



*System Impact Study Report
PID 227
127MW Generation Uprate*

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Executive Summary:

This System Impact Study is the second step of the interconnection process and is based on the PID-227 request for an uprate of 127 MW onto the Entergy Transmission Grid from the PID-227 Generation facility. This report is organized into typically two sections, namely, Section – A, Energy Resource Interconnection Service (ERIS) and Section – B, Network Resource Interconnection Service (NRIS – Section B).

The Scope for the ERIS section (Section – A) includes load flow (steady state) analysis, transient stability analysis and short circuit analysis as defined in FERC orders 2003, 2003A and 2003B. The NRIS section (Section – B) contains details of load flow (steady state) analysis only, however, transient stability analysis and short circuit analysis of Section – A are also applicable to Section – B. If applicable, additional information on scope for NRIS study can be found in Section – B.

Requestor for PID-227 did request ERIS, but did not request NRIS. PID 227 is an up-rate to an existing facility. The study evaluates an infusion of 127 MW to the Entergy Transmission System. The load flow study was performed on the latest available 2012 Summer Peak case, using PSS/E and MUST software by Siemens Power Technologies International (Siemens-PTI).

The proposed in-service date for ERIS is November 1, 2009.

Short Circuit Analysis Results – No Short Circuit analysis required given this is a generation uprate and there are no changes in the generation characteristics.

Load Flow Analysis – See analysis results beginning on page 6 of this report, detailing four (4) scenario considerations.

Transient Stability Analysis - The system was stable following all simulated normally cleared and stuck-breaker faults. No voltage criteria violation was observed following simulated faults. Based on the results of stability analysis it can be concluded that proposed 127 MW uprate of the Cottonwood generating units does not adversely impact the stability of the Entergy System in the local area.

Section – A

Energy Resource Interconnection Service

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I. Introduction

This Energy Resource Interconnection Service (ERIS) is based on PID 227's request for interconnection on Entergy's transmission system from the Cottonwood generation site near the Hartburg 500kV substation. The objective of this study is to assess the reliability impact of the new facility on the Entergy transmission system with respect to the steady state and transient stability performance of the system as well as its effects on the system's existing short circuit current capability. It is also intended to determine whether the transmission system meets standards established by NERC Reliability Standards and Entergy's planning guidelines when plant is connected to Entergy's transmission system. If not, transmission improvements will be identified.

The System Impact Study process required a load flow analysis to determine if the existing transmission lines are adequate to handle the full output from the plant for simulated transfers to adjacent control areas. A short circuit analysis (if applicable) is performed to determine if the generation would cause the available fault current to surpass the fault duty of existing equipment within the Entergy transmission system. A transient stability analysis was conducted to determine if the new units would cause a stability problem on the Entergy system.

This ERIS System Impact Study was based on information provided by Generation Interconnection customer PID 227 and assumptions made by Entergy's Transmission Technical System Planning group. All supplied information and assumptions are documented in this report. If the actual equipment installed is different from the supplied information or the assumptions made, the results outlined in this report are subject to change.

The load flow results from the ERIS study are for information only. ERIS does not in and of itself convey any transmission service.

II. Short Circuit Analysis / Breaker Rating Analysis

No Short Circuit analysis was performed due to generator having a pre-existing Interconnection Agreement and the generator characteristics remain unchanged.

III. Load Flow Analysis

1.1 Model Information

The load flow analysis was performed based on the projected 2012 summer and winter peak load flow models. The loads were scaled based on the forecasted loads for the year. All firm power transactions between Entergy and its neighboring control areas were modeled for the year 2012 excluding short-term firm transactions on the same transmission interface. An economic dispatch was carried out on Entergy generating units after the scaling of load and modeling of transactions. The proposed PID 227 generation and the associated facilities were then modeled in the case to build a revised case for the load flow analysis. Transfers were simulated between thirteen (13) control areas and Entergy using requesting generator as the source and adjacent control area as sink.

This study considered the following four scenarios:

Scenario No.	Approved Future Transmission Projects	Pending Transmission Service & Study Requests
1	Not Included	Not Included
2	Not Included	Included
3	Included	Not Included
4	Included	Included

The generator step-up transformers, generators, and interconnecting lines were modeled according to the information provided by PID-227. The one-line diagram of PID-227 facilities as modeled in the load flow analysis, and the Customer supplied data are shown in **Appendix A**. The data used to build the load flow and dynamic models are also shown in **Appendix B**. . All stability study plots are shown in **Appendix C**.

2.1 Load Flow Analyses

i) Load Flow Analysis:

With the above assumptions implemented, the First Contingency Incremental Transfer Capability (FCITC) values are calculated. The FCITC depends on various factors – the system load, generation dispatch, scheduled maintenance of equipment, and the configuration of the interconnected system and the power flows in effect among the interconnected systems. The FCITC is also dependent on previously confirmed firm reservations on the interface.

ii) Performance Criteria

The criteria for overload violations are as follows:

A) With All Lines in Service

- The MVA flow in any branch should not exceed Rate A (normal rating).

B) Under Contingencies

- The MVA flow through any facility should not exceed Rate A.

iii) Power Factor Consideration / Criteria

Entergy, consistent with the FERC Large Generator Interconnection Procedures (LGIP) requires the customer to be capable of supplying at least 0.33 MVAR (*i.e.*, 0.95 lagging power factor) and absorbing at least 0.33 MVAR (*i.e.*, 0.95 leading power factor) for every MW of power injected into the grid. In the event that, under normal operating conditions, the customer facility does not meet the prescribed power factor requirements at the point of interconnection, the customer shall take necessary steps, such as the installation of reactive power compensating devices, to achieve the desired power factor.

3.1 Analysis Results

Summary of the analysis results are documented in following table for each scenario.

Table II-C Summary of Results for PID 227 – ERIS Load Flow Study

Interface		Summer and Winter Peak Case Used	FCITC Available for Scenario 1	FCITC Available for Scenario 2	FCITC Available for Scenario 3	FCITC Available for Scenario 4
AECI	Associated Electric Cooperative, Inc.	2012	0	0	0	0
AMRN	Ameren Transmission	2012	0	0	0	0
CLELE	CLECO	2012	0	0	0	0
AEP-W	American Electric Power - West	2012	0	0	0	0
EDE	Empire District Electric Co	2012	0	0	0	0
EES	Entergy	2012	0	0	0	0
LAFA	Lafayette Utilities Sustum	2012	0	0	0	0
LAGN	Louisiana Generating, LLC	2012	0	0	0	0
LEPA	Louisiana Energy & Power Authority	2012	0	0	0	0
OKGE	Oklahoma Gas & Electric Company	2012	0	0	0	0
SMEPA	South Mississippi Electric Power Assoc.	2012	0	0	0	0
SOCO	Southern Company	2012	0	0	0	0
SWPA	Southwest Power Administration	2012	0	0	0	0
TVA	Tennessee Valley Authority	2012	0	0	0	0

Scenario No.	Approved Future Transmission Projects	Pending Transmission Service & Study Requests
1	Not Included	Not Included
2	Not Included	Included
3	Included	Not Included
4	Included	Included

TABLE II-C-1 DETAILS OF SCENARIO 1 RESULTS: (WITHOUT FUTURE PROJECTS AND WITHOUT PENDING TRANSMISSION SERVICE & STUDY REQUEST)

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
Acadia - Colonial Academy 138kV							X							
Addis - Big Cajun 1 230kV									X					
Baxter Wilson - Ray Braswell 500kV					X		X	X	X		X	X		X
Bogalusa - Adams Creek 230kV ckt 2									X					
Bonin - Cecelia 138kV									X					
Bull Shoals - Bull Shoals Dam SPA 161kV						X								
Calico Rock - Melborne 161kV						X				X			X	
Calico Rock - Norfolk 161kV						X				X			X	
Colonial Academy - Richard 138kV							X		X					
Danville - North Magazine REA 161kV		X				X				X			X	
Florence - Florence Switching Station 115kV											X			
Florence - South Jackson 115kV											X			
Florence Switching Station - Star 115kV											X			
Greenwood - Terrebone 115kV							X							
Habetz - Richard 138kV							X							
Harrison East - Everton 161kV						X				X				
Harrison East - Summit 161kV						X								
Jaguar - Tap Point Esso 230kV					X				X					
Judice - Scott1 138kV				X					X					
Lake Charles Bulk - Roy S Nelson 138kV ckt 1							X		X					
Lake Conway - Mayflower 115kV													X	
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	X	X	X			X				X			X	
Melborne - Sage 161kV						X				X			X	
Morton - ForindT2 (TVA) 115kV											X			
Morton - Pelahatchie 115kV											X			

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	Lagn	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
North Crowley - Scott1 138kV				X			X		X					
Richard - Scott1 138kV							X							
Russellville South - Dardanelle Dam 161kV													X	
Scott1 - Bonin 138kV							X		X					
Semere - Scott2 138kV							X		X					
Sorrento - Vignes 230kV					X				X		X			
St. Joe - Hilltop 161kV						X				X				

TABLE II-C-2 DETAILS OF SCENARIO 2 RESULTS: (WITHOUT FUTURE PROJECTS AND WITH PENDING TRANSMISSION SERVICE & STUDY REQUEST)

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	LAFa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
A.A.C. - Licar 230kV					X						X			
A.A.C. - Polsky Carville 230kV					X						X	X		X
Acadia - Colonial Academy 138kV							X		X					
Acadia GSU - Scanlan 138kV							X		X					
Addis - Big Cajun 1 230kV					X				X		X			
Alchem - Monochem1 138kV									X					
Baxter Wilson - Ray Braswell 500kV							X	X	X		X	X		X
Bayou Cove - Richard 138kV ckt 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bayou Cove - Richard 138kV ckt 2				X			X	X	X		X	X		X
Belle Helene - Licar 230kV					X						X			
Bevil - Cypress 230kV		X		X			X							
Bogalusa - Adams Creek 230kV ckt 2									X					
Bogalusa - Adams Creek 500/230kV transformer							X	X	X					
Bonin - Cecelia 138kV									X					
Calico Rock - Melborne 161kV						X				X			X	
Calico Rock - Norfolk 161kV													X	
Cecelia - Semere 138kV							X							
Colonial Academy - Richard 138kV							X		X					
Cypress - Lumberton 138kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Danville - North Magazine REA 161kV		X				X				X				
Evadale - McDonald 138kV				X										
Florence - Florence Switching Station 115kV											X			
Florence - South Jackson 115kV											X			
Florence Switching Station - Star 115kV											X			
Habetz - Richard 138kV				X			X		X					
Harrison East - Omaha 161kV						X								
Hartburg - Inland Orange 230kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
Helbig - McLewis 230kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inland - McLewis 230kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jaguar - Tap Point Esso 230kV					X				X					
Judice - Meaux 138kV				X					X					
Judice - Scott1 138kV				X					X					
Kountze - Lumberton 138kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Kountze - McDonald 138kV				X	X									
Louisiana Station - Thomas 138kV									X					
Melborne - Sage 161kV						X				X			X	
Moril - Cecelia 138kV				X					X					
Morton - ForindT2 (TVA) 115kV											X			
Morton - Pelahatchie 115kV											X			
Nine Mile - Michoud 230kV (Proposed for PID 222)											X			
North Crowley - Richard 138kV				X			X							
North Crowley - Scott1 138kV				X			X		X					
OZD312 - Omaha 161kV						X								
Polsky Carville - Willow Glen 230kV					X						X			
Port Hudson 230/138 transformer 1									X					
Port Hudson 230/138 transformer 2									X					
Richard - Scott1 138kV				X			X		X					
Richard 500/138kV transformer 1				X										
Scott1 - Bonin 138kV							X		X					
Semere - Scott2 138kV				X			X		X					
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	X		X			X				X	X	X	X	X
Sorrento - Vignes 230kV					X				X		X			
Willow Glen - Webre 500kV	X	X	X		X	X				X	X	X	X	X
Willow Glen - Willow Glen 2 500/138kV transformer 1					X			X	X					
Willow Glen 500/230kV Transformer					X			X	X		X			

TABLE II-C-3 DETAILS OF SCENARIO 3 RESULTS: (WITH FUTURE PROJECTS AND WITHOUT PENDING TRANSMISSION SERVICE & STUDY REQUEST)

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
Acadia - Colonial Academy 138kV							X							
Addis - Big Cajun 1 230kV									X					
Baxter Wilson - Ray Braswell 500kV					X		X	X	X		X	X		X
Bogalusa - Adams Creek 230kV ckt 2									X					
Bonin - Cecelia 138kV									X					
Bull Shoals - Bull Shoals Dam SPA 161kV						X								
Calico Rock - Melborne 161kV						X				X			X	
Calico Rock - Norfolk 161kV						X				X			X	
Colonial Academy - Richard 138kV							X		X					
Danville - North Magazine REA 161kV		X				X				X			X	
Florence - Florence Switching Station 115kV											X			
Florence - South Jackson 115kV											X			
Florence Switching Station - Star 115kV											X			
Greenwood - Terrebone 115kV							X							
Habetz - Richard 138kV							X							
Harrison East - Everton 161kV						X				X				
Harrison East - Summit 161kV						X								
Jaguar - Tap Point Esso 230kV					X				X					
Judice - Scott1 138kV				X					X					
Lake Charles Bulk - Roy S Nelson 138kV ckt 1							X		X					
Lake Conway - Mayflower 115kV													X	
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	X	X	X			X				X			X	
Melborne - Sage 161kV						X				X			X	
Morton - ForindT2 (TVA) 115kV											X			
Morton - Pelahatchie 115kV											X			

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
NONE	X		X	X										
North Crowley - Scott1 138kV				X			X		X					
Richard - Scott1 138kV							X							
Russellville South - Dardanelle Dam 161kV													X	
Scott1 - Bonin 138kV							X		X					
Semere - Scott2 138kV							X		X					
Sorrento - Vignes 230kV					X				X		X			
St. Joe - Hilltop 161kV						X				X				

TABLE II-C-4 DETAILS OF SCENARIO 4 RESULTS: (WITH FUTURE PROJECTS AND WITH PENDING TRANSMISSION SERVICE & STUDY REQUEST)

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
A.A.C. - Licar 230kV	X		X		X				X		X	X		X
A.A.C. - Polsky Carville 230kV	X		X		X				X		X	X		X
Acadia - Colonial Academy 138kV							X		X					
Acadia GSU - Scanlan 138kV							X		X					
Addis - Big Cajun 1 230kV					X				X		X			
Alchem - Monochem1 138kV									X					
Baxter Wilson - Ray Braswell 500kV							X	X	X		X	X		X
Bayou Cove - Richard 138kV ckt 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bayou Cove - Richard 138kV ckt 2				X			X	X	X		X	X		X
Belle Helene - Licar 230kV	X		X		X				X		X	X		X
Bogalusa - Adams Creek 230kV ckt 2									X					
Bonin - Cecelia 138kV				X					X					
Calico Rock - Melborne 161kV						X				X			X	
Calico Rock - Norfolk 161kV													X	
Cecelia - Semere 138kV							X							
Colonial Academy - Richard 138kV							X		X					
Cypress - Lumberton 138kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Danville - North Magazine REA 161kV		X				X				X				
Florence - Florence Switching Station 115kV											X			
Florence - South Jackson 115kV											X			
Florence Switching Station -											X			

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	LAFa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
Star 115kV														
Greenwood - Terrebone 115kV									X					
Habetz - Richard 138kV				X			X		X					
Harrison East - Omaha 161kV						X								
Hartburg - Inland Orange 230kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Helbig - McLewis 230kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inland - McLewis 230kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jaguar - Tap Point Esso 230kV					X				X					
Judice - Meaux 138kV				X					X					
Judice - Scott1 138kV				X					X					
Kountze - Lumberton 138kV	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Kountze - McDonald 138kV				X	X									
Louisiana Station - Thomas 138kV									X					
Melborne - Sage 161kV						X				X			X	
Moril - Cecelia 138kV				X					X					
Morton - ForindT2 (TVA) 115kV											X			
Morton - Pelahatchie 115kV											X			
Nine Mile - Michoud 230kV (Proposed for PID 222)											X			
Nine Mile - Michoud 230kV Supplemental Upgrade											X			
North Crowley - Richard 138kV				X			X							
North Crowley - Scott1 138kV				X			X		X					
OZD312 - Omaha 161kV						X								
Polsky Carville - Willow Glen 230kV	X		X		X				X		X	X		X
Port Hudson 230/138 transformer 1									X					
Port Hudson 230/138 transformer 2									X					
Richard - Scott1 138kV				X			X		X					

Limiting Element	AECI	AEPW	AMRN	CELE	EES	EMDE	Lafa	LAGN	LEPA	OKGE	SMEPA	SOCO	SWPA	TVA
Scott1 - Bonin 138kV							X		X					
Semere - Scott2 138kV				X			X		X					
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	X		X			X				X	X	X	X	X
Sorrento - Vignes 230kV					X				X		X			
Willow Glen - Webre 500kV	X	X	X		X	X				X	X	X	X	X
Willow Glen - Willow Glen 2 500/138kV transformer 1					X									
Willow Glen 500/230kV Transformer					X			X	X		X			

DETAILS OF SCENARIO 1

AECI

Limiting Element	Contingency Element	ATC
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0

AEP-W

Limiting Element	Contingency Element	ATC
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0

AMRN

Limiting Element	Contingency Element	ATC
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0

CELE

Limiting Element	Contingency Element	ATC
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0

EES

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0

EMDE

Limiting Element	Contingency Element	ATC
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	0
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Independence SES - Keo 500kV	0
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	0
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	0
St. Joe - Hilltop 161kV	Bull Shoals - Bull Shoals Dam SPA 161kV	0
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	0
Calico Rock - Norfolk 161kV	Independence SES - Keo 500kV	0
St. Joe - Hilltop 161kV	Bull Shoals - Flippin 161kV	0
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	0
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	0
Bull Shoals - Bull Shoals Dam SPA 161kV	St. Joe - Hilltop 161kV	0
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	0
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Swifton 161 kV	0
Bull Shoals - Bull Shoals Dam SPA 161kV	Everton - St. Joe 161kV	0
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Walnut Ridge 161kV	0
St. Joe - Hilltop 161kV	Flippin - Summit 161kV	0
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	0
Harrison East - Everton 161kV	Bull Shoals - Bull Shoals Dam SPA 161kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Swifton 161 kV	0
Bull Shoals - Bull Shoals Dam SPA 161kV	Harrison East - Everton 161kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Harrison East - Everton 161kV	Bull Shoals - Flippin 161kV	0
St. Joe - Hilltop 161kV	Harrison East - Summit 161kV	0
Harrison East - Everton 161kV	Flippin - Summit 161kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
St. Joe - Hilltop 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Base Case	0

Limiting Element	Contingency Element	ATC
Harrison East - Everton 161kV	Harrison East - Summit 161kV	0
Harrison East - Summit 161kV	St. Joe - Hilltop 161kV	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Harrison East - Summit 161kV	Everton - St. Joe 161kV	0
Melborne - Sage 161kV	Sage - Guion 161kV	0
Melborne - Sage 161kV	Mountain View - Guion 161kV	8
Harrison East - Summit 161kV	Harrison East - Everton 161kV	37
St. Joe - Hilltop 161kV	Eureka Springs - Osage Springs 161kV	44
Harrison East - Everton 161kV	ANO - Fort Smith 500kV	46

Lafa

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (Lafa)	0
Greenwood - Terrebone 115kV	Webre - Wells 500kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (Lafa)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	0
Semere - Scott2 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (Lafa)	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (Lafa)	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	0
Lake Charles Bulk - Roy S Nelson 138kV ckt 1	Lake Charles Bulk - Roy S Nelson 138kV ckt 2	0
North Crowley - Scott1 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	0
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	11
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	23
Scott1 - Bonin 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	43
Colonial Academy - Richard 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	56
Habetz - Richard 138kV	Bonin - Labbe 230kV (Lafa)	78
Wells 500/230kV transformer	Cocodrie - Vil Plat 230kV	91
Acadia - Colonial Academy 138kV	Bonin - Labbe 230kV (Lafa)	96
Richard - Scott1 138kV	Bonin - Labbe 230kV (Lafa)	105
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	106
Acadia - Colonial Academy 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	115
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	120

LAGN

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0

LEPA

Limiting Element	Contingency Element	ATC
Bogalusa - Adams Creek 230kV ckt 2	Bogalusa - Adams Creek 230kV ckt 1	0
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Addis - Big Cajun 1 230kV	Jaguar - Tap Point Esso 230kV	0
Addis - Big Cajun 1 230kV	Enjay - Fancy 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Addis - Big Cajun 1 230kV	Coly - McKnight 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Addis - Big Cajun 1 230kV	Enjay - Jaguar 230kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (LAFA)	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Bonin - Cecelia 138kV	Acadia - Colonial Academy 138kV	0
Bonin - Cecelia 138kV	Acadia GSU - Scanlan 138kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Lake Charles Bulk - Roy S Nelson 138kV ckt 1	Lake Charles Bulk - Roy S Nelson 138kV ckt 2	0
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	69

OKGE

Limiting Element	Contingency Element	ATC
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
St. Joe - Hilltop 161kV	ANO - Fort Smith 500kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
Harrison East - Everton 161kV	ANO - Fort Smith 500kV	89

SMEPA

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Florence - South Jackson 115kV	Bogalusa - Franklin 500kV	0
Florence - South Jackson 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Morton - Pelahatchie 115kV	Florence - South Jackson 115kV	0
Morton - Pelahatchie 115kV	Florence - Florence Switching Station 115kV	0
Morton - Pelahatchie 115kV	Angie - Adams Creek 230kV	0
Morton - Pelahatchie 115kV	Florence Switching Station - Star 115kV	0
Morton - Pelahatchie 115kV	Mendenhall - Star 115kV	0
Morton - Pelahatchie 115kV	Magee - Mendenhall 115kV	0
Florence - South Jackson 115kV	Choctaw - West Point 500kV (TVA)	0
Florence - South Jackson 115kV	South Jackson - Pop Spring 115kV	0
Florence - South Jackson 115kV	Franklin - Grand Gulf 500kV	0
Florence - South Jackson 115kV	Georgetown - Pop Spring 115kV	0
Florence - South Jackson 115kV	Georgetown - Silver Creek 115kV	0
Florence - Florence Switching Station 115kV	Bogalusa - Franklin 500kV	0
Florence - Florence Switching Station 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - South Jackson 115kV	Morton - Pelahatchie 115kV	10
Morton - ForindT2 (TVA) 115kV	Florence - South Jackson 115kV	28
Morton - ForindT2 (TVA) 115kV	Angie - Adams Creek 230kV	62
Morton - ForindT2 (TVA) 115kV	Florence - Florence Switching Station 115kV	72
Morton - ForindT2 (TVA) 115kV	Florence Switching Station - Star 115kV	95
Morton - ForindT2 (TVA) 115kV	Mendenhall - Star 115kV	107
Florence Switching Station - Star 115kV	Bogalusa - Franklin 500kV	109
Florence Switching Station - Star 115kV	Bogalusa - Adams Creek 500/230kV transformer	109
Morton - ForindT2 (TVA) 115kV	Magee - Mendenhall 115kV	122

SOCO

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0

SWPA

Limiting Element	Contingency Element	ATC
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	0
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	0
Calico Rock - Melborne 161kV	Independence SES - Keo 500kV	0
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	0
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	0
Calico Rock - Norfolk 161kV	Independence SES - Keo 500kV	0
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	0
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	0
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	0
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Swifton 161 kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	0
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Swifton 161 kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Walnut Ridge 161kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
Melborne - Sage 161kV	Base Case	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Melborne - Sage 161kV	Sage - Guion 161kV	0
Melborne - Sage 161kV	Mountain View - Guion 161kV	7
Russellville South - Dardanelle Dam 161kV	ANO - Fort Smith 500kV	122
Lake Conway - Mayflower 115kV	Pleasant Hill 500/161kV transformer	122

TVA

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0

DETAILS OF SCENARIO 2

AECI

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Poco 138kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	31
Kountze - Lumberton 138kV	Bragg - Honey 138kV	33
Kountze - Lumberton 138kV	Bragg - Menard 138kV	52
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	72
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	91
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	105

AEP-W

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Cypress - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Kountze - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Kountze - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Kountze - Lumberton 138kV	Bragg - Honey 138kV	0
Kountze - Lumberton 138kV	Bragg - Menard 138kV	0
Bevil - Cypress 230kV	Hartburg 500/230kV transformer 1	75
Bevil - Cypress 230kV	Hartburg - Inland Orange 230kV	78
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	89

AMRN

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Poco 138kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	22
Kountze - Lumberton 138kV	Bragg - Honey 138kV	33
Kountze - Lumberton 138kV	Bragg - Menard 138kV	52
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	70
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	92
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	106

CLELE

Limiting Element	Contingency Element	ATC
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Habetz - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Richard - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Kountze - McDonald 138kV	Bevil - Cypress 230kV	0
Kountze - McDonald 138kV	Ameila Bulk - Bevil 230kV	0
North Crowley - Scott1 138kV	Richard - Scott1 138kV	0
Cypress - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Moril - Cecelia 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Judice - Meaux 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Kountze - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Kountze - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Semere - Scott2 138kV	Wells 500/230kV transformer	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Richard - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Kountze - Lumberton 138kV	Bragg - Honey 138kV	0
Kountze - Lumberton 138kV	Bragg - Menard 138kV	0
Richard 500/138kV transformer 1	Richard 500/138kV transformer 2	0
North Crowley - Richard 138kV	Bonin - Labbe 230kV (LAFA)	22
Evadale - McDonald 138kV	Bevil - Cypress 230kV	57
Bevil - Cypress 230kV	Hartburg 500/230kV transformer 1	82
Bevil - Cypress 230kV	Hartburg - Inland Orange 230kV	86

Limiting Element	Contingency Element	ATC
Habetz - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	89
Evadale - McDonald 138kV	Ameila Bulk - Bevil 230kV	119

EES

Limiting Element	Contingency Element	ATC
Addis - Big Cajun 1 230kV	Fancy Point - McKnight 500kV	0
Addis - Big Cajun 1 230kV	Willow Glen - Webre 500kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
A.A.C. - Polsky Carville 230kV	Coly - Vignes 230kV	0
A.A.C. - Licar 230kV	Coly - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Coly - Vignes 230kV	0
A.A.C. - Polsky Carville 230kV	Sorrento - Vignes 230kV	0
A.A.C. - Licar 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Sorrento - Vignes 230kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Belle Helene - Licar 230kV	Coly - Vignes 230kV	0
Cypress - Lumberton 138kV	Holly Springs - Newton Bulk 138kV	0
Sorrento - Vignes 230kV	Waterford - Willow Glen 500kV	0
Sorrento - Vignes 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Cypress - Lumberton 138kV	Holly Springs - Jasper 138kV	0
Willow Glen 500/230kV Transformer	Coly 500/230kV transformer	0
Belle Helene - Licar 230kV	Sorrento - Vignes 230kV	0
Kountze - Lumberton 138kV	Holly Springs - Newton Bulk 138kV	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
Kountze - Lumberton 138kV	Holly Springs - Jasper 138kV	0
Cypress - Lumberton 138kV	Jasper - Rayburn 138kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - McDonald 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Kountze - McDonald 138kV	Ameila Bulk - Bevil 230kV	0
Cypress - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Kountze - Lumberton 138kV	Jasper - Rayburn 138kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0

Limiting Element	Contingency Element	ATC
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Kountze - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Willow Glen - Willow Glen 2 500/138kV transformer 1	Willow Glen 500/230kV Transformer	0
Kountze - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Willow Glen 500/230kV Transformer	Jaguar - Tap Point Esso 230kV	0
Willow Glen 500/230kV Transformer	Addis - Big Cajun 1 230kV	3
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	19
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	19
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	71
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	114
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	114

EMDE

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0

Limiting Element	Contingency Element	ATC
Harrison East - Omaha 161kV	Green Forest South - Clipper 161kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	22
Kountze - Lumberton 138kV	Bragg - Honey 138kV	32
Harrison East - Omaha 161kV	Green Forrest - Green Forrest South 161kV	34
Kountze - Lumberton 138kV	Bragg - Menard 138kV	50
Harrison East - Omaha 161kV	Berryville - Green Forrest 161kV	74
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	76
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	83
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	86
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	88
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	93
OZD312 - Omaha 161kV	Green Forest South - Clipper 161kV	102
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	110

Lafa

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Bogalusa - Adams Creek 500/230kV transformer	Franklin - Mcknight 500kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (Lafa)	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (Lafa)	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Semere - Scott2 138kV	Bonin - Cecelia 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (Lafa)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Semere - Scott2 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Semere - Scott2 138kV	Flander - Hopkins 138kV (CLECO/Lafa)	0

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Gulf Livingston - POCO 138kV	0
Acadia - Colonial Academy 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Habetz - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Richard - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Richard - Scott1 138kV	0
Colonial Academy - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Semere - Scott2 138kV	Richard - Scott1 138kV	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (LAFA)	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Acadia GSU - Scanlan 138kV	Bonin - Labbe 230kV (LAFA)	0
Acadia - Colonial Academy 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Kountze - Lumberton 138kV	Bragg - Honey 138kV	0
Acadia - Colonial Academy 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Kountze - Lumberton 138kV	Bragg - Menard 138kV	0
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Richard - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	2
North Crowley - Richard 138kV	Bonin - Labbe 230kV (LAFA)	6
Acadia GSU - Scanlan 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	10
Habetz - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	13
Scott1 - Bonin 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	24
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	26
Acadia GSU - Scanlan 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	43
North Crowley - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	57
North Crowley - Scott1 138kV	Coughlin - Plaisance 138kV (CLECO)	59
North Crowley - Scott1 138kV	Wells 500/230kV transformer	75
North Crowley - Scott1 138kV	Bonin 230/138kV transformer (LAFA)	79
North Crowley - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	89
Bevil - Cypress 230kV	Hartburg 500/230kV transformer 1	103
Bevil - Cypress 230kV	Hartburg - Inland Orange 230kV	108
Bayou Cove - Richard 138kV ckt 2	Roy S. Nelson - Richard 500kV	117
Cecelia - Semere 138kV	Bonin - Labbe 230kV (LAFA)	125

LAGN

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Willow Glen 500/230kV Transformer	Coly 500/230kV transformer	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
Bogalusa - Adams Creek 500/230kV transformer	Franklin - Mcknight 500kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Willow Glen - Willow Glen 2 500/138kV transformer 1	Willow Glen 500/230kV Transformer	0
Willow Glen 500/230kV Transformer	Jaguar - Tap Point Esso 230kV	0

LEPA

Limiting Element	Contingency Element	ATC
Addis - Big Cajun 1 230kV	Enjay - Fancy 230kV	0
Addis - Big Cajun 1 230kV	Enjay - Jaguar 230kV	0
Addis - Big Cajun 1 230kV	Jaguar - Tap Point Esso 230kV	0
Addis - Big Cajun 1 230kV	Coly - McKnight 500kV	0
Addis - Big Cajun 1 230kV	Willow Glen 500/230kV Transformer	0
Bogalusa - Adams Creek 230kV ckt 2	Bogalusa - Adams Creek 230kV ckt 1	0
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Addis - Big Cajun 1 230kV	Willow Glen - Webre 500kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (LAFA)	0
Addis - Big Cajun 1 230kV	Waterford - Willow Glen 500kV	0
Addis - Big Cajun 1 230kV	Waterford 500/230 transformer kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Addis - Big Cajun 1 230kV	Addis - Wilbert 138kV	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (LAFA)	0

Limiting Element	Contingency Element	ATC
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Alchem - Monochem1 138kV	A.A.C. - Polsky Carville 230kV	0
Alchem - Monochem1 138kV	A.A.C. - Licar 230kV	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Bonin - Cecelia 138kV	Acadia - Colonial Academy 138kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Alchem - Monochem1 138kV	Belle Helene - Licar 230kV	0
Bonin - Cecelia 138kV	Acadia GSU - Scanlan 138kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Alchem - Monochem1 138kV	Polsky Carville - Willow Glen 230kV	0
Willow Glen 500/230kV Transformer	Coly 500/230kV transformer	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
North Crowley - Scott1 138kV	Richard - Scott1 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Bogalusa - Adams Creek 500/230kV transformer	Franklin - Mcknight 500kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Richard - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Colonial Academy - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Port Hudson 230/138 transformer 2	Port Hudson 230/138 transformer 1	0
Semere - Scott2 138kV	Bonin - Cecelia 138kV	0
Acadia - Colonial Academy 138kV	Bonin - Labbe 230kV (LAFA)	0
Habetz - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Port Hudson 230/138 transformer 1	Port Hudson 230/138 transformer 2	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Semere - Scott2 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Alchem - Monochem1 138kV	Belle Helene - Woodstock 230kV	0
Alchem - Monochem1 138kV	Vulchlor - Woodstock 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Semere - Scott2 138kV	Richard - Scott1 138kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Cypress - Lumberton 138kV	Roy S. Nelson 500/230kV auto	0
Cypress - Lumberton 138kV	Gulf Livingston - Poco 138kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Acadia - Colonial Academy 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Moril - Cecelia 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0

Limiting Element	Contingency Element	ATC
Bonin - Cecelia 138kV	Scanlan - Scott2 138kV	0
Bonin - Cecelia 138kV	Semere - Scott2 138kV	0
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Acadia GSU - Scanlan 138kV	Bonin - Labbe 230kV (LAFA)	0
Judice - Meaux 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Bonin - Cecelia 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Acadia - Colonial Academy 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Louisiana Station - Thomas 138kV	Big Cajun 2 - Webre 500kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Kountze - Lumberton 138kV	Bragg - Honey 138kV	0
Willow Glen - Willow Glen 2 500/138kV transformer 1	Willow Glen 500/230kV Transformer	0
Richard - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Willow Glen 500/230kV Transformer	Jaguar - Tap Point Esso 230kV	0
Kountze - Lumberton 138kV	Bragg - Menard 138kV	0
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	28
Kountze - Lumberton 138kV	Roy S. Nelson 500/230kV auto	46

OKGE

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	22

Limiting Element	Contingency Element	ATC
Kountze - Lumberton 138kV	Bragg - Honey 138kV	30
Kountze - Lumberton 138kV	Bragg - Menard 138kV	48
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	75
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	79
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	84
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	90
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	123

SMEPA

Limiting Element	Contingency Element	ATC
Addis - Big Cajun 1 230kV	Willow Glen - Webre 500kV	0
Addis - Big Cajun 1 230kV	Fancy Point - McKnight 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Polsky Carville 230kV	Coly - Vignes 230kV	0
A.A.C. - Licar 230kV	Coly - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Coly - Vignes 230kV	0
A.A.C. - Polsky Carville 230kV	Sorrento - Vignes 230kV	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
A.A.C. - Licar 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Sorrento - Vignes 230kV	0
Sorrento - Vignes 230kV	Waterford - Willow Glen 500kV	0
Sorrento - Vignes 230kV	Waterford 500/230 transformer kV	0
Belle Helene - Licar 230kV	Coly - Vignes 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Belle Helene - Licar 230kV	Sorrento - Vignes 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Florence - South Jackson 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - South Jackson 115kV	Bogalusa - Franklin 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0

Limiting Element	Contingency Element	ATC
Nine Mile - Michoud 230kV (Proposed for PID 222)	Joliet - South Port 230kV	0
Morton - Pelahatchie 115kV	Angie - Adams Creek 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Bogalusa - Adams Creek 500/230kV transformer	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Bogalusa - Franklin 500kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Estelle - Ninemile Point 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - POCO 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Slidell - North Slidell (CLECO) 230kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Franklin 500kV	0
Florence - South Jackson 115kV	South Jackson - Pop Spring 115kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Florence - South Jackson 115kV	Franklin - Grand Gulf 500kV	0
Florence - South Jackson 115kV	Georgetown - Pop Spring 115kV	0
Florence - South Jackson 115kV	Georgetown - Silver Creek 115kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Florence - Florence Switching Station 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - Florence Switching Station 115kV	Bogalusa - Franklin 500kV	0
Florence - South Jackson 115kV	Angie - Adams Creek 230kV	0
Morton - ForindT2 (TVA) 115kV	Angie - Adams Creek 230kV	5
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	17
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	17
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	28
Kountze - Lumberton 138kV	Bragg - Honey 138kV	37
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	53
Nine Mile - Michoud 230kV (Proposed for PID 222)	Estelle - Peters Road 230kV	53
Kountze - Lumberton 138kV	Bragg - Menard 138kV	57
Nine Mile - Michoud 230kV Supplemental Upgrade	Joliet - South Port 230kV	67
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	101
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	102
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	102
Florence Switching Station - Star 115kV	Bogalusa - Adams Creek 500/230kV transformer	117
Florence Switching Station - Star 115kV	Bogalusa - Franklin 500kV	117

SOCO

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - POCO 138kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Franklin 500kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	26
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	26
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	30
Kountze - Lumberton 138kV	Bragg - Honey 138kV	35
Kountze - Lumberton 138kV	Bragg - Menard 138kV	55
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	61
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	97

SWPA

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	31
Kountze - Lumberton 138kV	Bragg - Honey 138kV	32
Kountze - Lumberton 138kV	Bragg - Menard 138kV	51
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	73
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	75
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	76
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	89
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	95
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	114
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	118
Calico Rock - Melborne 161kV	Independence SES - Keo 500kV	125

TVA

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - POCO 138kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	30
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	30
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	30
Kountze - Lumberton 138kV	Bragg - Honey 138kV	36
Kountze - Lumberton 138kV	Bragg - Menard 138kV	56
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	65
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	98

DETAILS OF SCENARIO 3

AECI

Limiting Element	Contingency Element	ATC
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0

AEP-W

Limiting Element	Contingency Element	ATC
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0

AMRN

Limiting Element	Contingency Element	ATC
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0

CELE

Limiting Element	Contingency Element	ATC
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0

EES

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0

EMDE

Limiting Element	Contingency Element	ATC
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	0
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Independence SES - Keo 500kV	0
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	0
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	0
St. Joe - Hilltop 161kV	Bull Shoals - Bull Shoals Dam SPA 161kV	0
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	0
Calico Rock - Norfolk 161kV	Independence SES - Keo 500kV	0
St. Joe - Hilltop 161kV	Bull Shoals - Flippin 161kV	0
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	0
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	0
Bull Shoals - Bull Shoals Dam SPA 161kV	St. Joe - Hilltop 161kV	0
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	0
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Swifton 161 kV	0
Bull Shoals - Bull Shoals Dam SPA 161kV	Everton - St. Joe 161kV	0
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Walnut Ridge 161kV	0
St. Joe - Hilltop 161kV	Flippin - Summit 161kV	0
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	0
Harrison East - Everton 161kV	Bull Shoals - Bull Shoals Dam SPA 161kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Swifton 161 kV	0
Bull Shoals - Bull Shoals Dam SPA 161kV	Harrison East - Everton 161kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Harrison East - Everton 161kV	Bull Shoals - Flippin 161kV	0
St. Joe - Hilltop 161kV	Harrison East - Summit 161kV	0
Harrison East - Everton 161kV	Flippin - Summit 161kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
St. Joe - Hilltop 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Base Case	0

Limiting Element	Contingency Element	ATC
Harrison East - Everton 161kV	Harrison East - Summit 161kV	0
Harrison East - Summit 161kV	St. Joe - Hilltop 161kV	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Harrison East - Summit 161kV	Everton - St. Joe 161kV	0
Melborne - Sage 161kV	Sage - Guion 161kV	0
Melborne - Sage 161kV	Mountain View - Guion 161kV	10
Harrison East - Summit 161kV	Harrison East - Everton 161kV	38
St. Joe - Hilltop 161kV	Eureka Springs - Osage Springs 161kV	44
Harrison East - Everton 161kV	ANO - Fort Smith 500kV	47

Lafa

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (Lafa)	0
Greenwood - Terrebone 115kV	Webre - Wells 500kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (Lafa)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	0
Semere - Scott2 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (Lafa)	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (Lafa)	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	0
Lake Charles Bulk - Roy S Nelson 138kV ckt 1	Lake Charles Bulk - Roy S Nelson 138kV ckt 2	0
North Crowley - Scott1 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	0
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	10
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	23
Scott1 - Bonin 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	42
Colonial Academy - Richard 138kV	Point Des Mouton (Lafa) - Labbe (Lafa) 230kV	55
Habetz - Richard 138kV	Bonin - Labbe 230kV (Lafa)	77
Acadia - Colonial Academy 138kV	Bonin - Labbe 230kV (Lafa)	95
Richard - Scott1 138kV	Bonin - Labbe 230kV (Lafa)	105
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	106
Acadia - Colonial Academy 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	114
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (Lafa) 230kV	120

LAGN

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0

LEPA

Limiting Element	Contingency Element	ATC
Bogalusa - Adams Creek 230kV ckt 2	Bogalusa - Adams Creek 230kV ckt 1	0
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Addis - Big Cajun 1 230kV	Jaguar - Tap Point Esso 230kV	0
Addis - Big Cajun 1 230kV	Enjay - Fancy 230kV	0
Addis - Big Cajun 1 230kV	Coly - McKnight 500kV	0
Addis - Big Cajun 1 230kV	Enjay - Jaguar 230kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (LAFA)	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Bonin - Cecelia 138kV	Acadia - Colonial Academy 138kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Bonin - Cecelia 138kV	Acadia GSU - Scanlan 138kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Lake Charles Bulk - Roy S Nelson 138kV ckt 1	Lake Charles Bulk - Roy S Nelson 138kV ckt 2	0
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	67
Sorrento - Vignes 230kV	Waterford - Willow Glen 500kV	69
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	124

OKGE

Limiting Element	Contingency Element	ATC
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
St. Joe - Hilltop 161kV	ANO - Fort Smith 500kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
Harrison East - Everton 161kV	ANO - Fort Smith 500kV	91

SMEPA

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Florence - South Jackson 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - South Jackson 115kV	Bogalusa - Franklin 500kV	0
Morton - Pelahatchie 115kV	Florence - South Jackson 115kV	0
Morton - Pelahatchie 115kV	Florence - Florence Switching Station 115kV	0
Morton - Pelahatchie 115kV	Angie - Adams Creek 230kV	0
Morton - Pelahatchie 115kV	Florence Switching Station - Star 115kV	0
Morton - Pelahatchie 115kV	Mendenhall - Star 115kV	0
Morton - Pelahatchie 115kV	Magee - Mendenhall 115kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Florence - South Jackson 115kV	Choctaw - West Point 500kV (TVA)	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Florence - South Jackson 115kV	South Jackson - Pop Spring 115kV	0
Florence - South Jackson 115kV	Franklin - Grand Gulf 500kV	0
Florence - South Jackson 115kV	Georgetown - Pop Spring 115kV	0
Florence - South Jackson 115kV	Georgetown - Silver Creek 115kV	0
Florence - Florence Switching Station 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - Florence Switching Station 115kV	Bogalusa - Franklin 500kV	0
Florence - South Jackson 115kV	Morton - Pelahatchie 115kV	10
Morton - ForindT2 (TVA) 115kV	Florence - South Jackson 115kV	28
Morton - ForindT2 (TVA) 115kV	Angie - Adams Creek 230kV	62
Morton - ForindT2 (TVA) 115kV	Florence - Florence Switching Station 115kV	72
Morton - ForindT2 (TVA) 115kV	Florence Switching Station - Star 115kV	95
Morton - ForindT2 (TVA) 115kV	Mendenhall - Star 115kV	107
Sorrento - Vignes 230kV	Bogalusa - Adams Creek 500/230kV transformer	108
Sorrento - Vignes 230kV	Bogalusa - Franklin 500kV	108
Florence Switching Station - Star 115kV	Bogalusa - Adams Creek 500/230kV transformer	110
Florence Switching Station - Star 115kV	Bogalusa - Franklin 500kV	110
Morton - ForindT2 (TVA) 115kV	Magee - Mendenhall 115kV	122

SOCO

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0

SWPA

Limiting Element	Contingency Element	ATC
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	0
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	0
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	0
Calico Rock - Melborne 161kV	Independence SES - Keo 500kV	0
Calico Rock - Melborne 161kV	Newport - Newport Industrial 161kV	0
Calico Rock - Melborne 161kV	Newport AB - Newport Industrial 161kV	0
Calico Rock - Norfolk 161kV	Independence SES - Keo 500kV	0
Calico Rock - Melborne 161kV	Cash - Newport AB 161kV	0
Calico Rock - Melborne 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Newport - Newport Industrial 161kV	0
Calico Rock - Melborne 161kV	Cash - Jonesboro 161kV	0
Calico Rock - Norfolk 161kV	Newport AB - Newport Industrial 161kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Swifton 161 kV	0
Calico Rock - Melborne 161kV	Hoxies AECC - Walnut Ridge 161kV	0
Calico Rock - Norfolk 161kV	Cash - Newport AB 161kV	0
Calico Rock - Norfolk 161kV	Newport - Swifton 161kV	0
Calico Rock - Norfolk 161kV	Cash - Jonesboro 161kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Swifton 161 kV	0
Calico Rock - Norfolk 161kV	Hoxies AECC - Walnut Ridge 161kV	0
'MANSFLD4 138' TO BUS 'IPAPER 4 138'	Contingency of FlowGate 5029 DOLHILL7 345 TO SW SHV 7 345	0
Melborne - Sage 161kV	Base Case	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Melborne - Sage 161kV	Sage - Guion 161kV	0
Melborne - Sage 161kV	Mountain View - Guion 161kV	9
Russellville South - Dardanelle Dam 161kV	ANO - Fort Smith 500kV	124
Lake Conway - Mayflower 115kV	Pleasant Hill 500/161kV transformer	125

TVA

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0

DETAILS OF SCENARIO 4

AECI

Limiting Element	Contingency Element	ATC
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	31
Kountze - Lumberton 138kV	Bragg - Honey 138kV	60
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	73
Kountze - Lumberton 138kV	Bragg - Menard 138kV	78
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	99
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	117

AEP-W

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0

Limiting Element	Contingency Element	ATC
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Cypress - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Kountze - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Kountze - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	29
Kountze - Lumberton 138kV	Bragg - Honey 138kV	48
Kountze - Lumberton 138kV	Bragg - Menard 138kV	63
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	90
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	125

AMRN

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0

Limiting Element	Contingency Element	ATC
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	30
Kountze - Lumberton 138kV	Bragg - Honey 138kV	61
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	71
Kountze - Lumberton 138kV	Bragg - Menard 138kV	79
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	100
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	118

CLELE

Limiting Element	Contingency Element	ATC
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Habetz - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Richard - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
North Crowley - Scott1 138kV	Richard - Scott1 138kV	0
Kountze - McDonald 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Moril - Cecelia 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Kountze - McDonald 138kV	Ameila Bulk - Bevil 230kV	0
Cypress - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Judice - Meaux 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Cypress - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (LAFA)	0
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0

Limiting Element	Contingency Element	ATC
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Semere - Scott2 138kV	Wells 500/230kV transformer	0
Kountze - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Bonin - Cecelia 138kV	Acadia - Colonial Academy 138kV	0
Kountze - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Richard - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Bonin - Cecelia 138kV	Acadia GСУ - Scanlan 138kV	8
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	23
North Crowley - Richard 138kV	Bonin - Labbe 230kV (LAFA)	25
Kountze - Lumberton 138kV	Bragg - Honey 138kV	42
Kountze - Lumberton 138kV	Bragg - Menard 138kV	55
Habetz - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	89

EES

Limiting Element	Contingency Element	ATC
Addis - Big Cajun 1 230kV	Fancy Point - McKnight 500kV	0
Addis - Big Cajun 1 230kV	Willow Glen - Webre 500kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
A.A.C. - Polsky Carville 230kV	Coly - Vignes 230kV	0
A.A.C. - Licar 230kV	Coly - Vignes 230kV	0
A.A.C. - Polsky Carville 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Coly - Vignes 230kV	0
Sorrento - Vignes 230kV	Waterford - Willow Glen 500kV	0
Sorrento - Vignes 230kV	Waterford 500/230 transformer kV	0
A.A.C. - Licar 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Sorrento - Vignes 230kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Cypress - Lumberton 138kV	Holly Springs - Newton Bulk 138kV	0
Belle Helene - Licar 230kV	Coly - Vignes 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Cypress - Lumberton 138kV	Holly Springs - Jasper 138kV	0

Limiting Element	Contingency Element	ATC
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Holly Springs - Newton Bulk 138kV	0
Belle Helene - Licar 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Willow Glen 500/230kV Transformer	Coly 500/230kV transformer	0
Kountze - Lumberton 138kV	Holly Springs - Jasper 138kV	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Cypress - Lumberton 138kV	Jasper - Rayburn 138kV	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - McDonald 138kV	Bevil - Cypress 230kV	0
Sorrento - Vignes 230kV	Conway - Vulchlor 230kV	0
Cypress - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Kountze - McDonald 138kV	Ameila Bulk - Bevil 230kV	0
Cypress - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Kountze - Lumberton 138kV	Jasper - Rayburn 138kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Kountze - Lumberton 138kV	Leach - Toledo Bend 138 kV	0
Kountze - Lumberton 138kV	Leach - Newton Bulk 138 kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Willow Glen 500/230kV Transformer	Jaguar - Tap Point Esso 230kV	43
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	71
Willow Glen - Willow Glen 2 500/138kV transformer 1	Willow Glen 500/230kV Transformer	73
Willow Glen 500/230kV Transformer	Addis - Big Cajun 1 230kV	74

EMDE

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0

Limiting Element	Contingency Element	ATC
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0
Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Harrison East - Omaha 161kV	Green Forest South - Clipper 161kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	31
Harrison East - Omaha 161kV	Green Forrest - Green Forrest South 161kV	34
Kountze - Lumberton 138kV	Bragg - Honey 138kV	58
Harrison East - Omaha 161kV	Berryville - Green Forrest 161kV	75
Kountze - Lumberton 138kV	Bragg - Menard 138kV	76
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	76
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	83
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	87
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	91
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	96
OZD312 - Omaha 161kV	Green Forest South - Clipper 161kV	103
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	111

Lafa

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (Lafa)	0

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Bonin - Cecelia 138kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Semere - Scott2 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Acadia - Colonial Academy 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Habetz - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Richard - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
North Crowley - Scott1 138kV	Richard - Scott1 138kV	0
Colonial Academy - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Semere - Scott2 138kV	Richard - Scott1 138kV	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (LAFA)	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Acadia GSU - Scanlan 138kV	Bonin - Labbe 230kV (LAFA)	0
Acadia - Colonial Academy 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Acadia - Colonial Academy 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Richard - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
North Crowley - Richard 138kV	Bonin - Labbe 230kV (LAFA)	7
Acadia GSU - Scanlan 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	10
Habetz - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	13
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	23
Scott1 - Bonin 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	24
Acadia GSU - Scanlan 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	43
North Crowley - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	58
North Crowley - Scott1 138kV	Coughlin - Plaisance 138kV (CLECO)	60
Kountze - Lumberton 138kV	Bragg - Honey 138kV	61
North Crowley - Scott1 138kV	Wells 500/230kV transformer	76

Limiting Element	Contingency Element	ATC
North Crowley - Scott1 138kV	Bonin 230/138kV transformer (LAFA)	80
North Crowley - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	89
Bayou Cove - Richard 138kV ckt 2	Roy S. Nelson - Richard 500kV	122
Cecelia - Semere 138kV	Bonin - Labbe 230kV (LAFA)	125

LAGN

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Willow Glen 500/230kV Transformer	Coly 500/230kV transformer	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	36
Willow Glen 500/230kV Transformer	Jaguar - Tap Point Esso 230kV	68

LEPA

Limiting Element	Contingency Element	ATC
Addis - Big Cajun 1 230kV	Enjay - Fancy 230kV	0
Addis - Big Cajun 1 230kV	Enjay - Jaguar 230kV	0
Addis - Big Cajun 1 230kV	Jaguar - Tap Point Esso 230kV	0
Addis - Big Cajun 1 230kV	Coly - McKnight 500kV	0
Addis - Big Cajun 1 230kV	Willow Glen 500/230kV Transformer	0
Addis - Big Cajun 1 230kV	Fancy Point - McKnight 500kV	0
Addis - Big Cajun 1 230kV	Coly - Willow Glen 500kV	0
Addis - Big Cajun 1 230kV	Port Hudson - Zoar 230kV	0
Addis - Big Cajun 1 230kV	Moler - Zoar 230kV	0
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Bogalusa - Adams Creek 230kV ckt 2	Bogalusa - Adams Creek 230kV ckt 1	0
Addis - Big Cajun 1 230kV	Willow Glen - Webre 500kV	0
Jaguar - Tap Point Esso 230kV	Addis - Big Cajun 1 230kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0

Limiting Element	Contingency Element	ATC
Semere - Scott2 138kV	Bonin - Labbe 230kV (LAFA)	0
Addis - Big Cajun 1 230kV	Waterford - Willow Glen 500kV	0
Addis - Big Cajun 1 230kV	Waterford 500/230 transformer kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Addis - Big Cajun 1 230kV	Addis - Wilbert 138kV	0
A.A.C. - Polsky Carville 230kV	Coly - Vignes 230kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	0
Scott1 - Bonin 138kV	Bonin - Labbe 230kV (LAFA)	0
A.A.C. - Licar 230kV	Coly - Vignes 230kV	0
A.A.C. - Polsky Carville 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Coly - Vignes 230kV	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Bonin - Cecelia 138kV	Acadia - Colonial Academy 138kV	0
A.A.C. - Licar 230kV	Sorrento - Vignes 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Polsky Carville - Willow Glen 230kV	Sorrento - Vignes 230kV	0
Colonial Academy - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Sorrento - Vignes 230kV	Bogalusa - Adams Creek 500/230kV transformer	0
Sorrento - Vignes 230kV	Bogalusa - Franklin 500kV	0
Bonin - Cecelia 138kV	Acadia GSU - Scanlan 138kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Belle Helene - Licar 230kV	Coly - Vignes 230kV	0
Judice - Scott1 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Colonial Academy - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Belle Helene - Licar 230kV	Sorrento - Vignes 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
North Crowley - Scott1 138kV	Richard - Scott1 138kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
Willow Glen 500/230kV Transformer	Coly 500/230kV transformer	0
Colonial Academy - Richard 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Richard - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Semere - Scott2 138kV	Bonin - Cecelia 138kV	0
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Acadia - Colonial Academy 138kV	Bonin - Labbe 230kV (LAFA)	0
Port Hudson 230/138 transformer 2	Port Hudson 230/138 transformer 1	0
Habetz - Richard 138kV	Bonin - Labbe 230kV (LAFA)	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Port Hudson 230/138 transformer 1	Port Hudson 230/138 transformer 2	0
Alchem - Monochem1 138kV	A.A.C. - Polsky Carville 230kV	0

Limiting Element	Contingency Element	ATC
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Alchem - Monochem1 138kV	A.A.C. - Licar 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Semere - Scott2 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Semere - Scott2 138kV	Richard - Scott1 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Alchem - Monochem1 138kV	Belle Helene - Licar 230kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Acadia - Colonial Academy 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Moril - Cecelia 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Bonin - Cecelia 138kV	Scanlan - Scott2 138kV	0
Bonin - Cecelia 138kV	Semere - Scott2 138kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Alchem - Monochem1 138kV	Polsky Carville - Willow Glen 230kV	0
Richard - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Semere - Scott2 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Acadia GSU - Scanlan 138kV	Bonin - Labbe 230kV (LAFA)	0
Judice - Meaux 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Semere - Scott2 138kV	Bonin - Labbe 230kV (LAFA)	0
Scott1 - Bonin 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - POCO 138kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Bonin - Cecelia 138kV	Flander - Hopkins 138kV (CLECO/LAFA)	0
Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Bonin - Cecelia 138kV	Colonial Academy - Richard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Habetz - Richard 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
North Crowley - Scott1 138kV	Wells (CLECO) - Point Mouton (LAFA) 230kV	0
Semere - Scott2 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Acadia - Colonial Academy 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
North Crowley - Scott1 138kV	Bonin - Labbe 230kV (LAFA)	0
Louisiana Station - Thomas 138kV	Big Cajun 2 - Webre 500kV	0
North Crowley - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Richard - Scott1 138kV	Point Des Mouton (LAFA) - Labbe (LAFA) 230kV	0
Bonin - Cecelia 138kV	Acadia - Colonial Academy 138kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Greenwood - Terrebone 115kV	Bayou Sales - Teche 138kV (CLECO)	0
Greenwood - Terrebone 115kV	Bayou Sales - WaxLake 138kV (CLECO)	0

OKGE

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	22
Kountze - Lumberton 138kV	Bragg - Honey 138kV	56
Kountze - Lumberton 138kV	Bragg - Menard 138kV	73
Danville - North Magazine REA 161kV	ANO - Fort Smith 500kV	76
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	80
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	88
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	92
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	124

SMEPA

Limiting Element	Contingency Element	ATC
Addis - Big Cajun 1 230kV	Willow Glen - Webre 500kV	0
Addis - Big Cajun 1 230kV	Fancy Point - McKnight 500kV	0
Sorrento - Vignes 230kV	A.A.C. - Polsky Carville 230kV	0
Sorrento - Vignes 230kV	A.A.C. - Licar 230kV	0
Sorrento - Vignes 230kV	Polsky Carville - Willow Glen 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Licar 230kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Sorrento - Vignes 230kV	Belle Helene - Woodstock 230kV	0

Limiting Element	Contingency Element	ATC
Sorrento - Vignes 230kV	Vulchlor - Woodstock 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Polsky Carville 230kV	Coly - Vignes 230kV	0
Sorrento - Vignes 230kV	Waterford - Willow Glen 500kV	0
Sorrento - Vignes 230kV	Waterford 500/230 transformer kV	0
A.A.C. - Licar 230kV	Coly - Vignes 230kV	0
A.A.C. - Polsky Carville 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Coly - Vignes 230kV	0
A.A.C. - Licar 230kV	Sorrento - Vignes 230kV	0
Polsky Carville - Willow Glen 230kV	Sorrento - Vignes 230kV	0
Willow Glen 500/230kV Transformer	Willow Glen - Willow Glen 2 500/138kV transformer 1	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
Belle Helene - Licar 230kV	Coly - Vignes 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Belle Helene - Licar 230kV	Sorrento - Vignes 230kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Florence - South Jackson 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - South Jackson 115kV	Bogalusa - Franklin 500kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Joliet - South Port 230kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Morton - Pelahatchie 115kV	Angie - Adams Creek 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Bogalusa - Adams Creek 500/230kV transformer	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Bogalusa - Franklin 500kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Estelle - Ninemile Point 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Poco 138kV	0
Nine Mile - Michoud 230kV (Proposed for PID 222)	Slidel - North Slidel (CLECO) 230kV	0

Limiting Element	Contingency Element	ATC
222)		
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Franklin 500kV	0
Florence - South Jackson 115kV	South Jackson - Pop Spring 115kV	0
Florence - South Jackson 115kV	Franklin - Grand Gulf 500kV	0
Florence - South Jackson 115kV	Georgetown - Pop Spring 115kV	0
Florence - South Jackson 115kV	Georgetown - Silver Creek 115kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Florence - Florence Switching Station 115kV	Bogalusa - Adams Creek 500/230kV transformer	0
Florence - Florence Switching Station 115kV	Bogalusa - Franklin 500kV	0
Florence - South Jackson 115kV	Angie - Adams Creek 230kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Morton - ForindT2 (TVA) 115kV	Angie - Adams Creek 230kV	6
Nine Mile - Michoud 230kV (Proposed for PID 222)	Estelle - Peters Road 230kV	17
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	28
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	53
Kountze - Lumberton 138kV	Bragg - Honey 138kV	66
Nine Mile - Michoud 230kV Supplemental Upgrade	Joliet - South Port 230kV	81
Kountze - Lumberton 138kV	Bragg - Menard 138kV	86
Florence Switching Station - Star 115kV	Bogalusa - Adams Creek 500/230kV transformer	121
Florence Switching Station - Star 115kV	Bogalusa - Franklin 500kV	121

SOCO

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Bayou Cove - Richard 138kV ckt 1	Bayou Cove - Richard 138kV ckt 2	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0

Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0
Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Poco 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Adams Creek 500/230kV transformer	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Bogalusa - Franklin 500kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	29
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	61
Kountze - Lumberton 138kV	Bragg - Honey 138kV	64
Kountze - Lumberton 138kV	Bragg - Menard 138kV	83
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	125

SWPA

Limiting Element	Contingency Element	ATC
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Big Three - Carlyss 230kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Big Three - Sabine 230kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Melborne - Sage 161kV	Dell - Independence SES 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Melborne - Sage 161kV	ANO - Fort Smith 500kV	0
Melborne - Sage 161kV	Independence SES - Keo 500kV	0
Melborne - Sage 161kV	Newport - Newport Industrial 161kV	0
Melborne - Sage 161kV	Newport AB - Newport Industrial 161kV	0

Melborne - Sage 161kV	Cash - Newport AB 161kV	0
Melborne - Sage 161kV	Cash - Jonesboro 161kV	0
Melborne - Sage 161kV	Newport - Swifton 161kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Melborne - Sage 161kV	Hoxies AECC - Swifton 161 kV	0
Melborne - Sage 161kV	Sansouci - Shelby (TVA) 500kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	31
Kountze - Lumberton 138kV	Bragg - Honey 138kV	59
Calico Rock - Melborne 161kV	ANO - Fort Smith 500kV	74
Calico Rock - Melborne 161kV	Dell - Independence SES 500kV	75
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	76
Kountze - Lumberton 138kV	Bragg - Menard 138kV	77
Kountze - Lumberton 138kV	Sam Rayburn - Mill Creek 138kV	93
Kountze - Lumberton 138kV	Big Three - Carlyss 230kV	97
Calico Rock - Norfolk 161kV	ANO - Fort Smith 500kV	114
Calico Rock - Norfolk 161kV	Dell - Independence SES 500kV	118
Calico Rock - Melborne 161kV	Independence SES - Keo 500kV	126

TVA

Limiting Element	Contingency Element	ATC
Baxter Wilson - Ray Braswell 500kV	Franklin - Grand Gulf 500kV	0
Cypress - Lumberton 138kV	Bevil - Cypress 230kV	0
Cypress - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Polsky Carville 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Polsky Carville 230kV	Waterford 500/230 transformer kV	0
Kountze - Lumberton 138kV	Bevil - Cypress 230kV	0
Kountze - Lumberton 138kV	Ameila Bulk - Bevil 230kV	0
A.A.C. - Licar 230kV	Waterford - Willow Glen 500kV	0
A.A.C. - Licar 230kV	Waterford 500/230 transformer kV	0
Polsky Carville - Willow Glen 230kV	Waterford - Willow Glen 500kV	0
Polsky Carville - Willow Glen 230kV	Waterford 500/230 transformer kV	0
Belle Helene - Licar 230kV	Waterford - Willow Glen 500kV	0
Belle Helene - Licar 230kV	Waterford 500/230 transformer kV	0
Bayou Cove - Richard 138kV ckt 2	Bayou Cove - Richard 138kV ckt 1	0
Hartburg - Inland Orange 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Kountze - Lumberton 138kV	Amelia Bulk - China Bulk 230kV	0
Cypress - Lumberton 138kV	Cypress - Honey 138kV	0
Inland - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Bragg - Honey 138kV	0
Cypress - Lumberton 138kV	Bragg - Menard 138kV	0
Helbig - McLewis 230kV	Cypress - Hartburg 500kV	0
Cypress - Lumberton 138kV	Gulf Livingston - Menard 138kV	0
Bayou Cove - Richard 138kV ckt 1	Roy S. Nelson - Richard 500kV	0
Cypress - Lumberton 138kV	Hartburg 500/230kV transformer 1	0

Cypress - Lumberton 138kV	Hartburg - Inland Orange 230kV	0
Cypress - Lumberton 138kV	Gulf Livingston - POCO 138kV	0
Kountze - Lumberton 138kV	Cypress - Honey 138kV	0
Slidell - Michoud 230kV ckt2 Supplemental Upgrade	Front Street - Michoud 230kV	0
Kountze - Lumberton 138kV	Hartburg - Roy S. Nelson 500kV	30
Kountze - Lumberton 138kV	Bragg - Honey 138kV	63
Willow Glen - Webre 500kV	Big Cajun 2 - Fancy Point 500kV	66
Kountze - Lumberton 138kV	Bragg - Menard 138kV	82
Kountze - Lumberton 138kV	Gulf Livingston - Menard 138kV	123

IV. TRANSIENT STABILITY INTRODUCTION

Southwest Power Pool (SPP) and its engineering partners have performed a stability analysis for System Impact study of PID-227, which is a request for 127 MW uprate of existing Cottonwood facility in the Entergy transmission system.

The objective of this portion of the study was to evaluate the impact of proposed PID-227 (127 MW) uprate of existing Cottonwood facility on system stability and the nearby transmission system and generating stations. The study was performed on 2012 Summer Peak case, provided by SPP/Entergy.

The system was stable following all simulated normally cleared and stuck-breaker faults. No voltage criteria violation was observed following simulated faults. Based on the results of stability analysis it can be concluded that proposed 127 MW uprate of the Cottonwood generating units does not adversely impact the stability of the Entergy System in the local area.

The results of this analysis are based on available data and assumptions made at the time of conducting this study. If any of the data and/or assumptions made in developing the study model change, the results provided in this report may not apply.

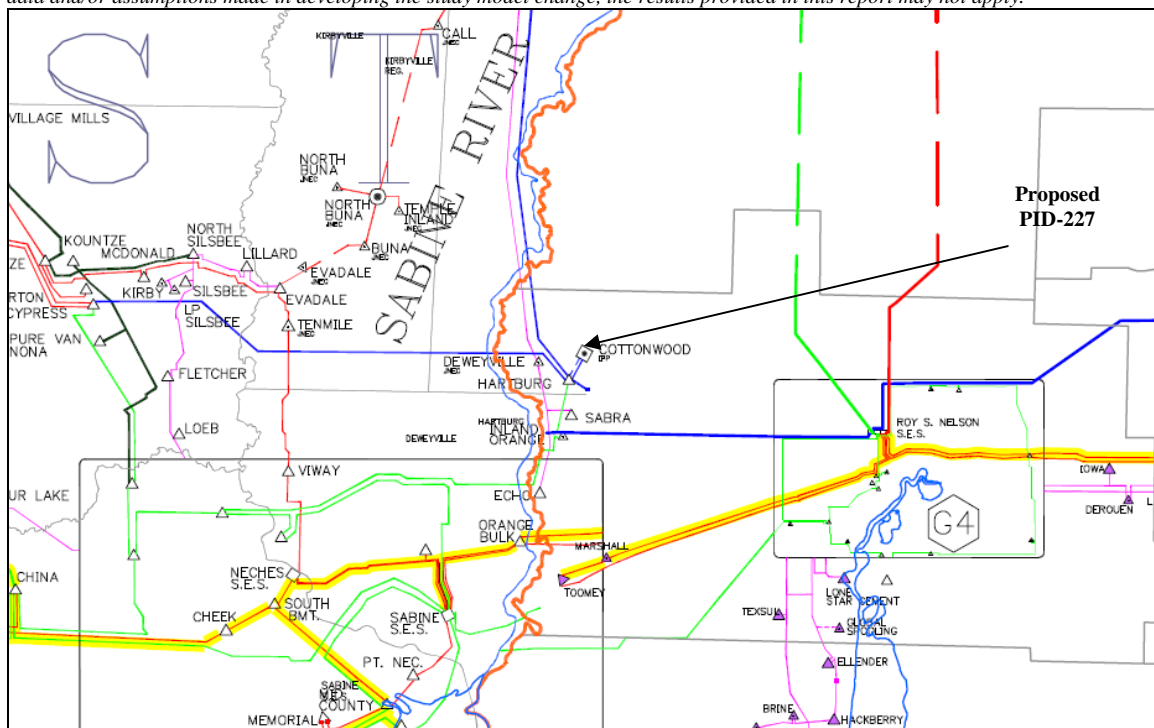


Figure IV-1 PID 227 Project location

V. STABILITY ANALYSIS

2.1 STABILITY ANALYSIS METHODOLOGY

Using Planning Standards approved by NERC, the following stability definition was applied in the Transient Stability Analysis:

“Power system stability is defined as that condition in which the differences of the angular positions of synchronous machine rotors become constant following an aperiodic system disturbance.”

Stability analysis was performed using Siemens-PTI’s PSS/E™ dynamics program V30.3.2. Three-phase and single-phase line faults were simulated for the specified duration and synchronous machine rotor angles and wind turbine generator speeds were monitored to check whether synchronism is maintained following fault removal.

Based on the Entergy study criteria, three-phase faults with normal clearing and delayed clearing were simulated.

Stability analysis was performed using the PSS/E dynamics program, which only simulates the positive sequence network. Unbalanced faults involve the positive, negative, and zero sequence networks. For unbalanced faults, the equivalent fault admittance must be inserted in the PSS/E positive sequence model between the faulted bus and ground to simulate the effect of the negative and zero sequence networks. For a single-line-to-ground (SLG) fault, the fault admittance equals the inverse of the sum of the positive, negative and zero sequence Thevenin impedances at the faulted bus. Since PSS/E inherently models the positive sequence fault impedance, the sum of the negative and zero sequence Thevenin impedances needs to be added and entered as the fault impedance at the faulted bus.

For three-phase faults, a fault admittance of $-j2E9$ is used (essentially infinite admittance or zero impedance). For the single phase stuck breaker faults, the fault admittances considered are mentioned in Table 0-3.

Transient Voltage Criteria

In addition to criteria for the stability of the machines, Entergy has evaluation criteria for the transient voltage dip as follows:

- 3-phase fault or single-line-ground fault with normal clearing resulting in the loss of a single component (generator, transmission circuit or transformer) or a loss of a single component without fault:
 - Not to exceed 20% for more than 20 cycles at any bus
 - Not to exceed 25% at any load bus
 - Not to exceed 30% at any non-load bus
- 3-phase faults with normal clearing resulting in the loss of two or more components (generator, transmission circuit or transformer), and SLG fault with delayed clearing resulting in the loss of one or more components:
 - Not to exceed 20% for more than 40 cycles at any bus
 - Not to exceed 30% at any bus

The duration of the transient voltage dip excludes the duration of the fault. The transient voltage dip criteria will not be applied to three-phase faults followed by stuck breaker conditions unless the determined impact is extremely widespread.

The voltages at all local buses (115 kV and above) were monitored during each of the fault cases as appropriate.

As there is no specific voltage dip criteria for three-phase stuck breaker faults, the results of these faults were compared with the most stringent voltage dip criteria of - not to exceed 20 % for more than 20 cycles.

2.2 STUDY MODEL DEVELOPMENT

The study model consists of power flow cases and dynamics databases, developed as follows.

Power Flow Case

A Powerflow case “EN12S08 U0A_r1+P5_scenario4-uncov.sav” representing the 2012 Summer Peak conditions was provided by SPP/ Entergy.

Two prior-queued projects, PID-223 and PID-224, were added to the base powerflow case. Thus a pre-project powerflow case was established and named as ‘PRE-PID-227.sav’.

The proposed PID-227 project is a 127 MW uprate at Cottonwood generation facility. The proposed 127 MW was distributed among the four (4) Combustion Turbine and Steam Turbines as follows:

CT1	185.30 MW
CT2	185.30 MW
CT3	185.30 MW
CT4	185.30 MW
ST1	156.41 MW
ST2	156.41 MW
ST3	156.41 MW
ST4	156.41 MW
Unit 1 House Load	9.96 MW
Unit 2 House Load	9.96 MW
Unit 3 House Load	9.96 MW
Unit 4 House Load	9.96 MW
Net Output	1327 MW

The additional 127 MW was dispatched against the area swing bus White Bluff Unit #2. [Table 2-1](#) summarizes the dispatch. Thus a post-project power flow case with PID-227 was established and named as ‘POST-PID-227.sav’.

Table 0-1: PID-227 project details

System condition	MW	Point of Interconnection	Sink
2012 Summer Peak	127	Cottonwood (#303024-303027, #334374- 334377)	White Bluff Unit 2 (#337653)

Figure 0-1 and Figure 0-2 show the PSS/E one-line diagrams for the local area WITHOUT and WITH the PID-227 project, respectively, for 2012 Summer Peak system conditions.

Stability Database

A basecase stability database was provided by SPP/Entergy in a PSSE *.dyr file format (‘red11S_newnum.dyr’).

To create a dynamic database (a snapshot file) for Pre-PID-227 powerflow case, stability data for PID-223 and PID-224 was appended to the basecase stability database.

As the proposed uprate is efficiency uprate SPP/ Entergy indicated that the dynamics data for the existing Cottonwood generator would not change. Hence, the pre-project stability database was used for Post-PID-227 powerflow case.

The data provided at the Interconnection Request for PID-227 is included in [Appendix A](#). The PSS/E power flow data for PID-227, used for this study, are included in [Appendix B](#).

2.3 TRANSIENT STABILITY ANALYSIS

Stability simulations were run to examine the transient behavior of the Cottonwood units and impact of the proposed uprate on the Entergy system. Stability analysis was performed using the following procedure. First, three-phase faults with normal clearing were simulated. Next, the three-phase stuck breaker (IPO: 3PH-1PH) faults were simulated. The fault clearing times used for the simulations are given in Table 0-2.

Table 0-2: Fault Clearing Times

Contingency at kV level	Normal Clearing	Delayed Clearing
500	5 cycles	5+9 cycles

The breaker failure scenario was simulated with the following sequence of events:

- 1) At the normal clearing time for the primary breakers, the faulted line is tripped at the far end from the fault by normal breaker opening.
- 2) The fault remains in place for Three-phase stuck-breaker (IPO: 3PH-1PH) faults. The fault admittance is changed to Thevenin equivalent admittance of single phase faults.
- 3) The fault is then cleared by back-up clearing. If the system was found to be unstable, then the fault was repeated without the proposed PID-226 project.

All line trips are assumed to be permanent (i.e. no high speed re-closure).

Table 0-3 and Table 0-4 list all the fault cases that were simulated in this study.

Twelve (12) three phase normally cleared and sixteen (16) three-phase stuck breaker converted into single-line-to-ground fault (following Independent Pole Operation of breakers) were simulated.

For all cases analyzed, the initial disturbance was applied at $t = 0.1$ seconds. The breaker clearing was applied at the appropriate time following this fault inception.

Table 0-3 List of 3 Phase faults simulated for stability analysis

CASE	LOCATION	TYPE	CLEARING TIME (cycles)	BREAKER TRIP #	TRIPPED FACILITIES
FAULT-1	Hartburg - Cypress 500 kV	3 PH	5	GCB 22920, 22930, GCB 13125, GCB 13560	Hartburg - Cypress 500 kV
FAULT-2	Hartburg - Nelson 500 kV	3 PH	5	GCB 13105, GCB 13110, GCB 13635 GCB 13645	Hartburg - Nelson 500 kV
FAULT-3	Hartburg -MT. Olive 500 kV	3 PH	5	GCB13670, GCB 13655, GCB R7338, GCB R9637	Hartburg -MT. Olive 500 kV
FAULT-4	Hartburg 500/230 kV Auto transformer	3 PH	5	GCB 13650, GCB 13630, GCB 13720	Hartburg 500/230 kV Auto transformer
FAULT-5	Cypress 500/230 kV Auto transformer	3 PH	5	GCB 22950, GCB 22935, GCB 22920, GCB 22925	Cypress 500/230 kV Auto transformer
FAULT-6	Cypress 500/138 kV Auto transformer	3 PH	5	GCB22925, GCB 22930, GCB 22045, GCB 22050	Cypress 500/138 kV Auto transformer
FAULT-7	Nelson -Richard 500 kV	3 PH	5	GCB13105, GCB 13060, ACB 13000, GCB 13070	Nelson -Richard 500 kV
FAULT-8	Nelson 500/230 kV Auto transformer	3 PH	5	GC 13060, GCB 13110, GCB 13025, GCB 13030	Nelson 500/230 kV Auto transformer
FAULT-9	MT. Olive -El Dorado EHV 500 kV	3 PH	5	ACB 9205, ACB 9208, GCB R2460, GCB R7338	MT. Olive -Eldorado EHV 500 kV
FAULT-10	Richard - Wells 500 kV	3 PH	5	GCB 13725, GCB 13735, GCB 13065, GCB 18415	Richard - Wells 500 kV
FAULT-12	El Dorado - Panda #1 500 kV	3 PH	5	GCB B9242, GCB B9237, GCB 1A, GCB 1B	El Dorado - Panda #1 500 kV
FAULT-13	El Dorado - Sterlington 500 kV	3 PH	5	GCB B9231, GCB B9234, GCB R3594, GCB R2196	El Dorado - Sterlington 500 kV

Table 0-4 List of 3 Phase Stuck Breaker (IPO: 3PH-1PH) faults simulated for stability analysis

CASE	LOCATION	TYPE	CLEARING TIME (cycles)		SLG FAULT IMPEDANCE (MVA)	STUCK BREAKER #	PRIMARY BREAKER TRIP #	SECONDARY BREAKER TRIP	TRIPPED FACILITIES
			PRIMARY	Back-up					
FAULT-1a	Hartburg - Cypress 500 kV	3 PH - 1PH	5	9	610.61-j8402.17	GCB 13125	GCB 22920, 22930, GCB 12560	GCB 13650, GCB 13635, GCB13665	Hartburg - Cypress 500 kV
FAULT-2a	Hartburg - Nelson 500 kV	3 PH - 1PH	5	9	610.61-j8402.17	GCB 13635	GCB 13105, GCB 13110, GCB 13645	GCB 13650, GCB13125, GCB 13665	Hartburg - Nelson 500 kV
FAULT-3a	Hartburg -MT. Olive 500 kV	3 PH - 1PH	5	9	610.61-j8402.17	GCB 13655	GCB13670, GCB R7338, GCB R9637	GCB 13645, GCB 13560, GCB 13120	Hartburg -MT. Olive 500 kV
FAULT-4a	Hartburg 500/230 kV Auto transformer	3 PH - 1PH	5	9	610.61-j8402.17	GCB 13650	GCB 13630, GCB 13720	GCB 13125, GCB 13635, GCB 13665	Hartburg 500/230 kV Auto transformer
FAULT-5a	Cypress 500/230 kV Auto transformer	3 PH - 1PH	5	9	469.17-j4463.25	GCB 22920	GCB 22950, GCB 22935, GCB 22925	GCB 13125, GCB 13560, GCB 22930	Cypress 500/230 kV Auto transformer; Cypress - Hartburg 500 kV
FAULT-6a	Cypress 500/138 kV Auto transformer	3 PH - 1PH	5	9	469.17-j4463.25	GCB 22930	GCB22925, GCB 22045, GCB 22050	GCB 13125, GCB 13560, GCB 22920	Cypress 500/138 kV Auto transformer; Cypress - Hartburg 500 kV
FAULT-7a	Nelson -Richard 500 kV	3 PH - 1PH	5	9	593.53-j6003.71	GCB 13060	GCB13105, ACB 13000, GCB 13070	GCB 13025, GCB 13030, GCB 13110	Nelson -Richard 500 kV; Nelson 500/230 kV Autotransformer #1
FAULT-7b	Nelson -Richard 500 kV	3 PH - 1PH	5	9	593.53-j6003.71	GCB13105	GCB 13060, ACB 13000, GCB 13070	GCB 13635, GCB 13645, GCB 13110	Nelson -Richard 500 kV; Nelson - Hartburg 500 kV
FAULT-8a	Nelson 500/230 kV Auto transformer	3 PH - 1PH	5	9	593.53-j6003.71	GCB13060	GCB 13110, GCB 13025, GCB 13030	GCB 13105, GCB 13070, ACB 13000	Nelson 500/230 kV Auto transformer; Nelson Richard 500 kV
FAULT-8b	Nelson 500/230 kV Auto transformer	3 PH - 1PH	5	9	593.53-j6003.71	GCB 13110	GC 13060, GCB 3025, GCB 3030	GCB 13105, GCB 13635, GCB 13645	Nelson 500/230 kV Auto transformer; Nelson - Hartburg 500 kV

CASE	LOCATION	TYPE	CLEARING TIME (cycles)		SLG FAULT IMPEDANCE (MVA)	STUCK BREAKER #	PRIMARY BREAKER TRIP #	SECONDARY BREAKER TRIP	TRIPPED FACILITIES
			PRIMARY	Back- up					
FAULT-9a	MT. Olive -El Dorado EHV 500 kV	3 PH - 1PH	5	9	581.37-j2771.31	GCB R2460	ACB 9205, ACB 9208, GCB R7338	R9637, R5269, R0182	MT. Olive -Eldorado EHV 500 kV; MT. Olive 500/230 kV Autotransformer #1
FAULT-9b	MT. Olive -El Dorado EHV 500 kV	3 PH - 1PH	5	9	581.37-j2771.31	GCB R7338	ACB 9205, ACB 9208, GCB R2460	GCB 9637, GCB 13655, GCB 13670	MT. Olive -Eldorado EHV 500 kV; MT. Olive - Hartburg 500 kV
FAULT-10a	Richard - Wells 500 kV	3 PH - 1PH	5	9	690.97-j6279.4	GCB 13065	GCB 13725, GCB 13735, GCB 18415	GCB 13070	Richard - Wells 500 Kv; Richard 500/138 kV
FAULT-12a	El Dorado - Panda #1 500 kV	3 PH - 1PH	5	9	869.33-j14636.44	GCB B9242	GCB B9237, GCB 1A, GCB 1B	GCB 85022, GCB 85014, GCB B9248	El Dorado - Panda #1 500 kV; El Dorado - Sheridan 500 kV
FAULT-12b	El Dorado - Panda #1 500 kV	3 PH - 1PH	5	9	869.33-j14636.44	GCB B9237	GCB B9242, GCB 1A, GCB 1B	GCB B9211, GCB B9208, GCB 9277, GCB 9234	El Dorado - Panda #1 500 kV
FAULT-13a	El Dorado - Sterlington 500 kV	3 PH - 1PH	5	9	869.33-j14636.44	GCB B9231	GCB B9234, GCB R3594, GCB R2196	GCB B9220, GCB 9202, GCB B9224, GCB	El Dorado - Sterlington 500 kV

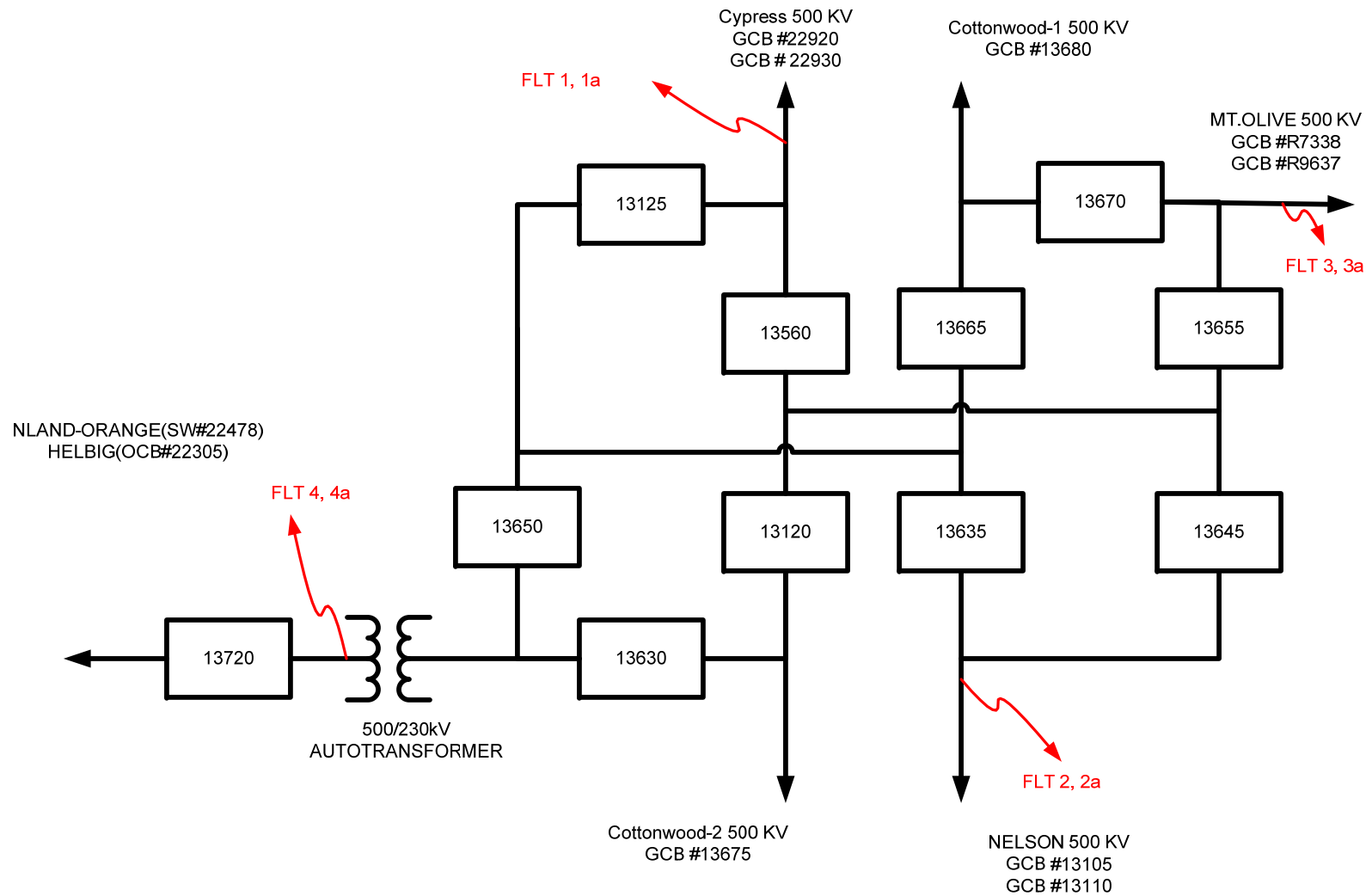


Figure 0-3 Substation Layout diagram for Hartsburg 500 kV

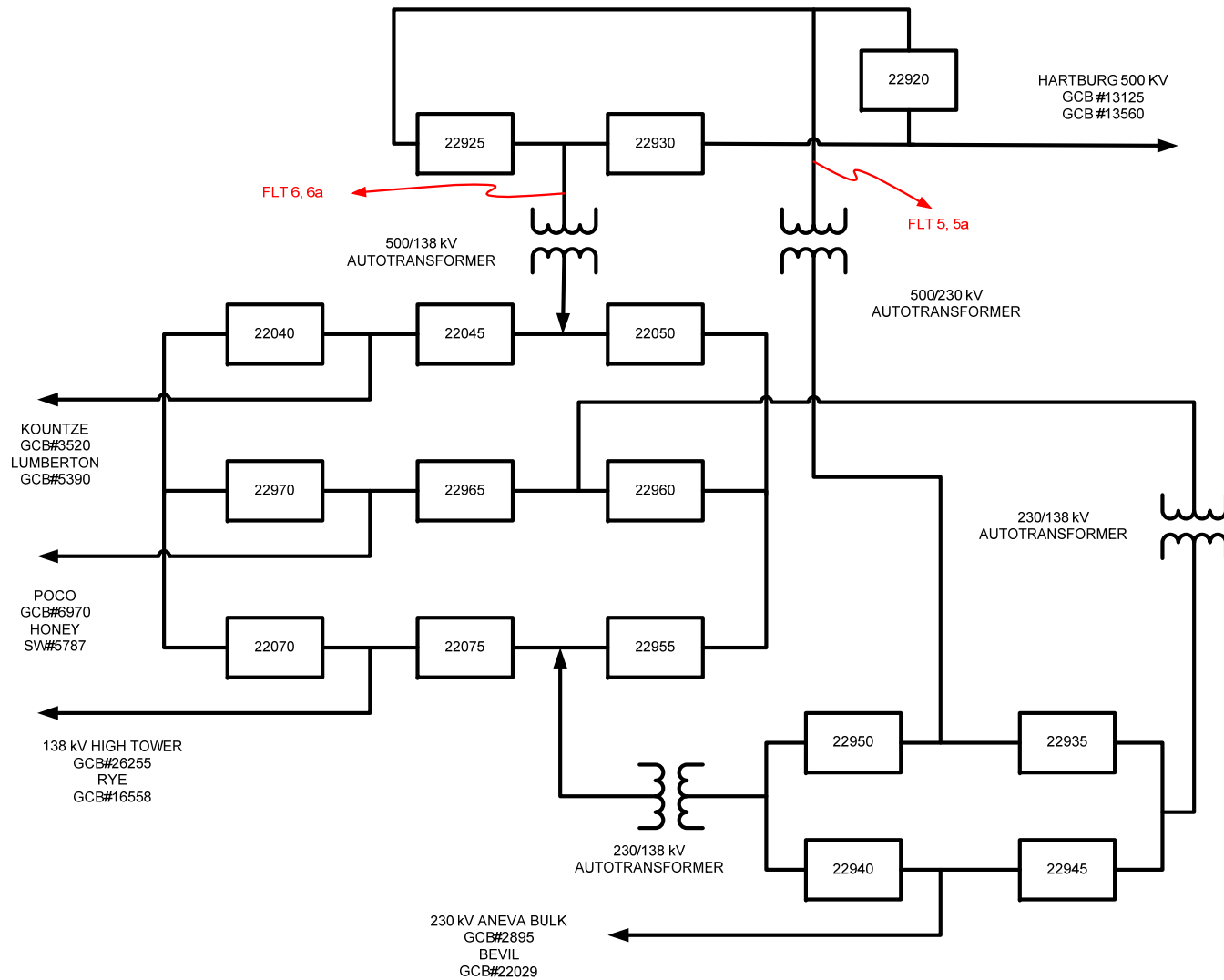


Figure 0-4 Substation Layout diagram for Cypress 500 kV

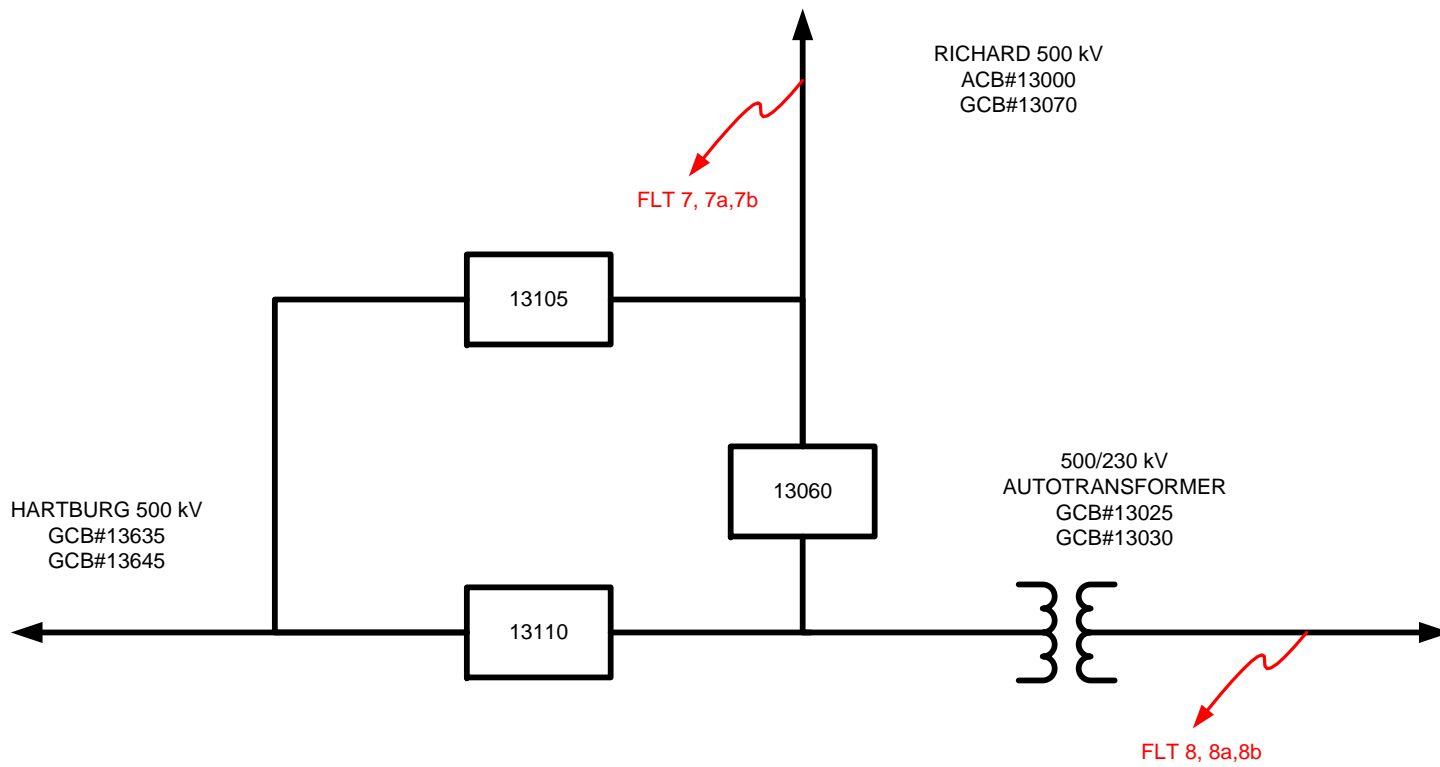


Figure 0-5 Substation Layout diagram for Nelson 500 kV

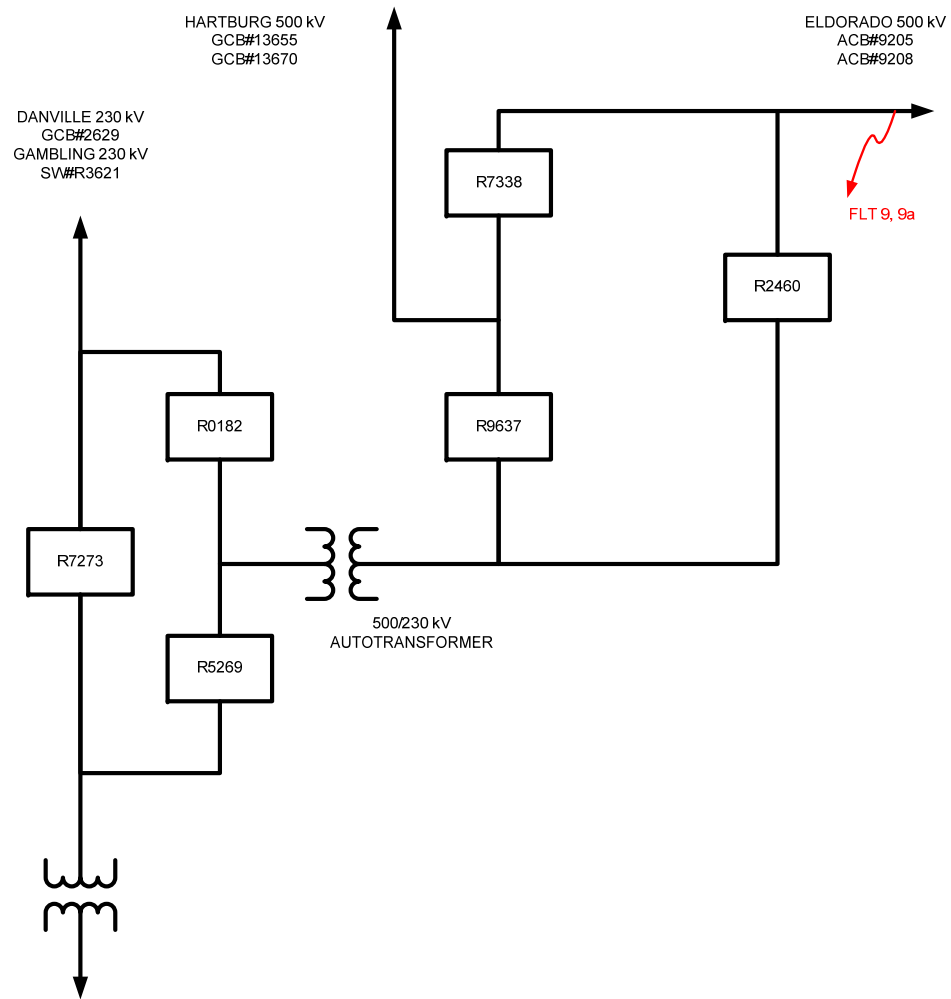


Figure 0-6 Substation Layout diagram for MT. Olive 500 kV

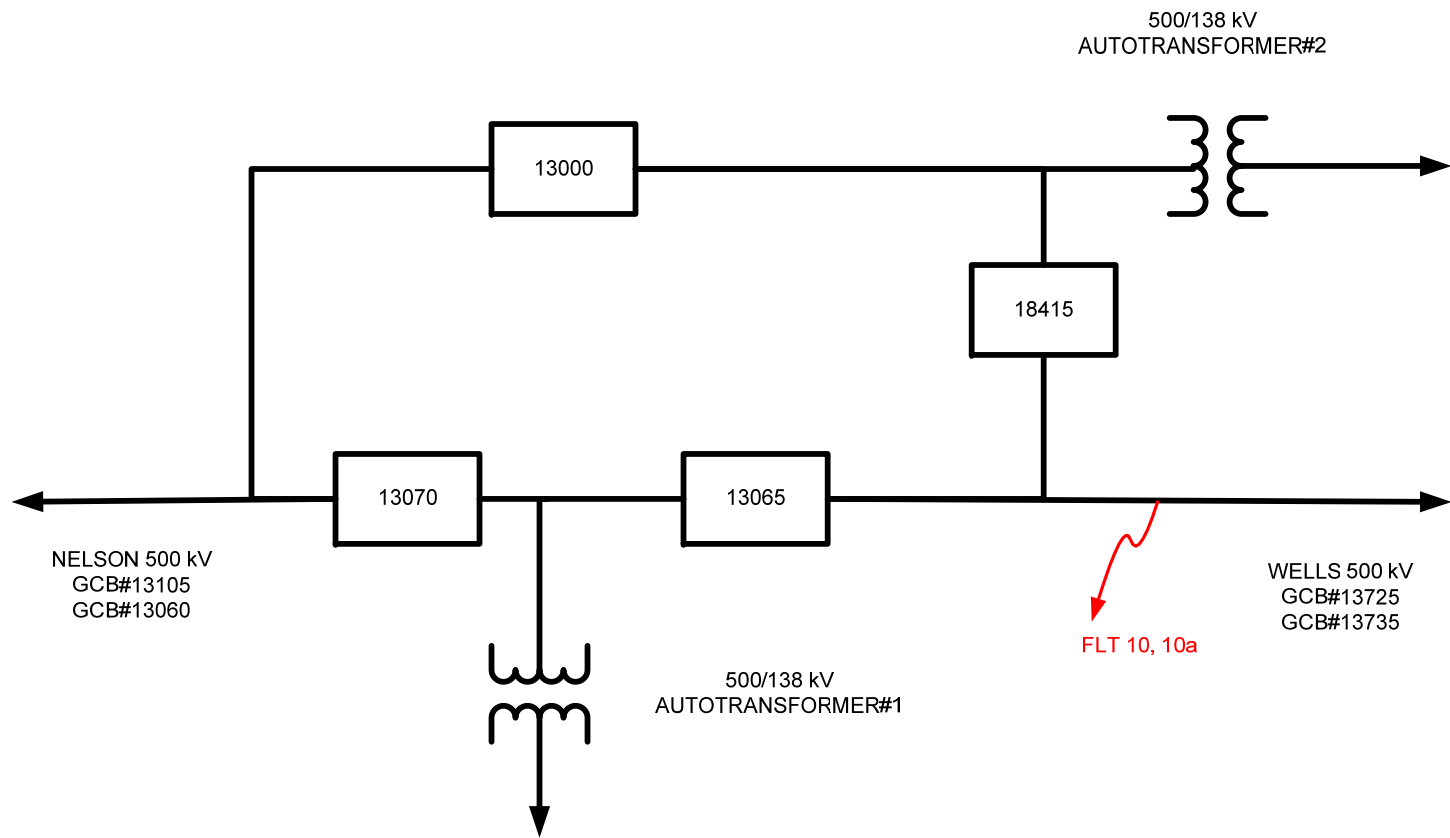


Figure 0-7 Substation Layout diagram for Richard 500 kV

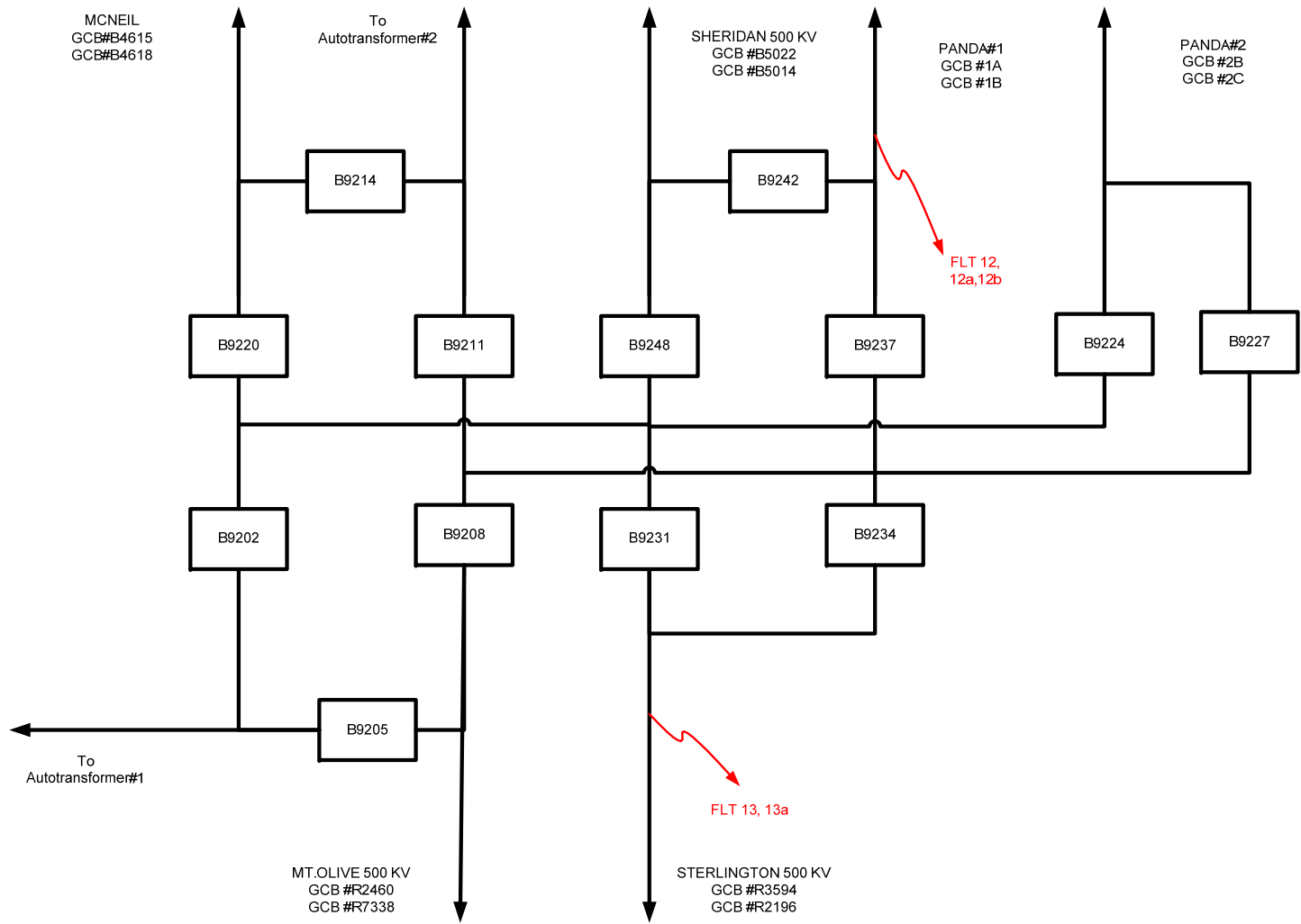


Figure 0-8 Substation Layout diagram for El Dorado 500 kV

Table 0-5 Results of faults simulated for stability analysis

CASE	PRE-PID227		POST-PID227	
	Stable	Acceptable Voltages	Stable	Acceptable Voltages
	?	?	?	?
FAULT-1	Not tested		YES	YES
FAULT-2	Not tested		YES	YES
FAULT-3	Not tested		YES	YES
FAULT-4	Not tested		YES	YES
FAULT-5	Not tested		YES	YES
FAULT-6	Not tested		YES	YES
FAULT-7	Not tested		YES	YES
FAULT-8	Not tested		YES	YES
FAULT-9	Not tested		YES	YES
FAULT-10	Not tested		YES	YES
FAULT-12	Not tested		YES	YES
FAULT-13	Not tested		YES	YES
FAULT-1a	Not tested		YES	YES
FAULT-2a	Not tested		YES	YES
FAULT-3a	Not tested		YES	YES
FAULT-4a	Not tested		YES	YES
FAULT-5a	Not tested		YES	YES
FAULT-6a	Not tested		YES	YES
FAULT-7a	Not tested		YES	YES
FAULT-7b	Not tested		YES	YES
FAULT-8a	Not tested		YES	YES
FAULT-8b	Not tested		YES	YES
FAULT-9a	Not tested		YES	YES
FAULT-9b	Not tested		YES	YES
FAULT-10a	Not tested		YES	YES
FAULT-12a	Not tested		YES	YES
FAULT-12b	Not tested		YES	YES
FAULT-13a	Not tested		YES	YES

The system was found to be STABLE following all the simulated faults.

Transient Voltage Recovery

The voltages at all buses in the Entergy system (115 kV and above) were monitored during each of the fault cases as appropriate. No Voltage criteria violation was observed following a normally cleared three-phase fault.

As there are no specific voltage dip criteria for three-phase fault converted into single-phase stuck breaker faults, the results of these faults were compared with the most stringent voltage dip criteria - not to exceed 20 % for more than 20 cycles. After comparison against the voltage-criteria, no voltage criteria violation was observed with the proposed uprate of Cottonwood units (PID-227) case.

Figure 0-9 and Figure 0-10 show the Cottonwood Generators parameters and voltage recovery at Hartsburg 500 kV following Fault 2 and Fault 2a, involving loss of Hartsburg – Nelson 500 kV line.



POST-PID-227 CASE

FILE: C:\US projects\PID227\02 DYN\Results\FLT_2_3PH.OUT

FRI, APR 10 2009 21:11
PID-227

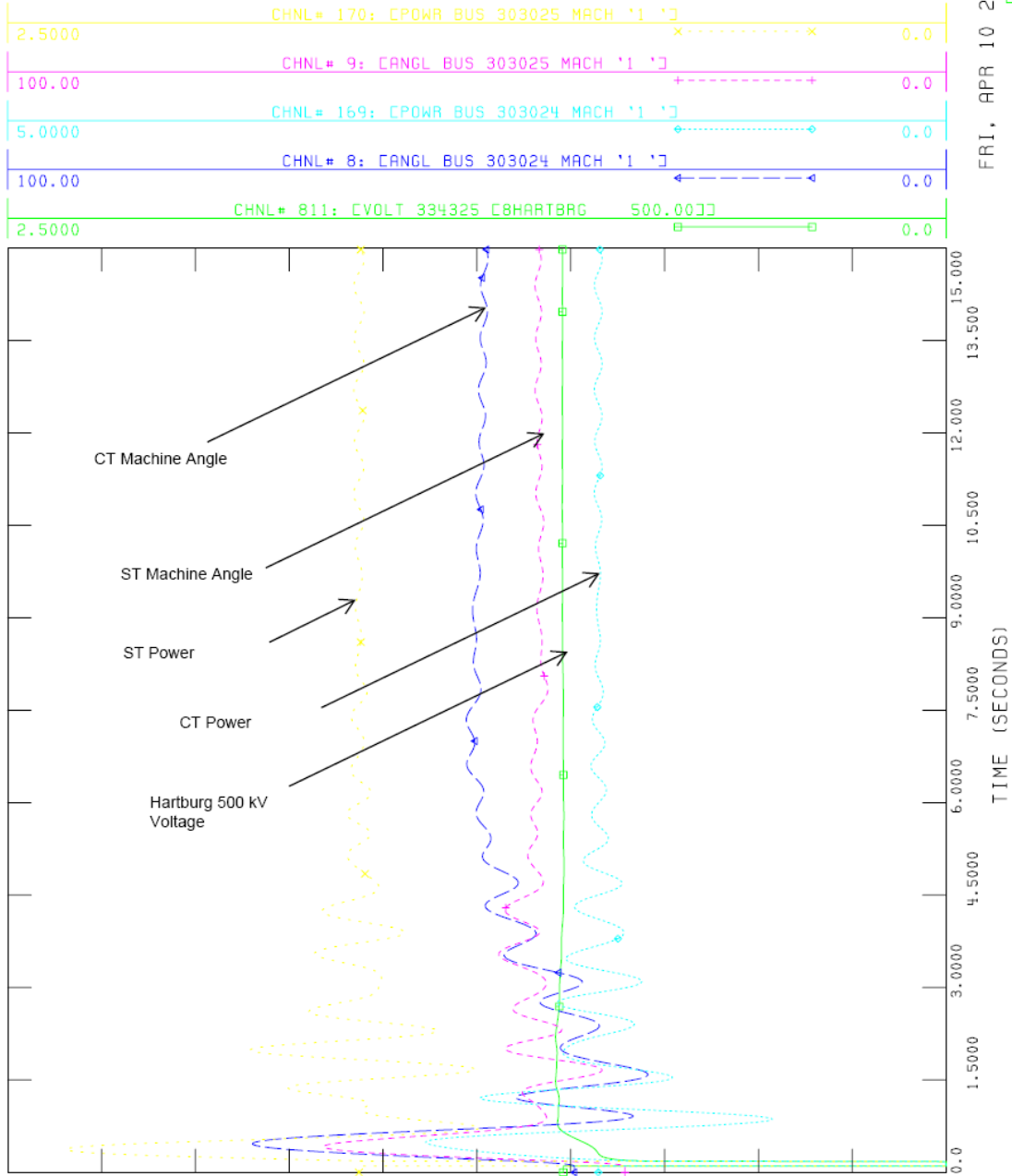


Figure 0-9 PID-227 Machine parameters for Fault 2



POST-PID-227 CASE

FILE: C:\US projects\PID227\02 DYN\Results\FLT_2a.OUT

FRI, APR 10 2009 21:13

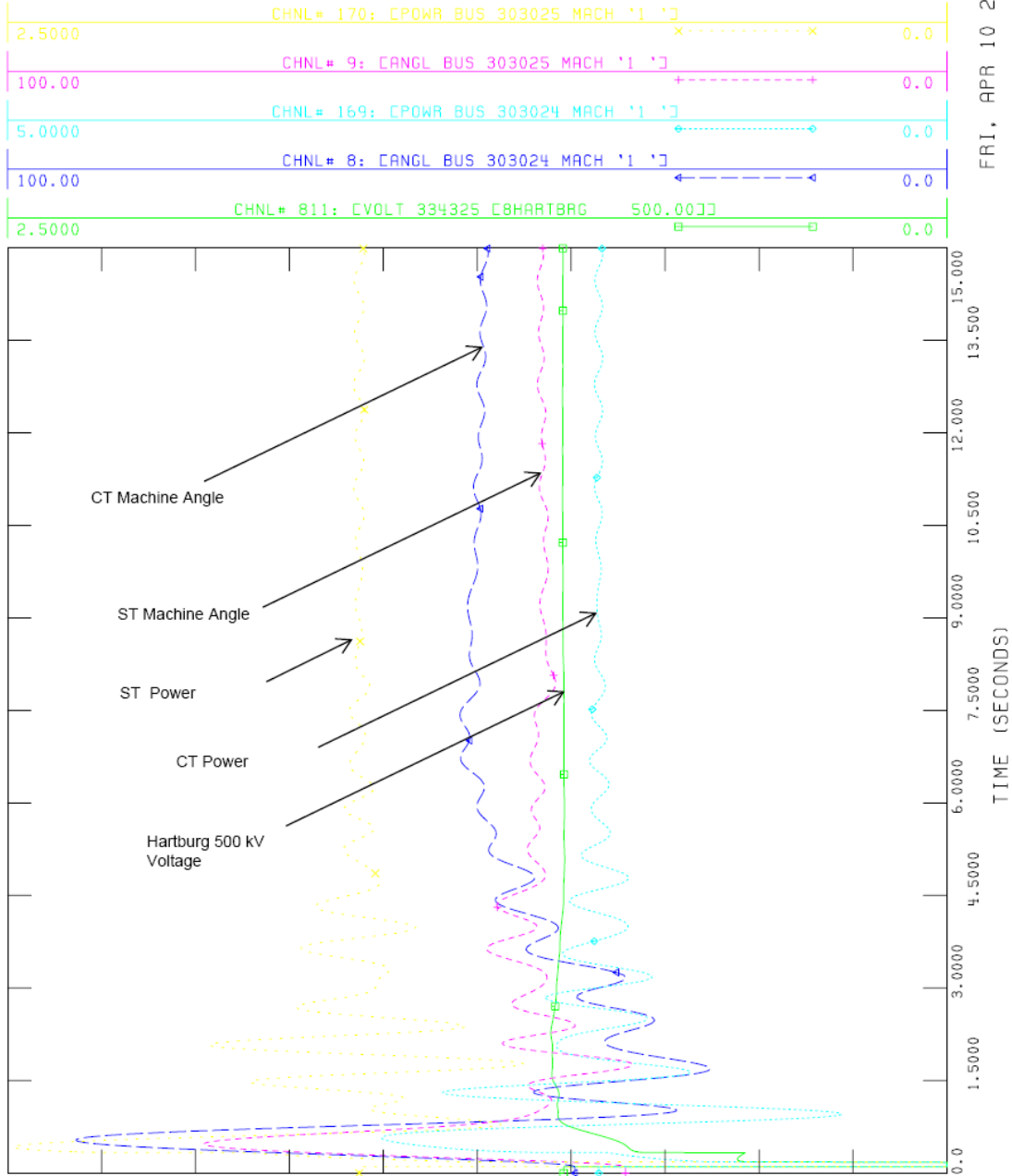


Figure 0-10 PID-227 Machine parameters for Fault 2a

CONCLUSIONS


The objective of this study was to evaluate the impact of proposed PID-227 (127 MW) uprate of existing Cottonwood Generation unit on system stability and the nearby transmission system and generating stations. The study was performed on 2012 Summer Peak case, provided by SPP/Entergy.

The system was stable following all simulated normally cleared and stuck-breaker faults. No voltage criteria violation was observed following simulated faults.

Based on the results of stability analysis it can be concluded that proposed 127 MW uprate of the Cottonwood Units does not adversely impact the stability of the Entergy System in the local area.

The results of this analysis are based on available data and assumptions made at the time of conducting this study. If any of the data and/or assumptions made in developing the study model change, the results provided in this report may not apply.

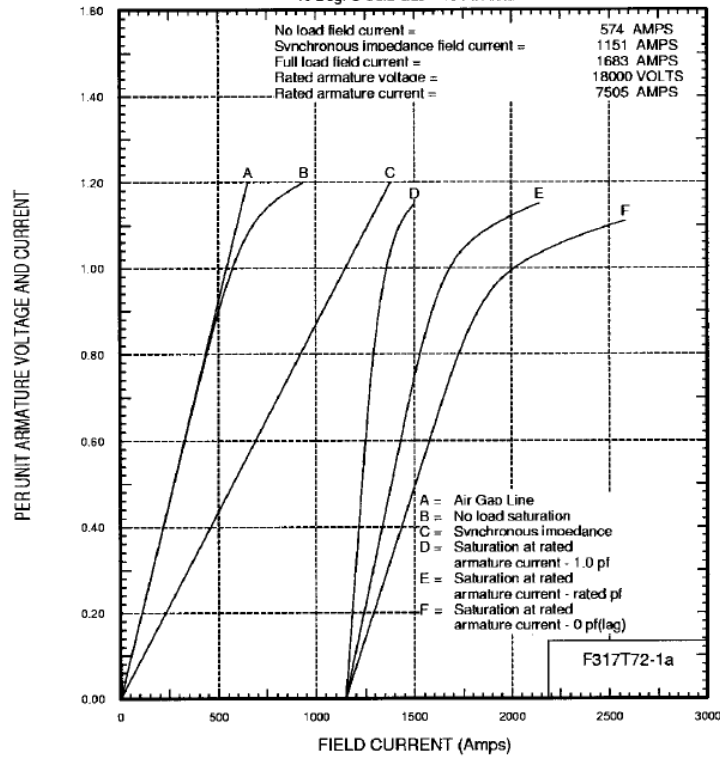
APPENDIX A - DATA PROVIDED BY CUSTOMER

SIZE	DWG NO	SH	REV
A	371A8985	3	
REACTANCES (Per Unit):			
		Direct Axis	Quadrature Axis
Saturated Synchronous	X_{dv}	2.12	X_{qv} 2.0175
Unsaturated Synchronous	X_{di}	2.12	X_{qi} 2.0175
Saturated Transient	X'_{dv}	0.23	
Unsaturated Transient	X'_{di}	0.26	X'_{qi} 0.4643
Saturated Sub transient	X''_{dv}	0.150	X''_{qv} 0.1517
Unsaturated Sub transient	X''_{di}	0.195	X''_{qi} 0.1958
Saturated Negative Sequence	X_{2v}	0.15	
Unsaturated Negative Sequence	X_{2i}	0.1958	
Saturated Zero Sequence	X_{0v}	0.125	
Unsaturated Zero Sequence	X_{0i}	0.1251	
Saturated Leakage Reactance	X_{lv}	0.135	
Unsaturated Leakage Reactance	X_{li}	0.15	
FIELD TIME CONSTANTS (Seconds @ 125 °C)			
Open Circuit	T'_{d0}	5.7	T'_{q0} 0.59
Three Phase Short Circuit Transient	T'_{d3}	0.62	T'_q 0.13
Line To Line Short Circuit Transient	T'_{d2}	0.96	
Line To Neutral Short Circuit Transient	T'_{d1}	1.2	
Short Circuit Sub transient	T''_d	0.023	T''_q 0.023
Open Circuit Sub transient	T''_{d0}	0.034	T''_{q0} 0.069
ARMATURE DC COMPONENT TIME CONSTANTS (Seconds@ 100 °C)			
Three Phase Short Circuit	T_{d3}	0.33	
Line To Line Short Circuit	T_{d2}	0.33	
Line To Neutral Short Circuit	T_{d1}	0.31	
ARMATURE WINDING SEQUENCE RESISTANCES (Per Unit)			
Positive	R_1	0.0031	
Negative	R_2	0.0203	
Zero	R_0	0.0108	
Reactance, Resistance and Time Constant data may be interpreted per IEEE 115, section VII.			
The base reactance ("UNIT") is calculated by the armature kV squared / MVA.			
Base reactance = 1.3846 Ohms			
Rotor Short-Time Thermal Capacity, $(I_2)^2 t$		10 s	
Turbine-Generator Combined Inertia Constant, H		4.84 KW SEC/KVA kW-s/kVA	
Three Phase Armature Winding Capacitance		0.8062 μ F	
Armature Winding DC Resistance (Per Phase)		0.0017 (100 °C)	
Field Winding DC Resistance		0.196 (125 °C)	
Field Current At Rated Kva, Armature Voltage, & PF		1683 A	
Field Current At Rated Kva, Armature Voltage, 0 PF Lagging		2014 A	
(For Systems Study Only - Not Allowable Operating Point)			
GENERAL ELECTRIC COMPANY  GE POWER GENERATION SCHENECTADY, NY		SIZE A	DWG NO 371A8985
DRAWN: S. WARNER		SCALE	SHEET 3
ISSUED: QUINTON PIERSON			

SIZE A	DWG NO 371A8985	SH 5	REV -
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ESTIMATED SATURATION AND SYNCHRONOUS IMPEDANCE CURVES

2 Pole 3600 RPM 234000 kVA 18000 Volts 0.850 PF
 0.489 SCR 30.00 PSIG H2 Pressure 330 Volts Excitation
 40 Deg. C Cold Gas 19 Ft. Altitude

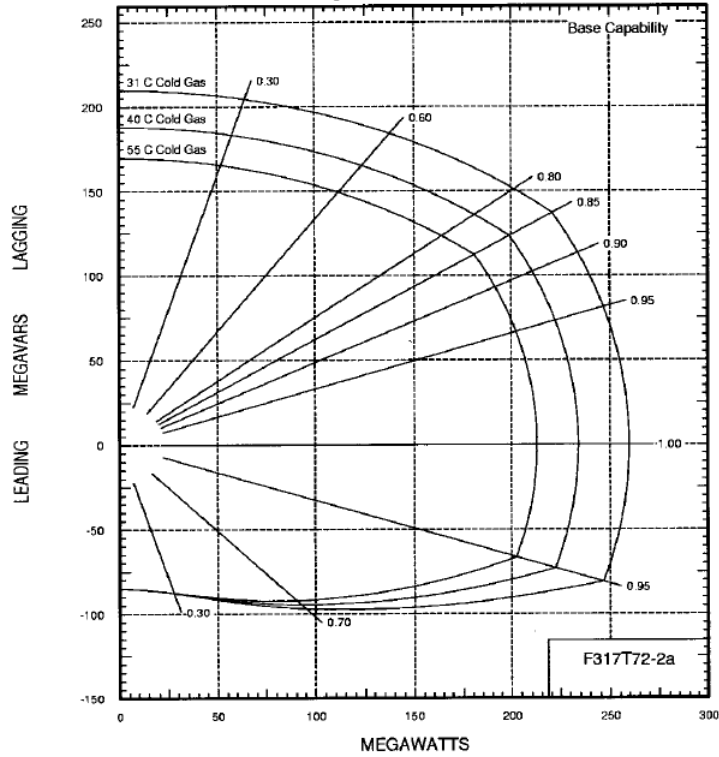


GENERAL ELECTRIC COMPANY GE POWER GENERATION SCHENECTADY, NY		SIZE A	CAGE CODE	DWG NO 371A8985
DRAWN S. WARNER		SCALE		SHEET 5
ISSUED QUINTON PIERSON				

SIZE A	DWG NO 371A8985	SH 6	REV -
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ESTIMATED REACTIVE CAPABILITY CURVES

2 Pole 3600 RPM 234000 kVA 18000 Volts 0.850 PF
 0.499 SCR 30.00 PSIG H2 Pressure 330 Volts Excitation
 40 Deg. C Cold Gas 19 Ft. Altitude

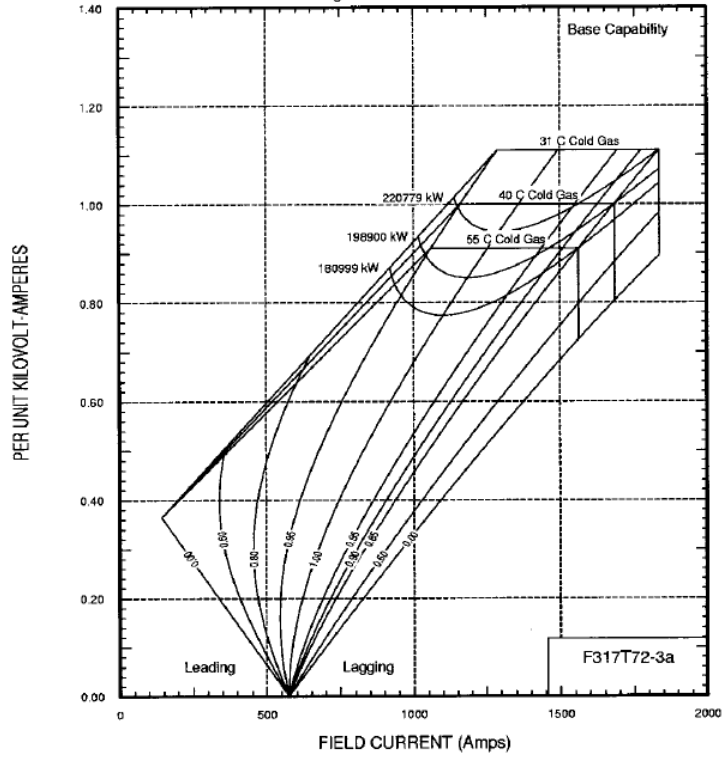


GE POWER GENERATION SCHENECTADY, NY	GENERAL ELECTRIC COMPANY	SIZE A	CAGE CODE	DWG NO 371A8985
	DRAWN S. WARNER	ISSUED QUINTON PIERSON	SCALE	SHEET 6

SIZE A	DWG NO 371A8985	SH 7	REV -
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ESTIMATED VEE CURVES

2 Pole 3600 RPM 234000 kVA 18000 Volts 0.850 PF
 0.489 SCR 30.00 PSIG H2 Pressure 330 Volts Excitation
 40 Deg. C Cold Gas 19 Ft. Altitude

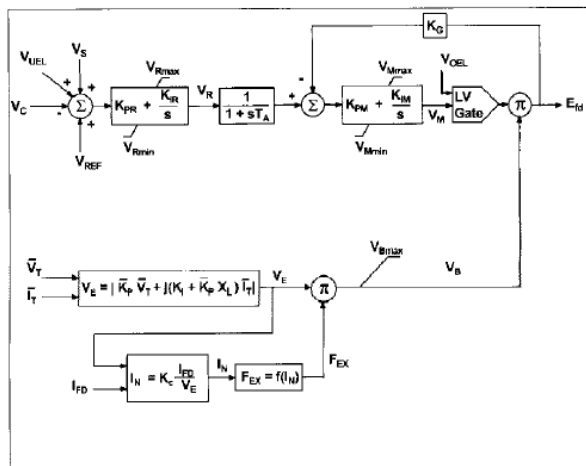


GE POWER GENERATION SCHENECTADY, NY	GENERAL ELECTRIC COMPANY	SIZE A	CAGE CODE	DWG NO 371A8985
	DRAWN S. WARNER ISSUED QUINTON PIERSON	SCALE		SHEET 7

SIZE	DWG NO	SH	REV
A	373A4508	2	-



Customer	Cottonwood Energy project / InterGen North America Inc		
unit			
Generator	337X787-790		
Design	F317T72	741 (7FH2)	
MVA Rating	234	KV Rating	18
RPM	3600	PF	0.85
SCR	0.489	H2PSI	30
Volts DC	340	RFG at 100 C	0.1824
AFAG amps	543	AFFL amps	1683
EX2100 Busfed Exciter Model Parameters			
IEEE ST4B Model Format	Exciter Nominal Response at rated input		2.0
TR	0	KC	0.11
KPR	2.49	KIR	2.49
VRMAX	1.00	VRMIN	-0.87
TA	0.01	KG	0
kKPM	1.00	KIM	0
VMMAX	1.00	VMMIN	-0.87
KP	8.04	KI	0
VBMAX	10.06	XL	0



GENERAL ELECTRIC COMPANY GE Power Generation SCHENECTADY, NY		SIZE	CAGE CODE	DWG NO
DRAWN Harold C. Sanderson 2000/11/28		A		373A4508
ISSUED		SCALE	11/28/00 5:23 PM	SHEET 2



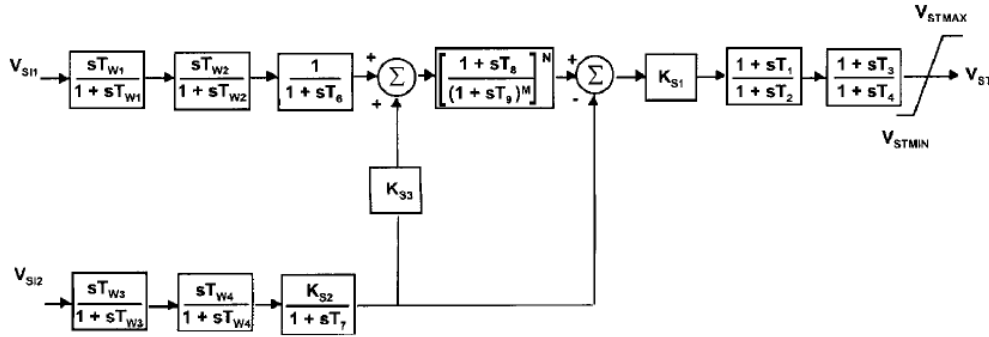
SIZE A	DWG NO 373A4508	SH 3	REV -
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Typical Power System Stabilizer Model Utilizing Speed Plus Power Input

Customer = Cottonwood Energy Project / InterGen North America Inc.
 Generator: 337X787-790
 Generator Design: F317T72
 Exciter Type: Busfed Exciter with EX2100 Digital Controls

IEEE Model Type PSS2A			
T1 = 0.15 @	T2 = 0.03 @	T3 = 0.15 @	T4 = 0.03 @
KS1 = 10 @	VSTmax = 0.1	VSTmin = -0.1	
TW1 = 2	TW2 = 2	T6 = 0	
TW3 = 2	TW4 = 0	T7 = 2	KS2 = 0.210
KS3 = 1.0	T8 = 0.5	T9 = 0.1	
M = 5		N = 1	
VSI1 = Speed(pu)		VSI2 = PE(pu) (Electrical Power)	

@ = Use field settings. Optimum settings can be provided at extra cost.



IEEE Type PSS2A Dual Input Stabilizer Model

GE Power Generation GENERAL ELECTRIC COMPANY SCHENECTADY, NY	SIZE A	GAGE CODE	DWG NO 373A4508
	DRAWN Harold C. Sanderson 2000/11/28	SCALE	11/28/00 5:23 PM SHEET 3
ISSUED			

GENERATOR DATA FOR STG

KVA **	<u>187650</u>	Voltage **	<u>18000 V</u>
Power Factor	<u>0.85</u>	H ₂ psig	<u>n.a. air cooled</u>
Speed (RPM)	<u>3600</u>	Connection (e.g. WYE)	<u>Y</u>
Short Circuit Ratio	<u>0.642</u>	Frequency, Hz	<u>60</u>
Stator Amperes at Rated KVA	<u>6019 A</u>	Field Volts	<u>261 V</u>

REACTANCE DATA (PER UNIT-RATED KVA) *

	<u>DIRECT</u> <u>AXIS</u>		<u>QUADRATURE</u> <u>AXIS</u>	
Synchronous – saturated	X _{dv}	<u>1.60</u>	X _{qv}	
Synchronous – unsaturated	X _{di} **	<u>1.93</u>	X _{qi} **	<u>1.799</u>
Transient – saturated	X' _{dv}	<u>0.175</u>	X' _{qv}	<u>0.276</u>
Transient – unsaturated	X' _{di} **	<u>0.189</u>	X' _{qi} **	<u>0.311</u>
Subtransient – saturated	X" _{dv}	<u>0.108</u>	X" _{qv}	<u>0.115</u>
Subtransient – unsaturated	X" _{di} **	<u>0.145</u>	X" _{qi} **	<u>0.155</u>
Negative Sequence – saturated	X _{2v}	<u>0.113</u>		
Negative Sequence – unsaturated	X _{2i}	<u>0.148</u>		
Zero Sequence – saturated	X _{0v}	<u>0.642</u>		
Zero Sequence – unsaturated	X _{0i}	<u>0.086</u>		
Leakage Reactance	X _{lm} **	<u>0.13</u>		

FIELD TIME CONSTANT DATA (SEC) *

Open Circuit	T' _{do} **	<u>9.79</u>	T' _{qo} **	<u>0.931</u>
Three-Phase Short Circuit Transient	T' _{d3}	<u>0.96</u>	T' _q	<u>0.161</u>
Line to Line Short Circuit Transient	T' _{d2}	<u>1.582</u>		
Line to Neutral Short Circuit Transient	T' _{d1}	<u>1.911</u>		
Short Circuit Subtransient	T" _d	<u>0.026</u>	T" _q	<u>0.032</u>
Open Circuit Subtransient	T" _{do} **	<u>0.042</u>	T" _{qo} **	<u>0.064</u>

ARMATURE TIME CONSTANT DATA (SEC)

Three Phase Short Circuit	Ta ₃	<u>0.542</u>
Line to Line Short Circuit	Ta ₂	<u>0.542</u>
Line to Neutral Short Circuit	Ta ₁	<u>0.467</u>

ARMATURE WINDING RESISTANCE DATA (PER UNIT)

Positive	R ₁	<u>0.00208</u>
Negative	R ₂	<u>0.01102</u>
Zero	R ₀	<u>0.00072</u>

Rotor Short Time Thermal Capacity i ² t	=	<u>10</u>	pus
Field Current at Rated kVA, Armature Voltage & PF	=	<u>1527</u>	amps
Three Phase Armature Winding Capacitance	=	<u>1074</u>	microfarad
Field Winding Resistance	=	<u>0.0006</u>	ohms
Armature Winding Resistance (Per Phase)	=	<u>0.00072</u>	ohms
			<u>75°C</u>
			<u>75°C</u>

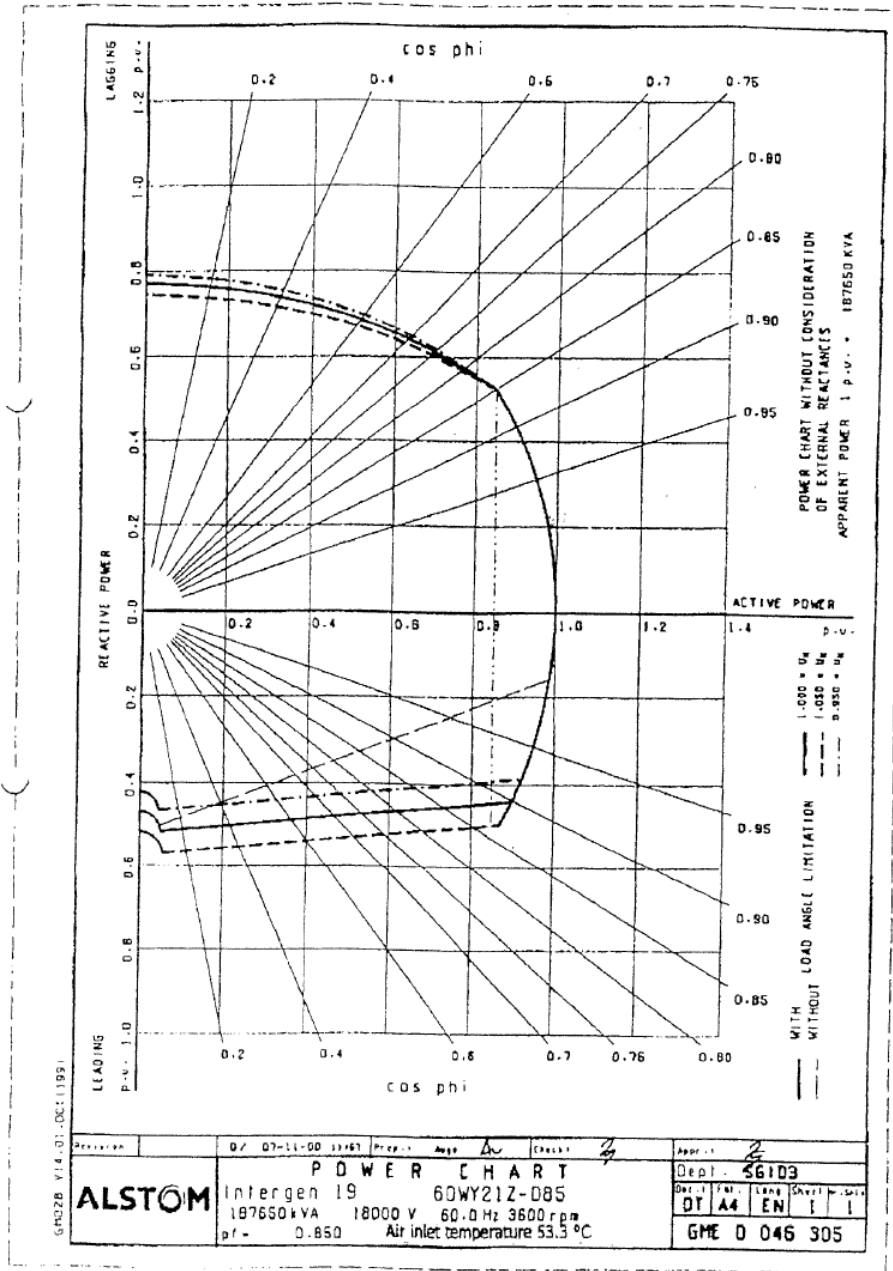
COMBINED TURBINE-GENERATOR-EXCITER INERTIA DATA (Provide one) *,**

Inertia Constant, H	=	<u>4.77</u>	kW sec/kVA
Moment-of-Inertia, WR ²	=		lb. ft. ²

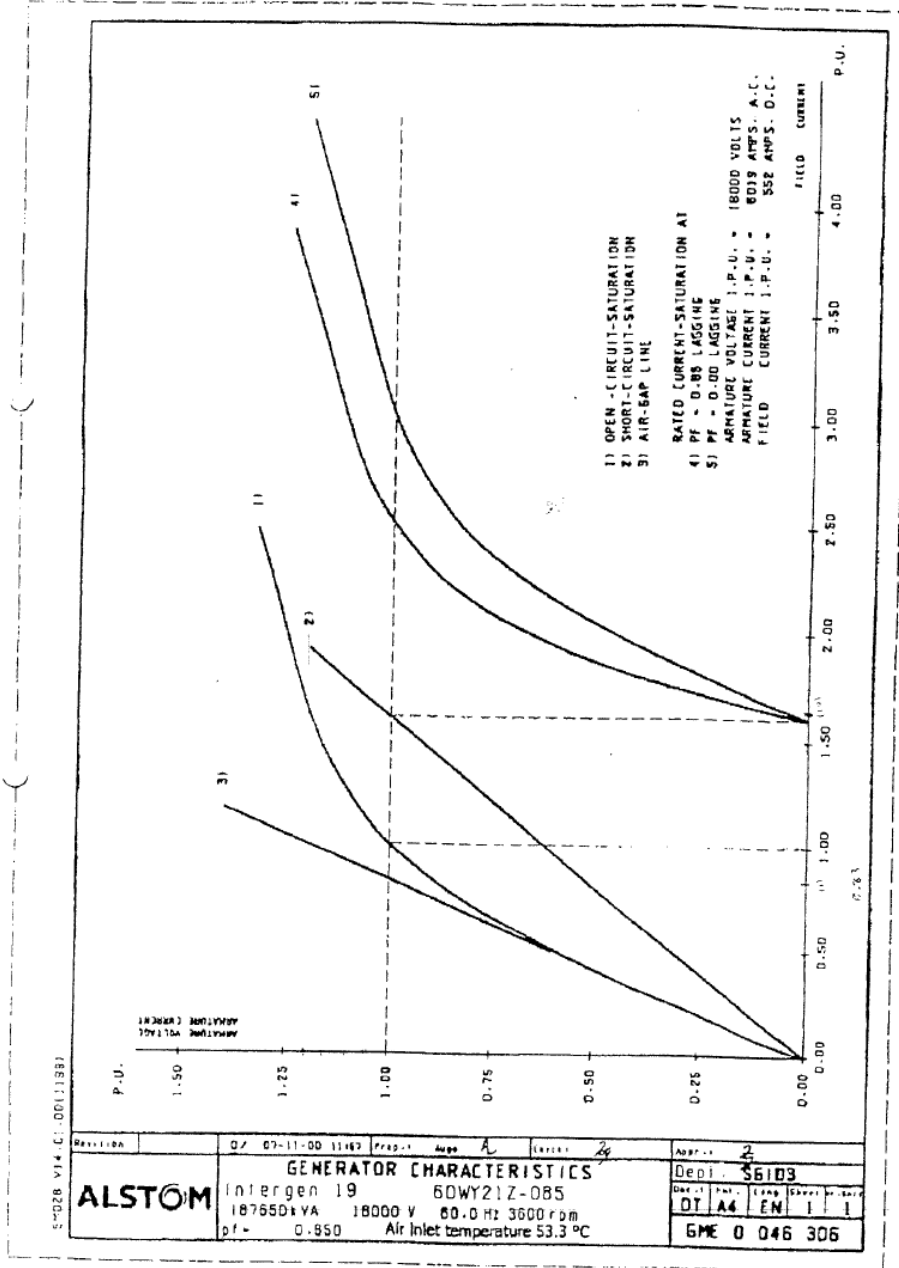
* These items are desired to carry out the stability study.

** These data are required to carry out the stability study.

STG



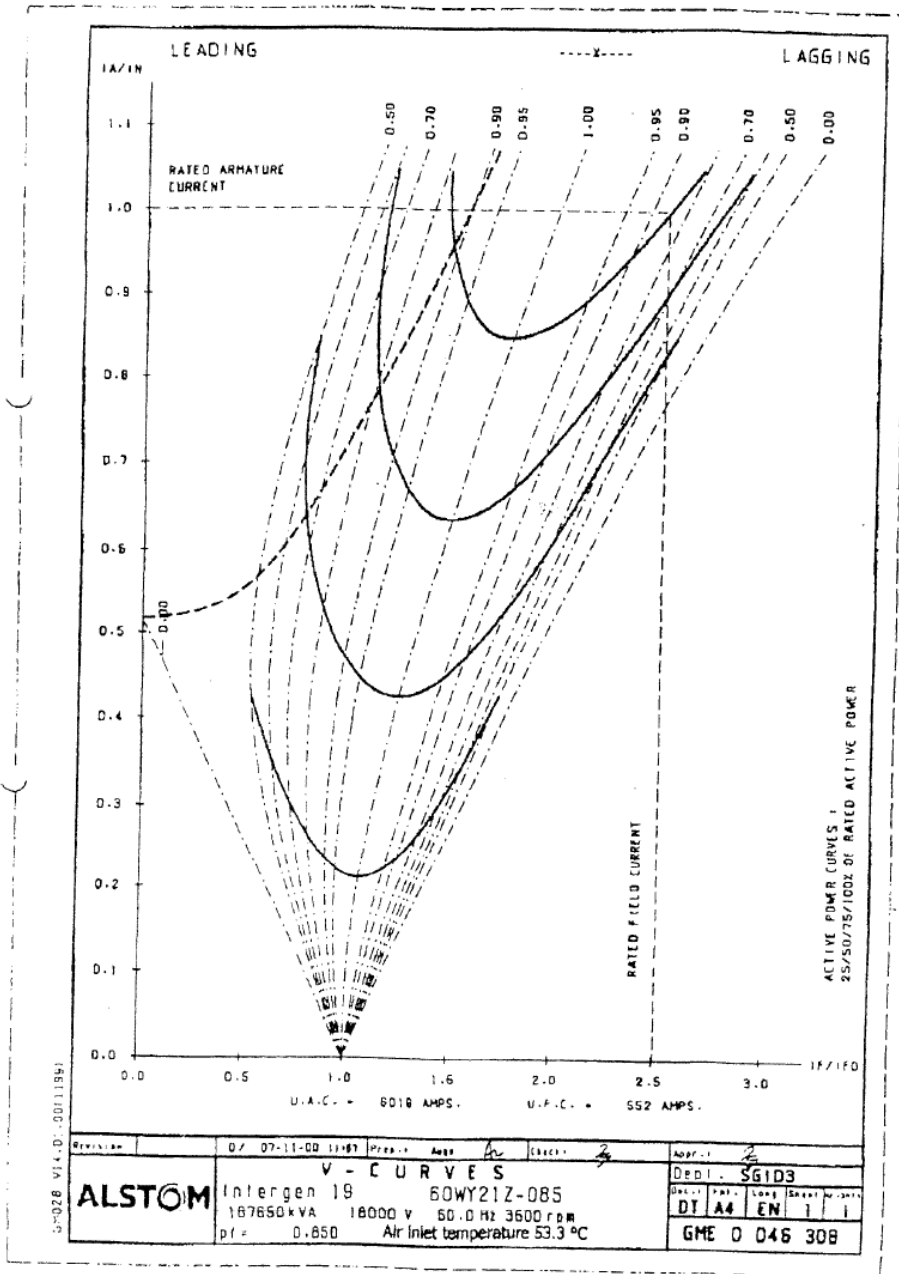
ST6




$$s(1.0) = \frac{1 - 0.83}{0.83} = 0.205$$

$$s(1.0) = \frac{1.63 - 1.0}{1.0} = 0.63$$

ST6

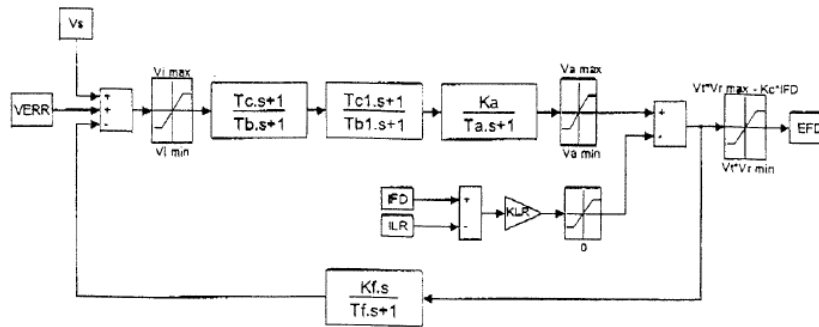


	INTERGEN	N° 54-652 015
	STATIC EXCITATION	Page : 3/4
	IEEE TRANSFER DIAGRAM	First issue : A

This diagram is drawn to fit with IEEE representation for simulation needs linked to the software used.

This is deteriorated representation of the actual equipment.

IEEE Type ST1A




PARAMETERS	VALUE
Vi max (pu)	0.2
Vi min (pu)	-0.2
Tc (s)	5
Tb (s)	192
Tc1 (s)	1
Tb1 (s)	1
Ka (pu)	1000
Ta (s)	0.01
Va max (pu)	5.22
Va min (pu)	-4.6
Vr max (pu)	5.22
Vr min (pu)	-4.6
Kc (pu)	0
Kf (pu)	0
Tf (s)	1
KLR (pu)	0
ILR (pu)	1

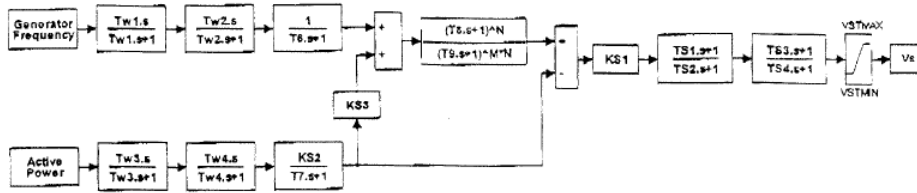
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	INTERGEN	N° 54-652 015
	STATIC EXCITATION	Page : 4/4
	IEEE TRANSFER DIAGRAM	First issue : A

PSS 2A IEEE



Parameter	Description	Value	Unit
KS1	PSS gain	-0.5	p.u
KS2	Power channel gain	1	p.u
KS3	Power channel gain	0	p.u
Tw3	frequency channel wash-out time constant	0.01	s
Tw2	frequency channel wash-out time constant	0.01	s
T6	frequency channel time constant	1000	s
Tw3	power channel wash-out time constant	1	s
Tw4	power channel wash-out time constant	1000	s
T7	power channel time constant	0.01	s
TS1	first lead-lag filter numerator time constant	1	s
TS2	first lead-lag filter denominator time constant	1	s
TS3	second lead-lag filter numerator time constant	1	s
TS4	second lead-lag filter denominator time constant	1	s
T8	ramp track filter numerator time constant	0	s
T9	ramp track filter denominator time constant	1000	s
N	ramp track filter parameter	1	integer
M	ramp track filter parameter	1	integer
VSTMAX	maximum correction signal limitation	0.05	p.u
VSTMIN	minimum correction signal limitation	-0.05	p.u

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APPENDIX B - LOAD FLOW AND STABILITY DATA IN PSSE FORMAT

Loadflow Data

```

0 / END OF BUS DATA, BEGIN LOAD DATA
334370,'1',1, 351, 505, 19.92, 9.65, 0.000, 0.000, 0.000, 0.000,
1
303021,'1',1, 332, 105, 19.92, 9.65, 0.000, 0.000, 0.000, 0.000,
1
0 / END OF LOAD DATA, BEGIN GENERATOR DATA
303024,'1', 185.300, 8.473, 123.300, -73.070,1.02000,334325, 234.000,
0.00000, 0.16100, 0.00000, 0.00000,1.00000,1, 100.0, 187.500, 0.000,
1,1.0000
303025,'1', 156.410, 8.473, 89.000, -53.100,1.02000,334325, 170.000,
0.00000, 0.14500, 0.00000, 0.00000,1.00000,1, 100.0, 125.000, 0.000,
1,1.0000
303026,'1', 185.300, 8.473, 123.300, -73.070,1.02000,334325, 234.000,
0.00000, 0.16100, 0.00000, 0.00000,1.00000,1, 100.0, 187.500, 0.000,
1,1.0000
303027,'1', 156.410, 8.473, 89.000, -53.100,1.02000,334325, 170.000,
0.00000, 0.14500, 0.00000, 0.00000,1.00000,1, 100.0, 125.000, 0.000,
1,1.0000
334374,'1', 185.300, 8.473, 134.000, -73.070,1.02000,334325, 234.000,
0.00000, 0.16100, 0.00000, 0.00000,1.00000,1, 100.0, 187.500, 0.000,
1,1.0000
334375,'1', 156.410, 8.473, 89.000, -53.100,1.02000,334325, 170.000,
0.00000, 0.14500, 0.00000, 0.00000,1.00000,1, 100.0, 125.000, 0.000,
1,1.0000
334376,'1', 185.300, 8.473, 160.000, -73.070,1.02000,334325, 234.000,
0.00000, 0.16100, 0.00000, 0.00000,1.00000,1, 100.0, 187.500, 0.000,
1,1.0000
334377,'1', 156.410, 8.473, 89.000, -53.100,1.02000,334325, 170.000,
0.00000, 0.14500, 0.00000, 0.00000,1.00000,1, 100.0, 125.000, 0.000,
1,1.0000
0 / END OF GENERATOR DATA, BEGIN BRANCH DATA
0 / END OF BRANCH DATA, BEGIN TRANSFORMER DATA
0 / END OF TRANSFORMER DATA, BEGIN AREA DATA
0 / END OF AREA DATA, BEGIN TWO-TERMINAL DC DATA
0 / END OF TWO-TERMINAL DC DATA, BEGIN VSC DC LINE DATA
0 / END OF VSC DC LINE DATA, BEGIN SWITCHED SHUNT DATA
0 / END OF SWITCHED SHUNT DATA, BEGIN IMPEDANCE CORRECTION DATA
0 / END OF IMPEDANCE CORRECTION DATA, BEGIN MULTI-TERMINAL DC DATA
0 / END OF MULTI-TERMINAL DC DATA, BEGIN MULTI-SECTION LINE DATA
0 / END OF MULTI-SECTION LINE DATA, BEGIN ZONE DATA
0 / END OF ZONE DATA, BEGIN INTER-AREA TRANSFER DATA
0 / END OF INTER-AREA TRANSFER DATA, BEGIN OWNER DATA
0 / END OF OWNER DATA, BEGIN FACTS DEVICE DATA
0 / END OF FACTS DEVICE DATA

```

Dynamics Data

```

** GENROU ** BUS X-- NAME --X BASEKV MC CONS STATES
303024 1G3INTHB 18.000 1 41041-41054 18431-18436

MBASE ZSOURCE XTRAN GENTAP
234.0 0.00000+J 0.16100 0.00000+J 0.00000 1.00000

T'D0 T''D0 T'Q0 T''Q0 H DAMP XD XQ X'D X'Q X''D XL
4.77 0.033 0.41 0.071 4.74 0.00 2.1400 2.0420 0.3220 0.4970 0.1610 0.1890

S(1.0) S(1.2)
0.0360 0.2270

** PSS2A ** BUS X-- NAME --X BASEKV MC CONS STATES VARS ICONS
303024 1G3INTHB 18.000 1 53841-53857 27355-27370 2043-2046 2712-2717

IC1 REMBUS1 IC2 REMBUS2 M N
1 0 3 0 5 1

TW1 TW2 T6 TW3 TW4 T7 KS2 KS3
5.000 5.000 0.000 5.000 0.000 5.000 0.527 1.000

```

T8 T9 KS1 T1 T2 T3 T4 VSTMAX VSTMIN
 0.500 0.100 30.000 0.060 0.030 0.000 0.000 0.100 -0.100

** ESST4B ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
 303024 1G3INTHB 18.000 1 98065-98081 40470-40473

TR KPR KIR VRMAX VRMIN TA KPM KIM VMMAX VMMIN
 0.000 3.960 3.960 1.000 -0.870 0.010 1.000 0.000 1.000 -0.870

KG KP KI VBMAX KC XL THETAP
 0.000 5.050 0.000 6.310 0.080 0.0000 0.000

** GAST ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S VAR
 303024 1G3INTHB 18.000 1 128276-128284 50583-50585 7339

R T1 T2 T3 LOAD LIM KT VMAX VMIN DT
 0.062 0.510 0.200 3.000 0.864 3.000 0.863 0.033 0.000

REPORT FOR PLANT MODELS BUS 303025 [1S3INTHB 13.800] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
 303025 1S3INTHB 13.800 1 41055-41068 18437-18442

MBASE Z S O R C E X T R A N GENTAP
 170.0 0.00000+J 0.14500 0.00000+J 0.00000 1.00000

T'DO T''DO T'QO T''QO H DAMP XD XQ X'D X'Q X''D XL
 9.79 0.042 0.93 0.064 4.77 0.00 1.9300 1.7990 0.1890 0.3110 0.1450 0.1300

S(1.0) S(1.2)
 0.2050 0.6300

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S
 303025 1S3INTHB 13.800 1 53858-53874 27371-27386 2047-2050 2718-2723

IC1 REMBUS1 IC2 REMBUS2 M N
 1 0 3 0 5 1

TW1 TW2 T6 TW3 TW4 T7 KS2 KS3
 5.000 5.000 0.000 5.000 0.000 5.000 0.524 1.000

T8 T9 KS1 T1 T2 T3 T4 VSTMAX VSTMIN
 0.500 0.100 30.000 0.000 0.000 0.000 0.000 0.100 -0.100

** ESST1A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S I C O N S
 303025 1S3INTHB 13.800 1 98082-98099 40474-40478 3602-3603

UEL VOS TR VIMAX VIMIN TC TB TC1 TB1 KA
 3 1 0.000 0.200 -0.200 5.000 192.000 1.000 1.000 1000.0

TA VAMAX VAMIN VRMAX VRMIN KC KF TF KLR ILR
 0.010 5.220 -4.600 5.220 -4.600 0.000 0.000 1.000 0.000 1.000

REPORT FOR PLANT MODELS BUS 303026 [1G4INTHB 18.000] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
 303026 1G4INTHB 18.000 1 41069-41082 18443-18448

MBASE Z S O R C E X T R A N GENTAP
 234.0 0.00000+J 0.16100 0.00000+J 0.00000 1.00000

T'DO T''DO T'QO T''QO H DAMP XD XQ X'D X'Q X''D XL
 4.77 0.033 0.41 0.071 4.74 0.00 2.1400 2.0420 0.3220 0.4970 0.1610 0.1890

S(1.0) S(1.2)
 0.0360 0.2270

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S
 303026 1G4INTHB 18.000 1 53875-53891 27387-27402 2051-2054 2724-2729

IC1 REMBUS1 IC2 REMBUS2 M N
 1 0 3 0 5 1

TW1	TW2	T6	TW3	TW4	T7	KS2	KS3				
5.000	5.000	0.000	5.000	0.000	5.000	0.527	1.000				
T8	T9	KS1	T1	T2	T3	T4	VSTMAX	VSTMIN			
0.500	0.100	30.000	0.060	0.030	0.000	0.000	0.100	-0.100			

** ESST4B ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
 303026 1G4INTHB 18.000 1 98100-98116 40479-40482

TR	KPR	KIR	VRMAX	VRMIN	TA	KPM	KIM	VMMAX	VMMIN		
0.000	3.960	3.960	1.000	-0.870	0.010	1.000	0.000	1.000	-0.870		
KG	KP	KI	VBMAX	KC	XL	THETAP					
0.000	5.050	0.000	6.310	0.080	0.0000	0.000					

** GAST ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S VAR
 303026 1G4INTHB 18.000 1 128285-128293 50586-50588 7340

R	T1	T2	T3	LOAD LIM	KT	VMAX	VMIN	DT			
0.062	0.510	0.200	3.000	0.864	3.000	0.863	0.033	0.000			

REPORT FOR PLANT MODELS BUS 303027 [1S4INTHB 13.800] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
 303027 1S4INTHB 13.800 1 41083-41096 18449-18454

MBASE	Z S O R C E	X T R A N	GENTAP				
170.0	0.00000+J 0.14500	0.00000+J 0.00000	1.00000				

T'D0	T''D0	T'Q0	T''Q0	H	DAMP	XD	XQ	X'D	X'Q	X''D	XL
9.79	0.042	0.93	0.064	4.77	0.00	1.9300	1.7990	0.1890	0.3110	0.1450	0.1300

S(1.0) S(1.2)
 0.2050 0.6300

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S
 303027 1S4INTHB 13.800 1 53892-53908 27403-27418 2055-2058 2730-2735

IC1	REMBUS1	IC2	REMBUS2	M	N		
1	0	3	0	5	1		

TW1	TW2	T6	TW3	TW4	T7	KS2	KS3				
5.000	5.000	0.000	5.000	0.000	5.000	0.524	1.000				
T8	T9	KS1	T1	T2	T3	T4	VSTMAX	VSTMIN			
0.500	0.100	30.000	0.000	0.000	0.000	0.000	0.100	-0.100			

** ESST1A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S I C O N S
 303027 1S4INTHB 13.800 1 98117-98134 40483-40487 3604-3605

UEL	VOS	TR	VIMAX	VIMIN	TC	TB	TC1	TB1	KA		
3	1	0.000	0.200	-0.200	5.000	192.000	1.000	1.000	1000.0		

TA	VAMAX	VAMIN	VRMAX	VRMIN	KC	KF	TF	KLR	ILR		
0.010	5.220	-4.600	5.220	-4.600	0.000	0.000	1.000	0.000	1.000		

REPORT FOR PLANT MODELS BUS 334374 [1G1INTHB 18.000] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
 334374 1G1INTHB 18.000 1 41329-41342 18551-18556

MBASE	Z S O R C E	X T R A N	GENTAP				
234.0	0.00000+J 0.16100	0.00000+J 0.00000	1.00000				

T'D0	T''D0	T'Q0	T''Q0	H	DAMP	XD	XQ	X'D	X'Q	X''D	XL
4.77	0.033	0.41	0.071	4.74	0.00	2.1400	2.0420	0.3220	0.4970	0.1610	0.1890

S(1.0) S(1.2)
 0.0360 0.2270

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S

334374 1G1INTHB 18.000 1 54096-54112 27595-27610 2103-2106 2802-2807

IC1 REMBUS1 IC2 REMBUS2 M N
1 0 3 0 5 1

TW1 TW2 T6 TW3 TW4 T7 KS2 KS3
5.000 5.000 0.000 5.000 0.000 5.000 0.527 1.000
T8 T9 KS1 T1 T2 T3 T4 VSTMAX VSTMIN
0.500 0.100 30.000 0.060 0.030 0.000 0.000 0.100 -0.100

** ESST4B ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
334374 1G1INTHB 18.000 1 98436-98452 40562-40565

TR KPR KIR VRMAX VRMIN TA KPM KIM VMMAX VMMIN
0.000 3.960 3.960 1.000 -0.870 0.010 1.000 0.000 1.000 -0.870
KG KP KI VBMAX KC XL THETAP
0.000 5.050 0.000 6.310 0.080 0.0000 0.000

** GAST ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S VAR
334374 1G1INTHB 18.000 1 128549-128557 50673-50675 7458

R T1 T2 T3 LOAD LIM KT VMAX VMIN DT
0.062 0.510 0.200 3.000 0.864 3.000 0.863 0.033 0.000

REPORT FOR PLANT MODELS BUS 334375 [1S1INTHB 13.800] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
334375 1S1INTHB 13.800 1 41343-41356 18557-18562

MBASE Z S O R C E X T R A N GENTAP
170.0 0.00000+J 0.14500 0.00000+J 0.00000 1.00000

T'DO T''DO T'QO T''QO H DAMP XD XQ X'D X'Q X''D XL
9.79 0.042 0.93 0.064 4.77 0.00 1.9300 1.7990 0.1890 0.3110 0.1450 0.1300

S(1.0) S(1.2)
0.2050 0.6300

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S
334375 1S1INTHB 13.800 1 54113-54129 27611-27626 2107-2110 2808-2813

IC1 REMBUS1 IC2 REMBUS2 M N
1 0 3 0 5 1

TW1 TW2 T6 TW3 TW4 T7 KS2 KS3
5.000 5.000 0.000 5.000 0.000 5.000 0.524 1.000
T8 T9 KS1 T1 T2 T3 T4 VSTMAX VSTMIN
0.500 0.100 30.000 0.000 0.000 0.000 0.000 0.100 -0.100

** ESST1A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S I C O N S
334375 1S1INTHB 13.800 1 98453-98470 40566-40570 3606-3607

UEL VOS TR VIMAX VIMIN TC TB TC1 TB1 KA
3 1 0.000 0.200 -0.200 5.000 192.000 1.000 1.000 1000.0

TA VAMAX VAMIN VRMAX VRMIN KC KF TF KLR ILR
0.010 5.220 -4.600 5.220 -4.600 0.000 0.000 1.000 0.000 1.000

REPORT FOR PLANT MODELS BUS 334376 [1G2INTHB 18.000] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
334376 1G2INTHB 18.000 1 41357-41370 18563-18568

MBASE Z S O R C E X T R A N GENTAP
234.0 0.00000+J 0.16100 0.00000+J 0.00000 1.00000

T'DO T''DO T'QO T''QO H DAMP XD XQ X'D X'Q X''D XL
4.77 0.033 0.41 0.071 4.74 0.00 2.1400 2.0420 0.3220 0.4970 0.1610 0.1890

S(1.0) S(1.2)

0.0360 0.2270

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S
334376 1G2INTHB 18.000 1 54130-54146 27627-27642 2111-2114 2814-2819

IC1 REMBUS1 IC2 REMBUS2 M N
1 0 3 0 5 1

TW1 TW2 T6 TW3 TW4 T7 KS2 KS3
5.000 5.000 0.000 5.000 0.000 5.000 0.527 1.000

T8 T9 KS1 T1 T2 T3 T4 VSTMAX VSTMIN
0.500 0.100 30.000 0.060 0.030 0.000 0.000 0.100 -0.100

** ESST4B ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
334376 1G2INTHB 18.000 1 98471-98487 40571-40574

TR KPR KIR VRMAX VRMIN TA KPM KIM VMMAX VMMIN
0.000 3.960 3.960 1.000 -0.870 0.010 1.000 0.000 1.000 -0.870

KG KP KI VBMAX KC XL THETAP
0.000 5.050 0.000 6.310 0.080 0.0000 0.000

** GAST ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R
334376 1G2INTHB 18.000 1 128558-128566 50676-50678 7459

R T1 T2 T3 LOAD LIM KT VMAX VMIN DT
0.062 0.510 0.200 3.000 0.864 3.000 0.863 0.033 0.000

REPORT FOR PLANT MODELS BUS 334377 [1S2INTHB 13.800] MODELS

** GENROU ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S
334377 1S2INTHB 13.800 1 41371-41384 18569-18574

MBASE Z S O R C E X T R A N GENTAP
170.0 0.00000+J 0.14500 0.00000+J 0.00000 1.00000

T'DO T''DO T'QO T''QO H DAMP XD XQ X'D X'Q X''D XL
9.79 0.042 0.93 0.064 4.77 0.00 1.9300 1.7990 0.1890 0.3110 0.1450 0.1300

S(1.0) S(1.2)
0.2050 0.6300

** PSS2A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S V A R S I C O N S
334377 1S2INTHB 13.800 1 54147-54163 27643-27658 2115-2118 2820-2825

IC1 REMBUS1 IC2 REMBUS2 M N
1 0 3 0 5 1

TW1 TW2 T6 TW3 TW4 T7 KS2 KS3
5.000 5.000 0.000 5.000 0.000 5.000 0.524 1.000

T8 T9 KS1 T1 T2 T3 T4 VSTMAX VSTMIN
0.500 0.100 30.000 0.000 0.000 0.000 0.000 0.100 -0.100

** ESST1A ** BUS X-- NAME --X BASEKV MC C O N S S T A T E S I C O N S
334377 1S2INTHB 13.800 1 98488-98505 40575-40579 3608-3609

UEL VOS TR VIMAX VIMIN TC TB TC1 TB1 KA
3 1 0.000 0.200 -0.200 5.000 192.000 1.000 1.000 1000.0

TA VAMAX VAMIN VRMAX VRMIN KC KF TF KLR ILR
0.010 5.220 -4.600 5.220 -4.600 0.000 0.000 1.000 0.000 1.000

APPENDIX C - PLOTS FOR STABILITY SIMULATIONS

APPENDIX- C

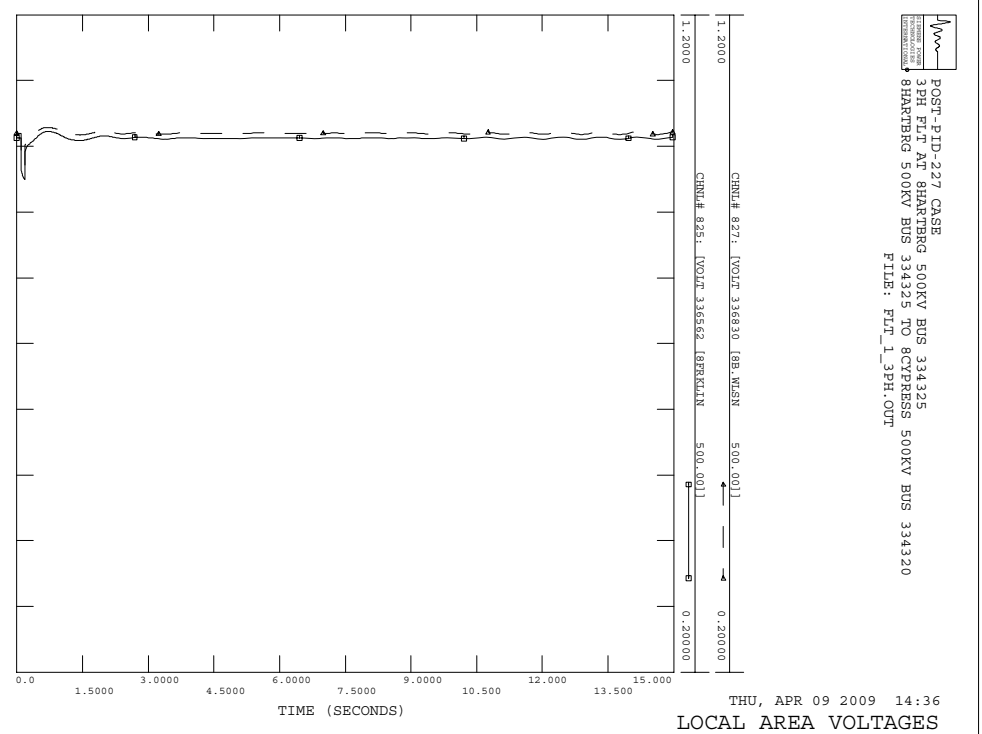
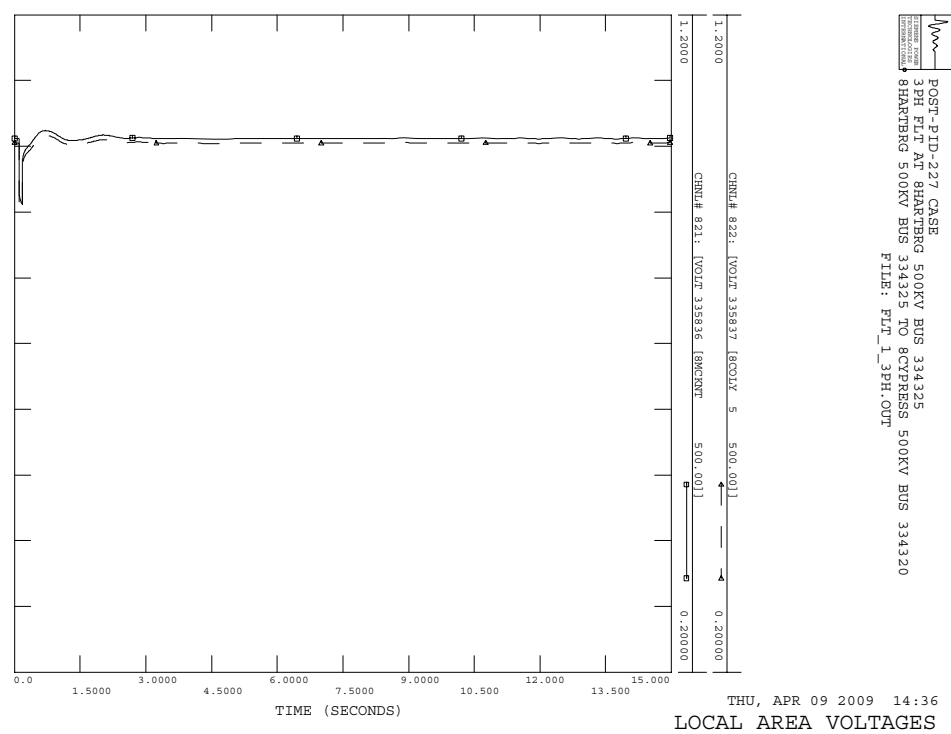
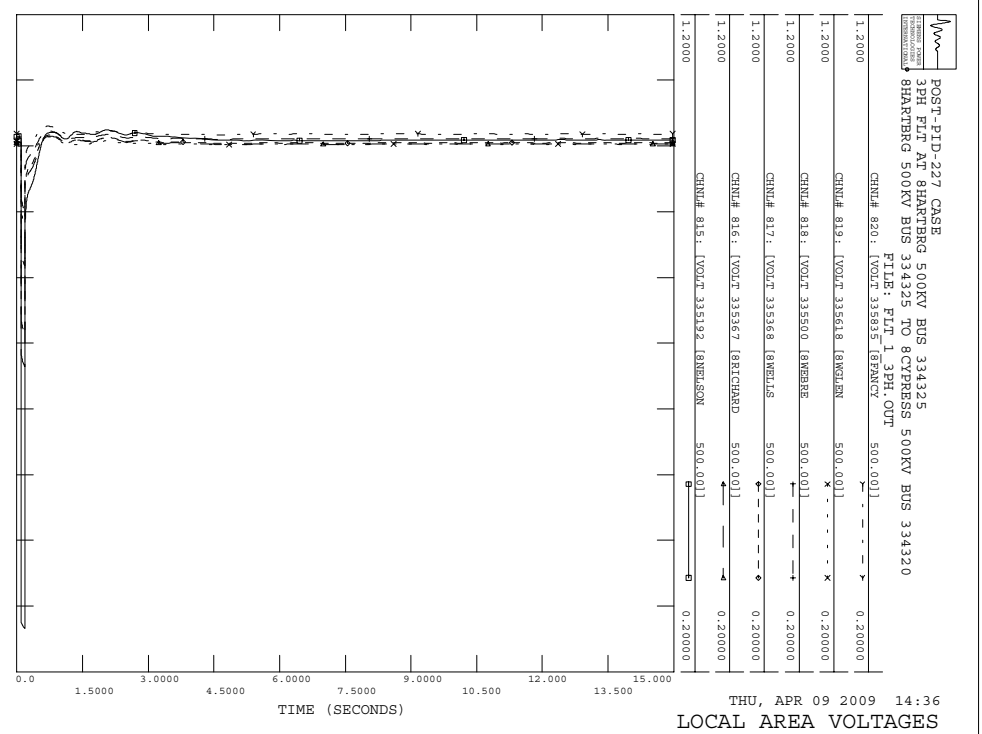
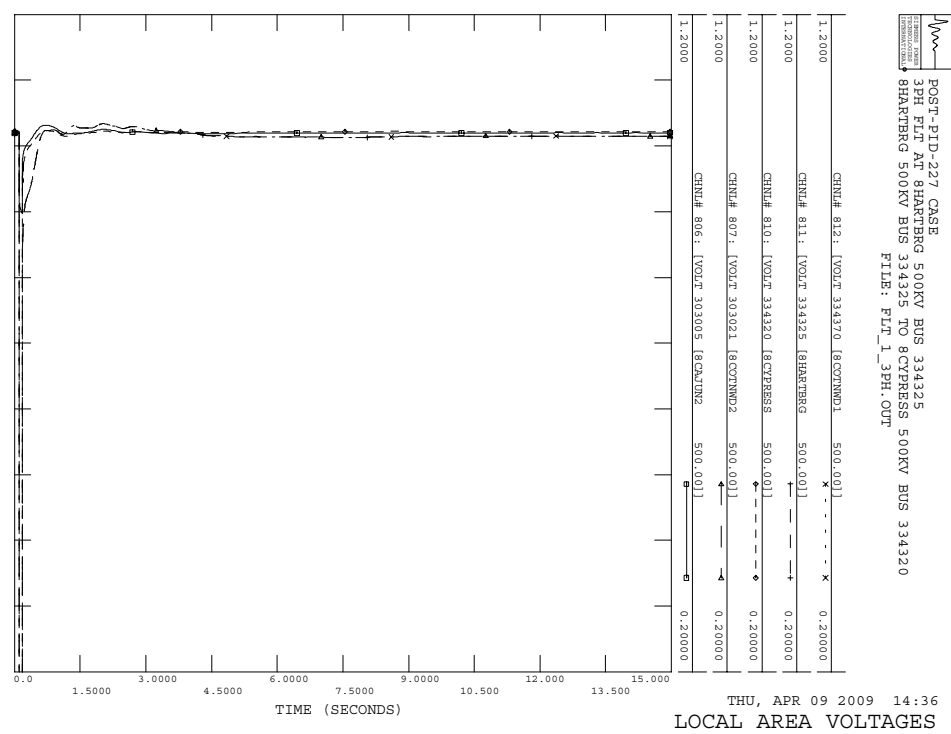
Plots for Stability Simulations

C.1	FLT_1_3PH	2
C.2	FLT_2_3PH	3
C.3	FLT_3_3PH	4
C.4	FLT_4_3PH	5
C.5	FLT_5_3PH	6
C.6	FLT_6_3PH	7
C.7	FLT_7_3PH	8
C.8	FLT_8_3PH	9
C.9	FLT_9_3PH	10
C.10	FLT_10_3PH	11
C.11	FLT_12_3PH	12
C.12	FLT_13_3PH	13
C.13	FLT_1a.....	14
C.14	FLT_2a.....	15
C.15	FLT_3a.....	16
C.16	FLT_4a.....	17
C.17	FLT_5a.....	18
C.18	FLT_6a.....	19
C.19	FLT_7a.....	20
C.20	FLT_7b	21
C.21	FLT_8a.....	22
C.22	FLT_8b	23
C.23	FLT_9a.....	24
C.24	FLT_9b	25
C.25	FLT_10a.....	26
C.26	FLT_12a.....	27
C.27	FLT_12b	28
C.28	FLT_13a.....	29

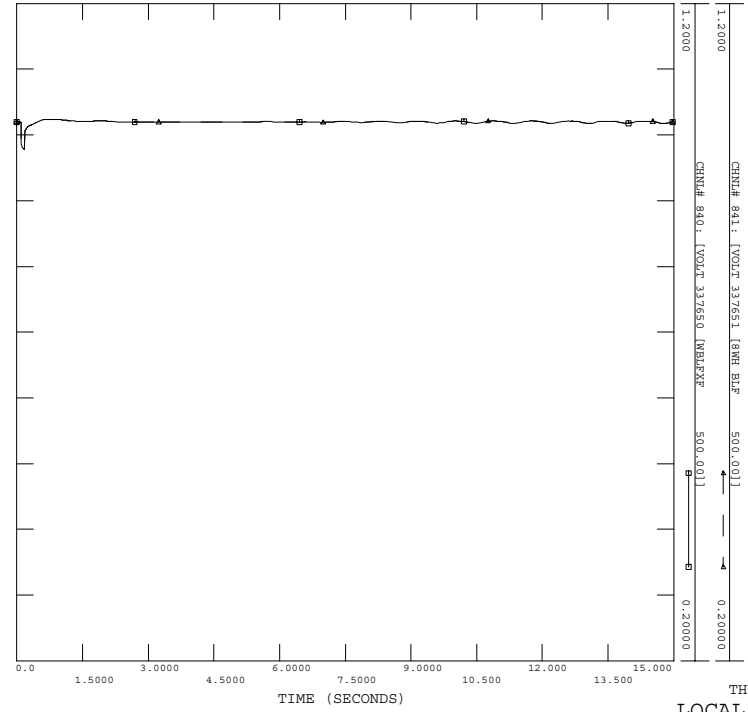
C.1 FLT_1_3PH

Three phase fault on the 8HARTBRG (#334325) to 8CYPRESS (#334320) 500 kV line, near the 8HARTBRG.

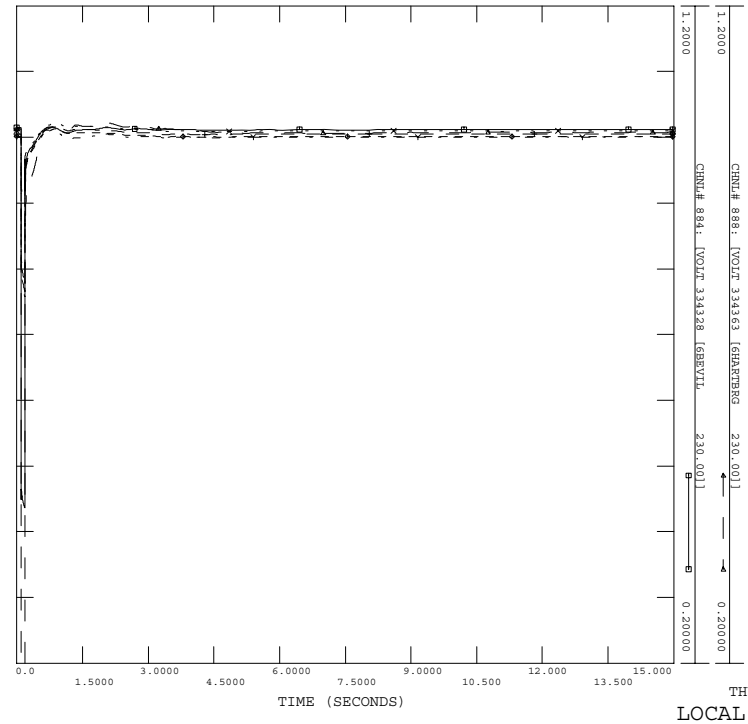
- a) Apply 3 Phase Fault at 8HARTBRG 500KV BUS 334325
- b) Clear fault after 5 cycles by tripping line from 8HARTBRG 500KV BUS 334325 TO 8CYPRESS 500KV BUS



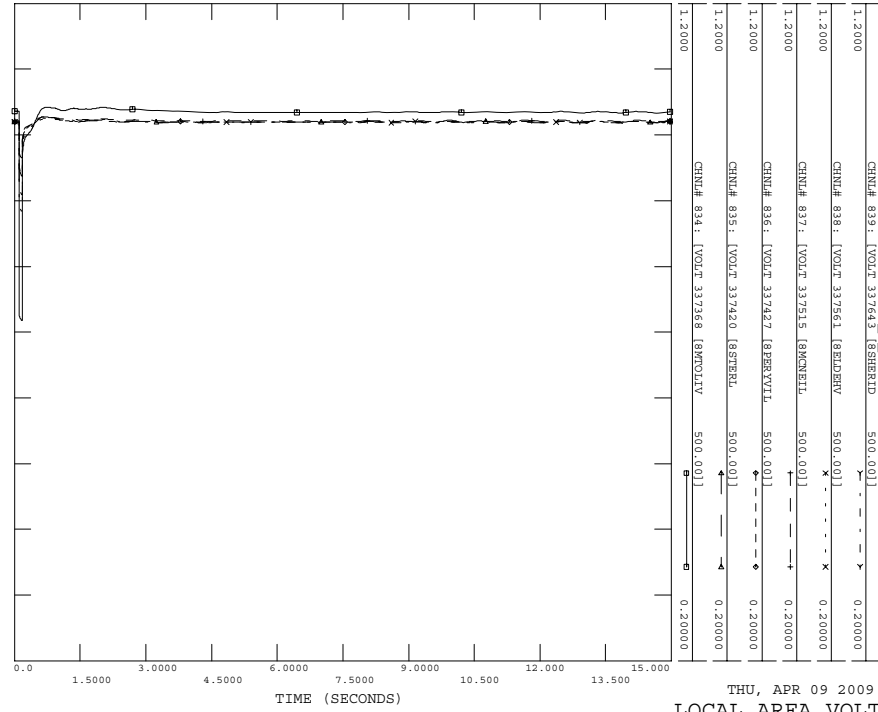
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



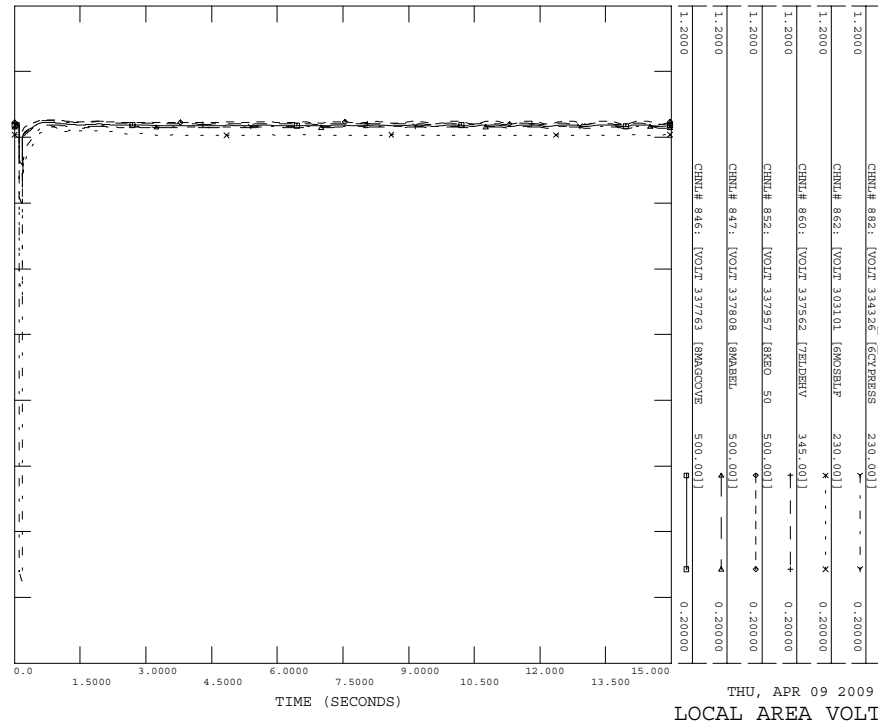
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT

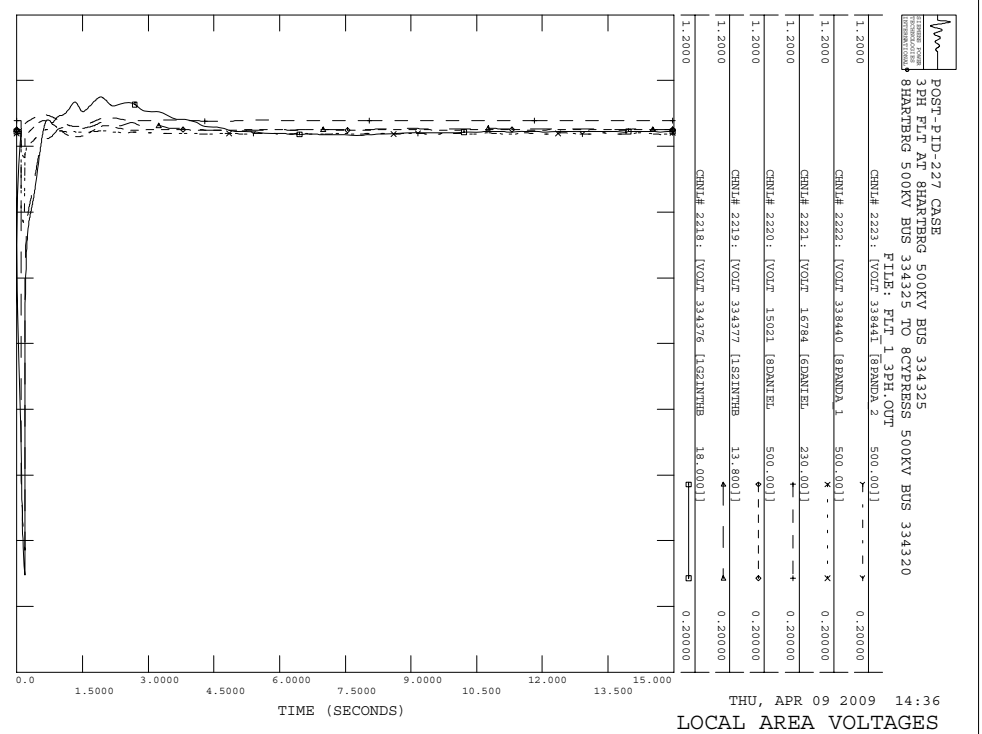
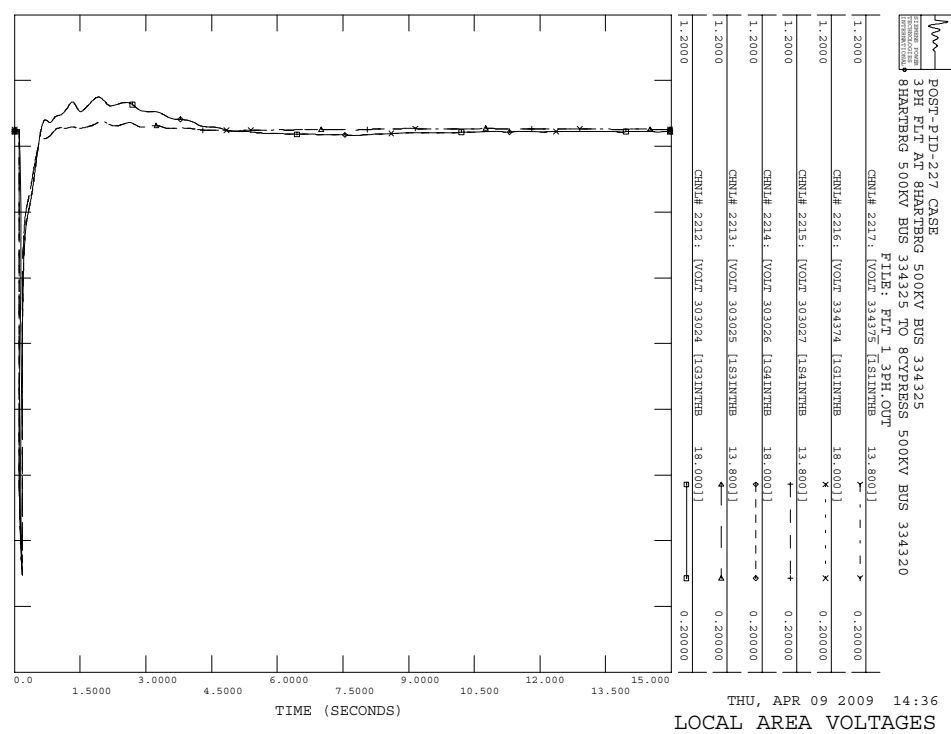
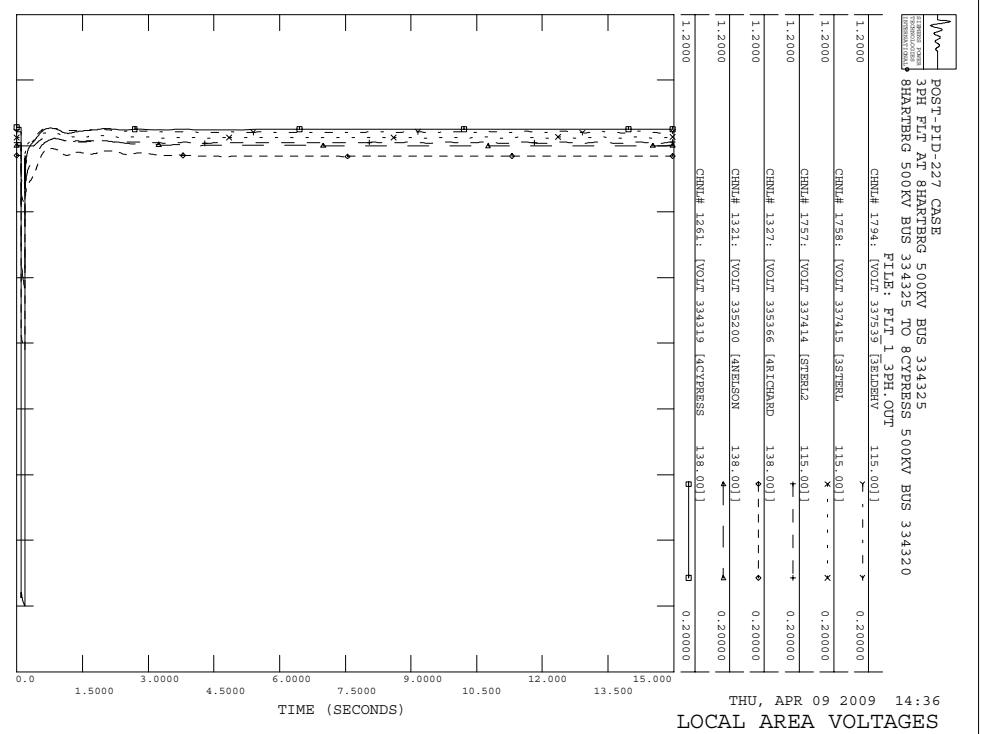
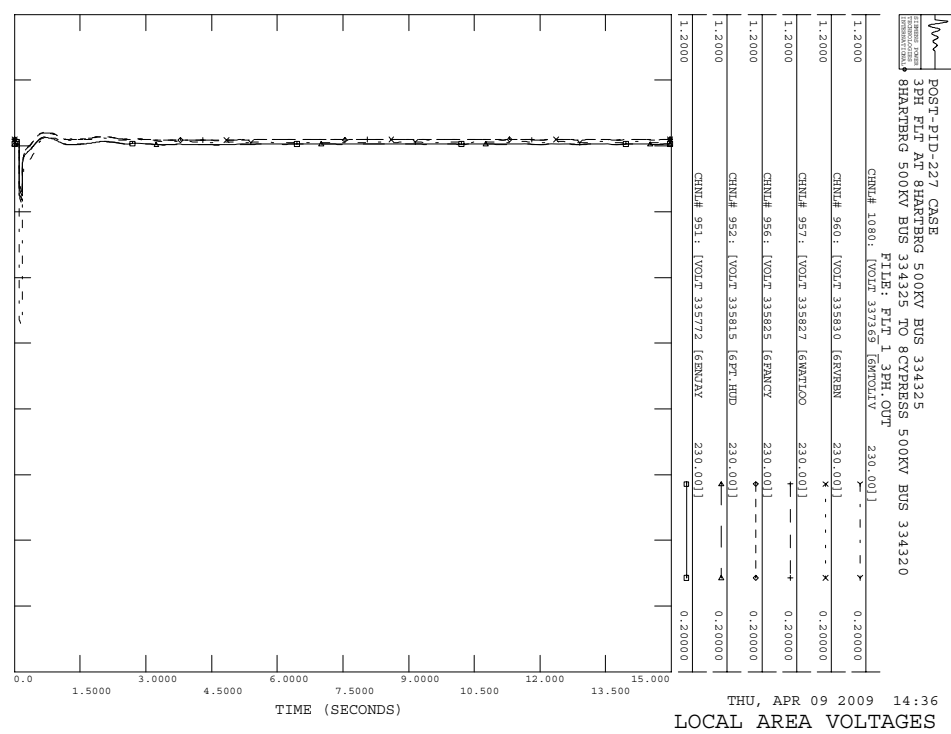


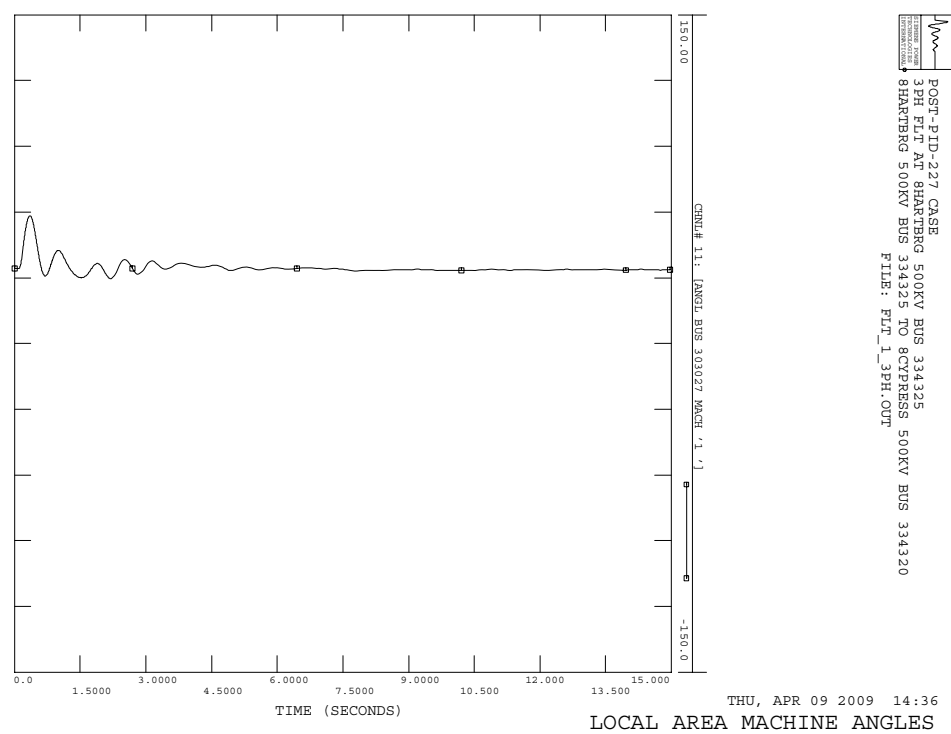
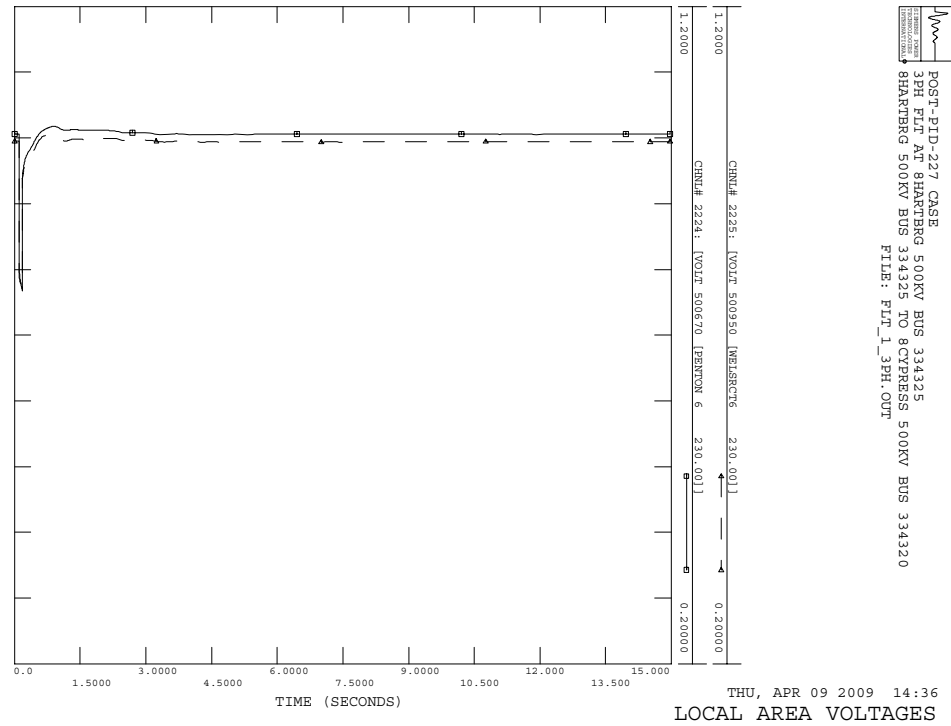
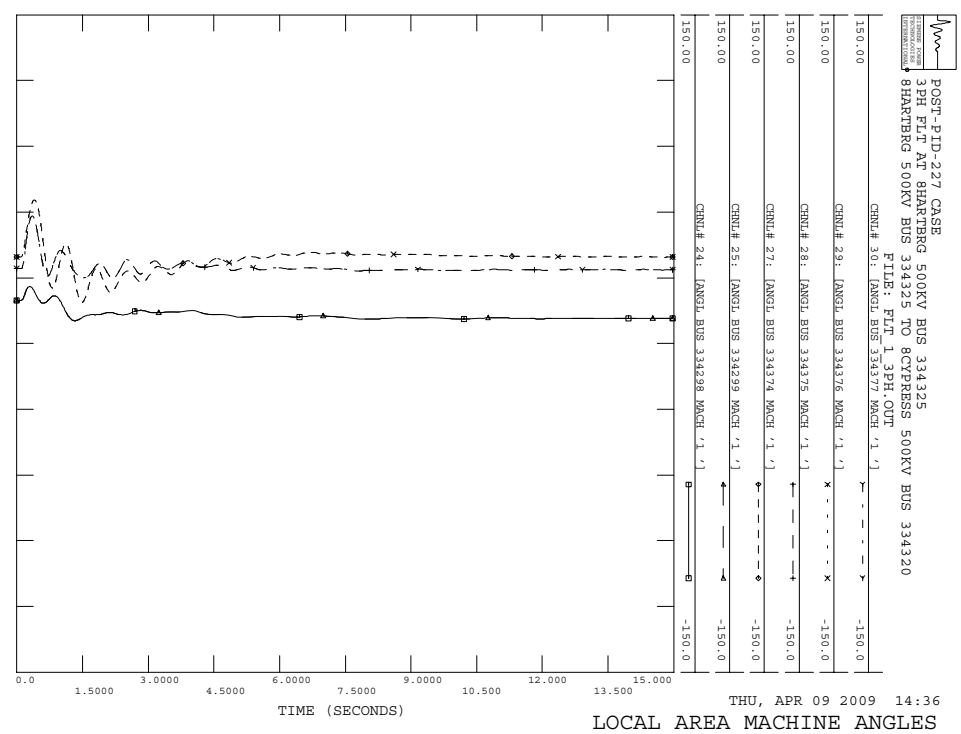
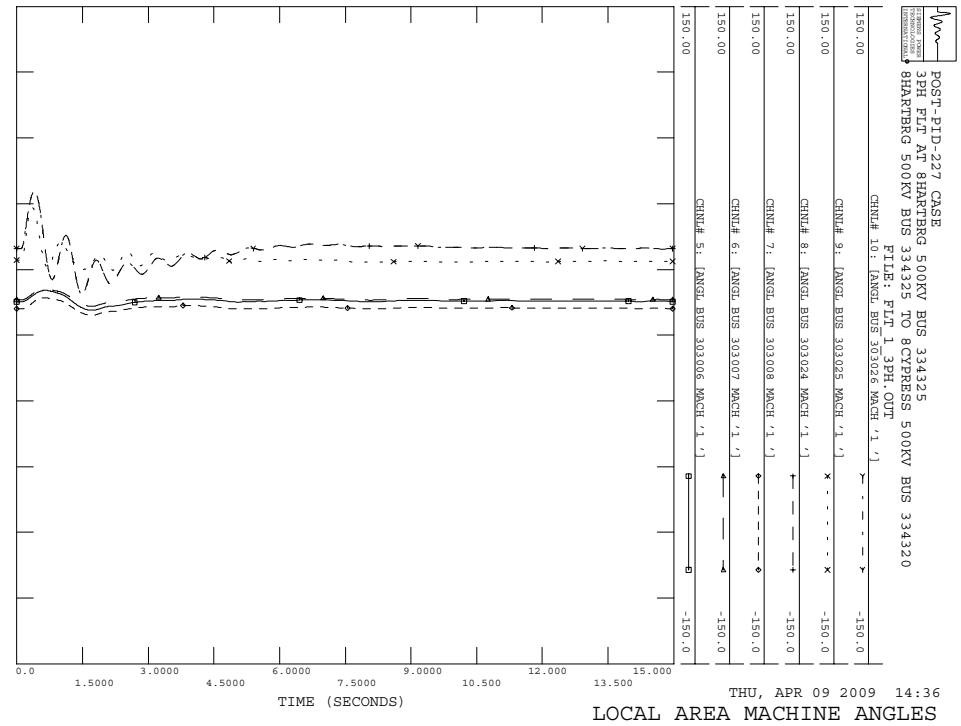
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



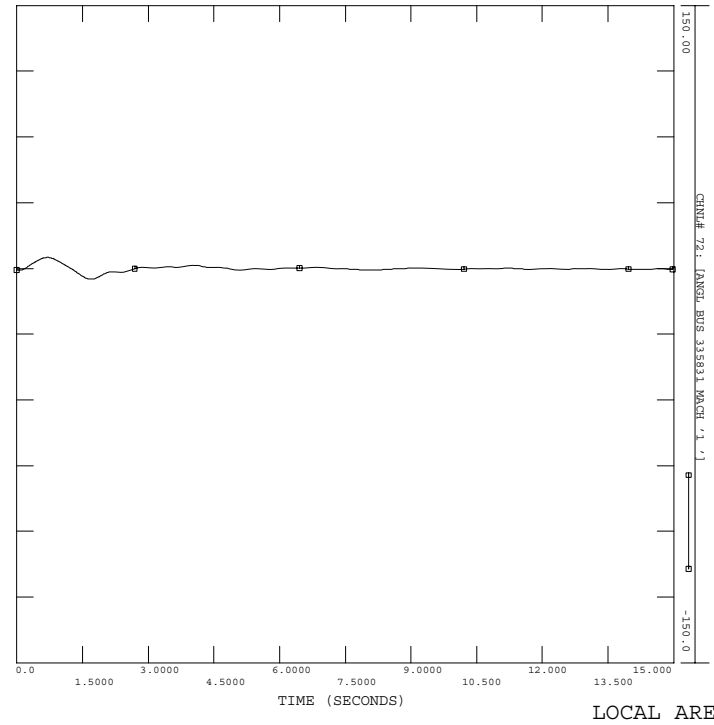
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



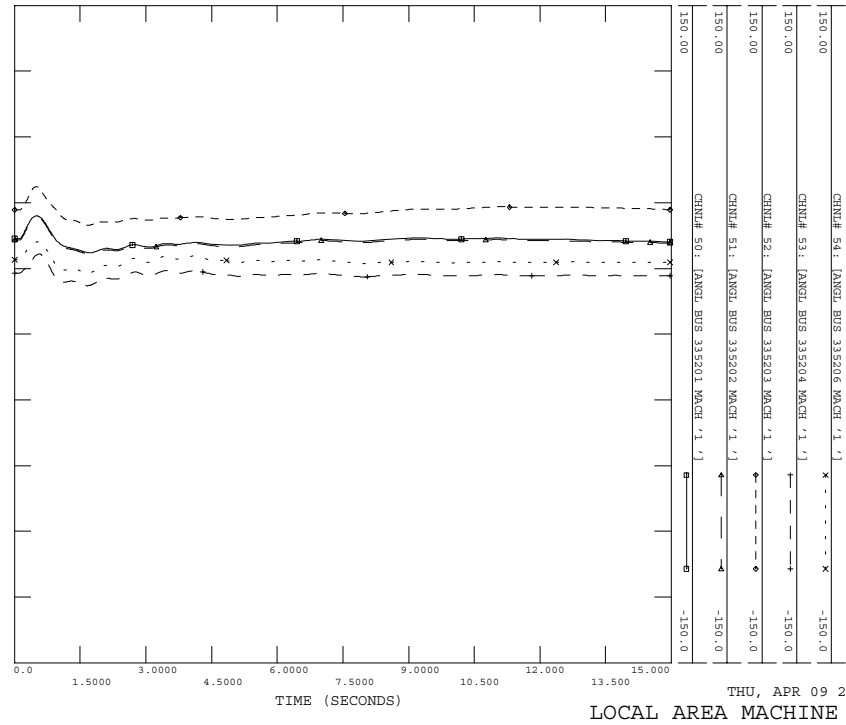




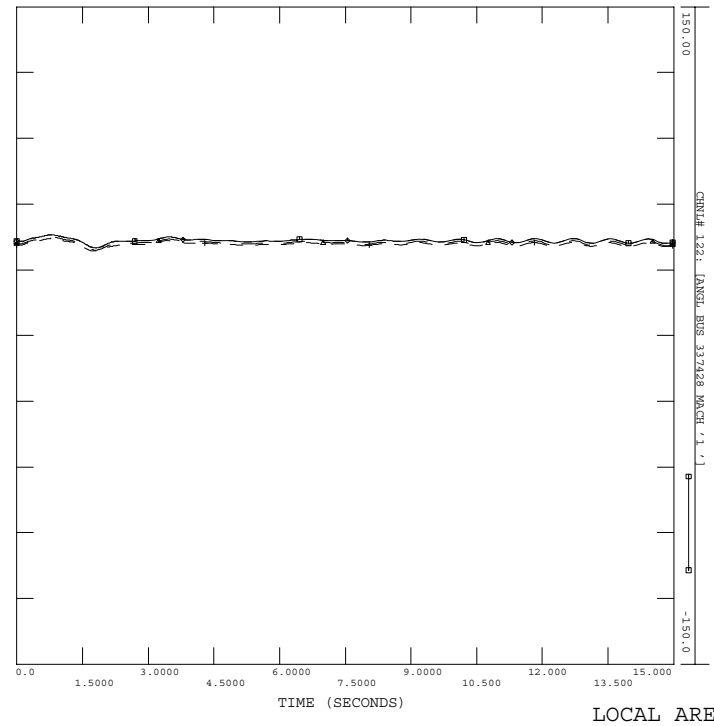
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



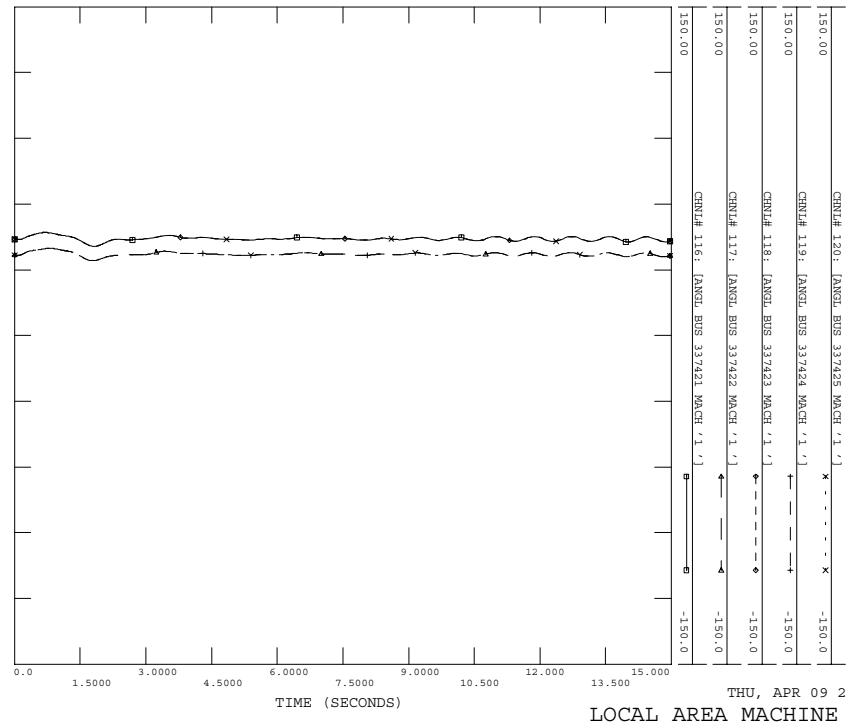
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



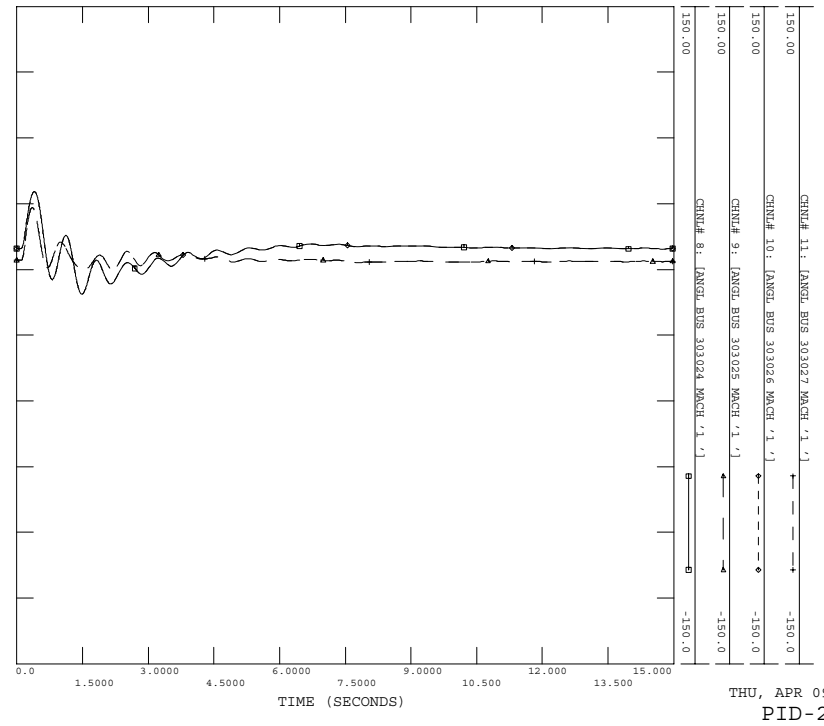
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



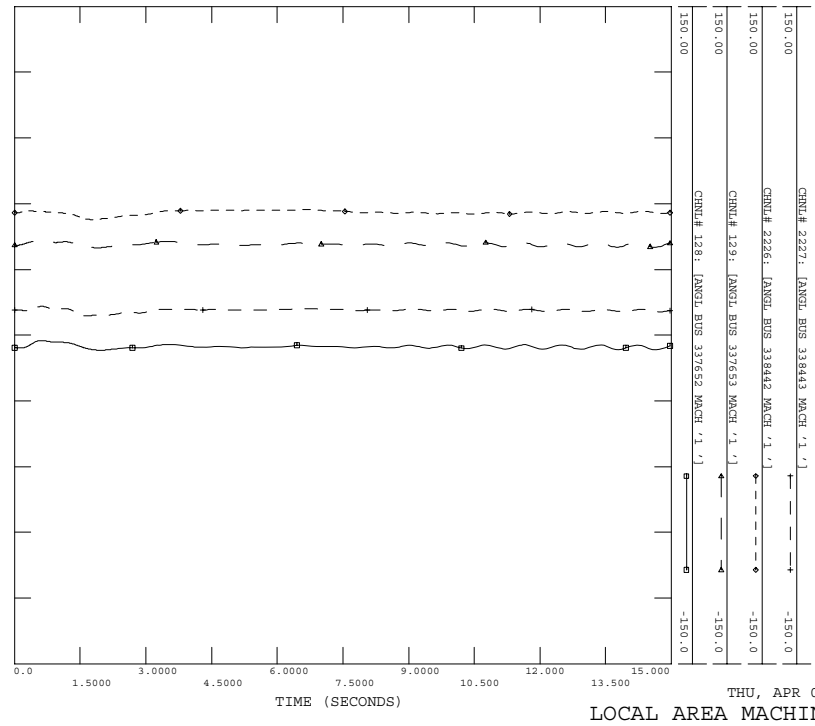
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH_OUT



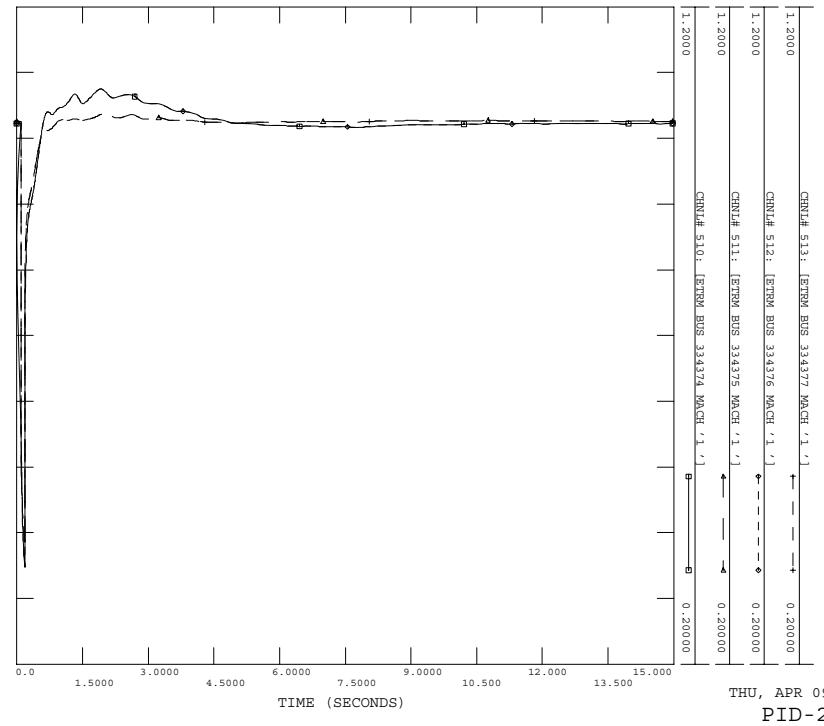
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT



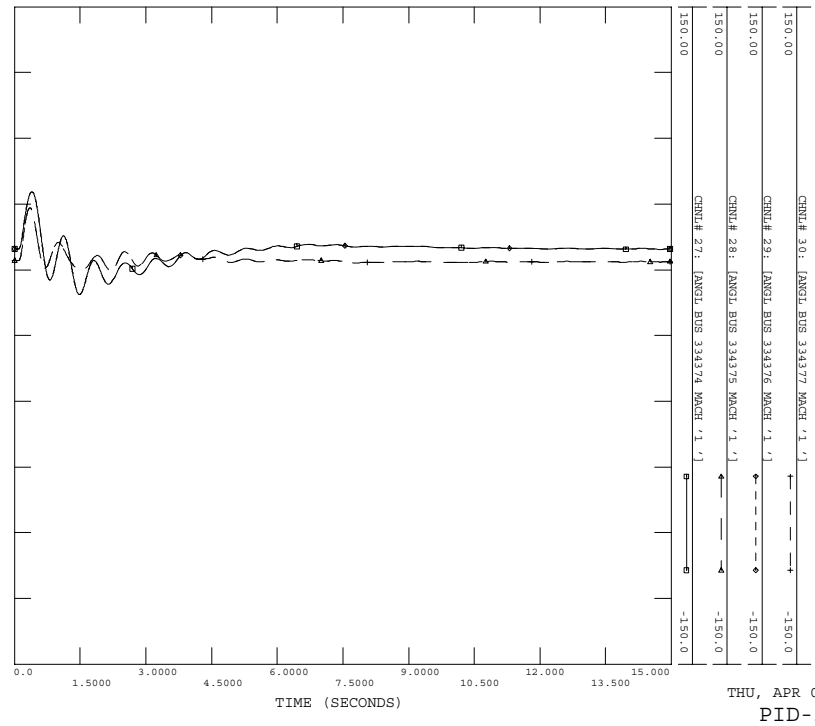
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT



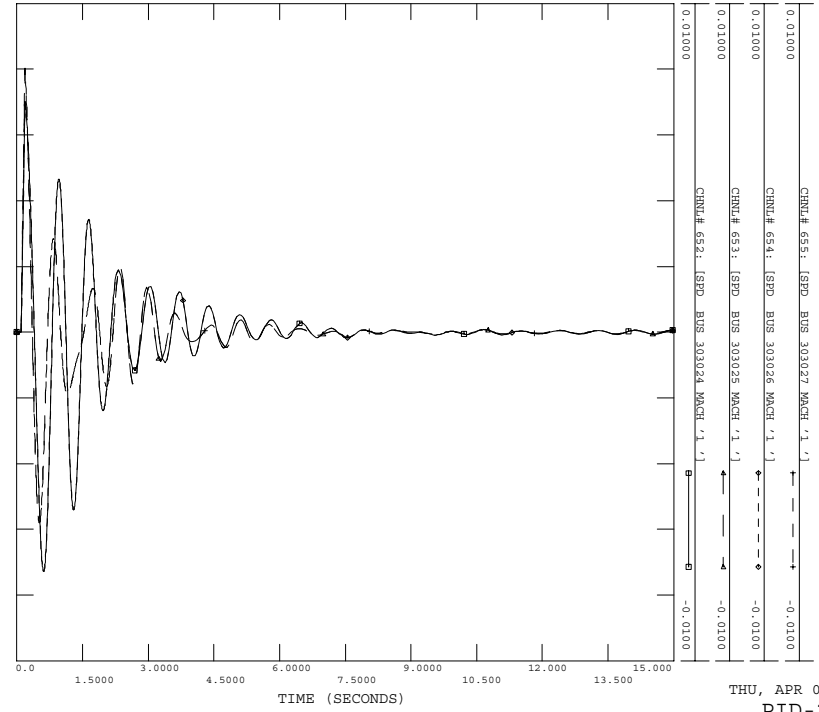
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT



POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT

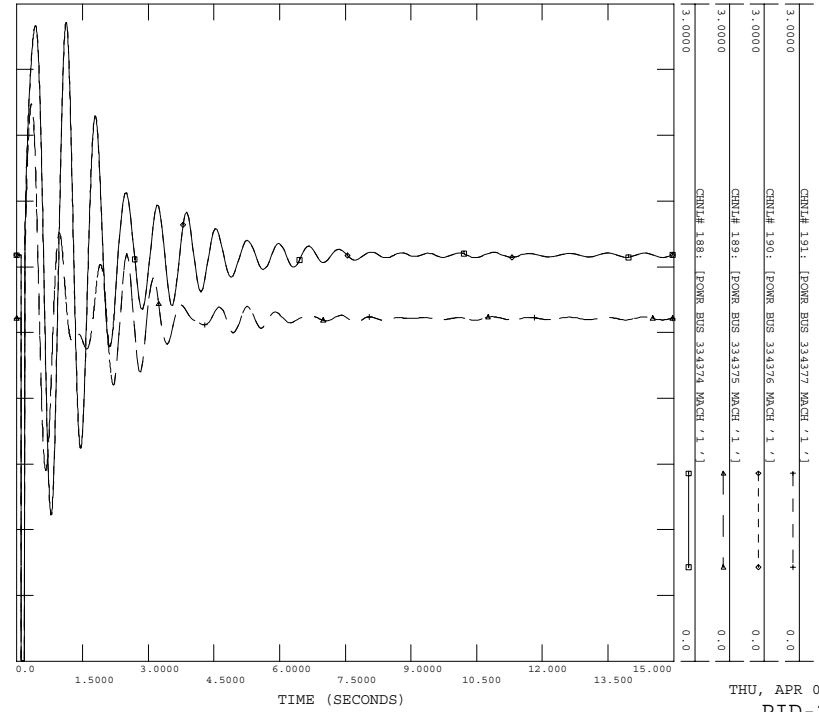


POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT



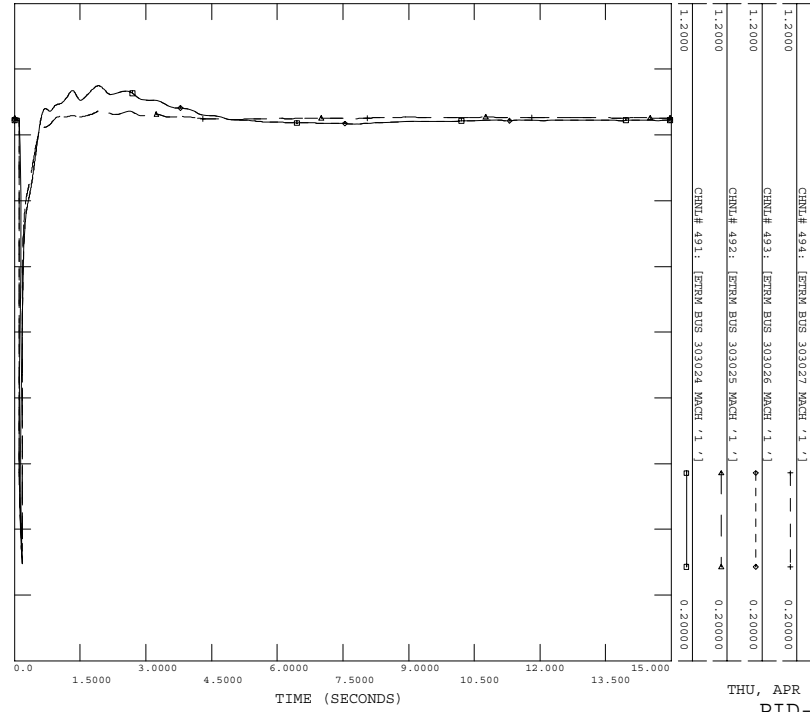
THU, APR 09 2009 14:37
 PID-227 PLOTS

POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT



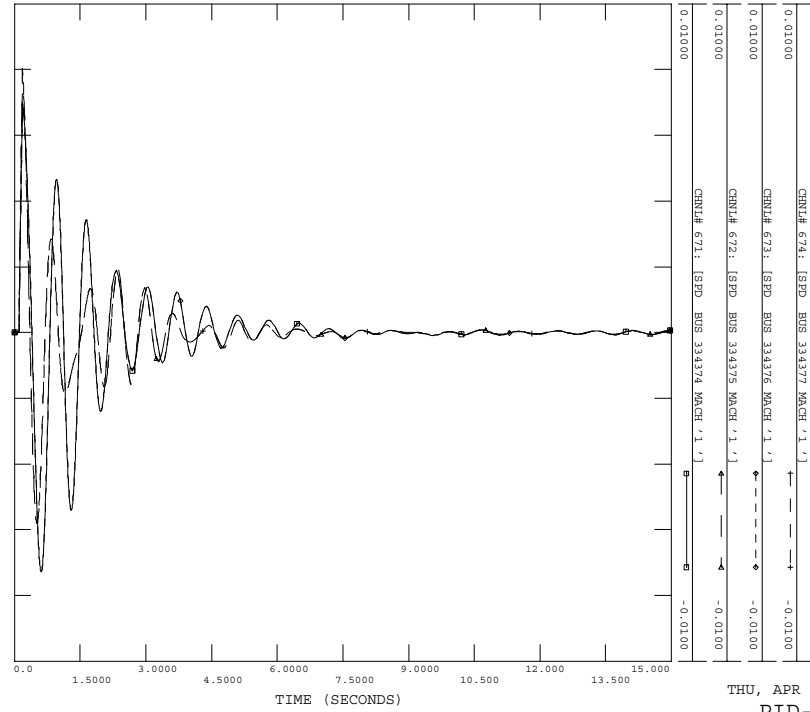
THU, APR 09 2009 14:37
 PID-227 PLOTS

POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT



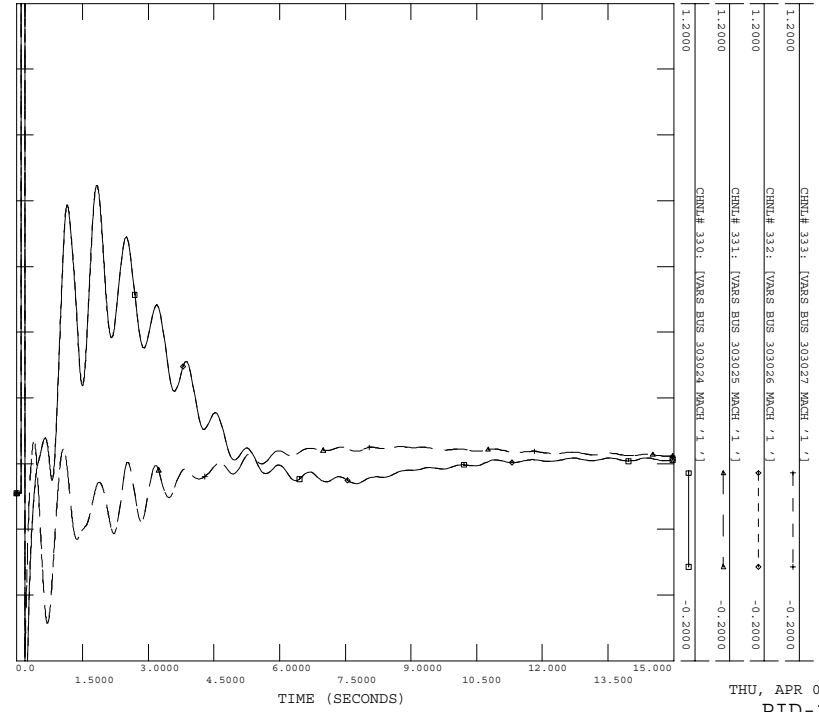
THU, APR 09 2009 14:36
 PID-227 PLOTS

POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1_3PH.OUT

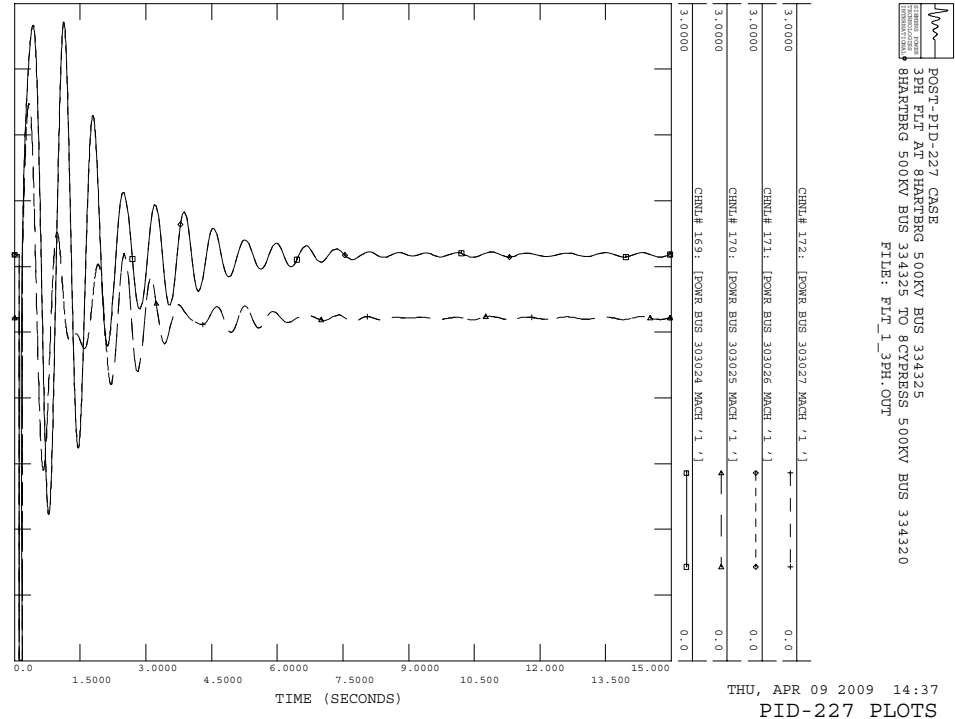


THU, APR 09 2009 14:37
 PID-227 PLOTS

POST-PID-227 CASE
3PH FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8CYRESS 500KV BUS 334320
FILE: FLT_1_3PH.OUT



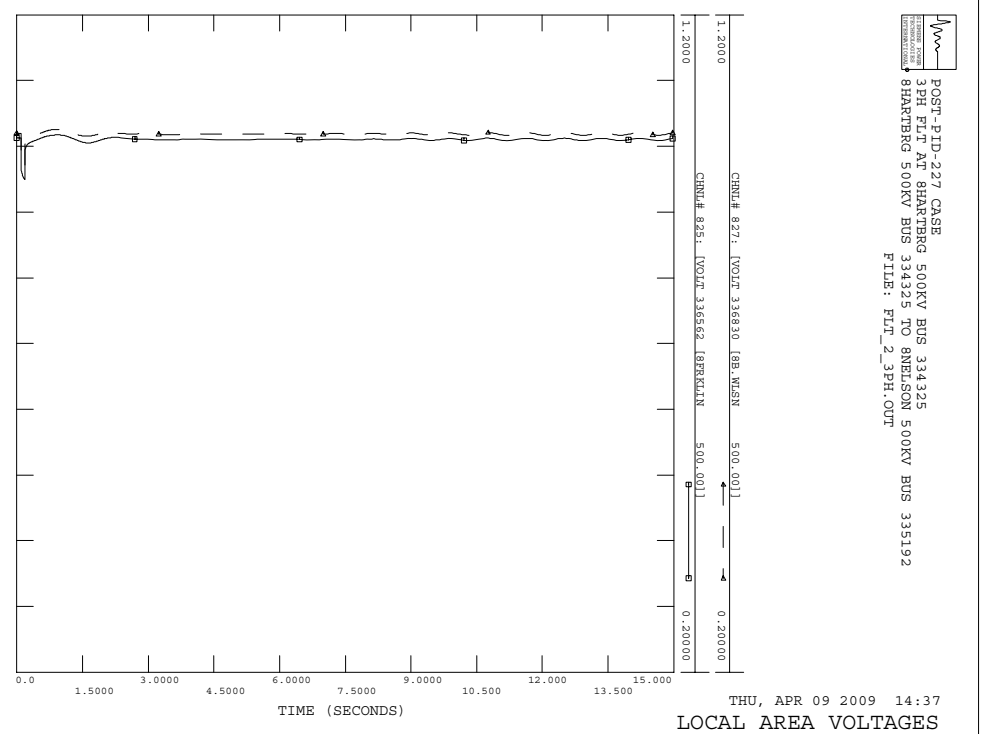
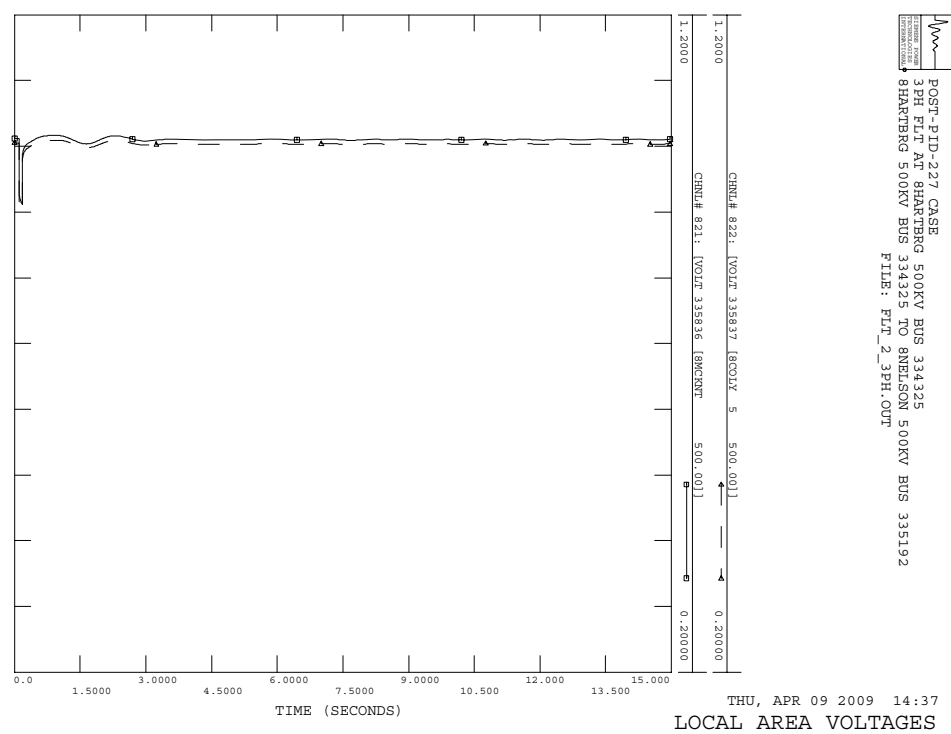
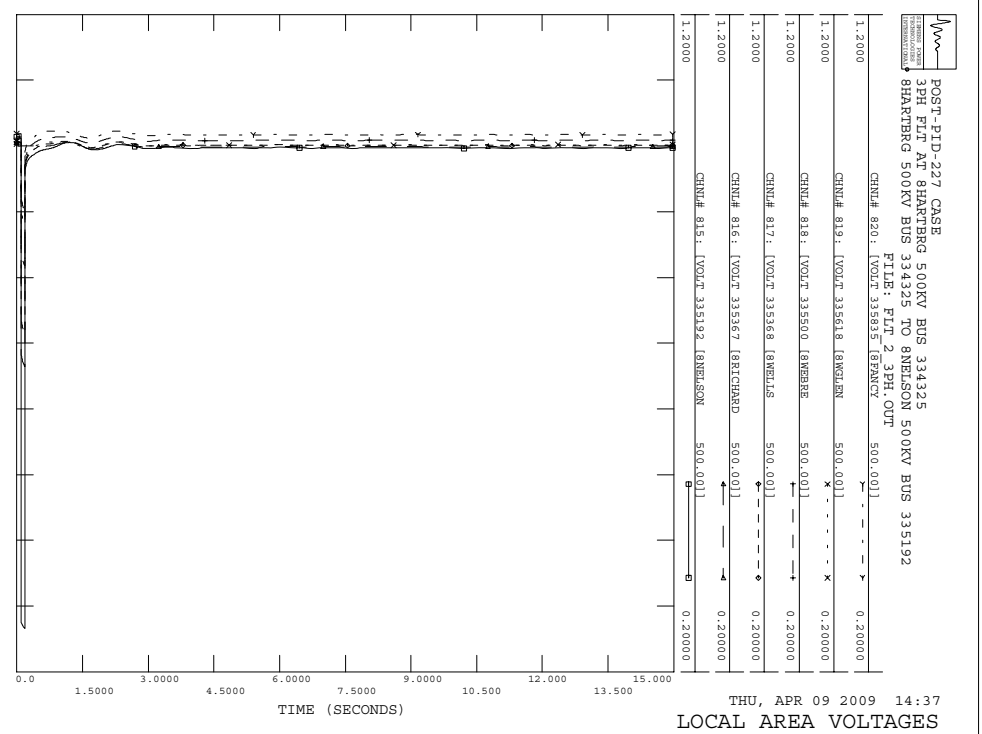
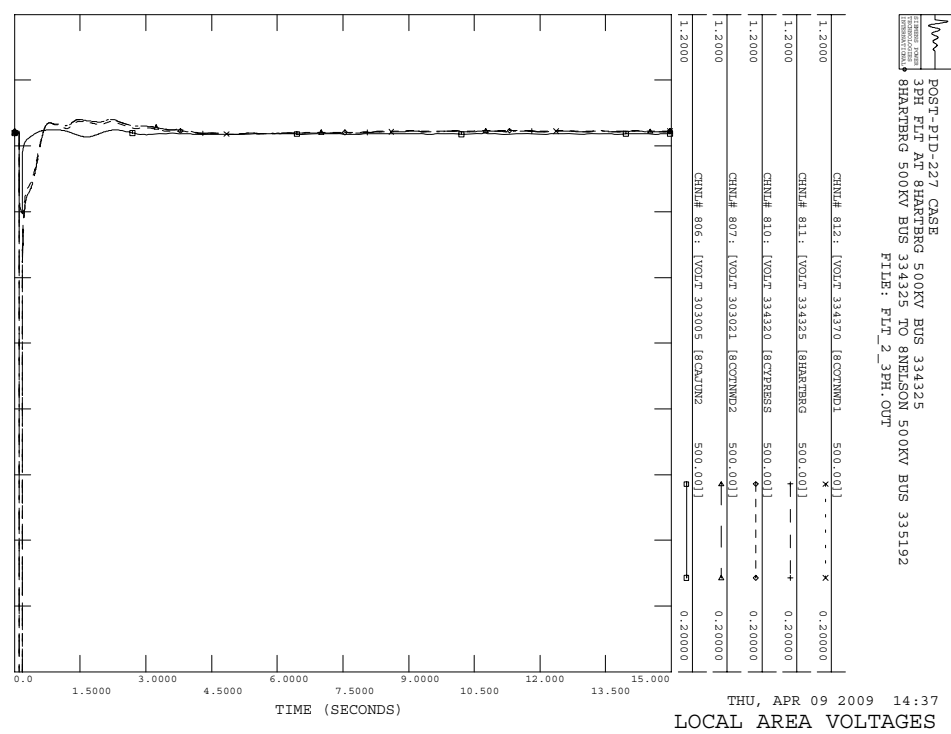
POST-PID-227 CASE
3PH FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8CYRESS 500KV BUS 334320
FILE: FLT_1_3PH.OUT

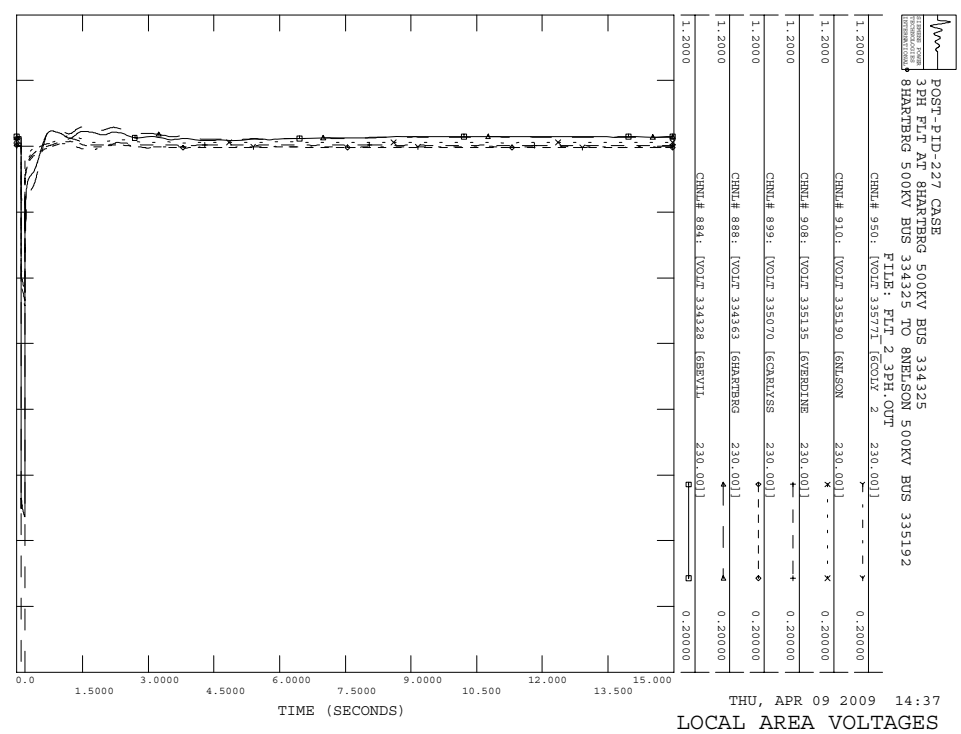
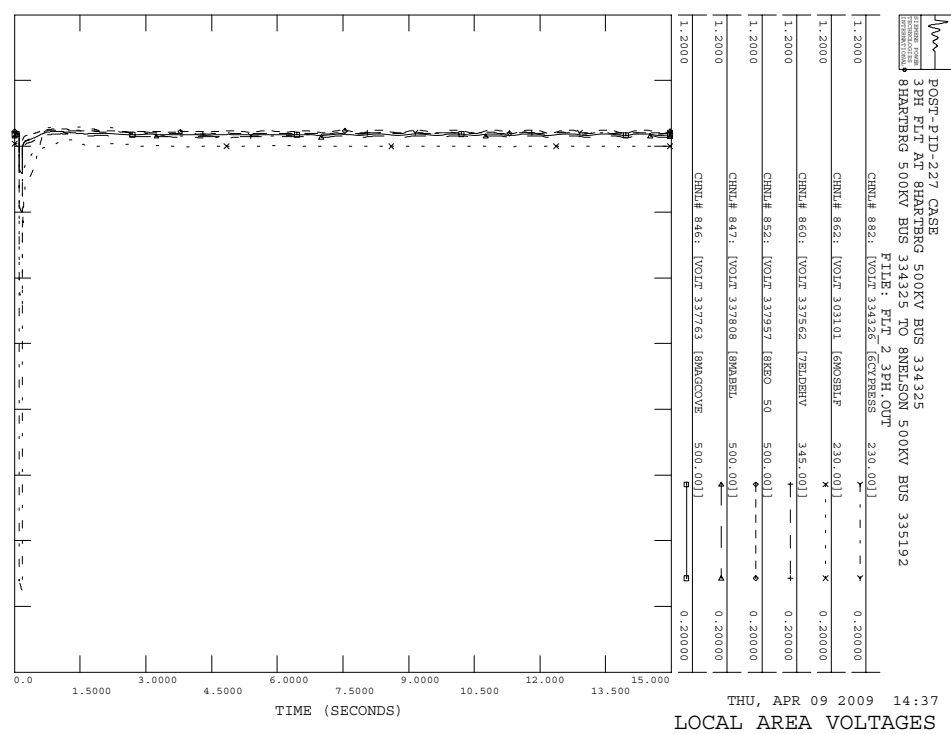
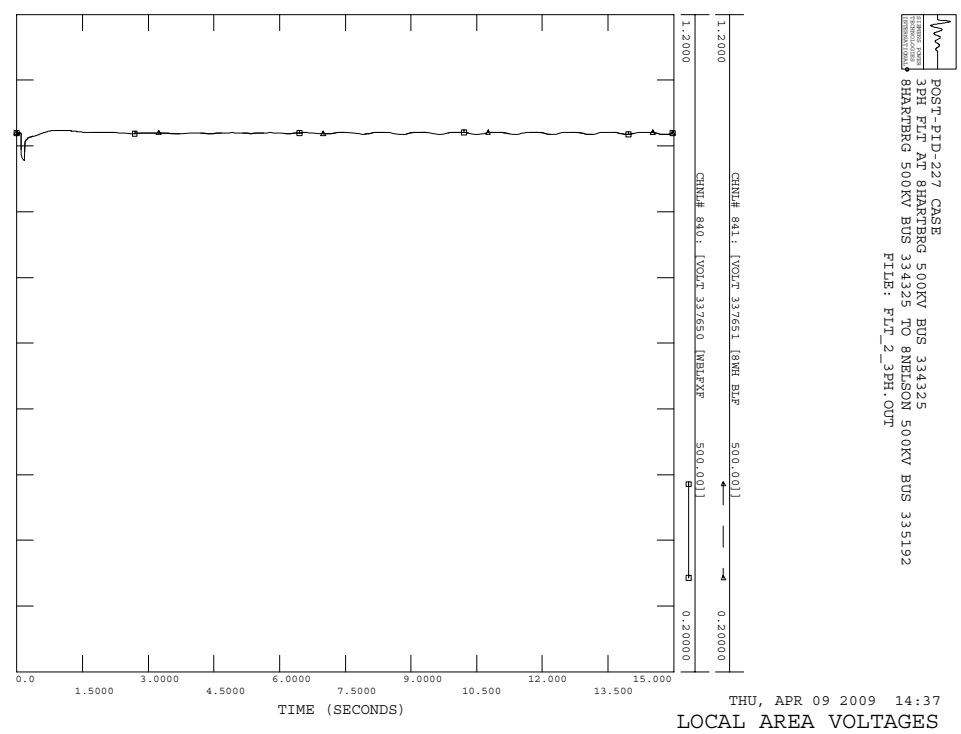
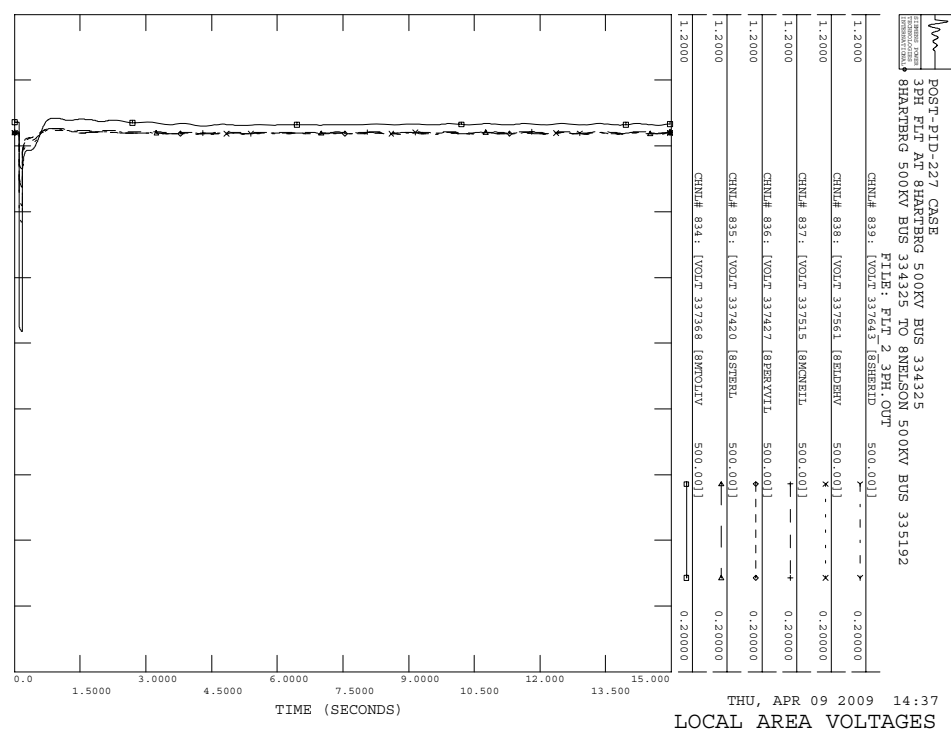


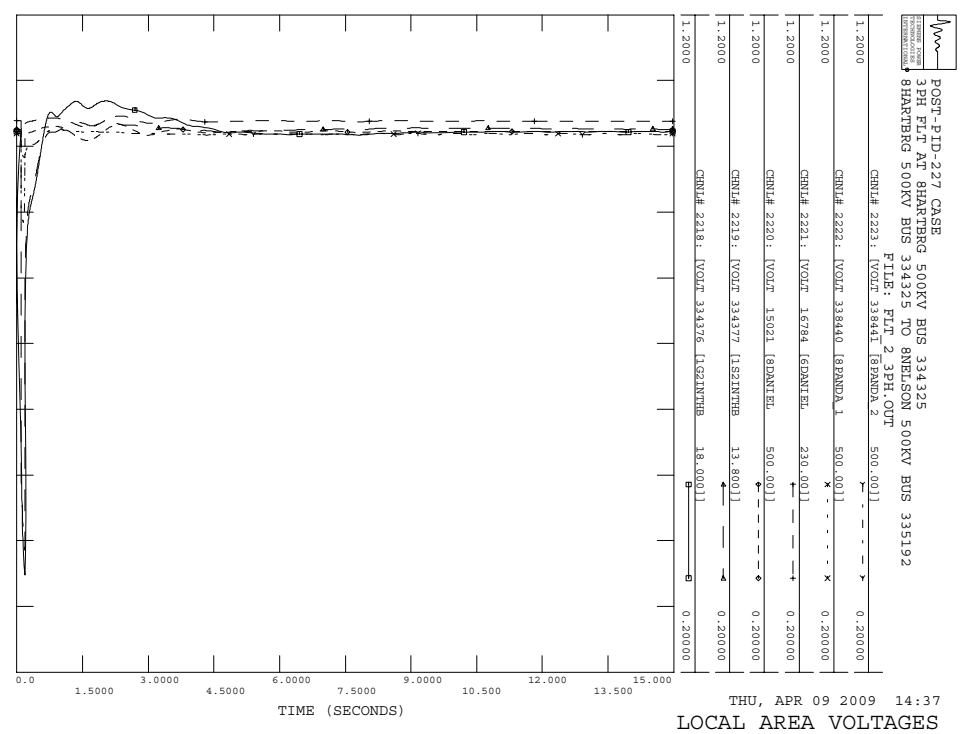
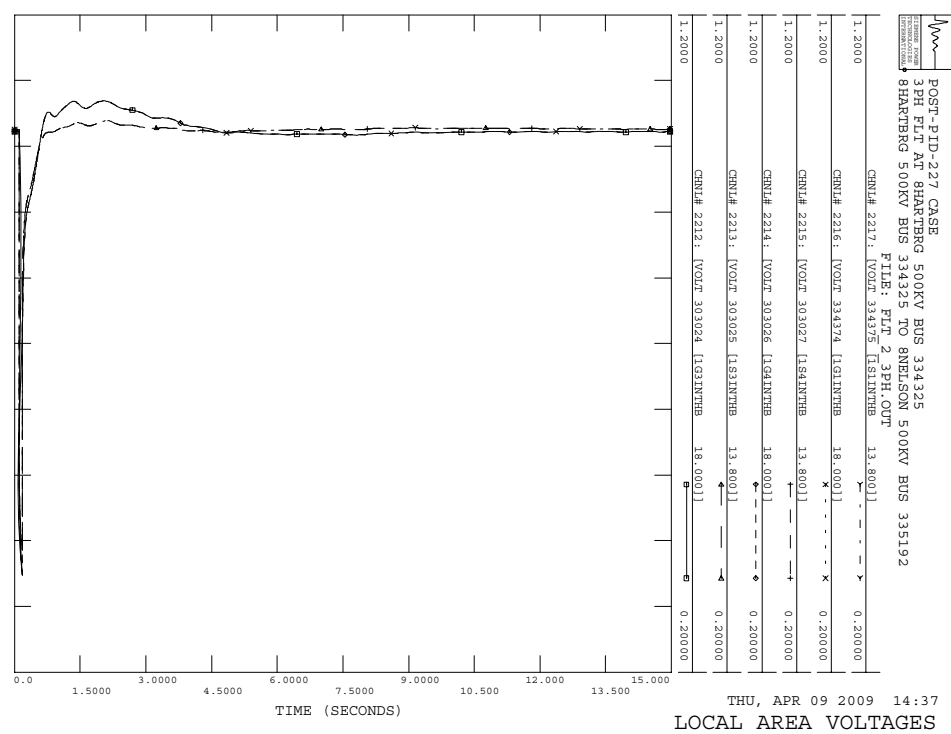
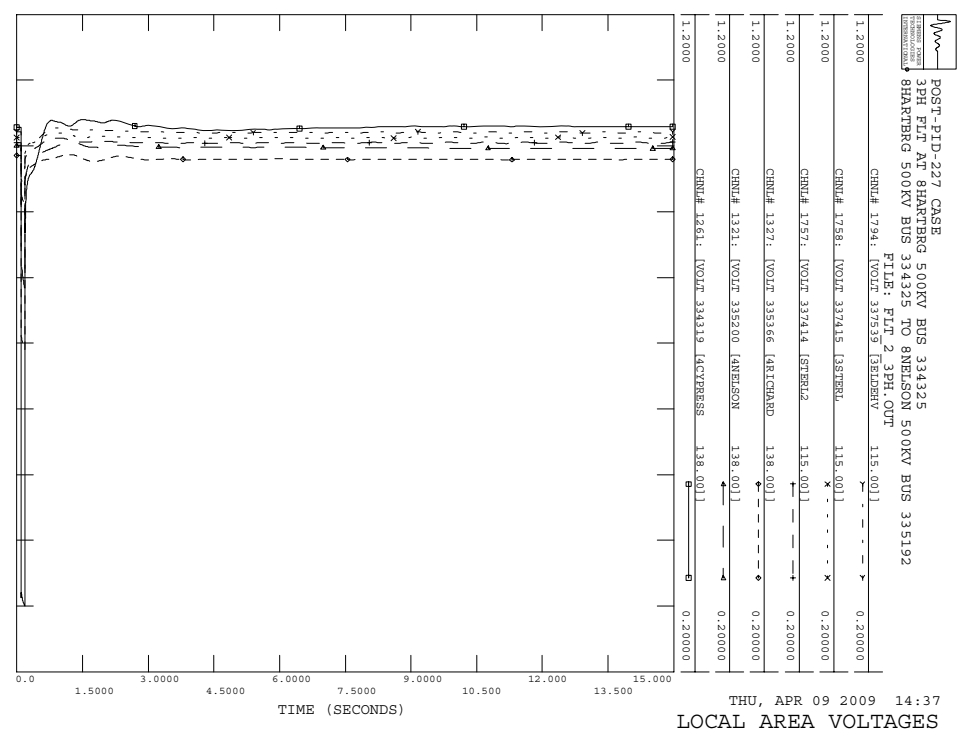
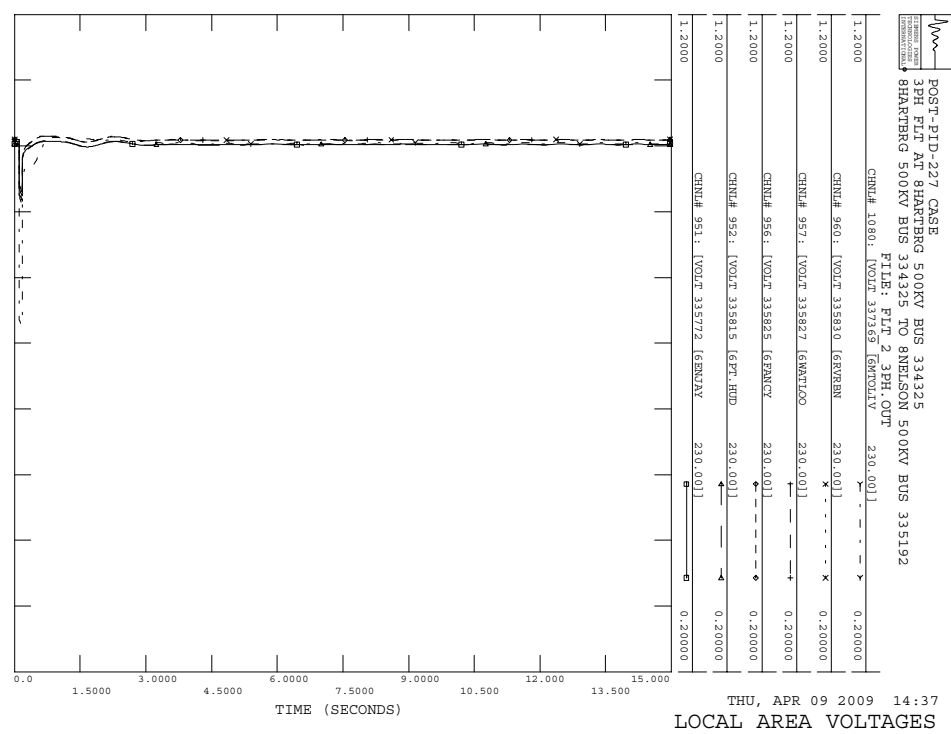
C.2 FLT_2_3PH

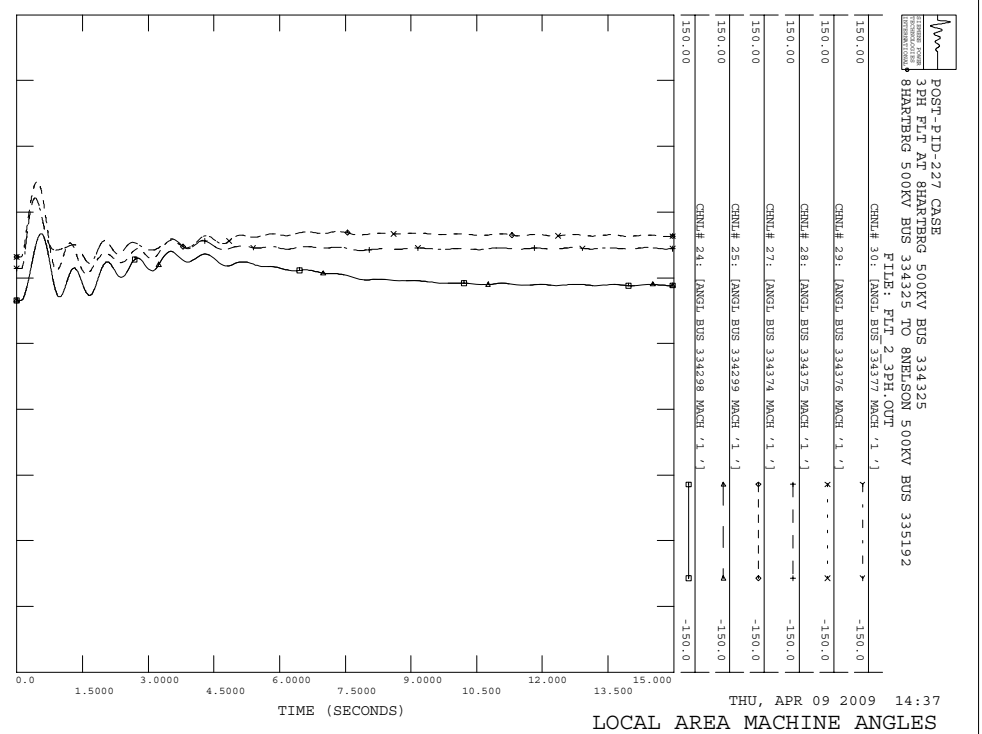
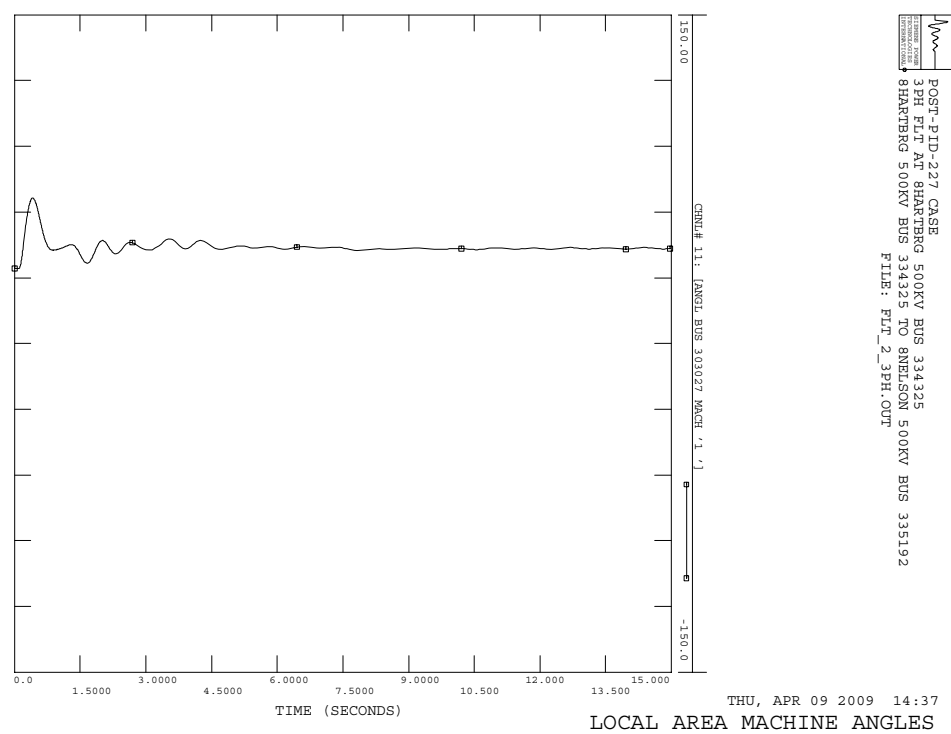
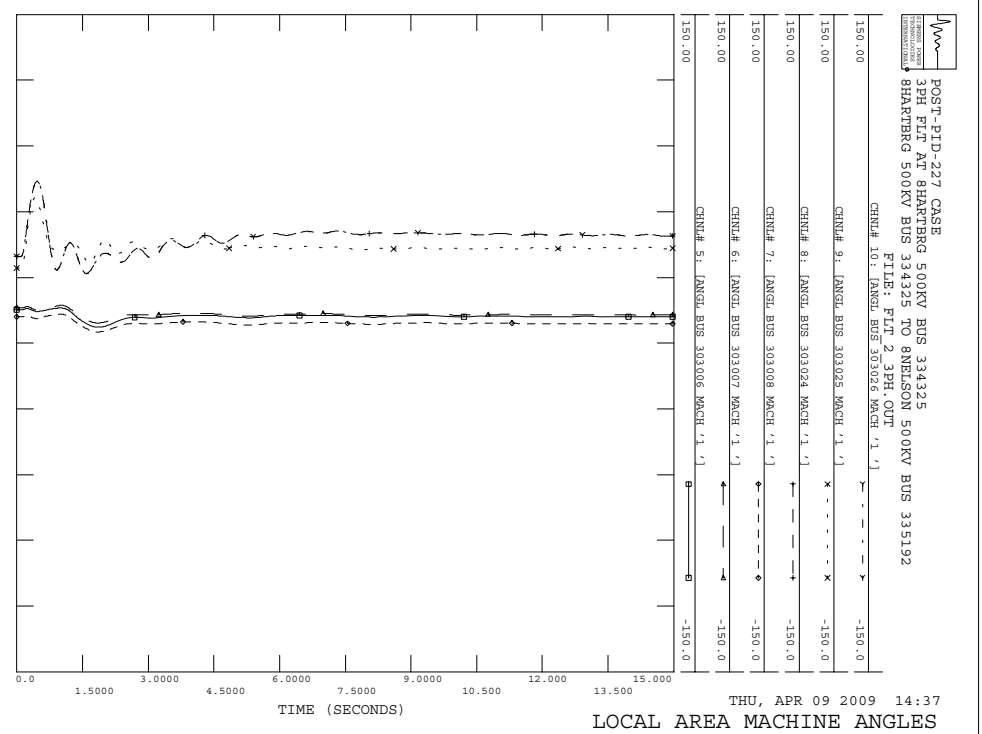
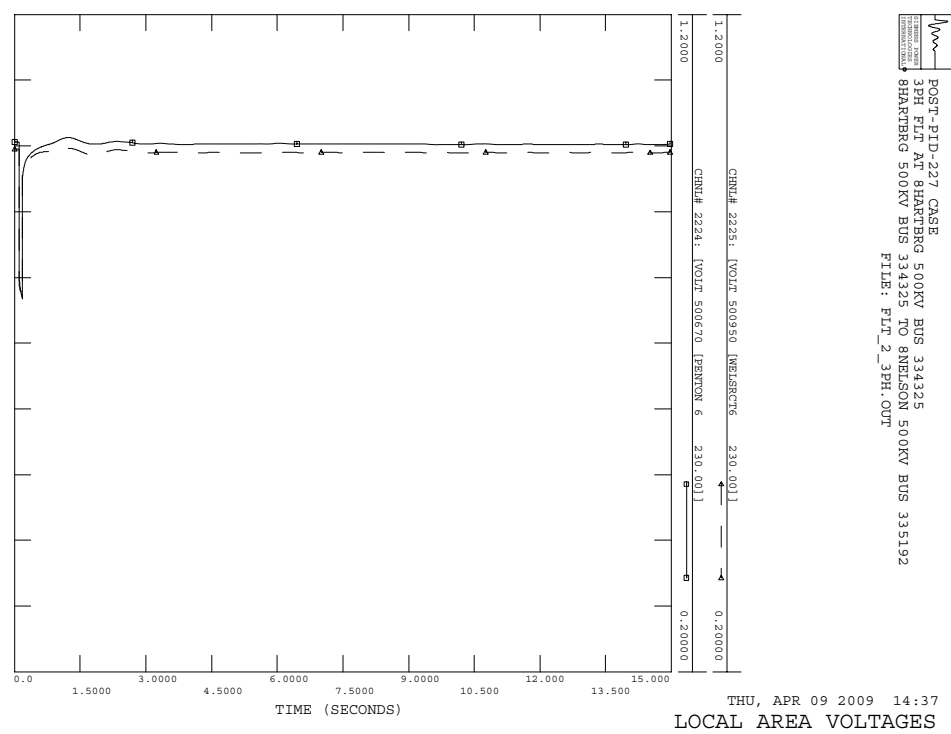
Three phase fault on the 8HARTBRG (#334325) to 8NELSON (#335192) 500 kV line, near the 8HARTBRG.

- a) Apply 3 Phase Fault at 8HARTBRG 500KV BUS 334325
- b) Clear fault after 5 cycles by tripping line from 8HARTBRG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192

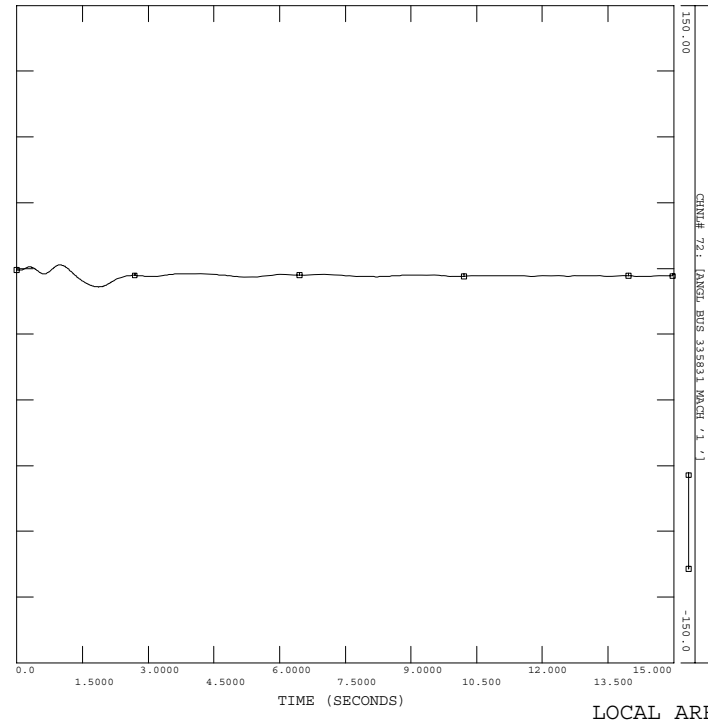




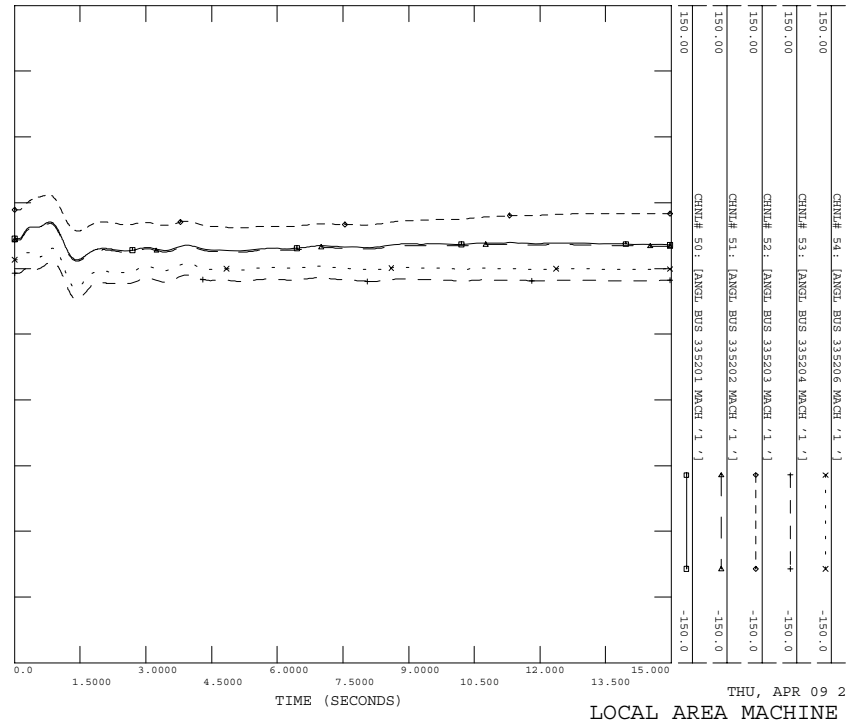




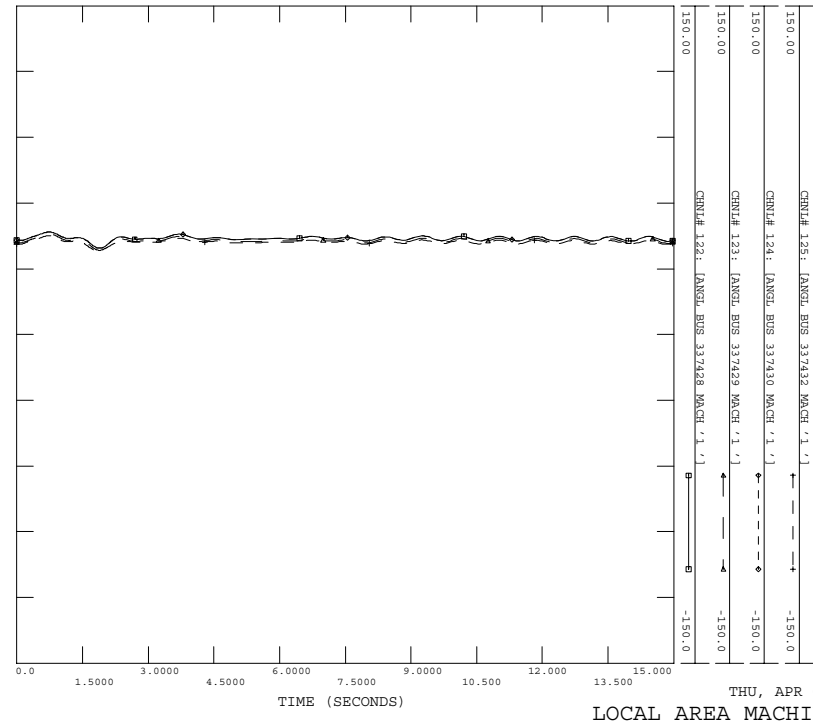
POST-PID-227 CASE
 3PH FLT AT BHARTERG 500KV BUS 334325
 8BHARTERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



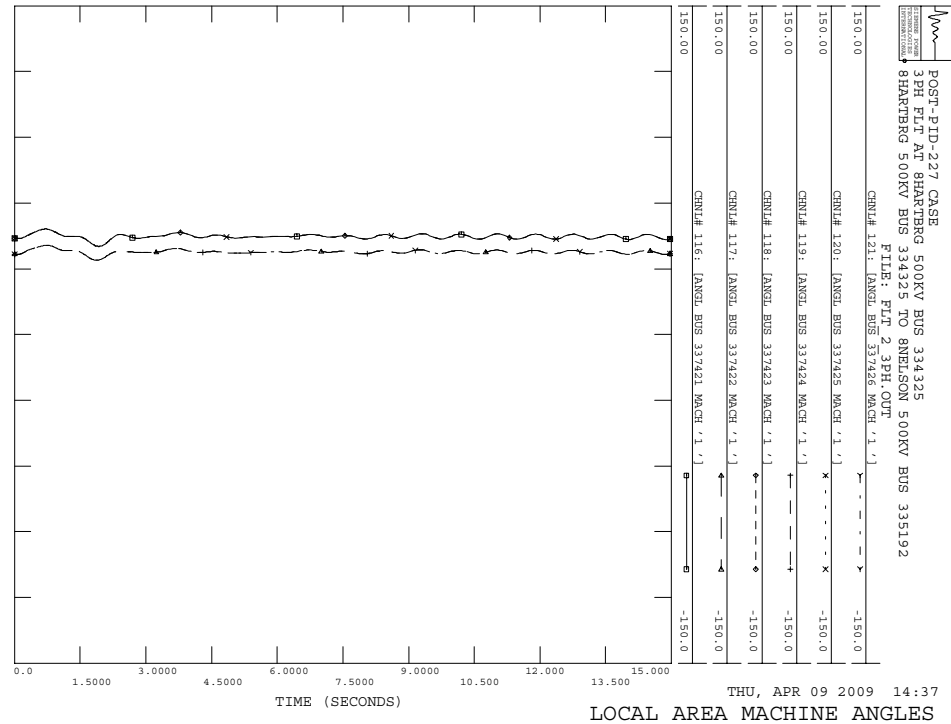
POST-PID-227 CASE
 3PH FLT AT BHARTERG 500KV BUS 334325
 8BHARTERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



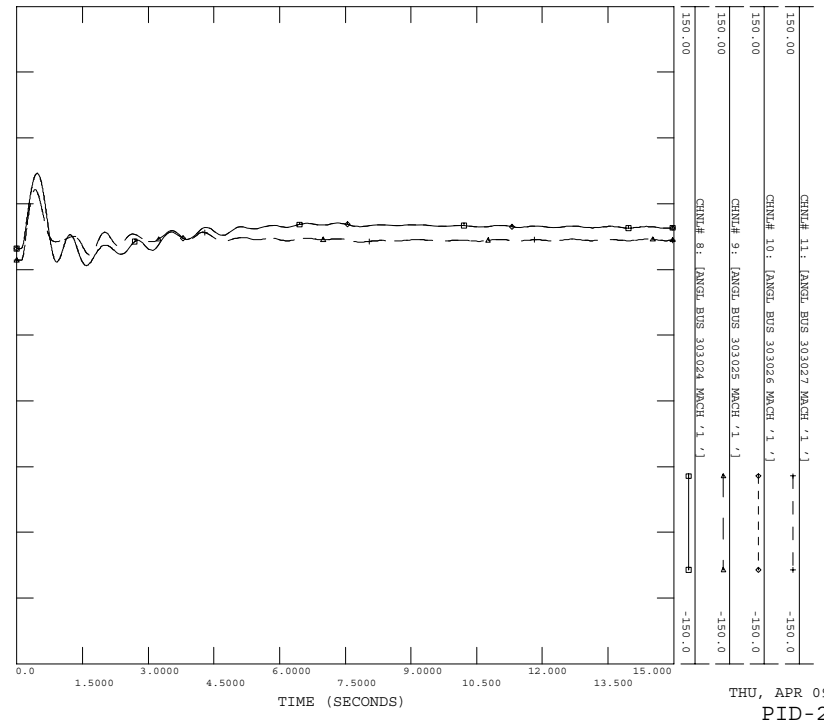
POST-PID-227 CASE
 3PH FLT AT BHARTERG 500KV BUS 334325
 8BHARTERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



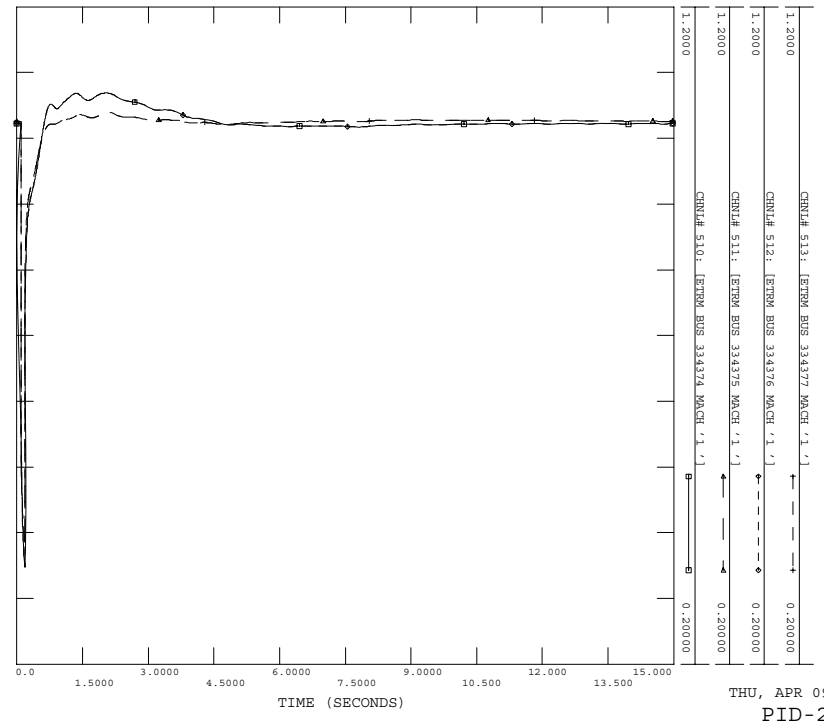
POST-PID-227 CASE
 3PH FLT AT BHARTERG 500KV BUS 334325
 8BHARTERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



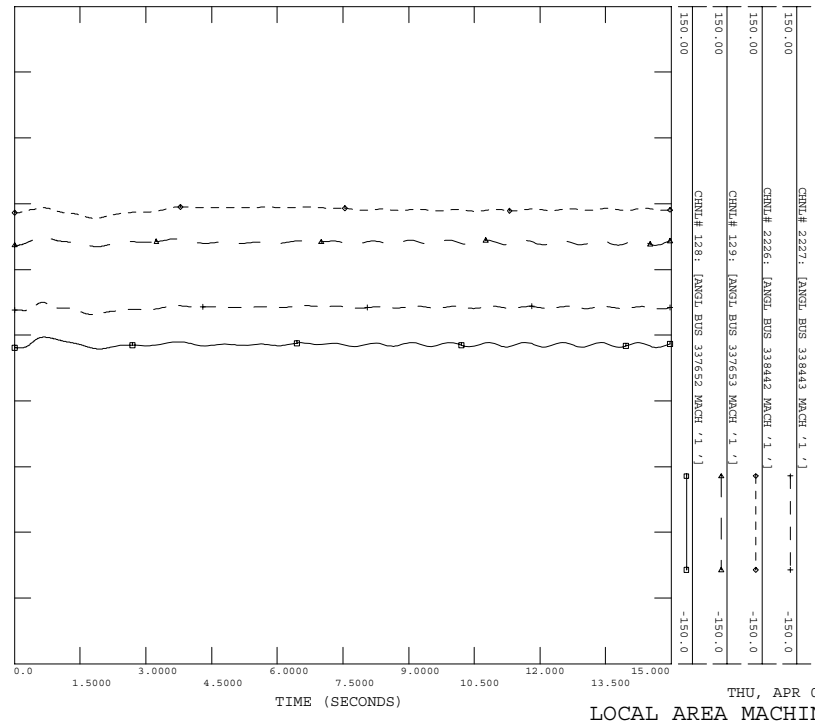
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NEILSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



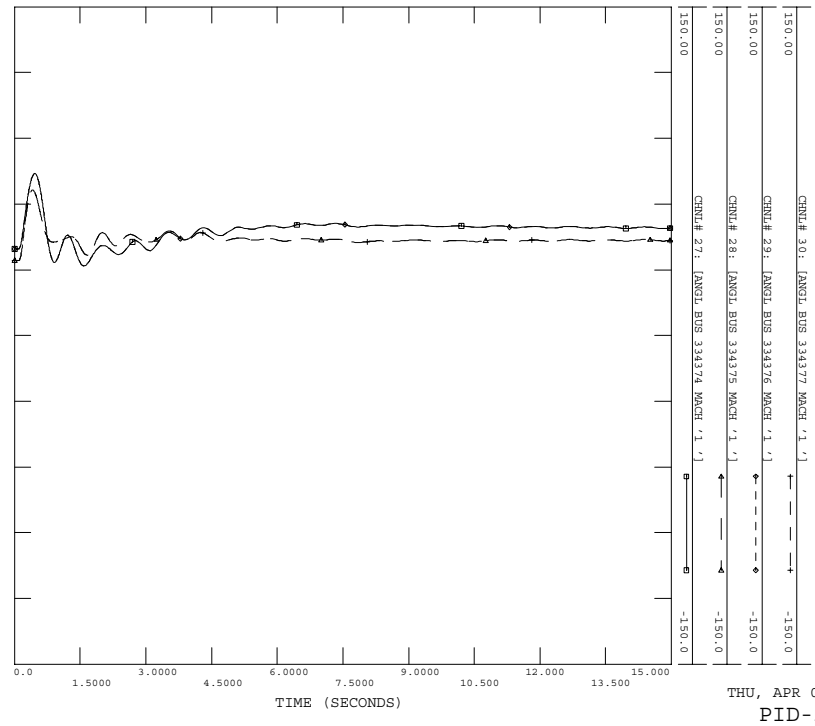
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NEILSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



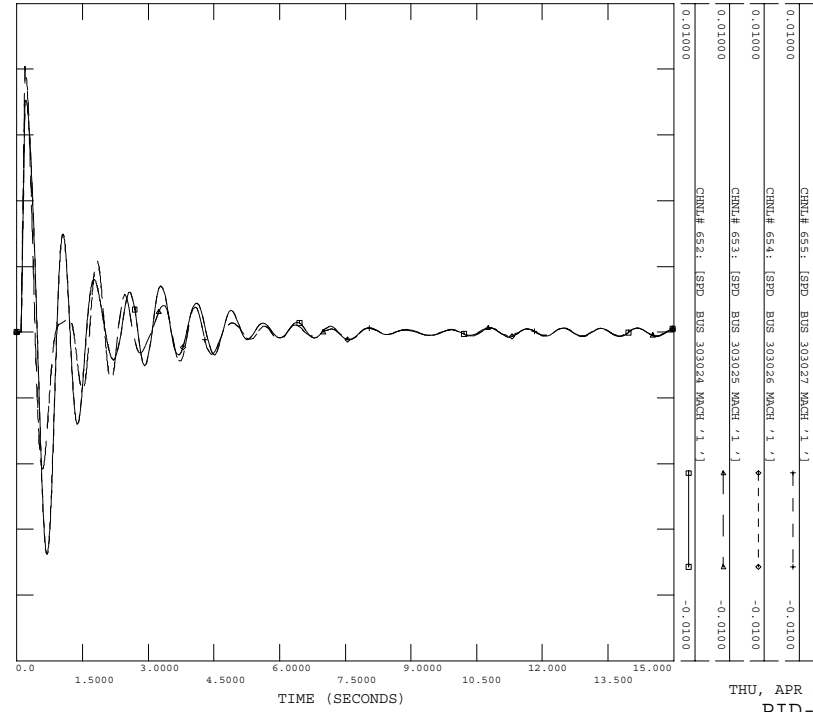
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NEILSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



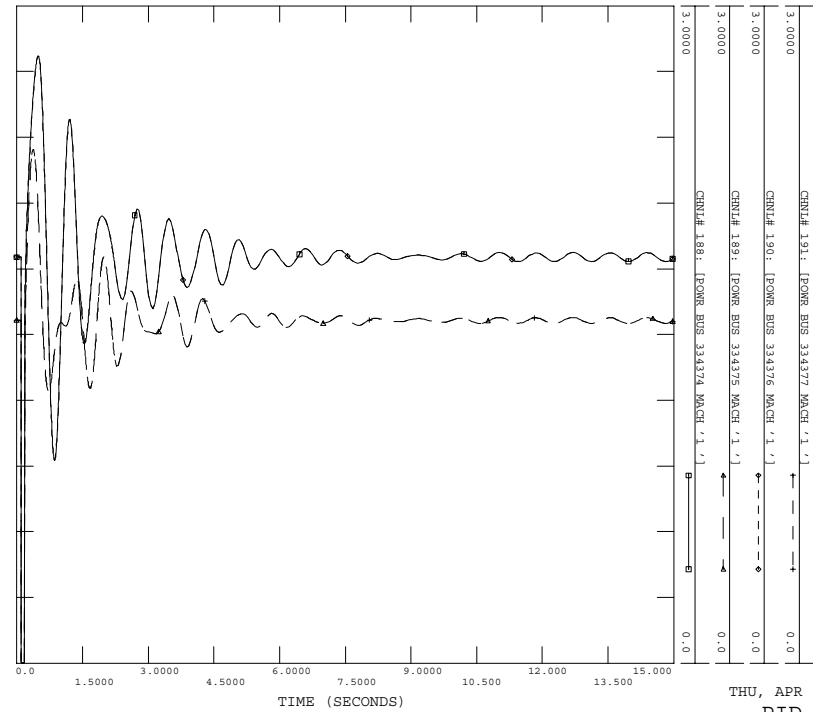
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NEILSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



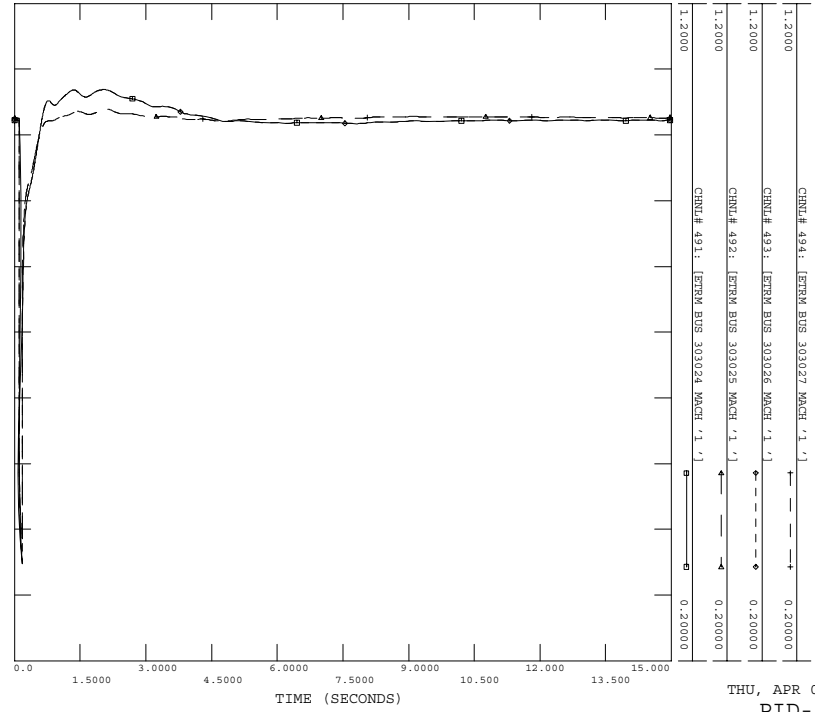
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



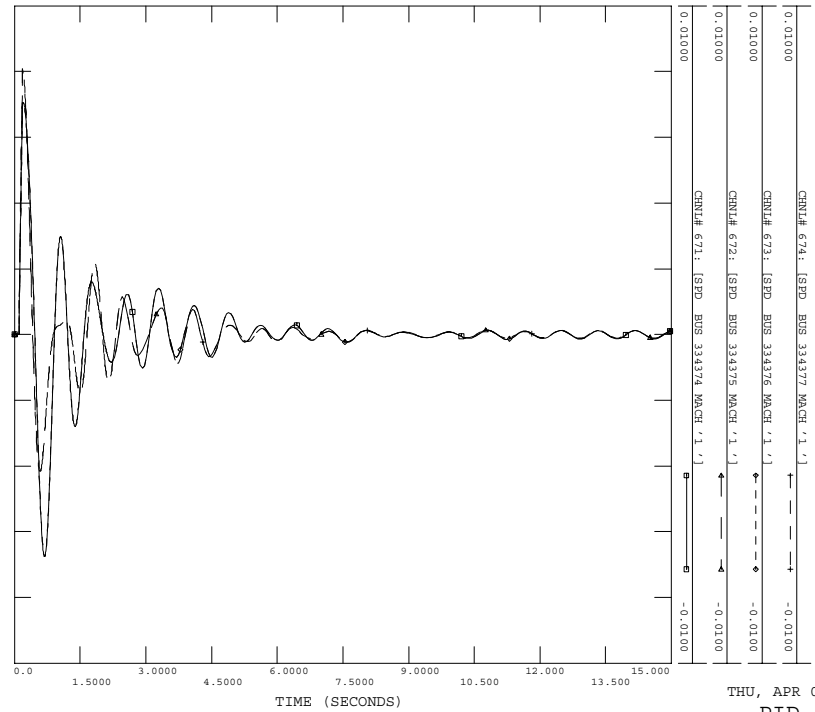
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



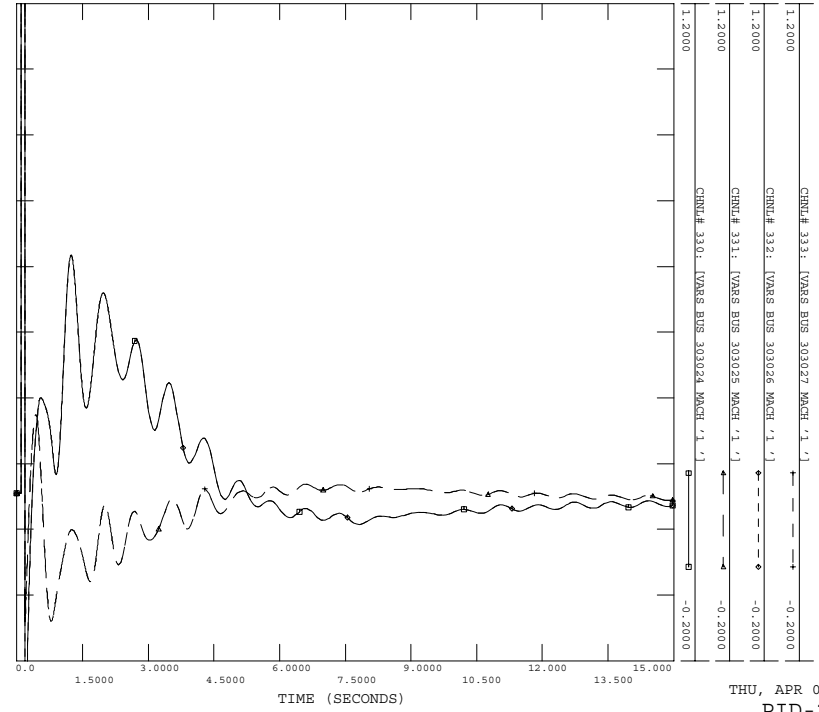
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



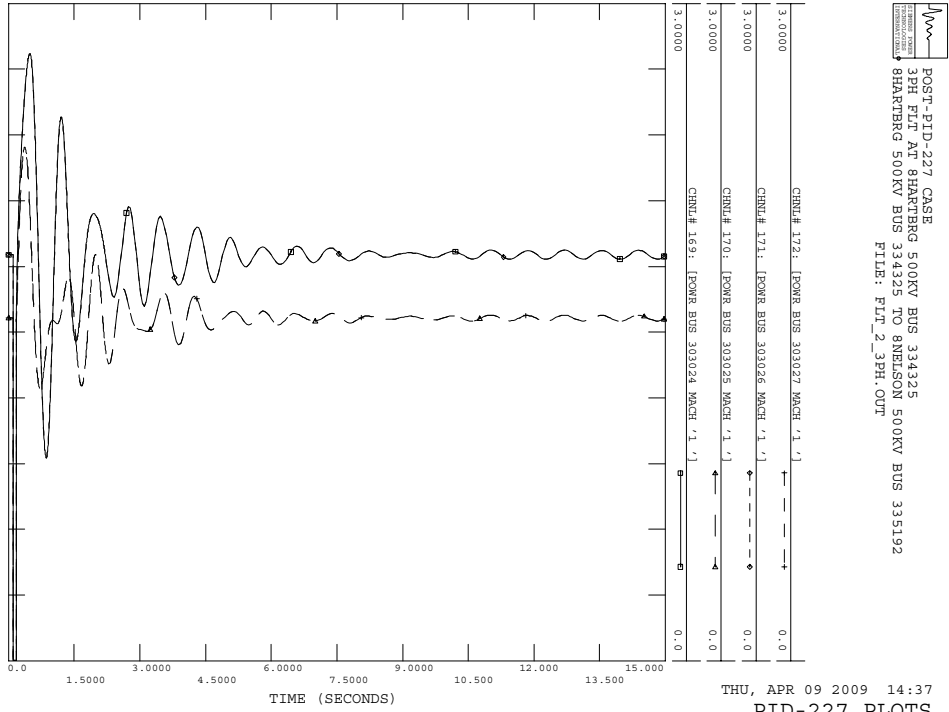
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192
 FILE: FLT_2_3PH.OUT



POST-PID-227 CASE
3PH FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BNEILSON 500KV BUS 335192
FILE: FLT_2_3PH.OUT



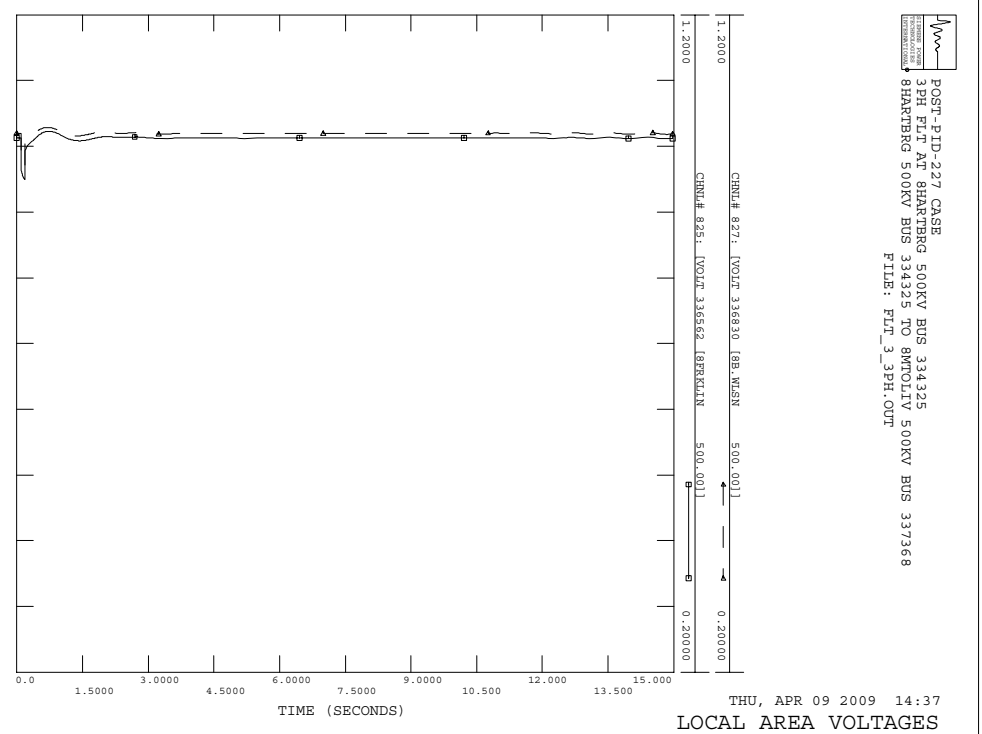
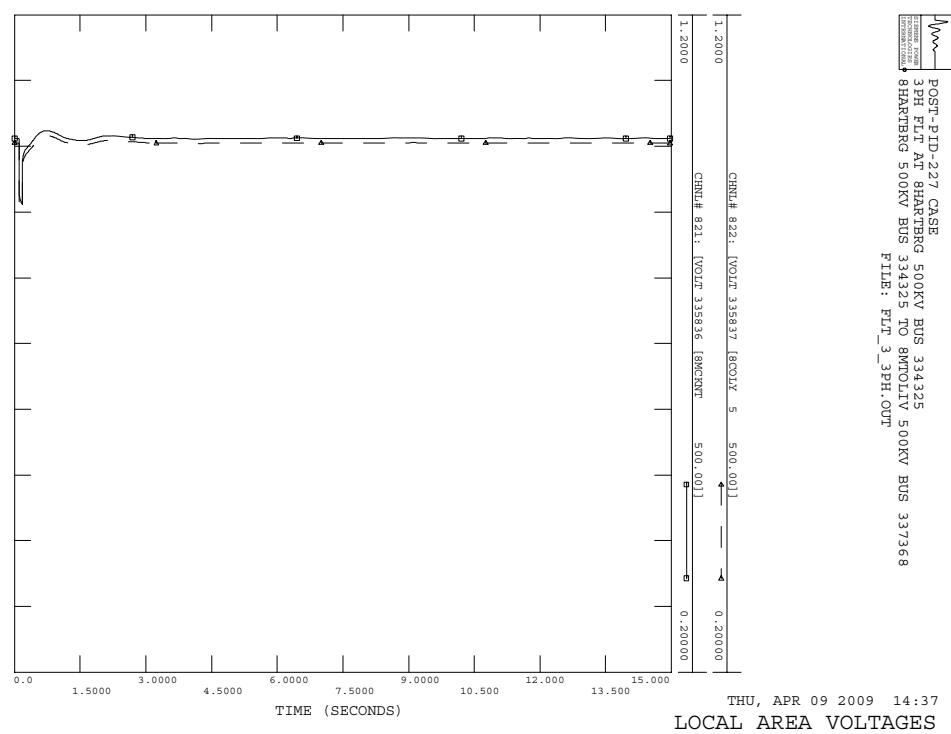
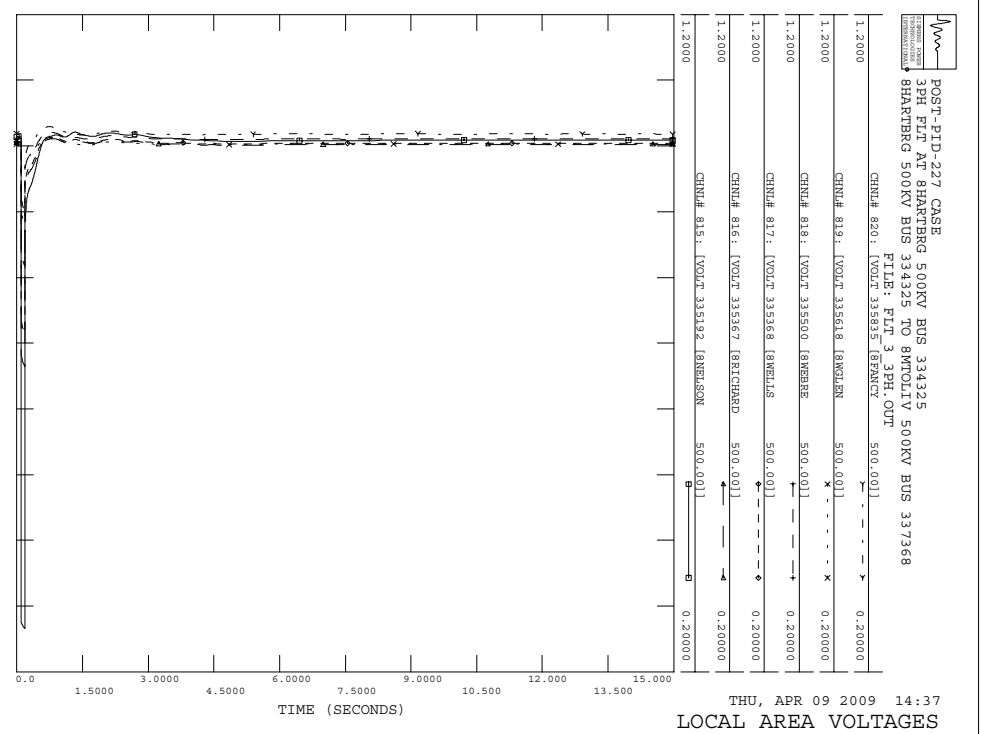
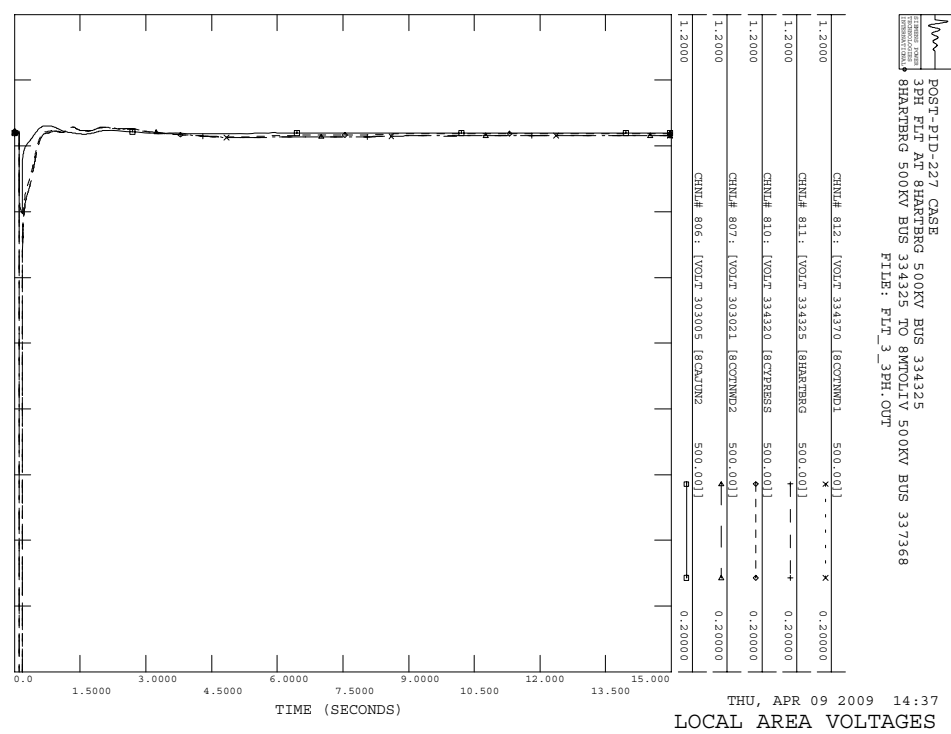
POST-PID-227 CASE
3PH FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BNEILSON 500KV BUS 335192
FILE: FLT_2_3PH.OUT



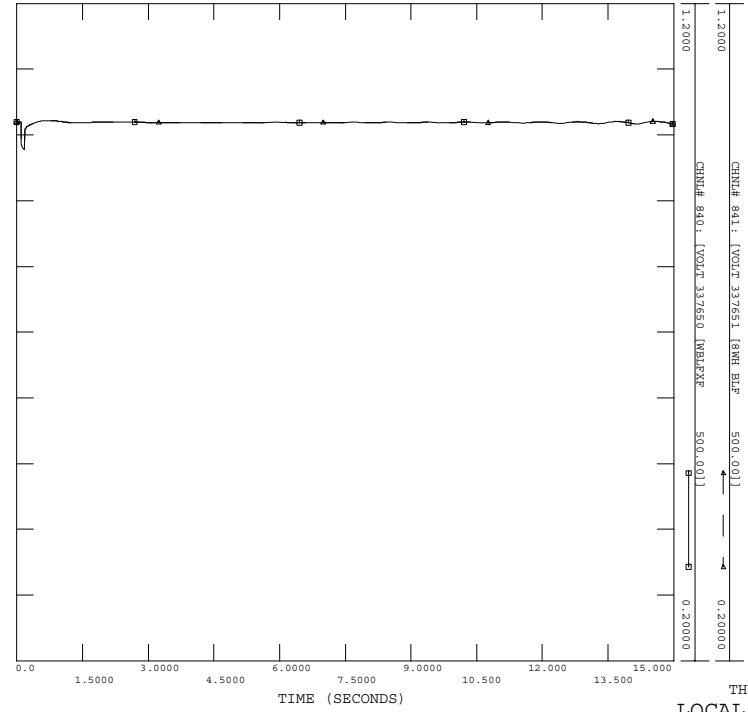
C.3 FLT_3_3PH

Three phase fault on the 8HARTBRG (#334325) to 8MTOLIV (#337368) 500 kV line, near the 8HARTBRG.

- a) Apply 3 Phase Fault at 8HARTBRG 500KV BUS 334325
- b) Clear fault after 5 cycles by tripping line from 8HARTBRG 500KV BUS 334325 TO 8MTOLIV 500KV BUS 337368



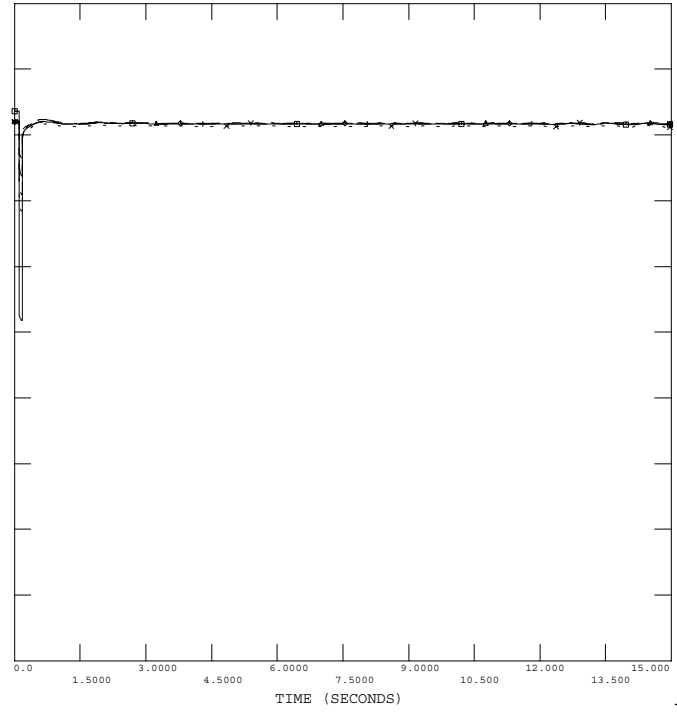
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH_OUT



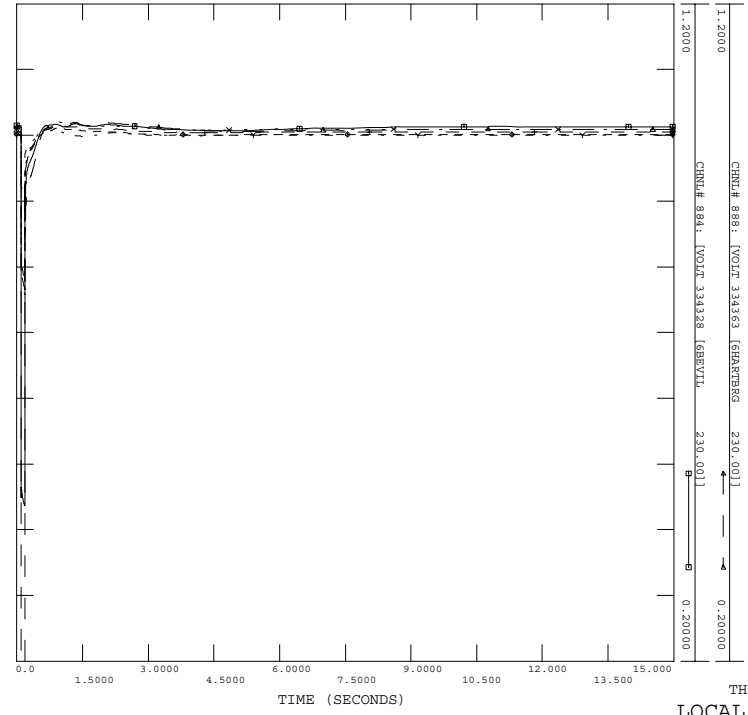
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH_OUT

Channel #	Measurement	Value
838	[VOLT 337561] [8HRT.BHV]	500.000
839	[VOLT 337653] [8HRT.BD]	500.000
837	[VOLT 337515] [8MCONBL]	500.000
836	[VOLT 337427] [8PERWYTL]	500.000
835	[VOLT 337450] [8STRBL]	500.000
834	[VOLT 337458] [8MTOLEIV]	500.000

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 LOCAL AREA VOLTAGES



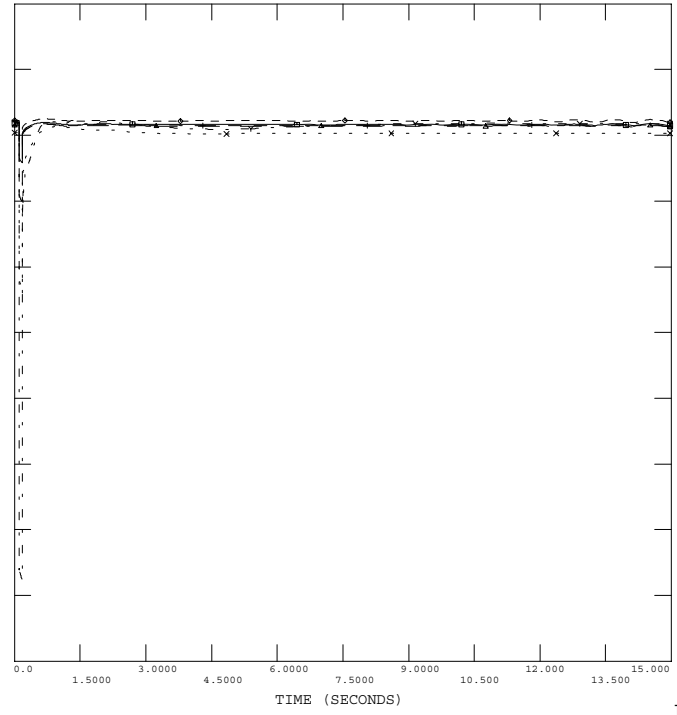
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH_OUT

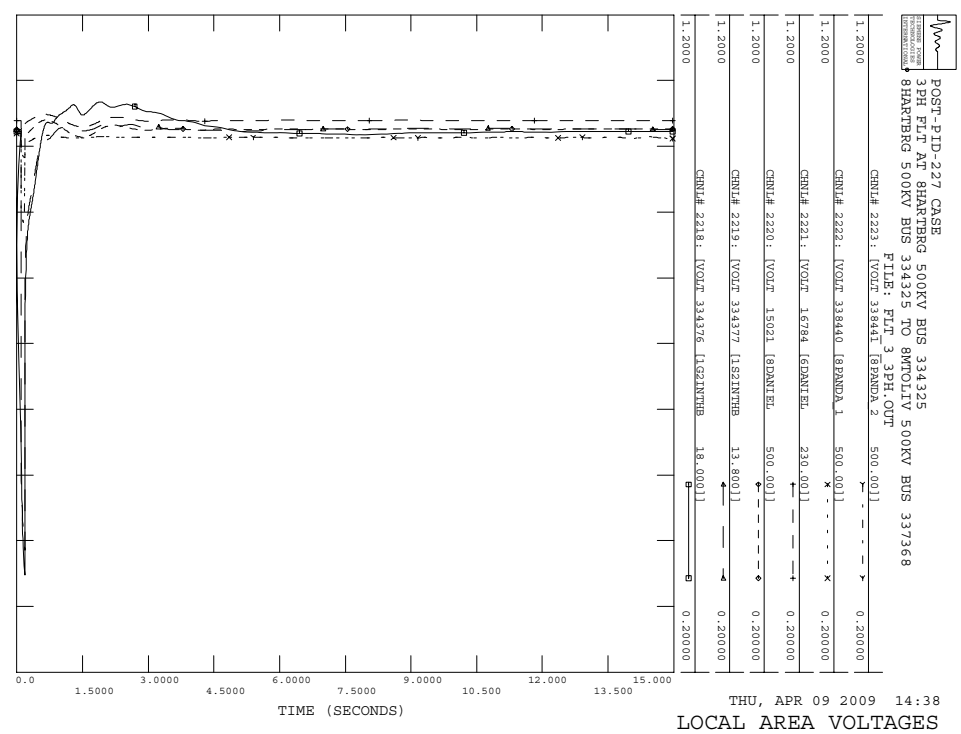
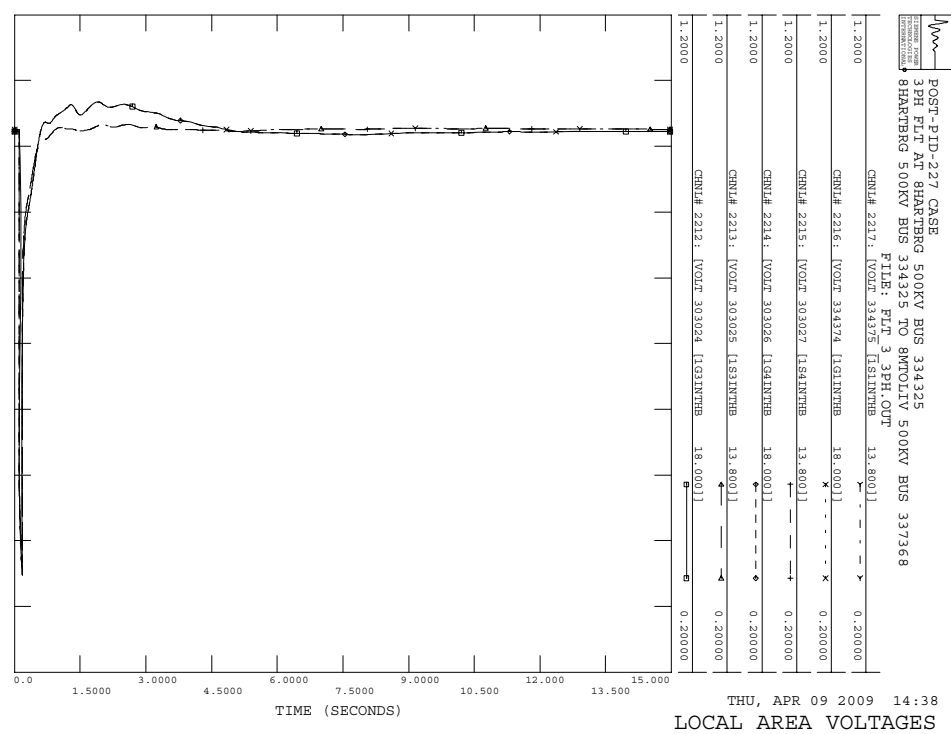
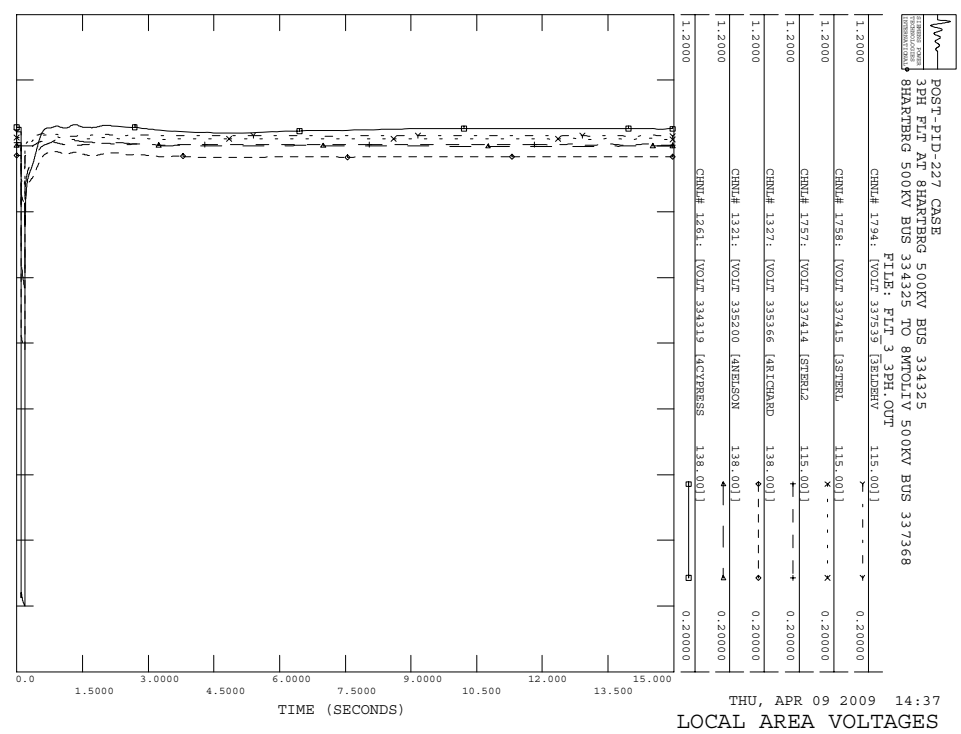
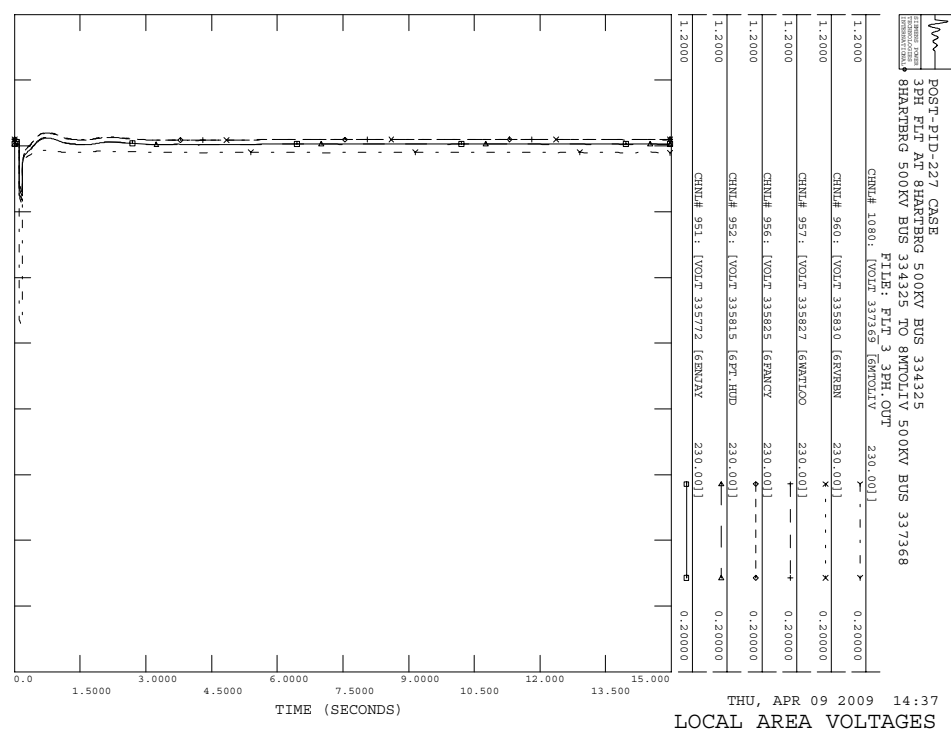


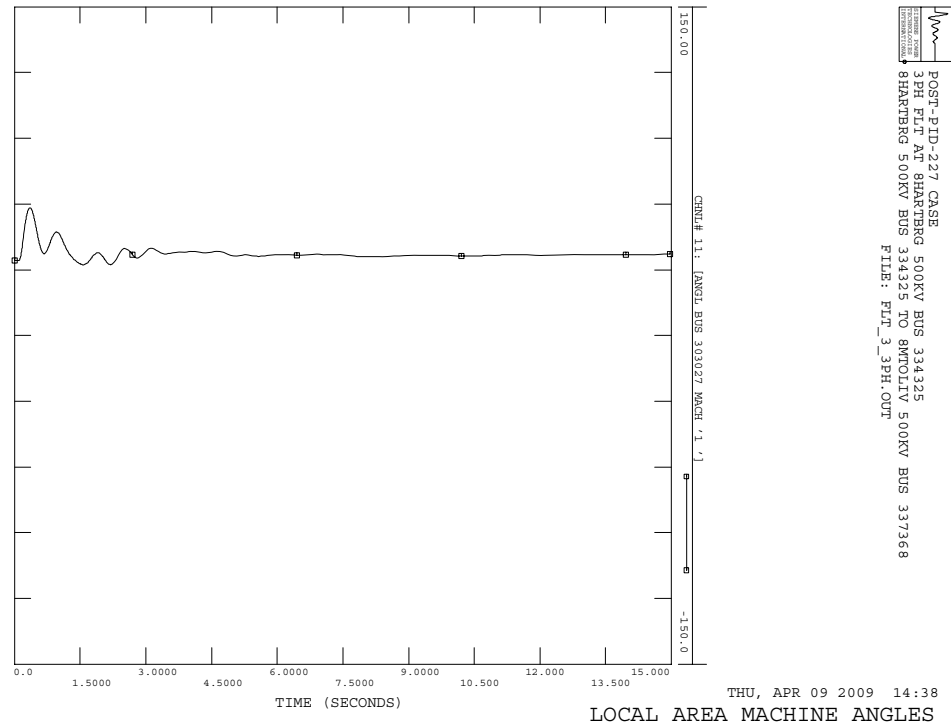
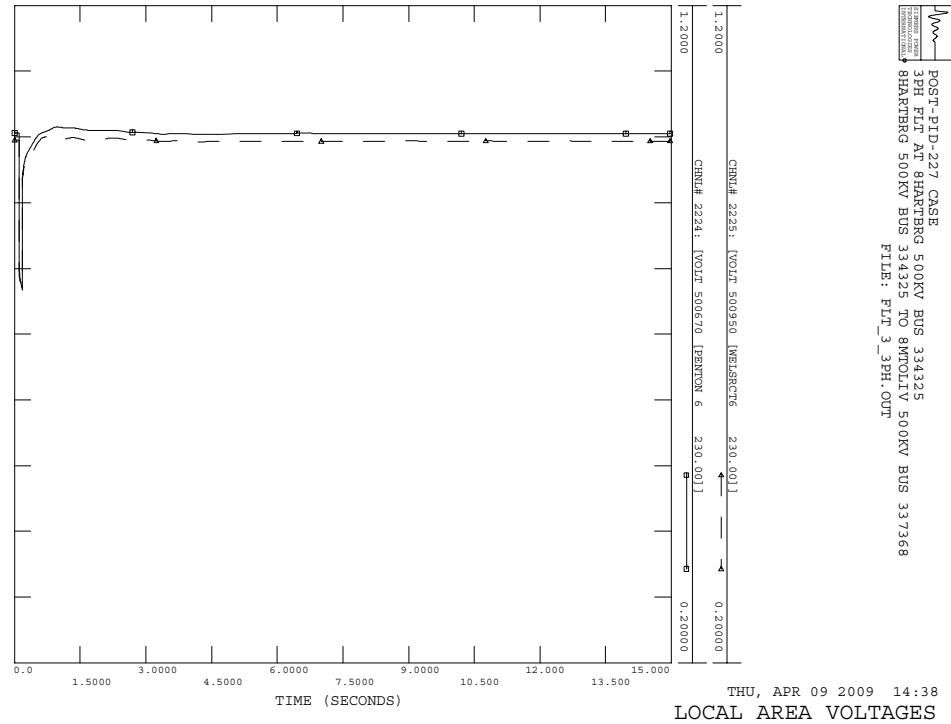
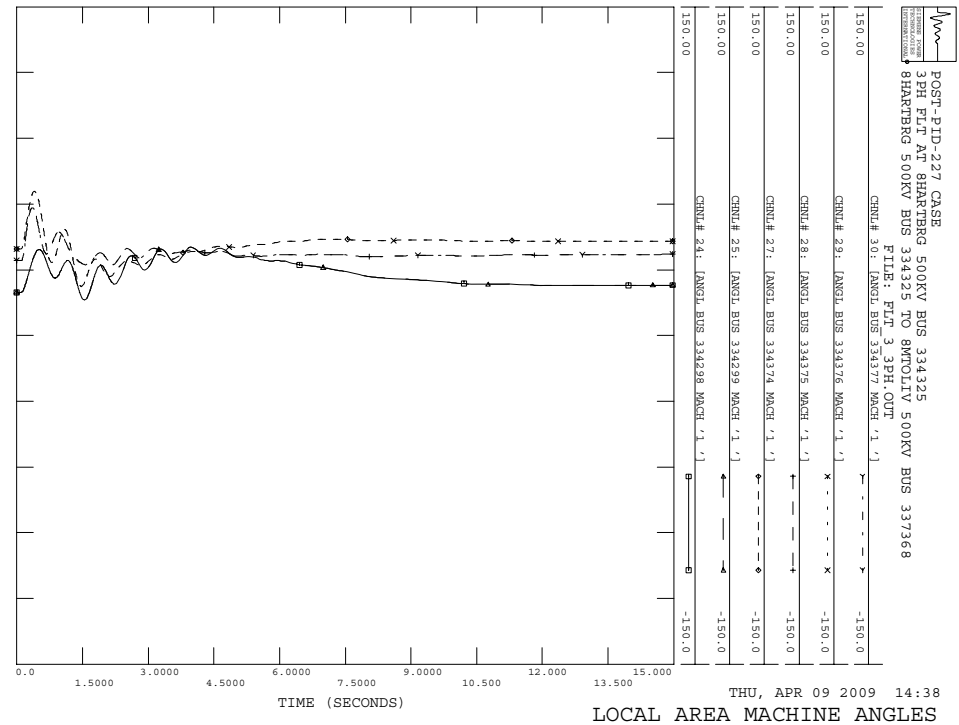
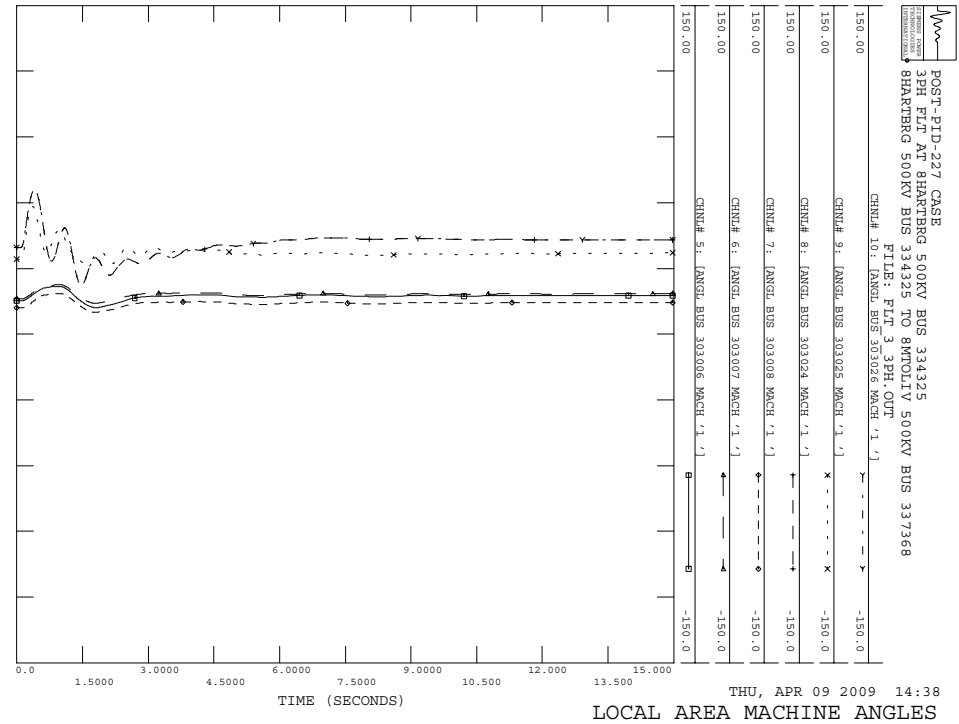
POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH_OUT

Channel #	Measurement	Value
882	[VOLT 334326] [6CTR882S]	230.000
883	[VOLT 334326] [6CTR882S]	230.000
882	[VOLT 334326] [6CTR882S]	230.000
862	[VOLT 303101] [6MOSBLP]	230.000
860	[VOLT 337562] [7EIDBRV]	345.000
852	[VOLT 337957] [8KBO.50]	500.000
847	[VOLT 337808] [8MABBL]	500.000
846	[VOLT 337763] [8MAGCOVE]	500.000

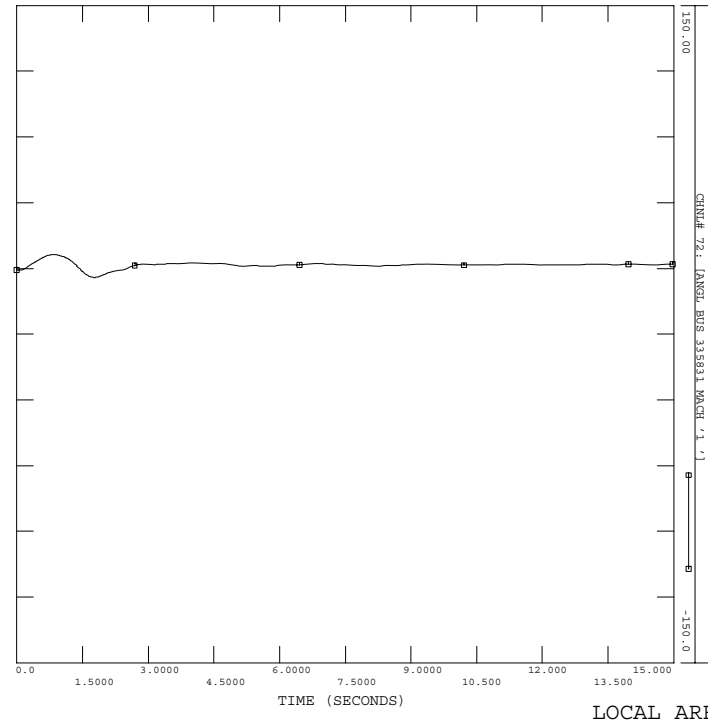
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 LOCAL AREA VOLTAGES



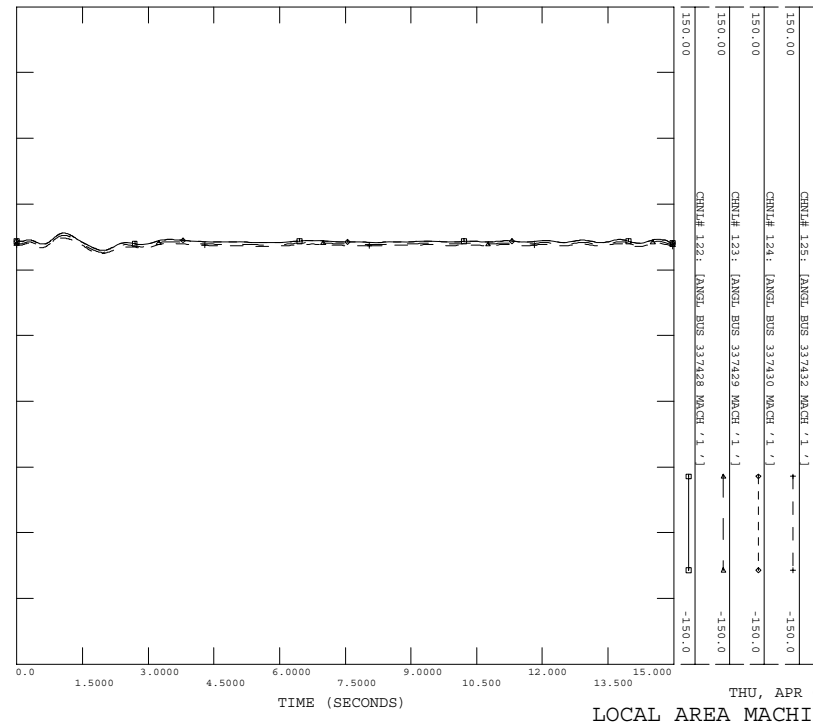




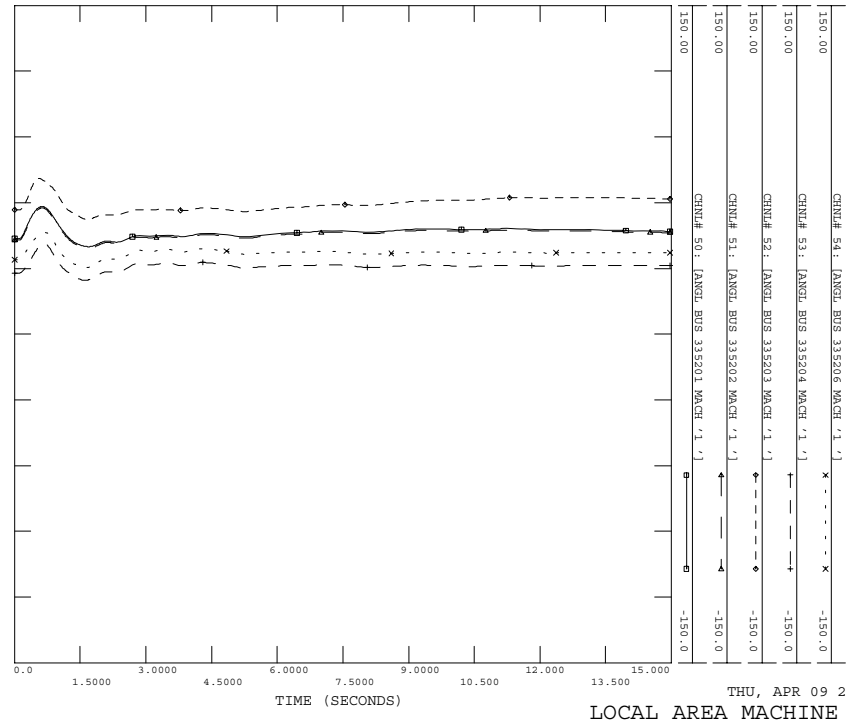
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



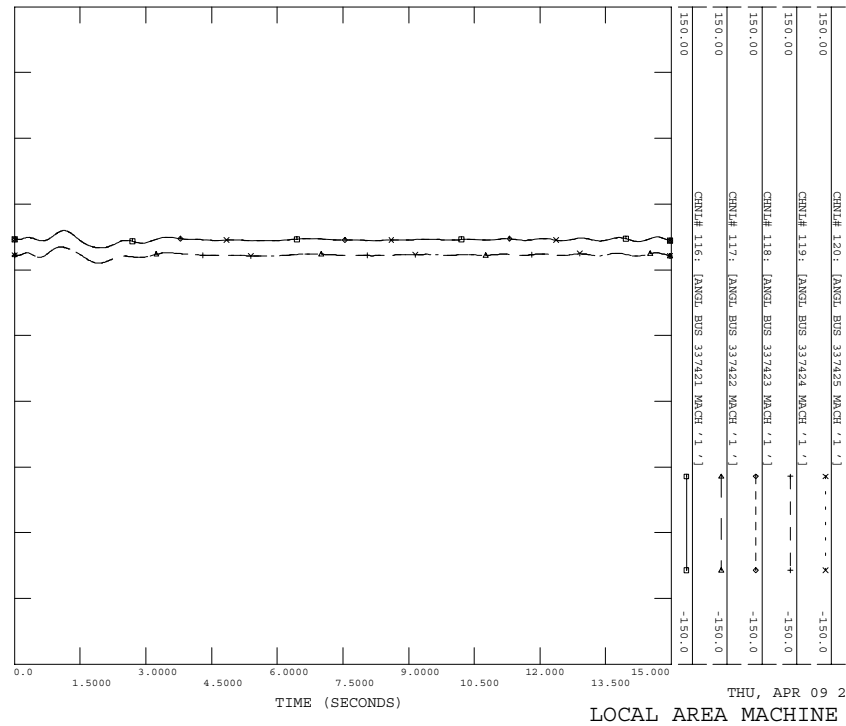
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



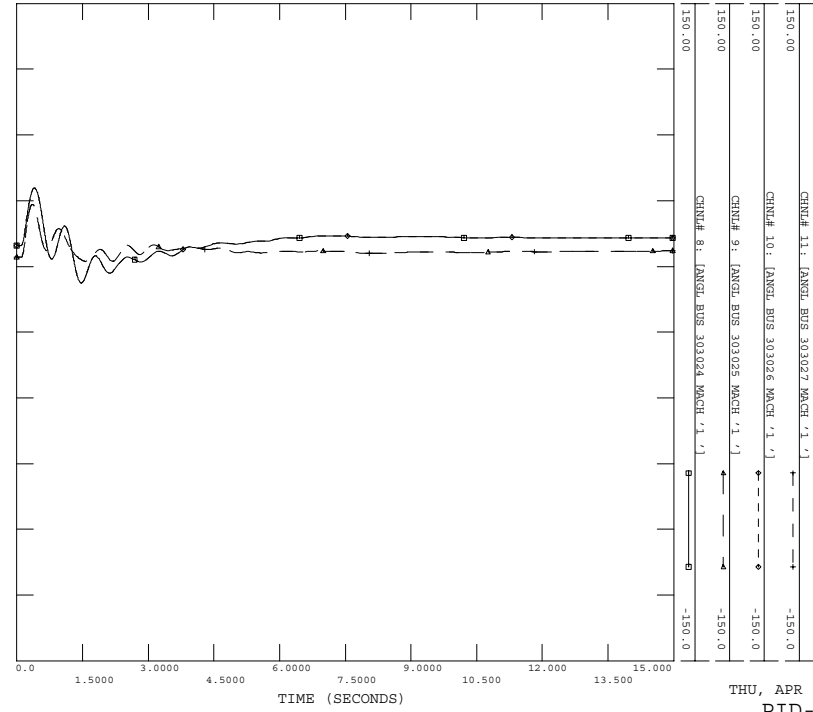
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



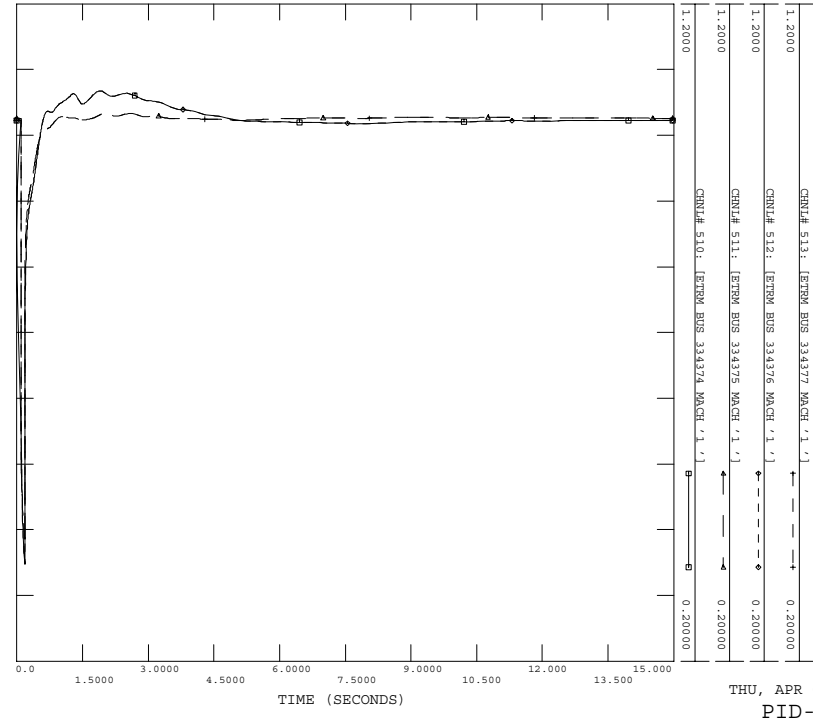
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOLEIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



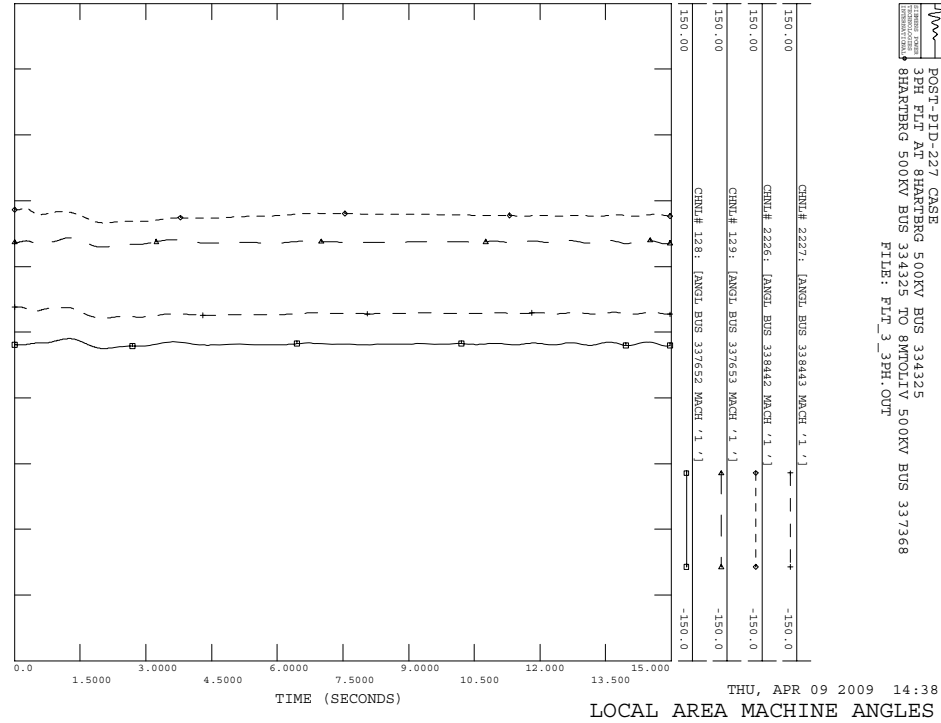
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



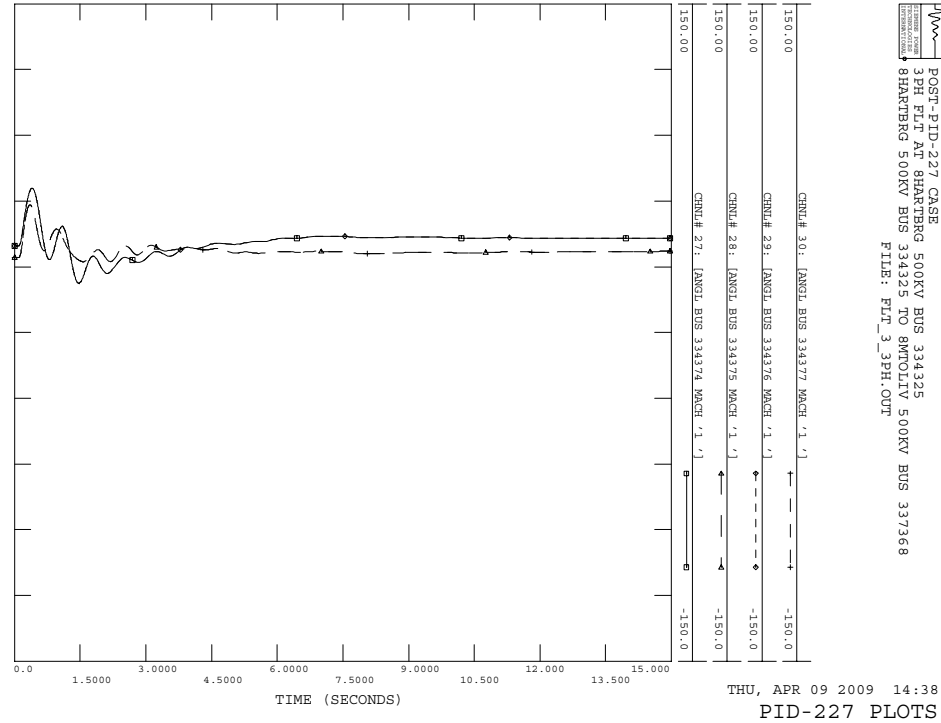
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



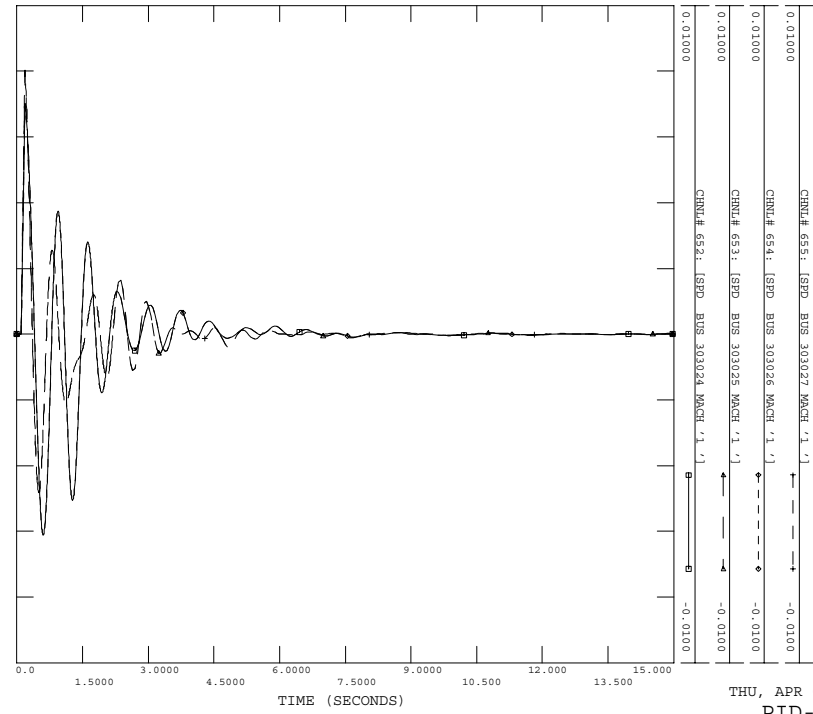
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



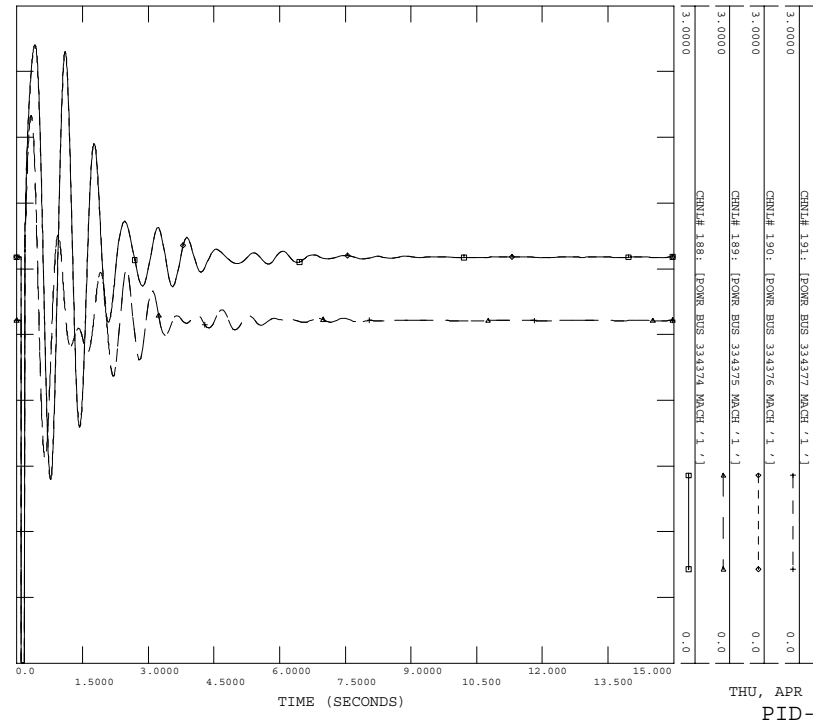
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



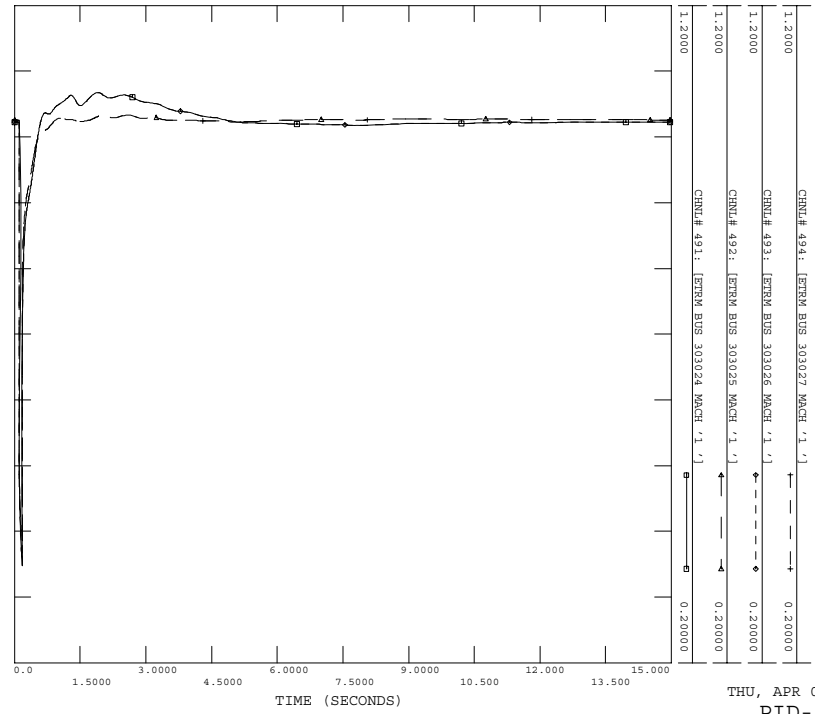
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTCOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



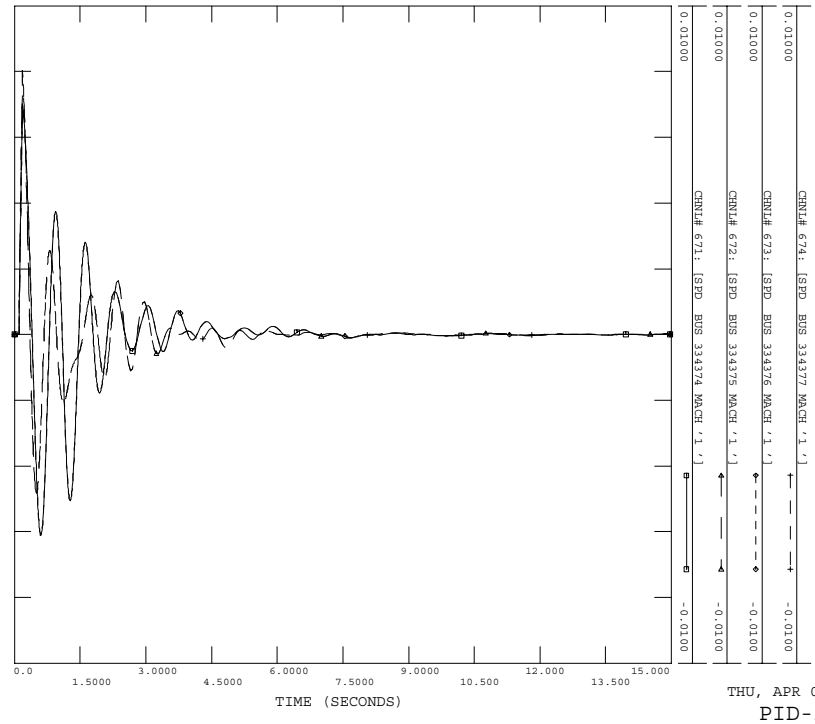
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTCOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



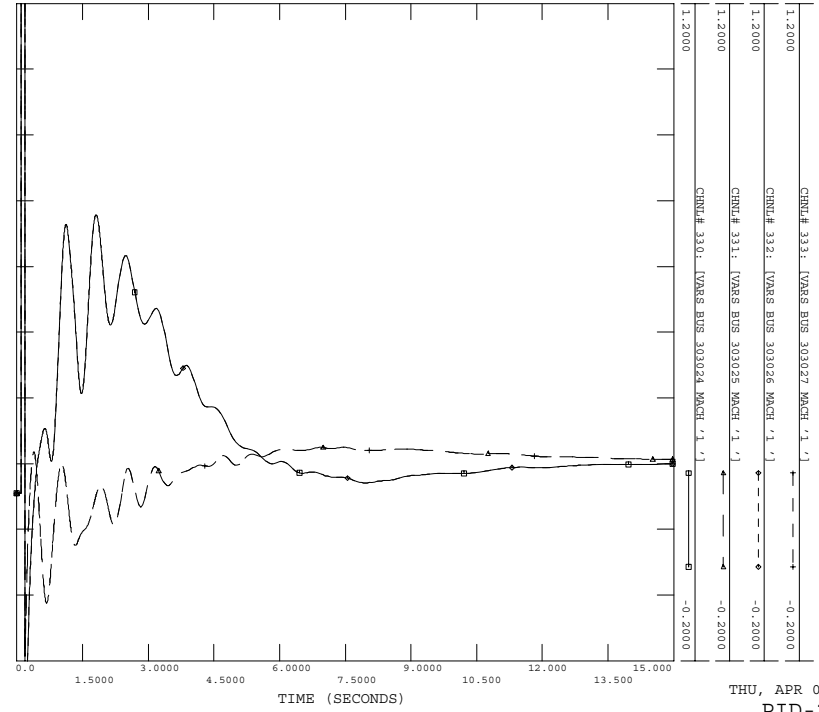
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTCOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT



POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 8MTCOLIV 500KV BUS 337368
 FILE: FLT_3_3PH.OUT

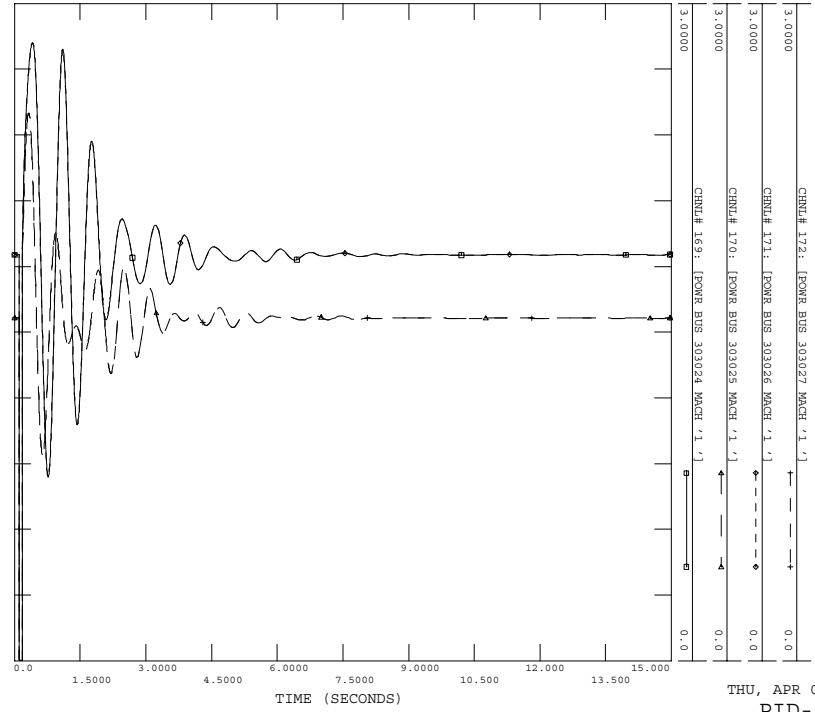


POST-PID-227 CASE
3PH FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
FILE: FLT_3_3PH.OUT



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PID-227 PLOTS

POST-PID-227 CASE
3PH FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
FILE: FLT_3_3PH.OUT

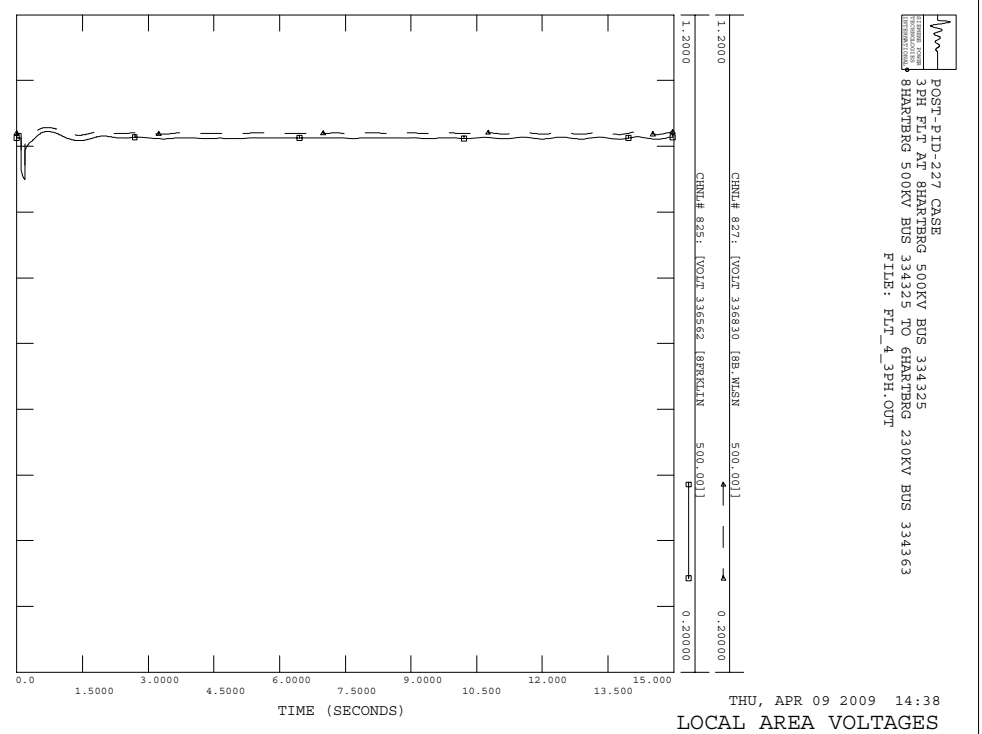
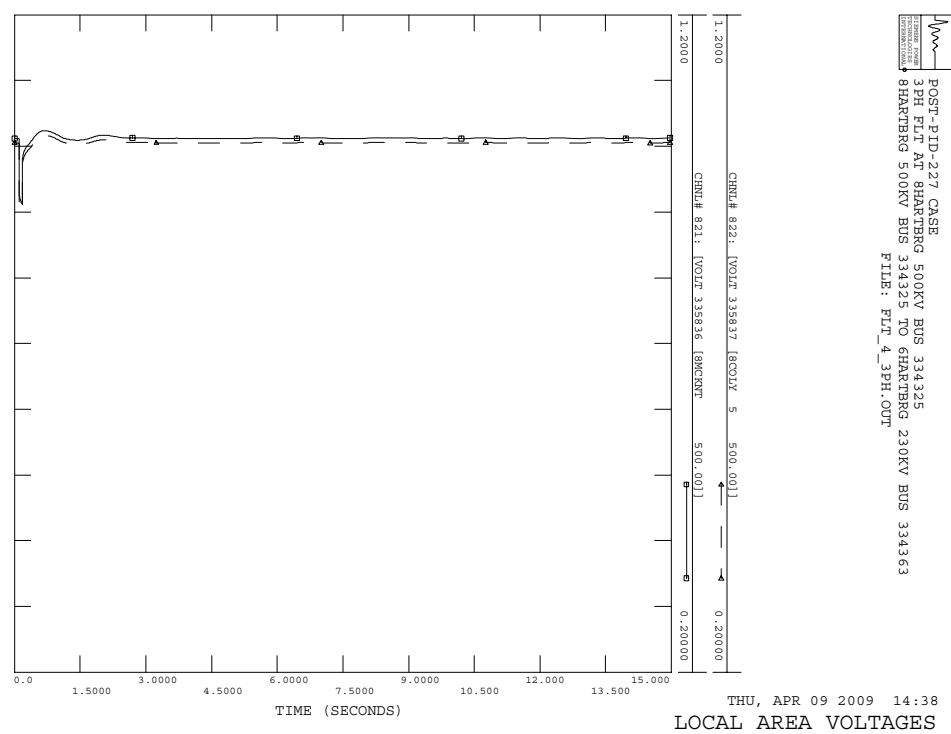
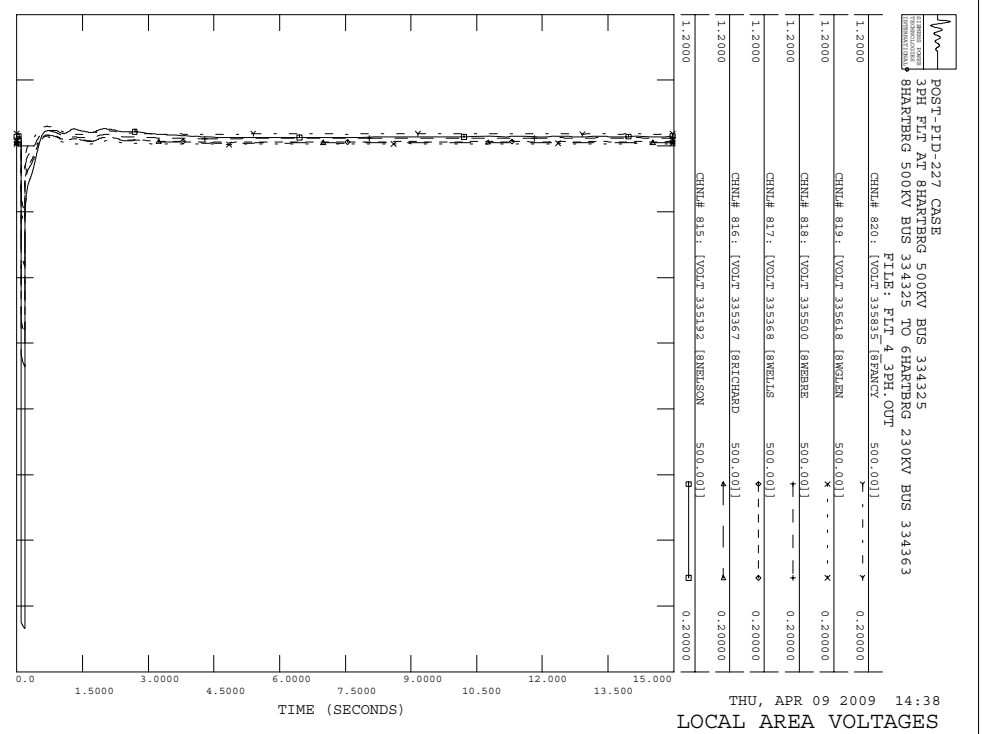
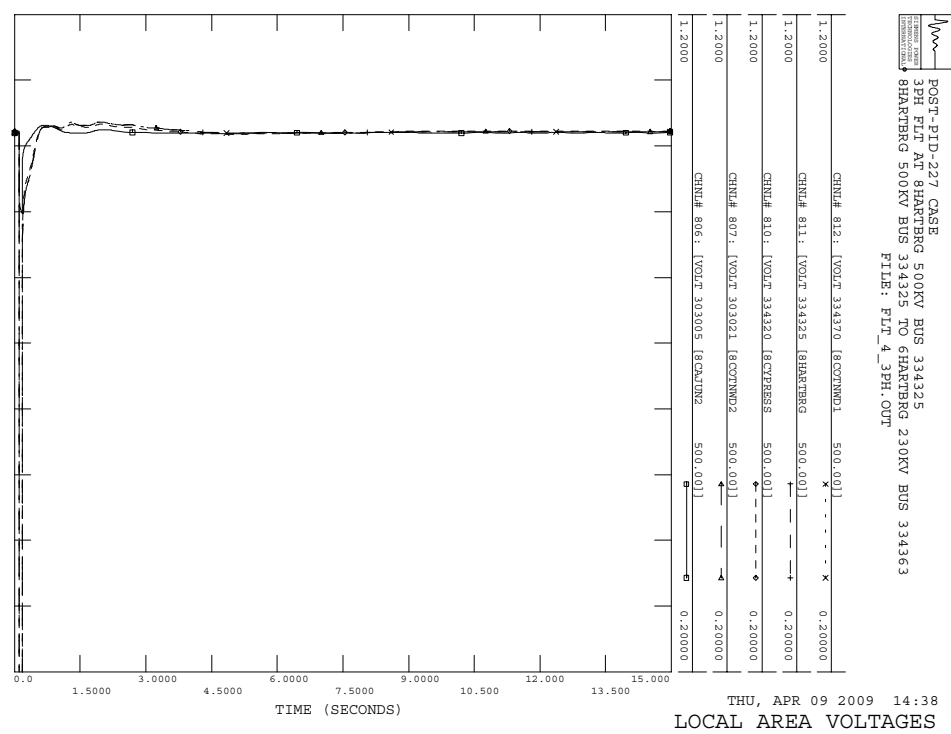


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PID-227 PLOTS

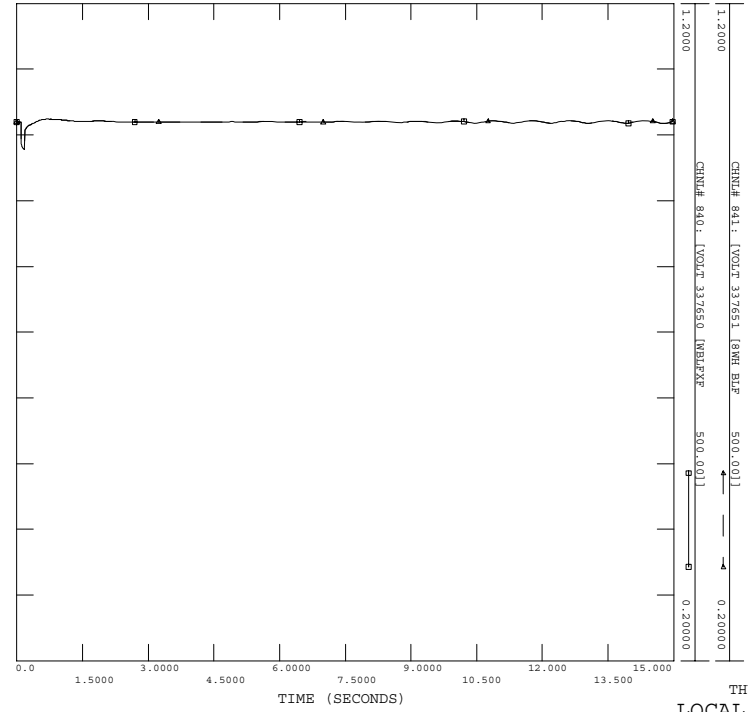
C.4 FLT_4_3PH

Three phase fault on the 8HARTBRG (#334325) to 6HARTBRG (#334363) 500/230 kV autotransformer, near the 8HARTBRG.

- a) Apply 3 Phase Fault at 8HARTBRG 500KV BUS 334325
- b) Clear fault after 5 cycles by tripping transformer from 8HARTBRG 500KV BUS 334325 TO 6HARTBRG 230KV BUS 334363

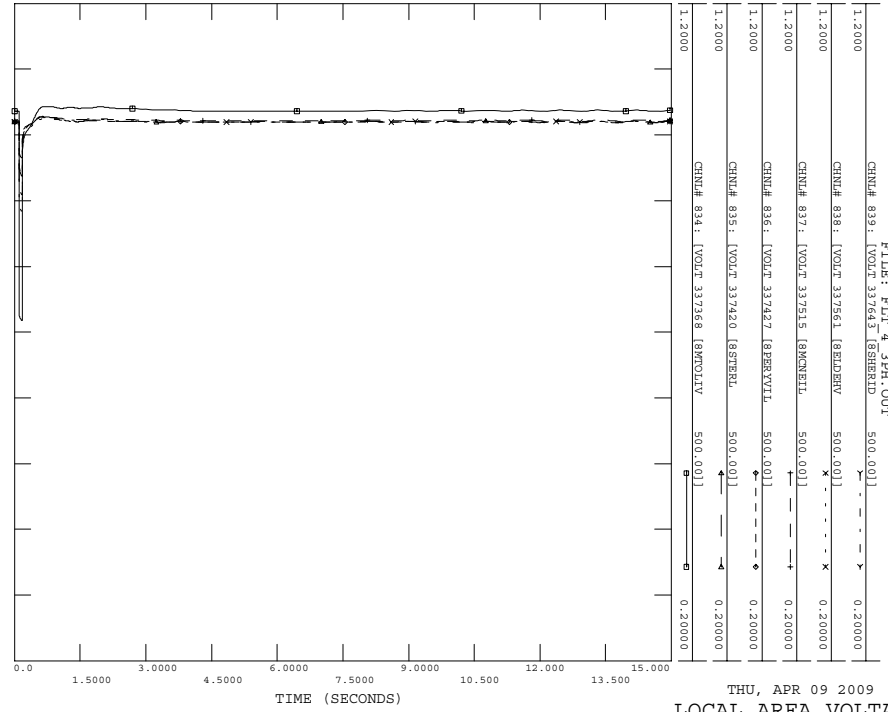


POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT



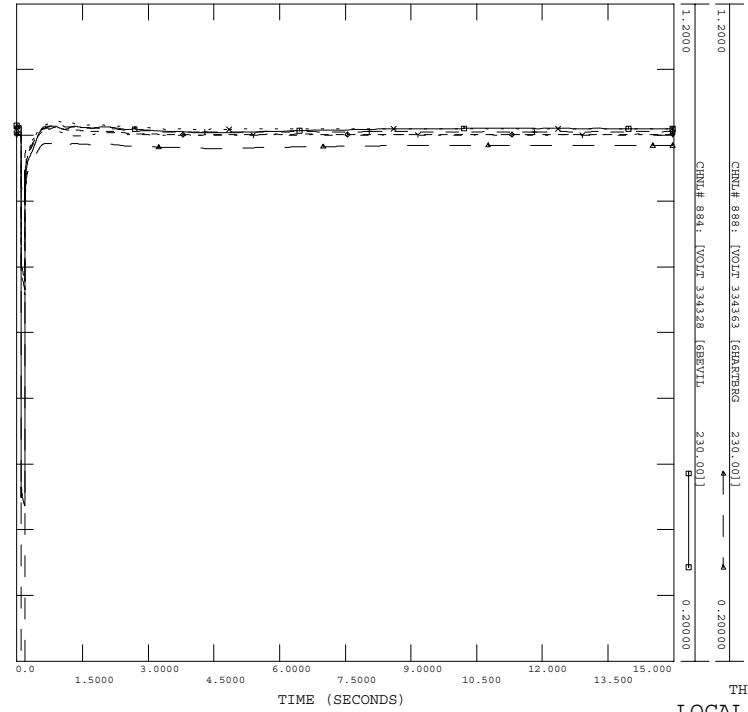
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 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT



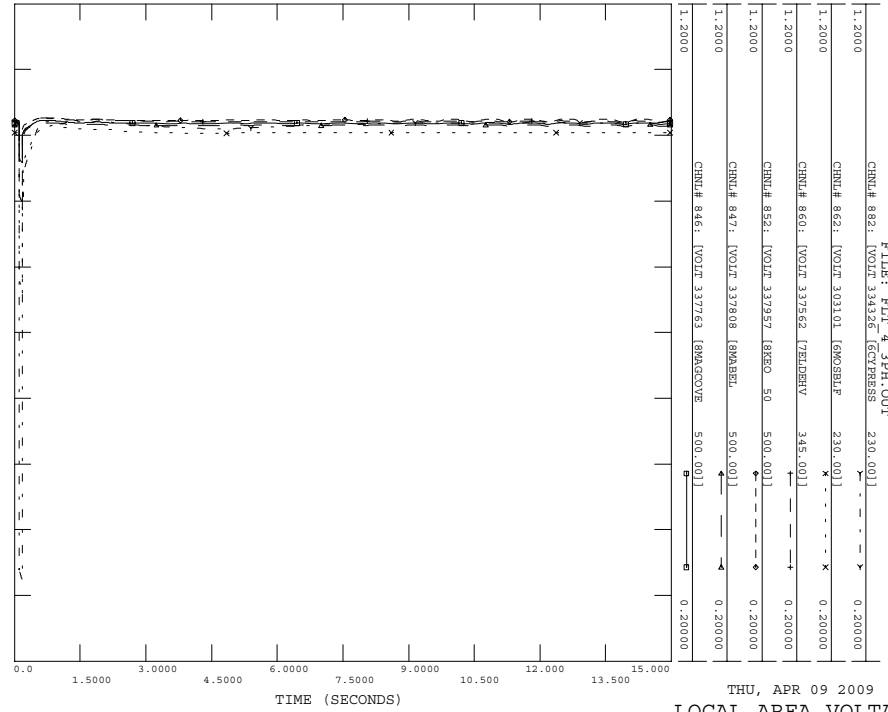
THU, APR 09 2009 14:38
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT

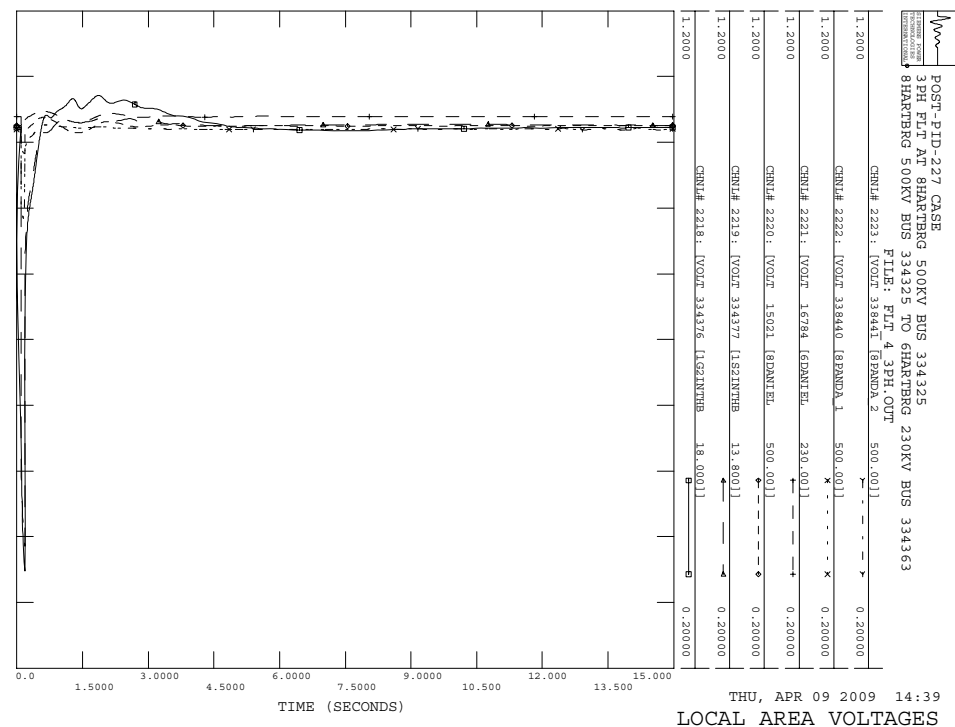
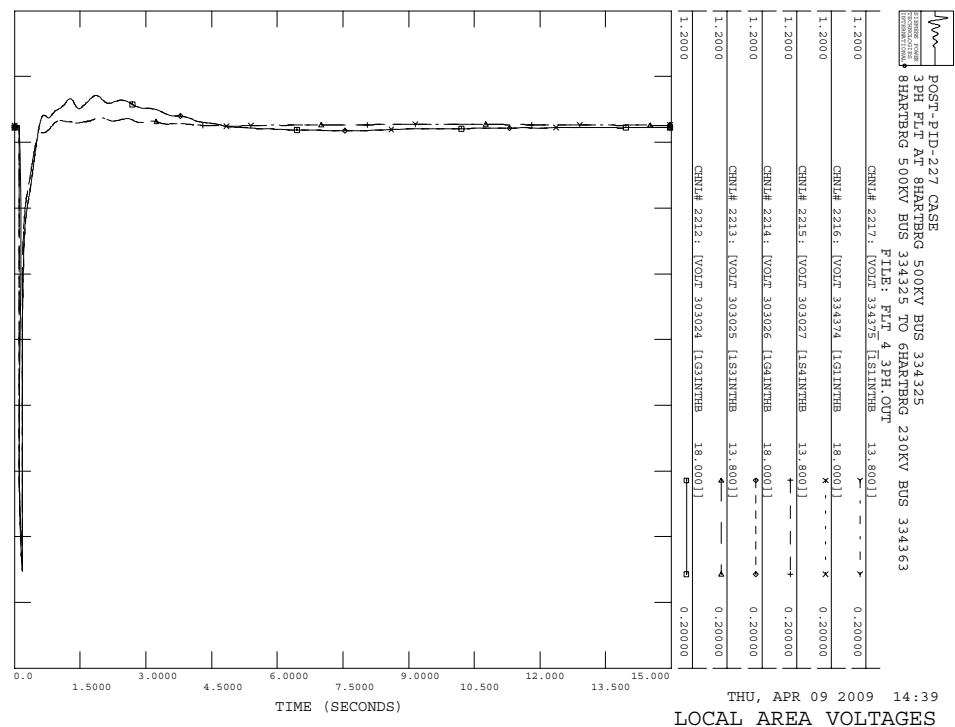
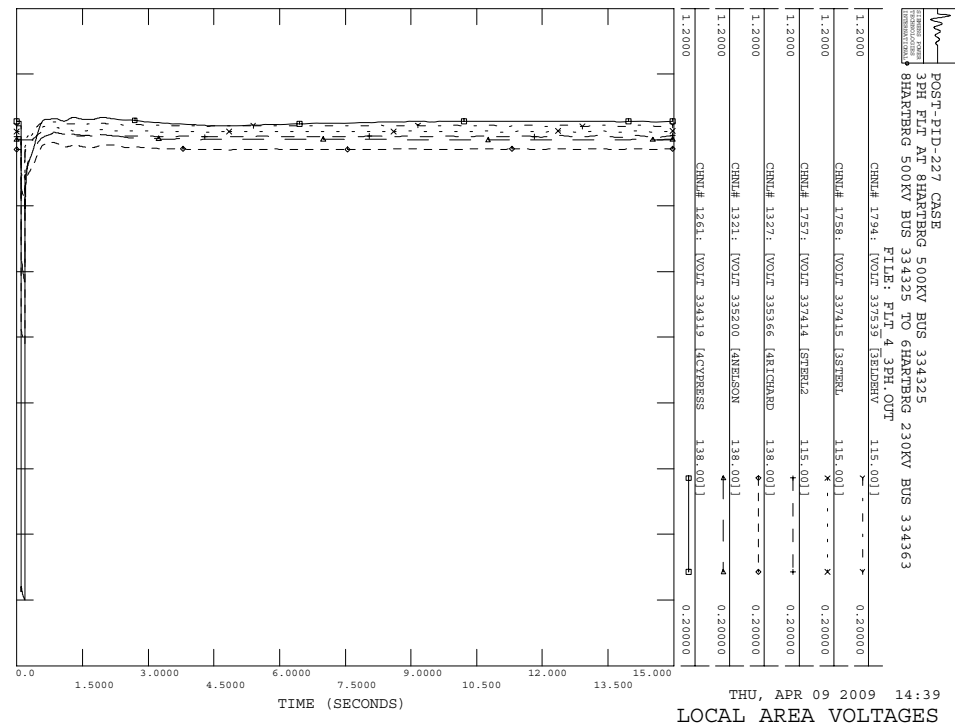
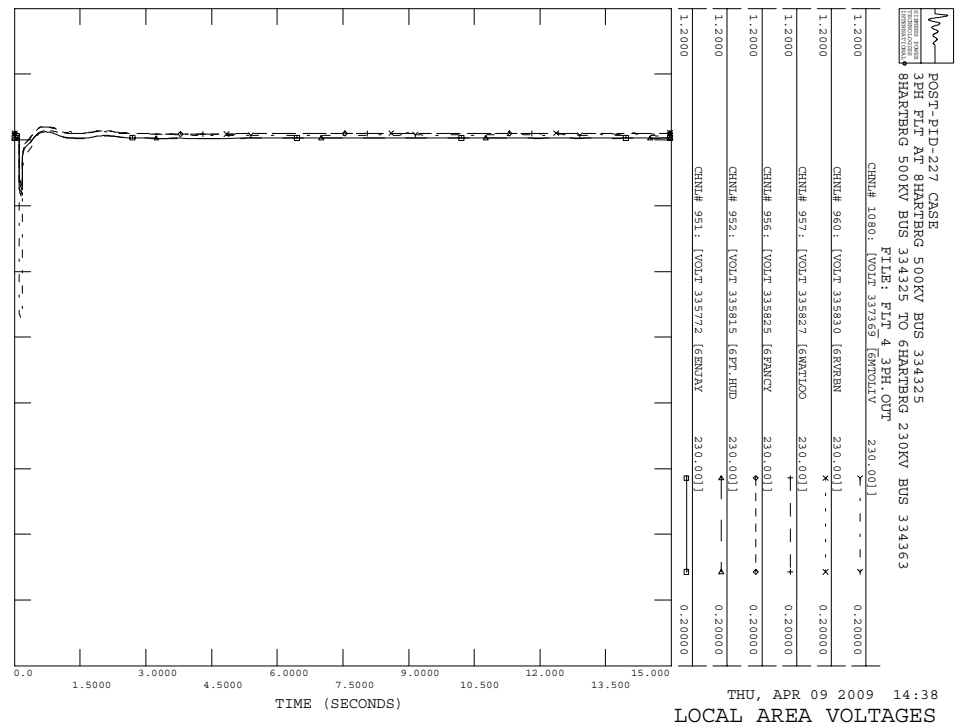


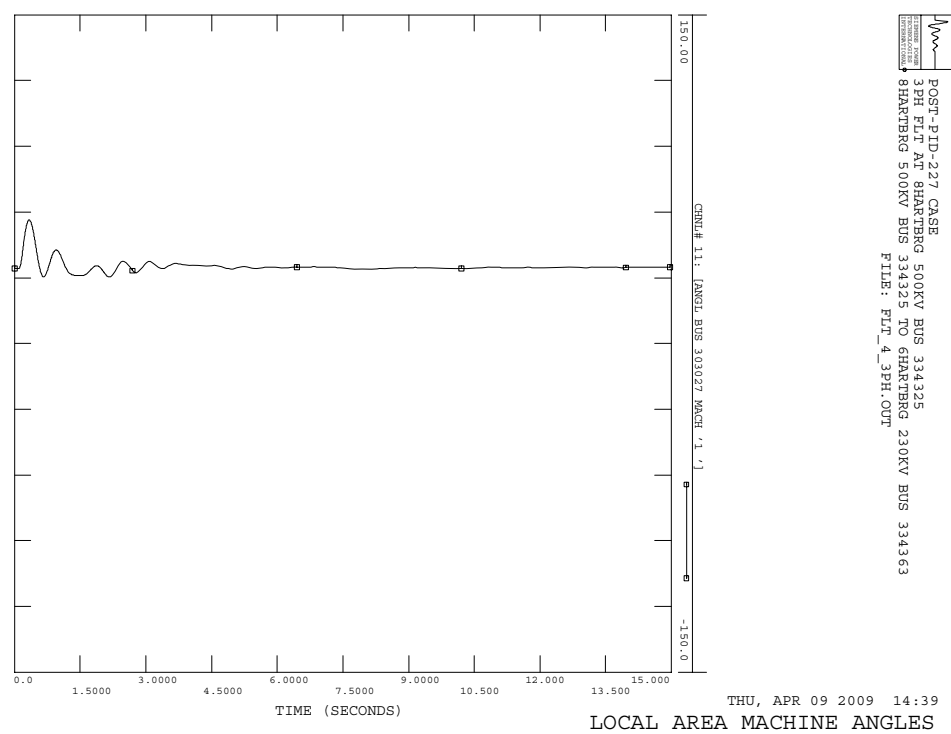
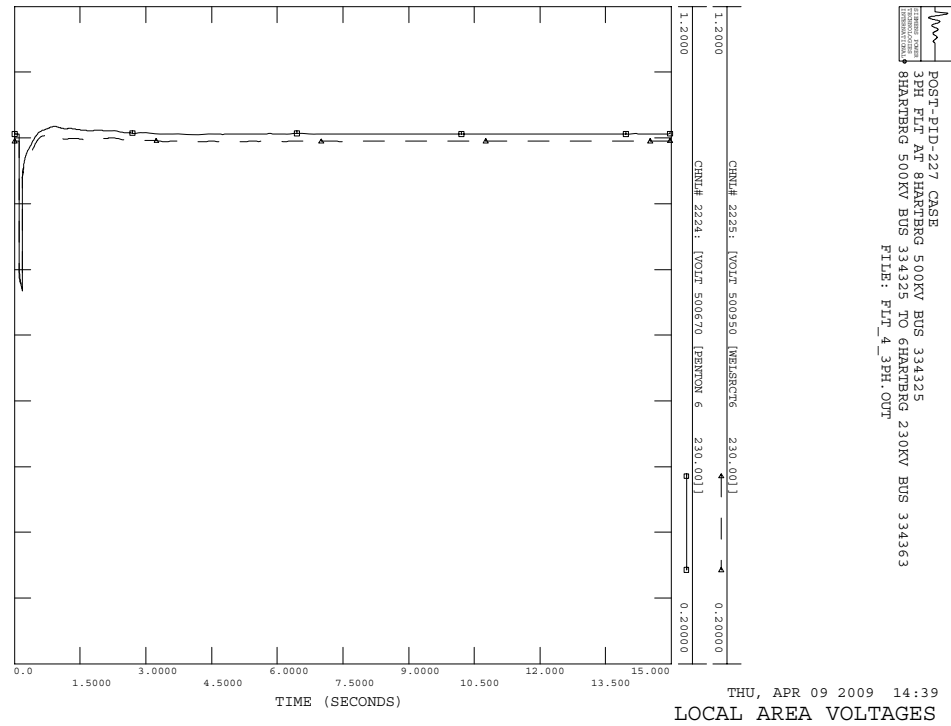
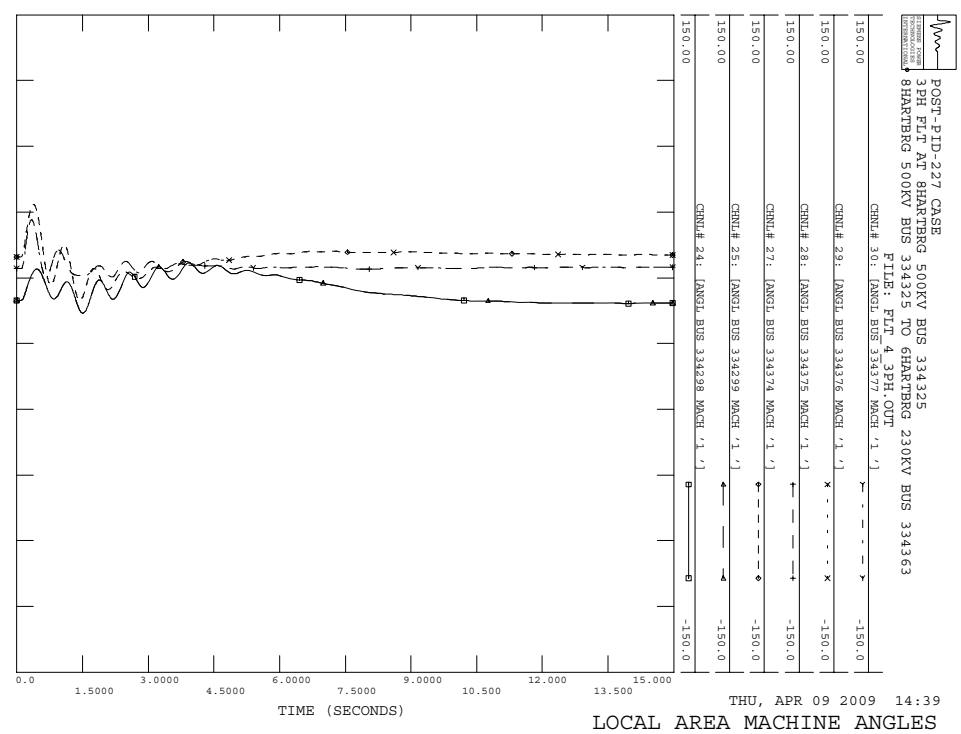
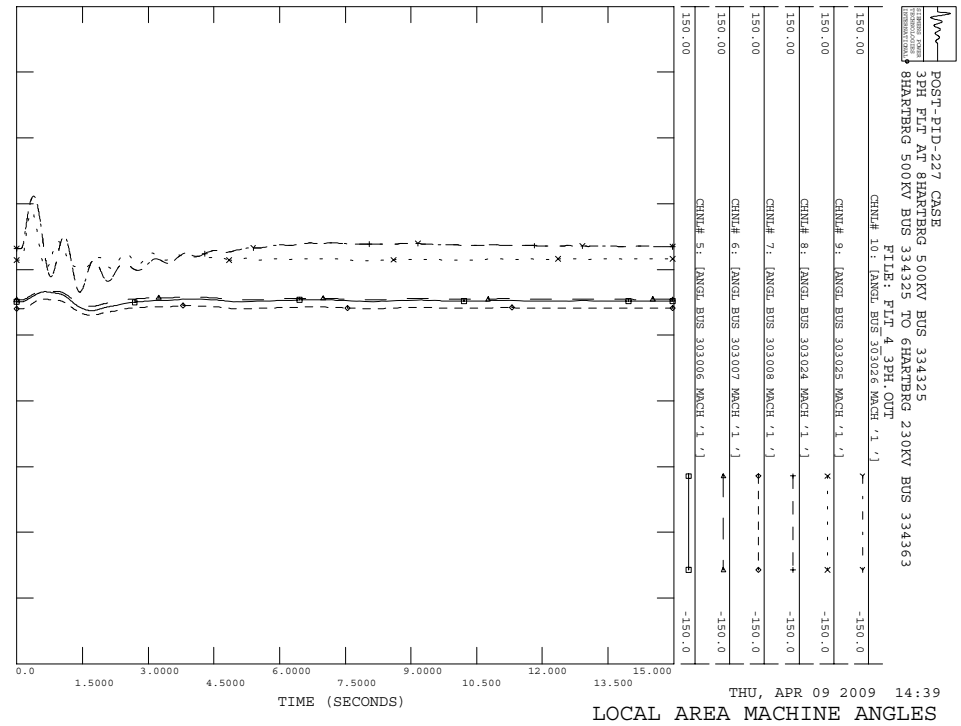
THU, APR 09 2009 14:38
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT

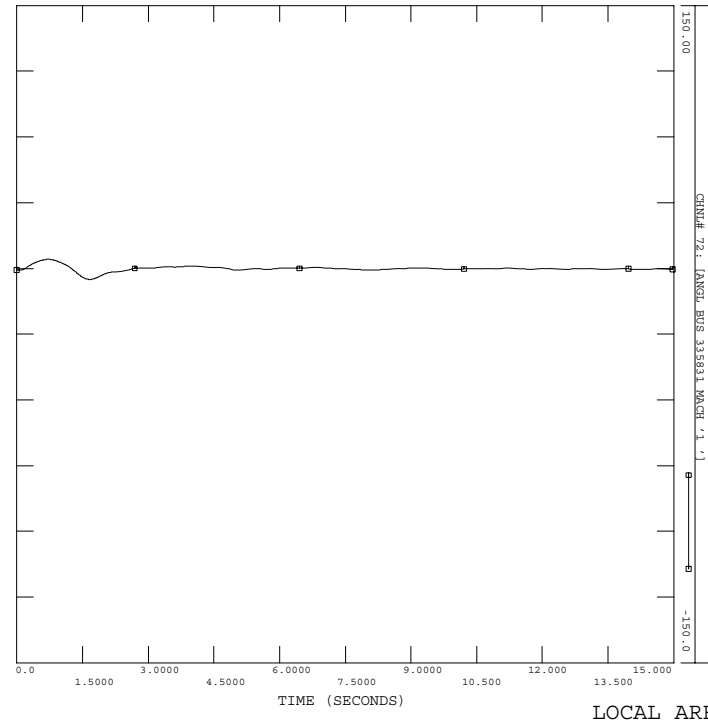


THU, APR 09 2009 14:38
 LOCAL AREA VOLTAGES



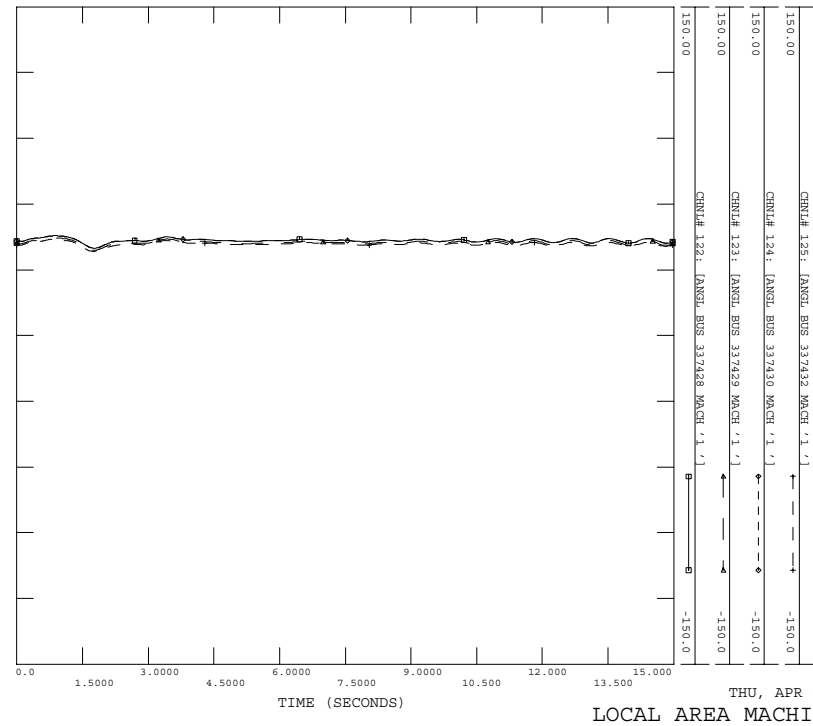


POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT



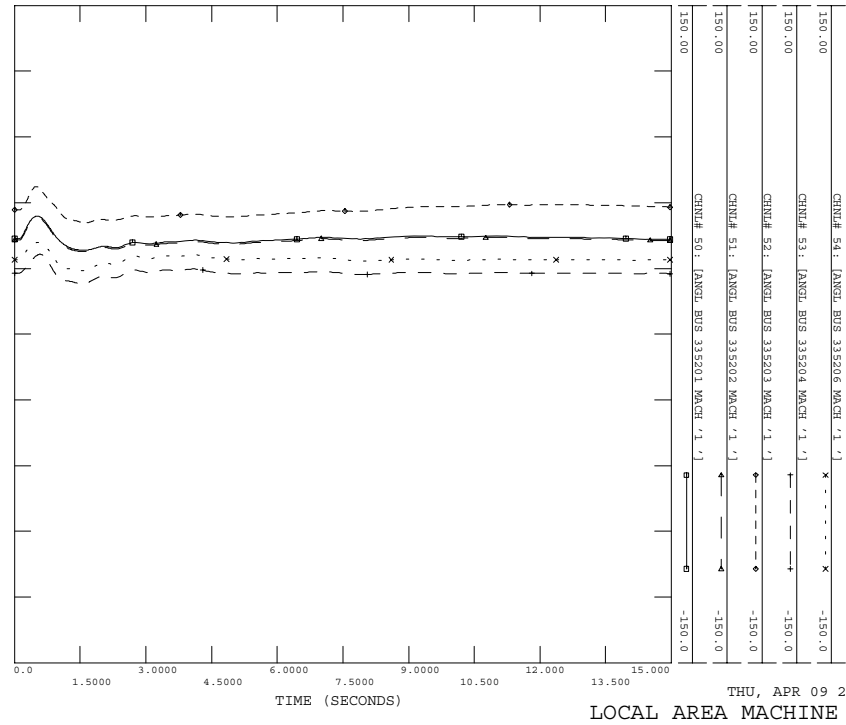
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 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT



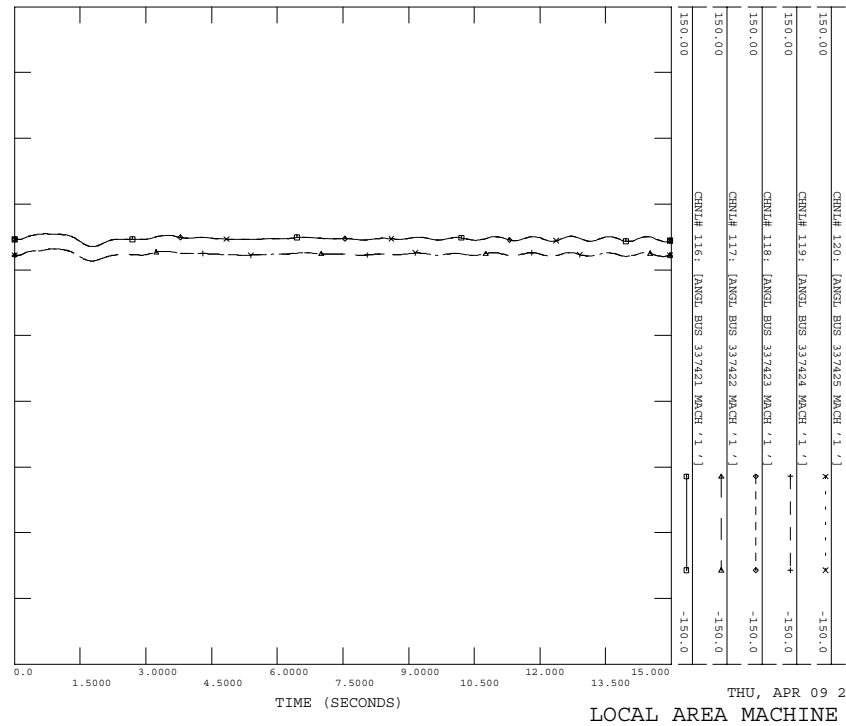
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 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT



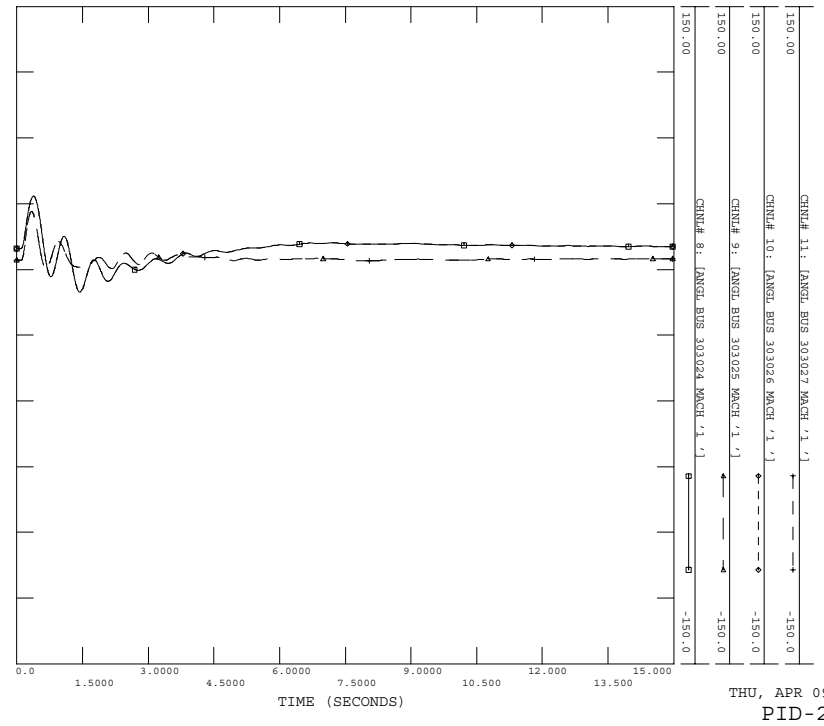
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 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH_OUT

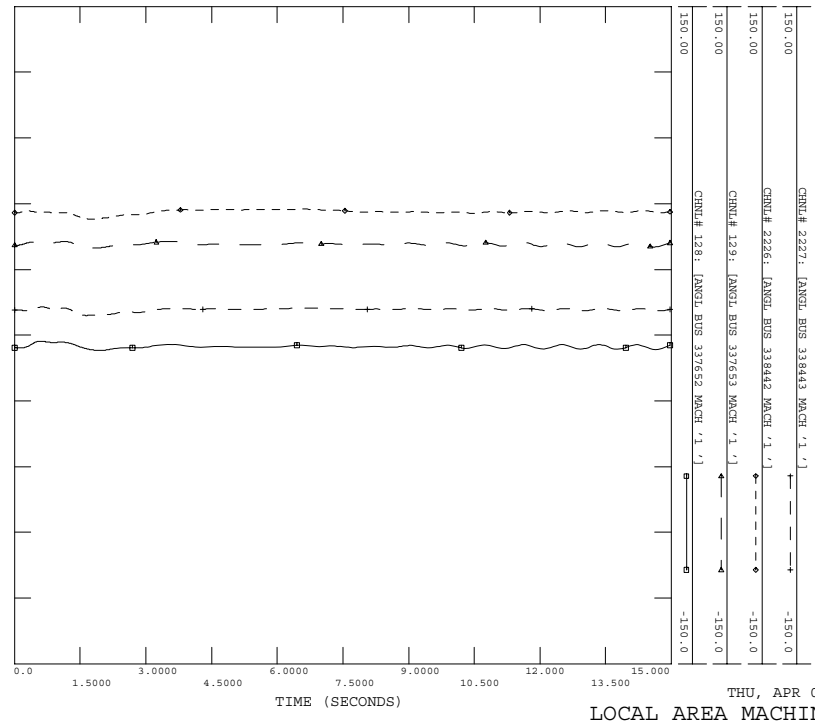


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 LOCAL AREA MACHINE ANGLES

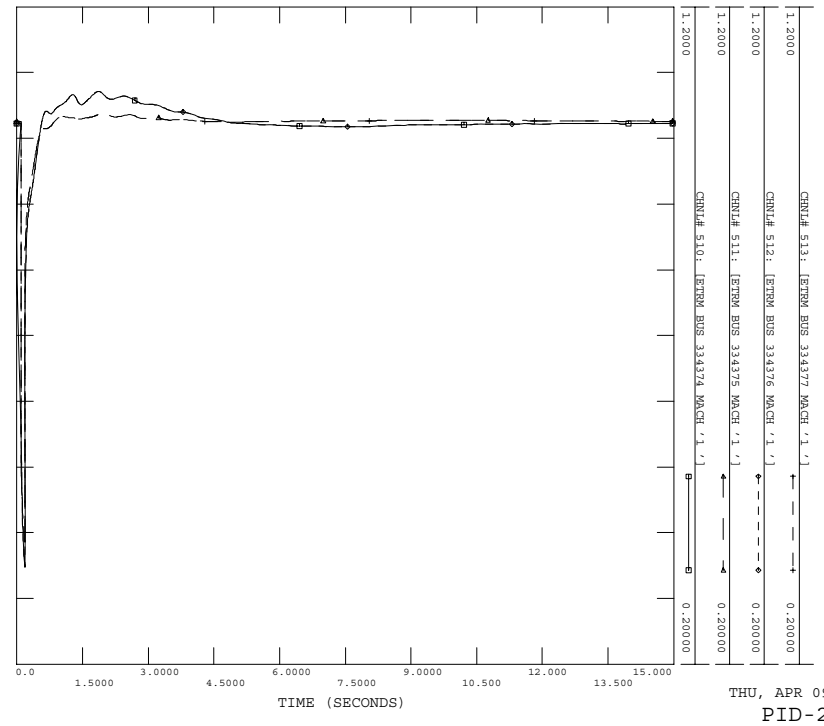
POST-PID-227 CASE
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 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



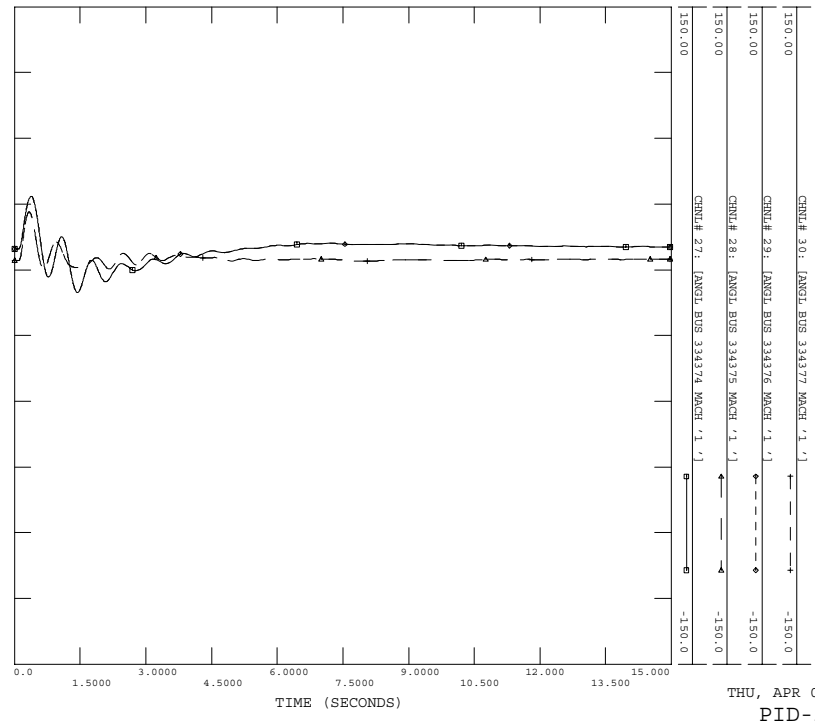
POST-PID-227 CASE
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 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



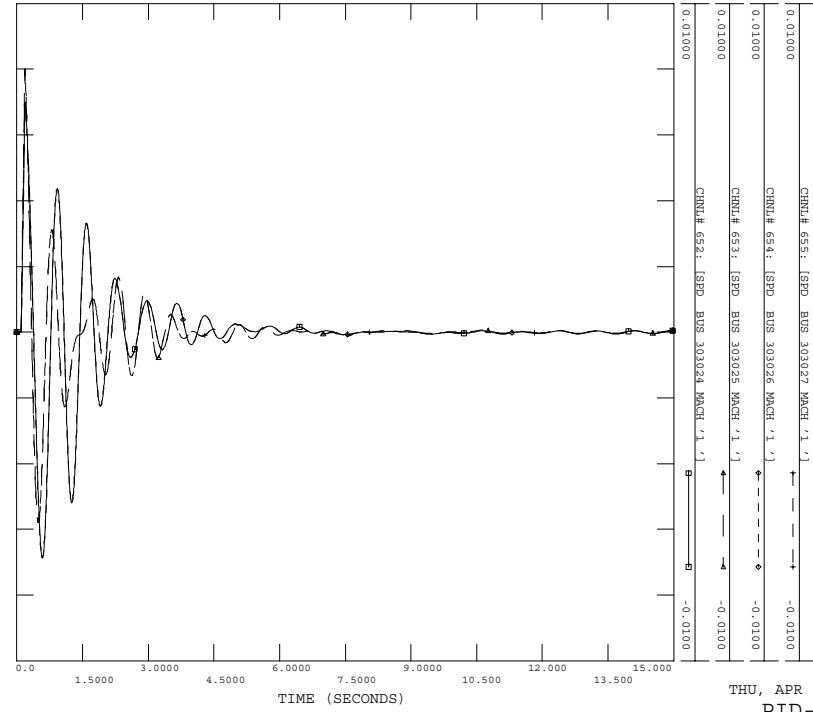
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



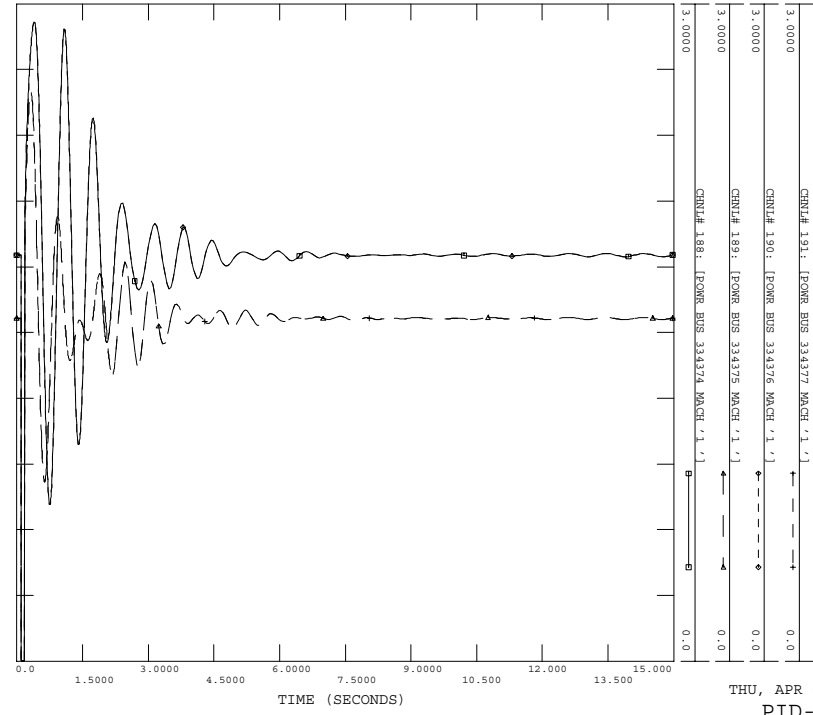
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



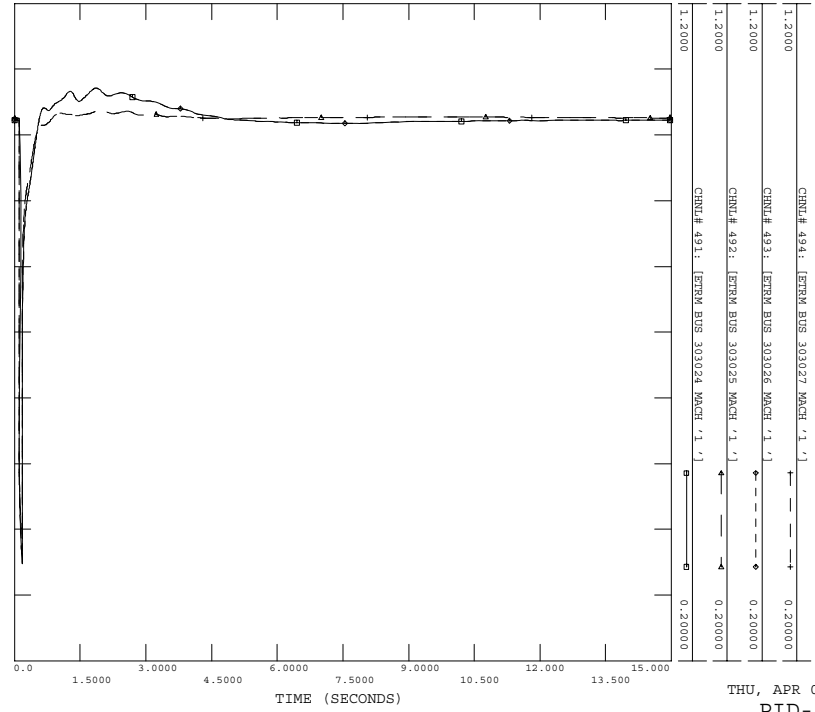
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



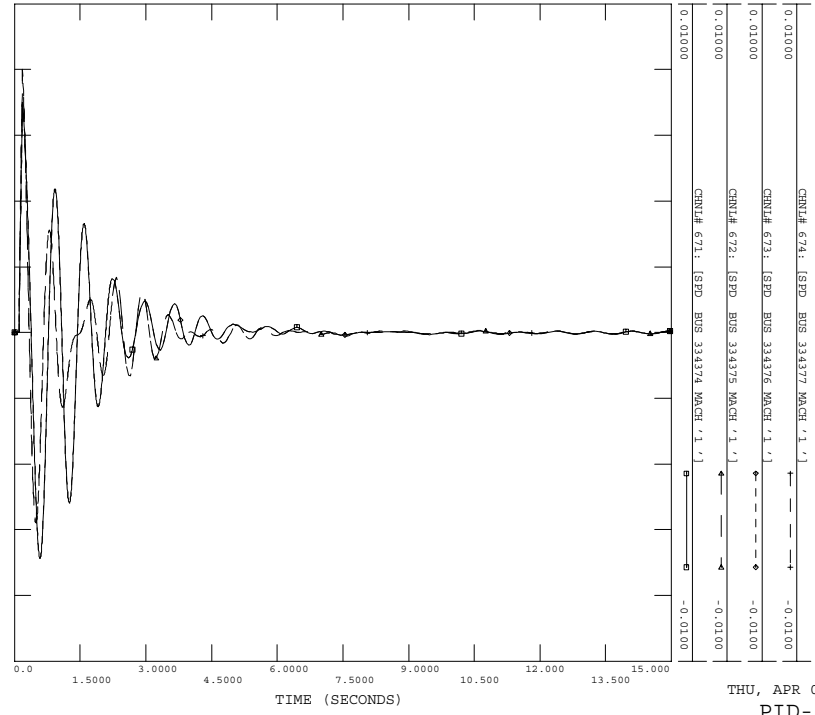
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



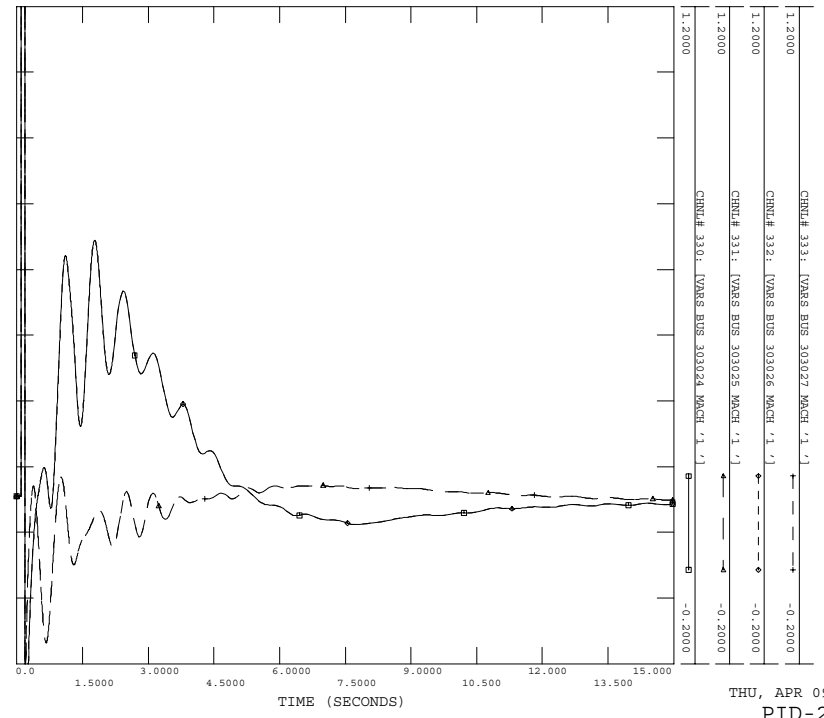
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



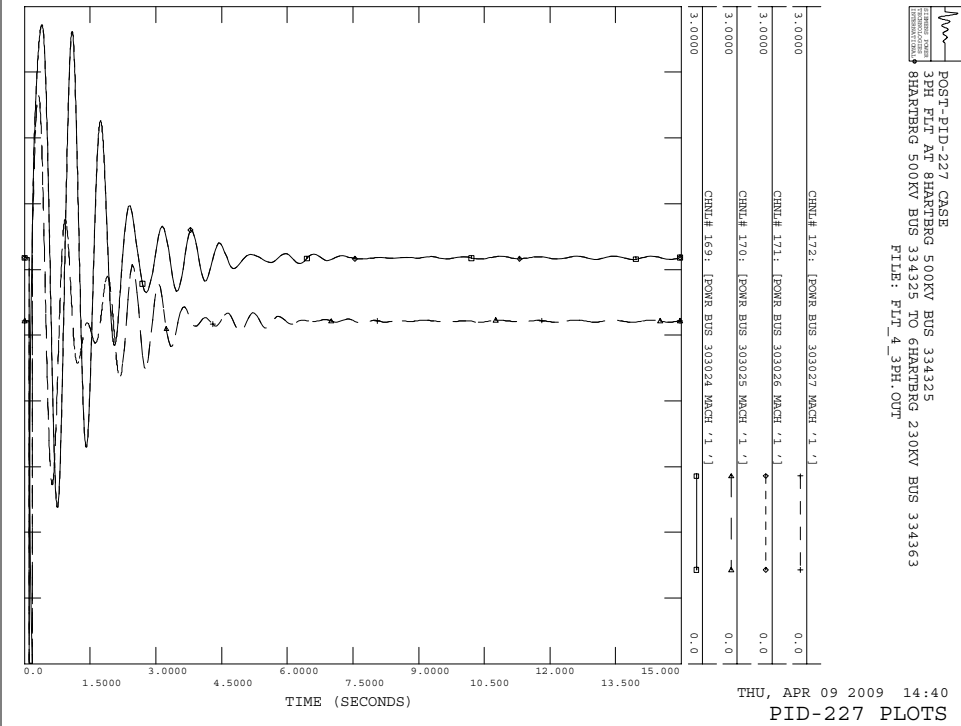
POST-PID-227 CASE
 3PH FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



POST-PID-227 CASE
 3PH FLT AT BHARTBERG 500KV BUS 334325
 BHARTBERG 500KV BUS 334325 TO 6BHARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT



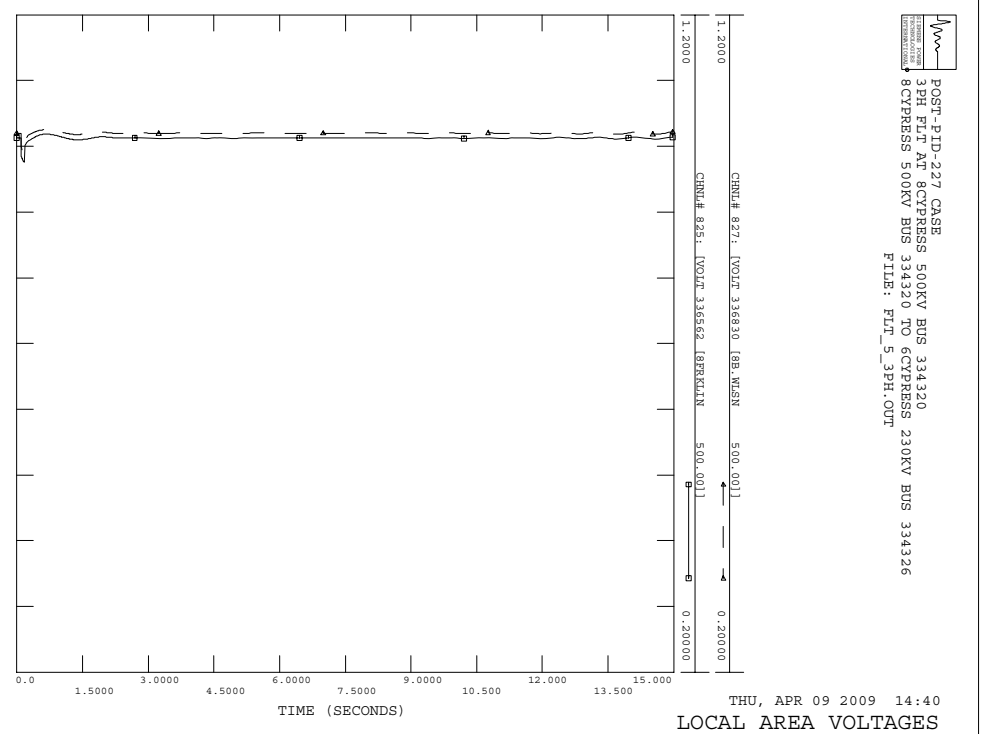
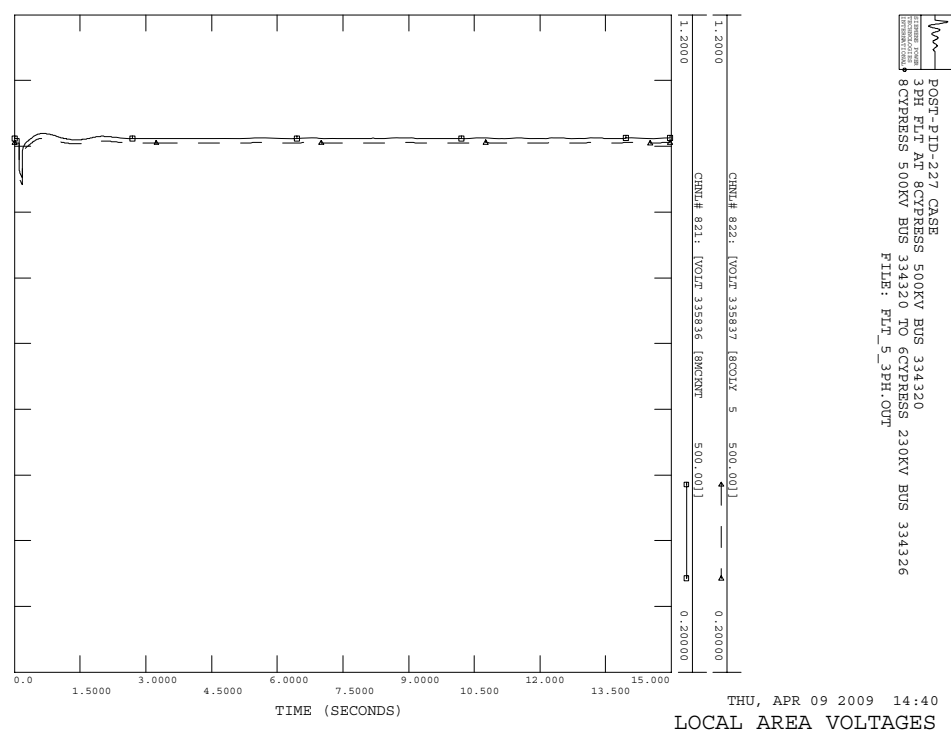
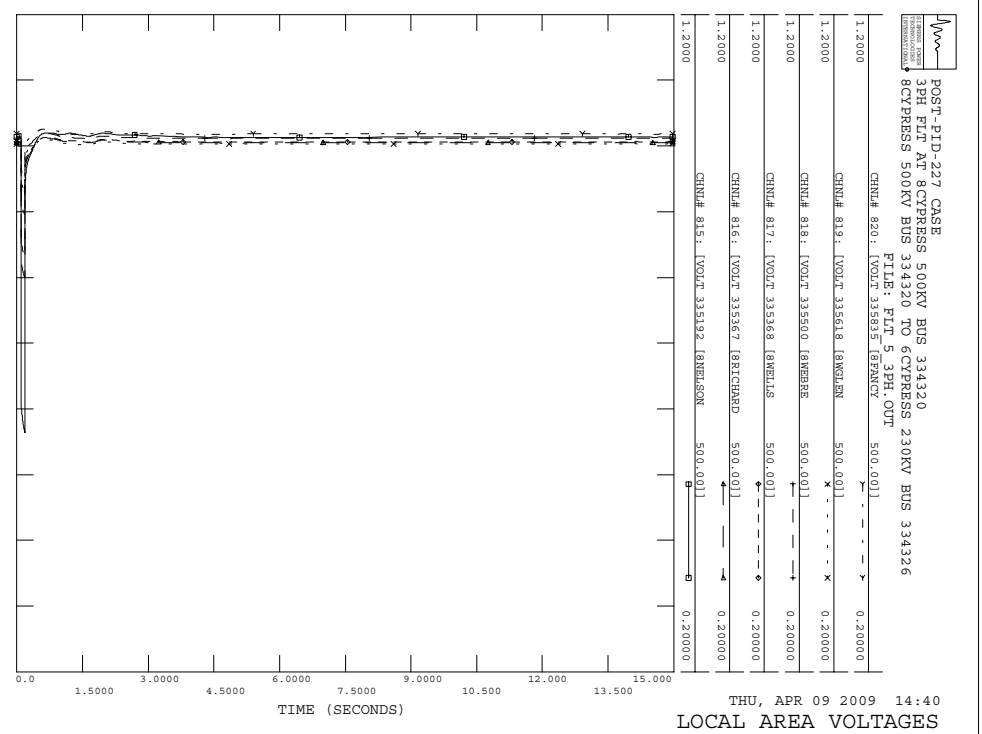
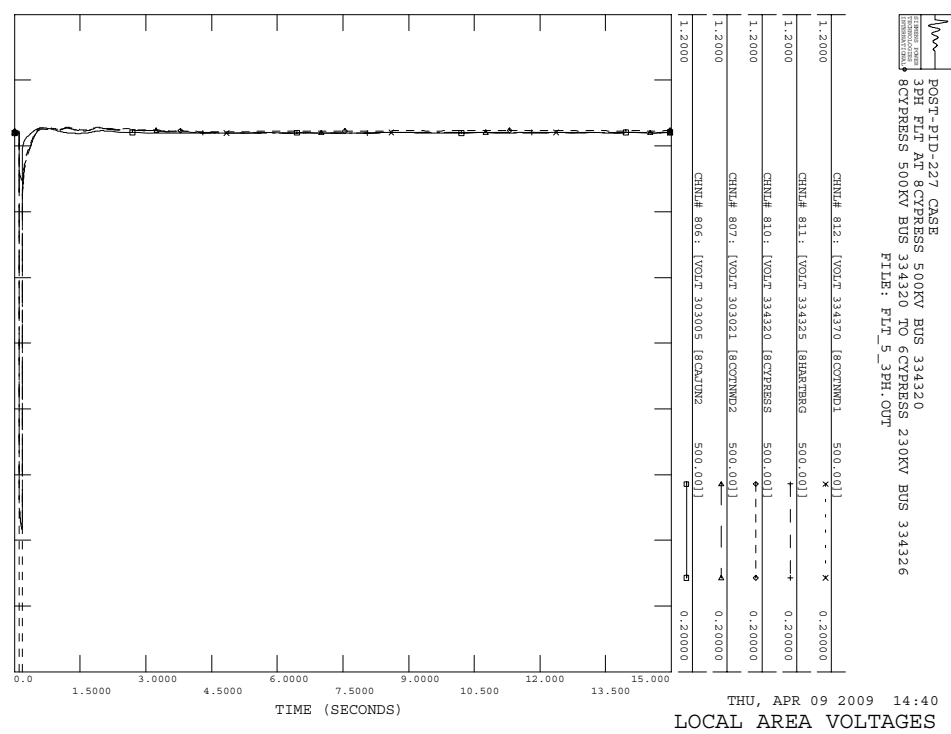
POST-PID-227 CASE
 3PH FLT AT BHARTBERG 500KV BUS 334325
 BHARTBERG 500KV BUS 334325 TO 6BHARTBERG 230KV BUS 334363
 FILE: FLT_4_3PH.OUT

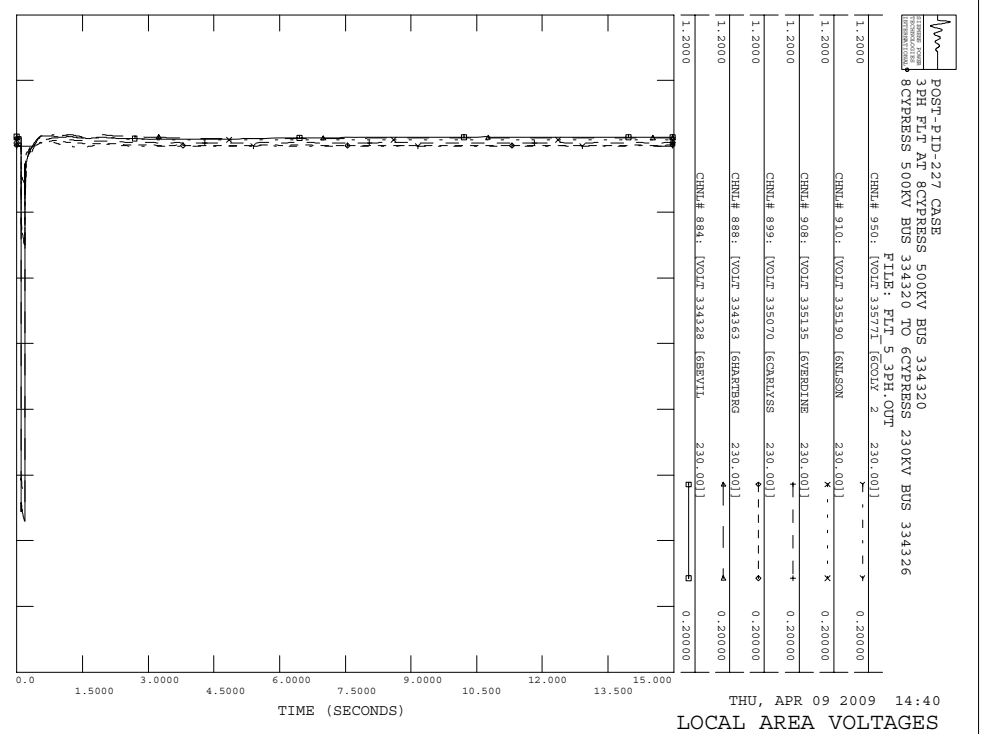
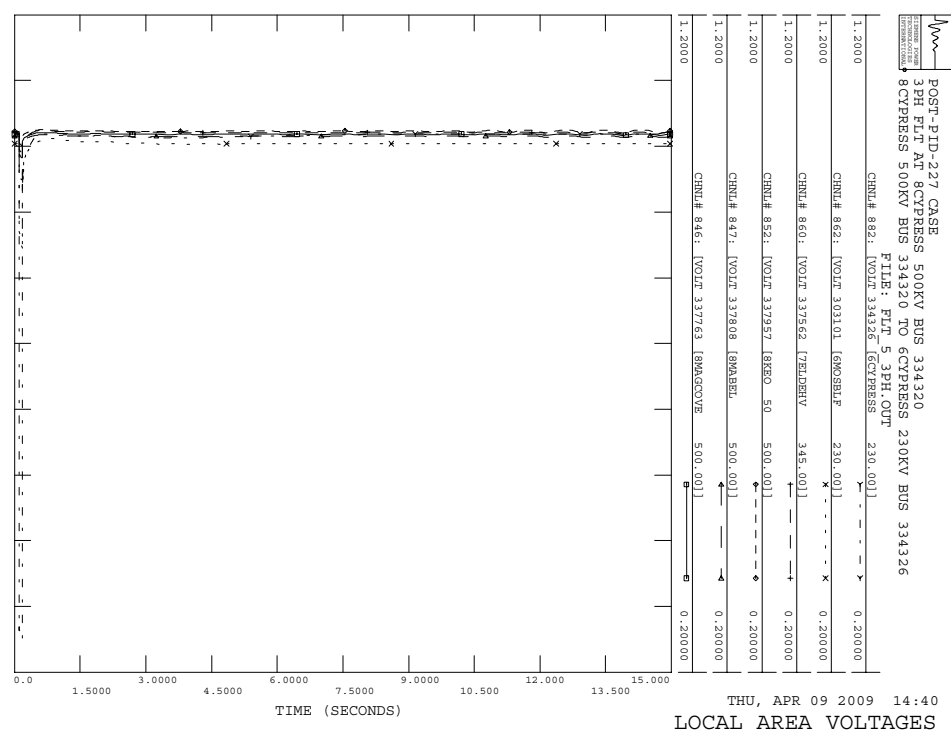
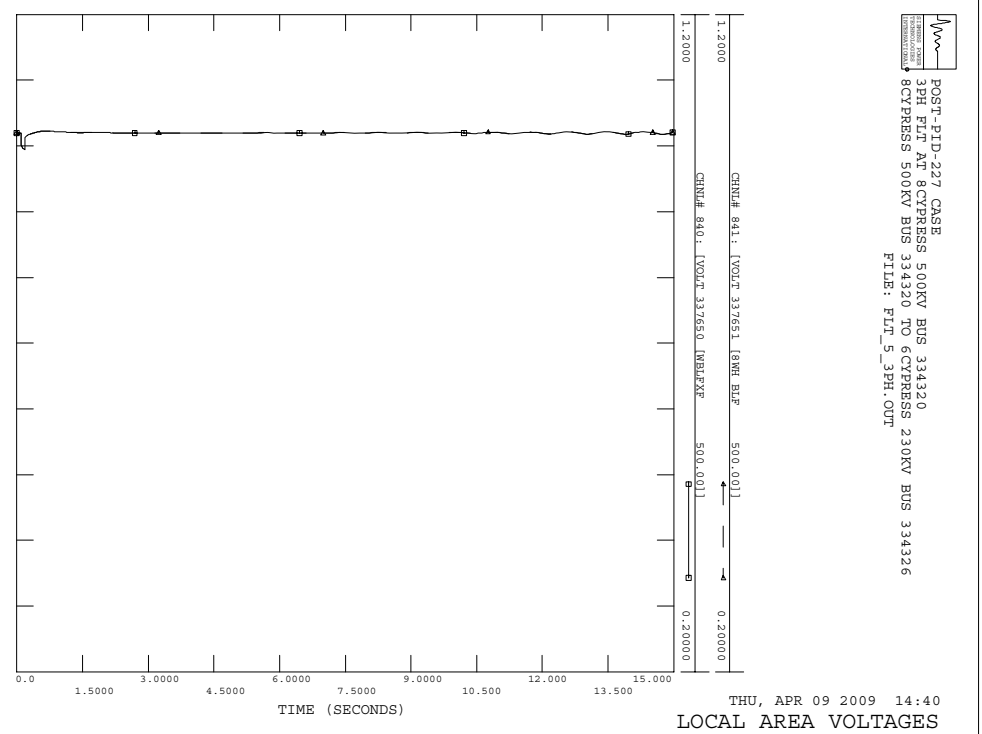
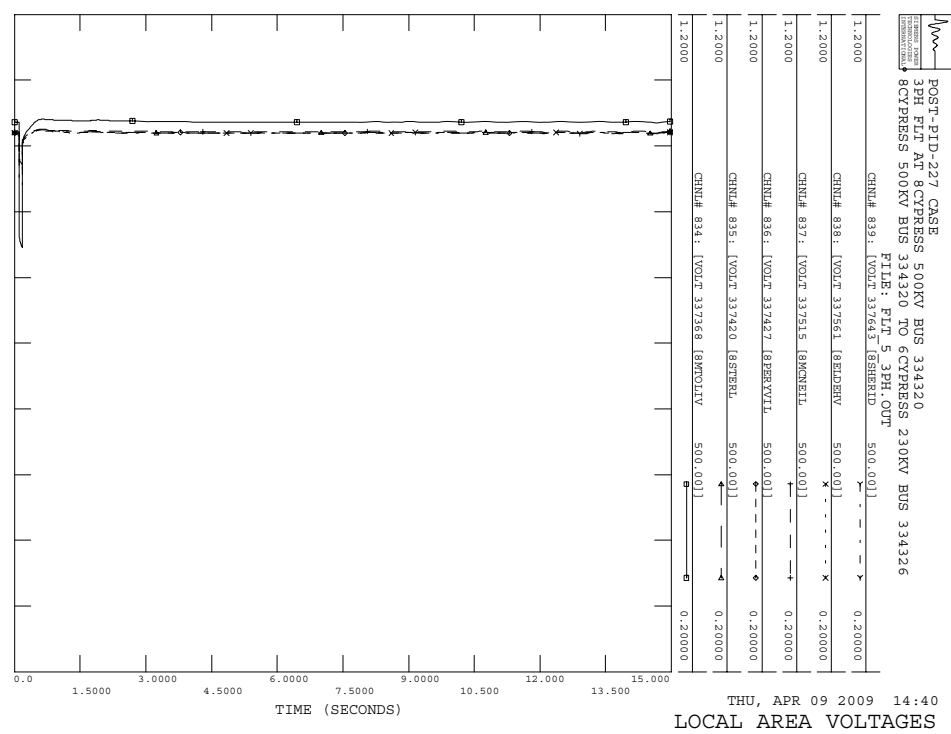


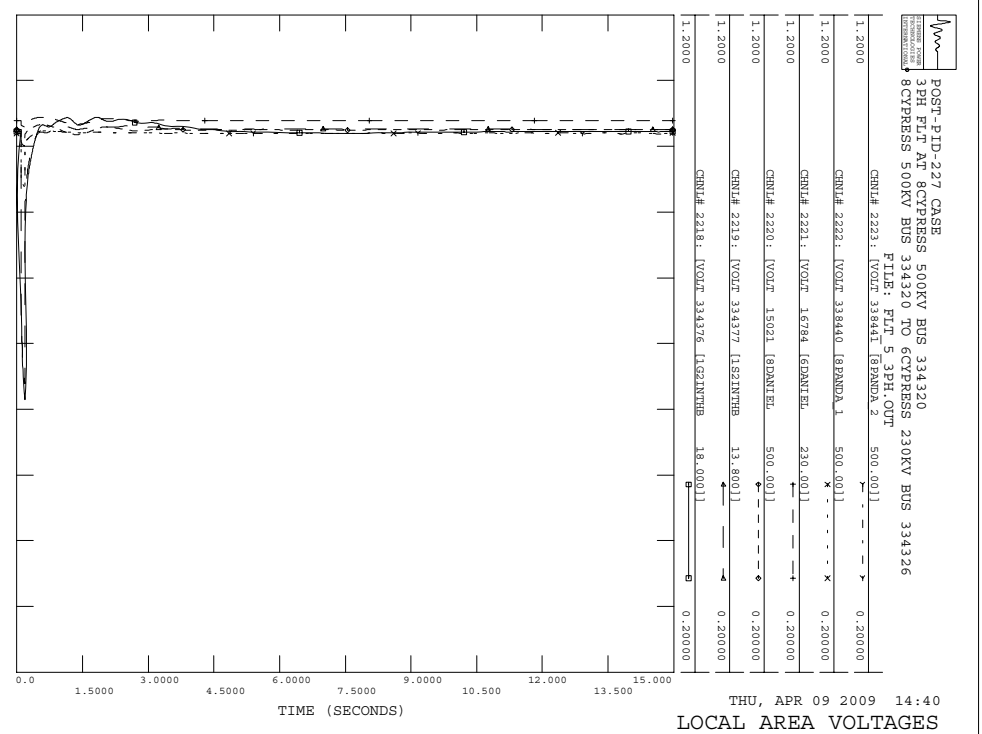
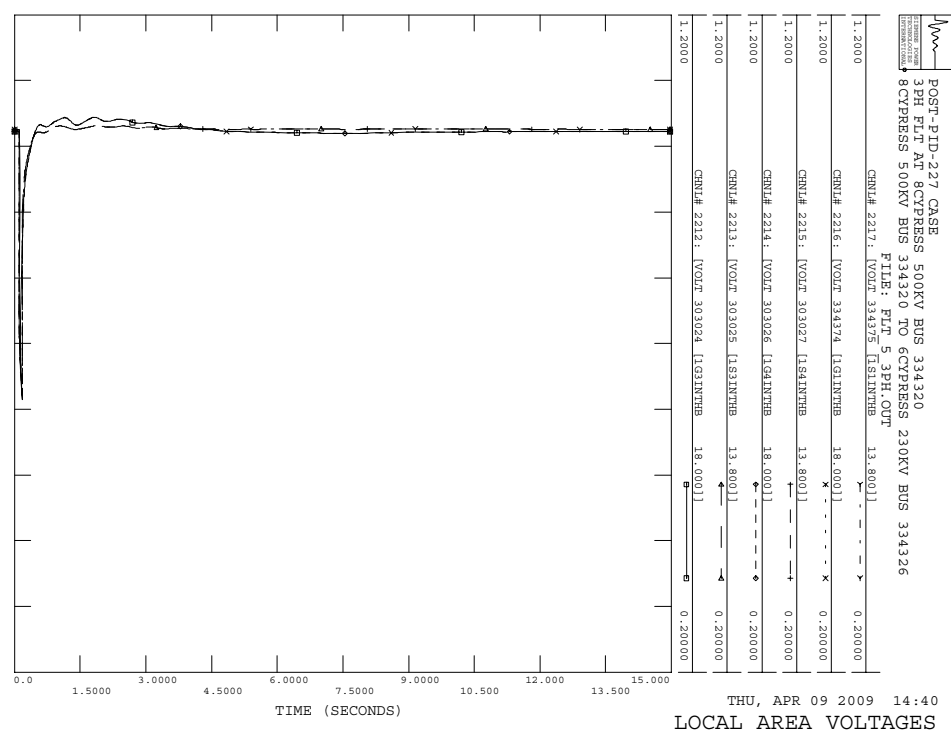
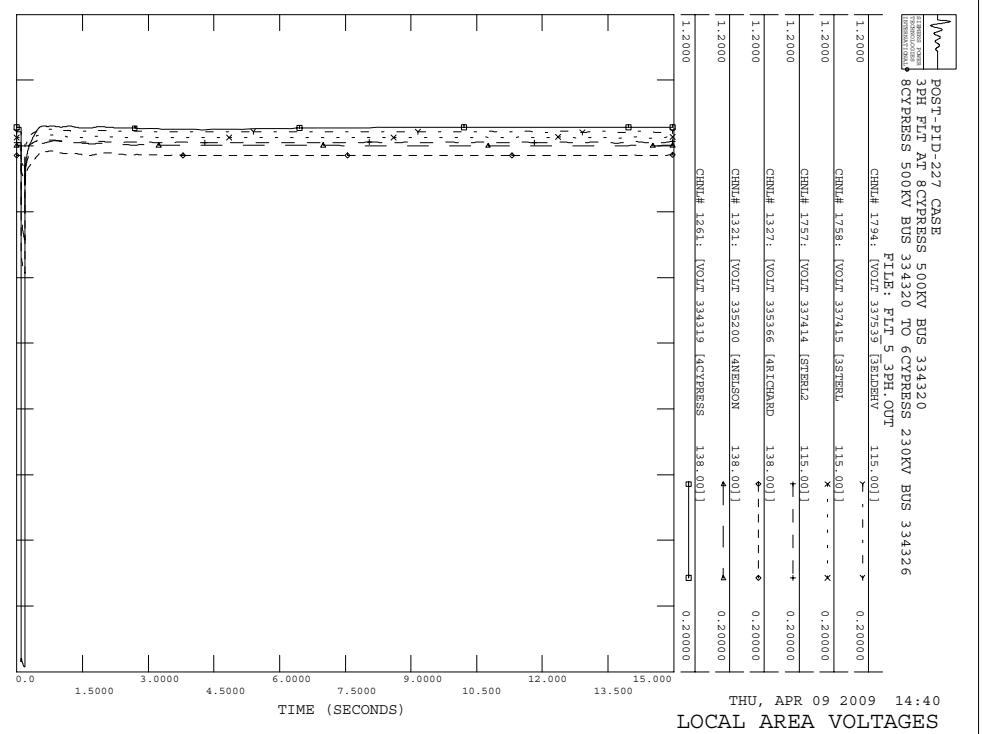
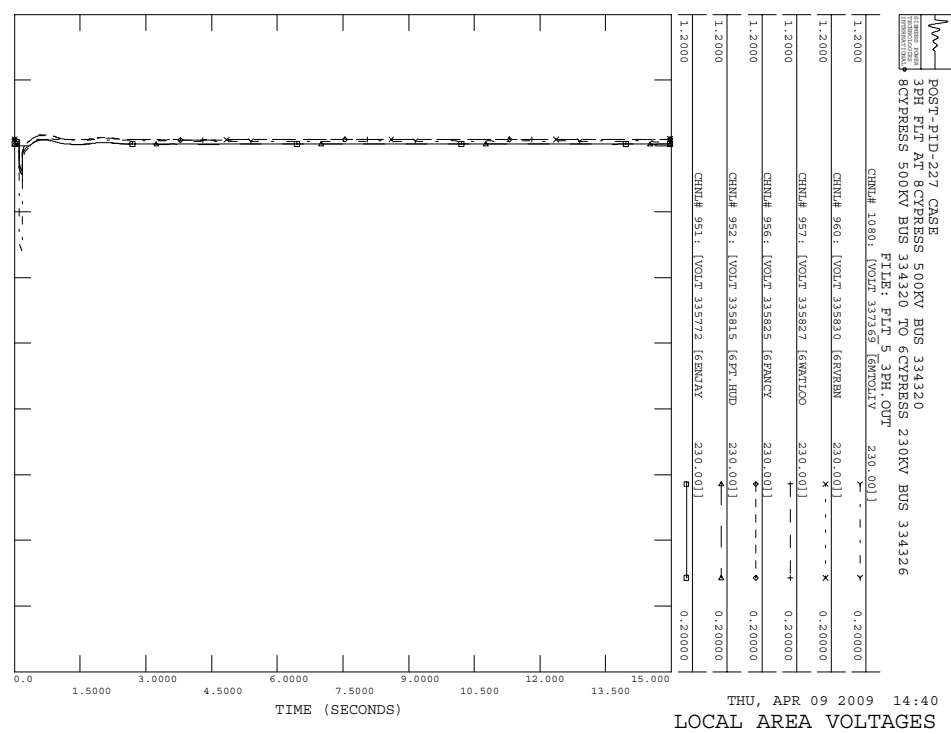
C.5 FLT_5_3PH

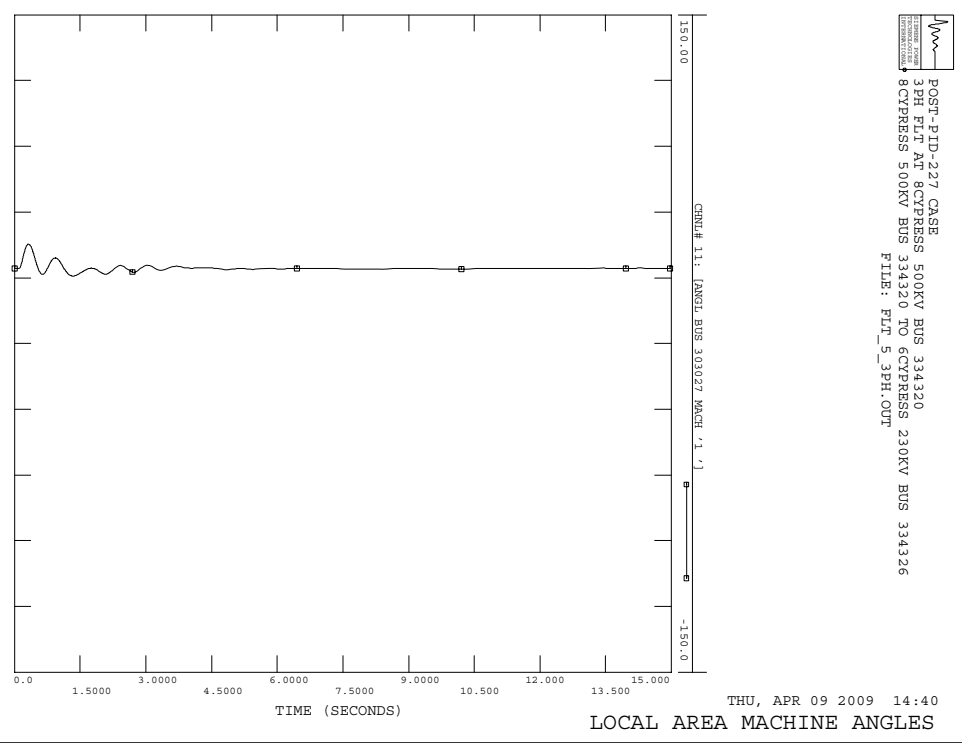
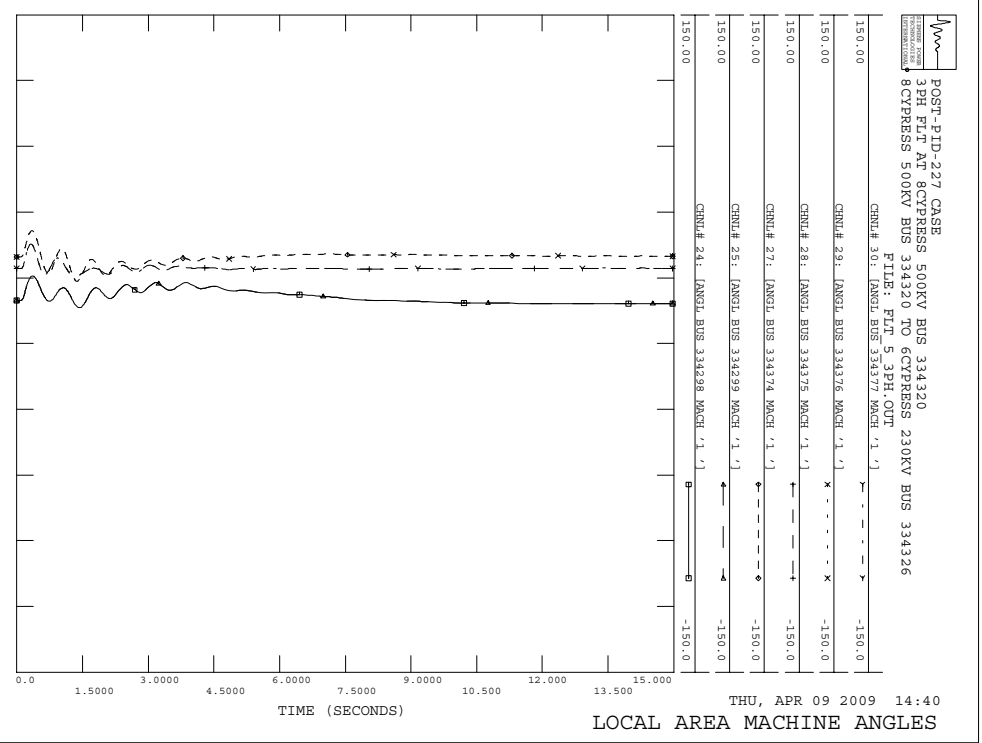
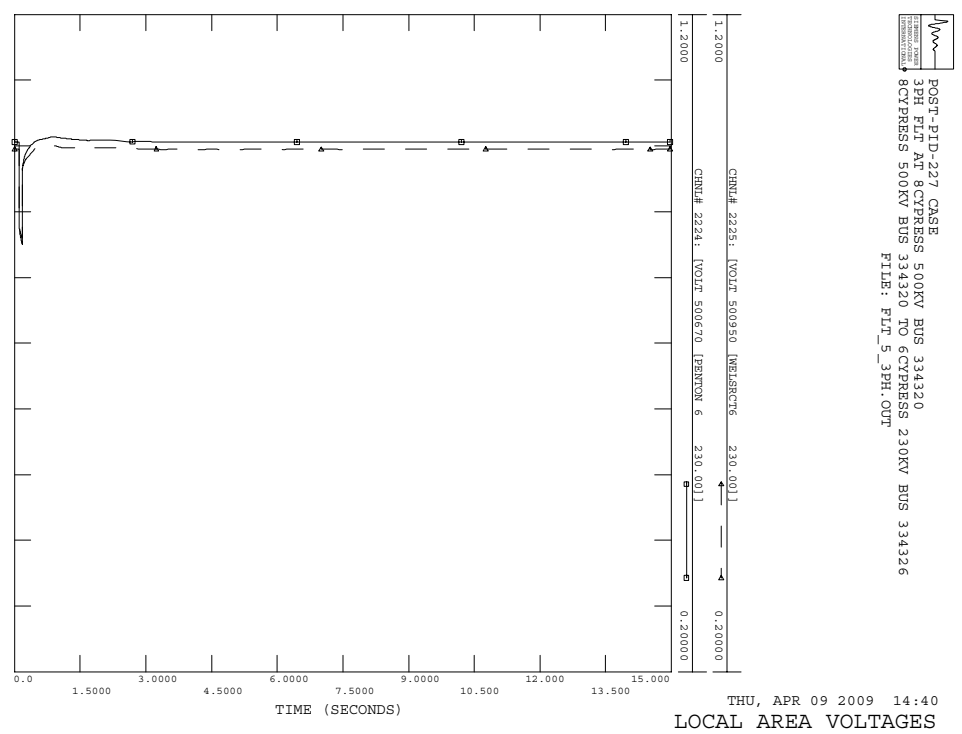
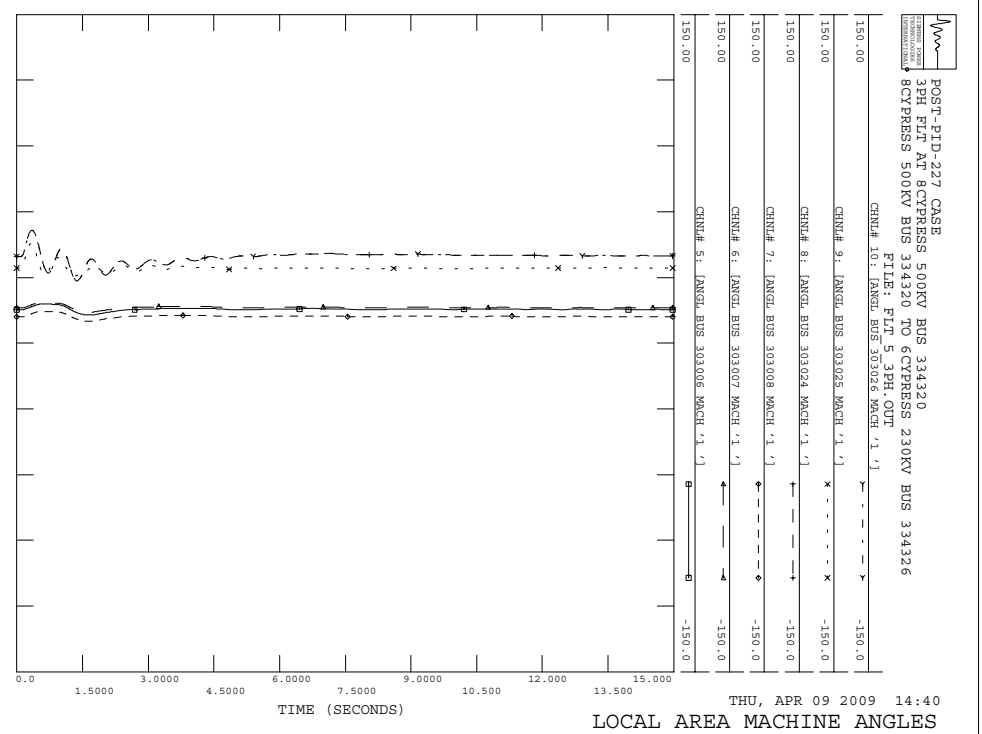
Three phase fault on the 8CYPRESS (#334320) to 6CYPRESS (#334326) transformer, near the 8CYPRESS.

- a) Apply 3 Phase Fault AT 8CYPRESS 500KV BUS 334320
- b) Clear fault after 5 cycles by tripping transformer from 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326

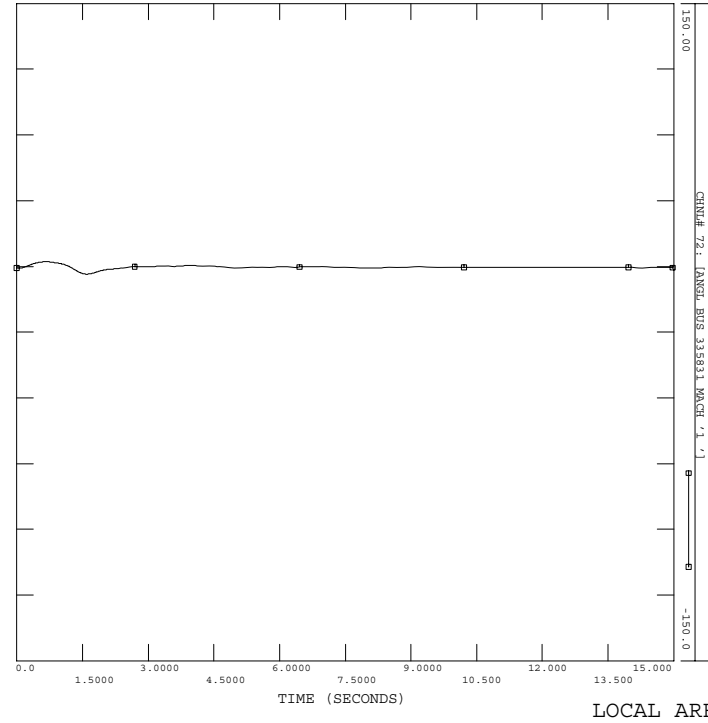




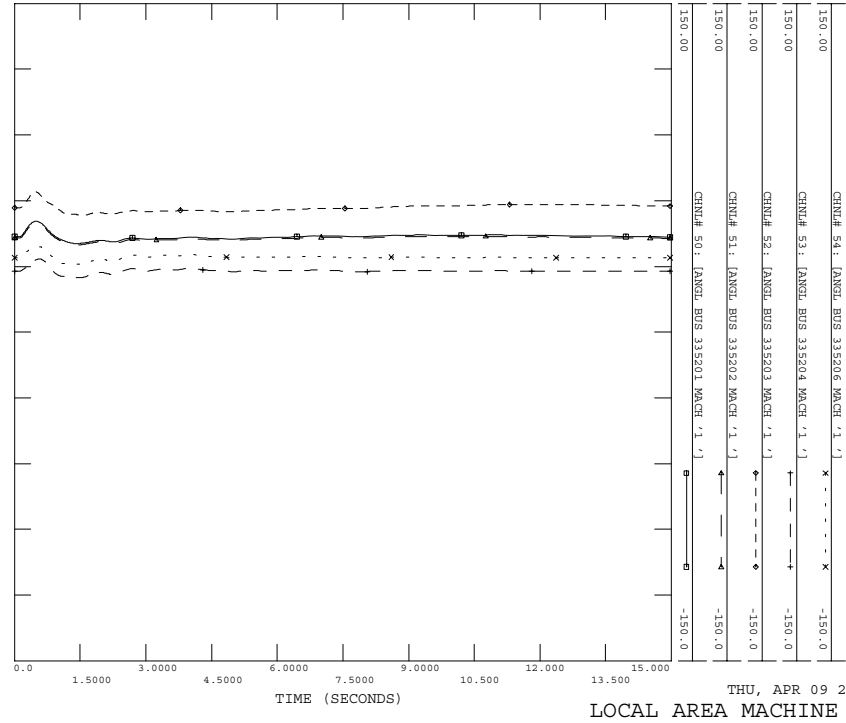




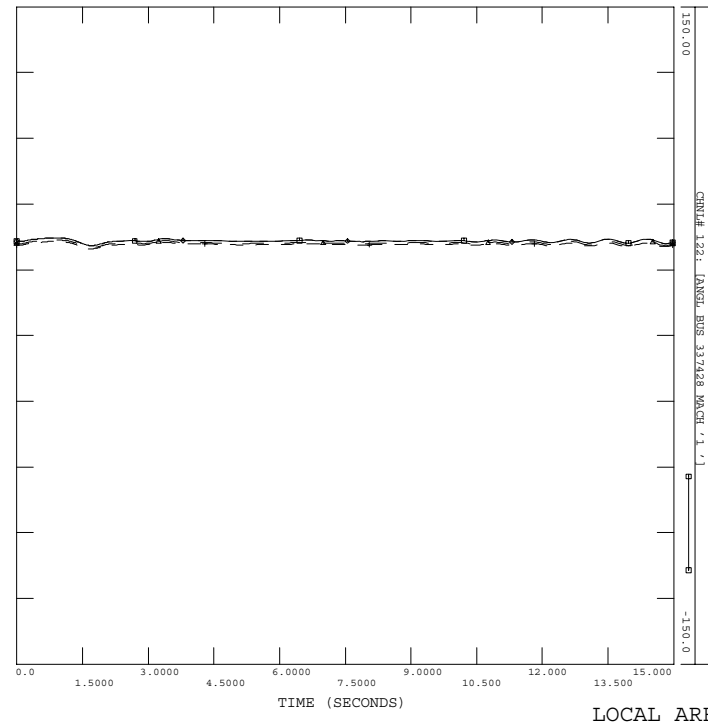
POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH_OUT



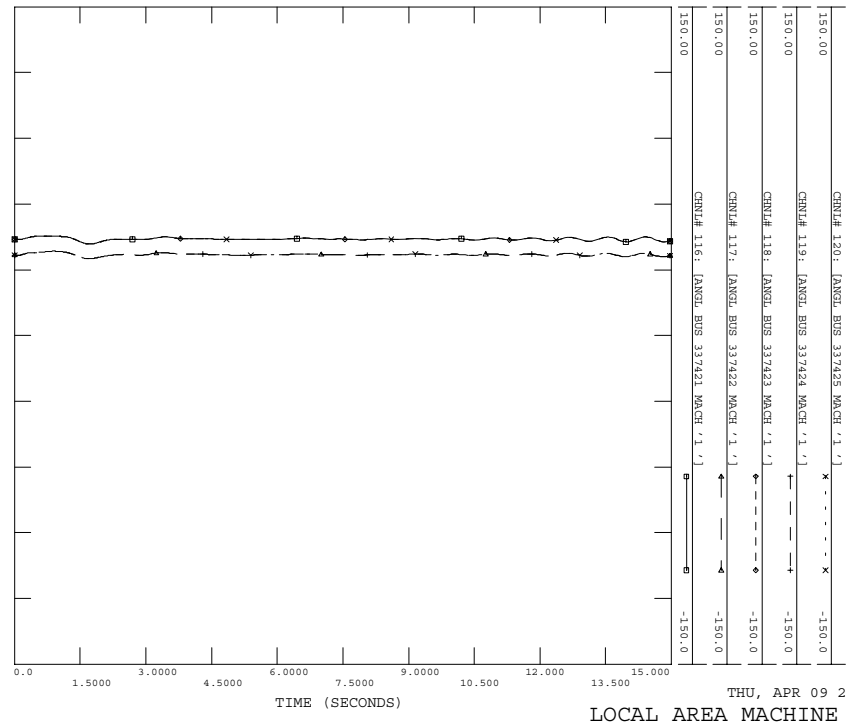
POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH_OUT



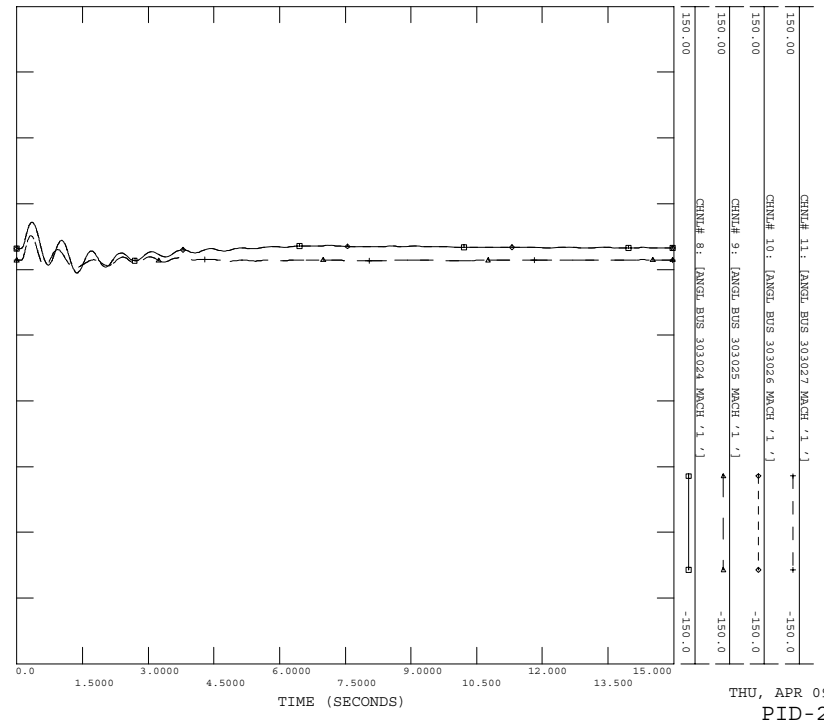
POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH_OUT



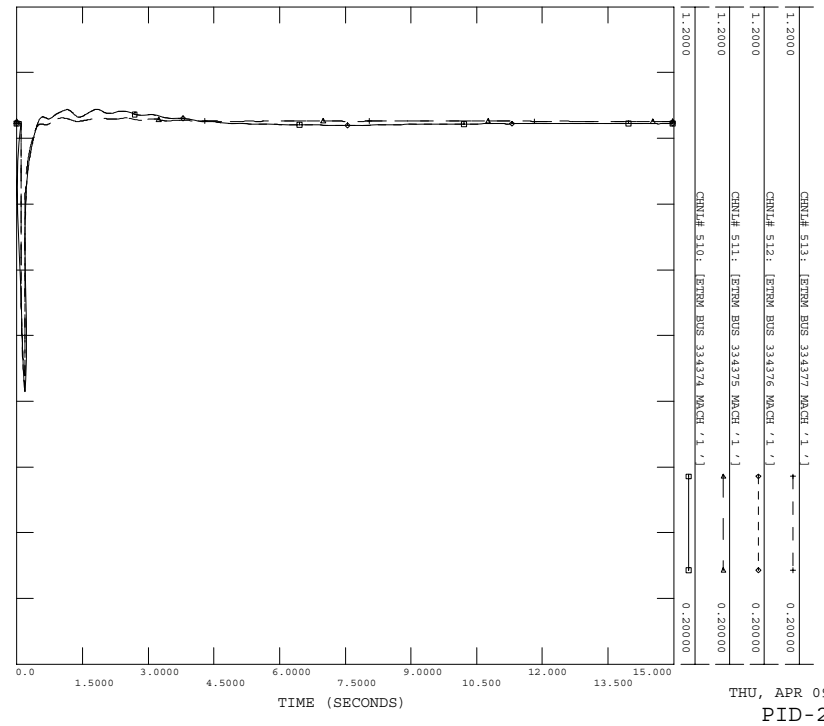
POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH_OUT



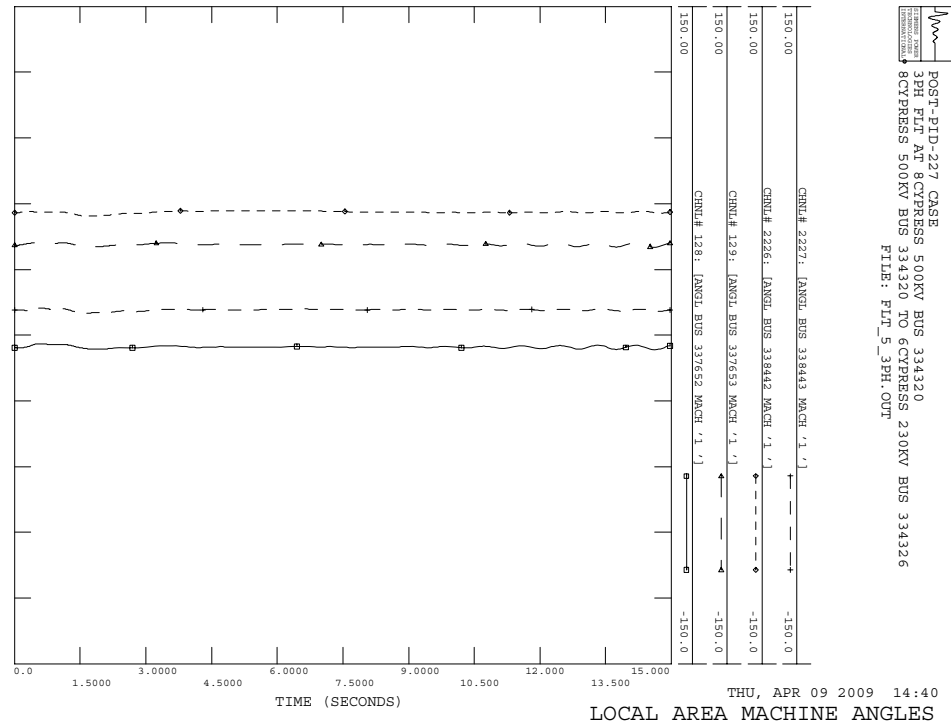
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



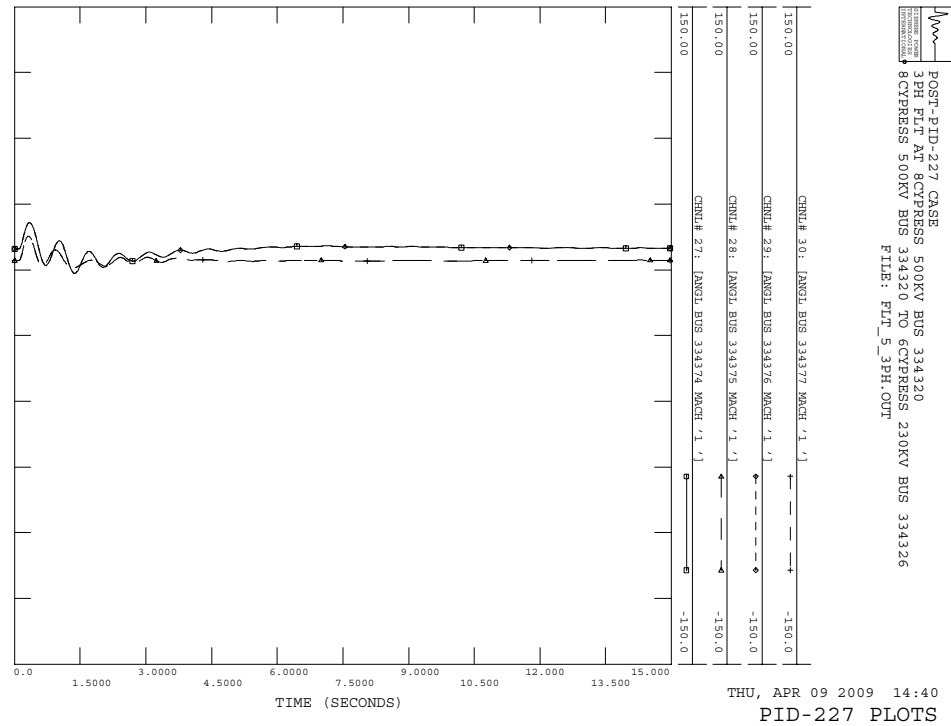
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



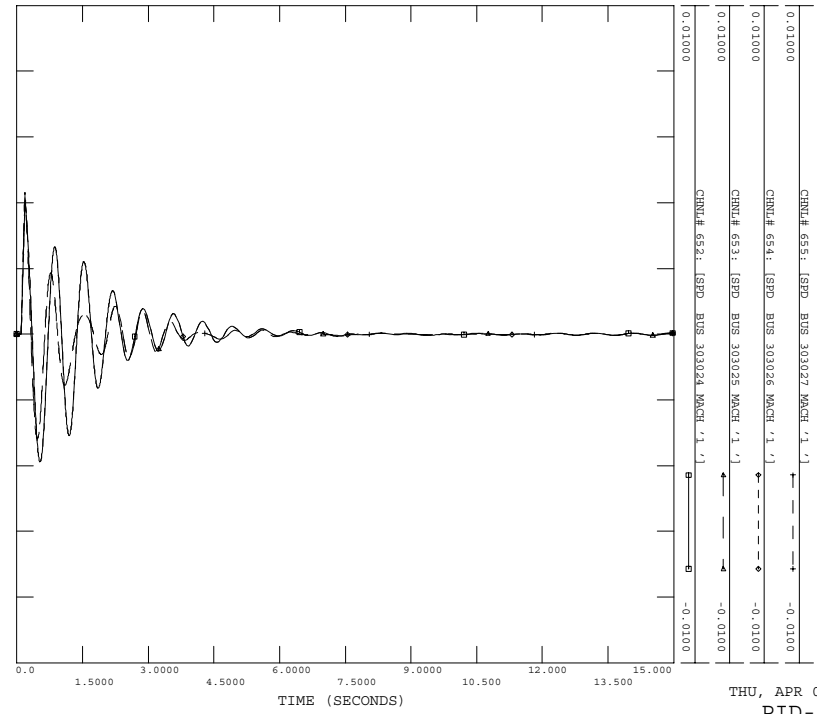
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



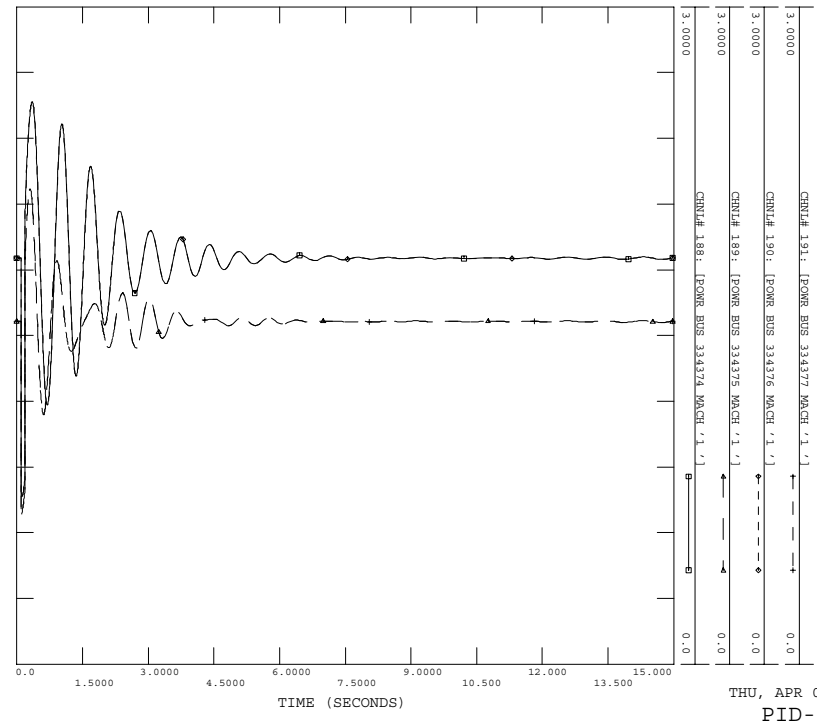
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



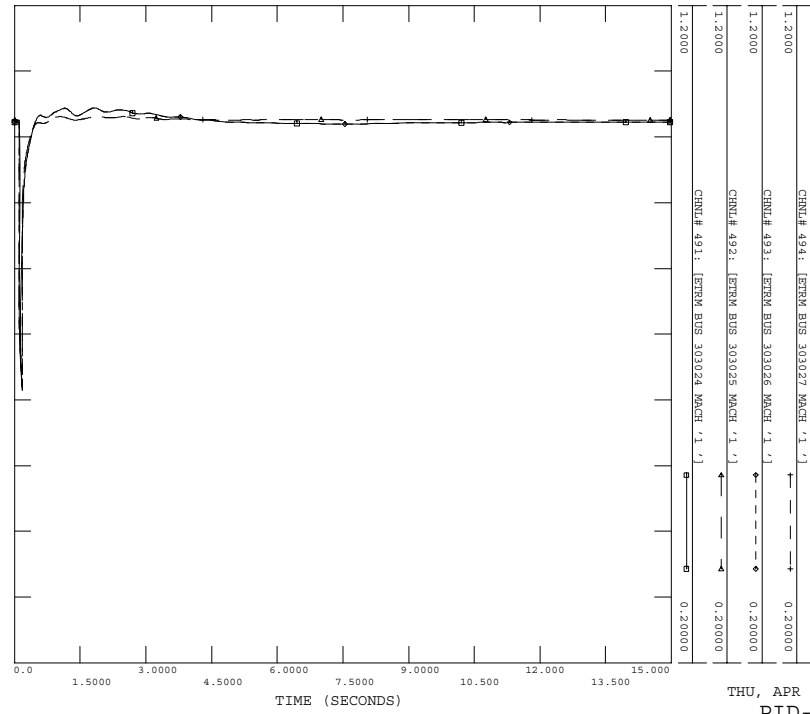
POST-PID-227 CASE
 3PH FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



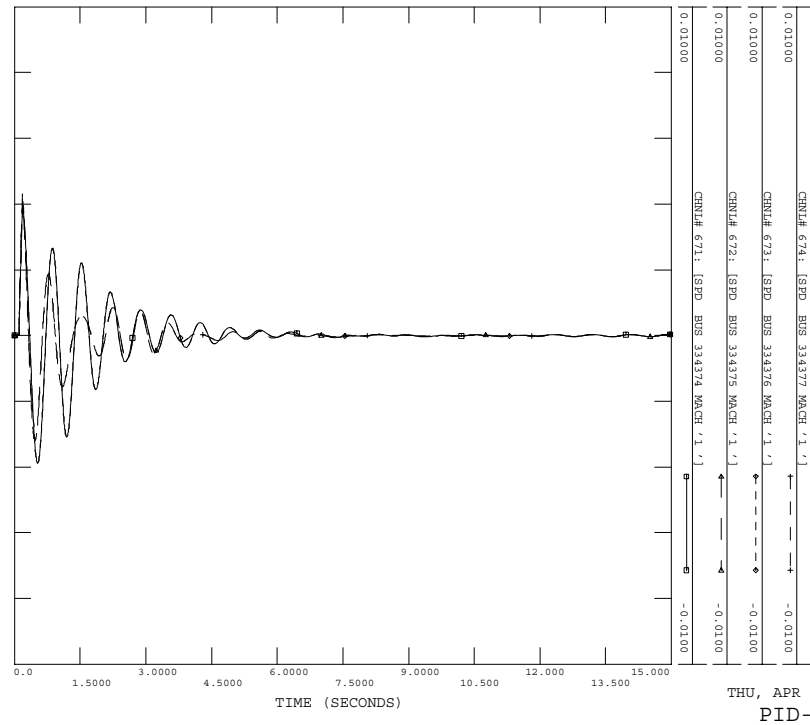
POST-PID-227 CASE
 3PH FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



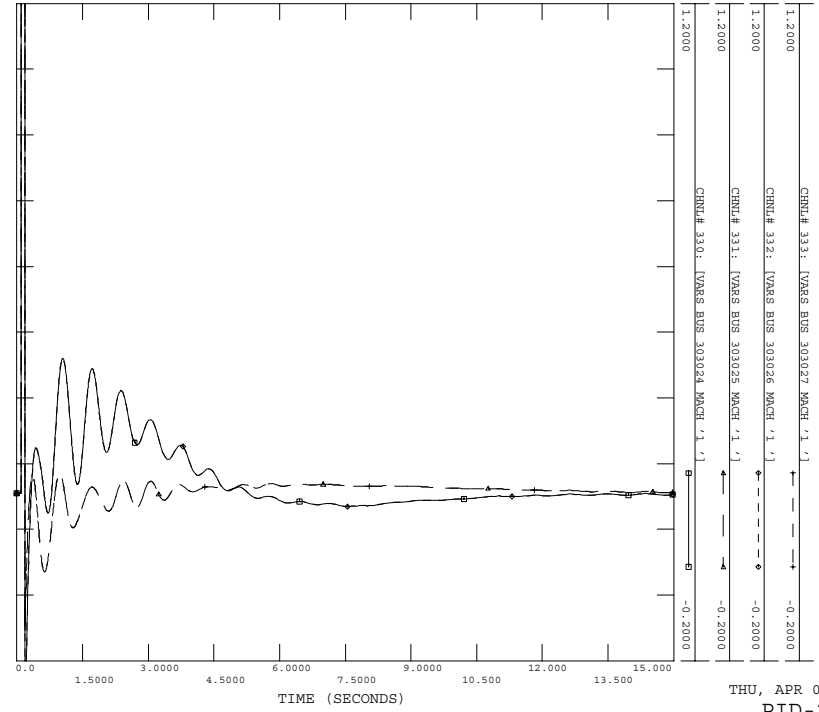
POST-PID-227 CASE
 3PH FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT



POST-PID-227 CASE
 3PH FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326
 FILE: FLT_5_3PH.OUT

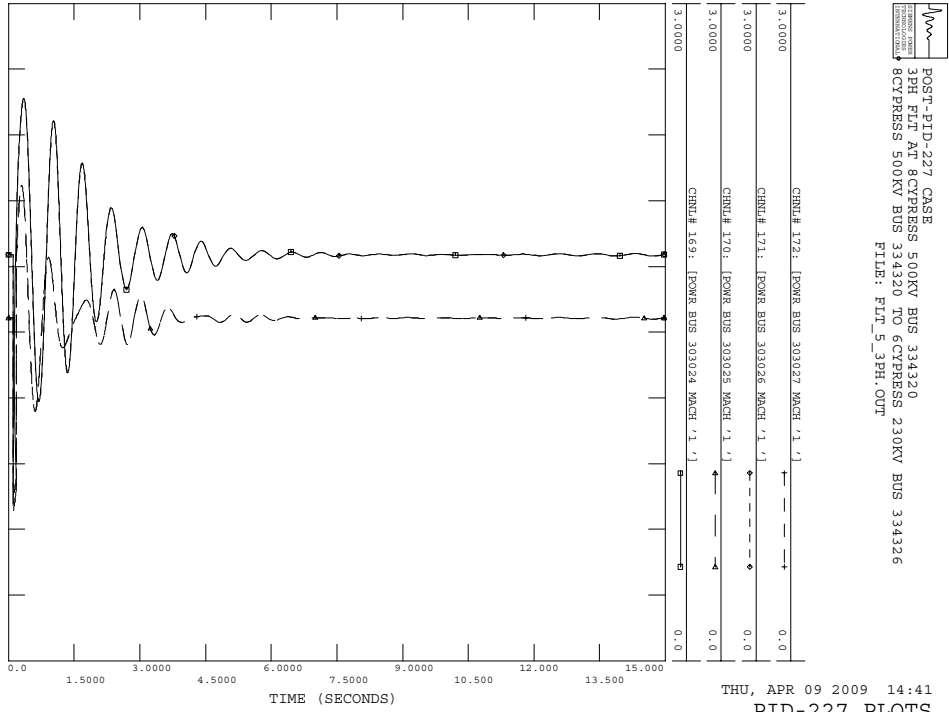


POST-PID-227 CASE
3PH FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326
FILE: FLT_5_3PH.OUT



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POST-PID-227 CASE
3PH FLT AT 6CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326
FILE: FLT_5_3PH.OUT

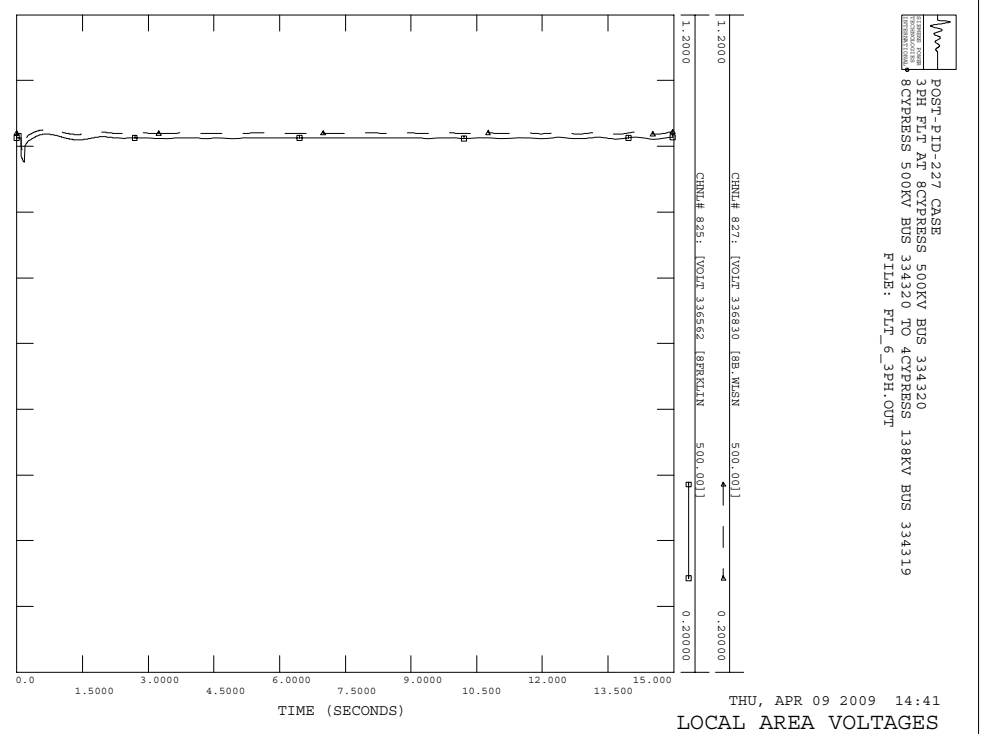
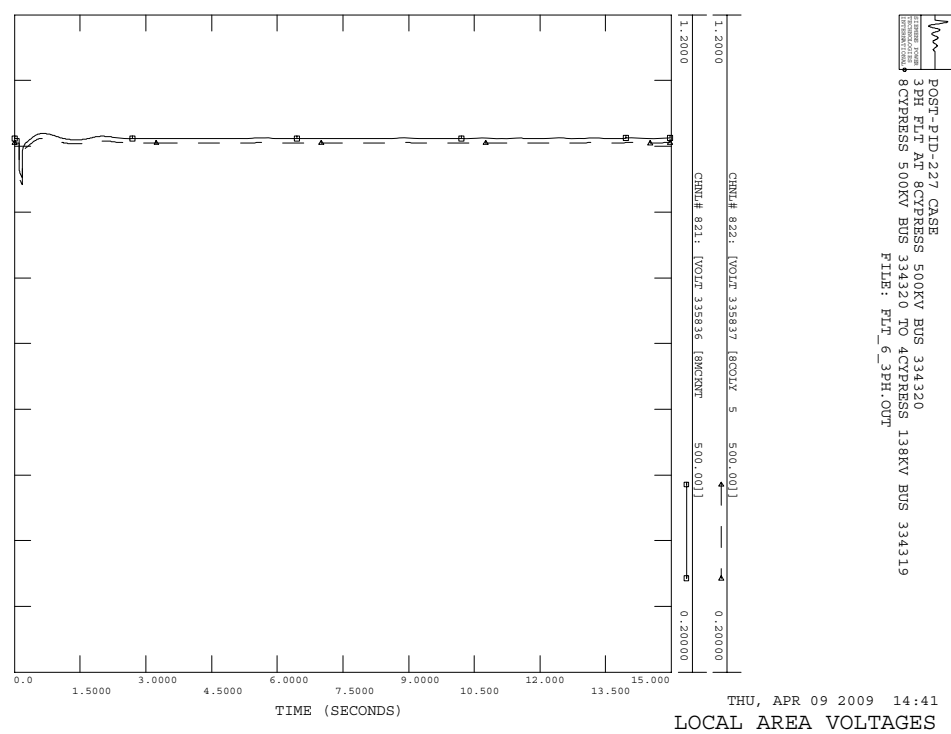
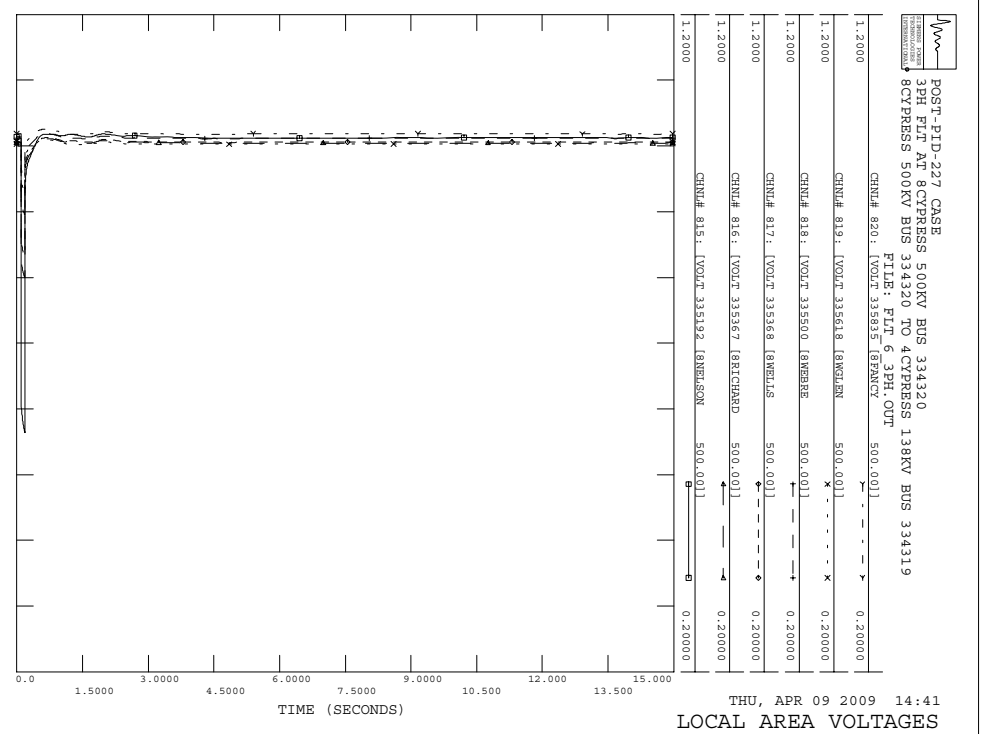
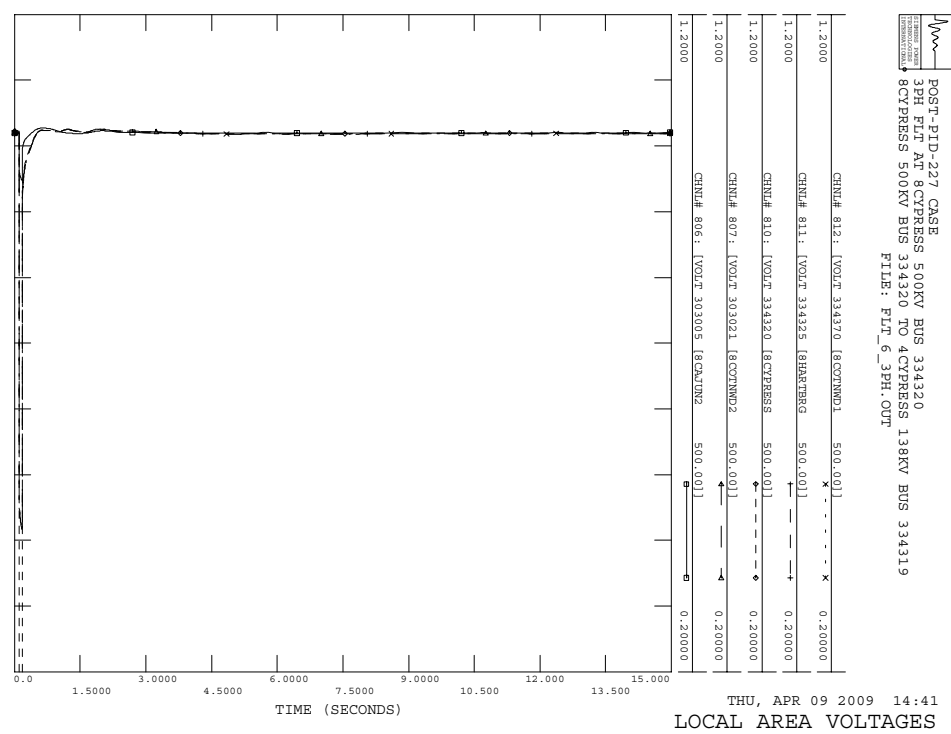


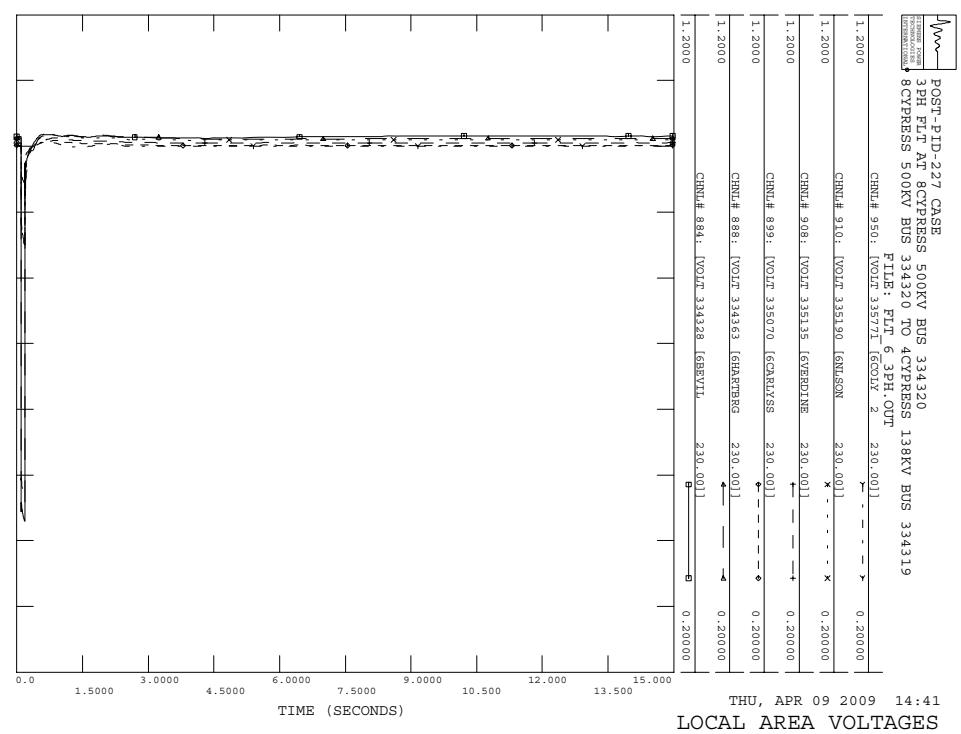
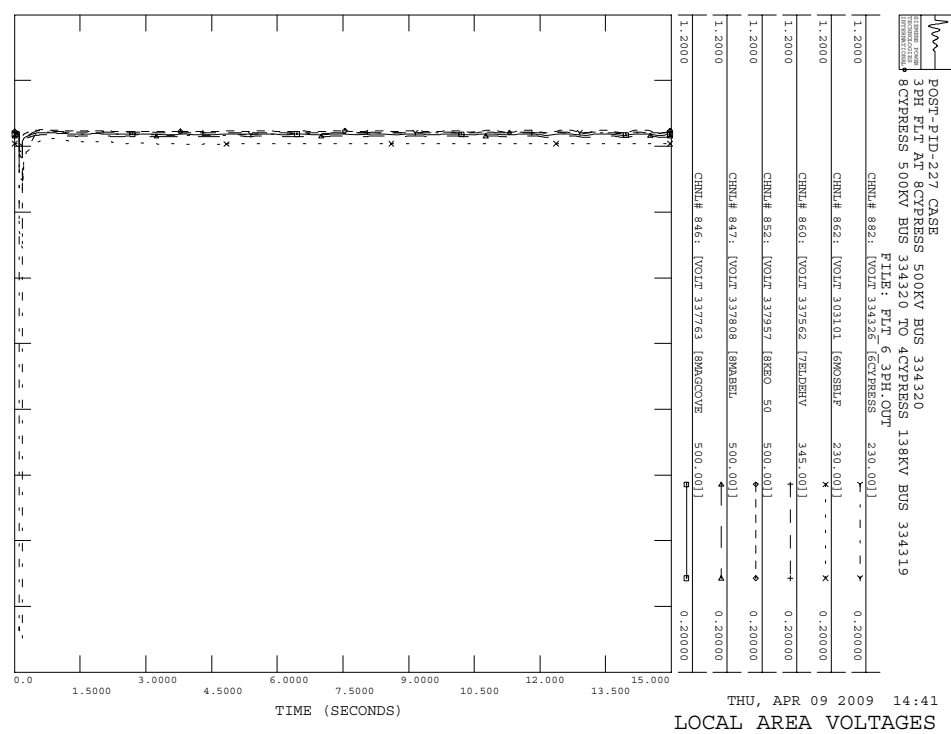
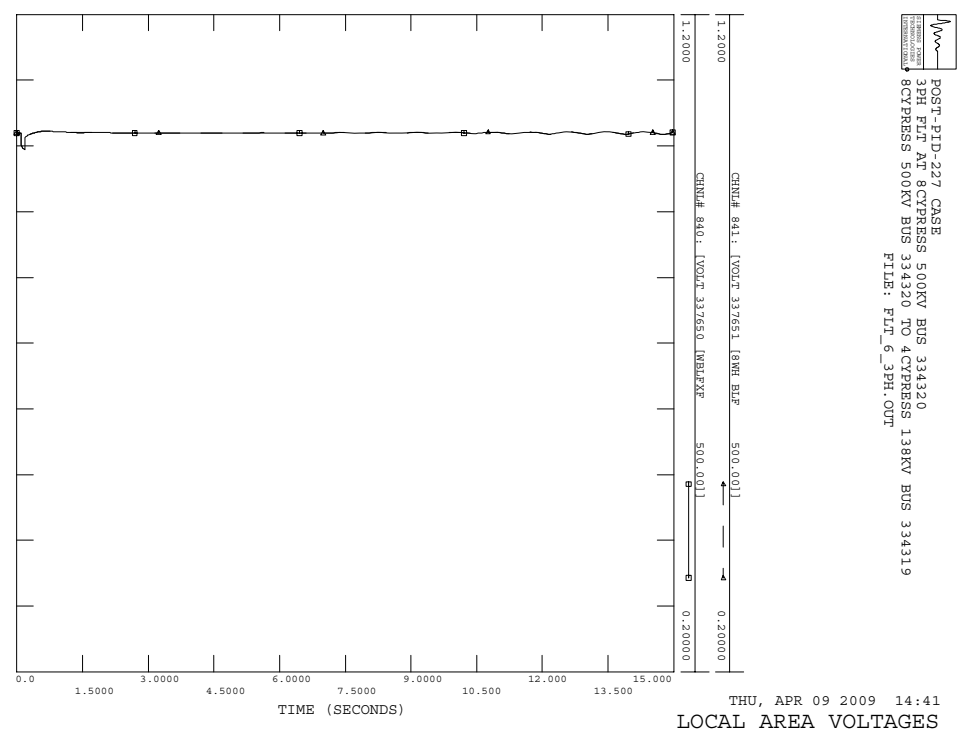
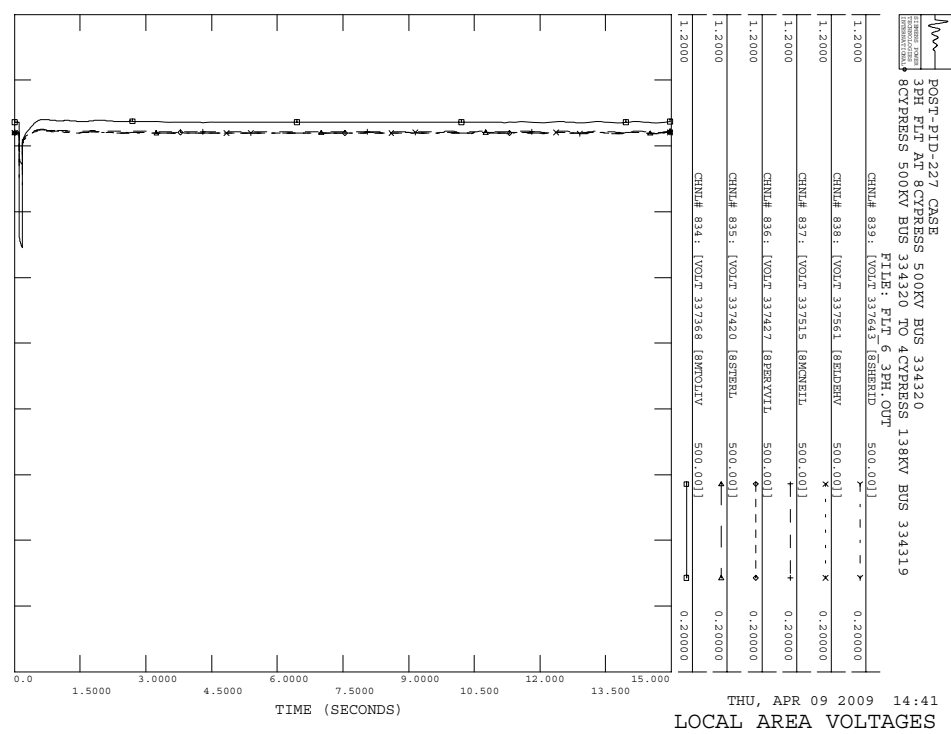
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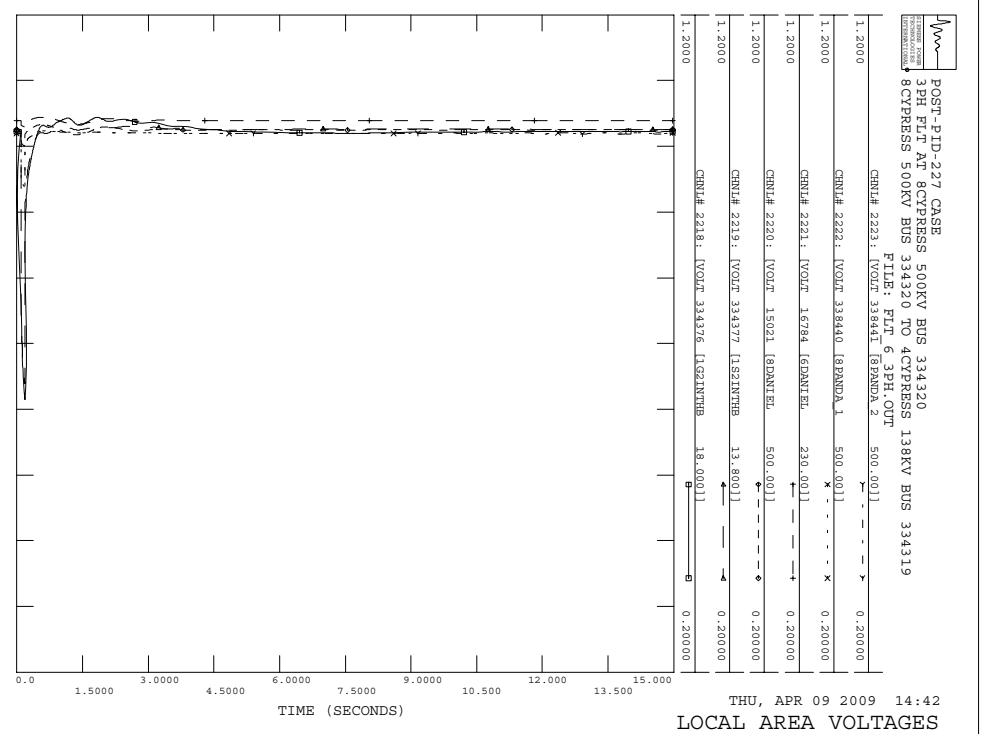
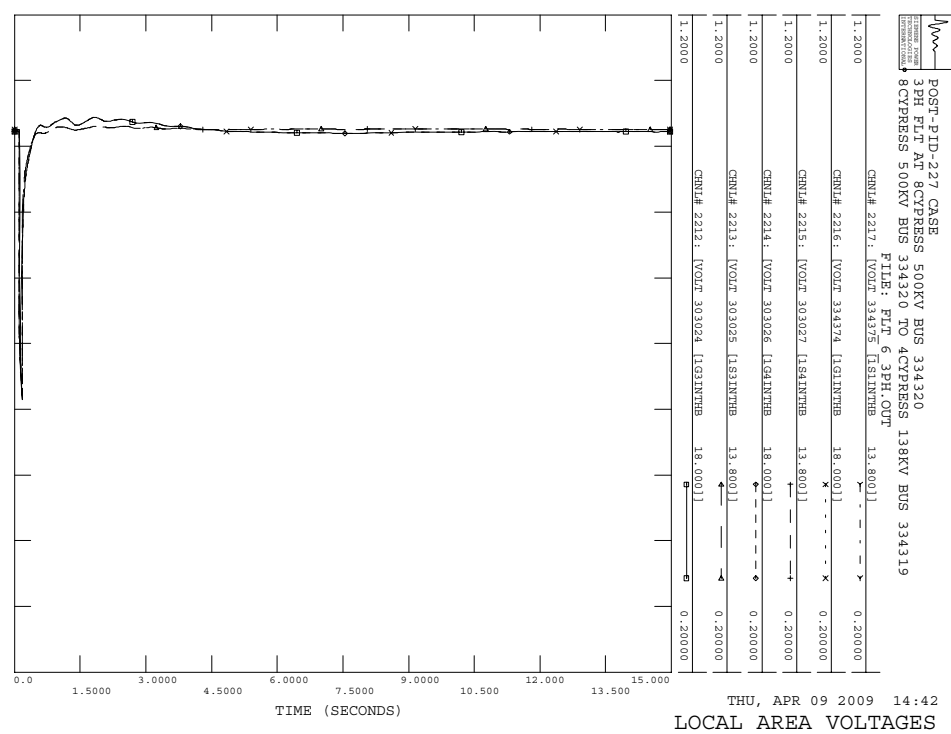
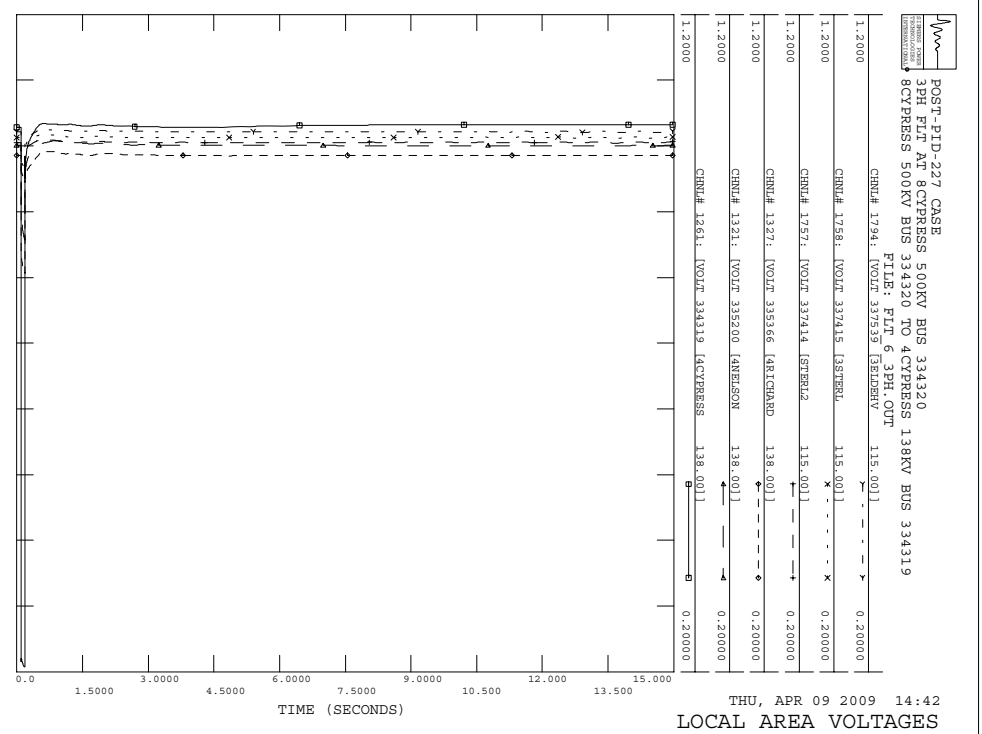
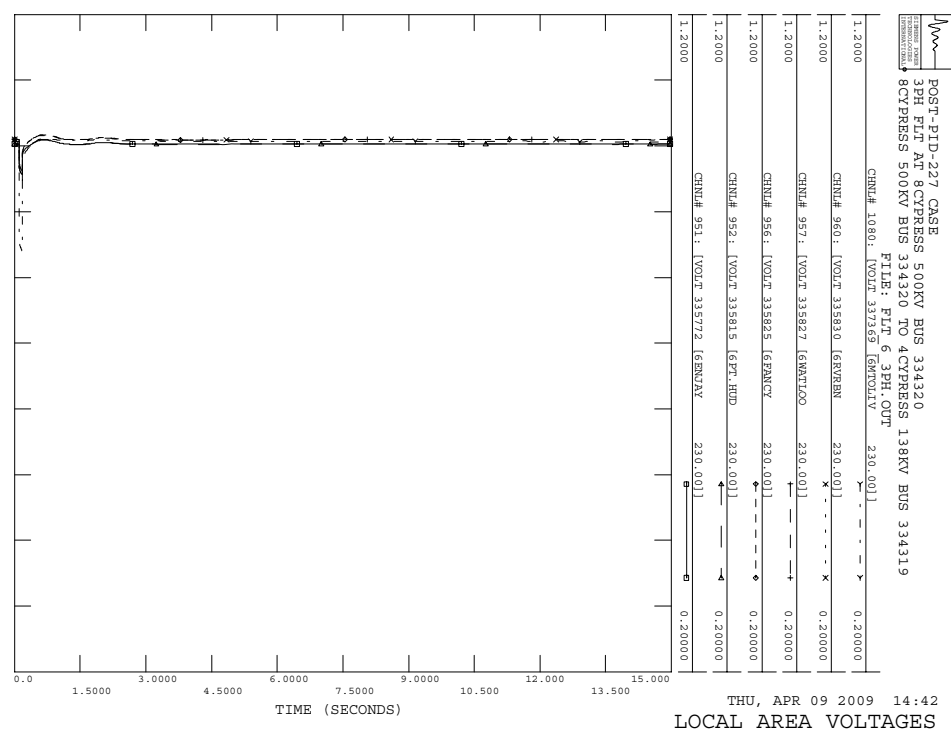
C.6 FLT_6_3PH

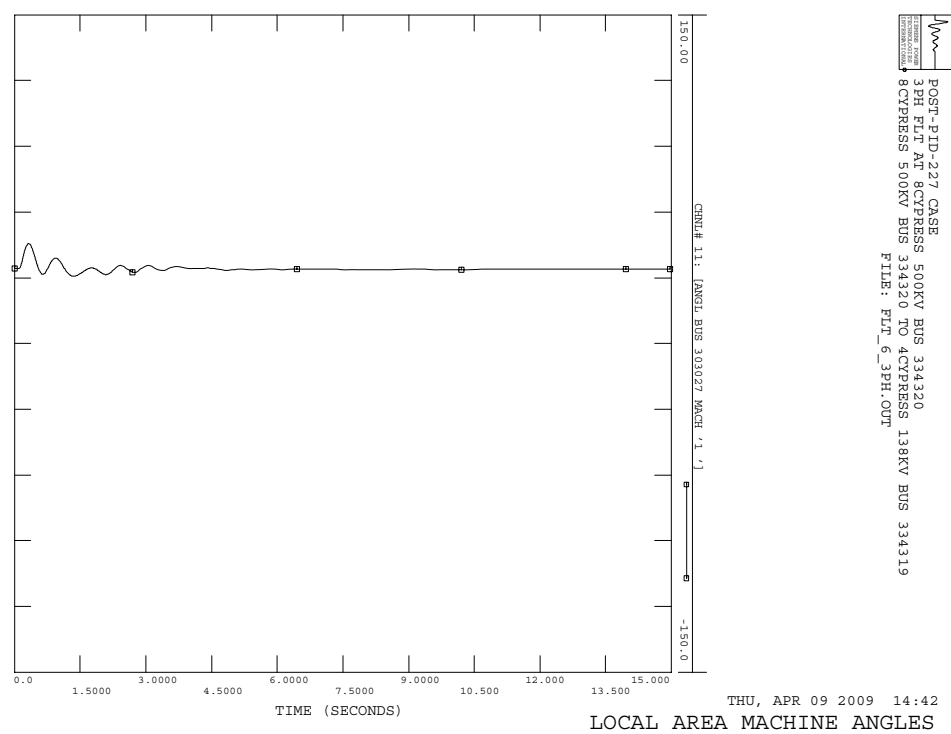
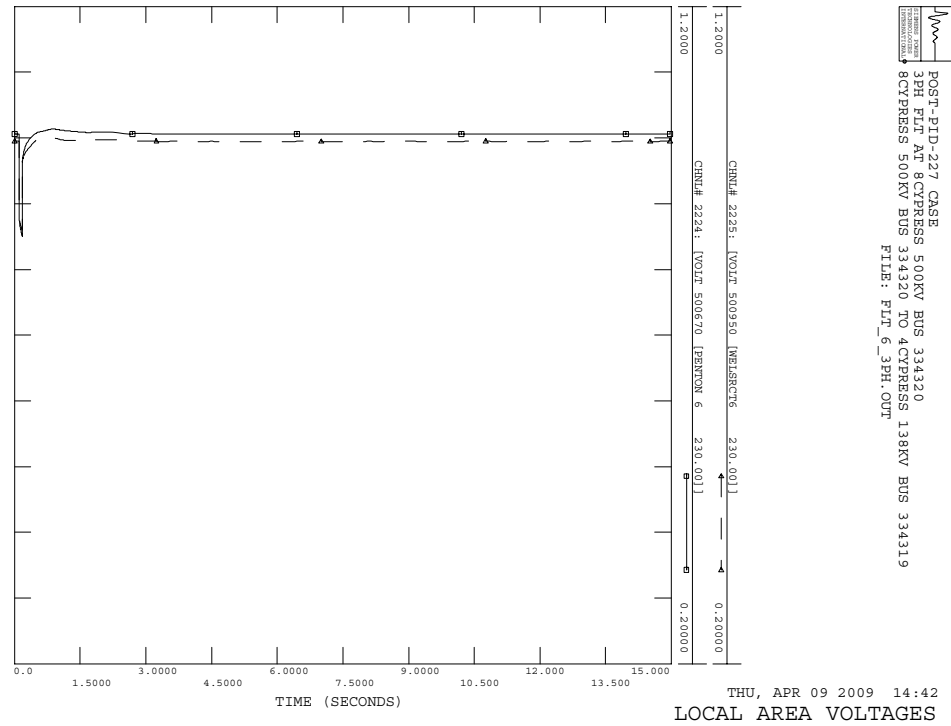
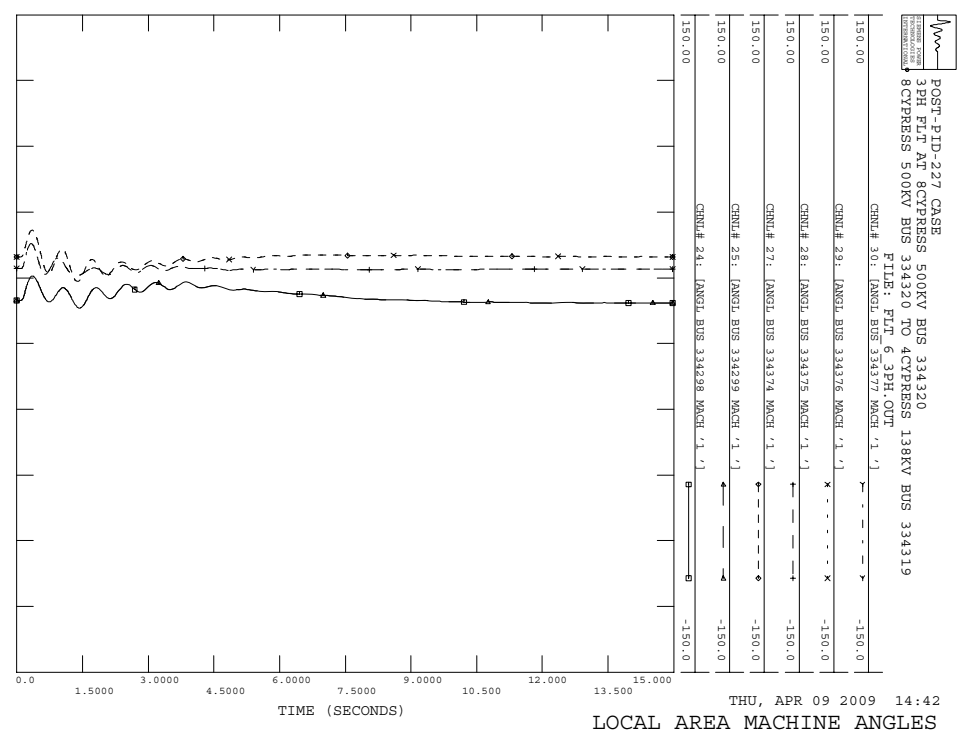
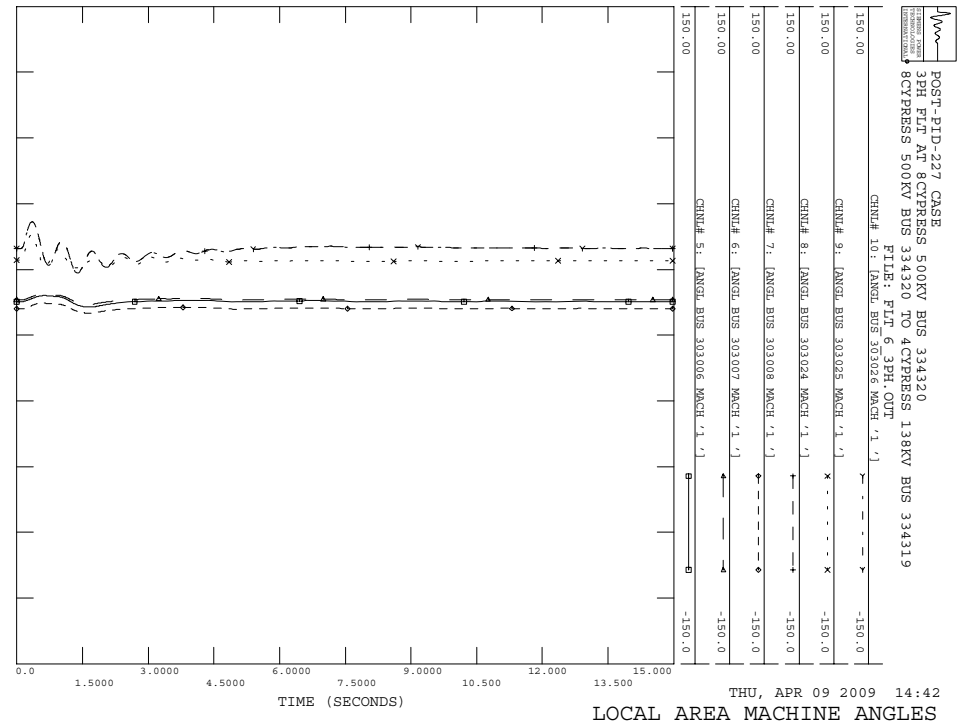
Three phase fault on the 8CYPRESS (#334320) to 4CYPRESS (#334319) transformer, near the 8CYPRESS.

- a) Apply 3 Phase Fault AT 8CYPRESS 500KV BUS 334320
- b) Clear fault after 5 cycles by tripping transformer from 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319

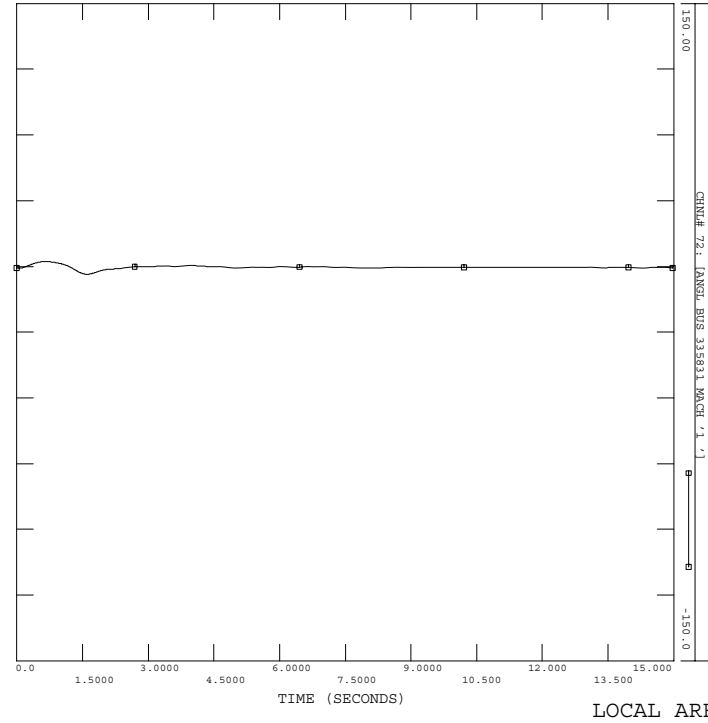






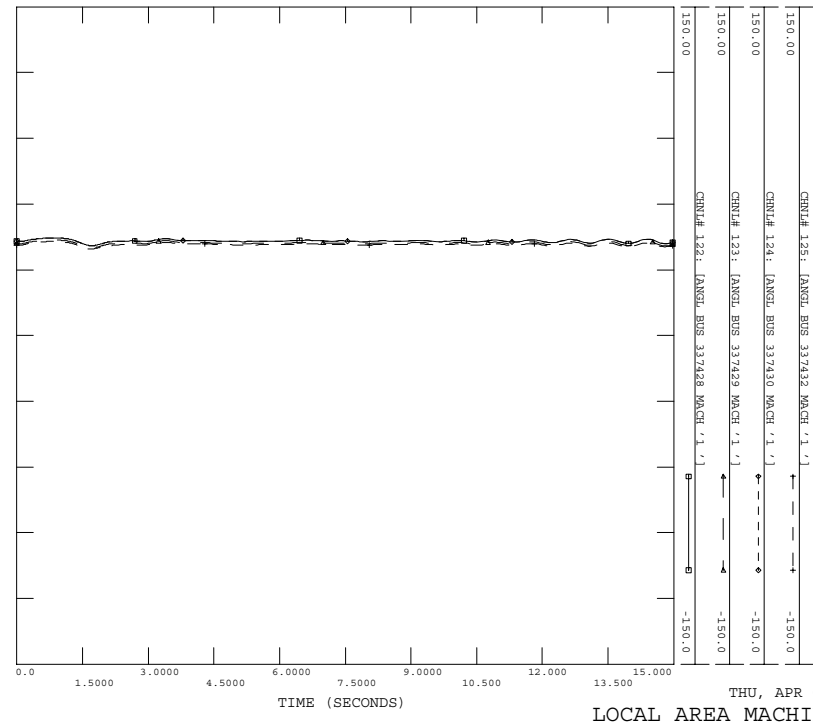


POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH_OUT



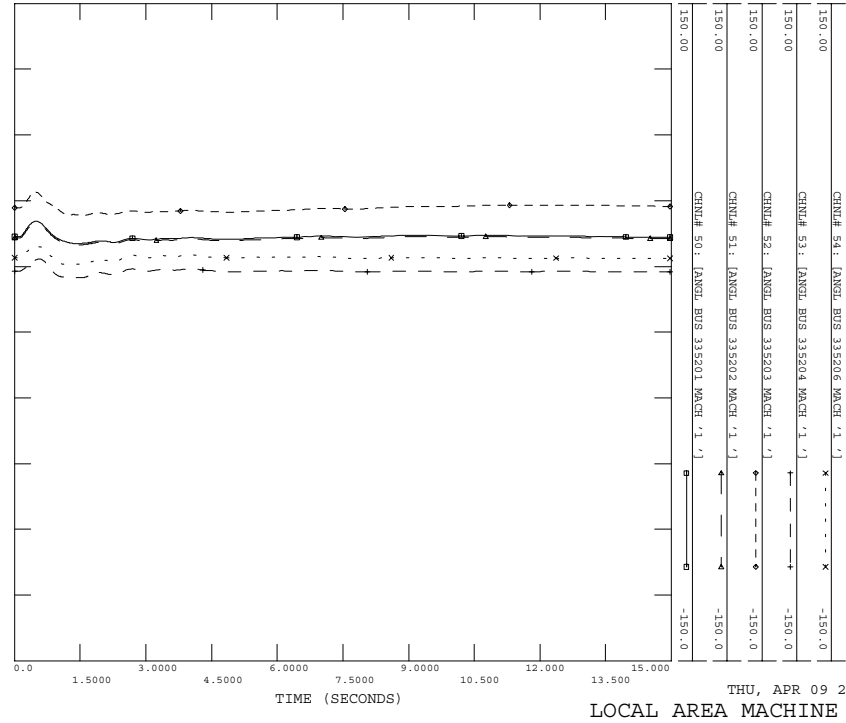
THU, APR 09 2009 14:42
 LOCAL AREA MACHINE ANGLES

POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH_OUT



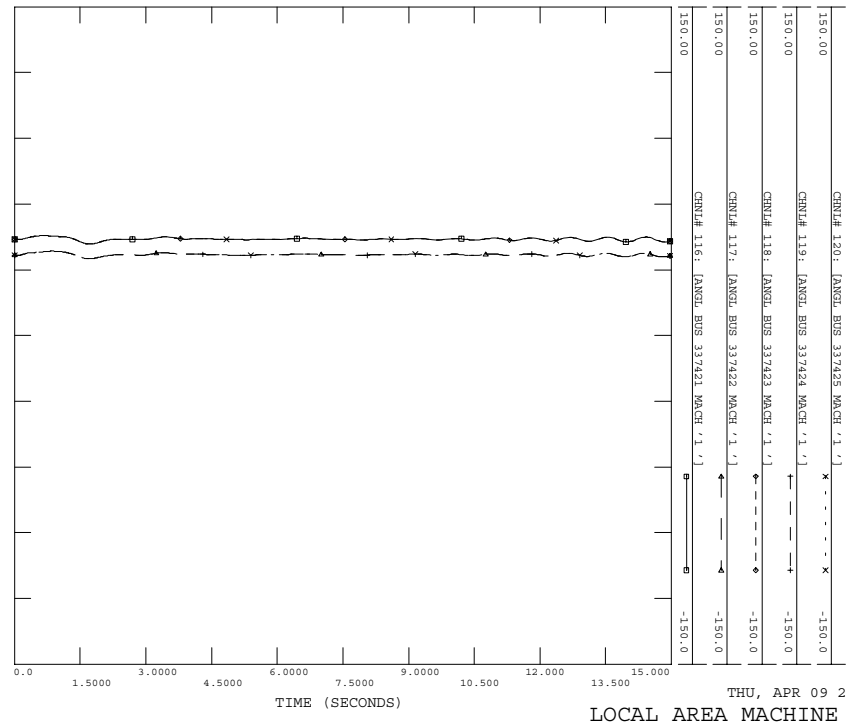
THU, APR 09 2009 14:42
 LOCAL AREA MACHINE ANGLES

POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH_OUT



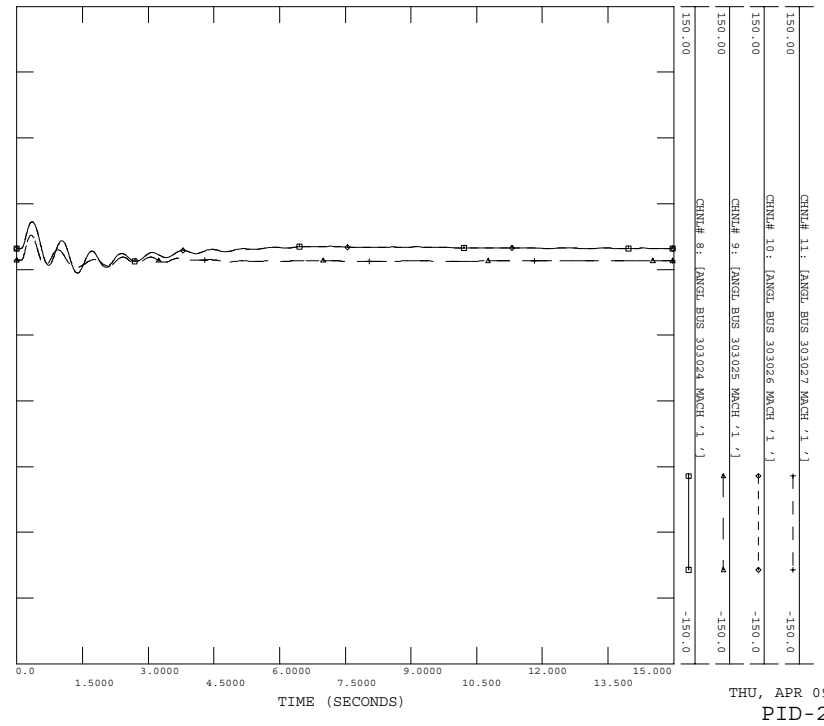
THU, APR 09 2009 14:42
 LOCAL AREA MACHINE ANGLES

POST-PTD-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH_OUT

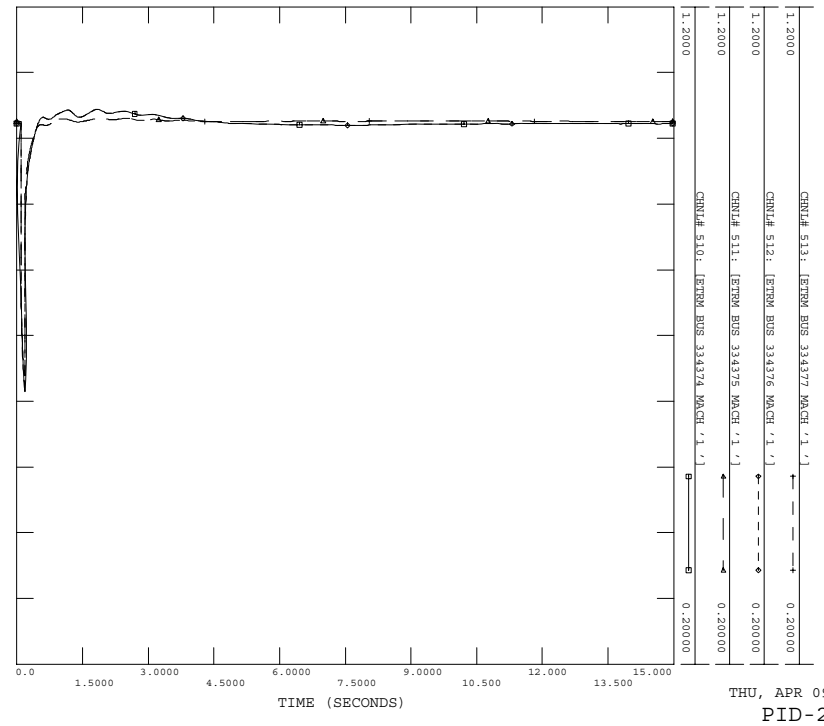


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 LOCAL AREA MACHINE ANGLES

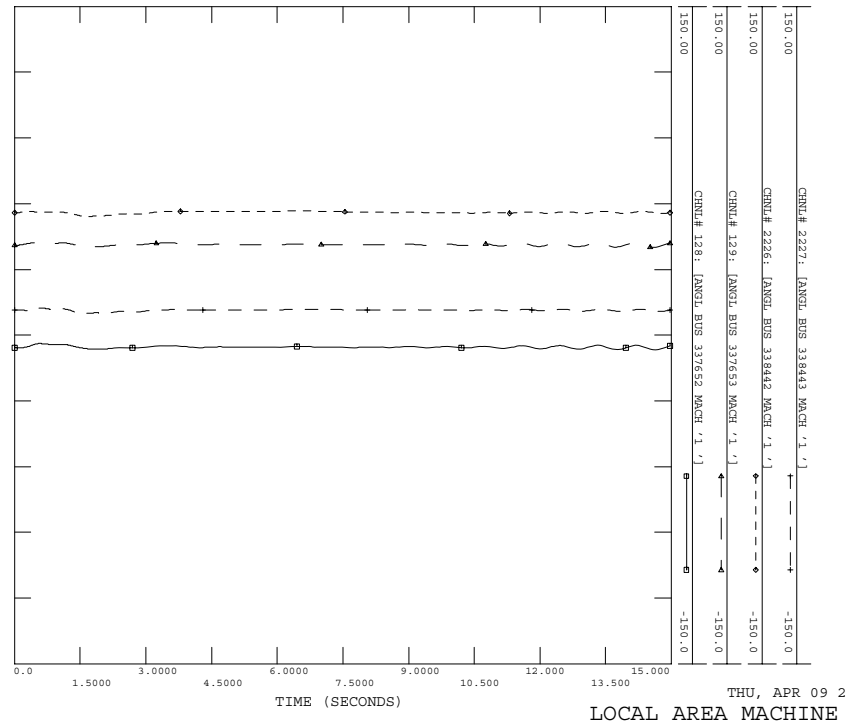
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



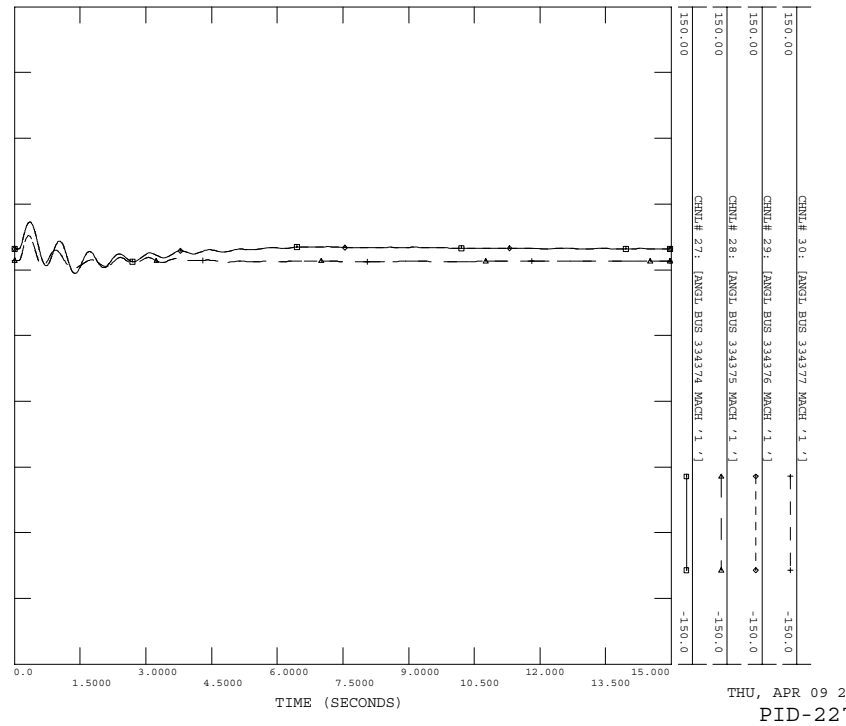
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



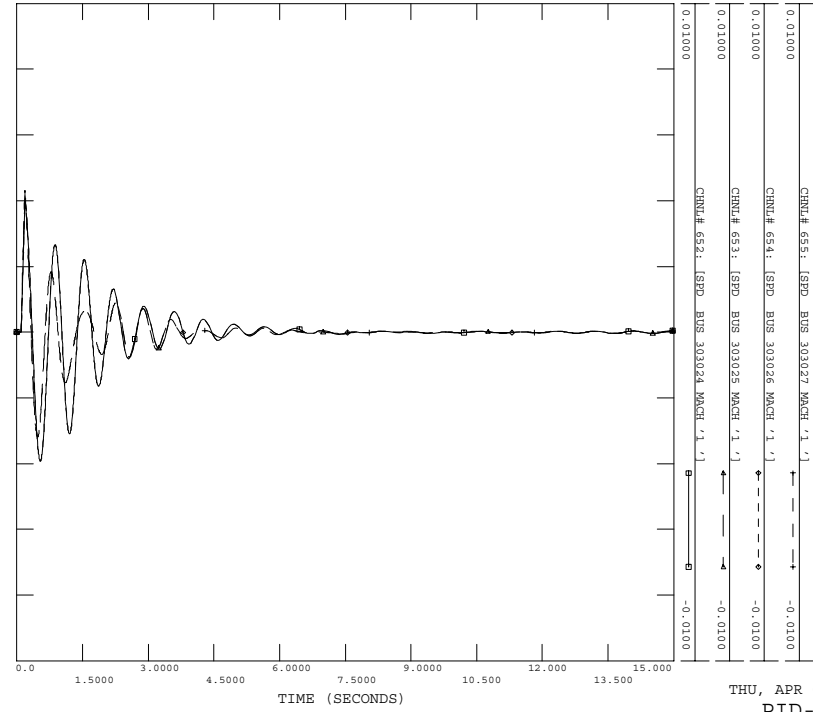
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



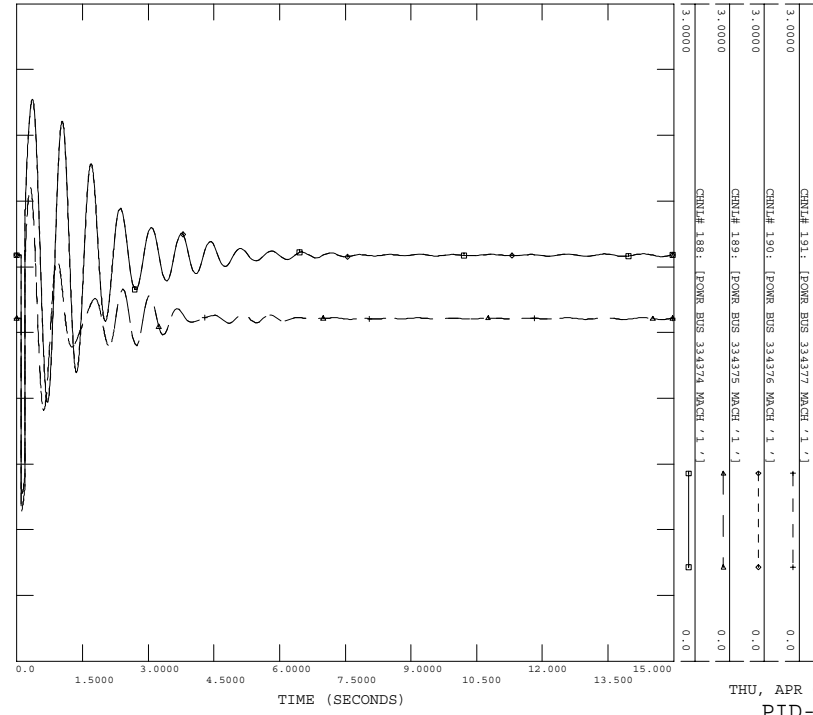
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



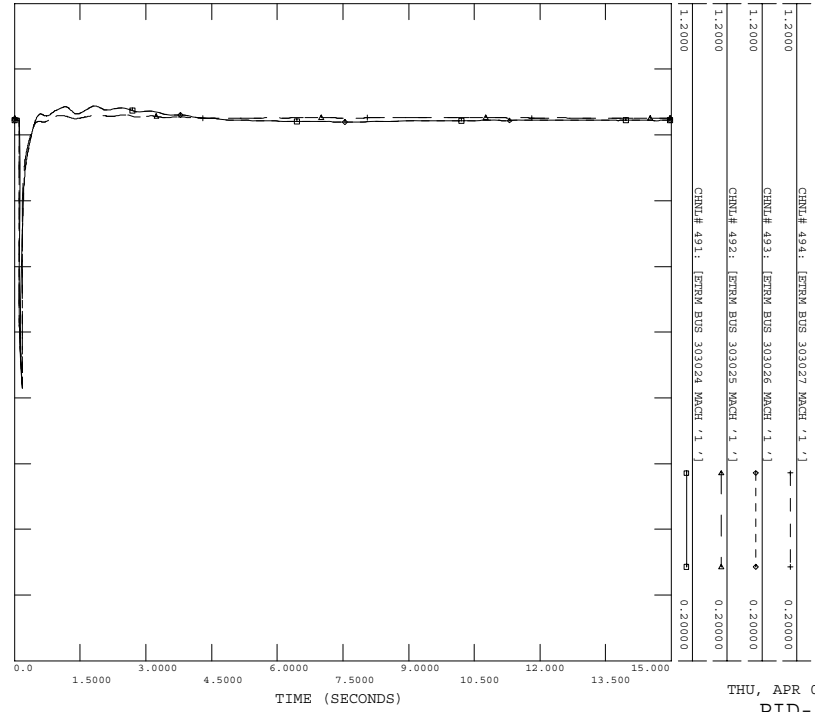
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



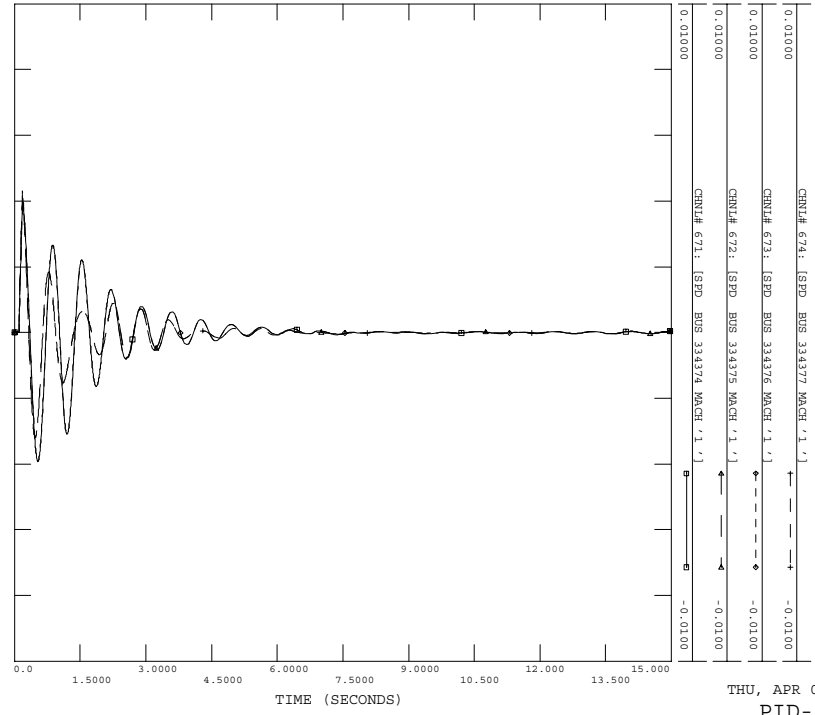
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



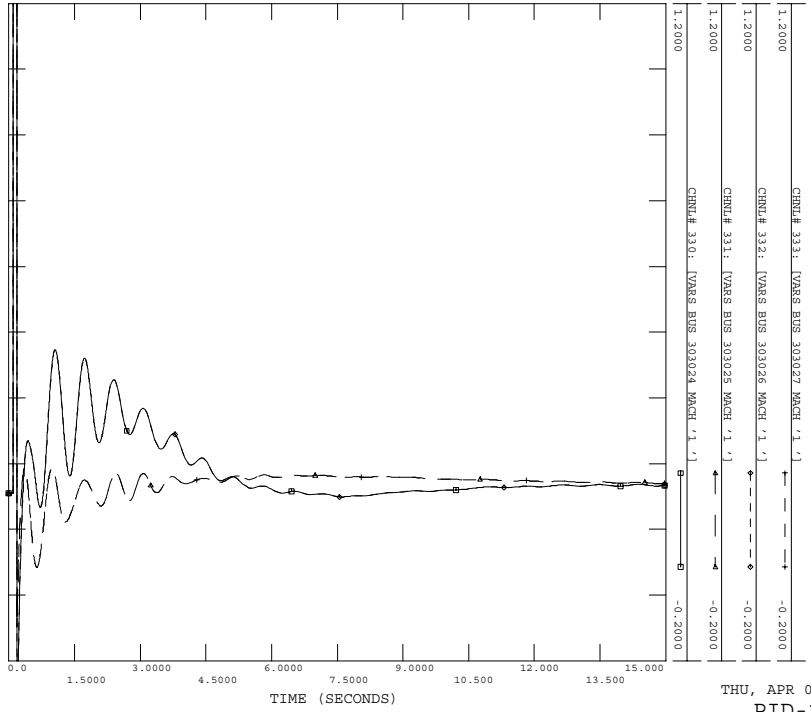
POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT



POST-PID-227 CASE
 3PH FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 4CYPERSS 138KV BUS 334319
 FILE: FLT_6_3PH.OUT

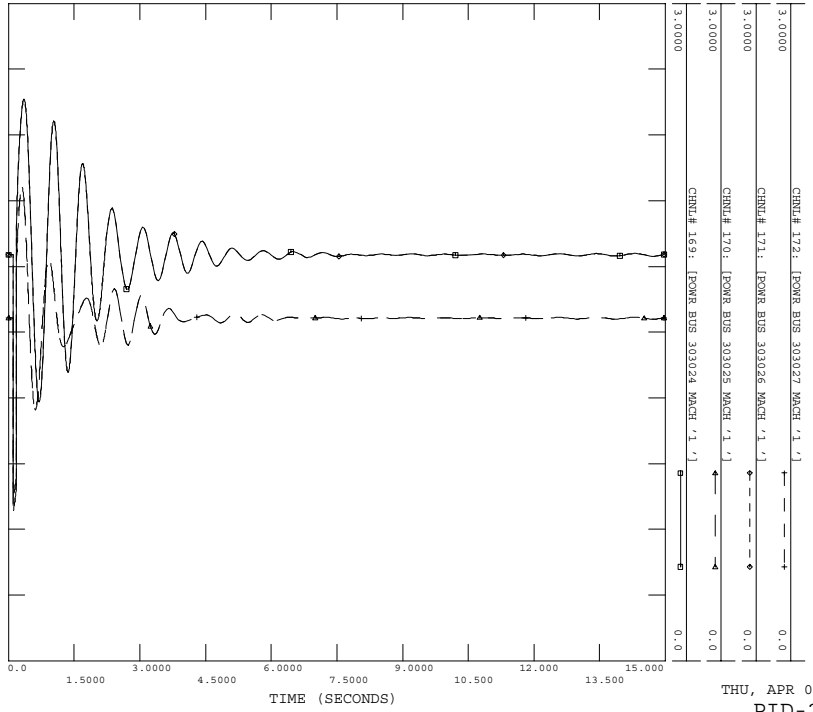


POST-PID-227 CASE
3PH FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319
FILE: FLT_6_3PH.OUT



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PID-227 PLOTS

POST-PID-227 CASE
3PH FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319
FILE: FLT_6_3PH.OUT

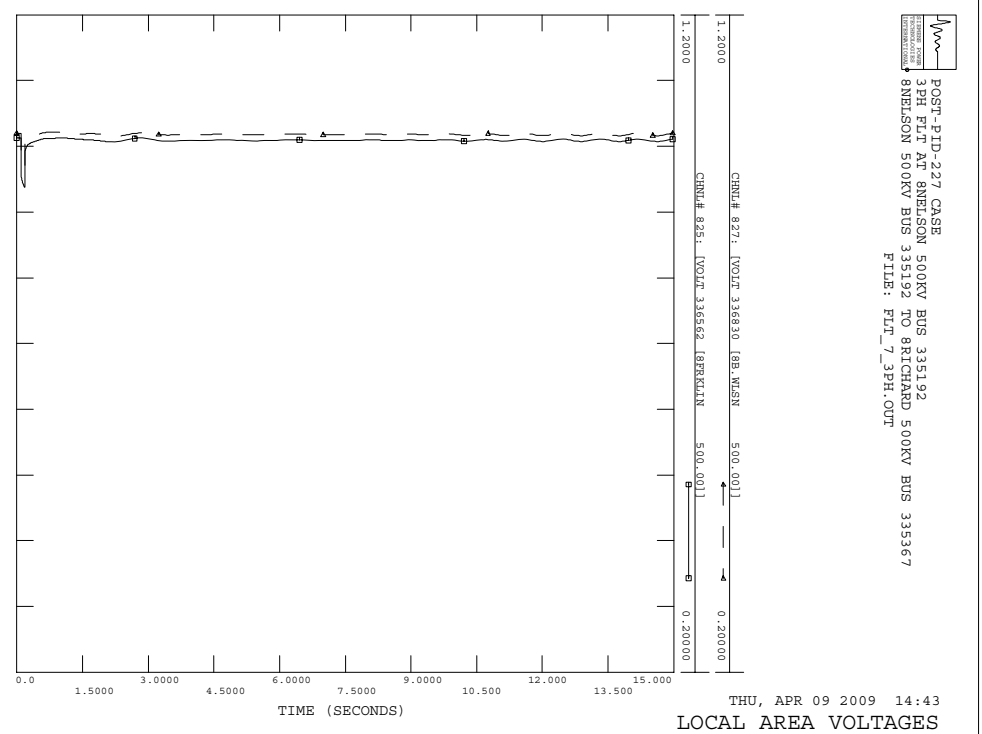
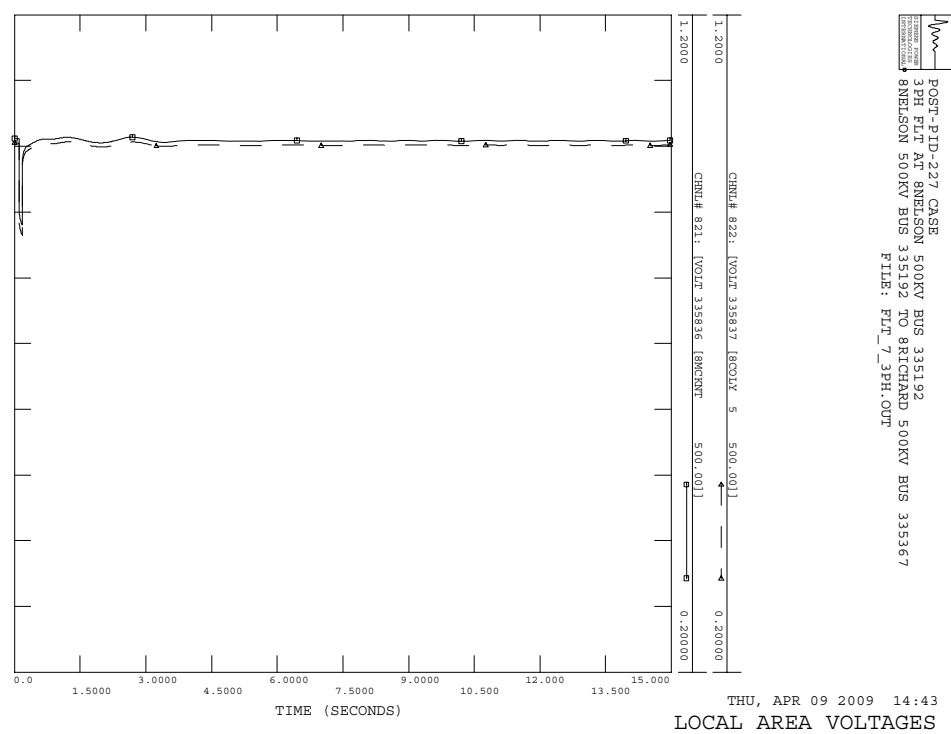
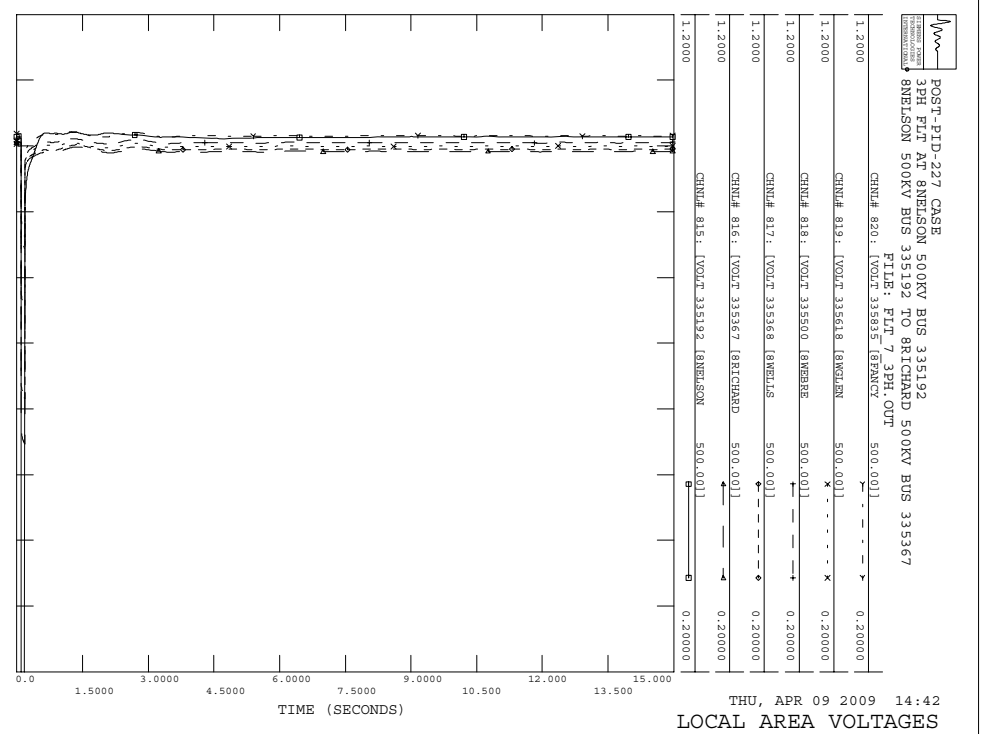
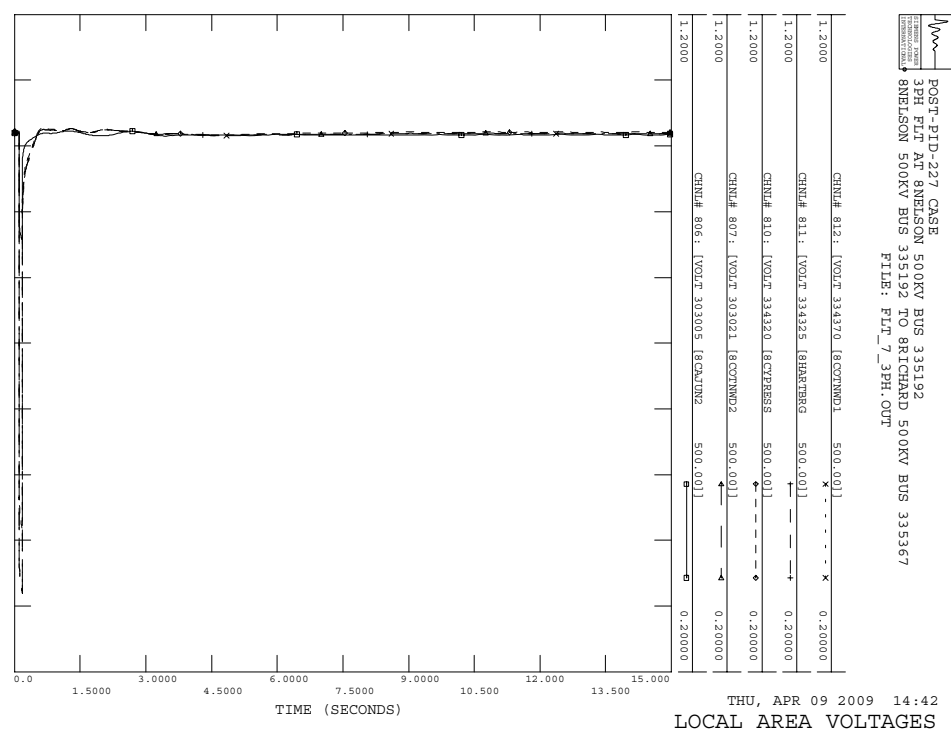


THU, APR 09 2009 14:42
PID-227 PLOTS

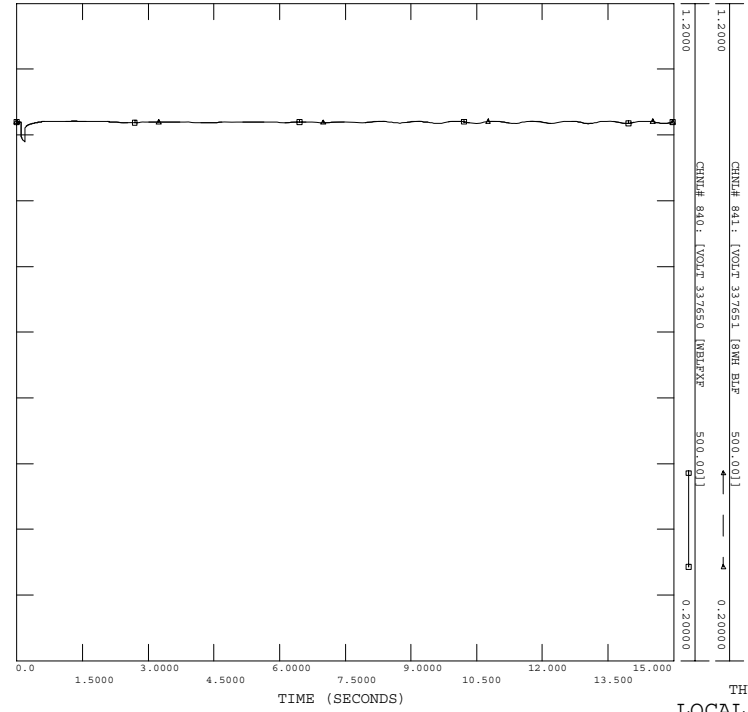
C.7 FLT_7_3PH

Three phase fault on the 8NELSON (#335192) to 8RICHARD (#335367) 500 kV line, near the 8NELSON.

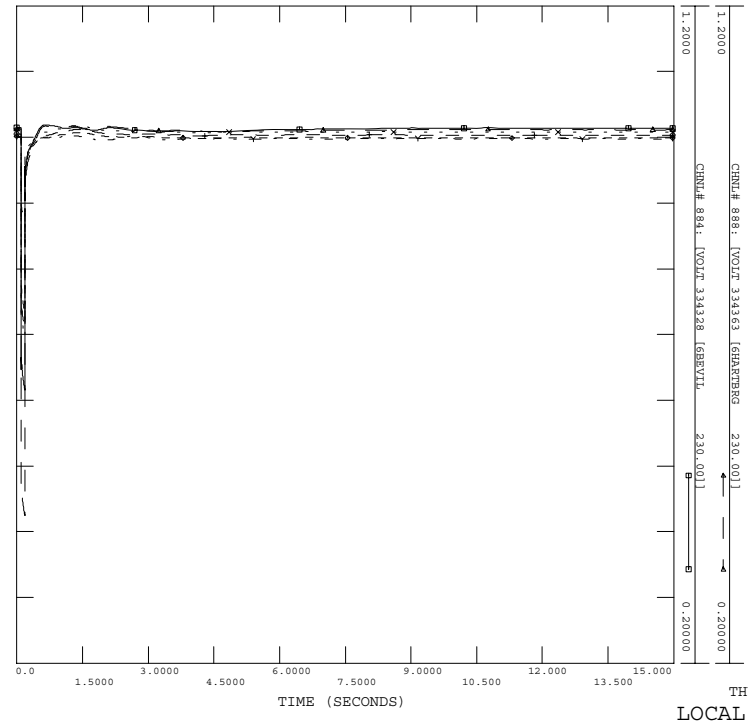
- a) Apply 3 Phase Fault AT 8NELSON 500KV BUS 335192
- b) Clear fault after 5 cycles by tripping line from 8NELSON 500KV BUS 335192 TO 8RICHARD 500KV BUS 335367



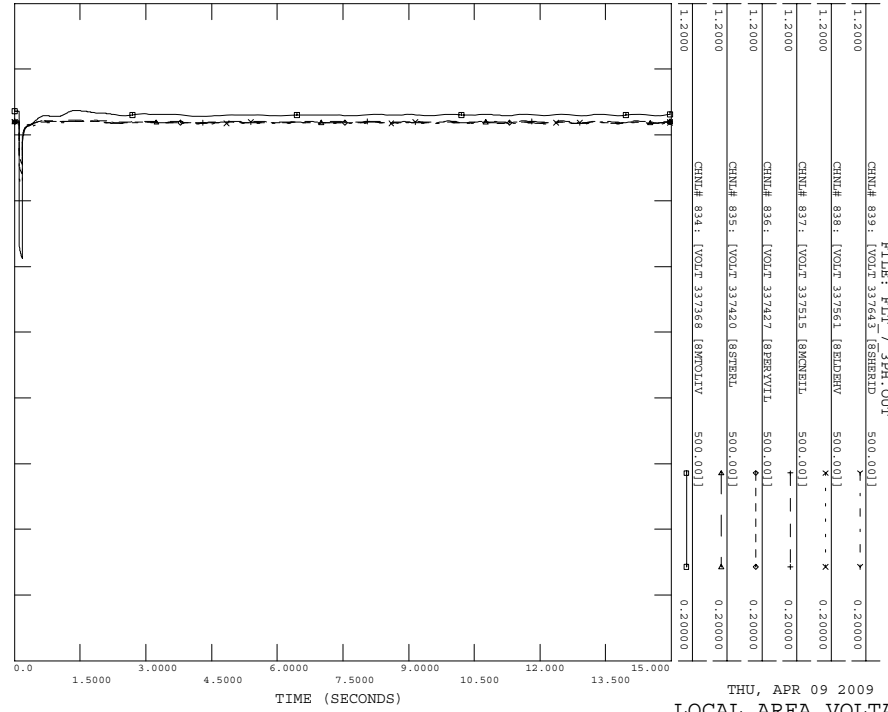
POST-PTD-227 CASE
 3PH FLT AT BNELSON 500KV BUS 335192
 BNELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH_OUT



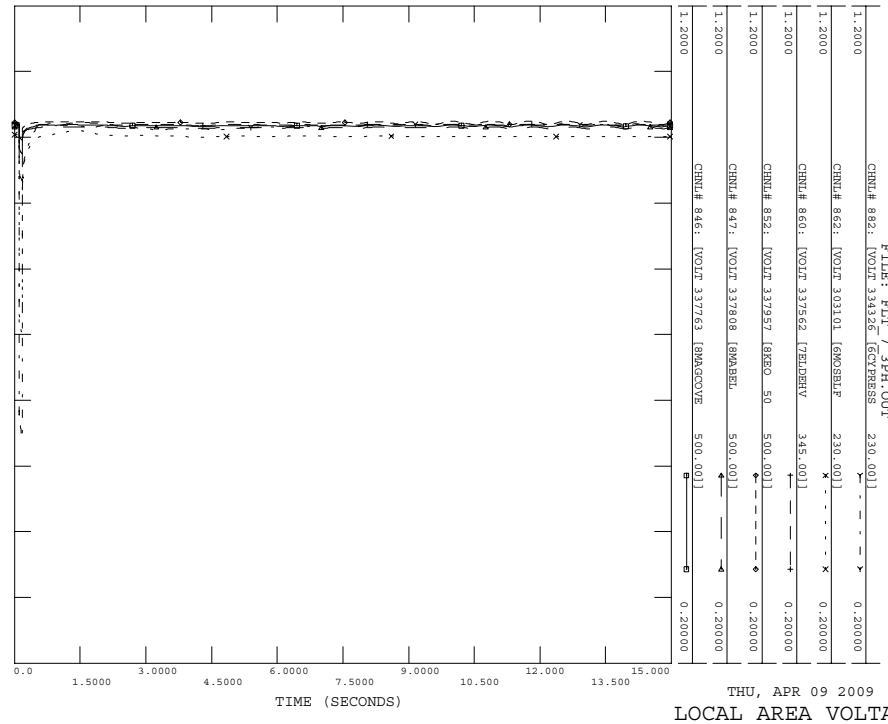
POST-PTD-227 CASE
 3PH FLT AT BNELSON 500KV BUS 335192
 BNELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH_OUT

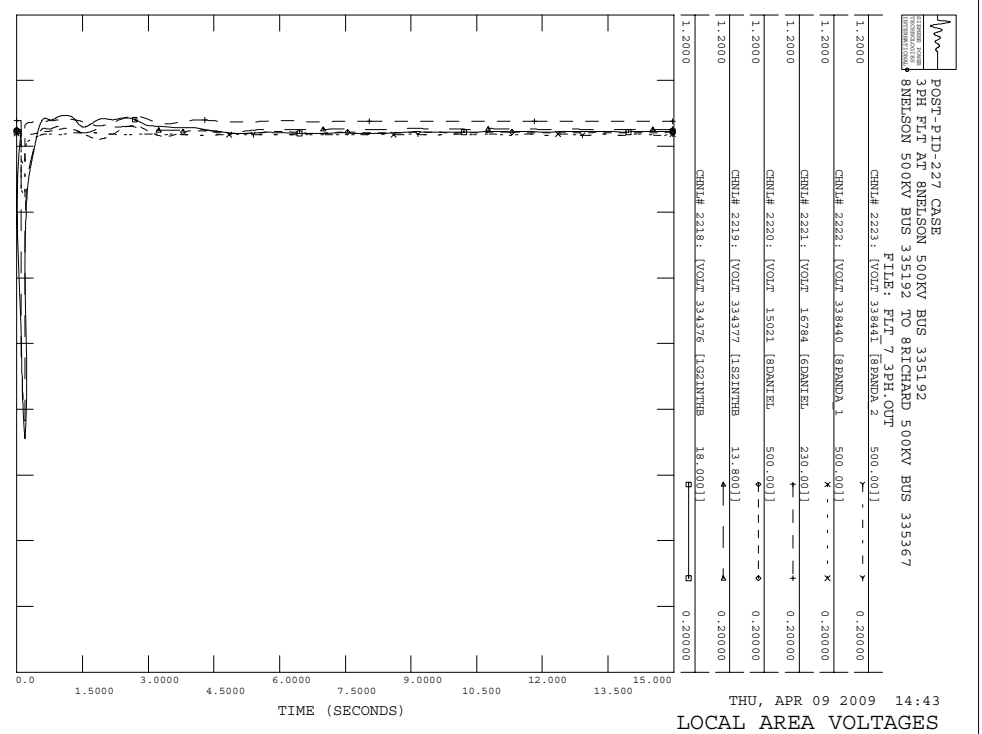
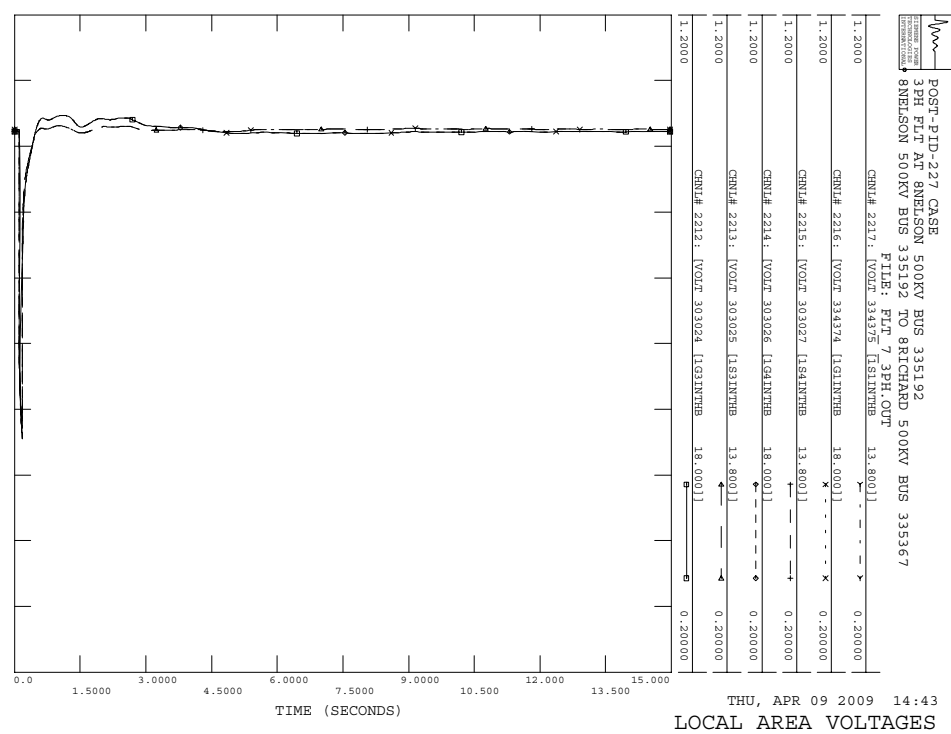
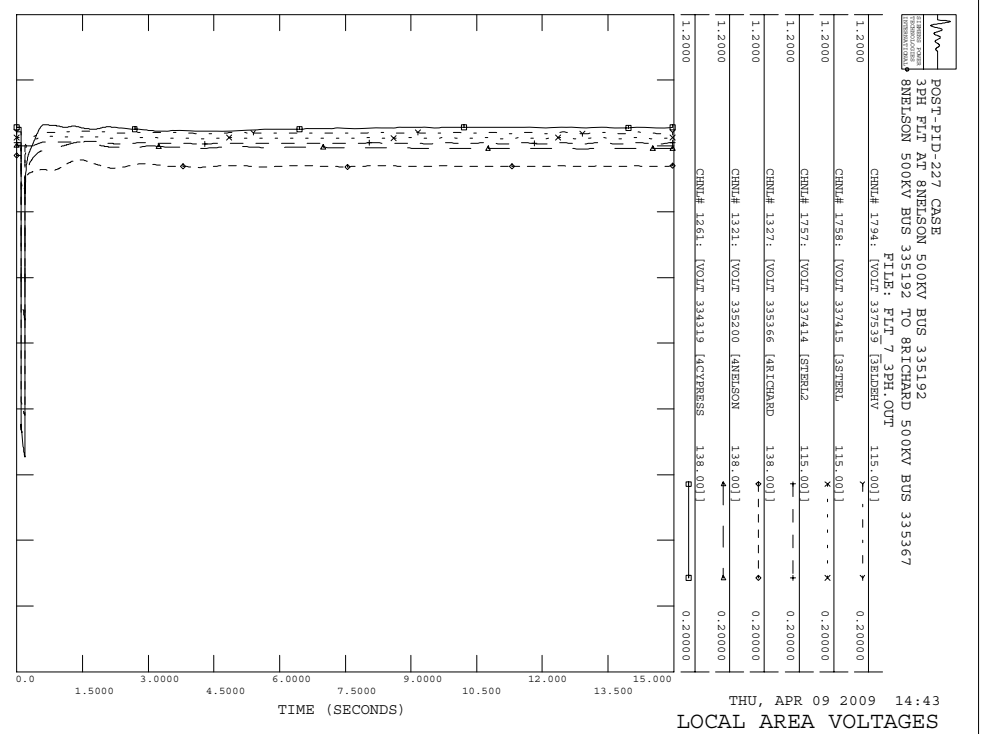
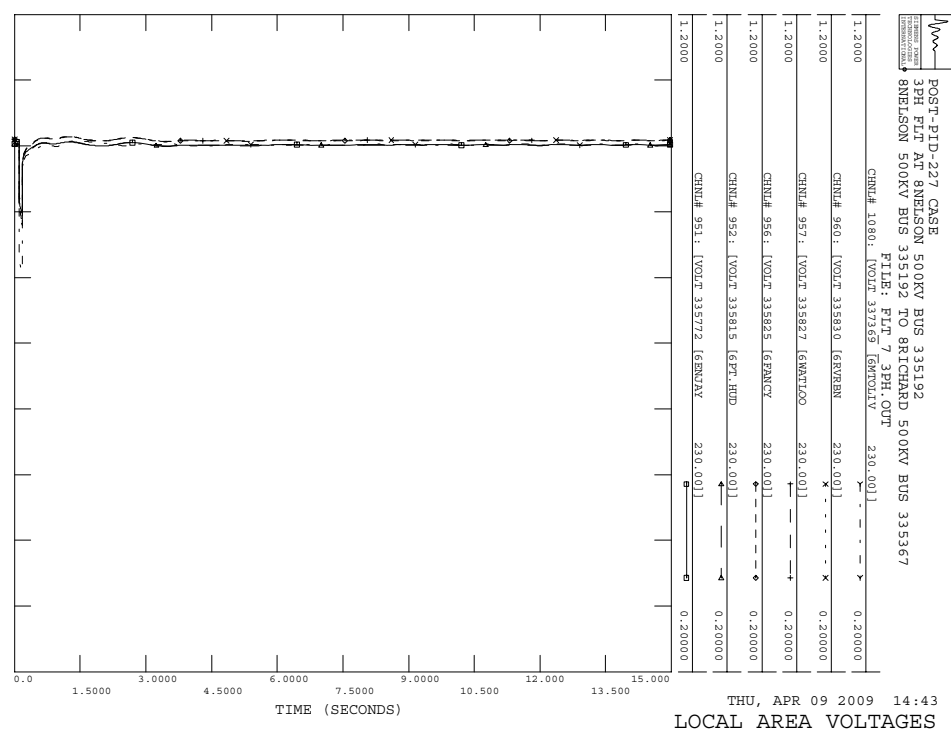


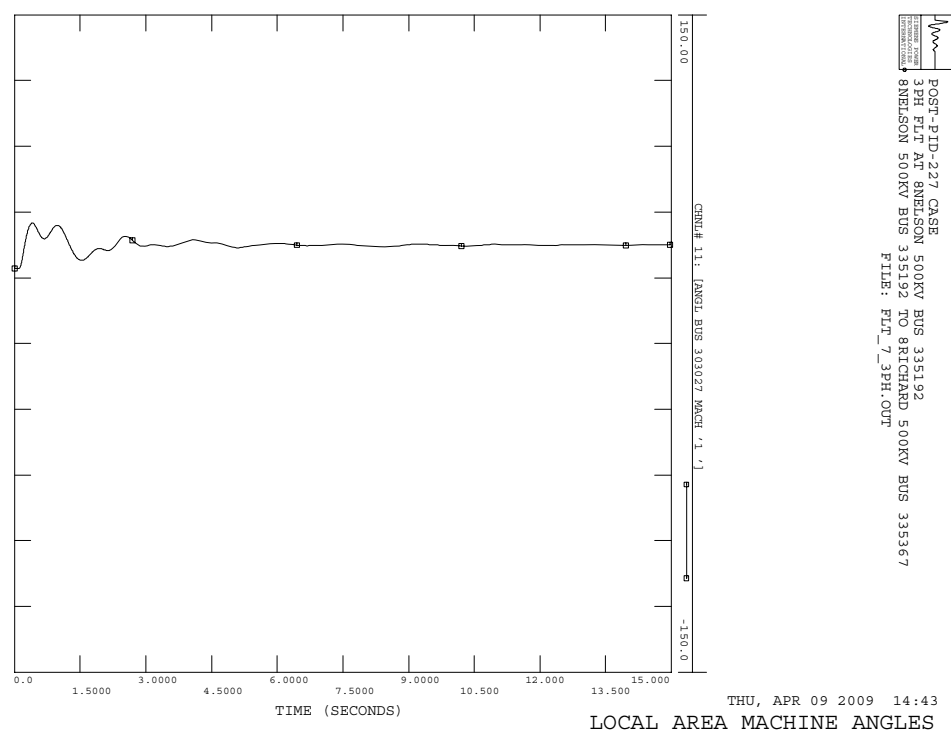
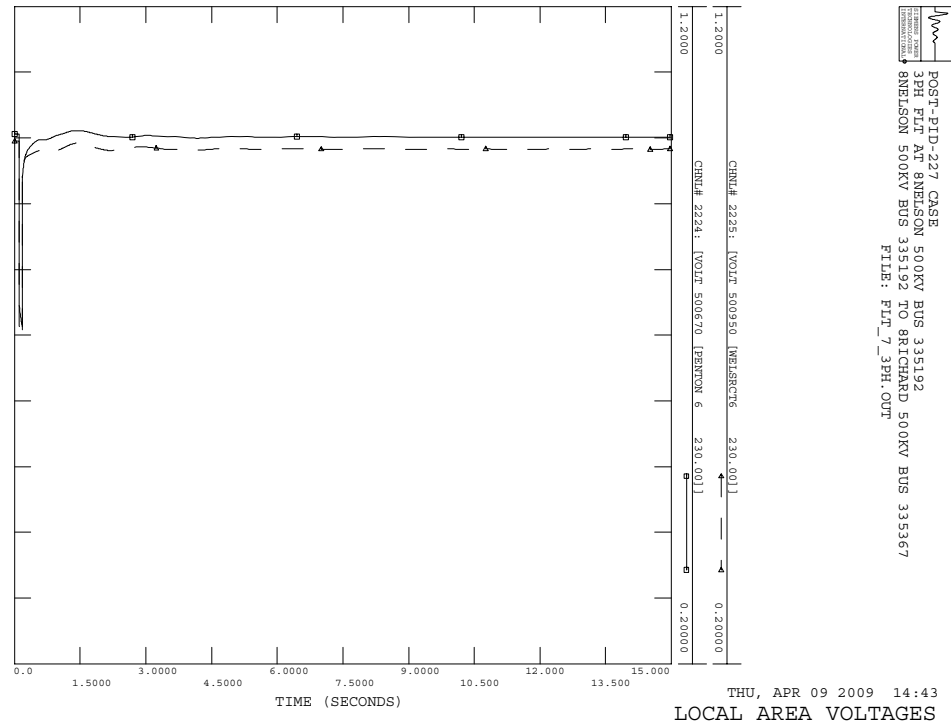
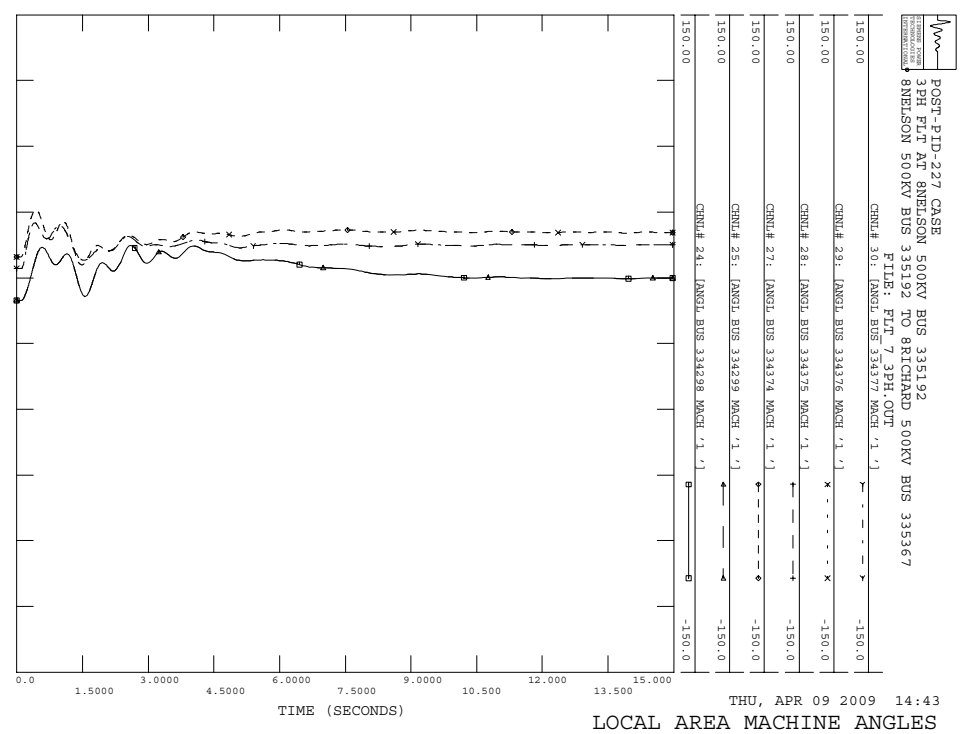
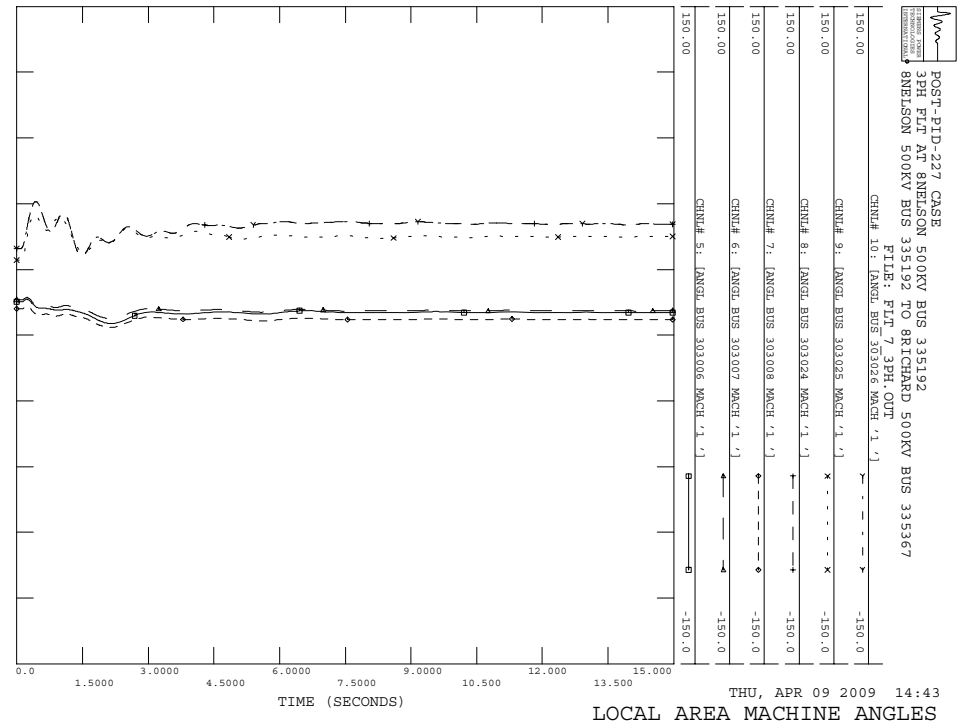
POST-PTD-227 CASE
 3PH FLT AT BNELSON 500KV BUS 335192
 BNELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH_OUT



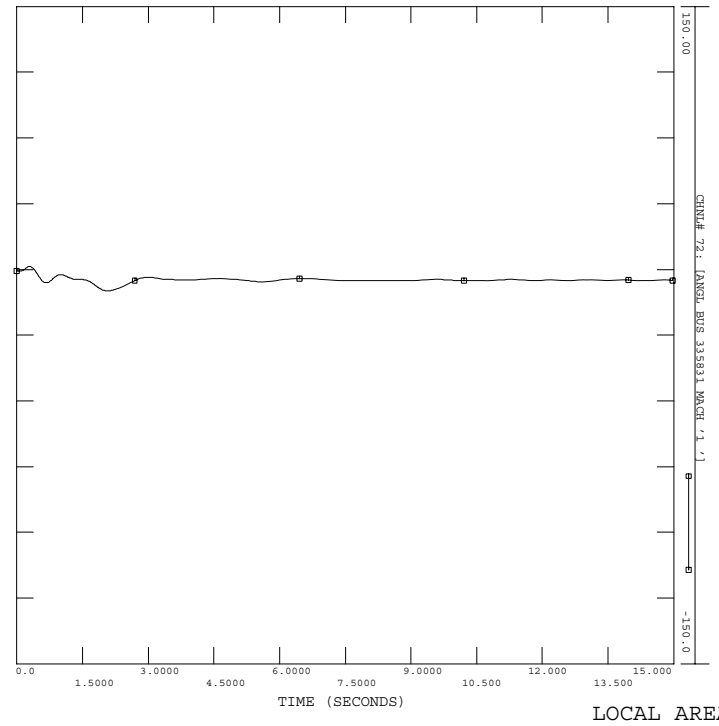
POST-PTD-227 CASE
 3PH FLT AT BNELSON 500KV BUS 335192
 BNELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH_OUT



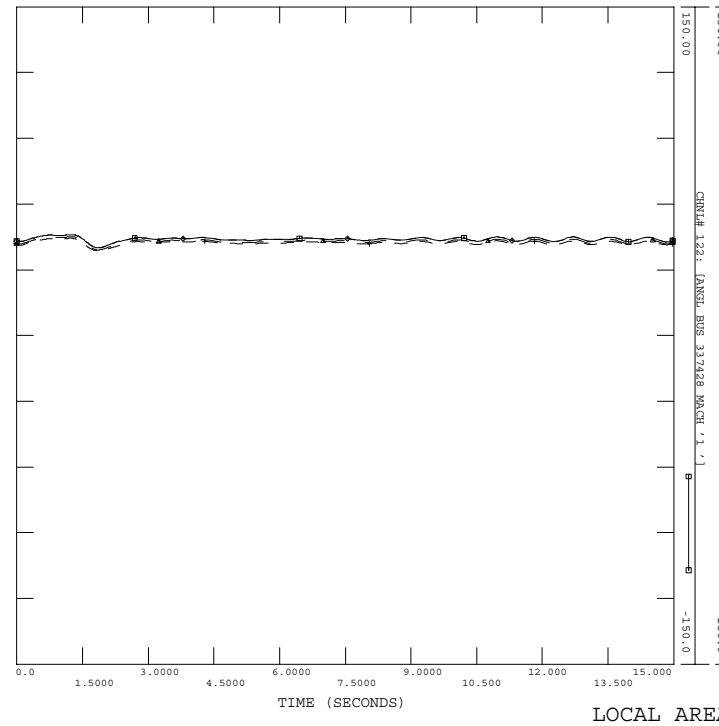




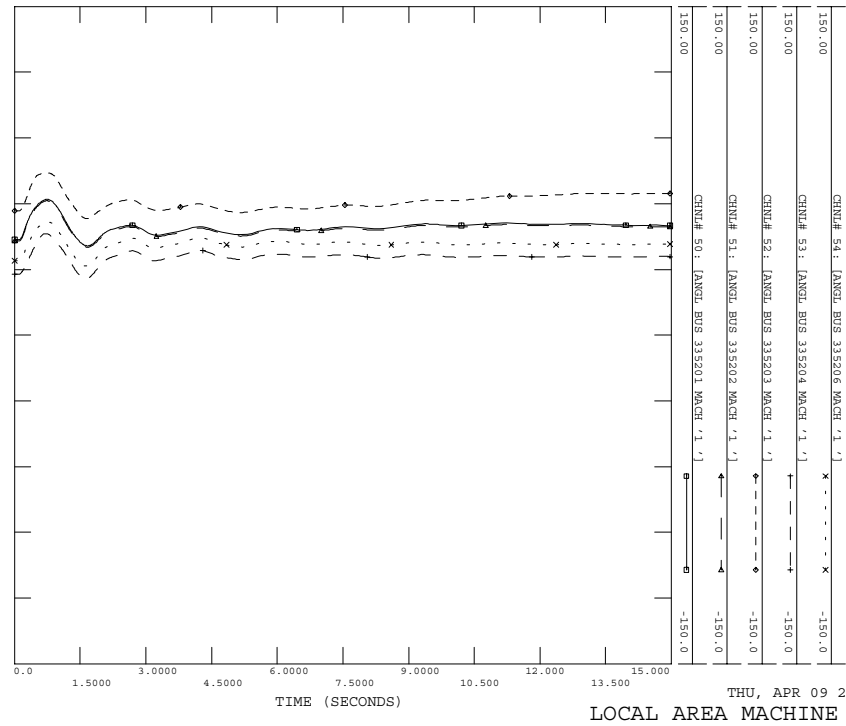
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



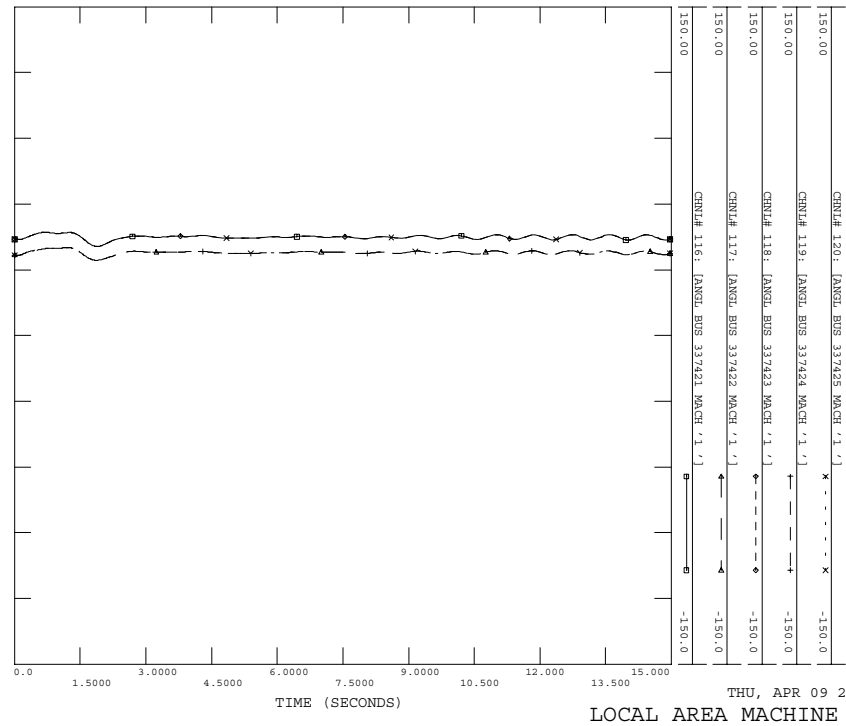
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



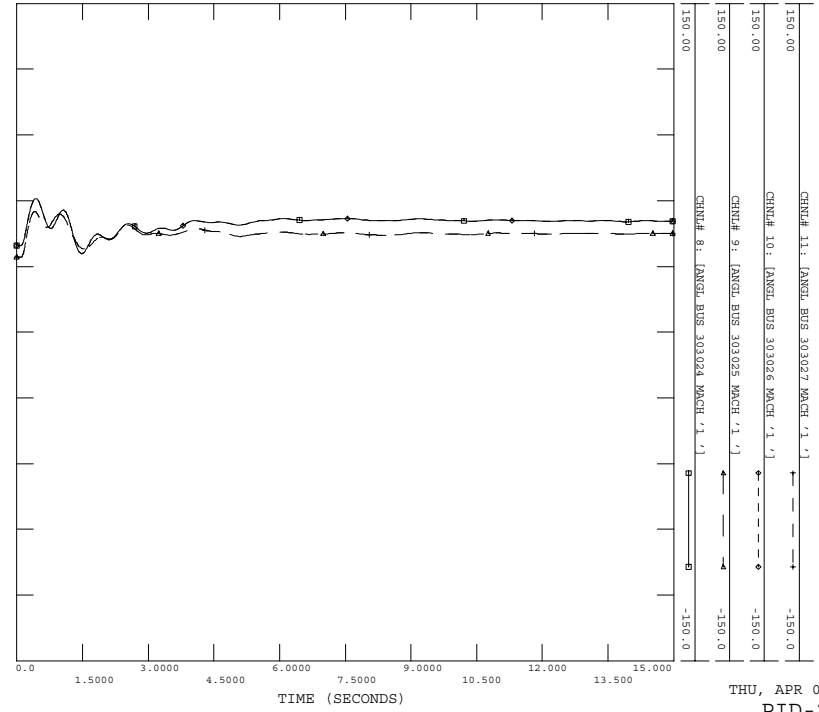
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



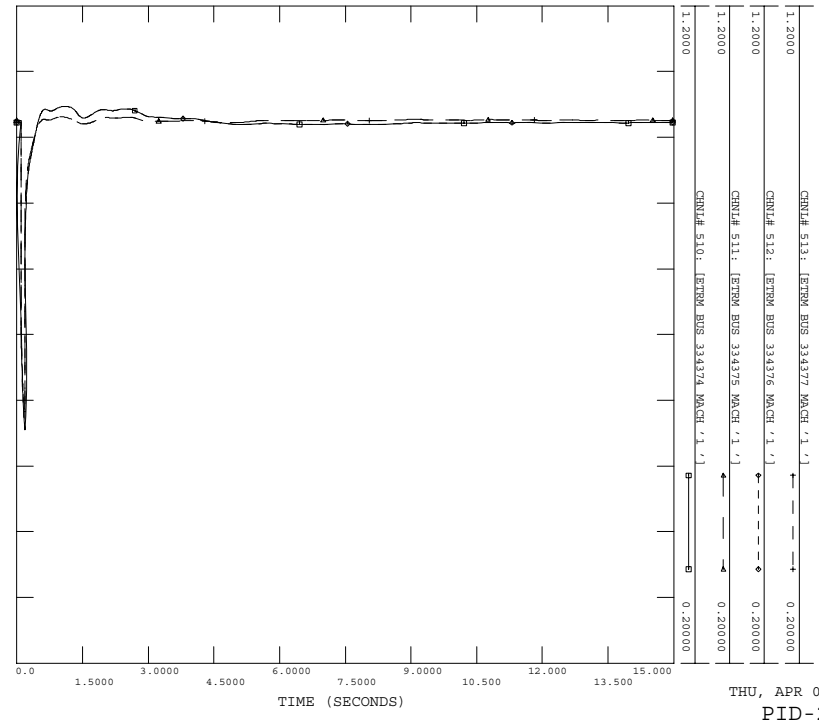
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



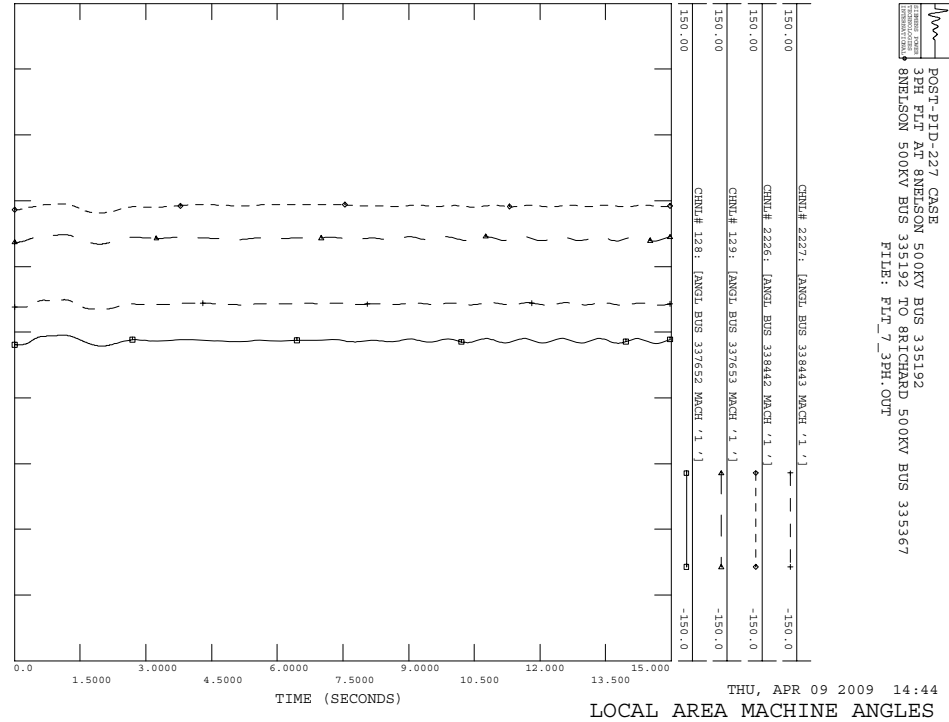
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



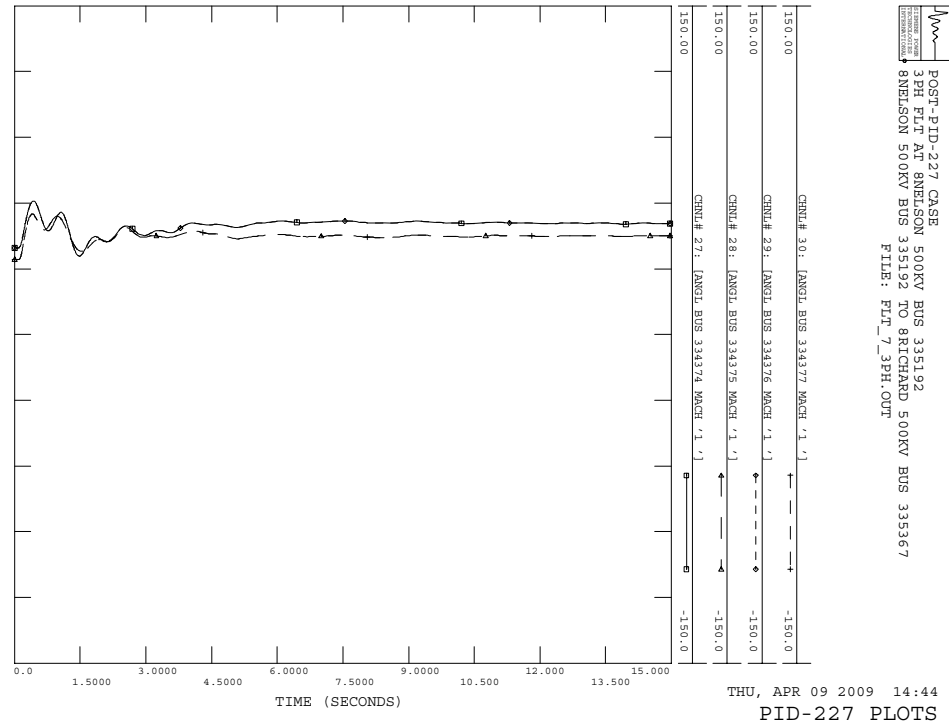
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



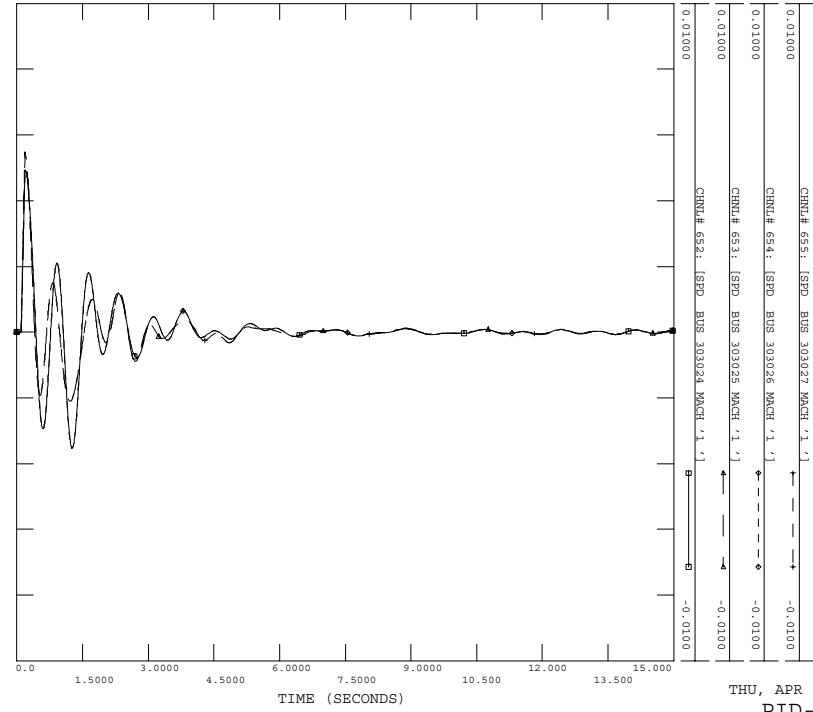
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



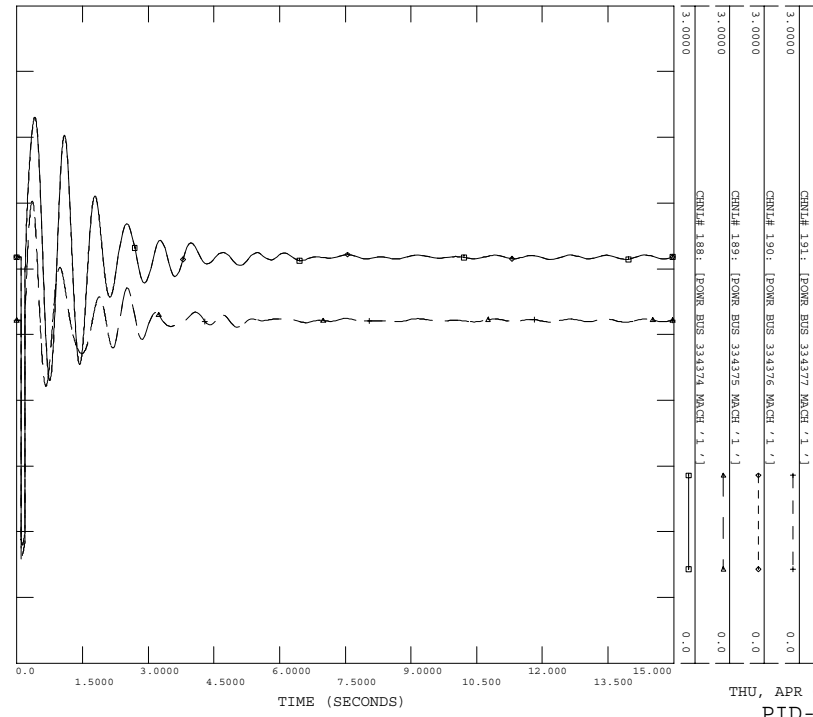
POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



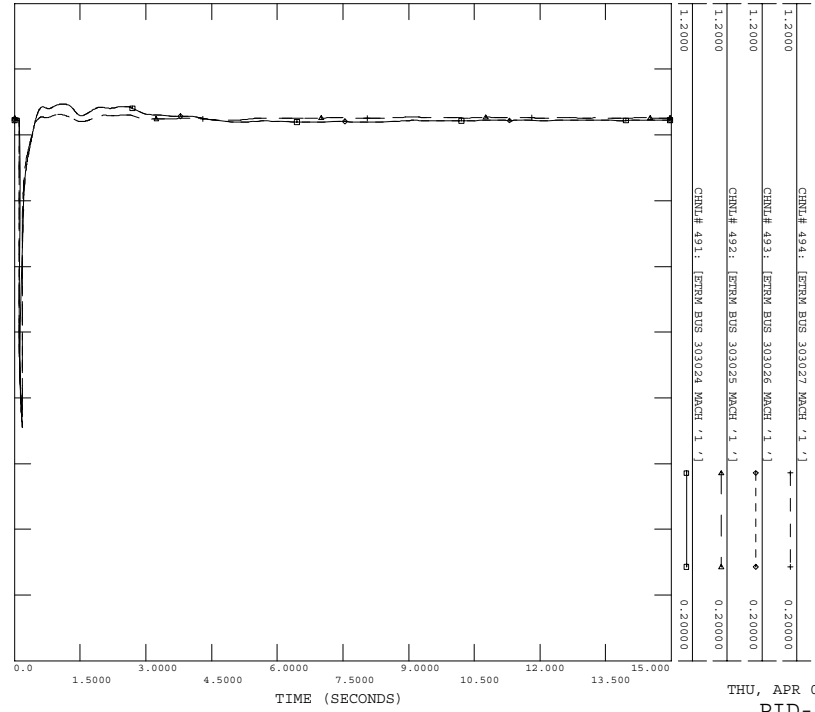
POST-PID-227 CASE
 3PH FLT AT 8NBLN50N 500KV BUS 335192
 8NBLN50N 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



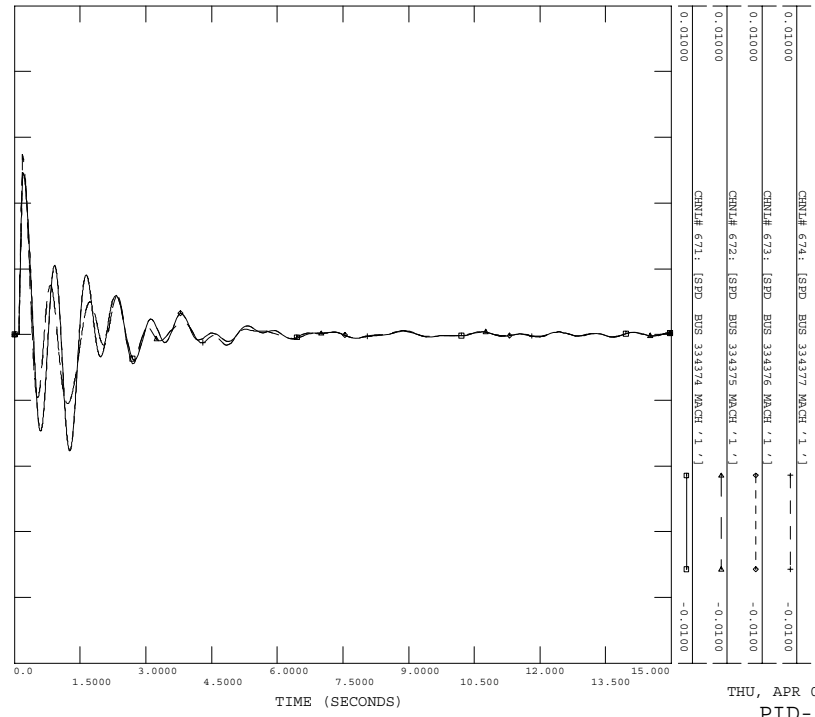
POST-PID-227 CASE
 3PH FLT AT 8NBLN50N 500KV BUS 335192
 8NBLN50N 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



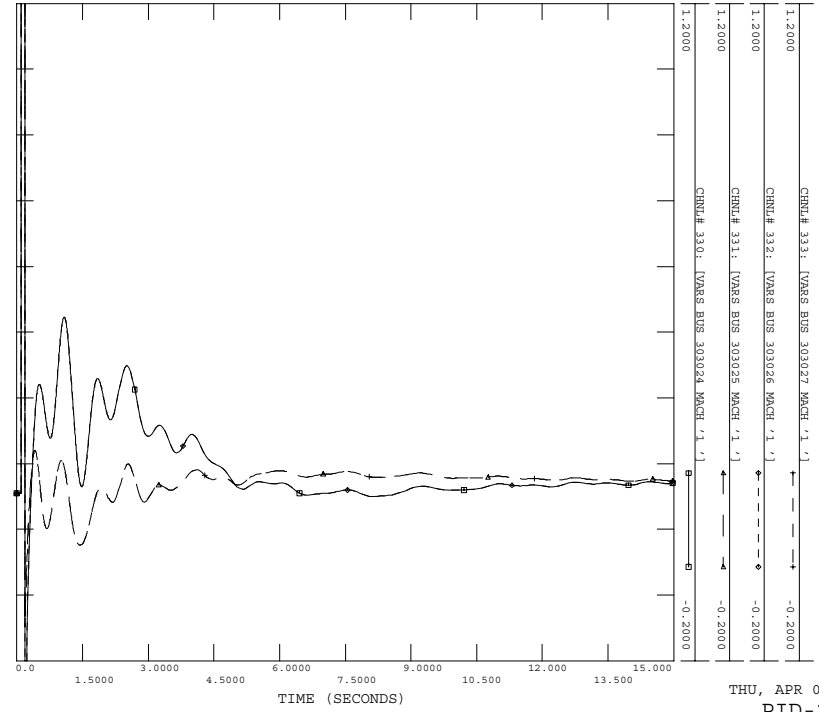
POST-PID-227 CASE
 3PH FLT AT 8NBLN50N 500KV BUS 335192
 8NBLN50N 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



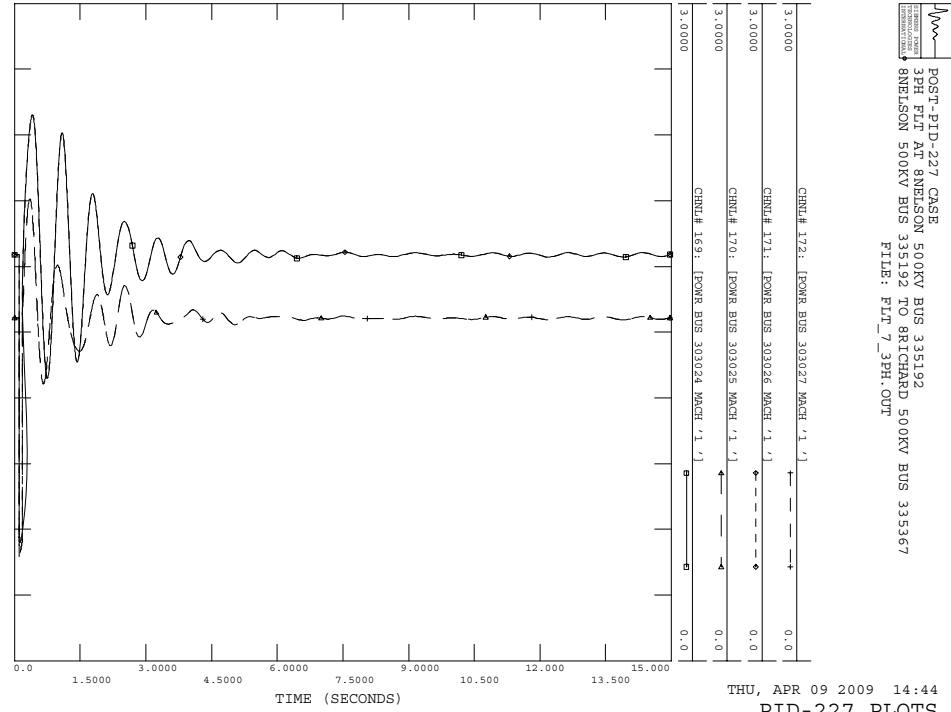
POST-PID-227 CASE
 3PH FLT AT 8NBLN50N 500KV BUS 335192
 8NBLN50N 500KV BUS 335192 TO RICHARD 500KV BUS 335367
 FILE: FLT_7_3PH.OUT



POST-PID-227 CASE
3PH FLT AT 8NBLSON 500KV BUS 335192
8NBLSON 500KV BUS 335192 TO BRICHARD 500KV BUS 335367
FILE: FLT_7_3PH.OUT



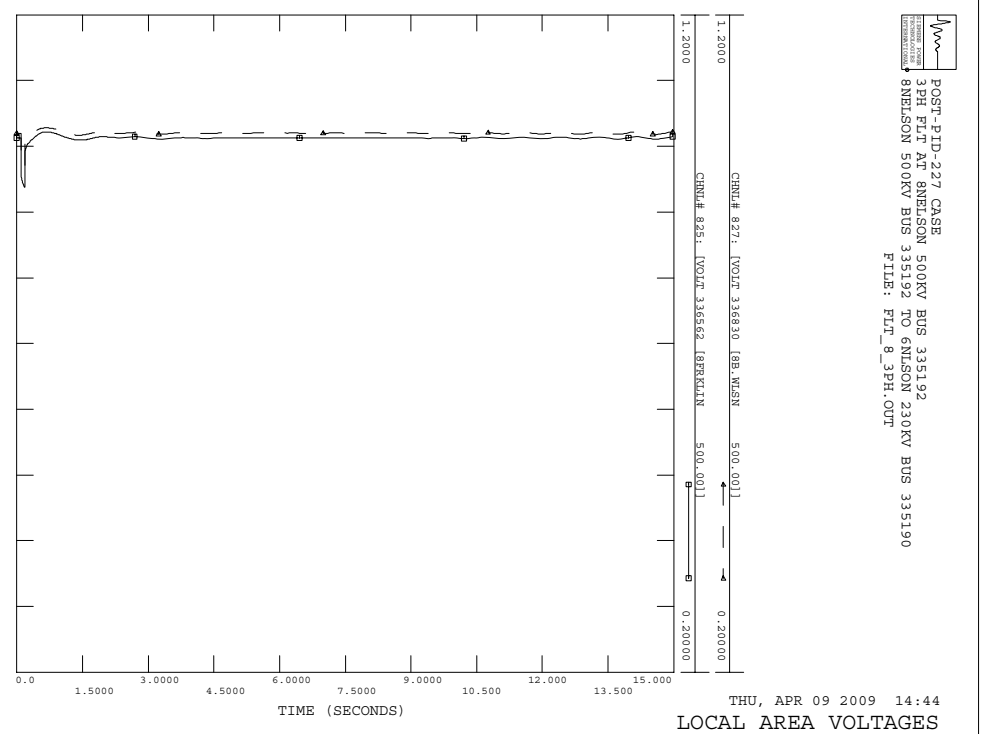
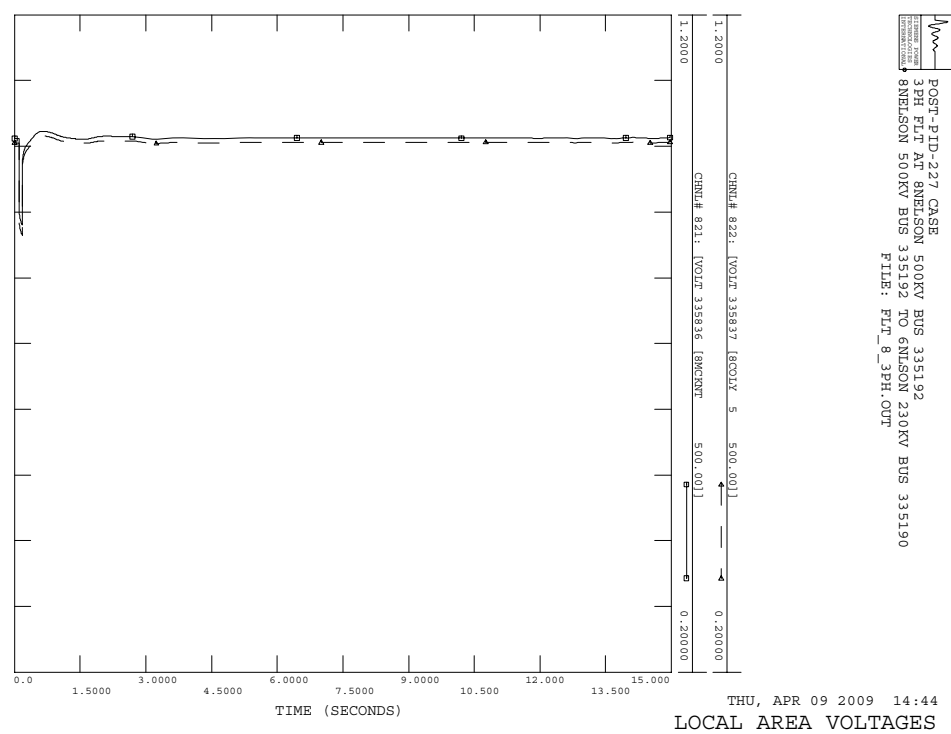
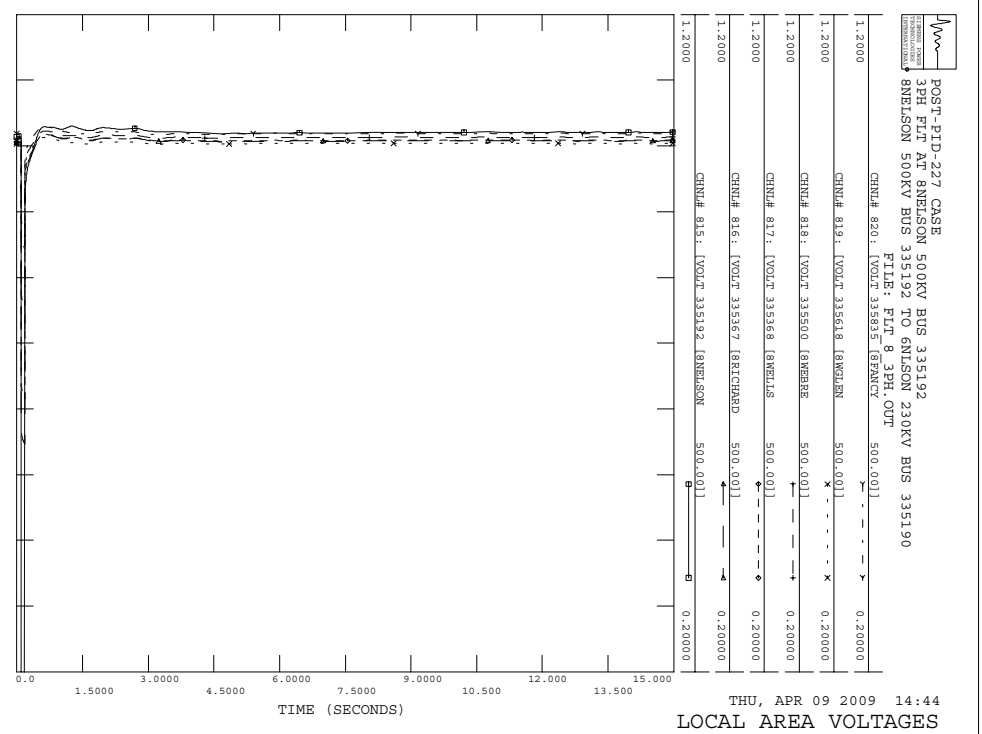
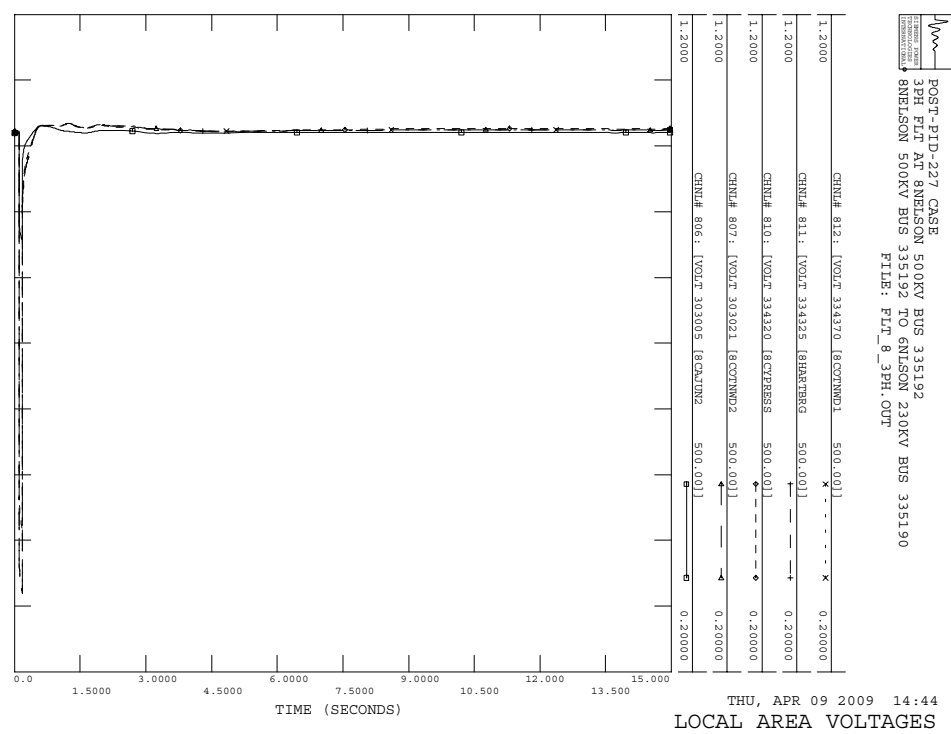
POST-PID-227 CASE
3PH FLT AT 8NBLSON 500KV BUS 335192
8NBLSON 500KV BUS 335192 TO BRICHARD 500KV BUS 335367
FILE: FLT_7_3PH.OUT



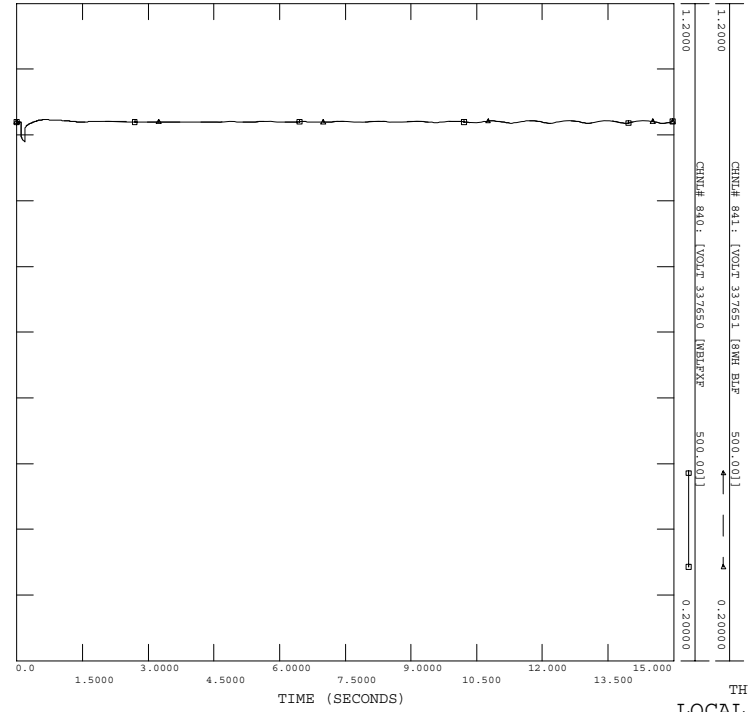
C.8 FLT_8_3PH

Three phase fault on the 8NELSON (#335192) to 6NELSON (#335190) 500/230 kV autotransformer, near the 8NELSON.

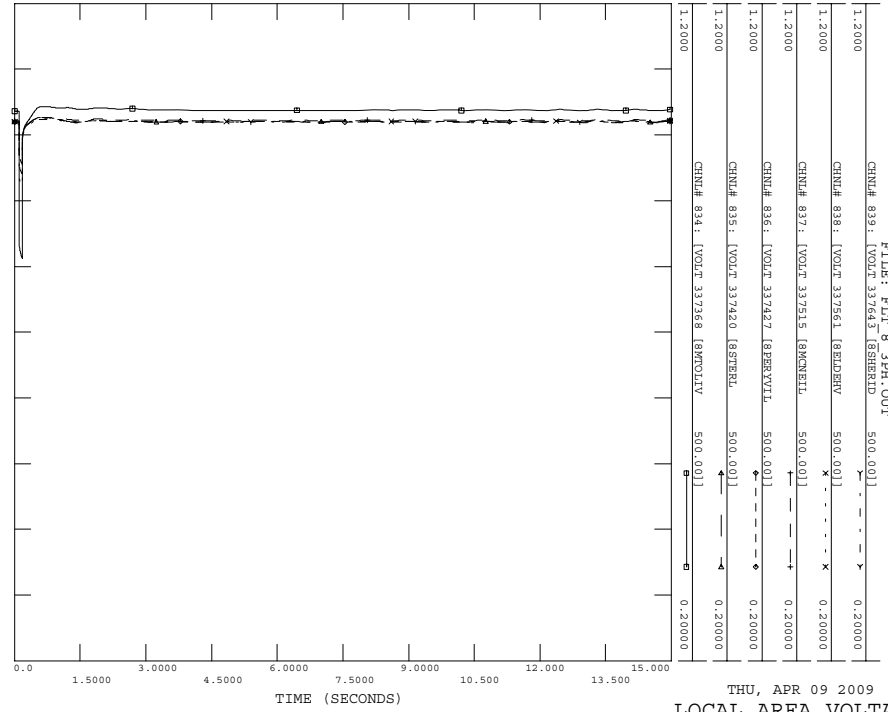
- a) Apply 3 Phase Fault AT 8NELSON 500KV BUS 335192
- b) Clear fault after 5 cycles by tripping transformer from 8NELSON 500KV BUS 335192 TO 6NELSON 230KV BUS 335190



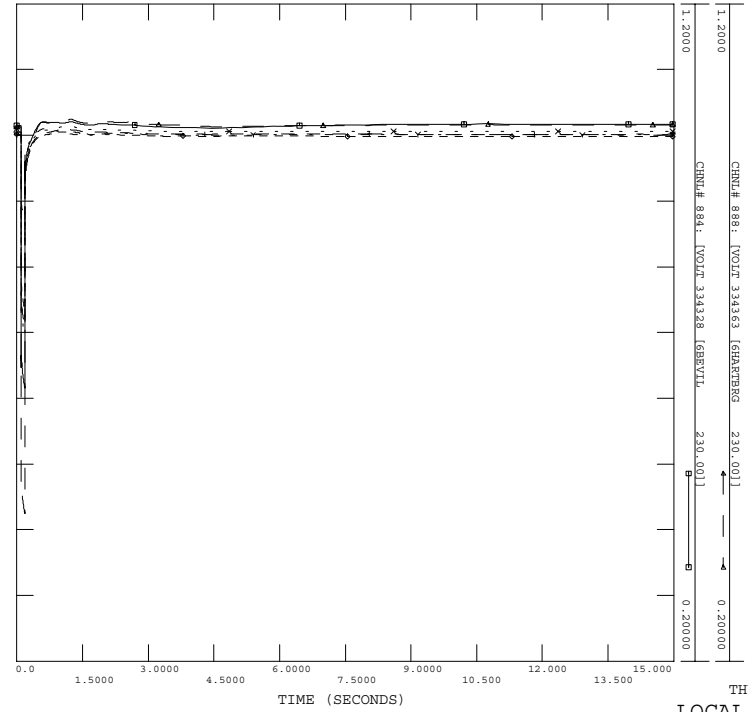
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT



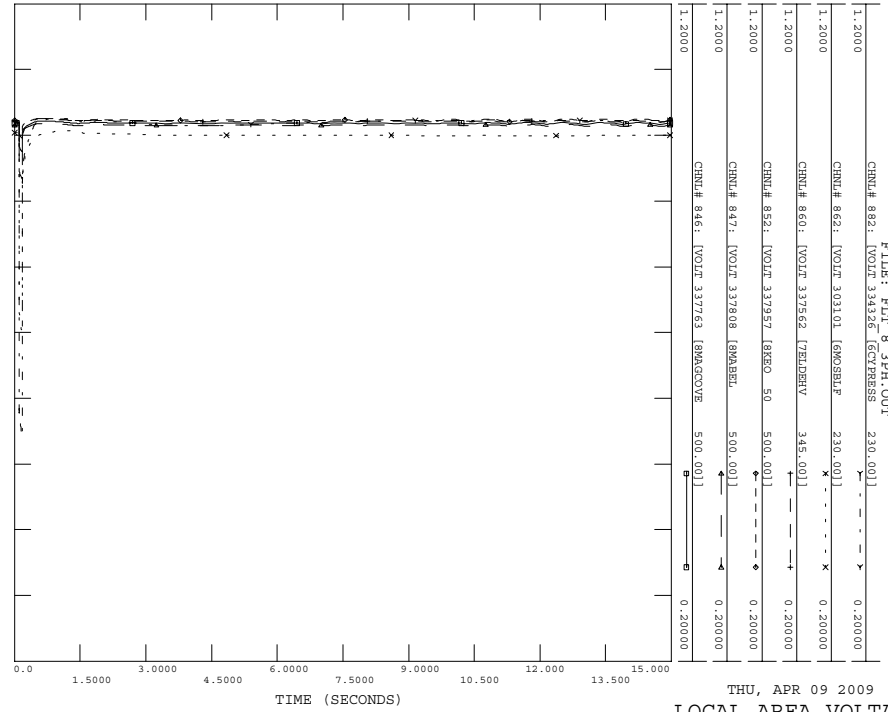
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT

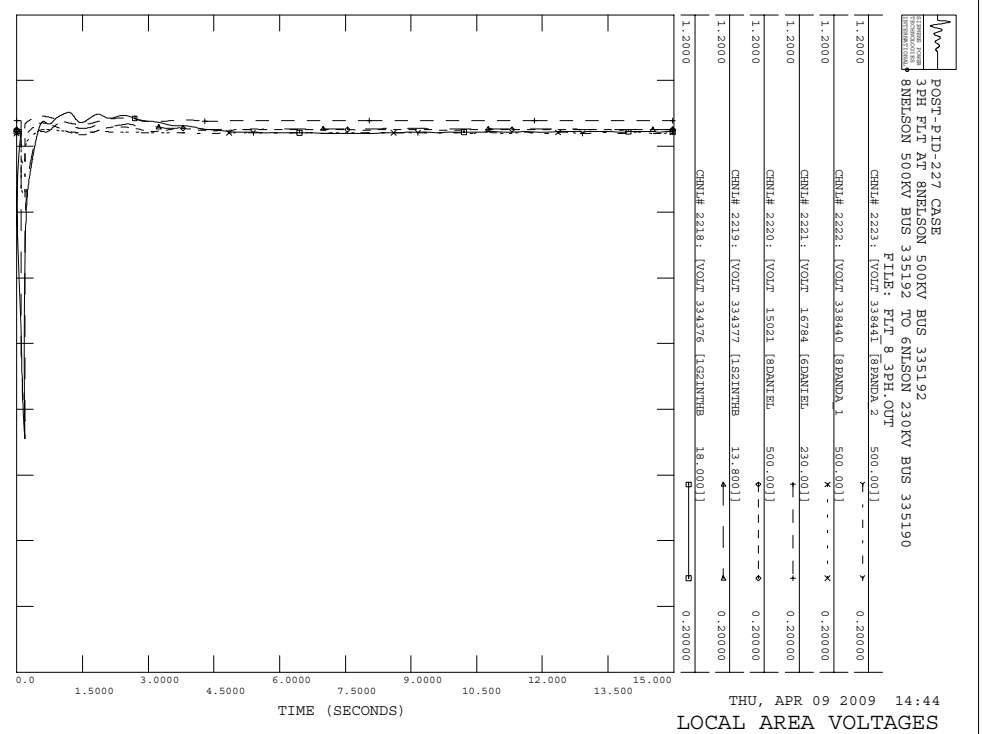
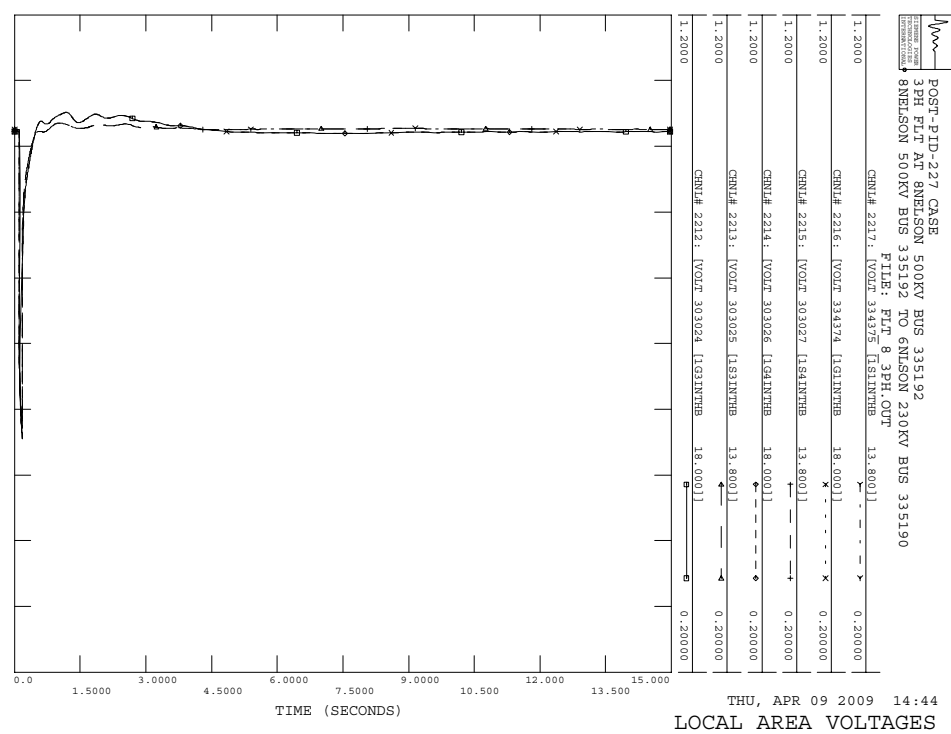
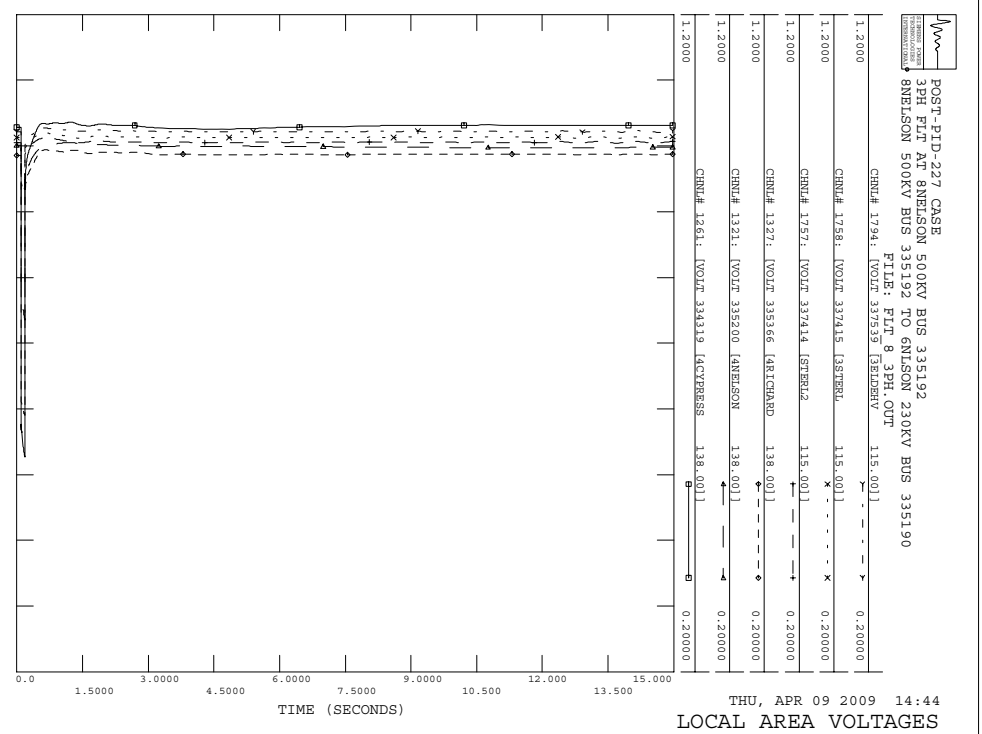
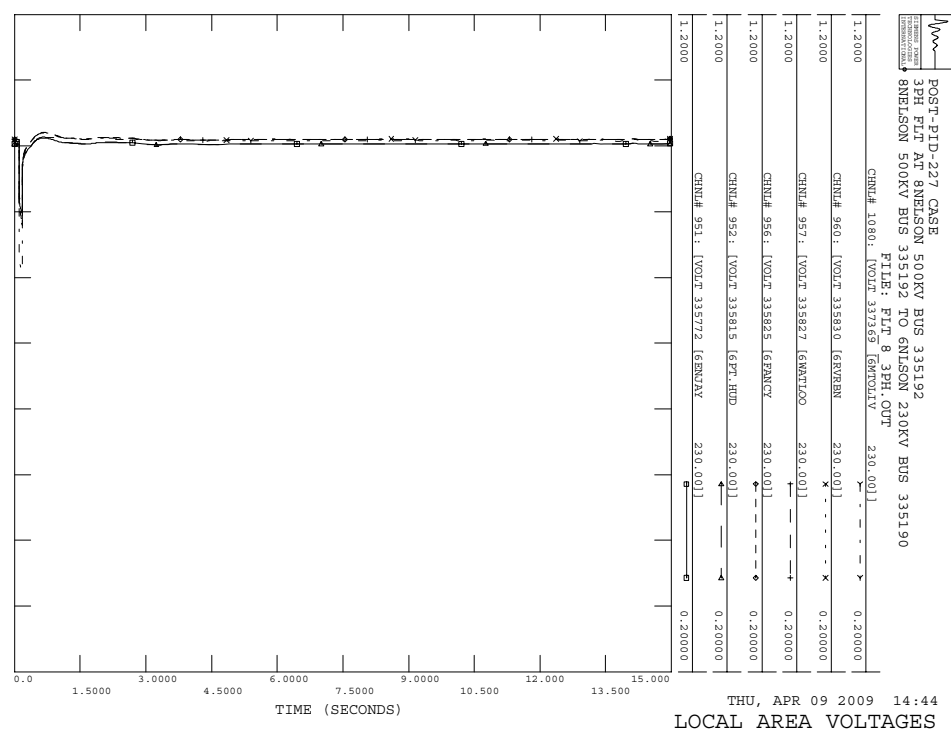


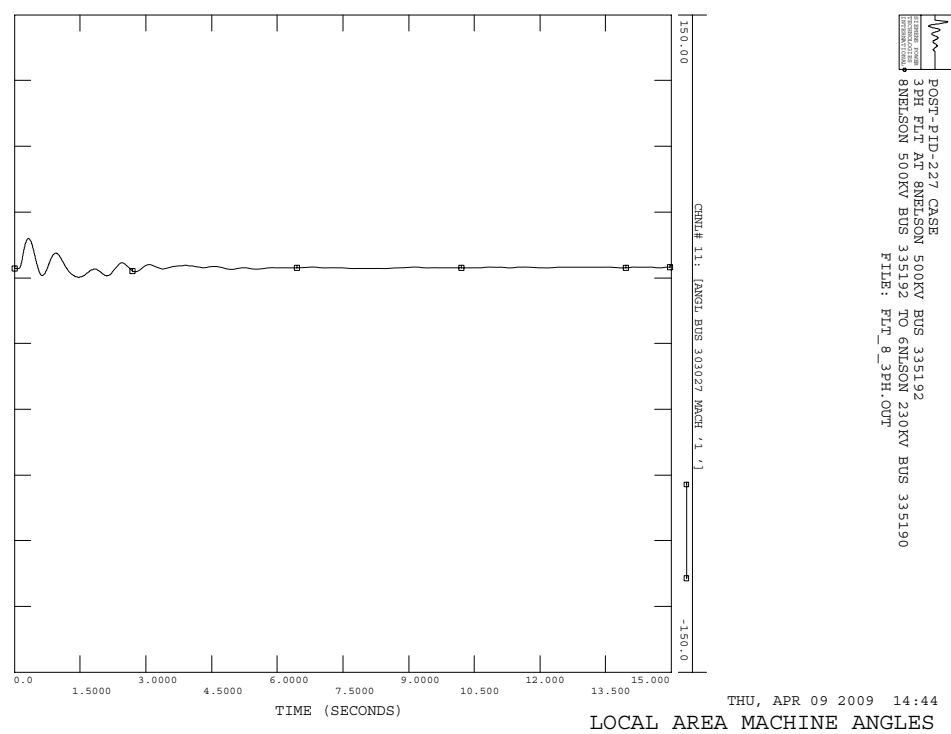
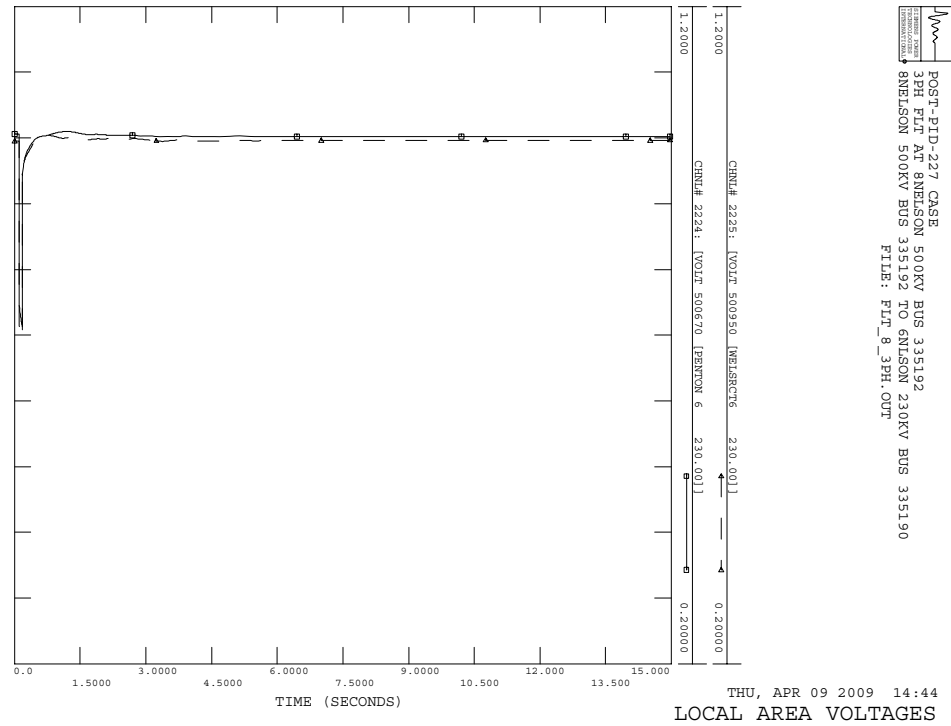
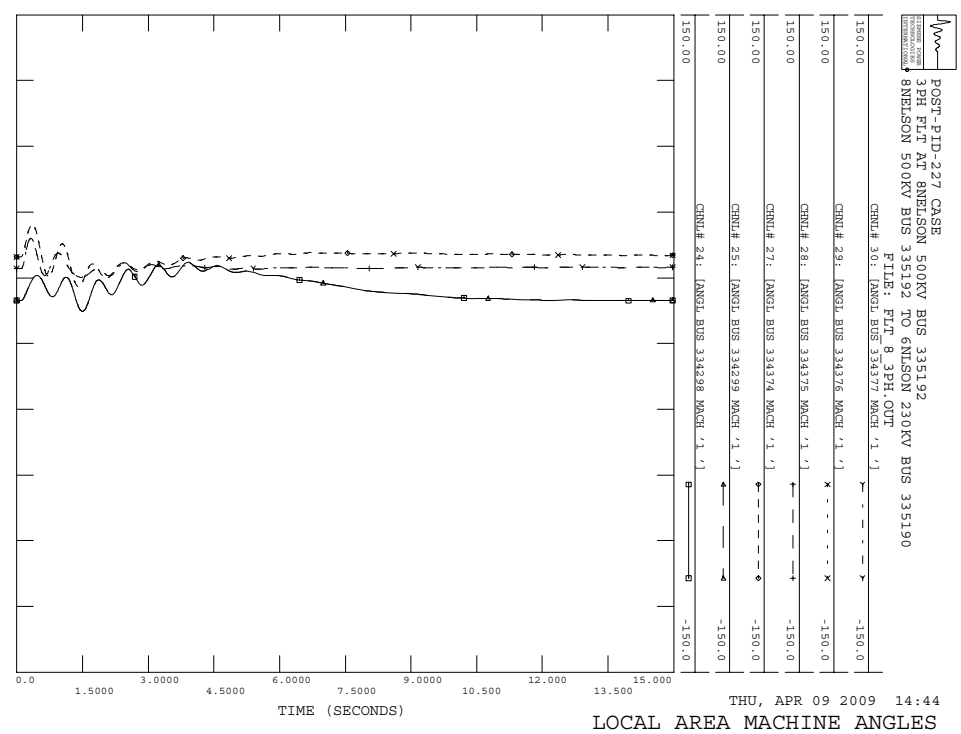
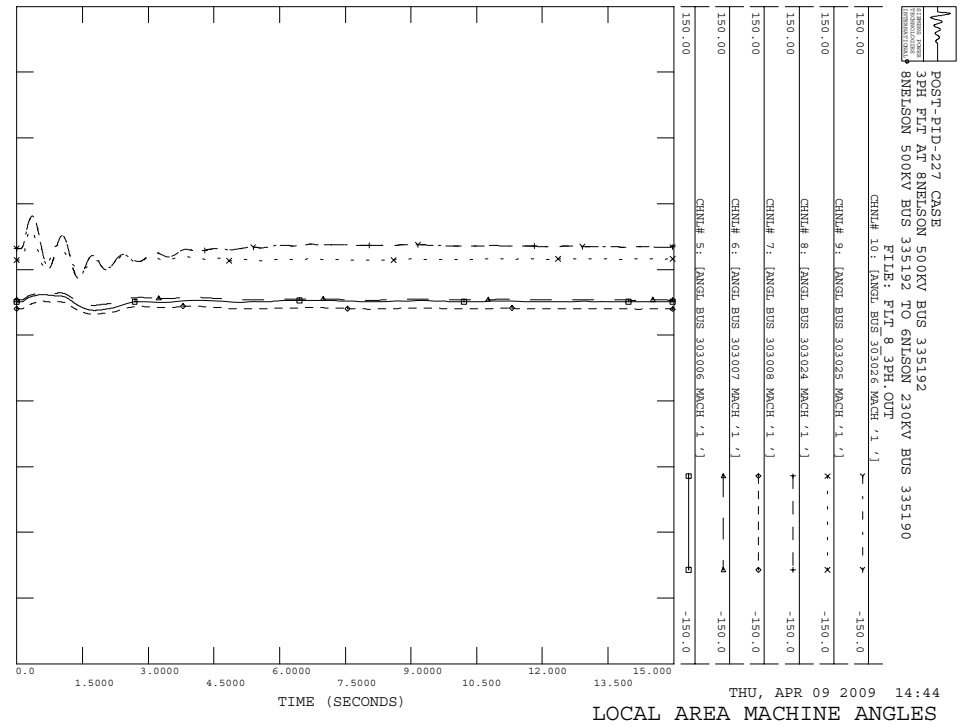
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT



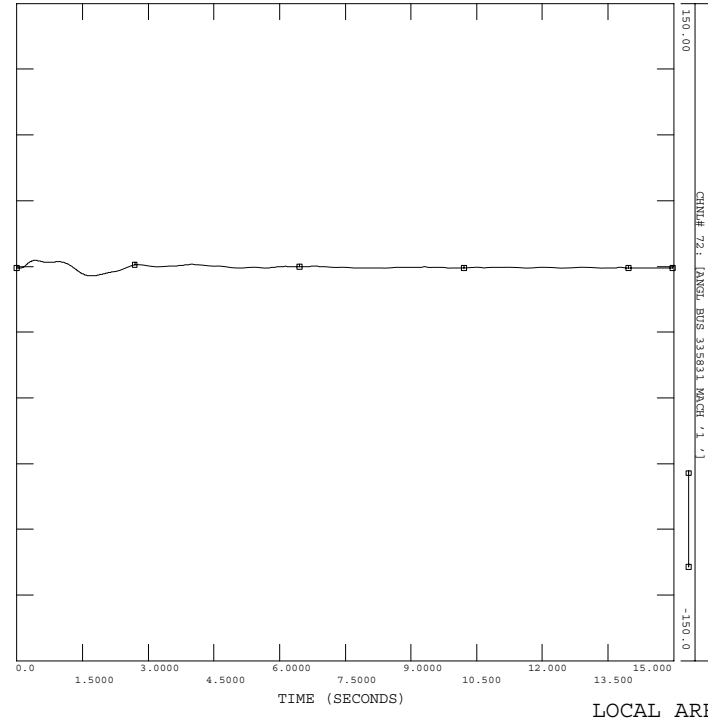
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT





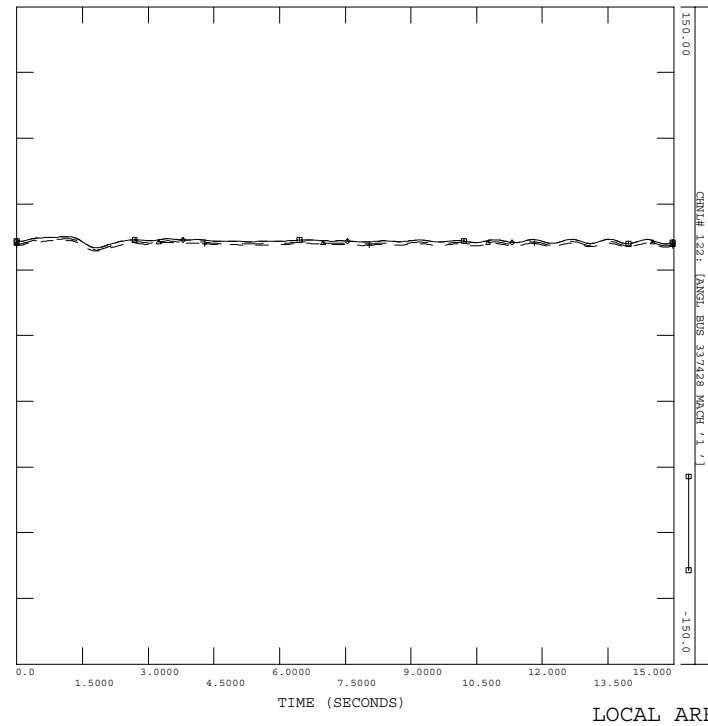


POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO 6NIELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT



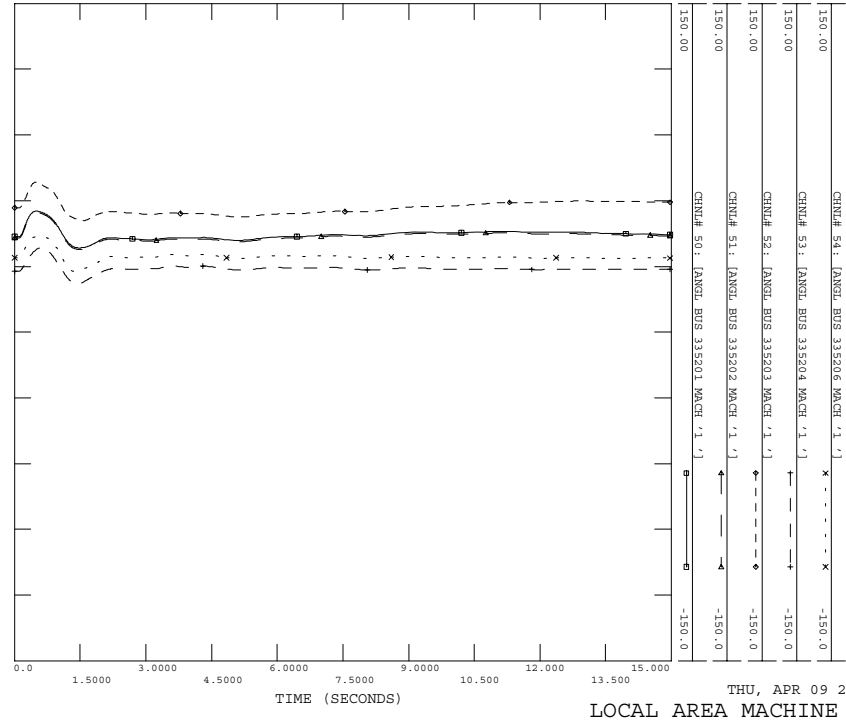
THU, APR 09 2009 14:44
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO 6NIELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT



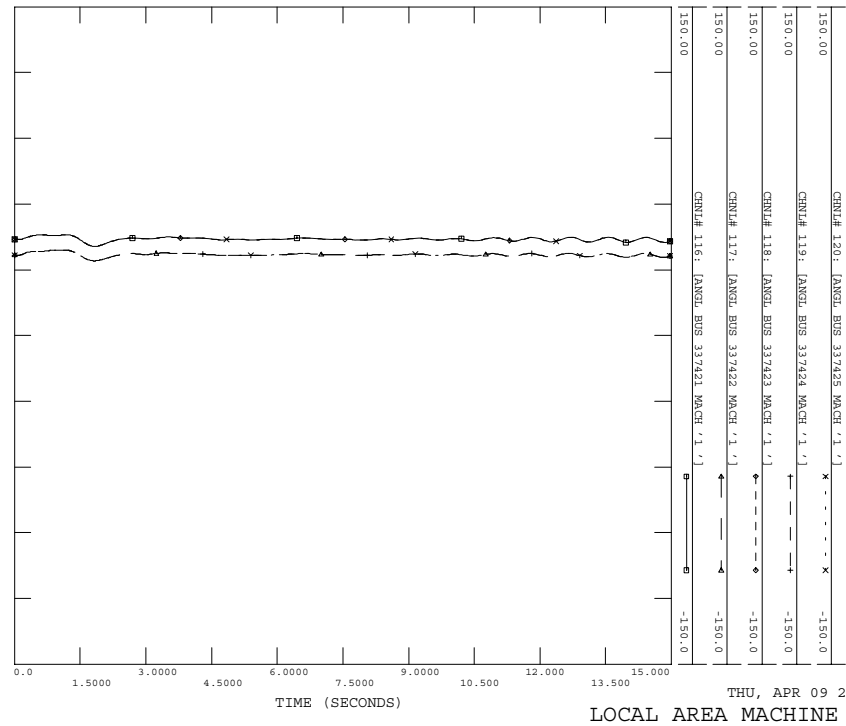
THU, APR 09 2009 14:44
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO 6NIELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT



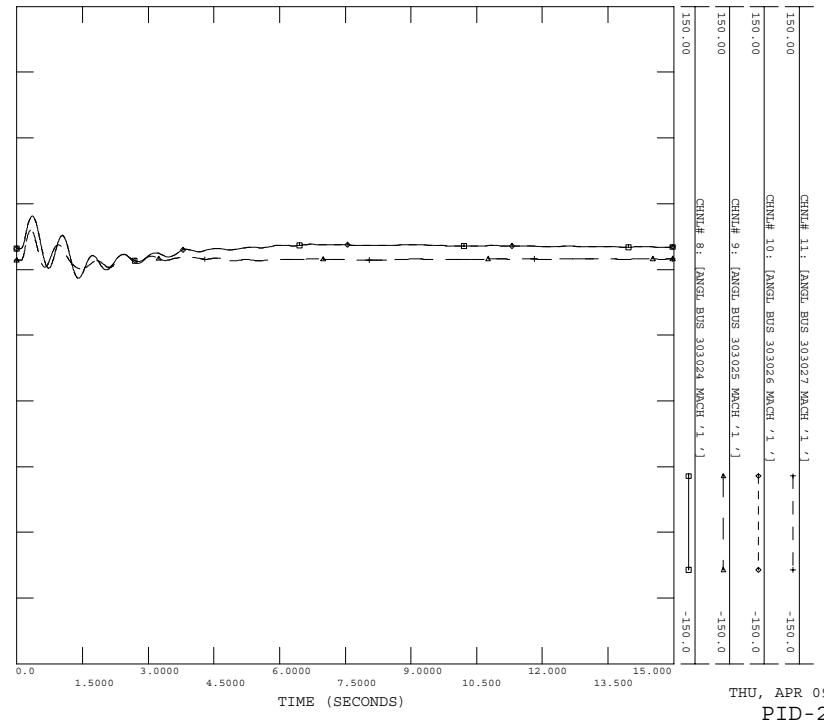
THU, APR 09 2009 14:44
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8NIELSON 500KV BUS 335192
 8NIELSON 500KV BUS 335192 TO 6NIELSON 230KV BUS 335190
 FILE: FLT_8_3PH_OUT

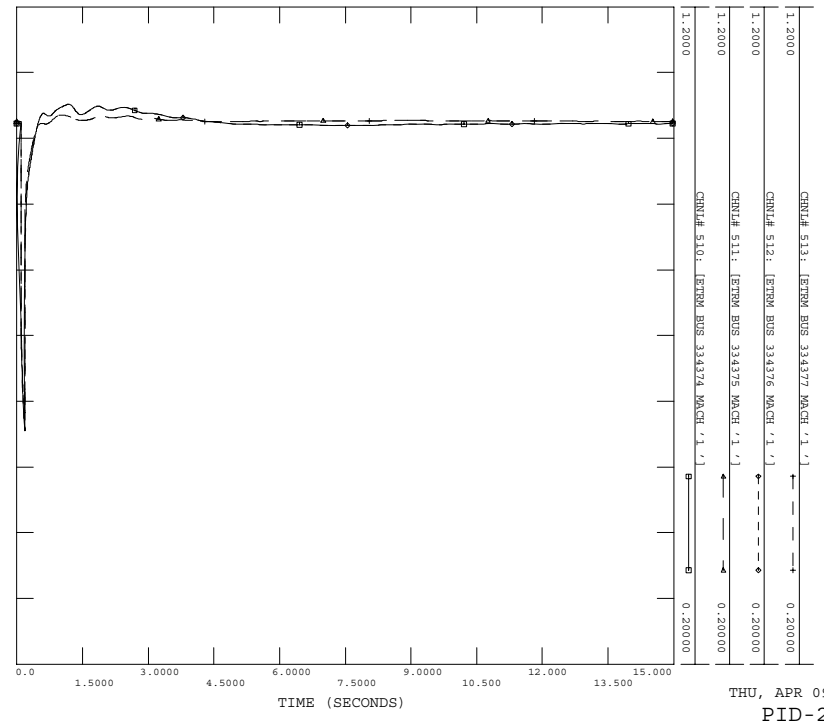


THU, APR 09 2009 14:44
 LOCAL AREA MACHINE ANGLES

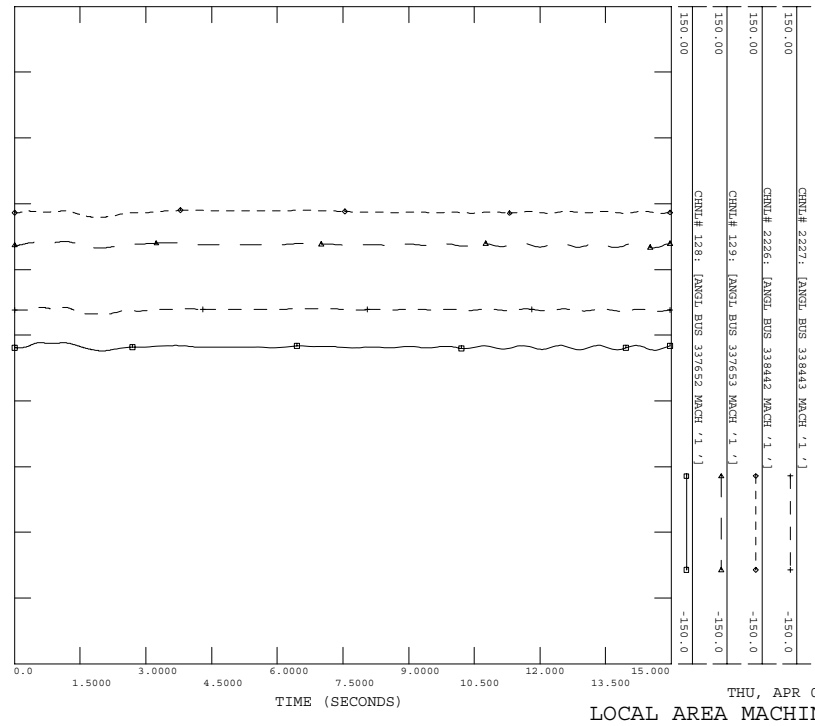
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NLSOIN 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



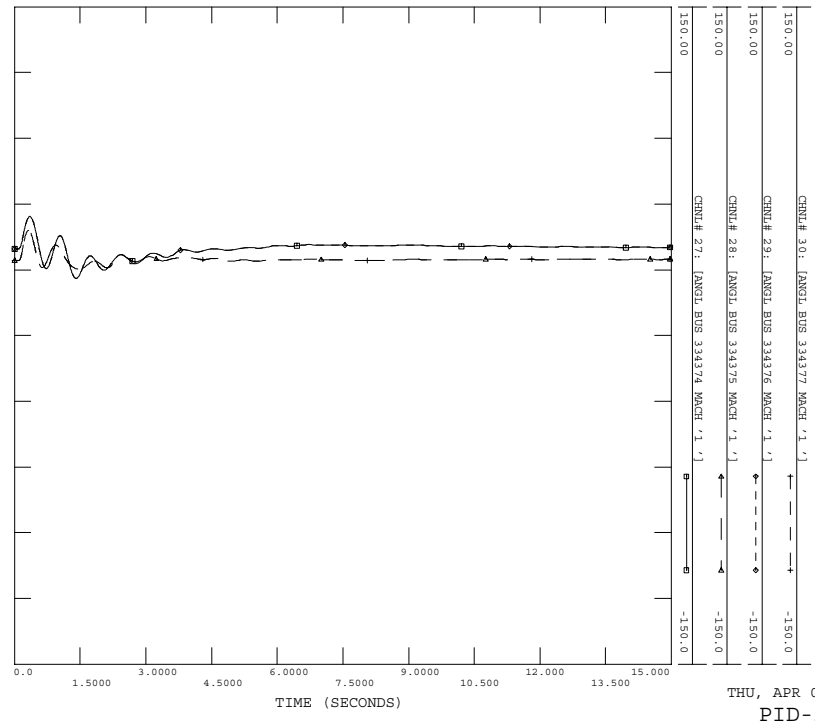
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NLSOIN 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



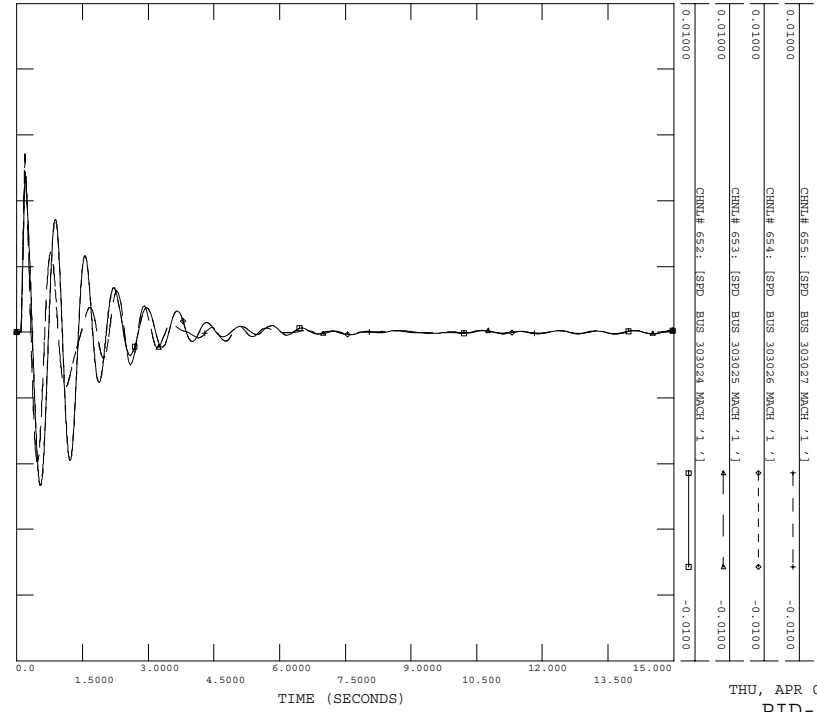
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NLSOIN 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



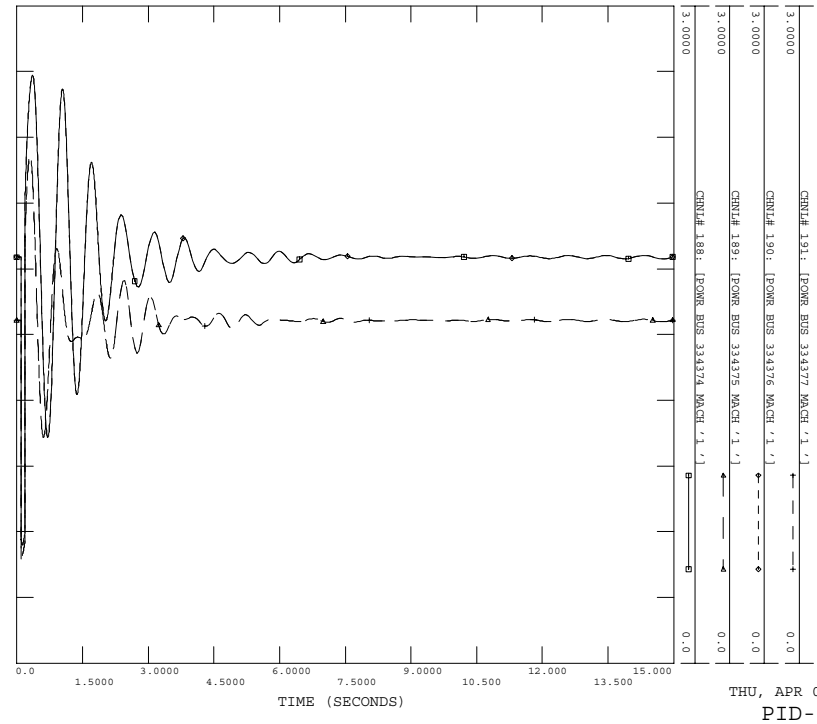
POST-PID-227 CASE
 3PH FLT AT 8NELSON 500KV BUS 335192
 8NELSON 500KV BUS 335192 TO 6NLSOIN 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



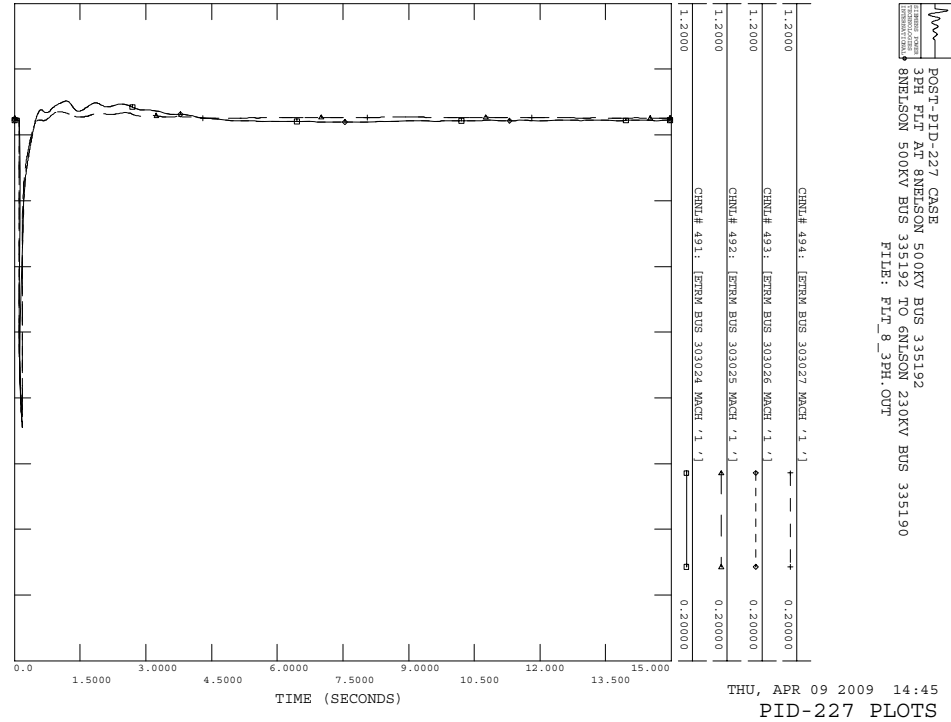
POST-PID-227 CASE
 3PH FLT AT 8NHELSON 500KV BUS 335192
 8NHELSON 500KV BUS 335192 TO 6NHELSON 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



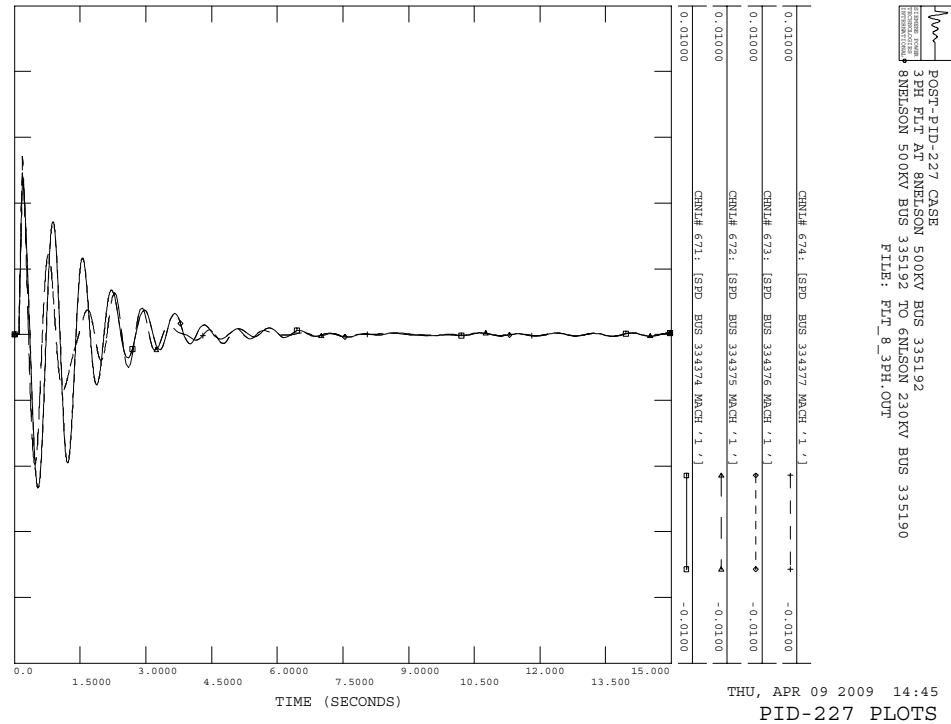
POST-PID-227 CASE
 3PH FLT AT 8NHELSON 500KV BUS 335192
 8NHELSON 500KV BUS 335192 TO 6NHELSON 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



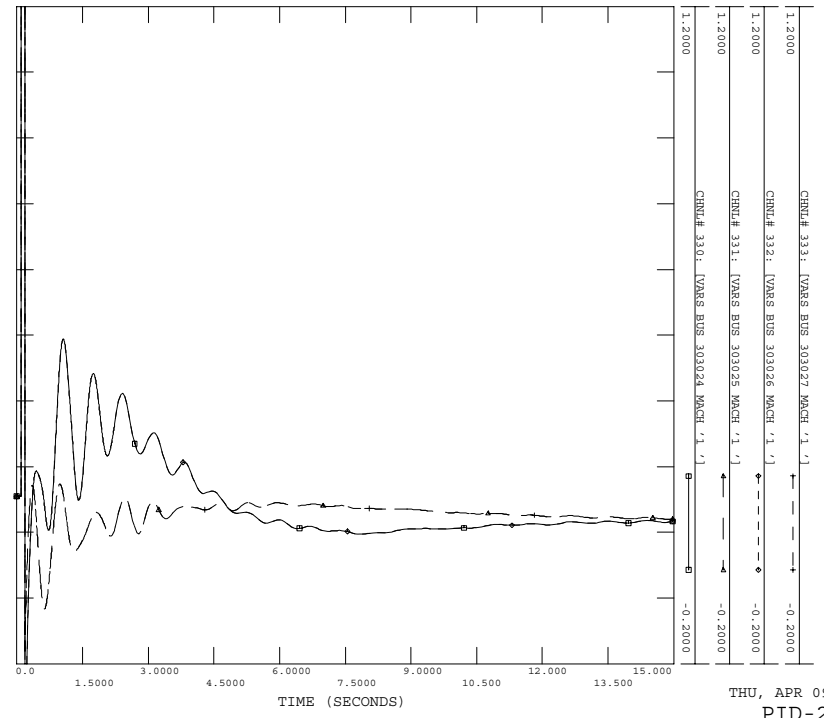
POST-PID-227 CASE
 3PH FLT AT 8NHELSON 500KV BUS 335192
 8NHELSON 500KV BUS 335192 TO 6NHELSON 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



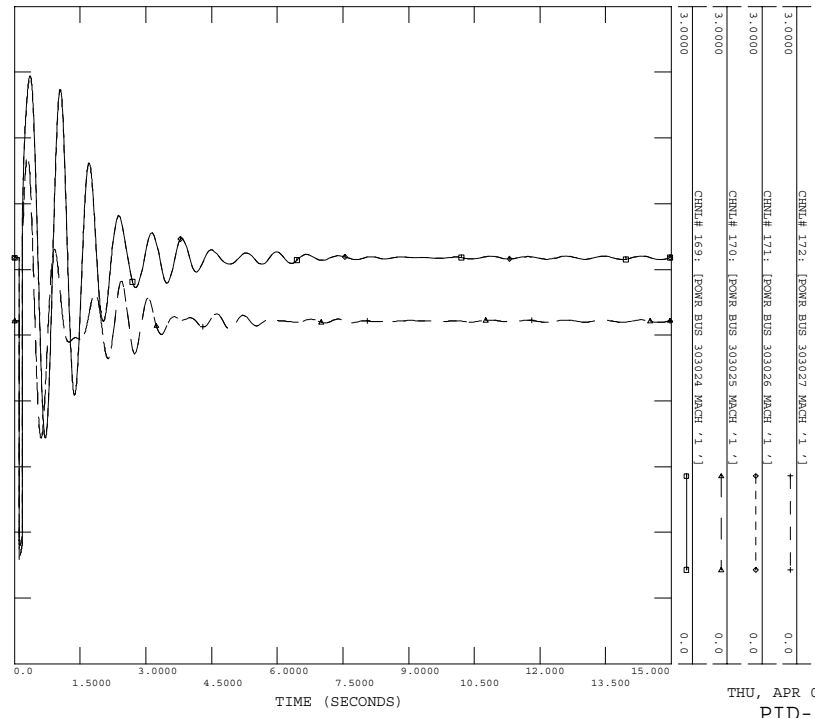
POST-PID-227 CASE
 3PH FLT AT 8NHELSON 500KV BUS 335192
 8NHELSON 500KV BUS 335192 TO 6NHELSON 230KV BUS 335190
 FILE: FLT_8_3PH.OUT



POST-PID-227 CASE
3PH FLT AT 8NBLSON 500KV BUS 335192
8NBLSON 500KV BUS 335192 TO 8NLSOON 230KV BUS 335190
FILE: FLT_8_3PH.OUT



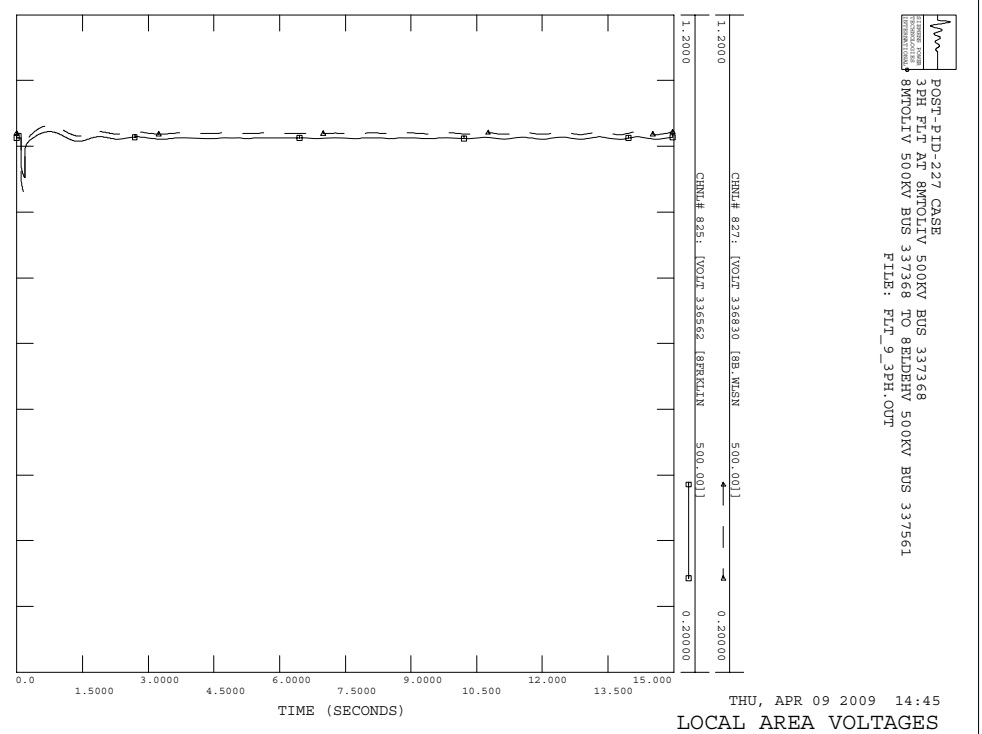
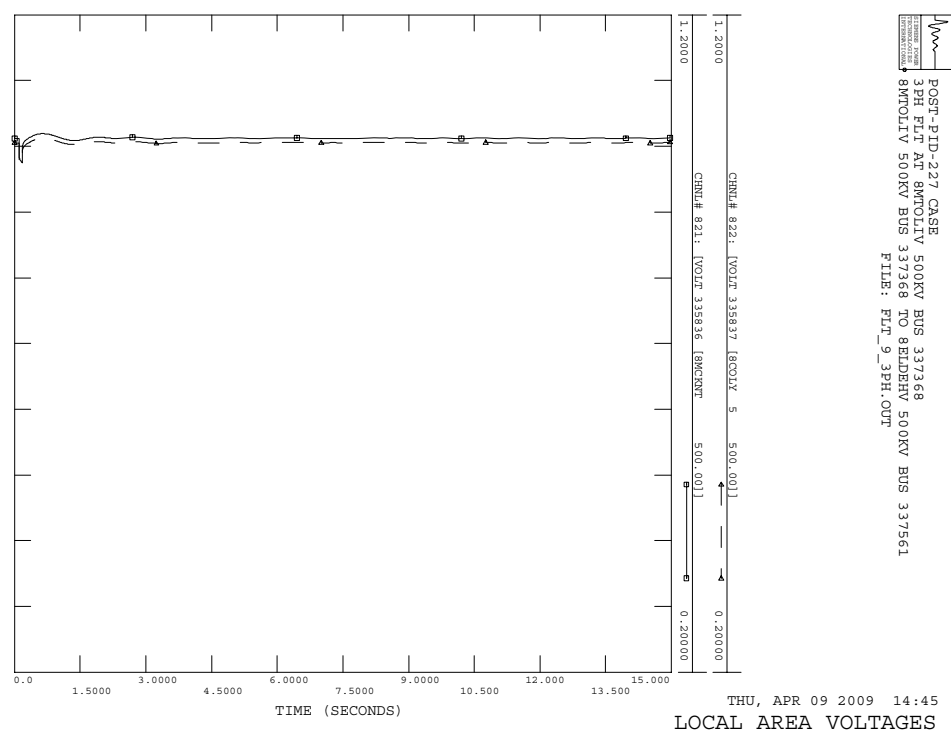
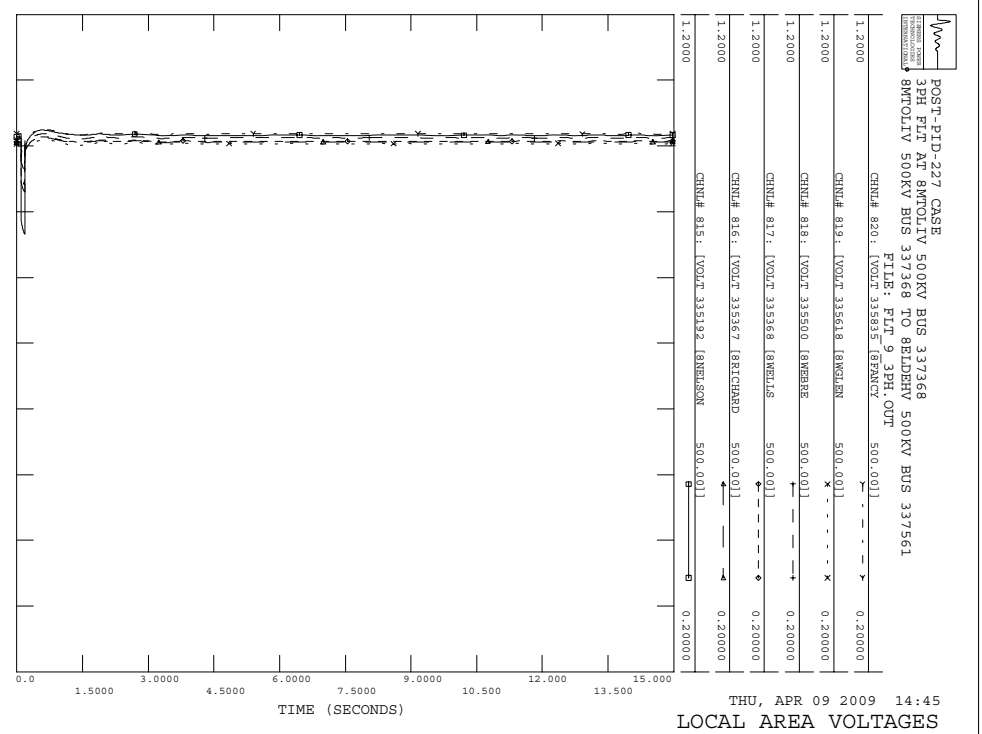
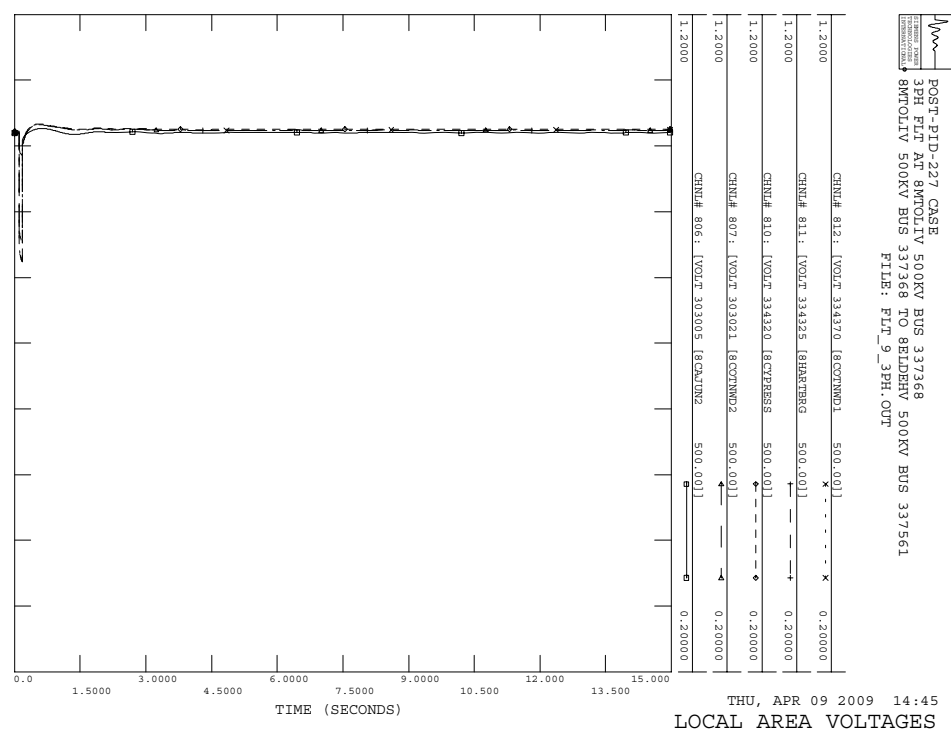
POST-PID-227 CASE
3PH FLT AT 8NBLSON 500KV BUS 335192
8NBLSON 500KV BUS 335192 TO 8NLSOON 230KV BUS 335190
FILE: FLT_8_3PH.OUT



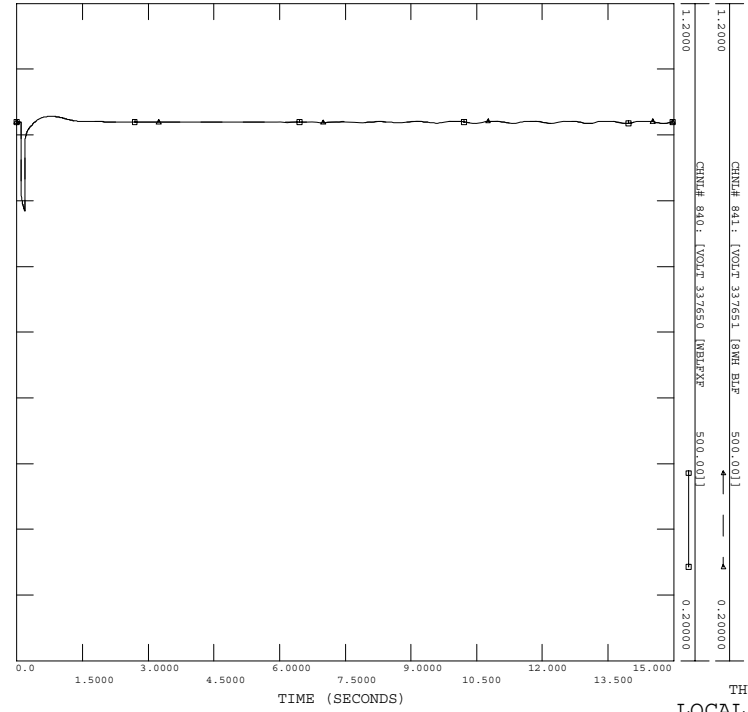
C.9 FLT_9_3PH

Three phase fault on the 8MTOLIV (#337368) to 8ELDEHV (#337561) 500 kV line, near the 8MTOLIV.

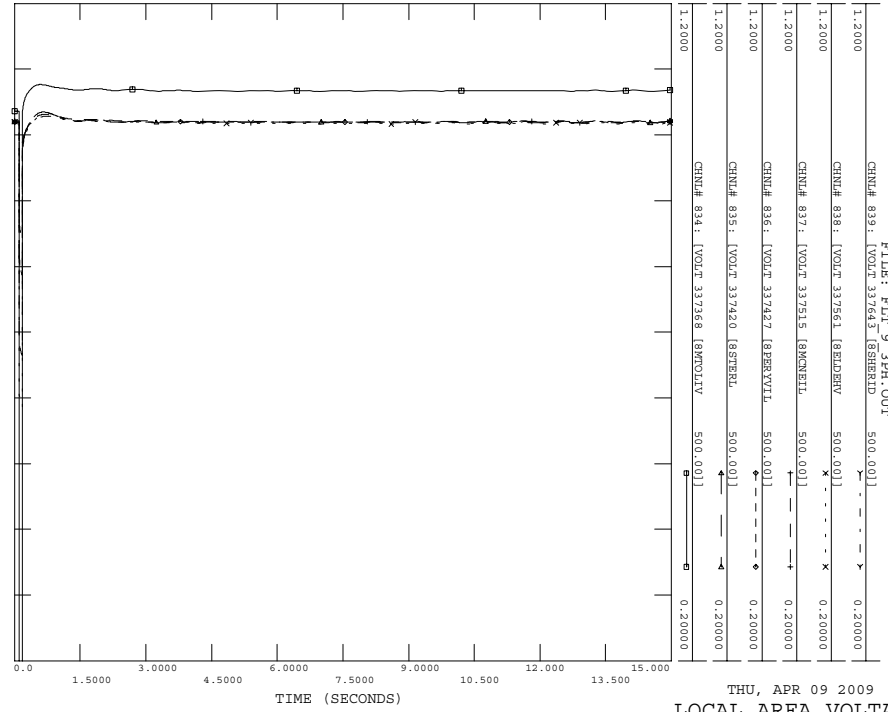
- a) Apply 3 Phase Fault AT 8MTOLIV 500KV BUS 337368
- b) Clear fault after 5 cycles by tripping line from 8MTOLIV 500KV BUS 337368 TO 8ELDEHV 500KV BUS 337561



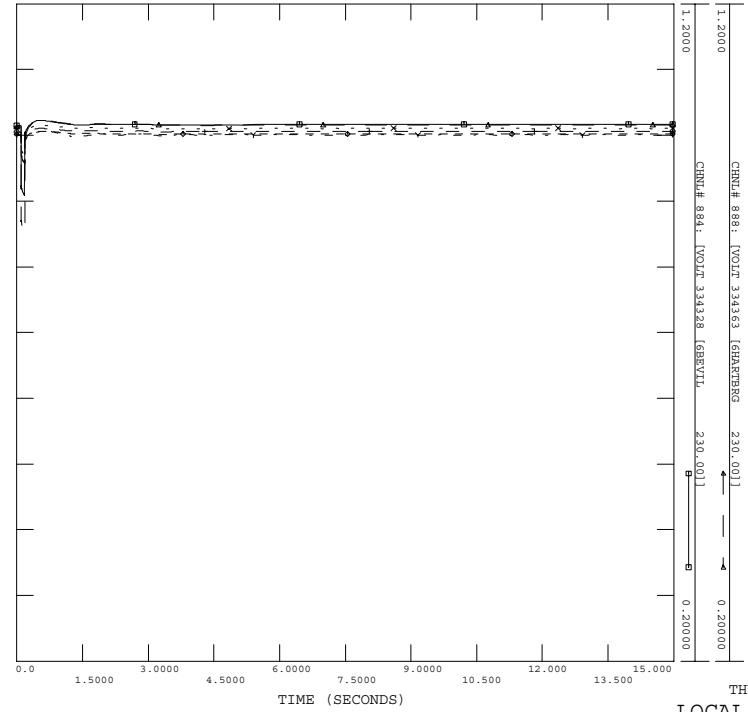
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8ELDBHV 500KV BUS 337561
 FILE: FLT_9_3PH_OUT



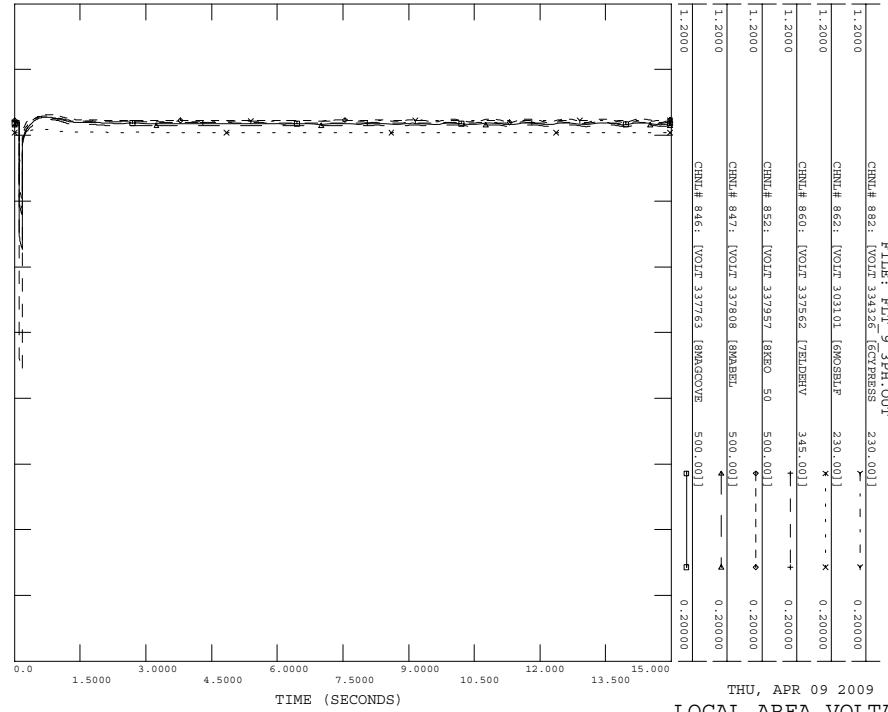
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8ELDBHV 500KV BUS 337561
 FILE: FLT_9_3PH_OUT

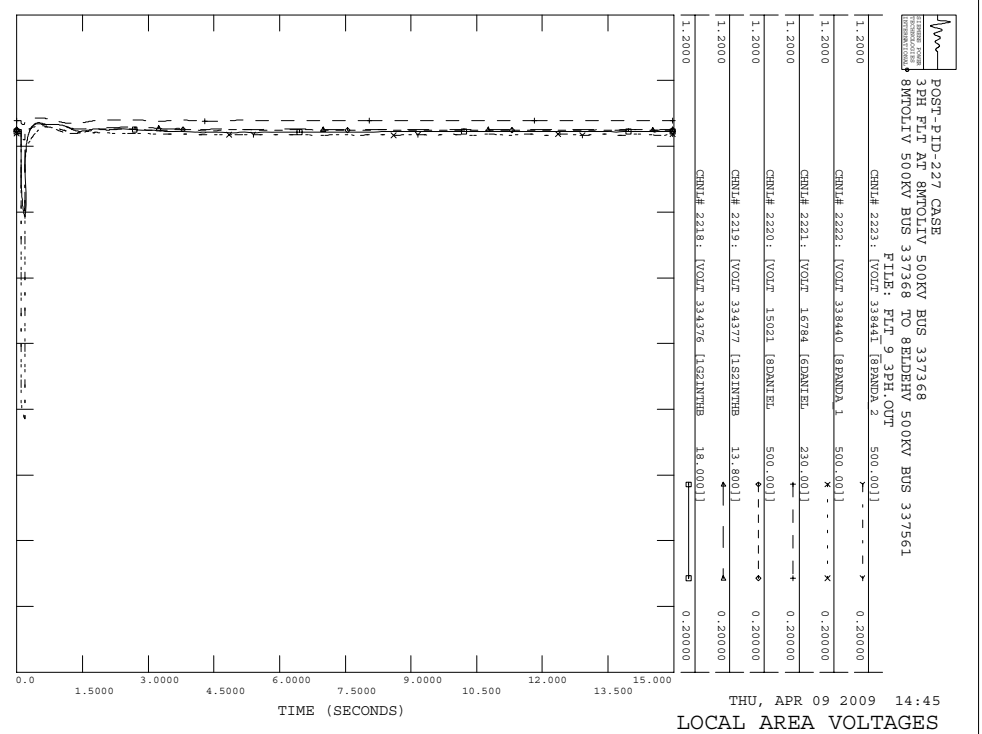
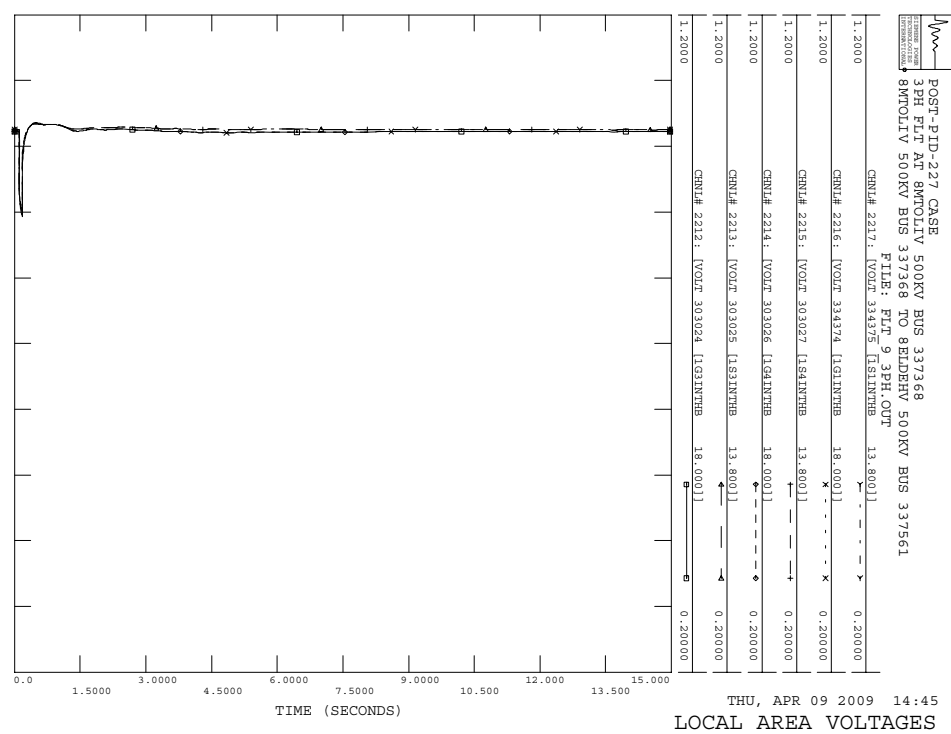
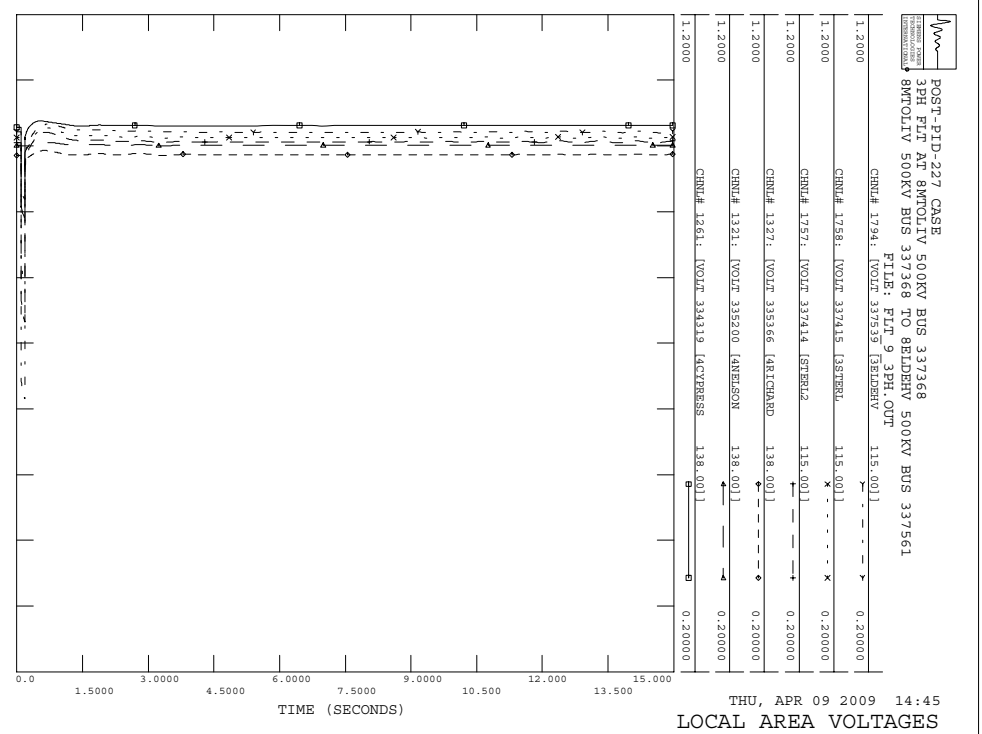
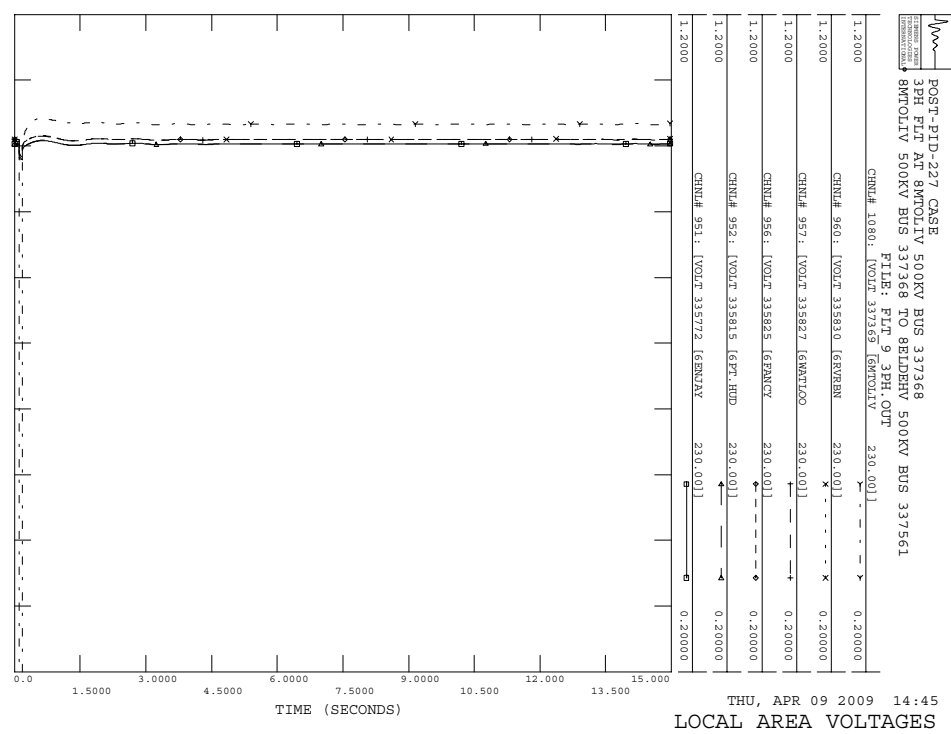


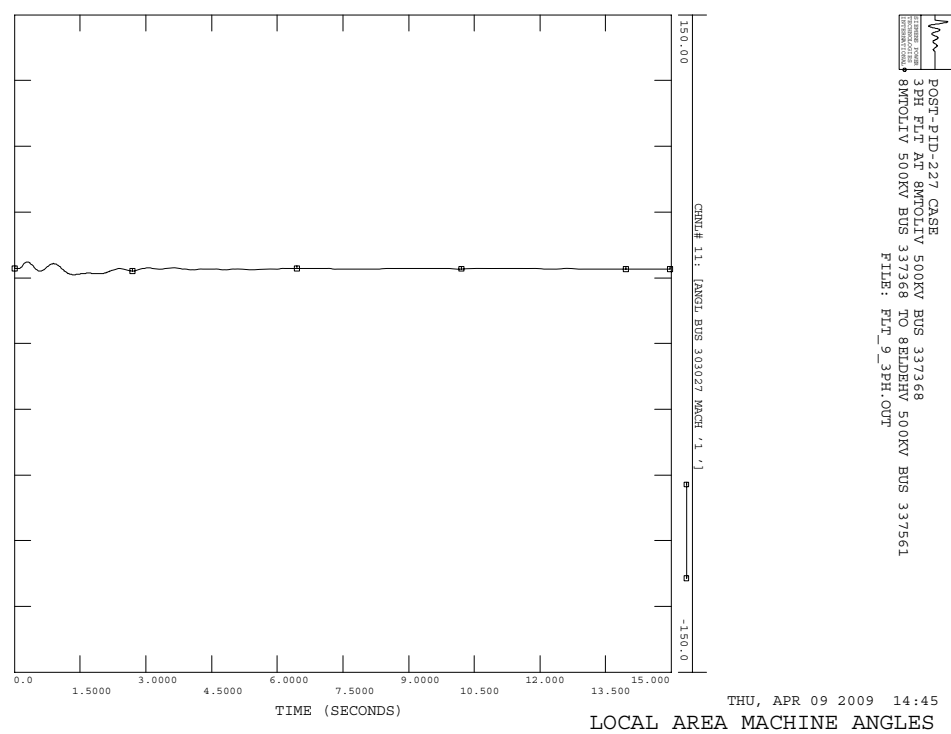
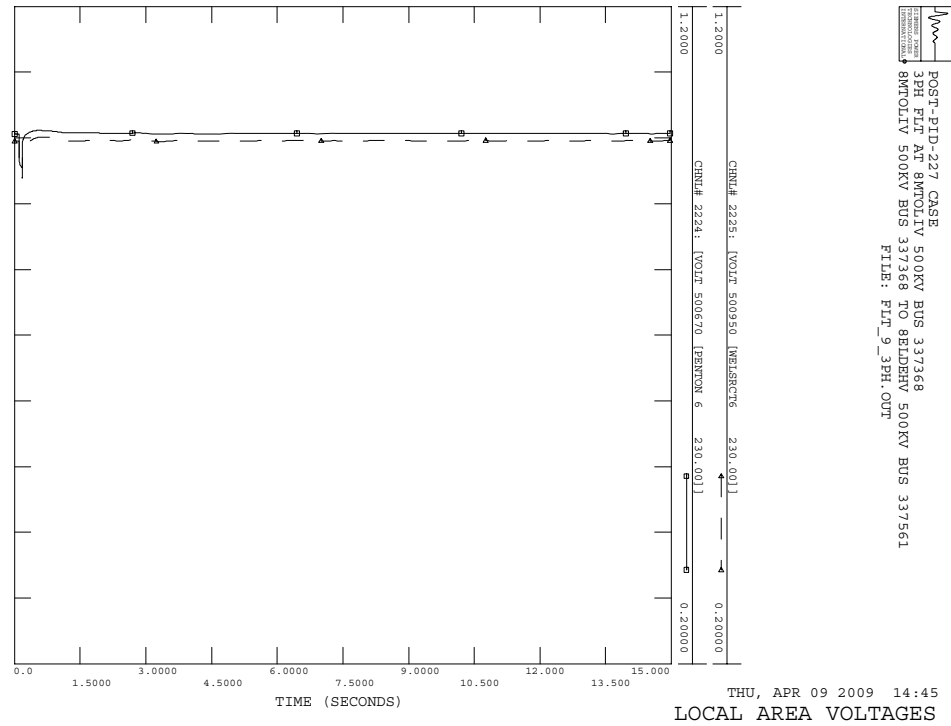
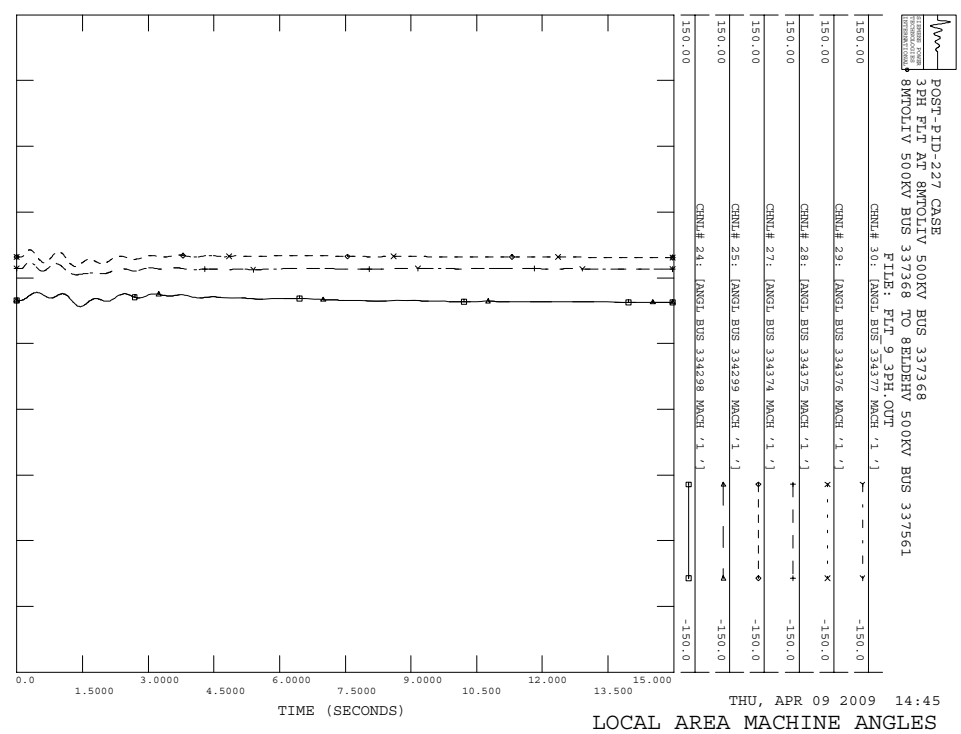
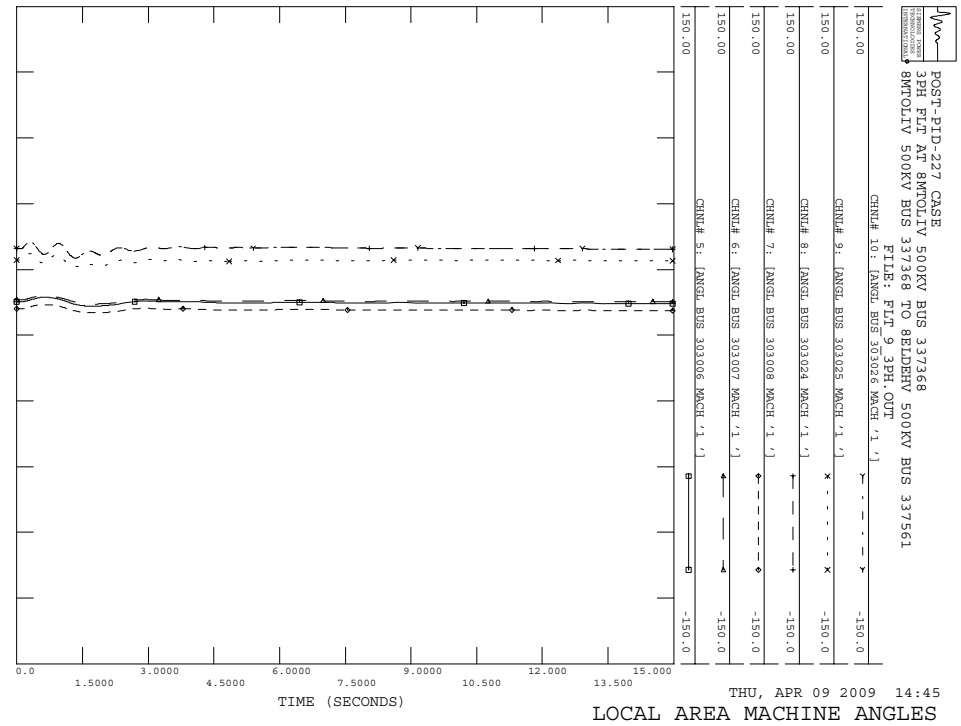
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8ELDBHV 500KV BUS 337561
 FILE: FLT_9_3PH_OUT



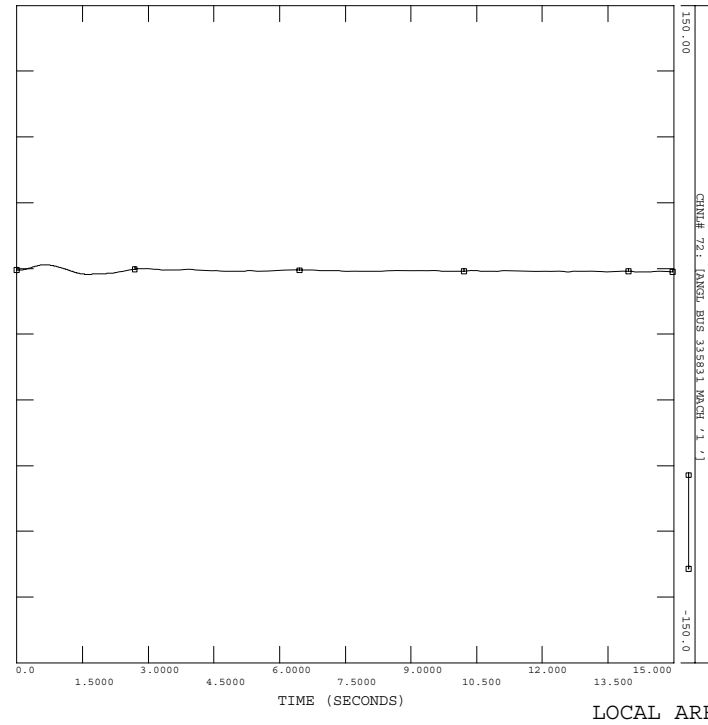
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8ELDBHV 500KV BUS 337561
 FILE: FLT_9_3PH_OUT



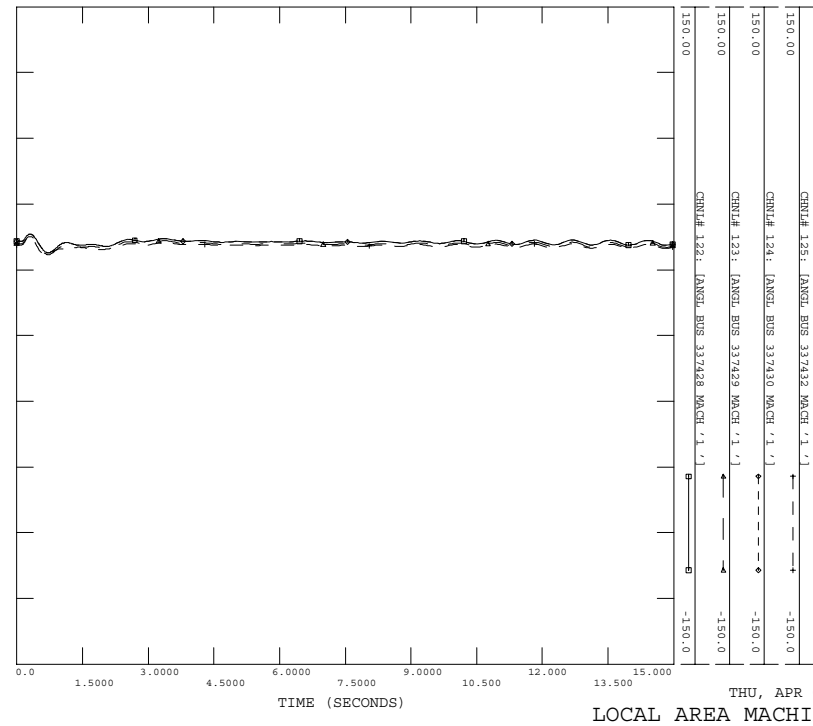




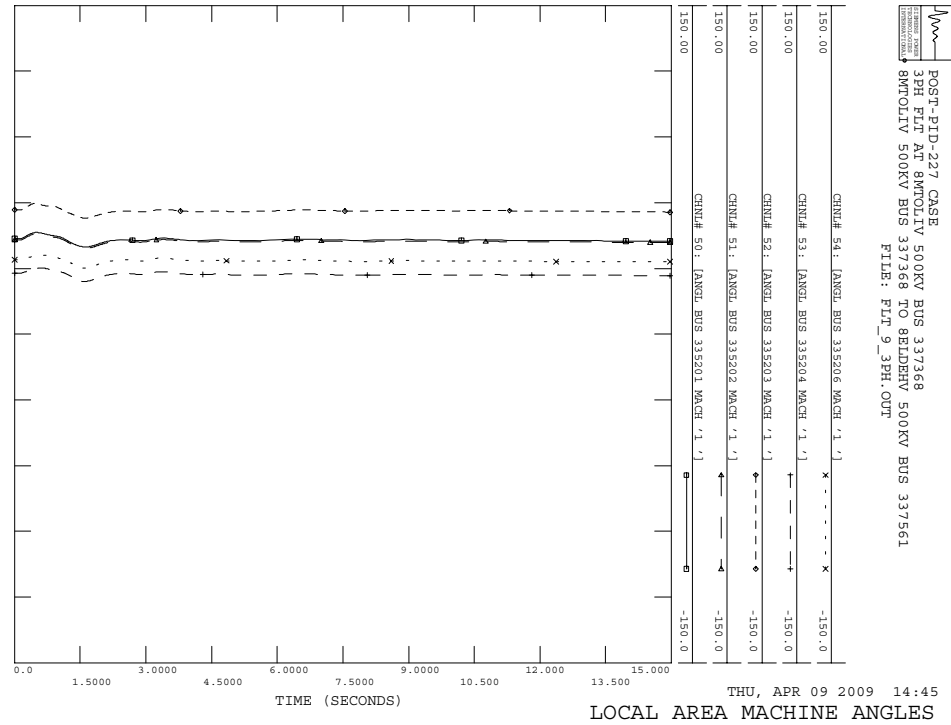
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



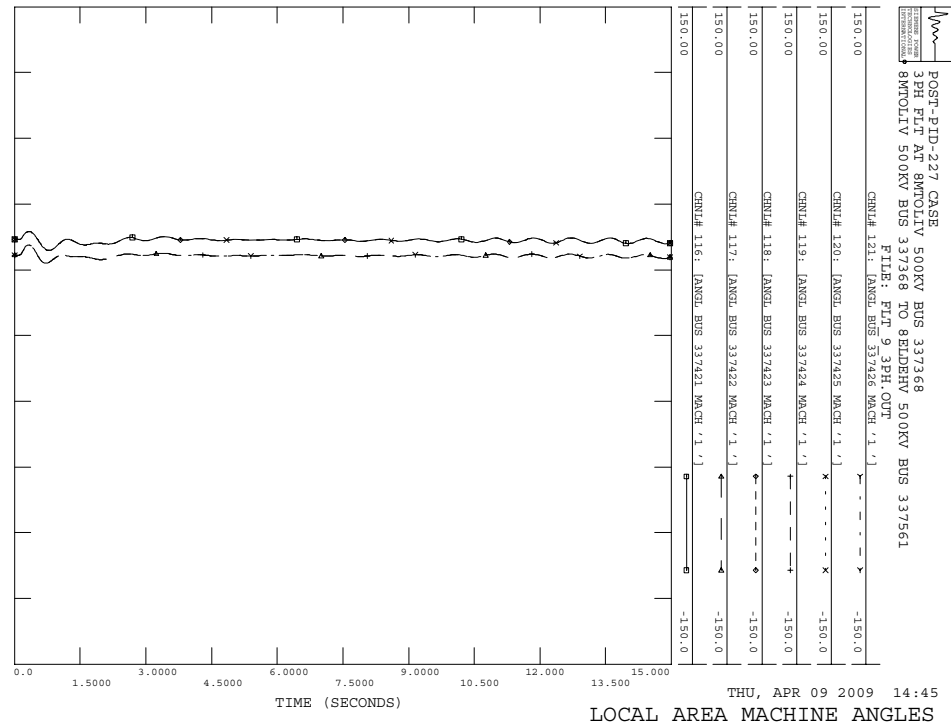
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



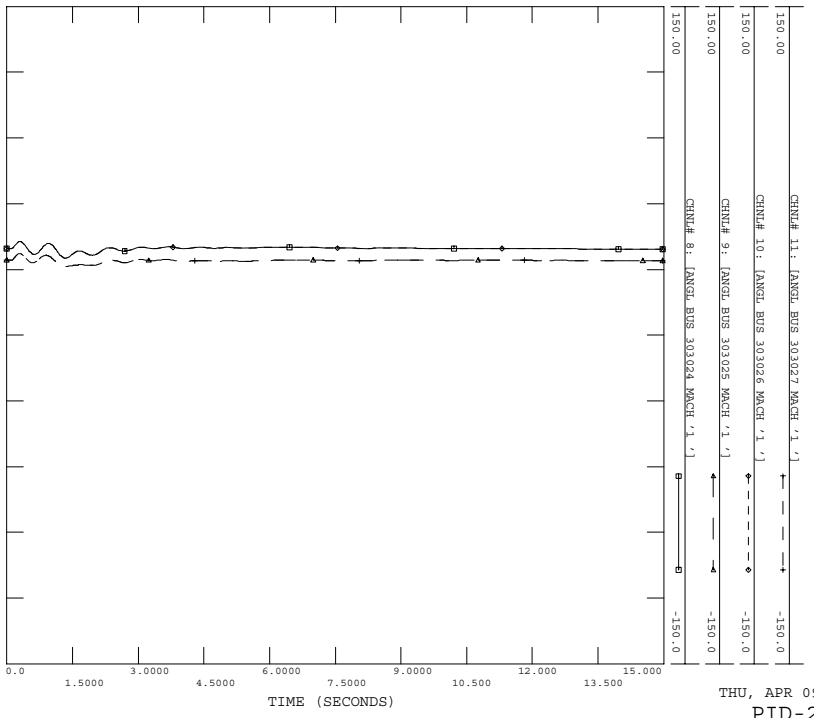
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



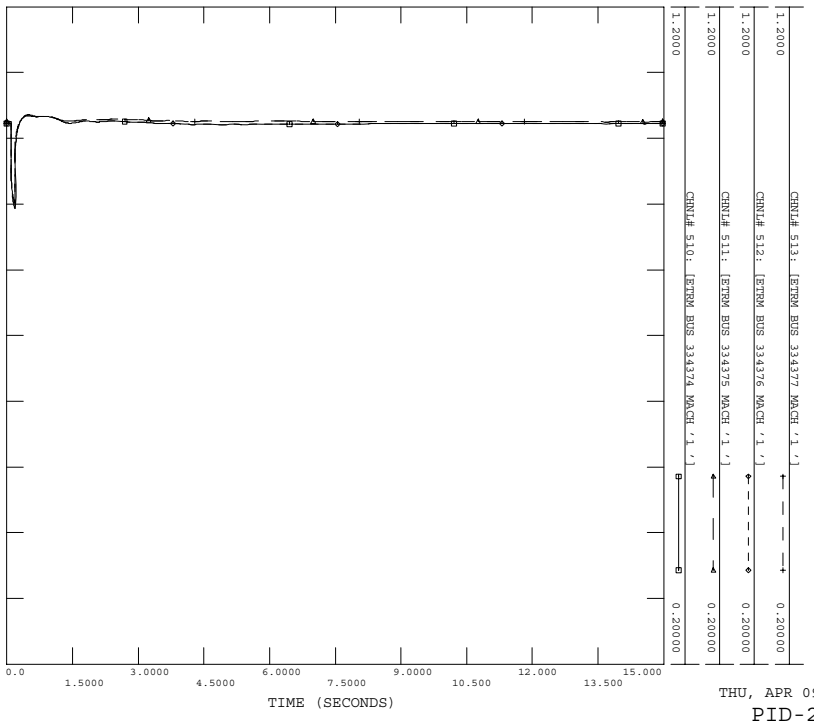
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



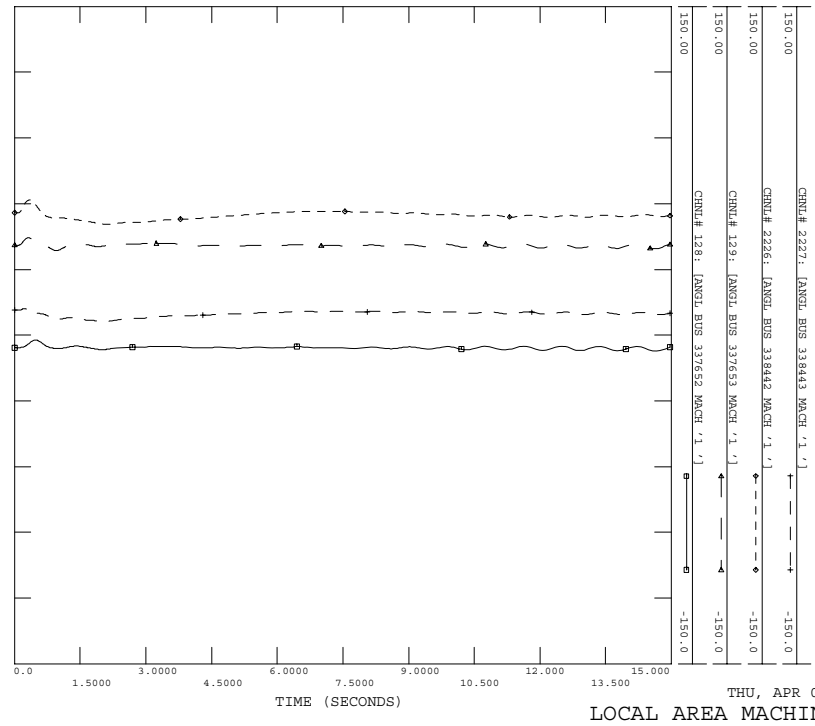
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



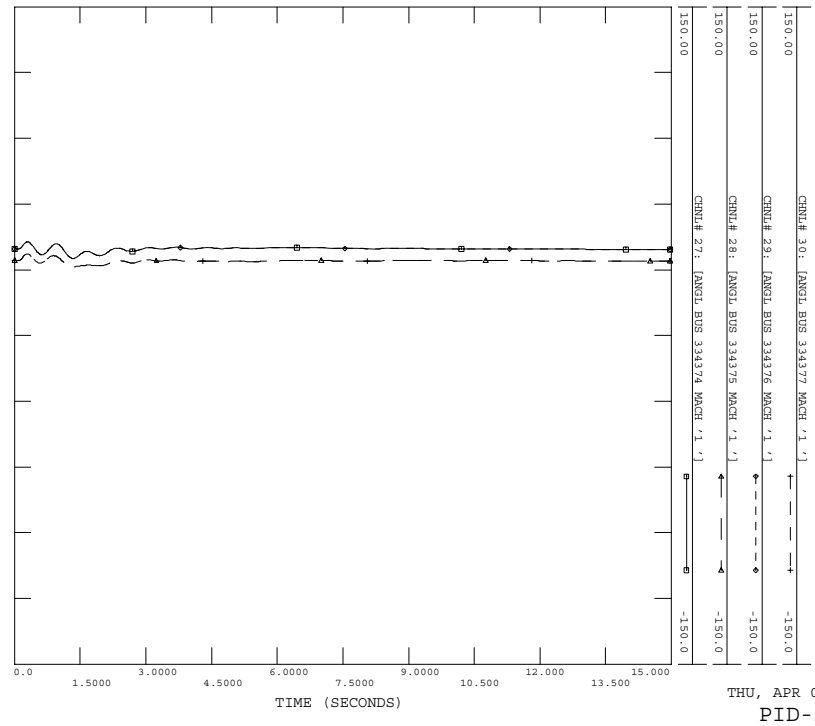
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



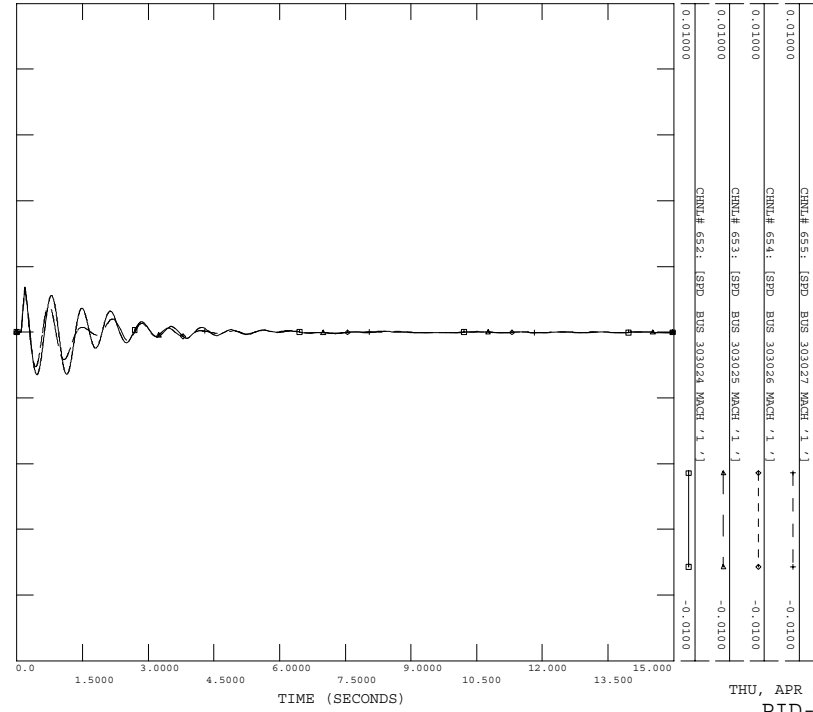
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



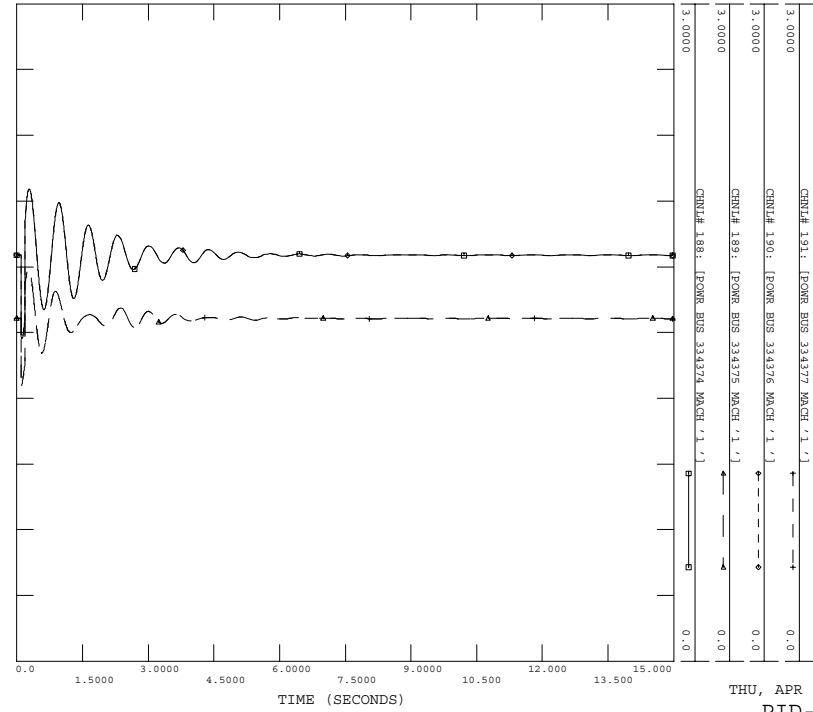
POST-PID-227 CASE
 3PH FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHV 500KV BUS 337561
 FILE: FLT_9_3PH.OUT



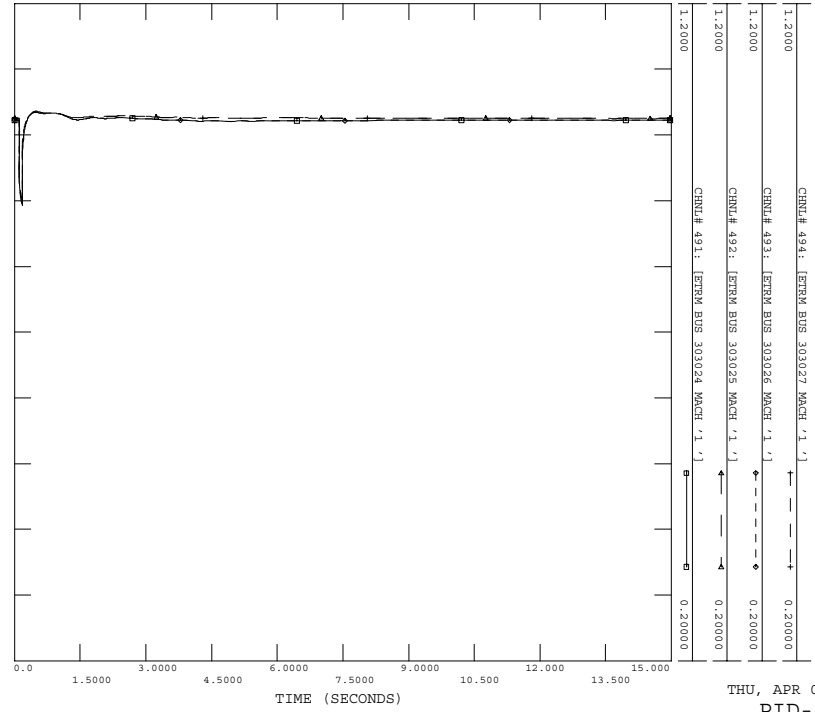
POST-PID-227 CASE
3PH FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
FILE: FLT_9_3PH.OUT



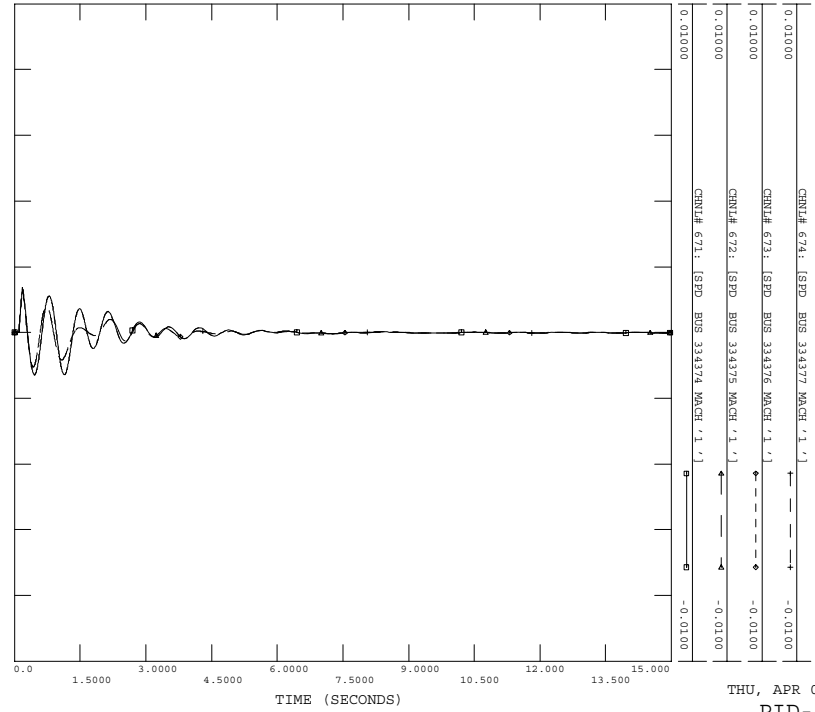
POST-PID-227 CASE
3PH FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
FILE: FLT_9_3PH.OUT



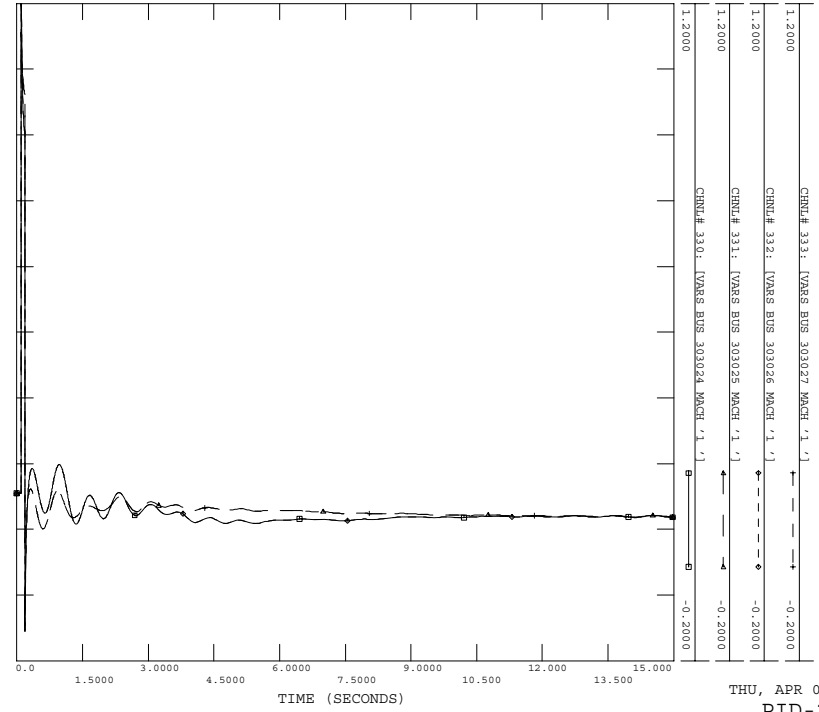
POST-PID-227 CASE
3PH FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
FILE: FLT_9_3PH.OUT



POST-PID-227 CASE
3PH FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO 8BDDHVV 500KV BUS 337561
FILE: FLT_9_3PH.OUT

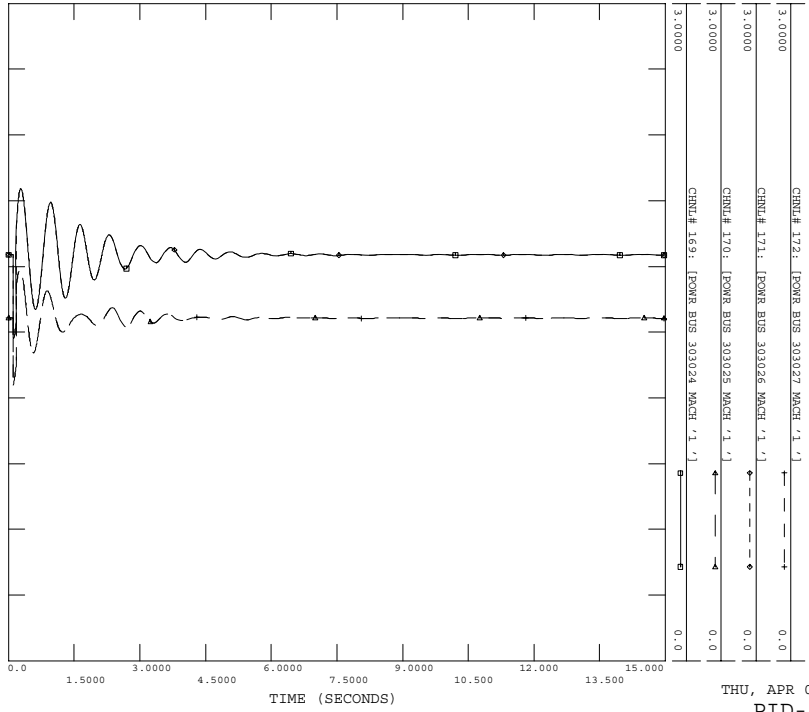


POST-PID-227 CASE
3PH FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO 8ELDEHV 500KV BUS 337561
FILE: FLT_9_3PH.OUT



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PID-227 PLOTS

POST-PID-227 CASE
3PH FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO 8ELDEHV 500KV BUS 337561
FILE: FLT_9_3PH.OUT

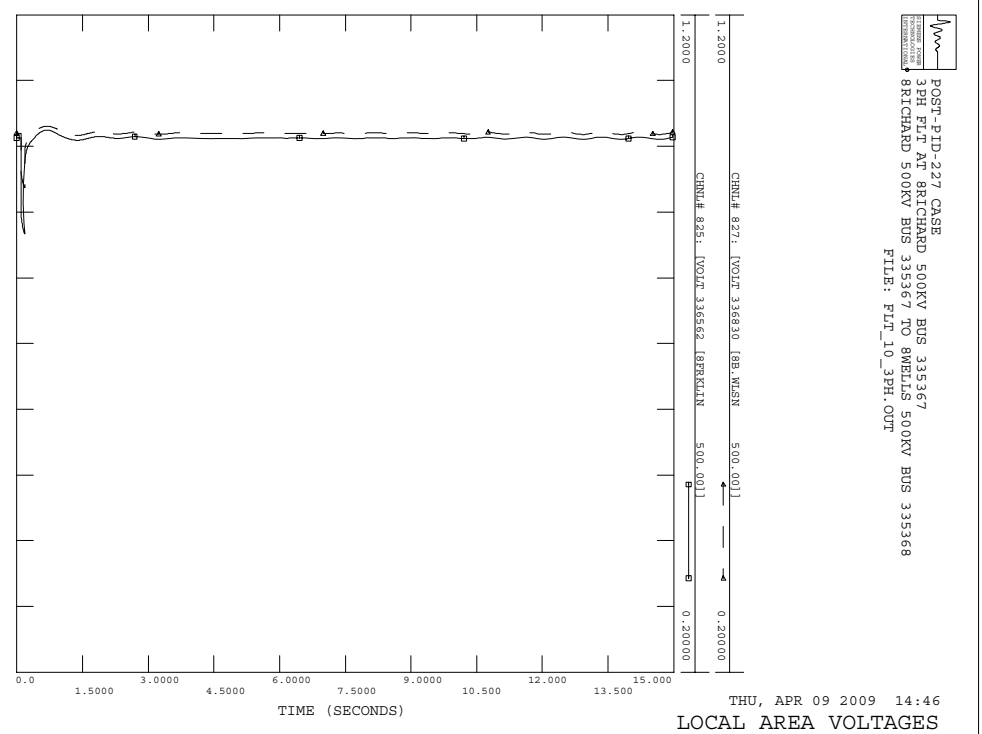
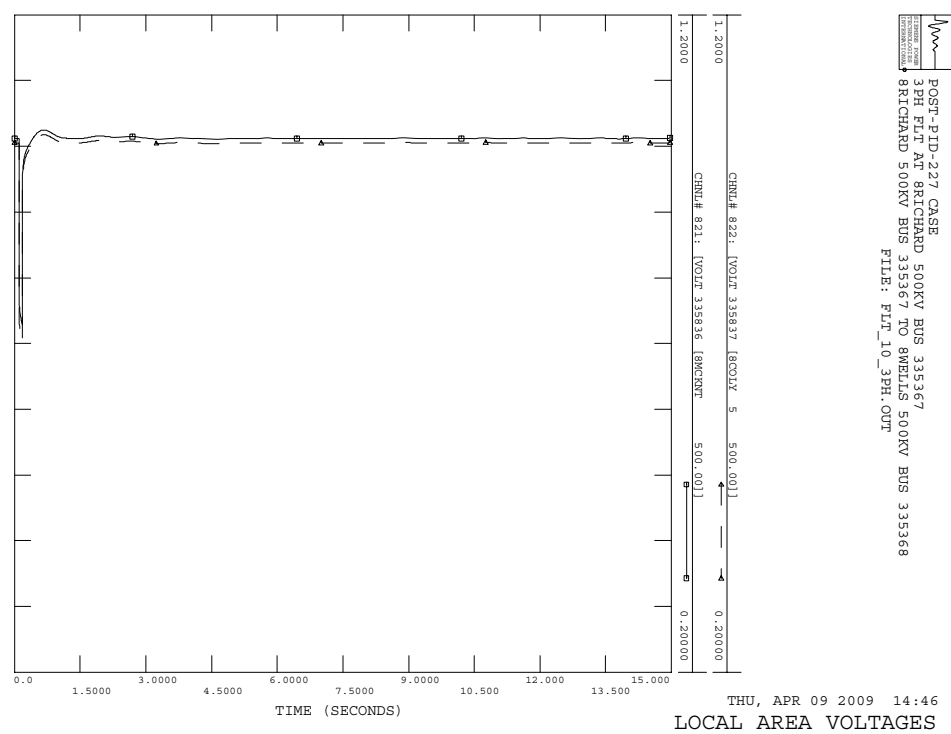
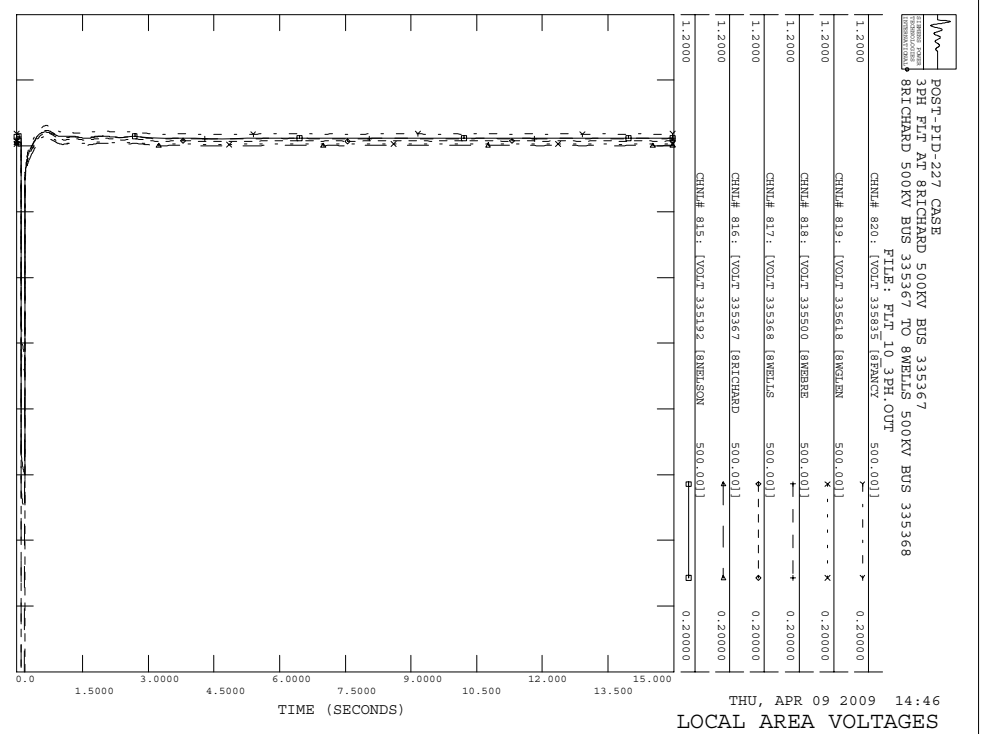
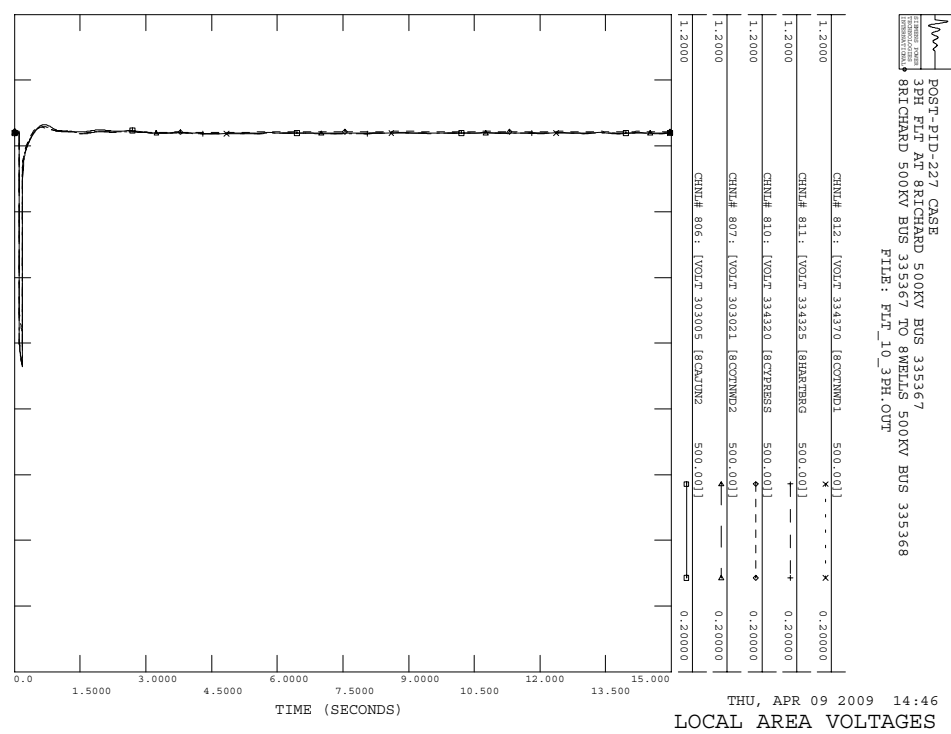


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PID-227 PLOTS

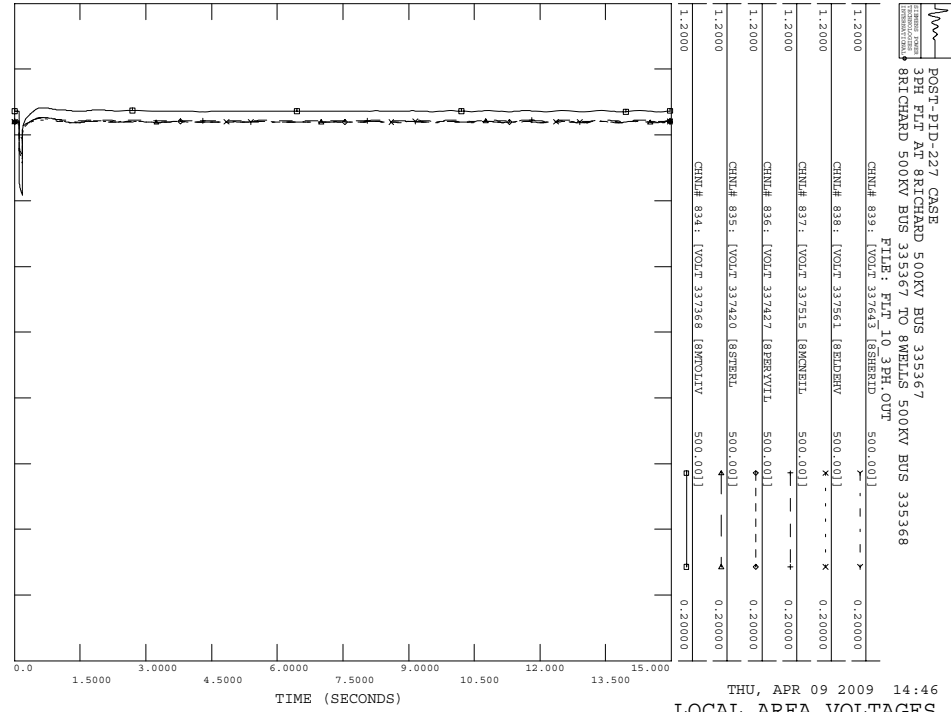
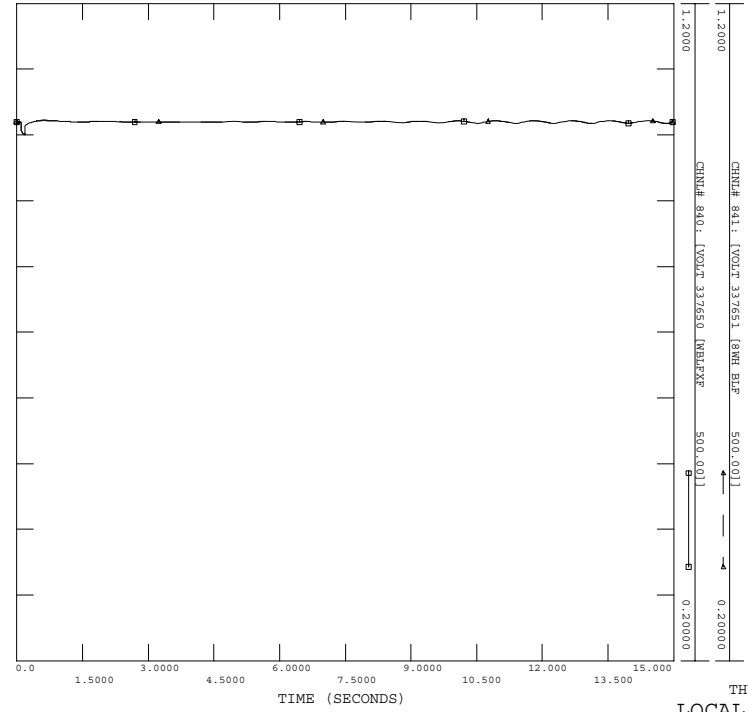
C.10 FLT_10_3PH

Three phase fault on the 8RICHARD (#335367) to 8WELLS (#335368) 500 kv line, near the 8RICHARD.

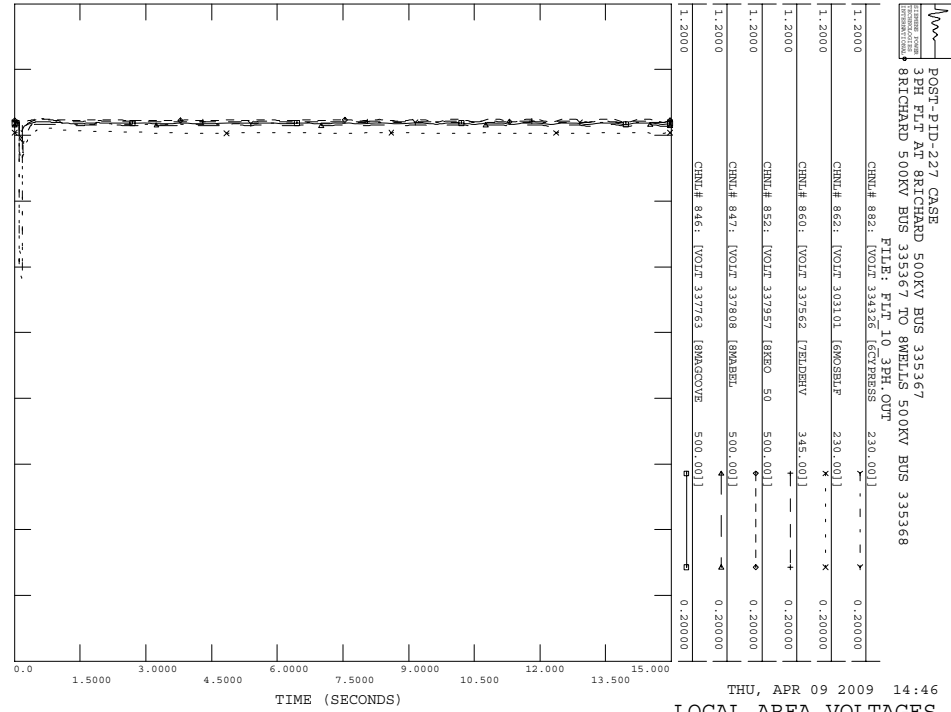
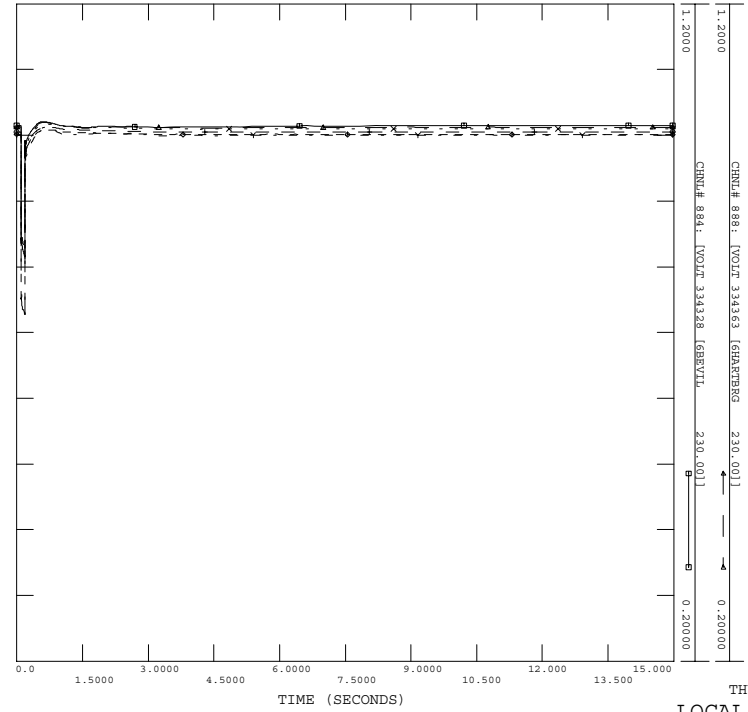
- a) Apply 3 Phase Fault at 8RICHARD 500KV BUS 335367
- b) Clear fault after 5 cycles by tripping line from 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368

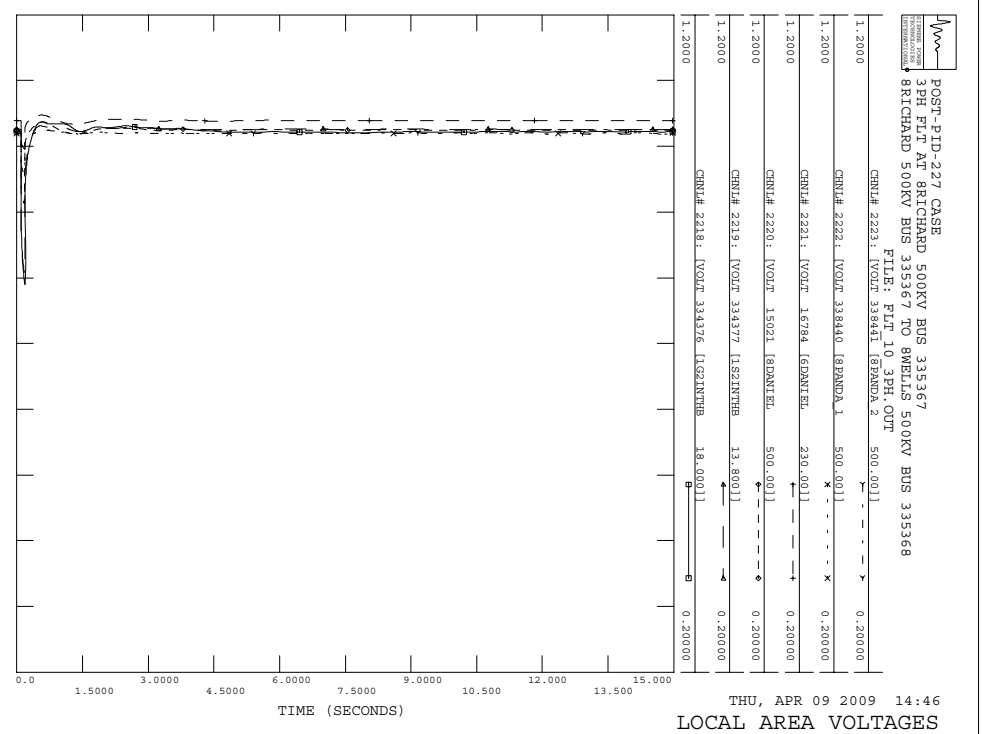
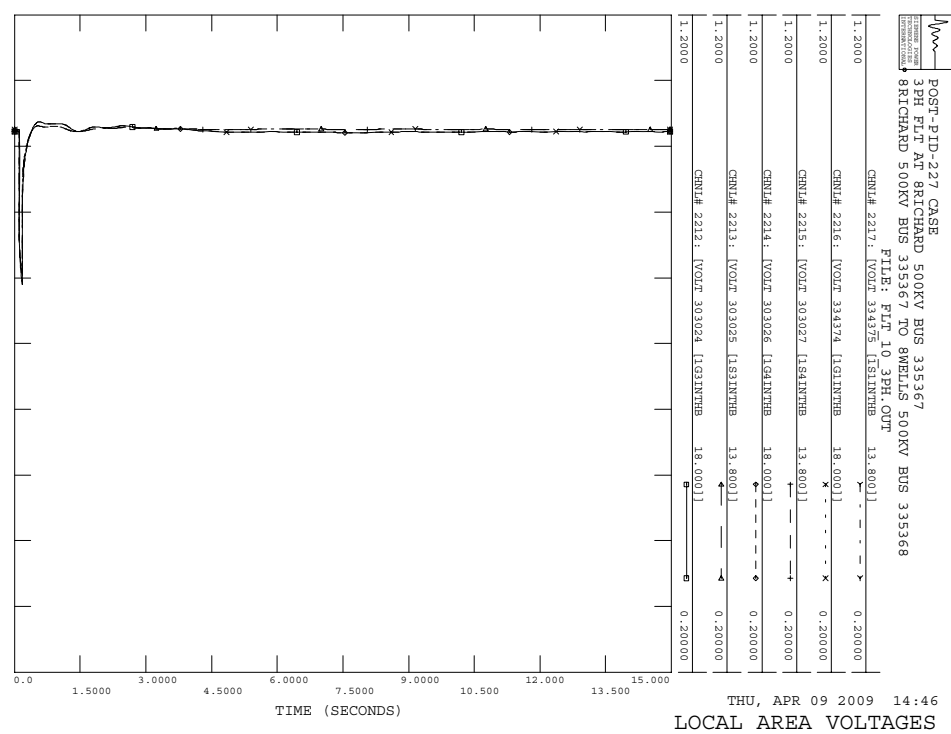
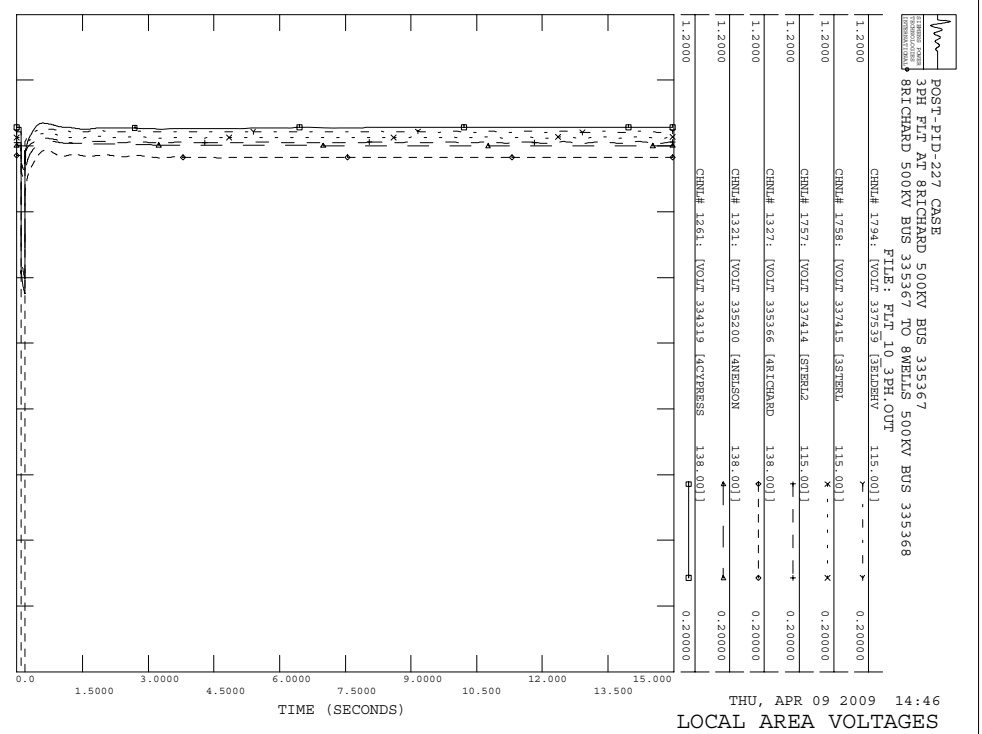
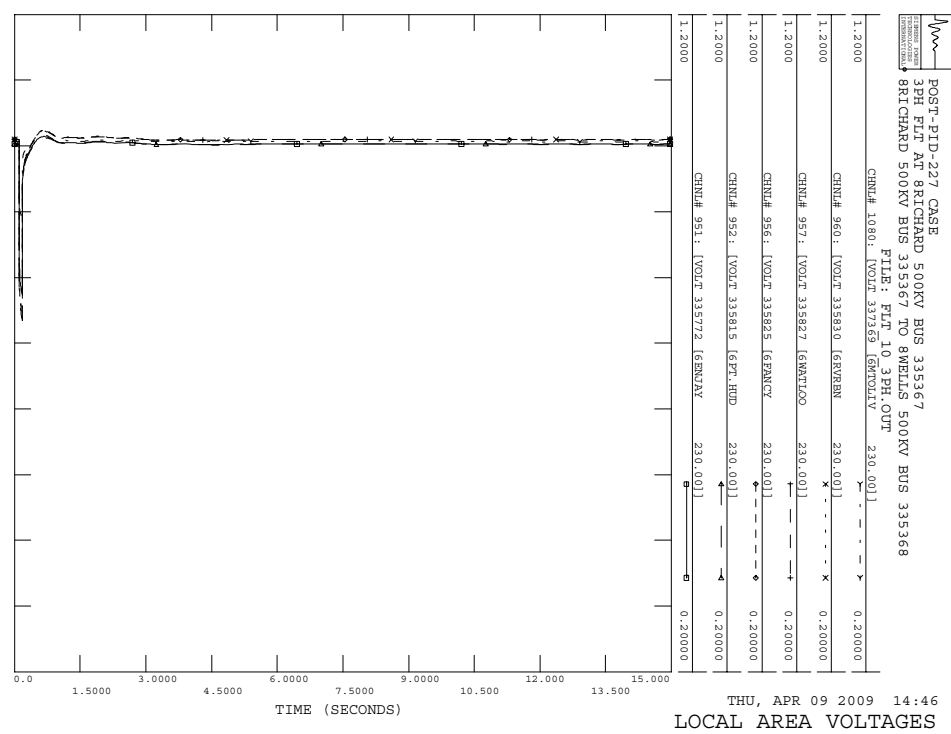


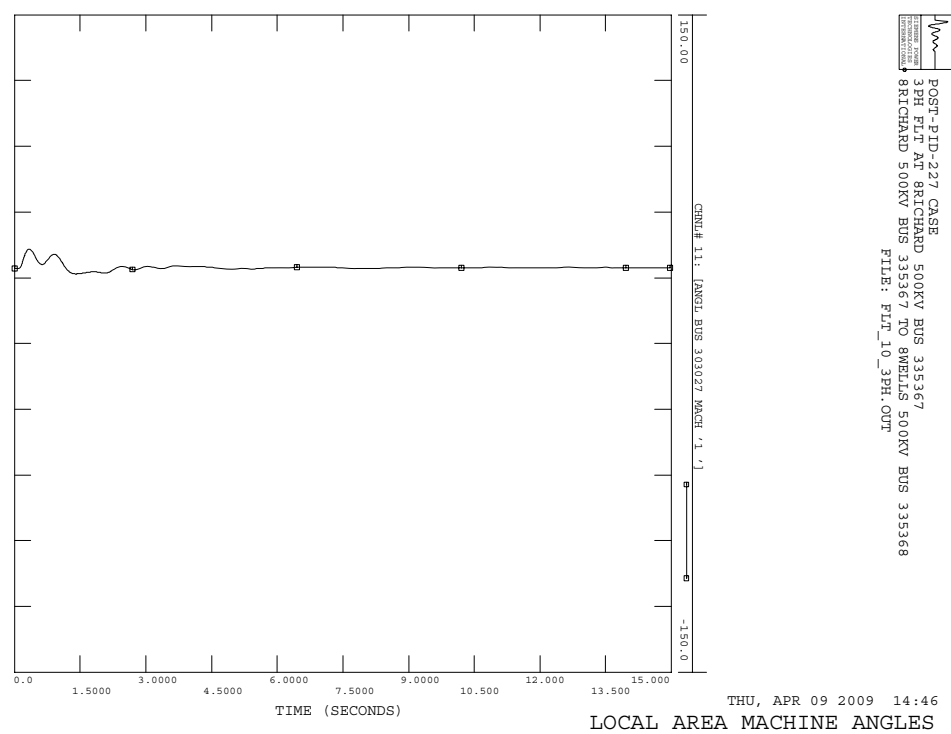
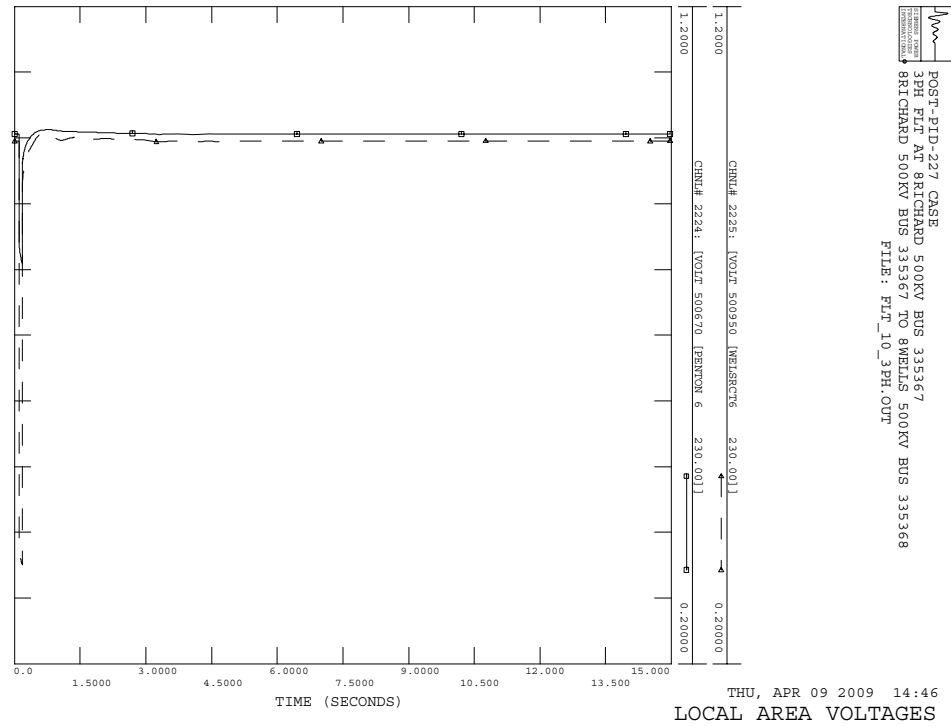
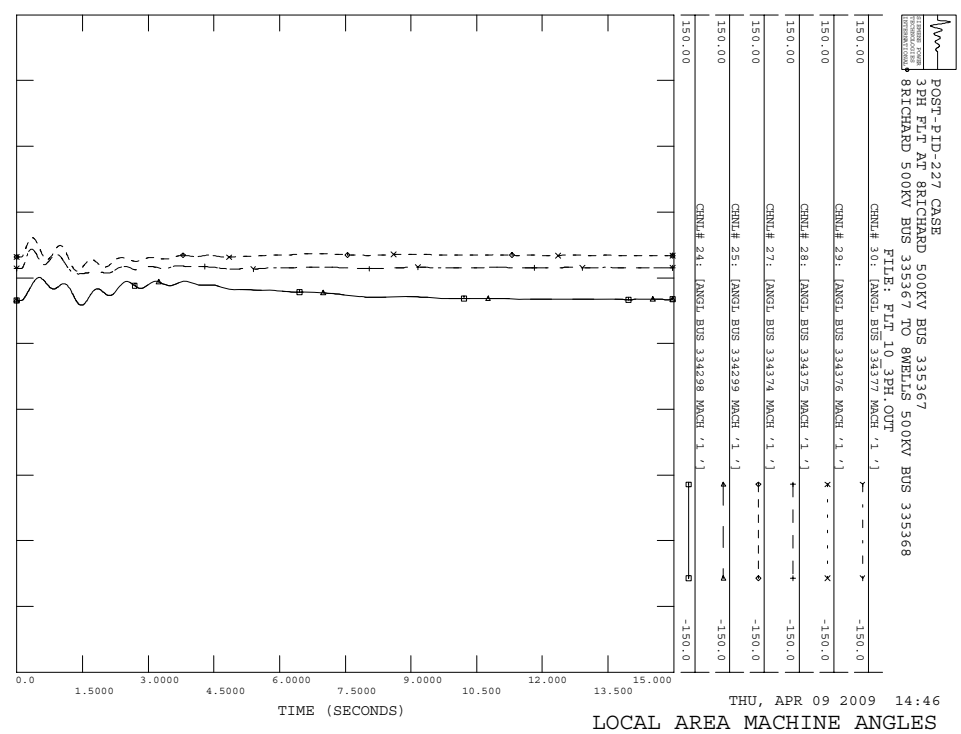
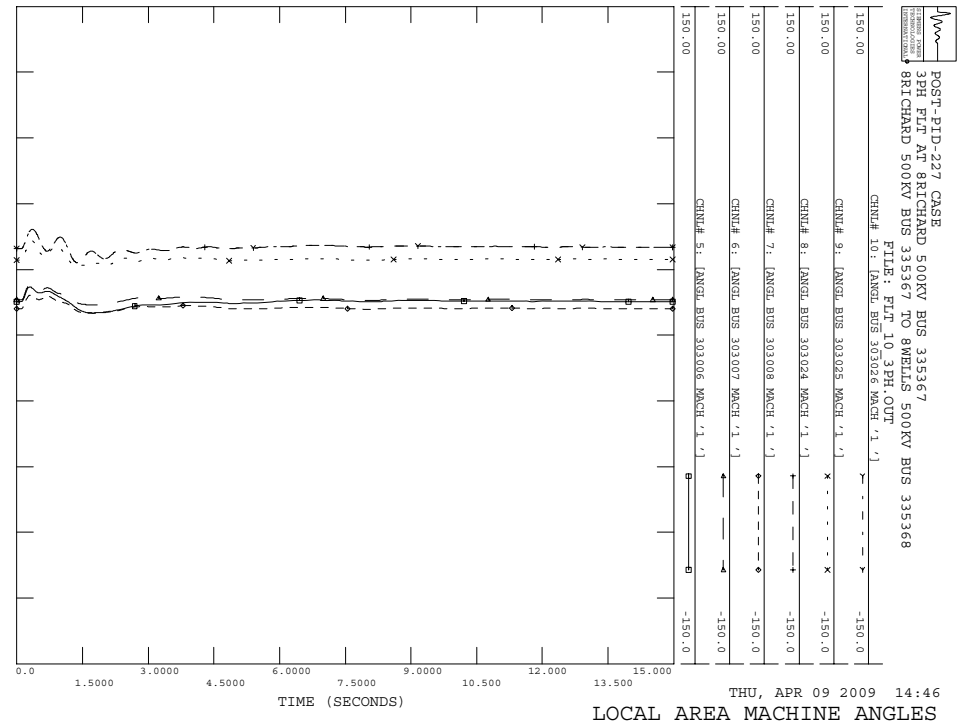
POST-PTD-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



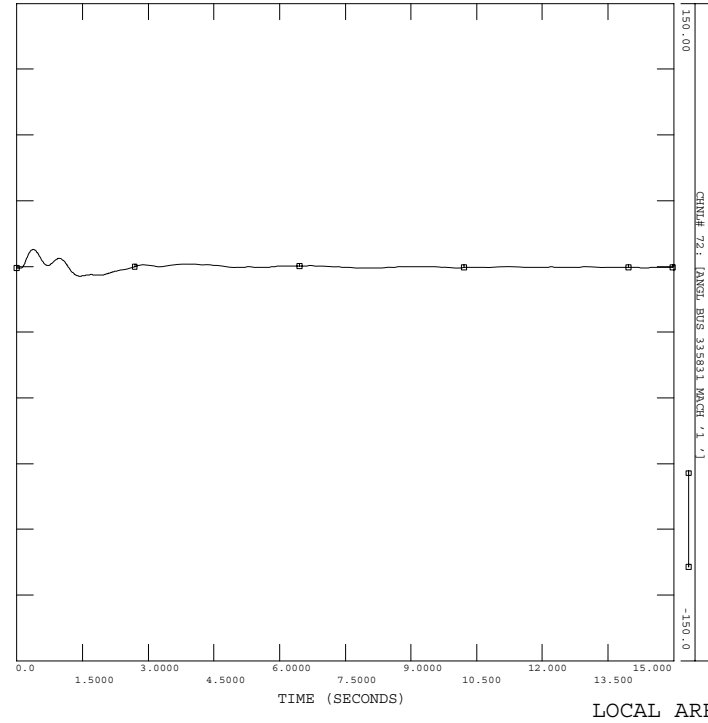
POST-PTD-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT





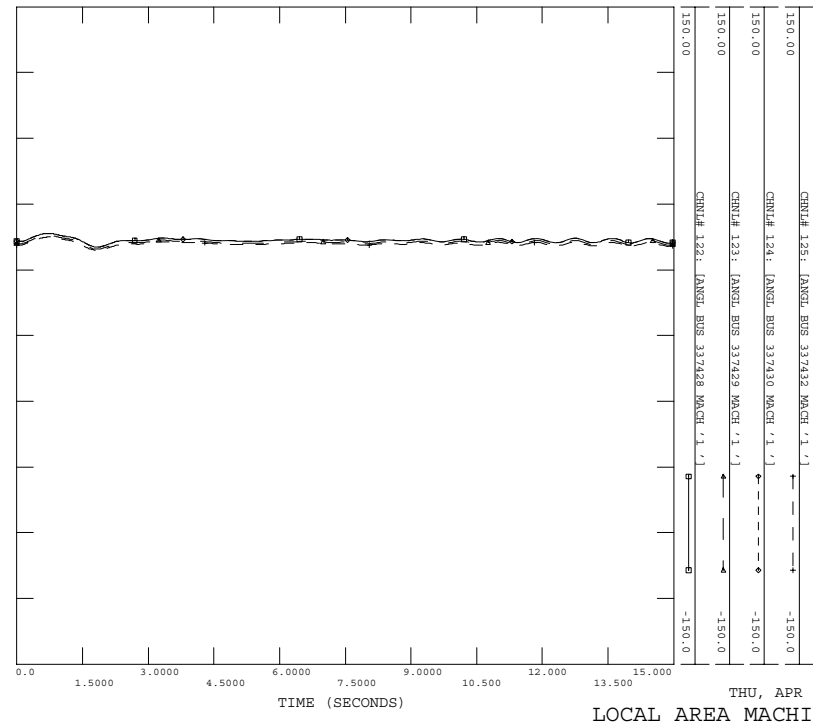


POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



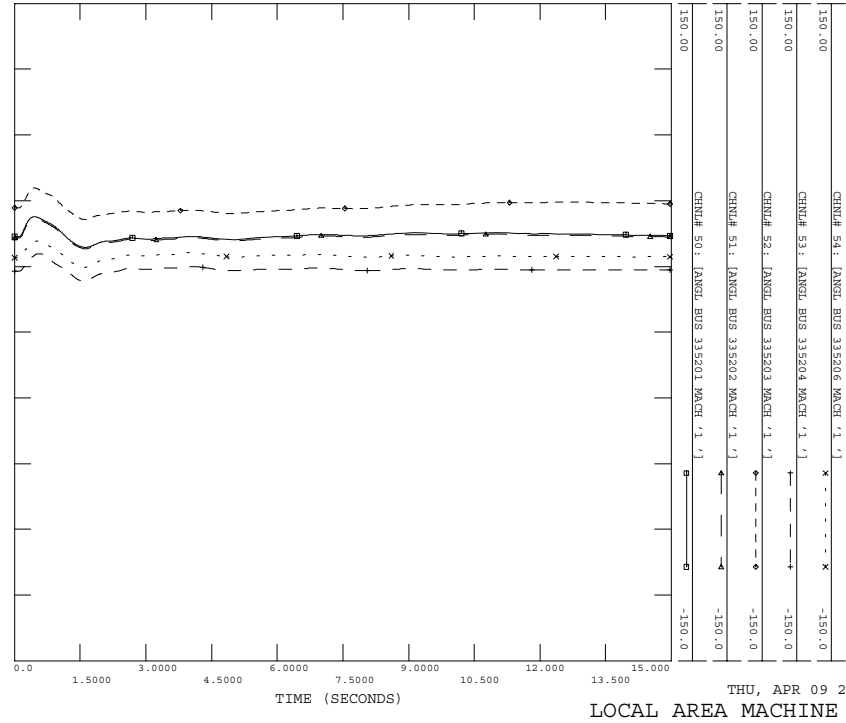
THU, APR 09 2009 14:46
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



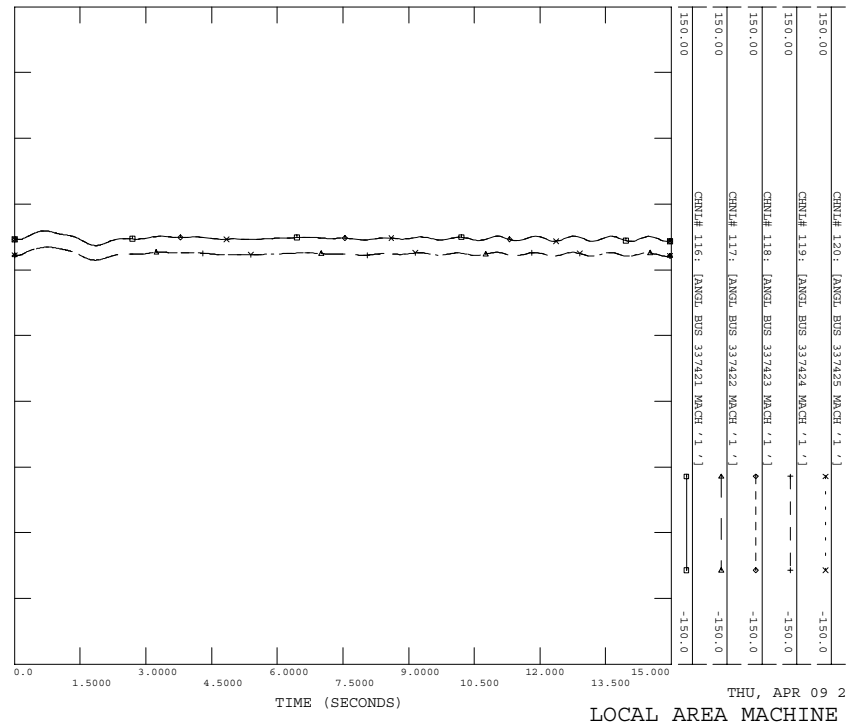
THU, APR 09 2009 14:46
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



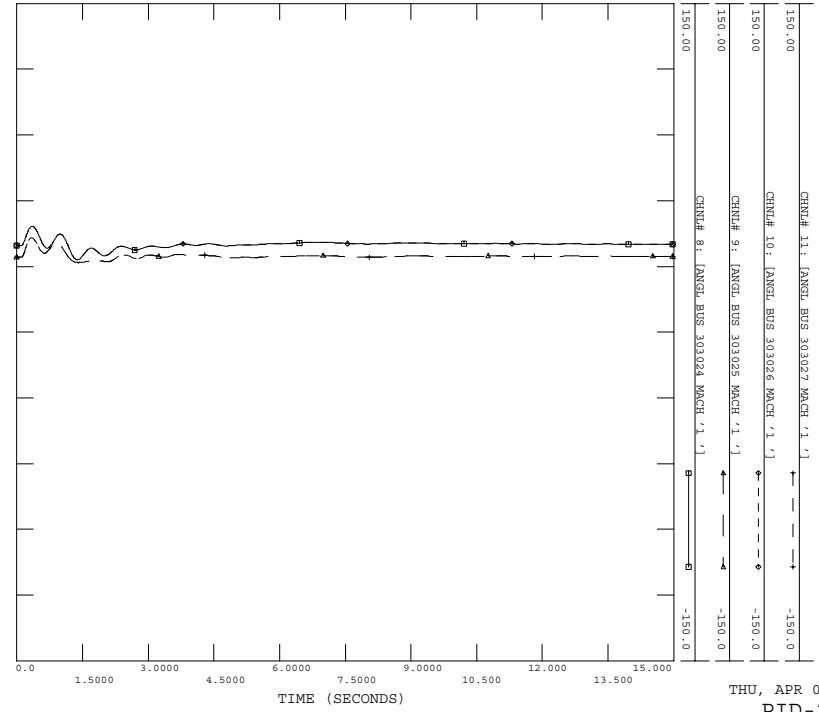
THU, APR 09 2009 14:46
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT

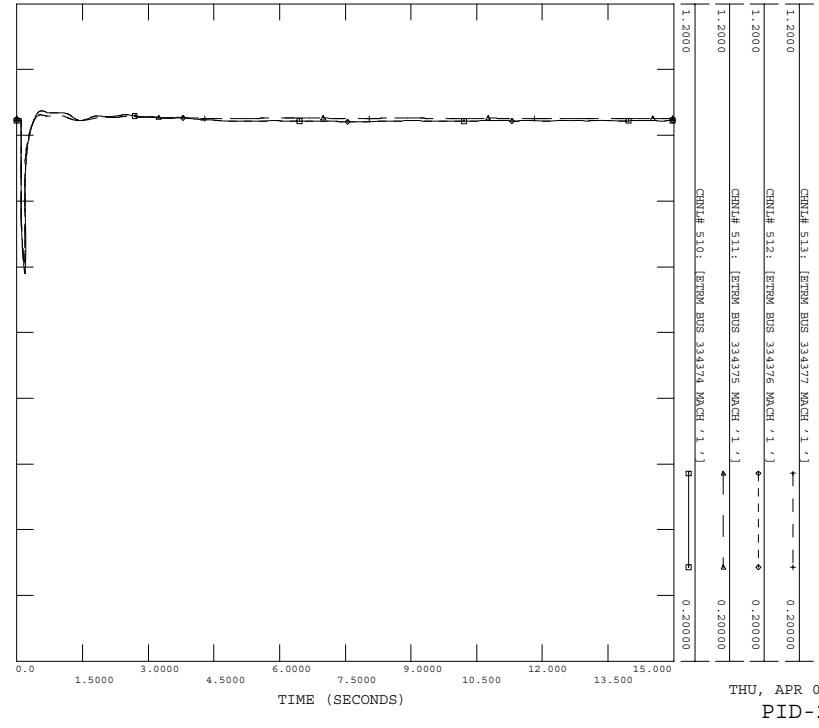


THU, APR 09 2009 14:46
 LOCAL AREA MACHINE ANGLES

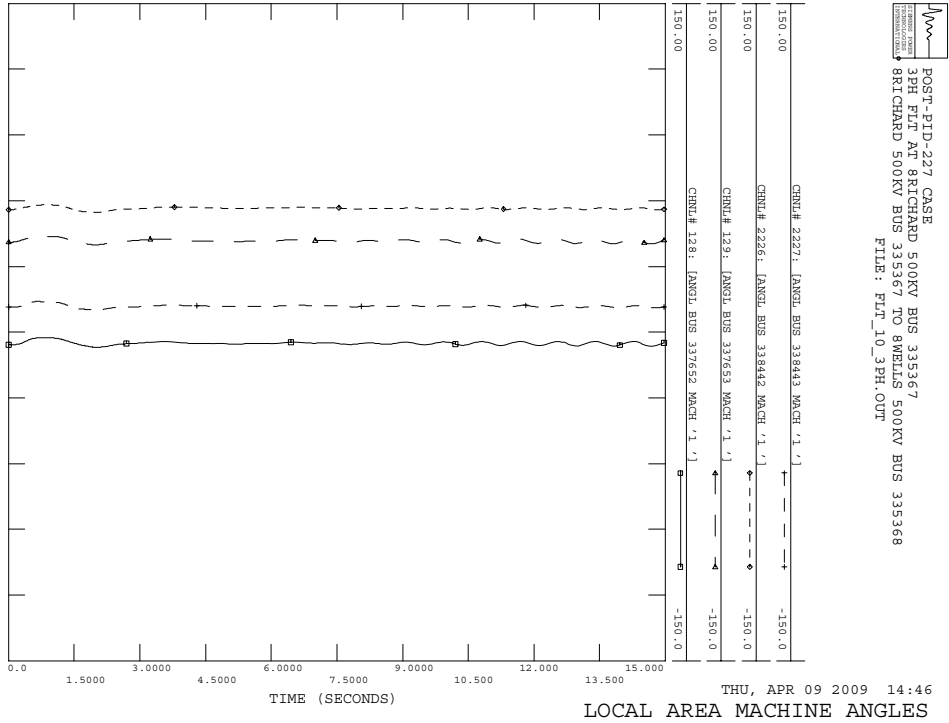
POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



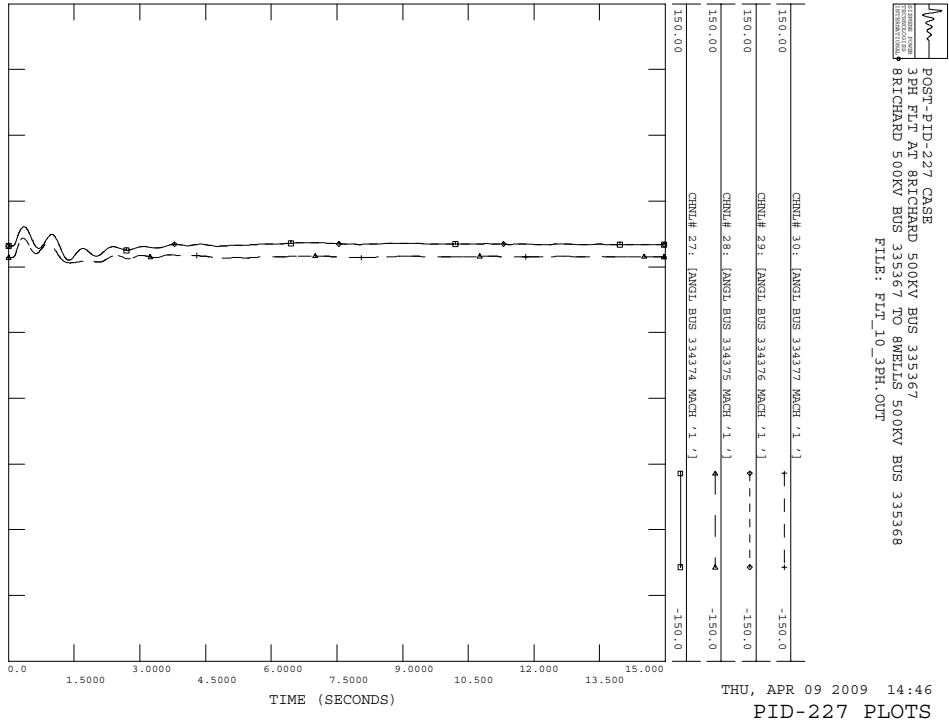
POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



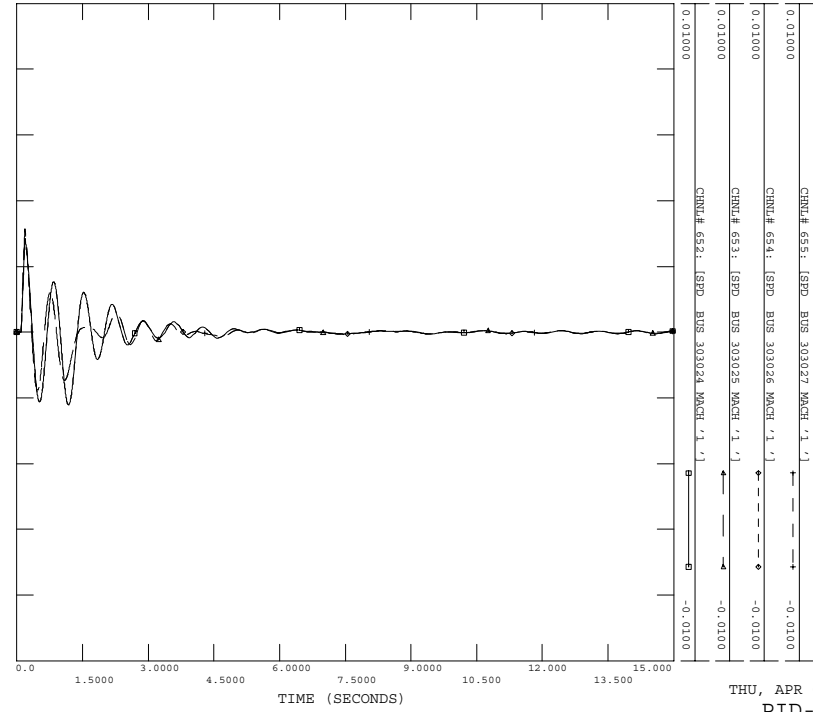
POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



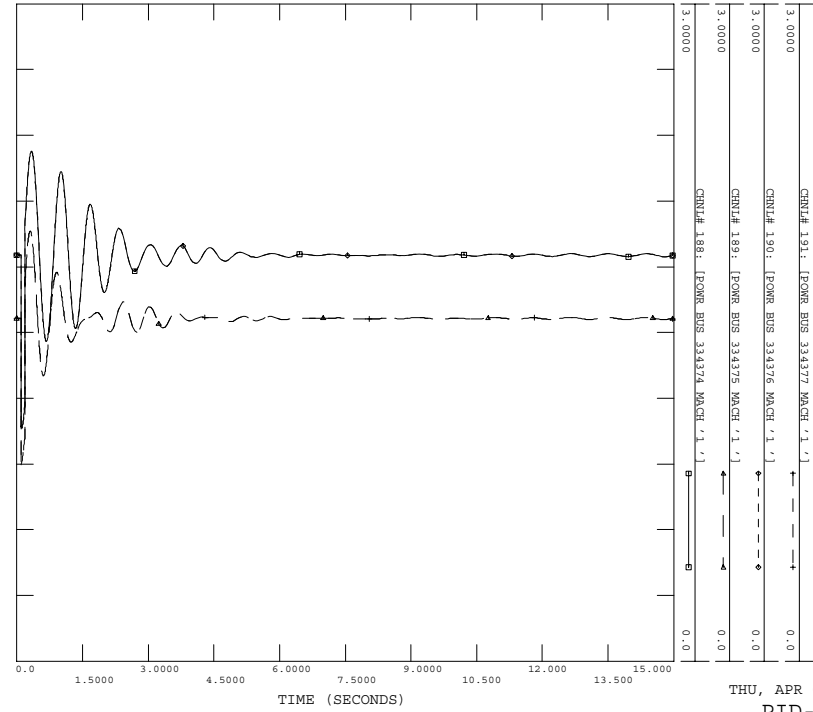
POST-PID-227 CASE
 3PH FLT AT RICHARD 500KV BUS 335367
 RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



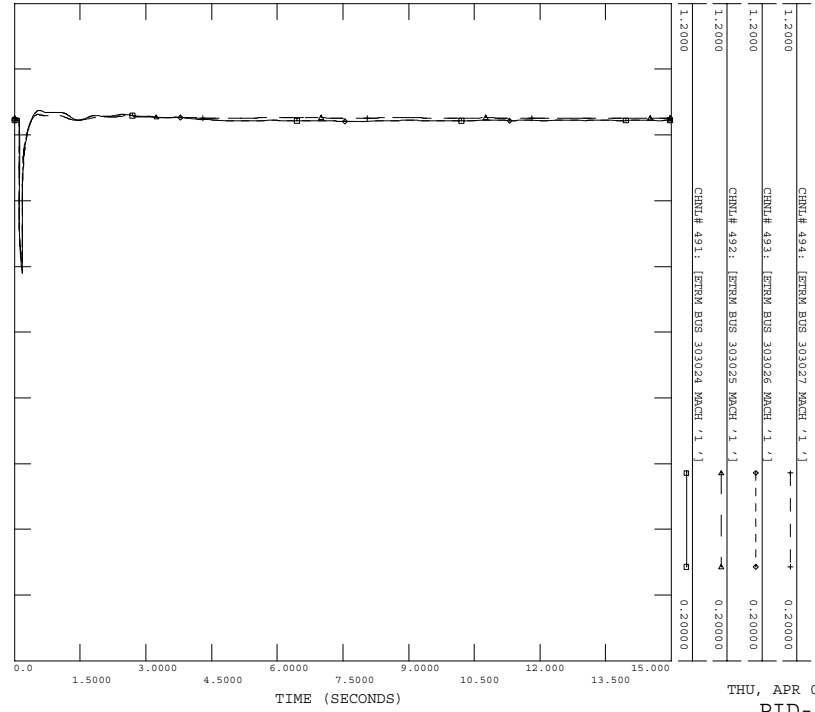
POST-PID-227 CASE
 3PH FLT AT BRICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



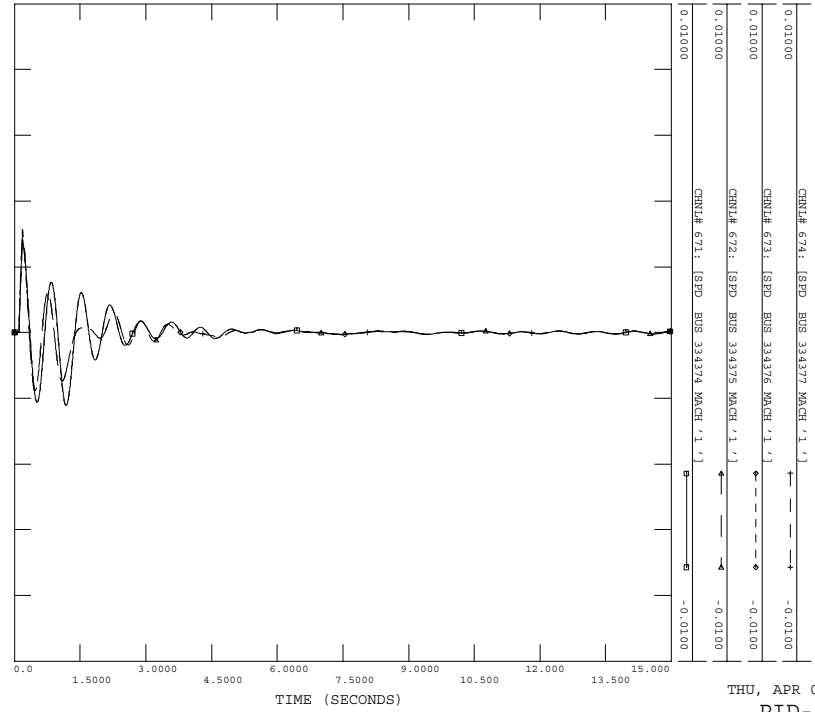
POST-PID-227 CASE
 3PH FLT AT BRICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



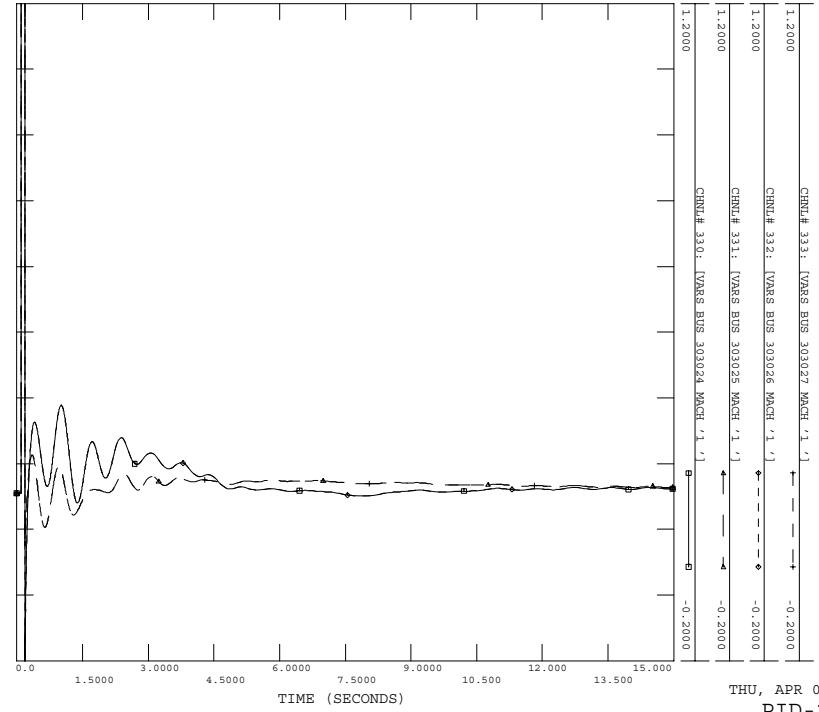
POST-PID-227 CASE
 3PH FLT AT BRICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT



POST-PID-227 CASE
 3PH FLT AT BRICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
 FILE: FLT_10_3PH.OUT

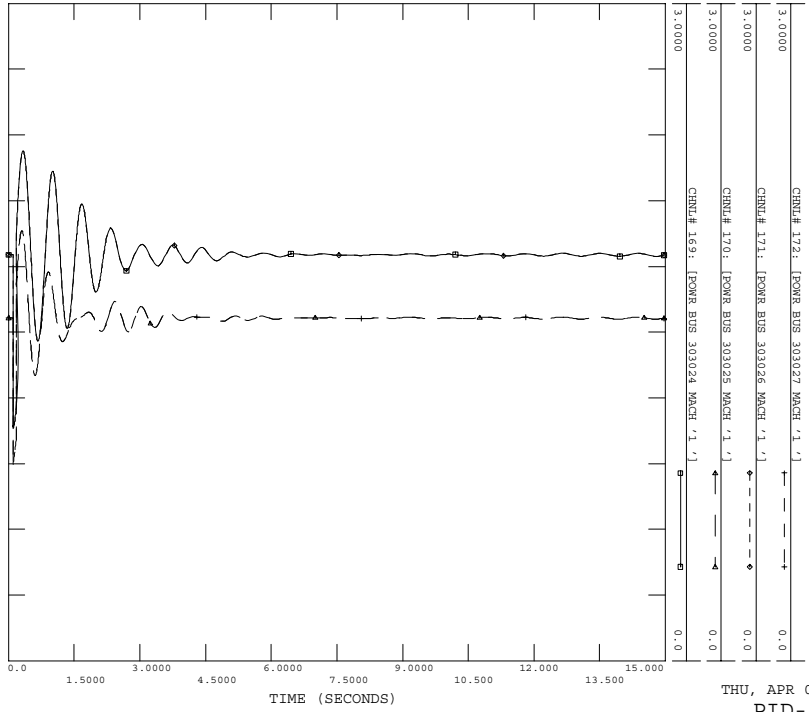


POST-PID-227 CASE
3PH FLT AT BRICHARD 500KV BUS 335367
BRICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
FILE: FLT_10_3PH.OUT



THU, APR 09 2009 14:46
PID-227 PLOTS

POST-PID-227 CASE
3PH FLT AT BRICHARD 500KV BUS 335367
BRICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368
FILE: FLT_10_3PH.OUT

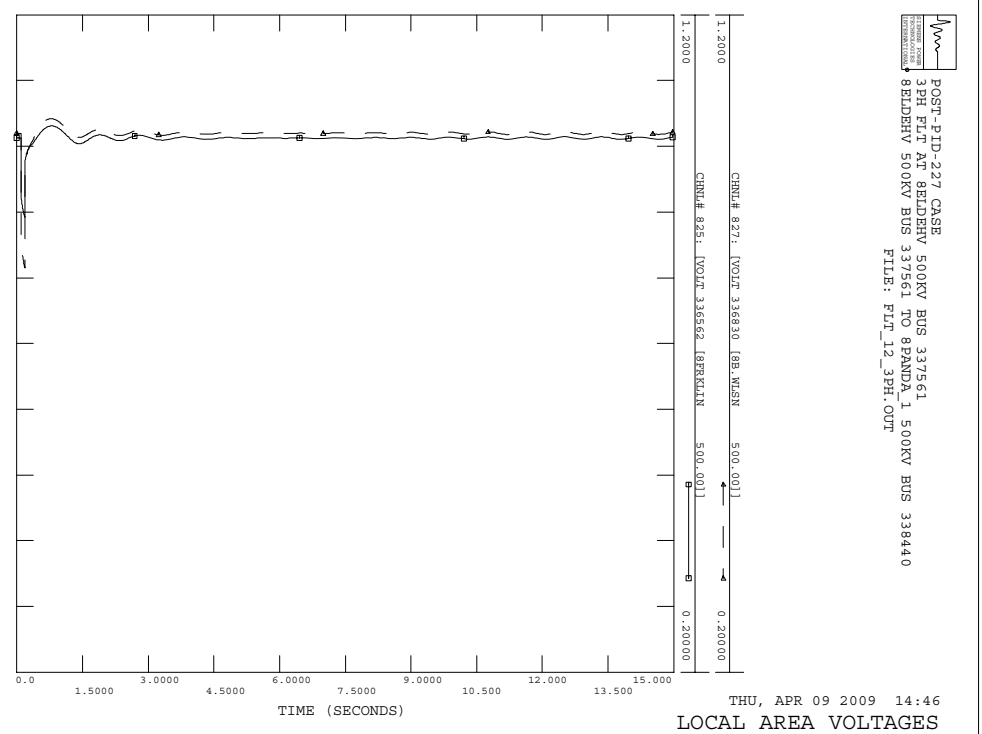
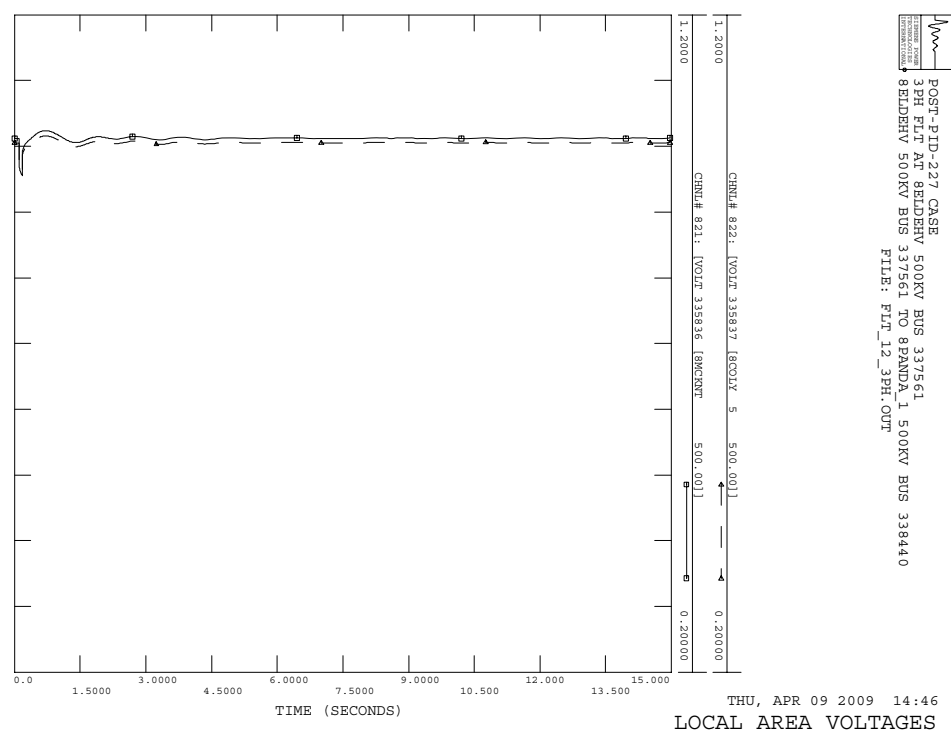
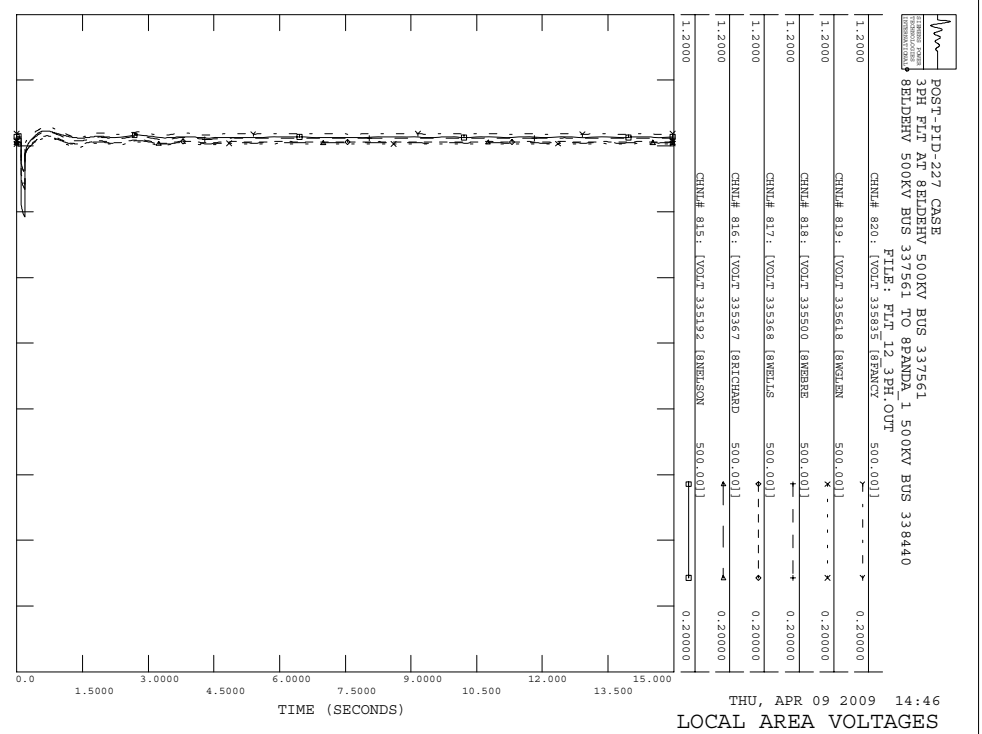
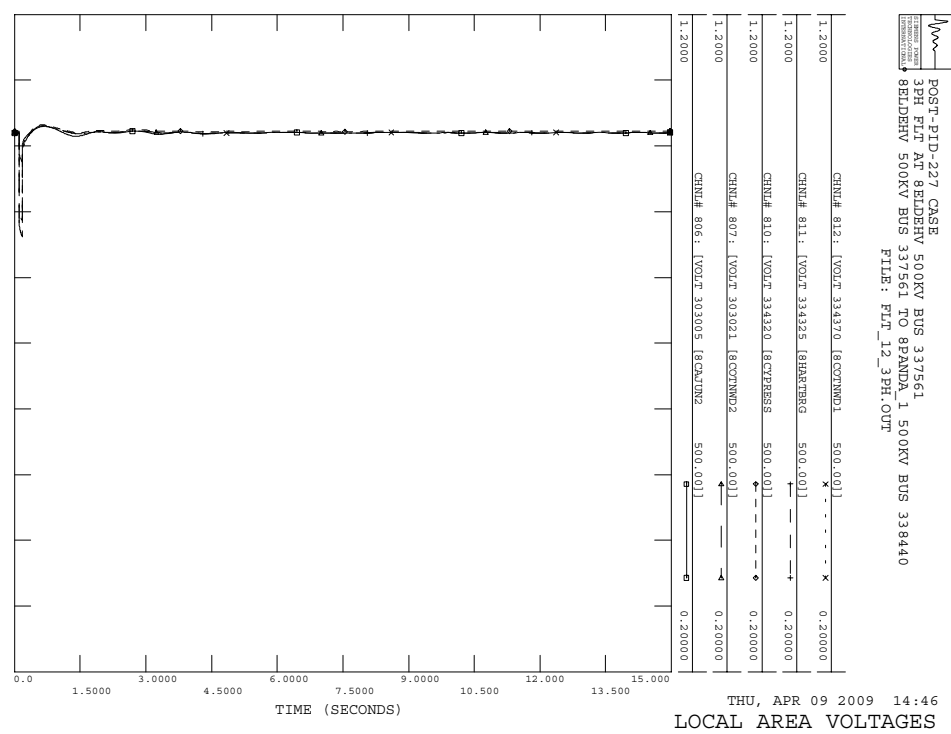


THU, APR 09 2009 14:46
PID-227 PLOTS

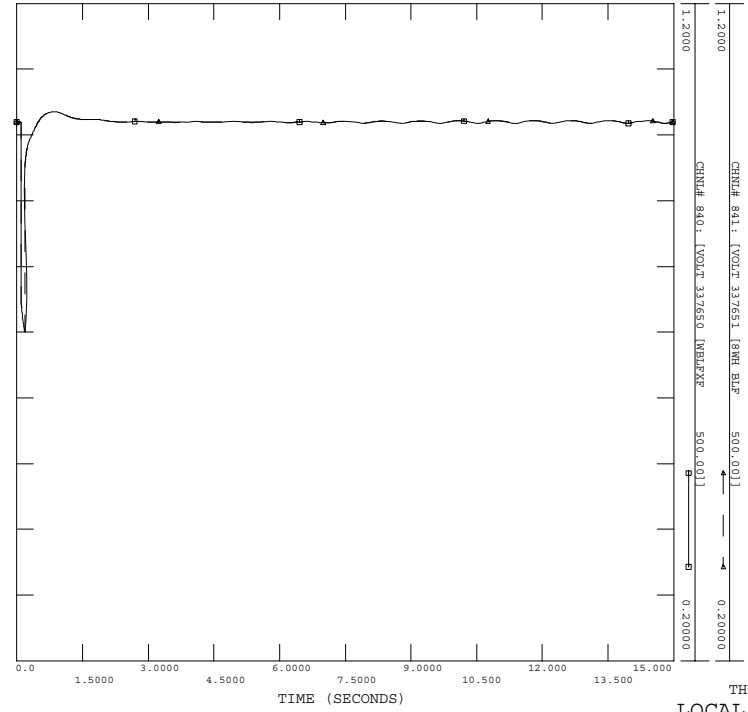
C.11 FLT_12_3PH

Three phase fault on the 8ELDEHV (#337561) to 8PANDA_1 (#338440) 500 kv line, near the 8ELDEHV.

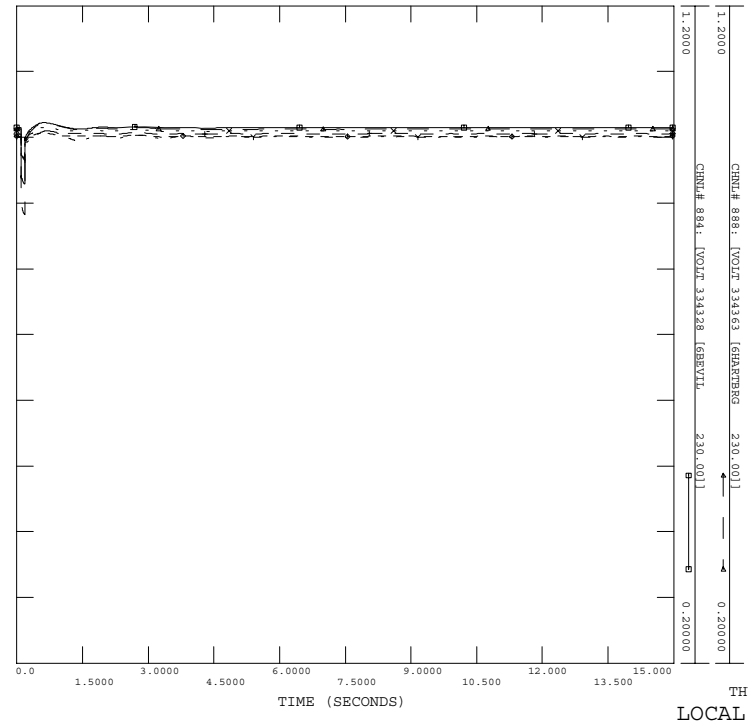
- a) Apply 3 Phase Fault at 8ELDEHV 500KV BUS 337561
- b) Clear fault after 5 cycles by tripping line from 8ELDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440



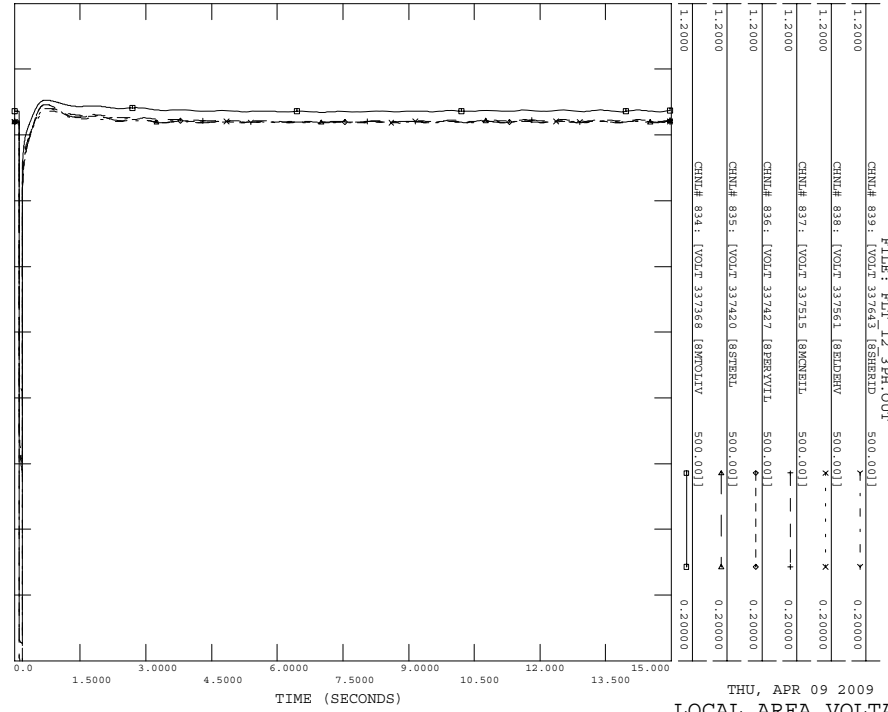
POST-PTD-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



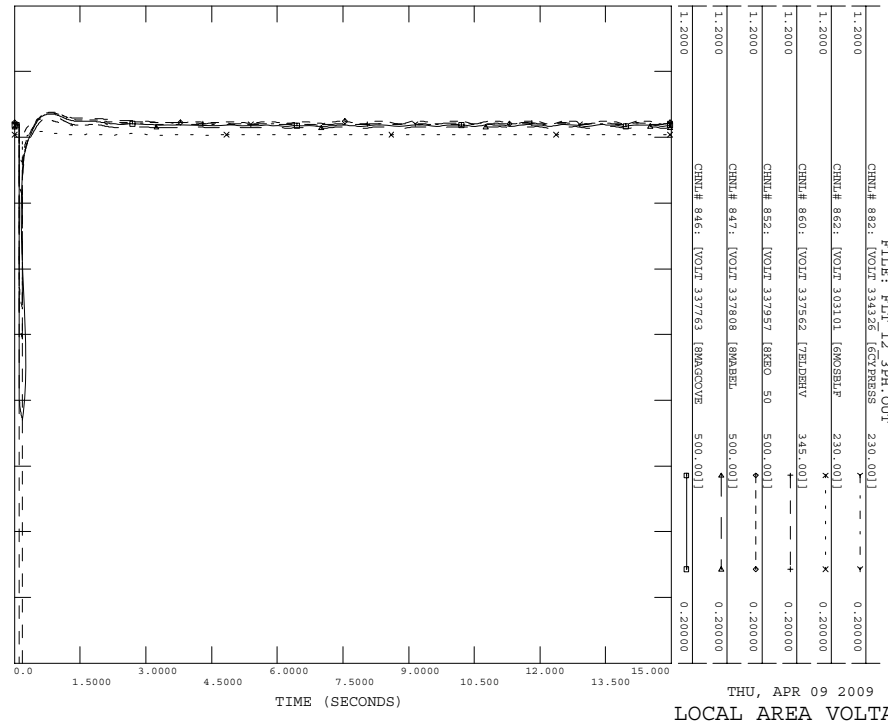
POST-PTD-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT

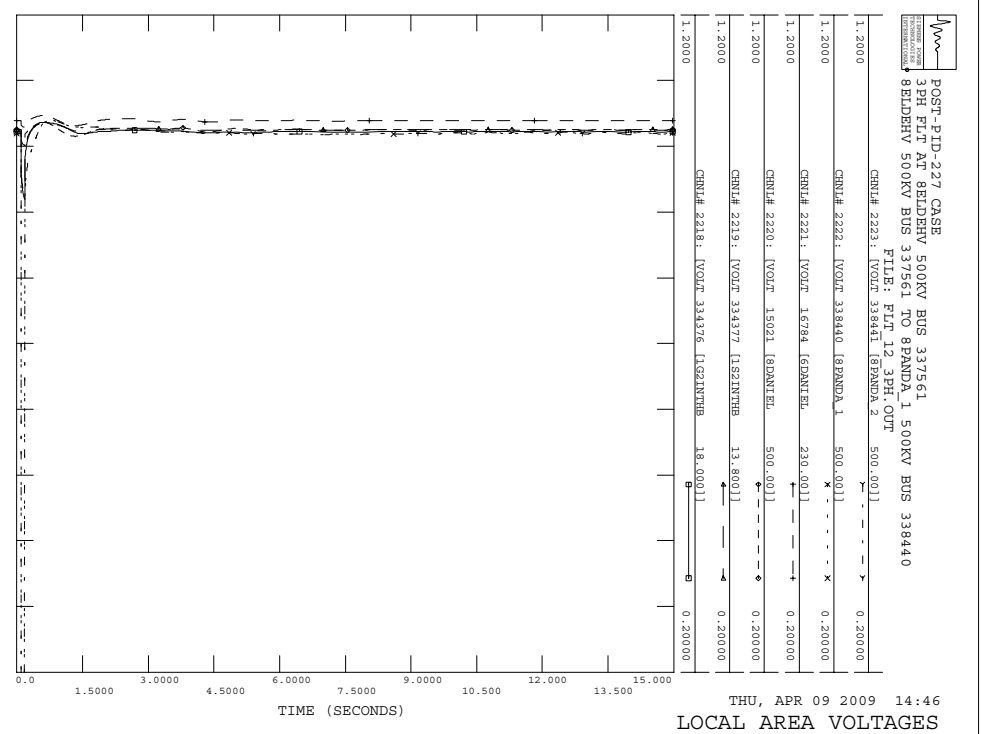
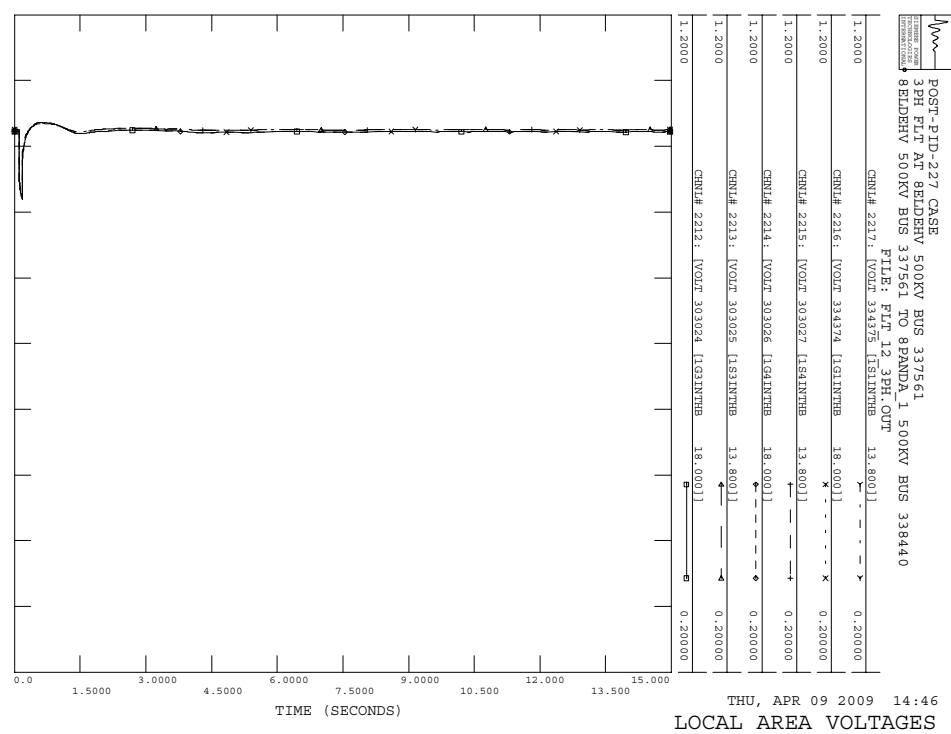
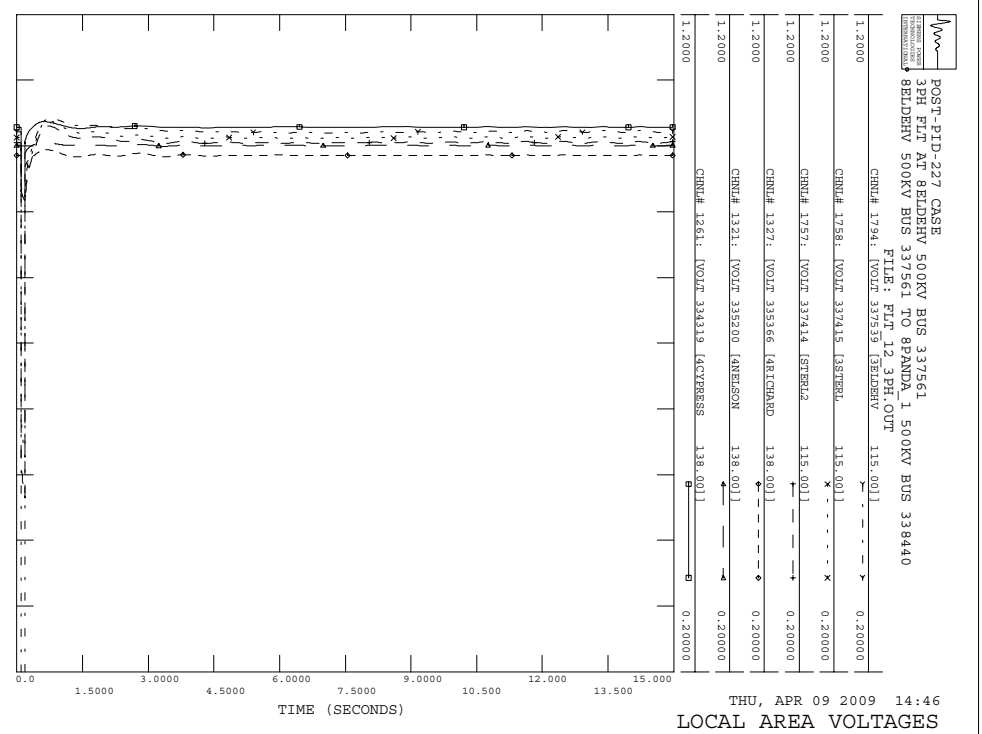
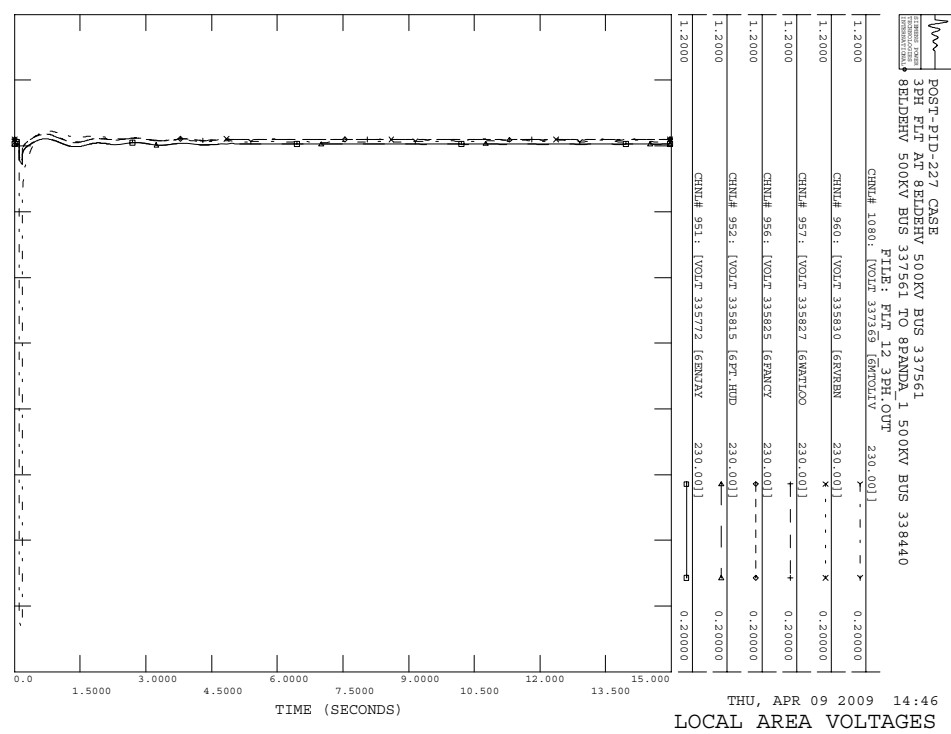


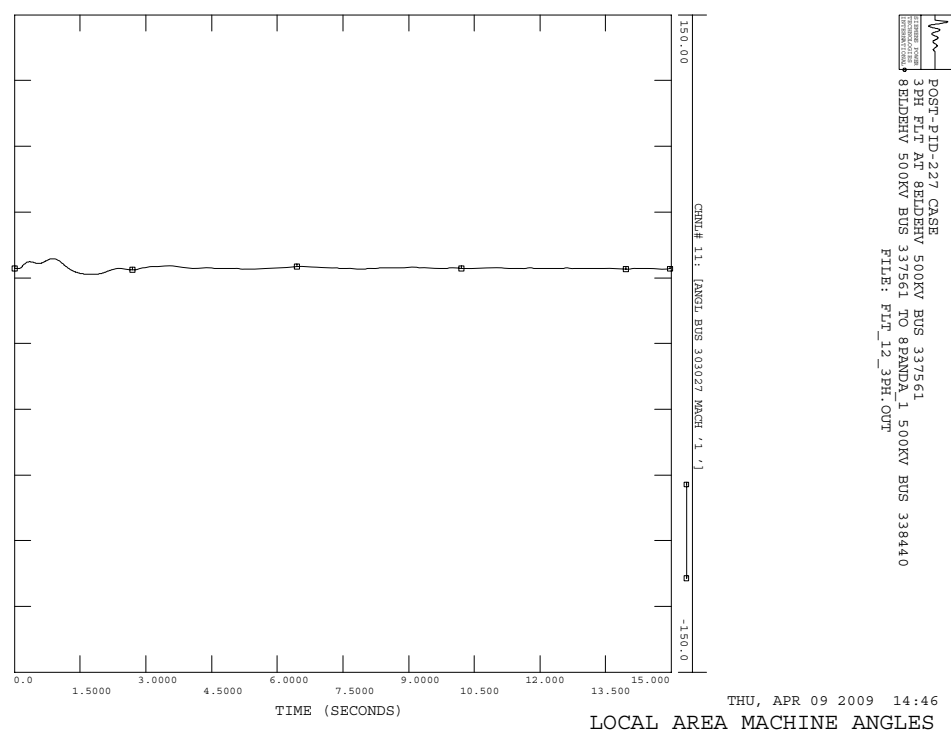
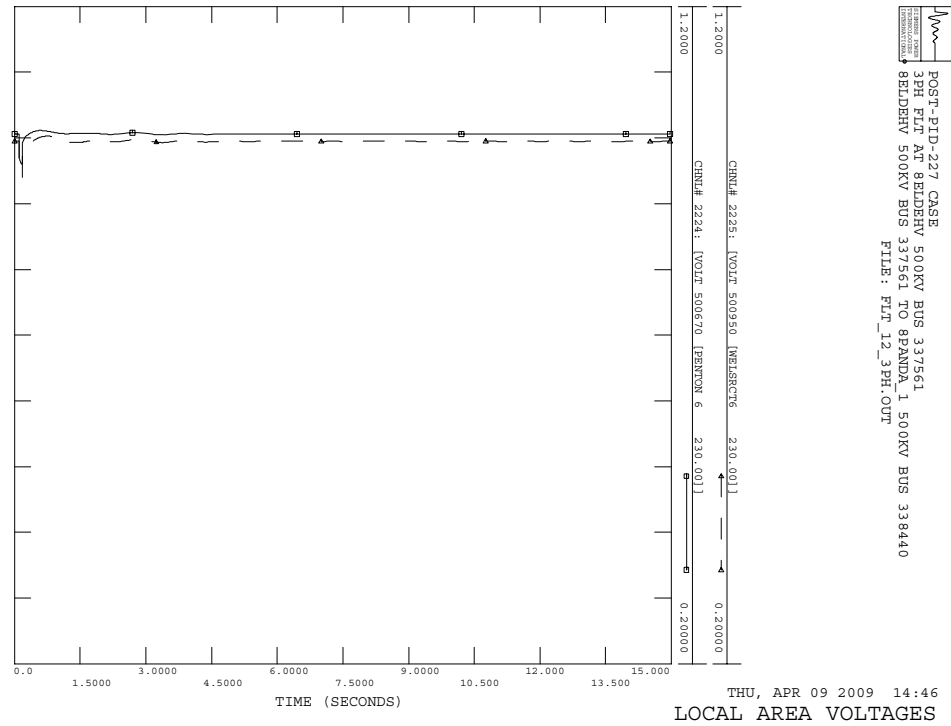
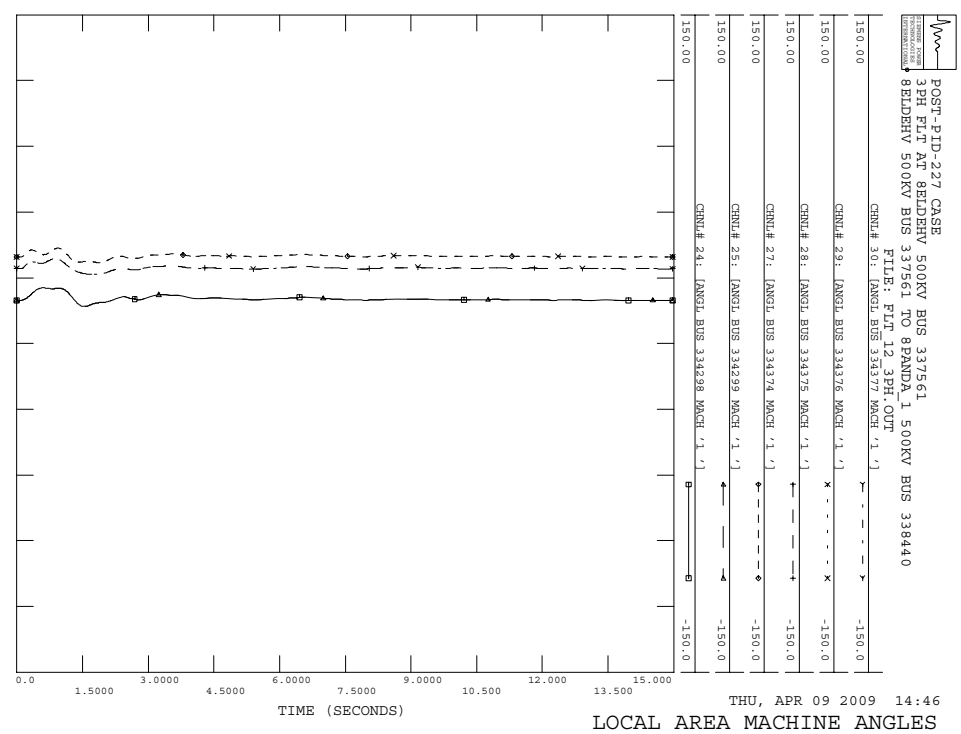
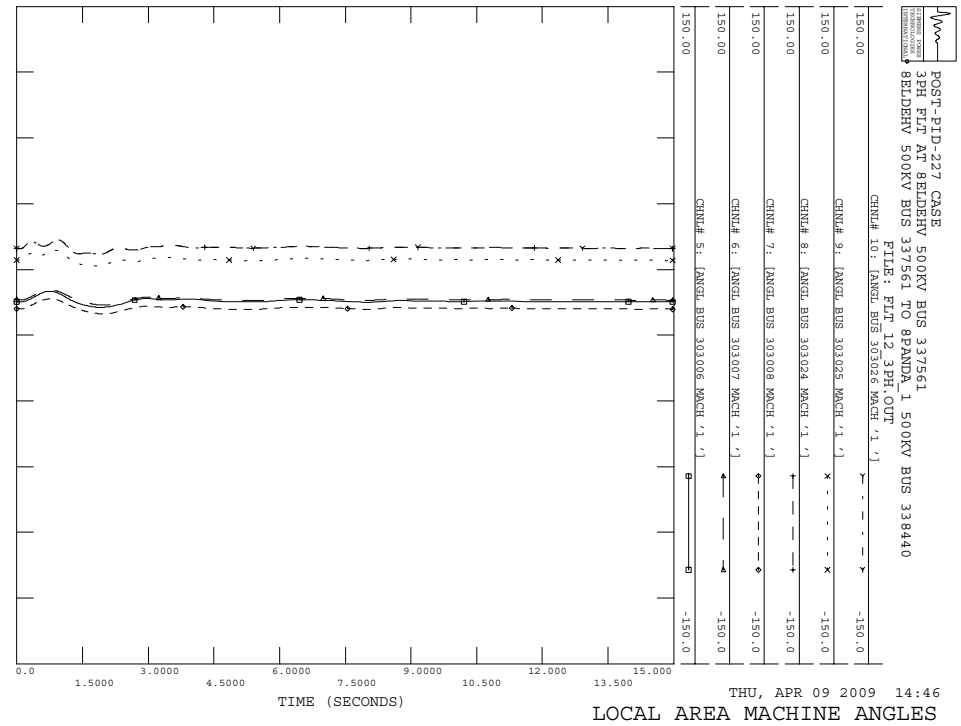
POST-PTD-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



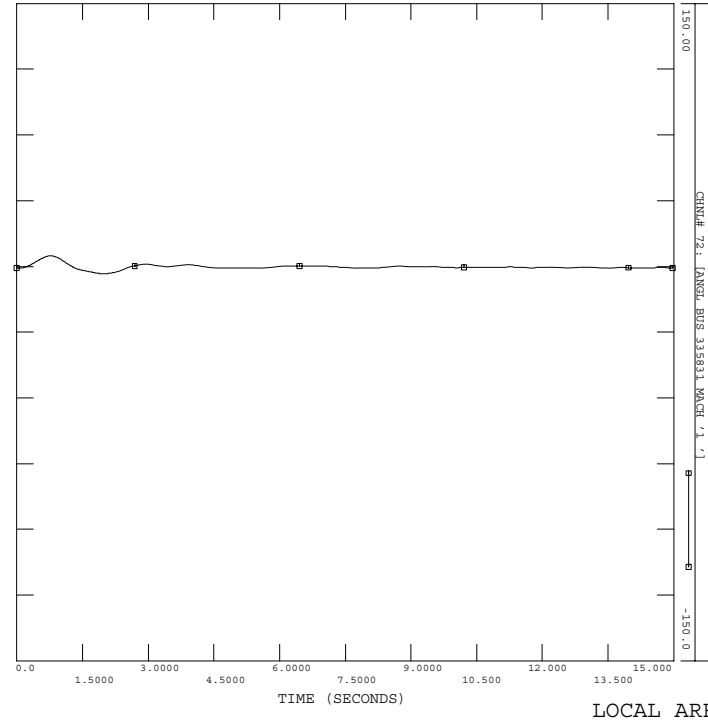
POST-PTD-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT





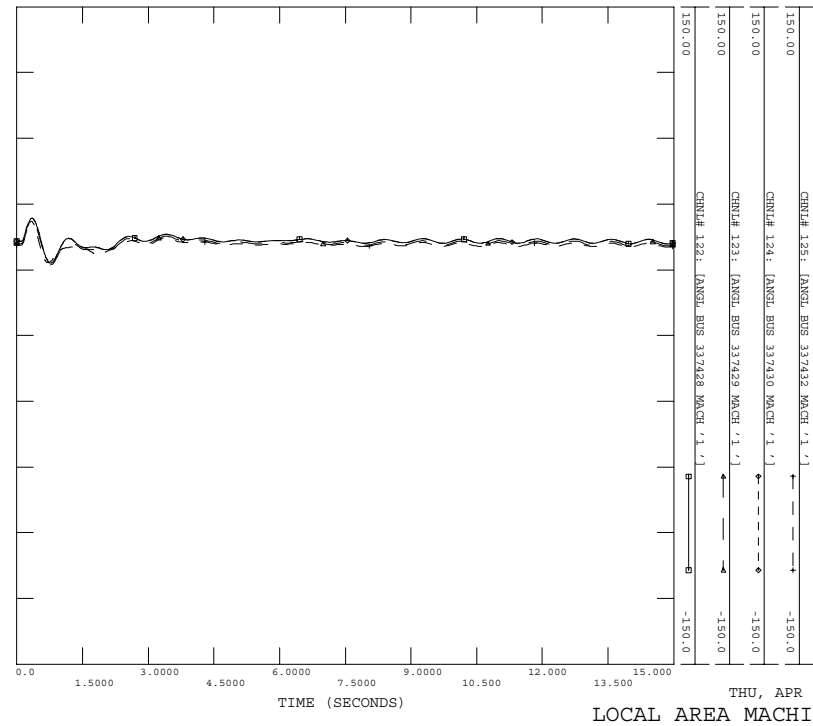


POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



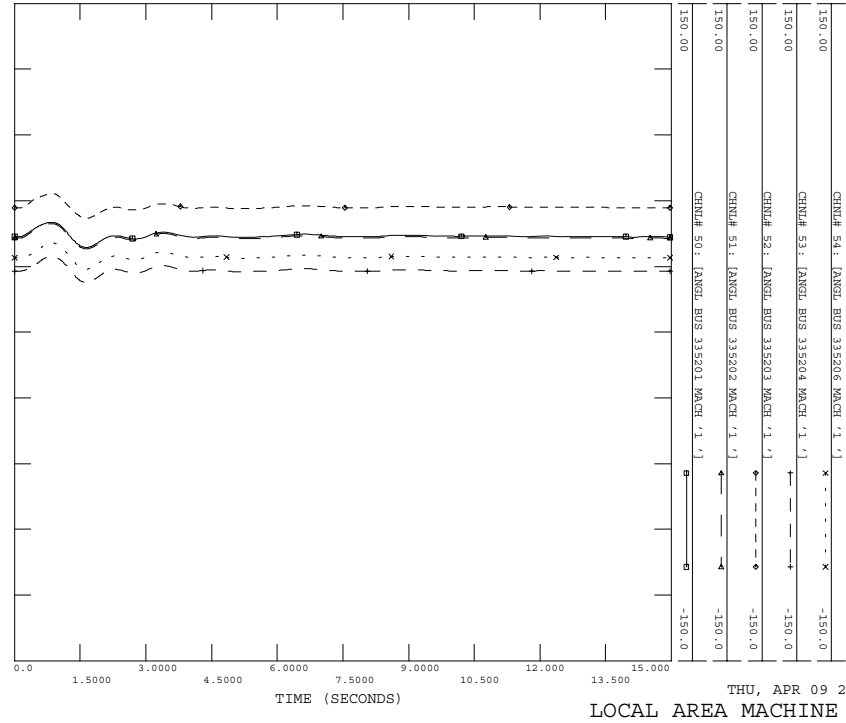
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



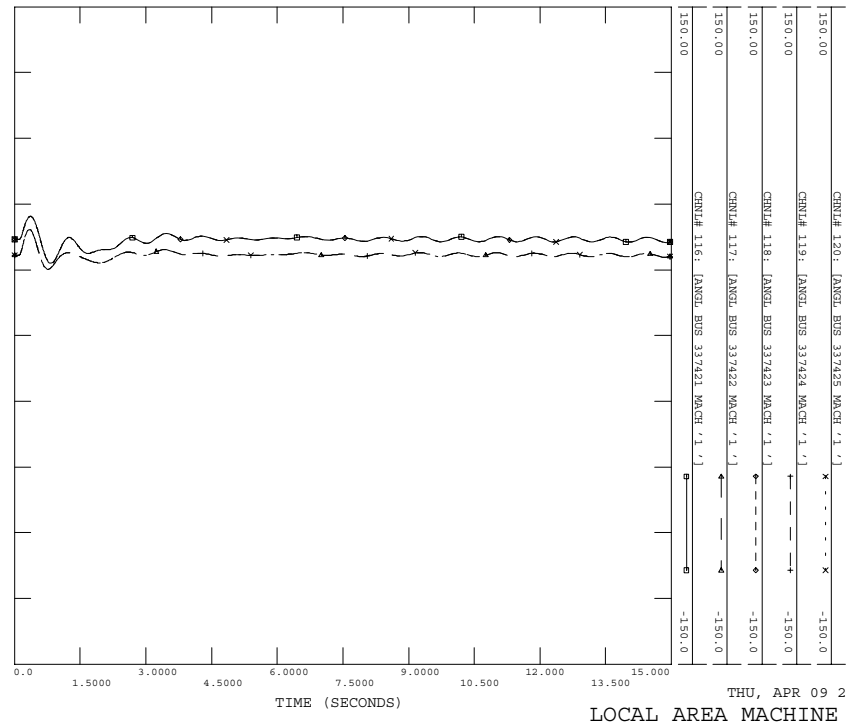
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



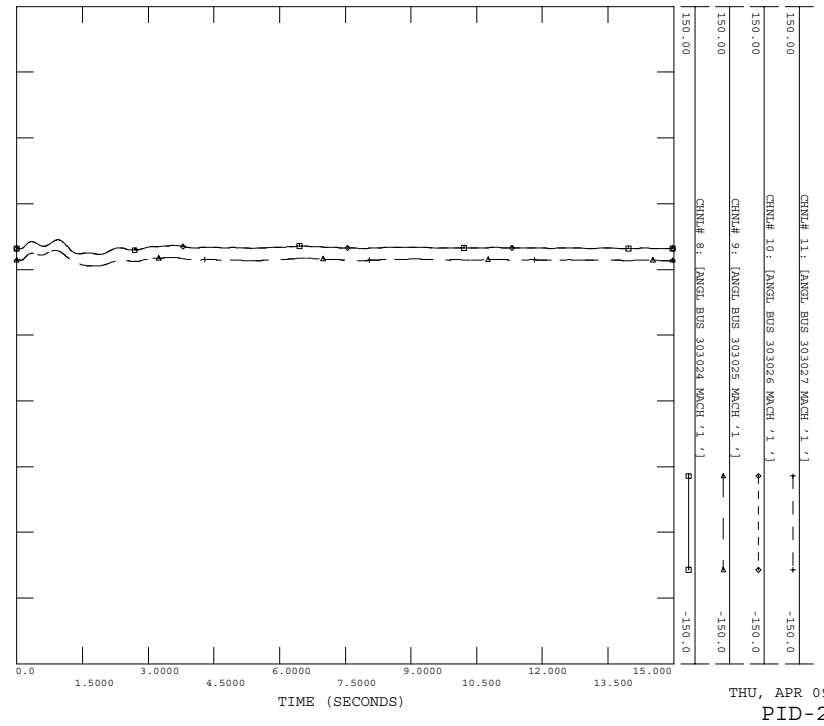
THU, APR 09 2009 14:46
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



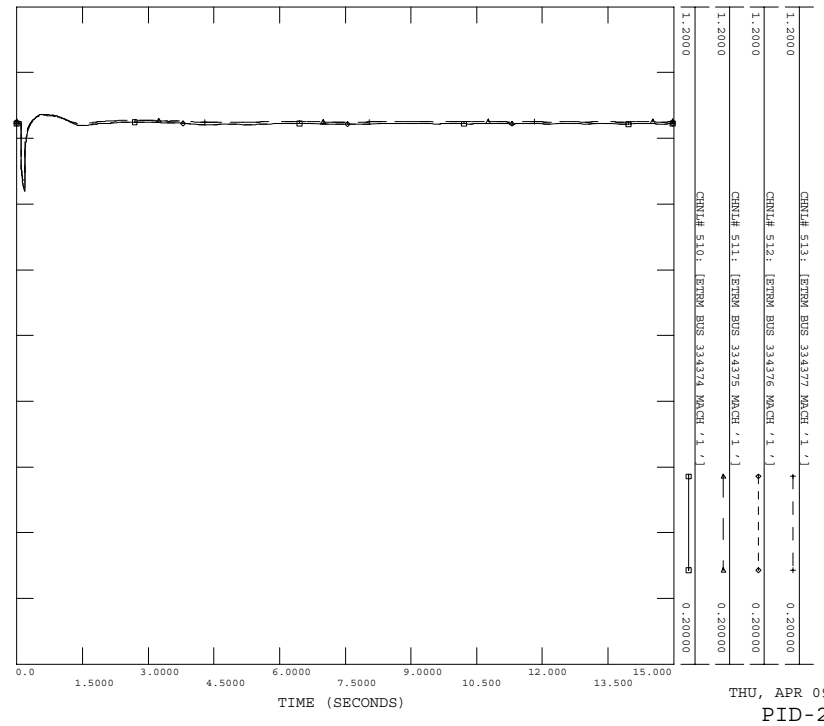
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH_OUT



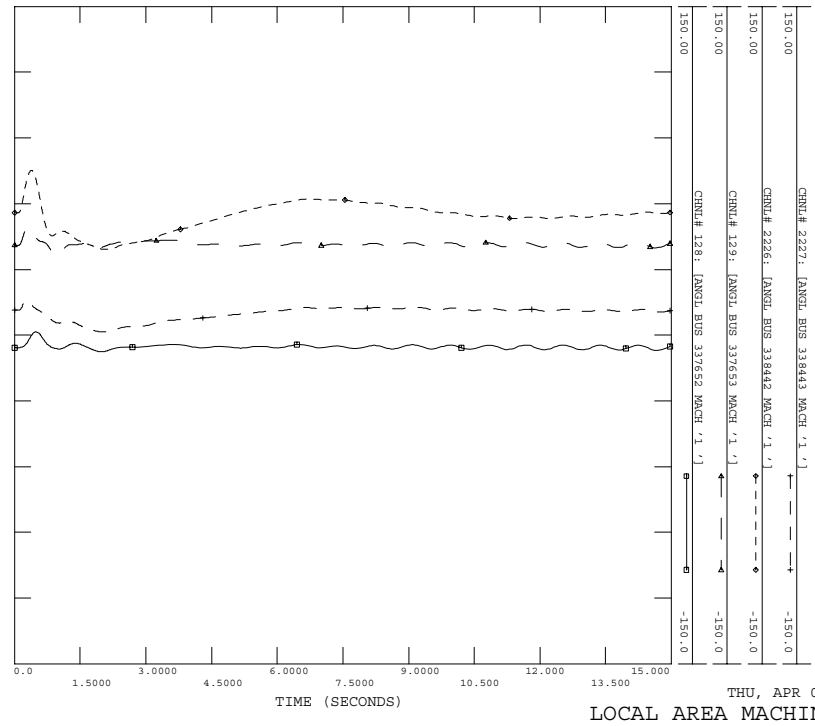
THU, APR 09 2009 14:47
 PID-227 PLOTS

POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH_OUT



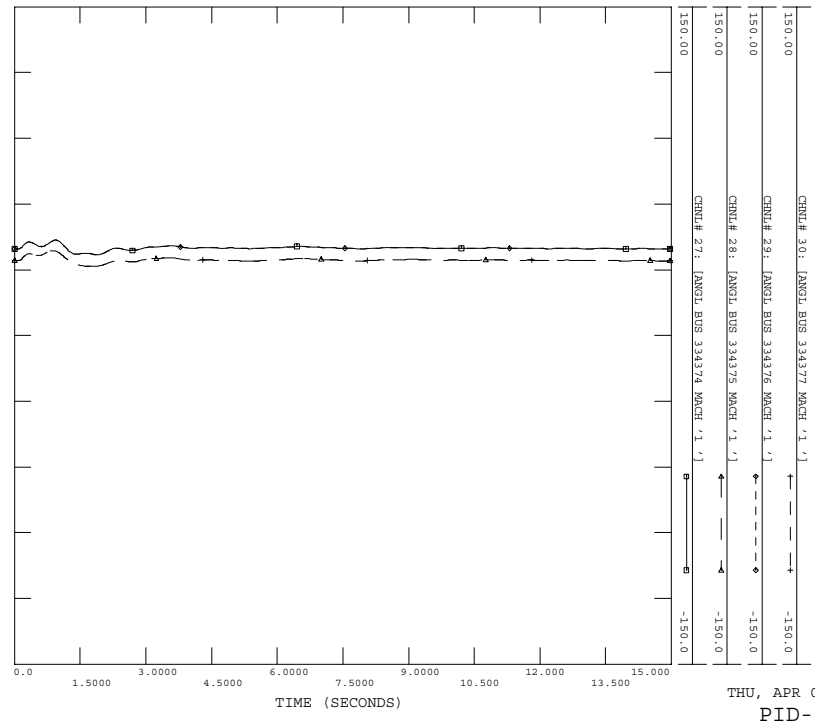
THU, APR 09 2009 14:47
 PID-227 PLOTS

POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH_OUT



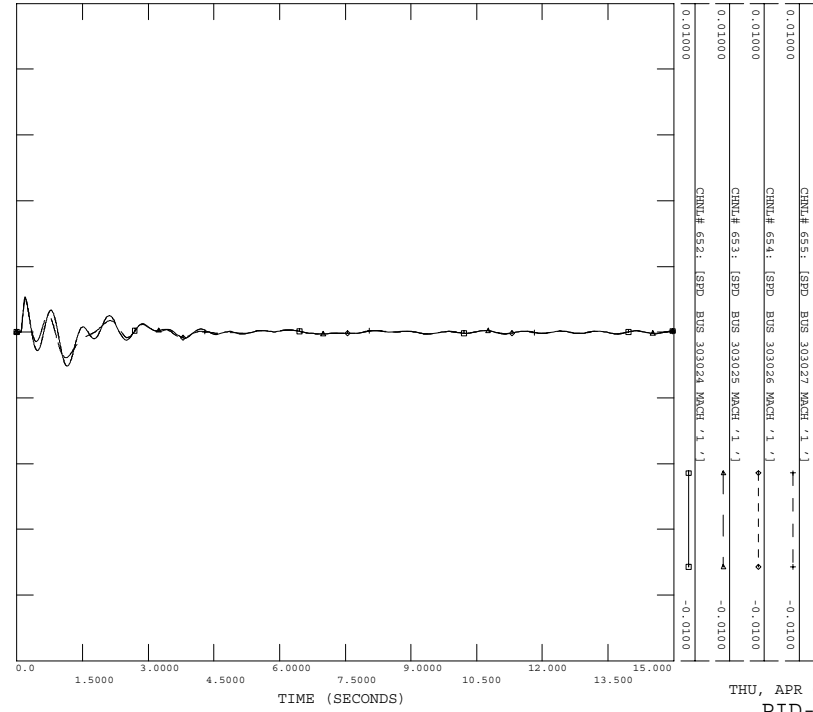
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH_OUT

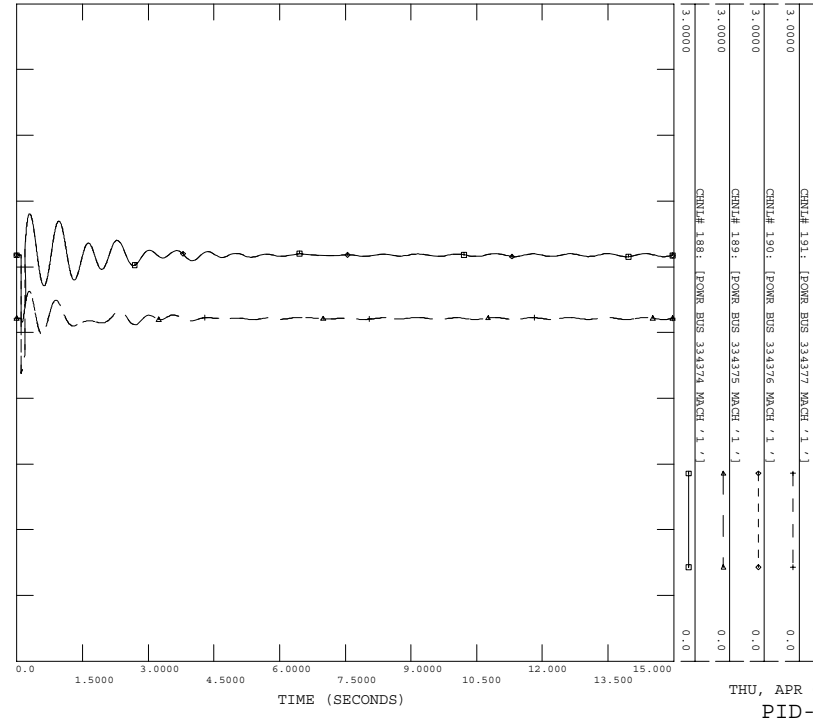


THU, APR 09 2009 14:47
 PID-227 PLOTS

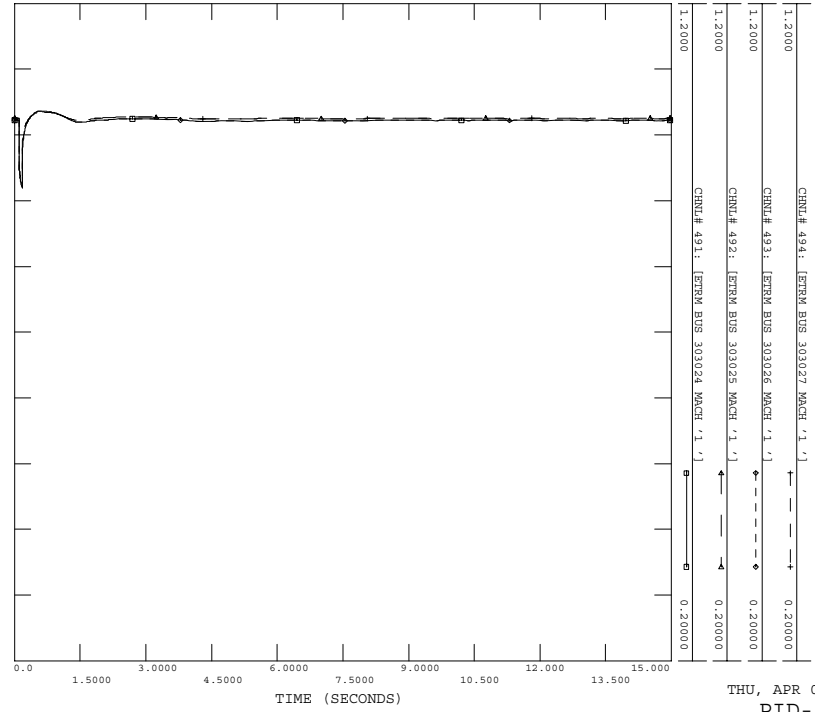
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



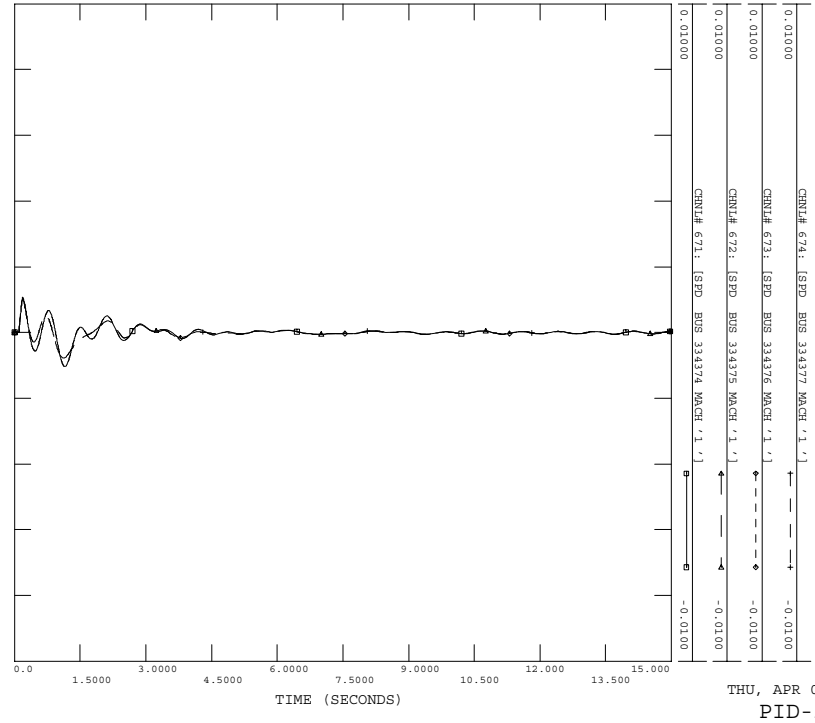
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



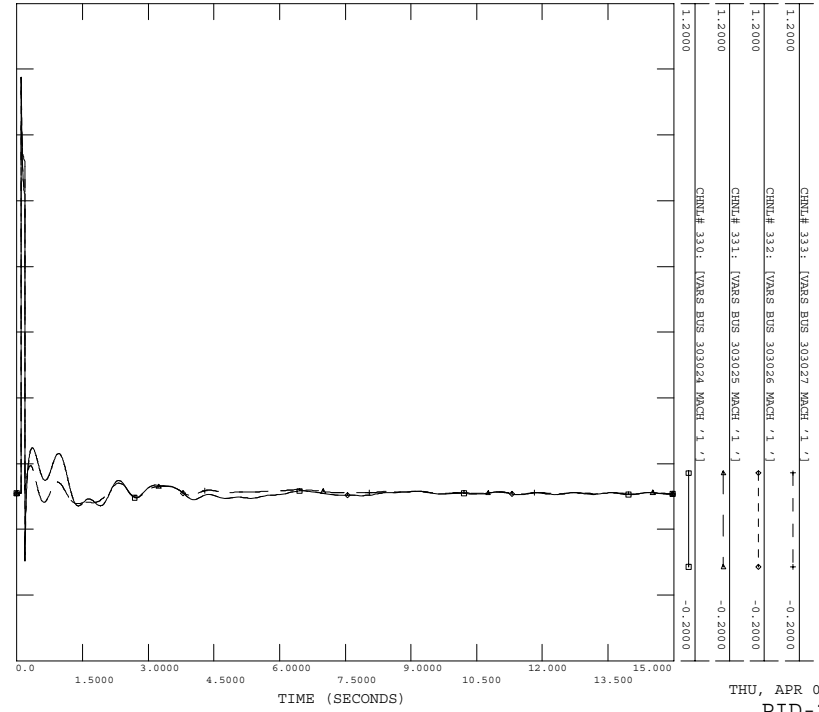
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



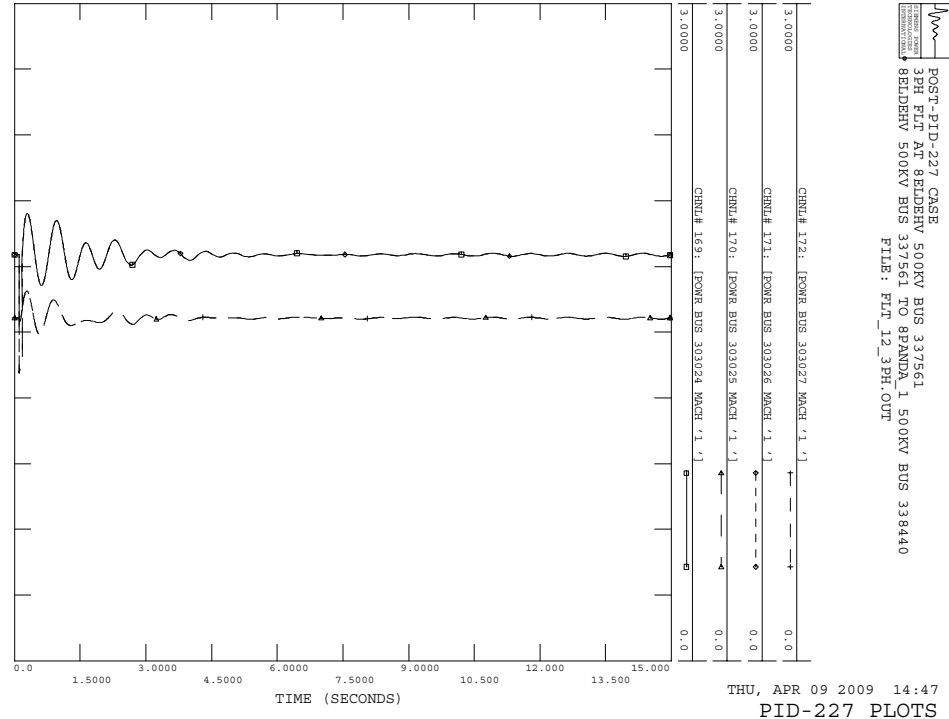
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
 FILE: FLT_12_3PH.OUT



POST-PID-227 CASE
3PH FLT AT BEIDHEV 500KV BUS 337561
BEIDHEV 500KV BUS 337561 TO BPANDA_1 500KV BUS 338440
FILE: FLT_12_3PH.OUT



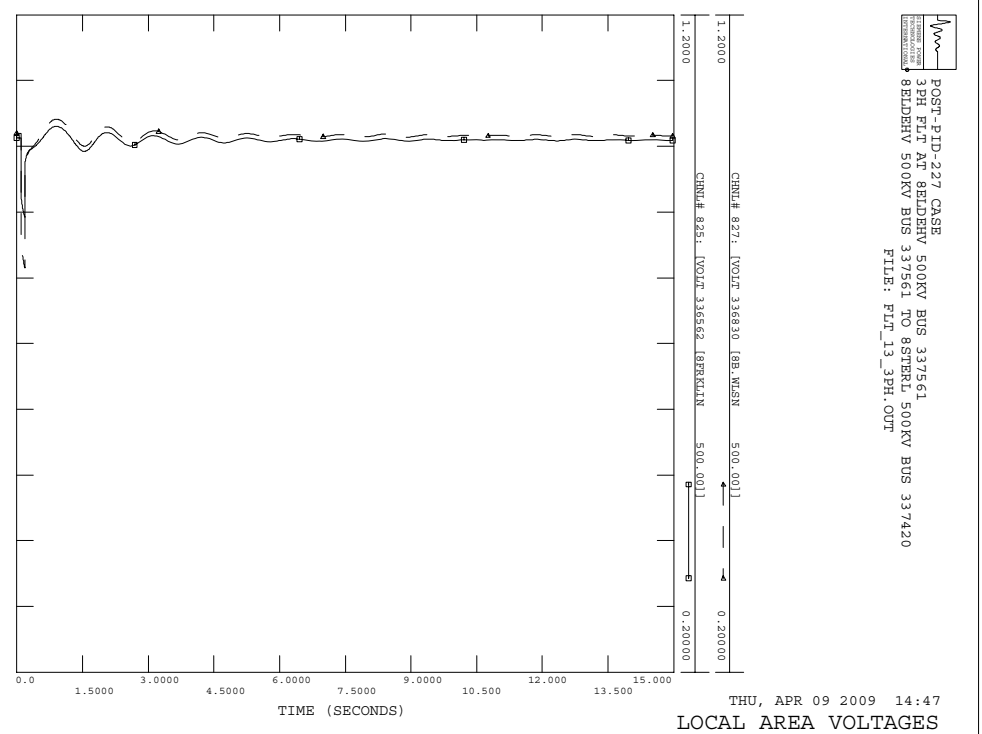
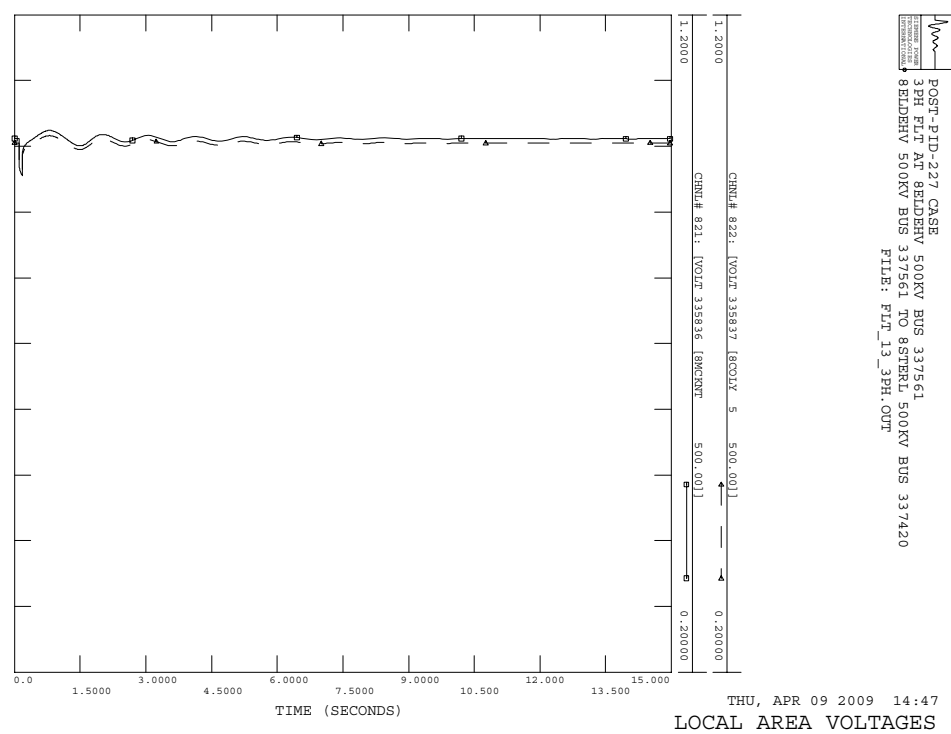
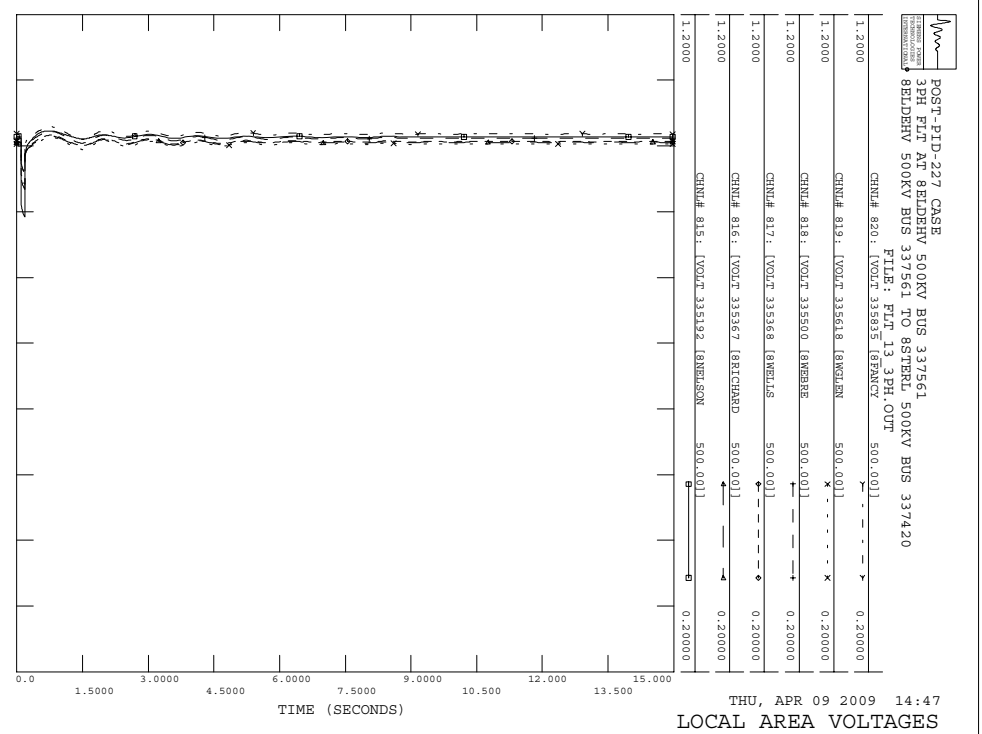
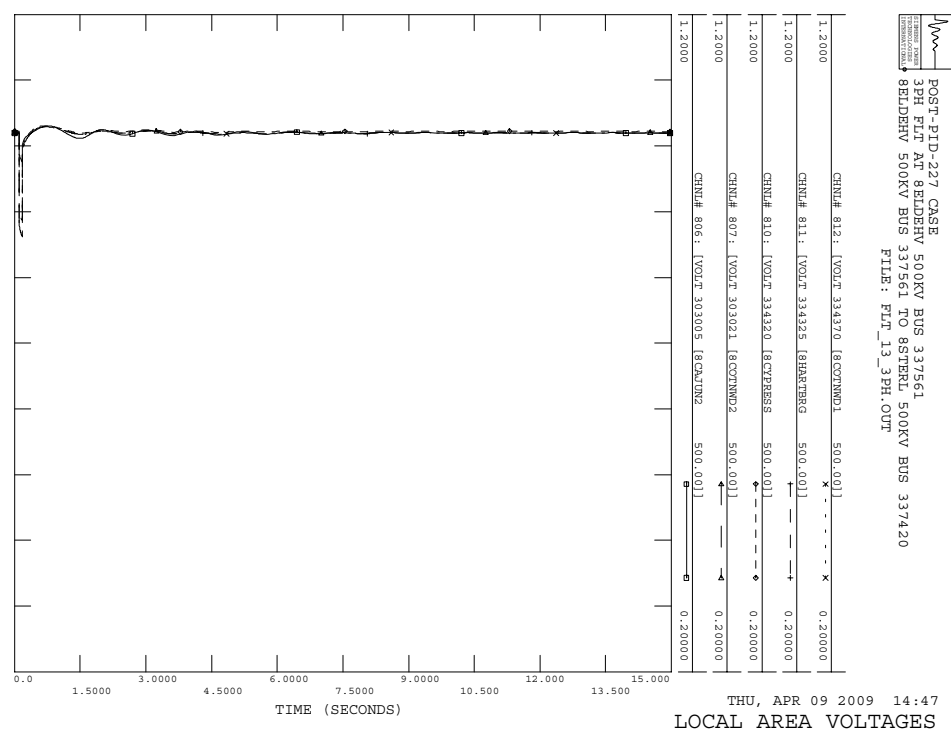
POST-PID-227 CASE
3PH FLT AT BEIDHEV 500KV BUS 337561
BEIDHEV 500KV BUS 337561 TO BPANDA_1 500KV BUS 338440
FILE: FLT_12_3PH.OUT



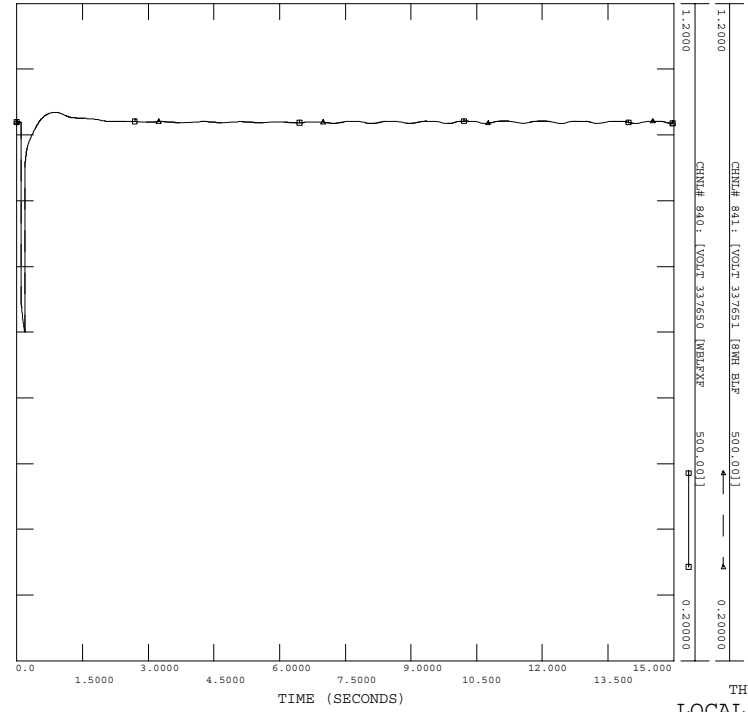
C.12 FLT_13_3PH

Three phase fault on the 8ELDEHV (#337561) to 8STERL (#337420) branch, near the 8ELDEHV.

- a) Apply 3 Phase Fault at 8ELDEHV 500KV BUS 337561
- b) Clear fault after 5 cycles by tripping line from 8ELDEHV 500KV BUS 337561 TO 8STERL 500KV BUS 337420

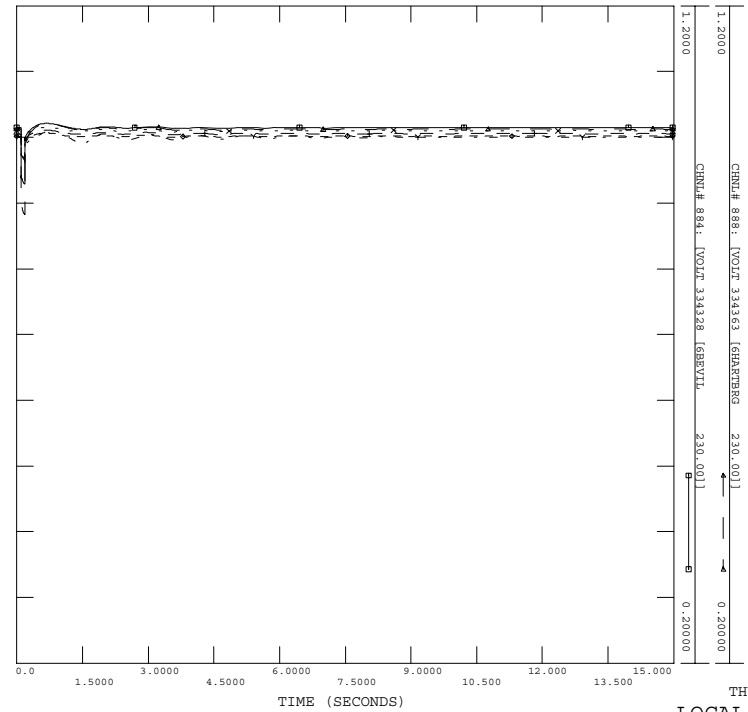


POST-PID-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



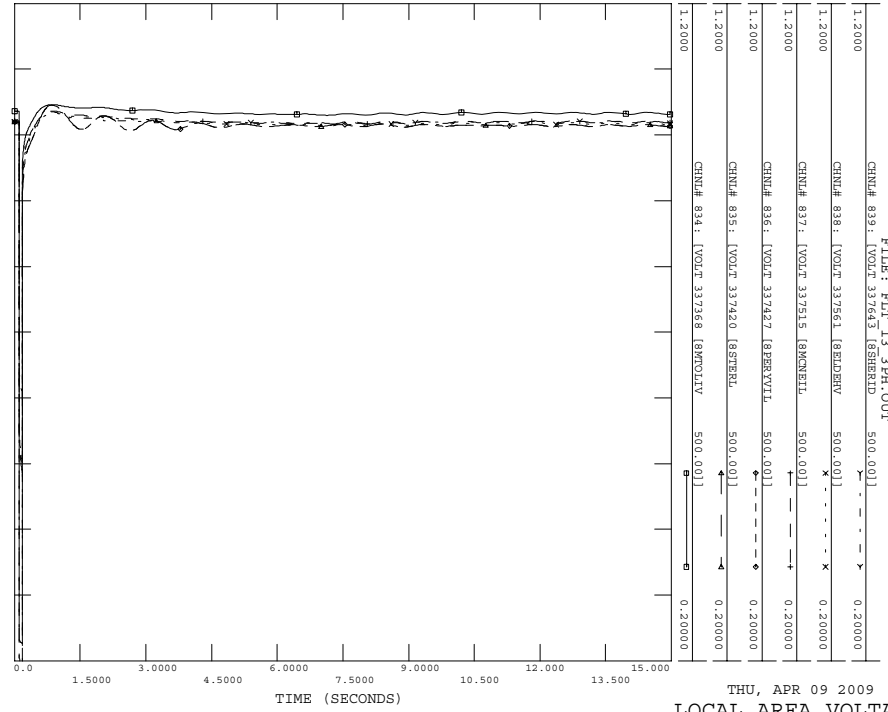
THU, APR 09 2009 14:47
 LOCAL AREA VOLTAGES

POST-PID-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



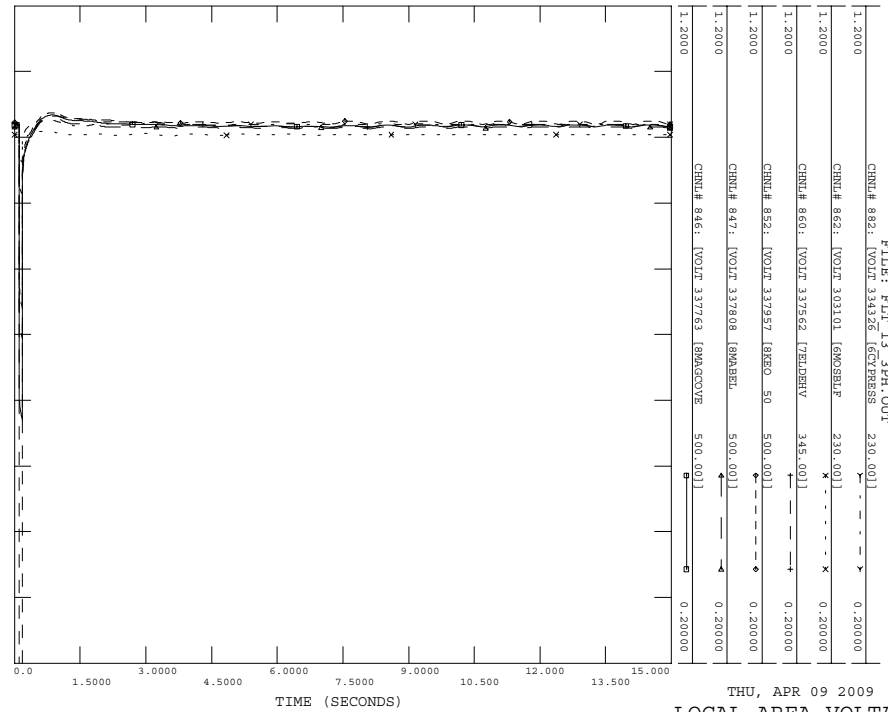
THU, APR 09 2009 14:47
 LOCAL AREA VOLTAGES

POST-PID-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT

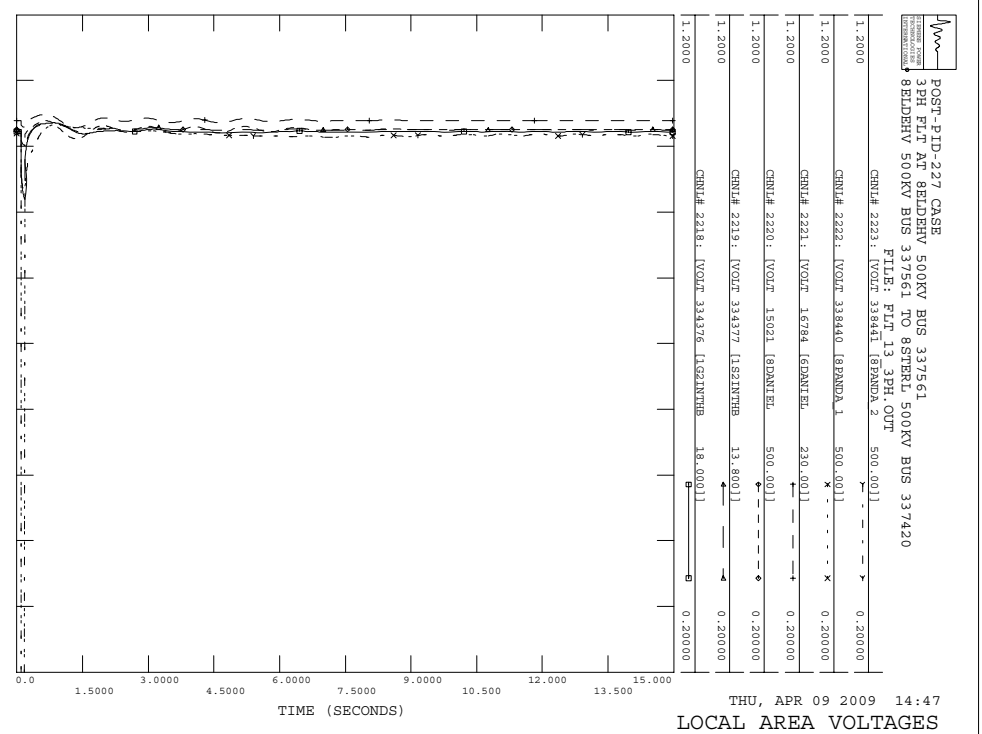
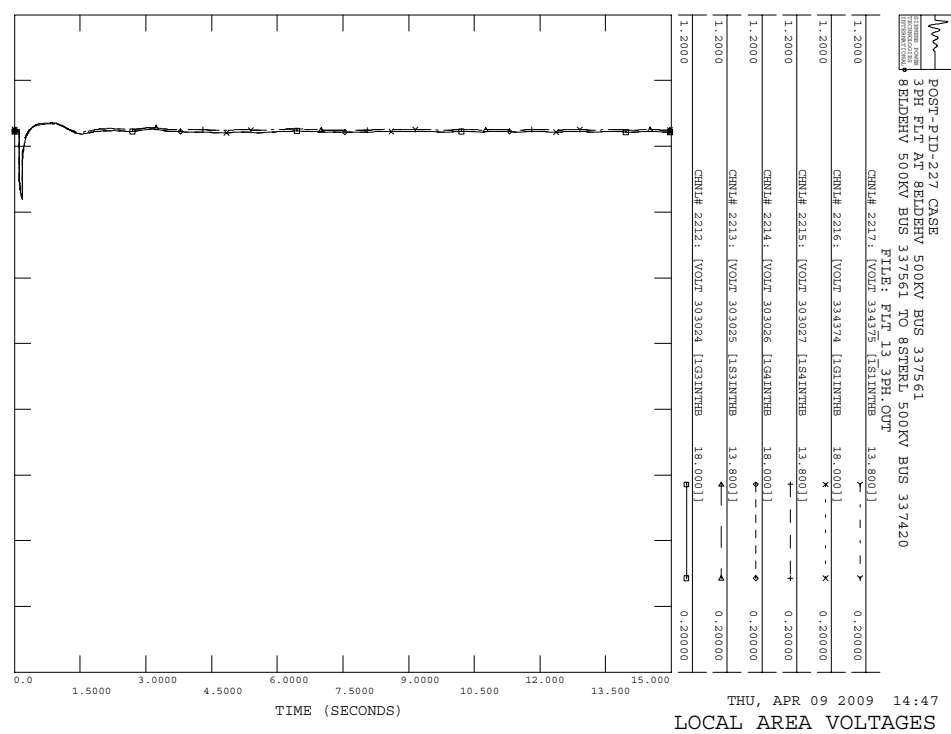
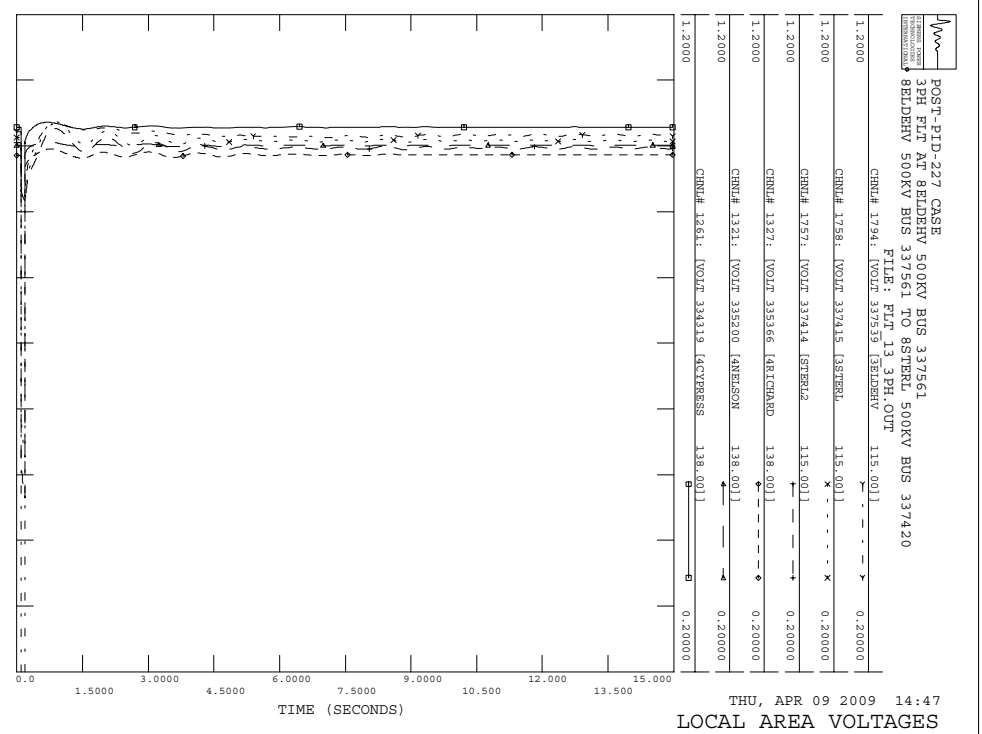
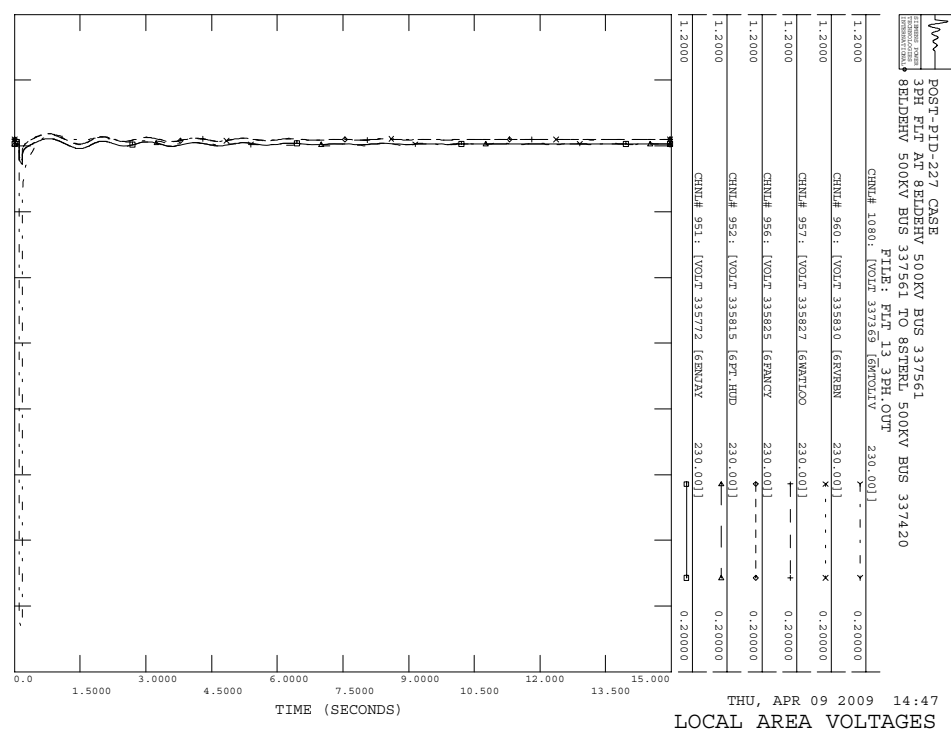


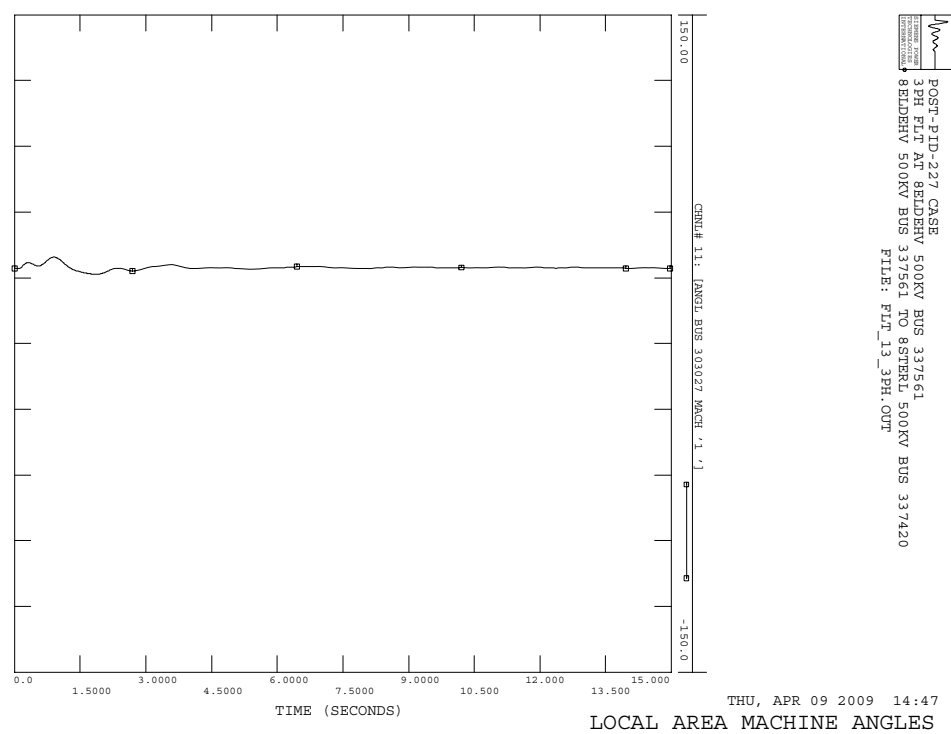
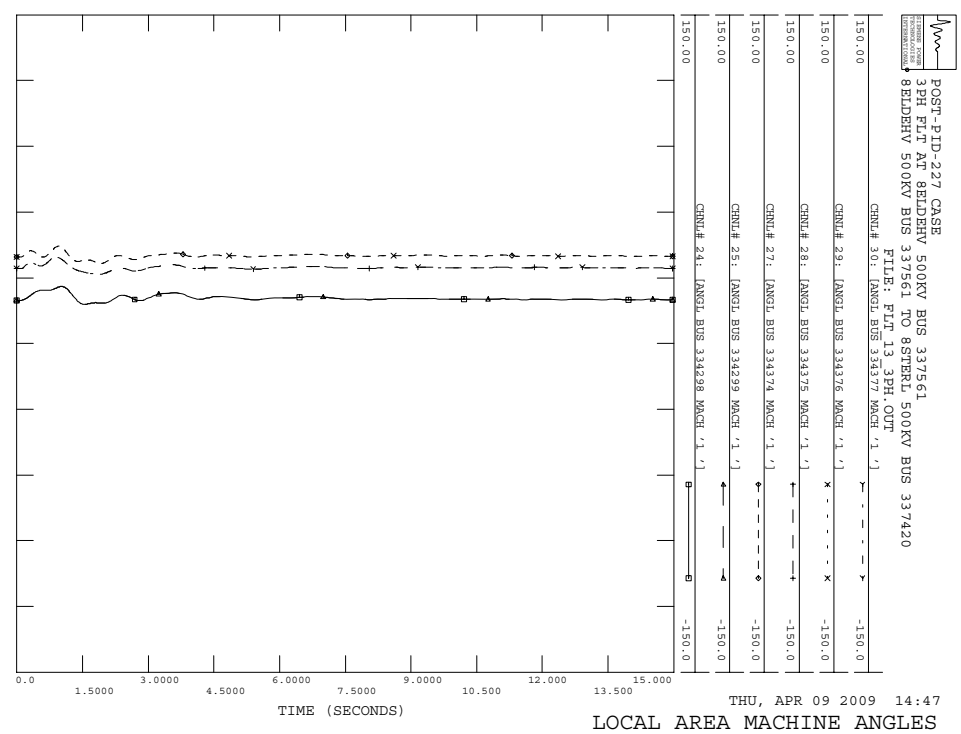
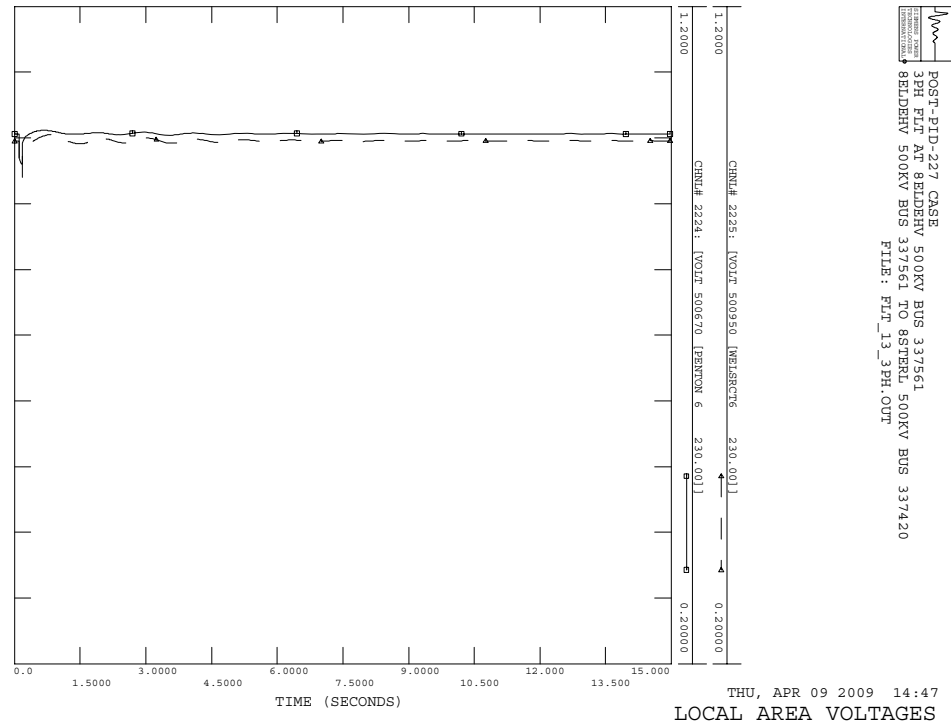
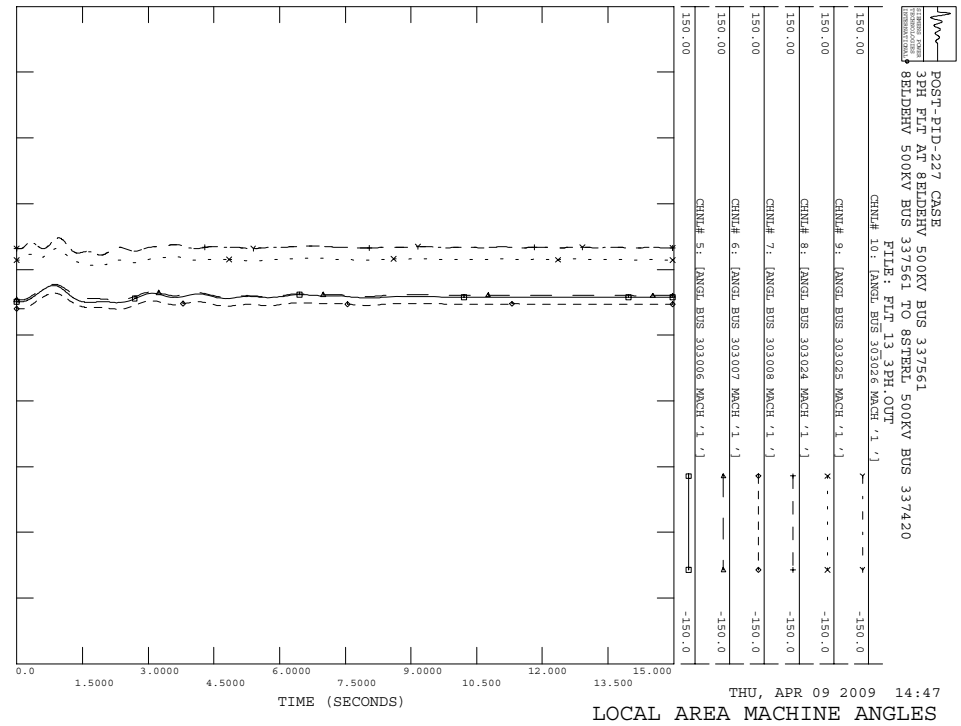
THU, APR 09 2009 14:47
 LOCAL AREA VOLTAGES

POST-PID-227 CASE
 3PH FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT

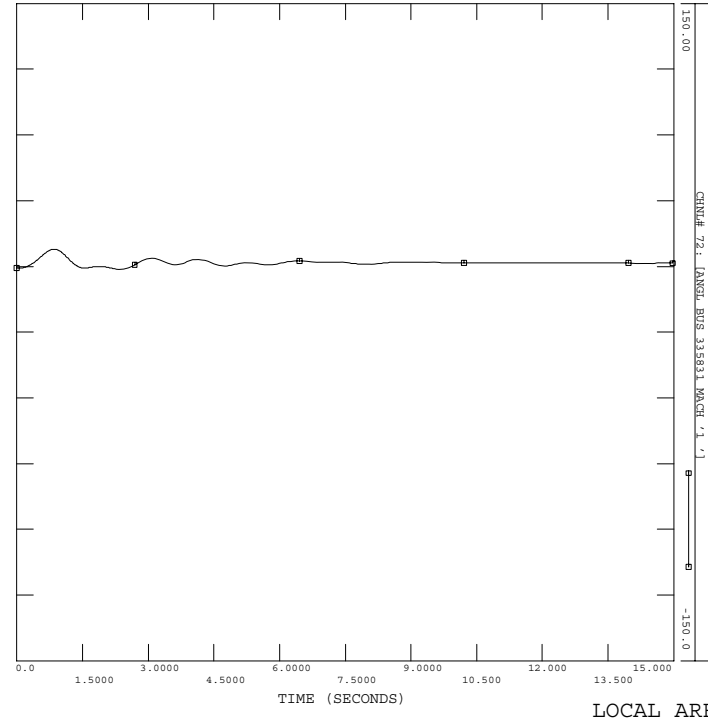


THU, APR 09 2009 14:47
 LOCAL AREA VOLTAGES



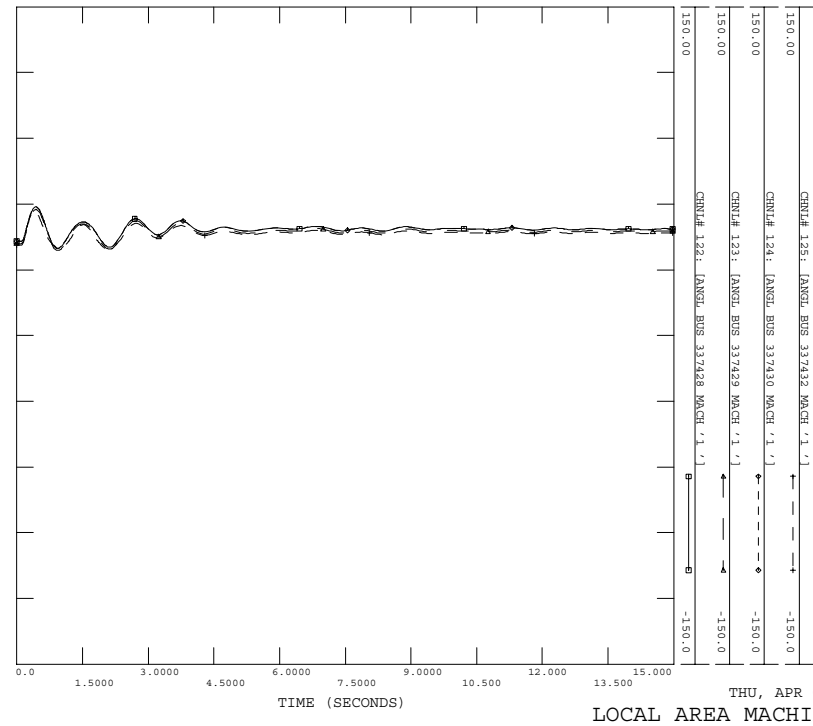


POST-PID-227 CASE
 3PH FLT AT 8BIDBRV 500KV BUS 337561
 8BIDBRV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH_OUT



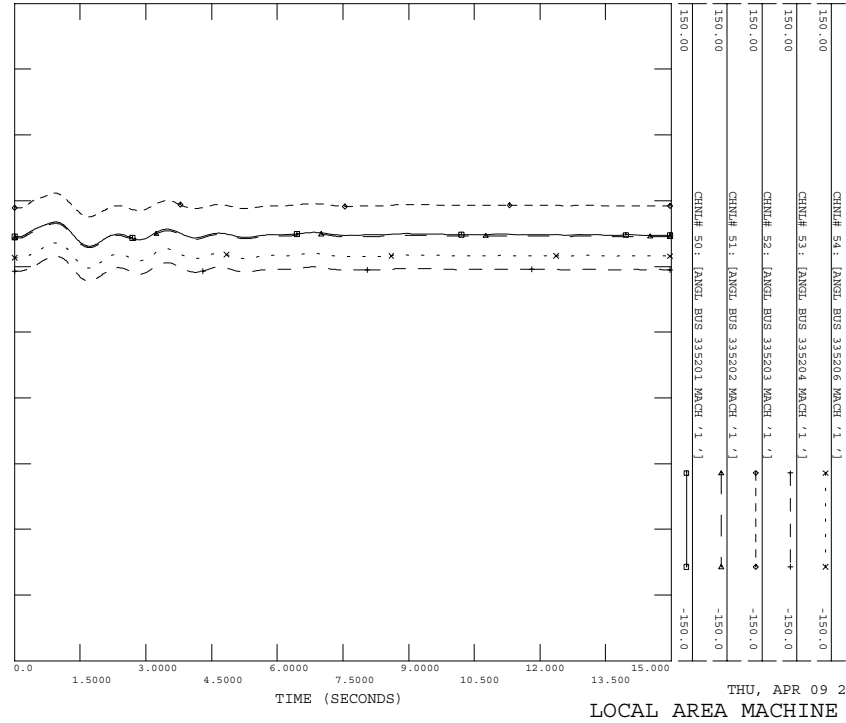
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDBRV 500KV BUS 337561
 8BIDBRV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH_OUT



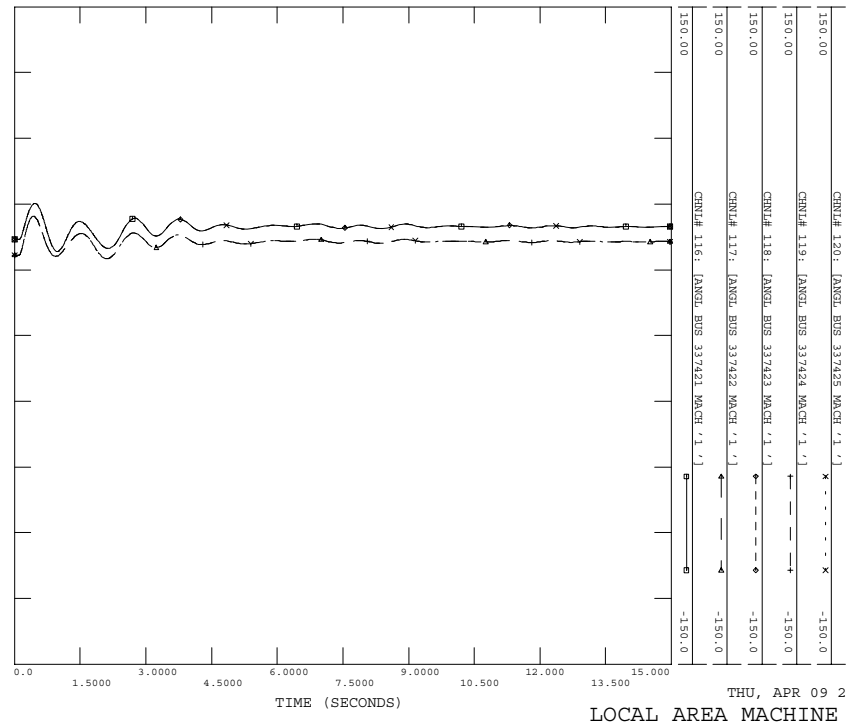
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDBRV 500KV BUS 337561
 8BIDBRV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH_OUT



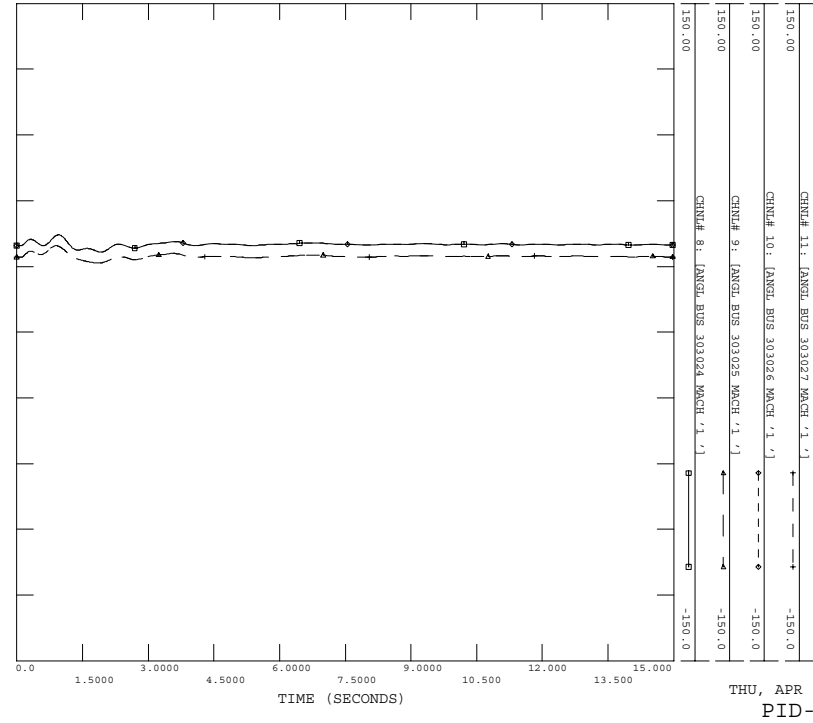
THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH FLT AT 8BIDBRV 500KV BUS 337561
 8BIDBRV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13_3PH_OUT

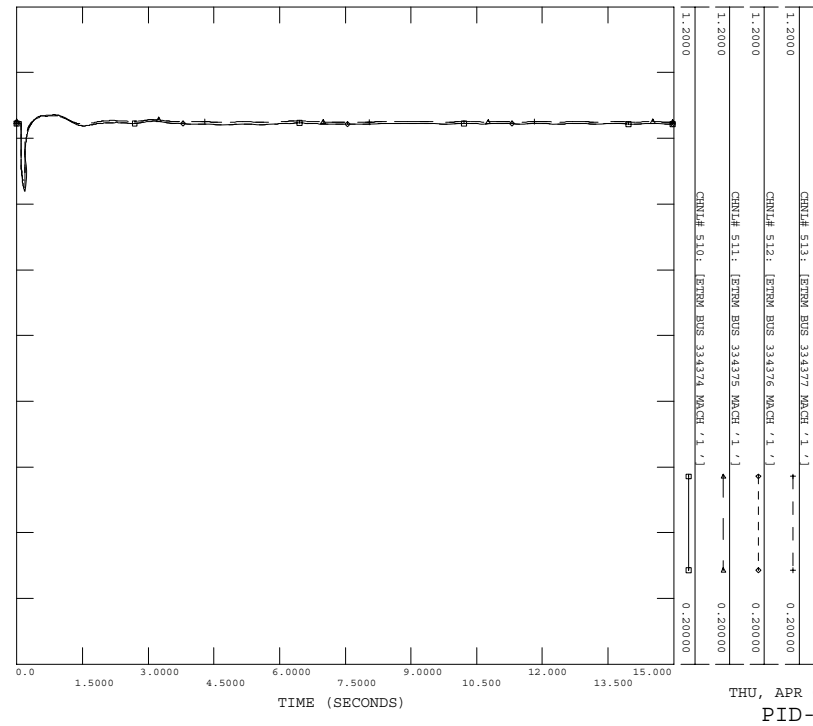


THU, APR 09 2009 14:47
 LOCAL AREA MACHINE ANGLES

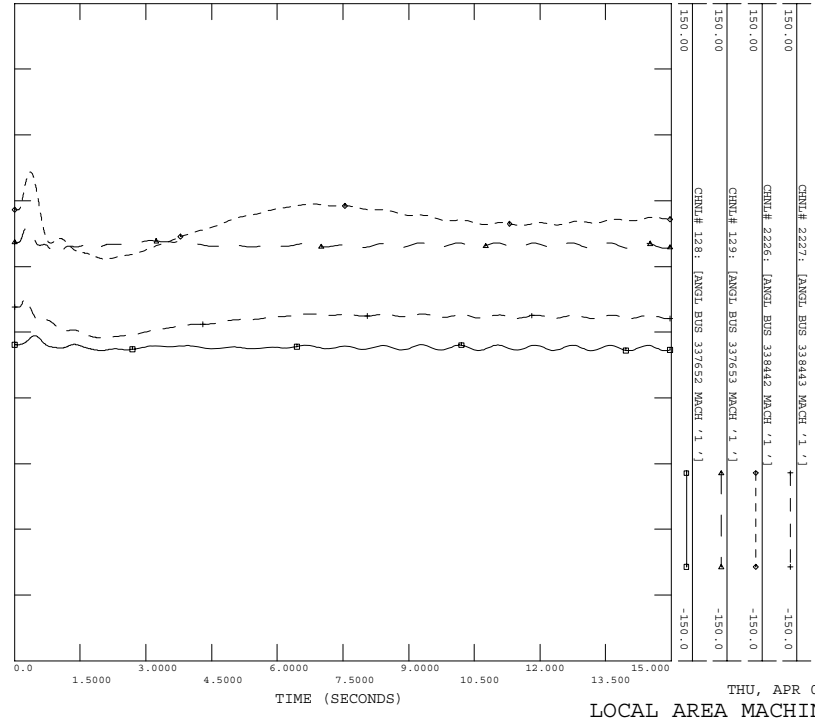
POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8STERE1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



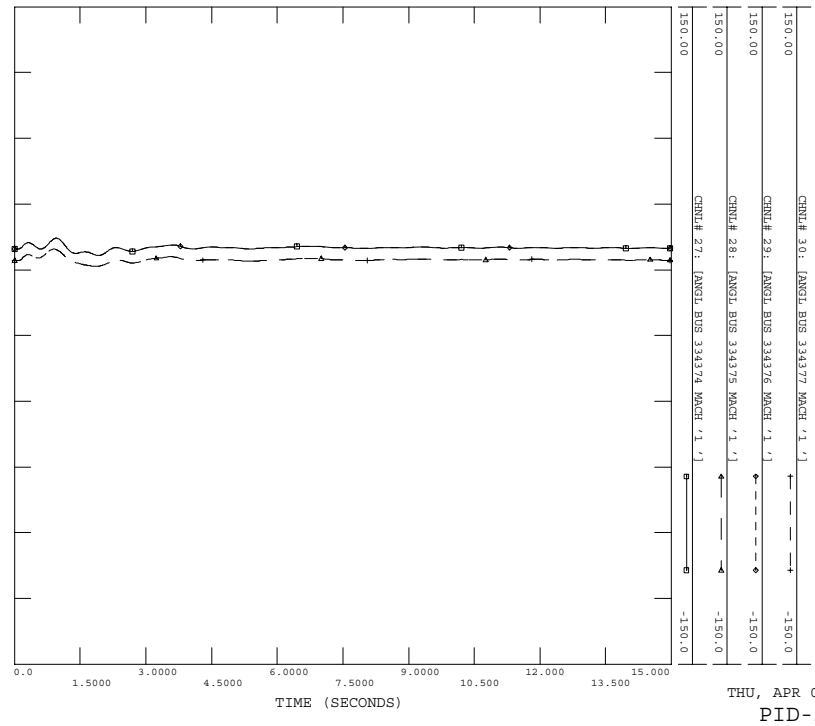
POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8STERE1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



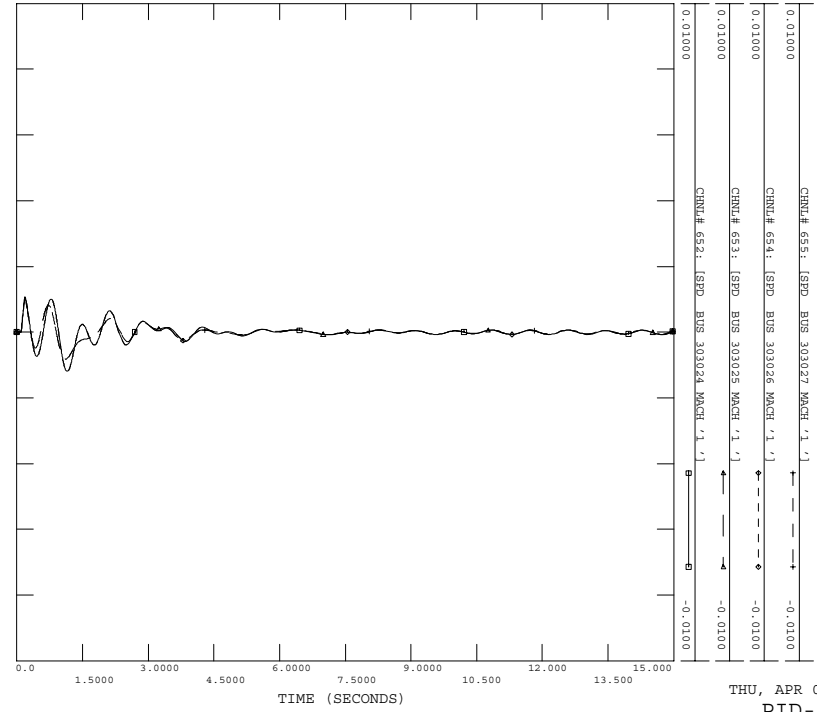
POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8STERE1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



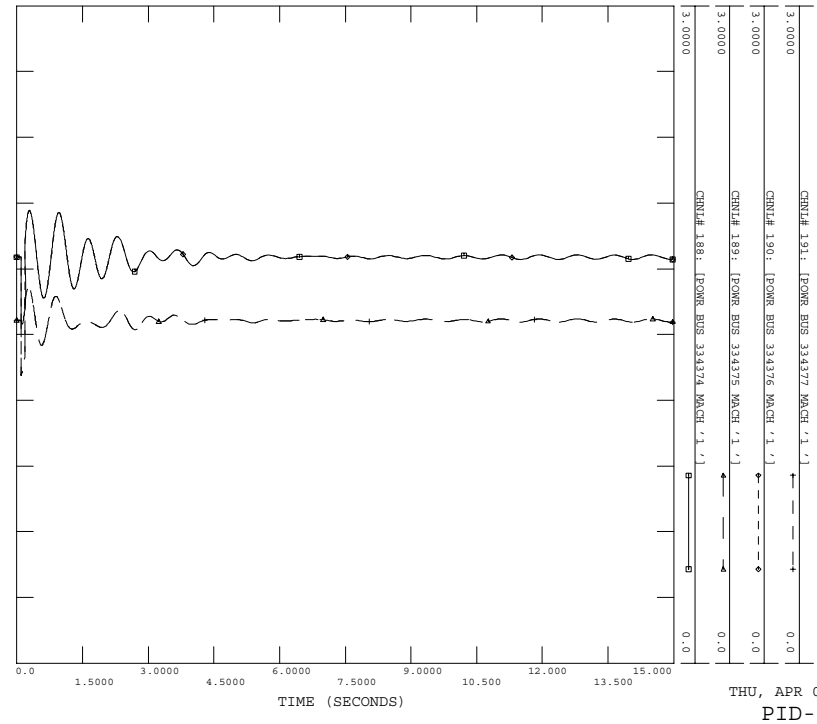
POST-PID-227 CASE
 3PH FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8STERE1 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



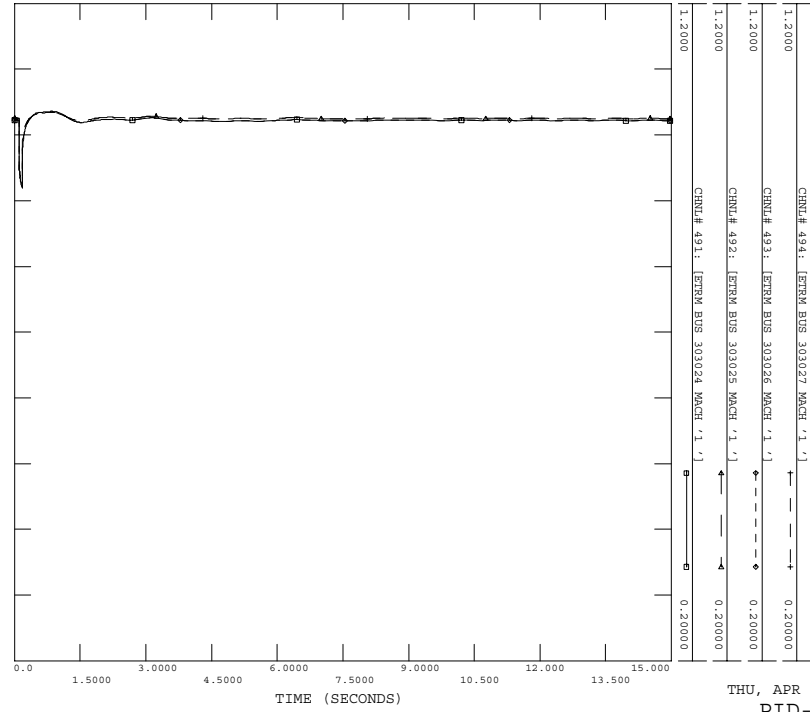
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8STERM 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



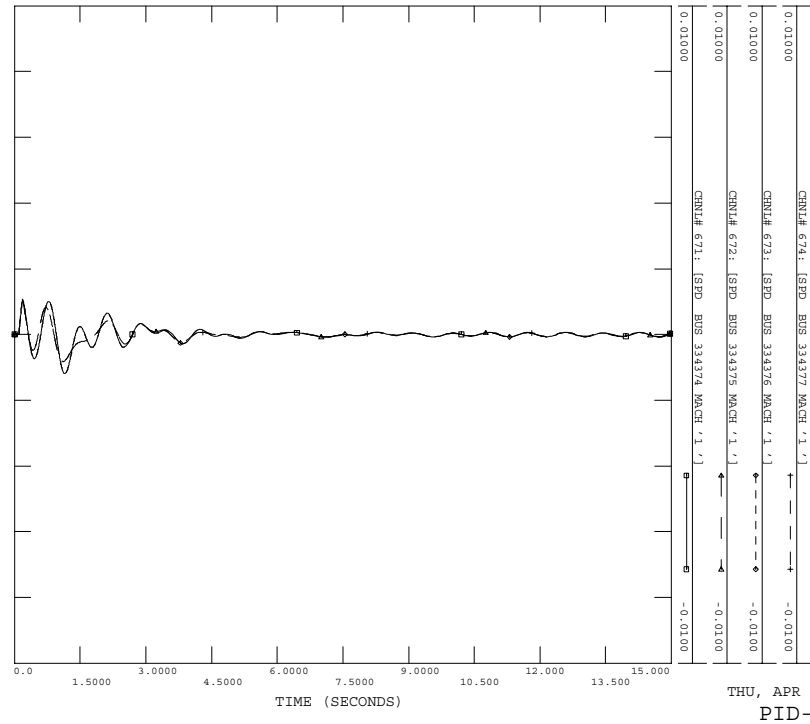
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8STERM 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



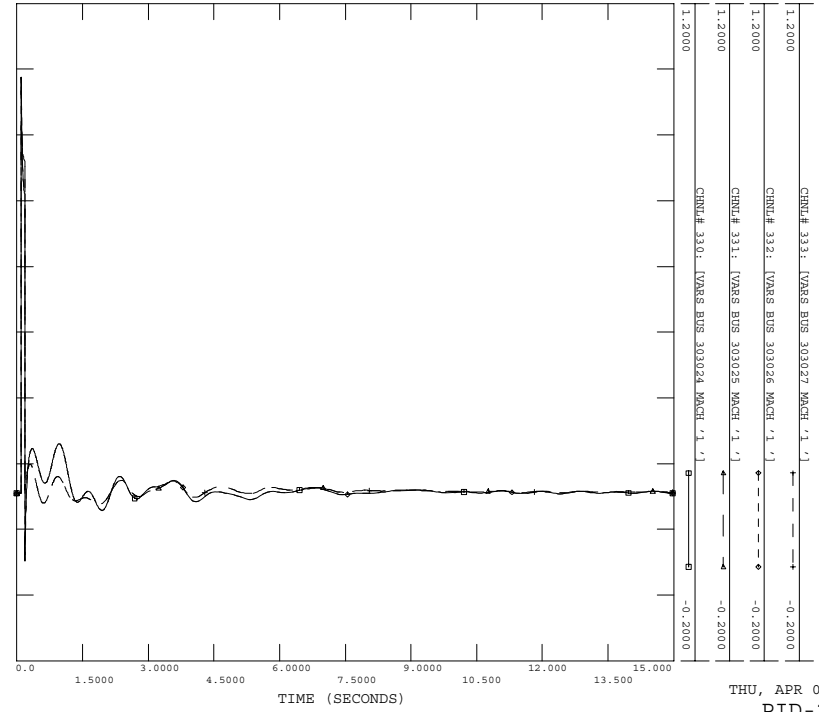
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8STERM 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



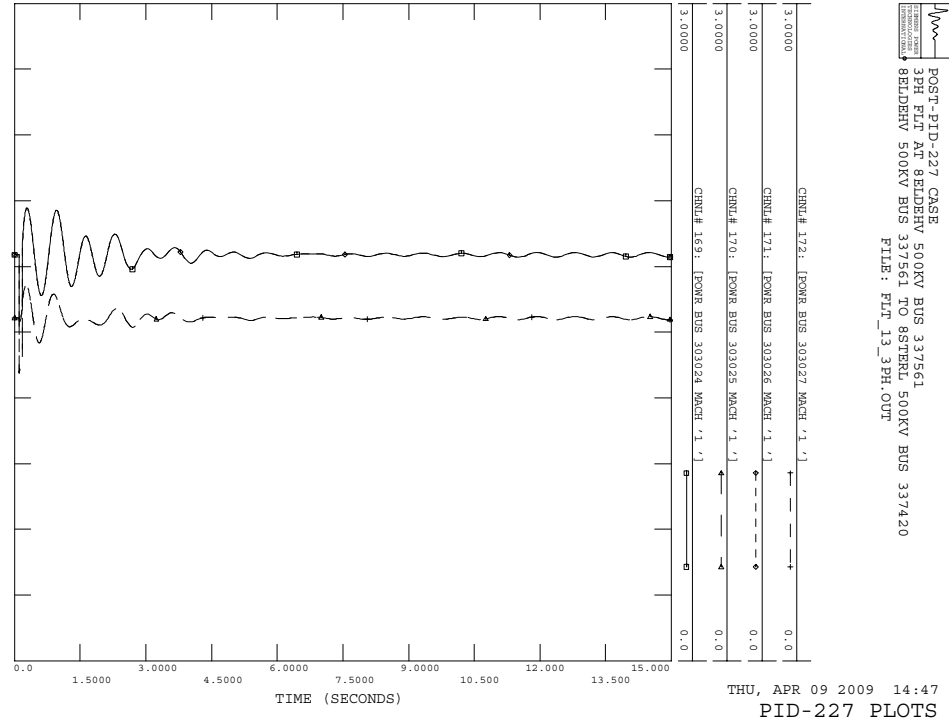
POST-PID-227 CASE
 3PH FLT AT 8BIDEBV 500KV BUS 337561
 8BIDEBV 500KV BUS 337561 TO 8STERM 500KV BUS 337420
 FILE: FLT_13_3PH.OUT



POST-PID-227 CASE
3PH FLT AT 8EIDEBV 500KV BUS 337561
8EIDEBV 500KV BUS 337561 TO 8STERM 500KV BUS 337420
FILE: FLT_13_3PH.OUT



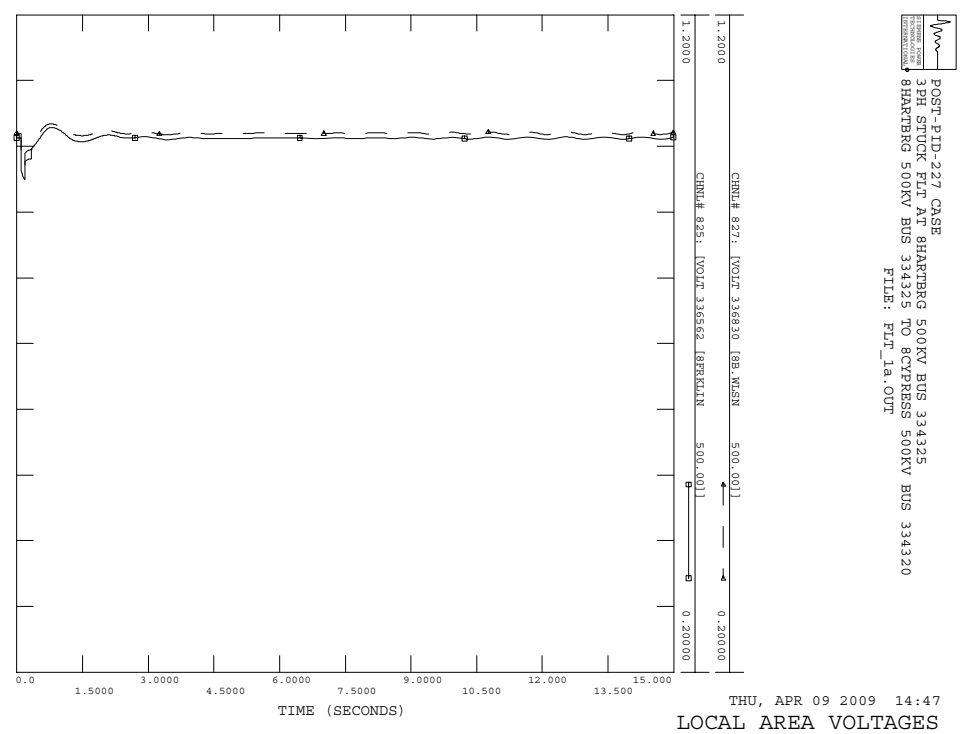
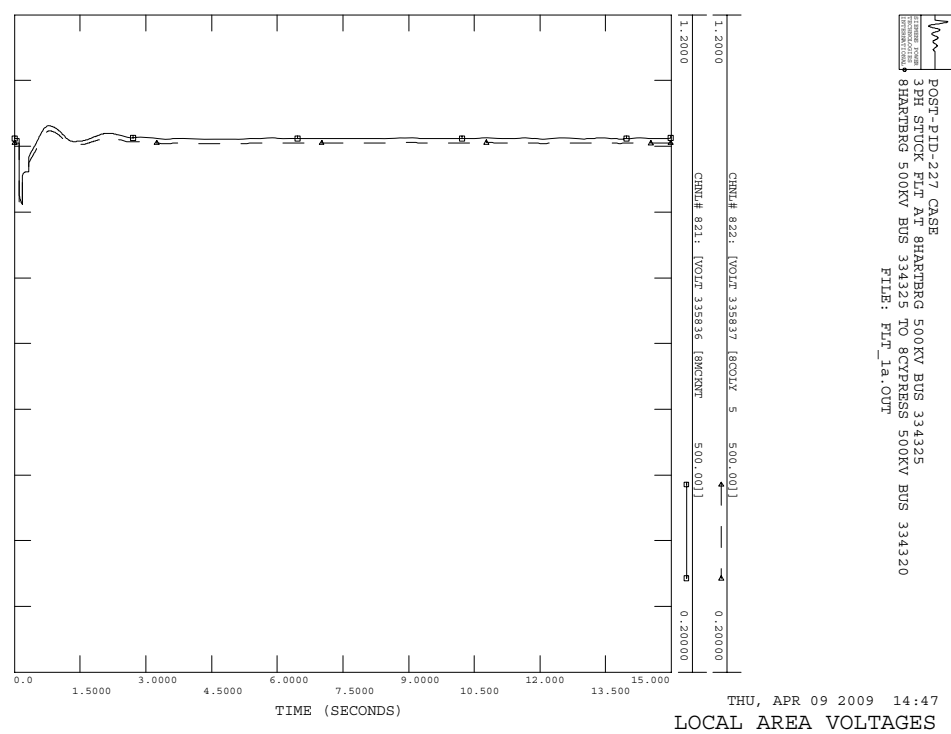
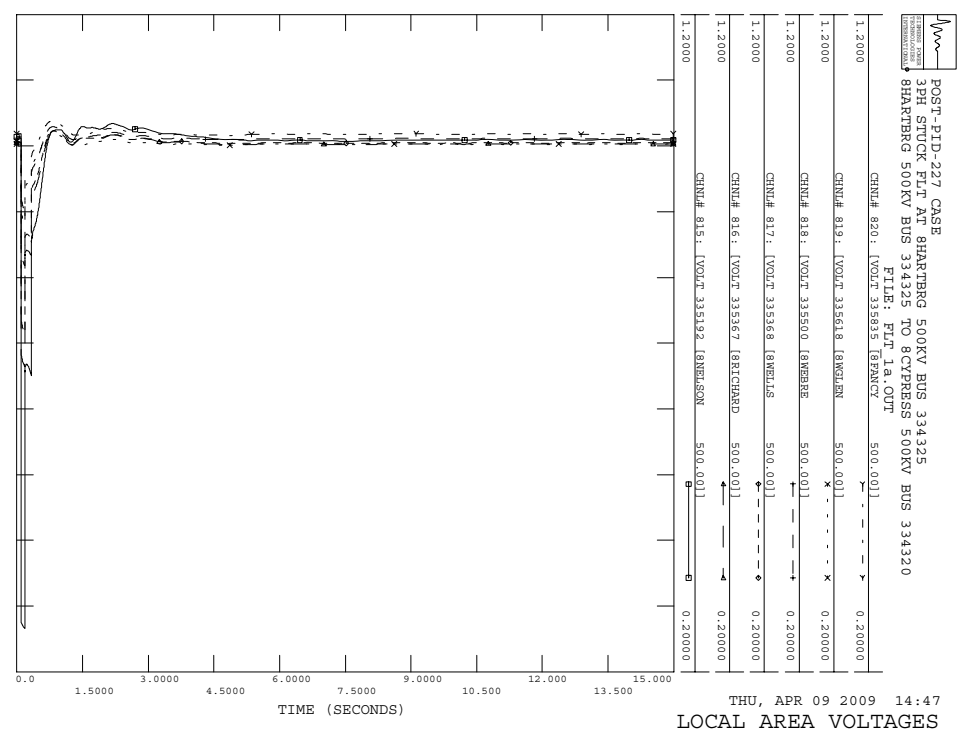
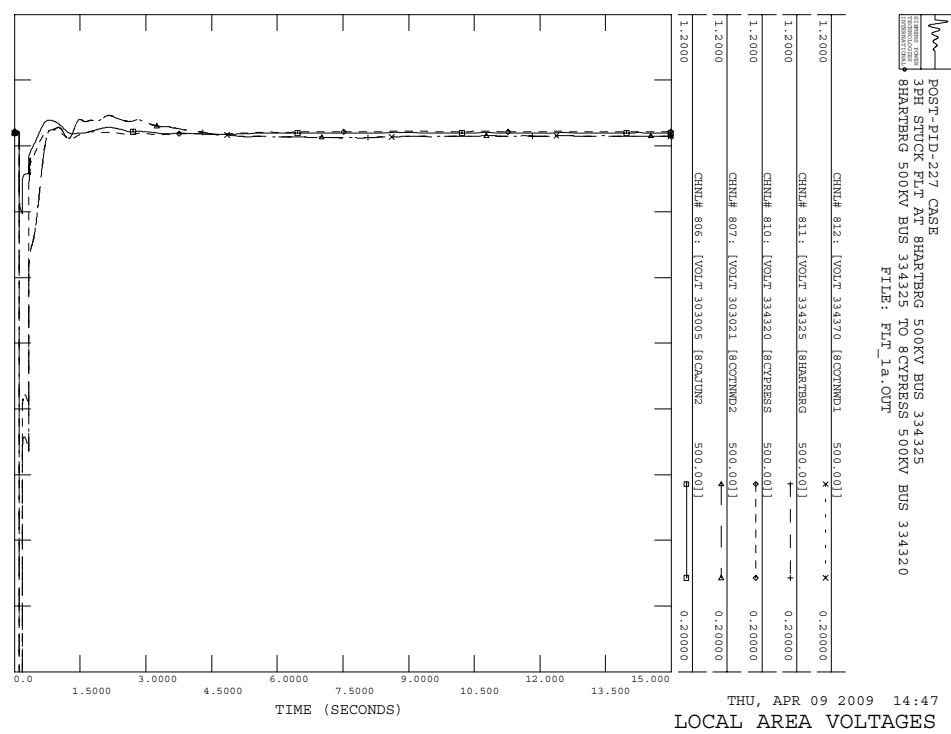
POST-PID-227 CASE
3PH FLT AT 8EIDEBV 500KV BUS 337561
8EIDEBV 500KV BUS 337561 TO 8STERM 500KV BUS 337420
FILE: FLT_13_3PH.OUT



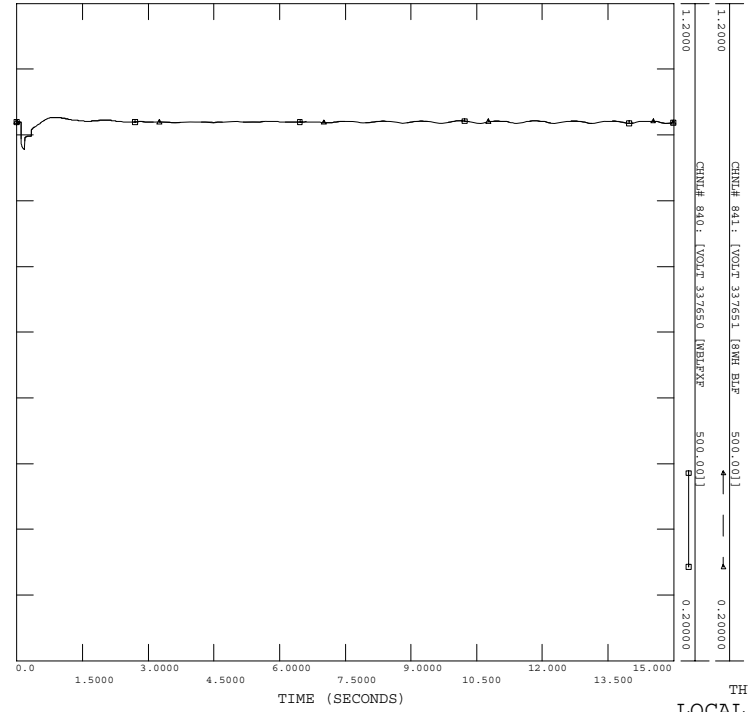
C.13 FLT_1a

Stuck breaker fault on the 8HARTBRG (#334325) to 8CYPRESS (#334320) 500 kV line, near the 8HARTBRG

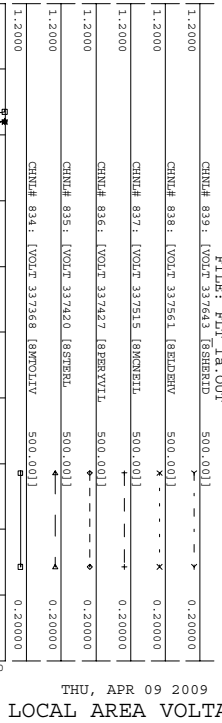
- a) Apply 3 Phase Fault AT 8HARTBRG 500KV BUS 334325
- b) Run fault for 5 cycles.
- c) Remove Fault AT8HARTBRG 500KV BUS 334325
- d) Apply 3 Phase fault at #334325 with admittance $610.61-j8402.17$ MVA
- e) Clear fault after 9 cycles by tripping line from 8HARTBRG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320



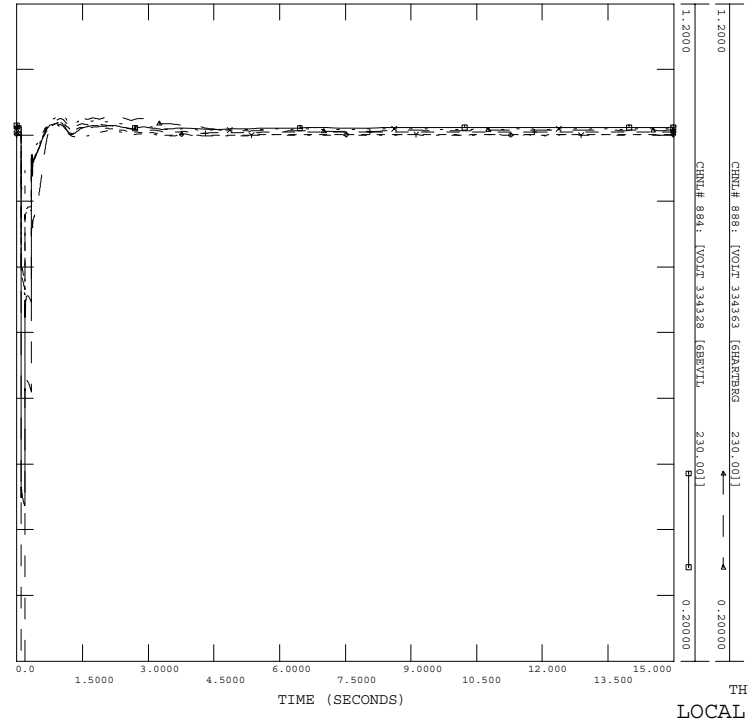
POST-PTD-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



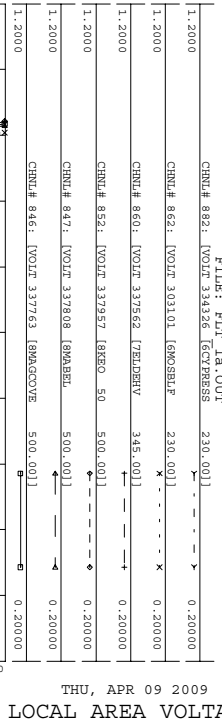
POST-PTD-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT

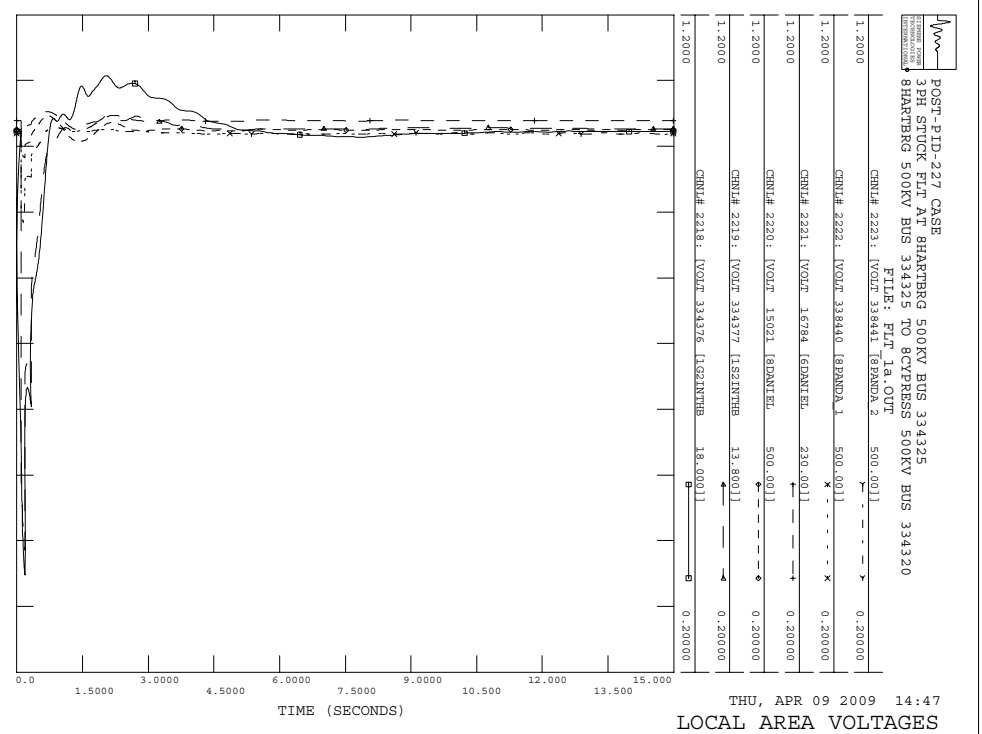
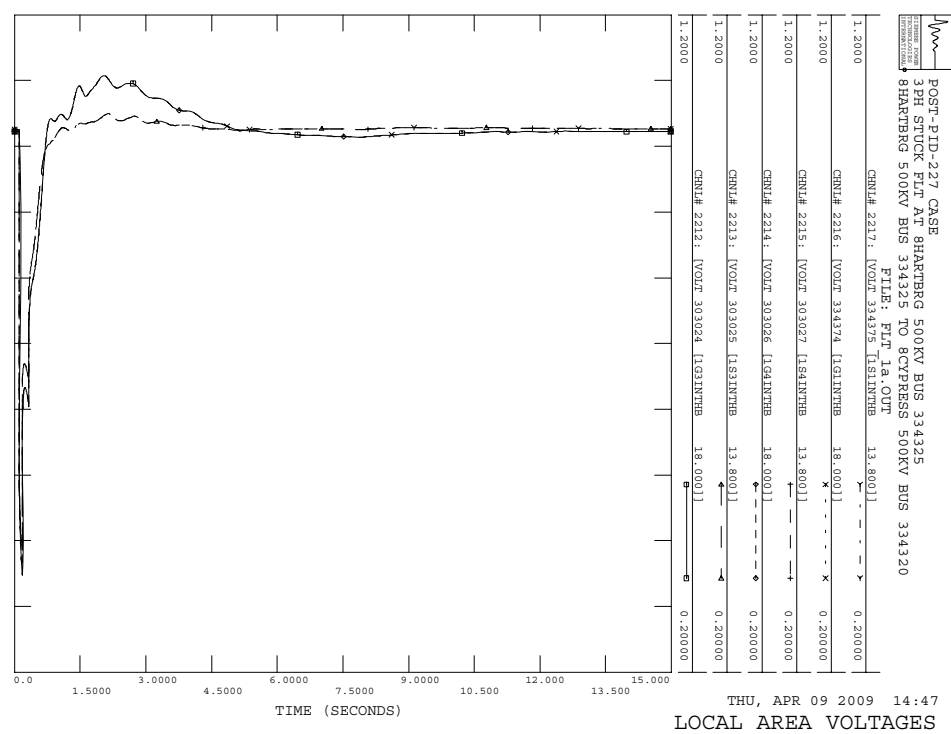
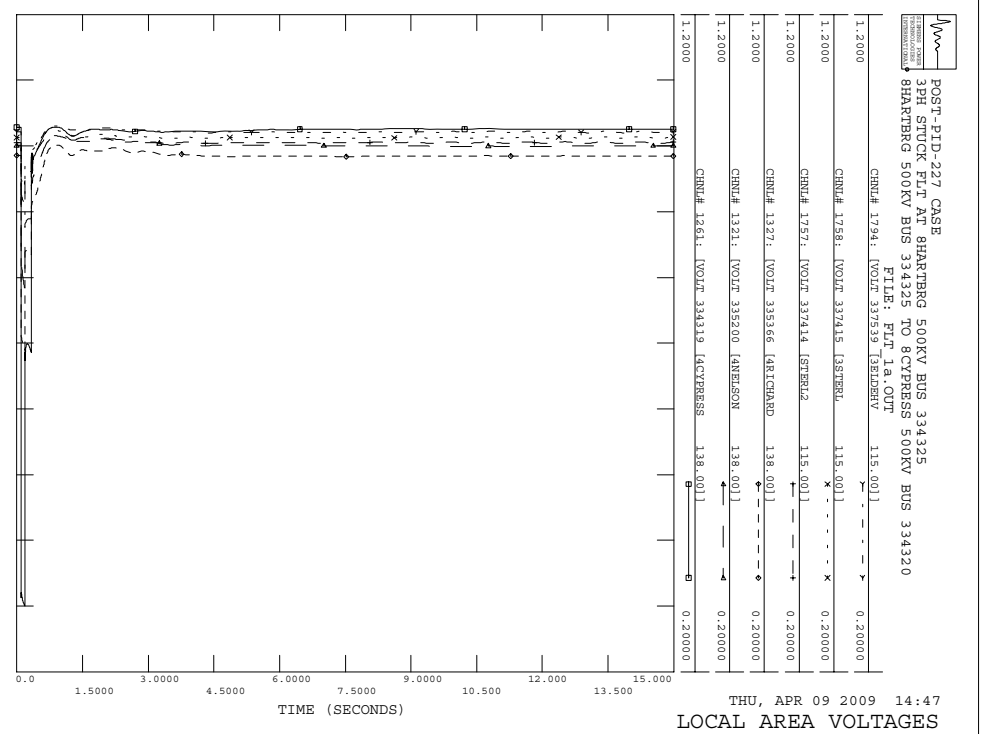
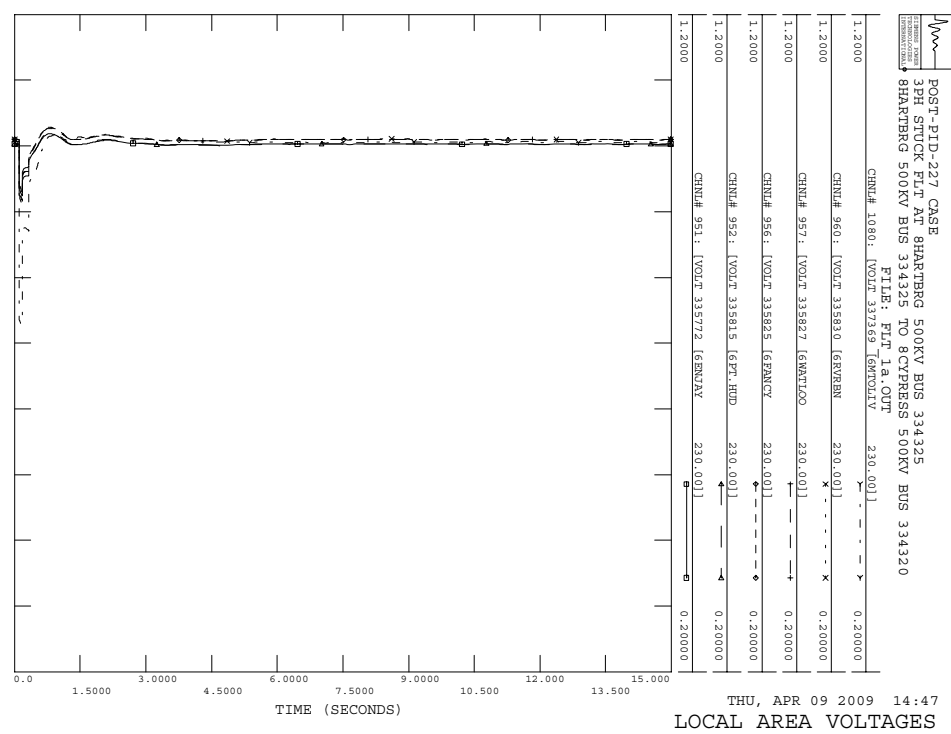


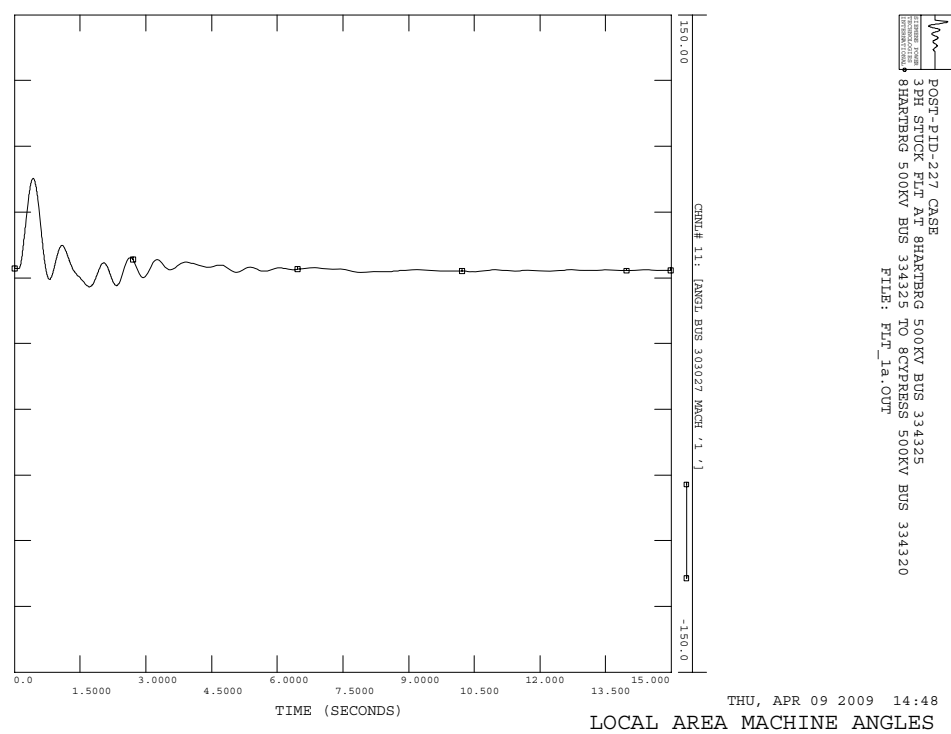
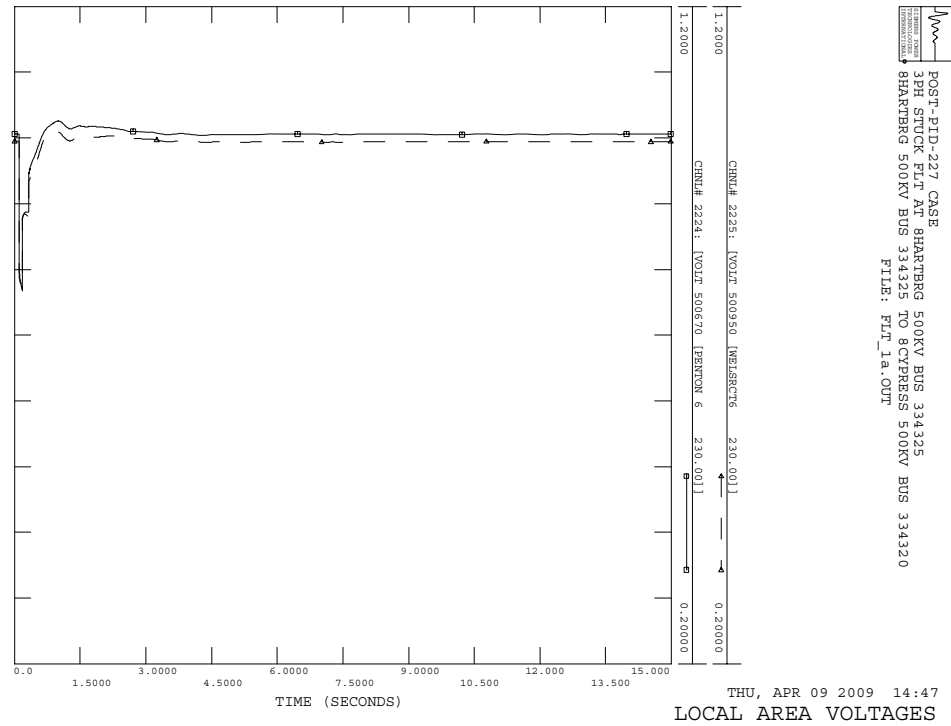
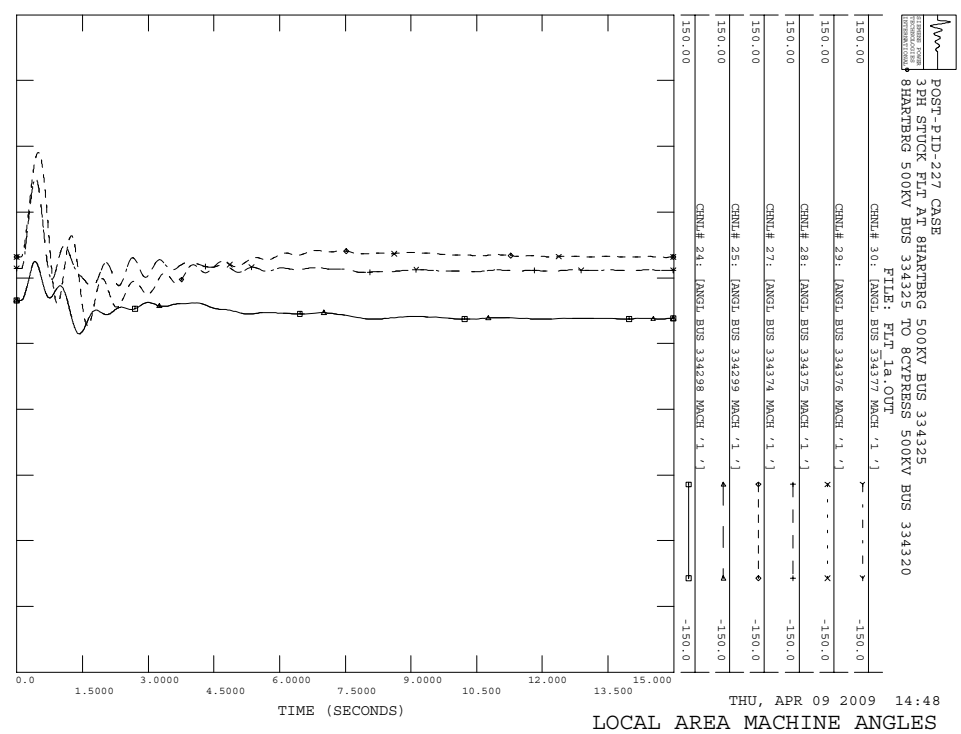
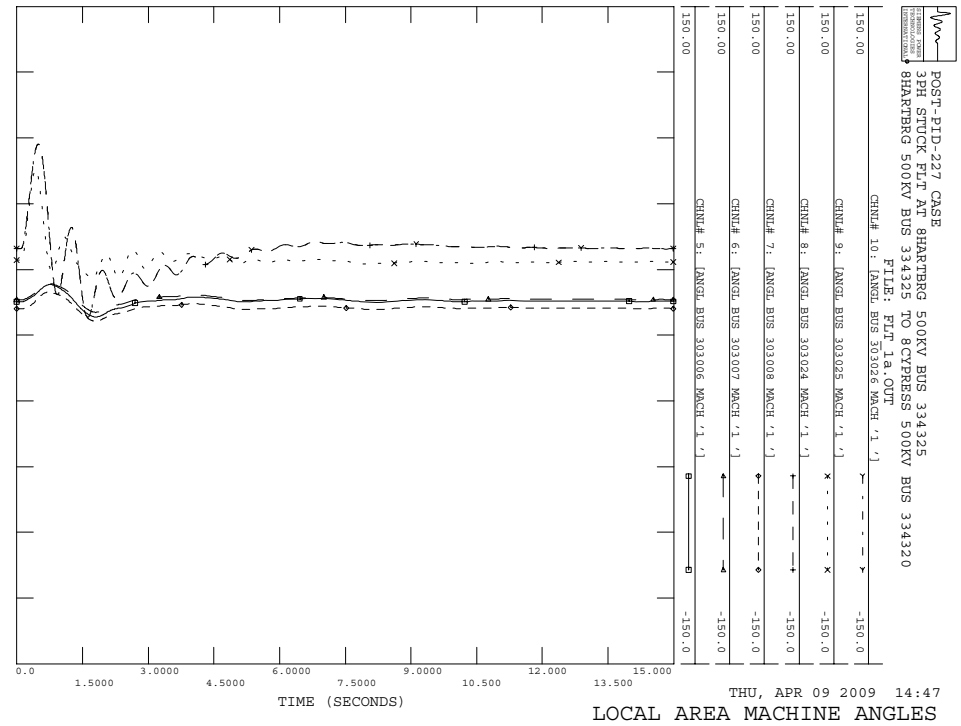
POST-PTD-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



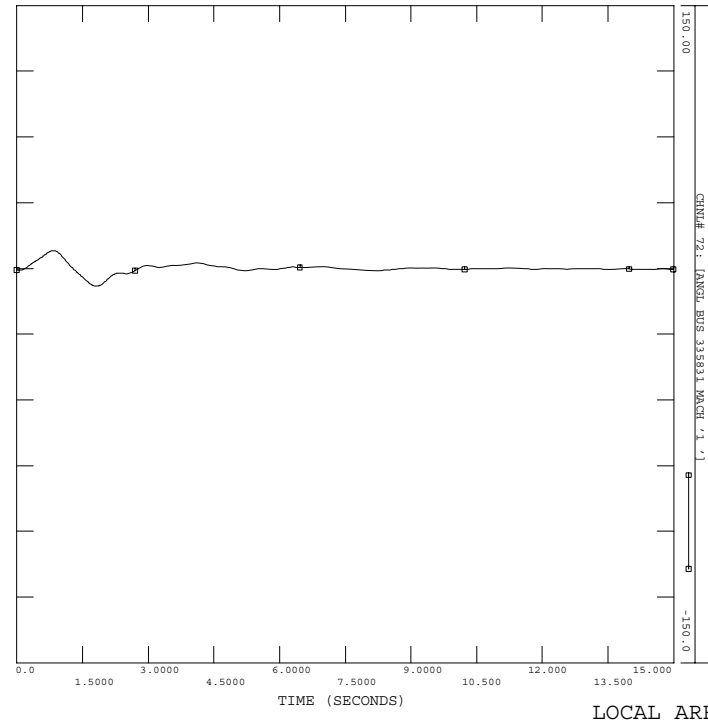
POST-PTD-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



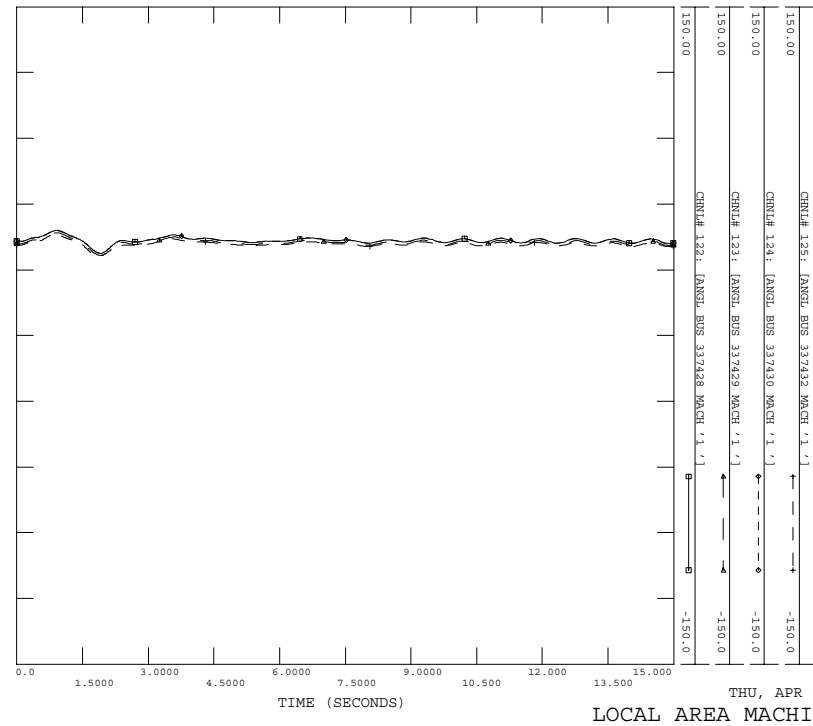




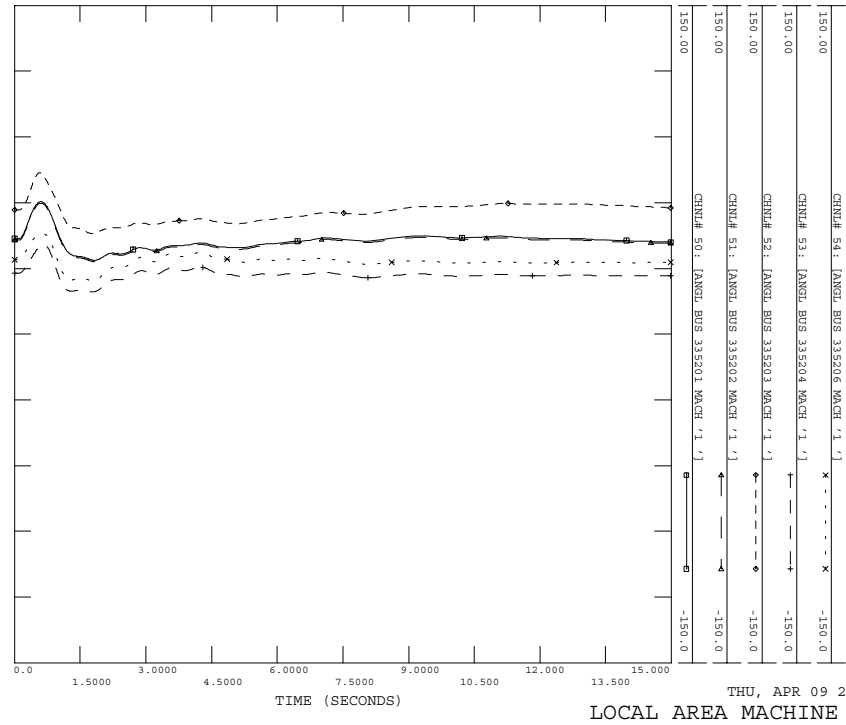
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



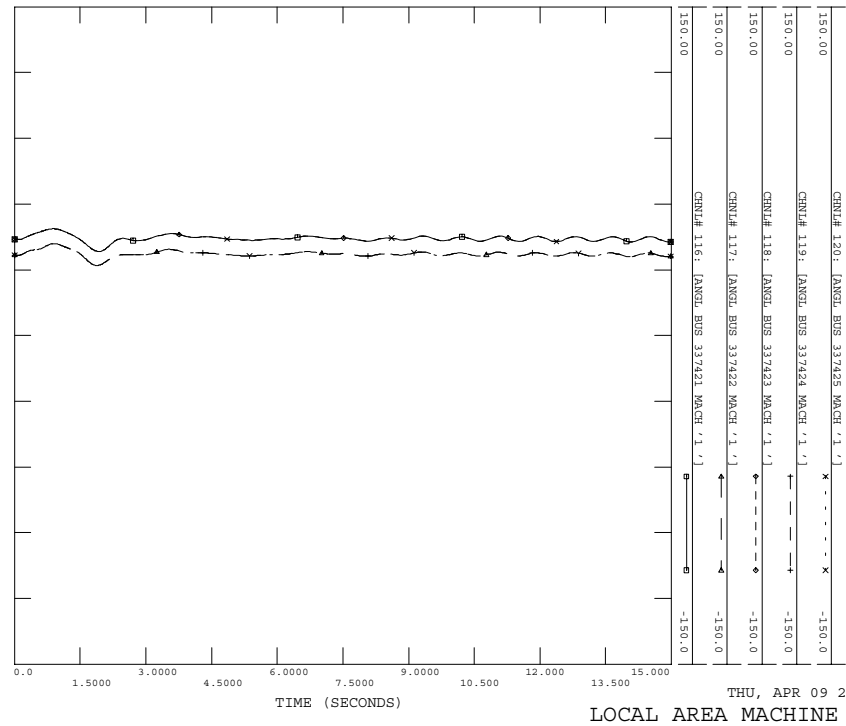
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



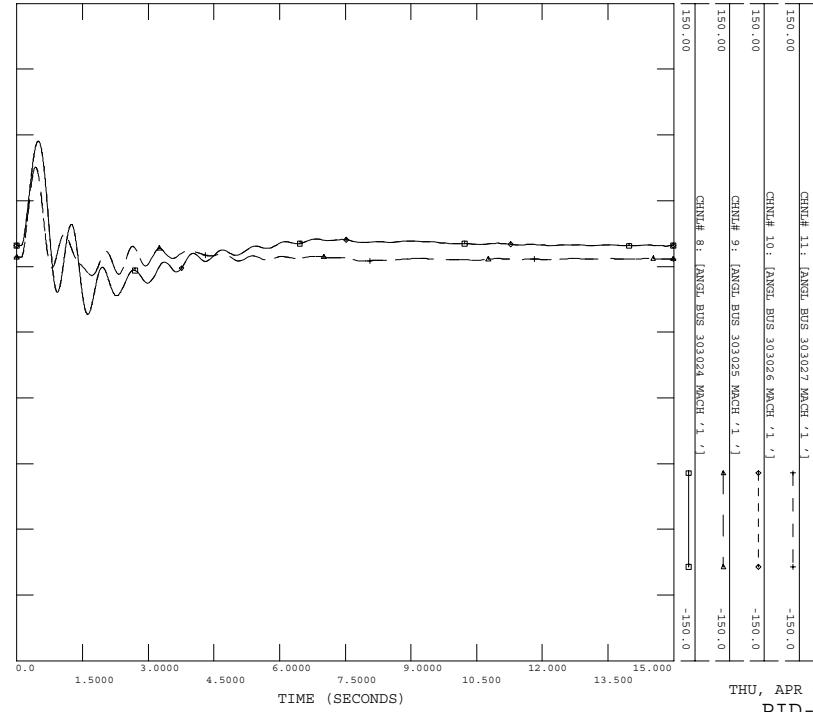
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



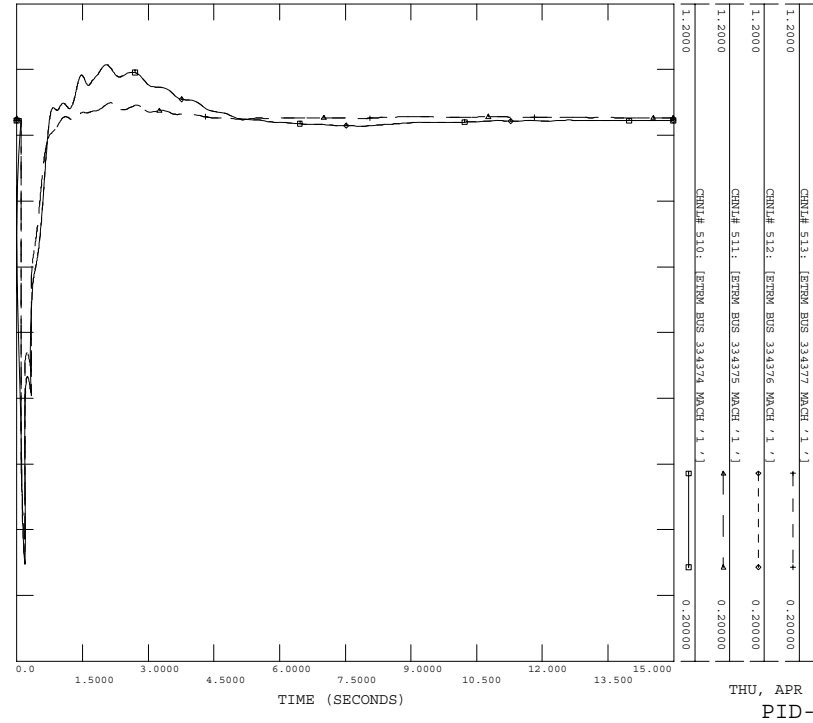
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



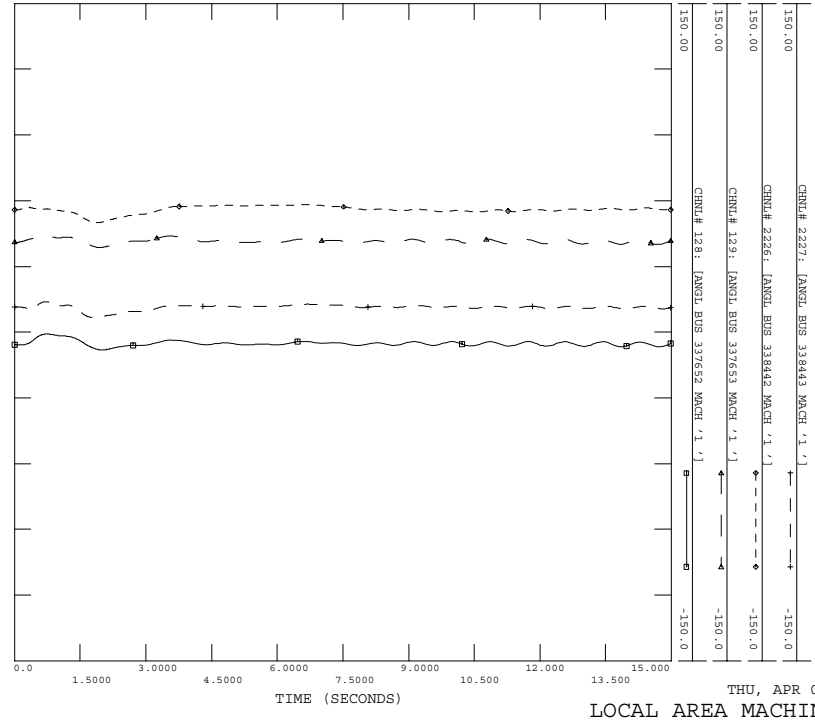
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



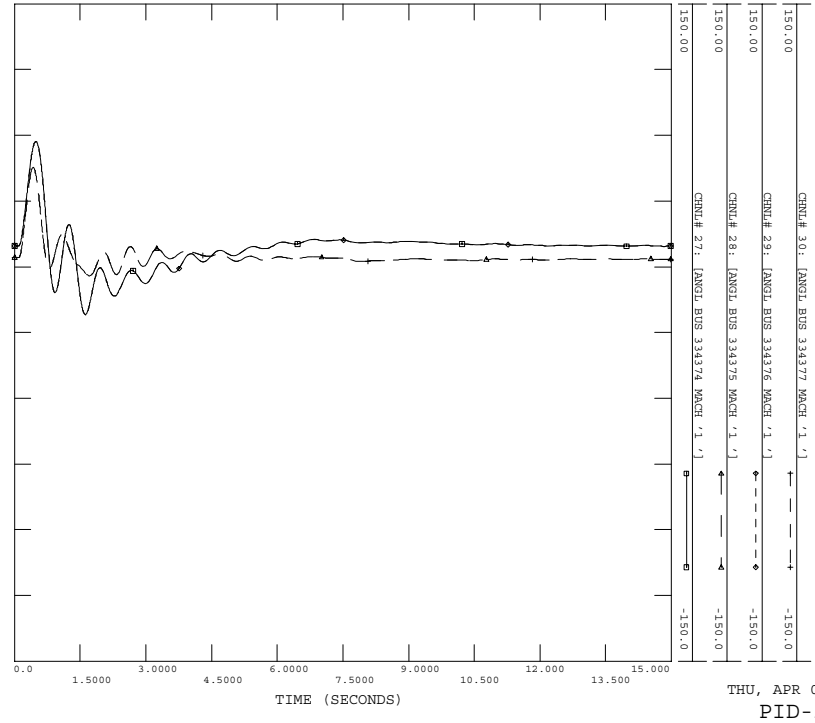
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



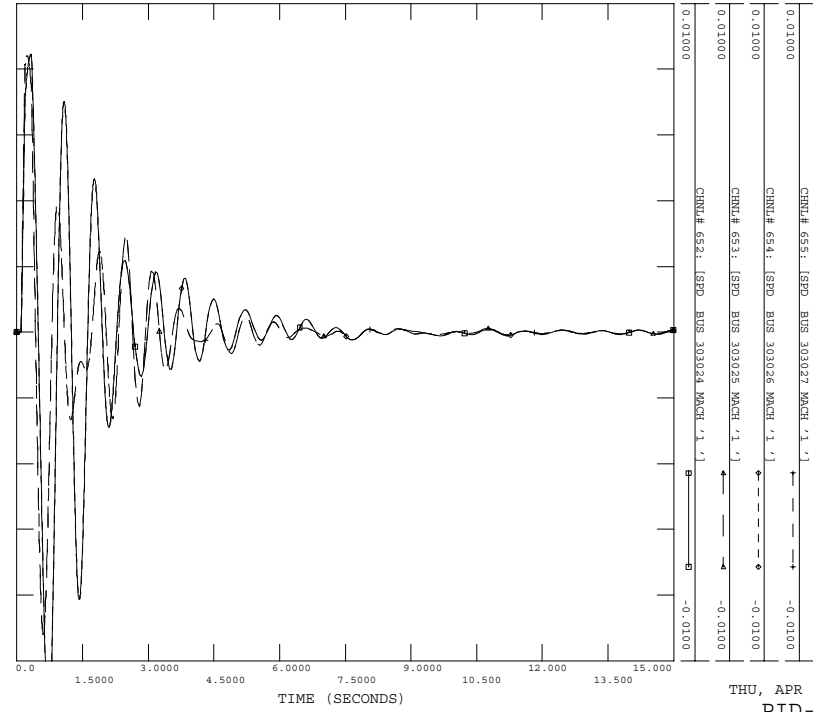
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



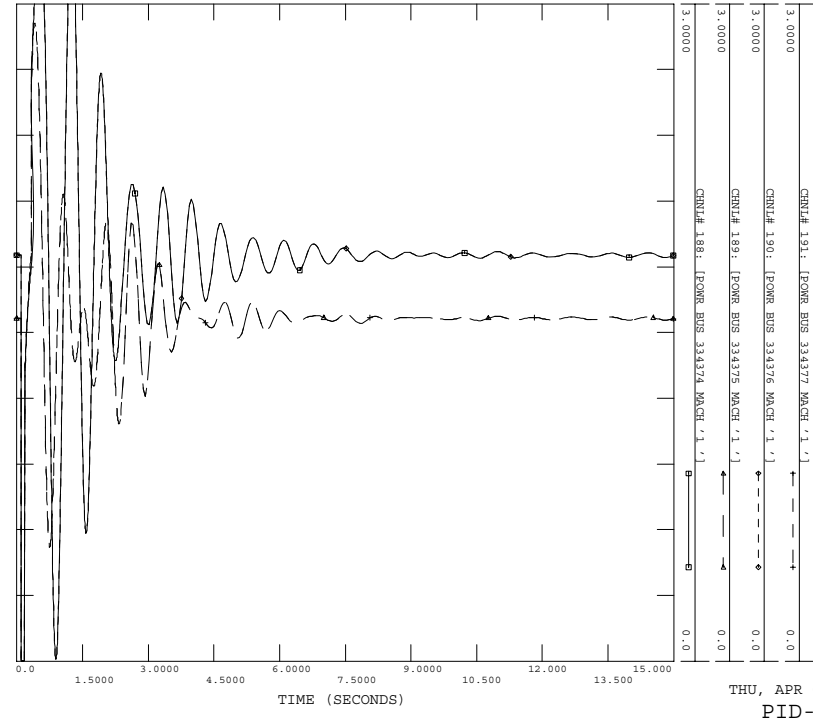
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320
 FILE: FLT_1a.OUT



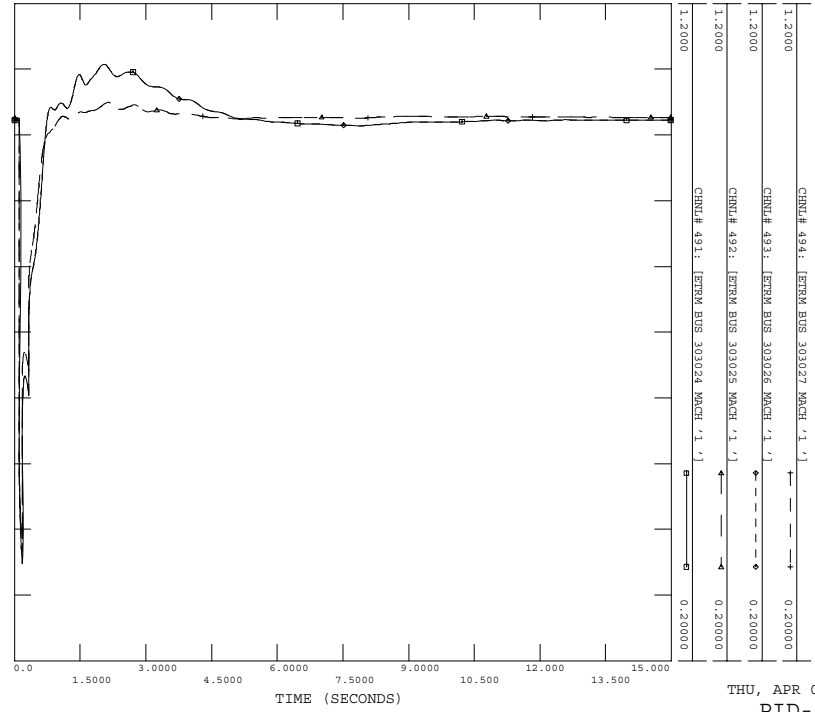
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1a.OUT



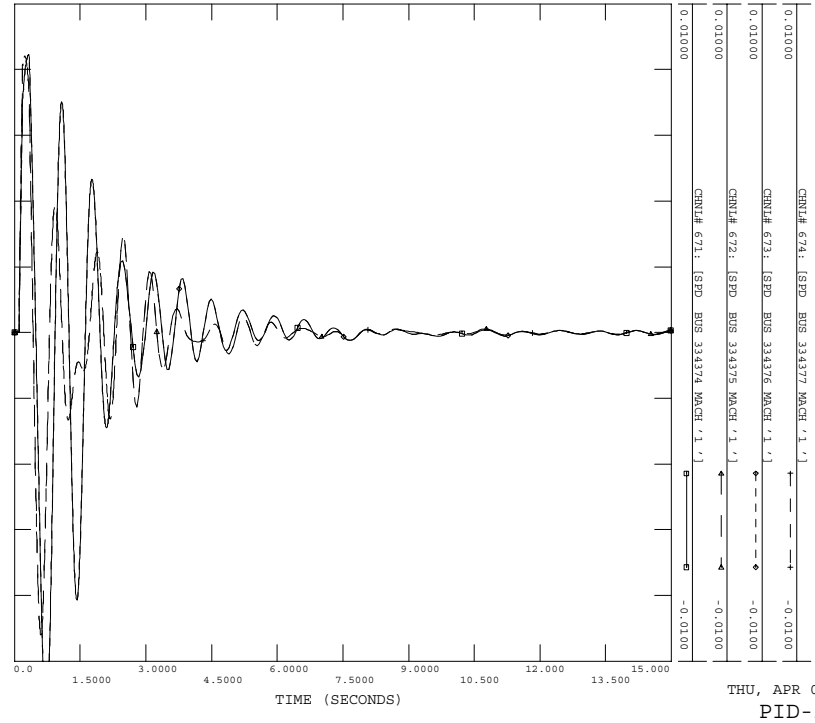
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1a.OUT



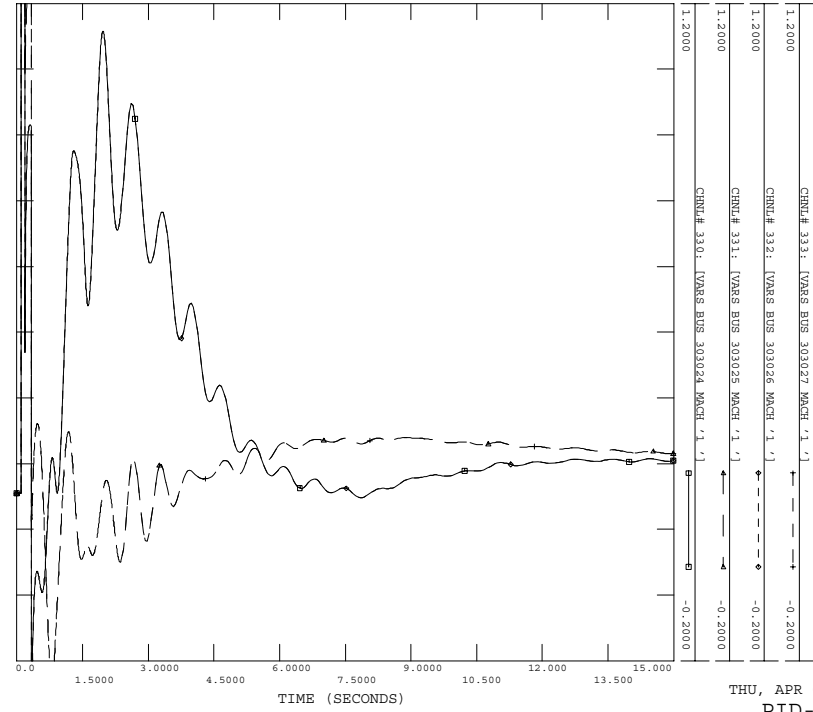
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1a.OUT



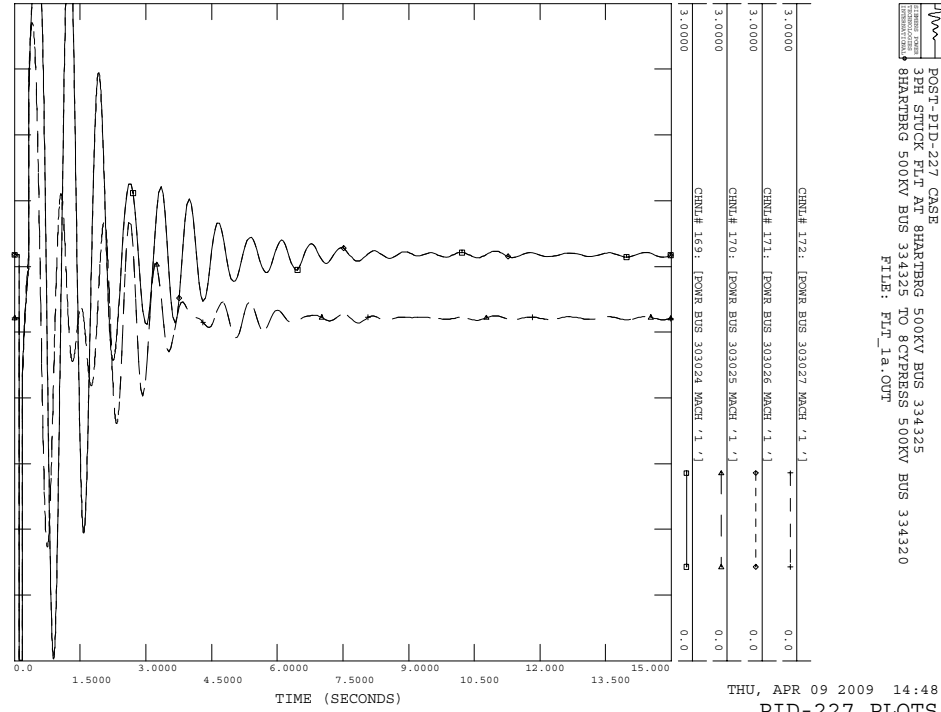
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8CYPRSS 500KV BUS 334320
 FILE: FLT_1a.OUT



POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8CYRESS 500KV BUS 334320
FILE: FLT_1a.OUT



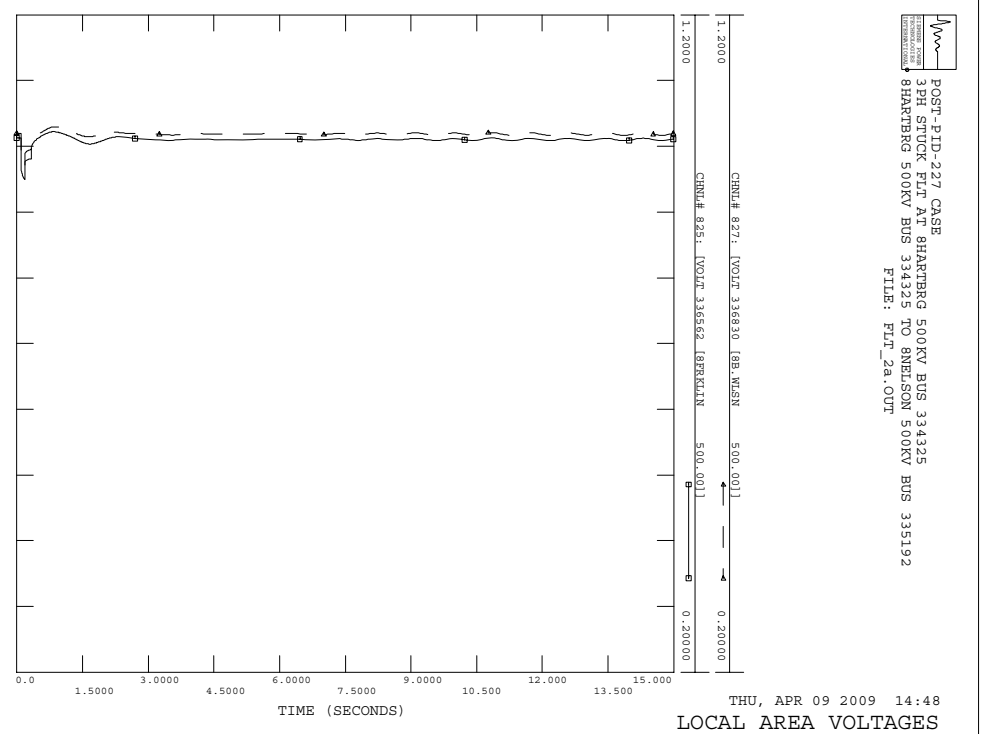
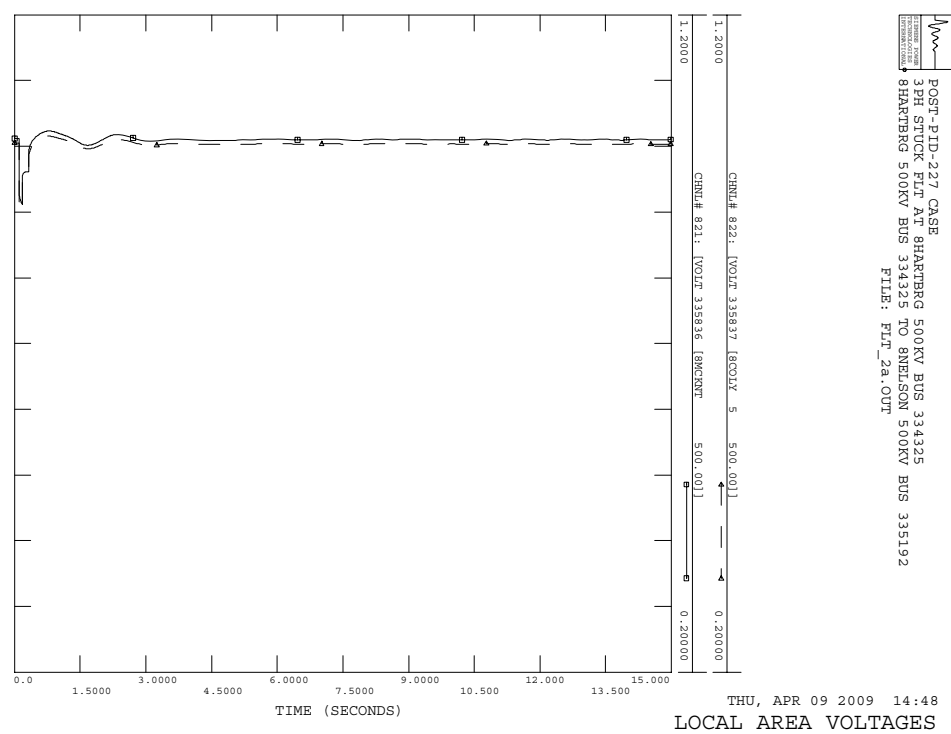
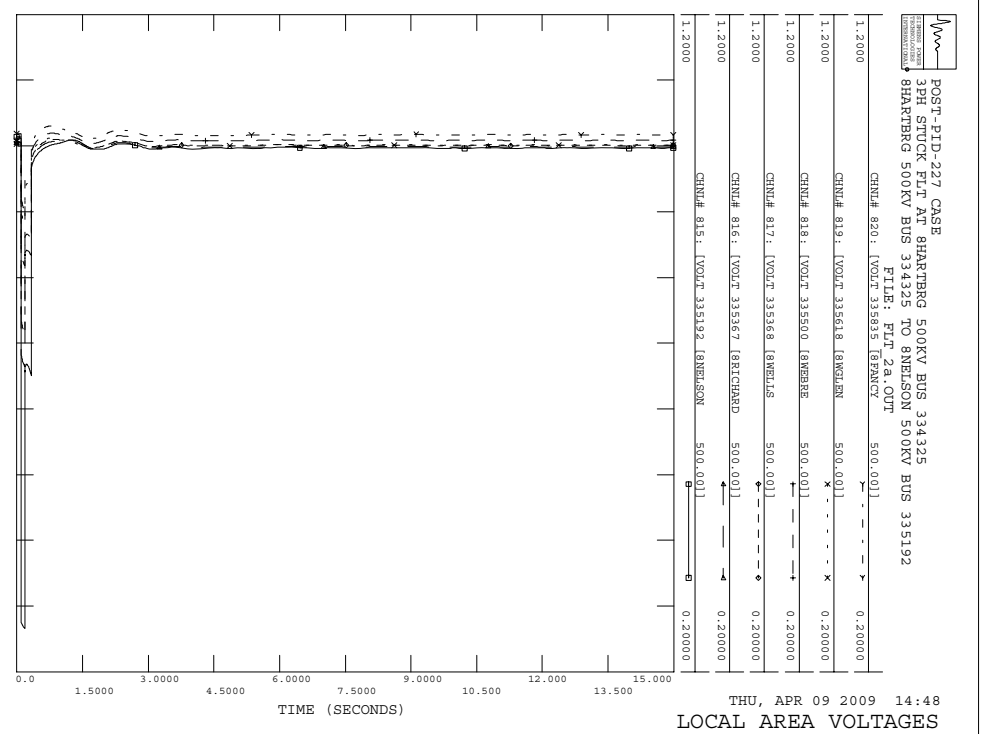
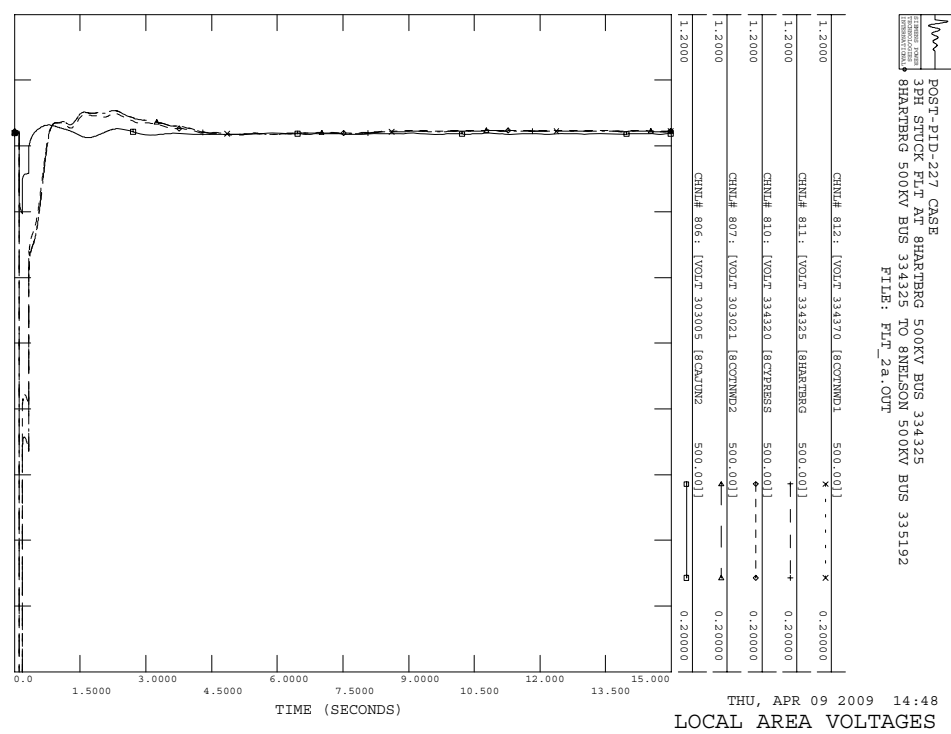
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8CYRESS 500KV BUS 334320
FILE: FLT_1a.OUT



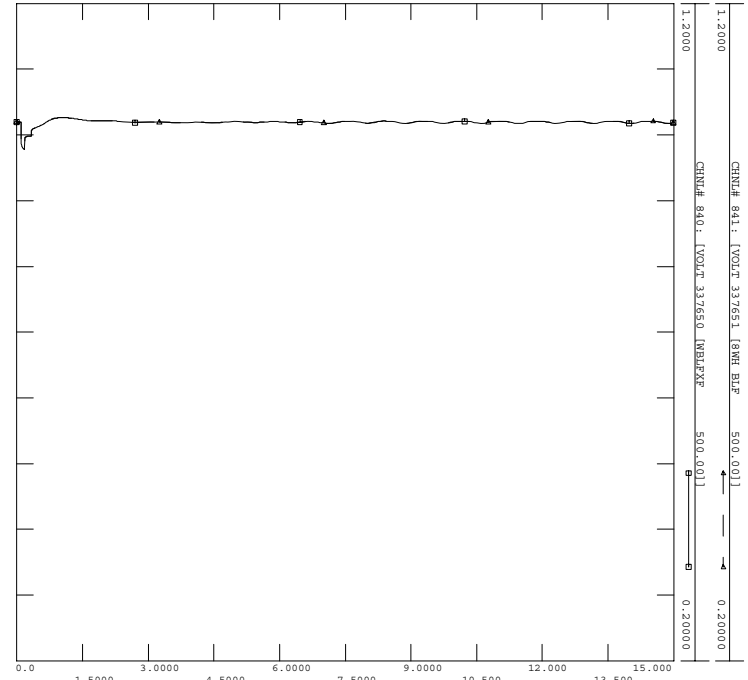
C.14 FLT_2a

Stuck breaker fault on the 8HARTBRG (#334325) to 8NELSON (#335192) 500 kV line, near the 8HARTBRG.

- a) Apply 3 Phase Fault AT 8HARTBRG 500KV BUS 334325
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8HARTBRG 500KV BUS 334325
- d) Apply 3 Phase fault at #334325 with admittance $610.61-j8402.17$ MVA
- e) Clear fault after 9 cycles by tripping line from 8HARTBRG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192

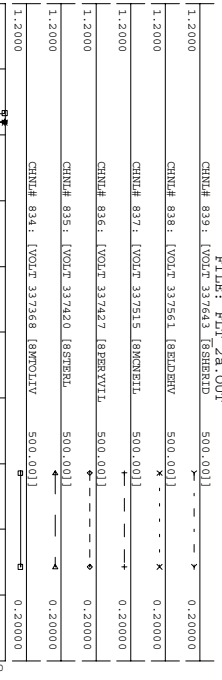


POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2A.OUT

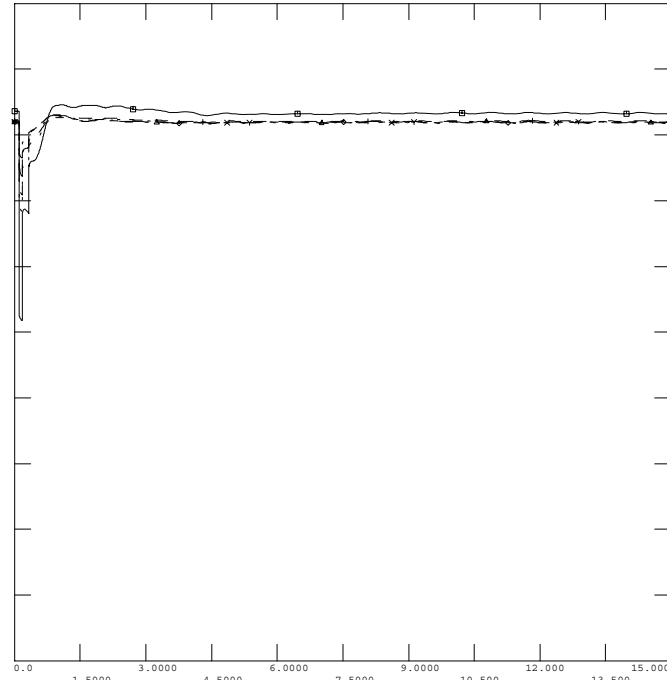


THU, APR 09 2009 14:48
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2A.OUT

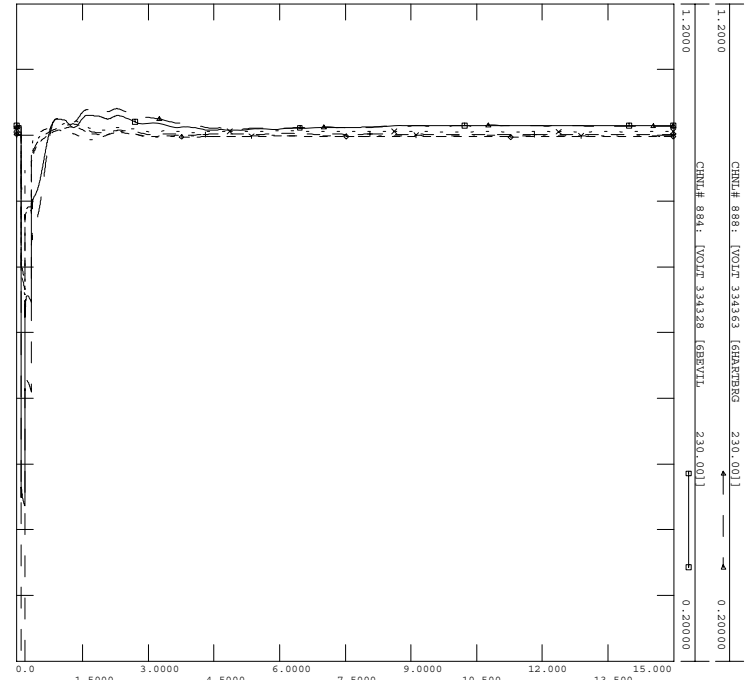


THU, APR 09 2009 14:48
 LOCAL AREA VOLTAGES



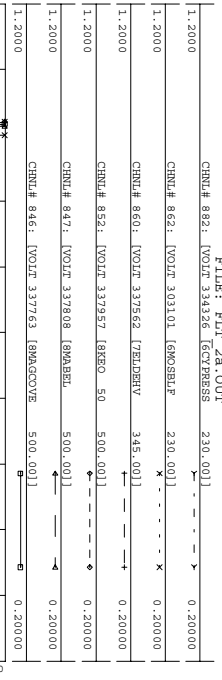
THU, APR 09 2009 14:48
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2A.OUT

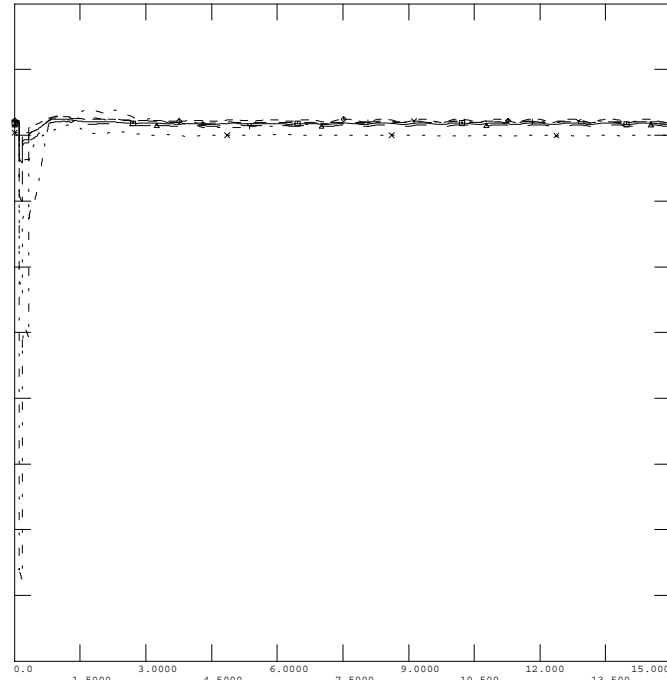


THU, APR 09 2009 14:48
 LOCAL AREA VOLTAGES

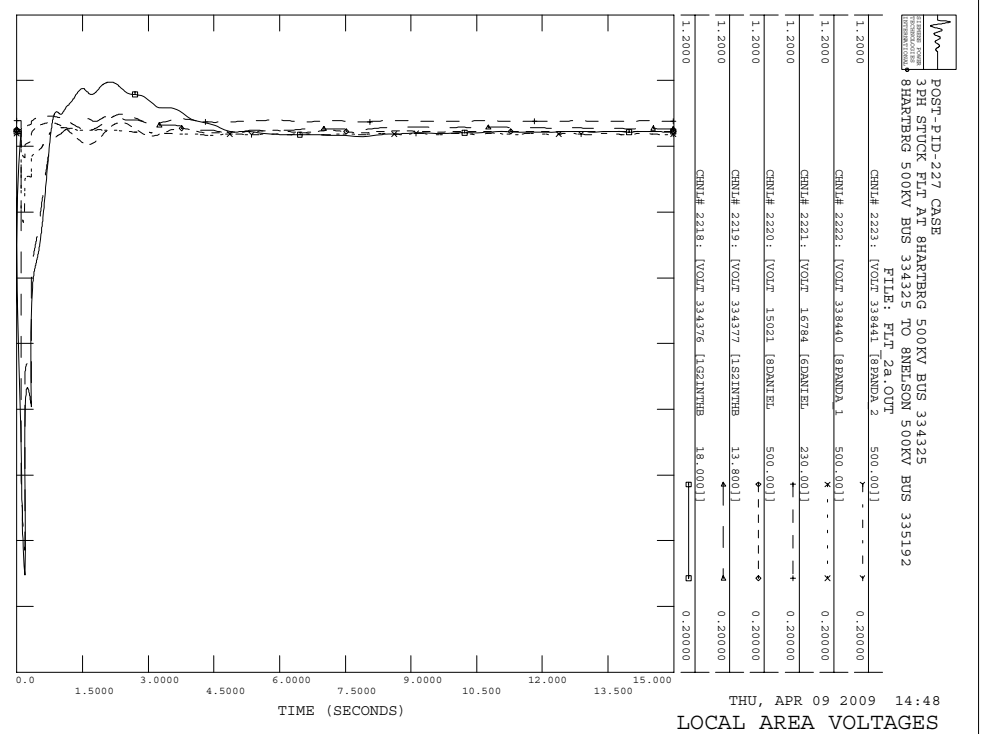
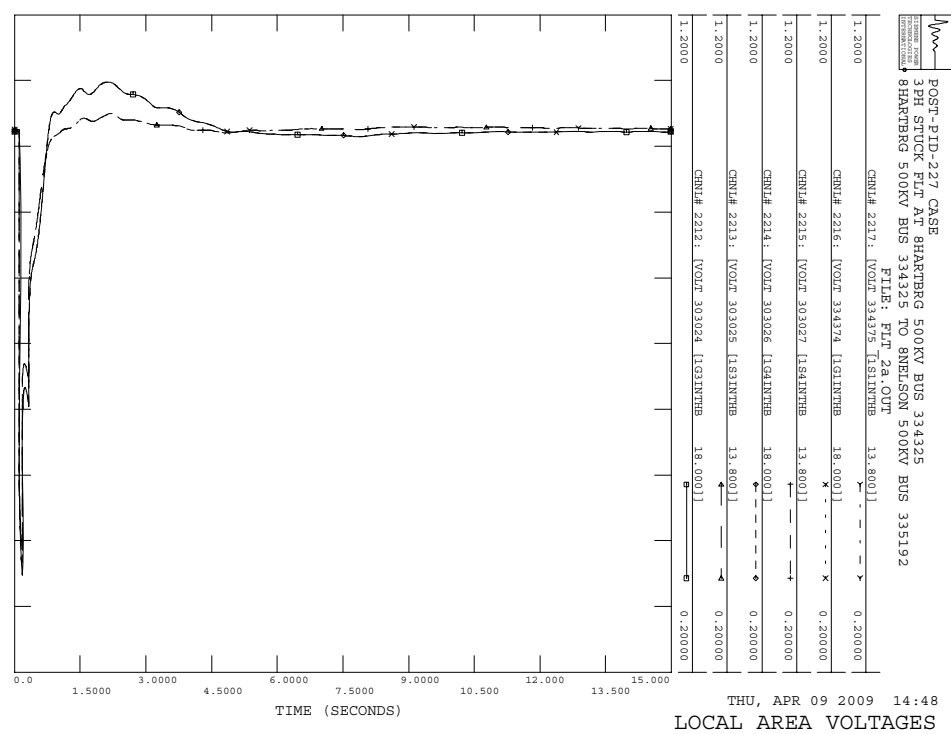
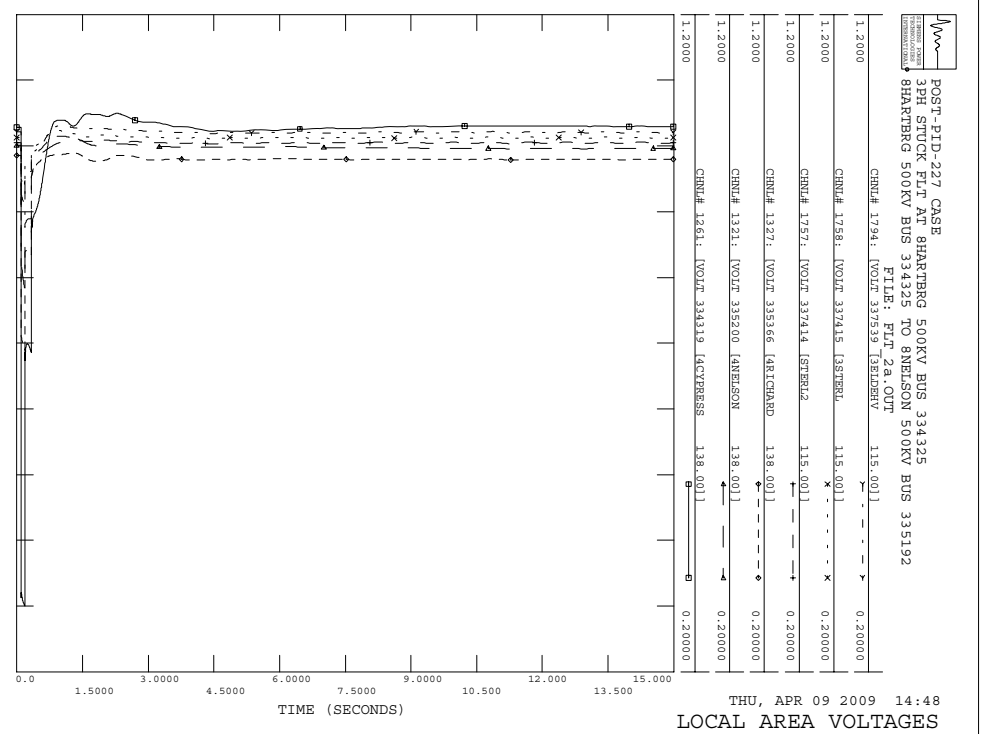
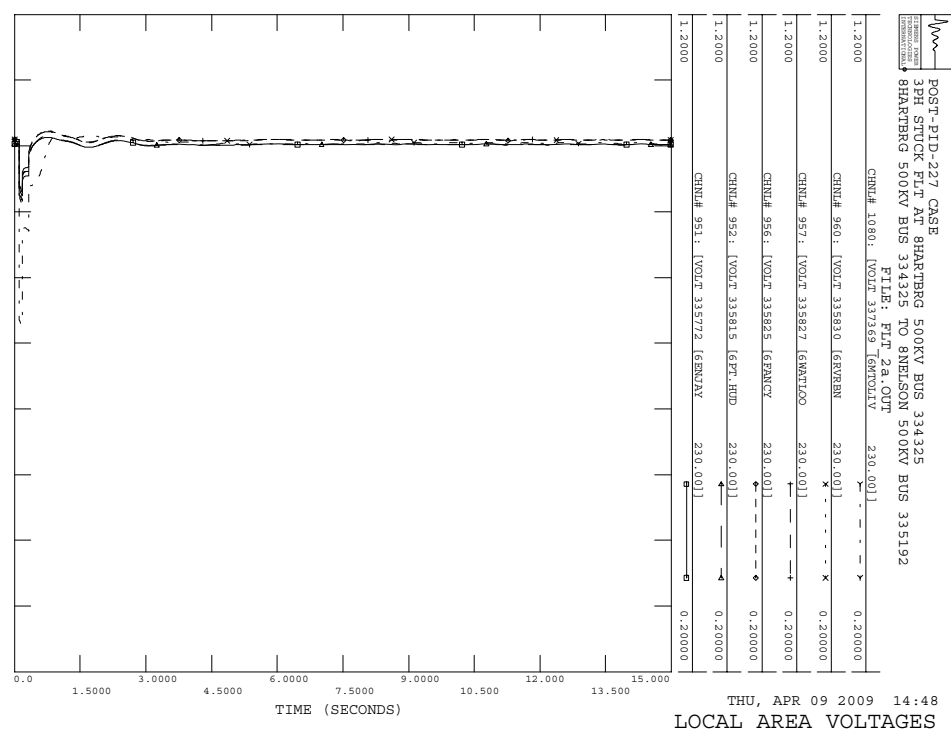
POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2A.OUT

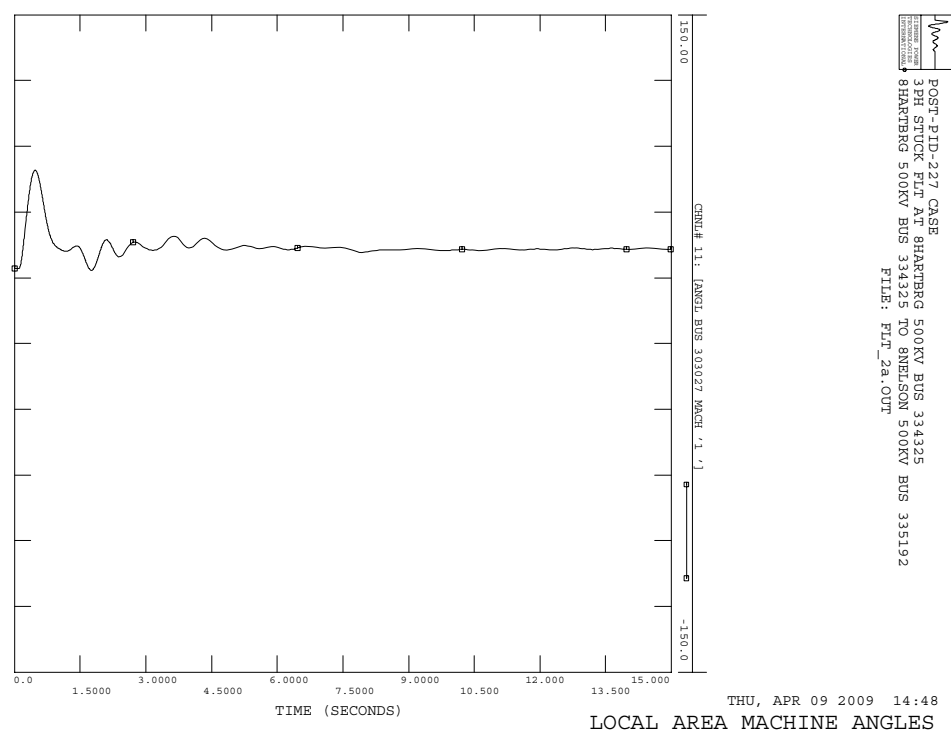
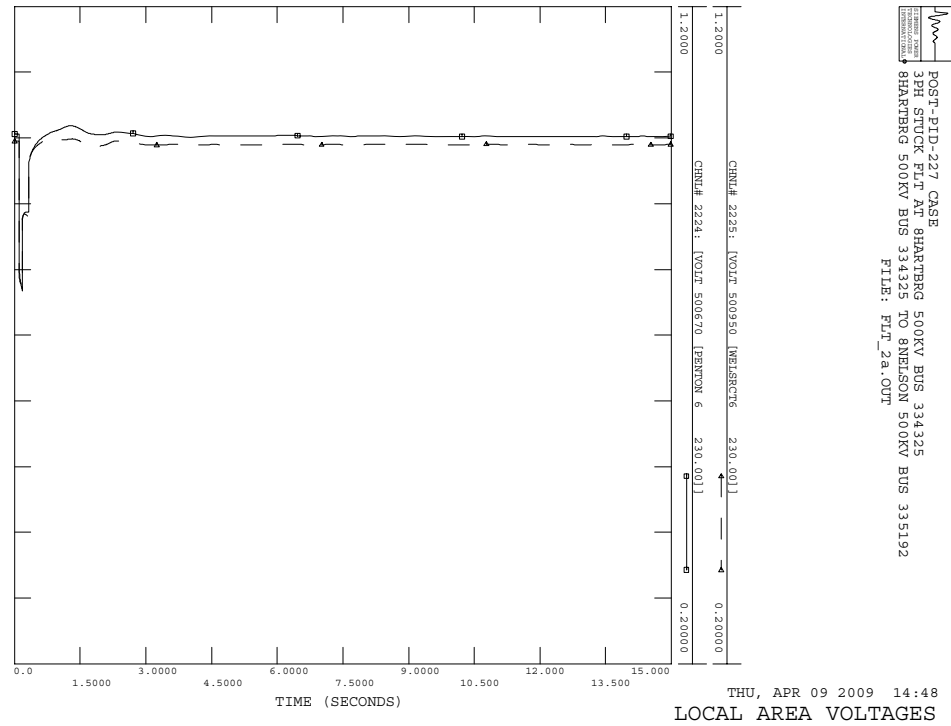
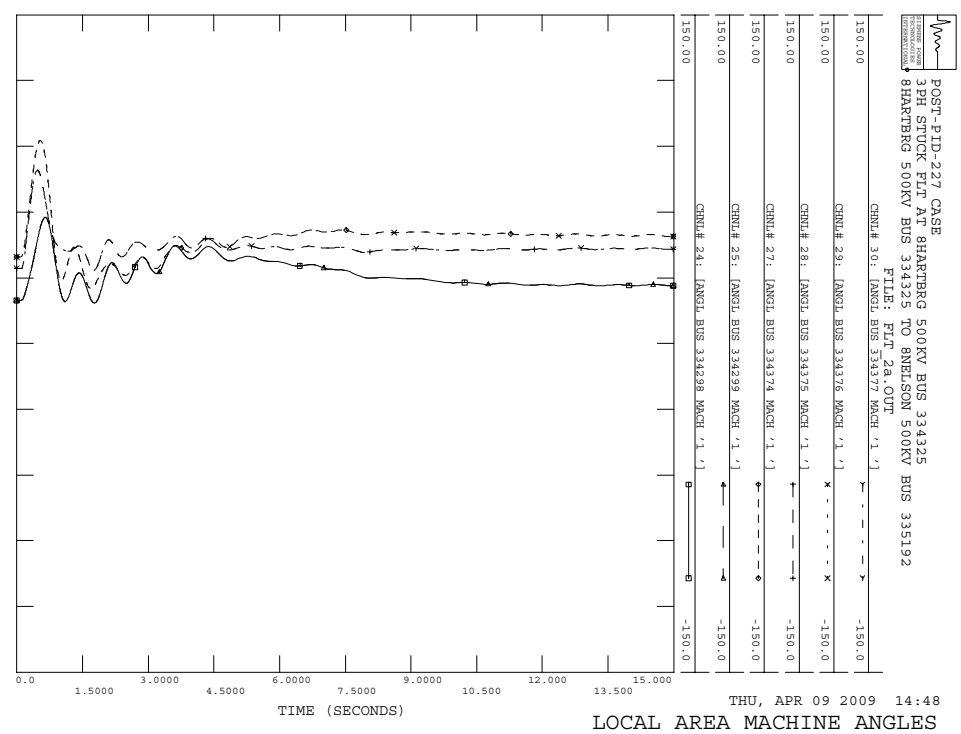
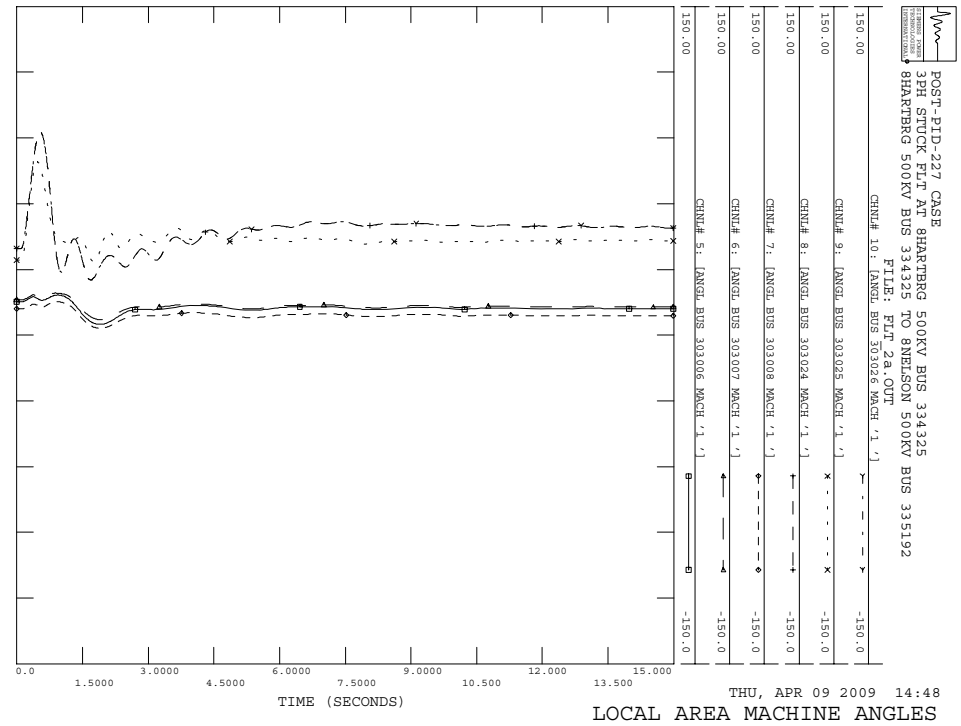


THU, APR 09 2009 14:48
 LOCAL AREA VOLTAGES

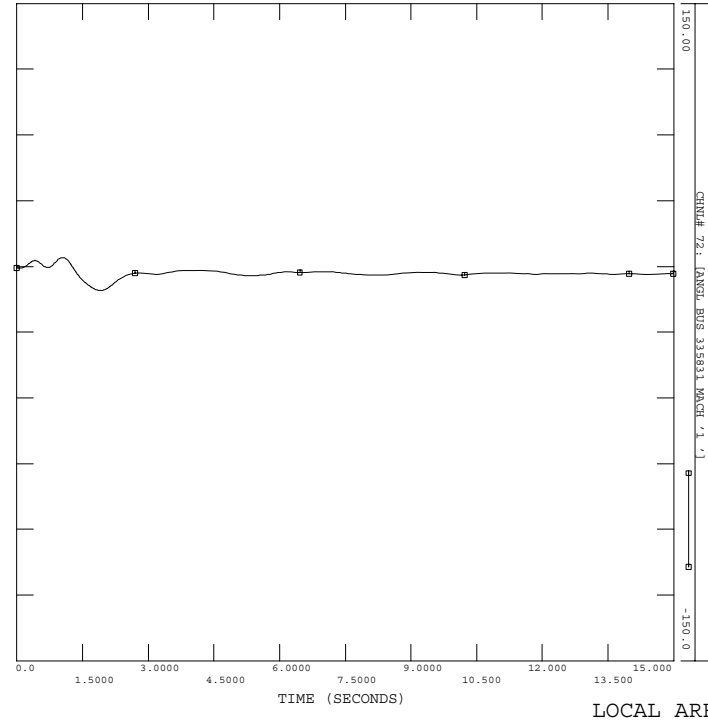


THU, APR 09 2009 14:48
 LOCAL AREA VOLTAGES



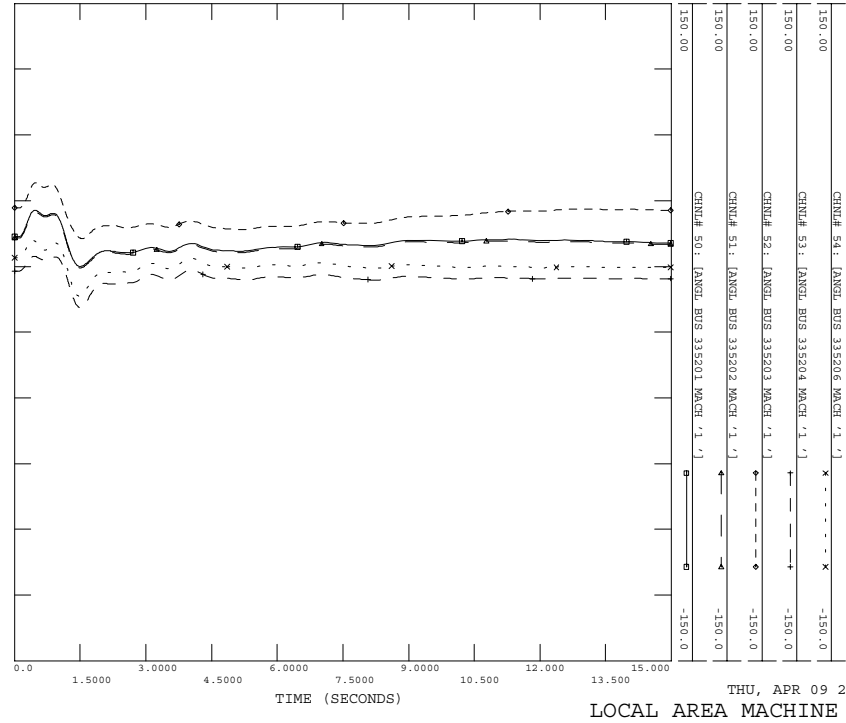


POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_24.0UT



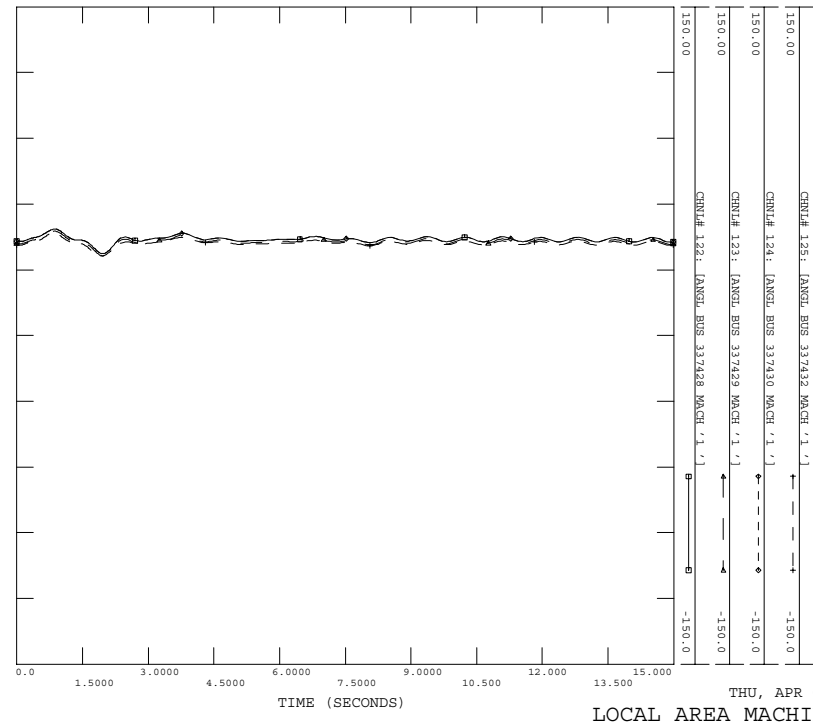
THU, APR 09 2009 14:48
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_24.0UT



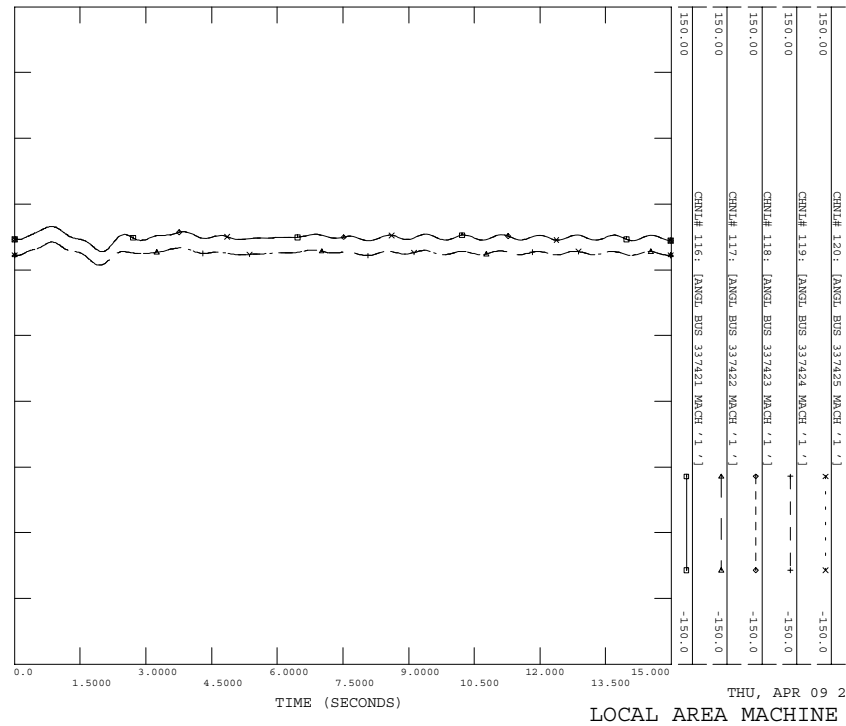
THU, APR 09 2009 14:48
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_24.0UT



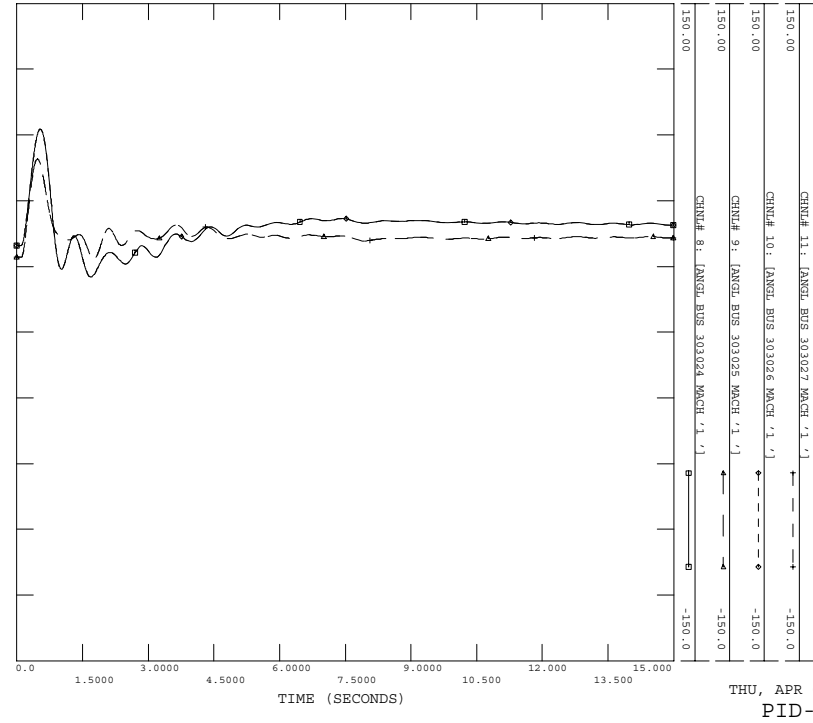
THU, APR 09 2009 14:48
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_24.0UT

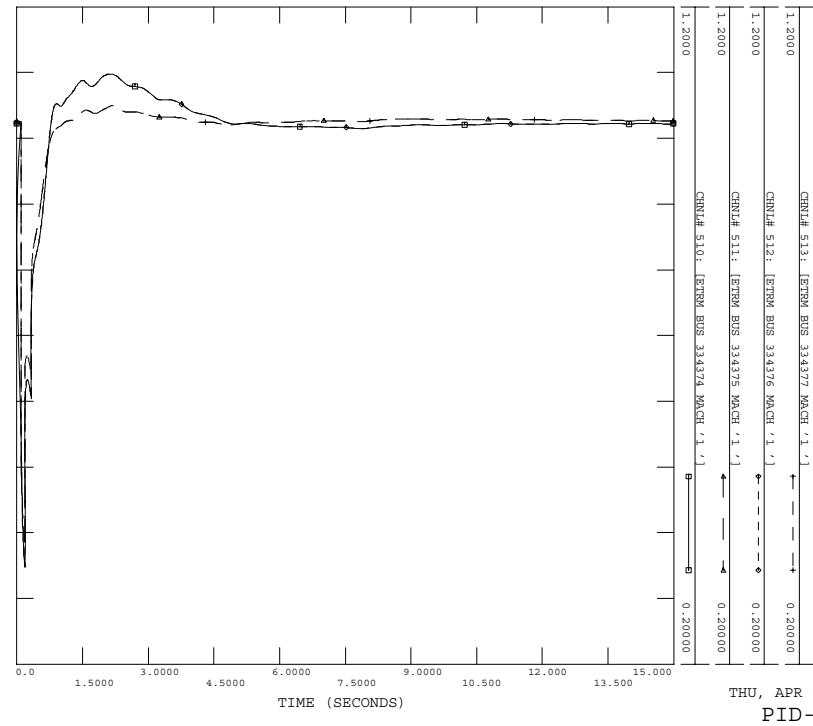


THU, APR 09 2009 14:48
 LOCAL AREA MACHINE ANGLES

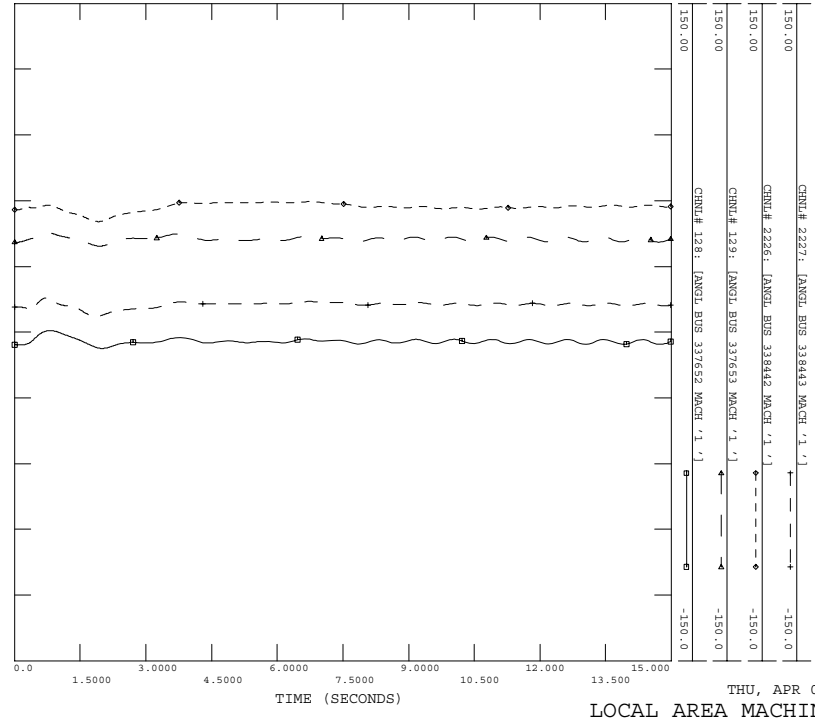
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_28.OUT



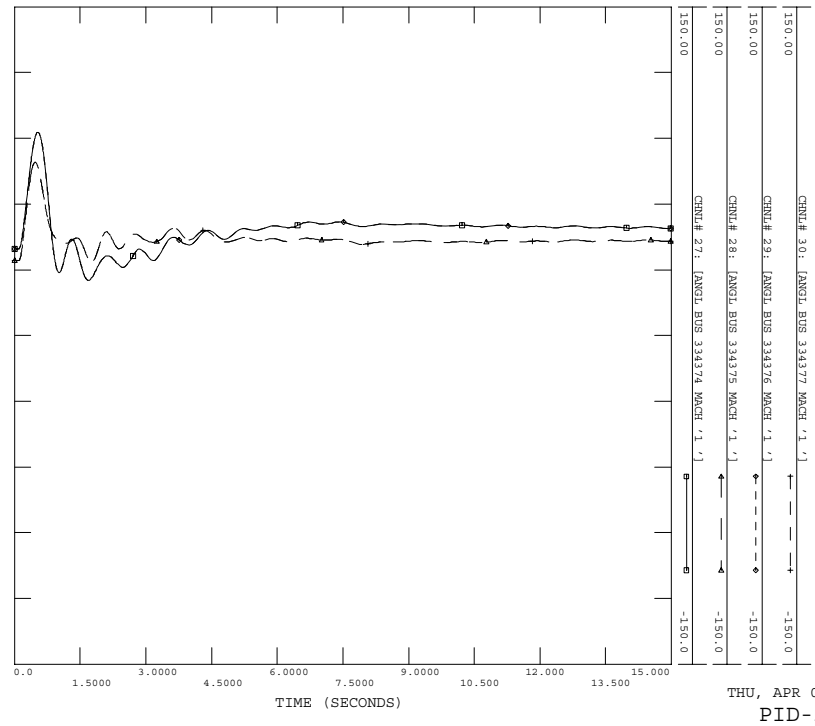
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_28.OUT



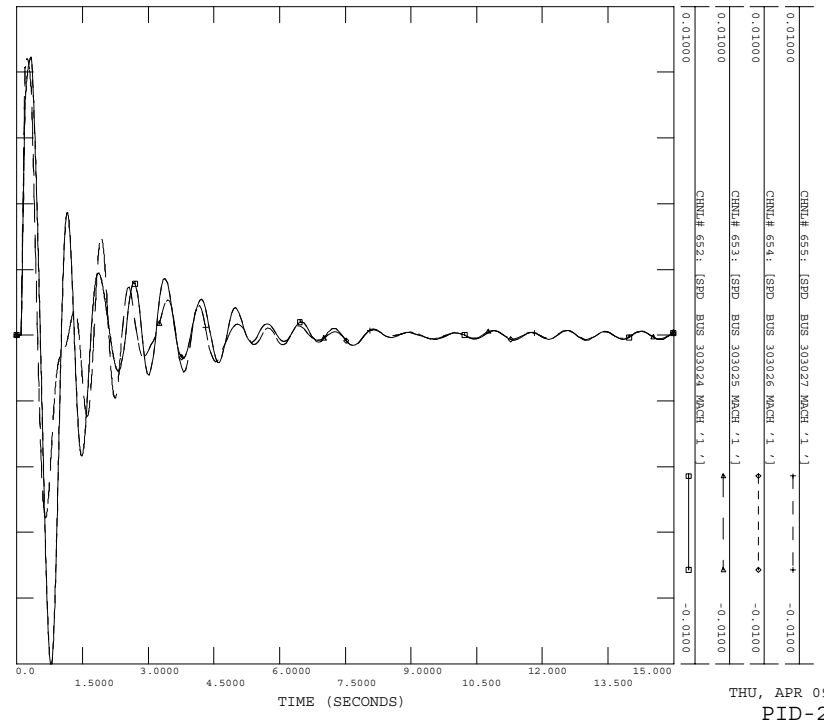
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_28.OUT



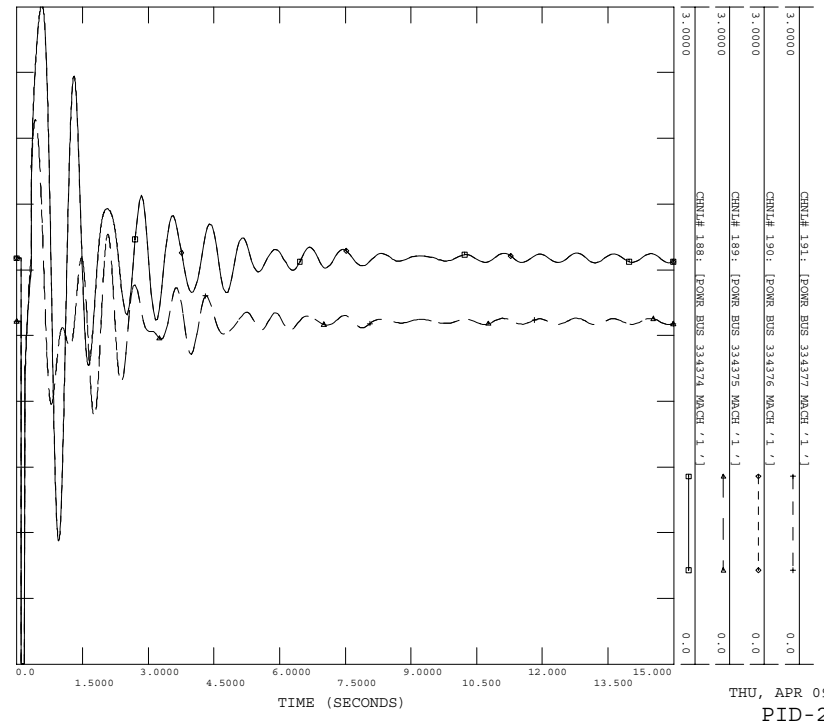
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_28.OUT



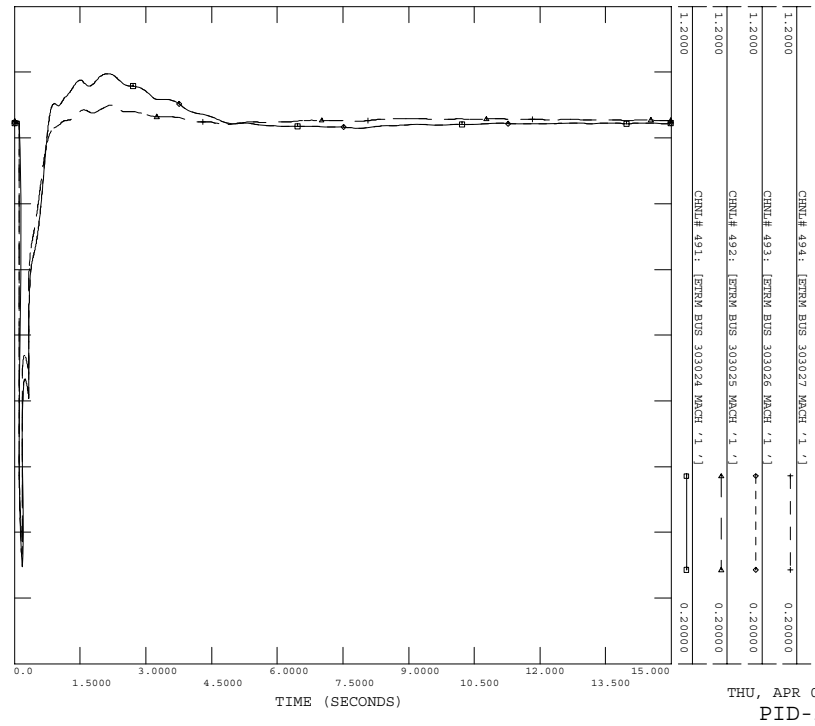
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2a.CUT



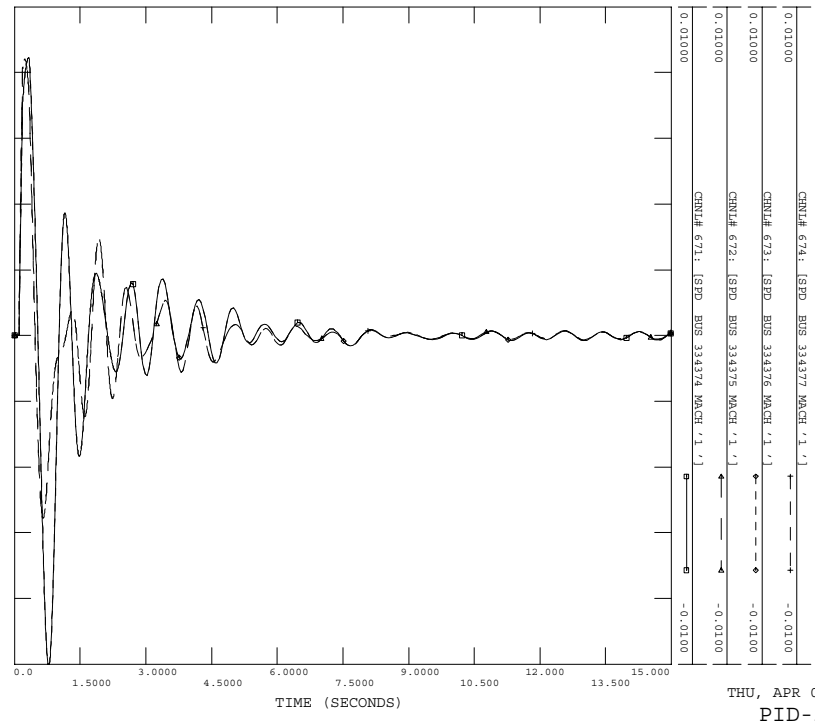
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2a.CUT



POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2a.CUT

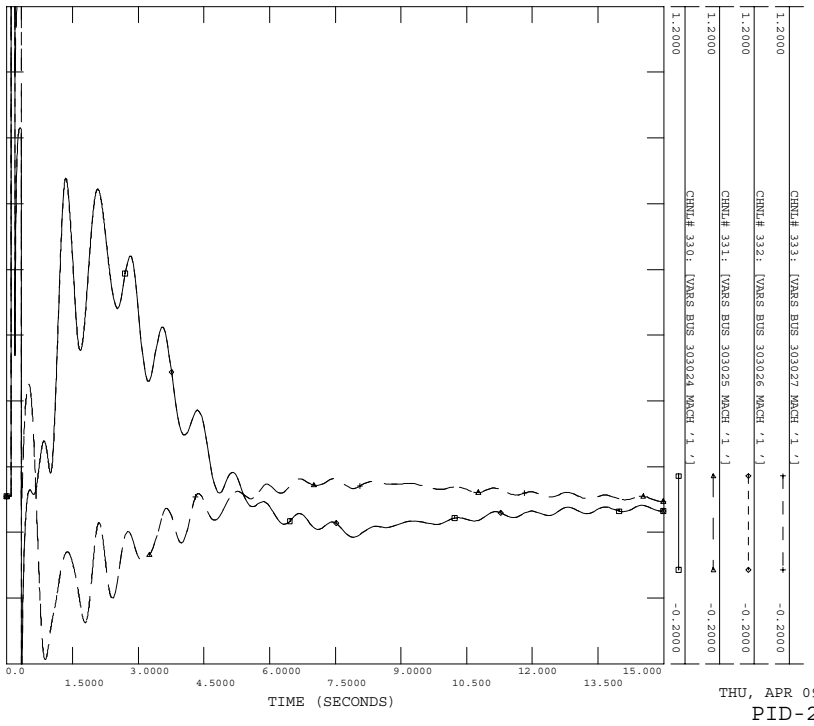


POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
 FILE: FLT_2a.CUT

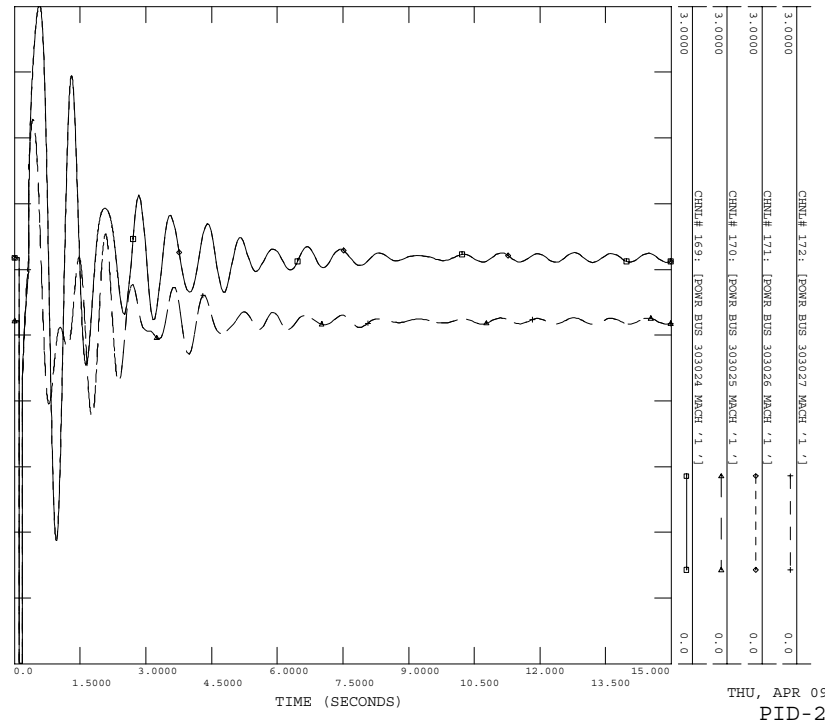




POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
FILE: FLT_2a.CUT



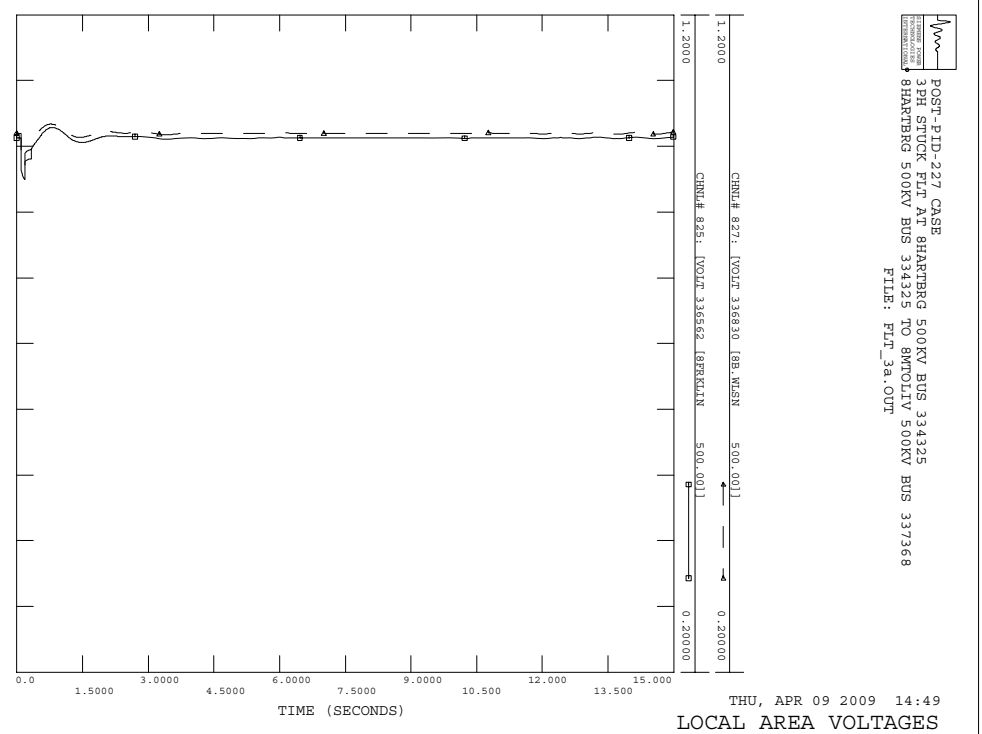
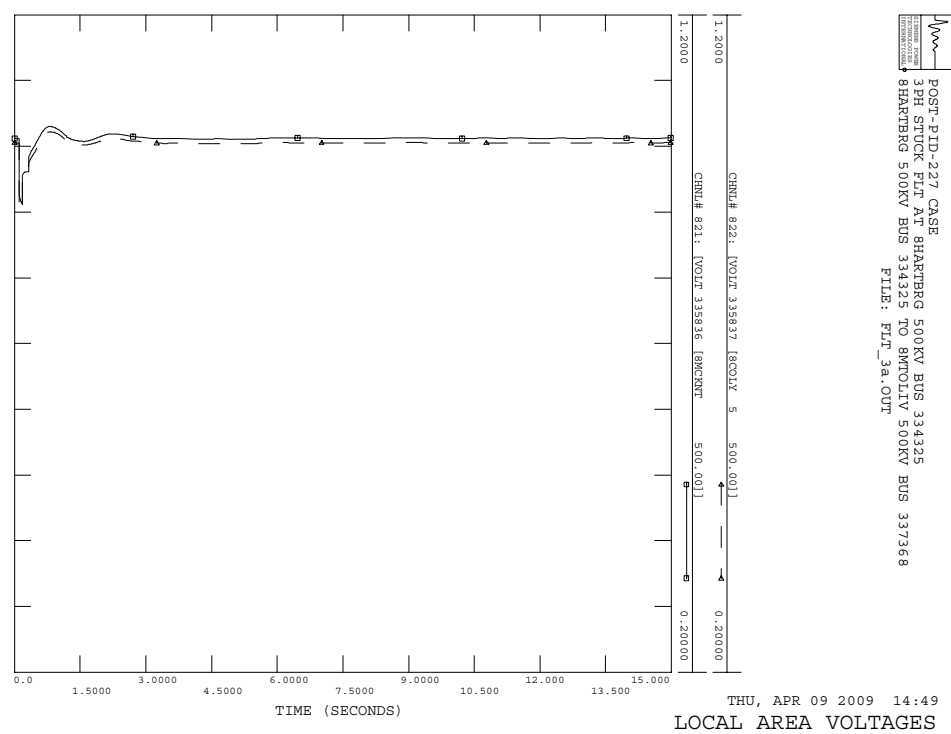
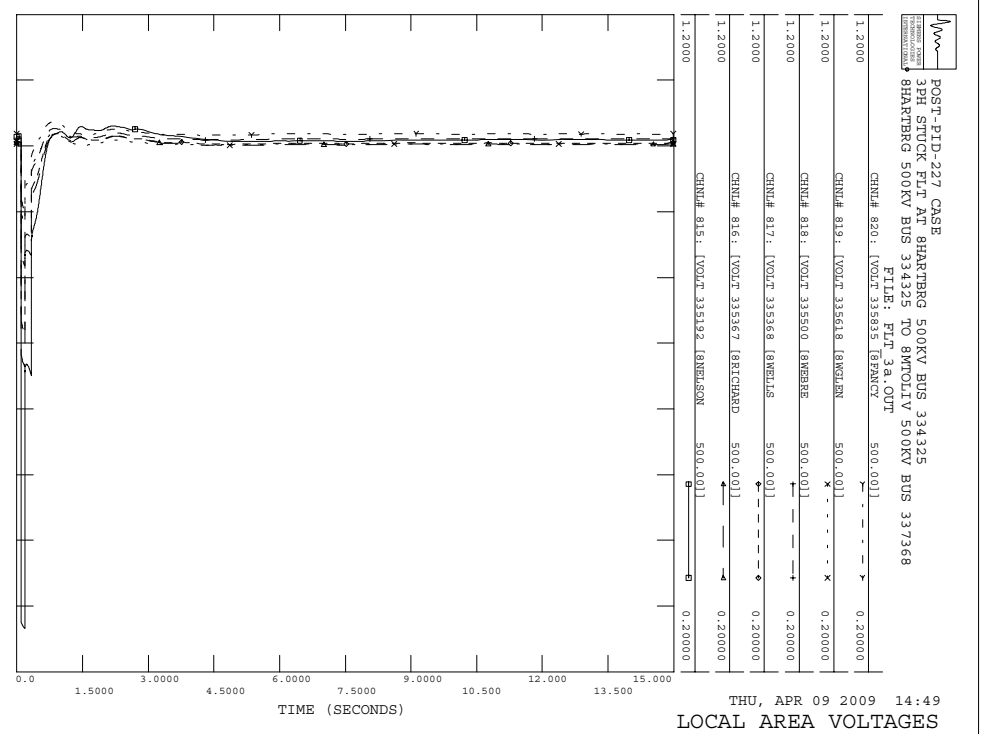
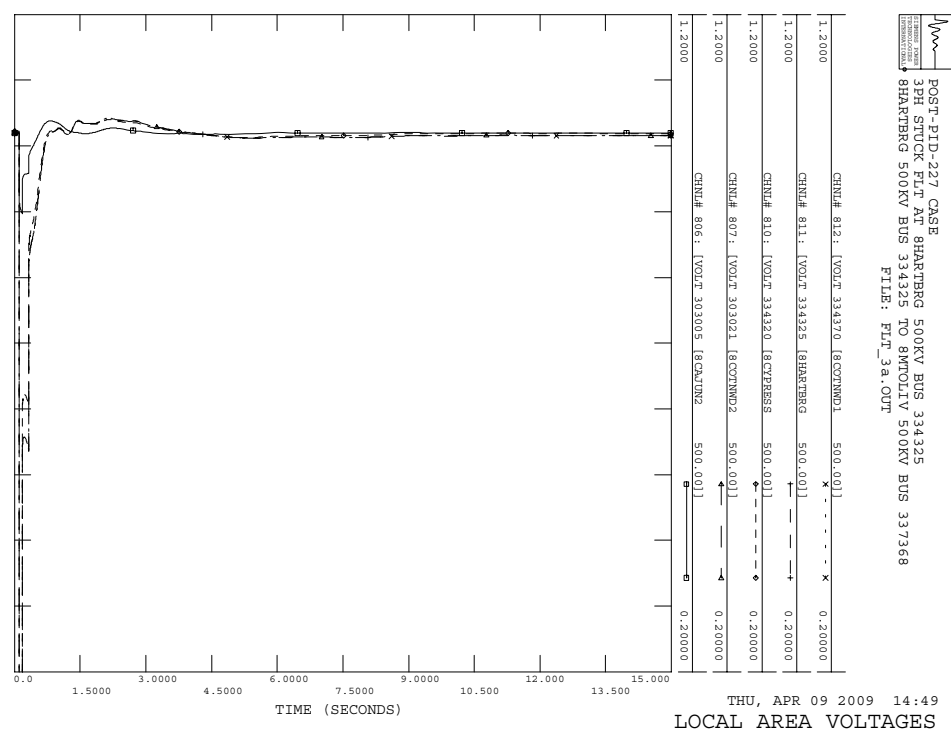
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO SHELSON 500KV BUS 335192
FILE: FLT_2a.CUT



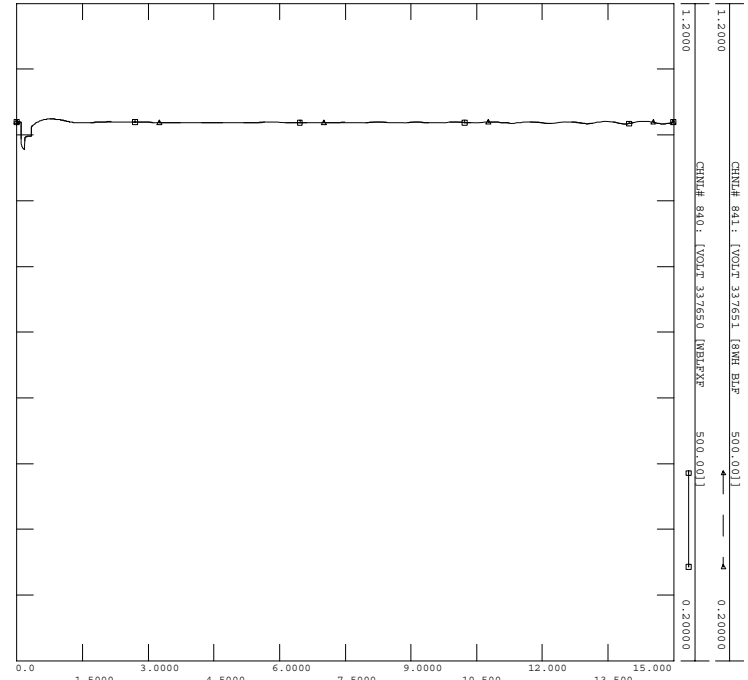
C.15 FLT_3a

Stuck breaker fault on the 8HARTBRG (#334325) to 8MTOLIV (#337368) 500 kV line, near the 8HARTBRG.

- a) Apply 3 Phase Fault AT 8HARTBRG 500KV BUS 334325
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8HARTBRG 500KV BUS 334325
- d) Apply 3 Phase fault at #334325 with admittance $610.61-j8402.17$ MVA
- e) Clear fault after 9 cycles by tripping line from 8HARTBRG 500KV BUS 334325 TO 8MTOLIV 500KV BUS 337368

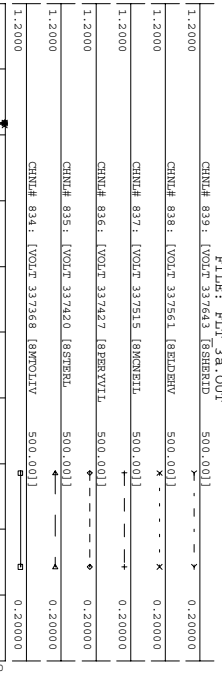


POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



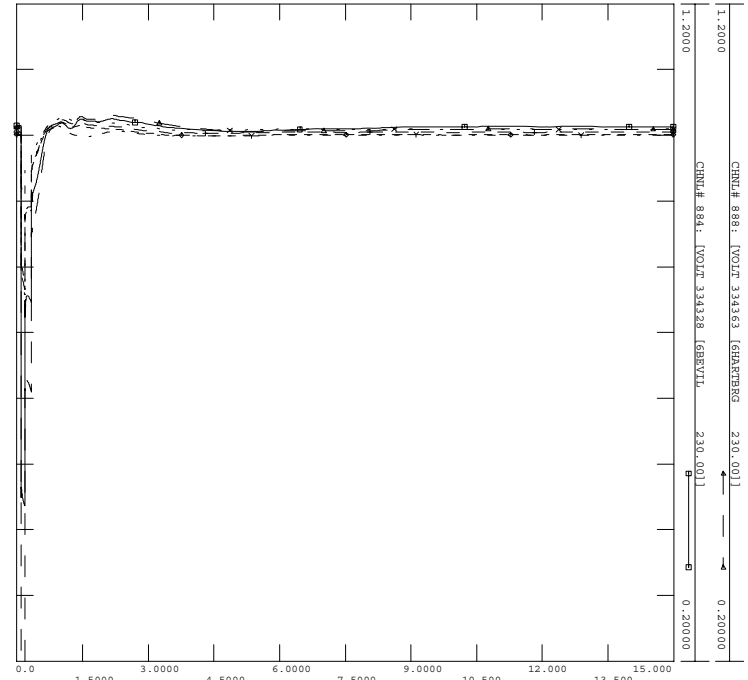
THU, APR 09 2009 14:49
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



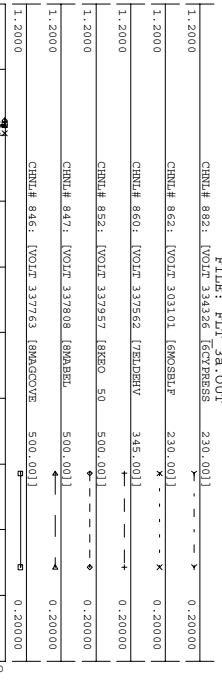
THU, APR 09 2009 14:49
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_38.OUT

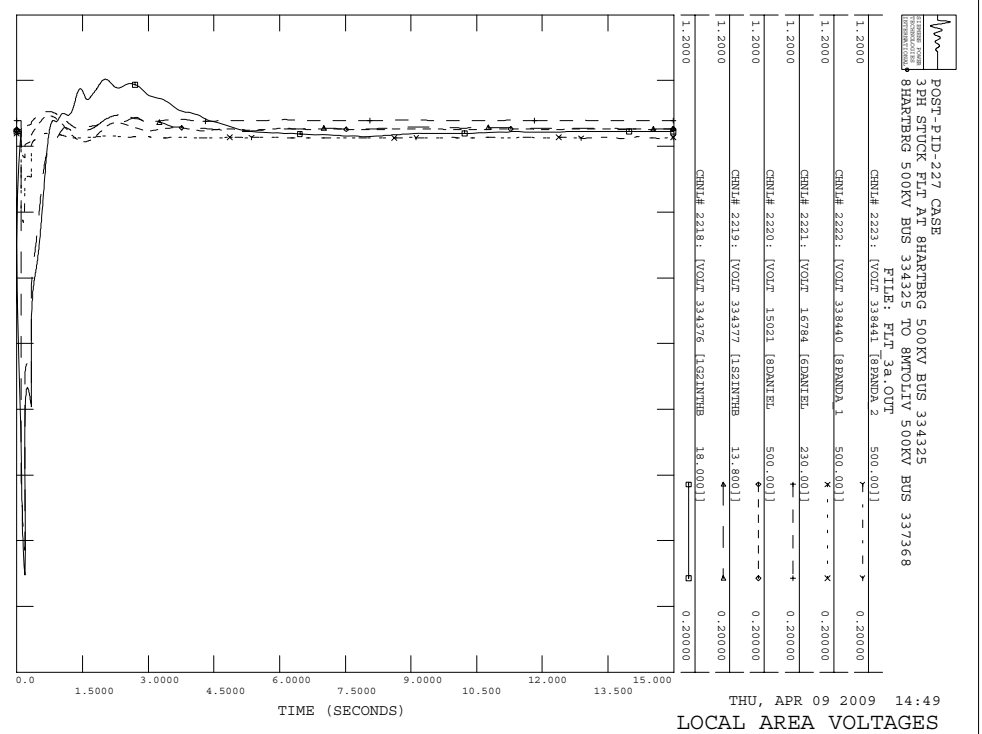
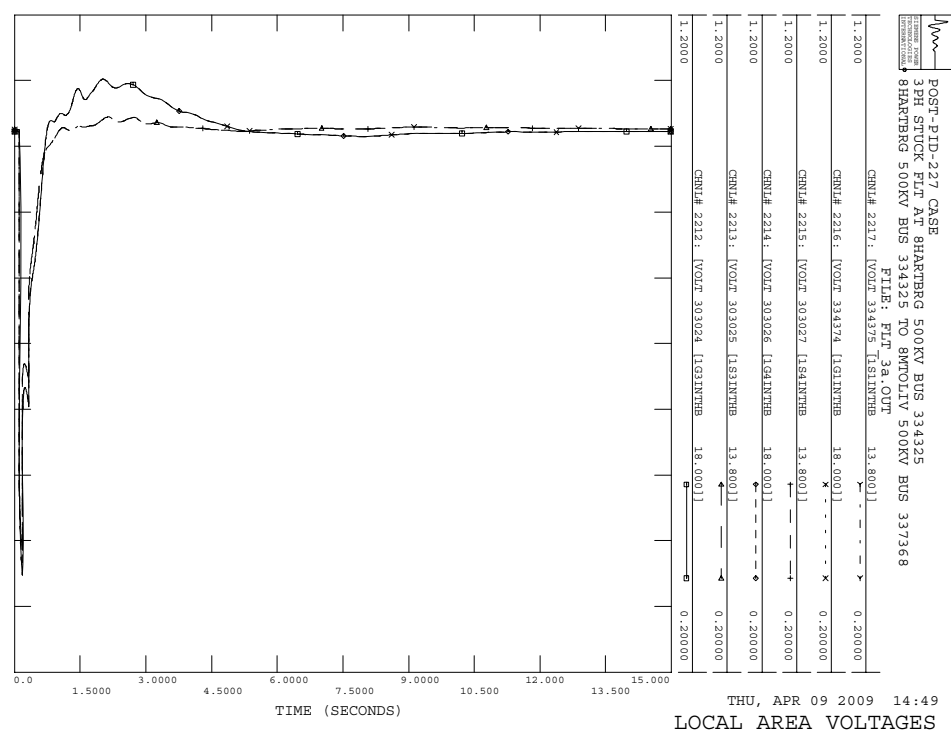
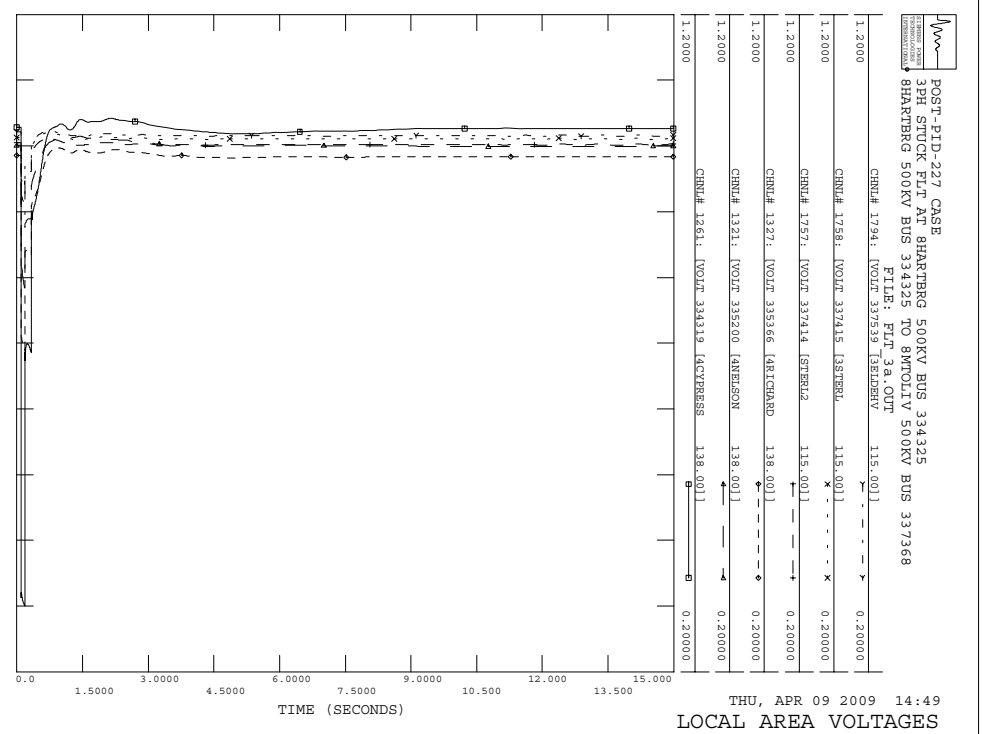
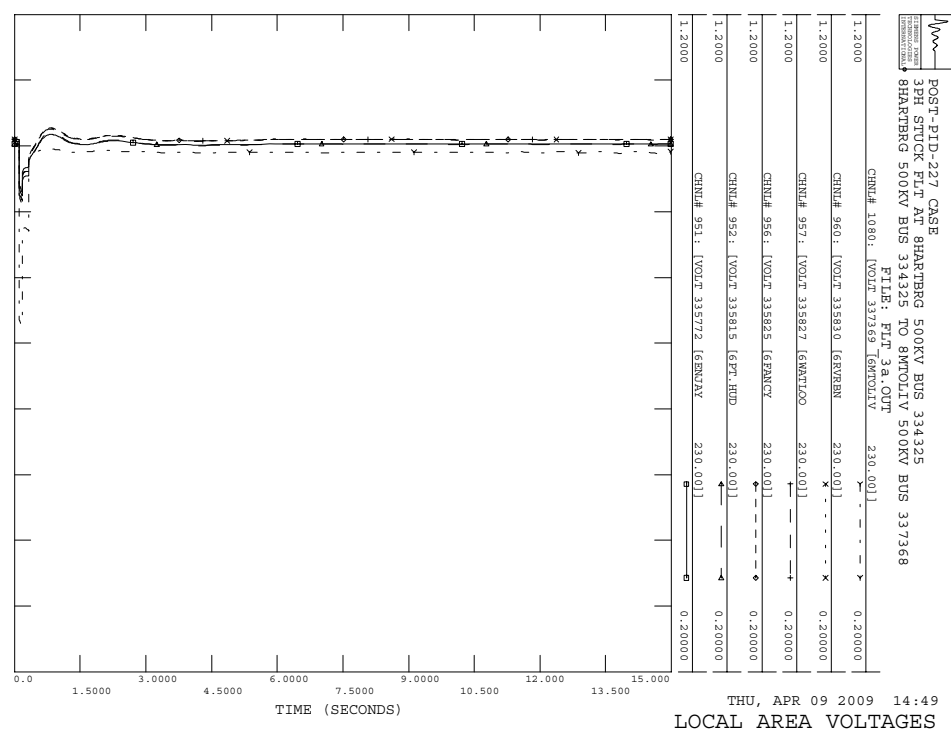


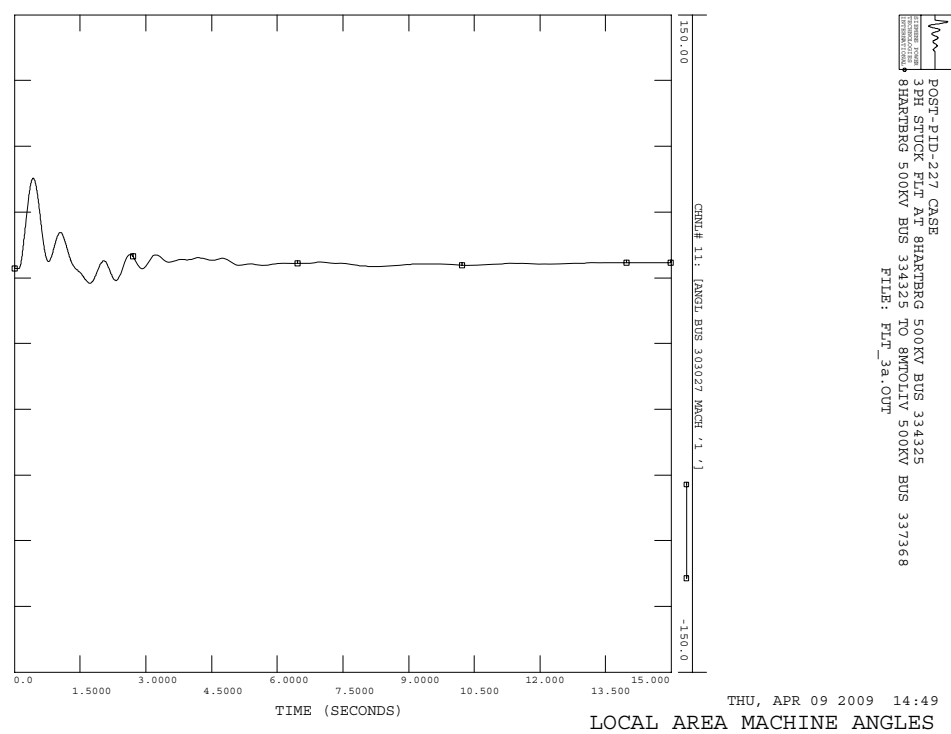
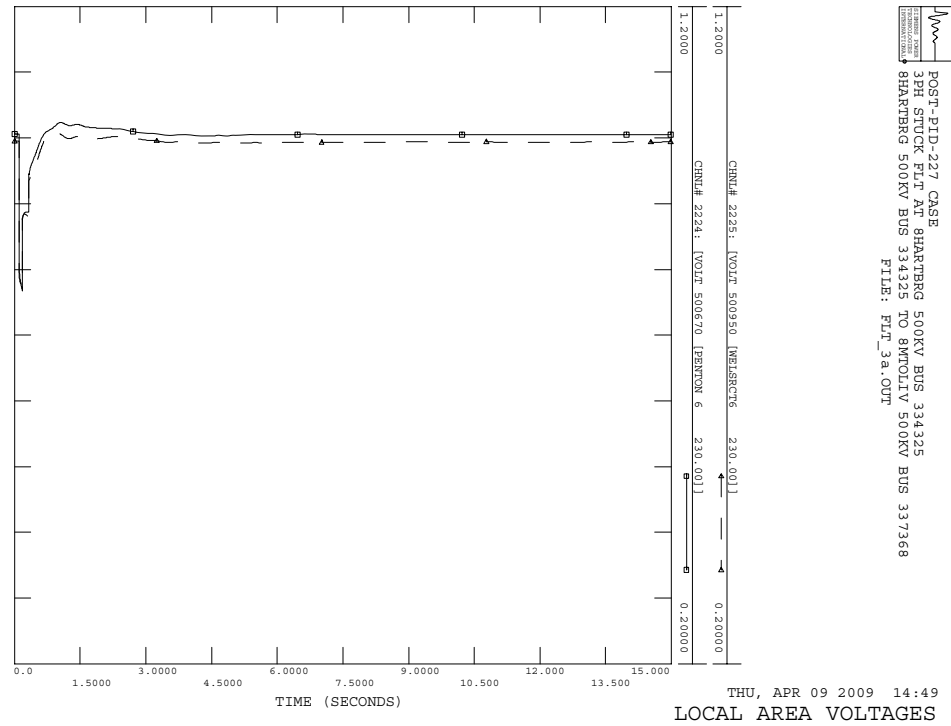
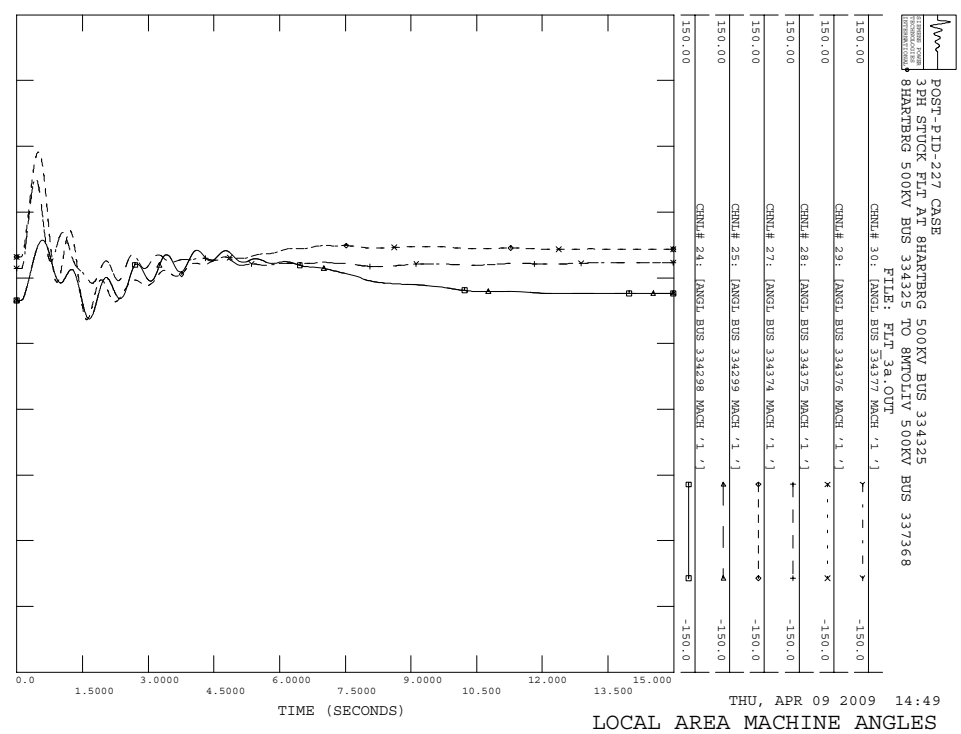
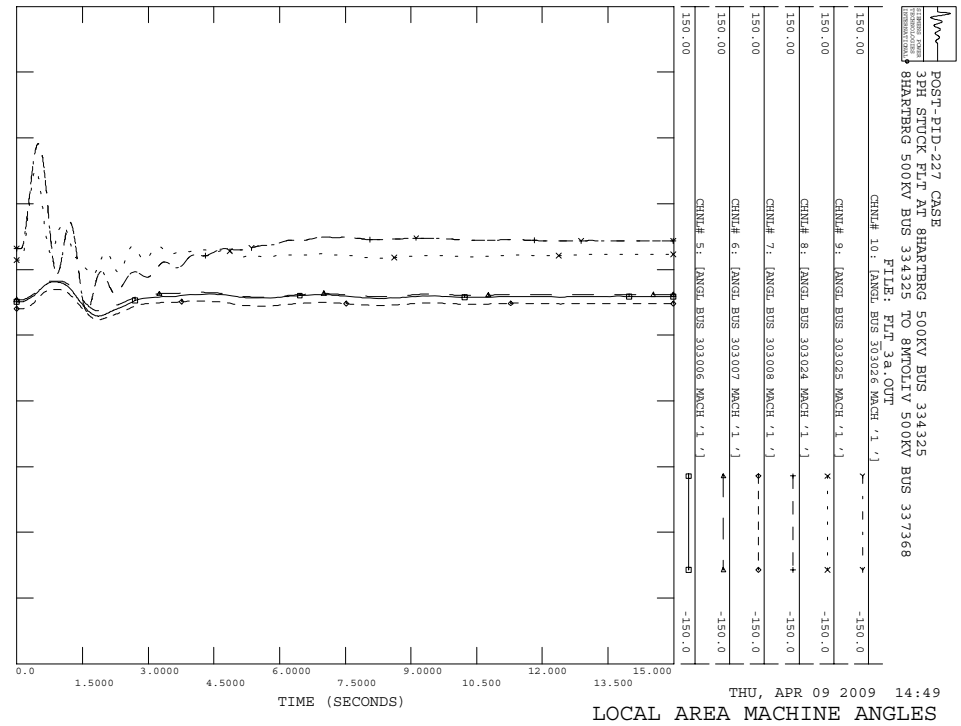
THU, APR 09 2009 14:49
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STOCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
 FILE: FLT_38.OUT

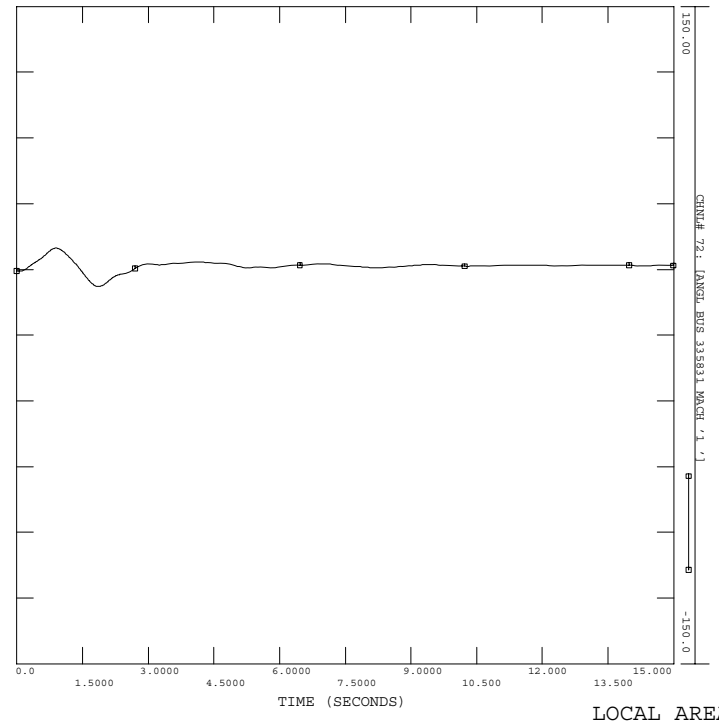


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 LOCAL AREA VOLTAGES

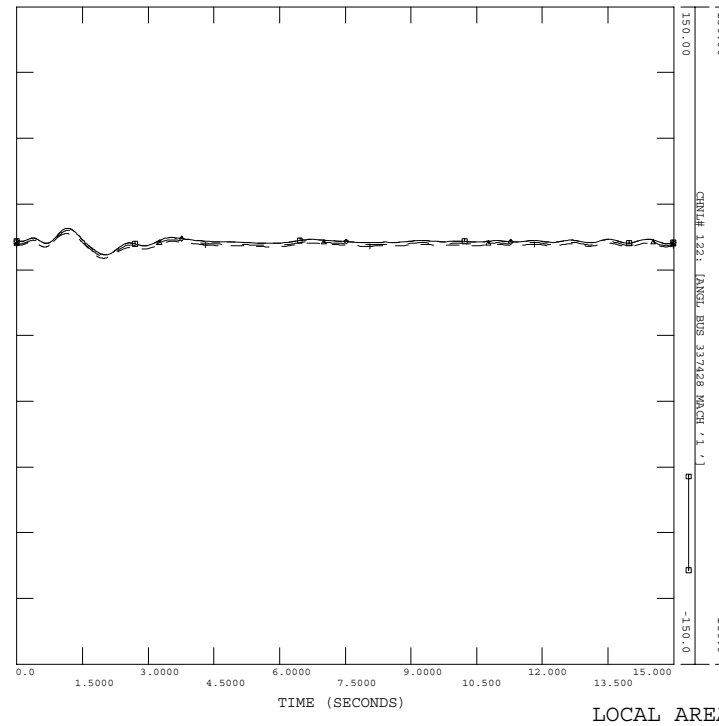




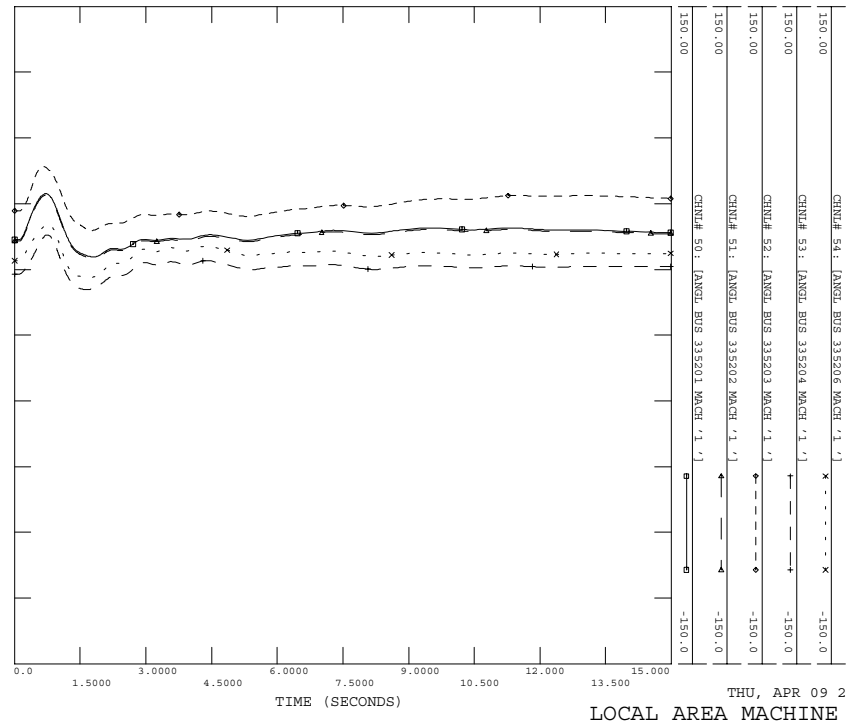
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



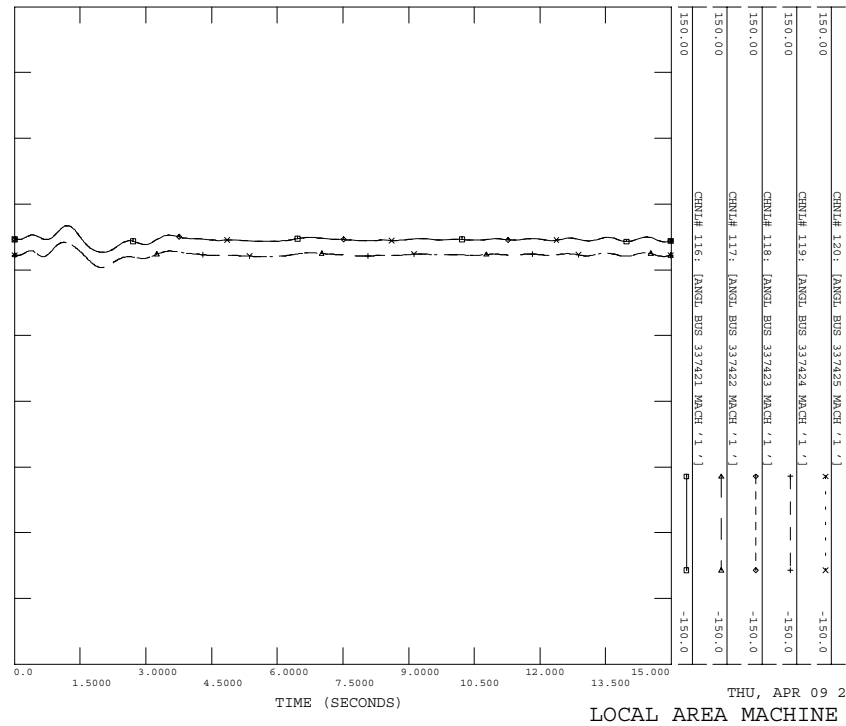
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



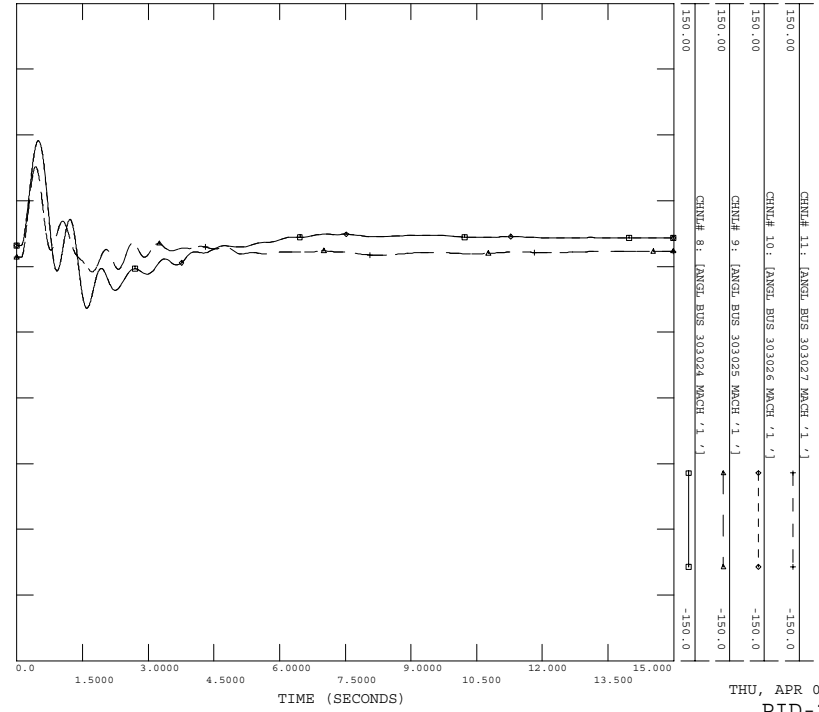
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



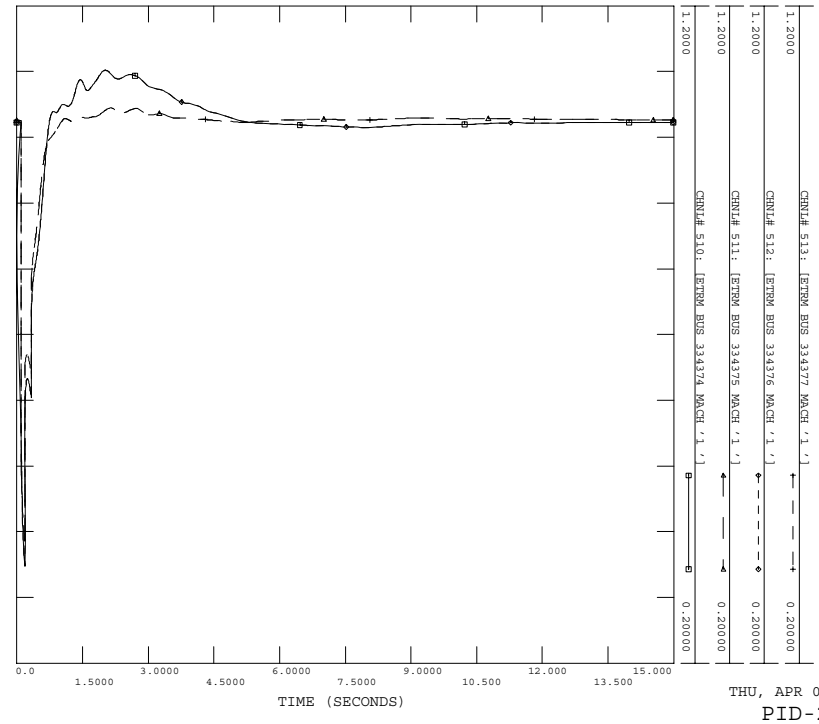
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



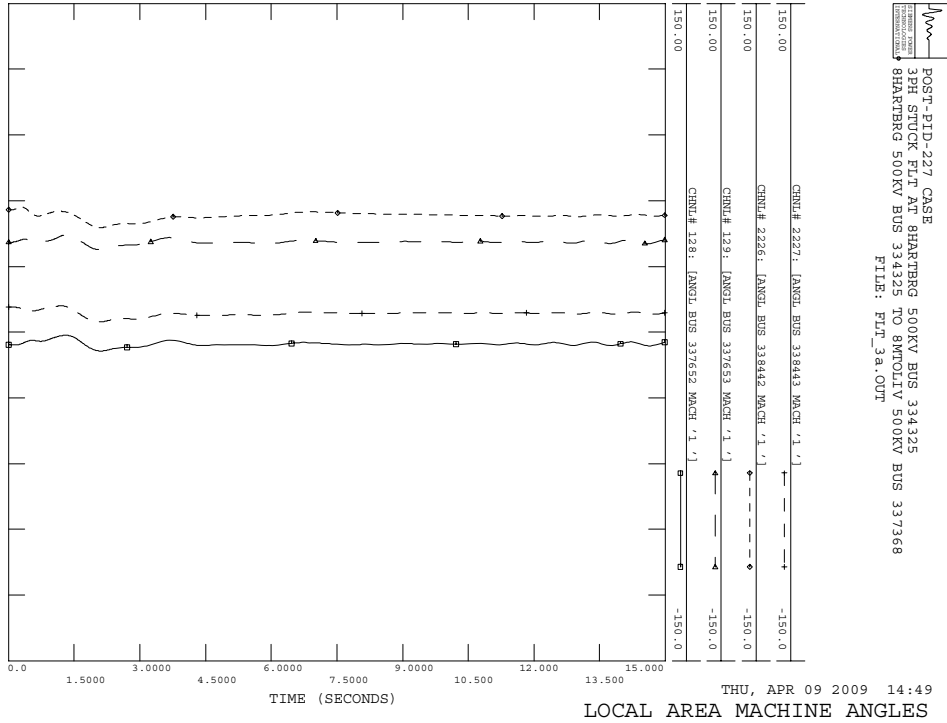
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



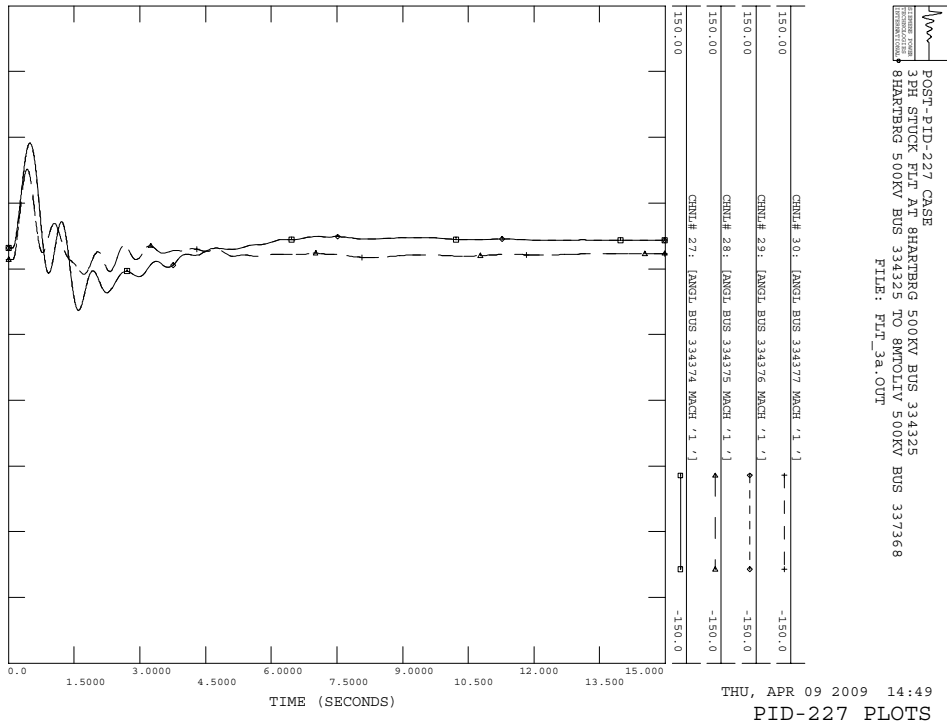
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



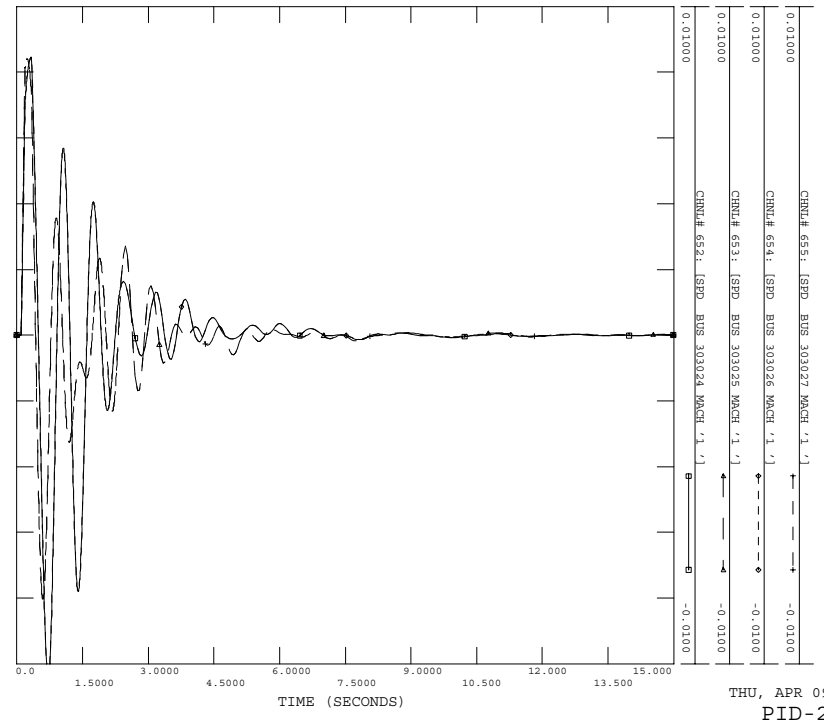
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 337368 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



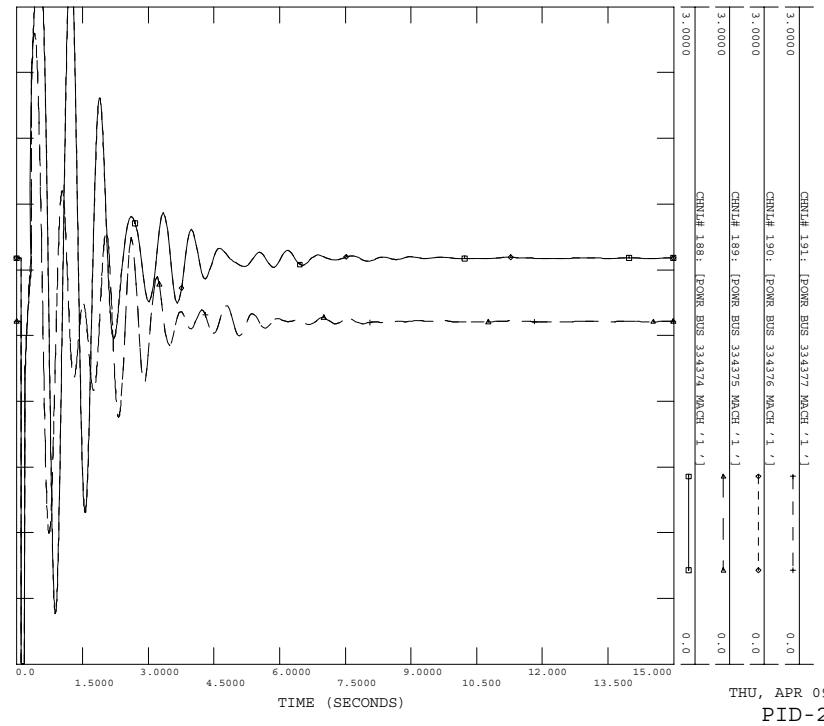
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTDOLIV 500KV BUS 337368
 FILE: FLT_38.OUT



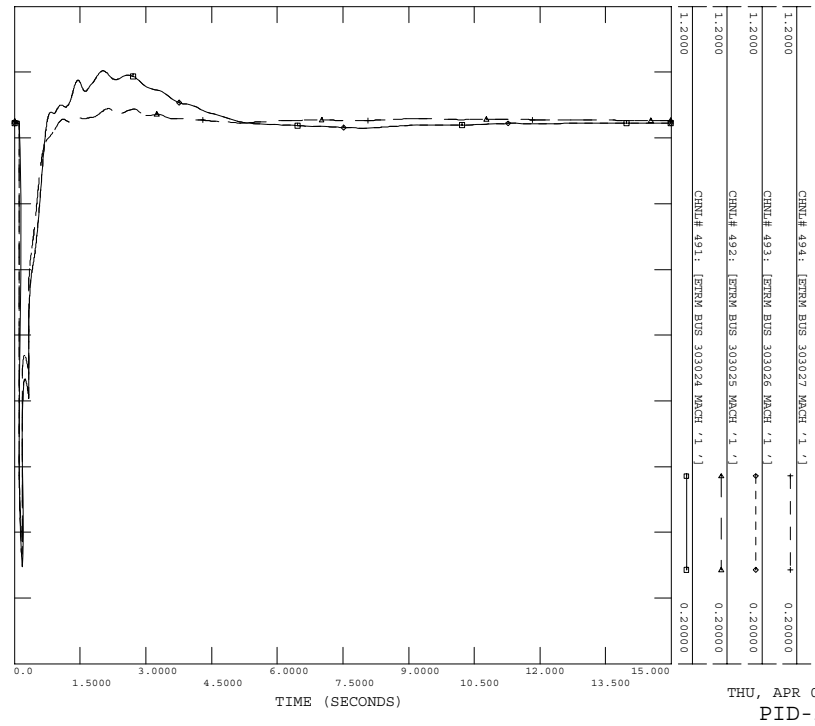
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOULIV 500KV BUS 337368
 FILE: FLT_38.CUT



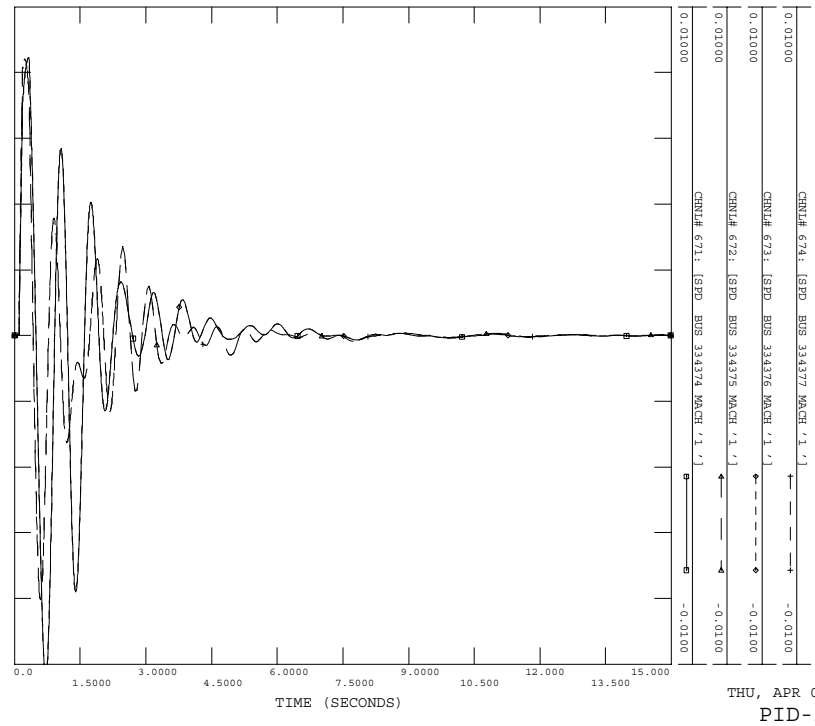
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOULIV 500KV BUS 337368
 FILE: FLT_38.CUT



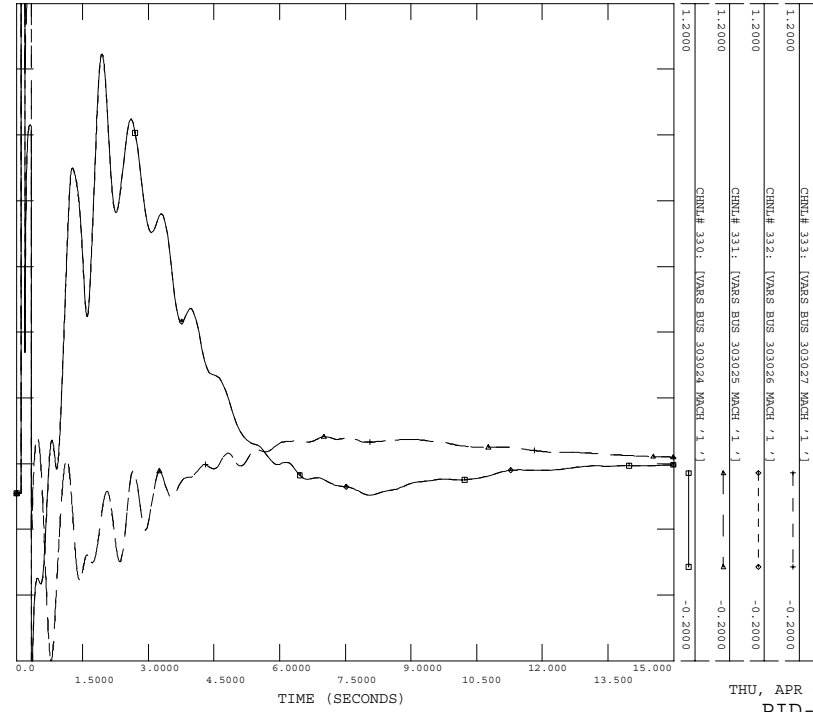
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOULIV 500KV BUS 337368
 FILE: FLT_38.CUT



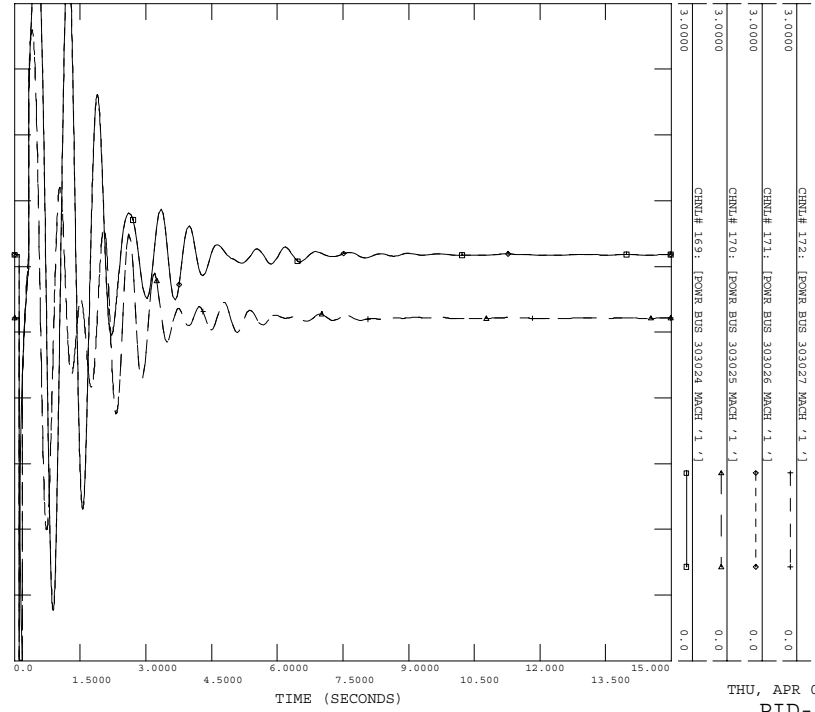
POST-PID-227 CASE
 3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
 8BHARTBERG 500KV BUS 334325 TO 8MTOULIV 500KV BUS 337368
 FILE: FLT_38.CUT



POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
FILE: FLT_38.OUT



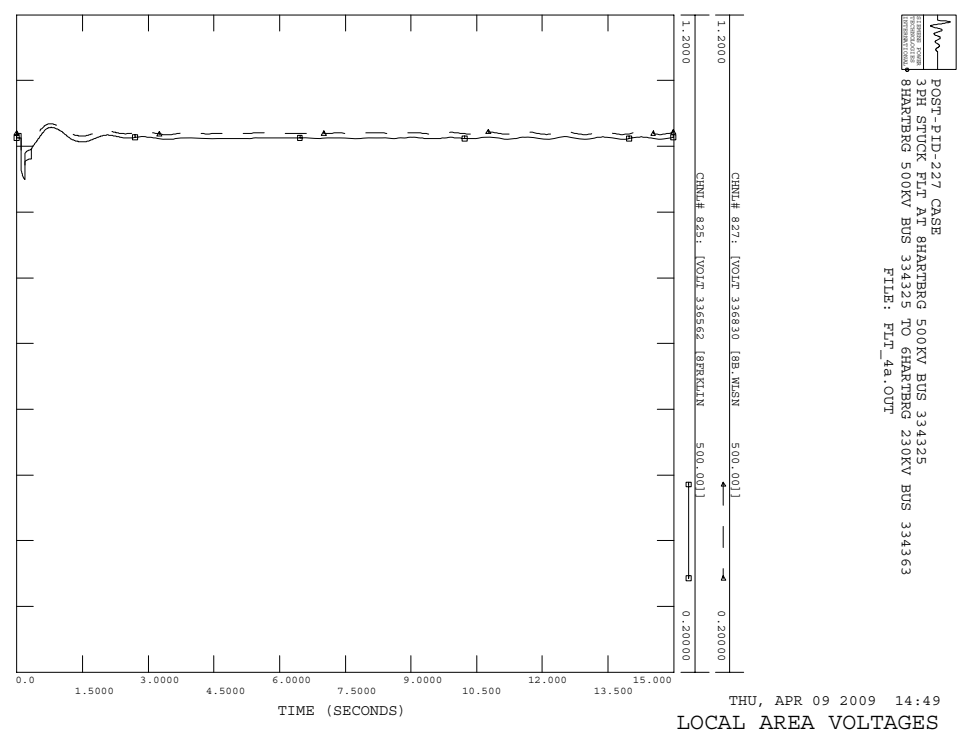
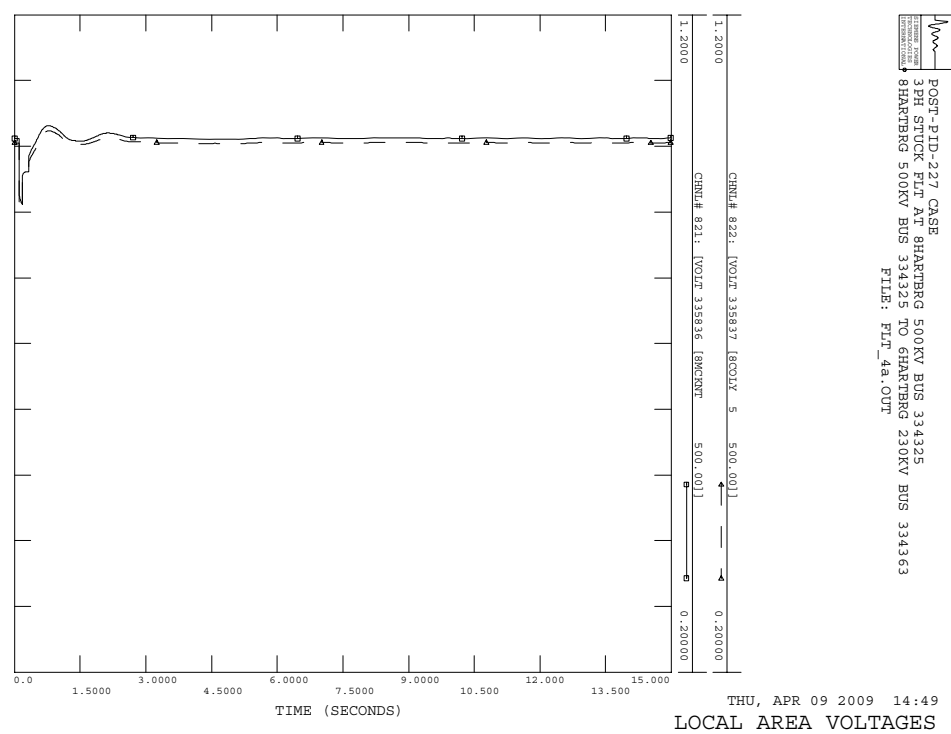
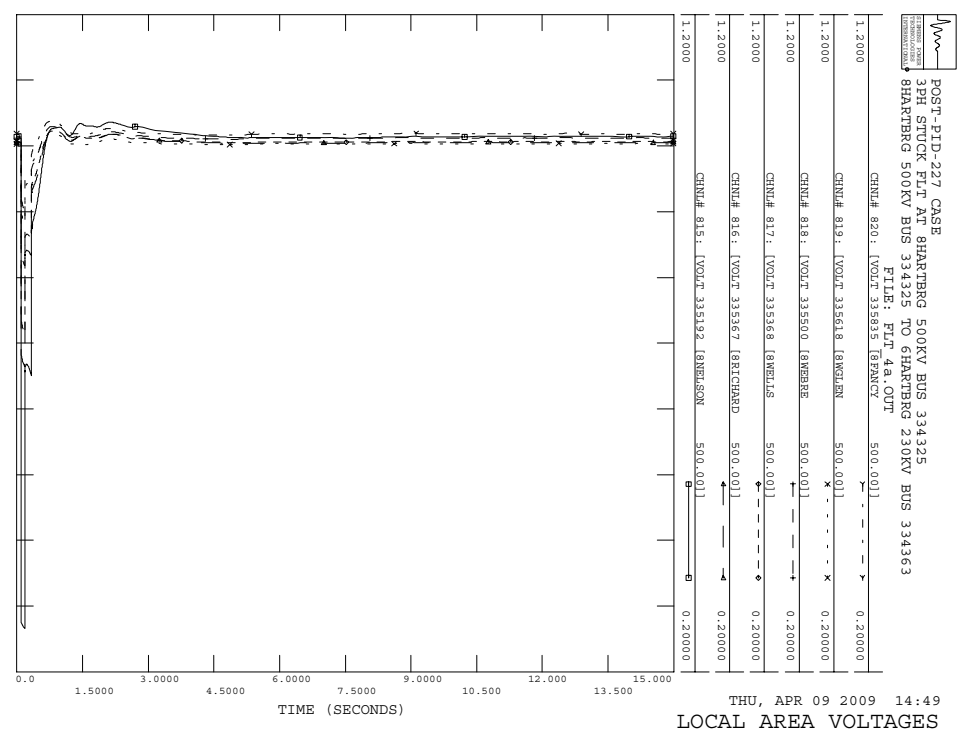
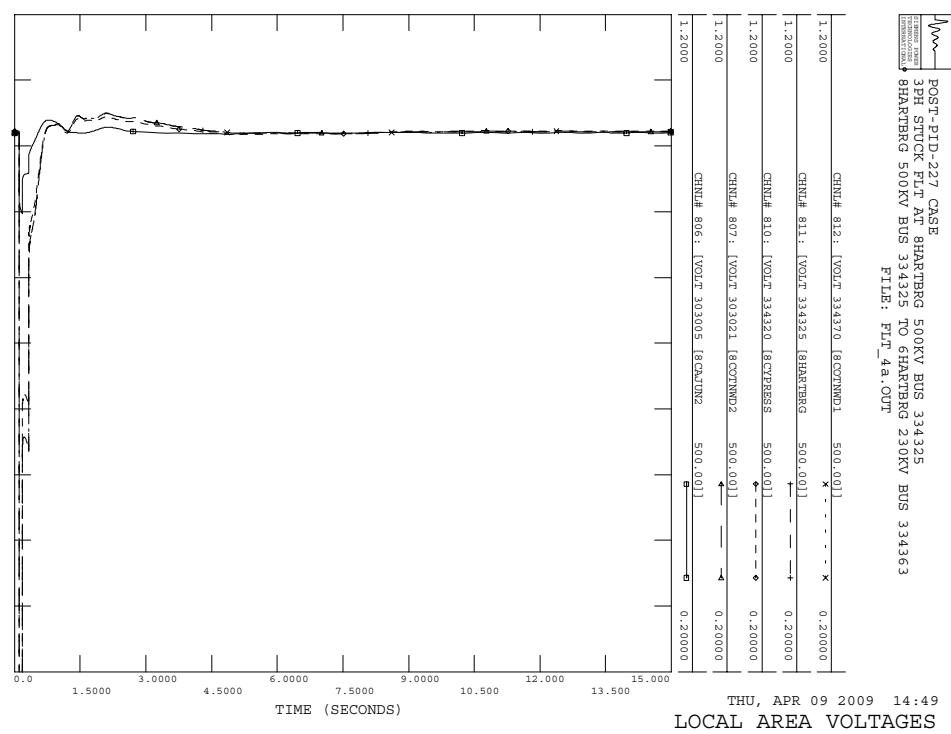
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO 8MTOOLIV 500KV BUS 337368
FILE: FLT_38.OUT

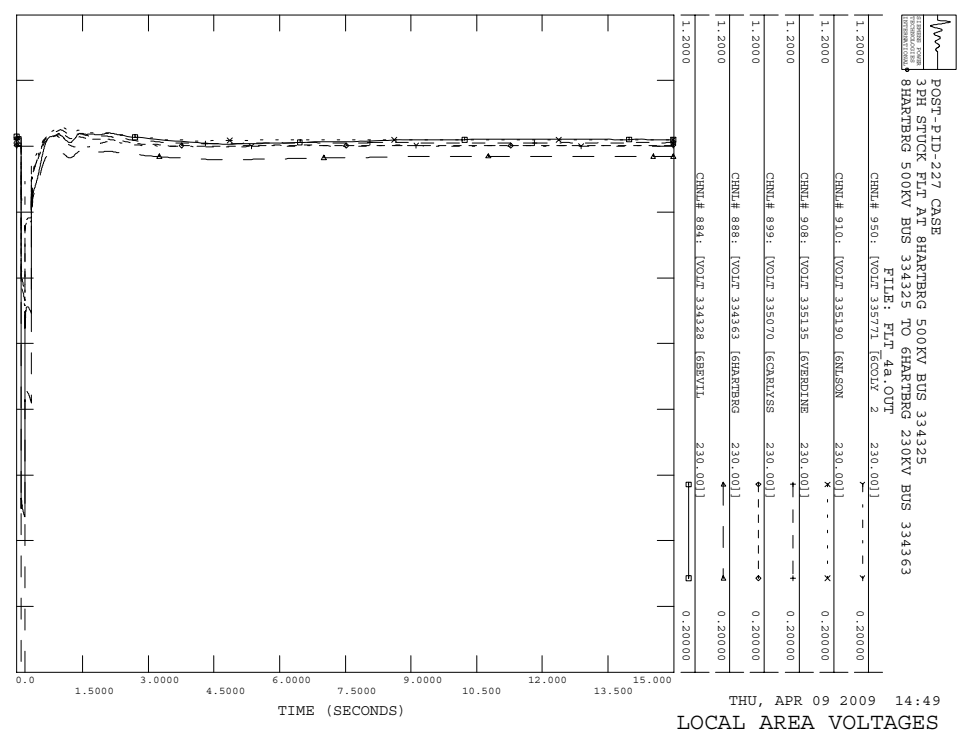
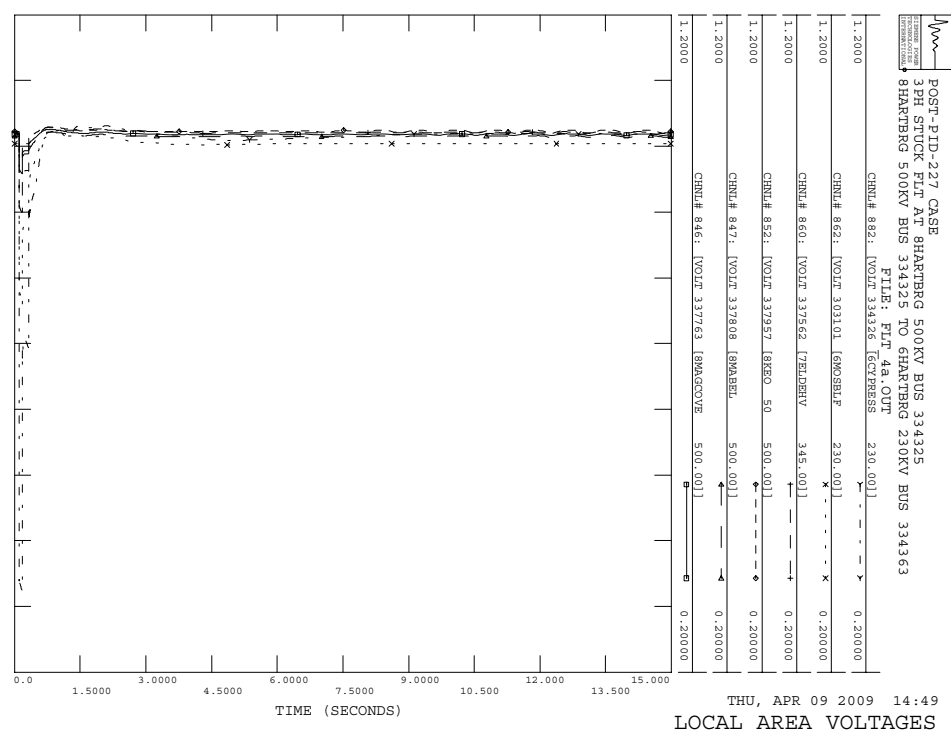
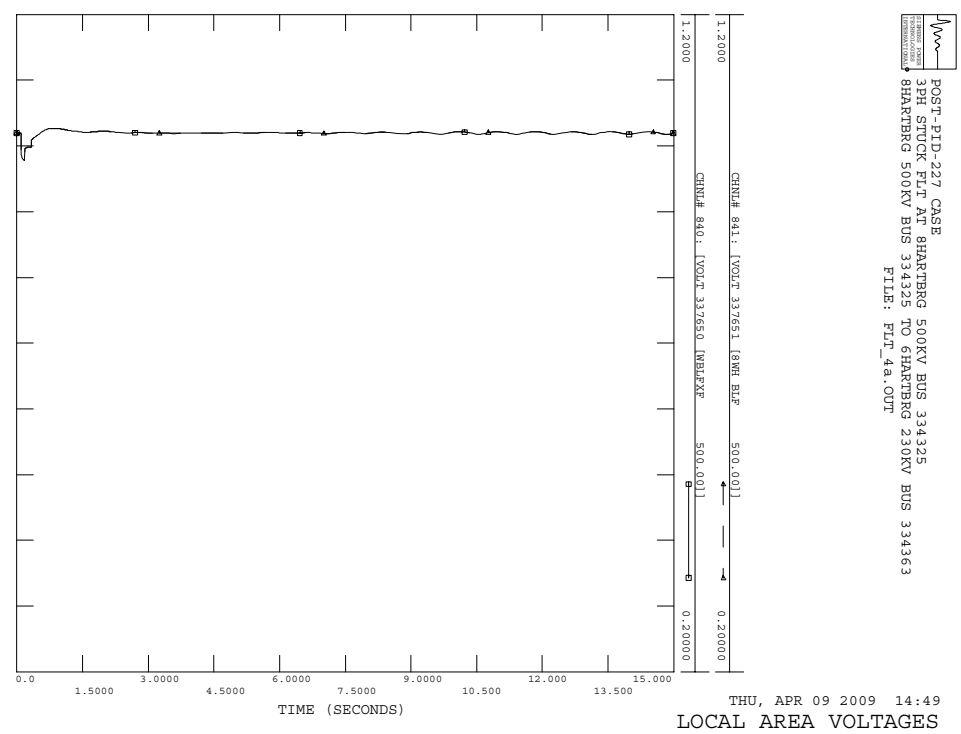
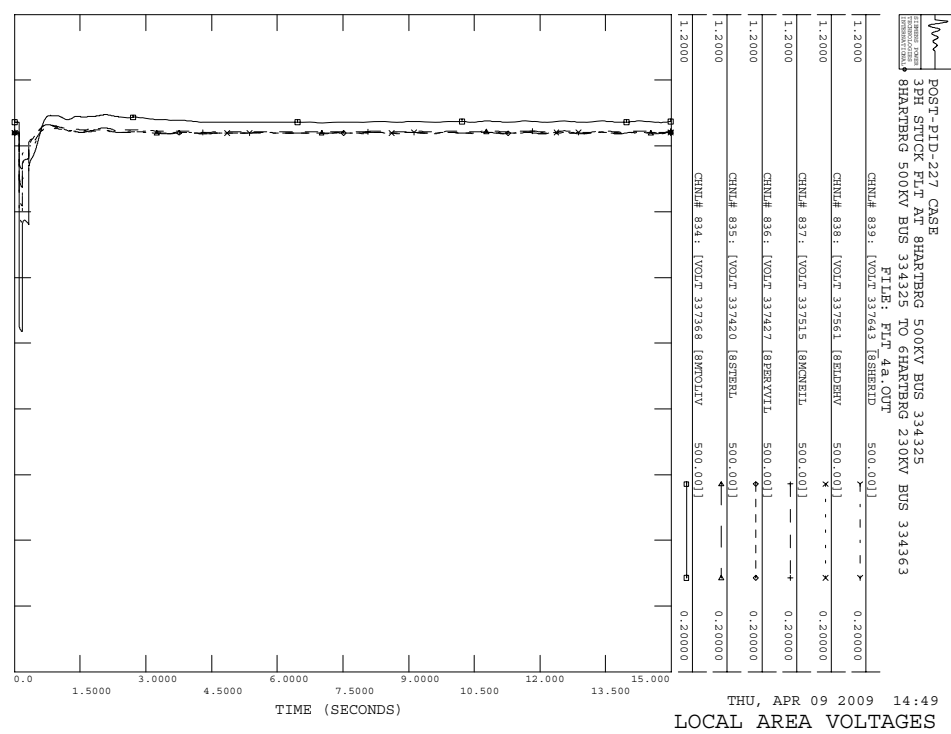


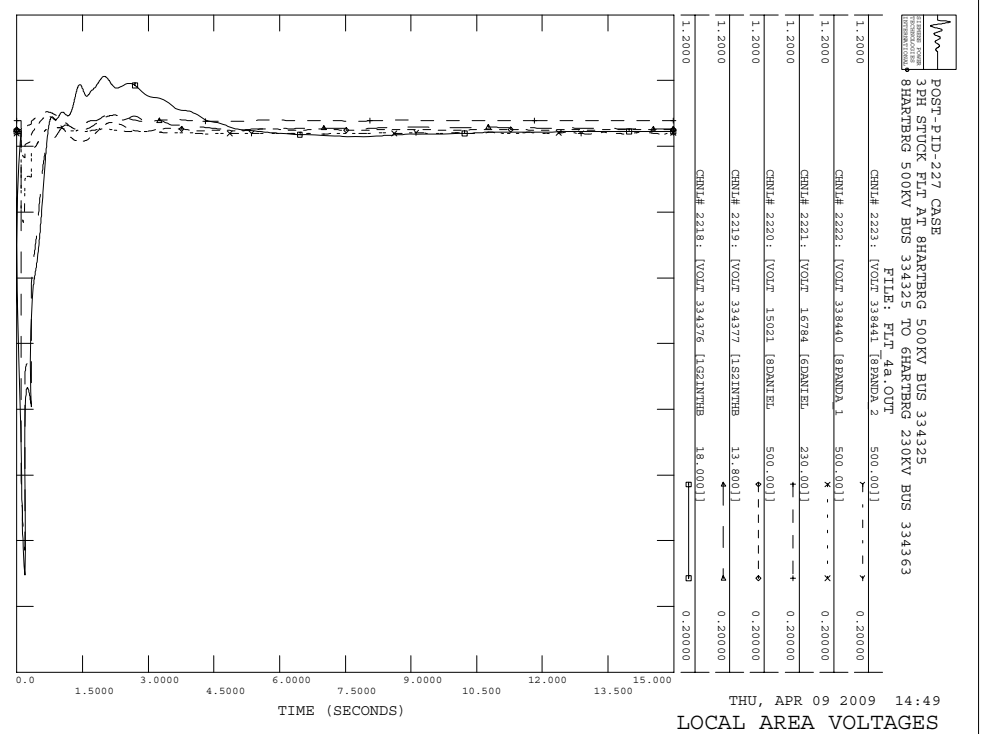
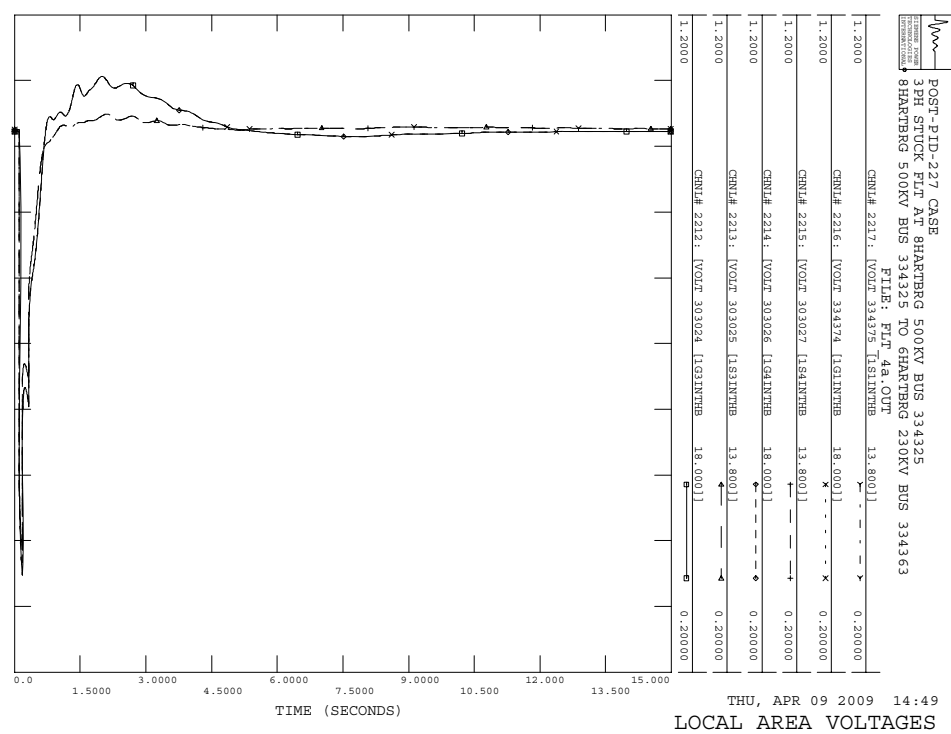
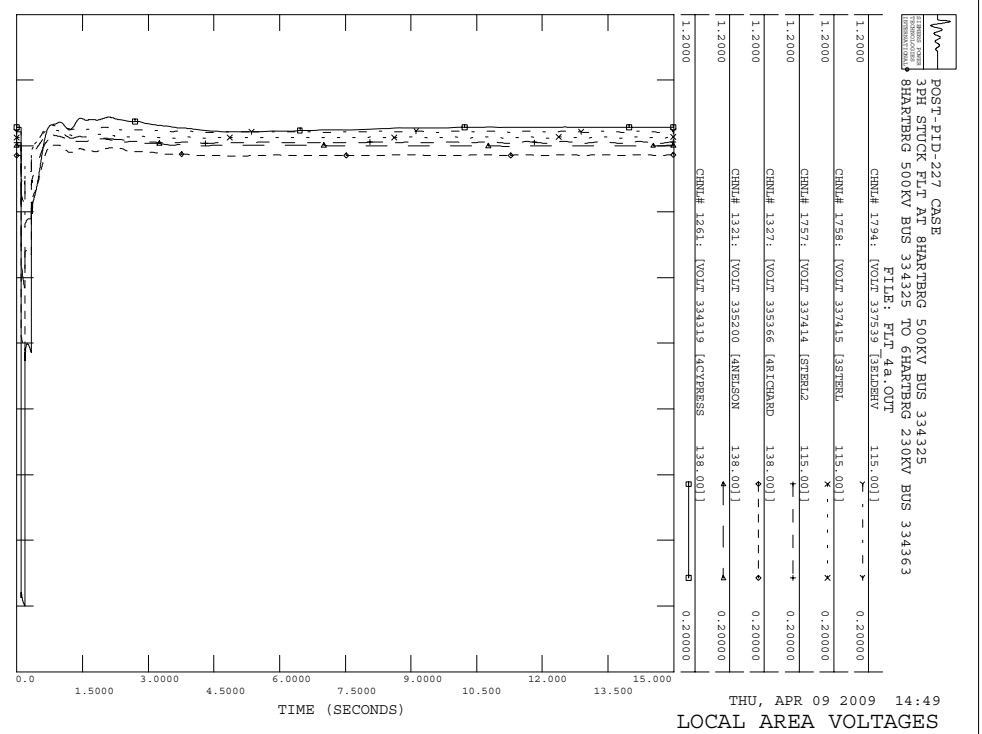
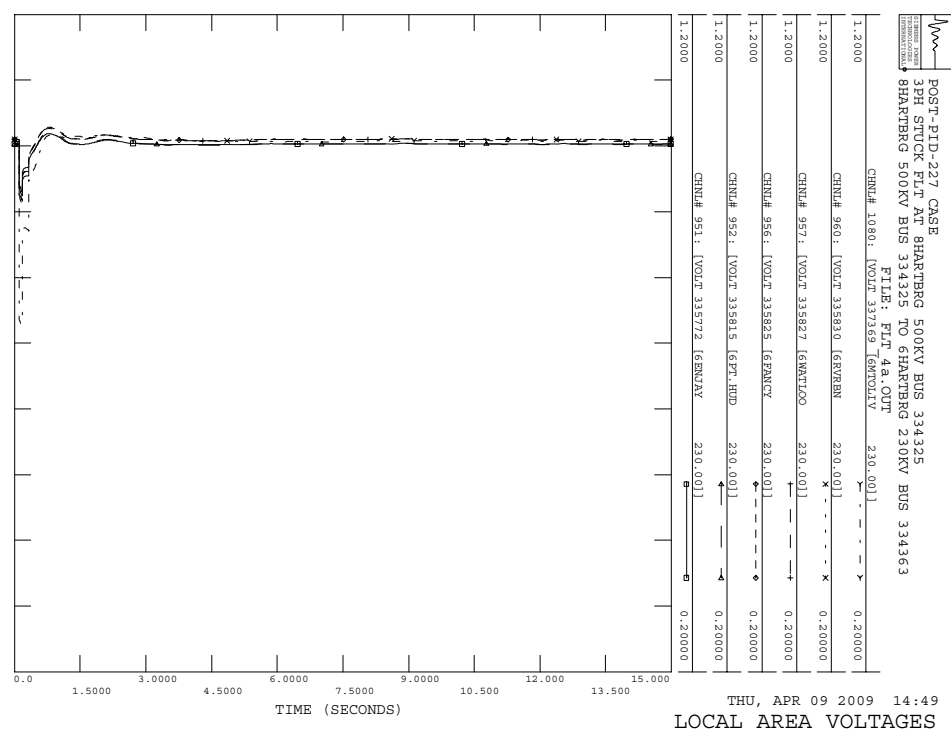
C.16 FLT_4a

Stuck breaker fault on the 8HARTBRG (#334325) to 6HARTBRG (#334363) 500/230 kV autotransformer, near the 8HARTBRG.

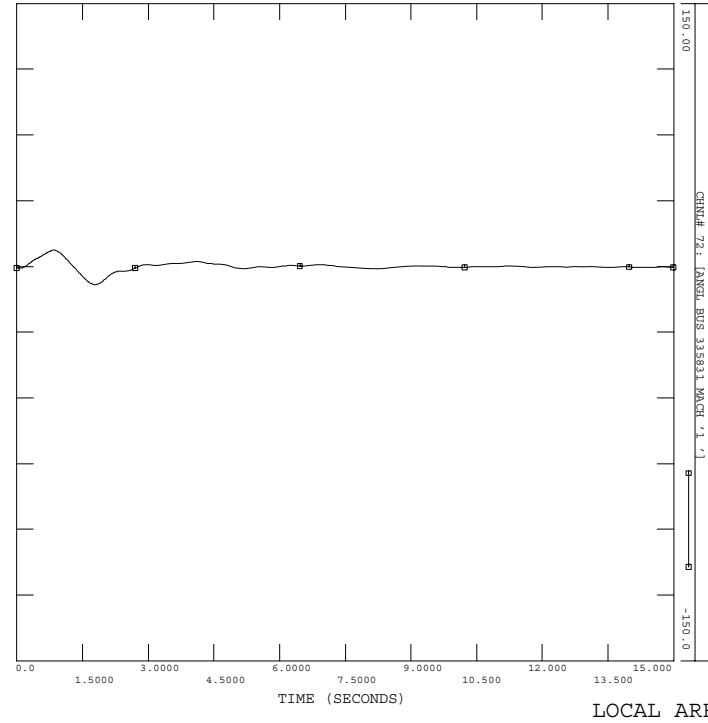
- a) Apply 3 Phase Fault AT 8HARTBRG 500KV BUS 334325
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8HARTBRG 500KV BUS 334325
- d) Apply 3 Phase fault at #334325 with admittance $610.61-j8402.17$ MVA
- e) Clear fault after 9 cycles by tripping transformer from 8HARTBRG 500KV BUS 334325 TO 6HARTBRG 230KV BUS 334363





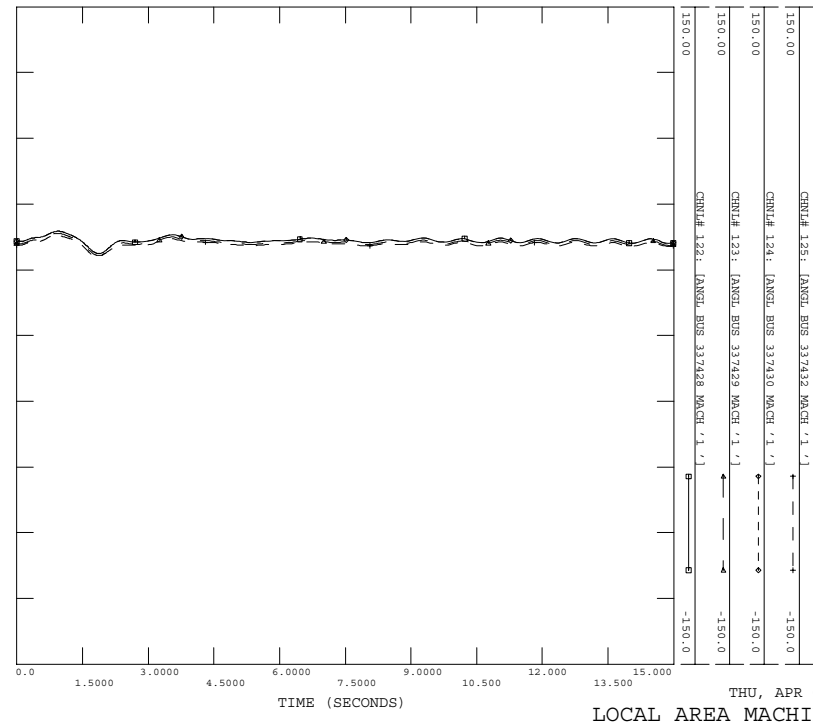


POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT



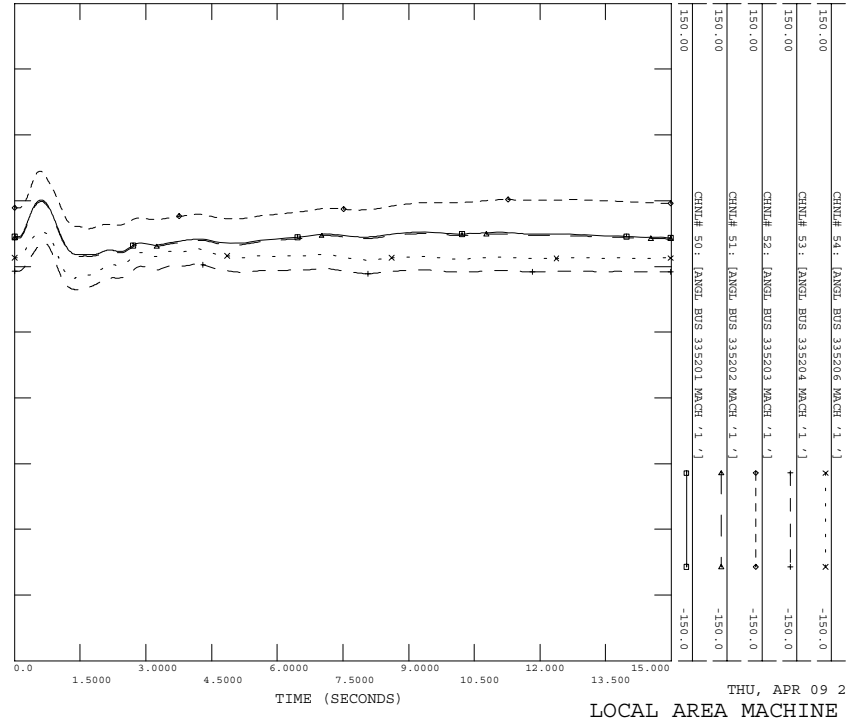
THU, APR 09 2009 14:49
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT



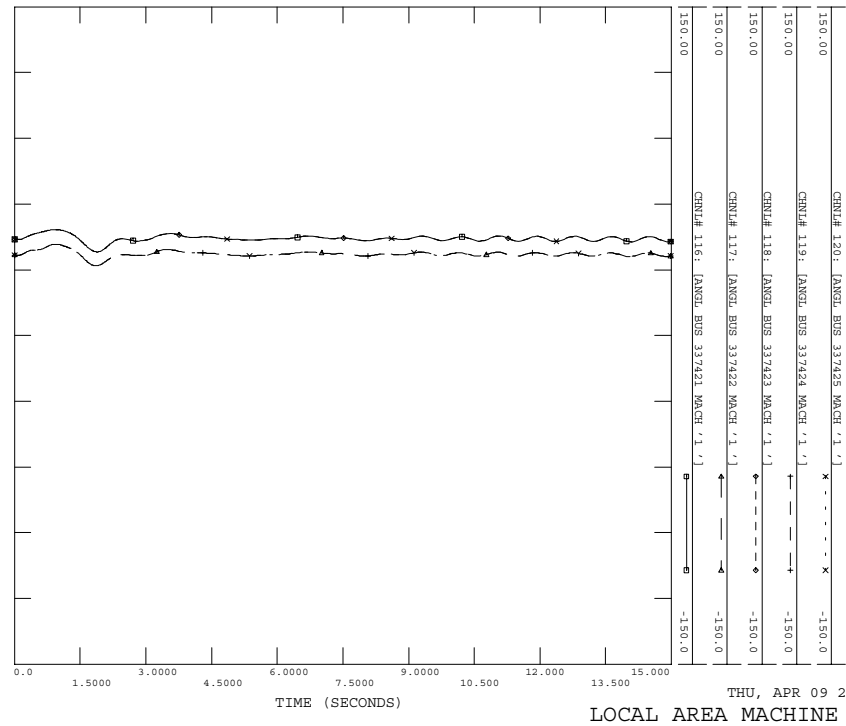
THU, APR 09 2009 14:50
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT



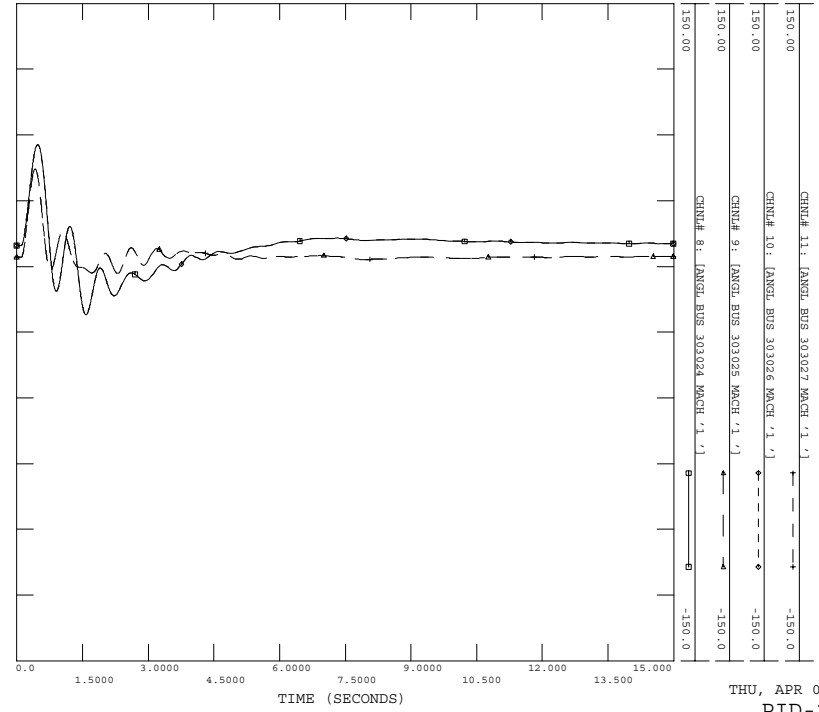
THU, APR 09 2009 14:49
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT

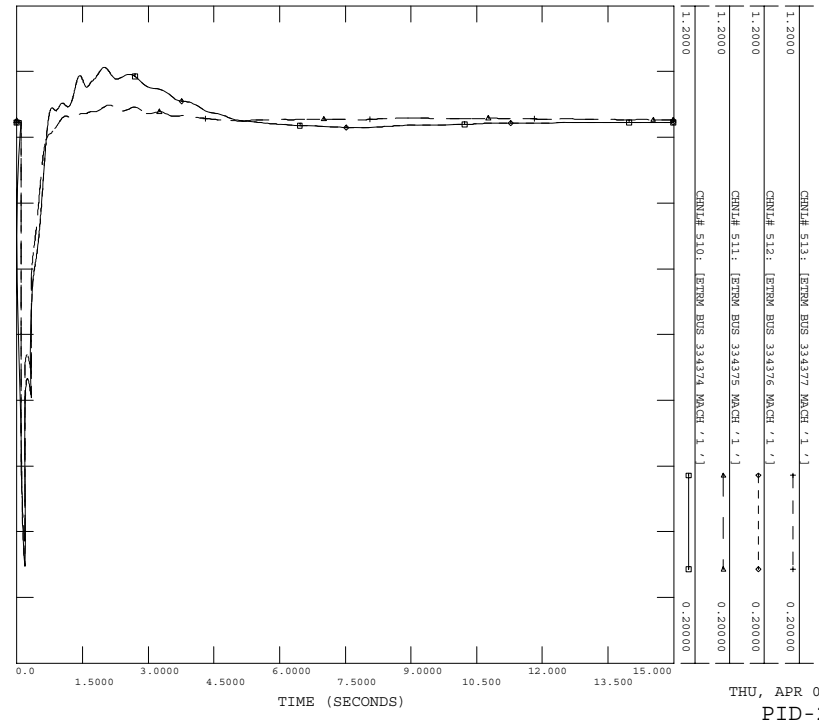


THU, APR 09 2009 14:49
 LOCAL AREA MACHINE ANGLES

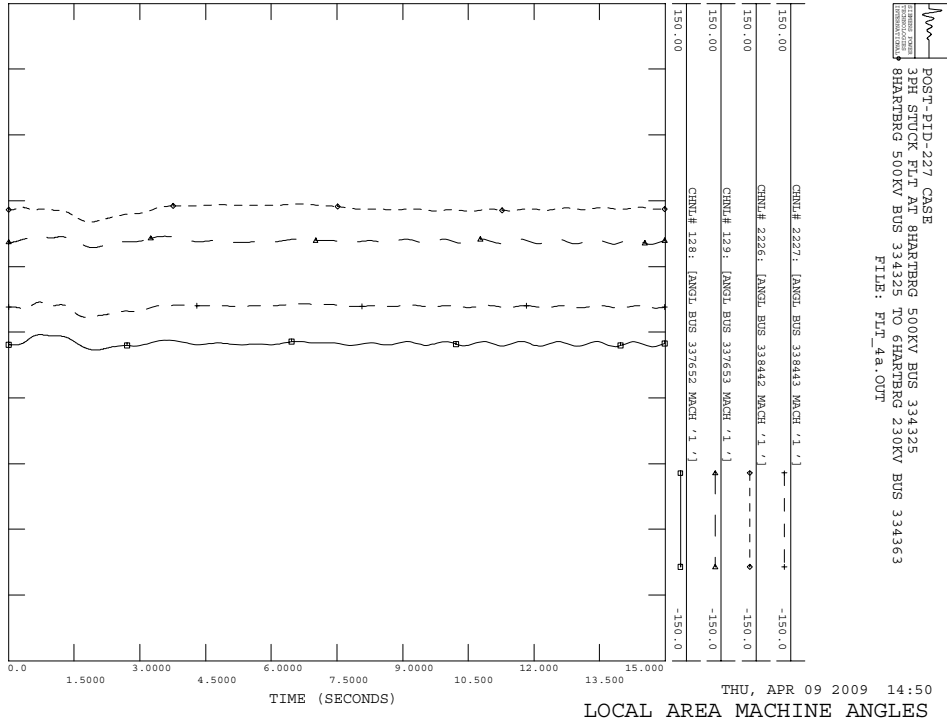
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BHARTBERG 230KV BUS 334363
FILE: FLT_4a.OUT



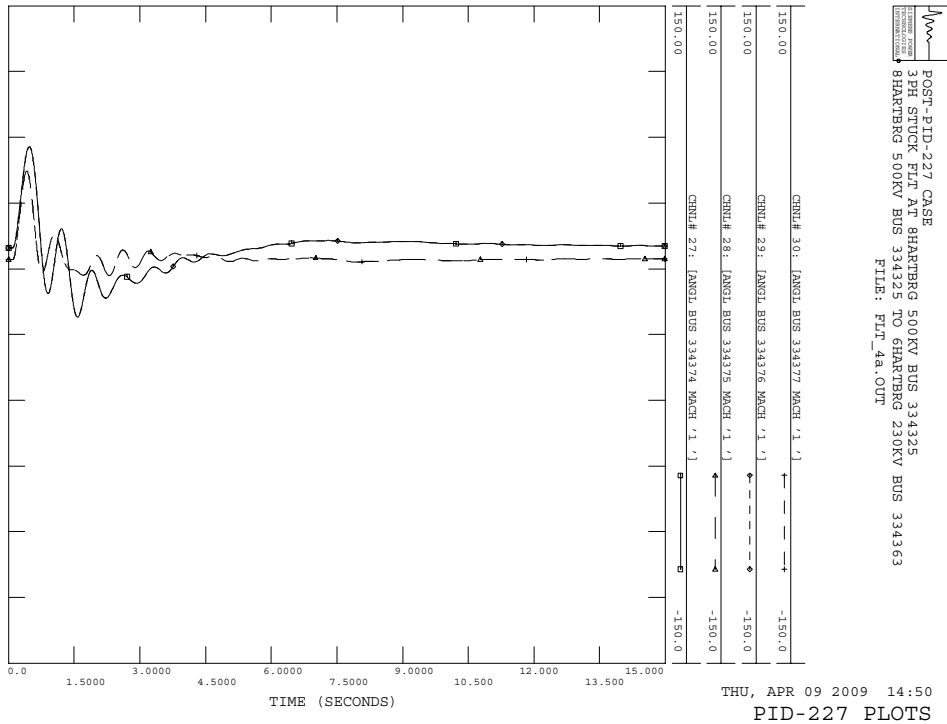
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BHARTBERG 230KV BUS 334363
FILE: FLT_4a.OUT



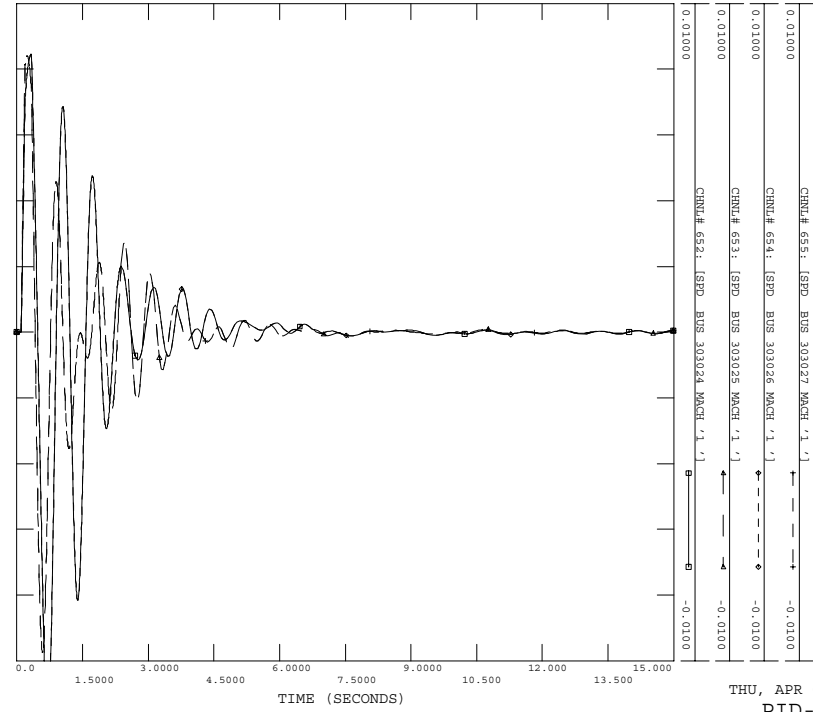
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BHARTBERG 230KV BUS 334363
FILE: FLT_4a.OUT



POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BHARTBERG 230KV BUS 334363
FILE: FLT_4a.OUT

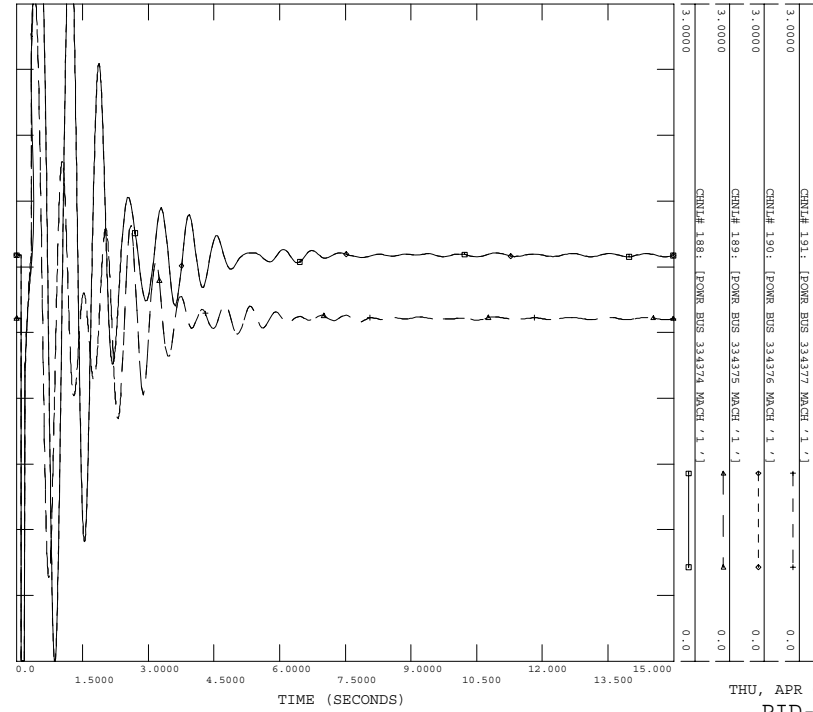


POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT



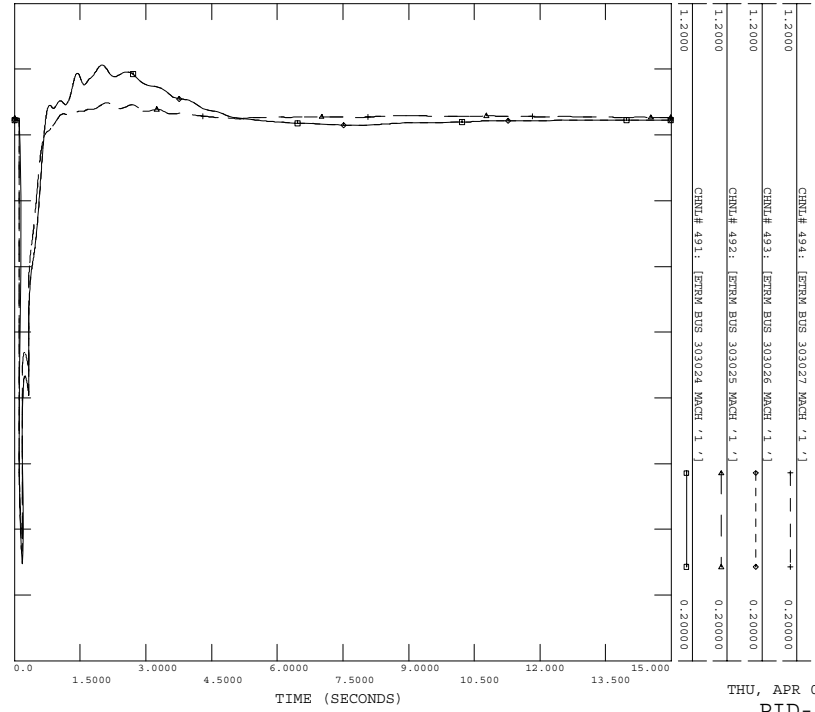
THU, APR 09 2009 14:50
 PID-227 PLOTS

POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT



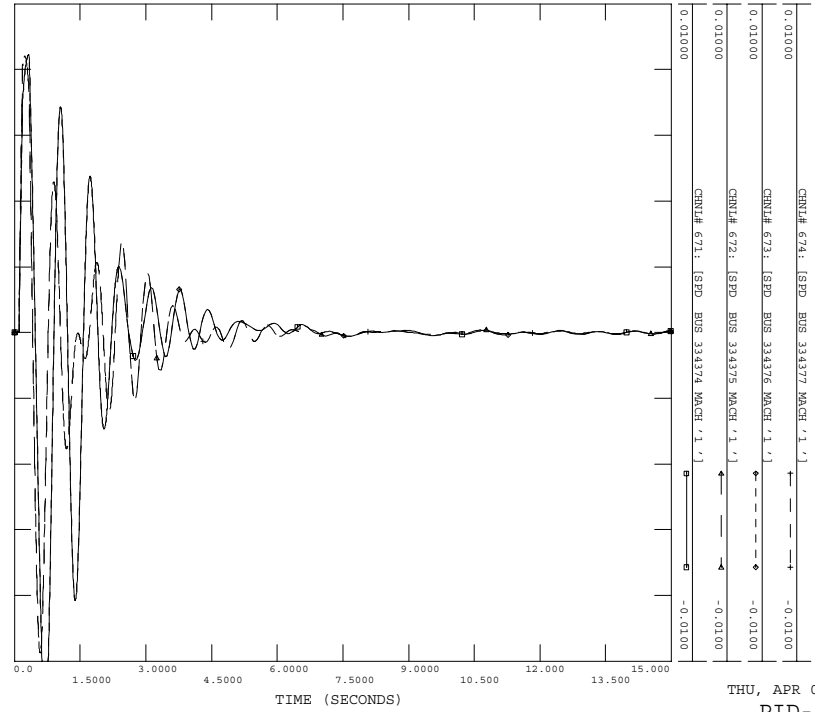
THU, APR 09 2009 14:50
 PID-227 PLOTS

POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT



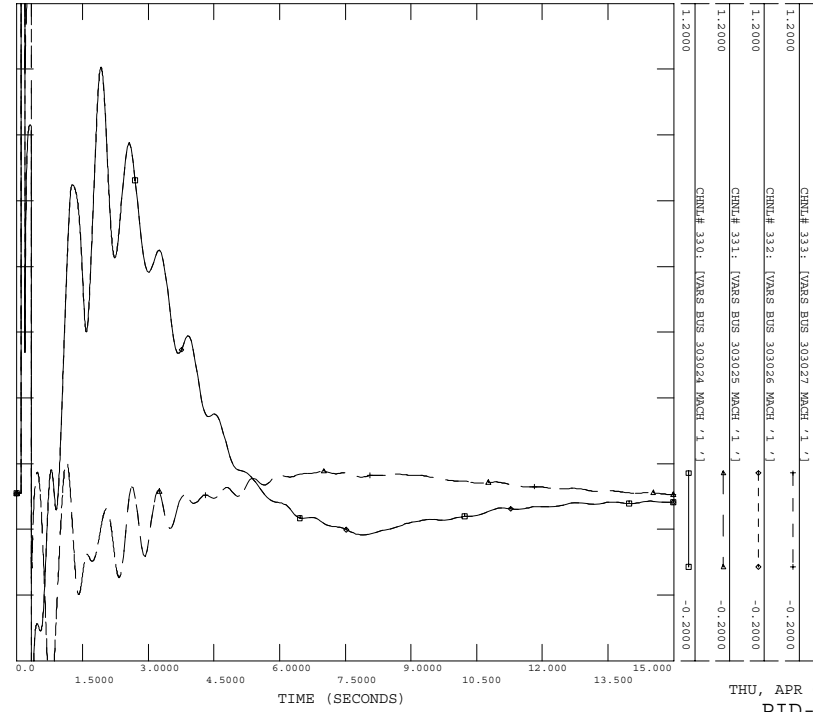
THU, APR 09 2009 14:50
 PID-227 PLOTS

POST-PID-227 CASE
 3PH STUCK FLT AT 8HARTBERG 500KV BUS 334325
 8HARTBERG 500KV BUS 334325 TO 6HARTBERG 230KV BUS 334363
 FILE: FLT_4a.OUT

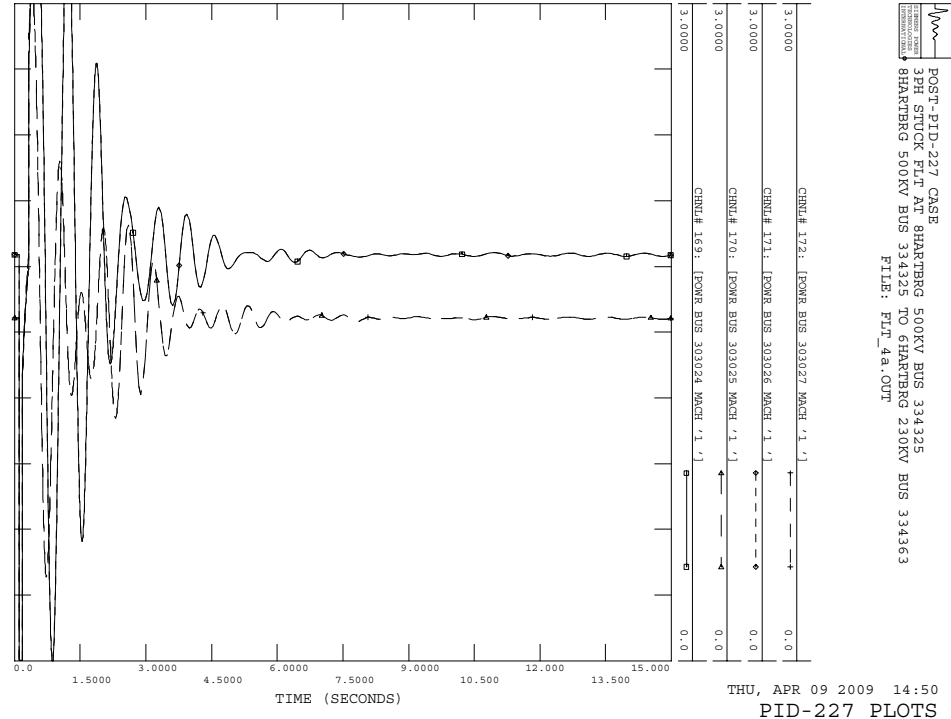


THU, APR 09 2009 14:50
 PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BHARTBERG 230KV BUS 334363
FILE: FLT_4a.OUT



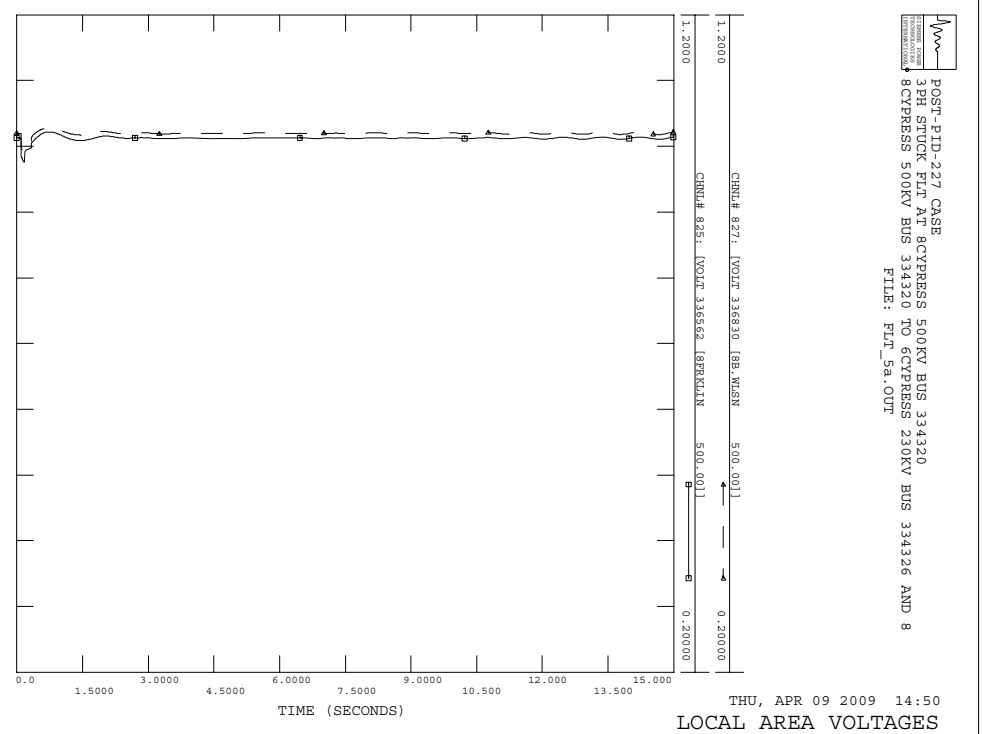
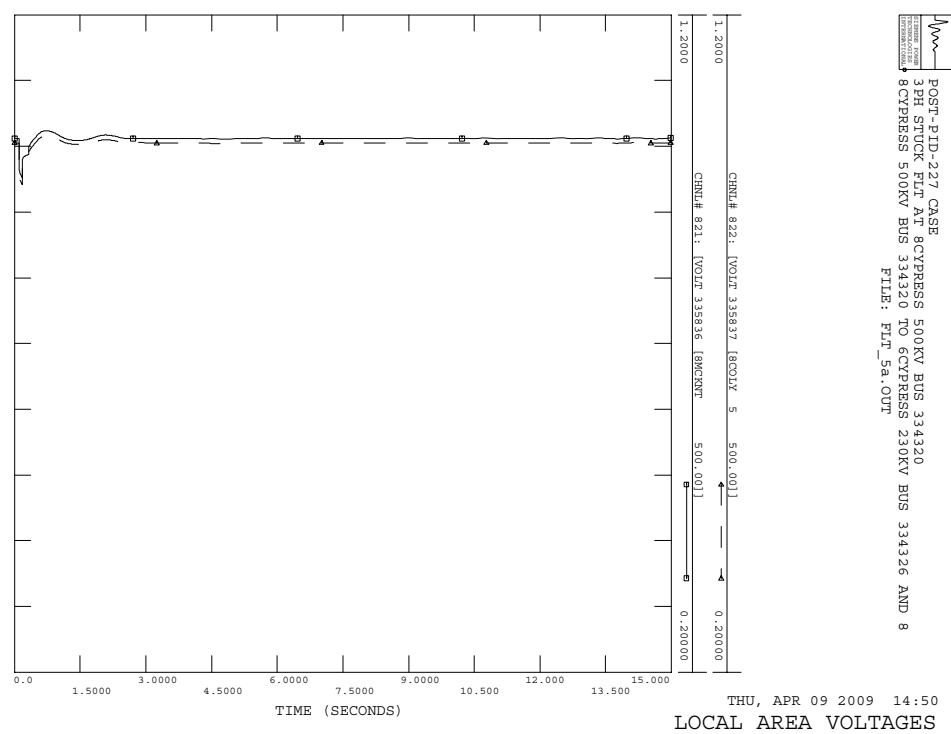
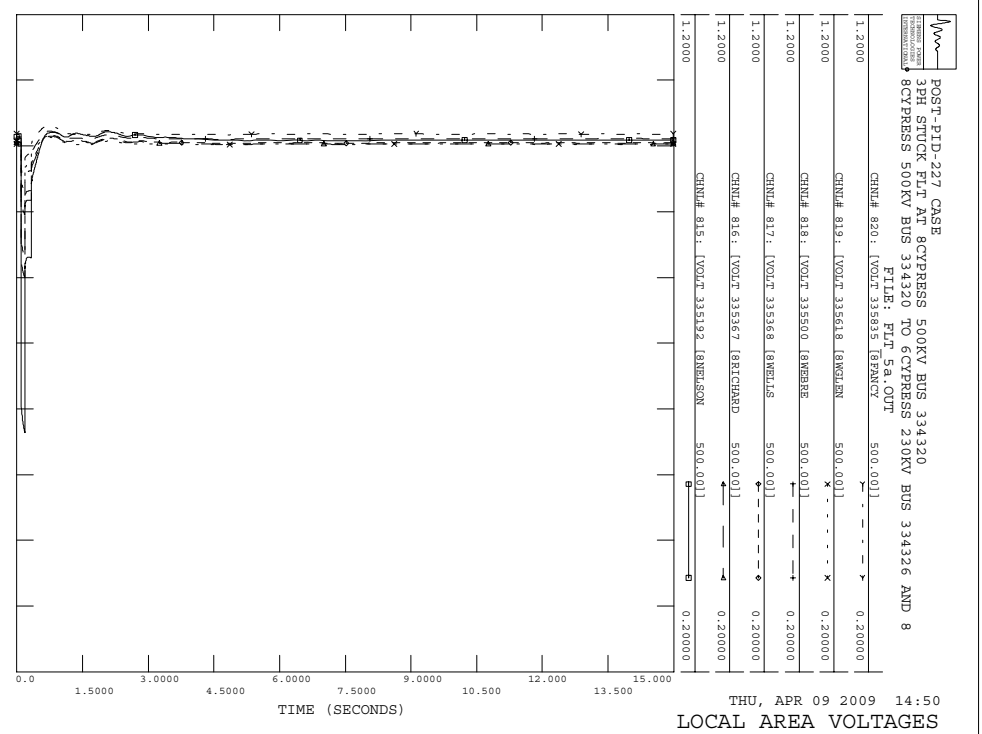
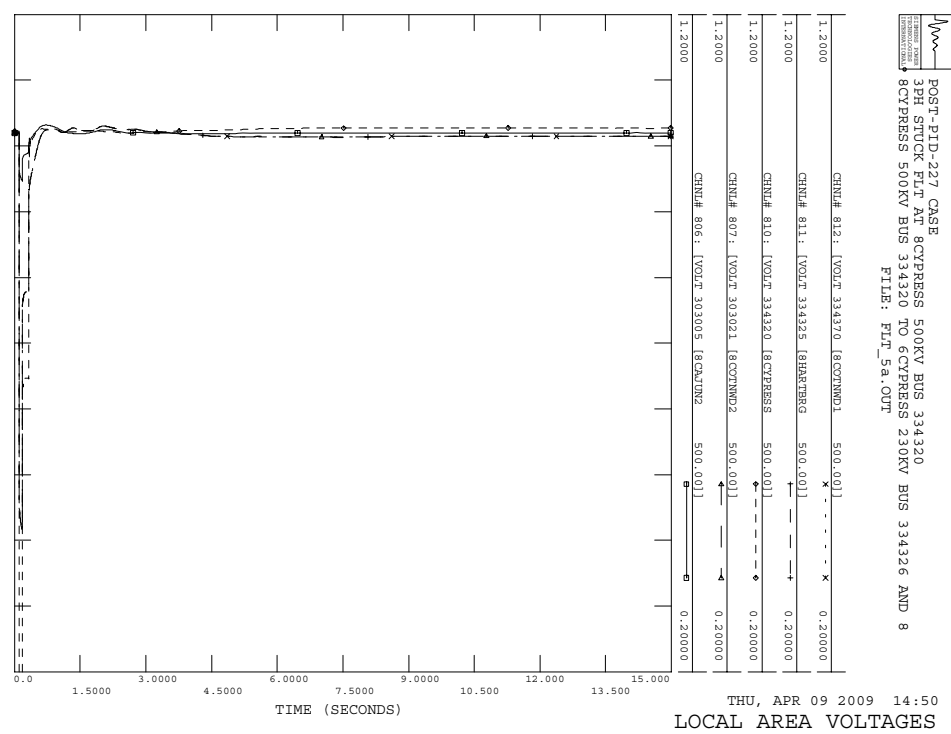
POST-PID-227 CASE
3PH STUCK FLT AT BHARTBERG 500KV BUS 334325
BHARTBERG 500KV BUS 334325 TO BHARTBERG 230KV BUS 334363
FILE: FLT_4a.OUT



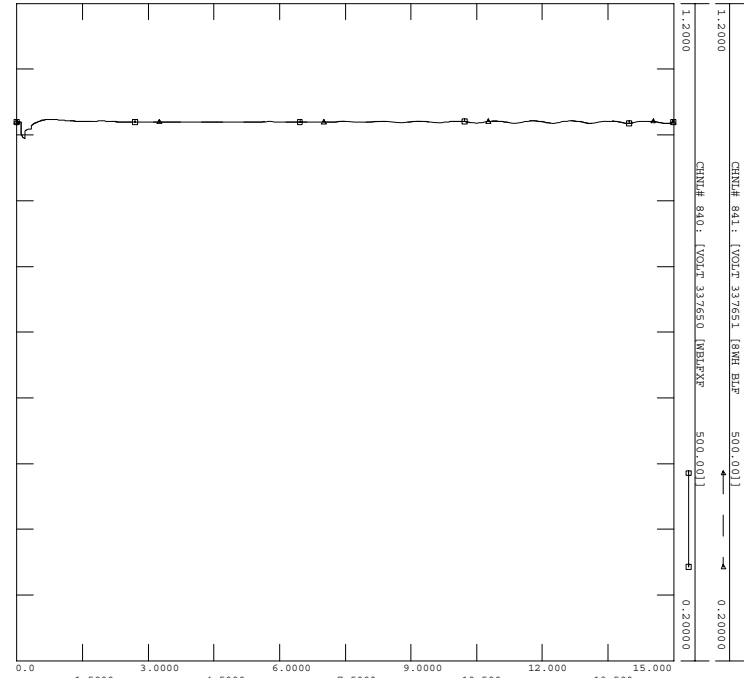
C.17 FLT_5a

Stuck breaker fault on the 8CYPRESS (#334320) to 6CYPRESS (#334326) transformer, near the 8CYPRESS.

- a) Apply 3 Phase Fault AT 8CYPRESS 500KV BUS 334320
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8CYPRESS 500KV BUS 334320
- d) Apply 3 Phase fault at #334320 with admittance 469.17-j4463.25 MVA
- e) Clear fault after 9 cycles by tripping transformer from 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 and line from 8HARTBRG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320

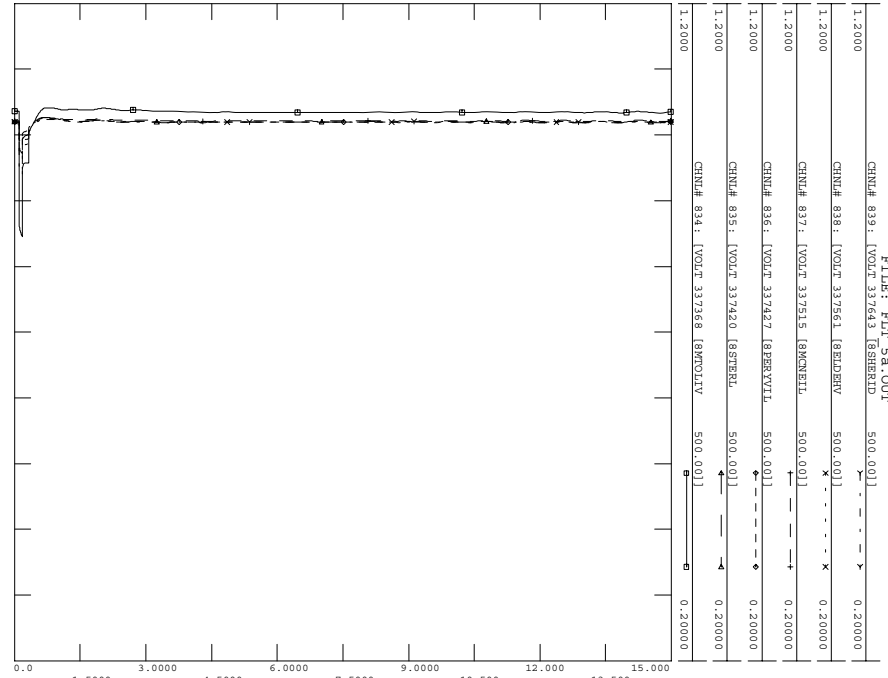


POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



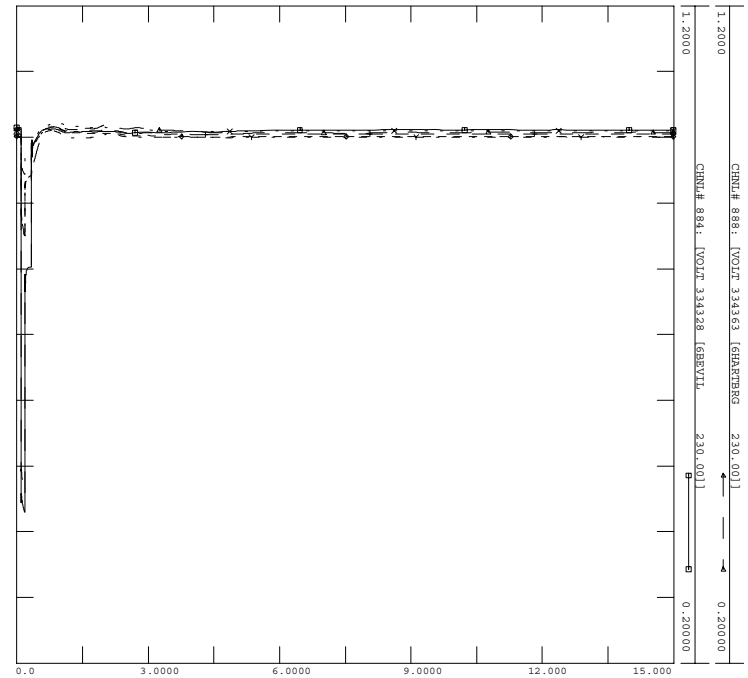
THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



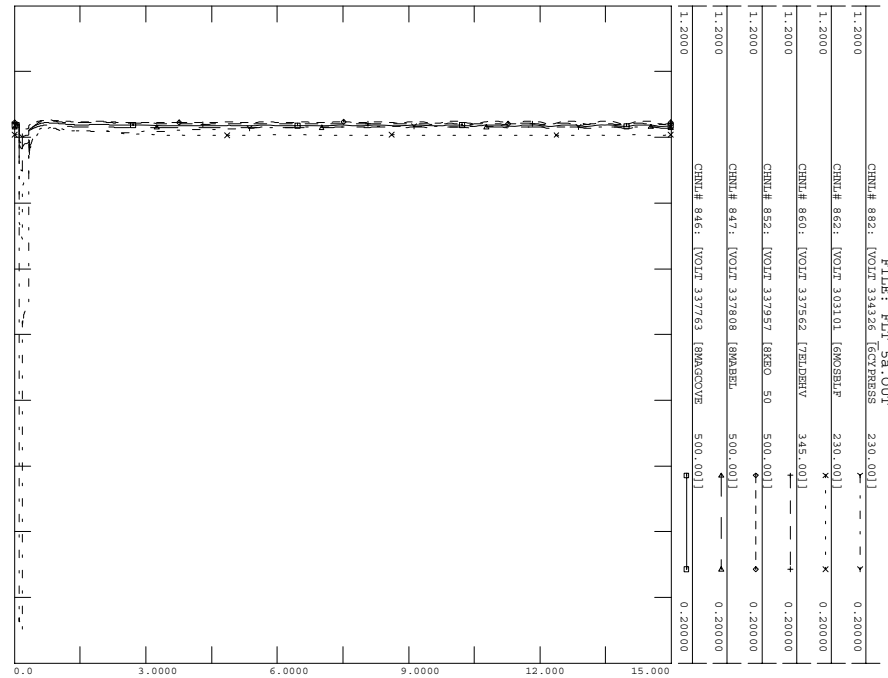
THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT

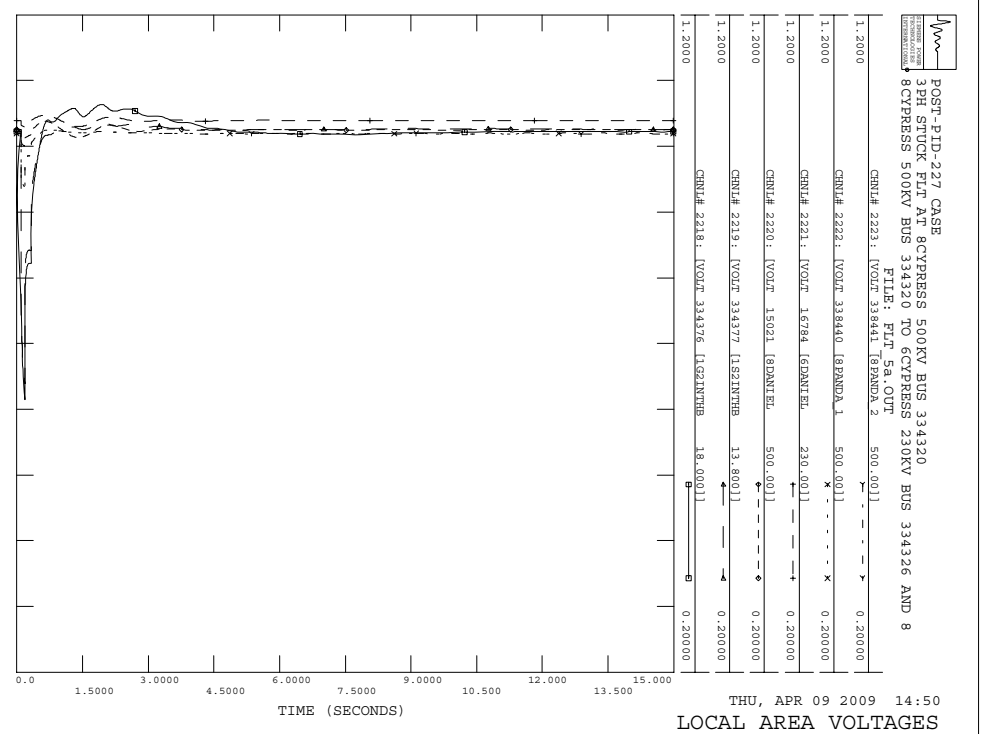
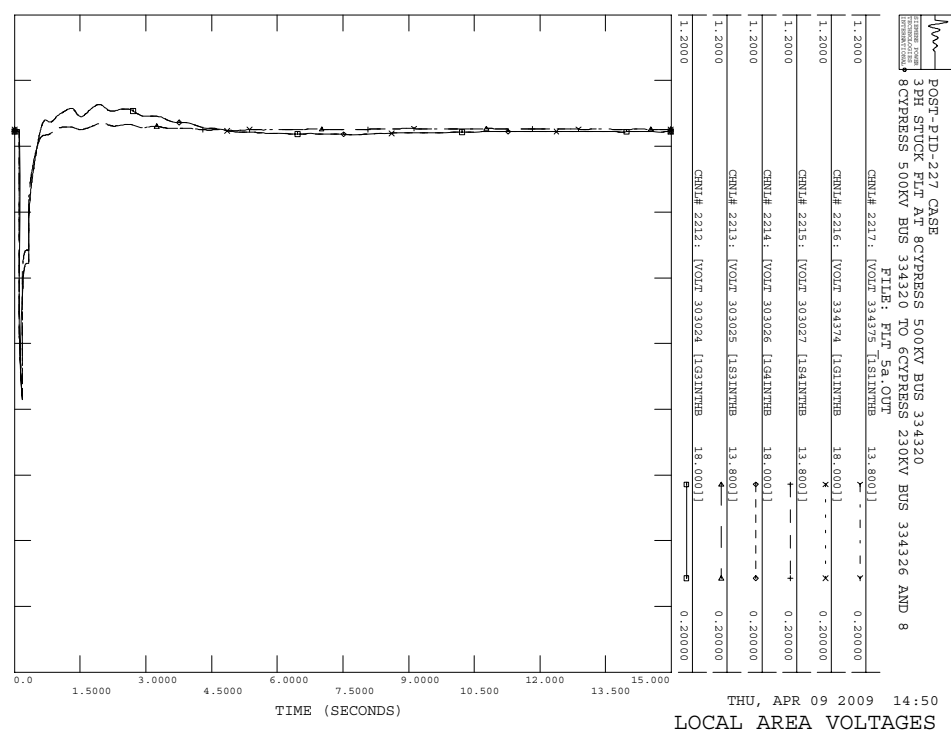
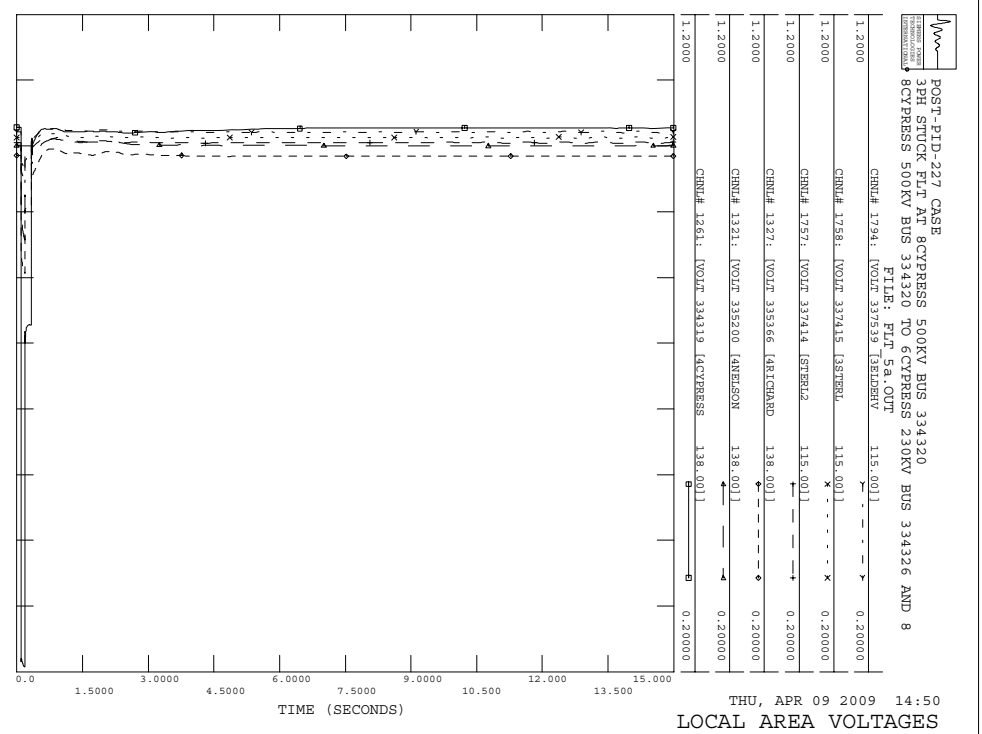
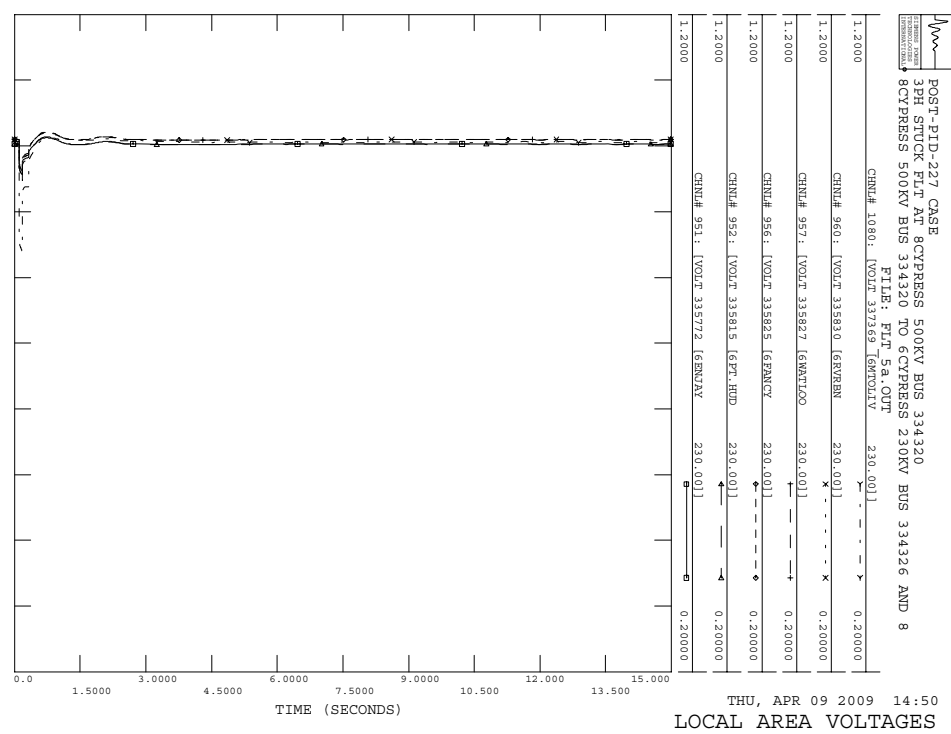


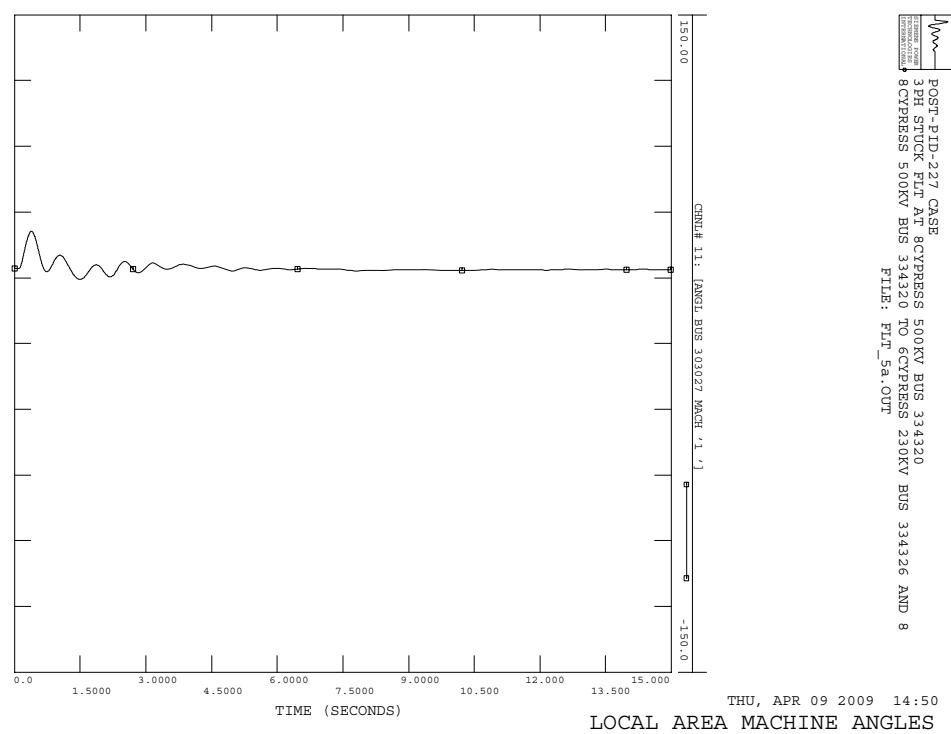
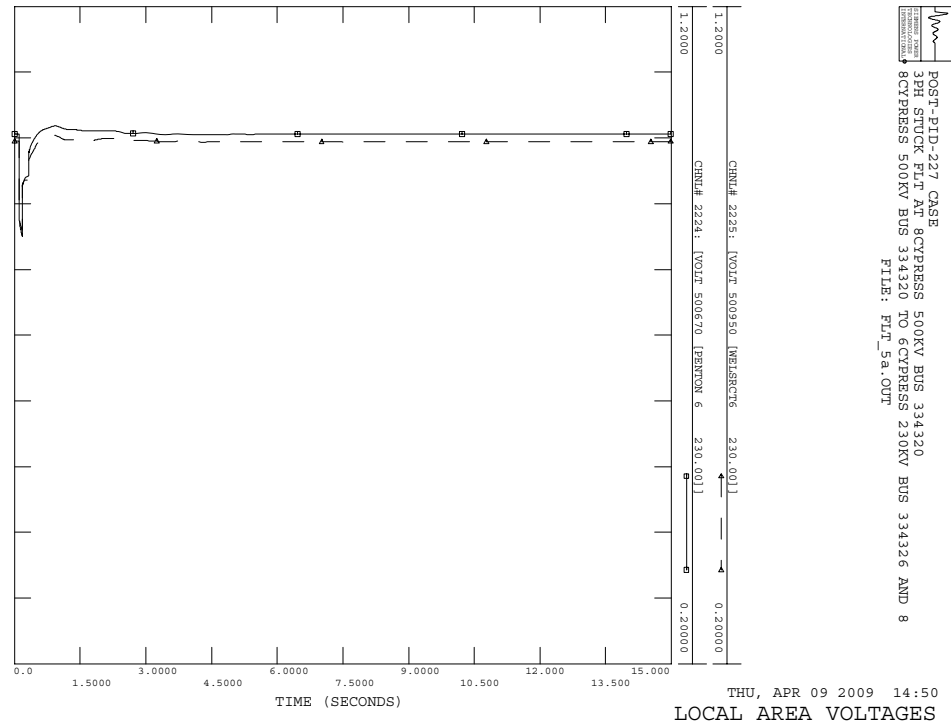
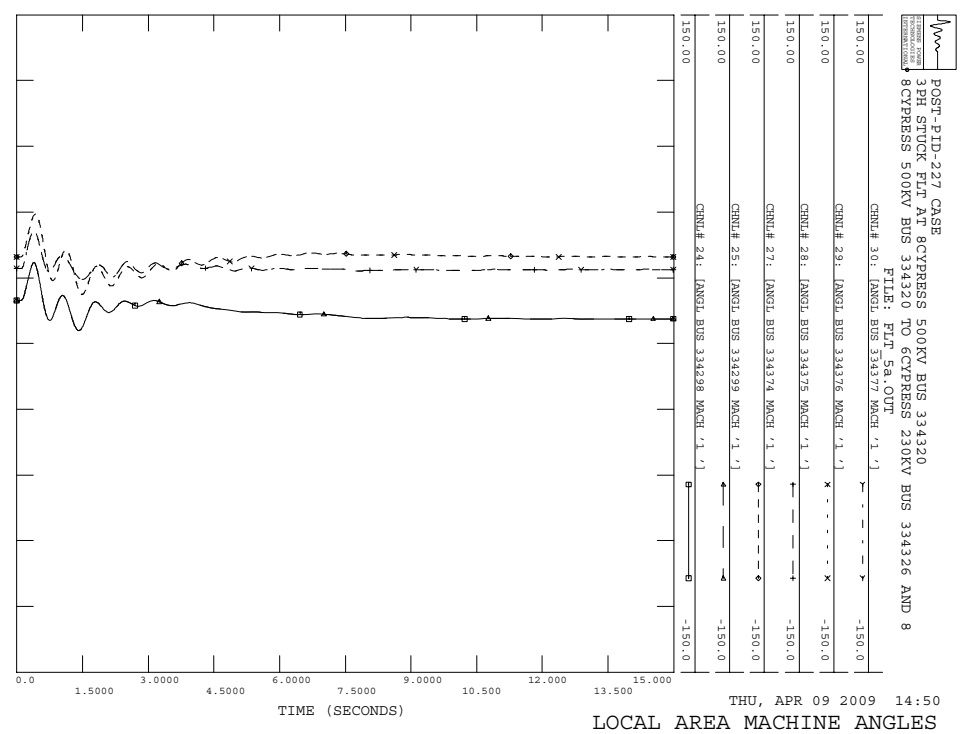
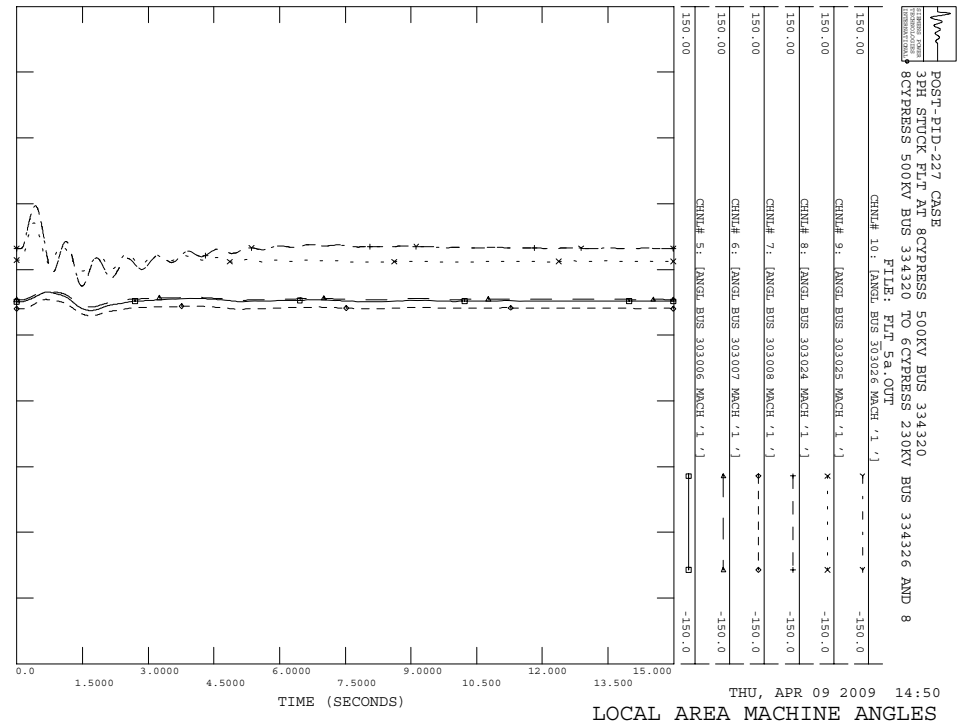
THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT

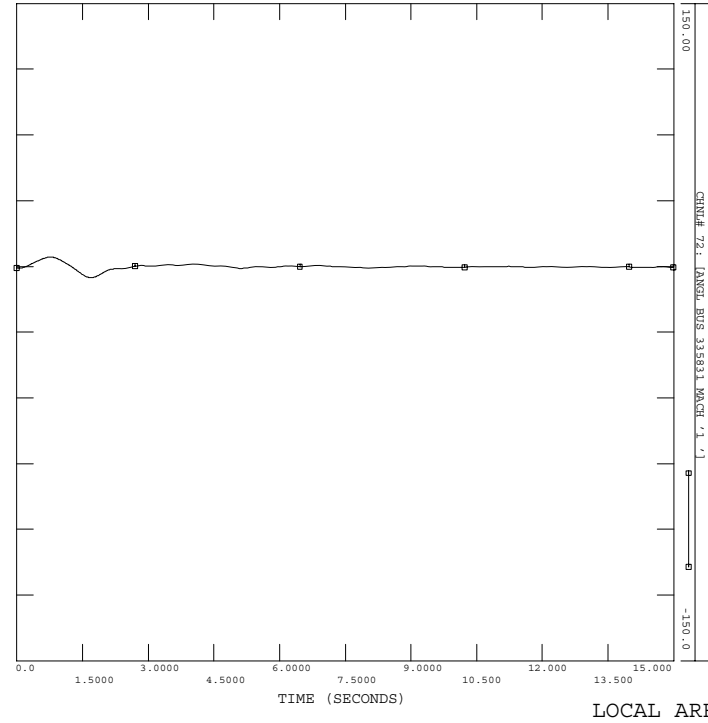


THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES



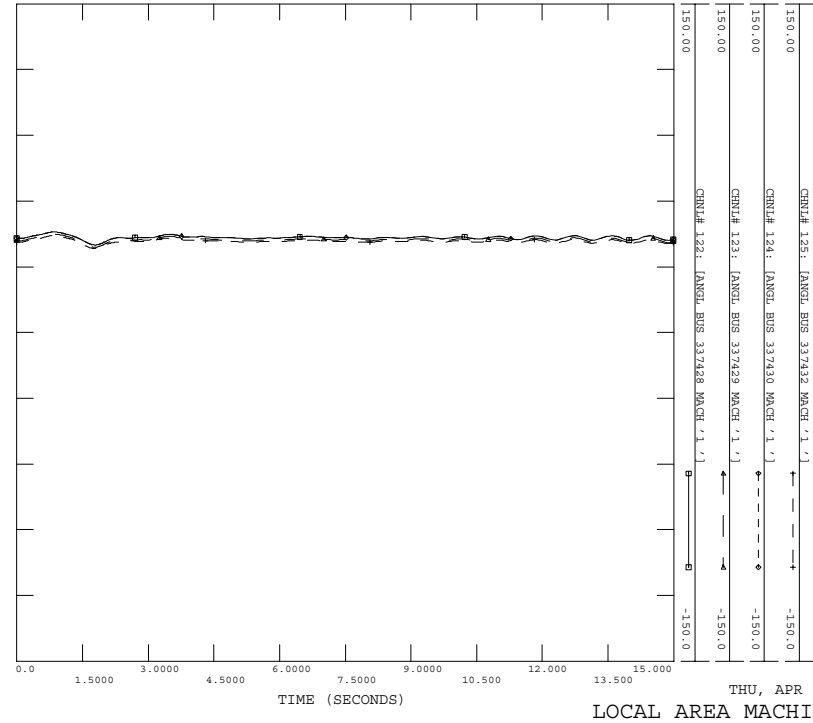


POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



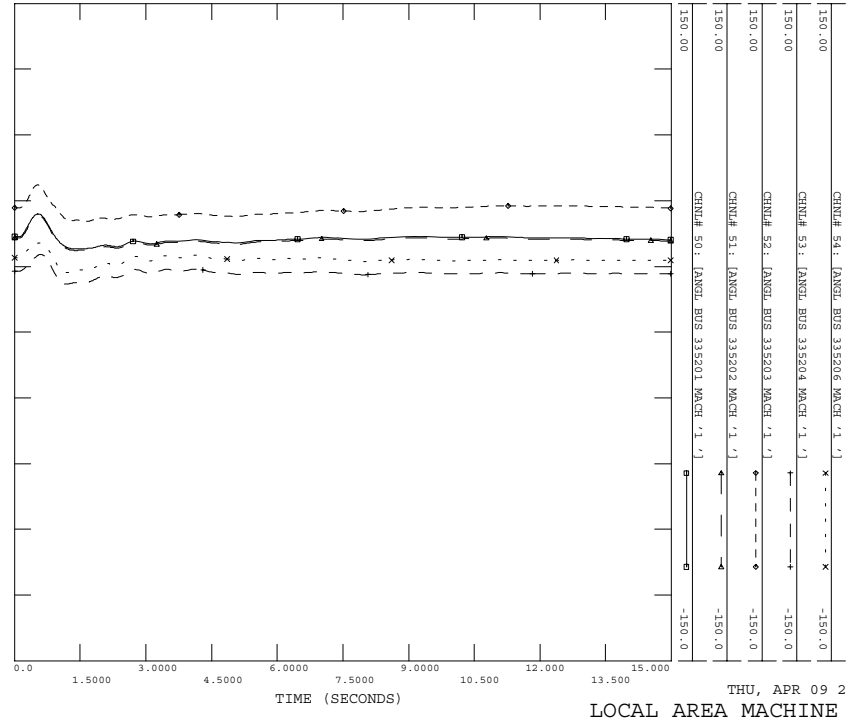
THU, APR 09 2009 14:50
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



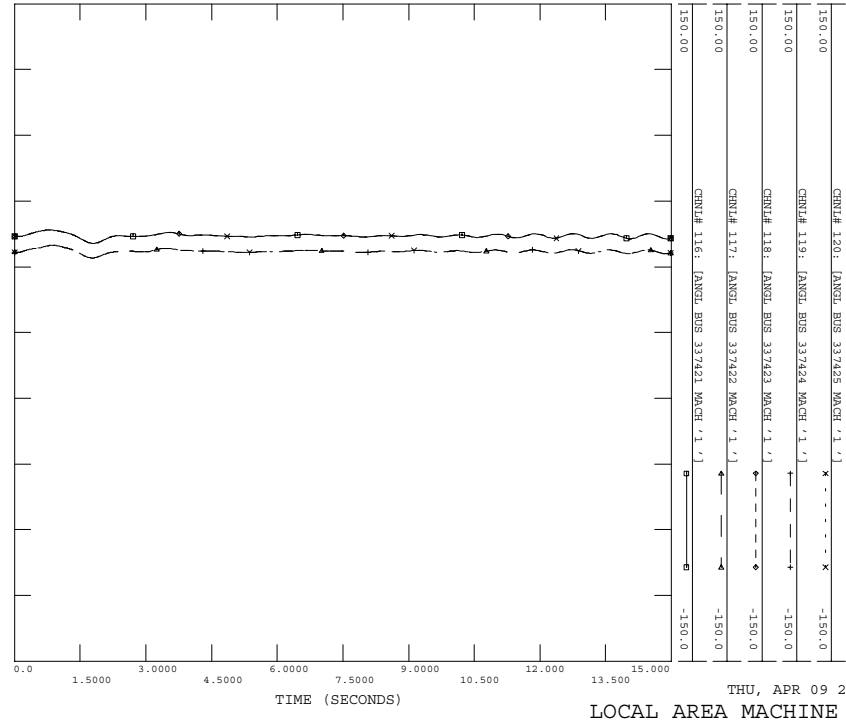
THU, APR 09 2009 14:50
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



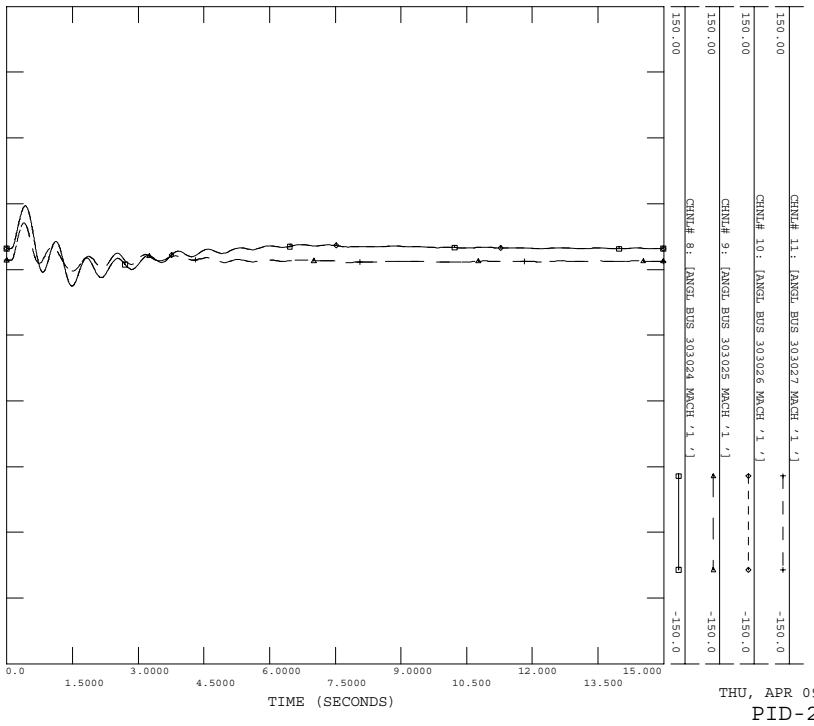
THU, APR 09 2009 14:50
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPERSS 500KV BUS 334320
 8CYPERSS 500KV BUS 334320 TO 6CYPERSS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT

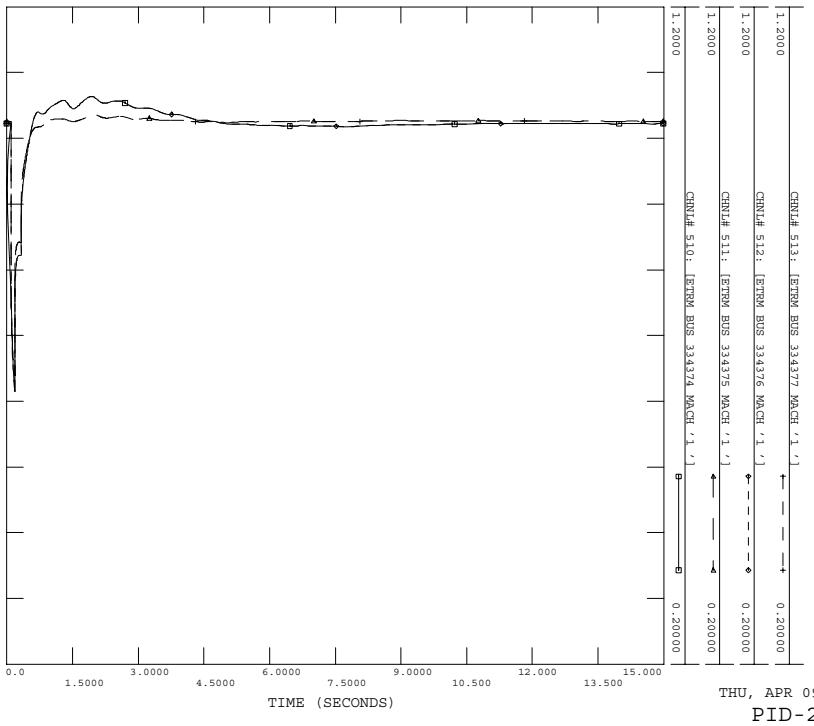


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 LOCAL AREA MACHINE ANGLES

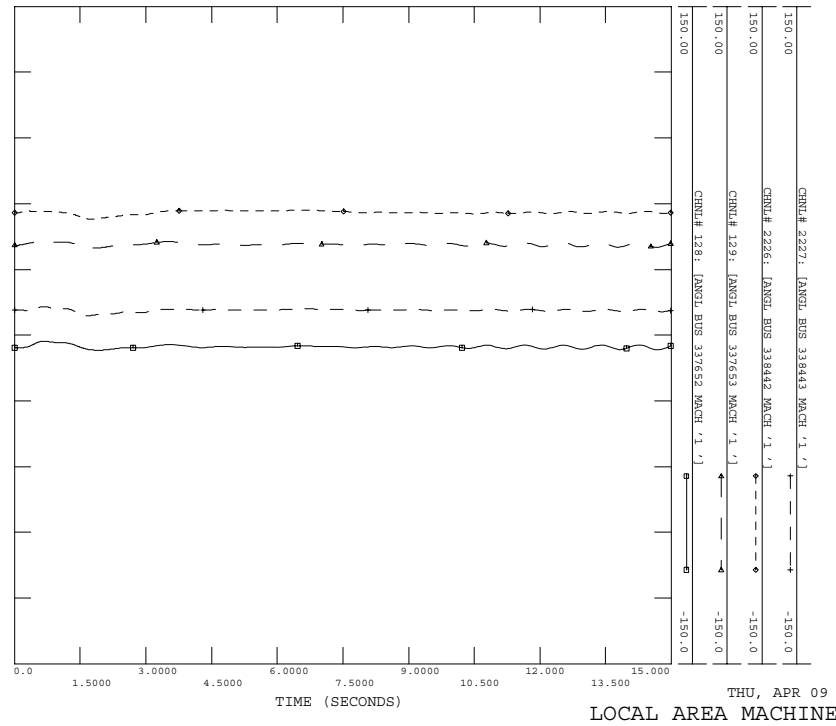
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



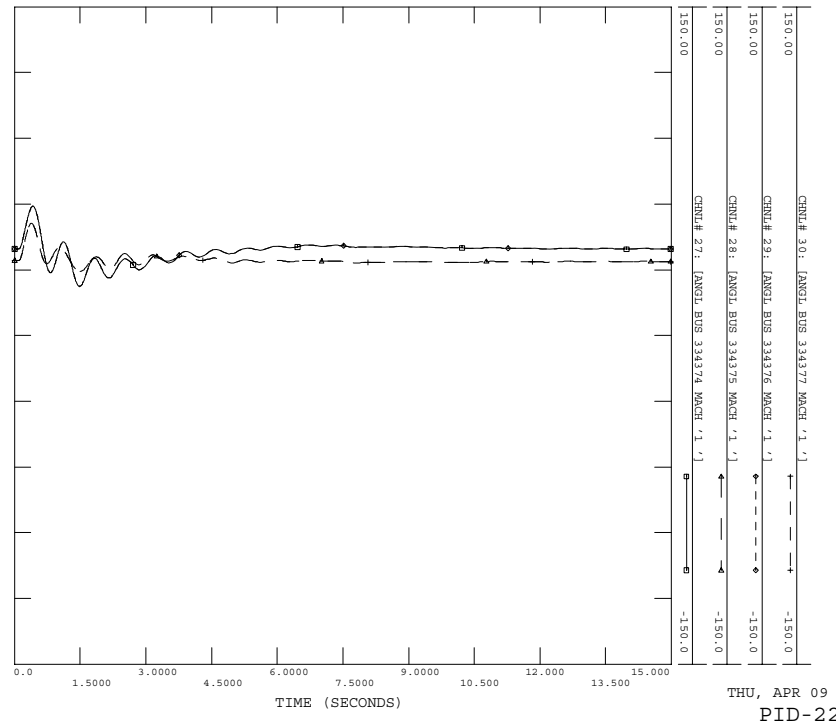
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



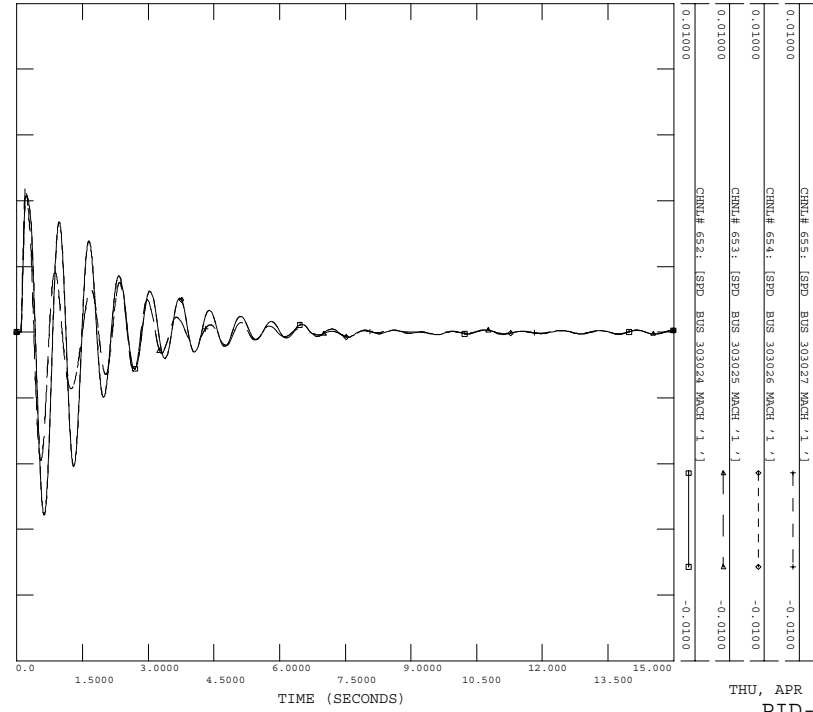
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



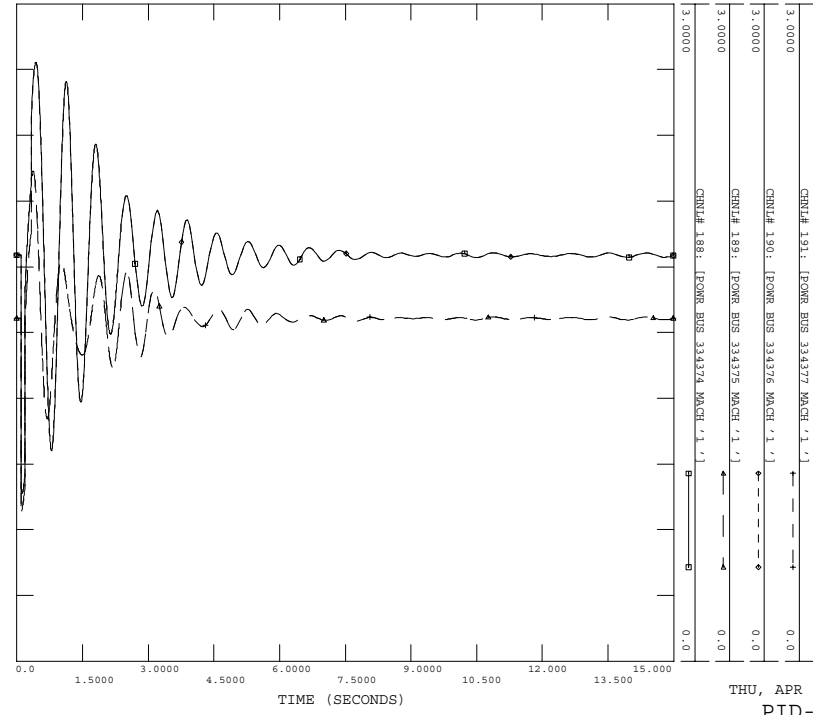
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



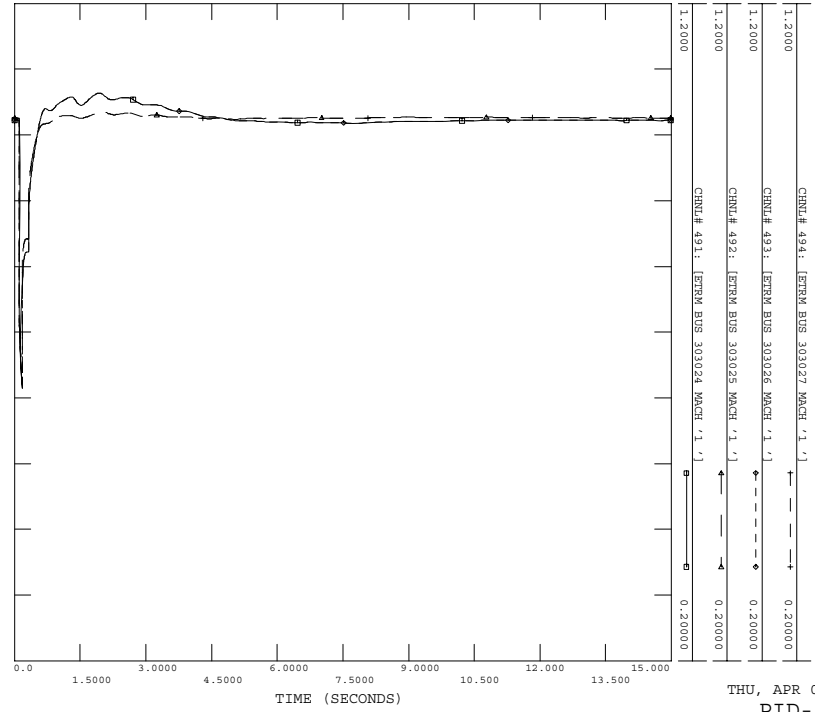
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



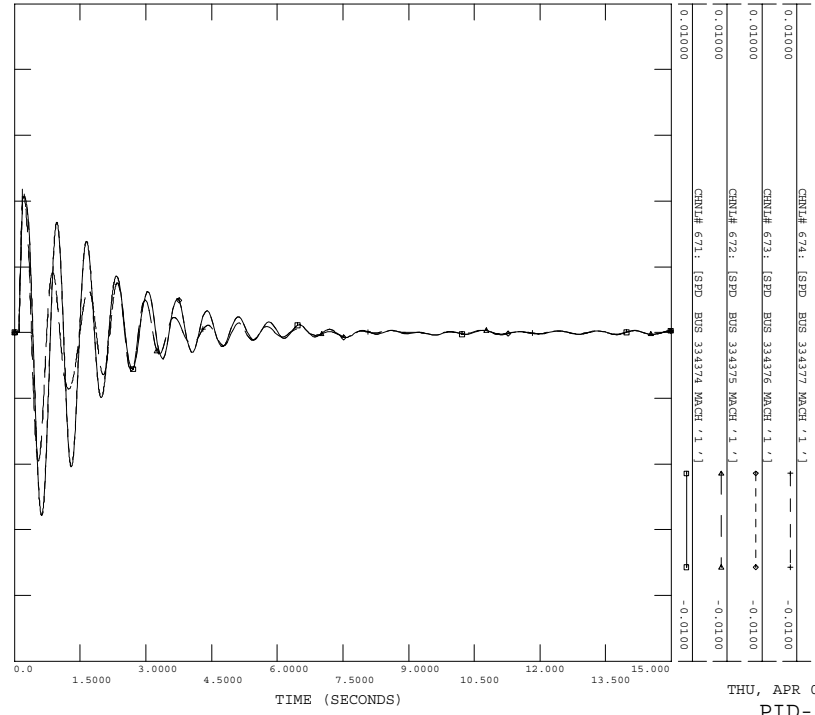
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



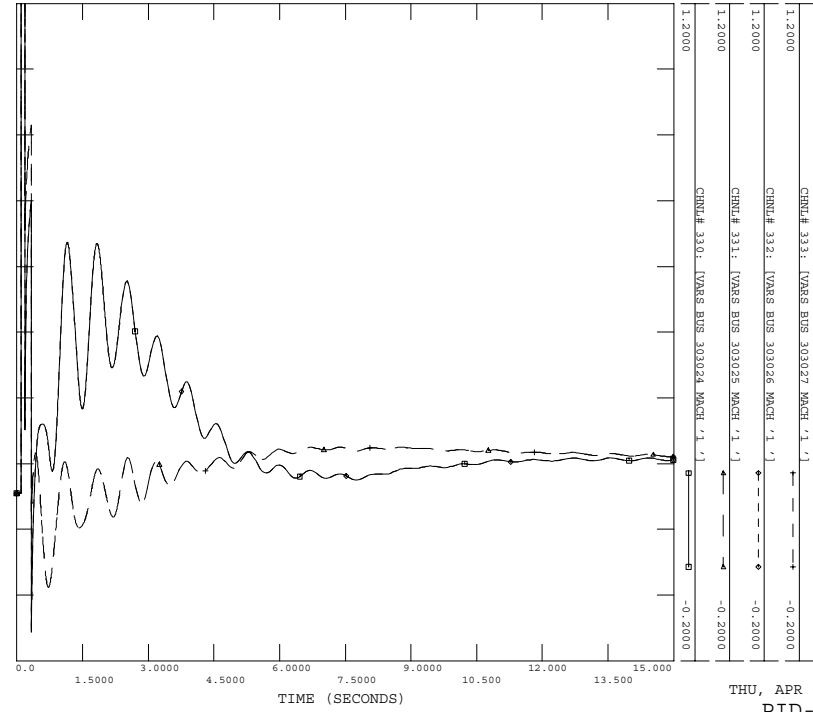
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT



POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
 FILE: FLT_58.OUT

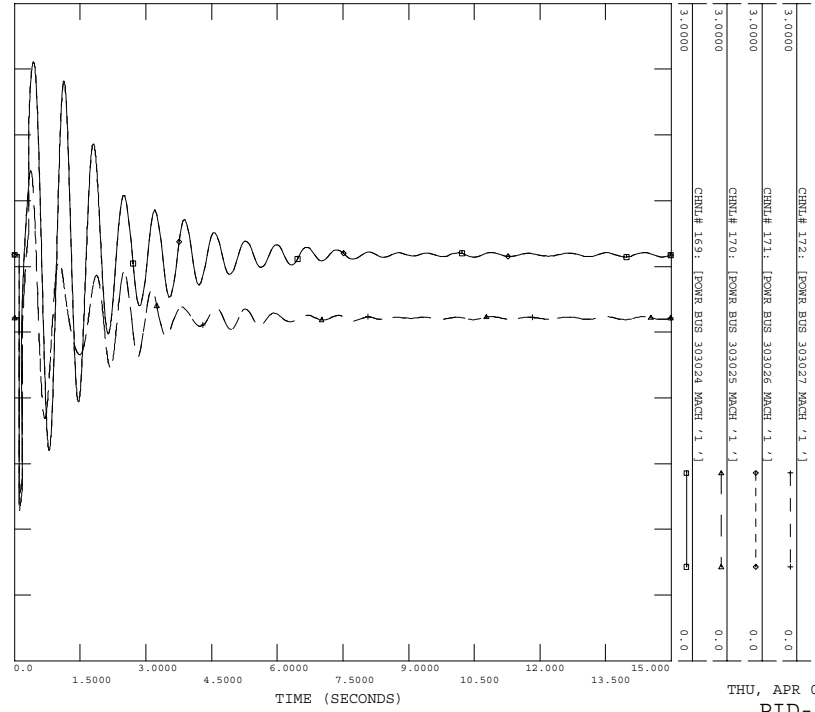


POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
FILE: FLT_58.OUT



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PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 6CYPRESS 230KV BUS 334326 AND 8
FILE: FLT_58.OUT

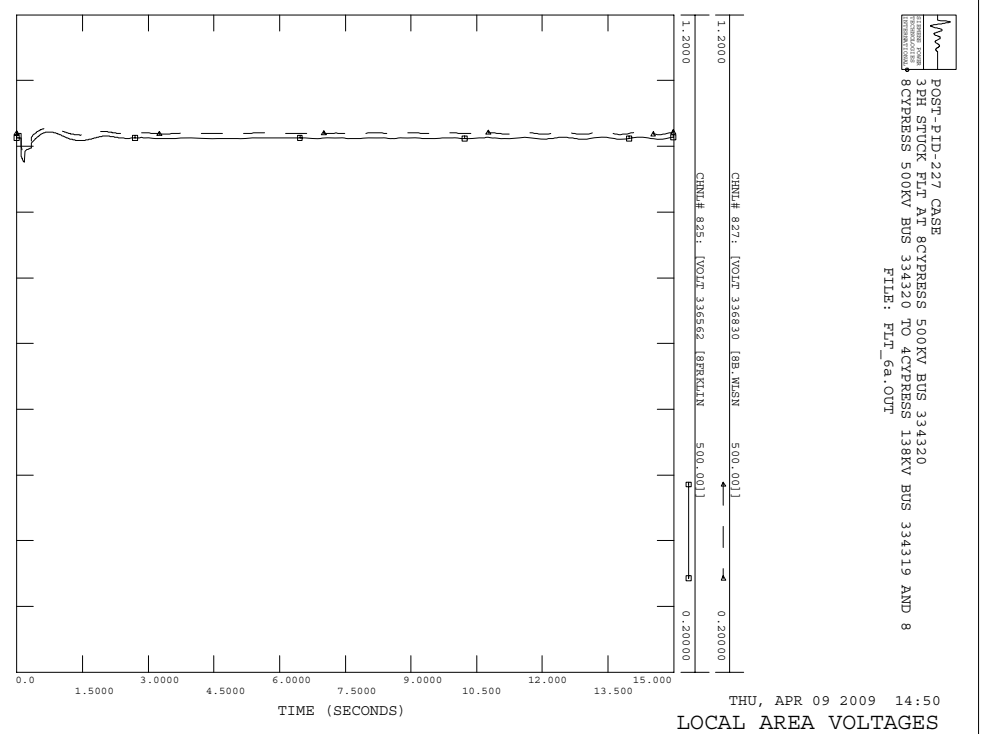
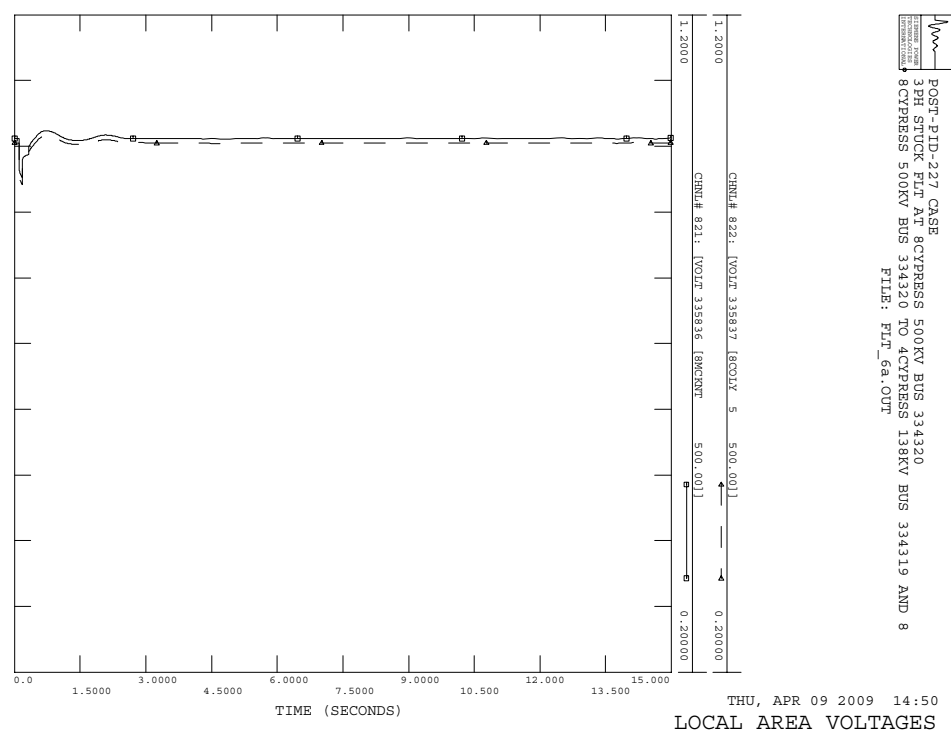
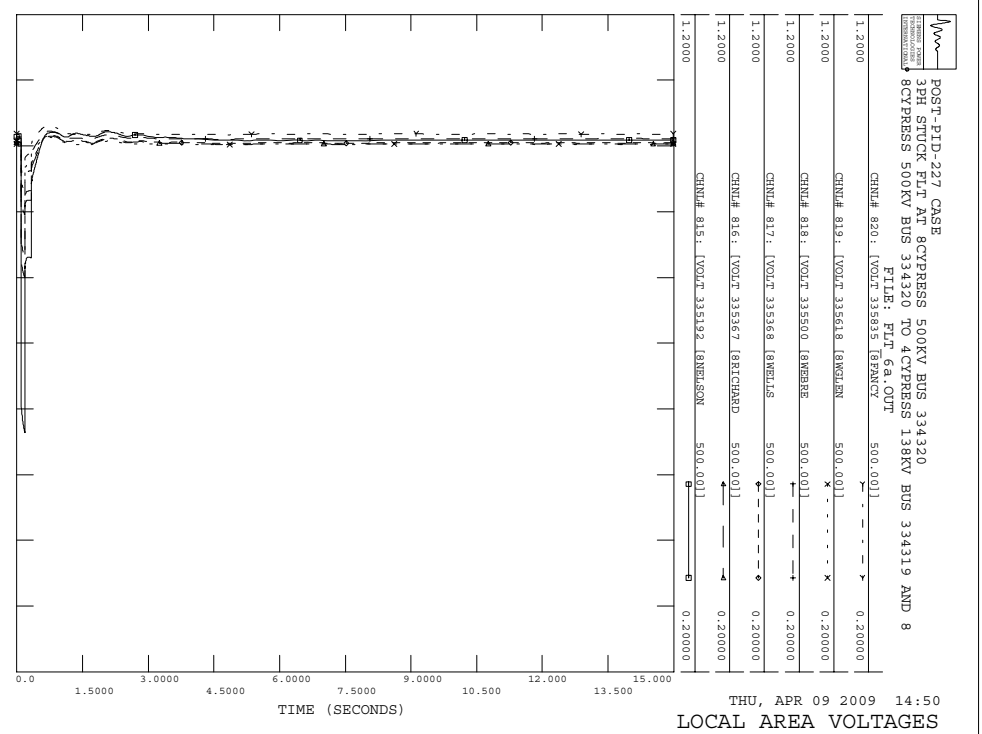
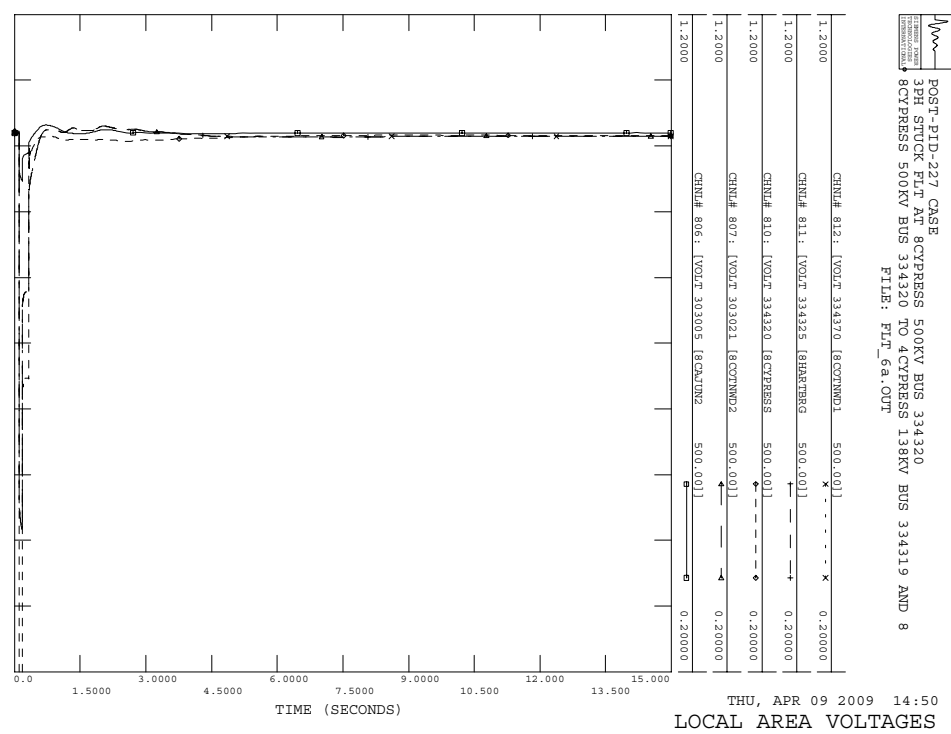


THU, APR 09 2009 14:50
PID-227 PLOTS

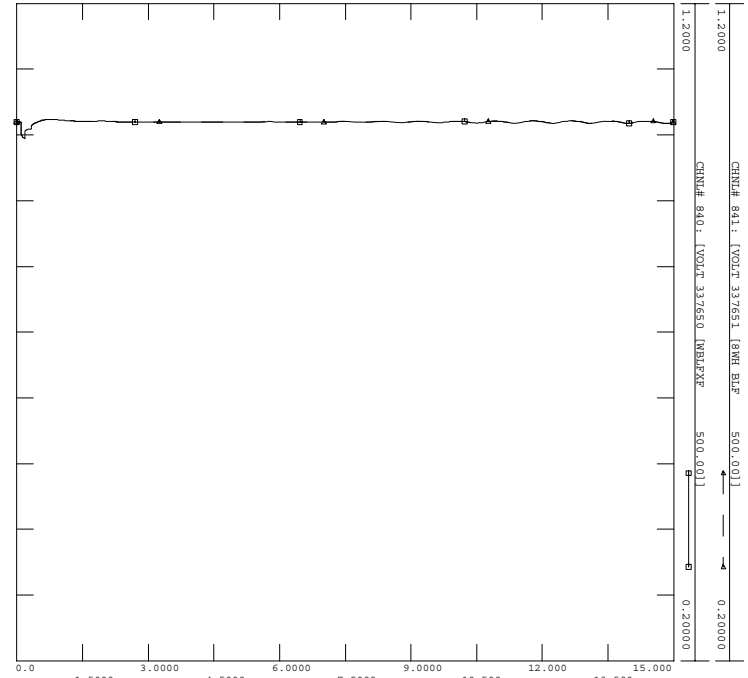
C.18 FLT_6a

Stuck breaker fault on the 8CYPRESS (#334320) to 4CYPRESS (#334319) transformer, near the 8CYPRESS.

- a) Apply 3 Phase Fault AT 8CYPRESS 500KV BUS 334320
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8CYPRESS 500KV BUS 334320
- d) Apply 3 Phase fault at #334320 with admittance $469.17-j4463.25$ MVA
- e) Clear fault after 9 cycles by tripping transformer from 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 and line from 8HARTBRG 500KV BUS 334325 TO 8CYPRESS 500KV BUS 334320

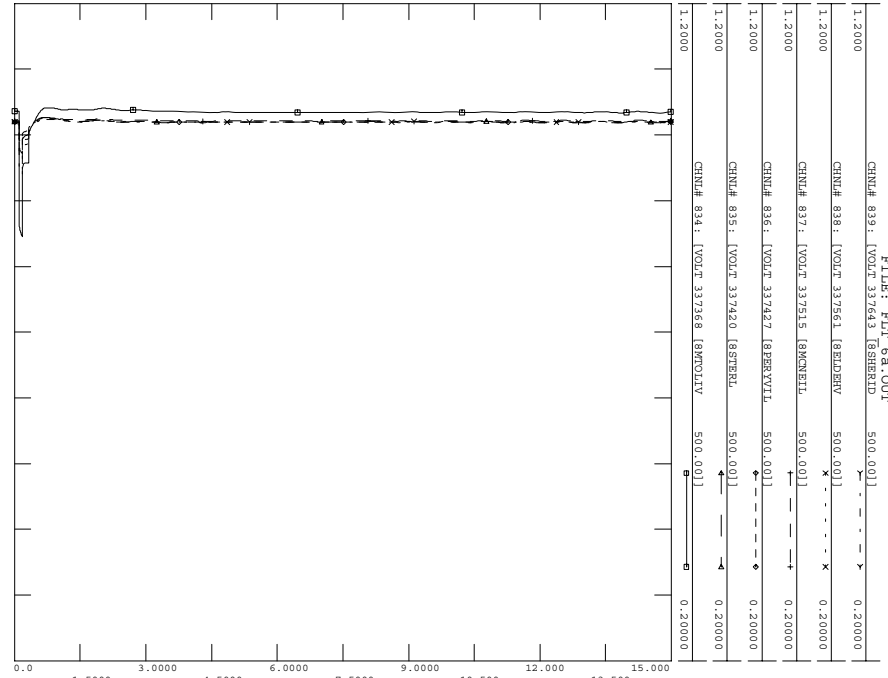


POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



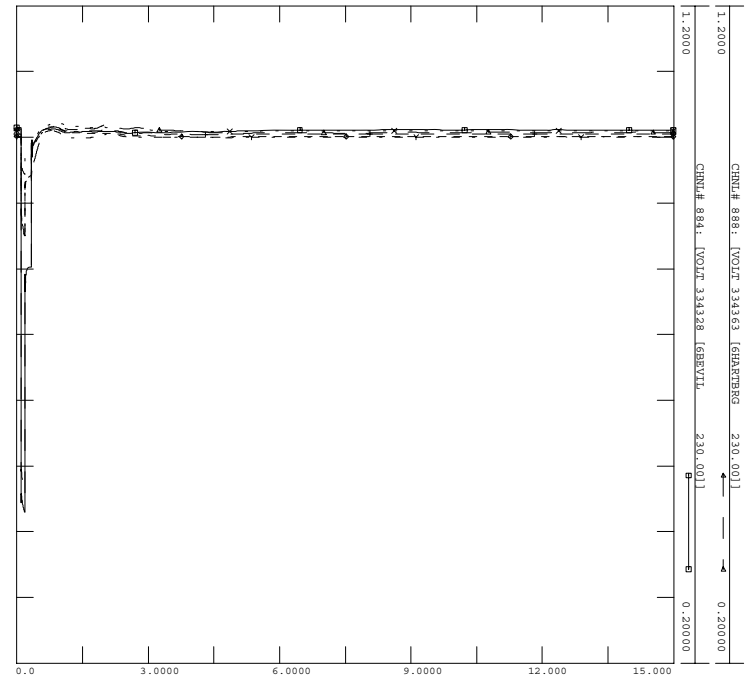
THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



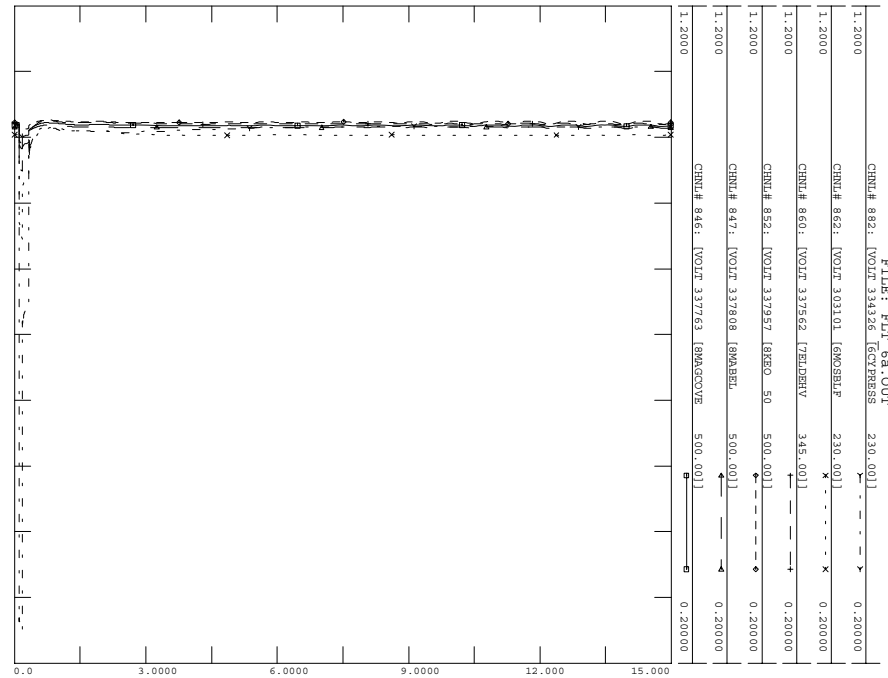
THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT

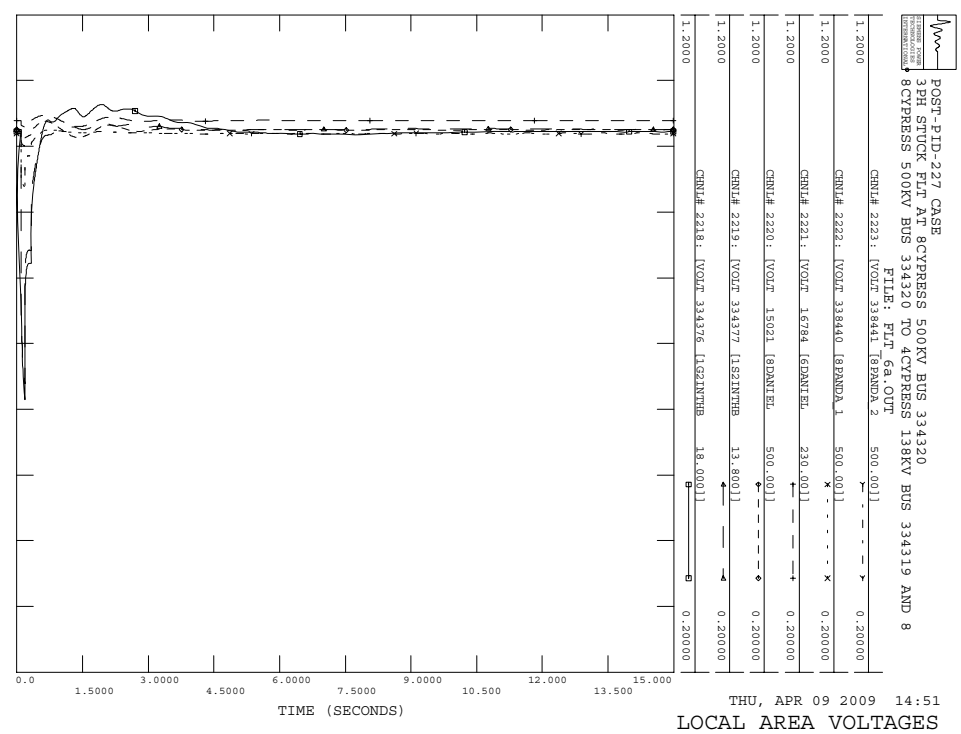
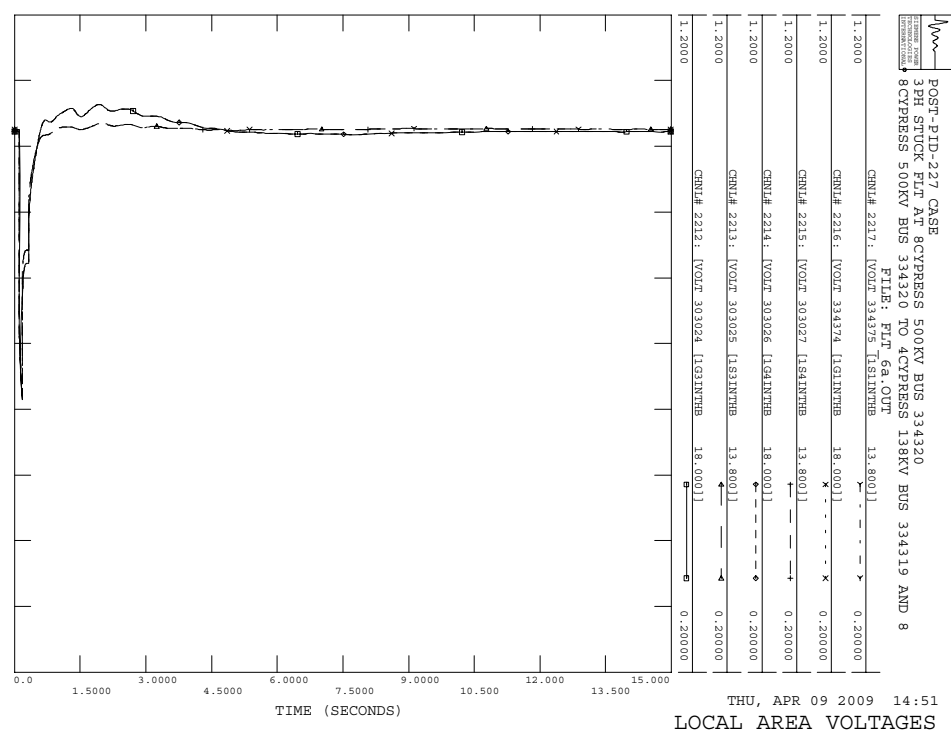
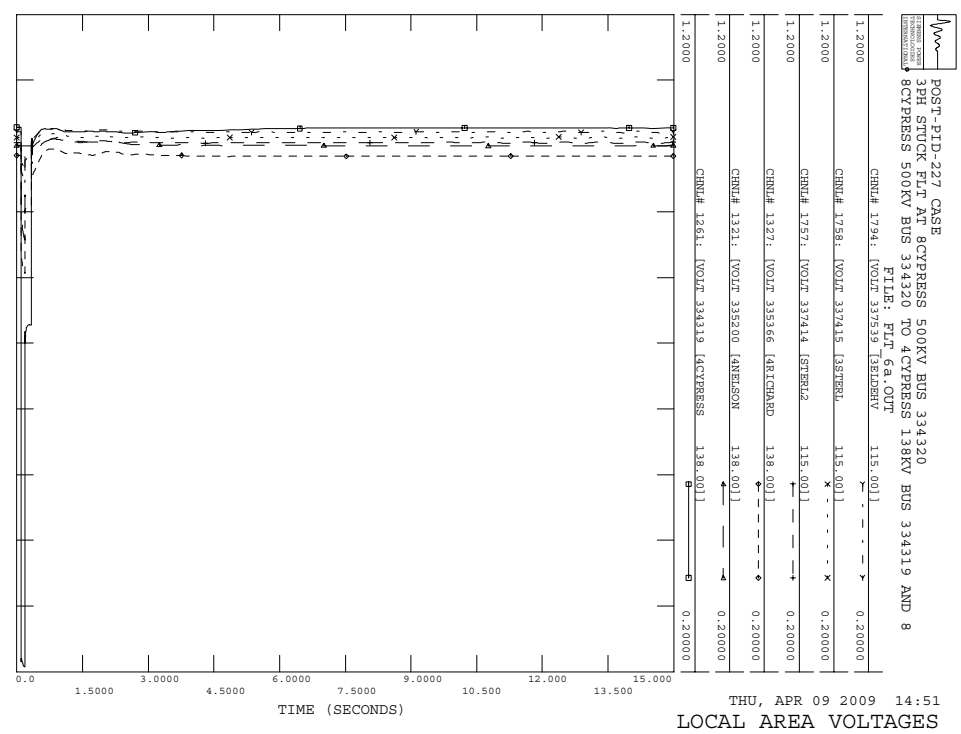
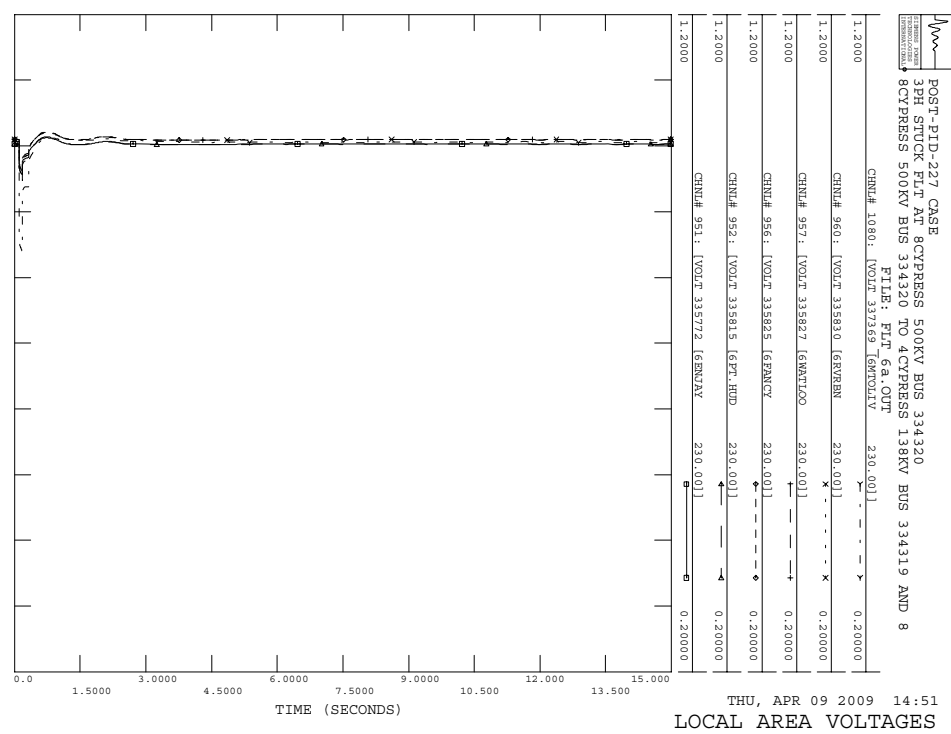


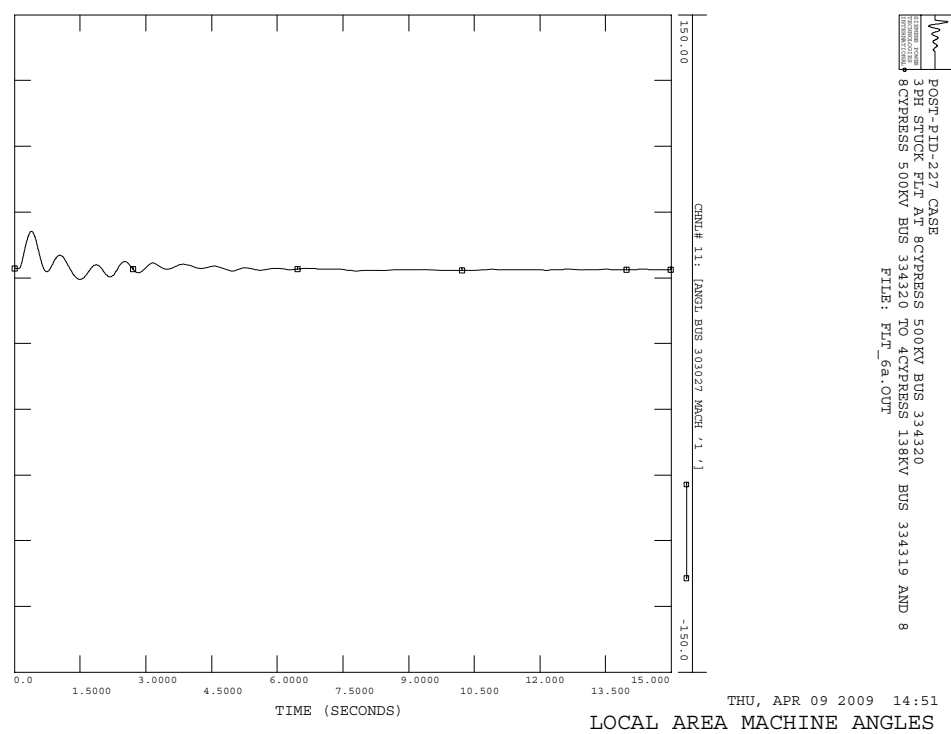
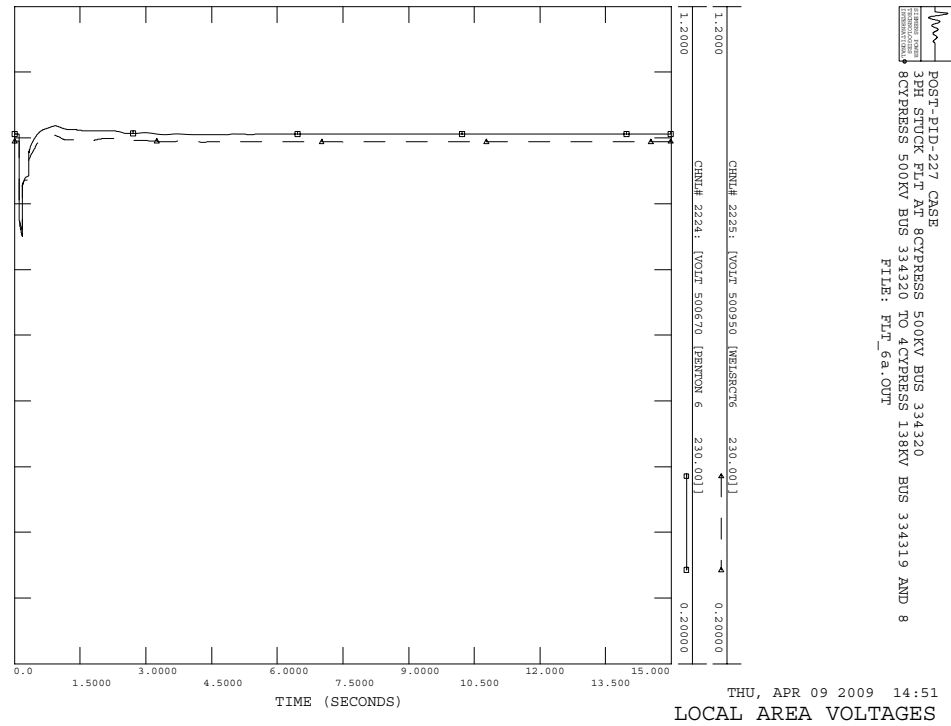
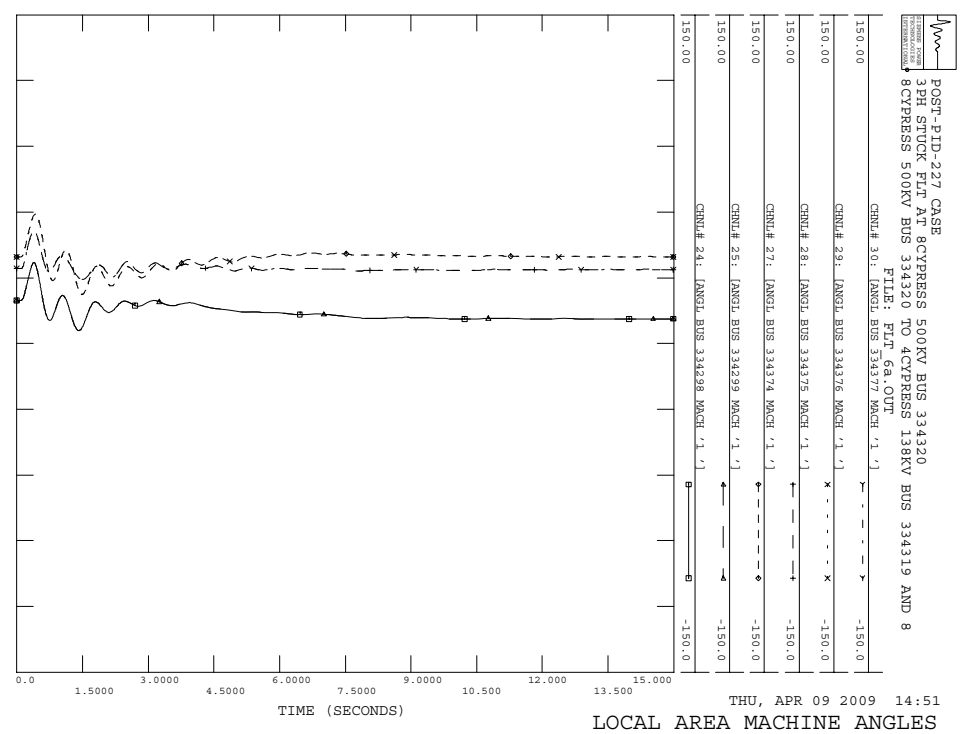
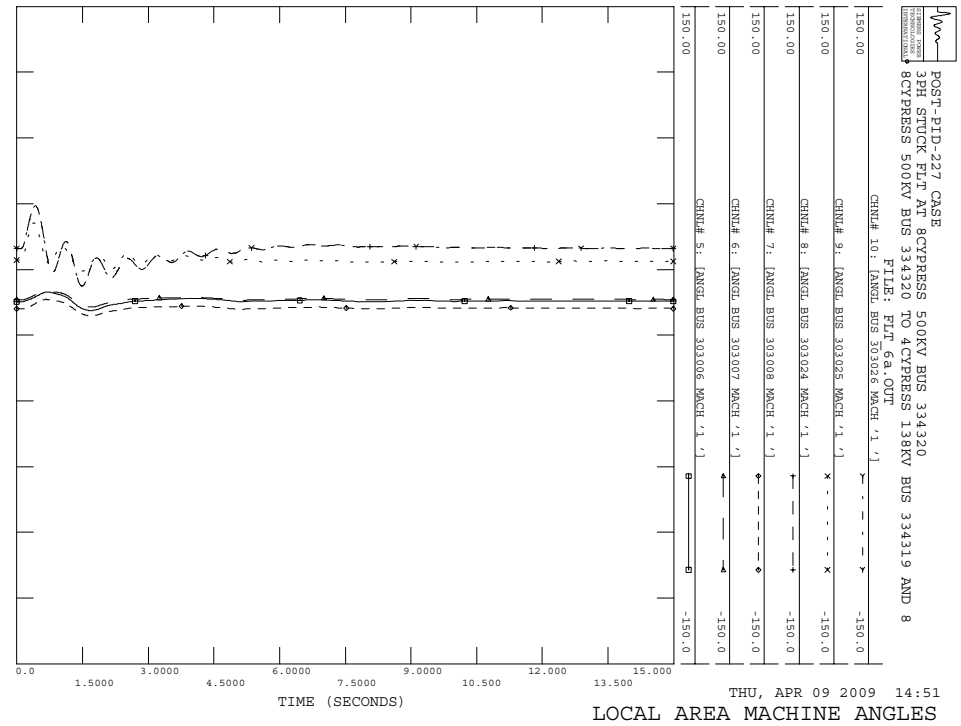
THU, APR 09 2009 14:51
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT

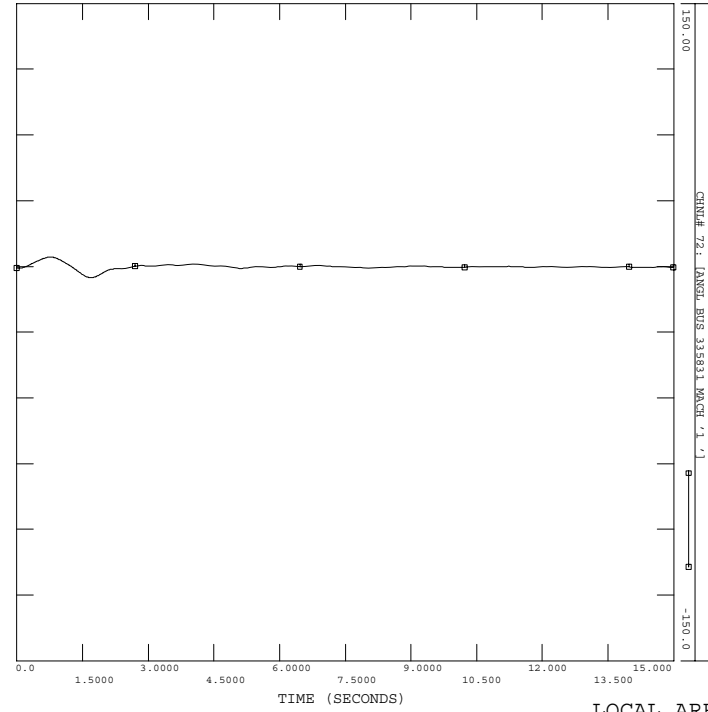


THU, APR 09 2009 14:50
 LOCAL AREA VOLTAGES

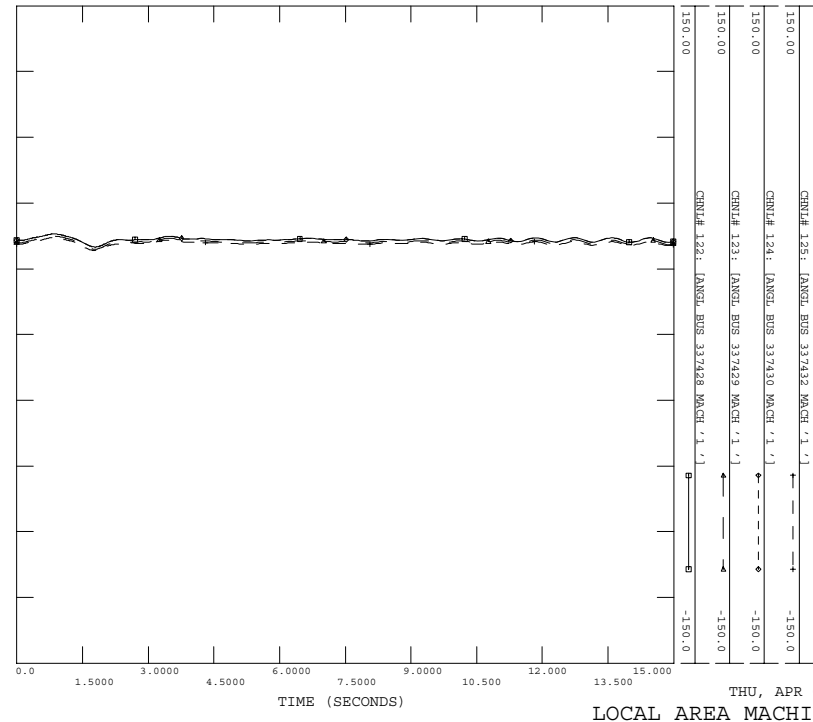




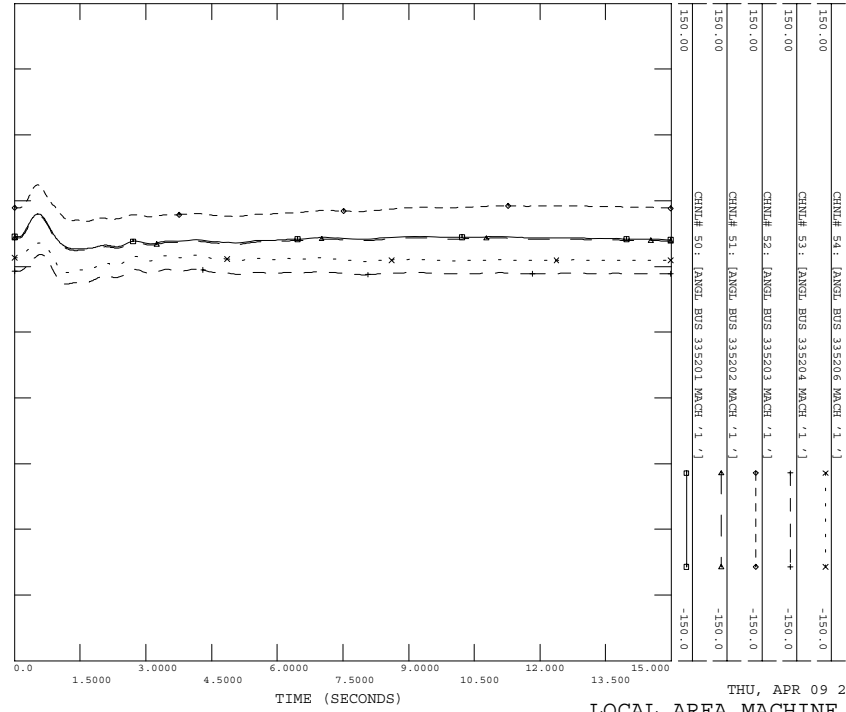
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



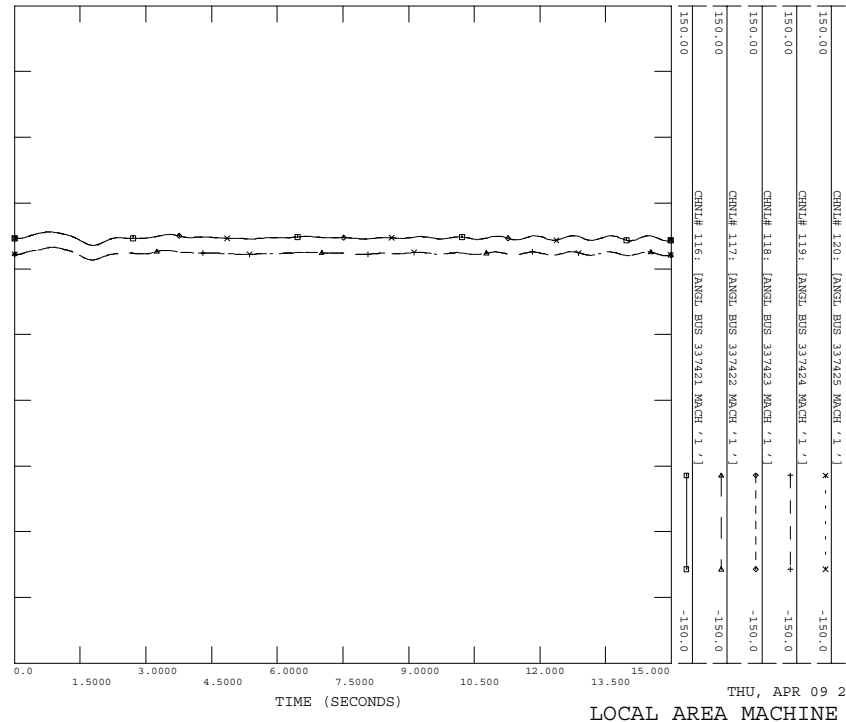
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



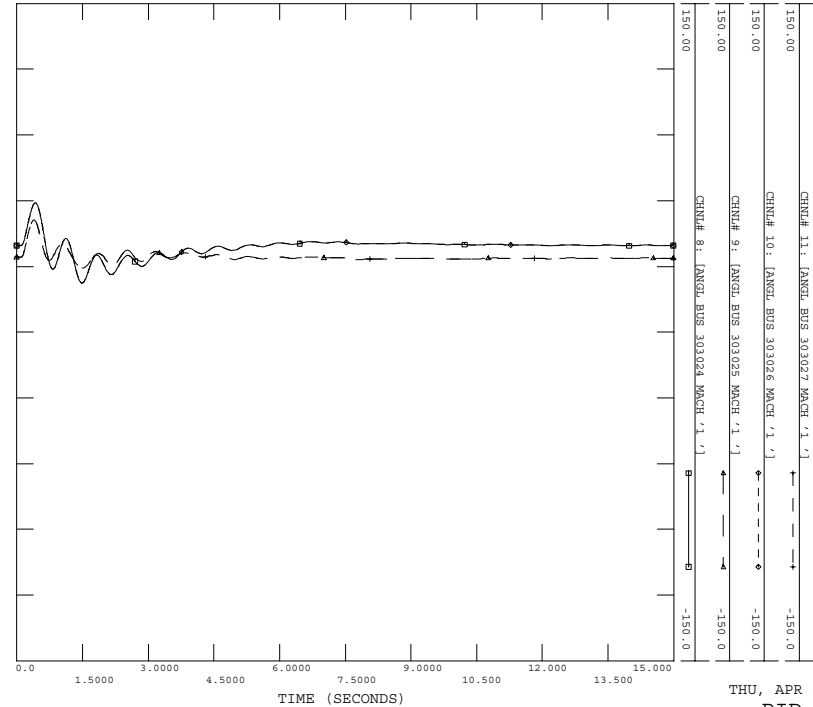
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



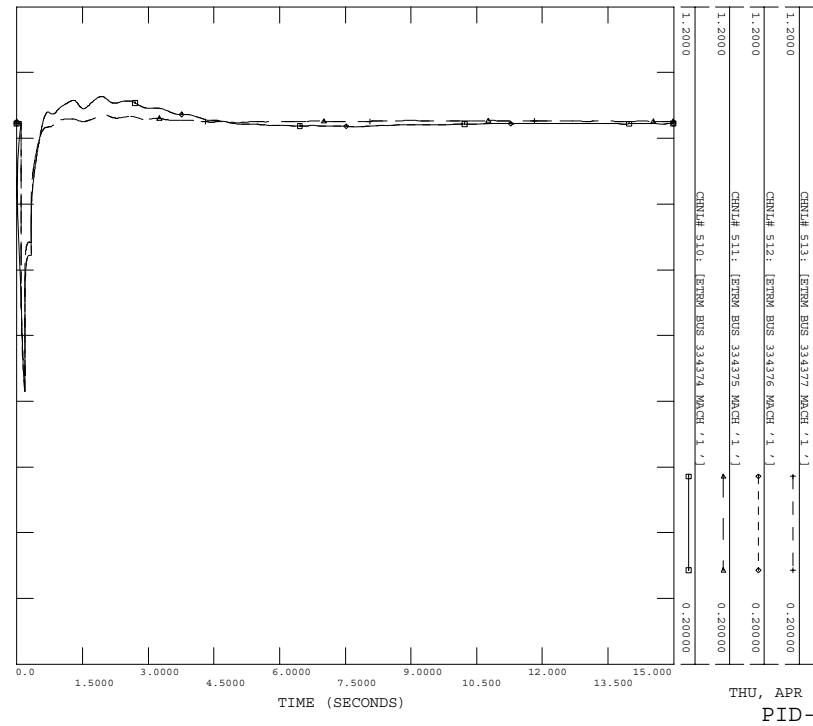
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



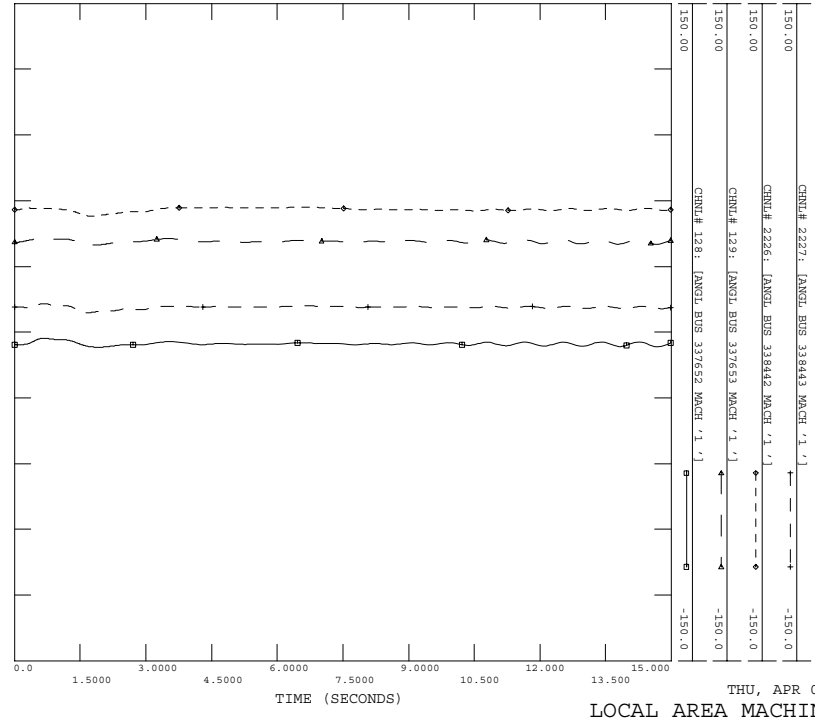
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



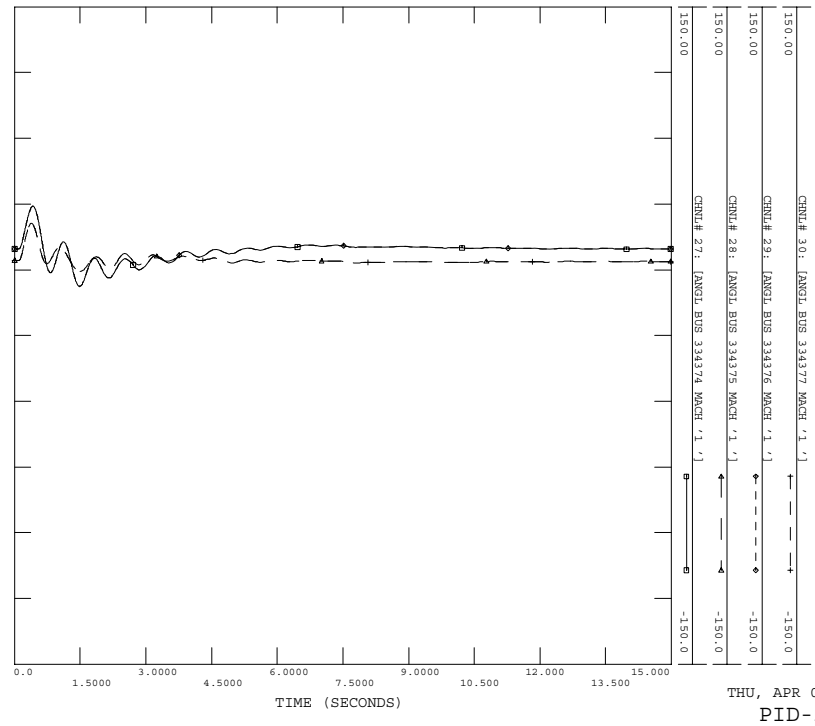
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



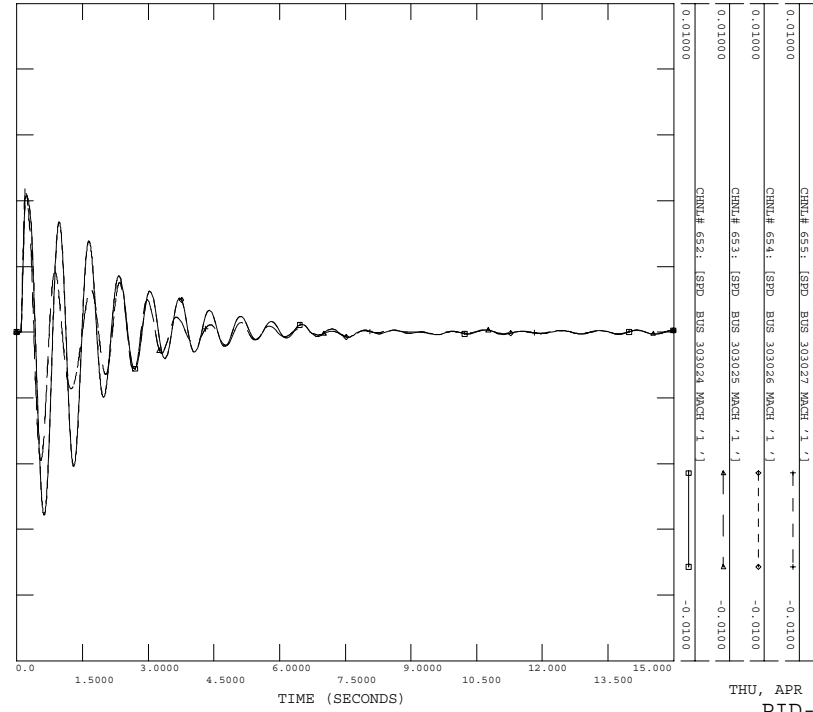
POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT



POST-PID-227 CASE
 3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
 8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
 FILE: FLT_6a.OUT

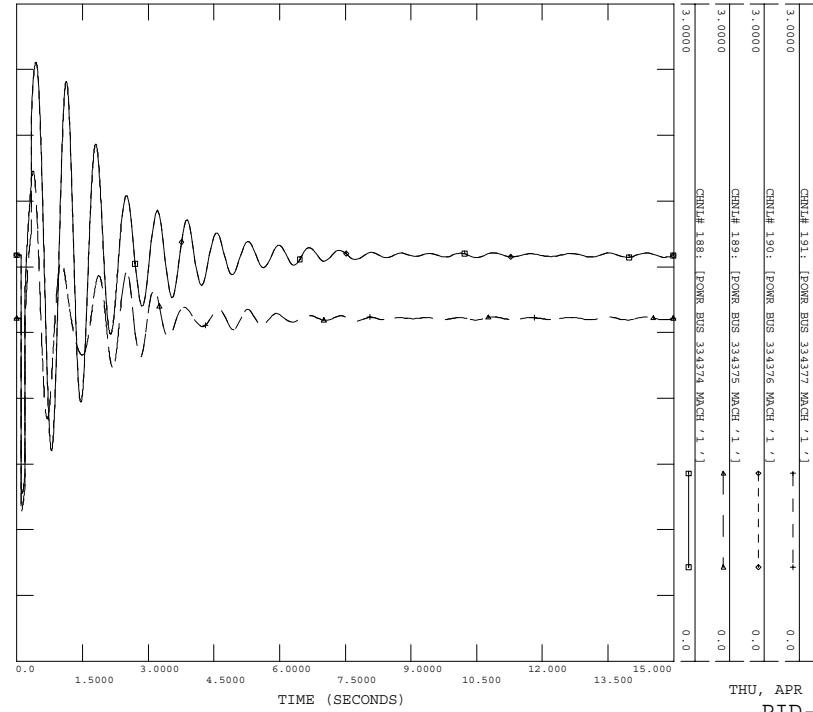


POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
FILE: FLT_6a.OUT



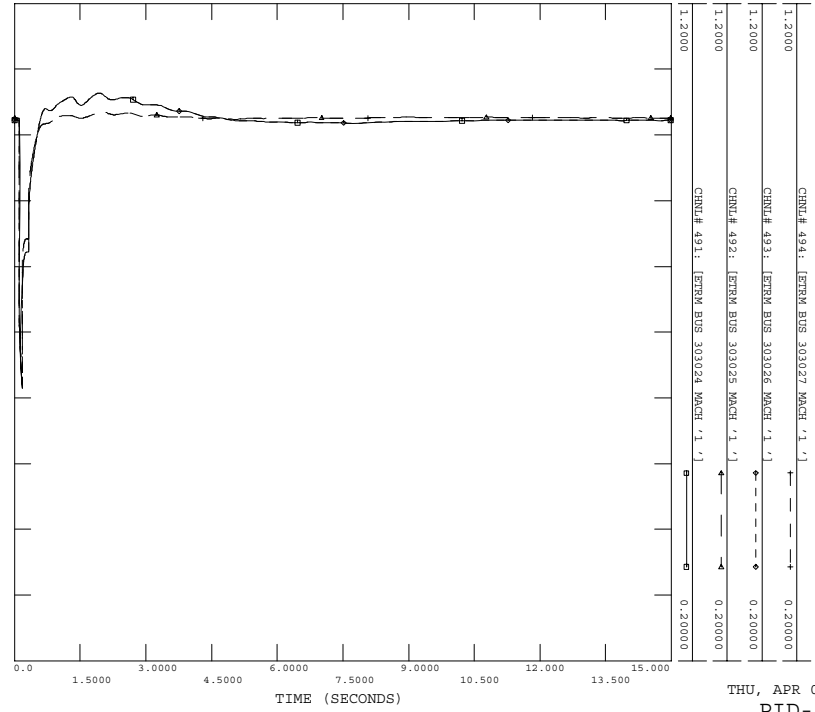
THU, APR 09 2009 14:51
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
FILE: FLT_6a.OUT



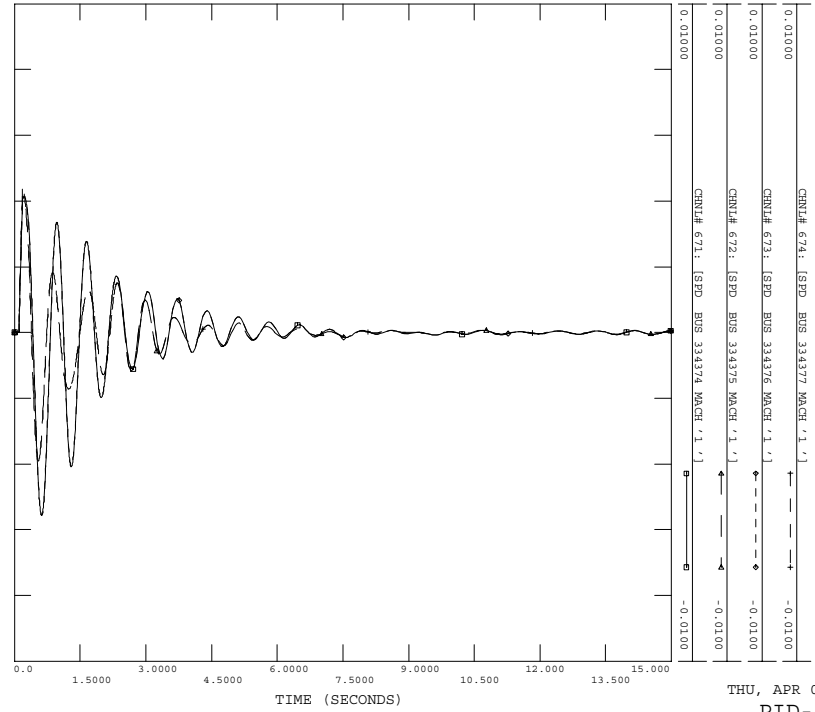
THU, APR 09 2009 14:51
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
FILE: FLT_6a.OUT



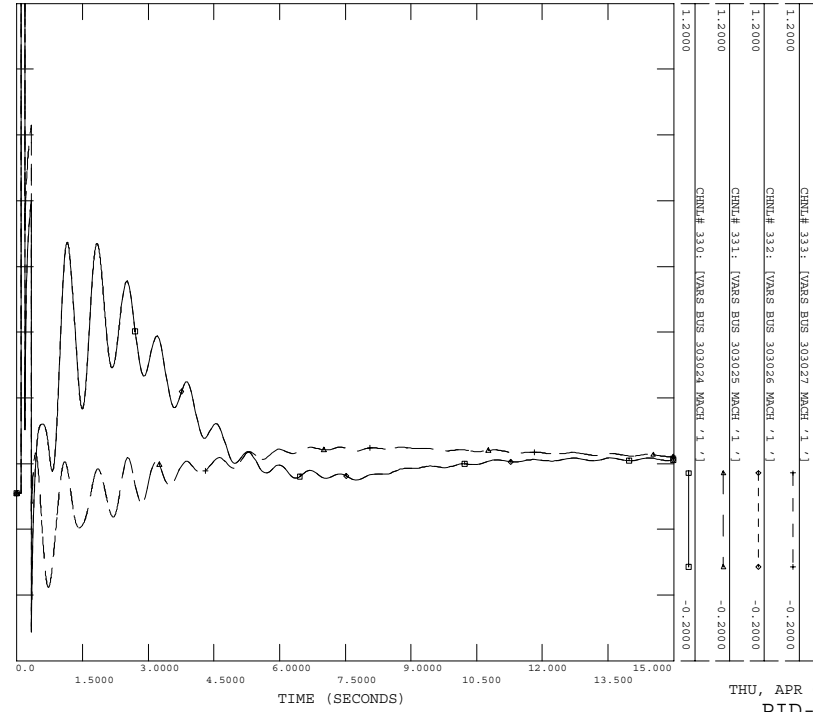
THU, APR 09 2009 14:51
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
FILE: FLT_6a.OUT

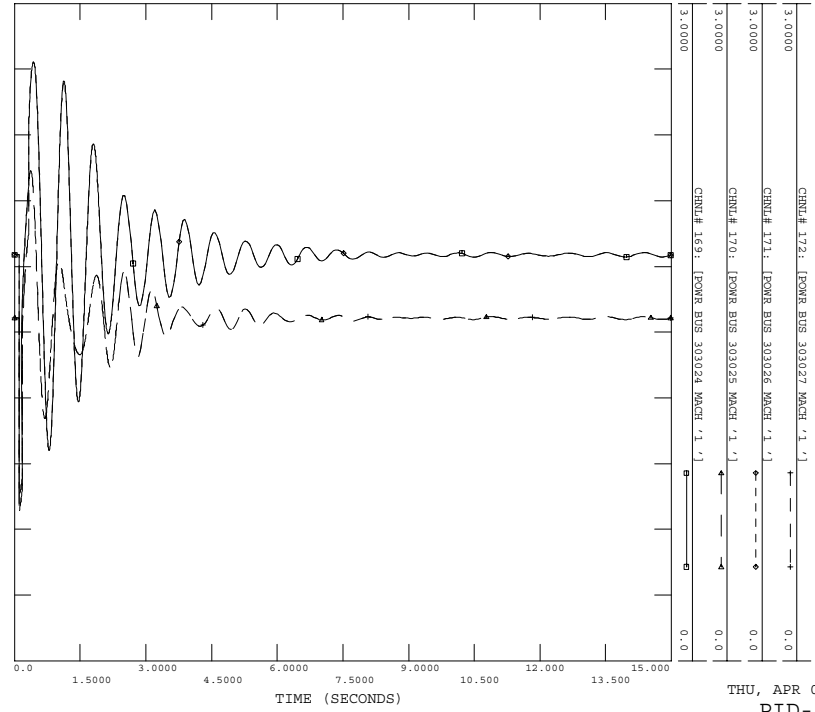


THU, APR 09 2009 14:51
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
FILE: FLT_68.OUT



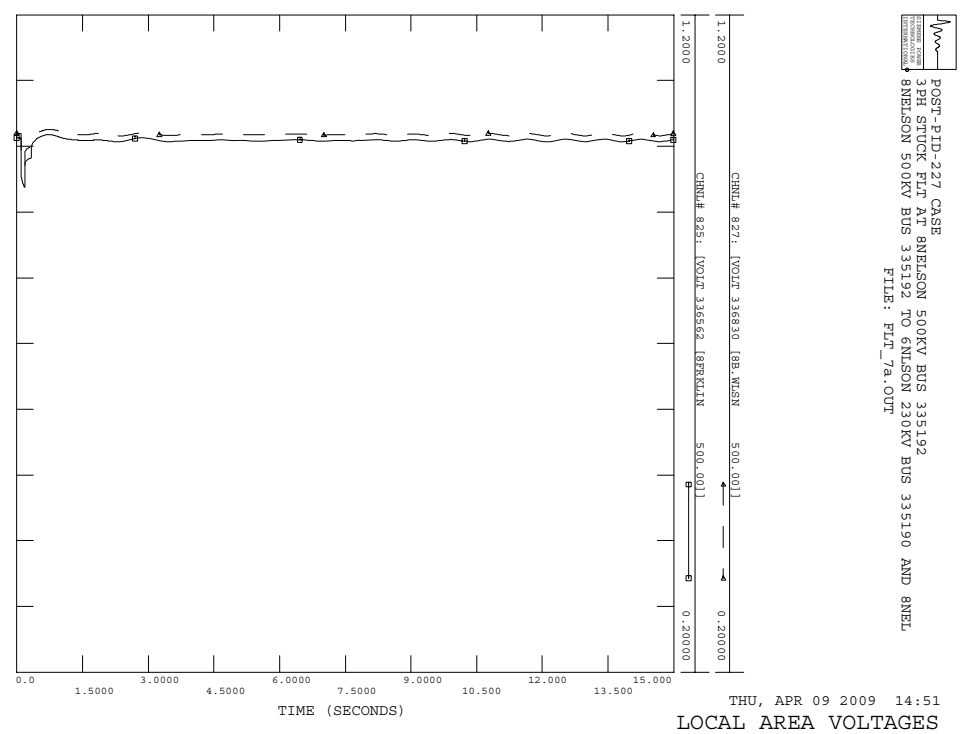
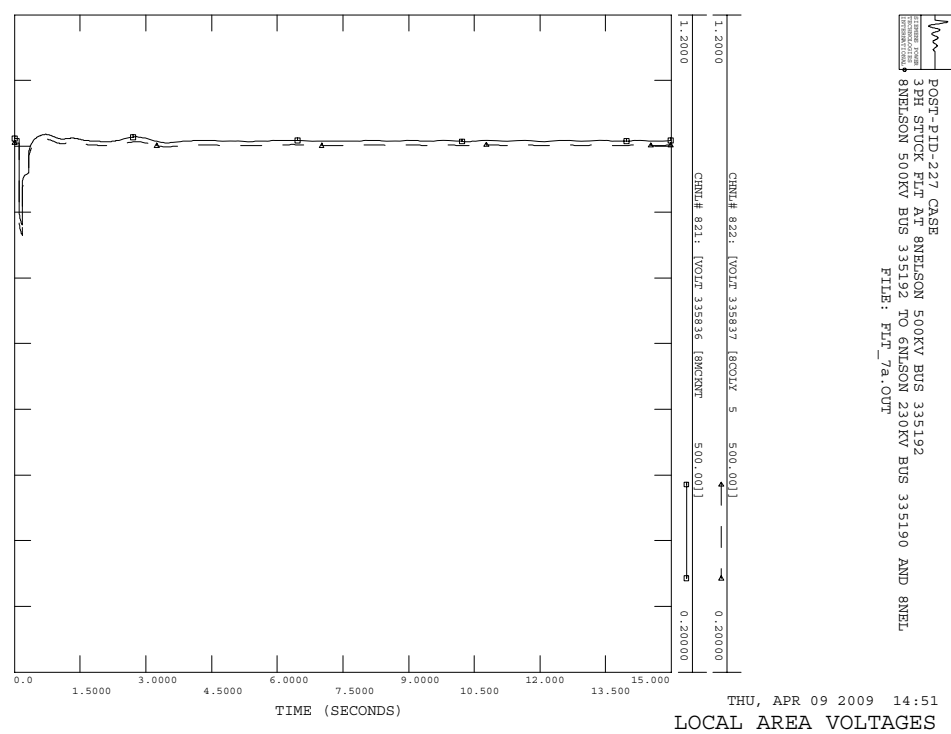
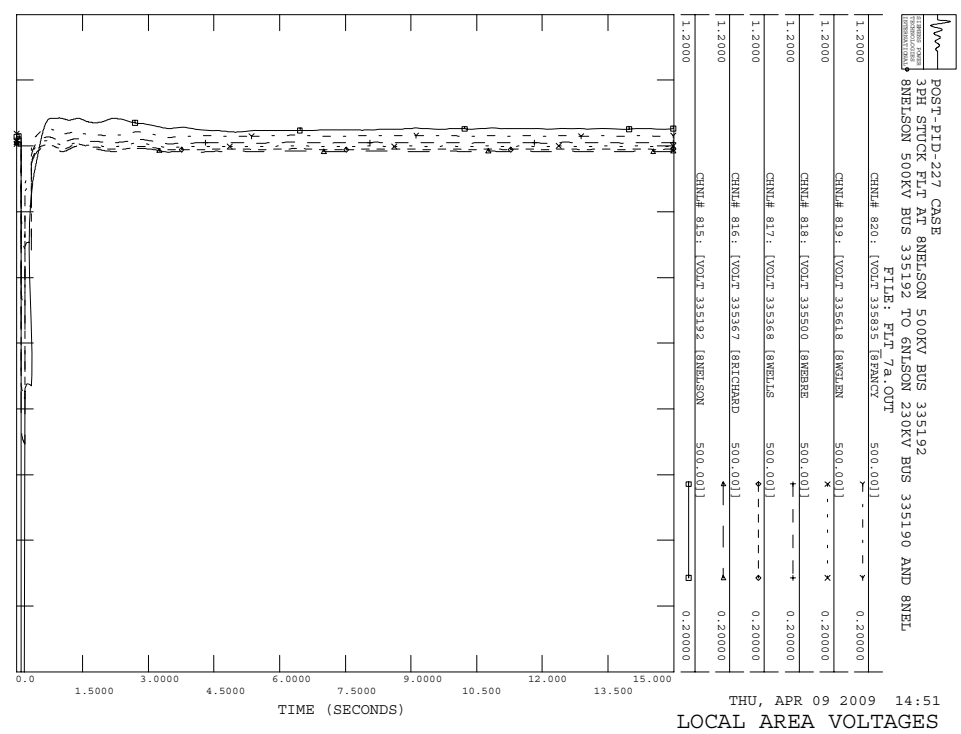
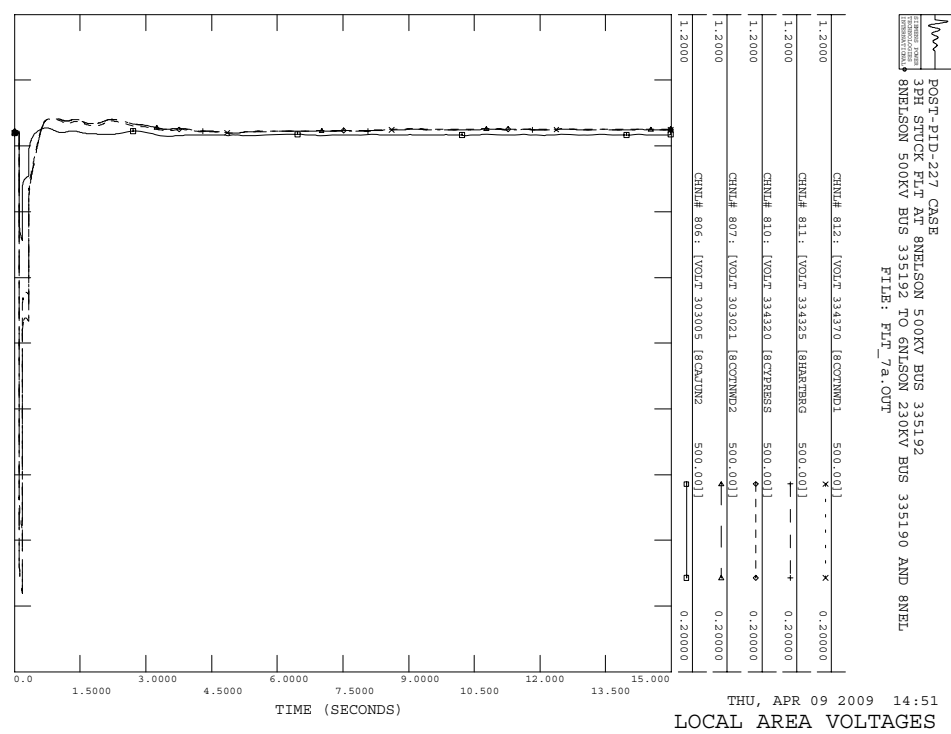
POST-PID-227 CASE
3PH STUCK FLT AT 8CYPRESS 500KV BUS 334320
8CYPRESS 500KV BUS 334320 TO 4CYPRESS 138KV BUS 334319 AND 8
FILE: FLT_68.OUT



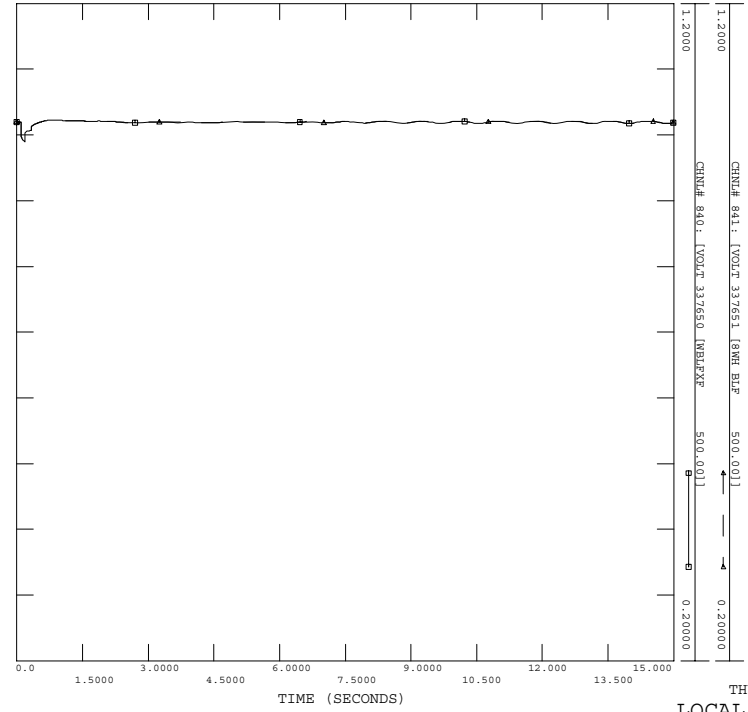
C.19 FLT_7a

Stuck breaker fault on the 8NELSON (#335192) to 8RICHARD (#335367) 500 kV line, near the 8NELSON.

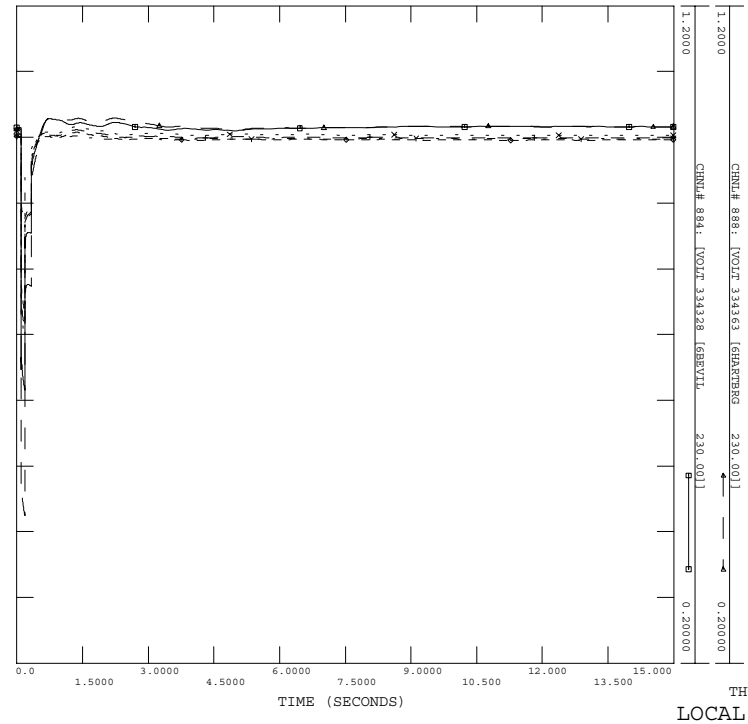
- a) Apply 3 Phase Fault AT 8NELSON 500KV BUS 335192
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8NELSON 500KV BUS 335192
- d) Apply 3 Phase fault at #335192 with admittance $593.53-j6003.71$ MVA
- e) Clear fault after 9 cycles by tripping line from 8NELSON 500KV BUS 335192 TO 8RICHARD 500KV BUS 335367 and transformer from 8NELSON 500KV BUS 335192 TO 6NELSON 230KV BUS 335190



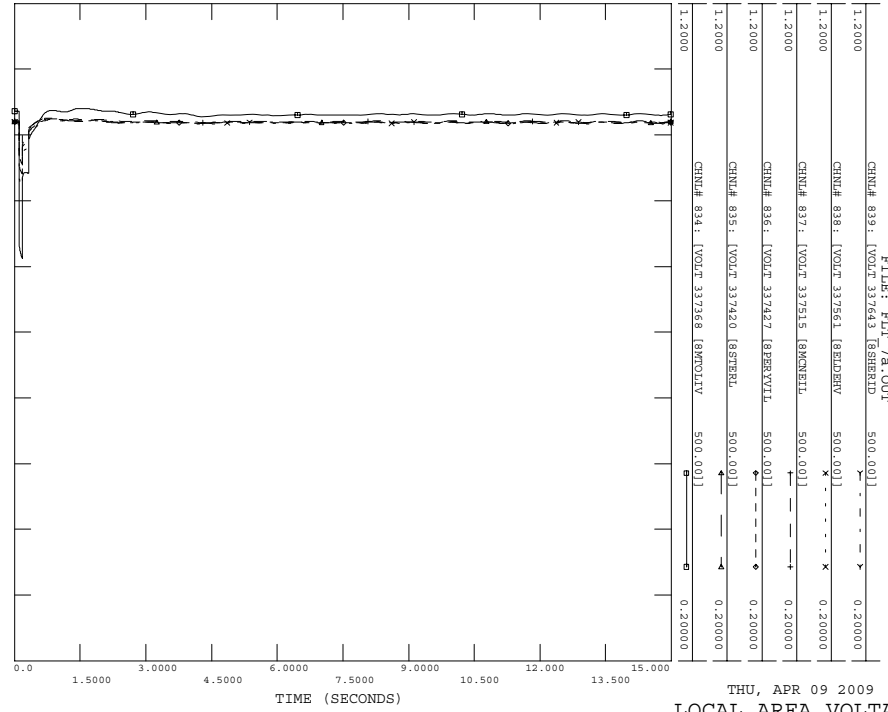
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMLSON 500KV BUS 335192
 8NEMLSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEML
 FILE: FLT_7A.OUT



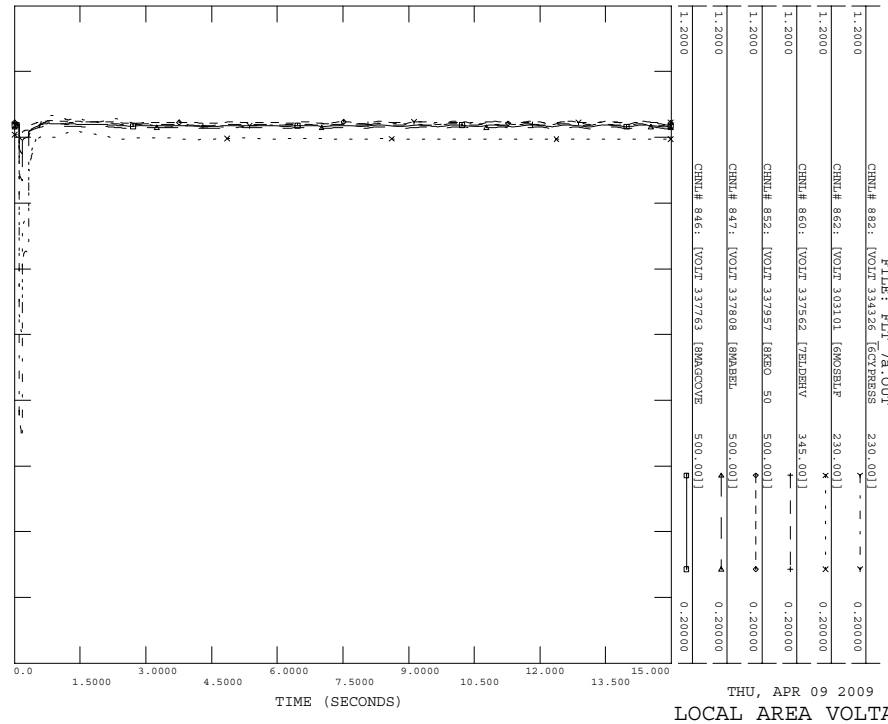
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMLSON 500KV BUS 335192
 8NEMLSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEML
 FILE: FLT_7A.OUT

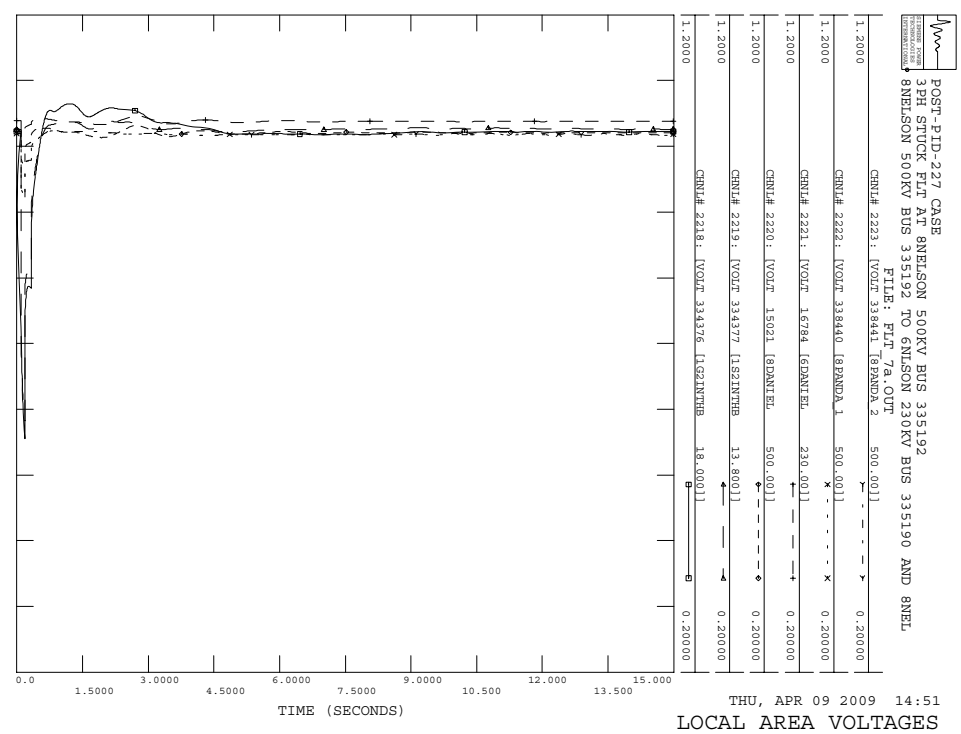
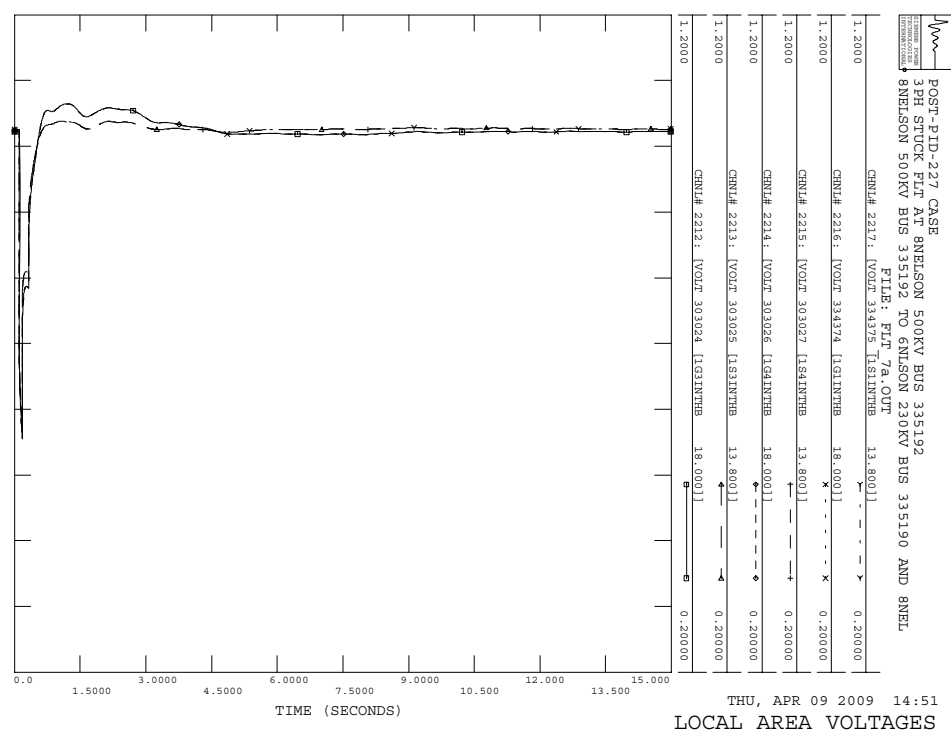
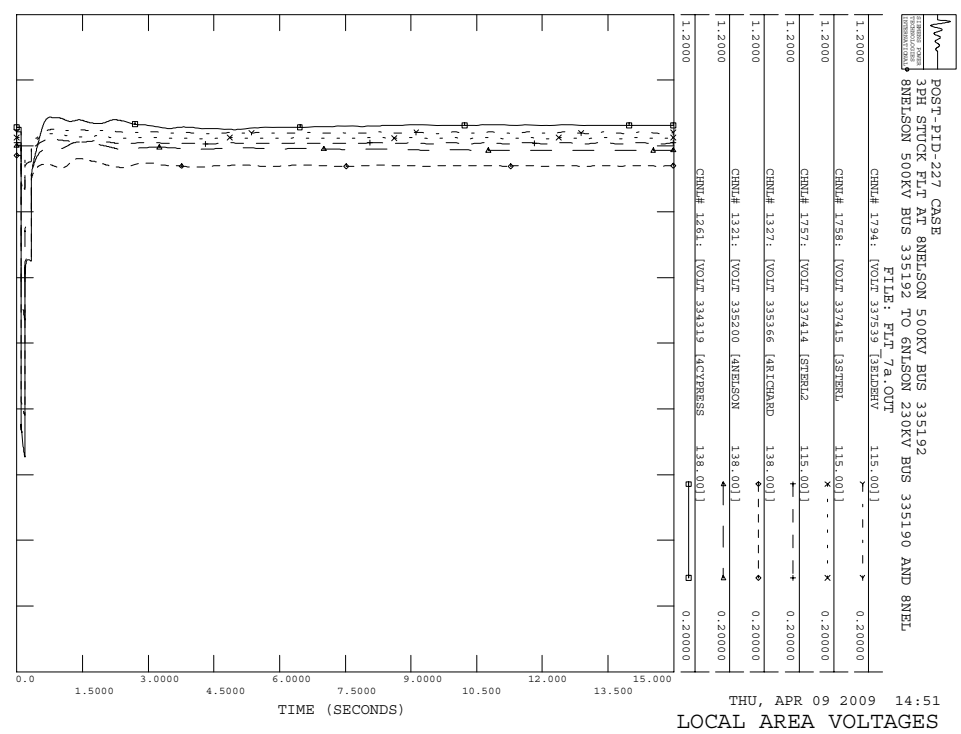
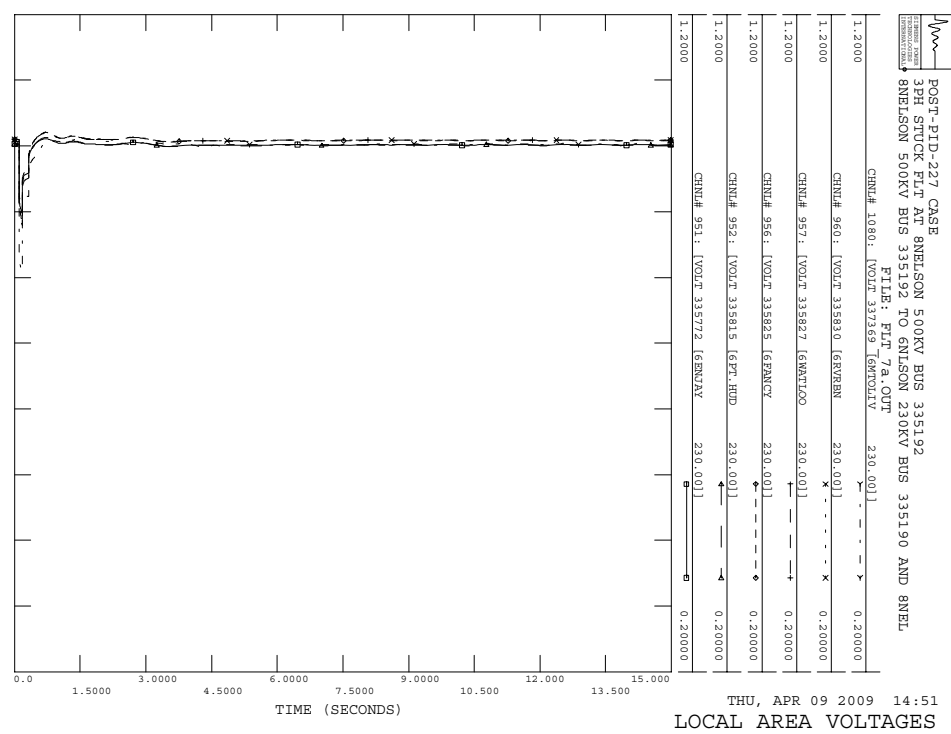


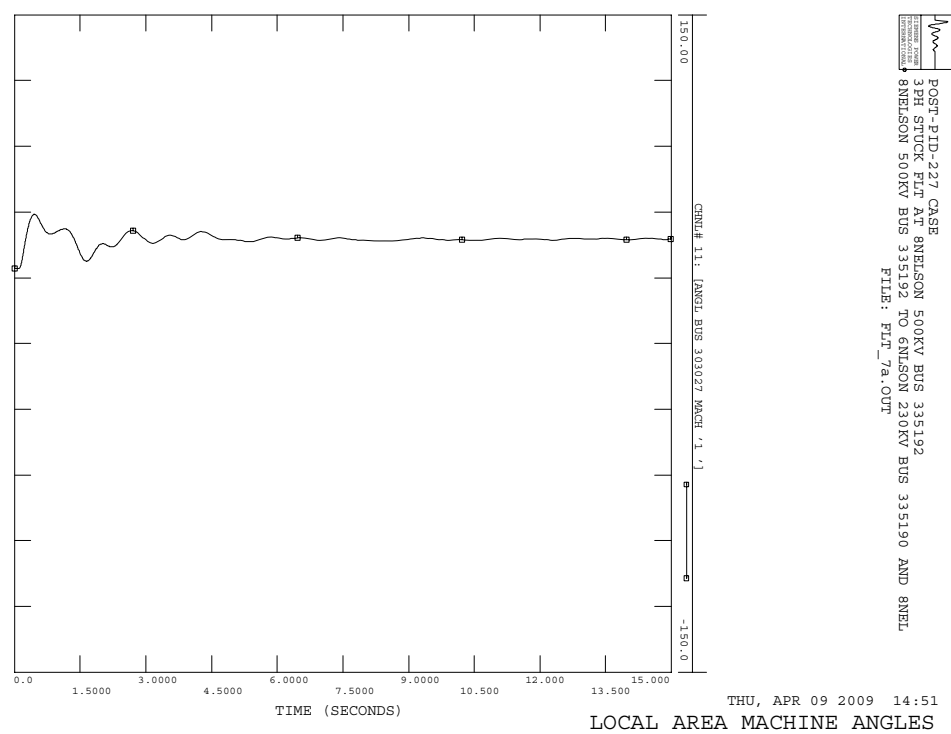
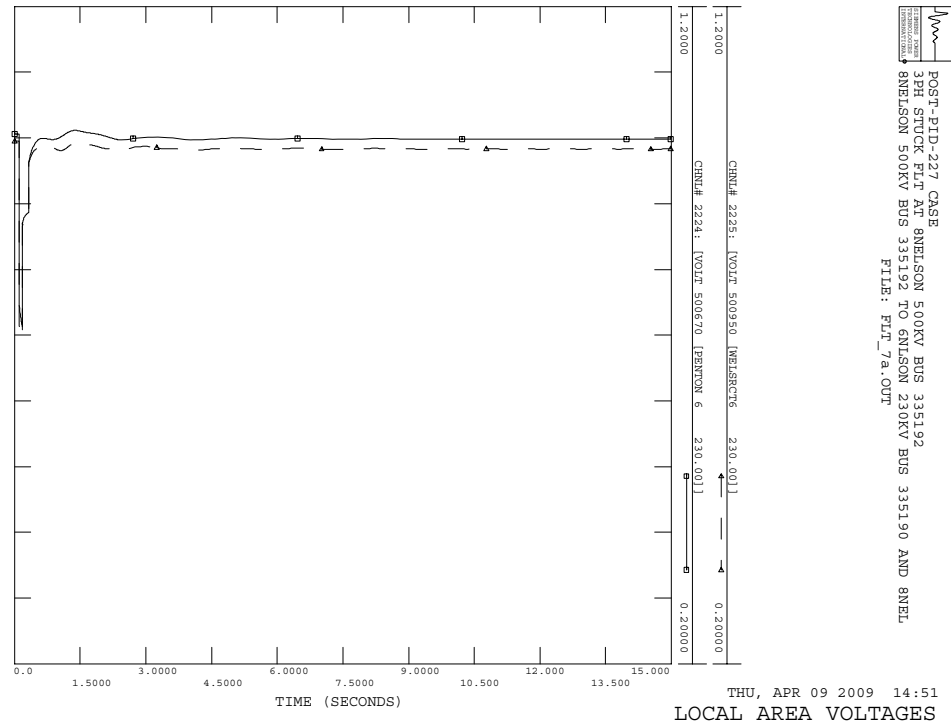
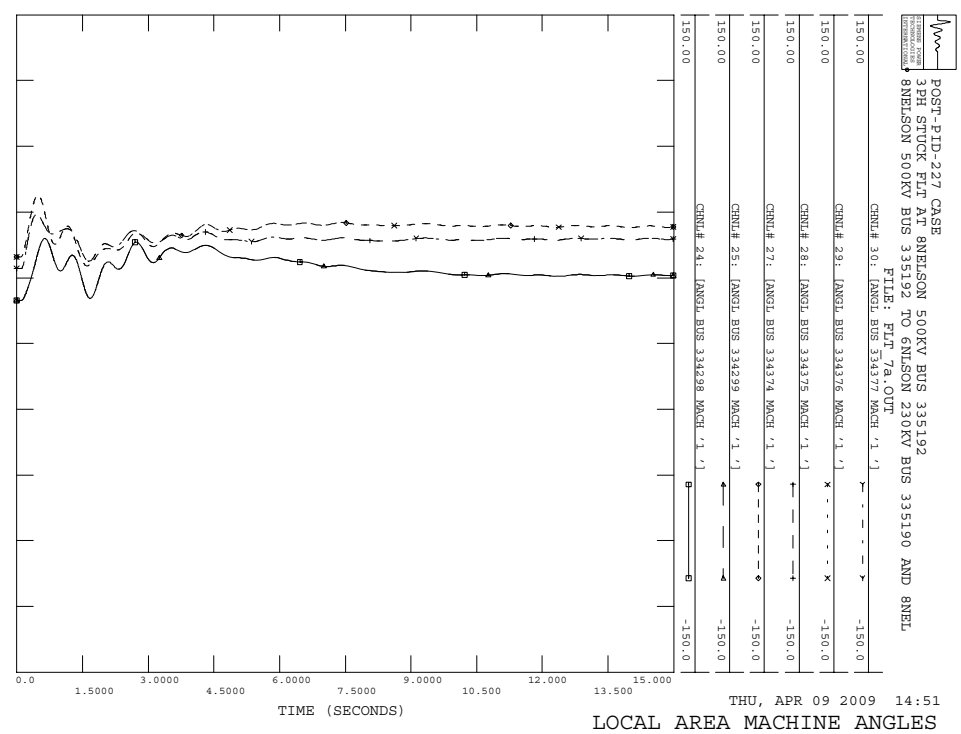
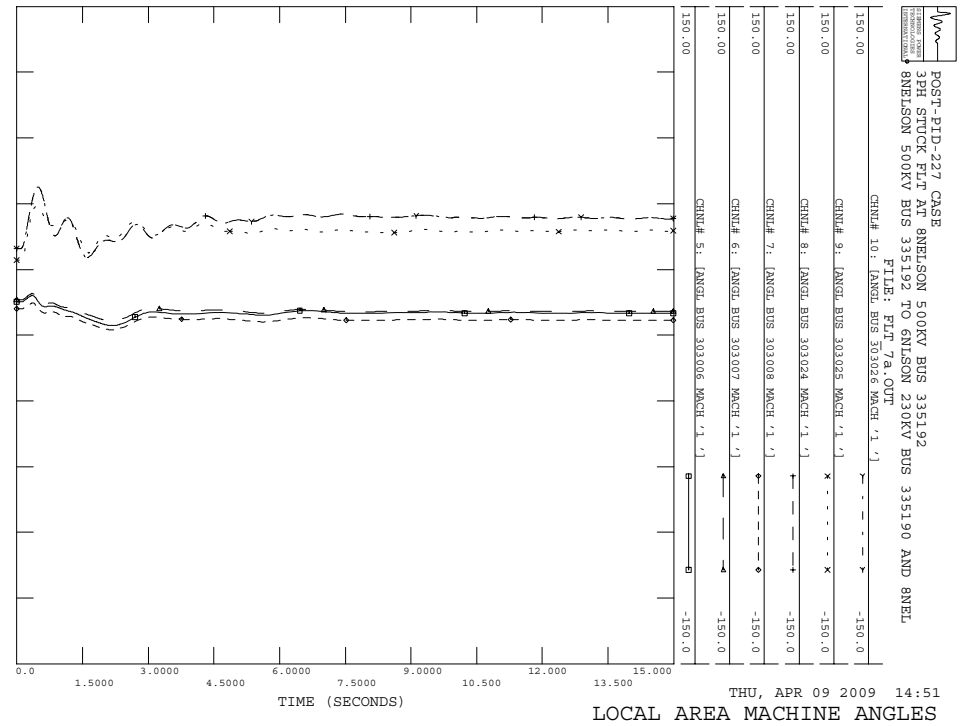
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMLSON 500KV BUS 335192
 8NEMLSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEML
 FILE: FLT_7A.OUT



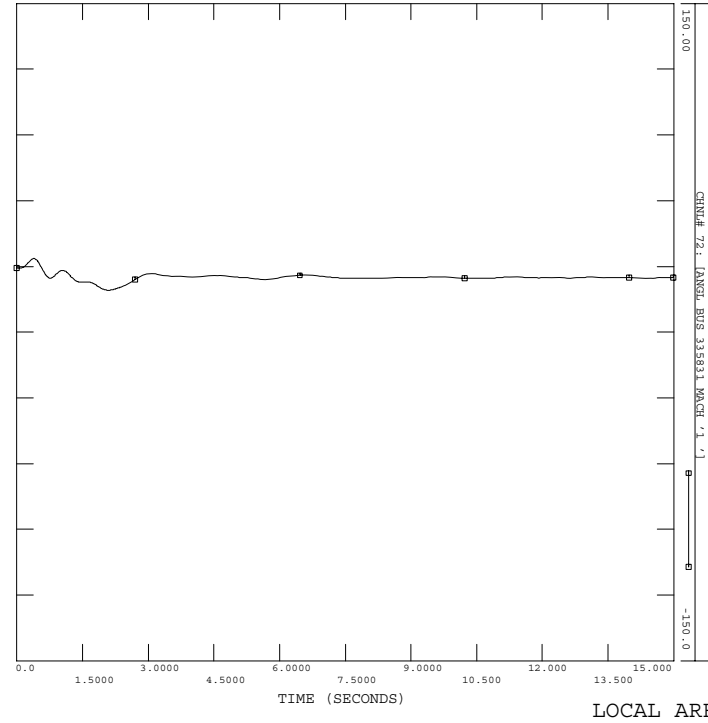
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMLSON 500KV BUS 335192
 8NEMLSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEML
 FILE: FLT_7A.OUT





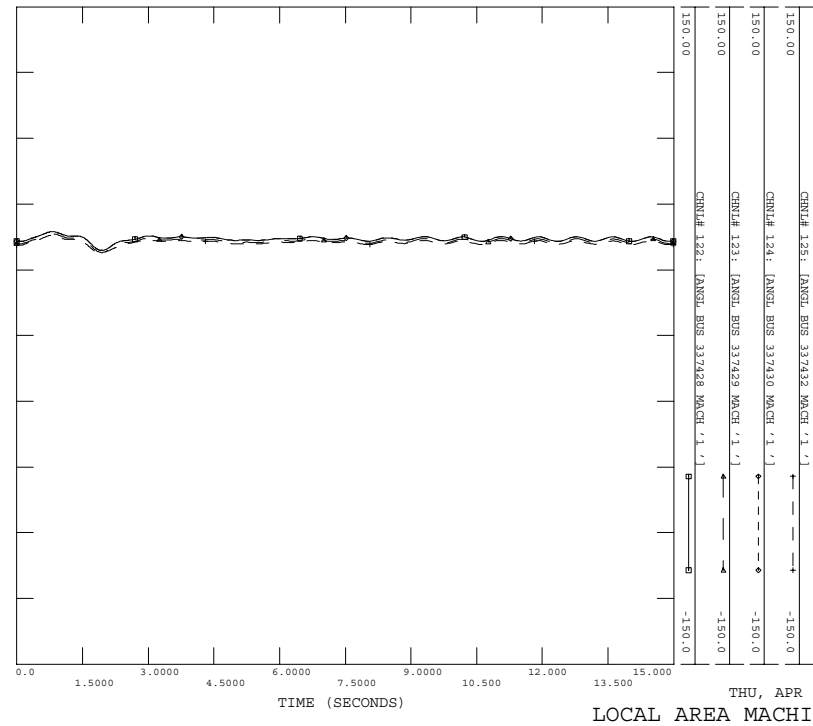


POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_7A.OUT



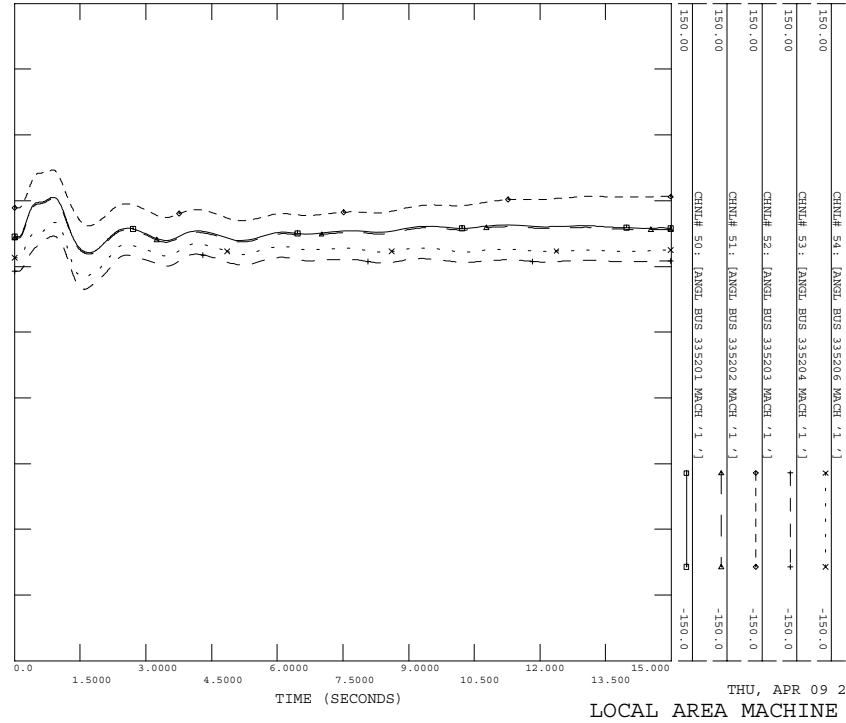
THU, APR 09 2009 14:51
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_7A.OUT



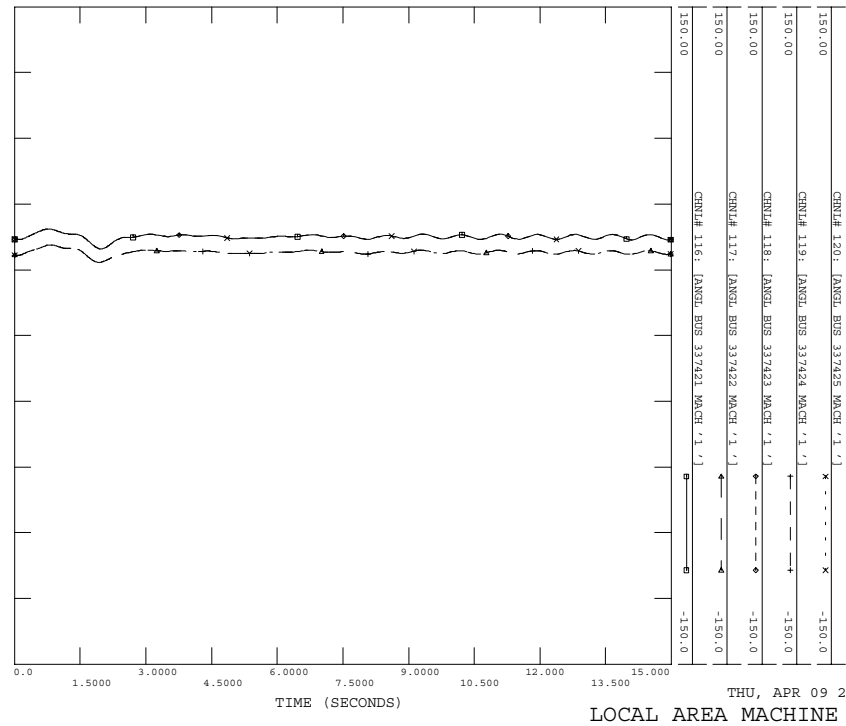
THU, APR 09 2009 14:51
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_7A.OUT



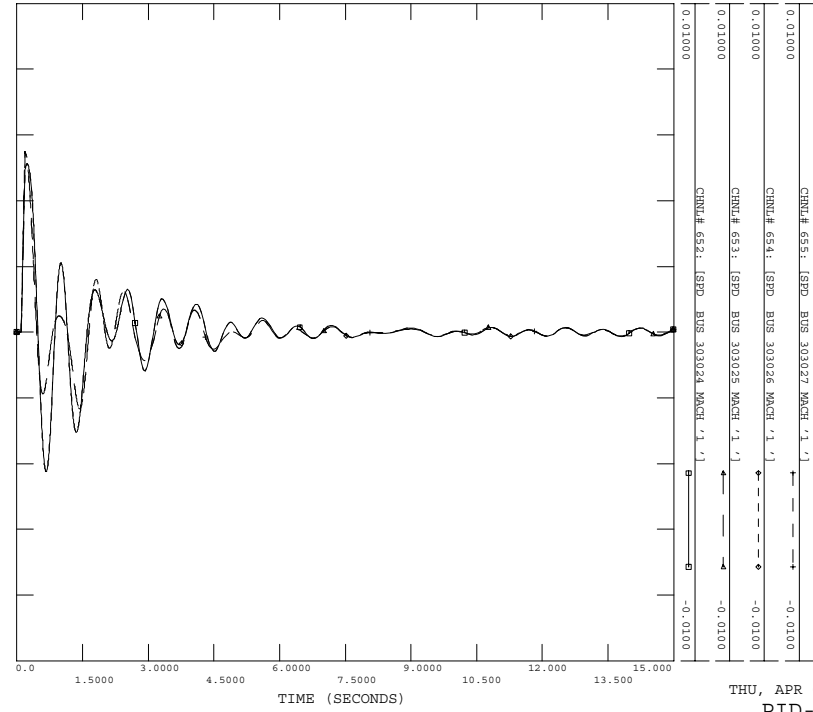
THU, APR 09 2009 14:51
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_7A.OUT

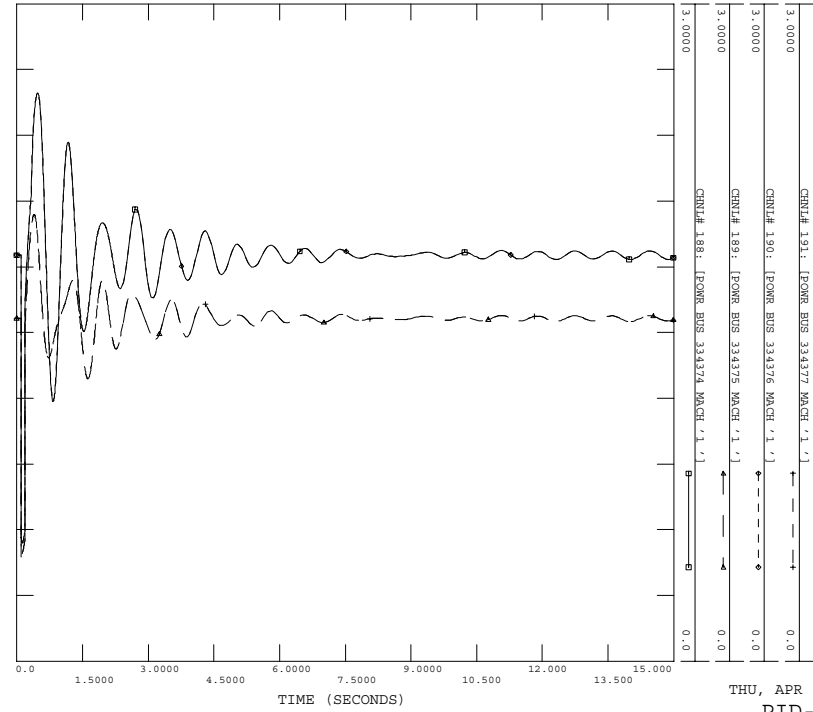


THU, APR 09 2009 14:51
 LOCAL AREA MACHINE ANGLES

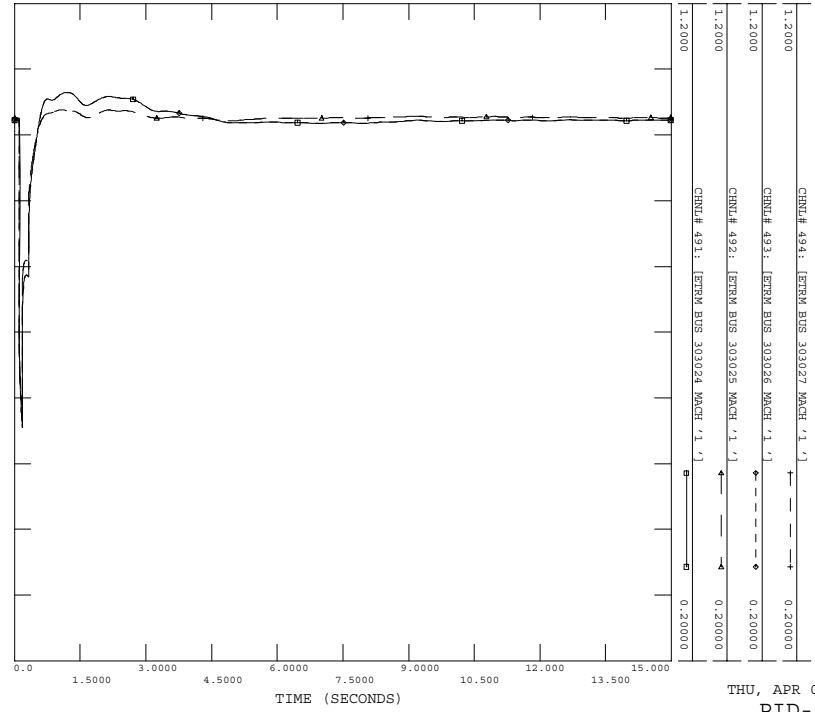
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_7A.OUT



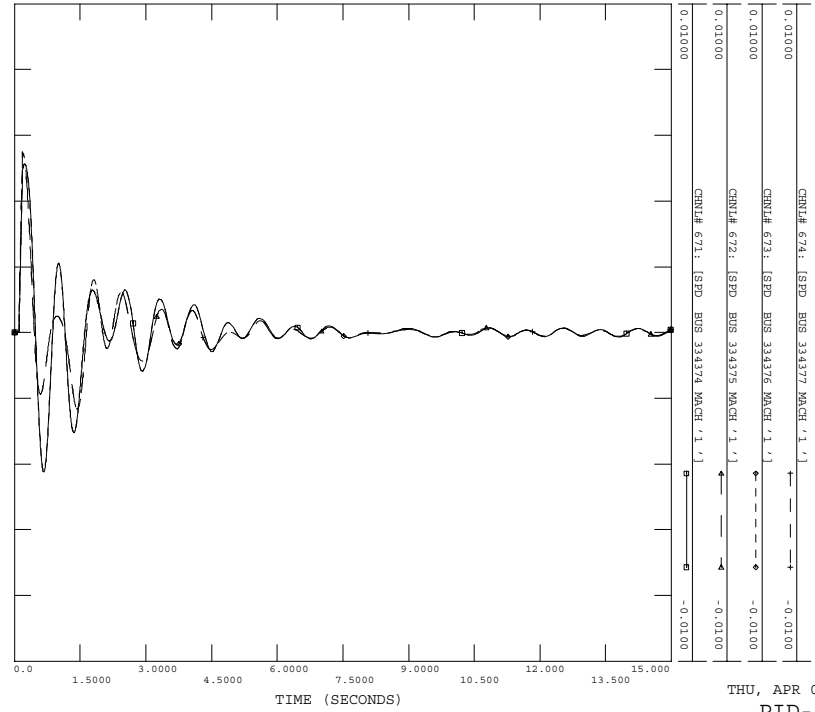
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_7A.OUT



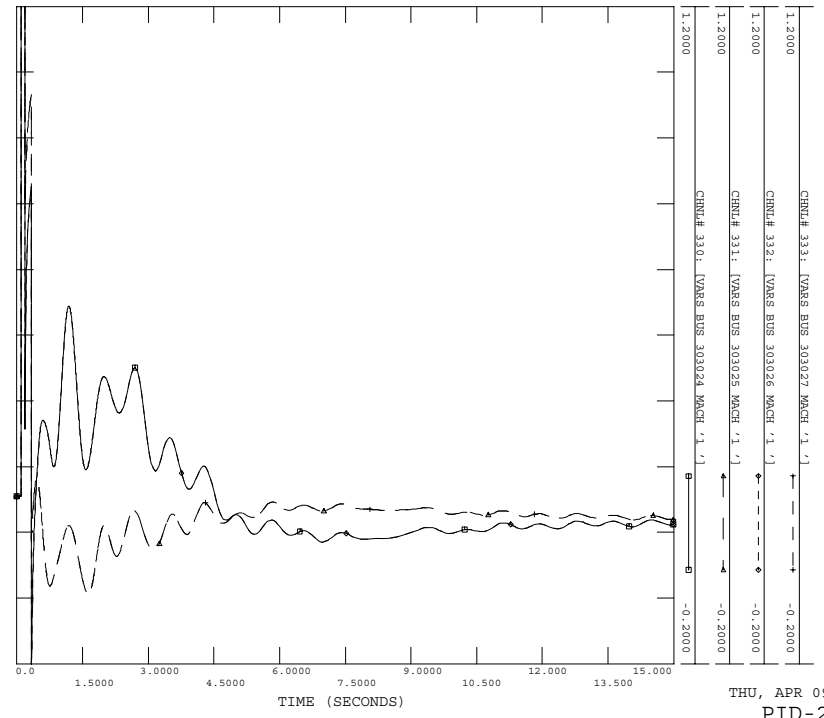
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_7A.OUT



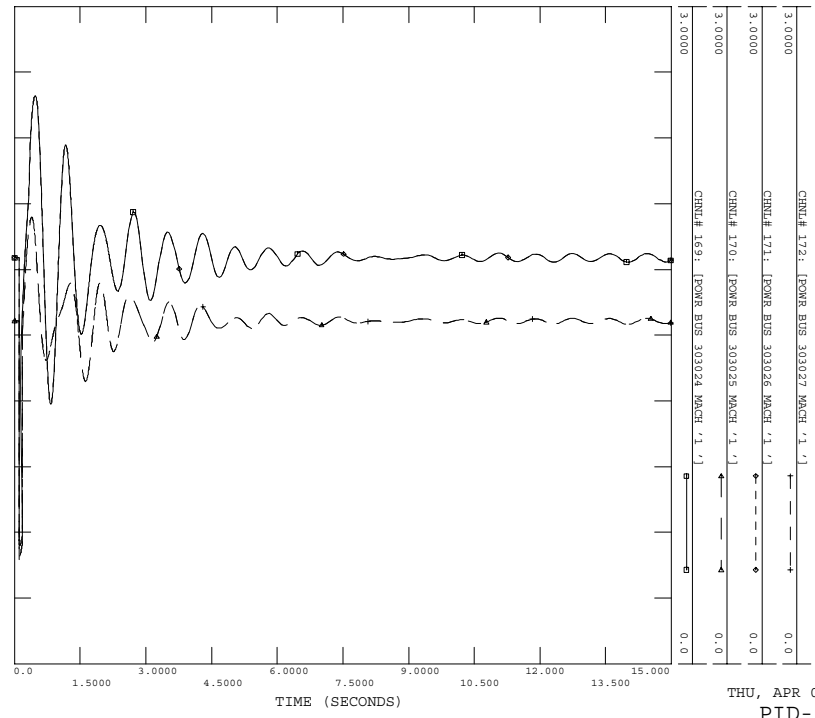
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_7A.OUT



POST-PID-227 CASE
3PH STOCK FLT AT 8NIELSON 500KV BUS 335192
8NIELSON 500KV BUS 335192 TO 8NIELSON 230KV BUS 335190 AND 8NIEL
FILE: FLT_7A.OUT



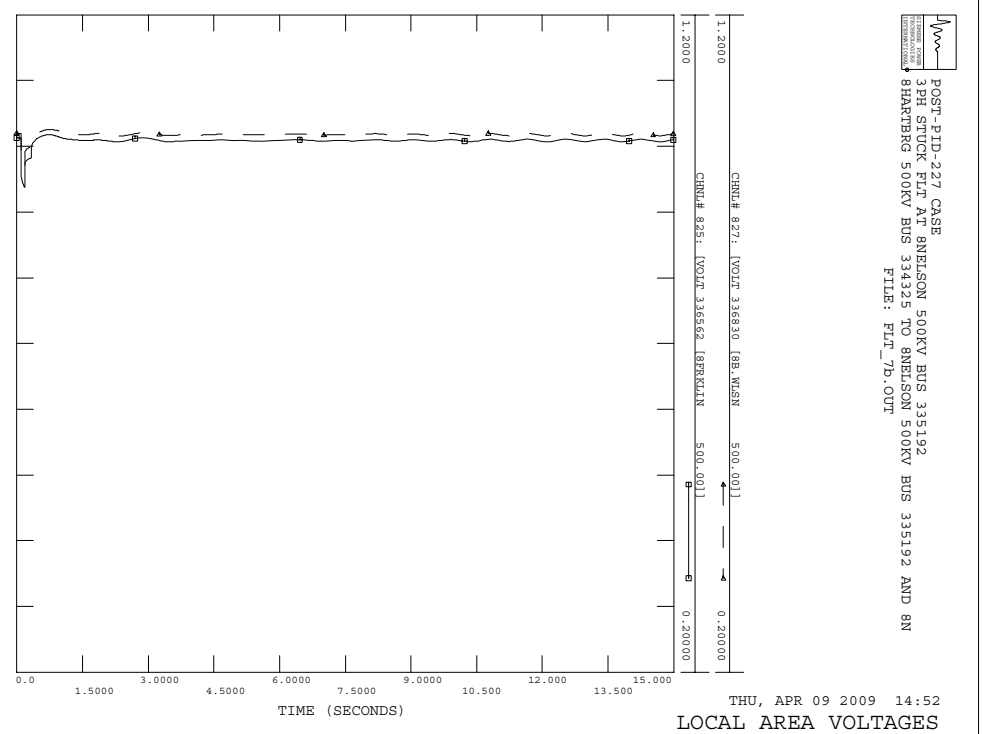
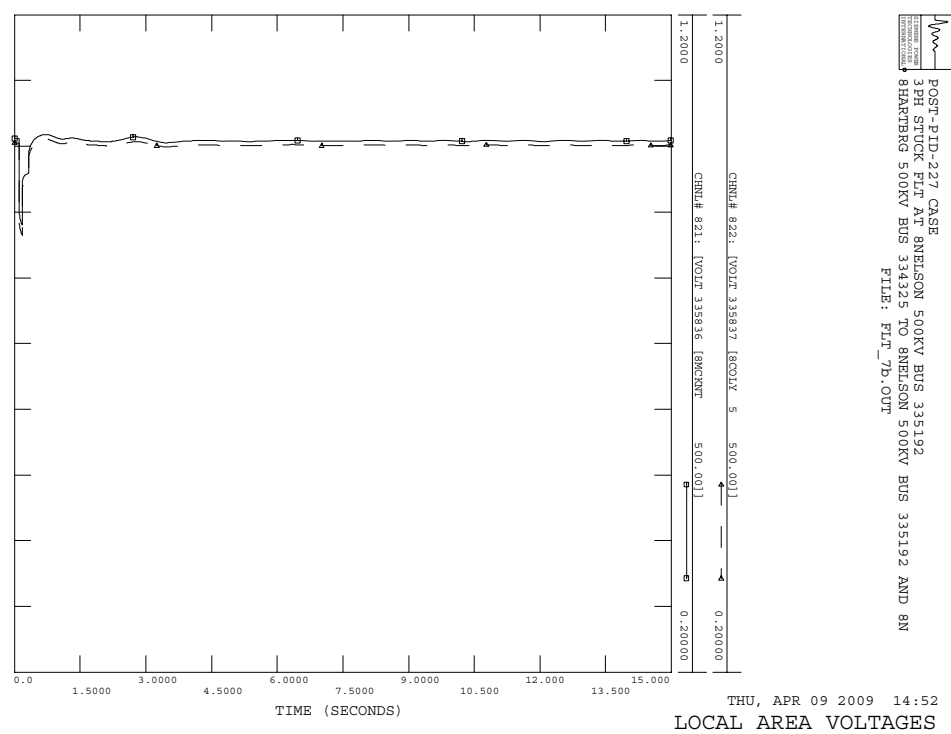
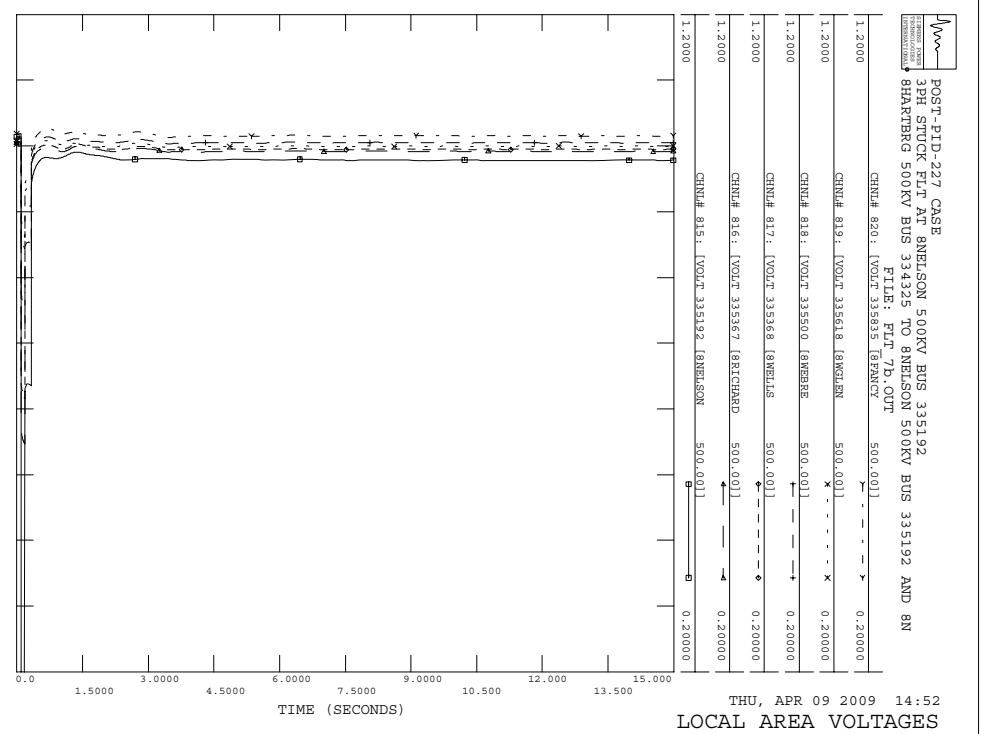
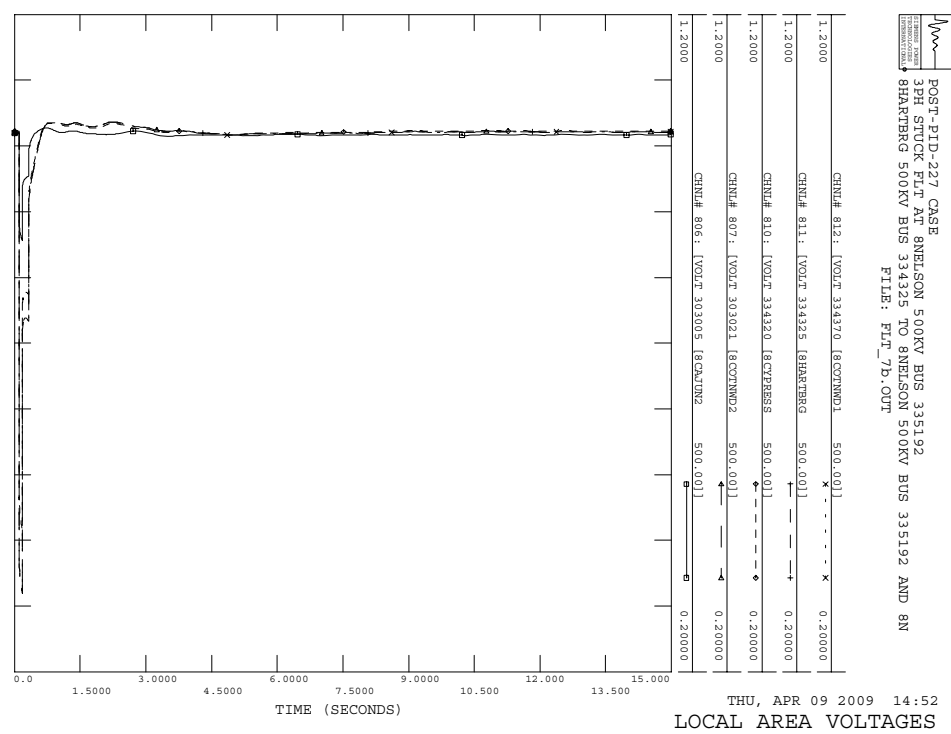
POST-PID-227 CASE
3PH STOCK FLT AT 8NIELSON 500KV BUS 335192
8NIELSON 500KV BUS 335192 TO 8NIELSON 230KV BUS 335190 AND 8NIEL
FILE: FLT_7A.OUT

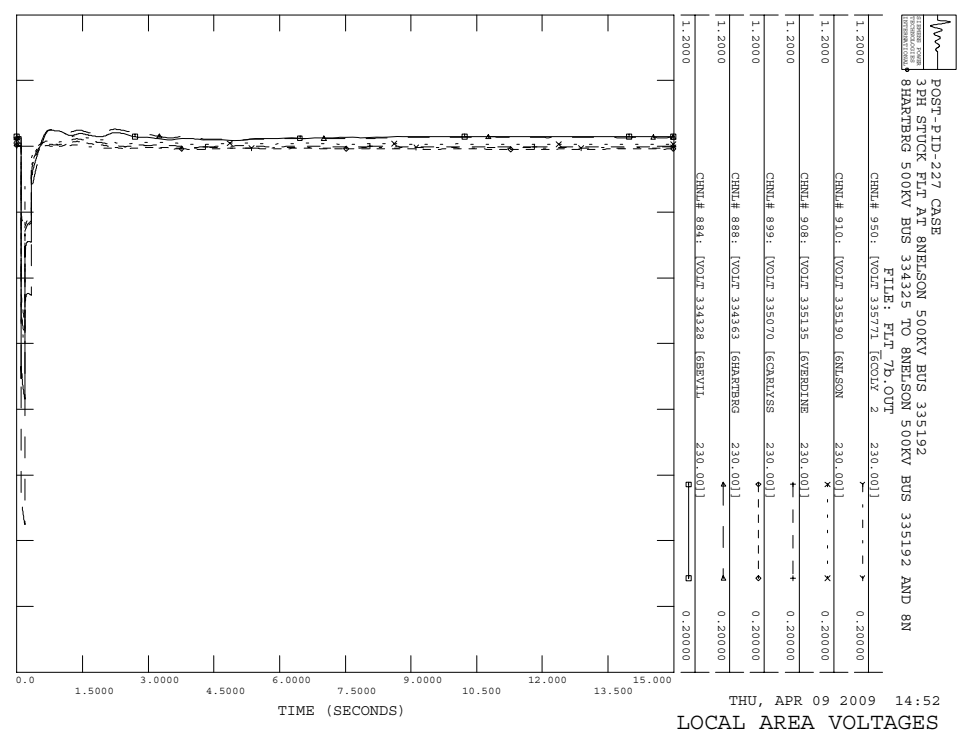
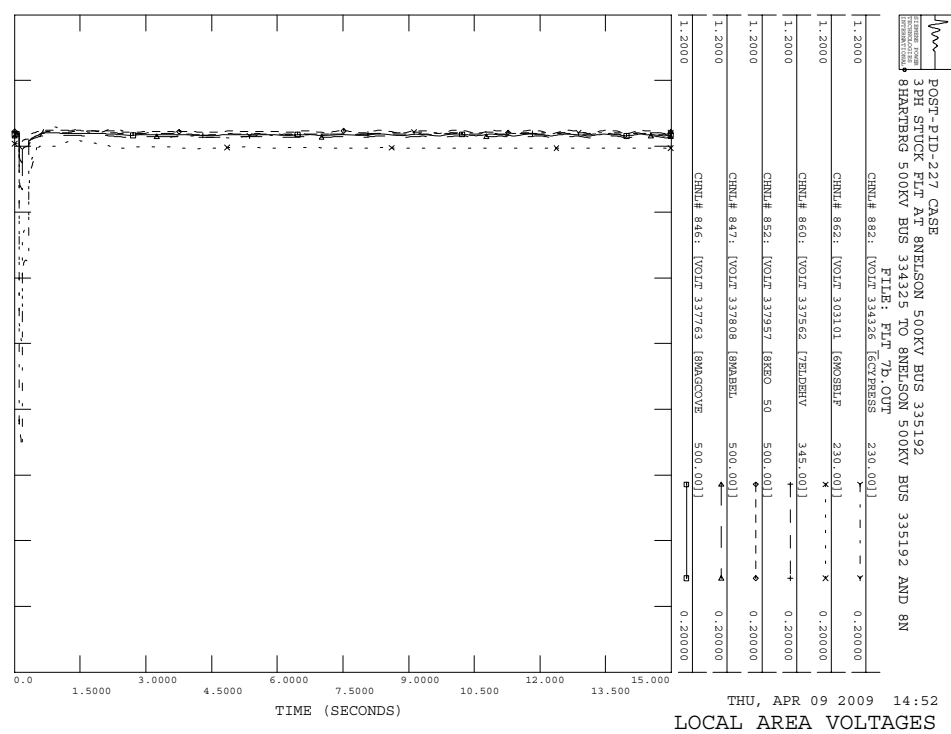
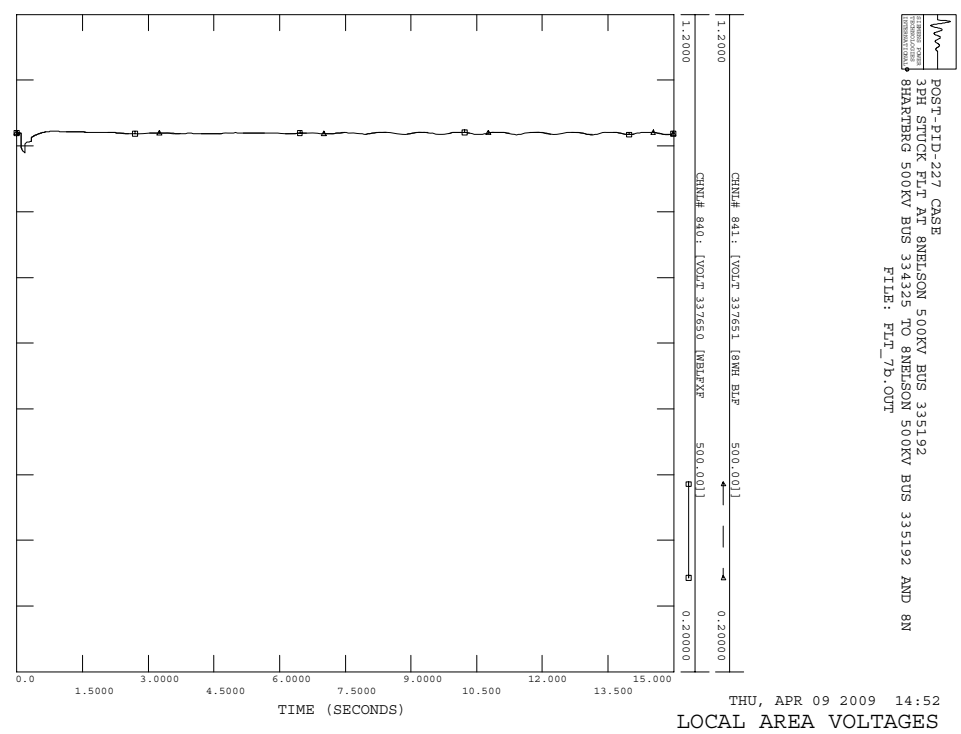
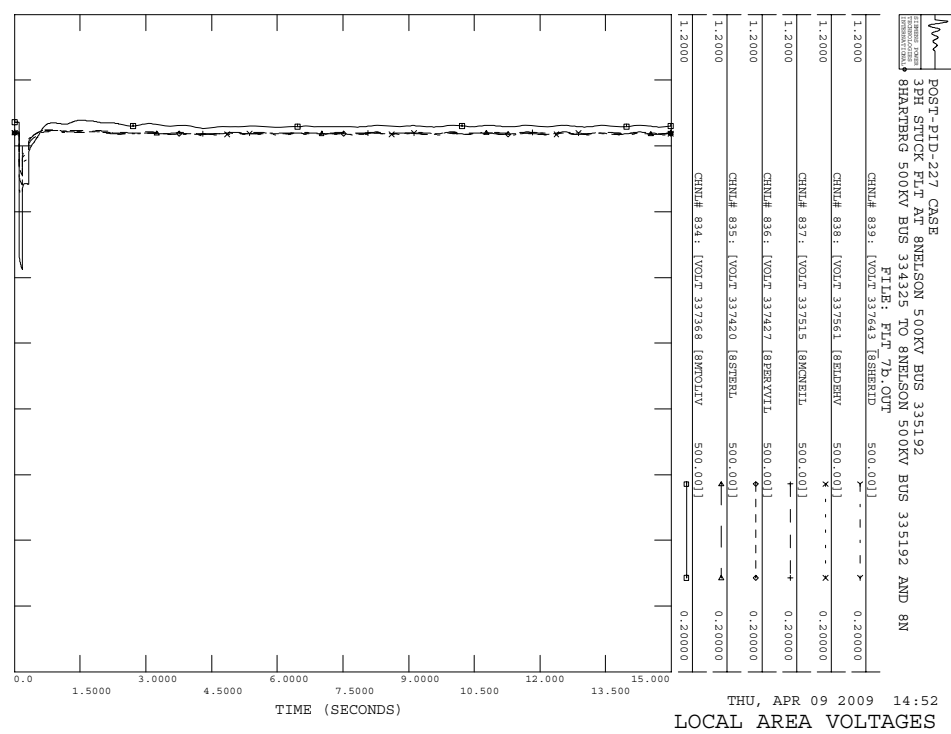


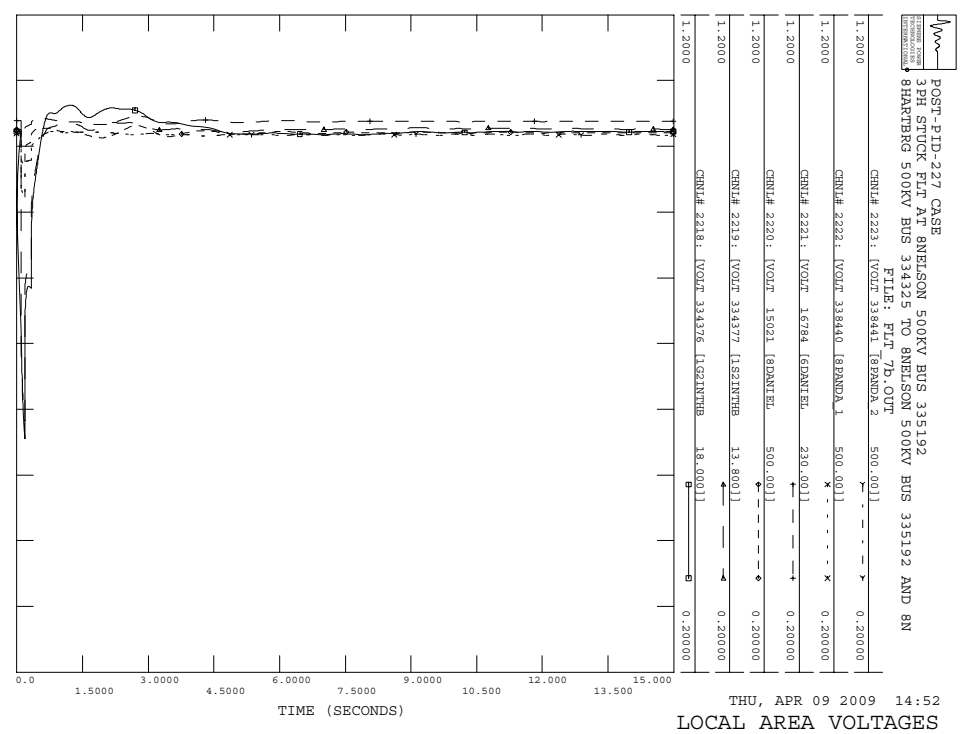
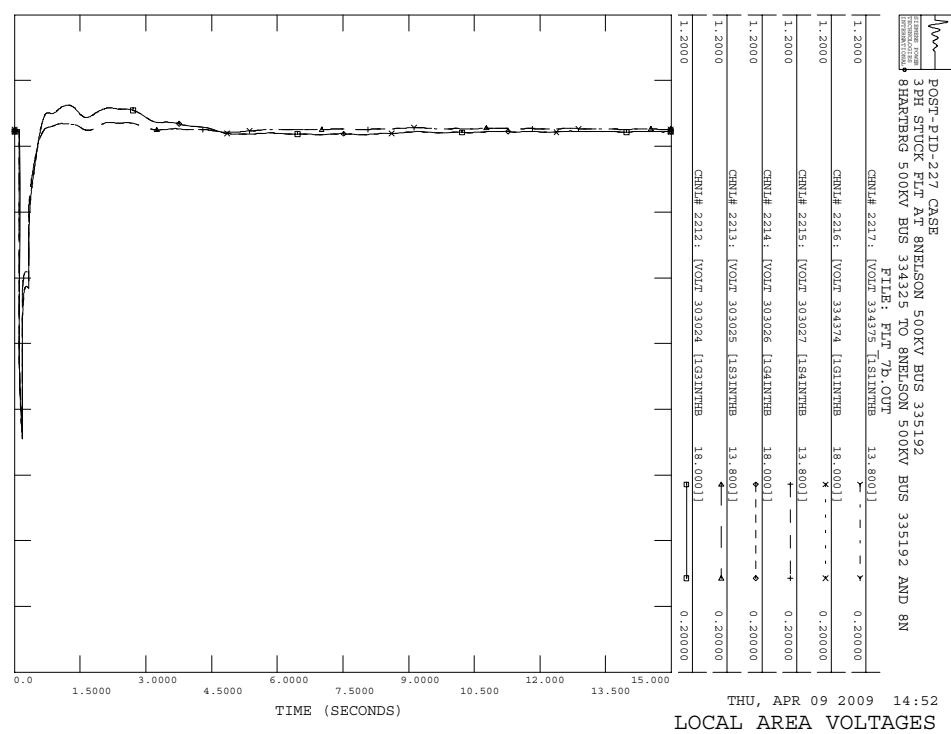
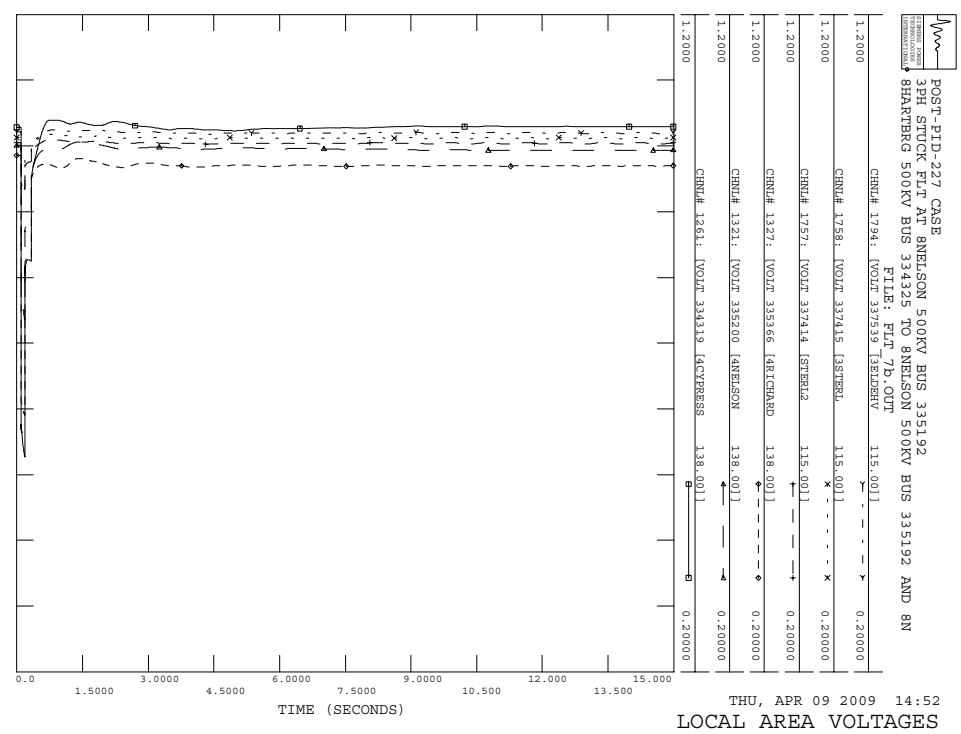
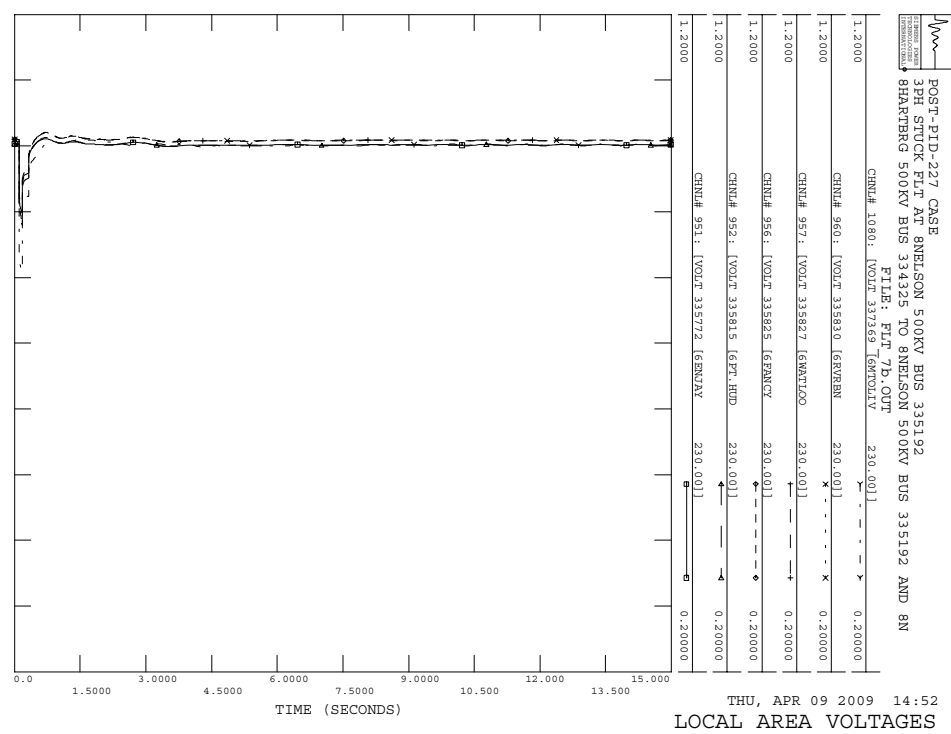
C.20 FLT_7b

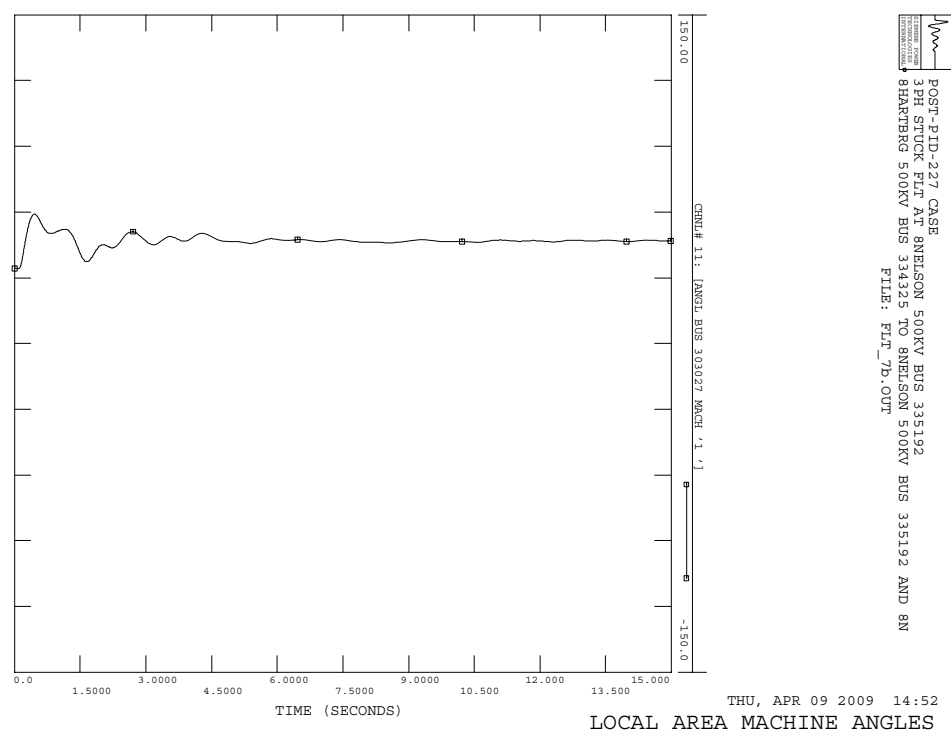
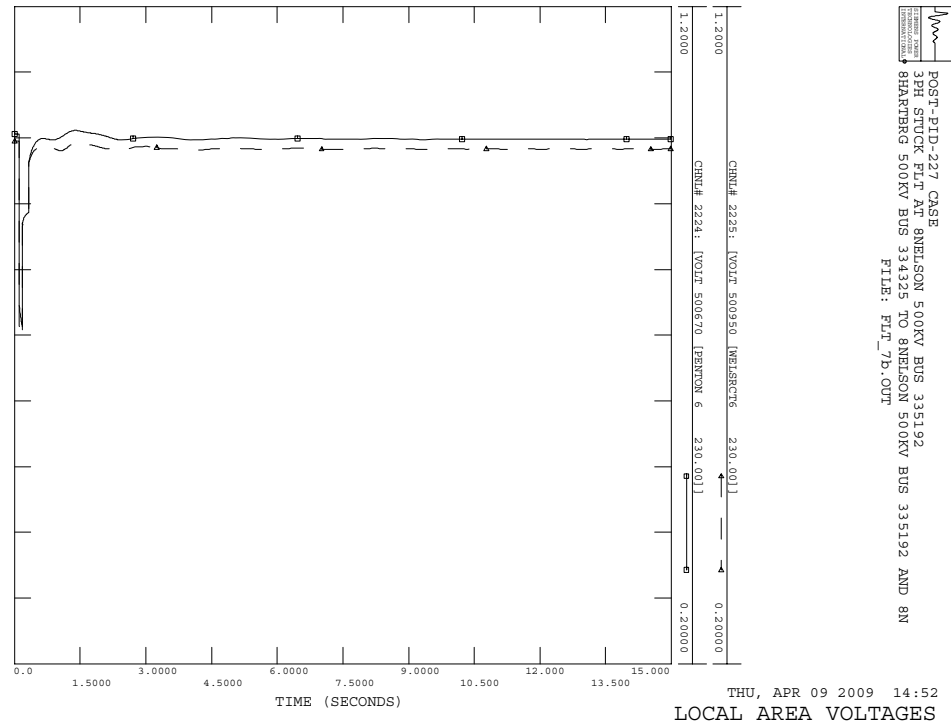
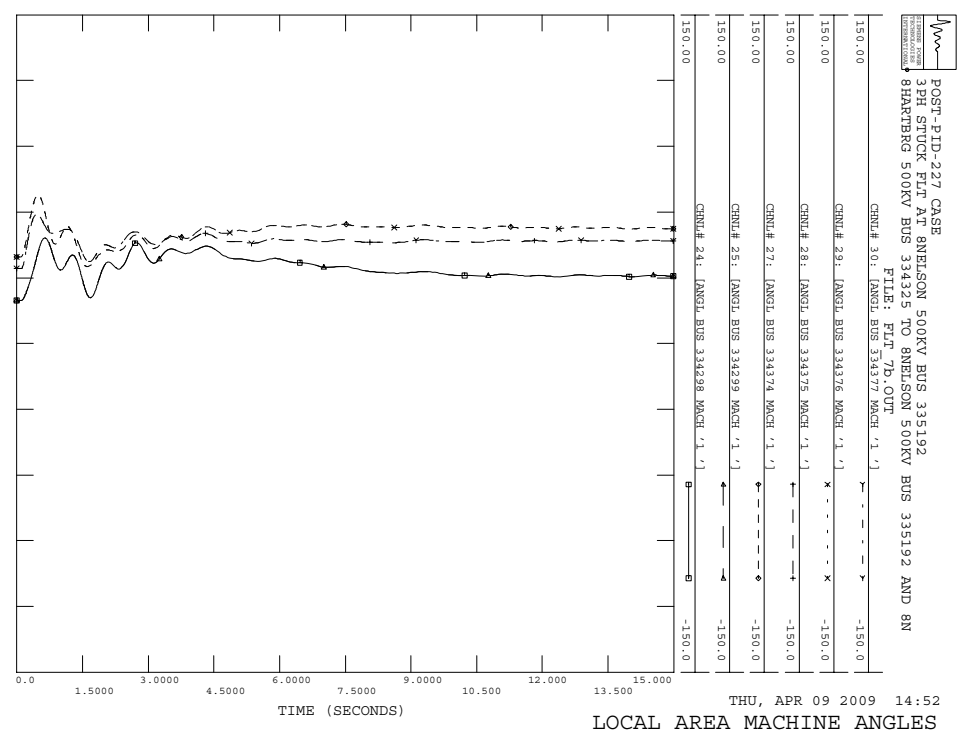
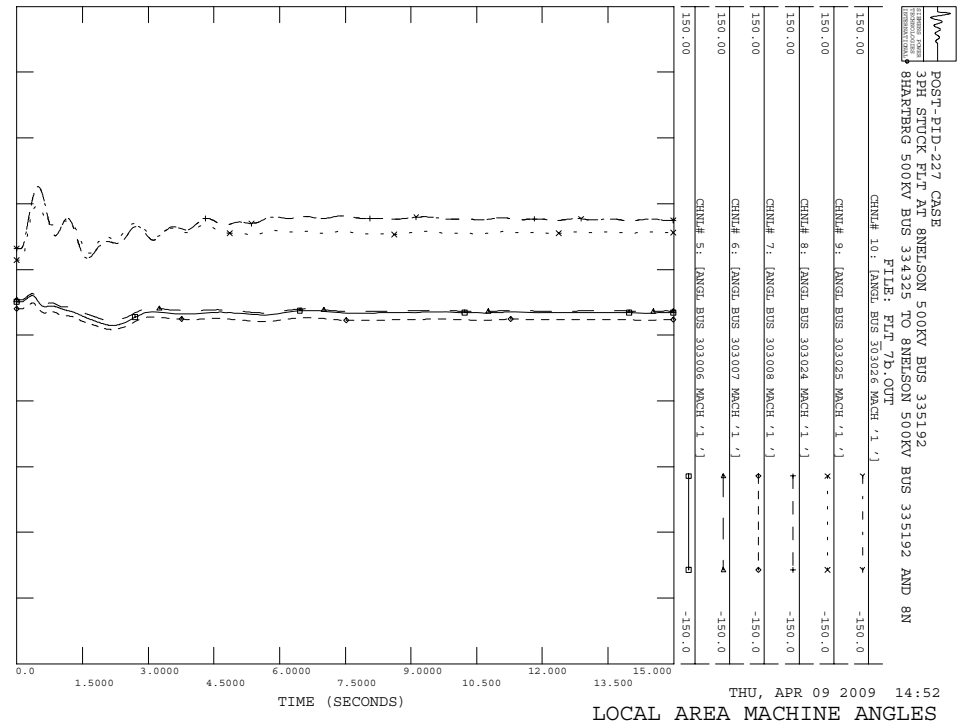
Stuck breaker fault on the 8NELSON (#335192) to 8RICHARD (#335367) 500 kV line, near the 8NELSON.

- a) Apply 3 Phase Fault AT 8NELSON 500KV BUS 335192
- b) Run fault for 5 cycles.
- c) Remove Fault AT 8NELSON 500KV BUS 335192
- d) Apply 3 Phase fault at #335192 with admittance $593.53-j6003.71$ MVA
- e) Clear fault after 9 cycles by tripping lines from 8HARTBRG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192 and 8NELSON 500KV BUS 335192 TO 8RICHARD 500KV BUS 335367

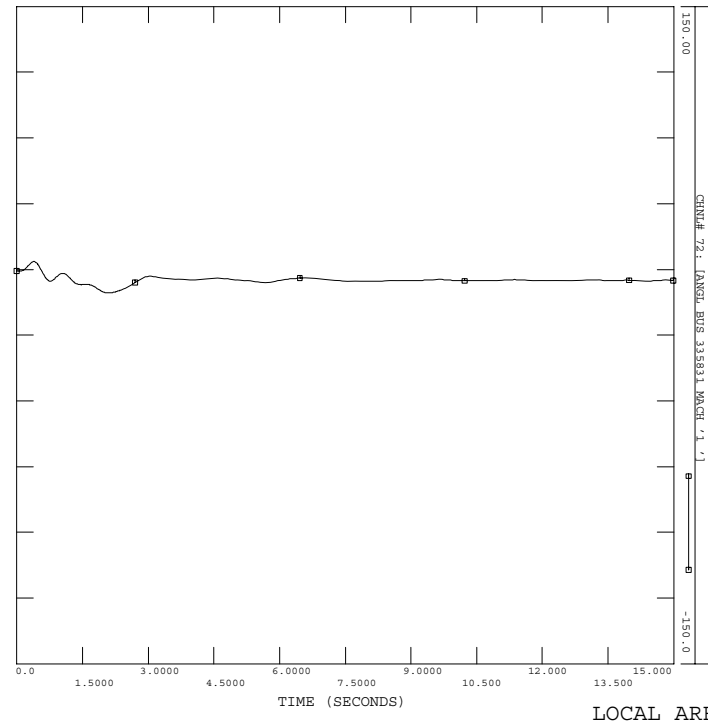




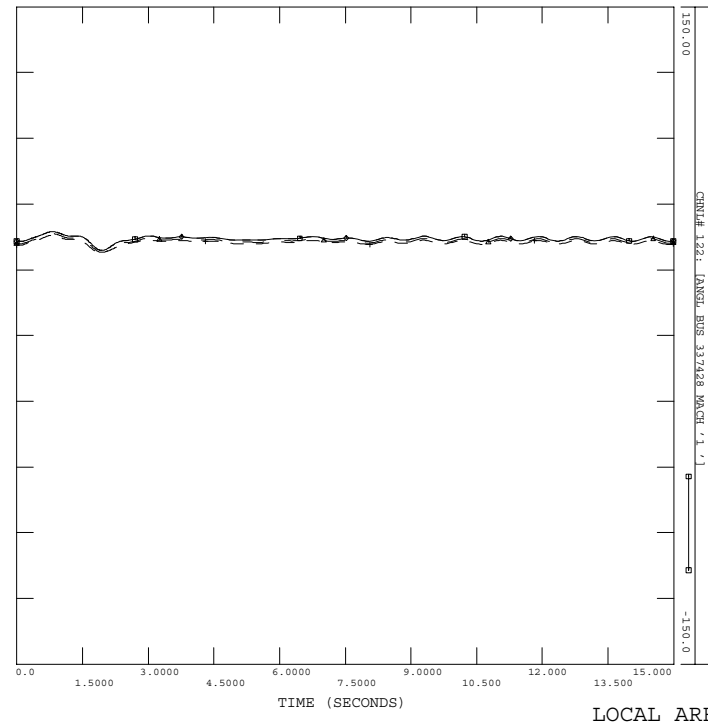




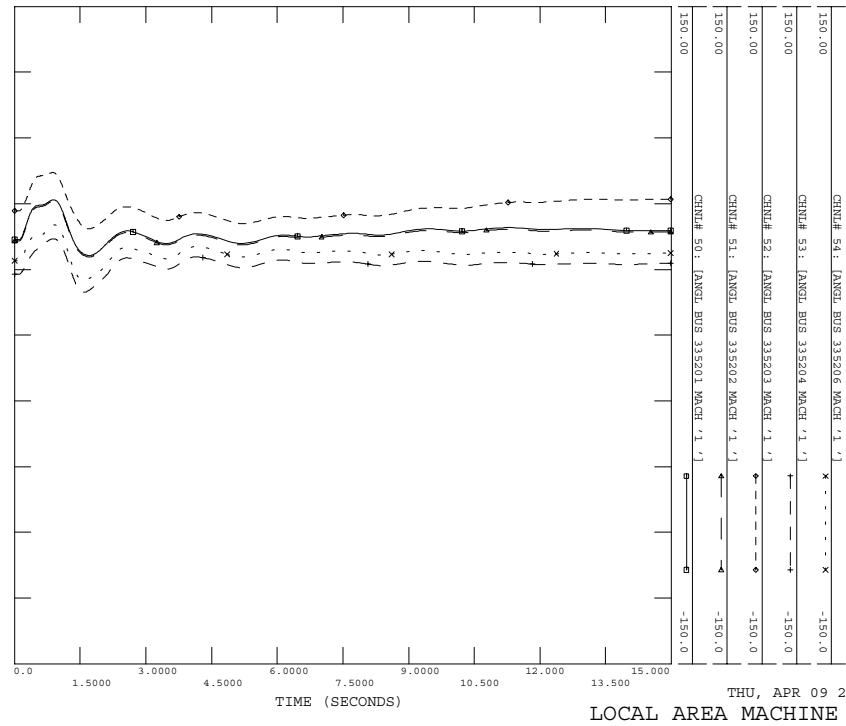
POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



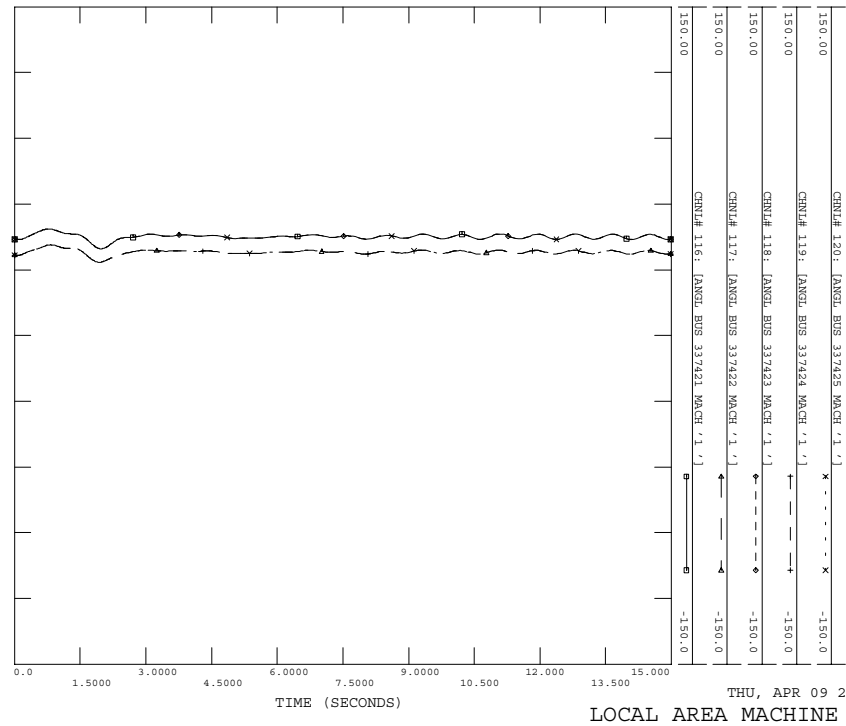
POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



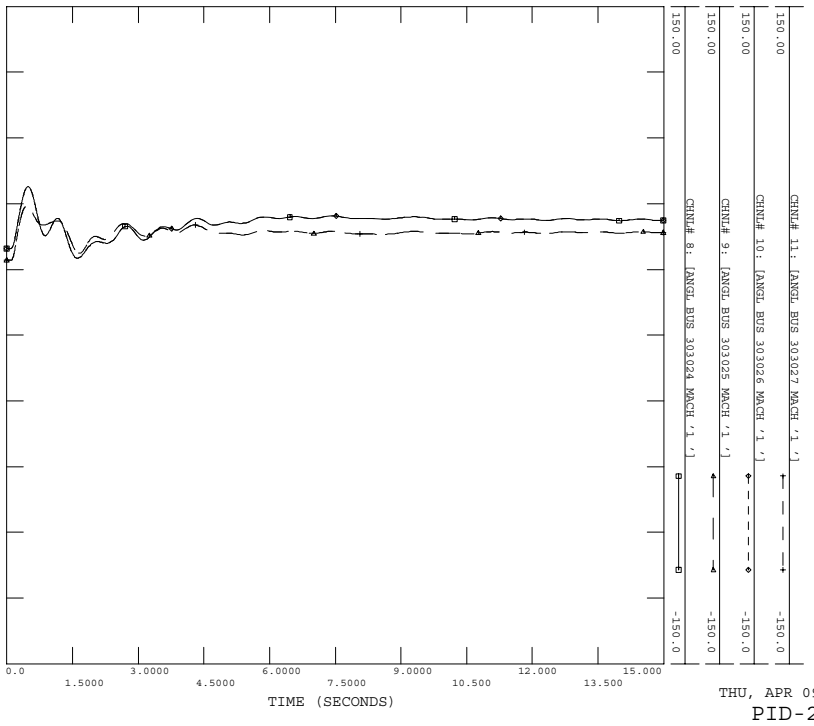
POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



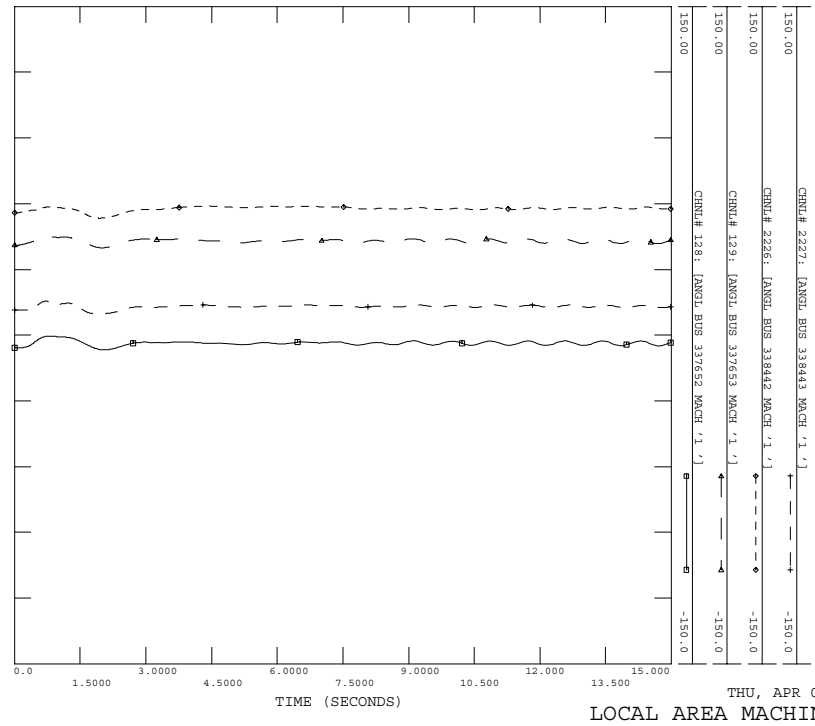
POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



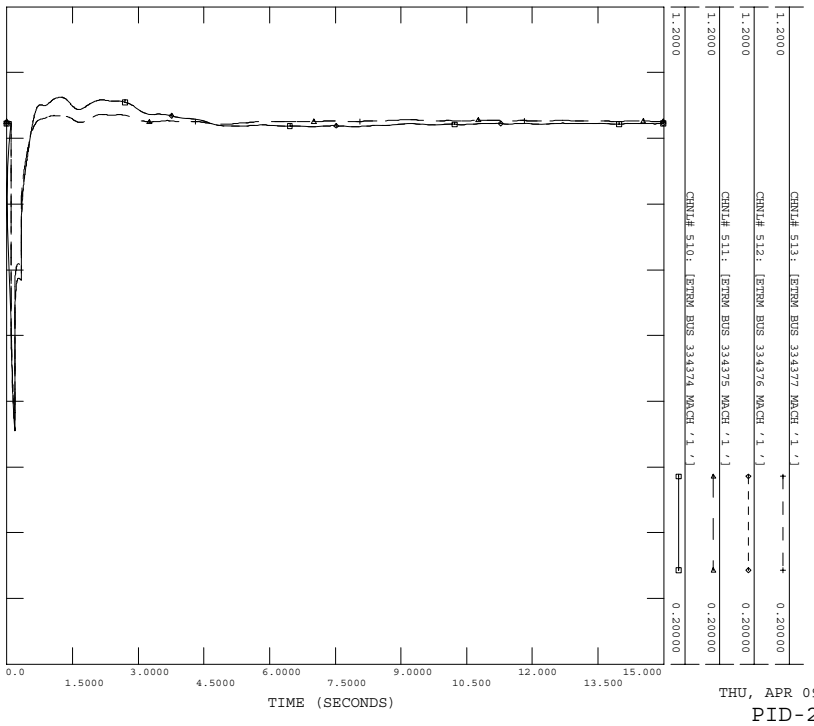
POST-PID-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8NEMELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



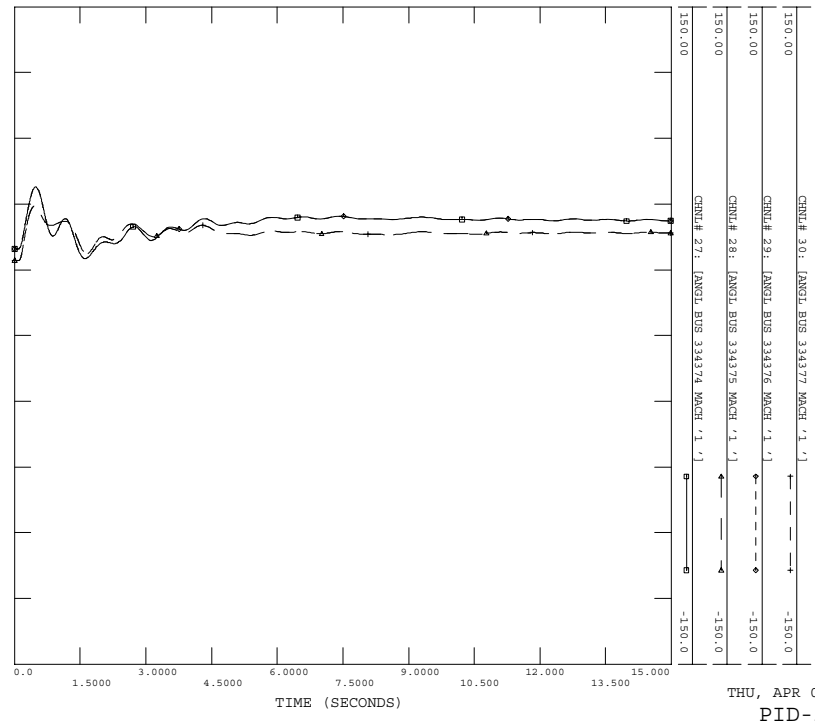
POST-PID-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8NEMELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



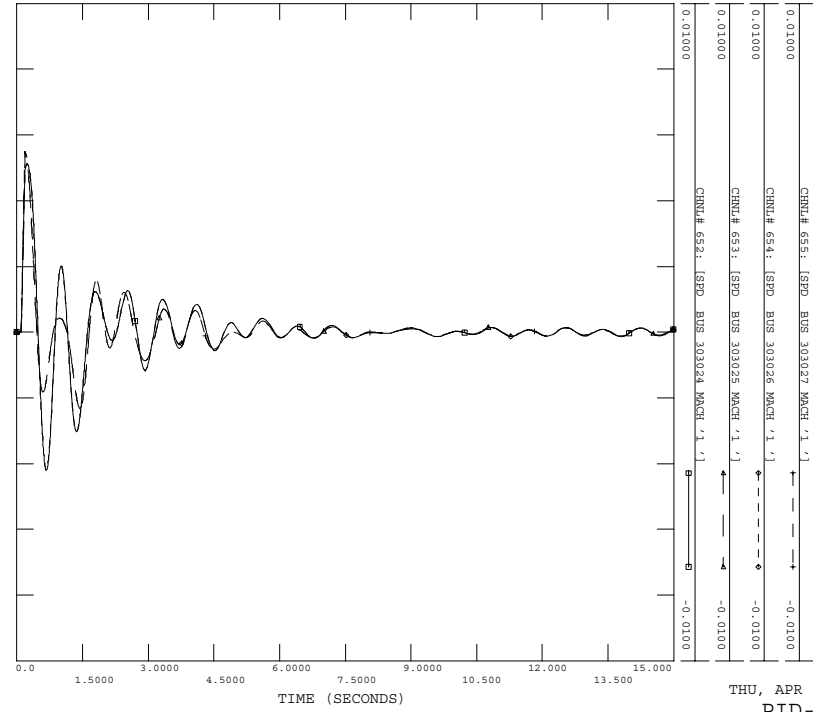
POST-PID-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8NEMELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT



POST-PID-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8HARTBERG 500KV BUS 334325 TO 8NEMELSON 500KV BUS 335192 AND 8N
 FILE: FLT_7B.OUT

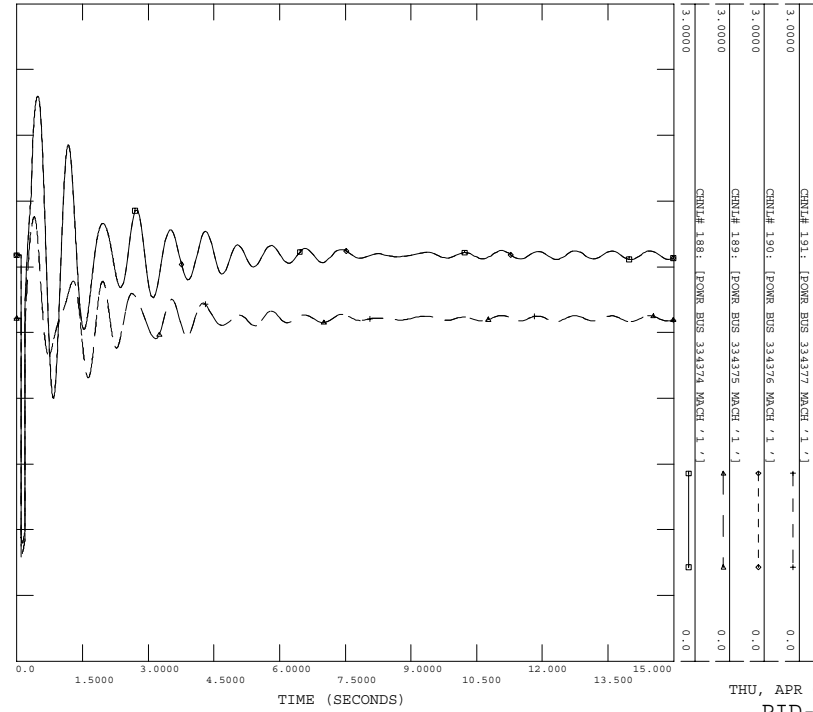


POST-PID-227 CASE
3PH STUCK FLT AT 8NELSON 500KV BUS 335192
8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192 AND 8N
FILE: FLT_7B.OUT



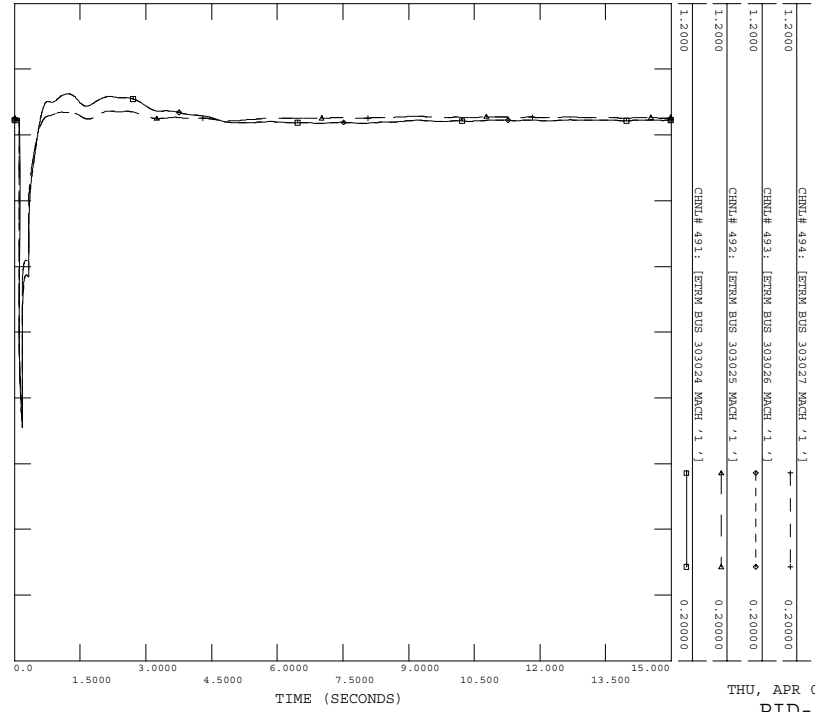
THU, APR 09 2009 14:52
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8NELSON 500KV BUS 335192
8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192 AND 8N
FILE: FLT_7B.OUT



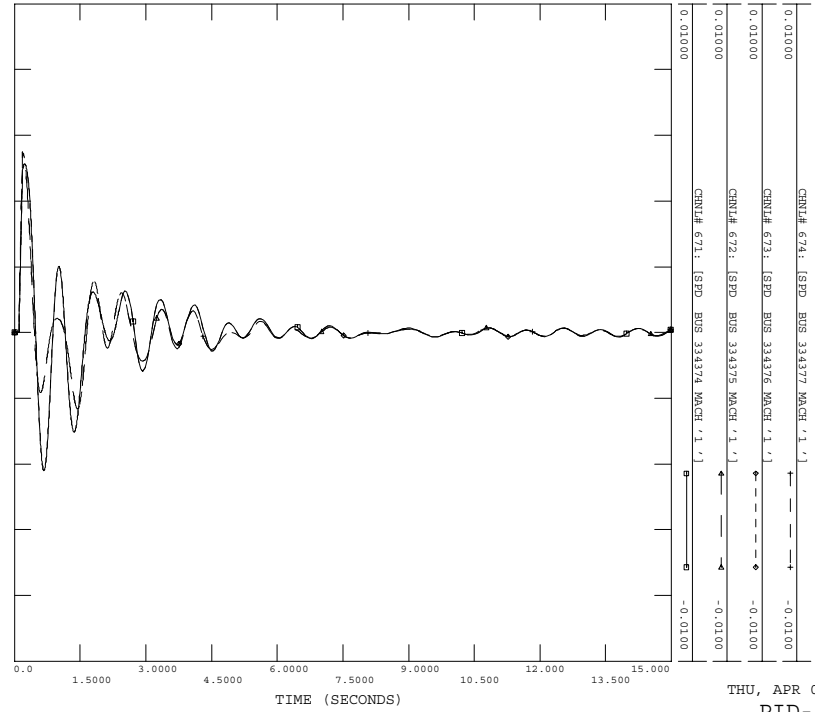
THU, APR 09 2009 14:52
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8NELSON 500KV BUS 335192
8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192 AND 8N
FILE: FLT_7B.OUT



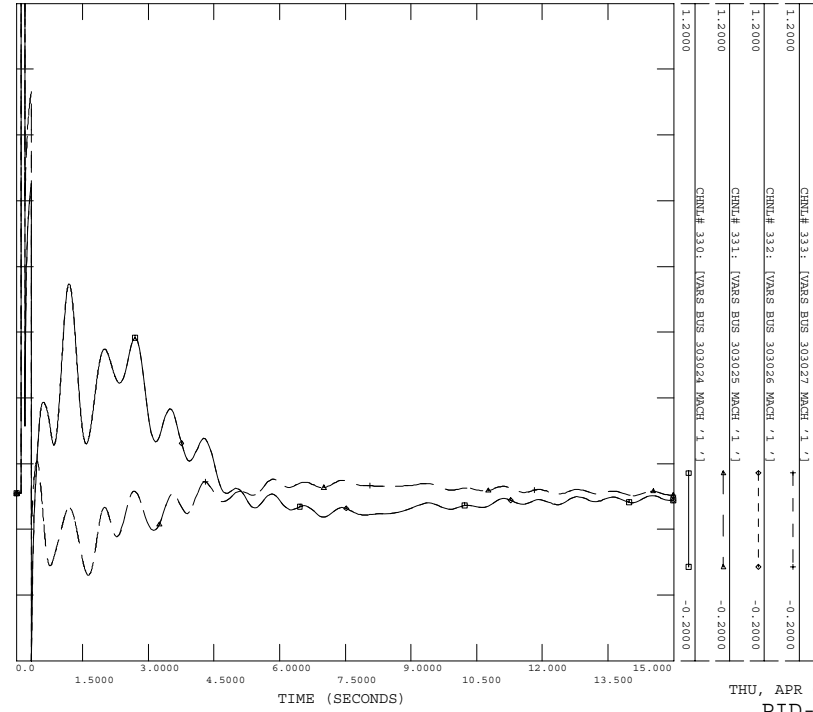
THU, APR 09 2009 14:52
PID-227 PLOTS

POST-PID-227 CASE
3PH STUCK FLT AT 8NELSON 500KV BUS 335192
8HARTBERG 500KV BUS 334325 TO 8NELSON 500KV BUS 335192 AND 8N
FILE: FLT_7B.OUT

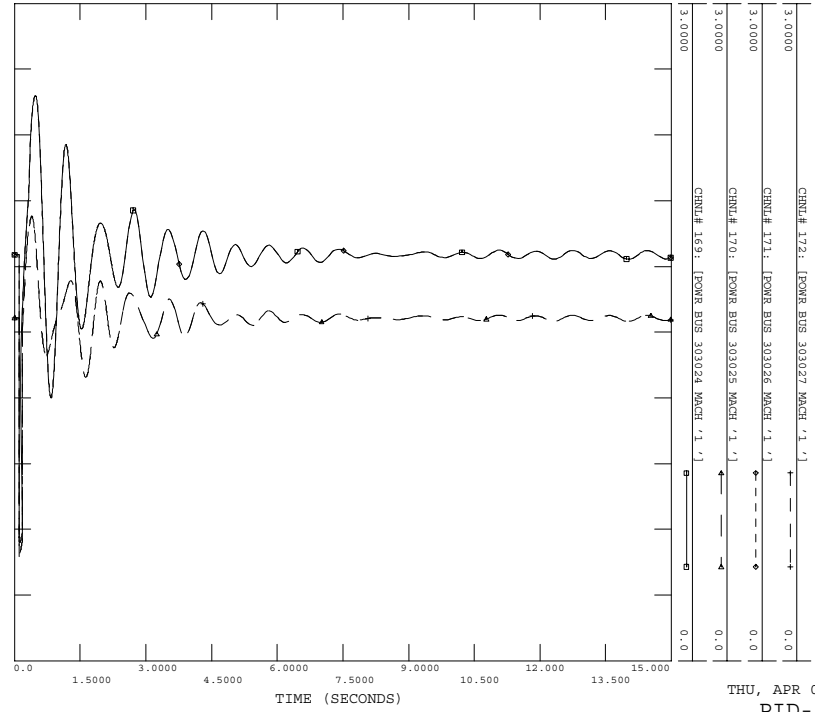


THU, APR 09 2009 14:52
PID-227 PLOTS

POST-PID-227 CASE
3PH STOCK FLT AT 8MELSON 500KV BUS 335192
8HARTBERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192 AND 8N
FILE: FLT_7B.OUT



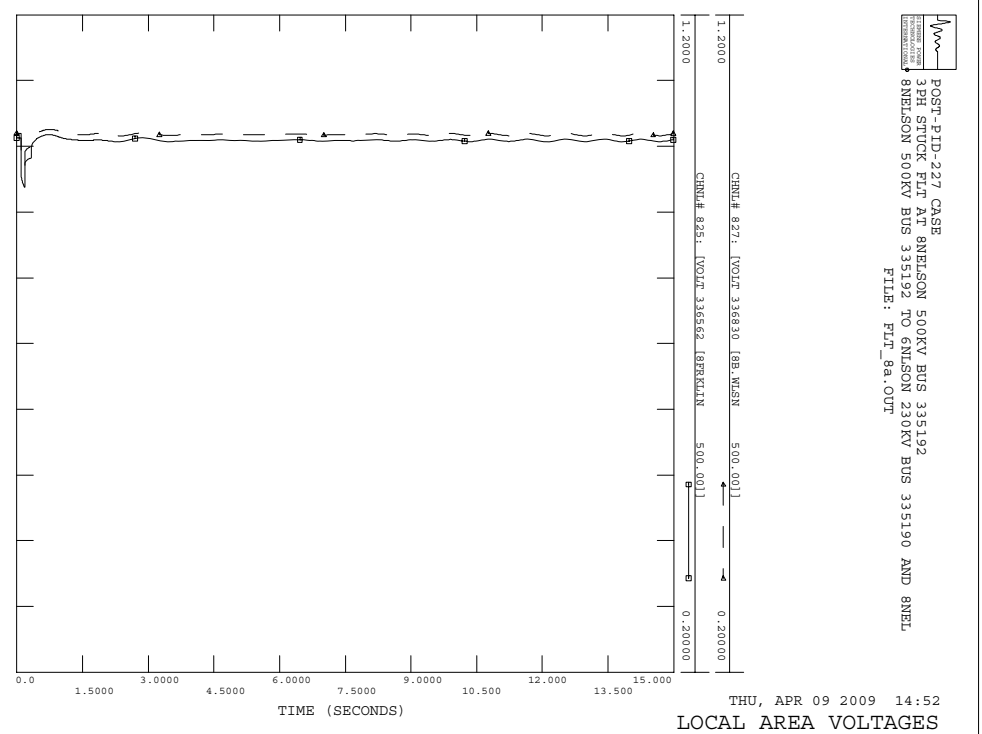
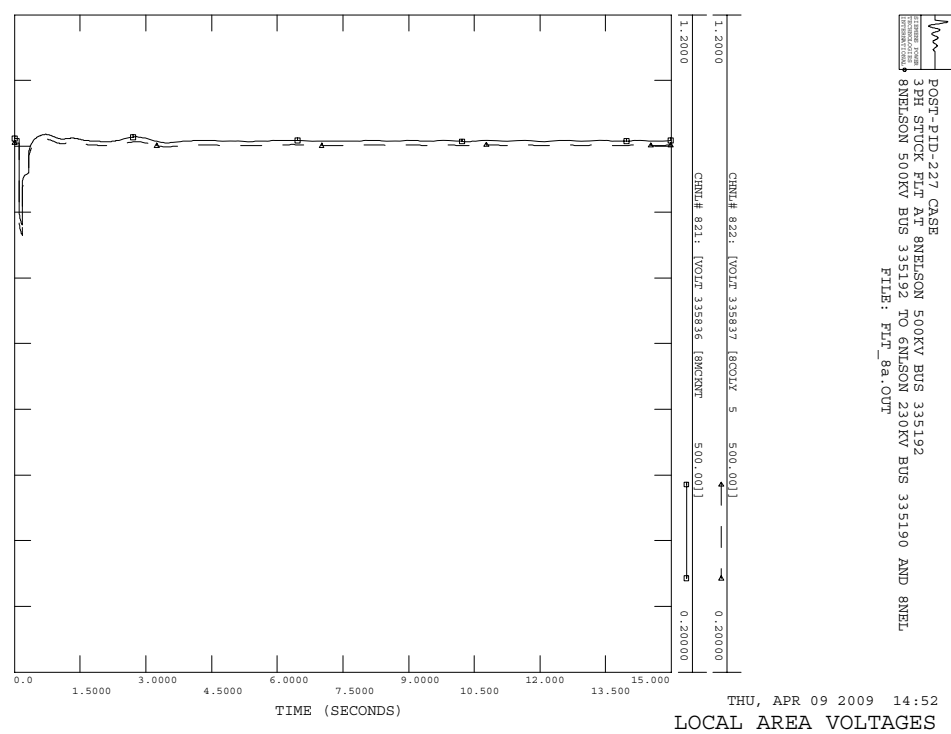
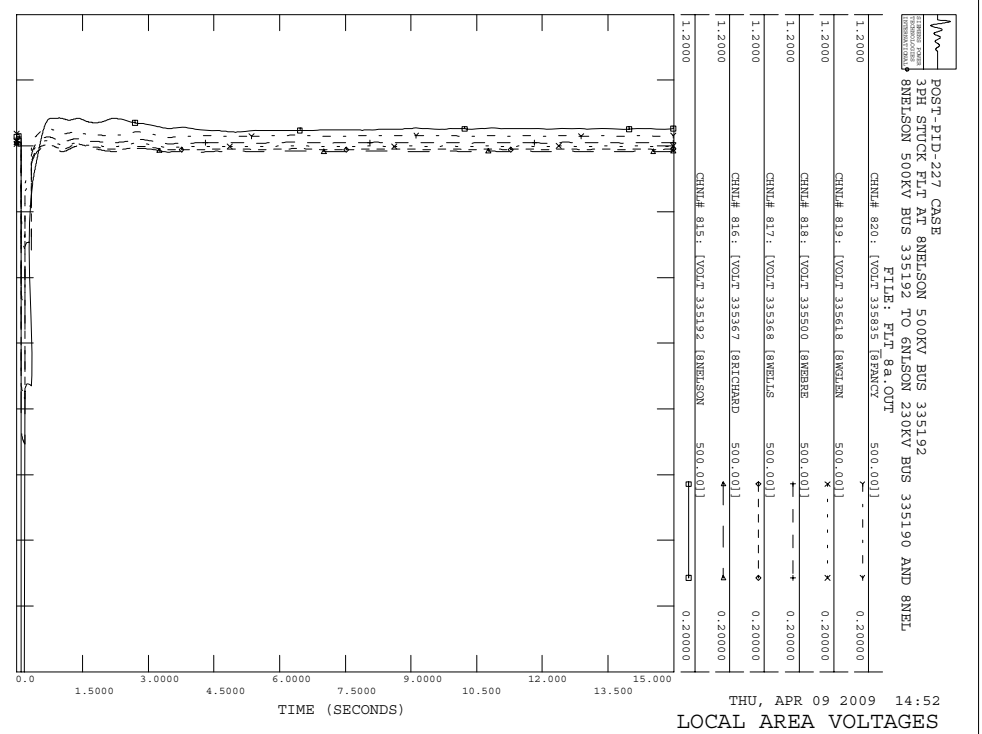
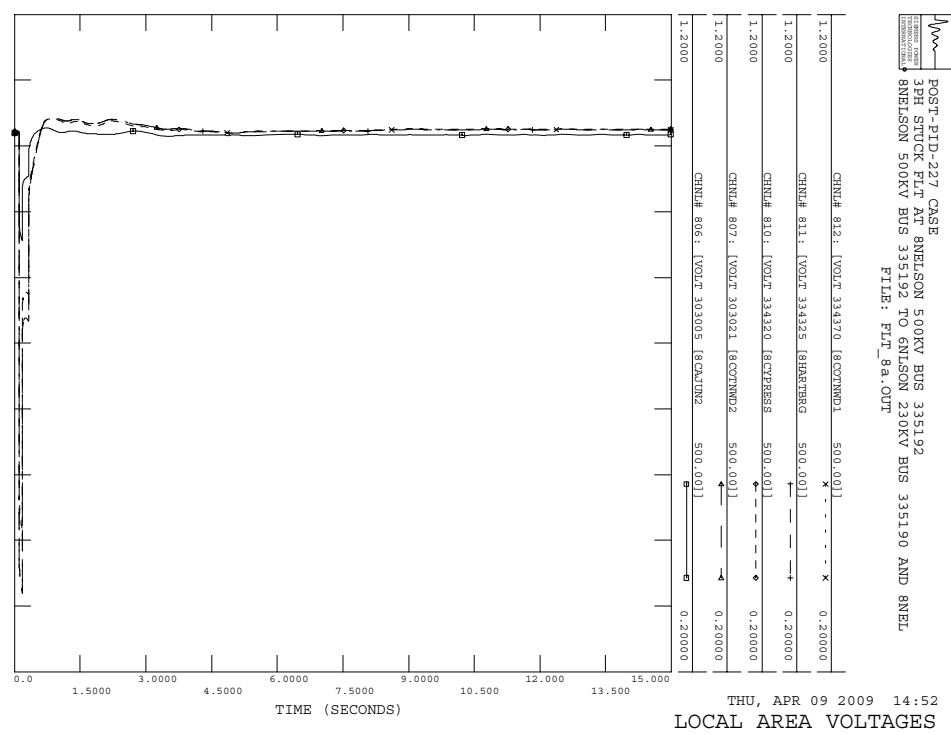
POST-PID-227 CASE
3PH STOCK FLT AT 8MELSON 500KV BUS 335192
8HARTBERG 500KV BUS 334325 TO 8MELSON 500KV BUS 335192 AND 8N
FILE: FLT_7B.OUT



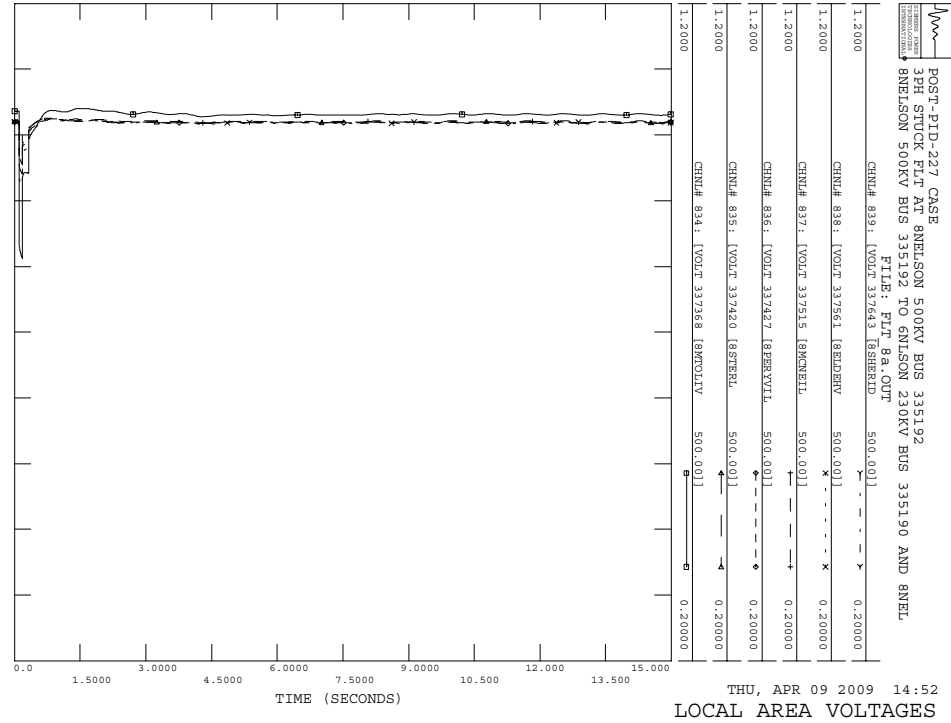
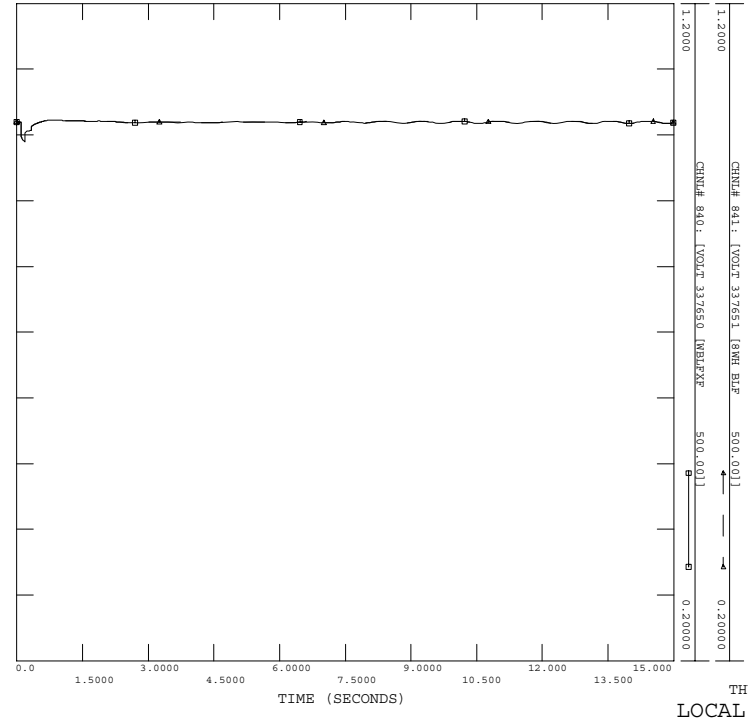
C.21 FLT_8a

Stuck breaker fault on the 8NELSON (#335192) to 6NLSOIN (#335190) 500/230 kV autotransformer, near the 8NELSON.

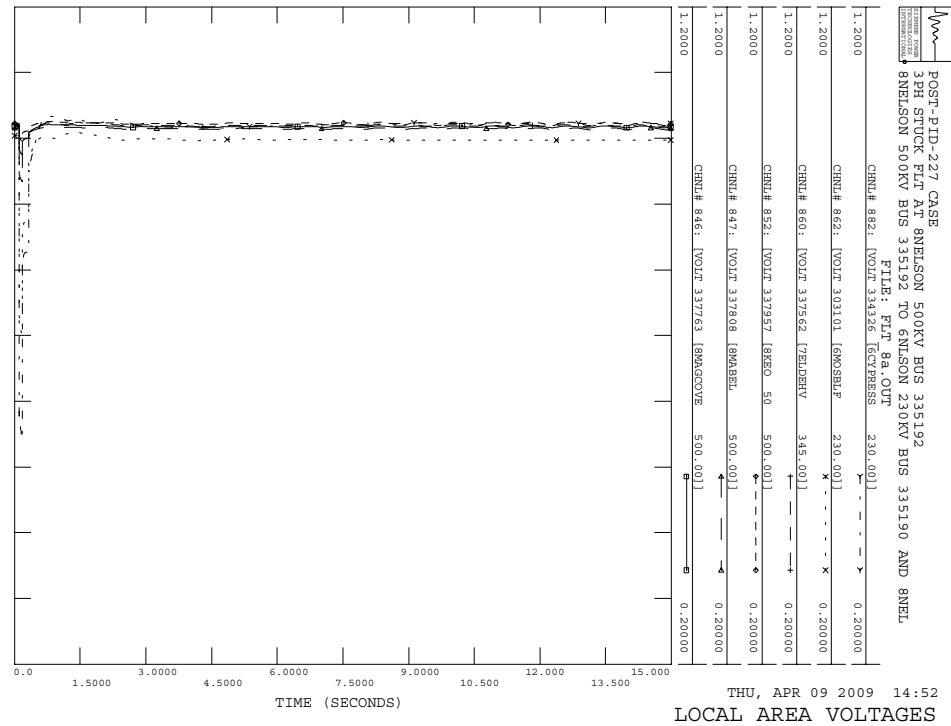
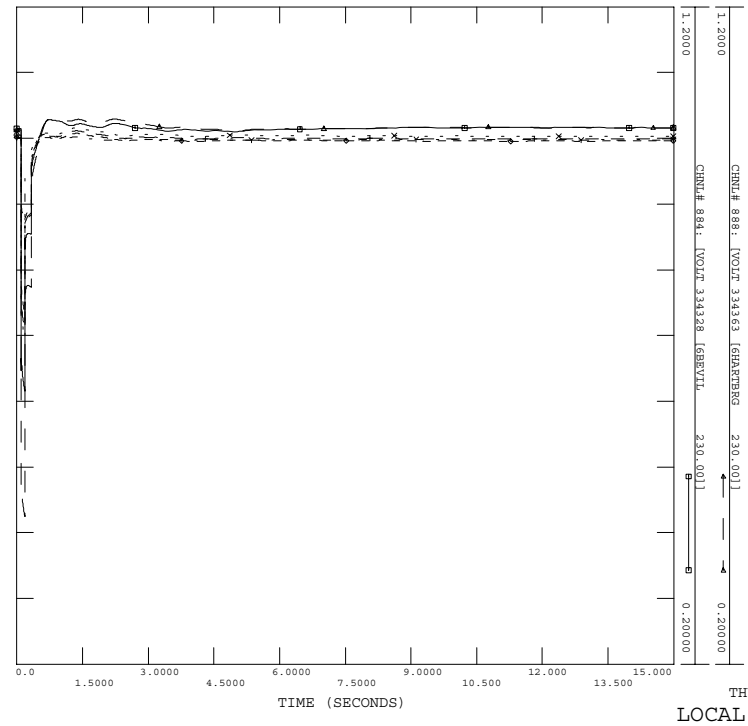
- a) Apply 3 Phase Fault AT 8NELSON 500KV BUS 335192
- b) Run fault for 5 cycles
- c) Remove Fault AT 8NELSON 500KV BUS 335192
- d) Apply 3 Phase fault at #335192 with admittance $593.53-j6003.71$ MVA
- e) Clear fault after 9 cycles by tripping line from 8NELSON 500KV BUS 335192 TO 8RICHARD 500KV BUS 335367 and transformer from 8NELSON 500KV BUS 335192 TO 6NLSOIN 230KV BUS 335190.

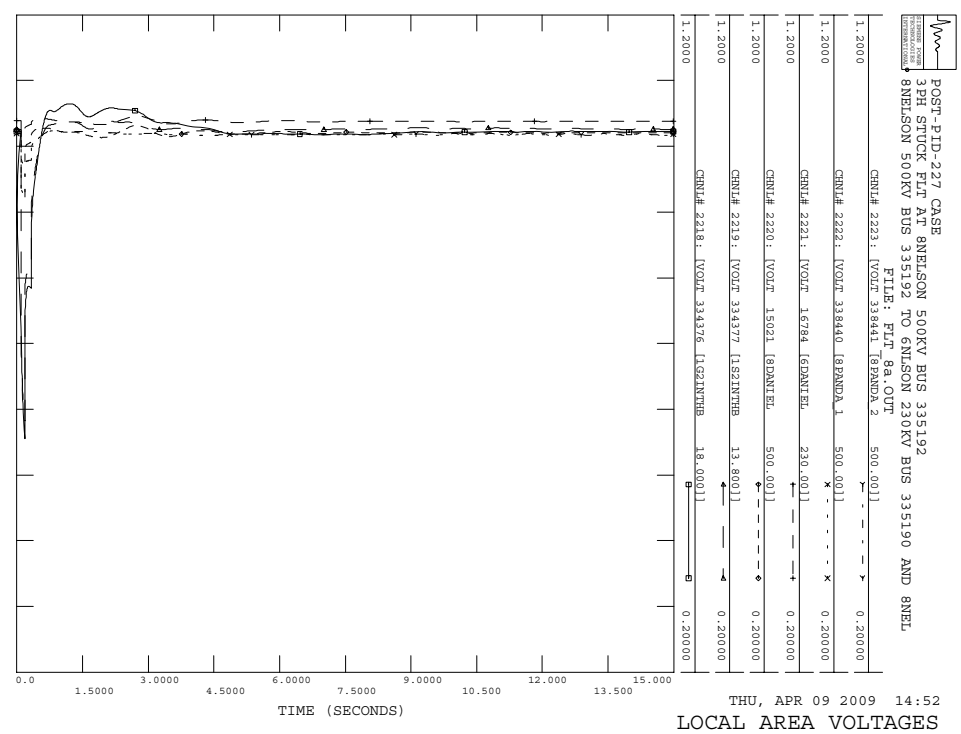
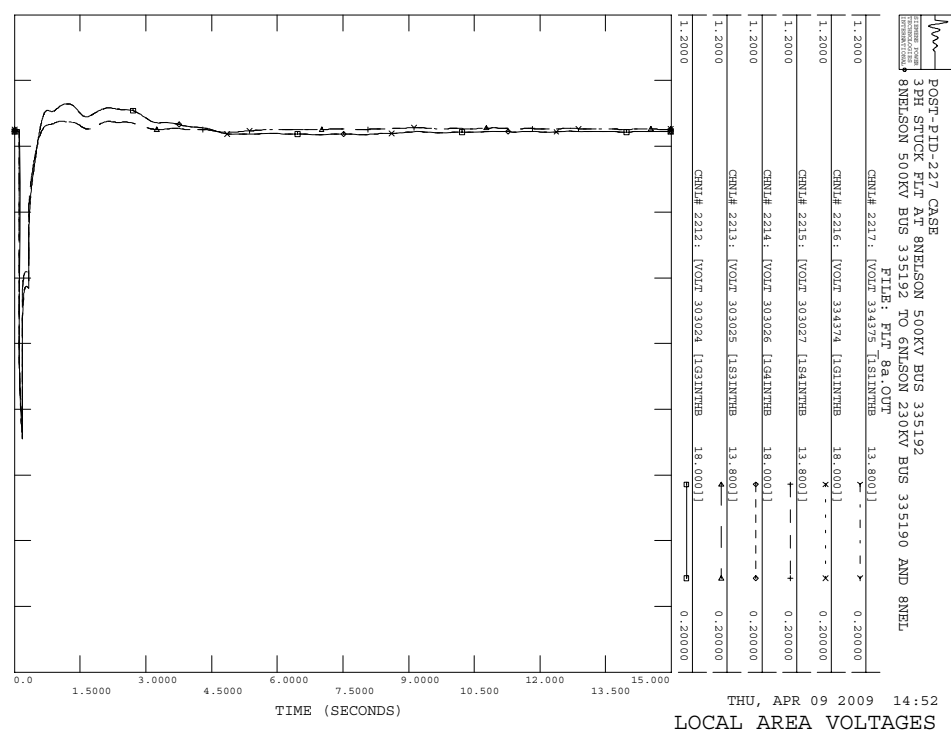
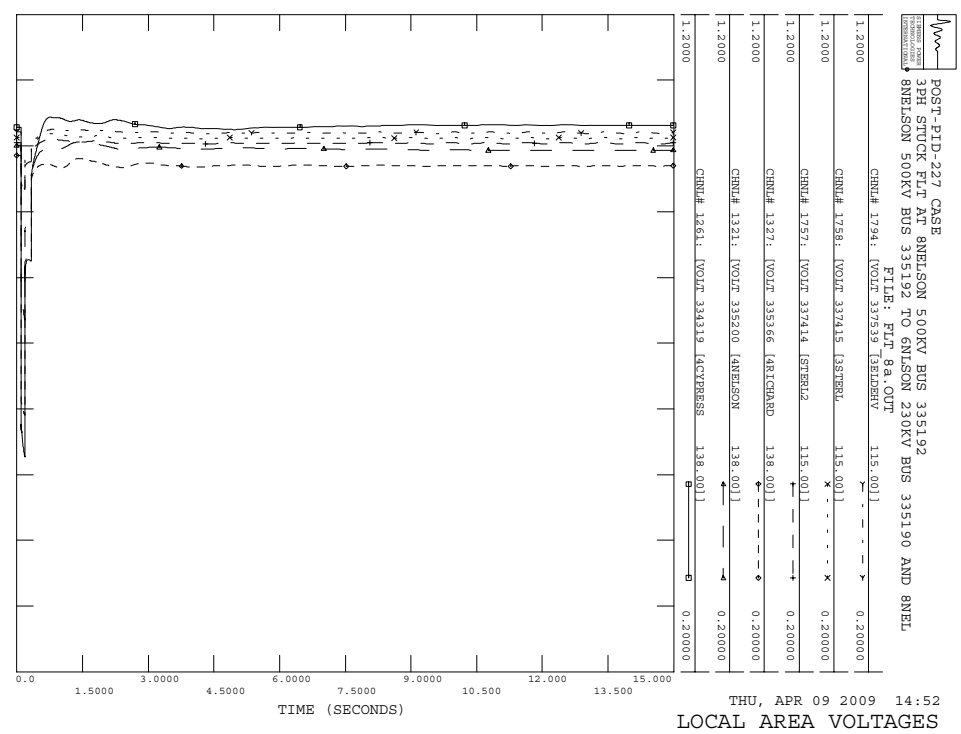
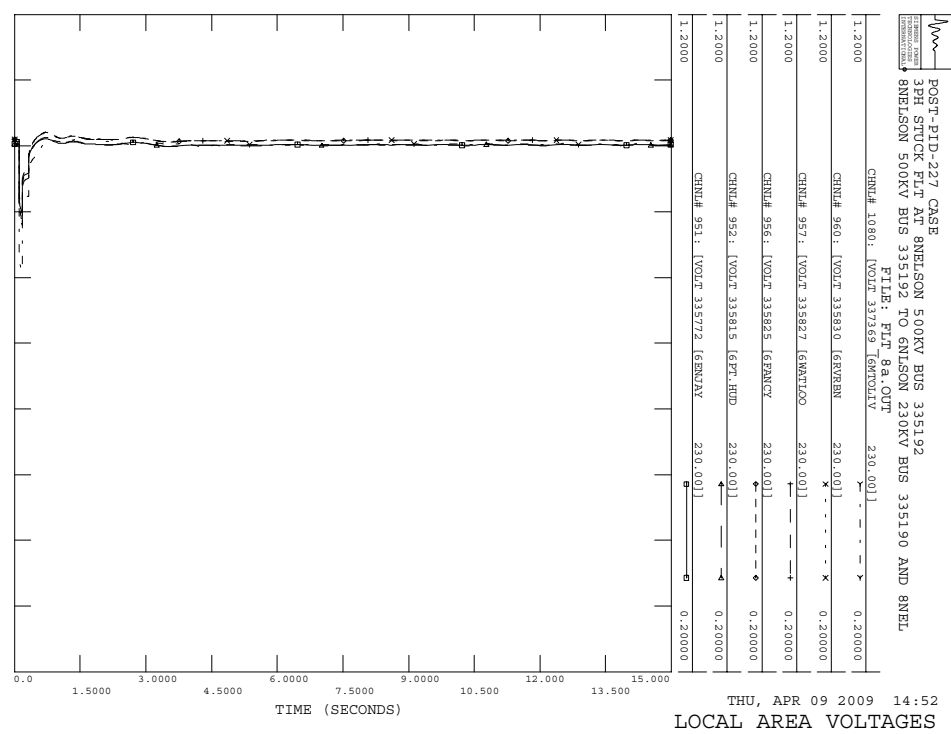


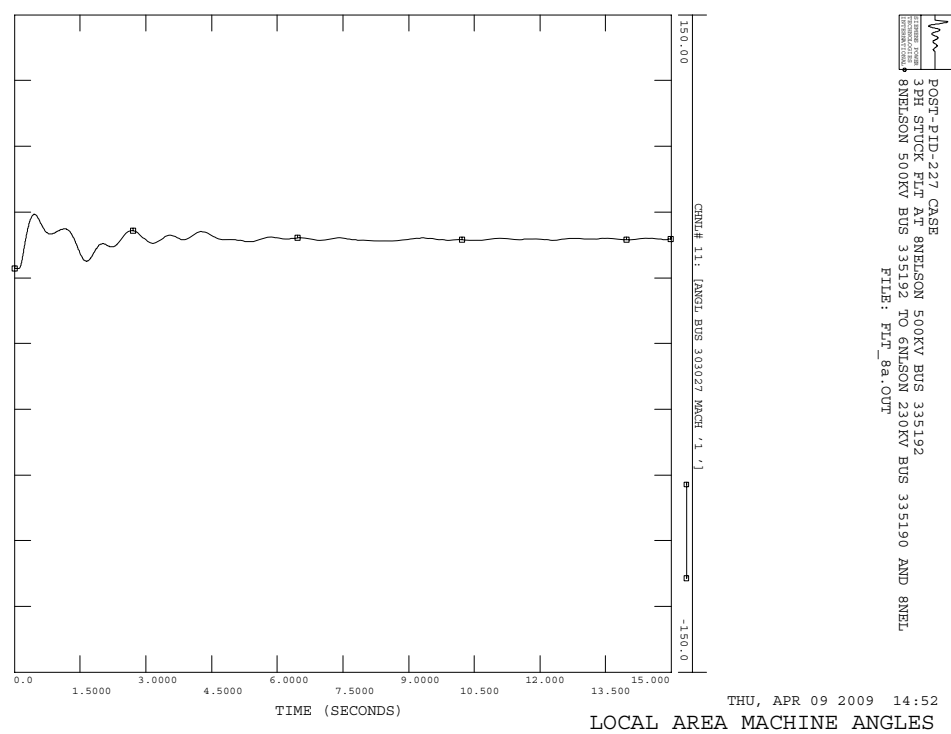
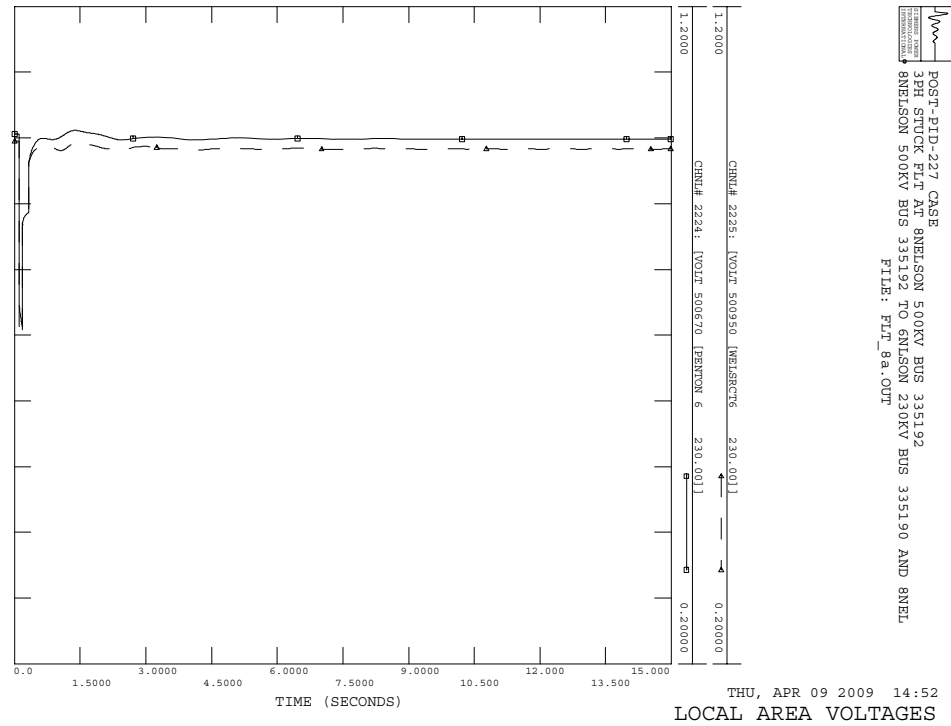
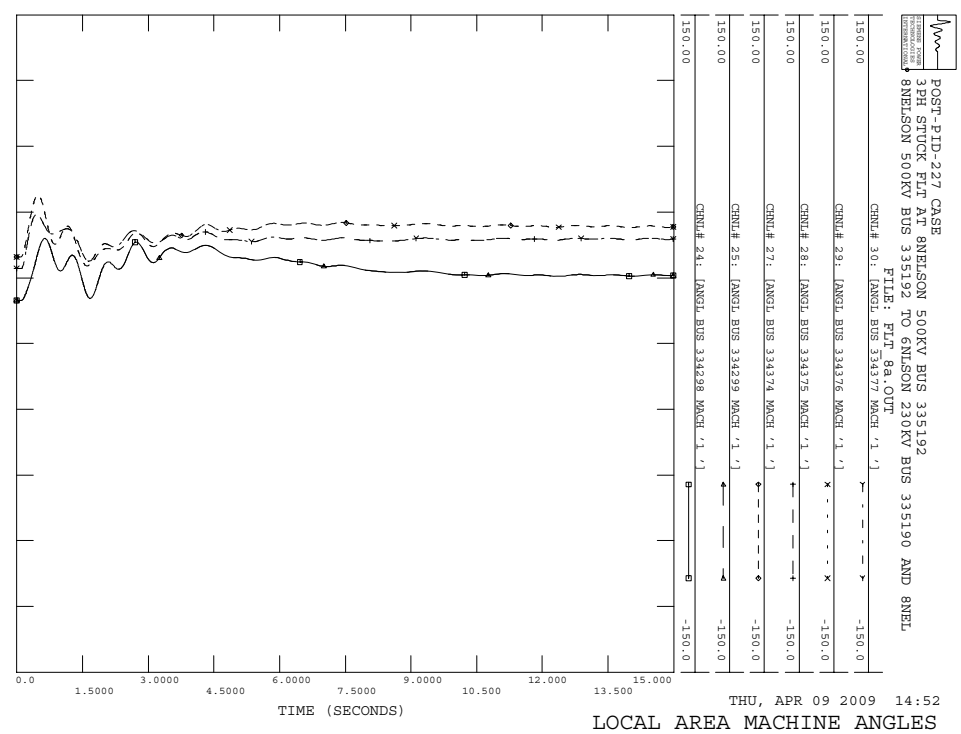
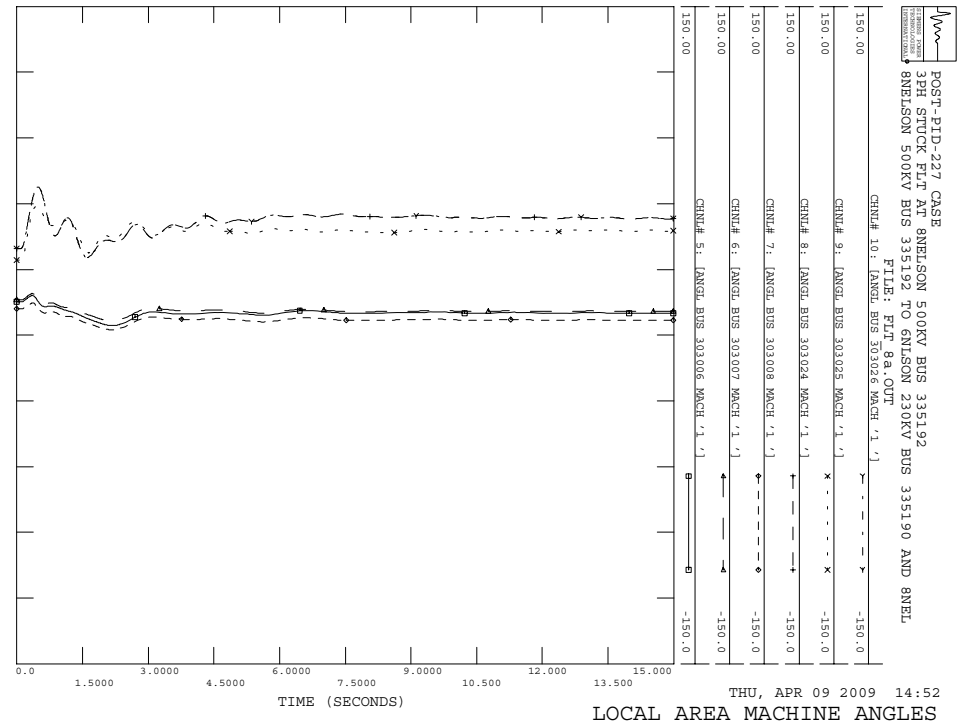
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMLSON 500KV BUS 335192
 8NEMLSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEML
 FILE: FLT_8a.OUT



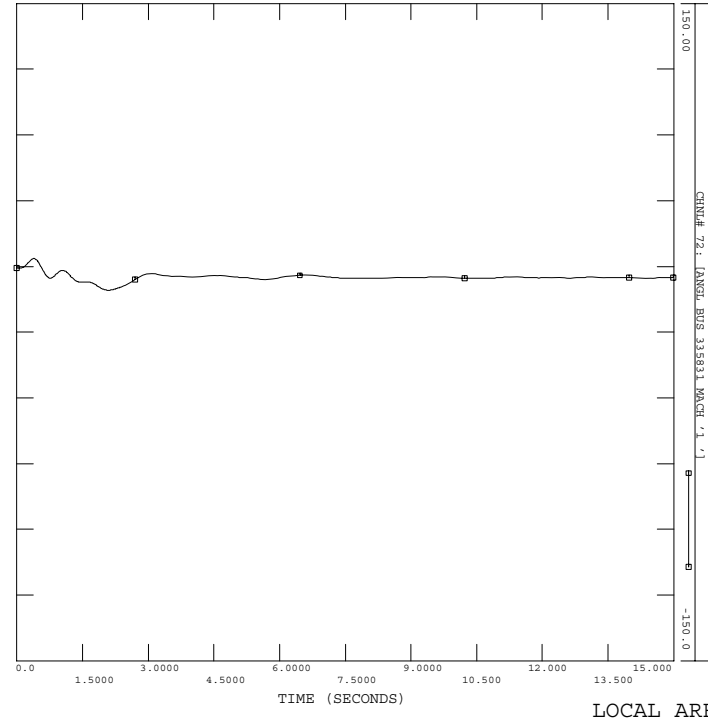
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMLSON 500KV BUS 335192
 8NEMLSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEML
 FILE: FLT_8a.OUT





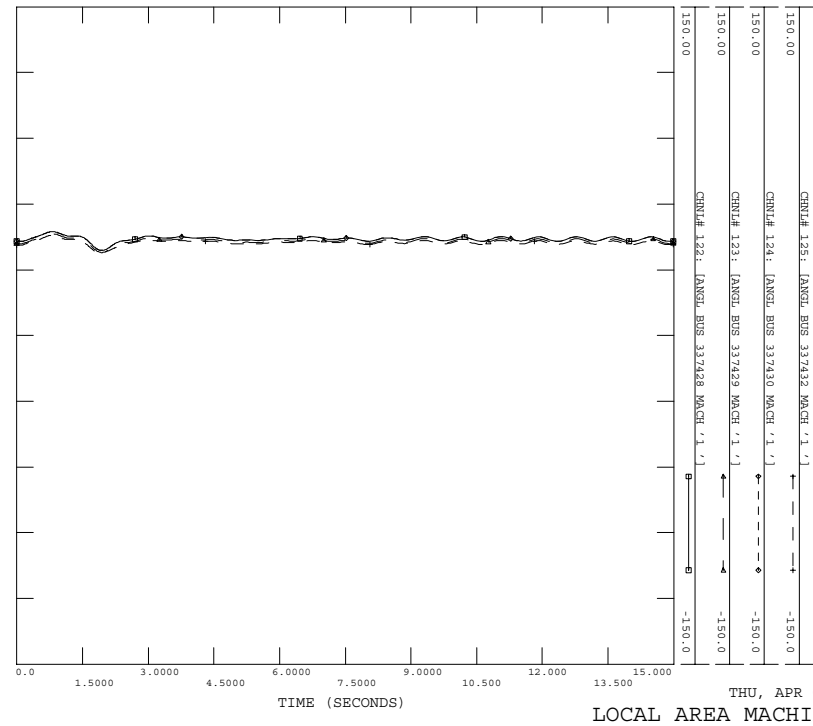


POST-PID-227 CASE
 3PH STOCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NBL
 FILE: FLT_8a.OUT



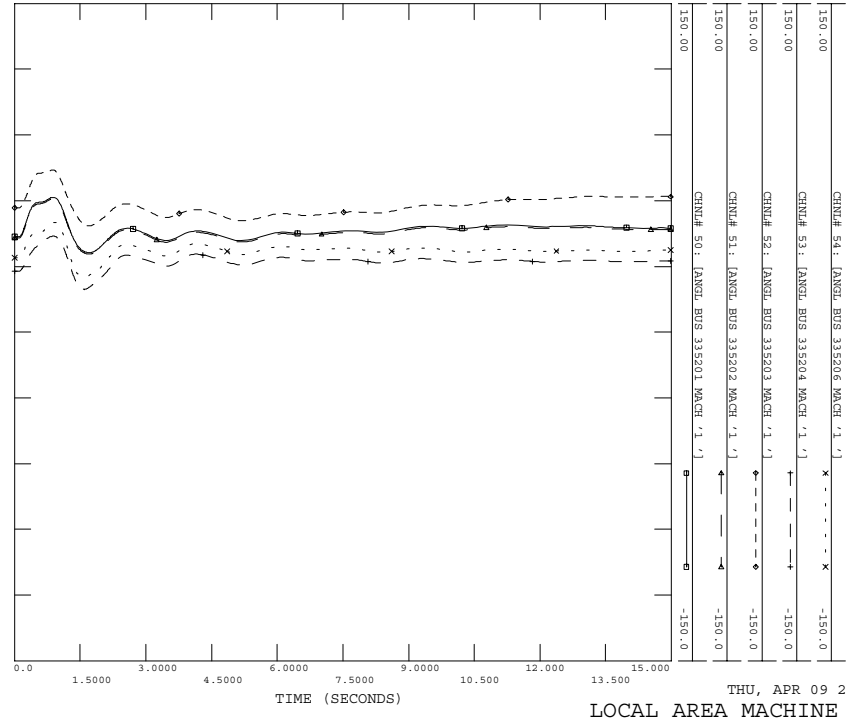
THU, APR 09 2009 14:52
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STOCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NBL
 FILE: FLT_8a.OUT



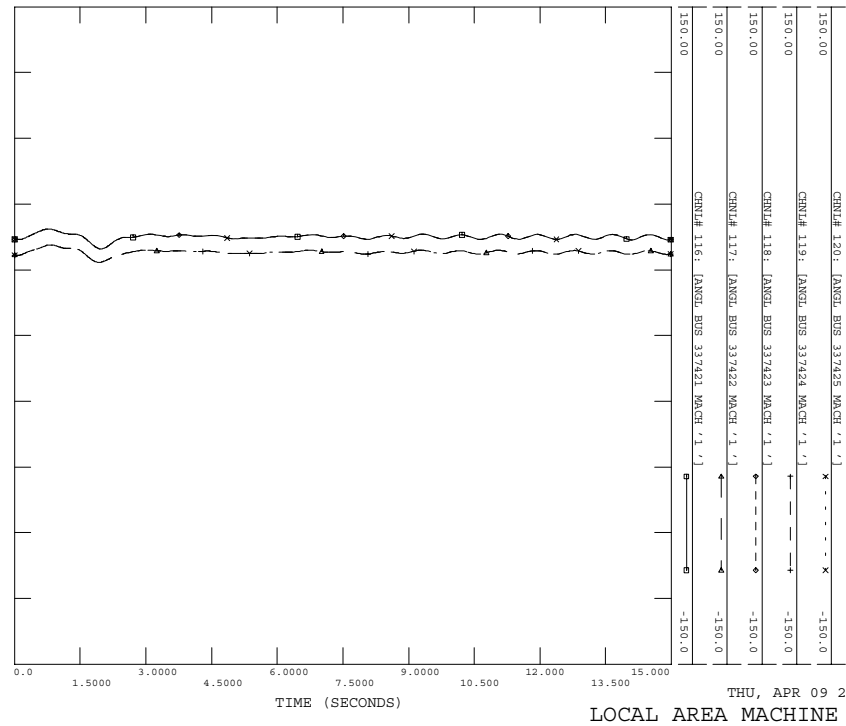
THU, APR 09 2009 14:52
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STOCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NBL
 FILE: FLT_8a.OUT



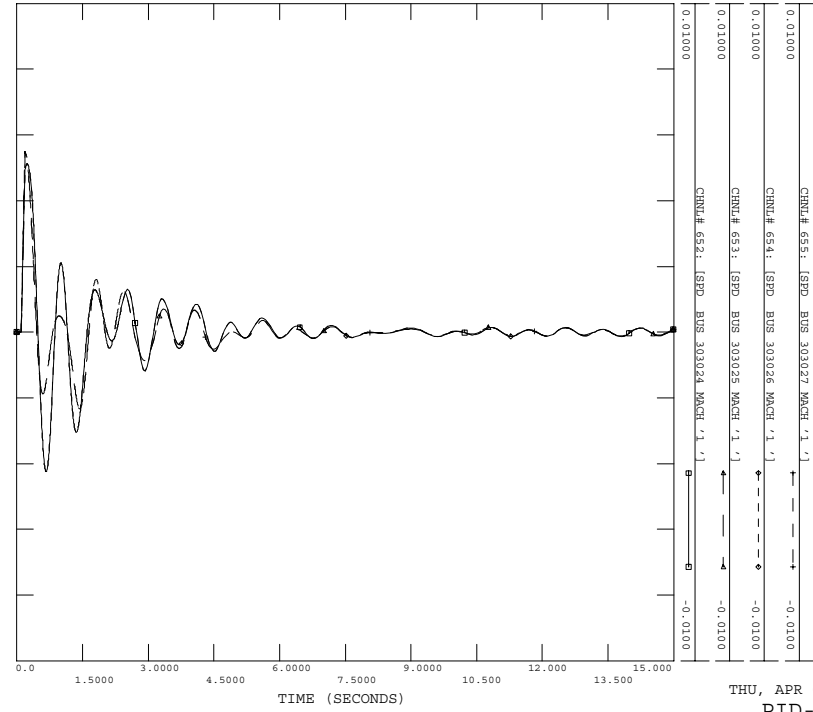
THU, APR 09 2009 14:52
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STOCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNILSON 230KV BUS 335190 AND 8NBL
 FILE: FLT_8a.OUT

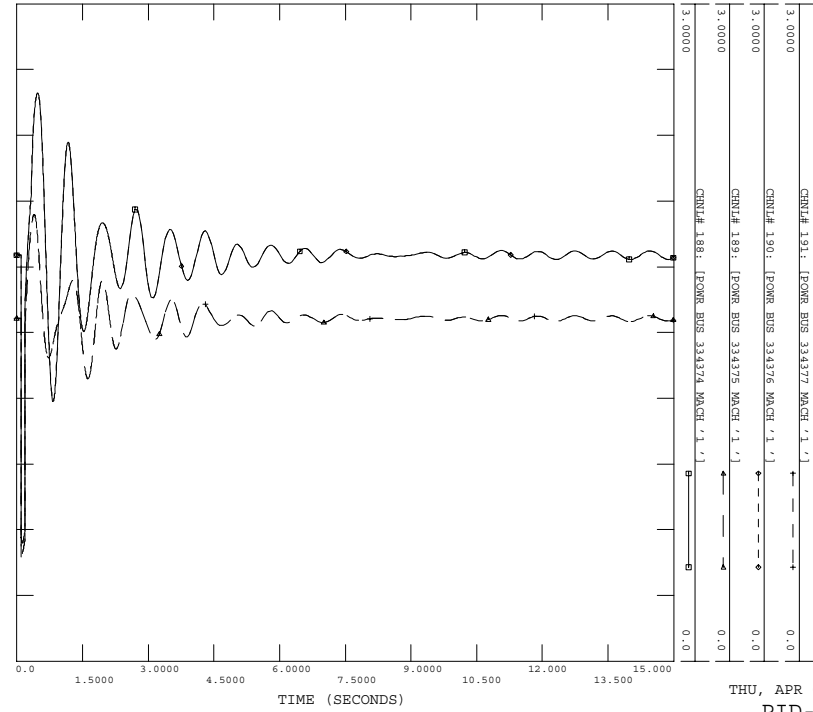


THU, APR 09 2009 14:52
 LOCAL AREA MACHINE ANGLES

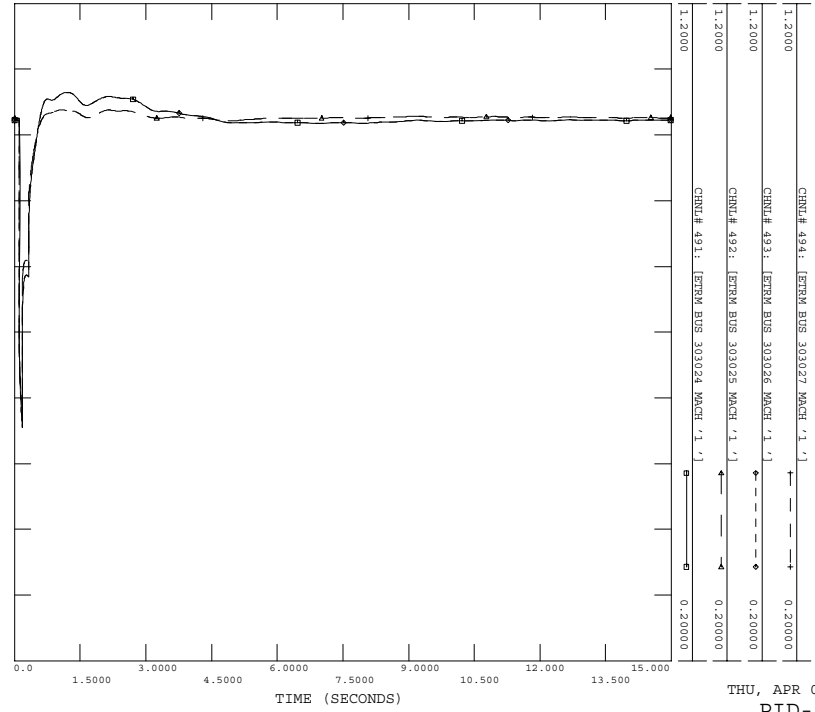
POST-PID-227 CASE
3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
FILE: FLT_8a.OUT



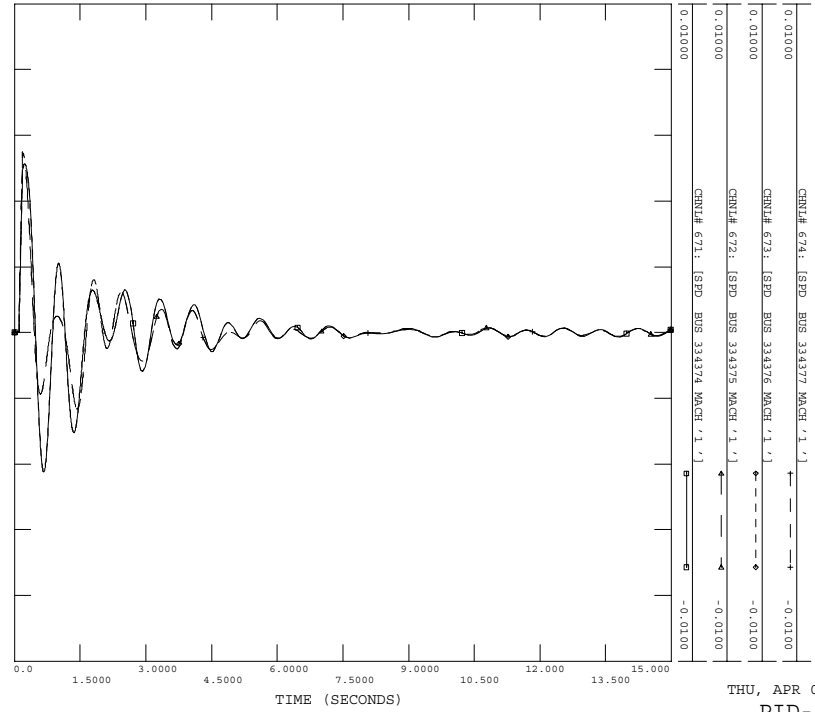
POST-PID-227 CASE
3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
FILE: FLT_8a.OUT



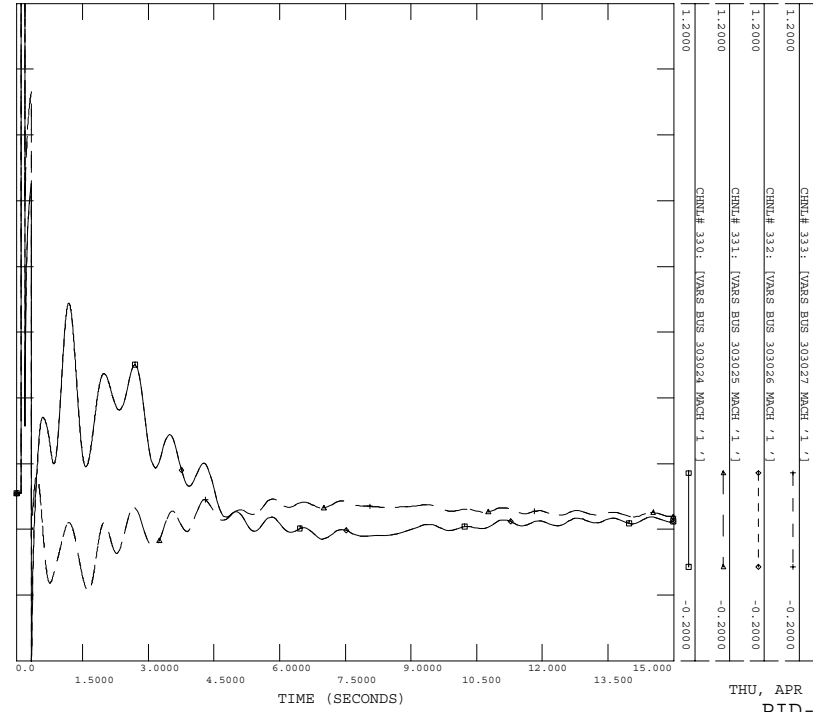
POST-PID-227 CASE
3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
FILE: FLT_8a.OUT



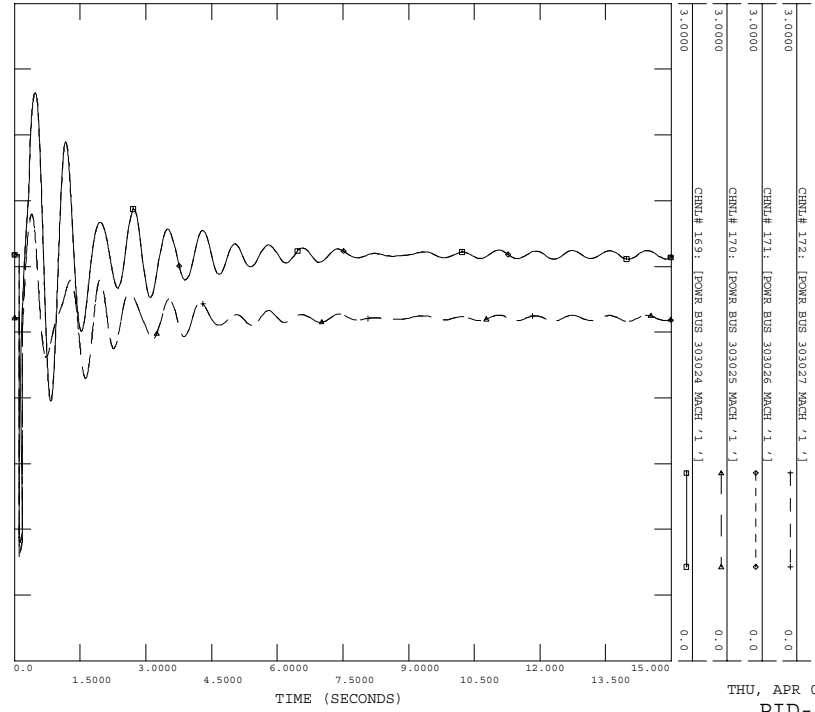
POST-PID-227 CASE
3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
FILE: FLT_8a.OUT



POST-PID-227 CASE
3PH STOCK FLT AT 8NIELSON 500KV BUS 335192
8NIELSON 500KV BUS 335192 TO 6NIELSON 230KV BUS 335190 AND 8NIEL
FILE: FLT_8a.OUT



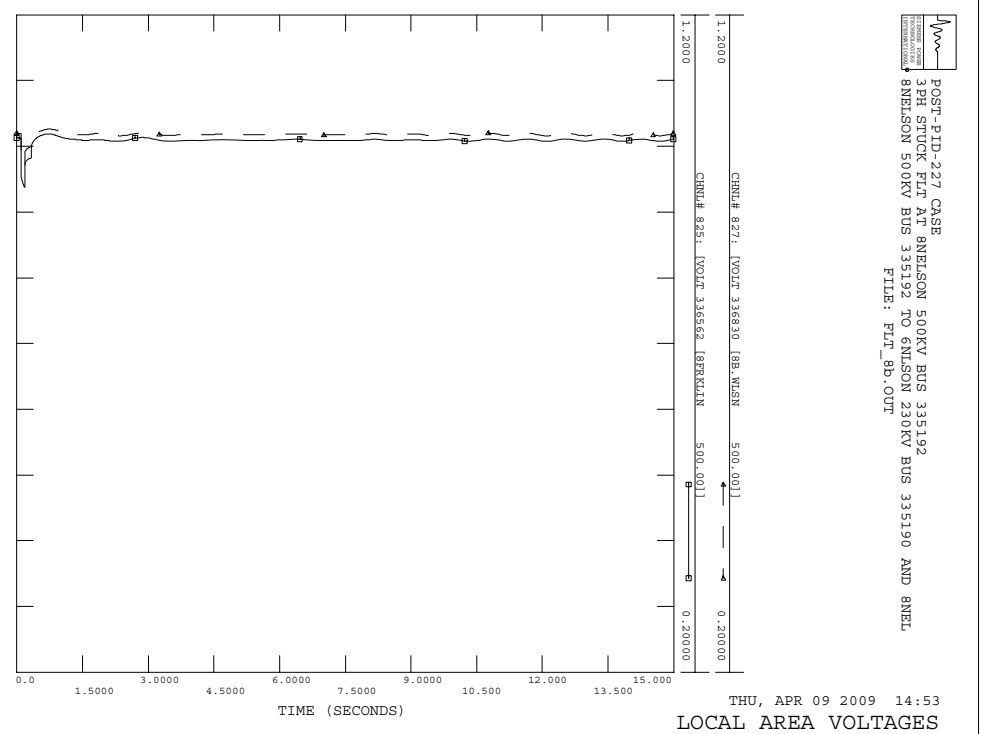
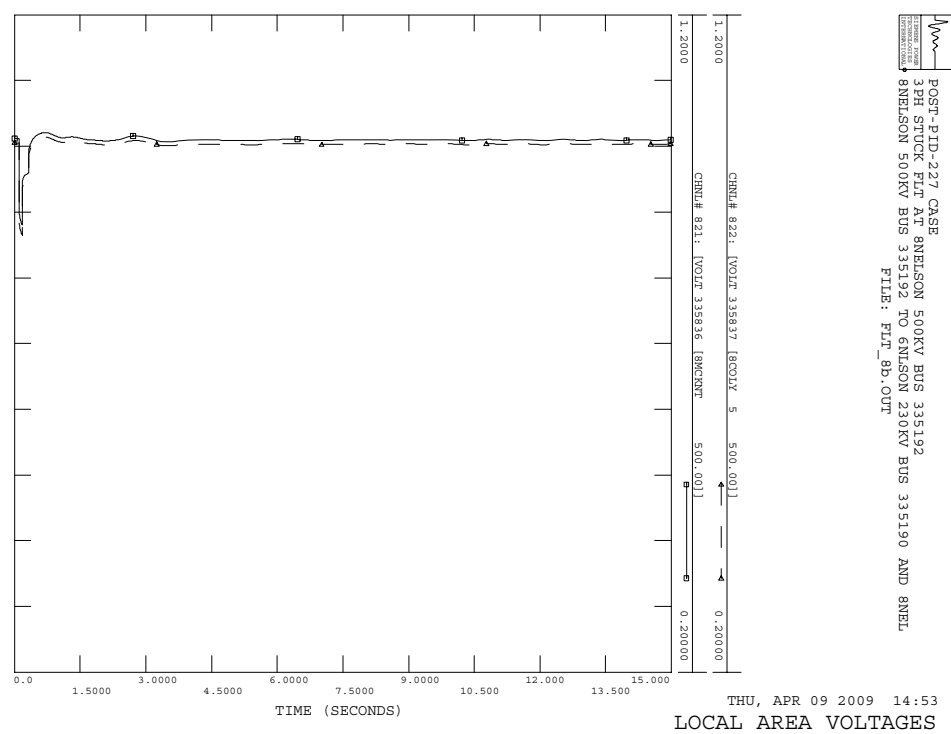
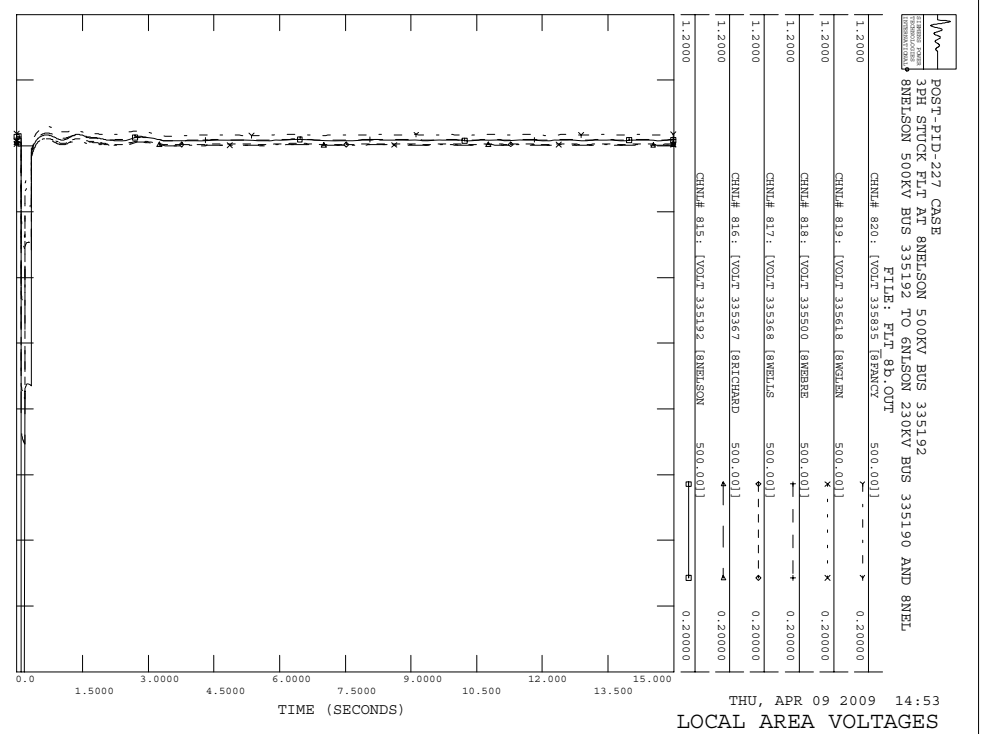
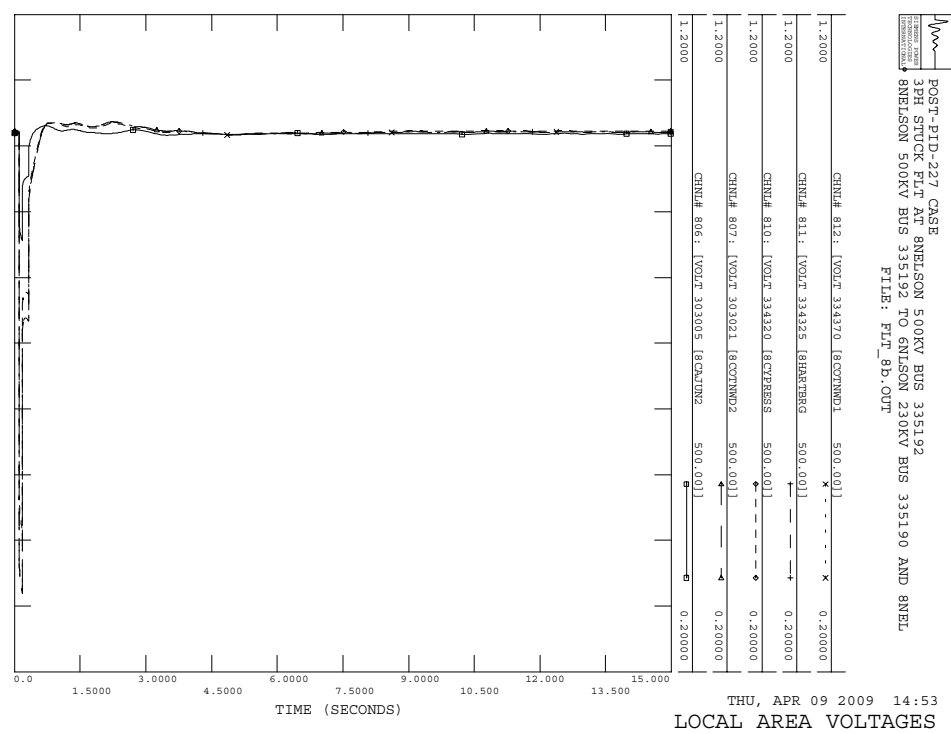
POST-PID-227 CASE
3PH STOCK FLT AT 8NIELSON 500KV BUS 335192
8NIELSON 500KV BUS 335192 TO 6NIELSON 230KV BUS 335190 AND 8NIEL
FILE: FLT_8a.OUT



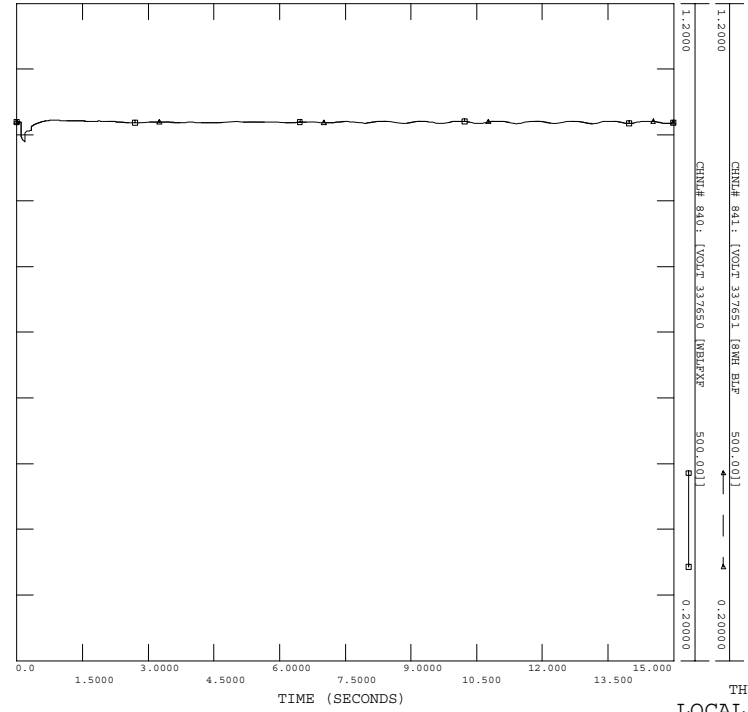
C.22 FLT_8b

Stuck breaker fault on the 8NELSON (#335192) to 6NLSOIN (#335190) 500/230 kV autotransformer, near the 8NELSON.

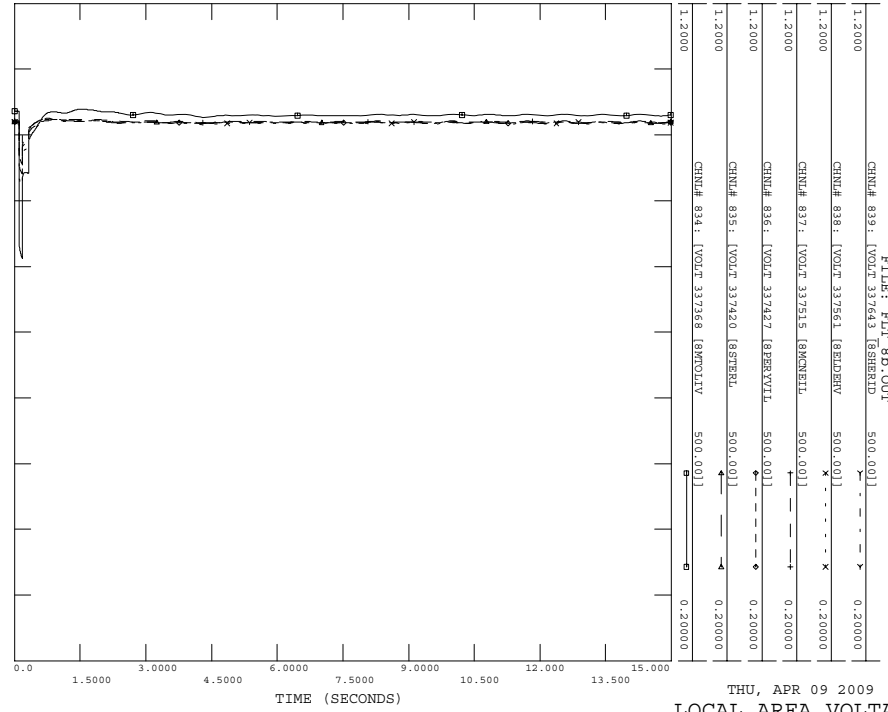
- a) Apply 3 Phase Fault AT 8NELSON 500KV BUS 335192
- b) Run fault for 5 cycles
- c) Remove Fault AT 8NELSON 500KV BUS 335192
- d) Apply 3 Phase fault at #335192 with admittance $593.53-j6003.71$ MVA
- e) Clear fault after 9 cycles by tripping lines from 8NELSON 500KV BUS 335192 TO 8HARTBRG 500KV BUS 334325 and transformer from 8NELSON 500KV BUS 335192 TO 6NLSOIN 230KV BUS 335190



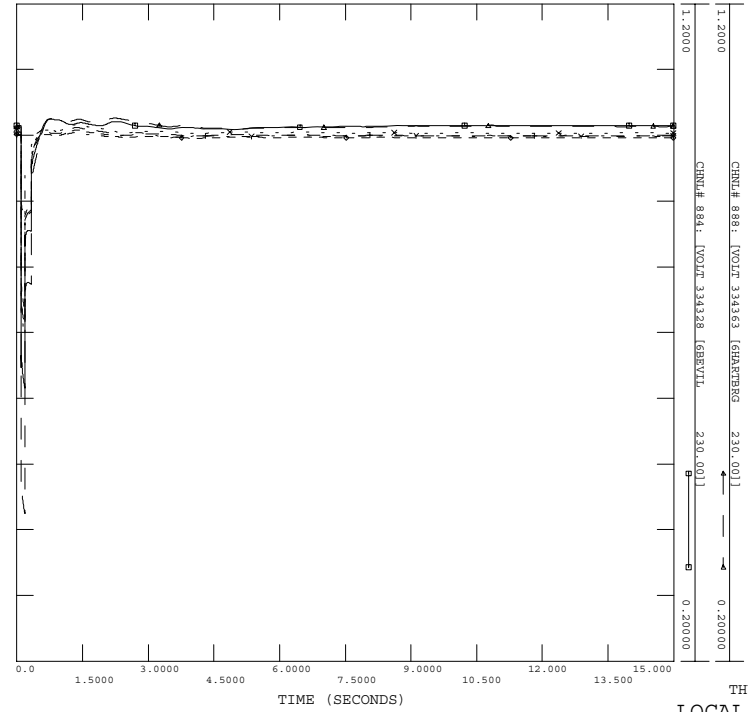
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_8b.0UT



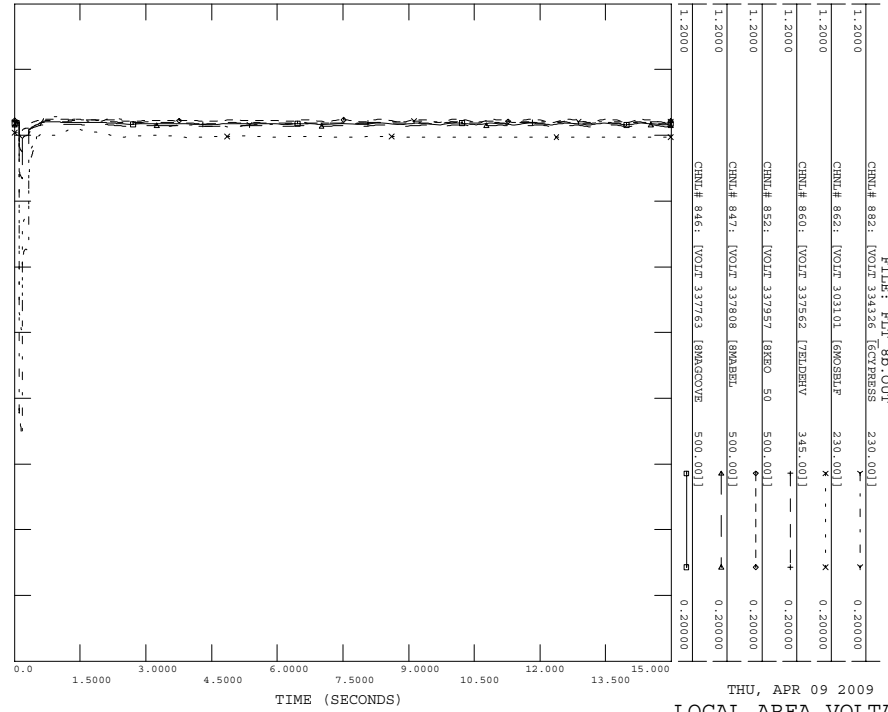
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_8b.0UT

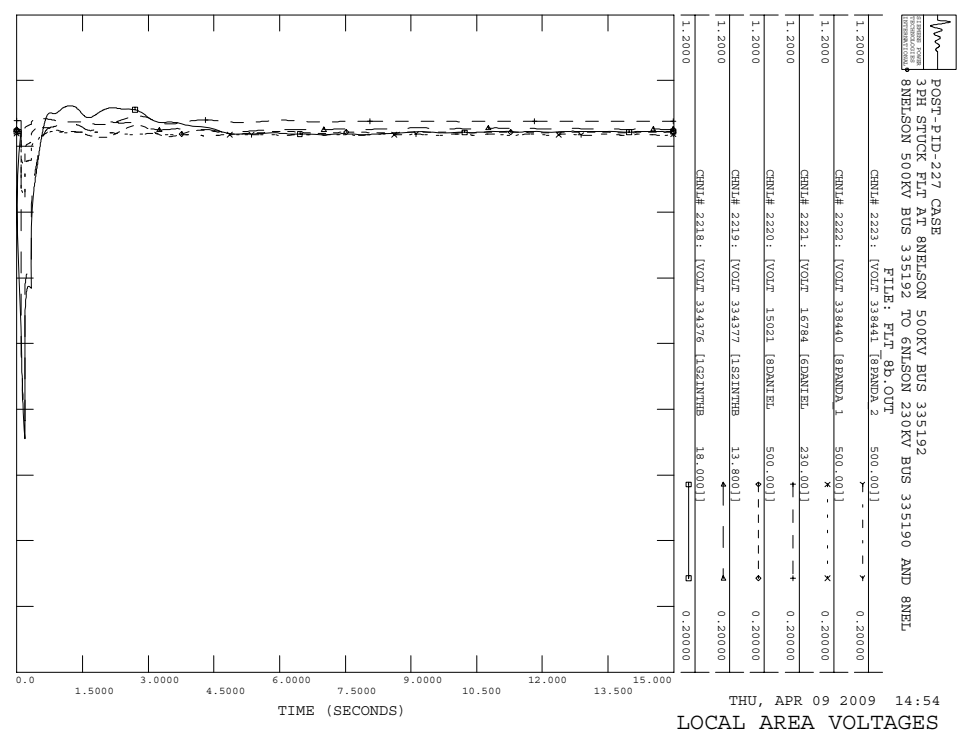
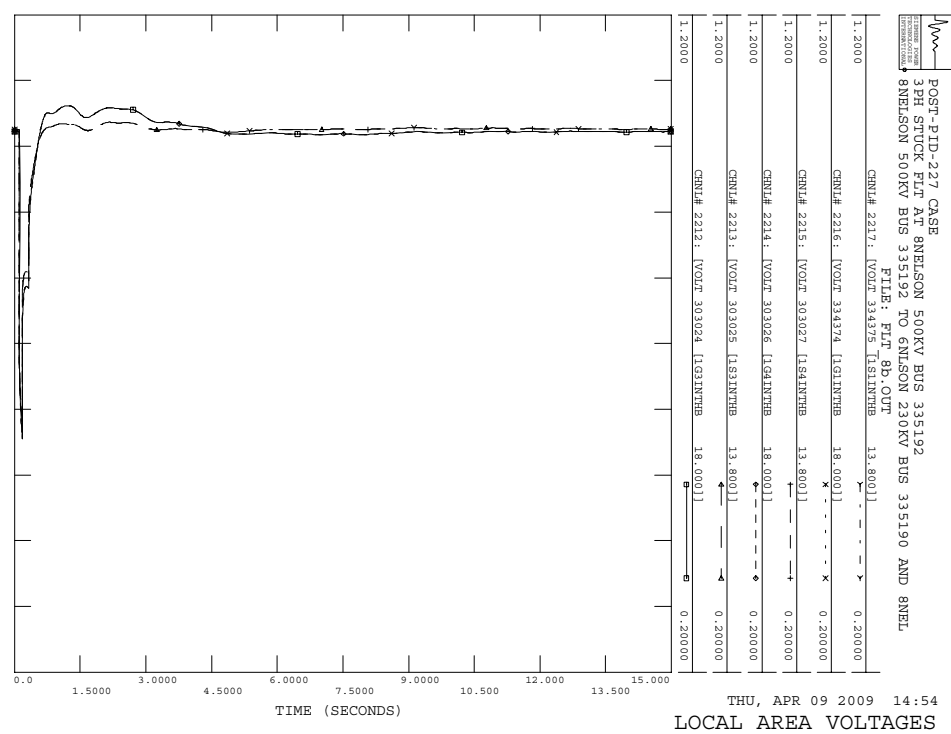
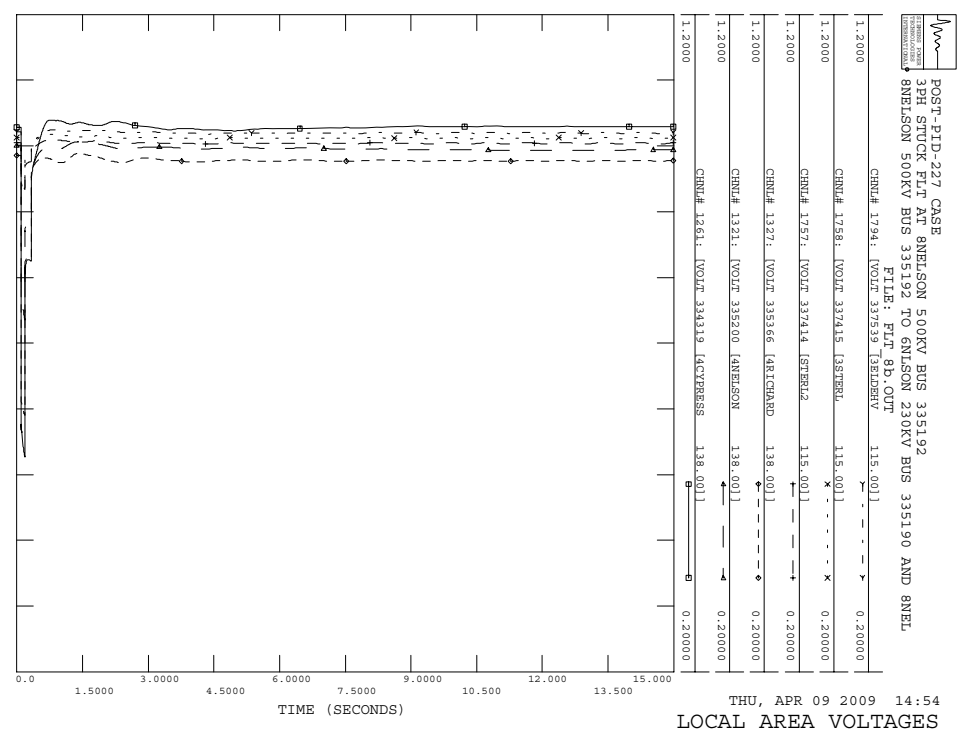
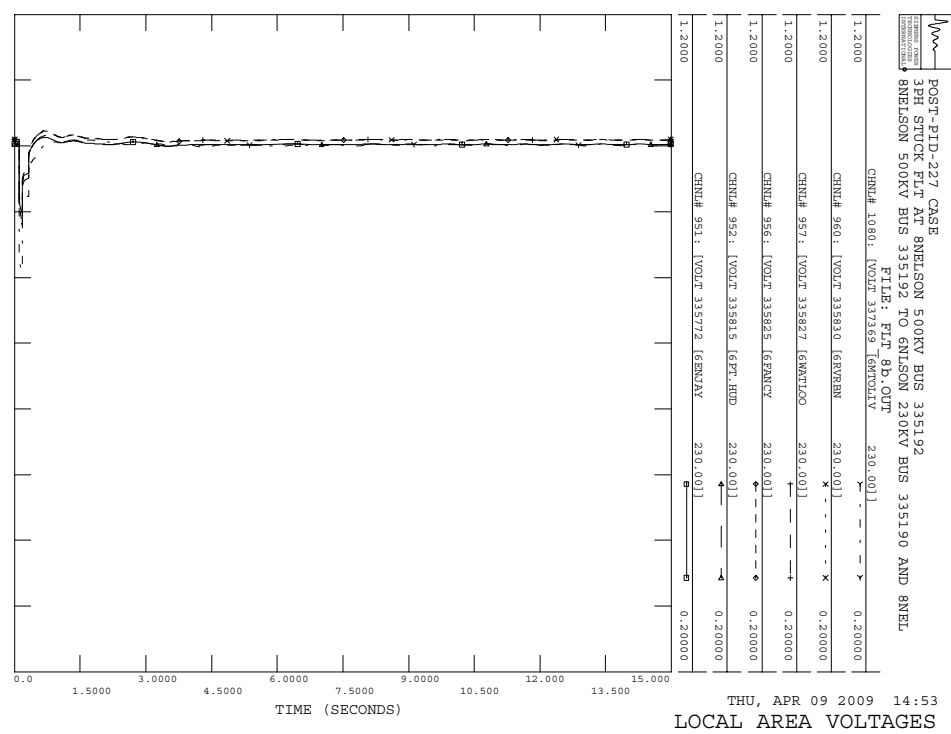


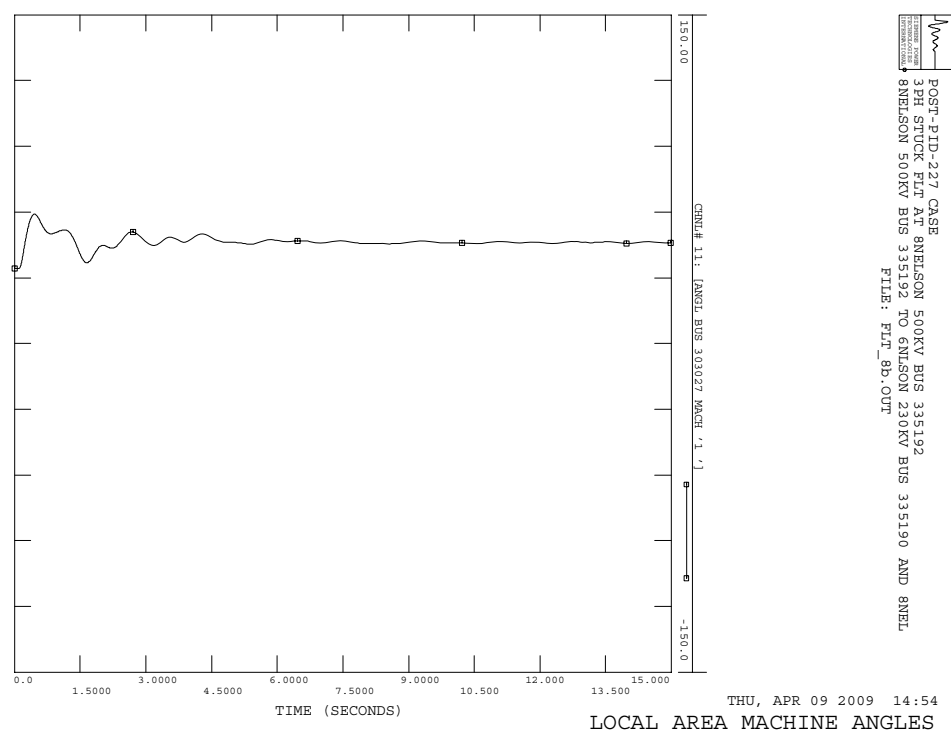
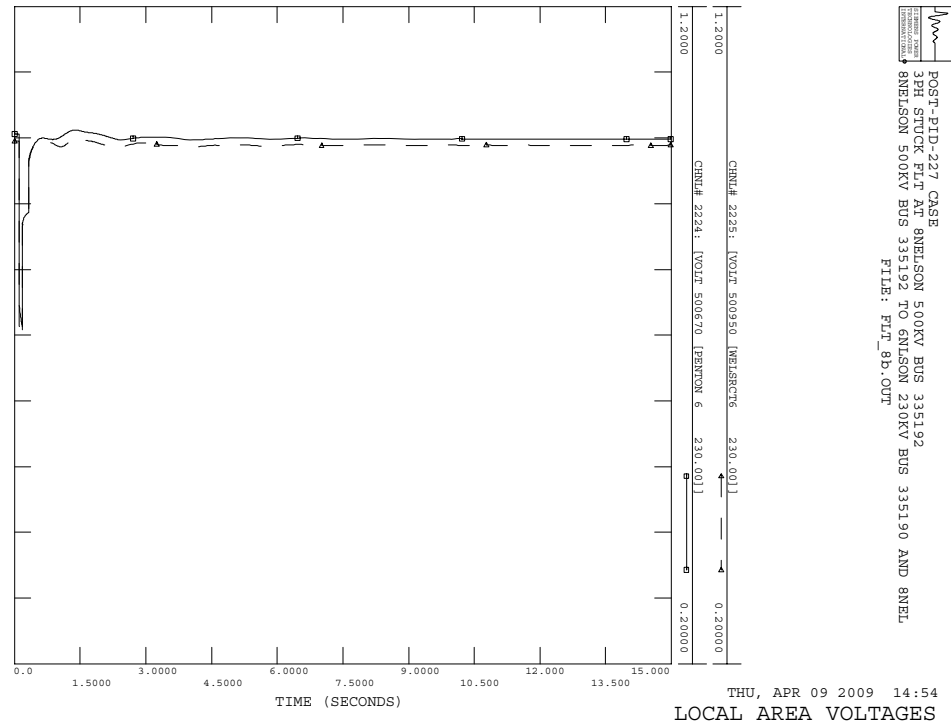
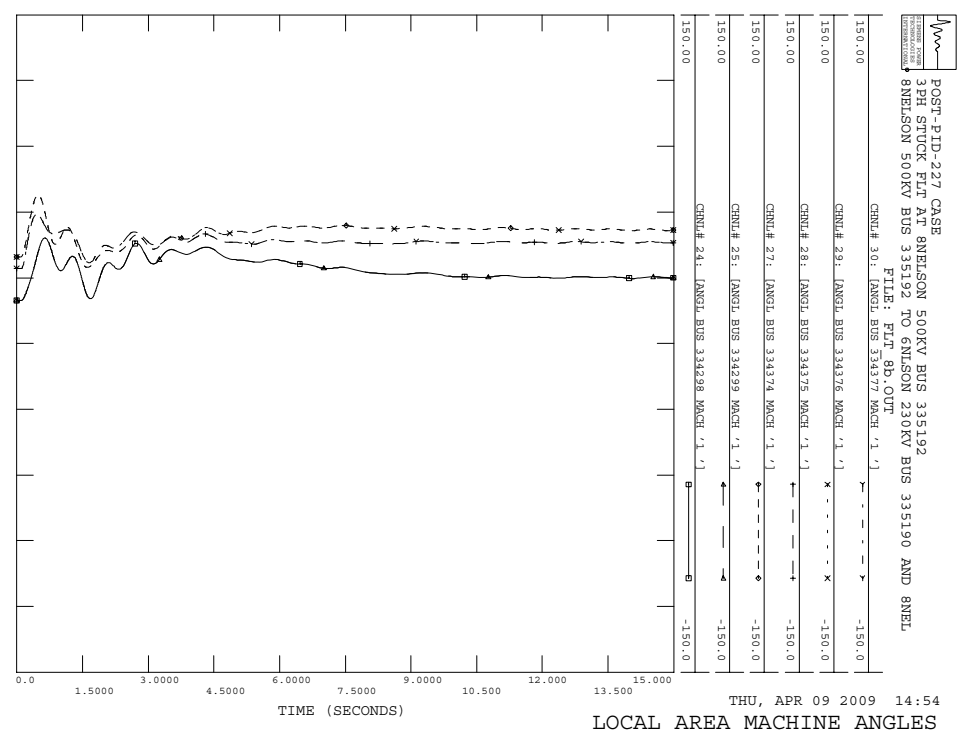
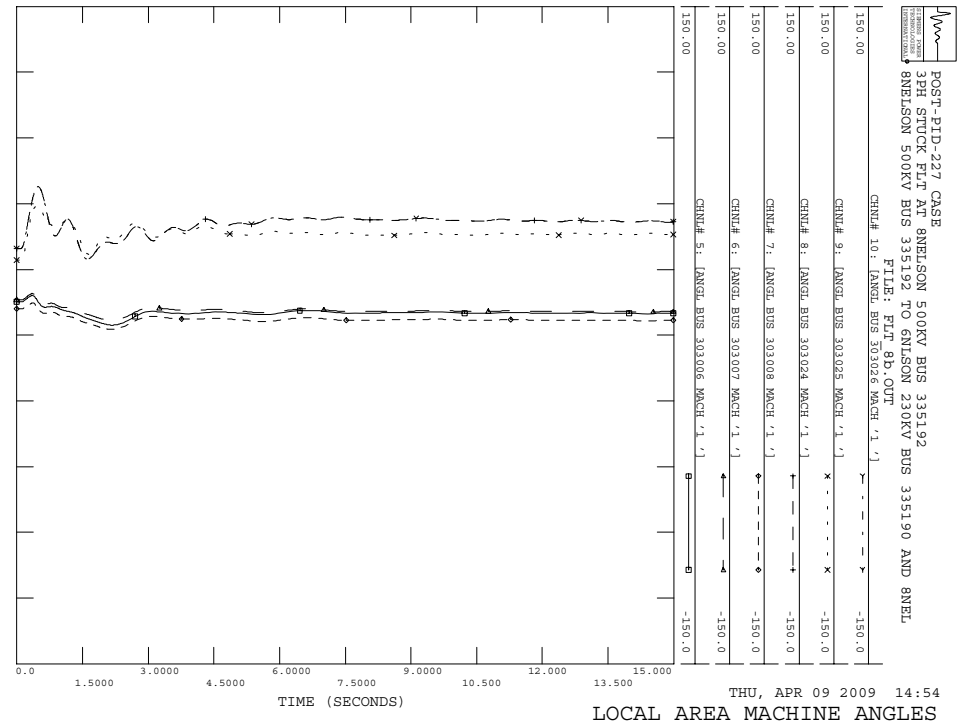
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_8b.0UT



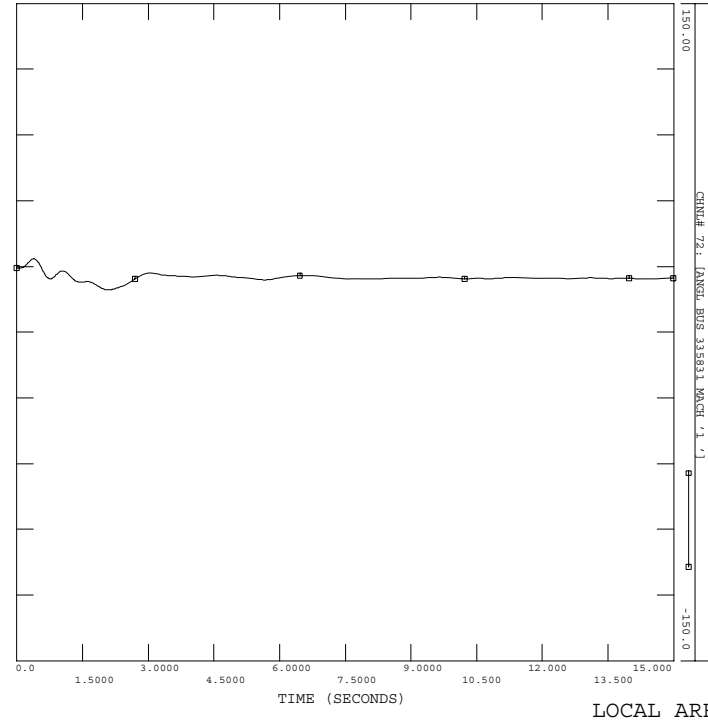
POST-PTD-227 CASE
 3PH STUCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEM
 FILE: FLT_8b.0UT





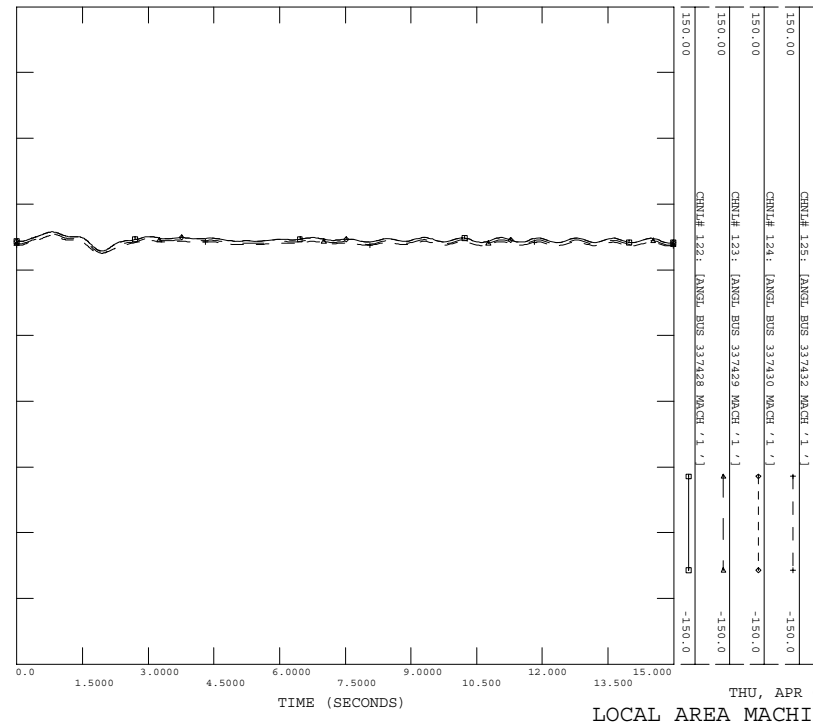


POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_85.OUT



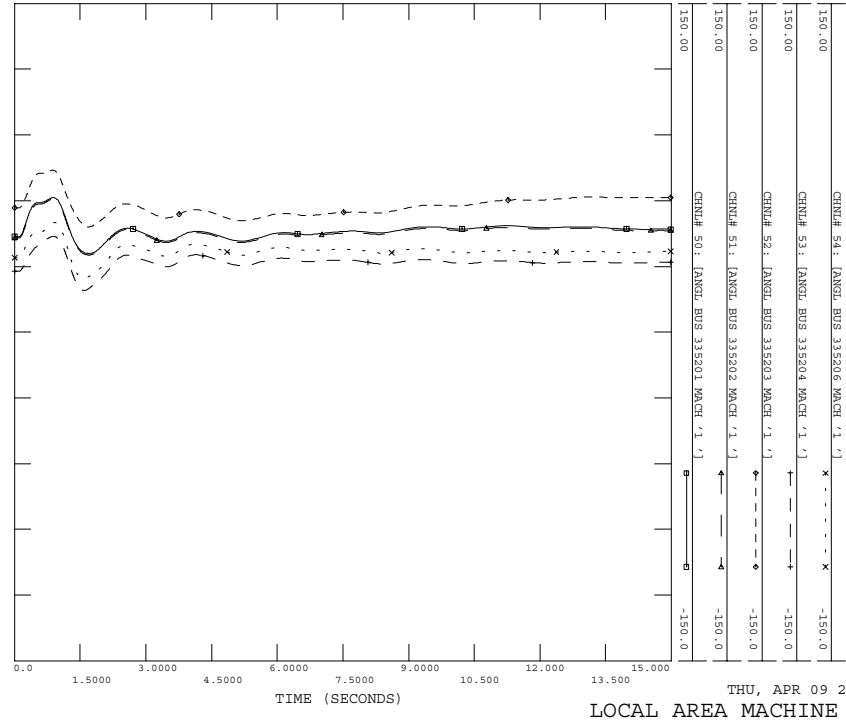
THU, APR 09 2009 14:54
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_85.OUT



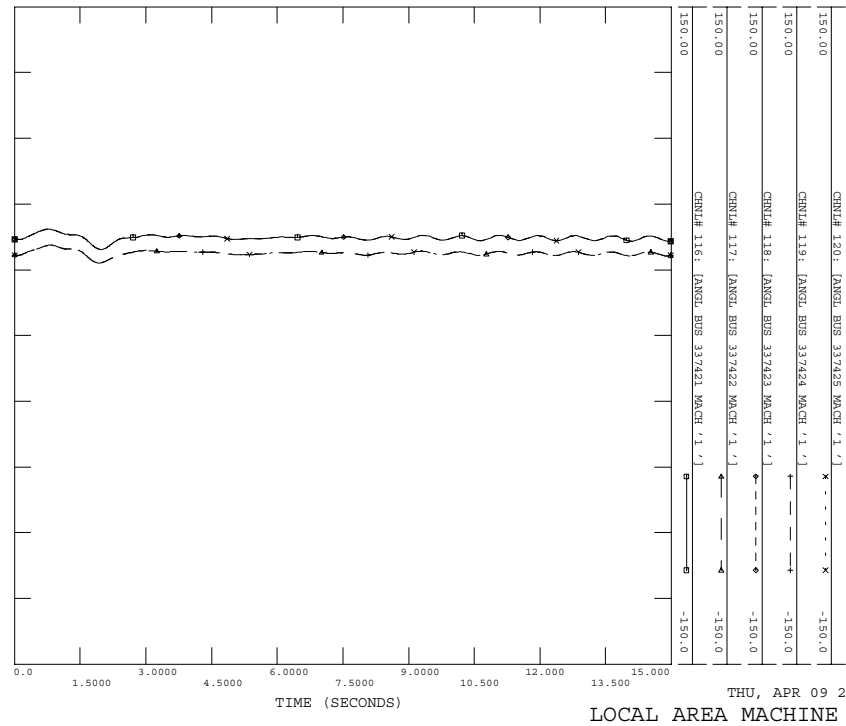
THU, APR 09 2009 14:54
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_85.OUT



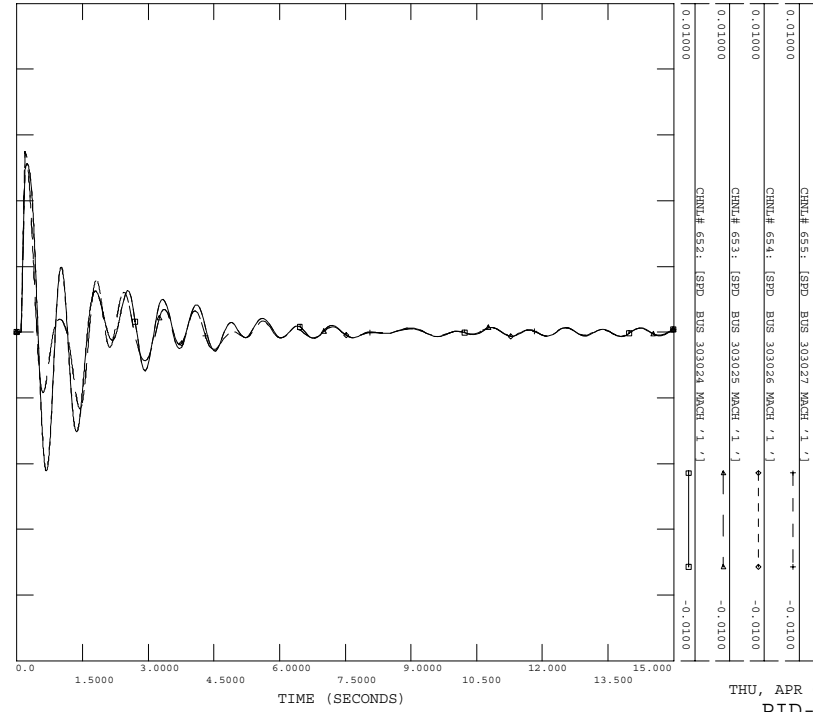
THU, APR 09 2009 14:54
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MELSON 500KV BUS 335192
 8MELSON 500KV BUS 335192 TO GNINSON 230KV BUS 335190 AND 8NEL
 FILE: FLT_85.OUT

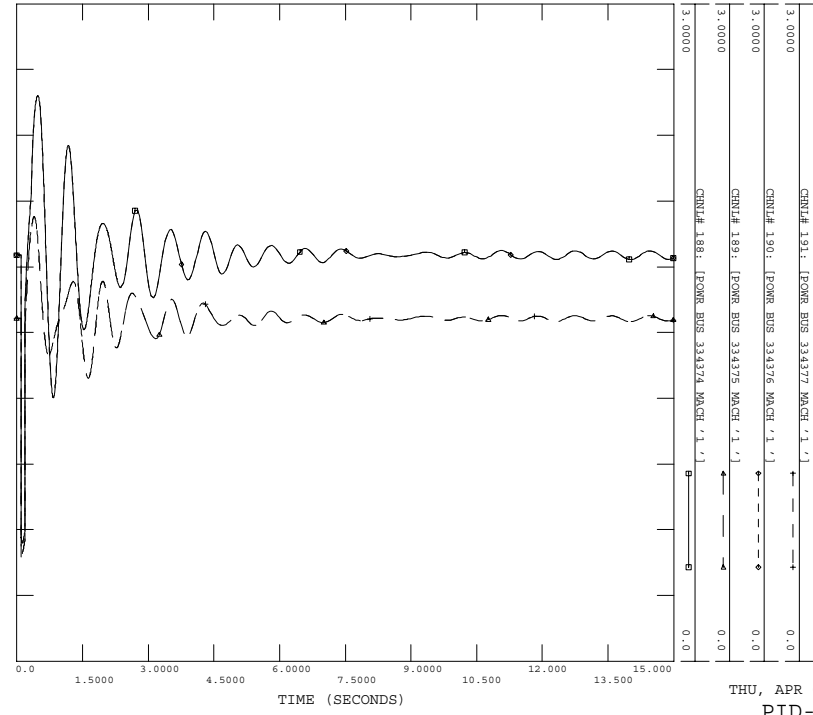


THU, APR 09 2009 14:54
 LOCAL AREA MACHINE ANGLES

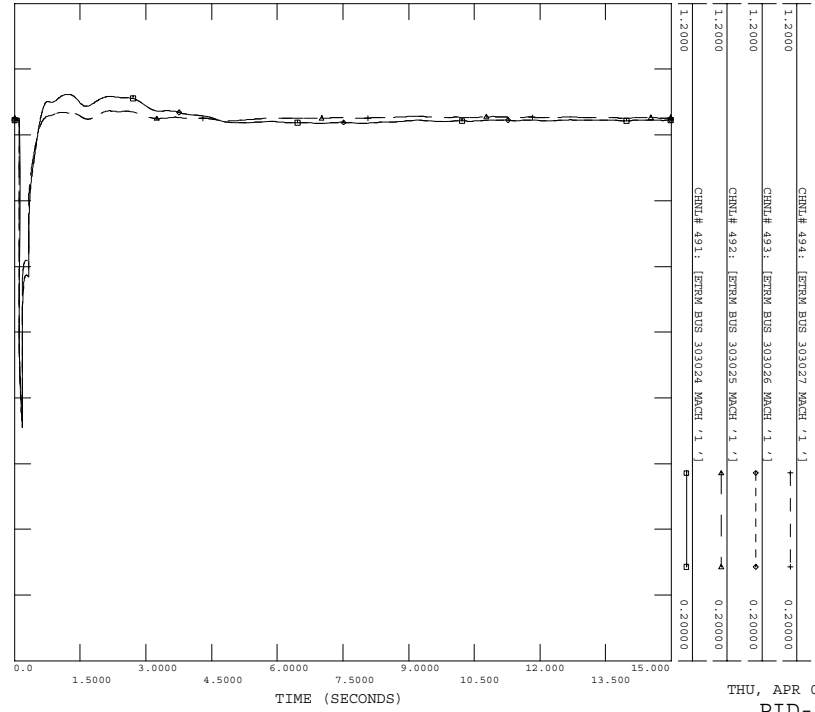
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
 FILE: FLT_8P.OUT



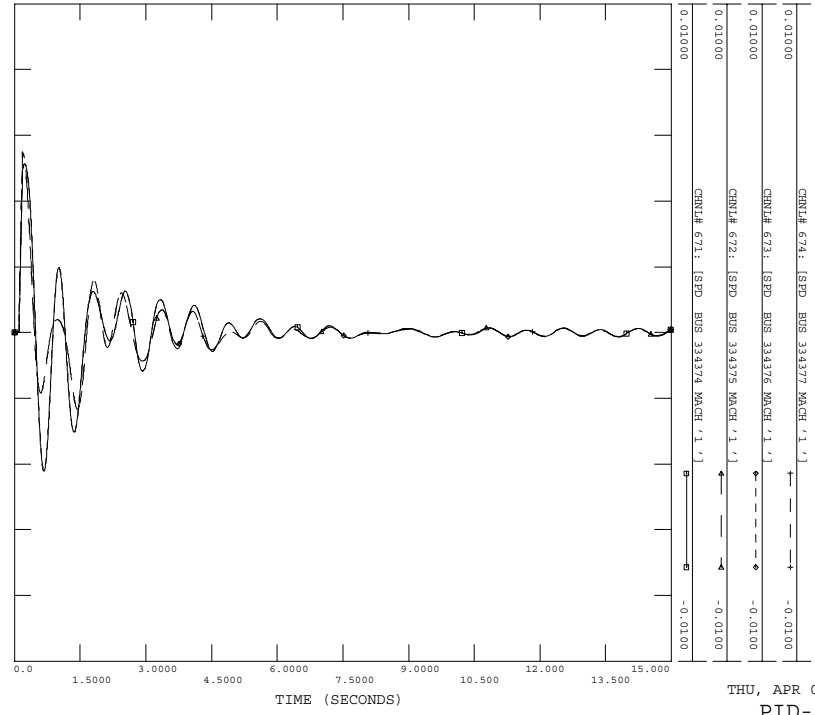
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
 FILE: FLT_8P.OUT



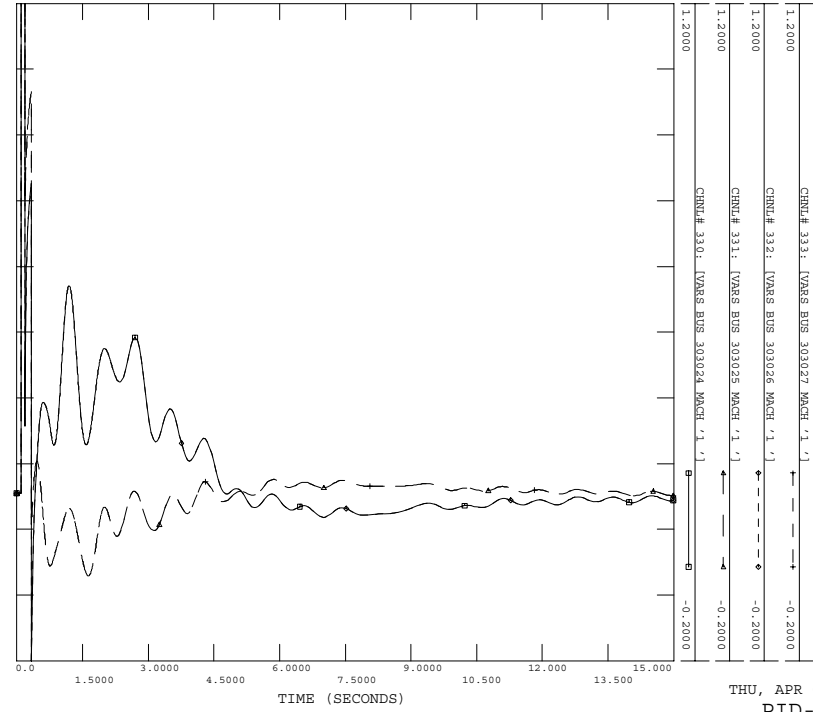
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
 FILE: FLT_8P.OUT



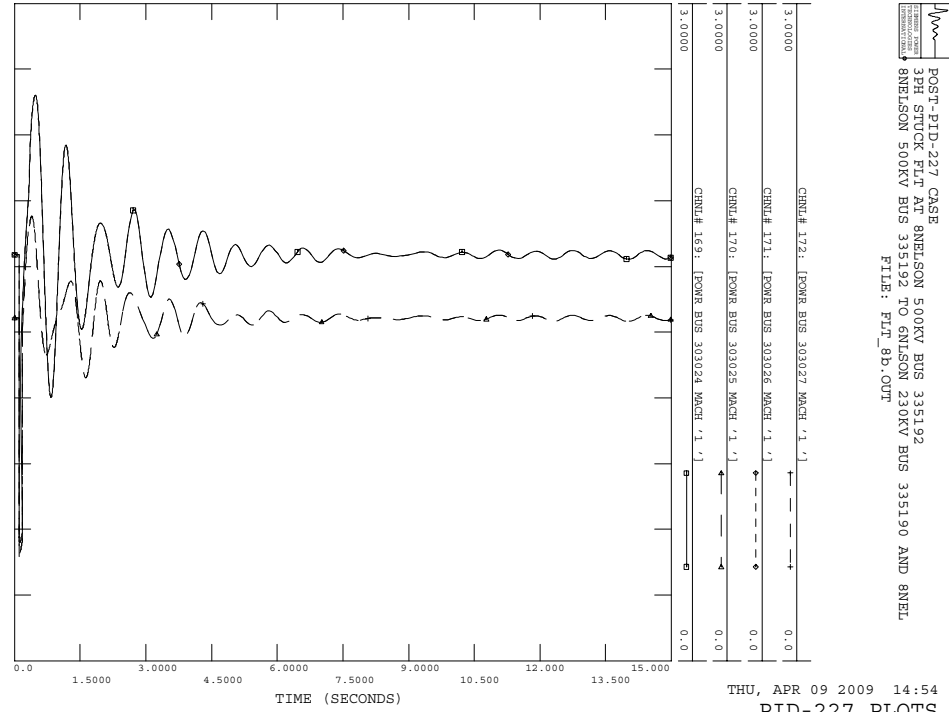
POST-PID-227 CASE
 3PH STOCK FLT AT 8NEMELSON 500KV BUS 335192
 8NEMELSON 500KV BUS 335192 TO 6NEMELSON 230KV BUS 335190 AND 8NEMEL
 FILE: FLT_8P.OUT



POST-PID-227 CASE
3PH STOCK FLT AT 8NELSON 500KV BUS 335192
8NELSON 500KV BUS 335192 TO 8NELSON 230KV BUS 335190 AND 8NEL
FILE: FLT_8P.OUT



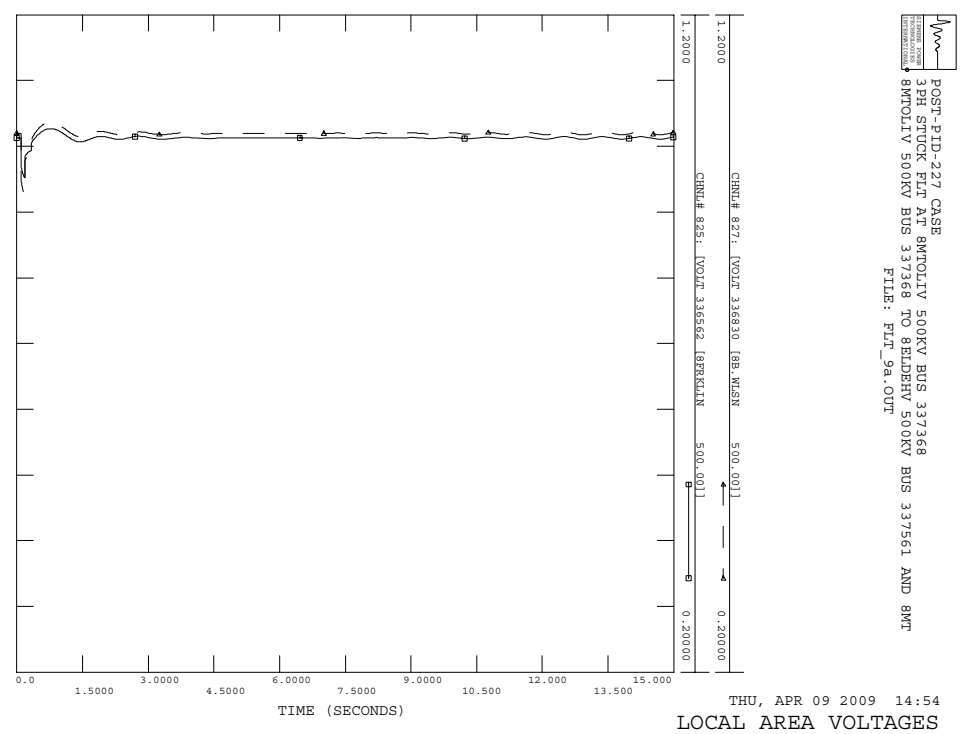
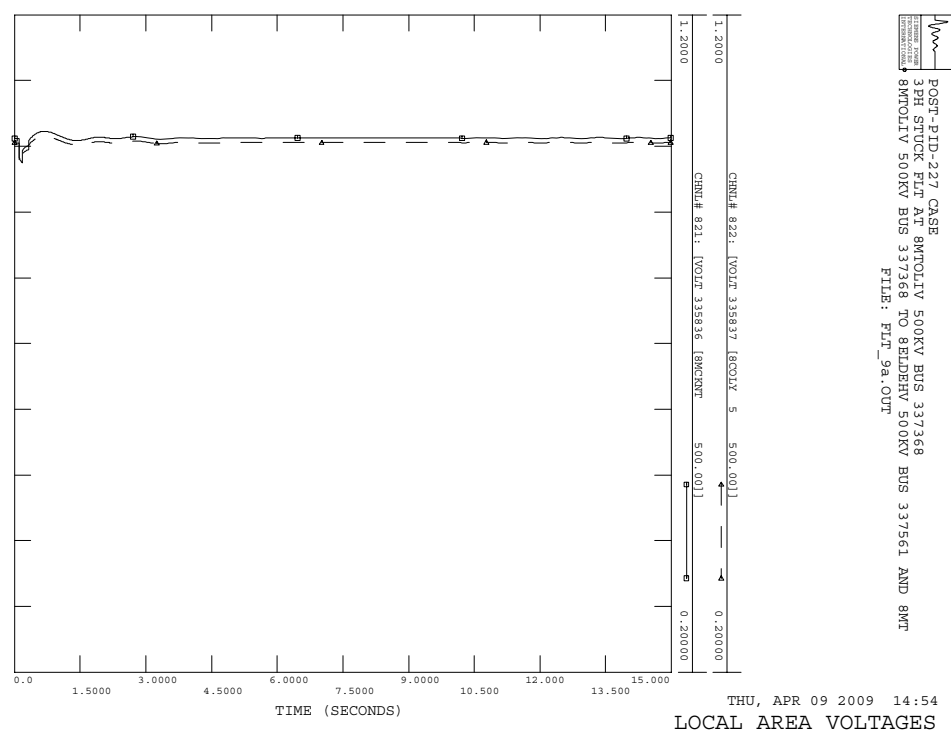
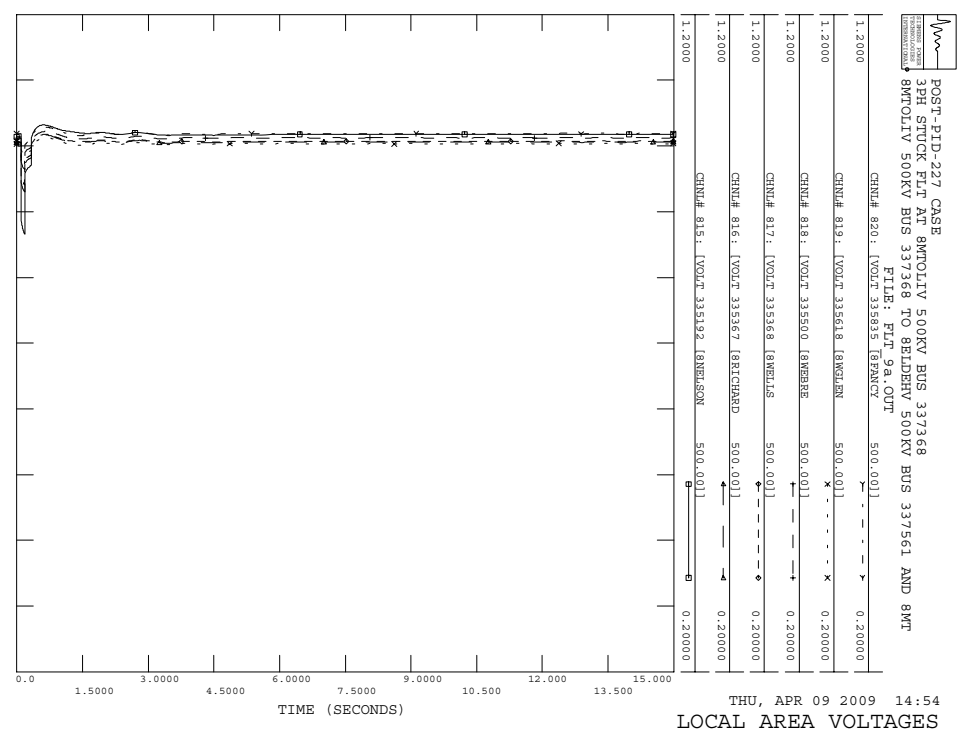
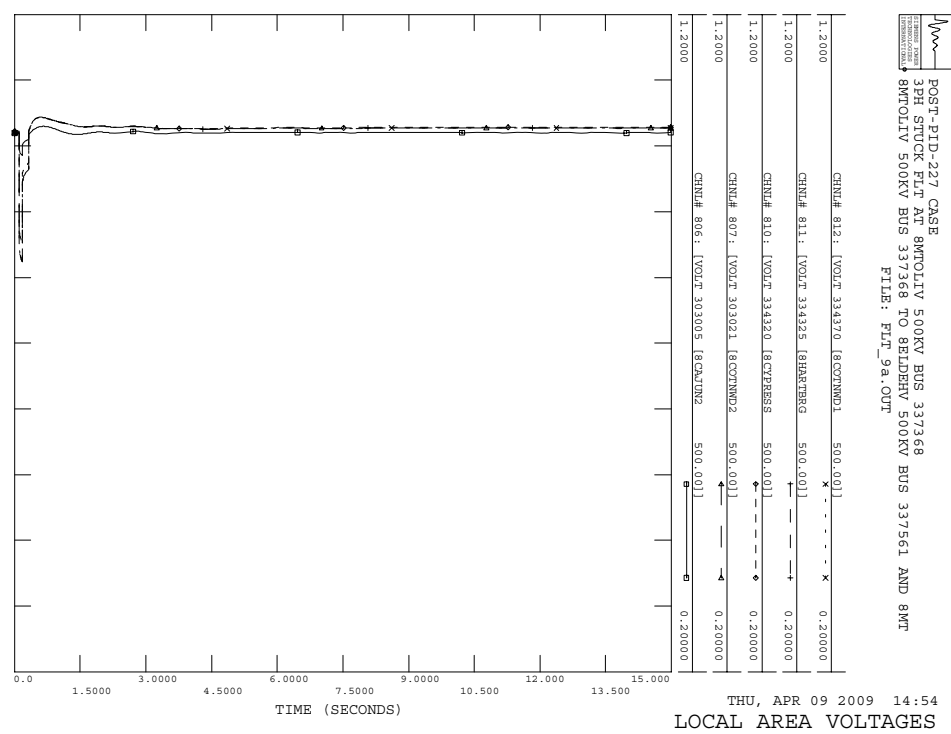
POST-PID-227 CASE
3PH STOCK FLT AT 8NELSON 500KV BUS 335192
8NELSON 500KV BUS 335192 TO 8NELSON 230KV BUS 335190 AND 8NEL
FILE: FLT_8P.OUT



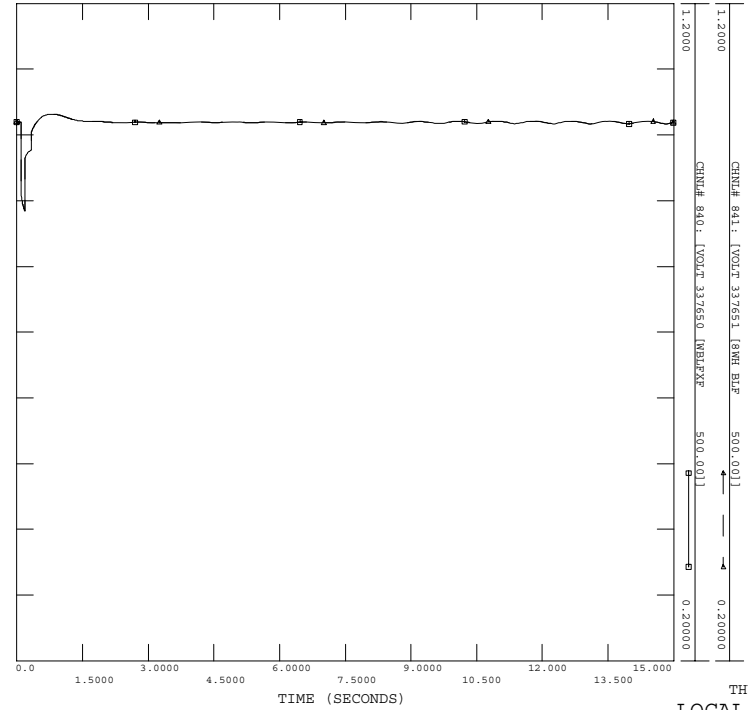
C.23 FLT_9a

Stuck breaker fault on 8MTOLIV (#337368) to 8ELDEHV (#337561) 500 kV line, near the 8MTOLIV.

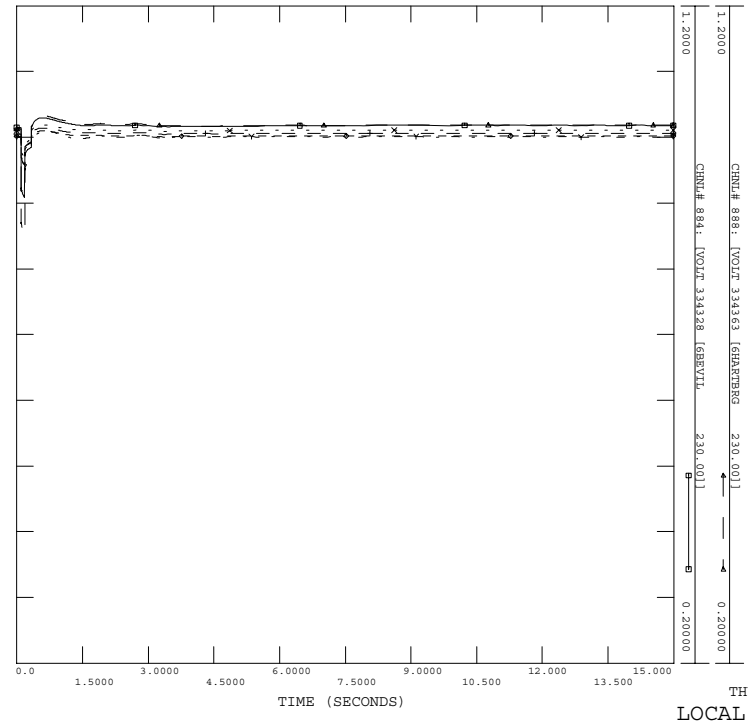
- a) Apply 3 Phase Fault AT 8MTOLIV 500KV BUS 337368
- b) Run fault for 5 cycles
- c) Remove Fault AT 8MTOLIV 500KV BUS 337368
- d) Apply 3 Phase fault at #337368 with admittance $581.37-j2771.31$ MVA
- e) Clear fault after 9 cycles by tripping line from 8MTOLIV 500KV BUS 337368 TO 8ELDEHV 500KV BUS 337561 and transformer from 8MTOLIV 500KV BUS 337368 TO 6MTOLIV 230KV BUS 337369.



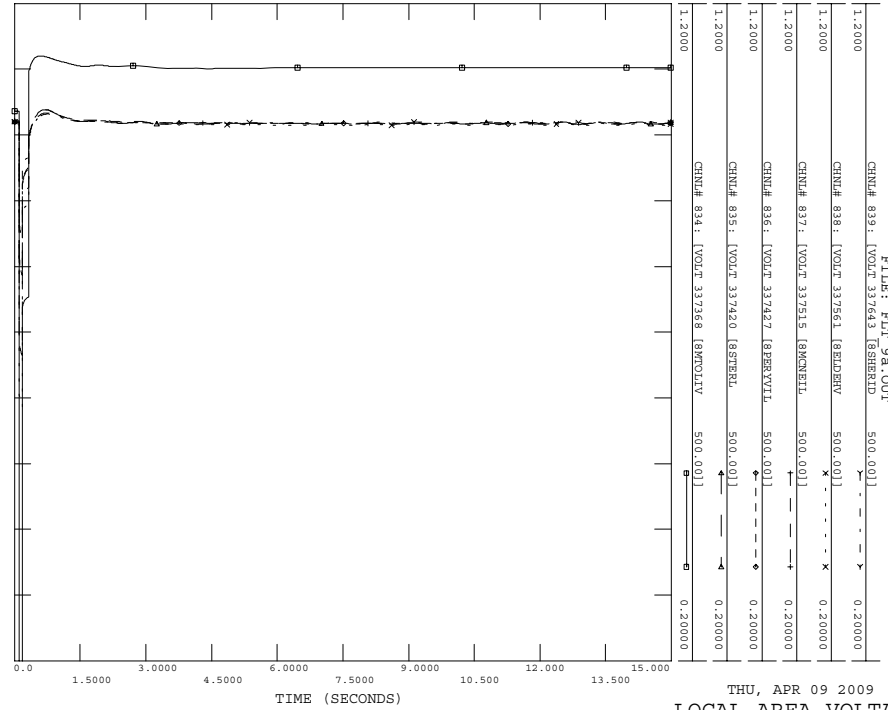
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLLY 500KV BUS 337368
 8MTOLLY 500KV BUS 337368 TO BLDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



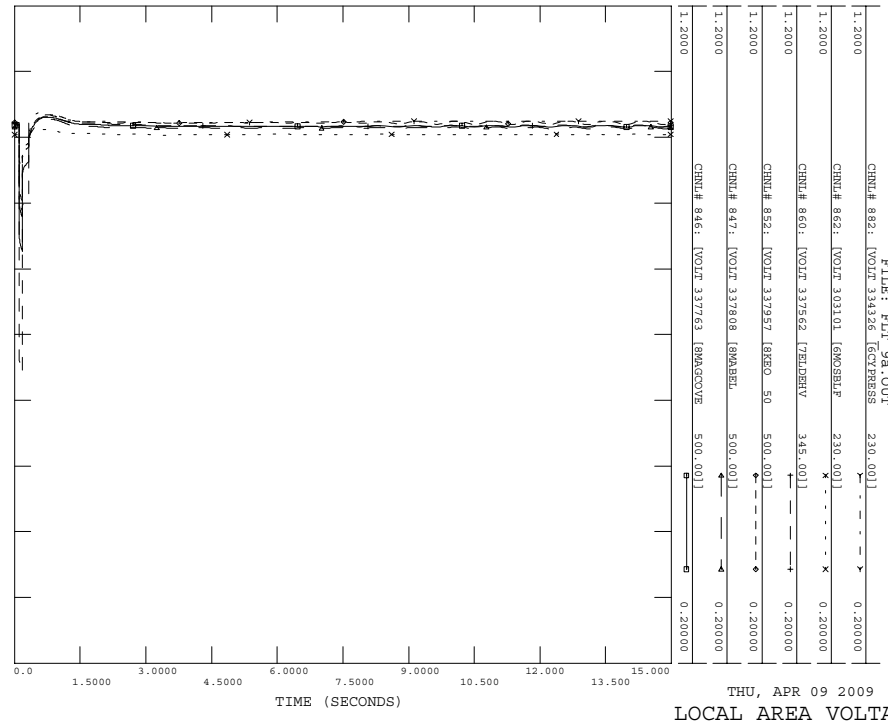
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLLY 500KV BUS 337368
 8MTOLLY 500KV BUS 337368 TO BLDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT

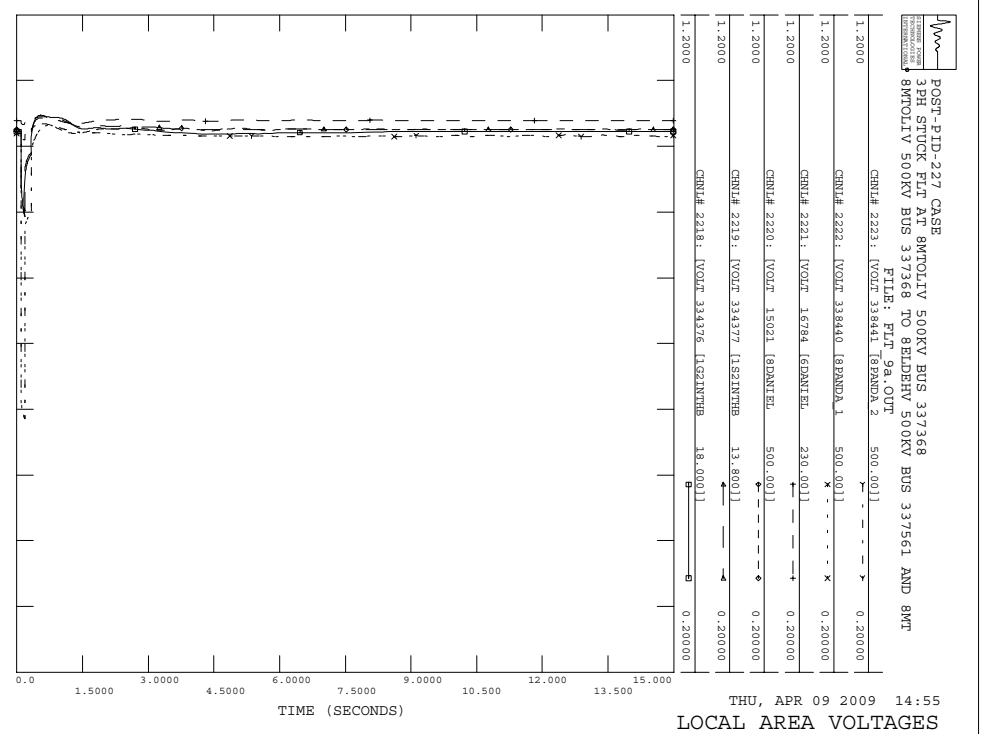
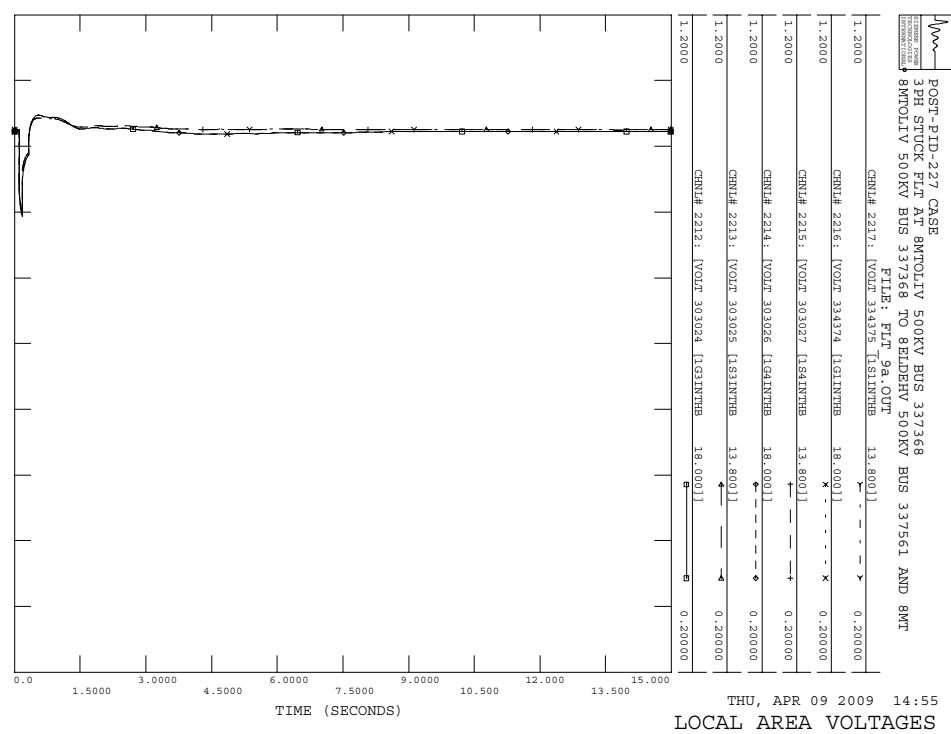
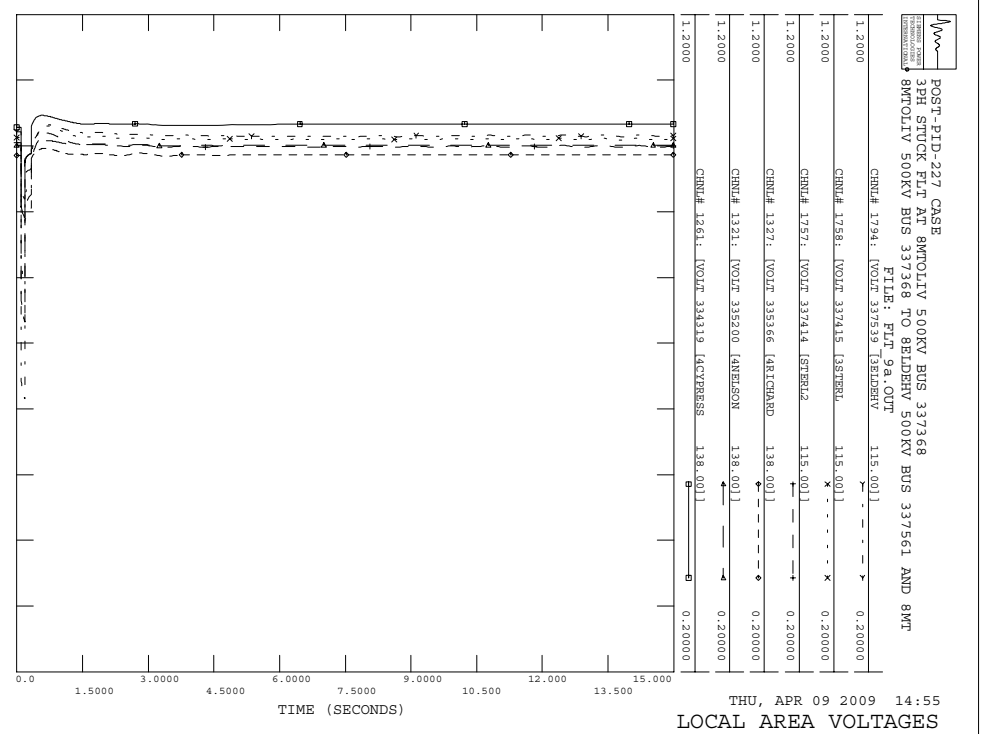
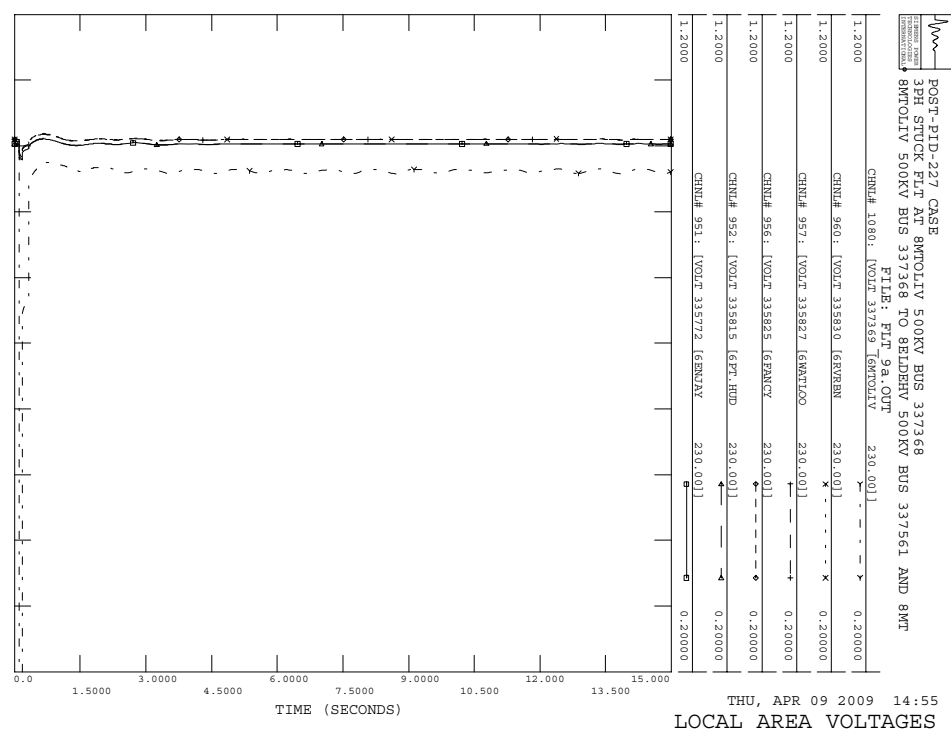


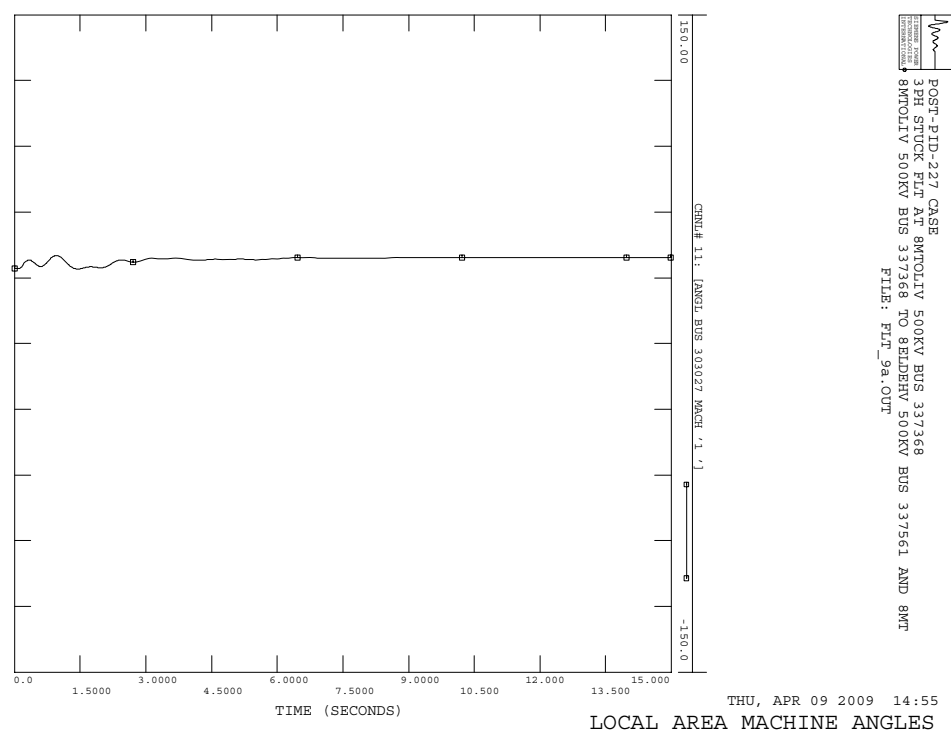
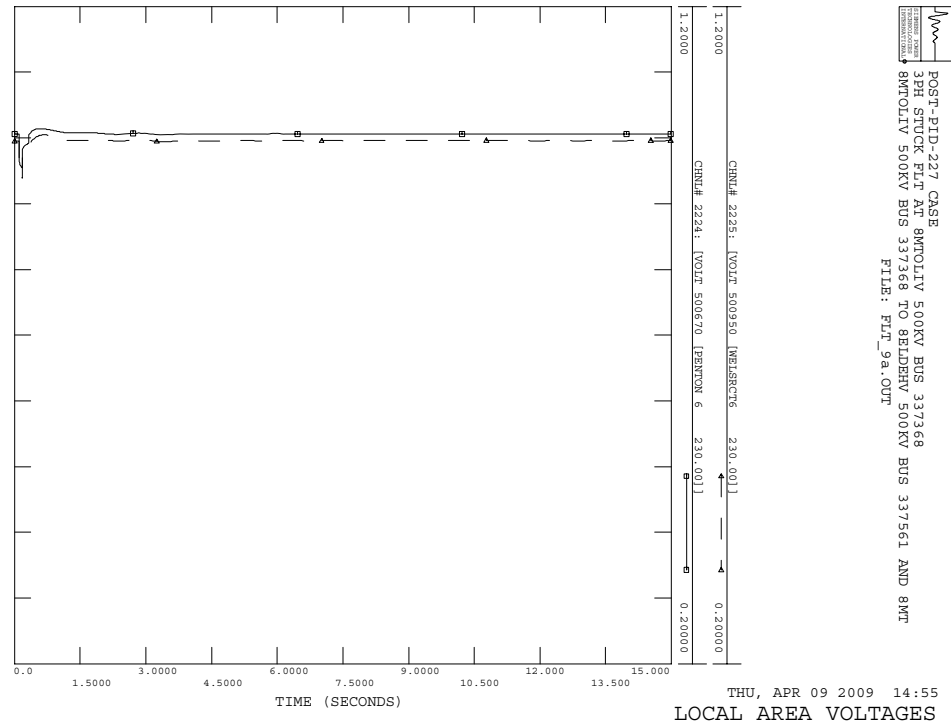
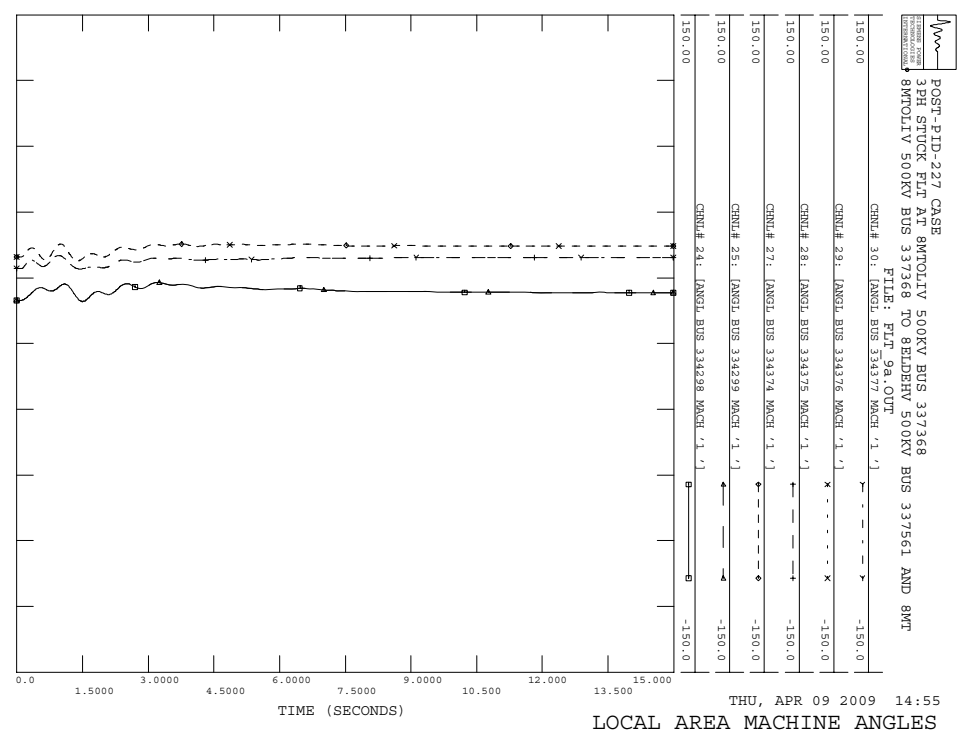
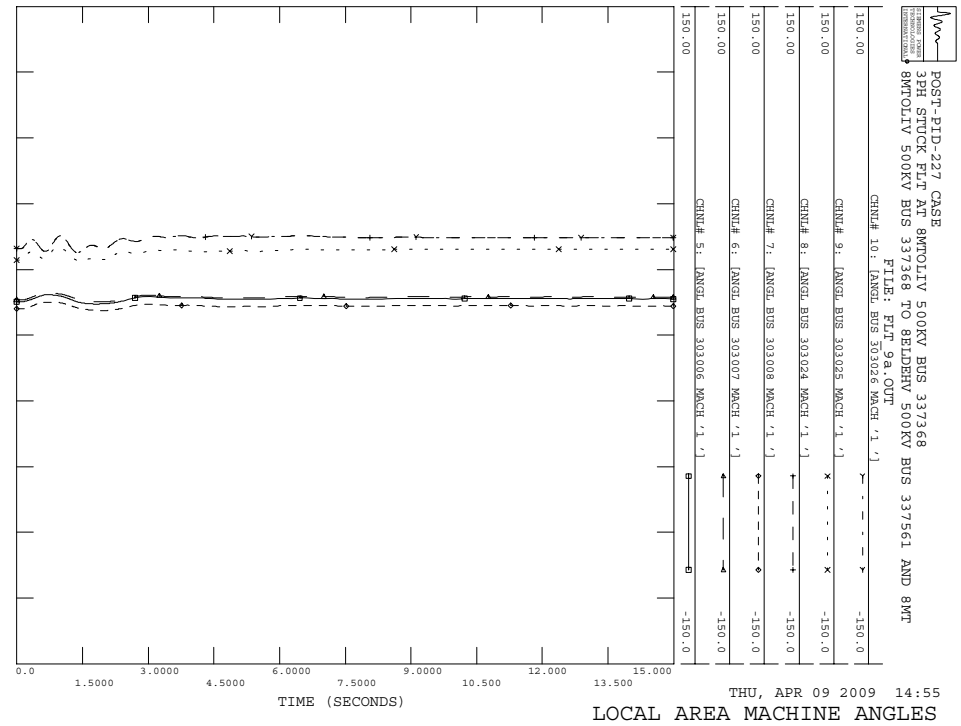
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLLY 500KV BUS 337368
 8MTOLLY 500KV BUS 337368 TO BLDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



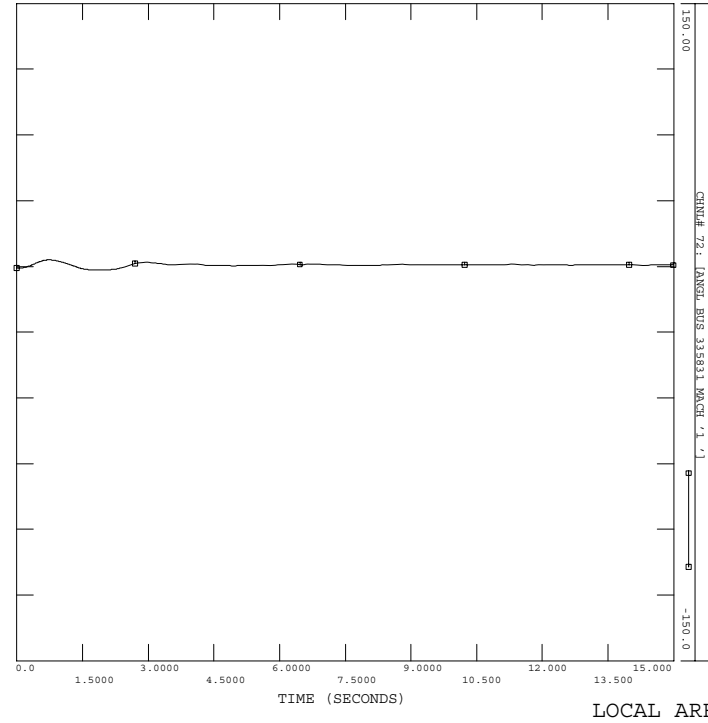
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLLY 500KV BUS 337368
 8MTOLLY 500KV BUS 337368 TO BLDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



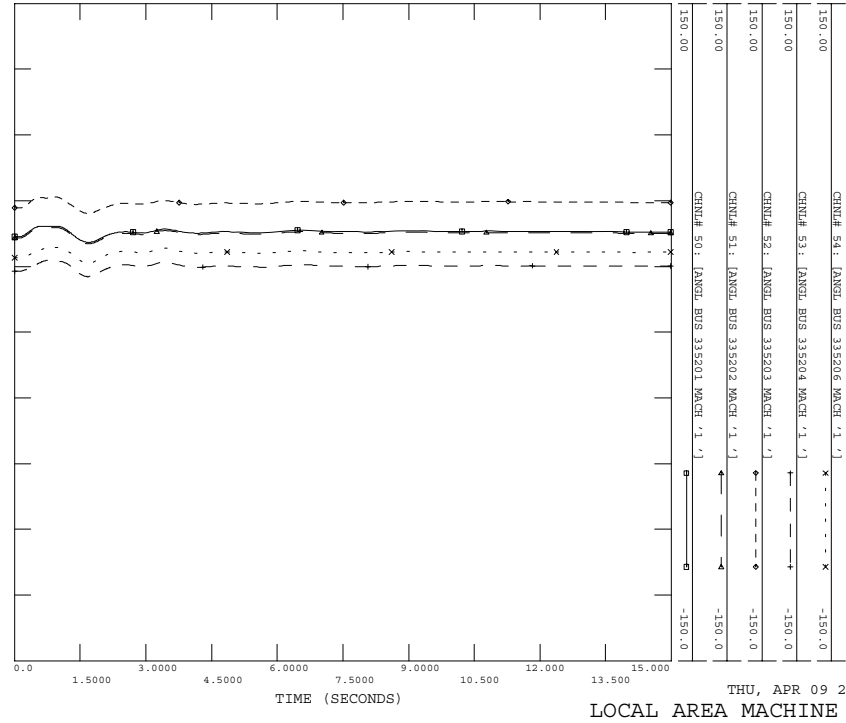




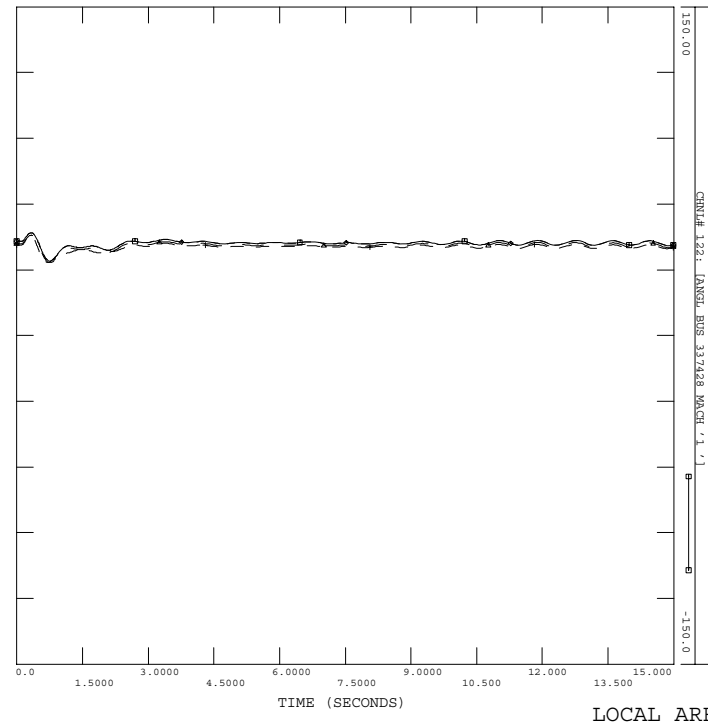
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_98.OUT



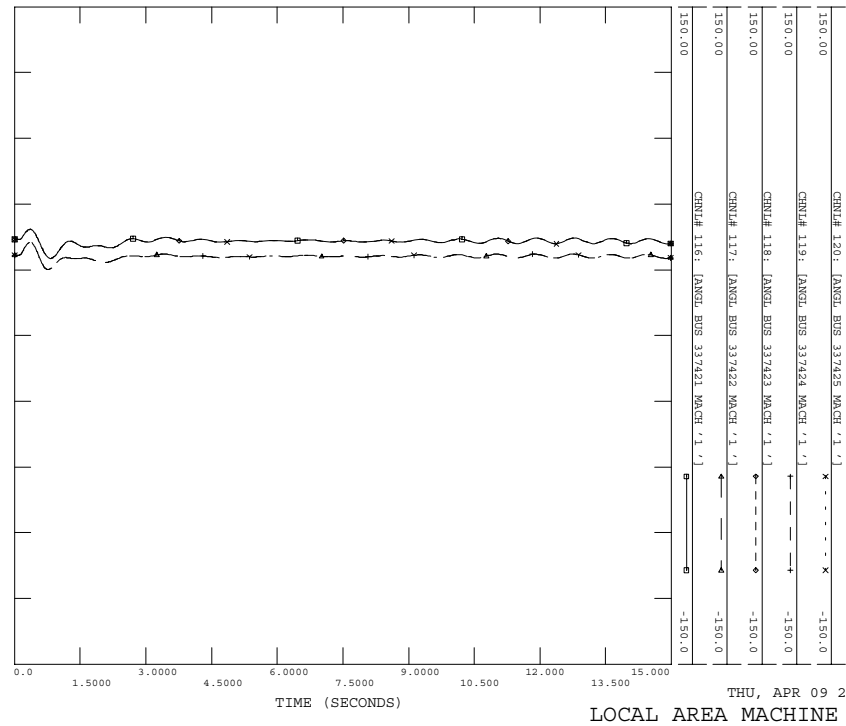
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_98.OUT



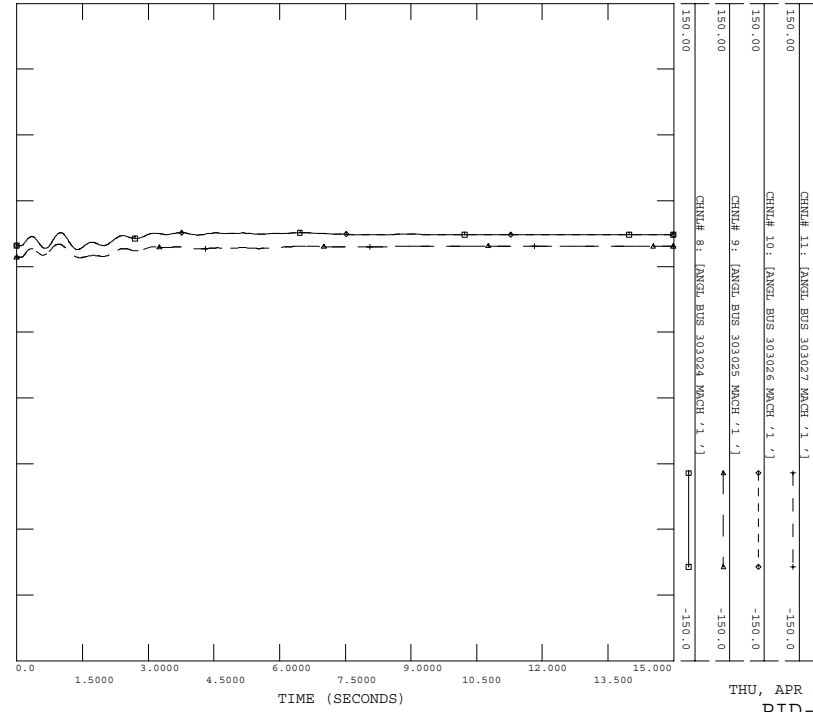
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_98.OUT



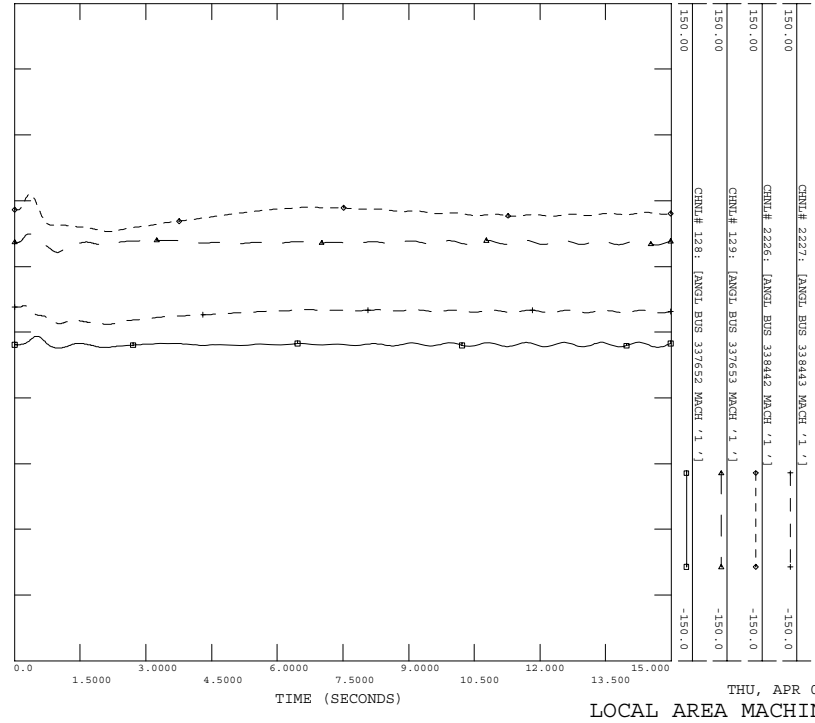
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_98.OUT



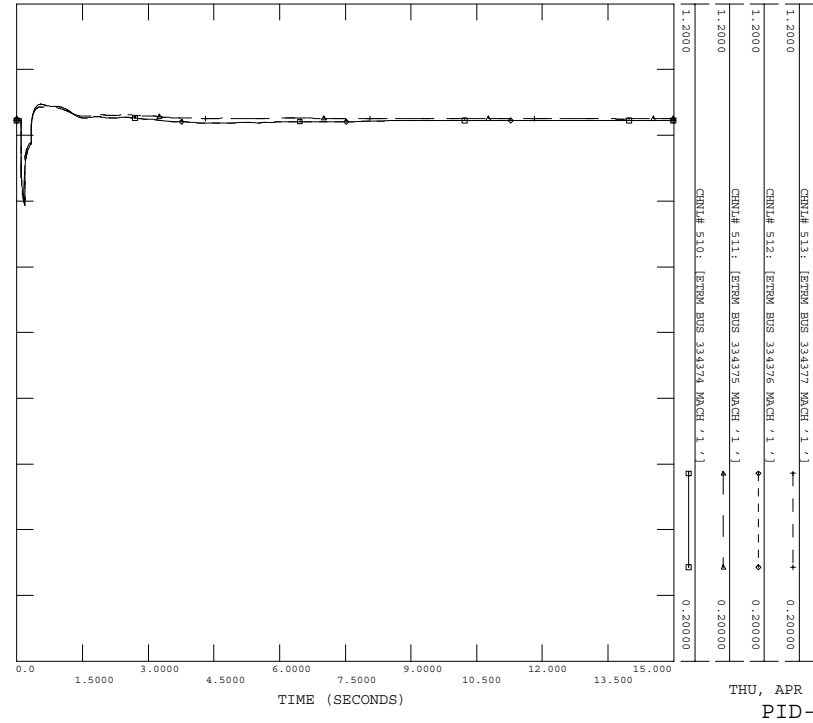
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



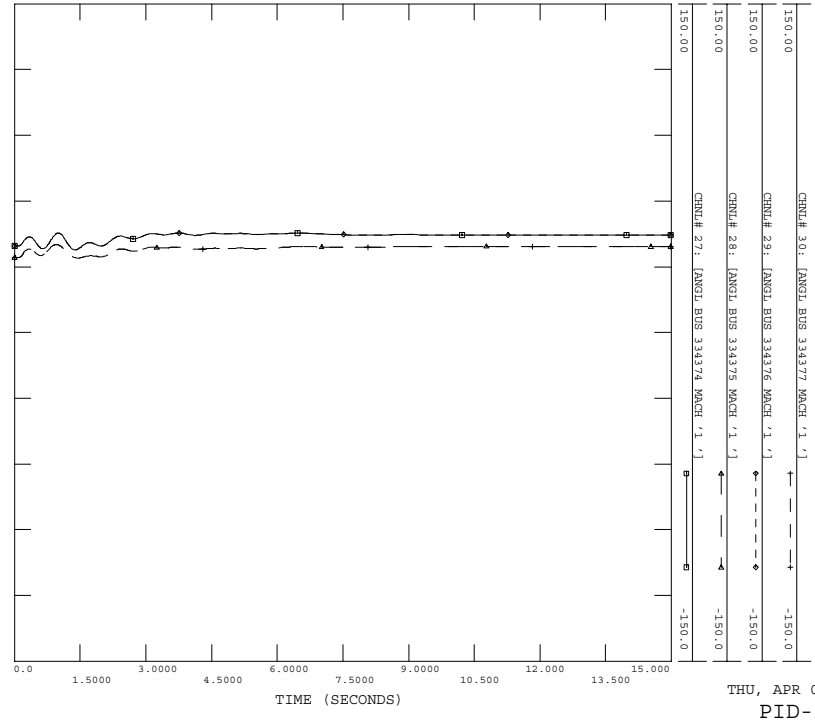
POST-PID-227 CASE
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 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



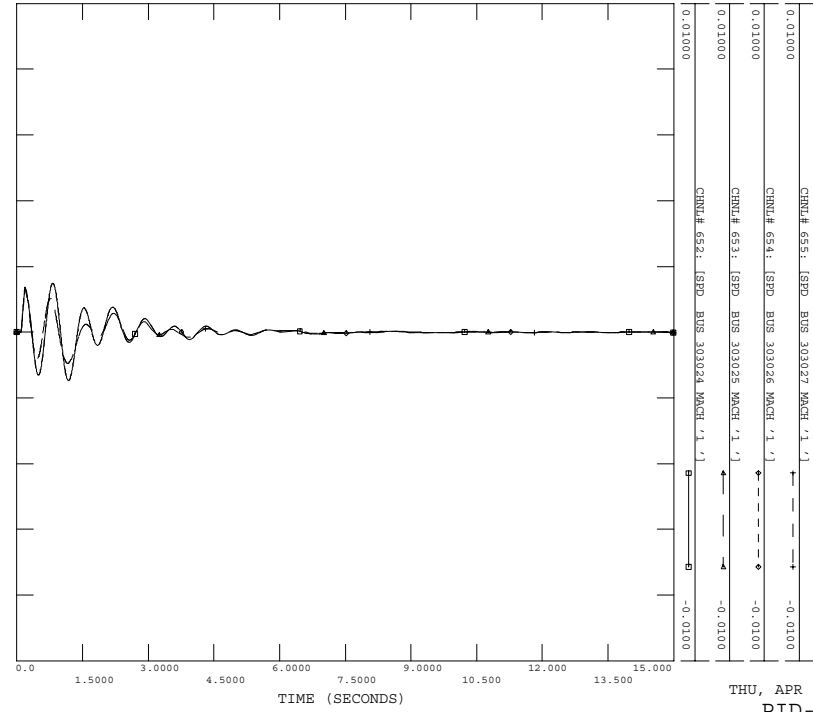
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



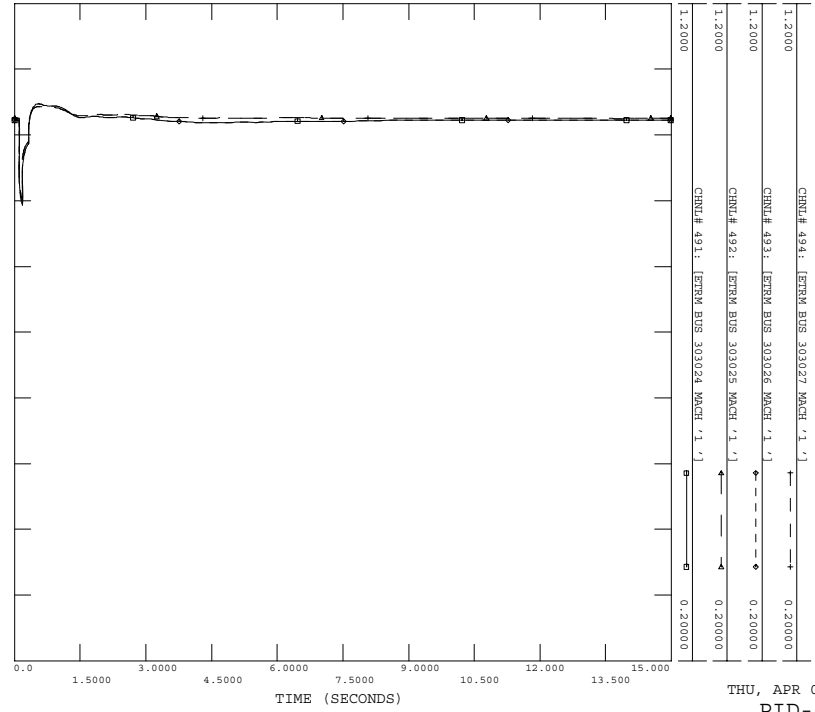
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
 FILE: FLT_9a.OUT



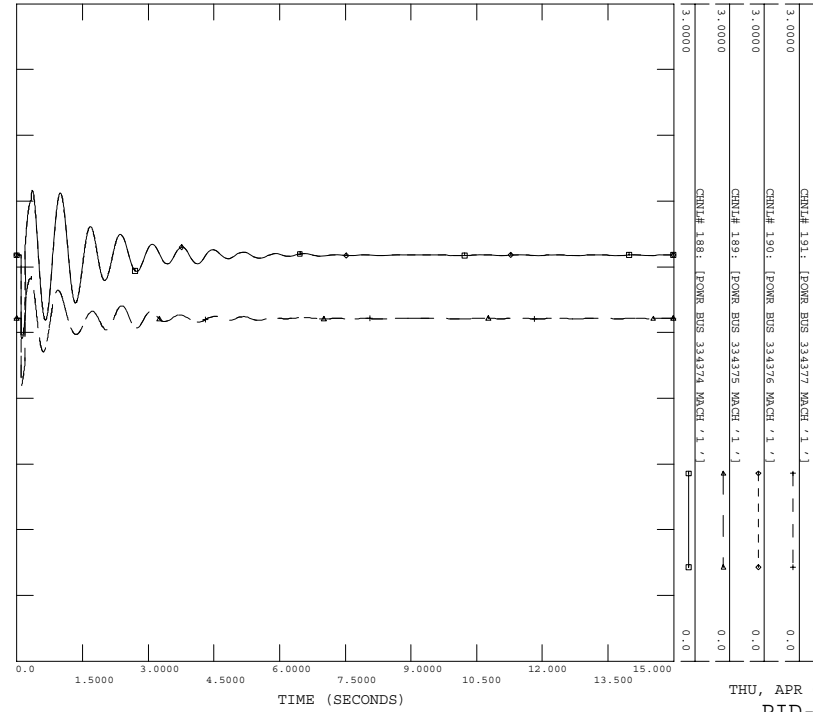
POST-PID-227 CASE
3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
FILE: FLT_9a.OUT



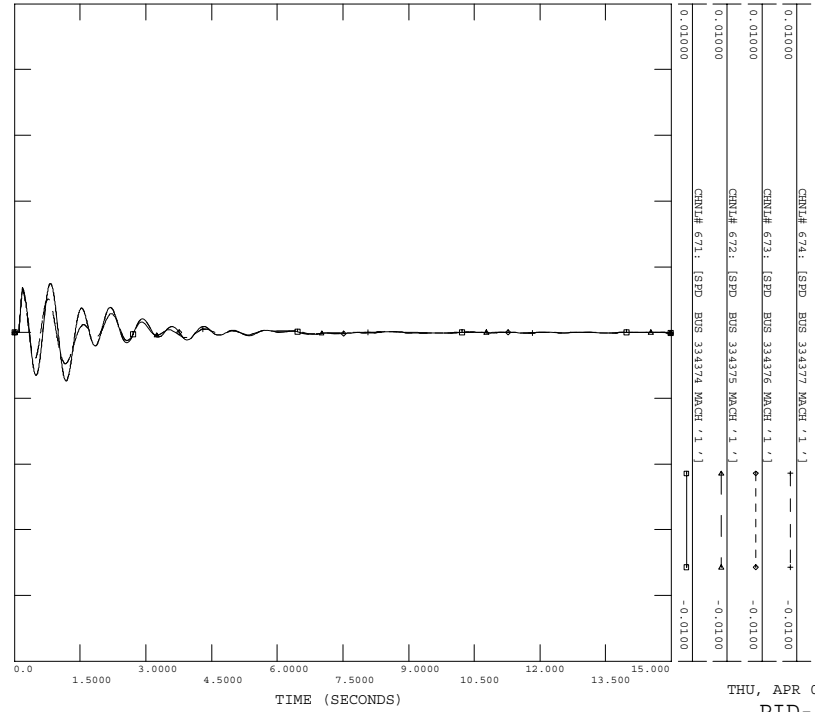
POST-PID-227 CASE
3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
FILE: FLT_9a.OUT



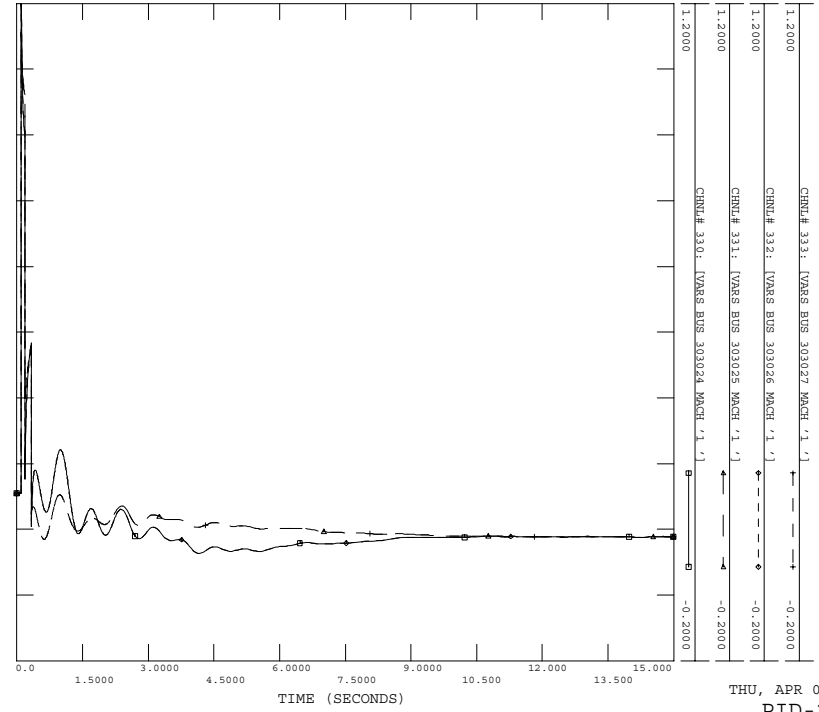
POST-PID-227 CASE
3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
FILE: FLT_9a.OUT



POST-PID-227 CASE
3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
FILE: FLT_9a.OUT

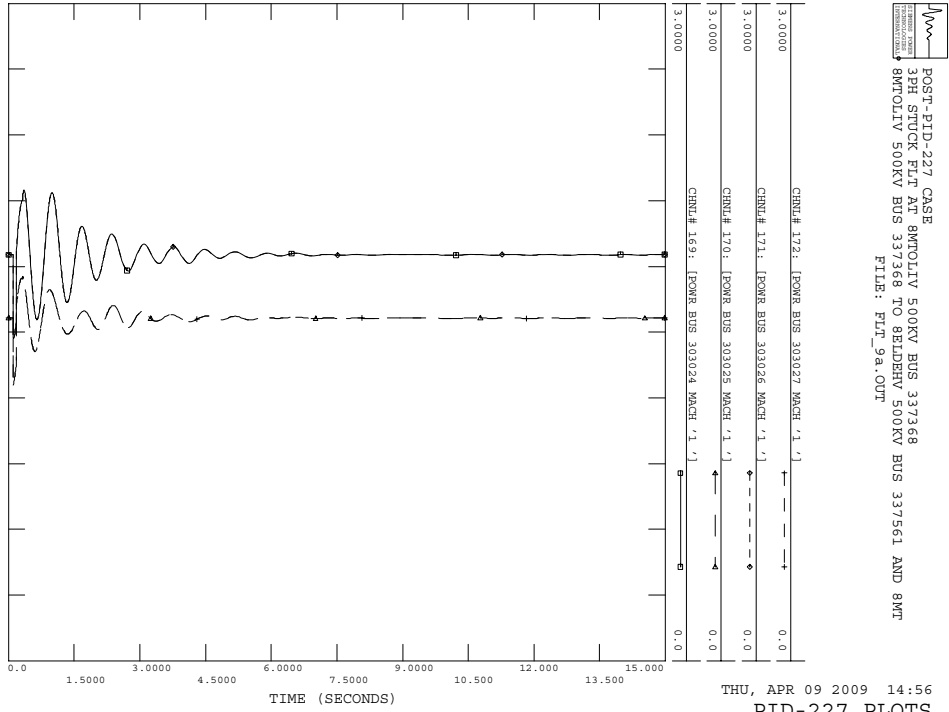


POST-PID-227 CASE
3PH STOCK FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
FILE: FLT_98.OUT



THU, APR 09 2009 14:56
PID-227 PLOTS

POST-PID-227 CASE
3PH STOCK FLT AT 8MTOLIV 500KV BUS 337368
8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8MT
FILE: FLT_98.OUT



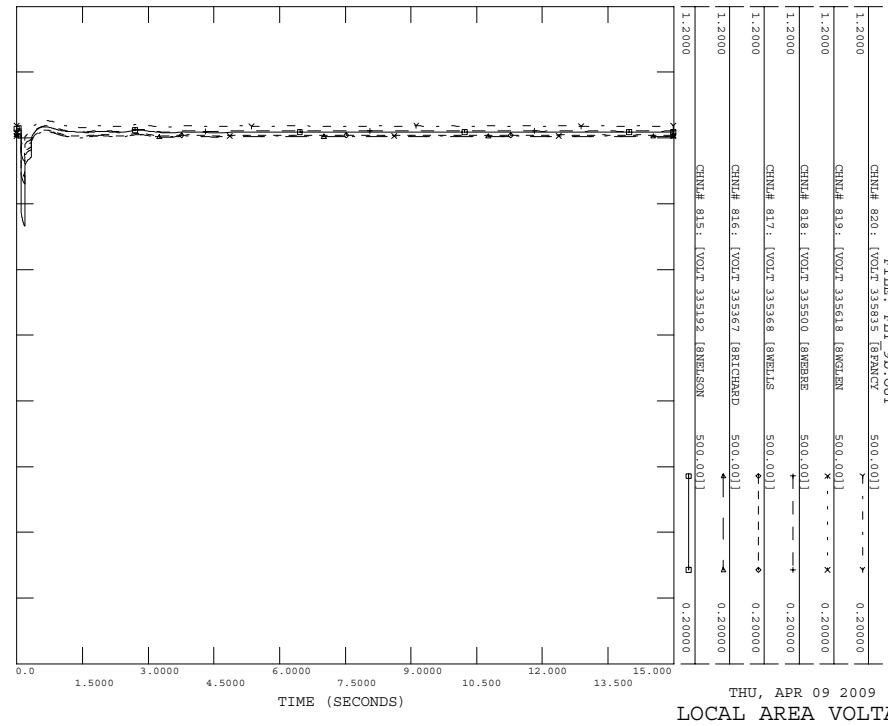
THU, APR 09 2009 14:56
PID-227 PLOTS

C.24 FLT_9b

Stuck breaker fault on 8MTOLIV (#337368) to 8ELDEHV (#337561) 500 kV line, near the 8MTOLIV.

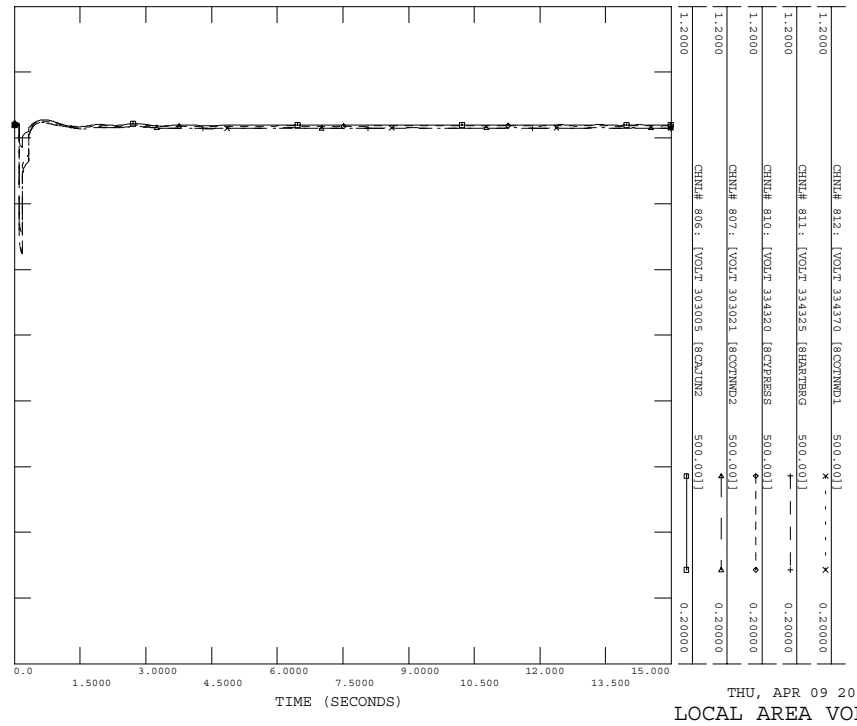
- a) Apply 3 Phase Fault AT 8MTOLIV 500KV BUS 337368
- b) Run fault for 5 cycles
- c) Remove Fault AT 8MTOLIV 500KV BUS 337368
- d) Apply 3 Phase fault at #337368 with admittance $581.37-j2771.31$ MVA
- e) Clear fault after 9 cycles by tripping lines from 8MTOLIV 500KV BUS 337368 TO 8ELDEHV 500KV BUS 337561 and 8HARTBRG 500KV BUS 334325 TO 8MTOLIV 500KV BUS 337368.

POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



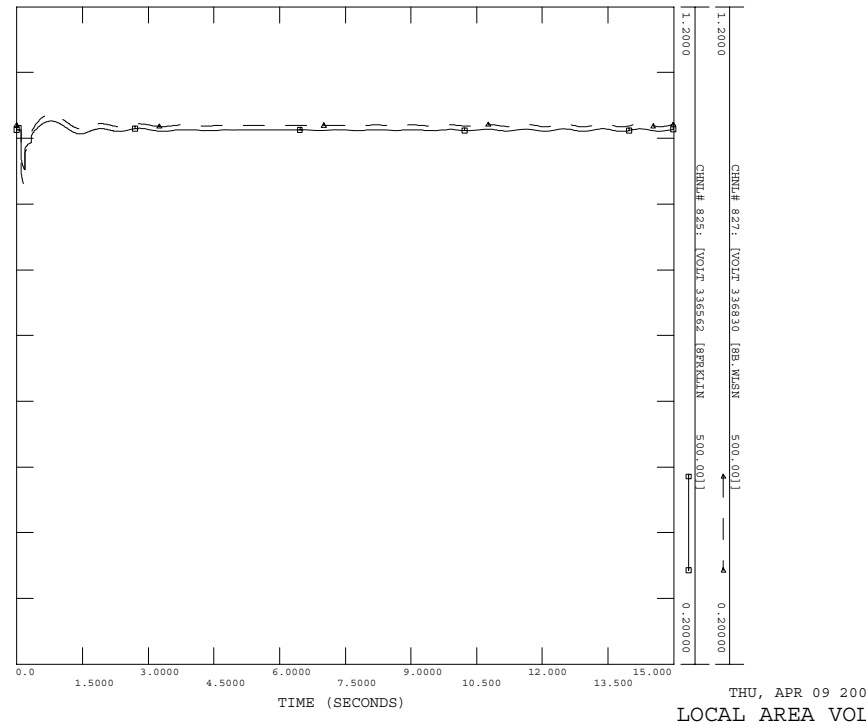
THU, APR 09 2009 14:56
 LOCAL AREA VOLTAGES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



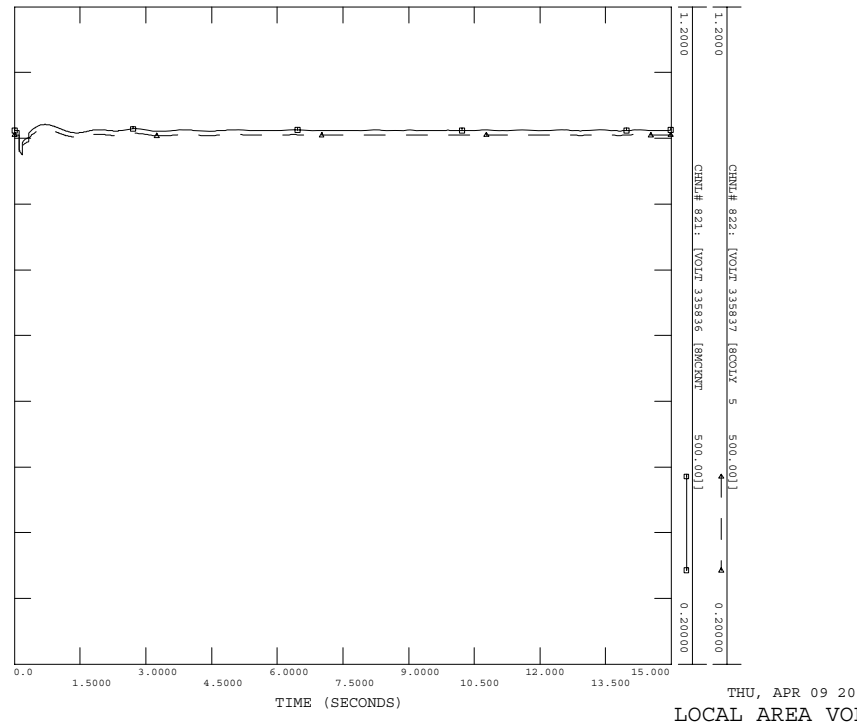
THU, APR 09 2009 14:56
 LOCAL AREA VOLTAGES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



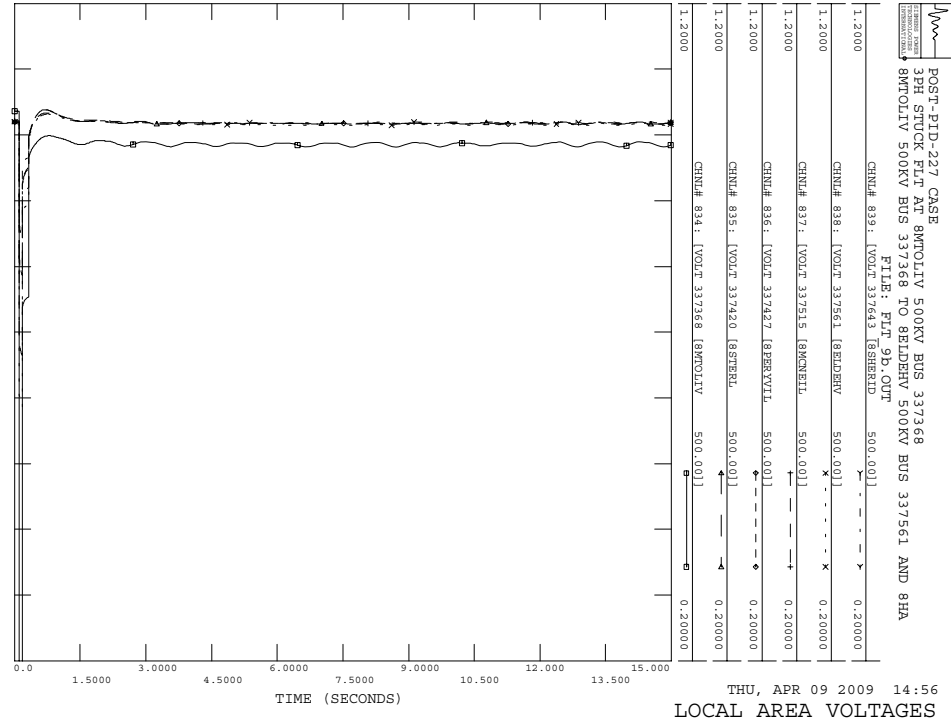
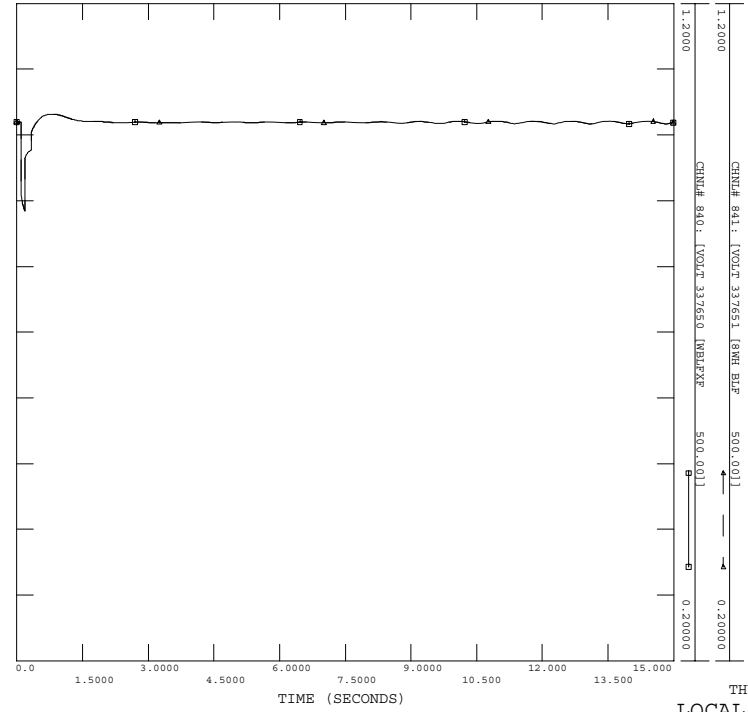
THU, APR 09 2009 14:56
 LOCAL AREA VOLTAGES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT

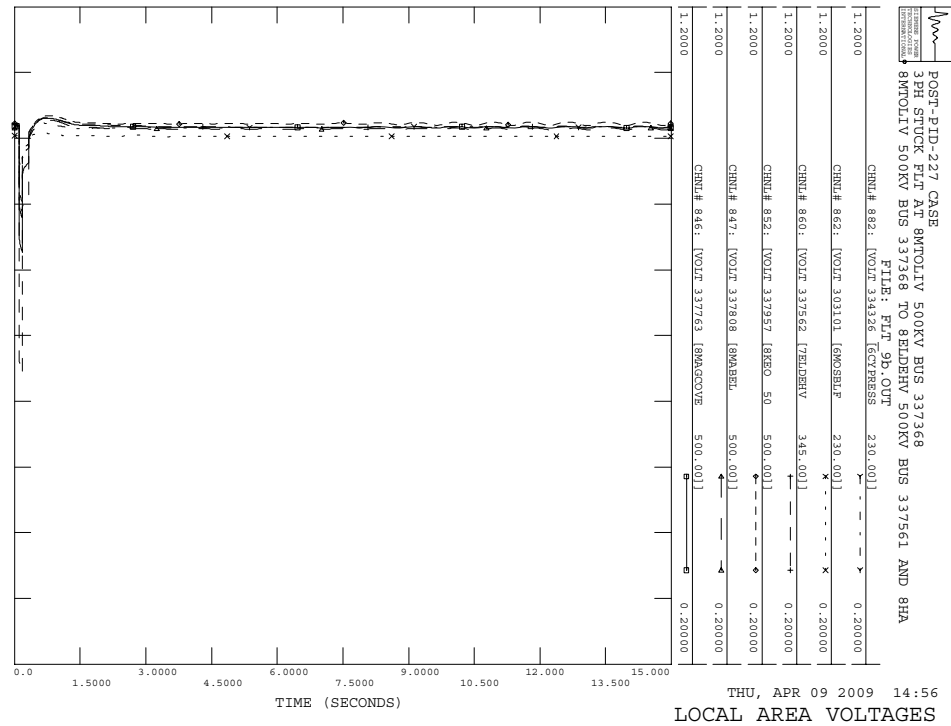
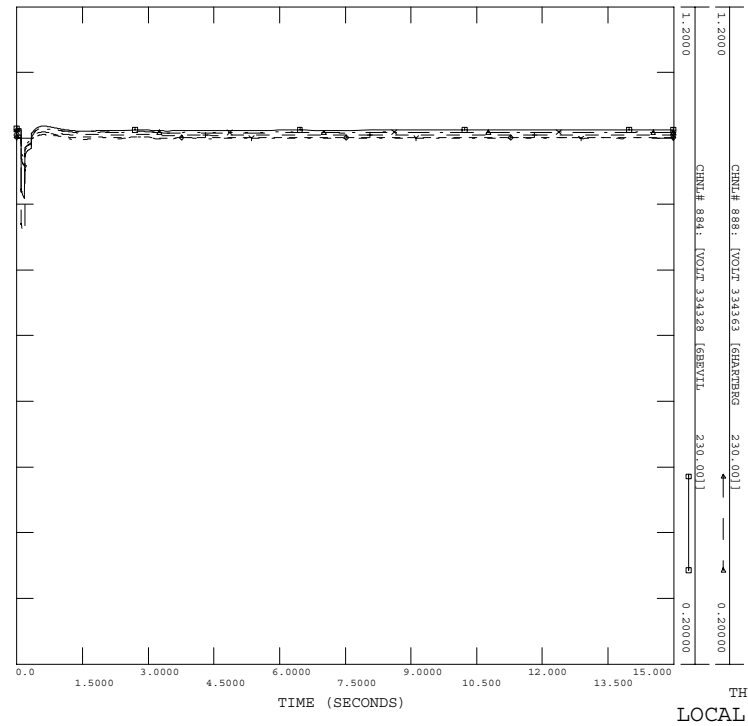


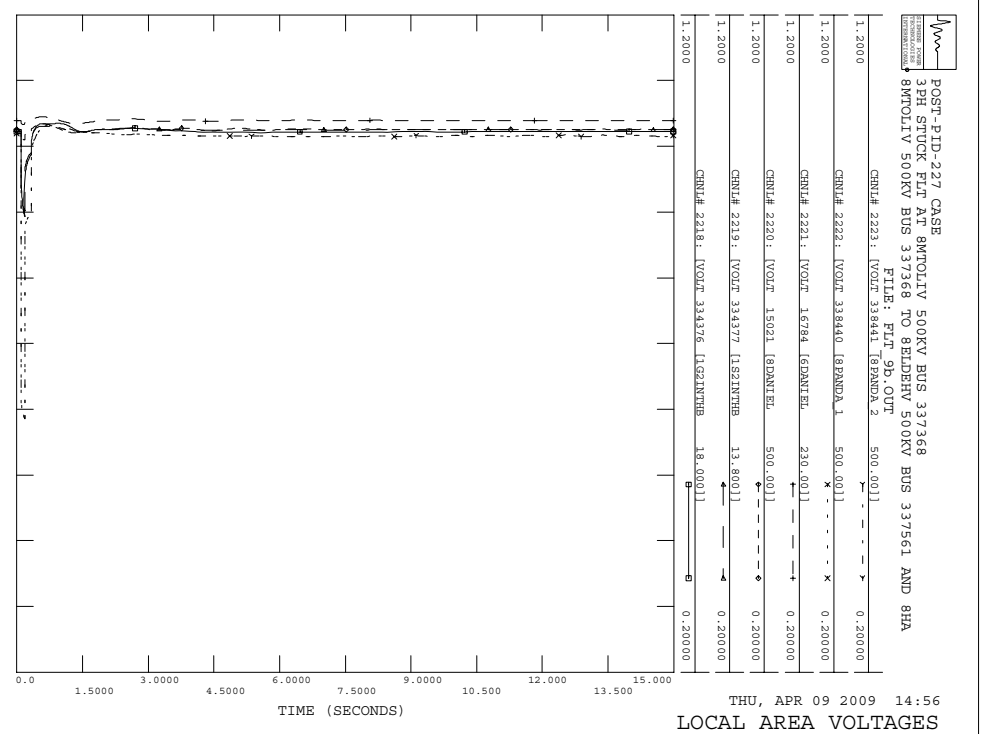
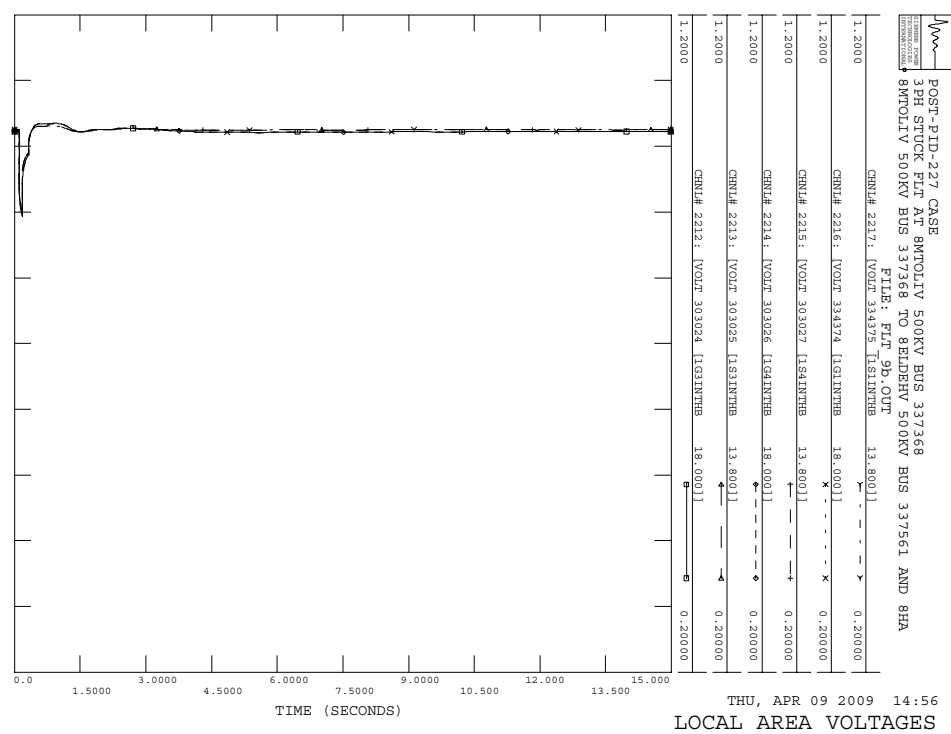
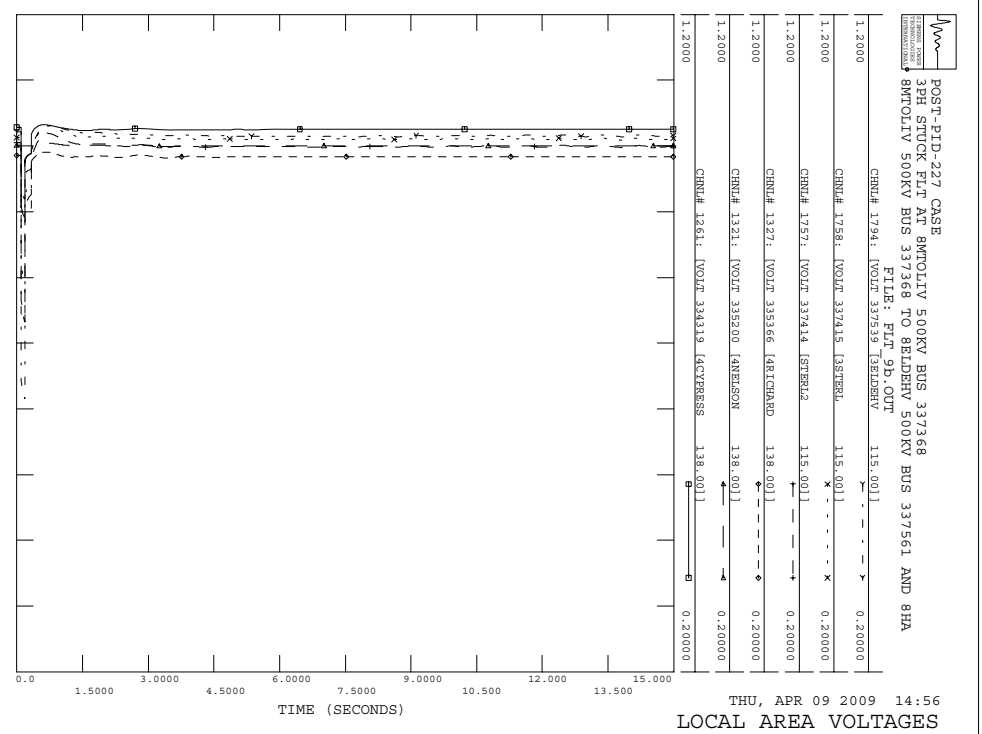
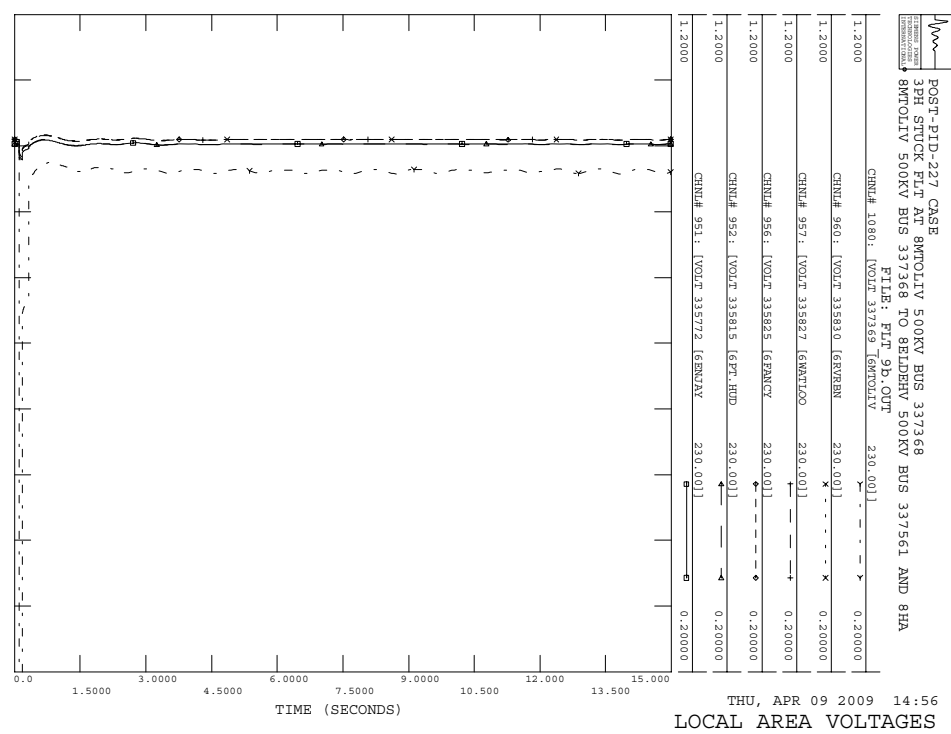
THU, APR 09 2009 14:56
 LOCAL AREA VOLTAGES

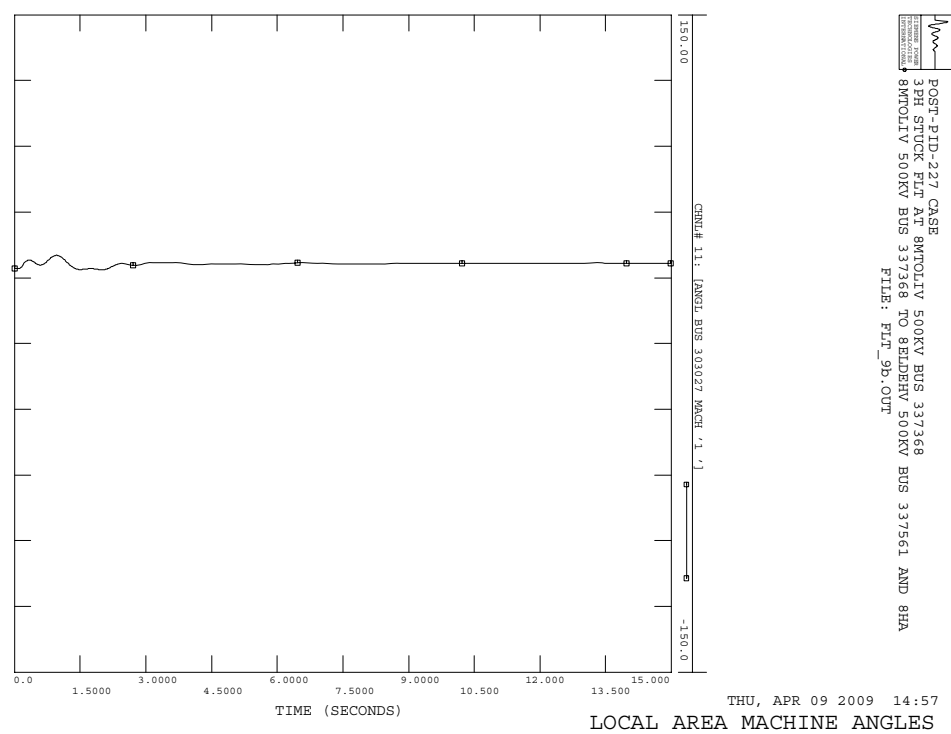
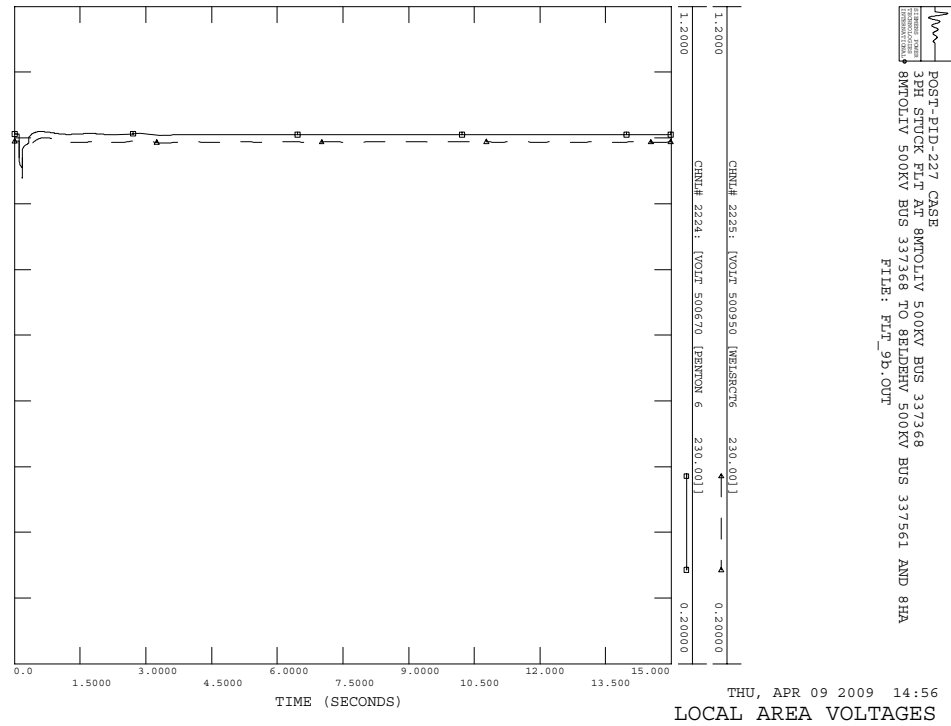
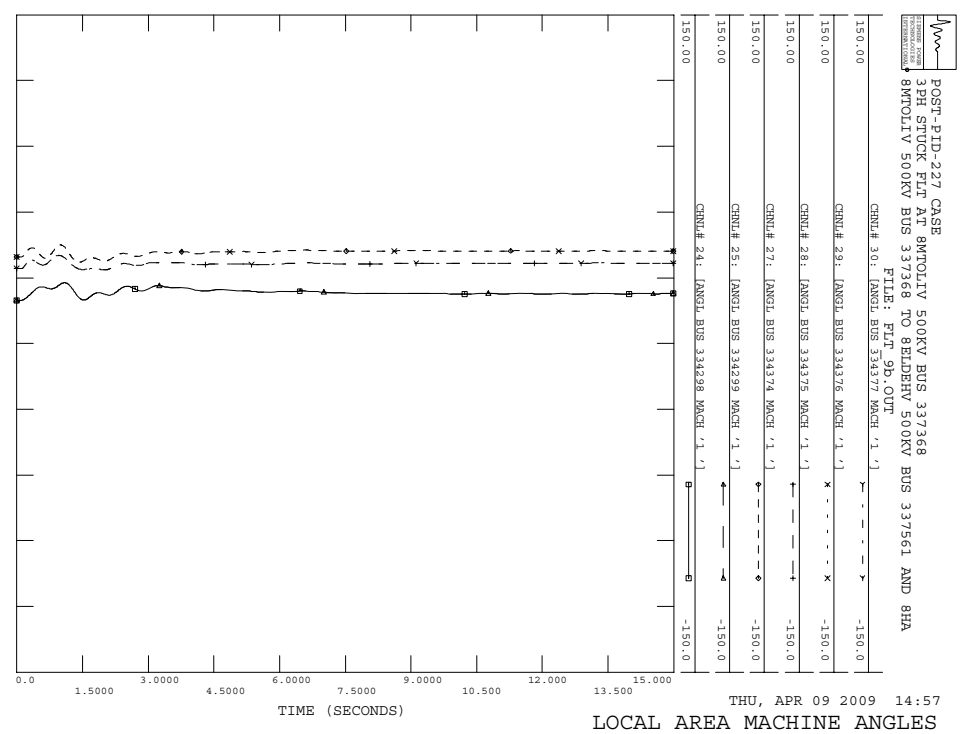
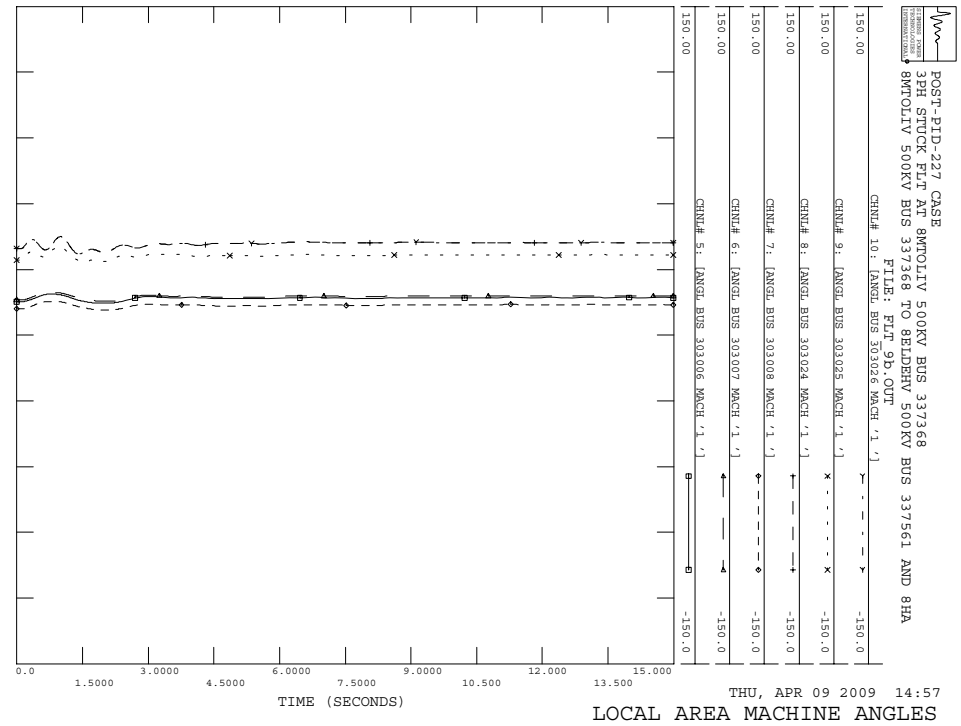
POST-PTD-227 CASE
 3PH STUCK FLT AT 8MTOLLY 500KV BUS 337368
 8MTOLLY 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



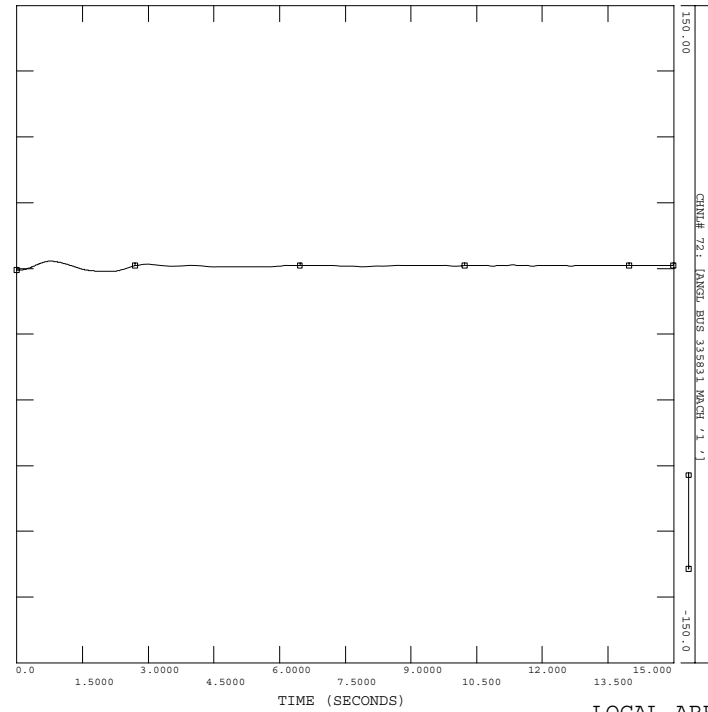
POST-PTD-227 CASE
 3PH STUCK FLT AT 8MTOLLY 500KV BUS 337368
 8MTOLLY 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT





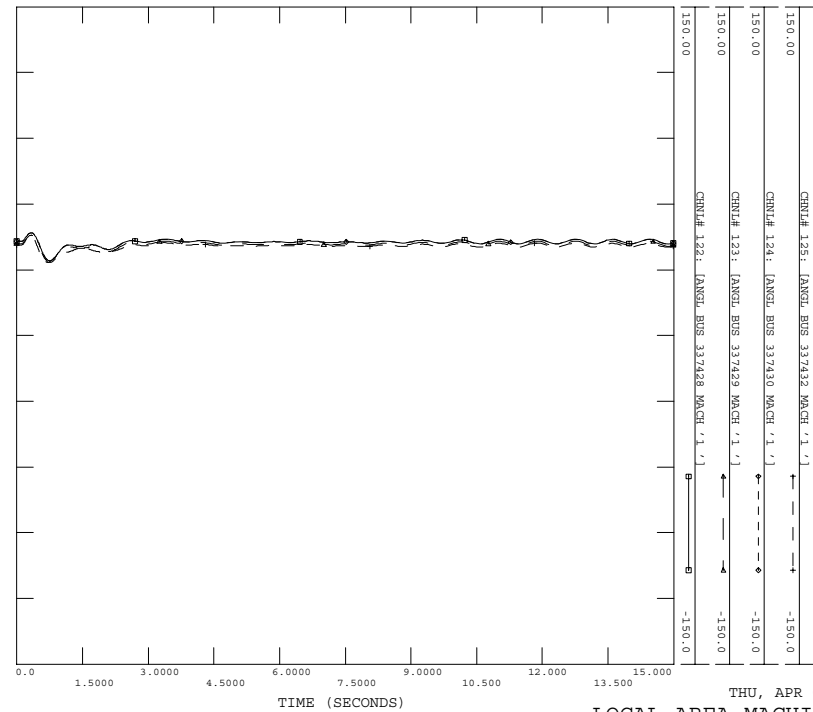


POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_95.OUT



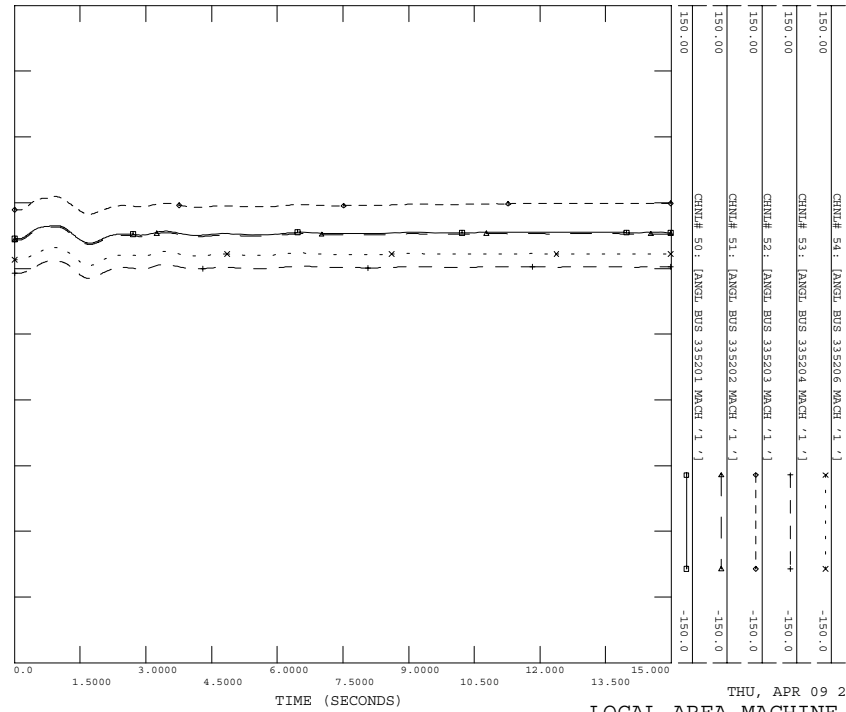
THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_95.OUT



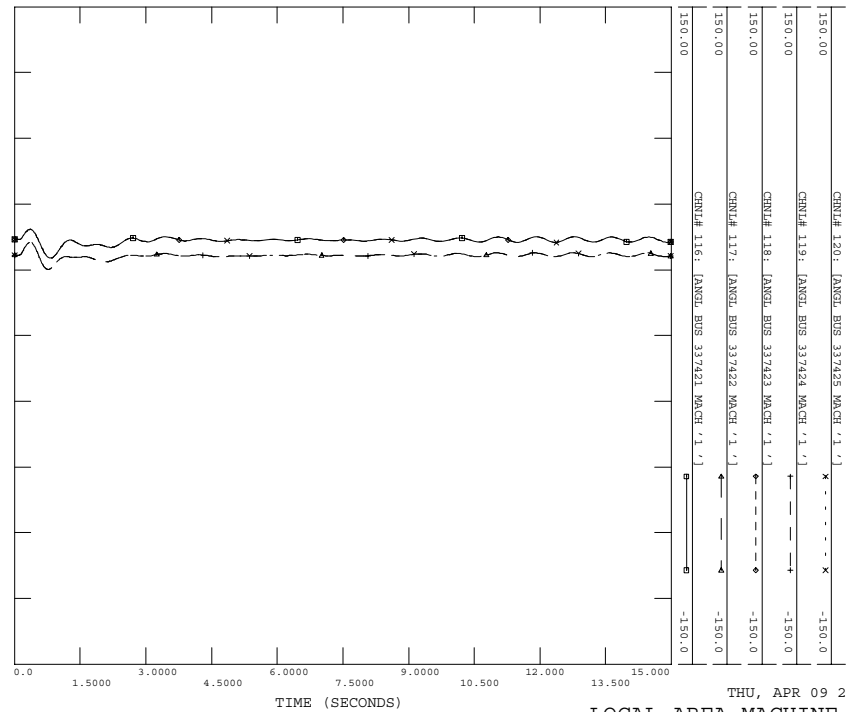
THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
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 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_95.OUT



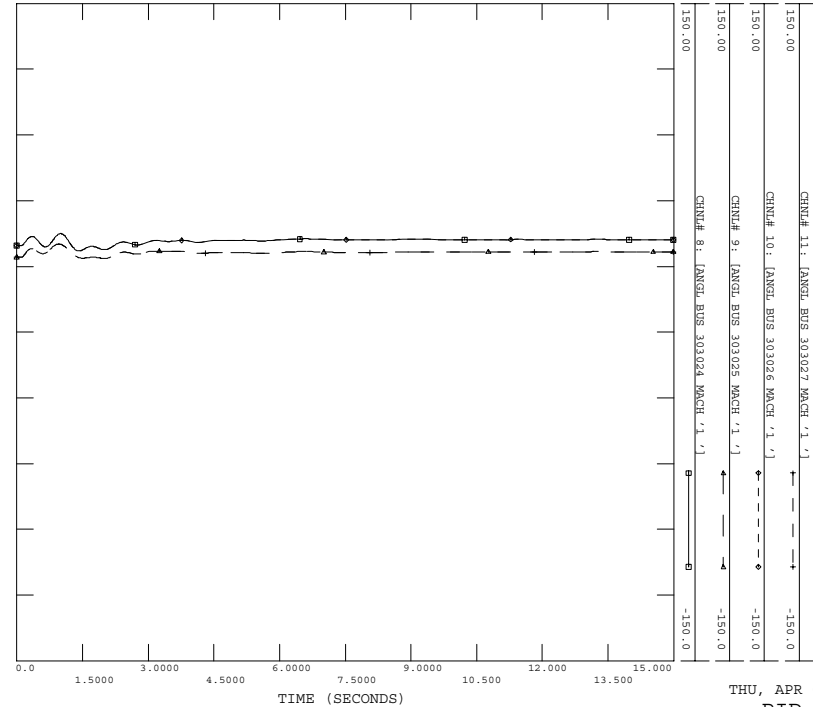
THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_95.OUT

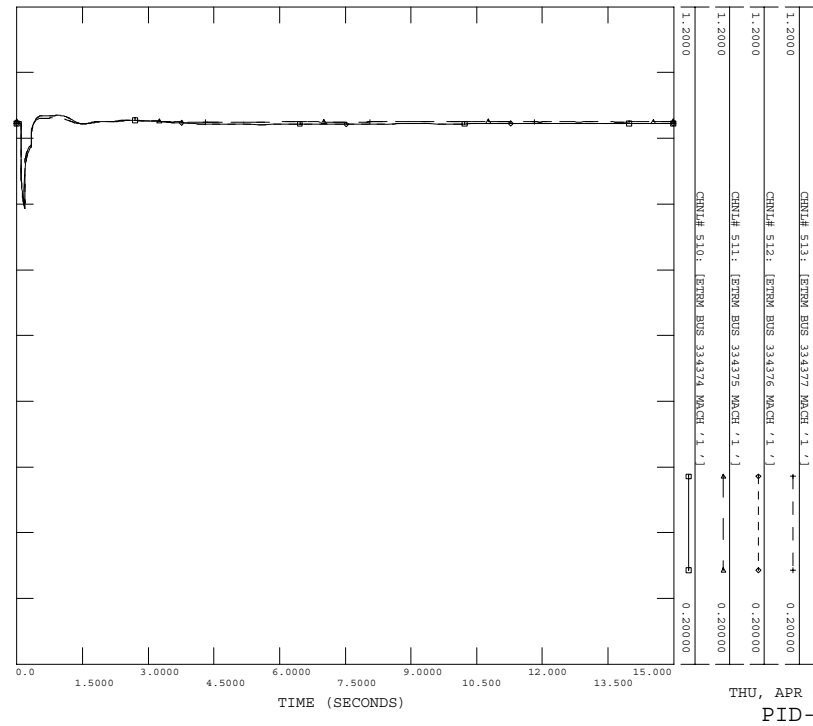


THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

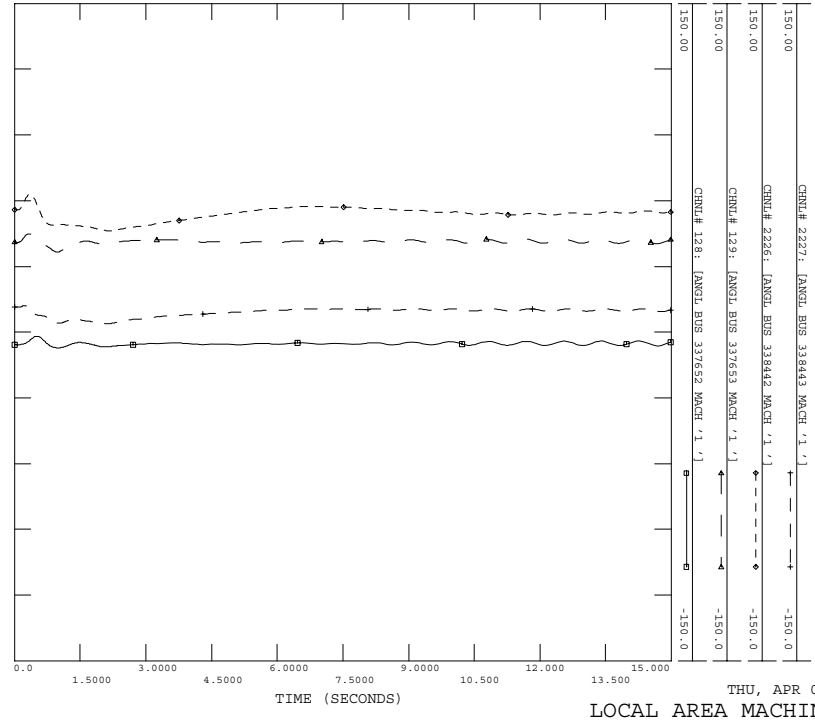
POST-PID-227 CASE
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 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



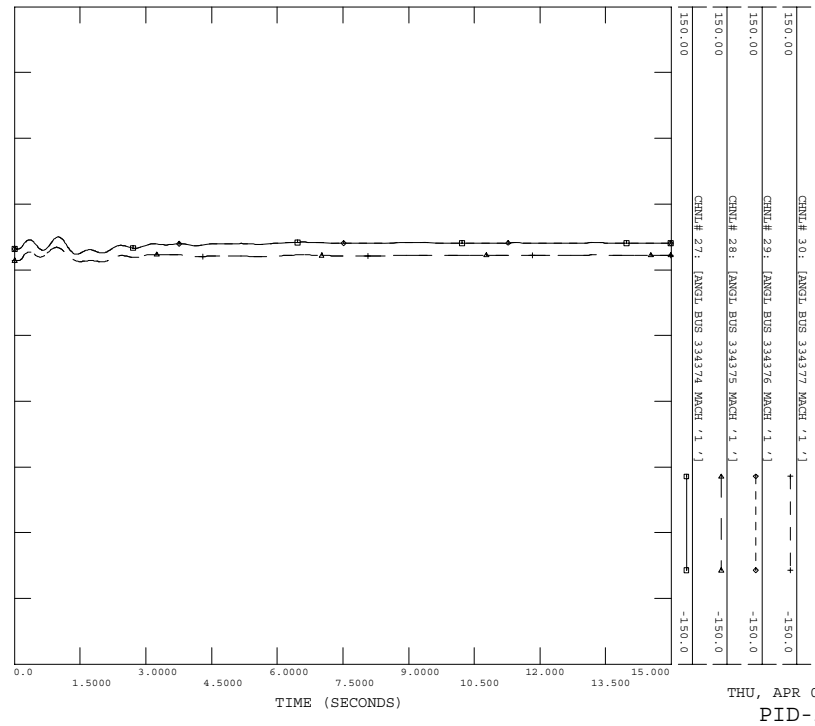
POST-PID-227 CASE
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 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



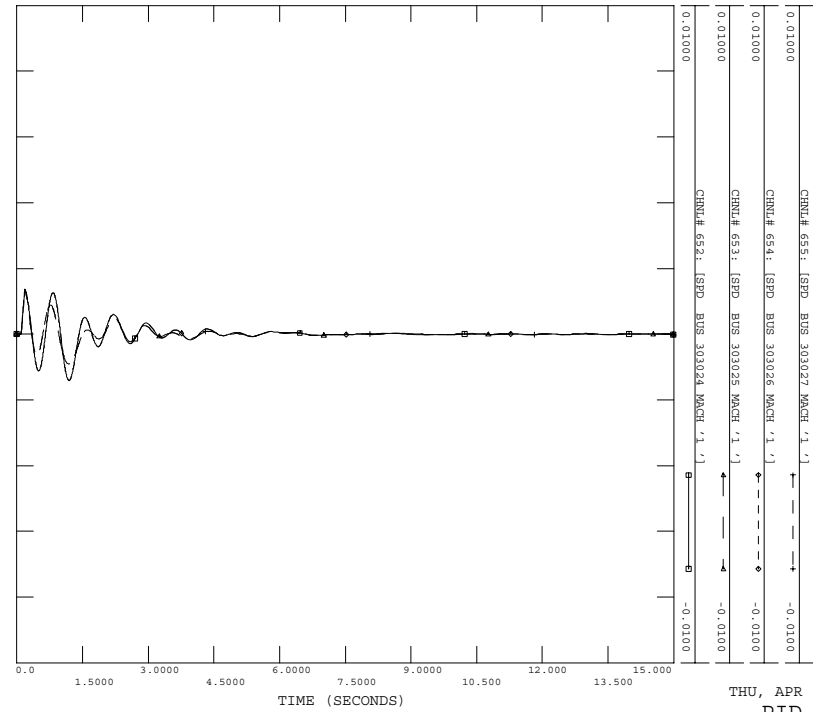
POST-PID-227 CASE
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 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



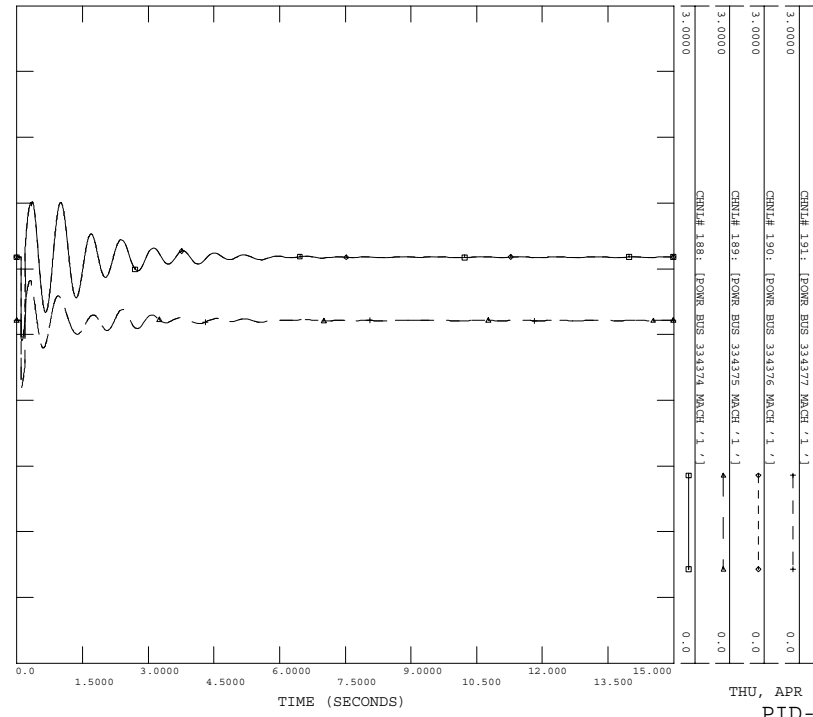
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



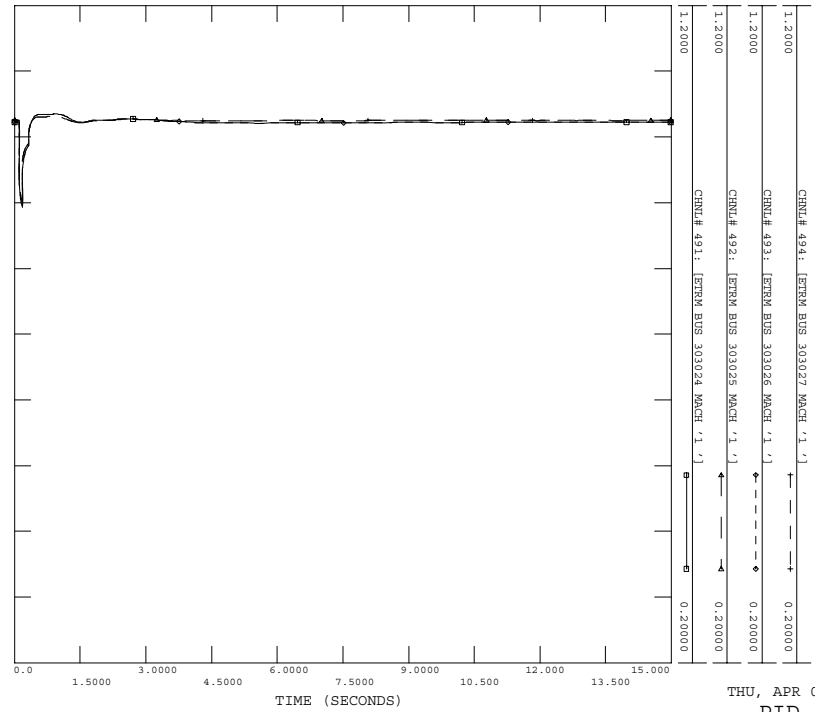
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



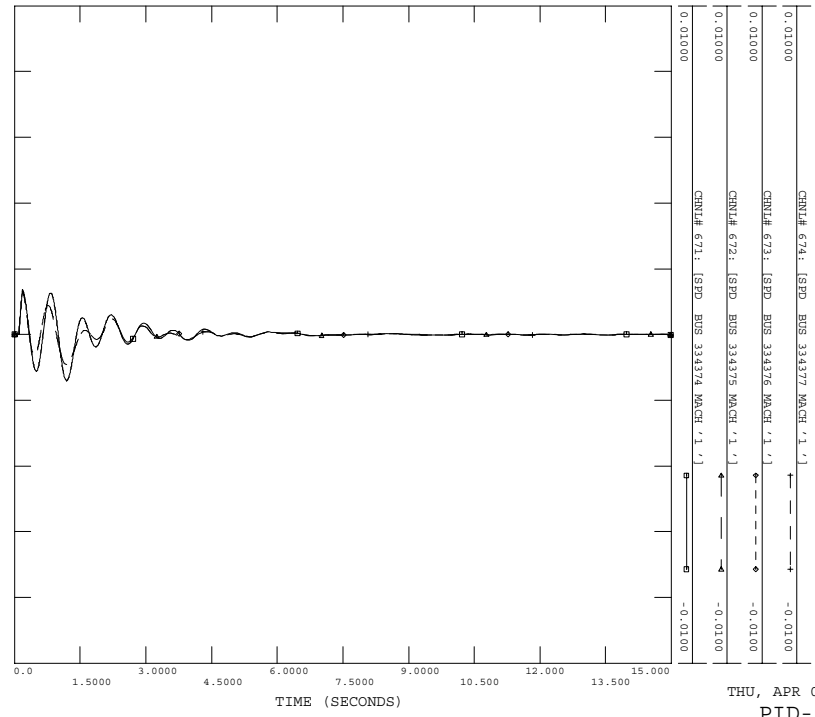
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



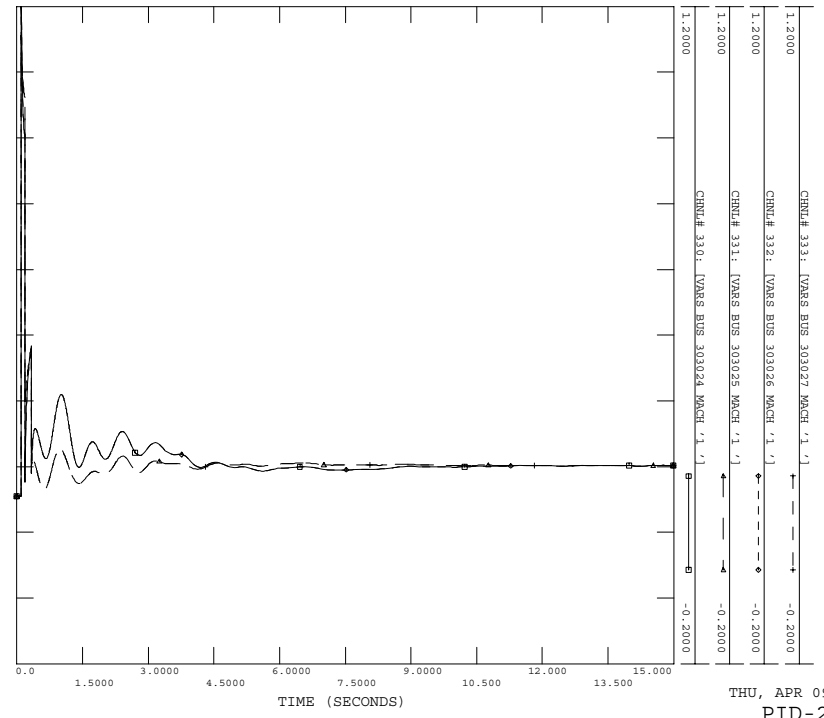
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



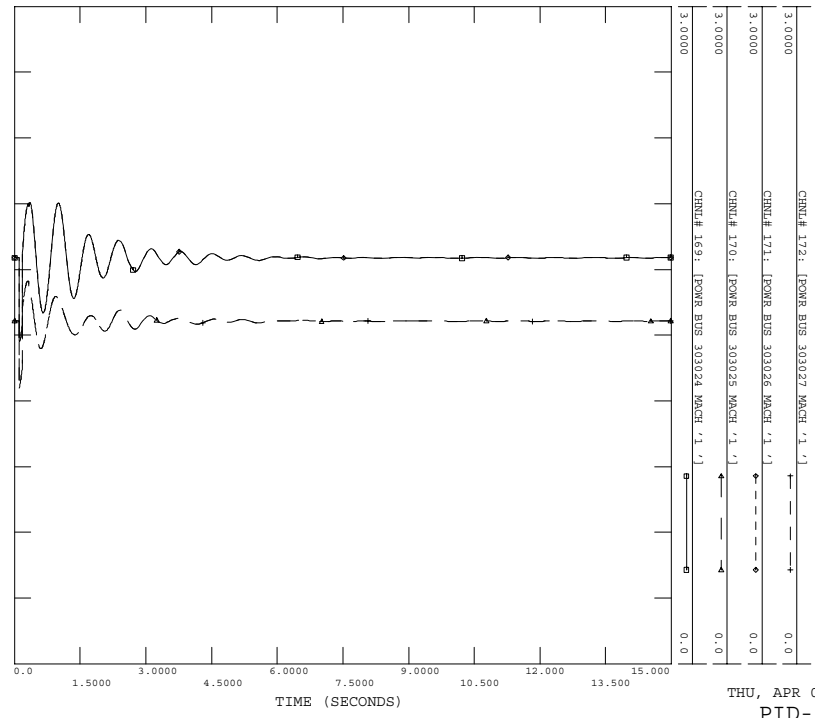
POST-PID-227 CASE
 3PH STUCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO 8BDDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_9P.OUT



POST-PID-227 CASE
 3PH STOCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_95.OUT



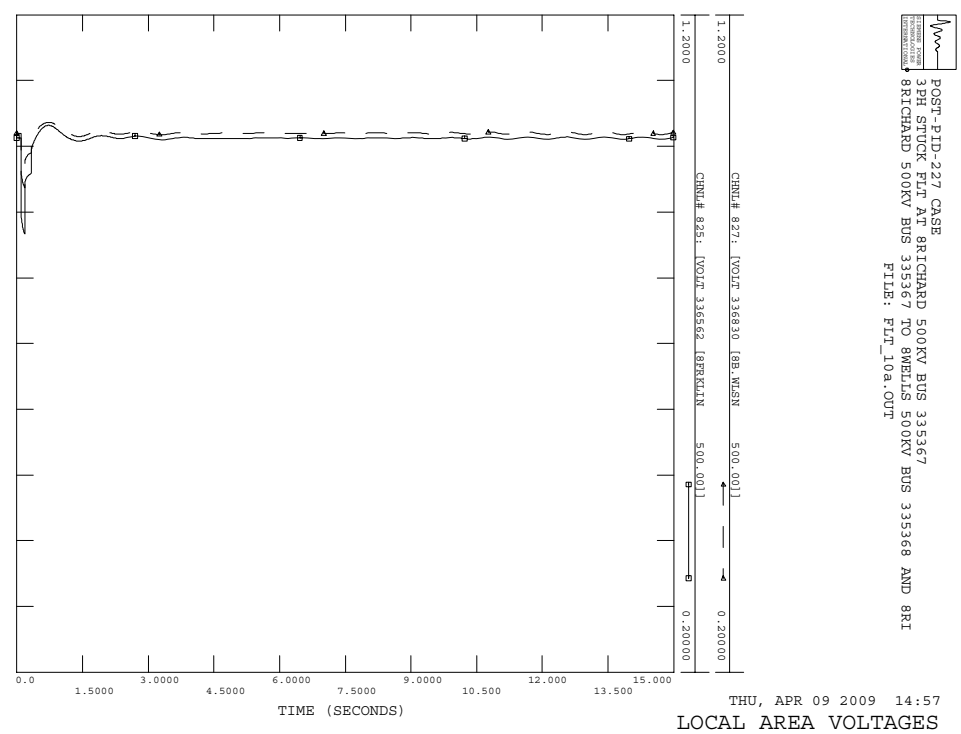
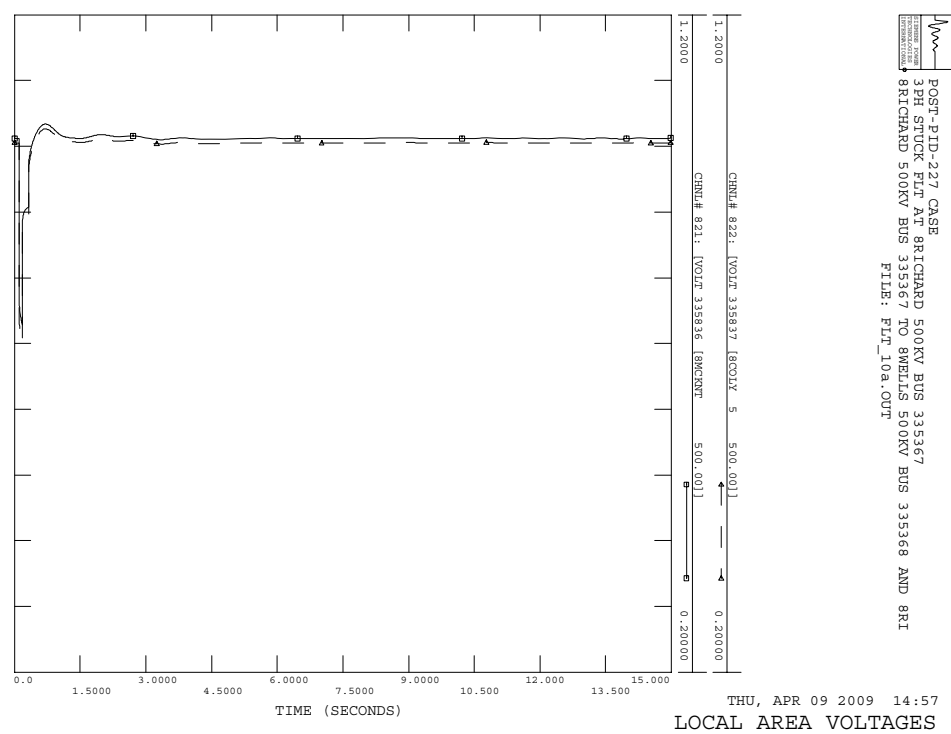
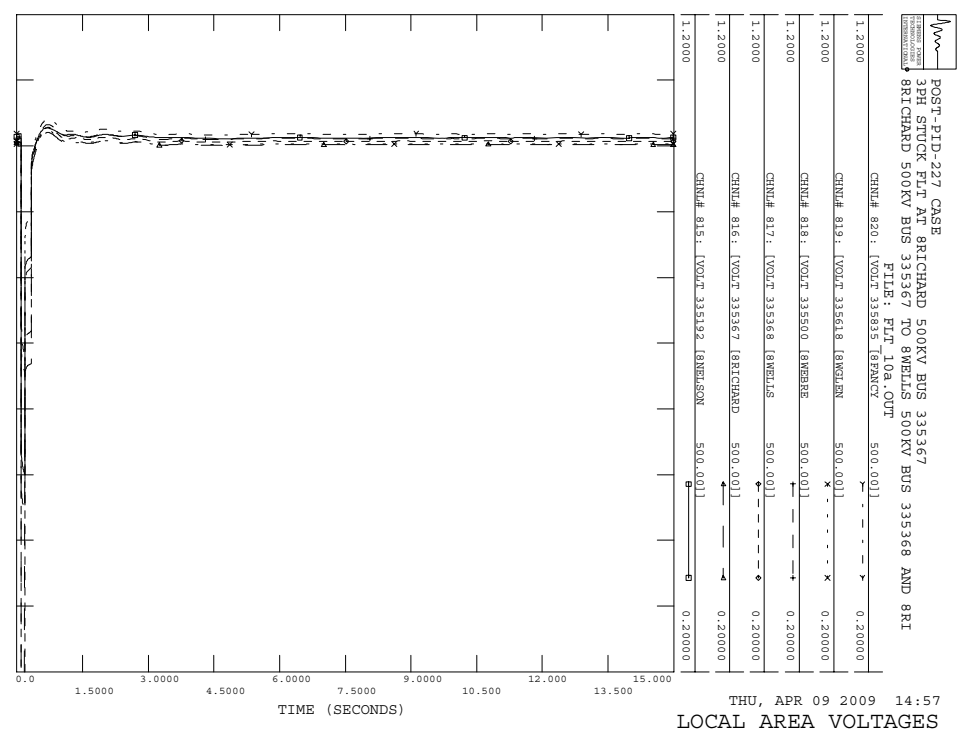
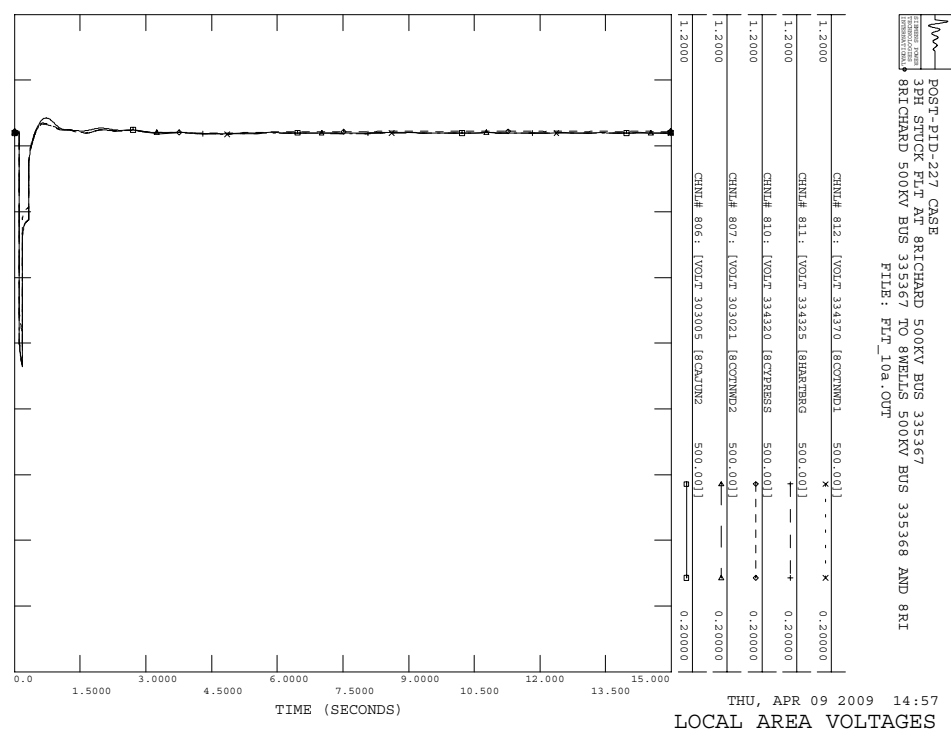
POST-PID-227 CASE
 3PH STOCK FLT AT 8MTOLIV 500KV BUS 337368
 8MTOLIV 500KV BUS 337368 TO BEIDHRV 500KV BUS 337561 AND 8HA
 FILE: FLT_95.OUT



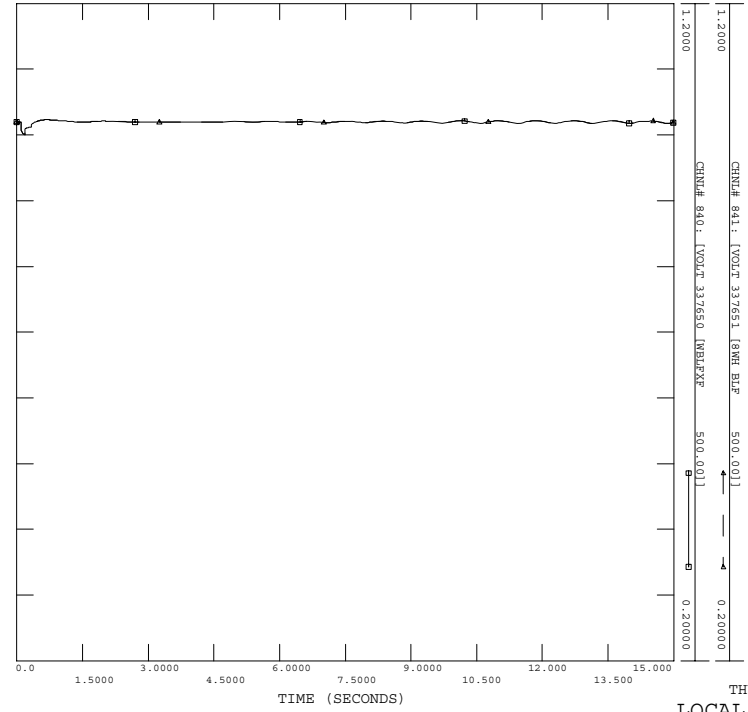
C.25 FLT_10a

Stuck breaker fault on 8RICHARD (#335367) to 8WELLS (#335368) 500 kv line, near the 8RICHARD.

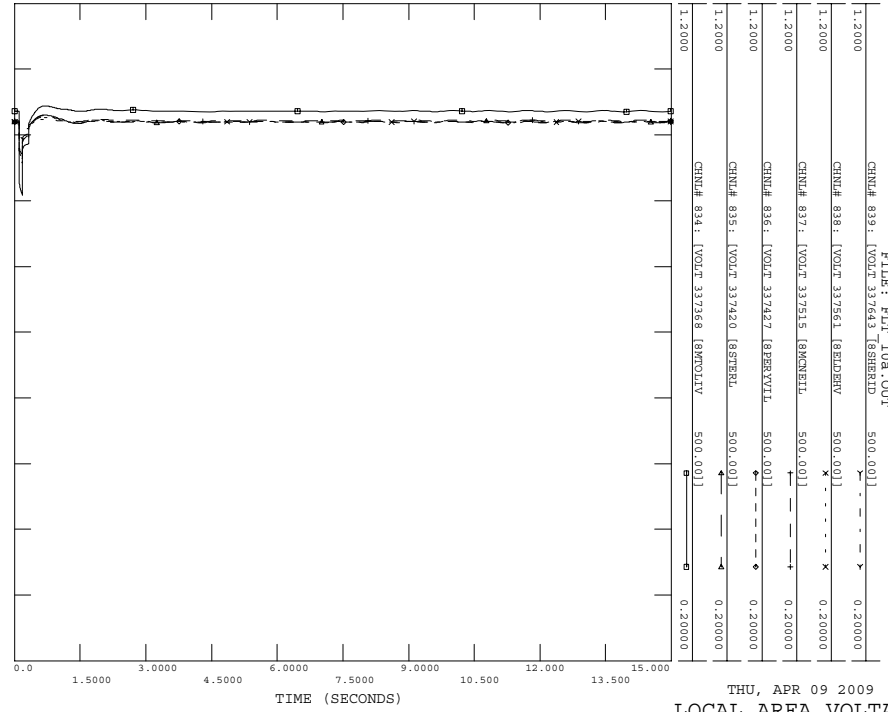
- a) Apply 3 Phase Fault AT 8RICHARD 500KV BUS 335367
- b) Run fault for 5 cycles
- c) Remove Fault AT 8RICHARD 500KV BUS 335367
- d) Apply 3 Phase fault at #335367 with admittance $690.97-j6279.4$ MVA
- e) Clear fault after 9 cycles by tripping line from 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 and transformer from 8RICHARD 500KV BUS 335367 TO 4RICHARD 138 KV BUS 335366 .



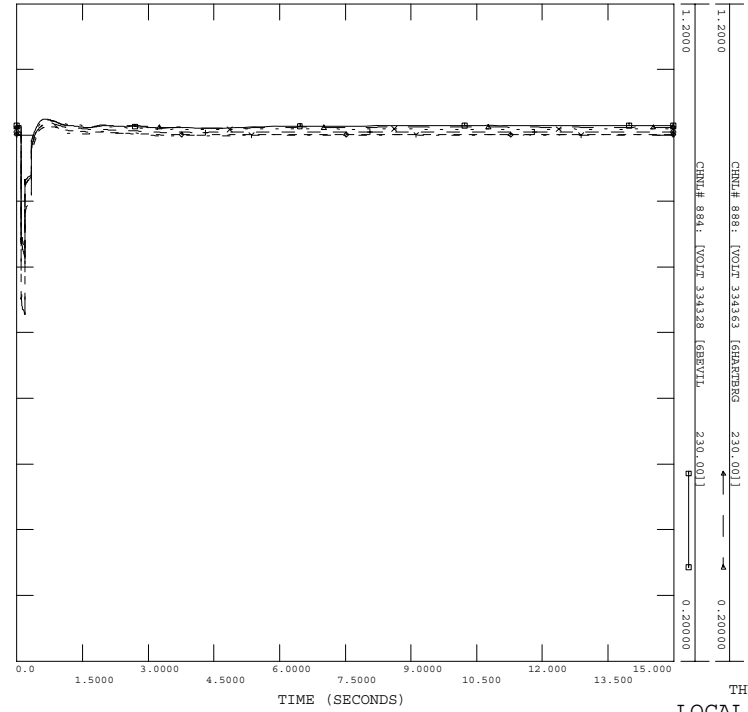
POST-PTD-227 CASE
 3PH STOCK FLT AT BRICHARD 500KV BUS 335367
 BRICHARD 500KV BUS 335367 TO SWELLS 500KV BUS 335368 AND 8R1
 FILE: FLT_10a.OUT



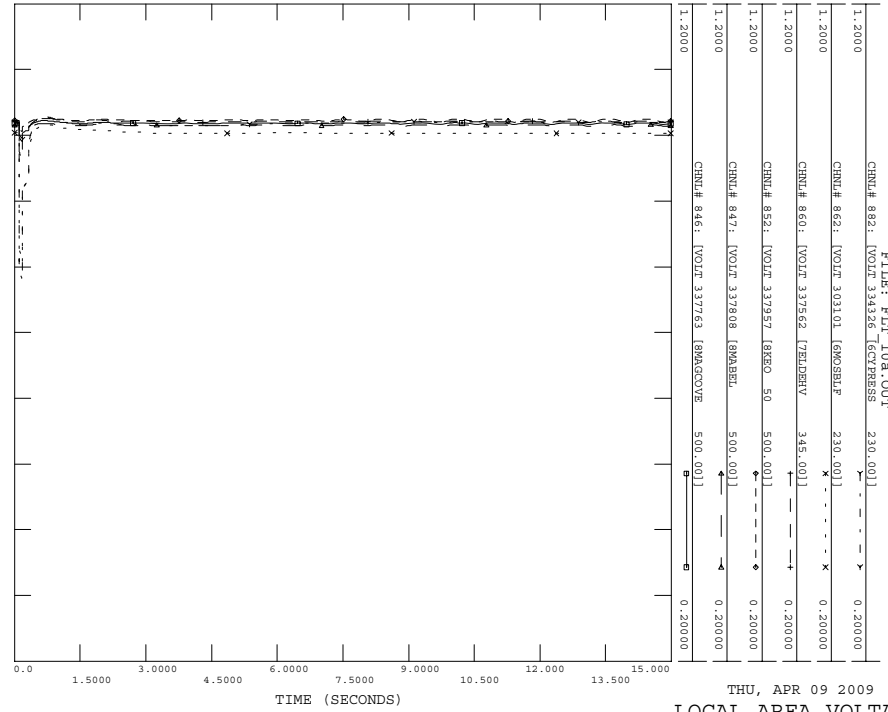
POST-PTD-227 CASE
 3PH STOCK FLT AT BRICHARD 500KV BUS 335367
 BRICHARD 500KV BUS 335367 TO SWELLS 500KV BUS 335368 AND 8R1
 FILE: FLT_10a.OUT

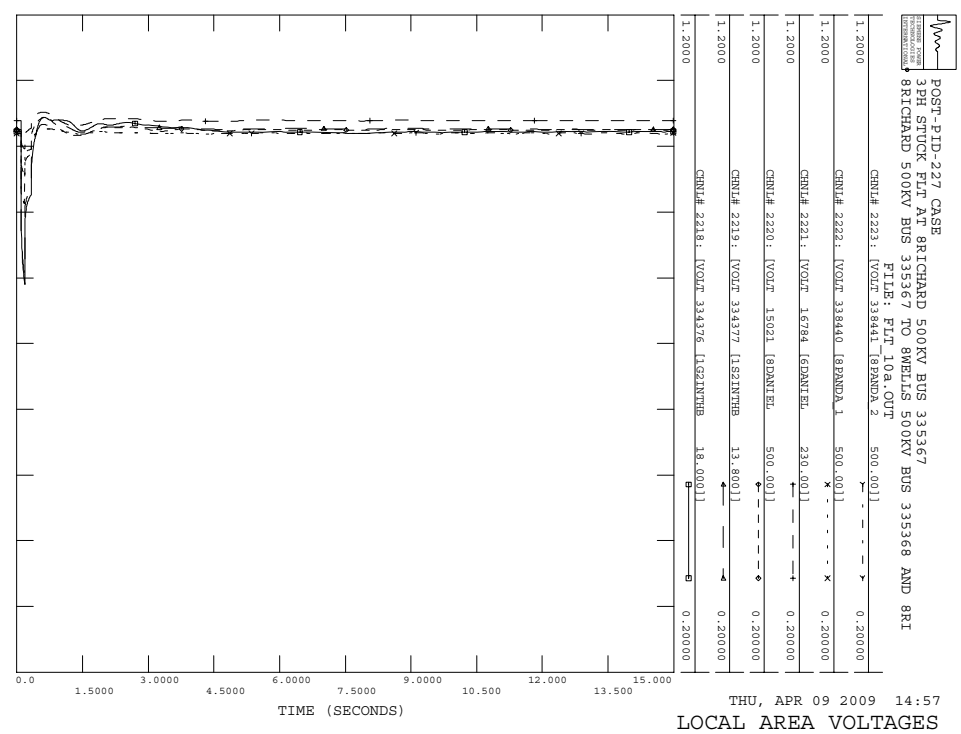
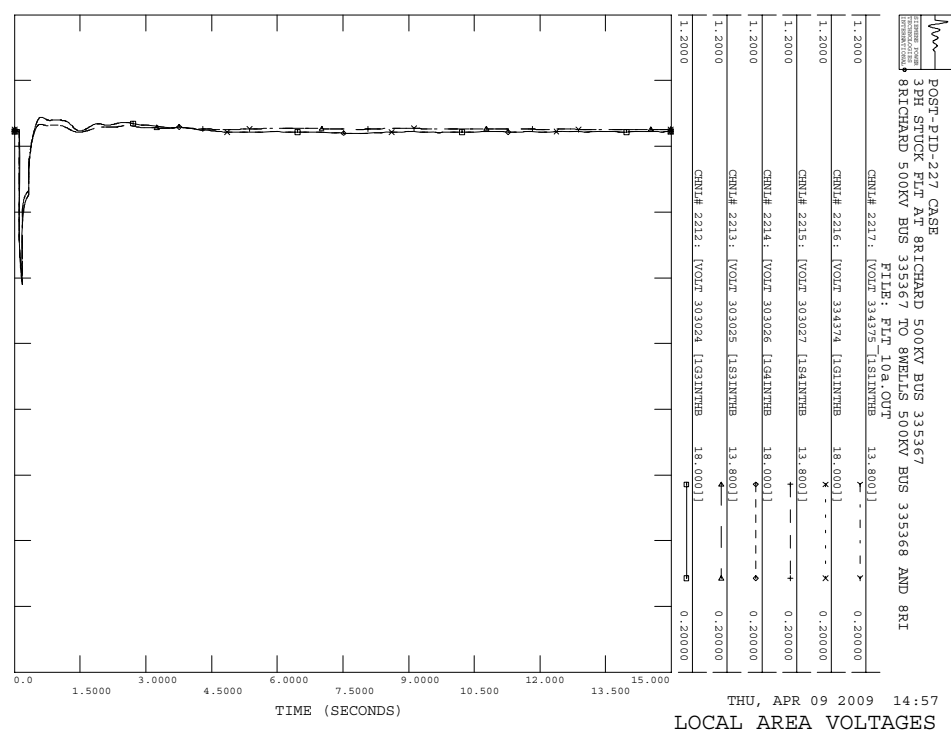
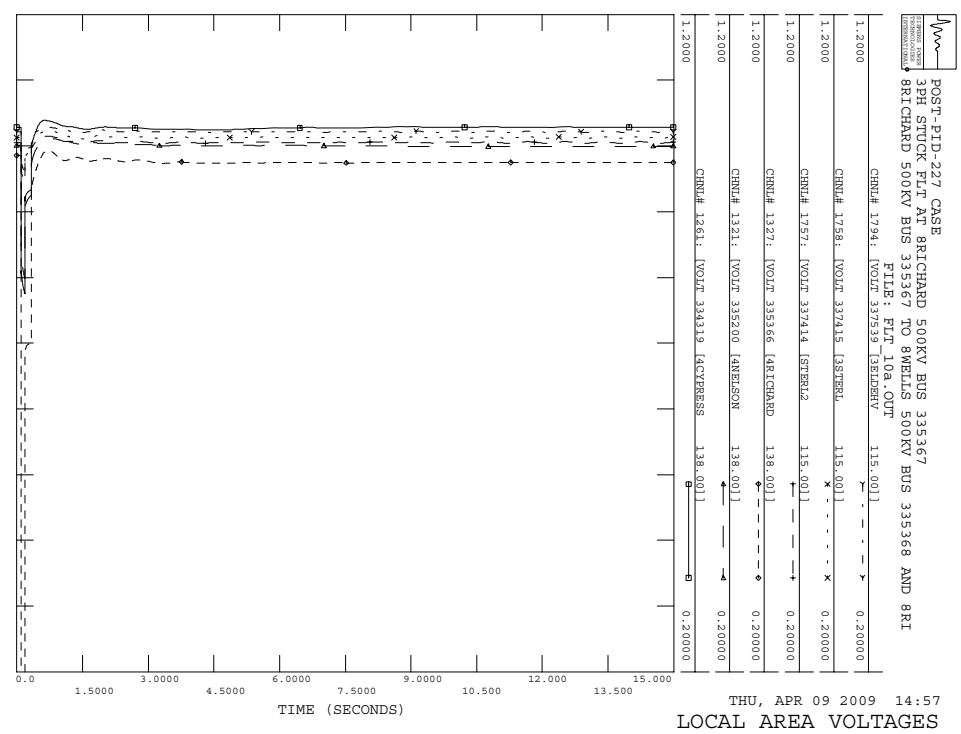
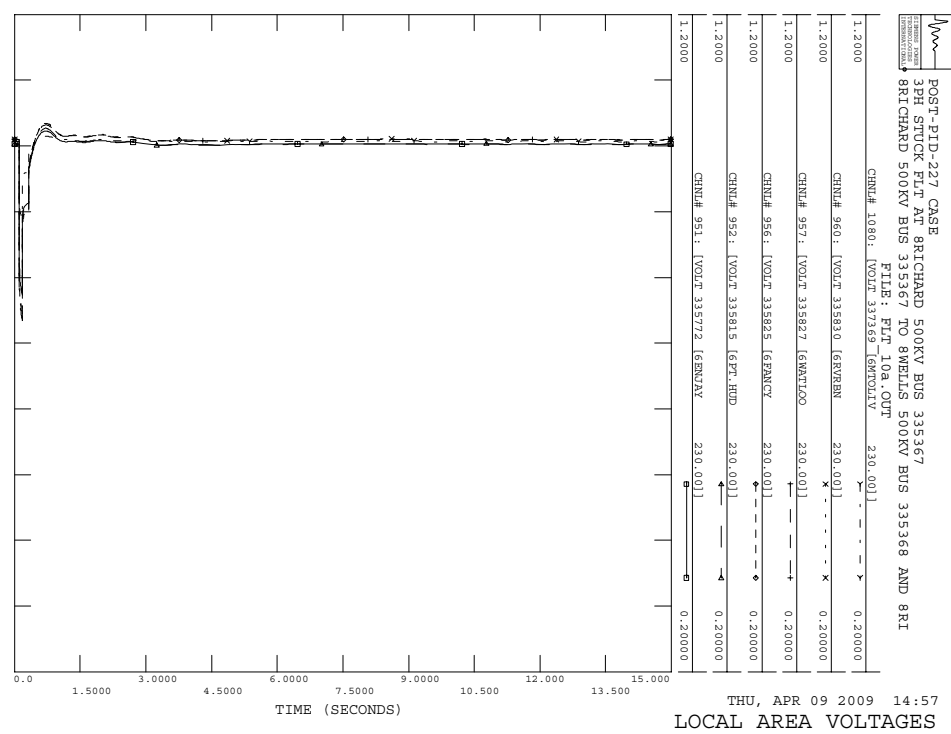


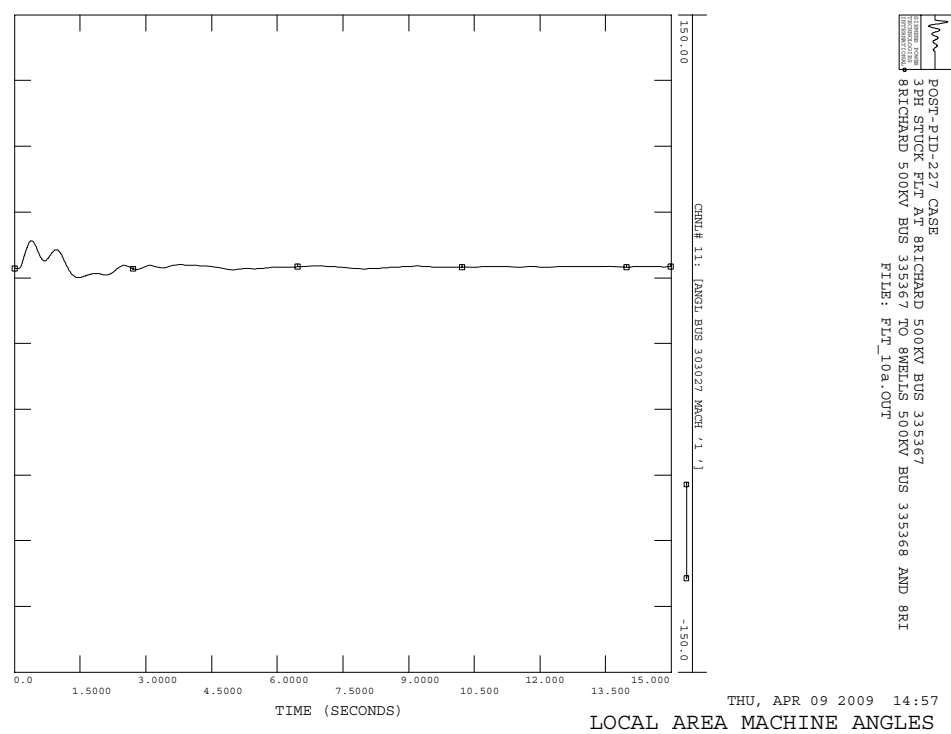
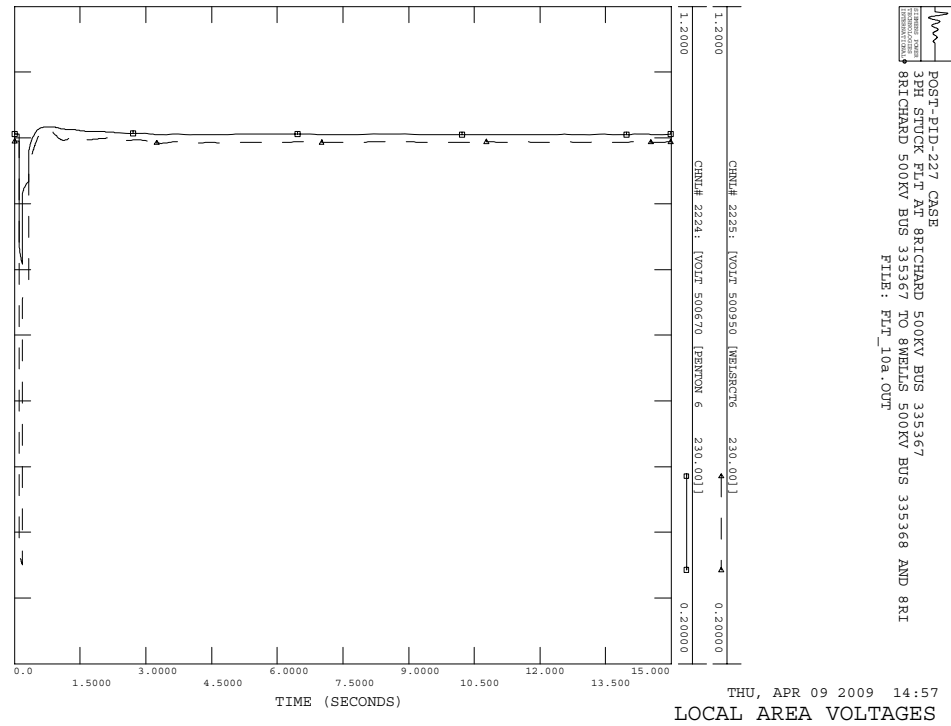
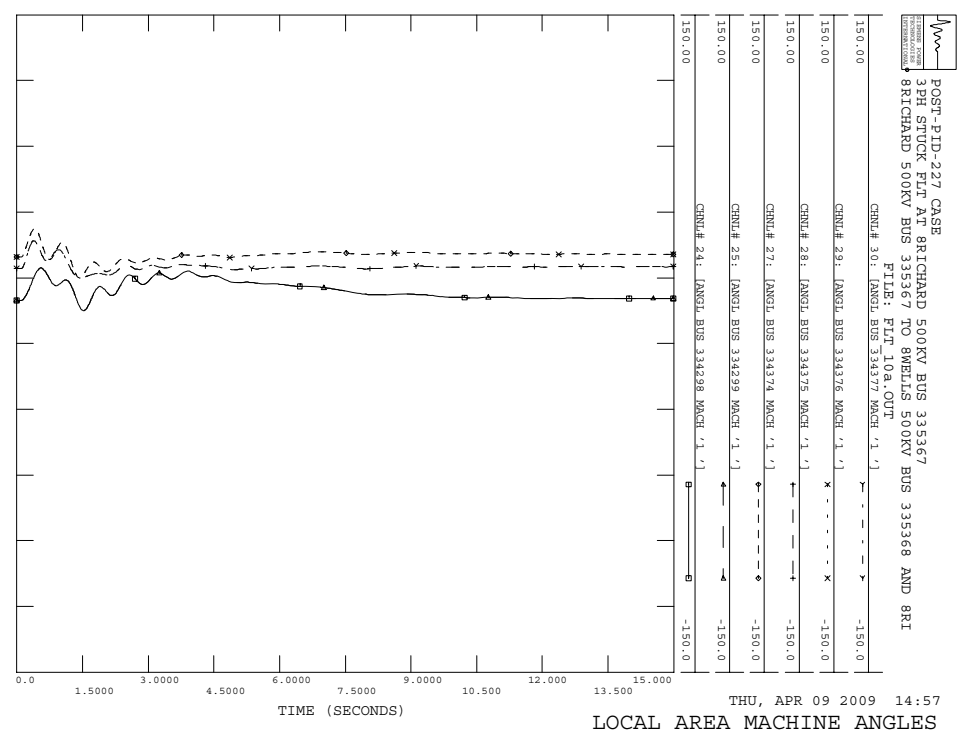
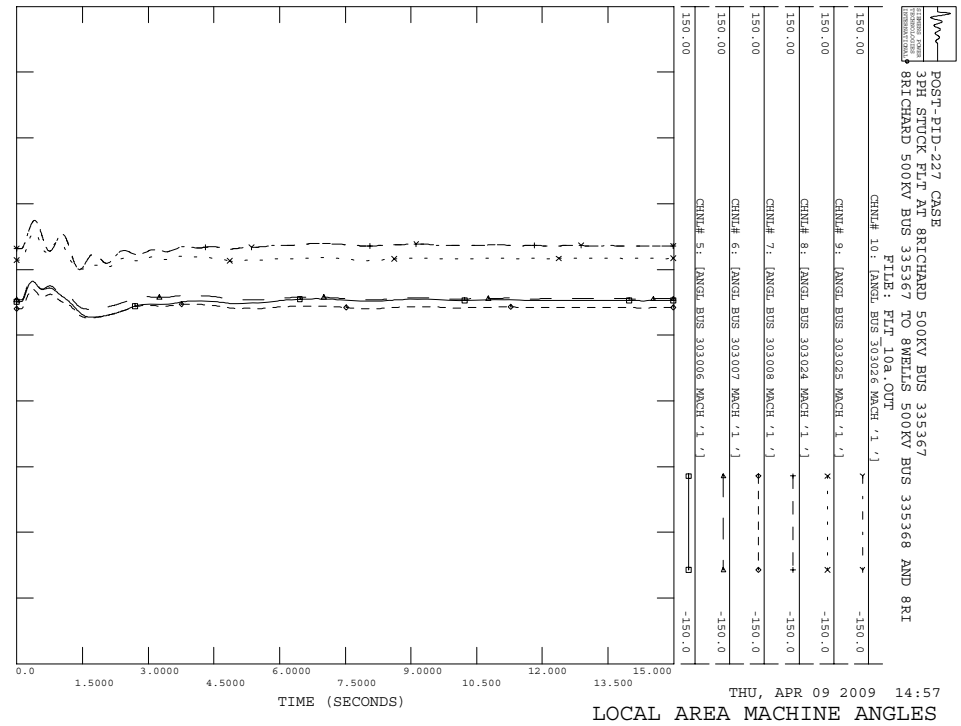
POST-PTD-227 CASE
 3PH STOCK FLT AT BRICHARD 500KV BUS 335367
 BRICHARD 500KV BUS 335367 TO SWELLS 500KV BUS 335368 AND 8R1
 FILE: FLT_10a.OUT



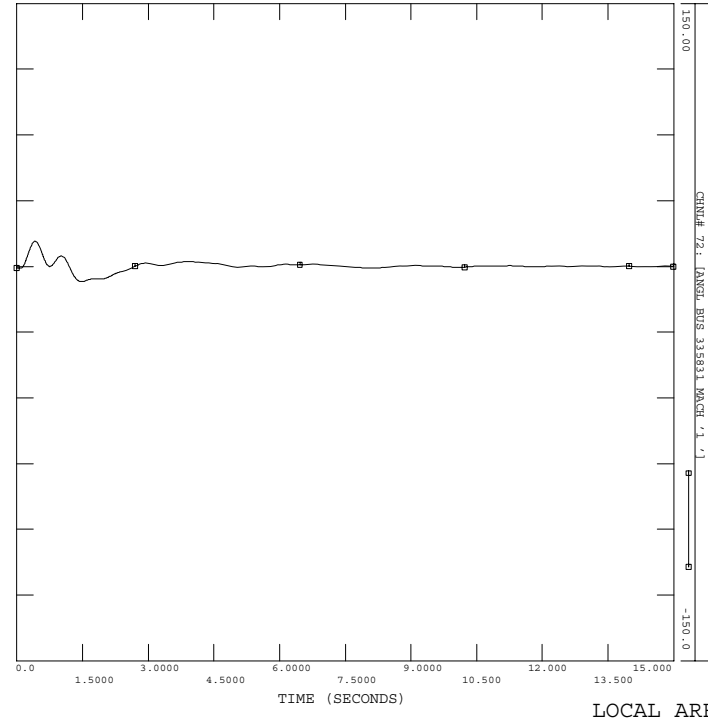
POST-PTD-227 CASE
 3PH STOCK FLT AT BRICHARD 500KV BUS 335367
 BRICHARD 500KV BUS 335367 TO SWELLS 500KV BUS 335368 AND 8R1
 FILE: FLT_10a.OUT





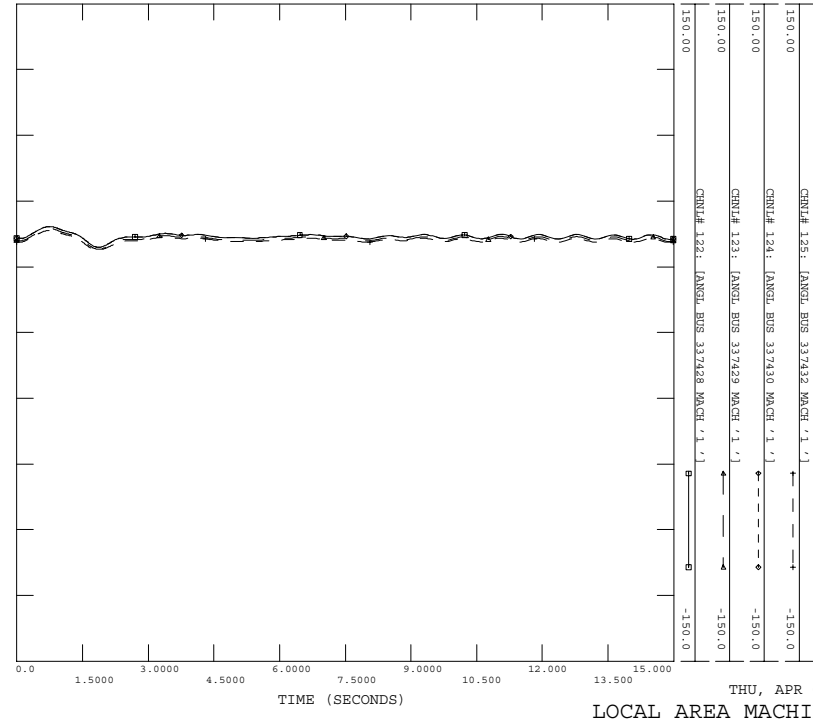


POST-PID-227 CASE
 3PH STOCK FLT AT 8RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10A.OUT



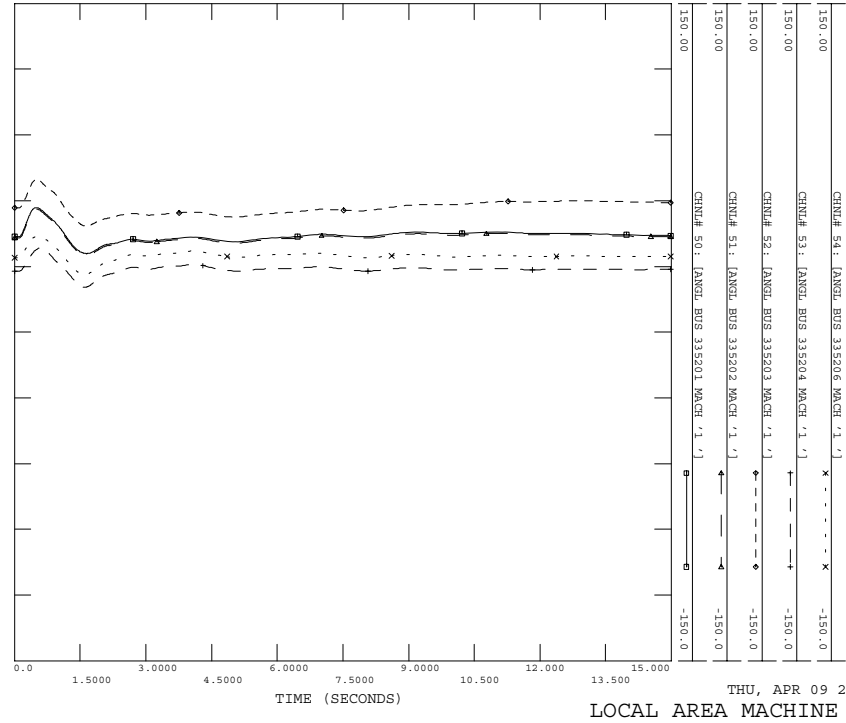
THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STOCK FLT AT 8RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10A.OUT



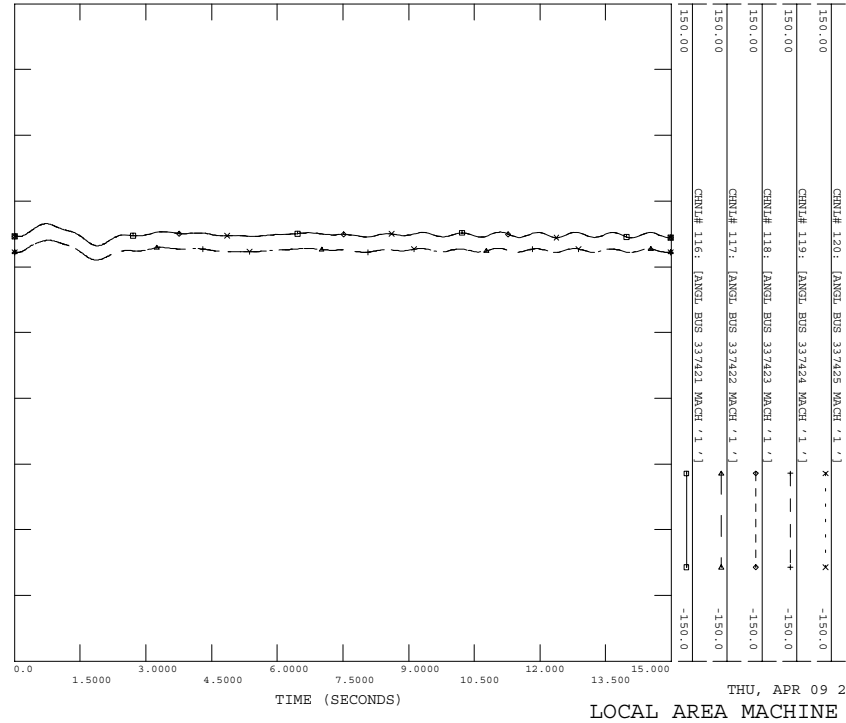
THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STOCK FLT AT 8RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10A.OUT



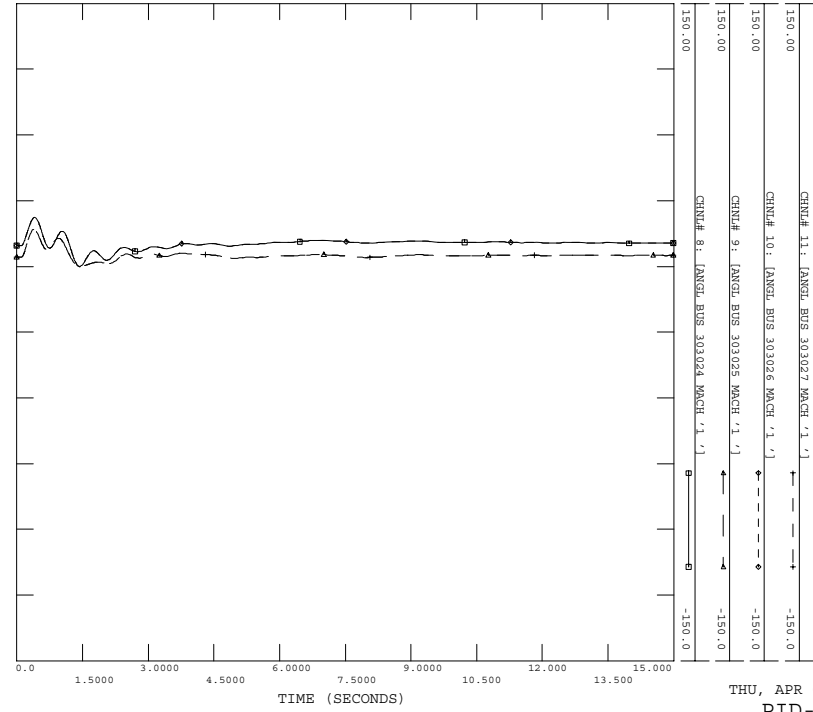
THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STOCK FLT AT 8RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10A.OUT

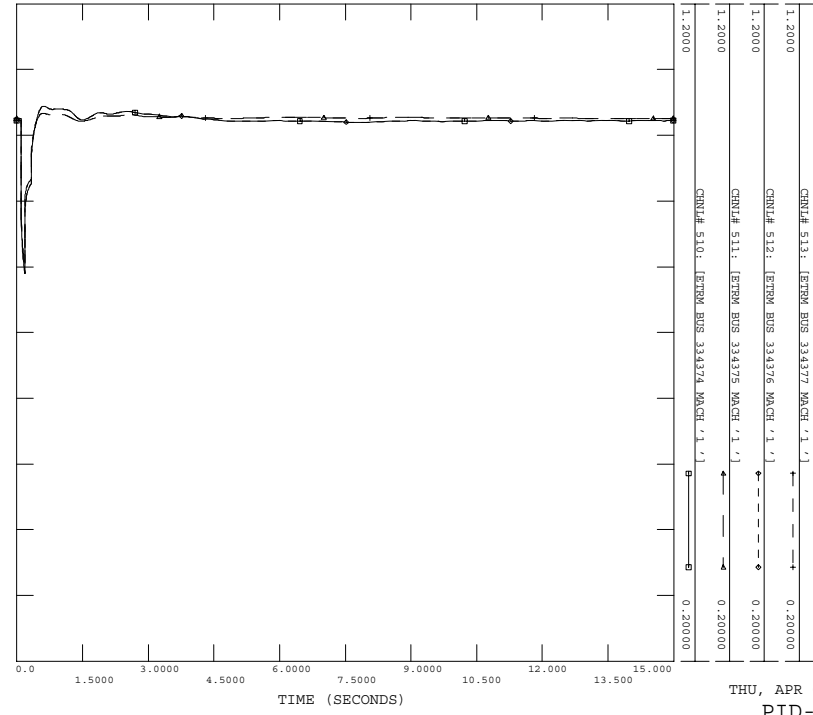


THU, APR 09 2009 14:57
 LOCAL AREA MACHINE ANGLES

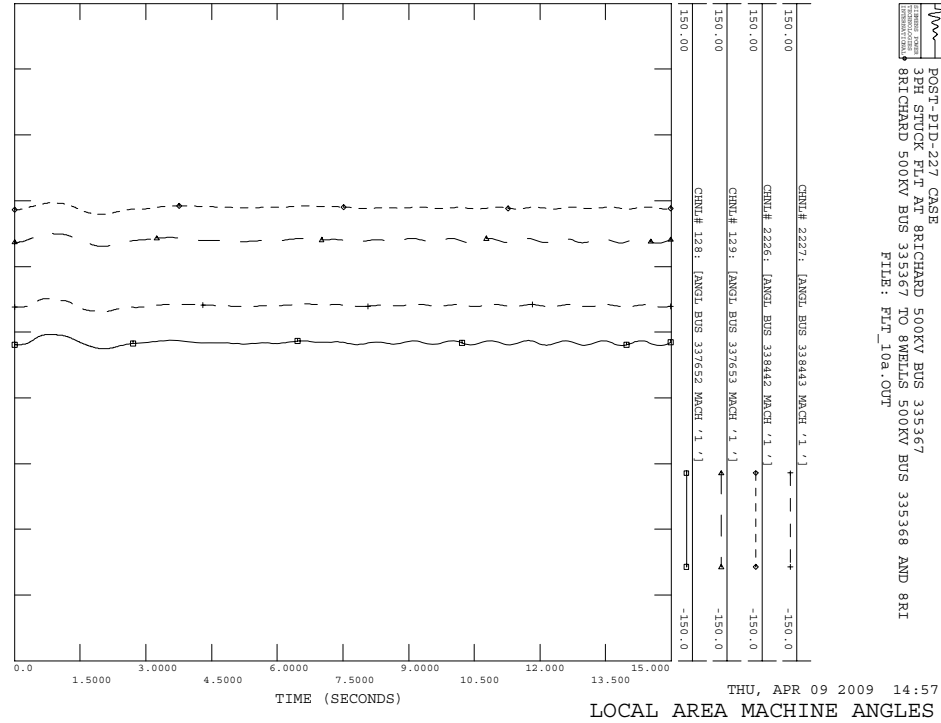
POST-PID-227 CASE
3PH STOCK FLT AT RICHARD 500KV BUS 335367
RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
FILE: FLT_10a.OUT



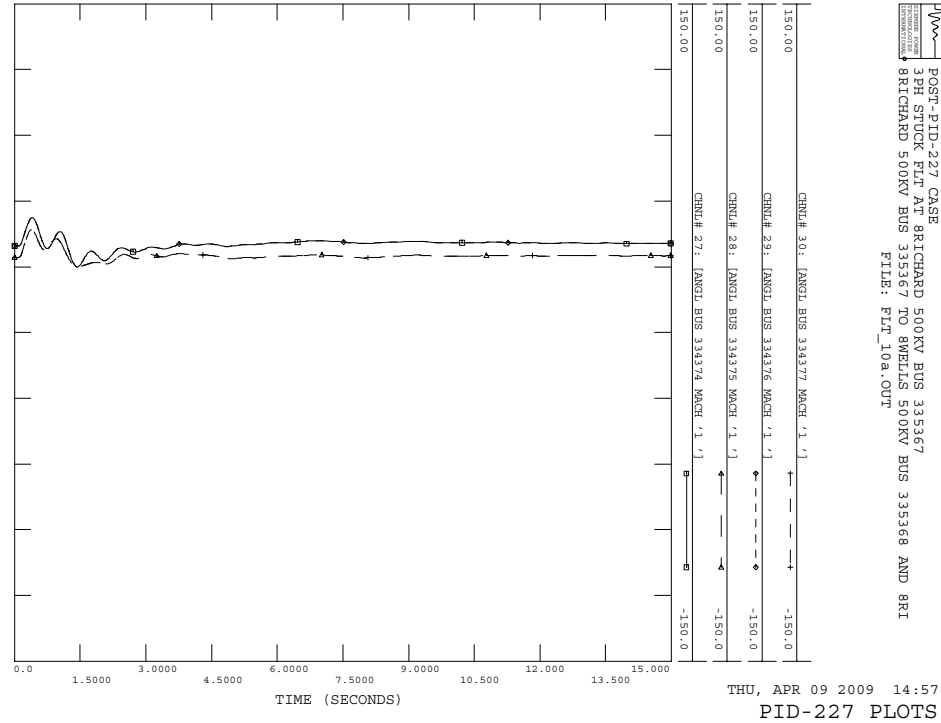
POST-PID-227 CASE
3PH STOCK FLT AT RICHARD 500KV BUS 335367
RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
FILE: FLT_10a.OUT



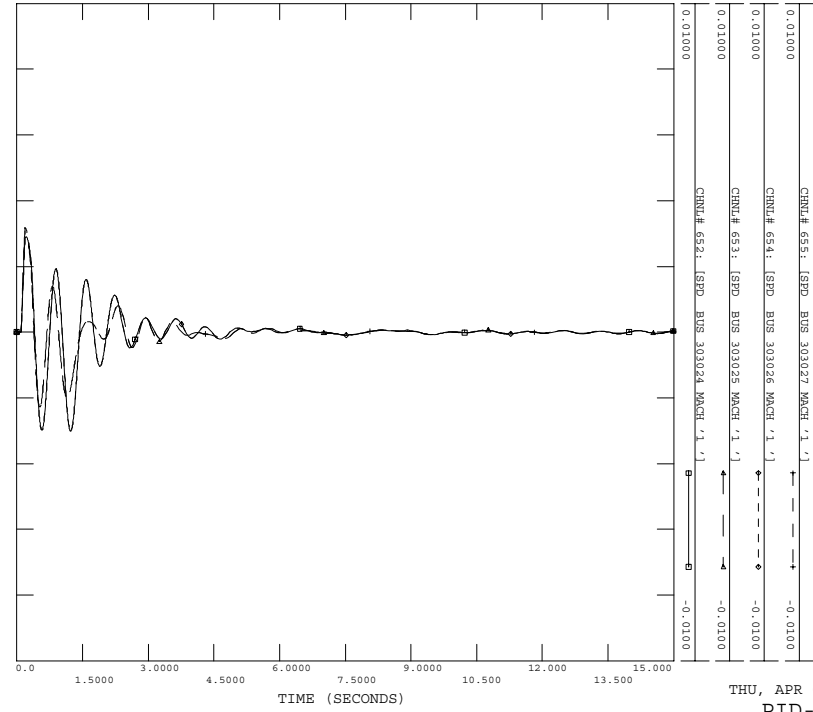
POST-PID-227 CASE
3PH STOCK FLT AT RICHARD 500KV BUS 335367
RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
FILE: FLT_10a.OUT



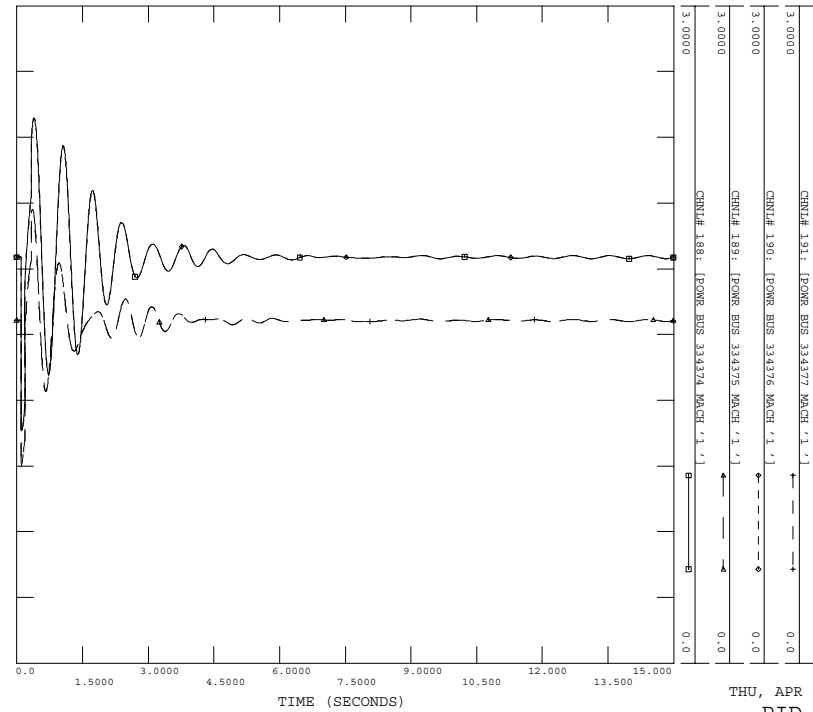
POST-PID-227 CASE
3PH STOCK FLT AT RICHARD 500KV BUS 335367
RICHARD 500KV BUS 335367 TO 8WELLS 500KV BUS 335368 AND 8RI
FILE: FLT_10a.OUT



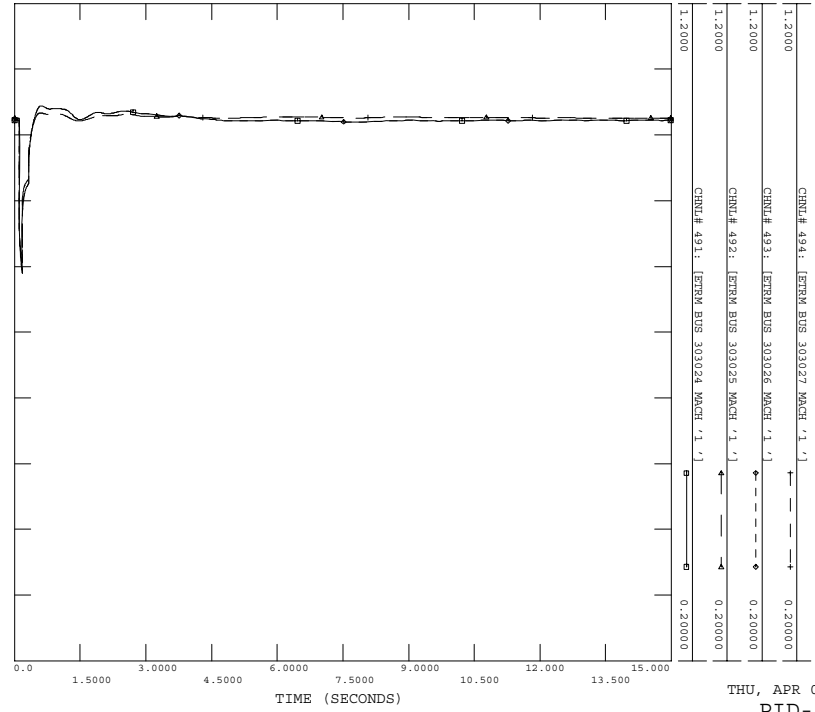
POST-PID-227 CASE
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 8RICHARD 500KV BUS 335367 TO 9WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10a.OUT



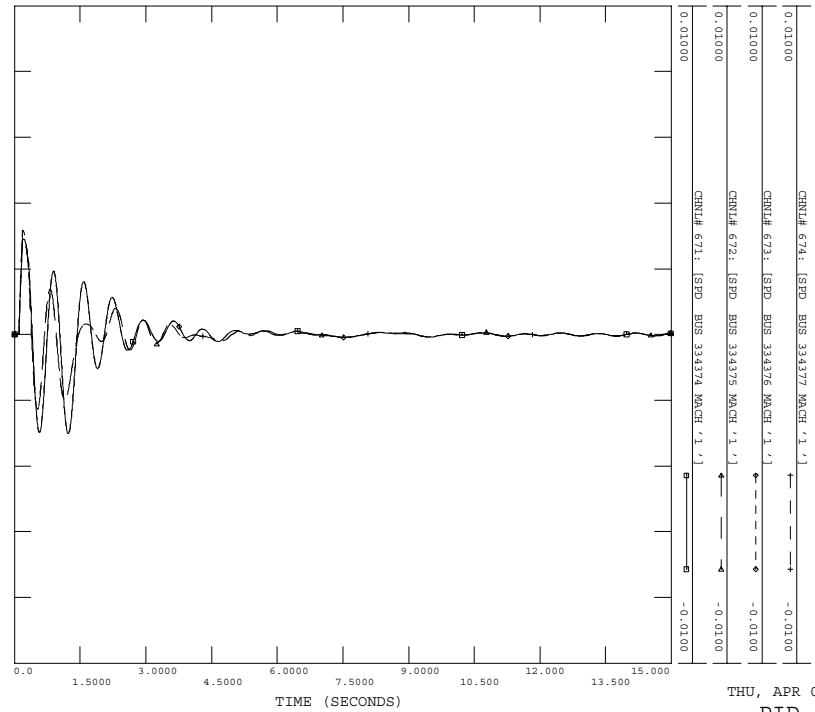
POST-PID-227 CASE
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 8RICHARD 500KV BUS 335367 TO 9WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10a.OUT



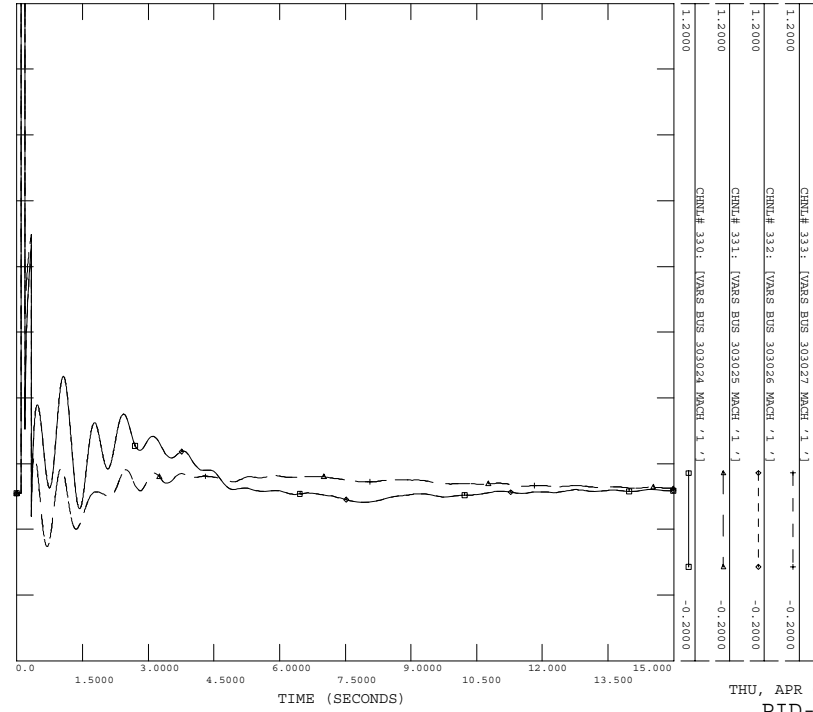
POST-PID-227 CASE
 3PH STOCK FLT AT 8RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 9WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10a.OUT



POST-PID-227 CASE
 3PH STOCK FLT AT 8RICHARD 500KV BUS 335367
 8RICHARD 500KV BUS 335367 TO 9WELLS 500KV BUS 335368 AND 8RI
 FILE: FLT_10a.OUT

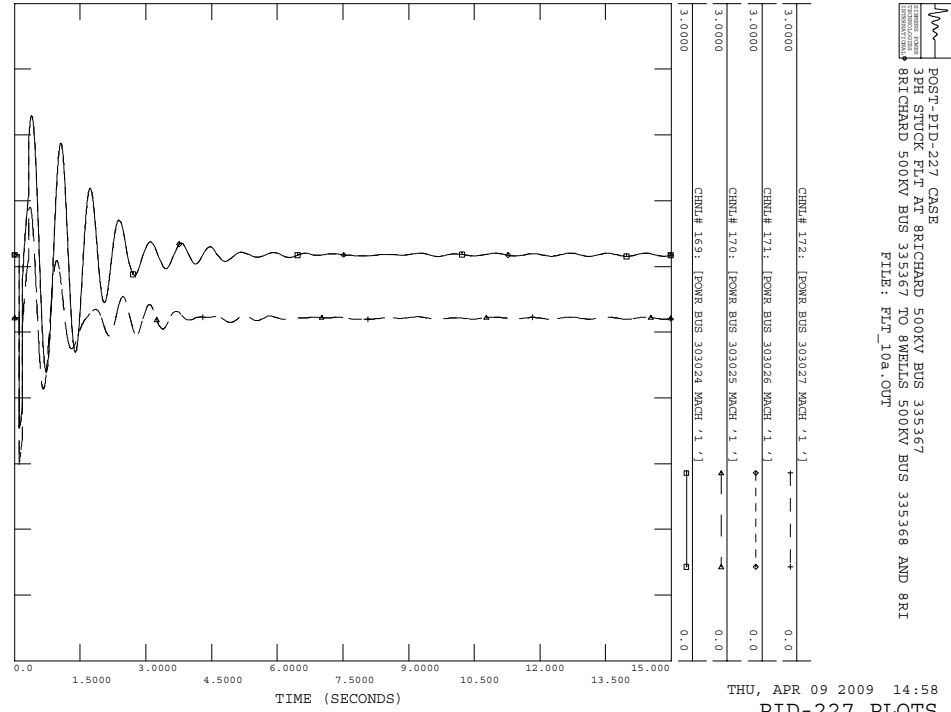


POST-PID-227 CASE
3PH STOCK FLT AT RICHARD 500KV BUS 335367
RICHARD 500KV BUS 335367 TO SWELLIS 500KV BUS 335368 AND 8R1
FILE: FLT_10A.OUT



THU, APR 09 2009 14:58
PID-227 PLOTS

POST-PID-227 CASE
3PH STOCK FLT AT RICHARD 500KV BUS 335367
RICHARD 500KV BUS 335367 TO SWELLIS 500KV BUS 335368 AND 8R1
FILE: FLT_10A.OUT

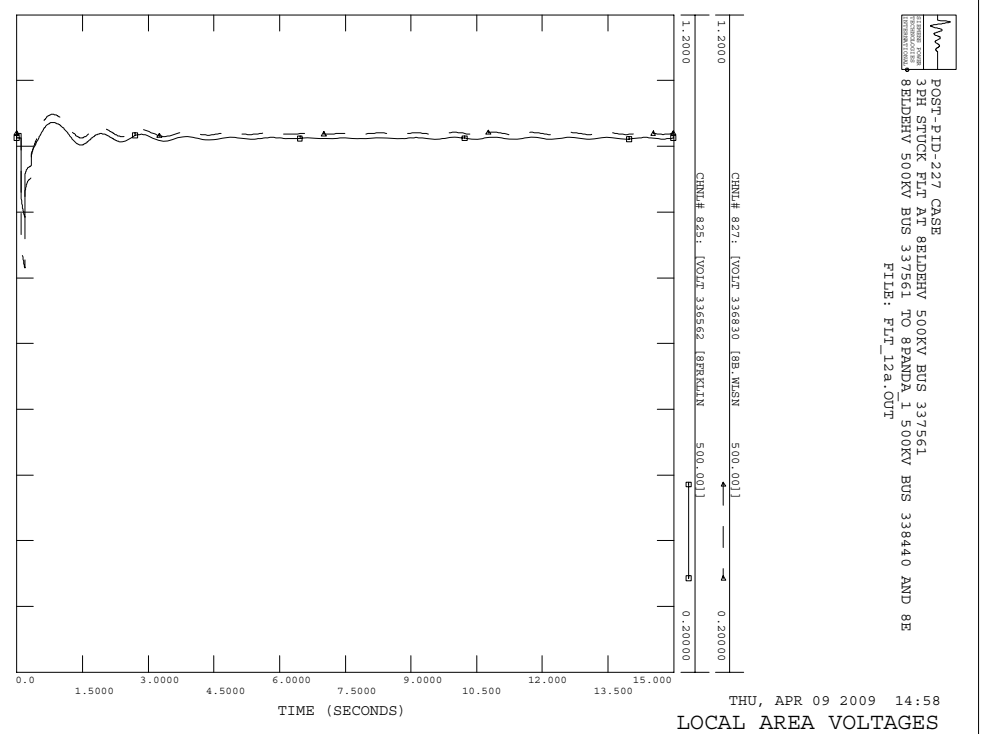
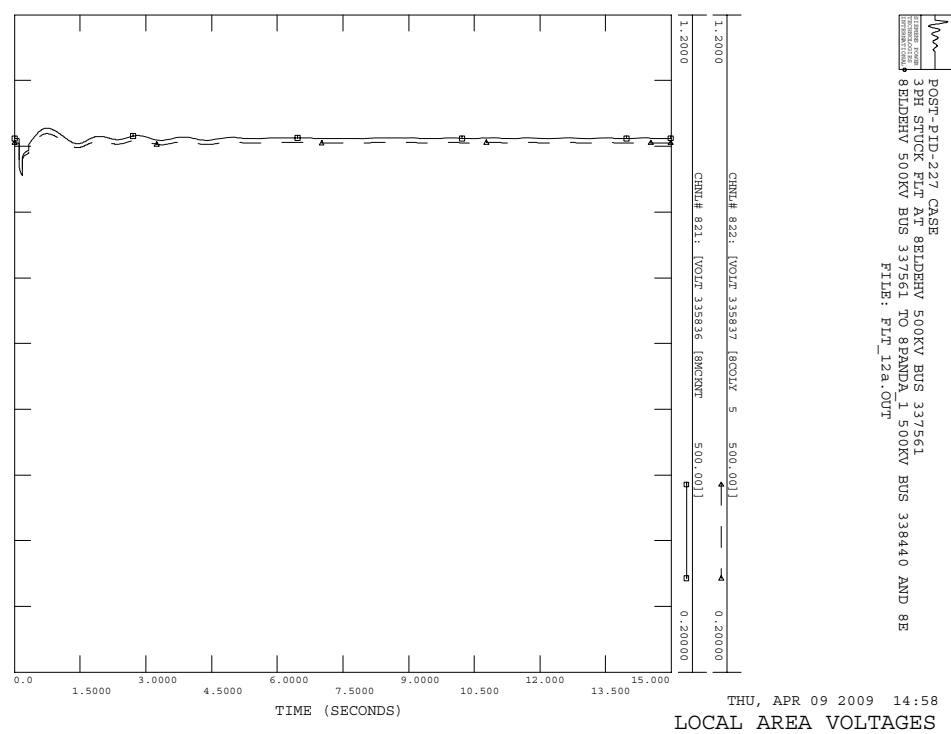
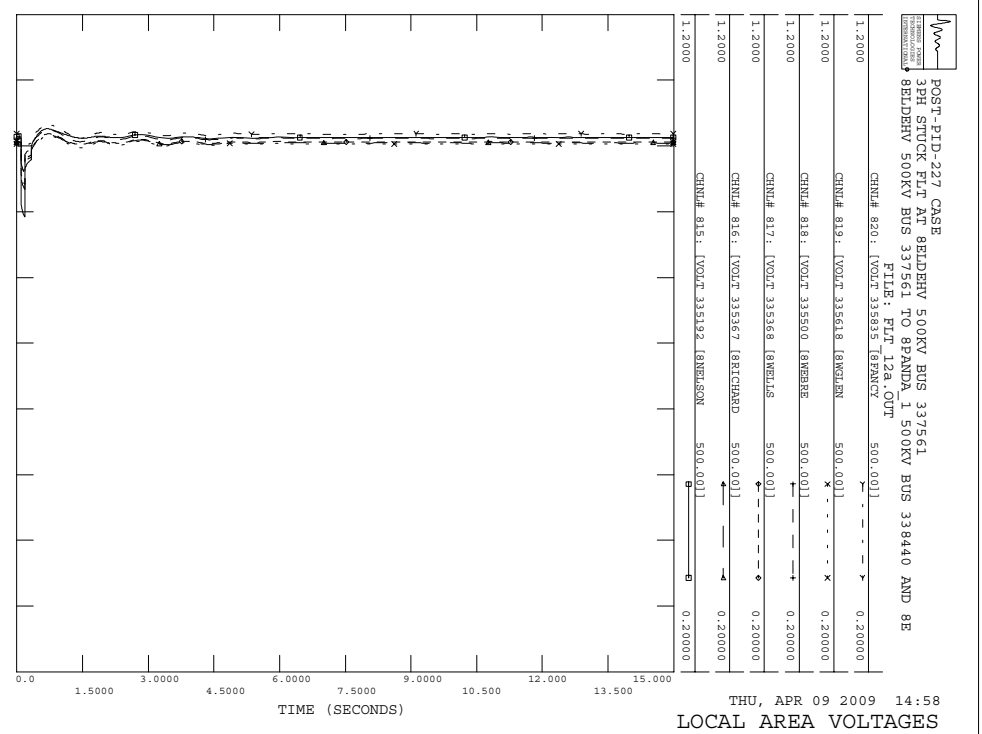
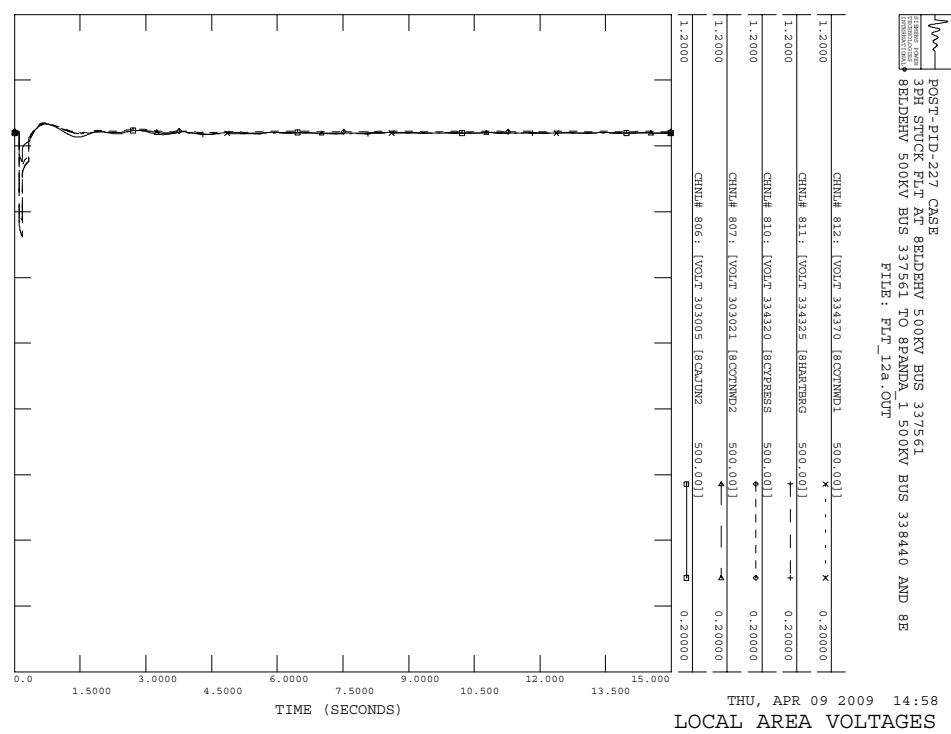


THU, APR 09 2009 14:58
PID-227 PLOTS

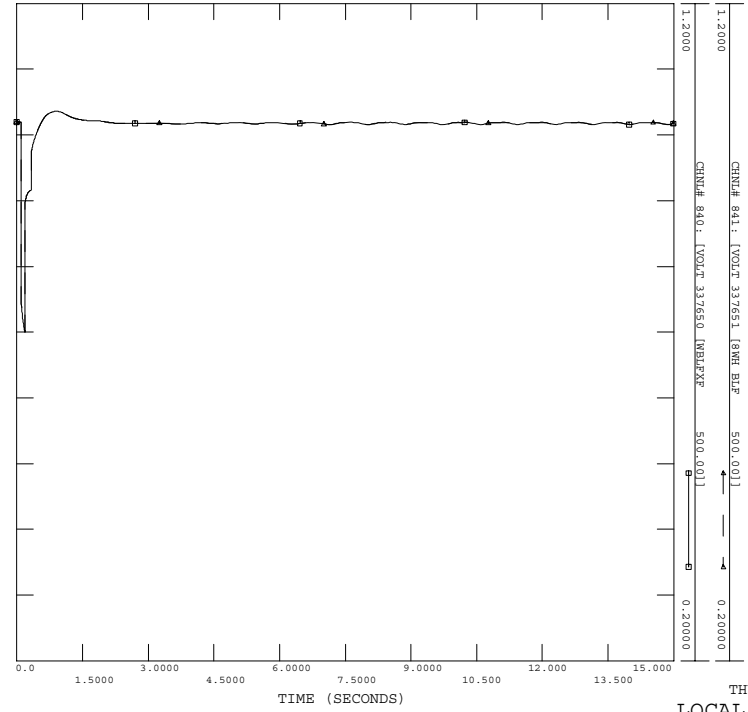
C.26 FLT_12a

Stuck breaker fault on the 8ELDEHV (#337561) to 8PANDA_1 (#338440) 500 kv line, near the 8ELDEHV.

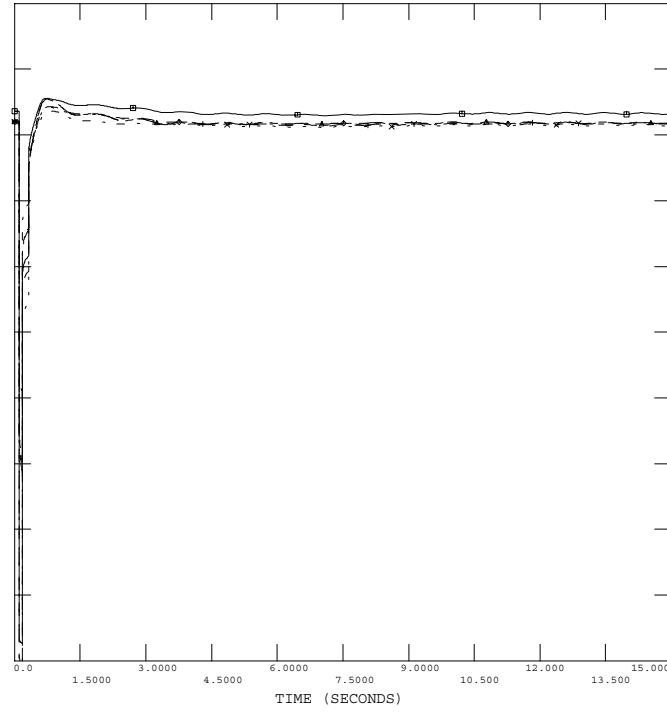
- a) Apply 3 Phase Fault at 8ELDEHV 500KV BUS 337561
- b) Run fault for 5 cycles
- c) Remove Fault AT 8ELDEHV 500KV BUS 337561
- d) Apply 3 Phase fault at #337561 with admittance $869.33-j14636.44$ MVA
- e) Clear fault after 9 cycles by tripping lines from 8ELDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 and 8ELDEHV 500KV BUS 337561 TO 8SHERID 500KV BUS 337643.



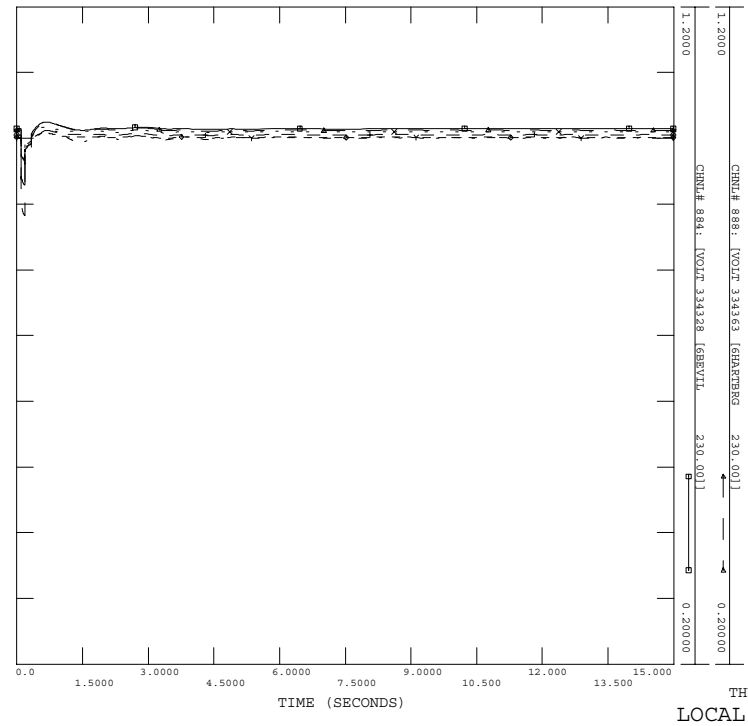
POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



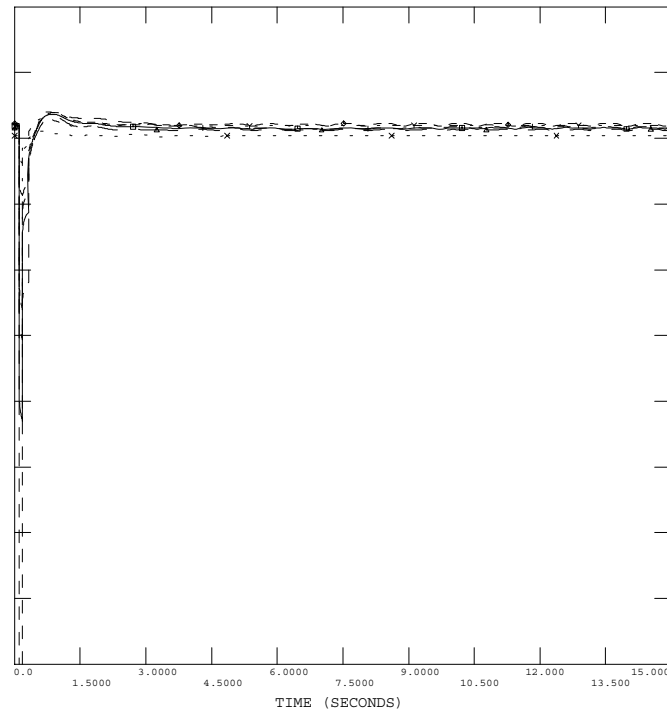
POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT

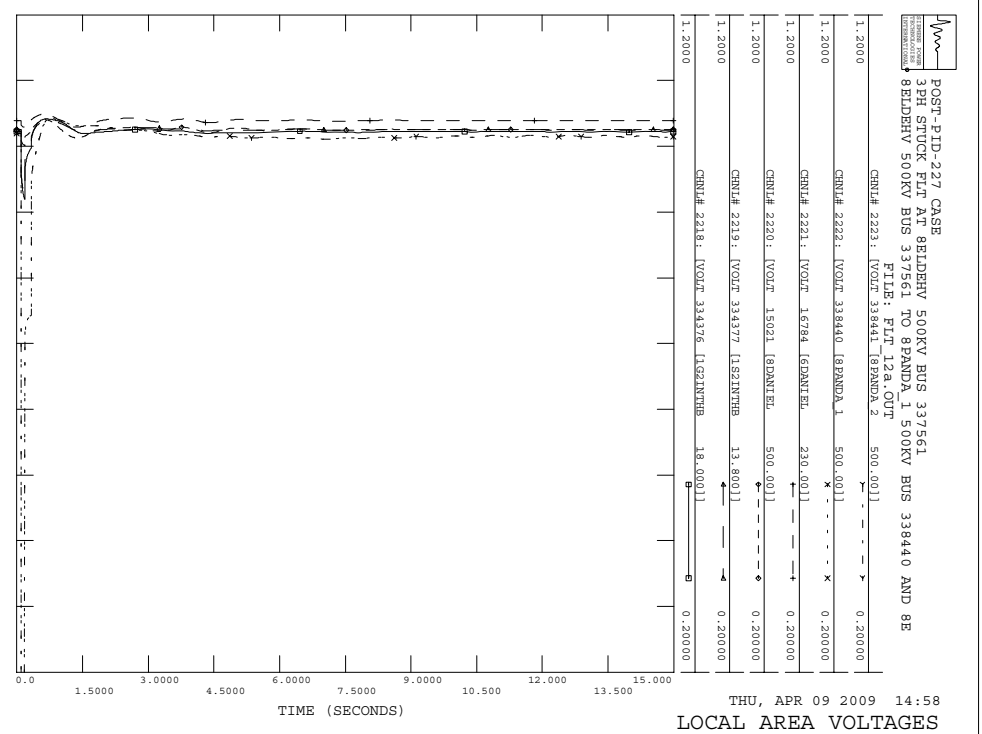
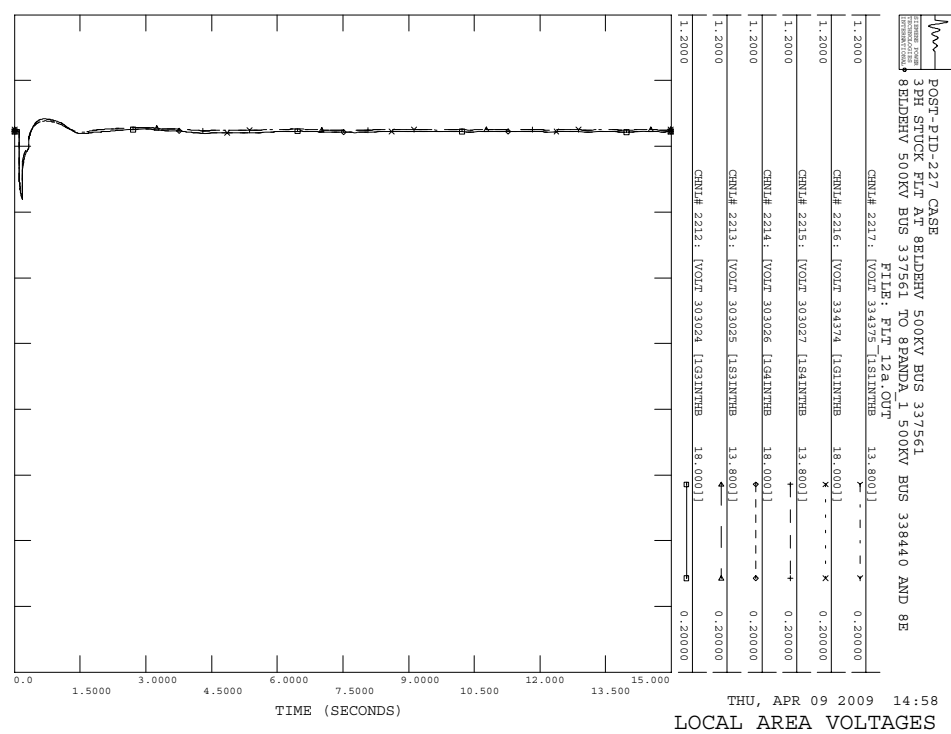
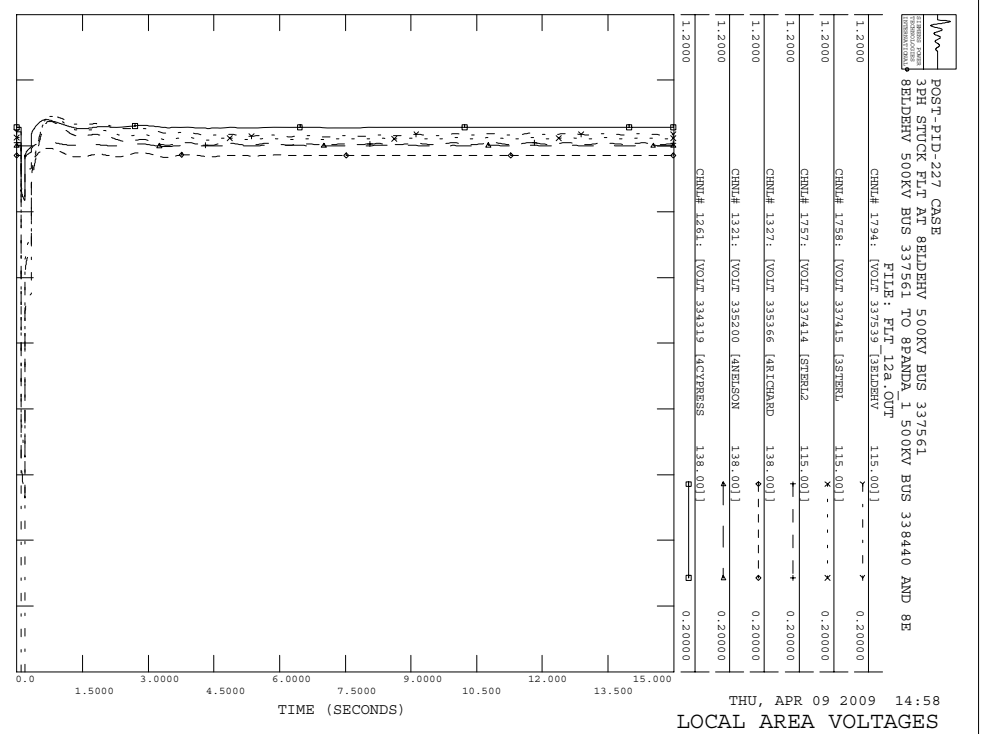
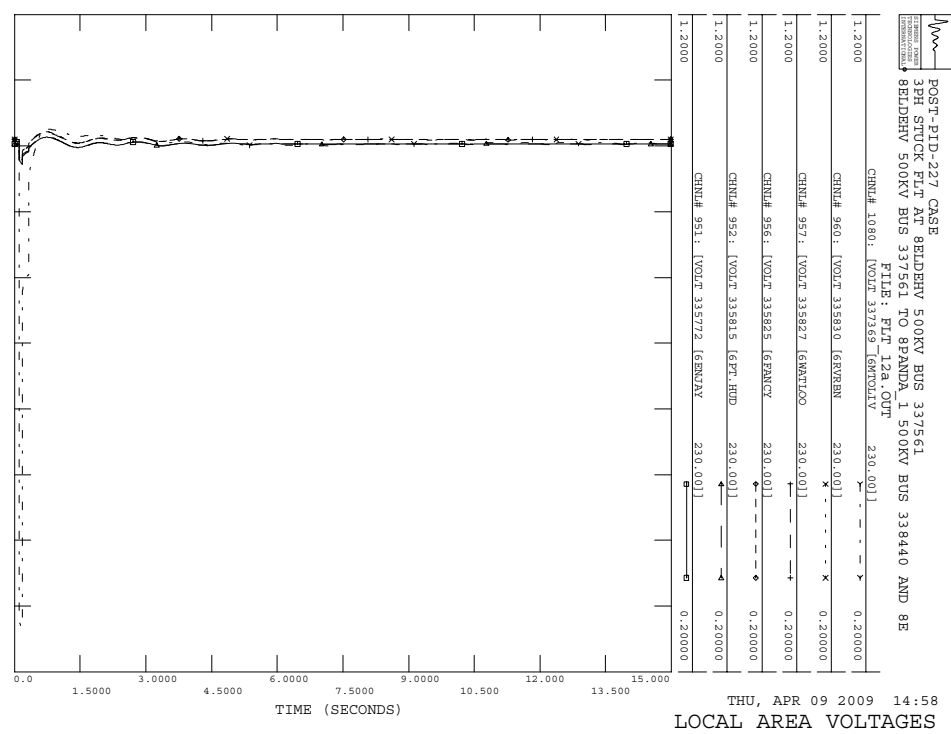


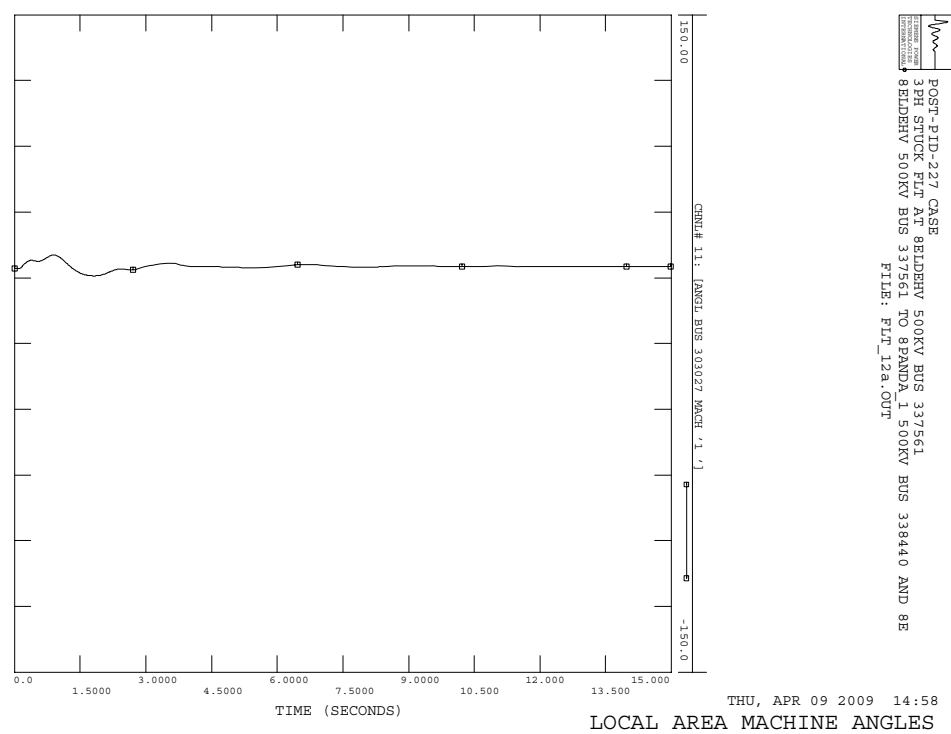
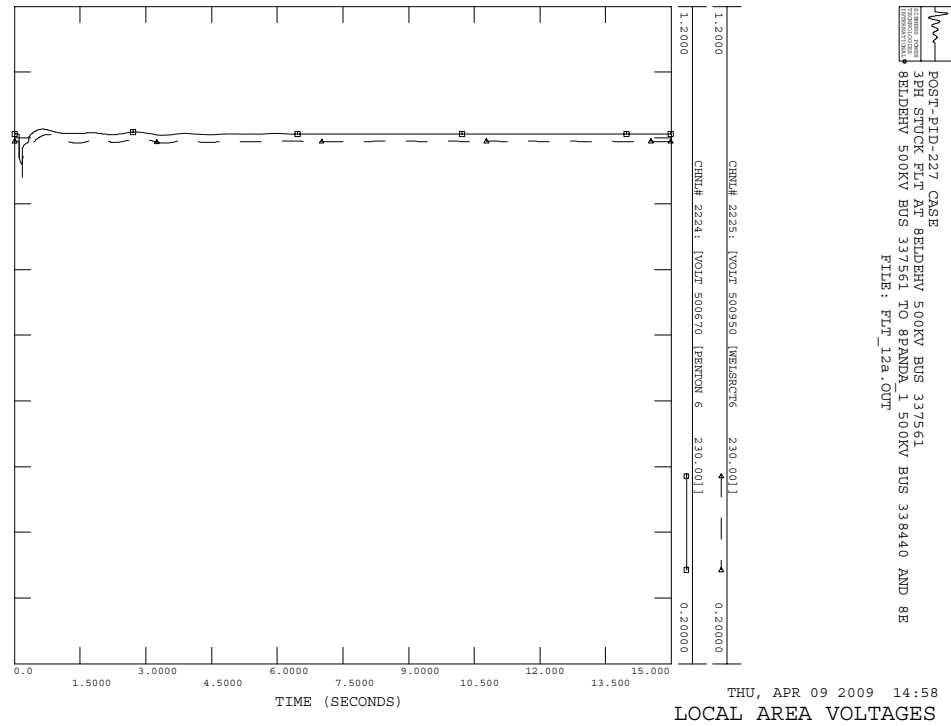
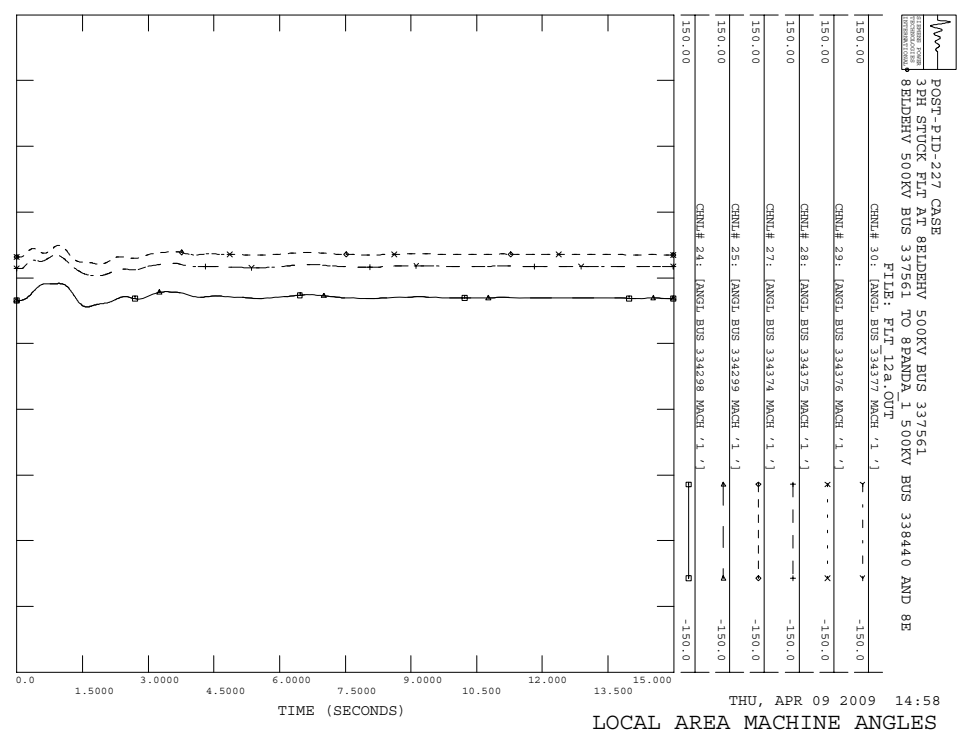
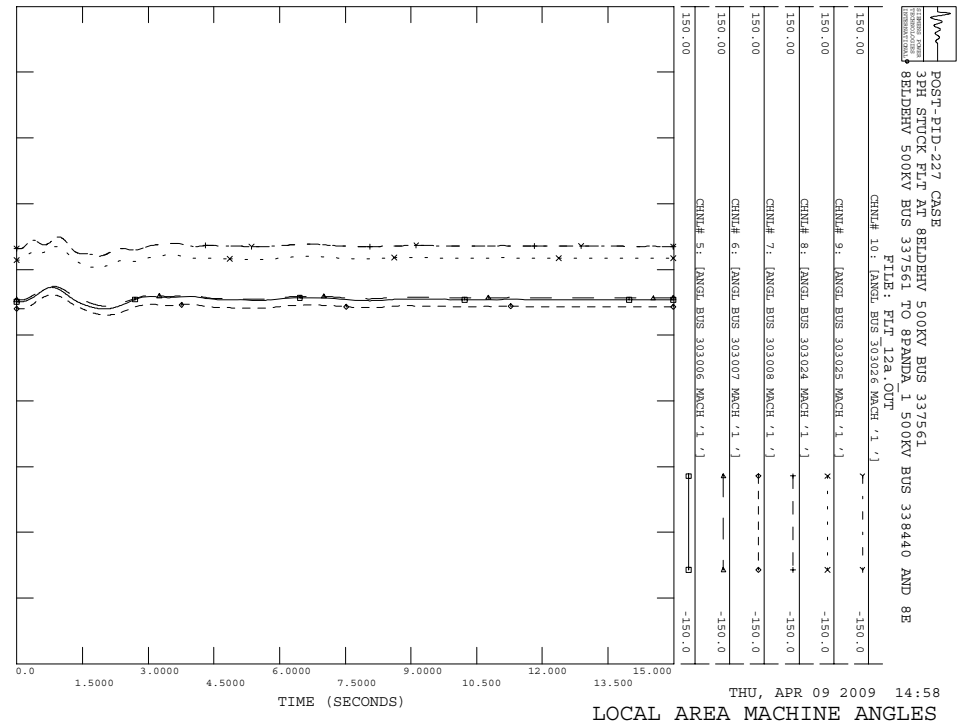
POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



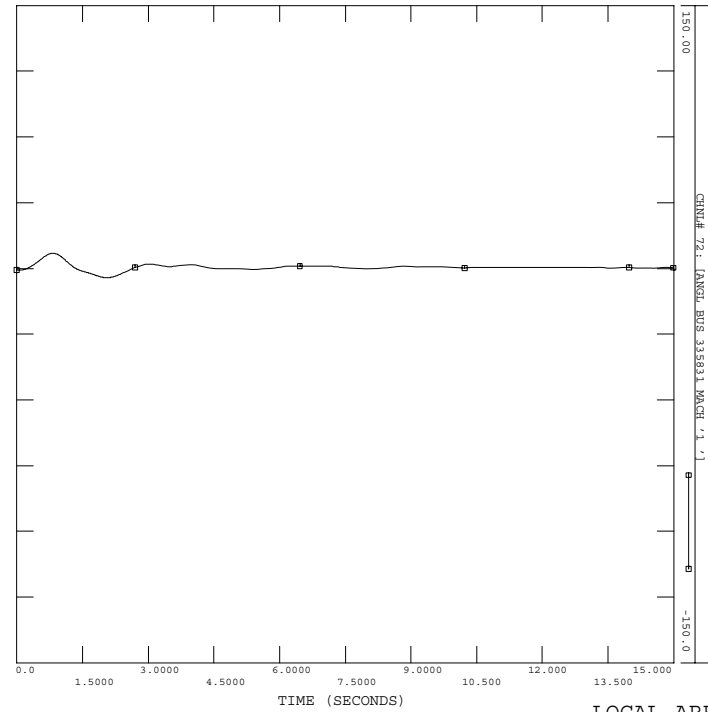
POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT





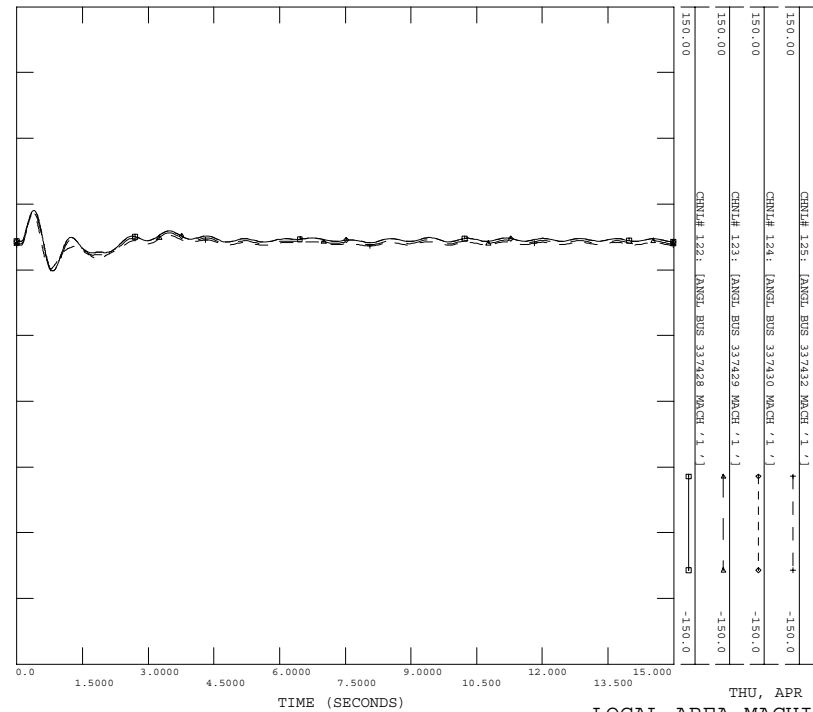


POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



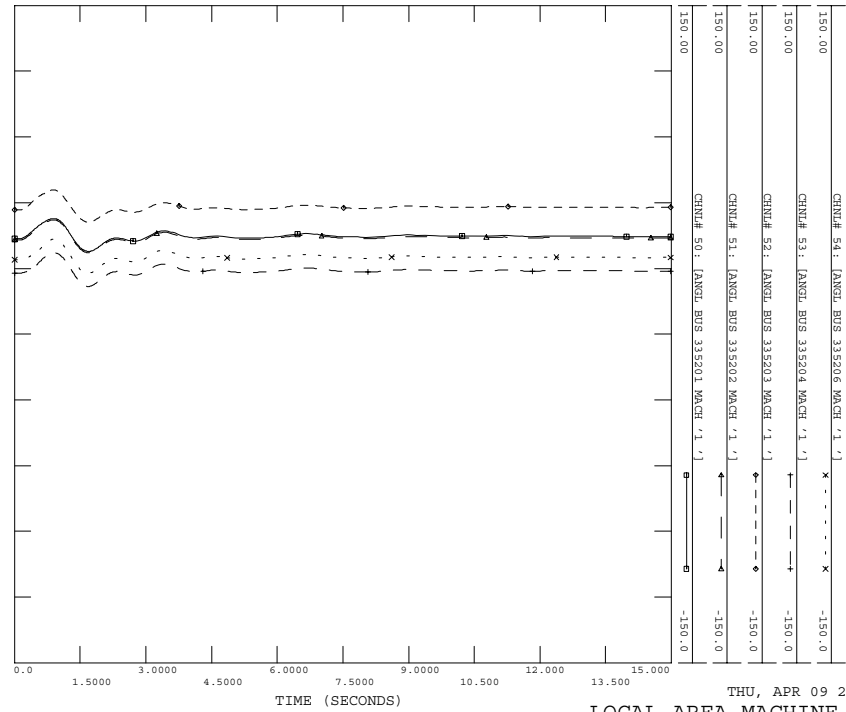
THU, APR 09 2009 14:58
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



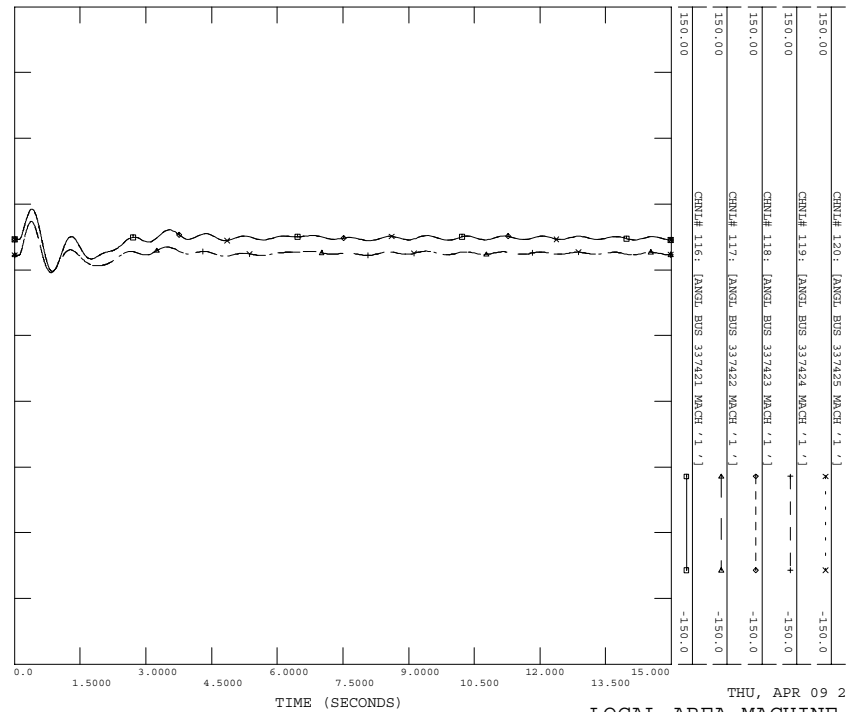
THU, APR 09 2009 14:58
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
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 8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



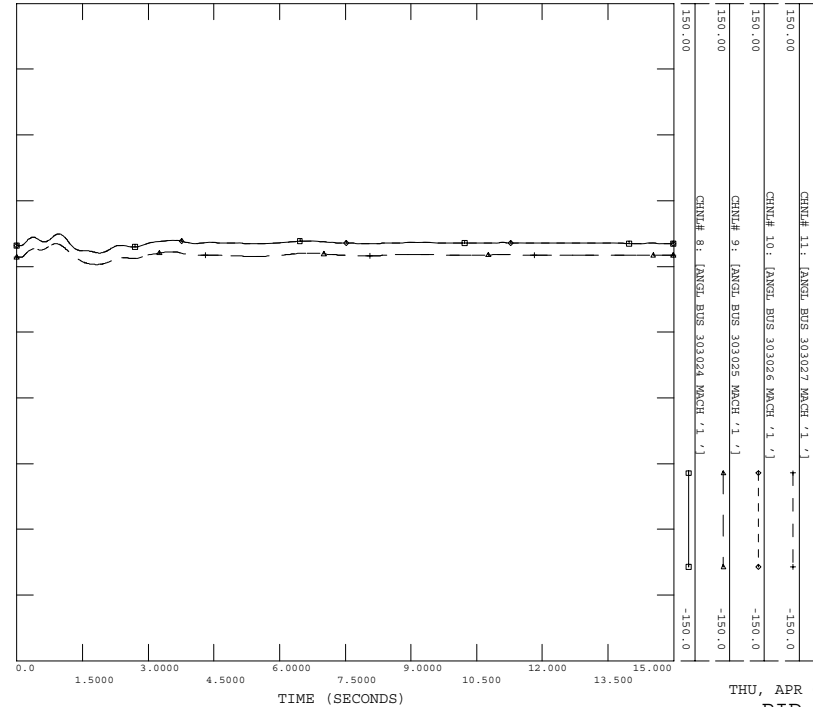
THU, APR 09 2009 14:58
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
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 8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



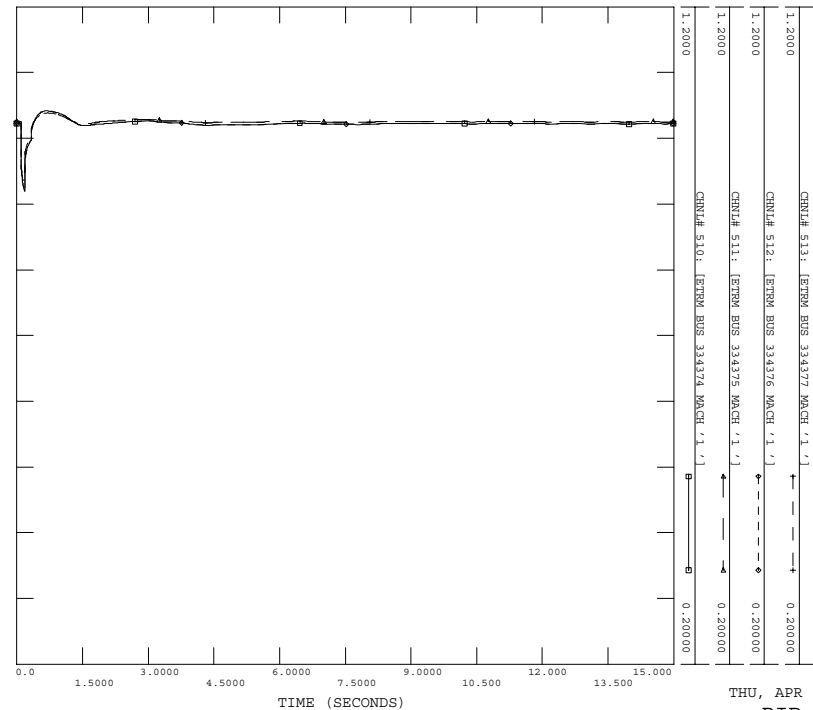
THU, APR 09 2009 14:58
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



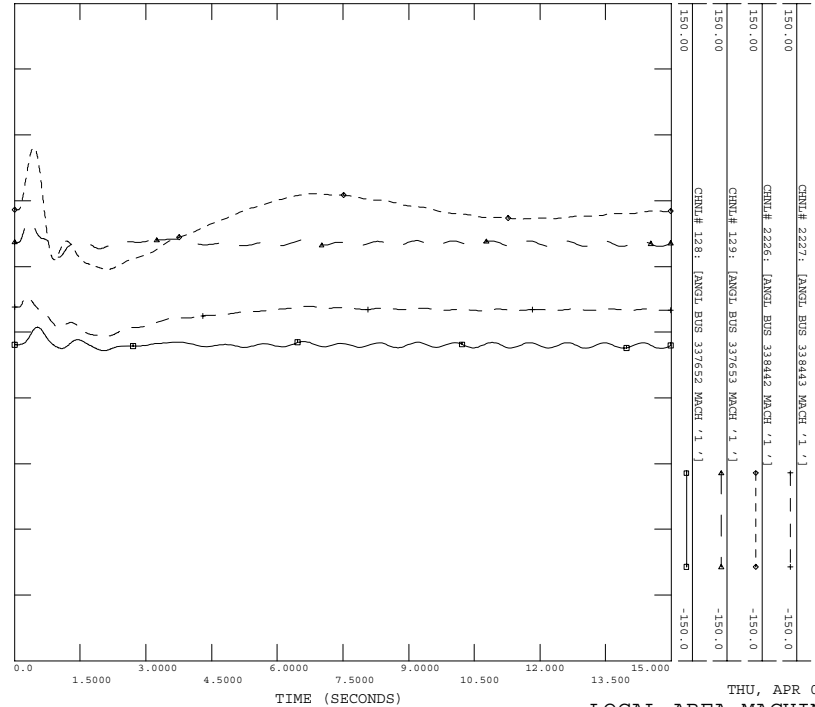
THU, APR 09 2009 14:58
 PID-227 PLOTS

POST-PID-227 CASE
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 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



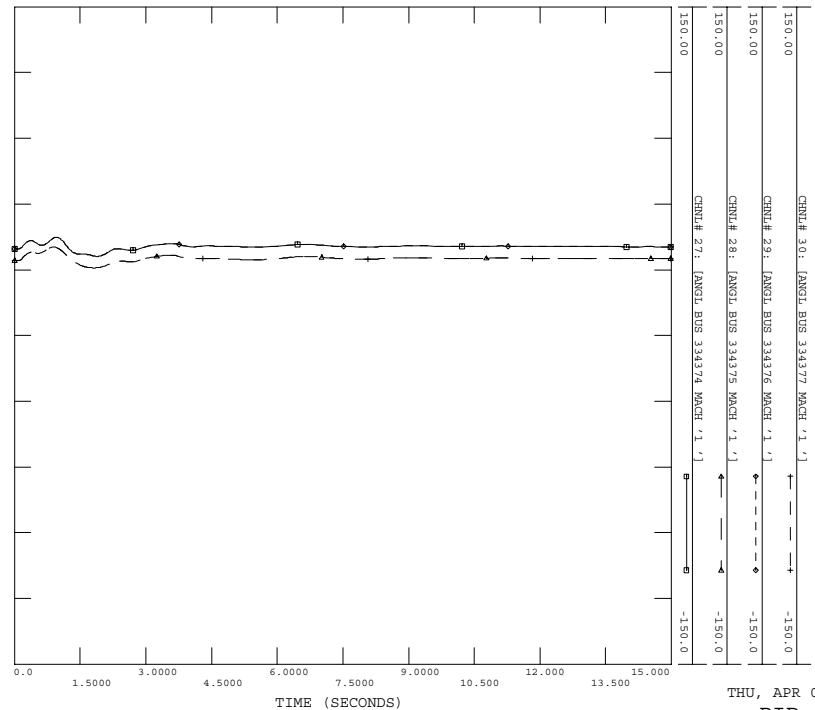
THU, APR 09 2009 14:58
 PID-227 PLOTS

POST-PID-227 CASE
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 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



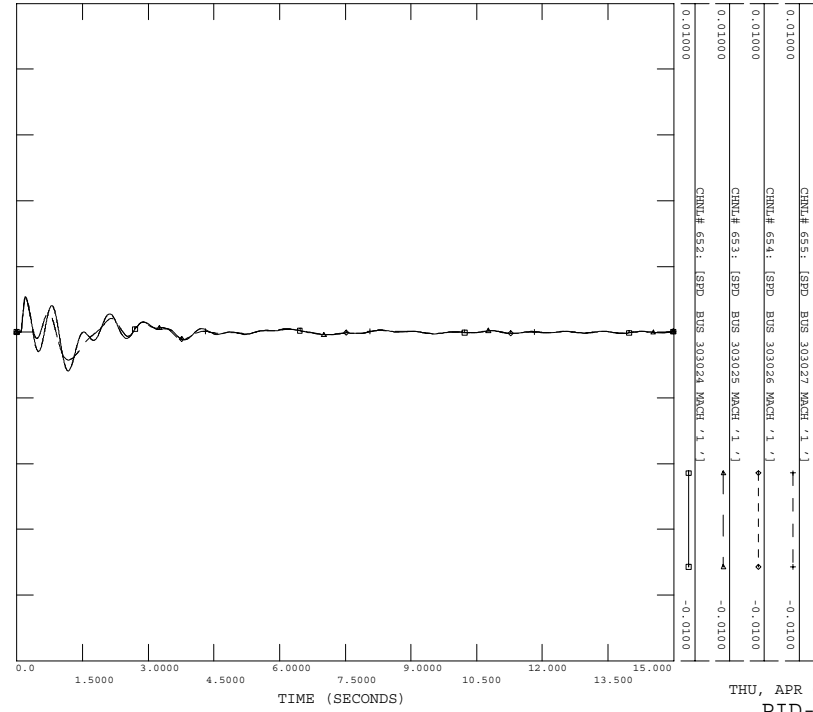
THU, APR 09 2009 14:58
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT

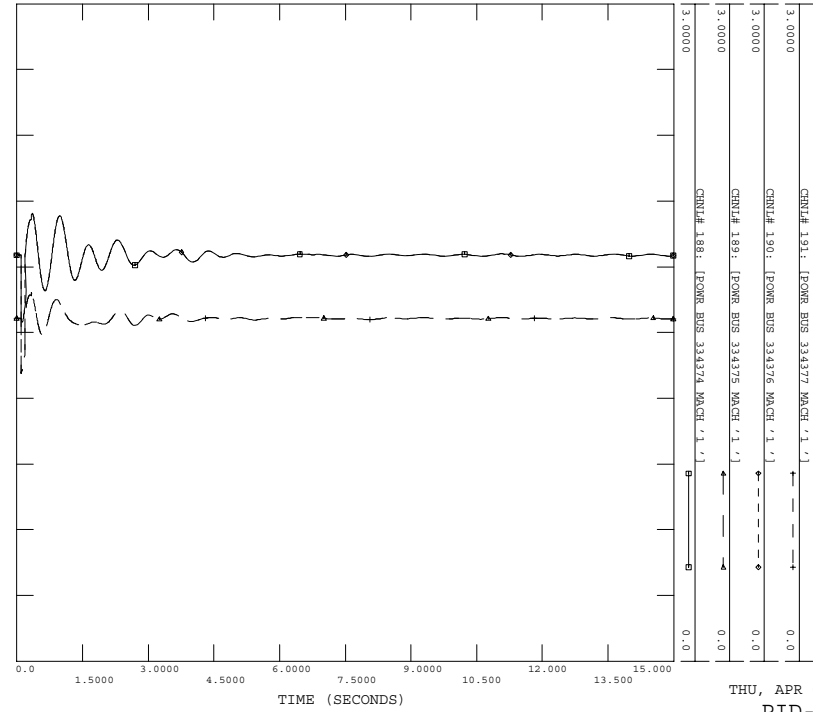


THU, APR 09 2009 14:58
 PID-227 PLOTS

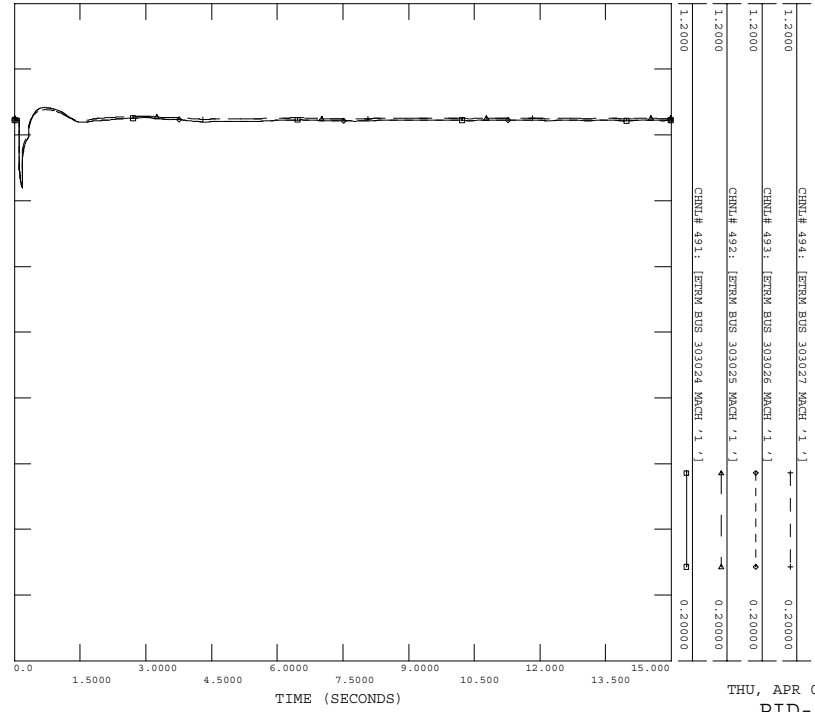
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDENHV 500KV BUS 337561
 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



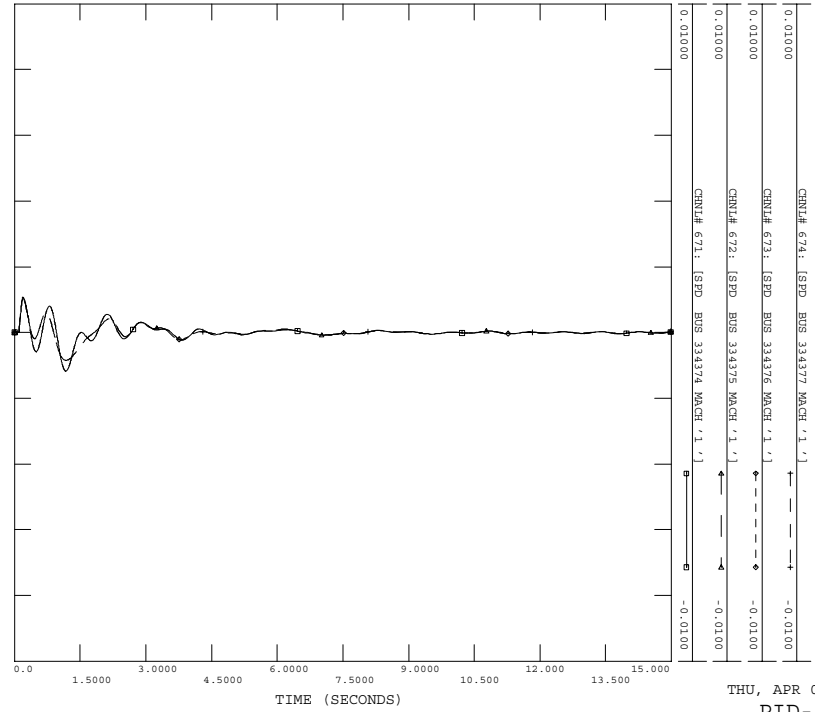
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDENHV 500KV BUS 337561
 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT




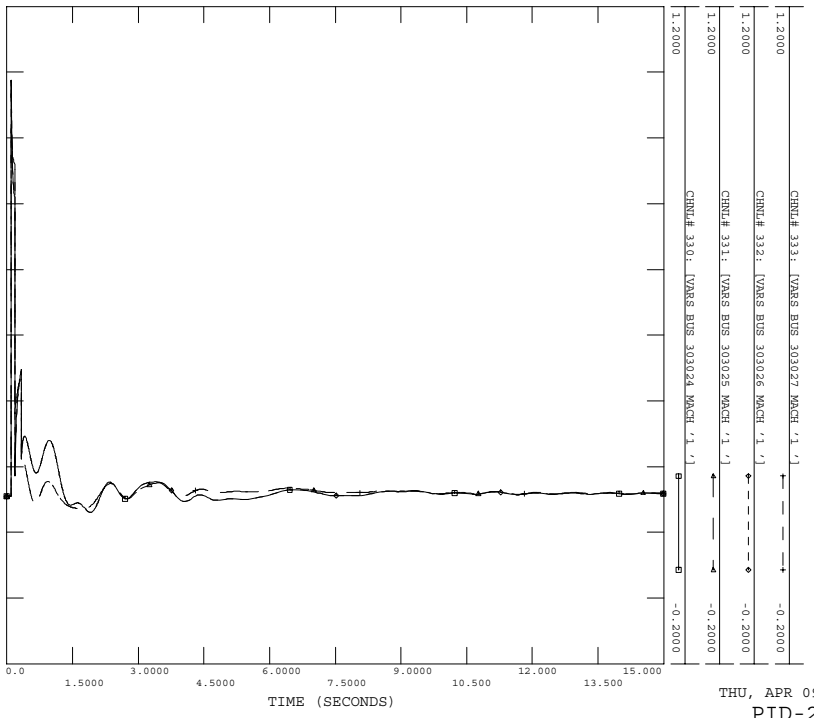
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDENHV 500KV BUS 337561
 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT




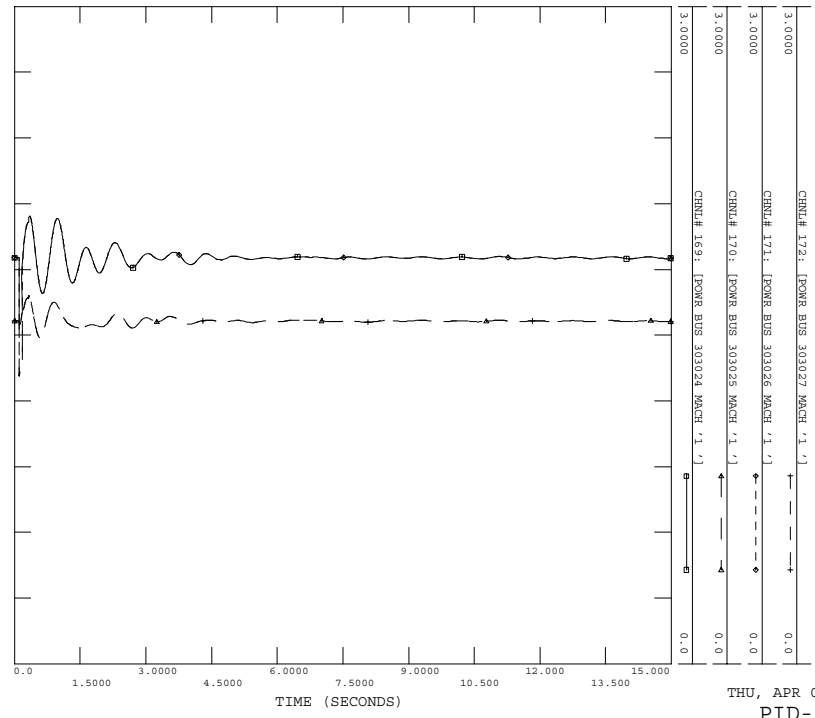
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDENHV 500KV BUS 337561
 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT




 POST-PID-227 CASE
 3PH STOCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



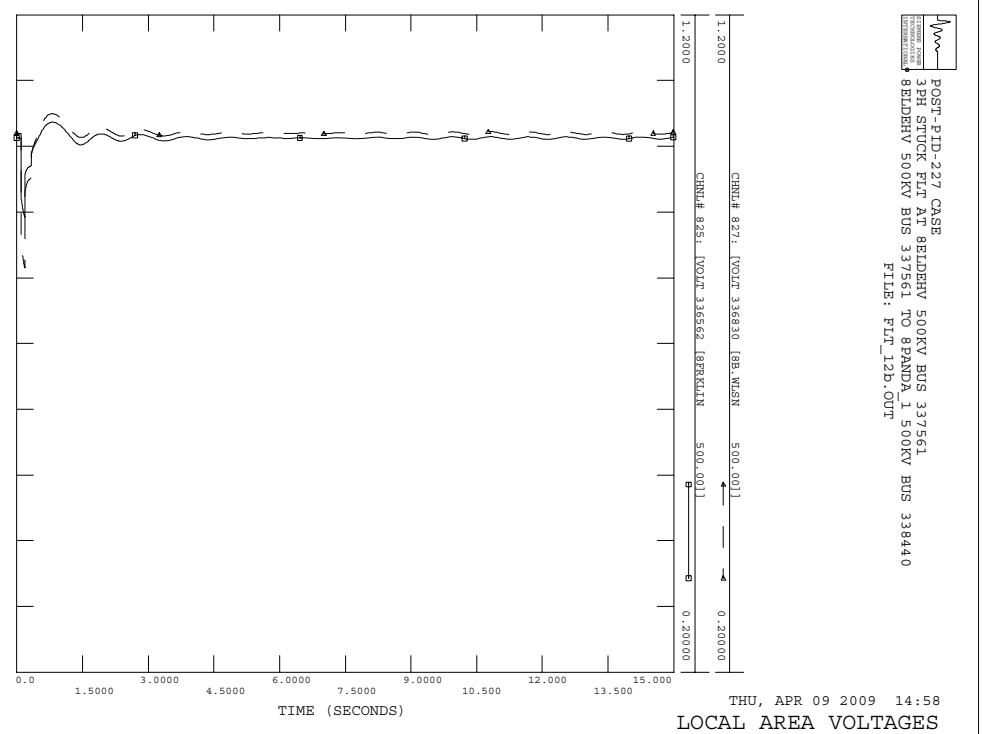
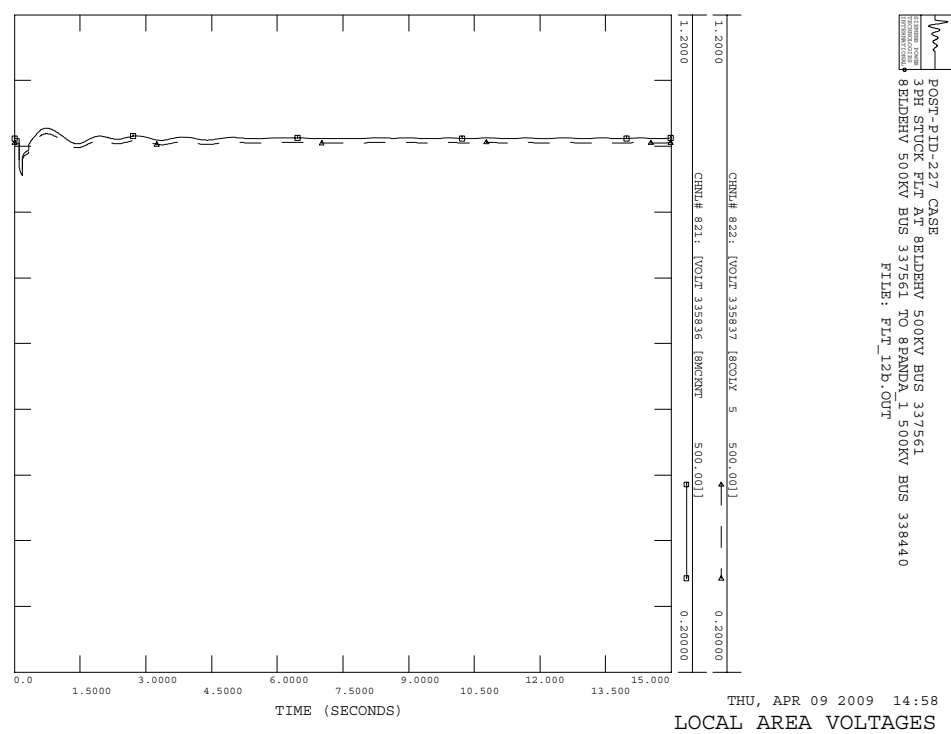
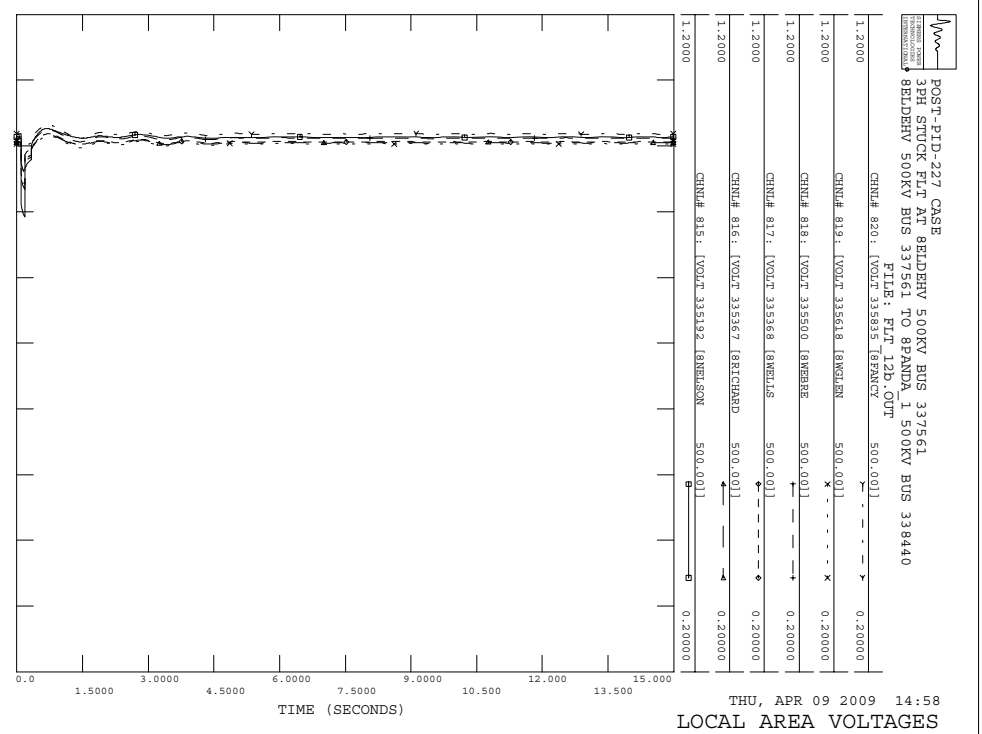
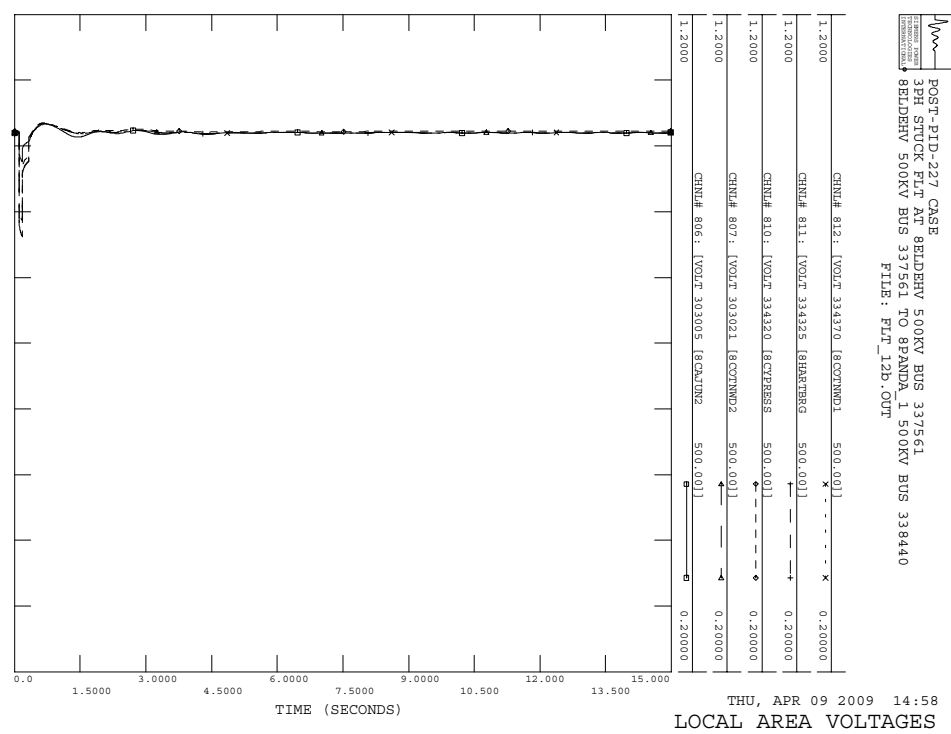

 POST-PID-227 CASE
 3PH STOCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440 AND 8B
 FILE: FLT_12a.OUT



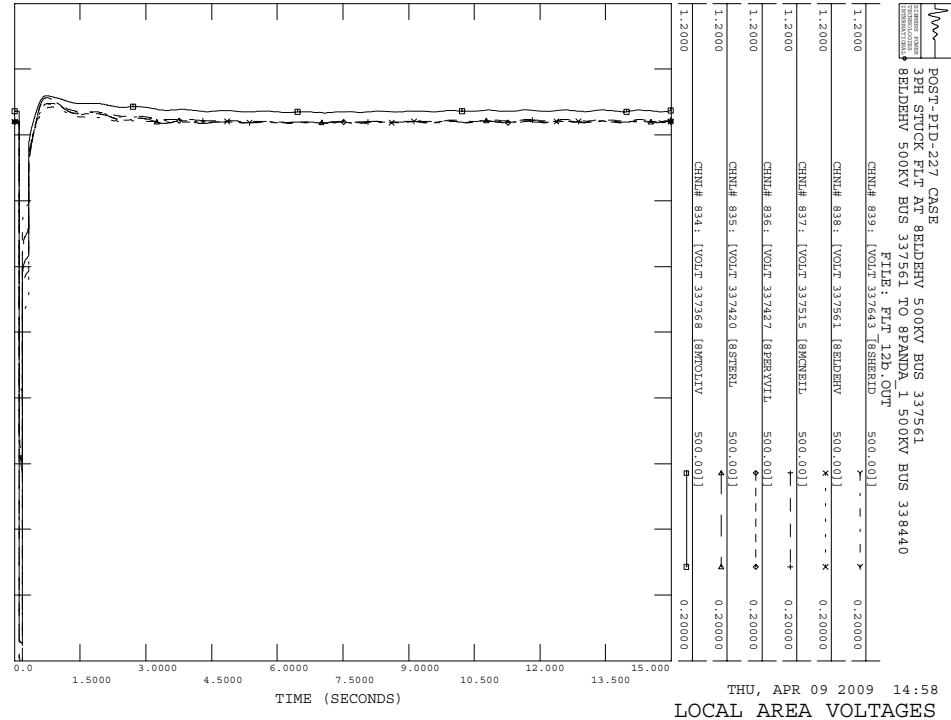
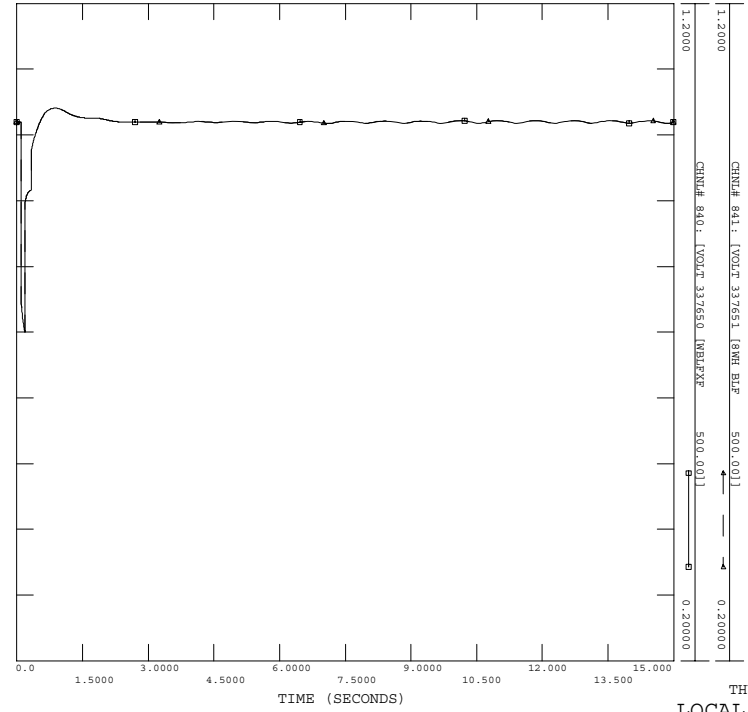
C.27 FLT_12b

Stuck breaker fault on the 8ELDEHV (#337561) to 8PANDA_1 (#338440) 500 kv line, near the 8ELDEHV.

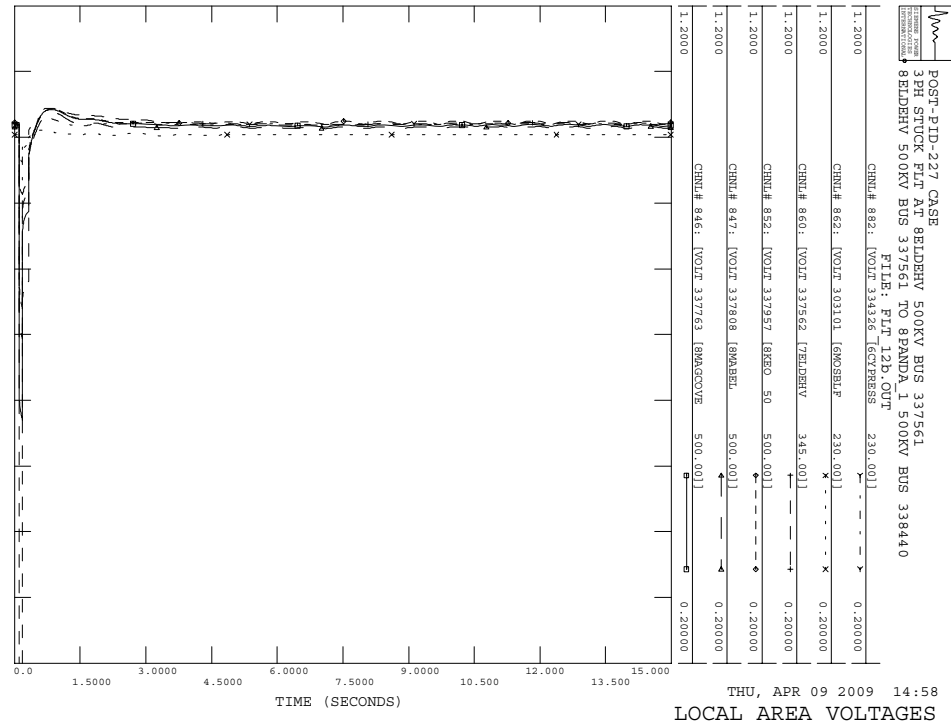
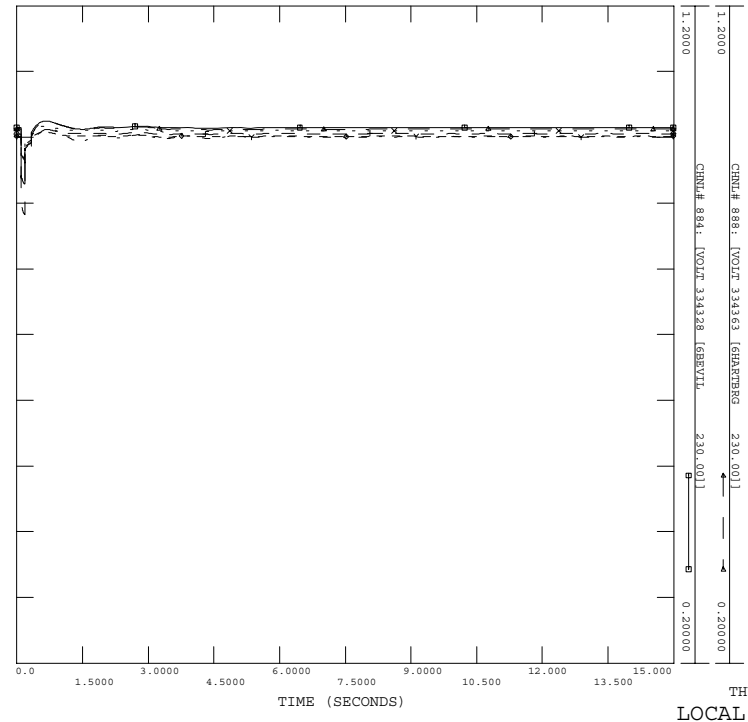
- a) Apply 3 Phase Fault at 8ELDEHV 500KV BUS 337561
- b) Run fault for 5 cycles
- c) Remove Fault AT 8ELDEHV 500KV BUS 337561
- d) Apply 3 Phase fault at #337561 with admittance $869.33-j14636.44$ MVA
- e) Clear fault after 9 cycles by tripping lines from 8ELDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440.

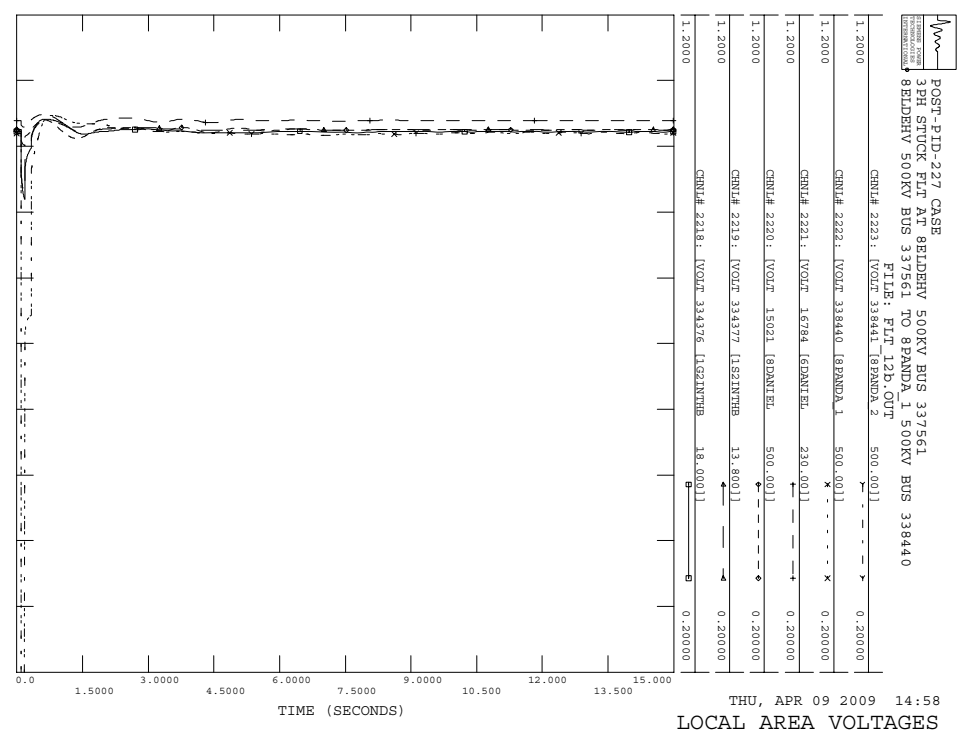
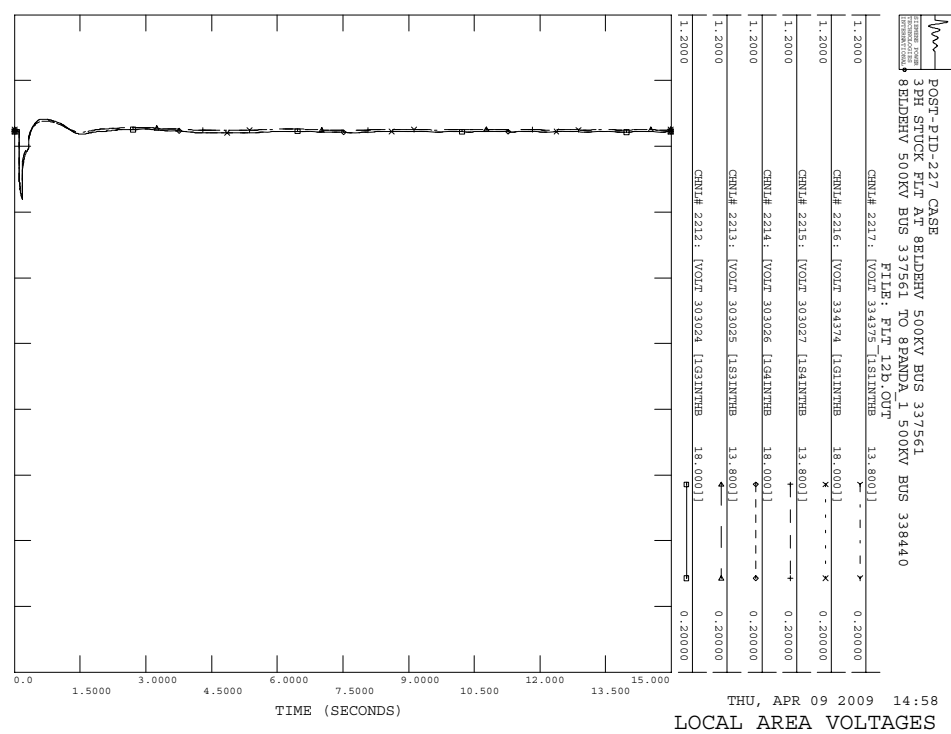
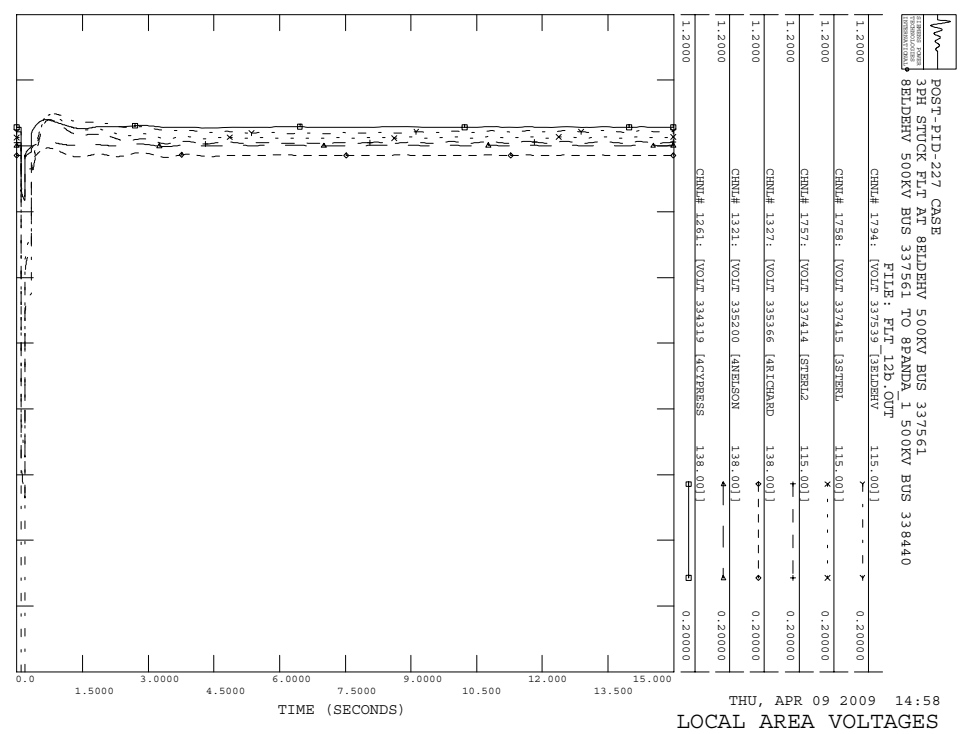
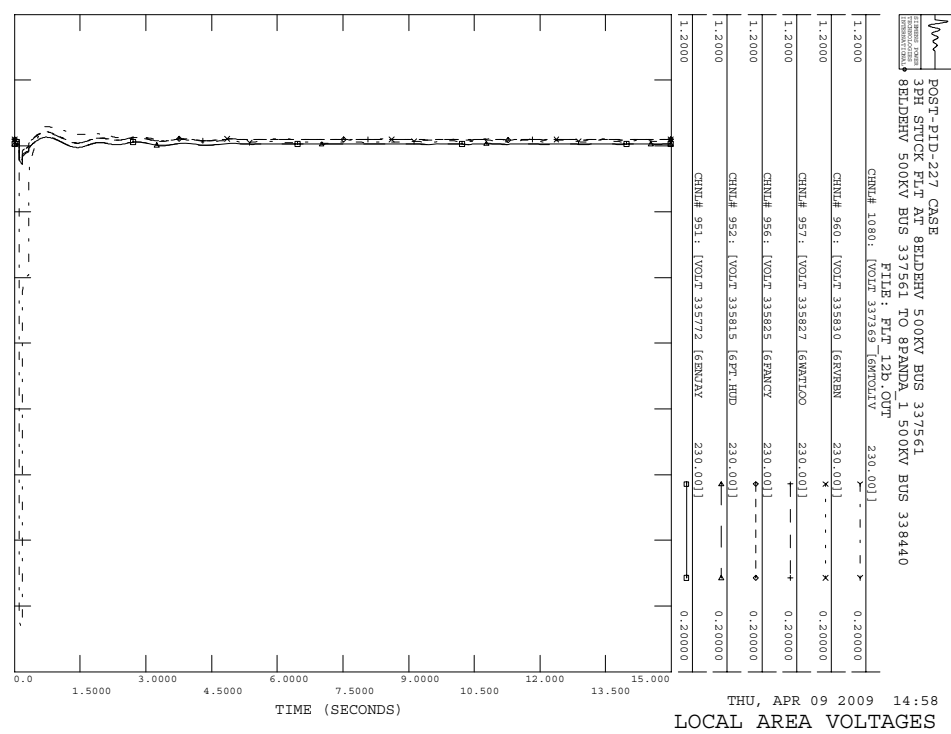


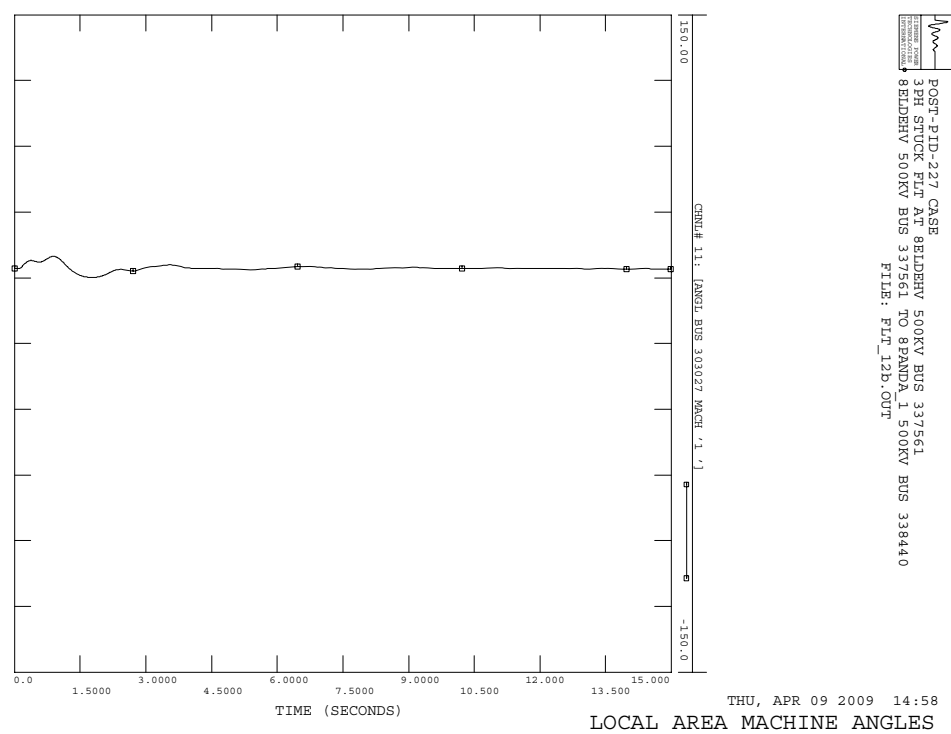
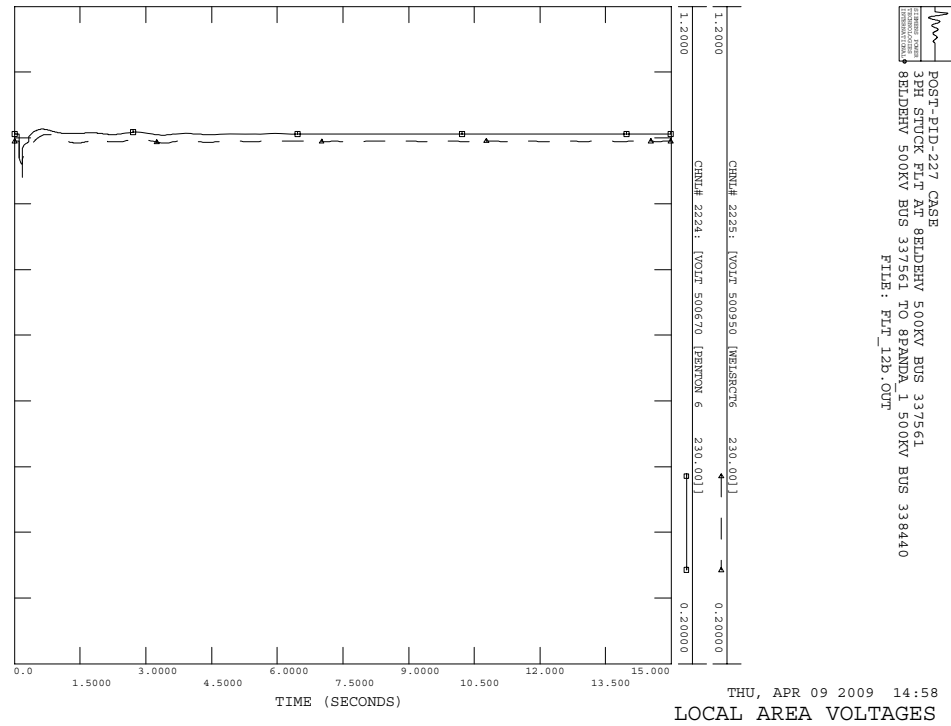
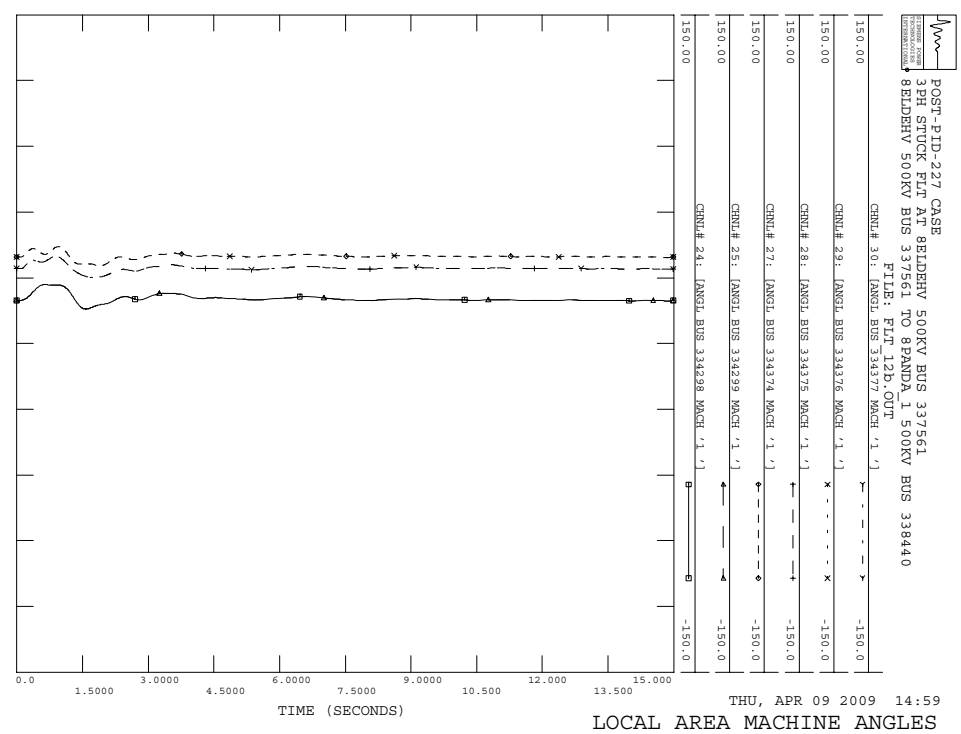
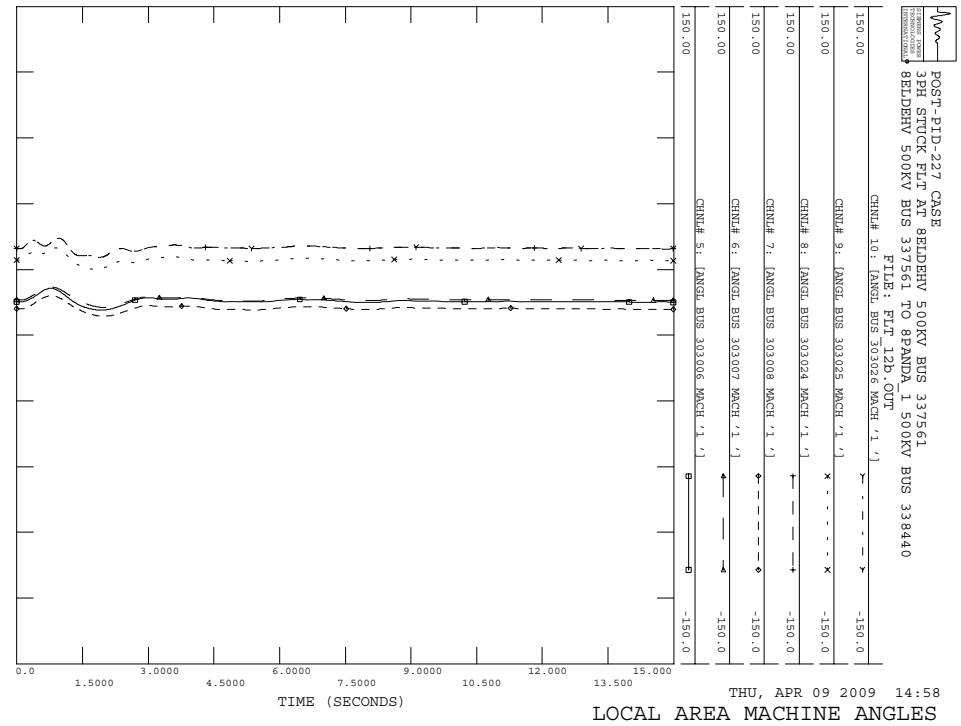
POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



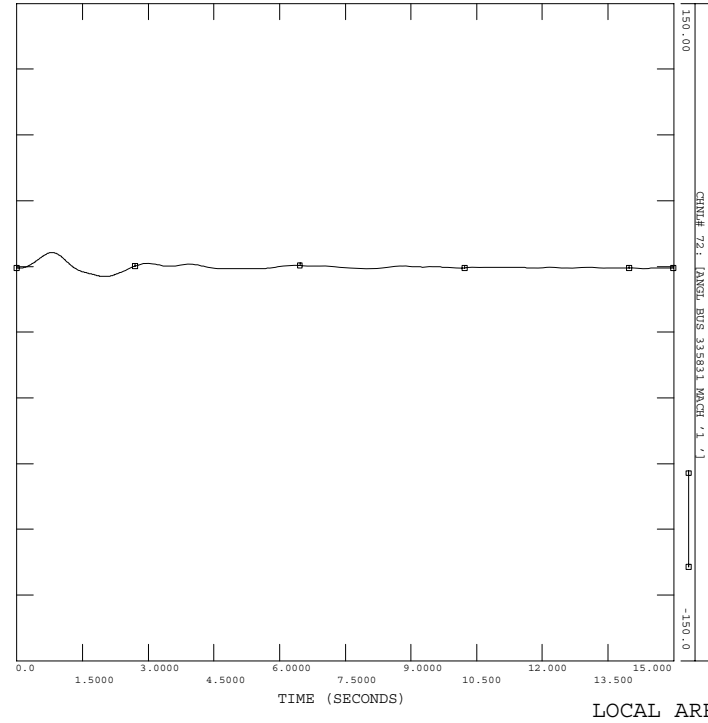
POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT





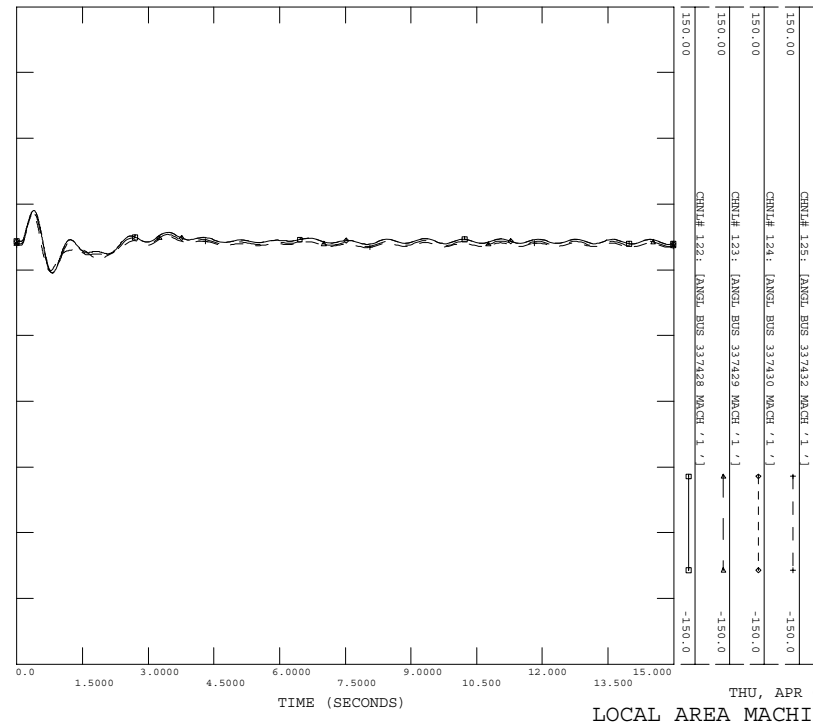


POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



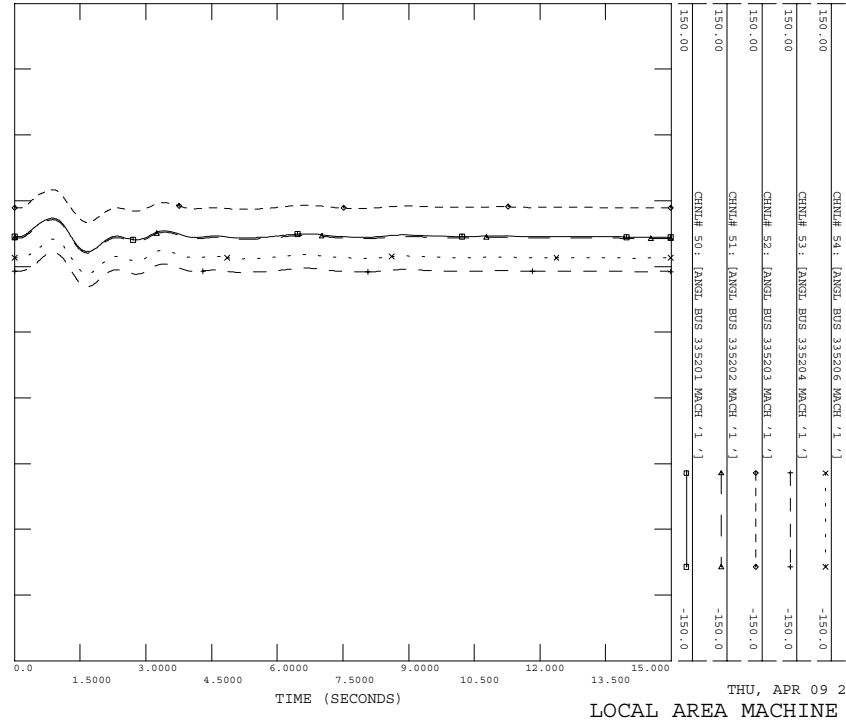
THU, APR 09 2009 14:59
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



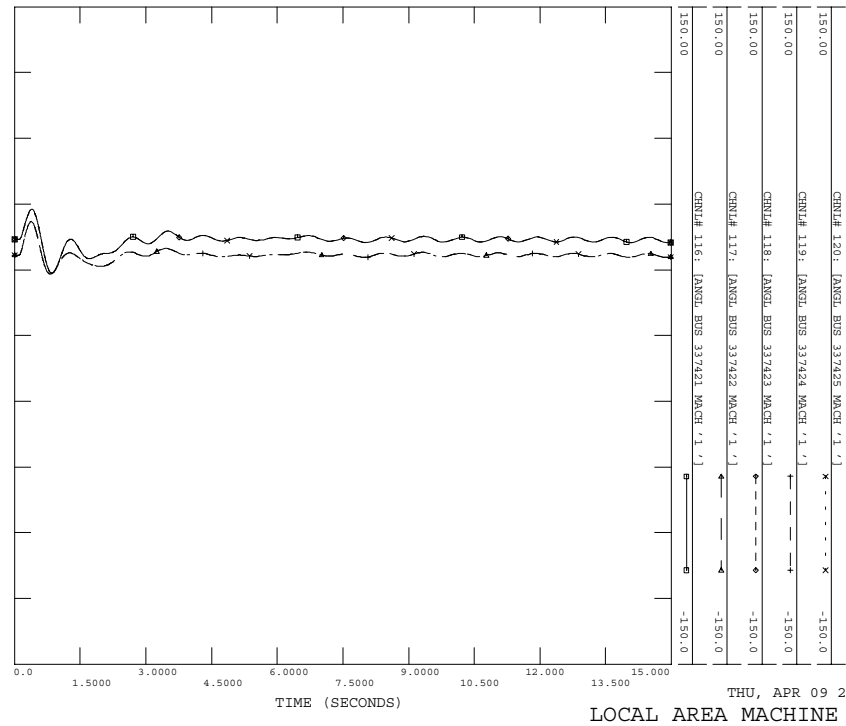
THU, APR 09 2009 14:59
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



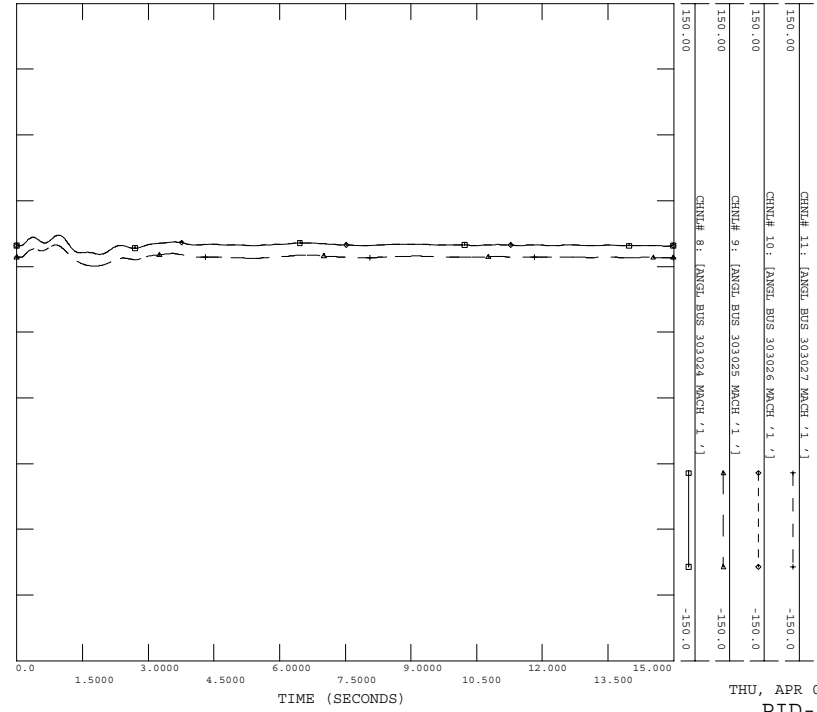
THU, APR 09 2009 14:59
 LOCAL AREA MACHINE ANGLES

POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT

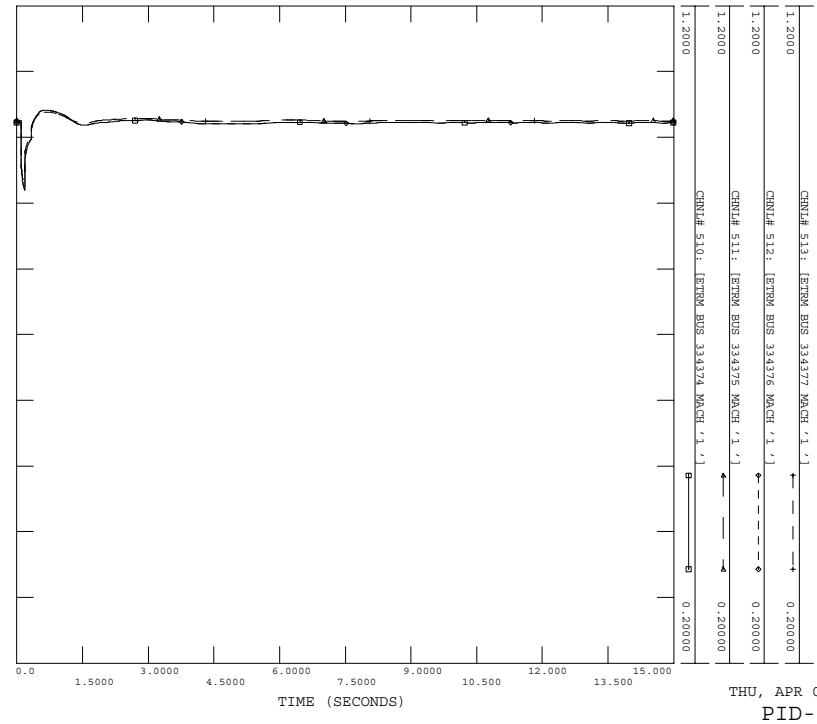


THU, APR 09 2009 14:59
 LOCAL AREA MACHINE ANGLES

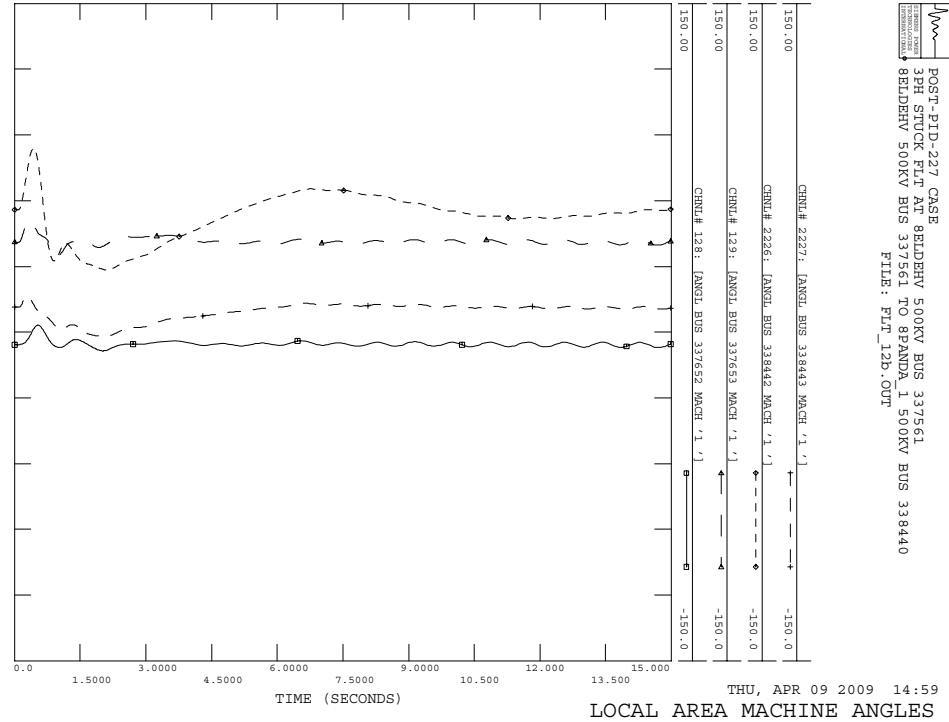
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



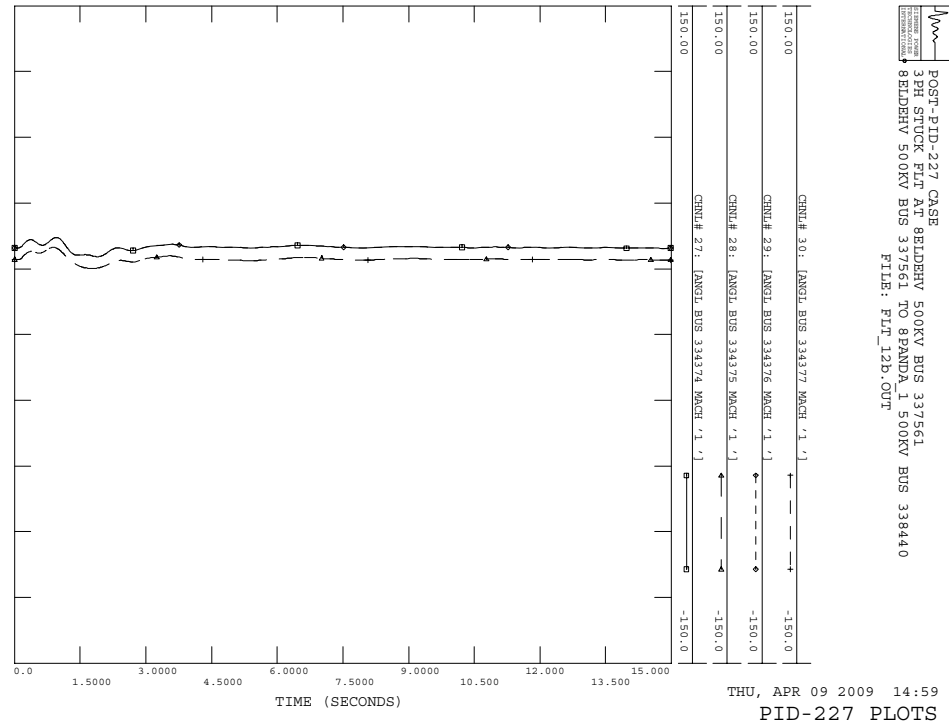
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



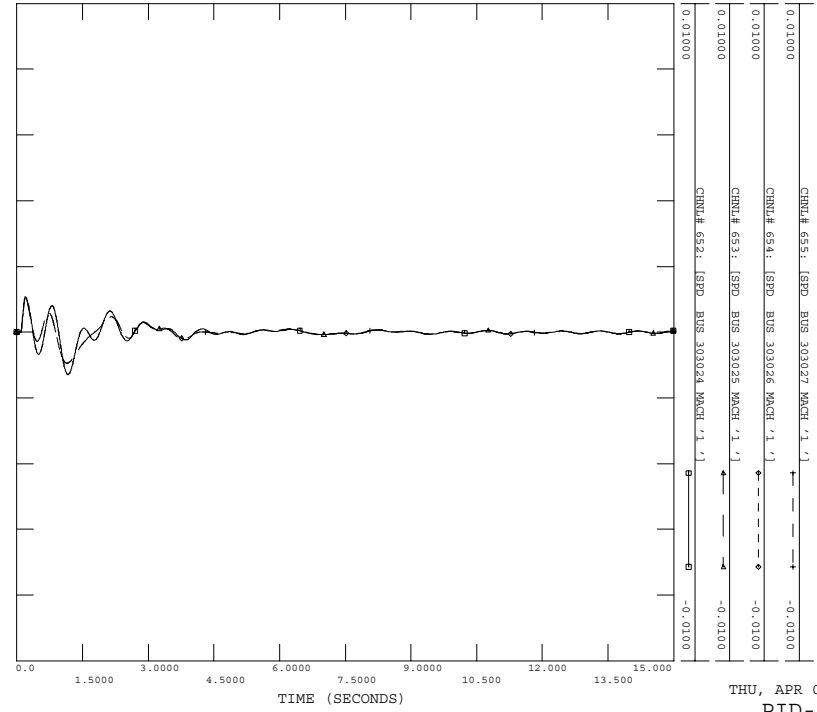
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



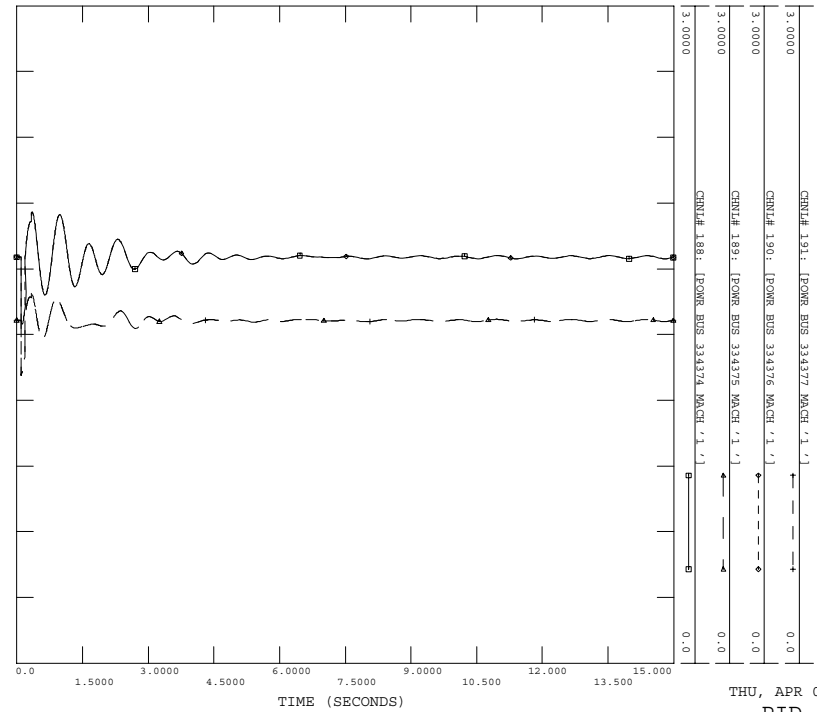
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDEBHV 500KV BUS 337561
 8BIDEBHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



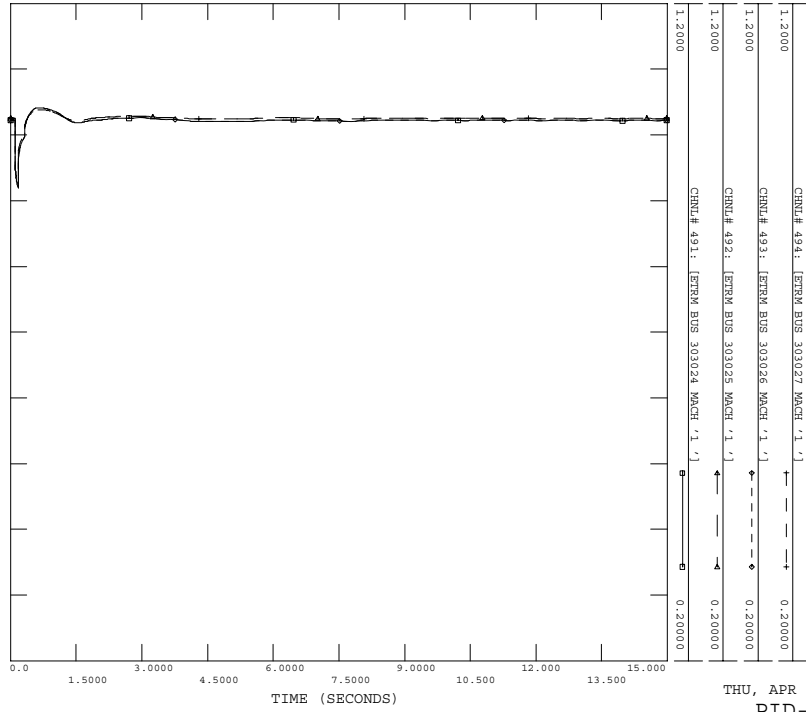
POST-PID-227 CASE
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 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



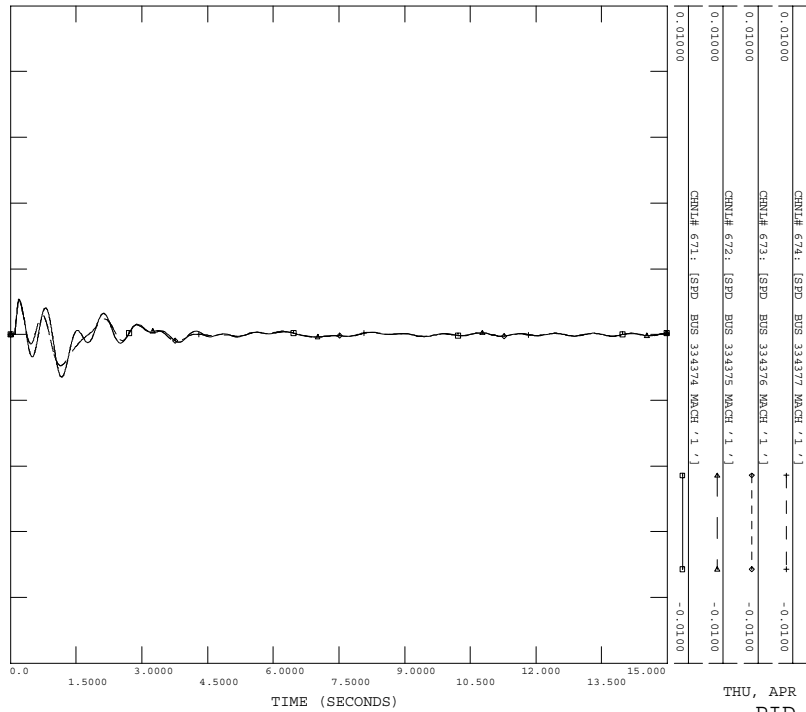
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDENHV 500KV BUS 337561
 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



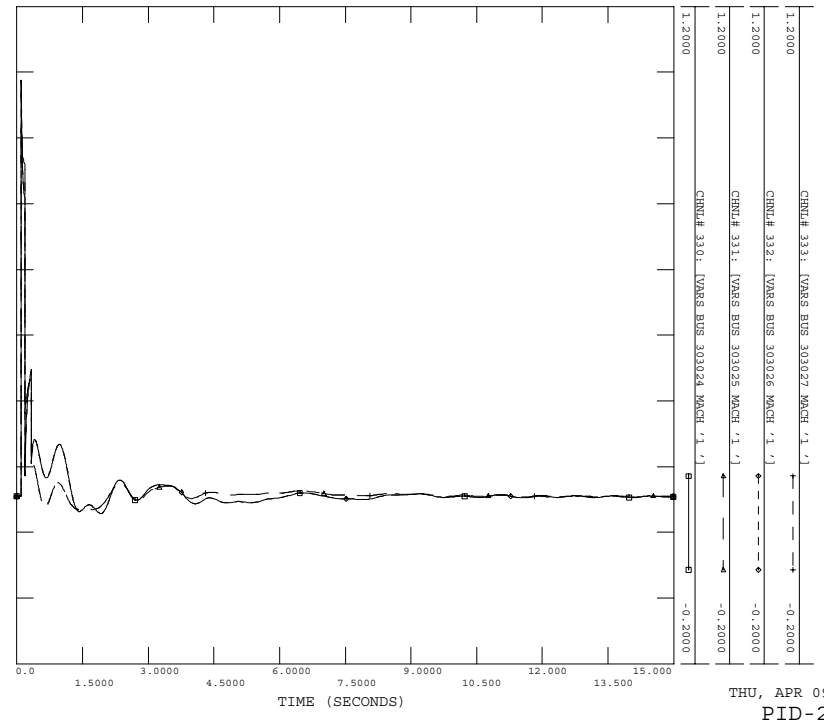
POST-PID-227 CASE
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 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



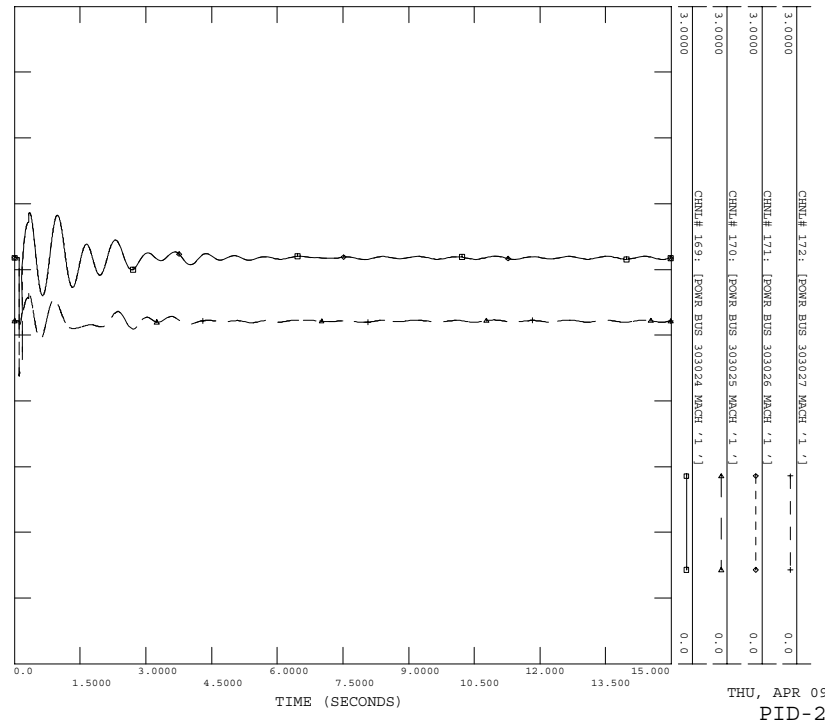
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDENHV 500KV BUS 337561
 8BIDENHV 500KV BUS 337561 TO 8PANDA.1 500KV BUS 338440
 FILE: FLT_12D.OUT



POST-PID-227 CASE
3PH STOCK FLT AT 8BLDEHV 500KV BUS 337561
8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
FILE: FLT_12D.OUT



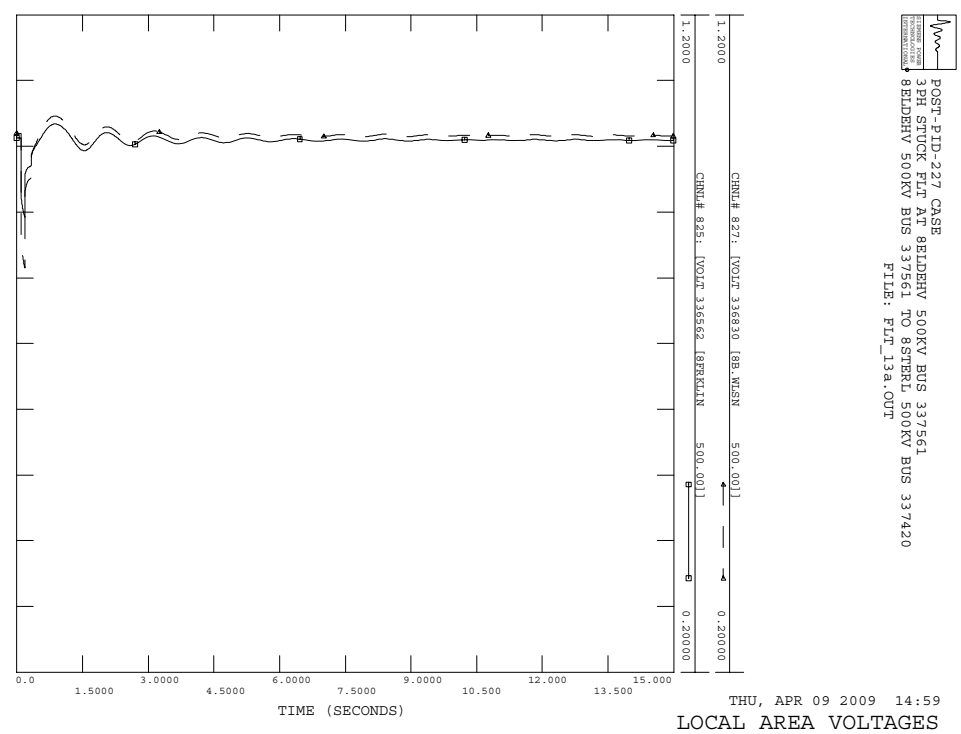
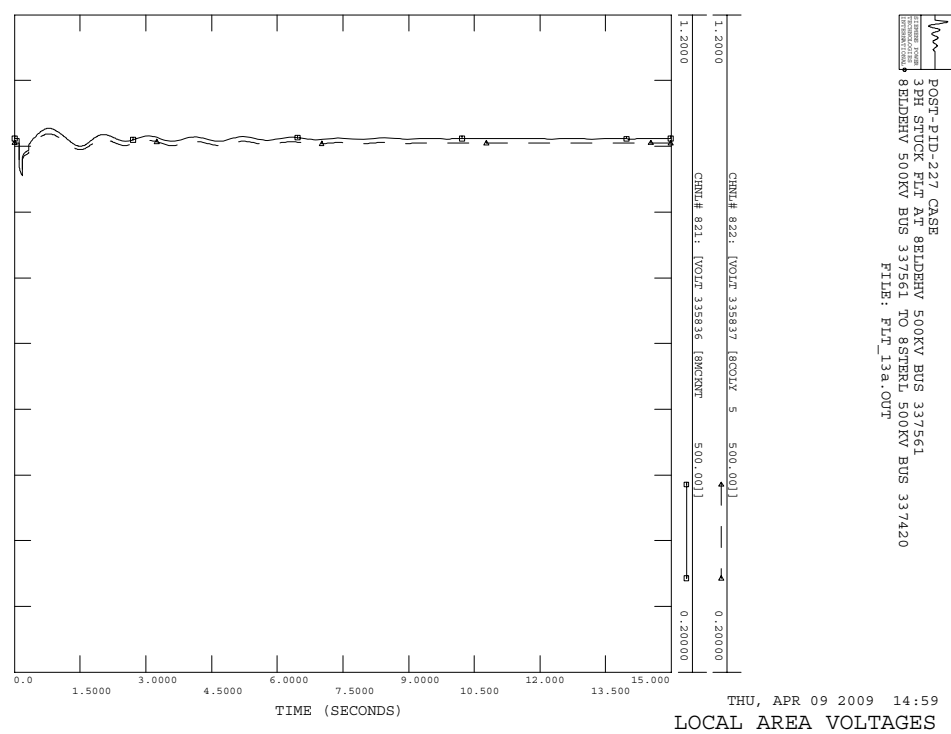
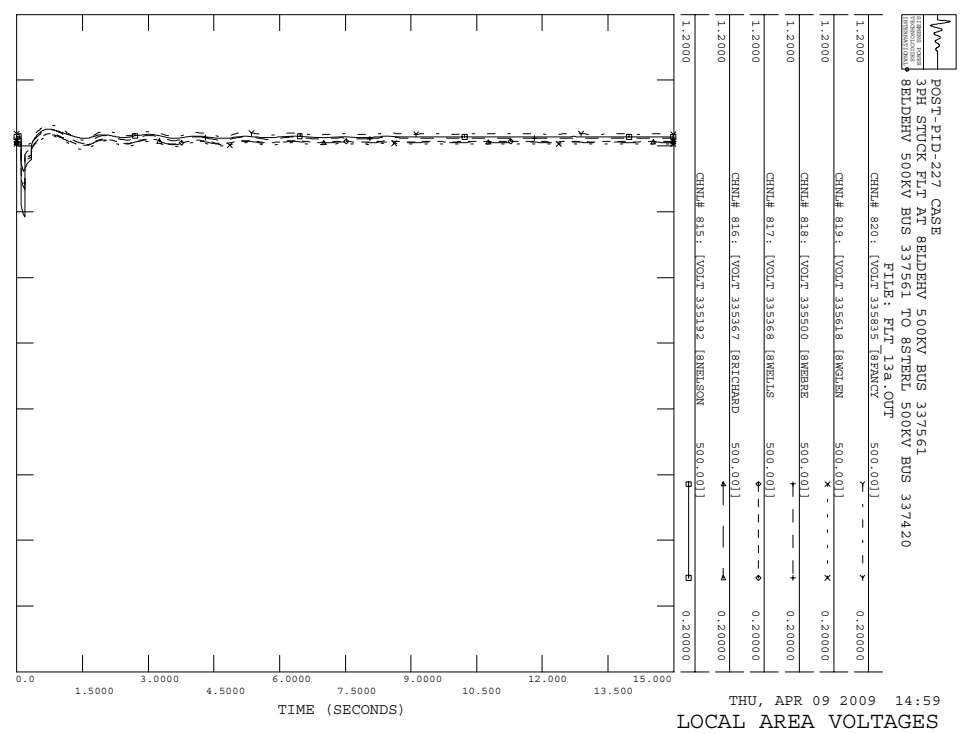
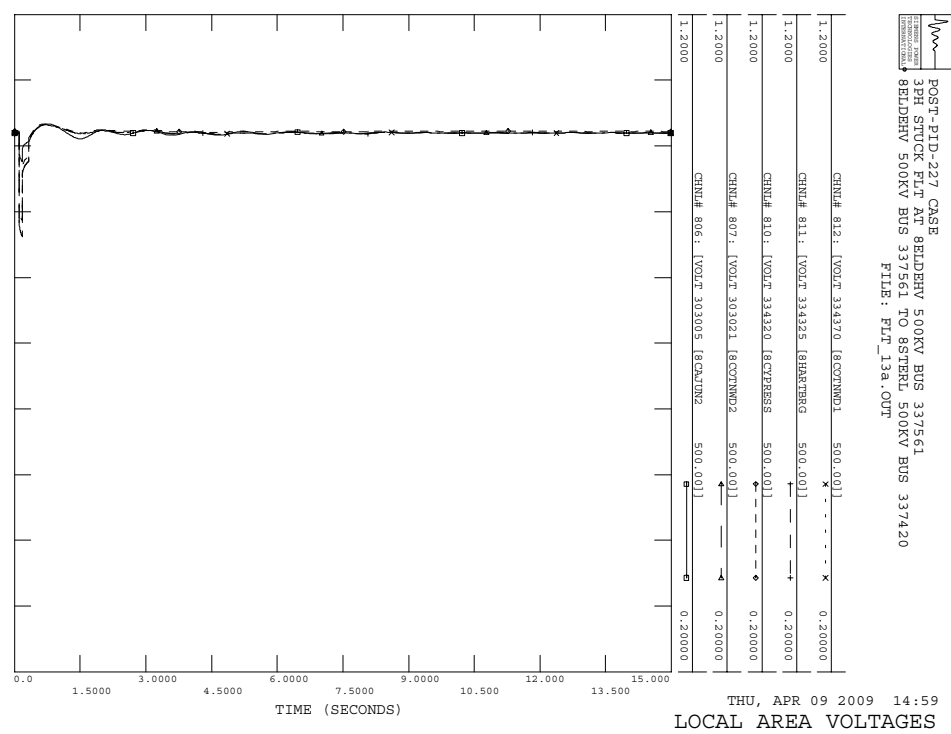
POST-PID-227 CASE
3PH STOCK FLT AT 8BLDEHV 500KV BUS 337561
8BLDEHV 500KV BUS 337561 TO 8PANDA_1 500KV BUS 338440
FILE: FLT_12D.OUT



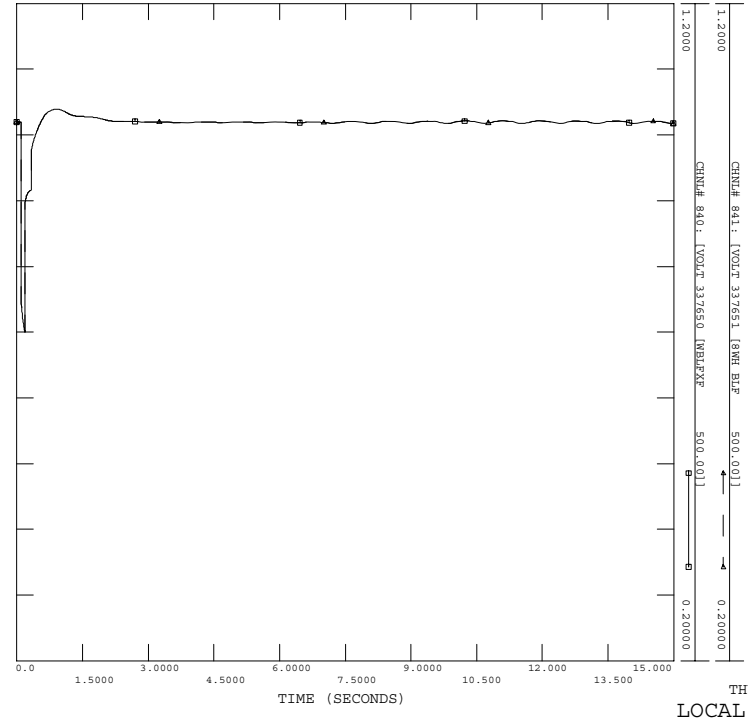
C.28 FLT_13a

Stuck breaker fault on the 8ELDEHV (#337561) to 8STERL (#337420) branch, near the 8ELDEHV.

- a) Apply 3 Phase Fault at 8ELDEHV 500KV BUS 337561
- b) Run fault for 5 cycles
- c) Remove Fault AT 8ELDEHV 500KV BUS 337561
- d) Apply 3 Phase fault at #337561 with admittance $869.33-j14636.44$ MVA
- e) Clear fault after 9 cycles by tripping lines from 8ELDEHV 500KV BUS 337561 TO 8STERL 500KV BUS

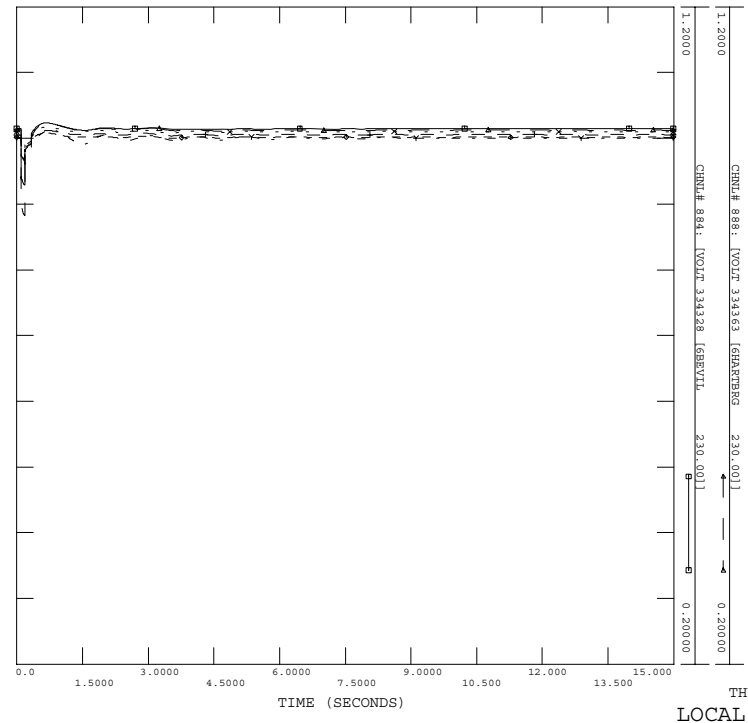


POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERL 500KV BUS 337420
 FILE: FLT_13a.OUT



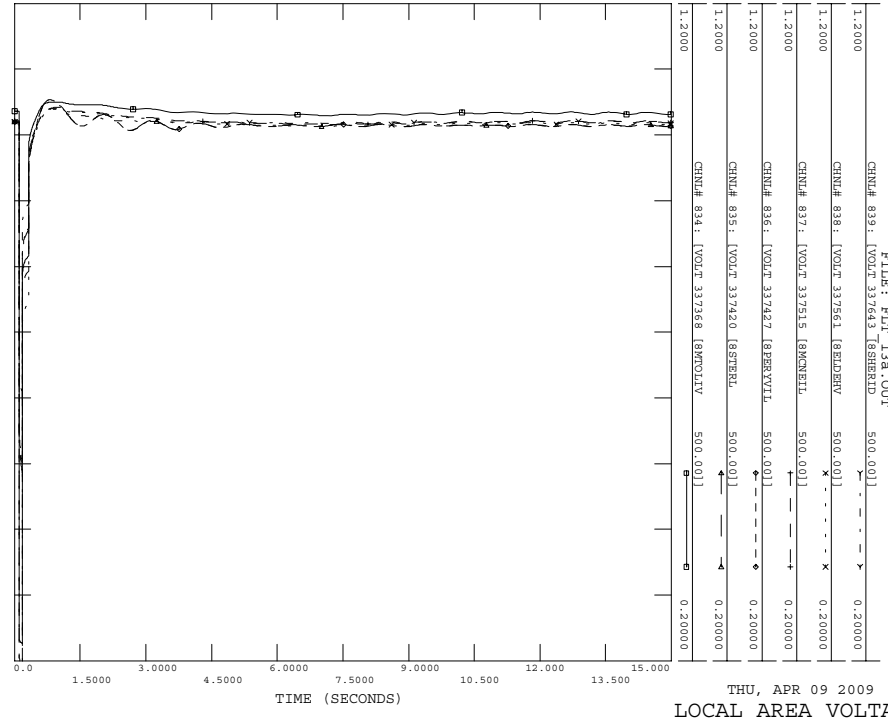
THU, APR 09 2009 14:59
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERL 500KV BUS 337420
 FILE: FLT_13a.OUT



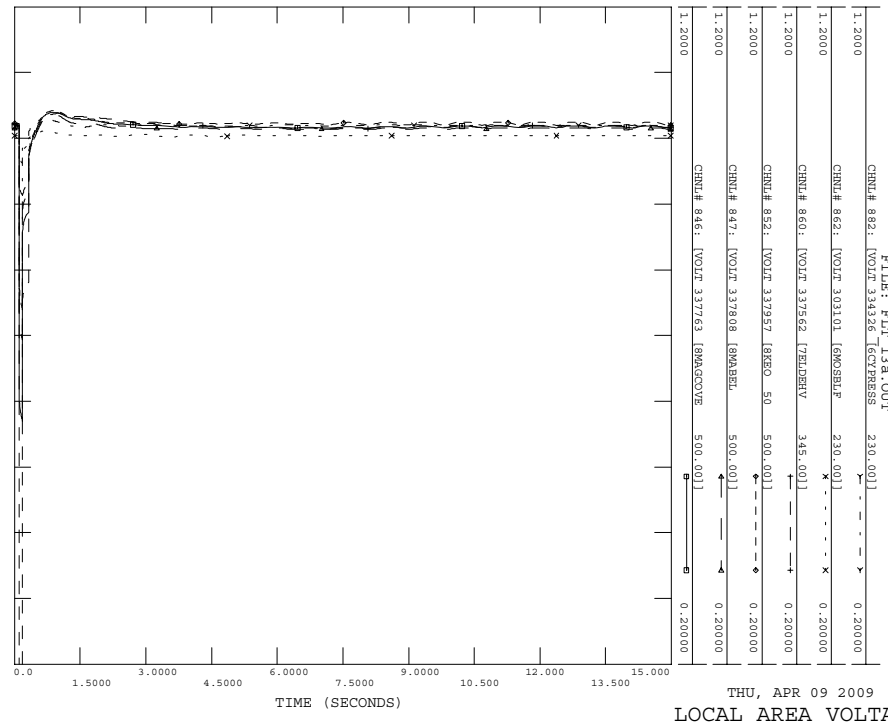
THU, APR 09 2009 14:59
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERL 500KV BUS 337420
 FILE: FLT_13a.OUT

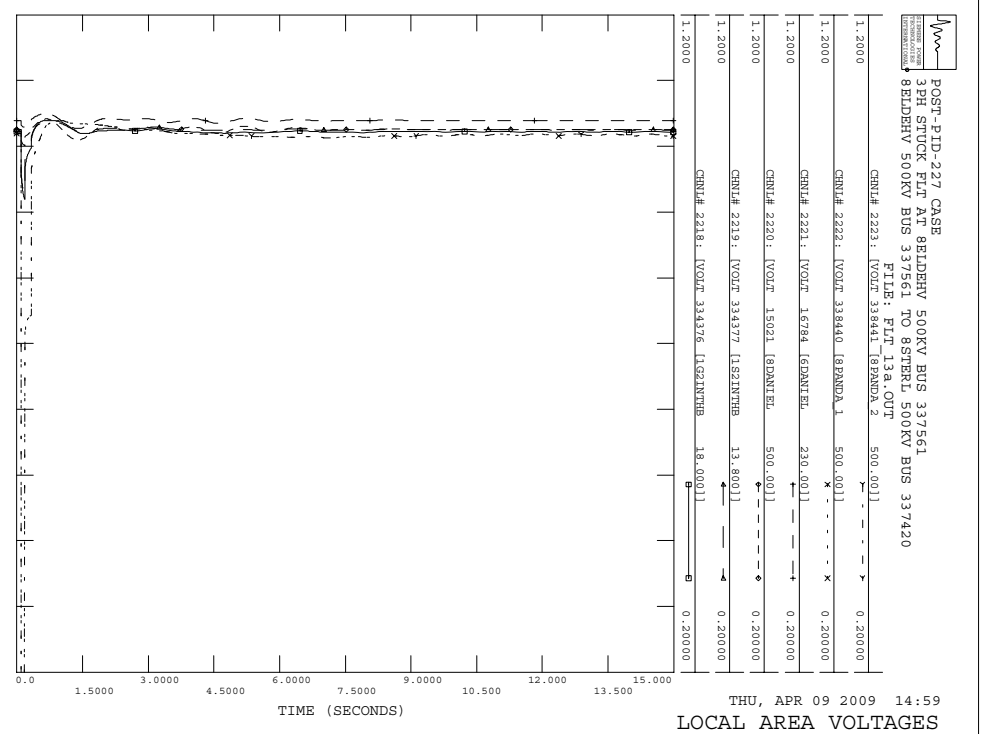
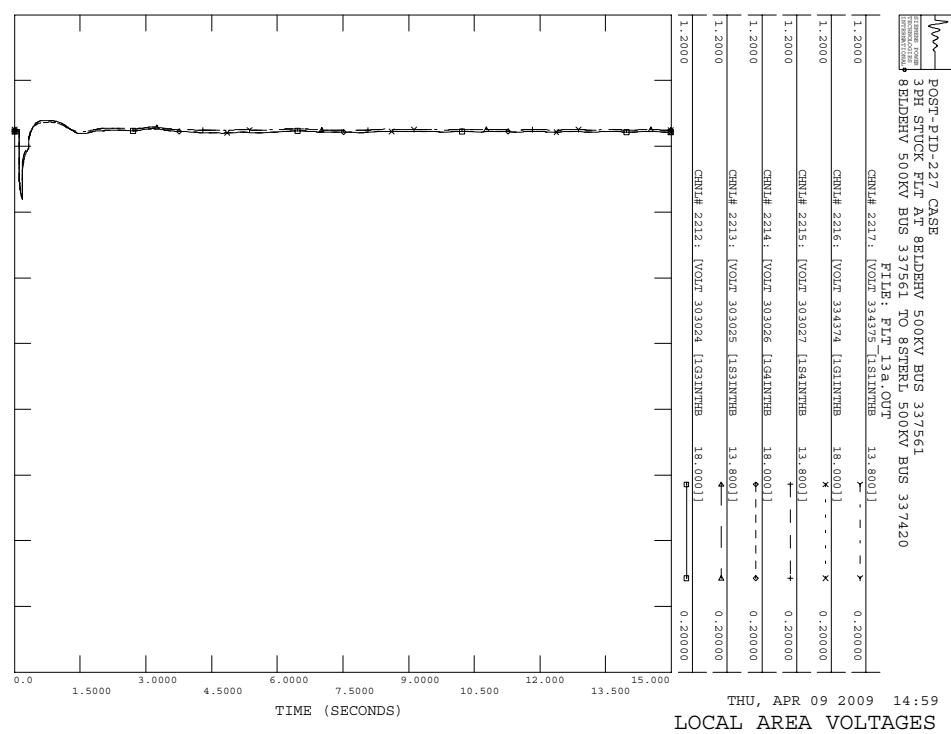
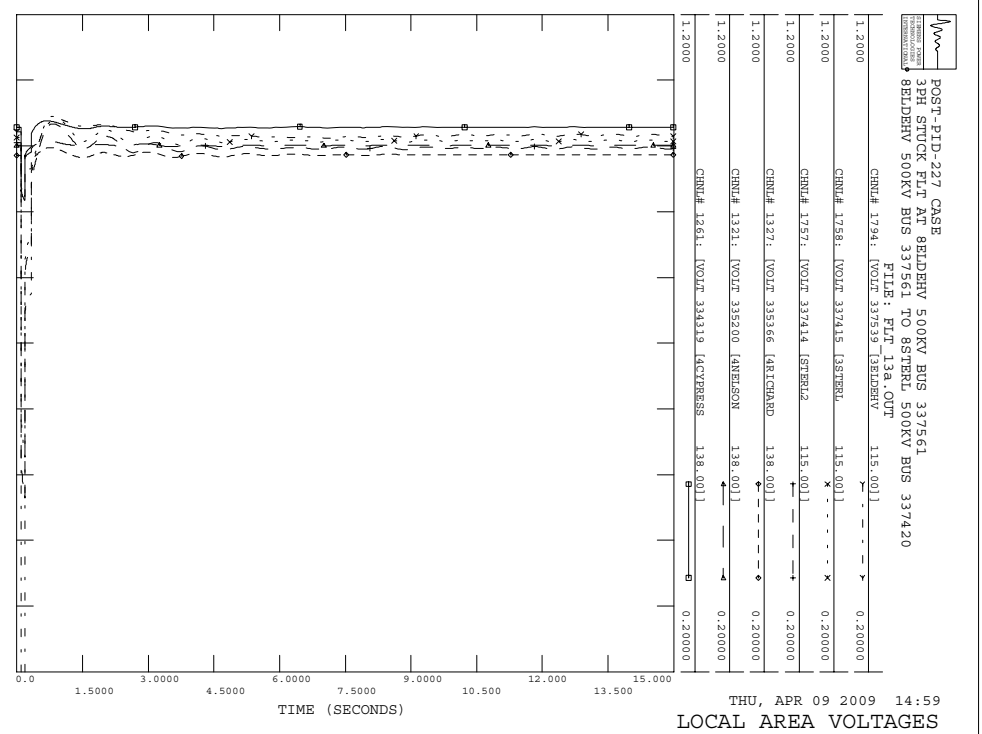
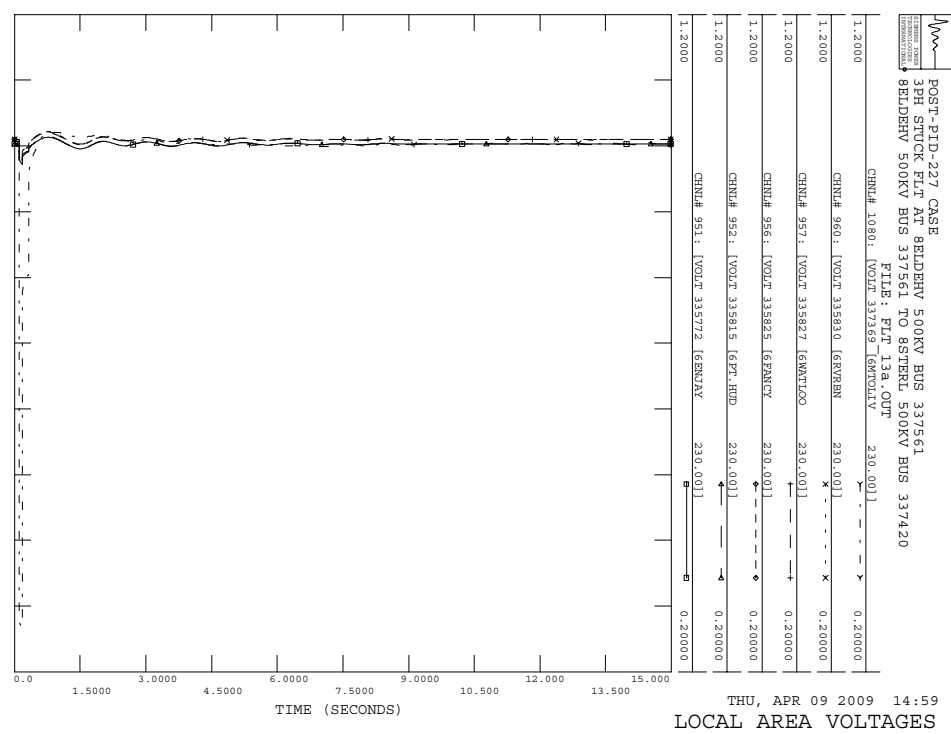


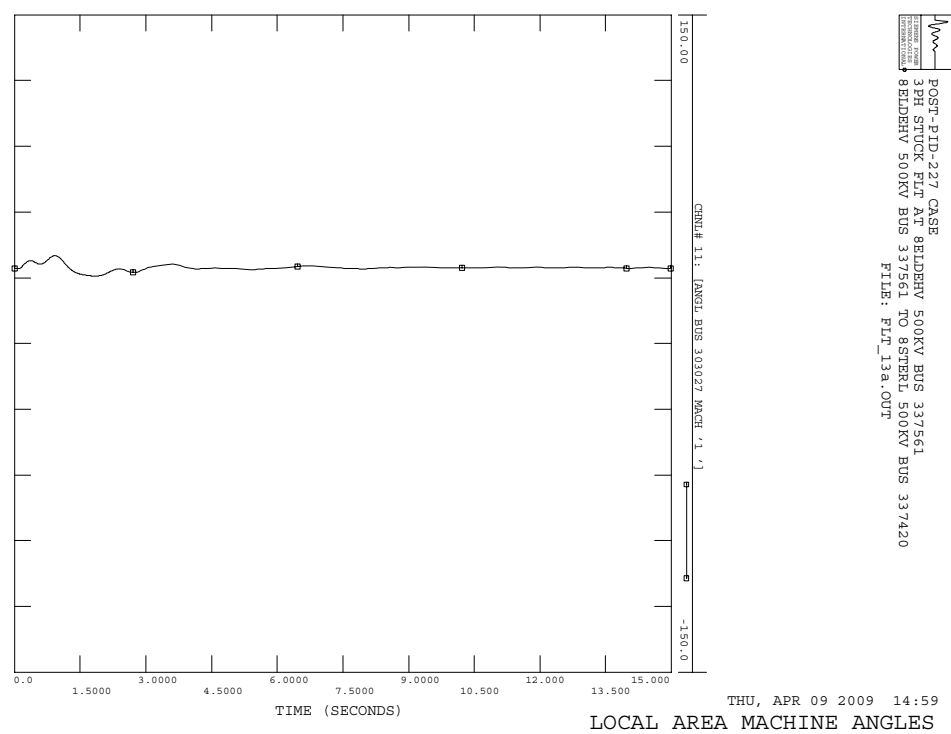
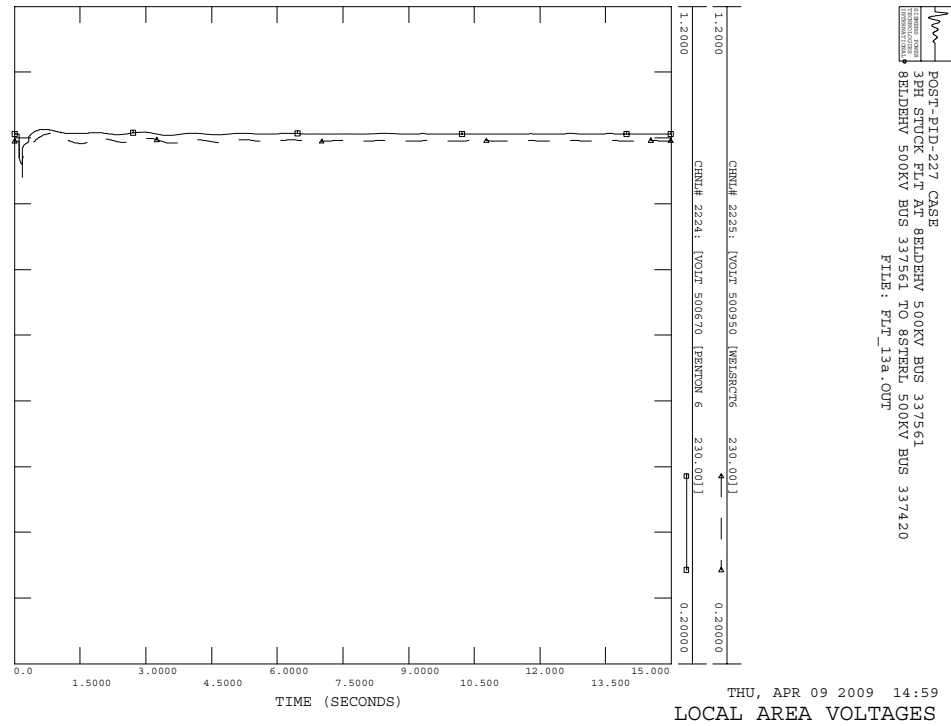
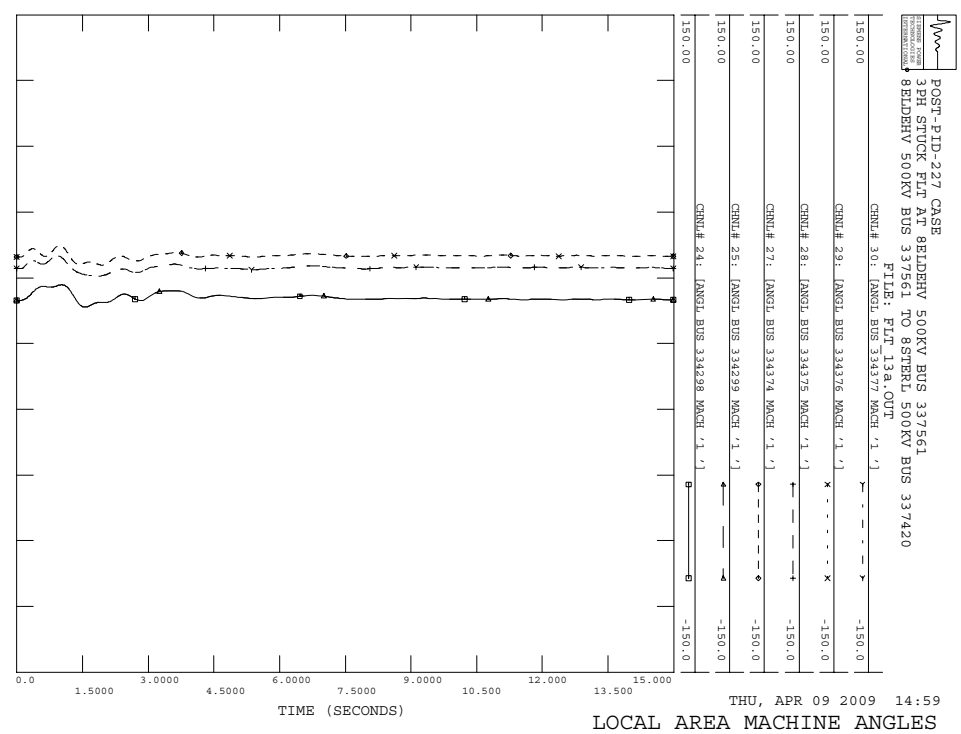
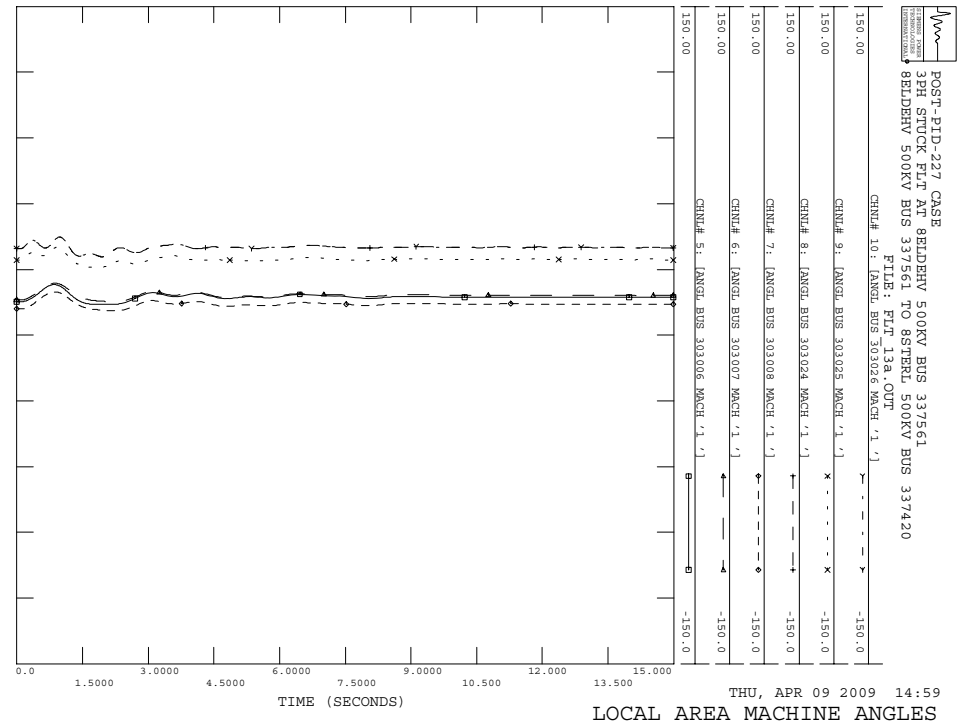
THU, APR 09 2009 14:59
 LOCAL AREA VOLTAGES

POST-PTD-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERL 500KV BUS 337420
 FILE: FLT_13a.OUT

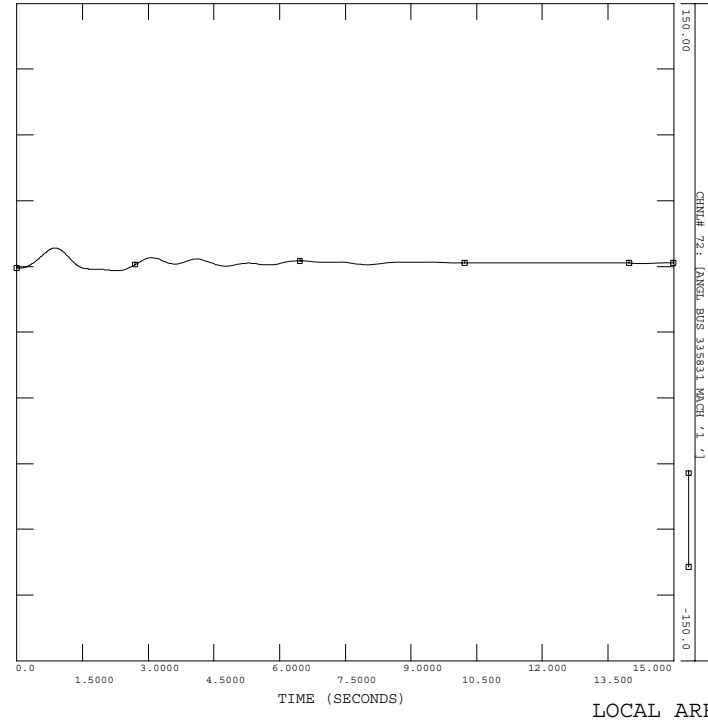


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 LOCAL AREA VOLTAGES

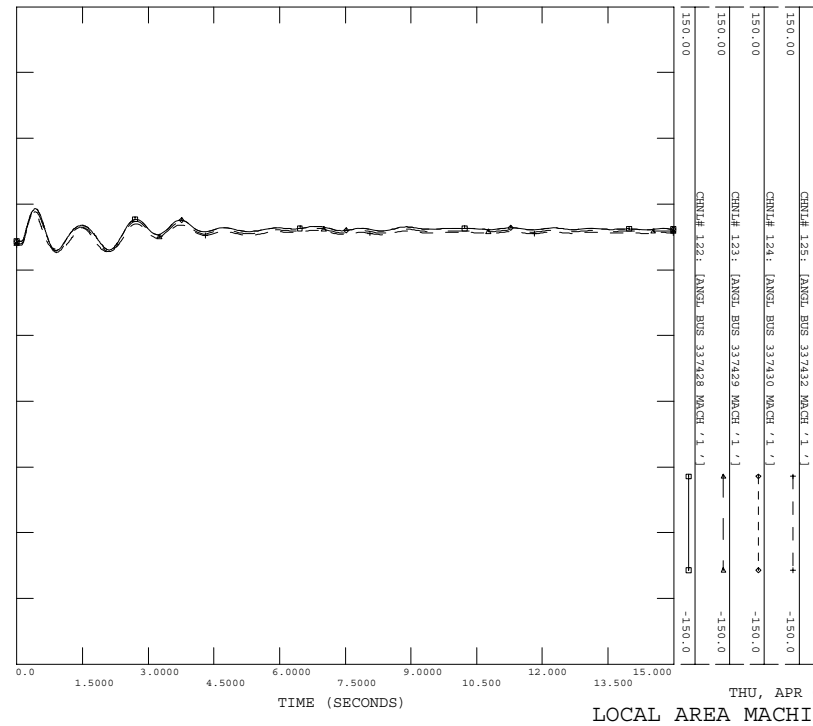




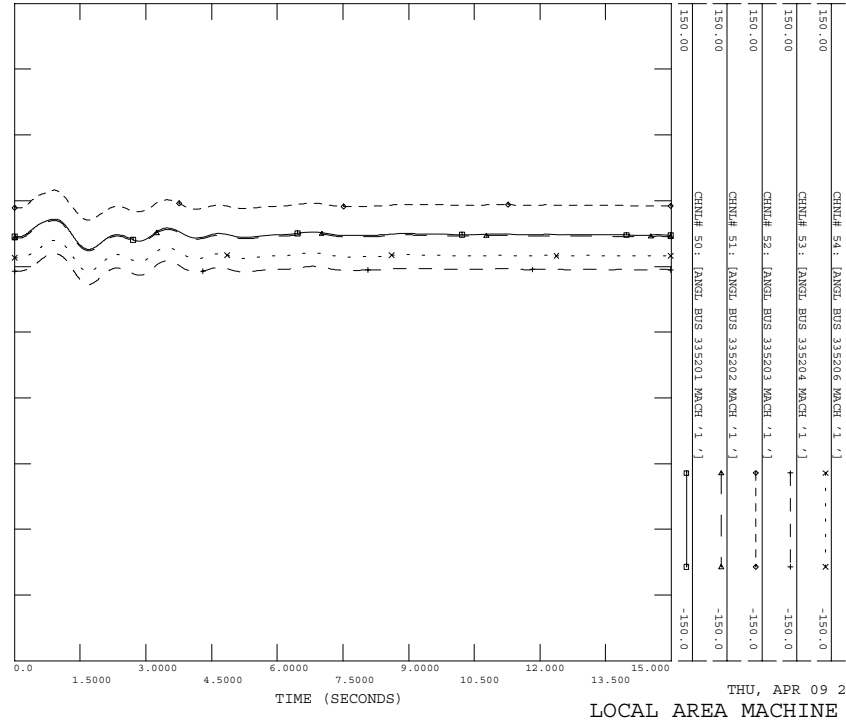
POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
 FILE: FLT_13a.OUT



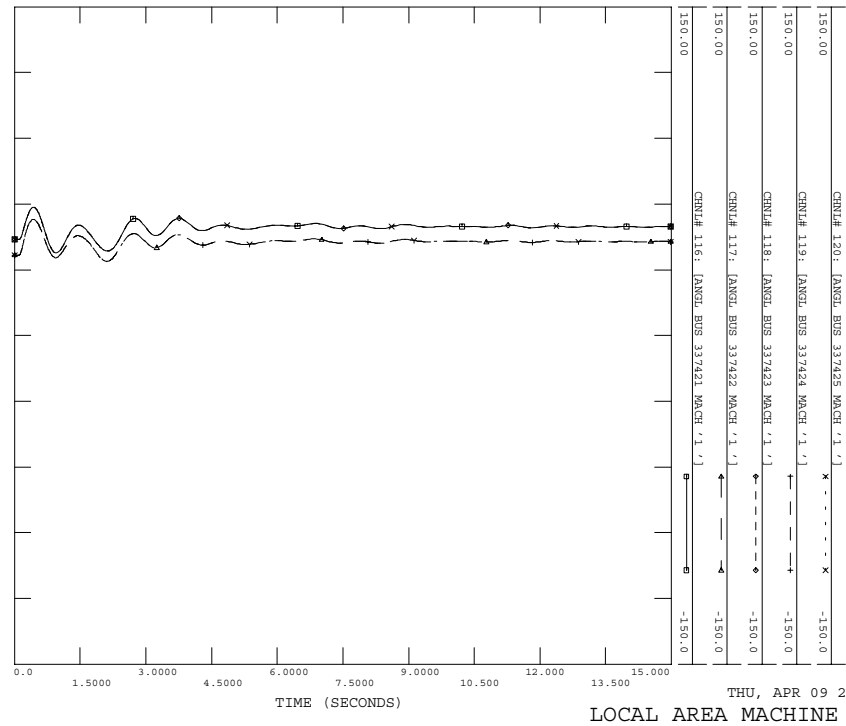
POST-PID-227 CASE
 3PH STUCK FLT AT 8BLDEHV 500KV BUS 337561
 8BLDEHV 500KV BUS 337561 TO 8STERM1 500KV BUS 337420
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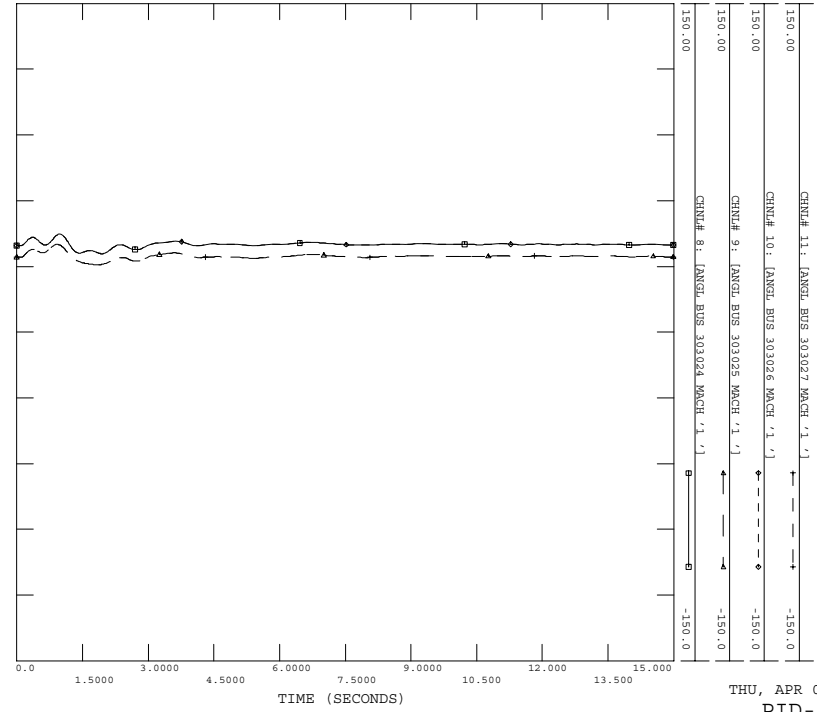
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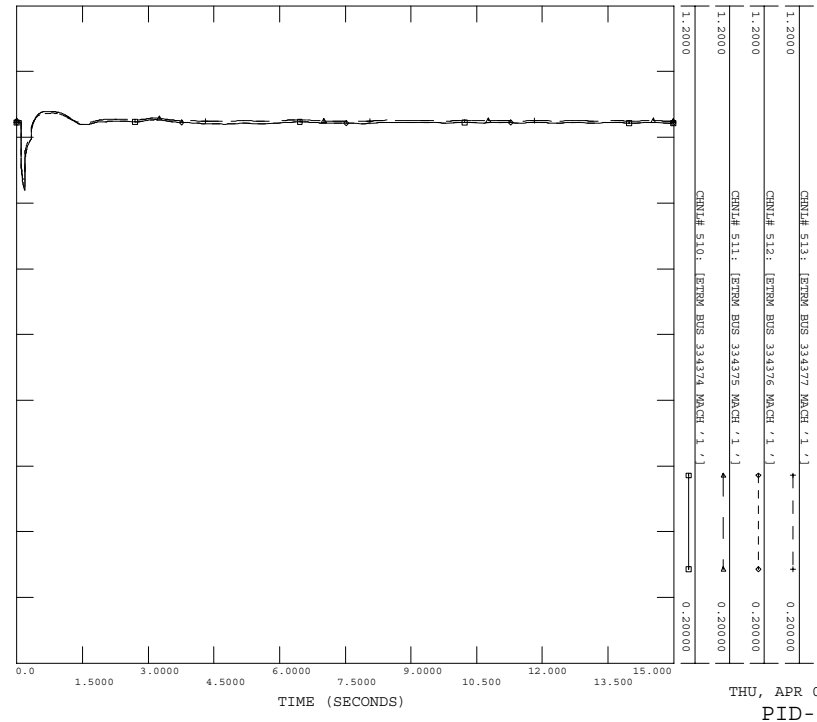
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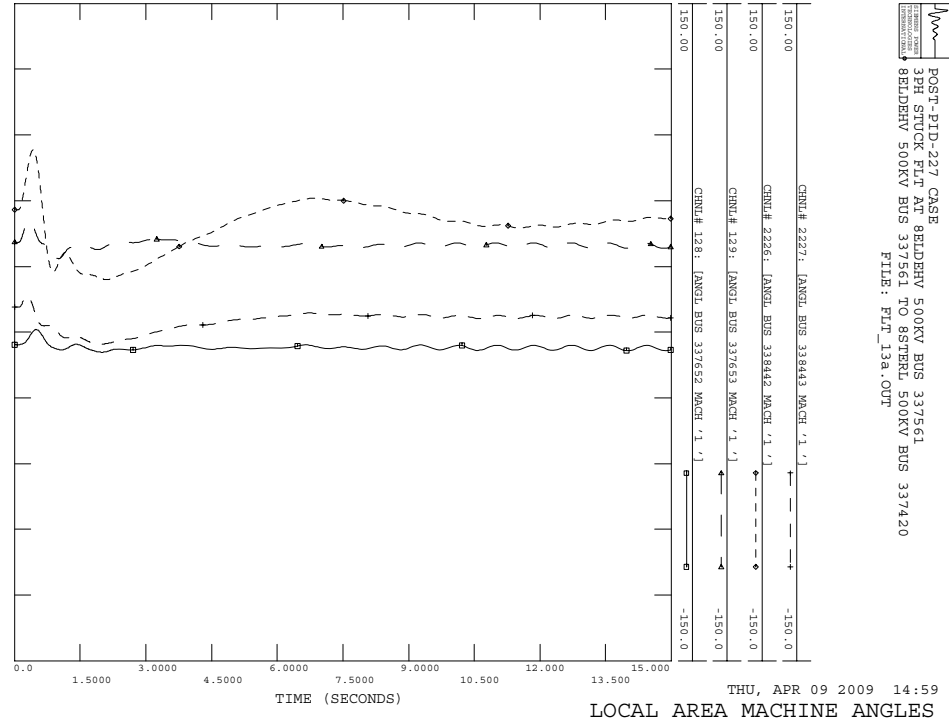
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDBHV 500KV BUS 337561
 8BIDBHV 500KV BUS 337561 TO 8STERL1 500KV BUS 337420
 FILE: FLT_13a.OUT



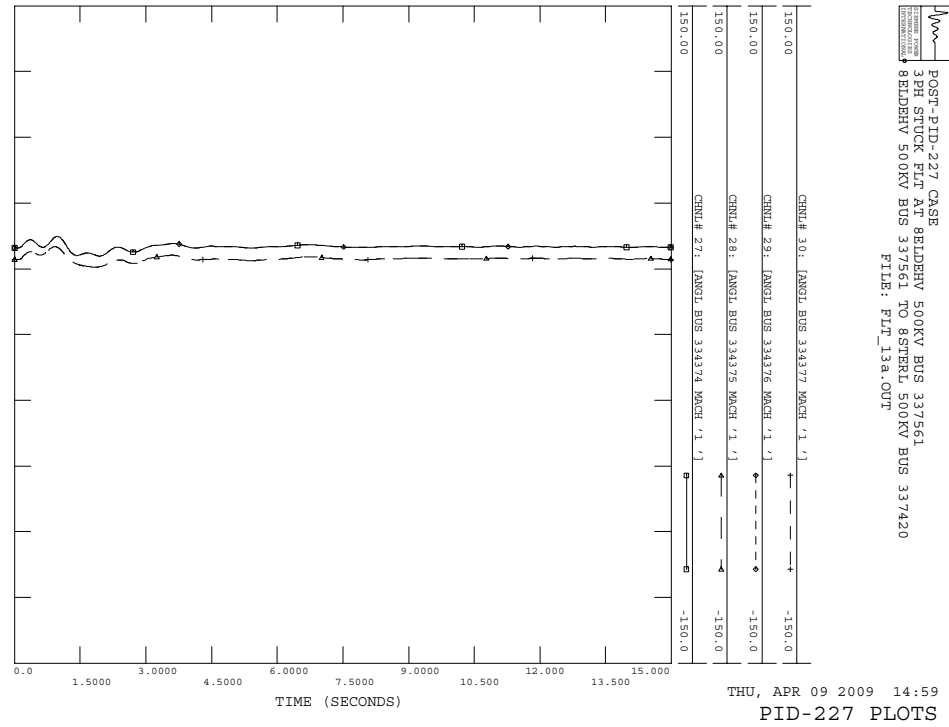
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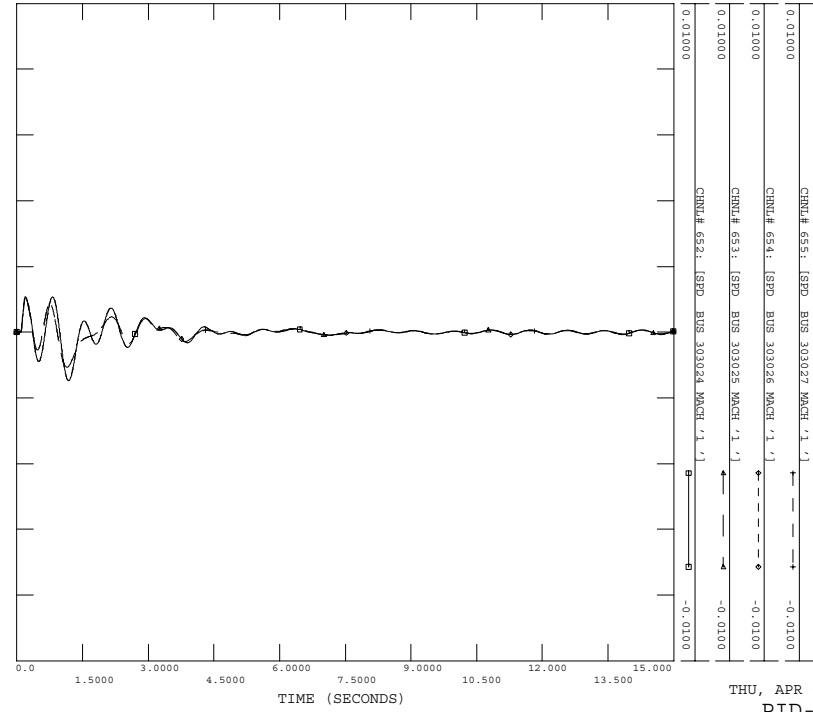
POST-PID-227 CASE
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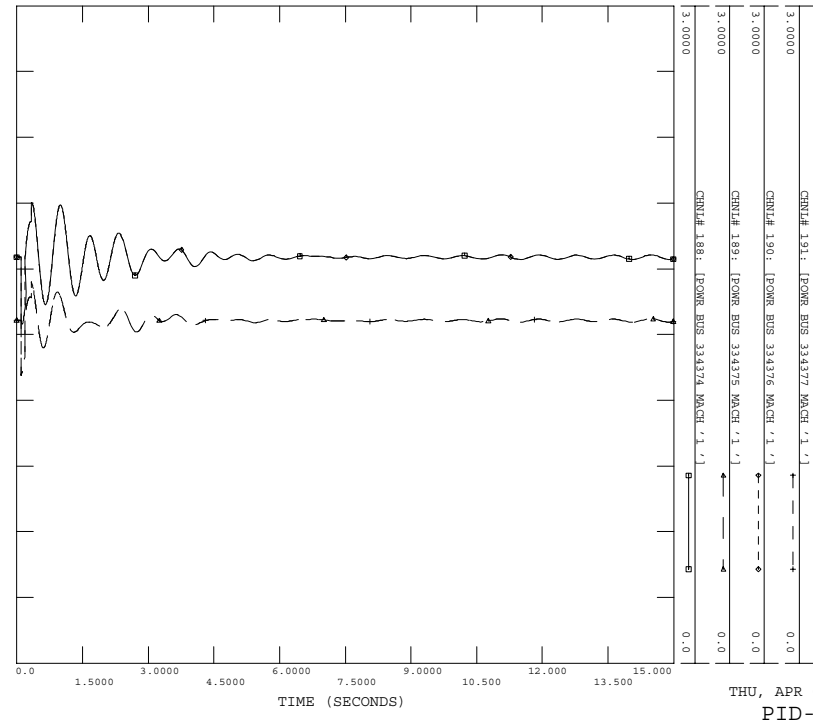
POST-PID-227 CASE
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 FILE: FLT_13a.OUT



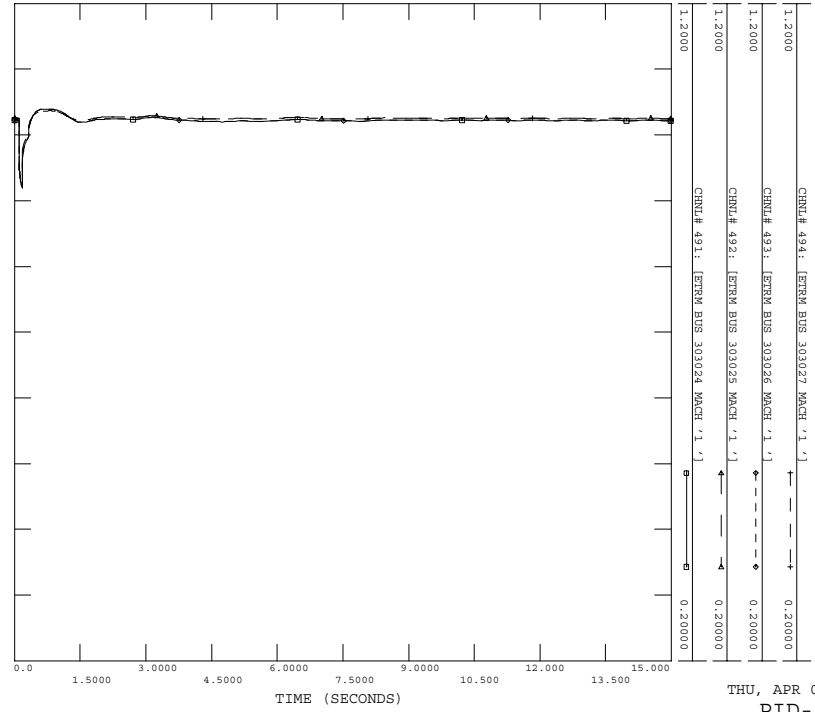
POST-PID-227 CASE
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 8BIDBHV 500KV BUS 337561 TO 8STERU 500KV BUS 337420
 FILE: FLT_13a.OUT



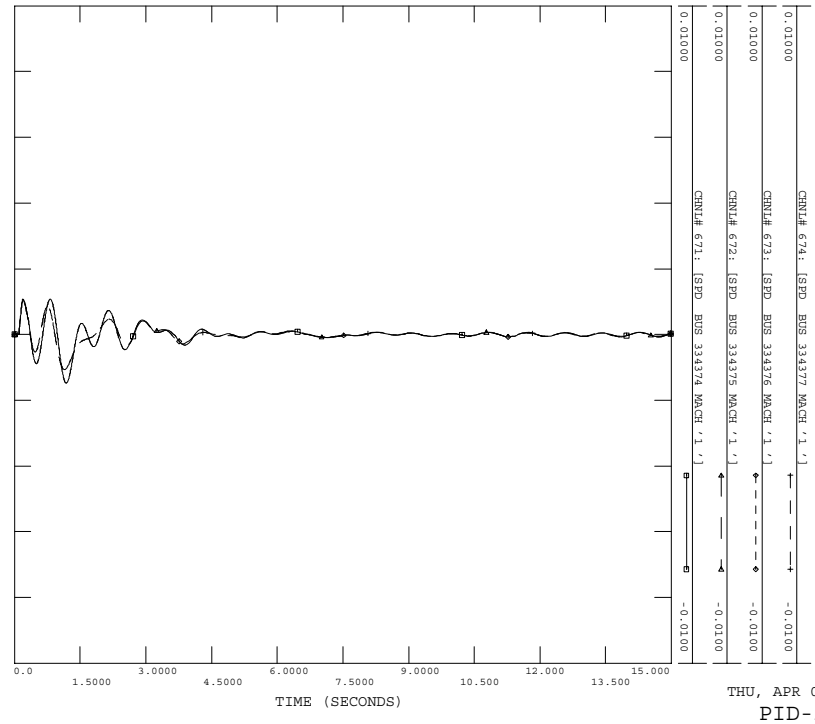
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 FILE: FLT_13a.OUT



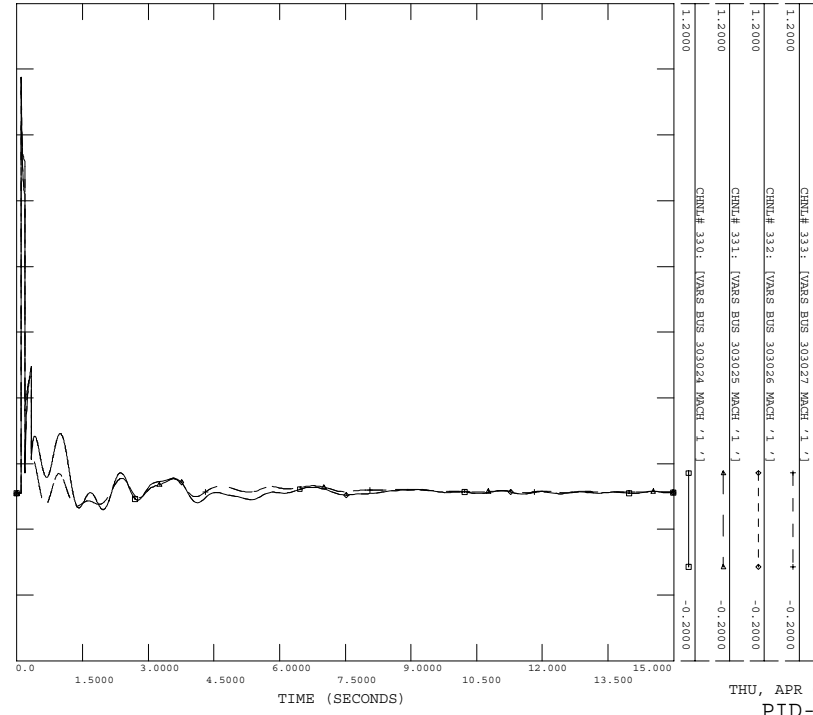
POST-PID-227 CASE
 3PH STUCK FLT AT 8BIDBHV 500KV BUS 337561
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 FILE: FLT_13a.OUT



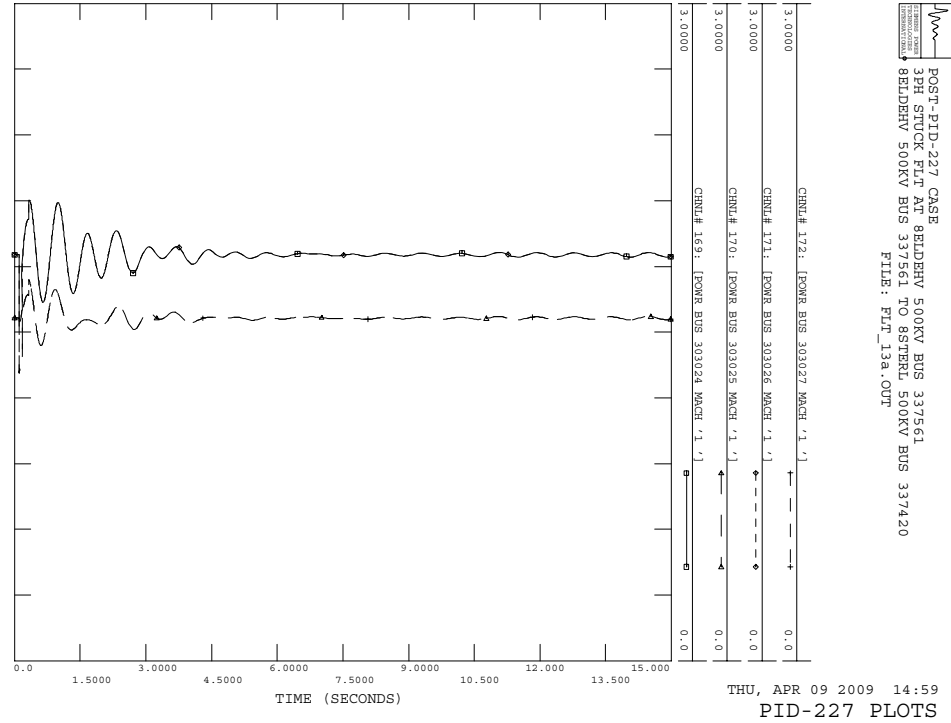
POST-PID-227 CASE
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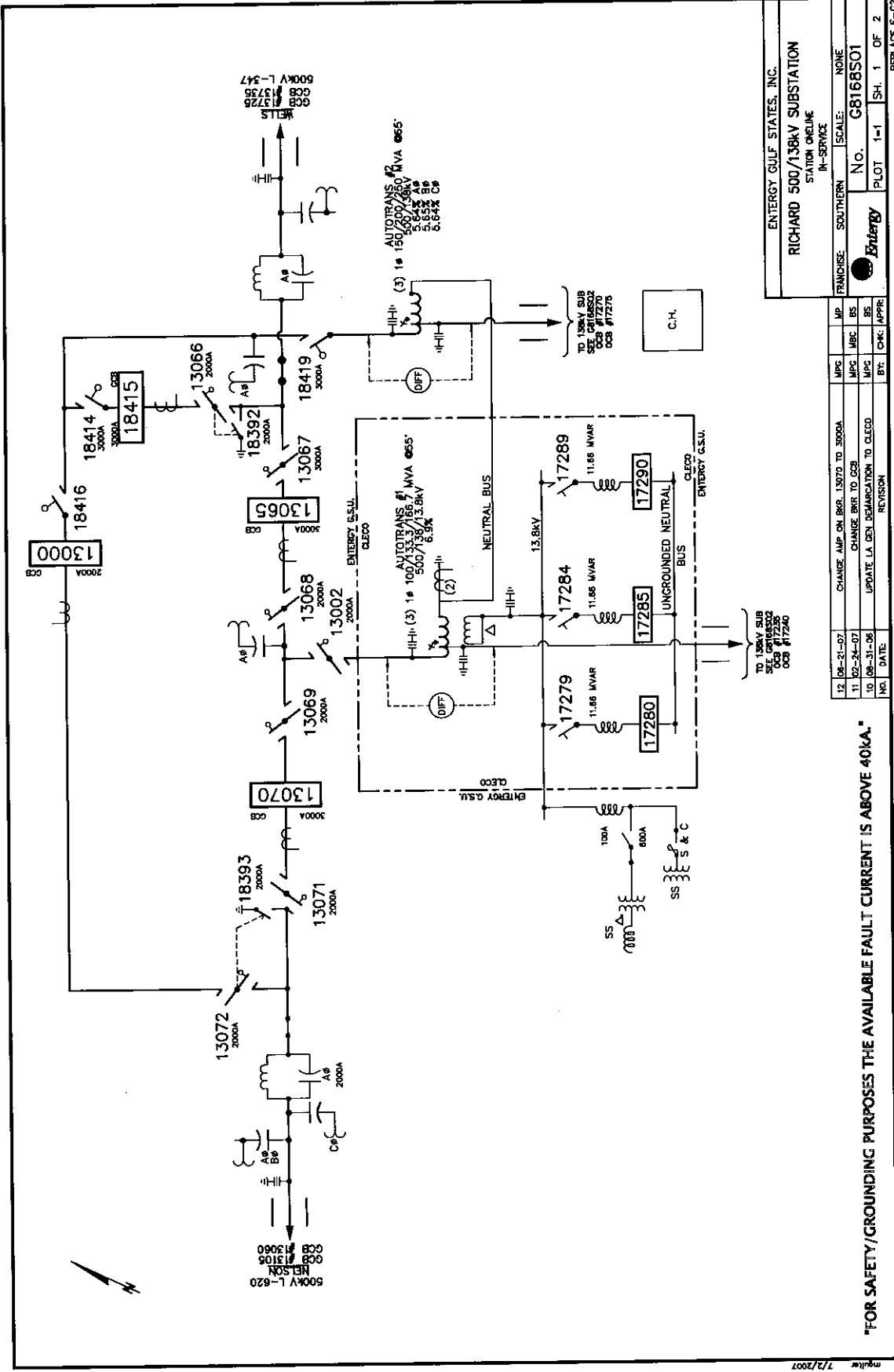


POST-PID-227 CASE
3PH STOCK FLT AT 8BLDEHV 500KV BUS 337561
8BLDEHV 500KV BUS 337561 TO 8STERU 500KV BUS 337420
FILE: FLT_13a.OUT



POST-PID-227 CASE
3PH STOCK FLT AT 8BLDEHV 500KV BUS 337561
8BLDEHV 500KV BUS 337561 TO 8STERU 500KV BUS 337420
FILE: FLT_13a.OUT



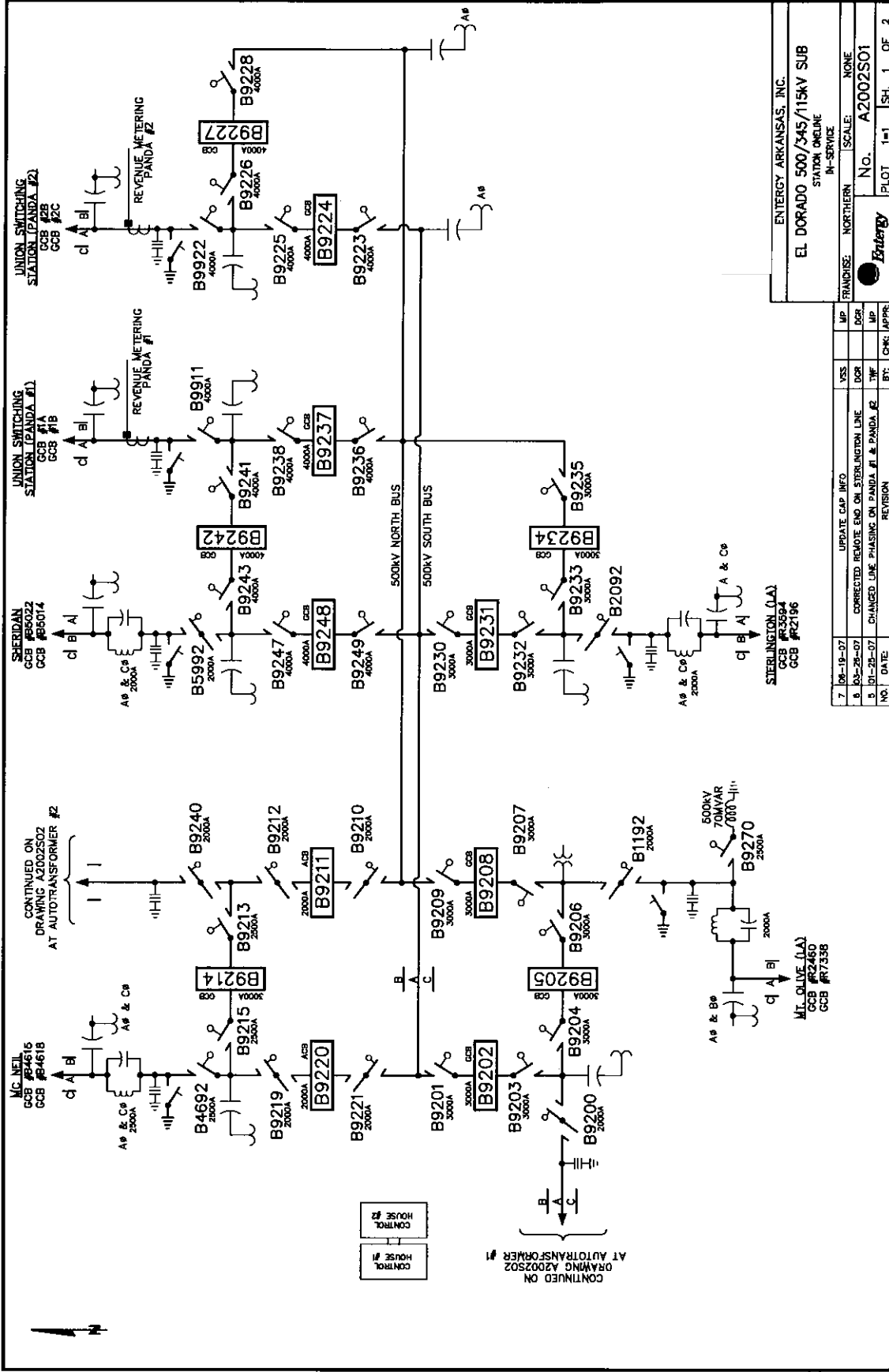


ENTRERY GULF STATES, INC.	
RICHARD 500/138KV SUBSTATION	
STATION ONELINE	
FRANCHISE	SOUTHERN
SCALE:	NONE
N.O.	G8168SO1
PLOT	1-1
SH.	1 OF 2

NO.	DATE	REVISION	BY	CHK	APPR
12	08-21-07	CHANGE AMP ON BRK. 13070 TO 3000A	MPC	BS	
11	02-24-07	CHANGE BRK TO GCB	MPC	BS	
10	08-31-06	UPDATE LA DEN DEMARCATION TO CLECO	MPC	BS	

"FOR SAFETY/GROUNDING PURPOSES THE AVAILABLE FAULT CURRENT IS ABOVE 40KA."

REPLACE E-62



ENERGY ARKANSAS, INC.	
EL DORADO 500/345/115KV SUB	
STATION ONE LINE IN-SERVICE	
FRANCHISE: NORTHERN	SCALE: NONE
No. A2002S01	
Plot 1=1	SH. 1 OF 2

NO.	DATE	REVISION	BY:	CHK:	APPR:
7	03-19-07	UPDATE CAP INFO	VSS	MP	
6	03-28-07	CORRECTED RELAYE END ON STERLINGTON LINE	DGR	DGR	
5	01-24-07	CHANGED LINE PHASING ON PANDA #1 & PANDA #2	WF	WF	

7/2/2007
 MOUNTAIN OLIVE (L.A.)
 GCB #R2460
 GCB #R7536
 500KV ZOMVAR
 7000V
 B1192
 2000A
 B9270
 2500A
 A & B & C
 STERLINGTON (L.A.)
 GCB #R3594
 GCB #R2196
 A & C & E
 B2092
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