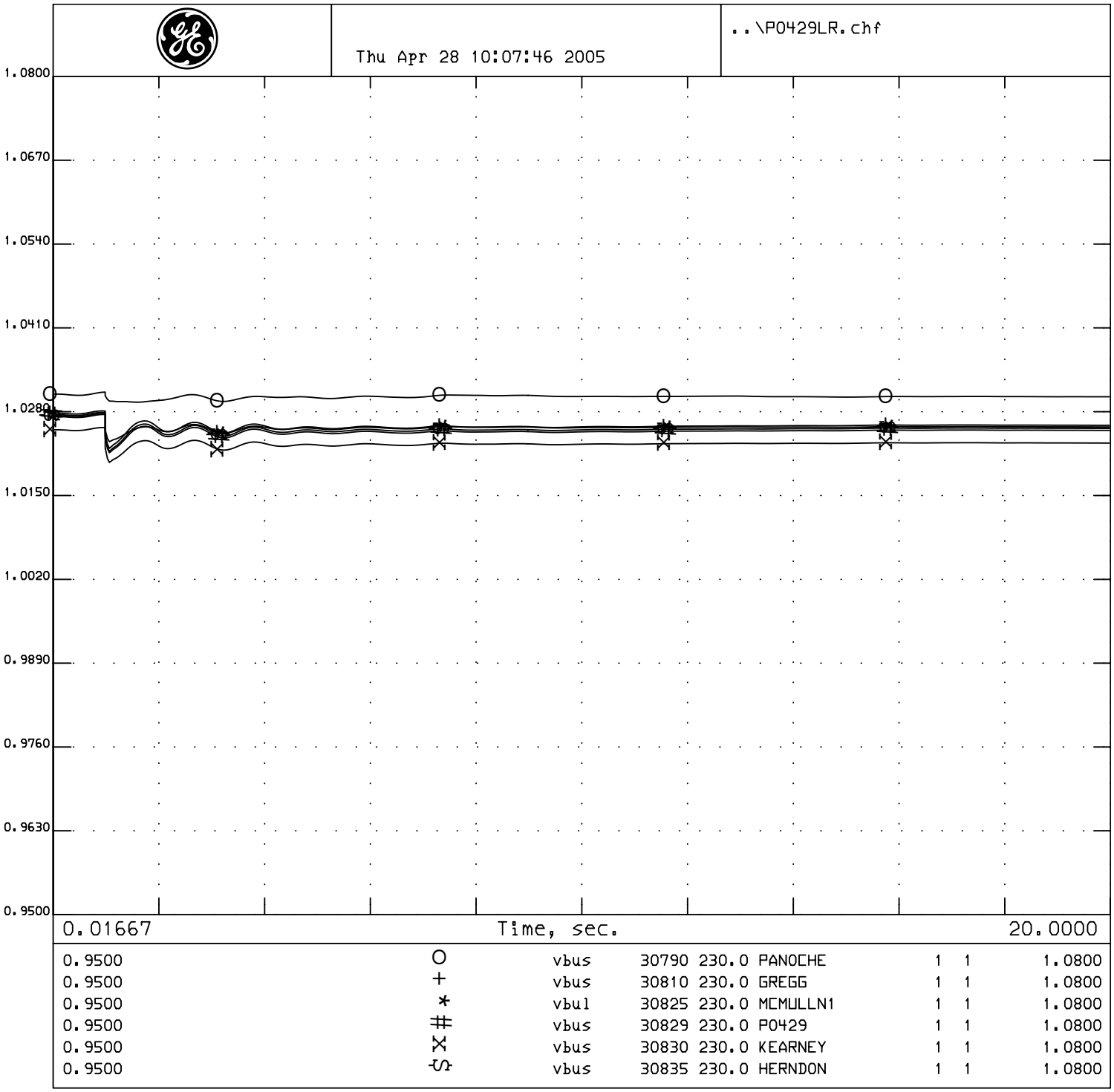
Appendix F

Dynamic Stability Plots

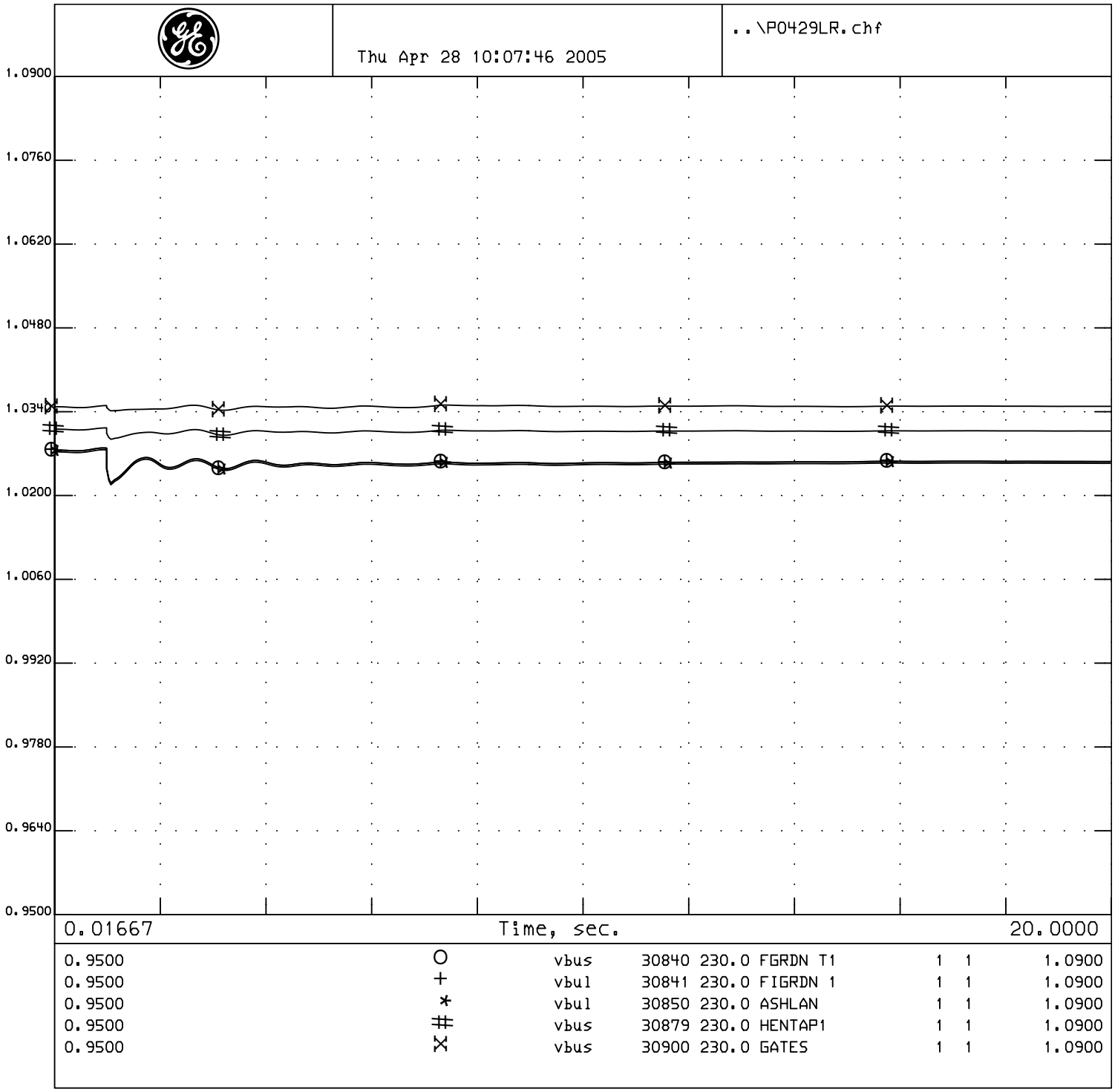


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

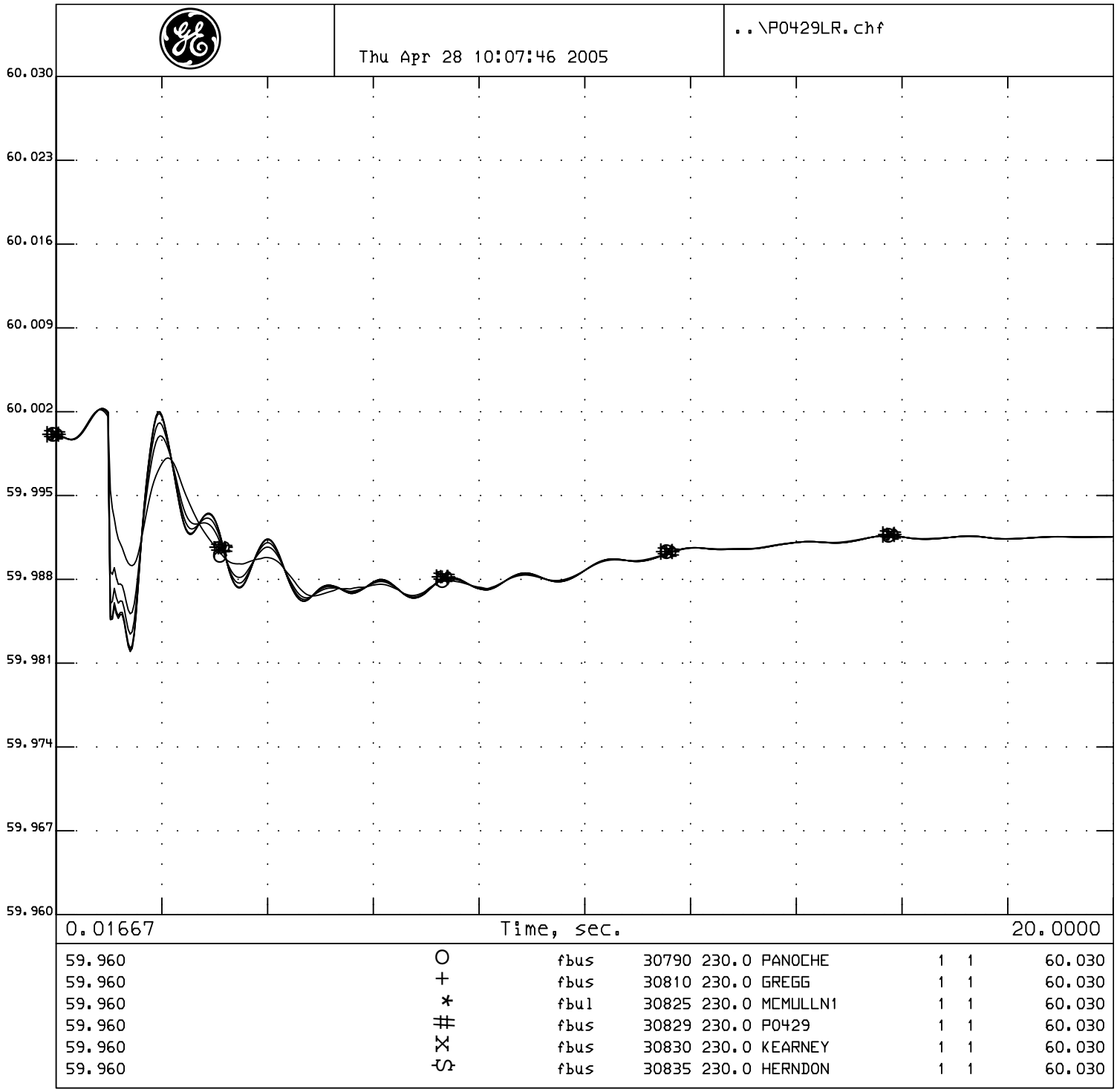


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

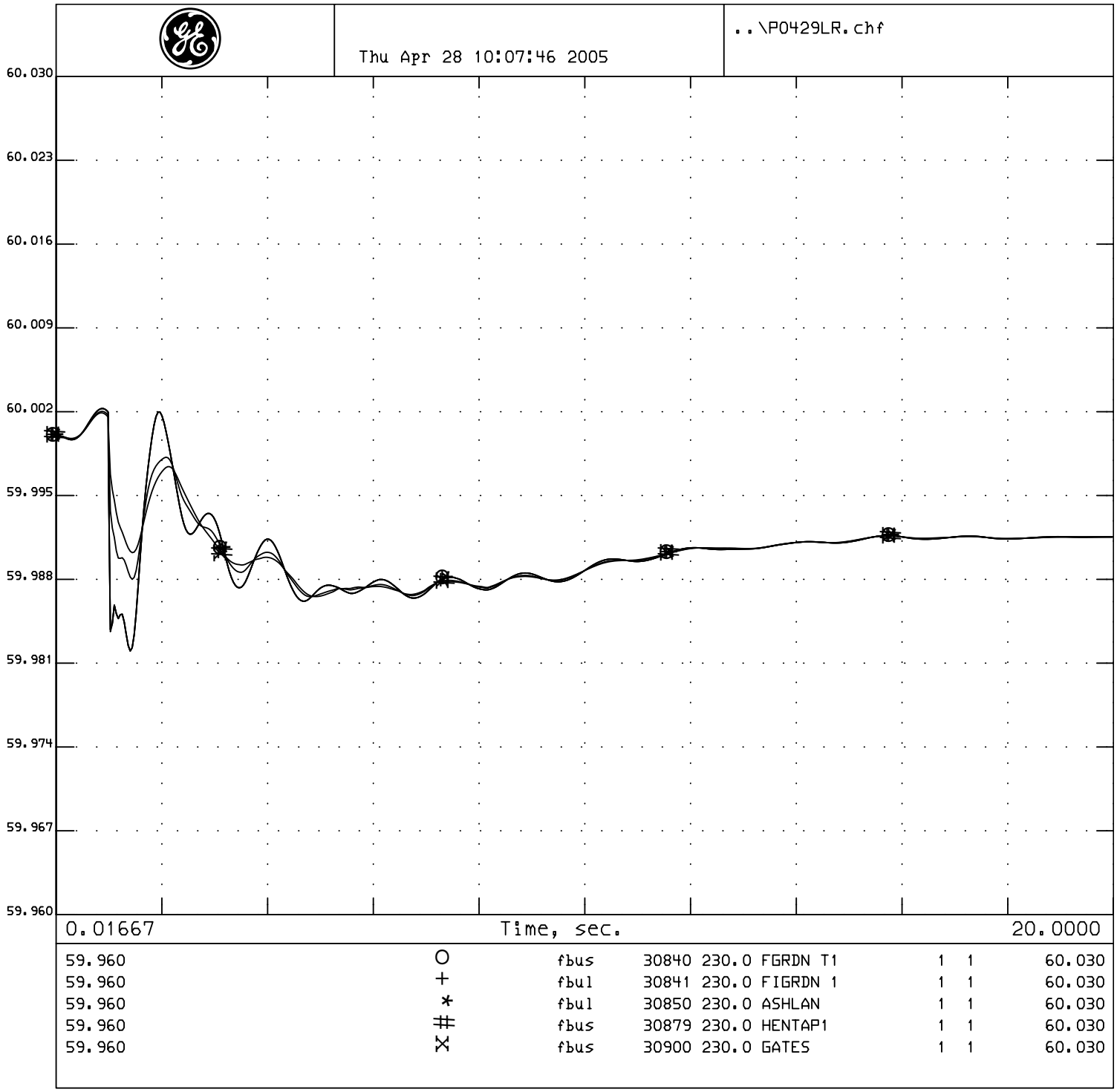


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

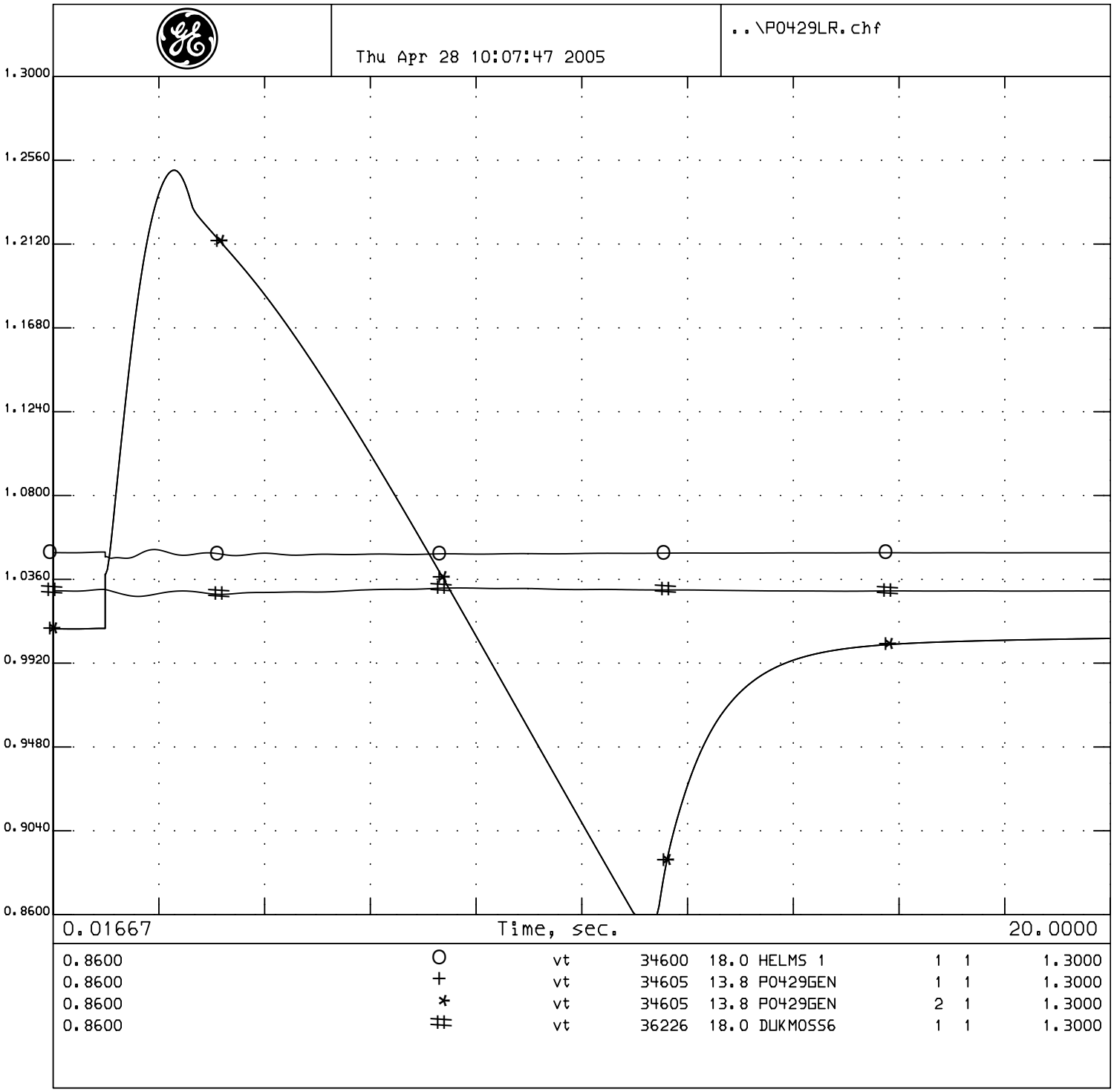


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

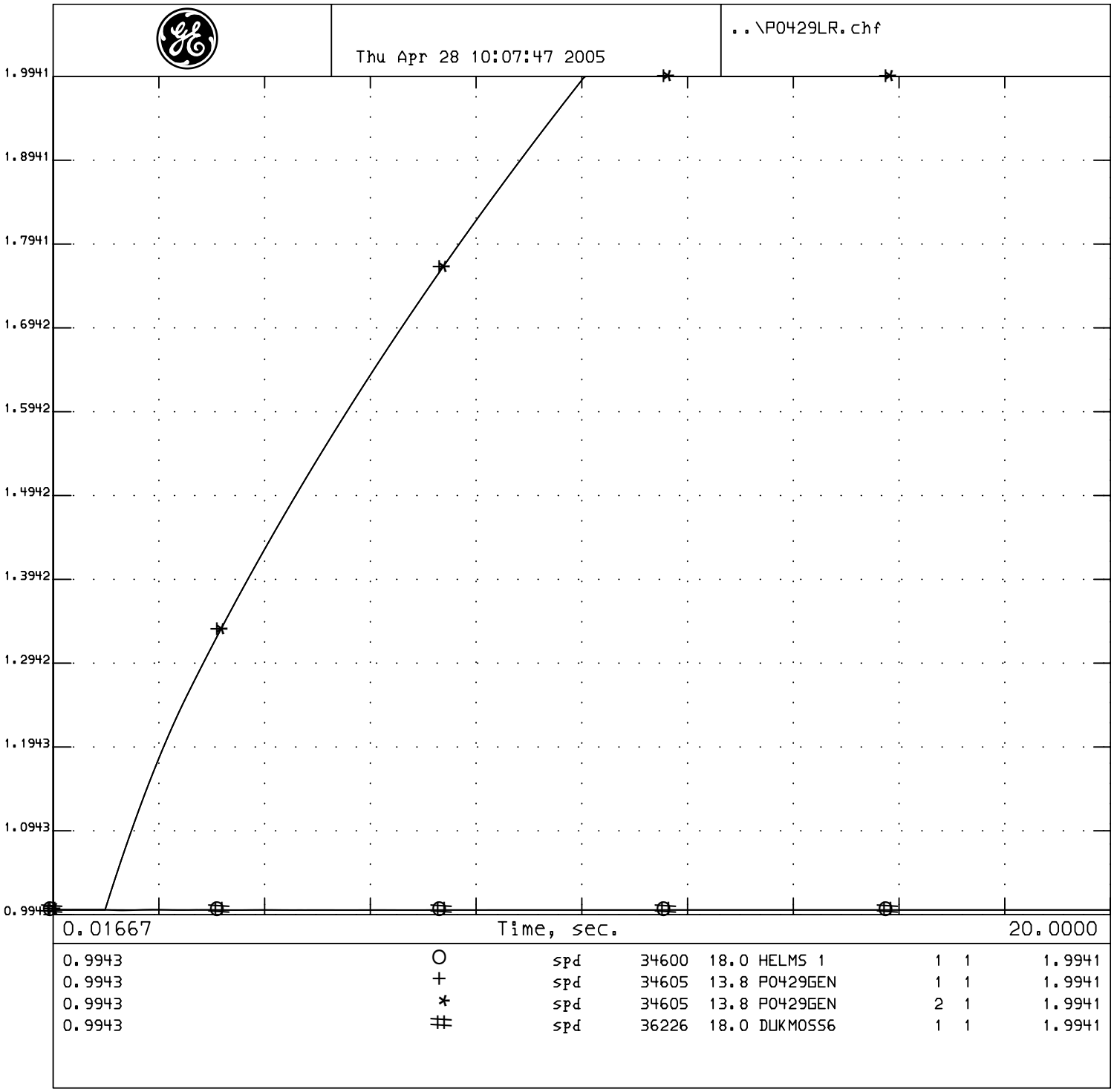


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

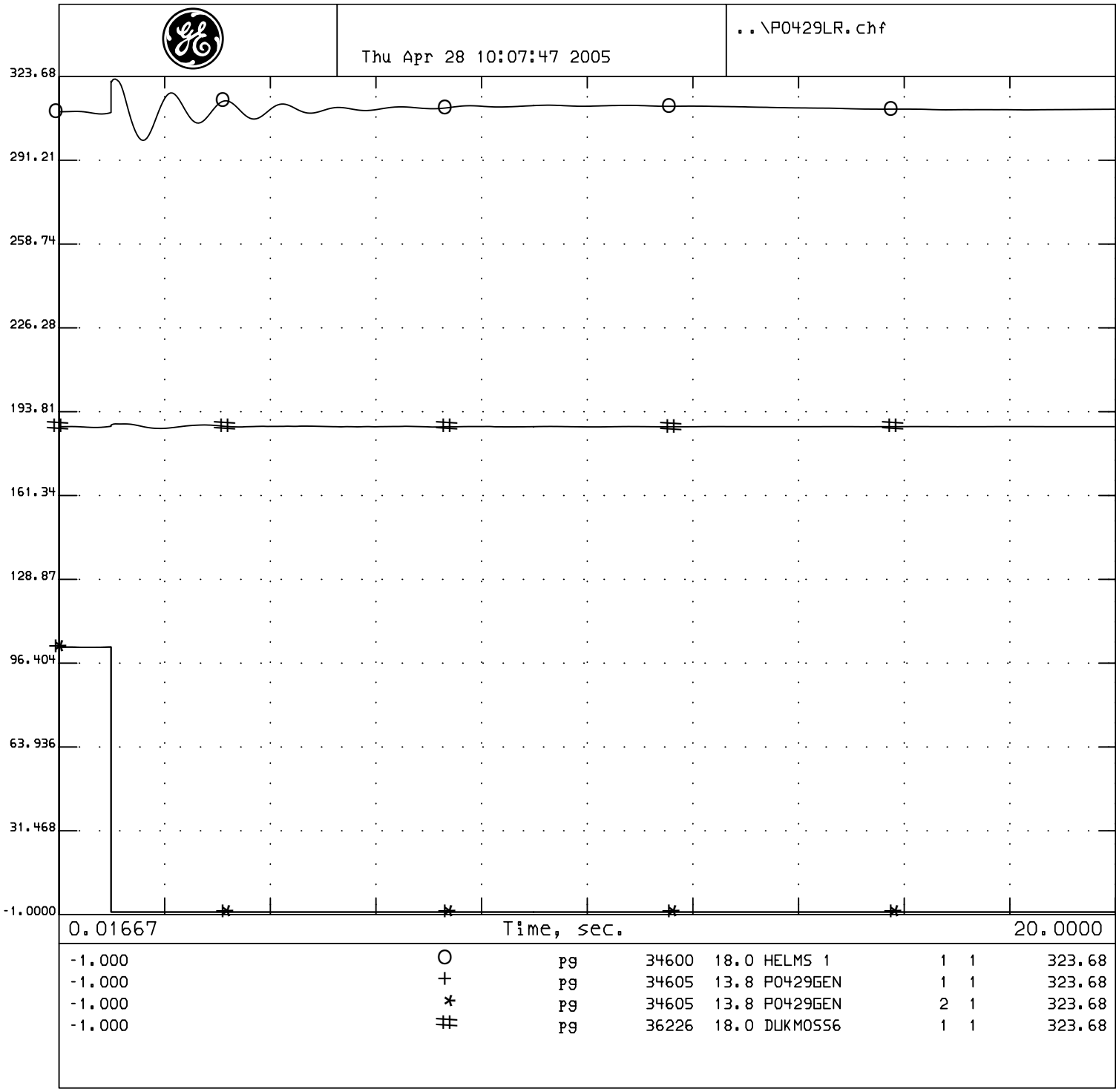


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed

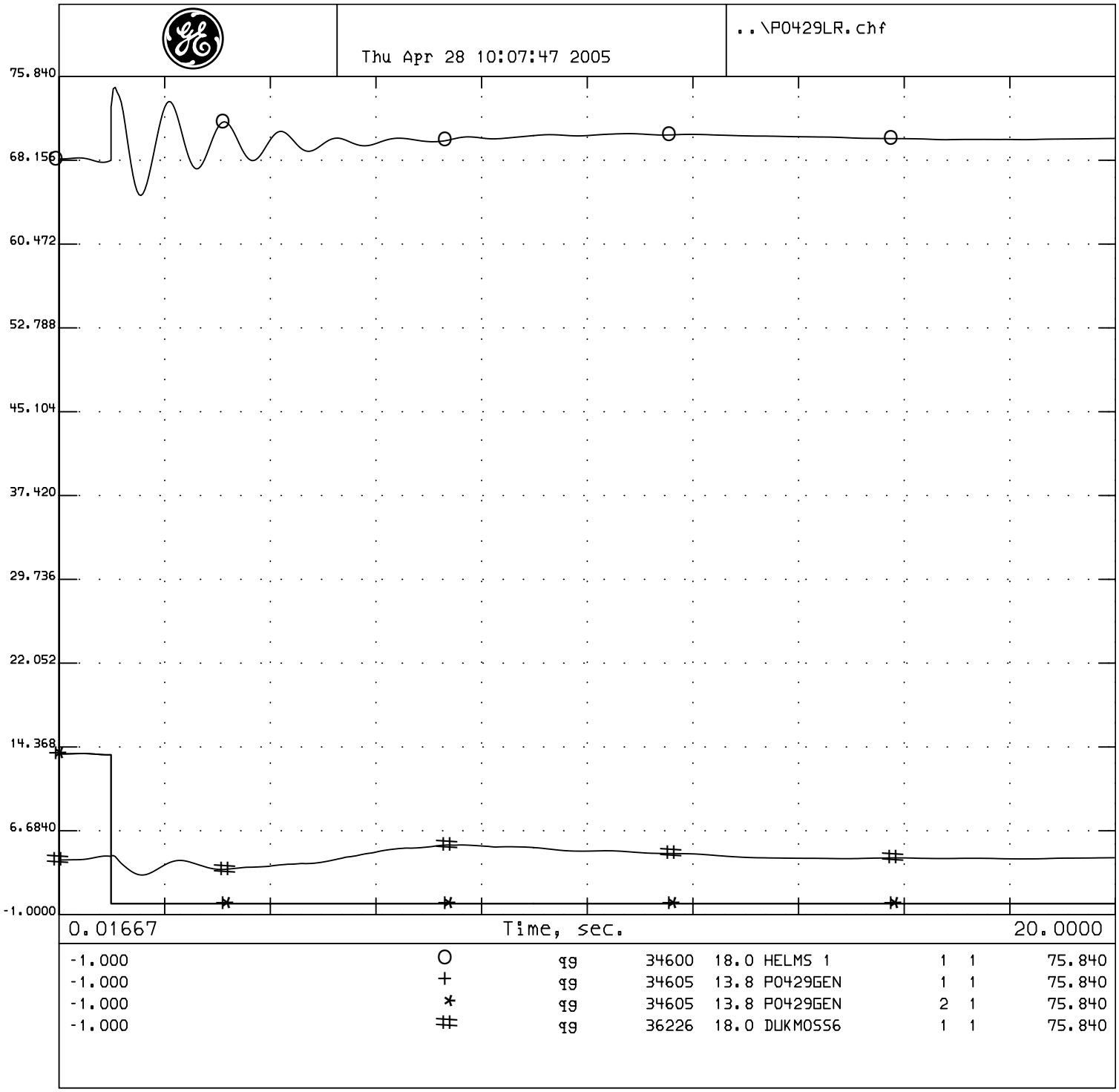


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power

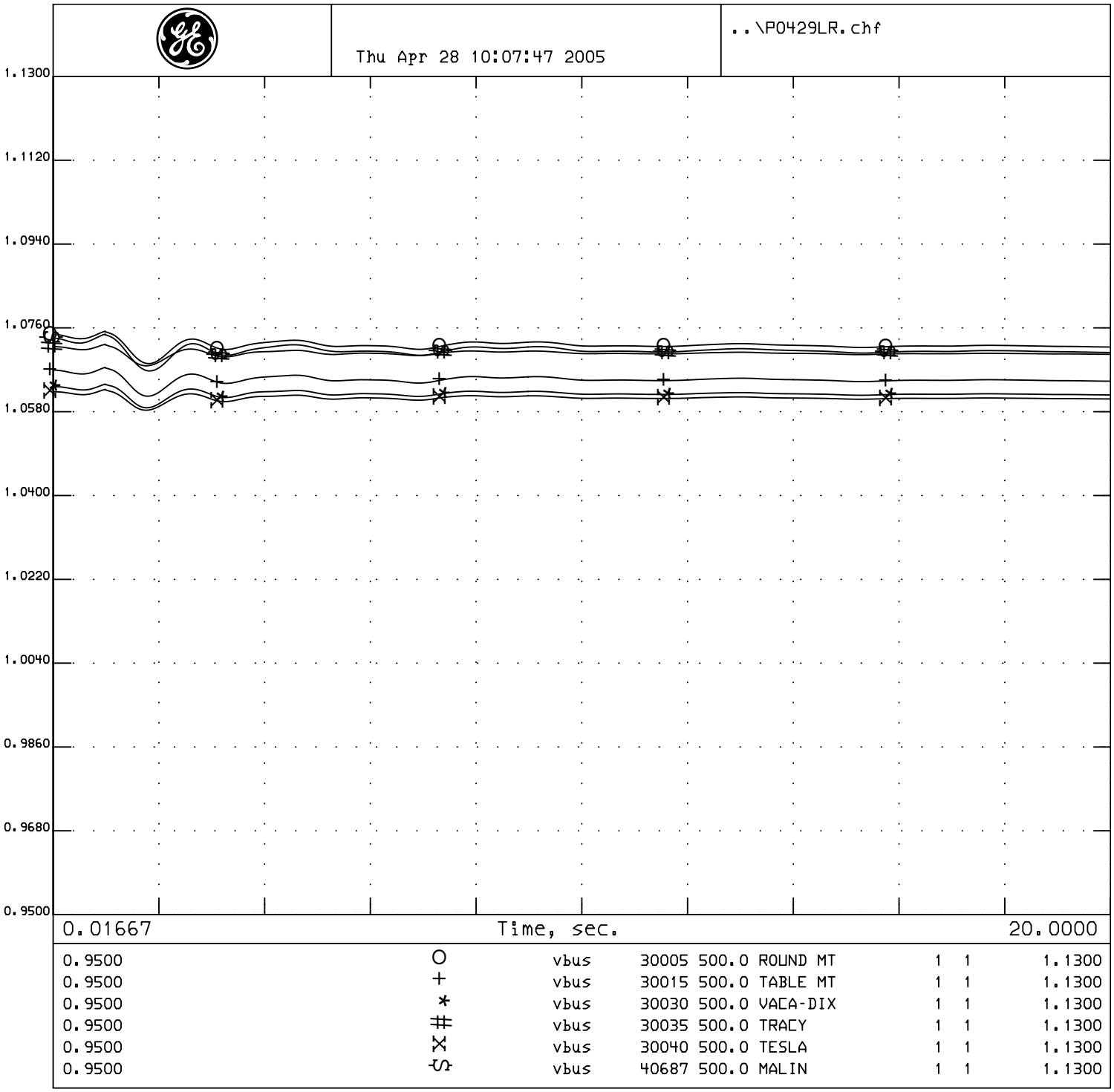


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power

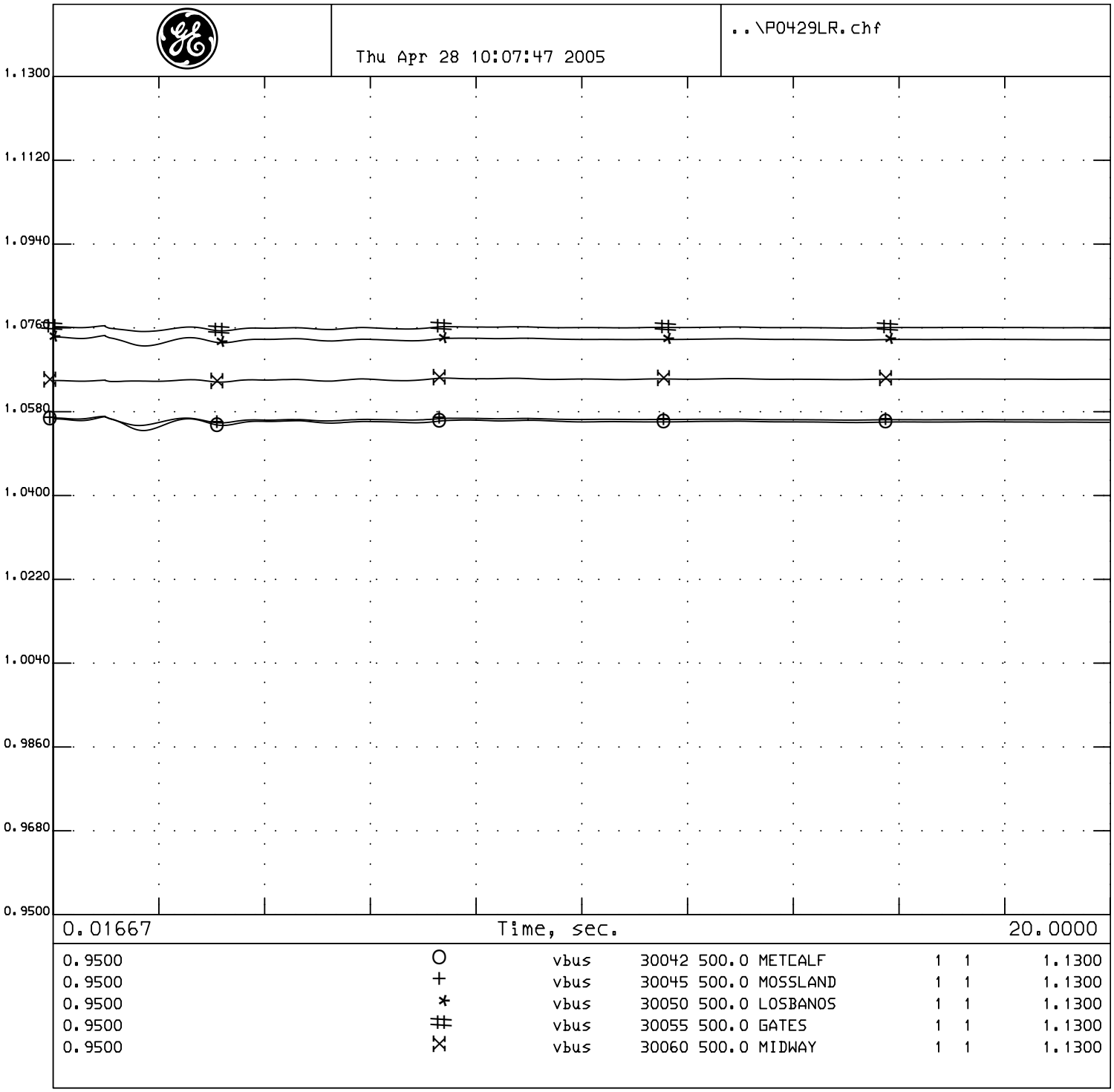


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

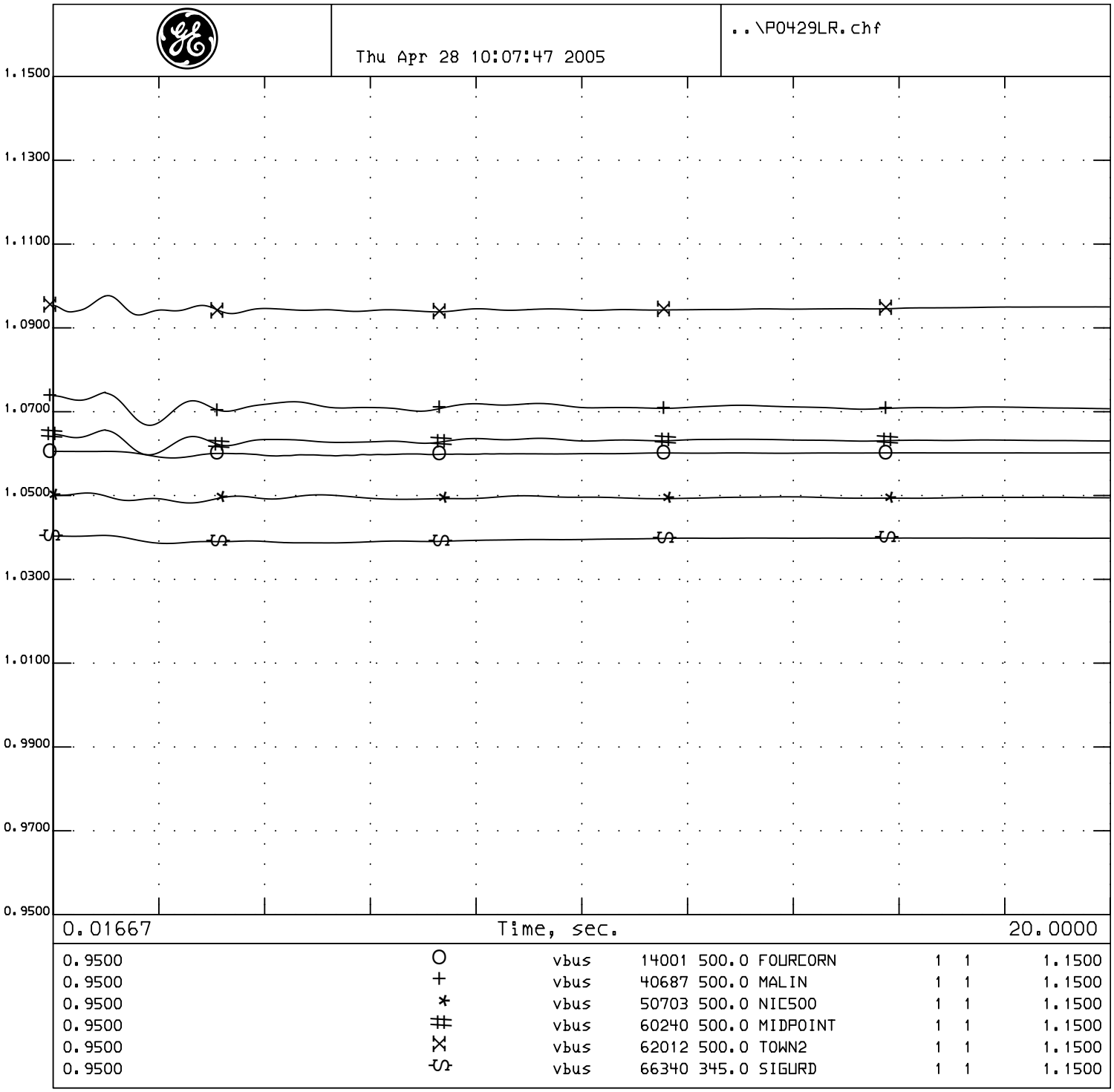


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

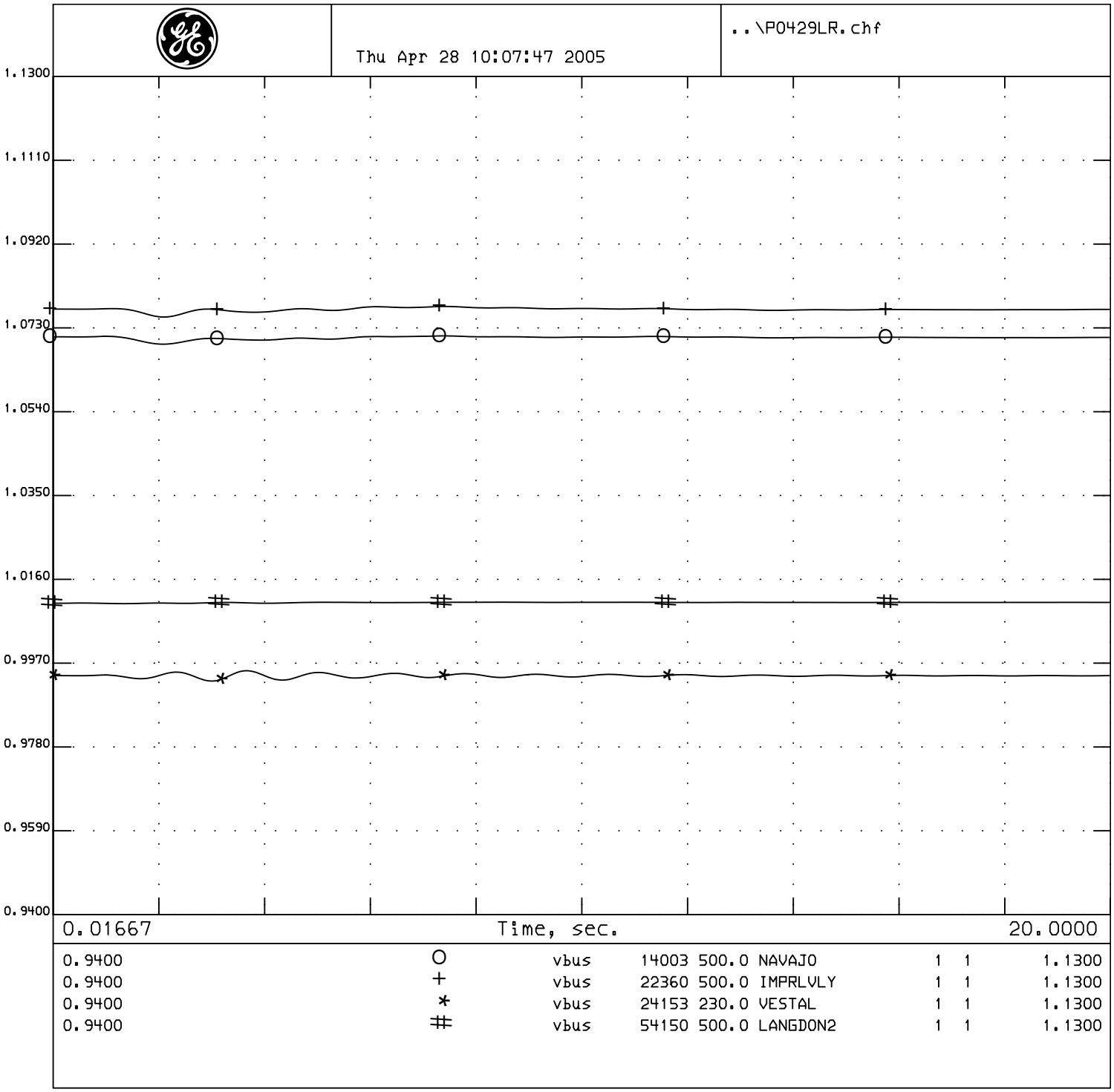


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

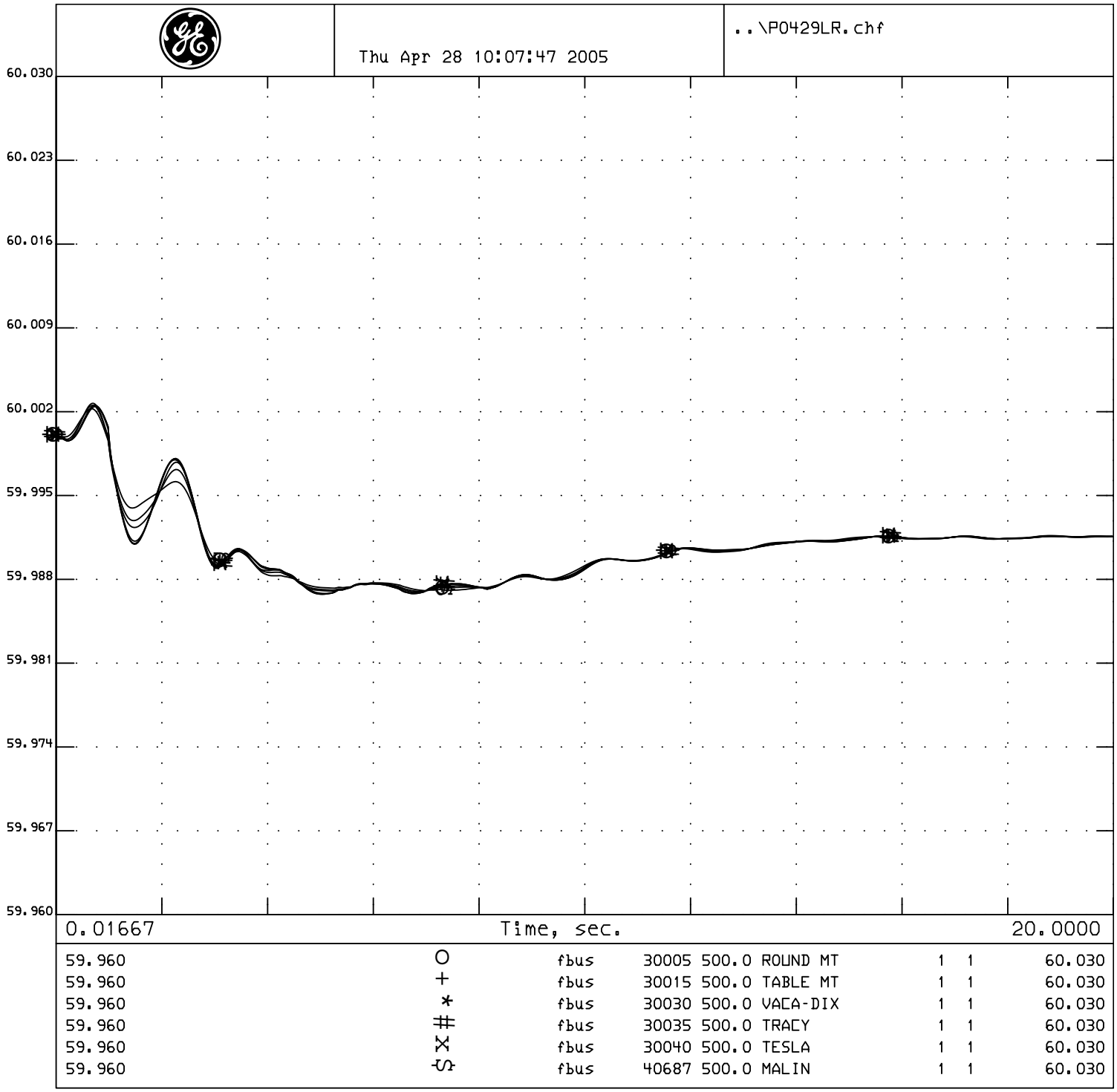


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

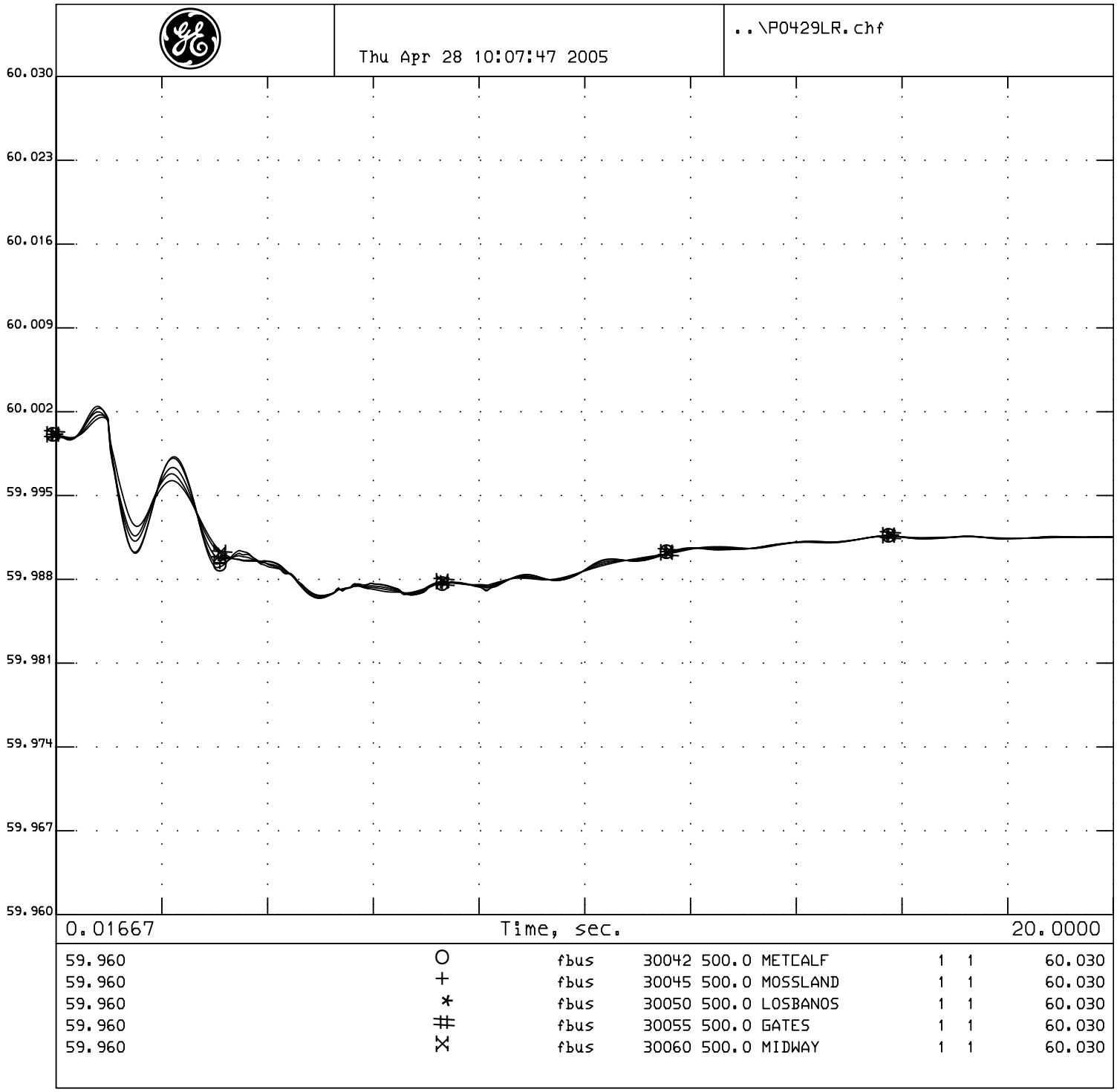


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

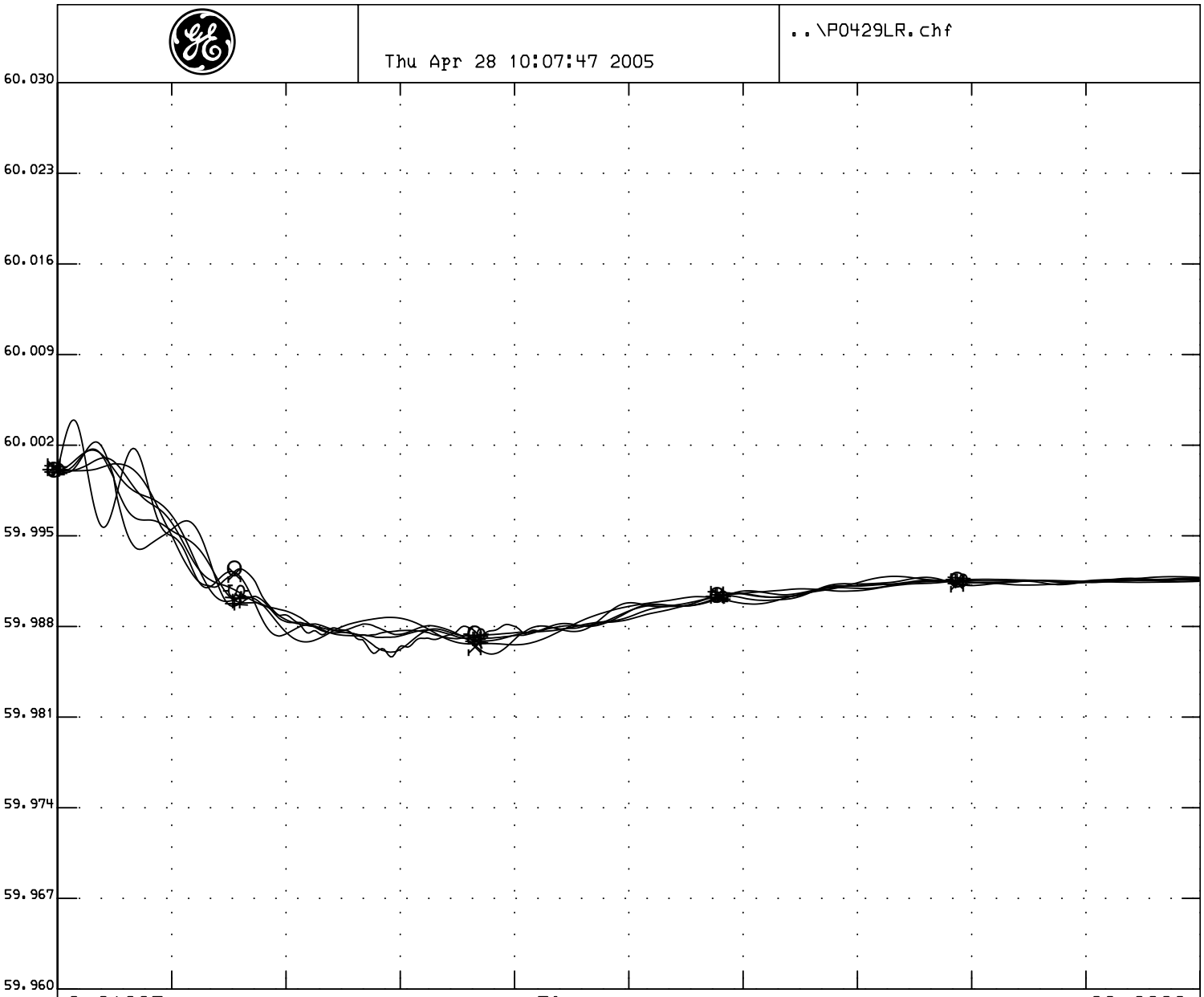


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



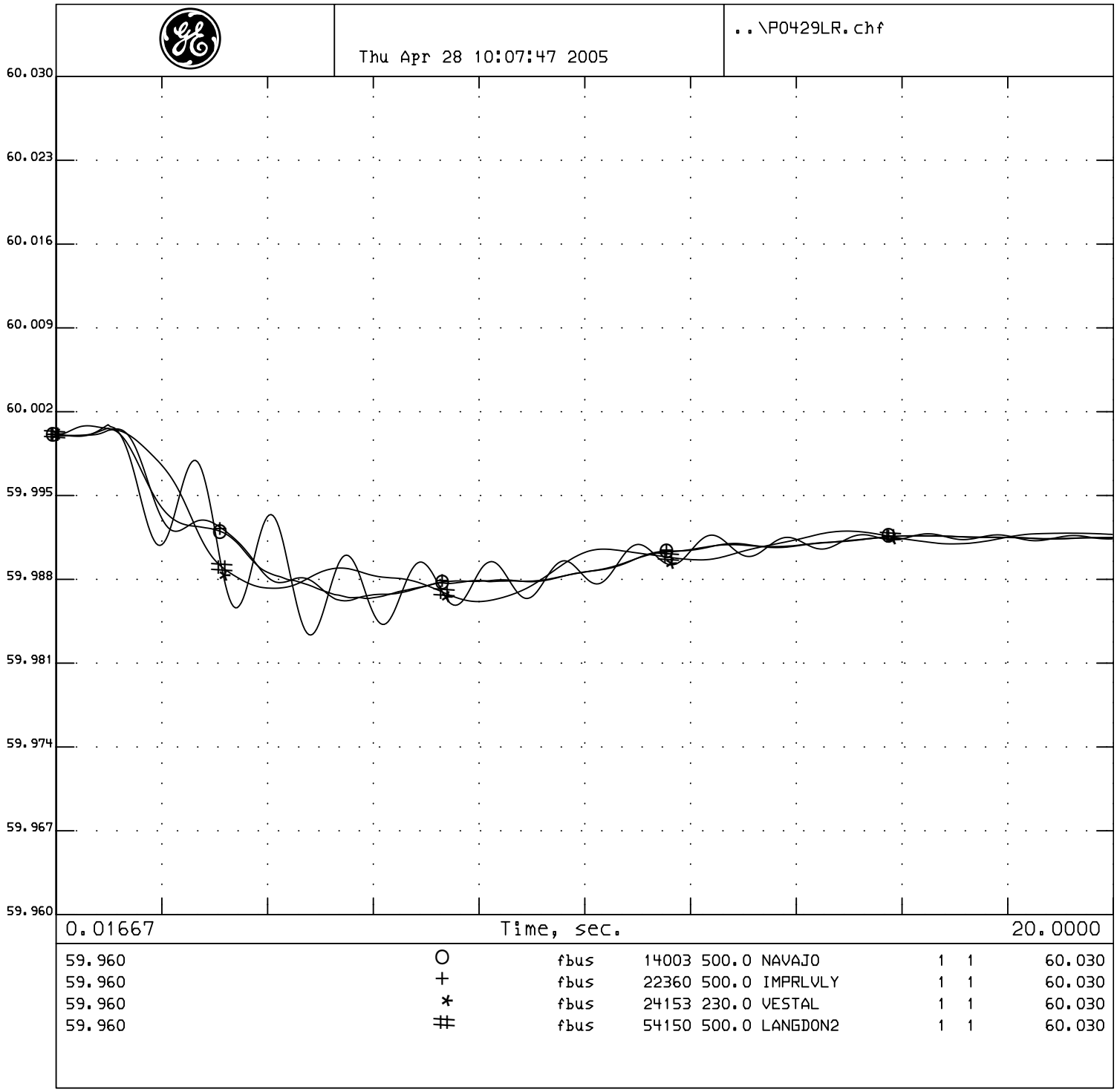
59.960	O	fbus	14001	500.0	FOURCORN	1	1	60.030
59.960	+	fbus	40687	500.0	MALIN	1	1	60.030
59.960	*	fbus	50703	500.0	NIC500	1	1	60.030
59.960	#	fbus	60240	500.0	MIDPOINT	1	1	60.030
59.960	X	fbus	62012	500.0	TOWN2	1	1	60.030
59.960	S	fbus	66340	345.0	SIGURD	1	1	60.030

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

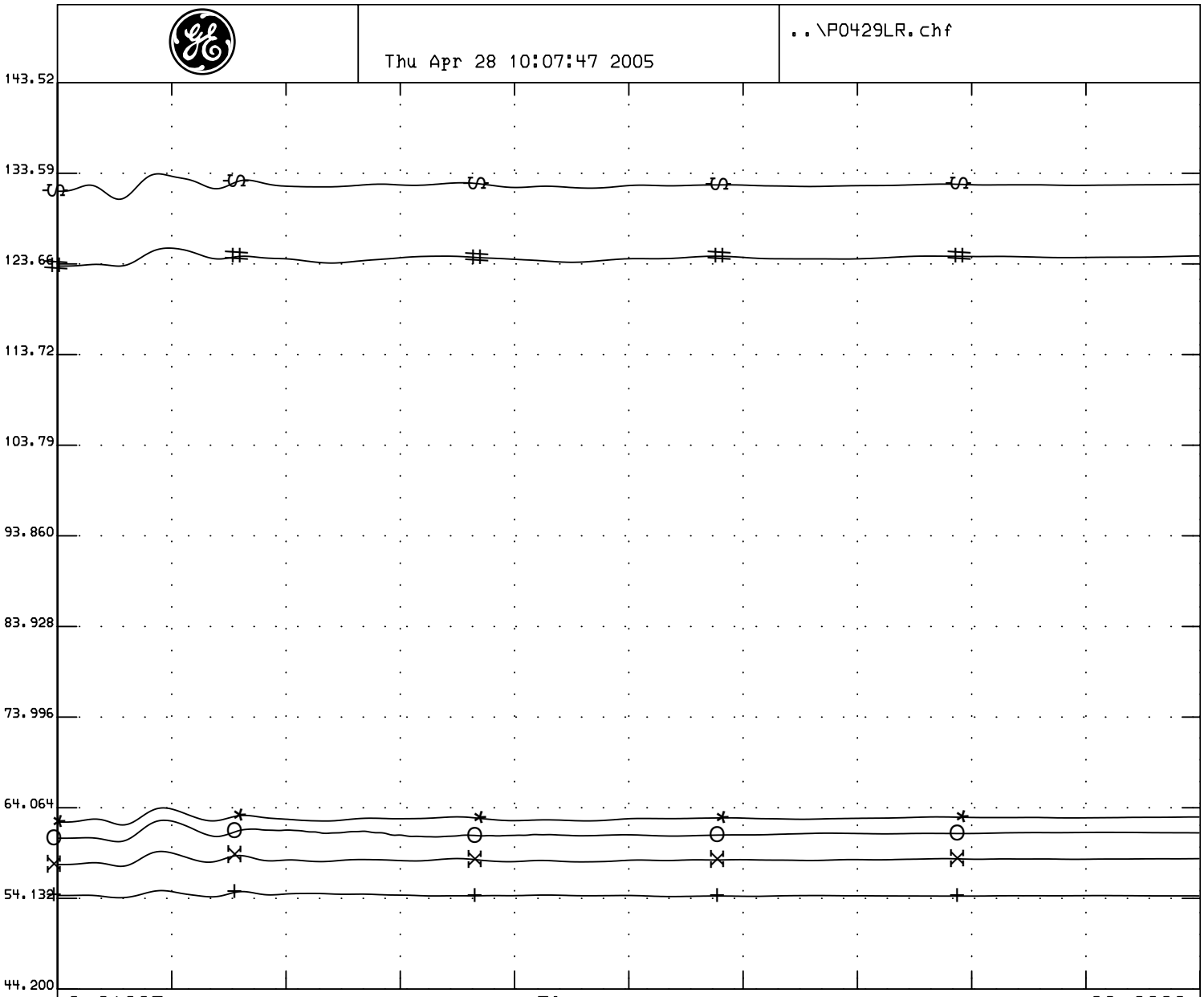


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



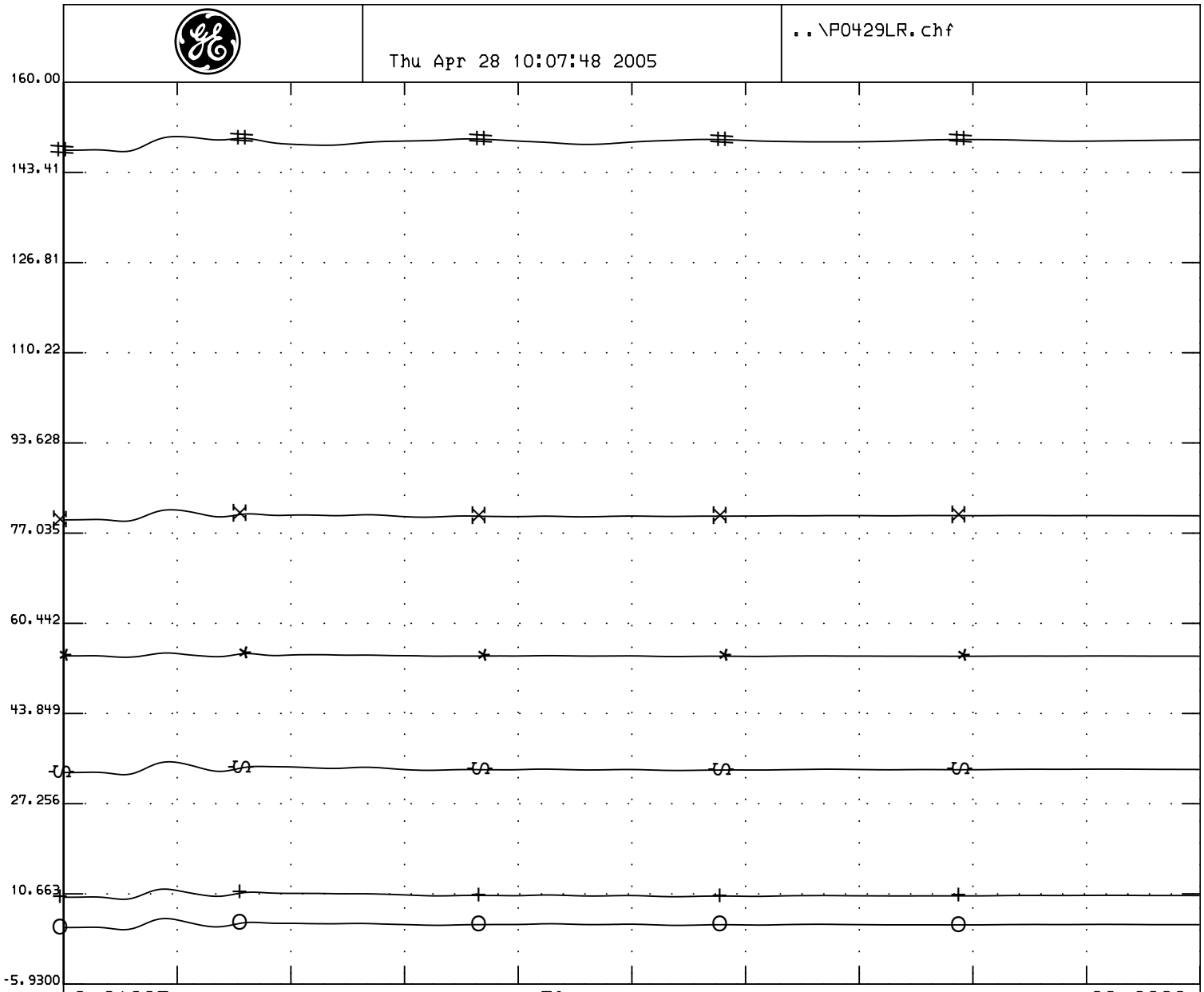
44.200	O	ang	14914	22.0	FCNGN4CC	H	1	143.52
44.200	+	ang	36411	25.0	DIABLO 1	1	1	143.52
44.200	*	ang	41701	13.8	JONDAY01	1	1	143.52
44.200	#	ang	50500	13.8	GMS G6	1	1	143.52
44.200	X	ang	60100	13.8	BRWNL 5	1	1	143.52
44.200	S	ang	62048	26.0	COLSTP 3	1	1	143.52

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle



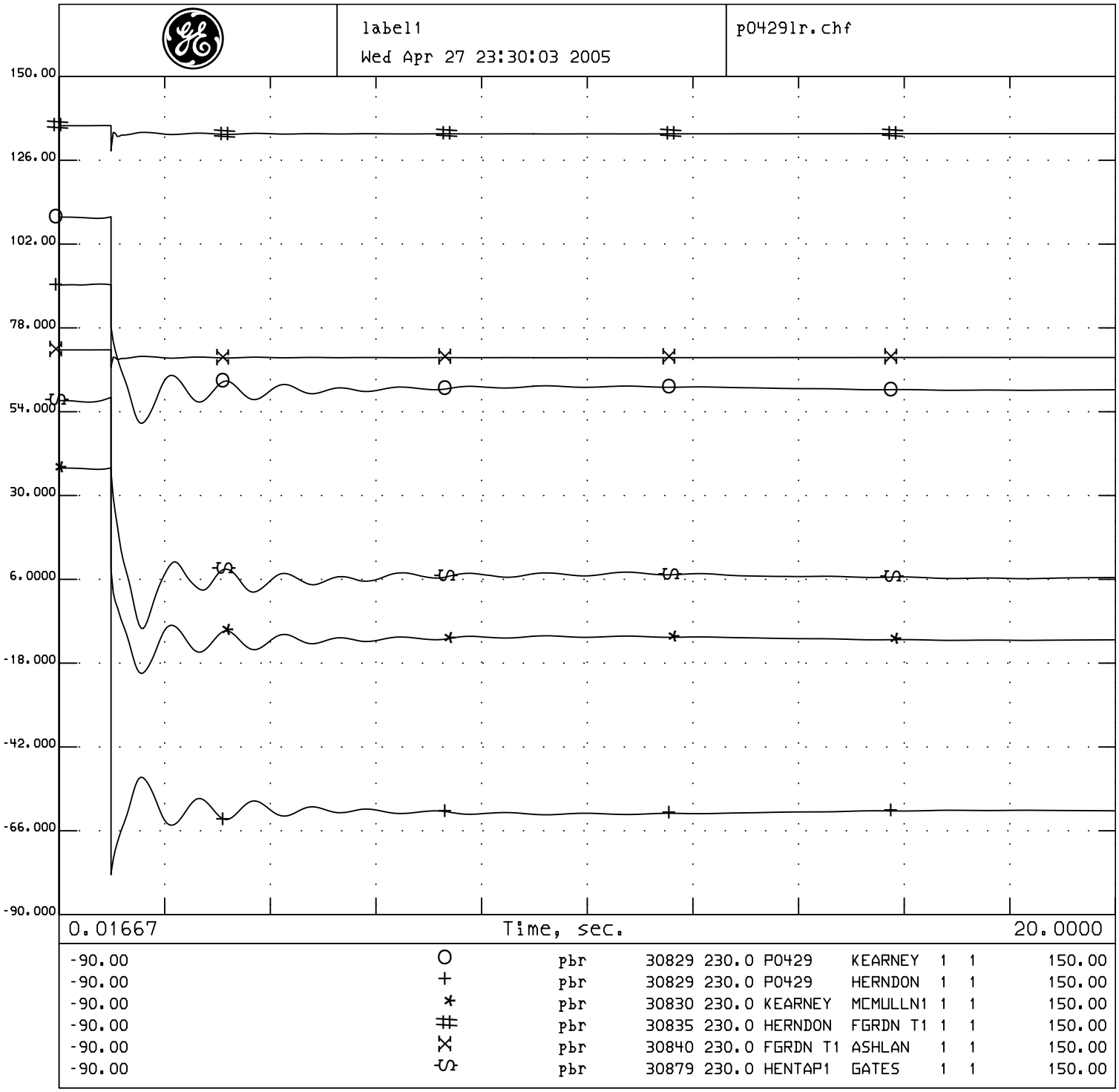
-5.930	O	ang	22244	24.0	ENCINA 5	1	1	160.00
-5.930	+	ang	24130	22.0	S.ONOFR3	3	1	160.00
-5.930	*	ang	36411	25.0	DIABLO 1	1	1	160.00
-5.930	#	ang	54280	18.0	SUND#2GN	2	1	160.00
-5.930	X	ang	65490	24.0	EHUNTR 1	1	1	160.00
-5.930	S	ang	79151	13.8	GLENC3-4	3	1	160.00

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

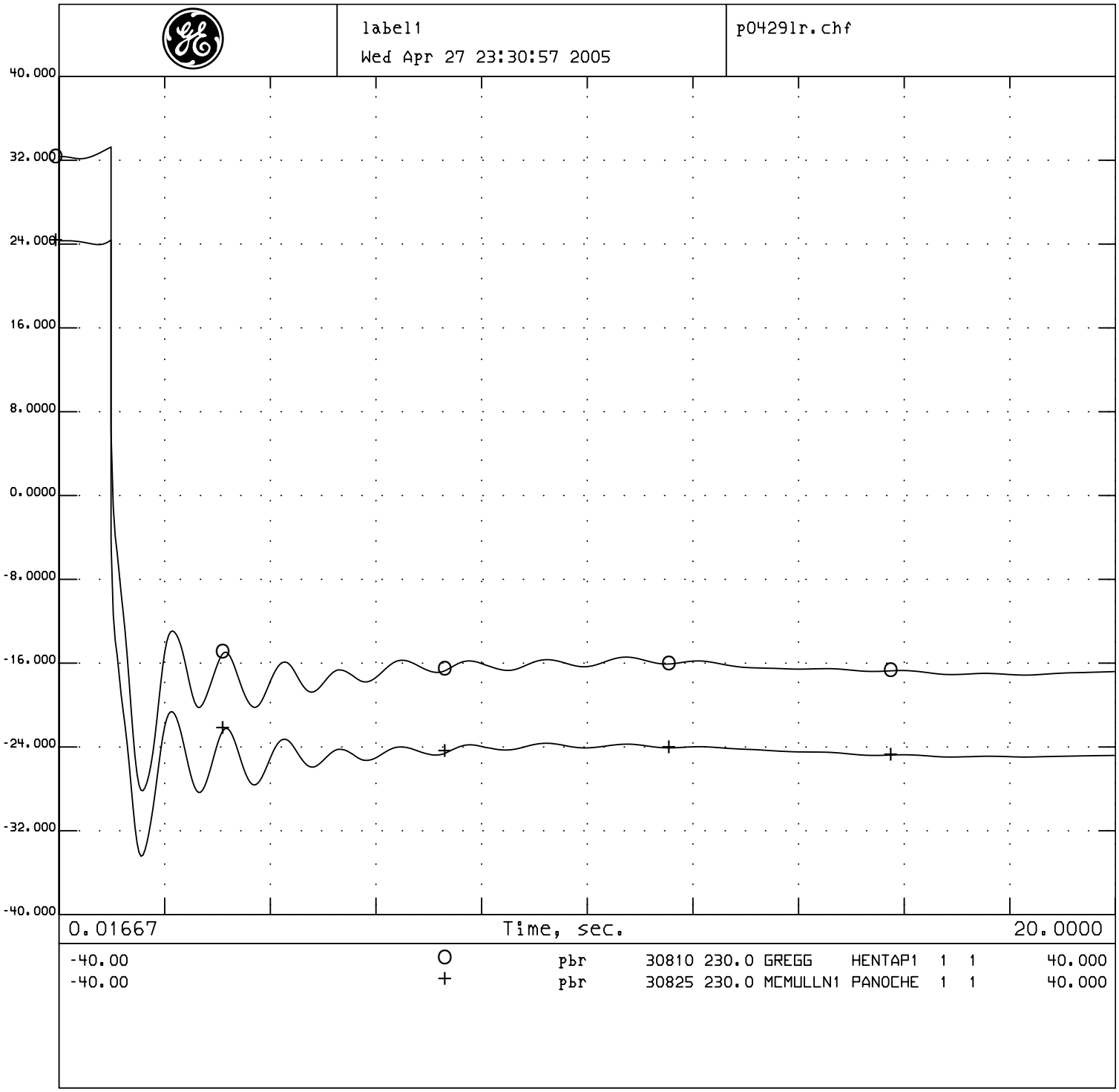


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW

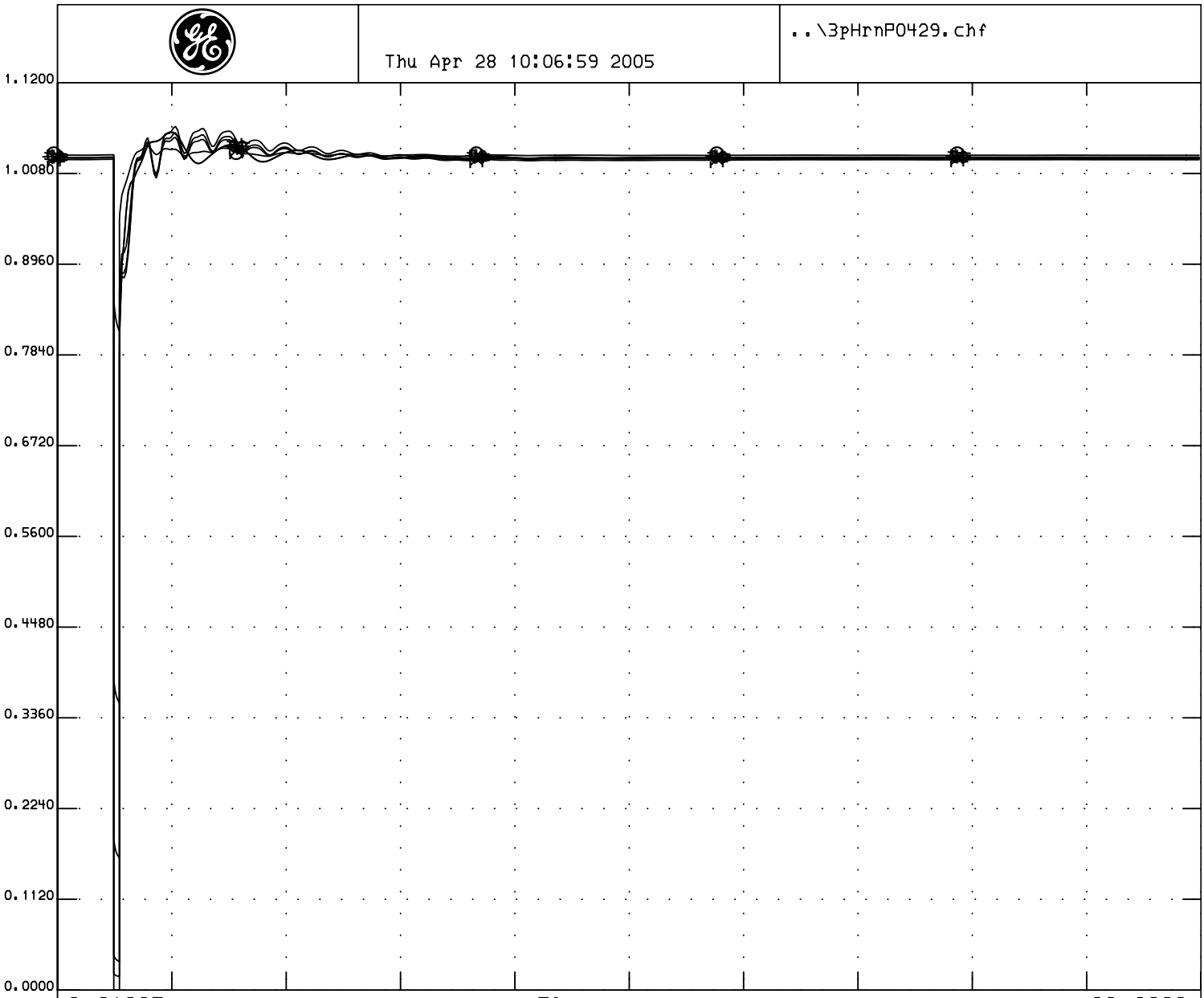


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
P0429 Load Rejection
No Fault

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



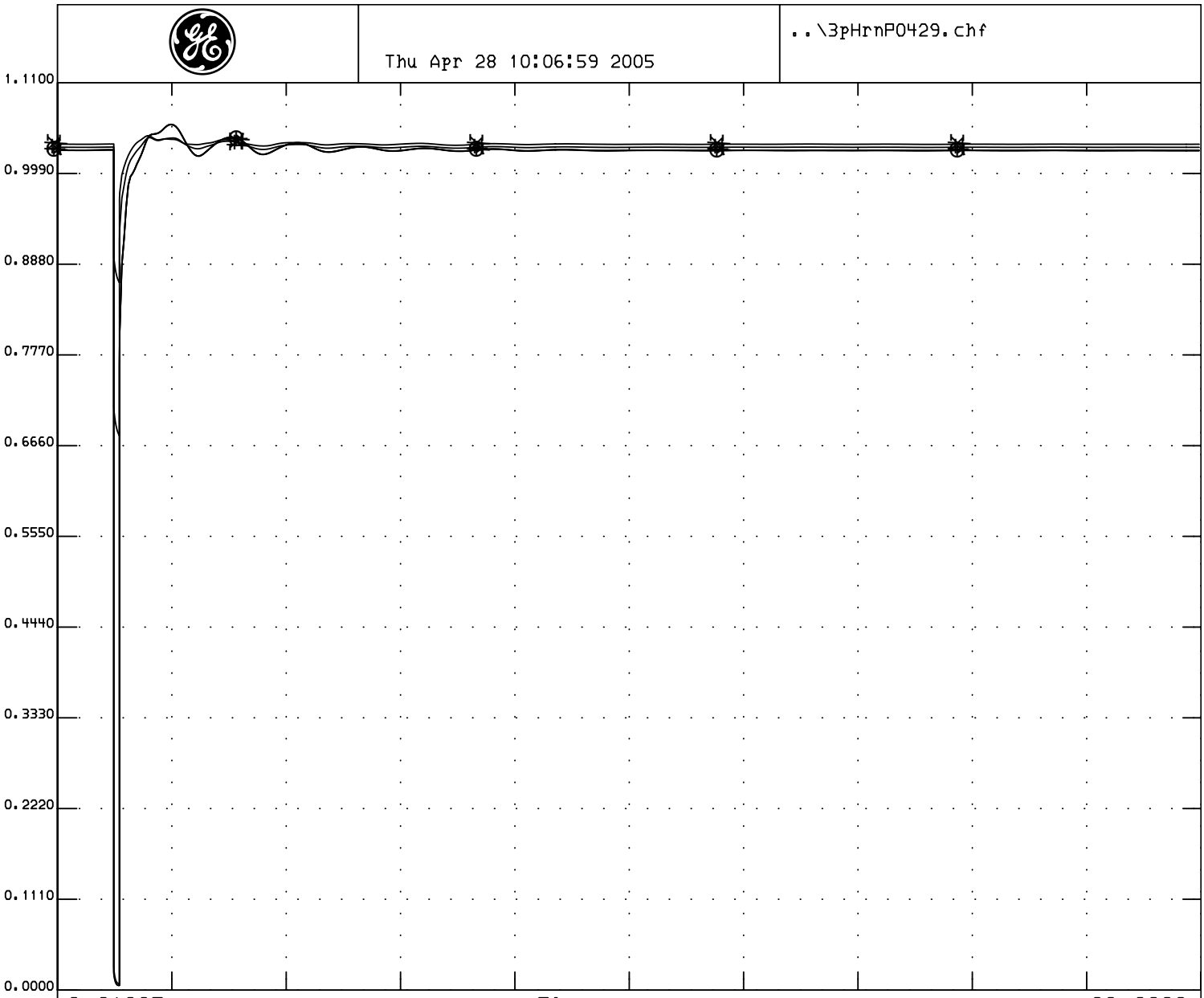
0.0000	O	vbus	30790	230.0	PANOCHE	1	1	1.1200
0.0000	+	vbus	30810	230.0	GREGG	1	1	1.1200
0.0000	*	vbul	30825	230.0	MCMULLN1	1	1	1.1200
0.0000	#	vbus	30829	230.0	P0429	1	1	1.1200
0.0000	X	vbus	30830	230.0	KEARNEY	1	1	1.1200
0.0000	S	vbus	30835	230.0	HERNDON	1	1	1.1200

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault



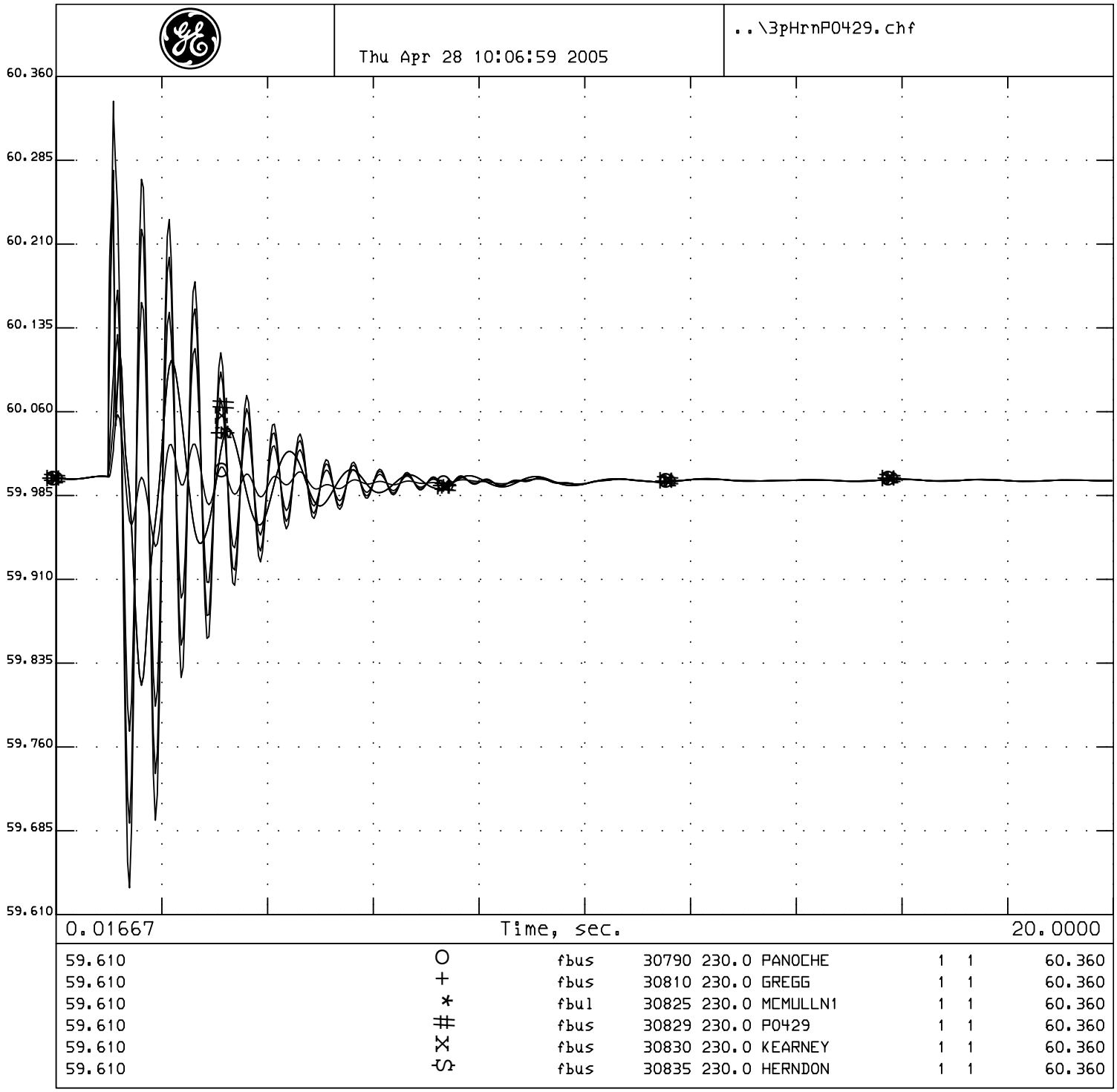
0.0000	O	vbus	30840	230.0	FGRDN T1	1	1	1.1100
0.0000	+	vbul	30841	230.0	FIGRDN 1	1	1	1.1100
0.0000	*	vbul	30850	230.0	ASHLAN	1	1	1.1100
0.0000	#	vbus	30879	230.0	HENTAP1	1	1	1.1100
0.0000	X	vbus	30900	230.0	GATES	1	1	1.1100

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

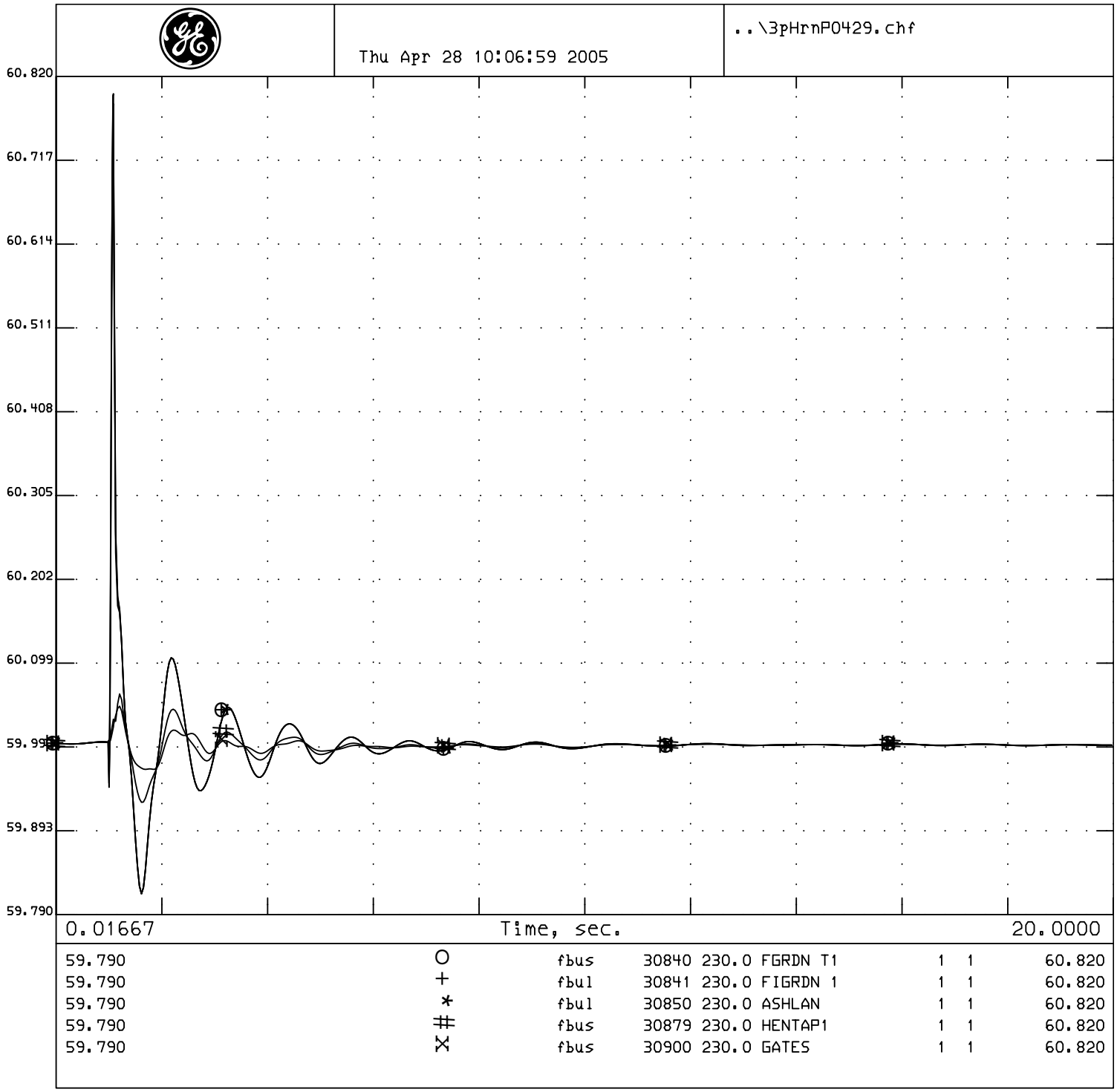


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

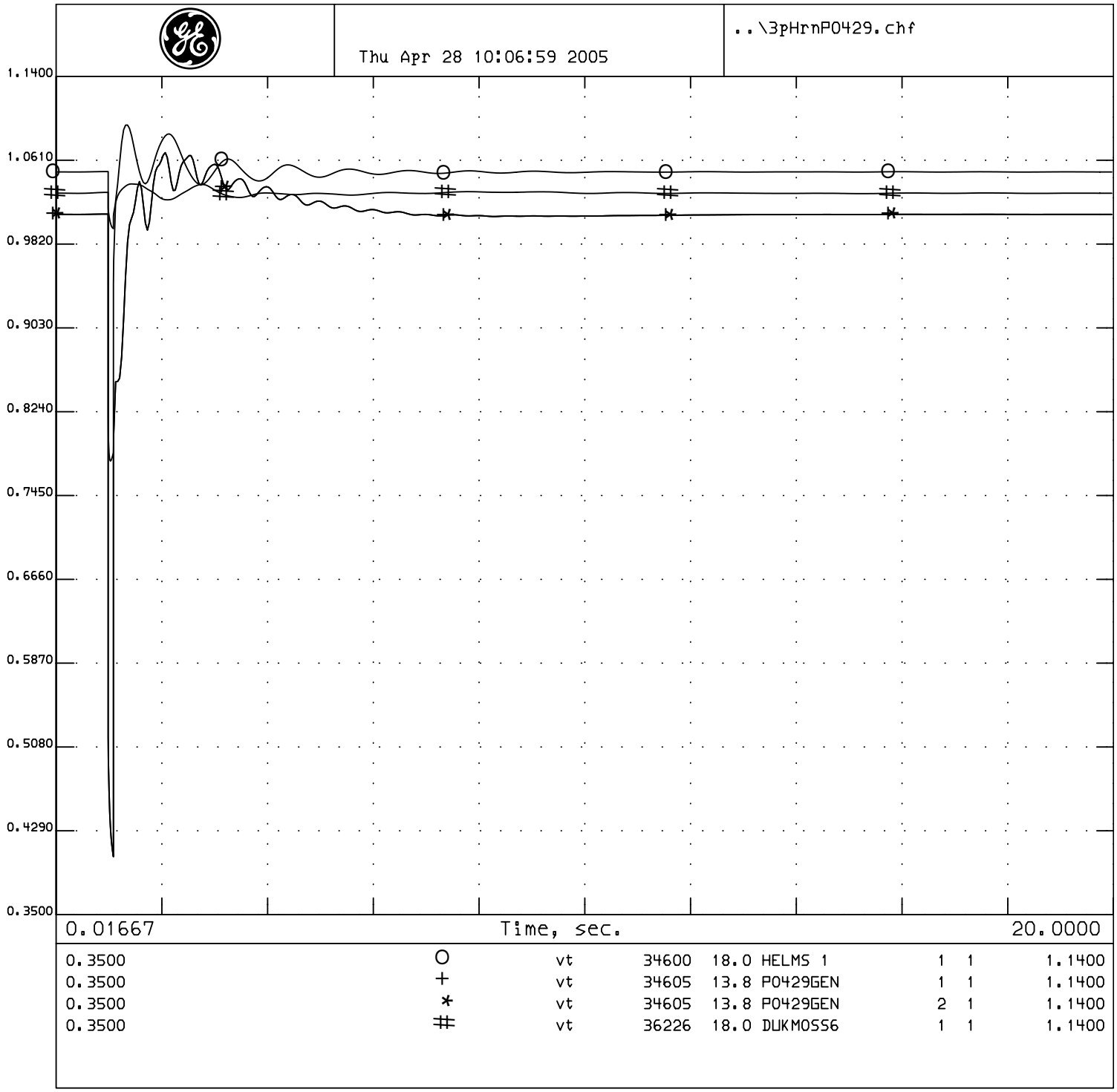


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

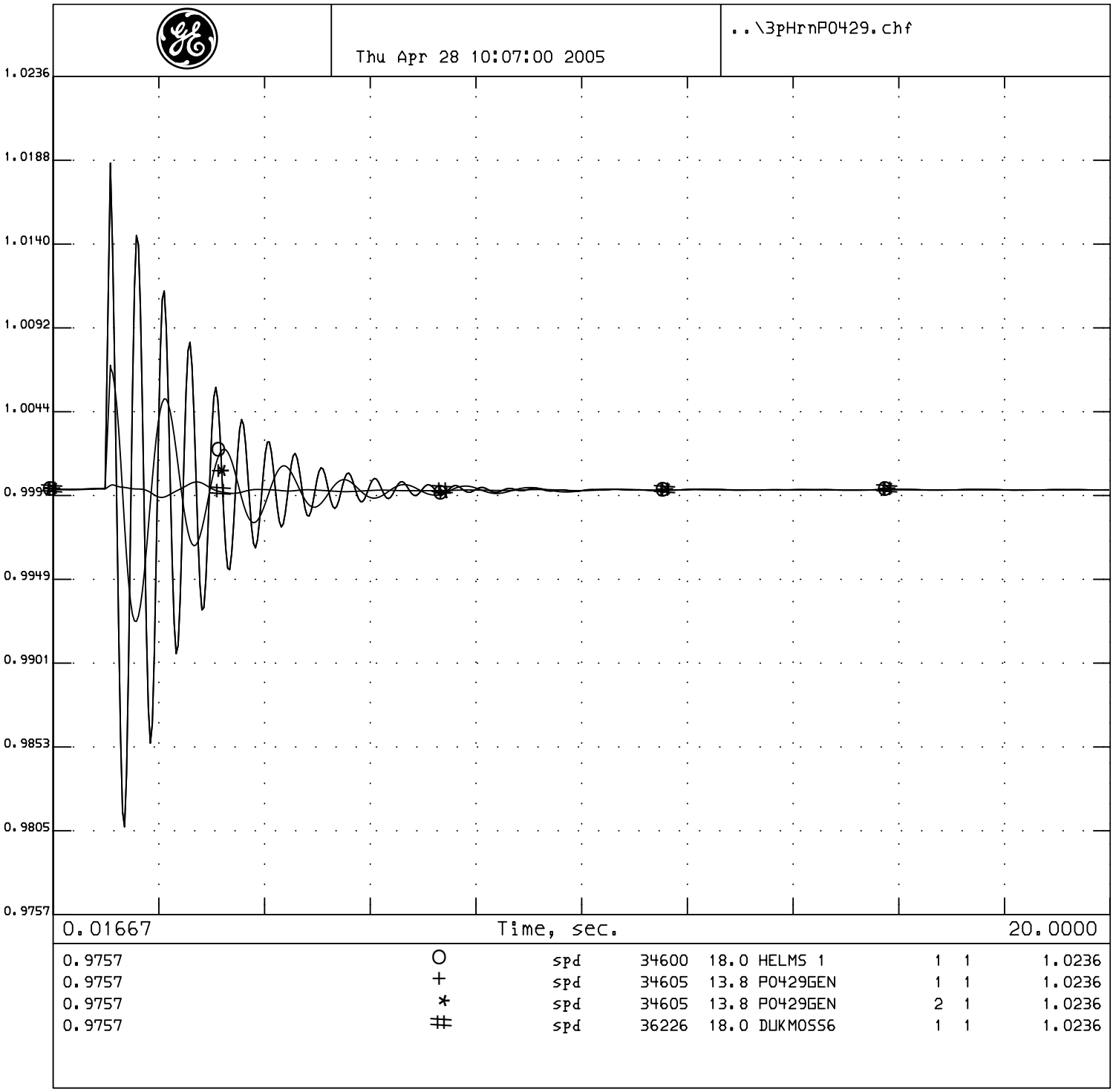


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

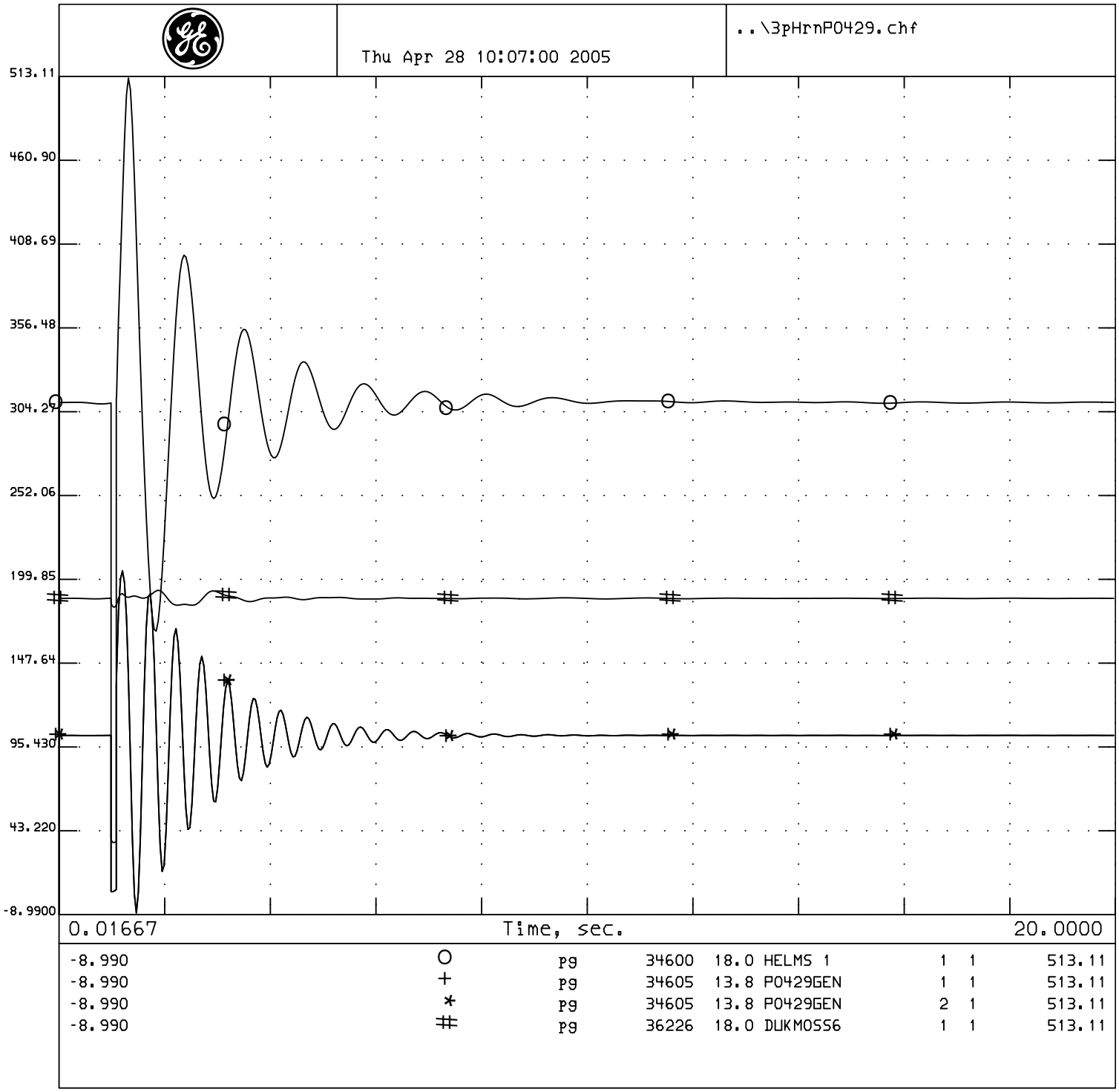


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed

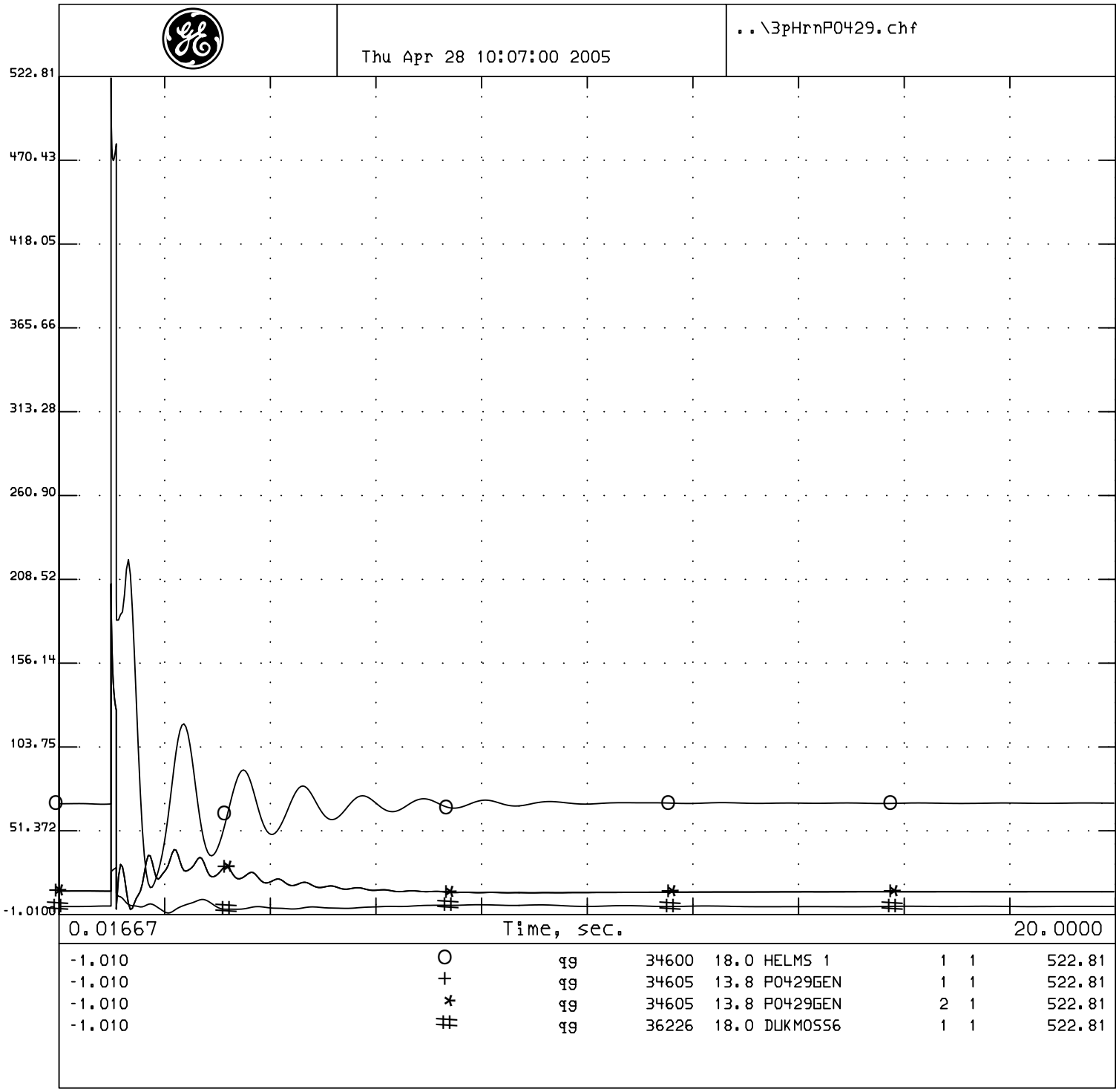


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power

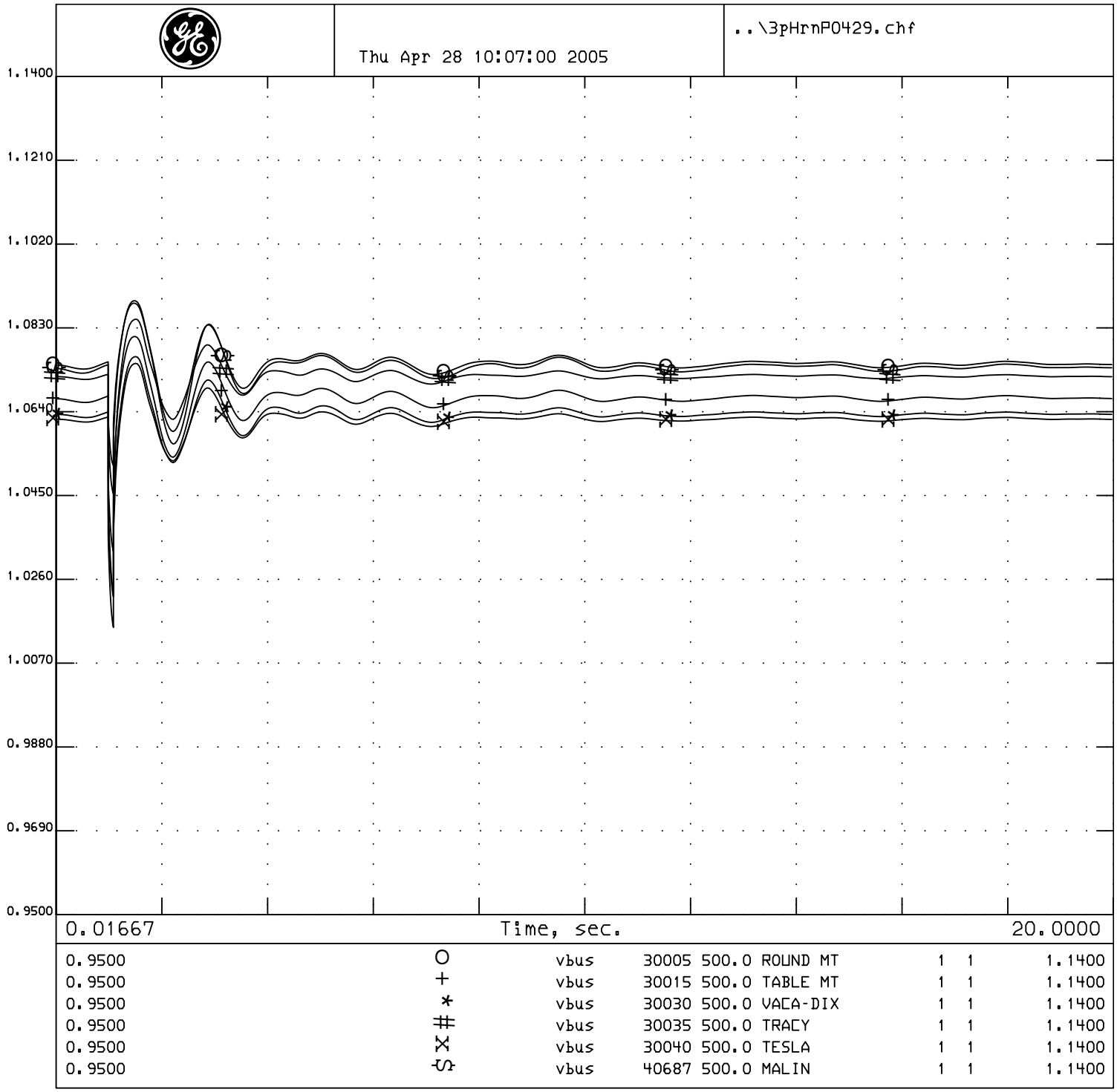


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power

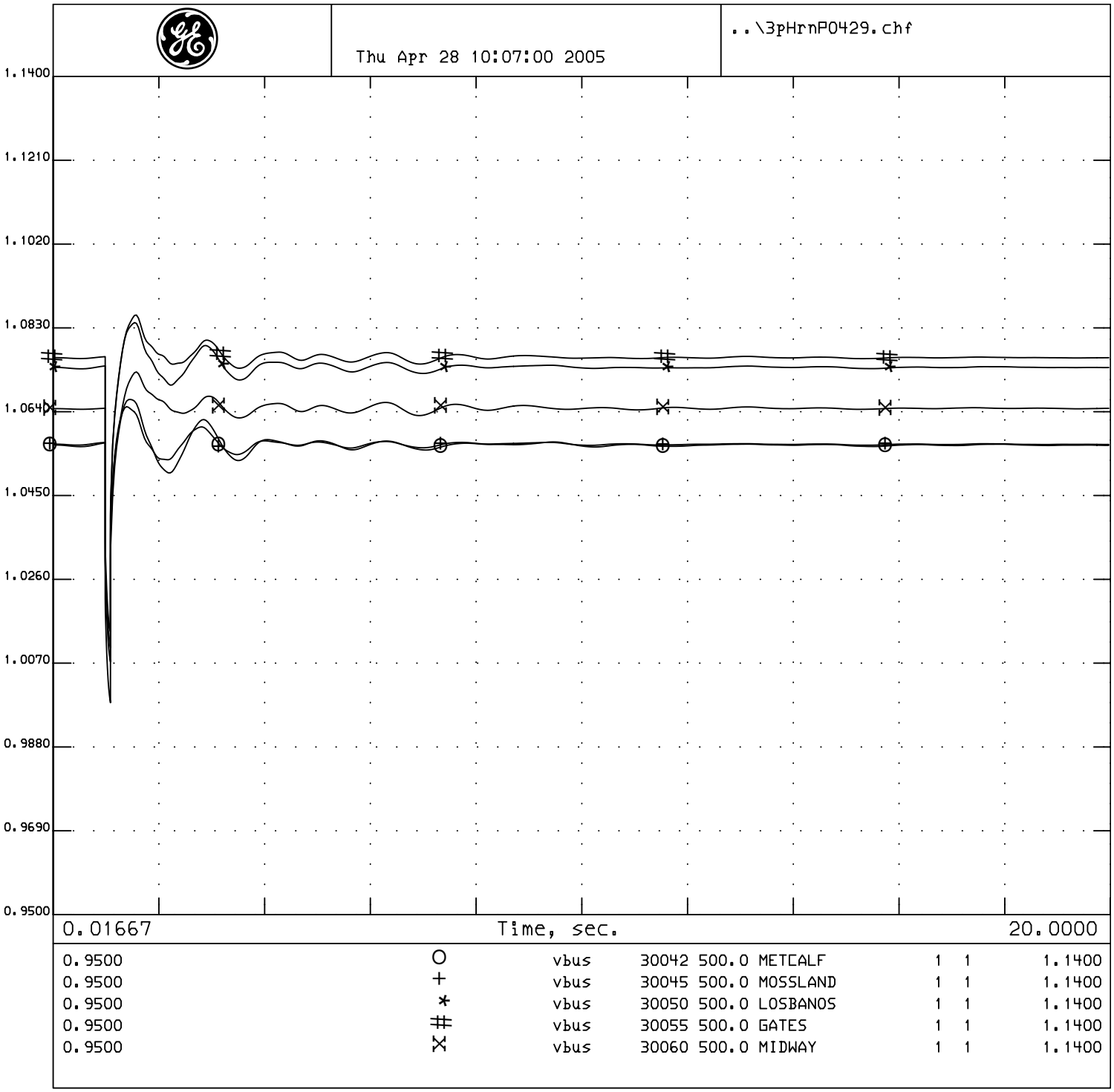


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

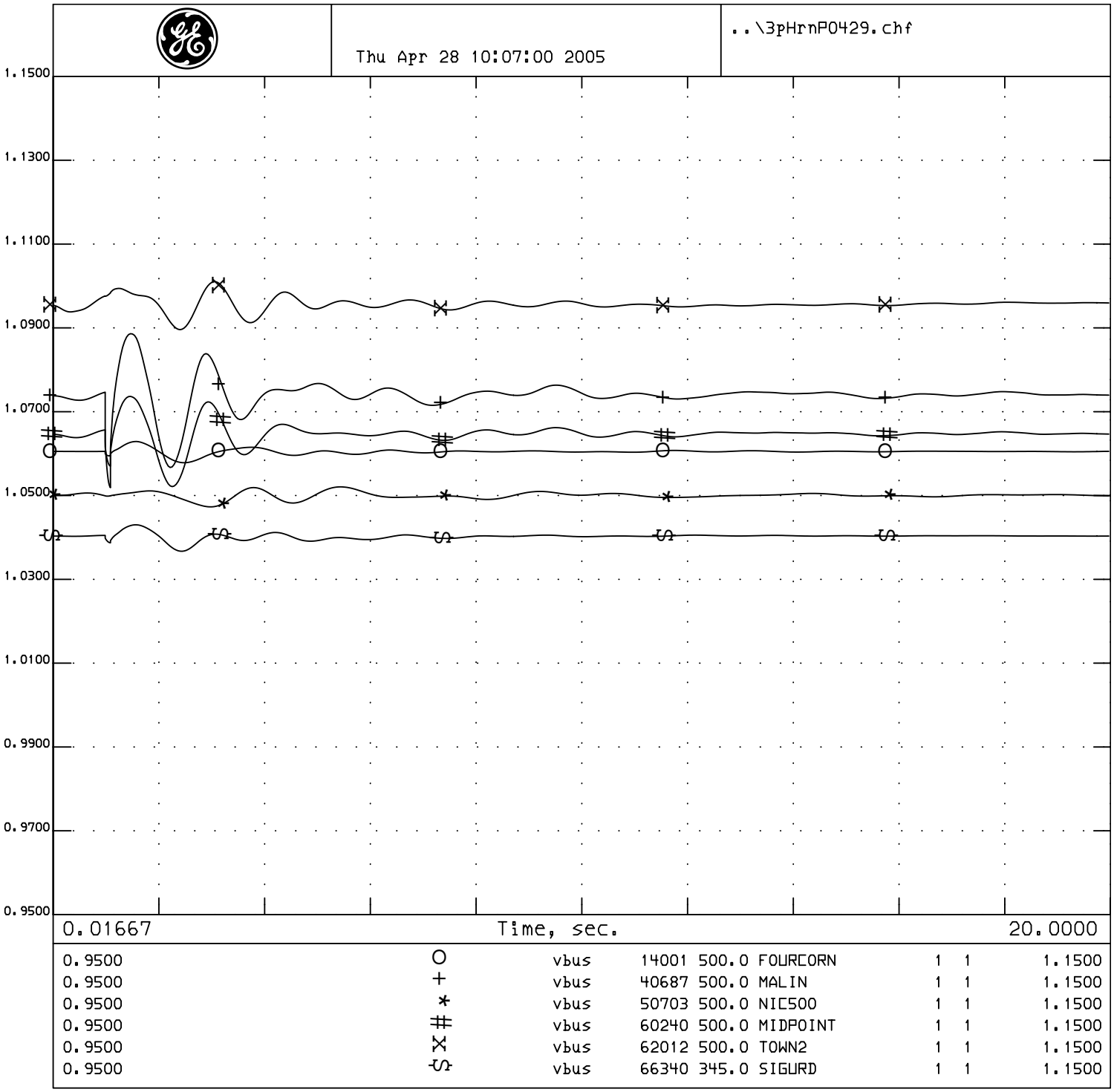


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

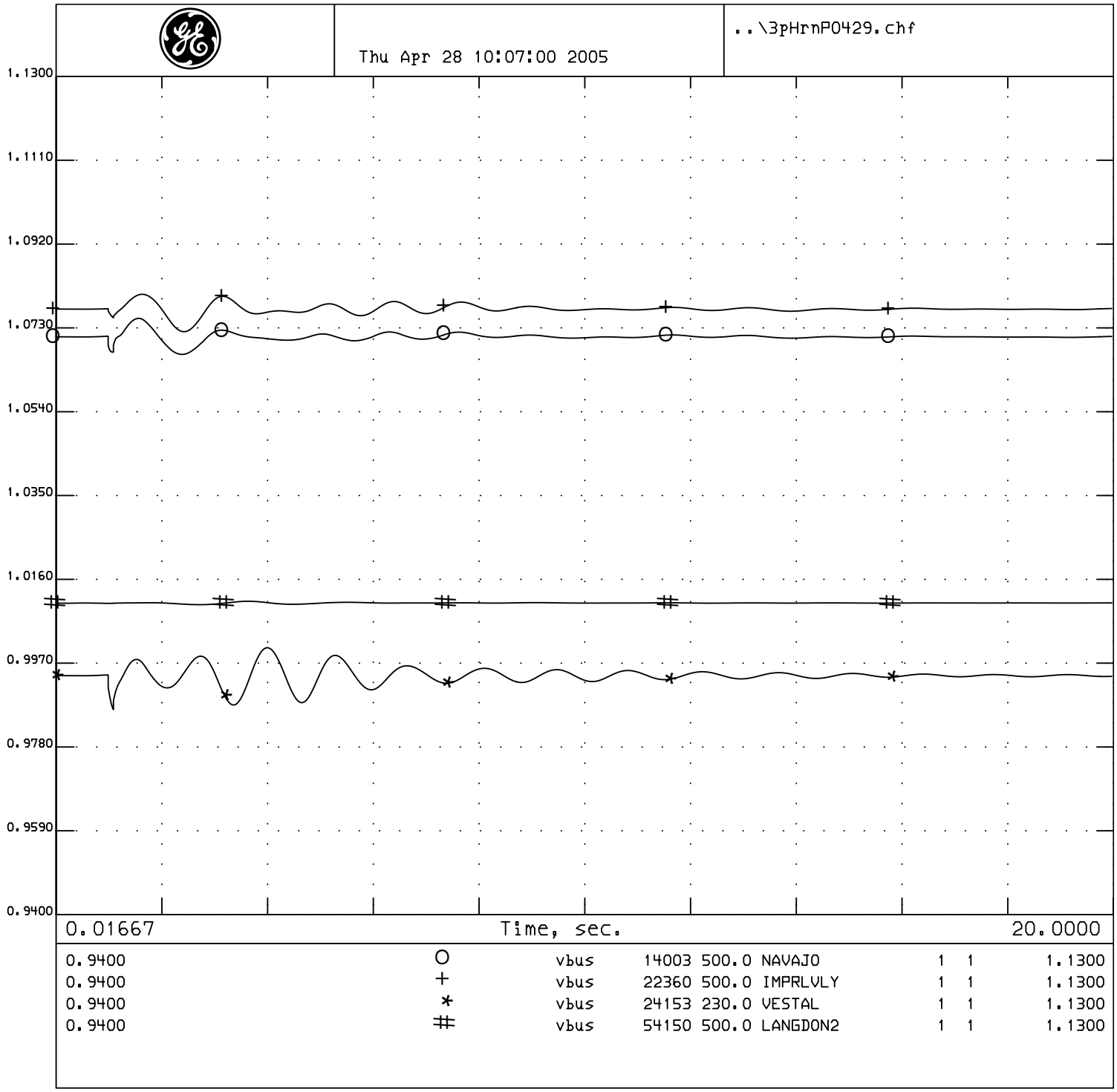


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

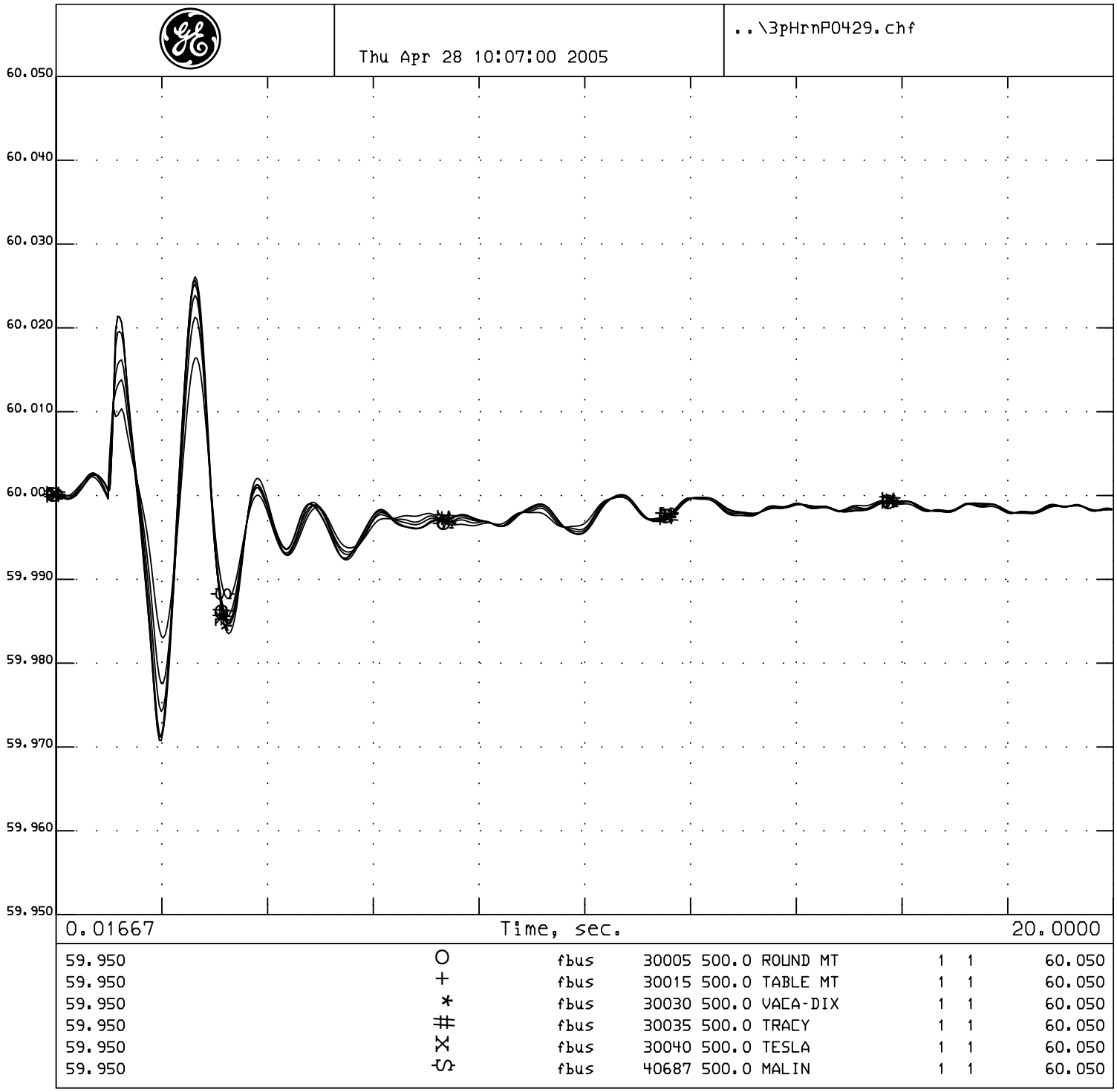


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

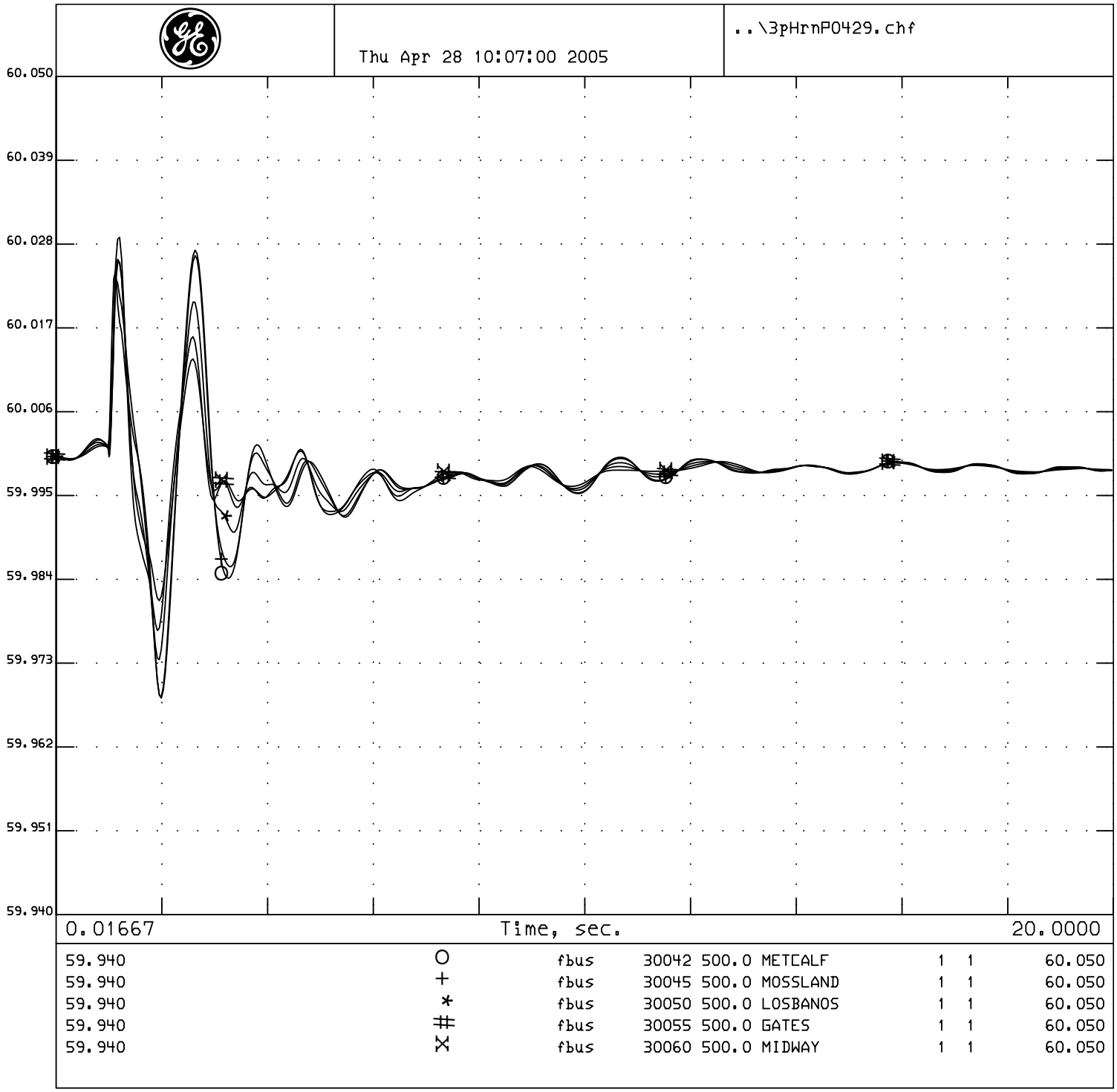


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

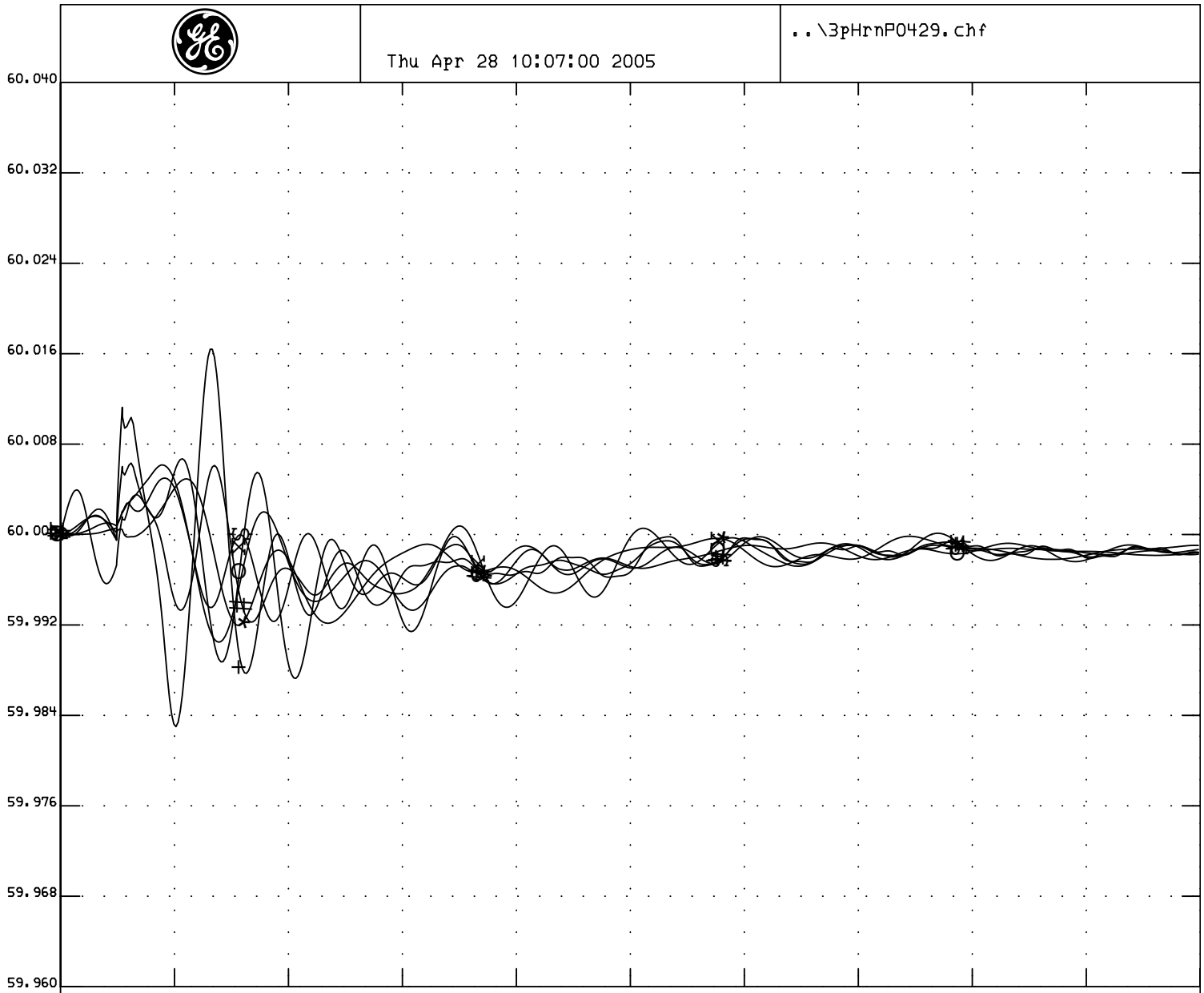


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



59.960	O	fbus	14001	500.0	FOURCORN	1	1	60.040
59.960	+	fbus	40687	500.0	MALIN	1	1	60.040
59.960	*	fbus	50703	500.0	NIC500	1	1	60.040
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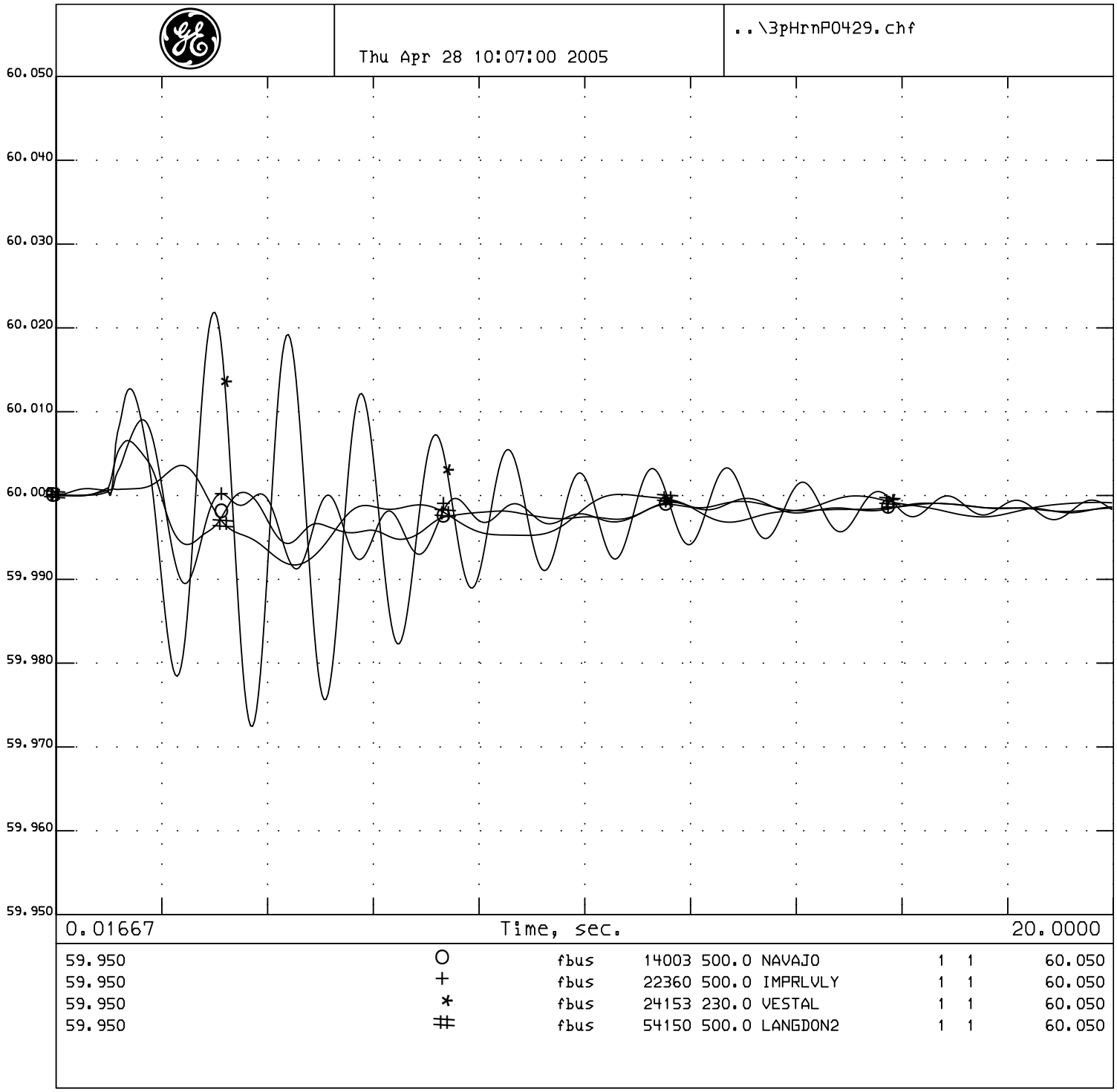
59.960	X	fbus	62012	500.0	TOWN2	1	1	60.040
59.960	S	fbus	66340	345.0	SIGURD	1	1	60.040

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429 230kV line outage
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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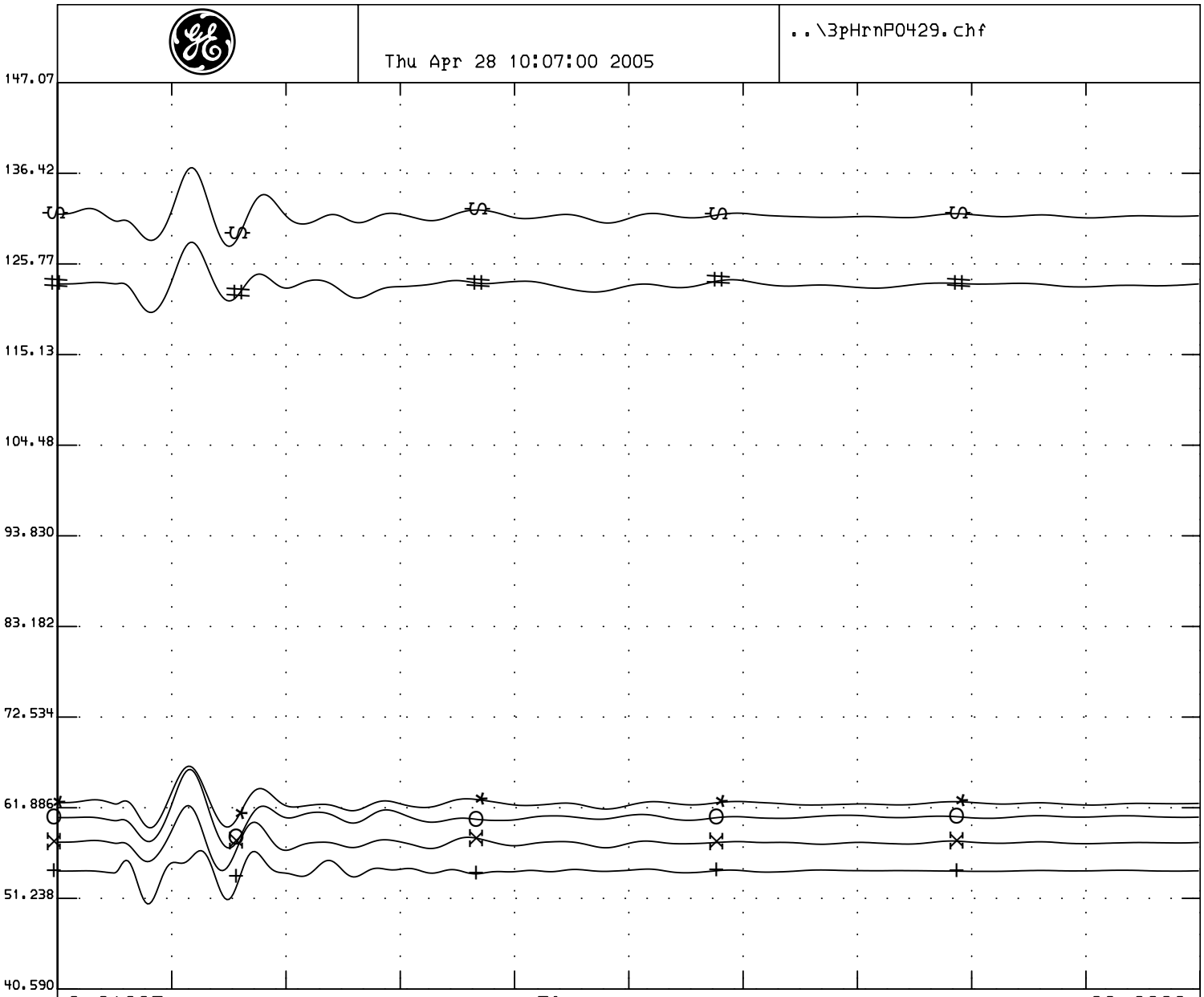

40.590	O	ang	14914	22.0	FCNGN4CC	H	1	147.07
40.590	+	ang	36411	25.0	DIABLO 1	1	1	147.07
40.590	*	ang	41701	13.8	JONDAY01	1	1	147.07
40.590	#	ang	50500	13.8	GMS G6	1	1	147.07
40.590	X	ang	60100	13.8	BRWNL 5	1	1	147.07
40.590	S	ang	62048	26.0	COLSTP 3	1	1	147.07

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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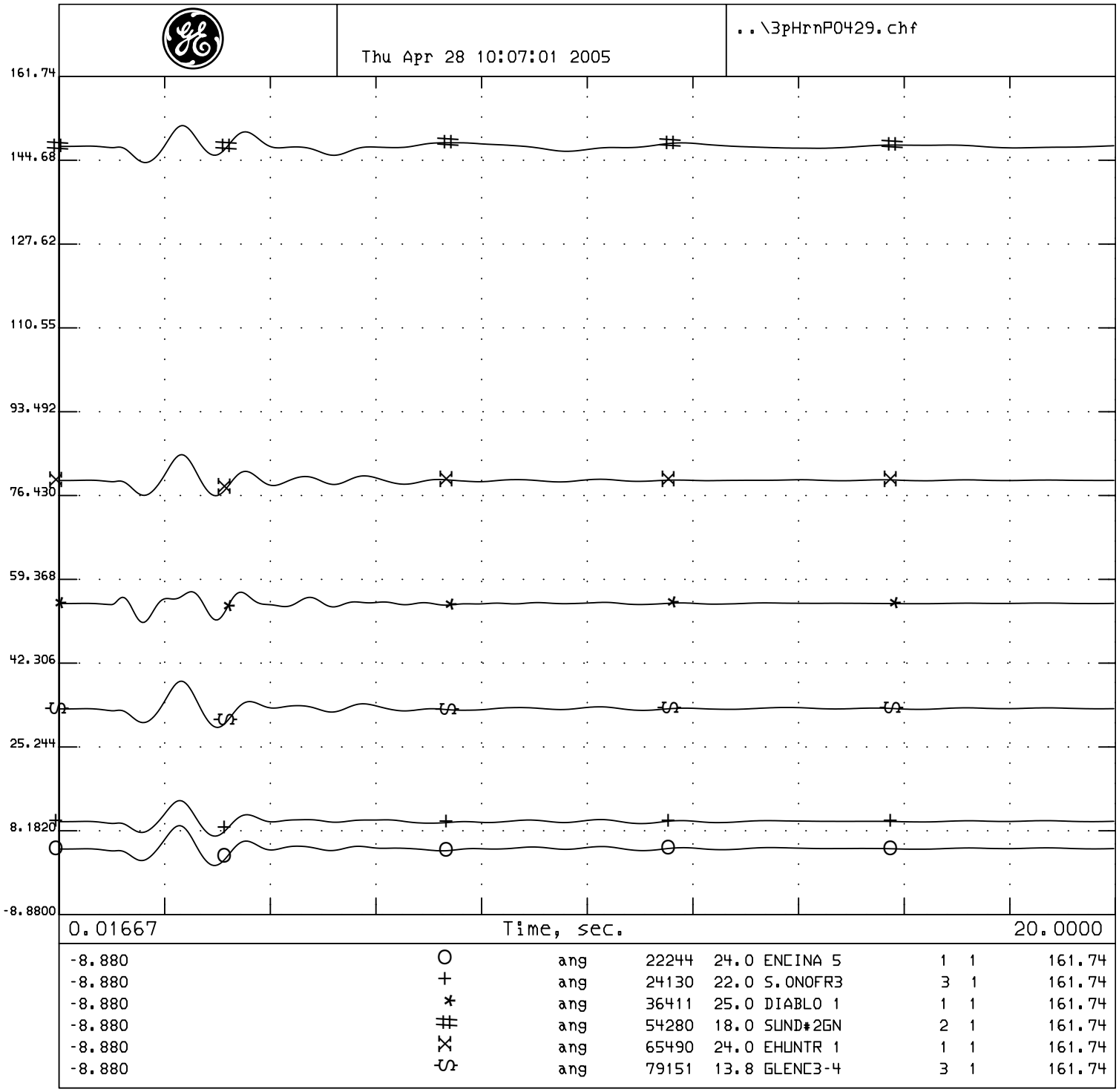
P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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Generator Interconnection Study

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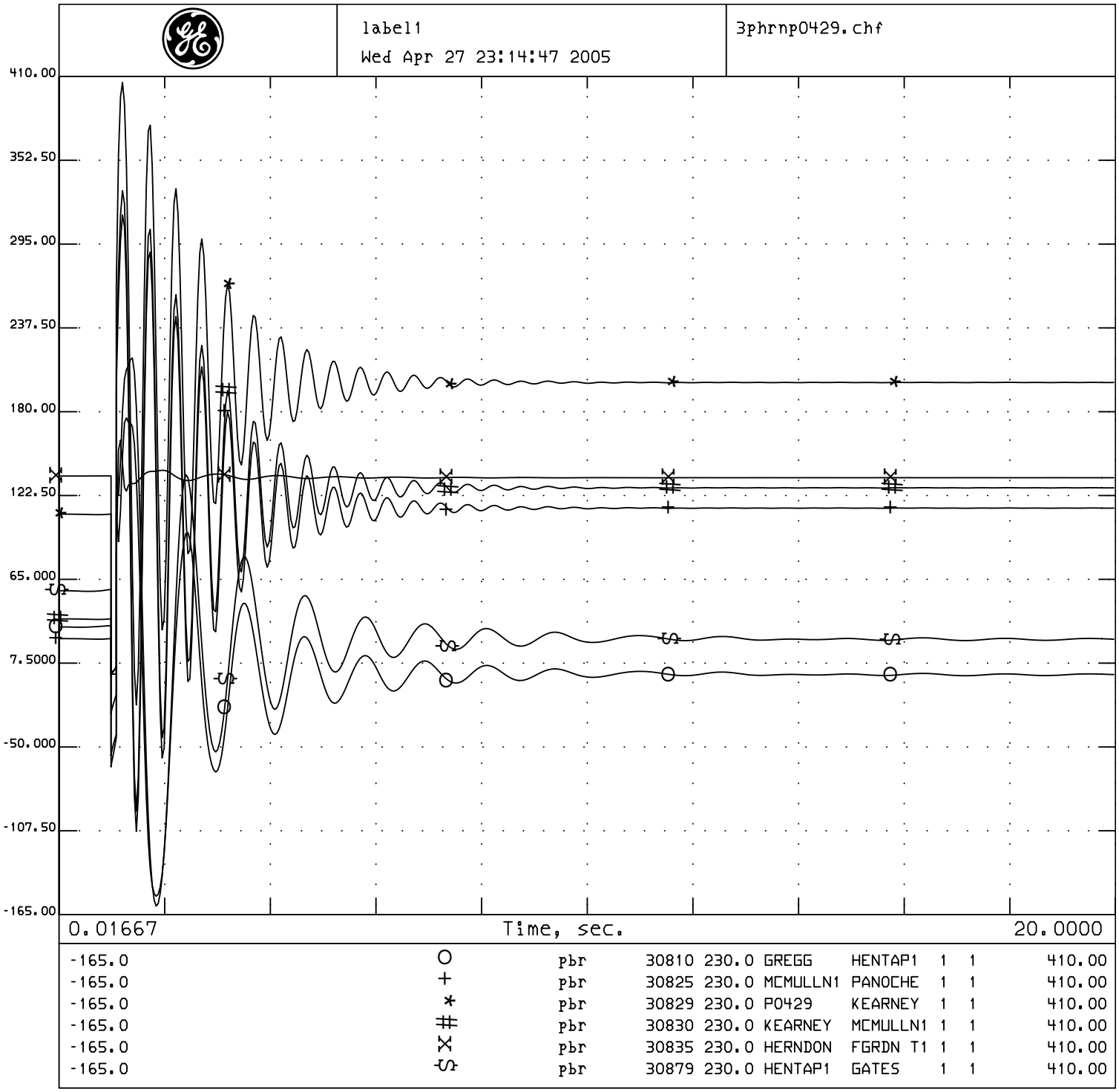

P0429 Project System Impact Study
2008 Summer Peak Base Case
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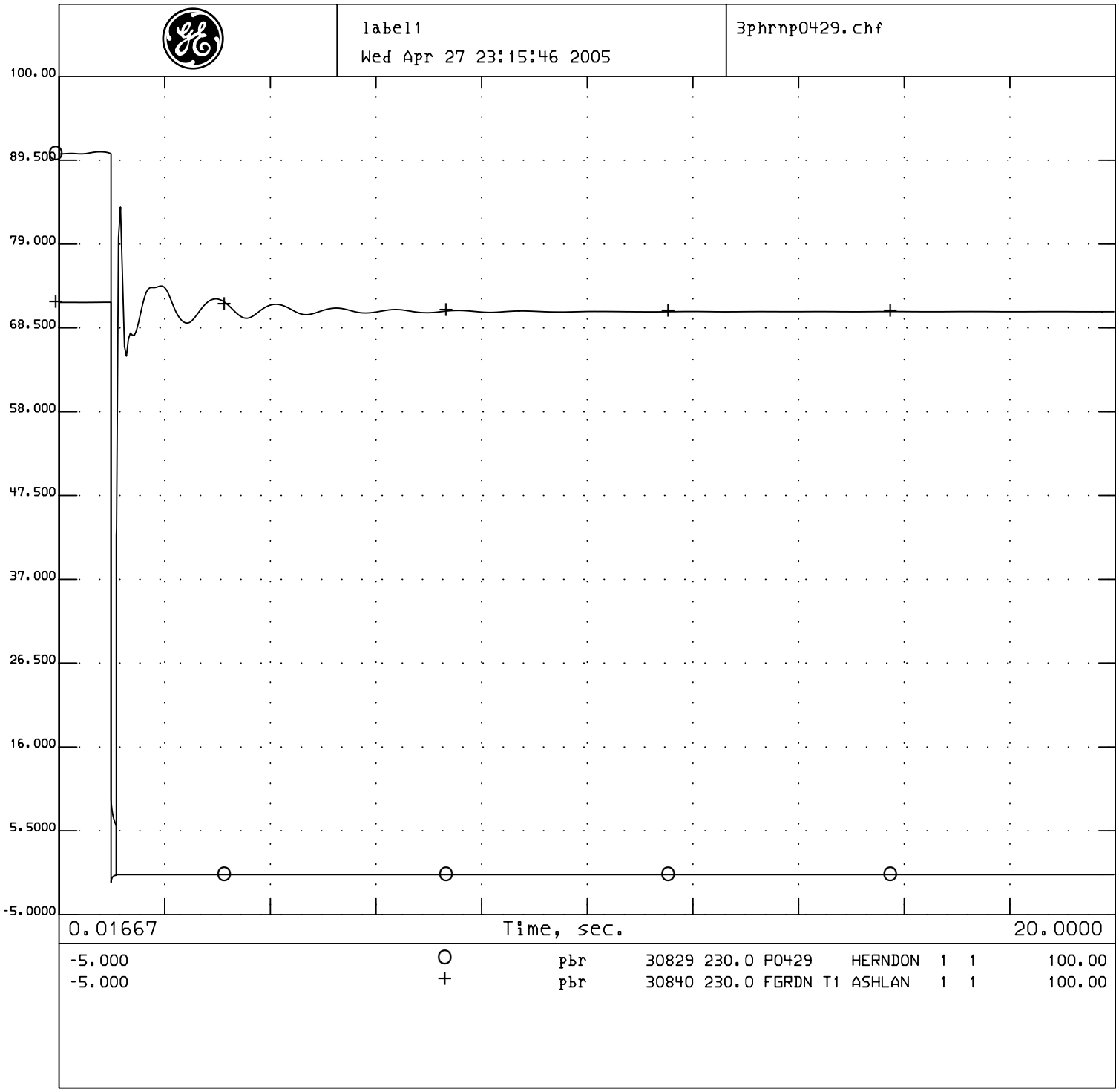
P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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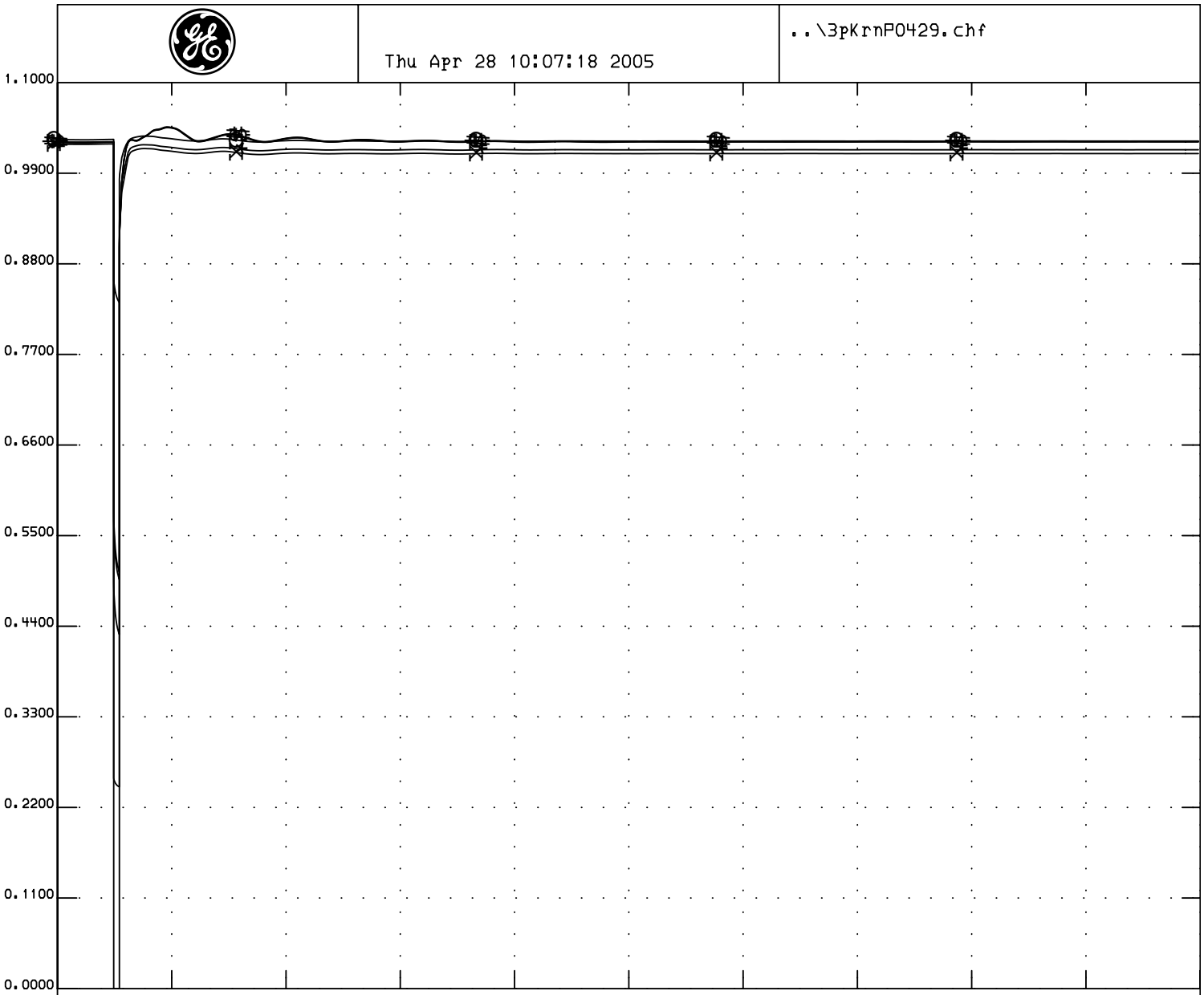
P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



0.0000	O	vbus	30790	230.0	PANOCHE	1	1	1.1000
0.0000	+	vbus	30810	230.0	GREGG	1	1	1.1000
0.0000	*	vbul	30825	230.0	MCMULLN1	1	1	1.1000
0.0000	#	vbus	30829	230.0	P0429	1	1	1.1000
0.0000	X	vbus	30830	230.0	KEARNEY	1	1	1.1000
0.0000	S	vbus	30835	230.0	HERNDON	1	1	1.1000

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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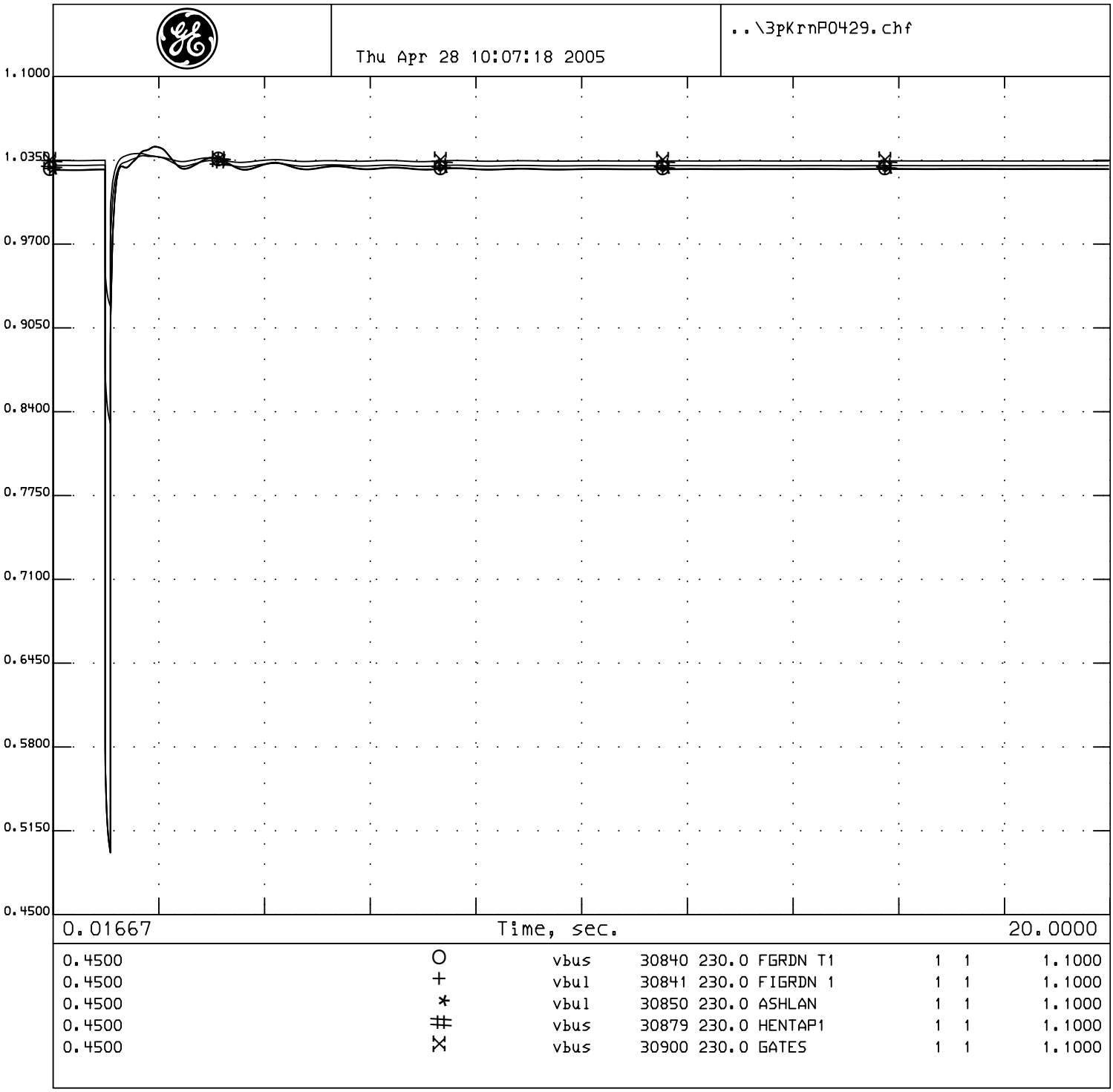
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault



P0429 Project System Impact Study
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Generator Interconnection Study

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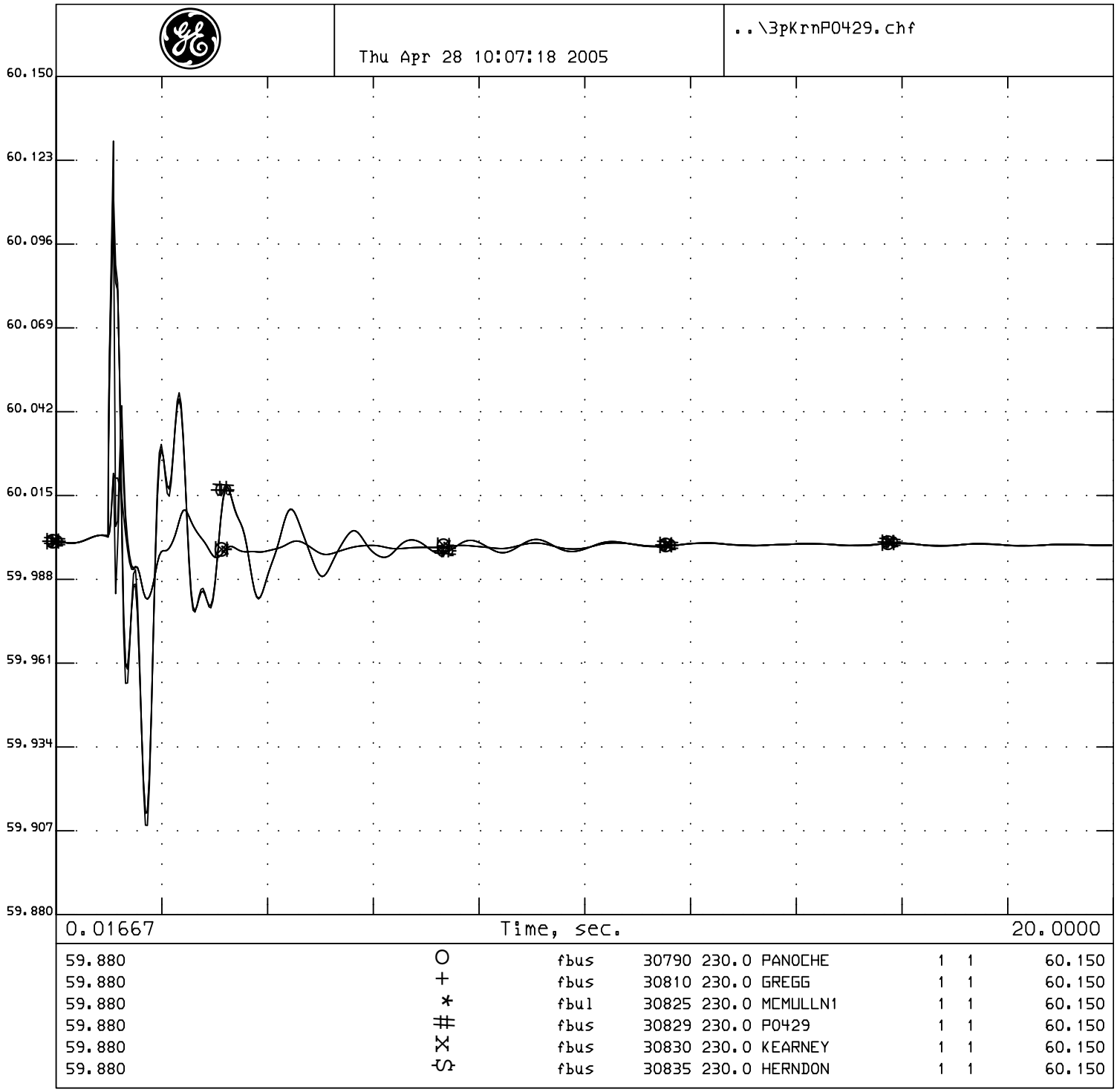

P0429 Project System Impact Study
2008 Summer Peak Base Case
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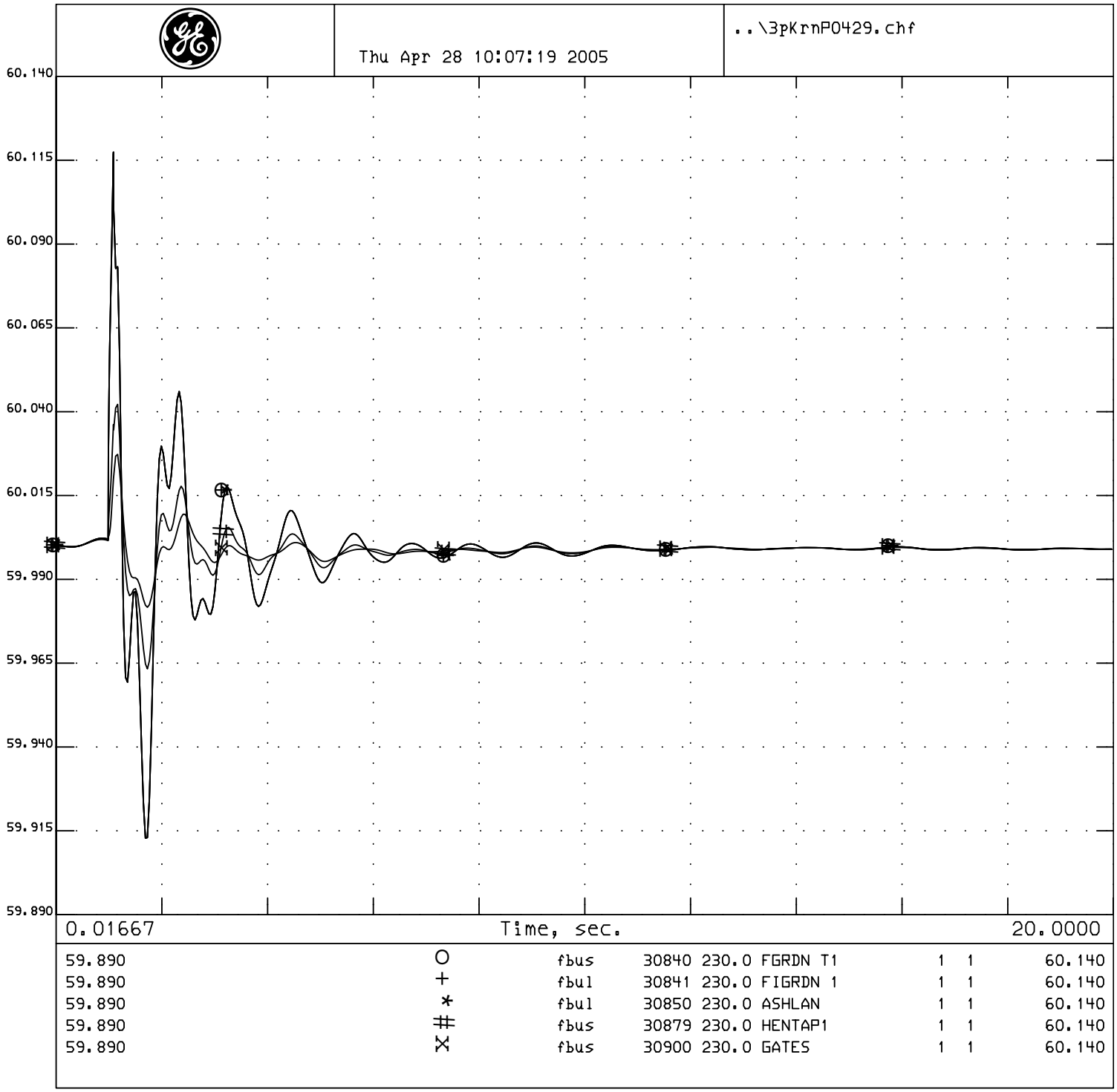
P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault



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2008 Summer Peak Base Case
P0429 @ 205.2MW
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P0429 Project System Impact Study

Generator Interconnection Study

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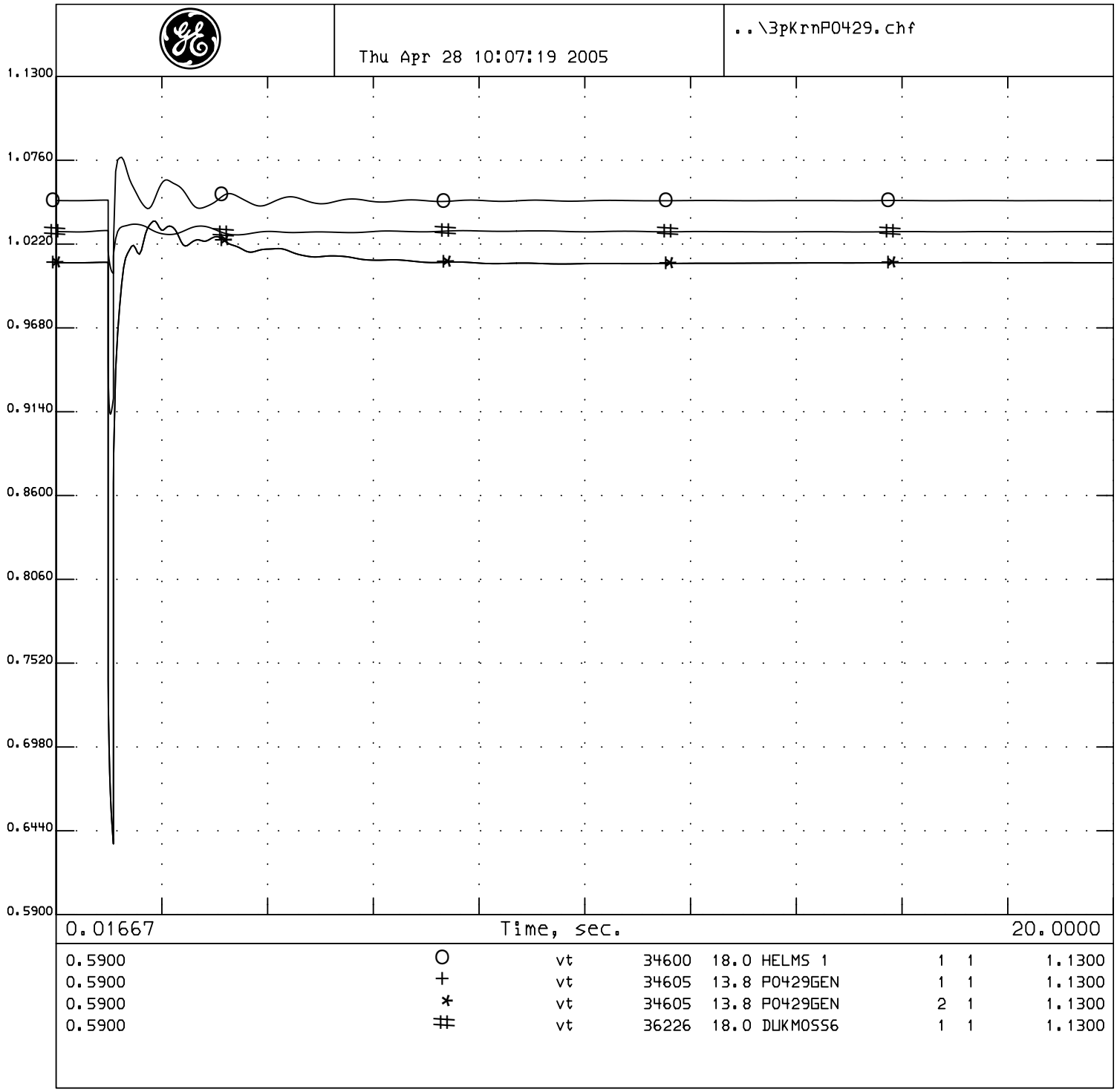

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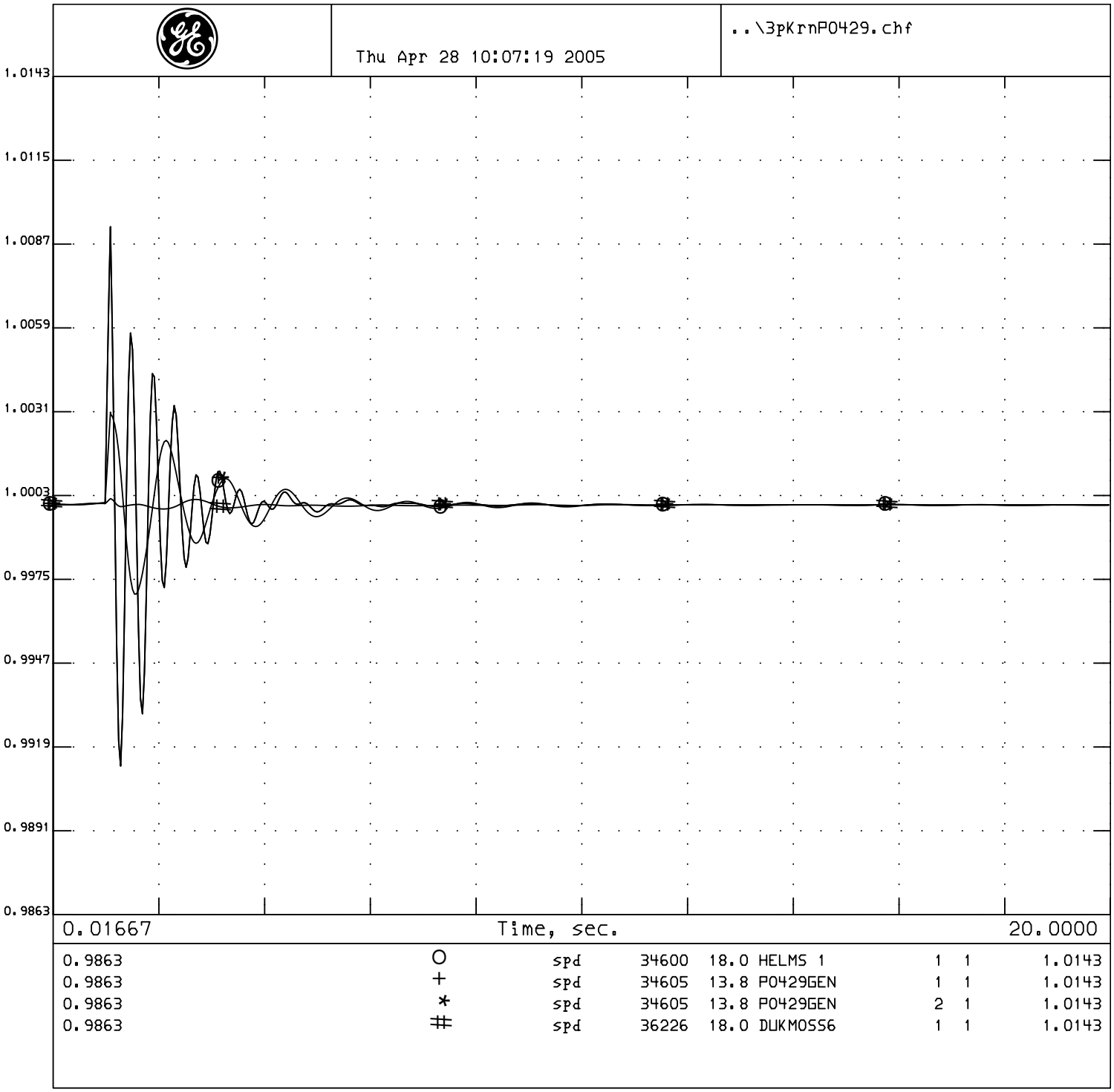
Kearney-P0429 230kV line outage
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

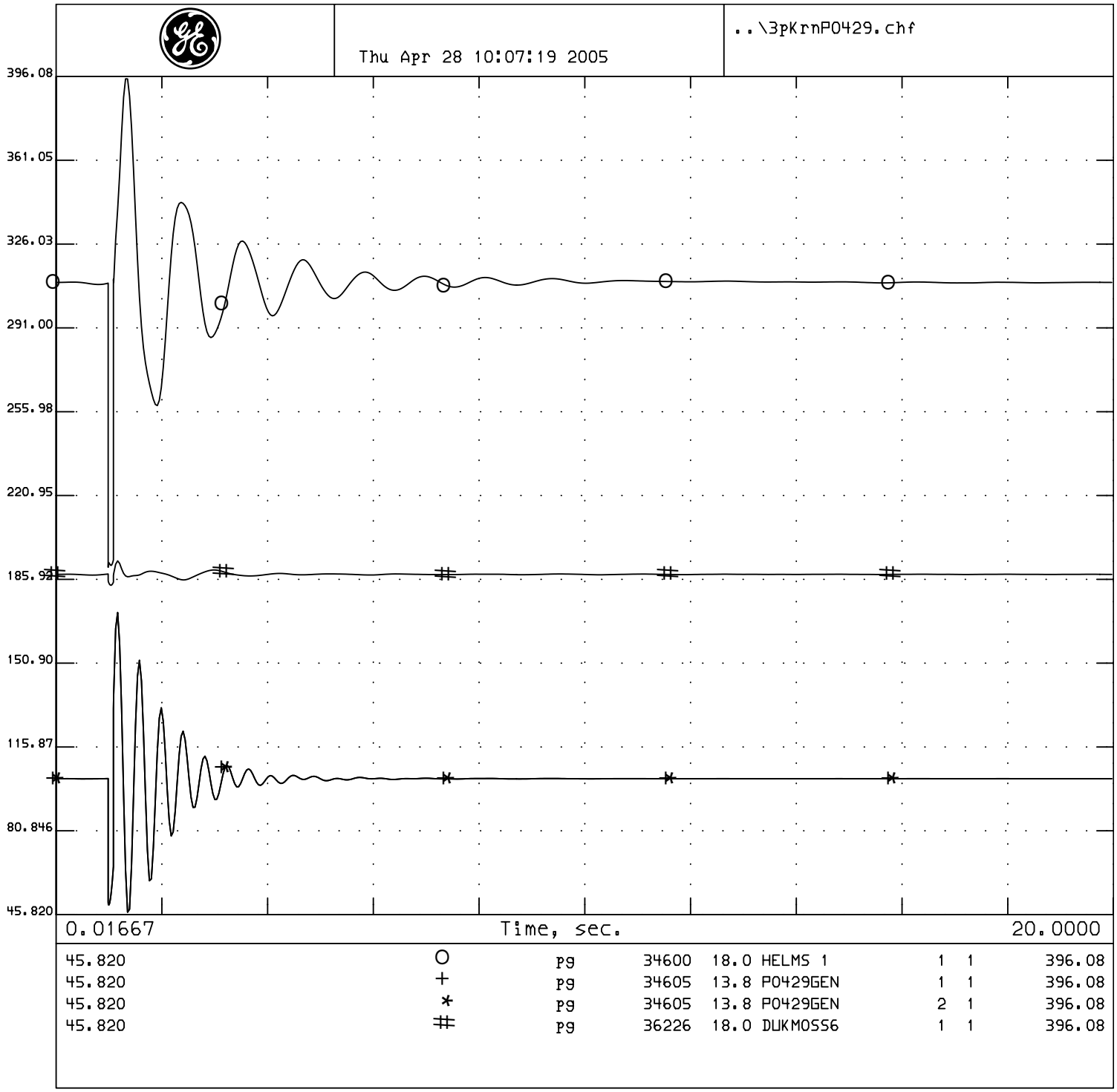


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429 230kV line outage
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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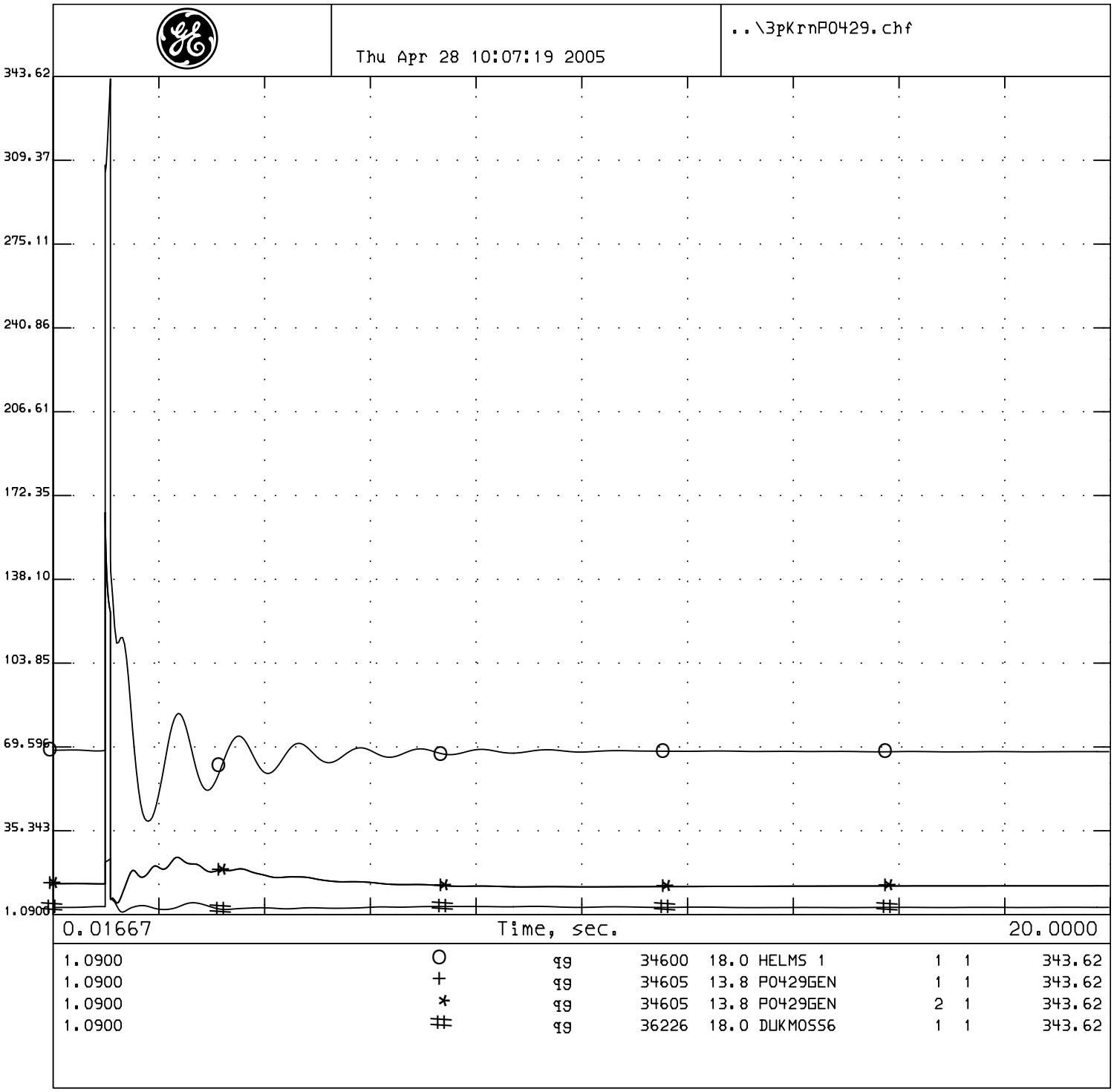
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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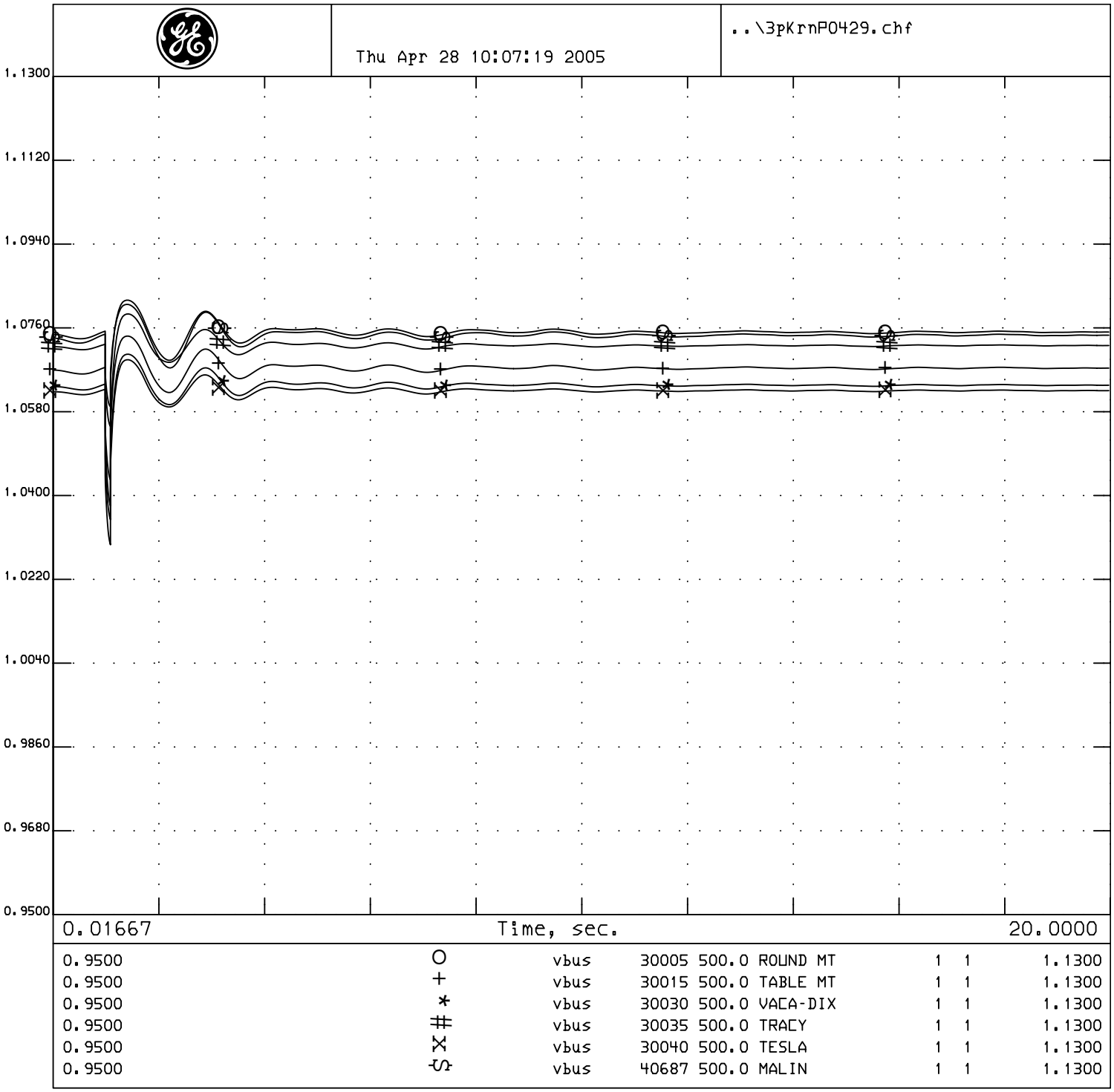
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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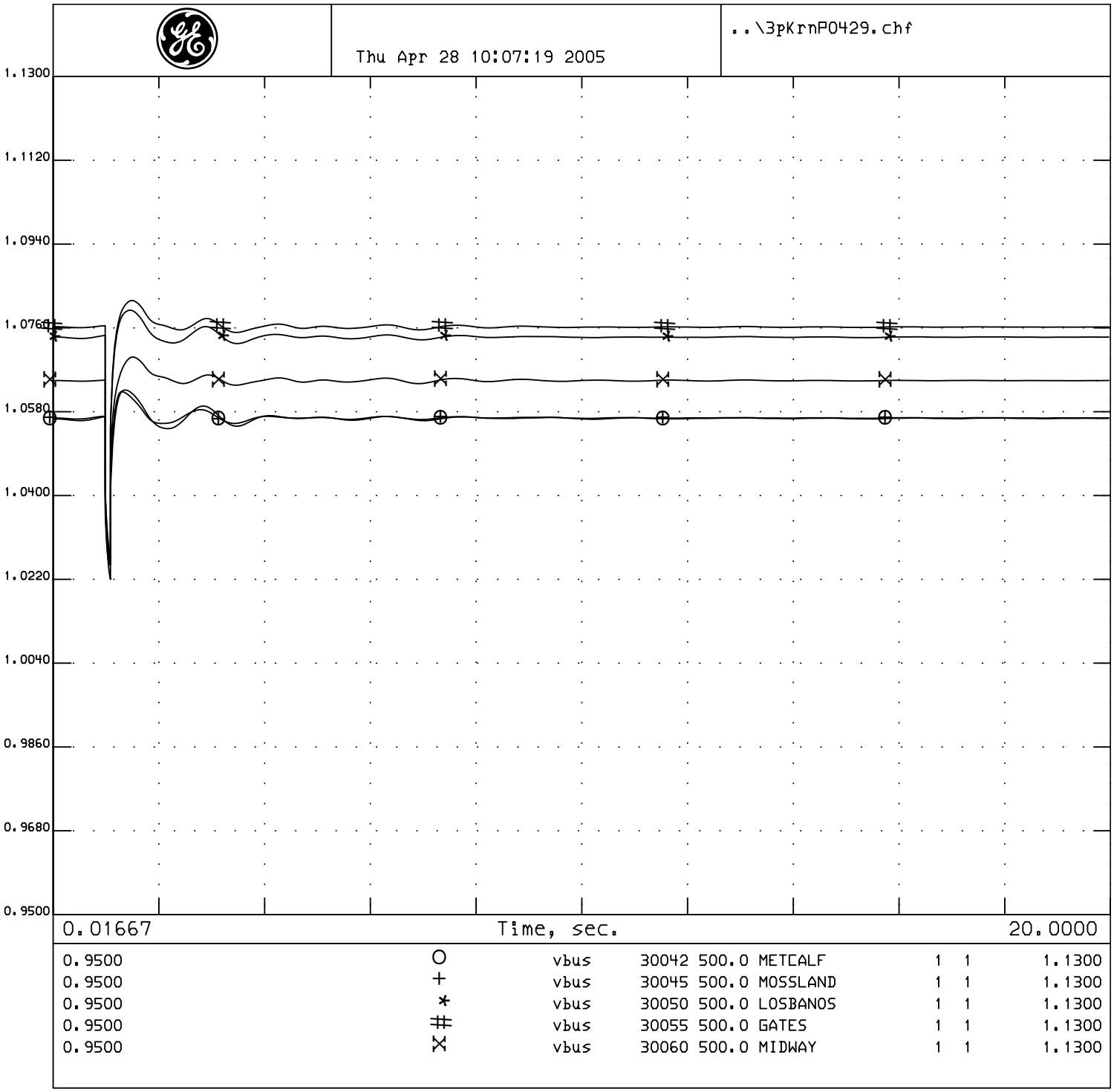
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



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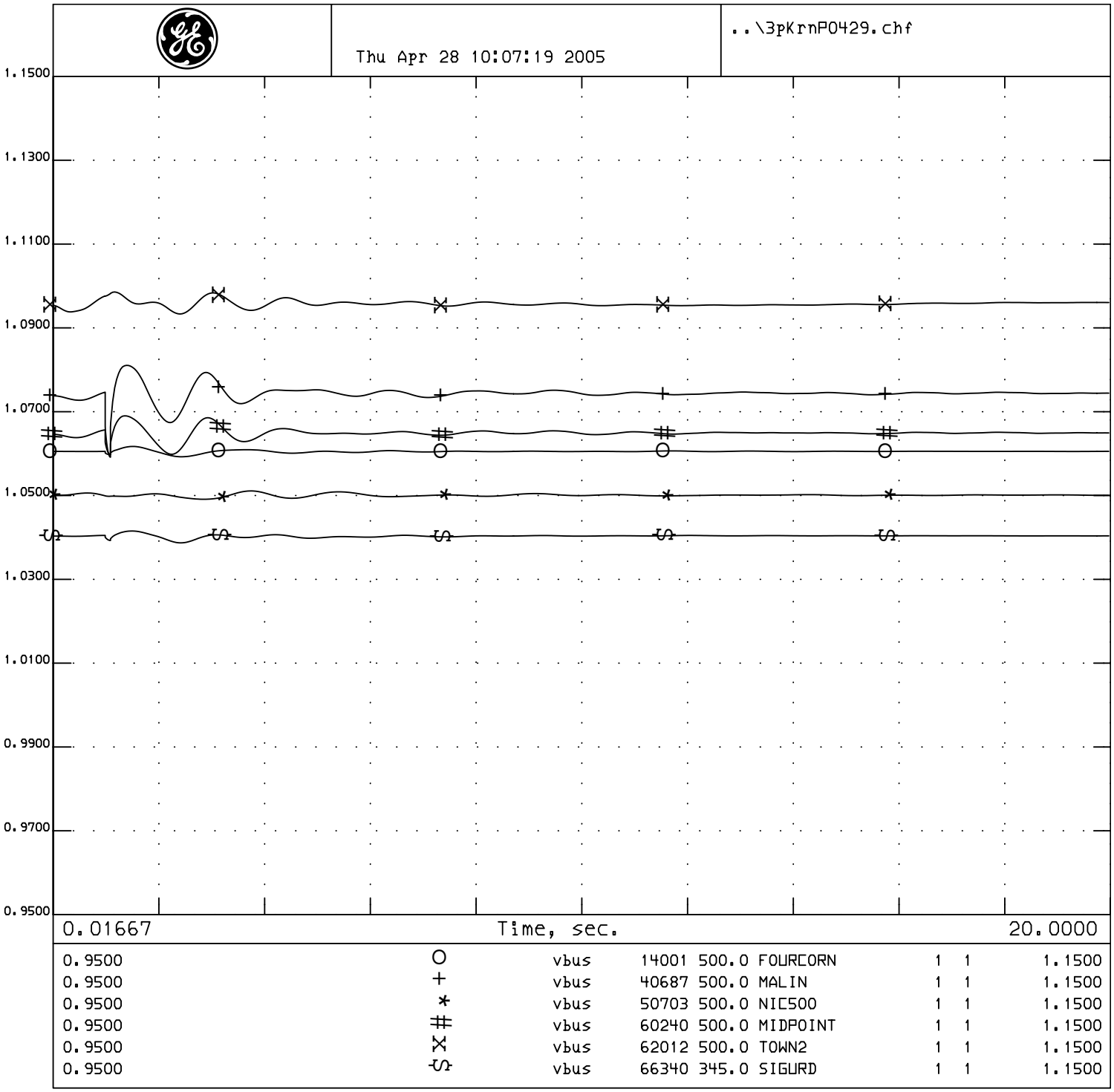

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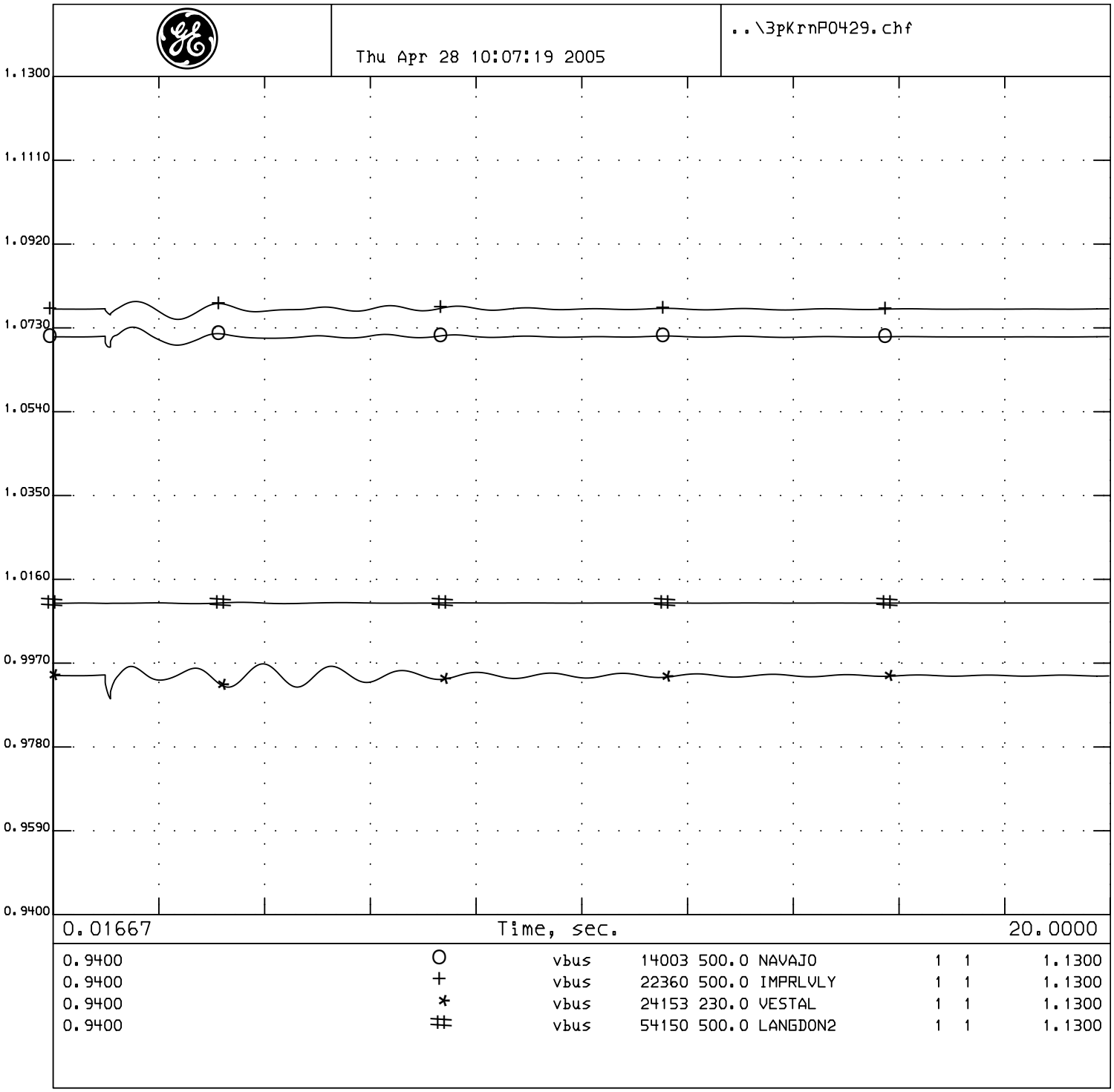

P0429 Project System Impact Study
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P0429 Project System Impact Study

Generator Interconnection Study

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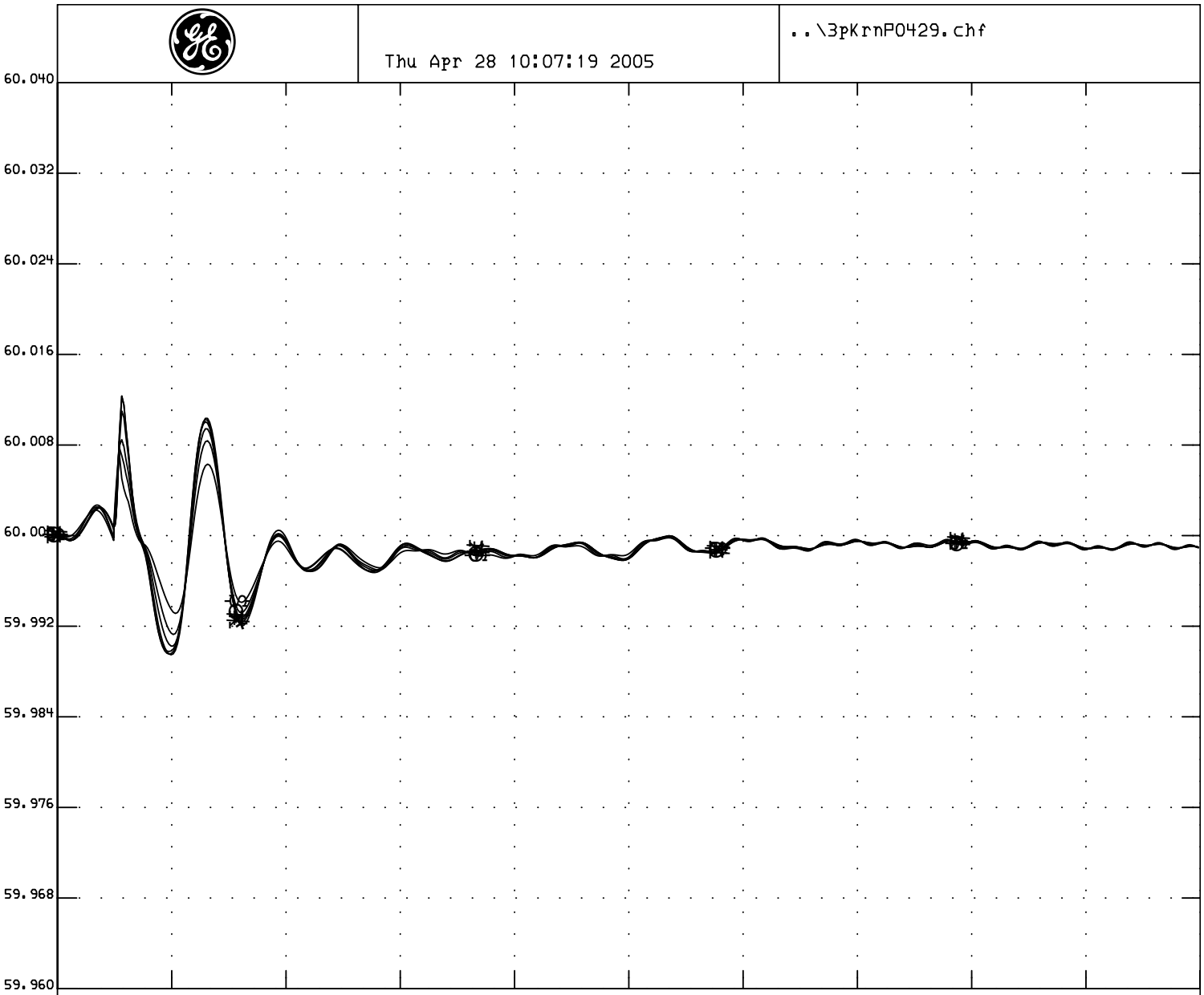

59.960	O	fbus	30005	500.0	ROUND MT	1	1	60.040
59.960	+	fbus	30015	500.0	TABLE MT	1	1	60.040
59.960	*	fbus	30030	500.0	VACA-DIX	1	1	60.040
59.960	#	fbus	30035	500.0	TRACY	1	1	60.040
59.960	X	fbus	30040	500.0	TESLA	1	1	60.040
59.960	S	fbus	40687	500.0	MALIN	1	1	60.040

P0429 Project System Impact Study
2008 Summer Peak Base Case
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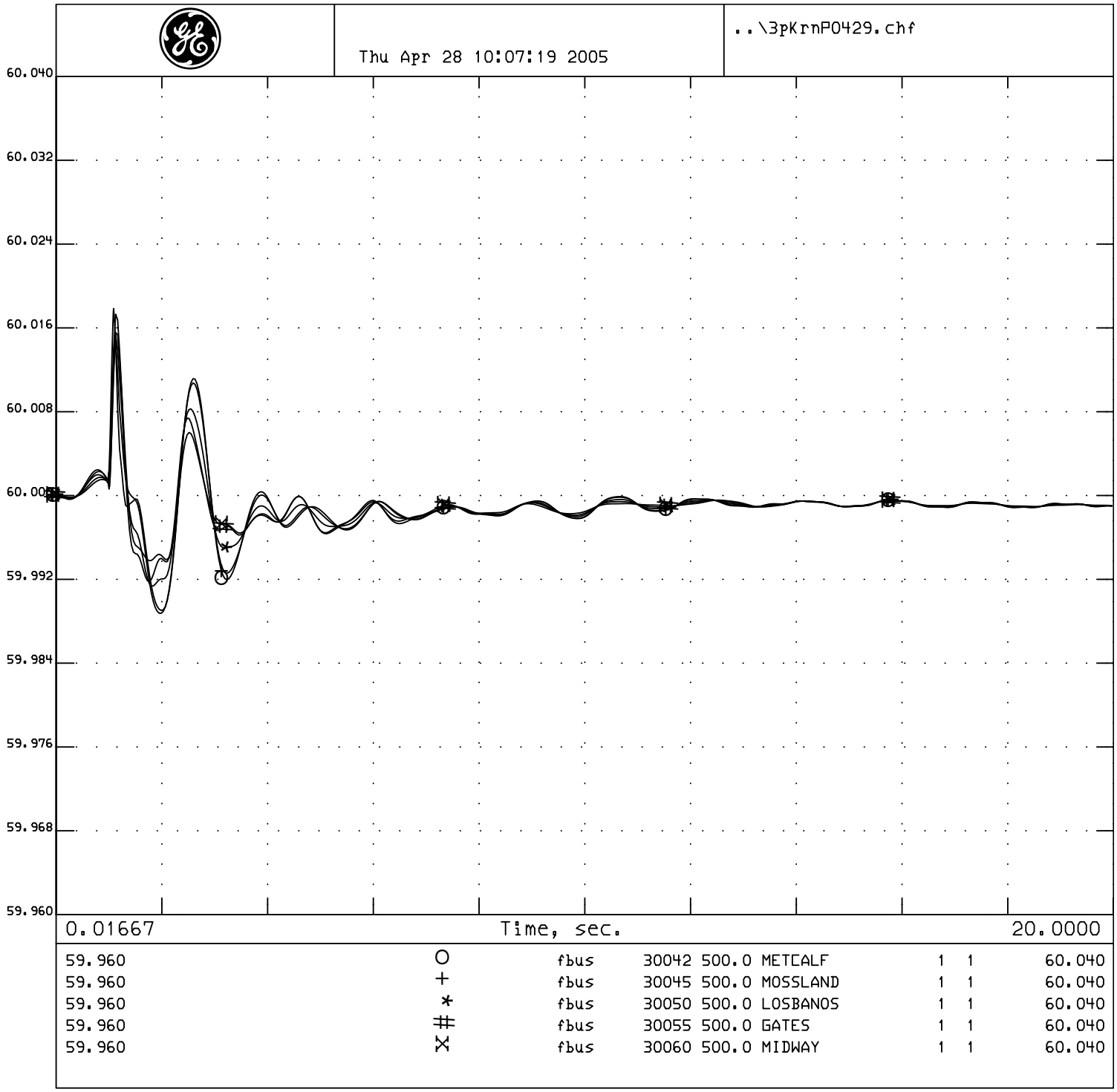
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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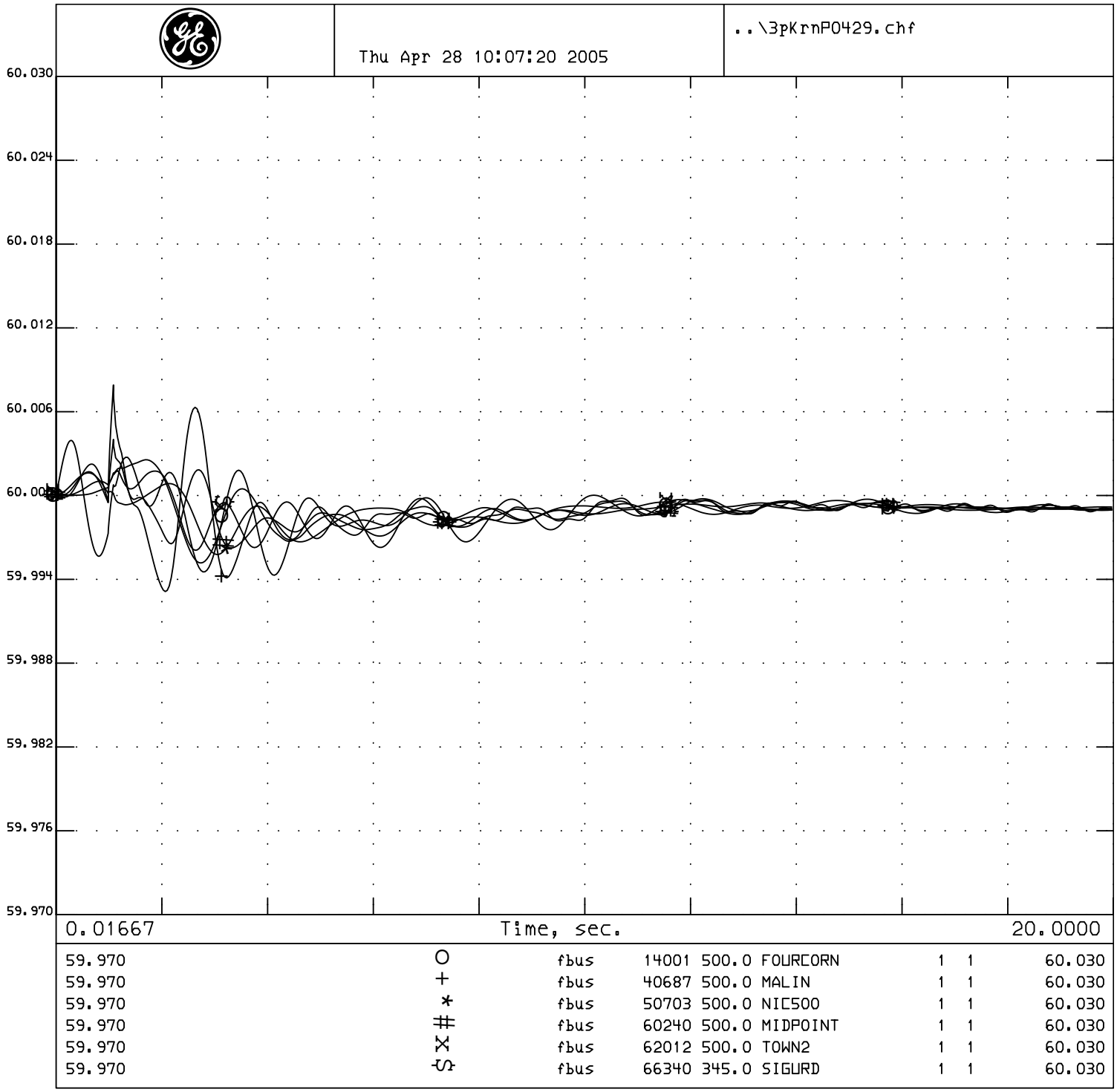
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



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Generator Interconnection Study

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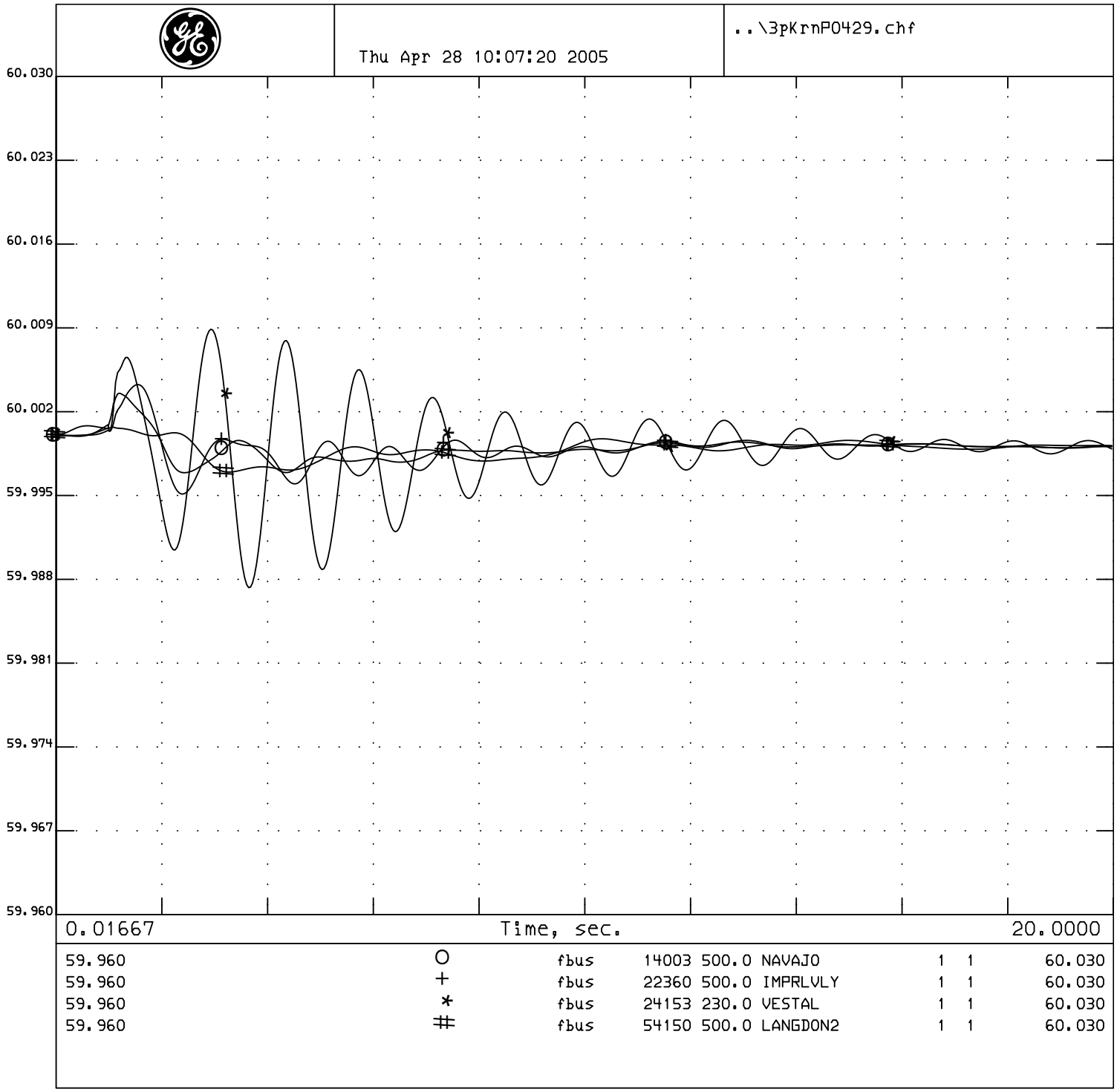

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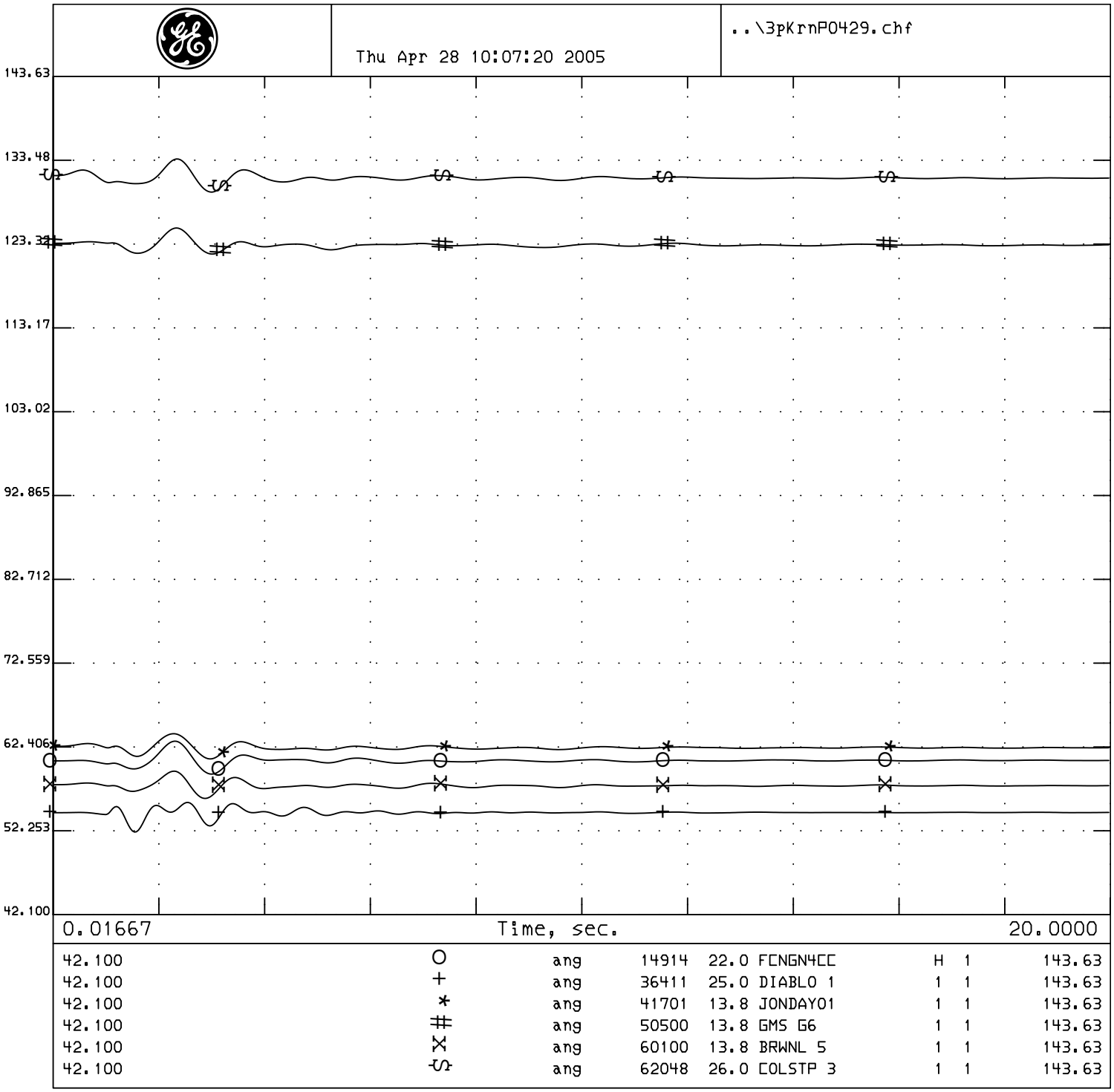

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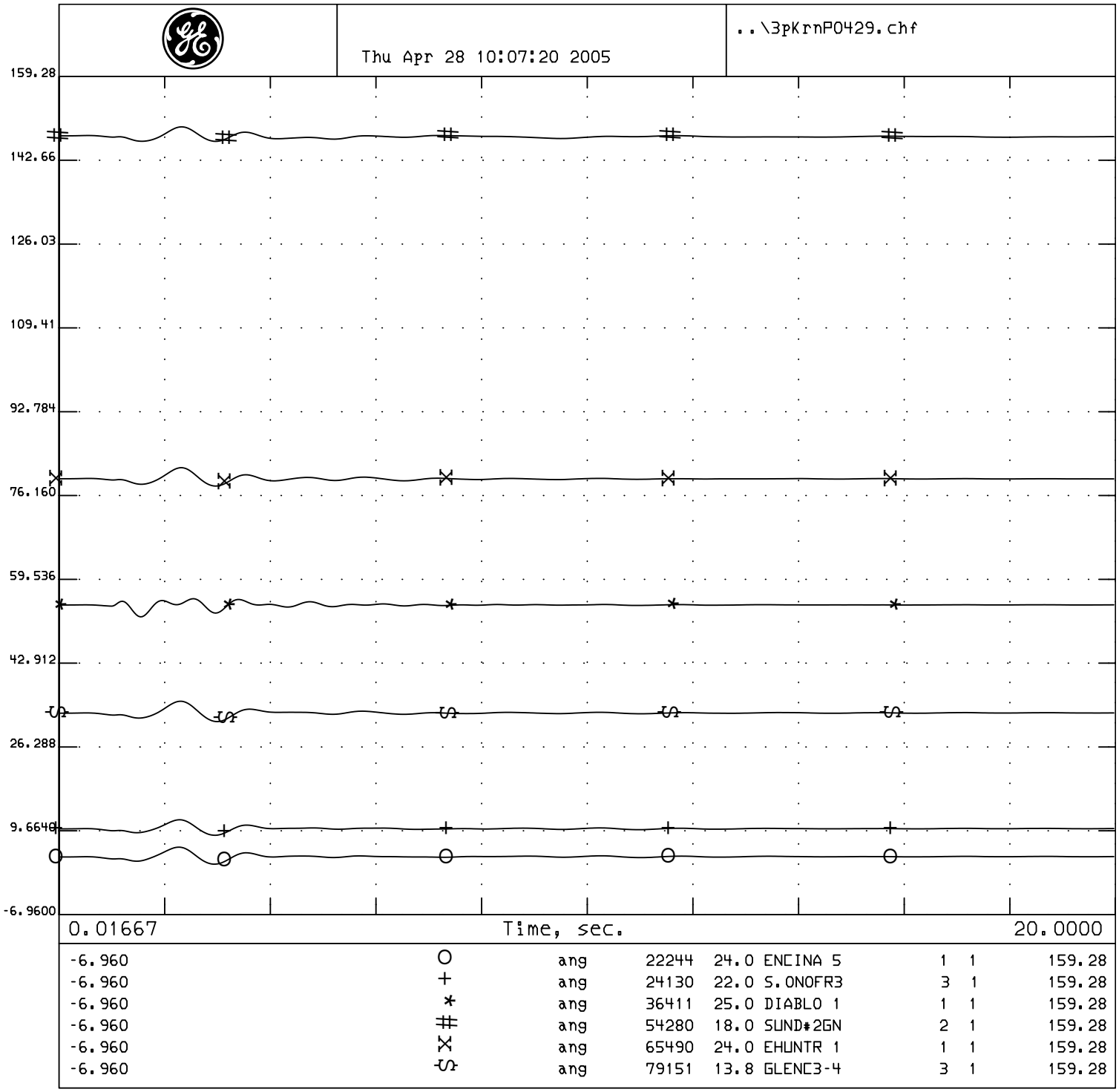
P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle



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Generator Interconnection Study

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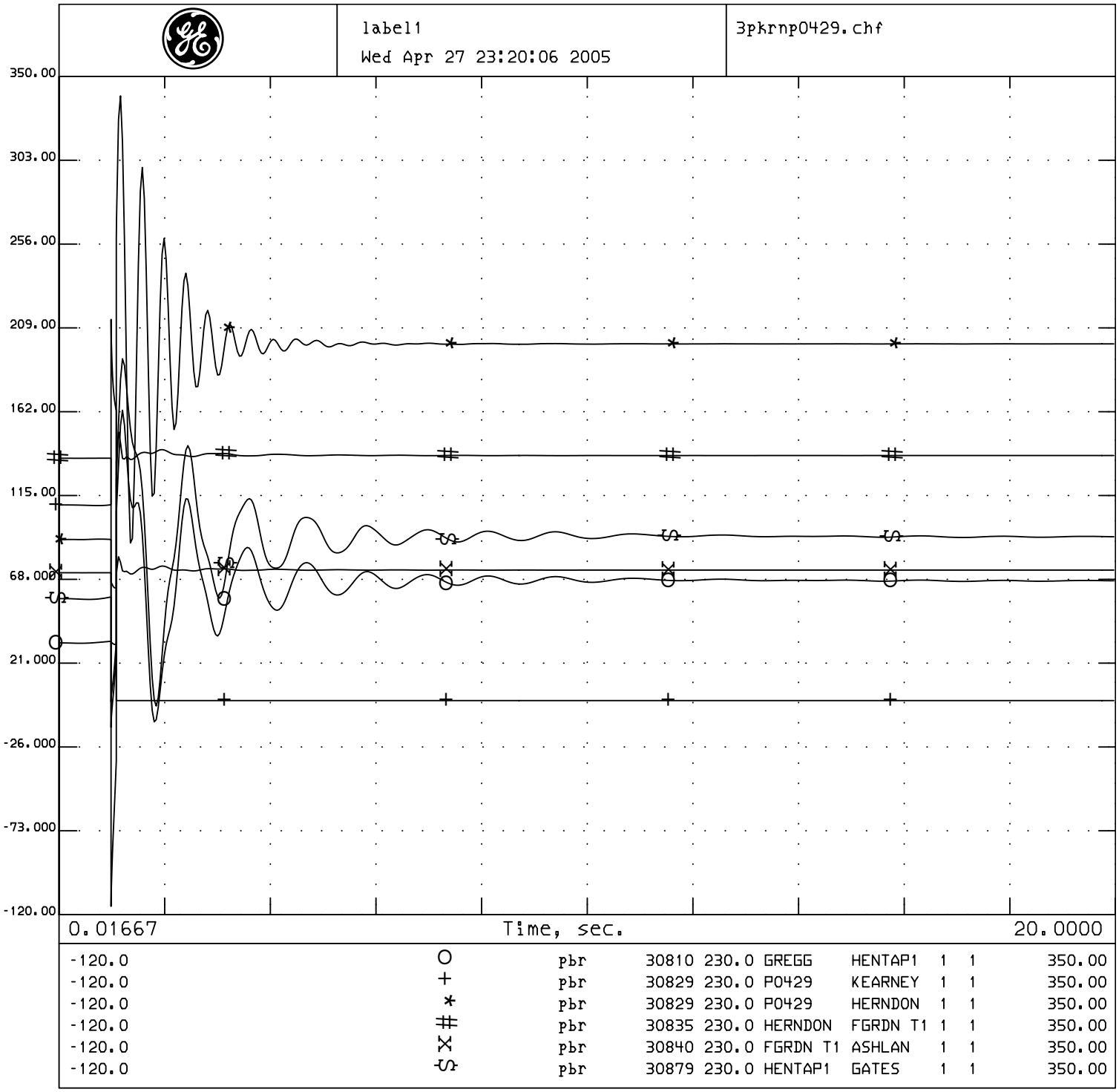

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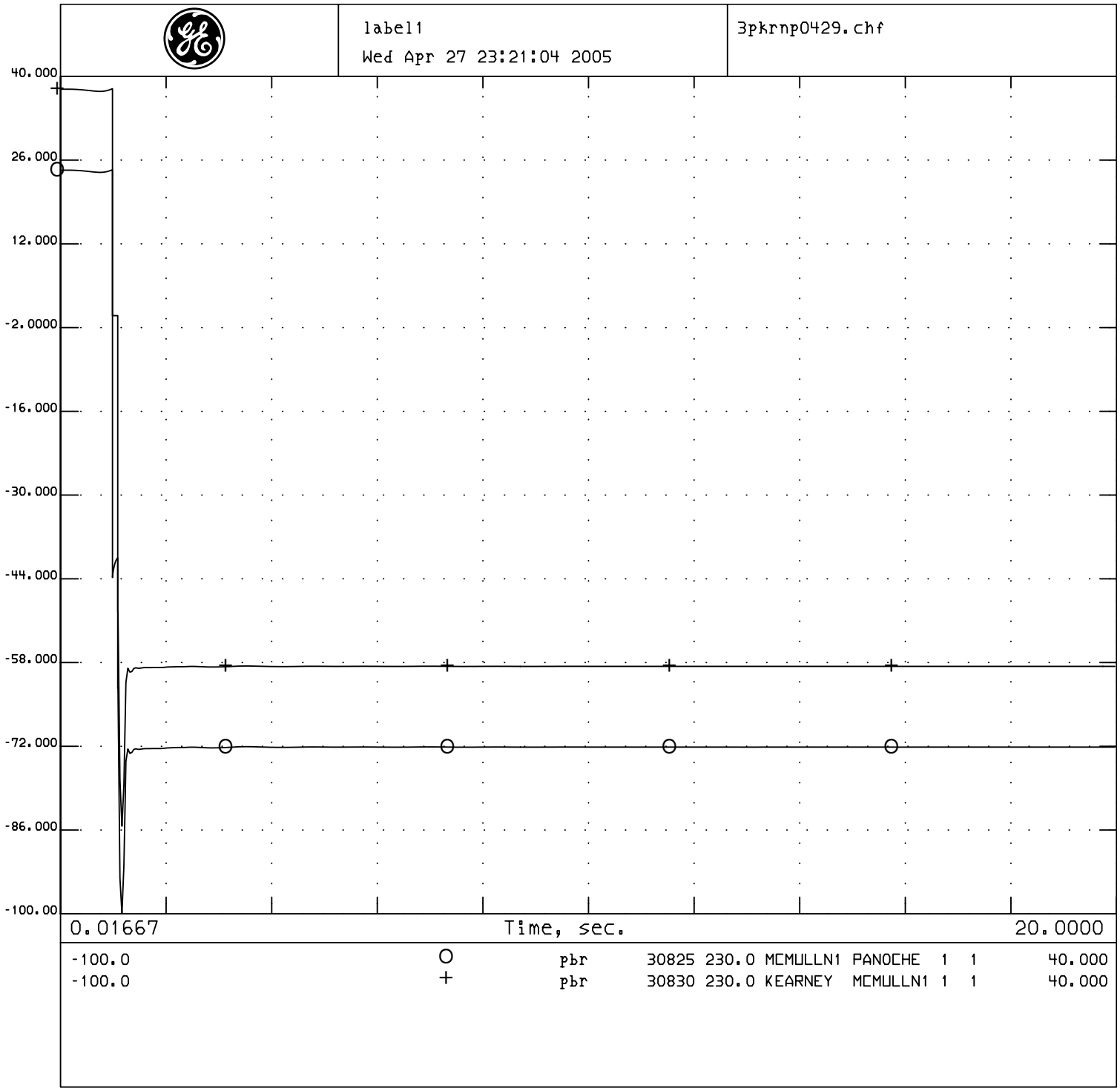
Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



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Generator Interconnection Study

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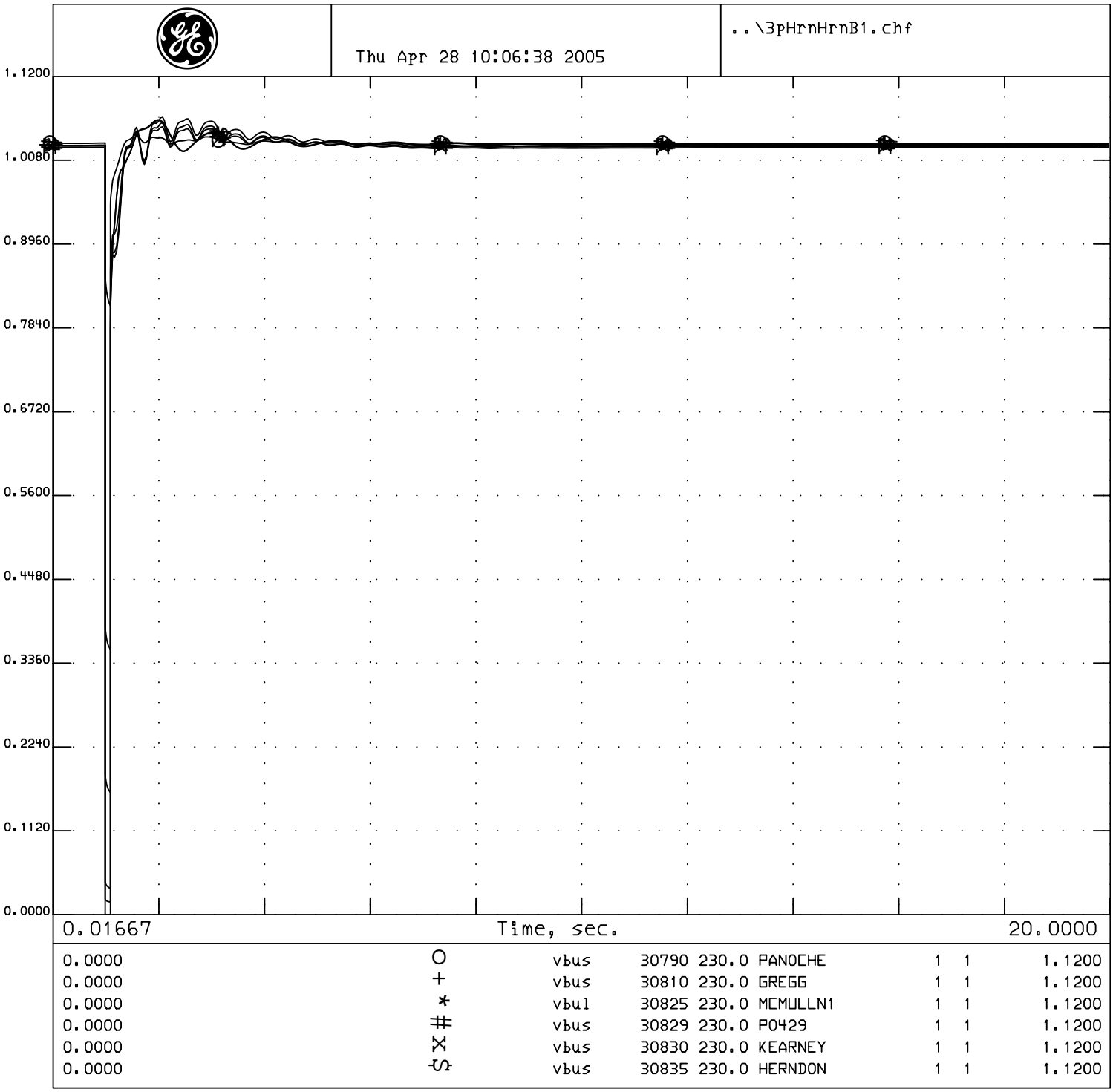
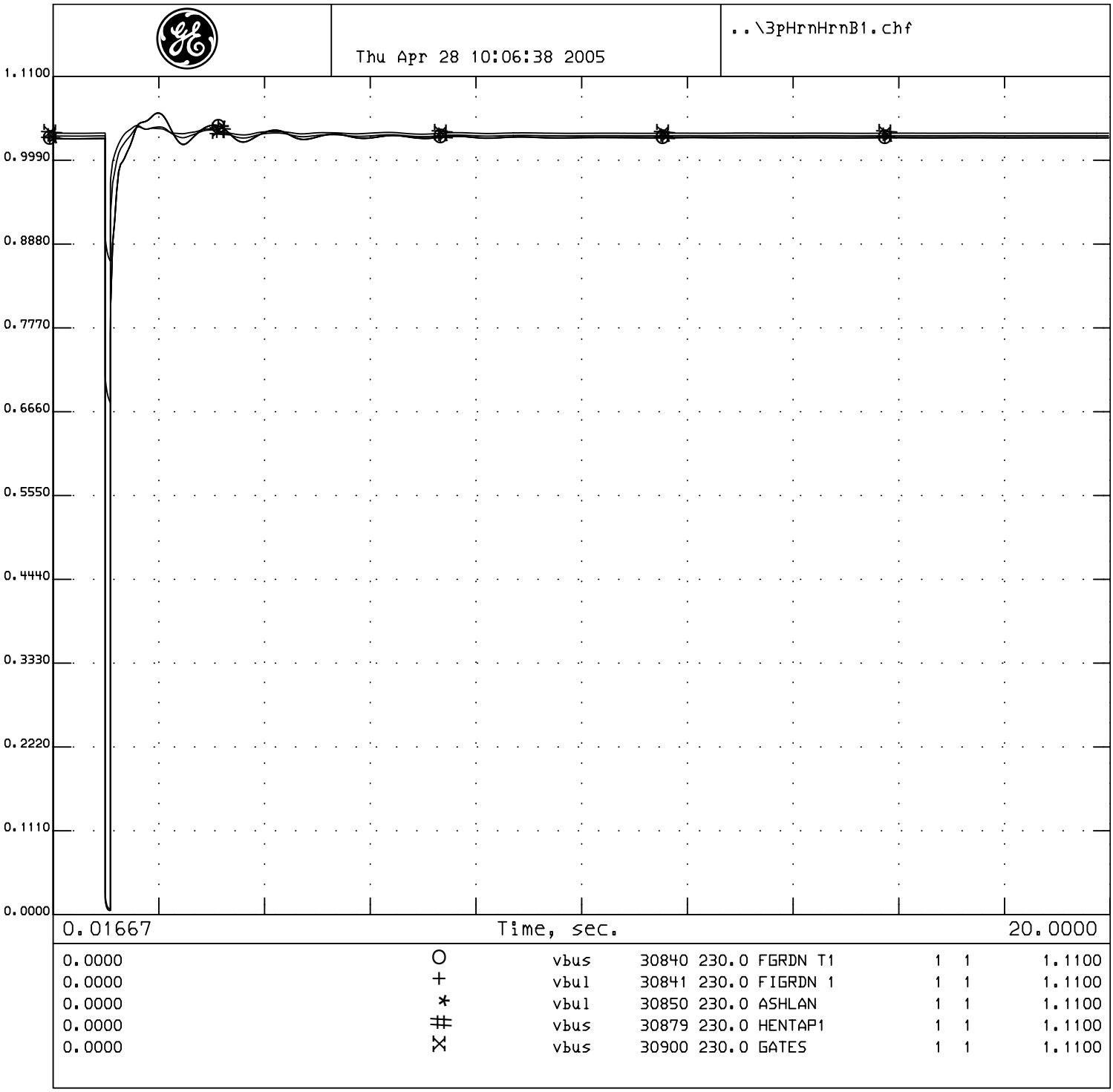


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault



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P0429 @ 205.2MW
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Generator Interconnection Study

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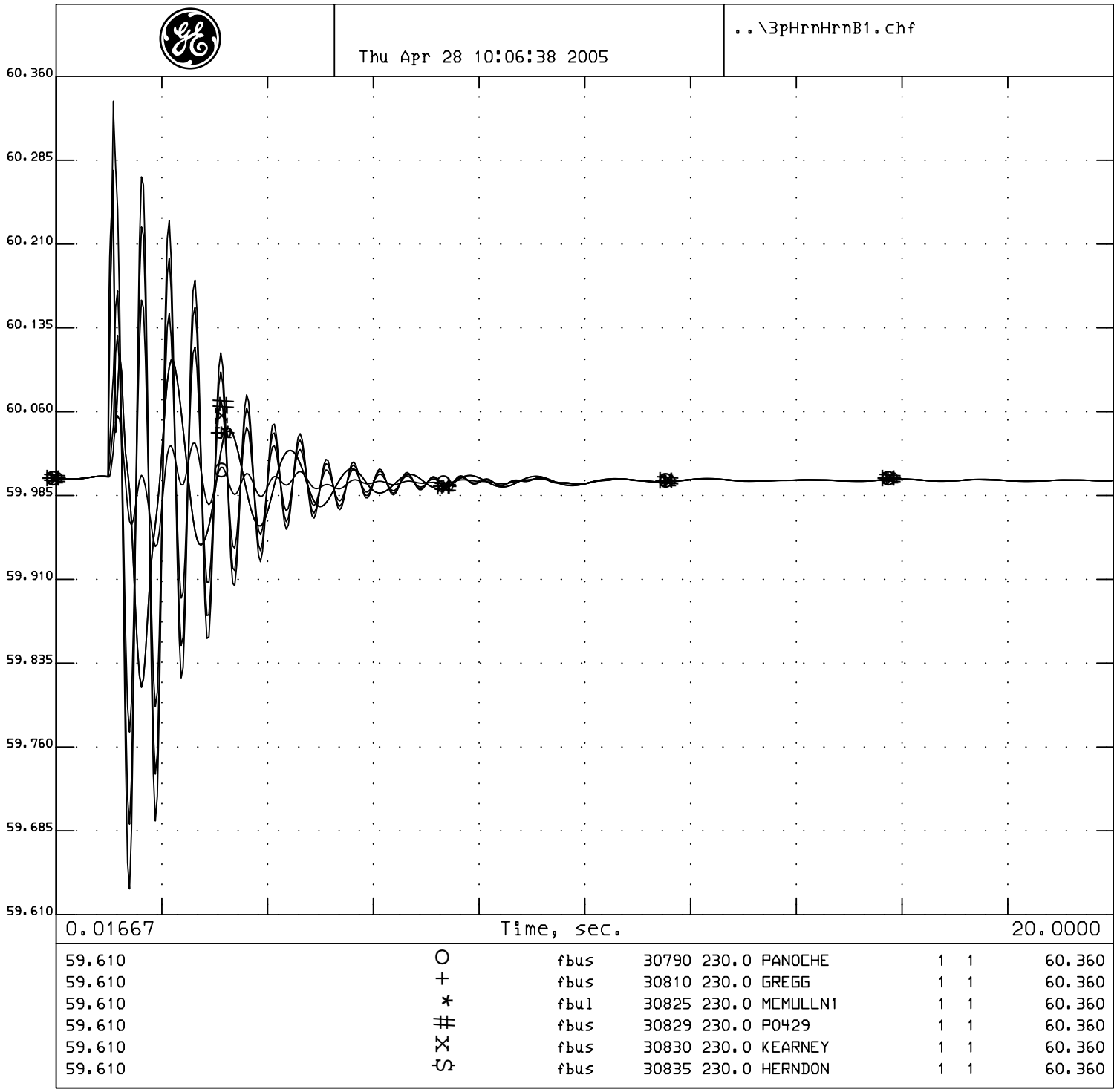

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2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
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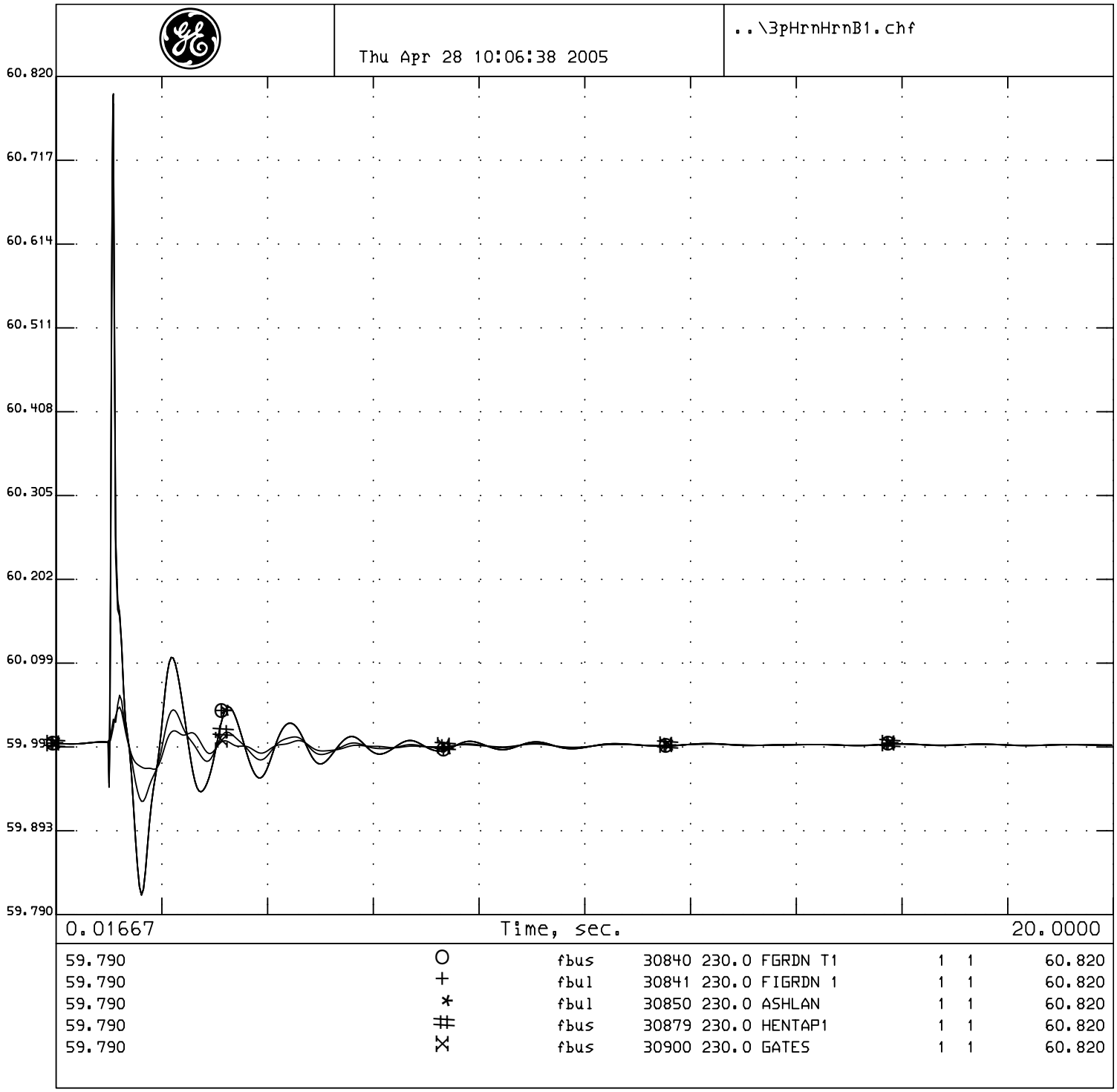
Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault



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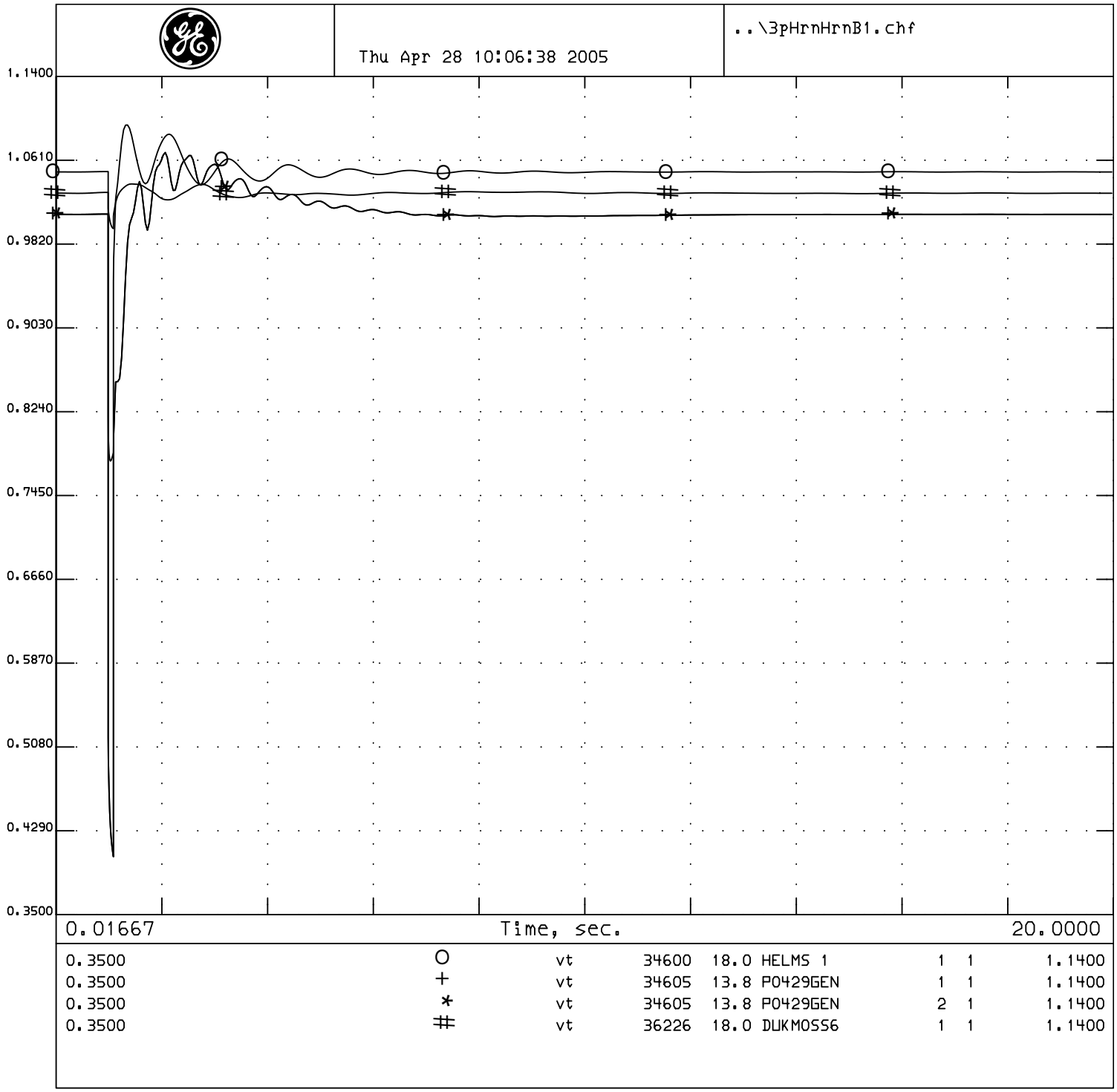

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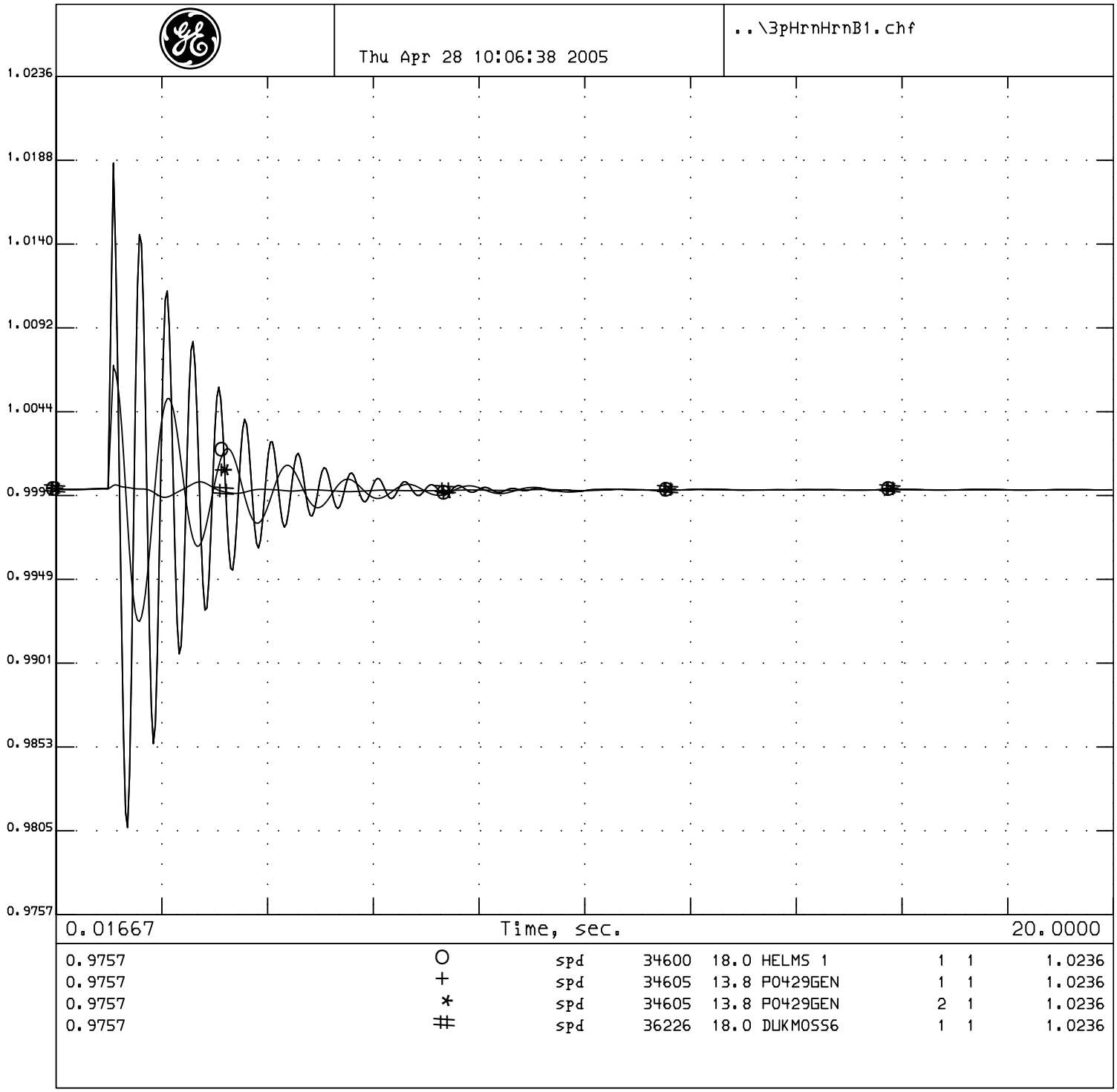
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

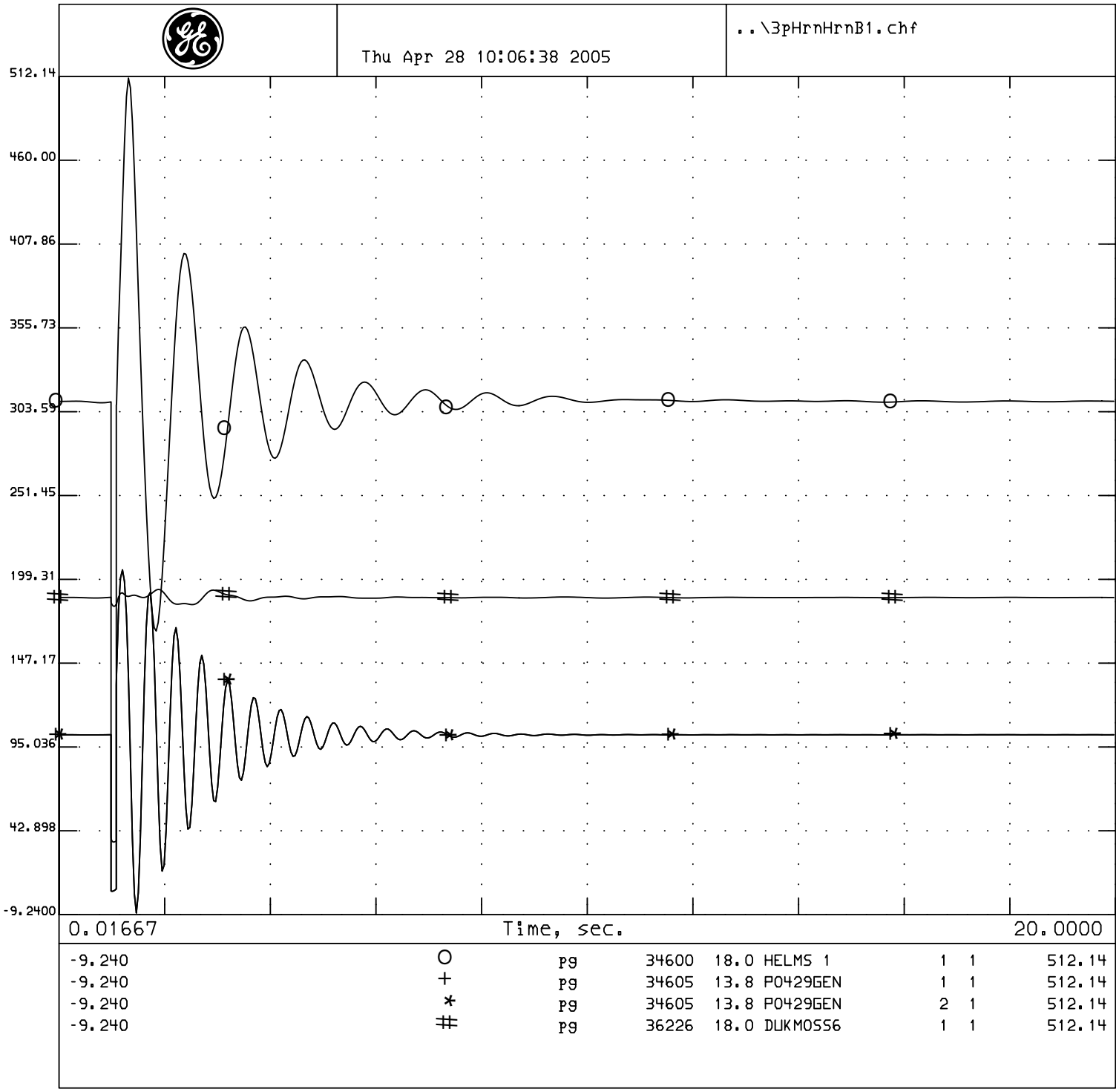


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed

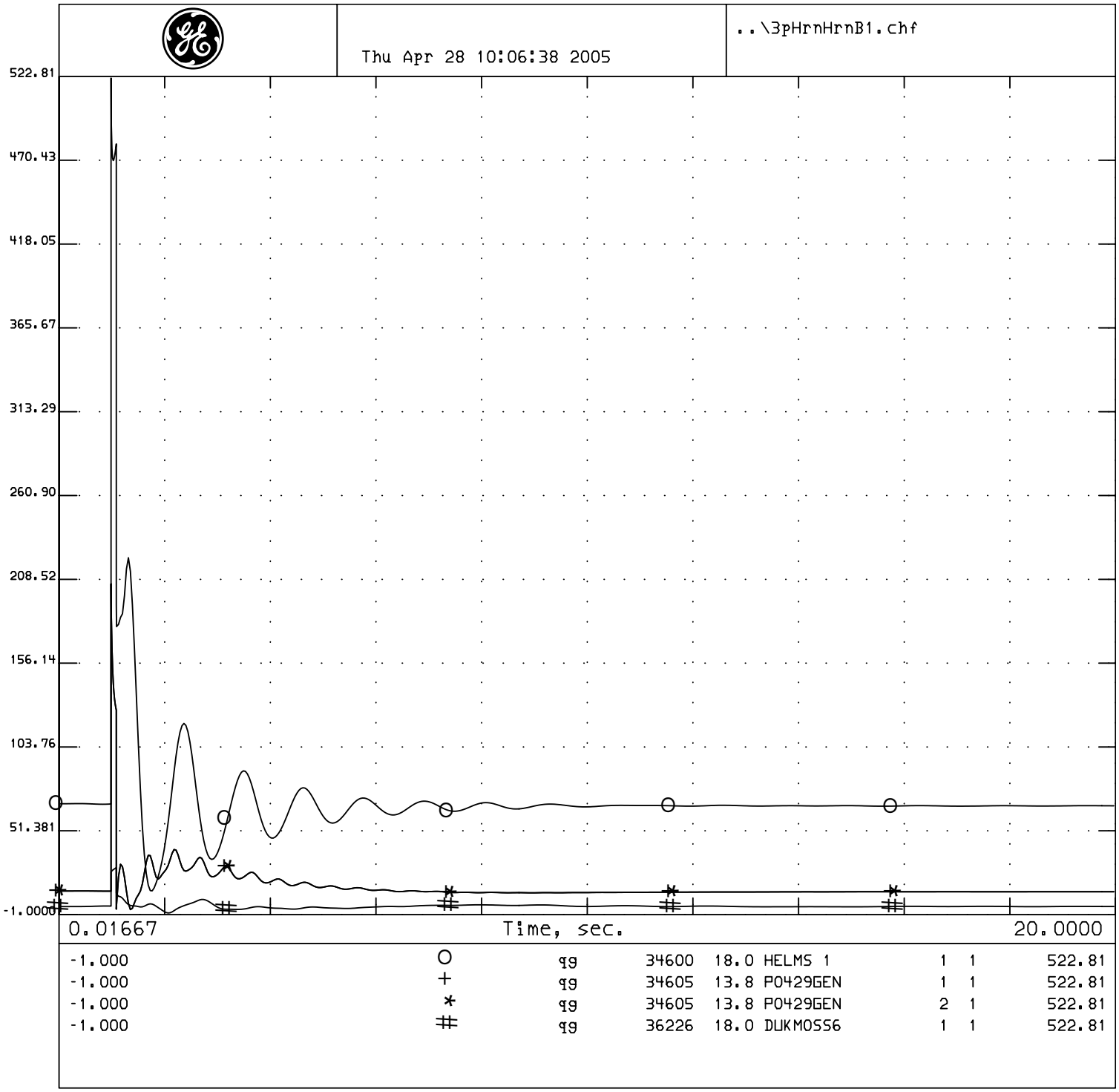


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power

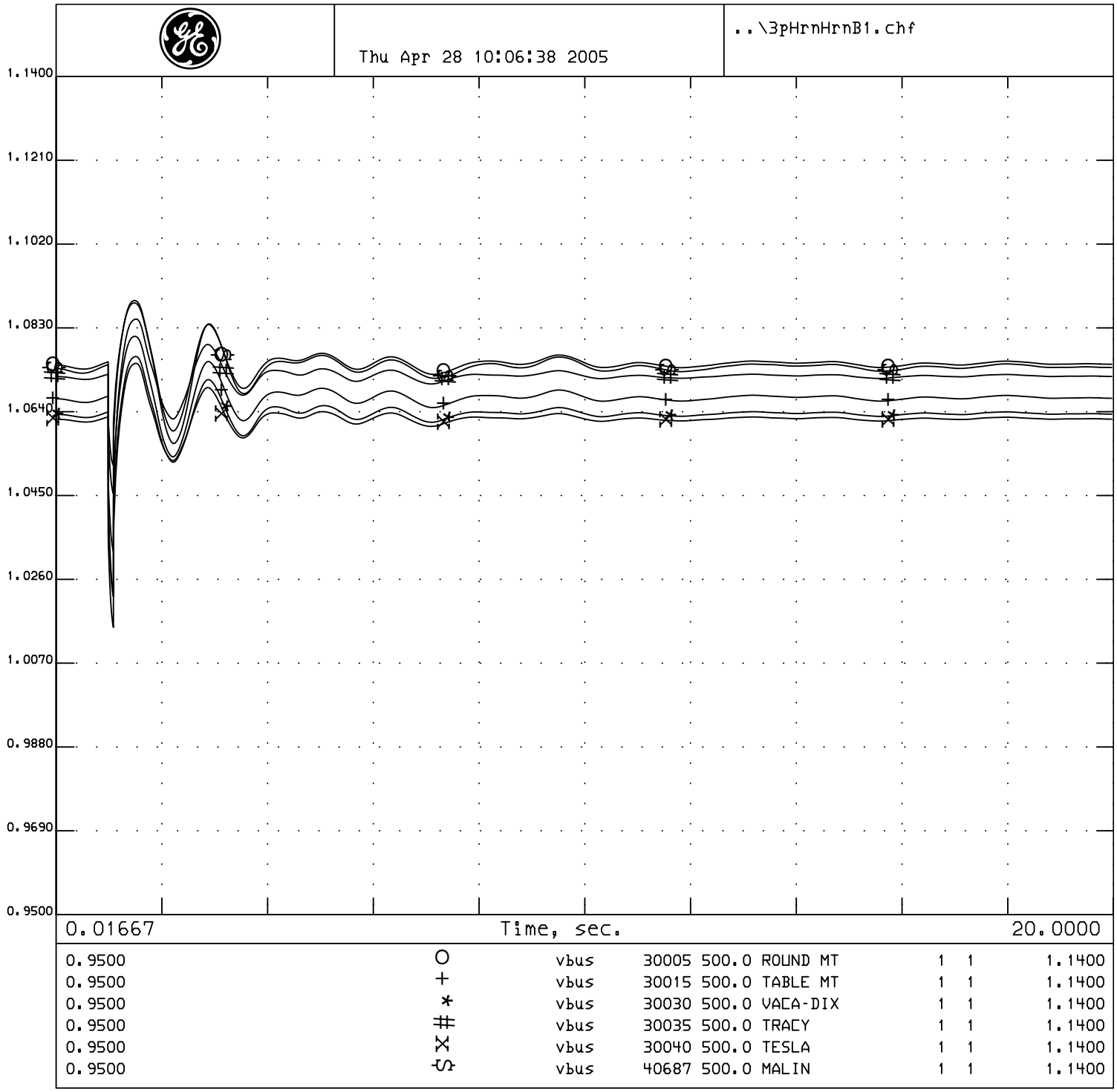


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power

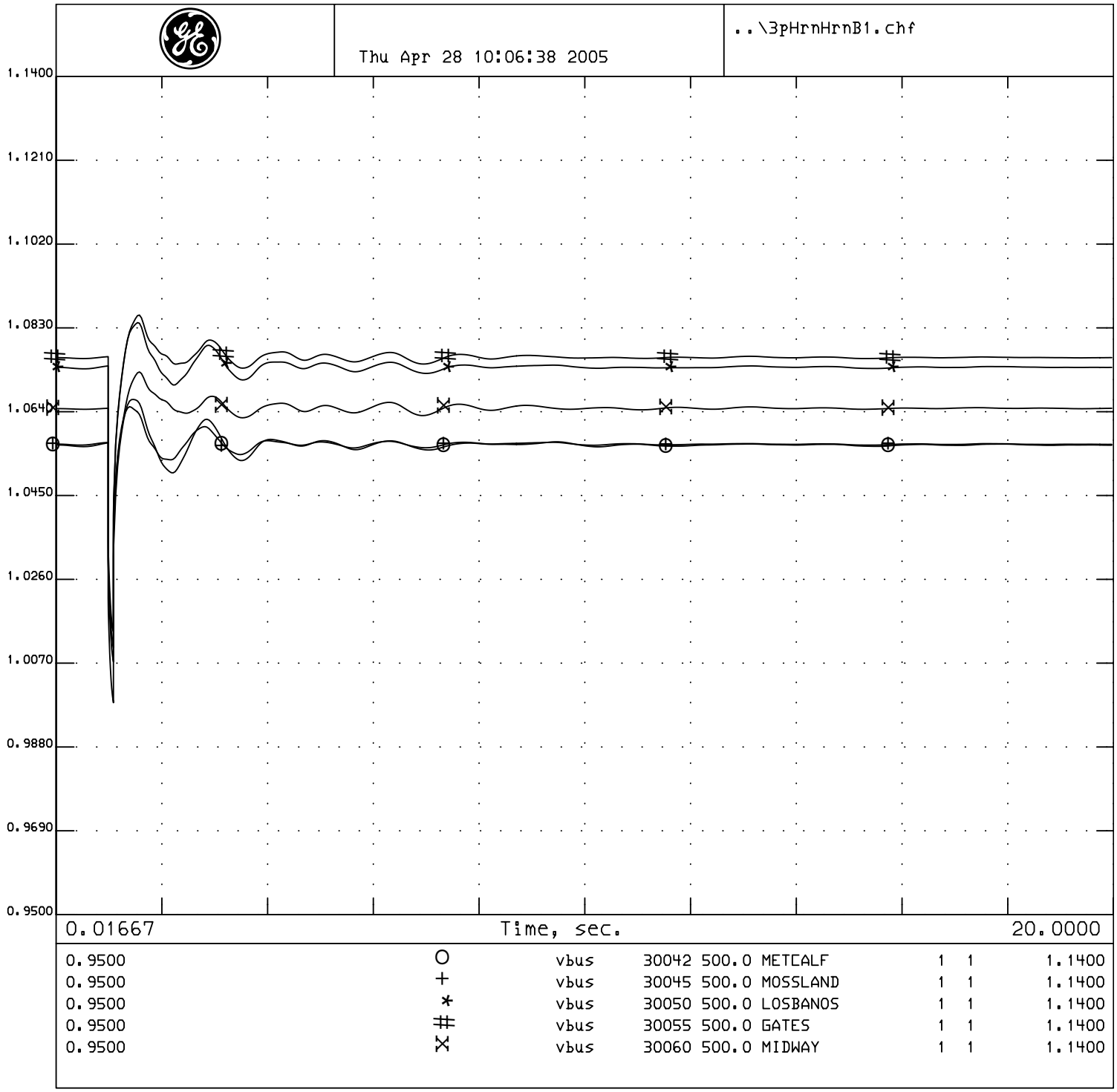


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

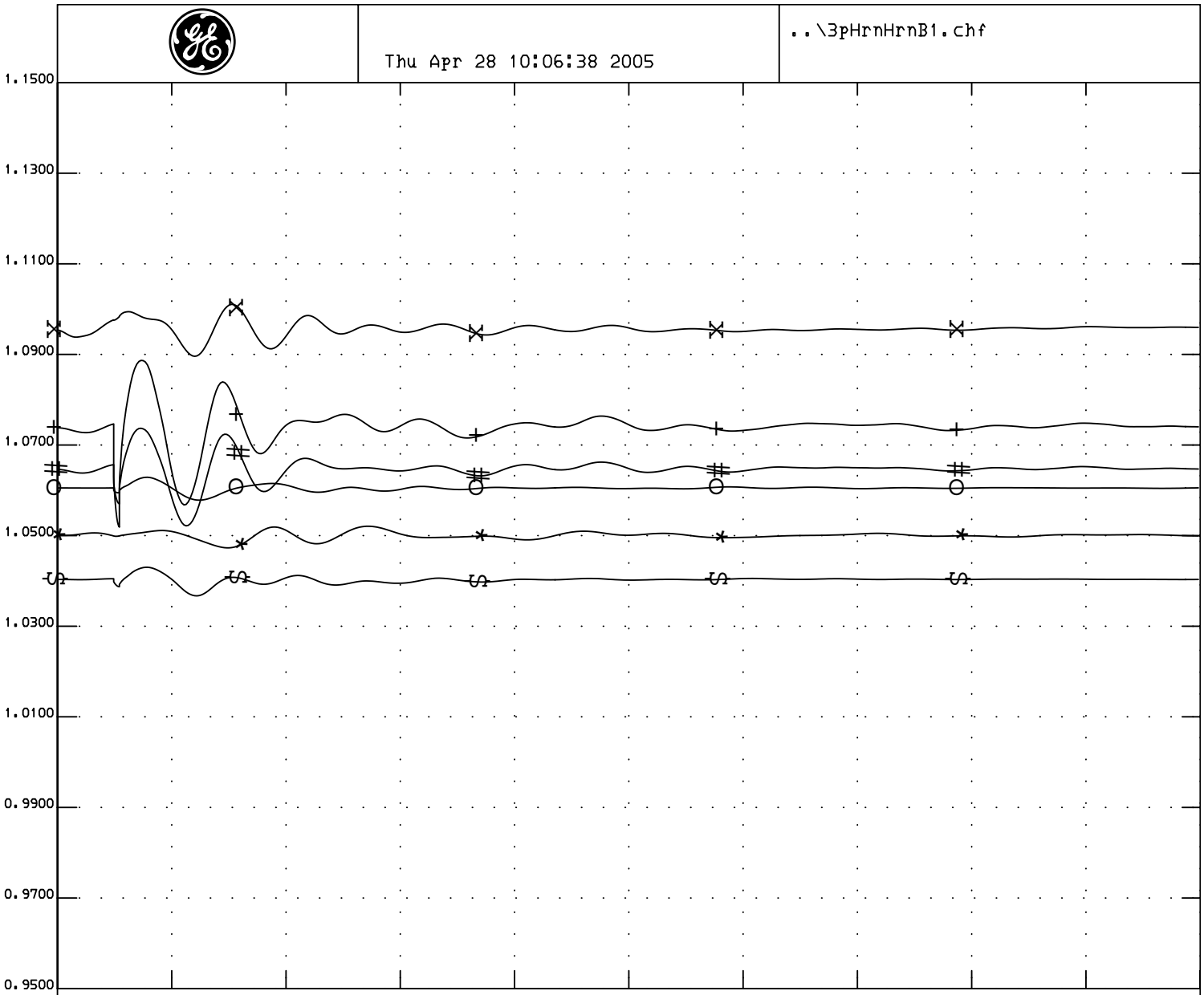


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



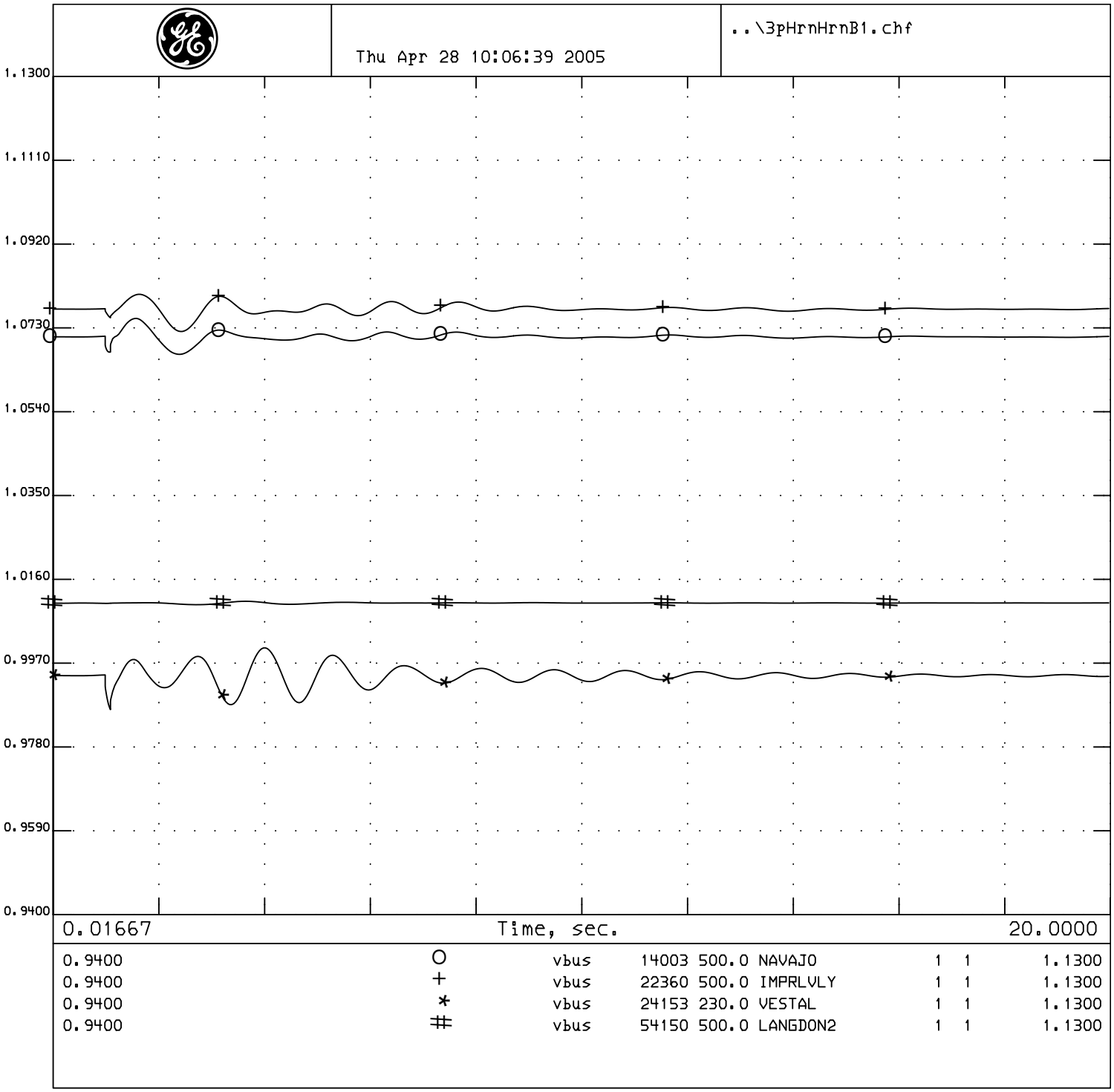
0.9500	O	vbus	14001	500.0	FOURCORN	1	1	1.1500
0.9500	+	vbus	40687	500.0	MALIN	1	1	1.1500
0.9500	*	vbus	50703	500.0	NIC500	1	1	1.1500
0.9500	#	vbus	60240	500.0	MIDPOINT	1	1	1.1500
0.9500	X	vbus	62012	500.0	TOWN2	1	1	1.1500
0.9500	S	vbus	66340	345.0	SIGURD	1	1	1.1500

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

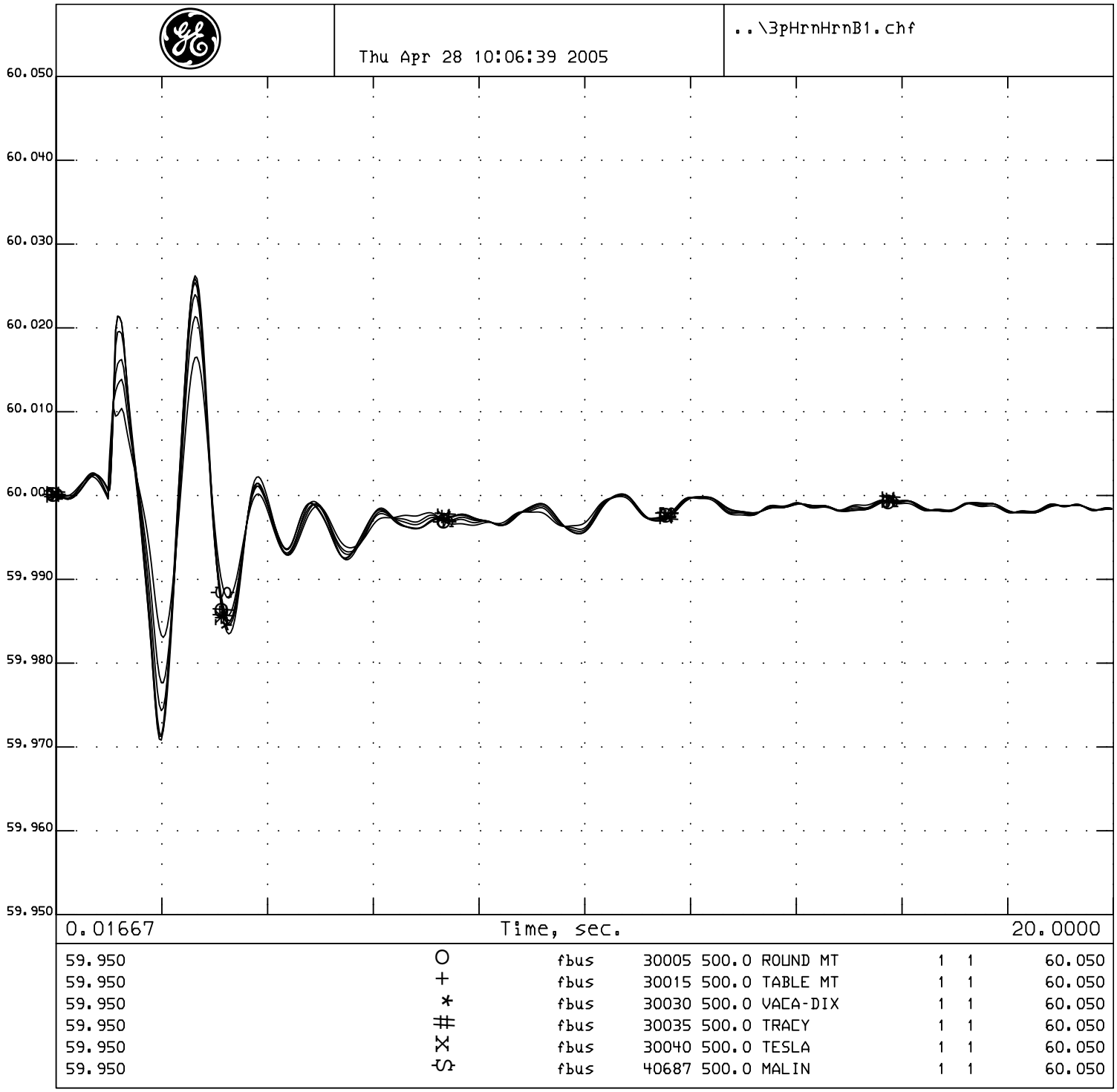


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

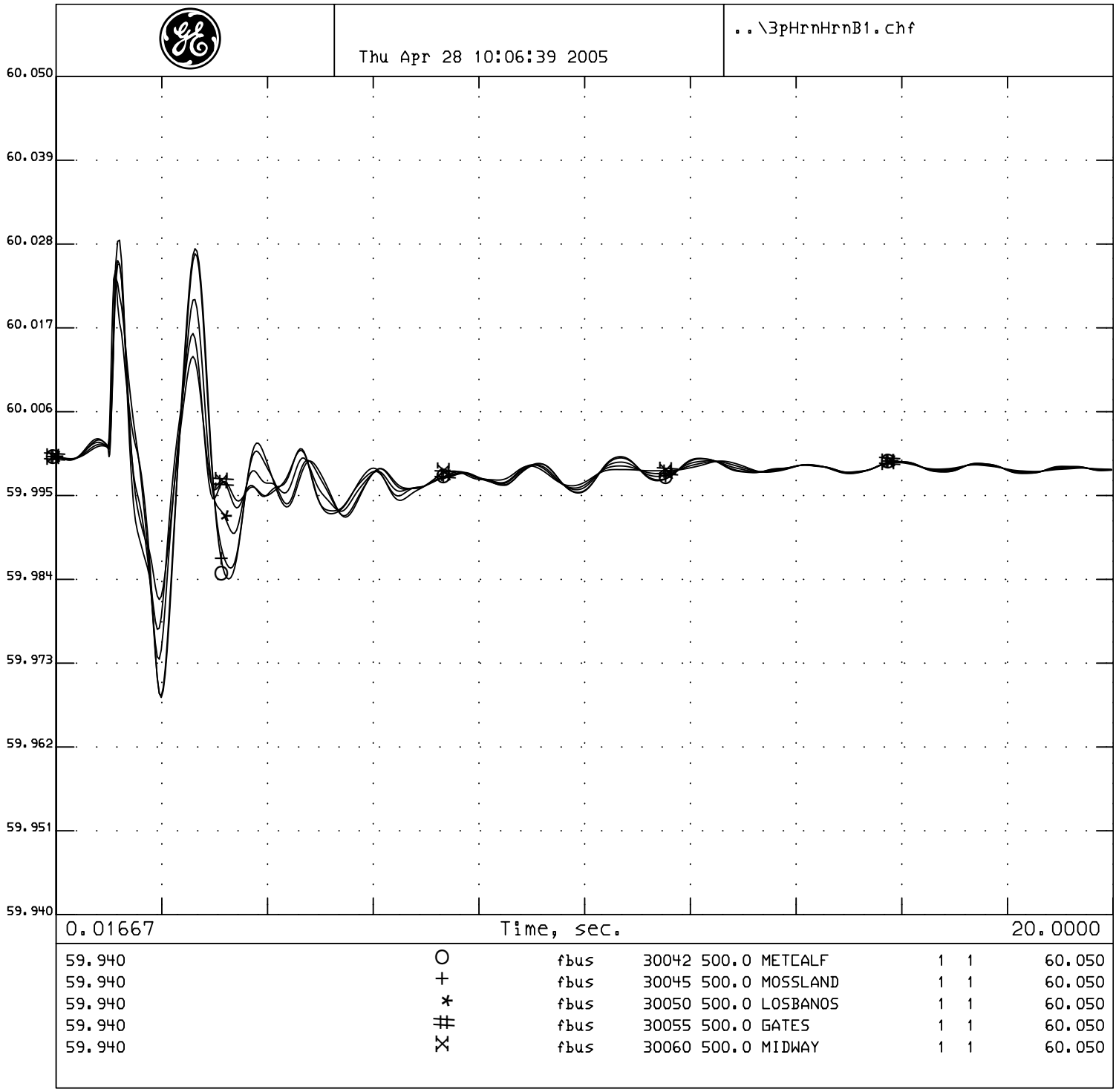


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

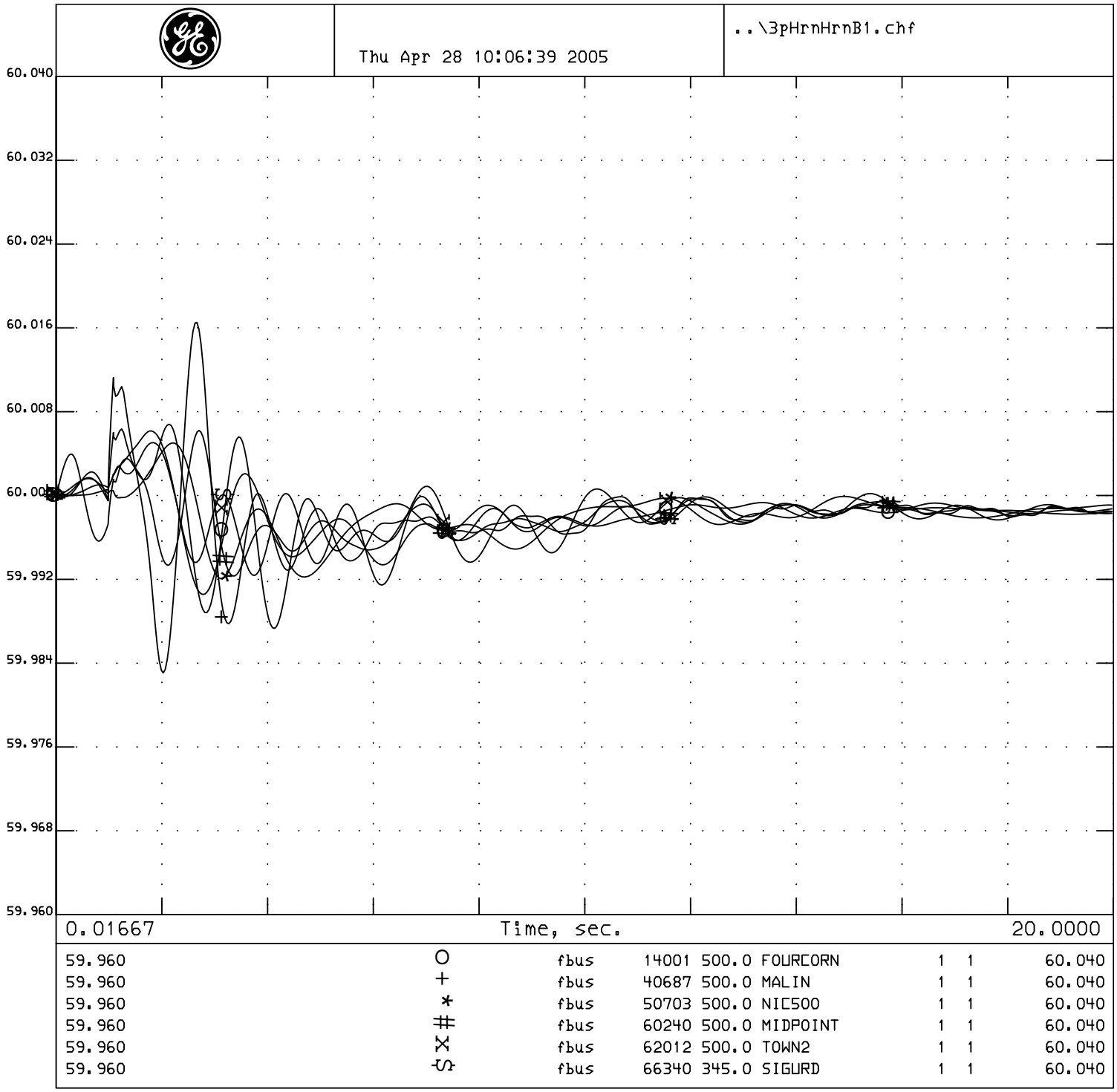


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

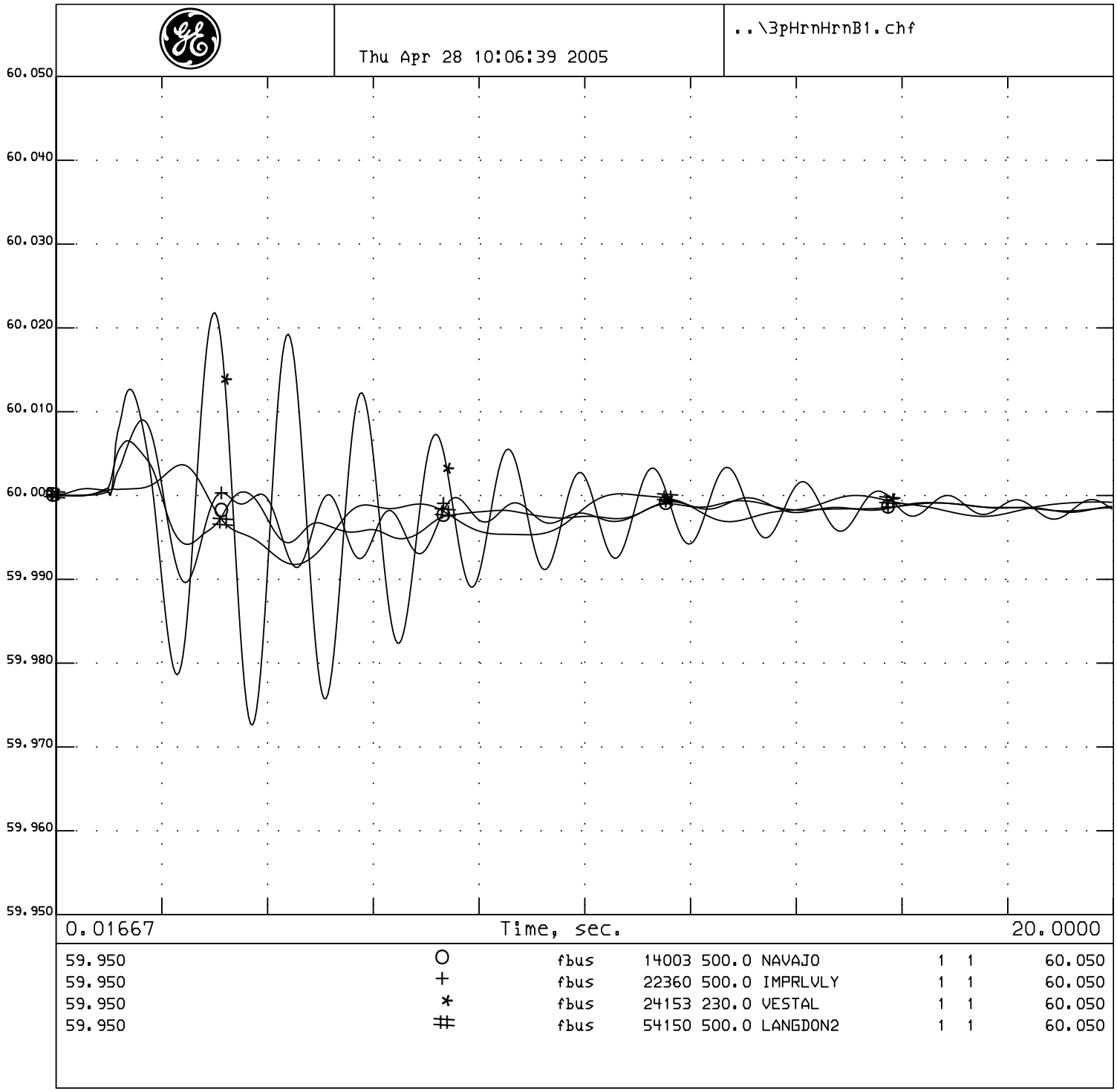


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

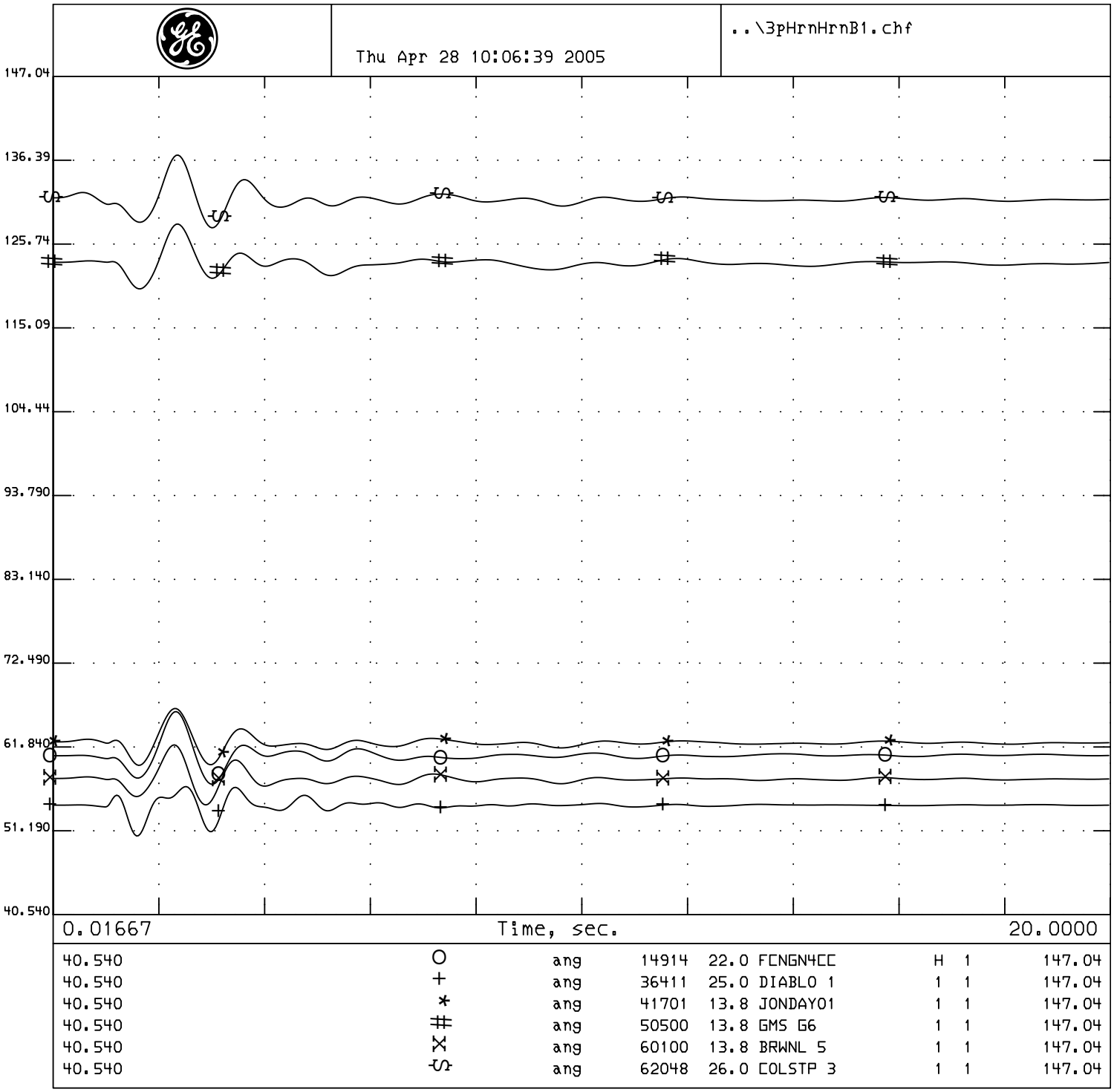


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

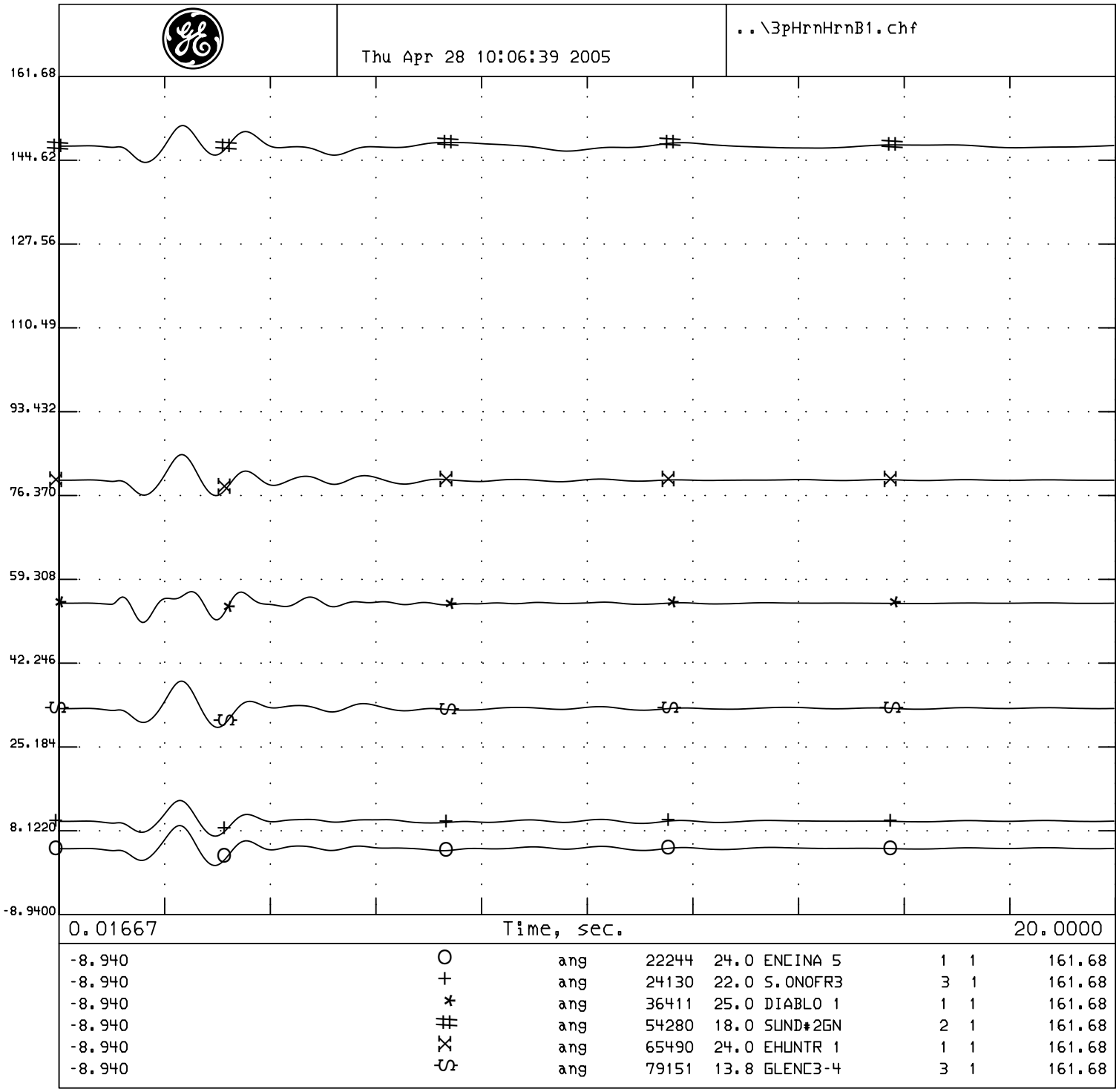


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

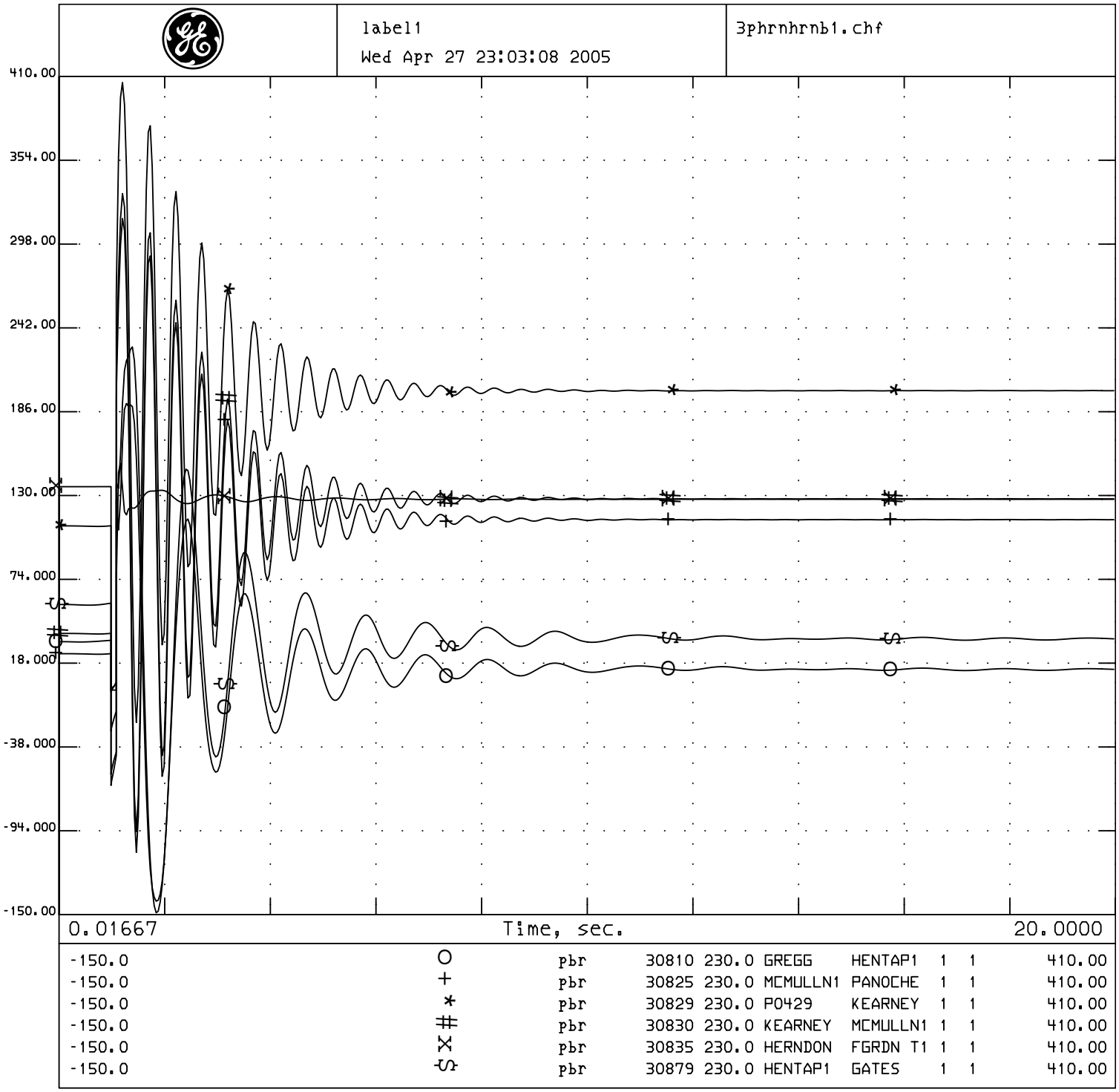


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

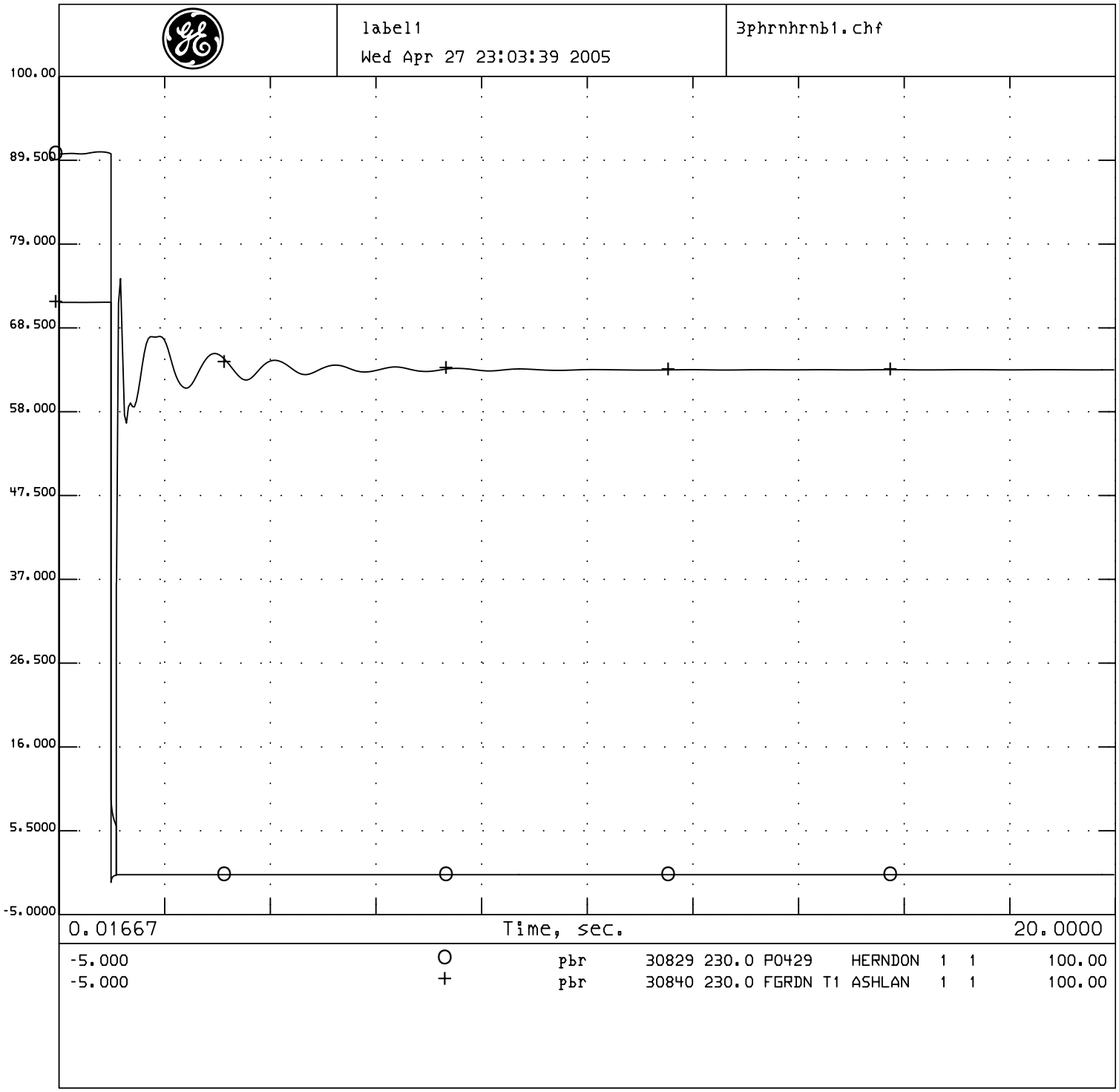


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW

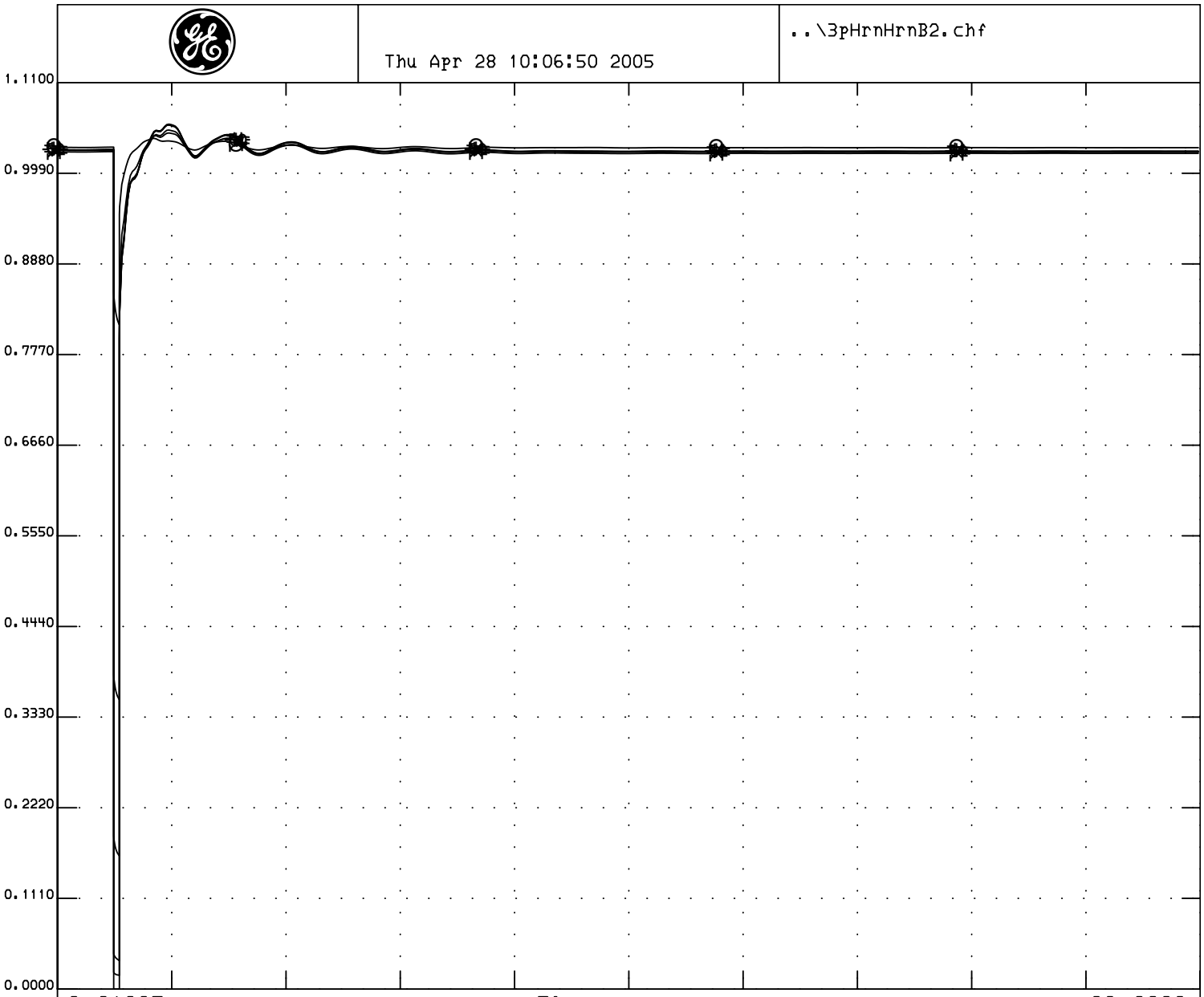


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #1 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #1

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



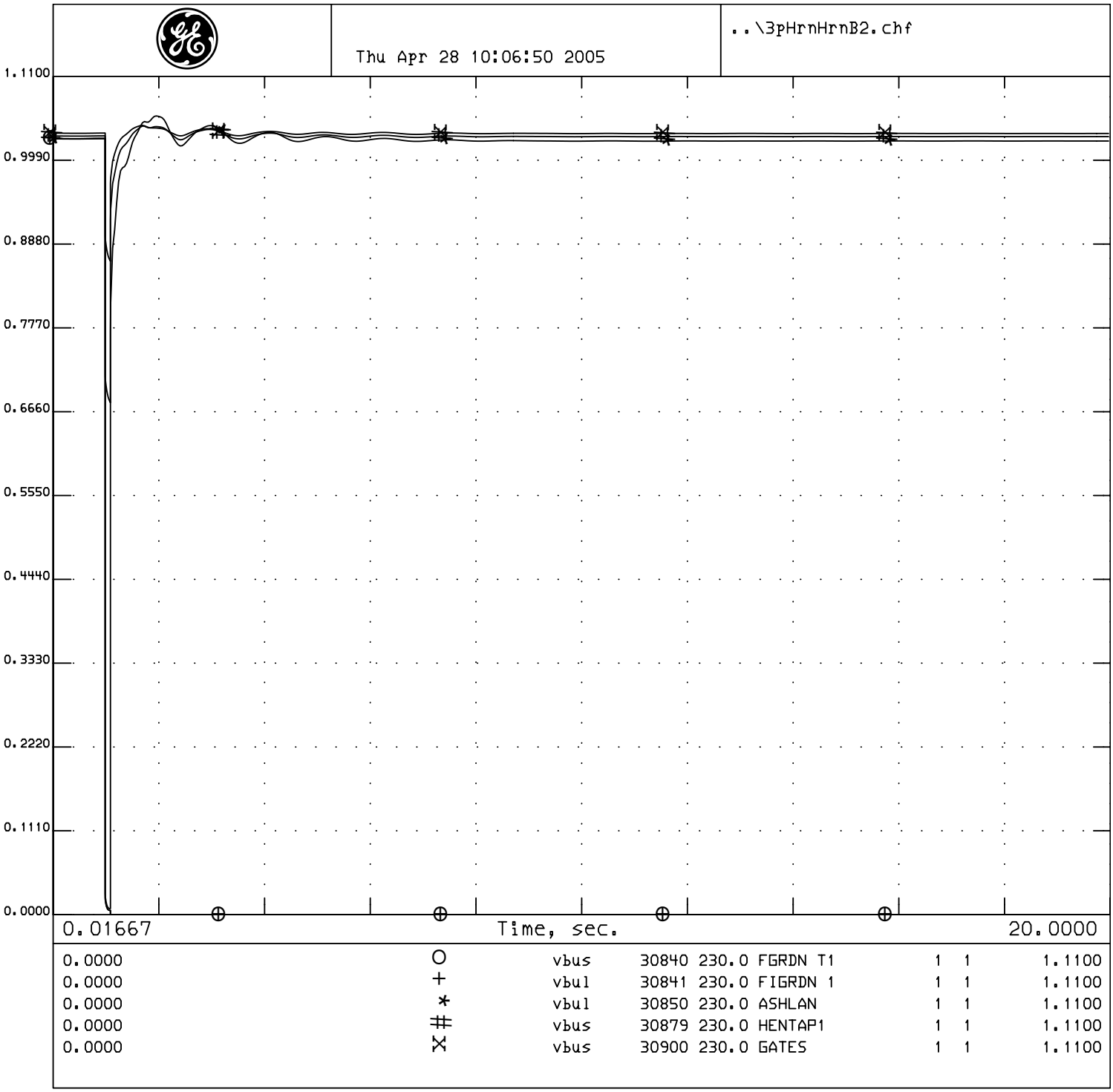
0.0000	O	vbus	30790	230.0	PANOCHE	1	1	1.1100
0.0000	+	vbus	30810	230.0	GREGG	1	1	1.1100
0.0000	*	vbul	30825	230.0	MCMULLN1	1	1	1.1100
0.0000	#	vbus	30829	230.0	P0429	1	1	1.1100
0.0000	X	vbus	30830	230.0	KEARNEY	1	1	1.1100
0.0000	S	vbus	30835	230.0	HERNDON	1	1	1.1100

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

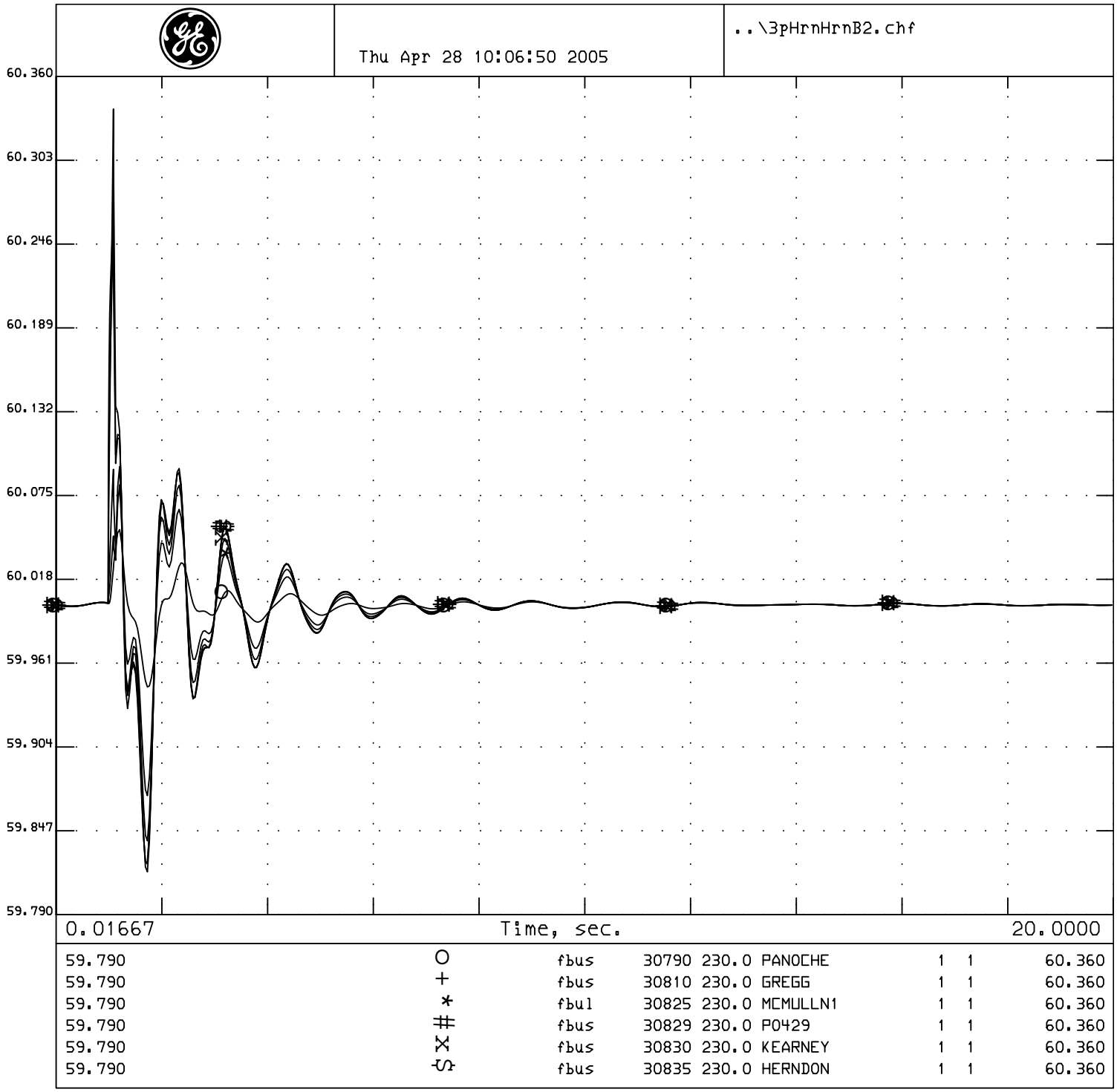


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

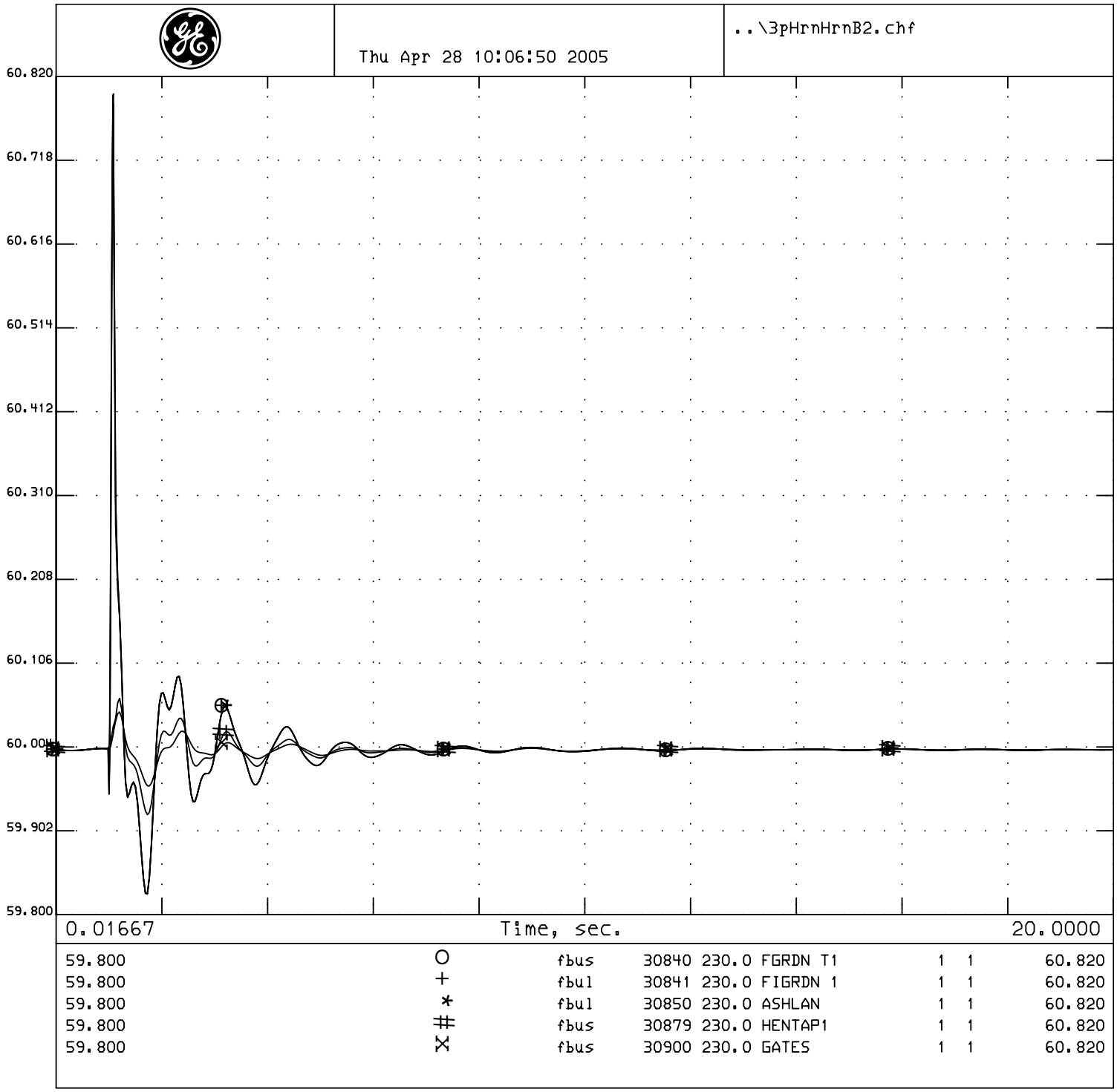


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

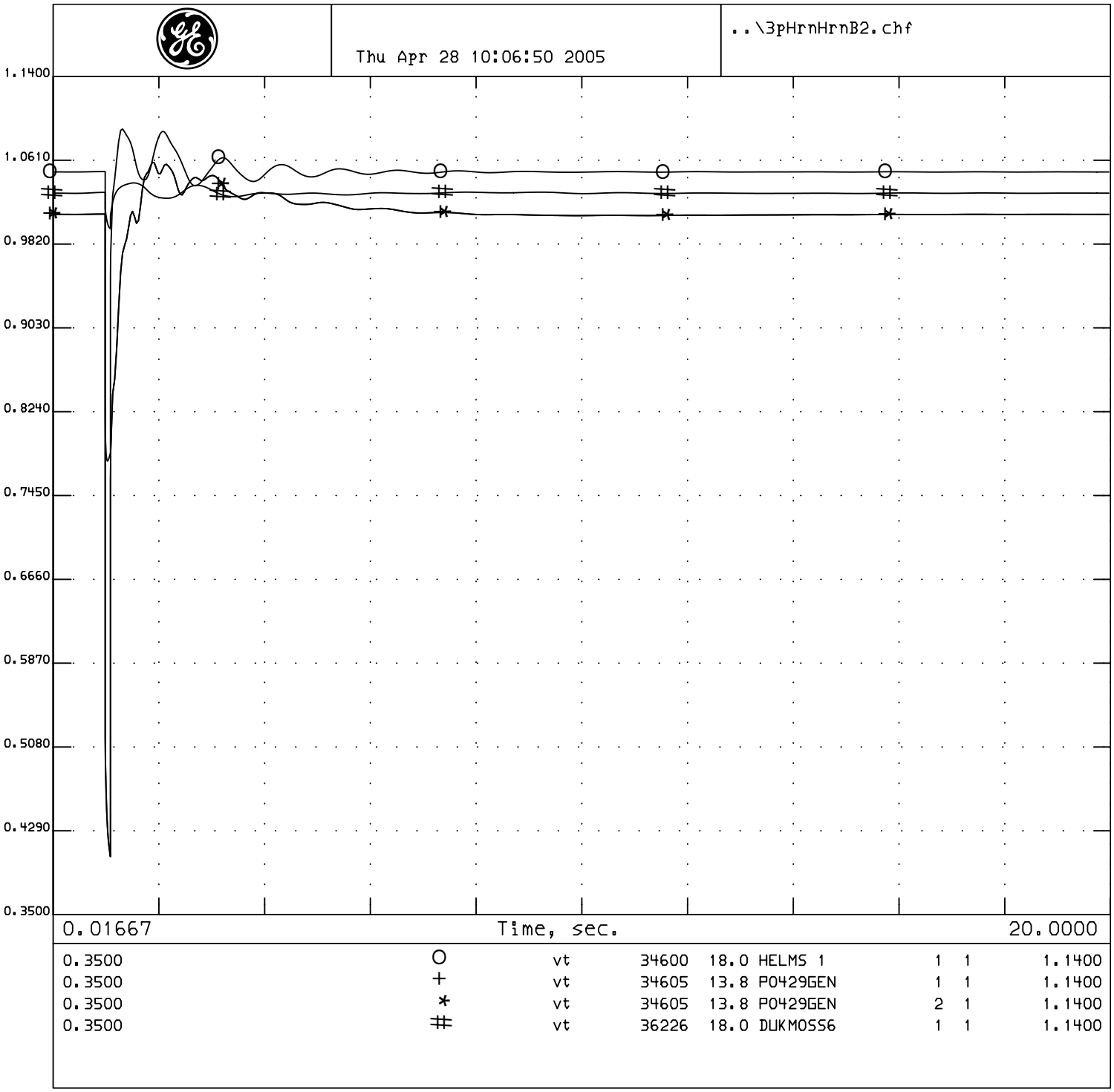


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

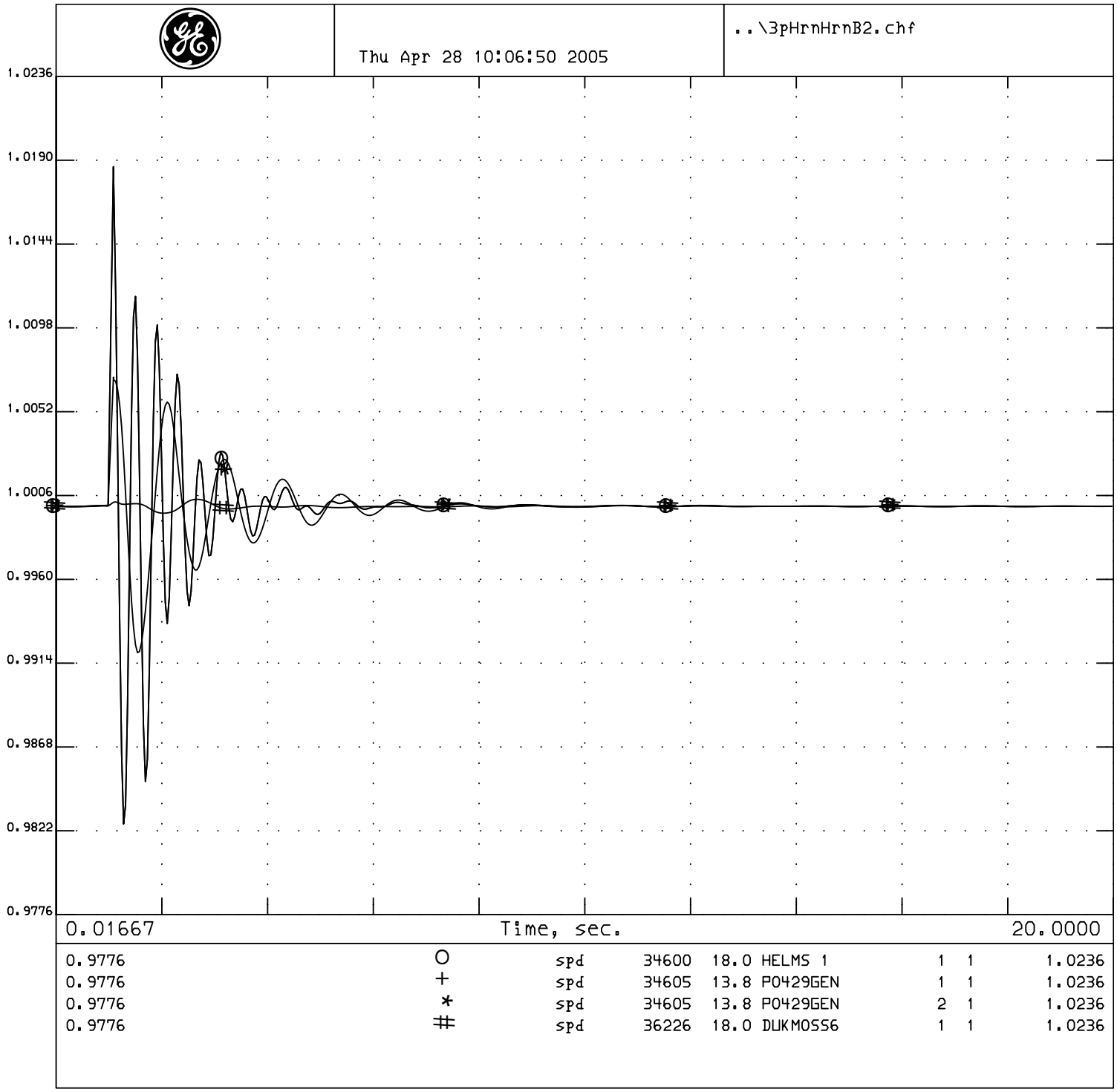


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

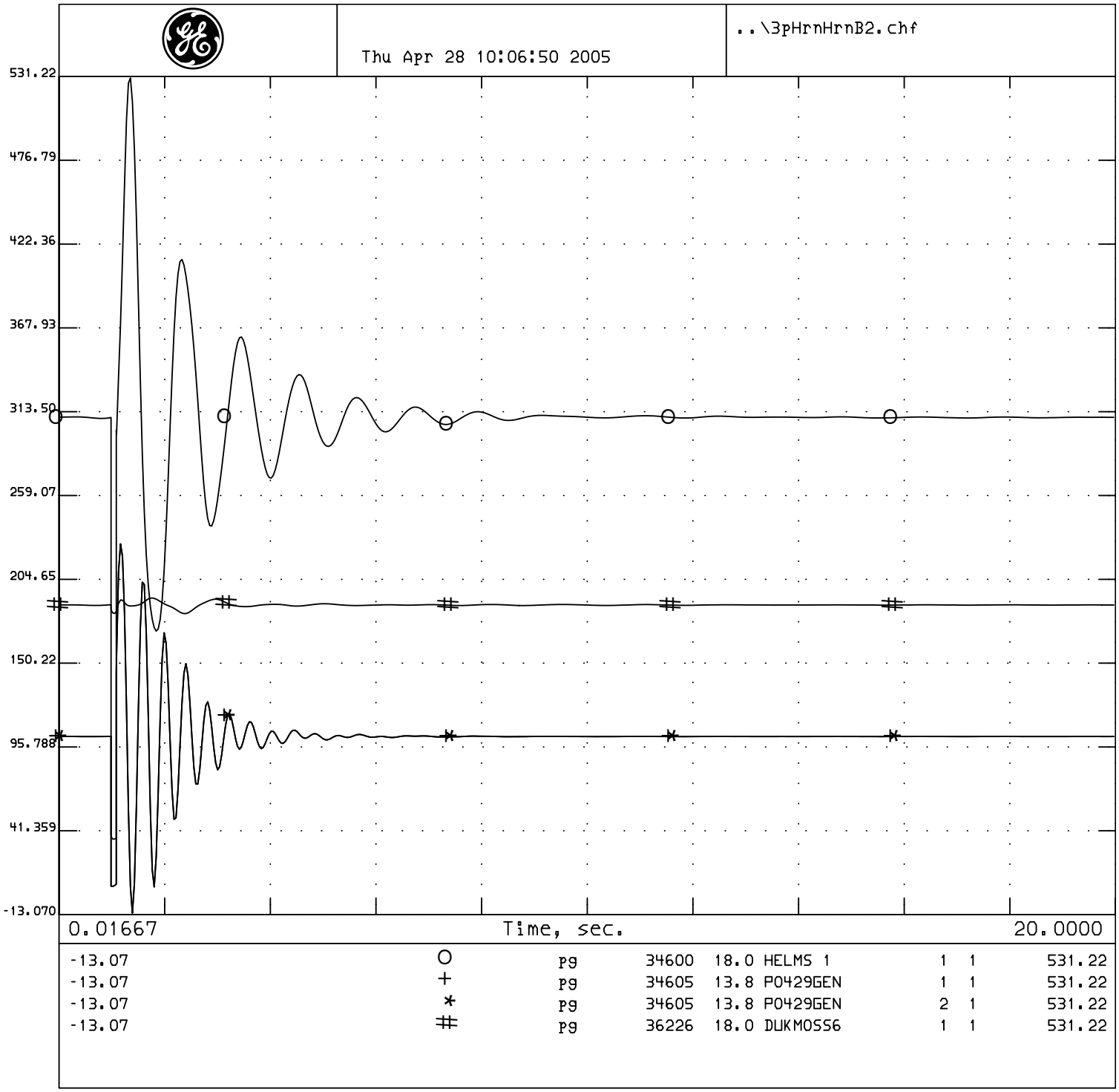


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed

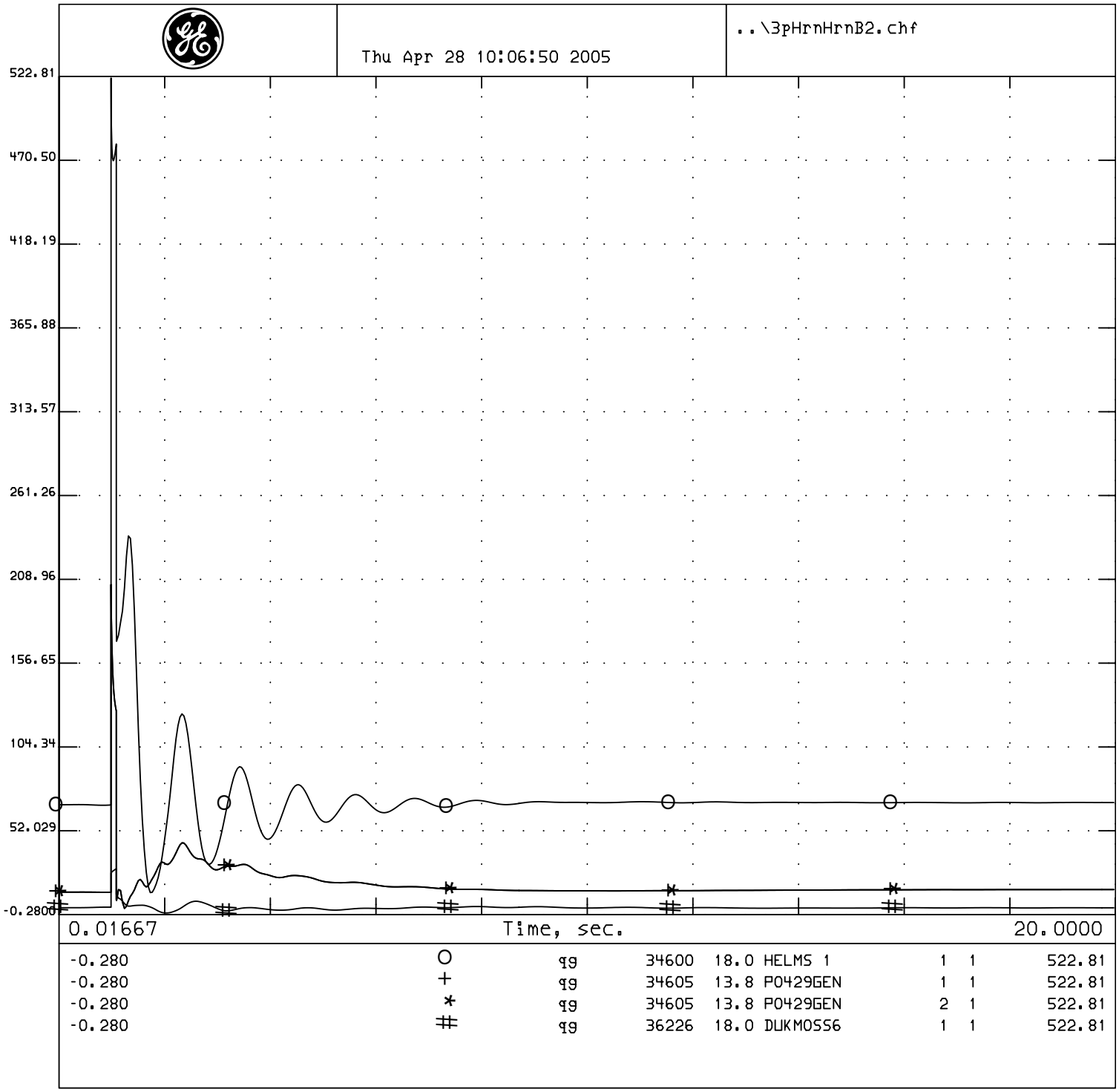


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power

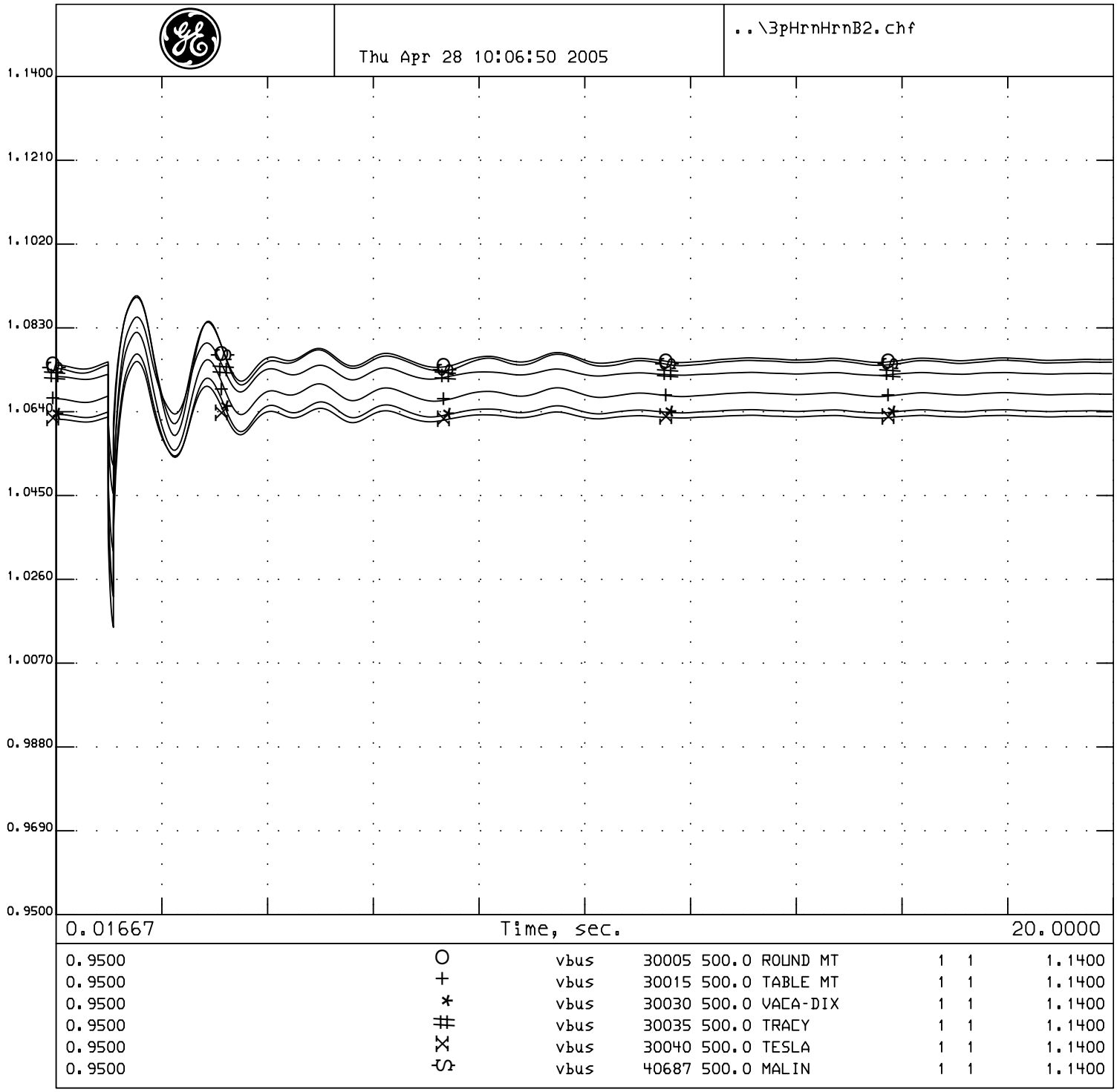


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power

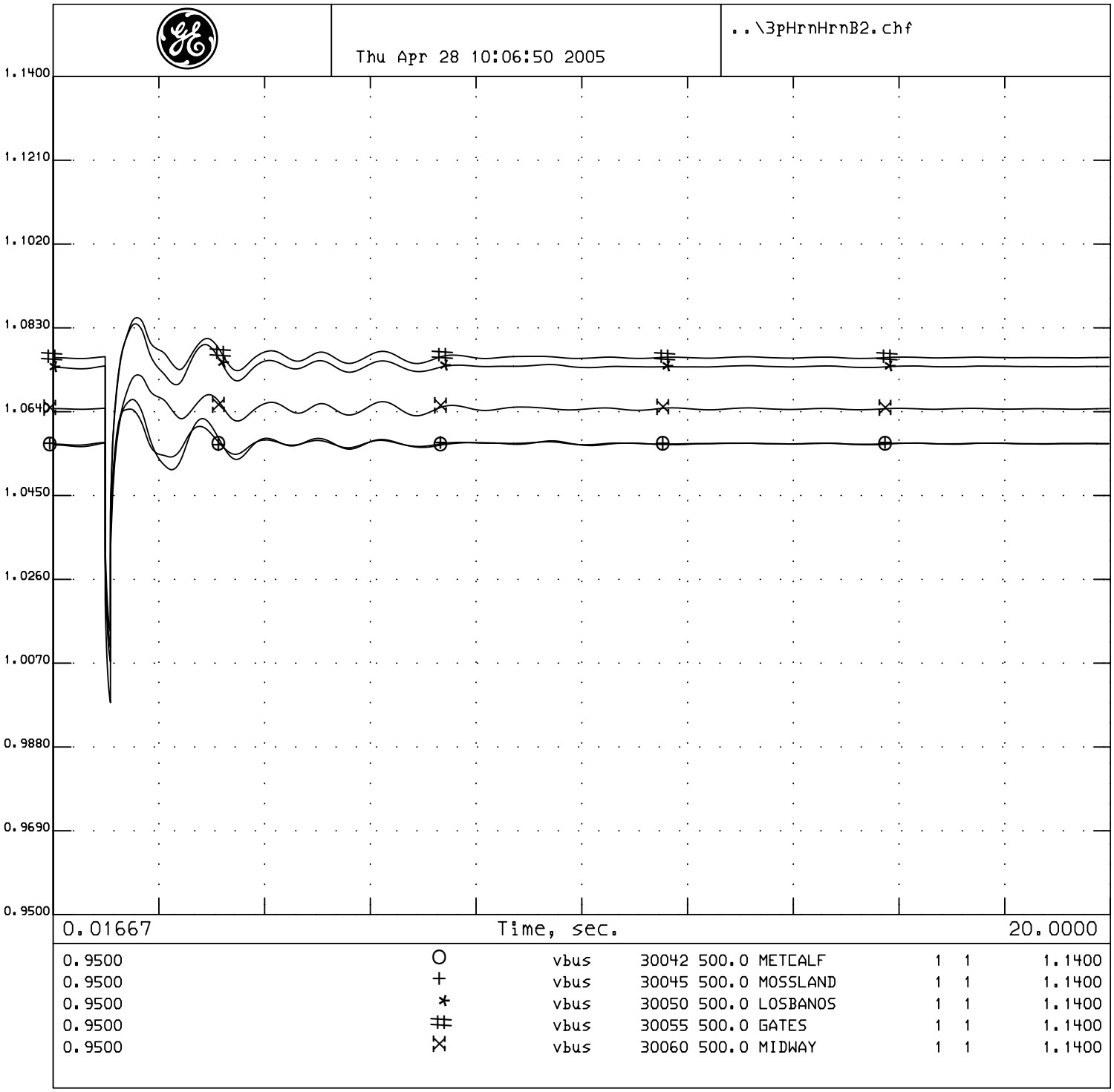


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

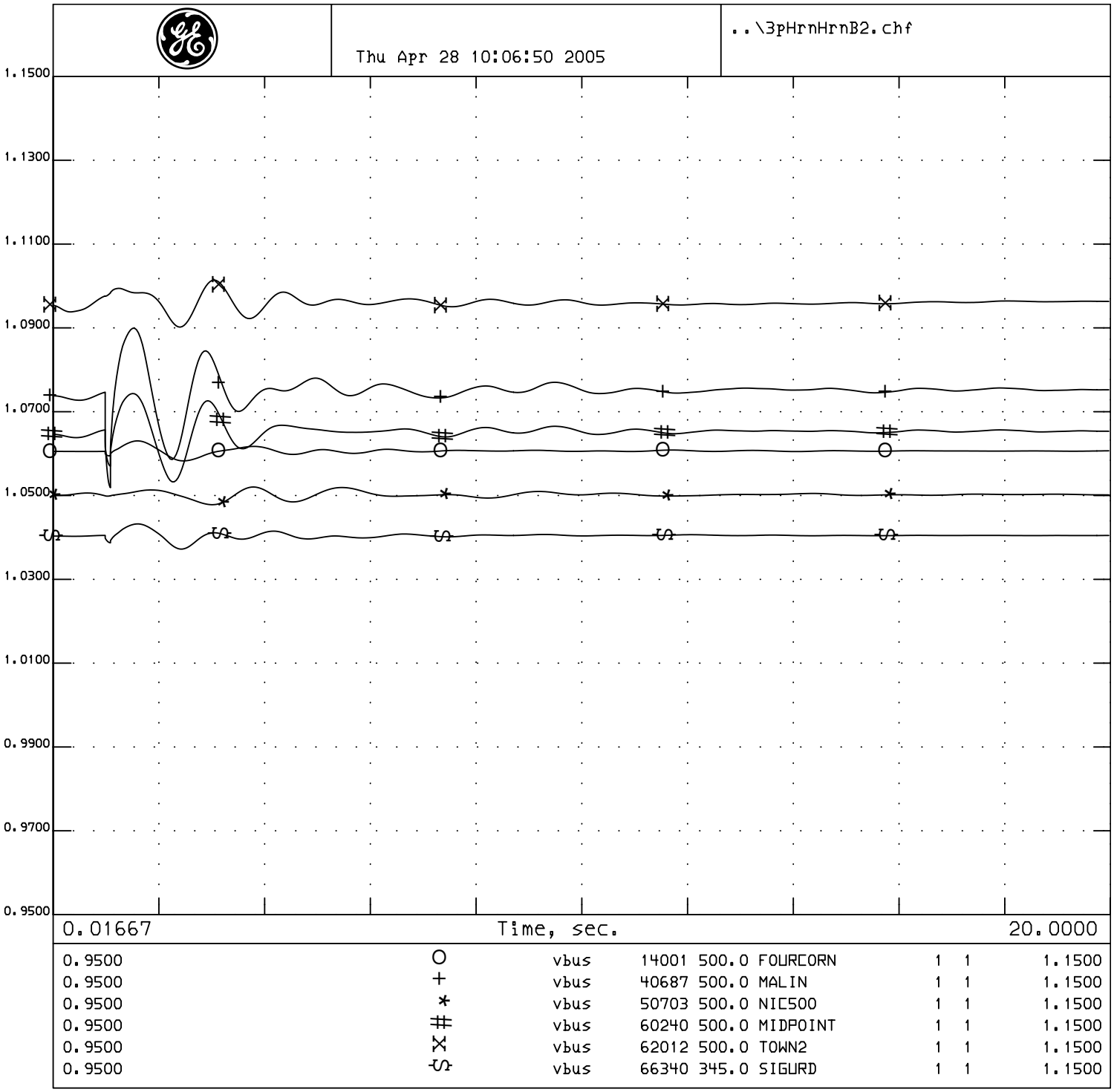


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

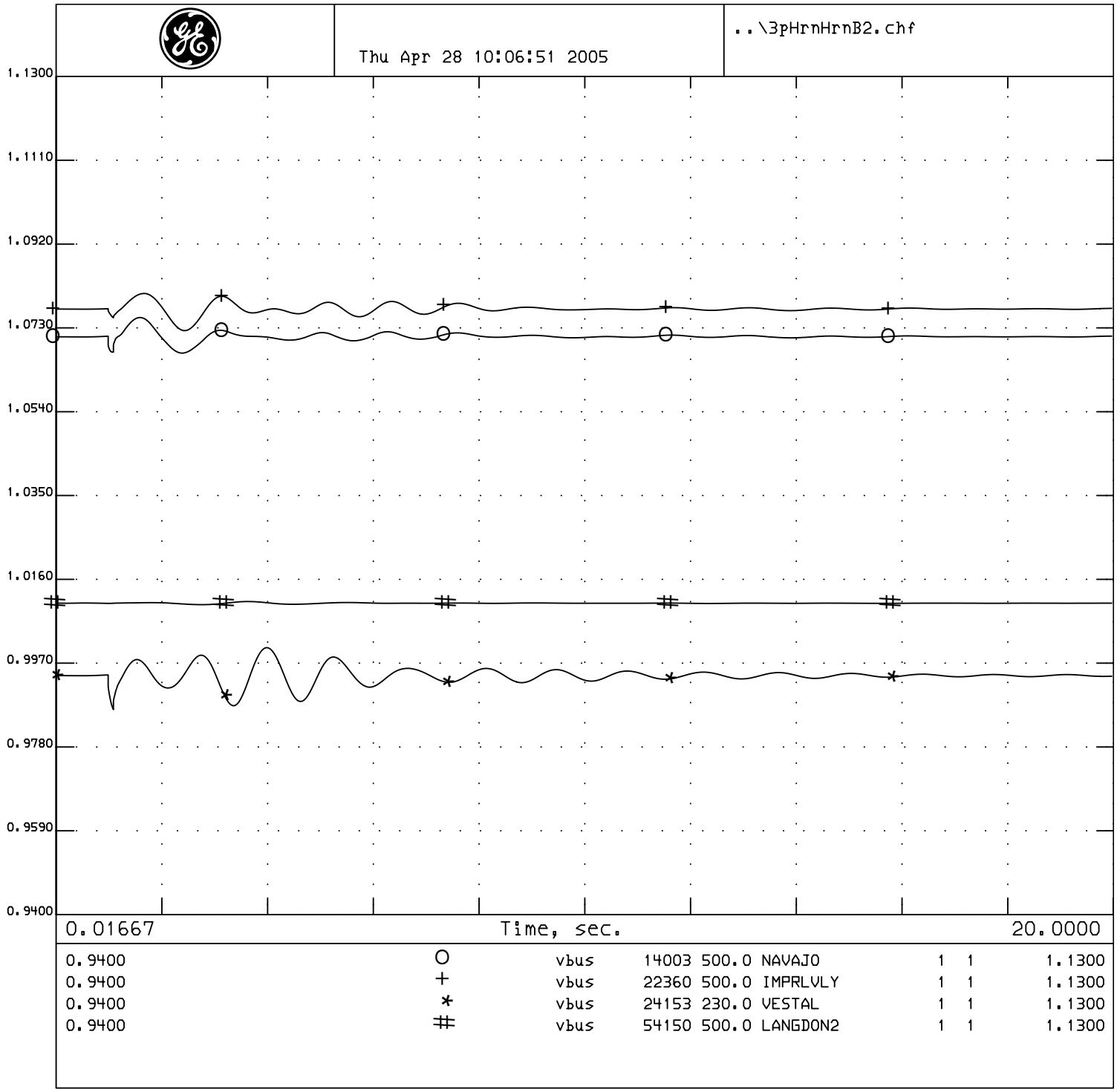


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

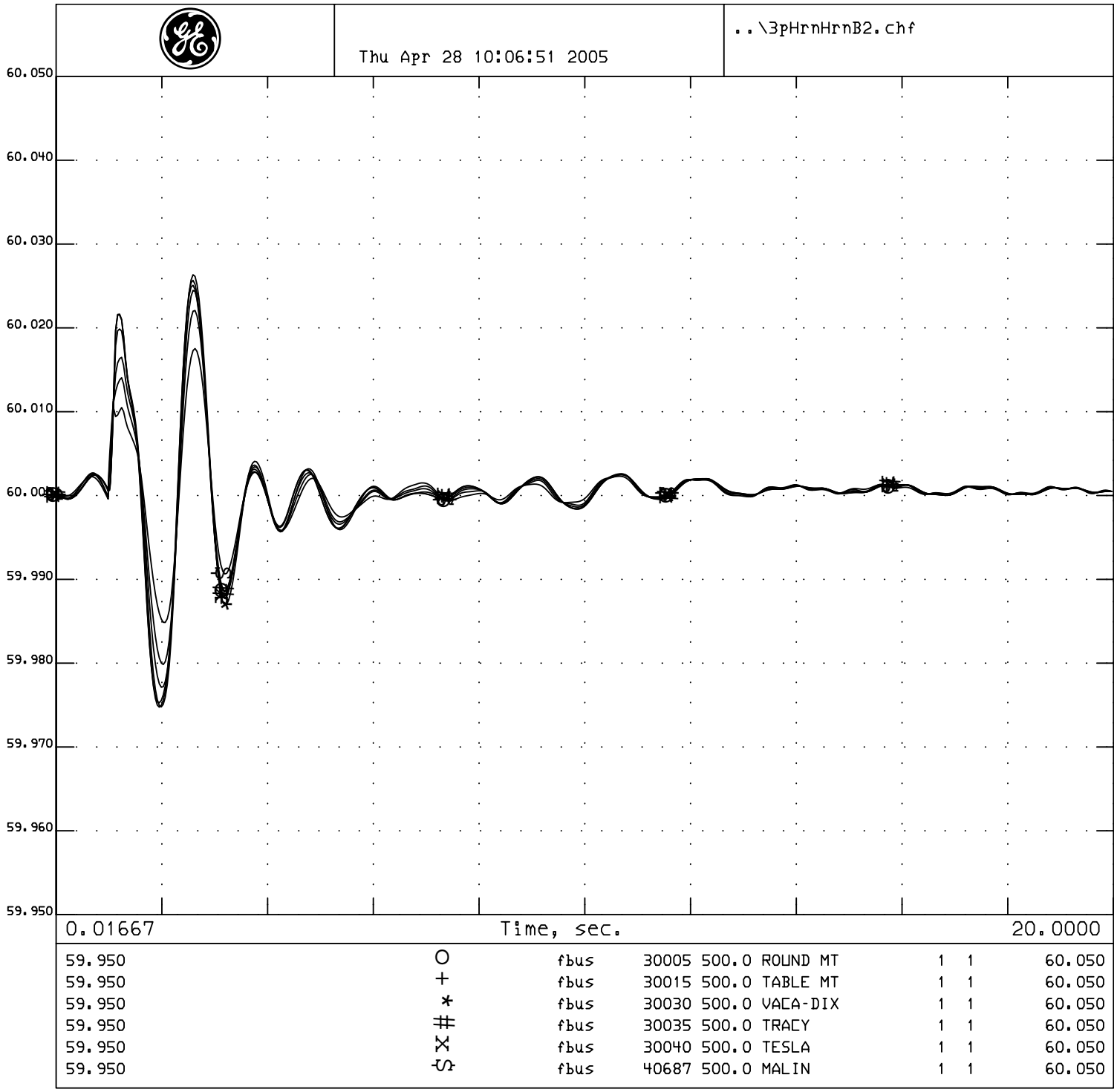


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots

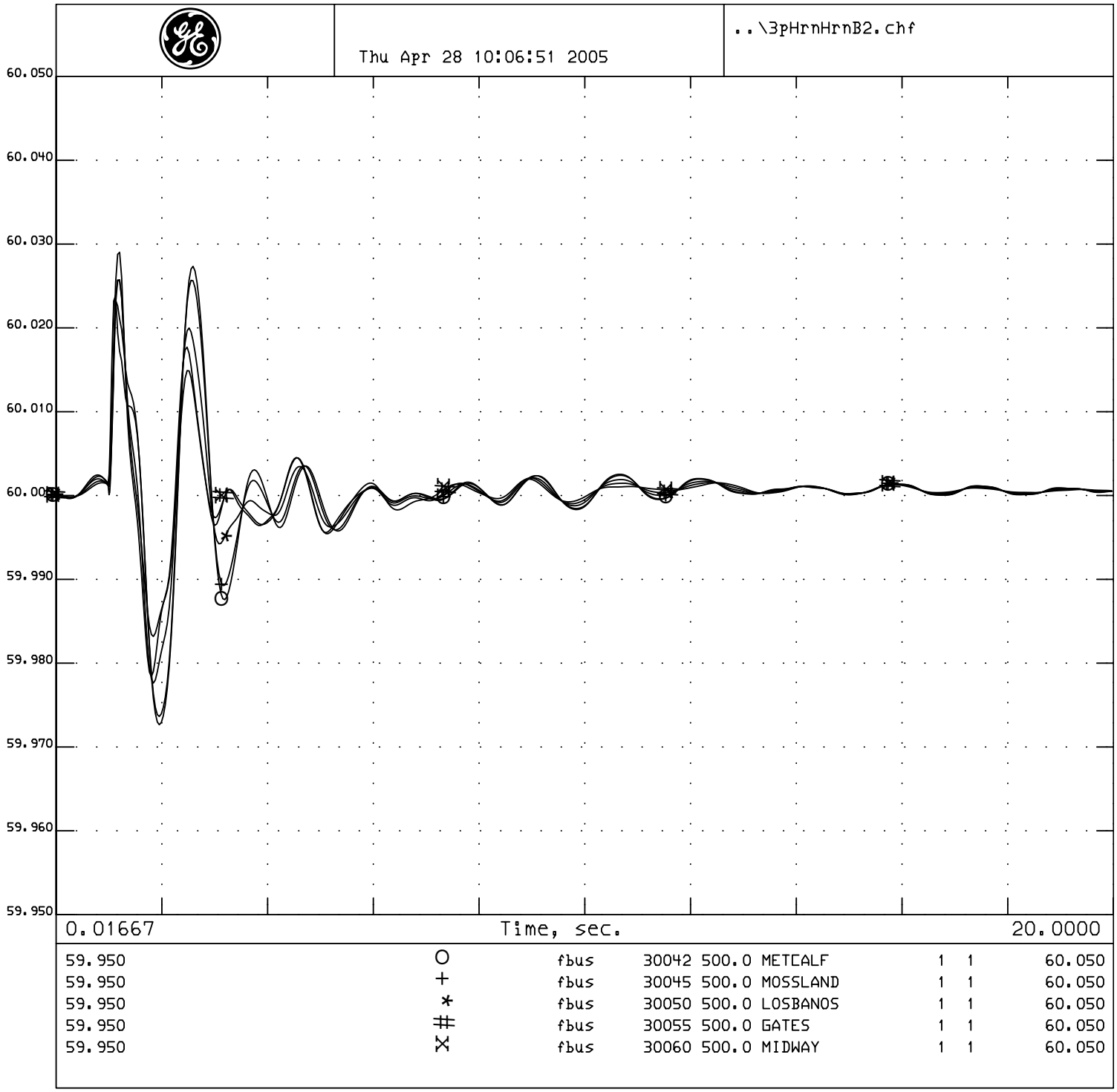


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

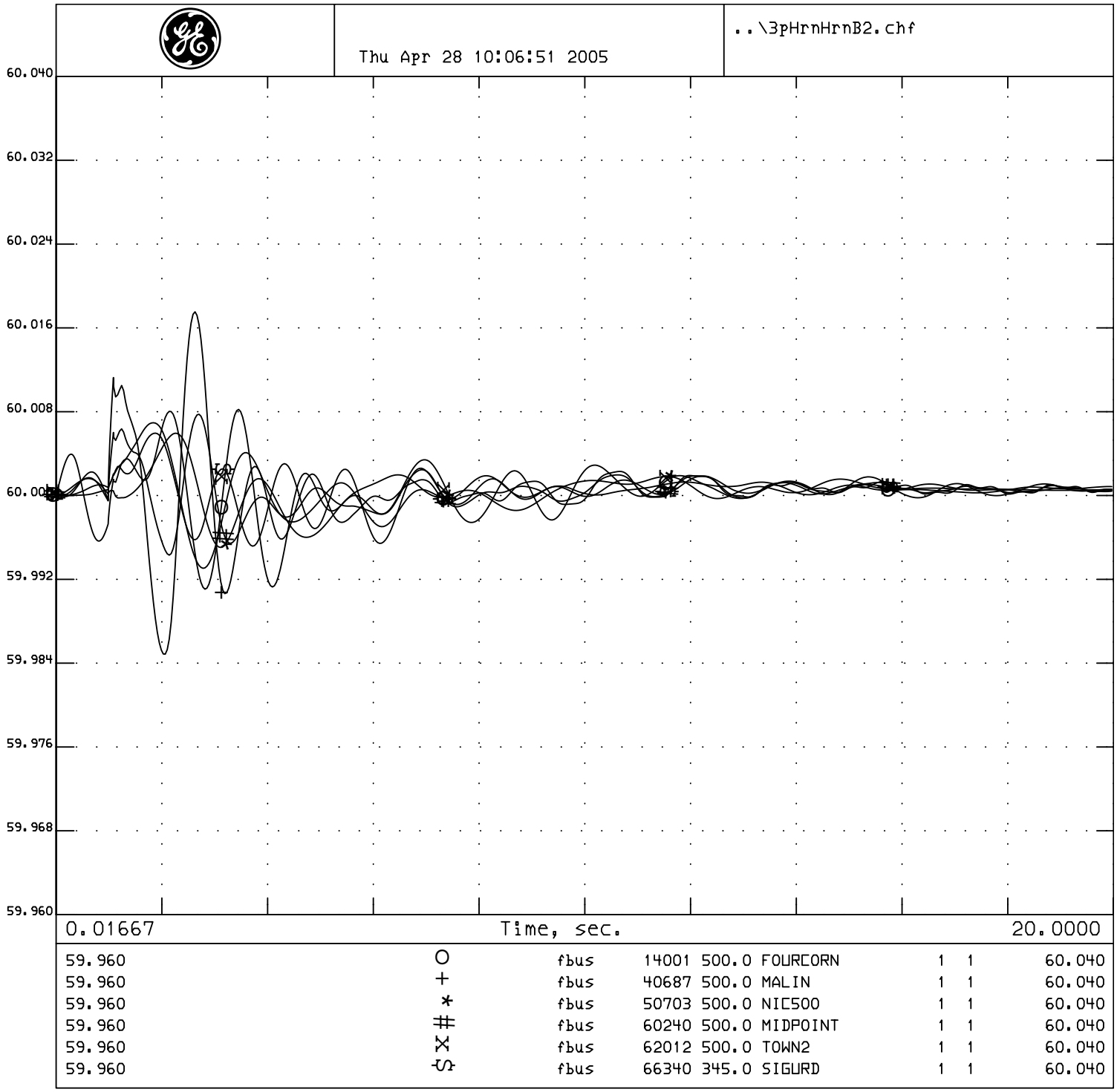


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

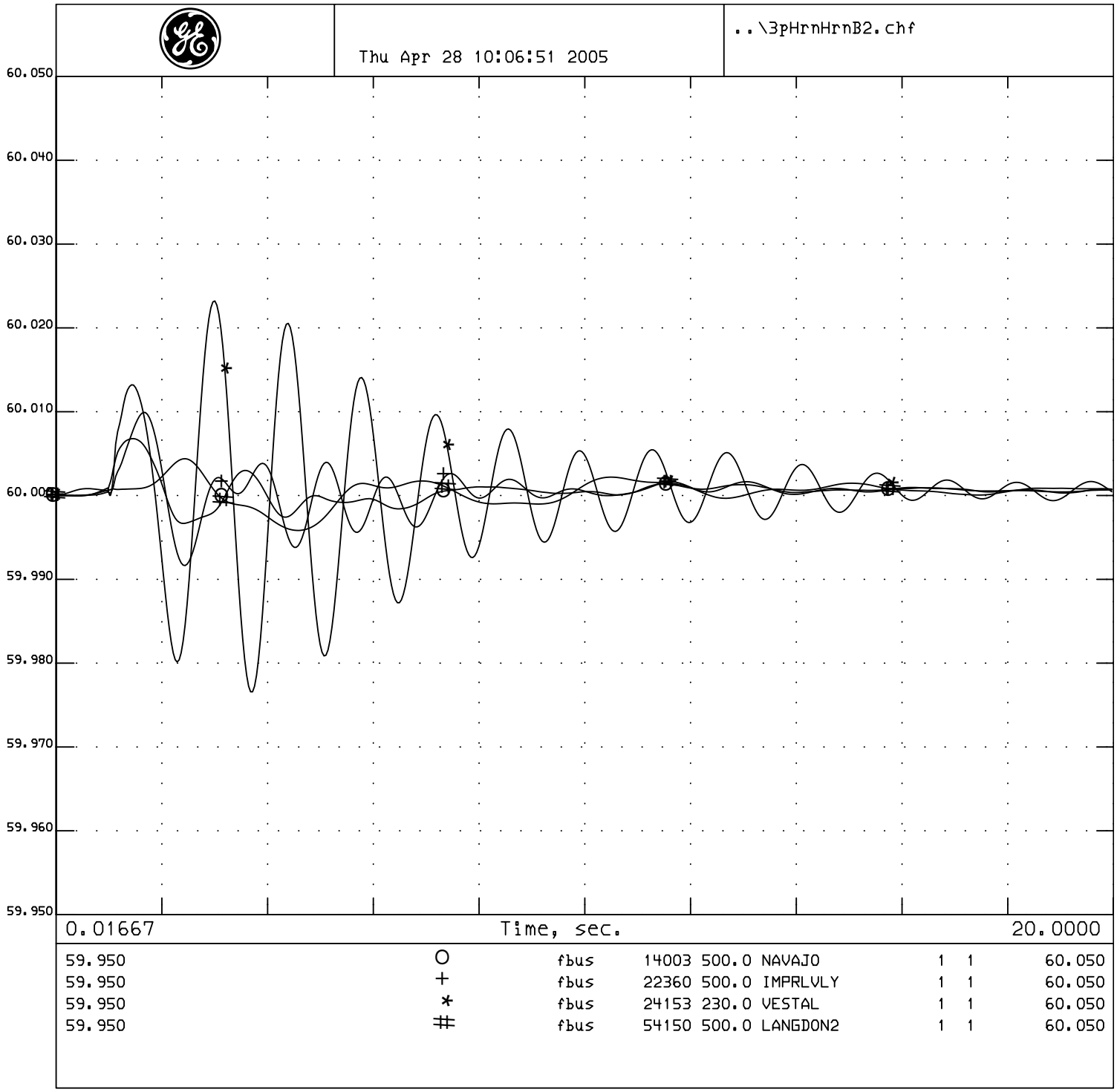


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots

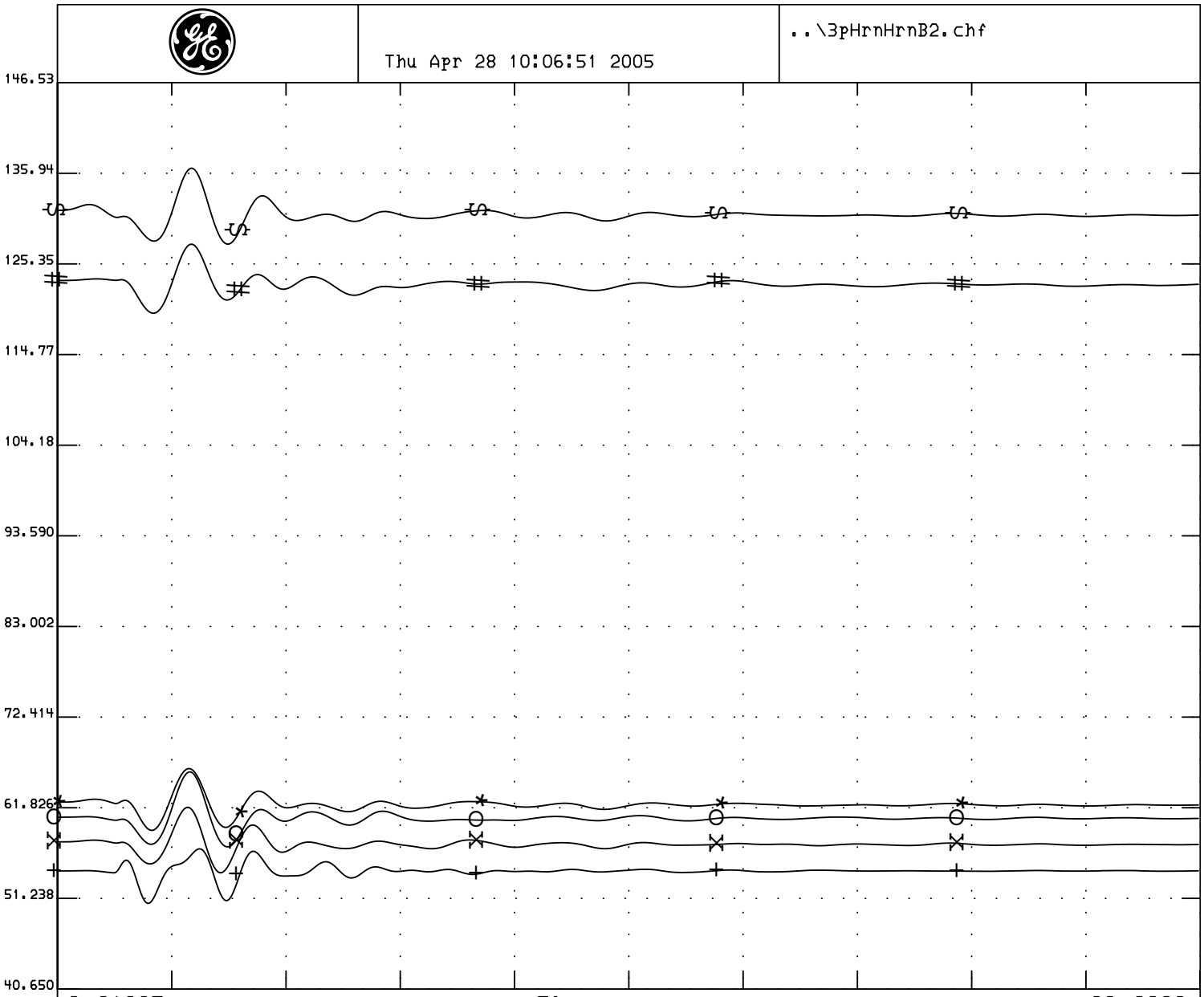


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



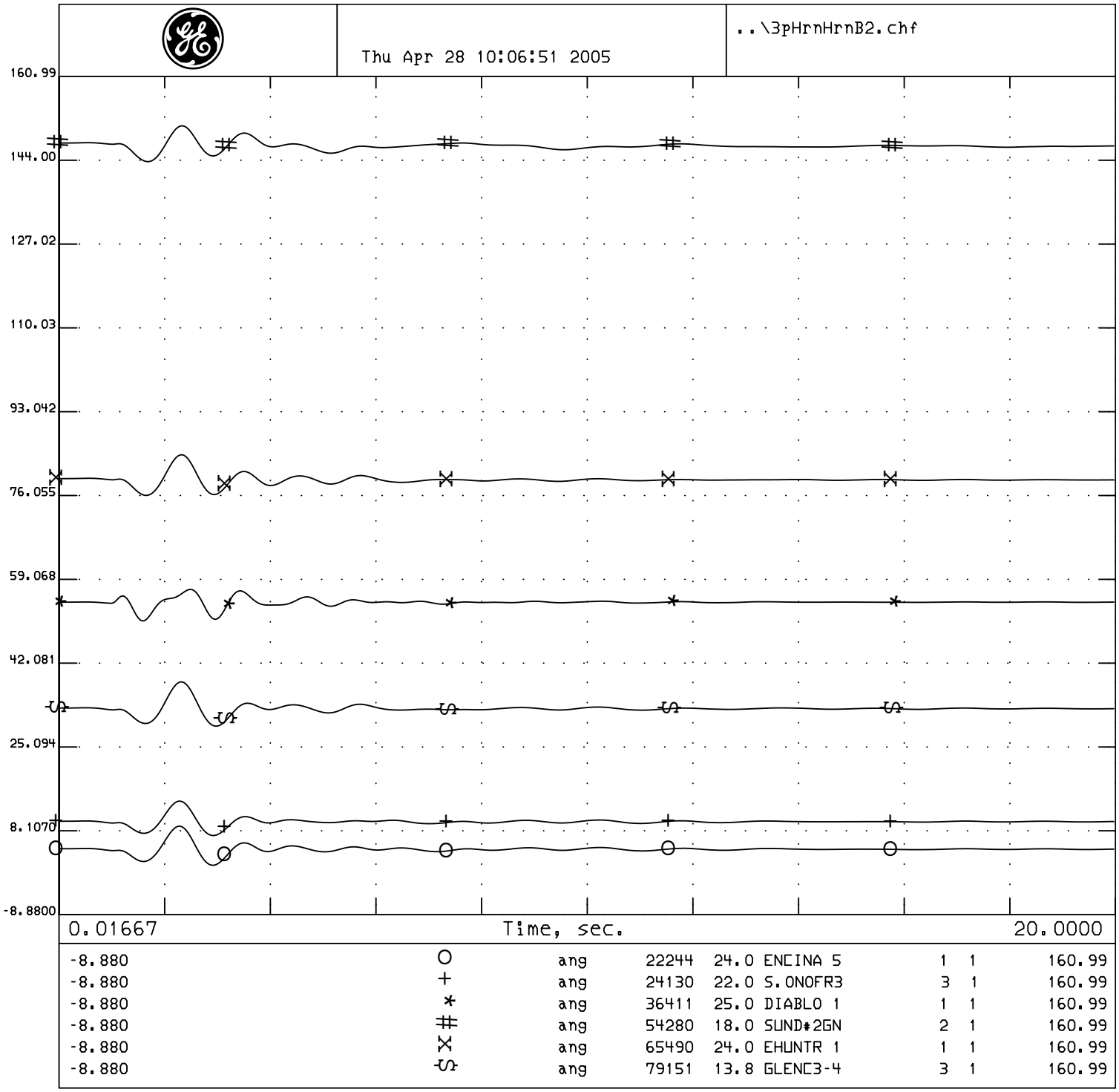
40.650	O	ang	14914	22.0	FCNGN4CC	H	1	146.53
40.650	+	ang	36411	25.0	DIABLO 1	1	1	146.53
40.650	*	ang	41701	13.8	JONDAY01	1	1	146.53
40.650	#	ang	50500	13.8	GMS G6	1	1	146.53
40.650	X	ang	60100	13.8	BRWNL 5	1	1	146.53
40.650	S	ang	62048	26.0	COLSTP 3	1	1	146.53

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

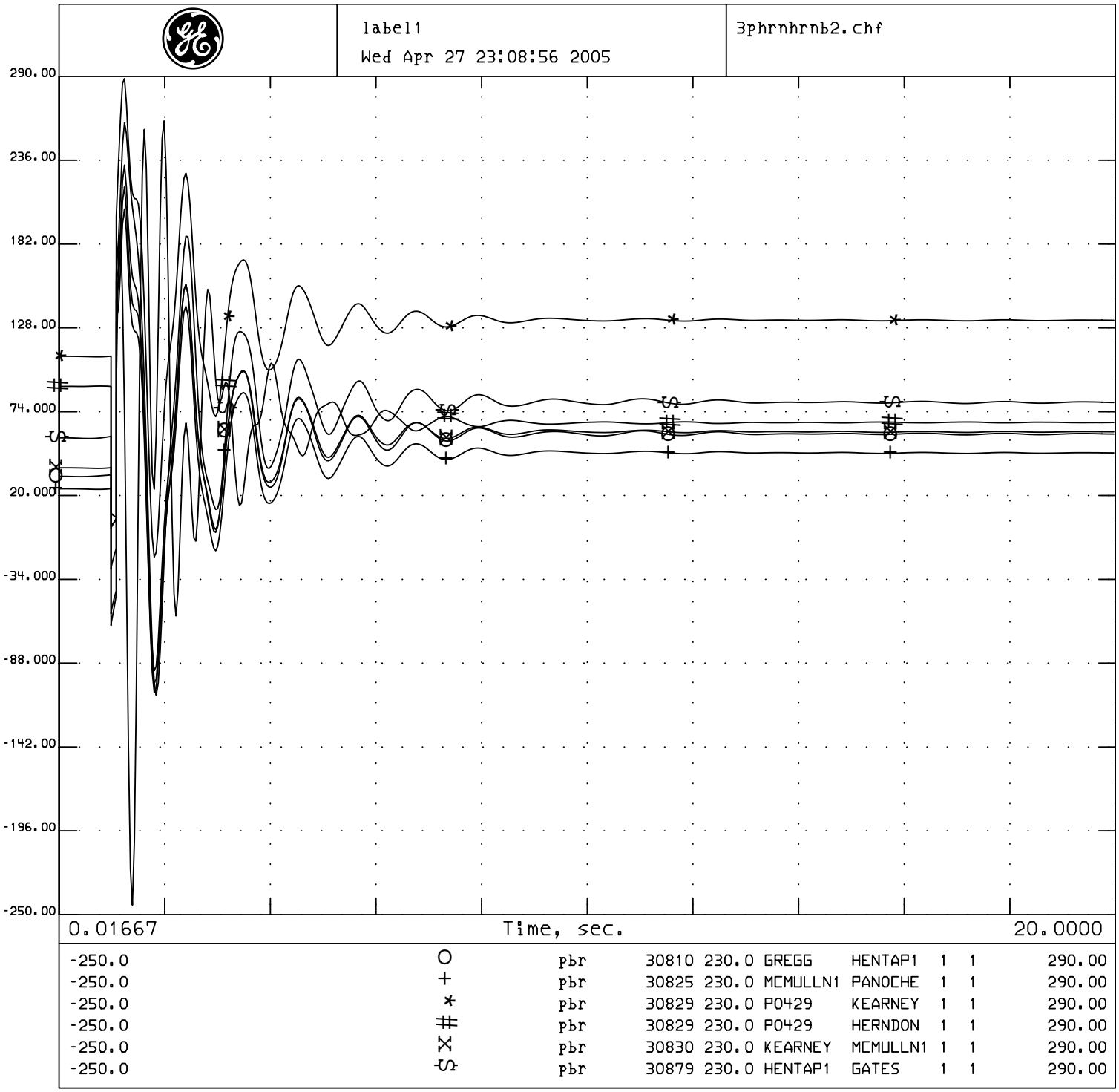


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

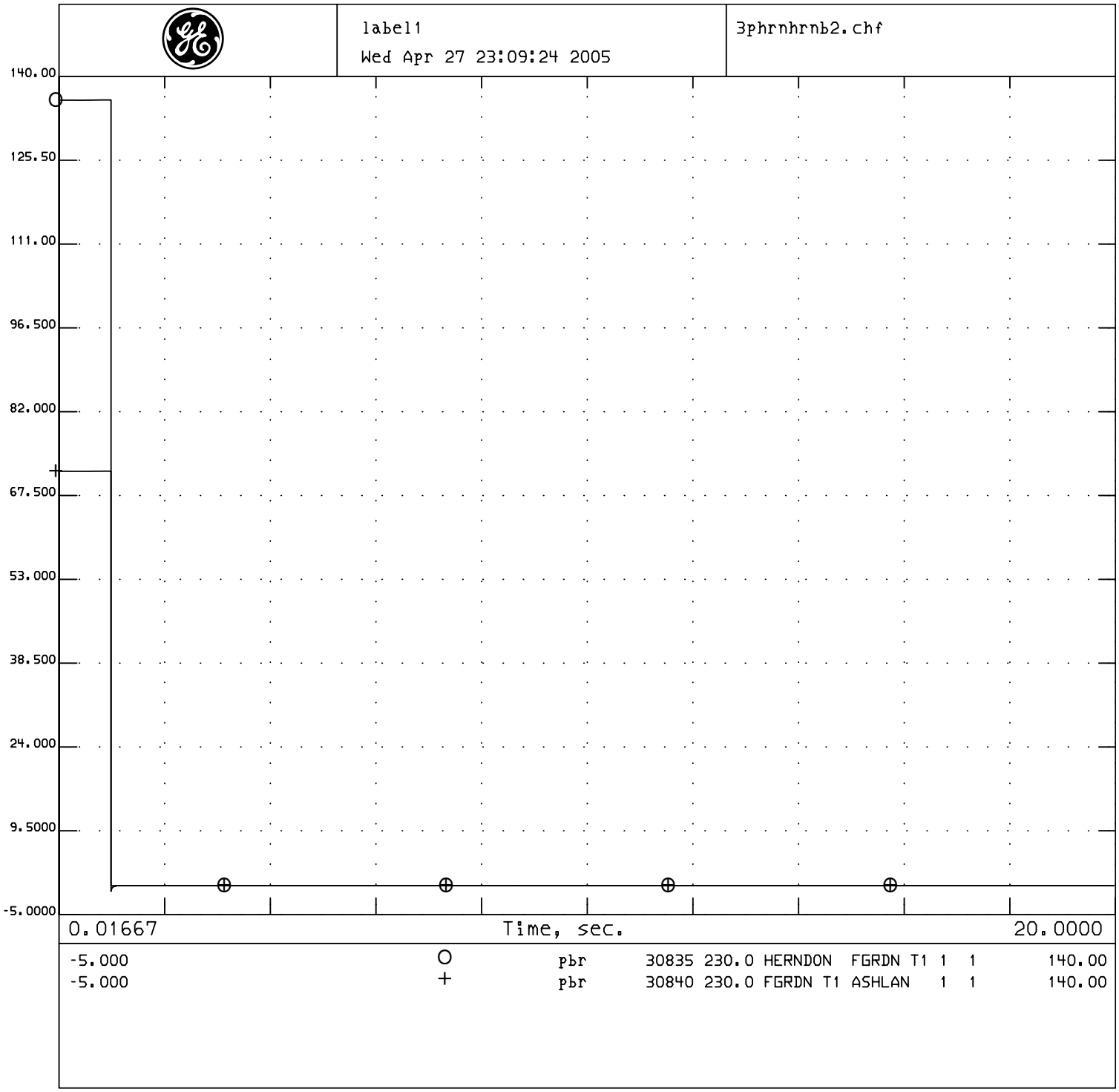


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW

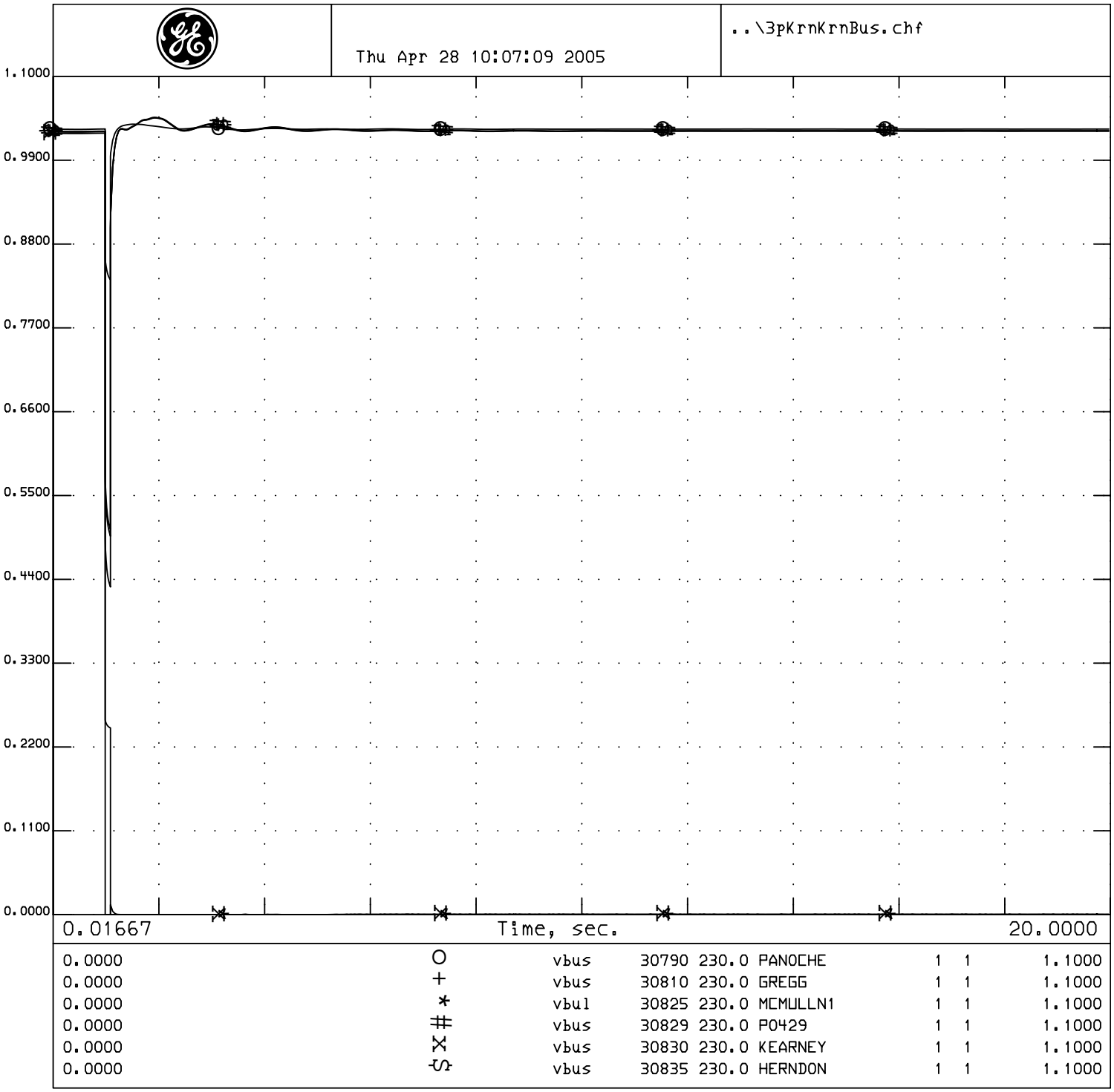


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon 230kV Bus #2 Outage
3 phase 6 cycle fault at Herndon 230kV bus and clear bus #2

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW

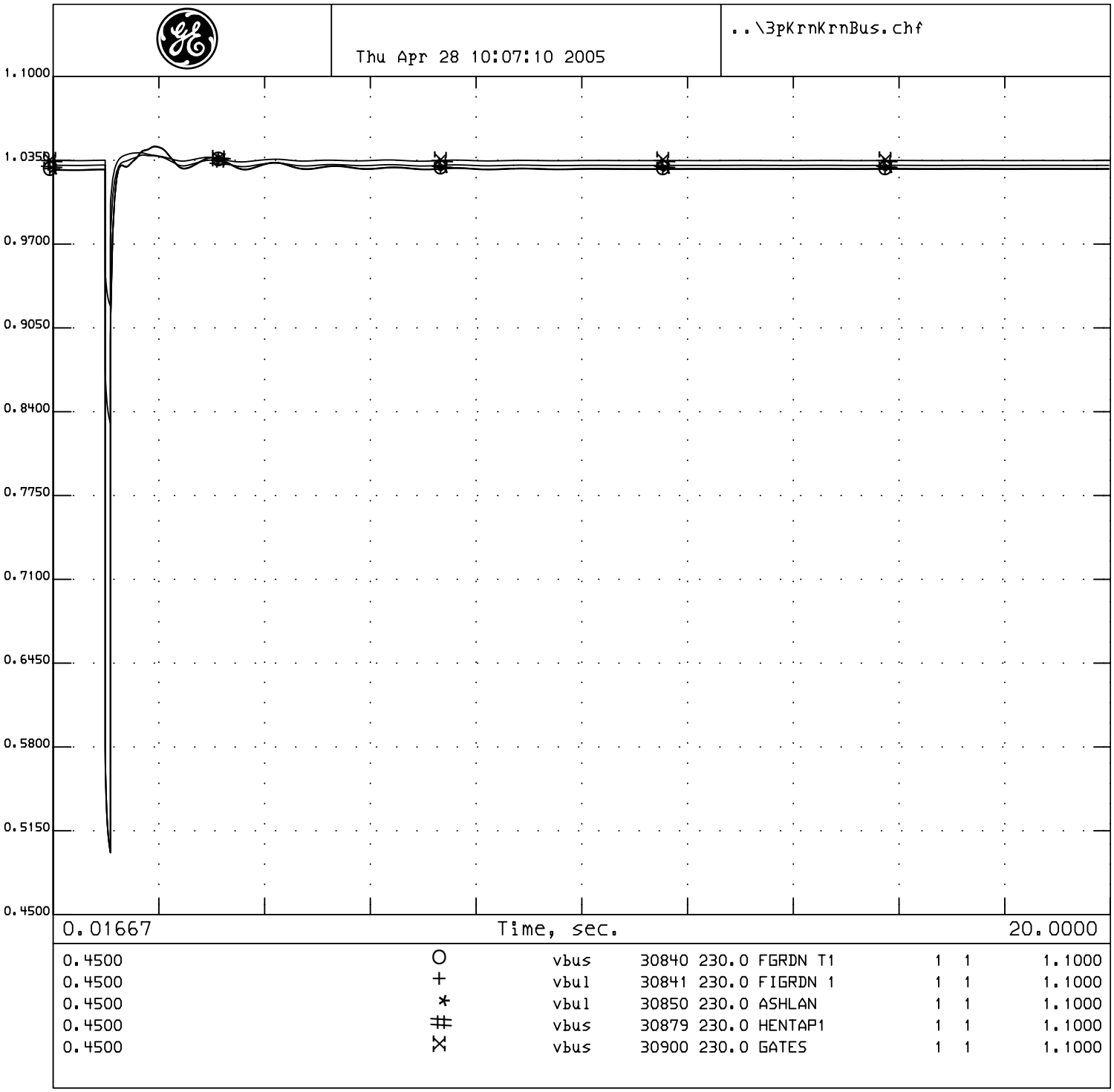


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

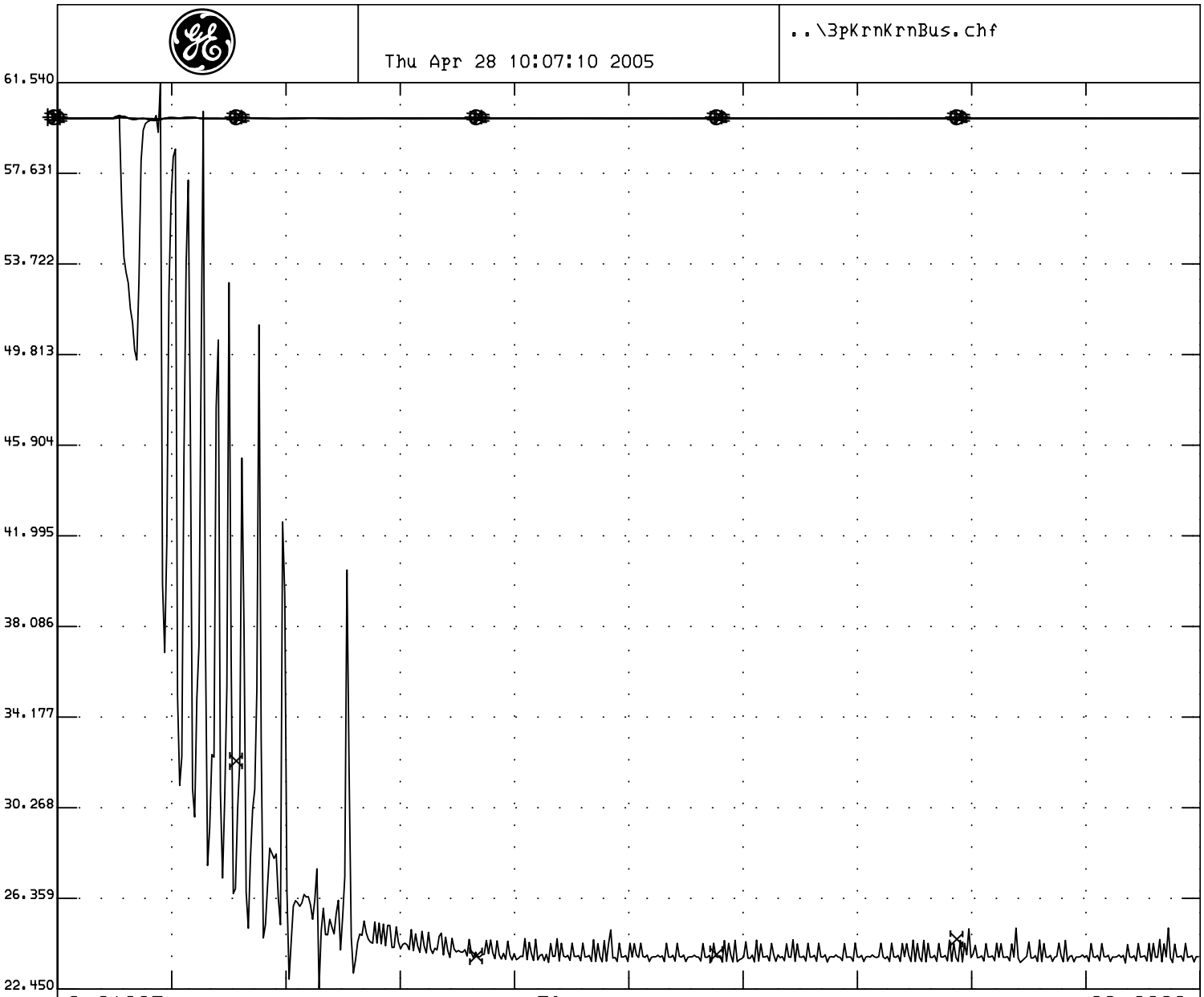


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault



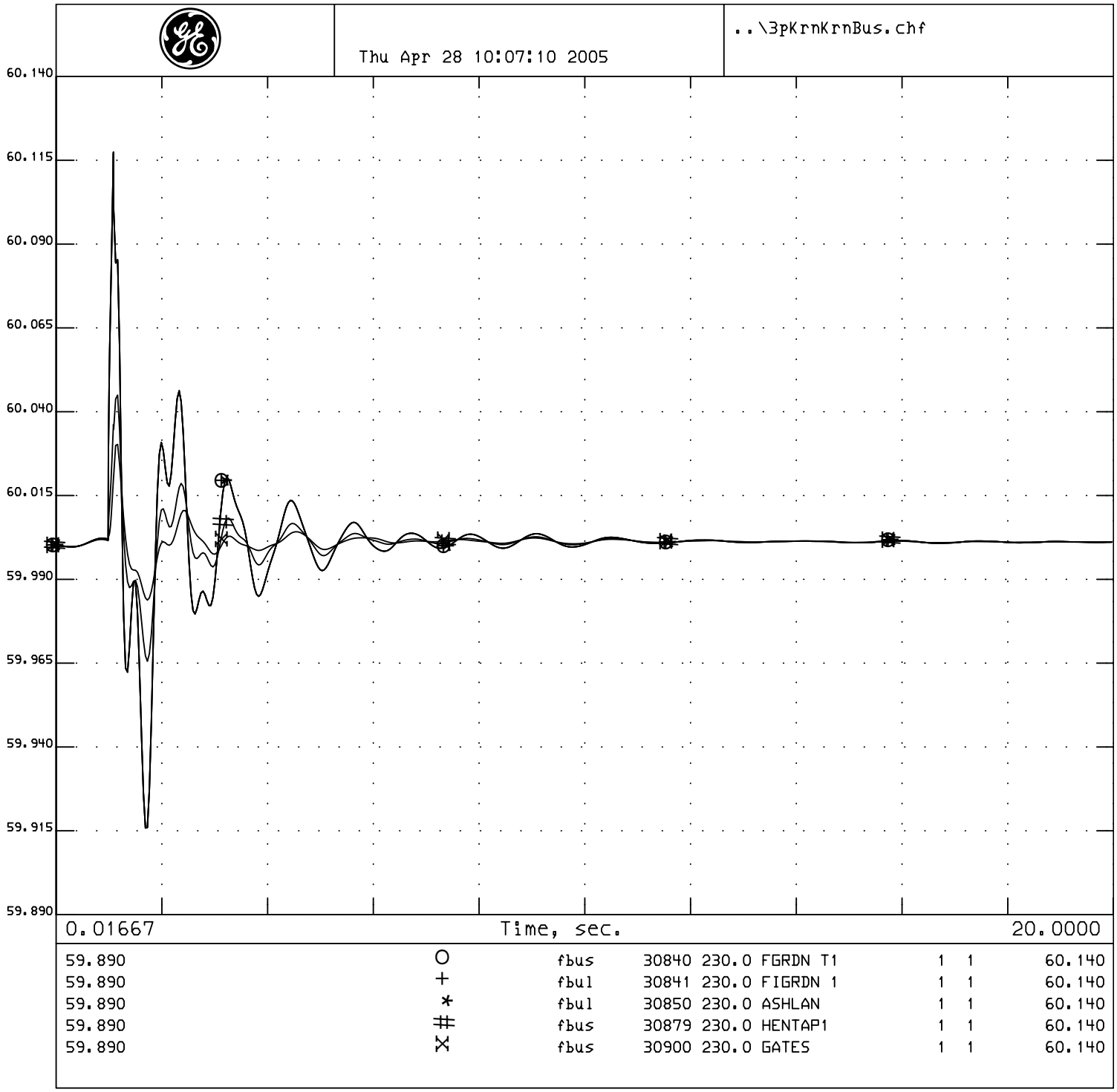
22.450	O	fbus	30790	230.0	PANOCHE	1	1	61.540
22.450	+	fbus	30810	230.0	GREGG	1	1	61.540
22.450	*	fbul	30825	230.0	MCMULLN1	1	1	61.540
22.450	#	fbus	30829	230.0	P0429	1	1	61.540
22.450	X	fbus	30830	230.0	KEARNEY	1	1	61.540
22.450	S	fbus	30835	230.0	HERNDON	1	1	61.540

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

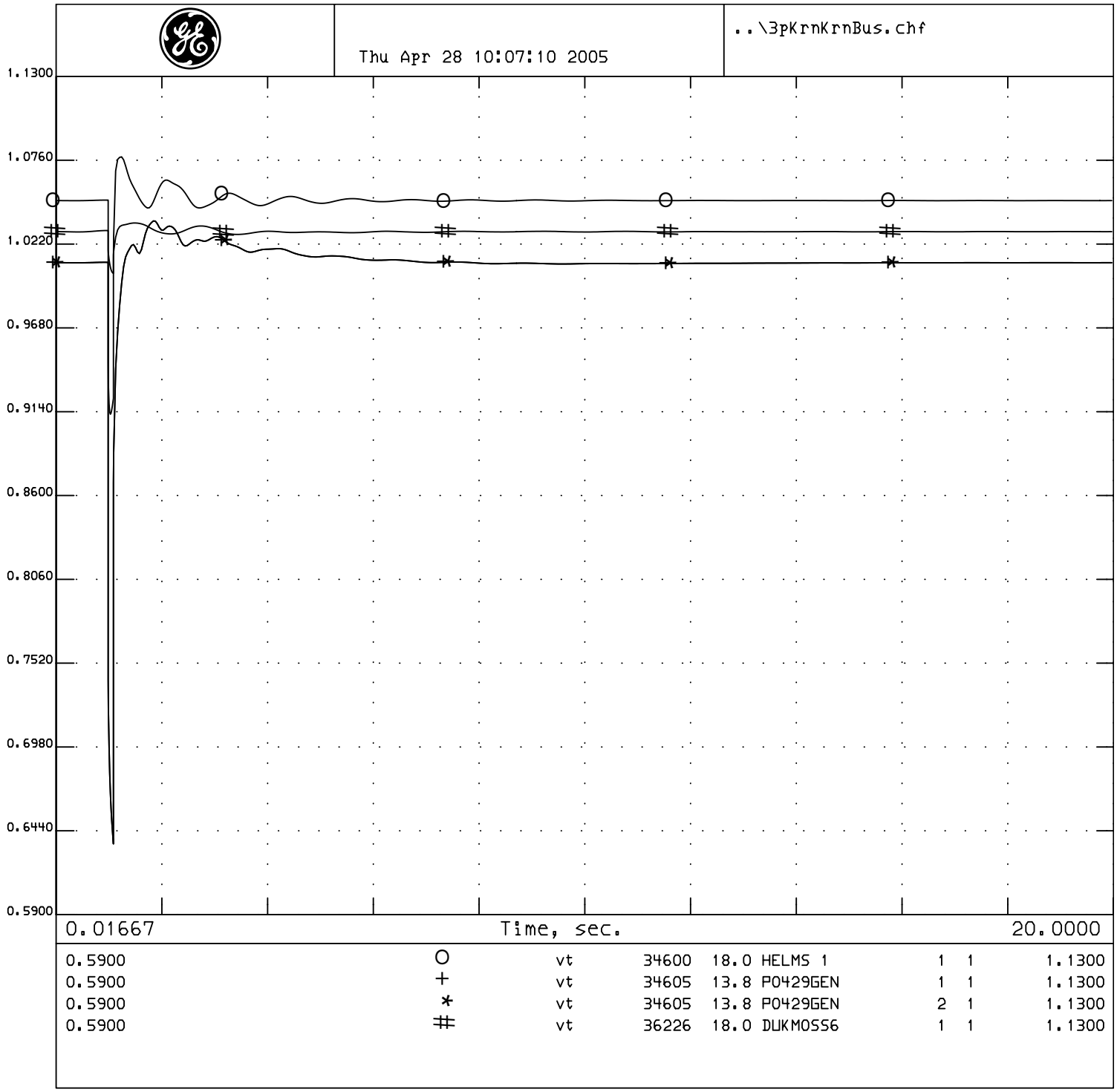


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

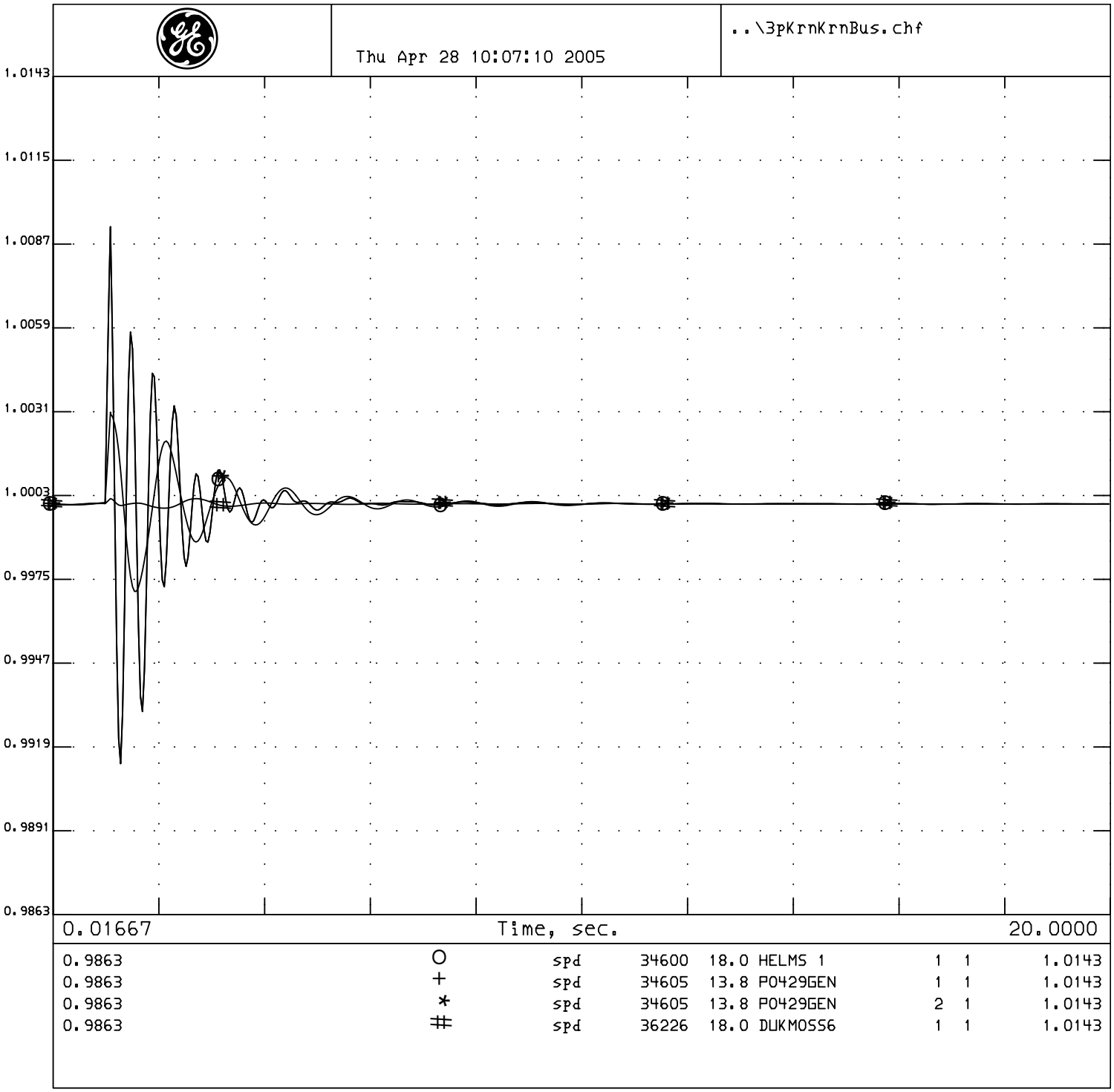


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

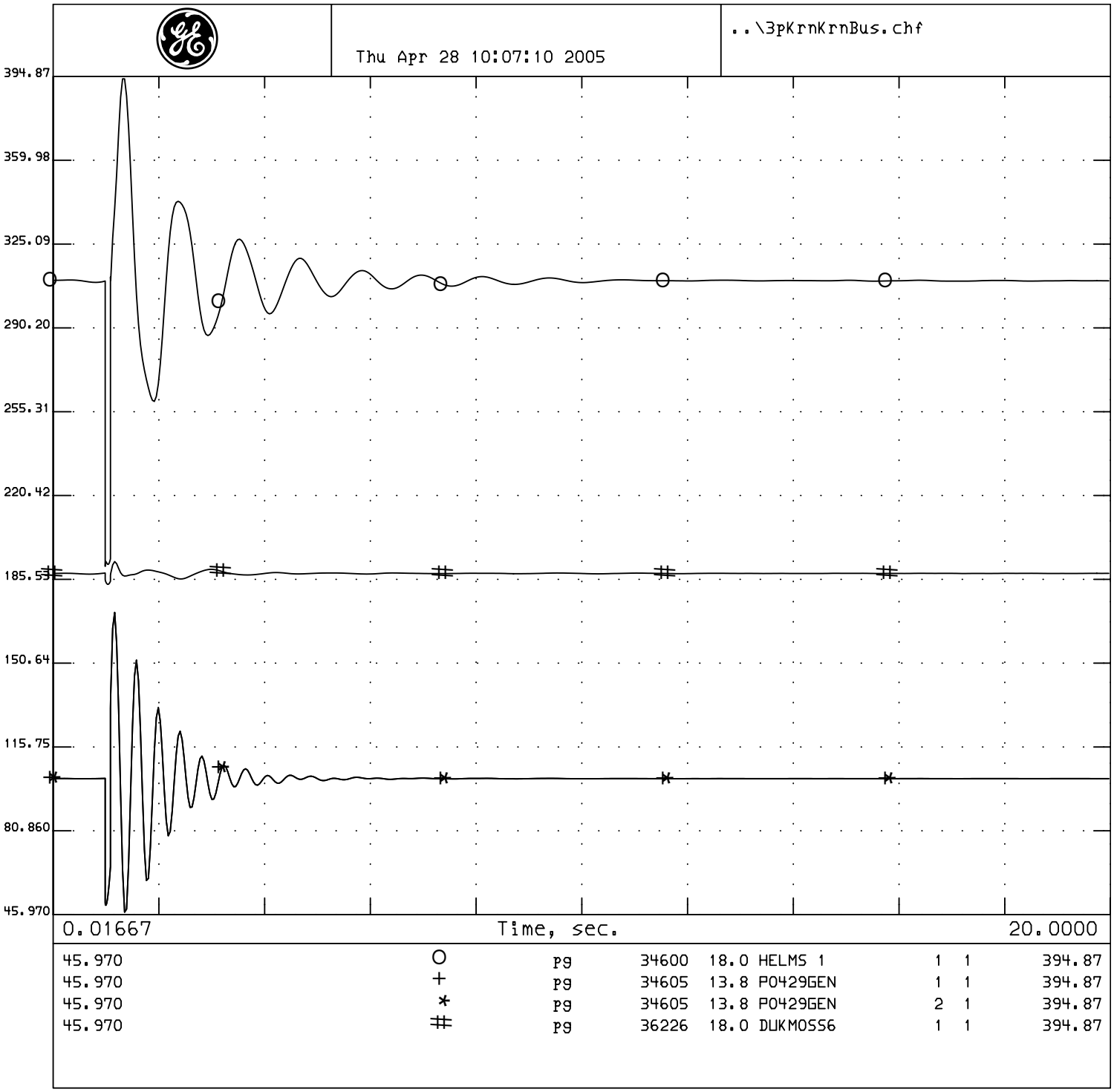


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed

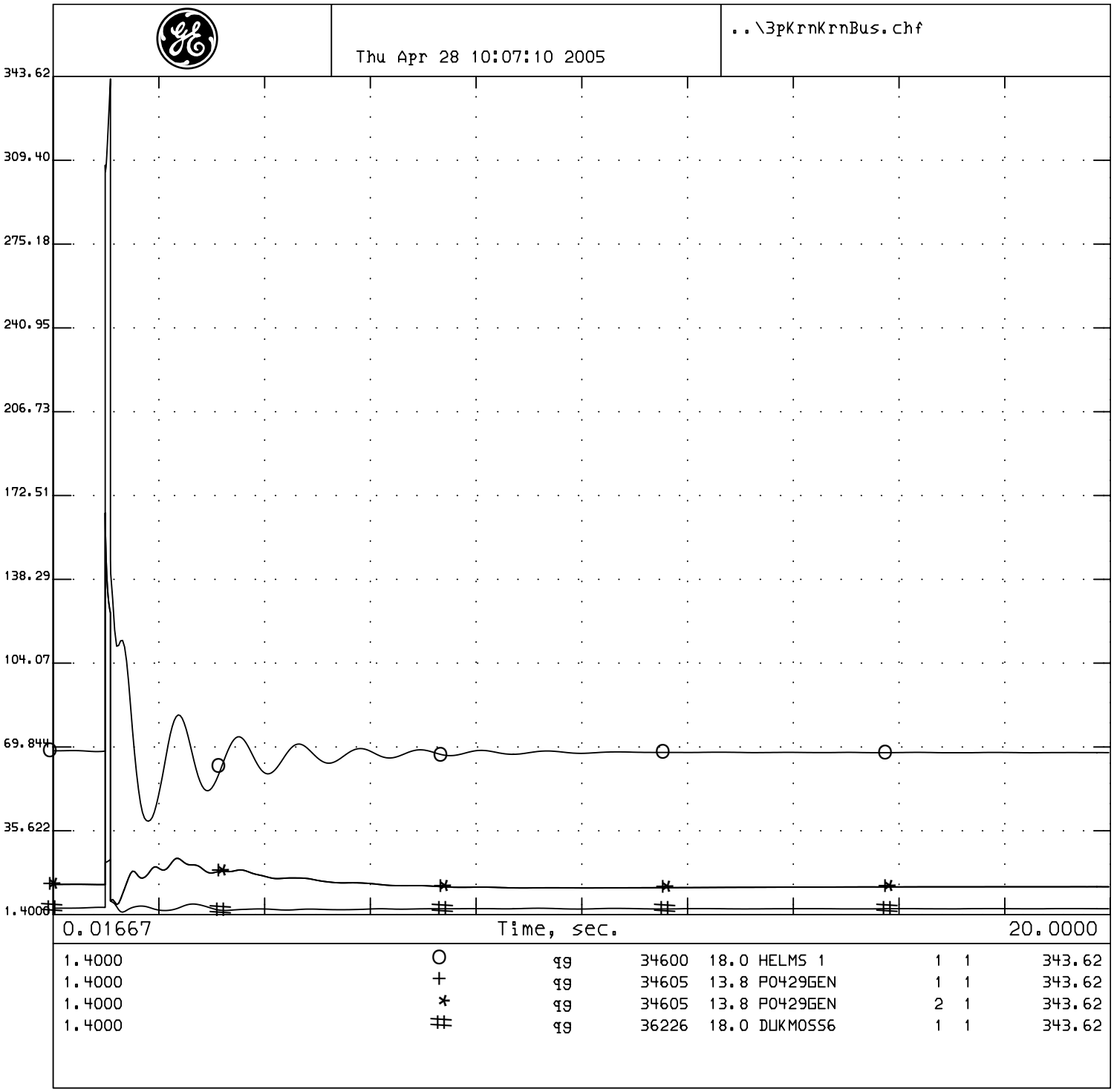


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power

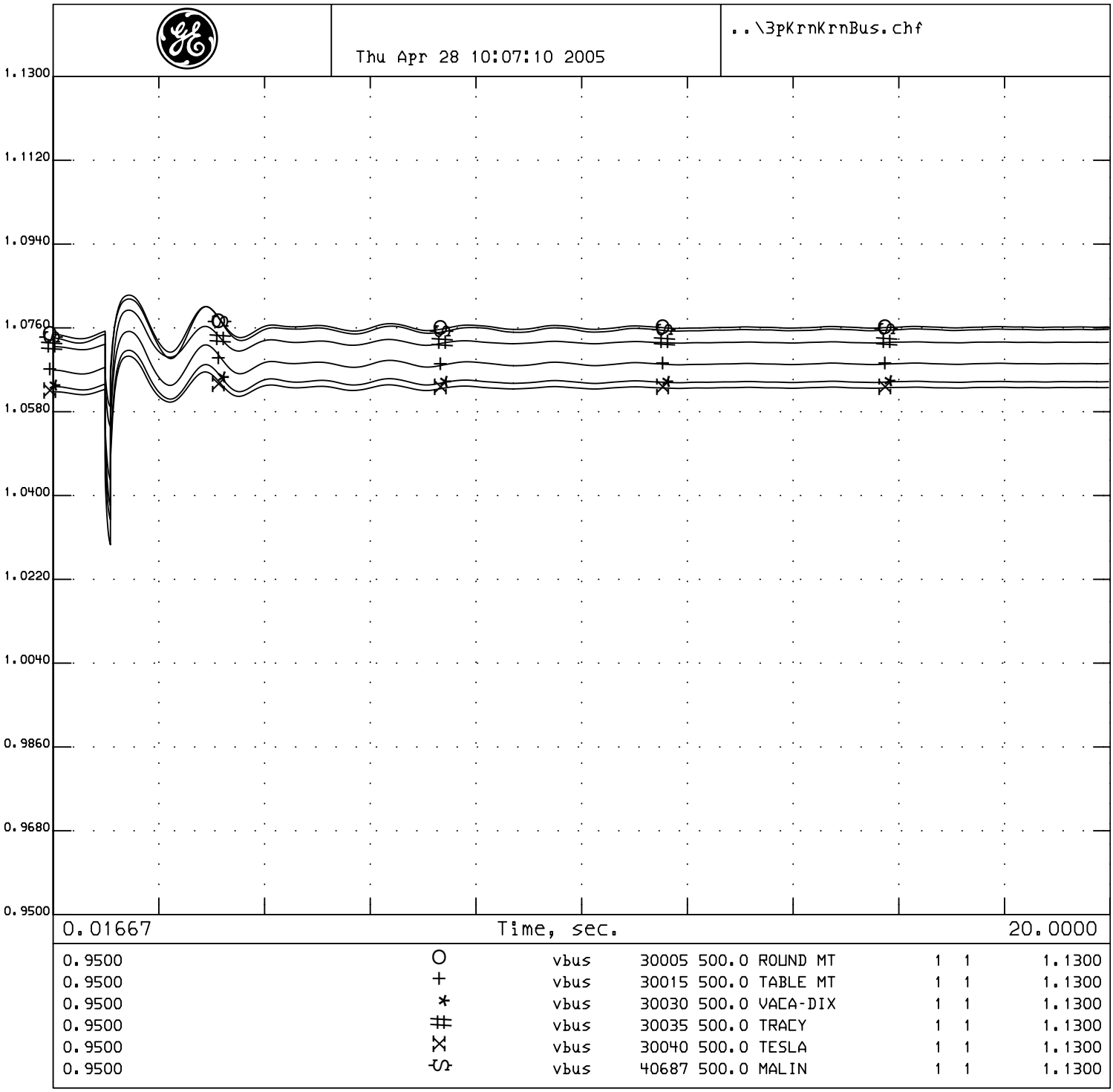


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power

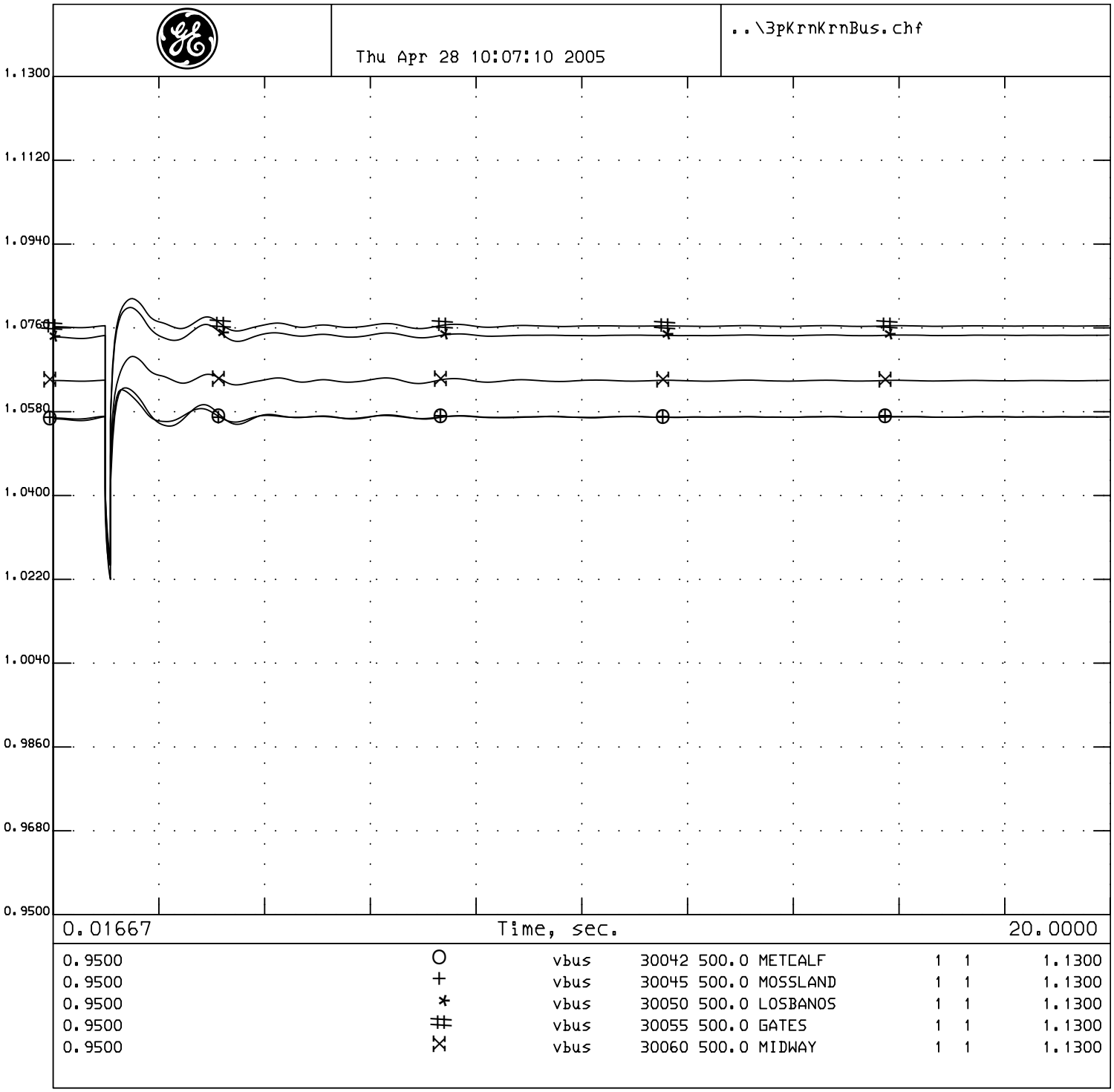


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

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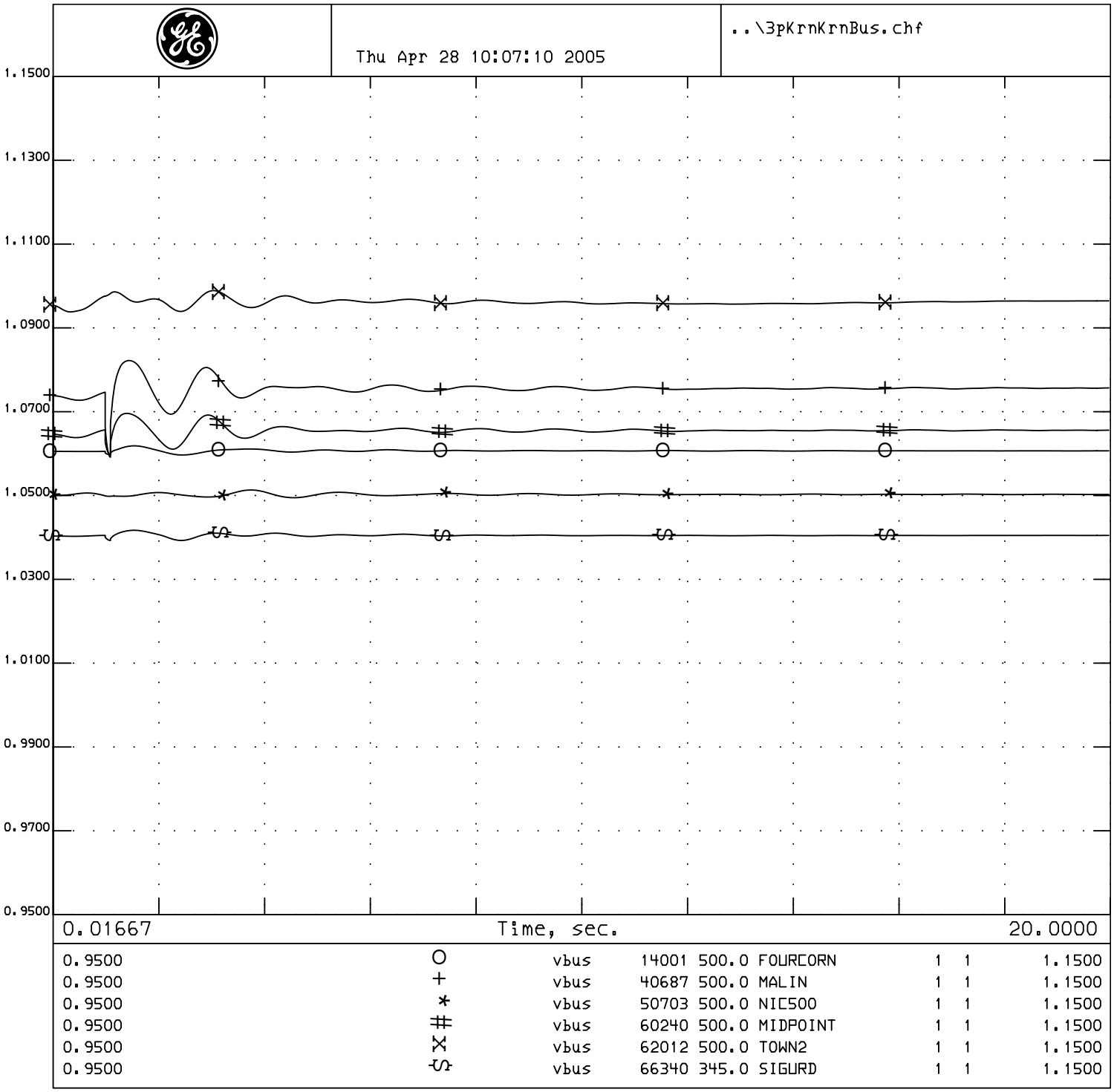

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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P0429 Project System Impact Study

Generator Interconnection Study

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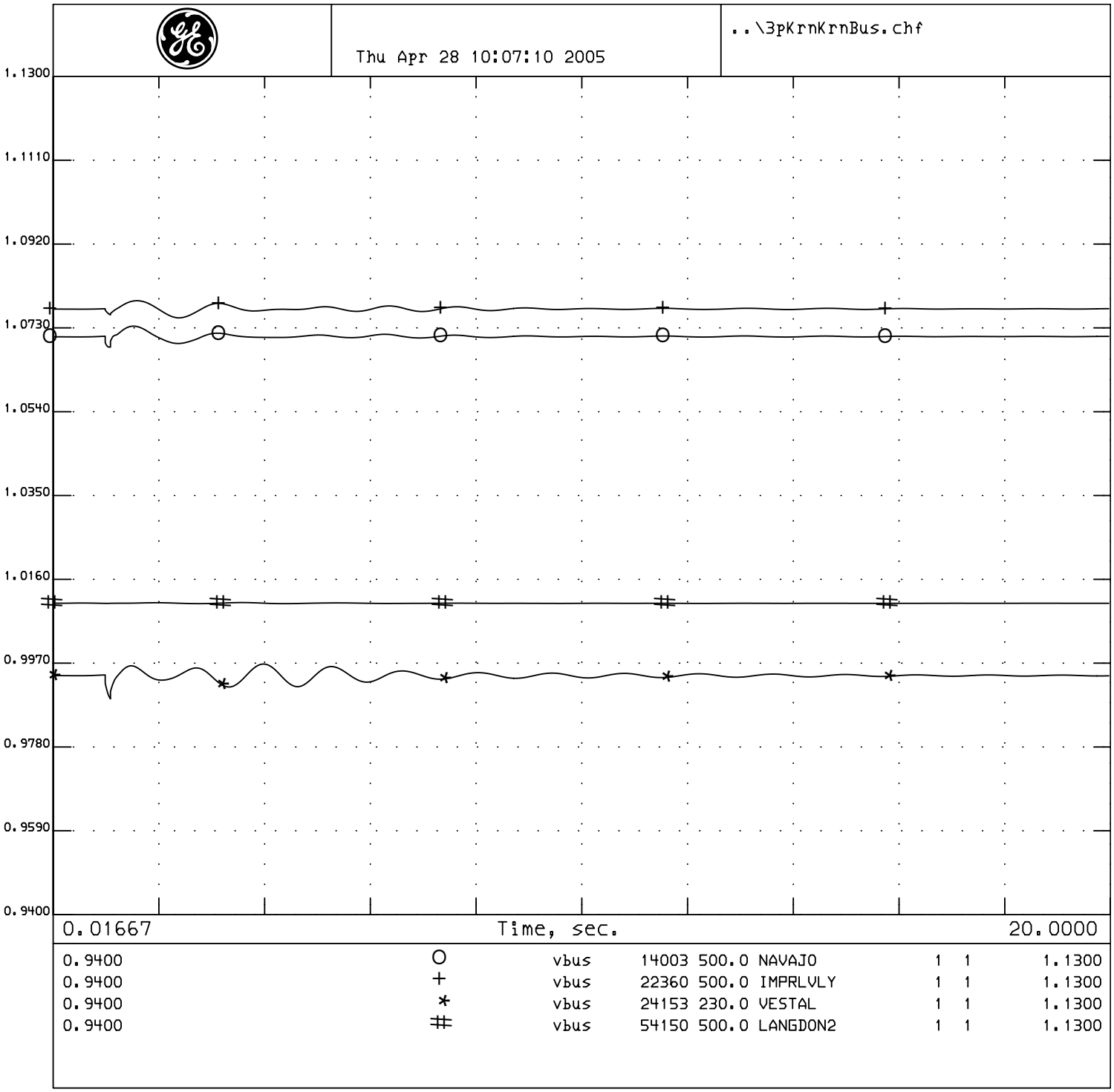

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P0429 @ 205.2MW
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P0429 Project System Impact Study

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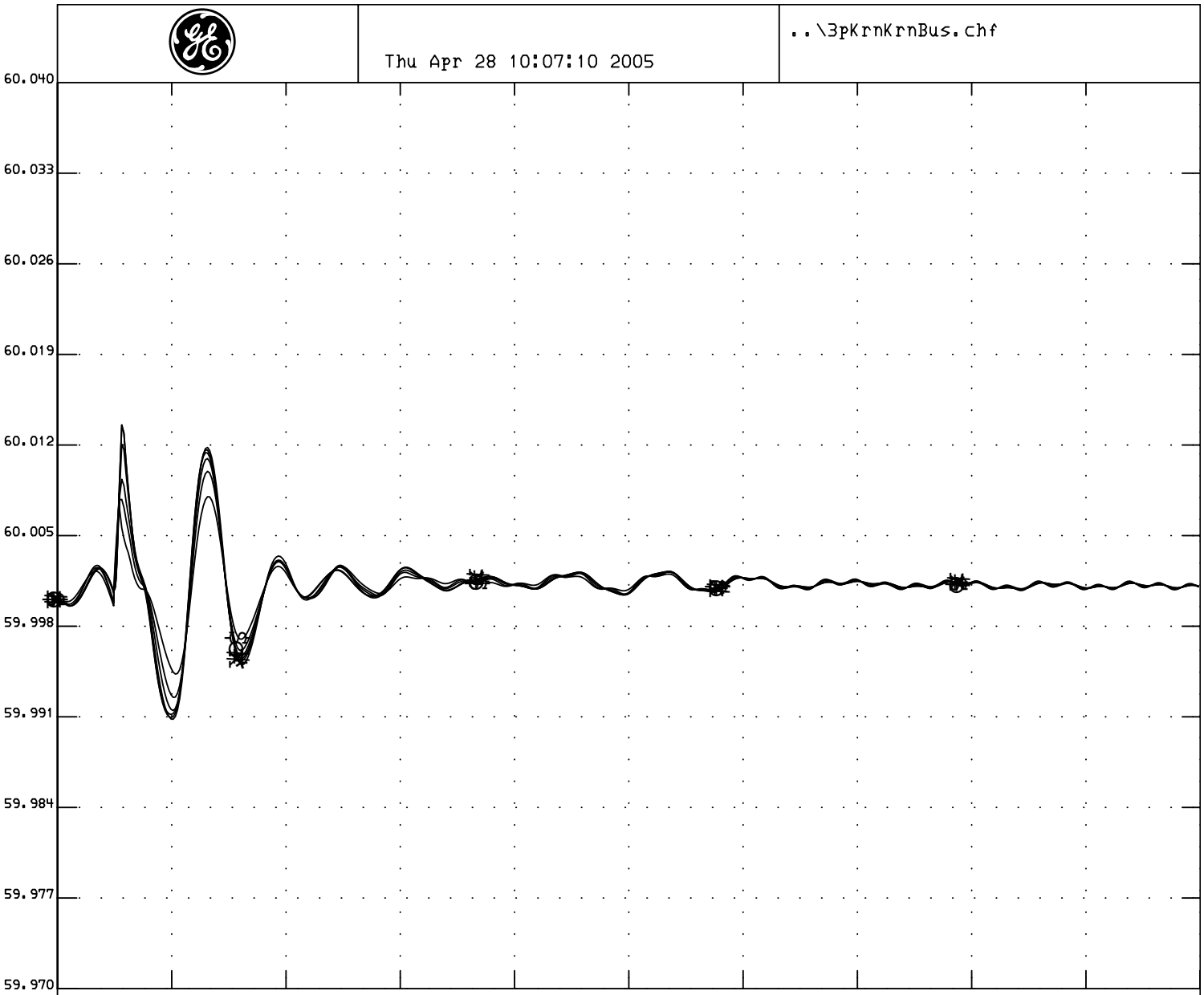


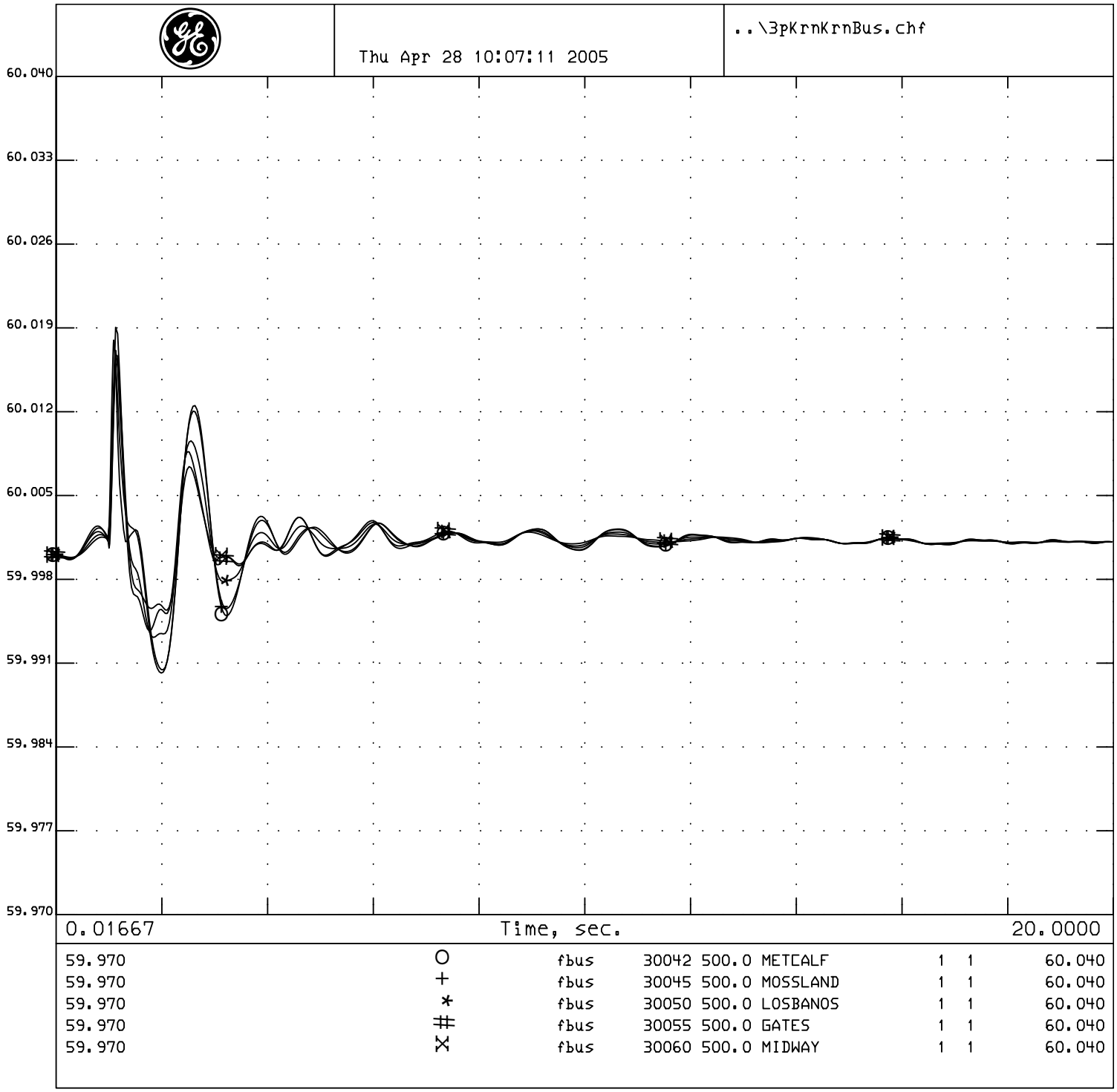
59.970	O	fbus	30005	500.0	ROUND MT	1	1	60.040
59.970	+	fbus	30015	500.0	TABLE MT	1	1	60.040
59.970	*	fbus	30030	500.0	VACA-DIX	1	1	60.040
59.970	#	fbus	30035	500.0	TRACY	1	1	60.040
59.970	X	fbus	30040	500.0	TESLA	1	1	60.040
59.970	S	fbus	40687	500.0	MALIN	1	1	60.040

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



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2008 Summer Peak Base Case
P0429 @ 205.2MW
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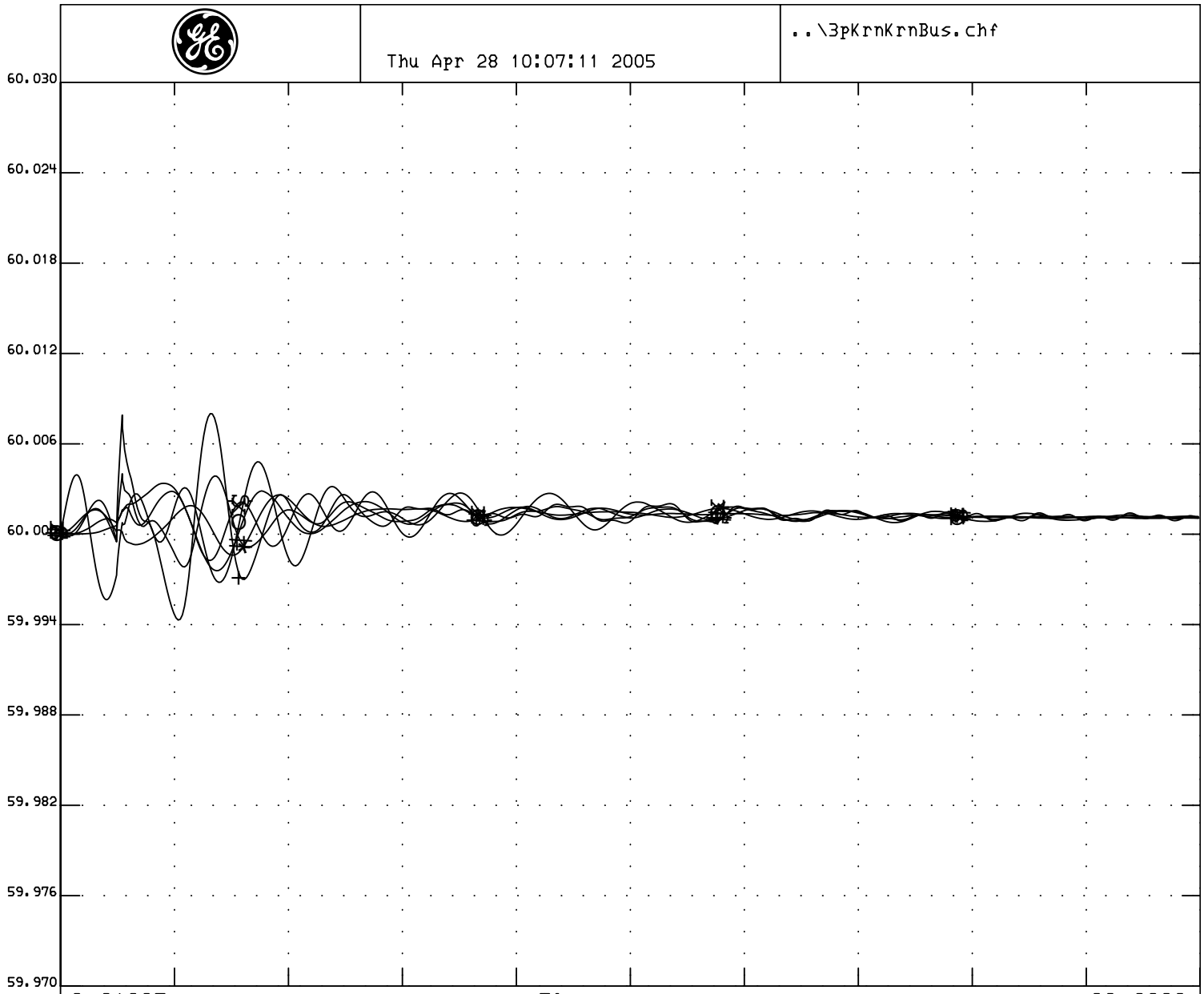
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



59.970	O	fbus	14001	500.0	FOURCORN	1	1	60.030
59.970	+	fbus	40687	500.0	MALIN	1	1	60.030
59.970	*	fbus	50703	500.0	NIC500	1	1	60.030
59.970	#	fbus	60240	500.0	MIDPOINT	1	1	60.030
59.970	X	fbus	62012	500.0	TOWN2	1	1	60.030
59.970	S	fbus	66340	345.0	SIGURD	1	1	60.030

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2008 Summer Peak Base Case
P0429 @ 205.2MW
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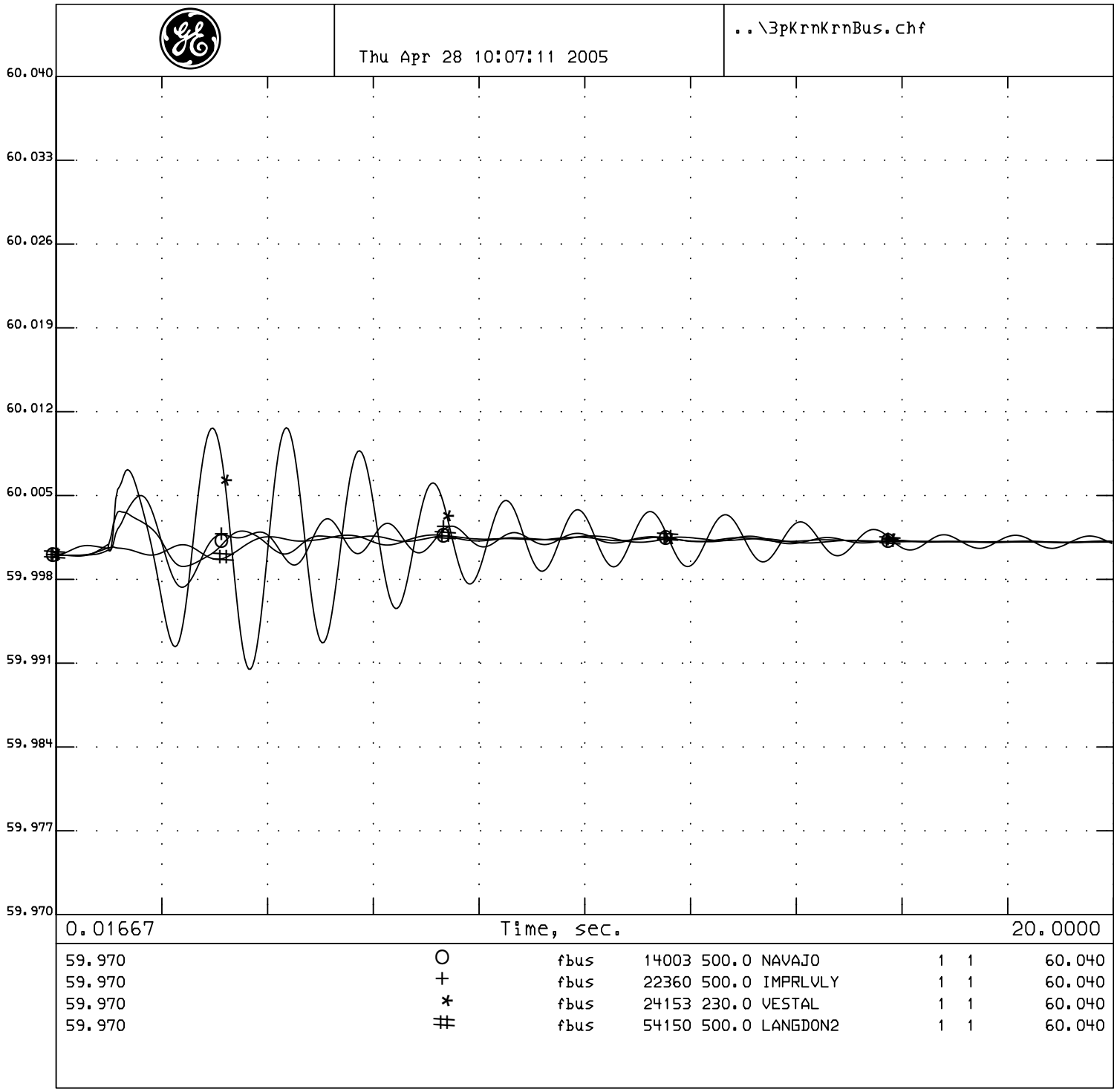
Generator Interconnection Study

Selected WECC Bus Frequency Plots



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2008 Summer Peak Base Case
P0429 @ 205.2MW
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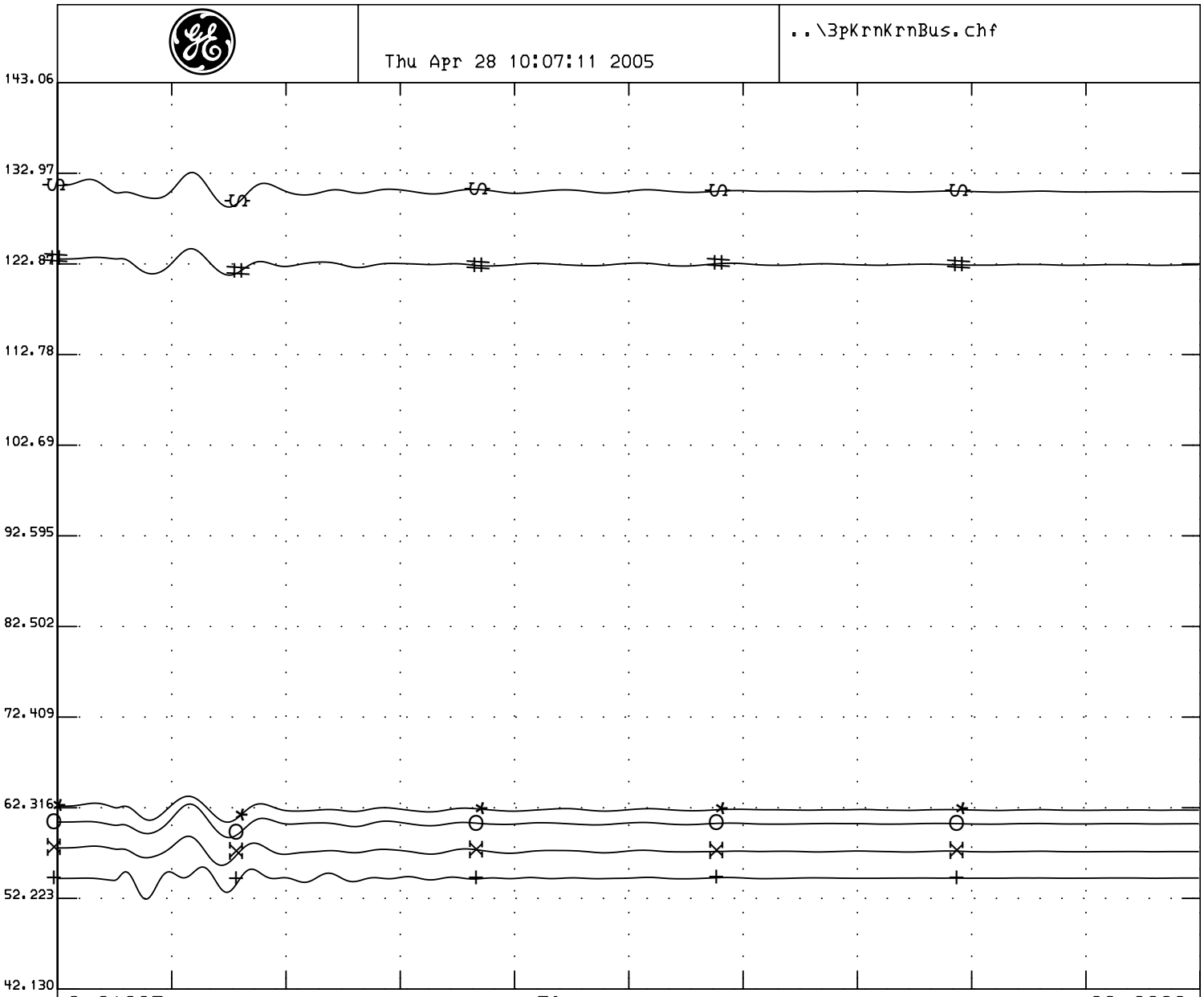
Generator Interconnection Study

Selected WECC Bus Frequency Plots



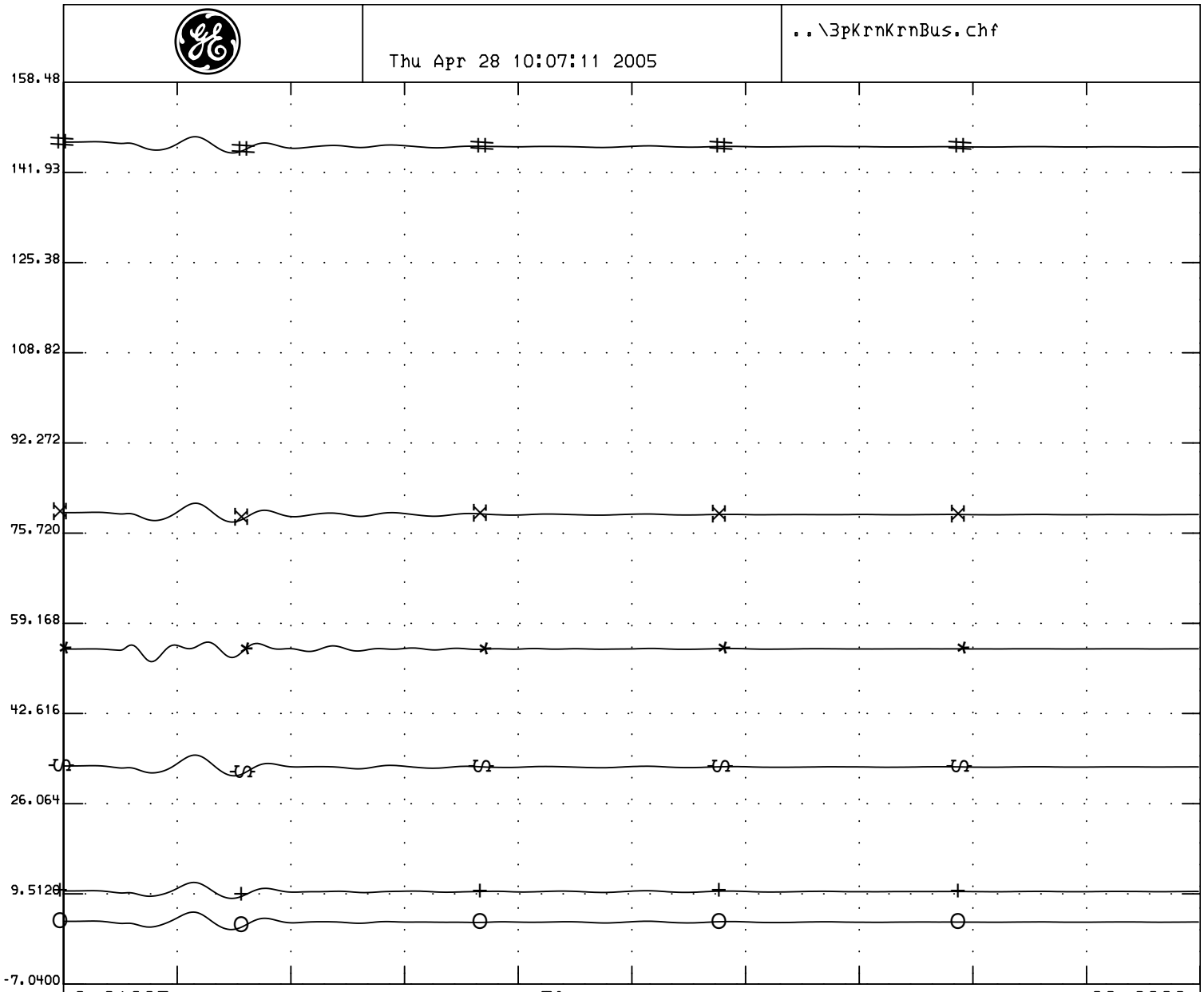
42.130	O	ang	14914	22.0	FCNGN4CC	H	1	143.06
42.130	+	ang	36411	25.0	DIABLO 1	1	1	143.06
42.130	*	ang	41701	13.8	JONDAY01	1	1	143.06
42.130	#	ang	50500	13.8	GMS G6	1	1	143.06
42.130	X	ang	60100	13.8	BRWNL 5	1	1	143.06
42.130	S	ang	62048	26.0	COLSTP 3	1	1	143.06

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle



-7.040	O	ang	22244	24.0	ENCINA 5	1	1	158.48
-7.040	+	ang	24130	22.0	S.ONOFR3	3	1	158.48
-7.040	*	ang	36411	25.0	DIABLO 1	1	1	158.48
-7.040	#	ang	54280	18.0	SUND#2GN	2	1	158.48
-7.040	X	ang	65490	24.0	EHUNTR 1	1	1	158.48
-7.040	S	ang	79151	13.8	GLENC3-4	3	1	158.48

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
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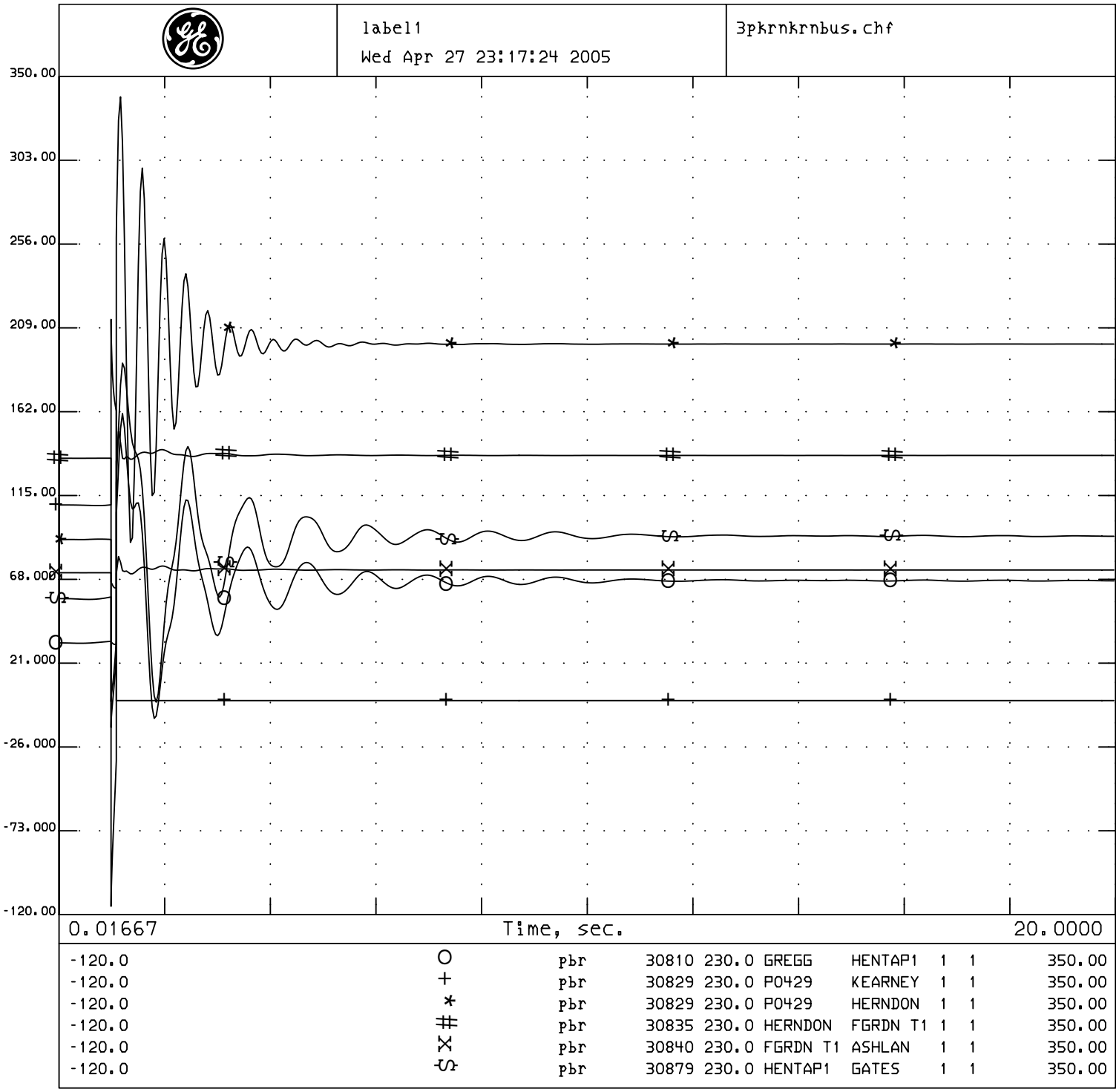
P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

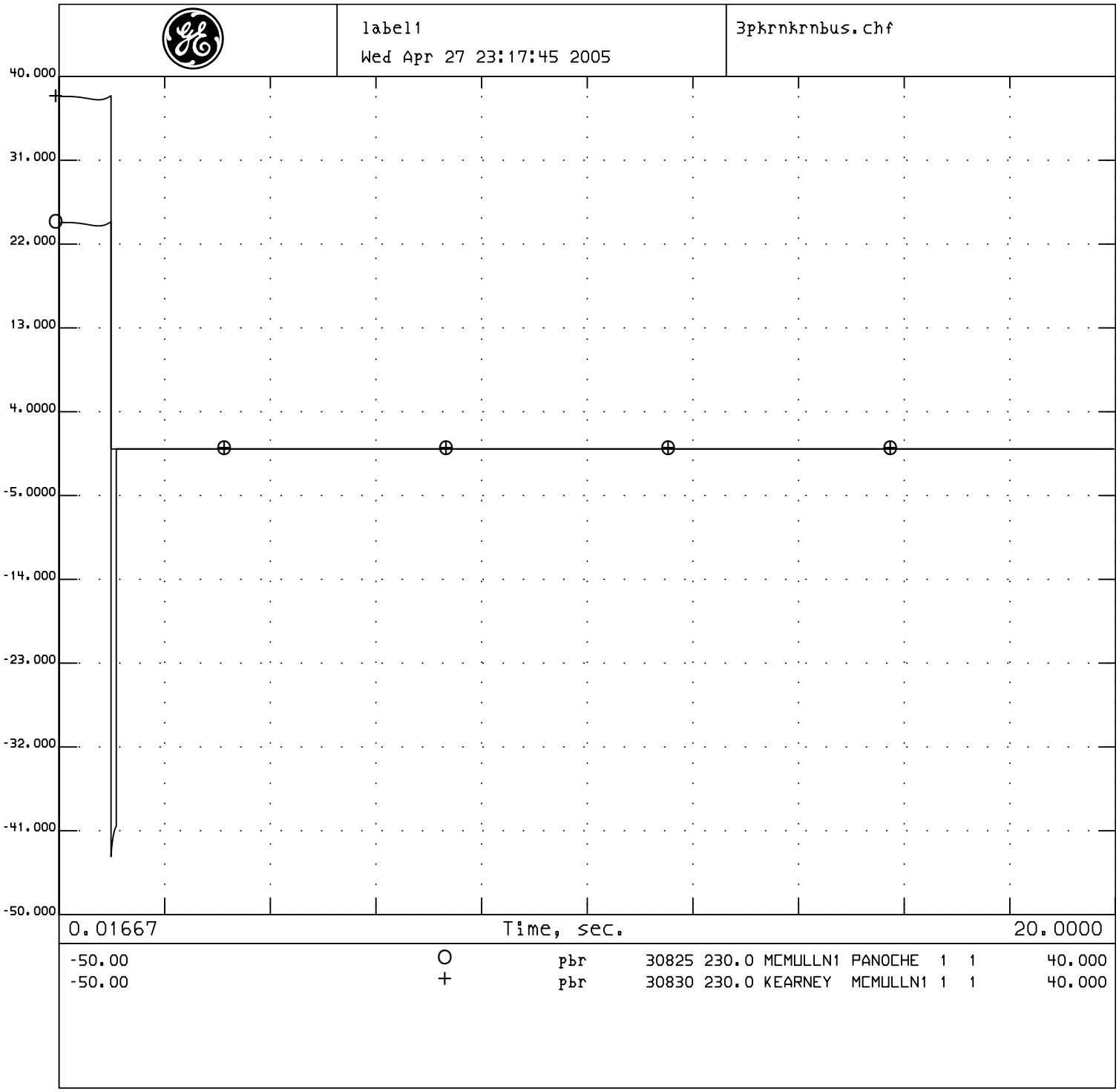


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW

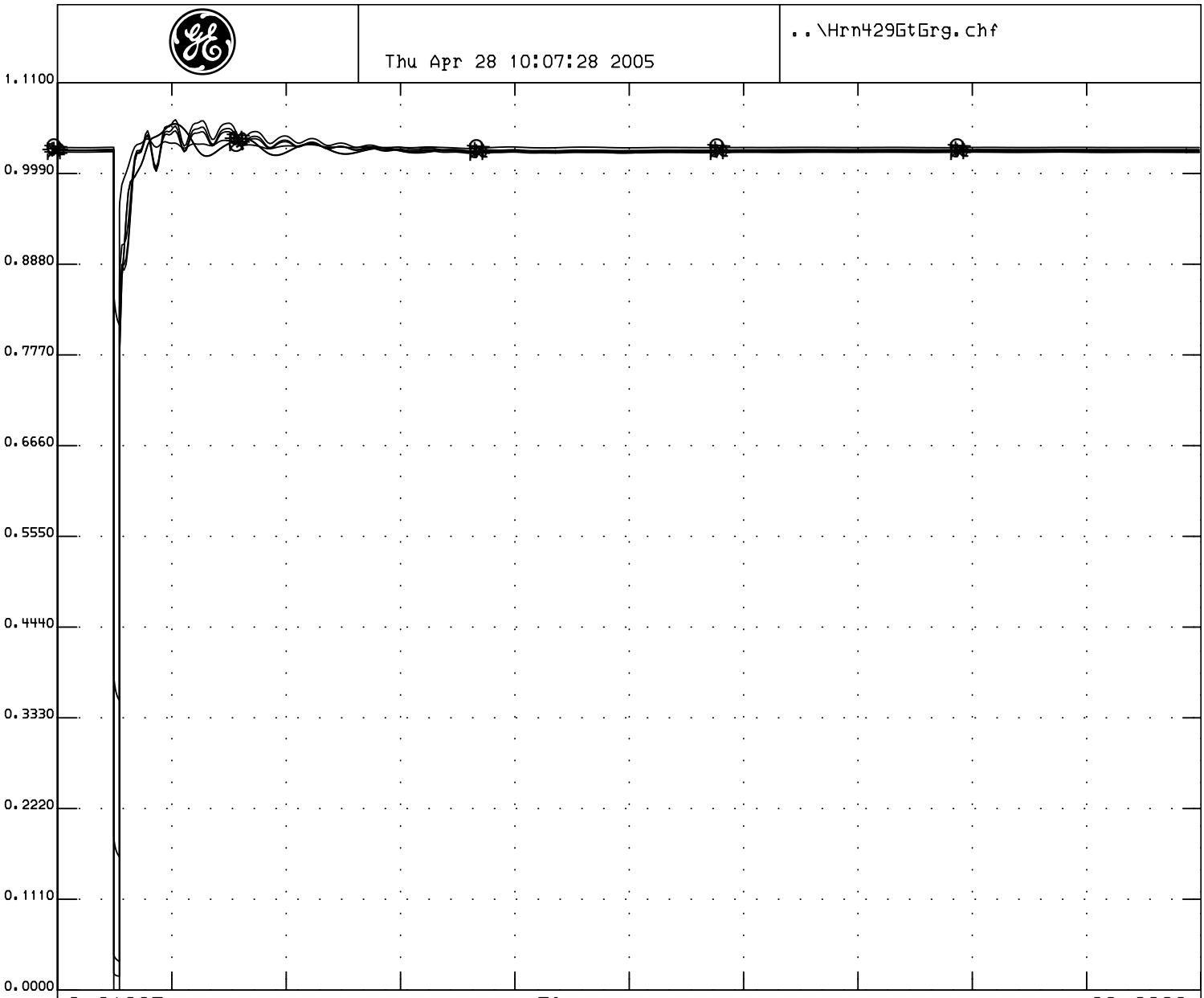


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney 230kV Bus Outage
3 phase 6 cycle fault at Kearney 230kV bus and clear bus

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



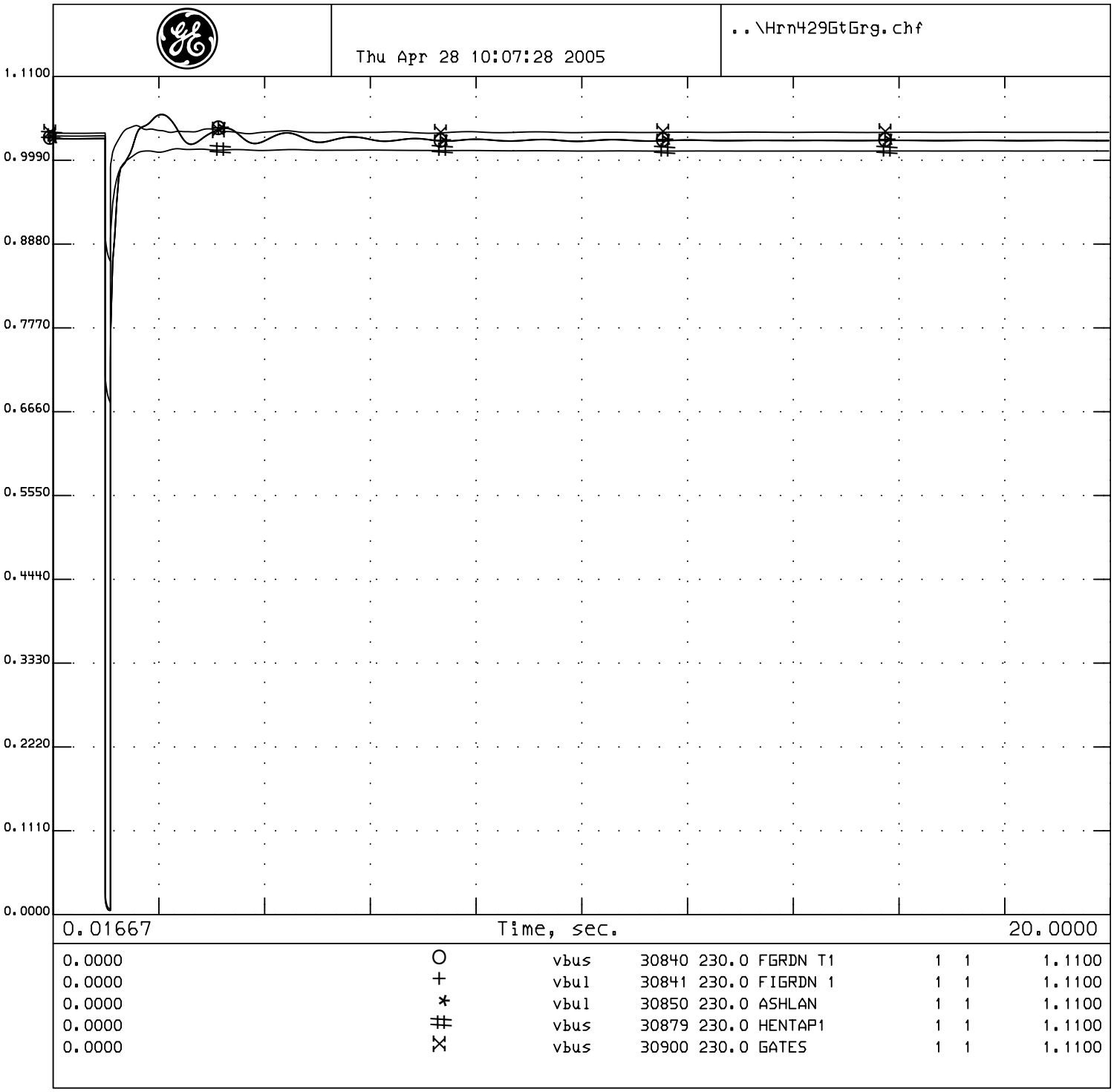
0.0000	O	vbus	30790	230.0	PANOCHE	1	1	1.1100
0.0000	+	vbus	30810	230.0	GREGG	1	1	1.1100
0.0000	*	vbul	30825	230.0	MCMULLN1	1	1	1.1100
0.0000	#	vbus	30829	230.0	P0429	1	1	1.1100
0.0000	X	vbus	30830	230.0	KEARNEY	1	1	1.1100
0.0000	S	vbus	30835	230.0	HERNDON	1	1	1.1100

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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Generator Interconnection Study

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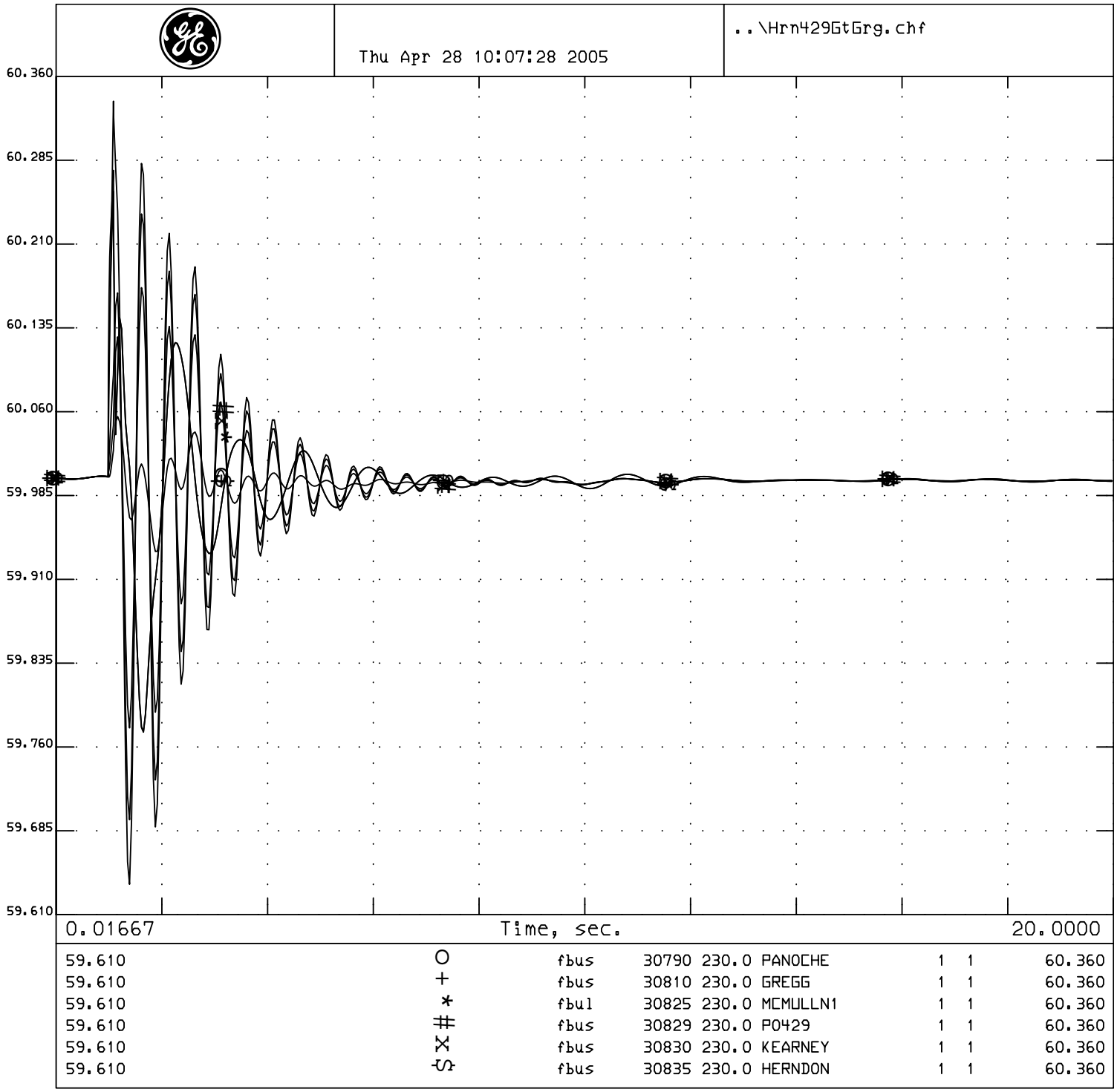

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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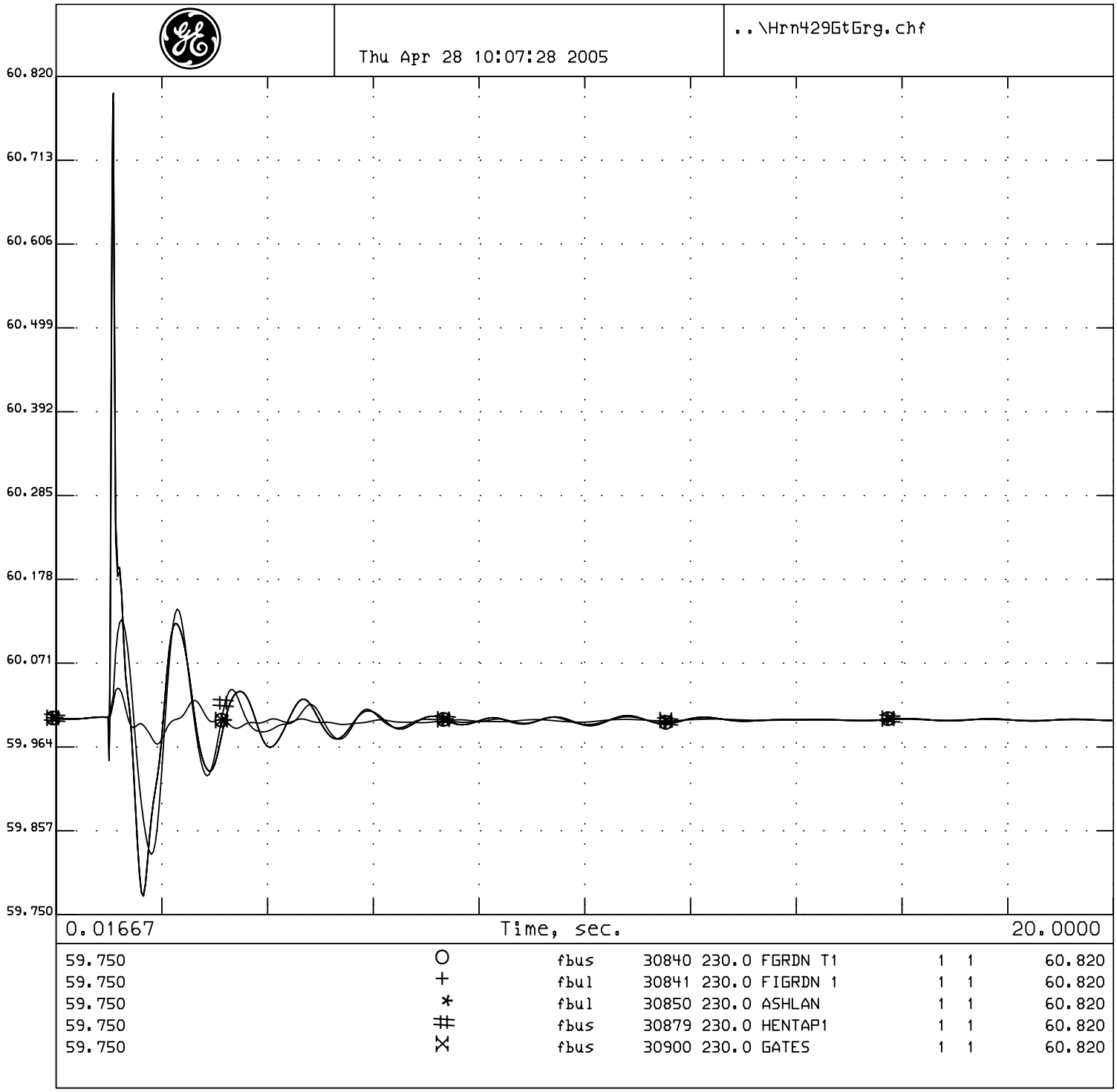
P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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Generator Interconnection Study

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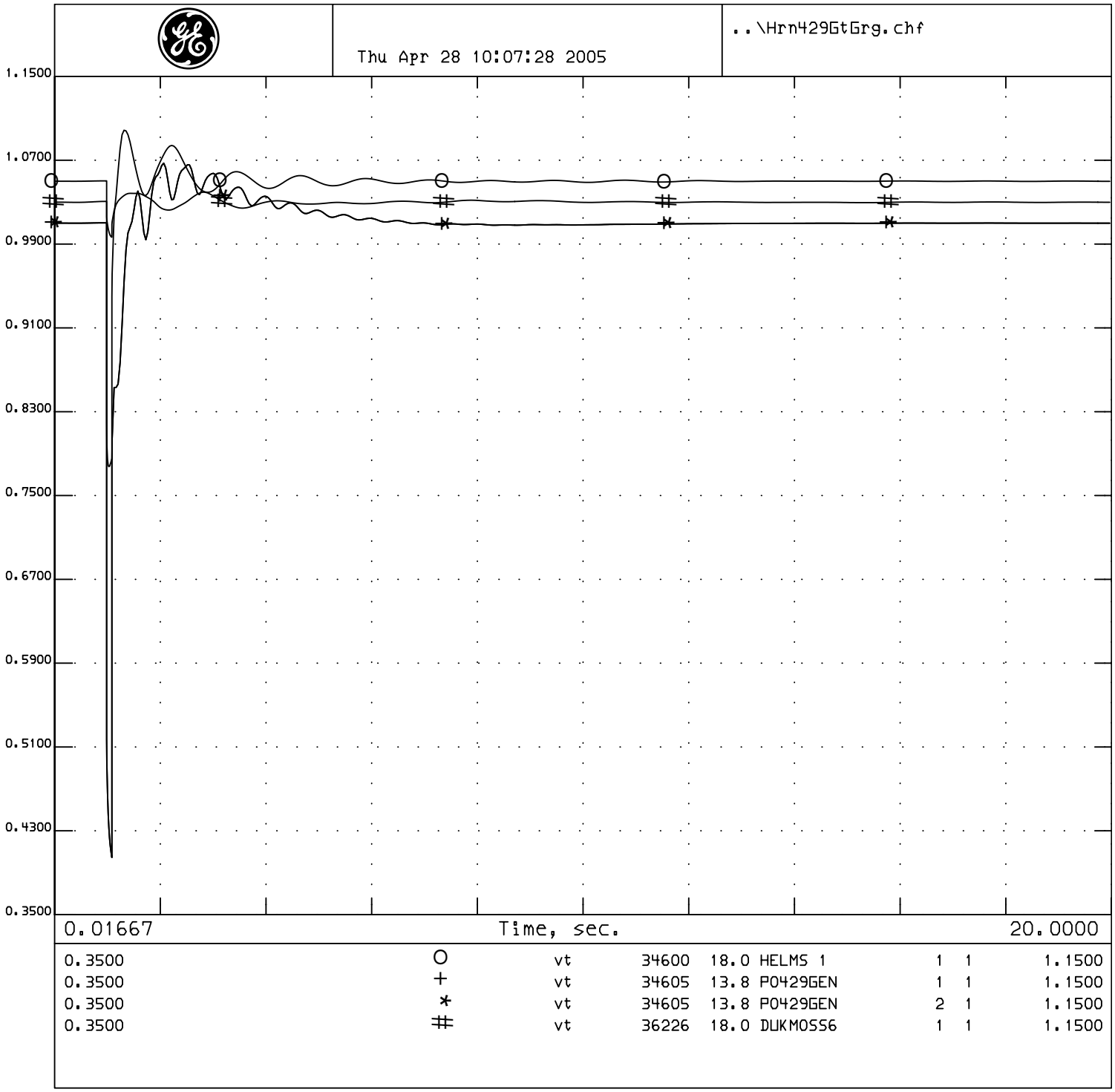

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2008 Summer Peak Base Case
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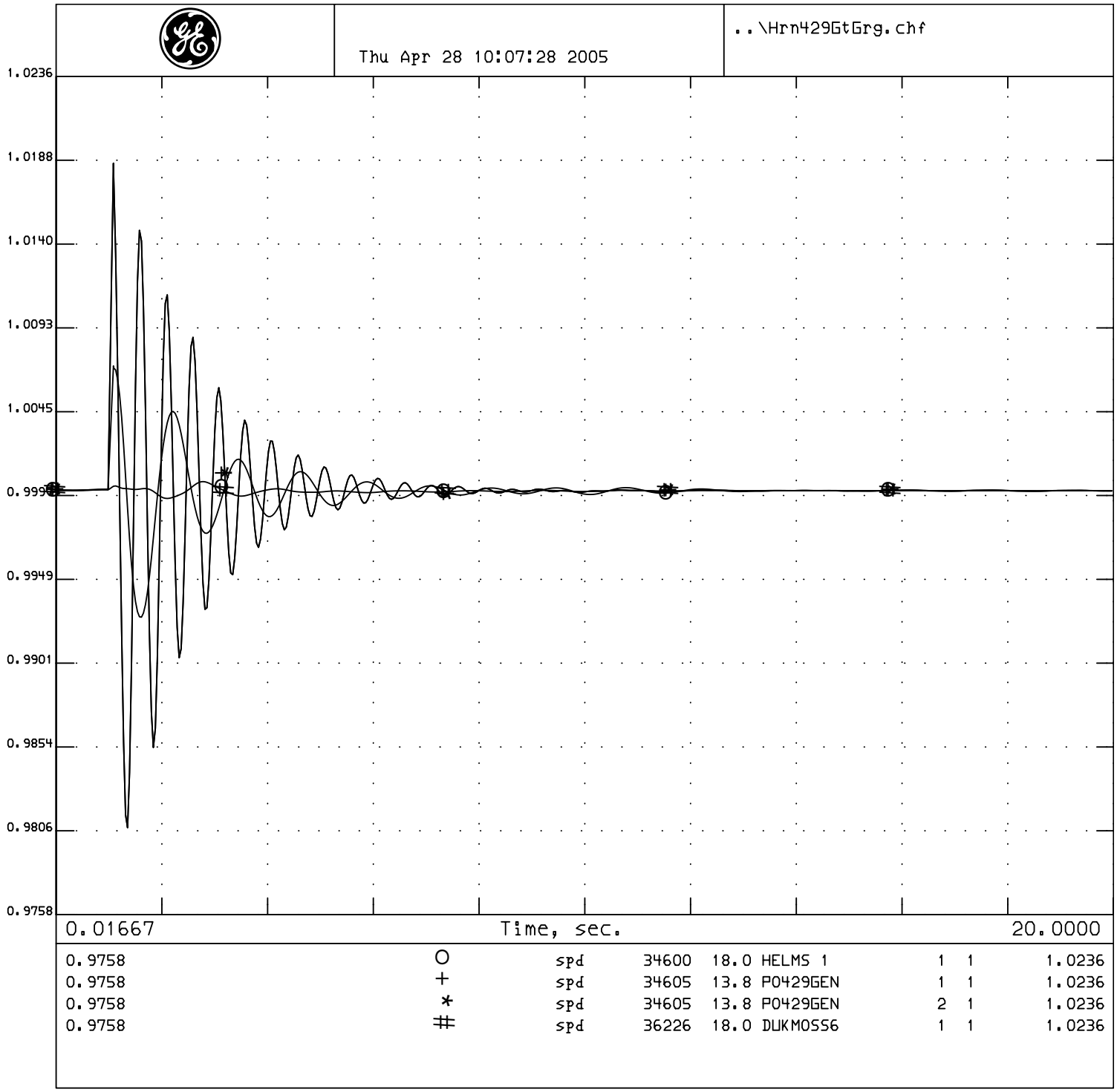
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages



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2008 Summer Peak Base Case
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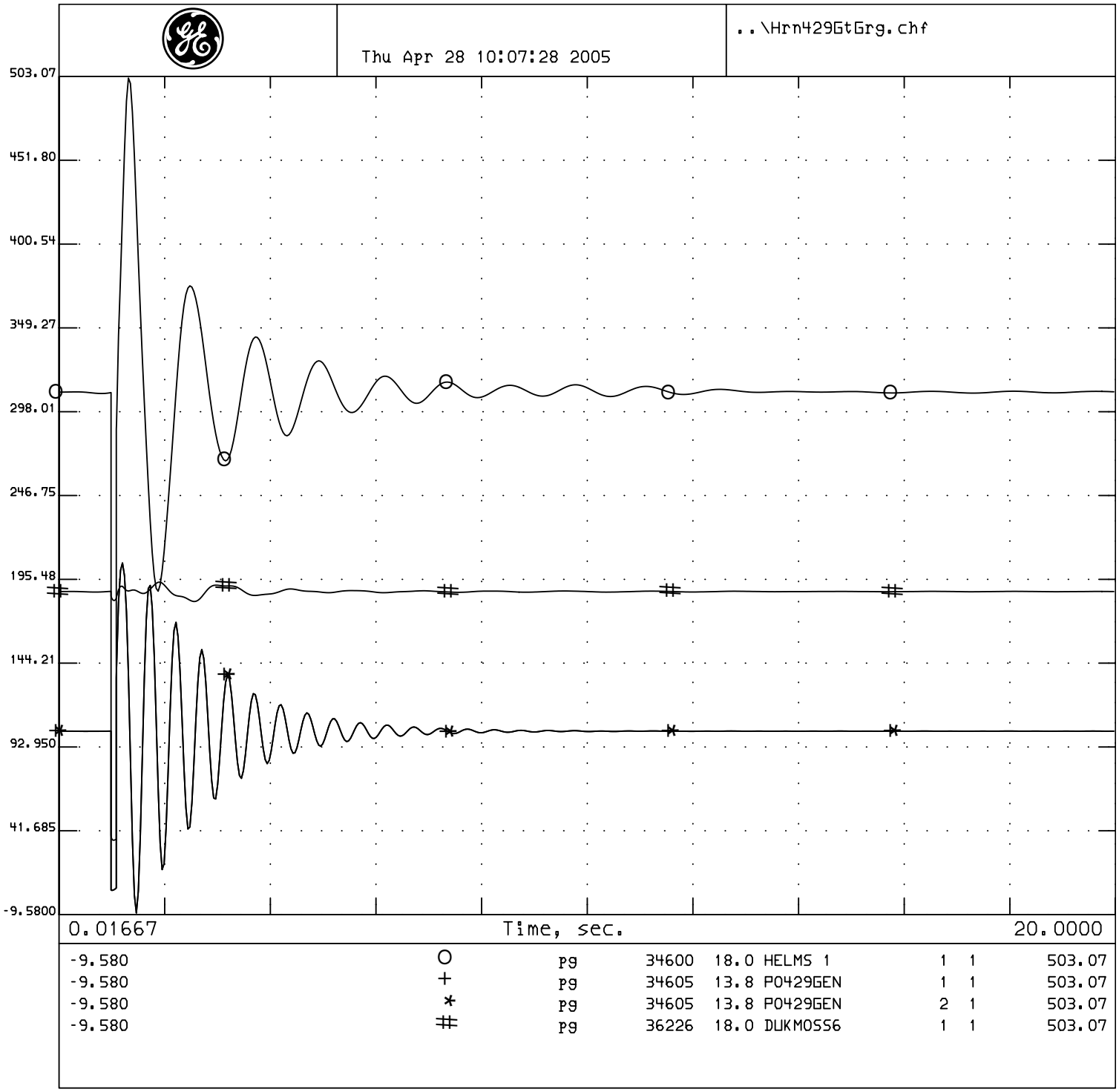
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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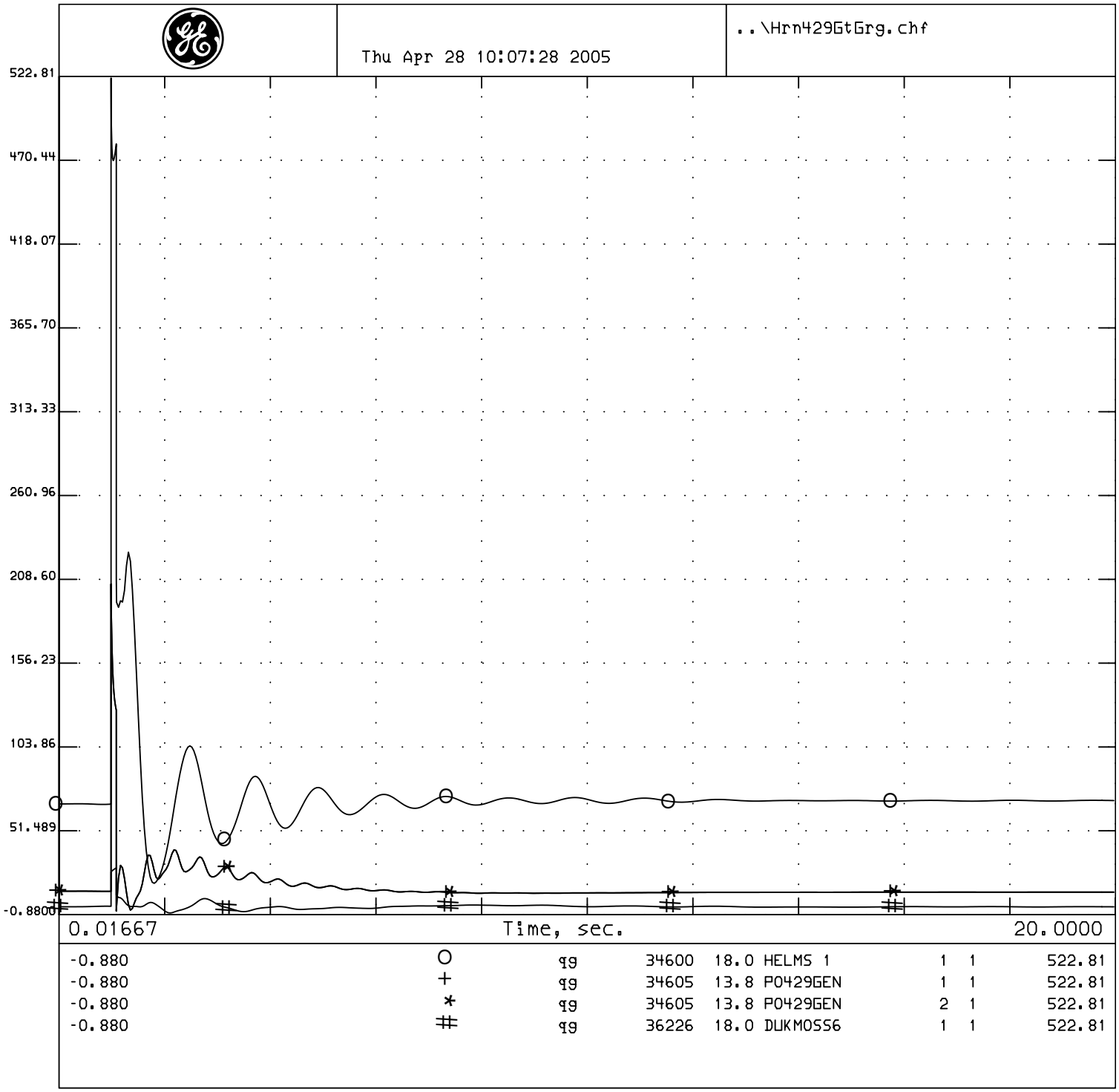
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power



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P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
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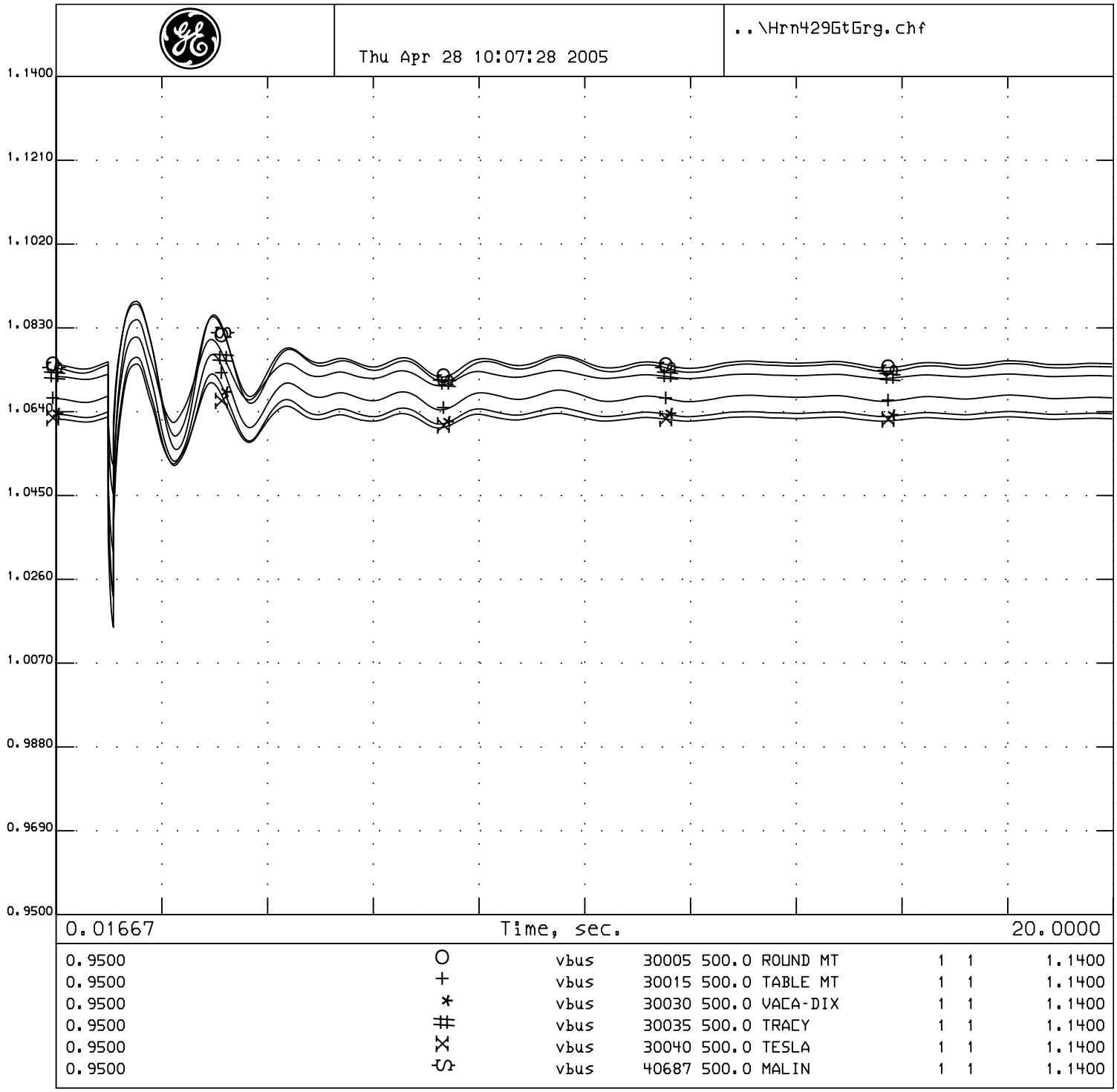
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power



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2008 Summer Peak Base Case
P0429 @ 205.2MW
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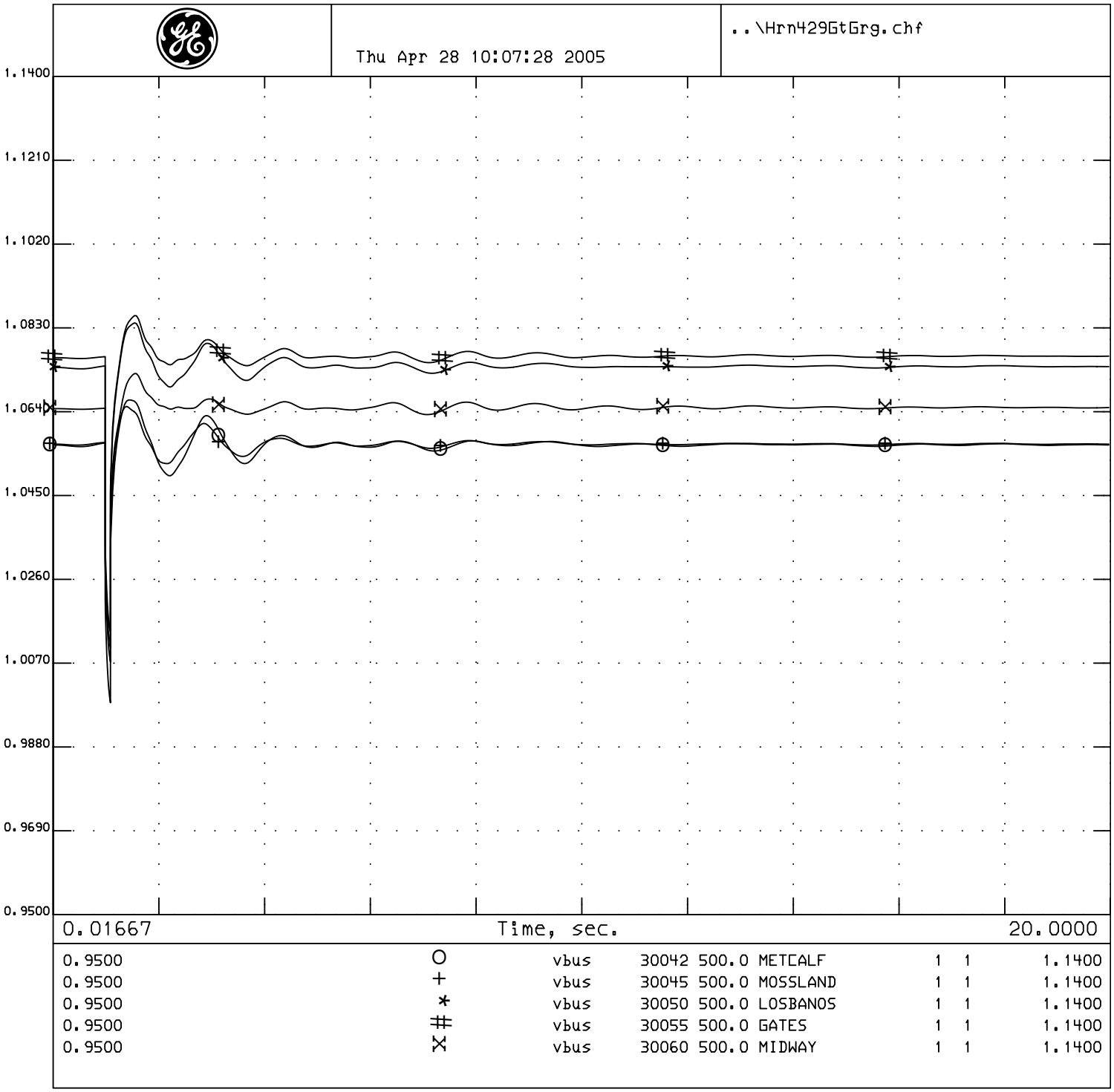
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



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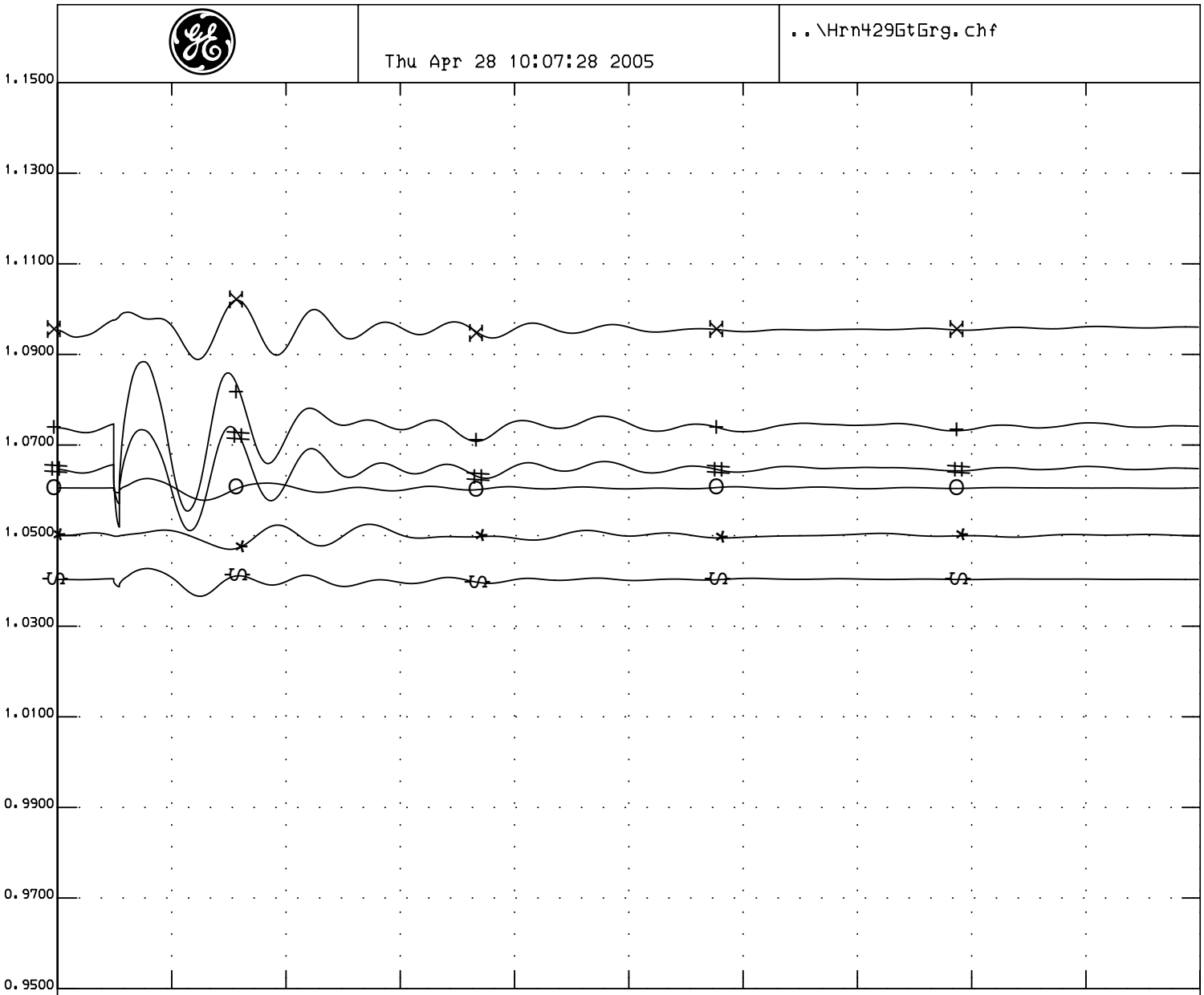

0.9500	O	vbus	14001	500.0	FOURCORN	1	1	1.1500
0.9500	+	vbus	40687	500.0	MALIN	1	1	1.1500
0.9500	*	vbus	50703	500.0	NIC500	1	1	1.1500
0.9500	#	vbus	60240	500.0	MIDPOINT	1	1	1.1500
0.9500	X	vbus	62012	500.0	TOWN2	1	1	1.1500
0.9500	S	vbus	66340	345.0	SIGURD	1	1	1.1500

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2008 Summer Peak Base Case
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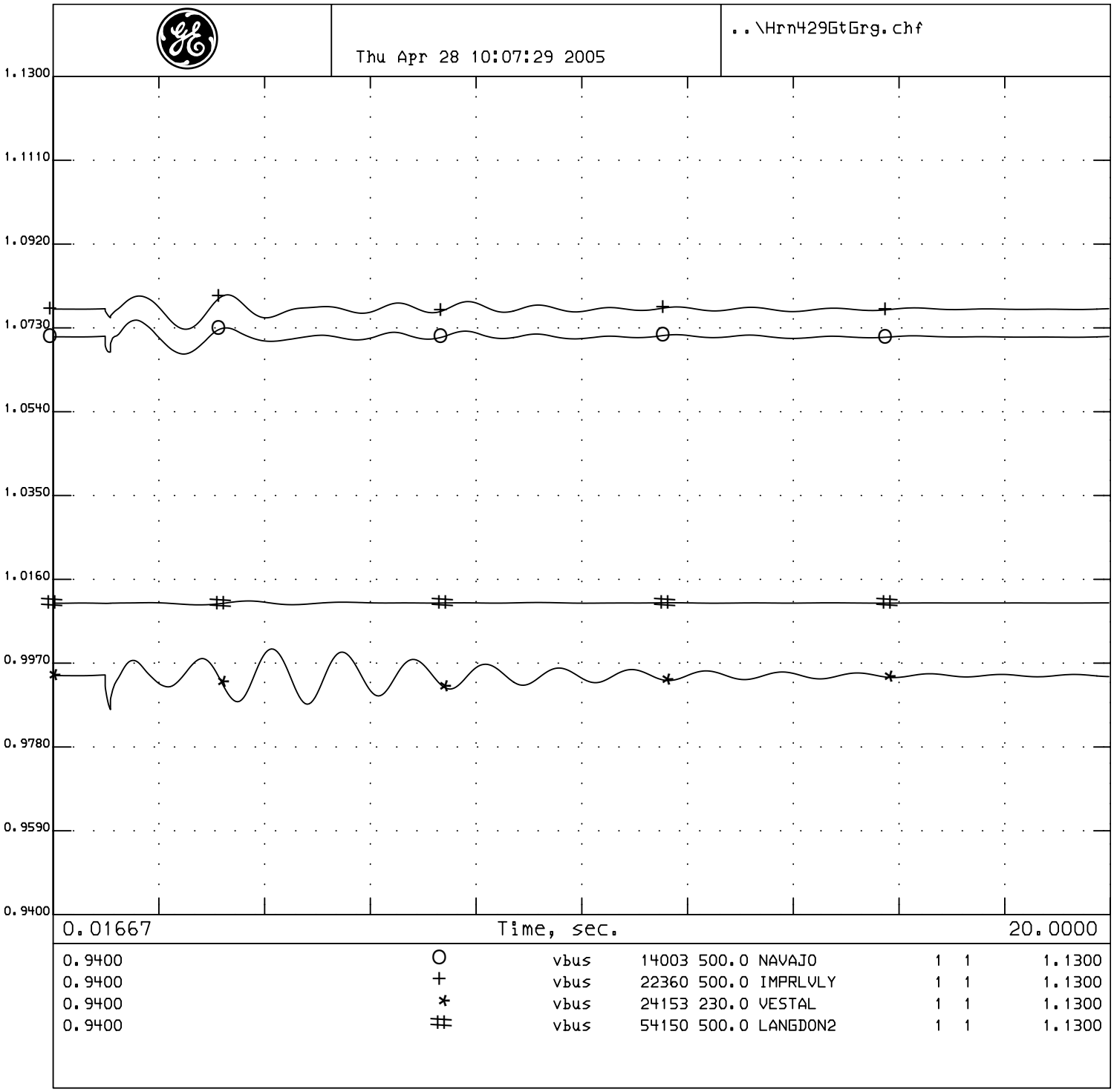

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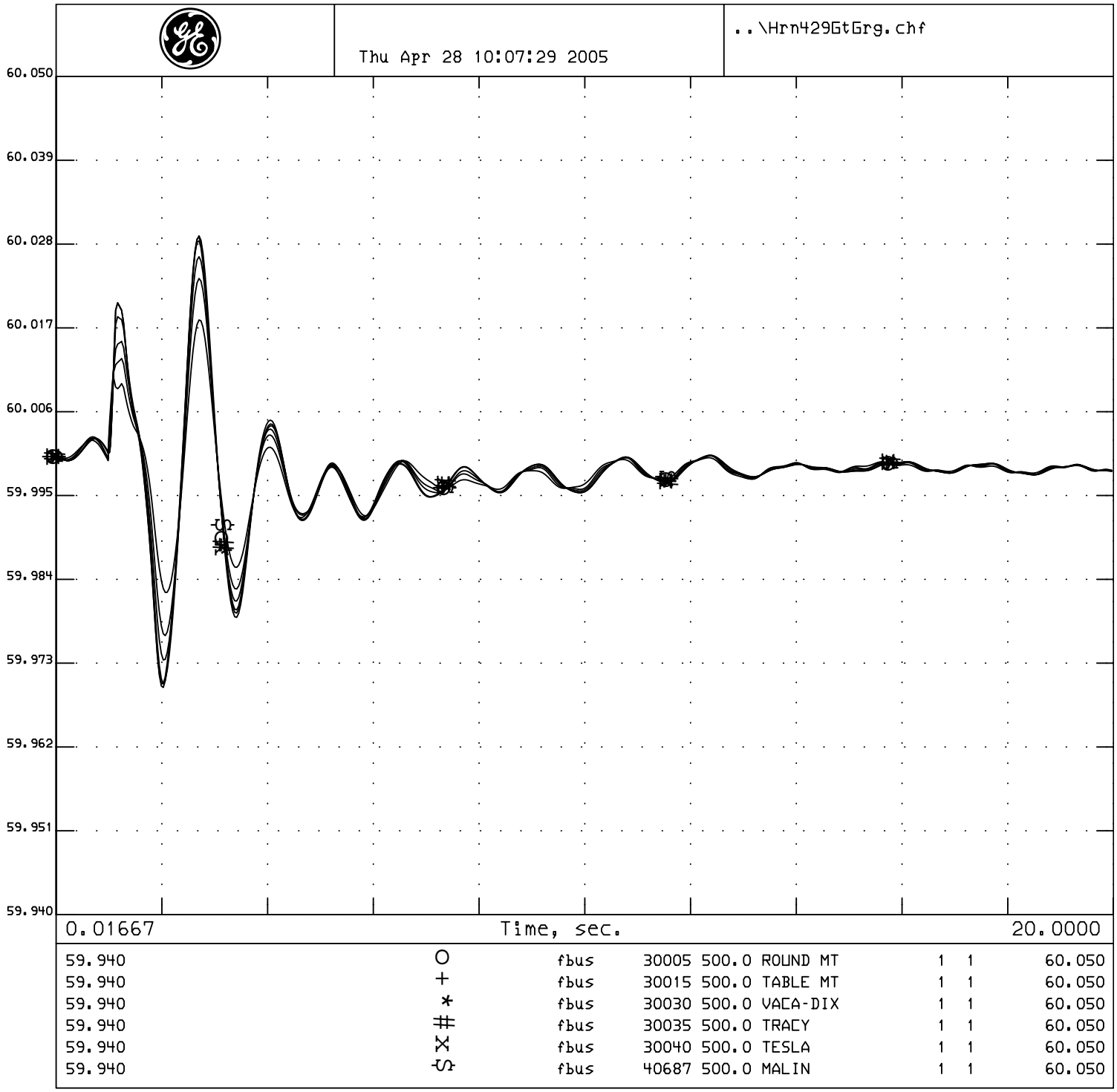

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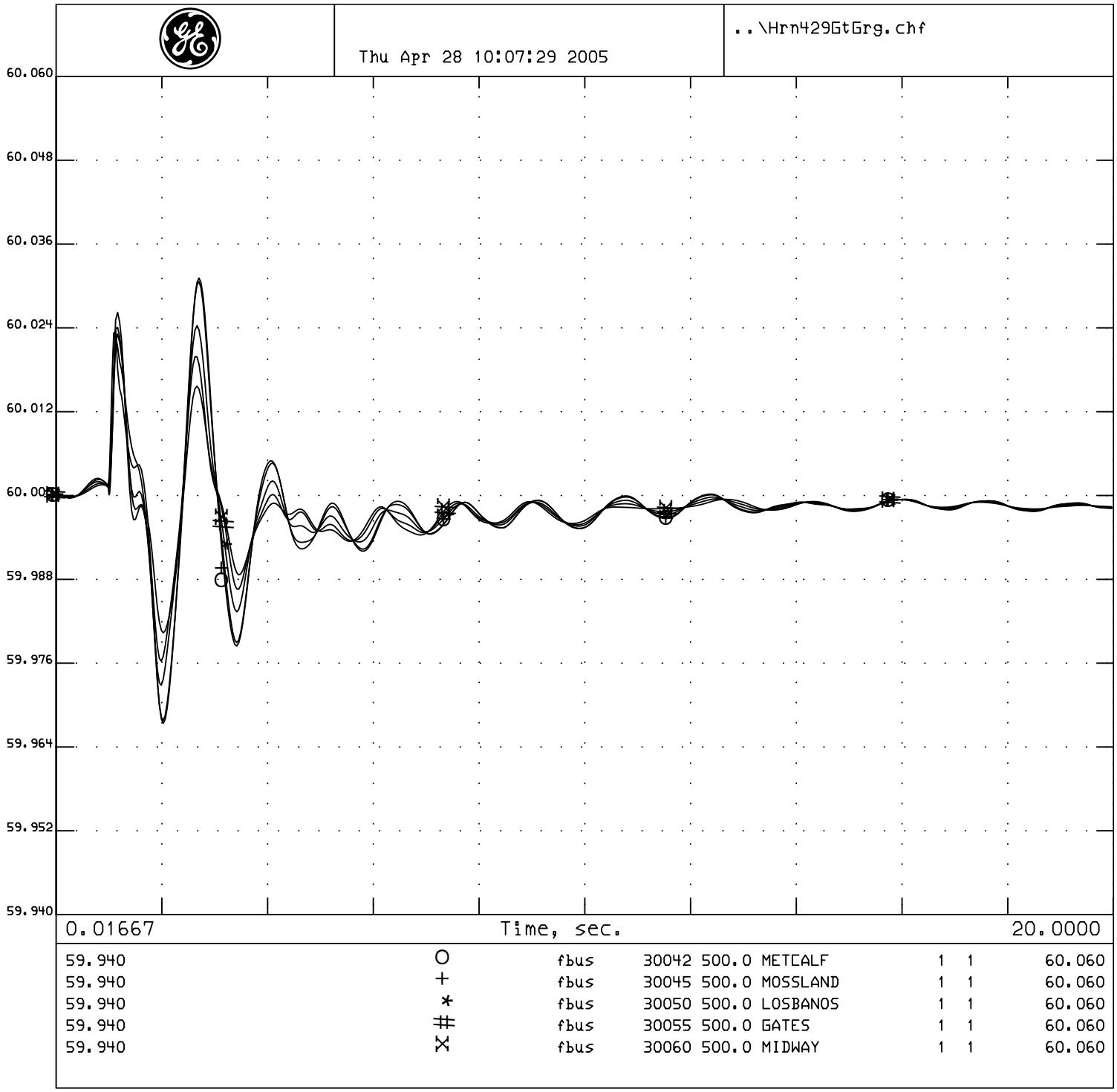
Generator Interconnection Study

Selected WECC Bus Frequency Plots



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P0429 @ 205.2MW
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Generator Interconnection Study

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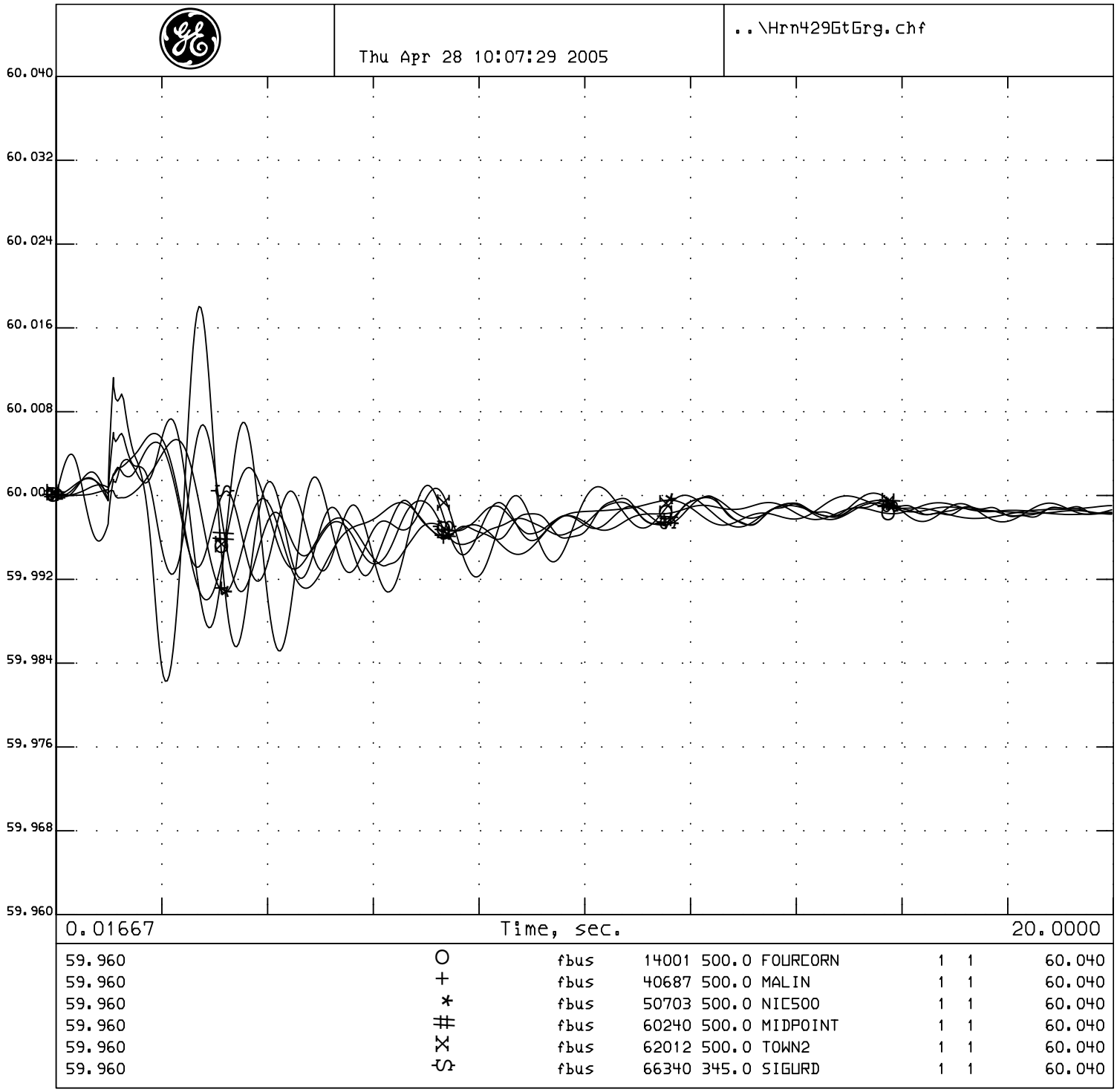

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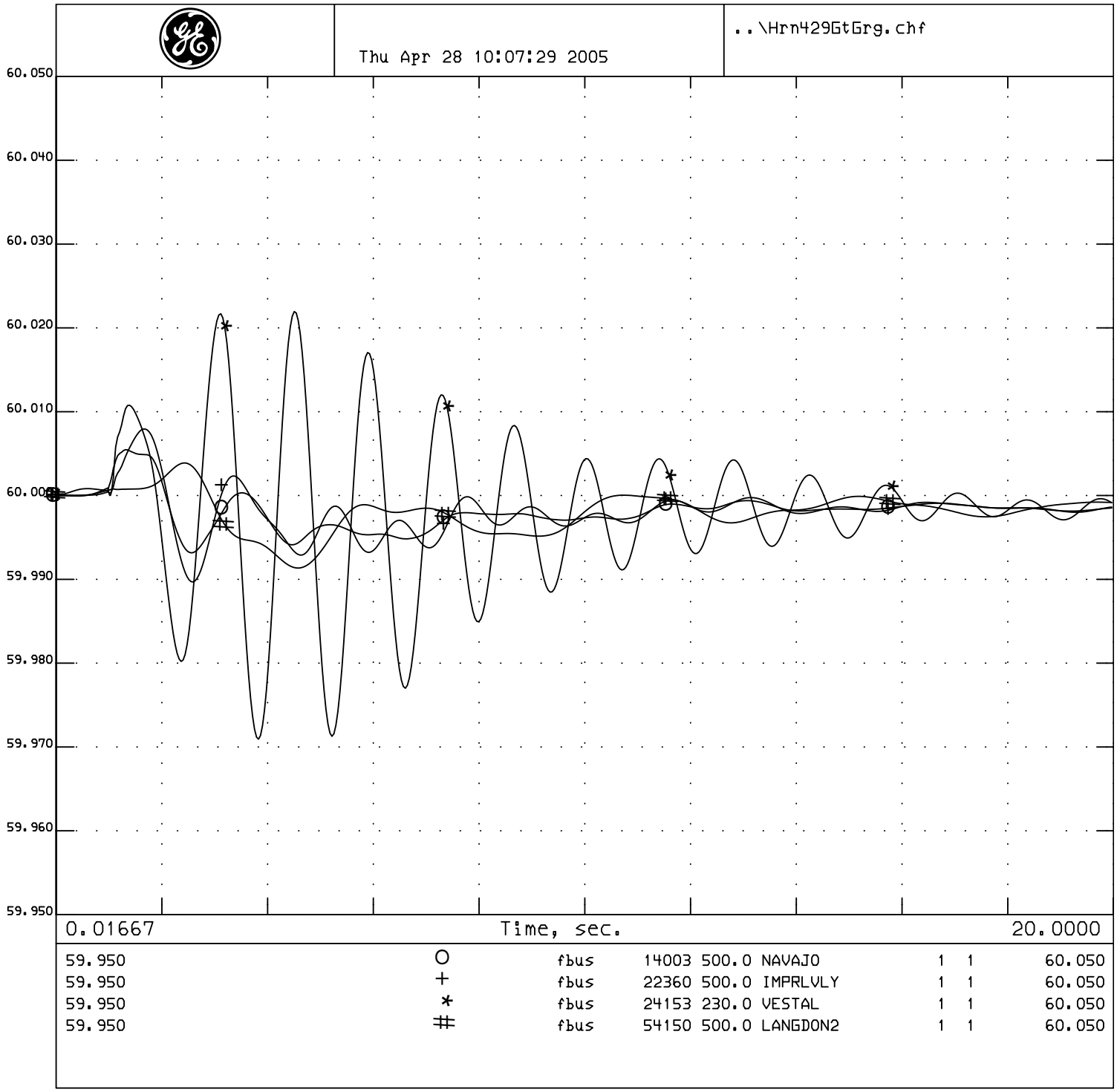

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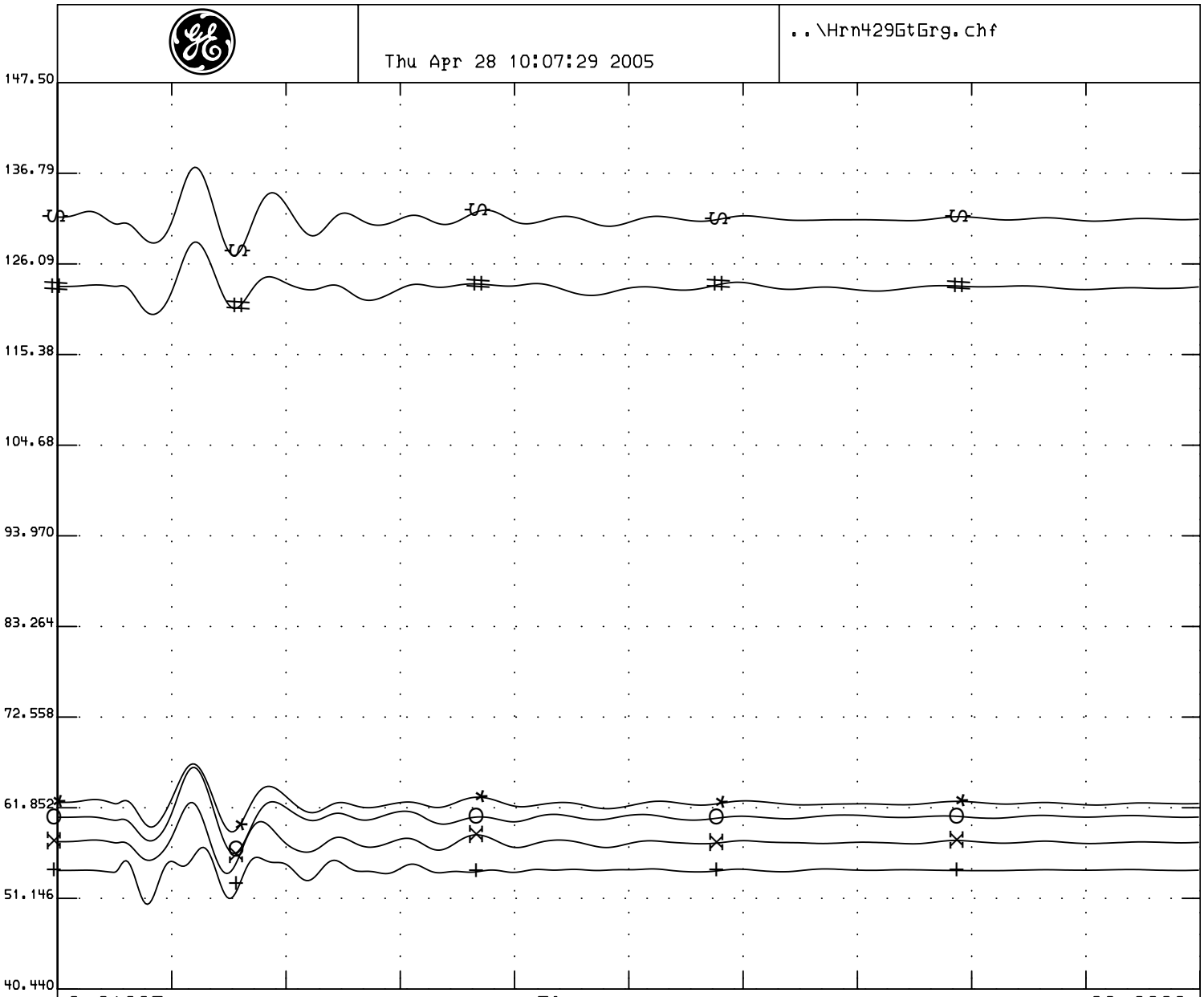
P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



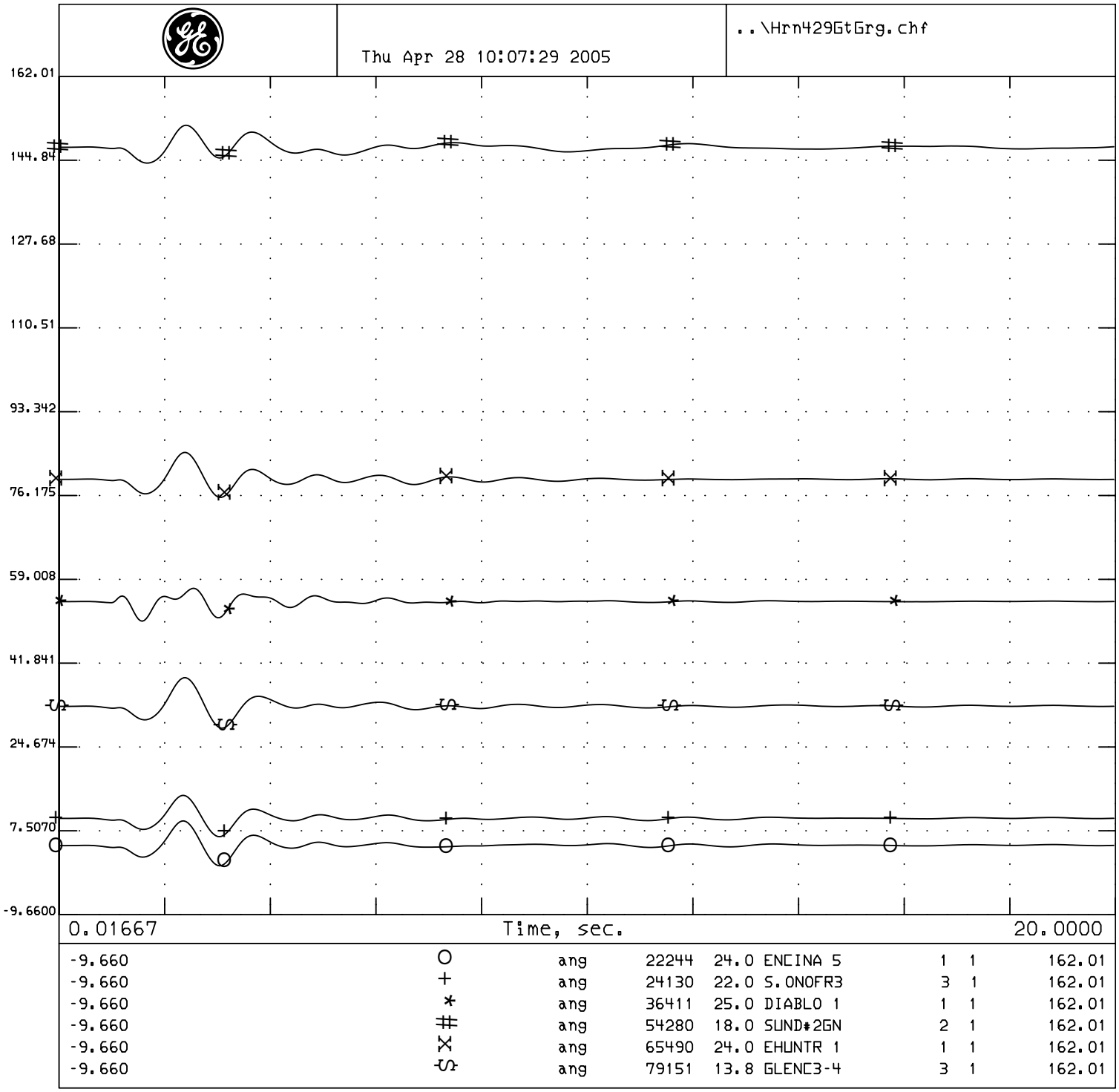
40.440	O	ang	14914	22.0	FCNGN4CC	H	1	147.50
40.440	+	ang	36411	25.0	DIABLO 1	1	1	147.50
40.440	*	ang	41701	13.8	JONDAY01	1	1	147.50
40.440	#	ang	50500	13.8	GMS G6	1	1	147.50
40.440	X	ang	60100	13.8	BRWNL 5	1	1	147.50
40.440	S	ang	62048	26.0	COLSTP 3	1	1	147.50

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
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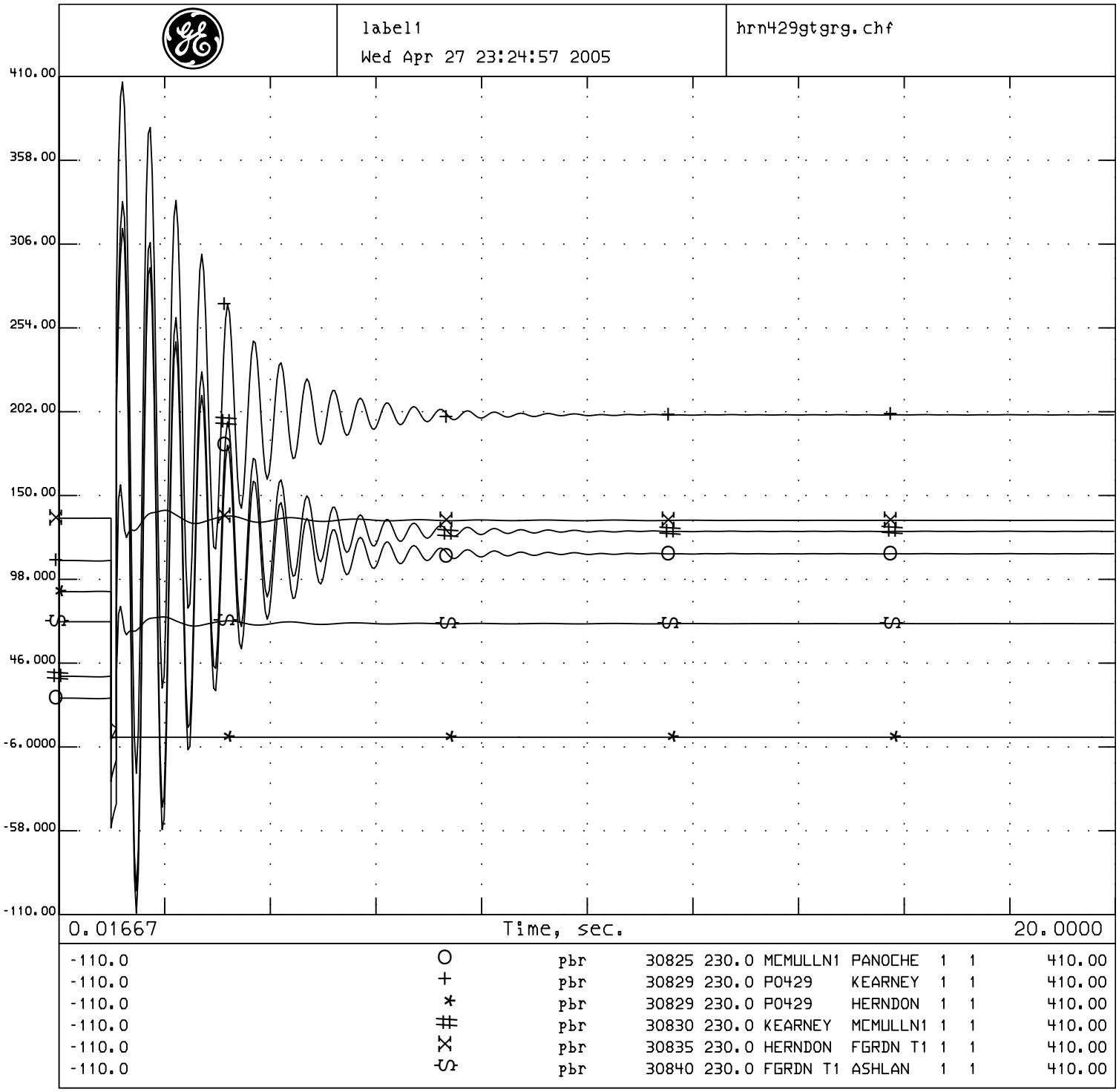
P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle

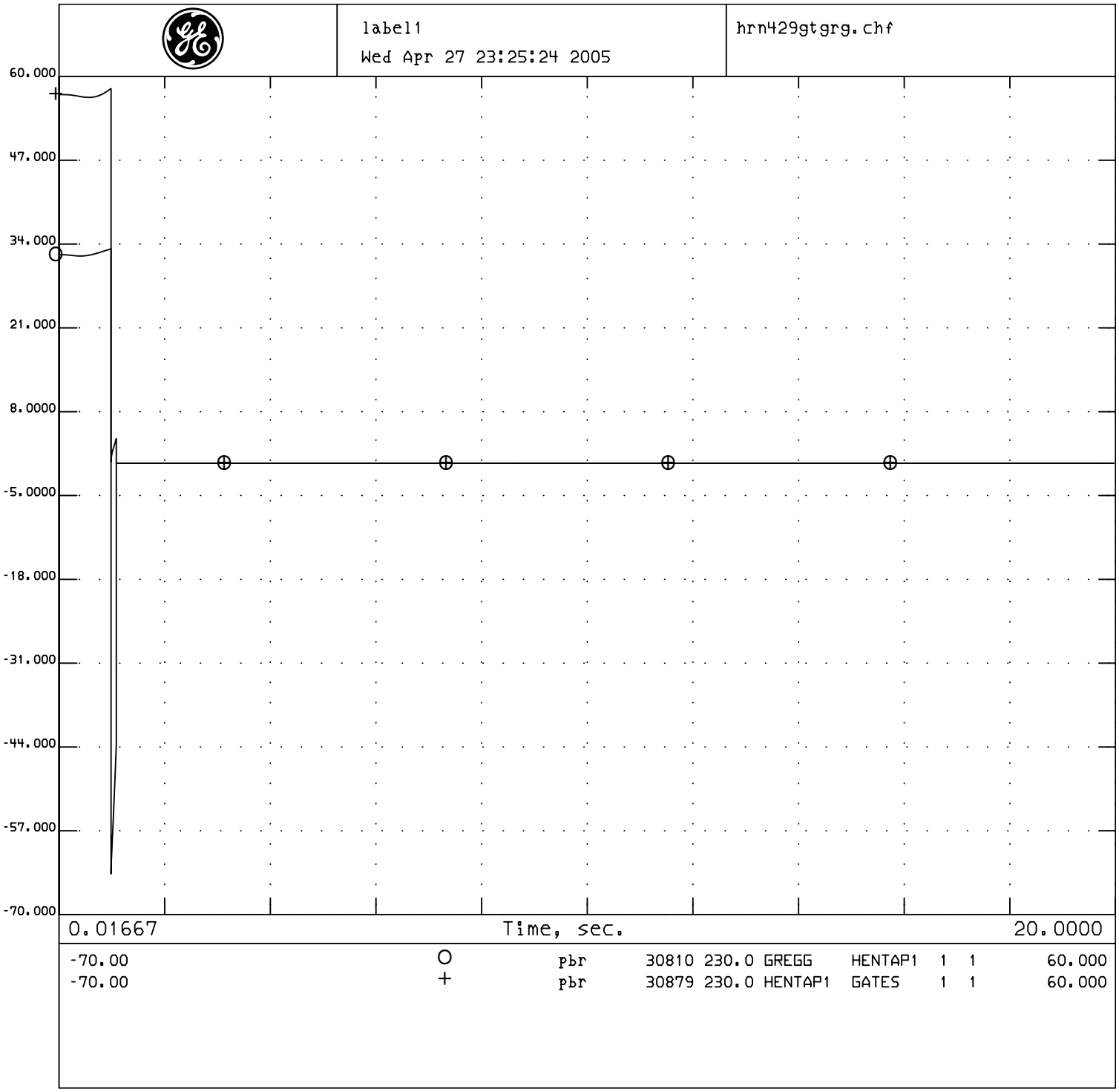


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW

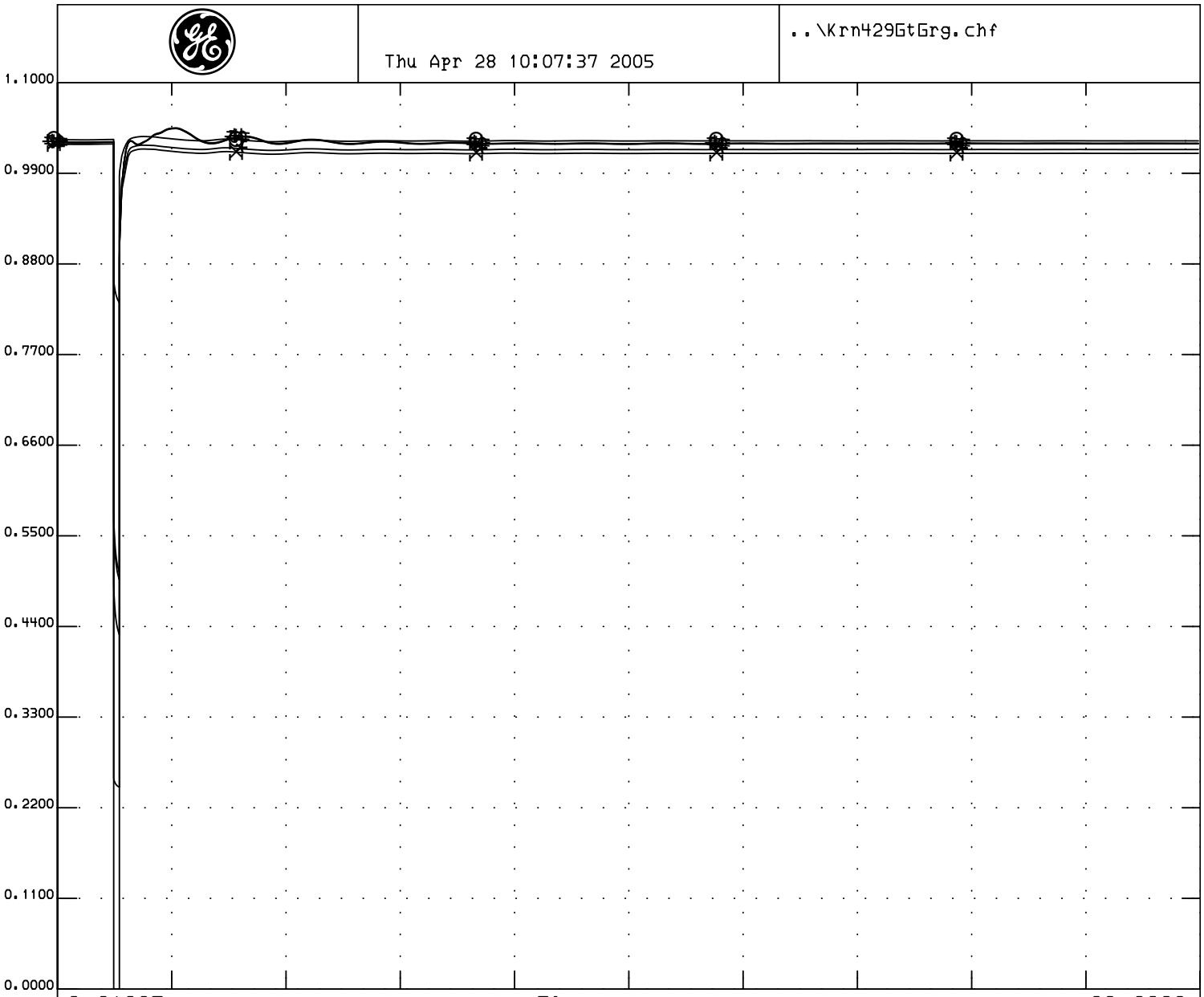


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Herndon-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Herndon 230kV bus & clear Herndon-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



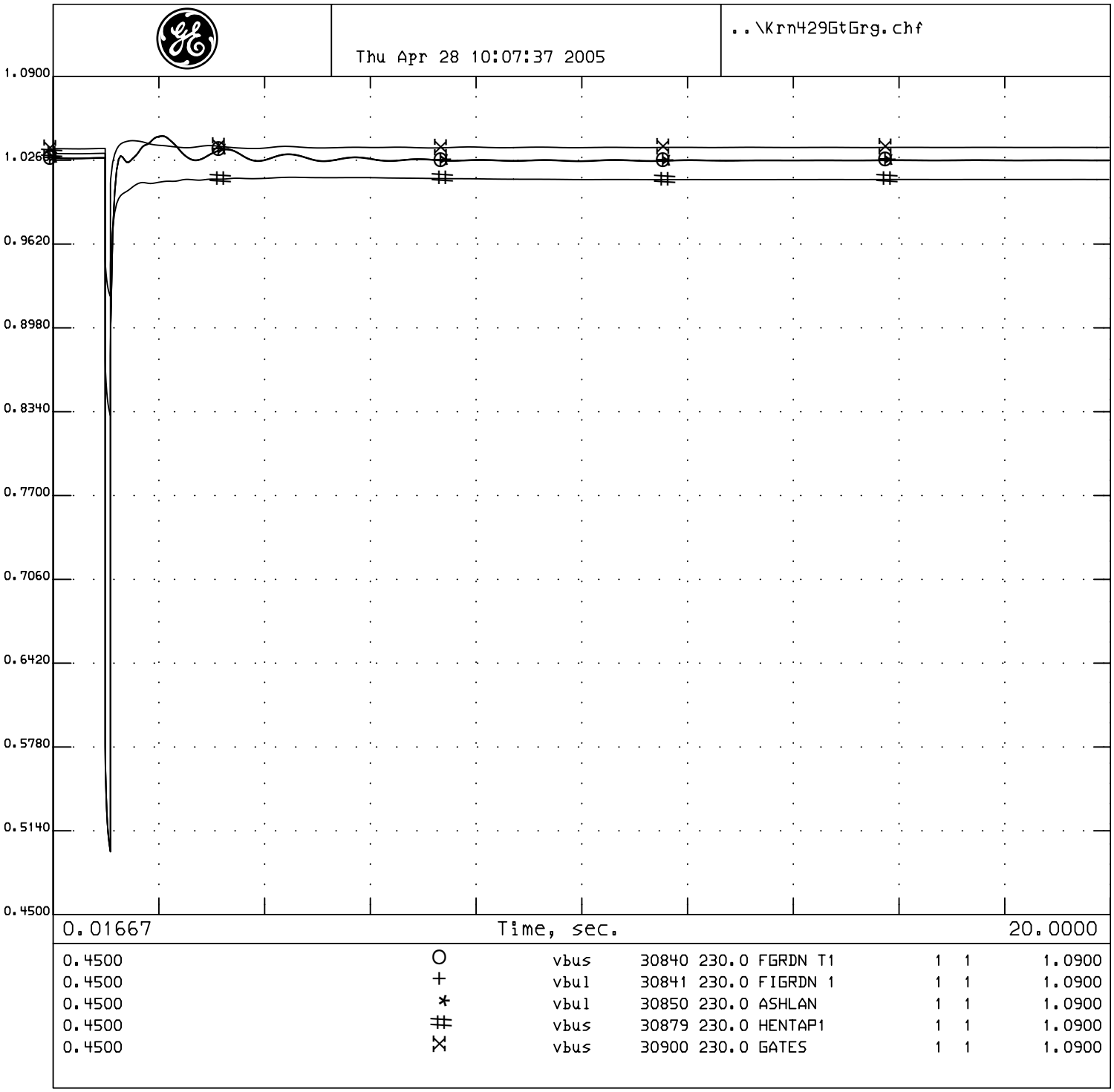
0.0000	O	vbus	30790	230.0	PANOCHE	1	1	1.1000
0.0000	+	vbus	30810	230.0	GREGG	1	1	1.1000
0.0000	*	vbul	30825	230.0	MCMULLN1	1	1	1.1000
0.0000	#	vbus	30829	230.0	P0429	1	1	1.1000
0.0000	X	vbus	30830	230.0	KEARNEY	1	1	1.1000
0.0000	S	vbus	30835	230.0	HERNDON	1	1	1.1000

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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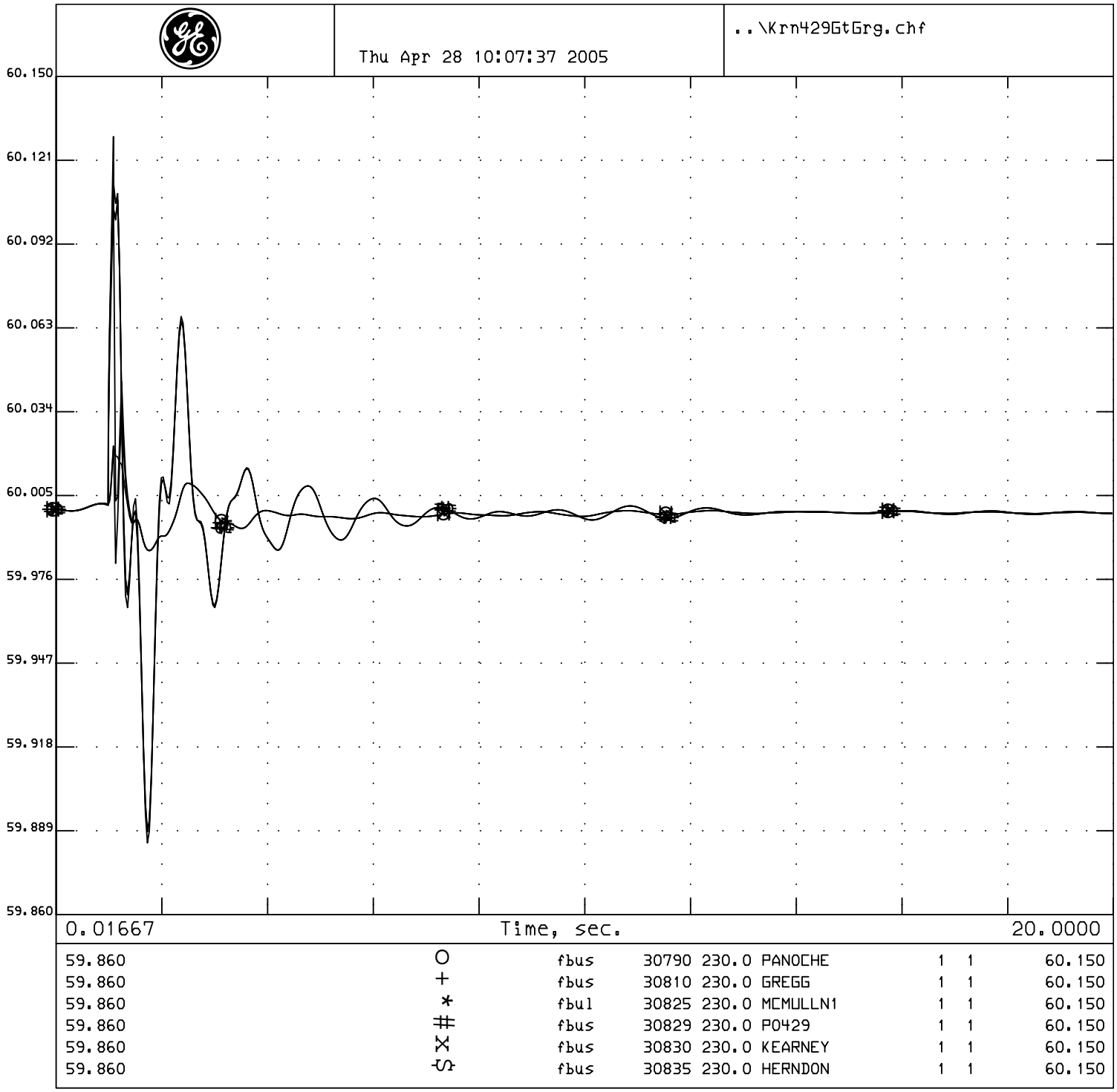
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Voltage Plots Adjacent to Fault

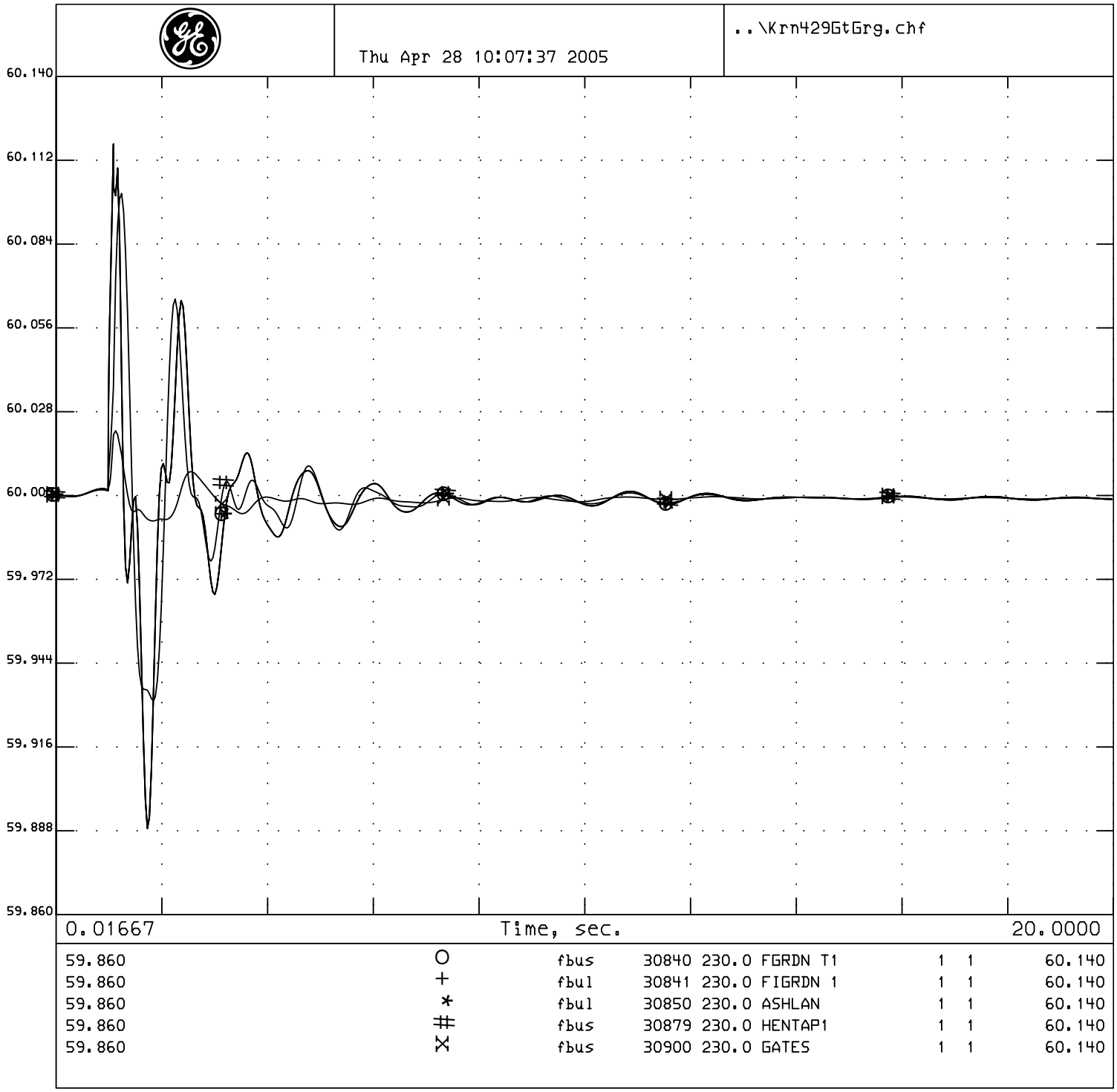


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

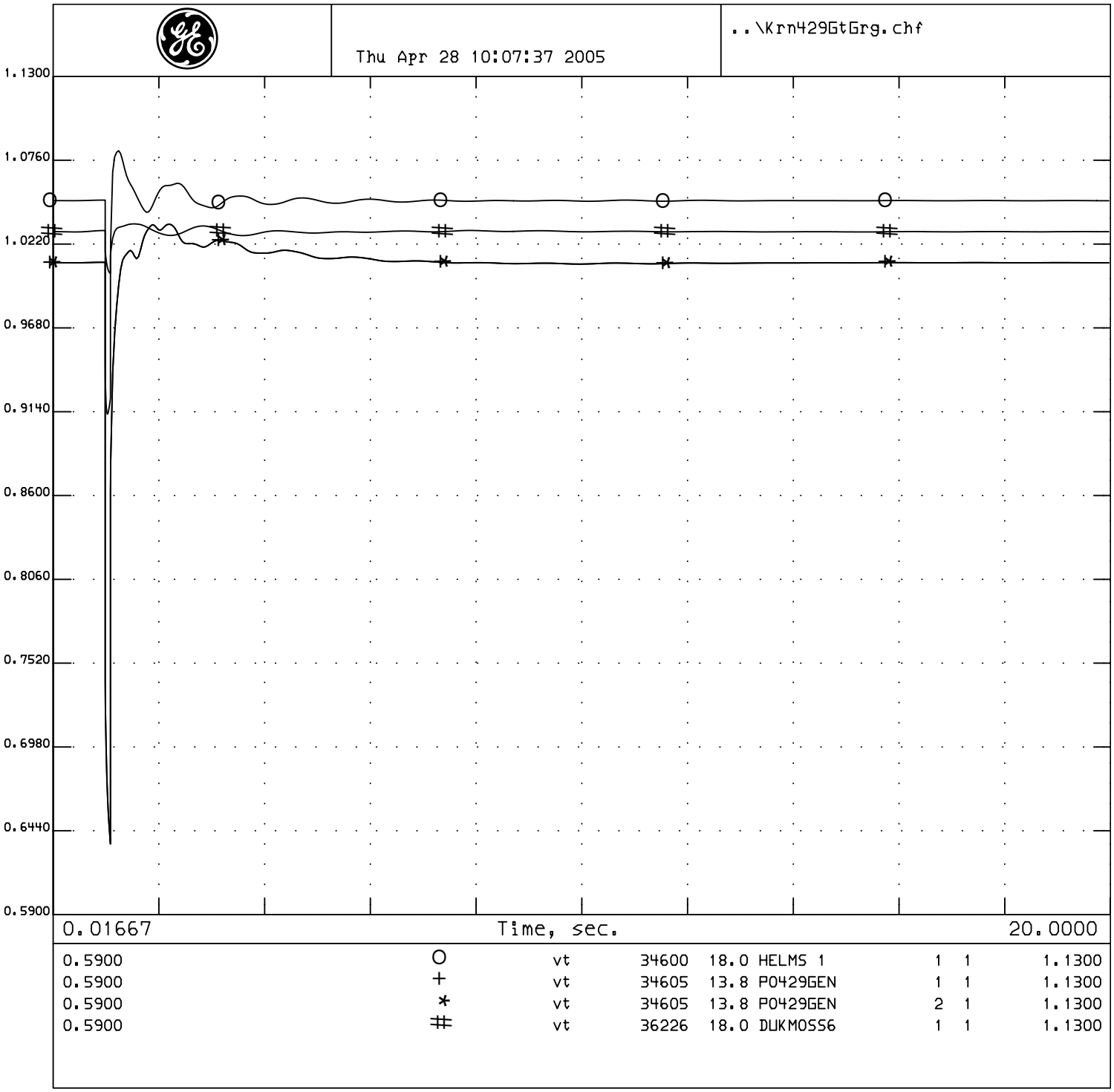


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Bus Frequency Plots Adjacent to Fault

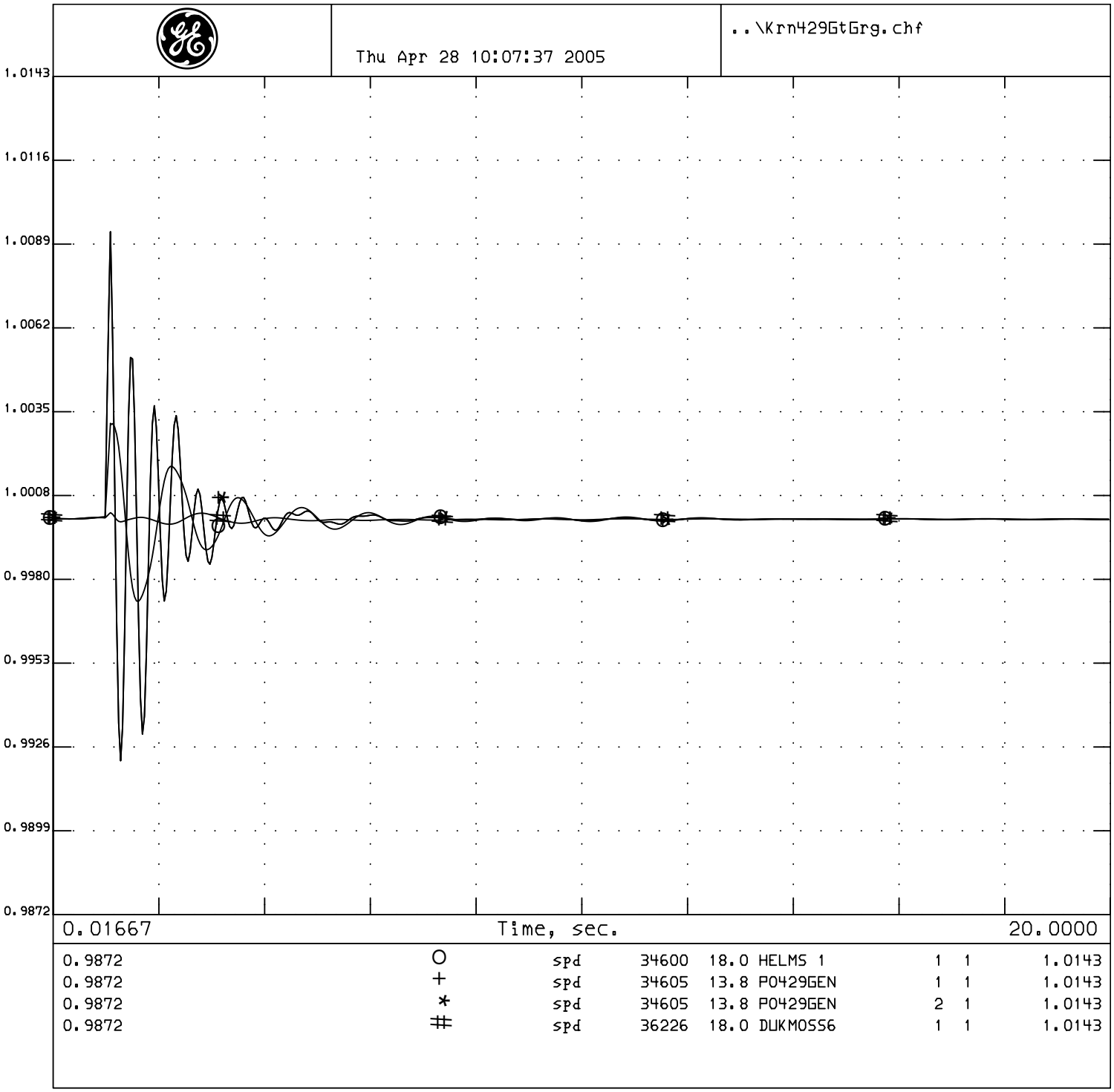


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Voltages

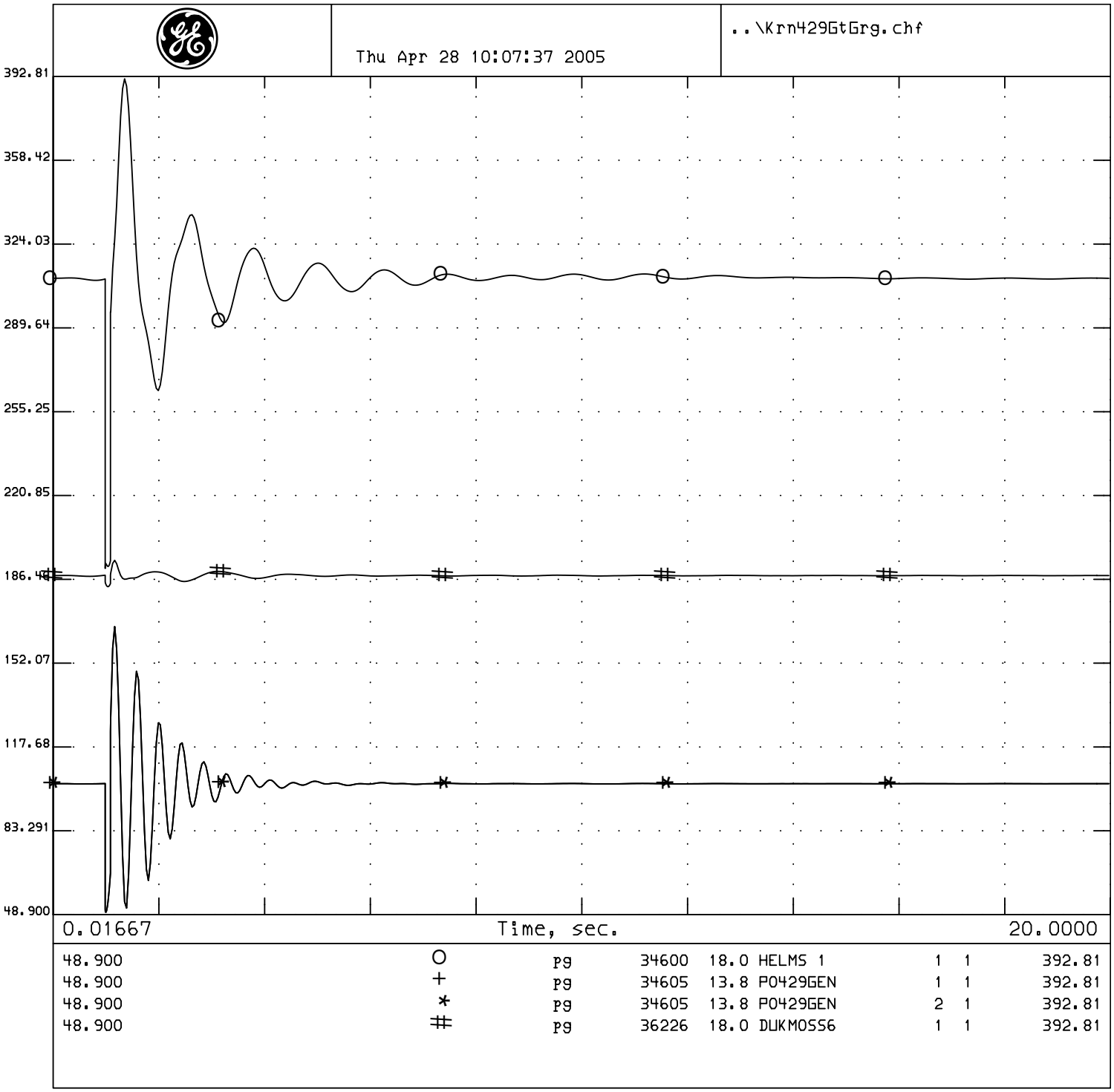


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Rotor Speed

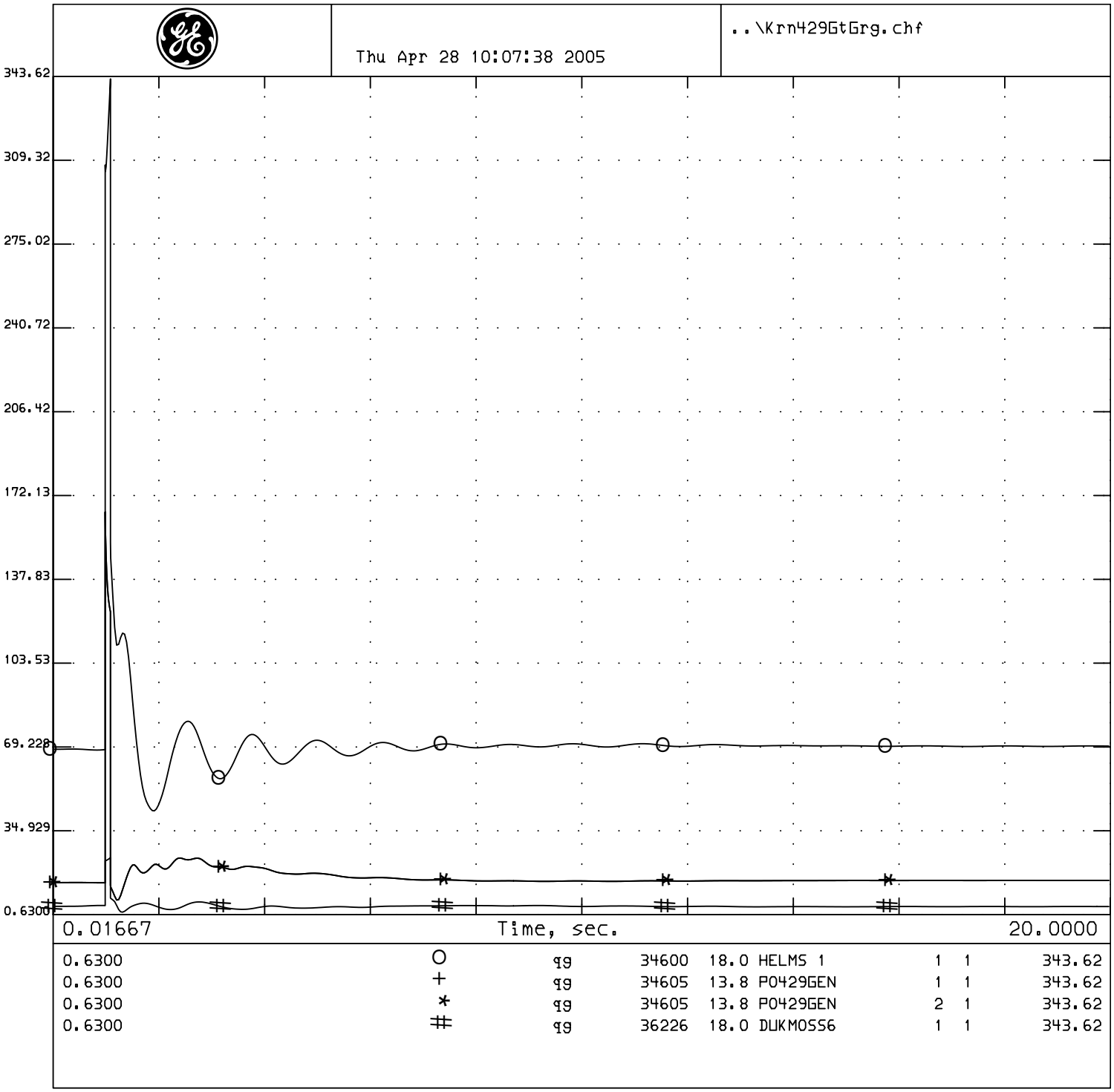


P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
3 ph 6 cyc flt @ Kearney 230kV bus & clear Kearney-P0429/Gates-Gregg 230kV line

P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Power



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
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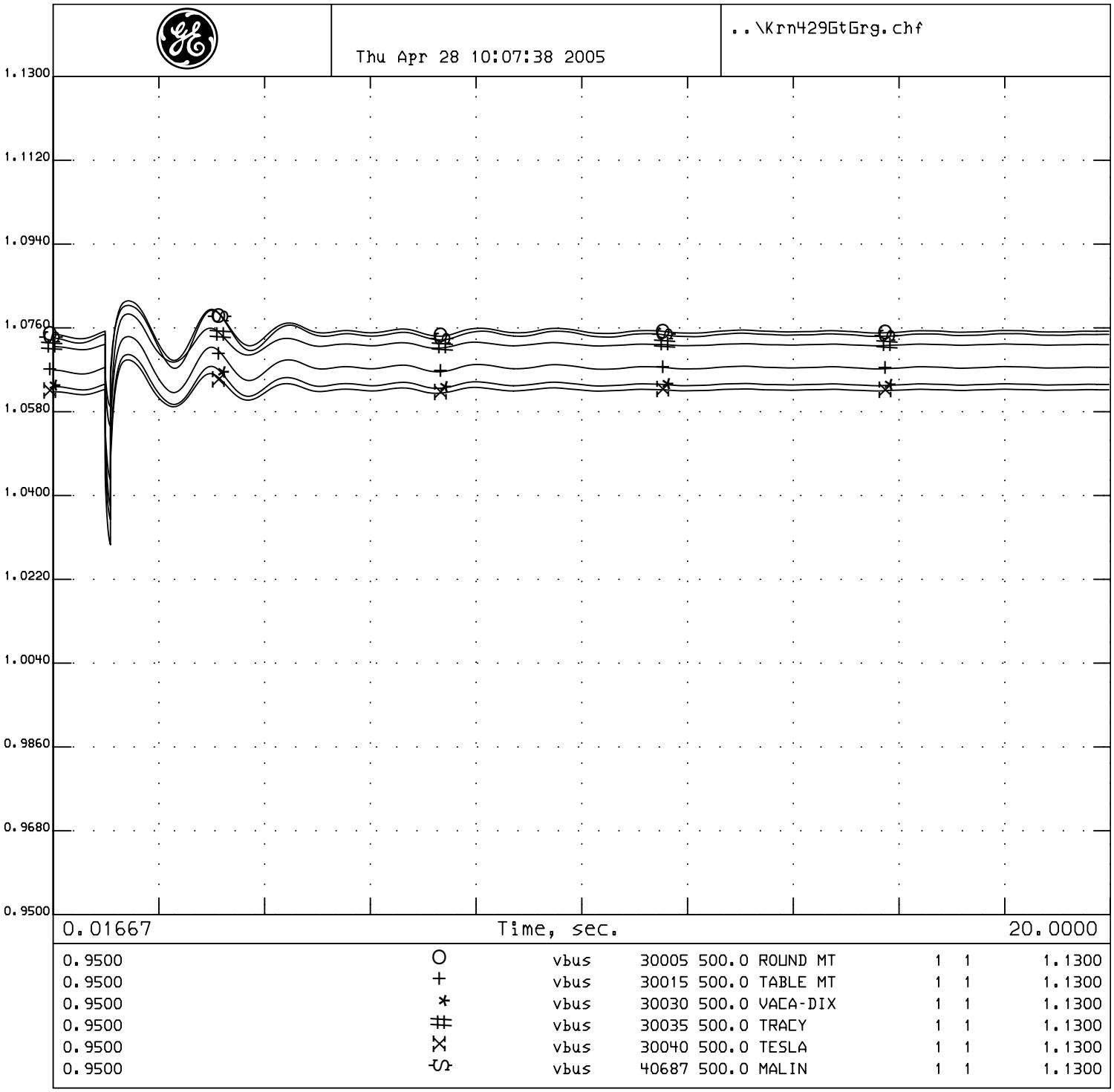
P0429 Project System Impact Study

Generator Interconnection Study

Project Generator Terminal Reactive Power



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
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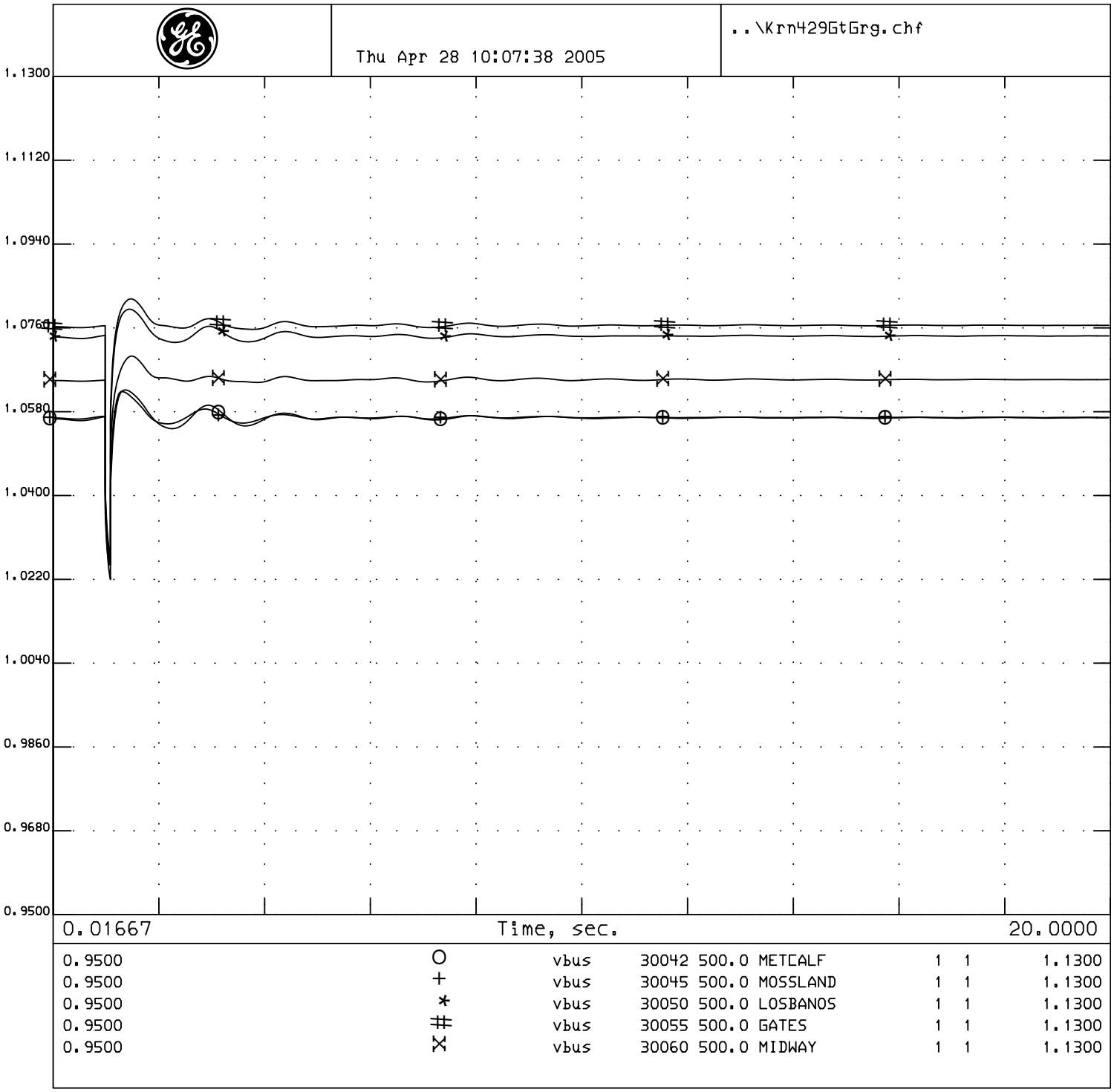
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
Kearney-P0429, Gates-Gregg 230kV line outages
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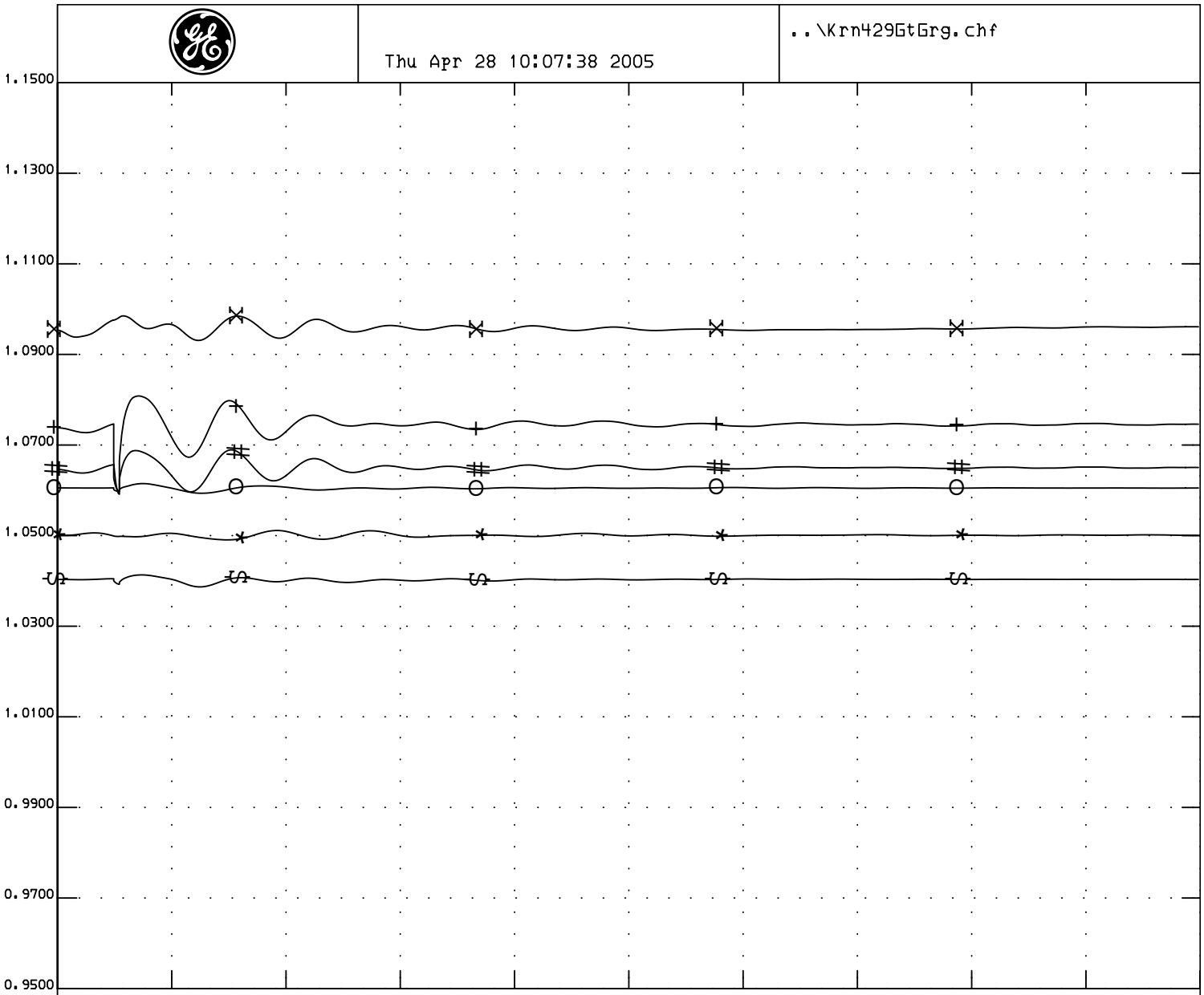
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



0.9500	O	vbus	14001	500.0	FOURCORN	1	1	1.1500
0.9500	+	vbus	40687	500.0	MALIN	1	1	1.1500
0.9500	*	vbus	50703	500.0	NIC500	1	1	1.1500
0.9500	#	vbus	60240	500.0	MIDPOINT	1	1	1.1500
0.9500	X	vbus	62012	500.0	TOWN2	1	1	1.1500
0.9500	S	vbus	66340	345.0	SIGURD	1	1	1.1500

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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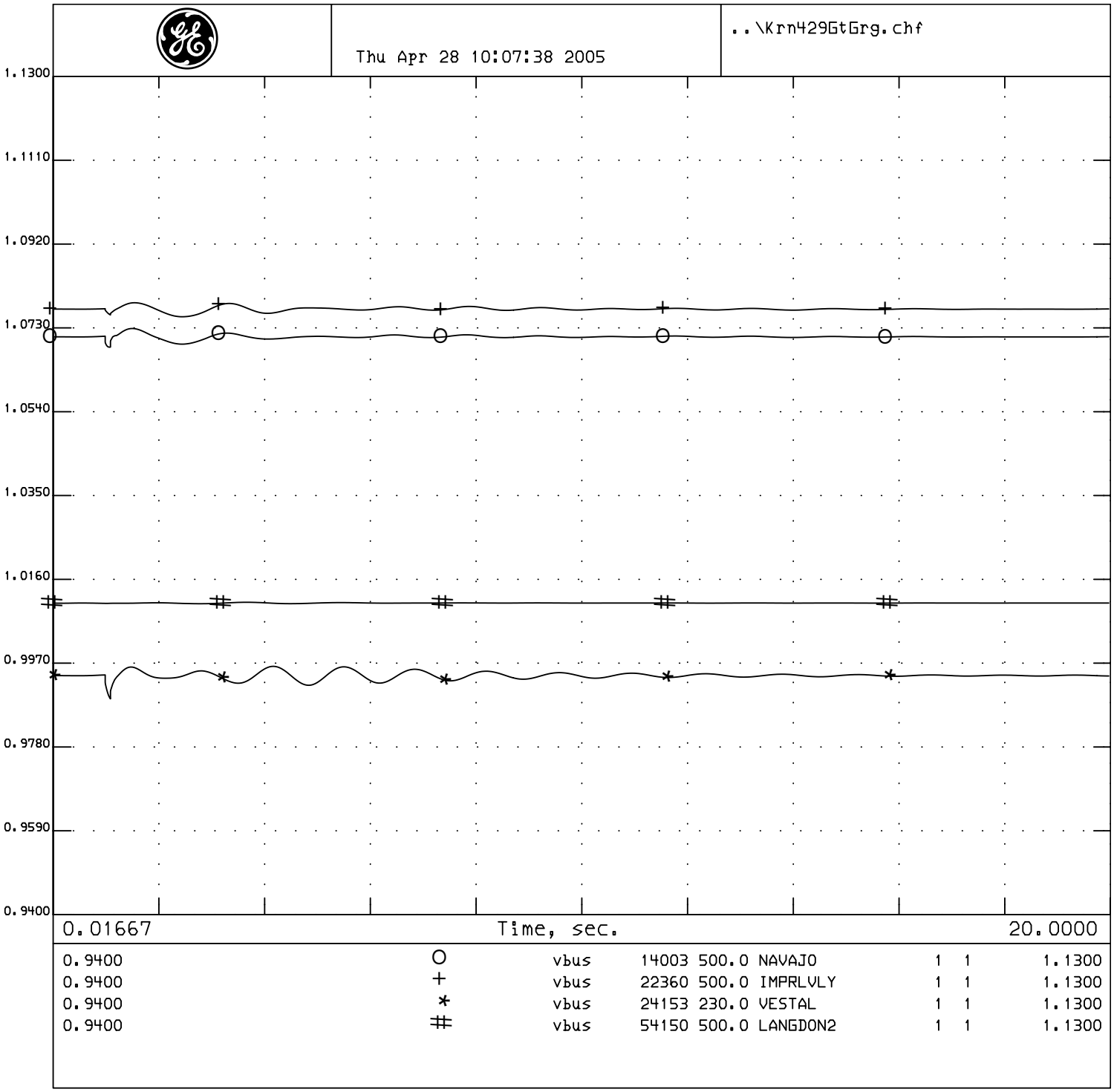
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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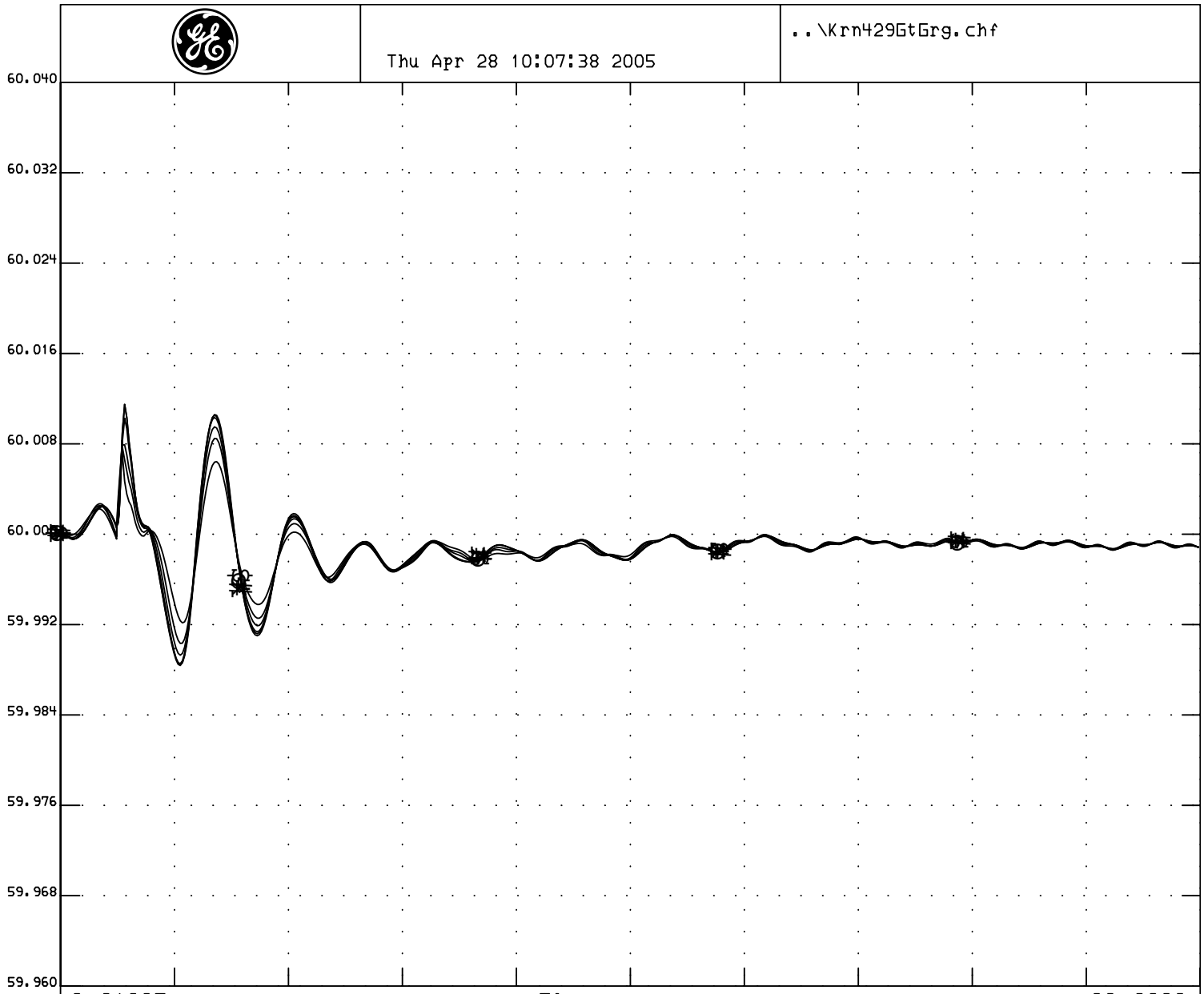
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Voltage Plots



59.960	O	fbus	30005	500.0	ROUND MT	1	1	60.040
59.960	+	fbus	30015	500.0	TABLE MT	1	1	60.040
59.960	*	fbus	30030	500.0	VACA-DIX	1	1	60.040
59.960	#	fbus	30035	500.0	TRACY	1	1	60.040
59.960	X	fbus	30040	500.0	TESLA	1	1	60.040
59.960	S	fbus	40687	500.0	MALIN	1	1	60.040

P0429 Project System Impact Study
2008 Summer Peak Base Case
P0429 @ 205.2MW
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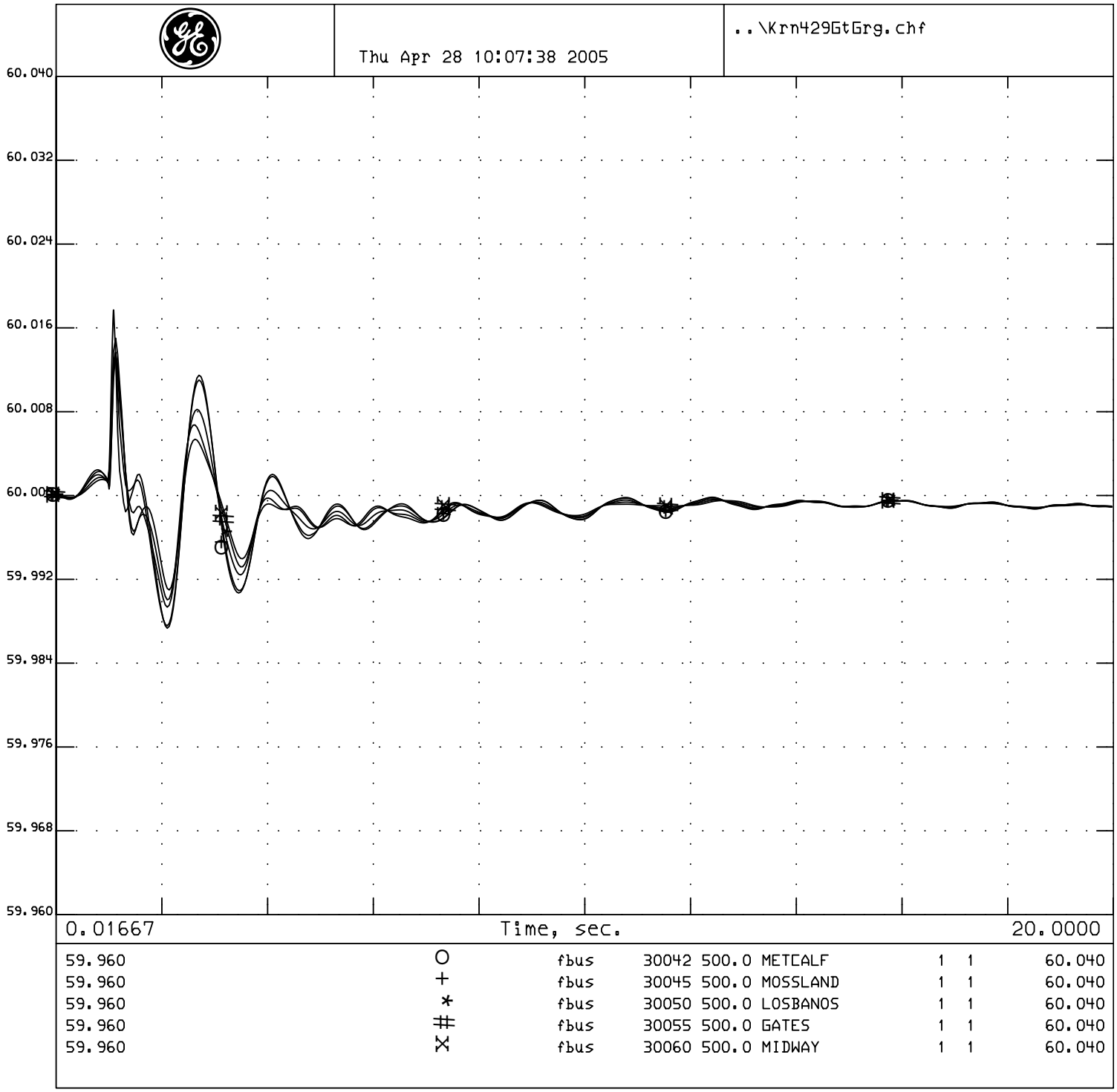
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



P0429 Project System Impact Study
2008 Summer Peak Base Case
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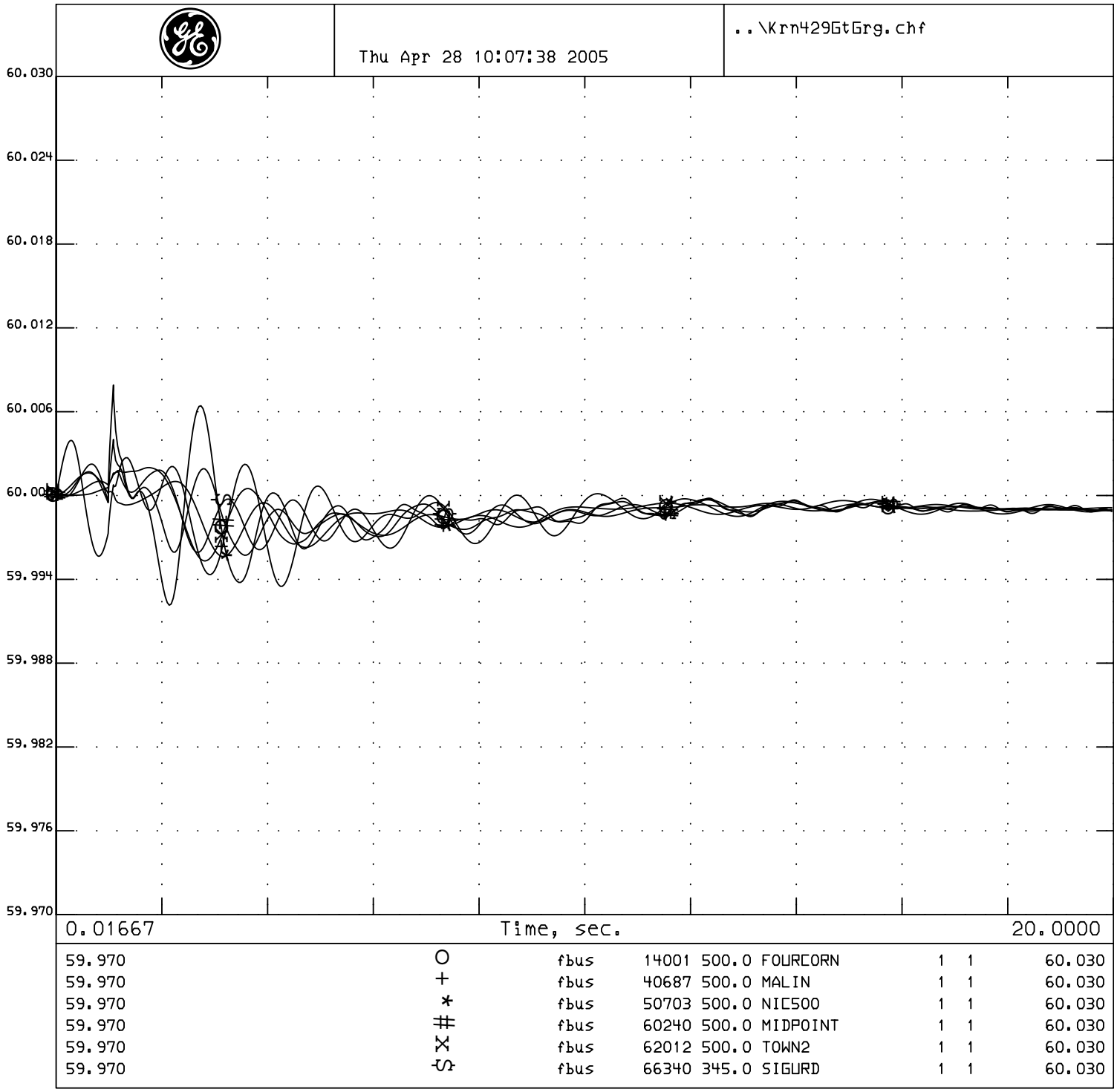
P0429 Project System Impact Study

Generator Interconnection Study

Selected WECC Bus Frequency Plots



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P0429 Project System Impact Study

Generator Interconnection Study

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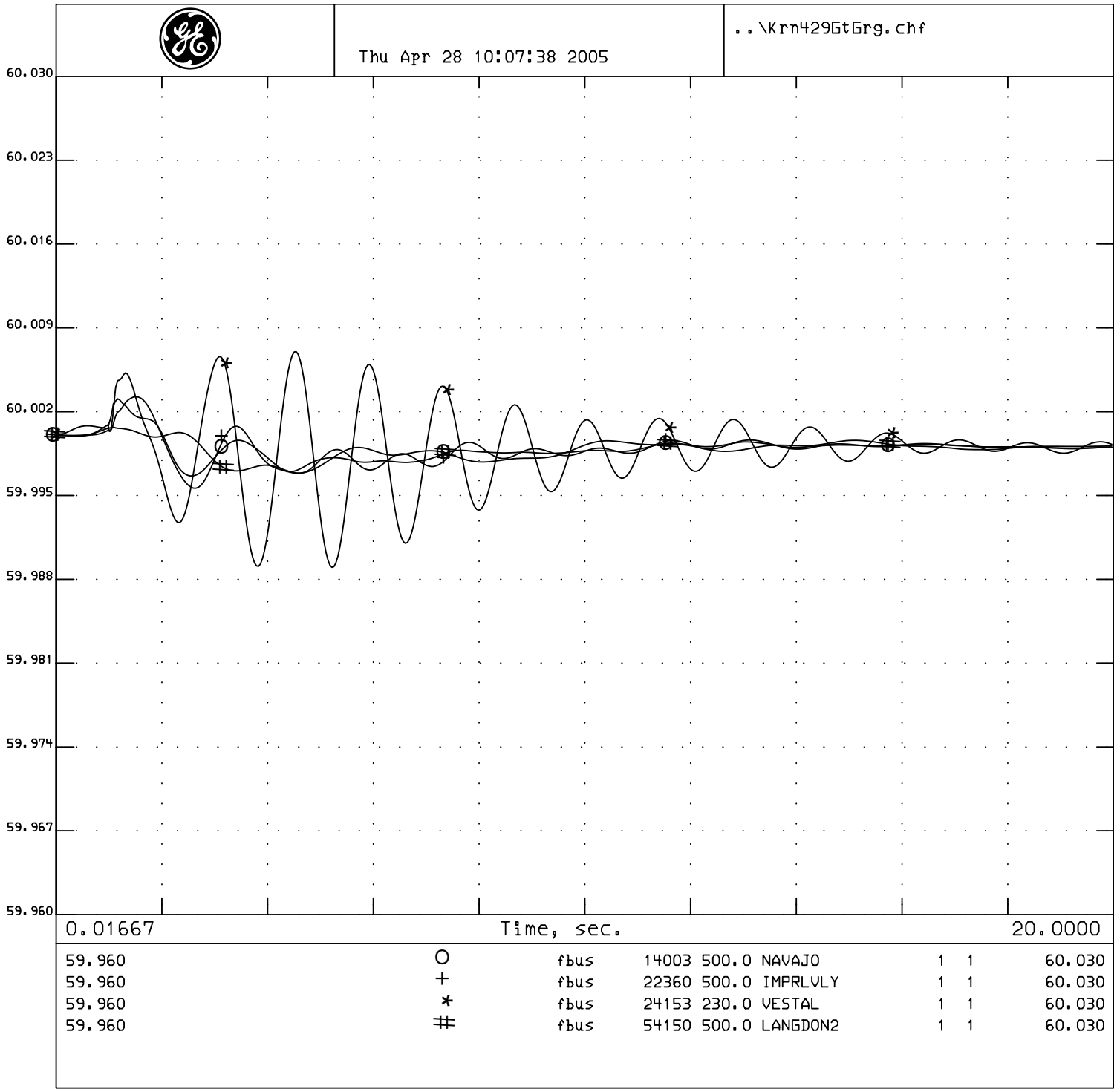

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P0429 Project System Impact Study

Generator Interconnection Study

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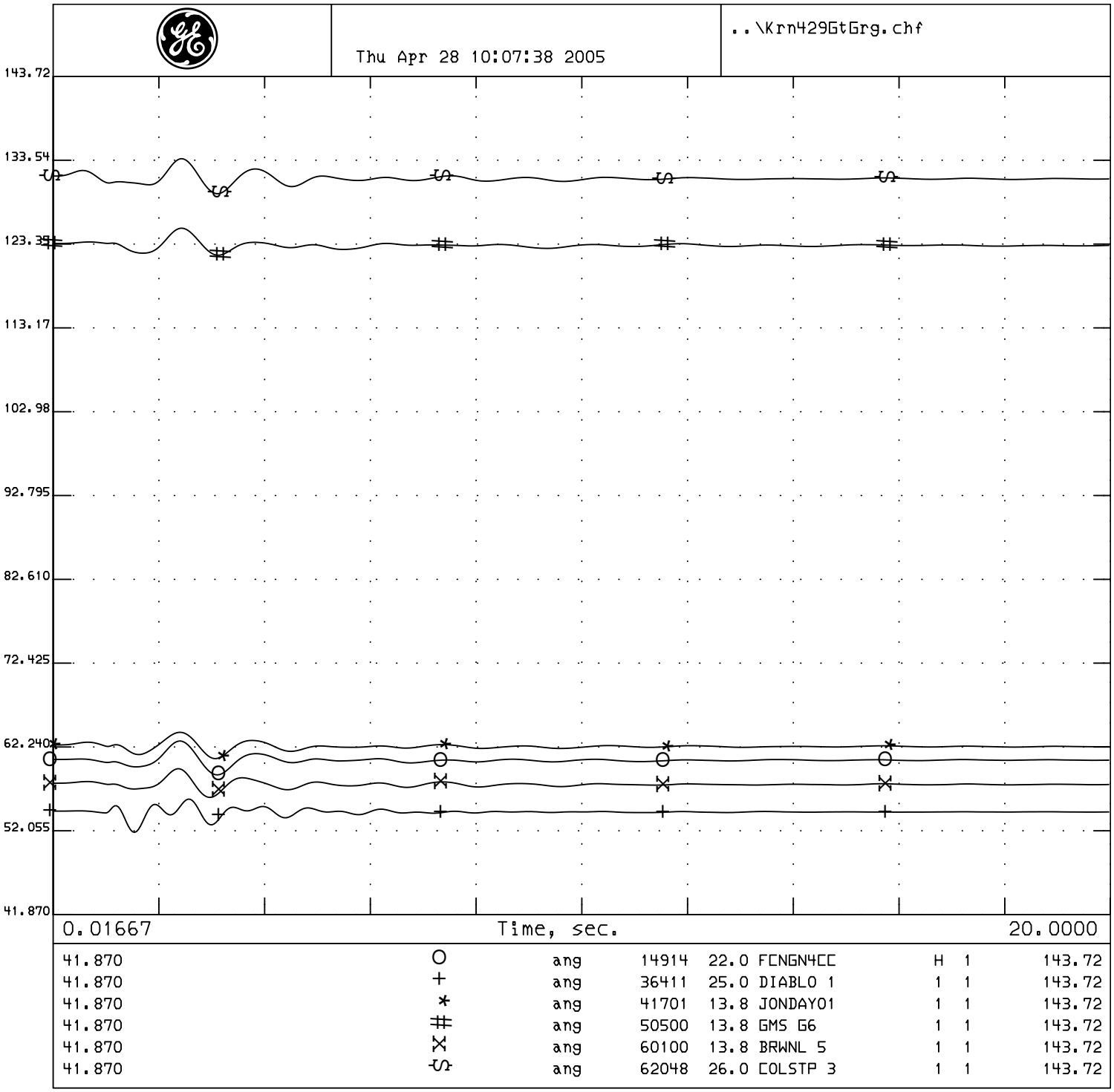

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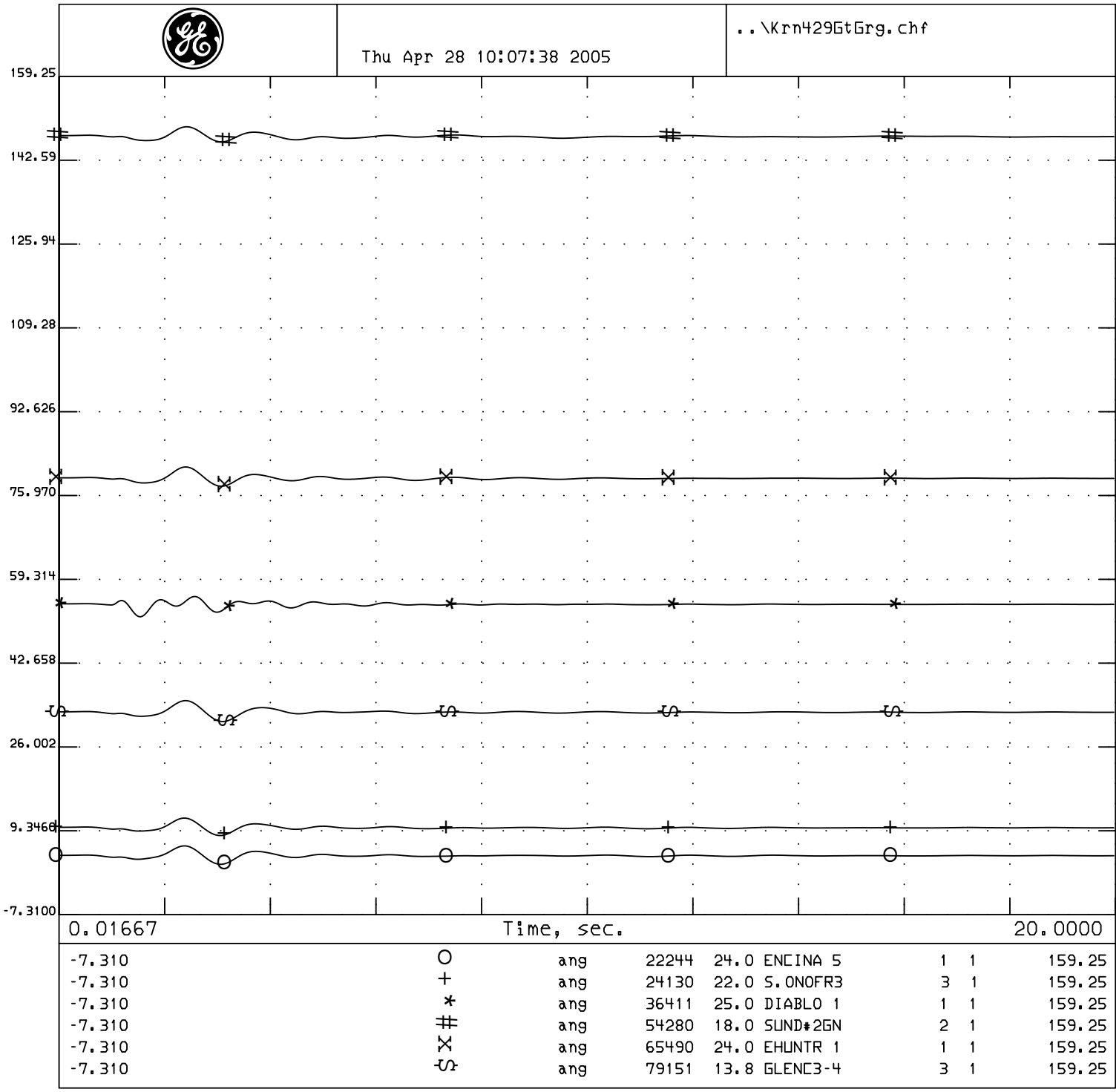
P0429 Project System Impact Study

Generator Interconnection Study

WECC Generator Rotor Angle



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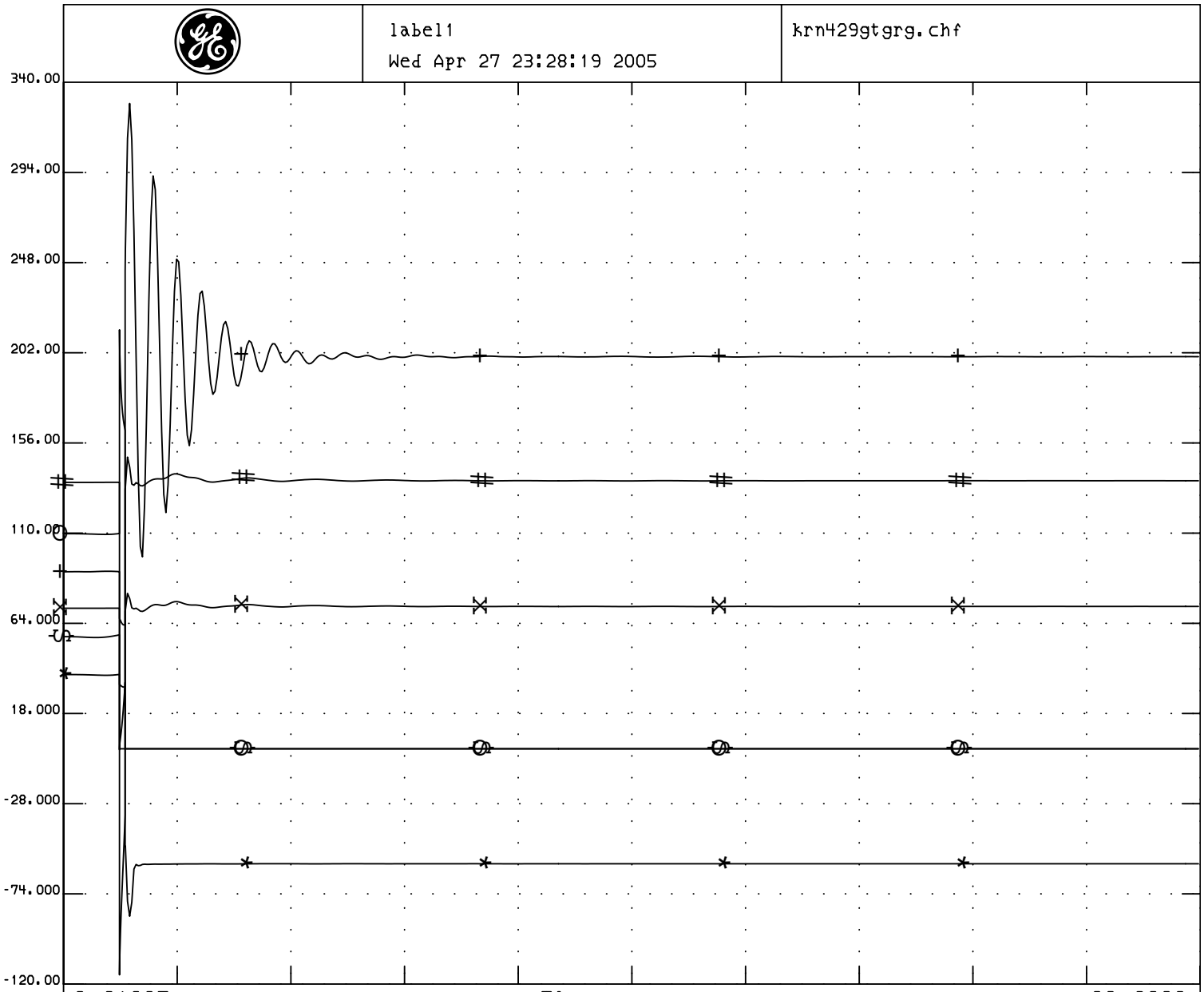

-120.0	O	pbr	30829	230.0	P0429	KEARNEY	1	1	340.00
-120.0	+	pbr	30829	230.0	P0429	HERNDON	1	1	340.00
-120.0	*	pbr	30830	230.0	KEARNEY	MCMULLN1	1	1	340.00
-120.0	#	pbr	30835	230.0	HERNDON	FGRDN T1	1	1	340.00
-120.0	X	pbr	30840	230.0	FGRDN T1	ASHLAN	1	1	340.00
-120.0	S	pbr	30879	230.0	HENTAP1	GATES	1	1	340.00

P0429 Project System Impact Study
2008 Summer Peak Base Case
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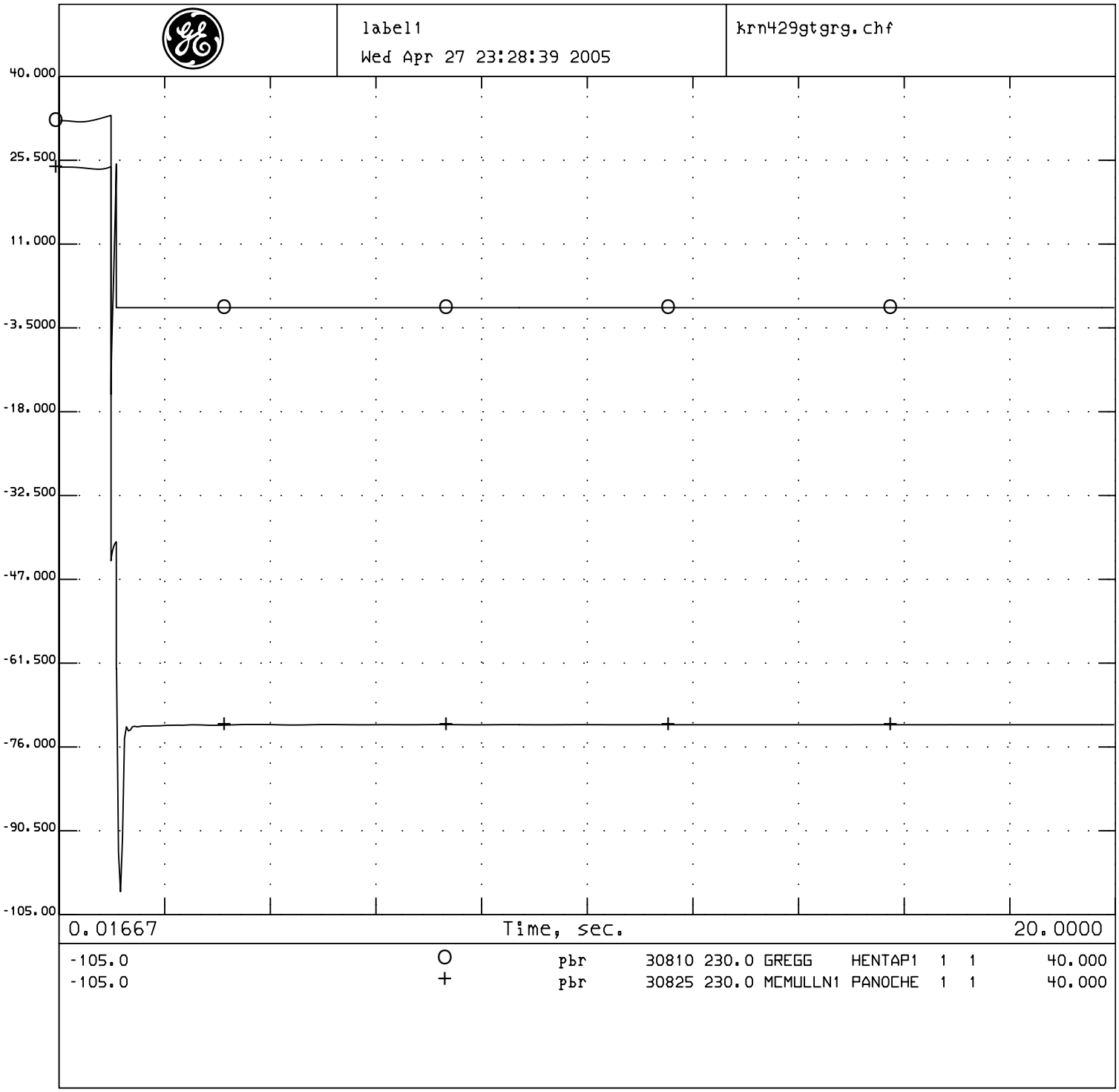
P0429 Project System Impact Study

Generator Interconnection Study

Selected PG&E Transmission Line Flows MW



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