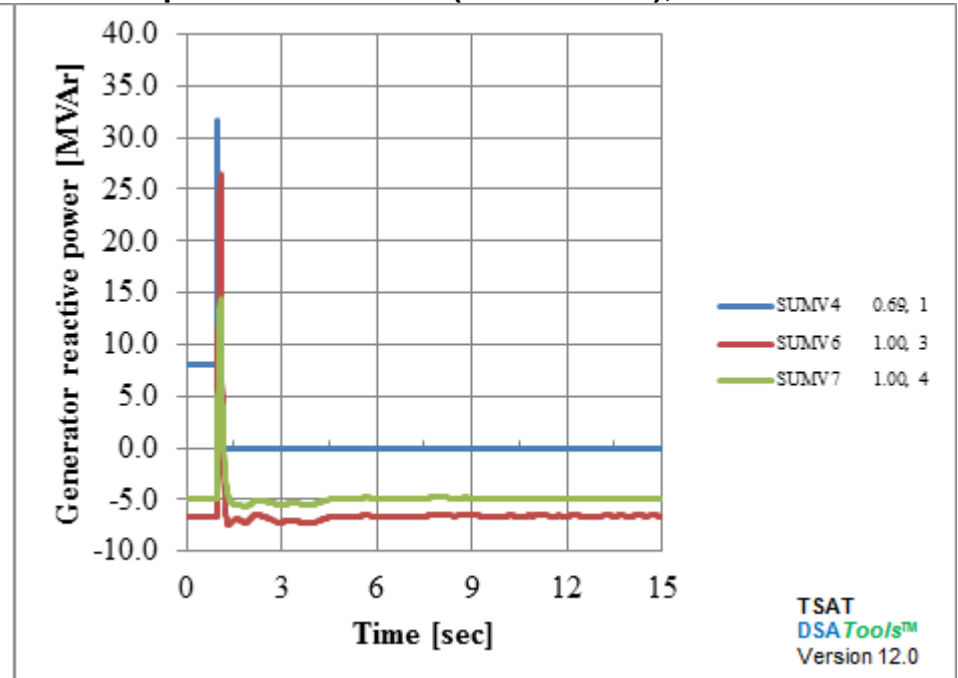
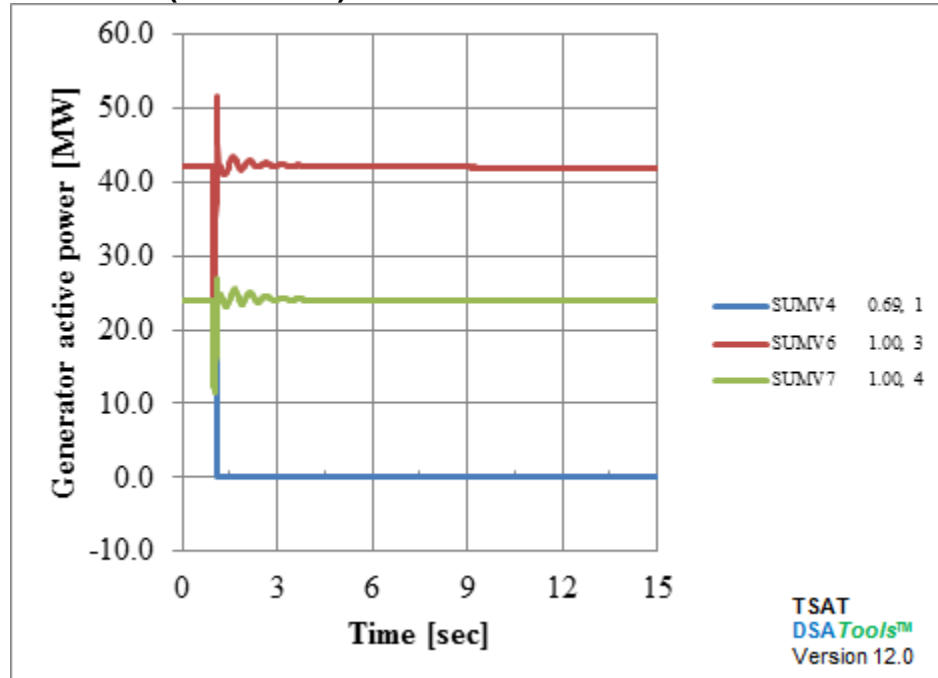
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Peak 2017



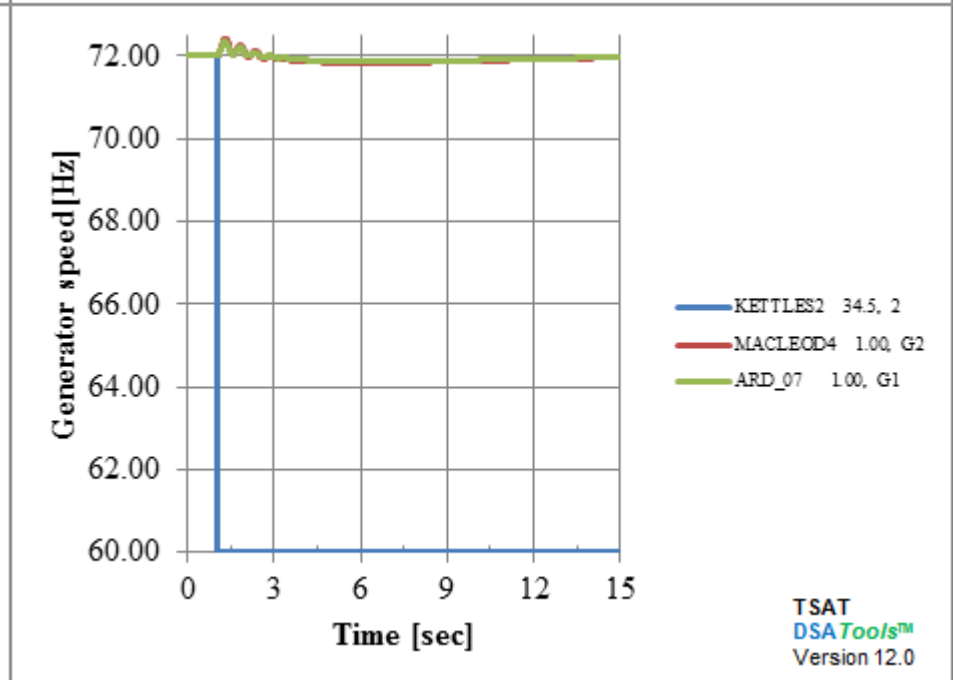
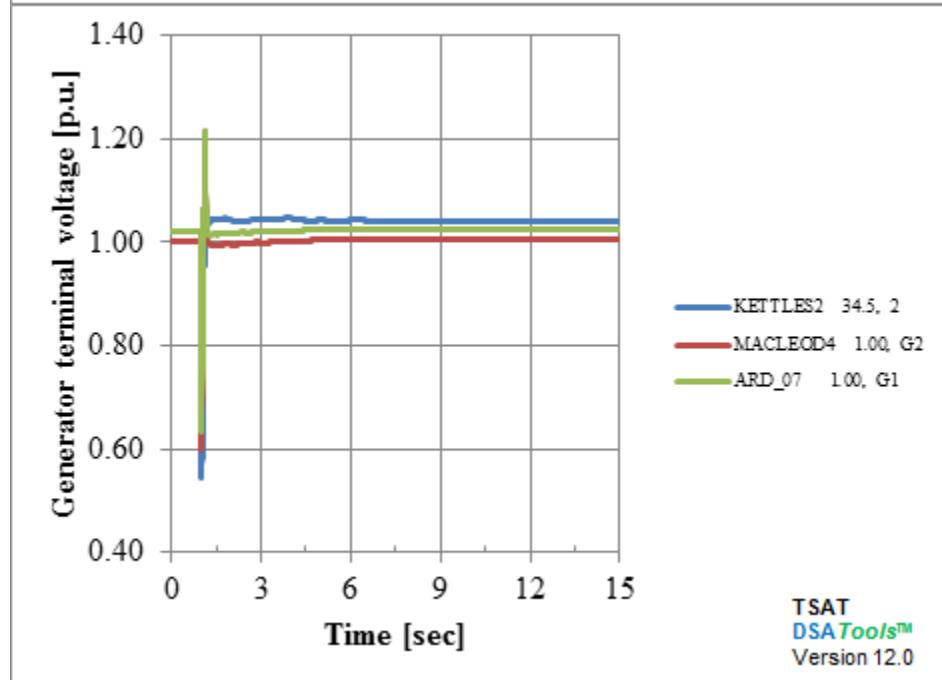
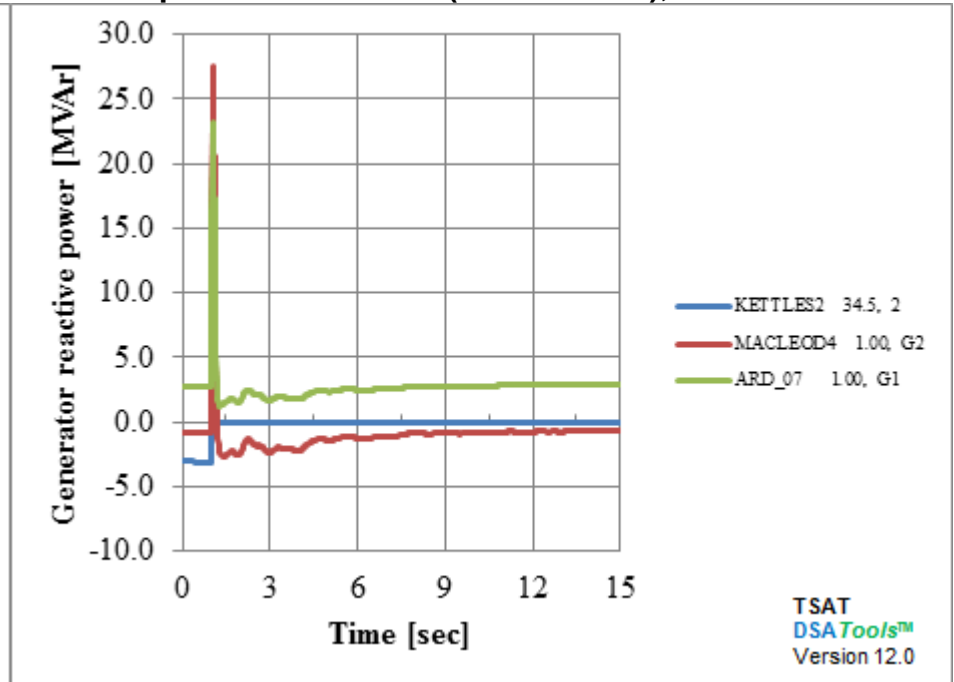
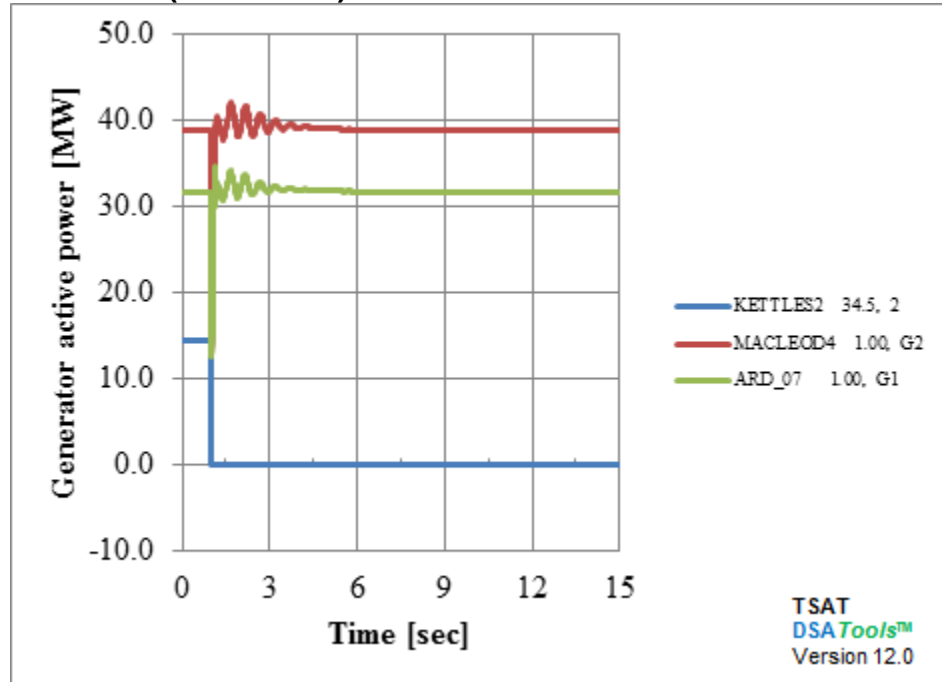
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Peak 2017



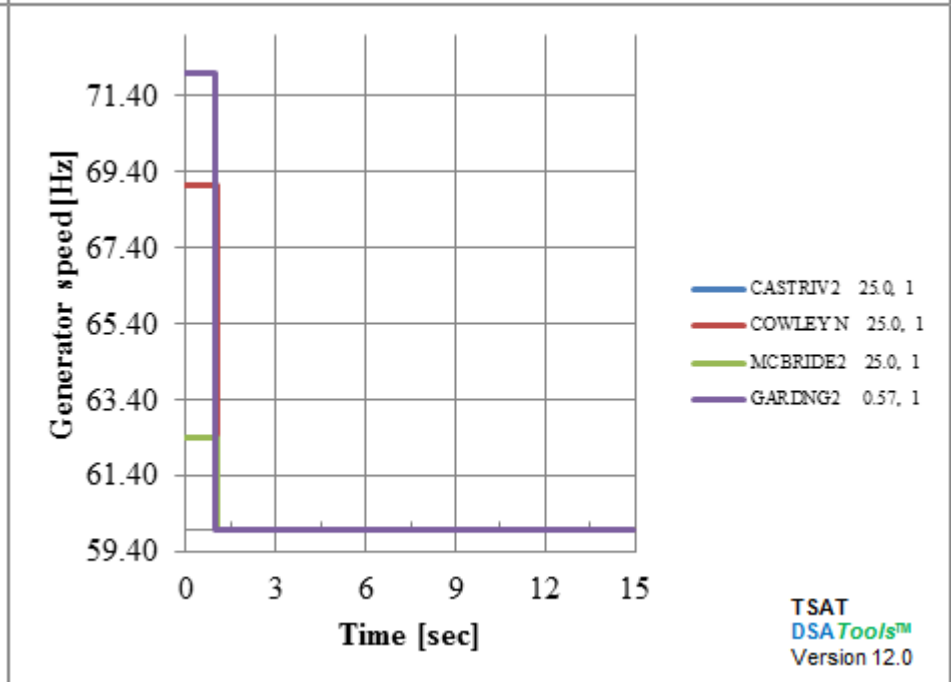
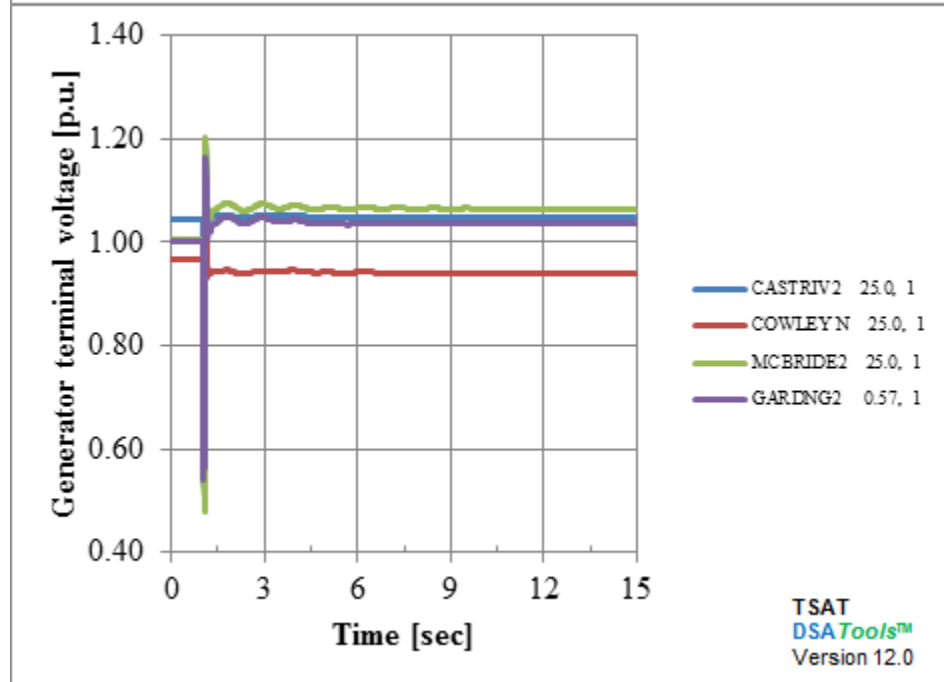
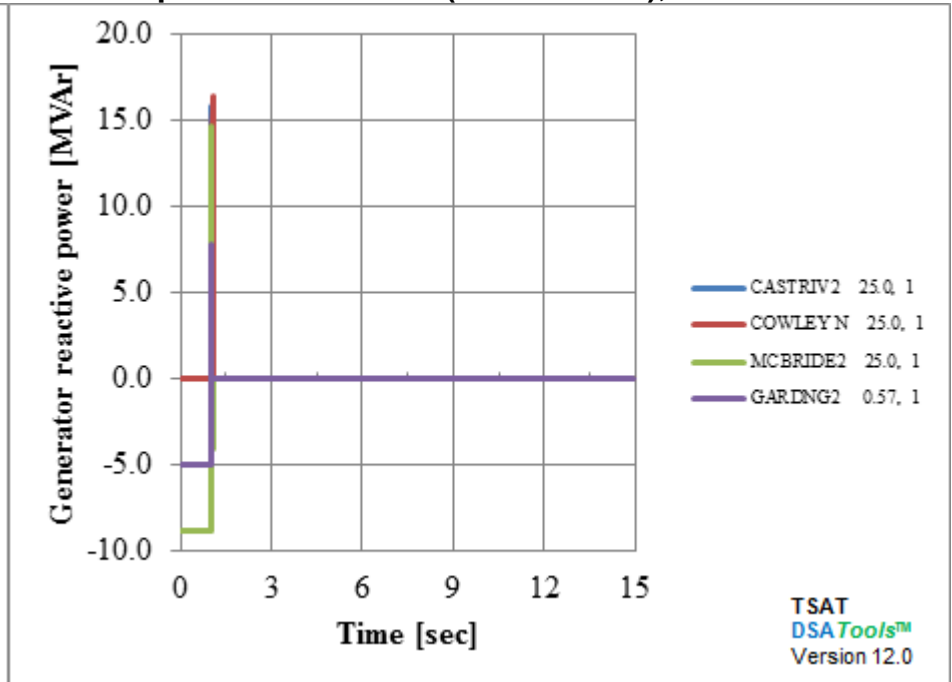
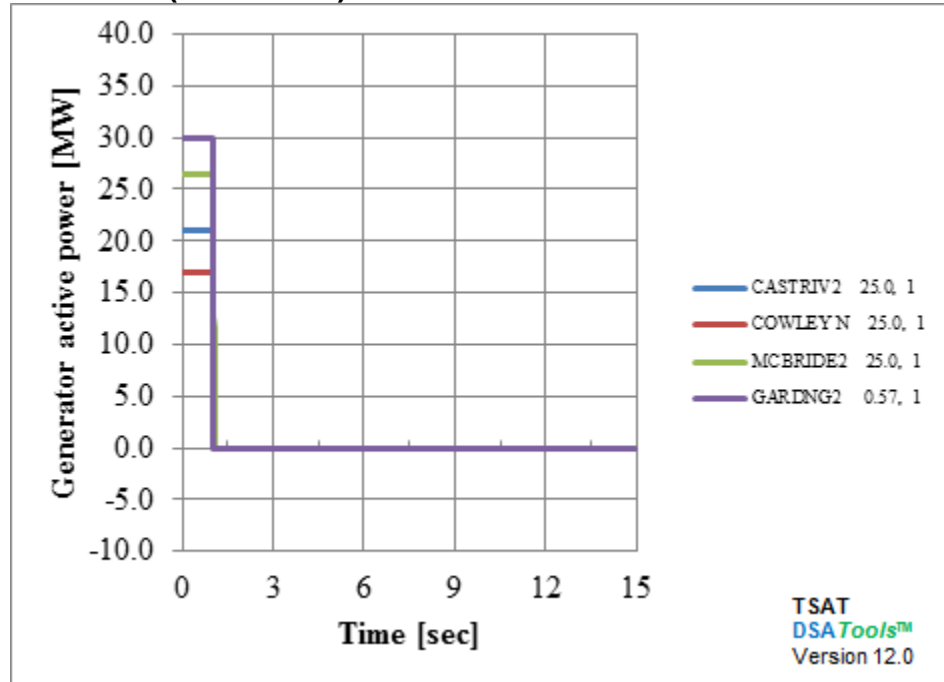
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Peak 2017



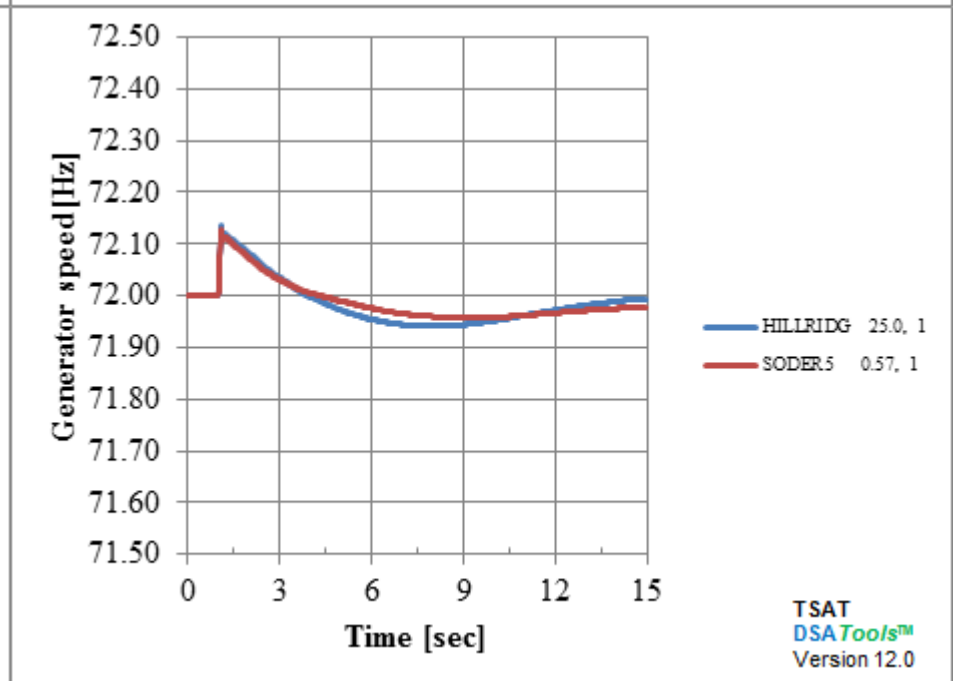
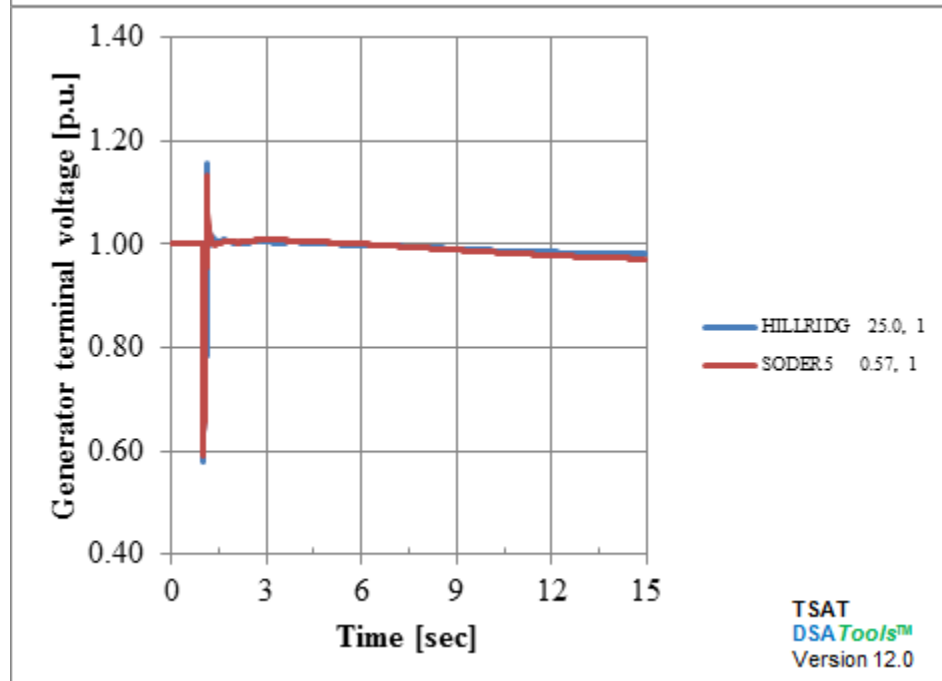
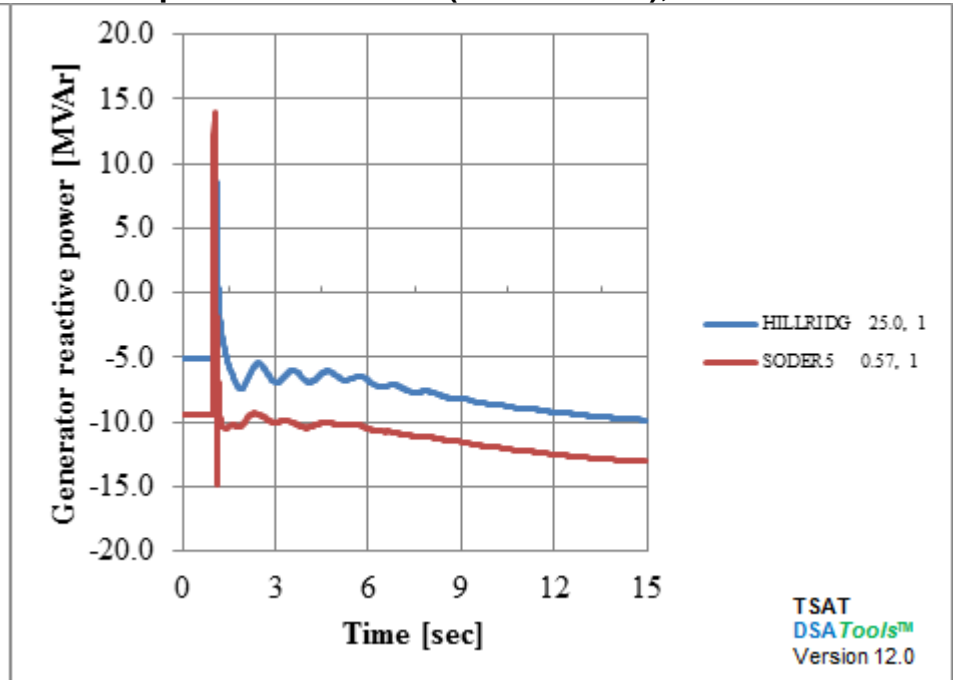
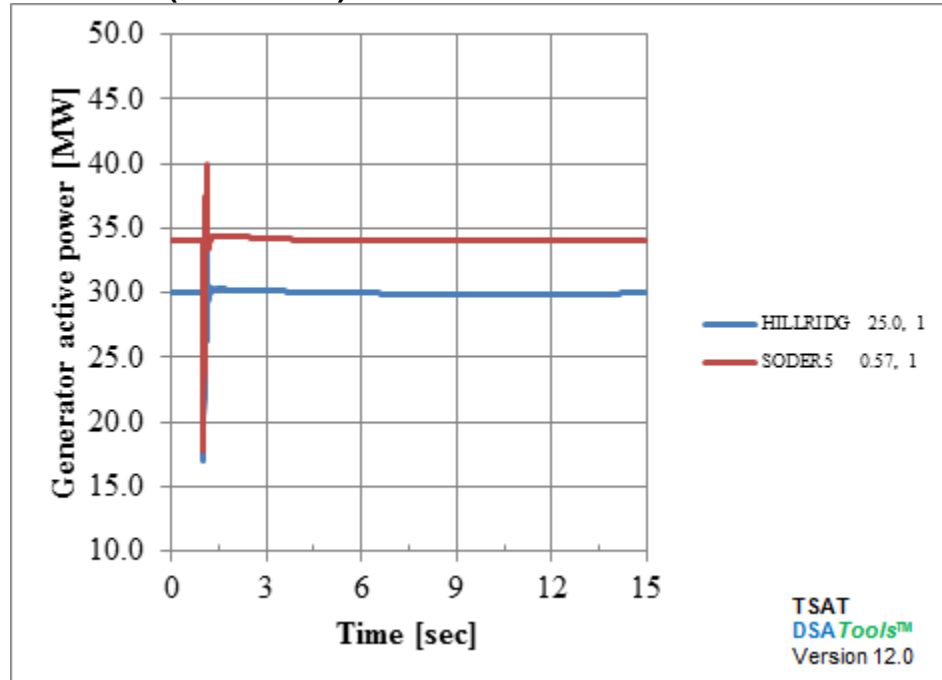
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Peak 2017



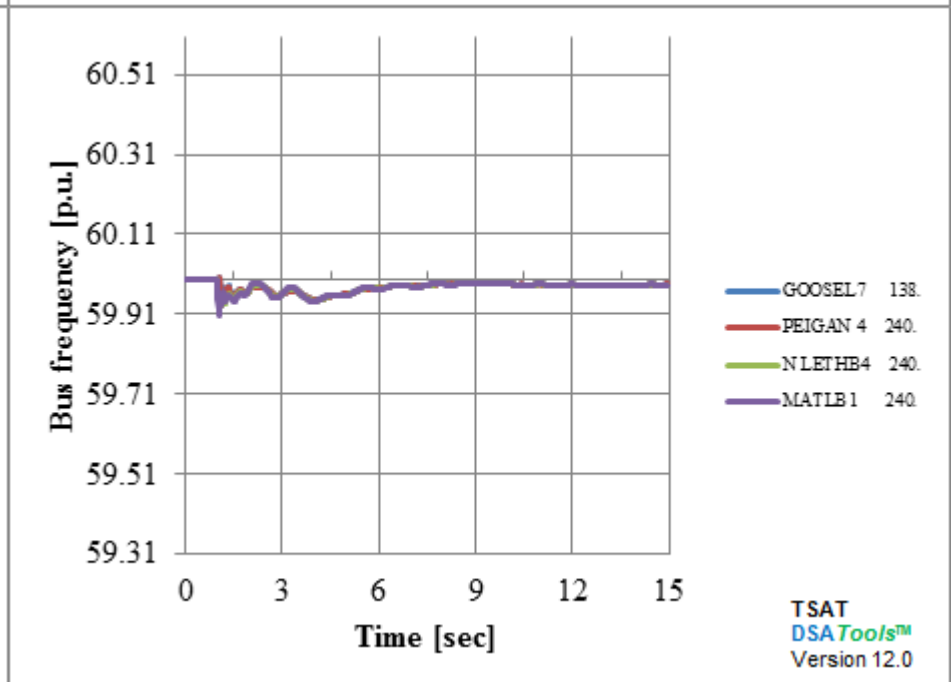
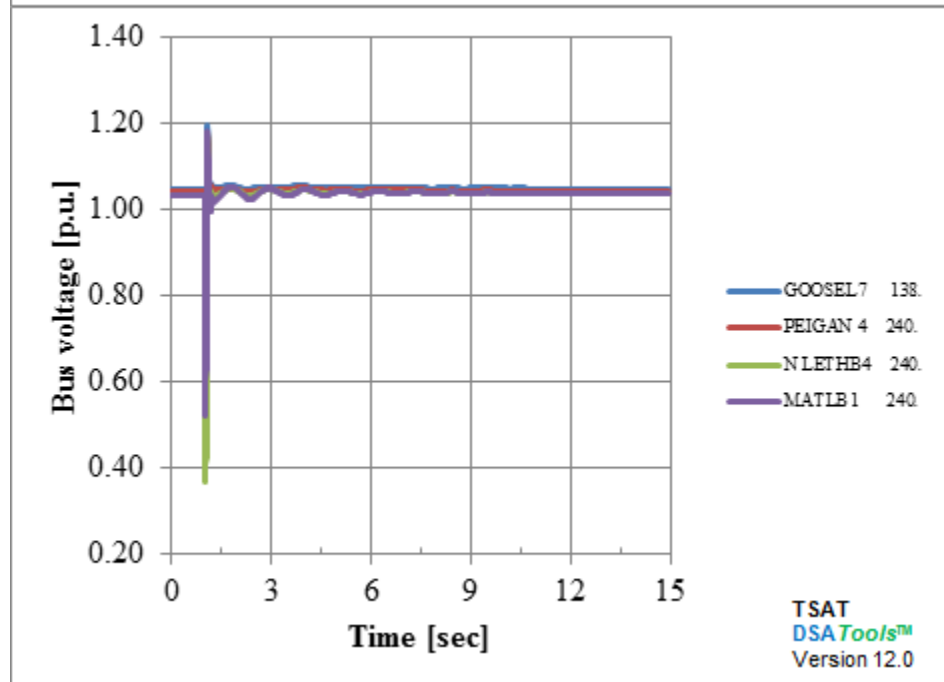
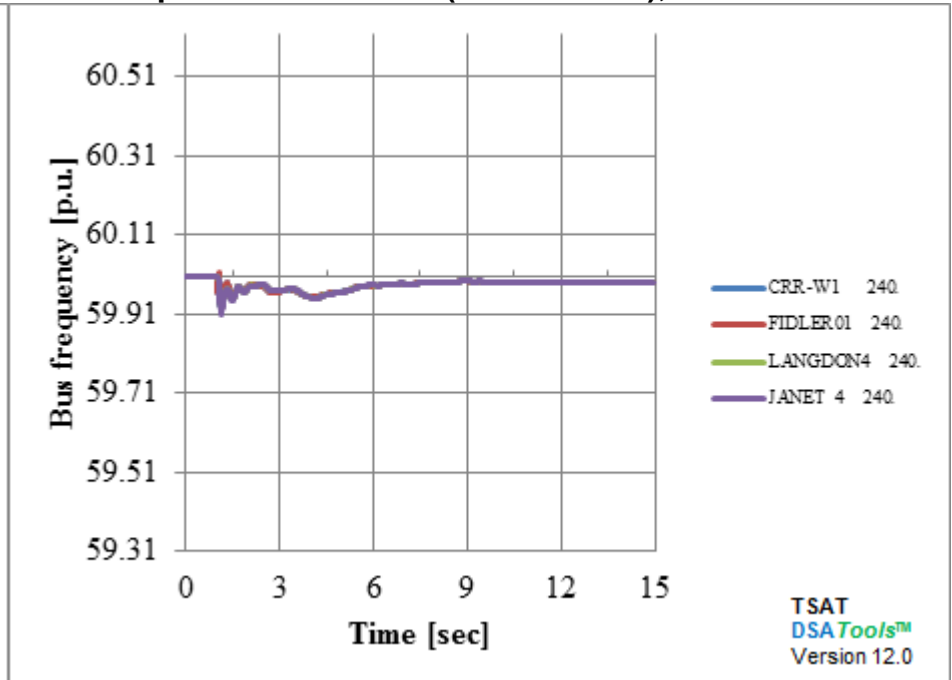
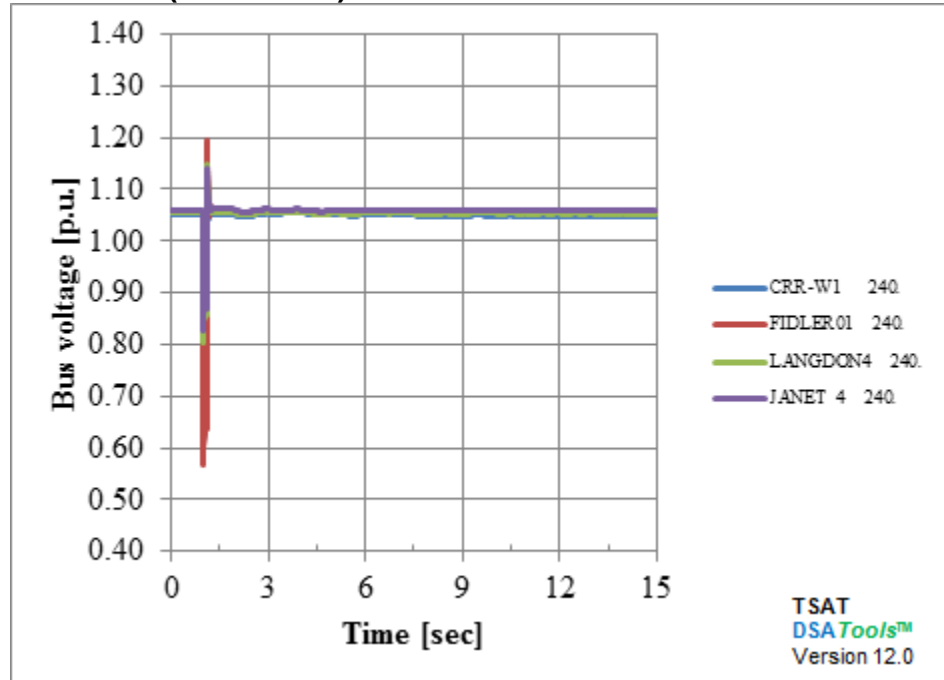
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Peak 2017



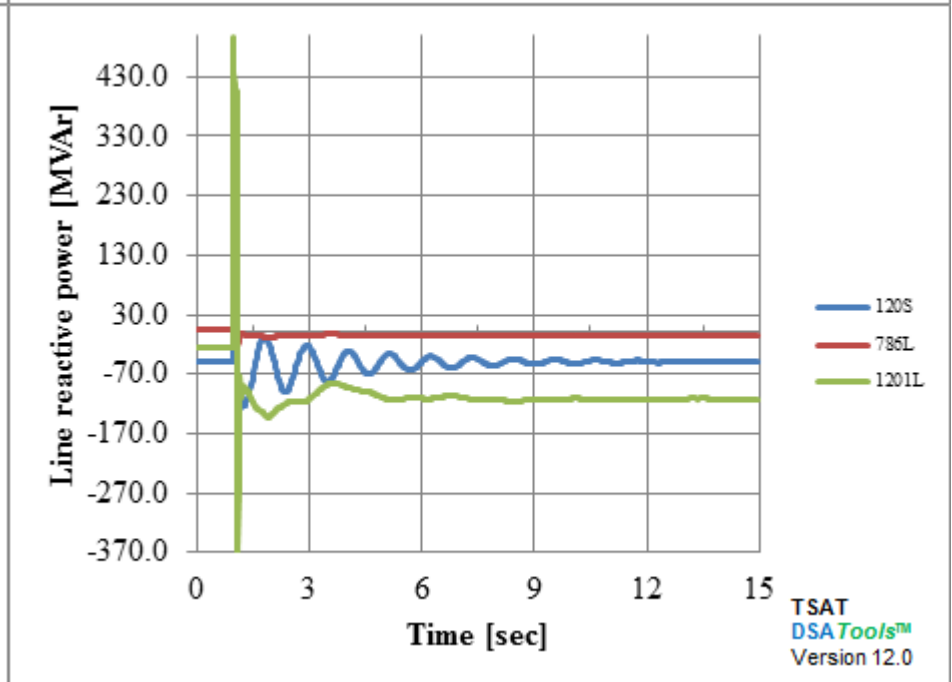
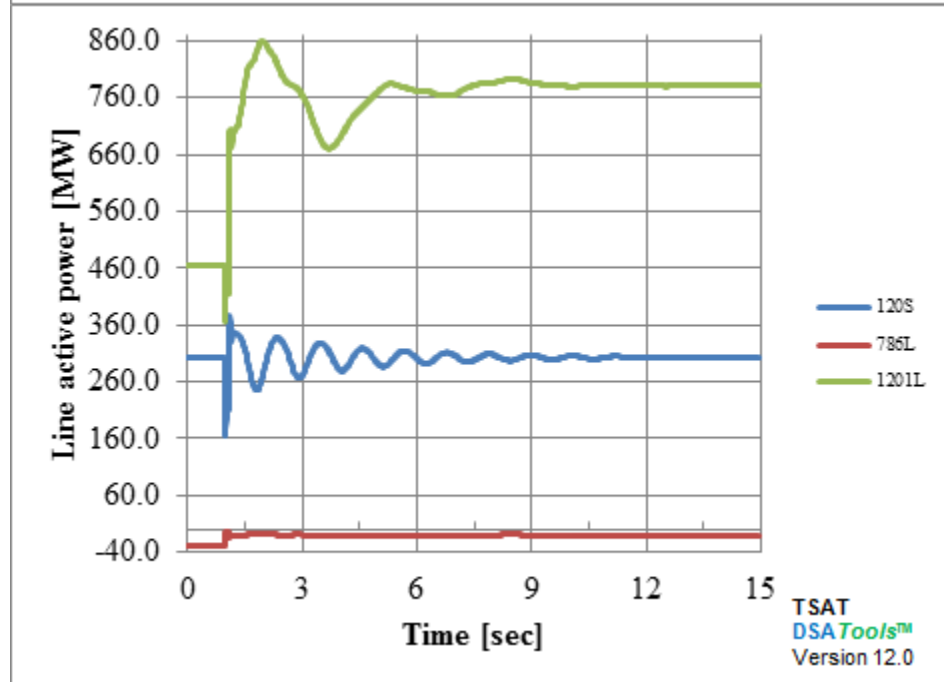
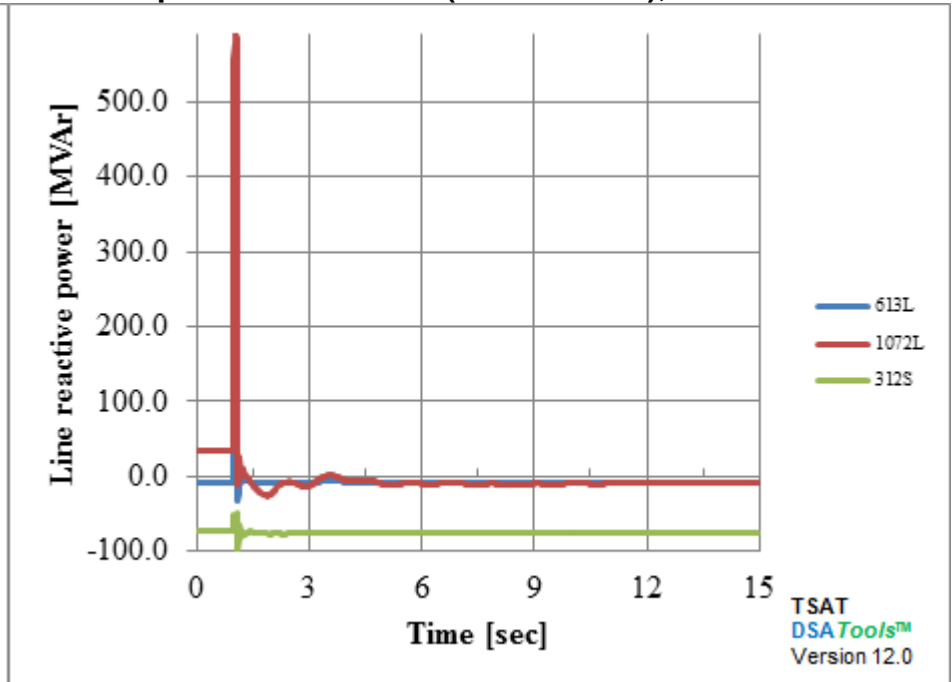
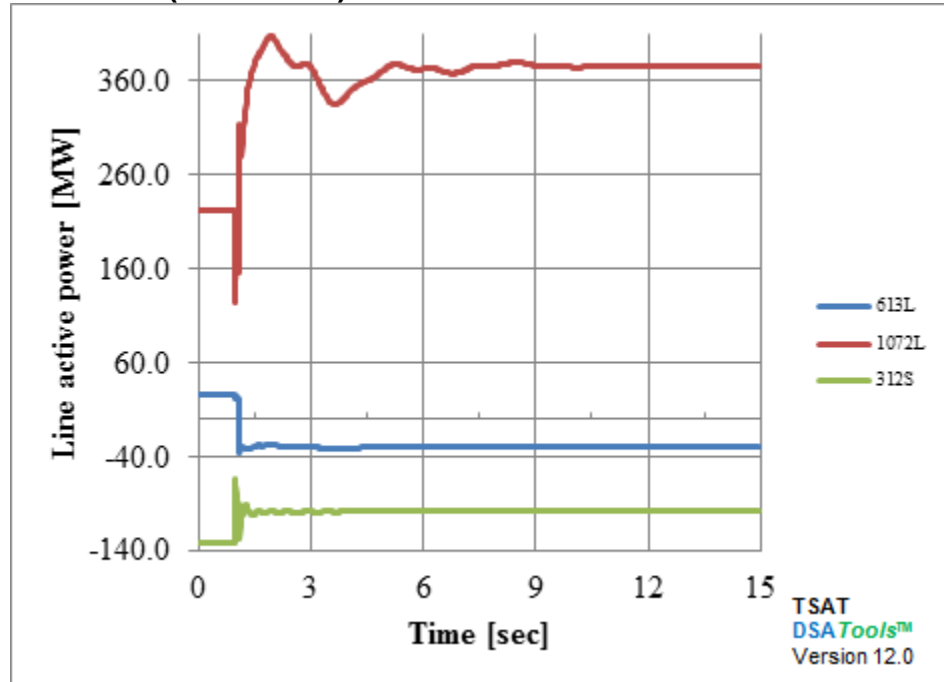
9 -- 1084L (59S - 246S) NEAR 246S

Proposed Connection (Alternative 2), Summer Peak 2017



9 -- 1084L (59S - 246S) NEAR 246S

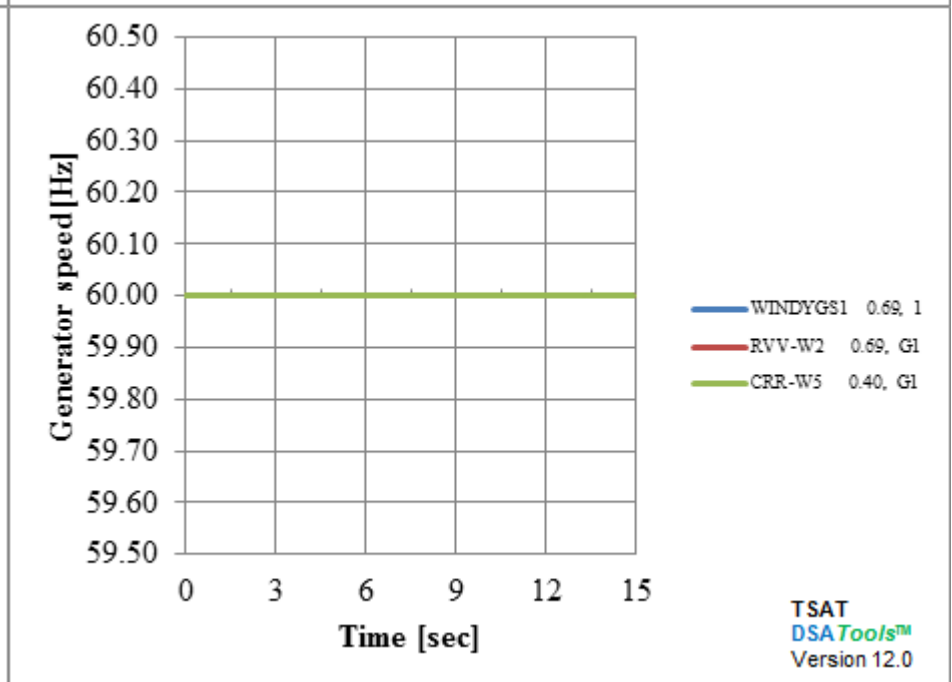
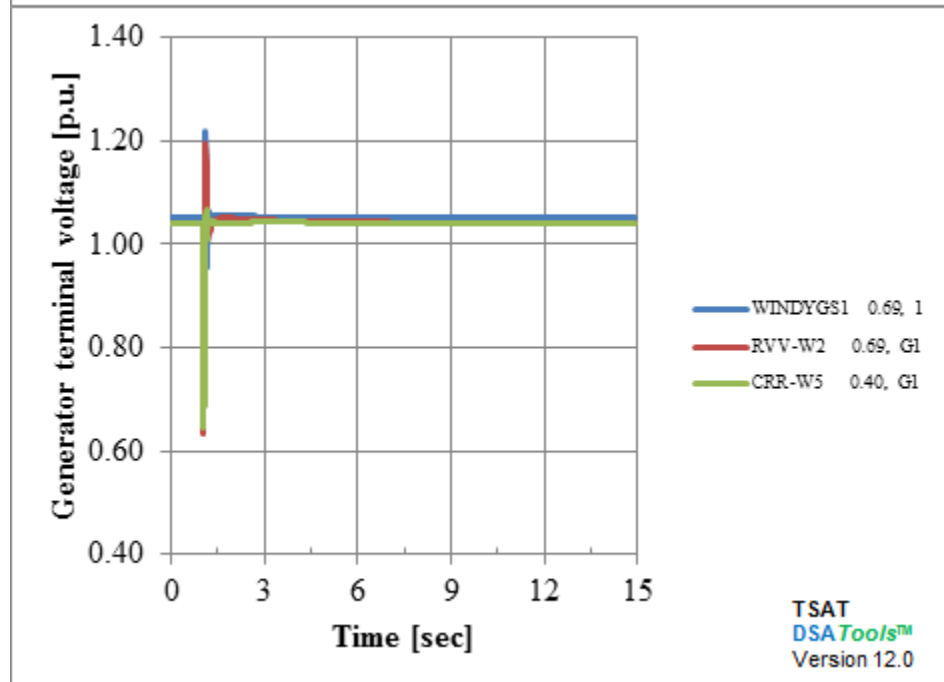
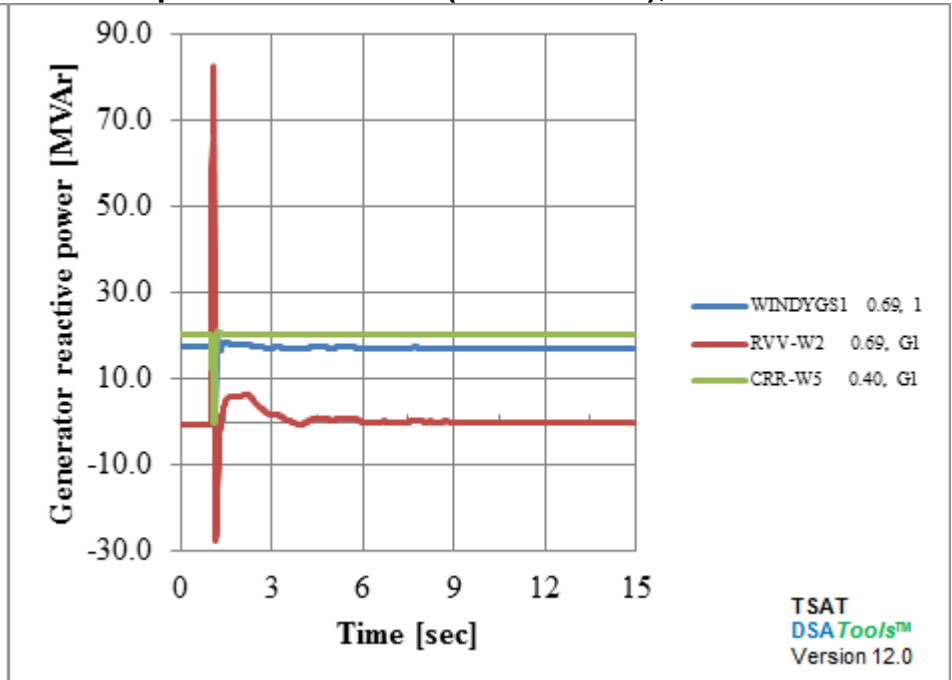
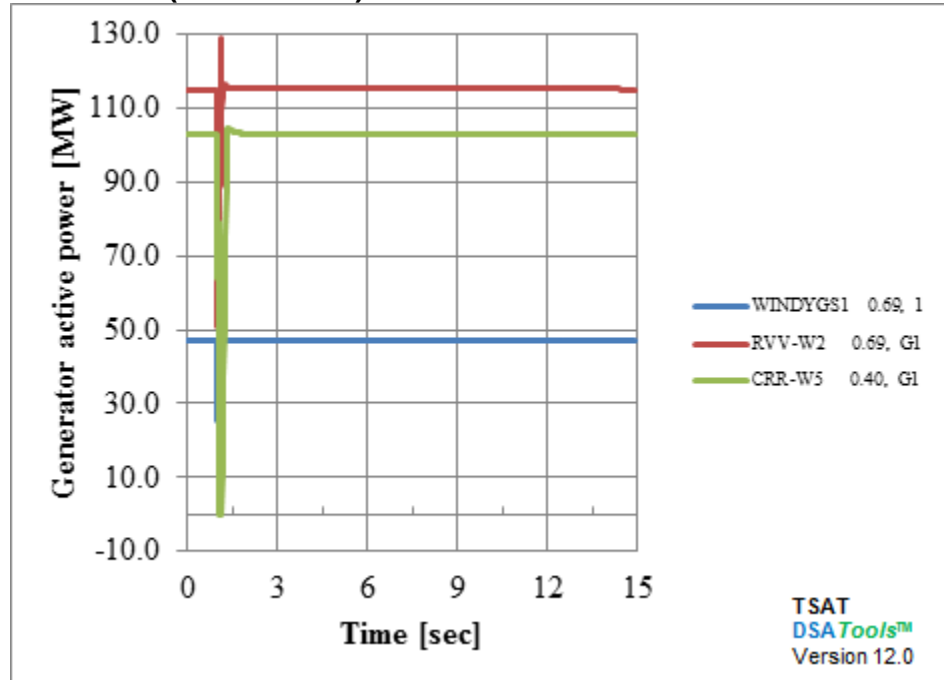
Proposed Connection (Alternative 2), Summer Peak 2017





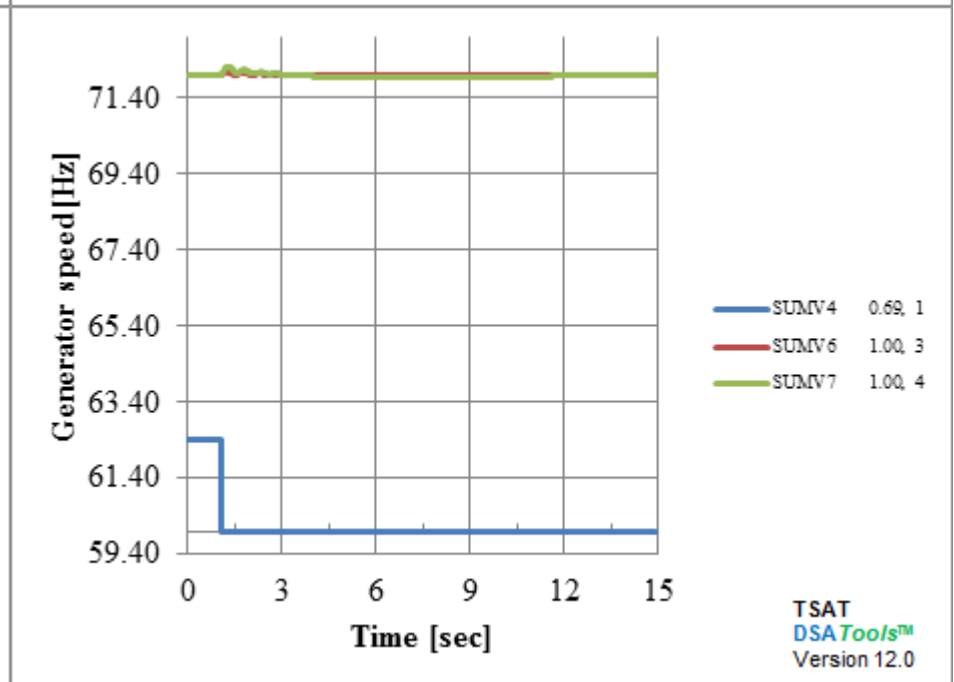
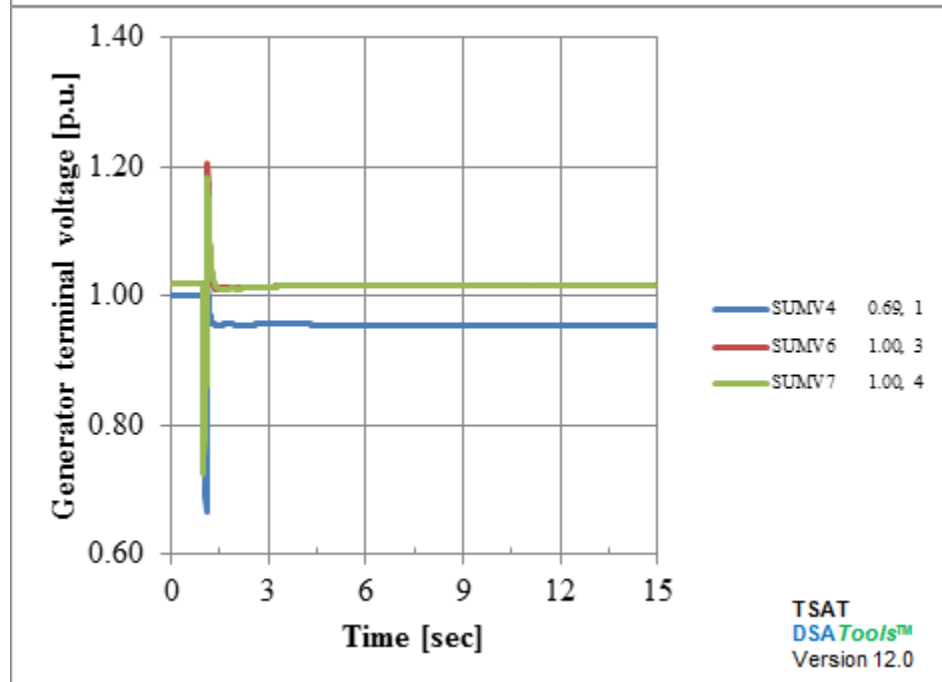
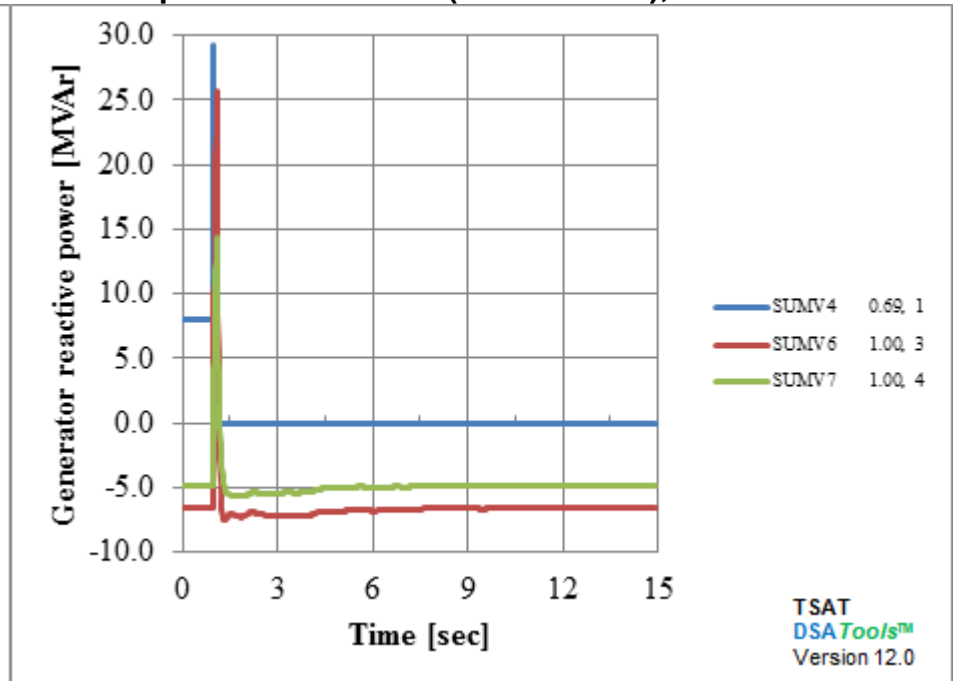
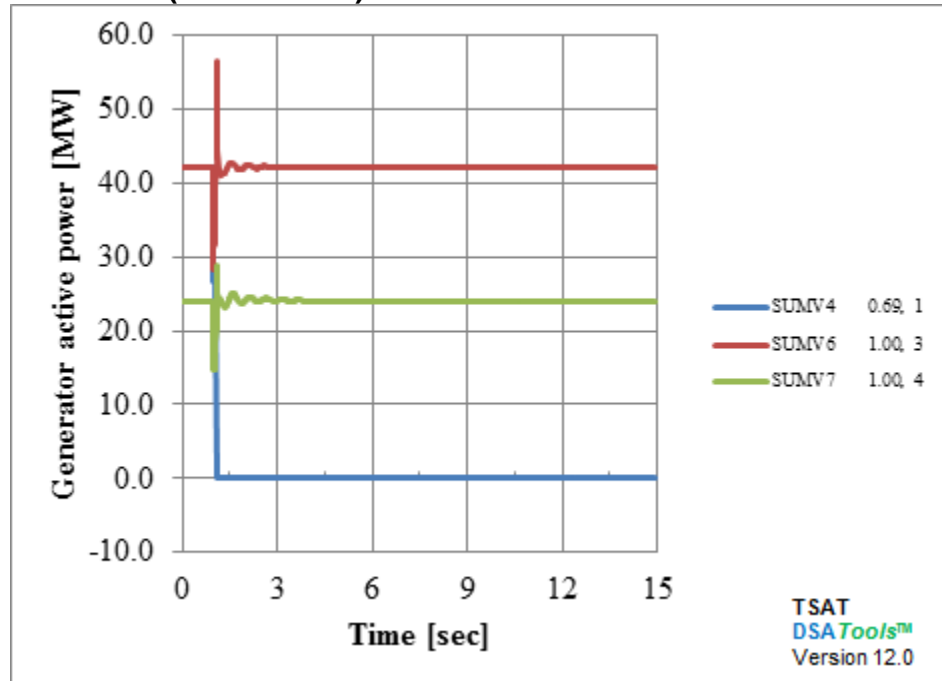
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



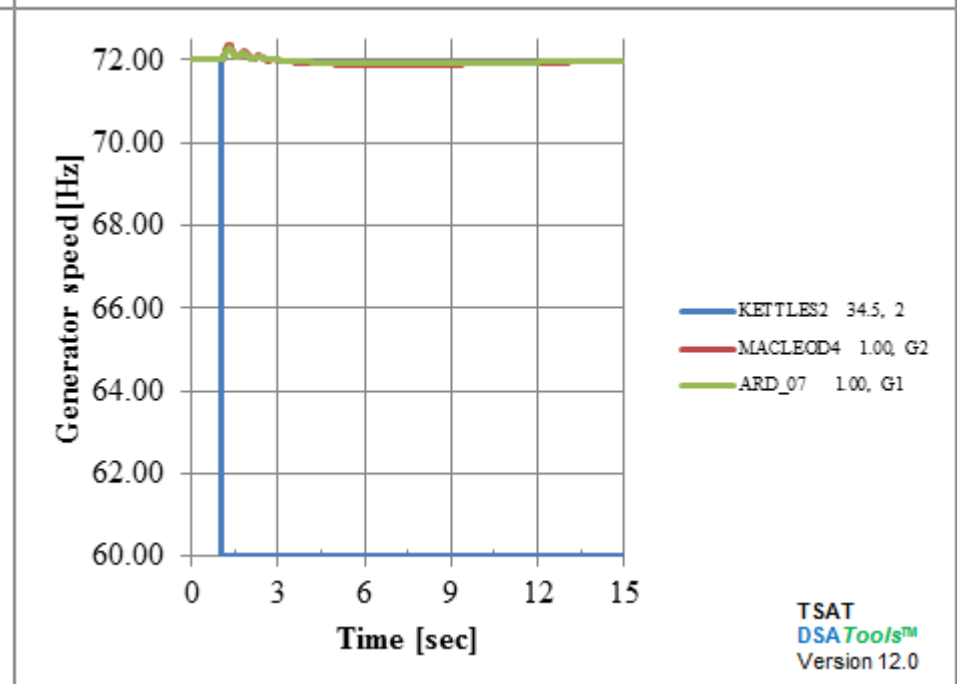
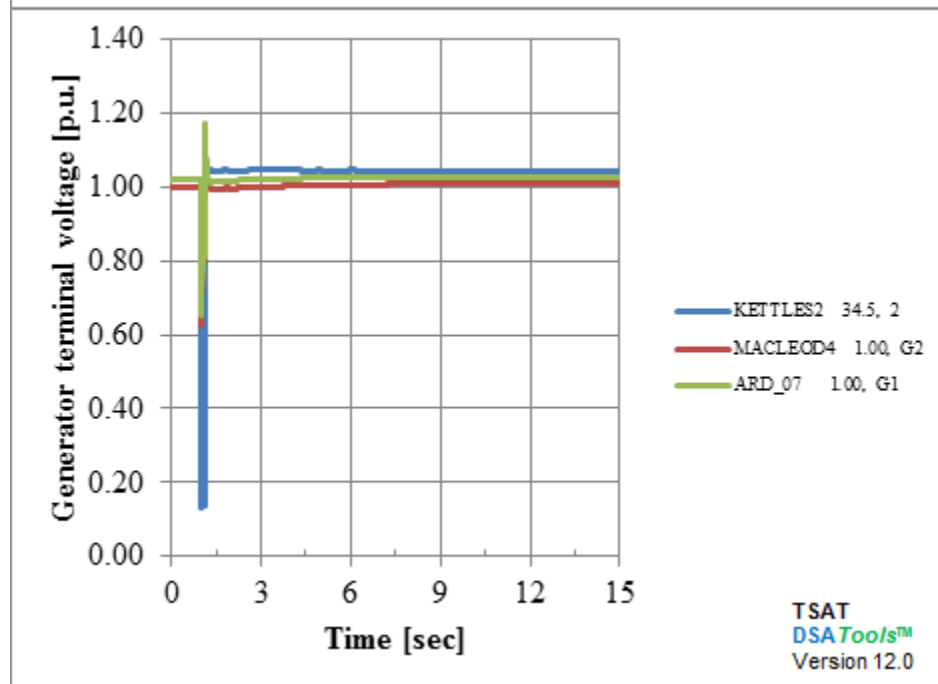
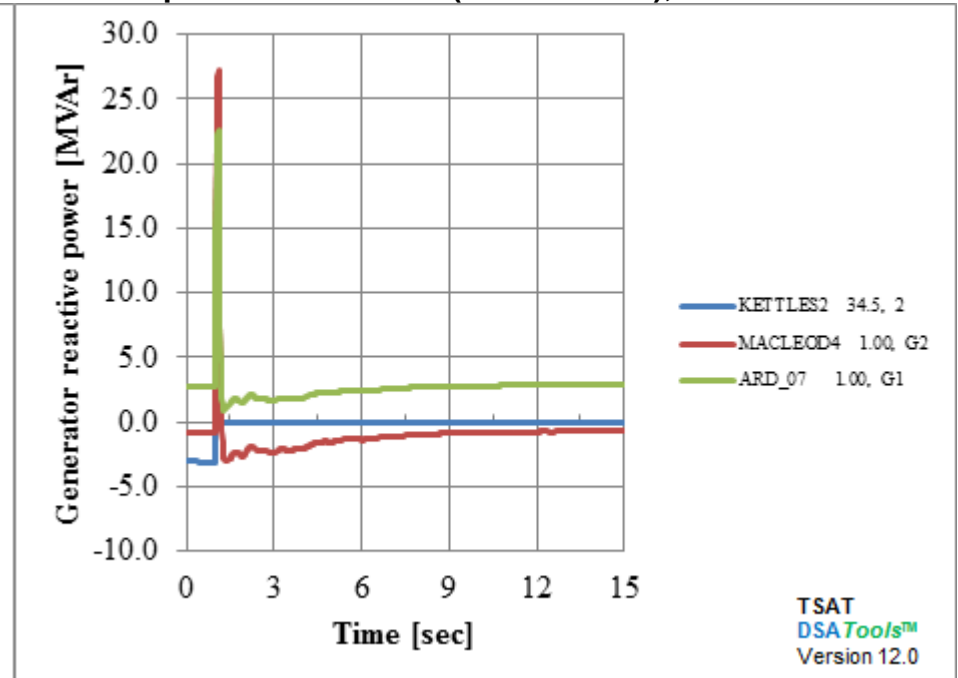
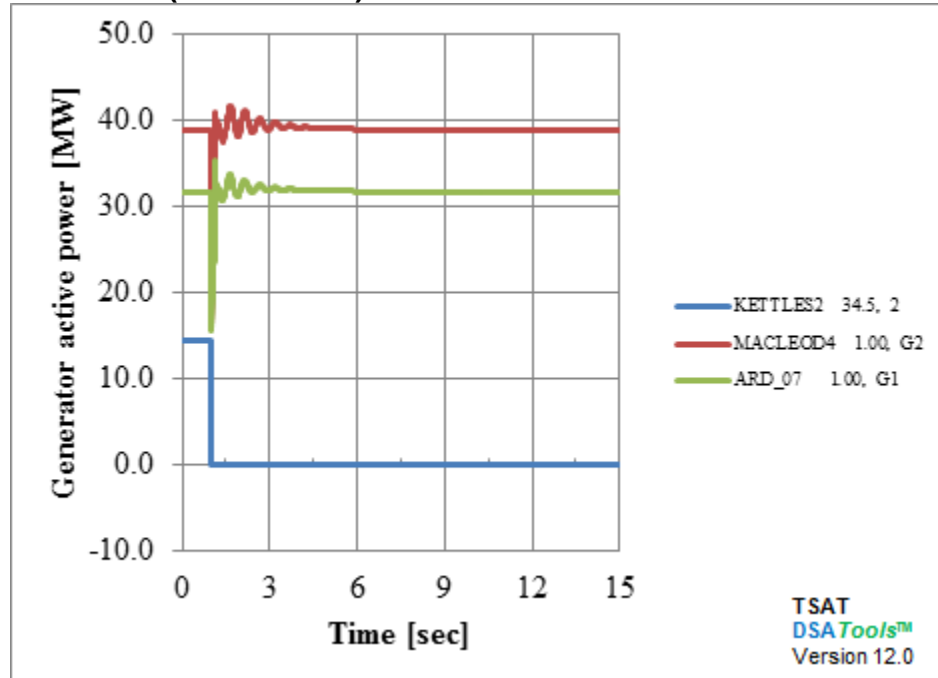
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



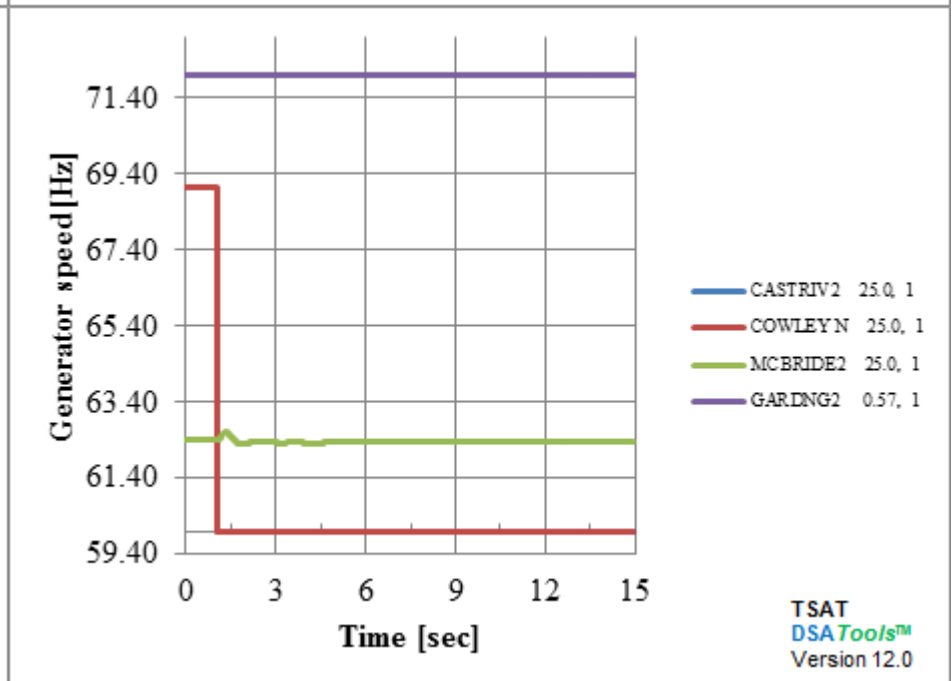
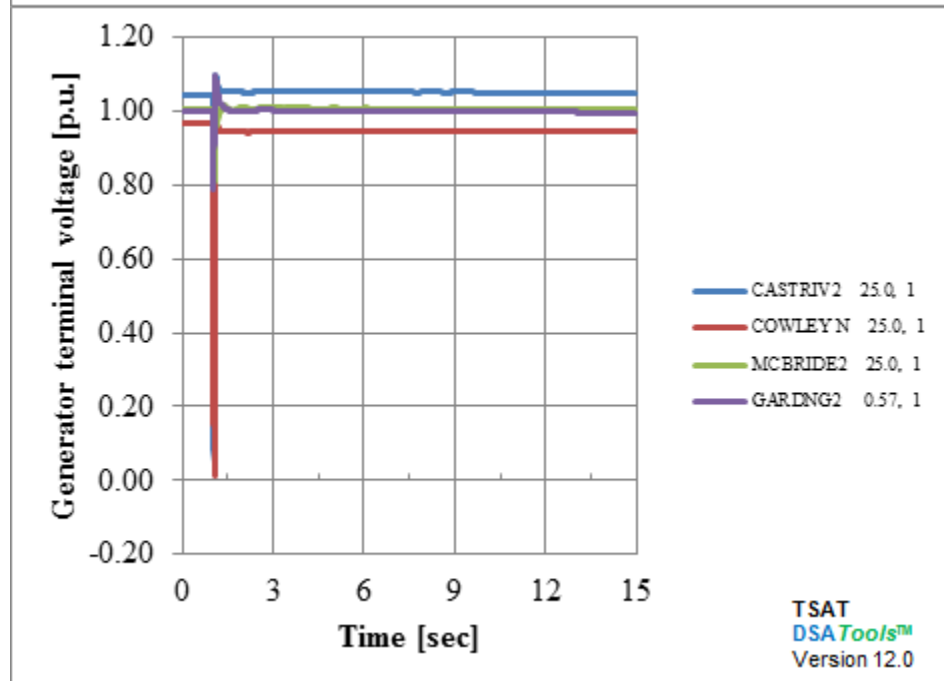
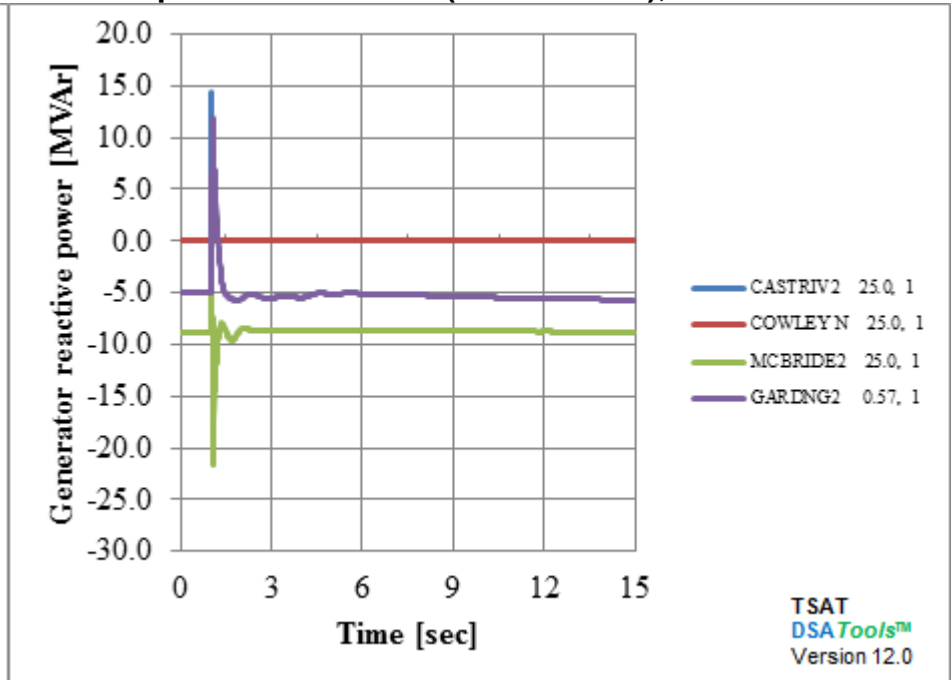
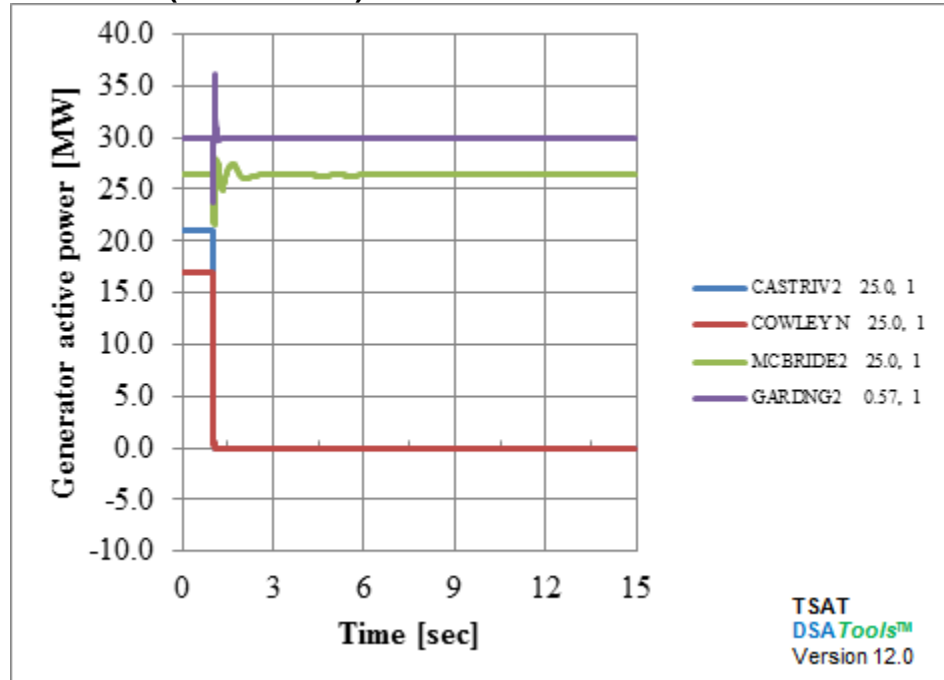
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



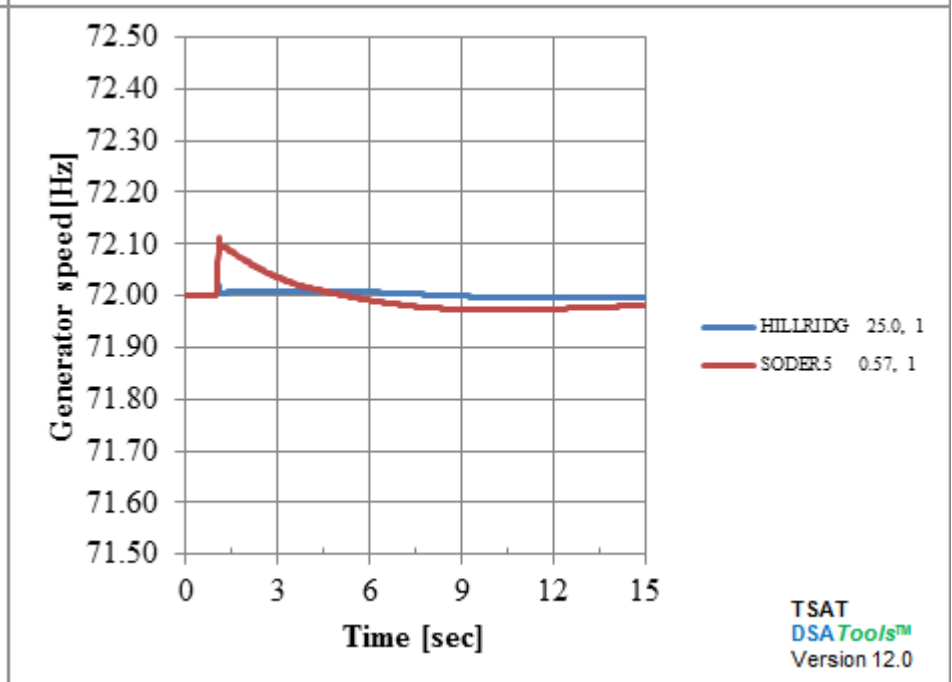
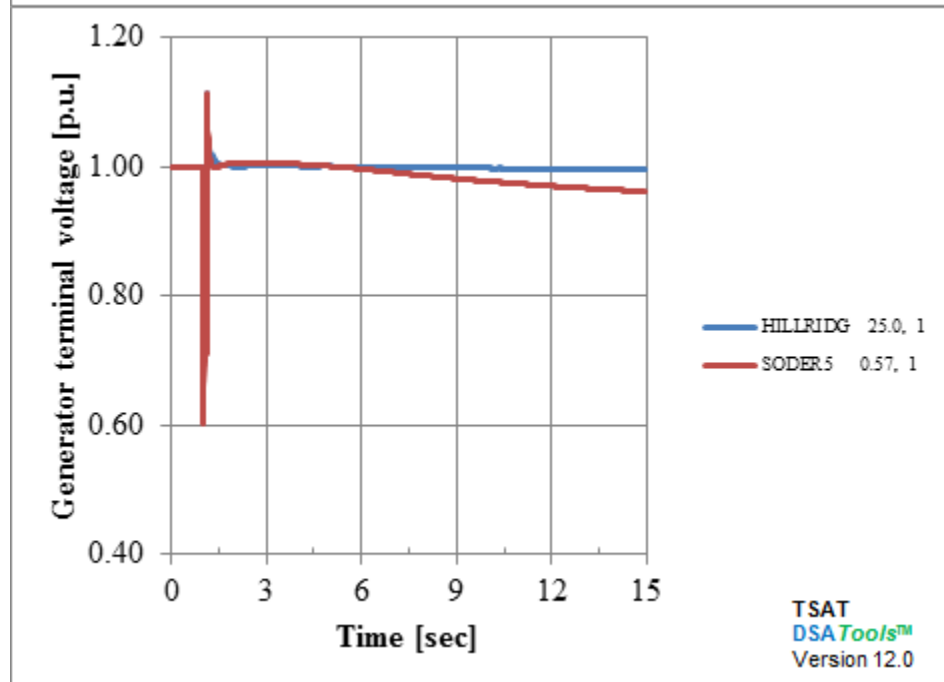
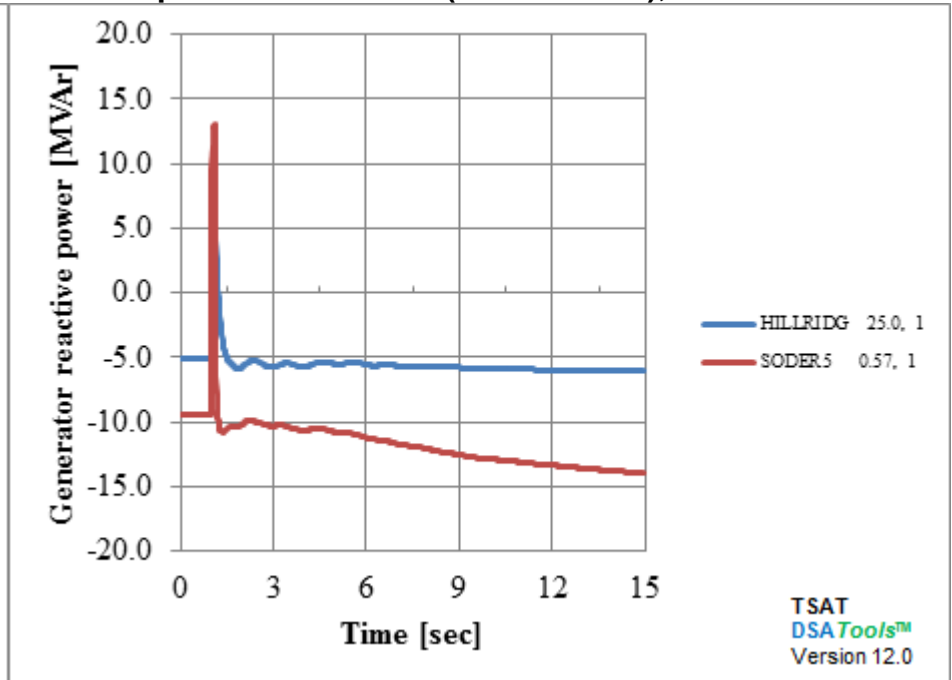
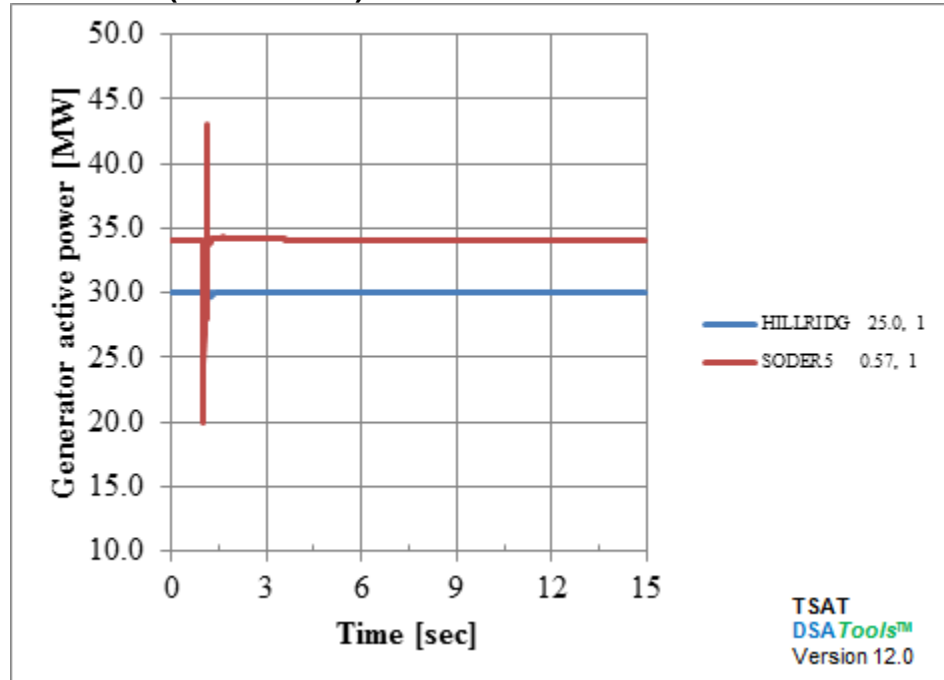
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



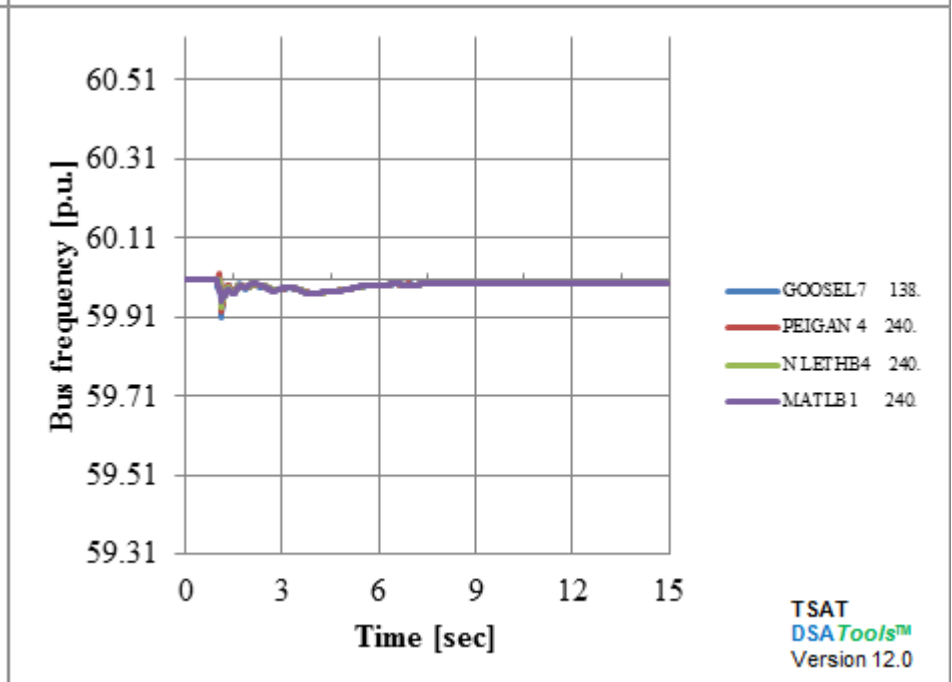
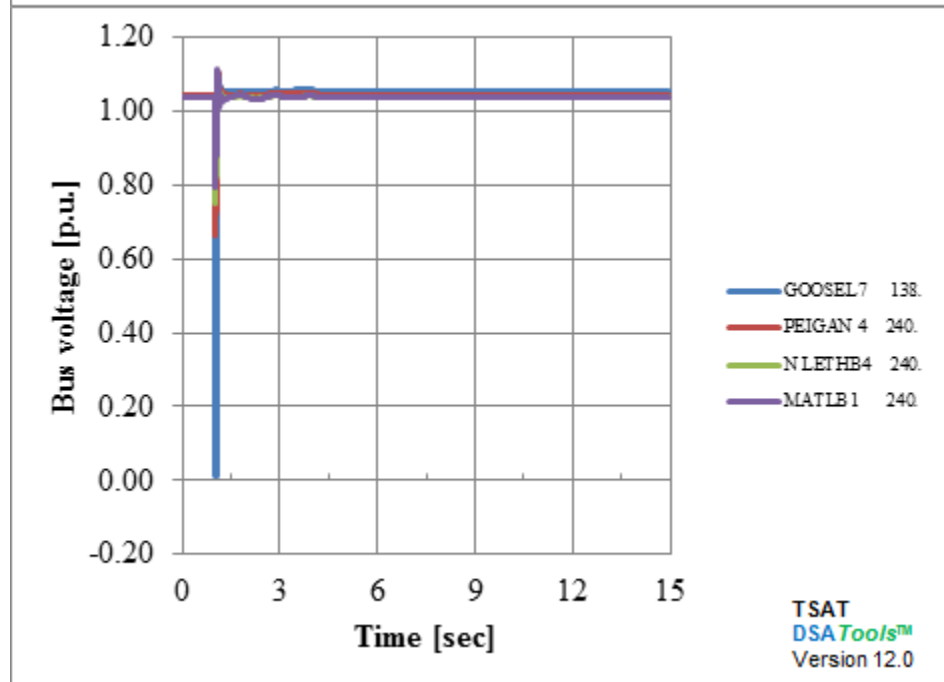
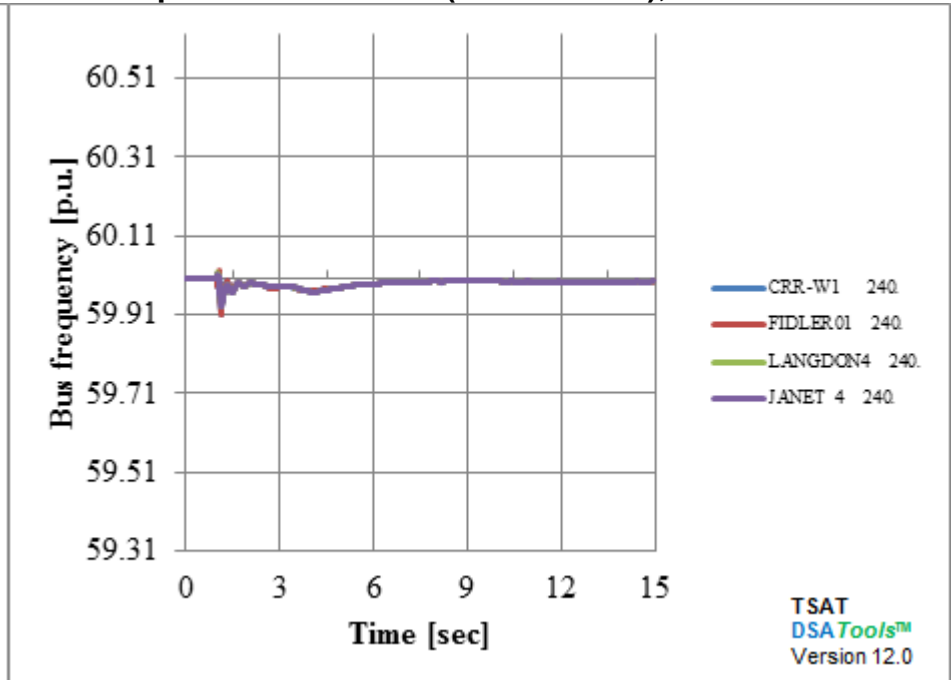
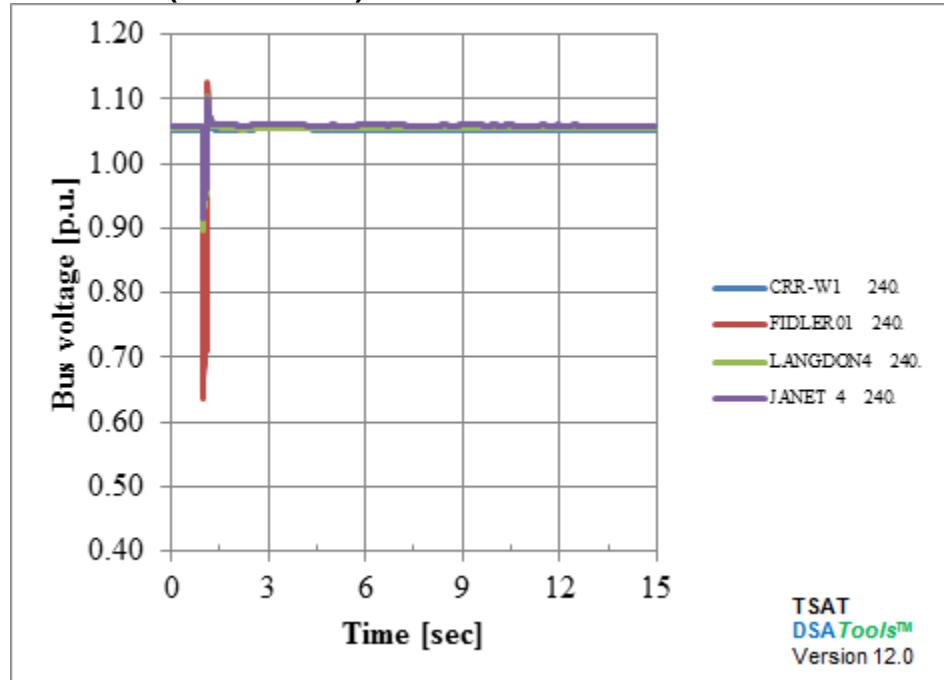
10 -- 164L (103S - 415S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017

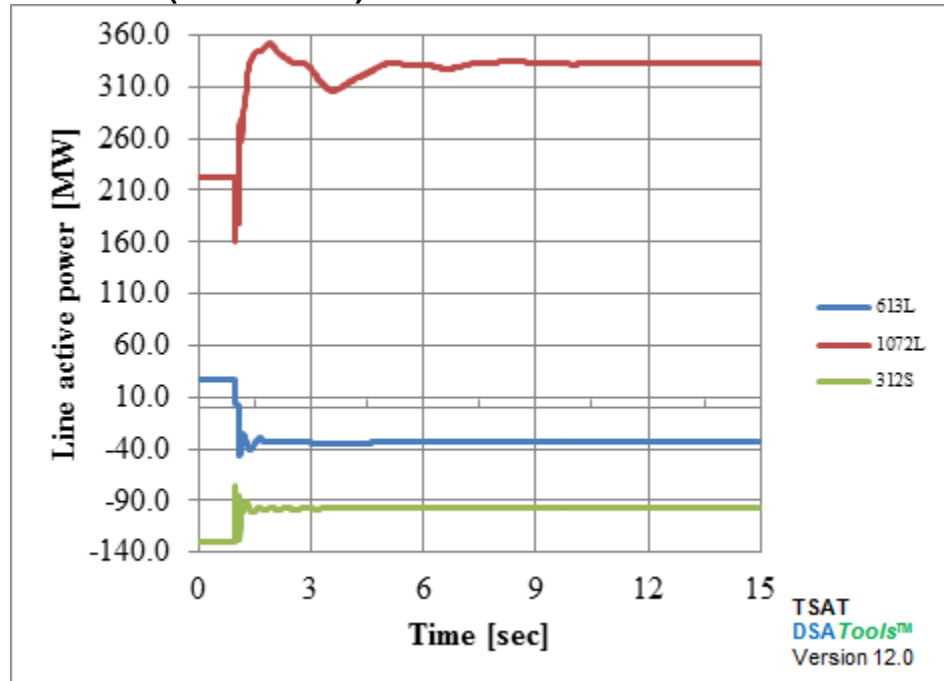


10 -- 164L (103S - 415S) NEAR 103S

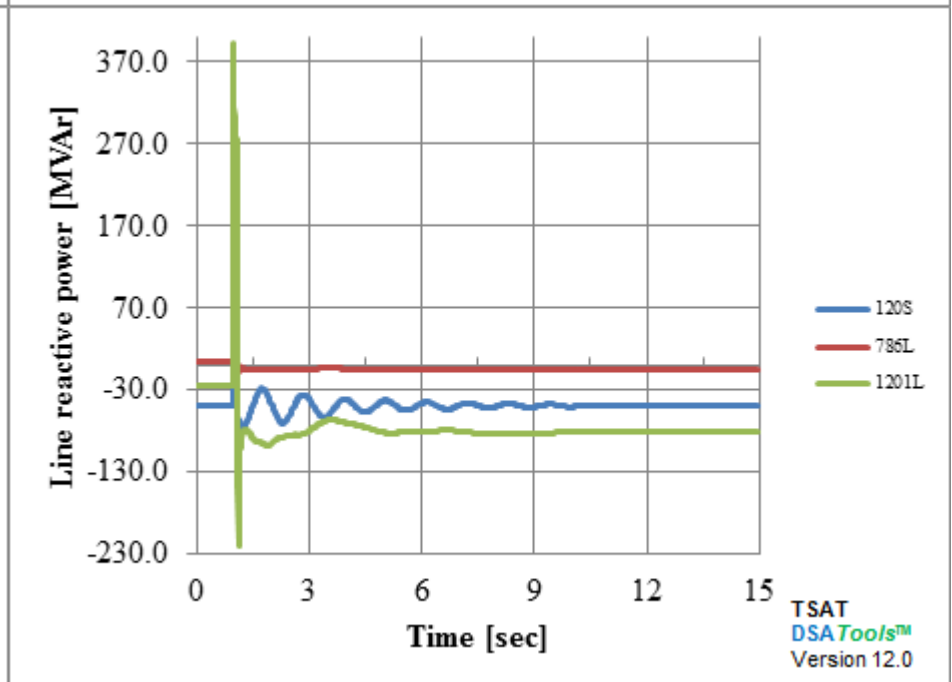
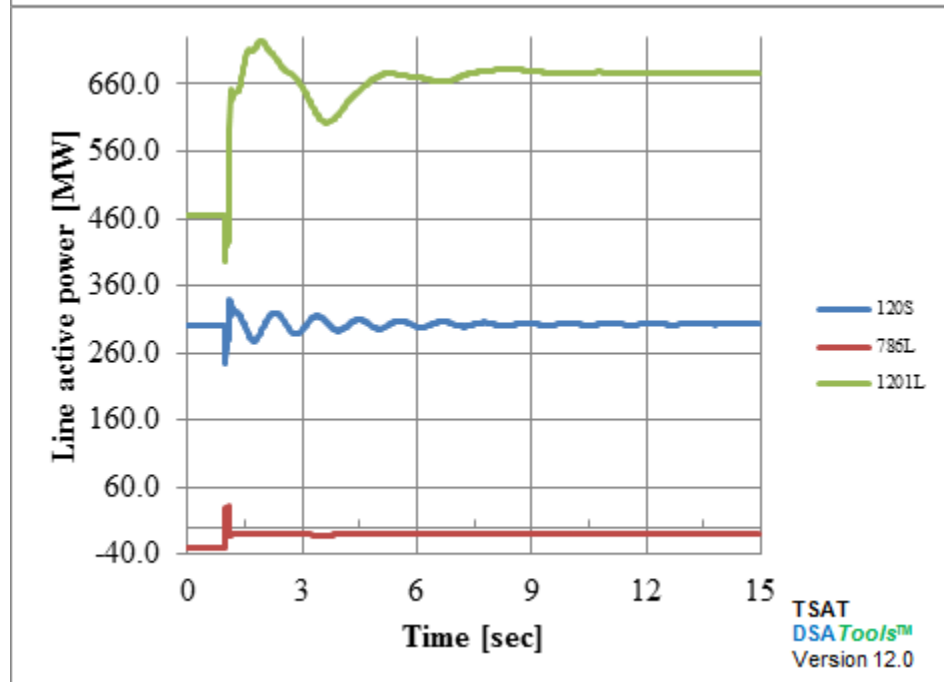
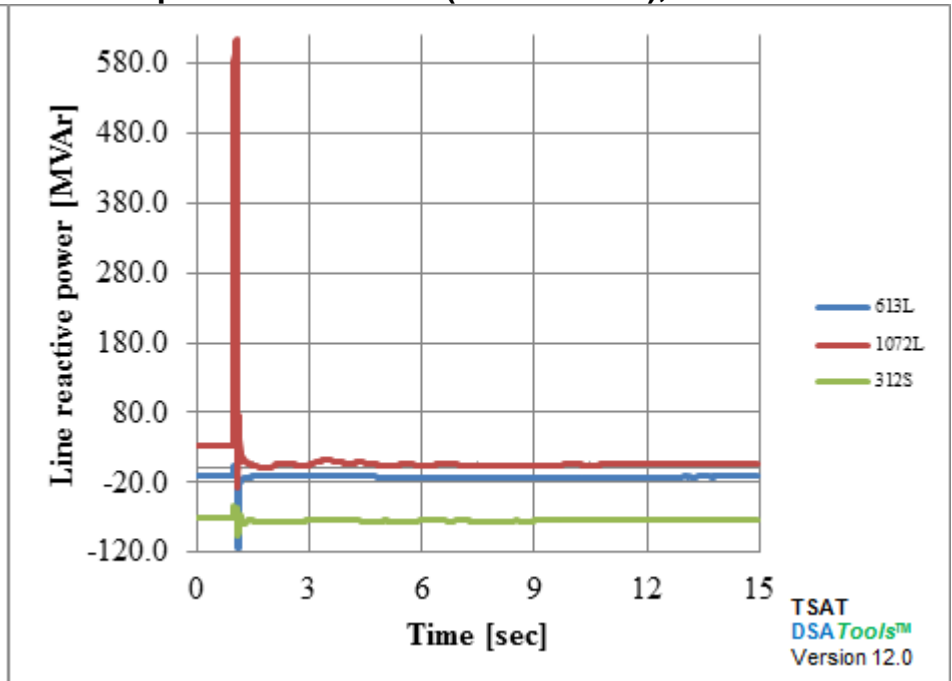
Proposed Connection (Alternative 2), Summer Peak 2017



10 -- 164L (103S - 415S) NEAR 103S

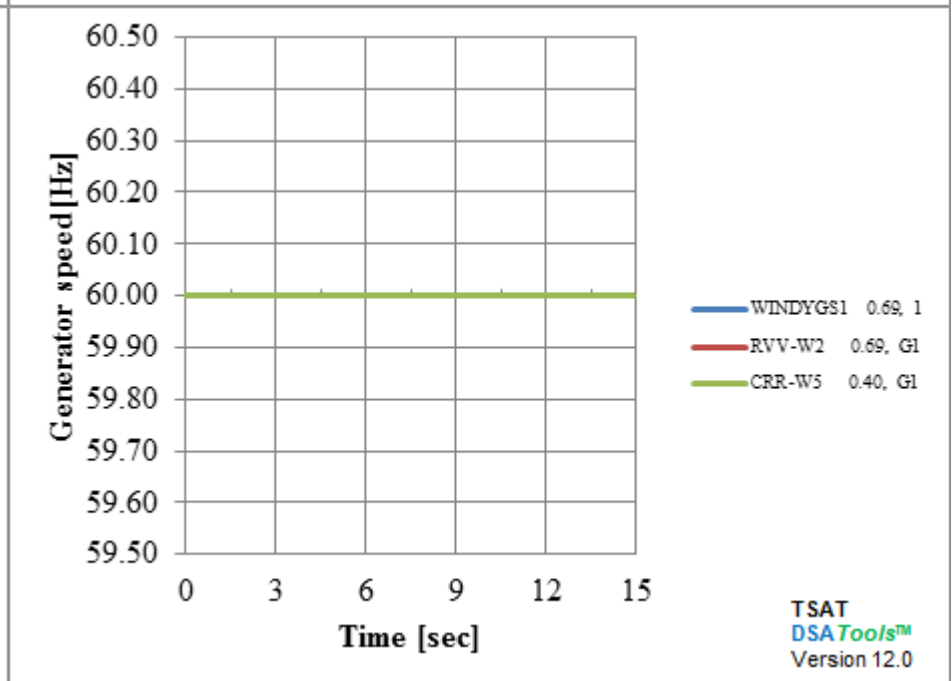
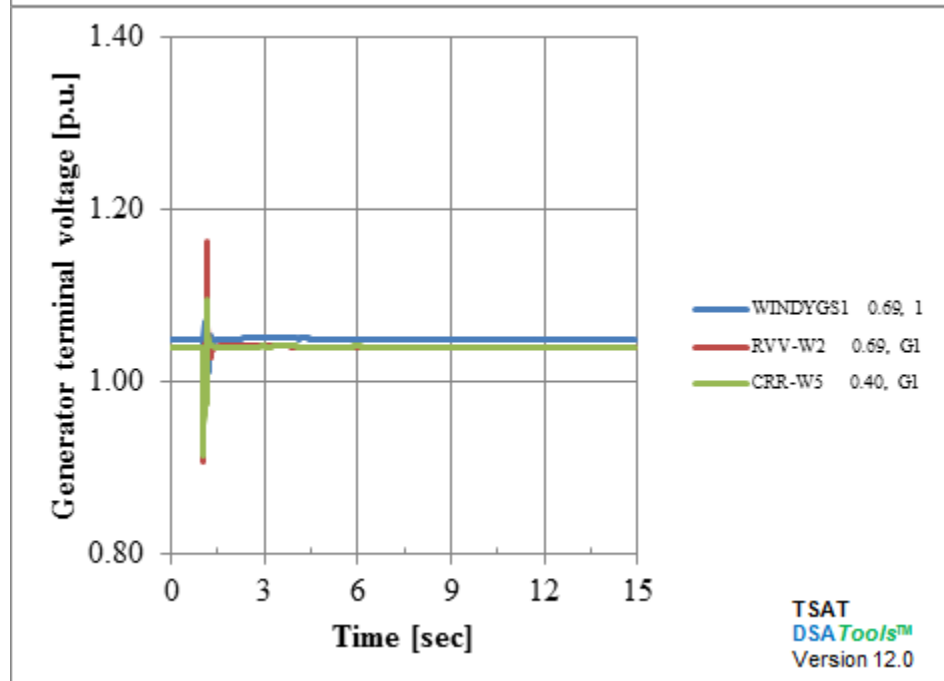
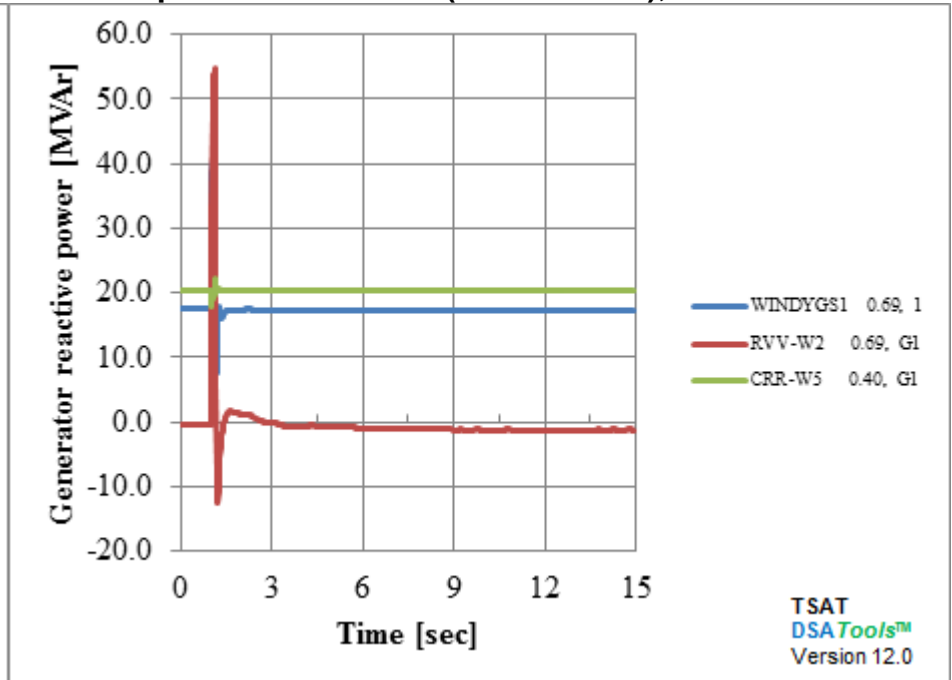
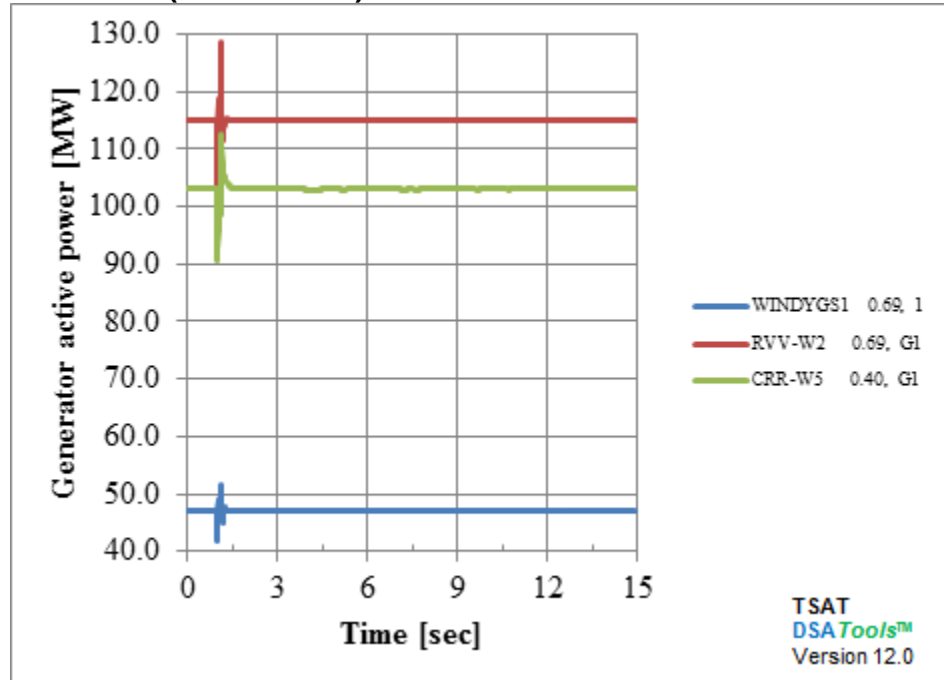


Proposed Connection (Alternative 2), Summer Peak 2017



11 -- 164L (103S - 415S) NEAR 415S

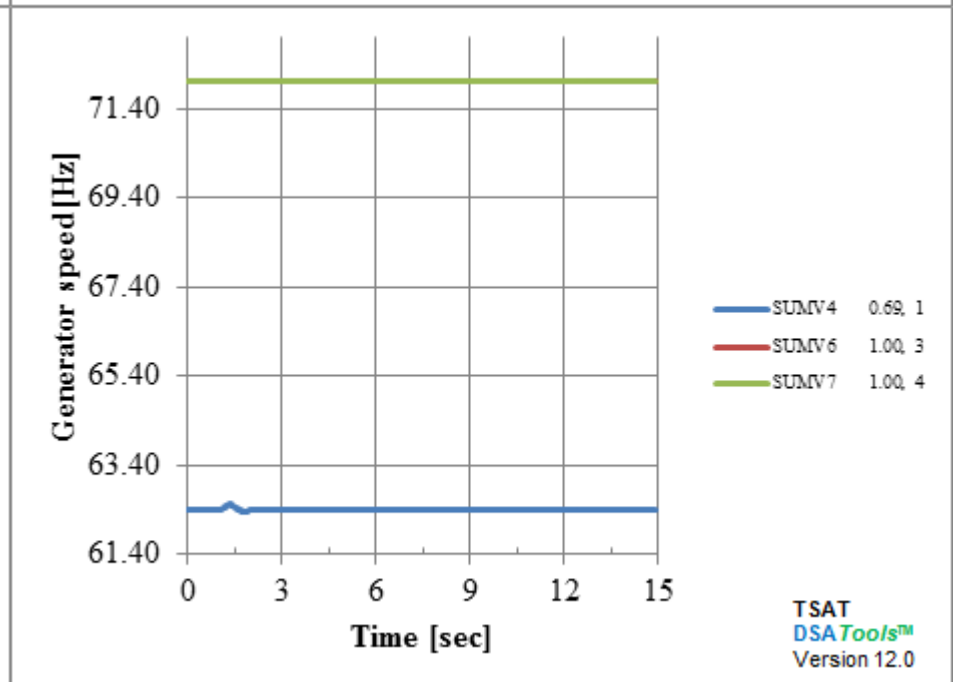
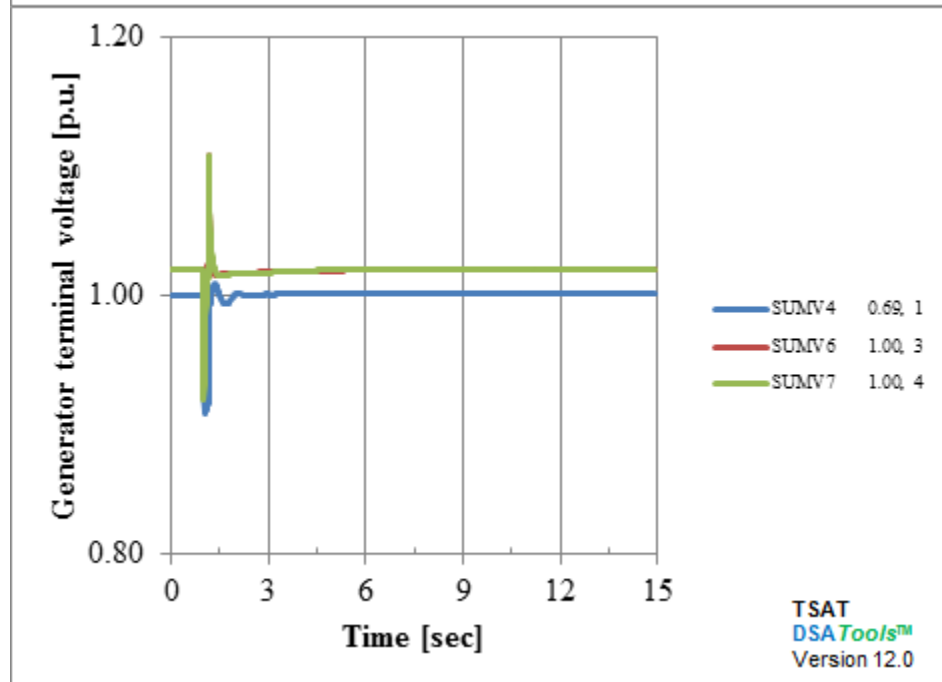
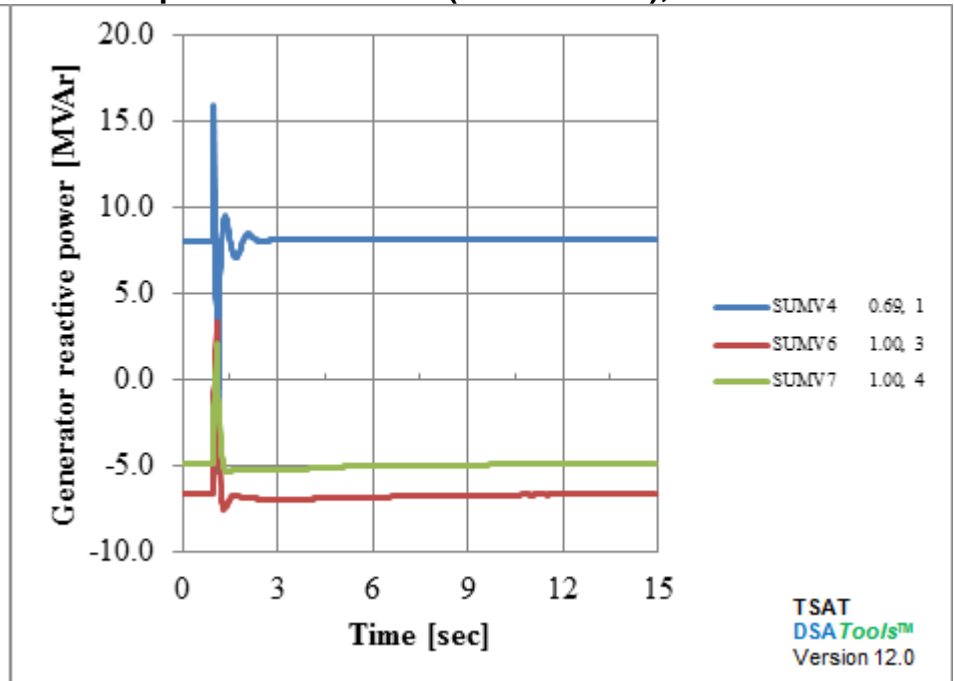
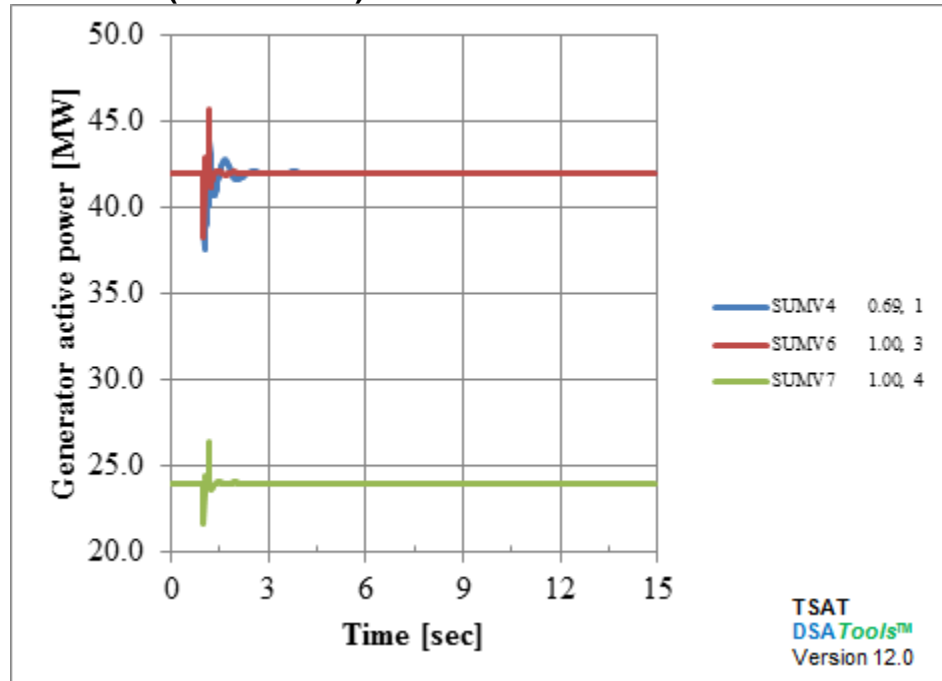
Proposed Connection (Alternative 2), Summer Peak 2017





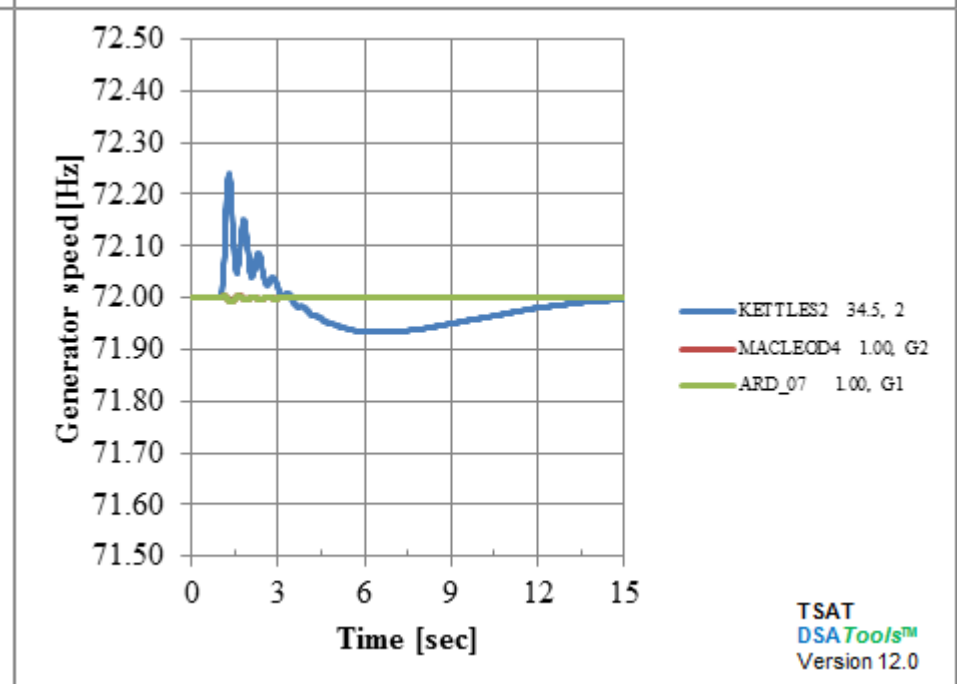
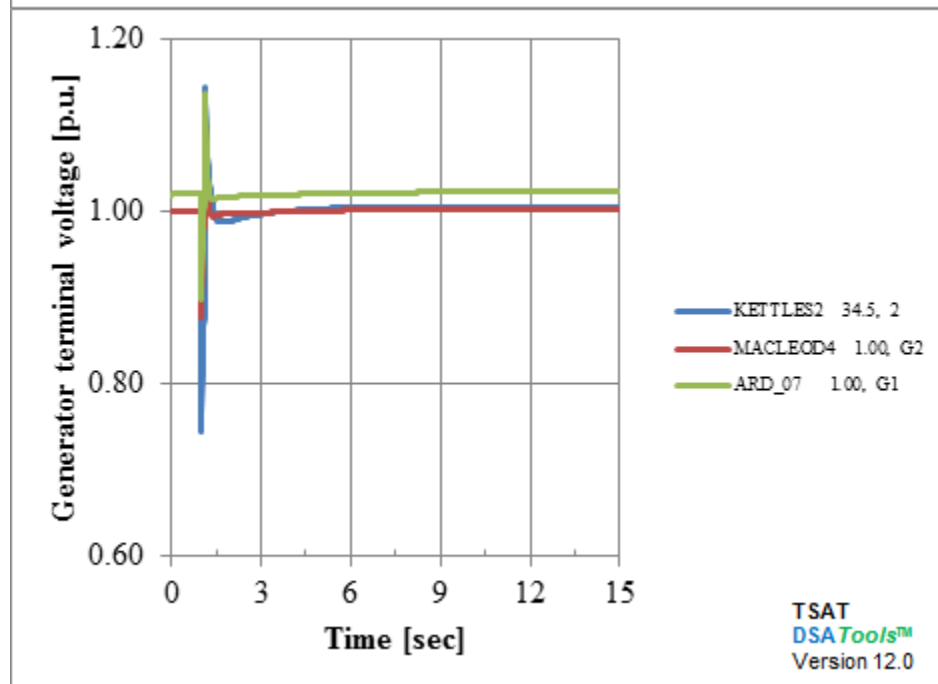
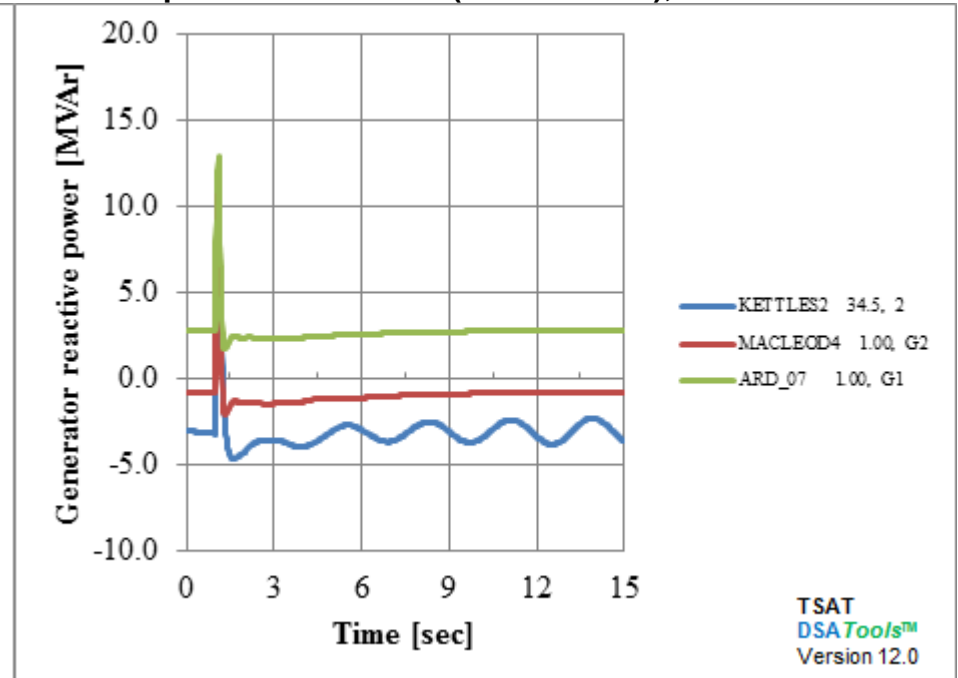
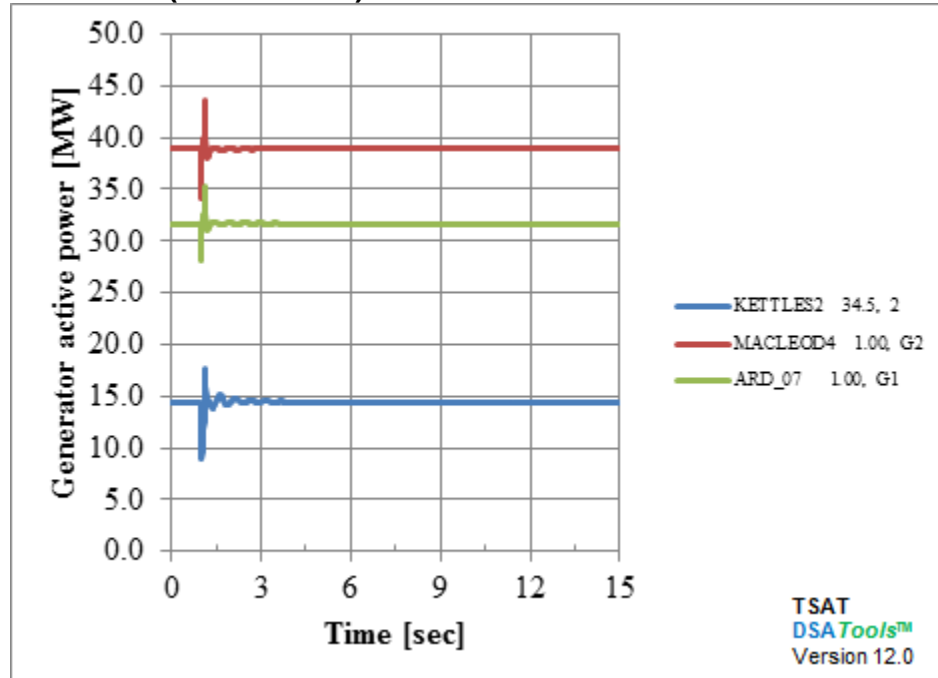
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Peak 2017



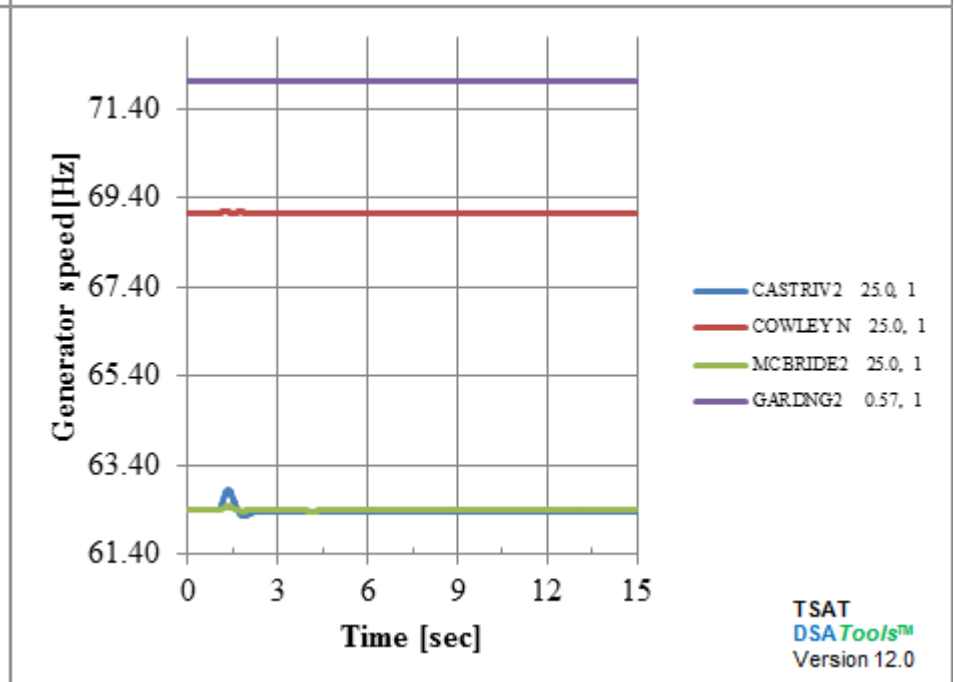
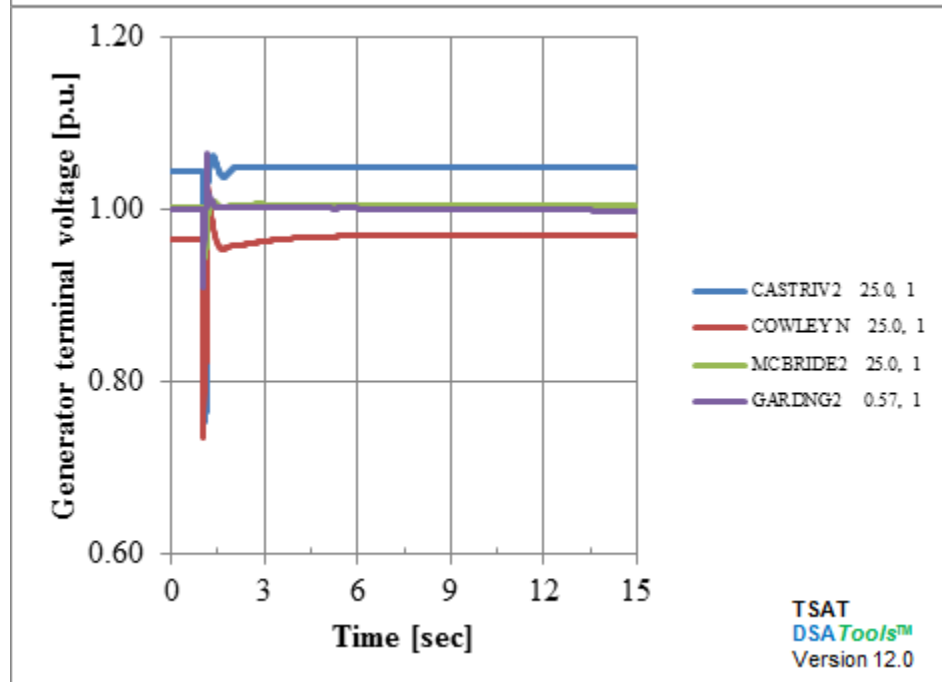
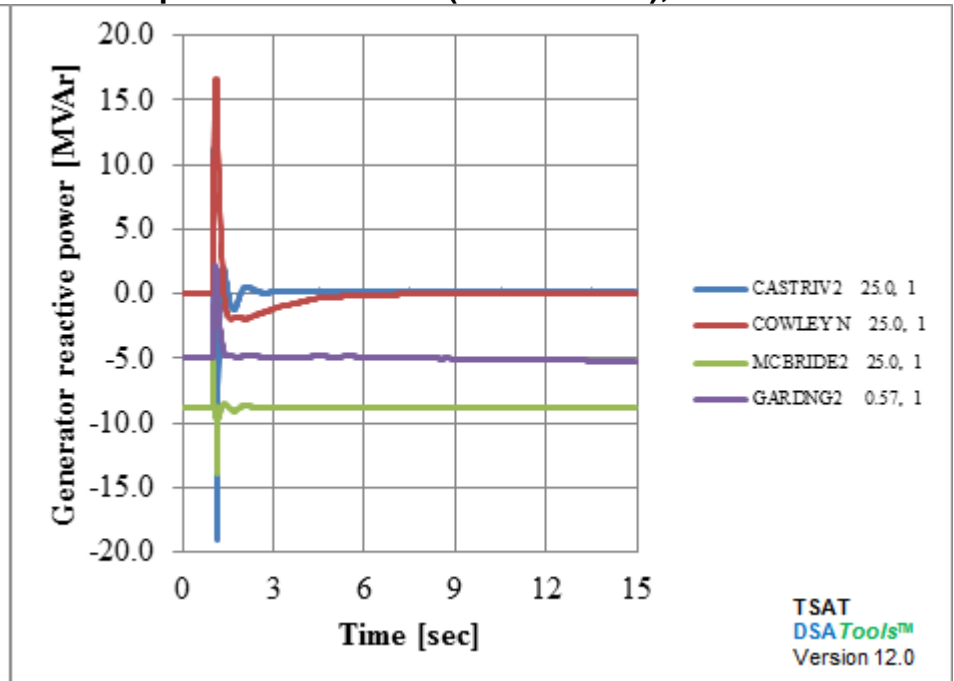
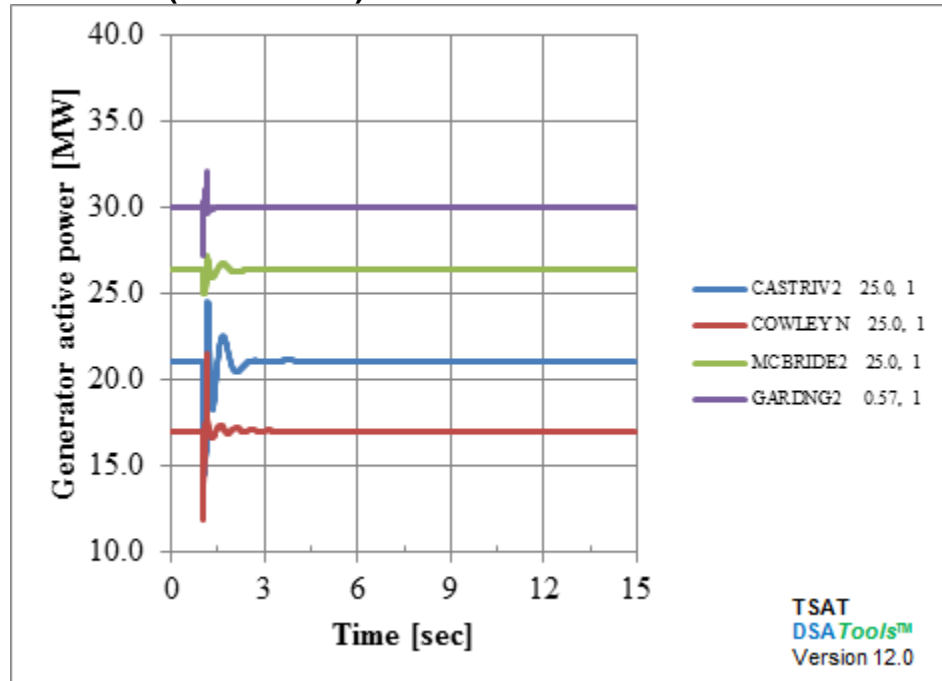
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Peak 2017



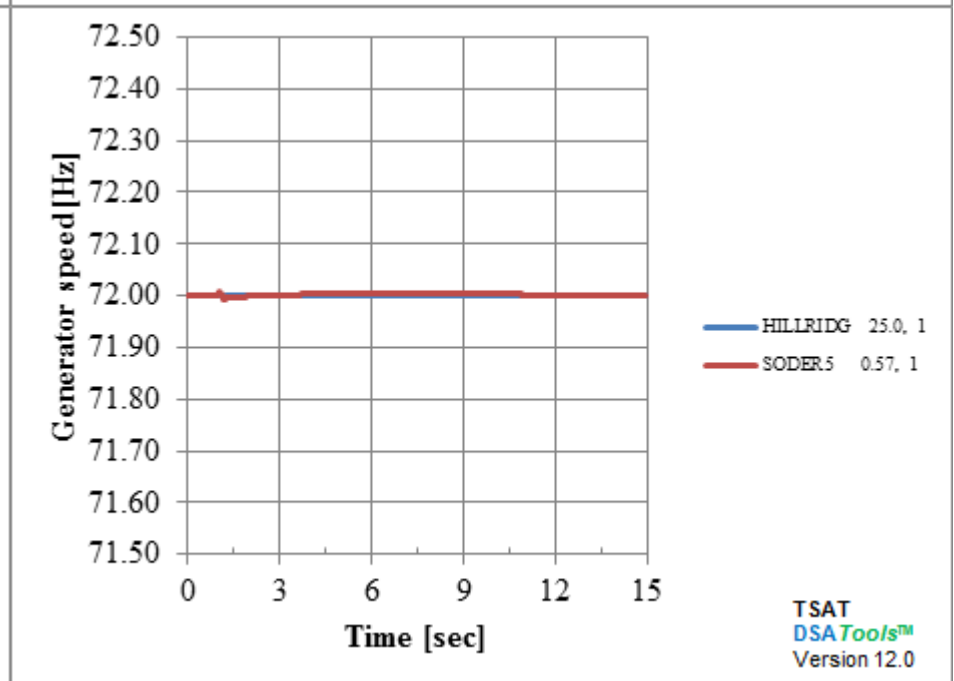
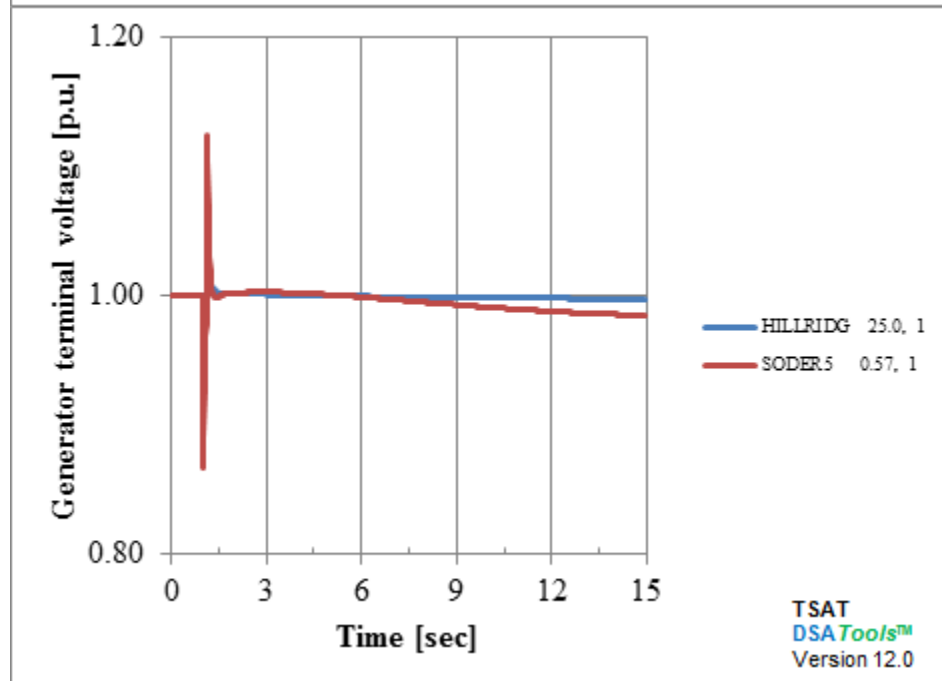
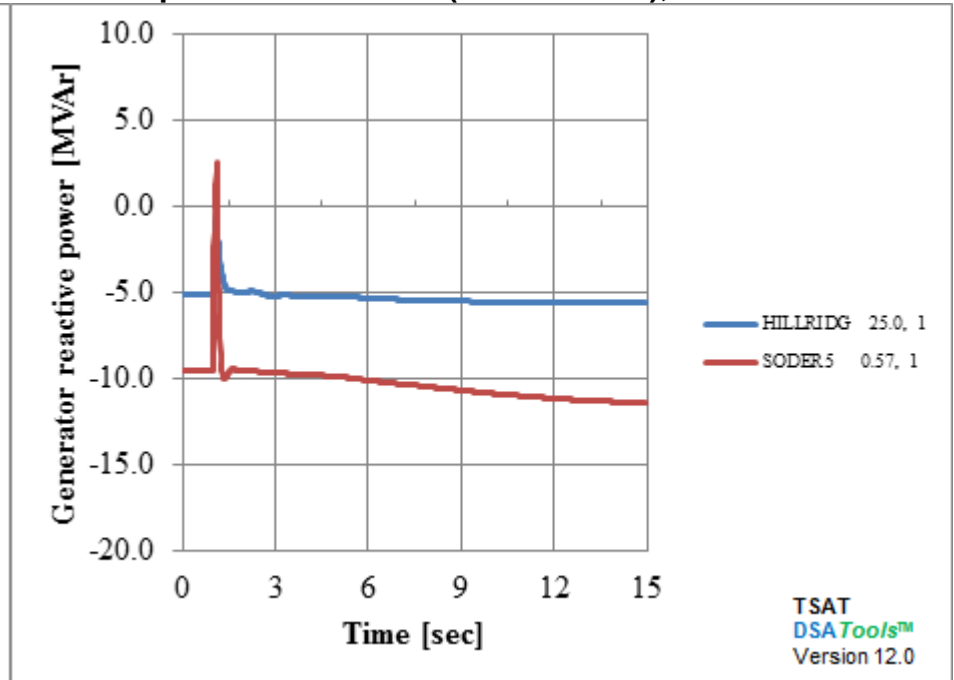
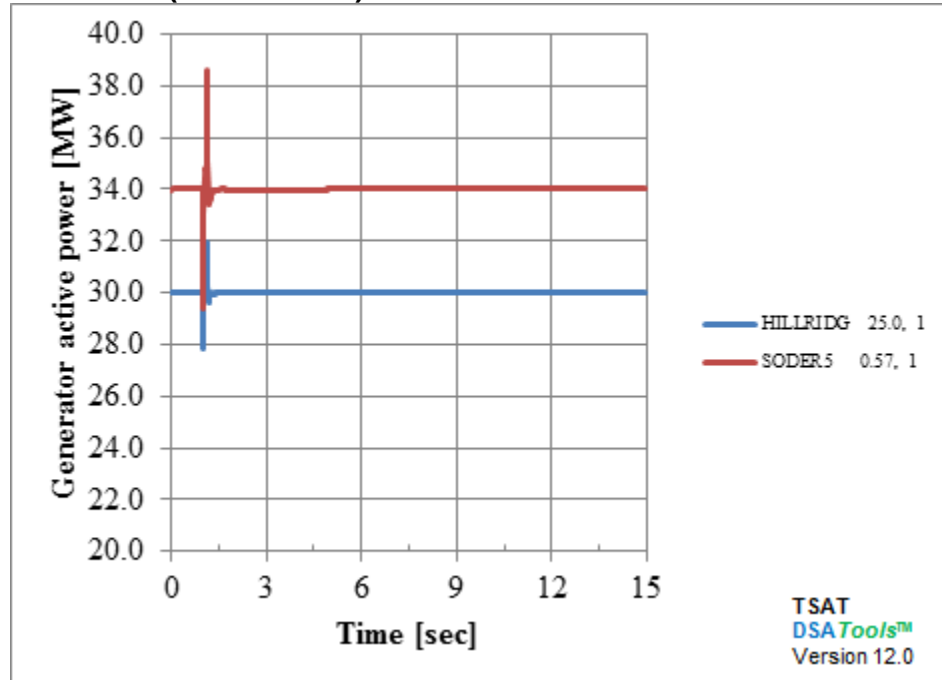
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Peak 2017



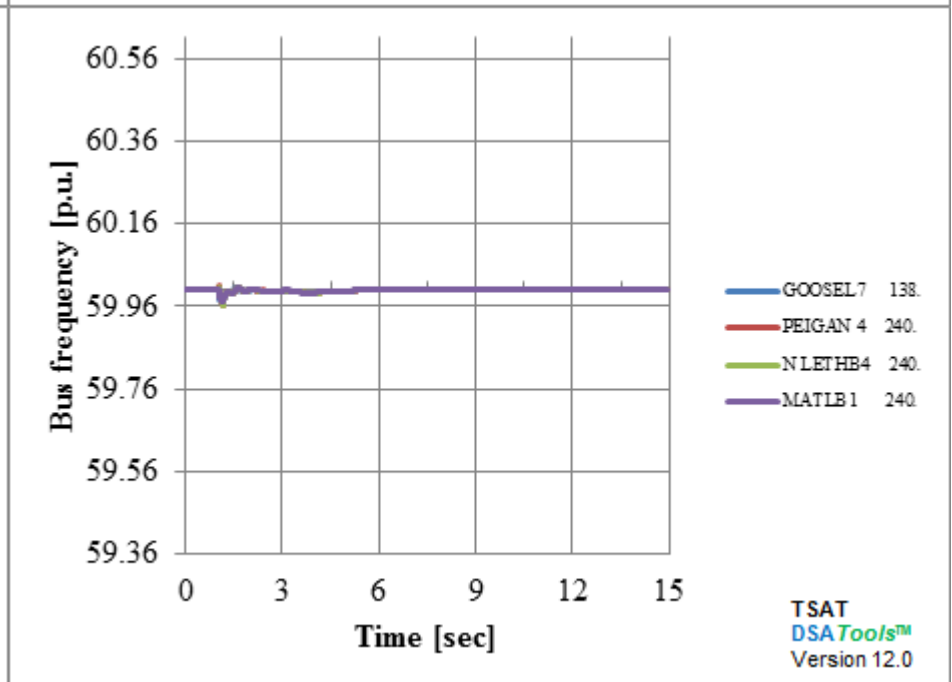
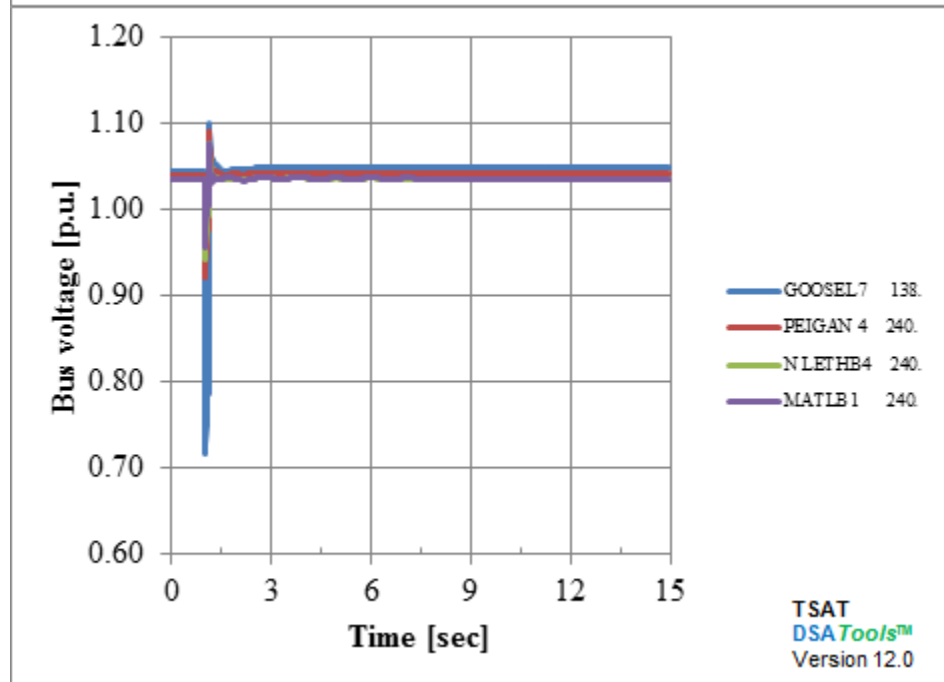
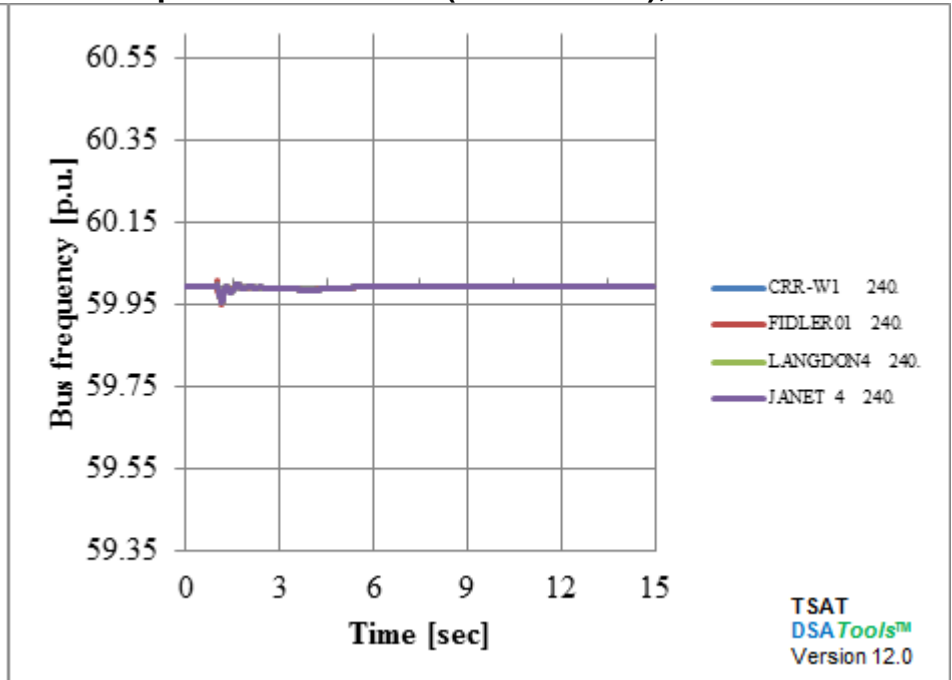
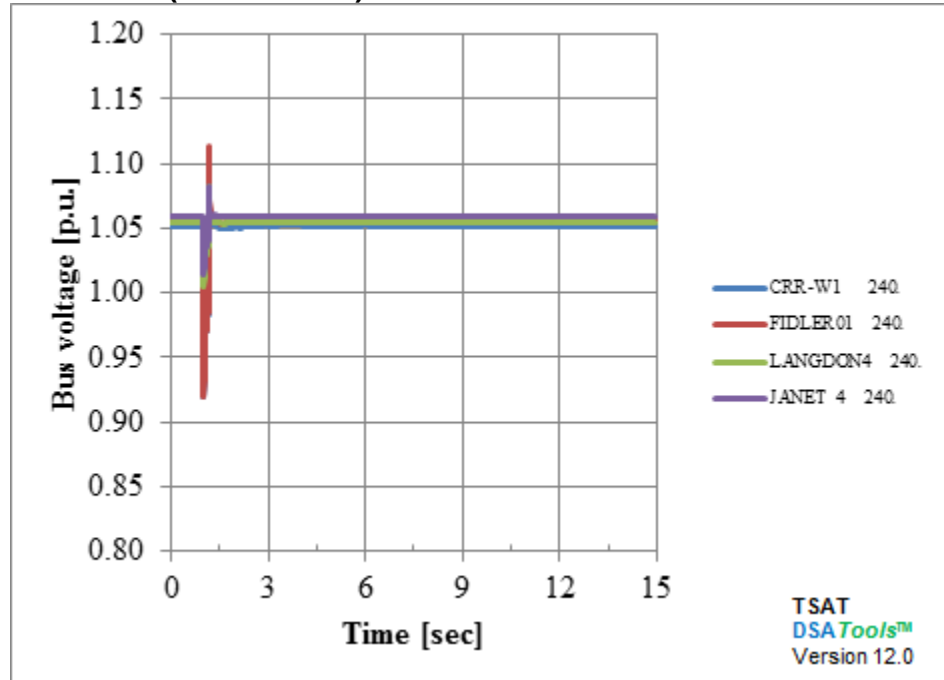
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Peak 2017



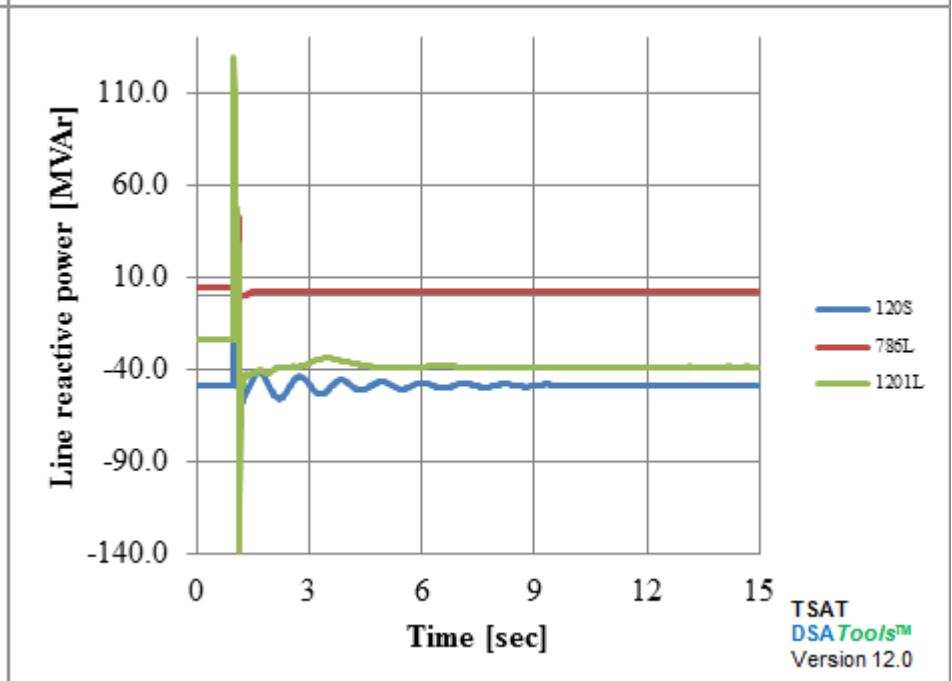
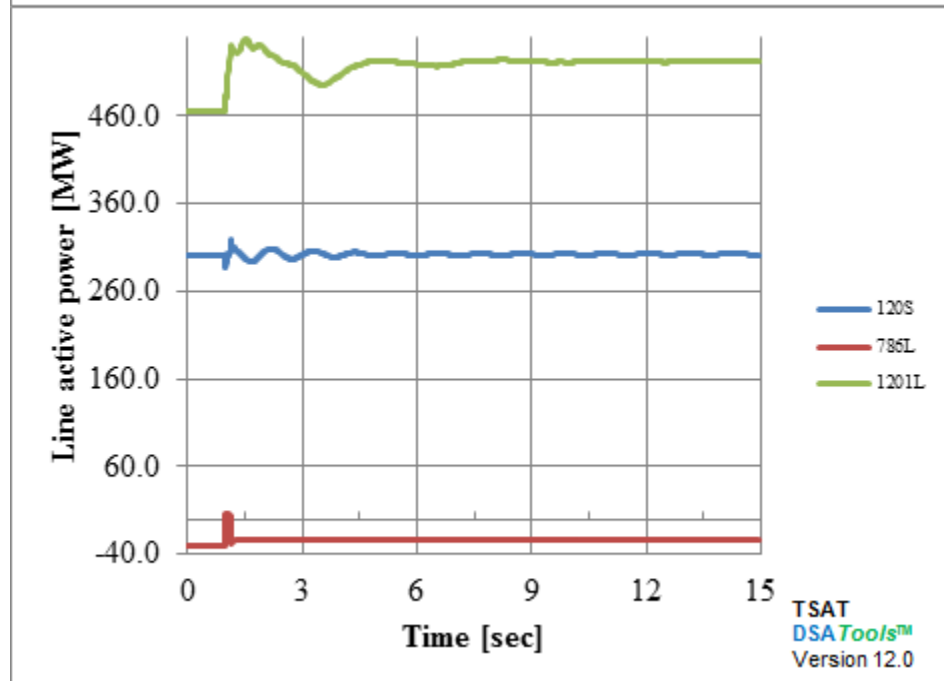
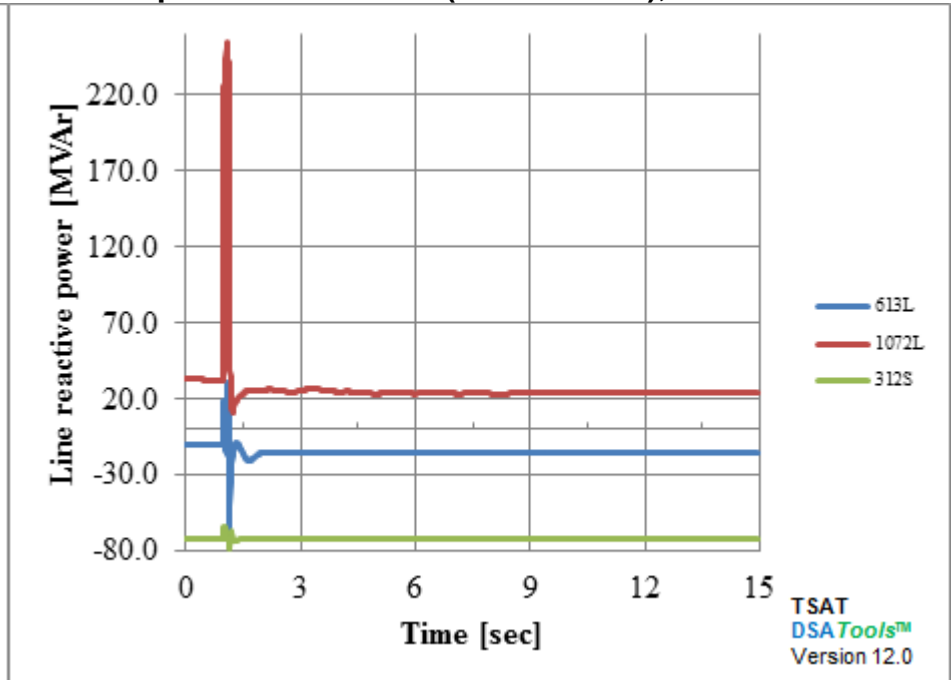
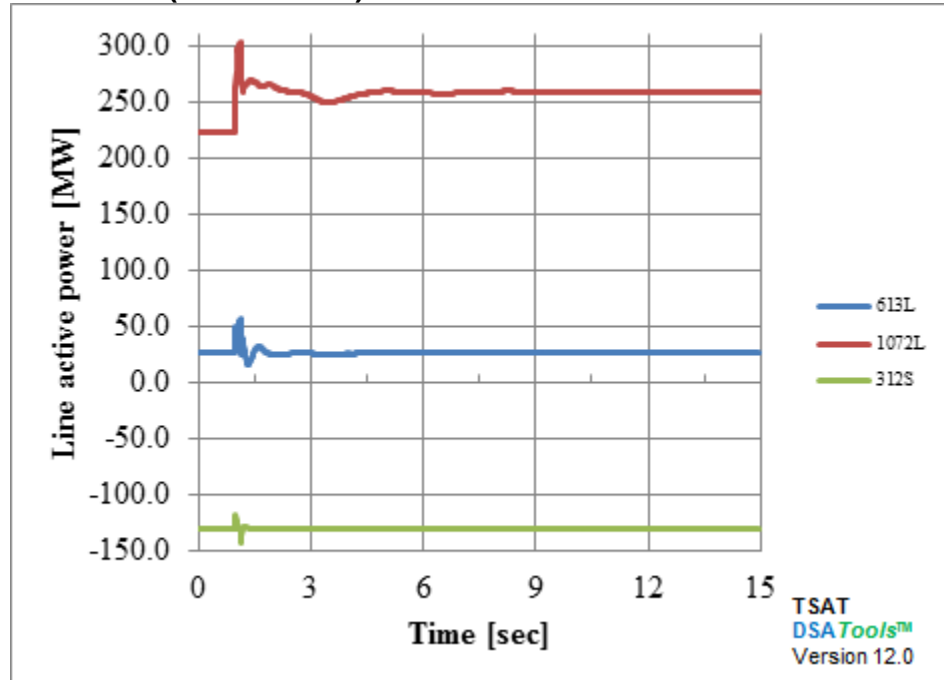
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Peak 2017



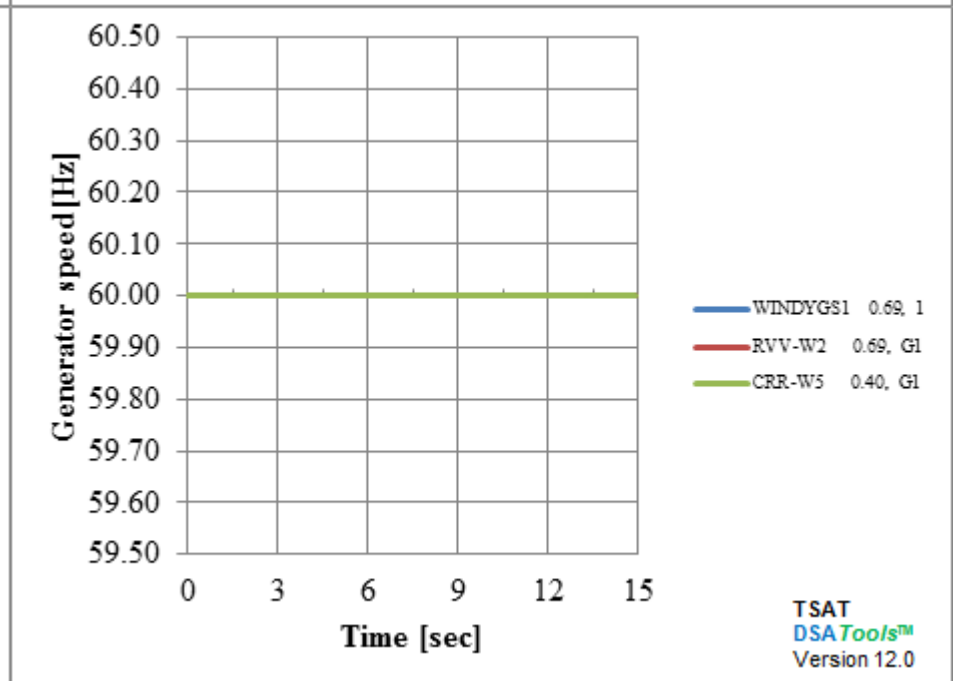
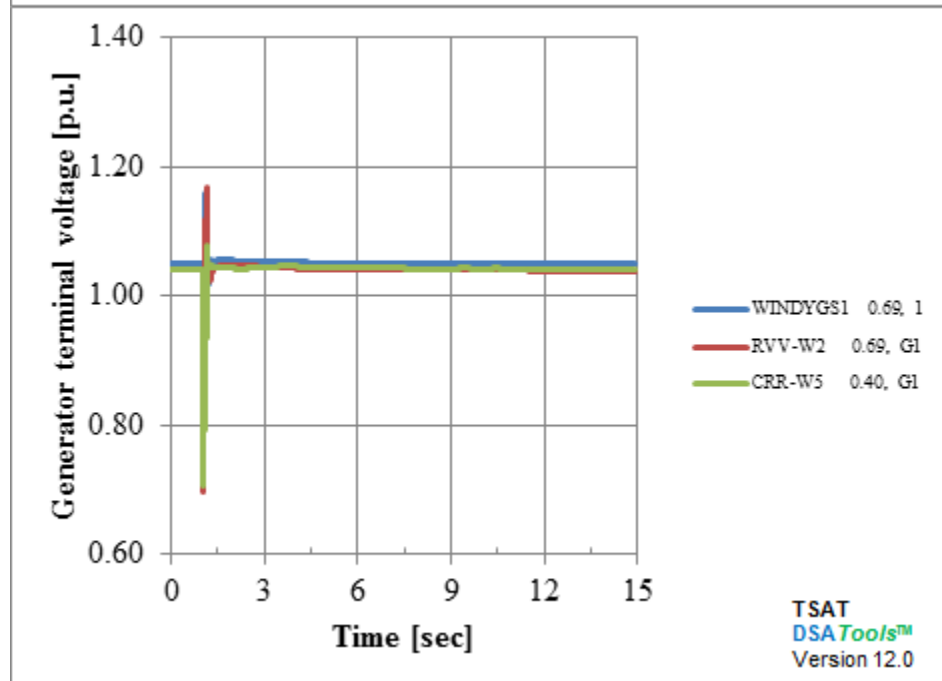
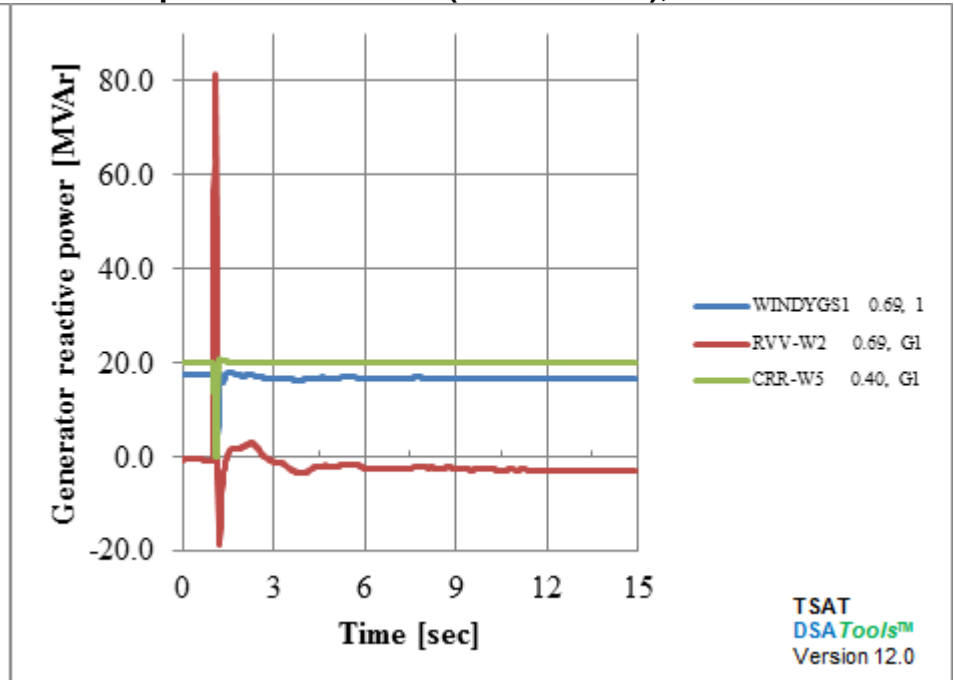
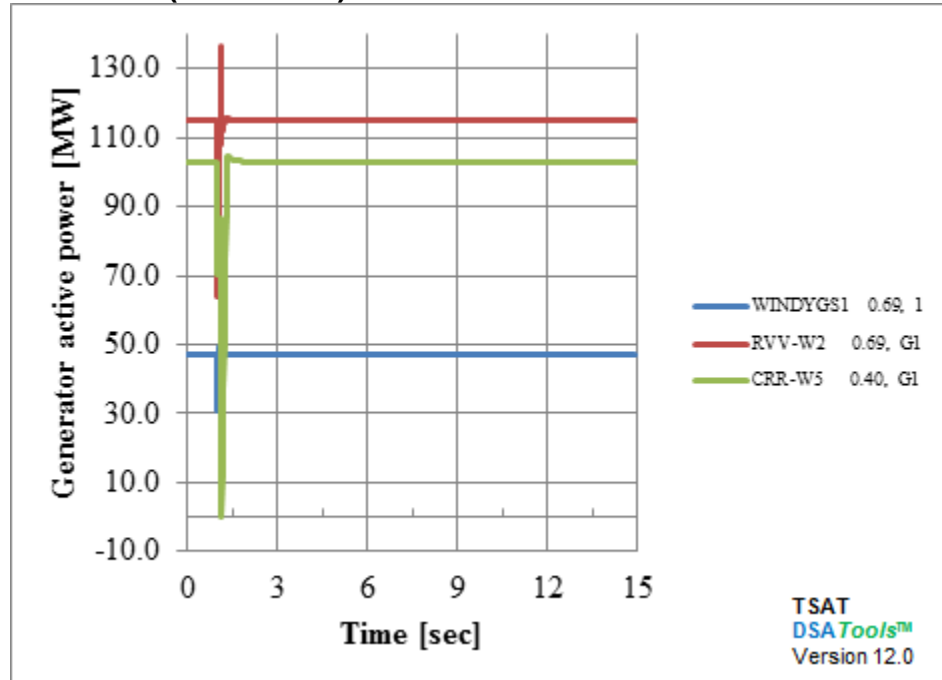
11 -- 164L (103S - 415S) NEAR 415S

Proposed Connection (Alternative 2), Summer Peak 2017



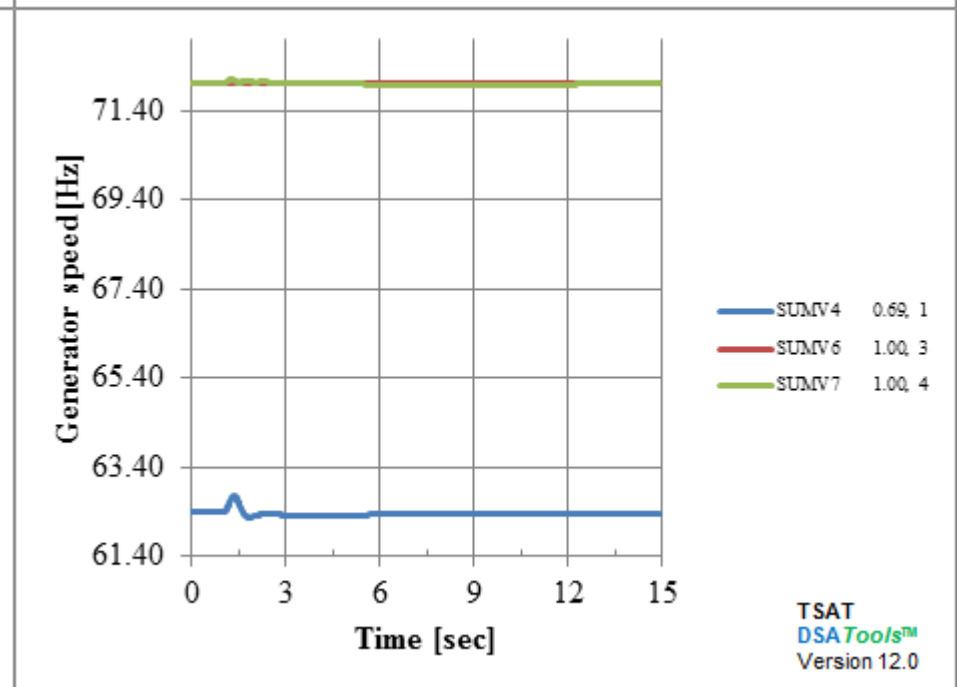
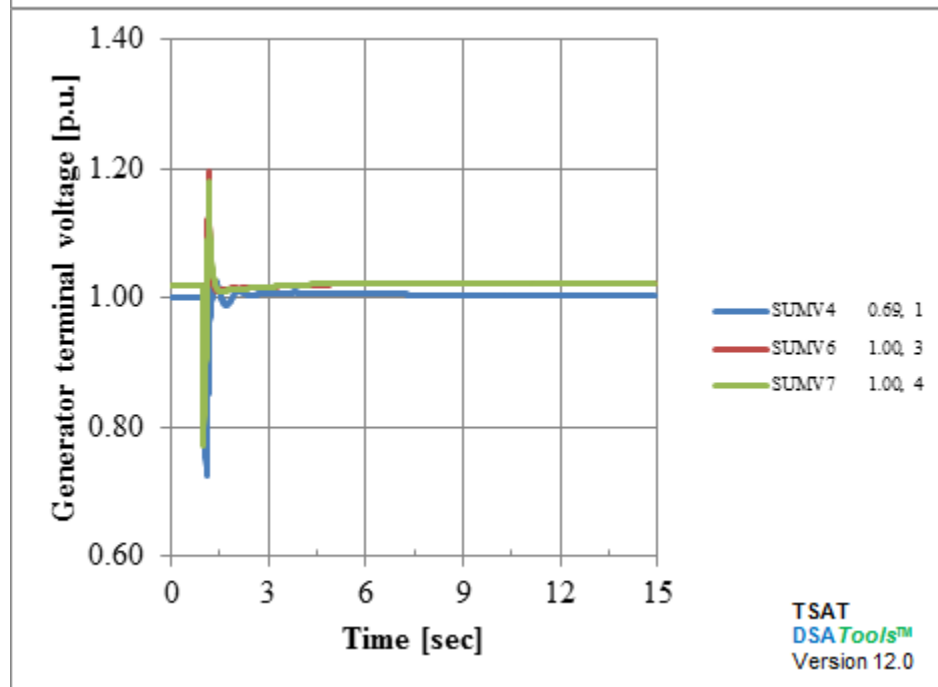
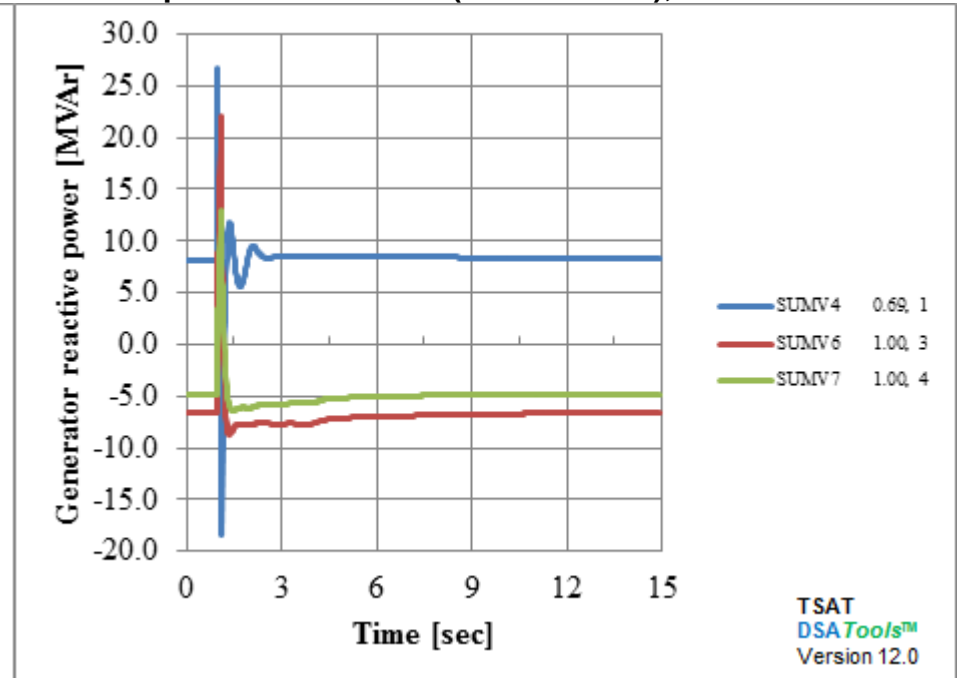
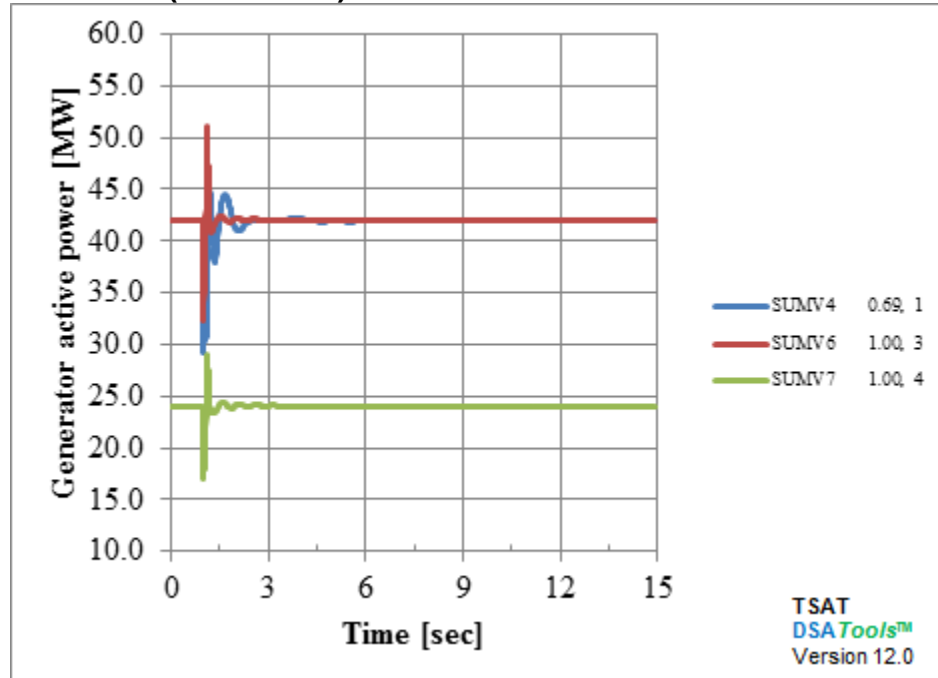
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



12 -- 616L (59S - 103S) NEAR 59S

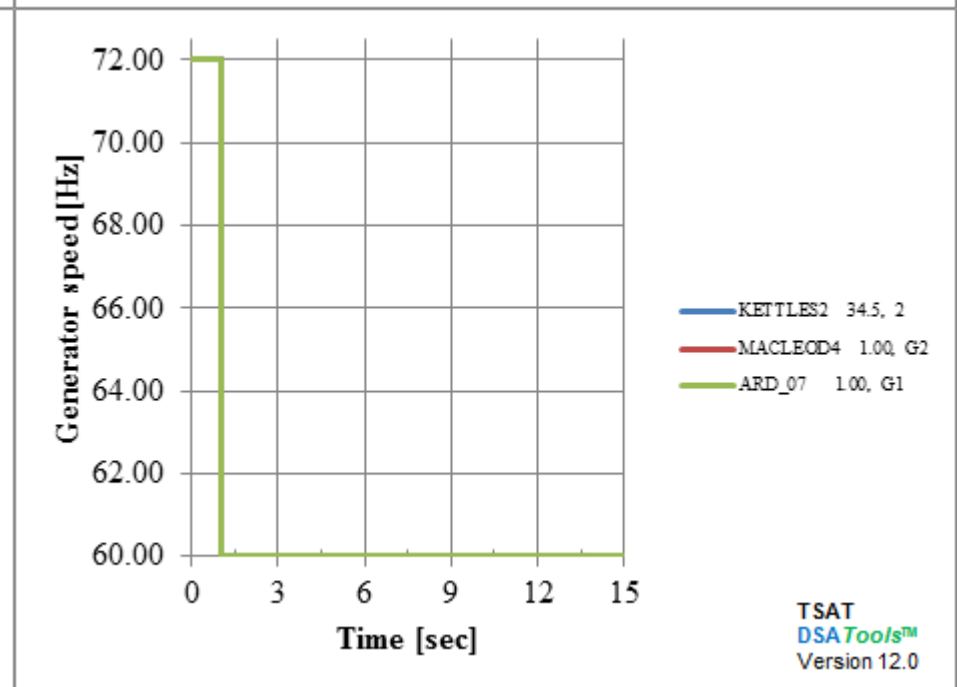
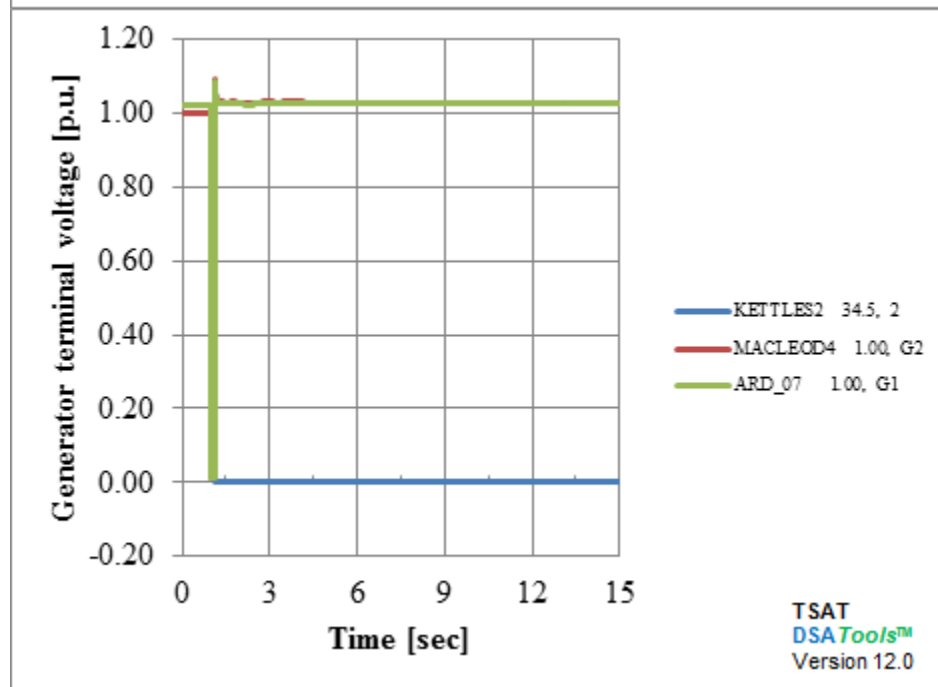
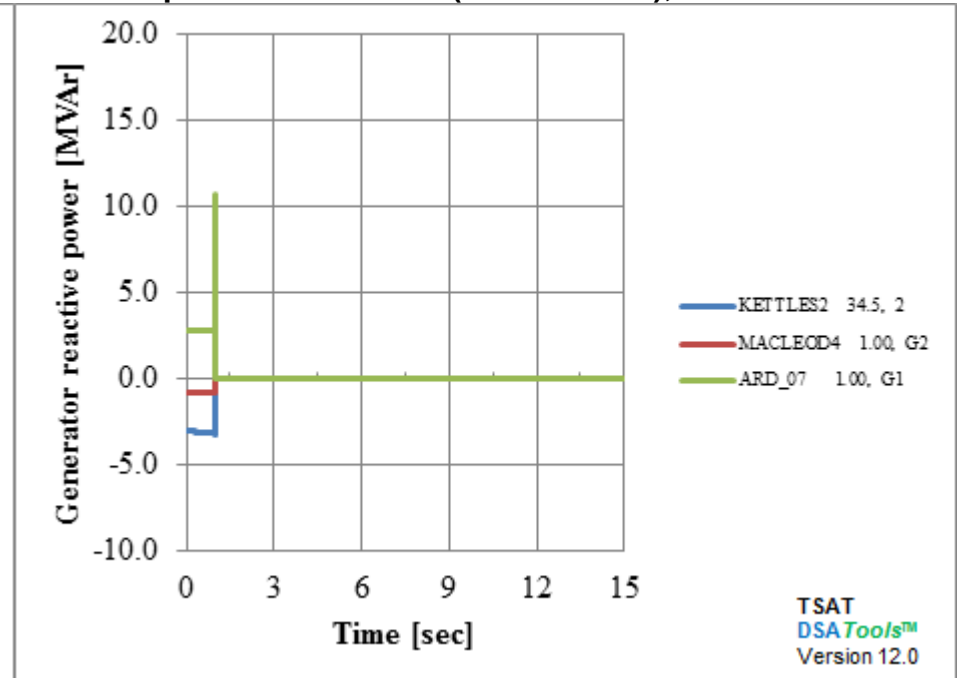
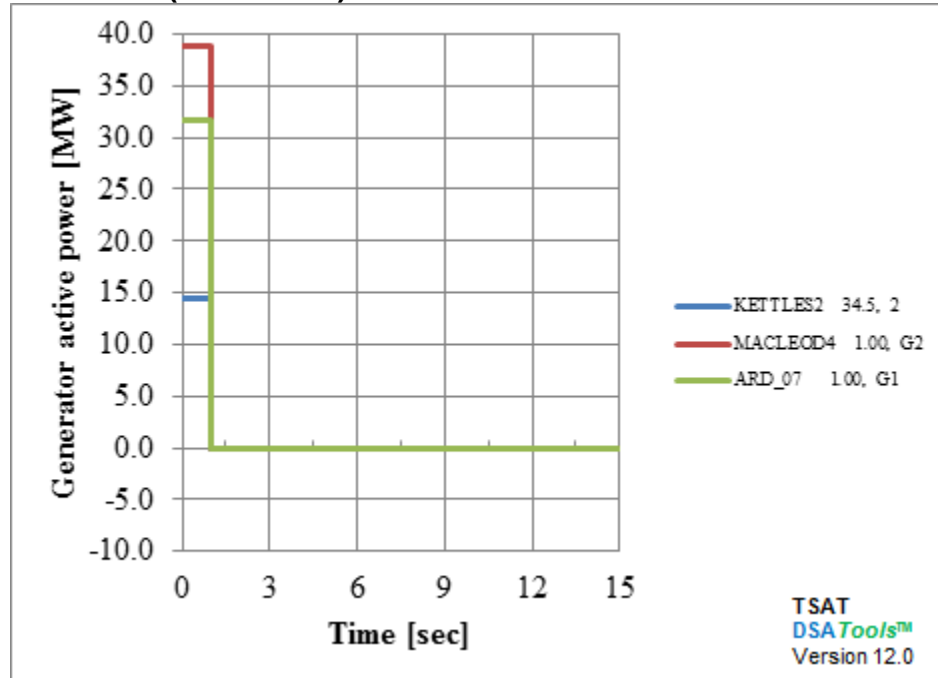
Proposed Connection (Alternative 2), Summer Peak 2017





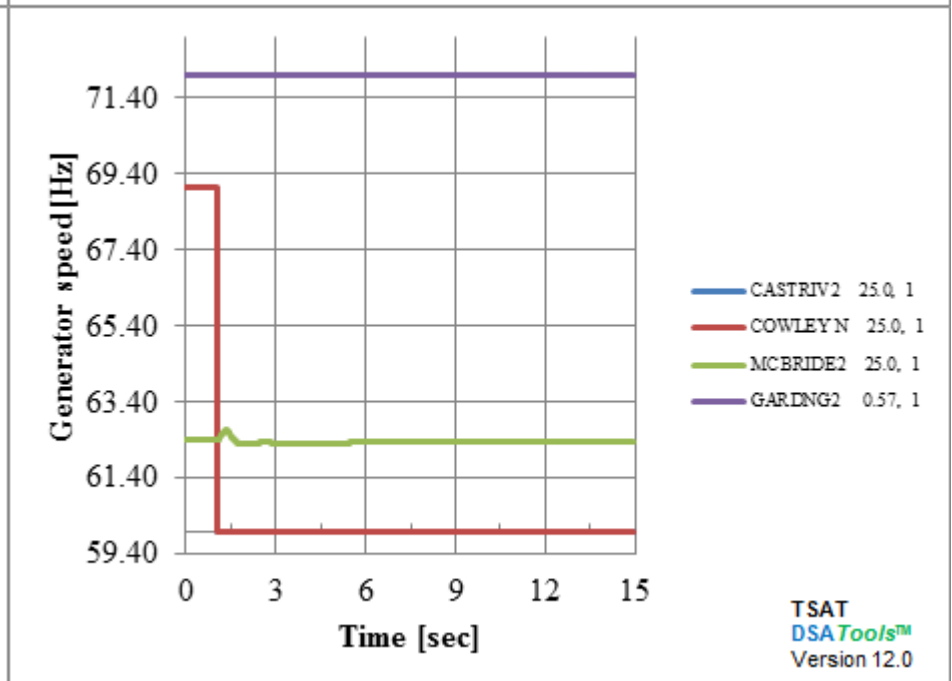
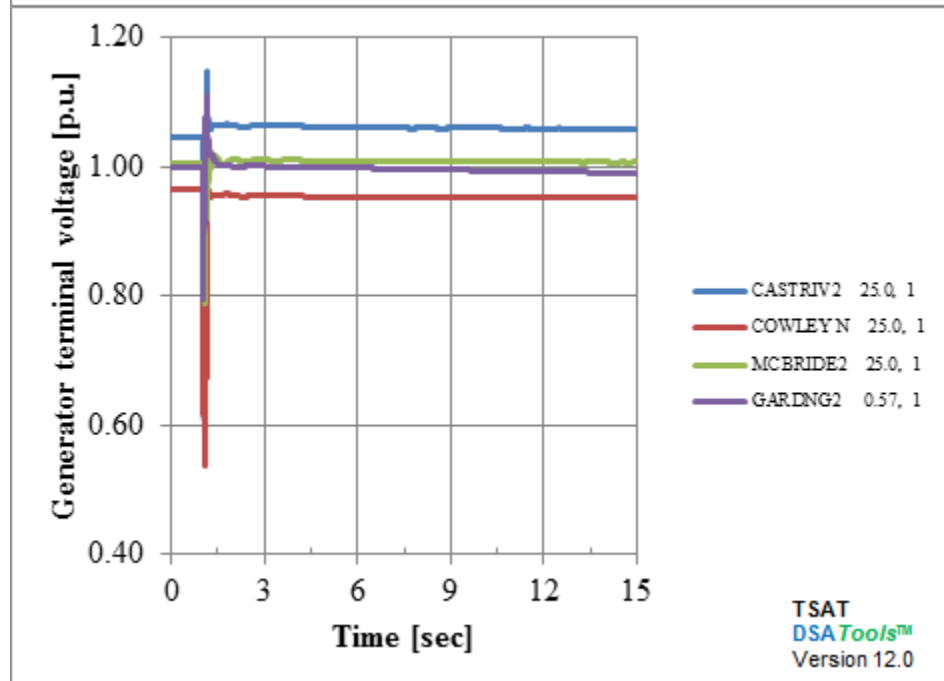
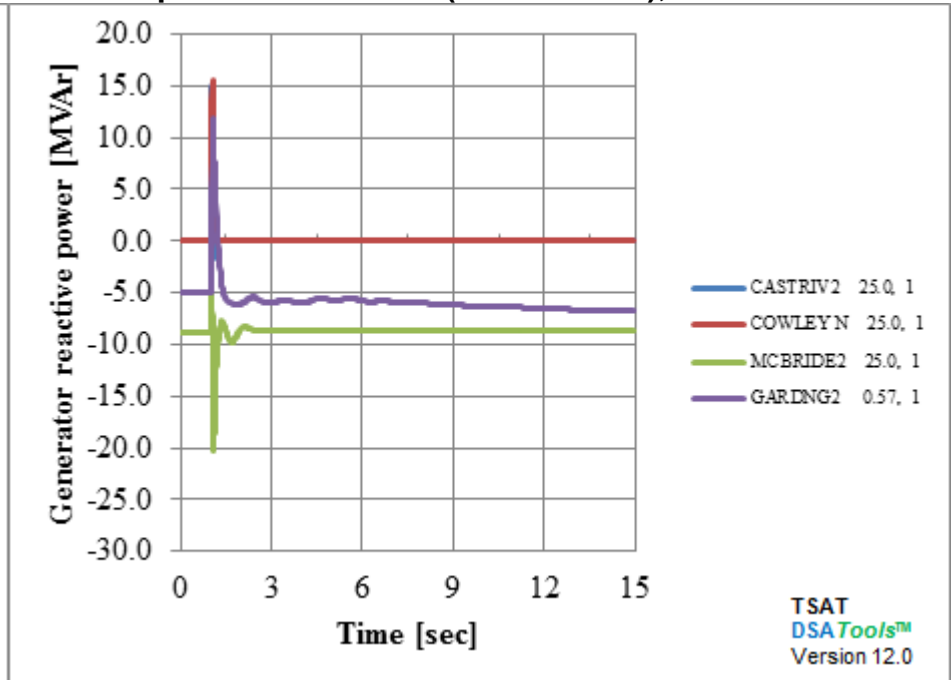
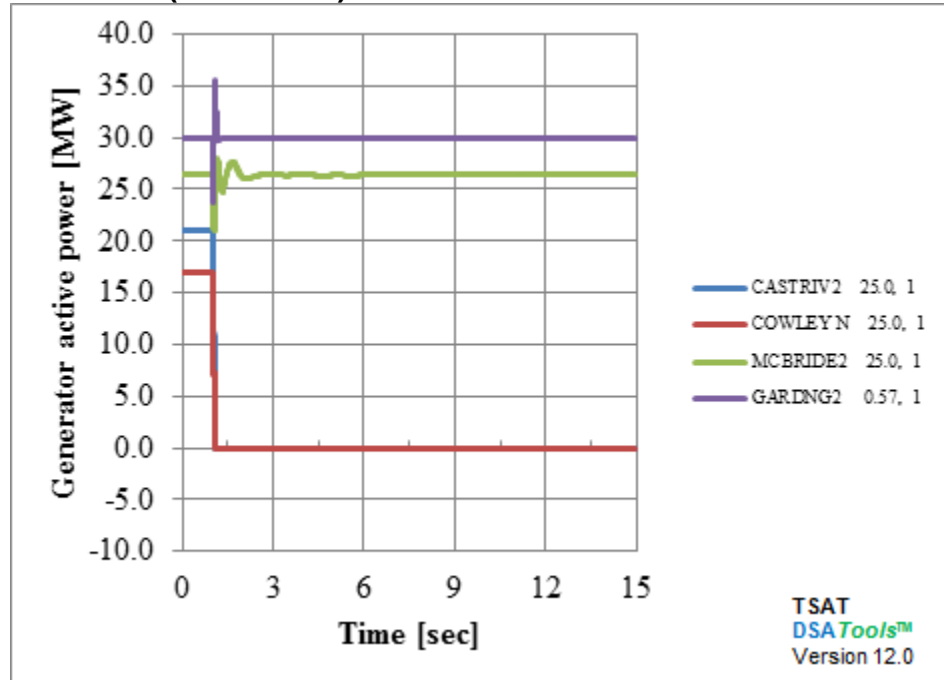
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



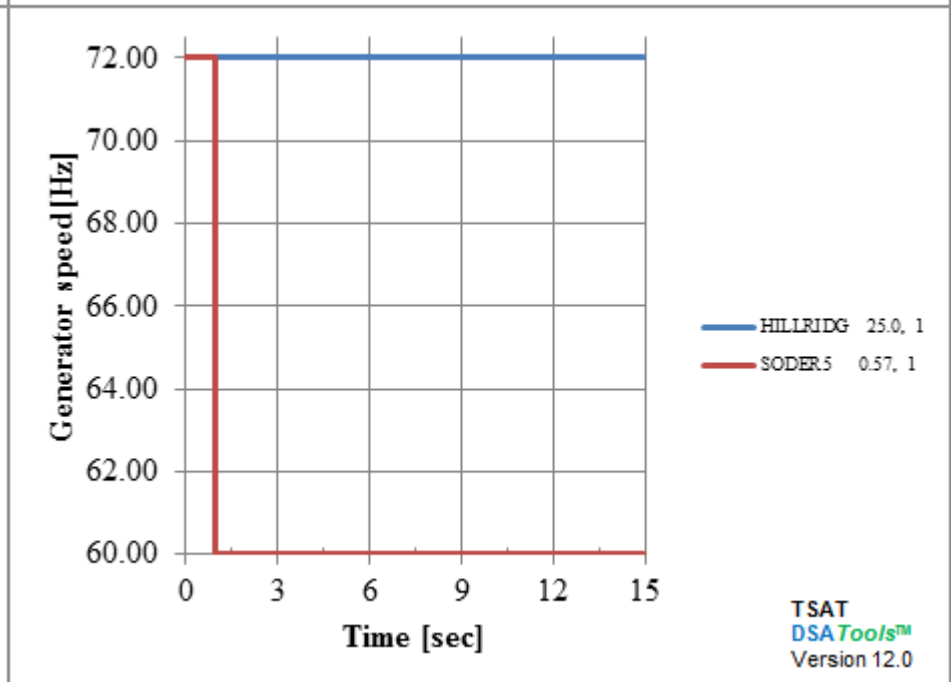
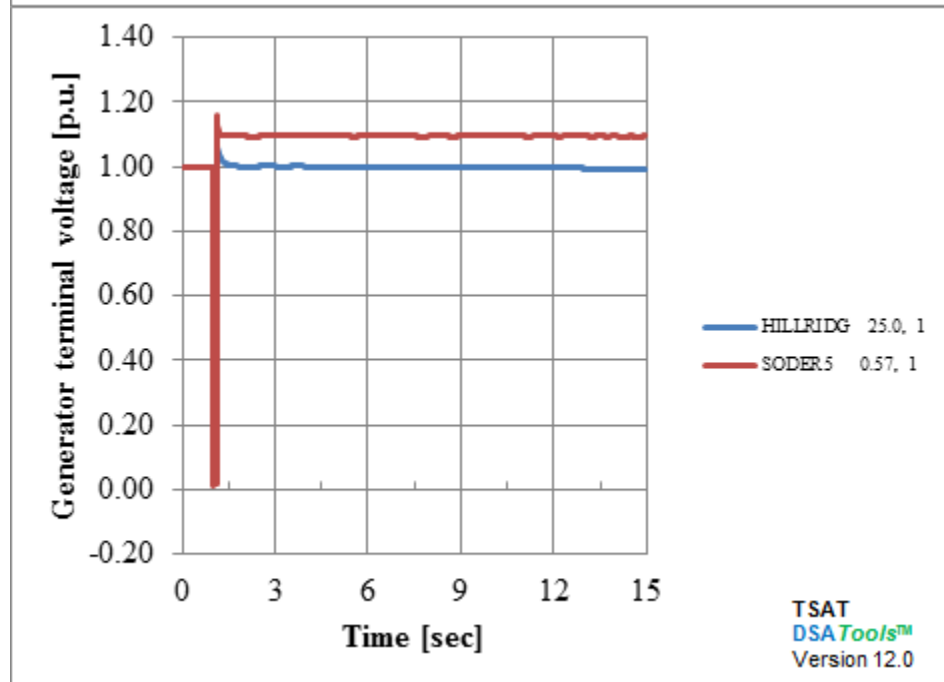
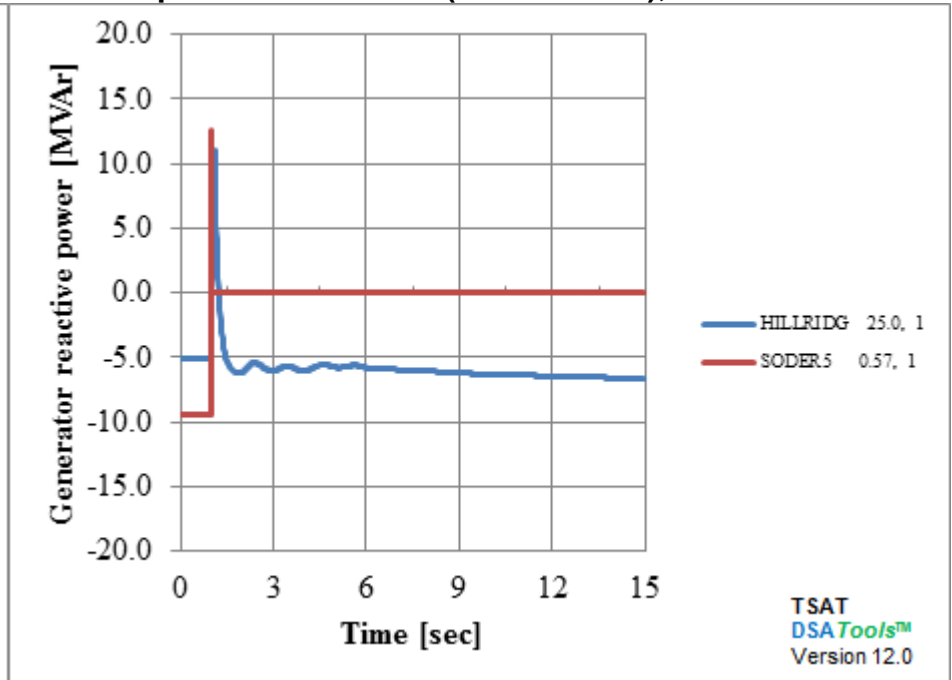
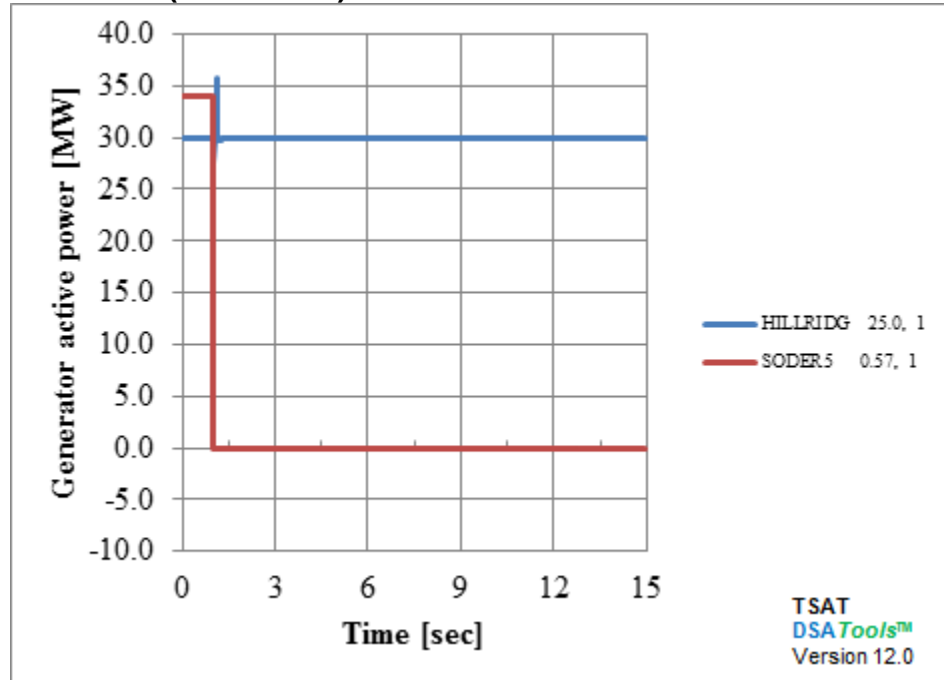
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



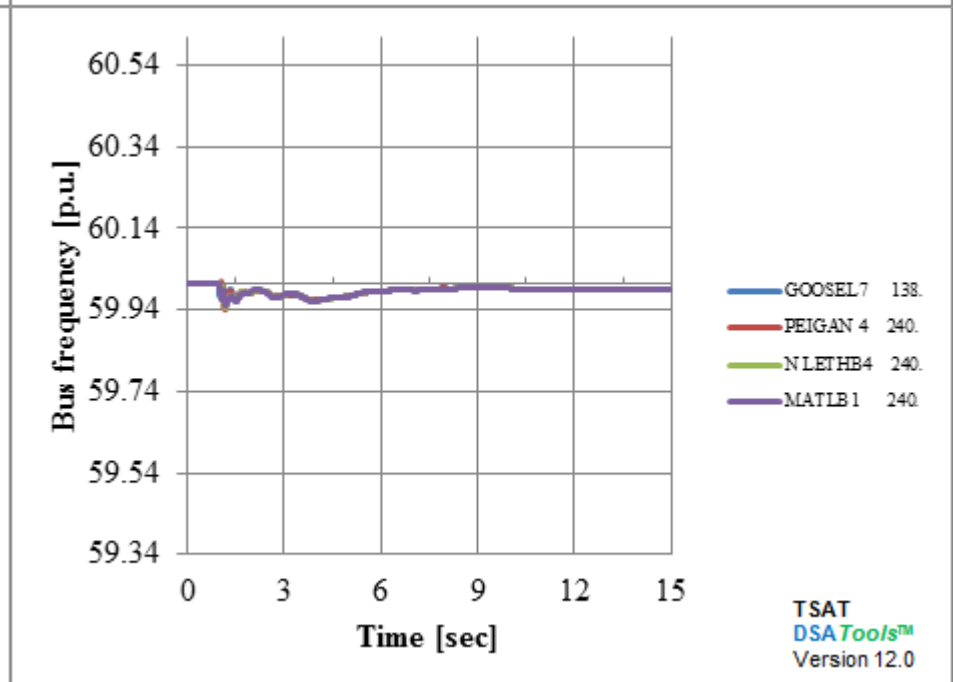
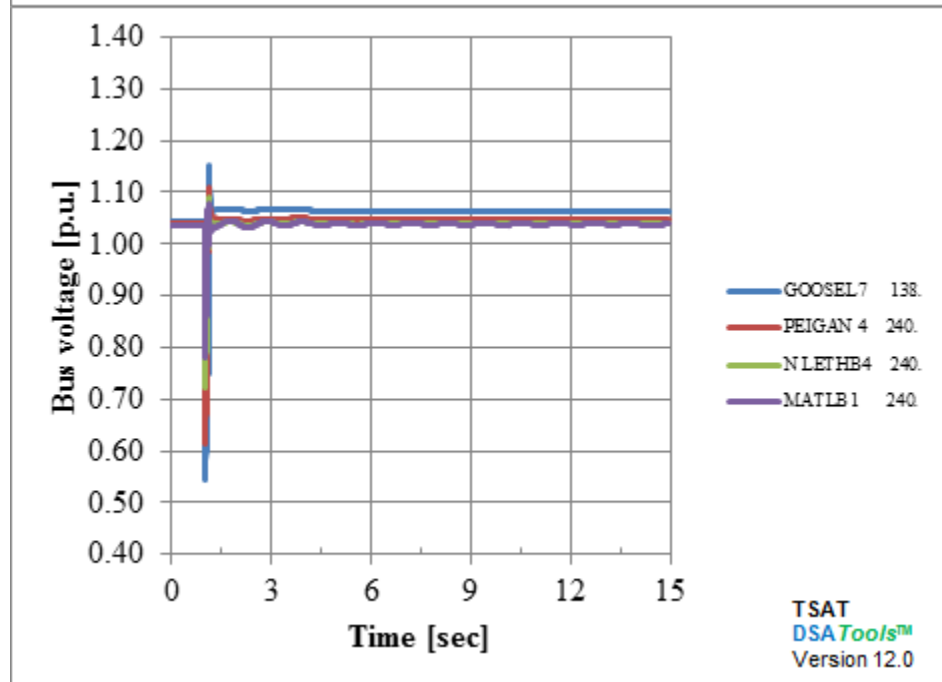
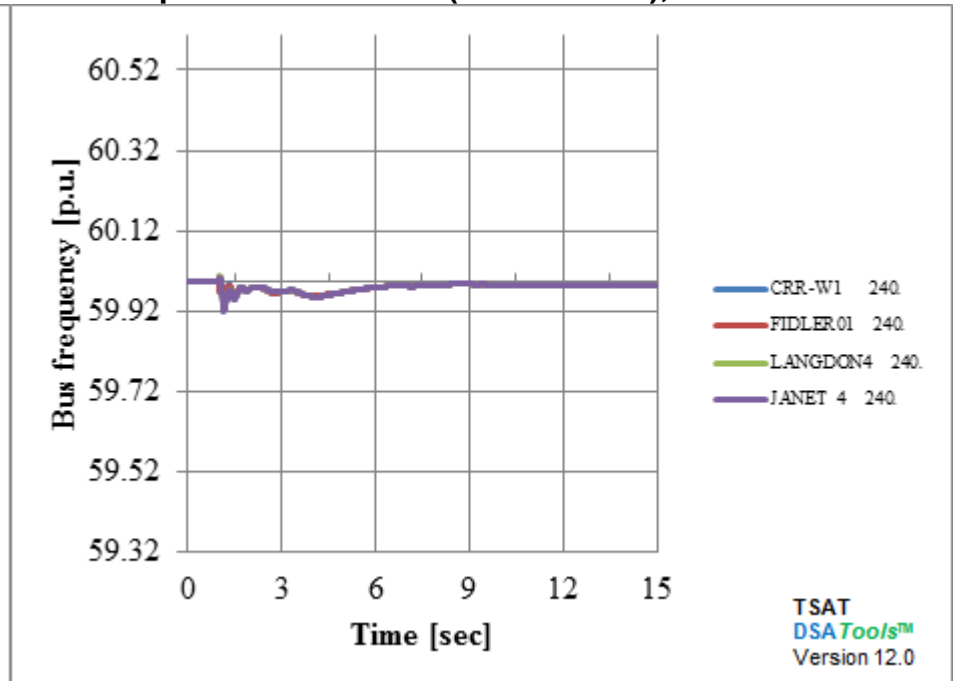
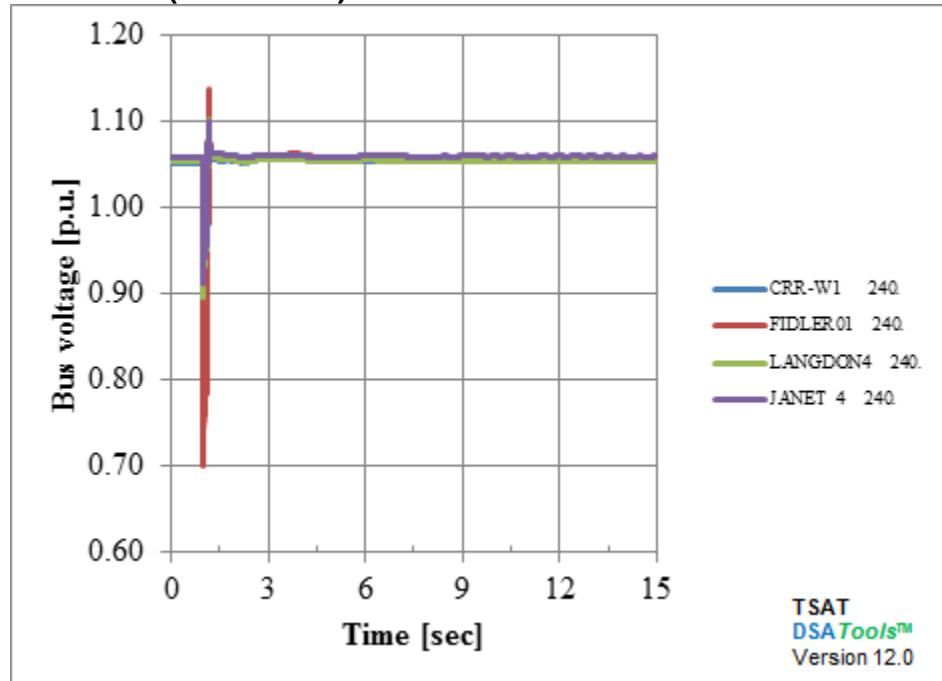
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



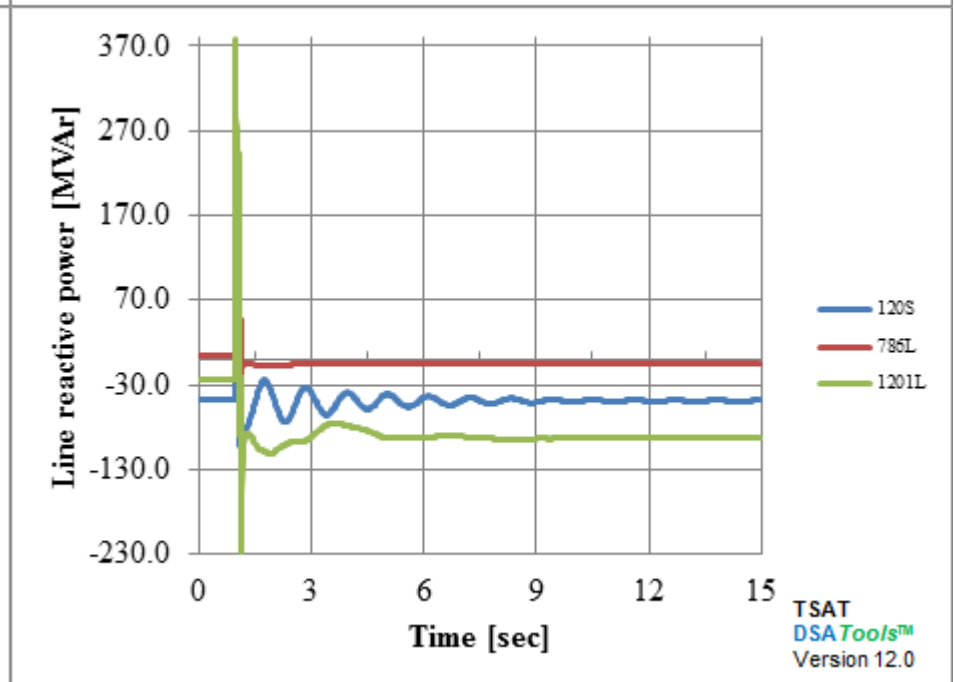
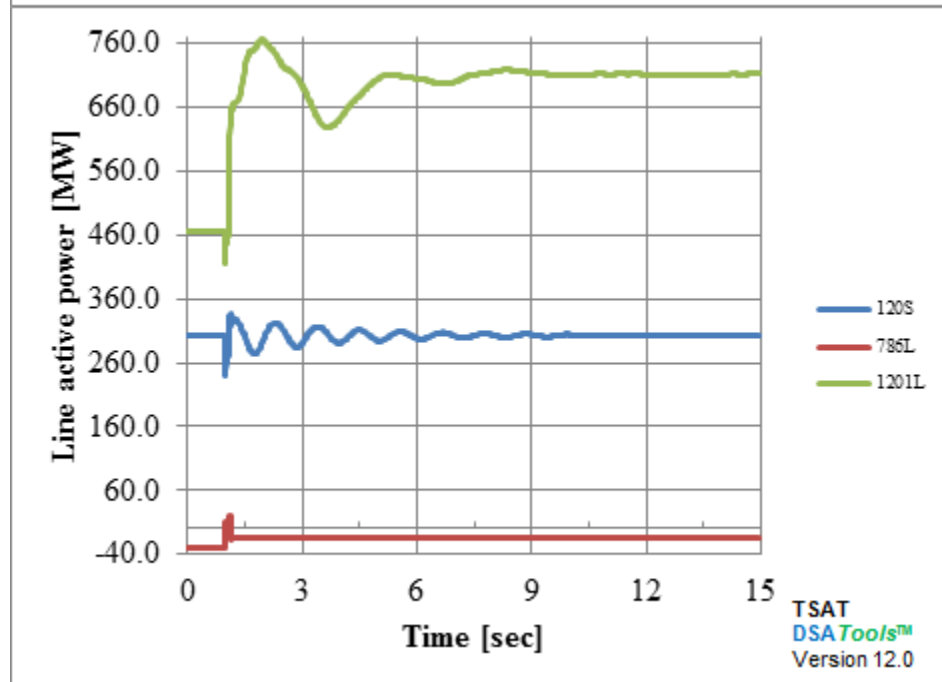
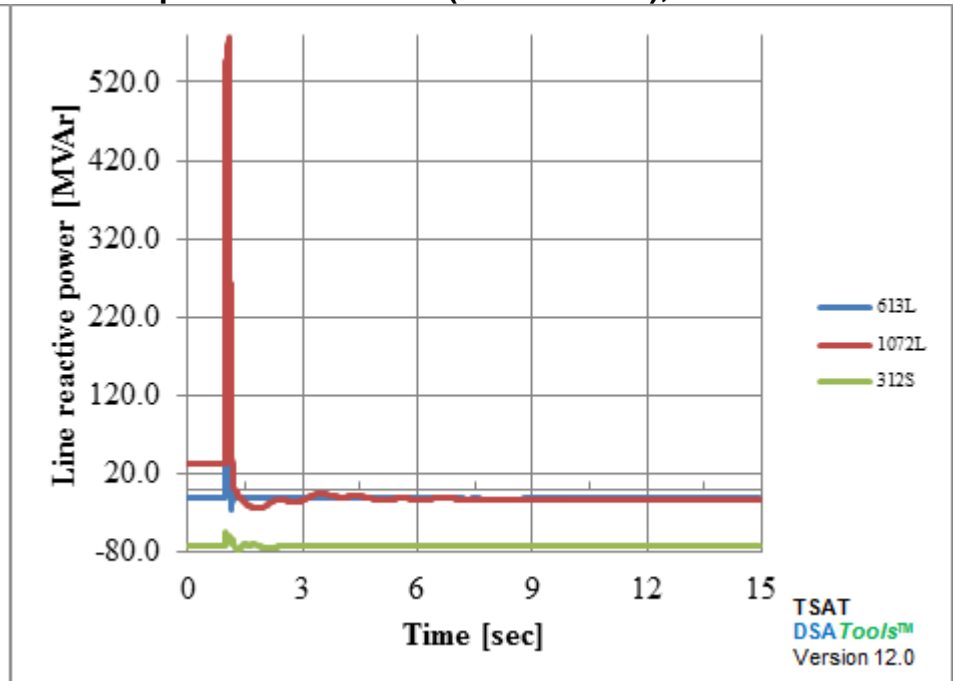
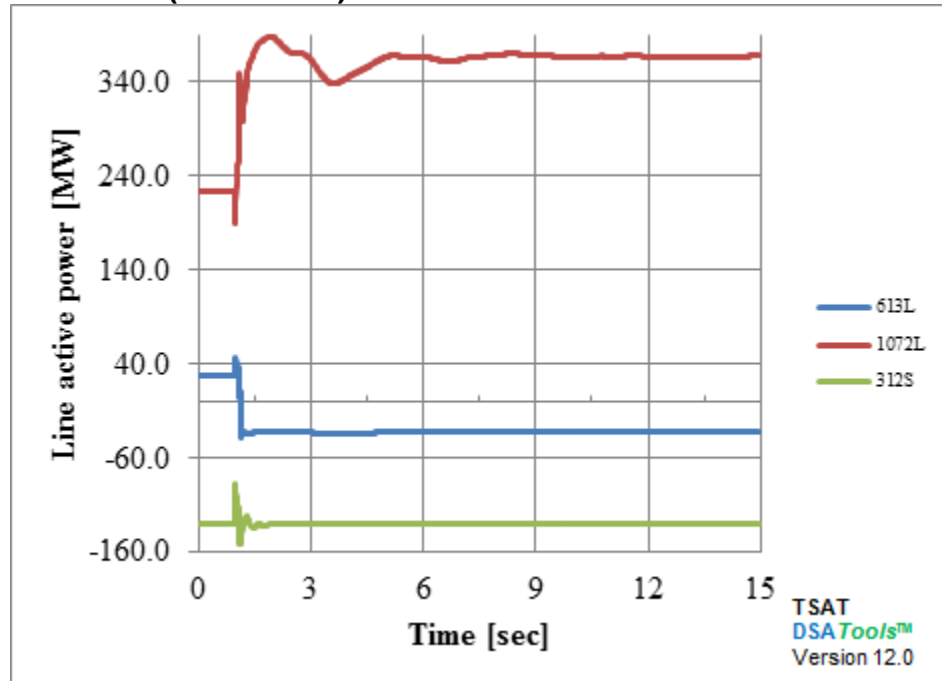
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



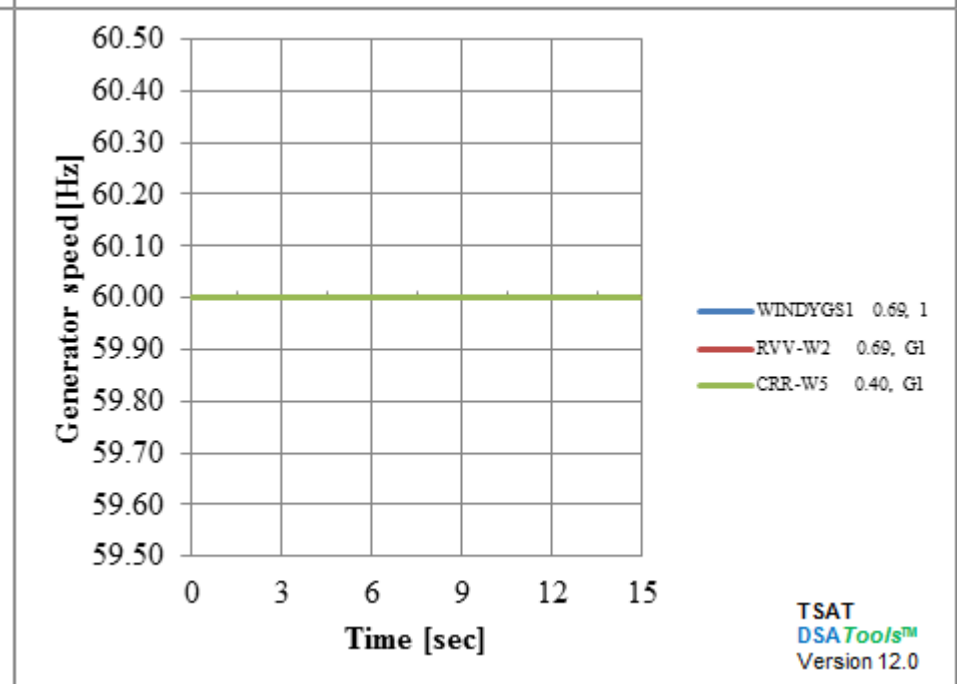
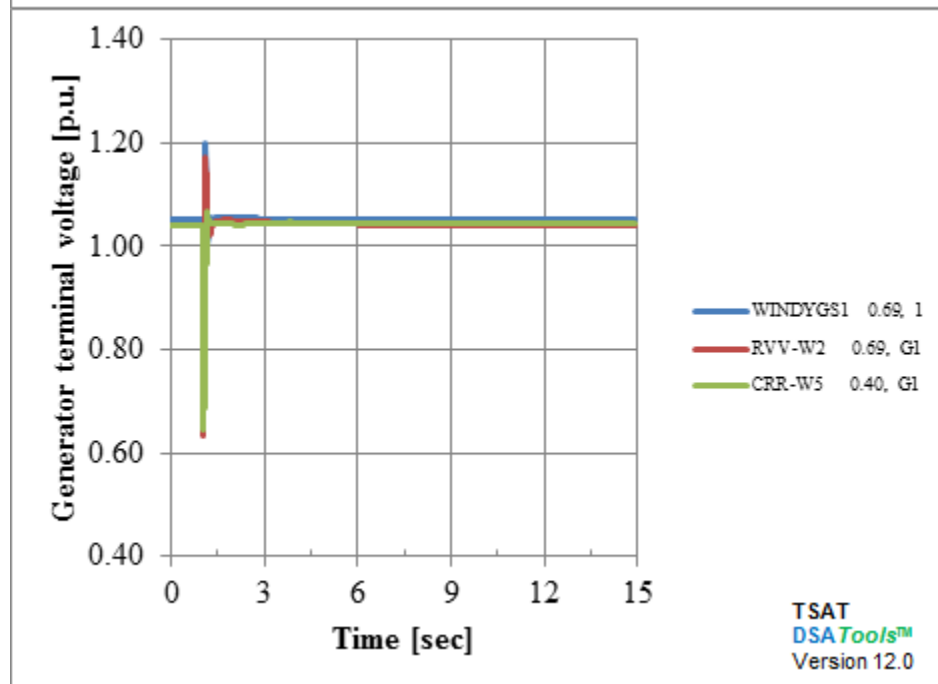
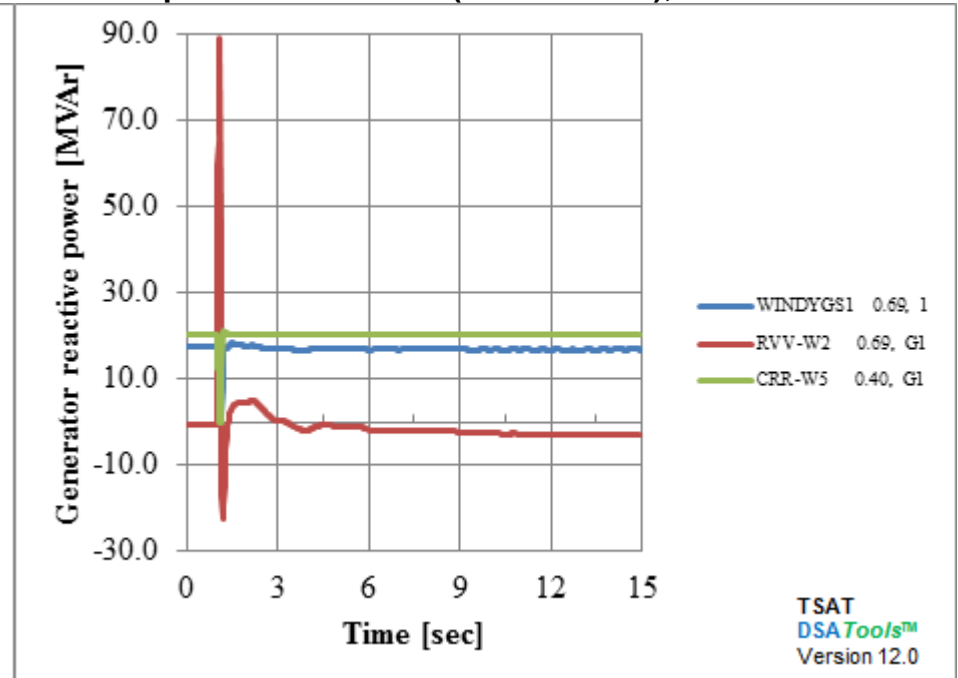
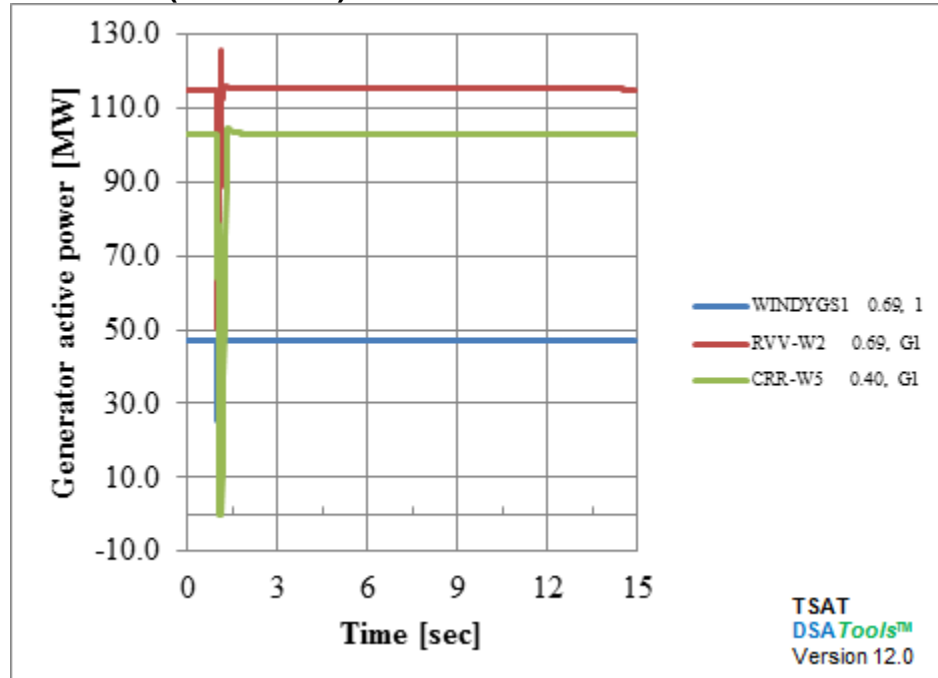
12 -- 616L (59S - 103S) NEAR 59S

Proposed Connection (Alternative 2), Summer Peak 2017



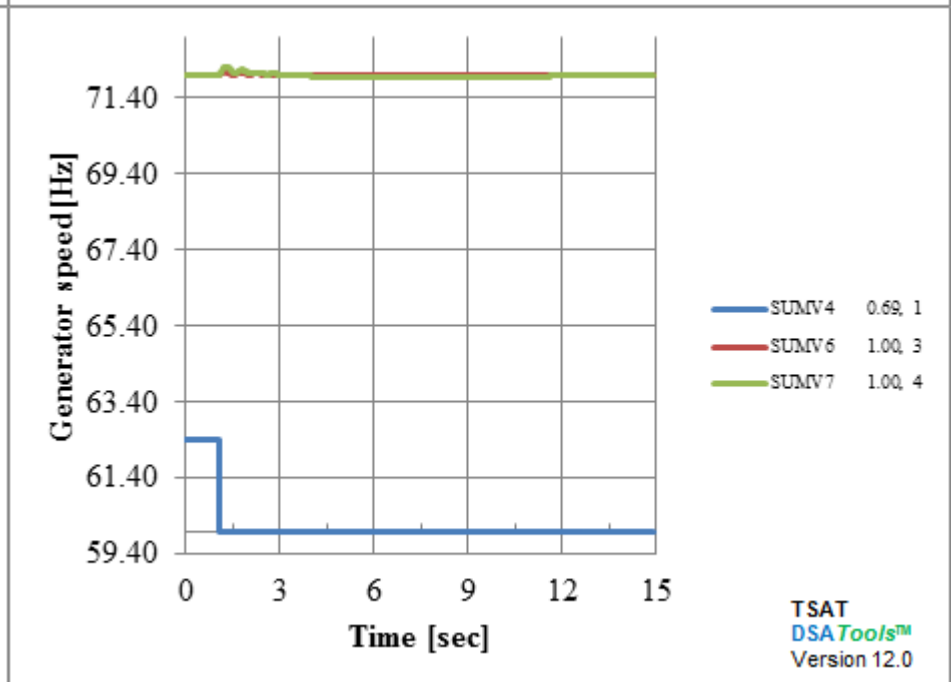
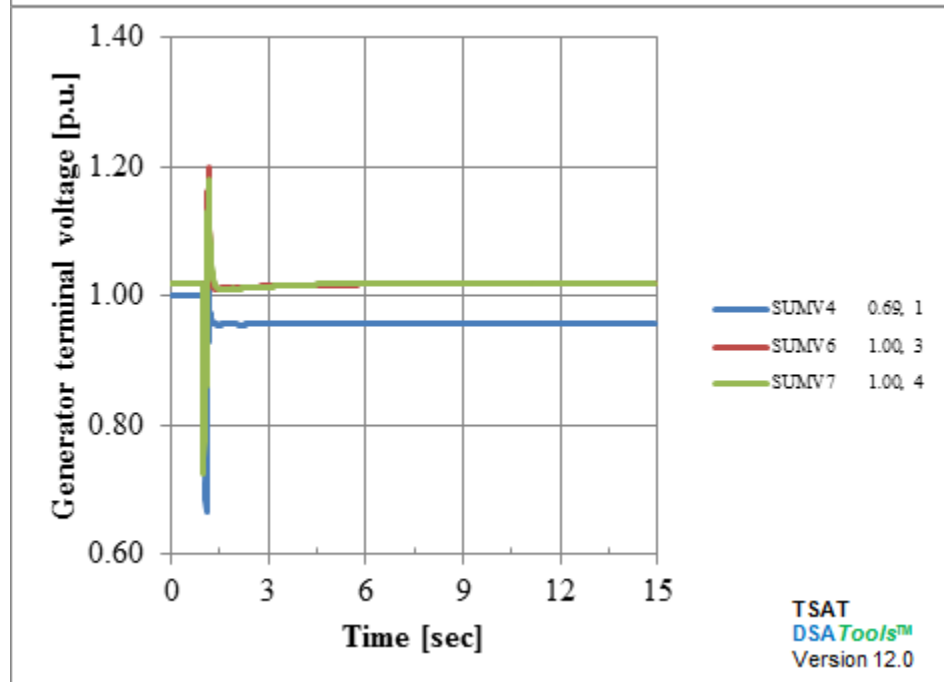
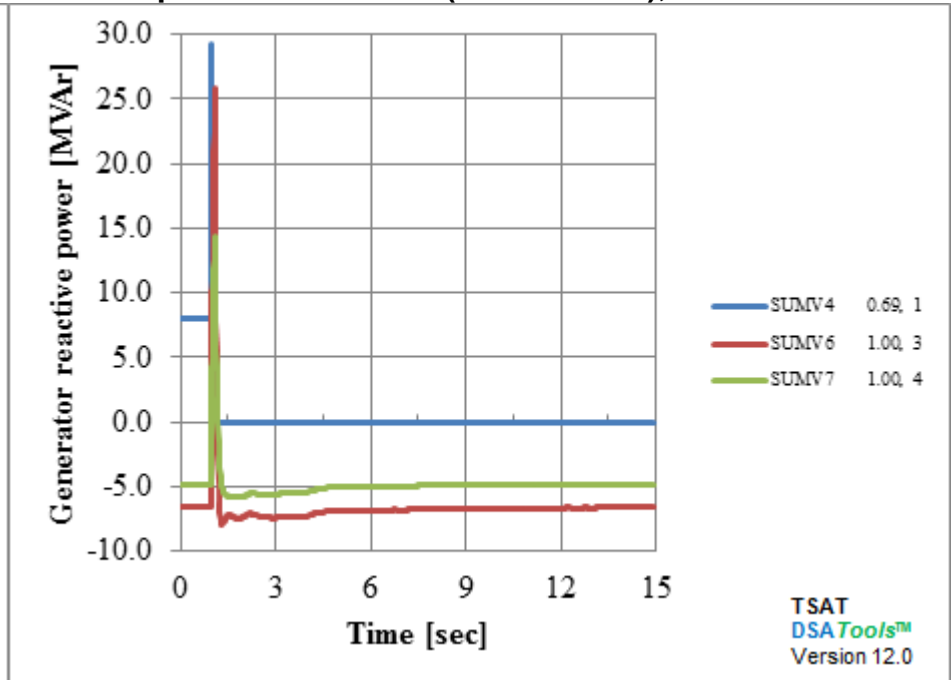
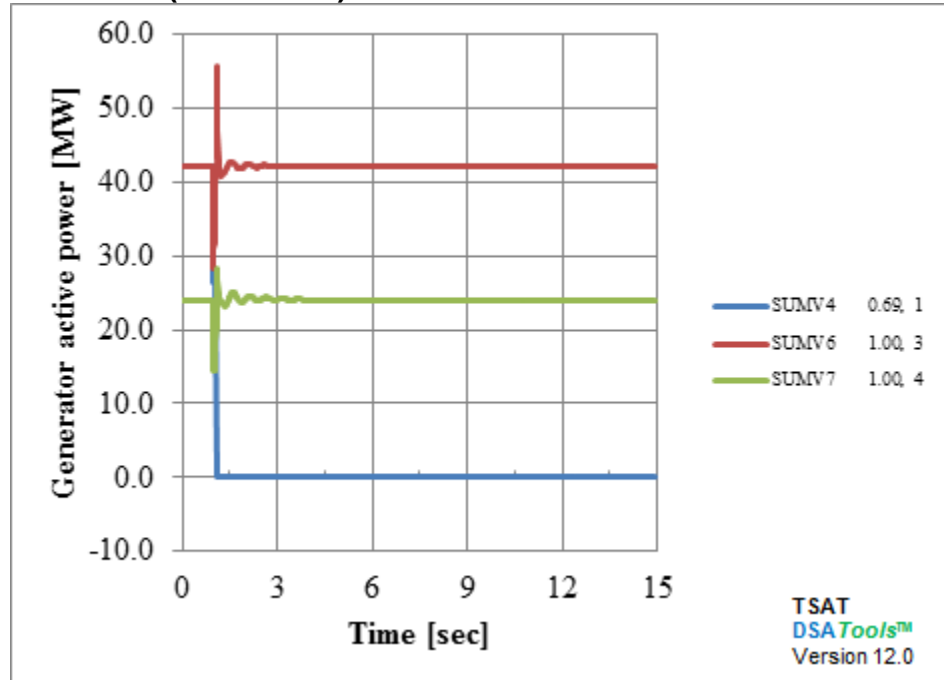
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



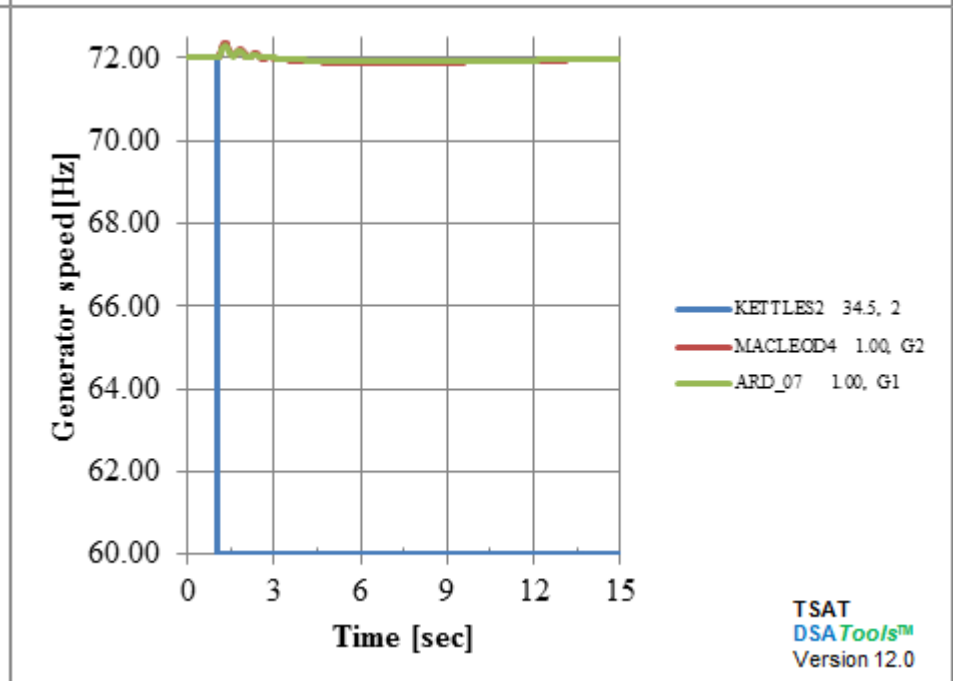
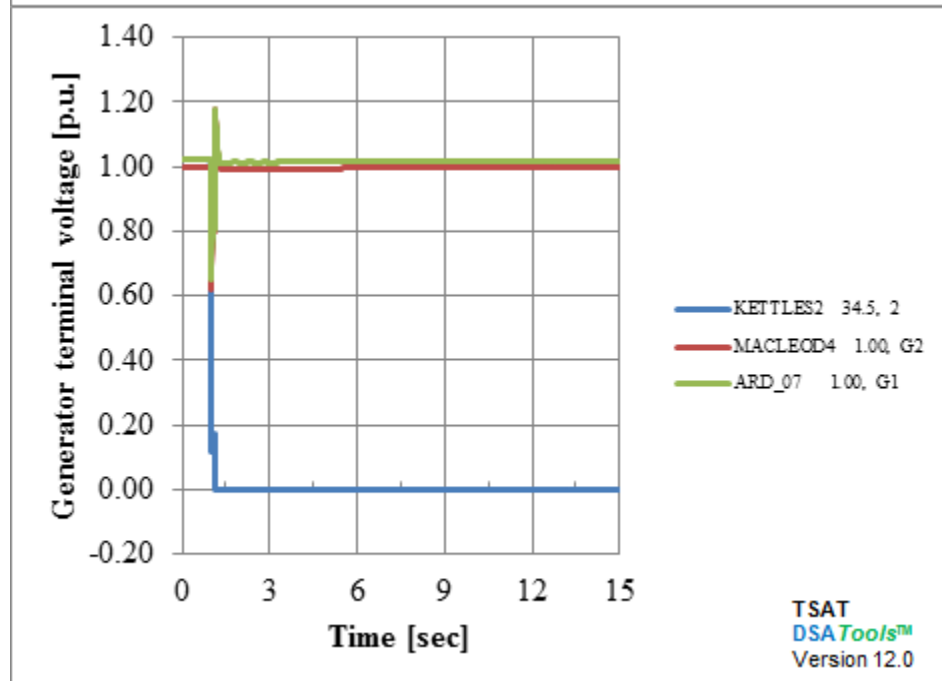
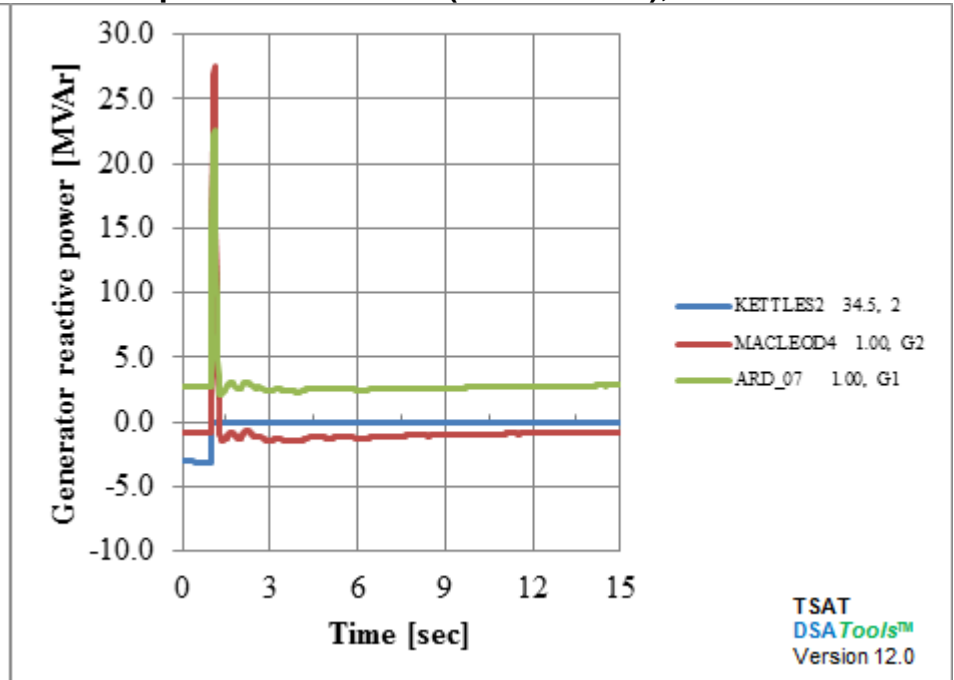
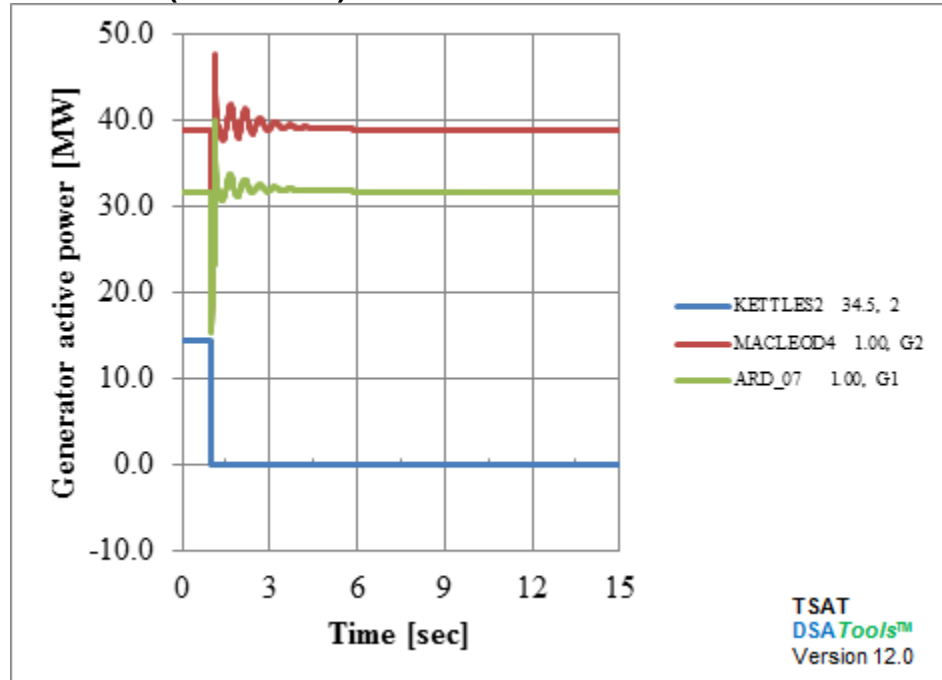
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



13 -- 616L (59S - 103S) NEAR 103S

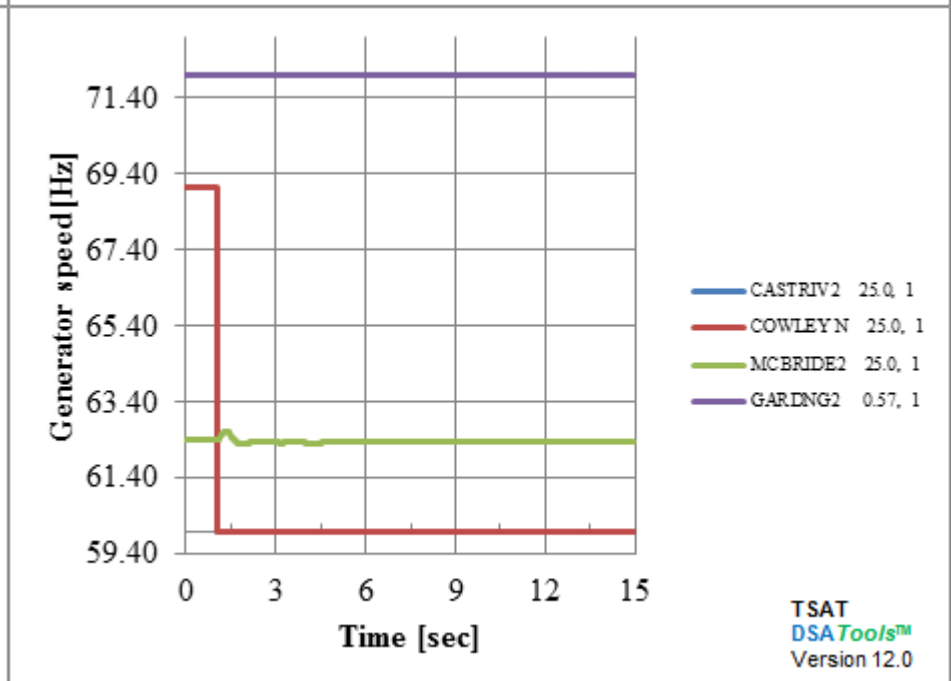
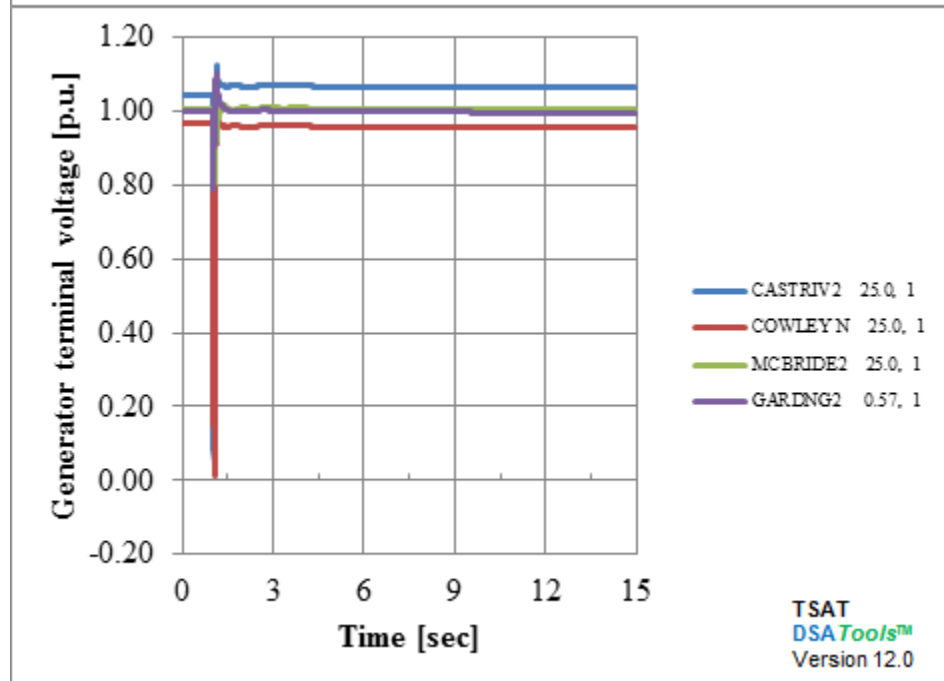
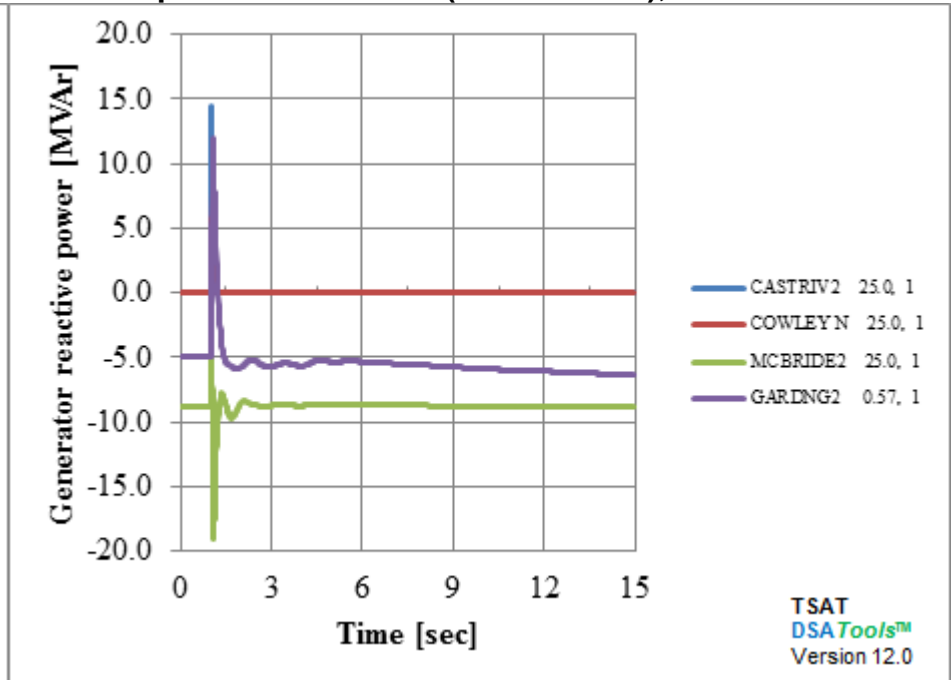
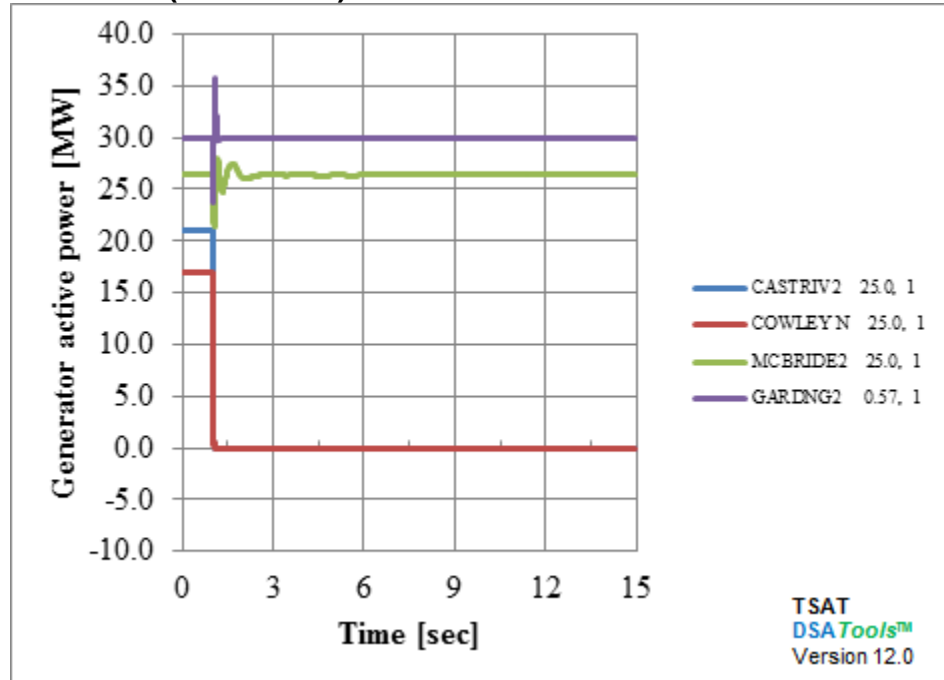
Proposed Connection (Alternative 2), Summer Peak 2017





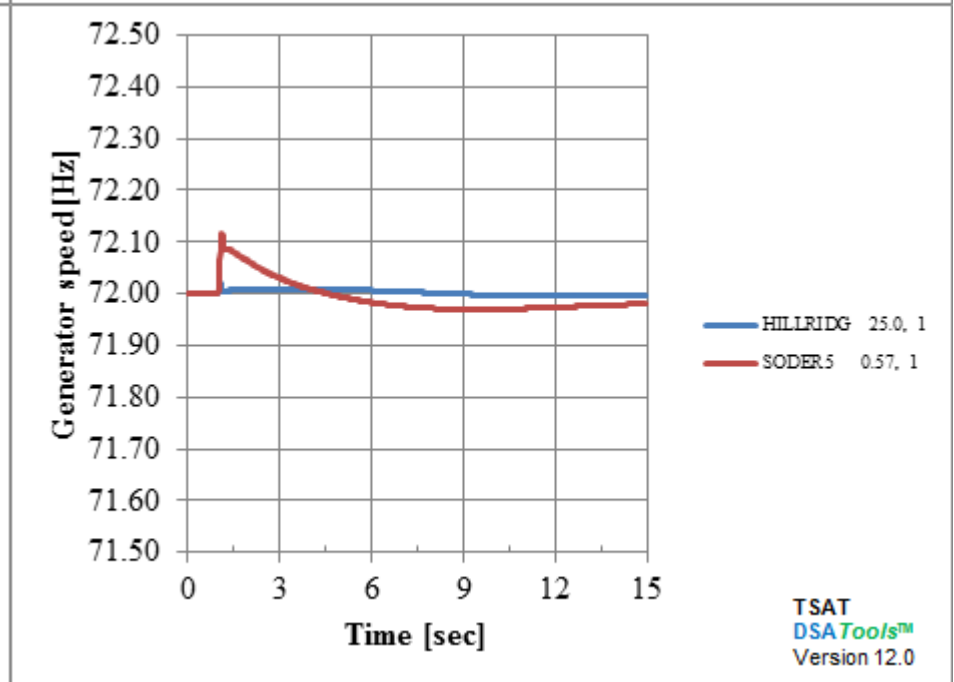
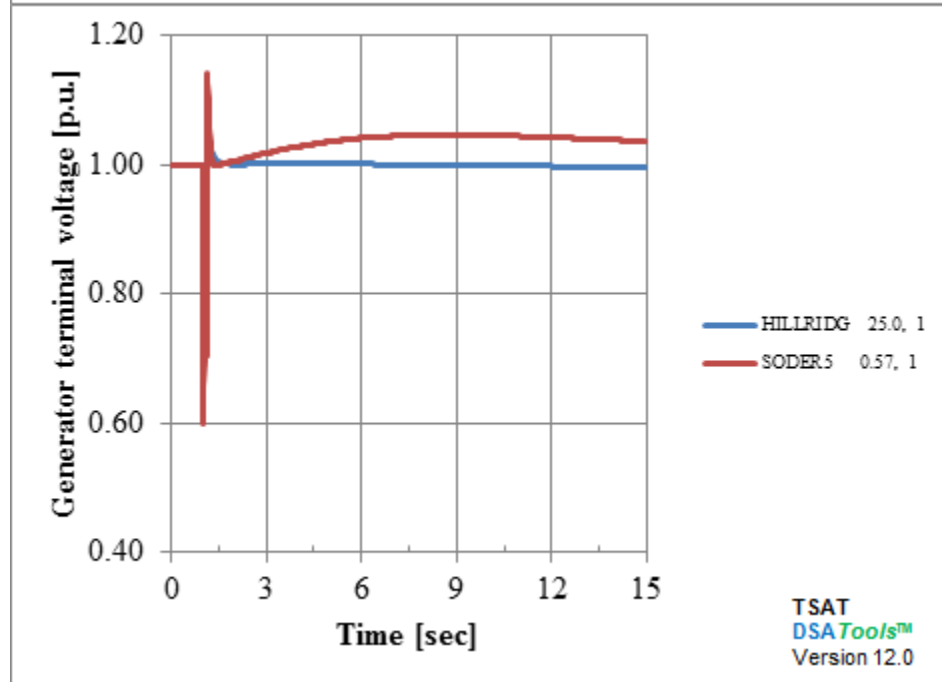
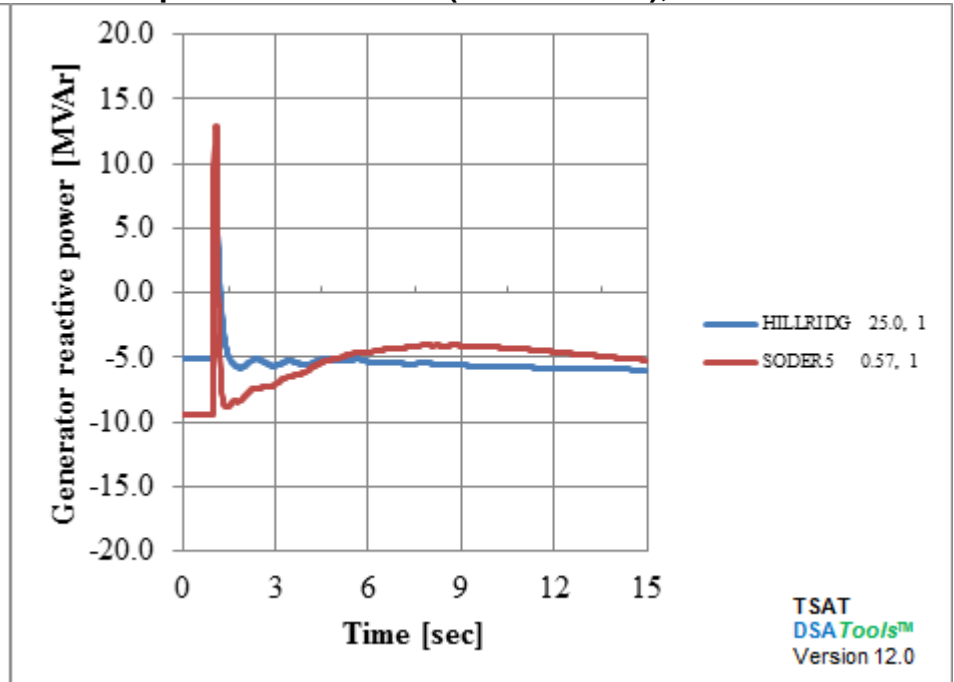
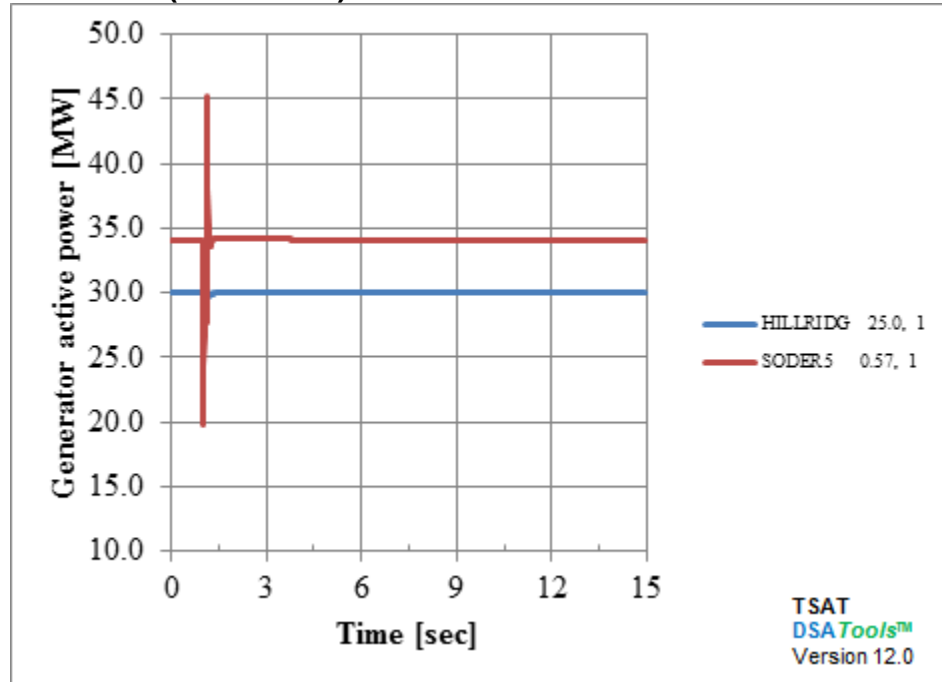
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



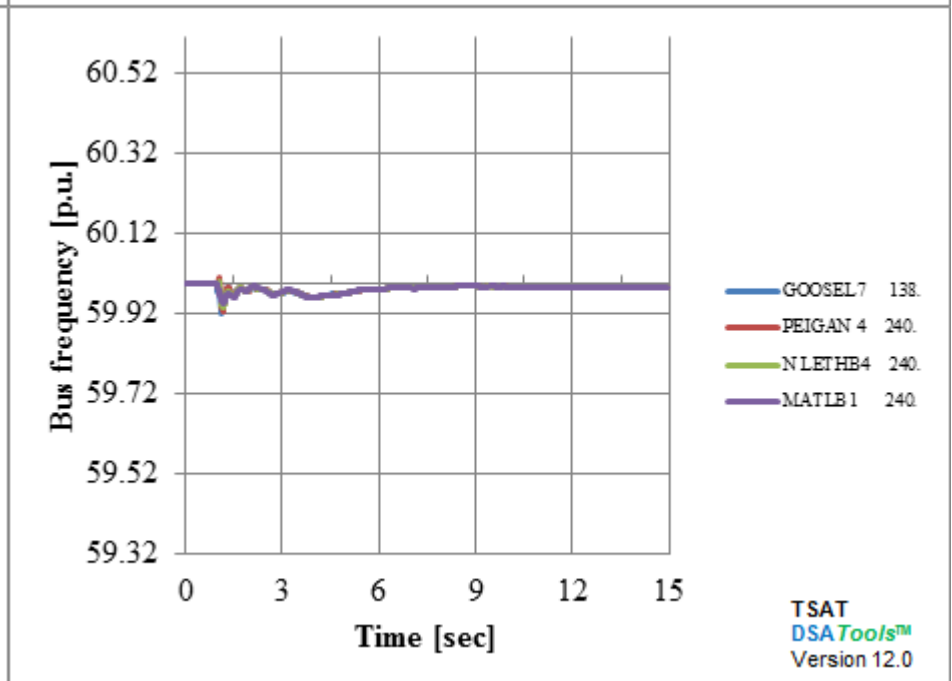
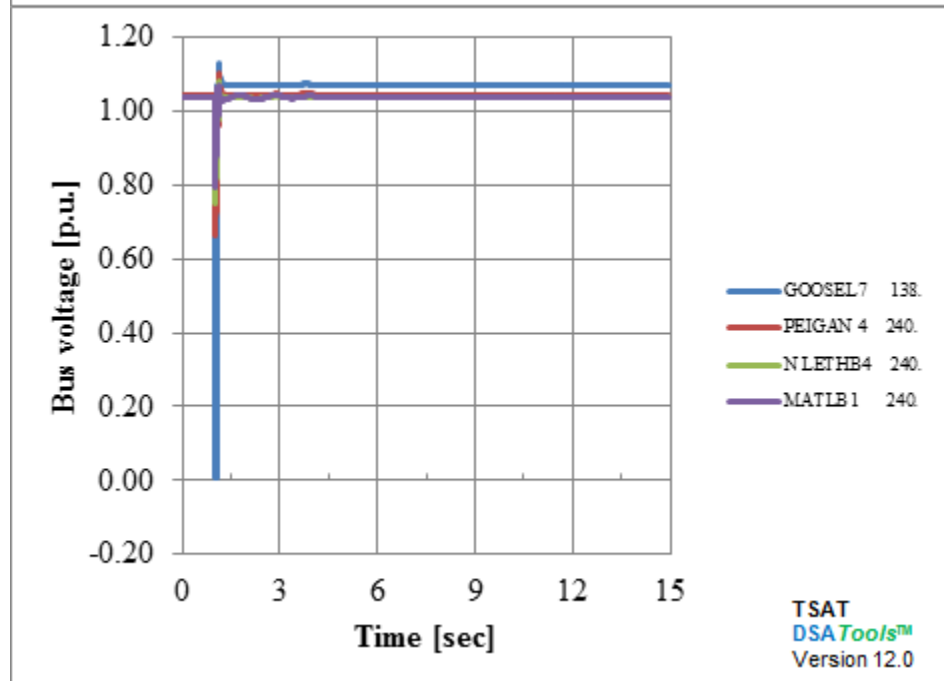
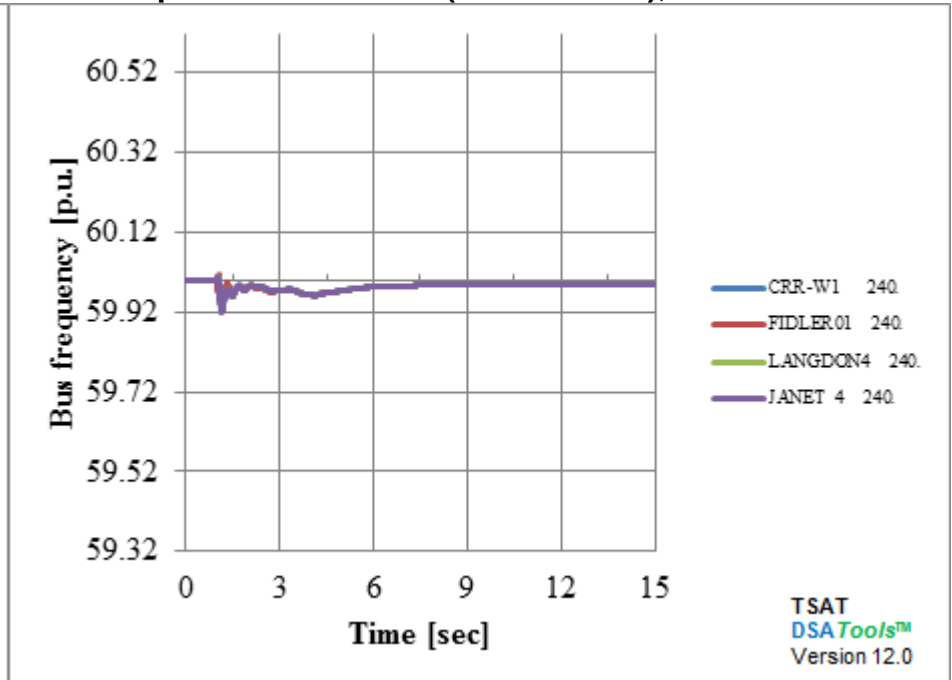
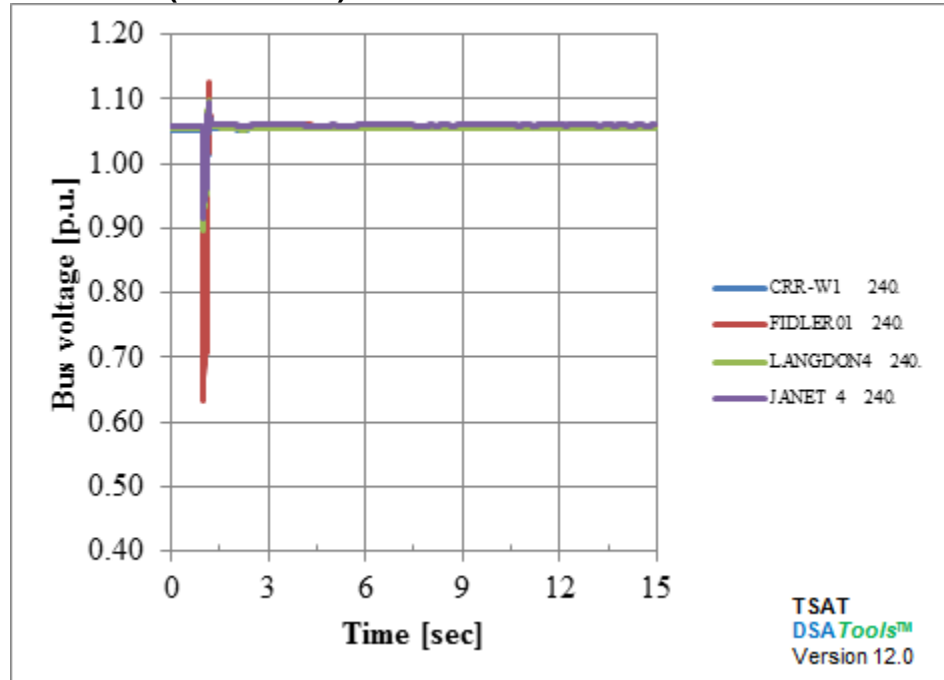
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



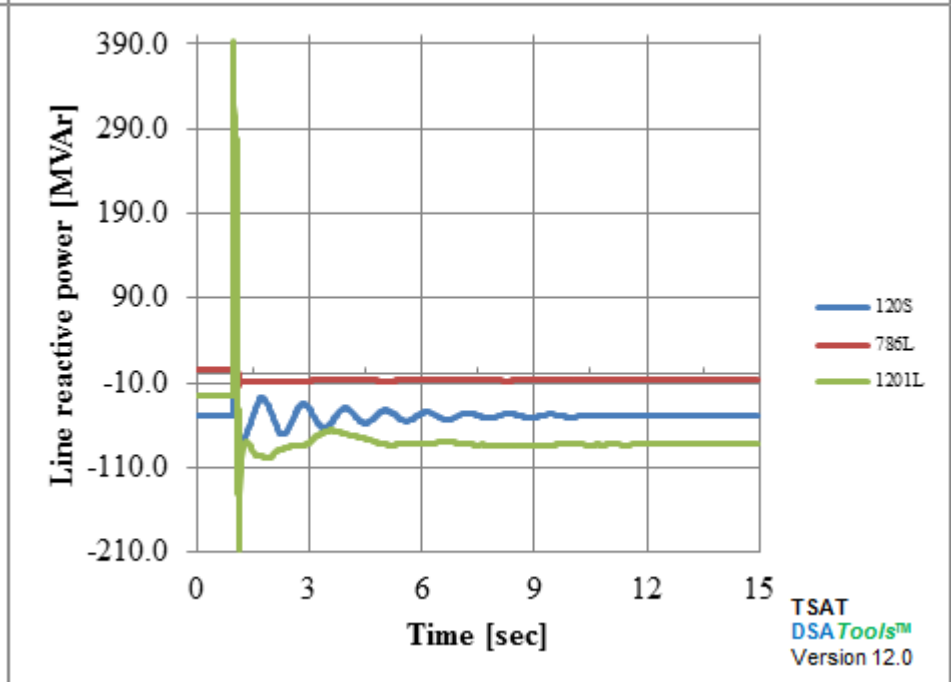
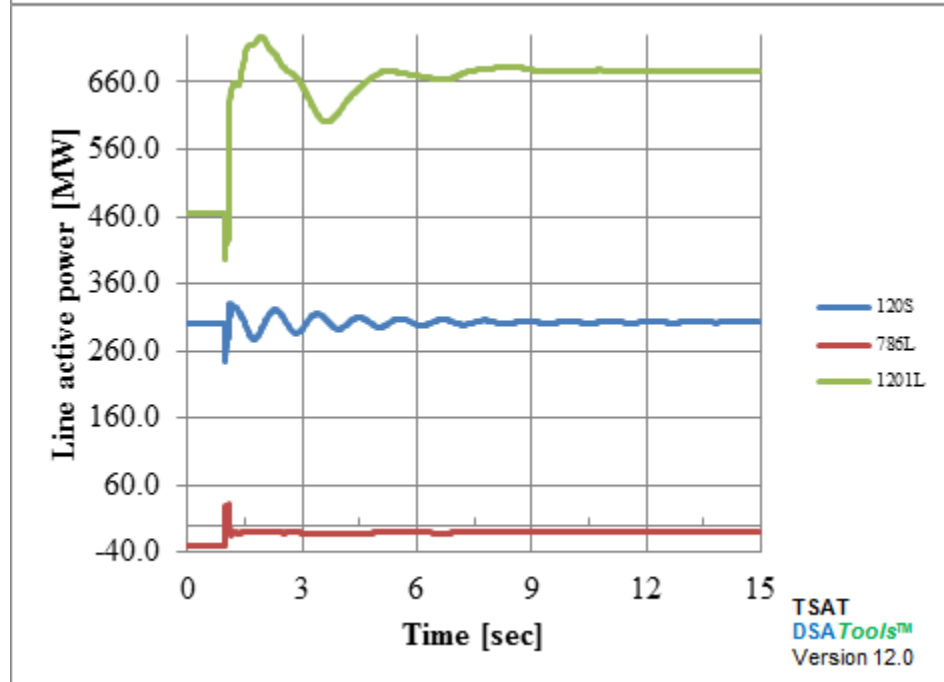
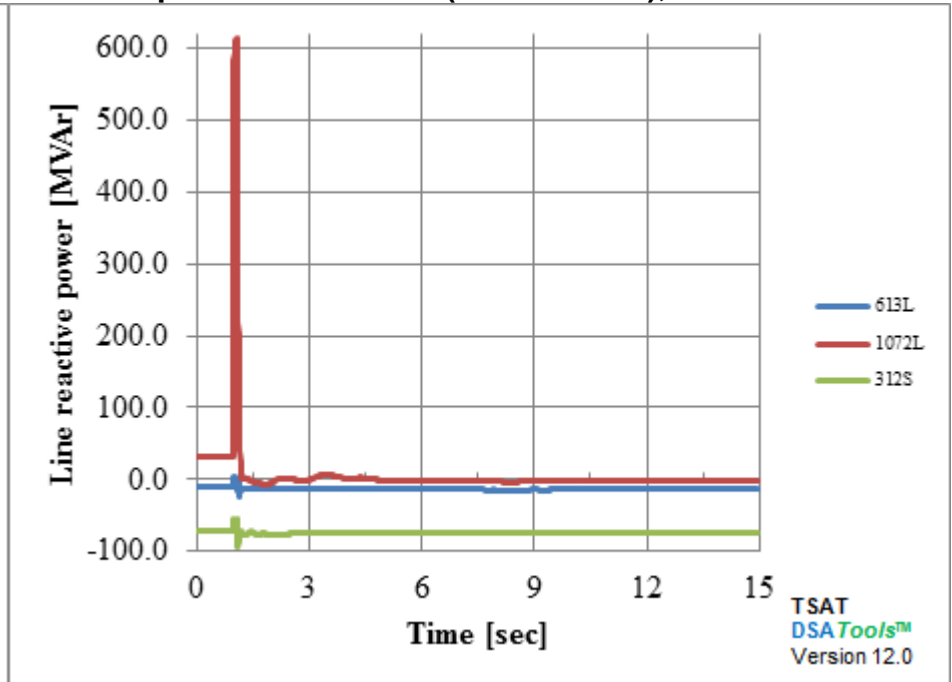
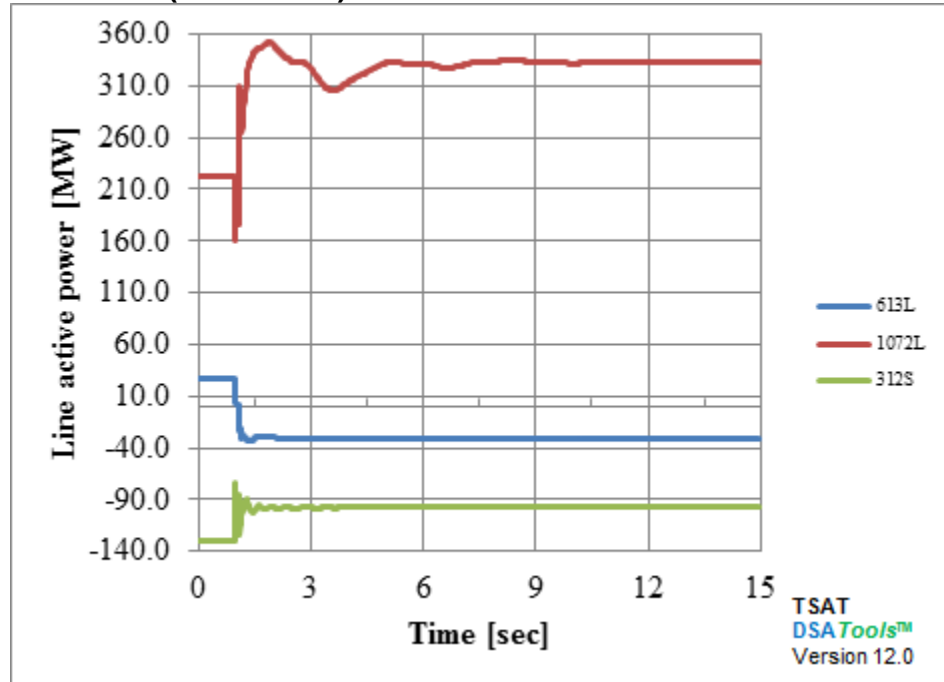
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



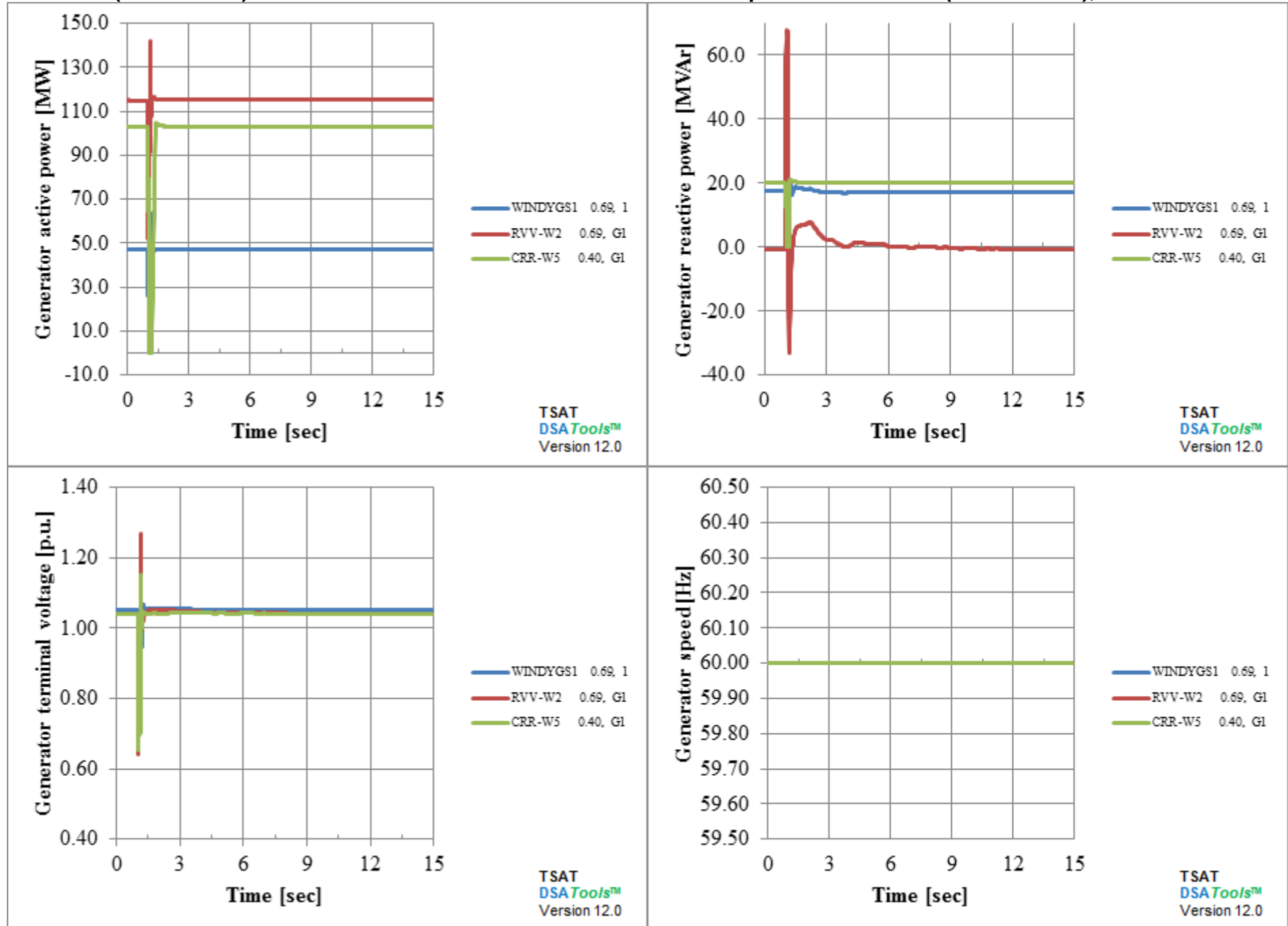
13 -- 616L (59S - 103S) NEAR 103S

Proposed Connection (Alternative 2), Summer Peak 2017



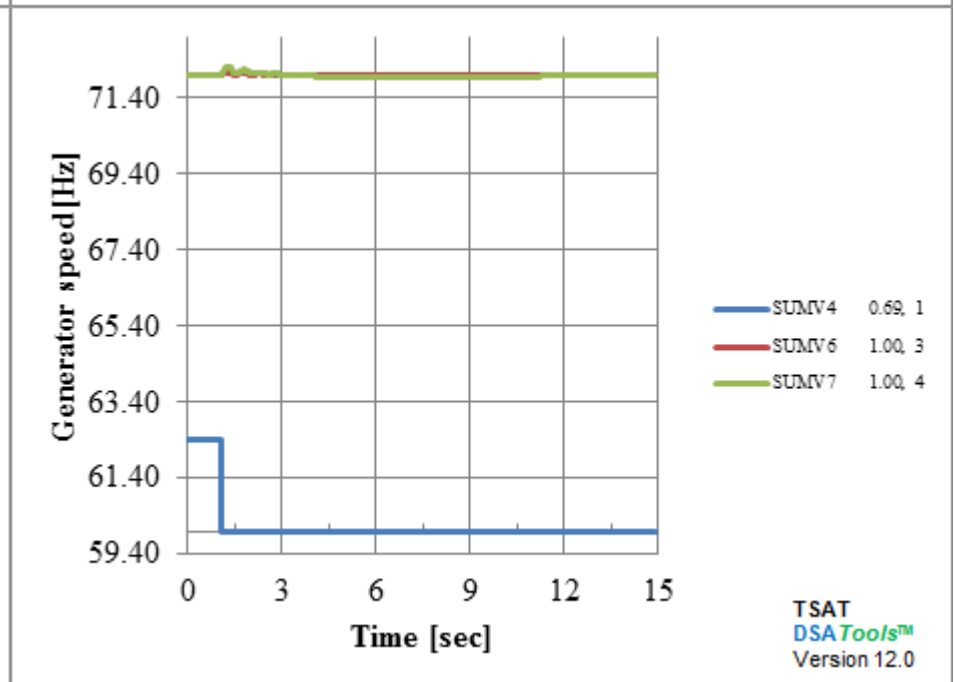
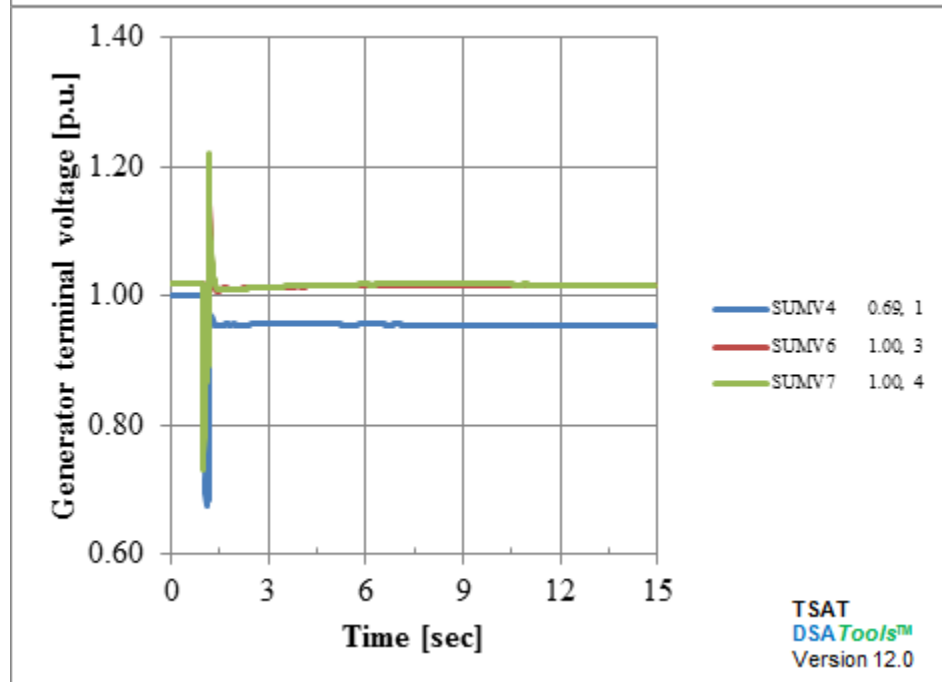
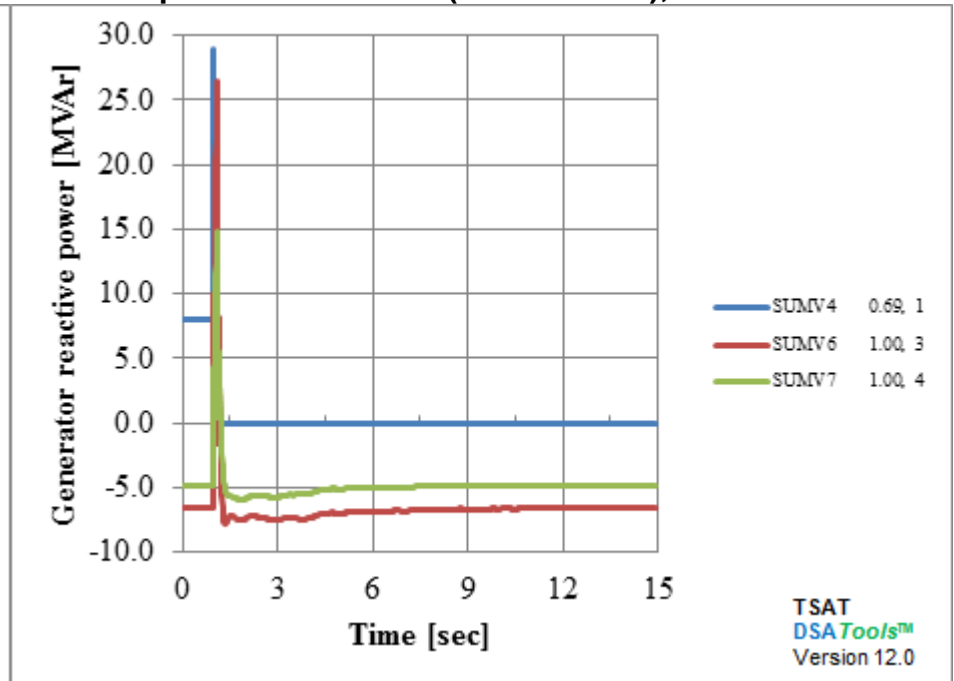
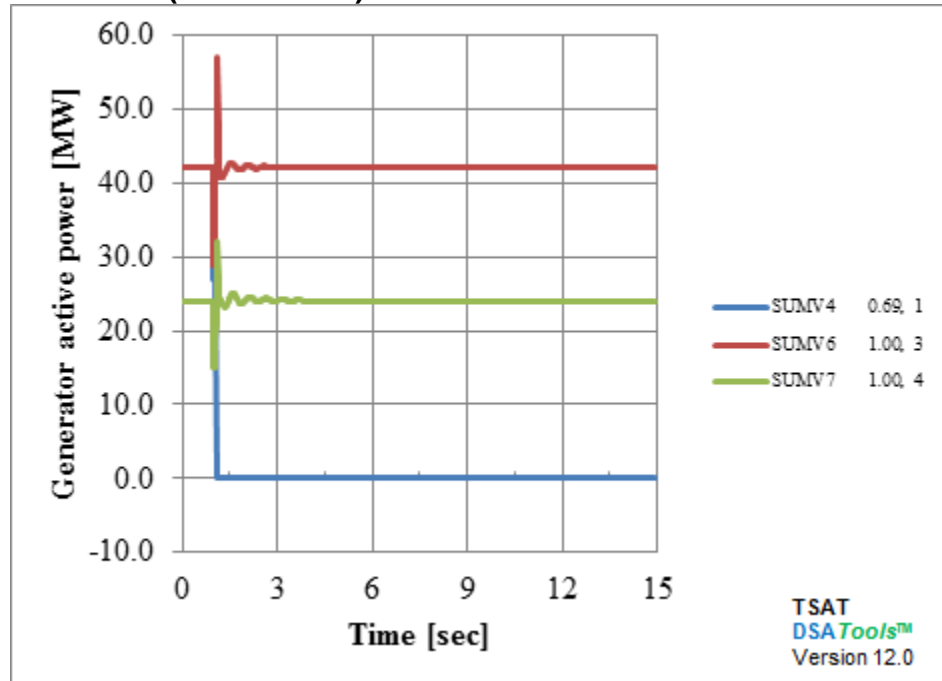
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Peak 2017



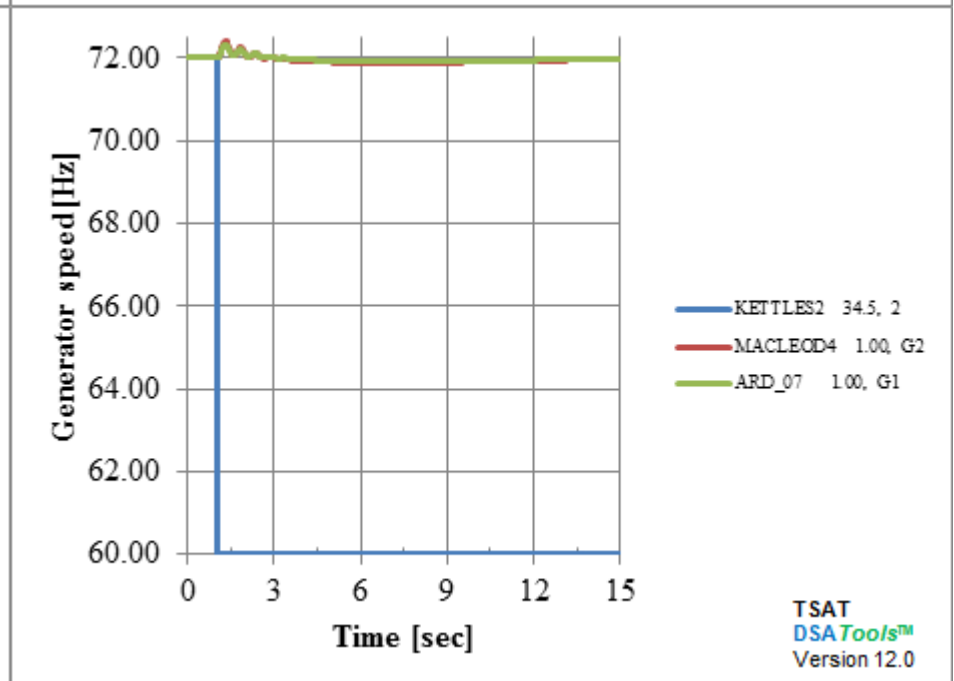
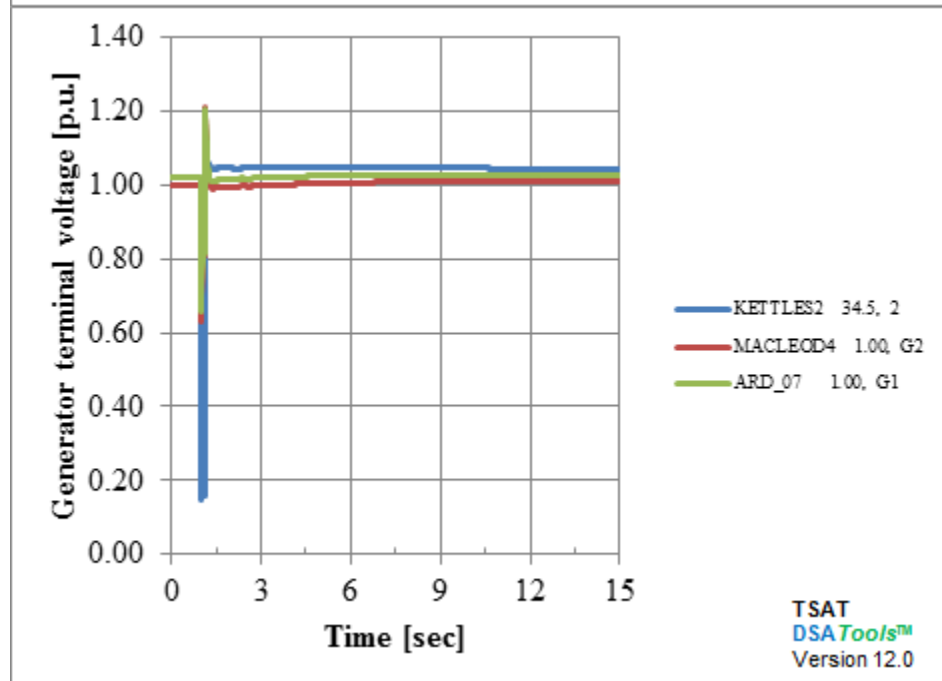
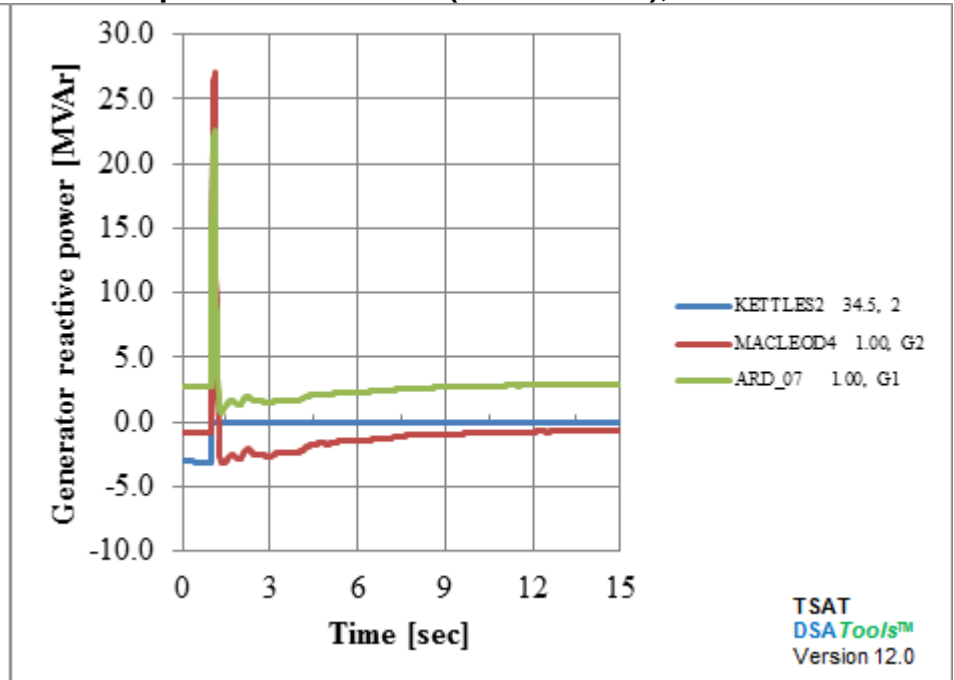
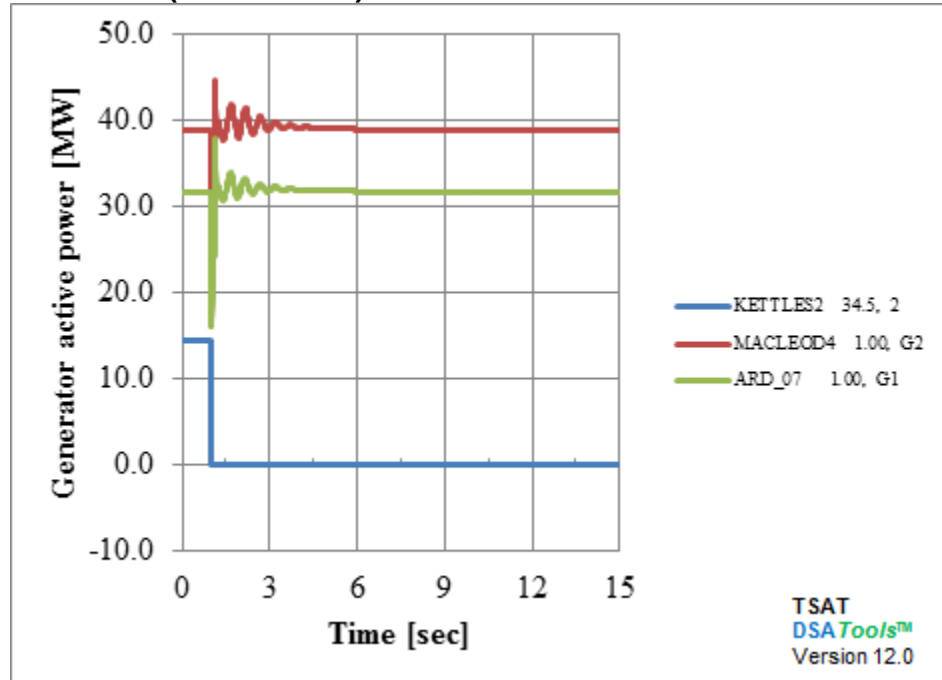
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Peak 2017



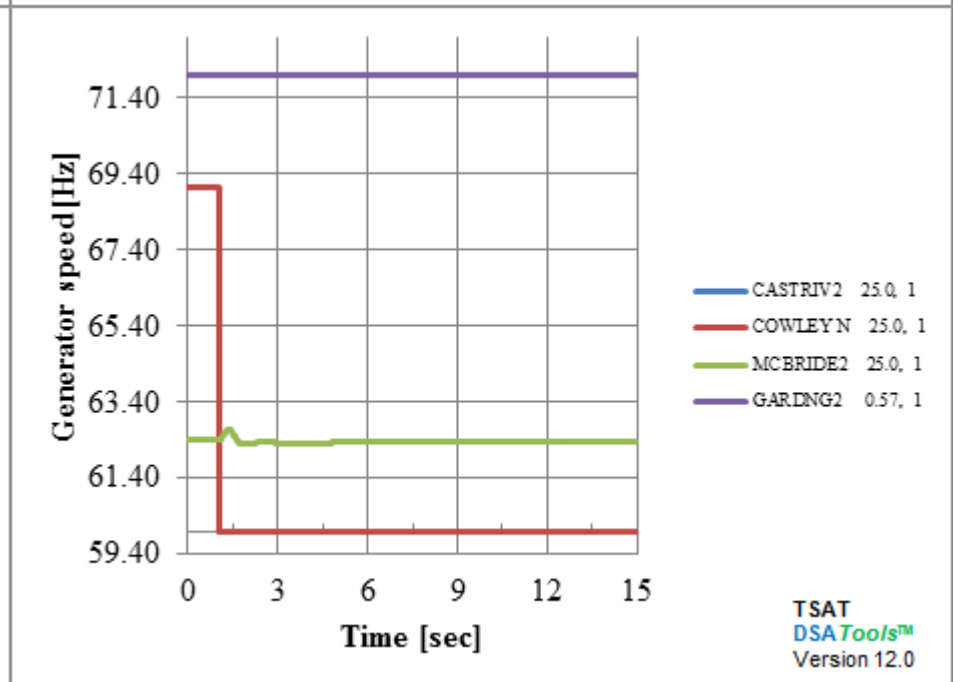
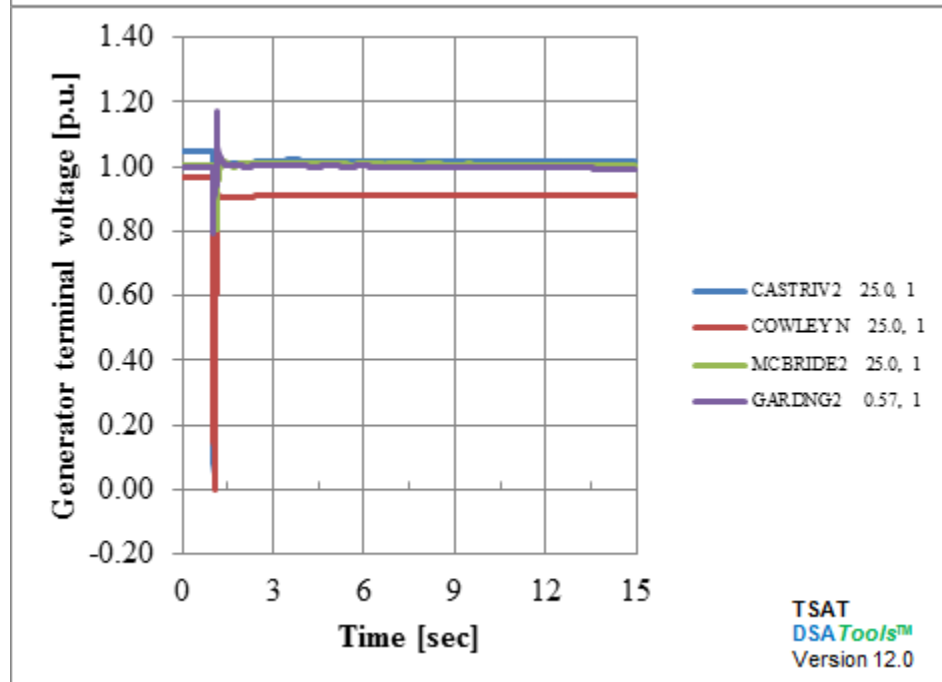
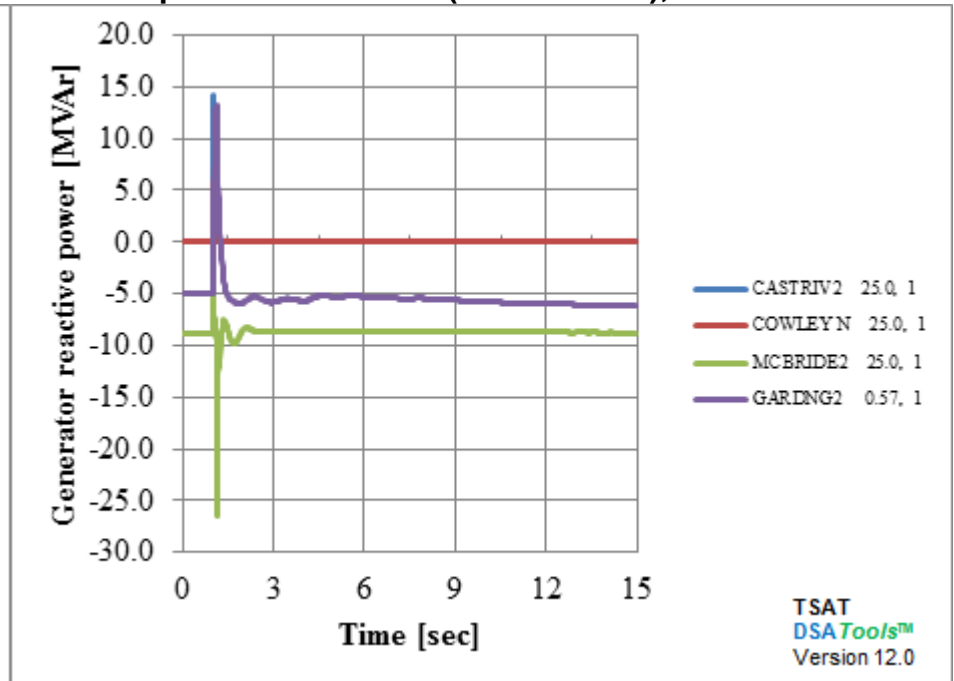
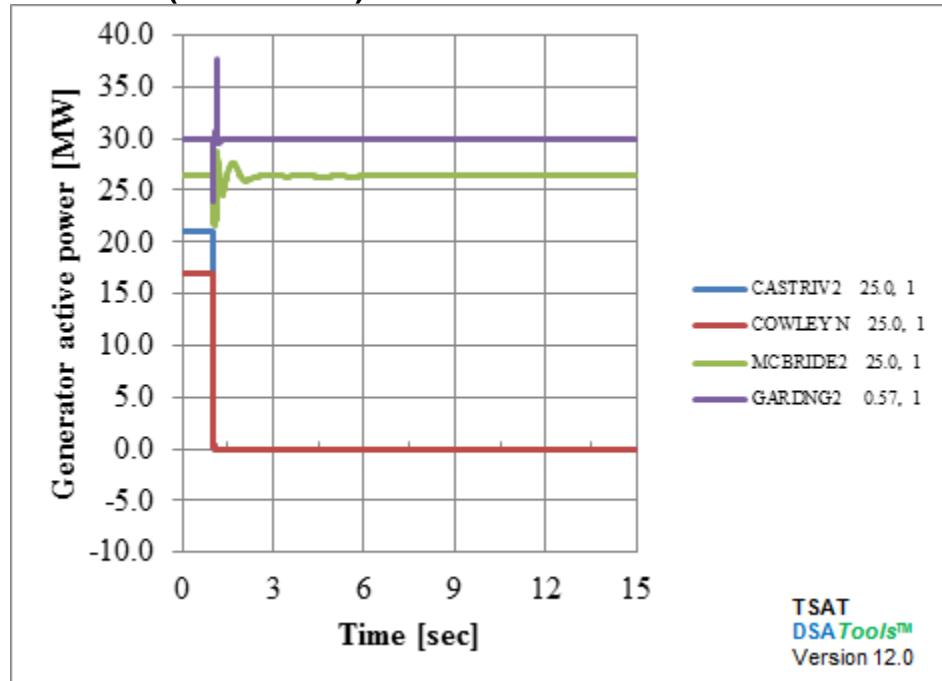
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Peak 2017



14 -- 613L (396S - 103S) NEAR 396S

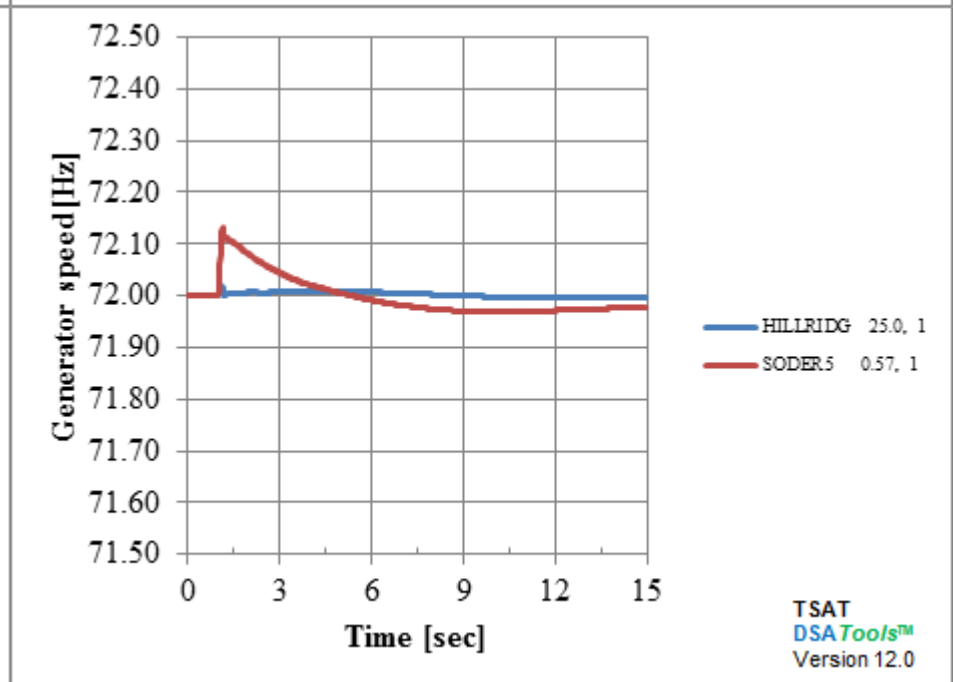
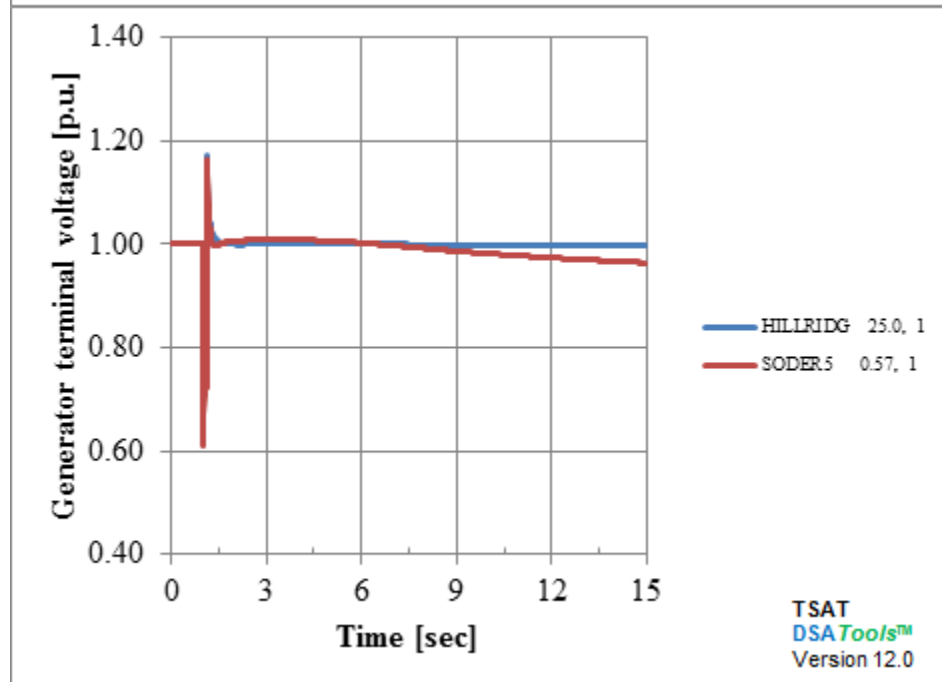
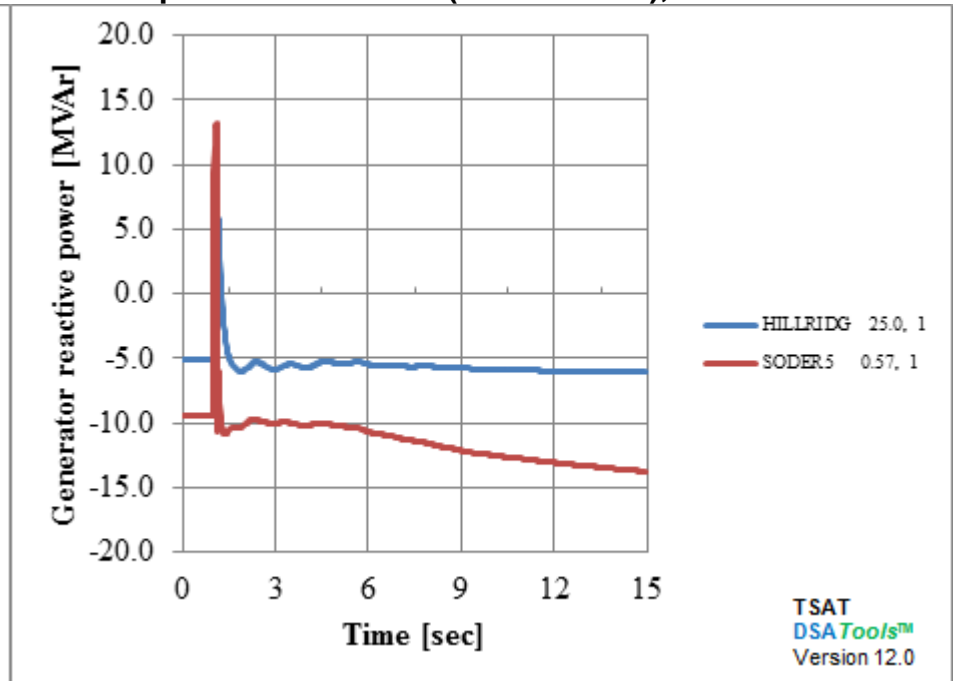
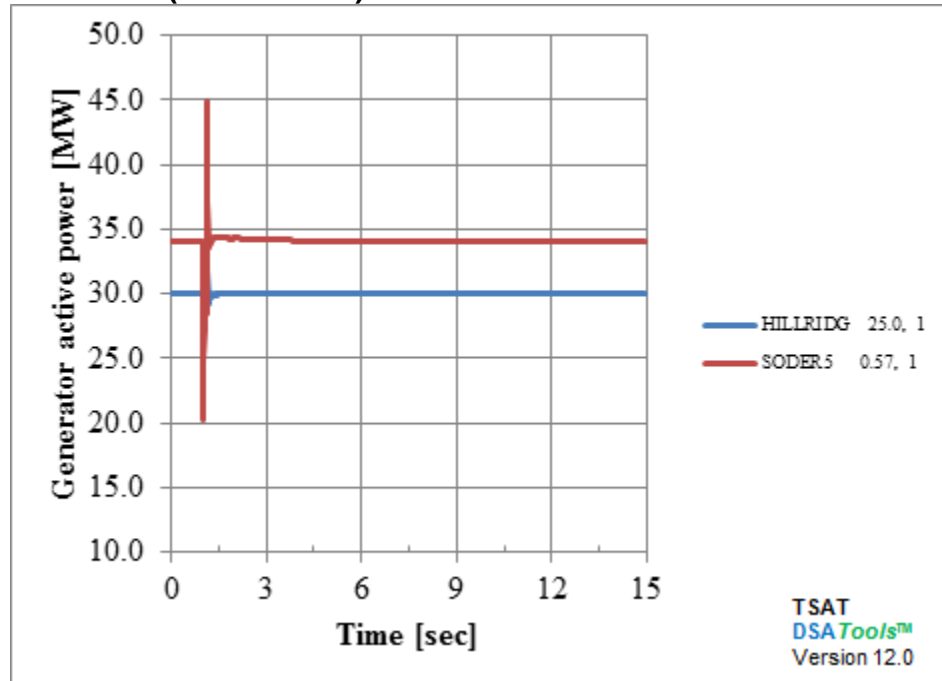
Proposed Connection (Alternative 2), Summer Peak 2017





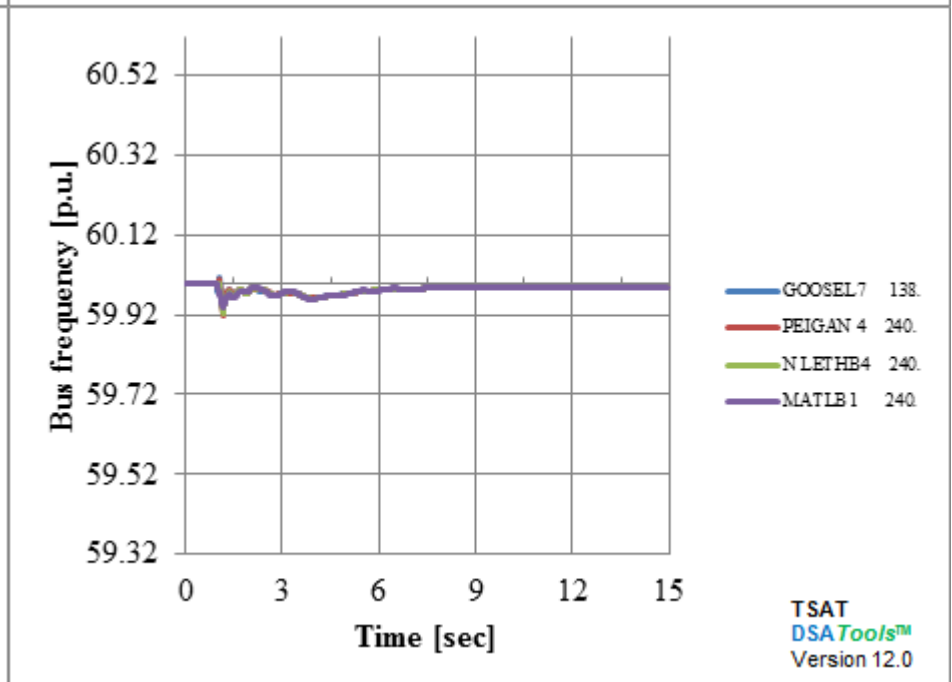
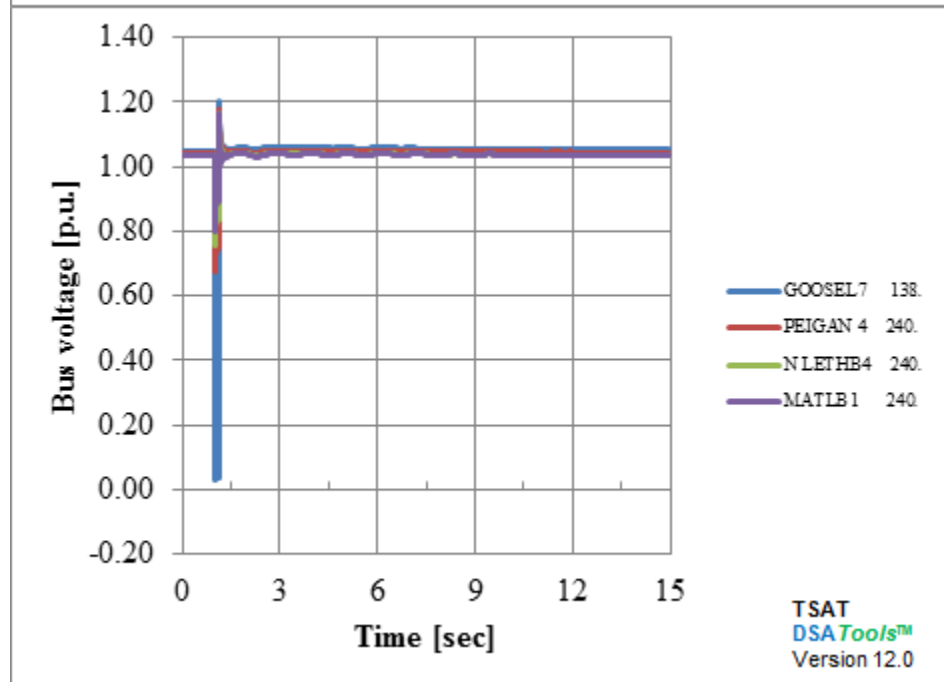
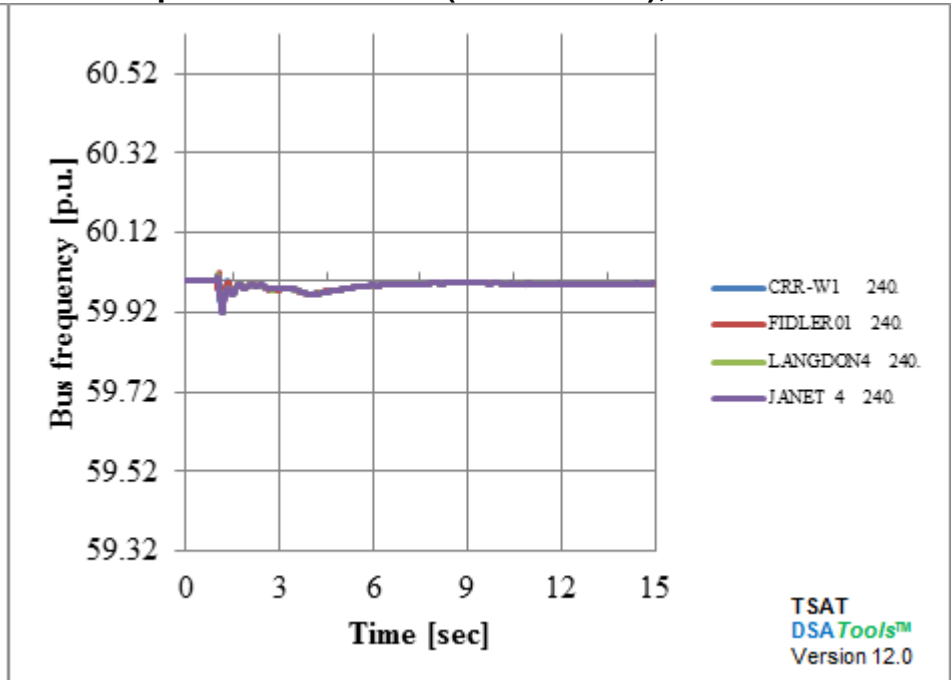
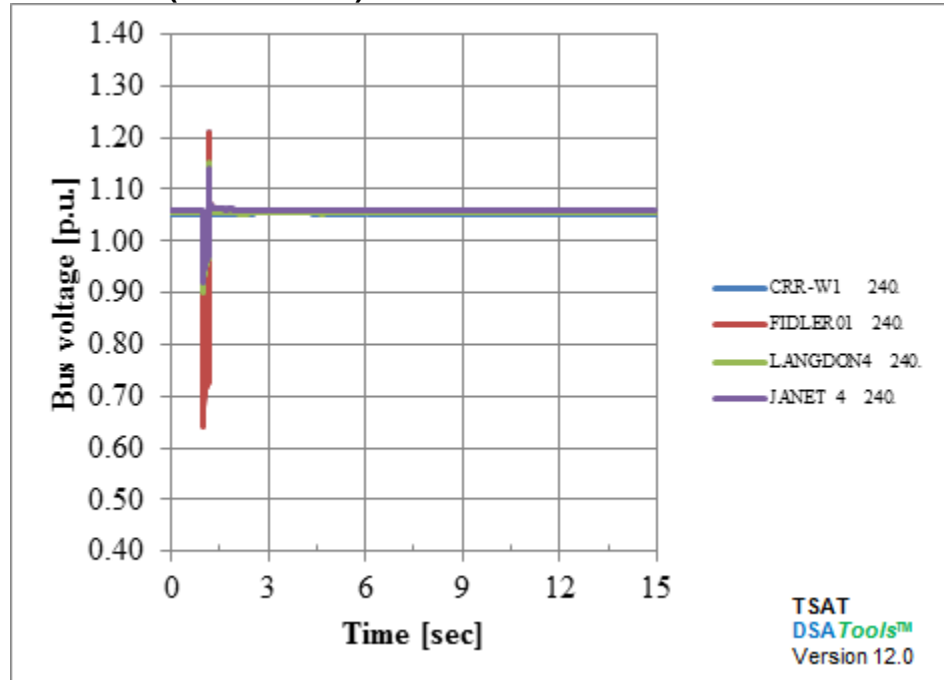
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Peak 2017



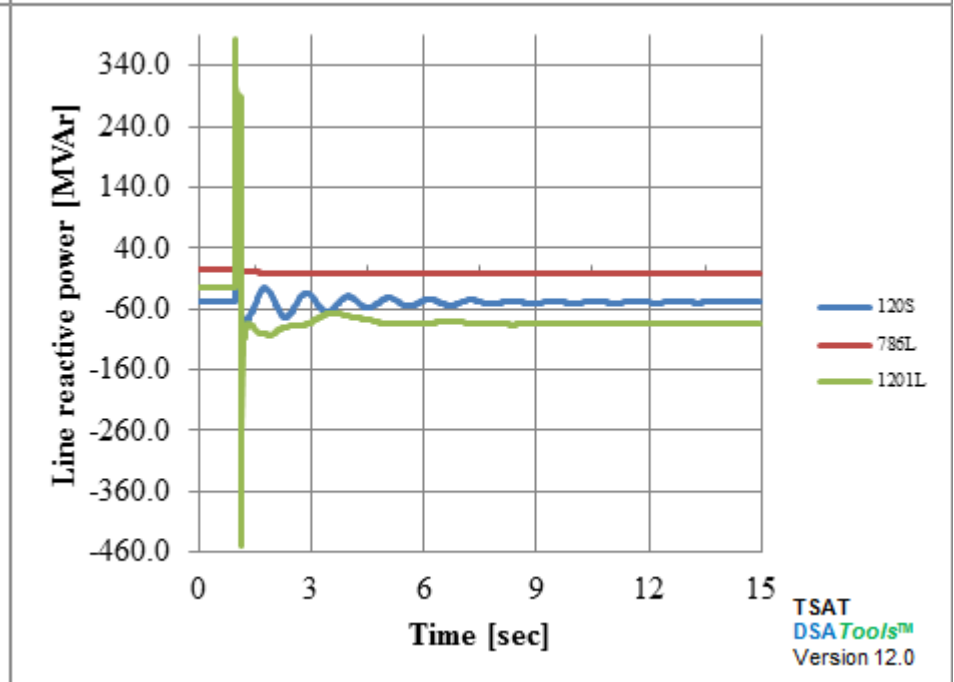
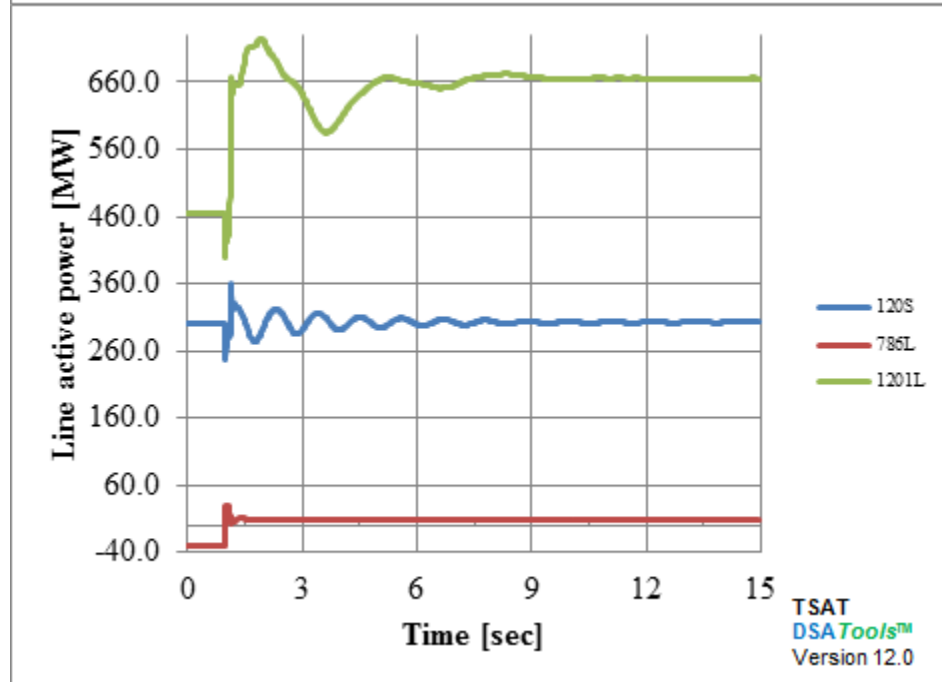
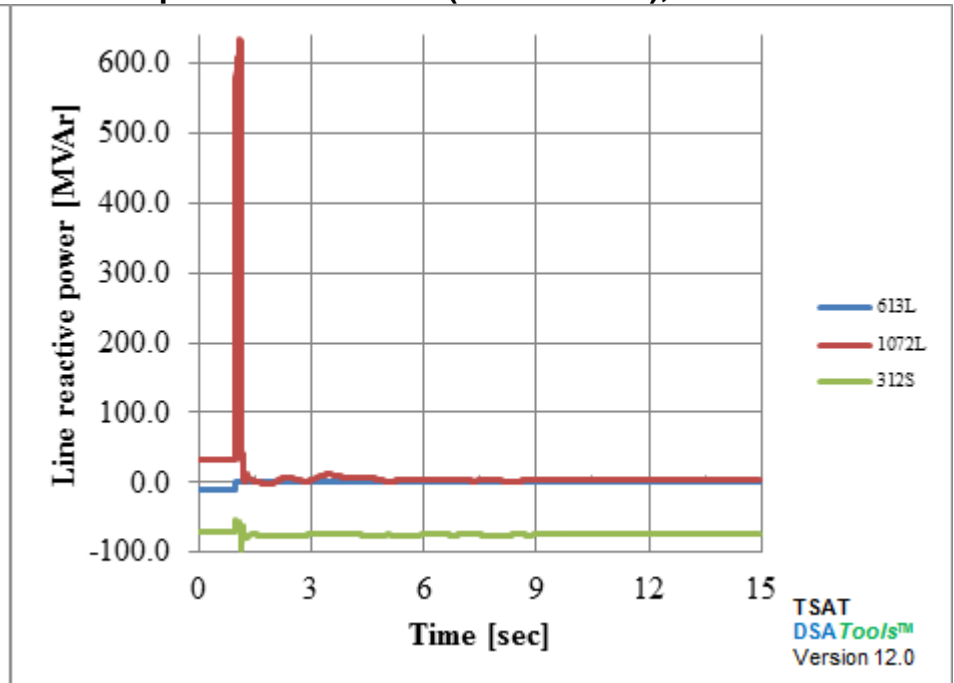
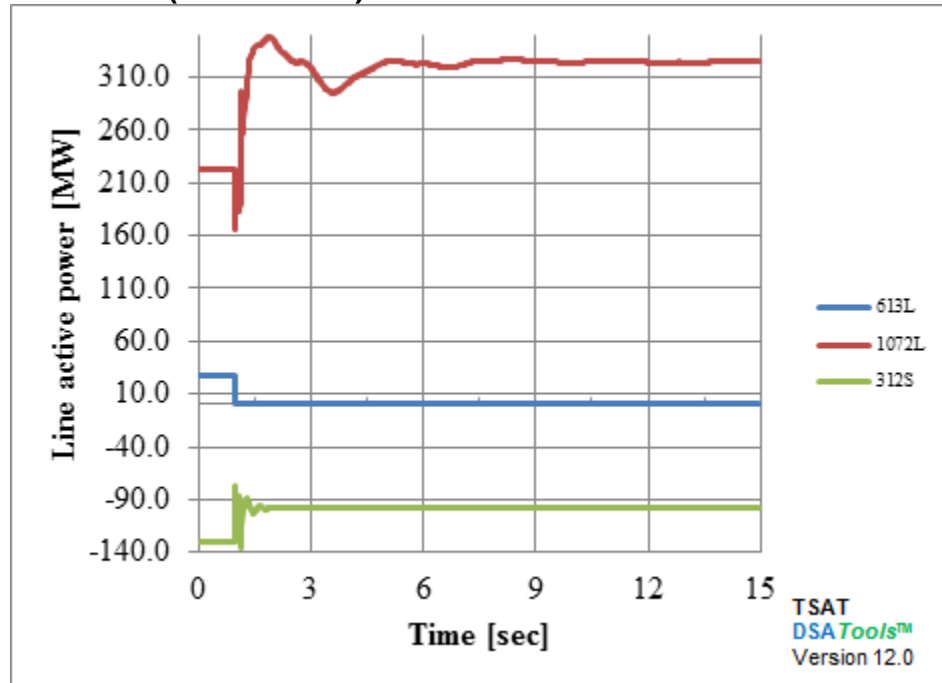
14 -- 613L (396S - 103S) NEAR 396S

Proposed Connection (Alternative 2), Summer Peak 2017



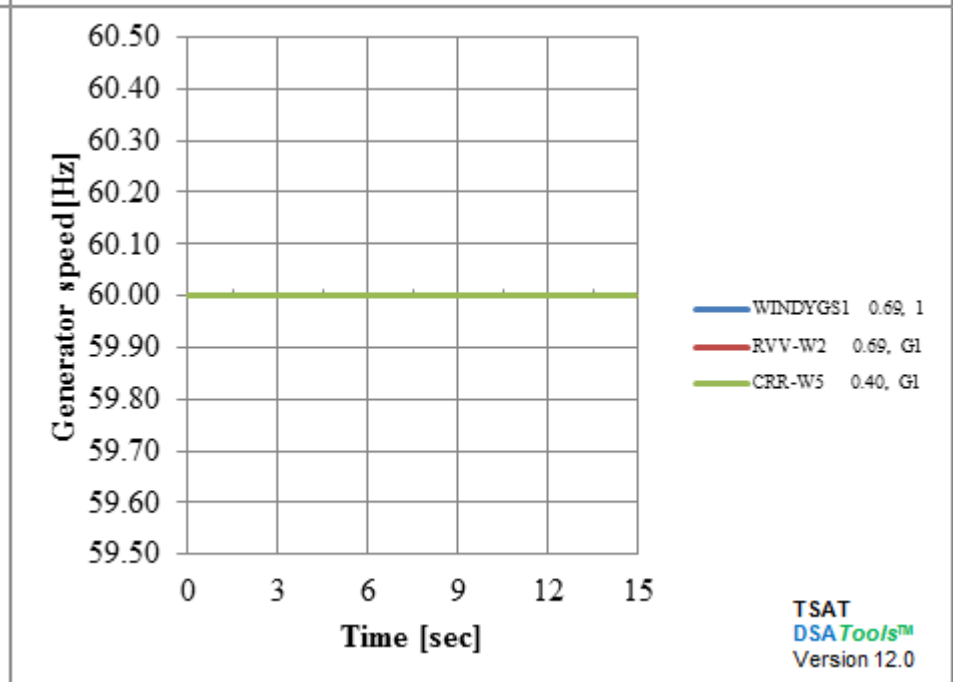
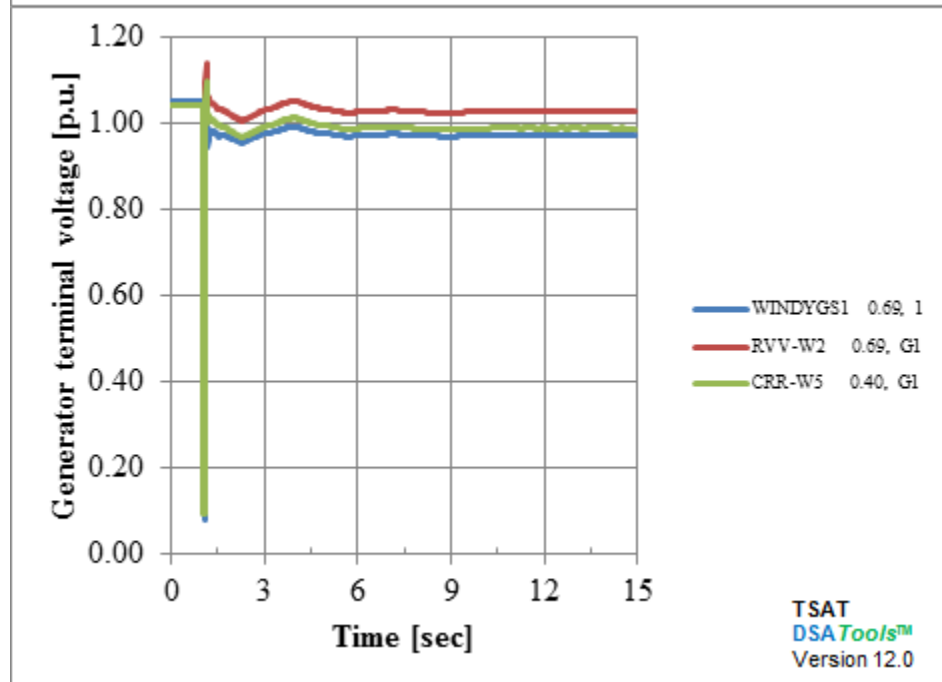
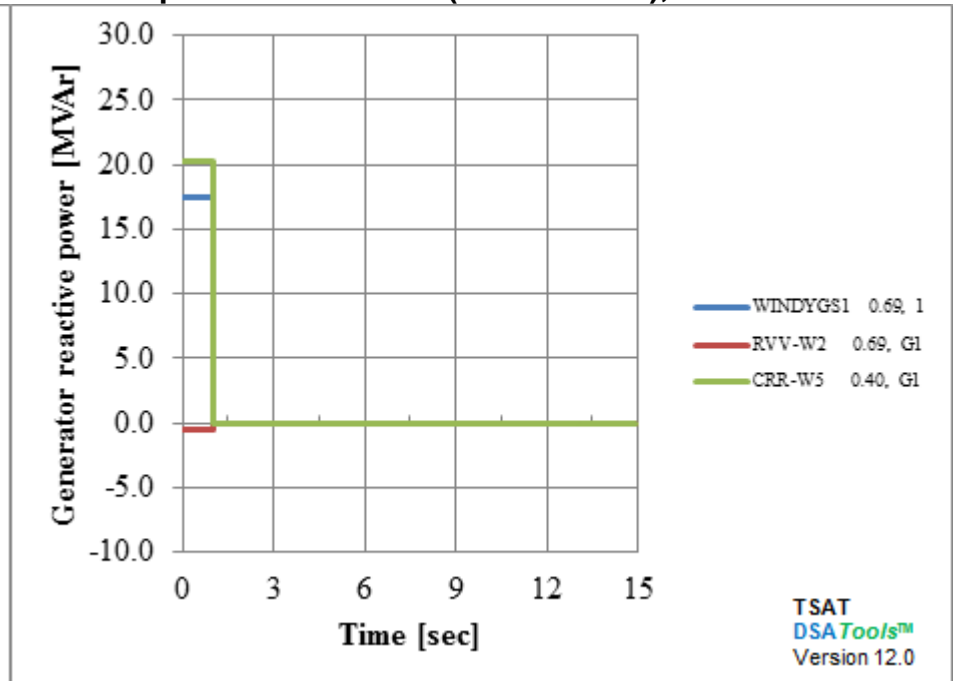
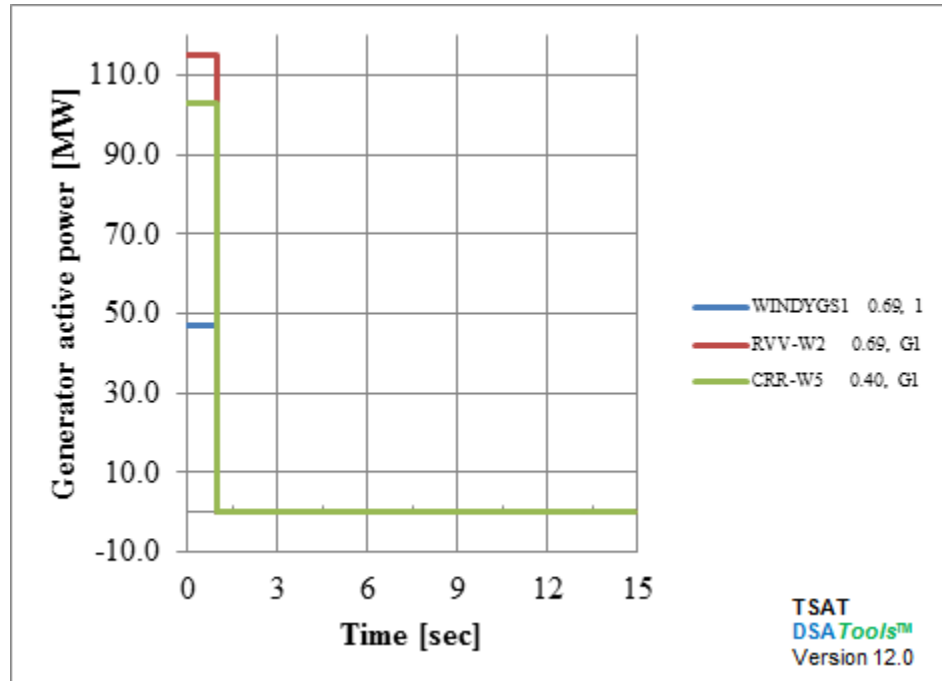
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Proposed Connection (Alternative 2), Summer Peak 2017



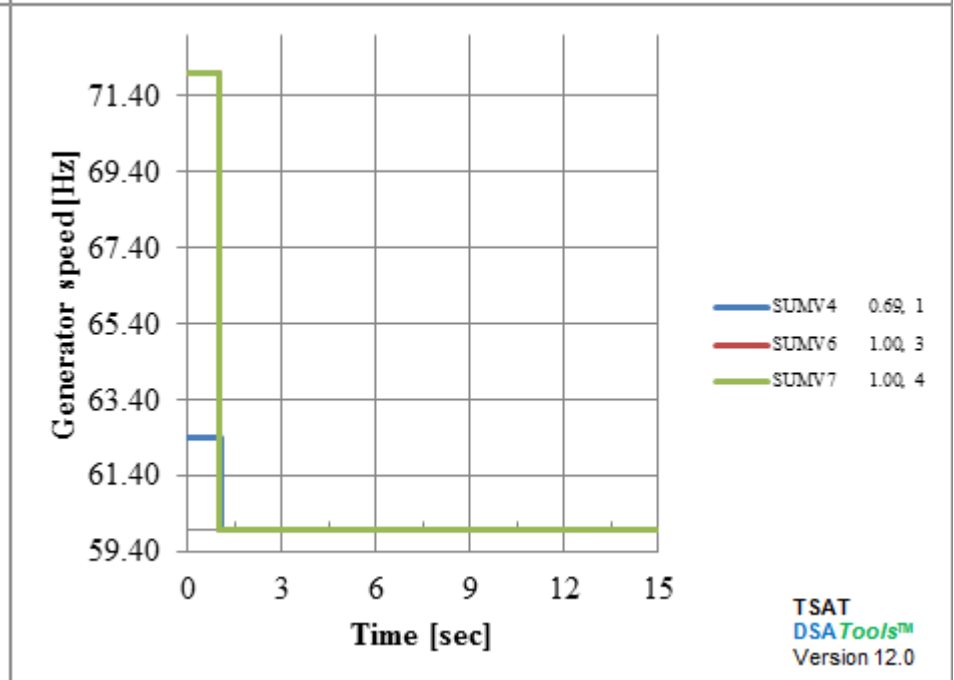
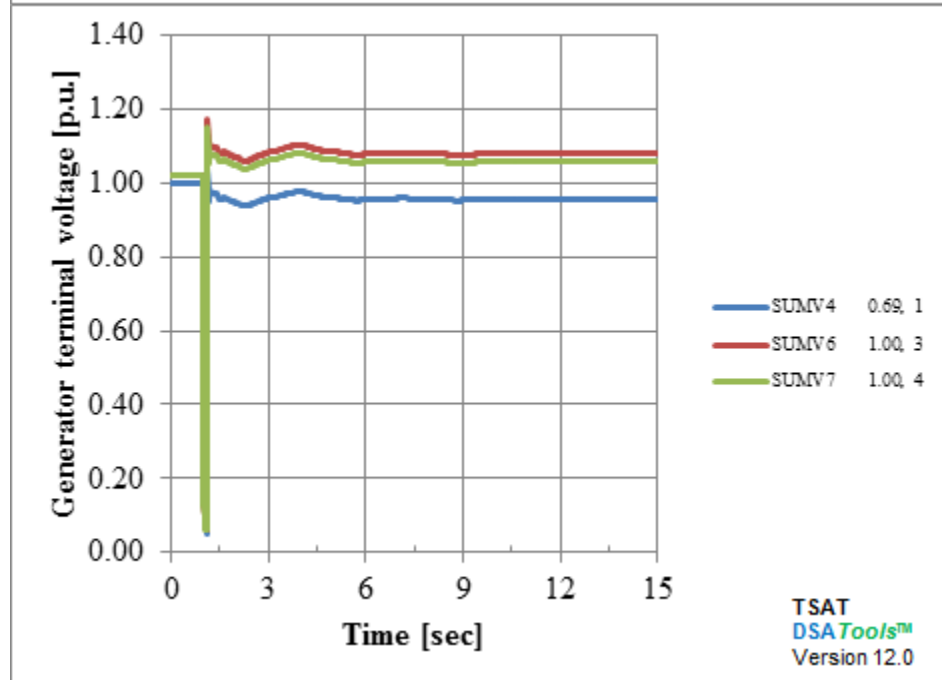
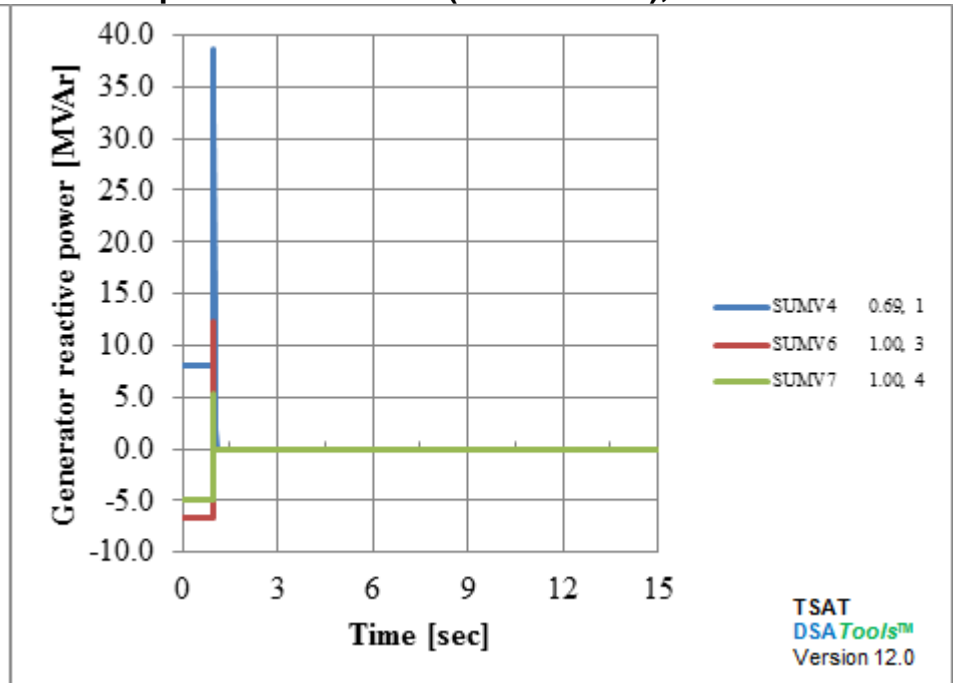
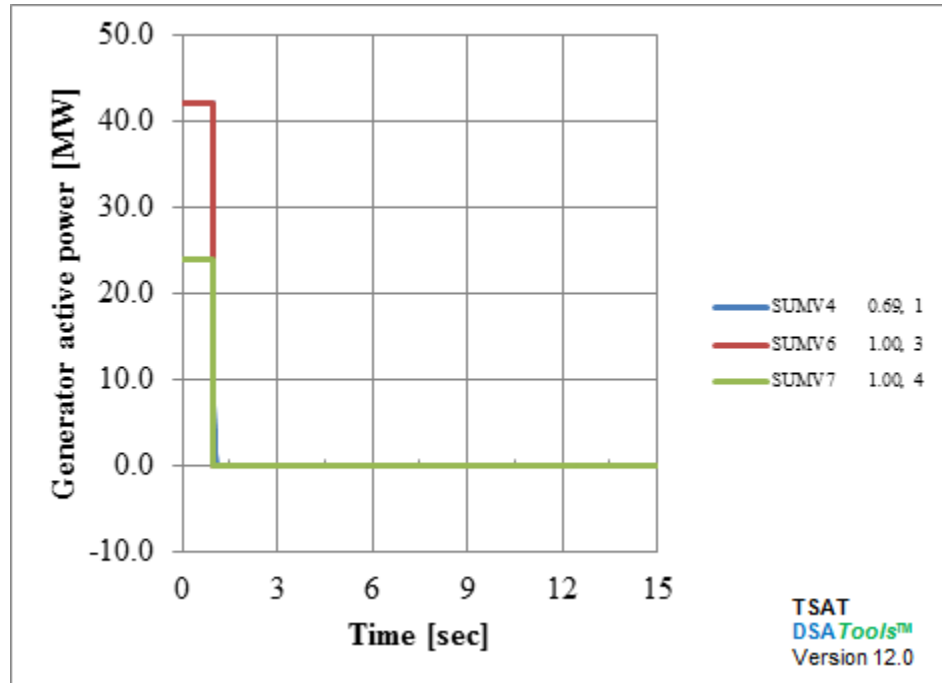
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Proposed Connection (Alternative 2), Summer Peak 2017



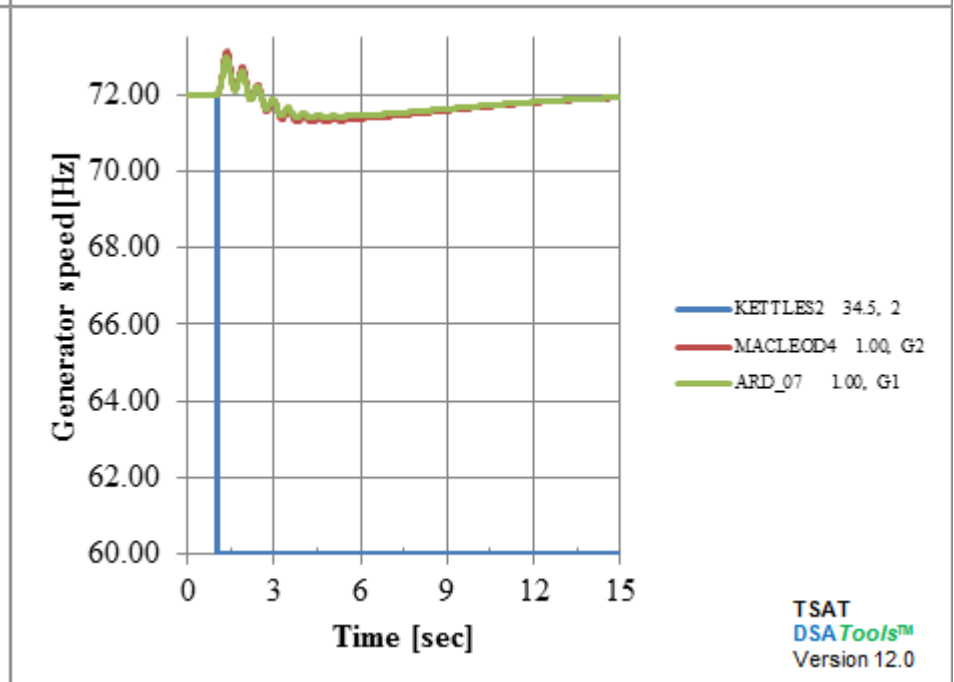
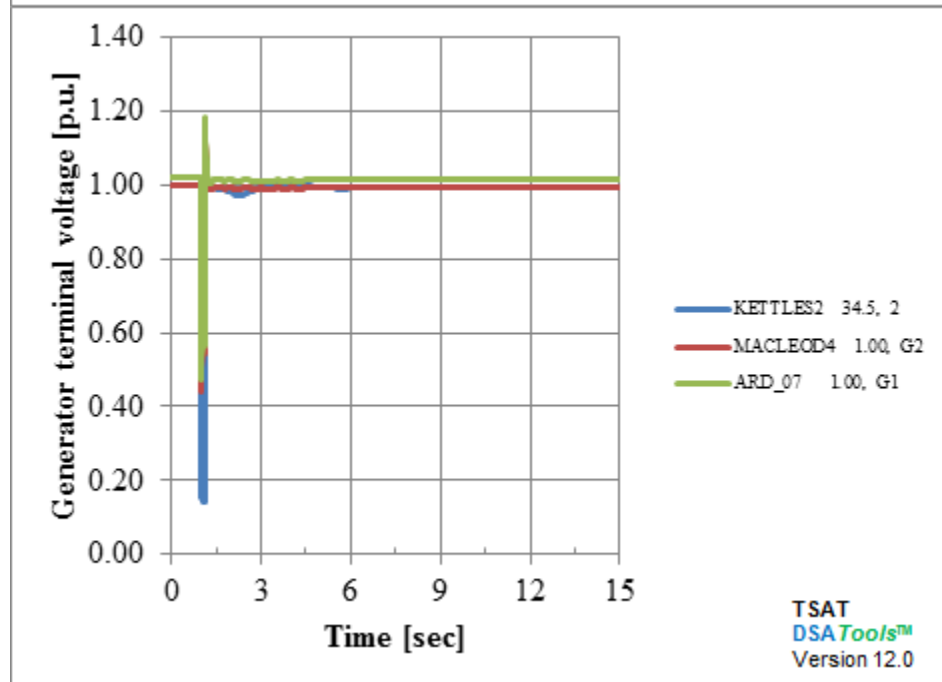
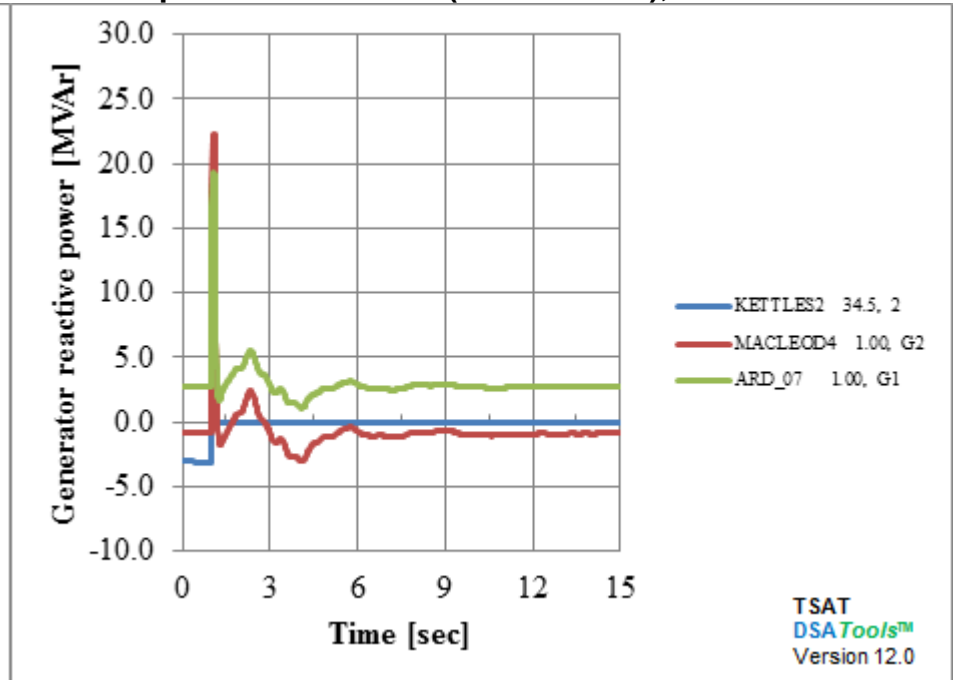
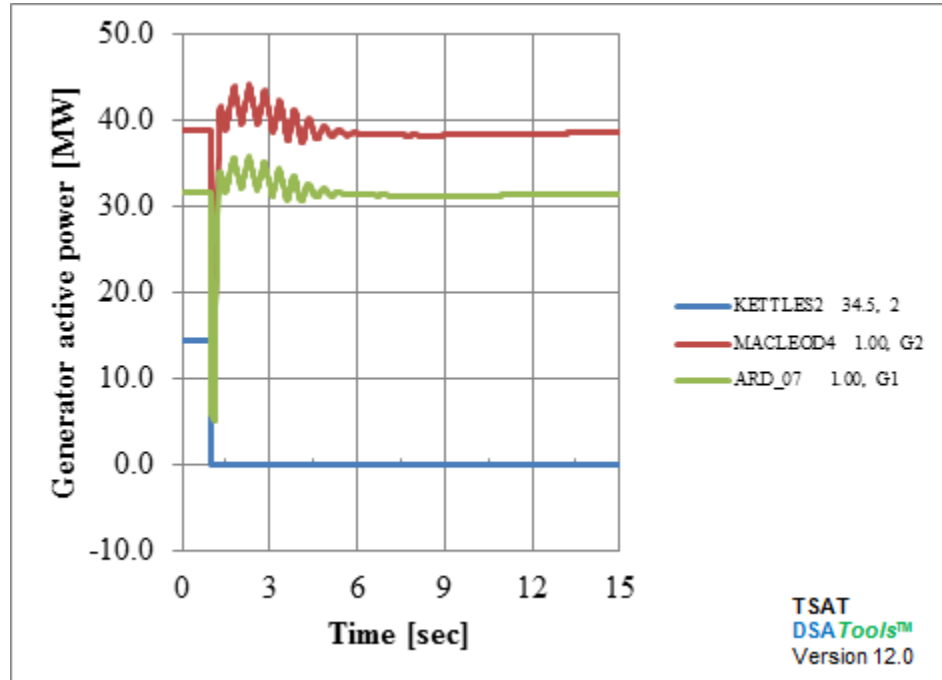
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Proposed Connection (Alternative 2), Summer Peak 2017



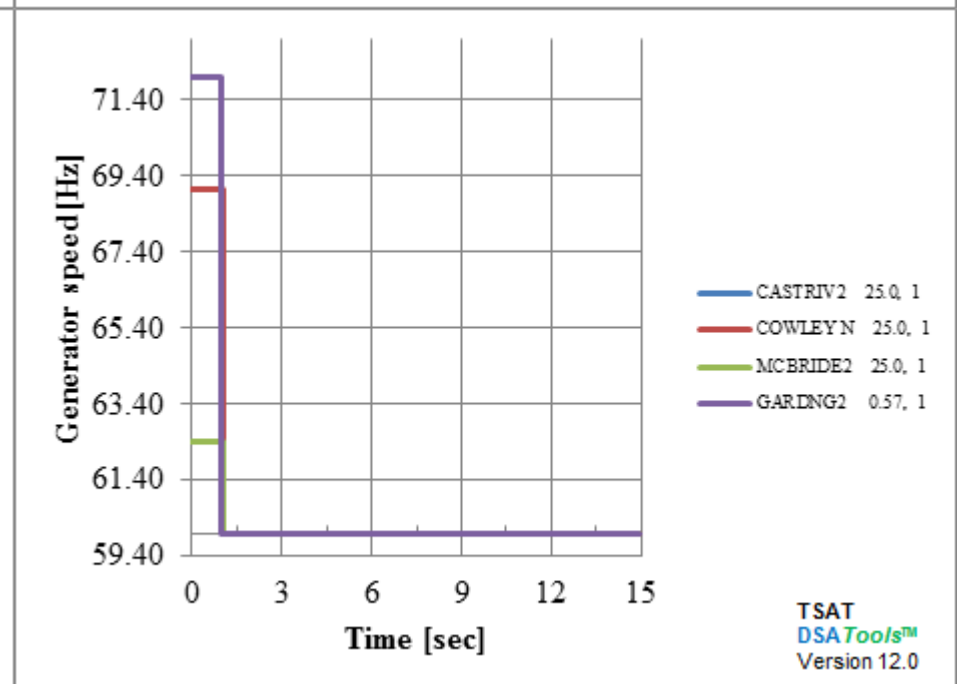
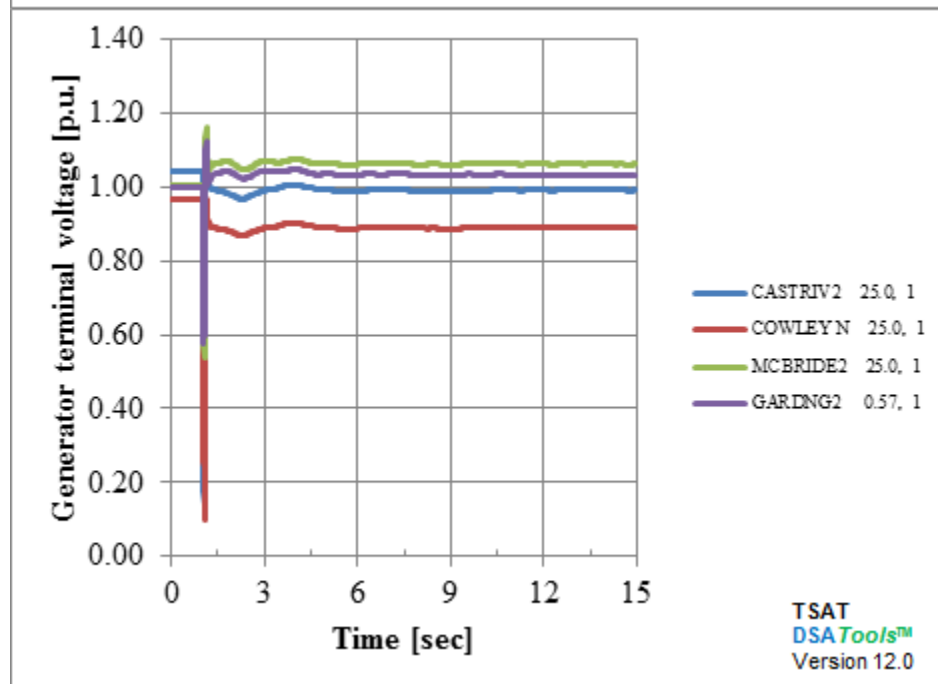
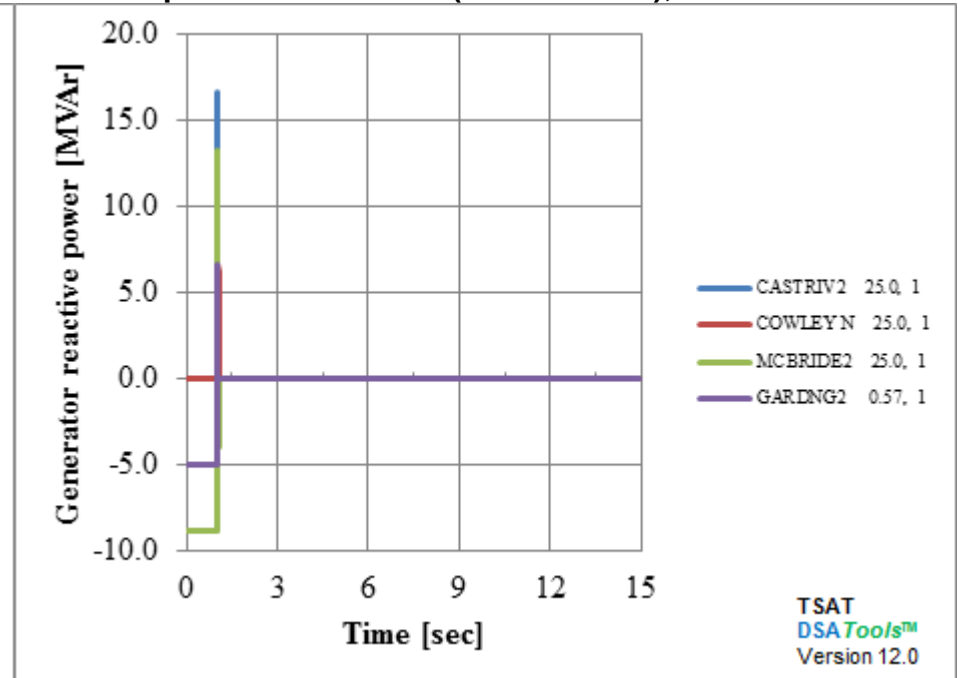
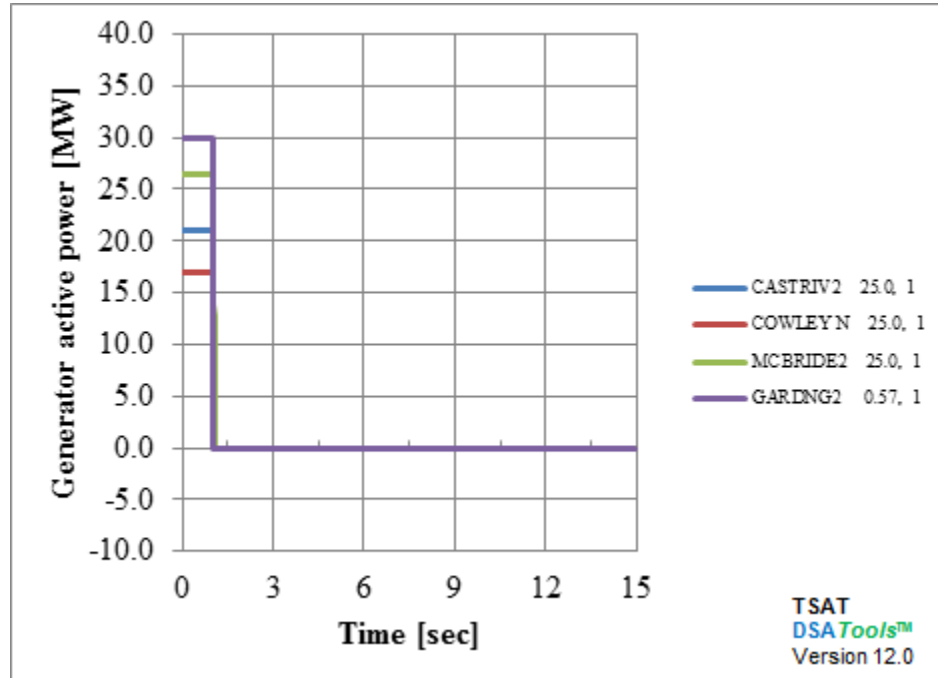
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Proposed Connection (Alternative 2), Summer Peak 2017



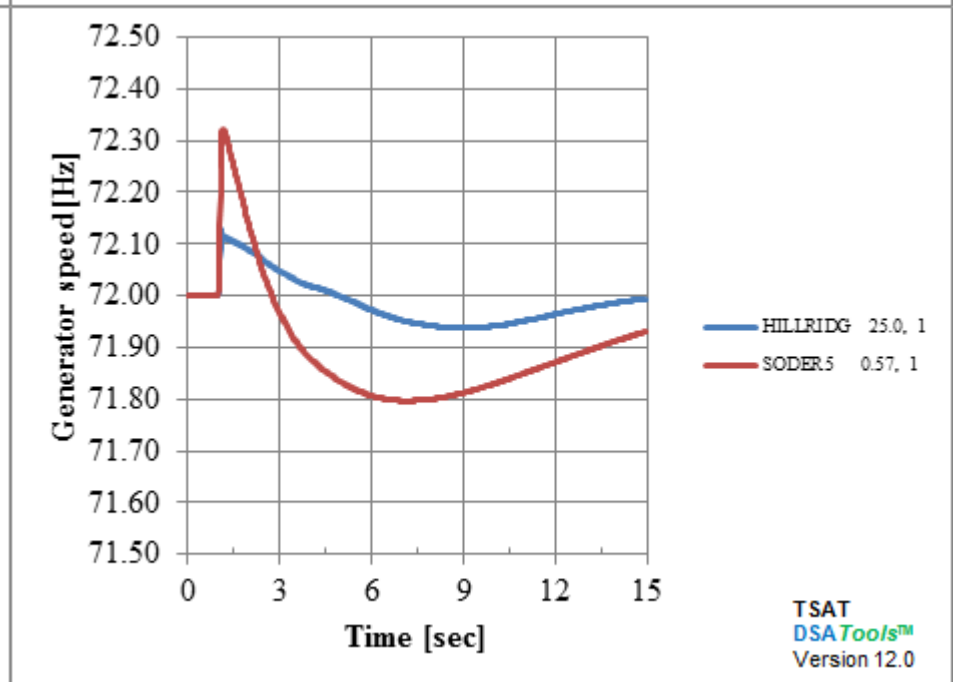
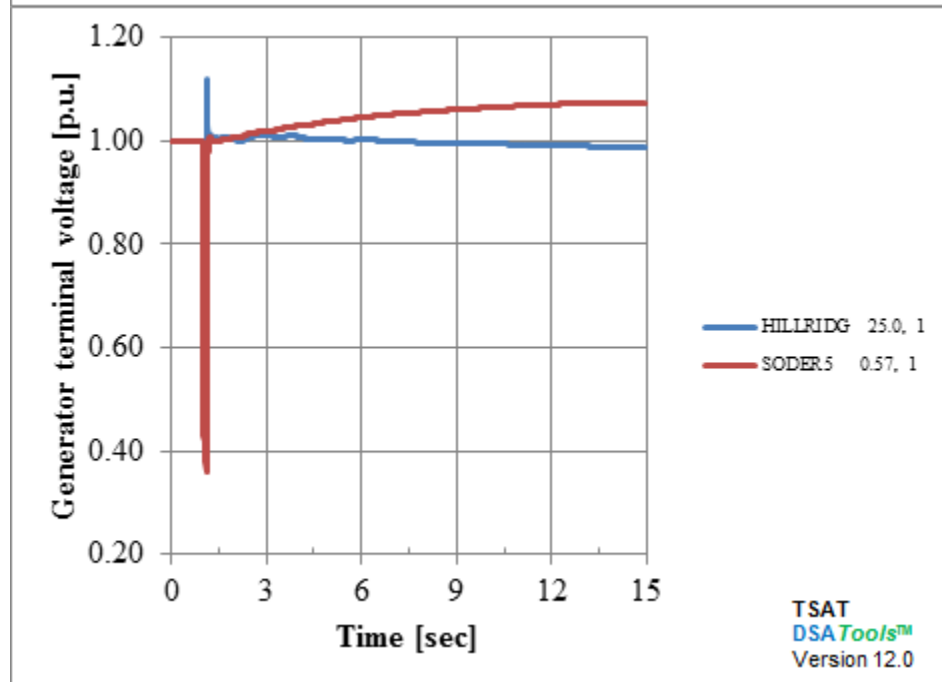
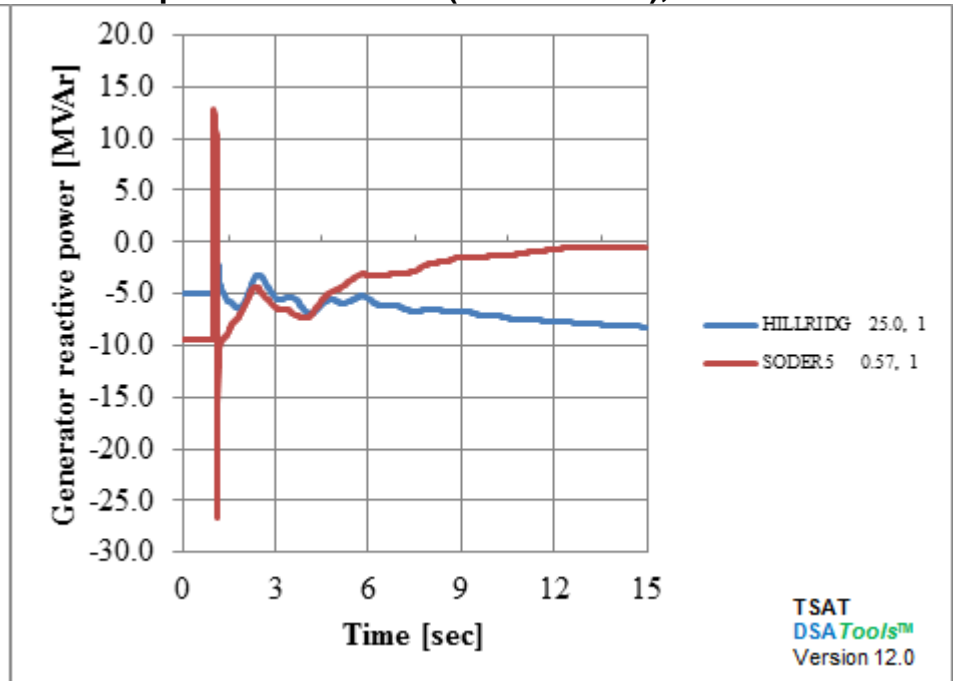
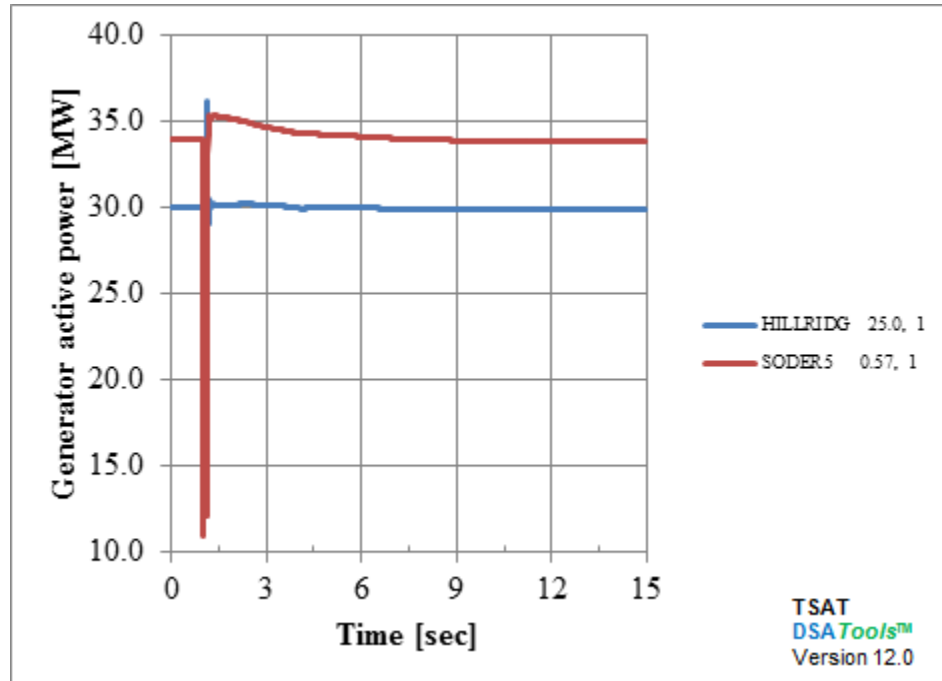
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Proposed Connection (Alternative 2), Summer Peak 2017



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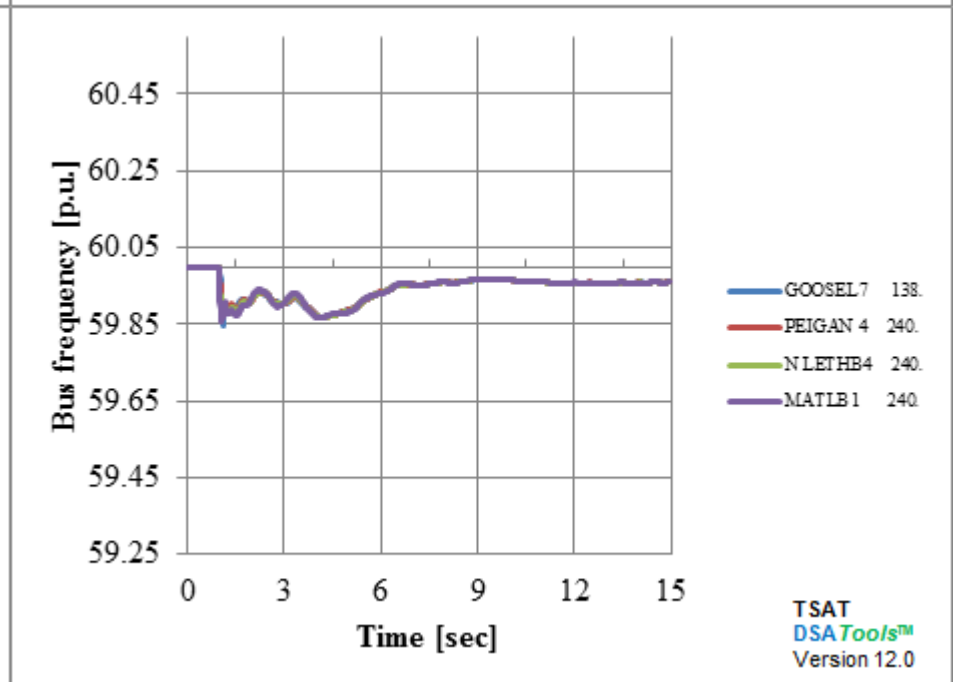
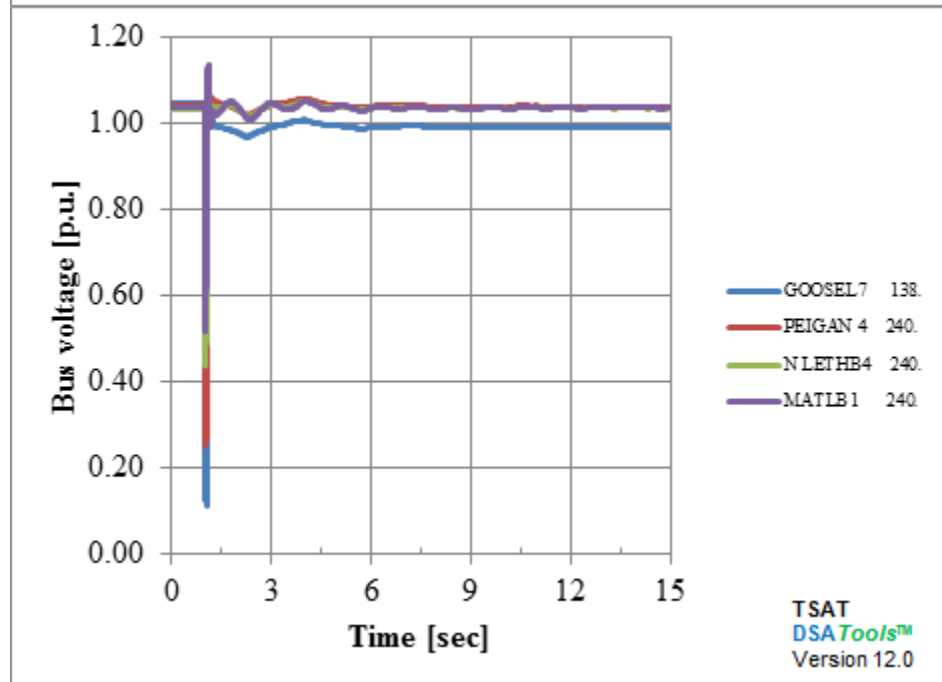
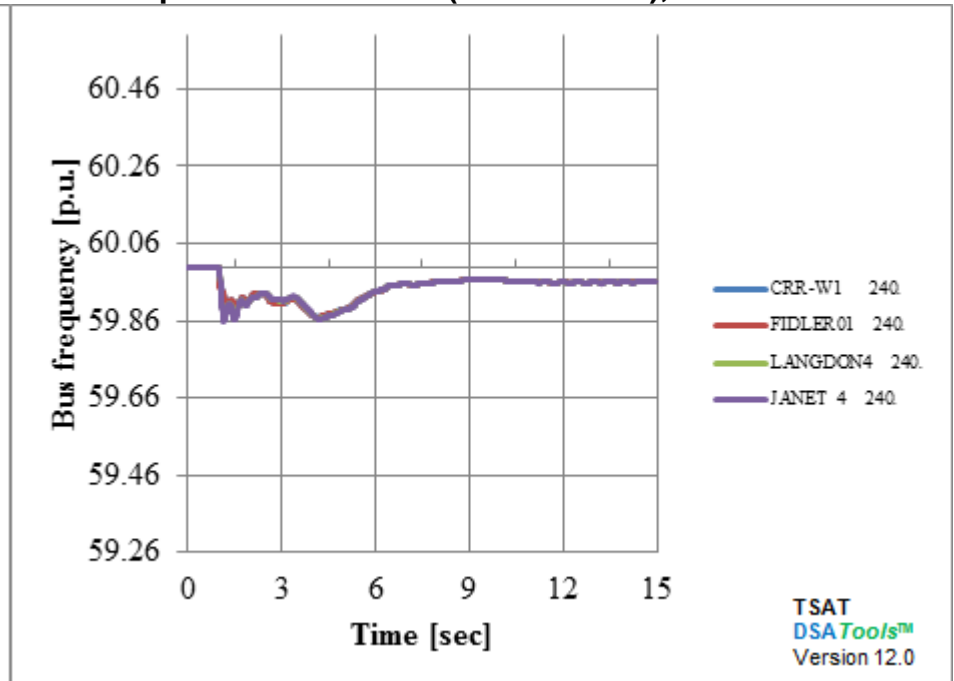
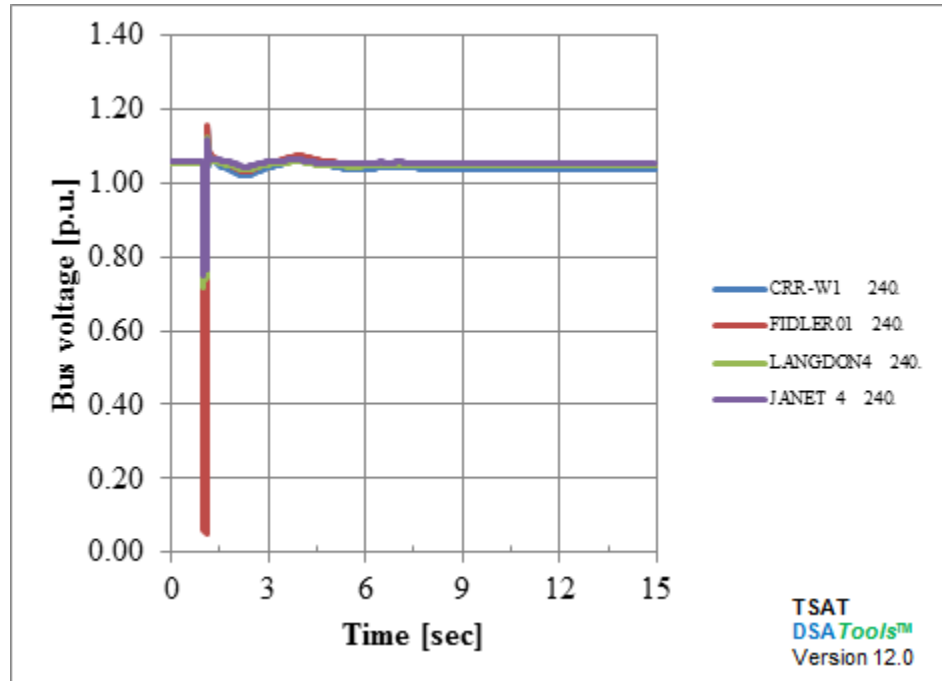
Proposed Connection (Alternative 2), Summer Peak 2017





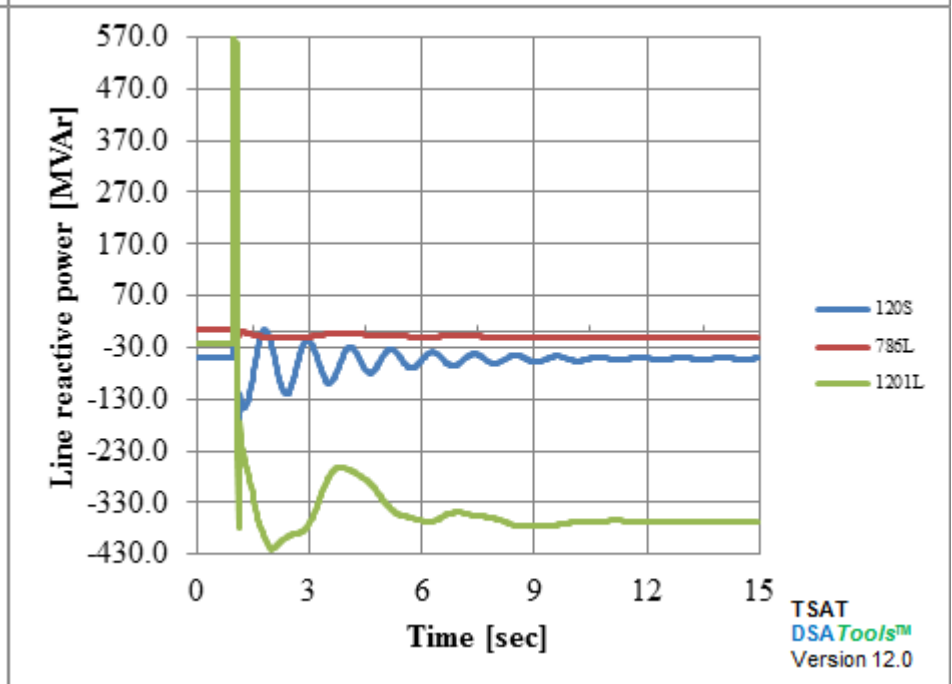
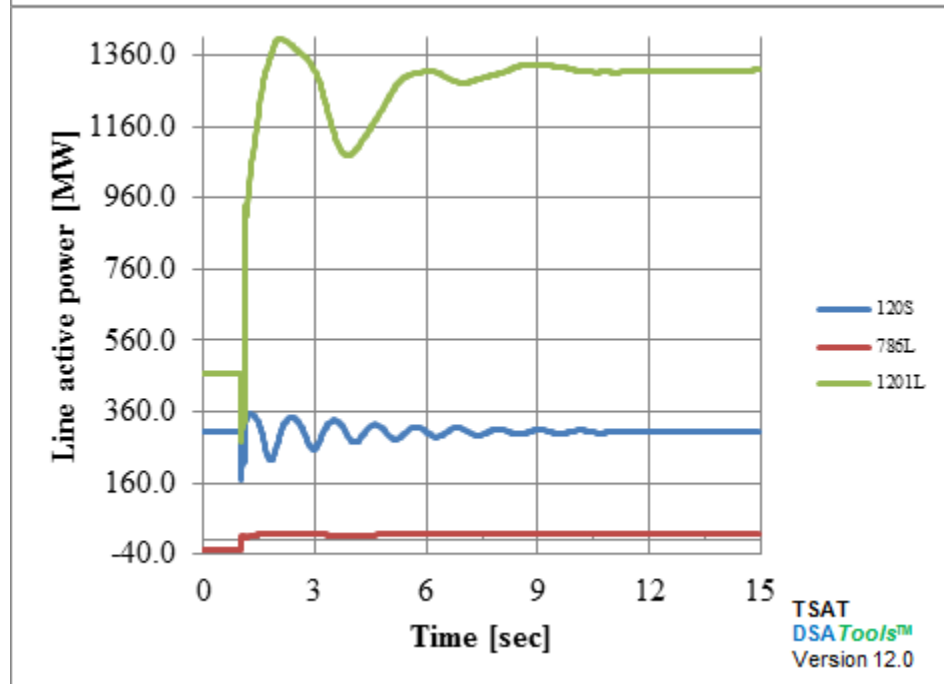
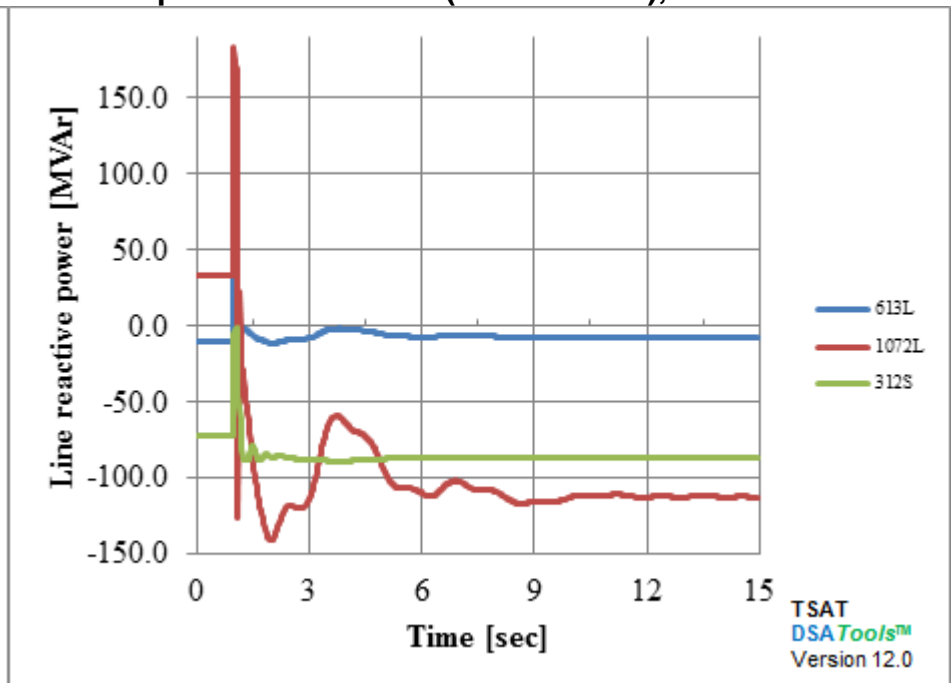
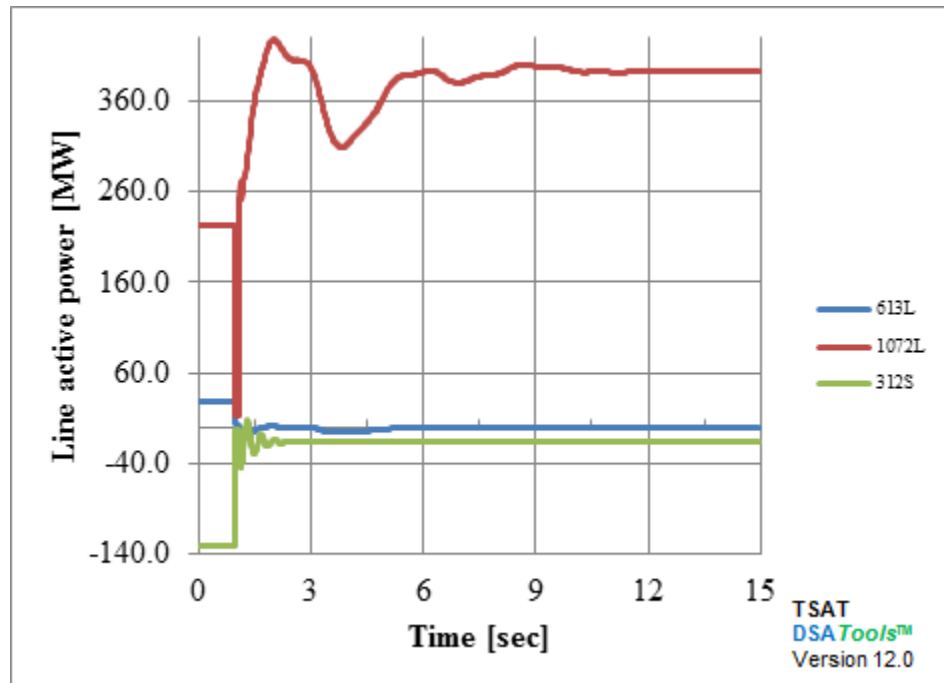
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Proposed Connection (Alternative 2), Summer Peak 2017



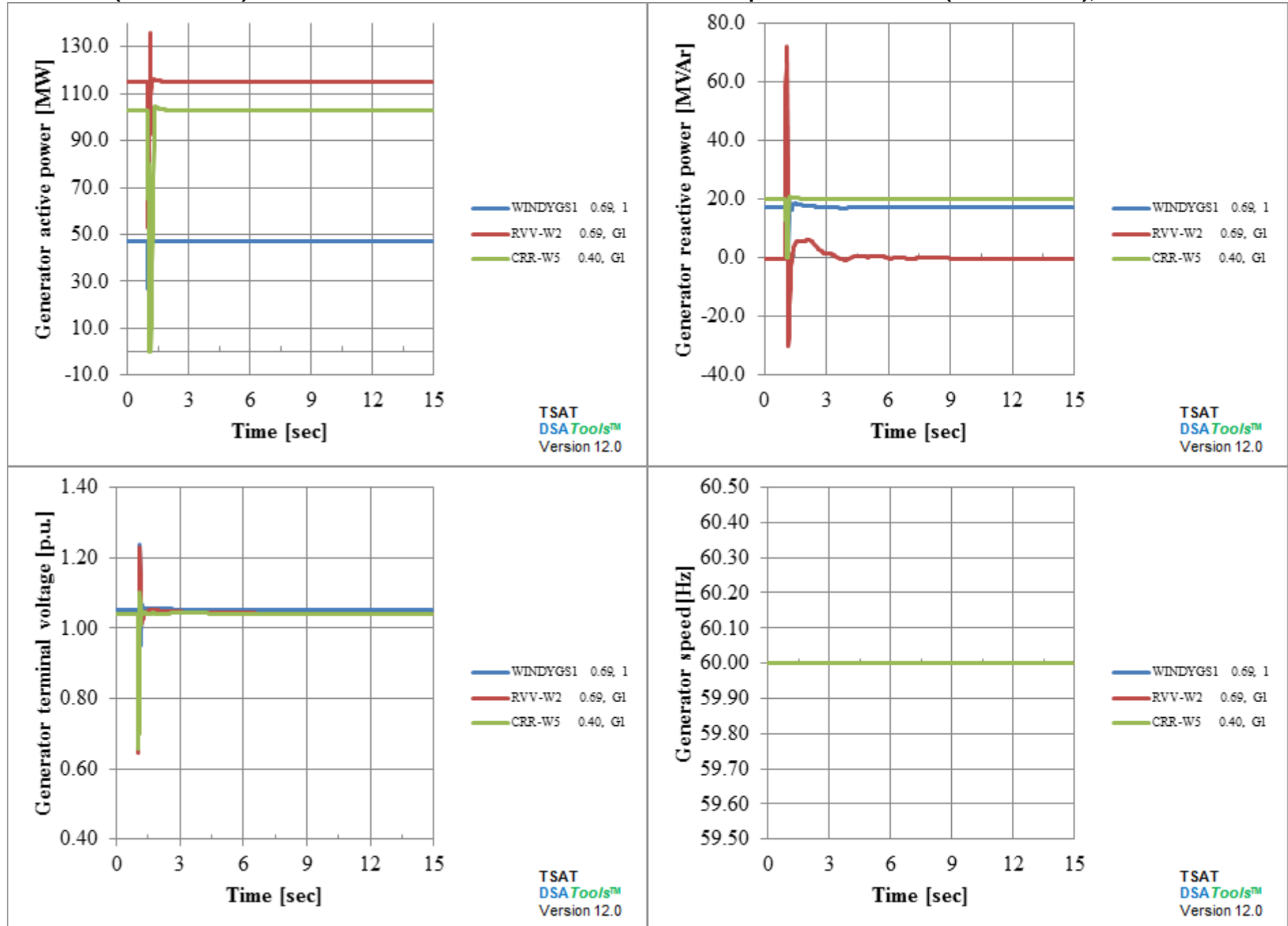
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Proposed Connection (Alternative 2), Summer Peak 2017



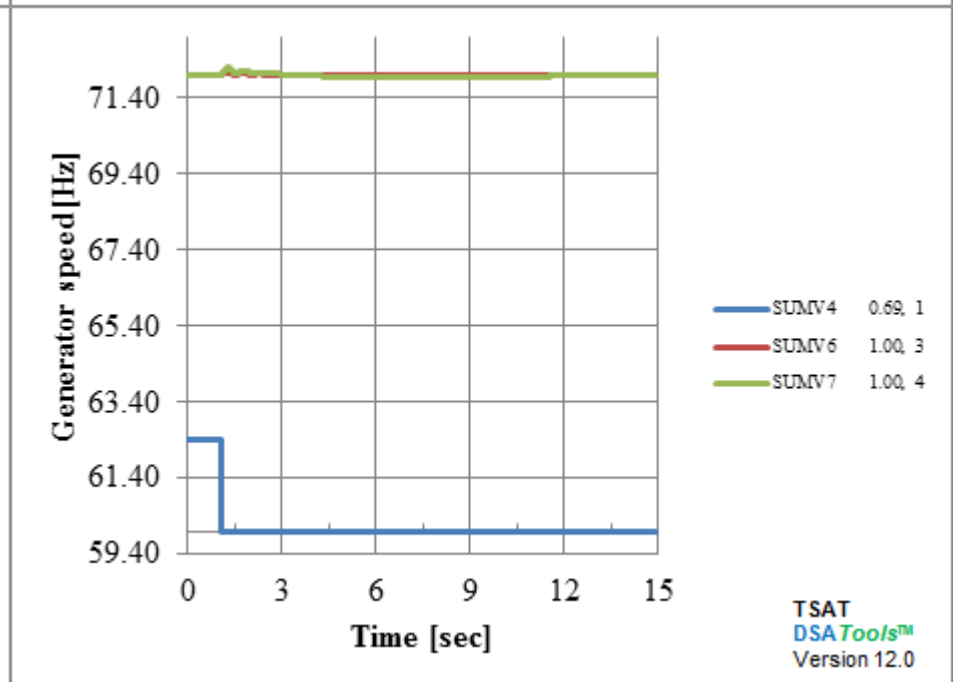
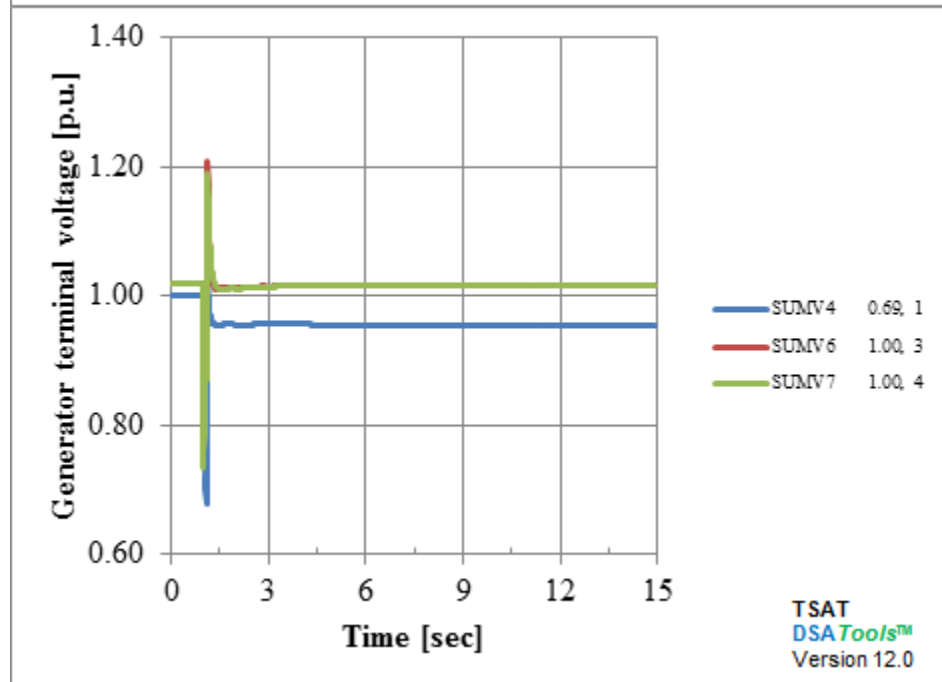
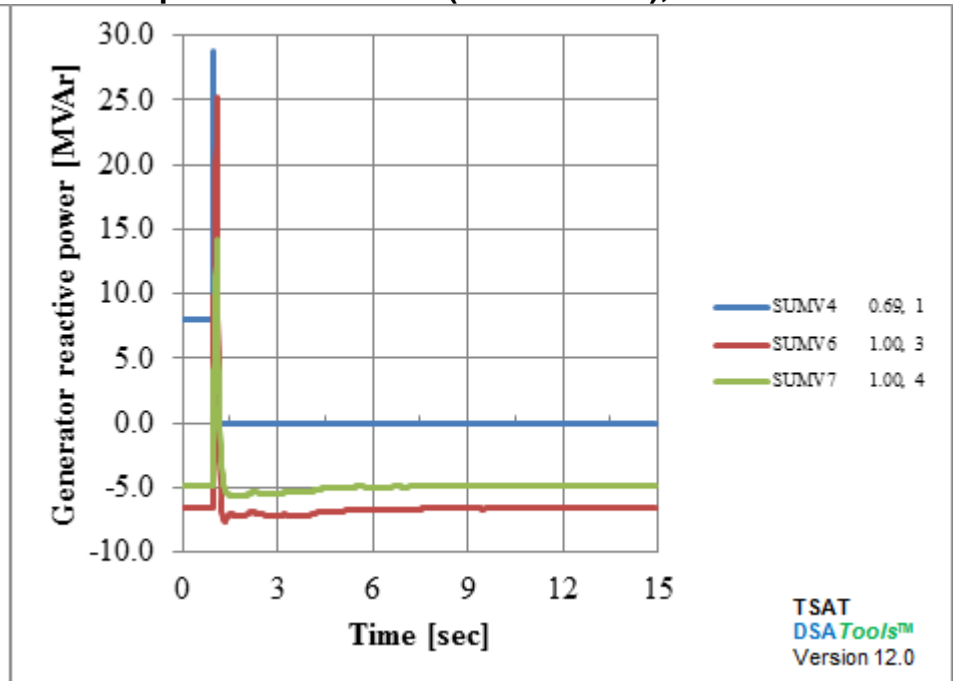
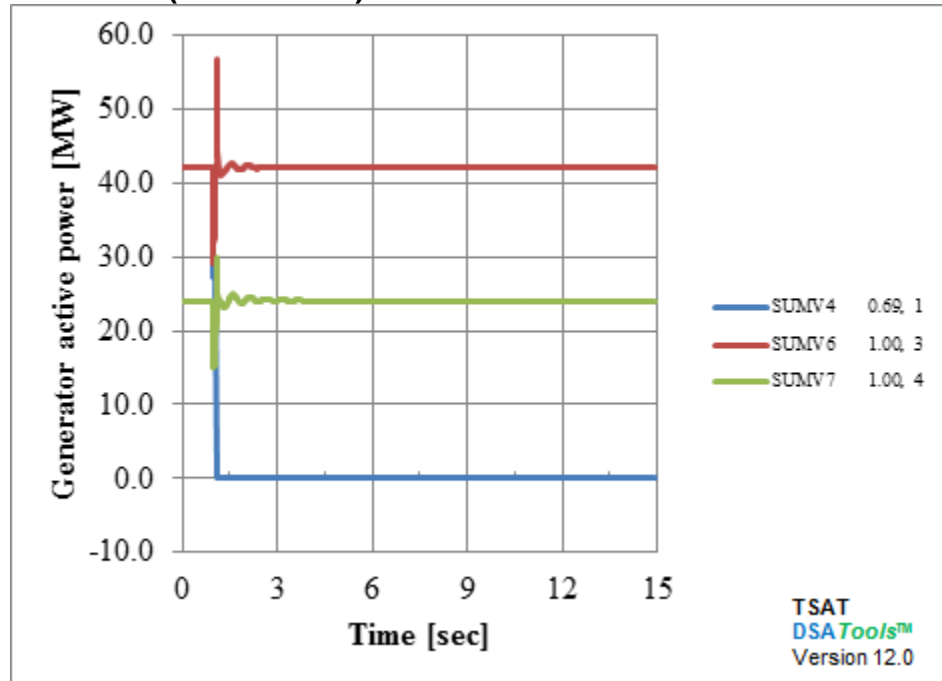
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Proposed Connection (Alternative 2), Summer Peak 2017



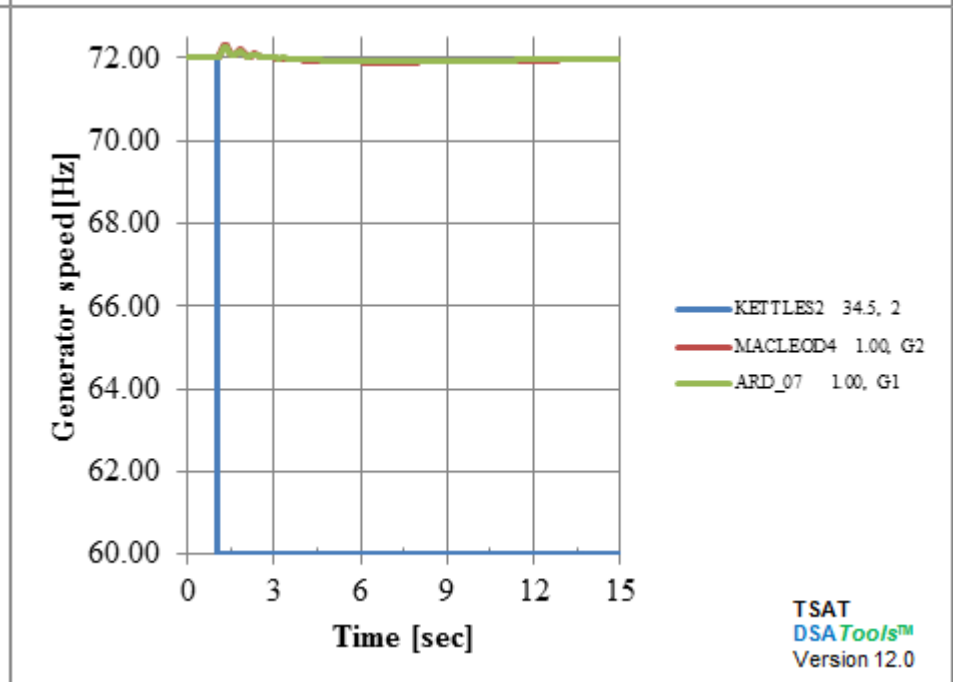
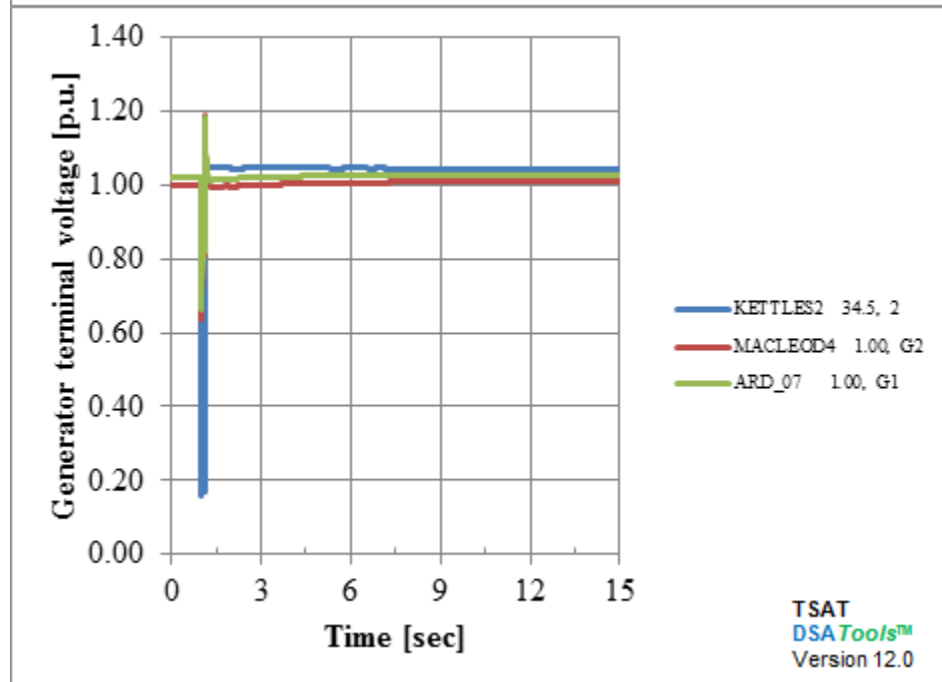
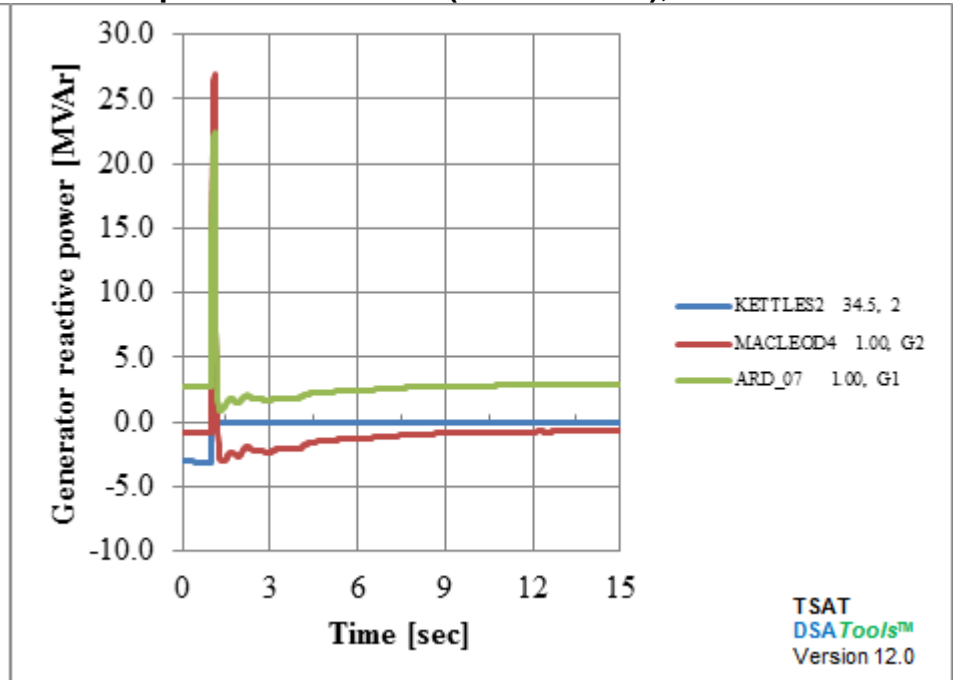
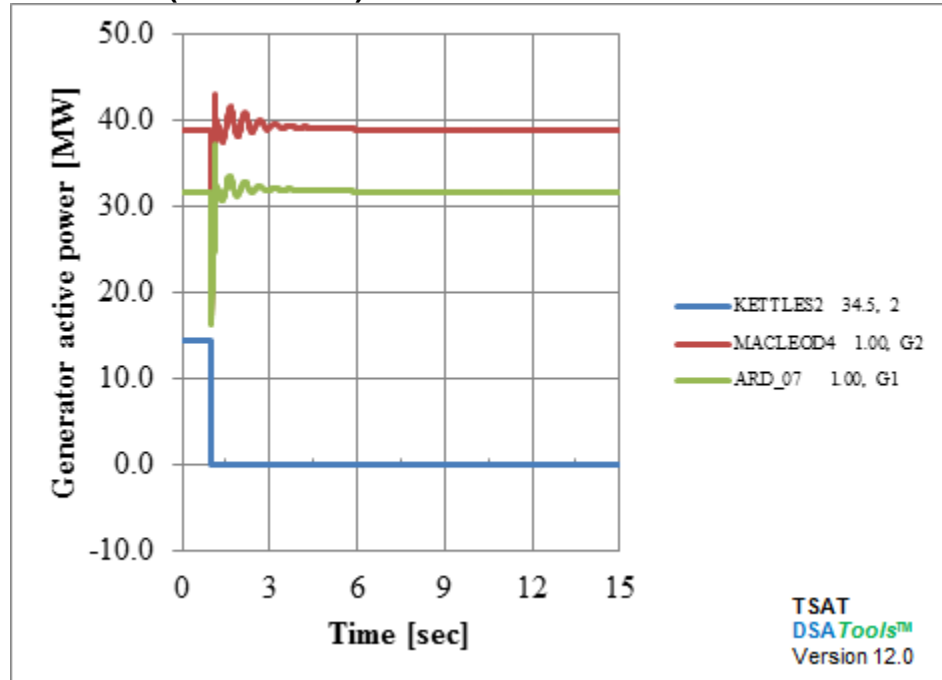
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Proposed Connection (Alternative 2), Summer Peak 2017



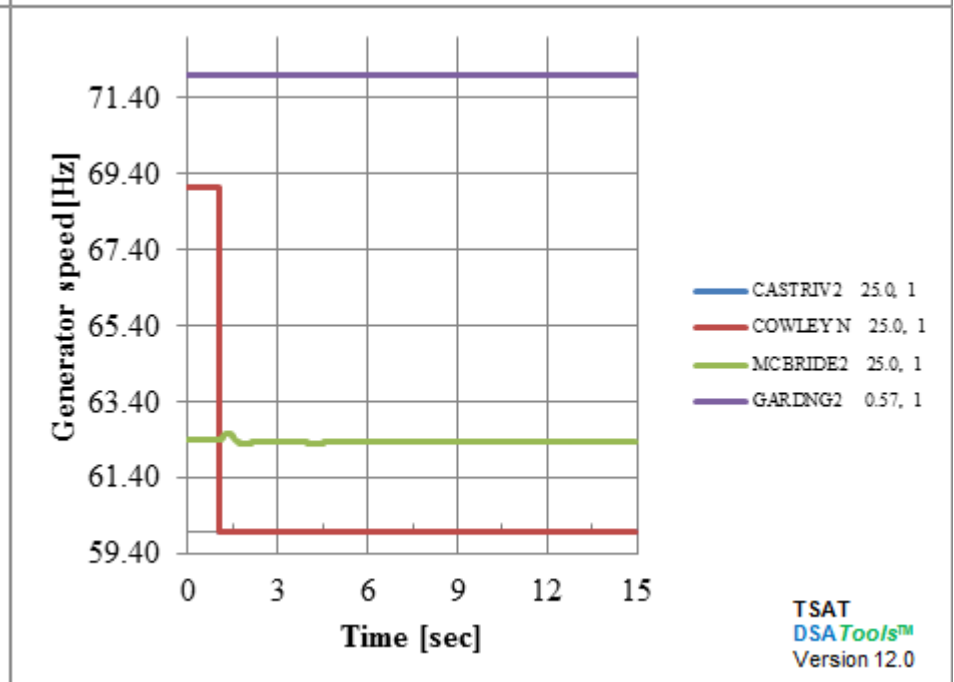
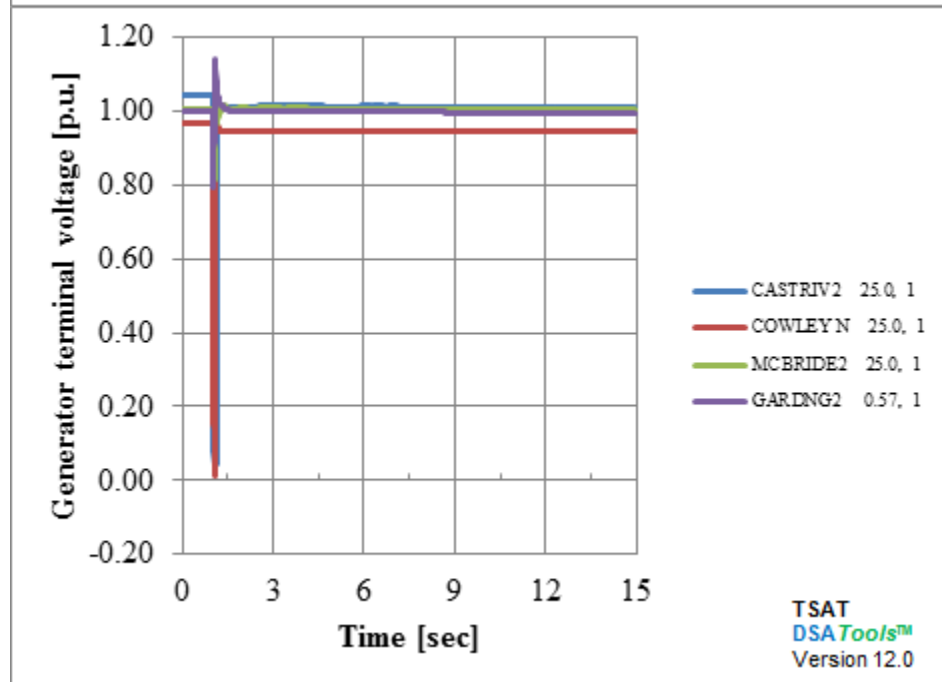
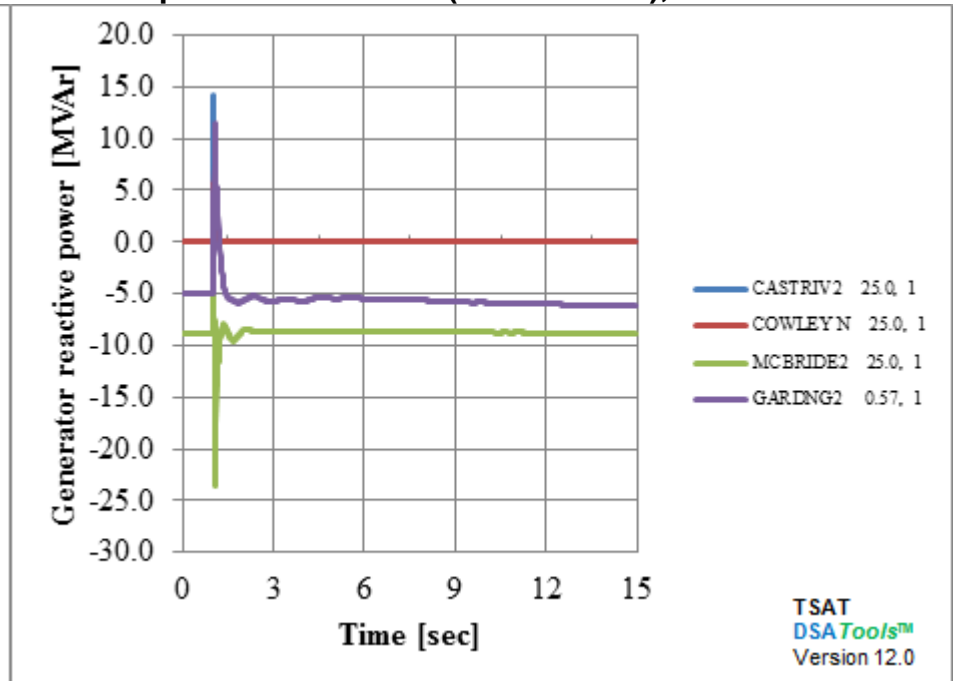
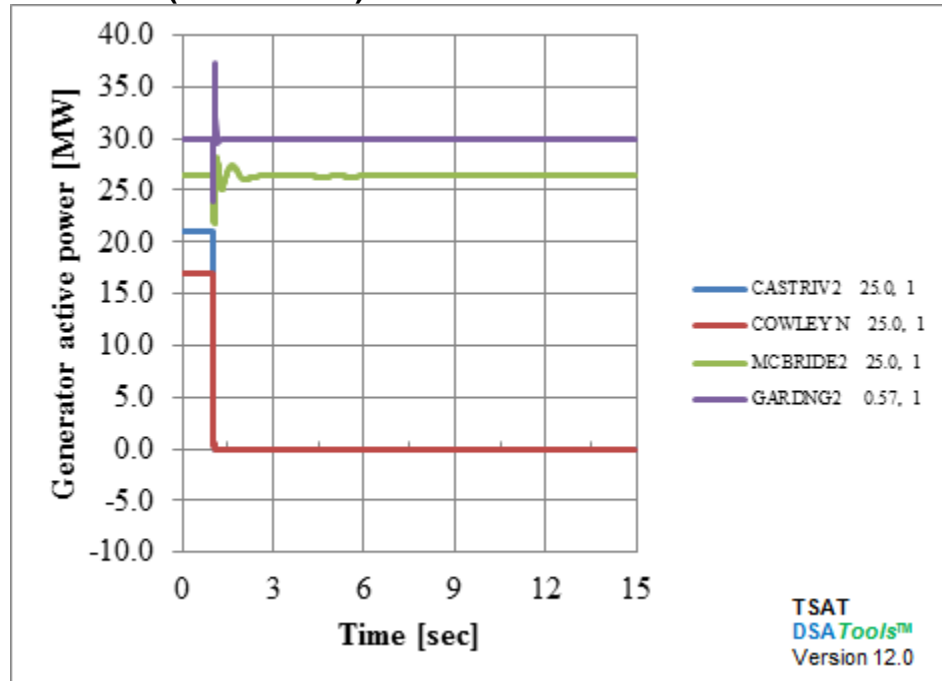
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Proposed Connection (Alternative 2), Summer Peak 2017



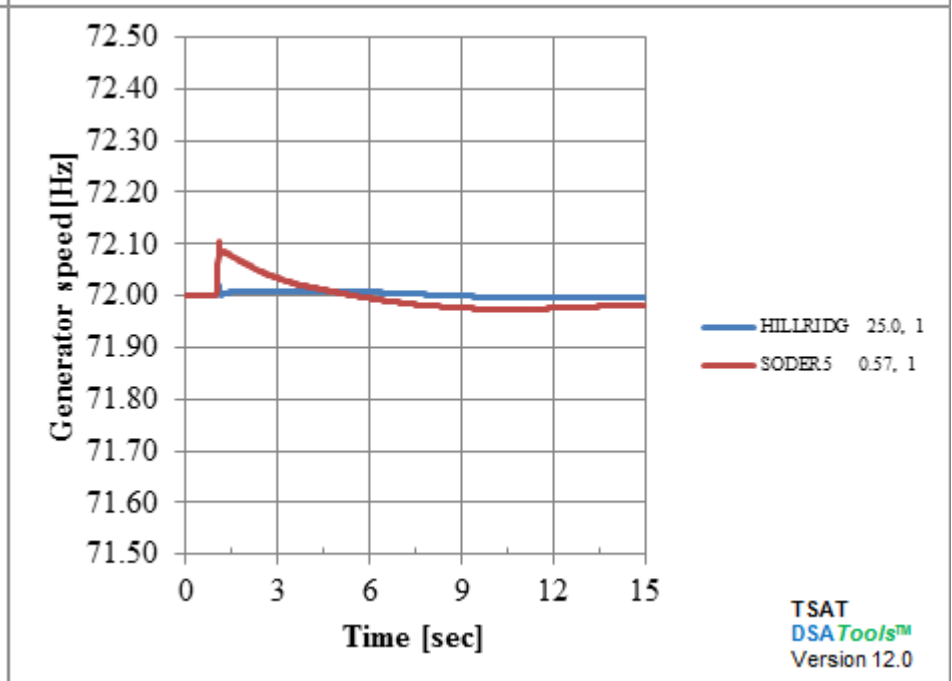
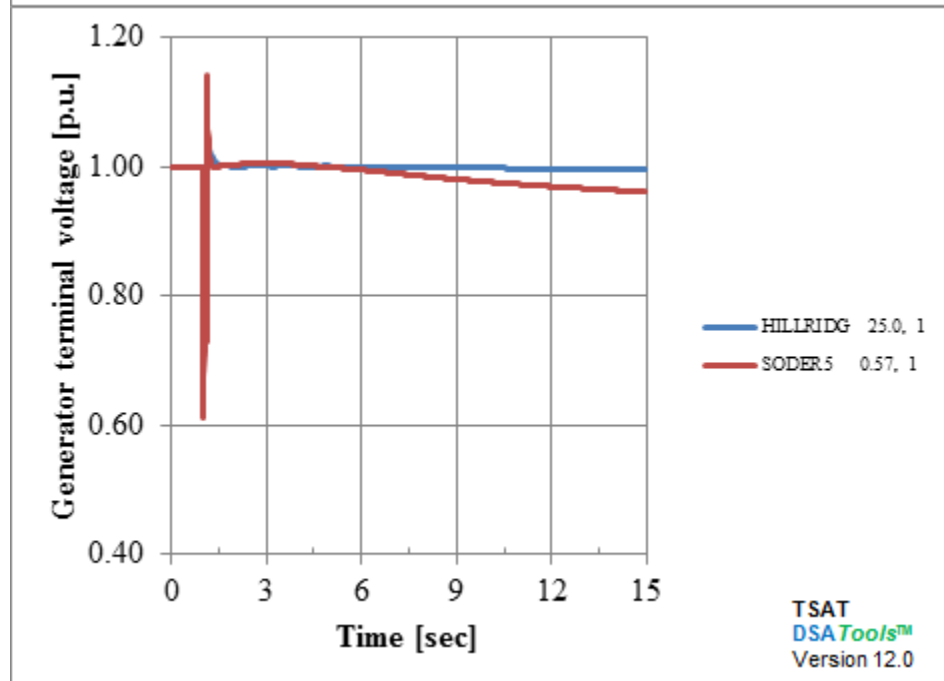
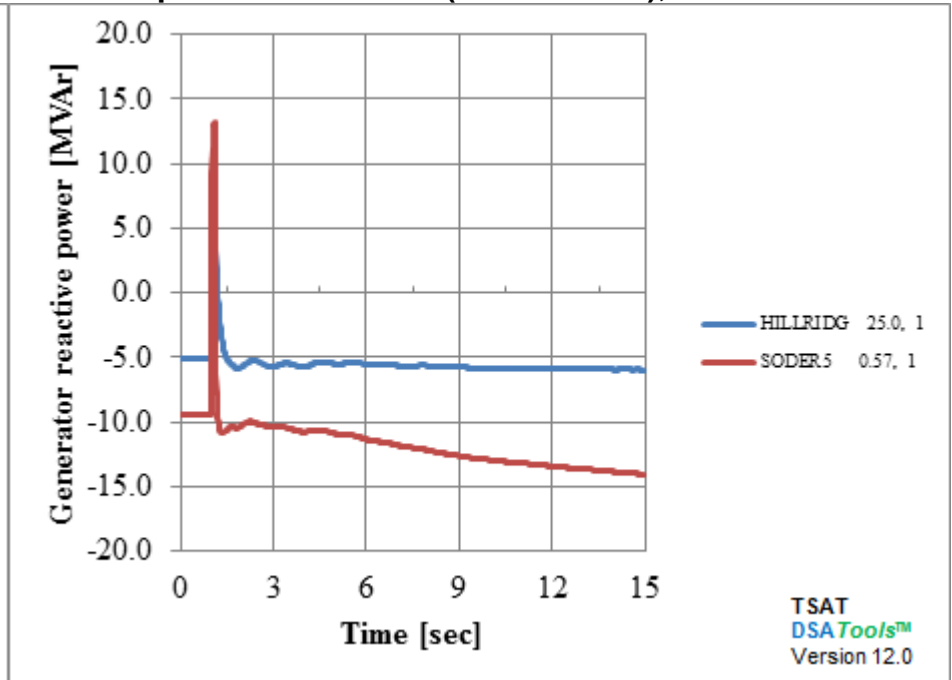
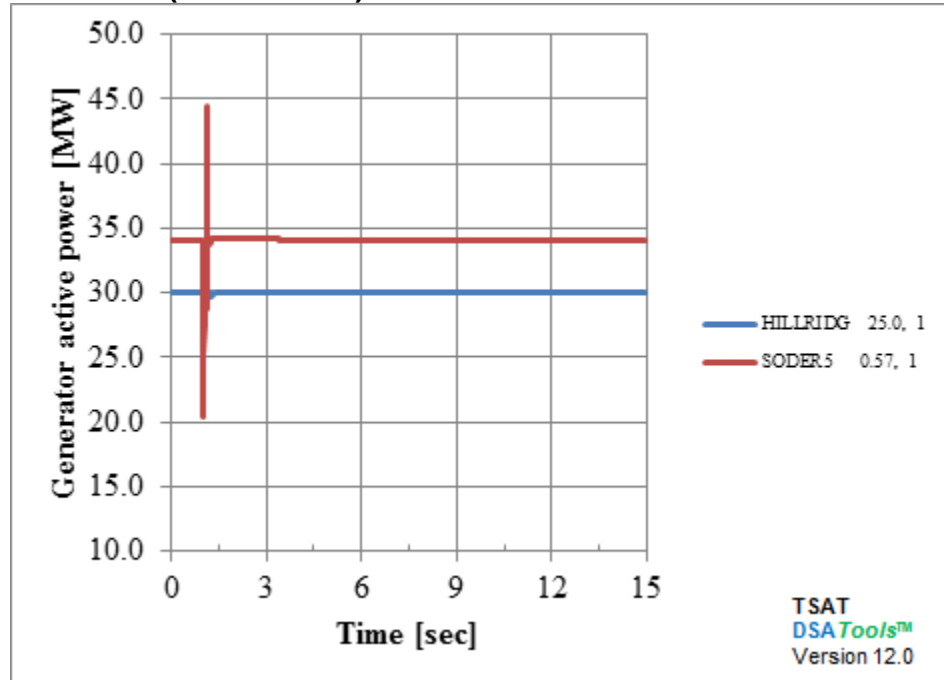
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Proposed Connection (Alternative 2), Summer Peak 2017



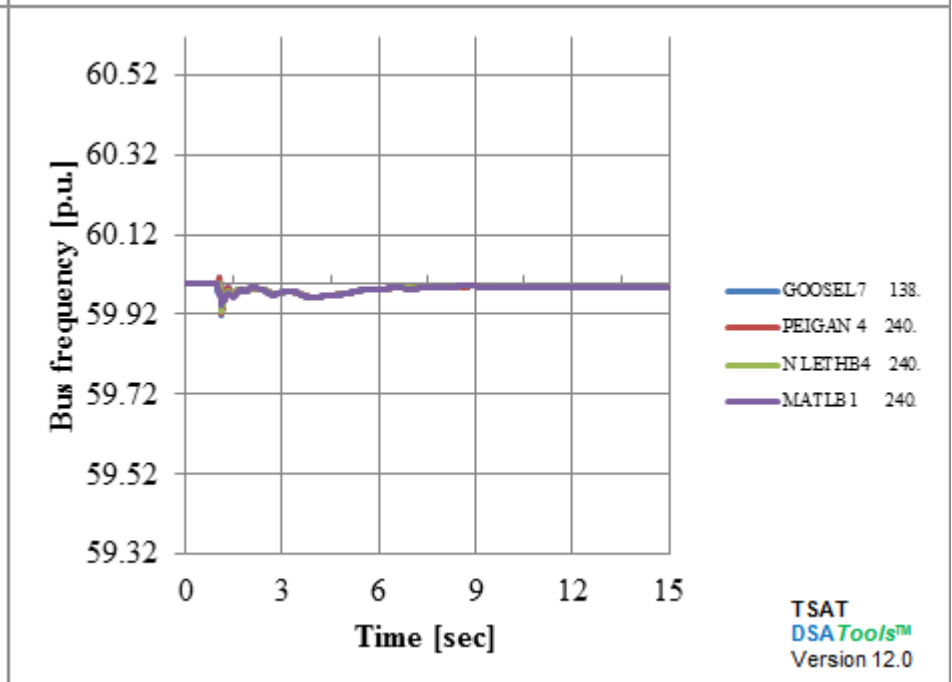
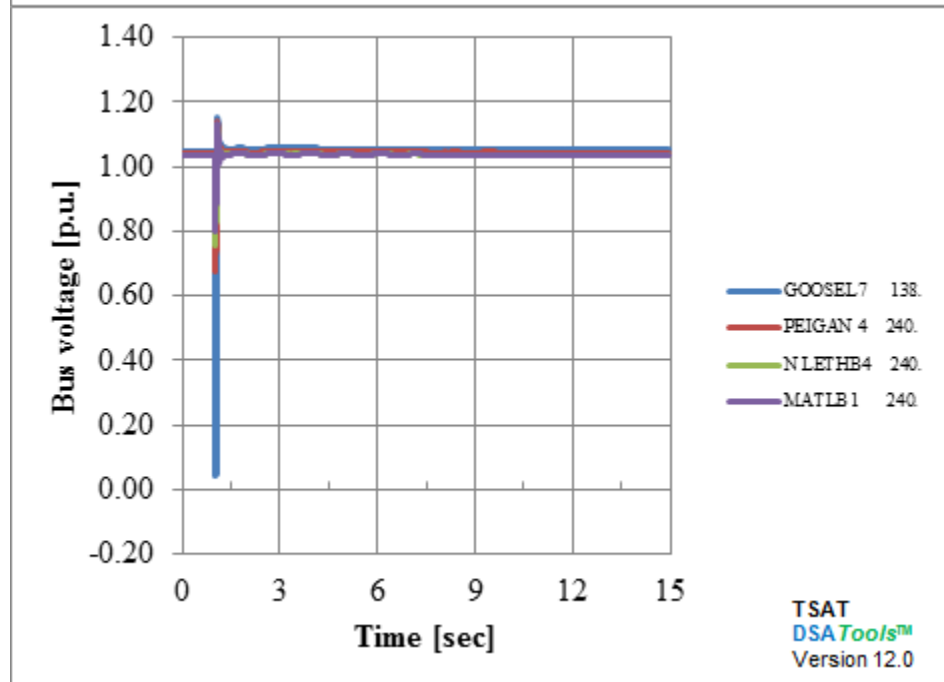
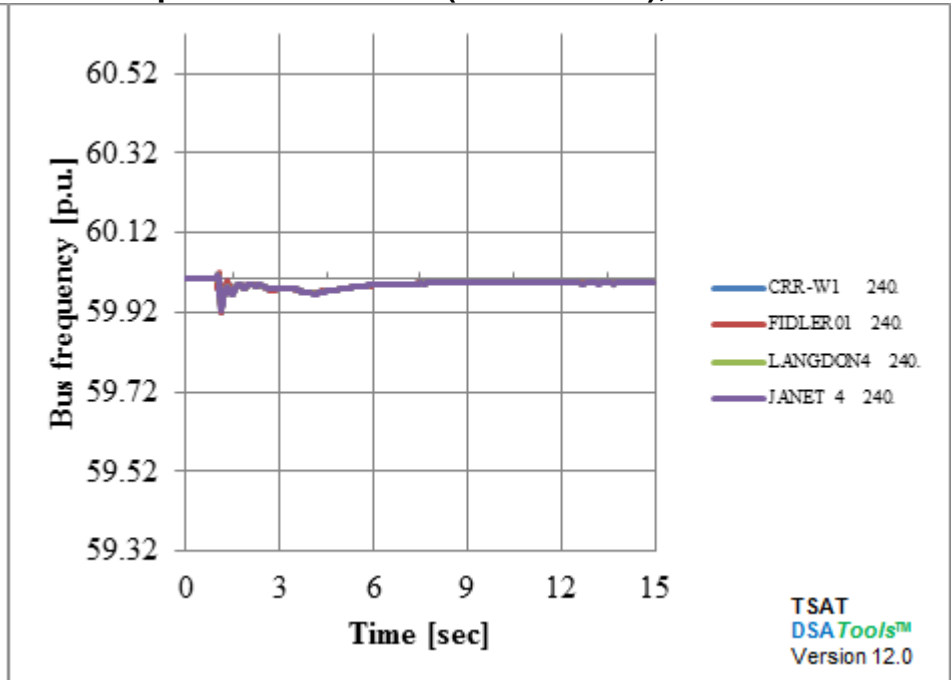
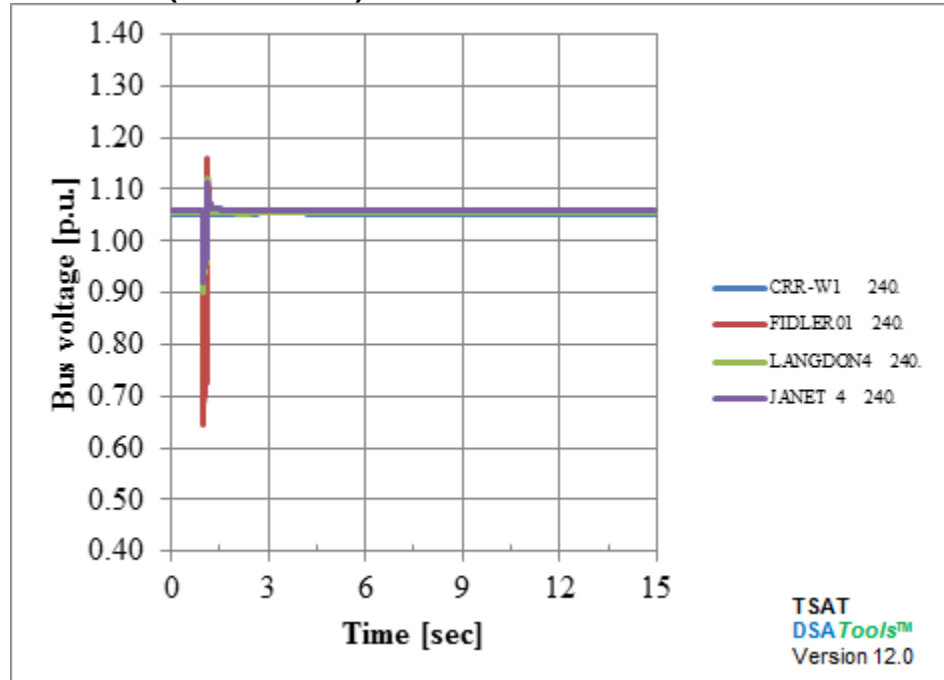
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Proposed Connection (Alternative 2), Summer Peak 2017



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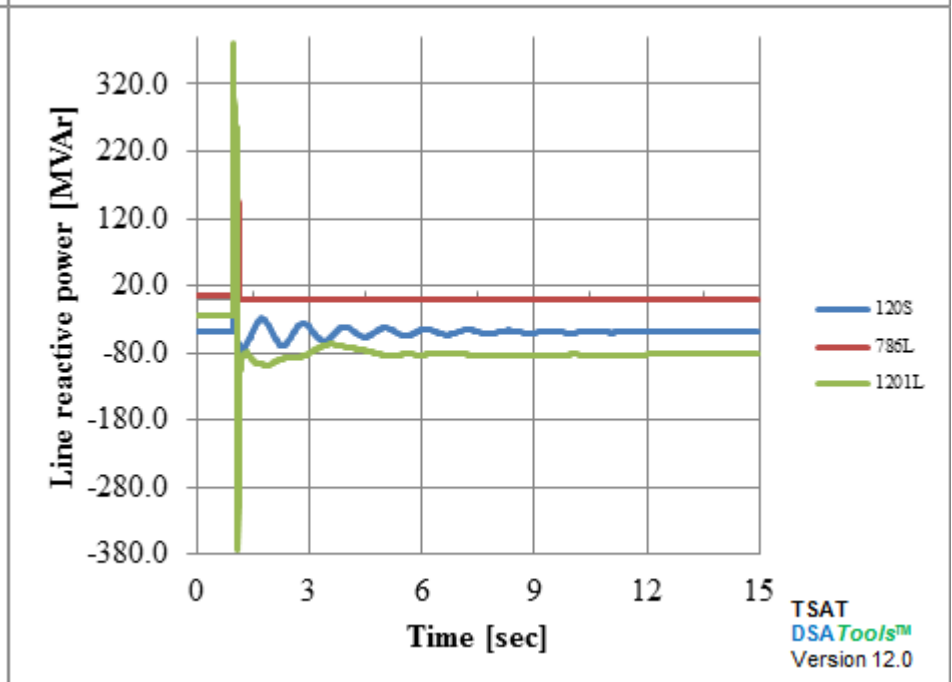
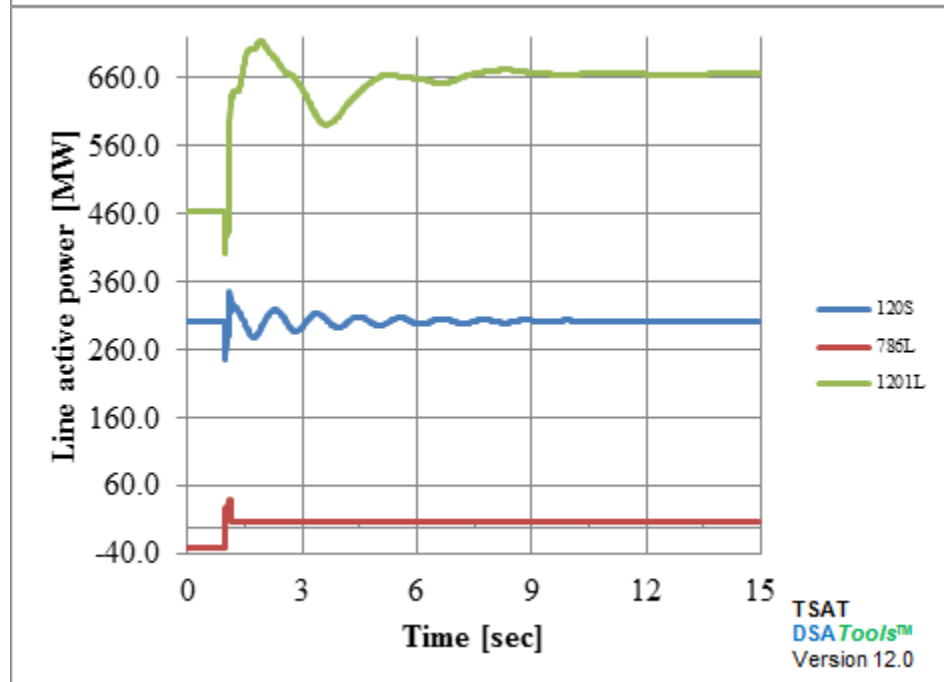
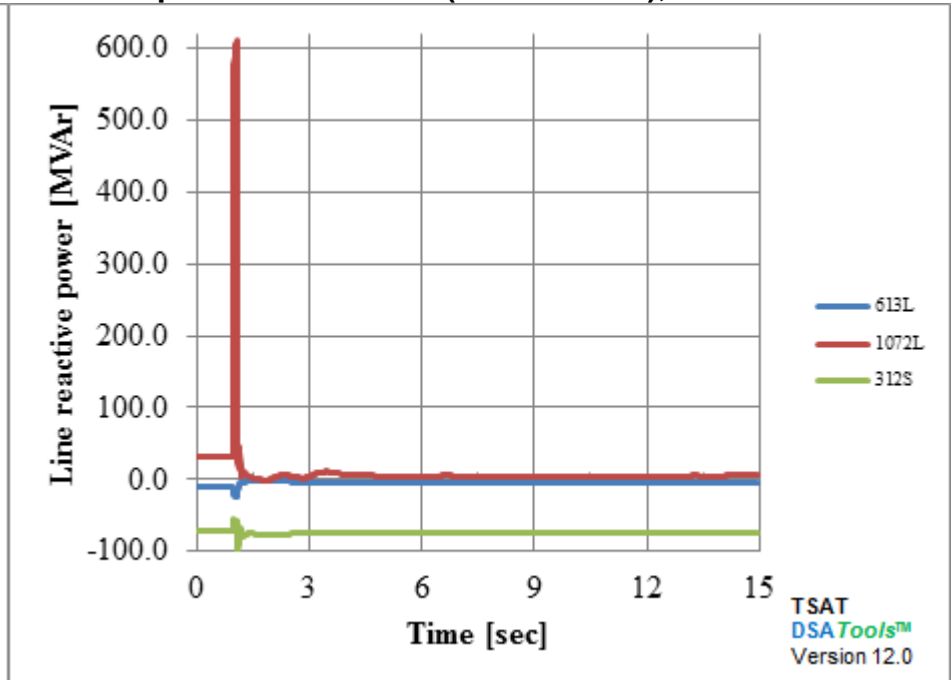
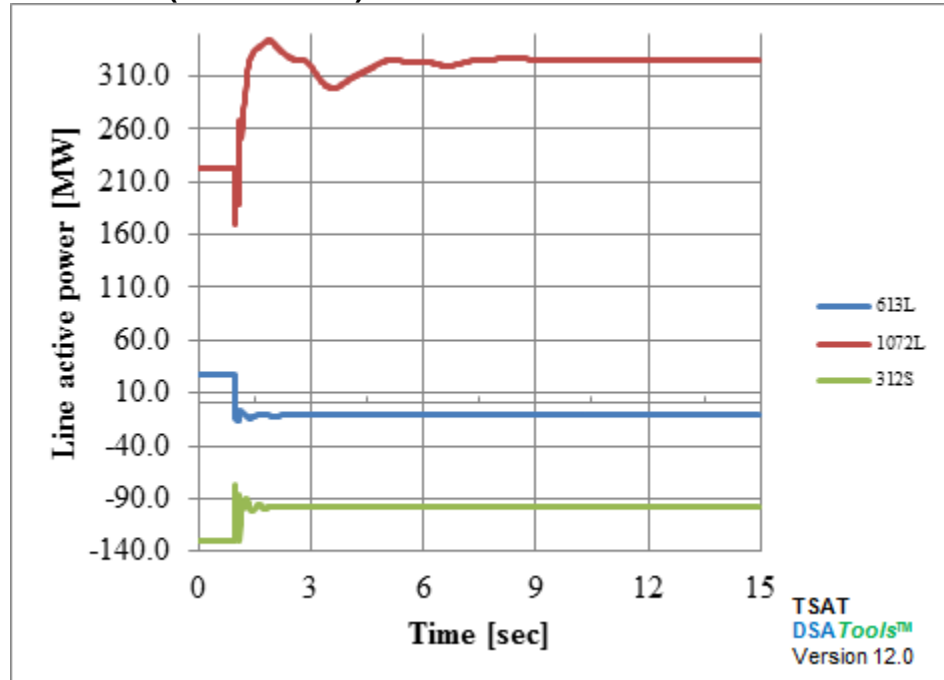
Proposed Connection (Alternative 2), Summer Peak 2017





16 -- 412L (396S - 632S) NEAR 396S

Proposed Connection (Alternative 2), Summer Peak 2017





P524

**Riverview WAGF**

Attachment F

Generator Effectiveness Factors

## Original Sending End MW Before 10 MW Reduction

2014 Summer Light			911L			180L		
			373.7			70.4		
			911L		180L			
Plant Name	Gen Bus #	ID	MW	Decrease	MW	Decrease		
McLaughlin	2773	G2	370.4	33.0%	70.0	4.0%		
	2775	G3						
	2781	G1						
Riverview	69221	G1	370.3	34.0%	70.0	4.0%		
	65221	G2						
Kettles	2402	1	370.4	33.0%	70.0	4.0%		
	2402	2						
	2402	3						
	2402	4						
	3402	1						
	3402	2						
	3402	3						
	3402	4						
	3402	5						
3402	6							
Heritage	66536	1	370.3	34.0%	70.0	4.0%		
MacLeod	66328	G2	370.4	33.0%	70.0	4.0%		
	67328	G1						
McBride	2901	1	371.5	22.0%	68.6	18.0%		
	3901	2						
	3901	3						
	4901	4						
Oldman River	2230	1	370.3	34.0%	70.0	4.0%		
	2230	2						
Soderglen	12358	1	370.4	33.0%	70.0	4.0%		
	13358	2						
Summerview	2338	1	370.4	33.0%	70.1	3.0%		
	3338	2						
	4339	3						
	5337	4						
Windy Point	61546	G1	370.5	32.0%	70.1	3.0%		
Oldman River Dam	61543	1	370.4	33.0%	70.0	4.0%		
Ardenville	4735	G2	370.4	33.0%	70.0	4.0%		
	4740	G1						
Cowleyridge	4264	1	370.7	30.0%	70.1	3.0%		
	265	1						
	255	1						
Castle River	2234	1	370.5	32.0%	70.1	3.0%		
	3234	2						
Castle Rock Ridge	67221	G1	370.4	33.0%	70.0	4.0%		

## **APPENDIX B TFO CAPITAL COST ESTIMATE**

### Proposal to Provide Services (PPS) - Estimate Summary

**Project Name:** Enel Riverview  
**Estimate Accuracy:** +20 / -10 %

	System Portion	Customer Portion	TOTAL
<b>Transmission Line Costs</b>			
Material	\$ -	\$ -	\$ -
Labour	\$ -	\$ -	\$ -
<b>Total-Transmission Line</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Substation Facilities Cost</b>			
Material	\$ -	\$ 725,428	\$ 725,428
Labour	\$ -	\$ 1,385,190	\$ 1,385,190
<b>Total-Substations</b>	<b>\$ -</b>	<b>\$ 2,110,618</b>	<b>\$ 2,110,618</b>
<b>Telecommunication Cost</b>			
Material	\$ -	\$ -	\$ -
Labour	\$ -	\$ -	\$ -
<b>Total-Telecommunication</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Owner Costs</b>			
Proposal to Provide Service		\$ 48,118	\$ 48,118
Facility Applications		\$ 226,126	\$ 226,126
Land Rights - Easements		\$ -	\$ -
Land - Damage Claims		\$ 5,000	\$ 5,000
Land - Acquisitions		\$ -	\$ -
<b>Total - Owner's Cost</b>	<b>\$ -</b>	<b>\$ 279,244</b>	<b>\$ 279,244</b>
<b>Distributed Costs</b>			
Procurement		\$ 31,702	\$ 31,702
Project Management		\$ 343,552	\$ 343,552
Construction Management		\$ 349,905	\$ 349,905
Contingency		\$ 89,792	\$ 89,792
<b>Total - Distributed Costs</b>	<b>\$ -</b>	<b>\$ 814,951</b>	<b>\$ 814,951</b>
<b>Total - Direct Costs</b>	<b>\$ -</b>	<b>\$ 3,204,812</b>	<b>\$ 3,204,812</b>
<b>Salvage</b>			
Transmission Line Labour	\$ -	\$ -	\$ -
Substation Labour	\$ -	\$ -	\$ -
Land Remediation and Reclamation	\$ -	\$ -	\$ -
<b>Total - Salvage</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Other Costs</b>			
AFUDC		\$ 692	\$ 692
E&S		\$ 160,336	\$ 160,336
<b>Total - Other Costs</b>	<b>\$ -</b>	<b>\$ 161,028</b>	<b>\$ 161,028</b>
<b>Total In-Direct Costs</b>	<b>\$ -</b>	<b>\$ 161,028</b>	<b>\$ 161,028</b>
<b>TOTAL PROJECT COSTS</b>	<b>\$ -</b>	<b>\$ 3,365,841</b>	<b>\$ 3,365,841</b>

**APPENDIX C PARTICIPANT INVOLVEMENT PROGRAM (PIP)**

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## Riverview Wind Energy Connection

### Needs Identification Document

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#### 1.0 Participant Involvement Program (PIP)

From April 2012 to June 2013, the AESO conducted a Participant Involvement Program (PIP) to assist in preparing its *Riverview Wind Energy Connection Needs Identification Document* (NID). The AESO directed transmission facility owner AltaLink Management Ltd. (AltaLink) to assist the AESO in providing notification in accordance with NID 13 and Appendix A of Alberta Utilities Commission Rule 007.

The AESO's PIP was designed to notify and provide information to all occupants, residents and landowners within 800 metres of the proposed development, as well as to other interested parties, including the following government agencies and other organizations:

- Environment Canada – Canadian Wildlife Service
- NAV Canada
- Transport Canada, Aerodrome Safety – Edmonton
- Alberta Culture
- Alberta Environment and Water
- Alberta Sustainable Resource Development – Land Use Operations
- Alberta Sustainable Resource Development – Fish and Wildlife
- Alberta Tourism, Parks and Recreation
- Alberta Transportation
- Town of Pincher Creek
- Municipal District of Pincher Creek
- Pincher Creek Water Cooperative
- Axia SuperNet Ltd.
- Bell Canada
- Enel Alberta Wind Inc.
- FortisAlberta Inc.
- TM Mobile Inc.
- TELUS Corporation
- The Nature Conservancy of Canada
- Alberta Land Stewardship Centre
- Alberta Wilderness Association
- Canadian Parks and Wilderness Society (CPAWS)
- Ducks Unlimited



- Farmer's Advocate
- Crowsnest Conservation Association
- Lethbridge Naturalist Society
- Nature Canada
- Sierra Club Chinook
- Wildlife Habitat Canada

## 1.1 Description of Participant Involvement Program

The AESO used a variety of methods to notify stakeholders on the need for the Riverview Wind Energy Connection. The AESO developed a one-page need overview document that described the need for the proposed transmission development and subsequently updated the need overview to revise the proposed date of the AESO's NID application to the Alberta Utilities Commission. Copies of these documents were posted to the AESO website at <http://www.aeso.ca/transmission/25724.html> on July 17, 2012 and December 17, 2012 respectively. A copy of the updated need overview is included in Attachment 1.

The original need overview was included with AltaLink's project-specific information package mailed on April 27, 2012 to occupants, residents and landowners within 800 metres of the proposed transmission development as well as to the government agencies and other organizations noted above. The updated need overview was mailed to the above stakeholders by AltaLink on November 23, 2012. Attachment 2 includes a copy of AltaLink's project-specific information brochure.

Most recently, the AESO advertised its intention to file the Riverview Wind Farm Connection NID in the Pincher Creek Echo newspaper on May 22, 2013. A copy of the final proof has been included in Attachment 3.

As directed by the AESO, AltaLink was prepared to direct any inquiries or concerns about the project need to the AESO. The AESO is not aware of any outstanding questions or concerns regarding the need for the Riverview Wind Energy Connection.

To ensure that stakeholders had the opportunity to provide feedback, the AESO also provided stakeholders with a dedicated, toll-free telephone line (1-888-866-2959) and a dedicated email address ([stakeholder.relations@aeso.ca](mailto:stakeholder.relations@aeso.ca)). AESO contact information, along with the AESO's mailing address (2500, 330 5<sup>th</sup> Ave, SW, Calgary) and website address ([www.aeso.ca](http://www.aeso.ca)), and a privacy statement that describes how the AESO honours Alberta's Personal Information Protection Act, were included on all AESO communications related to this application.

## **1.2 Notification to Effective Generators**

Planning studies completed by the AESO to ensure reliable system operation at the time of connecting the Riverview Wind Aggregated Generating Facility indicate that transmission constraints may arise or become more prevalent after the connection. The AESO issued a letter to potentially affected market participants on March 19, 2013 informing them of these potential constraints. The updated need overview was included with this letter. The letter was posted on the AESO website on March 20, 2013. A copy of the letter is included as Attachment 4 and mailing labels are provided under separate cover.

## **1.3 Issues and Concerns Raised**

The AESO has received no indication of concern from any party about the need for the proposed transmission development.

The AESO received one enquiry in respect of its notification to effective generators. One party contacted the AESO by phone to discuss the matter generally and to ascertain which of their generation assets could be affected by the potential transmission constraints described in the AESO's March 19, 2013 letter. At the conclusion of the discussion, the stakeholder indicated that it understood the AESO approach to system access service as set out in the letter and had no further questions. The AESO has addressed questions and concerns related to its notification to effective generators.

## **1.4 List of Attachments**

- Attachment 1 – AESO Need Overview
- Attachment 2 – AltaLink Brochure - "*AltaLink – Electric system improvements near you Riverview Wind Power Facility Interconnection*" (April 27, 2012)
- Attachment 3– Notification of Filing Advertisement – Final Proof
- Attachment 4 – AESO Letter to Effective Generators (March 19, 2013)

## **Attachment 1 – AESO Updated Need Overview**

# Need for the Riverview Wind Farm Connection in the Pincher Creek Area

## Transmission Development Information for Stakeholders Update

**In April 2012, stakeholders were sent an information package from AltaLink Management Ltd. (AltaLink) containing a one-page AESO document describing the need for the Riverview Wind Energy Connection. The purpose of this document is to update stakeholders on the proposed date of the AESO's application to the Alberta Utilities Commission (AUC).**

### **Why is this transmission development needed?**

ENEL Alberta Wind Inc. (ENEL) has requested connection to the transmission system for its proposed Riverview Wind Power Facility (Facility) in the Pincher Creek area. ENEL's request can be addressed by connecting the Facility to the existing Castle Rock Ridge 205S substation and adding a new 240 kV breaker and associated equipment to the Castle Rock Ridge 205S substation.

The Alberta Electric System Operator (AESO) is processing ENEL's request, including providing information to landowners, occupants, residents and agencies in the Pincher Creek area that may be near the proposed transmission development. The AESO intends to apply to the AUC for approval of this need in the spring of 2013. The AESO's needs identification document (NID) application will be available on the AESO's website at [www.aeso.ca/transmission/8969.html](http://www.aeso.ca/transmission/8969.html) at the time of its application to the AUC.

### **Who is the AESO?**

Alberta's transmission system, sometimes referred to as the Alberta Interconnected Electric System (AIES), is planned and operated by the AESO. The transmission system comprises the high-voltage lines, towers and equipment (generally 69kV and above) that transmit electricity from generators to lower voltage systems that distribute electricity to cities, towns, rural areas and large industrial customers.

The AESO's role is to maintain safe, reliable and economic operation of the AIES. The AESO's planning responsibility includes determining the need for transmission system development and the manner in which that need is met. The AESO is also mandated to facilitate the interconnection of qualified market participants to the AIES. The AESO is regulated by the AUC and must apply to the AUC for approval of its NID.

### **How is AltaLink involved?**

AltaLink is the transmission facilities owner (TFO) in the Pincher Creek area. While the AESO is responsible for identifying that transmission system development is needed, AltaLink is responsible for detailed siting and routing, constructing, operating and maintaining the associated transmission facilities. The AESO has directed AltaLink to provide information to stakeholders on this need and to file a facility proposal application with the AUC which will include a detailed description and location of the proposed transmission development.

## **Further Information**

The AESO appreciates your views on the need for transmission system development and your comments are encouraged. If you have any questions or suggestions regarding the need for the proposed transmission system development in the Pincher Creek area or the AESO's application regarding this need, please contact:

**Marina Lakhani**  
**AESO Stakeholder Relations**  
**1-888-866-2959**  
**stakeholder.relations@aeso.ca**  
**2500, 330 – 5th Avenue SW**  
**Calgary, Alberta T2P 0L4**

*The AESO is committed to protecting your personal privacy in accordance with Alberta's Personal Information Protection Act. Any personal information collected by the AESO with regard to this project may be used to provide you with further information about the project, may be disclosed to the Alberta Utilities Commission (and as a result, may become public), and may also be disclosed to AltaLink as the legal owner of transmission facilities in your area. If you have any questions about how the AESO will use and disclose your personal information, please contact us at 1-888-866-2959 or at [stakeholder.relations@aeso.ca](mailto:stakeholder.relations@aeso.ca)*

**Attachment 2 – AltaLink Brochure – “AltaLink – Electric system improvements near you Riverview Wind Power Facility Interconnection” (April 27, 2013)**

## Electric system improvements near you

Riverview Wind Power Facility Interconnection

### DID YOU KNOW?

The average four-person family in Alberta today has 20 'instant-on' electronics such as laptops, DVD players, music device chargers and cell phone chargers. This is in addition to the other appliances necessary to run a home – fridges, stoves, microwaves, washers and dryers – all of which require a reliable supply of electricity.

You are receiving this newsletter because you are located near the proposed Riverview Wind Farm Interconnection Facility project and we want your input. This project will connect new wind generated power to Alberta's electric system.

We want to provide you with:

- project details
- information about how you can provide your input
- project schedule
- maps of the proposed transmission development

### Why is this project needed?

The Alberta Electric System Operator (AESO) received an application from ENEL Alberta Wind Inc. (ENEL) to connect its facility to the electric system and will file a Needs Application with the [Alberta Utilities Commission](#) (AUC).

The AESO is an independent, not-for-profit organization responsible for the safe, reliable and economic planning and operation of the provincial transmission grid. For more information about why this project is needed, please refer to the AESO's Need Overview included with this package, or visit [www.aeso.ca](http://www.aeso.ca). If you have any questions or concerns about the need for this project you may contact the AESO directly or you can make your concerns known to an AltaLink representative who will communicate them to the AESO on your behalf.

### DEFINITION

#### **Alberta Utilities Commission**

The Alberta Utilities Commission (AUC) ensures the fair and responsible delivery of Alberta's utility services. AltaLink submits applications for new transmission projects to the AUC and the AUC reviews them in a public process.

### CONTACT US

1-877-267-1453 (toll-free)

[siting.consultation@altalink.ca](mailto:siting.consultation@altalink.ca)

Visit us online at

[www.altalink.ca/projects](http://www.altalink.ca/projects)

DEFINITION

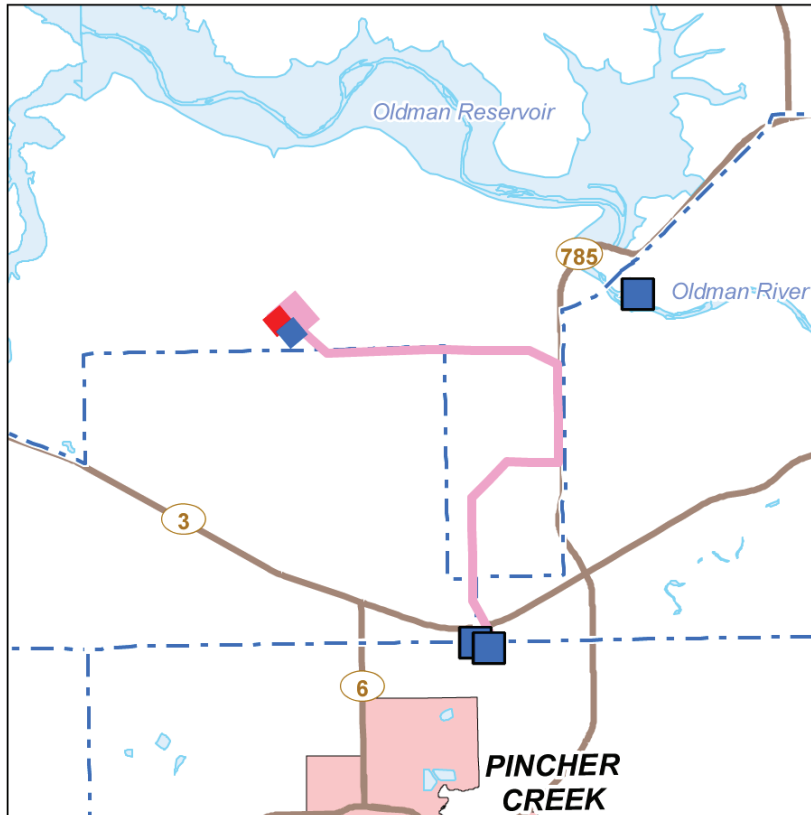
**Substation**

Substations are the connection points between power lines of varying voltages and contain equipment that control and protect the flow of power. Substations include transformers that step down and step up the voltage so power can be transmitted through transmission lines or distributed to your community through distribution lines.





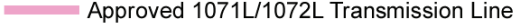

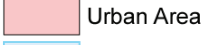

DEFINITION

**Megawatts**

The generation of electricity is measured in megawatts. 1 MW = 1,000,000 watts.



**LEGEND**

-  Potential ENEL Riverview Collector Substation
-  Approved AltaLink Castle Rock Ridge 205S Switching Station
-  Existing ENEL Castle Rock Ridge Collector Substation
-  Existing Substation
-  Approved 1071L/1072L Transmission Line
-  Existing Transmission Line
-  Major Road
-  Urban Area
-  Water Body

Project details

This proposed project includes:

- connecting the ENEL Riverview [Substation](#) to AltaLink’s Castle Rock Ridge Substation
- upgrades at the Castle Rock Ridge Substation

The wind power project will provide up to 115 [megawatts](#) (MW) of additional wind power to the province’s electric system.



## PROPOSED DEVELOPMENT

ENEL is proposing to build the Riverview Substation adjacent to the existing Castle Rock Ridge Substation. The Riverview Substation will be located on private land at SE-14-7-30-W4. AltaLink will be connecting the two substations using a [flexible bus](#) and adding equipment to the Castle Rock Ridge Substation.

AltaLink is responsible for the consultation and construction of the proposed connection between the ENEL and AltaLink substations and upgrades at the Castle Rock Ridge Substation. ENEL is responsible for the consultation and construction of the proposed wind farm and the Riverview Substation. If you have any questions regarding the proposed wind farm or substation, they can be directed to ENEL. ENEL's contact information is on the back of this newsletter.

## Provide your input

Stakeholder input is important to us. You can provide your input in any of the following ways.

### PARTICIPATE IN A ONE-ON-ONE CONSULTATION

We will contact all occupants, residents and landowners near the proposed development to gather input through one-on-one consultations. During the one-on-one process we will document the information you provide and respond to any questions or concerns you may have about the project.

AltaLink is committed to sharing information about its projects and working with the public to gather and respond to stakeholder input and concerns. A summary of stakeholder comments will be incorporated into the application we submit to the AUC.

### CONTACT US DIRECTLY

You can contact us by telephone, email, mail or through our website. Our contact information is on the front and back pages of this newsletter.

## Next steps

After our consultation process is complete we will file a [Facilities Application](#) with the AUC in the fall of 2012. The AUC will review both the Needs Application and the Facilities Application at the same time through a process in which stakeholders can participate.

To learn more about the AUC process and how you can become involved, please refer to the brochure included in this package titled *Public Involvement in Needs or Facilities Applications*.

### DEFINITION

#### [Flexible bus](#)

A flexible bus is an electrical conductor which serves as a connection point between high voltage devices. The flexible bus allows the connection between close substations without an overhead transmission line structure.

### DEFINITION

#### [Facilities Application](#)

AltaLink submits Facilities Applications to the AUC for review. A Facilities Application describes how AltaLink proposes to meet the requirements for a transmission project. It includes routing details, results of the participant involvement program and technical details. Facilities Applications must be approved by the AUC before construction can begin.



## INCLUDED IN THIS INFORMATION PACKAGE:

- Project maps
- AltaLink brochure: *A Dialogue on Electric & Magnetic Fields*
- AltaLink brochure: *Good Neighbours*
- AUC brochure: *Public Involvement in Needs or Facilities Applications*
- AESO Need Overview

### More information

*To learn more about the proposed project, please contact:*

#### **ALTALINK**

1-877-267-1453 (toll-free)

Email: [siting.consultation@altalink.ca](mailto:siting.consultation@altalink.ca)

Website: [www.altalink.ca/projects](http://www.altalink.ca/projects)

*To learn more about Alberta's electric system and the need for the project, please contact:*

#### **ALBERTA ELECTRIC SYSTEM OPERATOR (AESO)**

1-888-866-2959 (toll-free)

Email: [stakeholder.relations@aeso.ca](mailto:stakeholder.relations@aeso.ca)

Website: [www.aeso.ca](http://www.aeso.ca)

*To learn more about the application and review process, please contact:*

#### **ALBERTA UTILITIES COMMISSION (AUC)**

780-427-4903

(You can call toll-free by dialing 310-0000 before the number).

Email: [consumer-relations@auc.ab.ca](mailto:consumer-relations@auc.ab.ca)

Website: [www.auc.ab.ca](http://www.auc.ab.ca)

*To learn more about ENEL Alberta Wind, please contact Michael Kehle at:*

#### **ENEL ALBERTA WIND INC. (ENEL)**

514-397-0463

Email: [michael.kehle@enel.com](mailto:michael.kehle@enel.com)

Website: [www.enelgreenpower.com](http://www.enelgreenpower.com)

# ALTALINK

2611 - 3rd Avenue SE  
Calgary, Alberta T2A 7W7

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# ALTALINK

## Riverview Wind Power Facility Interconnection

### Anticipated project schedule

Notify and consult with stakeholders	Spring 2012
File application with the Alberta Utilities Commission (AUC)	Fall 2012
Start construction if project is approved	Summer 2014
Complete construction	Fall 2014

*Although we attempt to follow the anticipated project schedule it is subject to change. We will continue to provide you with updated schedule information as the project progresses.*

### CONTACT US

1-877-267-1453 (toll-free)

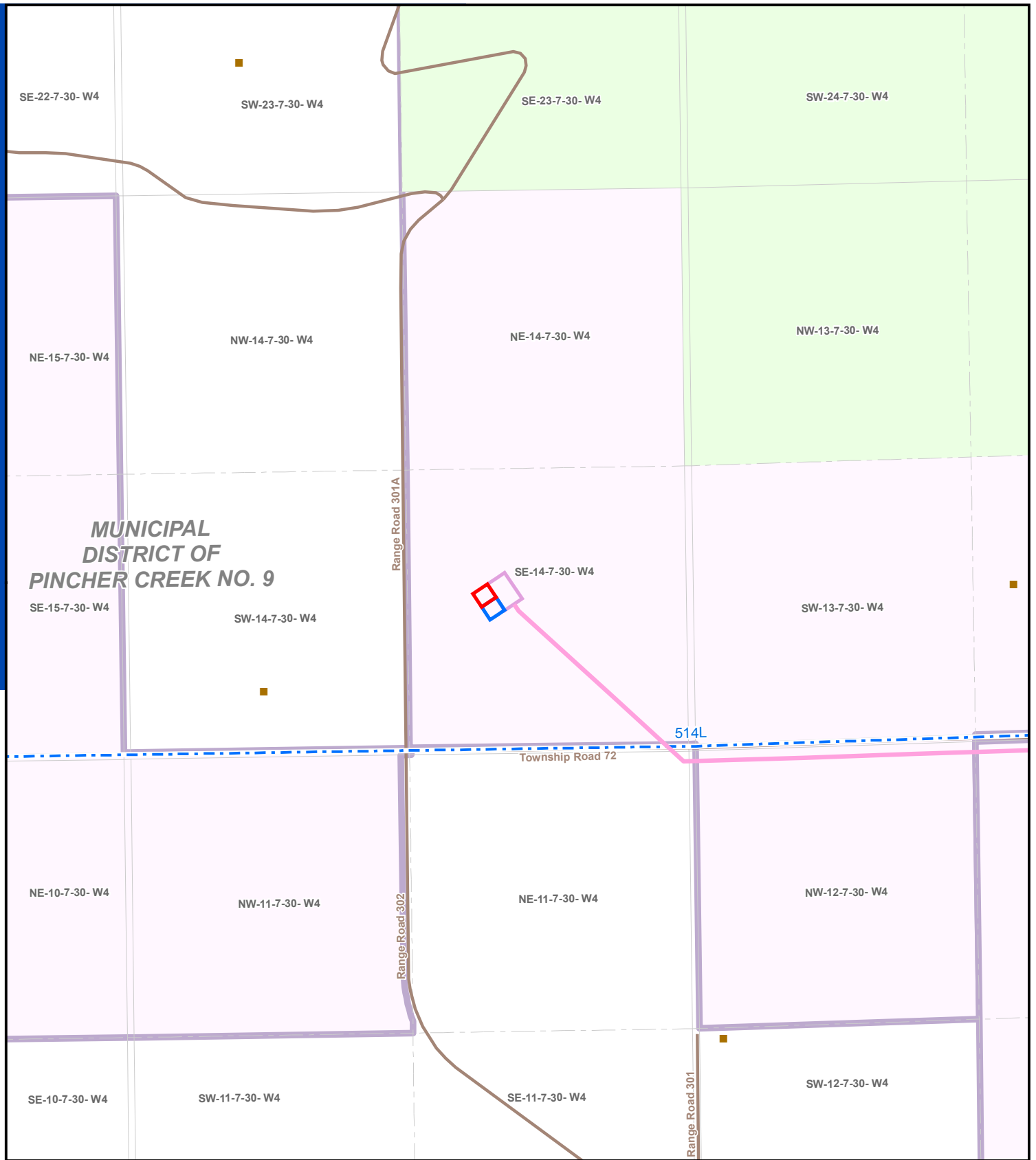
siting.consultation@altalink.ca

Visit us online at  
[www.altalink.ca/projects](http://www.altalink.ca/projects)

### Projects in the area

AltaLink is working on several projects in the area to make sure your lights come on at the flick of the switch.

Project name	Description	Status
Castle Rock Ridge Wind Farm Connection	A new substation, to be called Castle Rock Ridge Substation, and a new 240 kV transmission line between the Goose Lake and Castle Rock Ridge substations.	Construction underway
Highway 785 Wind Power Facility Interconnection	A new switching station and 150 metres of 240 kV transmission line.	Notification/Consultation underway
Oldman Wind Farm Interconnection	Interconnection of the Oldman 2's Windy Point Substation to the existing 138 kV transmission system.	Application Filed
Fidler to Chapel Rock Transmission Project	Approximately 50 kilometres (31 miles) of new 240 kV transmission line and a new substation	Awaiting further direction from the AESO
Fidler Substation and Transmission Line	Approximately 15 kilometres (nine miles) of new 240 kV transmission line and a new substation	Awaiting further direction from the AESO

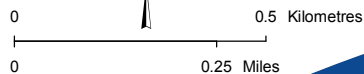


**LEGEND**

- Potential ENEL Riverview Collector Substation
- Approved AltaLink Castle Rock Ridge 205S Switching Station
- Existing ENEL Castle Rock Ridge Collector Substation
- Approved 1071L/1072L Transmission Line
- Existing Transmission Line
- Residence
- Road

- Environmentally Significant Area
- Wind Farm Area

NO:  
 DRAWN: WL - TERA  
 FILE NO.: TERA 8009  
 REVISION: 0.02.01  
 DATE: 2012-03-05  
 AL FOLDER: Riverview Wind Power



DETAIL BASE **DB1**

**ALTALINK**

**POTENTIAL**

**Riverview Wind Power Facility Interconnection**

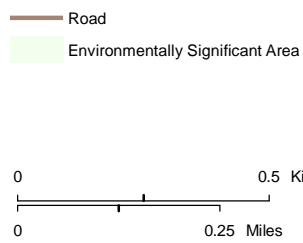
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**MUNICIPAL DISTRICT  
OF PINCHER CREEK  
NO. 9**

**LEGEND**

- Potential ENEL Riverview Collector Substation
- Approved AltaLink Castle Rock Ridge 205S Switching Station
- Existing ENEL Castle Rock Ridge Collector Substation
- Approved 1071L/1072L Transmission Line
- Existing Transmission Line
- Residence



NO:  
DRAWN: WL - TERA  
FILE NO.: TERA 8009  
REVISION: 0.02.00  
DATE: 2012-03-05  
AL FOLDER: Riverview Wind Power



DETAIL PHOTO DP1

**ALTALINK**

POTENTIAL

**Riverview Wind Power Facility Interconnection**

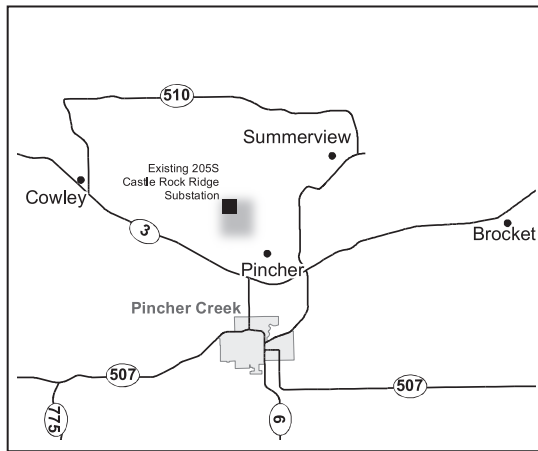
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Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

**Attachment 3 – Notification of Filing Advertisement – Final Proof**

## Notification of AESO Regulatory Filing Addressing the Need for the Riverview Wind Farm Connection in the Pincher Creek

The Alberta Electric System Operator (AESO) advises you of its intention to file a Needs Identification Document (NID) for the connection of Riverview Wind Power Facility with the Alberta Utilities Commission (AUC) on or after June 6, 2013.

Enel Alberta Wind Inc. (Enel) has requested connection to the transmission system for its proposed Riverview Wind Power Facility (Facility) in the Pincher Creek area. Enel's request requires transmission system development which is proposed to include connecting the Facility to the existing Castle Rock Ridge 205S substation and adding a new 240 kV breaker and associated equipment to the Castle Rock Ridge 205S substation.




*The shaded area on the map indicates the approximate area where the transmission connection is needed. In a separate application called a Facility Application, AltaLink Management Ltd. (AltaLink), the transmission facilities owner (TFO) in the Pincher Creek area, will describe the specific routes and sites they propose to implement the proposed transmission connection and request AUC approval to construct and operate the specific transmission facilities. The specific siting and transmission line routes applied for by AltaLink may extend beyond the area shown.*

The AESO and AltaLink presented this need to stakeholders, including residents, occupants and landowners, from July 2012 to June 2013. The AESO has considered feedback gathered from stakeholders, and technical and cost considerations, and will apply to the AUC for approval of the need for this transmission development. Once filed, the NID will be posted on the AESO website at <http://www.aeso.ca/transmission/25724.html>

Please visit our website, [www.aeso.ca](http://www.aeso.ca) for more information, or contact the AESO at 1-888-866-2959 or [stakeholder.relationships@aeso.ca](mailto:stakeholder.relationships@aeso.ca)



 <small>Integrated Marketing Communications</small>	
<b>Artist:</b>	<b>2N</b>
<b>Docket:</b>	<b>103243</b>
<b>Date:</b>	<b>Apr 15, 2013</b>
<b>Size:</b>	<b>5"</b>
<b>Proof:</b>	<b>1.1</b>
<b>1 of 1</b>	
<b>Publications(s):</b>	<b>PincherCk</b>

**Attachment 4 – AESO Letter to Effective Generators  
(March 19, 2013)**



March 19, 2013

Dear Market Participants and Other Interested Parties,

Re: **Proposed Connection of Riverview Wind Aggregated Generating Facility (WAGF)**

Enel Alberta Wind Inc. has requested connection to the transmission system for its Riverview WAGF, located in the Fort MacLeod area. The expected in-service date of the Riverview WAGF is October 2014. The purpose of this letter is to inform you that following this connection, your facility operation may be affected by future system conditions in the area.

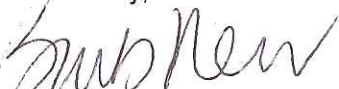
In keeping with its duties under the Electric Utilities Act to provide reasonable system access to all market participants, the AESO intends to proceed with the proposed connection and apply to the Alberta Utilities Commission for approval of the need to connect the Riverview WAGF. A copy of the AESO's need overview document is attached for your information.

The AESO has completed planning studies to ensure that reliable system operation is maintained at the time of connecting the Riverview WAGF to the Alberta Interconnected Electric System. These studies indicate that after the Riverview WAGF is connected, and depending on system operating conditions, transmission constraints may arise or existing constraints may become more prevalent on the transmission system. The identified constraints may occur under normal and abnormal operating conditions. The AESO is aware that it has a duty to plan the system to provide all market participants with full system access under normal operating conditions and is working to have planned system enhancements in place in a timely manner. The AESO advises that planned Southern Alberta Transmission Reinforcements, specifically the double-circuit 240 kV line from the proposed Windy Flats substation to the proposed Foothills substation, planned for 2015, and the Blackie area 138 kV transmission system reconfiguration, planned for 2016, will remove the identified system constraints.

Until planned system developments in the area are complete, the AESO intends to manage any constraints that arise using ISO Rule 302.1 Real Time Transmission Constraint Management (TCM Rule). The TCM Rule could result in curtailment of generators in the area that are effective in managing a constraint using a reverse merit order and pro rata curtailment protocol.

If you have any questions or concerns about the Need for the Riverview project please contact the AESO at 1-888-866-2959 or [stakeholder.relations@aeso.ca](mailto:stakeholder.relations@aeso.ca).

Yours truly,



Barb Reimer

Director

Transmission, Project Delivery

**APPENDIX D    TFO CONFIRMATION THAT COMMISSION RULE 007  
NID 12 ASPECTS ARE BEING ADDRESSED IN  
FACILITY PROPOSAL**

January 28, 2013

Alberta Electric System Operator  
Suite 2500  
330 – 5<sup>th</sup> Avenue S.W.  
Calgary, Alberta, T2P 0L4

Attention: Andrew Wolaniuk, Project Manager – Project Number 524

Dear Mr. Wolaniuk:

**RE: Confirmation that the seven (7) AUC Rule 007 NID 12 aspects are being addressed in AltaLink's Riverview Wind Power Facility Interconnection Facility Application**

The 7 major aspects of AUC Rule 007 NID 12 are addressed throughout AltaLink's Facility Application (FA) where applicable, and each major aspect is specifically addressed in the sections of the Facility Application outlined below:

**1. Agricultural Impact**

Is addressed in the FA in Section 4 (Route Determination Process) and Section 7 (Environmental Evaluation)

**2. Residential Impact**

Is addressed in the FA in Section 4 (Route Determination Process) and Section 6 (Visual Impact)

**3. Environmental Impact**

Is addressed in the FA in Section 7 (Environmental Evaluation)

**4. Cost**

Is addressed in the FA in Section 11 (Economic Assessment)

**5. Electrical Considerations**

Is addressed in the FA in Section 3 (Project Details)

**6. Visual Impact**

Is addressed in the FA in Section 6 (Visual Impact)

**7. Special Constraints**

There are no special constraints identified for the Project

Yours sincerely,



**Andrew Dunkley**  
Right-of-Way Planner