System Impact Study

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Generation Interconnection

Calpine/Bechtel Joint Development
Russell City Energy Center

October 10, 2001

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TABLE OF CONTENTS

1 Executive Summary 1

2 Study Scope 1

3 Project Information 1

4 Study Summary 2

4.1 Power Flow Studies 2

4.2 Dynamic Stability Studies 3

4.3 Transmission Line Evaluation 3

4.4 Substation Evaluation 3

4.5 System Protection Studies 3

4.6 Land and Compliance Evaluation 4

4 Interconnection Assumptions 4

6 General Criteria for Identifying Overloads 5

6.1 Normal Overloads 5

6.2 Emergency Overloads CAISO Category "B" Classifications 5

6.2.1 ISO Category "B" 6

6.2.2 ISO Category "C" 6

7 Steady State Power Flow Results 6

7.1 Power Flow Results 6

7.2 2004 Summer Peak Case: 7

7.3 2004 Partial Peak Base Case: 7

7.4 Contingency Results 10

7.5 Mitigation 13

8 Dynamic Stability Studies 14

8.1 Summary of the Stability Studies 14

8.2 Simulated Disturbances 15

8.2.1 NERC/CAISO Category "B" Contingencies: 15

NERC/CAISO Category "C" Contingencies: 16

8.3 Parameters Monitored to Evaluate Stability Performance 16

9 Short Circuit Study Results 17

9.1 Study Input Data and Assumptions 17

9.2 Fault Duties & Protection Requirements 18

10 Transmission Line Evaluation 19

10.1 Scope of Work 19

11 Substation Evaluation 21
12 Land and Compliance Evaluation 22
12.1 Overview and Right-Of-Way Acquisition 22

Appendices:

A - Autocon Input File –Contingency Outages
B - Autocon Output File – Power Flow Results Comparison
C - Power Flow Plots
D - Generator Machines Dynamic Data
E - Dynamic Stability Plots
F - Study Plan
G - Conceptual Substation and Transmission Layout Diagrams

1 Executive Summary

Russell City Energy Center (RCEC), proposed by Calpine/Bechtel Joint Development, will be located in Hayward, CA in Pacific Gas & Electric Company's (PG&E) Easy Bay Division. RCEC would be a combined cycle plant with a nominal total generating capacity of 635 megawatts with a maximum reactive capability of 0.85 lagging power factor. The project will provide a maximum net output of 620 MW to PG&E's transmission grid. The power plant would consist of Siemens Westinghouse combine cycle technology with associated heat-recovery system.

RCEC would be connected to the PG&E transmission system via existing East Shore substation. A new switchyard will be built for this purpose with a proposed 230 kV ring bus configuration scheme. The proposed interconnection will be accomplished by constructing two 230 kV lines to connect the generating plant switchyard with Eastshore substation. These two outlet circuits will be constructed using PG&E right-of-way (ROW), which is available for use, adjacent to the Grant - Eastshore 115kV lines. RCEC expected operational date is July 2003.

PG&E performed a System Impact Study (SIS), with input and concurrence from Calpine/Bechtel, to capture all impacts of the proposed project on transmission system. Based upon technical analysis results, various system upgrades will be necessary to accommodate full RCEC output and prevent any CA ISO planning criteria violation. Recommended improvements would include replacing existing East Shore 230-115 kV transformers with bigger size units, looping the Pittsburgh-East Shore 230 kV circuit #2 into East Shore substation and either implementing remedial action schemes (RAS) or reconductoring both East Shore-San Mateo 230 kV circuits #1 and #2 to provide higher capacity. A special protection scheme will be implemented for RCEC generation curtailment to prevent certain identified 115 kV thermal overloads arising during contingent conditions. The study identified various over stressed equipment resulting solely from the addition of the proposed project. System protection requirements were also determined based upon short-circuit analysis. Stability simulations indicated that RCEC would have no adverse impact on system dynamic performance of the PG&E transmission system.

2 Study Scope

The System Impact Study scope includes:

- The transmission system impacts caused solely by the addition of RCEC.
- An identification of potential transmission upgrades needed to mitigate the overloaded facilities caused solely as a result of adding RCEC Project.

3 Project Information

Based upon information provided by Calpine/Bechtel, the proposed RCEC site is located in Hayward, CA. RCEC will be connected to PG&E's Eastshore Substation. A new RCEC switchyard will be built for this purpose with a proposed 230 kV ring bus configuration scheme. The proposed interconnection will be accomplished by constructing two 230 kV new lines to connect the generating plant switchyard with Eastshore substation. These two outlet circuits will be constructed using PG&E right-of-way (ROW), which is available for use adjacent to the Grant - Eastshore 115 kV lines. The project will provide a maximum output of 620 MW to PG&E's transmission grid.

RCEC will consist of a combined cycle plant with a nominal total generating capacity of 635 megawatts with a maximum reactive capability of 0.85 lagging power factor. RCEC will have a plant load of 15 MW. The power plant would consist of Siemens Westinghouse combine cycle technology with associated heat-recovery system. The power plant would contain the following turbine/generators:

1) Two - gas combustion turbine/generators (CTG) rated at 190 MVA each.

2) One - steam turbine/generator (STG) rated at 255 MVA.

Each generator unit will have a dedicated 230/15.0 kV step-up transformer connected to the new 230 kV switching station via a ring bus configuration. All control and relay protection for the generating units and unit transformers will be furnished and installed by Calpine/Bechtel Joint Development. Figure 1 provides a view of the project's location.

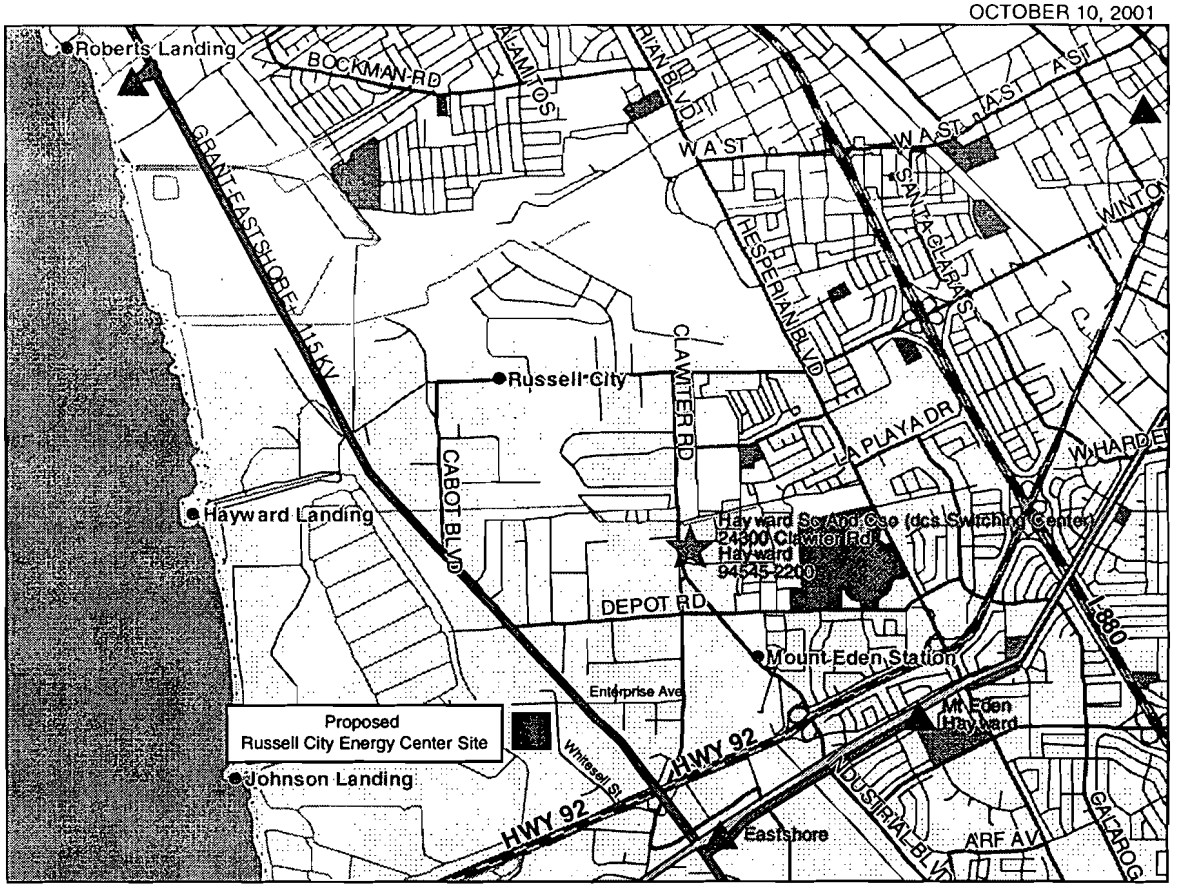

Figure 1: Map of Project Site

4 Study Summary

4.1 Power Flow Studies

Steady state power flow studies were conducted with PG&E's 2004 Summer Peak and 2004 Partial-Peak base cases. Section 7 describes in detail the key assumptions of these base cases and the results of the steady-state power flow studies. The overall results of this study are summarized in this section.

The results indicated there would be a normal overload on the East Shore 230/115 kV transformers caused solely as a result of adding the Project. The analysis assumes splitting of the existing 115 kV circuit between Grant and East Shore substations (for load serving purposes) and implementation of normally open configuration between Station J and Grant completed during 2001. Analysis also assumes that as part of the transmission system mitigation plan for the Delta Energy Center (DEC) Project, the existing San Mateo - Contra Costa 230 kV line will be converted to the San Mateo - Pittsubrg 230 kV line and the East Shore - Contra Costa 230 kV line will be converted to the East Shore - Pittsburg 230 kV line by 2002. To accomplish adequate RCEC generation outlet capability, Pittsburg - San Mateo 230 kV

Line (to be operational by 2002) will be looped into East Shore Substation as part of the Russell City Energy Center Project. East Shore transformers will experience 108% and 81% loading of rated capacity respectively during Peak and Partial-peak normal conditions upon addition of RCEC. Loss of one East Shore transformer will cause the remaining unit to experience 138% and 104% loading during Peak and Partial-peak conditions. Loss of one East Shore-San Mateo 230 kV circuit will cause the remaining circuit to experience 111% and 114% loading during Summer and Partial Peak load conditions respectively.

During various single and multiple contingency operating conditions (Category B and C), generation curtailment will be necessary to prevent adverse impact on various PG&E transmission facilities. The outcome of the power flow studies is discussed in greater details in Section 6.

4.2 Dynamic Stability Studies

Dynamic stability studies were conducted simulating selected disturbances. Section 8 describes the disturbance scenarios used and the results of the study. The studies indicated that the Project would have no adverse impact on system dynamic performance of the PG&E transmission system.

4.3 Transmission Line Evaluation

The transmission line evaluation determined the scope of facilities required to interconnect the new generation to East Shore substation via the proposed construction of two 230 kV circuits. Reconductoring of both East Shore-San Mateo 230kV lines with 954 SSAC conductor will be necessary to accommodate full RCEC output and thereby eliminate the identified thermal overload condition if a viable RAS scheme is not implemented. Section 10 discusses the results of the study in detail.

4.4 Substation Evaluation

The Substation evaluation identified new equipment needed to accommodate proposed breaker-and-half bus configuration scheme at East Shore substation consistent with current PG&E bus configuration guideline. East Shore Substation will be modeled with six 230 kV lines (two from San Mateo, two from Pittsburg, and two from RCEC). Section 11 discusses the results of the evaluation in detail. The scope of work includes expansion of East Shore substation consisting of a total of 12 circuit breakers arranged in 4 bays of breaker-and-a-half scheme, a control building for protection and control equipment, to be located in a fenced area (approximately 280 feet long x 160 feet deep) provided by the generator applicant.

4.5 System Protection Studies

Short circuit studies were performed to determine the effects of the RCEC on short-circuit fault duties and overstressed equipment on the existing transmission facilities in the surrounding area. This study identified various

over stressed equipment and protection relaying upgrades resulting solely from the addition of the proposed project. System protection requirements were determined and are discussed in Section 9.

4.6 Land and Compliance Evaluation

PG&E's land department performed an evaluation to determine if any new land rights are required to install new facilities required for the interconnection. Section 12 discusses the results of the study in detail.

4 Interconnection Assumptions

With input and concurrence from Calpine/Bechtel Joint Development, PG&E conducted the SIS using the following assumptions:

1) The maximum delivery from the project to the PG&E transmission grid would be 620 MW at approximately 0.85 (lagging) power factor.

2) East Shore Substation currently has a single 230 kV bus configuration. For the System Impact Study, East Shore Substation was modeled with six 230 kV lines (two from San Mateo, two from Pittsburg, and two from RCEC).

3) The RCEC would be connected to the PG&E transmission system by constructing two 230 kV circuits from RCEC on-site switchyard to loop in with East Shore substation using PG&E owned right of way. PG&E will build these two circuits to accomplish the proposed interconnection and will be fully reimbursed for this purpose. The loop lines are each approximately 4,600 ft long. RCEC is expected to be operational by July of 2003. PG&E personnel conducted a ground review for possible routes to interconnect the RCEC plant output via these two proposed transmission lines in Hayward. It is proposed to build new double circuit 230 kV line on tubular poles or towers in the available right of way running parallel and adjacent to Grant-Eastshore 115 kV line. The new structures will be placed about 600-800 feet apart in line with adjacent existing towers on Grant-Eastshore 115 kV line. The proposed new line from RCEC to Eastshore is approximately 4600 feet in length. There would be a need for a shoofly for both circuits in order to continue to operate the Pittsburg-Eastshore and Pittsburg-San Mateo lines and to perform the substation work for new bus arrangement. Figure 2 provides a proposed one-line for the new arrangement.

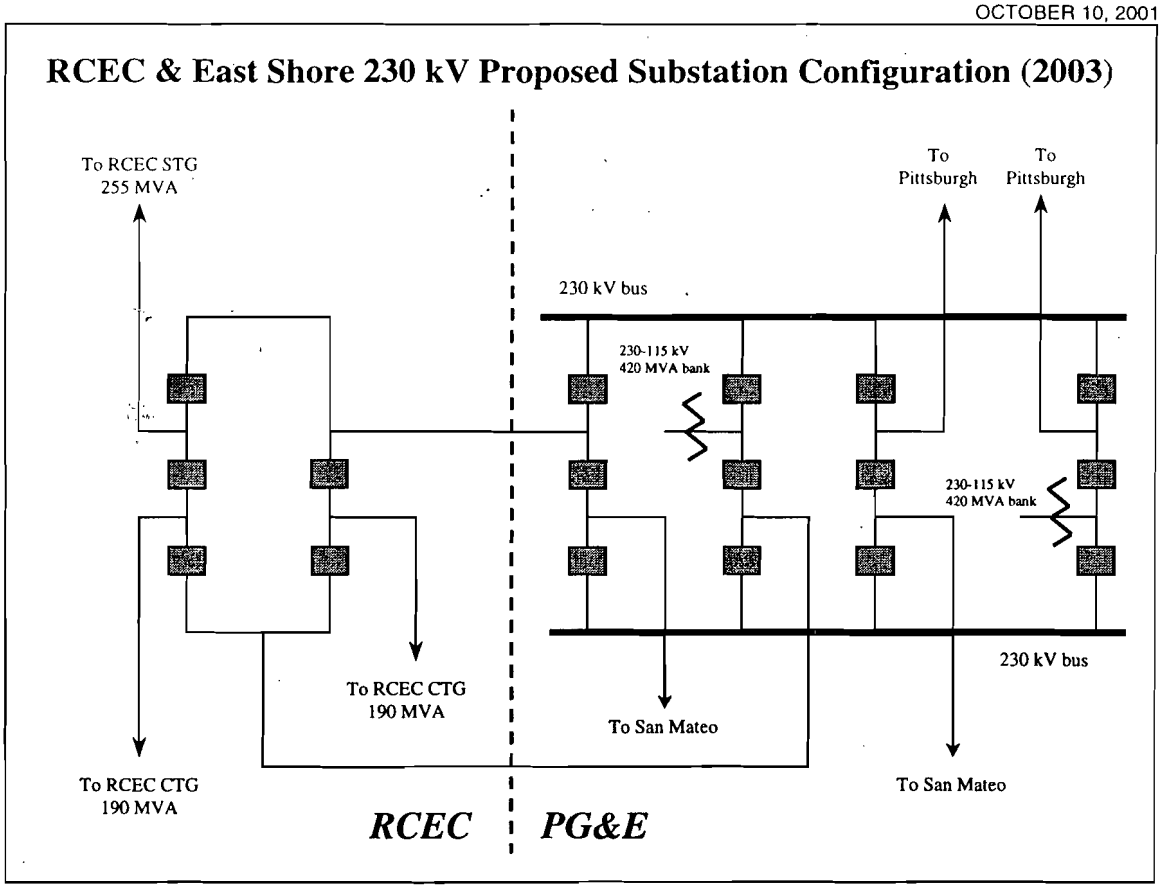

Figure 2: Proposed one-line

6 General Criteria for Identifying Overloads

6.1 Normal Overloads

Normal overloads are those that exceed 100% of normal summer ratings1.

6.2 Emergency Overloads CAISO Category "B" Classifications

Emergency overloads are those that exceed 100% of emergency summer ratings. The emergency overloads refer to overloads that occur during single (CAISO Category "B"[2]) and multiple (CAISO Category "C"[3]) contingencies.

[1] Summer normal ratings are calculated using a wind speed of 2 feet/second, an ambient temperature of 37° C for coastal regions and 43° C for interior regions, and a conductor temperature of 75 ° C for AAC and CU conductors. For other standard type conductors such as ACSR and ACSS the conductor temperatures used in the calculations are 80° C and 200° C respectively. A 4 feet/second wind speed is used on an exception basis.
[2] CAISO Category B refers to all single outages, i.e., a generator, a transmission circuit or a transformer bank.
[3] CAISO Category C refers to outages resulting from the loss of two or more components.

The single (ISO Category "B") and selected multiple (ISO Category "C") contingencies include the following outages[4]:

6.2.1 ISO Category "B"

- All single generator outages within the study area.
- All single (60-230 kV) transmission circuit outages within the study area.
- All single transformer outages within the study area.
- Overlapping single generator and transmission circuit outages for the transmission lines and generators within the study area.

6.2.2 ISO Category "C"

- Selected bus outages (115 and 230 kV) within the study area.
- Outages caused by breaker failures (excluding bus tie and sectionalizing breakers) at the same bus section above.
- Combination of any two-generator/transmission line/transformer outages (except ones included above in Category "B") within the study area.
- Outages of double circuit tower lines (115 and 230 kV) within the study area.
- Overlapping loss of the two largest available generation units in addition to any generation unavailable due to regular overhaul schedules. (ISO Grid Criteria Level C).

7 Steady State Power Flow Results

7.1 Power Flow Results

Power flow studies of the CAISO Category "A" normal conditions and CAISO Category "B" and selected Category "C" contingencies were performed for the 2004 Summer and Partial Peak load conditions. The results indicated that both East Shore 230-115 kV transformers would experience overloads during normal and emergency conditions. See Appendix A for the list of contingencies studied, Appendix B for the Autocon results comparison file and Appendix C for power flow plots.

Power flow and generation sensitivity studies were performed using PG&E's 2004 Summer Peak and 2004 Partial Peak Base Cases (in General Electric Power Flow format) to evaluate the transmission system impact of the RCEC.

7.2 2004 Summer Peak Case:

Power flow analysis was performed using PG&E's 2004 Summer Peak Full Loop Base Case (in General Electric Power Flow format). This base case was developed from PG&E's 2001 base case series and has a 1-in-10 year extreme weather load level for the Greater Bay Area.

7.3 2004 Partial Peak Base Case:

To evaluate the potential congestion on the transmission facilities with lower load level and with any generation unavailable, power flow analysis was performed using a 2004 Summer Partial Peak Base Case. The Greater Bay Area load levels are reduced approximately 22% from the levels shown in the Summer Peak Base Case, which is representative of a typical morning of a summer peak day.

These two base cases will model all the approved PG&E transmission reliability projects that will be operational by summer 2003. The following major reliability projects will be included:

- Third 500/230 kV, 1120 MVA transformer at Tesla Substation
- Second 500/230 kV, 850 MVA transformer at Tracy Substation
- Third 500/230 kV, 1120 MVA transformer at Metcalf Substation
- Tesla-Newark 230 kV line (new)
- Newark - San Mateo 230 kV line loop into Ravenswood Substation
- Static Capacitors (350 MVAR) at Metcalf 500 kV
- Static Capacitors (150 MVAR) at Martin 115 kV
- Newark Substation Bank #7, 9, and 11 TCAP
- Grant-Eastshore 115 kV Transmission Project
- Los Esteros Substation Project
- Tri-Valley Project - Phase I
- Pittsburg - Tassajara 230 kV Line Reconductoring
- Newark 230 kV - 100 to 200 MVAR Static VAR Compensator

The base case will also include the following major proposed generating facilities in Northern California:

1) Calpine/Bechtel - 880 MW Delta Energy Center (DEC), interconnecting with the 230 kV bus at the Pittsburg Power Plant switchyard.

2) Calpine/Bechtel - 600 MW Metcalf Energy Center (MEC), interconnecting with the Metcalf - Monta Vista #4 230 kV line, through the MEC switchyard.

3) PG&E NEG - La Paloma generation facility interconnecting at Midway 230 kV bus section D; La Paloma generation facility will be will be modeled at 1110 MW in summer and 1160 MW in spring and winter.

4) Calpine - 500 MW Los Medanos Energy Center (LMEC), interconnecting with the 115 kV bus at the Pittsburg Power Plant switchyard.

5) Texaco - 338 MW Sunrise Generation Facility interconnecting at La Paloma Switching Station.

6) Three Mountain Power Company - 530 MW project interconnecting to PG&E's Pit 1 – Pit 3 and Pit 1 – Cottonwood 230 kV lines.

7) GWF - 130 MW Hanford, interconnecting to Kingsburg - Henrietta 115 kV line in Fresno area.

8) Duke Energy North America Corporation (DENA) - 1080 MW Moss Landing project (MLPP), interconnecting with the existing 230 kV bus at the Moss Landing Power Plant.

9) Southern Energy Company of California - 530 MW Contra Costa Power Plant Capacity Increase Project, interconnecting to Contra Costa PP 230 kV bus.

10) Central Reliability Energy Center - 45 MW project in San Jose/San Clara area.

11) The Midway-Sunset generation facility will be 500 MW in summer, 540 MW in spring, and 540 MW winter. Midway-Sunset generation facility will be interconnected at Midway 230 kV bus section E.

12) Sempra - 500 MW Elk Hills Power Project, interconnecting at Midway 230 kV bus.

13) FPLE - 150 MW High Wind, tapping off the Vaca -Contra Costa #2 230 kV line.

14) United Golden Gate PP - 595 MW generating facilities, interconnecting with the San Mateo - Martin #5 and #6 115 kV lines.

15) Project A - 692 MW Tesla Generation Project , interconnecting near Tesla Substation.

16) Project B – 580 MW Fremont Generating Project interconnecting to the 230 kV bus at Newark Substation.

17) Project C – 581 MW Los Esteros Generating Project interconnecting to the 115 kV bus at Los Esteros Substation.

18) Wellhead Electric - 22 MW Stockton Cogen Project, interconnecting with Newark Sierra Paper Board 60 kV Tap on the Stockton "A" #1 60 kV line.

19) Morro Bay Modernization Project replacing the existing Morro Bay Power Plant with 1,200 MW of generation.

20) Panda - 150 MW West 1-3, interconnecting with Vaca Dixon - Contra Costa #1 230 kV line.

21) Mirant - 600 MW Potrero Unit 7 Project, interconnecting Potrero and Hunters Point Switching Stations.

22) Calpine Corporation - 500 MW Sutter facility, interconnecting with WAPA's Elverta - Olinda and Elverta - Keswick 230 kV.

23) FPLE - 560 MW Elverta Project, interconnecting with WAPA system.

24) Calpine – 1,070 MW East Altamont Generating Project interconnecting at loop the Tracy - Westley 230 kV circuit near Tracy Substation.

25) Project D - 1000 MW in the Fresno area.

26) Project E - 630 MW in Glenn and Colusa counties.

27) Project F - 1350 MW in Solano county.

Some of the key assumptions made in this base case after adding the Project are listed in Table1.

	Summer Peak Base Case	Partial Peak Base Case
California – Oregon Intertie (North to South)	3000 MW	3000 MW
Morro Bay Unit #4	Swing Bus	Swing Bus
Total Bay Area Load	8552 MW	7009 MW
San Francisco Load	1035 MW	922 MW
Peninsula Load	948 MW	662 MW
San Jose Load	2044 MW	1648 MW
Total PG&E Load	26099 MW	20290 MW

Generating Units	Summer Peak Base Case Output	Partial Peak Base Case Output
San Francisco Generation	450 MW	450 MW
Pittsburgh 7	500 MW	500 MW

Table 1: Critical Data Assumed for the Study Base Cases

7.4 Contingency Results

Powerflow results (for Category A&B outages) indicate that both East Shore 230-115 kV transformers will experience normal overload conditions following the addition of RCEC during 2003. Both transformers are currently rated at 120 normal and 144 MVA emergency capacity respectively. East Shore 230/115 kV bank was identified as having an emergency overload with an outage of the remaining parallel bank (summarized in Table 2) for pre-RCEC scenario. Based upon recent TCAP analysis performed at PG&E to identify mitigation measures for relieving the identified pre-RCEC emergency overload on the East Shore banks, these transformer will be re-rated to 139 MVA normal and 161 MVA emergency ratings during 2002 which will be adequate to address the T-1 emergency overload condition during pre-RCEC scenario. It does appear that the bank re-rate during 2002 to mitigate N-1 contingency overload on the East Shore transformer bank have an added benefit of reducing or eliminating the newly identified normal overload on the East Shore 230/115 kV #1 and #2 transformer banks. However, this re-rate is inadequate to relieve the normal and severe emergency overloads caused solely by addition of RCEC during 2003 and hence additional mitigation is required. Additional 230-115 kV transformer capacity will be required at East Shore to mitigate the newly identified transformer overload problems imposed by RCEC and meet ISO planning criteria. Because of the large number of local contingencies (more than three contingencies) that could cause the East Shore transformer to overload, RAS scheme requiring generation curtailment has not been proposed to fix the bank overload problem. These contingencies are East Shore – San Mateo 230 kV lines, San Mateo – Martin 230 kV cable and East Shore 230/115 kV bank #1 or #2.

Various emergency overloads have been identified during certain contingencies in the study area, which include outage of either East Shore-San Mateo 230 kV circuit causing the remaining one to overload beyond emergency ratings (currently rated at 397 MVA normal and 449 MVA emergency respectively based upon 3 ft/sec wind speed line rating assumption). By June 1, 2002 PG&E will be installing a CAT-1 device on this circuit, which would allow PG&E to increase the rating of this circuit to 4 feet per second wind speed. These new ratings based upon 4ft/sec wind speed are 433 MVA (summer normal) and 481 MVA (summer emergency). However, the 4 ft/sec wind-speed rating is not adequate to mitigate line overloads due to the addition of RCEC, and hence implementation of a viable RAS scheme to reduce RCEC generation or additional system reinforcements, such as line reconductoring, would be needed. Loss of

Ravenswood 230-115 kV transformer causes excessive thermal loadings (pre RCEC limitation) on certain 115 kV circuits in the peninsula that are only aggravated by RCEC addition. These limitations can be eliminated by addition of a second 230-115 kV transformer at Ravenswood required for PG&E load serving purposes during the same timeframe. A new Ravenswood-Bair 115 kV line addition will help to address the normal and emergency overload (pre RCEC limitation) of San Mateo-Belmont 115 kV line. Autocon outputs are all listed and summarized in Appendix B.

These results are summarized in Tables 2 and 3.

Powerflow simulations were also performed for all Category C outages. The results indicate the need for generation curtailment and system restructuring. Autocon summary outputs for these contingencies are also summarized and listed in Appendix B.

Transmission Contingency	Affected Facilities/Equipment	Facility Rating (MVA)	Thermal Loading (%)	
			(before RCEC)	(after RCEC)
System intact	East Shore 230-115 kV bank #1	139	77%	108%
	East Shore 230-115 kV bank #2	139	77%	108%
East Shore 230-115 kV bank #1	East Shore 230-115 kV bank #2	161*	99%	138%
Pittsburgh-San Mateo 230 kV ckt	East Shore-San Mateo 230 kV ckt	481*	65%	111%
	East Shore 230-115 kV bank #1	161*	63%	102%
	East Shore 230-115 kV bank #2	161*	63%	102%
East Shore-Dumbarton 115 kV circuit	San Mateo-Belmont 115 kV circuit	126*	82%	100%
Newark-Dumbarton 115 kV circuit	East Shore 230-115 kV bank #1	161*	89%	89%
	East Shore 230-115 kV bank #2	161*	89%	89%
San Mateo-Martin 230 kV cable	East Shore 230-115 kV bank #1	161*	71%	93%
	East Shore 230-115 kV bank #2	161*	71%	93%
Pittsburgh-East Shore 230 kV ckt	East Shore-San Mateo 230 kV ckt	481*	N/A	87%
(reduce RCEC output by 255 MW)	East Shore 230-115 kV bank #1	144*	N/A	89%
	East Shore 230-115 kV banks #2	144*	N/A	89%

* *Emergency equipment rating*

Table 2: 2004 Summer Powerflow Analysis Results

Transmission Contingency	Affected Facilities/Equipment	Rating (MVA)	Thermal Overloads (%)	
			(before RCEC)	(after RCEC)
System intact	East Shore 230-115 kV banks #1,2	139	54%, 54%	81%, 81%
	San Mateo-Belmont 115 kV circuit	99	48%	66%
East Shore 230-115 kV bank #1	East Shore 230-115 kV bank #2	161*	72%	104%
Pittsburgh-San Mateo 230 kV ckt	East Shore-San Mateo 230 kV ckt	481*	55%	114%
	East Shore 230-115 kV banks #1,2	161*	52%, 52%	80%, 80%
Newark-Dumbarton 115 kV circuit	East Shore 230-115 kV banks #1,2	161*	77%, 77%	77%, 77%
San Mateo-Martin 230 kV cable	East Shore 230-115 kV banks #1,2	144*	47%, 47%	71%, 71%
Ravenswood 230-115 kV bank	San Mateo-Ravenswood 115 kV ckt	104*	80%	101%
	San Mateo-Belmont 115 kV circuit	126*	85%	99%
Pittsburgh-San Mateo 230 kV ckt	East Shore-San Mateo 230 kV ckt	481*	N/A	89%
(reduce RCEC output by 190 MW)	East Shore 230-115 kV banks #1,2	161*	N/A	73%, 73%

* Current *emergency equipment rating*

Table 3: 2004 Partial Peak Powerflow Analysis Results

The Cal-ISO performed a sensitivity analysis to determine if there was any potential congestion on the East Shore – San Mateo 230 kV lines # 1 and # 2 under Summer peak load with the following generation dispatch conditions: maximum generation from the Pittsburg area [5], removal of the proposed United Golden Gate Power Phase II Project [6], and using the generation specified in the newly adopted "San Francisco Greater Bay Area Generation Outage Planning Standard" [7]. Under this generation dispatch condition, the East Shore – San Mateo 230 kV lines #1 and 2 were identified to be loaded up to 96% of the lines' 4 ft-per-second rating (433 MVA normal rating). For the Summer partial-peak scenario, the transmission lines were loaded up to 93% of their normal rating. This analysis assumes full RCEC output levels at 618 MW and 635 MW at peak and partial peak conditions respectively.

[5] 2,040 MW from the Pittsburg Power Plant, 880 MW from Delta Energy Center, 500 MW from Los Medanos Energy Center.

[6] Since El Paso Energy Center did not complete the Generator Special Facilities Agreement (GSFA) within 45 days of its issuance, the 570 MW Project in the San Francisco Peninsula was removed from PG&E's interconnection queue.

[7] San Francisco generation dispatch was simulated in accordance to the San Francisco Greater Bay Area Generation Outage Standard (where Potrero 3 and a combustion turbine were dispatched off-line in the base case scenario). Hunters Point Units 1 and 4 were studied off-line in accordance to the generation dispatch from the Potrero 7 System Impact Study.

Based upon CA-ISO supplemental analysis, under Category B single-element contingencies, the following transmission overloads were identified:

The East Shore 230/115 kV transformer bank #1 (or #2) would be overloaded by 34%, based on its re-rated 160 MVA emergency rating for a contingency of the parallel transformer bank under the Summer peak scenario. The East Shore 230/115 kV transformer banks would also be overloaded by 3% for the contingency of the East Shore – San Mateo 230 kV line #1 (or #2).

The East Shore – San Mateo 230 kV line #1 (or #2) would be overloaded by 46% of its 481 MVA 4 ft-per-second emergency rating for a contingency of the parallel East Shore – San Mateo 230 kV line #2 (or #1) under the Summer Peak scenario. The percent overload of the line would be 42% of its emergency rating under the Summer Partial Peak scenario.

Under Category C double-element or bus section contingencies, the following transmission overloads were identified:

The East Shore – San Mateo 230 kV line #1 (or #2) would be overloaded by 25%, based on its 481 MVA emergency rating for the contingency of the East Shore – San Mateo 230 kV line #2 (or #1) and the Pittsburg – East Shore 230 kV line #2 (or #1).

The East Shore – San Mateo 230 kV line #1 (or #2) would be overloaded by 57% for the contingency of the East Shore – San Mateo 230 kV line #2 (or #1) and the East Shore 230/115 kV transformer bank #1 (or #2).

The East Shore – San Mateo 230 kV line #1 (or #2) would be overloaded by 66% for the contingency of the East Shore – Dumbarton 115 kV line and the East Shore – San Mateo 230 kV line #2 (or #1).

The East Shore – San Mateo 230 kV line #1 (or #2) would be slightly overloaded (under 1%) for the contingency of the Pittsburg – San Ramon 230 kV line and the Pittsburg –Tassajara 230 kV line.

Due to a number of contingency conditions which can cause the East Shore 230/115 kV transformers and the East Shore – San Mateo 230 kV lines to overload, the ISO requires telemetry be installed to monitor loading conditions on the transformers or transmission lines. Having telemetry would greatly assist the transmission operators to provide proactive and timely response to transformer and/or line loading concerns.

7.5 Mitigation

Applicant is required to mitigate normal (Category A) and Category B emergency overloads. Mitigation may be achieved in a variety of ways. The most common are:

- Re-rating the affected facility experiencing thermal overload.

- Replacing the overloaded facility. This would include re-conductoring or rebuilding overloaded equipments.

- Installing a Special Protection Scheme to drop generation automatically in the event the condition that causes the overload occurs.

- Implementing an operating solution that requires certain actions to be taken by System Operator in the event the condition that causes the overload occurs. This could include turning on additional generation, instituting a curtailment process, or opening or closing switches to permit line reconfiguration.

- Advance Existing PG&E Planned Reliability Project(s)

  PG&E's overall 5-year work plan has various potential projects that have proposed on-line dates later than that of the generation project. If such a project would mitigate an overload, RCEC can pay to move the project's on-line date to be concurrent with that of the generation project. **Note: The ability to select this mitigation option is contingent upon the approval of the project by PG&E and the CAISO. If the project fails to be approved by both PG&E and CAISO, the developer must select an alternative mitigation option.**

In some instances, a combination of the above may be required to mitigate the overload.

Based upon RCEC powerflow analysis results, the following system upgrades are proposed for thermal overload mitigation:

1) Replace both existing 230-115 kV banks at East Shore with two three-phase 420 MVA units (PG&E standard size) units during 2003 to mitigate thermal overload and avoid any RCEC generation curtailment during normal condition.

2) Implement a RAS scheme or reconductor both East Shore-San Mateo 230 kV circuits with 954 SSAC conductor to accomplish higher thermal capacity. Curtailment of necessary amount of RCEC generation can eliminate these emergency overloads to avoid 230 kV transmission upgrades in the area. Supplemental analysis will need to be performed by PG&E to determine the exact amount of generation curtailment necessary to avoid identified thermal overloads.

8 Dynamic Stability Studies

8.1 Summary of the Stability Studies

Dynamic stability studies were conducted using the 2004 summer Peak base case to determine if the addition of RCEC would result in any adverse impact

on the stable operation of the PG&E transmission system. Selected disturbances were simulated for this purpose.

8.2 Simulated Disturbances

Twenty one disturbances were simulated for the dynamic stability studies. Disturbance simulations were performed for a study period of 20 seconds to determine whether the new facility will create any system instability during the following line and generator outages:

8.2.1 NERC/CAISO Category "B" Contingencies:

a) Full load rejection of the proposed 635 MW (nominal) generating facility.

b) A three-phase fault with the normal 6 cycles clearing time at the RCECSubstation 230 kV bus, followed by loss of one of the RCEC- East Shore 230 kV lines.

c) A three-phase fault with the normal 6 cycles clearing time at the RCECSubstation 230 kV bus, followed by loss of the 255 MW (nominal) STG.

d) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of one of the East Shore - San Mateo 230 kV lines.

e) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of one of the East Shore - Pittsburg 230 kV lines.

f) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of East Shore Bank #1 (230/115 kV bank).

g) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of one of the Grant - East Shore 115 kV lines.

h) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of one of the East Shore - Mt. Eden 115 kV lines.

i) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of the East Shore - Dumbarton 115 kV line.

j) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by loss of one of the San Mateo - Ravenswood 230 kV lines.

k) A three-phase fault with the normal 6 cycles clearing time at the Pittsburg 230 kV bus, followed by loss of one of the Pittsburg - Tesla 230 kV lines.

l) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by loss of San Mateo Bank #5 (230/115 kV bank).

NERC/CAISO Category "C" Contingencies:

a) A three-phase fault with the normal 6 cycles clearing time on East Shore 230 kV buses #1 and #2.

b) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - San Mateo #1 and #2 230 kV lines.

c) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - Pittsburg #1 and #2 230 kV lines.

d) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - Pittsburg #1 and East Shore - San Mateo #1 230 kV lines.

e) A three-phase fault with the normal 6 cycles clearing time on San Mateo 230 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

f) A three-phase fault with the normal 6 cycles clearing time on Pittsburg 230 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

g) A three-phase fault with the normal 6 cycles clearing time on East Shore 115 kV bus.

h) A three-phase fault with the normal 6 cycles clearing time on San Mateo 115 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

i) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by simultaneous loss of both San Mateo - Ravenswood 230 kV lines.

Dynamic stability studies were conducted to ensure that the transmission system remains in operating equilibrium through abnormal operating conditions after the new facility begins operation. This full loop base case was developed from PG&E's 2000 base case series. Other PG&E approved transmission projects and new generation projects in the Bay Area that will be operational by Summer 2004 were also be modeled in this case.

8.3 Parameters Monitored to Evaluate Stability Performance

(a) Bus Voltage

(b) Bus Frequency

(c) Generator Terminal Power

(d) Generator Rotor Angle

(e) Generator Rotor Speed

(f) Generator Terminal Voltage

(g) Generator Field Voltage

(h) Transmission Line Flows (MW) Adjacent to Fault

(i) Voltage Spread

(j) Frequency Spread

The rotor angle plots shown in Appendix E provide a measure for determining how the RCEC units would swing with respect to one another. The plots also provide a measure of how the RCEC units would swing with respect to other generation units in the area. The bus voltage plots are useful in assessing the magnitude and the duration of post disturbance voltage dips and peak-to-peak voltage oscillations. These plots also give an indication of system damping and the level to which voltages are expected to recover in steady state conditions. The bus frequency plots provide information on the magnitude and the duration of post fault frequency swings with RCEC in service. These plots indicate the extent of possible over frequency or under frequency that can be expected to occur because of the imbalance between the generation and load within an area. Certain disturbances were simulated for 20 seconds to confirm positive damping for the frequency plots. A careful review of these plots indicated that RCEC would have no adverse impact on bulk system stability performance and does not result in any WSCC planning criteria violation.

9 Short Circuit Study Results

Short circuit studies were performed to determine the impact of RCEC addition to the transmission system. The actual relays specified in the final protection requirements may differ from those outlined in this document. PG&E protection requirements are primarily designed and intended to protect PG&E's system only. Additional protection is typically needed to protect the Generation Entity's facility adequately. Typically, it is the Generation Entity's responsibility to protect its own system and equipment.

9.1 Study Input Data and Assumptions

Gas Turbine Generators #1 & #2

Synchronous reactance (X_d)	= 189.4 %	@ 235 MVA
Transient reactance (X'_d)	= 20.8 %	@ 235 MVA
Sub-transient reactance (X''_d)	= 14.4 %	@ 235 MVA
Negative sequence reactance (X-)	= 13.7 %	@ 235 MVA
Zero sequence reactance (X_0)	= 9.1 %	@ 235 MVA

Steam Turbine Generator

Synchronous reactance (X_d)	= 209.4 %	@ 277 MVA
Transient reactance (X'_d)	= 26.2 %	@ 277 MVA
Sub-transient reactance (X''_d)	= 19.8 %	@ 277 MVA
Negative sequence reactance (X-)	= 19.3 %	@ 277 MVA
Zero sequence reactance (X_0)	= 10.8 %	@ 277 MVA

Generators and step-up transformers data and connection are based on typical values and RCEC Single Line Drawings provided by the developer. Various estimated line lengths used for this analysis is as listed below:

- East Shore - RCEC #1 230kV 4600 feet
- East Shore - RCEC #2 230kV 4600 feet

9.2 Fault Duties & Protection Requirements

Short circuit studies were performed to determine the impact of adding the RCEC to PG&E's transmission system. The fault duties were calculated before and after the addition of the RCEC. Table 4 shows the results of the short circuit study for three scenarios developed for comparison purposes. System protection performed an analysis to determine the need for new equipment to accommodate the interconnection of the Project to PG&E transmission system.

The table consists of buses that are electrically adjacent to the proposed Russell City Generation Interconnection Project and have the most impact from short-circuit standpoint.

Listed below are the assumptions for Case 1, Case 2, & Case 3:

Case 1= Existing June 2001 system conditions:

- LMEC Generation Interconnection
- Ravenswood 230kV Loop
- Lakewood Reinforcement Project
- Grant-Eastshore 115 kV Line Breakers

Case 2 = Case 1 plus the following:

- DEC Generation Interconnection & associated 230kV Line Swap
- MEC Generation Interconnection
- DUKE Moss Landing Generation Interconnection

Case 3=Case 2 plus the following:

Russell City Generation Interconnection Project

- Two - Overhead 954 ACSS 230kV ties between Russell City & Eastshore substations (4600 feet apart)
- Second Pittsburg-Eastshore & East Shore-San Mateo 230kV Loop
- Two existing East Shore 230-115 kV banks replaced with two 420 MVA units

Short Circuit Currents on Selected Busses for the Proposed Project (AMPS)									
Case 1		Case 2		Case 3		DEVIATION PERCENT INCREASE(+) OR DECREASE(-) (Case 2 over Case 1)		DEVIATION PERCENT INCREASE(+) OR DECREASE(-) (Case 3 over Case 2)	
Existing Conditions: June 2001		Case1 + DEC + MEC + DUKE		Case 2 + Russell City					
3LG (A)	1LG (A)	3LG (A)	1LG (A)	3LG (A)	1LG (A)	3LG %DIFF	1LG %DIFF	3LG %DIFF	1LG %DIFF
36.8E+3	35.8E+3	38.4E+3	37.2E+3	38.5E+3	37.3E+3	4.4%	3.9%	0.3%	0.2%
18.2E+3	14.8E+3	18.5E+3	14.9E+3	23.5E+3	17.4E+3	1.3%	0.8%	27.4%	16.2%
15.4E+3	16.9E+3	15.7E+3	17.2E+3	30.5E+3	33.1E+3	1.6%	1.4%	94.6%	92.8%
14.3E+3	11.6E+3	14.9E+3	12.1E+3	27.3E+3	26.1E+3	4.5%	4.0%	82.8%	115.6%
11.2E+3	10.0E+3	11.3E+3	10.1E+3	17.5E+3	13.8E+3	1.2%	0.8%	55.4%	37.4%
14.2E+3	14.5E+3	14.4E+3	14.7E+3	26.2E+3	24.5E+3	1.5%	1.2%	81.5%	66.9%
38.7E+3	40.9E+3	39.4E+3	41.5E+3	41.8E+3	43.3E+3	2.0%	1.4%	6.2%	4.5%
57.2E+3	57.7E+3	59.1E+3	59.1E+3	60.4E+3	59.9E+3	3.4%	2.3%	2.1%	1.5%
45.3E+3	50.7E+3	54.8E+3	59.2E+3	55.9E+3	60.1E+3	21.0%	16.9%	2.0%	1.5%
000.0E+0	000.0E+0	000.0E+0	000.0E+0	26.2E+3	24.9E+3	N/A	N/A	N/A	N/A
26.3E+3	25.0E+3	27.3E+3	25.6E+3	30.0E+3	27.9E+3	3.8%	2.5%	10.1%	8.8%

Table 4: Short Circuit Study Results

The comparisons of the fault duty before and after RCEC are all listed in Table 4.

10 Transmission Line Evaluation

10.1 Scope of Work

PG&E personnel conducted a ground review for possible routes to construct the two proposed 230 kV circuits to interconnect the Russell City Energy Center Project output to PG&E's East Shore substation. Two routes were investigated for this purpose. One alternative considered is to utilize the existing Grant-East Shore line right-of-way and replace the existing 115 kV towers with double circuit 230 kV towers, under hung with 115 kV as appropriate for the portion of the route between RCEC and Eastshore

Substation. This option imposes significant reliability challenges from a constructability standpoint as it involves rebuilding 115 kV circuit to higher voltage and service interruption to Grant substation during such upgrades. This arrangement also imposes the potential risk of reliability degradation during loss of a transmission tower (violating NERC planning criteria of common mode failure) in the corridor. Proposed option is to construct these two RCEC outlets using PG&E right-of-way (ROW) adjacent to the Grant - Eastshore 115kV lines (currently available for use) and hence avoid costly replacement of the 115 kV towers involving prolonged outages of the two circuits. The required route will entirely follow PG&E owned right-of-way. Based on the review of new 230 kV bus arrangement at Eastshore station and based on field walkdown, PG&E Transmission Engineering Group has evaluated the feasibility of connecting RCEC to PG&E transmission grid at Eastshore by installing double circuit 230 kV line from Russell City Energy Center to 230 Bus at Eastshore Station. It has been determined that it is feasible to install double circuit 230 kV line and connect it to 230 kV new bus arrangement at Eastshore Station and loop second circuit of Pittsburg-San Mateo into Eastshore substation. This would require removal/addition of some structures on existing 115 kV (Grant-Eastshore) and 230 kV (Pittsburg-San Mateo) lines in the vicinity of Eastshore substation. PG&E did a cursory check of the easements between Enterprise Ave. near the Russell City Energy Center and Eastshore substation. In the areas reviewed, PG&E does have easements for a second transmission line west of and adjacent to the existing Grant-Eastshore 115 kV tower line. PG&E believes a double circuit 230 kV transmission line can be constructed within the easement. PG&E determined during a field trip that a turning tower north of Enterprise Avenue on undeveloped City of Hayward owned land can be constructed. An existing driveway and gate will need to be relocated further to the west in order to provide room for this structure. PG&E prepared three sketches and included those in this report to demonstrate how this would be accomplished.

It is proposed to build new double circuit 230 kV line on tubular poles or towers in the available right of way running parallel and adjacent to Grant-Eastshore 115 kV line. The new structures will be placed about 600-800 feet apart in line with adjacent existing towers on Grant-Eastshore 115 kV line. The proposed new line from RCEC to Eastshore is approximately 4600 feet in length. There would be a need for a shoofly for both circuits in order to continue to operate the Pittsburg-Eastshore and Pittsburg-San Mateo lines and to perform the substation work for new bus arrangement. In order to loop both circuits of Eastshore-San Mateo lines into new bus arrangement, and to connect RCEC circuits into 230 kV bus at Eastshore, there would be a need to reconfigure both 115 kV and 230 kV lines. This would require removing one tower on Grant-Eastshore 115 kV line and adding two flat structures to lower this line to achieve clearances from 230 kV lines crossing over 115 kV line. This would also require removing one tower on Eastshore-San Mateo line and adding a new tower to accommodate the crossing of 230 RCEC circuits.

In addition the looping of Contra Costa -San Mateo lines into Eastshore would also require installation of four new tubular poles.

For projects proposing generation facilities with capacities greater than 50 MW, the California Energy Commission has jurisdiction. The generator should contact the local agencies as part of the permitting process and seek their input.

11 Substation Evaluation

The Substation evaluation identified a conceptual layout of the East Shore substation expansion and new equipments needed to accommodate the proposed breaker-and-half scheme as shown in Figure 2.

Eastshore Substation will be used to tap two 230 kV circuits from RCEC with a new substation arrangement in the existing facility. This new bus arrangement will comprise of the "Breaker - And - A - Half " configuration consisting of two main Buses, each normally energized. Three Circuit Breakers are electrically connected between the Buses and a Circuit is tapped between each two breakers, meaning two independent circuits use three circuit breakers. Each Circuit shares the common center circuit breaker, so there are One- And- A - Half circuit breakers per Circuit. This configuration provides higher flexibility for circuit breaker maintenance, since any breaker can be removed from service without interrupting current flow to the remaining elements at the substation. In the event of any fault occurrence on either of the two buses, no flow interruptions are caused to the station.

The main advantages of breaker-and-half scheme are:

1) Flexible Operation
2) High Reliability
3) Can isolate either bus for maintenance without service disruption
4) Can isolate any circuit breaker for maintenance without disrupting service
5) Double feed to each circuit
6) Bus fault does not interrupt service to any circuits
7) All switching done with circuit breakers locally as well as remotely

New installation will consist of 4 bays initially, two circuits per bay, with a provision of one additional bay in future. There will be two circuits from RCEC, two circuits from Pittsburg and two circuits from San Mateo. In addition, two circuits will be used for two 420 MVA transformer banks to be installed within the substation. New installation will be completed without disturbing existing single loop 230 kV circuit at Eastshore. two banks will be built on either side of the existing transformer banks and will utilize same takeoff structure at existing 115 kV bus. Existing 115 kV switchyard will not experience any change during these station enhancements.

Entire new switchyard for breaker and a half arrangement will be located on west side of existing substation, within the PG&E vacant property. Total area required for this installation, including transport roadways, will be 300 feet by 300 feet.

Pursuant to preliminary review of PG&E Protection's fault study data for RCEC project and considering existing breaker ratings at the affected stations and PG&E's present overstress breaker guidelines, it does not appear that upgrades are needed to replace any HVCB due to possible overstress issue. According to PG&E guidelines, all bus faults at Contra Costa PP, Dumbarton, Eastshore, Grant, Mt Eden, Pittsburg PP, RCEC and San Mateo are within threshold value.

12 Land and Compliance Evaluation

12.1 Overview and Right-Of-Way Acquisition

The proposed route for the required RCEC-East Shore double-circuit 230 kv interconnection on tubular steel poles would be from the generator's switchyard on the south side of Enterprise Avenue proceeding east within the franchise area along the north side of Enterprise Avenue to the existing PG&E tower line right-of-way, then southeast along the west (vacant) side of the PG&E right-of-way to the connection point at the expanded 230 bank at the existing PG&E Eastshore Substation. The existing single-circuit 115 kV tower line along the east side of the PG&E right-of-way would remain unchanged. To conform the proposed double-circuit 230 kV tower line to the existing 115 kV right-of-way, the TSPs would be installed using short spans to reduce conductor sag and sway, and the conductors would be installed with crossarms and insulator assemblies designed for minimum conductor sway.

A preliminary review of the proposed 230 kV interconnection route revealed no likely significant environmental issues. An environmental assessment by TES needs to be conducted soon to determine what, if any, environmental impacts may actually occur. During construction, there will be impacts to existing vehicle access and parking use of, as well as landscaping/trees and fencing within, the vacant right-of-way. In addition, City encroachment permits will likely be required for all work over City streets and a Caltrans encroachment permit will be required for the crossing of Highway 92. It is possible that some overhang land rights may need to be obtained along Enterprise Avenue (from the City) and along the west side of the existing tower line right-of-way from Enterprise Avenue to Eastshore Substation (from third parties), but this will not be determined until preliminary tower/line engineering is completed.

Calpine/Bechtel will be responsible for conducting all environmental assessments and securing all enviromental clearances required for the construction and operation of the new interconnection transmission line and modifications to existing PG&E transmission line and substation facilities, including PG&E lands associated with those facilities, required to accommodate the addition of the Russell City Energy Center's generation to the PG&E system.

Reconductoring of the existing 230 kV tower line from Eastshore Substation to San Mateo Substation will probably involve no significant environmental

issues, but an environmental assessment by TES needs to be conducted soon to determine what, if any, environmental impacts may actually occur. Reconductoring of the existing tower lines over the SF Bay along the south side of the San Mateo Bridge will involve substantial operational, technical and safety issues, but environmental impacts should be minimal if no tower raising is required. If tower raises are necessary, this could result in increased bird contact potential which could be determined to be a significant environmental impact. City encroachment permits will likely be required for all work over City streets and a Caltrans encroachment permit will be required if a crossing of US 101 is involved.

PG&E Law Department will review of the potential CPUC GO 131D regulatory issues because there are some questions raised regarding CEC and CPUC jurisdiction for new electric generation projects. If the Generator includes all transmission/substation work by PG&E required to connect the new generation to the PG&E grid and it is determined that the required transmission/substation work will not have any significant environmental impacts, then the double-circuit 230 kv interconnection, the substation expansion and the reconductoring of the existing 230 kv tower line from Eastshore Substation to San Mateo Substation would be covered by the CEC AFC/CEQA permit process and the CPUC jurisdiction could be limited to a NOC filed by PG&E. The NOC process is a 6 month permit process and would be based upon the proposed work being part of a larger project (the CEC/CEQA process for the new power plant and all associated facilities/improvements). If the Generator does not include all required transmission/substation work by PG&E for the interconnection, the CPUC jurisdiction may extend to a Permit to Construct (PTC) or Certificate of Public Convenience and Necessity (CPCN) if the unincluded work does not qualify on its own for one of the other NOC exemptions or if it will have significant environmental impacts. The CPCN process is a 12 month process to prepare the required permit application and 2 years for CPUC approval. The PTC process is a 12 month process to prepare the required permit application and 1-2 years for CPUC approval.

Appendix A – Autocon Input File

(CAISO Category B Outages)

```
# Program: autocon_make.p   Thu Apr 19 10:49:26 2001
# Input Case: "F:\01_Assessment\Save\2004\a01sum2004_pge_a78.sav"
# Input File: "F:\01_Assessment\Breaker\2002-05\2002-05_Master_brkr_drcl.in"
# area_numbers  "7 8 16" # East Bay, Diablo, Mission
# zone_numbers  ""
# voltage_range  "1 230"
# bus_fault_opt  "no"
# Output File (this output): "F:\01_Assessment\Input\2004\Area07_CatB_2004.in"

#PG&E 2001 TRANSMISSION ASSESSMENT STUDY
#2004SUMPK AREA 78 CASE: COI=4880MW (n2s), P26=2100MW (n2s)
#1-IN-10 FORECAST; PG&E AREA LOADS/LOSSES=27,100MW; 3/22/2001
 #
 #
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30437 30438  "1 "    0     # line from  CROCKETT 230.00   (3) to BRKR  C&H      230.00
1  30437 30445  "1 "    0     # line from  CROCKETT 230.00   (3) to BRKR  IGNACIO  230.00
1  30437 30540  "1 "    0     # line from  CROCKETT 230.00   (3) to BRKR  SOBRANTE 230.00
0
 #
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32620 32778  "1 "    0     # line from  NTWRJCT2 115.00   (2) to (3)   MRTNZJCT 115.00
1  32620 32602  "1 "    0     # line from  NTWRJCT2 115.00   (2) to BRKR  NRTH TWR 115.00
1  32778 32754  "1 "    0     # line from  MRTNZJCT 115.00   (3) to BRKR  OLEUM    115.00
1  32778 32756  "1 "    0     # line from  MRTNZJCT 115.00   (3) to BRKR  CHRISTIE 115.00
4  32602     0  "1 "    0     # LOAD-DROP    NRTH TWR 115.00  LOAD==16.34(2.76)
4  32602     0  "2 "    0     # LOAD-DROP    NRTH TWR 115.00  LOAD==11.04(0.00)
4  32602     0  "3 "    0     # LOAD-DROP    NRTH TWR 115.00  LOAD==9.32(0.41)
4  32602     0  "4 "    0     # LOAD-DROP    NRTH TWR 115.00  LOAD==3.10(0.71)
1  32602 32618  "1 "    1     # LINE-TRANSFER NTWRJCT2 115.00 to NTWRJCT1 115.00
4  32602     0  "***"   1     # RESTORE NORTH TOWER load
0
 #
 #
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32740 32742  "1 "    0     # line from  UCB SUB  115.00  BRKR to (3)   UCB JCT1 115.00
1  32742 33006  "1 "    0     # line from  UCB JCT1 115.00   (3) to (3)   GRIZLYJ1 115.00
1  32742 32770  "1 "    0     # line from  UCB JCT1 115.00   (3) to BRKR  GRIZZLY2 115.00
1  33006 33010  "1 "    0     # line from  GRIZLYJ1 115.00   (3) to BRKR  SOBRANTE 115.00
1  33006 33012  "1 "    0     # line from  GRIZLYJ1 115.00   (3) to BRKR  EST PRTL 115.00
0
 #
 #
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32740 32744  "1 "    0     # line from  UCB SUB  115.00  BRKR to (3)   UCB JCT2 115.00
1  32744 33008  "2 "    0     # line from  UCB JCT2 115.00   (3) to (3)   GRIZLYJ2 115.00
1  32744 32770  "2 "    0     # line from  UCB JCT2 115.00   (3) to BRKR  GRIZZLY2 115.00
1  33008 32780  "1 "    0     # line from  GRIZLYJ2 115.00   (3) to BRKR  CLARMNT  115.00
1  33008 33010  "1 "    0     # line from  GRIZLYJ2 115.00   (3) to BRKR  SOBRANTE 115.00
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32748 32750  "1 "    0     # line from  PP STEEL 115.00  BRKR to (3)   PPSTLTAP 115.00
1  32750 32774  "1 "    0     # line from  PPSTLTAP 115.00   (3) to (3)   PTPNLTAP 115.00
1  32750 32760  "1 "    0     # line from  PPSTLTAP 115.00   (3) to (1)   PT PINLE 115.00
1  32774 32762  "1 "    0     # line from  PTPNLTAP 115.00   (3) to BRKR  STD. OIL 115.00
```

APPENDIX A – AUTOCON INPUT FILE

```
1  32774 32808  "1 "    0     # line from  PTPNLTAP 115.00   (3) to (2)   SNPBLTP2 115.00
1  32808 33010  "1 "    0     # line from  SNPBLTP2 115.00   (2) to BRKR  SOBRANTE 115.00
4  32748     0  "1 "    0     # LOAD-DROP    PP STEEL 115.00  LOAD==5.53(5.64)
4  32760     0  "1 "    0     # LOAD-DROP    PT PINLE 115.00  LOAD==9.21(0.82)
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32754 32802  "1 "    0     # line from  OLEUM    115.00  BRKR to (3)   VLYVWTP1 115.00
1  32802 32764  "1 "    0     # line from  VLYVWTP1 115.00   (3) to BRKR  VALLY VW 115.00
1  32802 32766  "1 "    0     # line from  VLYVWTP1 115.00   (3) to BRKR  EL CRRTO 115.00
4  32764     0  "1 "    0     # LOAD-DROP    VALLY VW 115.00  LOAD==6.03(1.40)
4  32764     0  "2 "    0     # LOAD-DROP    VALLY VW 115.00  LOAD==9.02(2.45)
1  32764 32804  "1 "    1     # LINE-TRANSFER VLYVWTP1 to VLYVWTP2
4  32764     0  "***"   1     # RESTORE VALLEY VIEW load
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32754 32804  "1 "    0     # line from  OLEUM    115.00  BRKR to (2)   VLYVWTP2 115.00
1  32804 32766  "1 "    0     # line from  VLYVWTP2 115.00   (2) to BRKR  EL CRRTO 115.00
0
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32756 33010  "1 "    0     # line from  CHRISTIE 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32766 33010  "1 "    0     # line from  EL CRRTO 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32766 33010  "2 "    0     # line from  EL CRRTO 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32768 33010  "1 "    0     # line from  RICHMOND 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32768 33010  "2 "    0     # line from  RICHMOND 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32780 32782  "1 "    0     # line from  CLARMNT  115.00  BRKR to BRKR  STATIN D 115.00
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32780 32782  "2 "    0     # line from  CLARMNT  115.00  BRKR to BRKR  STATIN D 115.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32782 32788  "1 "    0     # line from  STATIN D 115.00  BRKR to BRKR  STATIN L 115.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32786 32788  "1 "    0     # line from  OAK C115 115.00  BRKR to BRKR  STATIN L 115.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32786 32790  "1 "    0     # line from  OAK C115 115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
```

APPENDIX A – AUTOCON INPUT FILE

```
 #
1  32786 32794  "1 "    0     # line from  OAK C115 115.00  BRKR to BRKR  MARITIME 115.00
4  32794     0  "1 "    0     # LOAD-DROP    MARITIME 115.00  LOAD==14.20(8.80)
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32786 32904  "1 "    0     # line from  OAK C115 115.00  BRKR to (3)   OAKLND23 115.00
2  32904 32902  "8 "    0     # TRAN from  OAKLND23 115.00   (3) to (1)   OAKLND 2  13.80
2  32904 32903  "9 "    0     # TRAN from  OAKLND23 115.00   (3) to (1)   OAKLND 3  13.80
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32786 38026  "1 "    0     # line from  OAK C115 115.00  BRKR to (4)   ALAMEDCT 115.00
1  38026 38022  "1 "    0     # line from  ALAMEDCT 115.00   (4) to BRKR  CARTWRT  115.00
2  38026 38118  "1 "    0     # TRAN from  ALAMEDCT 115.00   (4) to (1)   ALMDACT1  13.80
2  38026 38119  "1 "    0     # TRAN from  ALAMEDCT 115.00   (4) to (1)   ALMDACT2  13.80
4  38022     0  "1 "    0     # LOAD-DROP    CARTWRT  115.00  LOAD==40.60(8.45)
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32792 32798  "1 "    0     # line from  STATIN J 115.00  BRKR to (2)   OWENSTAP 115.00
1  32798 32800  "1 "    0     # line from  OWENSTAP 115.00   (2) to BRKR  OWNBRKWY 115.00
4  32800     0  "1 "    0     # LOAD-DROP    OWNBRKWY 115.00  LOAD==11.25(6.97)
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32792 32814  "1 "    0     # line from  STATIN J 115.00  BRKR to (3)   EDESTAP1 115.00
1  32814 32810  "1 "    0     # line from  EDESTAP1 115.00   (3) to BRKR  EDES     115.00
1  32814 35113  "1 "    0     # line from  EDESTAP1 115.00   (3) to (2)   DMTAR_SL 115.00
1  35113 35101  "1 "    0     # line from  DMTAR_SL 115.00   (2) to BRKR  SN LNDRO 115.00
4  32810     0  "1 "    0     # LOAD-DROP    EDES     115.00  LOAD==16.67(2.49)
4  32810     0  "3 "    0     # LOAD-DROP    EDES     115.00  LOAD==30.62(-3.07)
4  35113     0  "1 "    0     # LOAD-DROP    DMTAR_SL 115.00  LOAD==3.90(2.92)
1  32810 32812  "1 "    1     # LINE-TRANSFER EDESTAP1 to EDS GRNT
4  32810     0  "***"   1     # RESTORE EDES load
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32792 38024  "1 "    0     # line from  STATIN J 115.00  BRKR to BRKR  JENNY    115.00
4  38024     0  "1 "    0     # LOAD-DROP    JENNY    115.00  LOAD==29.40(6.12)
1  38024 38022  "1 "    1     # LINE-TRANSFER ALAMDA J to ALAMDA C
4  38024     0  "***"   1     # RESTORE ALAMDA J load
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32806 32758  "1 "    0     # line from  SNPBLTP1 115.00   (3) to BRKR  SAN PBLO 115.00
1  32806 32762  "1 "    0     # line from  SNPBLTP1 115.00   (3) to BRKR  STD. OIL 115.00
1  32806 33010  "1 "    0     # line from  SNPBLTP1 115.00   (3) to BRKR  SOBRANTE 115.00
4  32758     0  "1 "    0     # LOAD-DROP    SAN PBLO 115.00  LOAD==14.58(1.86)
1  32758 32808  "1 "    1     # LINE-TRANSFER SNPBLTP1 to SNPBLTP2
4  32758     0  "***"   1     # RESTORE SAN PABLO load
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32812 35104  "1 "    0     # line from  EDS GRNT 115.00   (1) to BRKR  GRANT    115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32850 32852  "1 "    0     # line from  UNIN CHM  60.00   (3) to BRKR  CHRISTIE  60.00
1  32850 32860  "1 "    0     # line from  UNIN CHM  60.00   (3) to BRKR  FRKLNALT  60.00
2  32850 32920  "1 "    0     # TRAN from  UNIN CHM  60.00   (3) to (1)   UNION CH   9.11
4  32920     0  "1 "    0     # LOAD-DROP    UNION CH   9.11  LOAD==2.20(0.50)
3  32920     0  "1 "    0     # GEN-DROP    UNION CH   9.11  GEN==20.37(-9.00)
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32852 32856  "1 "    0     # line from  CHRISTIE  60.00  BRKR to (2)   FRANKLIN  60.00
1  32856 32858  "1 "    0     # line from  FRANKLIN  60.00   (2) to (1)   SEQUOIA   60.00
4  32856     0  "1 "    0     # LOAD-DROP    FRANKLIN  60.00  LOAD==11.86(2.70)
```

APPENDIX A – AUTOCON INPUT FILE

```
4  32856     0  "2 "    0     # LOAD-DROP    FRANKLIN  60.00  LOAD==9.08(0.70)
1  32856 32860  "1 "    1     # LINE-TRANSFER FRANKLIN to FRKLNALT
4  32856     0  "***"   1     # RESTORE FRANKLIN load
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32852 33067  "1 "    0     # line from  CHRISTIE  60.00  BRKR to (3)   PCBRICK   60.00
1  33067 32854  "1 "    0     # line from  PCBRICK   60.00   (3) to (1)   PRT CSTA  60.00
1  33067 33066  "1 "    0     # line from  PCBRICK   60.00   (3) to (3)   STAUFFER  60.00
1  33066 33065  "1 "    0     # line from  STAUFFER  60.00   (3) to (2)   URICH     60.00
2  33066 33139  "1 "    0     # TRAN from  STAUFFER  60.00   (3) to (1)   STAUFER    9.11
1  33065 33064  "1 "    0     # line from  URICH     60.00   (2) to (2)   SFPP CNC  60.00
1  33064 33091  "1 "    0     # line from  SFPP CNC  60.00   (2) to (2)   TAP GWF5  60.00
2  33091 33135  "1 "    0     # TRAN from  TAP GWF5  60.00   (2) to (1)   GWF #5    13.80
4  32854     0  "1 "    0     # LOAD-DROP    PRT CSTA  60.00  LOAD==1.32(1.20)
4  33065     0  "1 "    0     # LOAD-DROP    URICH     60.00  LOAD==2.30(1.49)
4  33139     0  "1 "    0     # LOAD-DROP    STAUFER    9.11  LOAD==1.95(0.44)
4  33064     0  "1 "    0     # LOAD-DROP    SFPP CNC  60.00  LOAD==8.10(4.81)
4  33135     0  "1 "    0     # LOAD-DROP    GWF #5    13.80  LOAD==2.70(0.62)
3  33139     0  "1 "    0     # GEN-DROP    STAUFER    9.11  GEN==1:95(-1.00)
3  33135     0  "1 "    0     # GEN-DROP    GWF #5    13.80  GEN==18.94(2.87)
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33012 32780  "1 "    0     # line from  EST PRTL 115.00  BRKR to BRKR  CLARMNT  115.00
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33016 32754  "1 "    0     # line from  ALHAMTP2 115.00   (2) to BRKR  OLEUM    115.00
1  33016 32990  "1 "    0     # line from  ALHAMTP2 115.00   (2) to BRKR  MARTNZ D 115.00
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32780  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  CLARMNT  115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32780  "2 "    0     # line from  MORAGA   115.00  BRKR to BRKR  CLARMNT  115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "2 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "3 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "4 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32792  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN J 115.00
0
 #
 #
 # (38)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32900 30438  "1 "    0     # TRAN from  CRCKTCOG  18.00   (1) to BRKR  C&H      230.00
3  32900     0  "1 "    0     # GEN-DROP    CRCKTCOG  18.00  GEN==240.00(44.87)
0
 #
```

```
 #
 # (39)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32852 32756  "1 "    0     # TRAN from  CHRISTIE  60.00  BRKR to BRKR  CHRISTIE 115.00
0
 #
 #
 # (40)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32908 32901  "7 "    0     # TRAN from  OAK C12   12.00  BRKR to BRKR  OAKLND 1  13.80
0
 #
 #
 # (41)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32786 32908  "1 "    0     # TRAN from  OAK C115 115.00  BRKR to BRKR  OAK C12   12.00
0
 #
 #
 # (42)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32786 32908  "2 "    0     # TRAN from  OAK C115 115.00  BRKR to BRKR  OAK C12   12.00
0
 #
 #
 # (43)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32786 32908  "3 "    0     # TRAN from  OAK C115 115.00  BRKR to BRKR  OAK C12   12.00
0
 #
 #
 # (44)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32754 32910  "1 "    0     # TRAN from  OLEUM    115.00  BRKR to BRKR  UNOCAL    12.00
4  32910     0  "1 "    0     # LOAD-DROP    UNOCAL    12.00  LOAD==43.80(27.14)
3  32910     0  "1 "    0     # GEN-DROP    UNOCAL    12.00  GEN==15.70(10.10)
3  32910     0  "2 "    0     # GEN-DROP    UNOCAL    12.00  GEN==15.70(10.10)
3  32910     0  "3 "    0     # GEN-DROP    UNOCAL    12.00  GEN==15.70(10.10)
0
 #
 #
 # (45)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32762 32921  "1 "    0     # TRAN from  STD. OIL 115.00  BRKR to (1)   ChevGen1  13.80
3  32921     0  "1 "    0     # GEN-DROP    ChevGen1  13.80  GEN==54.00(34.20)
0
 #
 #
 # (46)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32762 32922  "1 "    0     # TRAN from  STD. OIL 115.00  BRKR to (1)   ChevGen2  13.80
3  32922     0  "1 "    0     # GEN-DROP    ChevGen2  13.80  GEN==54.00(34.20)
0
 #
 #
 # (47)  B1 GENERATOR OUTAGE
 #
3  32740     0  "1"     0     # UCB SUB  115.00       PGEN=26.00  QGEN=-8.71
0
 #
 #
 # (48)  B1 GENERATOR OUTAGE
 #
3  32900     0  "1"     0     # CRCKTCOG  18.00       PGEN=240.00  QGEN=44.87
0
 #
 #
 # (49)  B1 GENERATOR OUTAGE
 #
3  32910     0  "1"     0     # UNOCAL    12.00       PGEN=15.70  QGEN=10.10
0
 #
 #
 # (50)  B1 GENERATOR OUTAGE
 #
3  32910     0  "2"     0     # UNOCAL    12.00       PGEN=15.70  QGEN=10.10
0
 #
 #
 # (51)  B1 GENERATOR OUTAGE
 #
3  32910     0  "3"     0     # UNOCAL    12.00       PGEN=15.70  QGEN=10.10
0
 #
 #
 # (52)  B1 GENERATOR OUTAGE
 #
```

APPENDIX A – AUTOCON INPUT FILE

```
3  32920     0  "1"     0     # UNION CH   9.11       PGEN=20.37  QGEN=-9.00
0
 #
 #
 # (53)  B1 GENERATOR OUTAGE
 #
3  32921     0  "1"     0     # ChevGen1  13.80       PGEN=54.00  QGEN=34.20
0
 #
 #
 # (54)  B1 GENERATOR OUTAGE
 #
3  32922     0  "1"     0     # ChevGen2  13.80       PGEN=54.00  QGEN=34.20
0
 # *************** Diablo Division #8 ******************************
 #PG&E 2001 TRANSMISSION ASSESSMENT STUDY
  #2004SUMPK AREA 78 CASE: COI=4880MW (n2s), P26=2100MW (n2s)
  #1-IN-10 FORECAST; PG&E AREA LOADS/LOSSES=27,100MW; 3/22/2001
   #
   #
   # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30435 30540  "1 "    0     # line from  LAKEVILE 230.00  BRKR to BRKR  SOBRANTE 230.00
  0
   #
   #
   # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30437 30540  "1 "    0     # line from  CROCKETT 230.00   (3) to BRKR  SOBRANTE 230.00
  1  30437 30438  "1 "    0     # line from  CROCKETT 230.00   (3) to BRKR  C&H      230.00
  1  30437 30445  "1 "    0     # line from  CROCKETT 230.00   (3) to BRKR  IGNACIO  230.00
  0
   #
   #
   # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30465 30550  "1 "    0     # line from  BAHIA    230.00  BRKR to BRKR  MORAGA   230.00
  0
   #
   #
   # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30467 30550  "1 "    0     # line from  PARKWAY  230.00  BRKR to BRKR  MORAGA   230.00
  0
   #
   #
   # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30472 30529  "1 "    0     # line from  PEABODY  230.00  BRKR to (3)   HIWD TAP 230.00
  1  30529 30525  "1 "    0     # line from  HIWD TAP 230.00   (3) to BRKR  C.COSTA  230.00
  2  30529 33177  "1 "    0     # TRAN from  HIWD TAP 230.00   (3) to (1)   HIWD HIT  34.50
  3  33177     0  "1 "    0     # GEN-DROP    HIWD HIT  34.50  GEN==150.00(13.17)
  0
   #
   #
   # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30480 30523  "1 "    0     # line from  USWP-RUS 230.00   (3) to BRKR  CC SUB   230.00
  2  30480 32168  "1 "    0     # TRAN from  USWP-RUS 230.00   (3) to (1)   USWINDPW   9.11
  3  32168     0  "2 "    0     # GEN-DROP    USWINDPW   9.11  GEN==3.41(0.00)
  0
  #*** CHANGES ************************************************
  #  (6A)
  #1  30480 30475  "1 "    0     # line from  USWP-RUS 230.00   (3) to (2)   PBDY TPB 230.00
  1  30480 30478  "1 "    0     # line from  USWP-RUS   230.00   (3) to (2)   LAMBIE 230.00
  1  30478 30475  "1 "    0     # line from  LAMBIE   230.00   (3) to (2)   PBDY TPB 230.00
  2  30478 32171  "1 "    0     # TRAN from LAMBIE 230 (3) to (2) PANDAGT1 13.8
  2  30478 32117  "1 "    0     # TRAN from LAMBIE 230 (3) to (2) LAMBIE69 70
  3  32171     0  "1 "    0     # GEN-DROP PANDAGT1 13.8    GEN==46.3
  0
  #
  #  (6B)
  1  30475 30460  "1 "    0     # line from  PBDY TPB 230.00   (2) to BRKR  VACA-DIX 230.00
  0
   #*********************************************************
   #
   # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30523 30525  "1 "    0     # line from  CC SUB   230.00  BRKR to BRKR  C.COSTA  230.00
  0
   #
   #
   # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
   #
  1  30525 30543  "1 "    0     # line from  C.COSTA  230.00  BRKR to (3)   ROSSTAP1 230.00
  1  30543 30545  "1 "    0     # line from  ROSSTAP1 230.00   (3) to BRKR  ROSSMOOR 230.00
  1  30543 30550  "1 "    0     # line from  ROSSTAP1 230.00   (3) to BRKR  MORAGA   230.00
```

```
4  30545      0  "1 "    0     # LOAD-DROP    ROSSMOOR 230.00  LOAD==27.94(7.59)
4  30545      0  "2 "    0     # LOAD-DROP    ROSSMOOR 230.00  LOAD==36.00(8.54)
1  30544 30545  "1 "    1     # LINE-TRANSFER  ROSSTAP1  230.00  TO  ROSSTAP2  230.00
4  30545      0  "**"    1     # RESTORE ROSSMOOR load
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30544  "1 "    0     # line from  C.COSTA  230.00  BRKR to (2)   ROSSTAP2 230.00
1  30544 30550  "1 "    0     # line from  ROSSTAP2 230.00   (2) to BRKR  MORAGA   230.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30565  "1 "    0     # line from  C.COSTA  230.00  BRKR to BRKR  BRENTWOD 230.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30575  "1 "    0     # line from  C.COSTA  230.00  BRKR to (3)   WND MSTR 230.00
1  30575 38610  "1 "    0     # line from  WND MSTR 230.00   (3) to BRKR  DELTAPMP 230.00
2  30575 33170  "1 "    0     # TRAN from  WND MSTR 230.00   (3) to (1)   WINDMSTR   9.11
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30585  "1 "    0     # line from  C.COSTA  230.00  BRKR to BRKR  LS PSTAS 230.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30590  "1 "    0     # line from  C.COSTA  230.00  BRKR to (3)   USWP-JRW 230.00
1  30590 30537  "1 "    0     # line from  USWP-JRW 230.00   (3) to BRKR  DUBLIN   230.00
2  30590 33838  "1 "    0     # TRAN from  USWP-JRW 230.00   (3) to (1)   USWP_#3    9.11
4  33838      0  "1 "    0     # LOAD-DROP    USWP_#3    9.11  LOAD==0.50(0.24)
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30528  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  DEC PTSG 230.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30528  "2 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  DEC PTSG 230.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30535  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  TIDEWATR 230.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30540  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  SOBRANTE 230.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30555  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  SANRAMON 230.00
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30560  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  E. SHORE 230.00
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30561  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  TASSAJAR 230.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
```

APPENDIX A – AUTOCON INPUT FILE

```
1  30526 30595  "1 "    0     # line from  PITSBURG 230.00  BRKR to (3)   FLOWIND2 230.00
1  30595 30640  "1 "    0     # line from  FLOWIND2 230.00   (3) to BRKR  TESLA F  230.00
2  30595 33840  "1 "    0     # TRAN from  FLOWIND2 230.00   (3) to (1)   FLOWD3-6   9.11
4  33840     0  "1 "    0     # LOAD-DROP    FLOWD3-6   9.11  LOAD==0.65(0.31)
3  33840     0  "1 "    0     # GEN-DROP    FLOWD3-6   9.11  GEN==1.25(0.00)
3  33840     0  "4 "    0     # GEN-DROP    FLOWD3-6   9.11  GEN==1.13(0.00)
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30600  "1 "    0     # line from  PITSBURG 230.00  BRKR to (3)   JV ENTER 230.00
1  30600 30640  "1 "    0     # line from  JV ENTER 230.00   (3) to BRKR  TESLA F  230.00
2  30600 33171  "1 "    0     # TRAN from  JV ENTER 230.00   (3) to (1)   JVE&HOWD   9.11
0
 #
 #**** CHANGES ********************************************************
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
#1  30526 30700  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  SANMATEO 230.00
#0
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
1  30526 30560  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  E. SHORE 230.00
0
 #
1  30526 30560  "2 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  E. SHORE 230.00
0
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
1  30560 30700  "1 "    0     # line from  E. SHORE 230.00  BRKR to BRKR  SANMATEO 230.00
0
 #
2  35105 30560  "1 "    0     # TRAN from  E. SHORE 115.00   (3) to (1)   E. SHORE  230
2  35105 30560  "2 "    0     # TRAN from  E. SHORE 115.00   (3) to (1)   E. SHORE  230
0
 #
1  30560 30700  "2 "    0     # line from  E. SHORE 230.00  BRKR to BRKR  SANMATEO 230.00
0
#
1  30560 89950  "1 "    0     # line from  E. SHORE 230.00  BRKR to BRKR  RCEC 230.00
0
#
1  30560 89950  "2 "    0     # line from  E. SHORE 230.00  BRKR to BRKR  RCEC 230.00
0
#*********************************************************************
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30535 30540  "1 "    0     # line from  TIDEWATR 230.00  BRKR to BRKR  SOBRANTE 230.00
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30550 30554  "1 "    0     # line from  MORAGA   230.00  BRKR to BRKR  CASTROVL 230.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30550 30555  "1 "    0     # line from  MORAGA   230.00  BRKR to BRKR  SANRAMON 230.00
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30561 30562  "1 "    0     # line from  TASSAJAR 230.00  BRKR to (3)   TES JCT  230.00
1  30562 30563  "1 "    0     # line from  TES JCT  230.00   (3) to BRKR  TES SUB  230.00
1  30562 30631  "1 "    0     # line from  TES JCT  230.00   (3) to BRKR  NEWARK E 230.00
4  30563     0  "1 "    0     # LOAD-DROP    TES SUB  230.00  LOAD==39.23(7.97)
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30565 30569  "1 "    0     # line from  BRENTWOD 230.00  BRKR to BRKR  KELSO    230.00
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32742 33006  "1 "    0     # line from  UCB JCT1 115.00   (3) to (3)   GRIZLYJ1 115.00
1  32742 32740  "1 "    0     # line from  UCB JCT1 115.00   (3) to BRKR  UCB SUB  115.00
1  32742 32770  "1 "    0     # line from  UCB JCT1 115.00   (3) to BRKR  GRIZZLY2 115.00
1  33006 33010  "1 "    0     # line from  GRIZLYJ1 115.00   (3) to BRKR  SOBRANTE 115.00
1  33006 33012  "1 "    0     # line from  GRIZLYJ1 115.00   (3) to BRKR  EST PRTL 115.00
0
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```
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32744 33008  "2 "    0     # line from  UCB JCT2 115.00   (3) to (3)   GRIZLYJ2 115.00
1  32744 32740  "1 "    0     # line from  UCB JCT2 115.00   (3) to BRKR  UCB SUB  115.00
1  32744 32770  "2 "    0     # line from  UCB JCT2 115.00   (3) to BRKR  GRIZZLY2 115.00
1  33008 32780  "1 "    0     # line from  GRIZLYJ2 115.00   (3) to BRKR  CLARMNT  115.00
1  33008 33010  "1 "    0     # line from  GRIZLYJ2 115.00   (3) to BRKR  SOBRANTE 115.00
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32756 33010  "1 "    0     # line from  CHRISTIE 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32766 33010  "1 "    0     # line from  EL CRRTO 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32766 33010  "2 "    0     # line from  EL CRRTO 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32768 33010  "1 "    0     # line from  RICHMOND 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32768 33010  "2 "    0     # line from  RICHMOND 115.00  BRKR to BRKR  SOBRANTE 115.00
0
 #
 #
 # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32806 33010  "1 "    0     # line from  SNPBLTP1 115.00   (3) to BRKR  SOBRANTE 115.00
1  32806 32758  "1 "    0     # line from  SNPBLTP1 115.00   (3) to BRKR  SAN PBLO 115.00
1  32806 32762  "1 "    0     # line from  SNPBLTP1 115.00   (3) to BRKR  STD. OIL 115.00
4  32758     0  "1 "    0     # LOAD-DROP    SAN PBLO 115.00  LOAD==14.58(1.86)
1  32758 32808  "1 "    1     # LINE-TRANSFER SNPBLTP1 to SNPBLTP2
4  32758     0  "***"  1     # RESTORE SAN PABLO load
0
 #
 #
 # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32808 33010  "1 "    0     # line from  SNPBLTP2 115.00   (2) to BRKR  SOBRANTE 115.00
1  32808 32774  "1 "    0     # line from  SNPBLTP2 115.00   (2) to (3)   PTPNLTAP 115.00
1  32774 32750  "1 "    0     # line from  PTPNLTAP 115.00   (3) to (3)   PPSTLTAP 115.00
1  32774 32762  "1 "    0     # line from  PTPNLTAP 115.00   (3) to BRKR  STD. OIL 115.00
1  32750 32748  "1 "    0     # line from  PPSTLTAP 115.00   (3) to BRKR  PP STEEL 115.00
1  32750 32760  "1 "    0     # line from  PPSTLTAP 115.00   (3) to (1)   PT PINLE 115.00
4  32748     0  "1 "    0     # LOAD-DROP    PP STEEL 115.00  LOAD==5.53(5.64)
4  32760     0  "1 "    0     # LOAD-DROP    PT PINLE 115.00  LOAD==9.21(0.82)
0
 #
 #
 # (38)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32852 33067  "1 "    0     # line from  CHRISTIE  60.00  BRKR to (3)   PCBRICK   60.00
1  33067 32854  "1 "    0     # line from  PCBRICK   60.00   (3) to (1)   PRT CSTA  60.00
1  33067 33066  "1 "    0     # line from  PCBRICK   60.00   (3) to (3)   STAUFFER  60.00
1  33066 33065  "1 "    0     # line from  STAUFFER  60.00   (3) to (2)   URICH     60.00
2  33066 33139  "1 "    0     # TRAN from  STAUFFER  60.00   (3) to (1)   STAUFER    9.11
1  33065 33064  "1 "    0     # line from  URICH     60.00   (2) to (2)   SFPP CNC  60.00
1  33064 33091  "1 "    0     # line from  SFPP CNC  60.00   (2) to (2)   TAP GWF5  60.00
2  33091 33135  "1 "    0     # TRAN from  TAP GWF5  60.00   (2) to (1)   GWF #5    13.80
4  32854     0  "1 "    0     # LOAD-DROP    PRT CSTA  60.00  LOAD==1.32(1.20)
4  33065     0  "1 "    0     # LOAD-DROP    URICH     60.00  LOAD==2.30(1.49)
4  33139     0  "1 "    0     # LOAD-DROP    STAUFER    9.11  LOAD==1.95(0.44)
4  33064     0  "1 "    0     # LOAD-DROP    SFPP CNC  60.00  LOAD==8.10(4.81)
4  33135     0  "1 "    0     # LOAD-DROP    GWF #5    13.80  LOAD==2.70(0.62)
3  33139     0  "1 "    0     # GEN-DROP    STAUFER    9.11  GEN==1.95(-1.00)
3  33135     0  "1 "    0     # GEN-DROP    GWF #5    13.80  GEN==18.94(2.87)
0
 #
 #
 # (39)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
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 #
1  32950 32970  "1 "    0     # line from  PITSBURG 115.00  BRKR to BRKR  CLAYTN   115.00
0
 #
 #
 # (40)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 32970  "4 "    0     # line from  PITSBURG 115.00  BRKR to BRKR  CLAYTN   115.00
0
 #
 #
 # (41)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 32978  "1 "    0     # line from  PITSBURG 115.00  BRKR to BRKR  LMEC   1 115.00
0
 #
 #
 # (42)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 32978  "2 "    0     # line from  PITSBURG 115.00  BRKR to BRKR  LMEC   1 115.00
0
 #
 #
 # (43)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 32992  "1 "    0     # line from  PITSBURG 115.00  BRKR to (2)   BOLLMAN2 115.00
1  32992 33043  "1 "    0     # line from  BOLLMAN2 115.00   (2) to (3)   IMHOFF_2 115.00
1  33043 32991  "1 "    0     # line from  IMHOFF_2 115.00   (3) to BRKR  MARTNZ E 115.00
1  33043 33041  "2 "    0     # line from  IMHOFF_2 115.00   (3) to (2)   IMHOFF   115.00
2  33041 33136  "1 "    0     # TRAN from  IMHOFF   115.00   (2) to (1)   CCCSD     12.47
4  33136     0  "1 "    0     # LOAD-DROP    CCCSD     12.47  LOAD==4.55(1.04)
3  33136     0  "1 "    0     # GEN-DROP    CCCSD     12.47  GEN==4.40(1.20)
0
 #
 #
 # (44)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 32993  "1 "    0     # line from  PITSBURG 115.00  BRKR to (2)   W.P.BART 115.00
1  32993 33040  "1 "    0     # line from  W.P.BART 115.00   (2) to (3)   BOLLMAN1 115.00
1  33040 32994  "1 "    0     # line from  BOLLMAN1 115.00   (3) to (1)   BOLLMAN  115.00
1  33040 33042  "1 "    0     # line from  BOLLMAN1 115.00   (3) to (2)   IMHOFF_1 115.00
1  33042 32991  "1 "    0     # line from  IMHOFF_1 115.00   (2) to BRKR  MARTNZ E 115.00
4  32993     0  "1 "    0     # LOAD-DROP    W.P.BART 115.00  LOAD==8.80(1.70)
4  32994     0  "1 "    0     # LOAD-DROP    BOLLMAN  115.00  LOAD==4.30(7.06)
0
 #
 #
 # (45)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 33030  "1 "    0     # line from  PITSBURG 115.00  BRKR to (2)   COLSTJT1 115.00
1  33030 33036  "1 "    0     # line from  COLSTJT1 115.00   (2) to (3)   LINDETP1 115.00
1  33036 32954  "1 "    0     # line from  LINDETP1 115.00   (3) to (3)   DOW TAP1 115.00
1  33036 32961  "1 "    0     # line from  LINDETP1 115.00   (3) to (3)   GWF2 TAP 115.00
1  32954 32953  "1 "    0     # line from  DOW TAP1 115.00   (3) to BRKR  CLMBA ST 115.00
1  32954 32956  "1 "    0     # line from  DOW TAP1 115.00   (3) to (2)   DOW MTR  115.00
2  32956 33160  "1 "    0     # TRAN from  DOW MTR  115.00   (2) to (4)   DOW CHEM  13.80
1  33160 33161  "1 "    0     # line from  DOW CHEM  13.80   (4) to (1)   DOWCHEM1  13.80
1  33160 33162  "1 "    0     # line from  DOW CHEM  13.80   (4) to (1)   DOWCHEM2  13.80
1  33160 33163  "1 "    0     # line from  DOW CHEM  13.80   (4) to (1)   DOWCHEM3  13.80
1  32961 32960  "1 "    0     # line from  GWF2 TAP 115.00   (3) to (2)   GWF#2 HS 115.00
1  32961 33038  "1 "    0     # line from  GWF2 TAP 115.00   (3) to (2)   LINDEJCT 115.00
2  32960 33132  "1 "    0     # TRAN from  GWF#2 HS 115.00   (2) to (1)   GWF #2    13.80
1  33038 32957  "1 "    0     # line from  LINDEJCT 115.00   (2) to BRKR  PRAXAIR  115.00
4  33160     0  "1 "    0     # LOAD-DROP    DOW CHEM  13.80  LOAD==15.00(9.30)
4  33132     0  "1 "    0     # LOAD-DROP    GWF #2    13.80  LOAD==2.60(0.59)
4  32957     0  "1 "    0     # LOAD-DROP    PRAXAIR  115.00  LOAD==20.40(2.91)
3  33161     0  "1 "    0     # GEN-DROP    DOWCHEM1  13.80  GEN==15.30(6.01)
3  33162     0  "1 "    0     # GEN-DROP    DOWCHEM2  13.80  GEN==22.00(7.56)
3  33163     0  "1 "    0     # GEN-DROP    DOWCHEM3  13.80  GEN==22.00(7.56)
3  33132     0  "1 "    0     # GEN-DROP    GWF #2    13.80  GEN==12.33(7.26)
0
 #
 #
 # (46)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 33032  "3 "    0     # line from  PITSBURG 115.00  BRKR to (2)   KIRKTAP1 115.00
1  33032 32970  "3 "    0     # line from  KIRKTAP1 115.00   (2) to BRKR  CLAYTN   115.00
0
 #
 #
 # (47)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32950 33033  "1 "    0     # line from  PITSBURG 115.00  BRKR to (3)   KIRKTAP2 115.00
1  33033 32951  "1 "    0     # line from  KIRKTAP2 115.00   (3) to BRKR  KIRKER   115.00
1  33033 33031  "1 "    0     # line from  KIRKTAP2 115.00   (3) to (2)   COLSTJT2 115.00
1  33031 33037  "1 "    0     # line from  COLSTJT2 115.00   (2) to (2)   LINDETP2 115.00
1  33037 32952  "1 "    0     # line from  LINDETP2 115.00   (2) to BRKR  POSCO    115.00
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4  32951     0  "1 "    0     # LOAD-DROP    KIRKER   115.00  LOAD==51.06(23.86)
4  32951     0  "2 "    0     # LOAD-DROP    KIRKER   115.00  LOAD==21.01(1.89)
4  32951     0  "3 "    0     # LOAD-DROP    KIRKER   115.00  LOAD==47.48(6.04)
1  33032 32951  "1 "    1     # LINE-TRANSFER  KIRKTAP2  115.00  TO KIRKTAP1
4  32951 0      "***"   1     # RESTORE KIRKER load
0
 #
 #
 # (48)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32952 32955  "1 "    0     # line from  POSCO    115.00  BRKR to (2)   DOW TAP2 115.00
1  32955 32953  "1 "    0     # line from  DOW TAP2 115.00   (2) to BRKR  CLMBA ST 115.00
0
 #
 #
 # (49)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32970 32971  "1 "    0     # line from  CLAYTN   115.00  BRKR to BRKR  MEDW LNE 115.00
0
 #
 #
 # (50)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32970 32973  "2 "    0     # line from  CLAYTN   115.00  BRKR to BRKR  LAKEWD-C 115.00
0
 #
 #
 # (51)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32970 33035  "1 "    0     # line from  CLAYTN   115.00  BRKR to (3)   LKWD_JCT 115.00
1  33035 32972  "1 "    0     # line from  LKWD_JCT 115.00   (3) to (2)   EBMUDGRY 115.00
1  33035 32973  "1 "    0     # line from  LKWD_JCT 115.00   (3) to BRKR  LAKEWD-C 115.00
1  32972 32971  "1 "    0     # line from  EBMUDGRY 115.00   (2) to BRKR  MEDW LNE 115.00
4  32972     0  "1 "    0     # LOAD-DROP    EBMUDGRY 115.00  LOAD==4.30(0.00)
0
 #
 #
 # (52)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32974 32976  "9 "    0     # line from  LAKEWD-M 115.00  BRKR to (2)   LK_REACT 115.00
1  32976 33048  "1 "    0     # line from  LK_REACT 115.00   (2) to (3)   MORAGAJT 115.00
1  33048 33010  "1 "    0     # line from  MORAGAJT 115.00   (3) to BRKR  SOBRANTE 115.00
1  33048 33020  "1 "    0     # line from  MORAGAJT 115.00   (3) to BRKR  MORAGA   115.00
0
 #
 #
 # (53)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32990 33014  "1 "    0     # line from  MARTNZ D 115.00  BRKR to (3)   ALHAMTP1 115.00
1  33014 33010  "1 "    0     # line from  ALHAMTP1 115.00   (3) to BRKR  SOBRANTE 115.00
1  33014 33011  "1 "    0     # line from  ALHAMTP1 115.00   (3) to BRKR  ALHAMBRA 115.00
4  33011     0  "1 "    0     # LOAD-DROP    ALHAMBRA 115.00  LOAD==13.59(1.73)
4  33011     0  "2 "    0     # LOAD-DROP    ALHAMBRA 115.00  LOAD==6.60(-1.19)
1  33016 33011  "1 "    1     # LINE-TRANSFER  ALHAMTP1  115.00  TO  ALHAMTP2  115.00
4  33011     0  "***"   1     # RESTORE ALHAMBRA load
0
 #
 #
 # (54)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32990 33016  "1 "    0     # line from  MARTNZ D 115.00  BRKR to (2)   ALHAMTP2 115.00
1  33016 32754  "1 "    0     # line from  ALHAMTP2 115.00   (2) to BRKR  OLEUM    115.00
0
 #
 #
 # (55)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33000 33046  "1 "    0     # line from  CC SUB   115.00  BRKR to (3)   FIBRJCT2 115.00
1  33046 33001  "1 "    0     # line from  FIBRJCT2 115.00   (3) to BRKR  DOMTAR   115.00
1  33046 33044  "1 "    0     # line from  FIBRJCT2 115.00   (3) to (2)   FIBRBJCT 115.00
1  33044 33002  "1 "    0     # line from  FIBRBJCT 115.00   (2) to (4)   CROWN Z  115.00
1  33002 33003  "1 "    0     # line from  CROWN Z  115.00   (4) to (1)   FIBREBRD 115.00
2  33002 33133  "1 "    0     # TRAN from  CROWN Z  115.00   (4) to (1)   GWF #3    13.80
2  33002 33145  "1 "    0     # TRAN from  CROWN Z  115.00   (4) to (1)   CROWN.Z.  13.80
4  33001     0  "1 "    0     # LOAD-DROP    DOMTAR   115.00  LOAD==2.35(0.77)
4  33133     0  "1 "    0     # LOAD-DROP    GWF #3    13.80  LOAD==2.60(0.59)
4  33145     0  "1 "    0     # LOAD-DROP    CROWN.Z.  13.80  LOAD==20.70(6.80)
3  33133     0  "1 "    0     # GEN-DROP    GWF #3    13.80  GEN==19.03(4.28)
3  33145     0  "1 "    0     # GEN-DROP    CROWN.Z.  13.80  GEN==40.00(-3.89)
3  33145     0  "2 "    0     # GEN-DROP    CROWN.Z.  13.80  GEN==5.40(-0.53)
0
 #
 #
 # (56)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33000 33047  "1 "    0     # line from  CC SUB   115.00  BRKR to (2)   CC JCT   115.00
1  33047 33045  "1 "    0     # line from  CC JCT   115.00   (2) to (1)   FIBRJCT1 115.00
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0
 #
 #
 # (57)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33012 32780  "1 "    0     # line from  EST PRTL 115.00  BRKR to BRKR  CLARMNT  115.00
0
 #
 #
 # (58)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32780  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  CLARMNT  115.00
0
 #
 #
 # (59)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32780  "2 "    0     # line from  MORAGA   115.00  BRKR to BRKR  CLARMNT  115.00
0
 #
 #
 # (60)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (61)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "2 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (62)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "3 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (63)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32790  "4 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN X 115.00
0
 #
 #
 # (64)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 32792  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  STATIN J 115.00
0
 #
 #
 # (65)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 35101  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  SN LNDRO 115.00
0
 #
 #
 # (66)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 35101  "2 "    0     # line from  MORAGA   115.00  BRKR to BRKR  SN LNDRO 115.00
0
 #
 #
 # (67)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 35101  "3 "    0     # line from  MORAGA   115.00  BRKR to BRKR  SN LNDRO 115.00
0
 #
 #
 # (68)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33050 33080  "1 "    0     # line from  CC SUB    60.00  BRKR to (3)   WILBRTAP  60.00
1  33080 33051  "1 "    0     # line from  WILBRTAP  60.00   (3) to BRKR  DU PONT   60.00
2  33080 33134  "1 "    0     # TRAN from  WILBRTAP  60.00   (3) to (1)   GWF #4    13.80
4  33051     0  "1 "    0     # LOAD-DROP    DU PONT   60.00  LOAD==2.00(2.16)
4  33134     0  "1 "    0     # LOAD-DROP    GWF #4    13.80  LOAD==2.70(0.62)
3  33134     0  "1 "    0     # GEN-DROP    GWF #4    13.80  GEN==18.58(3.07)
1  33051 33081  "1 "    1     # LINE-TRANSFER  WILBRTAP  60.00  TO  DUPNTJCT  60.00
4  33051     0  "***"  1     # RESTORE DU PONT load
0
 #
 #
 # (69)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33050 33081  "1 "    0     # line from  CC SUB    60.00  BRKR to (2)   DUPNTJCT  60.00
1  33081 33082  "1 "    0     # line from  DUPNTJCT  60.00   (2) to (3)   BALFRJCT  60.00
1  33082 33052  "1 "    0     # line from  BALFRJCT  60.00   (3) to (2)   MARSH     60.00
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1  33082 33054  "1 "    0     # line from  BALFRJCT  60.00   (3) to BRKR  BALFOUR   60.00
1  33052 33053  "1 "    0     # line from  MARSH     60.00   (2) to (1)   BRIONES   60.00
4  33052     0  "1 "    0     # LOAD-DROP    MARSH     60.00  LOAD==4.00(0.91)
4  33054     0  "1 "    0     # LOAD-DROP    BALFOUR   60.00  LOAD==4.00(0.91)
4  33053     0  "1 "    0     # LOAD-DROP    BRIONES   60.00  LOAD==3.40(0.48)
1  33083 33054  "1 "    1     # LINE-TRANSFER  BALFRJCT  60.00  TO  MDLRVRJT  60.00
4  33054     0  "***"   1     # RESTORE BALFOUR load
0
 #
 #
 # (70)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33055 33084  "1 "    0     # line from  BIXLER    60.00   (1) to (3)   BXLR_TAP  60.00
1  33084 33083  "1 "    0     # line from  BXLR_TAP  60.00   (3) to (2)   MDLRVRJT  60.00
1  33084 33778  "1 "    0     # line from  BXLR_TAP  60.00   (3) to (2)   MDL_RIVR  60.00
1  33083 33774  "1 "    0     # line from  MDLRVRJT  60.00   (2) to (3)   HRDLNJCT  60.00
1  33774 33770  "1 "    0     # line from  HRDLNJCT  60.00   (3) to BRKR  HERDLYN   60.00
1  33774 33782  "1 "    0     # line from  HRDLNJCT  60.00   (3) to (1)   WEST SDE  60.00
1  33778 33780  "1 "    0     # line from  MDL_RIVR  60.00   (2) to (1)   MCD_ISLE  60.00
4  33055     0  "1 "    0     # LOAD-DROP    BIXLER    60.00  LOAD==2.00(0.97)
4  33778     0  "1 "    0     # LOAD-DROP    MDL_RIVR  60.00  LOAD==3.37(0.00)
4  33782     0  "1 "    0     # LOAD-DROP    WEST SDE  60.00  LOAD==1.90(0.43)
4  33780     0  "1 "    0     # LOAD-DROP    MCD_ISLE  60.00  LOAD==6.24(1.56)
0
 #
 #
 # (71)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33060 33050  "1 "    0     # line from  ANTIOCH   60.00   (1) to BRKR  CC SUB    60.00
4  33060     0  "1 "    0     # LOAD-DROP    ANTIOCH   60.00  LOAD==4.40(1.00)
0
 #
 #
 # (72)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33062 33090  "1 "    0     # line from  SHLL CHM  60.00   (2) to (3)   SHLLCHMT  60.00
1  33062 33063  "1 "    0     # line from  SHLL CHM  60.00   (2) to BRKR  WLLW PSS  60.00
1  33090 33050  "1 "    0     # line from  SHLLCHMT  60.00   (3) to BRKR  CC SUB    60.00
1  33090 33061  "1 "    0     # line from  SHLLCHMT  60.00   (3) to (2)   PITTSBRG  60.00
2  33061 33131  "1 "    0     # TRAN from  PITTSBRG  60.00   (2) to (1)   GWF #1     9.11
4  33062     0  "1 "    0     # LOAD-DROP    SHLL CHM  60.00  LOAD==2.55(1.24)
4  33063     0  "1 "    0     # LOAD-DROP    WLLW PSS  60.00  LOAD==7.03(-0.83)
4  33061     0  "1 "    0     # LOAD-DROP    PITTSBRG  60.00  LOAD==1.20(0.27)
4  33131     0  "1 "    0     # LOAD-DROP    GWF #1     9.11  LOAD==2.60(0.59)
3  33131     0  "1 "    0     # GEN-DROP    GWF #1     9.11  GEN==12.74(-4.55)
1  33091 33063  "1 "    1     # LINE-TRANSFER  SHLL CHM  60.00  TO  TAP GWF5  60.00
4  33063     0  "***"   1     # RESTORE WILLOW PASS load
0
 #
 #
 # (73)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33000 30523  "3 "    0     # TRAN from  CC SUB   115.00  BRKR to BRKR  CC SUB   230.00
0
 #
 #
 # (74)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33114 30525  "1 "    0     # TRAN from  C.COS 4   13.80   (1) to BRKR  C.COSTA  230.00
0
 #
 #
 # (75)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33115 30525  "1 "    0     # TRAN from  C.COS 5   13.80   (1) to BRKR  C.COSTA  230.00
0
 #
 #
 # (76)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33116 30525  "1 "    0     # TRAN from  C.COS 6   18.00   (1) to BRKR  C.COSTA  230.00
4  33116     0  "1 "    0     # LOAD-DROP    C.COS 6   18.00  LOAD==5.00(2.50)
3  33116     0  "1 "    0     # GEN-DROP    C.COS 6   18.00  GEN==329.05(118.77)
0
 #
 #
 # (77)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33117 30525  "1 "    0     # TRAN from  C.COS 7   18.00   (1) to BRKR  C.COSTA  230.00
4  33117     0  "1 "    0     # LOAD-DROP    C.COS 7   18.00  LOAD==5.00(2.50)
3  33117     0  "1 "    0     # GEN-DROP    C.COS 7   18.00  GEN==339.27(119.47)
0
 #
 #
 # (78)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30000 30526  "1 "    0     # TRAN from  PTSB  7   20.00   (1) to BRKR  PITSBURG 230.00
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4  30000      0  "1 "    0     # LOAD-DROP    PTSB  7   20.00  LOAD==20.00(10.00)
3  30000      0  "1 "    0     # GEN-DROP    PTSB  7   20.00  GEN==600.00(131.32)
0
 #
 #
 # (79)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32950 30526  "12"    0     # TRAN from  PITSBURG 115.00  BRKR to BRKR  PITSBURG 230.00
0
 #
 #
 # (80)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32950 30526  "13"    0     # TRAN from  PITSBURG 115.00  BRKR to BRKR  PITSBURG 230.00
0
 #
 #
 # (81)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33103 30526  "1 "    0     # TRAN from  PTSB  3   18.00   (1) to BRKR  PITSBURG 230.00
4  33103      0  "1 "    0     # LOAD-DROP    PTSB  3   18.00  LOAD==7.00(3.50)
3  33103      0  "1 "    0     # GEN-DROP    PTSB  3   18.00  GEN==123.89(-13.61)
0
 #
 #
 # (82)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33104 30526  "1 "    0     # TRAN from  PTSB  4   18.00   (1) to BRKR  PITSBURG 230.00
4  33104      0  "1 "    0     # LOAD-DROP    PTSB  4   18.00  LOAD==7.00(2.50)
3  33104      0  "1 "    0     # GEN-DROP    PTSB  4   18.00  GEN==136.52(-0.39)
0
 #
 #
 # (83)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33105 30526  "1 "    0     # TRAN from  PTSB  5   18.00   (2) to BRKR  PITSBURG 230.00
2  33105 30526  "2 "    0     # TRAN from  PTSB  5   18.00   (2) to BRKR  PITSBURG 230.00
4  33105      0  "1 "    0     # LOAD-DROP    PTSB  5   18.00  LOAD==5.00(2.50)
3  33105      0  "1 "    0     # GEN-DROP    PTSB  5   18.00  GEN==310.22(125.81)
0
 #
 #
 # (84)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33106 30526  "1 "    0     # TRAN from  PTSB  6   18.00   (2) to BRKR  PITSBURG 230.00
2  33106 30526  "2 "    0     # TRAN from  PTSB  6   18.00   (2) to BRKR  PITSBURG 230.00
4  33106      0  "1 "    0     # LOAD-DROP    PTSB  6   18.00  LOAD==5.00(2.50)
3  33106      0  "1 "    0     # GEN-DROP    PTSB  6   18.00  GEN==251.26(112.49)
0
 #
 #
 # (85)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33151 30535  "1 "    0     # TRAN from  FOSTER W  12.47  BRKR to BRKR  TIDEWATR 230.00
0
 #
 #
 # (86)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33151 30535  "2 "    0     # TRAN from  FOSTER W  12.47  BRKR to BRKR  TIDEWATR 230.00
0
 #
 #
 # (87)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33010 30540  "1 "    0     # TRAN from  SOBRANTE 115.00  BRKR to BRKR  SOBRANTE 230.00
0
 #
 #
 # (88)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33010 30540  "2 "    0     # TRAN from  SOBRANTE 115.00  BRKR to BRKR  SOBRANTE 230.00
0
 #
 #
 # (89)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30550 30551  "1 "    0     # TRAN from  MORAGA   230.00  BRKR to (3)   MRAGA 1M 230.00
2  30551 33020  "1 "    0     # TRAN from  MRAGA 1M 230.00   (3) to BRKR  MORAGA   115.00
2  30551 33121  "1 "    0     # TRAN from  MRAGA 1M 230.00   (3) to (1)   MRAGA 1T  13.20
0
 #
 #
 # (90)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30550 30552  "2 "    0     # TRAN from  MORAGA   230.00  BRKR to (3)   MRAGA 2M 230.00
2  30552 33020  "2 "    0     # TRAN from  MRAGA 2M 230.00   (3) to BRKR  MORAGA   115.00
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2  30552 33122  "2 "    0     # TRAN from  MRAGA 2M 230.00   (3) to (1)   MRAGA 2T  13.20
0
 #
 #
 # (91)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30550 30553  "3 "    0     # TRAN from  MORAGA   230.00  BRKR to (3)   MRAGA 3M 230.00
2  30553 33020  "3 "    0     # TRAN from  MRAGA 3M 230.00   (3) to BRKR  MORAGA   115.00
2  30553 33123  "3 "    0     # TRAN from  MRAGA 3M 230.00   (3) to (1)   MRAGA 3T  13.20
0
 #
 #
 # (92)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33175 30580  "1 "    0     # TRAN from  ALTAMONT   9.11   (1) to (3)   ALTM MDW 230.00
1  30580 30625  "1 "    0     # line from  ALTM MDW 230.00   (3) to BRKR  TESLA D  230.00
1  30580 38610  "1 "    0     # line from  ALTM MDW 230.00   (3) to BRKR  DELTAPMP 230.00
0
 #
 #
 # (93)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33101 32950  "1 "    0     # TRAN from  PTSB  1   18.00   (1) to BRKR  PITSBURG 115.00
4  33101     0  "1 "    0     # LOAD-DROP    PTSB  1   18.00  LOAD==7.00(3.50)
3  33101     0  "1 "    0     # GEN-DROP    PTSB  1   18.00  GEN==143.84(45.36)
0
 #
 #
 # (94)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33102 32950  "1 "    0     # TRAN from  PTSB  2   18.00   (1) to BRKR  PITSBURG 115.00
4  33102     0  "1 "    0     # LOAD-DROP    PTSB  2   18.00  LOAD==7.00(3.50)
3  33102     0  "1 "    0     # GEN-DROP    PTSB  2   18.00  GEN==129.65(43.24)
0
 #
 #
 # (95)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33050 33000  "1 "    0     # TRAN from  CC SUB    60.00  BRKR to BRKR  CC SUB   115.00
0
 #
 #
 # (96)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30528 33107  "1 "    0     # TRAN from  DEC PTSG 230.00  BRKR to (1)   DEC STG1  24.00
3  33107     0  "1 "    0     # GEN-DROP    DEC STG1  24.00  GEN==280.00(81.18)
0
 #
 #
 # (97)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30528 33108  "1 "    0     # TRAN from  DEC PTSG 230.00  BRKR to (1)   DEC CTG1  18.00
3  33108     0  "1 "    0     # GEN-DROP    DEC CTG1  18.00  GEN==200.00(57.97)
0
 #
 #
 # (98)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30528 33109  "1 "    0     # TRAN from  DEC PTSG 230.00  BRKR to (1)   DEC CTG2  18.00
3  33109     0  "1 "    0     # GEN-DROP    DEC CTG2  18.00  GEN==200.00(57.97)
0
 #
 #
 # (99)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30528 33110  "1 "    0     # TRAN from  DEC PTSG 230.00  BRKR to (1)   DEC CTG3  18.00
3  33110     0  "1 "    0     # GEN-DROP    DEC CTG3  18.00  GEN==200.00(57.97)
0
 #
 #
 # (100)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32978 33111  "1 "    0     # TRAN from  LMEC   1 115.00  BRKR to (1)   LMECCT2   18.00
3  33111     0  "1 "    0     # GEN-DROP    LMECCT2   18.00  GEN==150.00(26.70)
0
 #
 #
 # (101)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32978 33112  "1 "    0     # TRAN from  LMEC   1 115.00  BRKR to (1)   LMECCT1   18.00
3  33112     0  "1 "    0     # GEN-DROP    LMECCT1   18.00  GEN==150.00(26.70)
0
 #
 #
 # (102)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32978 33113  "1 "    0     # TRAN from  LMEC   1 115.00  BRKR to (1)   LMECST1   18.00
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3  33113     0  "1 "    0     # GEN-DROP    LMECST1   18.00  GEN==200.00(30.79)
0
 #
 #
 # (103)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32990 33141  "2 "    0     # TRAN from  MARTNZ D 115.00  BRKR to BRKR  SHELL 1   12.47
0
 #
 #
 # (104)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32991 33141  "1 "    0     # TRAN from  MARTNZ E 115.00  BRKR to BRKR  SHELL 1   12.47
0
 #
 #
 # (105)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32990 33142  "2 "    0     # TRAN from  MARTNZ D 115.00  BRKR to BRKR  SHELL 2   12.47
0
 #
 #
 # (106)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32991 33142  "1 "    0     # TRAN from  MARTNZ E 115.00  BRKR to BRKR  SHELL 2   12.47
0
 #
 #
 # (107)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  32990 33143  "2 "    0     # TRAN from  MARTNZ D 115.00  BRKR to (2)   SHELL 3   12.47
2  33143 32991  "1 "    0     # TRAN from  SHELL 3   12.47   (2) to BRKR  MARTNZ E 115.00
4  33143     0  "1 "    0     # LOAD-DROP    SHELL 3   12.47  LOAD==43.00(17.00)
3  33143     0  "1 "    0     # GEN-DROP    SHELL 3   12.47  GEN==40.00(14.04)
0
 #
 #
 # (108)  B1 GENERATOR OUTAGE
 #
3  30000     0  "1"     0     # PTSB  7   20.00       PGEN=600.00  QGEN=131.32
0
 #
 #
 # (109)  B1 GENERATOR OUTAGE
 #
3  33101     0  "1"     0     # PTSB  1   18.00       PGEN=143.84  QGEN=45.36
0
 #
 #
 # (110)  B1 GENERATOR OUTAGE
 #
3  33102     0  "1"     0     # PTSB  2   18.00       PGEN=129.65  QGEN=43.24
0
 #
 #
 # (111)  B1 GENERATOR OUTAGE
 #
3  33103     0  "1"     0     # PTSB  3   18.00       PGEN=123.89  QGEN=-13.61
0
 #
 #
 # (112)  B1 GENERATOR OUTAGE
 #
3  33104     0  "1"     0     # PTSB  4   18.00       PGEN=136.52  QGEN=-0.39
0
 #
 #
 # (113)  B1 GENERATOR OUTAGE
 #
3  33105     0  "1"     0     # PTSB  5   18.00       PGEN=310.22  QGEN=125.81
0
 #
 #
 # (114)  B1 GENERATOR OUTAGE
 #
3  33106     0  "1"     0     # PTSB  6   18.00       PGEN=251.26  QGEN=112.49
0
 #
 #
 # (115)  B1 GENERATOR OUTAGE
 #
3  33107     0  "1"     0     # DEC STG1  24.00       PGEN=280.00  QGEN=81.18
0
 #
 #
 # (116)  B1 GENERATOR OUTAGE
 #
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3  33108     0  "1"     0     # DEC CTG1  18.00       PGEN=200.00  QGEN=57.97
0
 #
 #
 # (117)  B1 GENERATOR OUTAGE
 #
3  33109     0  "1"     0     # DEC CTG2  18.00       PGEN=200.00  QGEN=57.97
0
 #
 #
 # (118)  B1 GENERATOR OUTAGE
 #
3  33110     0  "1"     0     # DEC CTG3  18.00       PGEN=200.00  QGEN=57.97
0
 #
 #
 # (119)  B1 GENERATOR OUTAGE
 #
3  33111     0  "1"     0     # LMECCT2   18.00       PGEN=150.00  QGEN=26.70
0
 #
 #
 # (120)  B1 GENERATOR OUTAGE
 #
3  33112     0  "1"     0     # LMECCT1   18.00       PGEN=150.00  QGEN=26.70
0
 #
 #
 # (121)  B1 GENERATOR OUTAGE
 #
3  33113     0  "1"     0     # LMECST1   18.00       PGEN=200.00  QGEN=30.79
0
 #
 #
 # (122)  B1 GENERATOR OUTAGE
 #
3  33114     0  "1"     0     # C.COS 4   13.80       PGEN=0.00  QGEN=34.01
0
 #
 #
 # (123)  B1 GENERATOR OUTAGE
 #
3  33115     0  "1"     0     # C.COS 5   13.80       PGEN=0.00  QGEN=39.96
0
 #
 #
 # (124)  B1 GENERATOR OUTAGE
 #
3  33116     0  "1"     0     # C.COS 6   18.00       PGEN=329.05  QGEN=118.77
0
 #
 #
 # (125)  B1 GENERATOR OUTAGE
 #
3  33117     0  "1"     0     # C.COS 7   18.00       PGEN=339.27  QGEN=119.47
0
 #
 #
 # (126)  B1 GENERATOR OUTAGE
 #
3  33121     0  "1"     0     # MRAGA 1T  13.20       PGEN=0.00  QGEN=48.00
0
 #
 #
 # (127)  B1 GENERATOR OUTAGE
 #
3  33122     0  "1"     0     # MRAGA 2T  13.20       PGEN=0.00  QGEN=48.00
0
 #
 #
 # (128)  B1 GENERATOR OUTAGE
 #
3  33123     0  "1"     0     # MRAGA 3T  13.20       PGEN=0.00  QGEN=26.89
0
 #
 #
 # (129)  B1 GENERATOR OUTAGE
 #
3  33131     0  "1"     0     # GWF #1     9.11       PGEN=12.74  QGEN=-4.55
0
 #
 #
 # (130)  B1 GENERATOR OUTAGE
 #
3  33132     0  "1"     0     # GWF #2    13.80       PGEN=12.33  QGEN=7.26
0
 #
```

```
 #
 # (131)  B1 GENERATOR OUTAGE
 #
3  33133     0  "1"     0     # GWF #3    13.80       PGEN=19.03  QGEN=4.28
0
 #
 #
 # (132)  B1 GENERATOR OUTAGE
 #
3  33134     0  "1"     0     # GWF #4    13.80       PGEN=18.58  QGEN=3.07
0
 #
 #
 # (133)  B1 GENERATOR OUTAGE
 #
3  33135     0  "1"     0     # GWF #5    13.80       PGEN=18.94  QGEN=2.87
0
 #
 #
 # (134)  B1 GENERATOR OUTAGE
 #
3  33136     0  "1"     0     # CCCSD     12.47       PGEN=4.40  QGEN=1.20
0
 #
 #
 # (135)  B1 GENERATOR OUTAGE
 #
3  33139     0  "1"     0     # STAUFER    9.11       PGEN=1.95  QGEN=-1.00
0
 #
 #
 # (136)  B1 GENERATOR OUTAGE
 #
3  33141     0  "1"     0     # SHELL 1   12.47       PGEN=20.00  QGEN=9.44
0
 #
 #
 # (137)  B1 GENERATOR OUTAGE
 #
3  33142     0  "1"     0     # SHELL 2   12.47       PGEN=40.00  QGEN=15.60
0
 #
 #
 # (138)  B1 GENERATOR OUTAGE
 #
3  33143     0  "1"     0     # SHELL 3   12.47       PGEN=40.00  QGEN=14.04
0
 #
 #
 # (139)  B1 GENERATOR OUTAGE
 #
3  33145     0  "1"     0     # CROWN.Z.  13.80       PGEN=40.00  QGEN=-3.89
0
 #
 #
 # (140)  B1 GENERATOR OUTAGE
 #
3  33145     0  "2"     0     # CROWN.Z.  13.80       PGEN=5.40  QGEN=-0.53
0
 #
 #
 # (141)  B1 GENERATOR OUTAGE
 #
3  33151     0  "1"     0     # FOSTER W  12.47       PGEN=45.40  QGEN=23.99
0
 #
 #
 # (142)  B1 GENERATOR OUTAGE
 #
3  33151     0  "2"     0     # FOSTER W  12.47       PGEN=45.40  QGEN=23.99
0
 #
 #
 # (143)  B1 GENERATOR OUTAGE
 #
3  33151     0  "3"     0     # FOSTER W  12.47       PGEN=35.00  QGEN=18.49
0
 #
 #
 # (144)  B1 GENERATOR OUTAGE
 #
3  33161     0  "1"     0     # DOWCHEM1  13.80       PGEN=15.30  QGEN=6.01
0
 #
 #
 # (145)  B1 GENERATOR OUTAGE
 #
```

```
3  33162     0  "1"     0     # DOWCHEM2  13.80       PGEN=22.00  QGEN=7.56
0
 #
 #
 # (146)  B1 GENERATOR OUTAGE
 #
3  33163     0  "1"     0     # DOWCHEM3  13.80       PGEN=22.00  QGEN=7.56
0
 #
 #
 # (147)  B1 GENERATOR OUTAGE
 #
3  33177     0  "1"     0     # HIWD HIT  34.50       PGEN=150.00  QGEN=13.17
0
 #
 #
 # (148)  B1 GENERATOR OUTAGE
 #
3  38760     0  "1"     0     # DELTA 1   13.20       PGEN=-20.00  QGEN=0.00
0
 #
 #
 # (149)  B1 GENERATOR OUTAGE
 #
3  38760     0  "2"     0     # DELTA 1   13.20       PGEN=-20.00  QGEN=0.00
0
 #
 #
 # (150)  B1 GENERATOR OUTAGE
 #
3  38765     0  "1"     0     # DELTA 2   13.20       PGEN=-20.00  QGEN=0.00
0
 #
 #
 # (151)  B1 GENERATOR OUTAGE
 #
3  38765     0  "2"     0     # DELTA 2   13.20       PGEN=-20.00  QGEN=0.00
0
 #
 #
 # (152)  B1 GENERATOR OUTAGE
 #
3  38770     0  "1"     0     # DELTA 3   13.20       PGEN=-20.00  QGEN=0.00
0
 #
 #
 # (153)  B1 GENERATOR OUTAGE
 #
3  38820     0  "1"     0     # DELTA 5   13.20       PGEN=-14.80  QGEN=0.00
0
#
#************************** Mission Division #16 ****************************
#PG&E 2001 TRANSMISSION ASSESSMENT STUDY
 #2004SUMPK AREA 78 CASE: COI=4880MW (n2s), P26=2100MW (n2s)
 #1-IN-10 FORECAST; PG&E AREA LOADS/LOSSES=27,100MW; 3/22/2001
 #
 #
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30585  "1 "    0     # line from  C.COSTA  230.00  BRKR to BRKR  LS PSTAS 230.00
0
 #
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30525 30590  "1 "    0     # line from  C.COSTA  230.00  BRKR to (3)   USWP-JRW 230.00
1  30590 30537  "1 "    0     # line from  USWP-JRW 230.00   (3) to BRKR  DUBLIN   230.00
2  30590 33838  "1 "    0     # TRAN from  USWP-JRW 230.00   (3) to (1)   USWP_#3    9.11
4  33838     0  "1 "    0     # LOAD-DROP    USWP_#3    9.11  LOAD==0.50(0.24)
0
 #
 #
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30555  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  SANRAMON 230.00
0
 #
 #
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30526 30560  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  E. SHORE 230.00
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30527 30537  "1 "    0     # line from  N_LVMORE 230.00  BRKR to BRKR  DUBLIN   230.00
```

APPENDIX A – AUTOCON INPUT FILE

```
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30527 35224  "1 "    0     # line from  N_LVMORE 230.00  BRKR to BRKR  VINEYD_D 230.00
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30550 30554  "1 "    0     # line from  MORAGA   230.00  BRKR to BRKR  CASTROVL 230.00
0
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30550 30555  "1 "    0     # line from  MORAGA   230.00  BRKR to BRKR  SANRAMON 230.00
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30554 30631  "1 "    0     # line from  CASTROVL 230.00  BRKR to BRKR  NEWARK E 230.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30560 30700  "1 "    0     # line from  E. SHORE 230.00  BRKR to BRKR  SANMATEO 230.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30562 30631  "1 "    0     # line from  TES JCT  230.00   (3) to BRKR  NEWARK E 230.00
1  30562 30561  "1 "    0     # line from  TES JCT  230.00   (3) to BRKR  TASSAJAR 230.00
1  30562 30563  "1 "    0     # line from  TES JCT  230.00   (3) to BRKR  TES SUB  230.00
4  30563     0  "1 "    0     # LOAD-DROP    TES SUB  230.00  LOAD==39.23(7.97)
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30585 30630  "1 "    0     # line from  LS PSTAS 230.00  BRKR to BRKR  NEWARK D 230.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30624 30630  "1 "    0     # line from  TESLA E  230.00  BRKR to BRKR  NEWARK D 230.00
0
 #
 # **** CHANGES ***************************************************************
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 # (14A)
#1  30630 30703  "1 "    0     # line from  NEWARK D 230.00  BRKR to BRKR  RAVENSWD 230.00
#0
 #
 # (14B)
1  30630 30639  "1 "    0     # line from  NEWARK D 230.00  BRKR to BRKR  FGP_TAP 230.00
0
 #
 # (14C)
1  30639 30703  "1 "    0     # line from  FGP_TAP 230.00  BRKR to BRKR  RAVENSWD 230.00
0
 #
 # (14D)
1  30639 30633  "1 "    0     # line from  FGP_TAP  230.00  BRKR to BRKR  FGP 230.00
2  30633 30636  "1 "    0     # TRAN from  FGP   230.00   (3) to (1)   FGP_CT1   18
2  30633 30637  "1 "    0     # TRAN from  FGP   230.00   (3) to (1)   FGP_CT2   18
2  30633 30638  "1 "    0     # TRAN from  FGP   230.00   (3) to (1)   FGP_CT2   18
4  30633     0  "1 "    0     # LOAD-DROP    FGP    130  LOAD==20
0
 #
 #
3  30636     0  "1"     0     # FGP_ST1   18       PGEN=256  QGEN=0.00
0

3  30637     0  "1"     0     # FGP_ST2   18       PGEN=256  QGEN=0.00
0

3  30638     0  "1"     0     # FGP_ST3   18       PGEN=256  QGEN=0.00
0
 # ***************************************************************************
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
```

```
 #
1  30631 30635  "1 "    0     # line from  NEWARK E 230.00  BRKR to BRKR  NWK DIST 230.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30655 30630  "1 "    0     # line from  ADCC     230.00   (3) to BRKR  NEWARK D 230.00
1  30655 30640  "1 "    0     # line from  ADCC     230.00   (3) to BRKR  TESLA F  230.00
2  30655 35310  "1 "    0     # TRAN from  ADCC     230.00   (3) to (1)   LFC FIN+   9.11
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32812 35104  "1 "    0     # line from  EDS GRNT 115.00   (1) to BRKR  GRANT    115.00
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  32814 35113  "1 "    0     # line from  EDESTAP1 115.00   (3) to (2)   DMTAR_SL 115.00
1  32814 32792  "1 "    0     # line from  EDESTAP1 115.00   (3) to BRKR  STATIN J 115.00
1  32814 32810  "1 "    0     # line from  EDESTAP1 115.00   (3) to BRKR  EDES     115.00
1  35113 35101  "1 "    0     # line from  DMTAR_SL 115.00   (2) to BRKR  SN LNDRO 115.00
4  35113     0  "1 "    0     # LOAD-DROP    DMTAR_SL 115.00  LOAD==3.90(2.92)
4  32810     0  "1 "    0     # LOAD-DROP    EDES     115.00  LOAD==16.67(2.49)
4  32810     0  "3 "    0     # LOAD-DROP    EDES     115.00  LOAD==30.62(-3.07)
1  32810 32812  "1 "    1     # LINE-TRANSFER EDESTAP1 to EDS GRNT
4  32810     0  "***"   1     # RESTORE EDES load
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 35101  "1 "    0     # line from  MORAGA   115.00  BRKR to BRKR  SN LNDRO 115.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 35101  "2 "    0     # line from  MORAGA   115.00  BRKR to BRKR  SN LNDRO 115.00
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33020 35101  "3 "    0     # line from  MORAGA   115.00  BRKR to BRKR  SN LNDRO 115.00
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35104 35105  "1 "    0     # line from  GRANT    115.00  BRKR to BRKR  EASTSHRE 115.00
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35104 35105  "2 "    0     # line from  GRANT    115.00  BRKR to BRKR  EASTSHRE 115.00
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35105 35106  "1 "    0     # line from  EASTSHRE 115.00  BRKR to BRKR  MT EDEN  115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35105 35106  "2 "    0     # line from  EASTSHRE 115.00  BRKR to BRKR  MT EDEN  115.00
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35105 35107  "1 "    0     # line from  EASTSHRE 115.00  BRKR to BRKR  DUMBARTN 115.00
0
 #
 #
```

APPENDIX A – AUTOCON INPUT FILE

```
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35107 35120  "1 "    0     # line from  DUMBARTN 115.00  BRKR to BRKR  NEWARK D 115.00
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 35111  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  JARVIS   115.00
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 35124  "2 "    0     # line from  NEWARK D 115.00  BRKR to (2)   NUMI JCT 115.00
1  35124 35111  "2 "    0     # line from  NUMI JCT 115.00   (2) to BRKR  JARVIS   115.00
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 38432  "1 "    0     # line from  NEWARK D 115.00  BRKR to (6)   OAKDLTID 115.00
1  38432 35120  "2 "    0     # line from  OAKDLTID 115.00   (6) to BRKR  NEWARK D 115.00
1  38432 36962  "1 "    0     # line from  OAKDLTID 115.00   (6) to BRKR  MOCCASIN 115.00
1  38432 36962  "2 "    0     # line from  OAKDLTID 115.00   (6) to BRKR  MOCCASIN 115.00
1  38432 38420  "1 "    0     # line from  OAKDLTID 115.00   (6) to BRKR  TUOLUMN  115.00
1  38432 38420  "2 "    0     # line from  OAKDLTID 115.00   (6) to BRKR  TUOLUMN  115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35110  "1 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  FREMNT   115.00
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35110  "2 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  FREMNT   115.00
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35350  "1 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  AMES BS1 115.00
0
 #
 #
 # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35350  "3 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  AMES BS1 115.00
0
 #
 #
 # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35351  "2 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  AMES BS2 115.00
0
 #
 #
 # (38)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35126  "1 "    0     # line from  NEWARK F 115.00  BRKR to (2)   NUMI TAP 115.00
1  35126 35112  "1 "    0     # line from  NUMI TAP 115.00   (2) to BRKR  NUMMI    115.00
4  35112     0  "1 "    0     # LOAD-DROP    NUMMI    115.00  LOAD==37.50(27.15)
0
 #
 #
 # (39)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35357  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   LCKHD J1 115.00
1  35357 35358  "1 "    0     # line from  LCKHD J1 115.00   (3) to (3)   MFT.FD J 115.00
1  35357 35363  "1 "    0     # line from  LCKHD J1 115.00   (3) to BRKR  LAWRENCE 115.00
1  35358 35359  "1 "    0     # line from  MFT.FD J 115.00   (3) to (1)   MOFT.FLD 115.00
1  35358 35361  "1 "    0     # line from  MFT.FD J 115.00   (3) to BRKR  LOCKHD 1 115.00
4  35359     0  "1 "    0     # LOAD-DROP    MOFT.FLD 115.00  LOAD==4.46(1.02)
4  35361     0  "1 "    0     # LOAD-DROP    LOCKHD 1 115.00  LOAD==21.90(17.00)
1  35361 35362  "1 "    1     # close LOCKHD 1 115.00  LOCKHD 2  115.00
4  35361 0      "***"   1     # restore all loads to LOCKHD 1
0
 #
```

APPENDIX A – AUTOCON INPUT FILE

```
 #
 # (40)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35360  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   LCKHD J2 115.00
1  35360 35362  "1 "    0     # line from  LCKHD J2 115.00   (3) to BRKR  LOCKHD 2 115.00
1  35360 35365  "1 "    0     # line from  LCKHD J2 115.00   (3) to (3)   AMD JCT  115.00
1  35365 35364  "1 "    0     # line from  AMD JCT  115.00   (3) to BRKR  A.M.D    115.00
1  35365 35369  "1 "    0     # line from  AMD JCT  115.00   (3) to BRKR  APP MAT  115.00
4  35362     0  "1 "    0     # LOAD-DROP    LOCKHD 2 115.00  LOAD==18.80(14.59)
4  35364     0  "1 "    0     # LOAD-DROP    A.M.D    115.00  LOAD==7.56(4.88)
1  35361 35362  "1 "    1     # close LOCKHD 1 115.00  LOCKHD 2  115.00
4  35362 0      "***"   1     # restore all loads to LOCKHD 2
0
 #
 #
 # (41)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35600  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  DIXON LD 115.00
0
 #
 #
 # (42)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR. KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
0
 #
 #
 # (43)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35603  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J1 115.00
1  35603 35605  "1 "    0     # line from  ZNKER J1 115.00   (3) to (1)   AGNEW J  115.00
1  35603 35612  "1 "    0     # line from  ZNKER J1 115.00   (3) to BRKR  TRIMBLE  115.00
0
 #
 #
 # (44)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (45)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (46)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (47)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35200 35204  "1 "    0     # line from  SEAWEST   60.00   (3) to (3)   ZONDWD    60.00
1  35200 35218  "1 "    0     # line from  SEAWEST   60.00   (3) to (2)   FLOWIND1  60.00
2  35200 35312  "1 "    0     # TRAN from  SEAWEST   60.00   (3) to (1)   SEAWESTF   9.11
1  35204 35208  "1 "    0     # line from  ZONDWD    60.00   (3) to (3)   USWP-FRK  60.00
2  35204 35316  "1 "    0     # TRAN from  ZONDWD    60.00   (3) to (1)   ZOND SYS   9.11
2  35218 35318  "1 "    0     # TRAN from  FLOWIND1  60.00   (2) to (1)   FLOWDPTR   9.11
1  35208 35210  "1 "    0     # line from  USWP-FRK  60.00   (3) to (3)   VASCJCT.  60.00
2  35208 35320  "1 "    0     # TRAN from  USWP-FRK  60.00   (3) to (1)   USW FRIC  12.00
1  35210 35201  "1 "    0     # line from  VASCJCT.  60.00   (3) to BRKR  VASCO     60.00
1  35210 35220  "1 "    0     # line from  VASCJCT.  60.00   (3) to BRKR  LPOSTAS   60.00
4  35201     0  "1 "    0     # LOAD-DROP    VASCO     60.00  LOAD==4.31(0.43)
4  35201     0  "2 "    0     # LOAD-DROP    VASCO     60.00  LOAD==14.53(2.46)
3  35312     0  "1 "    0     # GEN-DROP    SEAWESTF   9.11  GEN==0.08(0.00)
3  35320     0  "1 "    0     # GEN-DROP    USW FRIC  12.00  GEN==2.64(0.00)
1  35211 35201  "1 "    1     # LINE-TRANSFER  VASCJCT.  60.00  TO  ALTAMONT  60.00
4  35201     0  "***"   1     # RESTORE VASCO load
0
 #
 #
 # (48)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35202 33776  "1 "    0     # line from  USWP-WKR  60.00   (3) to (2)   SOUTH BY  60.00
1  35202 35211  "1 "    0     # line from  USWP-WKR  60.00   (3) to (1)   ALTAMONT  60.00
2  35202 35314  "1 "    0     # TRAN from  USWP-WKR  60.00   (3) to (1)   WALKER+    9.11
1  33776 33775  "1 "    0     # line from  SOUTH BY  60.00   (2) to (2)   TOSCO-PP  60.00
1  33775 33773  "1 "    0     # line from  TOSCO-PP  60.00   (2) to (2)   ALTA-CGE  60.00
1  33773 33772  "1 "    0     # line from  ALTA-CGE  60.00   (2) to (2)   B.BTHNY-   60.00
```

APPENDIX A – AUTOCON INPUT FILE

```
1  33772 33770  "1 "    0     # line from  B.BTHNY-  60.00   (2) to BRKR  HERDLYN   60.00
4  33776     0  "1 "    0     # LOAD-DROP    SOUTH BY  60.00  LOAD==19.86(0.00)
4  33775     0  "1 "    0     # LOAD-DROP    TOSCO-PP  60.00  LOAD==0.97(0.91)
4  33772     0  "1 "    0     # LOAD-DROP    B.BTHNY-  60.00  LOAD==1.94(0.44)
3  33773     0  "1 "    0     # GEN-DROP    ALTA-CGE  60.00  GEN==4.03(-1.00)
0
 #
 #
 # (49)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35203 35220  "1 "    0     # line from  LIVERMRE  60.00  BRKR to BRKR  LPOSTAS   60.00
0
 #
 #
 # (50)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35203 35222  "1 "    0     # line from  LIVERMRE  60.00  BRKR to (2)   CALMAT60  60.00
1  35222 35206  "1 "    0     # line from  CALMAT60  60.00   (2) to (2)   KAISER    60.00
1  35206 35227  "1 "    0     # line from  KAISER    60.00   (2) to (3)   IUKA_TAP  60.00
1  35227 35205  "1 "    0     # line from  IUKA_TAP  60.00   (3) to BRKR  RADUM     60.00
1  35227 35212  "1 "    0     # line from  IUKA_TAP  60.00   (3) to (2)   IUKA      60.00
1  35212 35213  "1 "    0     # line from  IUKA      60.00   (2) to BRKR  VALLECTS  60.00
4  35222     0  "1 "    0     # LOAD-DROP    CALMAT60  60.00  LOAD==4.40(4.12)
4  35206     0  "1 "    0     # LOAD-DROP    KAISER    60.00  LOAD==9.00(7.22)
4  35212     0  "1 "    0     # LOAD-DROP    IUKA      60.00  LOAD==3.30(3.09)
0
 #
 #
 # (51)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35209 35221  "1 "    0     # line from  SAN RAMN  60.00  BRKR to (2)   E DUBLIN  60.00
1  35221 35223  "1 "    0     # line from  E DUBLIN  60.00   (2) to (3)   PARKS TP  60.00
1  35223 35205  "1 "    0     # line from  PARKS TP  60.00   (3) to BRKR  RADUM     60.00
1  35223 35207  "1 "    0     # line from  PARKS TP  60.00   (3) to (1)   PARKS     60.00
4  35221     0  "1 "    0     # LOAD-DROP    E DUBLIN  60.00  LOAD==8.00(1.82)
4  35207     0  "1 "    0     # LOAD-DROP    PARKS     60.00  LOAD==0.49(-0.05)
0
 #
 #
 # (52)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35213 35214  "1 "    0     # line from  VALLECTS  60.00  BRKR to (2)   SUNOL     60.00
1  35214 35216  "1 "    0     # line from  SUNOL     60.00   (2) to (2)   DCTO JCT  60.00
1  35216 35217  "1 "    0     # line from  DCTO JCT  60.00   (2) to BRKR  NEWARK    60.00
4  35214     0  "1 "    0     # LOAD-DROP    SUNOL     60.00  LOAD==8.14(-0.97)
0
 #
 #
 # (53)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35219 30630  "1 "    0     # line from  VINEYARD 230.00  BRKR to BRKR  NEWARK D 230.00
0
 #
 #
 # (54)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35225 35217  "1 "    0     # line from  LIVRMR_2  60.00  BRKR to BRKR  NEWARK    60.00
0
 #
 #
 # (55)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35349 35121  "1 "    0     # line from  AMES DST 115.00  BRKR to BRKR  NEWARK E 115.00
0
 #
 #
 # (56)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35209 30555  "1 "    0     # TRAN from  SAN RAMN  60.00  BRKR to BRKR  SANRAMON 230.00
0
 #
 #
 # (57)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35105 30560  "1 "    0     # TRAN from  EASTSHRE 115.00  BRKR to BRKR  E. SHORE 230.00
0
 #
 #
 # (58)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35105 30560  "2 "    0     # TRAN from  EASTSHRE 115.00  BRKR to BRKR  E. SHORE 230.00
0
 #
 #
 # (59)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35220 30585  "4 "    0     # TRAN from  LPOSTAS   60.00  BRKR to BRKR  LS PSTAS 230.00
```

```
0
 #
 #
 # (60)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35120 35109  "1 "    0     # TRAN from  NEWARK D 115.00  BRKR to (3)   NWRK 2 M 115.00
2  35109 35217  "1 "    0     # TRAN from  NWRK 2 M 115.00   (3) to BRKR  NEWARK    60.00
2  35109 35302  "1 "    0     # TRAN from  NWRK 2 M 115.00   (3) to (1)   NWRK 2 T  13.00
0
 #
 #
 # (61)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
#      **** 3-WINDING TRANSFORMER  30630  (30627)  35120  35301 :
2  30630 35120  "9 "    0     # TRAN from  NEWARK D 230.00  BRKR to (1)   NEWARK D 115.00
0
 #
 #
 # (62)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
#      **** 3-WINDING TRANSFORMER  30630  (30626)  35121  35303 :
2  30630 35121  "7 "    0     # TRAN from  NEWARK D 230.00  BRKR to (1)   NEWARK E 115.00
0
 #
 #
 # (63)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
#      **** 3-WINDING TRANSFORMER  30631  (30628)  35122  35300 :
2  30631 35122  "11"    0     # TRAN from  NEWARK E 230.00  BRKR to (1)   NEWARK F 115.00
0
 #
 #
 # (64)  B1 GENERATOR OUTAGE
 #
3  35300     0  "1"     0     # NWRK 11T  13.20       PGEN=0.00  QGEN=34.64
0
 #
 #
 # (65)  B1 GENERATOR OUTAGE
 #
3  35300     0  "2"     0     # NWRK 11T  13.20       PGEN=0.00  QGEN=34.64
0
 #
 #
 # (66)  B1 GENERATOR OUTAGE
 #
3  35301     0  "1"     0     # NWRK 9 T  13.20       PGEN=0.00  QGEN=25.73
0
 #
 #
 # (67)  B1 GENERATOR OUTAGE
 #
3  35301     0  "2"     0     # NWRK 9 T  13.20       PGEN=0.00  QGEN=25.73
0
 #
 #
 # (68)  B1 GENERATOR OUTAGE
 #
3  35303     0  "1"     0     # NWRK 7 T  13.20       PGEN=0.00  QGEN=12.50
0
 #
 #
 # (69)  B1 GENERATOR OUTAGE
 #
3  35303     0  "2"     0     # NWRK 7 T  13.20       PGEN=0.00  QGEN=12.50
0
 #
 #
 # (70)  B1 GENERATOR OUTAGE
 #
3  35312     0  "1"     0     # SEAWESTF   9.11       PGEN=0.08  QGEN=0.00
0
 #
 #
 # (71)  B1 GENERATOR OUTAGE
 #
3  35320     0  "1"     0     # USW FRIC  12.00       PGEN=2.64  QGEN=0.00
0
#
#
-1
# EOF
```

APPENDIX A – AUTOCON INPUT FILE

```
# Program: autocon_make.p   Thu Apr 19 10:49:26 2001
# Input Case: "F:\01_Assessment\Save\2004\a01sum2004_pge_a78.sav"
# Input File: "F:\01_Assessment\Breaker\2002-05\2002-05_Master_brkr_drcl.in"
# area_numbers  "7 8 9 10 16 17 18 G1L1"
# zone_numbers  ""
# voltage_range  "1 230"
# bus_fault_opt  "no"
# Output File (this output): "F:\01_Assessment\Input\2004\Area07_CatB_2004.in"

 #************************ Area 9 San Francisco Division ************************
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30685 30695  "1 "    0     # line from  EMBRCDRD 230.00  BRKR to BRKR  MARTIN C 230.00
4  30685     0  "1 "    0     # LOAD-DROP    EMBRCDRD 230.00  LOAD==83.01(18.92)
4  30685     0  "2 "    0     # LOAD-DROP    EMBRCDRD 230.00  LOAD==51.86(5.21)
1  30685 30690  "1 "    1     # LINE-TRANSFER MARTIN C to EMBRCDRE
4  30685     0  "***"   1     # RESTORE EMBRCDRD load
0
 #
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30690 30695  "1 "    0     # line from  EMBRCDRE 230.00  BRKR to BRKR  MARTIN C 230.00
4  30690     0  "3 "    0     # LOAD-DROP    EMBRCDRE 230.00  LOAD==51.86(9.09)
4  30690     0  "5 "    0     # LOAD-DROP    EMBRCDRE 230.00  LOAD==83.01(19.69)
1  30690 30685  "1 "    1     # LINE-TRANSFER MARTIN C to EMBRCDRD
4  30690     0  "***"   1     # RESTORE EMBRCDRE load
0
 #
 #
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30700 30695  "1 "    0     # line from  SANMATEO 230.00  BRKR to BRKR  MARTIN C 230.00
0
 #
 #
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33200 33204  "1 "    0     # line from  LARKIN D 115.00  BRKR to BRKR  POTRERO  115.00
4  33200     0  "1 "    0     # LOAD-DROP    LARKIN D 115.00  LOAD==39.53(7.82)
4  33200     0  "2 "    0     # LOAD-DROP    LARKIN D 115.00  LOAD==33.29(6.58)
1  33200 33201  "1 "    1     # LINE-TRANSFER POTRERO to LARKIN E
4  33200     0  "***"   1     # RESTORE LARKIN D load
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33201 33203  "1 "    0     # line from  LARKIN E 115.00  BRKR to BRKR  MISSON   115.00
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33201 33204  "1 "    0     # line from  LARKIN E 115.00  BRKR to BRKR  POTRERO  115.00
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33202 33208  "1 "    0     # line from  LARKIN F 115.00  BRKR to BRKR  MARTIN C 115.00
4  33202     0  "5 "    0     # LOAD-DROP    LARKIN F 115.00  LOAD==38.16(7.55)
4  33202     0  "6 "    0     # LOAD-DROP    LARKIN F 115.00  LOAD==33.04(6.36)
1  33202 33208  "1 "    1     # LINE-TRANSFER MARTIN C to LARKIN E
4  33202     0  "***"   1     # RESTORE LARKIN F load
0
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33203 33204  "1 "    0     # line from  MISSON   115.00  BRKR to BRKR  POTRERO  115.00
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33203 33205  "1 "    0     # line from  MISSON   115.00  BRKR to BRKR  HNTRS PT 115.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33203 33205  "2 "    0     # line from  MISSON   115.00  BRKR to BRKR  HNTRS PT 115.00
0
 #
 #
```

```
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33204 33206  "1 "    0     # line from  POTRERO  115.00  BRKR to (2)   BAYSHOR1 115.00
1  33206 33208  "1 "    0     # line from  BAYSHOR1 115.00   (2) to BRKR  MARTIN C 115.00
4  33206     0  "1 "    0     # LOAD-DROP    BAYSHOR1 115.00  LOAD==4.75(0.68)
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33204 33207  "1 "    0     # line from  POTRERO  115.00  BRKR to (2)   BAYSHOR2 115.00
1  33207 33208  "1 "    0     # line from  BAYSHOR2 115.00   (2) to BRKR  MARTIN C 115.00
4  33207     0  "2 "    0     # LOAD-DROP    BAYSHOR2 115.00  LOAD==6.65(0.95)
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33205 33208  "1 "    0     # line from  HNTRS PT 115.00  BRKR to BRKR  MARTIN C 115.00
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33205 33208  "2 "    0     # line from  HNTRS PT 115.00  BRKR to BRKR  MARTIN C 115.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33300  "1 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  DALY CTY 115.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33301  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   DLY CTYP 115.00
1  33301 33300  "1 "    0     # line from  DLY CTYP 115.00   (3) to BRKR  DALY CTY 115.00
1  33301 33302  "1 "    0     # line from  DLY CTYP 115.00   (3) to BRKR  SERRMNTE 115.00
4  33302     0  "1 "    0     # LOAD-DROP    SERRMNTE 115.00  LOAD==9.77(2.23)
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33303  "2 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  EST GRND 115.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33307  "1 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  MILLBRAE 115.00
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33310  "3 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  SANMATEO 115.00
0
 #
 #*************************************************
 #
# (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #20A
1  33208 33220  "5 "    0     # line from  MARTIN C 115.00  BRKR to (3)   GGPP D    115.00
0
 #20B
1  33208 33220  "J6 "   0     # line from  MARTIN C 115.00  BRKR to (3)   GGPP D    115.00
0
 #20C
1  33208 33202  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   LARKIN F  115.00
0
 #20D
1  33208 33205  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   HNTRS PT  115.00
0
 #20E
1  33208 33205  "2 "    0     # line from  MARTIN C 115.00  BRKR to (3)   HNTRS PT  115.00
0
 #20F
1  33208 33206  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   BAYSHOR1  115.00
0
 #20G
1  33208 33207  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   BAYSHOR2  115.00
0
 #20H
1  33208 33300  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   DALY CTY  115.00
0
```

```
 #20I
2  33208 33209  "6 "    0     # TRAN from  MARTIN C  115.00   (1) to BRKR  MARTIN    60.00
0
 #20J
1  33220 33305  "J6 "    0     # line from  GGPP D 115.00  BRKR to (3)     SHAWROAD  115.00
0
 #20K
2  33220 33223  "1 "    0     # TRAN from  GGPP D  115.00   (1) to BRKR  UGGPP P1  115.00
3  33223     0  "1 "    0     # GEN-DROP  UGGPP P1  13.8  GEN==175
4  33220     0  "1 "    0     # LOAD-DROP  GGPP D    LOAD==24.9 (1.50)
0
 #20L
2  33220 33224  "1 "    0     # TRAN from  GGPP D  115.00   (2) to BRKR  UGGPP P2  115.00
3  33224     0  "2 "    0     # GEN-DROP   UGGPP P2  13.8  GEN==175
0
 #20M
2  33220 33225  "1 "    0     # TRAN from  GGPP D  115.00   (3) to BRKR  UGGPP P3  115.00
3  33225     0  "3 "    0     # GEN-DROP   UGGPP P3  13.8  GEN==45
0
 #20N
2  33220 33222  "1 "    0     # TRAN from  GGPP D  115.00   (4) to BRKR  UGGPP P4  115.00
3  33222     0  "4 "    0     # GEN-DROP   UGGPP P4  13.8  GEN==200
0
 #20o
1  33305 33310  "6 "    0     # line from  SHAWROAD 115.00  BRKR to (3)   SANMATEO 115.00
0
 #20P
1  33220 33306  "5 "    0     # line from  GGPP D   115.00  BRKR to (3)   SFIA     115.00
0
 #20Q
1  33306 33310  "5 "    0     # line from  SFIA     115.00  BRKR to (3)   SANMATEO 115.00
0
 #20R
1  33220 33322  "5 "    0     # line from  GGPP D   115.00  BRKR to (3)   UAL TAP  115.00
0
 #20S
1  33322 33304  "1 "    0     # line from  UAL TAP  115.00  BRKR to (3)   UAL COGN 115.00
2  33304 33466  "1 "    0     # TRAN from  UAL COGN 115.00  BRKR to (1)   UNTED CO   9.11
3  33466     0  "1 "    0     # GEN-DROP    UNTED CO   9.11  GEN==28.22(15.00)
0
 #
 #*************************************************
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33209 33350  "1 "    0     # line from  MARTIN    60.00  BRKR to (3)   SNTH LNE  60.00
1  33350 33362  "1 "    0     # line from  SNTH LNE  60.00   (3) to (2)   CRYSTLSG  60.00
1  33350 33389  "1 "    0     # line from  SNTH LNE  60.00   (3) to (1)   PACIFJCT  60.00
1  33362 33363  "1 "    0     # line from  CRYSTLSG  60.00   (2) to (2)   RALSTON   60.00
1  33363 33380  "1 "    0     # line from  RALSTON   60.00   (2) to BRKR  JEFFERSN  60.00
4  33350 33355  "1 "    1     # LOAD-TRANSFER  SNTH LNE  60.00  TO  PACIFICA  60.00
LOAD==6.64(0.95)
4  33350 33355  "2 "    1     # LOAD-TRANSFER  SNTH LNE  60.00  TO  PACIFICA  60.00
LOAD==5.55(-0.56)
4  33362     0  "1 "    0     # LOAD-DROP    CRYSTLSG  60.00  LOAD==3.00(0.68)
4  33363     0  "1 "    0     # LOAD-DROP    RALSTON   60.00  LOAD==7.51(0.00)
4  33363     0  "2 "    0     # LOAD-DROP    RALSTON   60.00  LOAD==5.09(0.00)
4  33363     0  "***"   1     # RESTORE RALSTON load
4  33363 33379  "***"   1     # LOAD-TRANSFER  RALSTON  60.00   TO  WATRSHED  60.00
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33209 33353  "4 "    0     # line from  MARTIN    60.00  BRKR to BRKR  MILLBRAE  60.00
0
 #
 #*********************************************
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 # 23A
1  33305 33220  "J6 "    0     # line from  SHAWROAD 115.00   (2) to BRKR  GGPP D 115.00
1  33305 33310  "6 "    0     # line from  SHAWROAD 115.00   (2) to BRKR  SANMATEO 115.00
4  33305 33309  "1 "    1     # LOAD-TRANSFER  SHAWROAD 115.00  TO  SANPAULA 115.00
LOAD==9.00(4.36)
0
 #
#*********************************************
 #
 # (24)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33208 30695  "7 "    0     # TRAN from  MARTIN C 115.00  BRKR to BRKR  MARTIN C 230.00
0
 #
 #*********************************************
 # (25)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33252 33212  "1 "    0     # TRAN from  POTRERO3  20.00   (2) to BRKR  MIRANT 2  115.00
2  33252 33212  "2 "    0     # TRAN from  POTRERO3  20.00   (2) to BRKR  MIRANT 2  115.00
```

```
4  33252     0  "1 "    0     # LOAD-DROP   POTRERO3  20.00  LOAD==3.00(1.50)
3  33252     0  "1 "    0     # GEN-DROP    POTRERO3  20.00  GEN==206.51(79.23)
0
 #
 # (26)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33253 33212  "1 "    0     # TRAN from  POTRERO4  13.80   (1) to BRKR  MIRANT 2  115.00
3  33253     0  "1 "    0     # GEN-DROP    POTRERO4  13.80
0
 #
 #
 # (27)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33254 33212  "1 "    0     # TRAN from  POTRERO5  13.80   (1) to BRKR  MIRANT 2  115.00
3  33254     0  "1 "    0     # GEN-DROP    POTRERO5  13.80
0
 #
 #
 # (28)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33255 33212  "1 "    0     # TRAN from  POTRERO6  13.80   (1) to BRKR  MIRANT 2  115.00
3  33255     0  "1 "    0     # GEN-DROP    POTRERO6  13.80
0
 #
 # (28A)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33257 33212  "1 "    0     # TRAN from  POTRERO7B  13.80   (1) to BRKR  MIRANT 2  115.00
3  33257     0  "1 "    0     # GEN-DROP    POTRERO6  13.80
0
 #**********************************
 #
 # (29)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33268 33205  "1 "    0     # TRAN from  HNTRS P2  13.80   (1) to BRKR  HNTRS PT 115.00
0
 #
 #
 # (30)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33269 33205  "1 "    0     # TRAN from  HNTRS P3  13.80   (1) to BRKR  HNTRS PT 115.00
0
 #
 #
 # (31)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33270 33205  "1 "    0     # TRAN from  HNTRS P4  18.00   (1) to BRKR  HNTRS PT 115.00
4  33270     0  "1 "    0     # LOAD-DROP    HNTRS P4  18.00  LOAD==7.00(3.50)
3  33270     0  "1 "    0     # GEN-DROP    HNTRS P4  18.00  GEN==70.46(17.97)
0
 #
 #
 # (32)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33209 33208  "6 "    0     # TRAN from  MARTIN    60.00  BRKR to BRKR  MARTIN C 115.00
0
 #
 #
 # (33)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33205 33271  "1 "    0     # TRAN from  HNTRS PT 115.00  BRKR to (1)   HNTRS P1  12.00
4  33271     0  "6 "    0     # LOAD-DROP    HNTRS P1  12.00  LOAD==29.69(2.66)
0
 #
 #
 # (34)  B1 GENERATOR OUTAGE
 #
3  33252     0  "1"     0     # POTRERO3  20.00       PGEN=206.51  QGEN=79.23
0
 #
 #
 # (35)  B1 GENERATOR OUTAGE
 #
3  33268     0  "1"     0     # HNTRS P2  13.80       PGEN=0.00  QGEN=24.41
0
 #
 #
 # (36)  B1 GENERATOR OUTAGE
 #
3  33269     0  "1"     0     # HNTRS P3  13.80       PGEN=0.00  QGEN=24.41
0
 #
 #
 # (37)  B1 GENERATOR OUTAGE
 #
3  33270     0  "1"     0     # HNTRS P4  18.00       PGEN=70.46  QGEN=17.97
0
 #
```

```
#*********************************
 # (96)  B1 GENERATOR OUTAGE
 #
3  33225     0  "3"     0     # UGGPP P3  13.80      PGEN=45.00  QGEN=4.41
0
 #
 #
 # (97)  B1 GENERATOR OUTAGE
 #
3  33224     0  "2"     0     # UGGPP P2  13.80      PGEN=175.00  QGEN=13.19
0
 #
 #
 # (98)  B1 GENERATOR OUTAGE
 #
3  33223     0  "1"     0     # UGGPP P1  13.80      PGEN=175.00  QGEN=13.19
0
 #
 #
 # (99)  B1 GENERATOR OUTAGE
 #
3  33222     0  "4"     0     # UGGPP P4  13.80      PGEN=200.00  QGEN=16.10
0
 #
 #
 # (100)  B1 GENERATOR OUTAGE
 #
3  33460     0  "1"     0     # SMATO2SC  13.20      PGEN=0.00  QGEN=33.12
0
 #
 #
 # (101)  B1 GENERATOR OUTAGE
 #
3  33461     0  "1"     0     # SMATO3SC  13.20      PGEN=0.00  QGEN=33.60
0
 #
 #
 # (102)  B1 GENERATOR OUTAGE
 #
3  33462     0  "1"     0     # SMATO1SC  13.20      PGEN=0.00  QGEN=25.00
0
 #
 #
 # (103)  B1 GENERATOR OUTAGE
 #
3  38029     0  "1"     0     # PALTOLND  12.47      PGEN=2.00  QGEN=0.30
0
 #
 #
 # (104)  B1 GENERATOR OUTAGE
 #
3  33252     0  "1"     0     # POTRERO3  20.00      PGEN=205.00  QGEN=95.76
0
 #
 #
 # (105)  B1 GENERATOR OUTAGE
 #
3  33271     0  "1"     0     # HNTRS P1  12.00      PGEN=50.00  QGEN=20.03
0
 #
 #
 # (106)  B1 GENERATOR OUTAGE
 #
3  33268     0  "1"     0     # HNTRS P2  13.80      PGEN=75.00  QGEN=34.96
0
 #
 #
 # (107)  B1 GENERATOR OUTAGE
 #
3  33269     0  "1"     0     # HNTRS P3  13.80      PGEN=75.00  QGEN=34.96
0
 #
 #
 # (108)  B1 GENERATOR OUTAGE
 #
3  33270     0  "1"     0     # HNTRS P4  18.00      PGEN=165.00  QGEN=31.36
0
 #
 #
 # (109)  B1 GENERATOR OUTAGE
 #
3  33253     0  "1"     0     # POTRERO4  13.80      PGEN=52.00  QGEN=10.77
0
 #
 #
 # (110)  B1 GENERATOR OUTAGE
 #
```

```
3  33254     0  "1"     0     # POTRERO5  13.80       PGEN=52.00  QGEN=10.77
0
 #
 #
 # (111)  B1 GENERATOR OUTAGE
 #
3  33466     0  "1"     0     # UNTED CO   9.11       PGEN=25.70  QGEN=15.00
0
 #
 #
 # (112)  B1 GENERATOR OUTAGE
 #
#3  33467     0  "1"     0     # GRS.MNLO  12.00       PGEN=1.90  QGEN=0.30
#0
 #
 #
 # (113)  B1 GENERATOR OUTAGE
 #
3  33468     0  "1"     0     # SRI INTL   9.11       PGEN=2.50  QGEN=3.00
0
 #
 #
 # (114)  B1 GENERATOR OUTAGE
 #
3  33463     0  "1"     0     # CARDINAL  12.47       PGEN=32.80  QGEN=11.22
0
 #
 #
 # (115)  B1 GENERATOR OUTAGE
 #
3  33463     0  "2"     0     # CARDINAL  12.47       PGEN=9.70  QGEN=3.32
0
 #

 #************************** Area 10 Peninsula Division ************************
 #*******************
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 # 1A
1  30526 30560  "1 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  E.SHORE 230.00
0
 #1B
1  30526 30560  "2 "    0     # line from  PITSBURG 230.00  BRKR to BRKR  E.SHORE 230.00
0
 #1C
1  30560 30700  "1 "    0     # line from  E.SHORE 230.00  BRKR to BRKR  SANMATEO 230.00
0
 #1D
1  30560 30700  "2 "    0     # line from  E.SHORE 230.00  BRKR to BRKR  SANMATEO 230.00
0
 #******************
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30560 30700  "1 "    0     # line from  E. SHORE 230.00  BRKR to BRKR  SANMATEO 230.00
0
 #
 #*****************
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #3A
1  30630 30639  "1 "    0     # line from  NEWARK D 230.00  BRKR to BRKR  FGP_TAP 230.00
0
 #3B
1  30639 30703  "1 "    0     # line from  FGP_TAP 230.00  BRKR to BRKR  RAVENSWD 230.00
0
 #*****************
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30640 30703  "1 "    0     # line from  TESLA F  230.00  BRKR to BRKR  RAVENSWD 230.00
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30700 30695  "1 "    0     # line from  SANMATEO 230.00  BRKR to BRKR  MARTIN C 230.00
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30703 30700  "1 "    0     # line from  RAVENSWD 230.00  BRKR to BRKR  SANMATEO 230.00
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30703 30700  "2 "    0     # line from  RAVENSWD 230.00  BRKR to BRKR  SANMATEO 230.00
0
```

APPENDIX A – AUTOCON INPUT FILE

```
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30710  "1 "    0     # line from  MONTAVIS 230.00  BRKR to (3)   SLACTAP1 230.00
1  30710 30711  "1 "    0     # line from  SLACTAP1 230.00   (3) to BRKR  S.L.A.C. 230.00
1  30710 30715  "1 "    0     # line from  SLACTAP1 230.00   (3) to BRKR  JEFFERSN 230.00
4  30711     0  "1 "    0     # LOAD-DROP    S.L.A.C. 230.00  LOAD==46.31(10.55)
1  30711 30712  "1 "    1     # LINE-TRANSFER SLACTAP1 to SLACTAP2
4  30711     0  "**"    1     # RESTORE S.L.A.C. load
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30712  "1 "    0     # line from  MONTAVIS 230.00  BRKR to (2)   SLACTAP2 230.00
1  30712 30715  "1 "    0     # line from  SLACTAP2 230.00   (2) to BRKR  JEFFERSN 230.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33300  "1 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  DALY CTY 115.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33301  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   DLY CTYP 115.00
1  33301 33300  "1 "    0     # line from  DLY CTYP 115.00   (3) to BRKR  DALY CTY 115.00
1  33301 33302  "1 "    0     # line from  DLY CTYP 115.00   (3) to BRKR  SERRMNTE 115.00
4  33302     0  "1 "    0     # LOAD-DROP    SERRMNTE 115.00  LOAD==9.77(2.23)
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33303  "2 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  EST GRND 115.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33307  "1 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  MILLBRAE 115.00
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33208 33310  "3 "    0     # line from  MARTIN C 115.00  BRKR to BRKR  SANMATEO 115.00
0
 #
 #
 #15A
1  33208 33220  "5 "    0     # line from  MARTIN C 115.00  BRKR to (3)   GGPP D    115.00
0
 #15B
1  33208 33220  "J6 "   0     # line from  MARTIN C 115.00  BRKR to (3)   GGPP D    115.00
0
 #15C
1  33208 33202  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   LARKIN F  115.00
0
 #15D
1  33208 33205  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   HNTRS PT  115.00
0
 #15E
1  33208 33205  "2 "    0     # line from  MARTIN C 115.00  BRKR to (3)   HNTRS PT  115.00
0
 #15F
1  33208 33206  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   BAYSHOR1  115.00
0
 #15G
1  33208 33207  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   BAYSHOR2  115.00
0
 #15H
1  33208 33300  "1 "    0     # line from  MARTIN C 115.00  BRKR to (3)   DALY CTY  115.00
0
 #15I
2  33208 33209  "6 "    0     # TRAN from  MARTIN C  115.00   (1) to BRKR  MARTIN    60.00
0
 #15J
1  33220 33305  "J6 "    0     # line from  GGPP D 115.00  BRKR to (3)     SHAWROAD  115.00
0
 #15K
2  33220 33223  "1 "    0     # TRAN from  GGPP D  115.00   (1) to BRKR  UGGPP P1  115.00
3  33223     0  "1 "    0     # GEN-DROP   UGGPP P1  13.8  GEN==175
4  33220     0  "1 "    0     # LOAD-DROP  GGPP D    LOAD==24.9 (1.50)
```

```
0
 #15L
2  33220 33224  "1 "    0     # TRAN from  GGPP D  115.00   (2) to BRKR  UGGPP P2  115.00
3  33224     0  "2 "    0     # GEN-DROP   UGGPP P2  13.8  GEN==175
0
 #15M
2  33220 33225  "1 "    0     # TRAN from  GGPP D  115.00   (3) to BRKR  UGGPP P3  115.00
3  33225     0  "3 "    0     # GEN-DROP   UGGPP P3  13.8  GEN==45
0
 #15N
2  33220 33222  "1 "    0     # TRAN from  GGPP D  115.00   (4) to BRKR  UGGPP P4  115.00
3  33222     0  "4 "    0     # GEN-DROP   UGGPP P4  13.8  GEN==200
0
 #15o
1  33305 33310  "6 "    0     # line from  SHAWROAD 115.00  BRKR to (3)   SANMATEO 115.00
0
 #15P
1  33220 33306  "5 "    0     # line from  GGPP D   115.00  BRKR to (3)   SFIA     115.00
0
 #15Q
1  33306 33310  "5 "    0     # line from  SFIA     115.00  BRKR to (3)   SANMATEO 115.00
0
 #15R
1  33220 33322  "5 "    0     # line from  GGPP D   115.00  BRKR to (3)   UAL TAP  115.00
0
 #15S
1  33322 33304  "1 "    0     # line from  UAL TAP  115.00  BRKR to (3)   UAL COGN 115.00
2  33304 33466  "1 "    0     # TRAN from  UAL COGN 115.00  BRKR to (1)   UNTED CO   9.11
3  33466     0  "1 "    0     # GEN-DROP    UNTED CO   9.11  GEN==28.22(15.00)
0
 # **********************
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33209 33350  "1 "    0     # line from  MARTIN    60.00  BRKR to (3)   SNTH LNE  60.00
1  33350 33362  "1 "    0     # line from  SNTH LNE  60.00   (3) to (2)   CRYSTLSG  60.00
1  33350 33389  "1 "    0     # line from  SNTH LNE  60.00   (3) to (1)   PACIFJCT  60.00
1  33362 33363  "1 "    0     # line from  CRYSTLSG  60.00   (2) to (2)   RALSTON   60.00
1  33363 33380  "1 "    0     # line from  RALSTON   60.00   (2) to BRKR  JEFFERSN  60.00
4  33350 33355  "1 "    1     # LOAD-TRANSFER  SNTH LNE  60.00  TO  PACIFICA  60.00
LOAD==6.64(0.95)
4  33350 33355  "2 "    1     # LOAD-TRANSFER  SNTH LNE  60.00  TO  PACIFICA  60.00
LOAD==5.55(-0.56)
4  33362     0  "1 "    0     # LOAD-DROP    CRYSTLSG  60.00  LOAD==3.00(0.68)
4  33363     0  "1 "    0     # LOAD-DROP    RALSTON   60.00  LOAD==7.51(0.00)
4  33363     0  "2 "    0     # LOAD-DROP    RALSTON   60.00  LOAD==5.09(0.00)
4  33363     0  "***"   1     # RESTORE RALSTON load
4  33363 33379  "***"   1     # LOAD-TRANSFER  RALSTON  60.00   TO  WATRSHED  60.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33209 33353  "4 "    0     # line from  MARTIN    60.00  BRKR to BRKR  MILLBRAE  60.00
0
 #
 #********************
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33305 33220  "J6 "    0     # line from  SHAWROAD 115.00   (2) to BRKR  GGPP D 115.00
1  33305 33310  "6 "    0     # line from  SHAWROAD 115.00   (2) to BRKR  SANMATEO 115.00
4  33305 33309  "1 "    1     # LOAD-TRANSFER  SHAWROAD 115.00  TO  SANPAULA 115.00
LOAD==9.00(4.36)
0
 #********************
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33306 33310  "5 "    0     # line from  SFIA     115.00  BRKR to BRKR  SANMATEO 115.00
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33307 33310  "1 "    0     # line from  MILLBRAE 115.00  BRKR to BRKR  SANMATEO 115.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33308 33303  "2 "    0     # line from  SFIA-MA  115.00   (2) to BRKR  EST GRND 115.00
1  33308 33310  "2 "    0     # line from  SFIA-MA  115.00   (2) to BRKR  SANMATEO 115.00
4  33308 33306  "1 "    1     # LOAD-TRANSFER  SFIA-MA  115.00  TO  SFIA     115.00
LOAD==23.64(5.39)
0
 #
 #
```

```
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33309 33307  "1 "    0     # line from  SANPAULA 115.00   (1) to BRKR  MILLBRAE 115.00
4  33309 33305  "1 "    1     # LOAD-TRANSFER  SANPAULA 115.00  TO  SHAWROAD 115.00
LOAD==8.00(3.87)
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33310 33311  "1 "    0     # line from  SANMATEO 115.00  BRKR to BRKR  BAY MDWS 115.00
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33310 33311  "2 "    0     # line from  SANMATEO 115.00  BRKR to BRKR  BAY MDWS 115.00
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33310 33312  "1 "    0     # line from  SANMATEO 115.00  BRKR to BRKR  BELMONT  115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33310 33315  "1 "    0     # line from  SANMATEO 115.00  BRKR to BRKR  RAVENSWD 115.00
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33312 33313  "1 "    0     # line from  BELMONT  115.00  BRKR to BRKR  BAIR     115.00
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33313 33319  "1 "    0     # line from  BAIR     115.00  BRKR to (3)   SHREDJCT 115.00
1  33319 33314  "1 "    0     # line from  SHREDJCT 115.00   (3) to (2)   SHREDDER 115.00
1  33319 33315  "1 "    0     # line from  SHREDJCT 115.00   (3) to BRKR  RAVENSWD 115.00
1  33314 33320  "1 "    0     # line from  SHREDDER 115.00   (2) to (1)   LONESTAR 115.00
4  33314     0  "1 "    0     # LOAD-DROP    SHREDDER 115.00  LOAD==4.00(0.91)
4  33320     0  "1 "    0     # LOAD-DROP    LONESTAR 115.00  LOAD==1.80(1.64)
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 33313  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  BAIR     115.00
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 33316  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  CLY LNDG 115.00
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 33317  "2 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  CLY LNG2 115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 35350  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  AMES BS1 115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 35351  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  AMES BS2 115.00
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 38028  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  PLO ALTO 115.00
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
```

```
 1  33315 38028  "2 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  PLO ALTO 115.00
 0
  #
  #
  # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33316 38028  "1 "    0     # line from  CLY LNDG 115.00  BRKR to BRKR  PLO ALTO 115.00
 0
  #
  #
  # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33351 33352  "1 "    0     # line from  SN BRNOT  60.00   (2) to (2)   SNANDRES  60.00
 1  33351 33355  "1 "    0     # line from  SN BRNOT  60.00   (2) to (1)   PACIFICA  60.00
 1  33352 33354  "1 "    0     # line from  SNANDRES  60.00   (2) to (2)   MLLBRETP  60.00
 1  33354 33353  "1 "    0     # line from  MLLBRETP  60.00   (2) to BRKR  MILLBRAE  60.00
 4  33351     0  "1 "    0     # LOAD-DROP    SN BRNOT  60.00  LOAD==2.42(0.55)
 4  33352     0  "1 "    0     # LOAD-DROP    SNANDRES  60.00  LOAD==1.80(0.41)
 4  33355 33350  "1 "    1     # LOAD-TRANSFER  PACIFICA  60.00  TO  SNTH LNE  60.00
LOAD==6.48(0.77)
 4  33355 33350  "2 "    1     # LOAD-TRANSFER  PACIFICA  60.00  TO  SNTH LNE  60.00
LOAD==5.16(-0.99)
 0
  #
  #
  # (38)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33353 33356  "4 "    0     # line from  MILLBRAE  60.00  BRKR to BRKR  BURLNGME  60.00
 0
  #
  #
  # (39)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33356 33357  "4 "    0     # line from  BURLNGME  60.00  BRKR to BRKR  SAN MATO  60.00
 0
  #
  #
  # (40)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33357 33358  "1 "    0     # line from  SAN MATO  60.00  BRKR to BRKR  BERESFRD  60.00
 4  33358 33360  "1 "    1     # LOAD-TRANSFER  BERESFRD  60.00  TO  HILLSDLE  60.00
LOAD==3.91(0.89)
 4  33358 33360  "2 "    1     # LOAD-TRANSFER  BERESFRD  60.00  TO  HILLSDLE  60.00
LOAD==3.21(0.73)
 0
  #
  #
  # (41)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33357 33364  "1 "    0     # line from  SAN MATO  60.00  BRKR to (2)   ORACLE60  60.00
 1  33364 33365  "1 "    0     # line from  ORACLE60  60.00   (2) to BRKR  SAN CRLS  60.00
 4  33364     0  "1 "    0     # LOAD-DROP    ORACLE60  60.00  LOAD==12.50(2.54)
 0
  #
  #
  # (42)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33359 33361  "1 "    0     # line from  CAROLNDS  60.00   (1) to (4)   HLLSDLJT  60.00
 1  33361 33360  "1 "    0     # line from  HLLSDLJT  60.00  BRKR to (1)   HILLSDLE  60.00
 1  33361 33366  "1 "    0     # line from  HLLSDLJT  60.00  BRKR to (1)   HLF MNBY  60.00
 1  33361 33378  "1 "    0     # line from  HLLSDLJT  60.00   (4) to (3)   WTRSHDTP  60.00
 1  33378 33379  "1 "    0     # line from  WTRSHDTP  60.00   (3) to (1)   WATRSHED  60.00
 1  33378 33380  "1 "    0     # line from  WTRSHDTP  60.00   (3) to BRKR  JEFFERSN  60.00
 4  33359     0  "1 "    0     # LOAD-DROP    CAROLNDS  60.00  LOAD==2.50(0.57)
 4  33359     0  "2 "    0     # LOAD-DROP    CAROLNDS  60.00  LOAD==4.23(0.96)
 4  33360 33358  "1 "    1     # LOAD-TRANSFER  HILLSDLE  60.00  TO  BERESFRD  60.00
LOAD==5.80(1.24)
 4  33366     0  "1 "    0     # LOAD-DROP    HLF MNBY  60.00  LOAD==5.99(0.38)
 4  33366     0  "2 "    0     # LOAD-DROP    HLF MNBY  60.00  LOAD==7.28(2.62)
 4  33366     0  "3 "    0     # LOAD-DROP    HLF MNBY  60.00  LOAD==7.93(2.55)
 4  33379     0  "1 "    0     # LOAD-DROP    WATRSHED  60.00  LOAD==0.70(0.16)
 4  33359     0  "***"   1     # RESTORE CAROLANDS load
 4  33359 33362  "***"   1     # LOAD-TRANSFER  CAROLNDS 60.00   TO  CRYSTLSG  60.00
 1  33389 33366  "1 "    1     # LINE-TRANSFER  HLLSDLJT  60.00  TO  PACIFJCT  60.00
 4  33366     0  "***"   1     # RESTORE HALF MOON BAY load
 0
  #
  #
  # (43)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
  #
 1  33360 33361  "1 "    0     # line from  HILLSDLE  60.00   (1) to BRKR  HLLSDLJT  60.00
 4  33360 33358  "1 "    1     # LOAD-TRANSFER  HILLSDLE  60.00  TO  BERESFRD  60.00
LOAD==5.80(1.24)
 0
  #
  #
  # (44)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
```

```
 #
1  33361 33366  "1 "    0     # line from  HLLSDLJT  60.00  BRKR to (1)   HLF MNBY  60.00
4  33366     0  "1 "    0     # LOAD-DROP    HLF MNBY  60.00  LOAD==5.99(0.38)
4  33366     0  "2 "    0     # LOAD-DROP    HLF MNBY  60.00  LOAD==7.28(2.62)
4  33366     0  "3 "    0     # LOAD-DROP    HLF MNBY  60.00  LOAD==7.93(2.55)
1  33389 33366  "1 "    1     # LINE-TRANSFER  HLLSDLJT  60.00  TO  PACIFJCT  60.00
4  33366     0  "***"   1     # RESTORE HALF MOON BAY load
0
 #
 #
 # (45)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33365 33367  "1 "    0     # line from  SAN CRLS  60.00  BRKR to BRKR  BAIR      60.00
0
 #
 #
 # (46)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33367 33368  "1 "    0     # line from  BAIR      60.00  BRKR to (2)   REDWDTP1  60.00
1  33368 33373  "1 "    0     # line from  REDWDTP1  60.00   (2) to (3)   BLHVNTP1  60.00
1  33373 33372  "1 "    0     # line from  BLHVNTP1  60.00   (3) to (1)   BLLE HVN  60.00
1  33373 33375  "1 "    0     # line from  BLHVNTP1  60.00   (3) to BRKR  CLY LNDG  60.00
4  33372     0  "1 "    0     # LOAD-DROP    BLLE HVN  60.00  LOAD==4.85(1.11)
4  33372     0  "2 "    0     # LOAD-DROP    BLLE HVN  60.00  LOAD==5.61(1.28)
4  33372     0  "3 "    0     # LOAD-DROP    BLLE HVN  60.00  LOAD==14.61(1.98)
4  33372     0  "4 "    0     # LOAD-DROP    BLLE HVN  60.00  LOAD==14.92(3.40)
4  33372     0  "5 "    0     # LOAD-DROP    BLLE HVN  60.00  LOAD==19.60(3.87)
1  33374 33372  "1 "    1     # LINE-TRANSFER  BLHVNTP1  60.00  TO  BLHVNTP2  60.00
4  33372     0  "***"   1     # RESTORE BELLE HAVEN load
0
 #
 #
 # (47)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33367 33369  "1 "    0     # line from  BAIR      60.00  BRKR to (3)   REDWDTP2  60.00
1  33369 33370  "1 "    0     # line from  REDWDTP2  60.00   (3) to BRKR  REDWOOD   60.00
1  33369 33374  "1 "    0     # line from  REDWDTP2  60.00   (3) to (2)   BLHVNTP2  60.00
1  33374 33371  "1 "    0     # line from  BLHVNTP2  60.00   (2) to (2)   RAYCHEM   60.00
1  33371 33375  "1 "    0     # line from  RAYCHEM   60.00   (2) to BRKR  CLY LNDG  60.00
4  33370     0  "1 "    0     # LOAD-DROP    REDWOOD   60.00  LOAD==16.77(3.82)
4  33370     0  "2 "    0     # LOAD-DROP    REDWOOD   60.00  LOAD==3.64(0.83)
4  33370     0  "3 "    0     # LOAD-DROP    REDWOOD   60.00  LOAD==7.96(0.00)
4  33370     0  "4 "    0     # LOAD-DROP    REDWOOD   60.00  LOAD==8.30(1.89)
4  33370     0  "5 "    0     # LOAD-DROP    REDWOOD   60.00  LOAD==11.71(2.56)
4  33371     0  "1 "    0     # LOAD-DROP    RAYCHEM   60.00  LOAD==9.60(5.18)
1  33368 33370  "1 "    1     # LINE-TRANSFER  REDWDTP2  60.00  TO  REDWDTP1  60.00
4  33370     0  "***"   1     # RESTORE REDWOOD CITY load
0
 #
 #
 # (48)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33375 33382  "1 "    0     # line from  CLY LNDG  60.00  BRKR to (3)   S.R.I.    60.00
1  33382 33381  "1 "    0     # line from  S.R.I.    60.00   (3) to BRKR  GLENWOOD  60.00
2  33382 33468  "1 "    0     # TRAN from  S.R.I.    60.00   (3) to (1)   SRI INTL   9.11
4  33468     0  "1 "    0     # LOAD-DROP    SRI INTL   9.11  LOAD==2.90(0.66)
3  33468     0  "1 "    0     # GEN-DROP    SRI INTL   9.11  GEN==4.28(3.00)
3  33463     0  "***"   0     # GEN-DROP    CARDINAL  12.97
0
 #
 #
 # (49)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33375 35454  "1 "    0     # line from  CLY LNDG  60.00  BRKR to (3)   WSTNG JT  60.00
1  35454 35451  "1 "    0     # line from  WSTNG JT  60.00   (3) to (2)   L.ALTS J  60.00
1  35454 35453  "1 "    0     # line from  WSTNG JT  60.00   (3) to (1)   NRTHGRUM  60.00
1  35451 35450  "1 "    0     # line from  L.ALTS J  60.00   (2) to (1)   LOS ALTS  60.00
4  35453     0  "1 "    0     # LOAD-DROP    NRTHGRUM  60.00  LOAD==6.42(3.98)
4  35450     0  "1 "    0     # LOAD-DROP    LOS ALTS  60.00  LOAD==1.33(0.30)
4  35450     0  "2 "    0     # LOAD-DROP    LOS ALTS  60.00  LOAD==5.46(-0.24)
4  35450     0  "3 "    0     # LOAD-DROP    LOS ALTS  60.00  LOAD==10.14(2.71)
1  35450 35452  "1 "    1     # close line from LOS ALTS to LOYOLA (Cooley Landing - Los
Altos)
4  35450 0      "***"   1     # restore all loads to LOS ALTS 60.00 (Cooley Landing - Los
Altos)
0
 #
 #
 # (50)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33376 33387  "1 "    0     # line from  LAS PLGS  60.00   (1) to BRKR  WOODSIDE  60.00
4  33376     0  "1 "    0     # LOAD-DROP    LAS PLGS  60.00  LOAD==4.55(1.04)
4  33376     0  "***"   1     # RESTORE LAS PULGAS load
4  33376 33377  "***"   1     # LOAD-TRANSFER  LAS PLGS  60.00  TO  EMRLD LE  60.00
0
 #
 #
```

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 # (51)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33377 33380  "1 "    0     # line from  EMRLD LE  60.00   (2) to BRKR  JEFFERSN  60.00
1  33377 33385  "1 "    0     # line from  EMRLD LE  60.00   (2) to (3)   MNLOJCT2  60.00
1  33385 33383  "1 "    0     # line from  MNLOJCT2  60.00   (3) to BRKR  MENLO     60.00
1  33385 33388  "1 "    0     # line from  MNLOJCT2  60.00   (3) to (1)   S.L.A.C.  60.00
4  33377     0  "1 "    0     # LOAD-DROP    EMRLD LE  60.00  LOAD==2.81(0.64)
0
 #
 #
 # (52)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33380 33387  "1 "    0     # line from  JEFFERSN  60.00  BRKR to BRKR  WOODSIDE  60.00
4  33387 33377  "***"   1     # LOAD-TRANSFER  WOODSIDE  60.00  TO  EMRLD LE  60.00
4  33376 33377  "***"   1     # LOAD-TRANSFER  LAS PLGS  60.00  TO  EMRLD LE  60.00
0
 #
 #
 # (53)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33381 33384  "1 "    0     # line from  GLENWOOD  60.00  BRKR to (3)   MNLO JCT  60.00
1  33384 33386  "1 "    0     # line from  MNLO JCT  60.00   (3) to BRKR  STANFORD  60.00
1  33384 33390  "1 "    0     # line from  MNLO JCT  60.00   (3) to BRKR  MENLO G   60.00
3  33463     0  "***"   0     # GEN-DROP    CARDINAL  12.97
1  33388 33386  "1 "    1     # LINE-TRANSFER  MNLO JCT  60.00  TO  S.L.A.C.  60.00
4  33386     0  "***"   1     # RESTORE STANFORD load
0
 #
 #
 # (54)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
#      **** 3-WINDING TRANSFORMER  33310  (30701)  30700  33460 :
2  33310 30700  "5 "    0     # TRAN from  SANMATEO 115.00  BRKR to (1)   SANMATEO 230.00
0
 #
 #
 # (55)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
#      **** 3-WINDING TRANSFORMER  33310  (30702)  30700  33461 :
2  33310 30700  "6 "    0     # TRAN from  SANMATEO 115.00  BRKR to (1)   SANMATEO 230.00
0
 #
 #
 # (56)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
#      **** 3-WINDING TRANSFORMER  33310  (30704)  30700  33462 :
2  33310 30700  "7 "    0     # TRAN from  SANMATEO 115.00  BRKR to (1)   SANMATEO 230.00
0
 #
 #
 # (57)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33315 30703  "1 "    0     # TRAN from  RAVENSWD 115.00  BRKR to BRKR  RAVENSWD 230.00
0
 #
 #
 # (58)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33380 30715  "1 "    0     # TRAN from  JEFFERSN  60.00  BRKR to BRKR  JEFFERSN 230.00
0
 #
 #
 # (59)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33466 33304  "1 "    0     # TRAN from  UNTED CO   9.11   (1) to BRKR  UAL COGN 115.00
3  33466     0  "1 "    0     # GEN-DROP    UNTED CO   9.11  GEN==28.22(15.00)
0
 #
 #
 # (60)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33357 33310  "8 "    0     # TRAN from  SAN MATO  60.00  BRKR to BRKR  SANMATEO 115.00
0
 #
 #
 # (61)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33367 33313  "1 "    0     # TRAN from  BAIR      60.00  BRKR to BRKR  BAIR     115.00
0
 #
 #
 # (62)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33375 33316  "3 "    0     # TRAN from  CLY LNDG  60.00  BRKR to BRKR  CLY LNDG 115.00
0
 #
 #
```

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 # (63)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33375 33317  "1 "    0     # TRAN from  CLY LNDG  60.00  BRKR to BRKR  CLY LNG2 115.00
0
 #
 #
 # (64)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33310 33318  "3 "    0     # TRAN from  SANMATEO 115.00  BRKR to (2)   SMATEO3M 115.00
2  33318 33357  "3 "    0     # TRAN from  SMATEO3M 115.00   (2) to BRKR  SAN MATO  60.00
0
 #
 #
 # (65)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  33463 33386  "1 "    0     # TRAN from  CARDINAL  12.47   (1) to BRKR  STANFORD  60.00
3  33463     0  "1 "    0     # GEN-DROP    CARDINAL  12.47  GEN==31.00(9.00)
3  33463     0  "2 "    0     # GEN-DROP    CARDINAL  12.47  GEN==10.00(2.90)
0
 #
 #
 # (66)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  38029 38028  "1 "    0     # TRAN from  PALTOLND  12.47   (1) to BRKR  PLO ALTO 115.00
3  38029     0  "1 "    0     # GEN-DROP    PALTOLND  12.47  GEN==1.02(0.30)
0
 #
 #
 # (67)  B1 GENERATOR OUTAGE
 #
3  33460     0  "1"     0     # SMATO2SC  13.20       PGEN=0.00  QGEN=29.07
0
 #
 #
 # (68)  B1 GENERATOR OUTAGE
 #
3  33461     0  "1"     0     # SMATO3SC  13.20       PGEN=0.00  QGEN=29.67
0
 #
 #
 # (69)  B1 GENERATOR OUTAGE
 #
3  33462     0  "1"     0     # SMATO1SC  13.20       PGEN=0.00  QGEN=25.00
0
 #
 #
 # (70)  B1 GENERATOR OUTAGE
 #
3  33463     0  "1"     0     # CARDINAL  12.47       PGEN=31.00  QGEN=9.00
0
 #
 #
 # (71)  B1 GENERATOR OUTAGE
 #
3  33463     0  "2"     0     # CARDINAL  12.47       PGEN=10.00  QGEN=2.90
0
 #
 #
 # (72)  B1 GENERATOR OUTAGE
 #
3  33466     0  "1"     0     # UNTED CO   9.11       PGEN=28.22  QGEN=15.00
0
 #
 #
 # (73)  B1 GENERATOR OUTAGE
 #
3  33468     0  "1"     0     # SRI INTL   9.11       PGEN=4.28  QGEN=3.00
0
 #
 #
 # (74)  B1 GENERATOR OUTAGE
 #
3  38029     0  "1"     0     # PALTOLND  12.47       PGEN=1.02  QGEN=0.30
0
 #
 #*****************************************************************************
# De Anza Division (17) Category B Contigency List for 2002-2006
 #
 #
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30710  "1 "    0     # line from  MONTAVIS 230.00  BRKR to (3)   SLACTAP1 230.00
1  30710 30711  "1 "    0     # line from  SLACTAP1 230.00   (3) to BRKR  S.L.A.C. 230.00
1  30710 30715  "1 "    0     # line from  SLACTAP1 230.00   (3) to BRKR  JEFFERSN 230.00
4  30711     0  "1 "    0     # LOAD-DROP    S.L.A.C. 230.00  LOAD==46.31(10.55)
1  30711 30712  "1 "    1     # LINE-TRANSFER SLACTAP1 to SLACTAP2
4  30711     0  "***"   1     # RESTORE S.L.A.C. load
```

```
0
 #
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30712  "1 "    0     # line from  MONTAVIS 230.00  BRKR to (2)   SLACTAP2 230.00
1  30712 30715  "1 "    0     # line from  SLACTAP2 230.00   (2) to BRKR  JEFFERSN 230.00
0
 #
 #
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30720  "1 "    0     # line from  MONTAVIS 230.00  BRKR to BRKR  SARATOGA 230.00
0
 #
 #
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30730  "1 "    0     # line from  MONTAVIS 230.00  BRKR to BRKR  HICKS    230.00
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30720 30733  "1 "    0     # line from  SARATOGA 230.00  BRKR to BRKR  VASONA   230.00
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30733 30735  "1 "    0     # line from  VASONA   230.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30705  "3 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER) *** This circuit used to be 4, now is 3
 #
1  30735 30705  "3 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 35350  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  AMES BS1 115.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33315 35351  "1 "    0     # line from  RAVENSWD 115.00  BRKR to BRKR  AMES BS2 115.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  33375 35454  "1 "    0     # line from  CLY LNDG  60.00  BRKR to (3)   WSTNG JT  60.00
1  35454 35451  "1 "    0     # line from  WSTNG JT  60.00   (3) to (2)   L.ALTS J  60.00
1  35454 35453  "1 "    0     # line from  WSTNG JT  60.00   (3) to (1)   NRTHGRUM  60.00
1  35451 35450  "1 "    0     # line from  L.ALTS J  60.00   (2) to (1)   LOS ALTS  60.00
4  35453     0  "1 "    0     # LOAD-DROP    NRTHGRUM  60.00  LOAD==6.42(3.98)
4  35450     0  "1 "    0     # LOAD-DROP    LOS ALTS  60.00  LOAD==1.41(0.32)
4  35450     0  "2 "    0     # LOAD-DROP    LOS ALTS  60.00  LOAD==5.75(-0.26)
4  35450     0  "3 "    0     # LOAD-DROP    LOS ALTS  60.00  LOAD==10.63(2.84)
1  35450 35452  "1 "    1     # close line from LOS ALTS to LOYOLA (Cooley Landing - Los
Altos)
4  35450 0      "***"   1     # restore all loads to LOS ALTS 60.00 (Cooley Landing - Los
Altos)
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35350  "1 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  AMES BS1 115.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35350  "3 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  AMES BS1 115.00
0
 #
 #
```

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 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35121 35351  "2 "    0     # line from  NEWARK E 115.00  BRKR to BRKR  AMES BS2 115.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35357  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   LCKHD J1 115.00
1  35357 35358  "1 "    0     # line from  LCKHD J1 115.00   (3) to (3)   MFT.FD J 115.00
1  35357 35363  "1 "    0     # line from  LCKHD J1 115.00   (3) to BRKR  LAWRENCE 115.00
1  35358 35359  "1 "    0     # line from  MFT.FD J 115.00   (3) to (1)   MOFT.FLD 115.00
1  35358 35361  "1 "    0     # line from  MFT.FD J 115.00   (3) to BRKR  LOCKHD 1 115.00
4  35359     0  "1 "    0     # LOAD-DROP    MOFT.FLD 115.00  LOAD==4.46(1.02)
4  35361     0  "1 "    0     # LOAD-DROP    LOCKHD 1 115.00  LOAD==21.90(17.00)
1  35361 35362  "1 "    1     # close LOCKHD 1 115.00  LOCKHD 2  115.00
4  35361 0      "***"   1     # restore all loads to LOCKHD 1
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35360  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   LCKHD J2 115.00
1  35360 35362  "1 "    0     # line from  LCKHD J2 115.00   (3) to BRKR  LOCKHD 2 115.00
1  35360 35365  "1 "    0     # line from  LCKHD J2 115.00   (3) to (3)   AMD JCT  115.00
1  35365 35364  "1 "    0     # line from  AMD JCT  115.00   (3) to BRKR  A.M.D    115.00
1  35365 35369  "1 "    0     # line from  AMD JCT  115.00   (3) to BRKR  APP MAT  115.00
4  35362     0  "1 "    0     # LOAD-DROP    LOCKHD 2 115.00  LOAD==18.80(14.59)
4  35364     0  "1 "    0     # LOAD-DROP    A.M.D    115.00  LOAD==7.56(4.88)
1  35361 35362  "1 "    1     # close LOCKHD 1 115.00  LOCKHD 2  115.00
4  35362 0      "***"   1     # restore all loads to LOCKHD 2
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35349 35121  "1 "    0     # line from  AMES DST 115.00  BRKR to BRKR  NEWARK E 115.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35351 35349  "1 "    0     # line from  AMES BS2 115.00  BRKR to BRKR  AMES DST 115.00
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35352 35356  "1 "    0     # line from  WHISMAN  115.00  BRKR to BRKR  MNTA VSA 115.00
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35353 35356  "1 "    0     # line from  MT VIEW  115.00  BRKR to BRKR  MNTA VSA 115.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35354 35355  "1 "    0     # line from  STELLING 115.00  BRKR to BRKR  WOLFE    115.00
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35354 35356  "1 "    0     # line from  STELLING 115.00  BRKR to BRKR  MNTA VSA 115.00
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35355 35356  "1 "    0     # line from  WOLFE    115.00  BRKR to BRKR  MNTA VSA 115.00
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35356 35367  "1 "    0     # line from  MNTA VSA 115.00  BRKR to (3)   PHLPS_JT 115.00
1  35367 35363  "1 "    0     # line from  PHLPS_JT 115.00   (3) to BRKR  LAWRENCE 115.00
1  35367 35366  "1 "    0     # line from  PHLPS_JT 115.00   (3) to BRKR  PHILLIPS 115.00
4  35366     0  "1 "    0     # LOAD-DROP    PHILLIPS 115.00  LOAD==5.28(0.00)
0
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
```

```
1  35356 35368  "1 "    0     # line from  MNTA VSA 115.00  BRKR to BRKR  BRITTN   115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35368 35369  "1 "    0     # line from  BRITTN   115.00  BRKR to BRKR  APP MAT  115.00
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35370 35353  "1 "    0     # line from  AMES J1A 115.00   (2) to BRKR  MT VIEW  115.00
1  35370 35371  "1 "    0     # line from  AMES J1A 115.00   (2) to (2)   AMES J1B 115.00
1  35371 35352  "1 "    0     # line from  AMES J1B 115.00   (2) to BRKR  WHISMAN  115.00
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35452 35455  "1 "    0     # line from  LOYOLA    60.00   (1) to BRKR  MNTA VSA  60.00
4  35452     0  "1 "    0     # LOAD-DROP    LOYOLA    60.00  LOAD==3.43(0.78)
4  35452     0  "2 "    0     # LOAD-DROP    LOYOLA    60.00  LOAD==19.95(5.42)
1  35450 35452  "1 "    1     # close line from LOS ALTS to LOYOLA (Monta Vista - Loyola)
4  35452 0      "**"    1     # restore all loads to LOYOLA (Monta Vista - Loyola)
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35455 35456  "1 "    0     # line from  MNTA VSA  60.00  BRKR to (2)   PRMNT J3  60.00
1  35456 36000  "1 "    0     # line from  PRMNT J3  60.00   (2) to (2)   BIG BASN  60.00
1  36000 36001  "1 "    0     # line from  BIG BASN  60.00   (2) to (3)   BURNS J1  60.00
1  36001 36002  "1 "    0     # line from  BURNS J1  60.00   (3) to BRKR  BURNS     60.00
1  36001 36003  "1 "    0     # line from  BURNS J1  60.00   (3) to BRKR  BURNS J2  60.00
4  36000     0  "1 "    0     # LOAD-DROP    BIG BASN  60.00  LOAD==6.45(0.00)
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35455 35458  "1 "    0     # line from  MNTA VSA  60.00  BRKR to (2)   PRMNT J1  60.00
1  35458 35459  "1 "    0     # line from  PRMNT J1  60.00   (2) to (2)   PRMNT J2  60.00
1  35459 35457  "1 "    0     # line from  PRMNT J2  60.00   (2) to BRKR  PERMNNTE  60.00
4  35457     0  "1 "    0     # LOAD-DROP    PERMNNTE  60.00  LOAD==32.30(21.71)
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35455 35460  "1 "    0     # line from  MNTA VSA  60.00  BRKR to (1)   LOS GATS  60.00
4  35460     0  "1 "    0     # LOAD-DROP    LOS GATS  60.00  LOAD==20.66(2.28)
4  35460     0  "2 "    0     # LOAD-DROP    LOS GATS  60.00  LOAD==15.93(6.25)
1  35757 35460  "1 "    1     # close Los Gatos to Almaden (Monta Vista - Los Gatos 60 kV)
4  35460 0      "**"    1     # restore all loads to LOS GATS (Monta Vista - Los Gatos 60 kV)
0
 #
 #
 # (32)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35356 30705  "2 "    0     # TRAN from  MNTA VSA 115.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (33)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35356 30705  "3 "    0     # TRAN from  MNTA VSA 115.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (34)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35356 30705  "4 "    0     # TRAN from  MNTA VSA 115.00  BRKR to BRKR  MONTAVIS 230.00
2  35356 30705  "4A"    0     # include Monta Vista 230/115 kV Bank 4A
0
 #
 #
 # (35)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35455 30705  "5 "    0     # TRAN from  MNTA VSA  60.00  BRKR to BRKR  MONTAVIS 230.00
1  35452 35455  "1 "    0     # open line from  LOYOLA to MNTA VSA  (Monta Vista 230/60 kV
Bank 5)
1  35450 35452  "1 "    1     # close line from LOS ALTS to LOYOLA (Monta Vista 230/60 kV Bank
5)
1  35455 35460  "1 "    0     # open line from  MNTA VSA to LOS GATS  (Monta Vista 230/60 Bank
5)
1  35757 35460  "1 "    1     # close Los Gatos to Almaden (Monta Vista 230/60 kV Bank 5)
```

APPENDIX A – AUTOCON INPUT FILE

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0
 #

#*****************************************************************************************
 # San Jose Division (18) Category B Contigency List for 2002-2006 (Includes Silicon Valley
Power)
 #
 #
 # (1)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (2)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30705 30730  "1 "    0     # line from  MONTAVIS 230.00  BRKR to BRKR  HICKS    230.00
0
 #
 #
 # (3)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30733 30735  "1 "    0     # line from  VASONA   230.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (4)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30734 30730  "1 "    0     # line from  CYOTEVLY 230.00  BRKR to BRKR  HICKS    230.00
0
 #
 #
 # (5)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30705  "3 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (6)  B2 LINE OUTAGE (BREAKER-TO-BREAKER) ***** (This circuit used to be 4, now is 3)
 #
1  30735 30705  "3 "    0     # line from  METCALF  230.00  BRKR to BRKR  MONTAVIS 230.00
0
 #
 #
 # (7)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (8)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30734  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  CYOTEVLY 230.00
0
 #
 #
 # (9)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30750  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  MOSSLND2 230.00
0
 #
 #
 # (10)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  30735 30755  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  MOSSLND1 230.00
0
 #
 #
 # (11)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (12)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35600  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  DIXON LD 115.00
0
 #
 #
 # (13)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR  KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
```

```
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
0
 #
 #
 # (14)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35603  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J1 115.00
1  35603 35605  "1 "    0     # line from  ZNKER J1 115.00   (3) to (1)   AGNEW J  115.00
1  35603 35612  "1 "    0     # line from  ZNKER J1 115.00   (3) to BRKR  TRIMBLE  115.00
0
 #
 #
 # (15)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "1 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (16)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 35624  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  MILPITAS 115.00
0
 #
 #
 # (17)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (18)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35600 35629  "1 "    0     # line from  DIXON LD 115.00  BRKR to (3)   MABURY J 115.00
1  35629 35626  "1 "    0     # line from  MABURY J 115.00   (3) to BRKR  MCKEE    115.00
1  35629 35630  "1 "    0     # line from  MABURY J 115.00   (3) to BRKR  MABURY   115.00
4  35630     0  "2 "    0     # LOAD-DROP    MABURY   115.00  LOAD==22.38(6.87)
0
 #
 #
 # (19)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35612 35610  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  MONTAGUE 115.00
0
 #
 #
 # (20)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35612 35616  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  SJ B   E 115.00
0
 #
 #
 # (21)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35615 35617  "1 "    0     # line from  FMC      115.00   (2) to (3)   FMC JCT  115.00
2  35615 35854  "1 "    0     # TRAN from  FMC      115.00   (2) to (1)   FMC CT    12.00
1  35617 35616  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  SJ B   E 115.00
1  35617 36850  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  KIFER    115.00
4  35615     0  "1 "    0     # LOAD-DROP    FMC      115.00  LOAD==19.85(1.78)
4  35615     0  "3 "    0     # LOAD-DROP    FMC      115.00  LOAD==38.08(0.00)
3  35854     0  "1 "    0     # GEN-DROP    FMC CT    12.00  GEN==50.00(15.00)
0
 #
 #
 # (22)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35618 35619  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  SJ B   F 115.00
0
 #
 #
 # (23)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
0
 #
 #
 # (24)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1      # close Markham to Markham J2
 2  35632 35863  "1 "    1      # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "***"   1      # restore all loads to CATALYST
0
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```
 #
 #
 # (25)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35620 35621  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   IBM-HR J 115.00
1  35621 35642  "1 "    0     # line from  IBM-HR J 115.00   (2) to BRKR  MTCALF D 115.00
0
 #
 #
 # (26)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35620 35651  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   BAILY J3 115.00
1  35651 35642  "1 "    0     # line from  BAILY J3 115.00   (2) to BRKR  MTCALF D 115.00
0
 #
 #
 # (27)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35622 35643  "1 "    0     # line from  SWIFT    115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (28)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35624 35622  "1 "    0     # line from  MILPITAS 115.00  BRKR to BRKR  SWIFT    115.00
0
 #
 #
 # (29)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35624 35628  "1 "    0     # line from  MILPITAS 115.00  BRKR to BRKR  WAUKESHA 115.00
4  35628     0  "1 "    0     # LOAD-DROP    WAUKESHA 115.00  LOAD==3.55(2.29)
0
 #
 #
 # (30)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
0
 #
 #
 # (31)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35626 35656  "1 "    0     # line from  MCKEE    115.00  BRKR to BRKR  PIERCY   115.00
0
 #
 #
 # (32)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (33)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35637 35649  "1 "    0     # line from  IBM-CTLE 115.00   (1) to (3)   EDNVL J3 115.00
1  35649 35638  "1 "    0     # line from  EDNVL J3 115.00   (3) to BRKR  EDENVALE 115.00
1  35649 35641  "1 "    0     # line from  EDNVL J3 115.00  BRKR to (1)   EDNVL J1 115.00
4  35637     0  "1 "    0     # LOAD-DROP    IBM-CTLE 115.00  LOAD==38.90(31.21)
0
 #
 #
 # (34)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35638 35653  "1 "    0     # line from  EDENVALE 115.00  BRKR to (3)   BAILY J2 115.00
1  35653 35642  "1 "    0     # line from  BAILY J2 115.00   (3) to BRKR  MTCALF D 115.00
1  35653 35652  "1 "    0     # line from  BAILY J2 115.00   (3) to (2)   BAILY J1 115.00
1  35652 35640  "1 "    0     # line from  BAILY J1 115.00   (2) to BRKR  IBM-BALY 115.00
4  35640     0  "1 "    0     # LOAD-DROP    IBM-BALY 115.00  LOAD==6.00(3.24)
0
 #
 #
 # (35)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35639 35641  "1 "    0     # line from  IBM-HRRS 115.00  BRKR to (3)   EDNVL J1 115.00
1  35641 35642  "1 "    0     # line from  EDNVL J1 115.00   (3) to BRKR  MTCALF D 115.00
1  35641 35649  "1 "    0     # line from  EDNVL J1 115.00   (3) to BRKR  EDNVL J3 115.00
4  35639     0  "1 "    0     # LOAD-DROP    IBM-HRRS 115.00  LOAD==4.99(4.00)
 1  35621 35639  "1 "    1     # close IBM Harry to Metcalf-El Patio
```

```
 4  35639 0       "***"    1      # restore all loads to IBM HRRS
0
 #
 #
 # (36)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35642 35646  "1 "    0      # line from  MTCALF D 115.00  BRKR to BRKR  MRGN HIL 115.00
0
 #
 #
 # (37)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35642 35654  "1 "    0      # line from  MTCALF D 115.00  BRKR to (2)   MORGN J1 115.00
1  35654 35655  "1 "    0      # line from  MORGN J1 115.00   (2) to (2)   MORGN J2 115.00
1  35655 35648  "1 "    0      # line from  MORGN J2 115.00   (2) to BRKR  LLAGAS   115.00
0
 #
 #
 # (38)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35643 35644  "1 "    0      # line from  MTCALF E 115.00  BRKR to BRKR  CYTE PMP 115.00
4  35644     0  "1 "    0      # LOAD-DROP    CYTE PMP 115.00  LOAD==11.70(2.67)
0
 #
 #
 # (39)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35646 35648  "1 "    0      # line from  MRGN HIL 115.00  BRKR to BRKR  LLAGAS   115.00
0
 #
 #
 # (40)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35648 35650  "1 "    0      # line from  LLAGAS   115.00  BRKR to (2)   GILROY F 115.00
1  35650 35647  "1 "    0      # line from  GILROY F 115.00   (2) to BRKR  GILROY   115.00
4  35650     0  "1 "    0      # LOAD-DROP    GILROY F 115.00  LOAD==10.40(8.62)
0
 #
 #
 # (41)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35656 35643  "1 "    0      # line from  PIERCY   115.00  BRKR to BRKR  MTCALF E 115.00
0
 #
 #
 # (42)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35606  "1 "    0      # line from  LS ESTRS 115.00  BRKR to BRKR  AGNEW    115.00
0
 #
 #
 # (43)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35610  "1 "    0      # line from  LS ESTRS 115.00  BRKR to BRKR  MONTAGUE 115.00
0
 #
 #
 # (44)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35658 35612  "1 "    0      # line from  LS ESTRS 115.00  BRKR to BRKR  TRIMBLE  115.00
0
 #
 #
 # (45)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35659 35658  "1 "    0      # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
0
 #
 #
 # (46)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35659 36850  "1 "    0      # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
0
 #
 #
 # (47)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35750 35752  "1 "    0      # line from  MABURY    60.00  BRKR to (3)   JENING J  60.00
1  35752 35751  "1 "    0      # line from  JENING J  60.00   (3) to BRKR  JENNINGS  60.00
1  35752 35754  "1 "    0      # line from  JENING J  60.00   (3) to (3)   EVRGRN J  60.00
1  35754 35753  "1 "    0      # line from  EVRGRN J  60.00   (3) to BRKR  EVERGREN  60.00
1  35754 35755  "1 "    0      # line from  EVRGRN J  60.00   (3) to BRKR  SENTER    60.00
4  35750     0  "1 "    0      # LOAD-DROP    MABURY    60.00  LOAD==19.37(7.65)
4  35751     0  "1 "    0      # LOAD-DROP    JENNINGS  60.00  LOAD==1.27(1.22)
4  35755     0  "1 "    0      # LOAD-DROP    SENTER    60.00  LOAD==19.39(3.51)
 1  35755 35756  "1 "    1      # close Senter to Almaden (Evergreen - Mabury 60 kV)
 4  35755 0       "***"    1      # restore all loads to SENTER (Evergreen - Mabury 60 kV)
```

```
0
 #
 #
 # (48)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  35753 35756  "1 "    0     # line from  EVERGREN  60.00  BRKR to (2)   SENTER J  60.00
1  35756 35757  "1 "    0     # line from  SENTER J  60.00   (2) to BRKR  ALMADEN   60.00
4  35757     0  "1 "    0     # LOAD-DROP    ALMADEN   60.00  LOAD==20.06(2.55)
 1  35757 35460  "1 "    1     # close Almaden to Los Gatos (Evergreen - Los Gatos 60 kV)
 4  35757 0      "***"   1     # restore all loads to ALMADEN (Evergreen - Los Gatos 60 kV)
0
 #
 #
 # (49)  B2 LINE OUTAGE (BREAKER-TO-BREAKER)
 #
1  36850 36852  "1 "    0     # line from  KIFER    115.00  BRKR to BRKR  SCOTT    115.00
0
 #
 #
 # (50)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30735 30042  "11"    0     # TRAN from  METCALF  230.00  BRKR to BRKR  METCALF  500.00
0
 #
 #
 # (51)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  30735 30042  "12"    0     # TRAN from  METCALF  230.00  BRKR to BRKR  METCALF  500.00
0
 #
 #
 # (52)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35658 30731  "1 "    0     # TRAN from  LS ESTRS 115.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (53)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35658 30731  "2 "    0     # TRAN from  LS ESTRS 115.00  BRKR to BRKR  LS ESTRS 230.00
0
 #
 #
 # (54)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35642 30735  "1 "    0     # TRAN from  MTCALF D 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (55)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35643 30735  "2 "    0     # TRAN from  MTCALF E 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (56)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35643 30735  "3 "    0     # TRAN from  MTCALF E 115.00  BRKR to BRKR  METCALF  230.00
0
 #
 #
 # (57)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35860 35606  "1 "    0     # TRAN from  OLS-AGNE   9.11   (1) to BRKR  AGNEW    115.00
4  35860     0  "1 "    0     # LOAD-DROP    OLS-AGNE   9.11  LOAD==3.00(0.50)
3  35860     0  "1 "    0     # GEN-DROP    OLS-AGNE   9.11  GEN==29.64(9.63)
0
 #
 #
 # (58)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35863 35632  "1 "    0     # TRAN from  CATALYST   9.11   (1) to BRKR  MARKHAM  115.00
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
0
 #
 #
 # (59)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  35753 35633  "1 "    0     # TRAN from  EVERGREN  60.00  BRKR to BRKR  EVRGRN 2 115.00
 1  35756 35757  "1 "    0     # open ALMADEN to SENTER J (Evergreen 115/60 kV Bank)
 1  35757 35460  "1 "    1     # close Almaden to Los Gatos (Evergreen 115/60 kV Bank)
0
 #
 #
 # (60)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
```

```
2  35850 35647  "1 "    0     # TRAN from  GLRY COG  13.80   (1) to BRKR  GILROY   115.00
4  35850     0  "1 "    0     # LOAD-DROP    GLRY COG  13.80  LOAD==5.80(1.30)
3  35850     0  "1 "    0     # GEN-DROP    GLRY COG  13.80  GEN==121.97(47.00)
0
 #
 #
 # (61)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36856 36850  "1 "    0     # TRAN from  CSC_CCA    9.11   (1) to BRKR  KIFER    115.00
4  36856     0  "1 "    0     # LOAD-DROP    CSC_CCA    9.11  LOAD==1.00(0.20)
3  36856     0  "1 "    0     # GEN-DROP    CSC_CCA    9.11  GEN==23.75(13.06)
0
 #
 #
 # (62)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36854 36852  "1 "    0     # TRAN from  CSC COG.   9.11   (1) to BRKR  SCOTT    115.00
3  36854     0  "1 "    0     # GEN-DROP    CSC COG.   9.11  GEN==5.50(3.50)
0
 #
 #
 # (63)  B3 TRANSFORMER OUTAGE (BREAKER-TO-BREAKER)
 #
2  36858 36852  "1 "    0     # TRAN from  CSC_GNRA   9.11   (1) to BRKR  SCOTT    115.00
3  36858     0  "1 "    0     # GEN-DROP    CSC_GNRA   9.11  GEN==19.50(6.91)
3  36858     0  "2 "    0     # GEN-DROP    CSC_GNRA   9.11  GEN==19.50(6.91)
0
 #
 #
 # (64)  B1 GENERATOR OUTAGE
 #
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (65)  B1 GENERATOR OUTAGE
 #
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (66)  B1 GENERATOR OUTAGE
 #
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 # (67)  B1 GENERATOR OUTAGE
 #
3  35861     0  "1"     0     # SJ-SCL W   9.11       PGEN=5.00  QGEN=0.00
0
 #
 #
 # (68)  B1 GENERATOR OUTAGE
 #
3  35863     0  "1"     0     # CATALYST   9.11       PGEN=2.25  QGEN=0.00
0
 #
 #
 # (69)  B1 GENERATOR OUTAGE
 #
3  36854     0  "1"     0     # CSC COG.   9.11       PGEN=5.50  QGEN=3.50
0
 #
 #
 # (70)  B1 GENERATOR OUTAGE
 #
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (71)  B1 GENERATOR OUTAGE
 #
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (72)  B1 GENERATOR OUTAGE
 #
3  36858     0  "2"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (73)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and Agnew Co-gen
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
```

APPENDIX A – AUTOCON INPUT FILE

```
0
 #
 #
 #
 # (74)  L-1/G-1 Newark - Scott #1 115 kV and Agnew Co-gen
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (75)  L-1/G-1 El Patio - San Jose A 115 kV and Agnew Co-gen
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (76)  L-1/G-1 Evergreen - San Jose B 115 kV and Agnew Co-gen
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1     # close Markham to Markham J2
 2  35632 35863  "1 "    1     # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "***"   1     # restore all loads to CATALYST
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (77)  L-1/G-1 Metcalf - Evergreen #2 115 kV and Agnew Co-gen
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 #
 # (78)  L-1/G-1 Metcalf - Evergreen #1 115 kV and Agnew Co-gen
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  35860     0  "1"     0     # OLS-AGNE   9.11       PGEN=29.64  QGEN=9.63
0
 #
 #
 # (79)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and SVP CCA Generator
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (80)  L-1/G-1 Newark - Scott #1 115 kV and SVP CCA Generator
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (81)  L-1/G-1 Newark - Scott #1 115 kV and SVP CCA Generator
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  36856     0  "1"     0     # CSC_CCA    9.11       PGEN=23.75  QGEN=13.06
0
 #
 #
 # (82)  L-1/G-1 Kifer - San Jose B 115 kV and SVP CCA Generator
 #
1  35615 35617  "1 "    0     # line from  FMC      115.00   (2) to (3)   FMC JCT  115.00
2  35615 35854  "1 "    0     # TRAN from  FMC      115.00   (2) to (1)   FMC CT    12.00
1  35617 35616  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  SJ B   E 115.00
1  35617 36850  "1 "    0     # line from  FMC JCT  115.00   (3) to BRKR  KIFER    115.00
4  35615     0  "1 "    0     # LOAD-DROP    FMC      115.00  LOAD==19.85(1.78)
```

```
4  35615     0  "3 "   0     # LOAD-DROP    FMC       115.00  LOAD==38.08(0.00)
3  35854     0  "1 "   0     # GEN-DROP    FMC CT     12.00  GEN==50.00(15.00)
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (83)  L-1/G-1 El Patio - San Jose A 115 kV and SVP CCA Generator
 #
1  35618 35620  "1 "   0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (84)  L-1/G-1 Evergreen - San Jose B 115 kV and SVP CCA Generator
 #
1  35619 35631  "1 "   0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "   0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "   0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "   0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "   0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "   0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "   1      # close Markham to Markham J2
 2  35632 35863  "1 "   1      # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "***"  1      # restore all loads to CATALYST
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (85)  L-1/G-1 Metcalf - Evergreen #2 115 kV and SVP CCA Generator
 #
1  35625 35645  "1 "   0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "   0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "   0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "   0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "   0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "   0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "   0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "   0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "   0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (86)  L-1/G-1 Metcalf - Evergreen #1 115 kV and SVP CCA Generator
 #
1  35636 35643  "1 "   0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (87)  L-1/G-1 Los Esteros - Nortech 115 kV and SVP CCA Generator
 #
1  35659 35658  "1 "   0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (88)  L-1/G-1 Nortech - Kifer 115 kV and SVP CCA Generator
 #
1  35659 36850  "1 "   0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  36856     0  "1"    0     # CSC_CCA    9.11        PGEN=23.75  QGEN=13.06
0
 #
 #
 # (89)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and FMC Combustion Turbine
 #
1  30635 30731  "1 "   0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35854     0  "1"    0     # FMC CT    12.00        PGEN=50.00  QGEN=15.00
0
 #
 #
 # (90)  L-1/G-1 Los Esteros - Metcalf 230 kV and FMC Combustion Turbine
 #
1  30735 30731  "1 "   0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
3  35854     0  "1"    0     # FMC CT    12.00        PGEN=50.00  QGEN=15.00
0
 #
 #
 # (91)  L-1/G-1 Newark - Scott #1 115 kV and FMC Combustion Turbine
 #
1  35120 36852  "1 "   0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  35854     0  "1"    0     # FMC CT    12.00        PGEN=50.00  QGEN=15.00
0
 #
 #
 # (92)  L-1/G-1 Newark - Kifer 115 kV and FMC Combustion Turbine
 #
```

```
1  35122 35602  "1 "    0     # line from  NEWARK F 115.00  BRKR to (3)   ZNKER J2 115.00
1  35602 35604  "1 "    0     # line from  ZNKER J2 115.00   (3) to (2)   ZANKER   115.00
1  35602 36850  "1 "    0     # line from  ZNKER J2 115.00   (3) to BRKR  KIFER    115.00
2  35604 35861  "1 "    0     # TRAN from  ZANKER   115.00   (2) to (1)   SJ-SCL W   9.11
4  35861     0  "1 "    0     # LOAD-DROP    SJ-SCL W   9.11  LOAD==5.50(1.30)
3  35861     0  "1 "    0     # GEN-DROP    SJ-SCL W   9.11  GEN==5.00(0.00)
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (93)  L-1/G-1 Newark - Scott #2 115 kV and FMC Combustion Turbine
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (94)  L-1/G-1 Trimble - San Jose B 115 kV and FMC Combustion Turbine
 #
1  35612 35616  "1 "    0     # line from  TRIMBLE  115.00  BRKR to BRKR  SJ B   E 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (95)  L-1/G-1 El Patio - San Jose A 115 kV and FMC Combustion Turbine
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (96)  L-1/G-1 Evergreen - San Jose B 115 kV and FMC Combustion Turbine
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1      # close Markham to Markham J2
 2  35632 35863  "1 "    1      # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "***"   1      # restore all loads to CATALYST
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (97)  L-1/G-1 Metcalf - El Patio #1 115 kV and FMC Combustion Turbine
 #
1  35620 35621  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   IBM-HR J 115.00
1  35621 35642  "1 "    0     # line from  IBM-HR J 115.00   (2) to BRKR  MTCALF D 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (98)  L-1/G-1 Metcalf - El Patio #2 115 kV and FMC Combustion Turbine
 #
1  35620 35651  "1 "    0     # line from  EL PATIO 115.00  BRKR to (2)   BAILY J3 115.00
1  35651 35642  "1 "    0     # line from  BAILY J3 115.00   (2) to BRKR  MTCALF D 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (99)  L-1/G-1 Metcalf - Evergreen #2 115 kV and FMC Combustion Turbine
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (100)  L-1/G-1 Metcalf - Evergreen #1 115 kV and FMC Combustion Turbine
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  35854     0  "1"     0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (101)  L-1/G-1 Los Esteros - Montague 115 kV and FMC Combustion Turbine
 #
1  35658 35610  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  MONTAGUE 115.00
```

```
3  35854     0  "1"    0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (102)  L-1/G-1 Los Esteros - Nortech 115 kV and FMC Combustion Turbine
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  35854     0  "1"    0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (103)  L-1/G-1 Nortech - Kifer 115 kV and FMC Combustion Turbine
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  35854     0  "1"    0     # FMC CT    12.00       PGEN=50.00  QGEN=15.00
0
 #
 #
 # (104)  L-1/G-1 Los Esteros - Metcalf 230 kV and SVP Gianera Generator Unit 1
 #
1  30735 30731  "1 "    0     # line from  METCALF  230.00  BRKR to BRKR  LS ESTRS 230.00
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (105)  L-1/G-1 Newark - Scott #1 115 kV and SVP Gianera Generator Unit 1
 #
1  35120 36852  "1 "    0     # line from  NEWARK D 115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (106)  L-1/G-1 Newark - Scott #2 115 kV and SVP Gianera Generator Unit 1
 #
1  35122 36852  "2 "    0     # line from  NEWARK F 115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (107)  L-1/G-1 El Patio - San Jose A 115 kV and SVP Gianera Generator Unit 1
 #
1  35618 35620  "1 "    0     # line from  SN JSE A 115.00  BRKR to BRKR  EL PATIO 115.00
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (108)  L-1/G-1 Evergreen - San Jose B 115 kV and SVP Gianera Generator Unit 1
 #
1  35619 35631  "1 "    0     # line from  SJ B   F 115.00  BRKR to (3)   MARKHM J 115.00
1  35631 35632  "1 "    0     # line from  MARKHM J 115.00   (3) to (2)   MARKHAM  115.00
1  35631 35636  "1 "    0     # line from  MARKHM J 115.00   (3) to BRKR  EVRGRN 1 115.00
2  35632 35863  "1 "    0     # TRAN from  MARKHAM  115.00  BRKR to (1)   CATALYST   9.11
4  35863     0  "1 "    0     # LOAD-DROP    CATALYST   9.11  LOAD==9.23(3.13)
3  35863     0  "1 "    0     # GEN-DROP    CATALYST   9.11  GEN==2.25(0.00)
 1  35632 35625  "1 "    1      # close Markham to Markham J2
 2  35632 35863  "1 "    1      # restore TRAN from  MARKHAM 115.00 to CATALYST 9.11
 4  35863 0      "***"   1      # restore all loads to CATALYST
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (109)  L-1/G-1 Swift - Metcalf 115 kV and SVP Gianera Generator Unit 1
 #
1  35622 35643  "1 "    0     # line from  SWIFT    115.00  BRKR to BRKR  MTCALF E 115.00
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (110)  L-1/G-1 Metcalf - Evergreen #2 115 kV and SVP Gianera Generator Unit 1
 #
1  35625 35645  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   EVRGRN J 115.00
1  35625 35634  "1 "    0     # line from  MARKHMJ2 115.00   (2) to (3)   STONE J  115.00
1  35645 35633  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  EVRGRN 2 115.00
1  35645 35643  "1 "    0     # line from  EVRGRN J 115.00   (3) to BRKR  MTCALF E 115.00
1  35634 35635  "1 "    0     # line from  STONE J  115.00   (3) to (1)   GEN ELEC 115.00
1  35634 36420  "1 "    0     # line from  STONE J  115.00   (3) to BRKR  STONE    115.00
4  35635     0  "1 "    0     # LOAD-DROP    GEN ELEC 115.00  LOAD==15.70(11.37)
4  36420     0  "1 "    0     # LOAD-DROP    STONE    115.00  LOAD==34.74(13.06)
4  36420     0  "2 "    0     # LOAD-DROP    STONE    115.00  LOAD==12.18(-5.33)
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (111)  L-1/G-1 Metcalf - Evergreen #1 115 kV and SVP Gianera Generator Unit 1
 #
1  35636 35643  "1 "    0     # line from  EVRGRN 1 115.00  BRKR to BRKR  MTCALF E 115.00
3  36858     0  "1"    0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
```

APPENDIX A – AUTOCON INPUT FILE

```
0
 #
 #
 # (112)  L-1/G-1 Los Esteros - Agnew 115 kV and SVP Gianera Generator Unit 1
 #
1  35658 35606  "1 "    0     # line from  LS ESTRS 115.00  BRKR to BRKR  AGNEW    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (113)  L-1/G-1 Los Esteros - Nortech 115 kV and SVP Gianera Generator Unit 1
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (114)  L-1/G-1 Nortech - Kifer 115 kV and SVP Gianera Generator Unit 1
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (115)  L-1/G-1 Scott - Kifer 115 kV and SVP Gianera Generator Unit 1
 #
1  36850 36852  "1 "    0     # line from  KIFER    115.00  BRKR to BRKR  SCOTT    115.00
3  36858     0  "1"     0     # CSC_GNRA   9.11       PGEN=19.50  QGEN=6.91
0
 #
 #
 # (116)  L-1/G-1 Newark Distribution - Los Esteros 230 kV and Gilroy Energy Co-gen
 #
1  30635 30731  "1 "    0     # line from  NWK DIST 230.00  BRKR to BRKR  LS ESTRS 230.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (117)  L-1/G-1 Metcalf - Morgan Hill 115 kV and Gilroy Energy Co-gen
 #
1  35642 35646  "1 "    0     # line from  MTCALF D 115.00  BRKR to BRKR  MRGN HIL 115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (118)  L-1/G-1 Metcalf - Llagas 115 kV and Gilroy Energy Co-gen
 #
1  35642 35654  "1 "    0     # line from  MTCALF D 115.00  BRKR to (2)   MORGN J1 115.00
1  35654 35655  "1 "    0     # line from  MORGN J1 115.00   (2) to (2)   MORGN J2 115.00
1  35655 35648  "1 "    0     # line from  MORGN J2 115.00   (2) to BRKR  LLAGAS   115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (119)  L-1/G-1 Morgan Hill - Llagas 115 kV and Gilroy Energy Co-gen
 #
1  35646 35648  "1 "    0     # line from  MRGN HIL 115.00  BRKR to BRKR  LLAGAS   115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (120)  L-1/G-1 Los Esteros - Nortech 115 kV and Gilroy Energy Co-gen
 #
1  35659 35658  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  LS ESTRS 115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #
 # (121)  L-1/G-1 Nortech - Kifer 115 kV and Gilroy Energy Co-gen
 #
1  35659 36850  "1 "    0     # line from  NORTECH  115.00  BRKR to BRKR  KIFER    115.00
3  35850     0  "1"     0     # GLRY COG  13.80       PGEN=121.97  QGEN=47.00
0
 #
 #*****************************************************************************************

 #****************** G1 and L1 ******************************************
 #
 # (1) L-1/G-1
1  30703 30700  "2 "    0     # line from  RAVENSWD 230.00  BRKR to BRKR  SANMATEO 230.00
3  33252     0  "1"     0     # POTRERO3  20.00       PGEN=205.00  QGEN=95.76
0
 #

 # L-1, G-1
   #
   #--------------------------------
```

```
 #                                POTRERO UNIT OUT
 #  (2)  G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  30685 30695  "1 "    0     # line from  EMBRCDRD 230.00   (3) to BRKR  MARTIN C 230.00
0
 #
 #
 #---------------------------------
 #                                POTRERO UNIT OUT
 #  (3)  G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  30685 30695  "1 "    0     # line from  EMBRCDRD 230.00   (3) to BRKR  MARTIN C 230.00
0
 #
 #  (4) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33202 33208  "1 "    0     # line from  LARKIN F 115.00   (3) to BRKR  MARTIN C 115.00
0
 #
 #
 #  (5) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
```

```
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33202 33208  "1 "    0     # line from  LARKIN F 115.00   (3) to BRKR  MARTIN C 115.00
0
 #
 #  (6) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRER03  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33205 33208  "1 "    0     # line from  HNTRS PT 115.00  BRKR to BRKR  MARTIN C 115.00
7
0
 #
 #
 #  (7) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRER03  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33203 33205  "1 "    0     # line from  MISSION  115.00  BRKR to BRKR  HNTRS PT 115.00
7
0
 #
 #
 #  (8) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRER03  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33203 33205  "2 "    0     # line from  MISSION  115.00  BRKR to BRKR  HNTRS PT 115.00
7
0
 #
 #
 #  (9) G-1 (GENERATOR)
 #
```

```
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33204 33207  "1 "    0     # line from  POTRERO  115.00  BRKR to (2)   BAYSHOR2 115.00
1  33207 33208  "1 "    0     # line from  BAYSHOR2 115.00   (2) to BRKR  MARTIN C 115.00
4  33207     0  "1 "    0     # LOAD-DROP    BAYSHOR2 115.00
7
0
 #
 #  (10) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33204 33206  "1 "    0     # line from  POTRERO  115.00  BRKR to (2)   BAYSHOR1 115.00
1  33206 33208  "1 "    0     # line from  BAYSHOR1 115.00   (2) to BRKR  MARTIN C 115.00
4  33206     0  "1 "    0     # LOAD-DROP    BAYSHOR1 115.00
7
0
 #
 #
 #  (11) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33200 33204  "1 "    0     # line from  LARKIN D 115.00   (3) to BRKR  POTRERO  115.00
0
 #
 #
 #  (12) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
```

```
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33203 33204  "1 "    0     # line from  MISSION  115.00  BRKR to BRKR  POTRERO  115.00
7
0
 #
 #
 #  (13) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33201 33204  "1 "    0     # line from  LARKIN E 115.00  BRKR to BRKR  POTRERO  115.00
7
0
 #
 #
 #  (14) G-1 (GENERATOR)
 #
3  33252     0  "1"     0     # POTRERO3  20.00
4  33252     0  "1"     0     # LOAD-DROP   POTRER03  20.0   LOAD==3
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33201 33203  "1 "    0     # line from  LARKIN E 115.00  BRKR to BRKR  MISSION  115.00
7
0
 #
 #
 #                             HUNTERS POINT UNIT OUT
 #
 #  (15) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  30685 30695  "1 "    0     # line from  EMBRCDRD 230.00   (3) to BRKR  MARTIN C 230.00
0
```

```
 #
 #
 #  (16) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  30690 30695  "1 "    0     # line from  EMBRCDRE 230.00   (3) to BRKR  MARTIN C 230.00
0
 #
 #  (17) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33202 33208  "1 "    0     # line from  LARKIN F 115.00   (3) to BRKR  MARTIN C 115.00
0
 #
 #  (18) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33205 33208  "2 "    0     # line from  HNTRS PT 115.00  BRKR to BRKR  MARTIN C 115.00
7
0
 #
 #
 #  (19) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
```

```
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33205 33208  "1 "    0     # line from  HNTRS PT 115.00  BRKR to BRKR  MARTIN C 115.00
7
0
 #
 #
 #  (20) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33203 33205  "1 "    0     # line from  MISSION  115.00  BRKR to BRKR  HNTRS PT 115.00
7
0
 #
 #
 #  (21) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33203 33205  "2 "    0     # line from  MISSION  115.00  BRKR to BRKR  HNTRS PT 115.00
7
0
 #
 #  (22) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33204 33207  "1 "    0     # line from  POTRERO  115.00  BRKR to (2)   BAYSHOR2 115.00
1  33207 33208  "1 "    0     # line from  BAYSHOR2 115.00   (2) to BRKR  MARTIN C 115.00
4  33207     0  "1 "    0     # LOAD-DROP    BAYSHOR2 115.00  LOAD==7(1)
7
0
 #
 #
```

```
 #  (23) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33204 33206  "1 "    0     # line from  POTRERO  115.00  BRKR to (2)   BAYSHOR1 115.00
1  33206 33208  "1 "    0     # line from  BAYSHOR1 115.00   (2) to BRKR  MARTIN C 115.00
4  33206     0  "1 "    0     # LOAD-DROP    BAYSHOR1 115.00  LOAD==5(0.71)
7
0
 #
 #
 #  (24) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33200 33204  "1 "    0     # line from  LARKIN D 115.00   (3) to BRKR  POTRERO  115.00
0
 #
 #
 #  (25) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33203 33204  "1 "    0     # line from  MISSION  115.00  BRKR to BRKR  POTRERO  115.00
7
0
 #
 #
 #  (26) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
```

```
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33201 33204  "1 "    0     # line from  LARKIN E 115.00  BRKR to BRKR  POTRERO  115.00
7
0
 #
 #
 #  (27) G-1 (GENERATOR)
 #
3  33270     0  "1"     0     # HNTRS P4  18.00
4  33270     0  "1"     0     # LOAD-DROP    HNTRS P4  18.0   LOAD==7
 #
 #
 # TURN ON ALL 4 CT IN SF
 # ----------------------
 #
3  33271     0  "1"     50     # HNTRS P1  12.00       PGEN=50.00
 #
3  33253     0  "1"     50     # POTRER04  13.80       PGEN=50.00
 #
3  33254     0  "1"     50     # POTRER05  13.80       PGEN=50.00
 #
3  33255     0  "1"     50     # POTRER06  13.80       PGEN=50.00
 #
20
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33201 33203  "1 "    0     # line from  LARKIN E 115.00  BRKR to BRKR  MISSION  115.00
7
0
 #-----------------
 #  (28)  G-1, L-1
 #-----------------
 #
 # United Co-gen out and SM#1 out
 #
 #  G-1 (GENERATOR)
 #
3  33466     0  "1"     0     # UNTED CO   9.11
 #
 #  L-1 (BREAKER-TO-BREAKER)
 #
1  33307 33310  "1 "    0     # line from  MILLBRAE 115.00  BRKR to BRKR  SANMATEO 115.00
7
0
 #
-1
# EOF
```

Appendix B - Autocon Output File : Power Flow Results Comparison

Summer 2004 Peak Category A Autocon Comparison File

NORMAL LOADING FLAGS Compare
Input args: F:\Russellcity\Basecases\Summer\before\output\NORMAL_FLAGS F:\Russellcity\Basecases\Summer\After\output\NORMAL_FLAGS
F:\Russellcity\Basecases\Summer\peak_normal_comp.rpt

NORMAL LOADING FLAGS

--------FROM bus--------				---------TO bus---------						base	(rating no 1)		(rating no 1)	
bus	---name---	-kv-	ar	bus	---name---	-kv-	ar	ID	--mw-	-mvar-	loading p.u.	-flow-	rating	
10170	"LENKURT "	115	10	10295	"SANDIA_1"	115	10	"1 "	105	18	0.99**	532 AMPS	540.20 AMPS	rcec2004s_preB2
10170	"LENKURT "	115	10	10295	"SANDIA_1"	115	10	"1 "	105	18	0.99**	532 AMPS	540.20 AMPS	rcec2004s_postB2
10245	"PERSON "	115	10	10367	"WESMECOT"	115	10	"1 "	115	21	0.98**	588 AMPS	599.94 AMPS	rcec2004s_preB2
10245	"PERSON "	115	10	10367	"WESMECOT"	115	10	"1 "	115	21	0.98**	588 AMPS	599.94 AMPS	rcec2004s_postB2
10370	"WESTMS_1"	115	10	10374	"WESTMS_T"	115	10	"1 "	135	7	1.00**	669 AMPS	670.23 AMPS	rcec2004s_preB2
10370	"WESTMS_1"	115	10	10374	"WESTMS_T"	115	10	"1 "	135	7	1.00**	669 AMPS	670.23 AMPS	rcec2004s_postB2
15218	"WHITETNK"	230	14	15616	"WHITETNK"	69	14	"1 "	-275	49	1.00	279 MVA	280.00 MVA	rcec2004s_preB2
15218	"WHITETNK"	230	14	15616	"WHITETNK"	69	14	"1 "	-275	49	1.00	279 MVA	280.00 MVA	rcec2004s_postB2
18031	"ANDREWS "	138	18	18088	"PECOS "	138	18	"1 "	-192	-30	0.96	803 AMPS	837.16 AMPS	rcec2004s_preB2
18031	"ANDREWS "	138	18	18088	"PECOS "	138	18	"1 "	-193	-30	0.96	803 AMPS	837.16 AMPS	rcec2004s_postB2
18088	"PECOS "	138	18	18610	"ALXCOMM "	138	18	"1 "	199	29	0.98	824 AMPS	837.16 AMPS	rcec2004s_preB2
18088	"PECOS "	138	18	18610	"ALXCOMM "	138	18	"1 "	199	29	0.99	825 AMPS	837.16 AMPS	rcec2004s_postB2
18602	"EQUEST "	69	18	18619	"MGCWAY "	69	18	"1 "	95	19	0.96	802 AMPS	836.74 AMPS	rcec2004s_preB2
18602	"EQUEST "	69	18	18619	"MGCWAY "	69	18	"1 "	95	19	0.96	802 AMPS	836.74 AMPS	rcec2004s_postB2
30482	"LOCKFORD"	230	30	33724	"LOCKEFRD"	60	30	"2 "	136	55	1.09	147 MVA	134.40 MVA	rcec2004s_preB2
30482	"LOCKFORD"	230	30	33724	"LOCKEFRD"	60	30	"2 "	136	55	1.09	147 MVA	134.40 MVA	rcec2004s_postB2
30560	"E. SHORE"	230	30	35105	"EASTSHRE"	115	30	"1 "	114	11	0.96	115 MVA	120.00 MVA	rcec2004s_preB2
30560	"E. SHORE"	230	30	35105	"EASTSHRE"	115	30	"1 "	150	3	1.25**	150 MVA	120.00 MVA	rcec2004s_postB2
30560	"E. SHORE"	230	30	35105	"EASTSHRE"	115	30	"2 "	114	11	0.95	114 MVA	120.00 MVA	rcec2004s_preB2

APPENDIX B
AUTOCON OUTPUT

30560	"E. SHORE"	230	30	35105	"EASTSHRE"	115	30	"2 "	149	3	1.24**	149 MVA	120.00 MVA	rcec2004s_postB2
30705	"MONTAVIS"	230	30	35455	"MNTA VSA"	60	30	"5 "	115	60	0.96	130 MVA	134.40 MVA	rcec2004s_preB2
30705	"MONTAVIS"	230	30	35455	"MNTA VSA"	60	30	"5 "	115	60	0.96	130 MVA	134.40 MVA	rcec2004s_postB2
30790	"PANOCHE "	230	30	30792	"PNCHE 2M"	230	30	"2 "	120	35	1.03	125 MVA	121.80 MVA	rcec2004s_preB2
30790	"PANOCHE "	230	30	30792	"PNCHE 2M"	230	30	"2 "	121	31	1.03	125 MVA	121.80 MVA	rcec2004s_postB2
30792	"PNCHE 2M"	230	30	34158	"PANOCHE "	115	30	"2 "	120	29	1.01	123 MVA	121.80 MVA	rcec2004s_preB2
30792	"PNCHE 2M"	230	30	34158	"PANOCHE "	115	30	"2 "	121	26	1.01	124 MVA	121.80 MVA	rcec2004s_postB2
33310	"SANMATEO"	115	30	33312	"BELMONT "	115	30	"1 "	105	5	1.03	511 AMPS	497.02 AMPS	rcec2004s_preB2
33310	"SANMATEO"	115	30	33312	"BELMONT "	115	30	"1 "	124	-1	1.22**	605 AMPS	497.02 AMPS	rcec2004s_postB2
33514	"MANTECA "	115	30	33742	"MANTECA "	60	30	"3 "	26	15	0.98	30 MVA	31.20 MVA	rcec2004s_preB2
33514	"MANTECA "	115	30	33742	"MANTECA "	60	30	"3 "	26	15	0.97	30 MVA	31.20 MVA	rcec2004s_postB2

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=

35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	159	58	0.96	805 AMPS	838.41 AMPS	rcec2004s_postB2
35612	"TRIMBLE "	115	30	35616	"SJ B E"	115	30	"1 "	150	33	1.07	752 AMPS	702.86 AMPS	rcec2004s_preB2
35612	"TRIMBLE "	115	30	35616	"SJ B E"	115	30	"1 "	163	30	1.15	811 AMPS	702.86 AMPS	rcec2004s_postB2
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	-318	-69	1.13**	1582 AMPS	1405.72 AMPS	rcec2004s_preB2
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	-314	-71	1.11**	1566 AMPS	1405.72 AMPS	rcec2004s_postB2

NORMAL VOLTAGE FLAGS

BUS	---name---	-kv-	-area-	-base-- pu volt	
12040	"HOLLYWO#"	115	10	0.922	rcec2004s_preB2
12040	"HOLLYWO#"	115	10	0.922	rcec2004s_postB2
13005	"GAVILAN "	115	10	0.922	rcec2004s_preB2
13005	"GAVILAN "	115	10	0.922	rcec2004s_postB2
13011	"RUIDOSO "	115	10	0.922	rcec2004s_preB2
13011	"RUIDOSO "	115	10	0.922	rcec2004s_postB2
31605	"NEO REDT"	60	30	0.938	rcec2004s_preB2
31605	"NEO REDT"	60	30	0.935	rcec2004s_postB2
31609	"CR CANAL"	60	30	0.934	rcec2004s_preB2
31609	"CR CANAL"	60	30	0.932	rcec2004s_postB2
31610	"TYLER "	60	30	0.935	rcec2004s_preB2
31610	"TYLER "	60	30	0.933	rcec2004s_postB2
31611	"RASN JNT"	60	30	0.938	rcec2004s_preB2
31611	"RASN JNT"	60	30	0.935	rcec2004s_postB2
31613	"TYLERJT "	60	30	0.935	rcec2004s_preB2
31613	"TYLERJT "	60	30	0.933	rcec2004s_postB2
31615	"LP FB SP"	60	30	0.933	rcec2004s_preB2

APPENDIX B
AUTOCON OUTPUT

31615	"LP FB SP"	60	30	0.930	rcec2004s_postB2
31617	"RWSN J1 "	60	30	0.947	rcec2004s_preB2
31617	"RWSN J1 "	60	30	0.945	rcec2004s_postB2

"=1=1=1=1=1=1_" and "=2=2=2=2=2=2_" danotes no violation on either the before case or after case, respectively, for the given outage. Violations are those circuits, transformers, etc. that have a normal or emergency loading of .95 per unit or greater during a CAISO Category A or B contingency.

APPENDIX B
AUTOCON OUTPUT

Summer 2004 Peak Category B Autocon Comparison File

```
--------FROM bus--------  ---------TO bus---------     (rate 1) (rate 2)     --------- outage ---------    (Rate 2)
 --------FROM bus--------  ---------TO bus---------     (rate 1) (rate 1)     --------- outage ---------    (Rate 1)

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "   0.55    1.26    109.35   103.70   150.71 MVA   120.00 MVA   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"   0.55    1.02    108.92    97.76   146.36 MVA   144.00 MVA   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "   0.53    1.00    359.75   350.97   502.60 MVA   504.00 MVA   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "1 "   0.65    1.29   -876.89   -77.33  2156.11 AMPS 1669.30 AMPS  rcec2004s_preB2   71
30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "1 "   0.65    1.29   -876.88   -85.24  2160.59 AMPS 1669.30 AMPS  rcec2004s_postB2  71

30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "2 "   0.65    1.29   -876.89   -77.33  2156.11 AMPS 1669.30 AMPS  rcec2004s_preB2   70
30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "2 "   0.65    1.29   -876.88   -85.24  2160.59 AMPS 1669.30 AMPS  rcec2004s_postB2  70

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "1 "   0.81    1.19    520.03  -141.04  1339.96 AMPS 1129.10 AMPS  rcec2004s_postB2  83

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "   0.81    1.19    520.03  -141.04  1339.96 AMPS 1127.09 AMPS  rcec2004s_postB2 225

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "   0.81    1.19    520.03  -141.04  1339.96 AMPS 1127.09 AMPS  rcec2004s_postB2  81

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.13    162.99     7.10   163.15 MVA   144.00 MVA   rcec2004s_postB2  22

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.14    163.90     1.38   163.91 MVA   144.00 MVA   rcec2004s_postB2 225

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.23    177.66     6.31   177.77 MVA   144.00 MVA   rcec2004s_postB2 229

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.13    162.99     7.10   163.15 MVA   144.00 MVA   rcec2004s_postB2 239

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   0.96    1.04    140.73    51.22   149.76 MVA   144.00 MVA   rcec2004s_preB2  248
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   0.96    1.19    169.52    28.34   171.87 MVA   144.00 MVA   rcec2004s_preB2  278
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.55    222.28    20.06   223.19 MVA   144.00 MVA   rcec2004s_postB2 278

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   0.96    1.03    146.85    20.16   148.23 MVA   144.00 MVA   rcec2004s_preB2  281
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.26    180.14    15.67   180.82 MVA   144.00 MVA   rcec2004s_postB2 281

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.09    157.51     2.66   157.53 MVA   144.00 MVA   rcec2004s_postB2  76

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25    1.14    163.90     1.38   163.91 MVA   144.00 MVA   rcec2004s_postB2  81
```

APPENDIX B
AUTOCON OUTPUT

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=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25   1.14   163.90     1.38   163.91 MVA   144.00 MVA    rcec2004s_postB2  83

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.13   161.95     7.13   162.10 MVA   144.00 MVA    rcec2004s_postB2  22

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.13   162.85     1.45   162.86 MVA   144.00 MVA    rcec2004s_postB2 225

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.23   176.52     6.35   176.63 MVA   144.00 MVA    rcec2004s_postB2 229

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.13   161.95     7.13   162.10 MVA   144.00 MVA    rcec2004s_postB2 239

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   0.95   1.03   139.82    50.96   148.82 MVA   144.00 MVA    rcec2004s_preB2 248
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   0.95   1.19   168.95    28.44   171.33 MVA   144.00 MVA    rcec2004s_preB2 277
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.54   221.54    20.23   222.46 MVA   144.00 MVA    rcec2004s_postB2 277

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   0.95   1.02   145.91    20.10   147.29 MVA   144.00 MVA    rcec2004s_preB2 281
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.25   178.99    15.64   179.67 MVA   144.00 MVA    rcec2004s_postB2 281

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.09   156.50     2.71   156.53 MVA   144.00 MVA    rcec2004s_postB2  76

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.13   162.85     1.45   162.86 MVA   144.00 MVA    rcec2004s_postB2  81

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.13   162.85     1.45   162.86 MVA   144.00 MVA    rcec2004s_postB2  83

30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   0.98   463.13   150.78   487.06 MVA   495.00 MVA    rcec2004s_preB2 281
30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   0.98   457.86   153.94   483.04 MVA   495.00 MVA    rcec2004s_postB2 281

30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   1.05   487.13   174.38   517.40 MVA   495.00 MVA    rcec2004s_preB2 283
30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   1.04   485.75   177.54   517.18 MVA   495.00 MVA    rcec2004s_postB2 283

30626 "NWRK  7M"   13 30  35121 "NEWARK E"  115 30  "7 "   0.93   0.96  -462.06  -111.69   475.37 MVA   495.00 MVA    rcec2004s_preB2 281
30626 "NWRK  7M"   13 30  35121 "NEWARK E"  115 30  "7 "   0.93   0.95  -456.81  -115.83   471.26 MVA   495.00 MVA    rcec2004s_postB2 281

30626 "NWRK  7M"   13 30  35121 "NEWARK E"  115 30  "7 "   0.93   1.01  -485.92  -127.19   502.29 MVA   495.00 MVA    rcec2004s_preB2 283
30626 "NWRK  7M"   13 30  35121 "NEWARK E"  115 30  "7 "   0.93   1.01  -484.54  -130.28   501.75 MVA   495.00 MVA    rcec2004s_postB2 283

30628 "NWRK 11M"   13 30  30631 "NEWARK E"  230 30  "11"   0.90   0.96   447.82   162.20   476.28 MVA   496.00 MVA    rcec2004s_preB2 282
30628 "NWRK 11M"   13 30  30631 "NEWARK E"  230 30  "11"   0.90   0.96   446.71   164.88   476.17 MVA   496.00 MVA    rcec2004s_postB2 282

30628 "NWRK 11M"   13 30  35122 "NEWARK F"  115 30  "11"   0.90   0.95  -446.81  -150.15   471.36 MVA   496.00 MVA    rcec2004s_preB2 282
30628 "NWRK 11M"   13 30  35122 "NEWARK F"  115 30  "11"   0.90   0.95  -445.70  -154.72   471.79 MVA   496.00 MVA    rcec2004s_postB2 282

30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "   0.92   0.99   459.18   167.67   488.83 MVA   492.00 MVA    rcec2004s_preB2 229
30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "   0.93   1.09   510.23   165.73   536.47 MVA   492.00 MVA    rcec2004s_postB2 229

31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.50   6.96  -135.58  -173.22  2632.95 AMPS  378.04 AMPS   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=
```

APPENDIX B
AUTOCON OUTPUT

```
31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35    6.65    126.07   168.01  2514.20 AMPS  378.04 AMPS   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42    3.66    282.21   448.01  2704.61 AMPS  739.01 AMPS   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00    4.21    -40.04    -4.50  2027.66 AMPS  481.96 AMPS   rcec2004s_preB2    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

32782 "STATIN D"  115 30  32788 "STATIN L"  115 30  "1 "   0.54    1.20    191.13   -12.63   948.97 AMPS  790.22 AMPS   rcec2004s_preB2  17
32782 "STATIN D"  115 30  32788 "STATIN L"  115 30  "1 "   0.56    1.20    191.13   -12.59   949.23 AMPS  790.22 AMPS   rcec2004s_postB2  17

32786 "OAK C115"  115 30  32790 "STATIN X"  115 30  "1 "   0.65    1.20   -190.52     8.28   948.92 AMPS  790.22 AMPS   rcec2004s_preB2  15
32786 "OAK C115"  115 30  32790 "STATIN X"  115 30  "1 "   0.63    1.20   -190.52     8.23   949.37 AMPS  790.22 AMPS   rcec2004s_postB2  15

32950 "PITSBURG"  115 30  32978 "LMEC   1"  115 30  "1 "   0.61    1.21   -498.71   -45.81  2428.01 AMPS 2008.18 AMPS   rcec2004s_preB2 104
32950 "PITSBURG"  115 30  32978 "LMEC   1"  115 30  "1 "   0.61    1.21   -498.70   -49.23  2431.03 AMPS 2008.18 AMPS   rcec2004s_postB2 104

32950 "PITSBURG"  115 30  32978 "LMEC   1"  115 30  "2 "   0.61    1.21   -498.71   -45.81  2428.01 AMPS 2008.18 AMPS   rcec2004s_preB2 103
32950 "PITSBURG"  115 30  32978 "LMEC   1"  115 30  "2 "   0.61    1.21   -498.70   -49.23  2431.03 AMPS 2008.18 AMPS   rcec2004s_postB2 103

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33010 "SOBRANTE"  115 30  33048 "MORAGAJT"  115 30  "1 "   0.74    0.95    198.46   -34.28   995.22 AMPS 1044.25 AMPS   rcec2004s_postB2 218

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33010 "SOBRANTE"  115 30  33048 "MORAGAJT"  115 30  "1 "   0.74    0.95    198.46   -34.28   995.22 AMPS 1044.25 AMPS   rcec2004s_postB2  74

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22    1.05    135.87    -3.89   662.92 AMPS  632.58 AMPS   rcec2004s_postB2 229

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22    1.02    132.17    -0.04   646.16 AMPS  632.58 AMPS   rcec2004s_postB2 282

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22    1.01    131.13     1.01   641.32 AMPS  632.58 AMPS   rcec2004s_postB2 283

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22    1.07    138.17    -3.10   675.78 AMPS  632.58 AMPS   rcec2004s_postB2  82

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33315 "RAVENSWD"  115 30  35350 "AMES BS1"  115 30  "1 "   0.53    1.02    118.88   -47.70   626.83 AMPS  617.51 AMPS   rcec2004s_postB2 229

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33315 "RAVENSWD"  115 30  35351 "AMES BS2"  115 30  "1 "   0.53    1.02    118.95   -47.70   627.12 AMPS  617.51 AMPS   rcec2004s_postB2 229

33600 "HERDLYN "   70 30  33770 "HERDLYN "   60 30  "2 "   0.82    1.21     60.12     6.30    60.45 MVA     50.00 MVA    rcec2004s_preB2 267
33600 "HERDLYN "   70 30  33770 "HERDLYN "   60 30  "2 "   0.82    1.21     60.12     6.31    60.45 MVA     50.00 MVA    rcec2004s_postB2 267

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.80    0.97    178.18   -66.89   924.15 AMPS  948.86 AMPS   rcec2004s_postB2 229

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.80    0.98    183.06   -50.02   929.75 AMPS  948.86 AMPS   rcec2004s_postB2 281

35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.35    0.96   -174.24   -34.46   906.47 AMPS  948.86 AMPS   rcec2004s_preB2  82
35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.80    0.96   -174.24   -34.47   908.04 AMPS  948.86 AMPS   rcec2004s_postB2  82

35107 "DUMBARTN"  115 30  35120 "NEWARK D"  115 30  "1 "   0.48    1.53   -281.11   -74.39  1448.16 AMPS  948.86 AMPS   rcec2004s_preB2  82
```

APPENDIX B
AUTOCON OUTPUT

```
35107 "DUMBARTN"  115 30  35120 "NEWARK D"  115 30  "1 "   0.57   1.53   -281.12   -74.42  1450.62 AMPS  948.86 AMPS   rcec2004s_postB2  82

35110 "FREMNT  "  115 30  35121 "NEWARK E"  115 30  "1 "   0.59   1.02     85.37    22.16   423.29 AMPS  416.70 AMPS   rcec2004s_preB2 254
35110 "FREMNT  "  115 30  35121 "NEWARK E"  115 30  "1 "   0.59   1.02     85.38    22.18   424.07 AMPS  416.70 AMPS   rcec2004s_postB2 254

35110 "FREMNT  "  115 30  35121 "NEWARK E"  115 30  "2 "   0.59   1.02     85.37    22.16   423.29 AMPS  416.70 AMPS   rcec2004s_preB2 253
35110 "FREMNT  "  115 30  35121 "NEWARK E"  115 30  "2 "   0.59   1.02     85.38    22.18   424.07 AMPS  416.70 AMPS   rcec2004s_postB2 253

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.00    191.42    56.57   947.60 AMPS  948.86 AMPS   rcec2004s_postB2 235

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.98    184.49    65.24   929.16 AMPS  948.86 AMPS   rcec2004s_postB2 262

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.99    187.23    66.33   943.33 AMPS  948.86 AMPS   rcec2004s_postB2 266

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.98    179.27    41.68   903.61 AMPS  923.76 AMPS   rcec2004s_postB2 251

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.95    175.99    31.89   877.91 AMPS  923.76 AMPS   rcec2004s_postB2 261

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96    176.95    40.99   889.66 AMPS  923.76 AMPS   rcec2004s_postB2 262

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96    176.92    41.08   889.75 AMPS  923.76 AMPS   rcec2004s_postB2 266

35616 "SJ B   E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.81   0.95    151.78    26.80   764.73 AMPS  803.27 AMPS   rcec2004s_preB2 251
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.13   -358.95   -95.32  1808.50 AMPS 1606.54 AMPS   rcec2004s_preB2 251
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.12   -357.98   -96.19  1806.92 AMPS 1606.54 AMPS   rcec2004s_postB2 251

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.10   -351.29   -90.25  1761.83 AMPS 1606.54 AMPS   rcec2004s_preB2 262
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.09   -348.16   -92.25  1751.49 AMPS 1606.54 AMPS   rcec2004s_postB2 262

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.10   -351.32   -90.54  1762.55 AMPS 1606.54 AMPS   rcec2004s_preB2 266
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.09   -348.08   -92.58  1751.78 AMPS 1606.54 AMPS   rcec2004s_postB2 266

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.11   -356.69   -84.78  1783.21 AMPS 1606.54 AMPS   rcec2004s_preB2 281
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.10   -350.56   -88.04  1759.41 AMPS 1606.54 AMPS   rcec2004s_postB2 281

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.08   -347.71   -83.33  1738.27 AMPS 1606.54 AMPS   rcec2004s_preB2 282
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.07   -343.38   -85.66  1722.24 AMPS 1606.54 AMPS   rcec2004s_postB2 282

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.08   -345.03   -85.10  1729.10 AMPS 1606.54 AMPS   rcec2004s_preB2 283
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.07   -340.71   -87.54  1713.42 AMPS 1606.54 AMPS   rcec2004s_postB2 283

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.03   -332.51   -79.63  1661.21 AMPS 1606.54 AMPS   rcec2004s_postB2  82

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96    296.50    59.30  1472.02 AMPS 1541.27 AMPS   rcec2004s_preB2 230
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.08    330.56    88.85  1666.81 AMPS 1541.27 AMPS   rcec2004s_preB2 251
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.08    329.59    89.73  1665.10 AMPS 1541.27 AMPS   rcec2004s_postB2 251
```

APPENDIX B
AUTOCON OUTPUT

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35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93     1.05     322.90     83.78  1620.45 AMPS 1541.27 AMPS   rcec2004s_preB2 262
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92     1.04     319.77     85.78  1609.99 AMPS 1541.27 AMPS   rcec2004s_postB2 262

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93     1.05     322.93     84.07  1621.16 AMPS 1541.27 AMPS   rcec2004s_preB2 266
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92     1.04     319.69     86.11  1610.27 AMPS 1541.27 AMPS   rcec2004s_postB2 266

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93     1.07     328.30     78.31  1641.60 AMPS 1541.27 AMPS   rcec2004s_preB2 281
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92     1.05     322.17     81.57  1617.72 AMPS 1541.27 AMPS   rcec2004s_postB2 281

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93     1.04     319.32     76.86  1596.73 AMPS 1541.27 AMPS   rcec2004s_preB2 282
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92     1.03     314.99     79.19  1580.58 AMPS 1541.27 AMPS   rcec2004s_postB2 282

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93     1.03     316.64     78.63  1587.45 AMPS 1541.27 AMPS   rcec2004s_preB2 283
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92     1.02     312.32     81.07  1571.66 AMPS 1541.27 AMPS   rcec2004s_postB2 283

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93     0.99     304.69     72.67  1519.84 AMPS 1541.27 AMPS   rcec2004s_preB2  82
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92     0.99     304.12     73.16  1519.76 AMPS 1541.27 AMPS   rcec2004s_postB2  82

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "1 "   0.81     1.19     520.03   -141.04  1339.96 AMPS 1129.10 AMPS   rcec2004s_postB1  79

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "   0.81     1.19     520.03   -141.04  1339.96 AMPS 1127.09 AMPS   rcec2004s_postB1  78

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "   0.81     1.19     520.03   -141.04  1339.96 AMPS 1127.09 AMPS   rcec2004s_postB1  80

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25     1.10     157.90      2.99   157.93 MVA    144.00 MVA    rcec2004s_postB1 342

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25     1.10     157.89      2.96   157.92 MVA    144.00 MVA    rcec2004s_postB1 343

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25     1.14     163.90      1.38   163.91 MVA    144.00 MVA    rcec2004s_postB1  78

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25     1.14     163.90      1.38   163.91 MVA    144.00 MVA    rcec2004s_postB1  79

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25     1.14     163.90      1.38   163.91 MVA    144.00 MVA    rcec2004s_postB1  80

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   1.25     1.23     177.66      6.31   177.77 MVA    144.00 MVA    rcec2004s_postB1  81

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24     1.09     156.89      3.05   156.92 MVA    144.00 MVA    rcec2004s_postB1 342

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24     1.09     156.88      3.02   156.91 MVA    144.00 MVA    rcec2004s_postB1 343

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24     1.13     162.85      1.45   162.86 MVA    144.00 MVA    rcec2004s_postB1  78

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24     1.13     162.85      1.45   162.86 MVA    144.00 MVA    rcec2004s_postB1  79
```

APPENDIX B
AUTOCON OUTPUT

```
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.13   162.85    1.45   162.86 MVA   144.00 MVA    rcec2004s_postB1  80

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   1.24   1.23   176.52    6.35   176.63 MVA   144.00 MVA    rcec2004s_postB1  81

30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   0.96   395.31  117.37   412.37 MVA   429.00 MVA    rcec2004s_preB1 270
30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   0.96   394.29  119.59   412.03 MVA   429.00 MVA    rcec2004s_postB1 270

30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   0.95   390.95  116.97   408.07 MVA   429.00 MVA    rcec2004s_preB1 276
30626 "NWRK  7M"   13 30  30630 "NEWARK D"  230 30  "7 "   0.95   0.95   389.94  119.18   407.75 MVA   429.00 MVA    rcec2004s_postB1 276

30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "   0.92   0.99   459.18  167.67   488.83 MVA   492.00 MVA    rcec2004s_preB1  81
30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "   0.93   1.09   510.23  165.73   536.47 MVA   492.00 MVA    rcec2004s_postB1  81

30705 "MONTAVIS"  230 30  35356 "MNTA VSA"  115 30  "3 "   0.69   1.08   139.27   68.60   155.25 MVA   144.00 MVA    rcec2004s_preB1 203
30705 "MONTAVIS"  230 30  35356 "MNTA VSA"  115 30  "3 "   0.66   1.02   130.89   66.59   146.85 MVA   144.00 MVA    rcec2004s_postB1 203

30705 "MONTAVIS"  230 30  35356 "MNTA VSA"  115 30  "4 "   0.70   1.09   142.24   67.78   157.57 MVA   144.00 MVA    rcec2004s_preB1 203
30705 "MONTAVIS"  230 30  35356 "MNTA VSA"  115 30  "4 "   0.67   1.04   133.71   65.85   149.04 MVA   144.00 MVA    rcec2004s_postB1 203

30705 "MONTAVIS"  230 30  35356 "MNTA VSA"  115 30  "4A"   0.62   0.96   139.26   69.29   155.55 MVA   161.30 MVA    rcec2004s_preB1 203
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30705 "MONTAVIS"  230 30  35455 "MNTA VSA"   60 30  "5 "   0.96   0.96   135.97   72.43   154.06 MVA   161.30 MVA    rcec2004s_preB1 254
30705 "MONTAVIS"  230 30  35455 "MNTA VSA"   60 30  "5 "   0.96   0.96   135.97   72.41   154.05 MVA   161.30 MVA    rcec2004s_postB1 254

30705 "MONTAVIS"  230 30  35455 "MNTA VSA"   60 30  "5 "   0.96   0.95   135.96   72.34   154.00 MVA   161.30 MVA    rcec2004s_preB1 265
30705 "MONTAVIS"  230 30  35455 "MNTA VSA"   60 30  "5 "   0.96   0.95   135.95   72.32   153.99 MVA   161.30 MVA    rcec2004s_postB1 265

30735 "METCALF "  230 30  35642 "MTCALF D"  115 30  "1 "   0.91   1.09   478.87  160.84   505.16 MVA   463.70 MVA    rcec2004s_preB1 261
30735 "METCALF "  230 30  35642 "MTCALF D"  115 30  "1 "   0.87   1.04   454.17  161.72   482.11 MVA   463.70 MVA    rcec2004s_postB1 261

30735 "METCALF "  230 30  35642 "MTCALF D"  115 30  "1 "   0.91   1.08   476.23  160.48   502.54 MVA   463.70 MVA    rcec2004s_preB1 262
30735 "METCALF "  230 30  35642 "MTCALF D"  115 30  "1 "   0.87   1.03   451.65  161.35   479.61 MVA   463.70 MVA    rcec2004s_postB1 262

30735 "METCALF "  230 30  35642 "MTCALF D"  115 30  "1 "   0.91   0.99   379.48  119.39   397.82 MVA   403.20 MVA    rcec2004s_preB1 270
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30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "2 "   0.89   1.08   472.81  160.02   499.16 MVA   463.70 MVA    rcec2004s_preB1 260
30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "2 "   0.85   1.03   448.33  160.83   476.30 MVA   463.70 MVA    rcec2004s_postB1 260

30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "2 "   0.89   1.06   467.18  158.88   493.46 MVA   463.70 MVA    rcec2004s_preB1 262
30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "2 "   0.85   1.02   442.91  159.68   470.82 MVA   463.70 MVA    rcec2004s_postB1 262

30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "2 "   0.89   0.96   369.49  117.35   387.67 MVA   403.20 MVA    rcec2004s_preB1 270
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30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "3 "   0.87   1.06   465.84  158.74   492.14 MVA   463.70 MVA    rcec2004s_preB1 260
30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "3 "   0.83   1.01   441.69  159.46   469.59 MVA   463.70 MVA    rcec2004s_postB1 260

30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "3 "   0.87   1.05   462.89  157.96   489.10 MVA   463.70 MVA    rcec2004s_preB1 261
30735 "METCALF "  230 30  35643 "MTCALF E"  115 30  "3 "   0.83   1.01   438.83  158.69   466.64 MVA   463.70 MVA    rcec2004s_postB1 261

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33203 "MISSON  "  115 30  33204 "POTRERO "  115 30  "1 "   0.46   1.07  -153.72    0.28   746.76 AMPS  699.85 AMPS   rcec2004s_postB1 353

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APPENDIX B
AUTOCON OUTPUT

33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.62	1.07	42.73	1.73	42.77	MVA	40.00	MVA	rcec2004s_postB1 136
33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.51	1.03	38.56	14.07	41.05	MVA	40.00	MVA	rcec2004s_preB1 155
33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.62	1.07	40.16	14.48	42.69	MVA	40.00	MVA	rcec2004s_postB1 155
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.62	67.29	1182.68	AMPS	1144.16	AMPS	rcec2004s_preB1 103
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.52	64.78	1181.75	AMPS	1144.16	AMPS	rcec2004s_postB1 103
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.02	-232.70	67.39	1169.25	AMPS	1144.16	AMPS	rcec2004s_preB1 108
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.02	-232.61	64.87	1168.25	AMPS	1144.16	AMPS	rcec2004s_postB1 108
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.64	67.21	1183.03	AMPS	1144.16	AMPS	rcec2004s_preB1 109
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.54	64.96	1182.38	AMPS	1144.16	AMPS	rcec2004s_postB1 109
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-221.99	65.51	1116.93	AMPS	1144.16	AMPS	rcec2004s_preB1 110
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-221.89	63.22	1116.04	AMPS	1144.16	AMPS	rcec2004s_postB1 110
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.04	-236.00	67.14	1184.41	AMPS	1144.16	AMPS	rcec2004s_preB1 115
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.91	64.62	1183.51	AMPS	1144.16	AMPS	rcec2004s_postB1 115
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-221.99	65.51	1116.93	AMPS	1144.16	AMPS	rcec2004s_preB1 116
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-221.89	63.22	1116.04	AMPS	1144.16	AMPS	rcec2004s_postB1 116
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.27	-286.83	94.20	1457.59	AMPS	1144.16	AMPS	rcec2004s_preB1 21
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.27	-286.68	91.65	1456.54	AMPS	1144.16	AMPS	rcec2004s_postB1 21
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.62	67.29	1182.68	AMPS	1144.16	AMPS	rcec2004s_preB1 29
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.52	64.78	1181.75	AMPS	1144.16	AMPS	rcec2004s_postB1 29
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.02	-234.20	52.19	1169.55	AMPS	1144.16	AMPS	rcec2004s_preB1 3
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.22	52.73	1176.35	AMPS	1144.16	AMPS	rcec2004s_postB1 3
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.63	67.32	1161.22	AMPS	1144.16	AMPS	rcec2004s_preB1 328
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.33	64.79	1159.49	AMPS	1144.16	AMPS	rcec2004s_postB1 328
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.02	-232.70	67.39	1169.25	AMPS	1144.16	AMPS	rcec2004s_preB1 34
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.02	-232.61	64.87	1168.25	AMPS	1144.16	AMPS	rcec2004s_postB1 34
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.64	67.21	1183.03	AMPS	1144.16	AMPS	rcec2004s_preB1 35
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.54	64.96	1182.38	AMPS	1144.16	AMPS	rcec2004s_postB1 35
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-221.99	65.51	1116.93	AMPS	1144.16	AMPS	rcec2004s_preB1 36
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-221.89	63.22	1116.04	AMPS	1144.16	AMPS	rcec2004s_postB1 36
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.04	-236.00	67.14	1184.41	AMPS	1144.16	AMPS	rcec2004s_preB1 41
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-235.91	64.62	1183.51	AMPS	1144.16	AMPS	rcec2004s_postB1 41
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.02	66.45	1158.59	AMPS	1144.16	AMPS	rcec2004s_preB1 43
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-229.87	64.11	1157.41	AMPS	1144.16	AMPS	rcec2004s_postB1 43
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-227.09	74.58	1151.39	AMPS	1144.16	AMPS	rcec2004s_preB1 47
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-226.94	72.78	1150.78	AMPS	1144.16	AMPS	rcec2004s_postB1 47
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.48	66.47	1160.88	AMPS	1144.16	AMPS	rcec2004s_preB1 53
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.33	64.14	1159.70	AMPS	1144.16	AMPS	rcec2004s_postB1 53
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.48	66.47	1160.88	AMPS	1144.16	AMPS	rcec2004s_preB1 65
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.01	-230.33	64.14	1159.70	AMPS	1144.16	AMPS	rcec2004s_postB1 65

APPENDIX B
AUTOCON OUTPUT

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33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.02   -234.20   52.19  1169.55 AMPS 1144.16 AMPS  rcec2004s_preB1  84
33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.03   -235.22   52.73  1176.35 AMPS 1144.16 AMPS  rcec2004s_postB1  84

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.27   -286.83   94.20  1457.59 AMPS 1144.16 AMPS  rcec2004s_preB1  95
33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.27   -286.68   91.65  1456.54 AMPS 1144.16 AMPS  rcec2004s_postB1  95

33310 "SANMATEO"  115 30  33311 "BAY MDWS"  115 30  "1 "   0.58   1.03    110.35   39.40   570.51 AMPS  552.25 AMPS  rcec2004s_preB1 121
33310 "SANMATEO"  115 30  33311 "BAY MDWS"  115 30  "1 "   0.58   1.04    110.36   39.42   572.80 AMPS  552.25 AMPS  rcec2004s_postB1 121

33310 "SANMATEO"  115 30  33311 "BAY MDWS"  115 30  "2 "   0.58   1.03    110.35   39.40   570.51 AMPS  552.25 AMPS  rcec2004s_preB1 120
33310 "SANMATEO"  115 30  33311 "BAY MDWS"  115 30  "2 "   0.58   1.04    110.36   39.42   572.80 AMPS  552.25 AMPS  rcec2004s_postB1 120

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.08    140.08   -5.89   685.49 AMPS  632.58 AMPS  rcec2004s_postB1 123

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.24   -1.87   655.95 AMPS  632.58 AMPS  rcec2004s_postB1 138

33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.03   1.38    175.87   32.18   872.64 AMPS  632.58 AMPS  rcec2004s_preB1 154
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.53    195.19   27.11   965.73 AMPS  632.58 AMPS  rcec2004s_postB1 154

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.02    131.84   -2.99   644.84 AMPS  632.58 AMPS  rcec2004s_postB1 329

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.02    131.84   -2.99   644.84 AMPS  632.58 AMPS  rcec2004s_postB1 330

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.10    142.27   -5.63   696.51 AMPS  632.58 AMPS  rcec2004s_postB1 342

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.10    142.30   -5.57   696.65 AMPS  632.58 AMPS  rcec2004s_postB1 343

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.08    139.36   -4.59   681.50 AMPS  632.58 AMPS  rcec2004s_postB1 344

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.11   -3.35   655.64 AMPS  632.58 AMPS  rcec2004s_postB1 345

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.10   -3.36   655.62 AMPS  632.58 AMPS  rcec2004s_postB1 346

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.09   -3.39   655.64 AMPS  632.58 AMPS  rcec2004s_postB1 347

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.09   -3.39   655.63 AMPS  632.58 AMPS  rcec2004s_postB1 348

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.61   -3.44   658.08 AMPS  632.58 AMPS  rcec2004s_postB1 349

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.04    134.46   -3.42   657.35 AMPS  632.58 AMPS  rcec2004s_postB1 350

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.08    139.46   -4.56   681.95 AMPS  632.58 AMPS  rcec2004s_postB1 351
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APPENDIX B
AUTOCON OUTPUT

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "    1.22    1.04    134.08    -3.38   655.58 AMPS  632.58 AMPS   rcec2004s_postB1 352

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "    1.22    1.04    134.06    -3.45   655.54 AMPS  632.58 AMPS   rcec2004s_postB1 353

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "    1.22    1.04    134.12    -3.31   655.68 AMPS  632.58 AMPS   rcec2004s_postB1 354

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "    1.22    1.05    135.87    -3.89   662.92 AMPS  632.58 AMPS   rcec2004s_postB1  81

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33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.86    1.05    109.80   -20.79   545.99 AMPS  522.13 AMPS   rcec2004s_postB1 122

33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.60    1.35    142.65    23.29   705.45 AMPS  522.13 AMPS   rcec2004s_preB1 154
33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.86    1.57    166.87    17.03   822.00 AMPS  522.13 AMPS   rcec2004s_postB1 154

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33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.86    0.99    102.54   -24.37   515.58 AMPS  522.13 AMPS   rcec2004s_postB1 342

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33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.86    0.99    102.57   -24.29   515.66 AMPS  522.13 AMPS   rcec2004s_postB1 343

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33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.86    0.95     98.86   -23.09   496.20 AMPS  522.13 AMPS   rcec2004s_postB1 344

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33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "    0.86    0.95     98.99   -23.06   496.73 AMPS  522.13 AMPS   rcec2004s_postB1 351

33310 "SANMATEO"  115 30  33318 "SMATEO3M"  115 30  "3 "    0.80    1.01     67.88     3.53    67.97 MVA    67.50 MVA    rcec2004s_preB1 157
33310 "SANMATEO"  115 30  33318 "SMATEO3M"  115 30  "3 "    0.87    1.10     74.06     2.15    74.09 MVA    67.50 MVA    rcec2004s_postB1 157

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33310 "SANMATEO"  115 30  33357 "SAN MATO"   60 30  "8 "    0.66    1.00     67.13     3.30    67.21 MVA    67.50 MVA    rcec2004s_postB1 161

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33315 "RAVENSWD"  115 30  35350 "AMES BS1"  115 30  "1 "    0.53    1.02    118.88   -47.70   626.83 AMPS  617.51 AMPS   rcec2004s_postB1  81

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33315 "RAVENSWD"  115 30  35351 "AMES BS2"  115 30  "1 "    0.53    1.02    118.95   -47.70   627.12 AMPS  617.51 AMPS   rcec2004s_postB1  81

33318 "SMATEO3M"  115 30  33357 "SAN MATO"   60 30  "3 "    0.80    1.00     67.80     1.74    67.82 MVA    67.50 MVA    rcec2004s_preB1 157
33318 "SMATEO3M"  115 30  33357 "SAN MATO"   60 30  "3 "    0.87    1.09    -73.87     2.49    73.91 MVA    67.50 MVA    rcec2004s_postB1 157

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33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "    0.92    1.00     59.66    -3.55   559.21 AMPS  557.14 AMPS   rcec2004s_postB1 122

33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "    0.81    1.04     61.65     5.81   581.14 AMPS  557.14 AMPS   rcec2004s_preB1 154
33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "    0.92    1.14     67.27     4.63   635.04 AMPS  557.14 AMPS   rcec2004s_postB1 154

33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "    0.81    0.95     56.84     2.43   531.76 AMPS  557.14 AMPS   rcec2004s_preB1 158
33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "    0.92    1.05     62.46     1.01   585.81 AMPS  557.14 AMPS   rcec2004s_postB1 158

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33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "    0.92    0.95     50.11    -3.82   470.26 AMPS  494.60 AMPS   rcec2004s_postB1 167

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APPENDIX B
AUTOCON OUTPUT

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33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "   0.92   0.95    50.11   -3.82   470.26 AMPS  494.60 AMPS   rcec2004s_postB1  74

33381 "GLENWOOD"   60 30  33384 "MNLO JCT"   60 30  "1 "   0.14   1.13    56.06   16.29   564.16 AMPS  498.45 AMPS   rcec2004s_preB1 155
33381 "GLENWOOD"   60 30  33384 "MNLO JCT"   60 30  "1 "   0.16   1.11    54.51   16.68   553.03 AMPS  498.45 AMPS   rcec2004s_postB1 155

33383 "MENLO   "   60 30  33390 "MENLO G "   60 30  "1 "   0.23   1.05   -60.65  -19.22   626.46 AMPS  596.60 AMPS   rcec2004s_preB1 155
33383 "MENLO   "   60 30  33390 "MENLO G "   60 30  "1 "   0.31   1.03   -59.12  -19.64   615.82 AMPS  596.60 AMPS   rcec2004s_postB1 155

33384 "MNLO JCT"   60 30  33390 "MENLO G "   60 30  "1 "   0.35   1.29    75.22   23.09   771.34 AMPS  596.60 AMPS   rcec2004s_preB1 155
33384 "MNLO JCT"   60 30  33390 "MENLO G "   60 30  "1 "   0.51   1.28    73.69   23.51   761.18 AMPS  596.60 AMPS   rcec2004s_postB1 155

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35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.80   0.97   178.18  -66.89   924.15 AMPS  948.86 AMPS   rcec2004s_postB1  81

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.98   184.49   65.24   929.16 AMPS  948.86 AMPS   rcec2004s_postB1 219

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.99   187.23   66.33   943.33 AMPS  948.86 AMPS   rcec2004s_postB1 223

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.11   205.85   81.64  1054.75 AMPS  948.86 AMPS   rcec2004s_preB1 251
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.16   216.58   77.85  1099.55 AMPS  948.86 AMPS   rcec2004s_postB1 251

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.08   200.46   79.27  1026.06 AMPS  948.86 AMPS   rcec2004s_preB1 252
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.13   211.23   75.42  1070.87 AMPS  948.86 AMPS   rcec2004s_postB1 252

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.06   198.54   72.28  1003.33 AMPS  948.86 AMPS   rcec2004s_preB1 255
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.08   202.97   70.46  1023.60 AMPS  948.86 AMPS   rcec2004s_postB1 255

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.96   183.79   54.61   910.33 AMPS  948.86 AMPS   rcec2004s_postB1 258

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.96   183.79   54.61   910.33 AMPS  948.86 AMPS   rcec2004s_postB1 259

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   0.96   179.56   71.40   915.14 AMPS  948.86 AMPS   rcec2004s_preB1 287
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.02   192.08   67.02   966.59 AMPS  948.86 AMPS   rcec2004s_postB1 287

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.14   211.07   84.65  1084.38 AMPS  948.86 AMPS   rcec2004s_preB1 293
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.19   221.78   81.15  1129.43 AMPS  948.86 AMPS   rcec2004s_postB1 293

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.11   205.66   81.86  1054.70 AMPS  948.86 AMPS   rcec2004s_preB1 294
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.16   216.40   78.30  1099.88 AMPS  948.86 AMPS   rcec2004s_postB1 294

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.98   184.49   65.24   929.16 AMPS  948.86 AMPS   rcec2004s_postB1 298

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.99   187.23   66.33   943.33 AMPS  948.86 AMPS   rcec2004s_postB1 299

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.11   205.85   81.64  1054.75 AMPS  948.86 AMPS   rcec2004s_preB1 308
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.16   216.58   77.85  1099.55 AMPS  948.86 AMPS   rcec2004s_postB1 308

35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.90   1.08   200.46   79.27  1026.06 AMPS  948.86 AMPS   rcec2004s_preB1 309
35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   1.13   211.23   75.42  1070.87 AMPS  948.86 AMPS   rcec2004s_postB1 309

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35120 "NEWARK D"  115 30  36852 "SCOTT   "  115 30  "1 "   0.96   0.99   187.23   66.33   943.33 AMPS  948.86 AMPS   rcec2004s_postB1 312
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APPENDIX B
AUTOCON OUTPUT

35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.90	1.11	205.85	81.64	1054.75 AMPS	948.86 AMPS	rcec2004s_preB1 319
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.96	1.16	216.58	77.85	1099.55 AMPS	948.86 AMPS	rcec2004s_postB1 319
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.90	1.08	200.46	79.27	1026.06 AMPS	948.86 AMPS	rcec2004s_preB1 320
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.96	1.13	211.23	75.42	1070.87 AMPS	948.86 AMPS	rcec2004s_postB1 320
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.90	1.06	198.54	72.28	1003.33 AMPS	948.86 AMPS	rcec2004s_preB1 321
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.96	1.08	202.97	70.46	1023.60 AMPS	948.86 AMPS	rcec2004s_postB1 321

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35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.96	0.95	181.06	58.72	903.80 AMPS	948.86 AMPS	rcec2004s_postB1 322
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.90	1.13	209.67	82.62	1075.08 AMPS	948.86 AMPS	rcec2004s_preB1 326
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.96	1.18	220.39	78.93	1120.01 AMPS	948.86 AMPS	rcec2004s_postB1 326
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.90	1.10	204.29	80.21	1046.26 AMPS	948.86 AMPS	rcec2004s_preB1 327
35120	"NEWARK D"	115	30	36852	"SCOTT "	115	30	"1 "	0.96	1.15	215.04	76.49	1091.17 AMPS	948.86 AMPS	rcec2004s_postB1 327
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	1.00	187.02	62.96	951.94 AMPS	948.86 AMPS	rcec2004s_preB1 251
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.02	190.31	62.47	967.81 AMPS	948.86 AMPS	rcec2004s_postB1 251
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	0.97	181.19	60.61	921.04 AMPS	948.86 AMPS	rcec2004s_preB1 252
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	0.99	184.49	60.11	936.89 AMPS	948.86 AMPS	rcec2004s_postB1 252
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	1.04	192.47	65.88	982.60 AMPS	948.86 AMPS	rcec2004s_preB1 293
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.05	195.76	65.64	998.76 AMPS	948.86 AMPS	rcec2004s_postB1 293
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	1.00	186.62	63.12	950.78 AMPS	948.86 AMPS	rcec2004s_preB1 294
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.02	189.92	62.86	967.02 AMPS	948.86 AMPS	rcec2004s_postB1 294
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	1.00	187.02	62.96	951.94 AMPS	948.86 AMPS	rcec2004s_preB1 308
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.02	190.31	62.47	967.81 AMPS	948.86 AMPS	rcec2004s_postB1 308
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	0.97	181.19	60.61	921.04 AMPS	948.86 AMPS	rcec2004s_preB1 309
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	0.99	184.49	60.11	936.89 AMPS	948.86 AMPS	rcec2004s_postB1 309
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	1.00	187.02	62.96	951.94 AMPS	948.86 AMPS	rcec2004s_preB1 319
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.02	190.31	62.47	967.81 AMPS	948.86 AMPS	rcec2004s_postB1 319
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	0.97	181.19	60.61	921.04 AMPS	948.86 AMPS	rcec2004s_preB1 320
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	0.99	184.49	60.11	936.89 AMPS	948.86 AMPS	rcec2004s_postB1 320
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	1.02	189.18	63.53	964.53 AMPS	948.86 AMPS	rcec2004s_preB1 326
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.03	192.46	63.08	980.33 AMPS	948.86 AMPS	rcec2004s_postB1 326
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.75	0.98	183.35	61.17	933.51 AMPS	948.86 AMPS	rcec2004s_preB1 327
35122	"NEWARK F"	115	30	35602	"ZNKER J2"	115	30	"1 "	0.77	1.00	186.64	60.71	949.24 AMPS	948.86 AMPS	rcec2004s_postB1 327
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	1.01	188.40	62.65	957.81 AMPS	948.86 AMPS	rcec2004s_preB1 251
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.03	191.44	62.30	972.72 AMPS	948.86 AMPS	rcec2004s_postB1 251
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	0.98	182.74	60.35	927.73 AMPS	948.86 AMPS	rcec2004s_preB1 252
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	0.99	185.78	59.97	942.61 AMPS	948.86 AMPS	rcec2004s_postB1 252
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	0.99	186.81	54.37	934.80 AMPS	948.86 AMPS	rcec2004s_preB1 255
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	0.97	182.44	56.51	919.13 AMPS	948.86 AMPS	rcec2004s_postB1 255

APPENDIX B
AUTOCON OUTPUT

35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	1.04	193.70	65.52	987.66	AMPS	948.86 AMPS	rcec2004s_preB1 293
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.06	196.73	65.40	1002.85	AMPS	948.86 AMPS	rcec2004s_postB1 293
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	1.01	188.02	62.81	956.68	AMPS	948.86 AMPS	rcec2004s_preB1 294
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.02	191.06	62.67	971.95	AMPS	948.86 AMPS	rcec2004s_postB1 294
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	1.01	188.40	62.65	957.81	AMPS	948.86 AMPS	rcec2004s_preB1 308
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.03	191.44	62.30	972.72	AMPS	948.86 AMPS	rcec2004s_postB1 308
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	0.98	182.74	60.35	927.73	AMPS	948.86 AMPS	rcec2004s_preB1 309
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	0.99	185.78	59.97	942.61	AMPS	948.86 AMPS	rcec2004s_postB1 309
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	1.01	188.40	62.65	957.81	AMPS	948.86 AMPS	rcec2004s_preB1 319
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.03	191.44	62.30	972.72	AMPS	948.86 AMPS	rcec2004s_postB1 319
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	0.98	182.74	60.35	927.73	AMPS	948.86 AMPS	rcec2004s_preB1 320
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	0.99	185.78	59.97	942.61	AMPS	948.86 AMPS	rcec2004s_postB1 320
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	0.99	186.81	54.37	934.80	AMPS	948.86 AMPS	rcec2004s_preB1 321
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	0.97	182.44	56.51	919.13	AMPS	948.86 AMPS	rcec2004s_postB1 321
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	1.02	190.47	63.22	969.96	AMPS	948.86 AMPS	rcec2004s_preB1 326
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.04	193.49	62.90	984.79	AMPS	948.86 AMPS	rcec2004s_postB1 326
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.77	0.99	184.80	60.90	939.77	AMPS	948.86 AMPS	rcec2004s_preB1 327
35122	"NEWARK F"	115	30	36852	"SCOTT "	115	30	"2 "	0.79	1.01	187.83	60.57	954.52	AMPS	948.86 AMPS	rcec2004s_postB1 327
35455	"MNTA VSA"	60	30	35460	"LOS GATS"	60	30	"1 "	0.70	1.02	53.77	15.80	509.86	AMPS	500.37 AMPS	rcec2004s_preB1 254
35455	"MNTA VSA"	60	30	35460	"LOS GATS"	60	30	"1 "	0.70	1.02	53.76	15.79	509.67	AMPS	500.37 AMPS	rcec2004s_postB1 254
35455	"MNTA VSA"	60	30	35460	"LOS GATS"	60	30	"1 "	0.70	1.02	53.76	15.78	509.04	AMPS	500.37 AMPS	rcec2004s_preB1 265
35455	"MNTA VSA"	60	30	35460	"LOS GATS"	60	30	"1 "	0.70	1.02	53.76	15.77	508.94	AMPS	500.37 AMPS	rcec2004s_postB1 265
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	1.00	184.09	50.17	948.62	AMPS	948.86 AMPS	rcec2004s_preB1 251
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	1.02	187.30	49.27	964.51	AMPS	948.86 AMPS	rcec2004s_postB1 251
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	0.97	178.42	48.59	917.72	AMPS	948.86 AMPS	rcec2004s_preB1 252
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	0.98	181.64	47.70	933.60	AMPS	948.86 AMPS	rcec2004s_postB1 252
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	1.03	189.38	52.30	979.26	AMPS	948.86 AMPS	rcec2004s_preB1 293
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	1.05	192.59	51.63	995.44	AMPS	948.86 AMPS	rcec2004s_postB1 293
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	1.00	183.70	50.36	947.45	AMPS	948.86 AMPS	rcec2004s_preB1 294
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	1.02	186.92	49.68	963.71	AMPS	948.86 AMPS	rcec2004s_postB1 294
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	1.00	184.09	50.17	948.62	AMPS	948.86 AMPS	rcec2004s_preB1 308
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	1.02	187.30	49.27	964.51	AMPS	948.86 AMPS	rcec2004s_postB1 308
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	0.97	178.42	48.59	917.72	AMPS	948.86 AMPS	rcec2004s_preB1 309
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	0.98	181.64	47.70	933.60	AMPS	948.86 AMPS	rcec2004s_postB1 309
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	1.00	184.09	50.17	948.62	AMPS	948.86 AMPS	rcec2004s_preB1 319
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	1.02	187.30	49.27	964.51	AMPS	948.86 AMPS	rcec2004s_postB1 319
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	0.97	178.42	48.59	917.72	AMPS	948.86 AMPS	rcec2004s_preB1 320
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.77	0.98	181.64	47.70	933.60	AMPS	948.86 AMPS	rcec2004s_postB1 320
35602	"ZNKER J2"	115	30	36850	"KIFER "	115	30	"1 "	0.75	1.01	186.19	50.41	961.21	AMPS	948.86 AMPS	rcec2004s_preB1 326

APPENDIX B
AUTOCON OUTPUT

35602	"ZNKER J2"	115 30	36850	"KIFER "	115 30	"1 "	0.77	1.03	189.39	49.55	977.03 AMPS	948.86 AMPS	rcec2004s_postB1 326
35602	"ZNKER J2"	115 30	36850	"KIFER "	115 30	"1 "	0.75	0.98	180.52	48.84	930.20 AMPS	948.86 AMPS	rcec2004s_preB1 327
35602	"ZNKER J2"	115 30	36850	"KIFER "	115 30	"1 "	0.77	1.00	183.73	47.99	945.94 AMPS	948.86 AMPS	rcec2004s_postB1 327
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.98	179.27	41.68	903.61 AMPS	923.76 AMPS	rcec2004s_postB1 217
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.95	175.99	31.89	877.91 AMPS	923.76 AMPS	rcec2004s_postB1 218
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.96	176.95	40.99	889.66 AMPS	923.76 AMPS	rcec2004s_postB1 219
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.96	176.92	41.08	889.75 AMPS	923.76 AMPS	rcec2004s_postB1 223
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.97	177.71	42.00	892.54 AMPS	923.76 AMPS	rcec2004s_preB1 228
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.01	184.86	41.44	928.46 AMPS	923.76 AMPS	rcec2004s_postB1 228
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	1.06	194.66	44.43	979.27 AMPS	923.76 AMPS	rcec2004s_preB1 229
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.10	201.65	42.94	1012.25 AMPS	923.76 AMPS	rcec2004s_postB1 229
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.95	175.43	38.38	877.66 AMPS	923.76 AMPS	rcec2004s_postB1 230
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.98	179.92	46.07	909.11 AMPS	923.76 AMPS	rcec2004s_preB1 231
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.04	190.83	43.04	958.51 AMPS	923.76 AMPS	rcec2004s_postB1 231
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.98	180.05	46.06	909.71 AMPS	923.76 AMPS	rcec2004s_preB1 232
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.04	190.95	43.04	959.09 AMPS	923.76 AMPS	rcec2004s_postB1 232
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.96	174.29	47.78	884.59 AMPS	923.76 AMPS	rcec2004s_preB1 238
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.01	185.81	44.44	936.11 AMPS	923.76 AMPS	rcec2004s_postB1 238
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	1.49	273.61	61.27	1373.77 AMPS	923.76 AMPS	rcec2004s_preB1 251
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.54	285.08	58.38	1426.90 AMPS	923.76 AMPS	rcec2004s_postB1 251
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	1.43	262.53	58.42	1317.25 AMPS	923.76 AMPS	rcec2004s_preB1 252
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.48	273.99	55.54	1370.34 AMPS	923.76 AMPS	rcec2004s_postB1 252
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.96	177.50	36.57	887.06 AMPS	923.76 AMPS	rcec2004s_postB1 256
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35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	0.97	178.63	36.43	892.50 AMPS	923.76 AMPS	rcec2004s_postB1 257
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.97	177.67	44.07	896.23 AMPS	923.76 AMPS	rcec2004s_preB1 260
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.03	189.23	41.01	948.98 AMPS	923.76 AMPS	rcec2004s_postB1 260
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.96	176.38	44.12	890.09 AMPS	923.76 AMPS	rcec2004s_preB1 261
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.02	188.00	41.03	942.99 AMPS	923.76 AMPS	rcec2004s_postB1 261
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	0.96	175.91	44.23	887.98 AMPS	923.76 AMPS	rcec2004s_preB1 262
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.02	187.55	41.13	940.92 AMPS	923.76 AMPS	rcec2004s_postB1 262
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.07	1.16	161.04	42.29	813.93 AMPS	702.86 AMPS	rcec2004s_preB1 270
35612	"TRIMBLE "	115 30	35616	"SJ B E"	115 30	"1 "	1.15	1.24	173.93	38.63	871.82 AMPS	702.86 AMPS	rcec2004s_postB1 270

APPENDIX B
AUTOCON OUTPUT

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96   174.88   42.40   883.69 AMPS  923.76 AMPS   rcec2004s_postB1 280

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.04   191.01   44.32   960.28 AMPS  923.76 AMPS   rcec2004s_preB1 281
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.08   198.12   43.53   996.10 AMPS  923.76 AMPS   rcec2004s_postB1 281

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.99   181.52   45.42   916.89 AMPS  923.76 AMPS   rcec2004s_postB1 284

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.99   181.00   41.98   913.17 AMPS  923.76 AMPS   rcec2004s_postB1 286

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.97   178.66   41.18   898.85 AMPS  923.76 AMPS   rcec2004s_postB1 287

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.07   196.82   43.07   986.98 AMPS  923.76 AMPS   rcec2004s_preB1 289
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.11   203.96   42.67  1023.61 AMPS  923.76 AMPS   rcec2004s_postB1 289

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96   177.44   37.96   887.09 AMPS  923.76 AMPS   rcec2004s_postB1 290

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   0.97   175.83   47.49   891.81 AMPS  923.76 AMPS   rcec2004s_preB1 292
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.02   187.35   44.19   943.52 AMPS  923.76 AMPS   rcec2004s_postB1 292

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.51   277.44   63.45  1396.60 AMPS  923.76 AMPS   rcec2004s_preB1 293
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.57   288.92   60.74  1449.84 AMPS  923.76 AMPS   rcec2004s_postB1 293

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.45   266.35   60.28  1339.36 AMPS  923.76 AMPS   rcec2004s_preB1 294
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.51   277.80   57.54  1392.60 AMPS  923.76 AMPS   rcec2004s_postB1 294

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.98   179.27   41.68   903.61 AMPS  923.76 AMPS   rcec2004s_postB1 297

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96   176.95   40.99   889.66 AMPS  923.76 AMPS   rcec2004s_postB1 298

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96   176.92   41.08   889.75 AMPS  923.76 AMPS   rcec2004s_postB1 299

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.06   194.66   44.43   979.27 AMPS  923.76 AMPS   rcec2004s_preB1 301
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.10   201.65   42.94  1012.25 AMPS  923.76 AMPS   rcec2004s_postB1 301

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.95   175.43   38.38   877.66 AMPS  923.76 AMPS   rcec2004s_postB1 302

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   0.98   179.92   46.07   909.11 AMPS  923.76 AMPS   rcec2004s_preB1 303
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.04   190.83   43.04   958.51 AMPS  923.76 AMPS   rcec2004s_postB1 303

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   0.98   180.05   46.06   909.71 AMPS  923.76 AMPS   rcec2004s_preB1 304
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.04   190.95   43.04   959.09 AMPS  923.76 AMPS   rcec2004s_postB1 304

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   0.96   174.29   47.78   884.59 AMPS  923.76 AMPS   rcec2004s_preB1 306
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.01   185.81   44.44   936.11 AMPS  923.76 AMPS   rcec2004s_postB1 306

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.49   273.61   61.27  1373.77 AMPS  923.76 AMPS   rcec2004s_preB1 308
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.54   285.08   58.38  1426.90 AMPS  923.76 AMPS   rcec2004s_postB1 308
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APPENDIX B
AUTOCON OUTPUT

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35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    1.43    262.53    58.42  1317.25 AMPS  923.76 AMPS   rcec2004s_preB1 309
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.48    273.99    55.54  1370.34 AMPS  923.76 AMPS   rcec2004s_postB1 309

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35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    0.98    179.27    41.68   903.61 AMPS  923.76 AMPS   rcec2004s_postB1 311

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35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    0.96    176.92    41.08   889.75 AMPS  923.76 AMPS   rcec2004s_postB1 312

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    1.06    194.66    44.43   979.27 AMPS  923.76 AMPS   rcec2004s_preB1 313
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.10    201.65    42.94  1012.25 AMPS  923.76 AMPS   rcec2004s_postB1 313

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35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    0.95    175.43    38.38   877.66 AMPS  923.76 AMPS   rcec2004s_postB1 314

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    0.96    174.29    47.78   884.59 AMPS  923.76 AMPS   rcec2004s_preB1 317
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.01    185.81    44.44   936.11 AMPS  923.76 AMPS   rcec2004s_postB1 317

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    1.49    273.61    61.27  1373.77 AMPS  923.76 AMPS   rcec2004s_preB1 319
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.54    285.08    58.38  1426.90 AMPS  923.76 AMPS   rcec2004s_postB1 319

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    1.43    262.53    58.42  1317.25 AMPS  923.76 AMPS   rcec2004s_preB1 320
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.48    273.99    55.54  1370.34 AMPS  923.76 AMPS   rcec2004s_postB1 320

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35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    0.96    175.30    42.34   884.17 AMPS  923.76 AMPS   rcec2004s_postB1 323

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    1.55    284.81    63.08  1433.10 AMPS  923.76 AMPS   rcec2004s_preB1 326
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.61    296.21    60.24  1486.04 AMPS  923.76 AMPS   rcec2004s_postB1 326

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.07    1.49    273.72    60.21  1376.35 AMPS  923.76 AMPS   rcec2004s_preB1 327
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "    1.15    1.55    285.14    57.40  1429.27 AMPS  923.76 AMPS   rcec2004s_postB1 327

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    0.95    151.78    26.80   764.73 AMPS  803.27 AMPS   rcec2004s_preB1 217
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35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    1.60    254.71    41.13  1285.12 AMPS  803.27 AMPS   rcec2004s_preB1 251
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.71    1.51    238.09    47.03  1209.63 AMPS  803.27 AMPS   rcec2004s_postB1 251

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    1.52    242.06    37.85  1219.01 AMPS  803.27 AMPS   rcec2004s_preB1 252
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.71    1.42    225.40    43.85  1143.35 AMPS  803.27 AMPS   rcec2004s_postB1 252

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    0.96    152.50    26.61   768.29 AMPS  803.27 AMPS   rcec2004s_preB1 280
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    1.00    158.84    27.12   800.39 AMPS  803.27 AMPS   rcec2004s_preB1 286
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    0.96    153.64    22.92   769.40 AMPS  803.27 AMPS   rcec2004s_preB1 287
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    1.66    263.57    44.78  1334.31 AMPS  803.27 AMPS   rcec2004s_preB1 293
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.71    1.57    247.00    50.93  1259.46 AMPS  803.27 AMPS   rcec2004s_postB1 293

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    1.58    250.90    40.80  1267.04 AMPS  803.27 AMPS   rcec2004s_preB1 294
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.71    1.48    234.29    47.08  1192.07 AMPS  803.27 AMPS   rcec2004s_postB1 294

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "    0.81    0.95    151.78    26.80   764.73 AMPS  803.27 AMPS   rcec2004s_preB1 297
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APPENDIX B
AUTOCON OUTPUT

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35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	1.60	254.71	41.13	1285.12 AMPS	803.27 AMPS	rcec2004s_preB1	308
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.71	1.51	238.09	47.03	1209.63 AMPS	803.27 AMPS	rcec2004s_postB1	308
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	1.52	242.06	37.85	1219.01 AMPS	803.27 AMPS	rcec2004s_preB1	309
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.71	1.42	225.40	43.85	1143.35 AMPS	803.27 AMPS	rcec2004s_postB1	309
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	0.95	151.78	26.80	764.73 AMPS	803.27 AMPS	rcec2004s_preB1	311

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35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	1.60	254.71	41.13	1285.12 AMPS	803.27 AMPS	rcec2004s_preB1	319
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.71	1.51	238.09	47.03	1209.63 AMPS	803.27 AMPS	rcec2004s_postB1	319
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	1.52	242.06	37.85	1219.01 AMPS	803.27 AMPS	rcec2004s_preB1	320
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.71	1.42	225.40	43.85	1143.35 AMPS	803.27 AMPS	rcec2004s_postB1	320
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	1.56	246.93	38.93	1249.24 AMPS	803.27 AMPS	rcec2004s_preB1	326
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.71	1.46	230.39	44.88	1173.64 AMPS	803.27 AMPS	rcec2004s_postB1	326
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.81	1.47	234.28	35.65	1183.00 AMPS	803.27 AMPS	rcec2004s_preB1	327
35616	"SJ B E"	115	30	35617	"FMC JCT "	115	30	"1 "	0.71	1.38	217.68	41.62	1106.90 AMPS	803.27 AMPS	rcec2004s_postB1	327
35633	"EVRGRN 2"	115	30	35753	"EVERGREEN"	60	30	"1 "	0.75	1.01	90.79	34.85	97.25 MVA	96.00 MVA	rcec2004s_preB1	202
35633	"EVRGRN 2"	115	30	35753	"EVERGREEN"	60	30	"1 "	0.75	1.01	90.78	34.76	97.20 MVA	96.00 MVA	rcec2004s_postB1	202
35633	"EVRGRN 2"	115	30	35753	"EVERGREEN"	60	30	"1 "	0.75	1.01	90.78	34.79	97.22 MVA	96.00 MVA	rcec2004s_preB1	206
35633	"EVRGRN 2"	115	30	35753	"EVERGREEN"	60	30	"1 "	0.75	1.01	90.78	34.79	97.22 MVA	96.00 MVA	rcec2004s_postB1	206
35642	"MTCALF D"	115	30	35643	"MTCALF E"	115	30	"1 "	0.42	1.20	-485.22	-118.06	2397.90 AMPS	1998.13 AMPS	rcec2004s_preB1	260
35642	"MTCALF D"	115	30	35643	"MTCALF E"	115	30	"1 "	0.42	1.17	-470.40	-121.00	2332.40 AMPS	1998.13 AMPS	rcec2004s_postB1	260
35642	"MTCALF D"	115	30	35646	"MRGN HIL"	115	30	"1 "	0.34	1.01	192.81	56.52	961.44 AMPS	948.86 AMPS	rcec2004s_preB1	324
35642	"MTCALF D"	115	30	35646	"MRGN HIL"	115	30	"1 "	0.34	1.01	192.81	56.51	961.31 AMPS	948.86 AMPS	rcec2004s_postB1	324
35642	"MTCALF D"	115	30	35654	"MORGN J1"	115	30	"1 "	0.05	1.09	198.65	84.99	1037.10 AMPS	948.86 AMPS	rcec2004s_preB1	323
35642	"MTCALF D"	115	30	35654	"MORGN J1"	115	30	"1 "	0.05	1.09	198.64	84.97	1036.88 AMPS	948.86 AMPS	rcec2004s_postB1	323
35648	"LLAGAS "	115	30	35655	"MORGN J2"	115	30	"1 "	0.07	1.40	-189.06	-38.81	1039.49 AMPS	743.03 AMPS	rcec2004s_preB1	323
35648	"LLAGAS "	115	30	35655	"MORGN J2"	115	30	"1 "	0.07	1.40	-189.06	-38.81	1039.27 AMPS	743.03 AMPS	rcec2004s_postB1	323
35654	"MORGN J1"	115	30	35655	"MORGN J2"	115	30	"1 "	0.05	1.09	194.15	63.47	1038.40 AMPS	948.86 AMPS	rcec2004s_preB1	323
35654	"MORGN J1"	115	30	35655	"MORGN J2"	115	30	"1 "	0.05	1.09	194.16	63.47	1038.25 AMPS	948.86 AMPS	rcec2004s_postB1	323
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.13	1.13	-358.95	-95.32	1808.50 AMPS	1606.54 AMPS	rcec2004s_preB1	217
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.11	1.12	-357.98	-96.19	1806.92 AMPS	1606.54 AMPS	rcec2004s_postB1	217
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.13	1.10	-351.29	-90.25	1761.83 AMPS	1606.54 AMPS	rcec2004s_preB1	219
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.11	1.09	-348.16	-92.25	1751.49 AMPS	1606.54 AMPS	rcec2004s_postB1	219
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.13	1.10	-351.32	-90.54	1762.55 AMPS	1606.54 AMPS	rcec2004s_preB1	223
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.11	1.09	-348.08	-92.58	1751.78 AMPS	1606.54 AMPS	rcec2004s_postB1	223
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.13	1.16	-374.29	-88.21	1866.20 AMPS	1606.54 AMPS	rcec2004s_preB1	226
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.11	1.16	-374.53	-89.94	1871.37 AMPS	1606.54 AMPS	rcec2004s_postB1	226
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.13	1.08	-349.70	-78.98	1742.63 AMPS	1606.54 AMPS	rcec2004s_preB1	227
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	1.11	1.06	-338.46	-82.87	1695.54 AMPS	1606.54 AMPS	rcec2004s_postB1	227

APPENDIX B
AUTOCON OUTPUT

35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.07	-347.08	-74.15	1725.03 AMPS	1606.54 AMPS	rcec2004s_preB1	249
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.06	-343.12	-76.46	1710.22 AMPS	1606.54 AMPS	rcec2004s_postB1	249
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.14	-369.60	-78.53	1834.92 AMPS	1606.54 AMPS	rcec2004s_preB1	250
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.13	-366.09	-80.81	1822.47 AMPS	1606.54 AMPS	rcec2004s_postB1	250
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.11	-354.10	-95.82	1786.80 AMPS	1606.54 AMPS	rcec2004s_preB1	280
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.11	-353.12	-96.59	1785.07 AMPS	1606.54 AMPS	rcec2004s_postB1	280
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.15	-366.21	-96.17	1845.79 AMPS	1606.54 AMPS	rcec2004s_preB1	286
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.15	-365.23	-97.30	1844.57 AMPS	1606.54 AMPS	rcec2004s_postB1	286
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.12	-358.56	-90.61	1798.16 AMPS	1606.54 AMPS	rcec2004s_preB1	287
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.11	-355.31	-92.96	1787.79 AMPS	1606.54 AMPS	rcec2004s_postB1	287
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.11	-358.69	-78.65	1786.03 AMPS	1606.54 AMPS	rcec2004s_preB1	288
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=														
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.13	-358.95	-95.32	1808.50 AMPS	1606.54 AMPS	rcec2004s_preB1	297
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.12	-357.98	-96.19	1806.92 AMPS	1606.54 AMPS	rcec2004s_postB1	297
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.10	-351.29	-90.25	1761.83 AMPS	1606.54 AMPS	rcec2004s_preB1	298
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.09	-348.16	-92.25	1751.49 AMPS	1606.54 AMPS	rcec2004s_postB1	298
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.10	-351.32	-90.54	1762.55 AMPS	1606.54 AMPS	rcec2004s_preB1	299
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.09	-348.08	-92.58	1751.78 AMPS	1606.54 AMPS	rcec2004s_postB1	299
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.16	-374.29	-88.21	1866.20 AMPS	1606.54 AMPS	rcec2004s_preB1	300
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.16	-374.53	-89.94	1871.37 AMPS	1606.54 AMPS	rcec2004s_postB1	300
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.07	-347.08	-74.15	1725.03 AMPS	1606.54 AMPS	rcec2004s_preB1	307
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.06	-343.12	-76.46	1710.22 AMPS	1606.54 AMPS	rcec2004s_postB1	307
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.13	-358.95	-95.32	1808.50 AMPS	1606.54 AMPS	rcec2004s_preB1	311
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.12	-357.98	-96.19	1806.92 AMPS	1606.54 AMPS	rcec2004s_postB1	311
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.13	1.10	-351.32	-90.54	1762.55 AMPS	1606.54 AMPS	rcec2004s_preB1	312
35658	"LS ESTRS"	115 30	35659	"NORTECH "	115 30	"1 "	1.11	1.09	-348.08	-92.58	1751.78 AMPS	1606.54 AMPS	rcec2004s_postB1	312
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	0.98	303.05	74.67	1513.80 AMPS	1541.27 AMPS	rcec2004s_preB1	154
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.92	0.97	298.96	76.76	1498.63 AMPS	1541.27 AMPS	rcec2004s_postB1	154
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	0.95	293.24	64.57	1464.50 AMPS	1541.27 AMPS	rcec2004s_preB1	195
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=														
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	0.95	294.13	64.34	1468.74 AMPS	1541.27 AMPS	rcec2004s_preB1	196
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=														
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	1.08	330.56	88.85	1666.81 AMPS	1541.27 AMPS	rcec2004s_preB1	217
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.92	1.08	329.59	89.73	1665.10 AMPS	1541.27 AMPS	rcec2004s_postB1	217
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	1.05	322.90	83.78	1620.45 AMPS	1541.27 AMPS	rcec2004s_preB1	219
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.92	1.04	319.77	85.78	1609.99 AMPS	1541.27 AMPS	rcec2004s_postB1	219
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	1.05	322.93	84.07	1621.16 AMPS	1541.27 AMPS	rcec2004s_preB1	223
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.92	1.04	319.69	86.11	1610.27 AMPS	1541.27 AMPS	rcec2004s_postB1	223

APPENDIX B
AUTOCON OUTPUT

```
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.12   345.90   81.74  1724.90 AMPS 1541.27 AMPS   rcec2004s_preB1 226
35659 "NORTECH "  115 30  36850."KIFER    "  115 30  "1 "   0.92   1.12   346.14   83.48  1729.92 AMPS 1541.27 AMPS   rcec2004s_postB1 226

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.04   321.31   72.51  1601.11 AMPS 1541.27 AMPS   rcec2004s_preB1 227
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   1.01   310.07   76.40  1553.88 AMPS 1541.27 AMPS   rcec2004s_postB1 227

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   294.01   72.23  1466.23 AMPS 1541.27 AMPS   rcec2004s_preB1 228
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.96   296.18   72.55  1480.88 AMPS 1541.27 AMPS   rcec2004s_preB1 229
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   294.24   72.67  1469.28 AMPS 1541.27 AMPS   rcec2004s_preB1 231
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   294.26   72.67  1469.37 AMPS 1541.27 AMPS   rcec2004s_preB1 232
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.96   295.49   63.60  1472.39 AMPS 1541.27 AMPS   rcec2004s_preB1 233
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   293.54   72.87  1466.16 AMPS 1541.27 AMPS   rcec2004s_preB1 238
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   294.33   63.00  1465.45 AMPS 1541.27 AMPS   rcec2004s_preB1 247
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.96   298.25   67.07  1481.02 AMPS 1541.27 AMPS   rcec2004s_preB1 248
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   0.95   293.90   69.23  1464.70 AMPS 1541.27 AMPS   rcec2004s_postB1 248

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.03   318.70   67.68  1583.52 AMPS 1541.27 AMPS   rcec2004s_preB1 249
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   1.02   314.74   69.99  1568.58 AMPS 1541.27 AMPS   rcec2004s_postB1 249

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.10   341.21   72.06  1693.54 AMPS 1541.27 AMPS   rcec2004s_preB1 250
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   1.09   337.70   74.34  1680.93 AMPS 1541.27 AMPS   rcec2004s_postB1 250

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.96   296.94   72.40  1482.33 AMPS 1541.27 AMPS   rcec2004s_preB1 260
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   0.95   292.32   74.88  1465.02 AMPS 1541.27 AMPS   rcec2004s_postB1 260

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.96   296.72   72.41  1481.17 AMPS 1541.27 AMPS   rcec2004s_preB1 261
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.96   296.61   72.44  1480.69 AMPS 1541.27 AMPS   rcec2004s_preB1 262
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   295.60   61.34  1468.46 AMPS 1541.27 AMPS   rcec2004s_preB1 267
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   0.95   295.86   61.42  1469.86 AMPS 1541.27 AMPS   rcec2004s_preB1 276
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.07   325.71   89.35  1645.10 AMPS 1541.27 AMPS   rcec2004s_preB1 280
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   1.07   324.73   90.12  1643.25 AMPS 1541.27 AMPS   rcec2004s_postB1 280

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.11   337.82   89.70  1703.93 AMPS 1541.27 AMPS   rcec2004s_preB1 286
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.92   1.10   336.84   90.82  1702.57 AMPS 1541.27 AMPS   rcec2004s_postB1 286

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.93   1.07   330.17   84.14  1656.63 AMPS 1541.27 AMPS   rcec2004s_preB1 287
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APPENDIX B
AUTOCON OUTPUT

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35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.07   326.92   86.49  1646.14 AMPS 1541.27 AMPS   rcec2004s_postB1 287

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.07   330.30   72.18  1644.42 AMPS 1541.27 AMPS   rcec2004s_preB1 288
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.98   302.36   71.37  1507.15 AMPS 1541.27 AMPS   rcec2004s_preB1 289
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   0.97   297.48   74.70  1491.84 AMPS 1541.27 AMPS   rcec2004s_postB1 289

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   297.82   61.71  1481.30 AMPS 1541.27 AMPS   rcec2004s_preB1 290
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   0.95   294.25   73.50  1469.67 AMPS 1541.27 AMPS   rcec2004s_postB1 290

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   296.42   62.01  1474.95 AMPS 1541.27 AMPS   rcec2004s_preB1 291
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.97   299.83   71.86  1495.15 AMPS 1541.27 AMPS   rcec2004s_preB1 292
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   0.96   295.33   74.48  1478.59 AMPS 1541.27 AMPS   rcec2004s_postB1 292

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.08   330.56   88.85  1666.81 AMPS 1541.27 AMPS   rcec2004s_preB1 297
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.08   329.59   89.73  1665.10 AMPS 1541.27 AMPS   rcec2004s_postB1 297

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.05   322.90   83.78  1620.45 AMPS 1541.27 AMPS   rcec2004s_preB1 298
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.04   319.77   85.78  1609.99 AMPS 1541.27 AMPS   rcec2004s_postB1 298

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.05   322.93   84.07  1621.16 AMPS 1541.27 AMPS   rcec2004s_preB1 299
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.04   319.69   86.11  1610.27 AMPS 1541.27 AMPS   rcec2004s_postB1 299

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.12   345.90   81.74  1724.90 AMPS 1541.27 AMPS   rcec2004s_preB1 300
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.12   346.14   83.48  1729.92 AMPS 1541.27 AMPS   rcec2004s_postB1 300

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   296.18   72.55  1480.88 AMPS 1541.27 AMPS   rcec2004s_preB1 301
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.95   294.24   72.67  1469.28 AMPS 1541.27 AMPS   rcec2004s_preB1 303
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.95   294.26   72.67  1469.37 AMPS 1541.27 AMPS   rcec2004s_preB1 304
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.95   293.54   72.87  1466.16 AMPS 1541.27 AMPS   rcec2004s_preB1 306
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.03   318.70   67.68  1583.52 AMPS 1541.27 AMPS   rcec2004s_preB1 307
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.02   314.74   69.99  1568.58 AMPS 1541.27 AMPS   rcec2004s_postB1 307

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.08   330.56   88.85  1666.81 AMPS 1541.27 AMPS   rcec2004s_preB1 311
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.08   329.59   89.73  1665.10 AMPS 1541.27 AMPS   rcec2004s_postB1 311

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.05   322.93   84.07  1621.16 AMPS 1541.27 AMPS   rcec2004s_preB1 312
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.04   319.69   86.11  1610.27 AMPS 1541.27 AMPS   rcec2004s_postB1 312

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   296.18   72.55  1480.88 AMPS 1541.27 AMPS   rcec2004s_preB1 313
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   295.49   63.60  1472.39 AMPS 1541.27 AMPS   rcec2004s_preB1 315
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.95   293.54   72.87  1466.16 AMPS 1541.27 AMPS   rcec2004s_preB1 317
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=
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APPENDIX B
AUTOCON OUTPUT

35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	0.96	298.25	67.07	1481.02 AMPS	1541.27 AMPS	rcec2004s_preB1	318
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.92	0.95	293.90	69.23	1464.70 AMPS	1541.27 AMPS	rcec2004s_postB1	318
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	0.95	292.91	72.61	1464.37 AMPS	1541.27 AMPS	rcec2004s_preB1	323
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=														
35659	"NORTECH "	115 30	36850	"KIFER "	115 30	"1 "	0.93	0.96	296.50	59.30	1472.02 AMPS	1541.27 AMPS	rcec2004s_preB1	82
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=														
35756	"SENTER J"	60 30	35757	"ALMADEN "	60 30	"1 "	0.39	1.01	52.80	13.79	503.02 AMPS	500.37 AMPS	rcec2004s_preB1	202
35756	"SENTER J"	60 30	35757	"ALMADEN "	60 30	"1 "	0.39	1.00	52.79	13.76	501.28 AMPS	500.37 AMPS	rcec2004s_postB1	202
35756	"SENTER J"	60 30	35757	"ALMADEN "	60 30	"1 "	0.39	1.00	52.79	13.77	501.83 AMPS	500.37 AMPS	rcec2004s_preB1	206
35756	"SENTER J"	60 30	35757	"ALMADEN "	60 30	"1 "	0.39	1.00	52.79	13.77	501.98 AMPS	500.37 AMPS	rcec2004s_postB1	206

"=1=1=1=1=1=1…" and "=2=2=2=2=2=2…" denotes no violation on either the before case or after case, respectively, for the given outage. Violations are those circuits, transformers, etc. that have a normal or emergency loading of .95 per unit or greater during a CAISO Category A or B contingency.

APPENDIX B
AUTOCON OUTPUT

Summer 2004 Peak Category C Autocon Comparison File

```
--------FROM bus--------  ---------TO bus---------       (rate 1) (rate 2)      --------- outage ---------      (Rate 2)
 bus ---name--- -kv- ar     bus ---name--- -kv- ar  ID        base   outage        MW     MVAR       FLOW          RATING

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "    0.55     1.26     109.35   103.70   150.70 MVA   120.00 MVA      rcec2004s_preC    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "    0.55     1.26     109.35   103.70   150.70 MVA   120.00 MVA      rcec2004s_preC    3
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "    0.55     1.26     109.32   103.63   150.64 MVA   120.00 MVA      rcec2004s_postC   3

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "    0.55     1.26     109.35   103.70   150.70 MVA   120.00 MVA      rcec2004s_preC   43
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "    0.55     1.26     109.32   103.63   150.64 MVA   120.00 MVA      rcec2004s_postC  43

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "    0.55     1.26     109.35   103.70   150.70 MVA   120.00 MVA      rcec2004s_preC   45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"    0.55     1.02     108.92    97.75   146.35 MVA   144.00 MVA      rcec2004s_preC    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"    0.55     1.02     108.92    97.76   146.35 MVA   144.00 MVA      rcec2004s_preC    3
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"    0.55     1.02     108.89    97.70   146.29 MVA   144.00 MVA      rcec2004s_postC   3

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"    0.55     1.02     108.92    97.76   146.35 MVA   144.00 MVA      rcec2004s_preC   43
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"    0.55     1.02     108.89    97.70   146.29 MVA   144.00 MVA      rcec2004s_postC  43

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2A"    0.55     1.02     108.92    97.75   146.35 MVA   144.00 MVA      rcec2004s_preC   45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "    0.53     1.00     359.74   350.95   502.58 MVA   504.00 MVA      rcec2004s_preC    2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "    0.53     1.00     359.75   350.96   502.58 MVA   504.00 MVA      rcec2004s_preC    3
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "    0.53     1.00     359.66   350.74   502.37 MVA   504.00 MVA      rcec2004s_postC   3

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "    0.53     1.00     359.75   350.96   502.58 MVA   504.00 MVA      rcec2004s_preC   43
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "    0.53     1.00     359.66   350.74   502.37 MVA   504.00 MVA      rcec2004s_postC  43

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "3 "    0.53     1.00     359.74   350.95   502.58 MVA   504.00 MVA      rcec2004s_preC   45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "    0.81     1.08     468.71  -144.18  1221.03 AMPS 1127.09 AMPS     rcec2004s_postC  26

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "    0.81     1.08     468.71  -144.18  1221.03 AMPS 1127.09 AMPS     rcec2004s_postC  59

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "    0.81     1.08     468.71  -144.18  1221.03 AMPS 1127.09 AMPS     rcec2004s_postC  86

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25     1.14     163.94     7.06   164.09 MVA   144.00 MVA      rcec2004s_postC  10

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25     1.10     157.79     3.00   157.82 MVA   144.00 MVA      rcec2004s_postC  23
```

APPENDIX B
AUTOCON OUTPUT

```
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25    1.14    164.81     3.02   164.84 MVA   144.00 MVA    rcec2004s_postC  25

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25    1.20    172.14     5.57   172.23 MVA   144.00 MVA    rcec2004s_postC  60

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25    1.14    164.81     3.02   164.84 MVA   144.00 MVA    rcec2004s_postC  85

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    0.96    1.09    156.36     2.78   156.39 MVA   144.00 MVA    rcec2004s_preC  92
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25    1.67    240.07     3.39   240.09 MVA   144.00 MVA    rcec2004s_postC  92

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25    1.20    172.14     5.57   172.23 MVA   144.00 MVA    rcec2004s_postC  94

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    1.25    1.14    163.94     7.06   164.09 MVA   144.00 MVA    rcec2004s_postC  95

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.13    162.89     7.09   163.04 MVA   144.00 MVA    rcec2004s_postC  10

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.09    156.78     3.05   156.81 MVA   144.00 MVA    rcec2004s_postC  23

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.14    163.75     3.07   163.78 MVA   144.00 MVA    rcec2004s_postC  25

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.19    171.04     5.61   171.13 MVA   144.00 MVA    rcec2004s_postC  60

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.14    163.75     3.07   163.78 MVA   144.00 MVA    rcec2004s_postC  85

30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    0.95    1.08    155.36     2.84   155.39 MVA   144.00 MVA    rcec2004s_preC  92
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.66    238.53     3.46   238.55 MVA   144.00 MVA    rcec2004s_postC  92

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.19    171.04     5.61   171.13 MVA   144.00 MVA    rcec2004s_postC  94

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "    1.24    1.13    162.89     7.09   163.04 MVA   144.00 MVA    rcec2004s_postC  95

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "    0.93    1.02    477.39   153.91   501.59 MVA   492.00 MVA    rcec2004s_postC  60

30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "    0.92    1.00    465.11   165.81   493.78 MVA   492.00 MVA    rcec2004s_preC  74
30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "    0.93    1.06    494.59   159.84   519.78 MVA   492.00 MVA    rcec2004s_postC  74

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "    0.93    0.98    450.65   165.22   479.99 MVA   492.00 MVA    rcec2004s_postC  75

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30703 "RAVENSWD"  230 30  33315 "RAVENSWD"  115 30  "1 "    0.93    1.02    477.39   153.91   501.59 MVA   492.00 MVA    rcec2004s_postC  94

31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "    0.50    6.96   -135.57  -173.21  2632.86 AMPS  378.04 AMPS   rcec2004s_preC   2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=
```

APPENDIX B
AUTOCON OUTPUT

```
31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.50   6.96  -135.57  -173.21  2632.89 AMPS  378.04 AMPS  rcec2004s_preC   3
31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.50   6.96  -135.51  -173.06  2631.95 AMPS  378.04 AMPS  rcec2004s_postC  3

31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.50   6.96  -135.57  -173.21  2632.89 AMPS  378.04 AMPS  rcec2004s_preC  43
31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.50   6.96  -135.51  -173.06  2631.95 AMPS  378.04 AMPS  rcec2004s_postC 43

31996 "HALE1    "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.50   6.96  -135.57  -173.21  2632.86 AMPS  378.04 AMPS  rcec2004s_preC  45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35   6.65   126.06   168.00  2514.10 AMPS  378.04 AMPS  rcec2004s_preC   2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35   6.65   126.06   168.00  2514.13 AMPS  378.04 AMPS  rcec2004s_preC   3
31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35   6.65   126.00   167.85  2513.14 AMPS  378.04 AMPS  rcec2004s_postC  3

31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35   6.65   126.06   168.00  2514.13 AMPS  378.04 AMPS  rcec2004s_preC  43
31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35   6.65   126.00   167.85  2513.14 AMPS  378.04 AMPS  rcec2004s_postC 43

31996 "HALE1    "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.35   6.65   126.06   168.00  2514.10 AMPS  378.04 AMPS  rcec2004s_preC  45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42   3.66   282.20   447.97  2704.52 AMPS  739.01 AMPS  rcec2004s_preC   2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42   3.66   282.20   447.98  2704.55 AMPS  739.01 AMPS  rcec2004s_preC   3
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42   3.66   282.06   447.64  2703.65 AMPS  739.01 AMPS  rcec2004s_postC  3

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42   3.66   282.20   447.98  2704.55 AMPS  739.01 AMPS  rcec2004s_preC  43
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42   3.66   282.06   447.64  2703.65 AMPS  739.01 AMPS  rcec2004s_postC 43

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.42   3.66   282.20   447.97  2704.52 AMPS  739.01 AMPS  rcec2004s_preC  45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00   4.21   -40.04    -4.50  2027.54 AMPS  481.96 AMPS  rcec2004s_preC   2
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00   4.21   -40.04    -4.50  2027.58 AMPS  481.96 AMPS  rcec2004s_preC   3
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00   4.20   -40.04    -4.50  2026.38 AMPS  481.96 AMPS  rcec2004s_postC  3

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00   4.21   -40.04    -4.50  2027.58 AMPS  481.96 AMPS  rcec2004s_preC  43
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00   4.20   -40.04    -4.50  2026.38 AMPS  481.96 AMPS  rcec2004s_postC 43

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00   4.21   -40.04    -4.50  2027.54 AMPS  481.96 AMPS  rcec2004s_preC  45
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

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32754 "OLEUM    "  115 30  33016 "ALHAMTP2"  115 30  "1 "   0.49   1.06    86.40    -7.62   431.79 AMPS  406.66 AMPS  rcec2004s_postC 23

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
32754 "OLEUM    "  115 30  33016 "ALHAMTP2"  115 30  "1 "   0.49   0.97    79.46    -5.80   396.45 AMPS  406.66 AMPS  rcec2004s_postC 24

32786 "OAK C115"  115 30  32790 "STATIN X"  115 30  "1 "   0.65   0.97  -154.00    22.66   769.14 AMPS  790.22 AMPS  rcec2004s_preC  12
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

32786 "OAK C115"  115 30  32790 "STATIN X"  115 30  "1 "   0.65   0.97  -154.00    22.66   769.14 AMPS  790.22 AMPS  rcec2004s_preC  47
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

32950 "PITSBURG"  115 30  32970 "CLAYTN  "  115 30  "1 "   0.55   1.20   387.07    86.50  1921.17 AMPS 1600.01 AMPS  rcec2004s_preC  38
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APPENDIX B
AUTOCON OUTPUT

32950	"PITSBURG"	115	30	32970	"CLAYTN "	115	30	"1 "	0.56	1.23	395.71	87.98	1965.38 AMPS	1600.01 AMPS	rcec2004s_postC	38
32974	"LAKEWD-M"	115	30	32976	"LK_REACT"	115	30	"9 "	0.14	1.08	-164.85	-21.05	863.70 AMPS	798.25 AMPS	rcec2004s_preC	42
32974	"LAKEWD-M"	115	30	32976	"LK_REACT"	115	30	"9 "	0.20	1.08	-164.85	-21.05	864.31 AMPS	798.25 AMPS	rcec2004s_postC	42
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32992	"BOLLMAN2"	115	30	33043	"IMHOFF_2"	115	30	"1 "	0.66	1.03	-132.30	2.17	655.33 AMPS	638.10 AMPS	rcec2004s_postC	23
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=																
32992	"BOLLMAN2"	115	30	33043	"IMHOFF_2"	115	30	"1 "	0.66	0.97	-124.74	0.42	617.52 AMPS	638.10 AMPS	rcec2004s_postC	24
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.65	0.99	206.80	-32.47	1034.12 AMPS	1044.25 AMPS	rcec2004s_preC	25
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.74	1.11	231.58	-38.55	1160.90 AMPS	1044.25 AMPS	rcec2004s_postC	25
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.65	0.95	201.81	-23.02	995.07 AMPS	1044.25 AMPS	rcec2004s_preC	33
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.74	1.07	225.44	-28.53	1113.98 AMPS	1044.25 AMPS	rcec2004s_postC	33
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.65	0.95	201.81	-23.02	995.07 AMPS	1044.25 AMPS	rcec2004s_preC	4
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.74	1.07	225.44	-28.53	1113.98 AMPS	1044.25 AMPS	rcec2004s_postC	4
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33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.74	1.05	219.50	-31.58	1097.80 AMPS	1044.25 AMPS	rcec2004s_postC	42
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.65	0.99	206.80	-32.47	1034.12 AMPS	1044.25 AMPS	rcec2004s_preC	85
33010	"SOBRANTE"	115	30	33048	"MORAGAJT"	115	30	"1 "	0.74	1.11	231.58	-38.55	1160.90 AMPS	1044.25 AMPS	rcec2004s_postC	85
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"1 "	0.64	1.21	131.83	12.43	651.21 AMPS	540.20 AMPS	rcec2004s_preC	51
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"1 "	0.64	1.21	131.85	12.56	652.47 AMPS	540.20 AMPS	rcec2004s_postC	51
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"1 "	0.64	1.21	131.83	12.43	651.21 AMPS	540.20 AMPS	rcec2004s_preC	97
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"1 "	0.64	1.21	131.85	12.56	652.47 AMPS	540.20 AMPS	rcec2004s_postC	97
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"2 "	0.65	1.22	133.17	12.46	657.79 AMPS	540.20 AMPS	rcec2004s_preC	51
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"2 "	0.65	1.22	133.19	12.59	659.06 AMPS	540.20 AMPS	rcec2004s_postC	51
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"2 "	0.65	1.22	133.17	12.46	657.79 AMPS	540.20 AMPS	rcec2004s_preC	97
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"2 "	0.65	1.22	133.19	12.59	659.06 AMPS	540.20 AMPS	rcec2004s_postC	97
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"3 "	0.52	1.08	155.11	14.15	766.57 AMPS	708.89 AMPS	rcec2004s_preC	50
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"3 "	0.52	1.08	155.10	14.09	765.89 AMPS	708.89 AMPS	rcec2004s_postC	50
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"3 "	0.52	1.08	155.11	14.15	766.57 AMPS	708.89 AMPS	rcec2004s_preC	96
33020	"MORAGA "	115	30	35101	"SN LNDRO"	115	30	"3 "	0.52	1.08	155.10	14.09	765.89 AMPS	708.89 AMPS	rcec2004s_postC	96
33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.51	1.03	38.55	14.18	41.08 MVA	40.00 MVA	rcec2004s_preC	110
33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.62	1.07	40.15	14.58	42.72 MVA	40.00 MVA	rcec2004s_postC	110
33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.51	1.03	38.55	14.18	41.08 MVA	40.00 MVA	rcec2004s_preC	62
33208	"MARTIN C"	115	30	33209	"MARTIN "	60	30	"6 "	0.62	1.07	40.15	14.58	42.72 MVA	40.00 MVA	rcec2004s_postC	62
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-233.68	69.73	1175.83 AMPS	1144.16 AMPS	rcec2004s_preC	54
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.03	-233.54	67.58	1174.79 AMPS	1144.16 AMPS	rcec2004s_postC	54
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.99	-223.62	68.18	1127.47 AMPS	1144.16 AMPS	rcec2004s_preC	57
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	0.98	-223.47	66.23	1126.59 AMPS	1144.16 AMPS	rcec2004s_postC	57
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.54	-347.53	111.75	1764.55 AMPS	1144.16 AMPS	rcec2004s_preC	58
33208	"MARTIN C"	115	30	33220	"GGPP D "	115	30	"5 "	0.88	1.54	-347.45	108.11	1762.90 AMPS	1144.16 AMPS	rcec2004s_postC	58

APPENDIX B
AUTOCON OUTPUT

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33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.03   -233.68    69.73  1175.83 AMPS 1144.16 AMPS   rcec2004s_preC  65
33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.03   -233.54    67.58  1174.79 AMPS 1144.16 AMPS   rcec2004s_postC  65

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   0.99   -223.62    68.18  1127.47 AMPS 1144.16 AMPS   rcec2004s_preC  68
33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   0.98   -223.47    66.23  1126.59 AMPS 1144.16 AMPS   rcec2004s_postC  68

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.54   -347.53   111.75  1764.55 AMPS 1144.16 AMPS   rcec2004s_preC  69
33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   1.54   -347.45   108.11  1762.90 AMPS 1144.16 AMPS   rcec2004s_postC  69

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   0.97   -218.94    71.08  1110.54 AMPS 1144.16 AMPS   rcec2004s_preC  72
33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "   0.88   0.97   -218.61    70.04  1109.82 AMPS 1144.16 AMPS   rcec2004s_postC  72

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.01    131.14    -1.89   641.79 AMPS  632.58 AMPS   rcec2004s_postC  25

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.03    133.57    -2.48   652.68 AMPS  632.58 AMPS   rcec2004s_postC  60

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.03    133.54     9.38   649.88 AMPS  632.58 AMPS   rcec2004s_postC  61

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.03    133.76    -1.04   651.52 AMPS  632.58 AMPS   rcec2004s_postC  73

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.10    142.39     3.17   696.64 AMPS  632.58 AMPS   rcec2004s_postC  76

33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.03   1.16    146.04    35.99   733.39 AMPS  632.58 AMPS   rcec2004s_preC  78
33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.21    152.99    35.27   768.54 AMPS  632.58 AMPS   rcec2004s_postC  78

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.01    131.14    -1.89   641.79 AMPS  632.58 AMPS   rcec2004s_postC  85

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33310 "SANMATEO"  115 30  33312 "BELMONT "  115 30  "1 "   1.22   1.03    133.57    -2.48   652.68 AMPS  632.58 AMPS   rcec2004s_postC  94

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33310 "SANMATEO"  115 30  33315 "RAVENSWD"  115 30  "1 "   0.86   1.17    123.53   -22.15   613.02 AMPS  522.13 AMPS   rcec2004s_postC  75

33315 "RAVENSWD"  115 30  33316 "CLY LNDG"  115 30  "1 "   0.77   1.67    255.21    96.86  1335.27 AMPS  798.75 AMPS   rcec2004s_preC  81
33315 "RAVENSWD"  115 30  33316 "CLY LNDG"  115 30  "1 "   0.78   1.68    255.91    95.74  1340.78 AMPS  798.75 AMPS   rcec2004s_postC  81

33315 "RAVENSWD"  115 30  38028 "PLO ALTO"  115 30  "2 "   0.59   1.40    212.81    84.56  1120.33 AMPS  798.75 AMPS   rcec2004s_preC  82
33315 "RAVENSWD"  115 30  38028 "PLO ALTO"  115 30  "2 "   0.59   1.41    212.81    83.82  1122.58 AMPS  798.75 AMPS   rcec2004s_postC  82

33316 "CLY LNDG"  115 30  38028 "PLO ALTO"  115 30  "1 "   0.39   1.41    212.28    80.66  1123.03 AMPS  798.75 AMPS   rcec2004s_preC  81
33316 "CLY LNDG"  115 30  38028 "PLO ALTO"  115 30  "1 "   0.39   1.41    212.29    79.93  1125.32 AMPS  798.75 AMPS   rcec2004s_postC  81

33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "   0.81   0.99     58.79    -2.99   549.01 AMPS  557.14 AMPS   rcec2004s_preC  74
33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "   0.92   1.15     68.08    -5.52   639.13 AMPS  557.14 AMPS   rcec2004s_postC  74

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33357 "SAN MATO"   60 30  33364 "ORACLE60"   60 30  "1 "   0.92   0.97     57.65    -1.76   540.29 AMPS  557.14 AMPS   rcec2004s_postC  79

33381 "GLENWOOD"   60 30  33384 "MNLO JCT"   60 30  "1 "   0.14   1.14     56.14    16.63   565.98 AMPS  498.45 AMPS   rcec2004s_preC 110
33381 "GLENWOOD"   60 30  33384 "MNLO JCT"   60 30  "1 "   0.16   1.11     54.59    17.02   554.90 AMPS  498.45 AMPS   rcec2004s_postC 110
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APPENDIX B
AUTOCON OUTPUT

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33381 "GLENWOOD"   60 30  33384 "MNLO JCT"   60 30  "1 "   0.14   1.14    56.14    16.63   565.98 AMPS  498.45 AMPS   rcec2004s_preC  62
33381 "GLENWOOD"   60 30  33384 "MNLO JCT"   60 30  "1 "   0.16   1.11    54.59    17.02   554.90 AMPS  498.45 AMPS   rcec2004s_postC  62

33383 "MENLO    "  60 30  33390 "MENLO G "   60 30  "1 "   0.23   1.05   -60.72   -19.55   628.42 AMPS  596.60 AMPS   rcec2004s_preC 110
33383 "MENLO    "  60 30  33390 "MENLO G "   60 30  "1 "   0.31   1.04   -59.21   -19.99   618.01 AMPS  596.60 AMPS   rcec2004s_postC 110

33383 "MENLO    "  60 30  33390 "MENLO G "   60 30  "1 "   0.23   1.05   -60.72   -19.55   628.42 AMPS  596.60 AMPS   rcec2004s_preC  62
33383 "MENLO    "  60 30  33390 "MENLO G "   60 30  "1 "   0.31   1.04   -59.21   -19.99   618.01 AMPS  596.60 AMPS   rcec2004s_postC  62

33384 "MNLO JCT"   60 30  33390 "MENLO G "   60 30  "1 "   0.35   1.30    75.29    23.42   773.31 AMPS  596.60 AMPS   rcec2004s_preC 110
33384 "MNLO JCT"   60 30  33390 "MENLO G "   60 30  "1 "   0.51   1.28    73.77    23.84   763.21 AMPS  596.60 AMPS   rcec2004s_postC 110

33384 "MNLO JCT"   60 30  33390 "MENLO G "   60 30  "1 "   0.35   1.30    75.29    23.42   773.31 AMPS  596.60 AMPS   rcec2004s_preC  62
33384 "MNLO JCT"   60 30  33390 "MENLO G "   60 30  "1 "   0.51   1.28    73.77    23.84   763.21 AMPS  596.60 AMPS   rcec2004s_postC  62

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35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.80   1.65   301.26  -110.34  1561.28 AMPS  948.86 AMPS   rcec2004s_postC  92

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35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "   0.80   0.96   181.96   -54.09   909.94 AMPS  948.86 AMPS   rcec2004s_postC  99

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35107 "DUMBARTN"  115 30  35120 "NEWARK D"  115 30  "1 "   0.57   1.28   188.55  -164.29  1217.66 AMPS  948.86 AMPS   rcec2004s_postC  92

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35120 "NEWARK D"  115 30  36852 "SCOTT    " 115 30  "1 "   0.96   0.98   184.49    65.24   929.16 AMPS  948.86 AMPS   rcec2004s_postC 108

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35120 "NEWARK D"  115 30  36852 "SCOTT    " 115 30  "1 "   0.96   1.01   190.68    63.97   956.31 AMPS  948.86 AMPS   rcec2004s_postC 127

35120 "NEWARK D"  115 30  36852 "SCOTT    " 115 30  "1 "   0.90   0.97   179.61    73.46   918.14 AMPS  948.86 AMPS   rcec2004s_preC 137
35120 "NEWARK D"  115 30  36852 "SCOTT    " 115 30  "1 "   0.96   1.02   192.90    68.73   972.09 AMPS  948.86 AMPS   rcec2004s_postC 137

35120 "NEWARK D"  115 30  36852 "SCOTT    " 115 30  "1 "   0.90   1.03   190.26    78.07   975.11 AMPS  948.86 AMPS   rcec2004s_preC 142
35120 "NEWARK D"  115 30  36852 "SCOTT    " 115 30  "1 "   0.96   1.07   199.59    74.19  1012.86 AMPS  948.86 AMPS   rcec2004s_postC 142

35122 "NEWARK F"  115 30  35602 "ZNKER J2"  115 30  "1 "   0.75   1.15   214.43    75.91  1086.74 AMPS  948.86 AMPS   rcec2004s_preC 101
35122 "NEWARK F"  115 30  35602 "ZNKER J2"  115 30  "1 "   0.77   1.19   223.33    73.56  1125.58 AMPS  948.86 AMPS   rcec2004s_postC 101

35122 "NEWARK F"  115 30  35602 "ZNKER J2"  115 30  "1 "   0.75   1.15   214.43    75.91  1086.74 AMPS  948.86 AMPS   rcec2004s_preC 131
35122 "NEWARK F"  115 30  35602 "ZNKER J2"  115 30  "1 "   0.77   1.19   223.33    73.56  1125.58 AMPS  948.86 AMPS   rcec2004s_postC 131

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35122 "NEWARK F"  115 30  35603 "ZNKER J1"  115 30  "1 "   0.42   1.16   183.56    52.87   923.52 AMPS  798.25 AMPS   rcec2004s_postC 138

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35122 "NEWARK F"  115 30  36852 "SCOTT    " 115 30  "2 "   0.79   0.95   179.99    58.53   905.35 AMPS  948.86 AMPS   rcec2004s_postC 137

35122 "NEWARK F"  115 30  36852 "SCOTT    " 115 30  "2 "   0.77   0.98   183.37    62.83   928.40 AMPS  948.86 AMPS   rcec2004s_preC 142
35122 "NEWARK F"  115 30  36852 "SCOTT    " 115 30  "2 "   0.79   0.99   184.80    62.58   936.07 AMPS  948.86 AMPS   rcec2004s_postC 142

35602 "ZNKER J2"  115 30  36850 "KIFER    " 115 30  "1 "   0.75   1.14   210.77    59.47  1083.43 AMPS  948.86 AMPS   rcec2004s_preC 101
35602 "ZNKER J2"  115 30  36850 "KIFER    " 115 30  "1 "   0.77   1.18   219.44    55.98  1122.34 AMPS  948.86 AMPS   rcec2004s_postC 101

35602 "ZNKER J2"  115 30  36850 "KIFER    " 115 30  "1 "   0.75   1.14   210.77    59.47  1083.43 AMPS  948.86 AMPS   rcec2004s_preC 131
35602 "ZNKER J2"  115 30  36850 "KIFER    " 115 30  "1 "   0.77   1.18   219.44    55.98  1122.34 AMPS  948.86 AMPS   rcec2004s_postC 131

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
```

```
35603 "ZNKER J1"  115 30  35612 "TRIMBLE "  115 30  "1 "   0.42   1.16   181.46    42.95   924.13 AMPS  798.25 AMPS   rcec2004s_postC 138

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.05   187.72    60.05   967.94 AMPS  923.76 AMPS   rcec2004s_preC 101
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.12   202.45    55.17  1031.69 AMPS  923.76 AMPS   rcec2004s_postC 101

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.97   179.67    32.23   896.22 AMPS  923.76 AMPS   rcec2004s_postC 107

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.96   176.95    40.99   889.66 AMPS  923.76 AMPS   rcec2004s_postC 108

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.05   187.72    60.05   967.94 AMPS  923.76 AMPS   rcec2004s_preC 131
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.12   202.45    55.17  1031.69 AMPS  923.76 AMPS   rcec2004s_postC 131

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   0.97   179.67    32.23   896.22 AMPS  923.76 AMPS   rcec2004s_postC 132

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.32   239.40    56.46  1215.36 AMPS  923.76 AMPS   rcec2004s_preC 144
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.36   247.19    60.76  1252.19 AMPS  923.76 AMPS   rcec2004s_postC 144

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.07   1.11   200.82    54.40  1023.06 AMPS  923.76 AMPS   rcec2004s_preC 145
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "   1.15   1.15   209.45    51.75  1061.79 AMPS  923.76 AMPS   rcec2004s_postC 145

35616 "SJ B   E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.81   1.30   204.55    42.02  1040.26 AMPS  803.27 AMPS   rcec2004s_preC 101
35616 "SJ B   E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.71   1.24   194.68    45.14   996.32 AMPS  803.27 AMPS   rcec2004s_postC 101

35616 "SJ B   E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.81   1.30   204.55    42.02  1040.26 AMPS  803.27 AMPS   rcec2004s_preC 131
35616 "SJ B   E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.71   1.24   194.68    45.14   996.32 AMPS  803.27 AMPS   rcec2004s_postC 131

35616 "SJ B   E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.81   0.96   156.09    15.55   774.37 AMPS  803.27 AMPS   rcec2004s_preC 136
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.31  -414.13  -124.05  2110.52 AMPS 1606.54 AMPS   rcec2004s_preC 101
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.32  -415.44  -124.18  2119.16 AMPS 1606.54 AMPS   rcec2004s_postC 101

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.10  -351.29   -90.25  1761.83 AMPS 1606.54 AMPS   rcec2004s_preC 108
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.09  -348.16   -92.25  1751.49 AMPS 1606.54 AMPS   rcec2004s_postC 108

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.31  -414.13  -124.05  2110.52 AMPS 1606.54 AMPS   rcec2004s_preC 131
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.32  -415.44  -124.18  2119.16 AMPS 1606.54 AMPS   rcec2004s_postC 131

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.08  -344.10   -87.22  1729.46 AMPS 1606.54 AMPS   rcec2004s_preC 137
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.07  -340.24   -89.42  1715.85 AMPS 1606.54 AMPS   rcec2004s_postC 137

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.50  -484.93  -111.91  2410.86 AMPS 1606.54 AMPS   rcec2004s_postC 138

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.34  -433.60   -93.92  2148.40 AMPS 1606.54 AMPS   rcec2004s_preC 139
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.33  -431.68   -96.30  2143.92 AMPS 1606.54 AMPS   rcec2004s_postC 139

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.08  -351.13   -76.02  1736.61 AMPS 1606.54 AMPS   rcec2004s_preC 140
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.07  -347.15   -78.32  1722.31 AMPS 1606.54 AMPS   rcec2004s_postC 140

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.13  -364.37   -84.66  1811.65 AMPS 1606.54 AMPS   rcec2004s_preC 141
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.11  -356.67   -88.07  1781.19 AMPS 1606.54 AMPS   rcec2004s_postC 141

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.27  -404.63  -108.58  2040.19 AMPS 1606.54 AMPS   rcec2004s_preC 142
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.11   1.24  -394.04  -112.31  1997.45 AMPS 1606.54 AMPS   rcec2004s_postC 142
```

APPENDIX B
AUTOCON OUTPUT

```
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   1.13   1.06  -340.77   -73.66  1697.42 AMPS 1606.54 AMPS   rcec2004s_preC 143
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.28   385.74   117.58  1968.72 AMPS 1541.27 AMPS   rcec2004s_preC 101
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.28   387.05   117.71  1977.19 AMPS 1541.27 AMPS   rcec2004s_postC 101

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.05   322.90    83.78  1620.45 AMPS 1541.27 AMPS   rcec2004s_preC 108
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.04   319.77    85.78  1609.99 AMPS 1541.27 AMPS   rcec2004s_postC 108

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   295.98    71.86  1476.16 AMPS 1541.27 AMPS   rcec2004s_preC 113
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.98   301.81    76.66  1518.05 AMPS 1541.27 AMPS   rcec2004s_preC 122
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   0.97   296.06    79.31  1495.52 AMPS 1541.27 AMPS   rcec2004s_postC 122

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   296.00    76.13  1485.74 AMPS 1541.27 AMPS   rcec2004s_preC 123
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   294.81    76.01  1479.36 AMPS 1541.27 AMPS   rcec2004s_preC 124
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   296.27    71.74  1477.68 AMPS 1541.27 AMPS   rcec2004s_preC 128
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.96   296.83    71.82  1481.15 AMPS 1541.27 AMPS   rcec2004s_preC 129
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.28   385.74   117.58  1968.72 AMPS 1541.27 AMPS   rcec2004s_preC 131
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.28   387.05   117.71  1977.19 AMPS 1541.27 AMPS   rcec2004s_postC 131

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.95   295.14    62.20  1468.17 AMPS 1541.27 AMPS   rcec2004s_preC 135
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   0.98   302.90    74.24  1513.01 AMPS 1541.27 AMPS   rcec2004s_preC 136
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   0.97   297.79    76.99  1495.40 AMPS 1541.27 AMPS   rcec2004s_postC 136

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.03   315.71    80.75  1587.65 AMPS 1541.27 AMPS   rcec2004s_preC 137
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.02   311.86    82.95  1573.93 AMPS 1541.27 AMPS   rcec2004s_postC 137

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.47   456.54   105.44  2269.81 AMPS 1541.27 AMPS   rcec2004s_postC 138

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.30   405.21    87.45  2007.42 AMPS 1541.27 AMPS   rcec2004s_preC 139
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.30   403.29    89.83  2002.79 AMPS 1541.27 AMPS   rcec2004s_postC 139

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.04   322.74    69.55  1595.88 AMPS 1541.27 AMPS   rcec2004s_preC 140
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.03   318.76    71.85  1581.39 AMPS 1541.27 AMPS   rcec2004s_postC 140

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.08   335.98    78.19  1670.65 AMPS 1541.27 AMPS   rcec2004s_preC 141
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.06   328.28    81.60  1640.05 AMPS 1541.27 AMPS   rcec2004s_postC 141

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.23   376.24   102.11  1898.50 AMPS 1541.27 AMPS   rcec2004s_preC 142
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   1.20   365.66   105.84  1855.73 AMPS 1541.27 AMPS   rcec2004s_postC 142

35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.93   1.01   312.38    67.19  1555.68 AMPS 1541.27 AMPS   rcec2004s_preC 143
35659 "NORTECH "  115 30  36850 "KIFER   "  115 30  "1 "   0.92   0.97   299.15    71.27  1500.93 AMPS 1541.27 AMPS   rcec2004s_postC 143
```

APPENDIX B
AUTOCON OUTPUT

35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.93	0.98	301.34	73.76	1514.50	AMPS	1541.27 AMPS	rcec2004s_preC 144
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.92	0.98	297.54	86.16	1504.43	AMPS	1541.27 AMPS	rcec2004s_postC 144
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.93	0.96	296.45	73.69	1485.66	AMPS	1541.27 AMPS	rcec2004s_preC 145
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.92	0.95	291.62	76.13	1467.16	AMPS	1541.27 AMPS	rcec2004s_postC 145

"=1=1=1=1=1=1_" and "=2=2=2=2=2=2_" denotes no violation on either the before case or after case, respectively, for the given outage. Violations are those circuits, transformers, etc. that have a normal or emergency loading of .95 per unit or greater during a CAISO Category A or B contingency.

APPENDIX B
AUTOCON OUTPUT

2004 Partial Peak Category B Autocon Comparison File

```
--------FROM bus-------- ---------TO bus---------      (rate 1) (rate 2)     --------- outage ---------    (Rate 2)
 --------FROM bus-------- ---------TO bus---------      (rate 1) (rate 1)     --------- outage ---------    (Rate 1)

30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "   0.37    1.09     85.47    98.55   130.45 MVA    120.00 MVA    rcec2004pp_preB2   2
30460 "VACA-DIX"  230 30  31998 "VACA-DIX"  115 30  "2 "   0.37    1.09     85.47    98.56   130.46 MVA    120.00 MVA    rcec2004pp_postB2   2

30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "1 "   0.67    1.34   -876.65  -189.06  2237.17 AMPS 1669.30 AMPS   rcec2004pp_preB2  71
30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "1 "   0.67    1.34   -876.64  -192.56  2240.33 AMPS 1669.30 AMPS   rcec2004pp_postB2  71

30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "2 "   0.67    1.34   -876.65  -189.06  2237.17 AMPS 1669.30 AMPS   rcec2004pp_preB2  70
30526 "PITSBURG"  230 30  30528 "DEC PTSG"  230 30  "2 "   0.67    1.34   -876.64  -192.56  2240.33 AMPS 1669.30 AMPS   rcec2004pp_postB2  70

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30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "1 "   0.83    1.22    541.60  -110.94  1381.79 AMPS 1129.10 AMPS   rcec2004pp_postB2  83

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "   0.83    1.23    541.60  -110.94  1381.79 AMPS 1127.09 AMPS   rcec2004pp_postB2 225

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "   0.83    1.23    541.60  -110.94  1381.79 AMPS 1127.09 AMPS   rcec2004pp_postB2  81

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   0.94    1.17    168.00    15.46   168.71 MVA    144.00 MVA    rcec2004pp_postB2 278

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30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "   0.94    0.96    138.09     7.66   138.30 MVA    144.00 MVA    rcec2004pp_postB2 281

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30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   0.94    1.17    167.45    15.60   168.17 MVA    144.00 MVA    rcec2004pp_postB2 277

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30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "2 "   0.94    0.95    137.20     7.68   137.42 MVA    144.00 MVA    rcec2004pp_postB2 281

31996 "HALE1   "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.37    6.86   -117.19  -178.03  2594.29 AMPS  378.04 AMPS   rcec2004pp_preB2   2
31996 "HALE1   "  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.37    6.86   -117.20  -178.05  2594.43 AMPS  378.04 AMPS   rcec2004pp_postB2   2

31996 "HALE1   "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.22    6.56    107.68   172.82  2478.44 AMPS  378.04 AMPS   rcec2004pp_preB2   2
31996 "HALE1   "  115 30  32020 "JMSN JCT"  115 30  "1 "   0.22    6.56    107.69   172.84  2478.58 AMPS  378.04 AMPS   rcec2004pp_postB2   2

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.29    3.57    251.64   443.25  2635.00 AMPS  739.01 AMPS   rcec2004pp_preB2   2
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "   0.29    3.57    251.66   443.30  2635.13 AMPS  739.01 AMPS   rcec2004pp_postB2   2

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00    4.56    -28.17    -3.45  2198.28 AMPS  481.96 AMPS   rcec2004pp_preB2   2
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "   0.00    4.56    -28.17    -3.45  2198.44 AMPS  481.96 AMPS   rcec2004pp_postB2   2

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32782 "STATIN D"  115 30  32788 "STATIN L"  115 30  "1 "   0.48    1.03    161.15   -15.77   812.66 AMPS  790.22 AMPS   rcec2004pp_postB2  17

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
32786 "OAK C115"  115 30  32790 "STATIN X"  115 30  "1 "   0.55    1.03   -160.69    11.00   811.86 AMPS  790.22 AMPS   rcec2004pp_postB2  15

32950 "PITSBURG"  115 30  32978 "LMEC    1"  115 30  "1 "   0.62    1.24   -498.64  -100.66  2490.58 AMPS 2008.18 AMPS   rcec2004pp_preB2 104
32950 "PITSBURG"  115 30  32978 "LMEC    1"  115 30  "1 "   0.62    1.24   -498.64  -102.01  2492.50 AMPS 2008.18 AMPS   rcec2004pp_postB2 104
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APPENDIX B
AUTOCON OUTPUT

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32950 "PITSBURG"  115 30  32978 "LMEC    1"  115 30  "2 "    0.62    1.24   -498.64  -100.66  2490.58 AMPS 2008.18 AMPS   rcec2004pp_preB2 103
32950 "PITSBURG"  115 30  32978 "LMEC    1"  115 30  "2 "    0.62    1.24   -498.64  -102.01  2492.50 AMPS 2008.18 AMPS   rcec2004pp_postB2 103

33600 "HERDLYN "   70 30  33770 "HERDLYN "    60 30  "2 "    0.73    1.07     53.16     5.16    53.41 MVA    50.00 MVA    rcec2004pp_preB2 267
33600 "HERDLYN "   70 30  33770 "HERDLYN "    60 30  "2 "    0.73    1.07     53.16     5.17    53.41 MVA    50.00 MVA    rcec2004pp_postB2 267

35107 "DUMBARTN"  115 30  35120 "NEWARK D"  115 30  "1 "    0.53    1.31   -240.59   -62.55  1243.86 AMPS  948.86 AMPS   rcec2004pp_preB2  82
35107 "DUMBARTN"  115 30  35120 "NEWARK D"  115 30  "1 "    0.43    1.31   -240.59   -62.57  1244.80 AMPS  948.86 AMPS   rcec2004pp_postB2  82

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    0.95    130.71    40.85   668.11 AMPS  702.86 AMPS   rcec2004pp_postB2 212


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30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "1 "    0.83    1.22    541.60  -110.94  1381.79 AMPS 1129.10 AMPS   rcec2004pp_postB1  79

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "    0.83    1.23    541.60  -110.94  1381.79 AMPS 1127.09 AMPS   rcec2004pp_postB1  78

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  30700 "SANMATEO"  230 30  "2 "    0.83    1.23    541.60  -110.94  1381.79 AMPS 1127.09 AMPS   rcec2004pp_postB1  80

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
30560 "E. SHORE"  230 30  35105 "EASTSHRE"  115 30  "1 "    0.94    0.95    113.98     3.40   114.03 MVA   120.00 MVA    rcec2004pp_postB1 270

33207 "BAYSHOR2"  115 30  33208 "MARTIN C"  115 30  "1 "    0.54    0.95   -126.77   -11.44   619.90 AMPS  650.15 AMPS   rcec2004pp_preB1  47
33207 "BAYSHOR2"  115 30  33208 "MARTIN C"  115 30  "1 "    0.54    0.96   -126.73   -10.17   621.14 AMPS  650.15 AMPS   rcec2004pp_postB1  47

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "    0.72    1.05   -232.90    84.80  1203.14 AMPS 1144.16 AMPS   rcec2004pp_preB1  21
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "    0.72    1.05   -232.90    84.80  1203.14 AMPS 1144.16 AMPS   rcec2004pp_preB1  95
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.89    1.24    225.41    60.30  1142.03 AMPS  923.76 AMPS   rcec2004pp_preB1 251
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    1.27    233.18    58.67  1177.08 AMPS  923.76 AMPS   rcec2004pp_postB1 251

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.89    1.19    216.61    58.21  1097.67 AMPS  923.76 AMPS   rcec2004pp_preB1 252
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    1.23    224.38    56.55  1132.63 AMPS  923.76 AMPS   rcec2004pp_postB1 252

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.89    0.96    131.73    43.01   676.92 AMPS  702.86 AMPS   rcec2004pp_preB1 270
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    1.02    140.73    40.99   716.28 AMPS  702.86 AMPS   rcec2004pp_postB1 270

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35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    0.95    131.16    40.93   670.40 AMPS  702.86 AMPS   rcec2004pp_postB1 274

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    0.95    130.77    40.78   668.28 AMPS  702.86 AMPS   rcec2004pp_postB1 275

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    0.96    131.79    40.36   672.42 AMPS  702.86 AMPS   rcec2004pp_postB1 276

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.89    1.26    229.16    60.54  1160.87 AMPS  923.76 AMPS   rcec2004pp_preB1 293
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    1.29    236.93    58.96  1196.03 AMPS  923.76 AMPS   rcec2004pp_postB1 293

35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.89    1.21    220.36    58.21  1115.99 AMPS  923.76 AMPS   rcec2004pp_preB1 294
35612 "TRIMBLE "  115 30  35616 "SJ B   E"  115 30  "1 "    0.95    1.25    228.12    56.63  1151.13 AMPS  923.76 AMPS   rcec2004pp_postB1 294
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35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.89   1.24   225.41    60.30  1142.03 AMPS  923.76 AMPS   rcec2004pp_preB1 308
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.95   1.27   233.18    58.67  1177.08 AMPS  923.76 AMPS   rcec2004pp_postB1 308

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.89   1.19   216.61    58.21  1097.67 AMPS  923.76 AMPS   rcec2004pp_preB1 309
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.95   1.23   224.38    56.55  1132.63 AMPS  923.76 AMPS   rcec2004pp_postB1 309

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.89   1.24   225.41    60.30  1142.03 AMPS  923.76 AMPS   rcec2004pp_preB1 319
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.95   1.27   233.18    58.67  1177.08 AMPS  923.76 AMPS   rcec2004pp_postB1 319

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.89   1.19   216.61    58.21  1097.67 AMPS  923.76 AMPS   rcec2004pp_preB1 320
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.95   1.23   224.38    56.55  1132.63 AMPS  923.76 AMPS   rcec2004pp_postB1 320

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.95   1.33   244.09    58.76  1231.10 AMPS  923.76 AMPS   rcec2004pp_postB1 326

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.38   219.79    35.88  1106.56 AMPS  803.27 AMPS   rcec2004pp_preB1 251
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.31   207.25    39.30  1048.34 AMPS  803.27 AMPS   rcec2004pp_postB1 251

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.31   209.74    33.52  1054.75 AMPS  803.27 AMPS   rcec2004pp_preB1 252
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.24   197.19    36.88   996.34 AMPS  803.27 AMPS   rcec2004pp_postB1 252

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.43   228.60    35.88  1150.73 AMPS  803.27 AMPS   rcec2004pp_preB1 293
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.36   216.07    39.36  1092.39 AMPS  803.27 AMPS   rcec2004pp_postB1 293

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.37   218.55    33.02  1098.30 AMPS  803.27 AMPS   rcec2004pp_preB1 294
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.29   206.01    36.53  1039.78 AMPS  803.27 AMPS   rcec2004pp_postB1 294

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.38   219.79    35.88  1106.56 AMPS  803.27 AMPS   rcec2004pp_preB1 308
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.31   207.25    39.30  1048.34 AMPS  803.27 AMPS   rcec2004pp_postB1 308

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.31   209.74    33.52  1054.75 AMPS  803.27 AMPS   rcec2004pp_preB1 309
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.24   197.19    36.88   996.34 AMPS  803.27 AMPS   rcec2004pp_postB1 309

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.38   219.79    35.88  1106.56 AMPS  803.27 AMPS   rcec2004pp_preB1 319
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.31   207.25    39.30  1048.34 AMPS  803.27 AMPS   rcec2004pp_postB1 319

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72   1.31   209.74    33.52  1054.75 AMPS  803.27 AMPS   rcec2004pp_preB1 320
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.24   197.19    36.88   996.34 AMPS  803.27 AMPS   rcec2004pp_postB1 320

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64   1.26   199.79    38.19  1012.90 AMPS  803.27 AMPS   rcec2004pp_postB1 326

35642 "MTCALF D"  115 30  35643 "MTCALF E"  115 30  "1 "   0.31   0.95  -380.36  -102.99  1906.45 AMPS 1998.13 AMPS   rcec2004pp_preB1 260
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35648 "LLAGAS  "  115 30  35655 "MORGN J2"  115 30  "1 "   0.07   1.11  -153.58   -31.43   825.86 AMPS  743.03 AMPS   rcec2004pp_preB1 323
35648 "LLAGAS  "  115 30  35655 "MORGN J2"  115 30  "1 "   0.07   1.11  -153.58   -31.43   825.87 AMPS  743.03 AMPS   rcec2004pp_postB1 323

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96   0.98  -314.21   -82.90  1578.70 AMPS 1606.54 AMPS   rcec2004pp_preB1 226
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95   0.98  -313.92   -83.90  1579.46 AMPS 1606.54 AMPS   rcec2004pp_postB1 226

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96   0.97  -311.77   -73.51  1556.97 AMPS 1606.54 AMPS   rcec2004pp_preB1 250
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95   0.96  -308.89   -74.82  1545.39 AMPS 1606.54 AMPS   rcec2004pp_postB1 250

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96   0.96  -306.24   -85.04  1546.27 AMPS 1606.54 AMPS   rcec2004pp_preB1 286
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95   0.96  -305.64   -85.46  1544.60 AMPS 1606.54 AMPS   rcec2004pp_postB1 286
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APPENDIX B
AUTOCON OUTPUT

35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	0.96	0.96	-307.65	-70.91	1537.29 AMPS	1606.54 AMPS	rcec2004pp_preB1	288

=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	0.96	0.98	-314.21	-82.90	1578.70 AMPS	1606.54 AMPS	rcec2004pp_preB1	300
35658	"LS ESTRS"	115	30	35659	"NORTECH "	115	30	"1 "	0.95	0.98	-313.92	-83.90	1579.46 AMPS	1606.54 AMPS	rcec2004pp_postB1	300
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.81	0.95	291.60	77.75	1466.14 AMPS	1541.27 AMPS	rcec2004pp_preB1	226
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.80	0.95	291.32	78.75	1466.85 AMPS	1541.27 AMPS	rcec2004pp_postB1	226
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.81	0.95	291.60	77.75	1466.14 AMPS	1541.27 AMPS	rcec2004pp_preB1	300
35659	"NORTECH "	115	30	36850	"KIFER "	115	30	"1 "	0.80	0.95	291.32	78.75	1466.85 AMPS	1541.27 AMPS	rcec2004pp_postB1	300

"=1=1=1=1=1=1…" and "=2=2=2=2=2=2…" denotes no violation on either the before case or after case, respectively, for the given outage. Violations are those circuits, transformers, etc. that have a normal or emergency loading of .95 per unit or greater during a CAISO Category A or B contingency.

APPENDIX B
AUTOCON OUTPUT

2004 Partial Peak Category C Autocon Comparison File

--------FROM bus--------				---------TO bus---------					(rate 1)	(rate 2)	--------- outage ---------			(Rate 2)		
bus	---name---	-kv-	ar	bus	---name---	-kv-	ar	ID	base	outage	MW	MVAR	FLOW	RATING		
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.55	130.44 MVA	120.00 MVA	rcec2004pp_preC	2
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.56	130.45 MVA	120.00 MVA	rcec2004pp_postC	2
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.55	130.45 MVA	120.00 MVA	rcec2004pp_preC	3
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.56	130.46 MVA	120.00 MVA	rcec2004pp_postC	3
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.55	130.45 MVA	120.00 MVA	rcec2004pp_preC	43
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.56	130.46 MVA	120.00 MVA	rcec2004pp_postC	43
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.55	130.44 MVA	120.00 MVA	rcec2004pp_preC	45
30460	"VACA-DIX"	230	30	31998	"VACA-DIX"	115	30	"2 "	0.37	1.09	85.47	98.56	130.45 MVA	120.00 MVA	rcec2004pp_postC	45
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=																
30560	"E. SHORE"	230	30	30700	"SANMATEO"	230	30	"2 "	0.83	1.14	501.67	-110.46	1284.20 AMPS	1127.09 AMPS	rcec2004pp_postC	26
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=																
30560	"E. SHORE"	230	30	30700	"SANMATEO"	230	30	"2 "	0.83	1.14	501.67	-110.46	1284.20 AMPS	1127.09 AMPS	rcec2004pp_postC	59
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=																
30560	"E. SHORE"	230	30	30700	"SANMATEO"	230	30	"2 "	0.83	1.14	501.67	-110.46	1284.20 AMPS	1127.09 AMPS	rcec2004pp_postC	86
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=																
30560	"E. SHORE"	230	30	35105	"EASTSHRE"	115	30	"1 "	0.94	1.45	208.47	1.80	208.47 MVA	144.00 MVA	rcec2004pp_postC	92
=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=																
30560	"E. SHORE"	230	30	35105	"EASTSHRE"	115	30	"2 "	0.94	1.44	207.13	1.88	207.14 MVA	144.00 MVA	rcec2004pp_postC	92
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.19	-178.01	2594.19 AMPS	378.04 AMPS	rcec2004pp_preC	2
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.20	-178.04	2594.33 AMPS	378.04 AMPS	rcec2004pp_postC	2
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.19	-178.03	2594.30 AMPS	378.04 AMPS	rcec2004pp_preC	3
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.20	-178.06	2594.44 AMPS	378.04 AMPS	rcec2004pp_postC	3
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.19	-178.03	2594.30 AMPS	378.04 AMPS	rcec2004pp_preC	43
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.20	-178.06	2594.44 AMPS	378.04 AMPS	rcec2004pp_postC	43
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.19	-178.01	2594.19 AMPS	378.04 AMPS	rcec2004pp_preC	45
31996	"HALE1 "	115	30	32006	"VCVLLE1J"	115	30	"1 "	0.37	6.86	-117.20	-178.04	2594.33 AMPS	378.04 AMPS	rcec2004pp_postC	45
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.68	172.80	2478.33 AMPS	378.04 AMPS	rcec2004pp_preC	2
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.69	172.83	2478.48 AMPS	378.04 AMPS	rcec2004pp_postC	2
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.68	172.82	2478.45 AMPS	378.04 AMPS	rcec2004pp_preC	3
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.69	172.85	2478.60 AMPS	378.04 AMPS	rcec2004pp_postC	3
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.68	172.82	2478.45 AMPS	378.04 AMPS	rcec2004pp_preC	43
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.69	172.85	2478.60 AMPS	378.04 AMPS	rcec2004pp_postC	43
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.68	172.80	2478.33 AMPS	378.04 AMPS	rcec2004pp_preC	45
31996	"HALE1 "	115	30	32020	"JMSN JCT"	115	30	"1 "	0.22	6.56	107.69	172.83	2478.48 AMPS	378.04 AMPS	rcec2004pp_postC	45

APPENDIX B
AUTOCON OUTPUT

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31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.62  443.21  2634.89 AMPS  739.01 AMPS  rcec2004pp_preC   2
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.65  443.26  2635.03 AMPS  739.01 AMPS  rcec2004pp_postC  2

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.64  443.26  2635.01 AMPS  739.01 AMPS  rcec2004pp_preC   3
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.66  443.31  2635.15 AMPS  739.01 AMPS  rcec2004pp_postC  3

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.64  443.26  2635.01 AMPS  739.01 AMPS  rcec2004pp_preC  43
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.66  443.31  2635.15 AMPS  739.01 AMPS  rcec2004pp_postC 43

31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.62  443.21  2634.89 AMPS  739.01 AMPS  rcec2004pp_preC  45
31998 "VACA-DIX"  115 30  32006 "VCVLLE1J"  115 30  "1 "  0.29  3.57  251.65  443.26  2635.03 AMPS  739.01 AMPS  rcec2004pp_postC 45

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.14 AMPS  481.96 AMPS  rcec2004pp_preC   2
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.32 AMPS  481.96 AMPS  rcec2004pp_postC  2

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.29 AMPS  481.96 AMPS  rcec2004pp_preC   3
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.46 AMPS  481.96 AMPS  rcec2004pp_postC  3

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.29 AMPS  481.96 AMPS  rcec2004pp_preC  43
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.46 AMPS  481.96 AMPS  rcec2004pp_postC 43

32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.14 AMPS  481.96 AMPS  rcec2004pp_preC  45
32020 "JMSN JCT"  115 30  32618 "NTWRJCT1"  115 30  "1 "  0.00  4.56  -28.17  -3.45  2198.32 AMPS  481.96 AMPS  rcec2004pp_postC 45

32950 "PITSBURG"  115 30  32970 "CLAYTN  "  115 30  "1 "  0.46  1.00  318.76  71.21  1597.25 AMPS 1600.01 AMPS  rcec2004pp_preC  38
32950 "PITSBURG"  115 30  32970 "CLAYTN  "  115 30  "1 "  0.47  1.02  325.05  71.37  1627.85 AMPS 1600.01 AMPS  rcec2004pp_postC 38

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33020 "MORAGA  "  115 30  35101 "SN LNDRO"  115 30  "1 "  0.55  1.02  110.12   7.63   551.63 AMPS  540.20 AMPS  rcec2004pp_postC 51

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33020 "MORAGA  "  115 30  35101 "SN LNDRO"  115 30  "1 "  0.55  1.02  110.12   7.63   551.63 AMPS  540.20 AMPS  rcec2004pp_postC 97

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33020 "MORAGA  "  115 30  35101 "SN LNDRO"  115 30  "2 "  0.55  1.03  111.24   7.63   557.20 AMPS  540.20 AMPS  rcec2004pp_postC 51

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33020 "MORAGA  "  115 30  35101 "SN LNDRO"  115 30  "2 "  0.55  1.03  111.24   7.63   557.20 AMPS  540.20 AMPS  rcec2004pp_postC 97

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "  0.72  1.08  -243.57  76.29  1238.81 AMPS 1144.16 AMPS  rcec2004pp_preC  58
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

33208 "MARTIN C"  115 30  33220 "GGPP D  "  115 30  "5 "  0.72  1.08  -243.57  76.29  1238.81 AMPS 1144.16 AMPS  rcec2004pp_preC  69
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

33315 "RAVENSWD"  115 30  33316 "CLY LNDG"  115 30  "1 "  0.61  1.37  201.91  92.81  1091.83 AMPS  798.75 AMPS  rcec2004pp_preC  81
33315 "RAVENSWD"  115 30  33316 "CLY LNDG"  115 30  "1 "  0.62  1.38  203.16  92.59  1098.52 AMPS  798.75 AMPS  rcec2004pp_postC 81

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
33315 "RAVENSWD"  115 30  38028 "PLO ALTO"  115 30  "2 "  0.50  1.19  175.17  81.91   951.48 AMPS  798.75 AMPS  rcec2004pp_postC 82

33316 "CLY LNDG"  115 30  38028 "PLO ALTO"  115 30  "1 "  0.35  1.19  174.79  80.01   954.00 AMPS  798.75 AMPS  rcec2004pp_preC  81
33316 "CLY LNDG"  115 30  38028 "PLO ALTO"  115 30  "1 "  0.35  1.20  174.80  80.03   955.39 AMPS  798.75 AMPS  rcec2004pp_postC 81

=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35105 "EASTSHRE"  115 30  35107 "DUMBARTN"  115 30  "1 "  0.50  1.43  263.86  -88.70  1361.54 AMPS  948.86 AMPS  rcec2004pp_postC 92
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APPENDIX B
AUTOCON OUTPUT

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=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=1=
35107 "DUMBARTN"  115 30  35120 "NEWARK D"  115 30  "1 "   0.43    1.11    168.09  -132.86  1050.52 AMPS  948.86 AMPS   rcec2004pp_postC  92

35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.89    1.07    194.57    51.78   990.34 AMPS  923.76 AMPS   rcec2004pp_preC 144
35612 "TRIMBLE "  115 30  35616 "SJ B    E"  115 30  "1 "   0.95    1.10    199.29    50.97  1012.08 AMPS  923.76 AMPS   rcec2004pp_postC 144

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72    1.05    166.71    31.53   840.94 AMPS  803.27 AMPS   rcec2004pp_preC 101
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64    1.01    159.59    33.27   808.25 AMPS  803.27 AMPS   rcec2004pp_postC 101

35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.72    1.05    166.71    31.53   840.94 AMPS  803.27 AMPS   rcec2004pp_preC 131
35616 "SJ B    E"  115 30  35617 "FMC JCT "  115 30  "1 "   0.64    1.01    159.59    33.27   808.25 AMPS  803.27 AMPS   rcec2004pp_postC 131

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96    1.08   -339.42  -109.45  1733.80 AMPS 1606.54 AMPS   rcec2004pp_preC 101
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95    1.08   -340.42  -109.28  1738.96 AMPS 1606.54 AMPS   rcec2004pp_postC 101

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96    1.08   -339.42  -109.45  1733.80 AMPS 1606.54 AMPS   rcec2004pp_preC 131
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95    1.08   -340.42  -109.28  1738.96 AMPS 1606.54 AMPS   rcec2004pp_postC 131

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96    1.27   -408.64   -99.85  2036.49 AMPS 1606.54 AMPS   rcec2004pp_preC 138
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96    1.14   -366.46   -88.26  1826.40 AMPS 1606.54 AMPS   rcec2004pp_preC 139
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95    1.13   -364.72   -89.58  1820.35 AMPS 1606.54 AMPS   rcec2004pp_postC 139

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96    0.96   -309.63   -78.98  1549.98 AMPS 1606.54 AMPS   rcec2004pp_preC 141
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.96    1.07   -339.82   -98.82  1720.71 AMPS 1606.54 AMPS   rcec2004pp_preC 142
35658 "LS ESTRS"  115 30  35659 "NORTECH "  115 30  "1 "   0.95    1.05   -331.45  -100.91  1685.13 AMPS 1606.54 AMPS   rcec2004pp_postC 142

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.81    1.05    316.81   104.29  1621.54 AMPS 1541.27 AMPS   rcec2004pp_preC 101
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.80    1.06    317.81   104.13  1626.65 AMPS 1541.27 AMPS   rcec2004pp_postC 101

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.81    1.05    316.81   104.29  1621.54 AMPS 1541.27 AMPS   rcec2004pp_preC 131
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.80    1.06    317.81   104.13  1626.65 AMPS 1541.27 AMPS   rcec2004pp_postC 131

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.81    1.25    386.04    94.70  1924.26 AMPS 1541.27 AMPS   rcec2004pp_preC 138
=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=2=

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.81    1.11    343.85    83.10  1714.07 AMPS 1541.27 AMPS   rcec2004pp_preC 139
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.80    1.11    342.11    84.43  1707.99 AMPS 1541.27 AMPS   rcec2004pp_postC 139

35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.81    1.04    317.22    93.67  1608.20 AMPS 1541.27 AMPS   rcec2004pp_preC 142
35659 "NORTECH "  115 30  36850 "KIFER    "  115 30  "1 "   0.80    1.02    308.84    95.76  1572.68 AMPS 1541.27 AMPS   rcec2004pp_postC 142
```

"=1=1=1=1=1=1…" and "=2=2=2=2=2=2…" denotes no violation on either the before case or after case, respectively, for the given outage. Violations are those circuits, transformers, etc. that have a normal or emergency loading of .95 per unit or greater during a CAISO Category A or B contingency.

Appendix C - Power Flow Plots

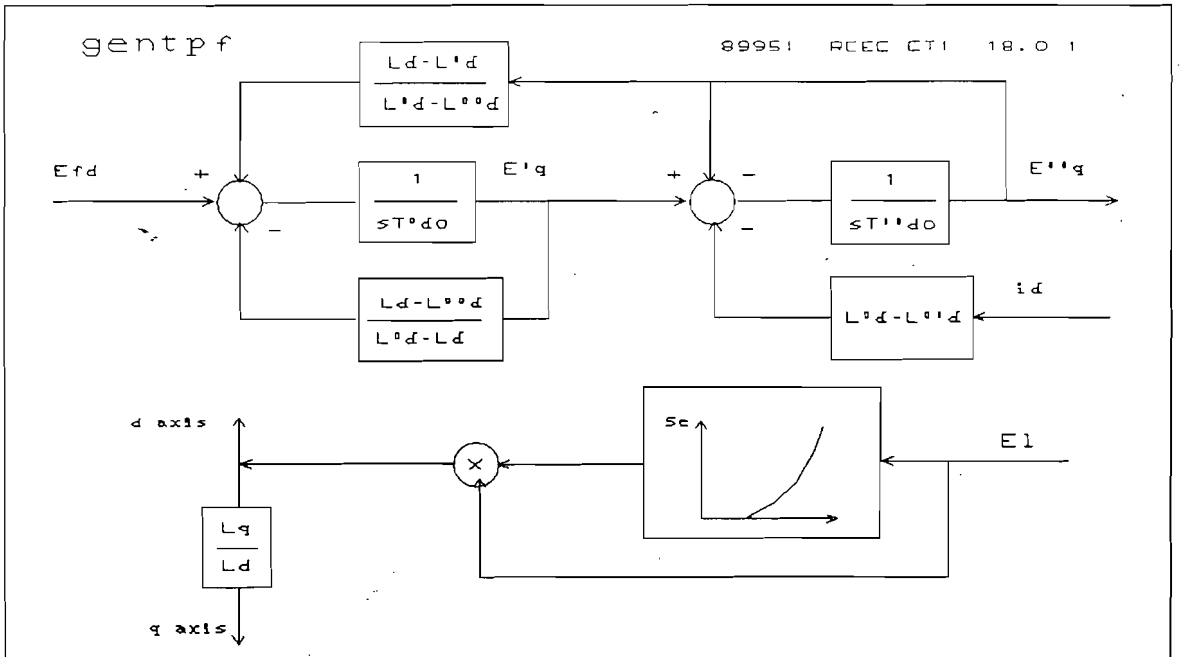
APPENDIX C
POWERFLOW PLOTS

2004 Base Cases Power Flow Plots

Plot	Description
Plot #1	Summer, system intact without RCEC
Plot #2	Summer, system intact with RCEC
Plot #3	Partial Peak, system intact without RCEC
Plot #4	Partial Peak, system intact with RCEC
Plot #5	Summer, East Shore 230-115 kV bank outage, without RCEC
Plot #6	Summer, East Shore 230-115 kV bank outage, with RCEC
Plot #7	Summer, East Shore-San Mateo 230 kV line outage, without RCEC
Plot #8	Summer, East Shore-San Mateo 230 kV line outage, with RCEC
Plot #9	Summer, Martin-San Mateo 230 kV cable outage, without RCEC
Plot #10	Summer, Martin-San Mateo 230 kV cable outage, with RCEC
Case Divergent	Summer, East Shore-Dumbarton 115 kV line outage, without RCEC
Plot #12	Summer, East Shore-Dumbarton 115 kV line outage, with RCEC
Plot #13	Partial Peak, East Shore 230-115 kV bank outage, without RCEC
Plot #14	Partial Peak, East Shore 230-115 kV bank outage, with RCEC
Plot #15	Partial Peak, East Shore-San Mateo 230 kV line outage, without RCEC
Plot #16	Partial Peak, East Shore-San Mateo 230 kV line outage, with RCEC
Plot #17	Partial Peak, Martin-San Mateo 230 kV cable outage, without RCEC
Plot #18	Partial Peak, Martin-San Mateo 230 kV cable outage, with RCEC
Plot #19	Partial Peak, East Shore-Dumbarton 115 kV line outage, without RCEC
Plot #20	Partial Peak, East Shore-Dumbarton 115 kV line outage, with RCEC
Plot #21	Summer, Ravenswood 230-115 kV bank outage, without RCEC
Plot #22	Summer, Ravenswood 230-115 kV bank outage, with RCEC
Plot #23	Partial Peak, Ravenswood 230-115 kV bank outage, without RCEC
Plot #24	Partial Peak, Ravenswood 230-115 kV bank outage, with RCEC

APPENDIX D - Generator Machines Dynamic Data

GT 1,2 Generator Data:



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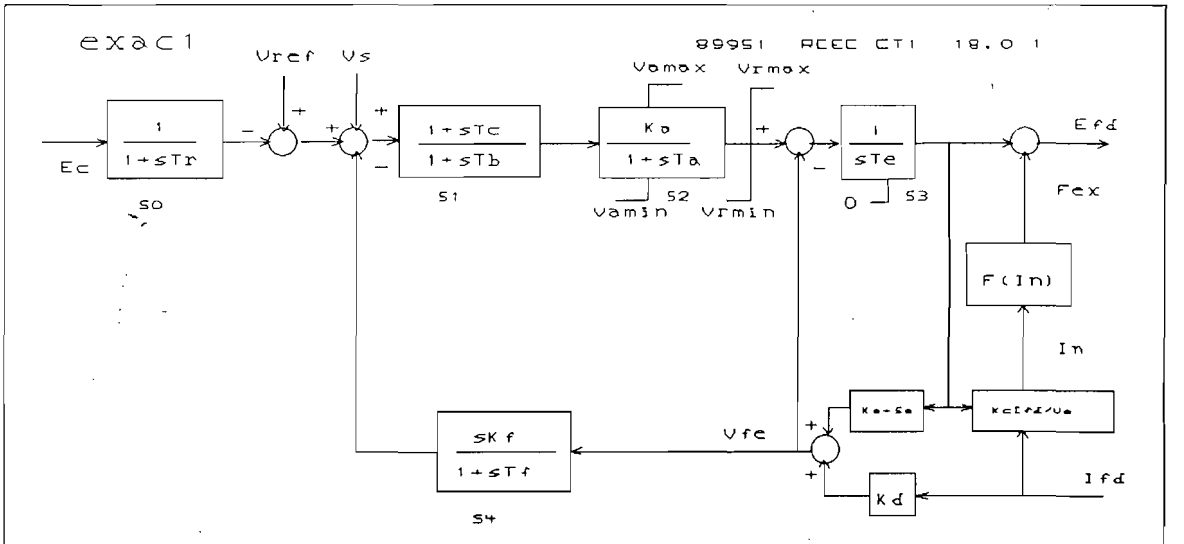
lpd	0.2690	lppq	0.2055	tppdo	0.0430	s12	1.1940
lppd	0.2084	ll	0.1640	tpqo	1.0800	h	3.6700
lq	0.2024	ra	0.0008	tppqo	0.0740	d	0.0000

GT 1,2 Excitation System:



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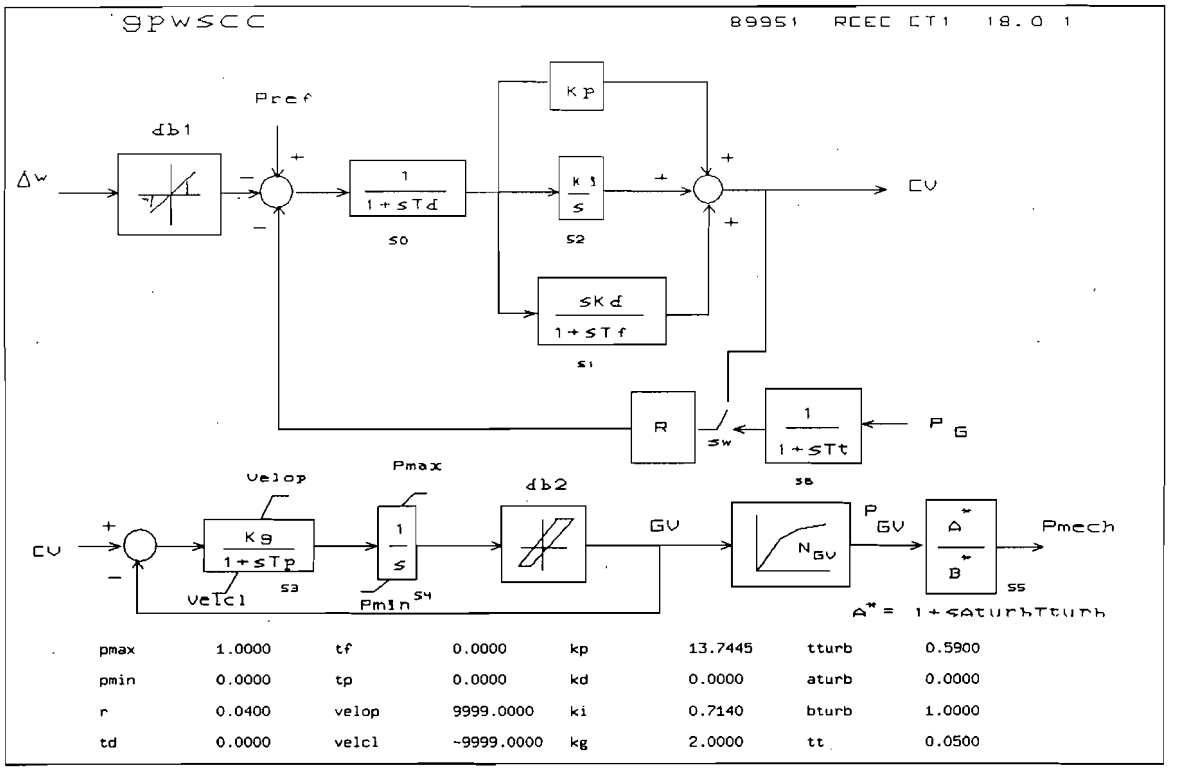
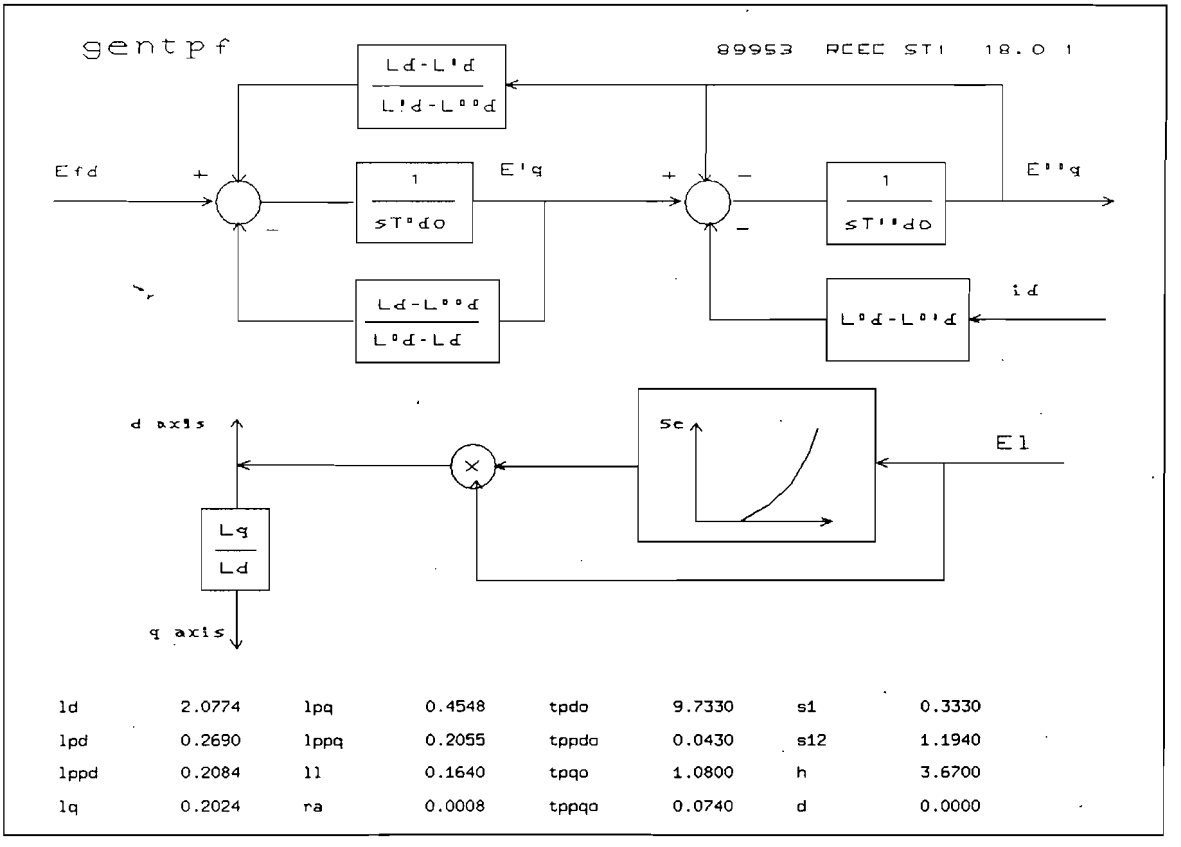
tb	0.0000	vamax	99.0000	tf	1.0000	e1	4.8000
tc	0.0000	vamin	-99.0000	kc	0.5300	se1	0.2200
ka	4.0000	te	0.4200	kd	2.0600	e2	3.6000

GT 1,2 Governor/Turbine Data:



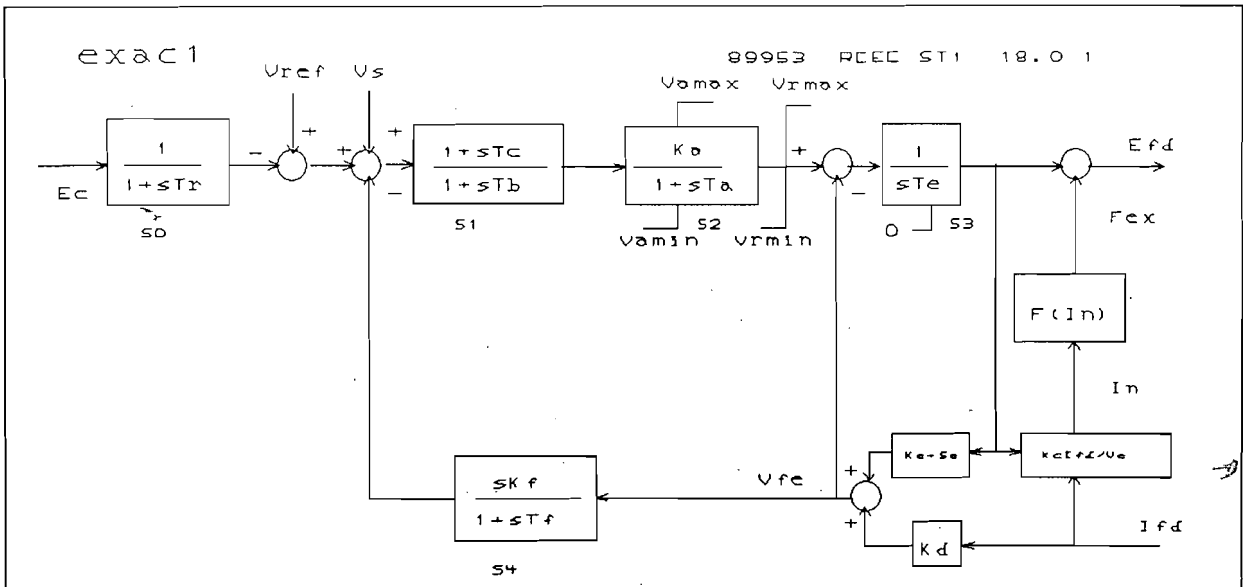
pmax	1.0000	tf	0.0000	kp	13.7445	tturb	0.5900
pmin	0.0000	tp	0.0000	kd	0.0000	aturb	0.0000
r	0.0400	velop	9999.0000	ki	0.7140	bturb	1.0000
td	0.0000	velcl	-9999.0000	kg	2.0000	tt	0.0500

ST Generator Data:



ld	2.0774	lpq	0.4548	tpdo	9.7330	s1	0.3330
lpd	0.2690	lppq	0.2055	tppdo	0.0430	s12	1.1940
lppd	0.2084	ll	0.1640	tpqo	1.0800	h	3.6700
lq	0.2024	ra	0.0008	tppqo	0.0740	d	0.0000

ST Excitation System Data:



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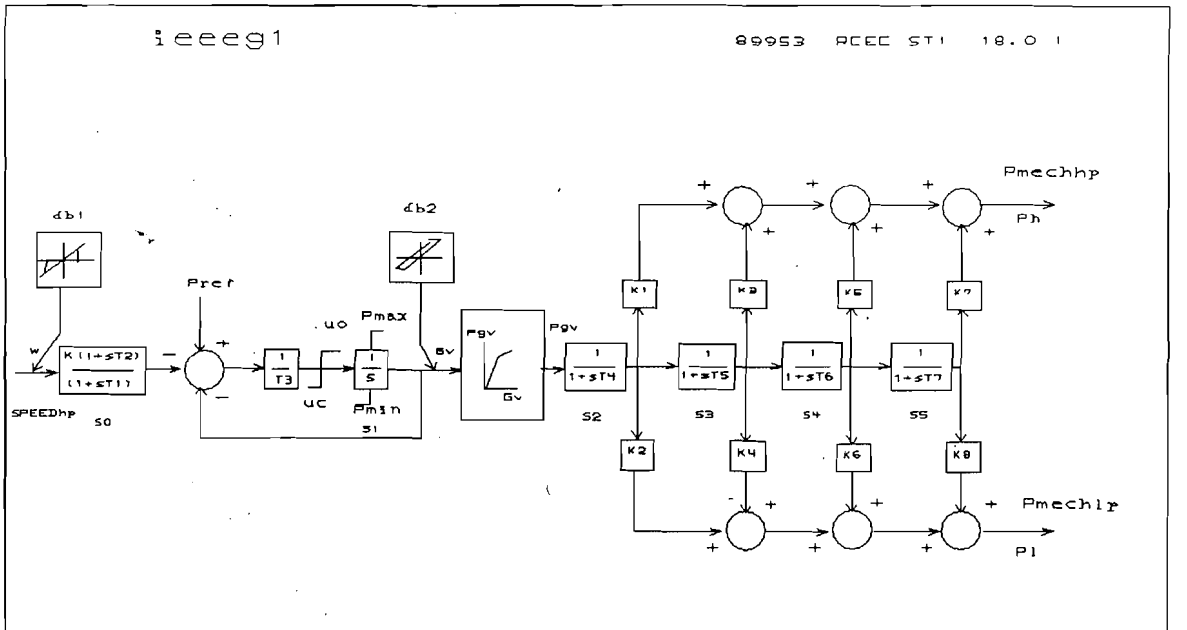
tb	0.0000	vamax	99.0000	tf	1.0000	e1	4.8000
tc	0.0000	vamin	-99.0000	kc	0.5300	se1	0.2200
ka	4.0000	te	0.4200	kd	2.0600	e2	3.6000

ST Governor/Turbine Data:



k	20.0000	uo	0.2000	t4	0.0840	k3	0.3300
t1	7.5000	uc	-0.2000	k1	0.2130	k4	0.0000
t2	2.8000	pmax	1.0000	k2	0.0000	t6	0.1520
t3	0.1000	pmin	0.0000	t5	10.0000	k5	0.4570

Appendix E - Dynamic Stability Plots

```
basecase.sav
basecase.dyd
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Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units
RUN  9
CC
CC   Fault RCEC 230kV bus
FB   0.0 "RCEC    " 230.
CC
CC   Clear fault at RCEC 230kV bus
CFB  6.0 "RCEC    " 230.
CC
CC   Trip the generators
TG   6.0 "RCEC CT1"  18.0 "1 "
TG   6.0 "RCEC CT2"  18.0 "1 "
TG   6.0 "RCEC ST1"  18.0 "1 "
CC
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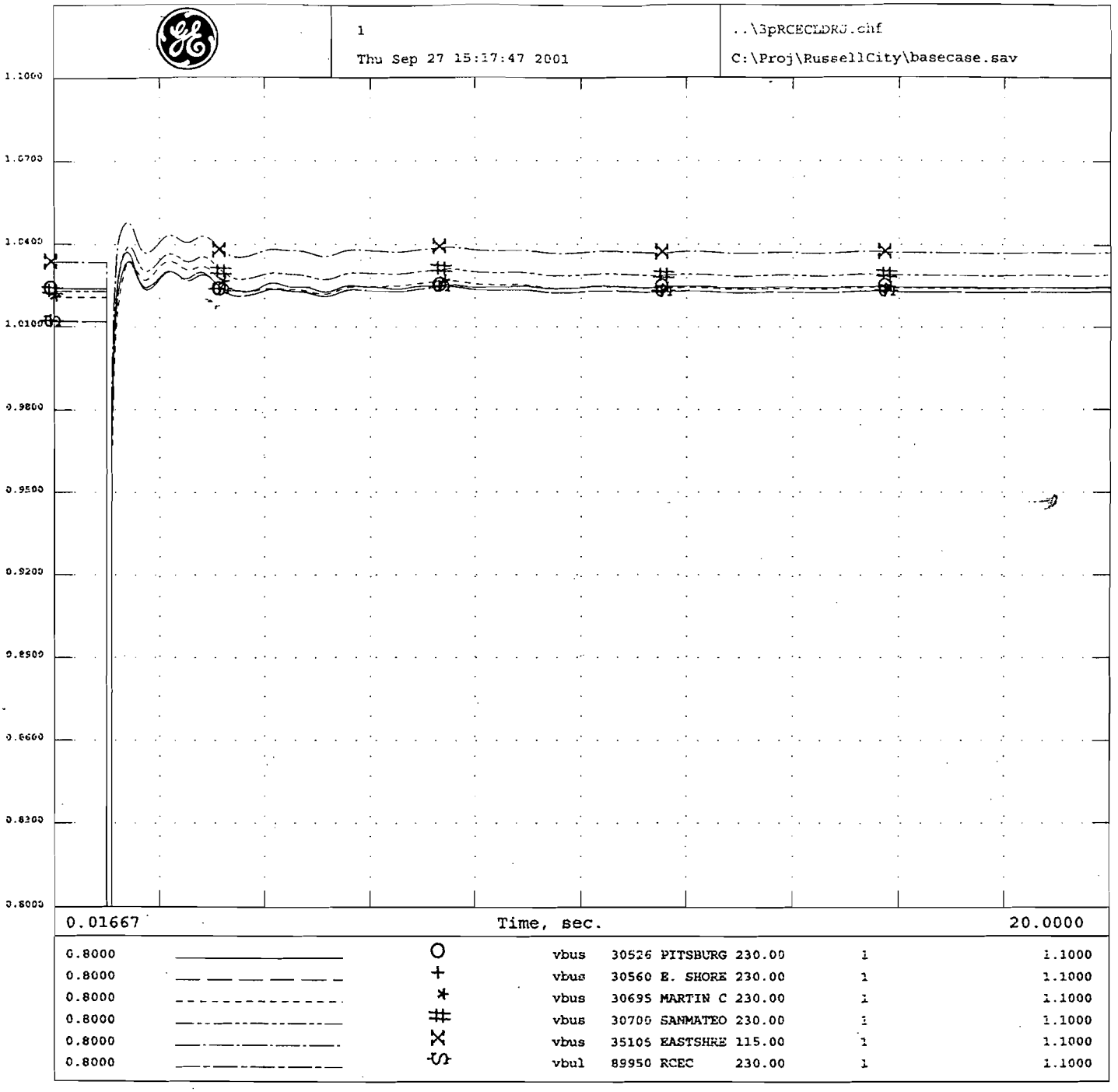
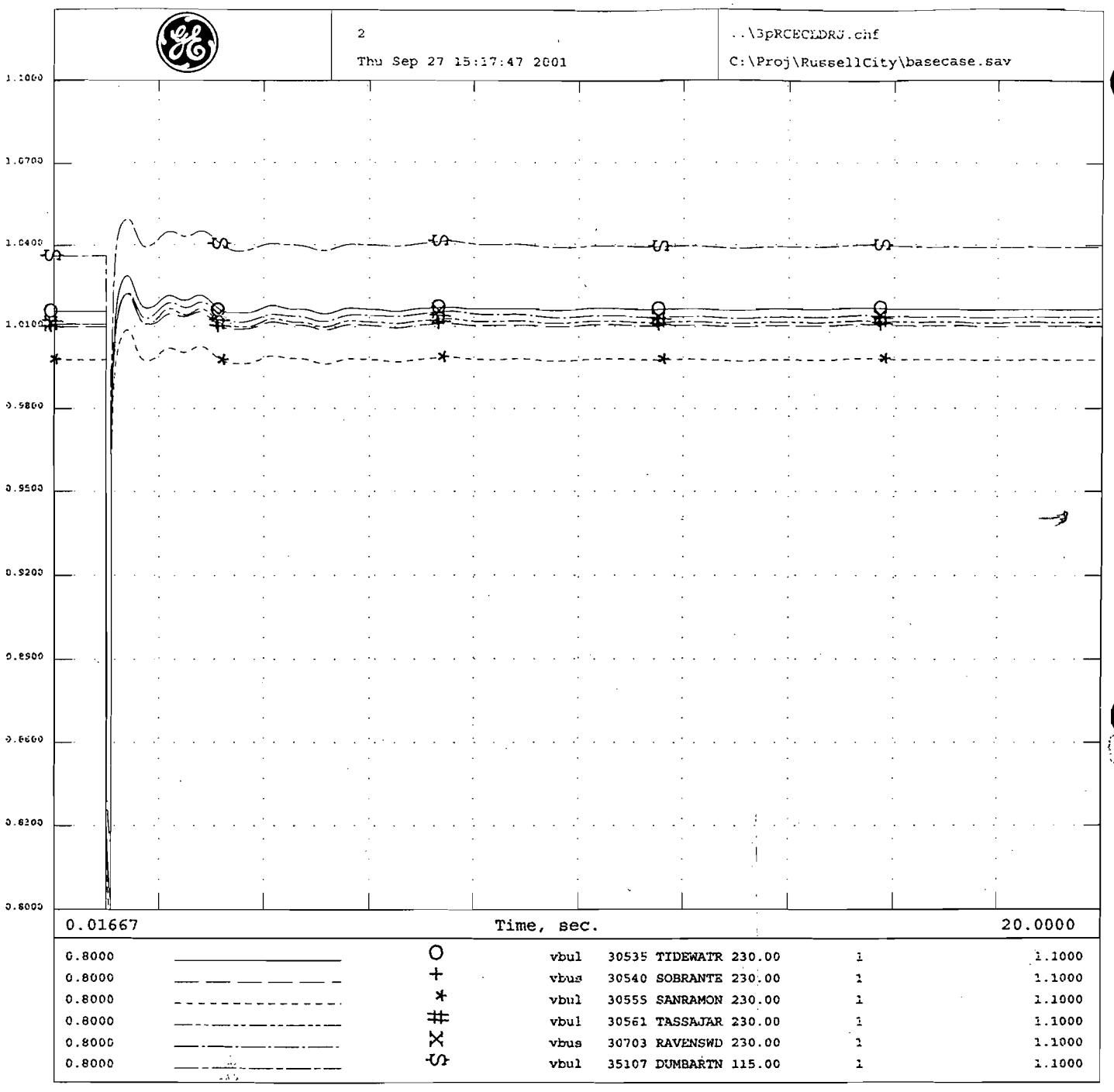


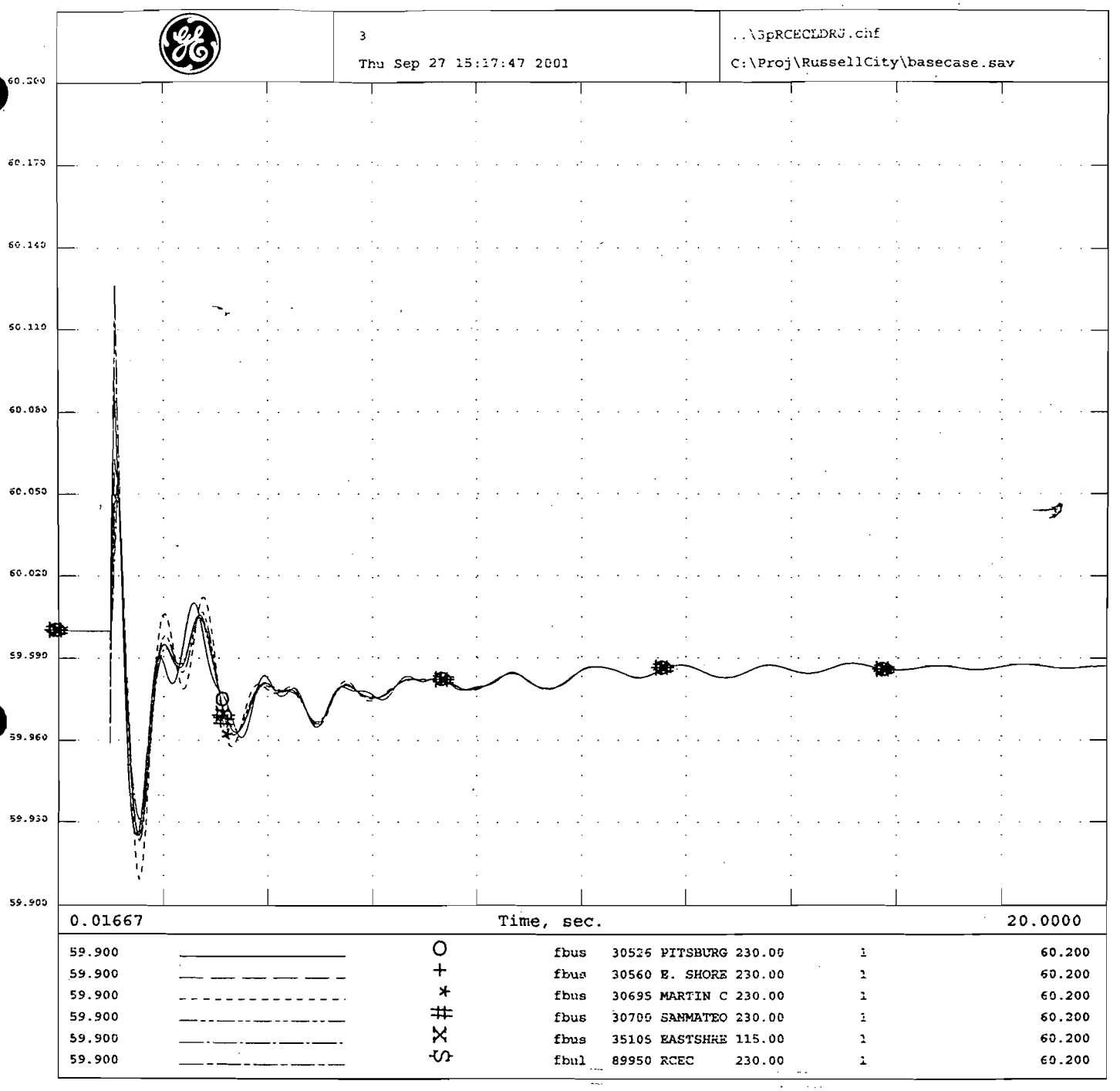
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



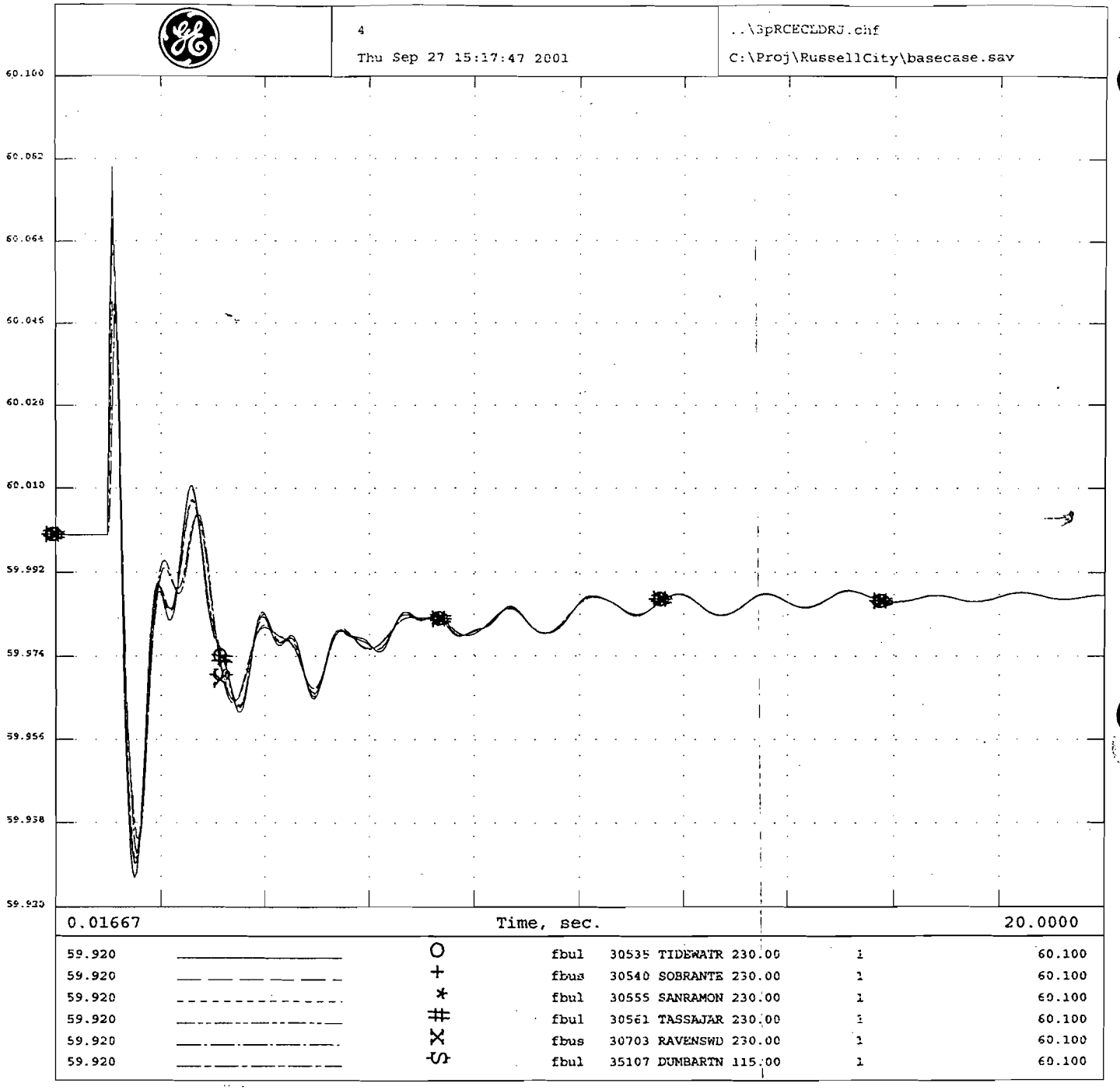
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



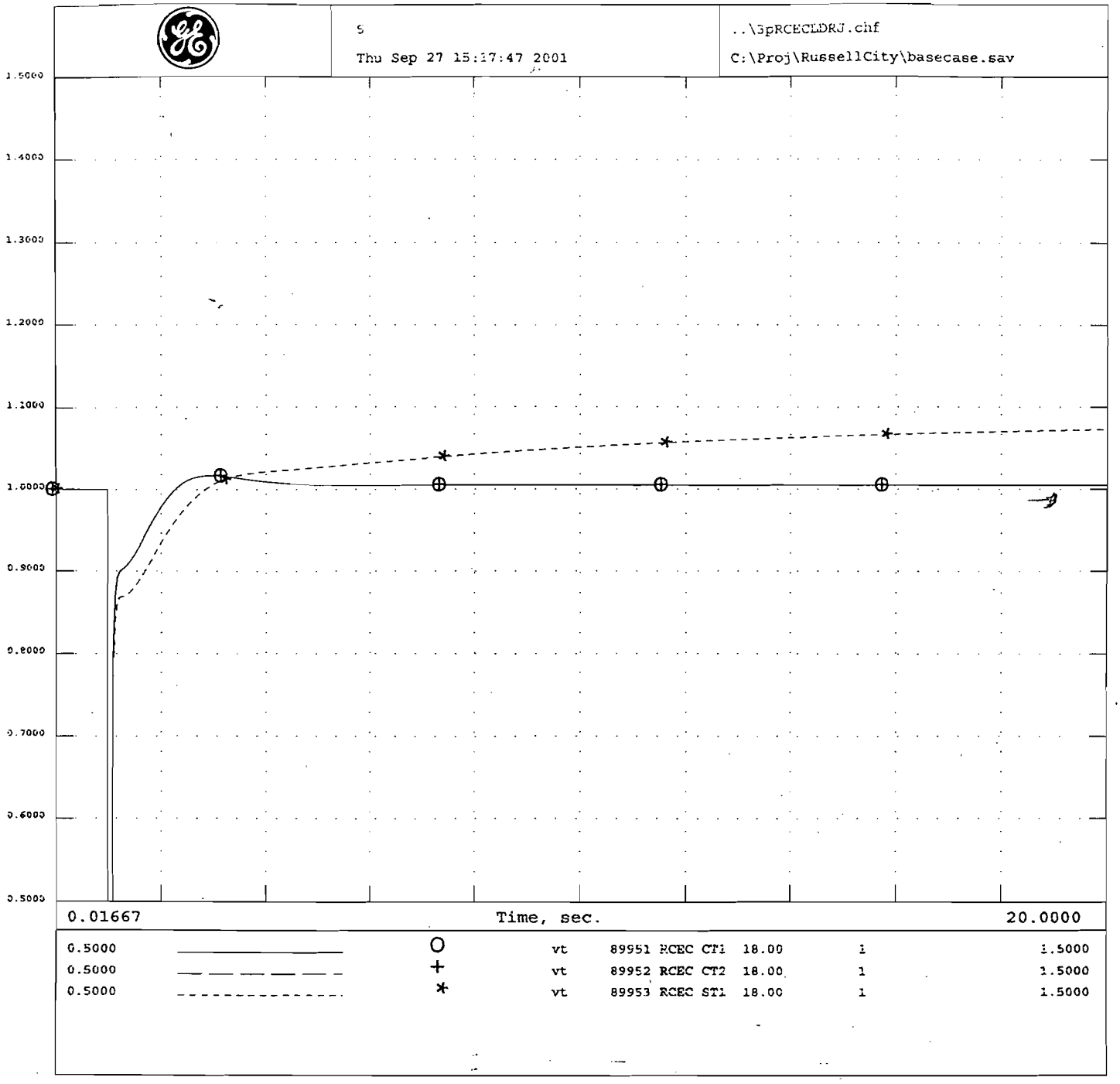
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



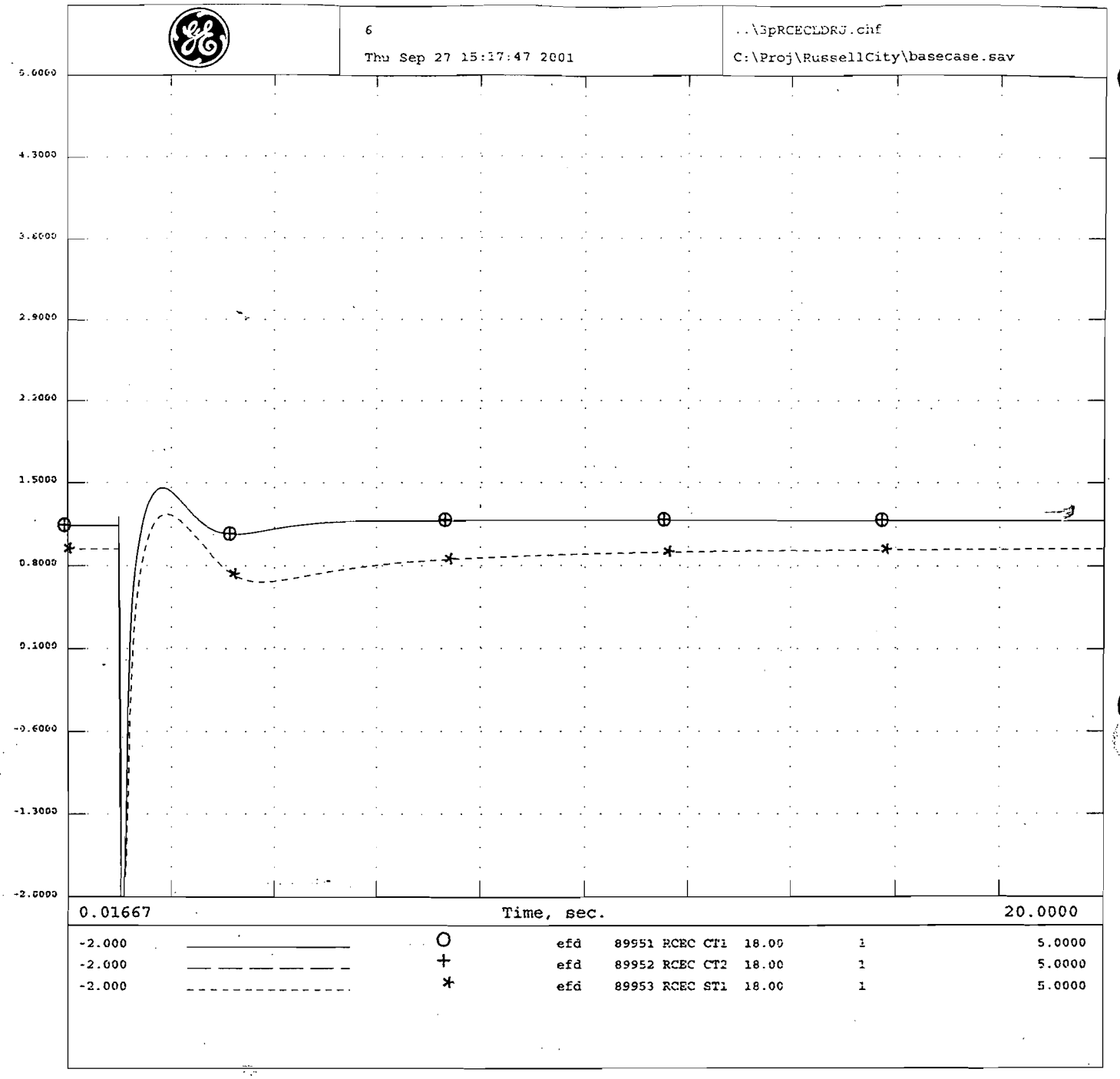
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



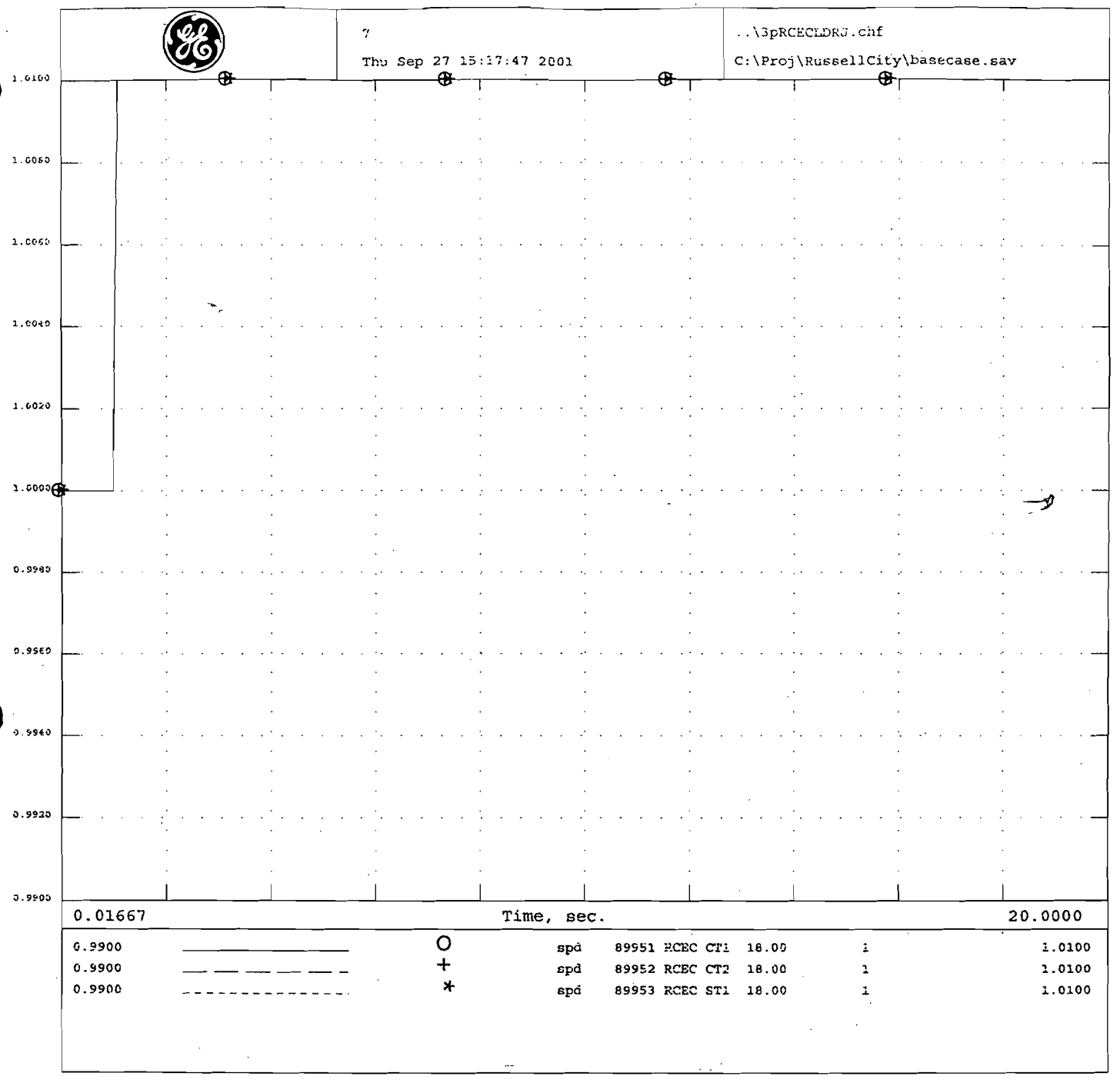
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



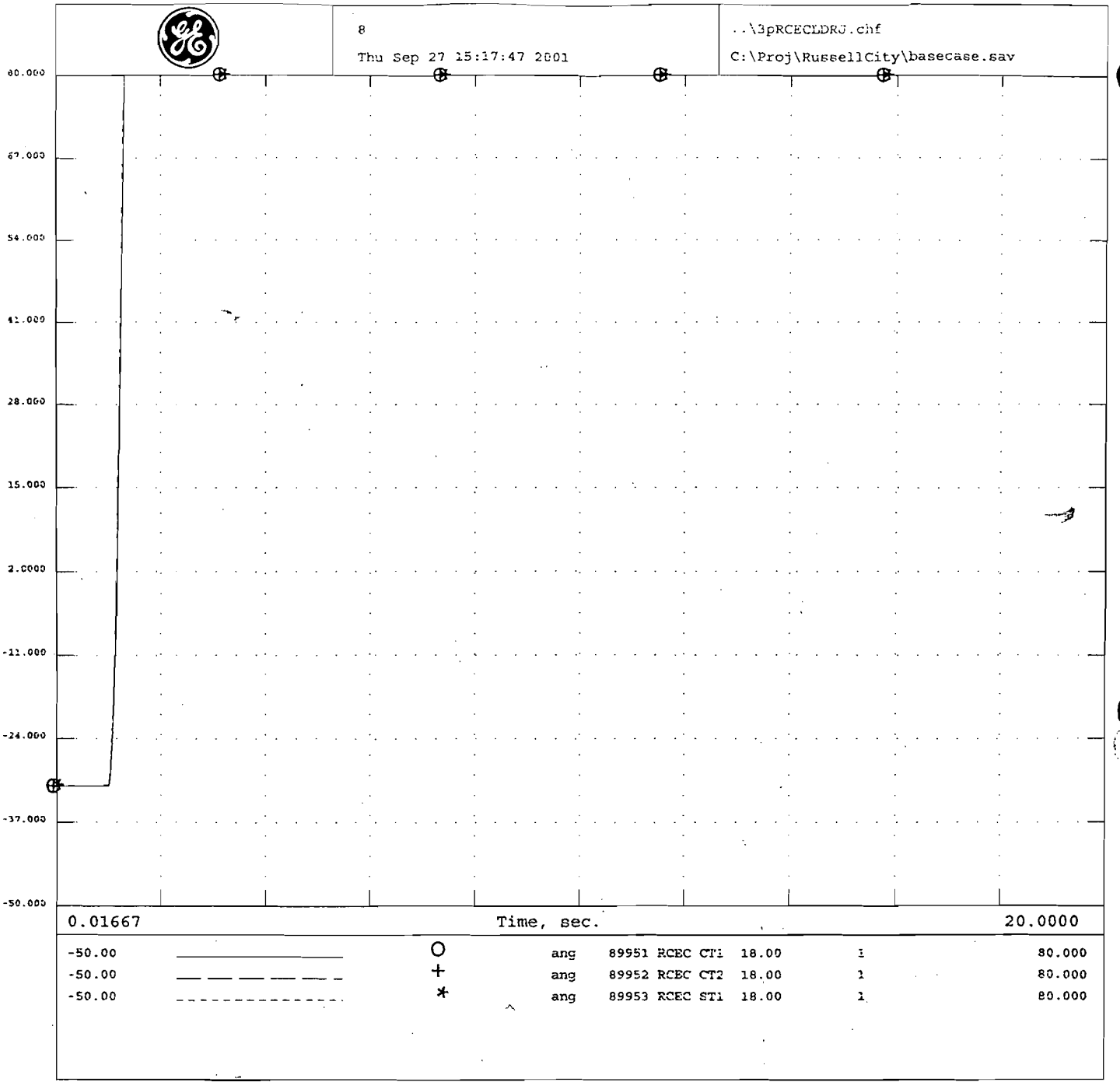
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



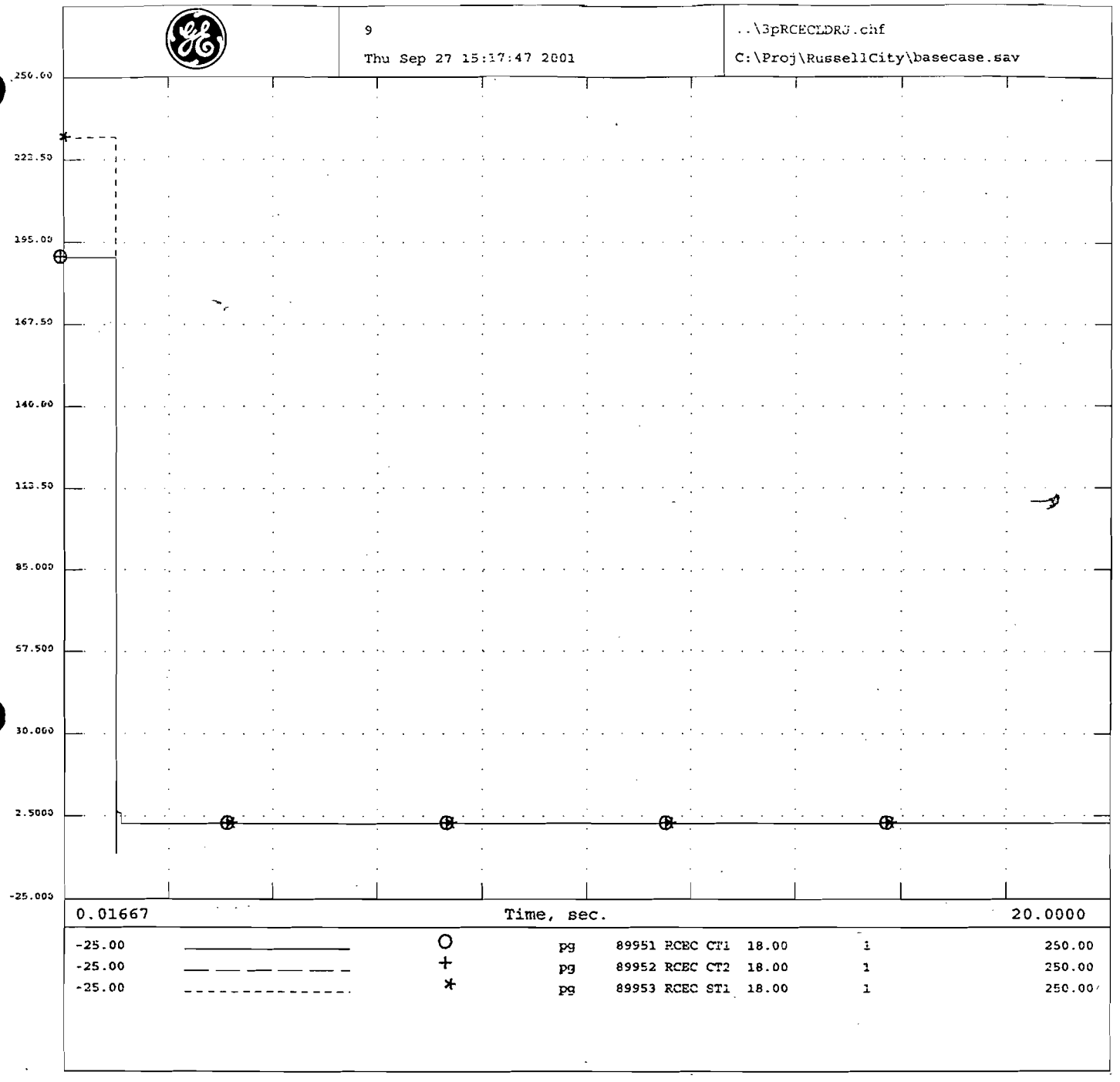
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



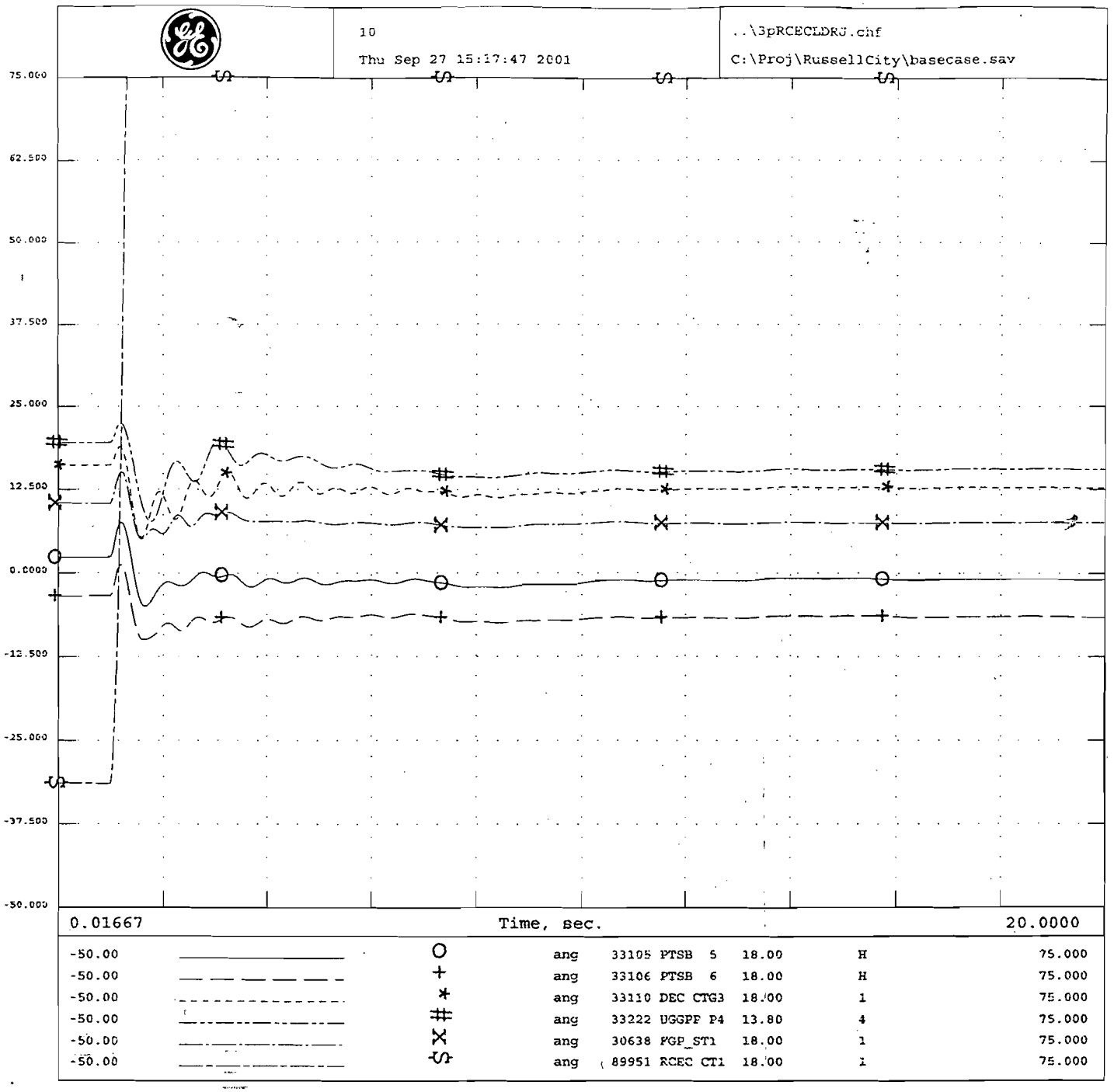
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



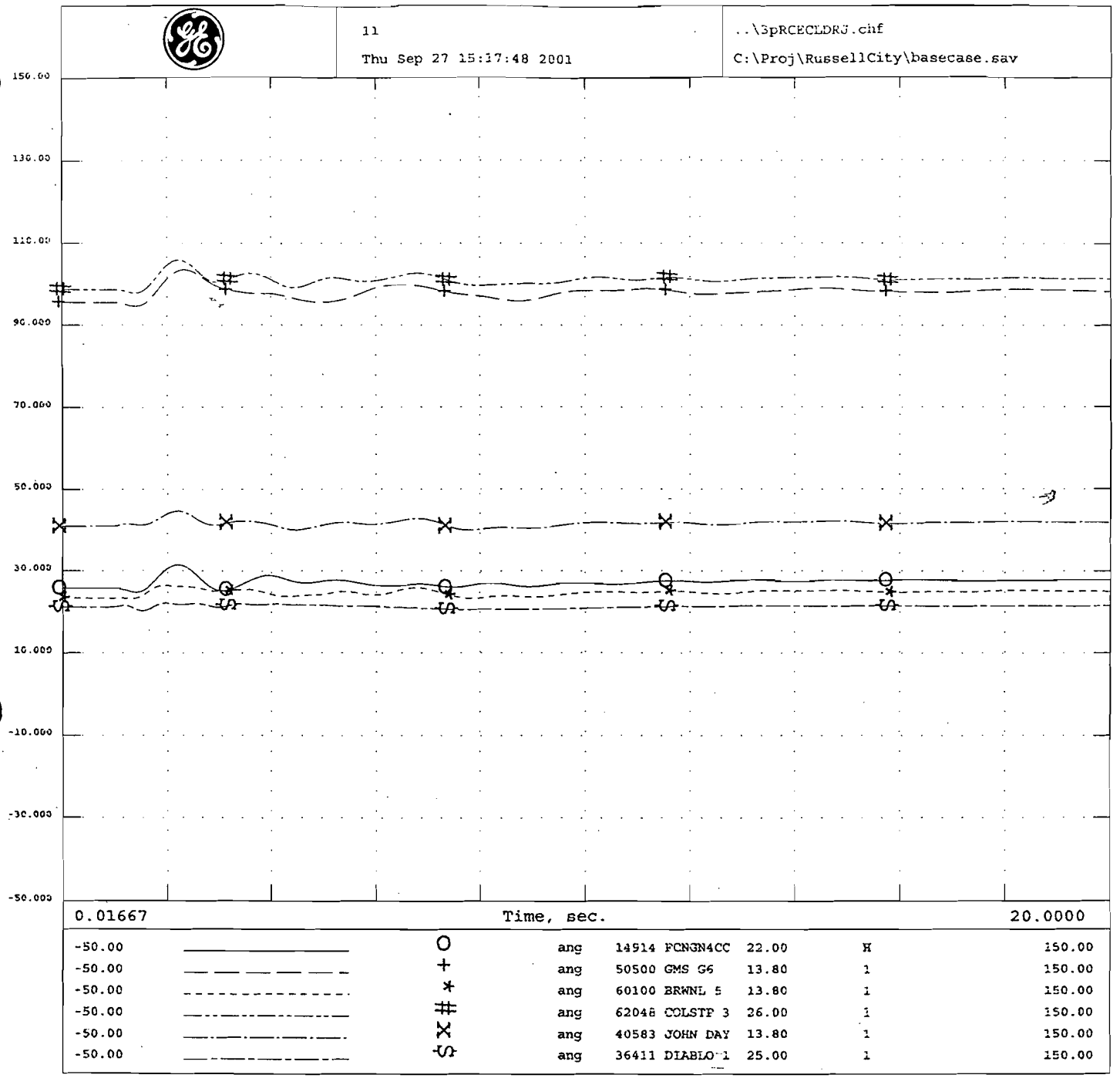
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



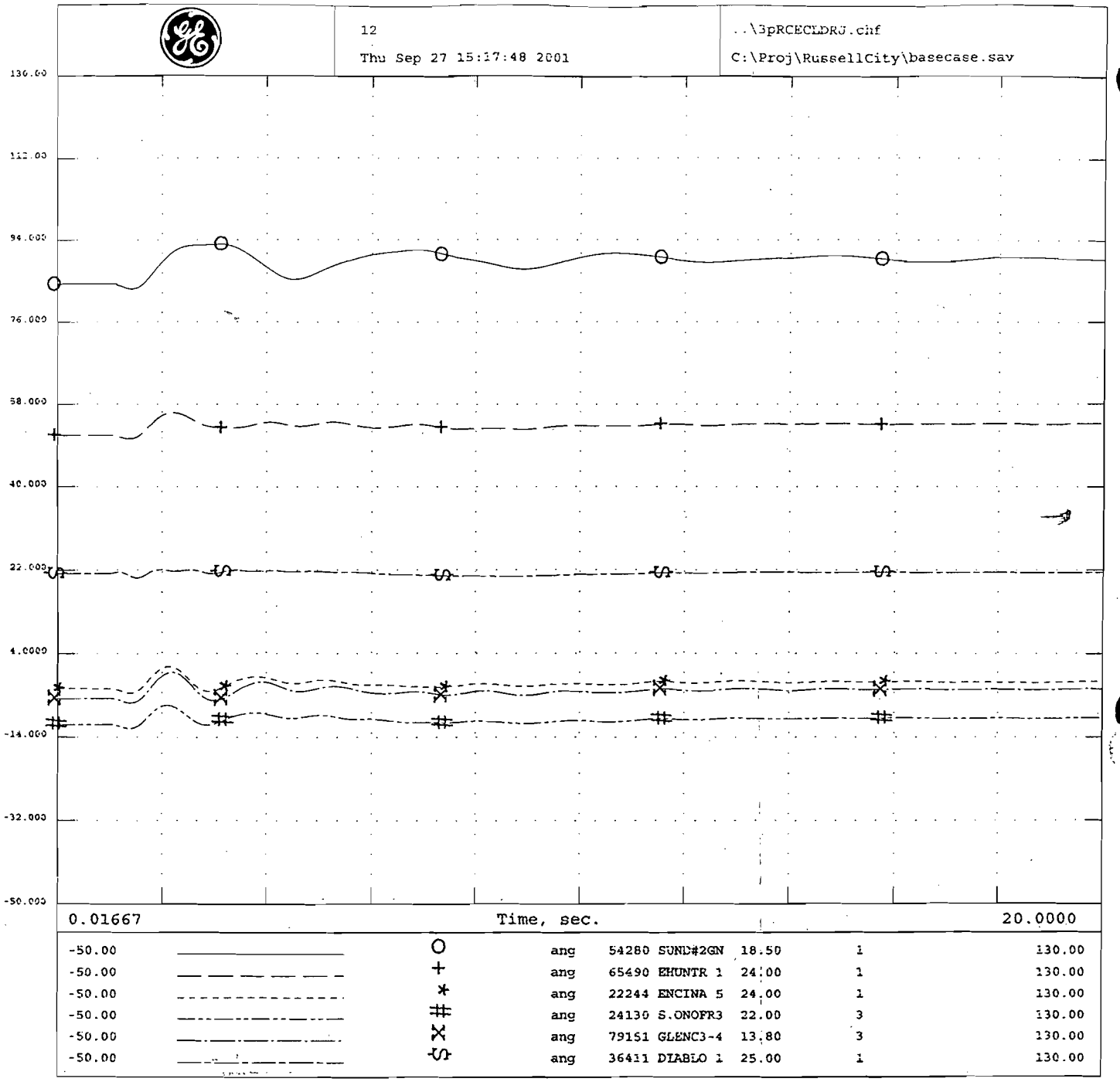
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



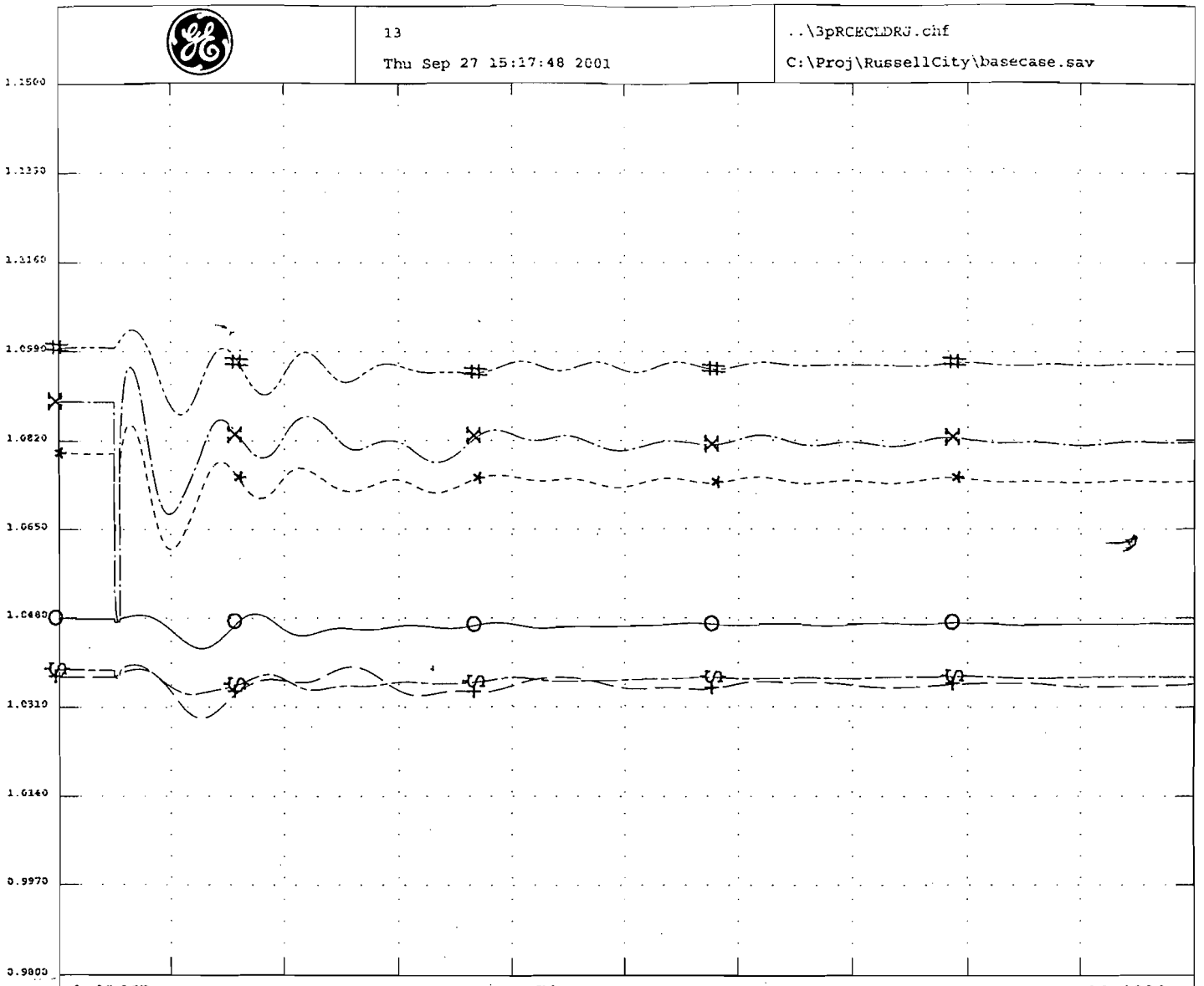
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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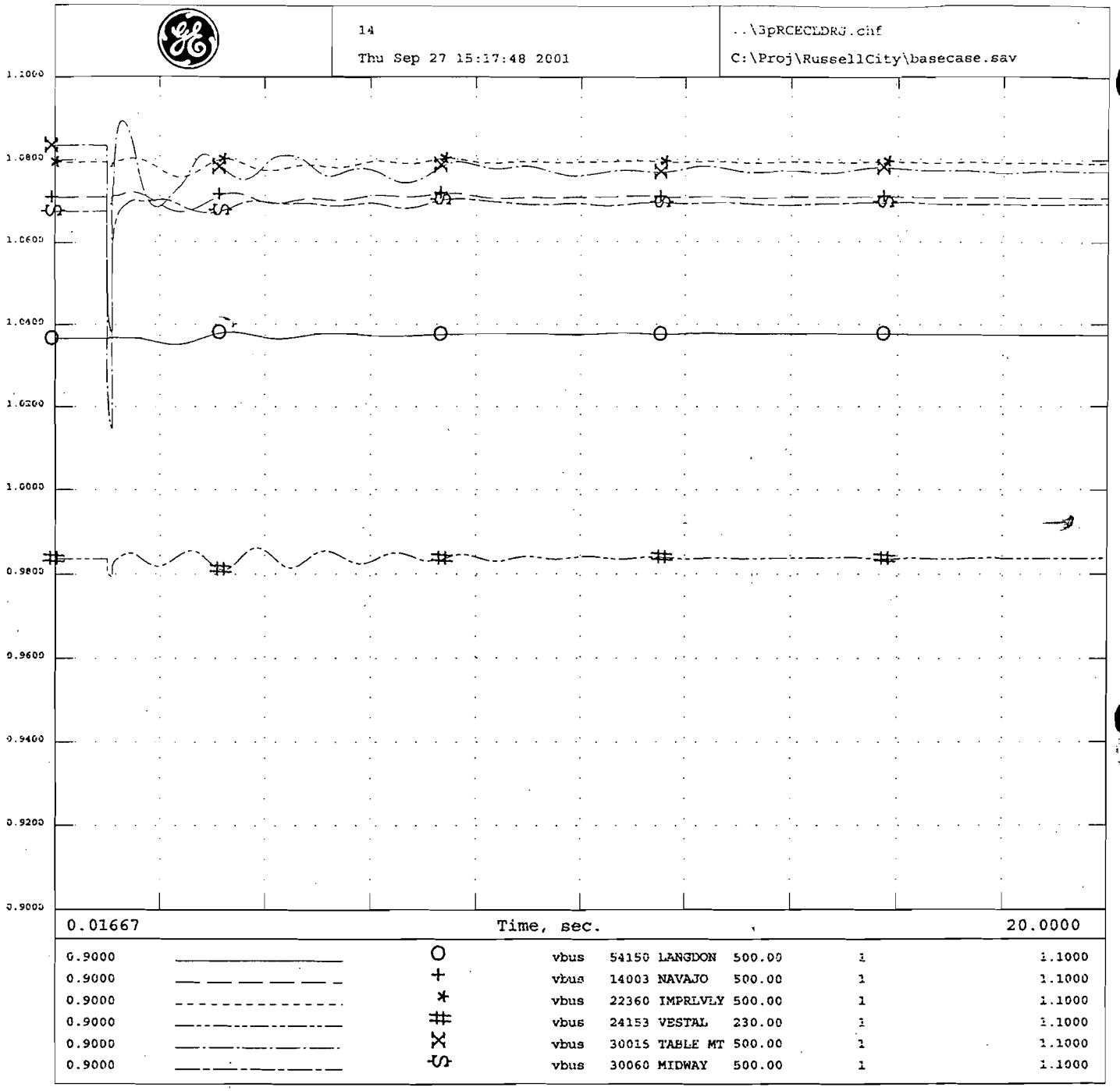
0.9800	— — — — — —	+	vbus	50662	LU2138	138.00	1	1.1500
0.9800	- - - - - - - - - - - - -	*	vbus	60240	MIDPOINT	500.00	1	1.1500
0.9800	—-—-—-—-—-—-	#	vbus	62012	TOWN2	500.00	1	1.1500
0.9800	—.—.—.—.—.—.	X	vbus	40687	MALIN	500.00	1	1.1500
0.9800	—-—-—-—-—-—-	S	vbus	66340	SIGURD	345.00	1	1.1500

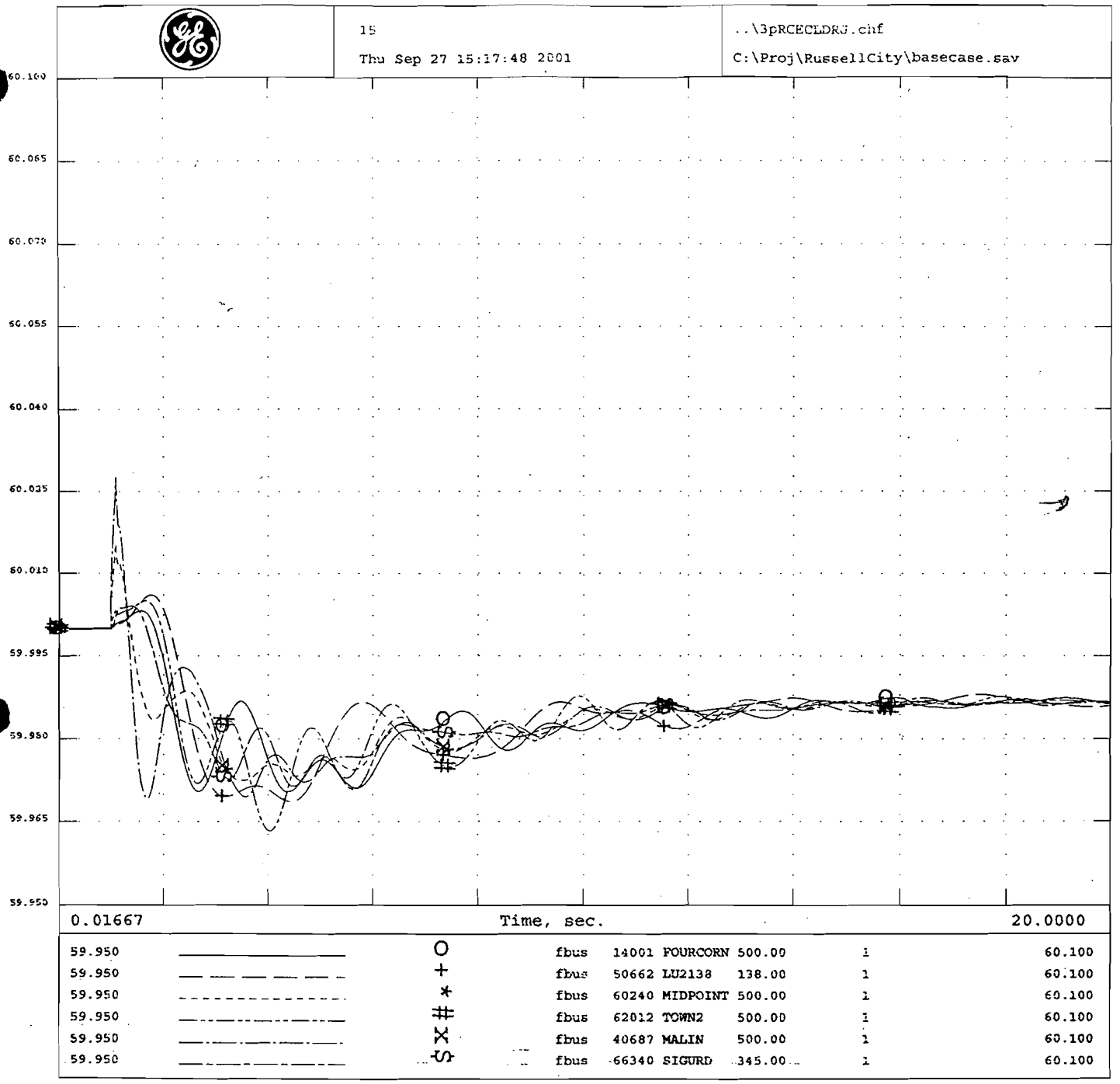
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



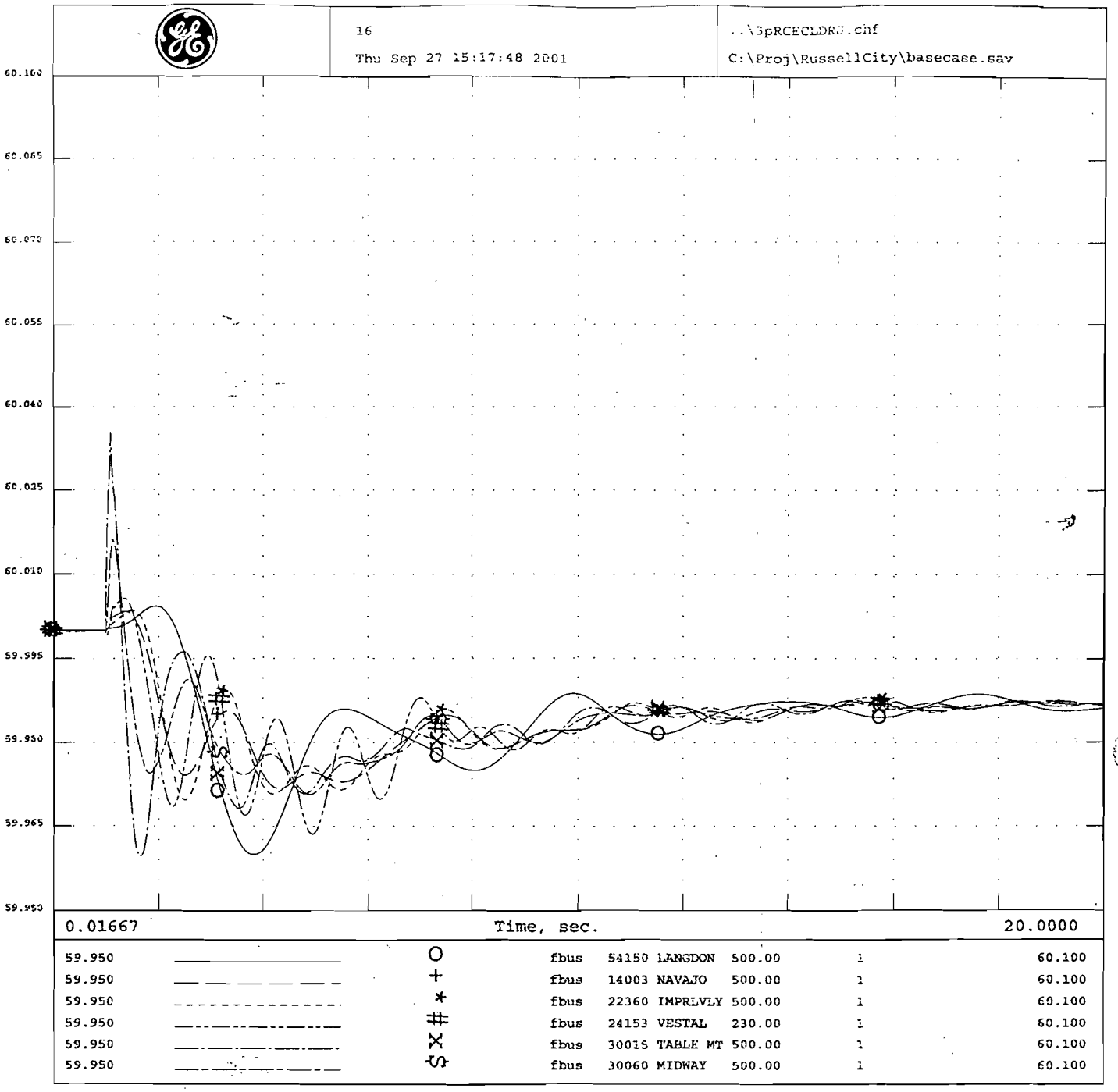
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



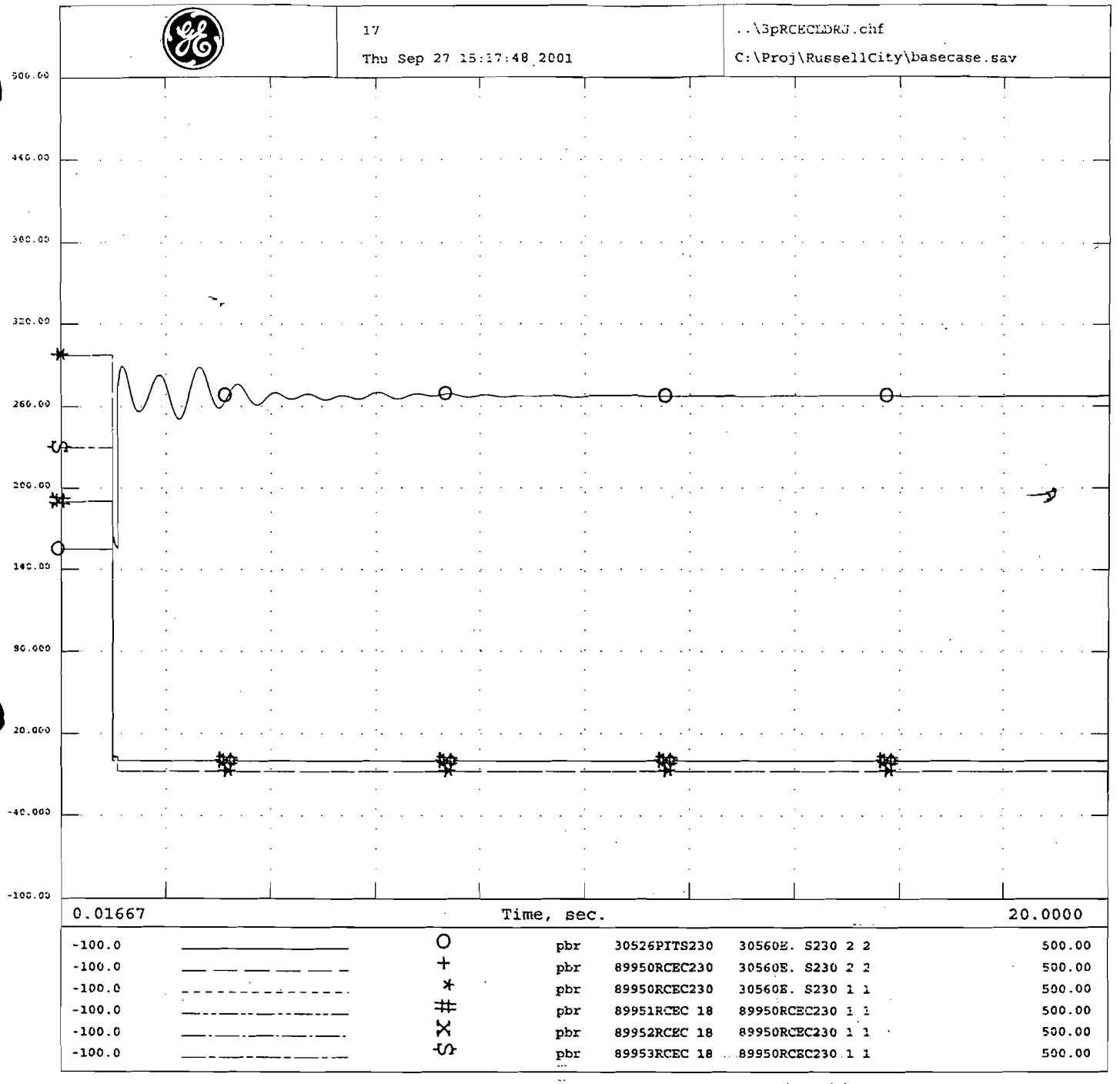
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



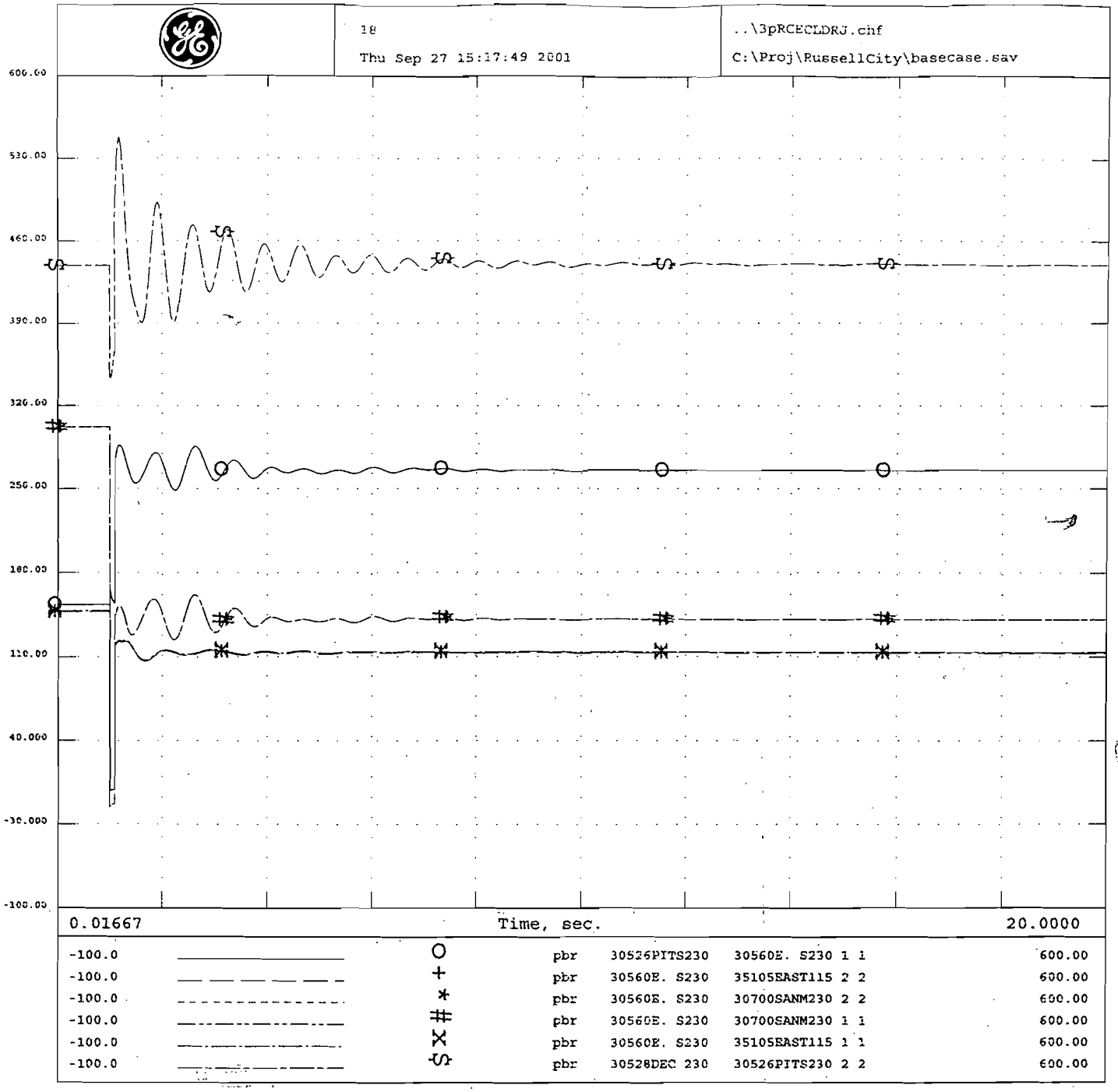
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



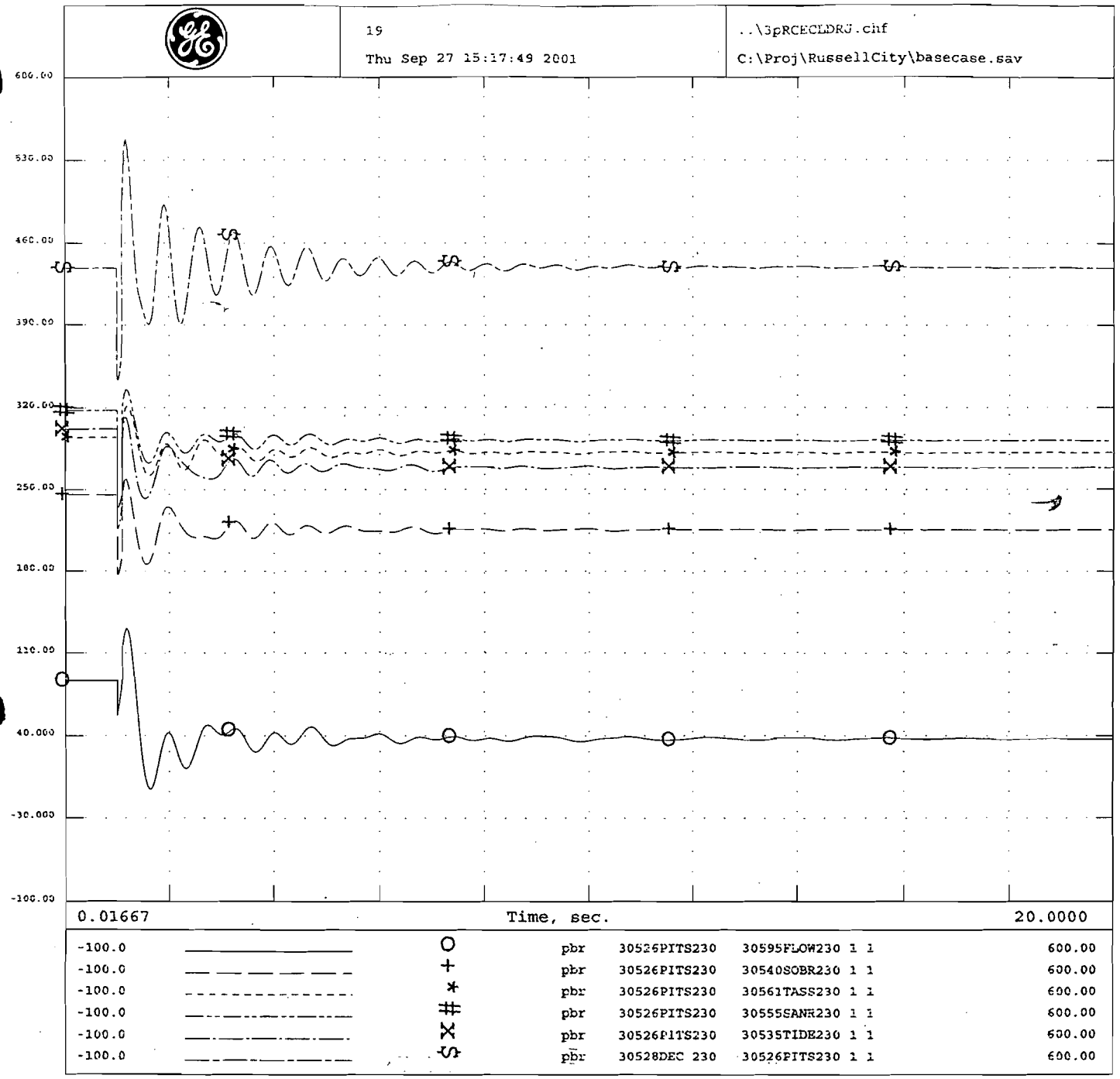
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



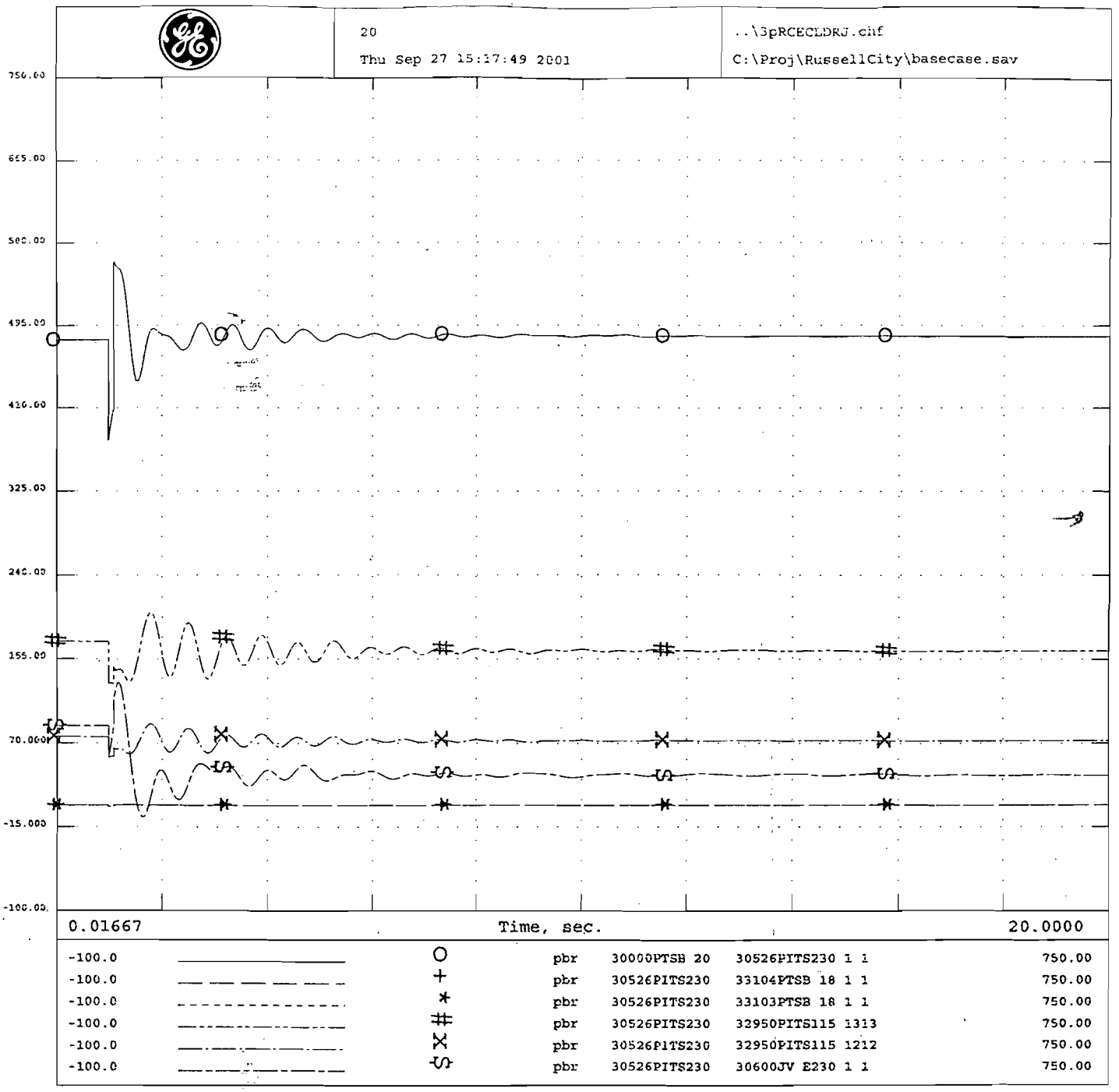
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



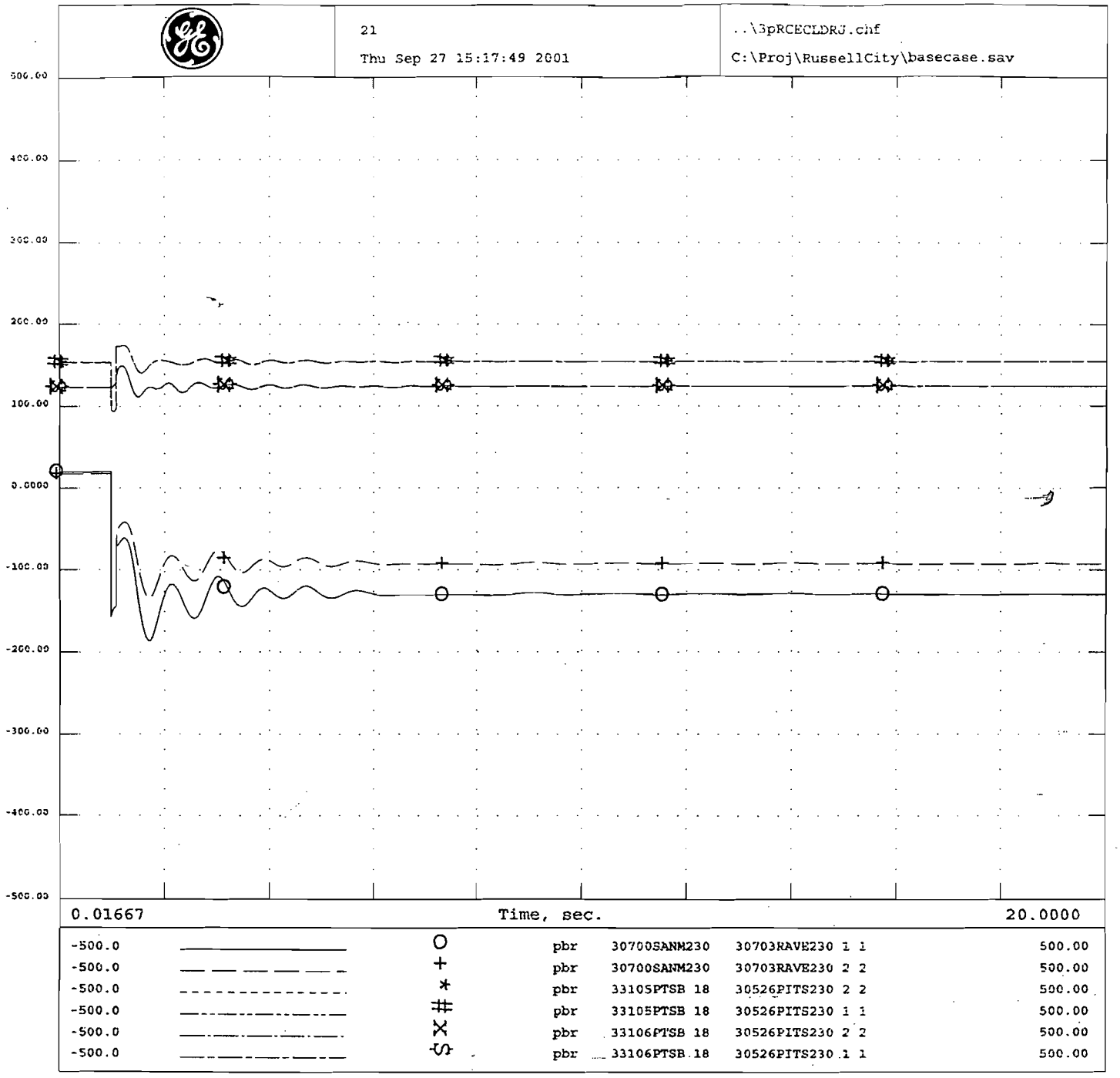
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



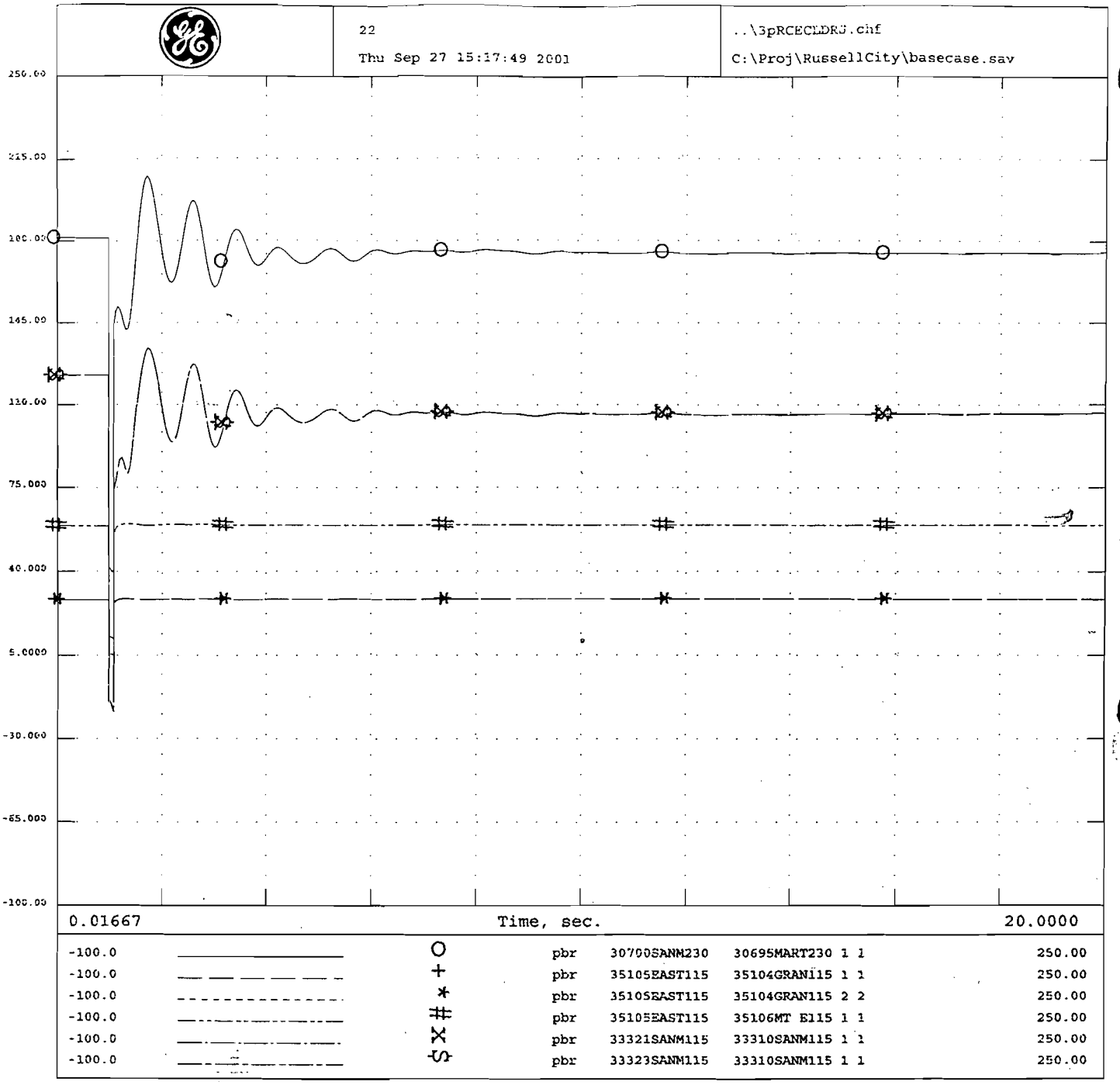
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



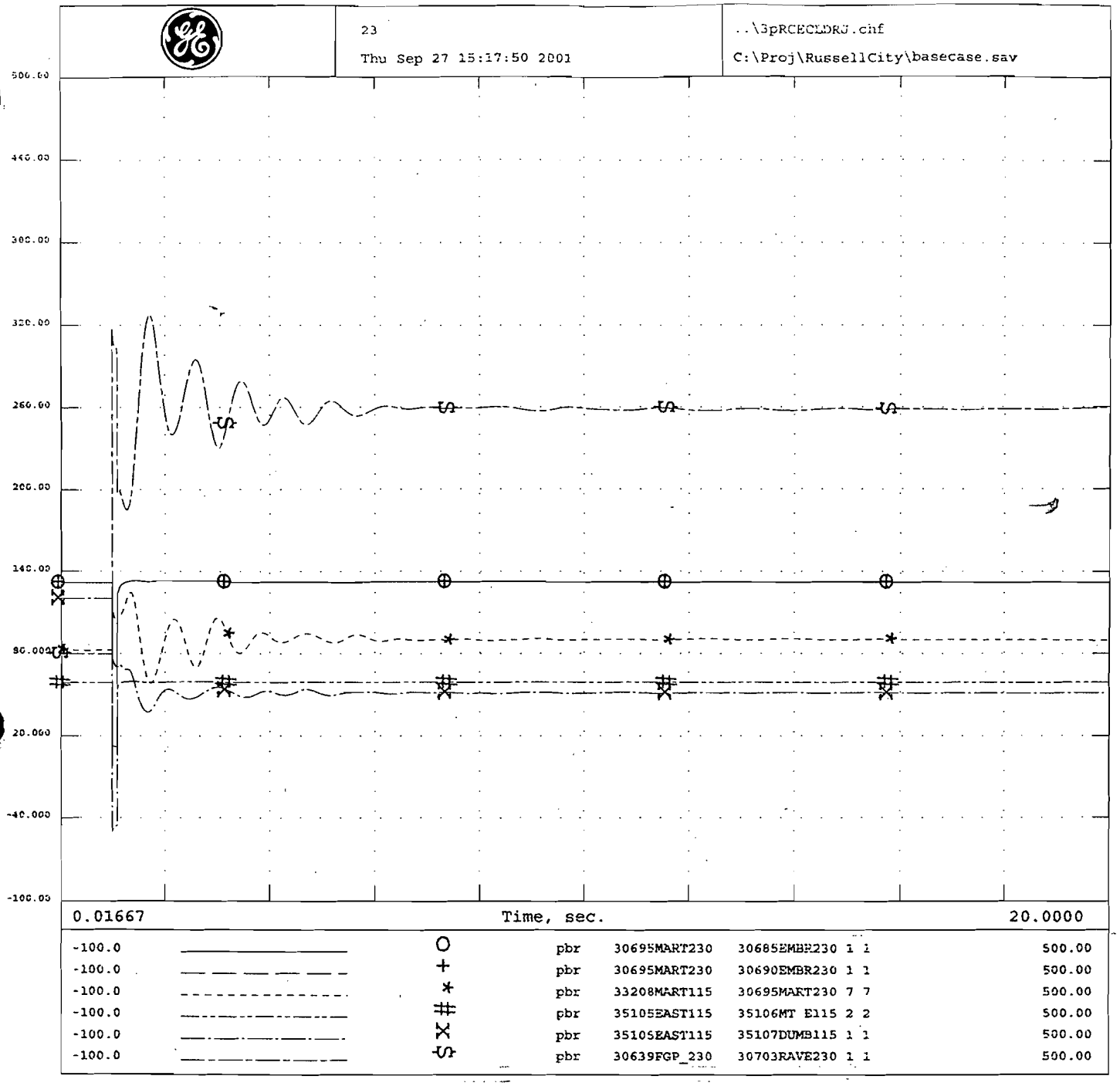
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



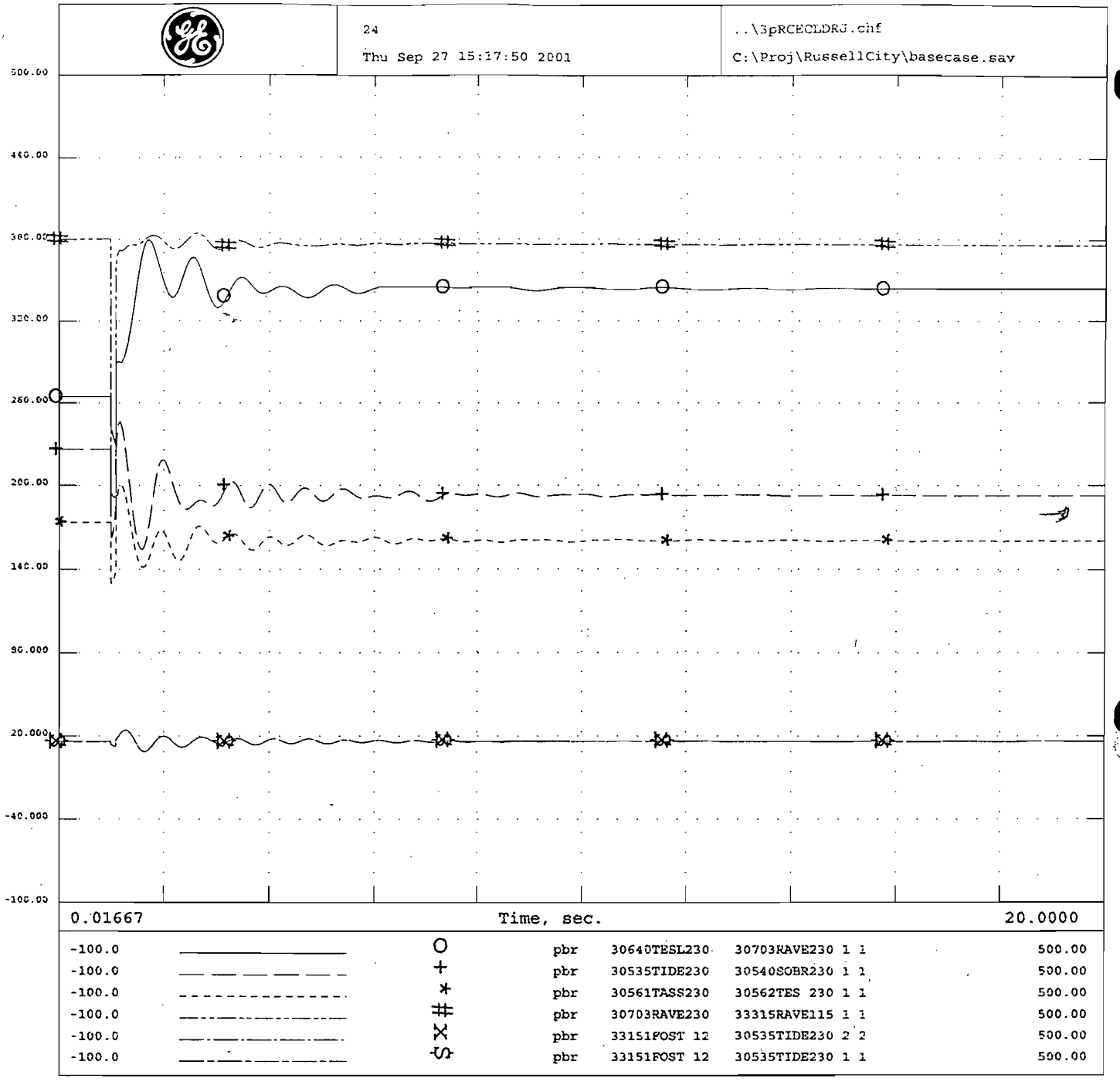
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC Load Rejection
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC units

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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RCEC Load Rejection
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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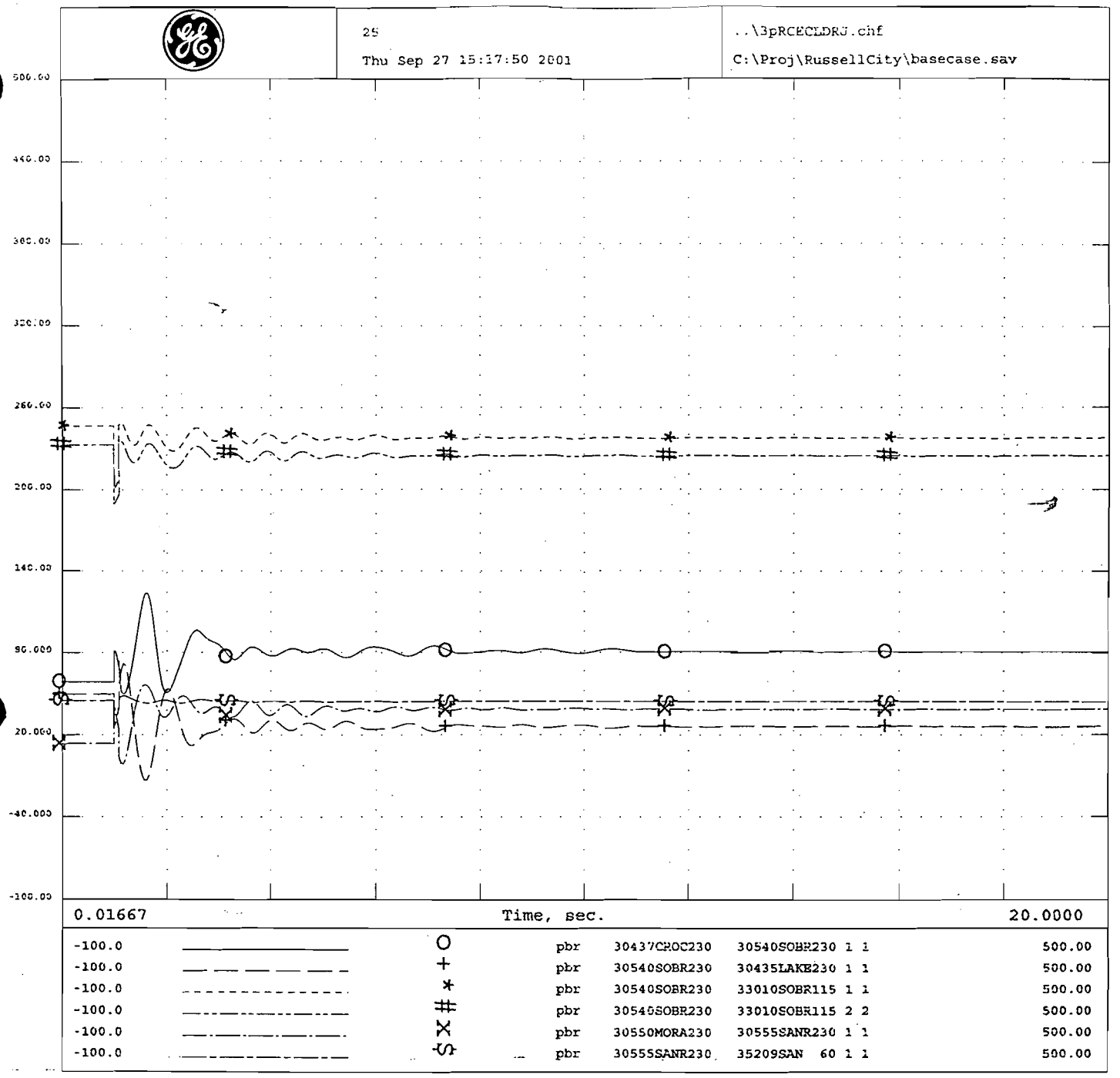

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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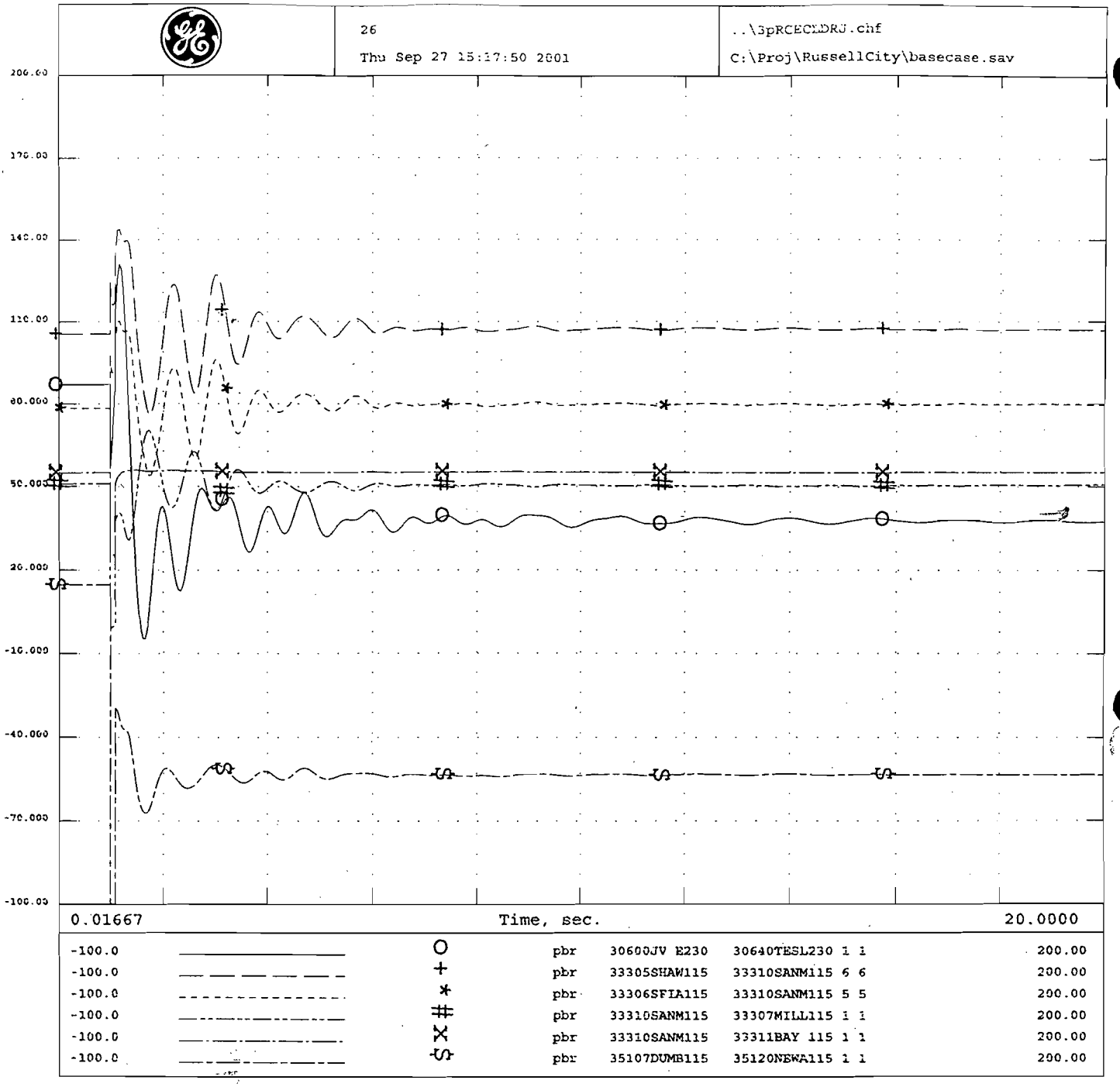

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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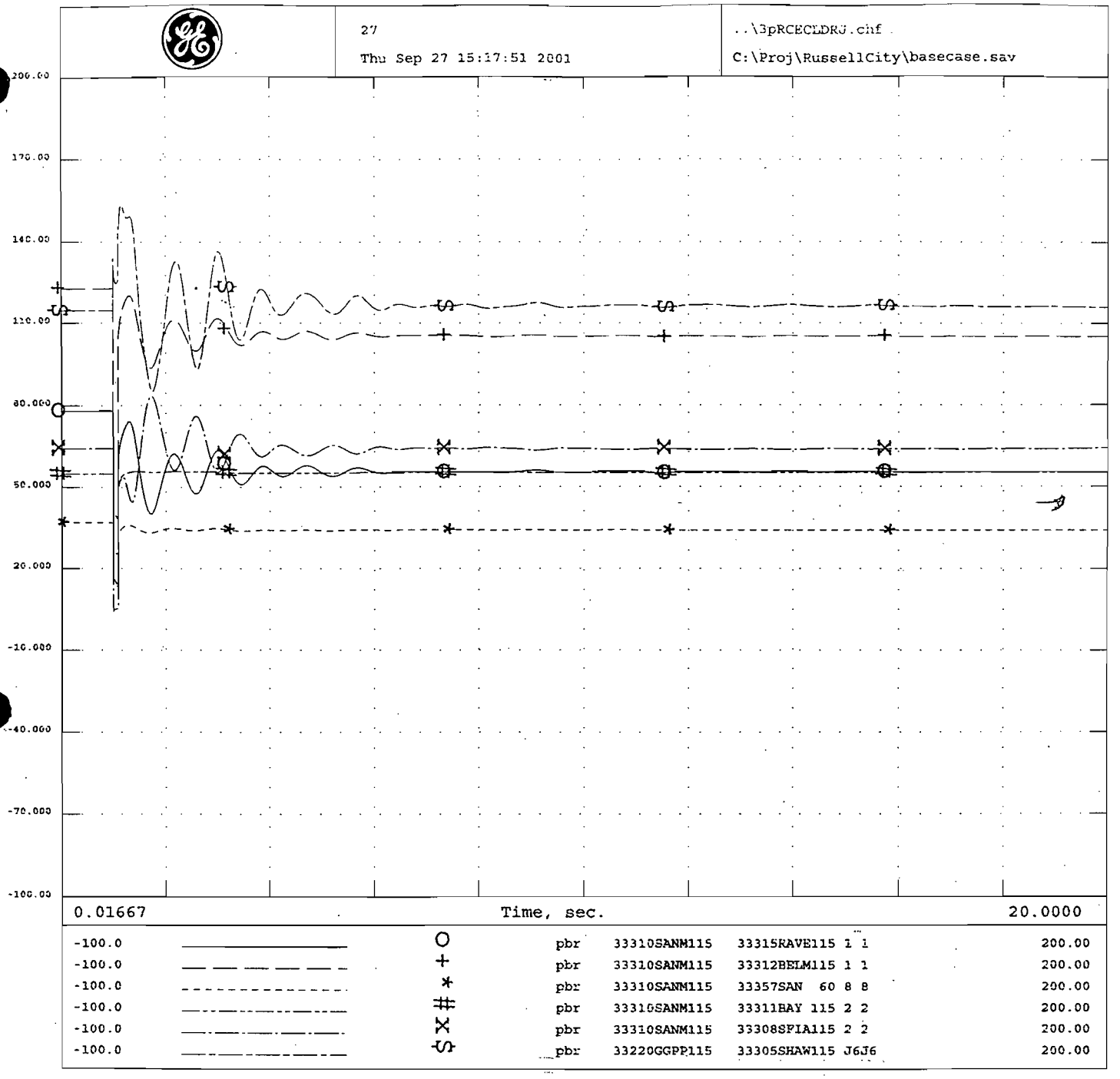

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D
RUN  9
CC
CC   Fault San Mateo 115kV bus
FB   0.0 "SANMATEO" 115.
CC
CC   Clear fault at San Mateo 115kV bus
CFB  6.0 "SANMATEO" 115.
CC
CC   Trip San Mateo bus 1, section D
DL   6.0 "SANMATEO" 115. "MILLBRAE" 115. "1 "
DL   6.0 "SANMATEO" 115. "BAY MDWS" 115. "1 "
CC
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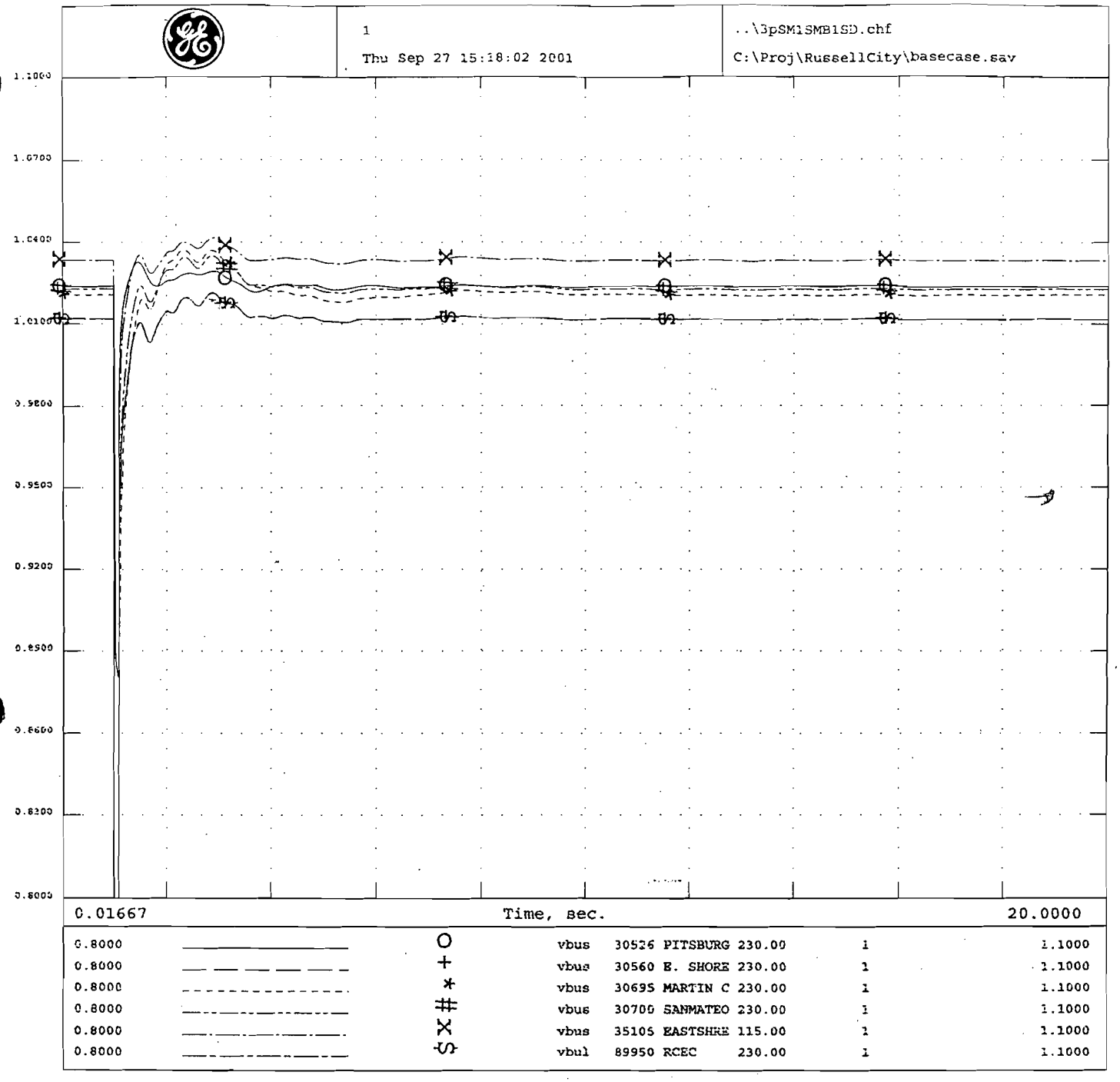
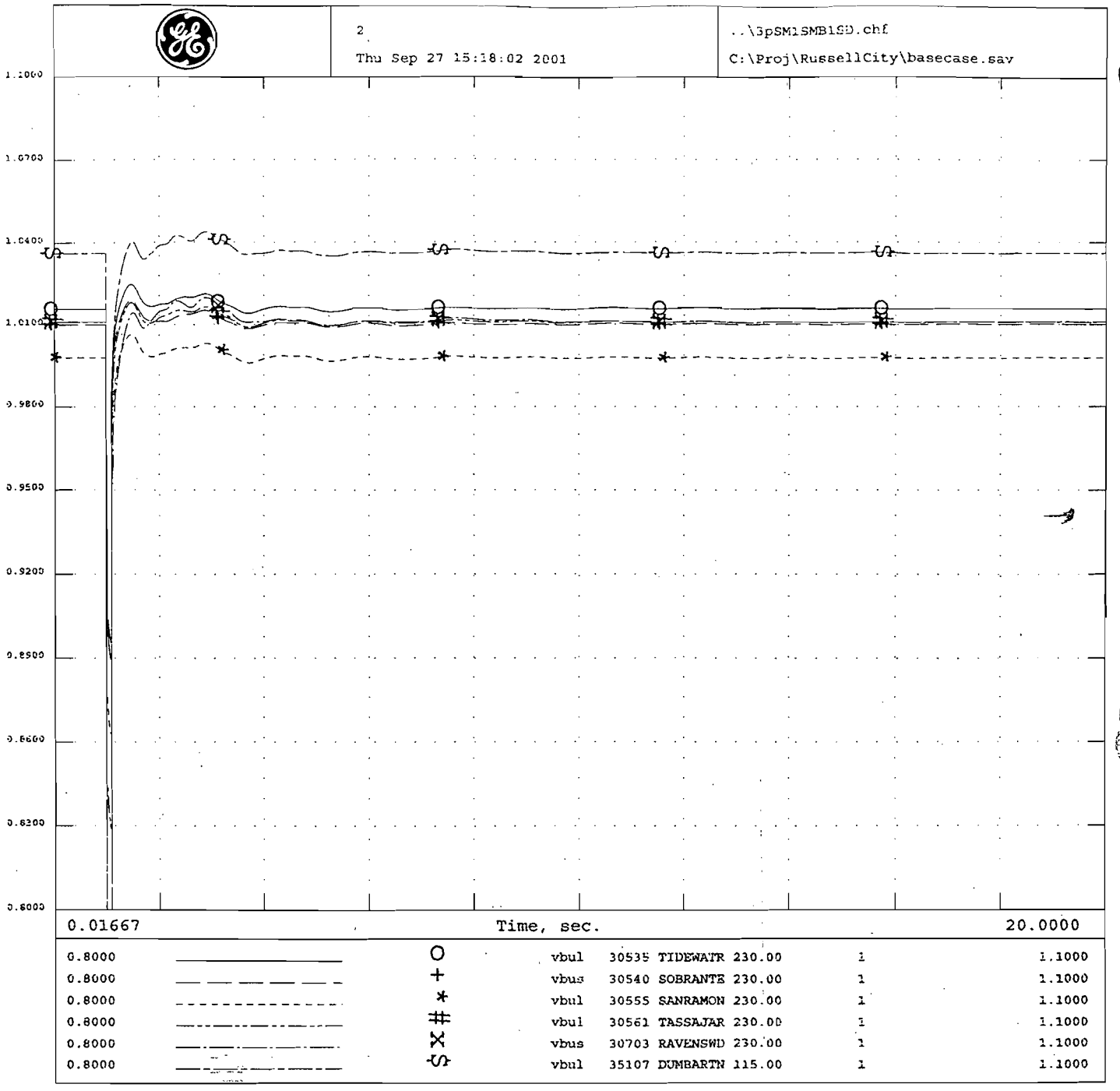


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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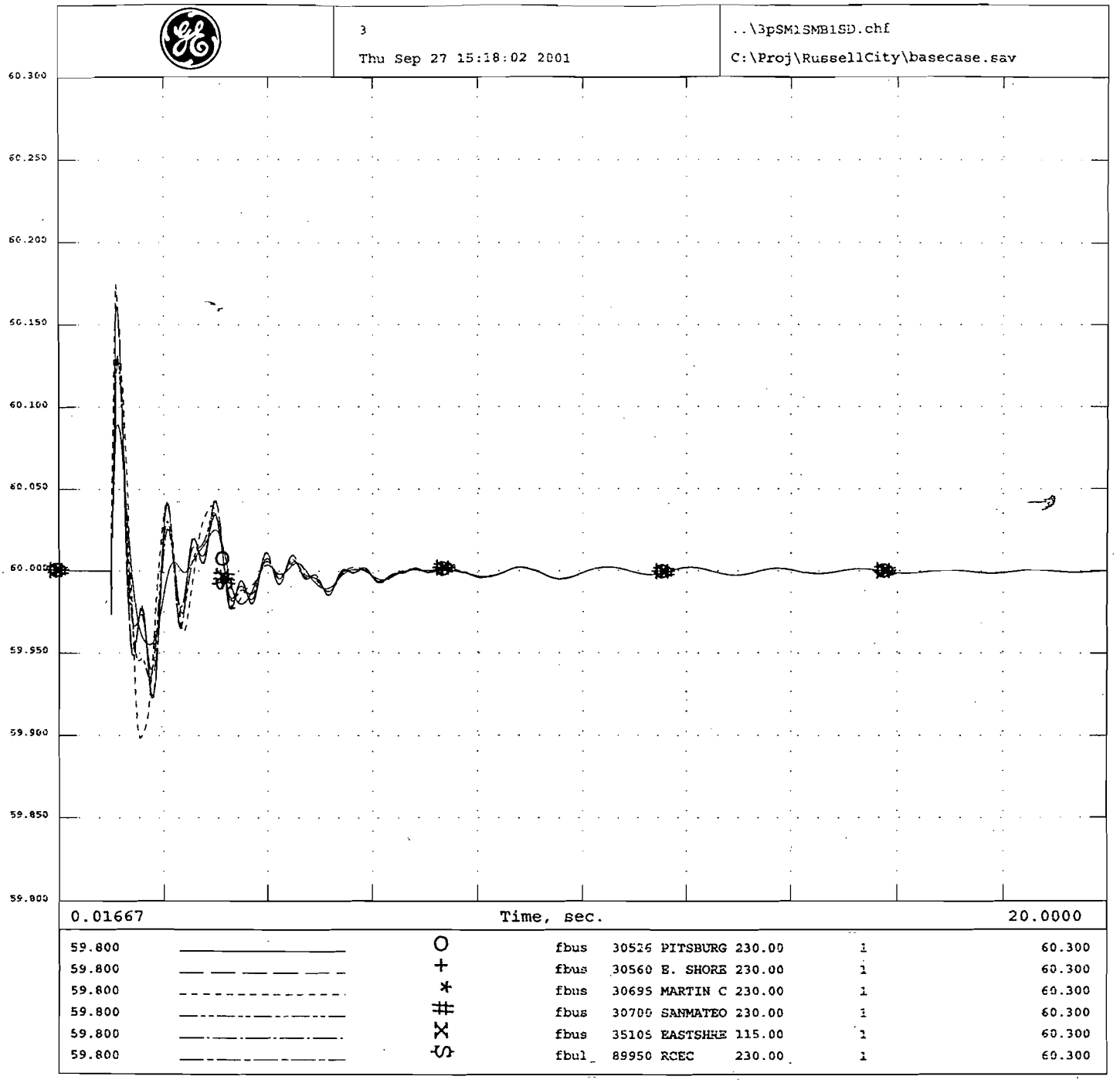
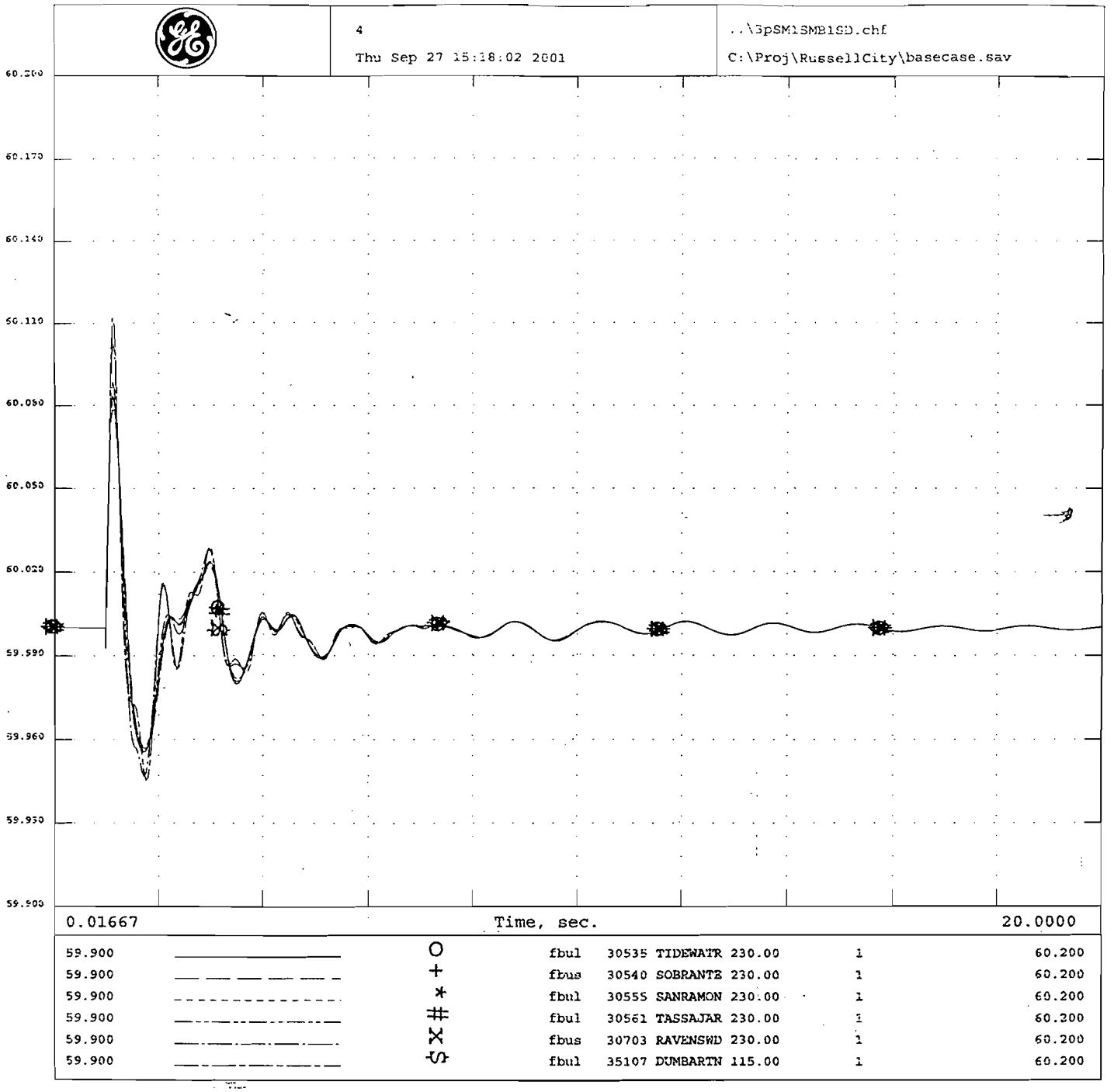
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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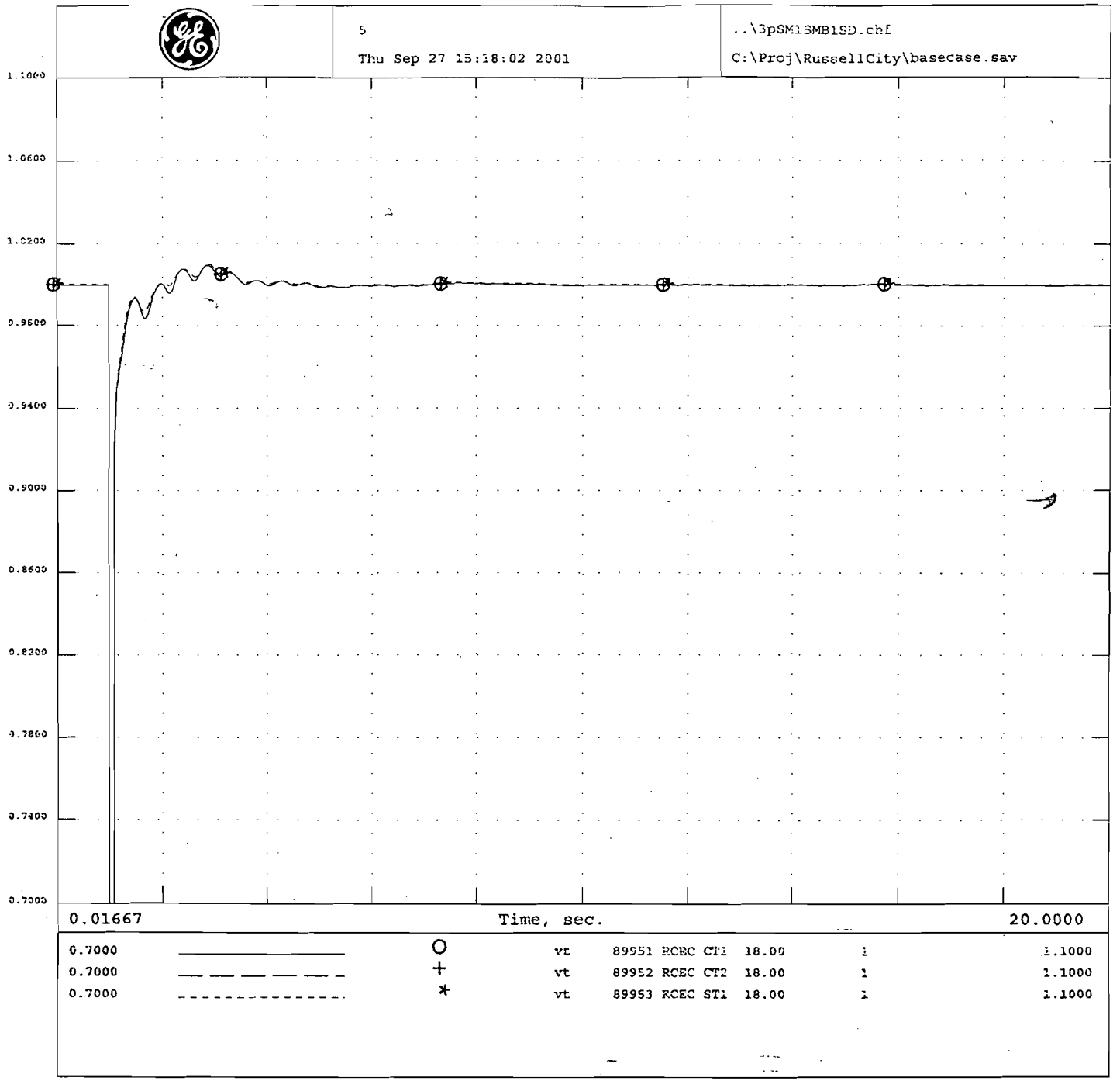

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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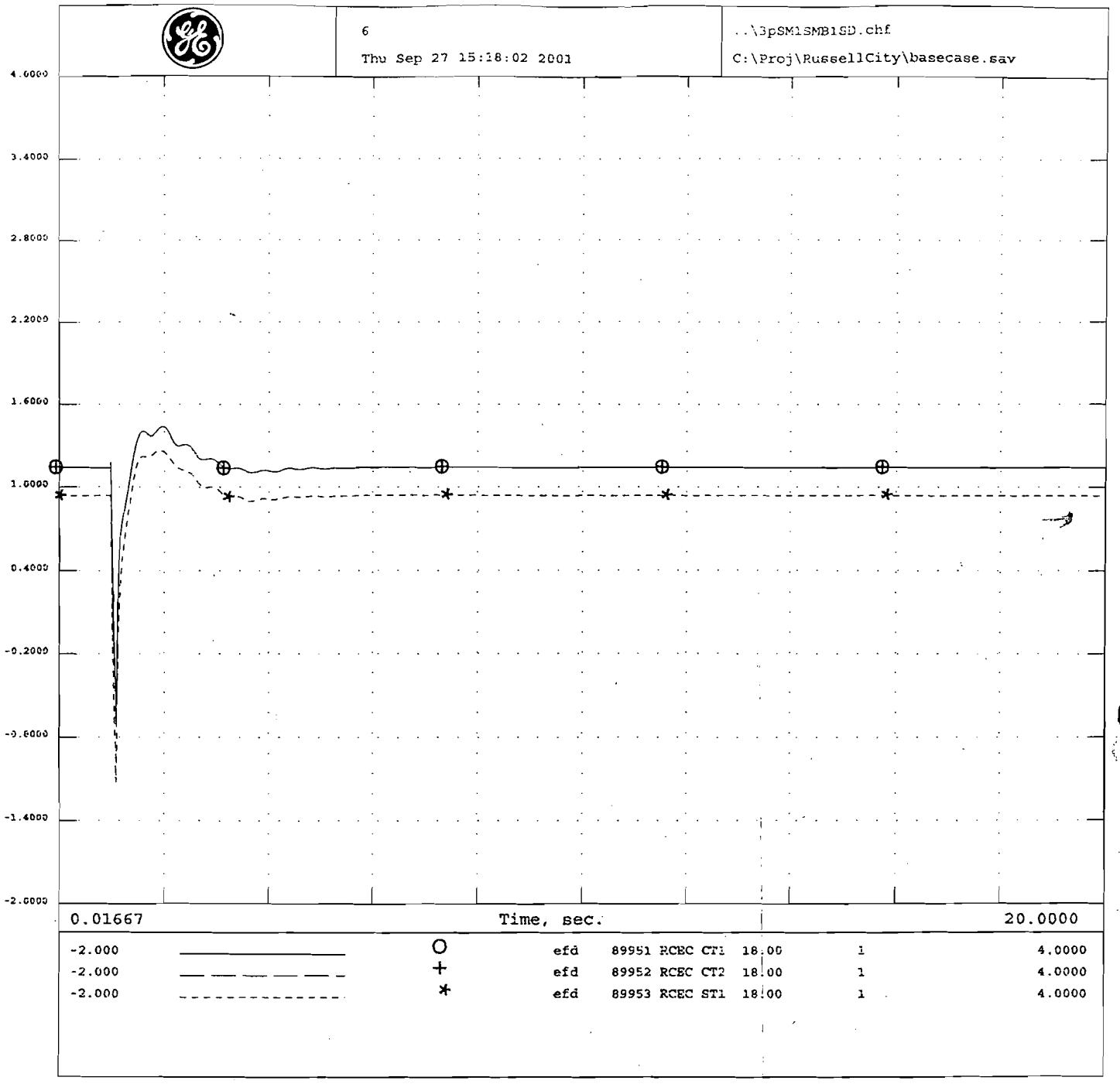
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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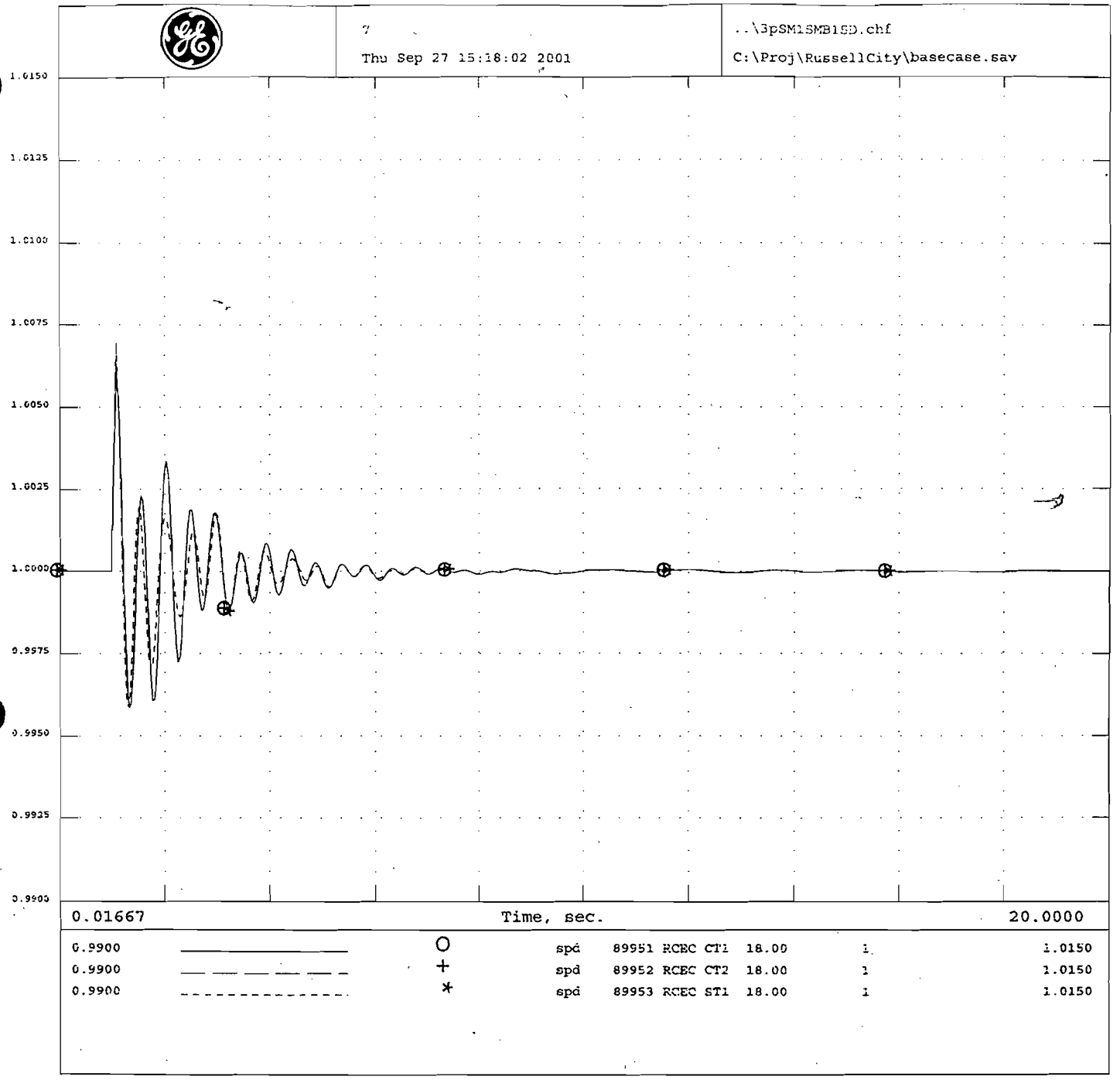
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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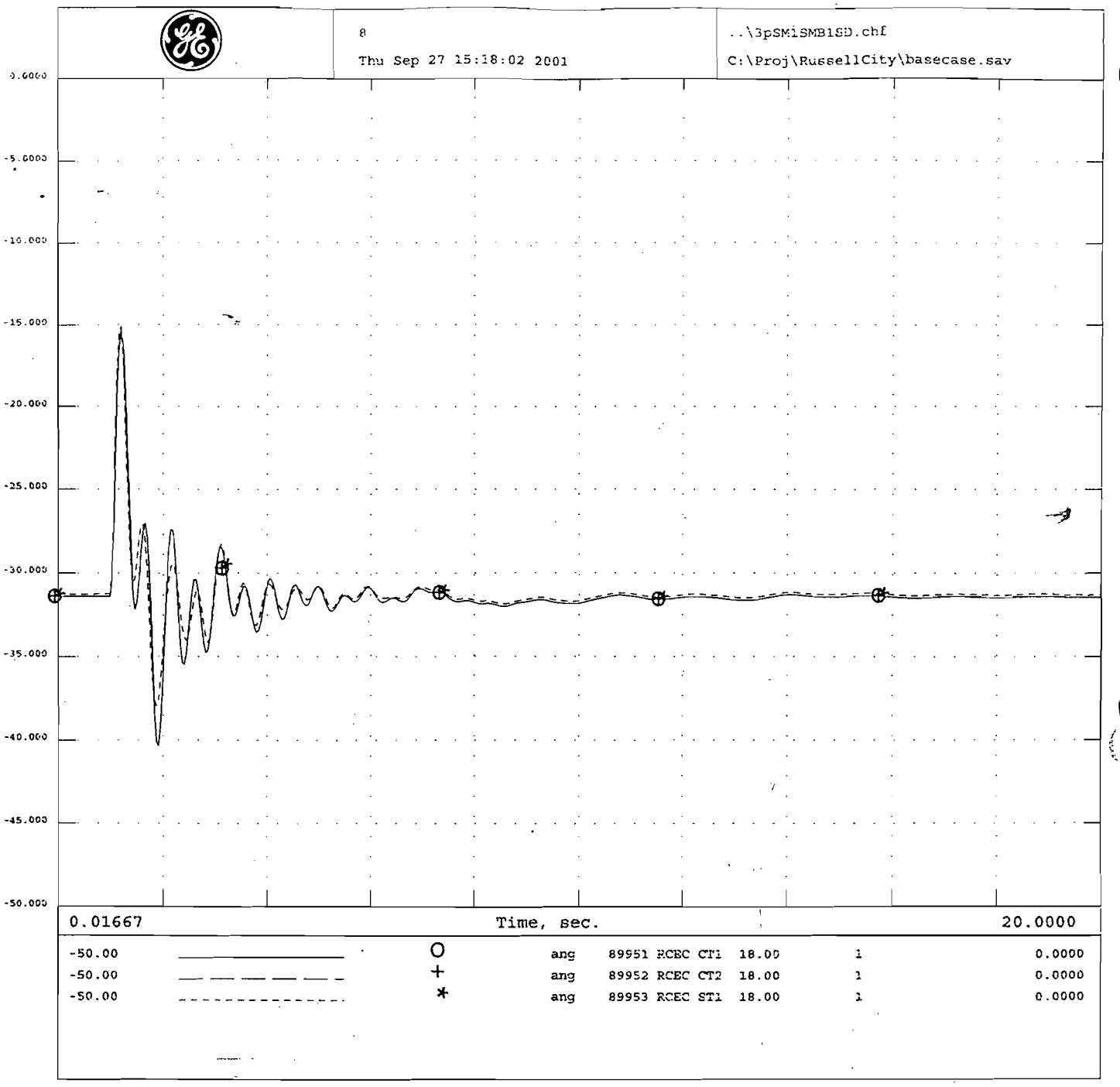
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
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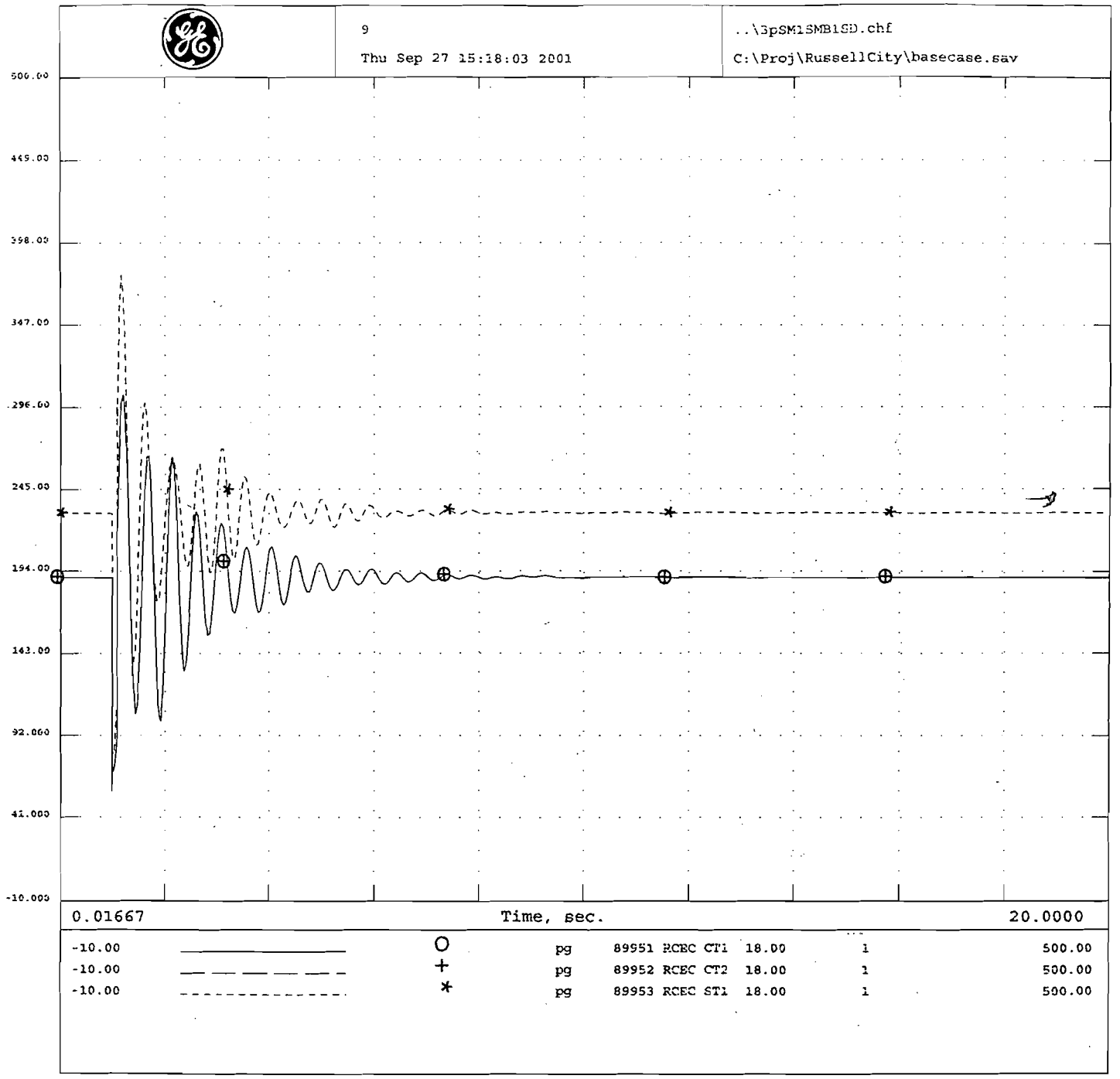
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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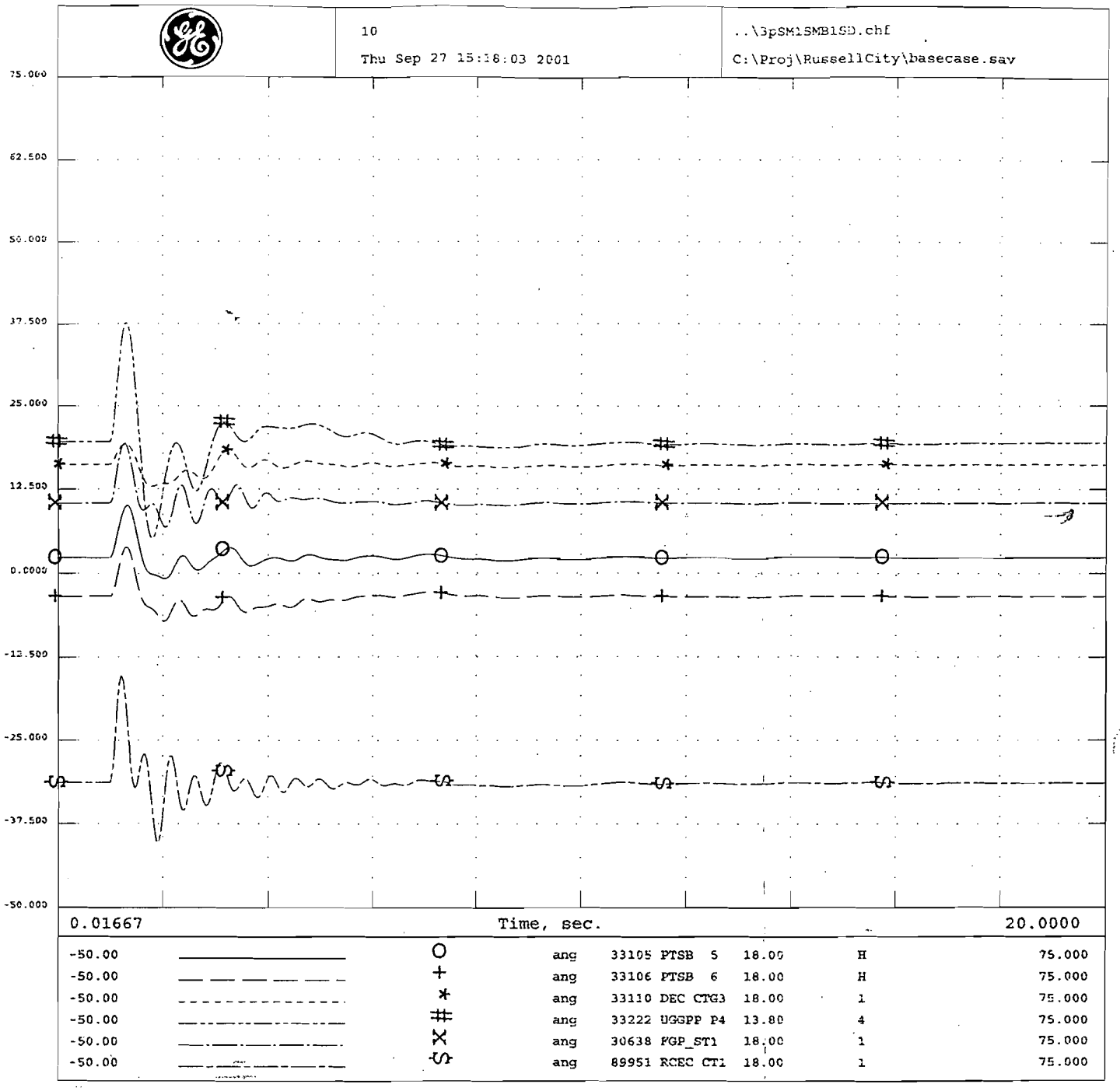
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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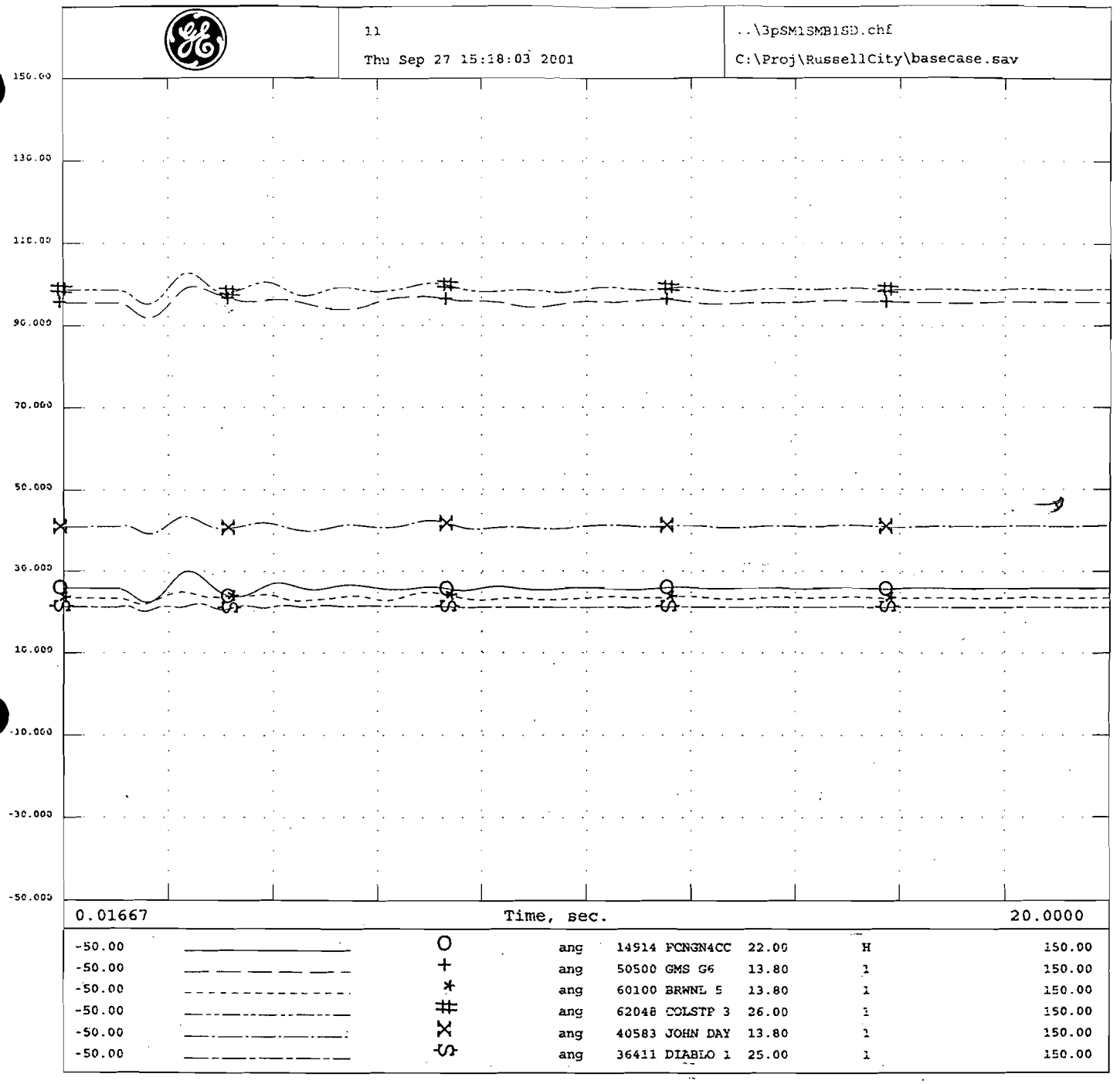
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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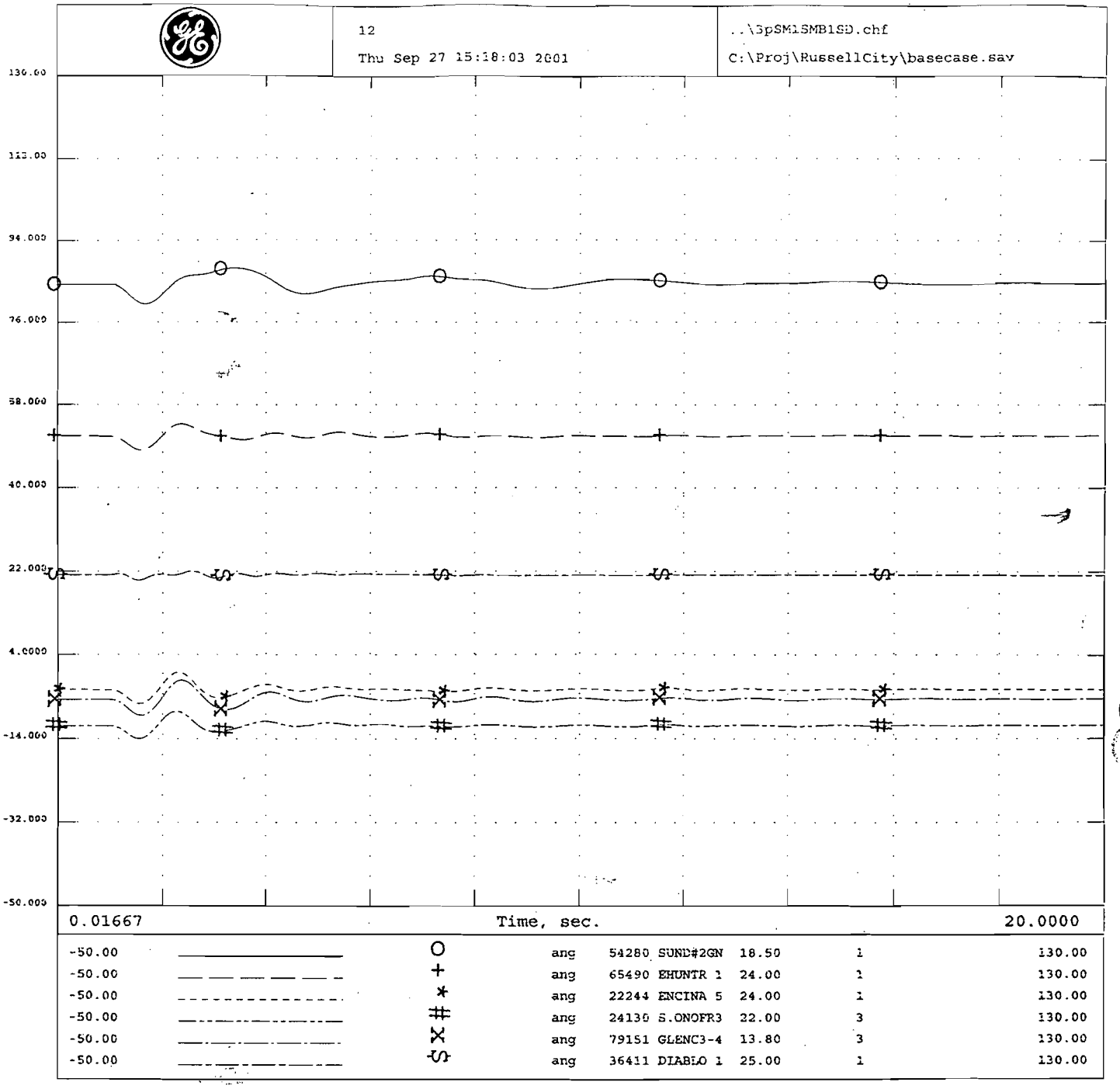
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
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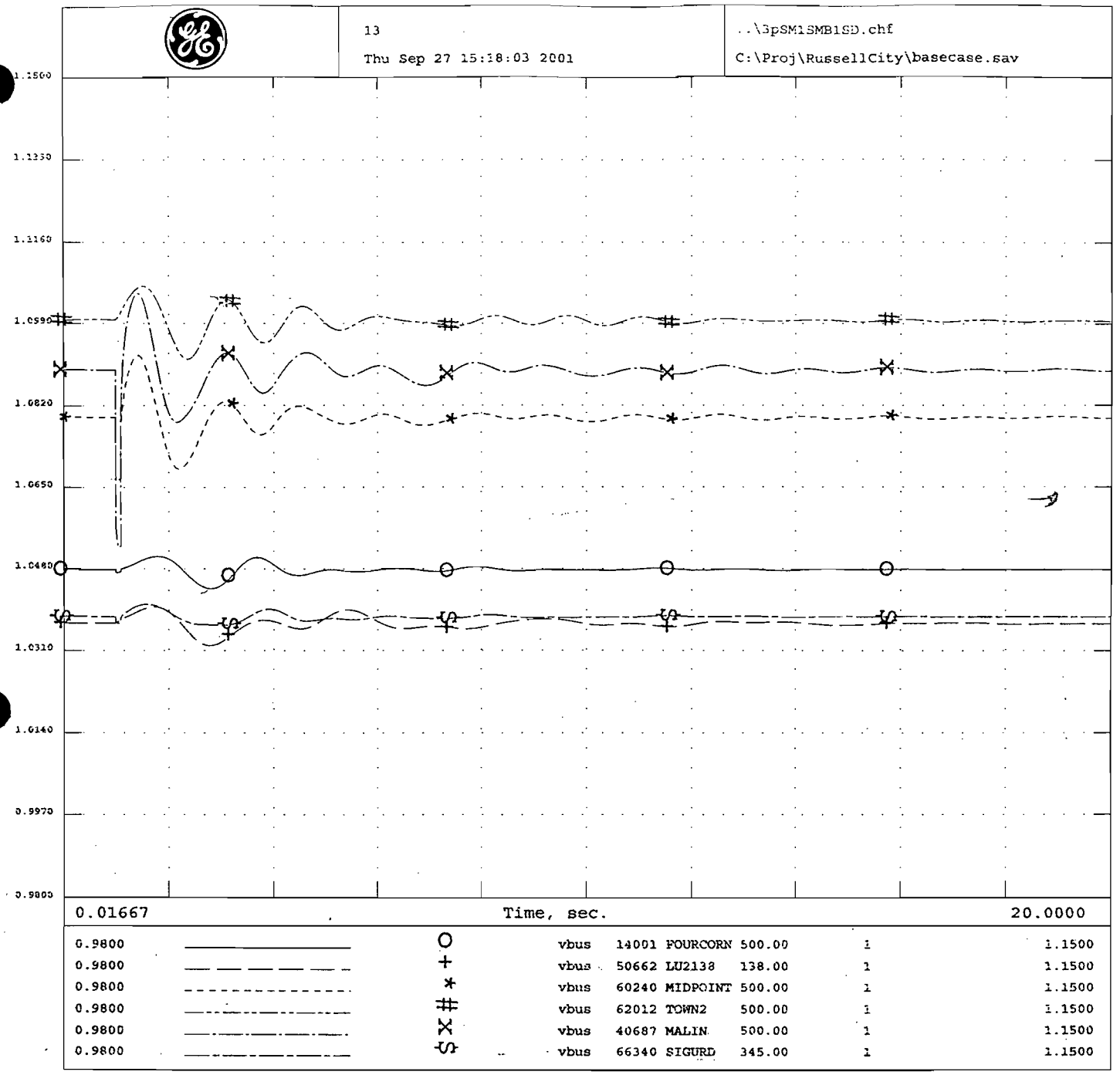
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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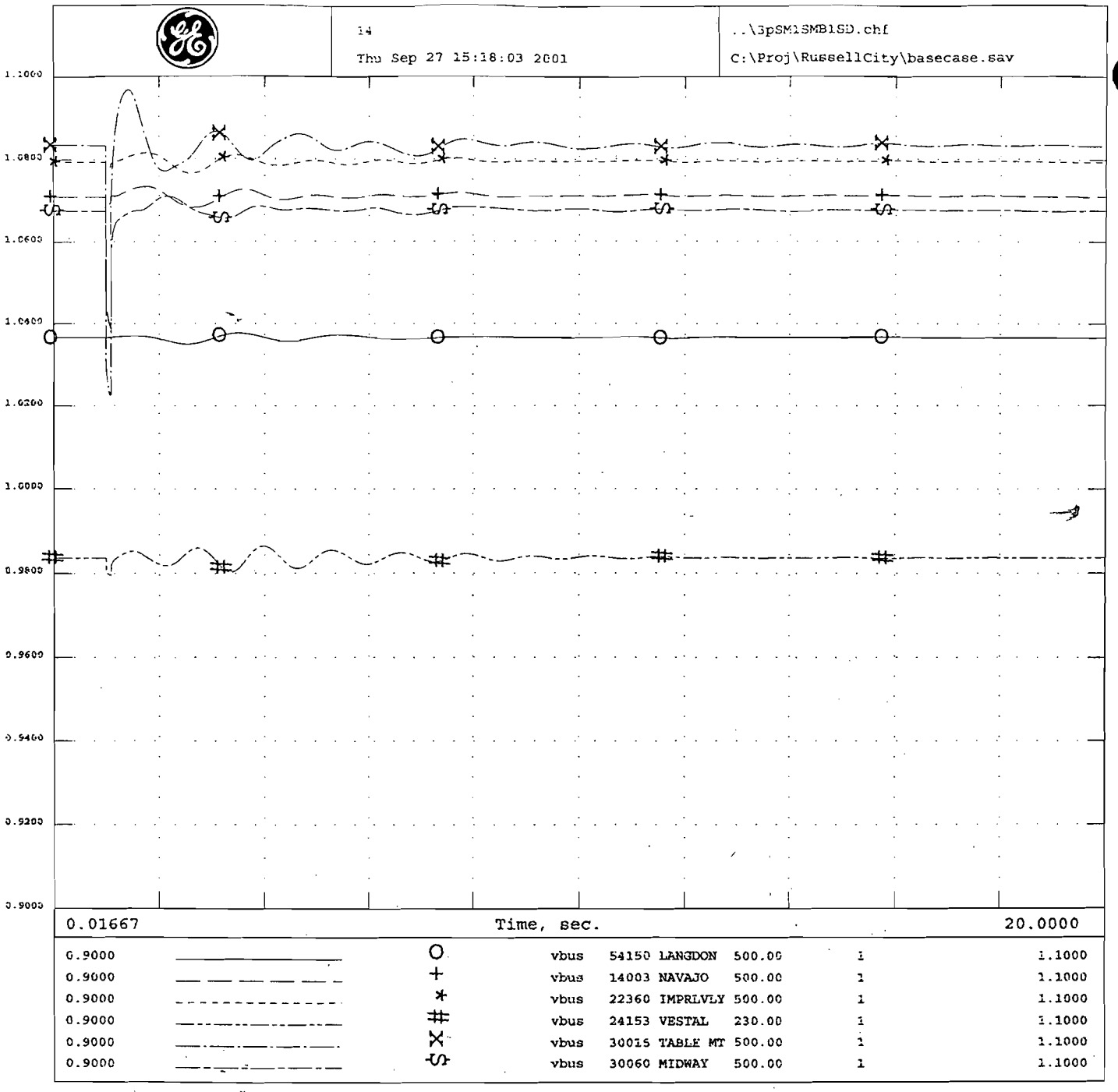
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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2004 Summer Peak Base Case
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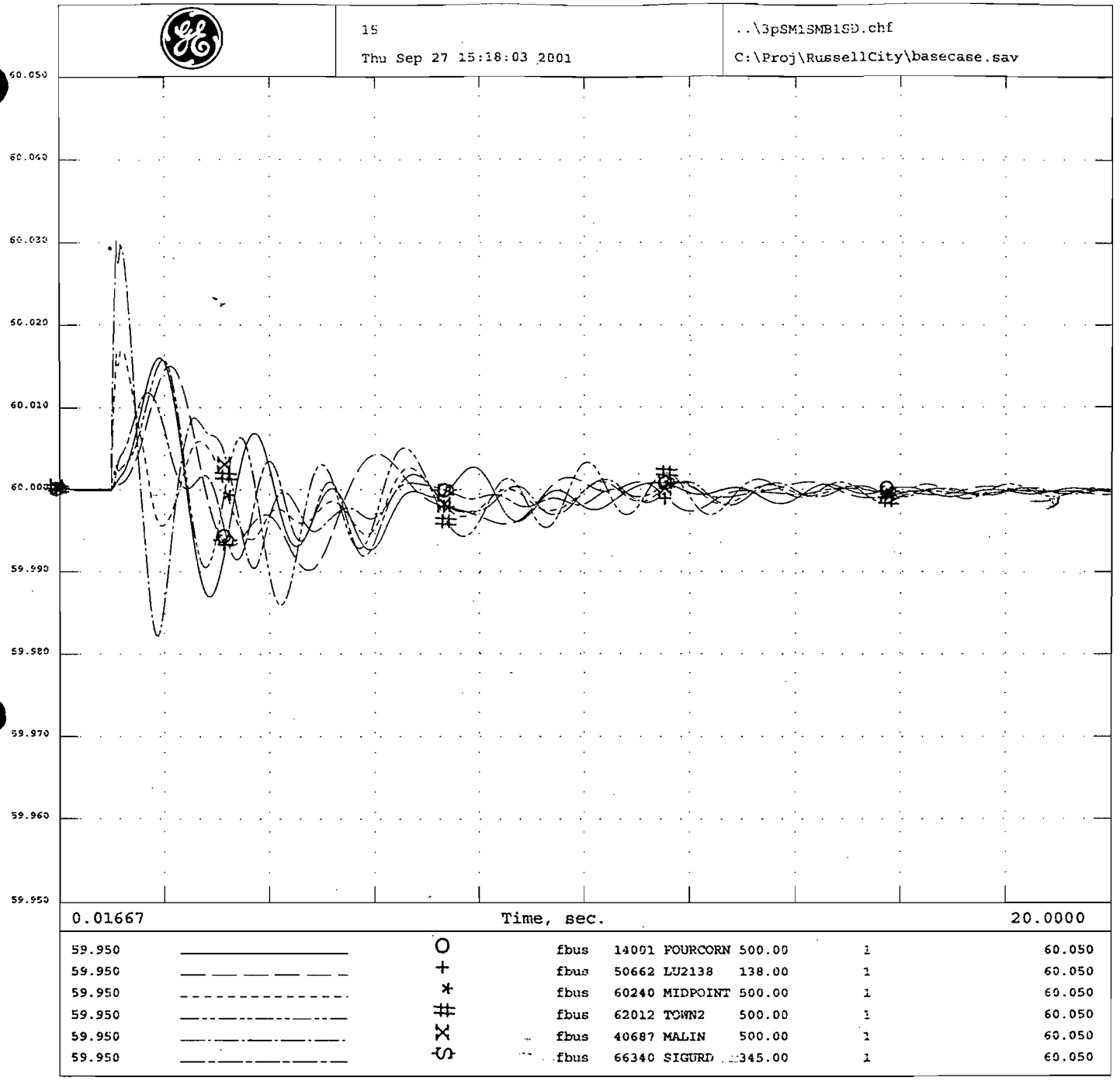
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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2004 Summer Peak Base Case
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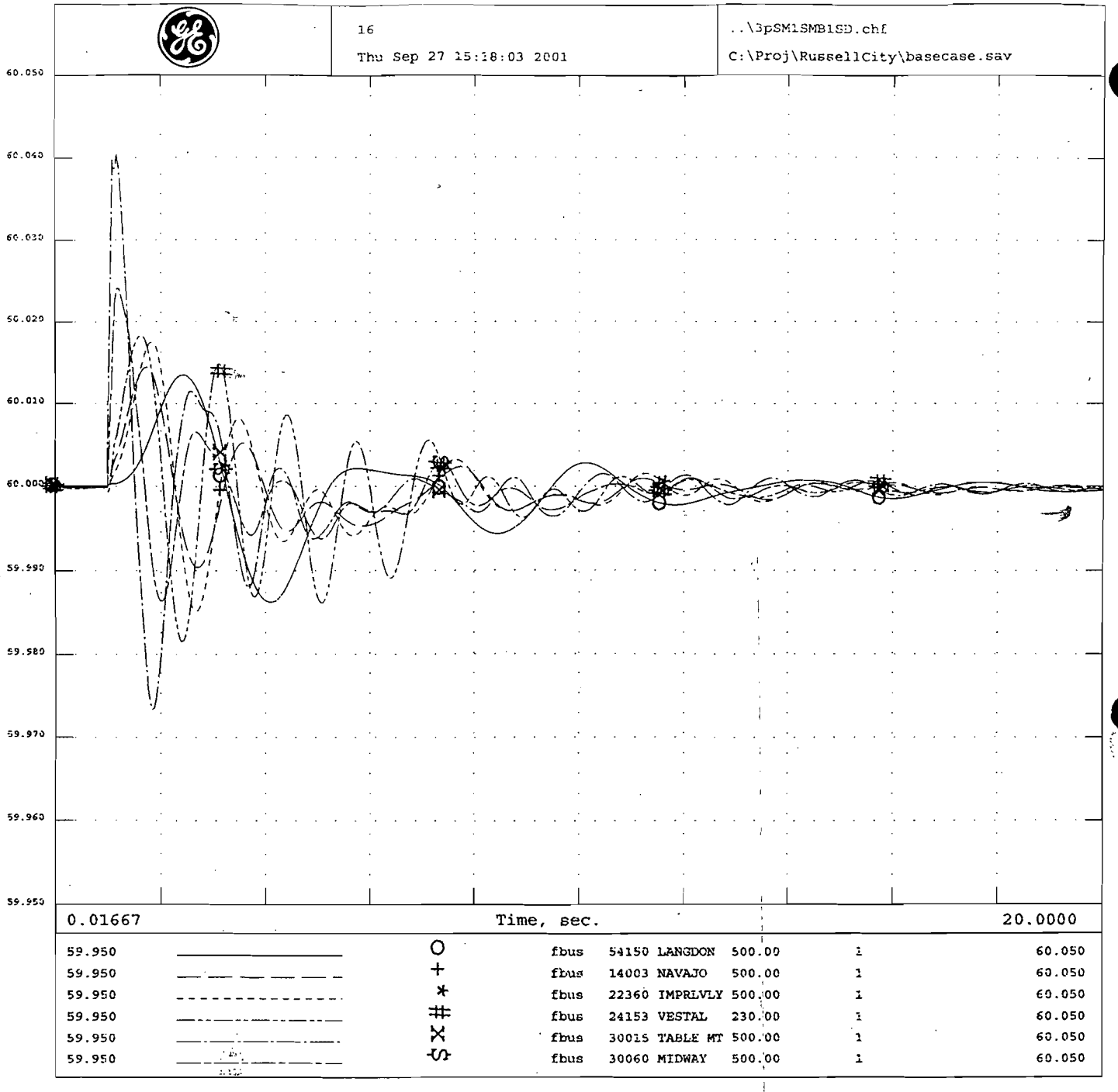
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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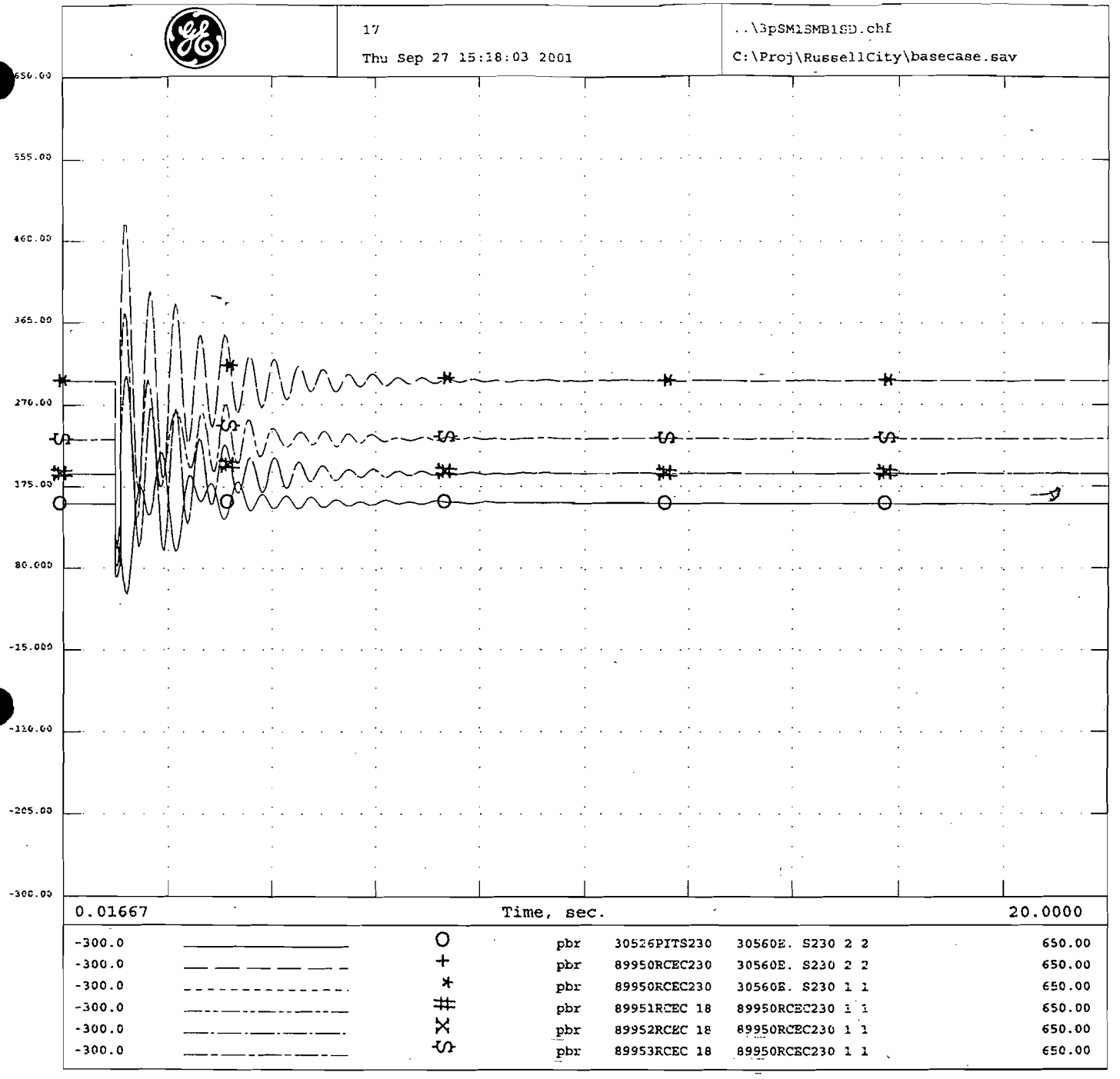
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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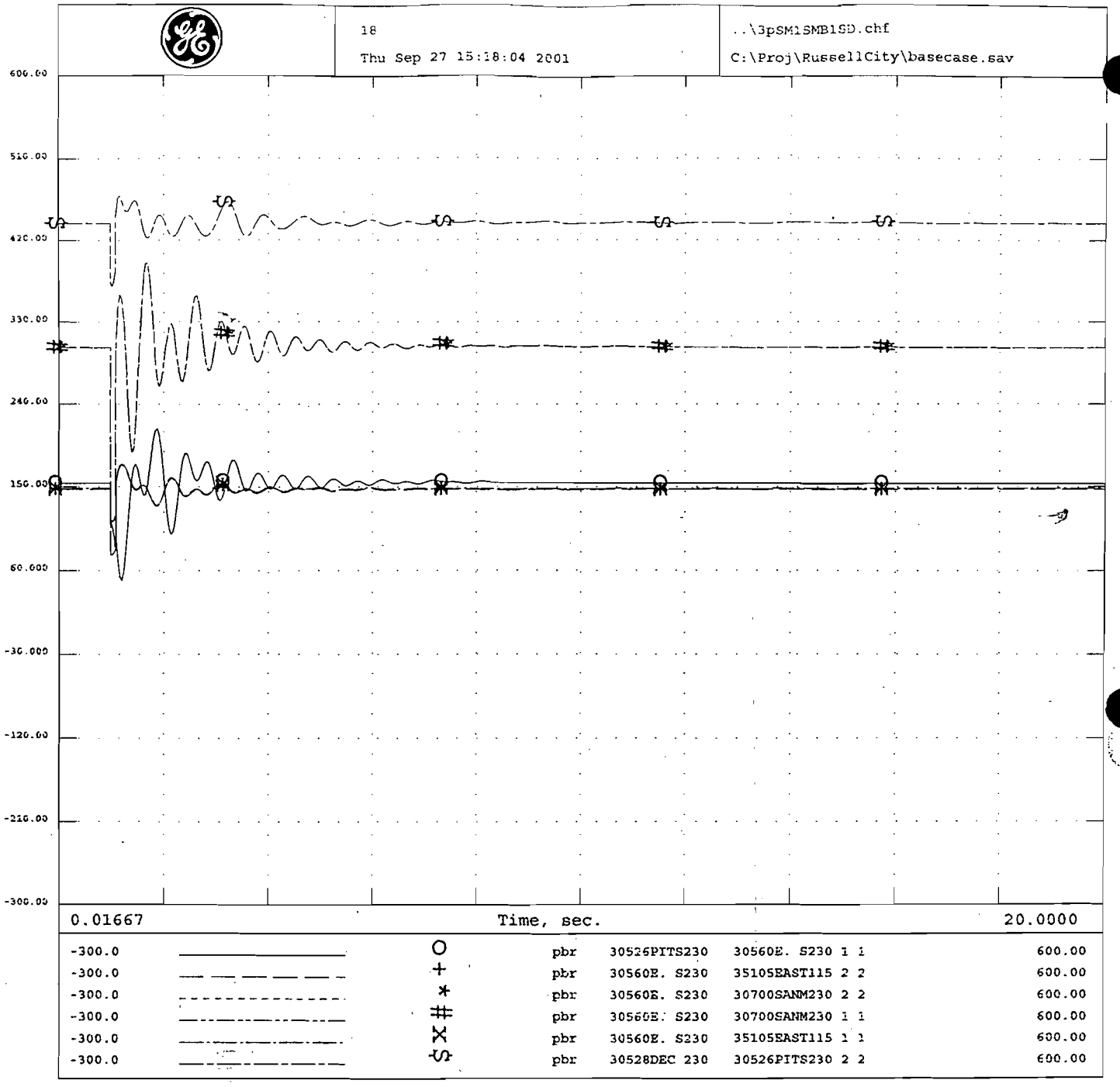
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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2004 Summer Peak Base Case
RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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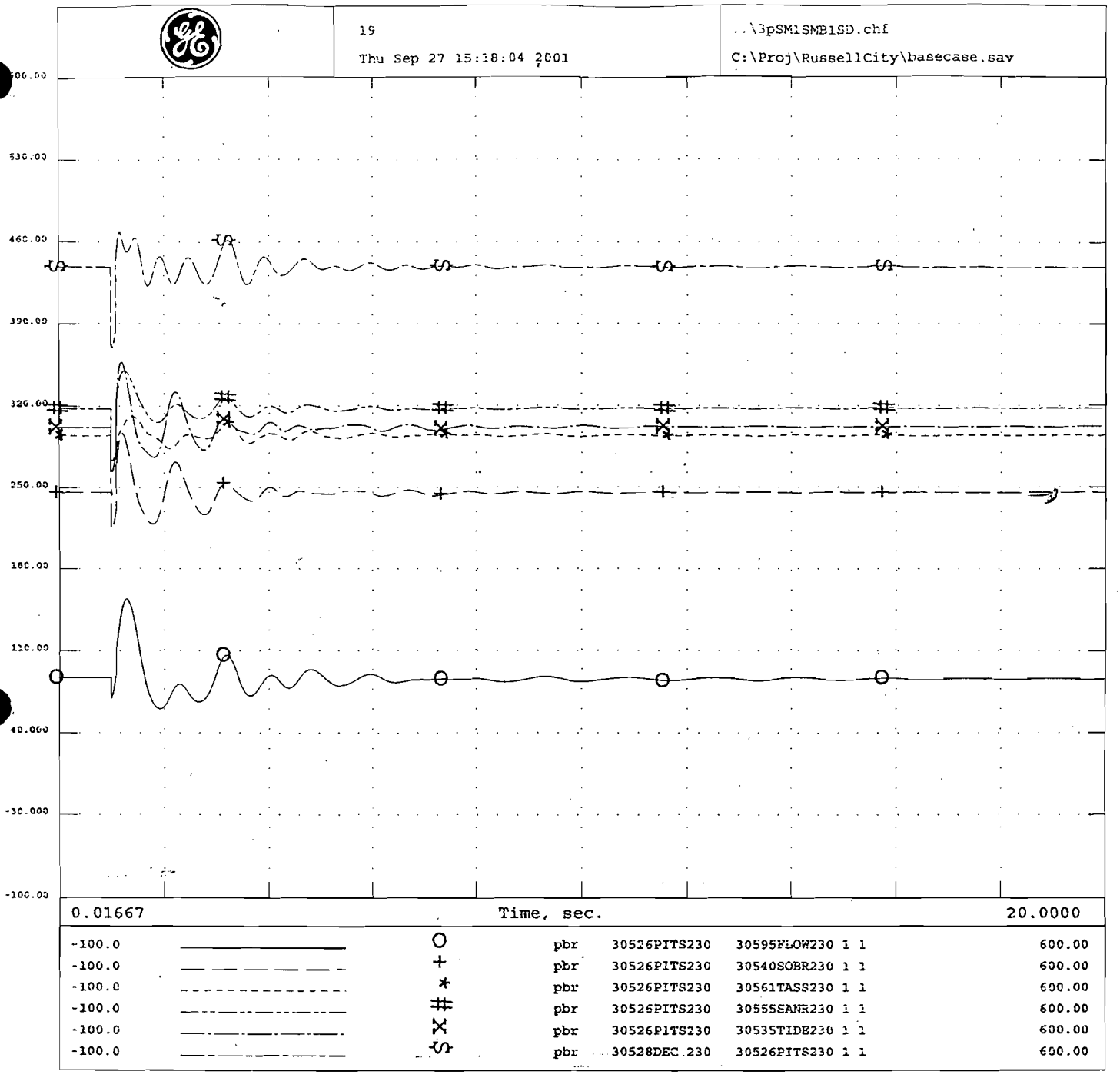

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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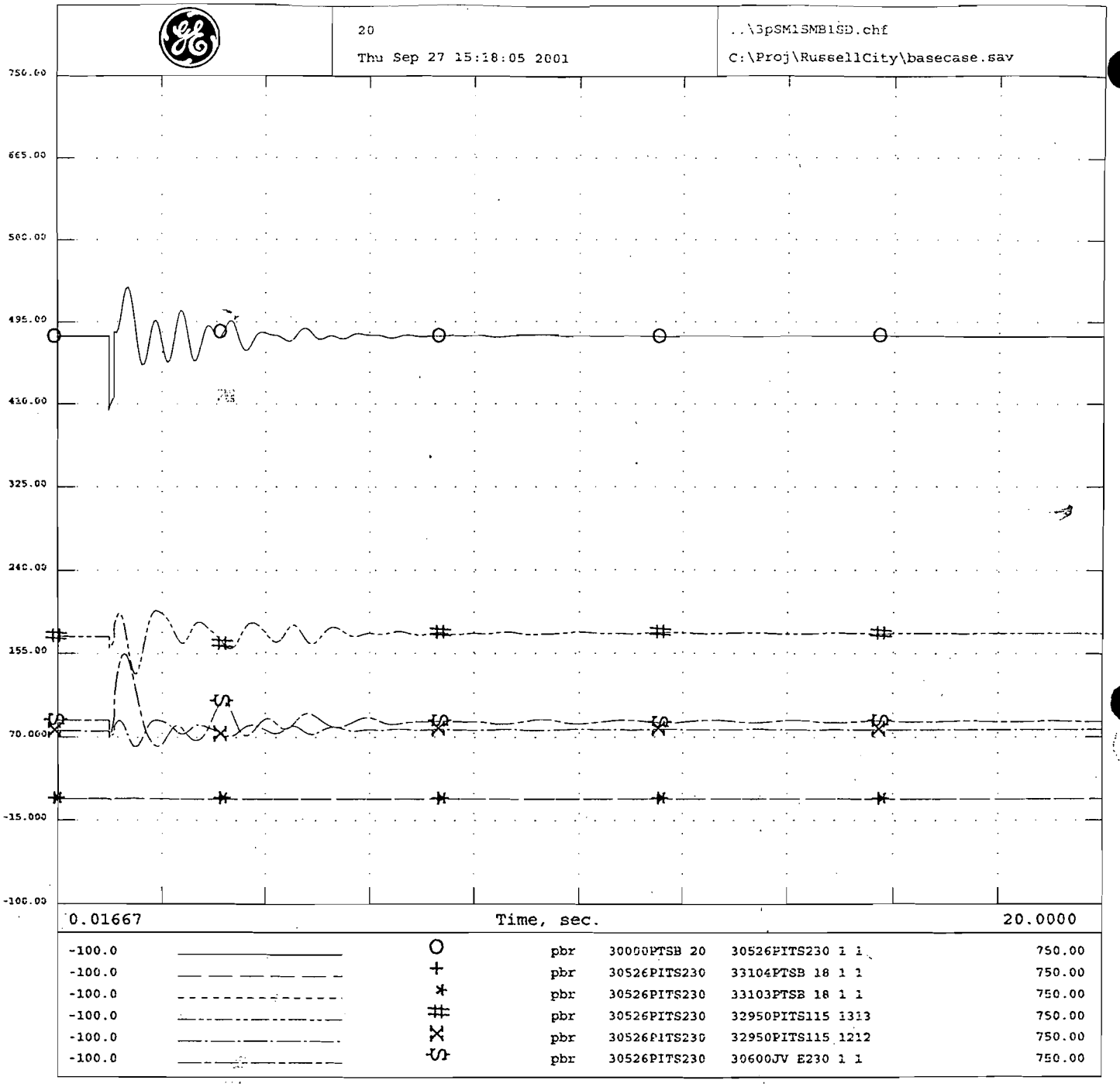
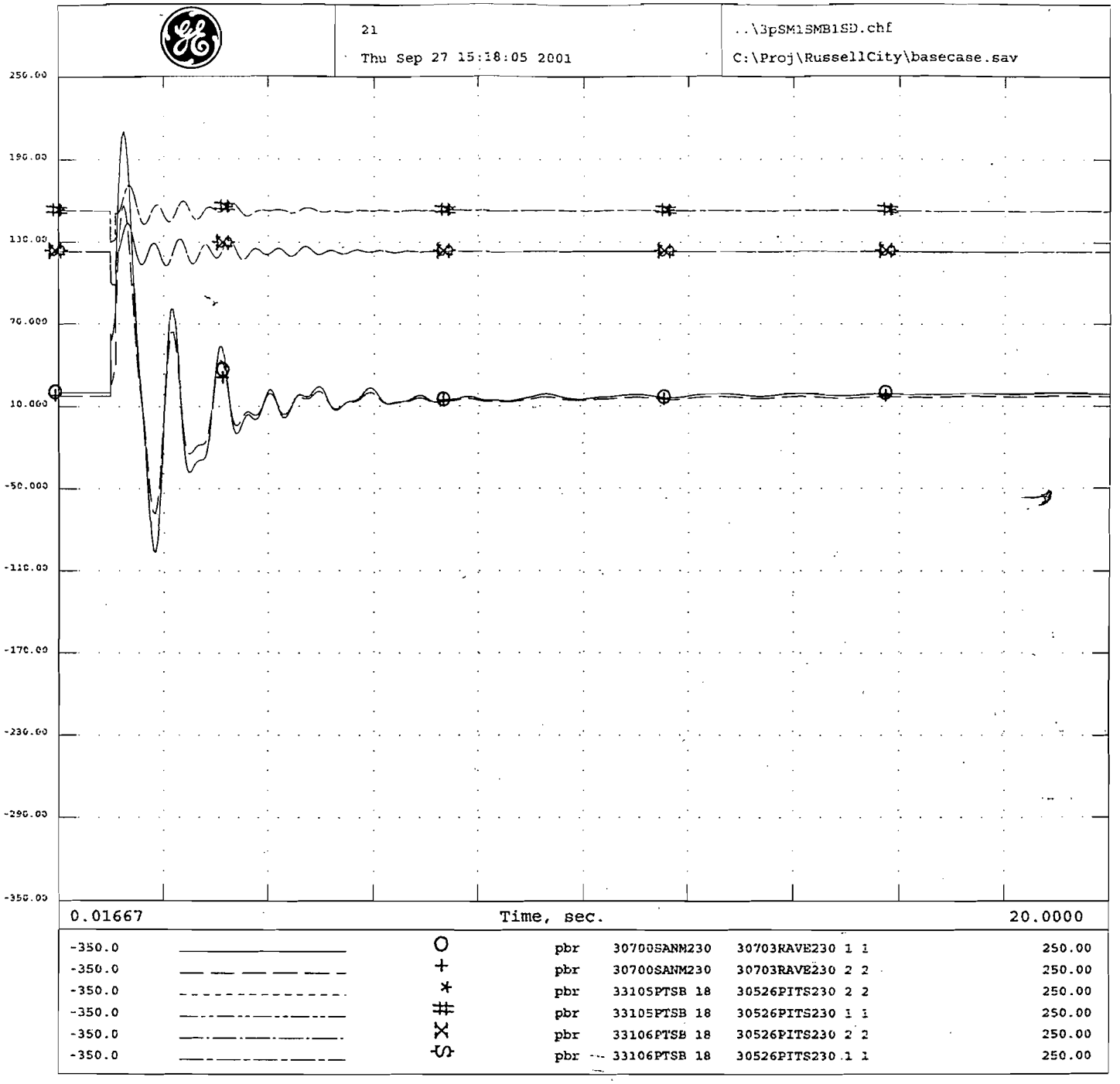


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
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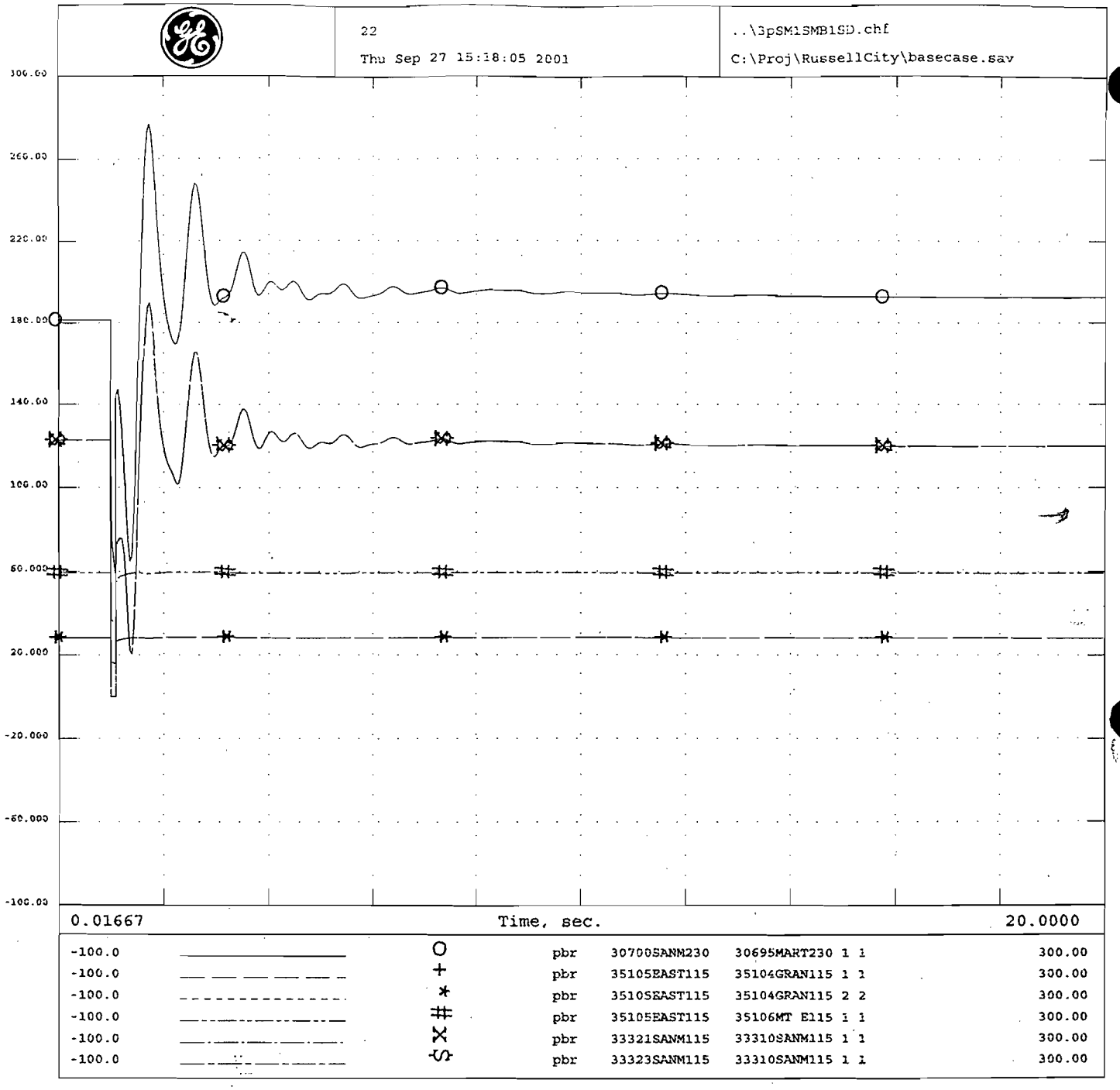
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
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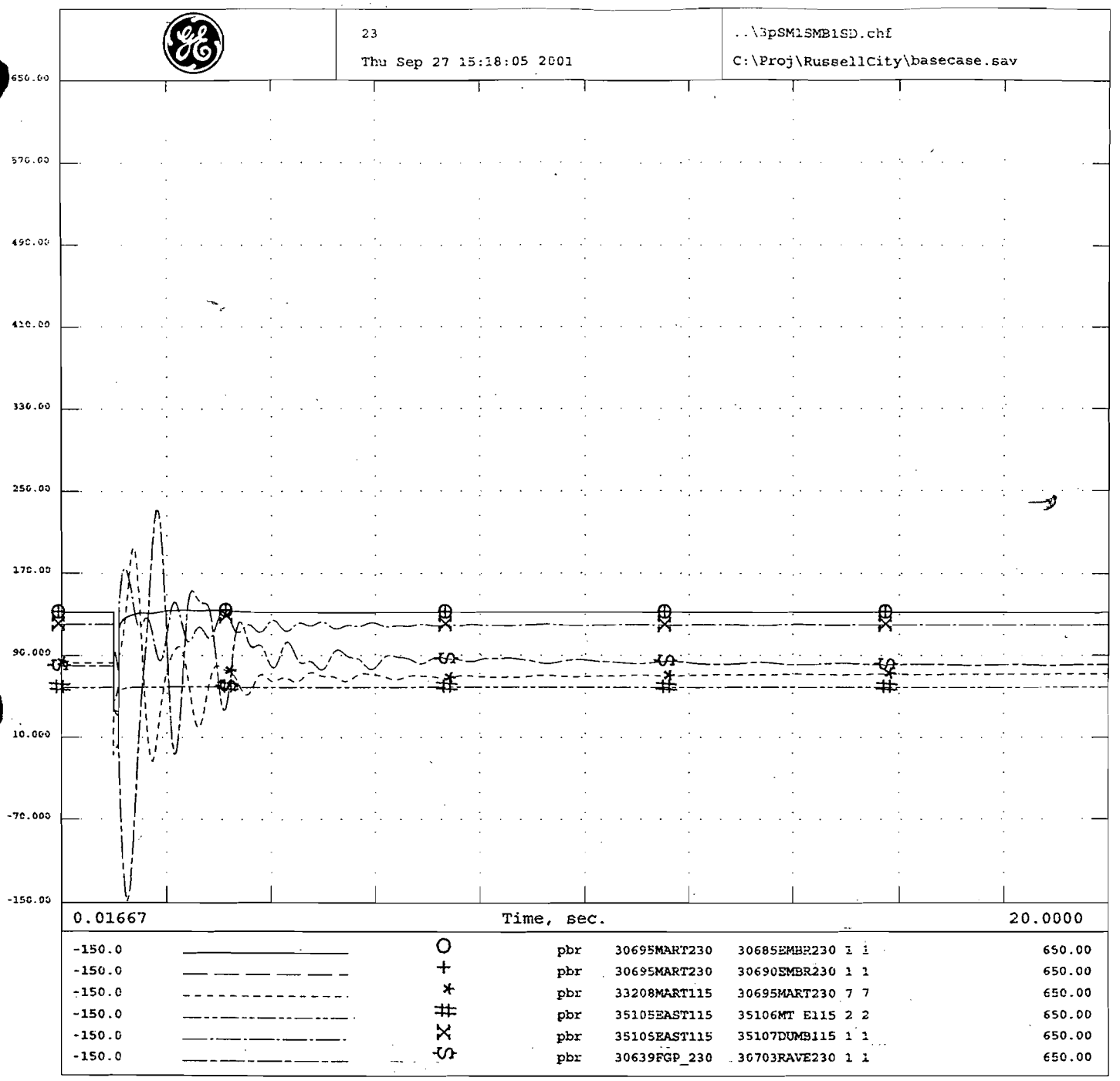
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
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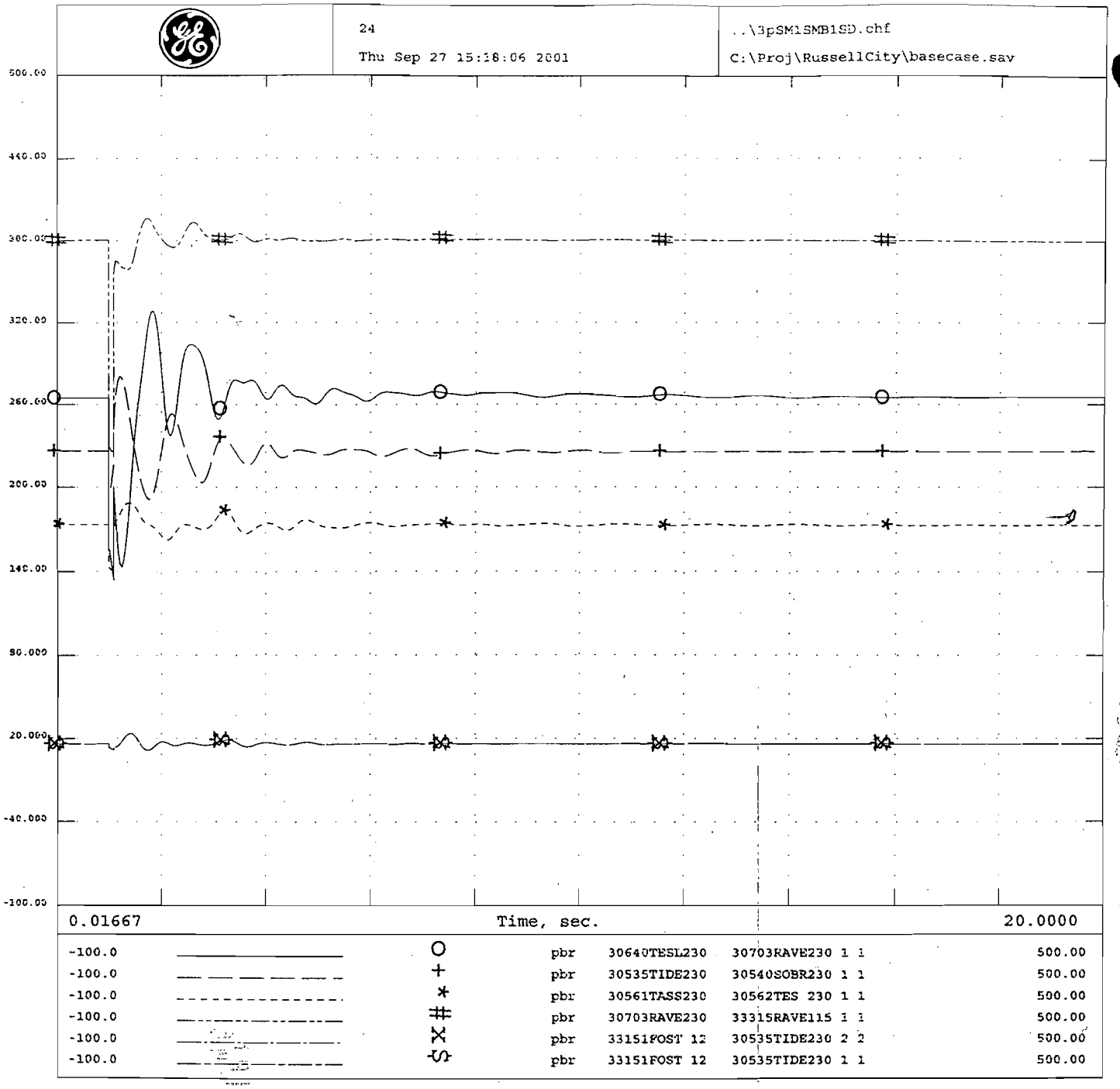
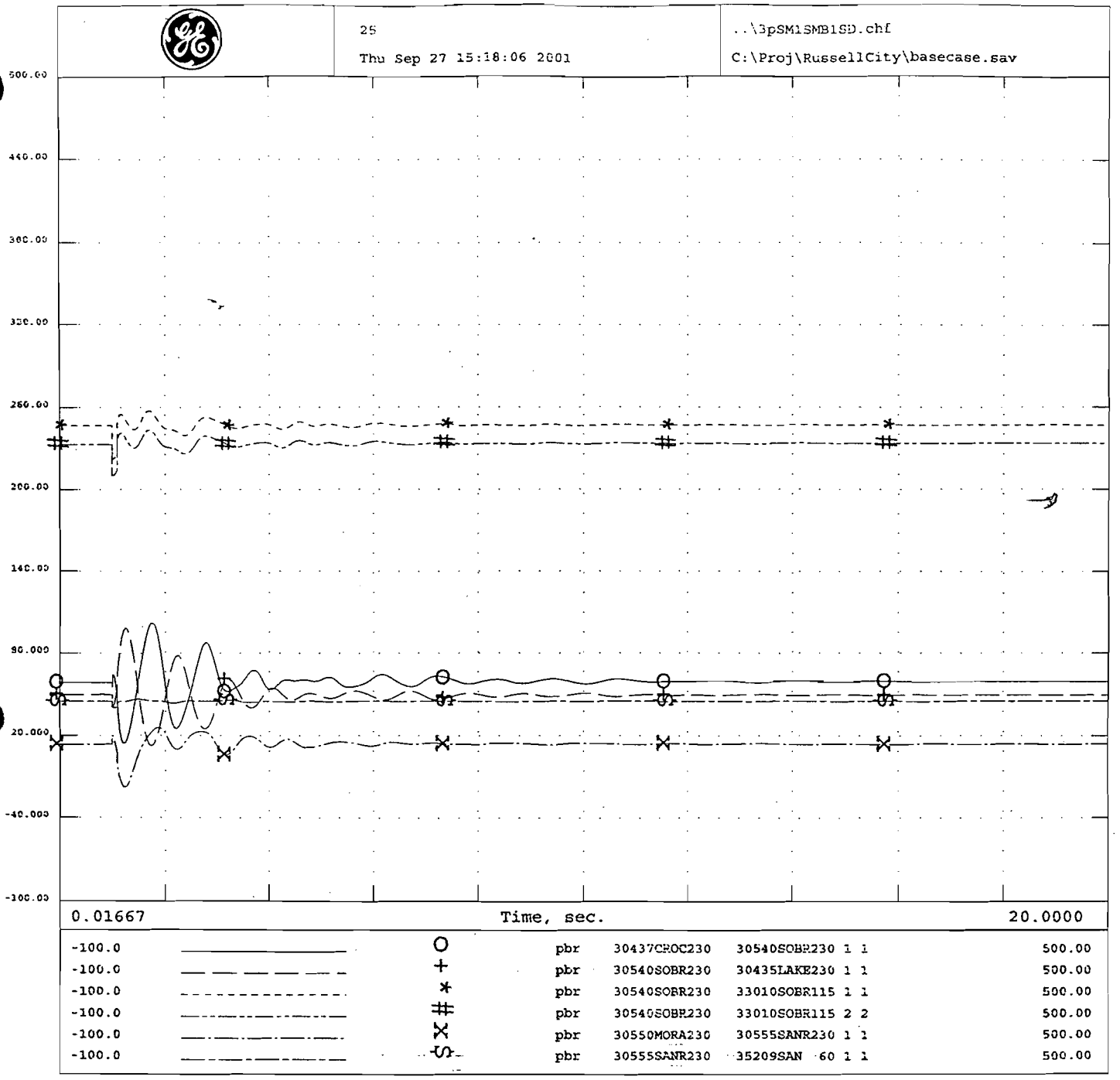
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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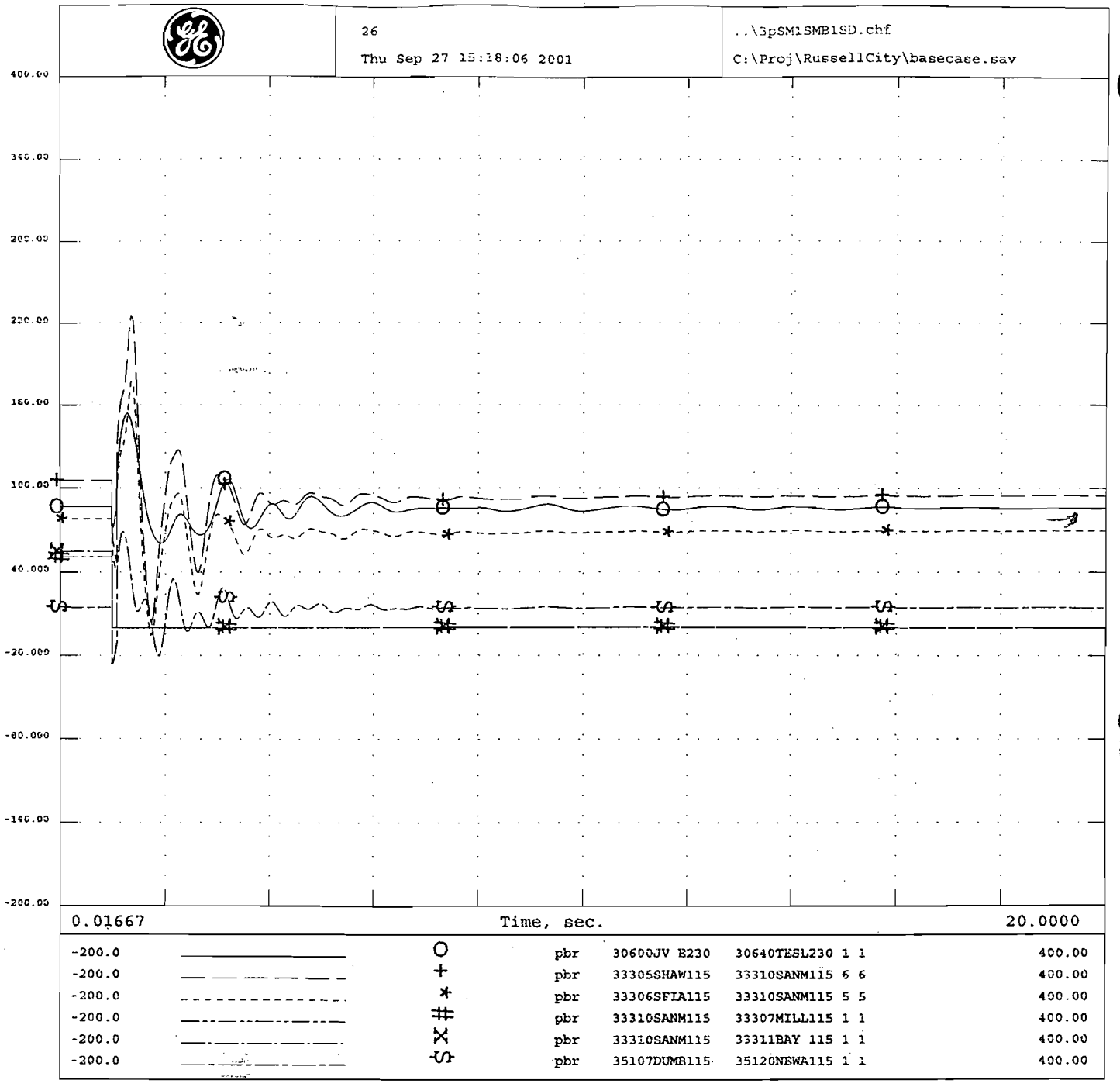
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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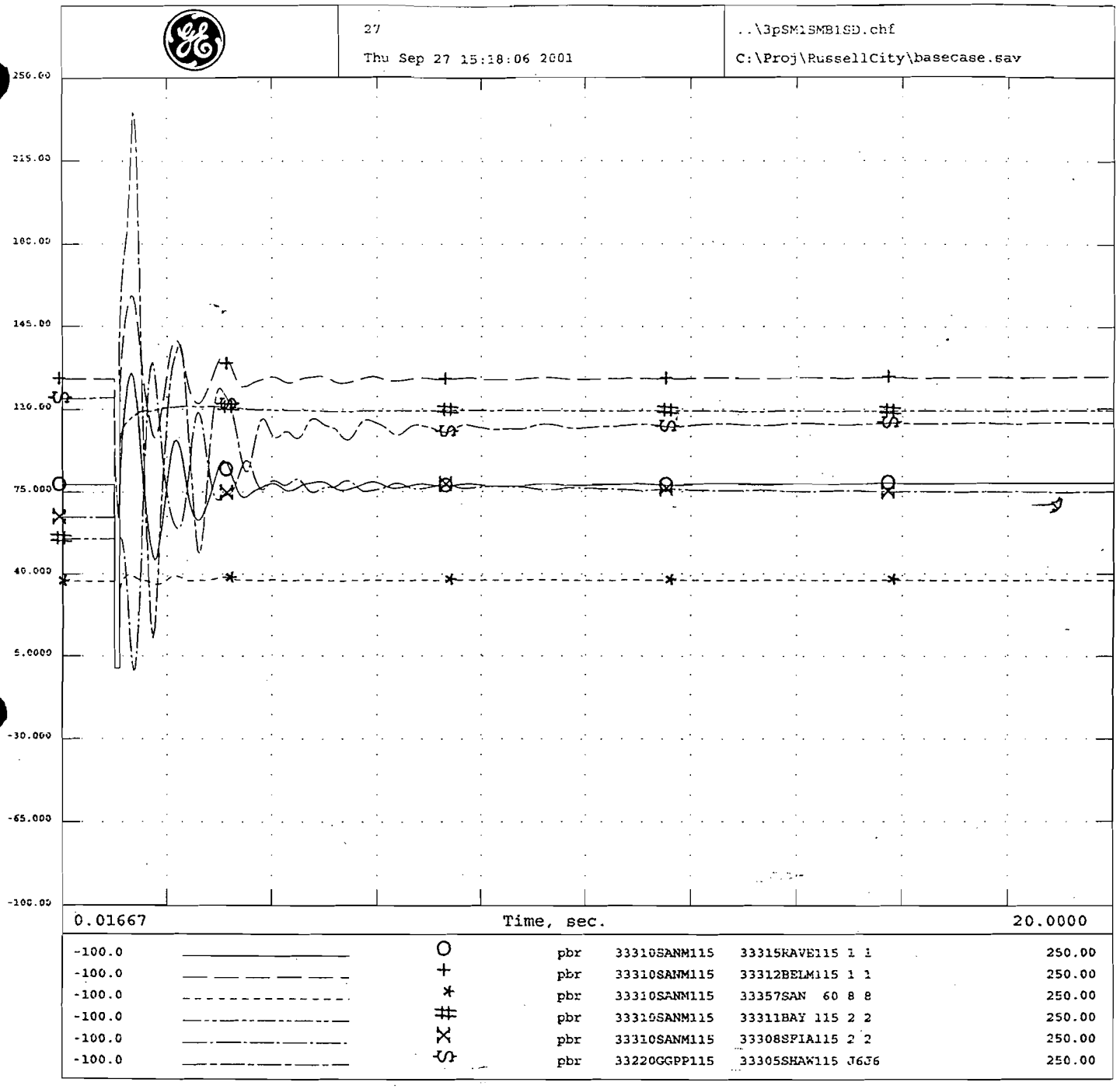
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section E
RUN  9
CC
CC   Fault San Mateo 115kV bus
FB   0.0 "SANMATEO" 115.
CC
CC   Clear fault at San Mateo 115kV bus
CFB  6.0 "SANMATEO" 115.
CC
CC   Trip San Mateo bus 2, section E
MBL  6.0 "SANMATEO" 115. "9 " D
CC   The bus SANMATB6 is a dummy bus to allow plotting of transformer flow
DL   6.0 "SANMATB6" 115.00 "SANMATEO" 230.00 "6 "
DL   6.0 "SANMATEO" 115. "SAN MATO" 60.0 "8 "
DL   6.0 "SANMATEO" 115. "RAVENSWD" 115. "1 "
DL   6.0 "SANMATEO" 115. "BELMONT " 115. "1 "
CC
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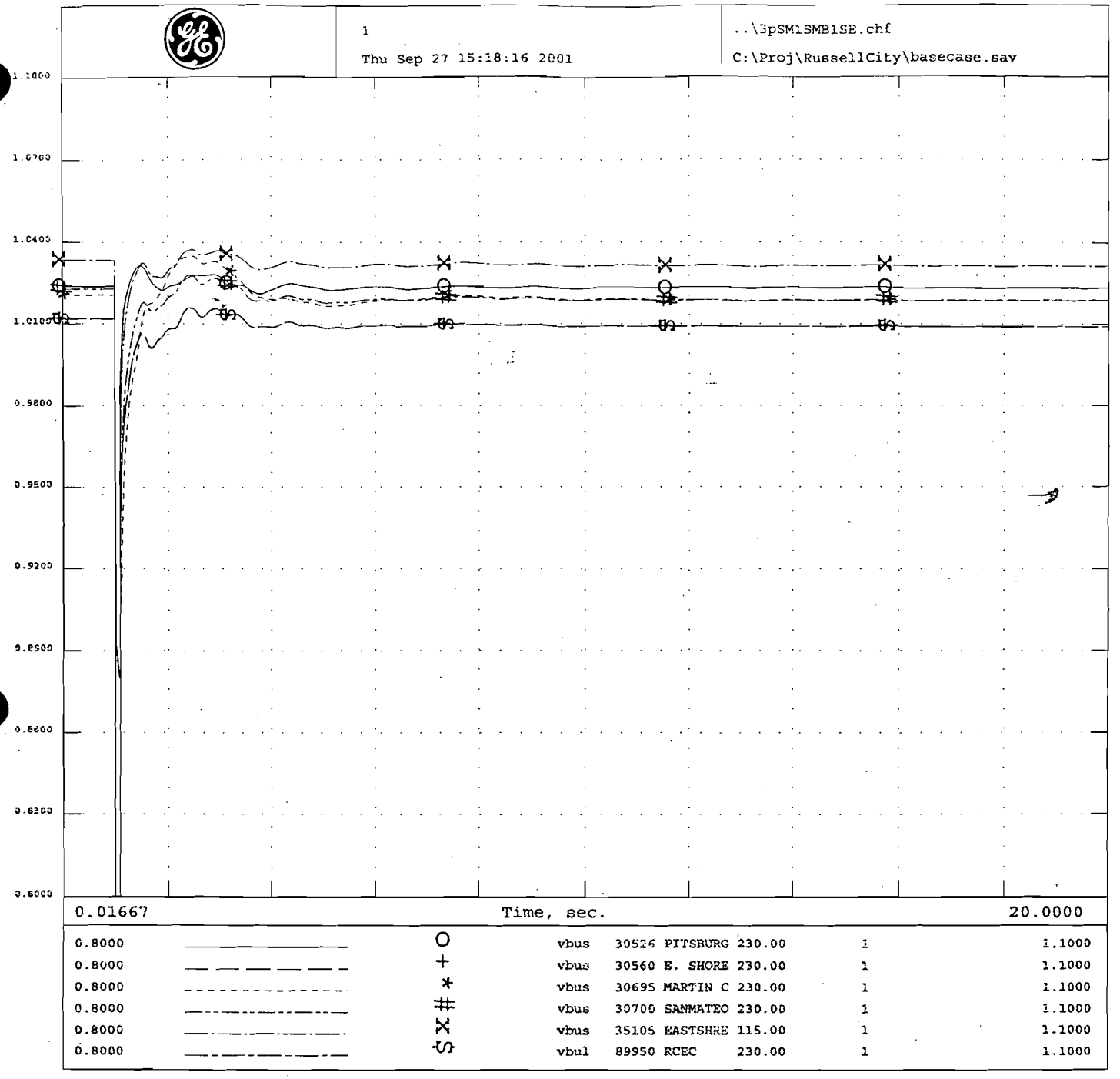
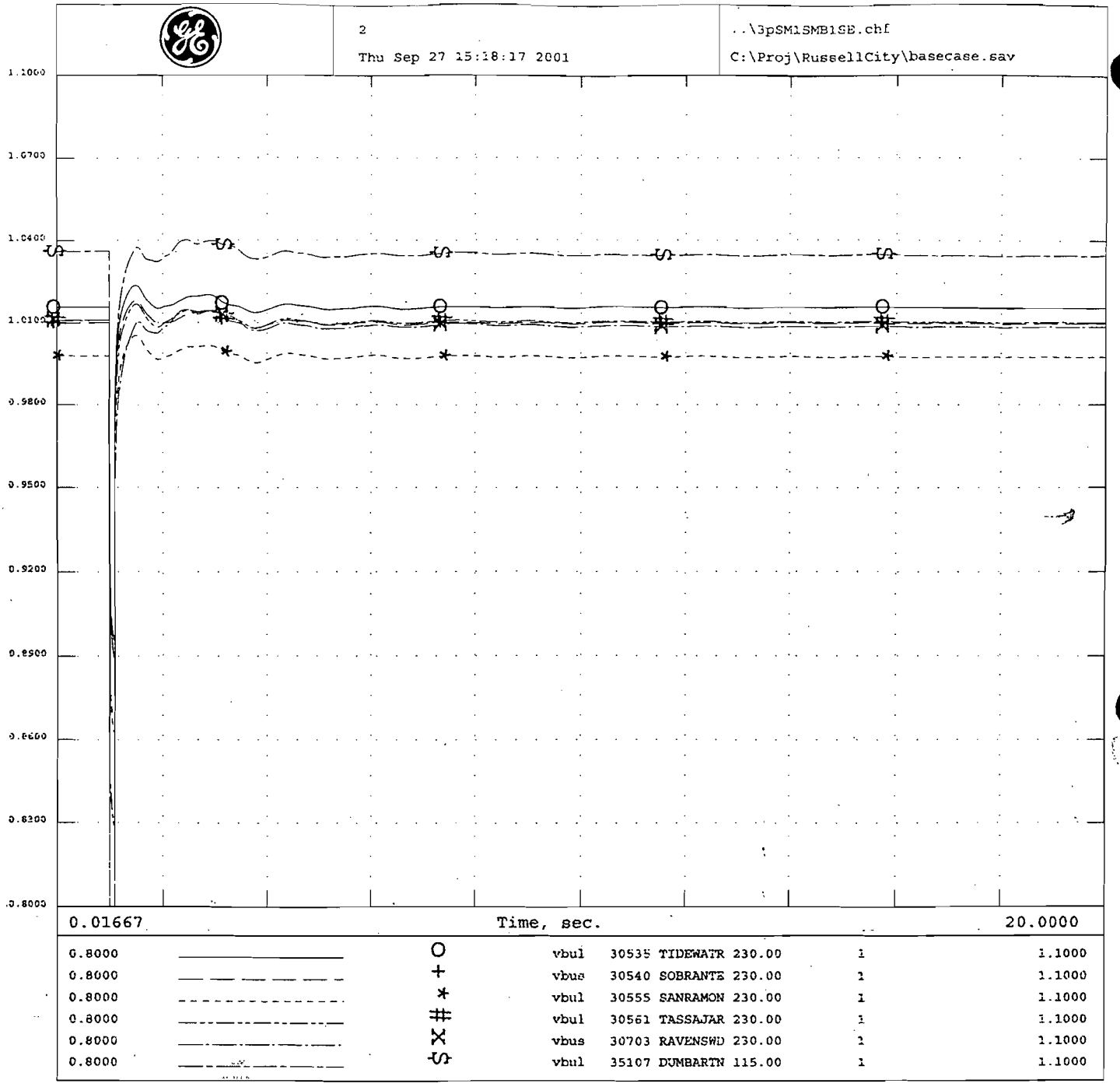


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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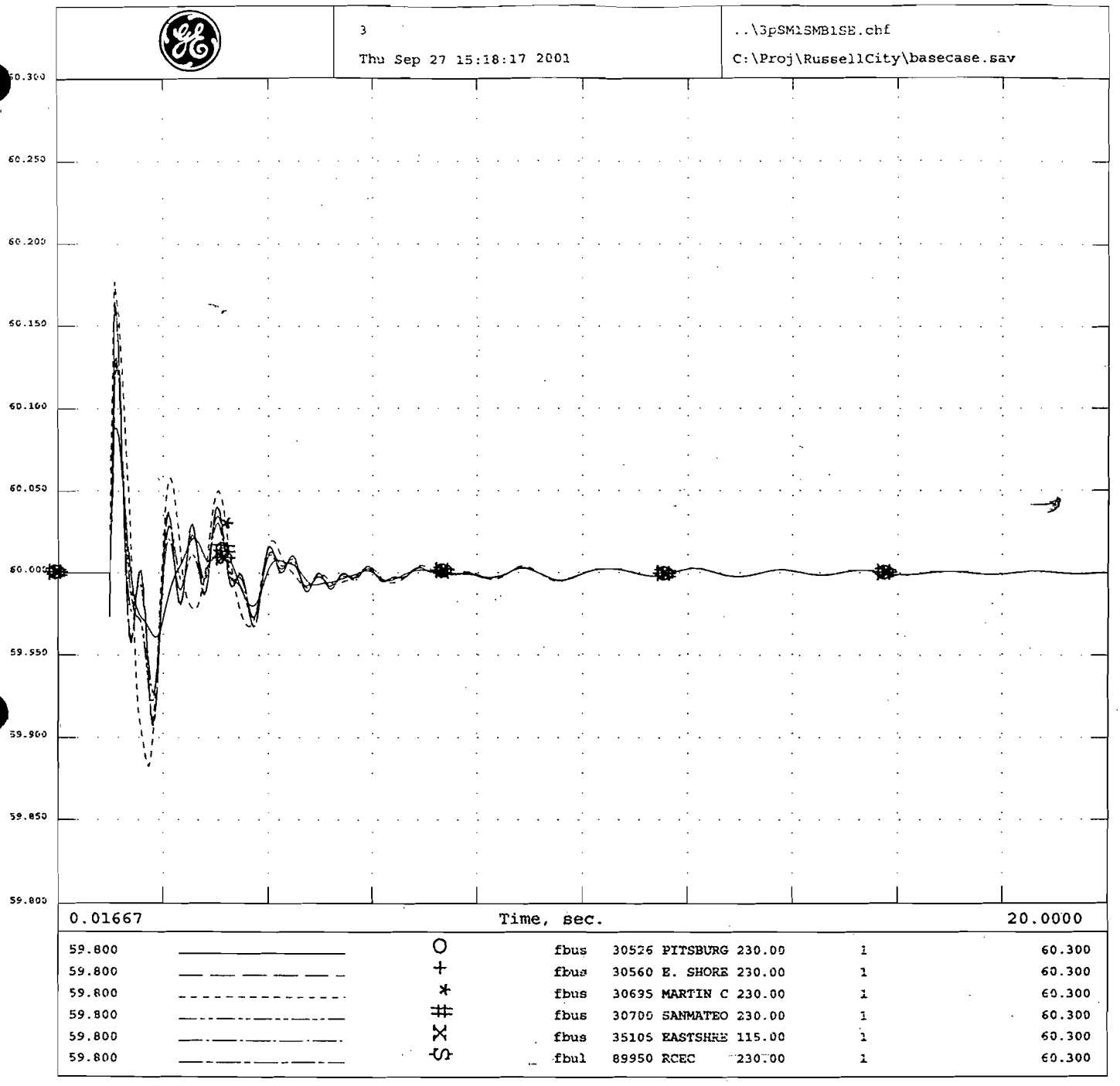
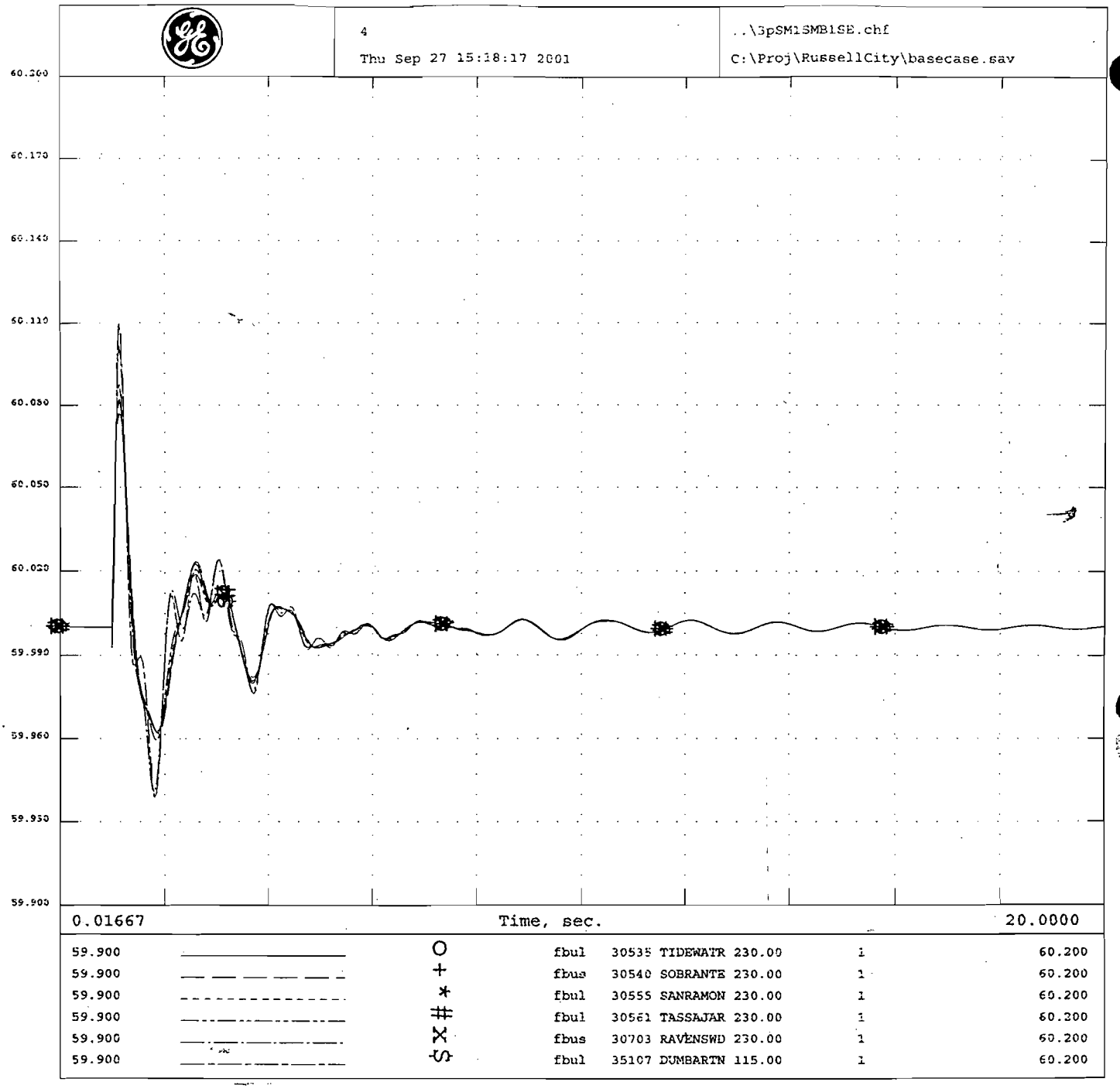
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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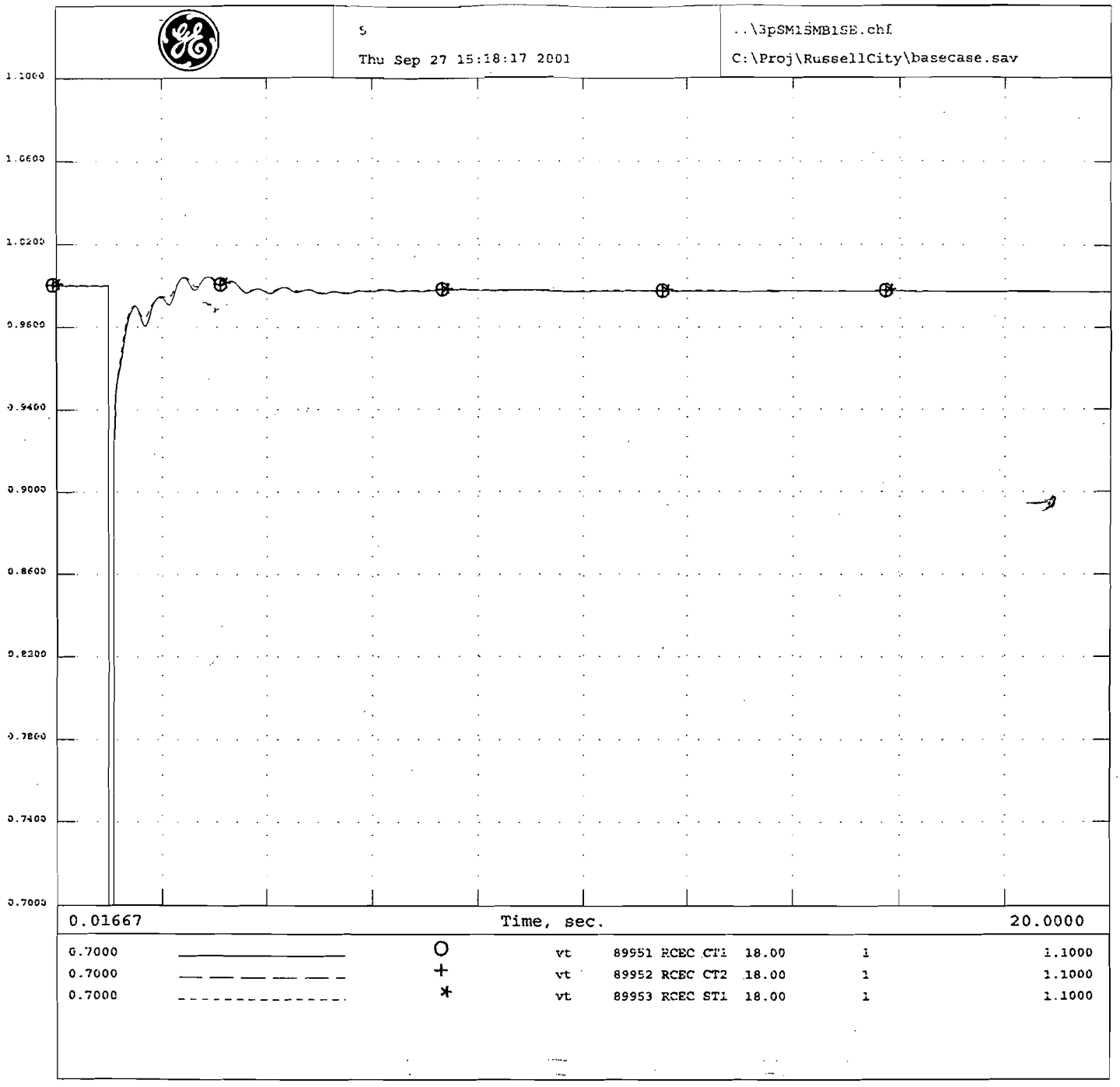

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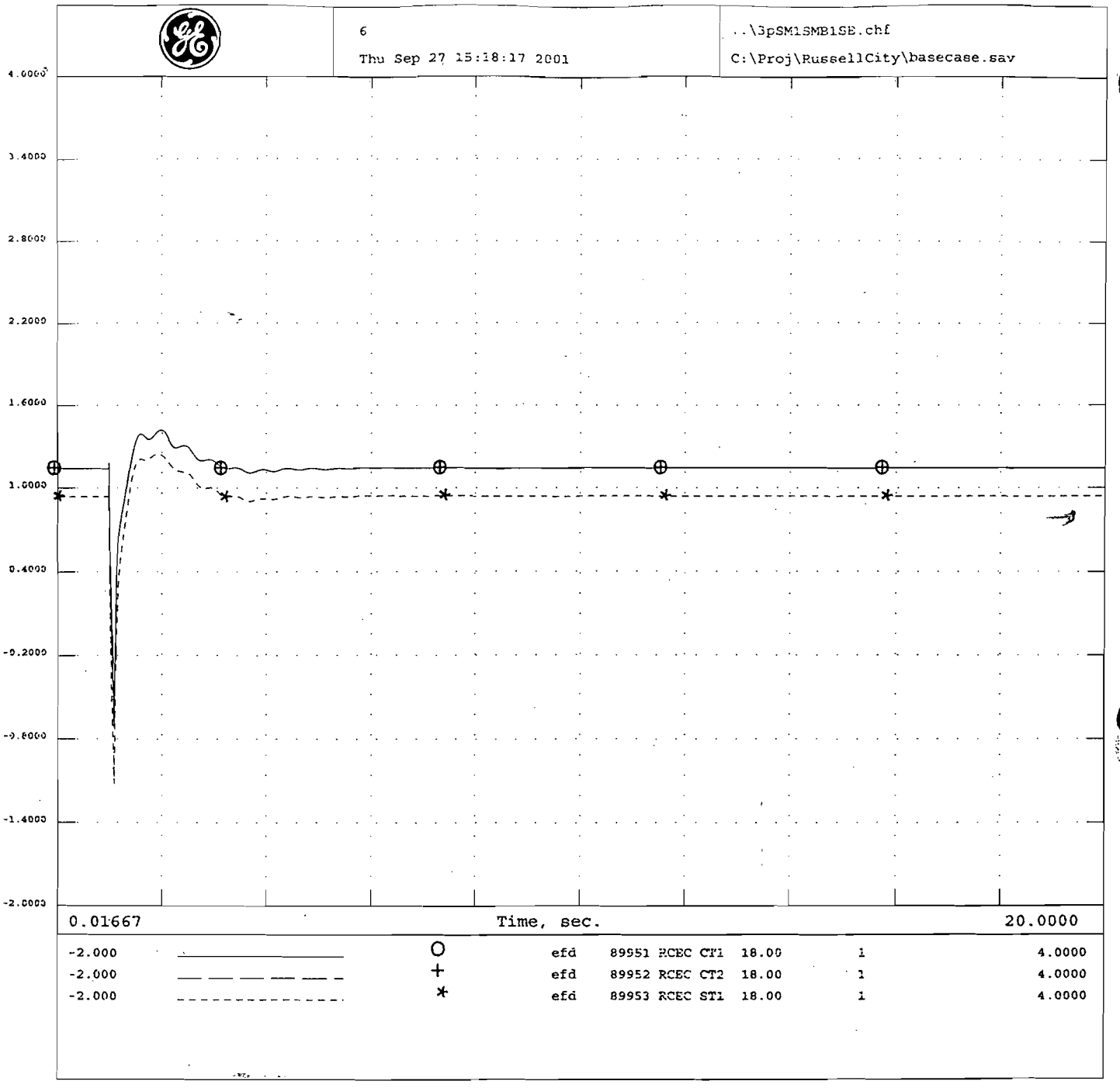
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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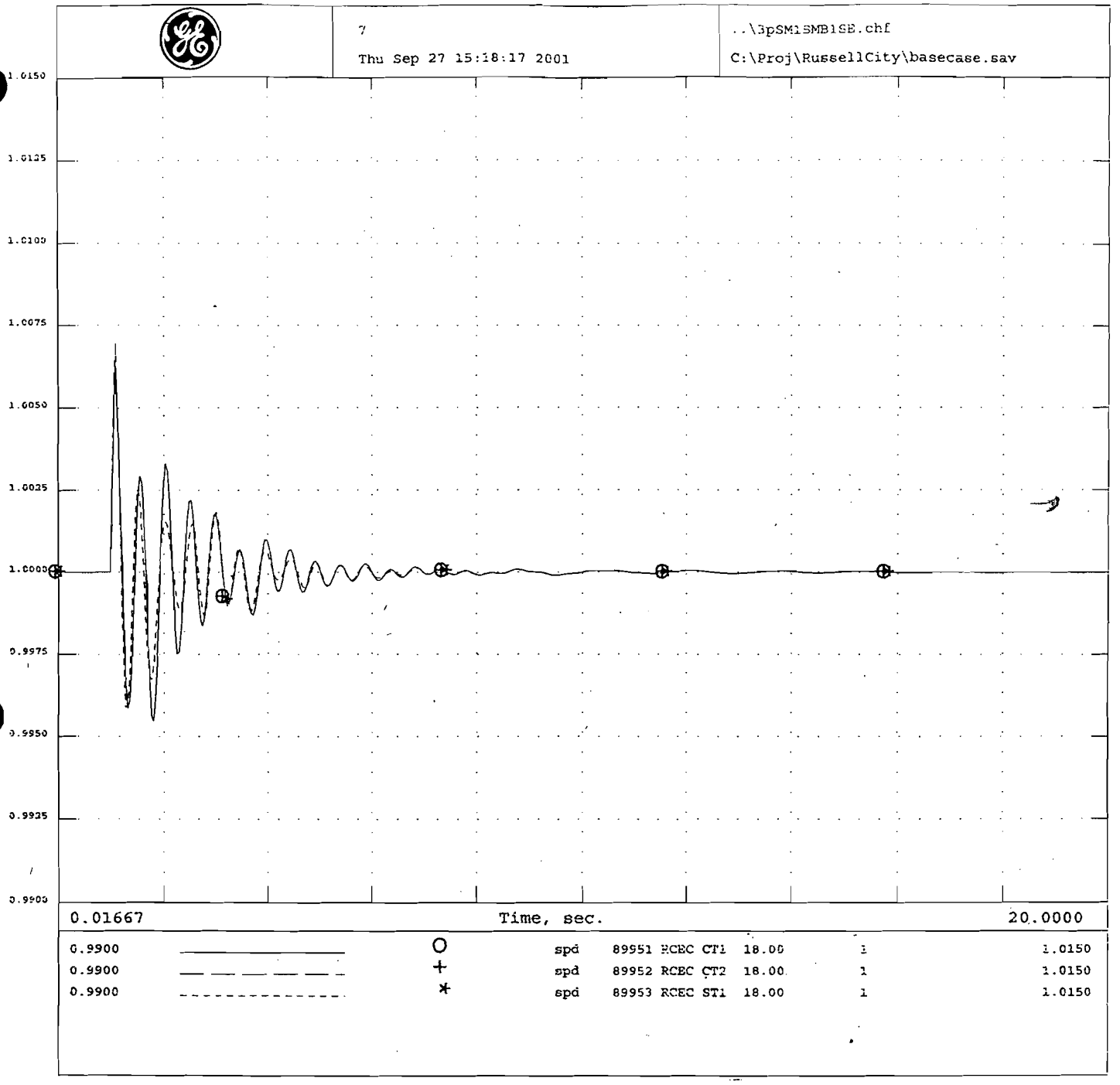
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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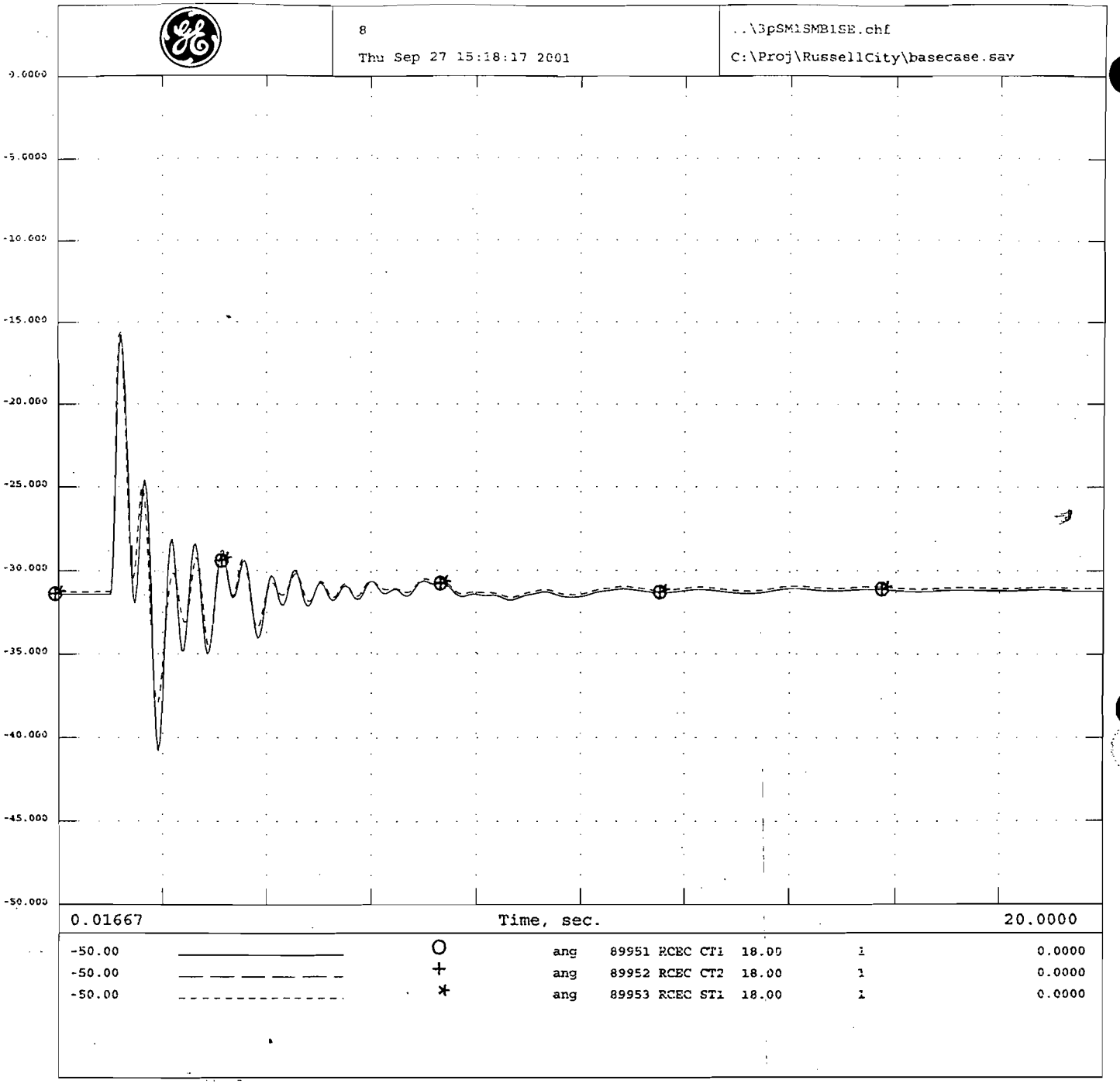
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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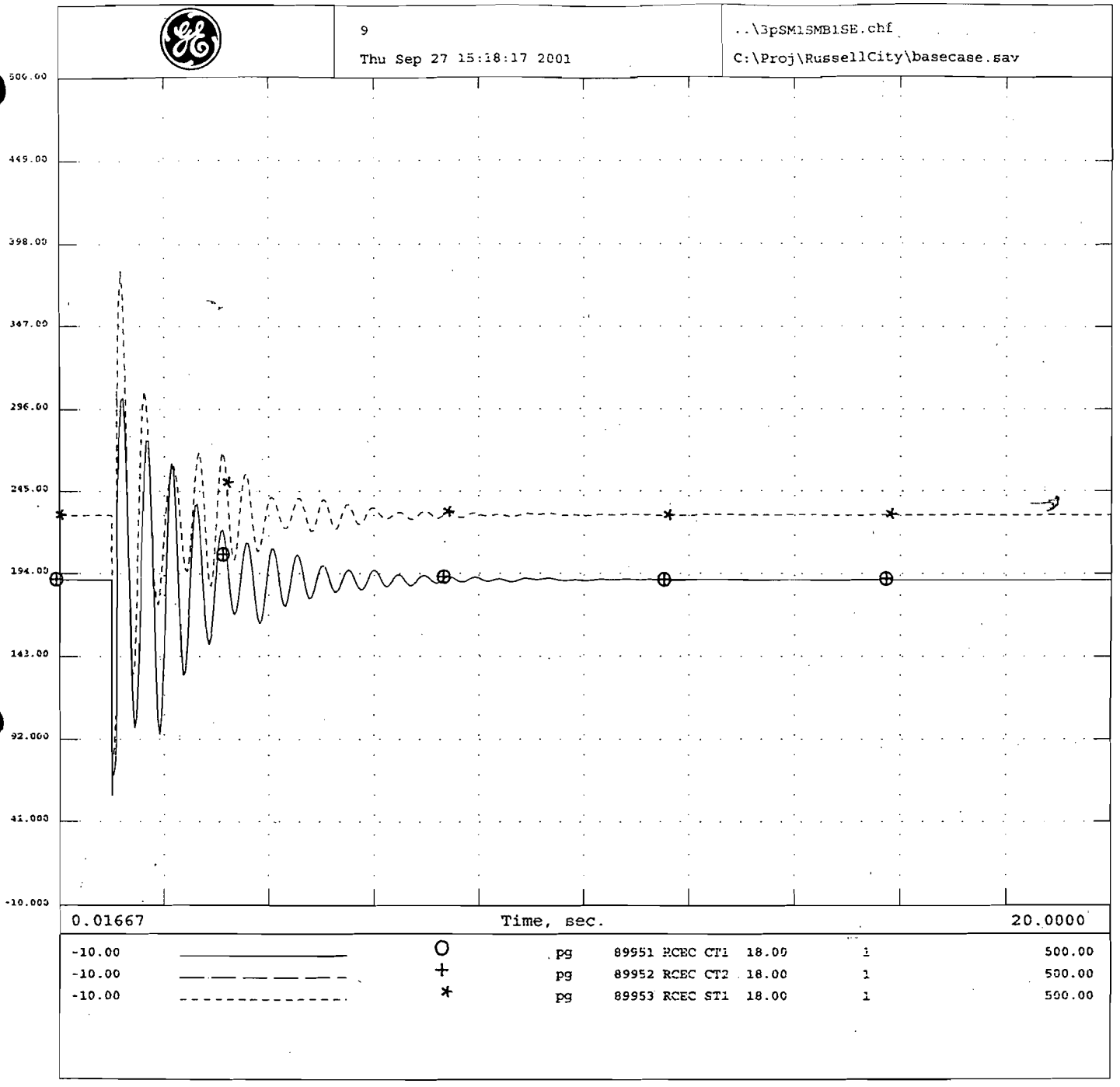
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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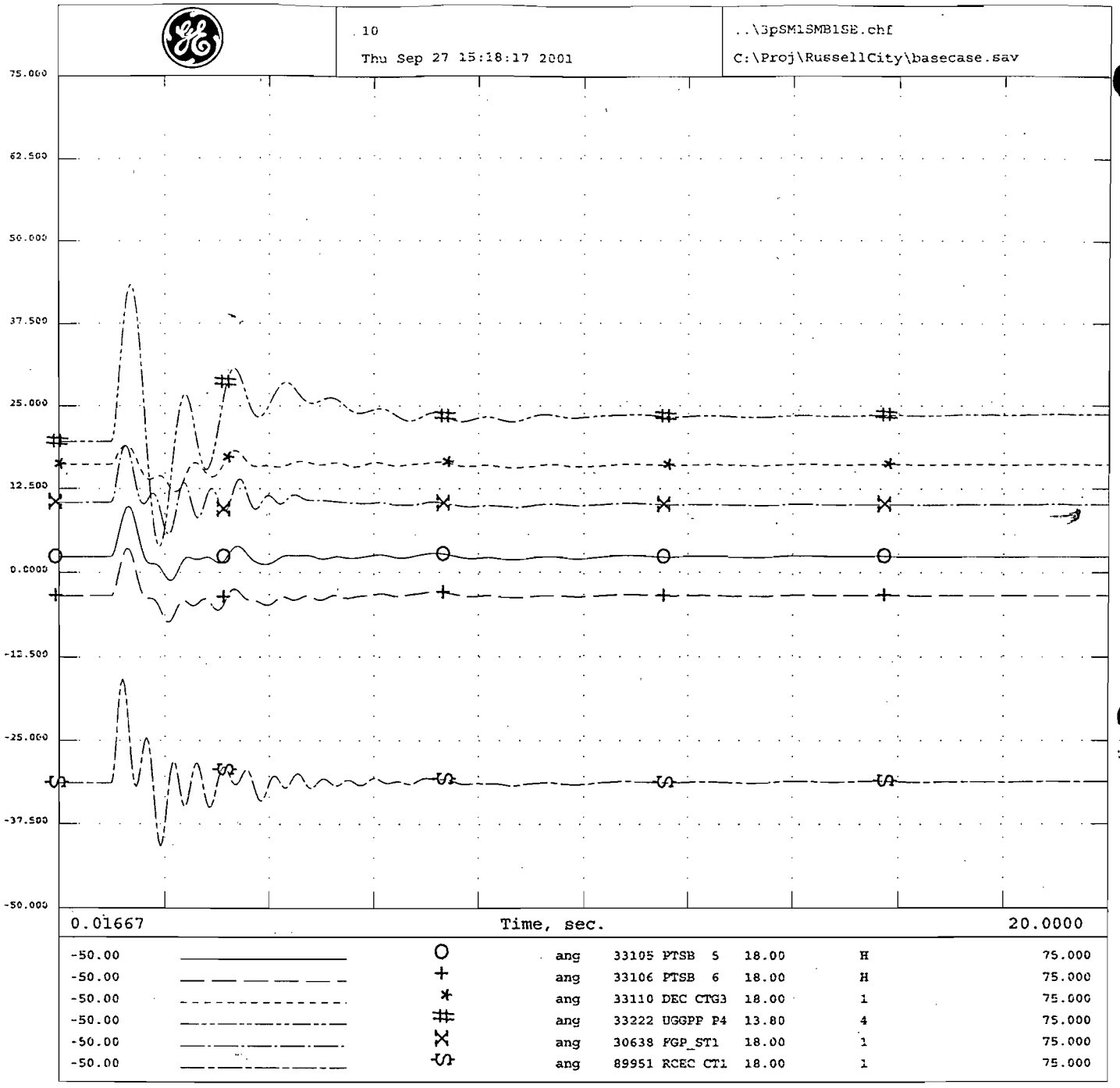
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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Calpine/Bechtel Joint Development
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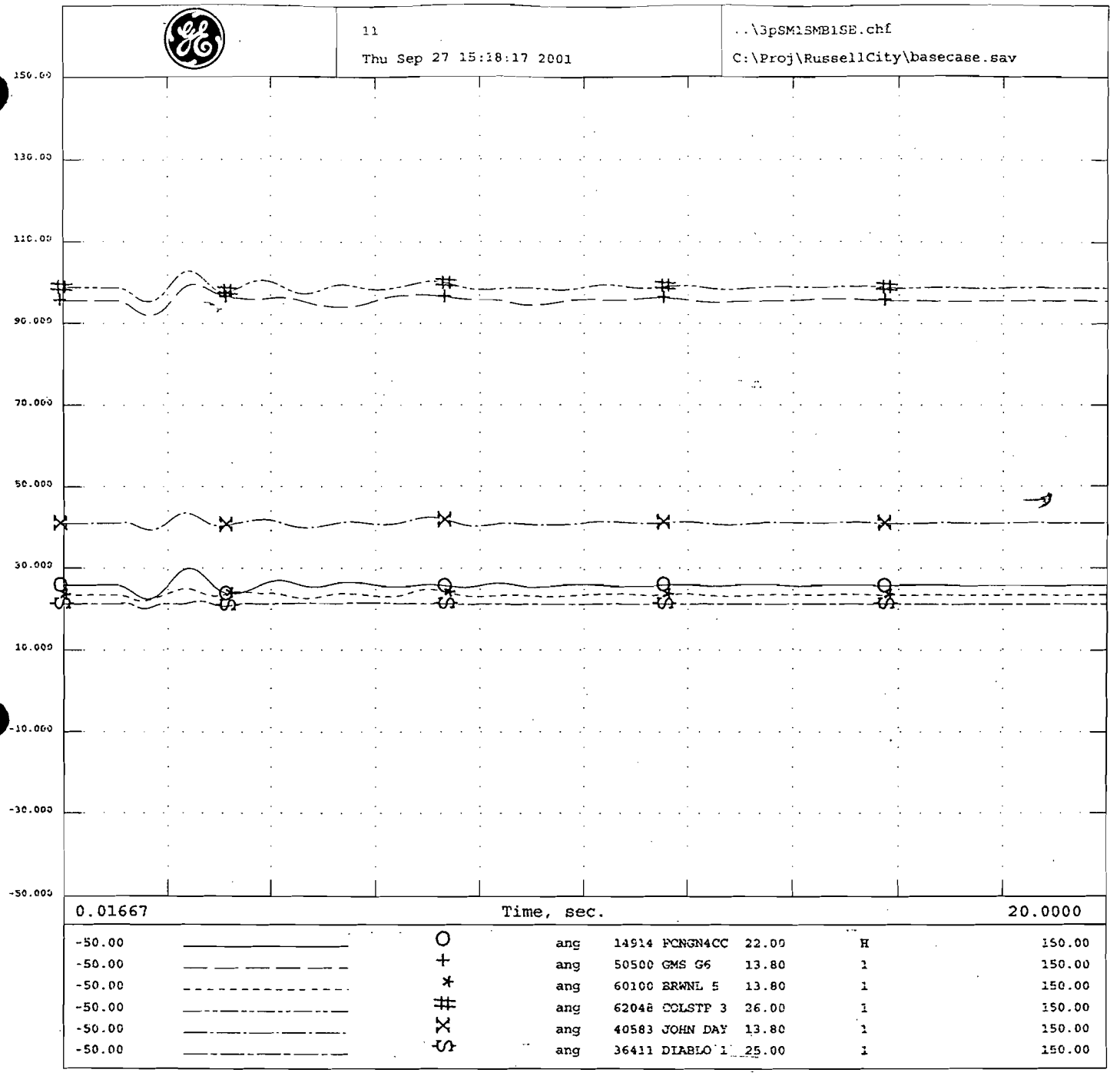

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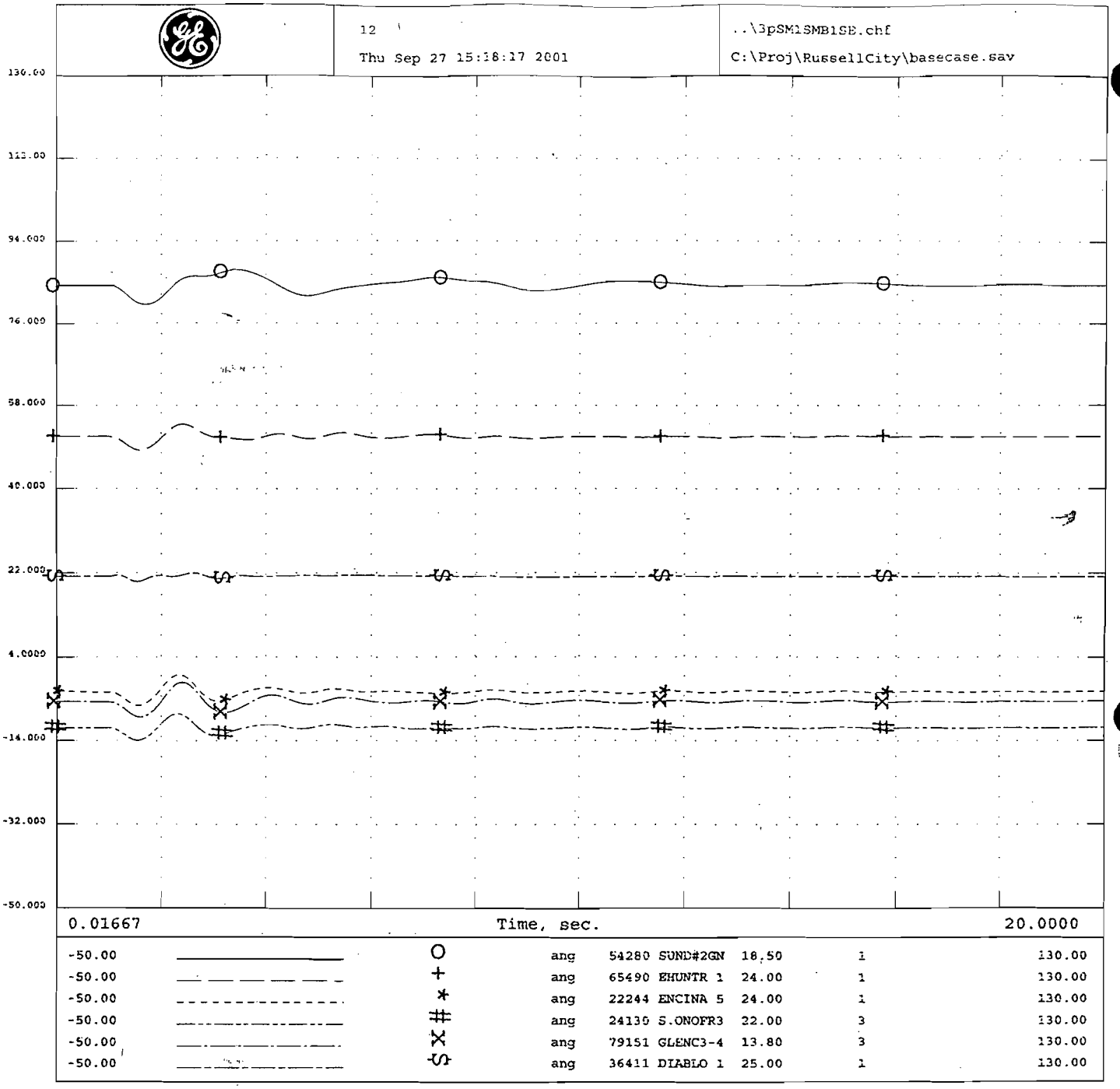
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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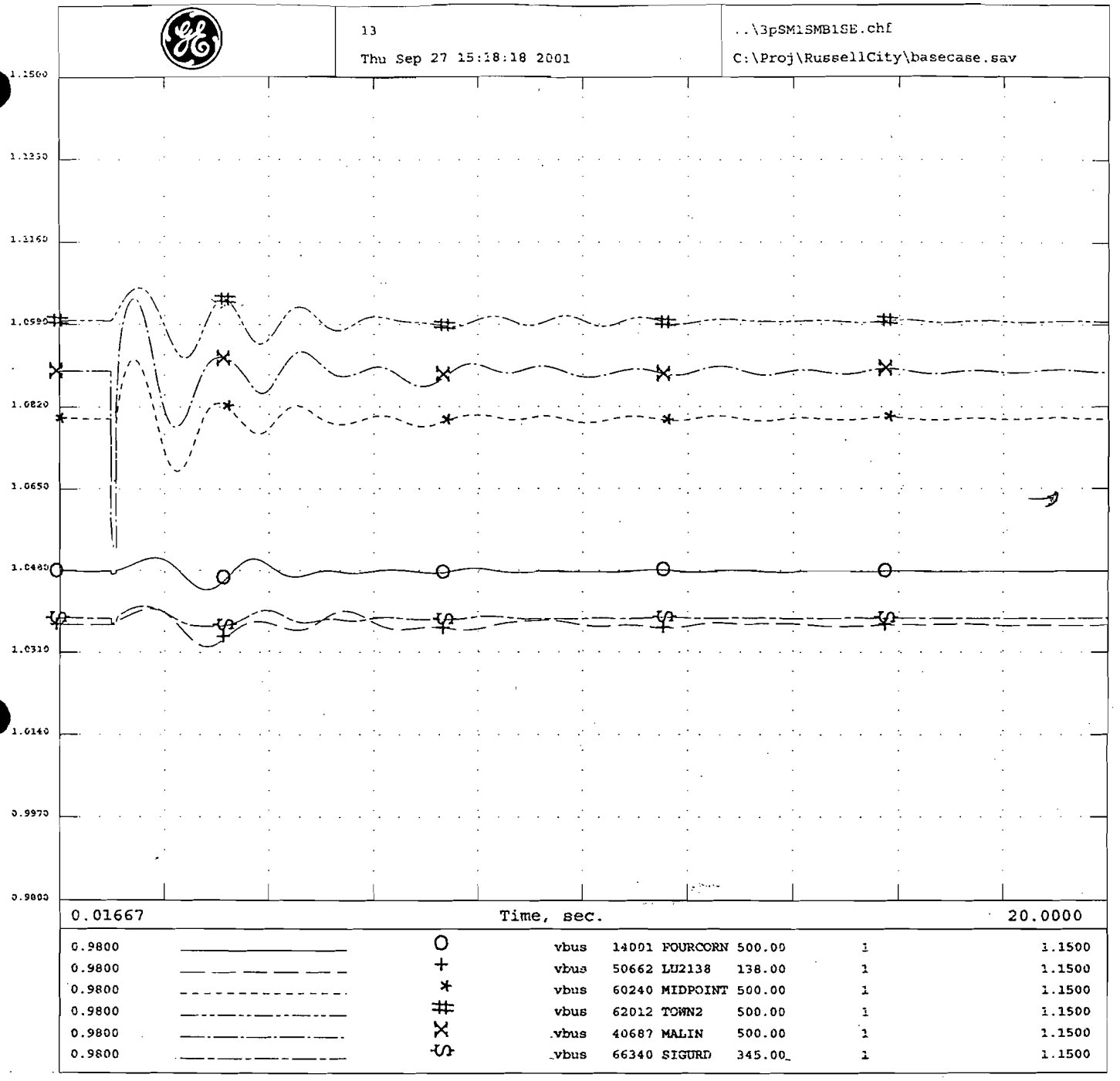

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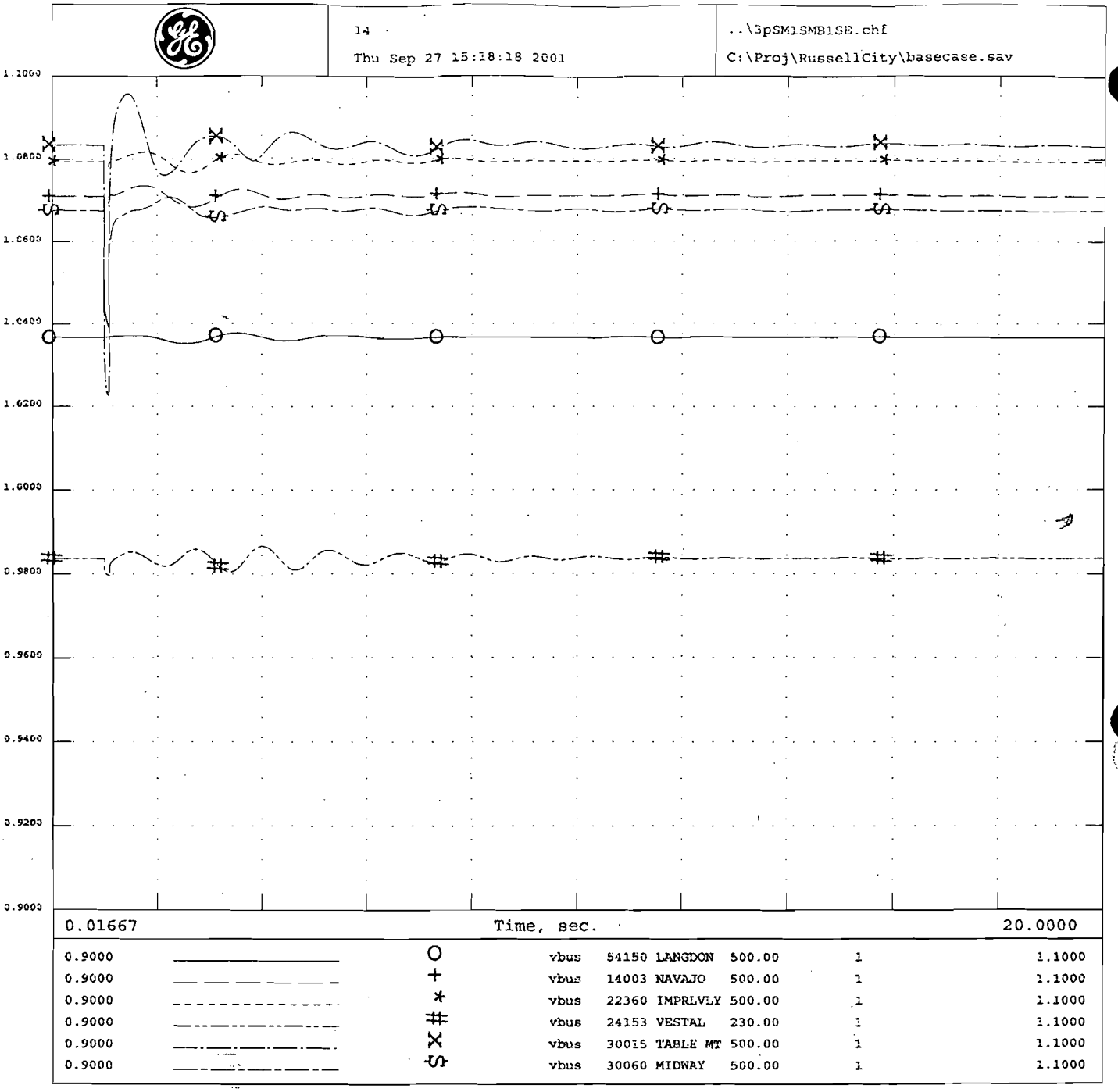

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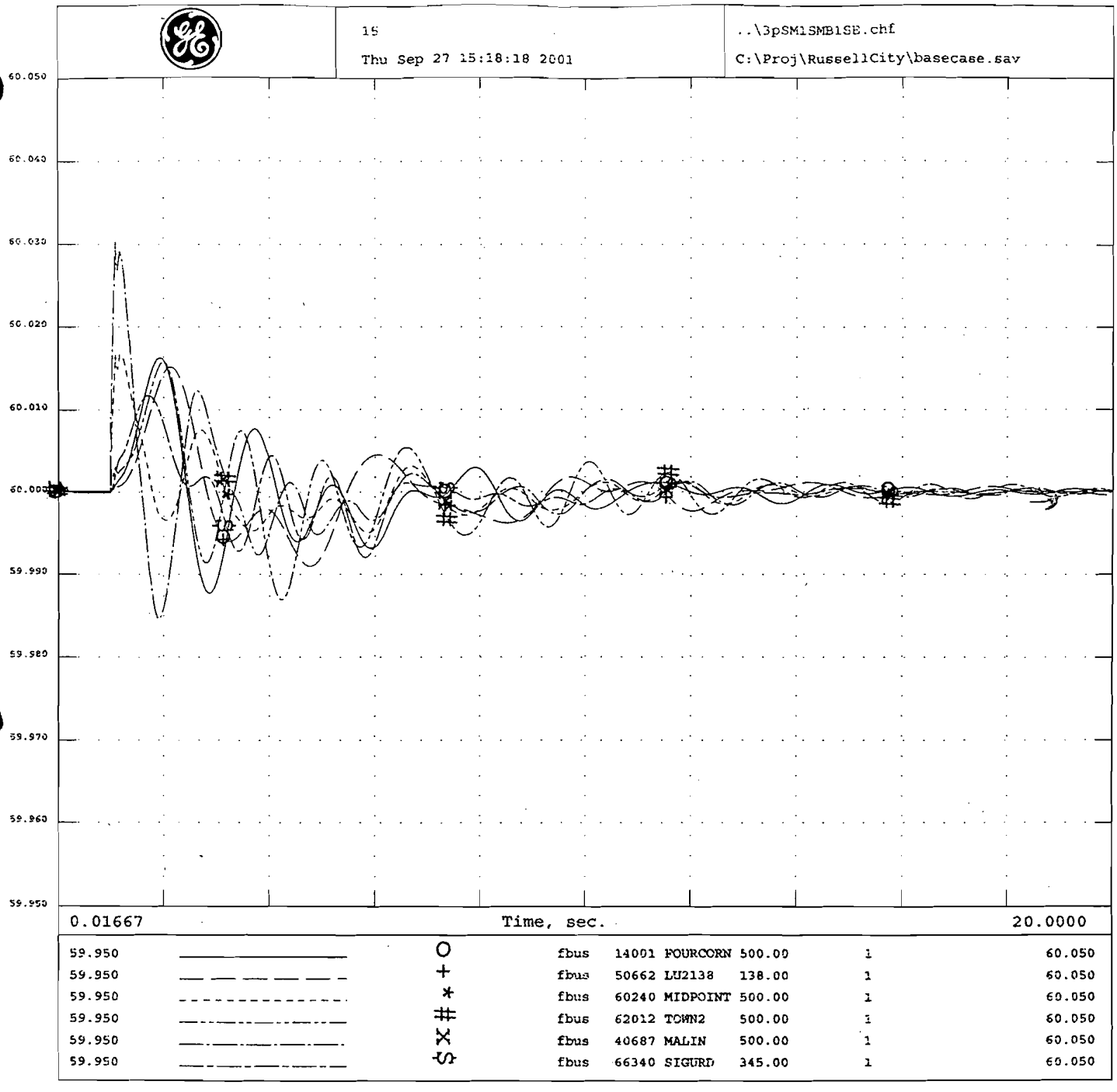

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Calpine/Bechtel Joint Development
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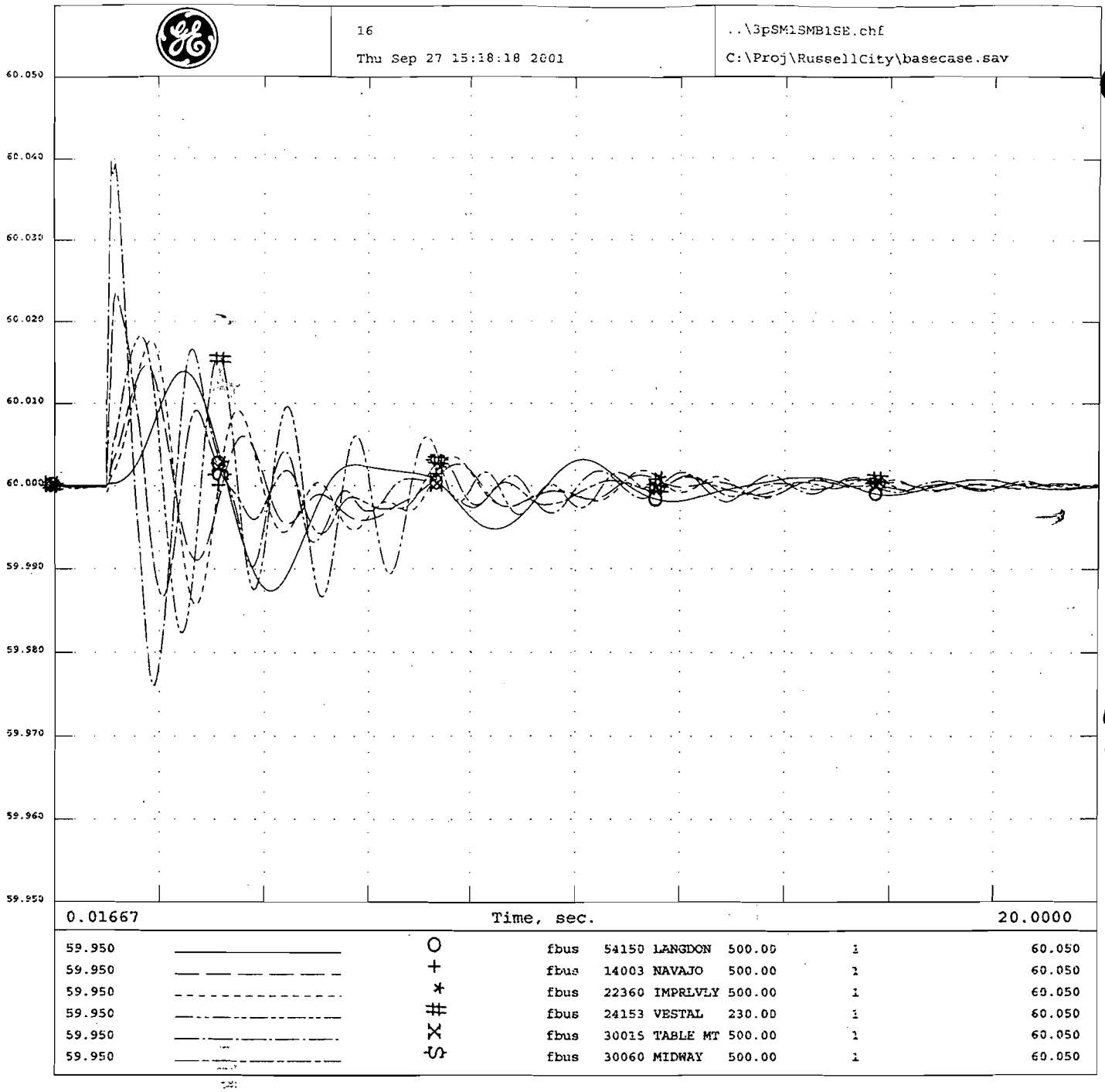

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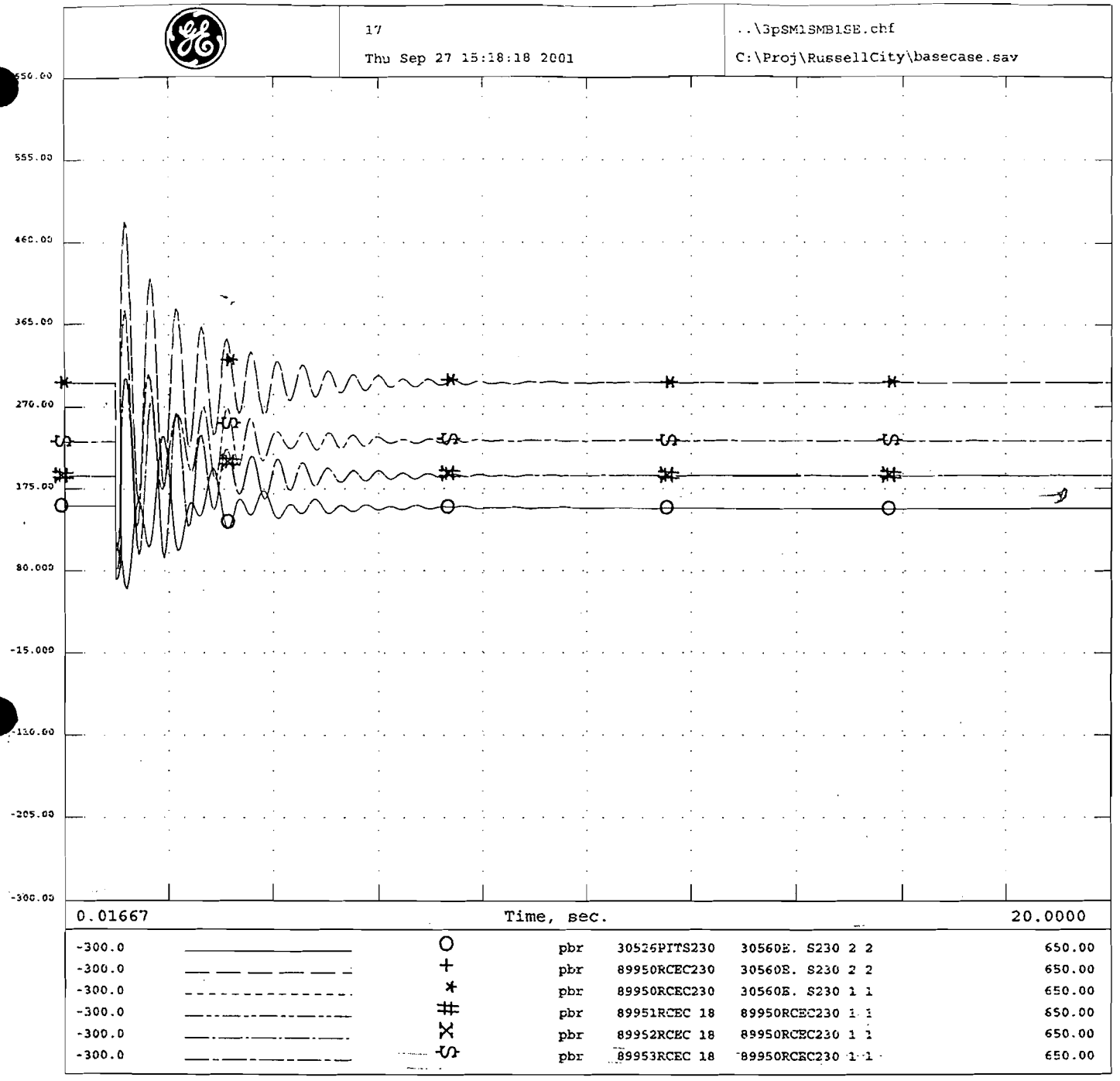

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Calpine/Bechtel Joint Development
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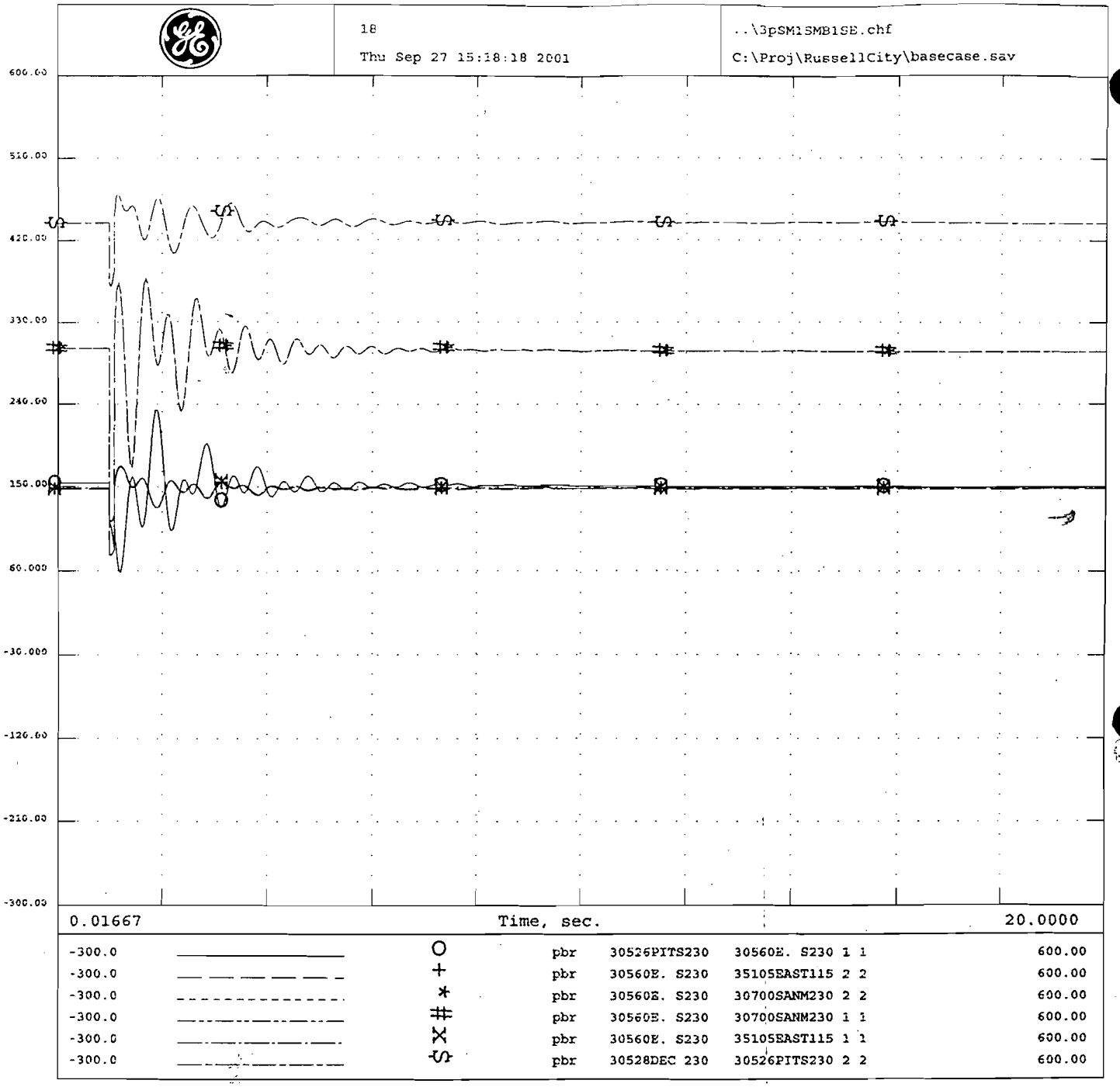

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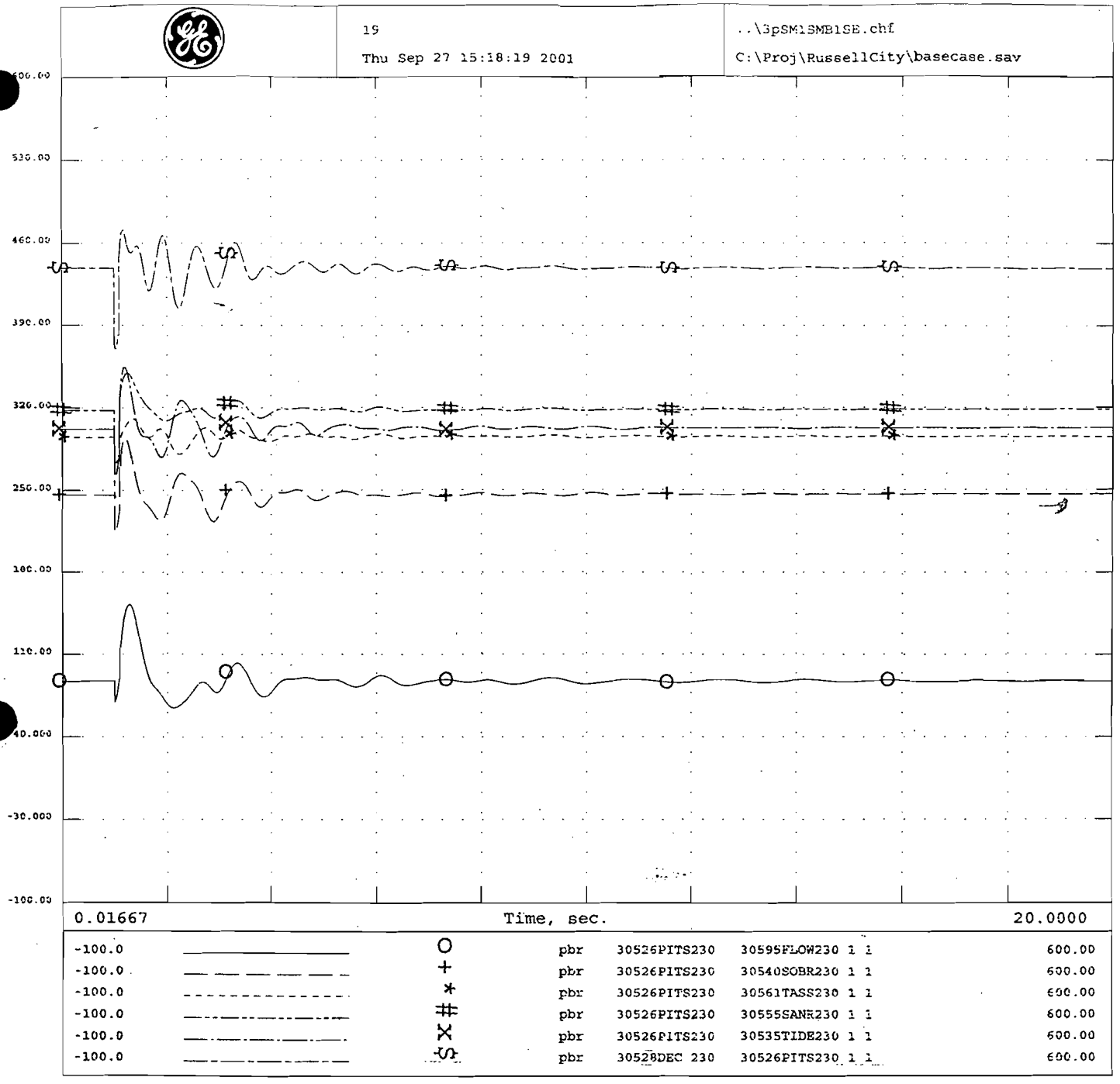

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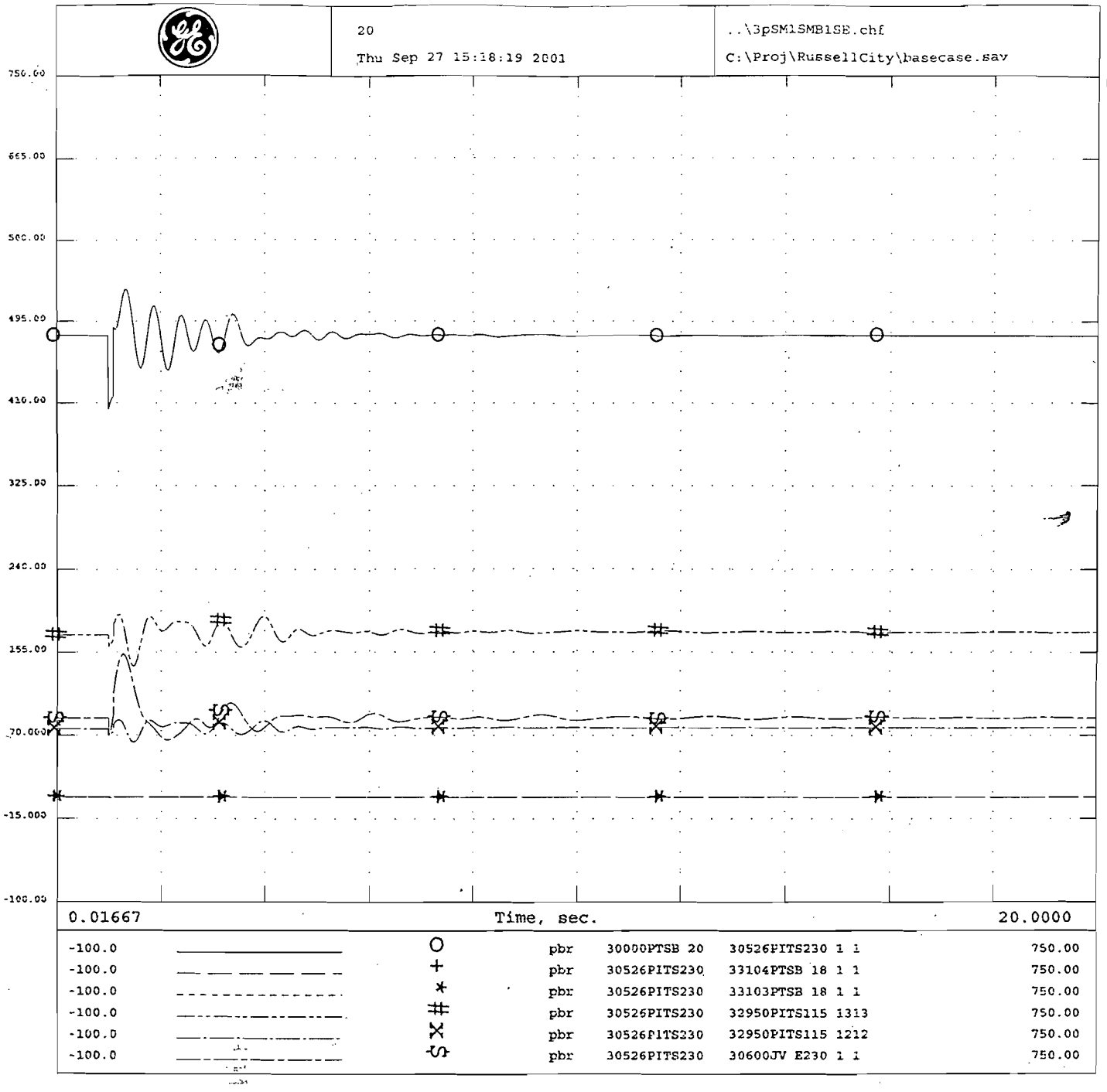

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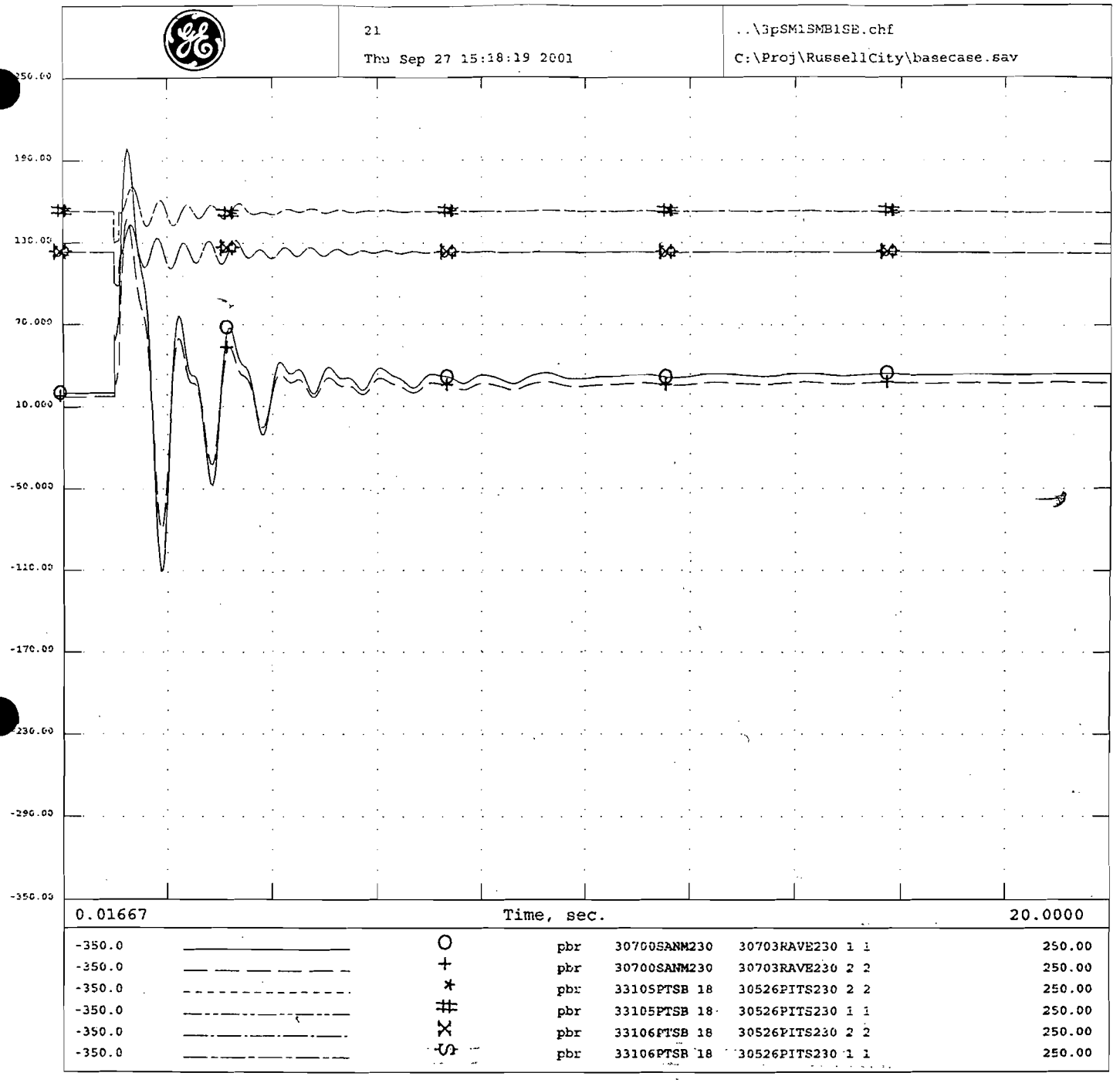

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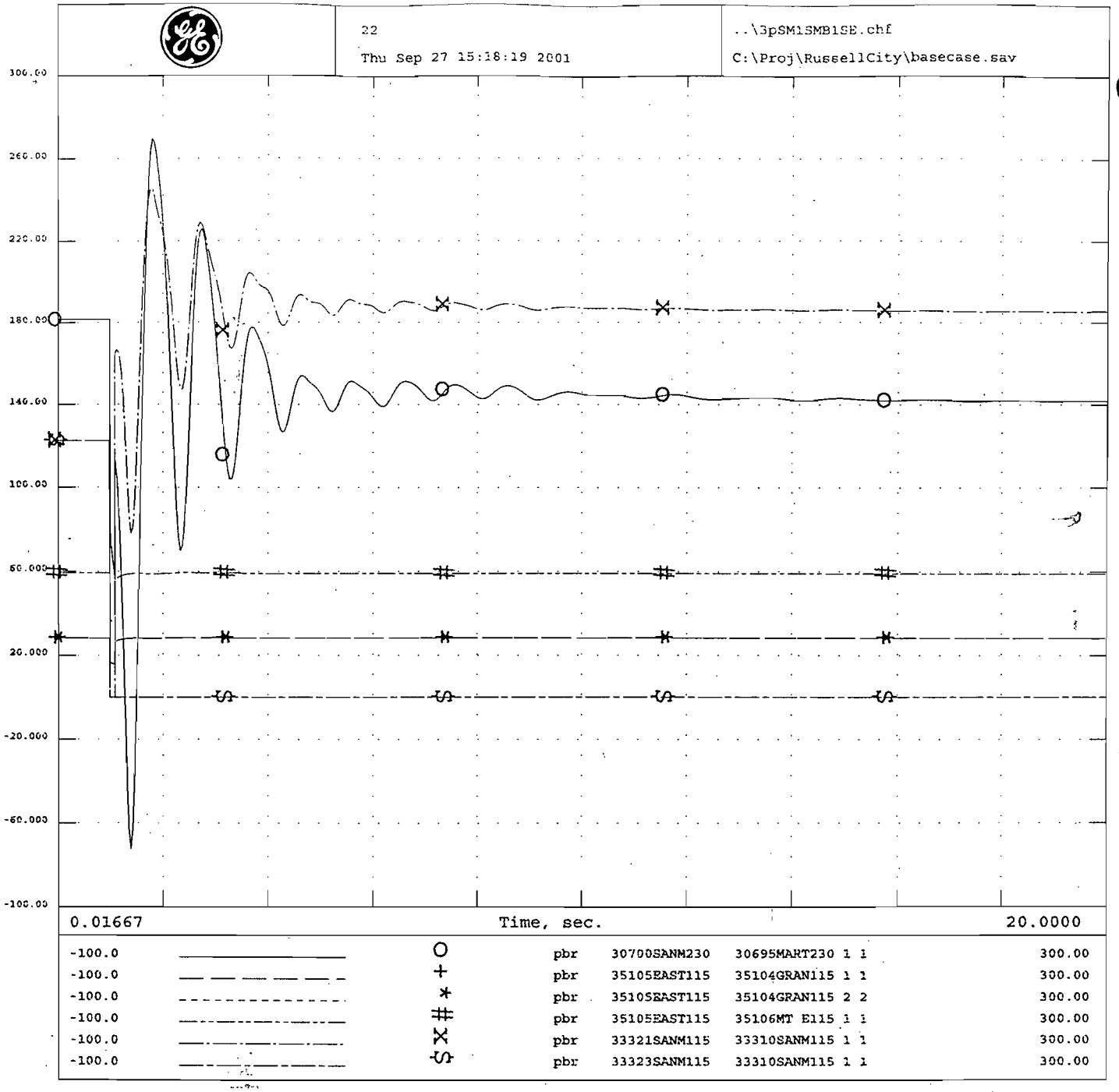

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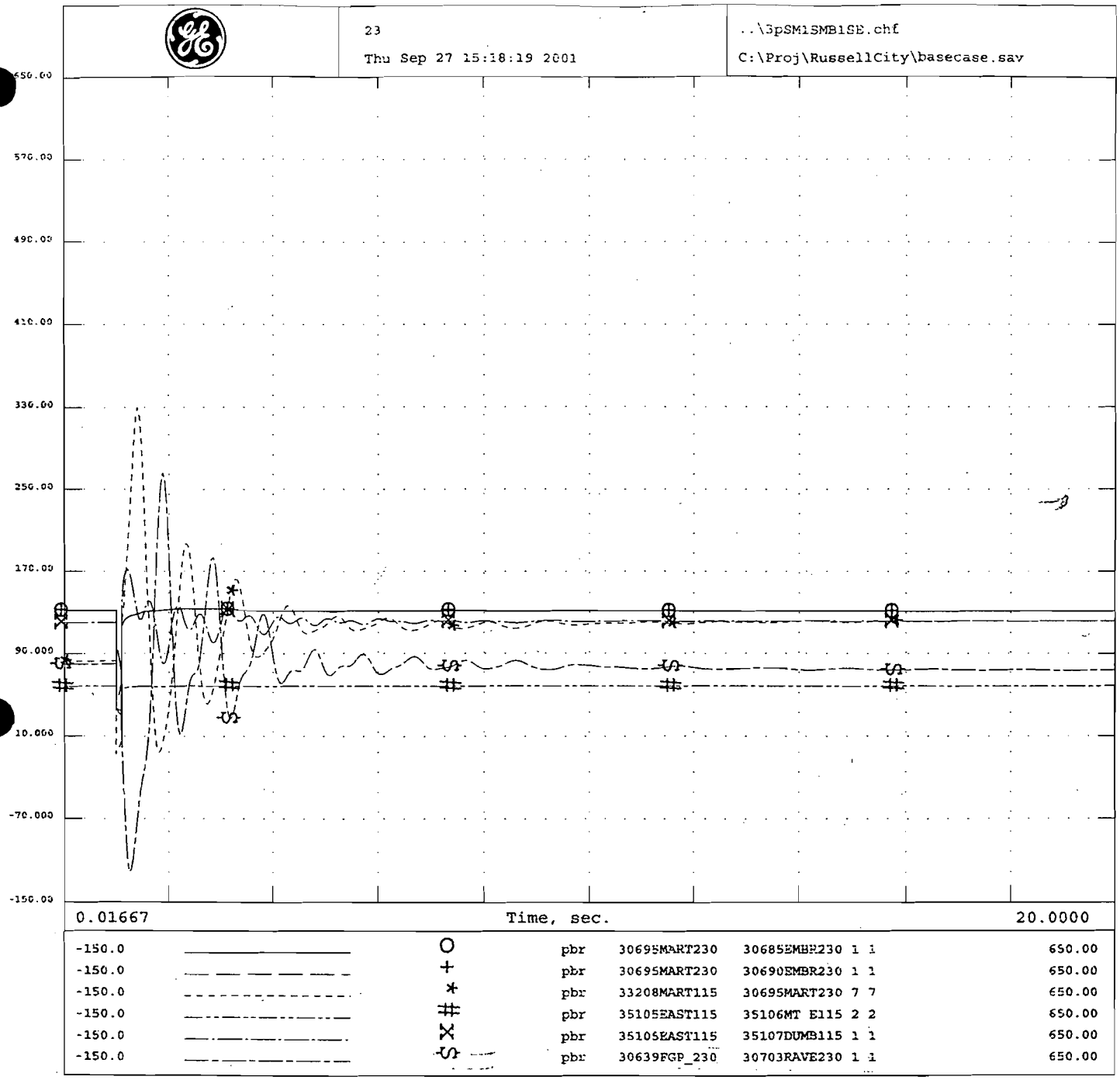

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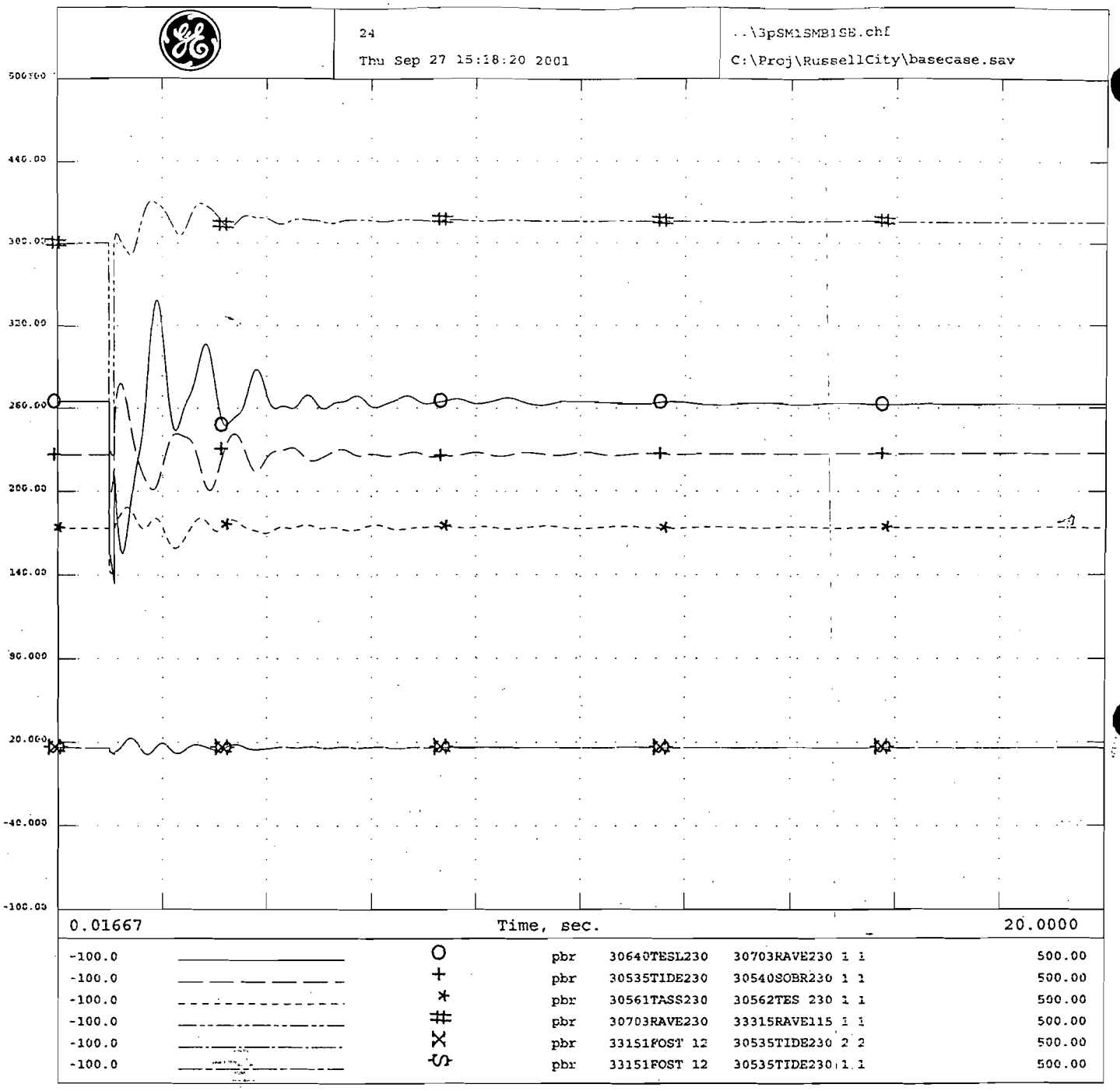

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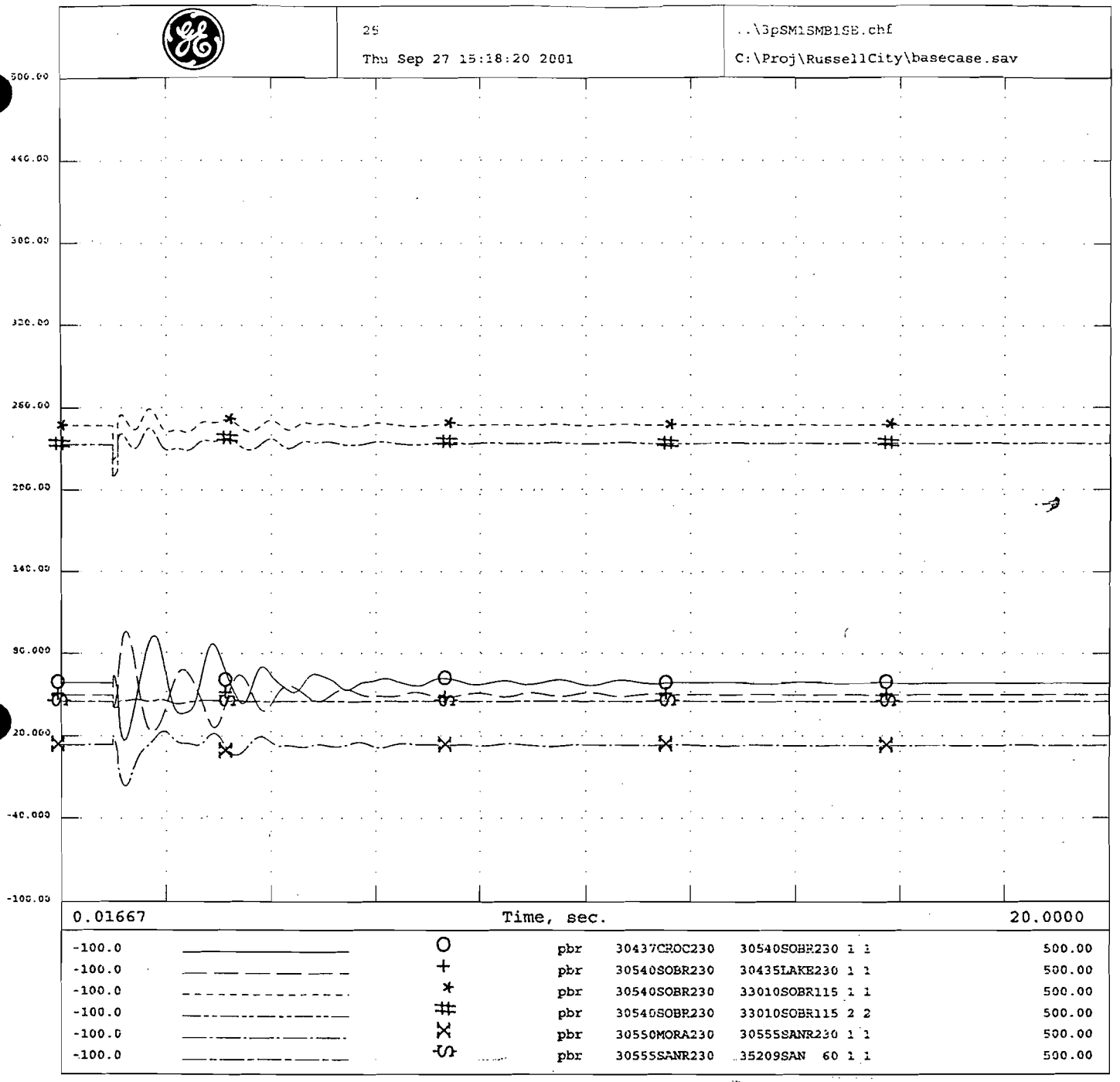

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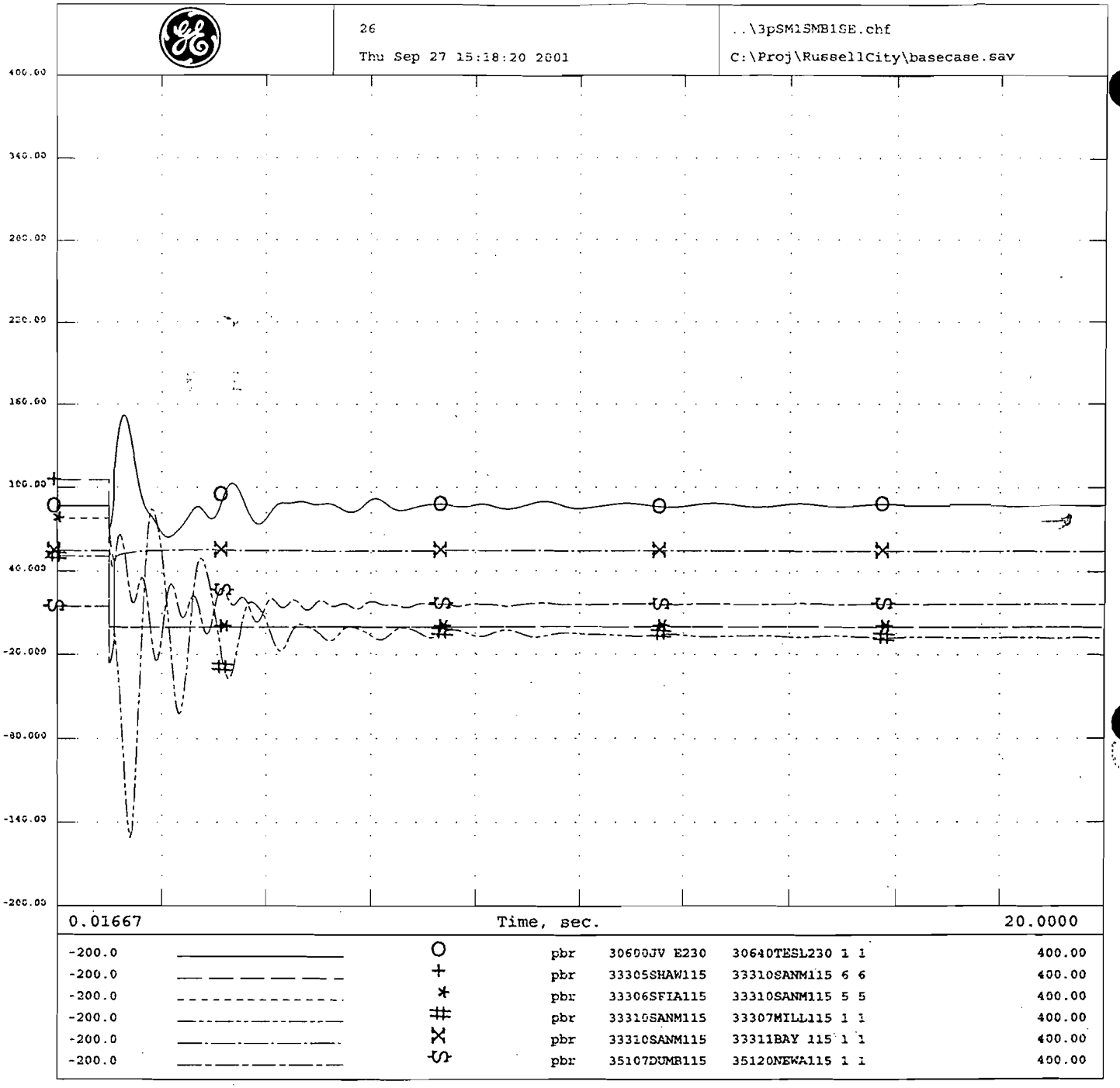

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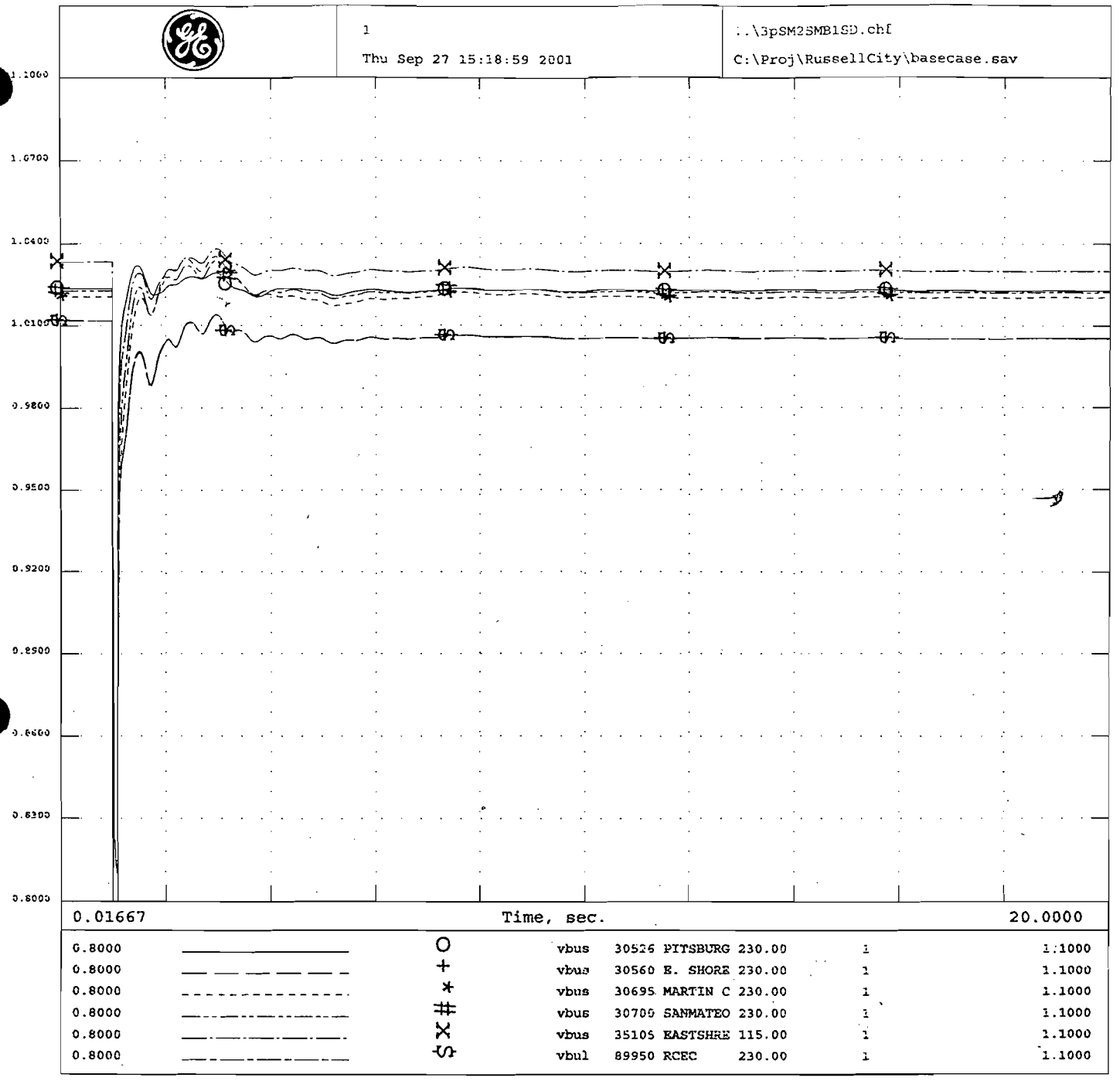

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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Russell City Energy Center System Impact Study
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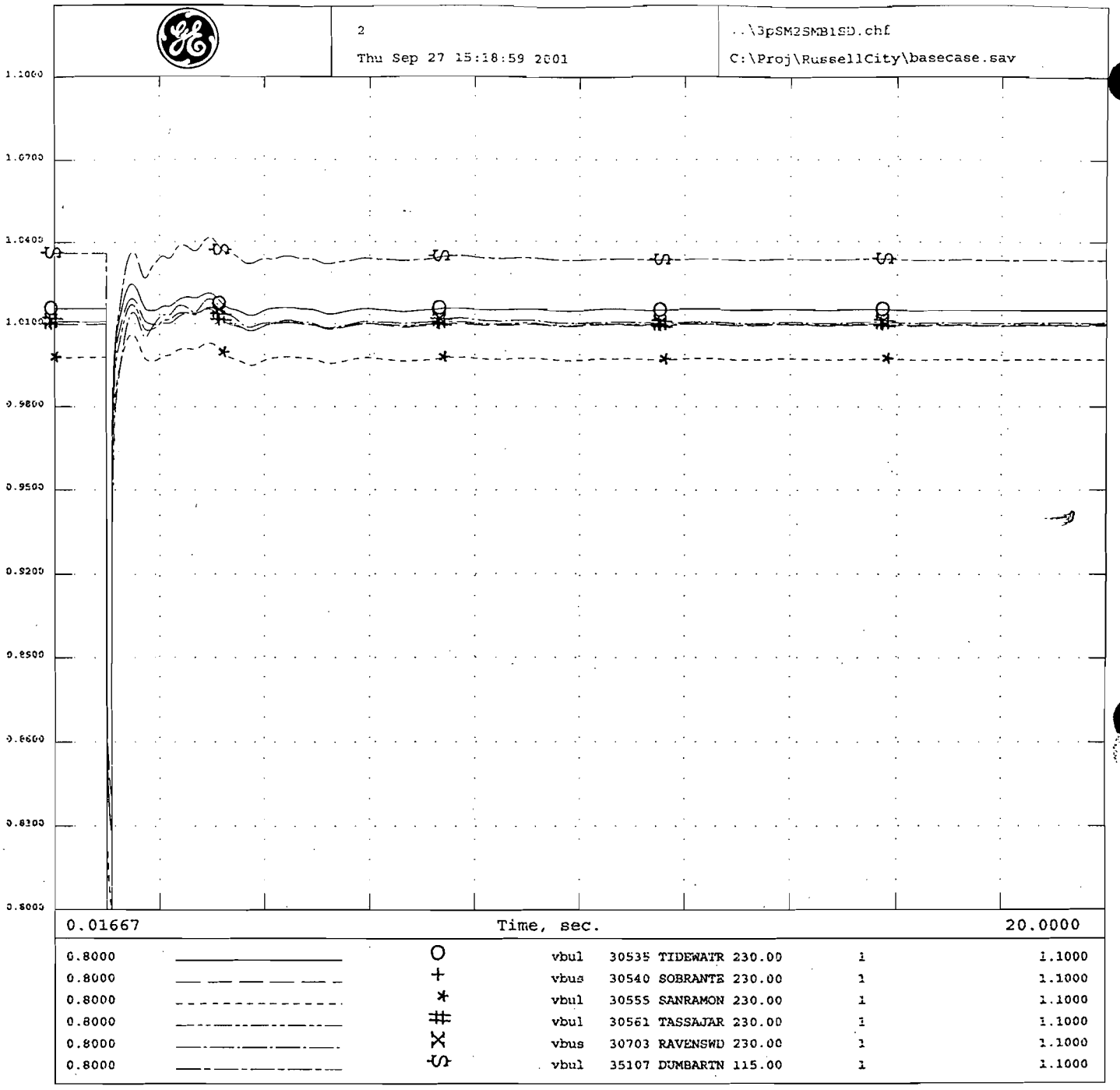

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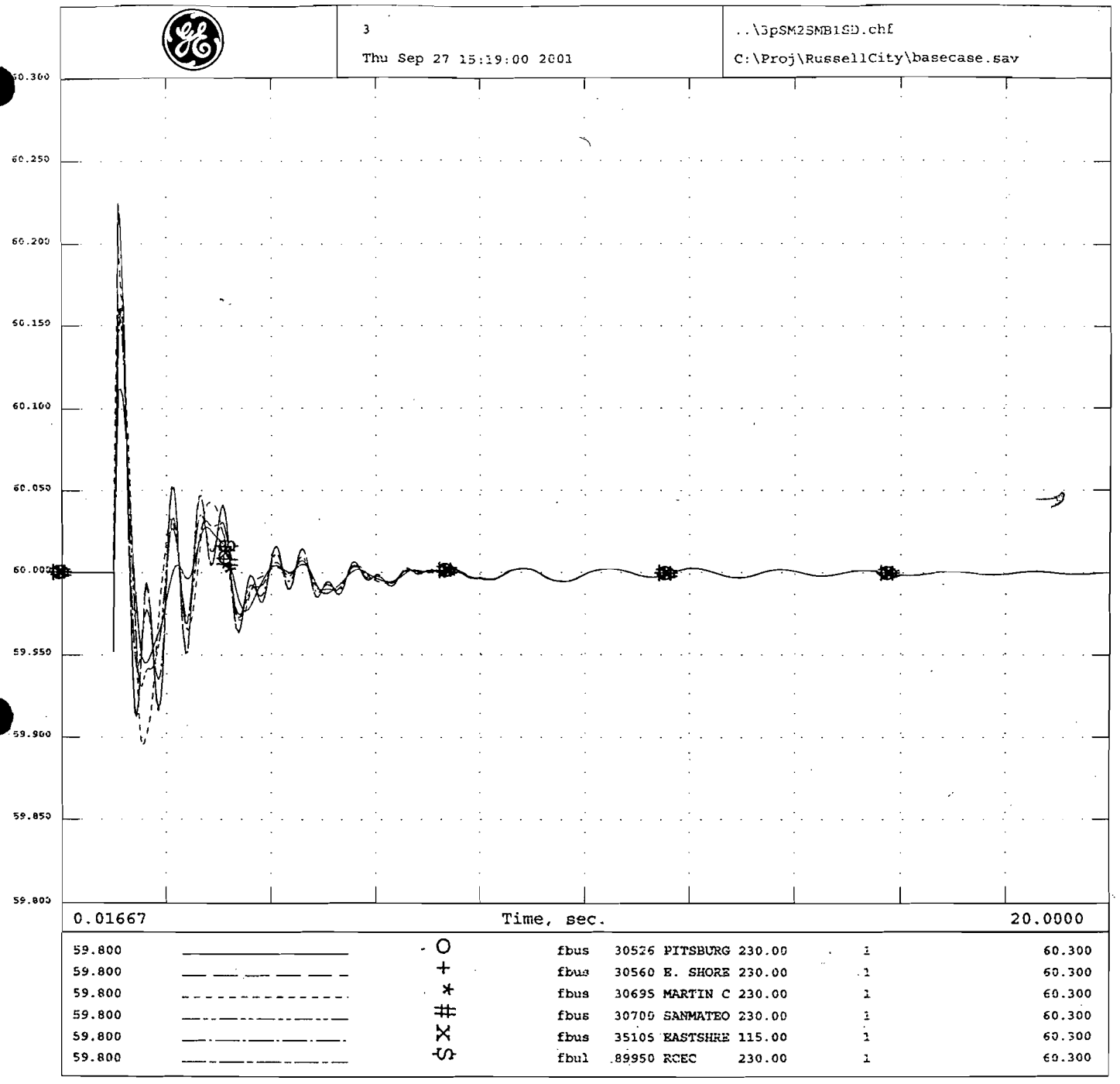

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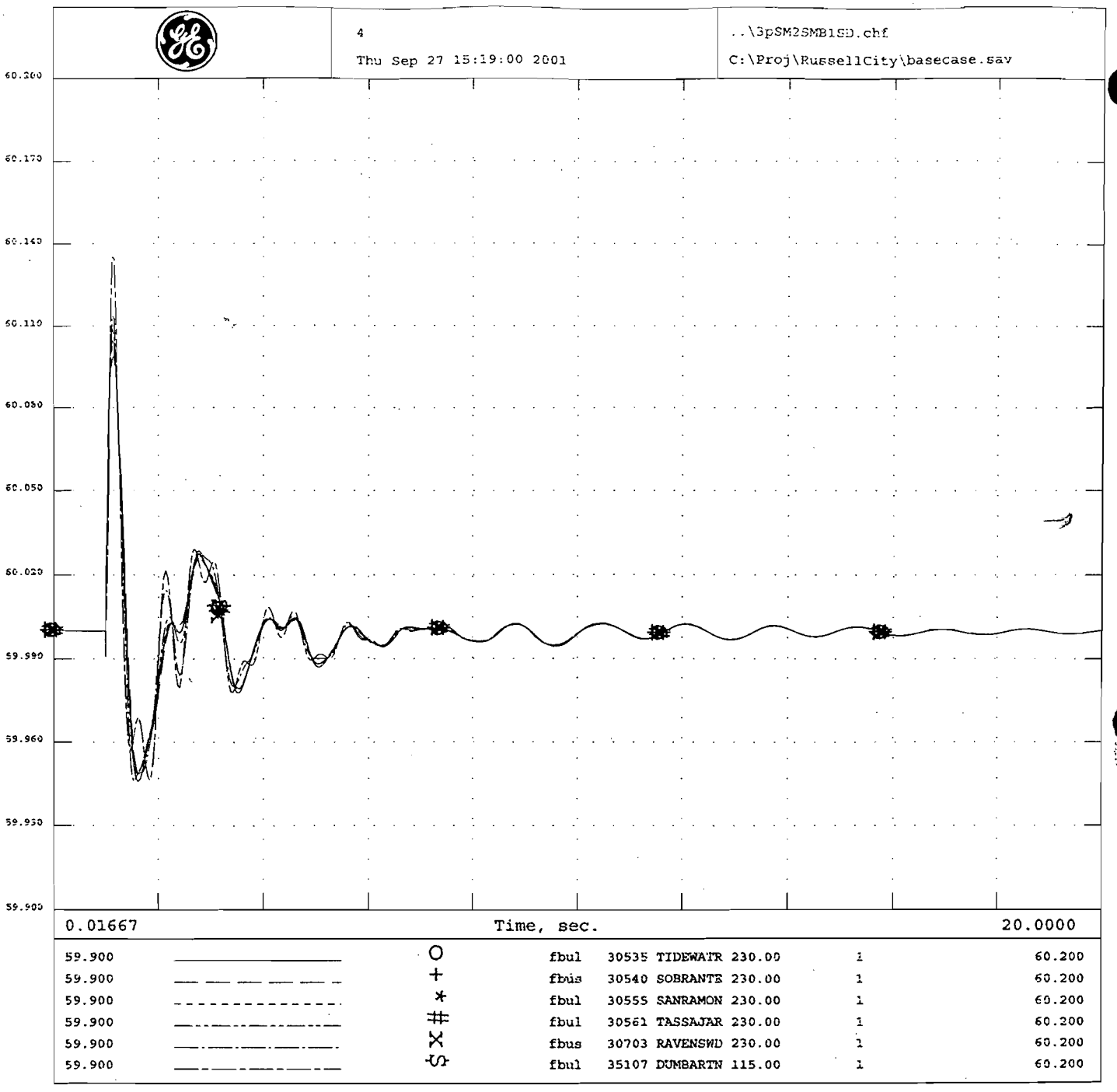

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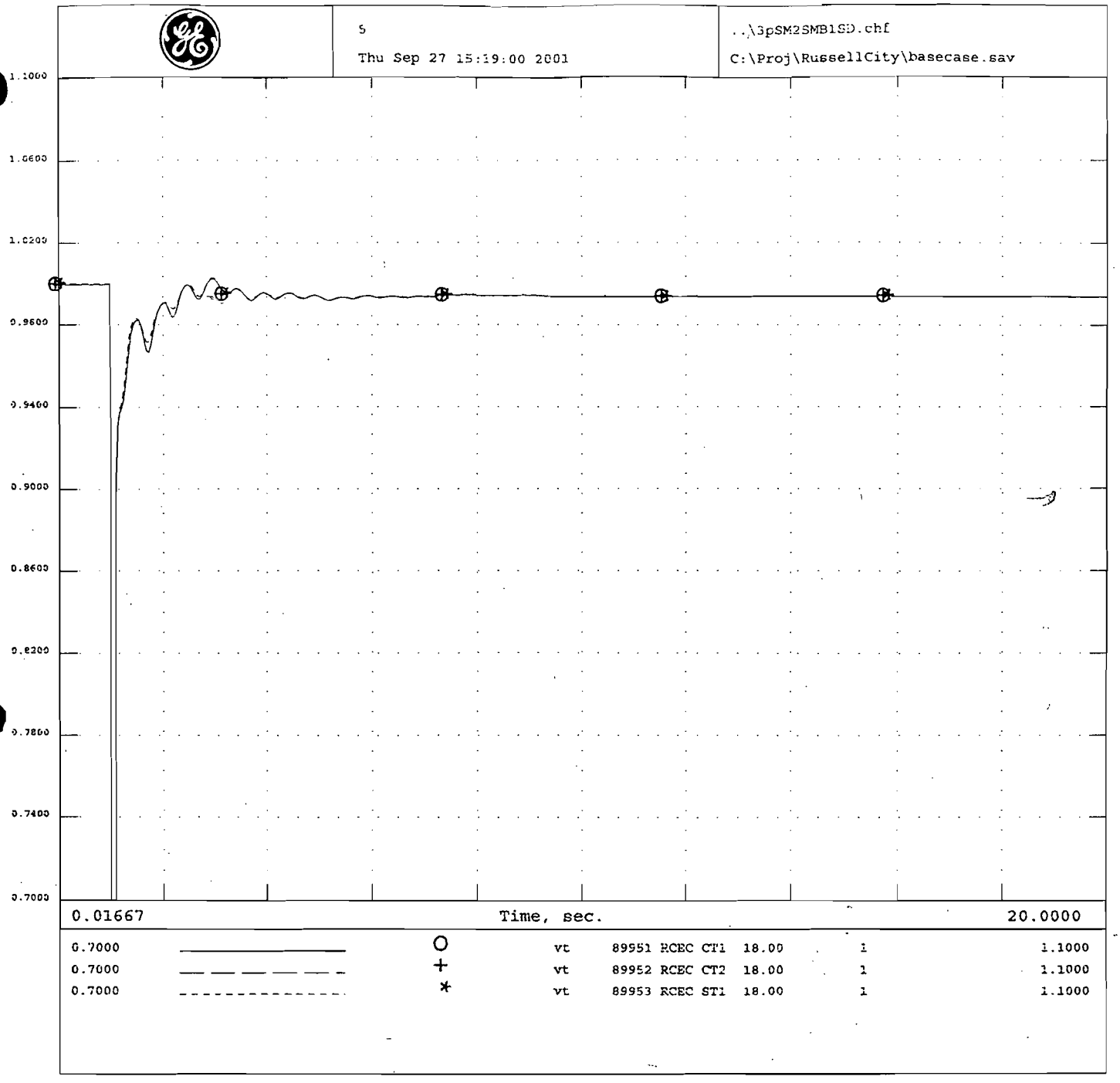

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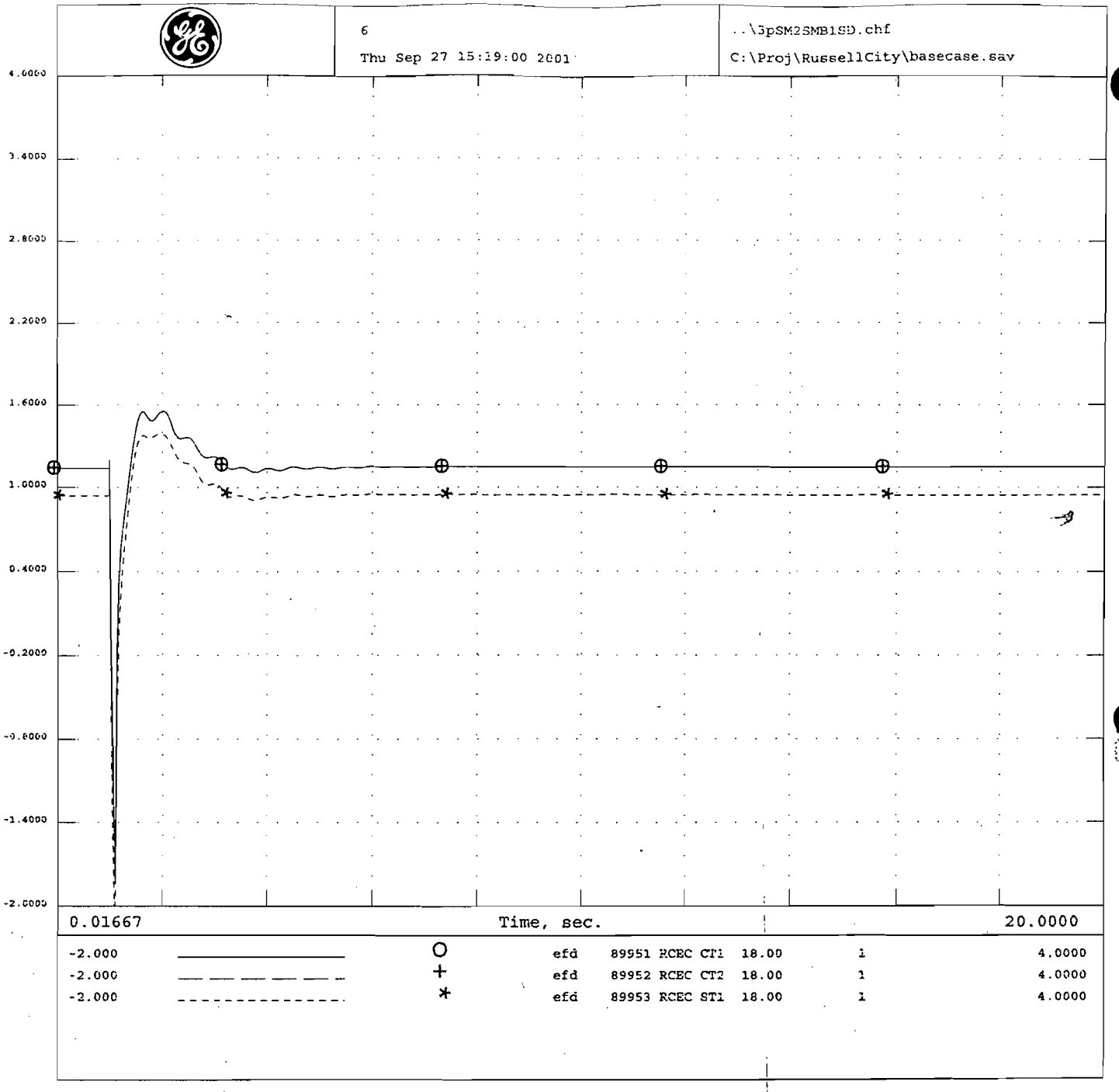

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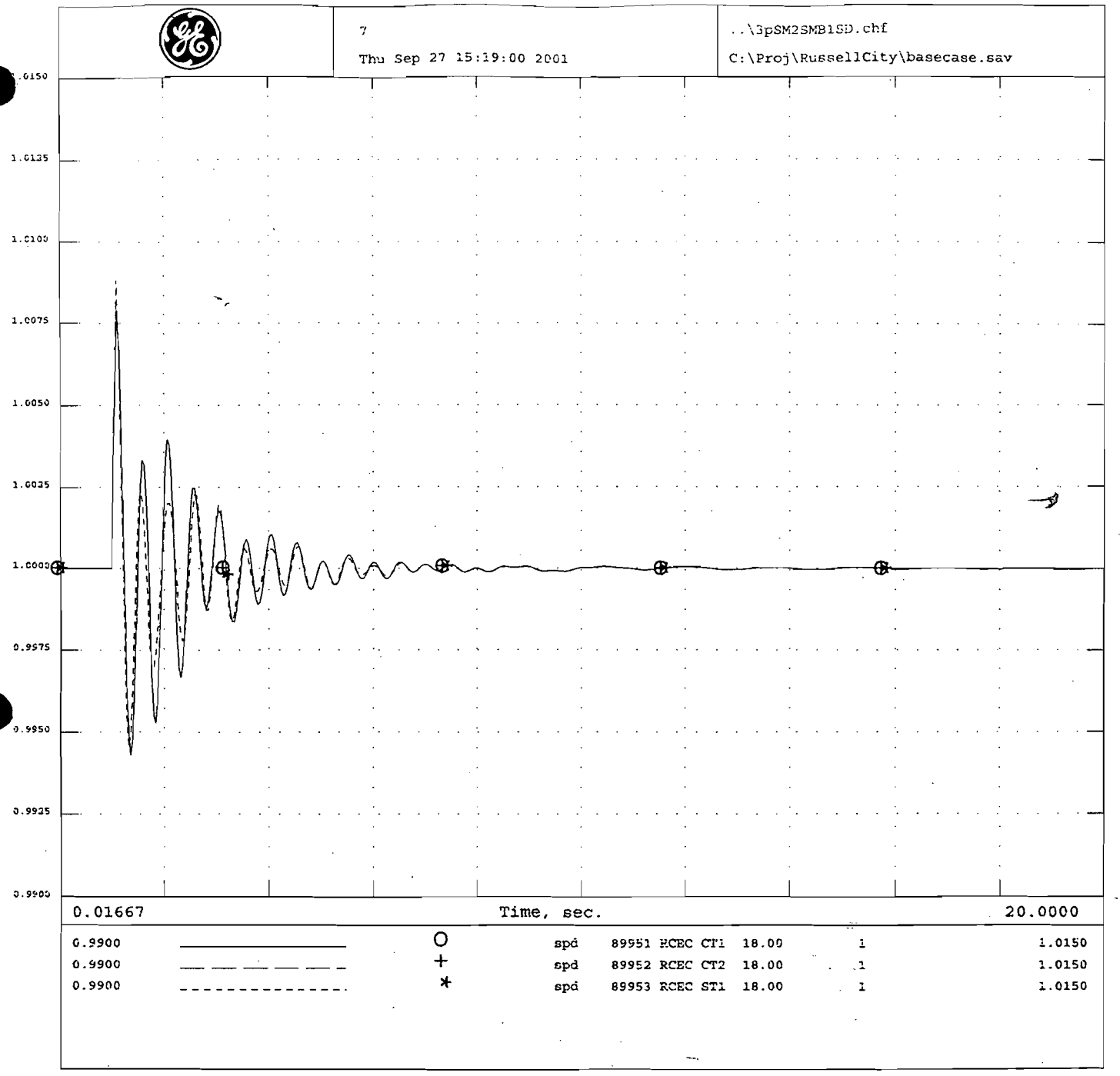

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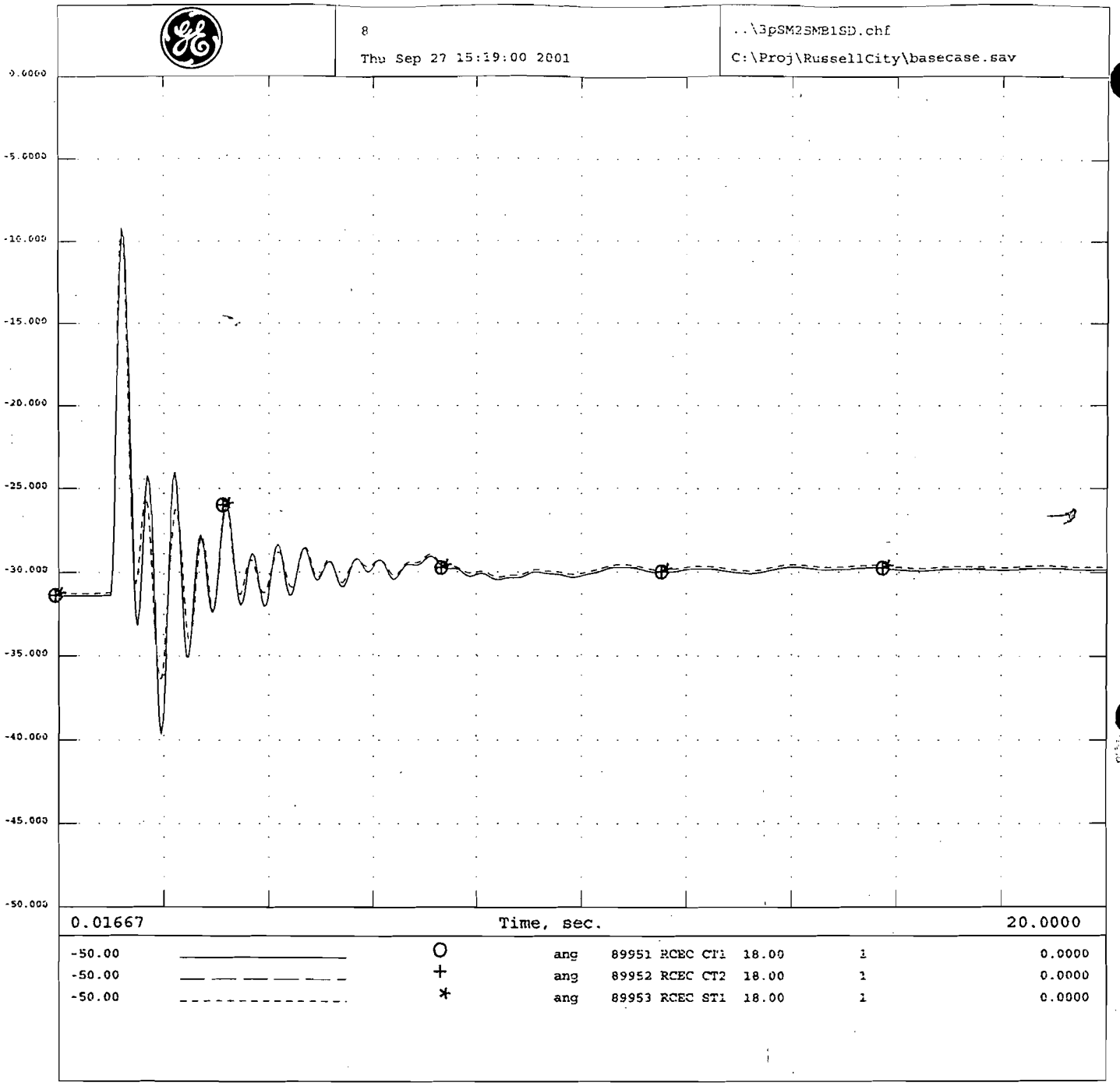

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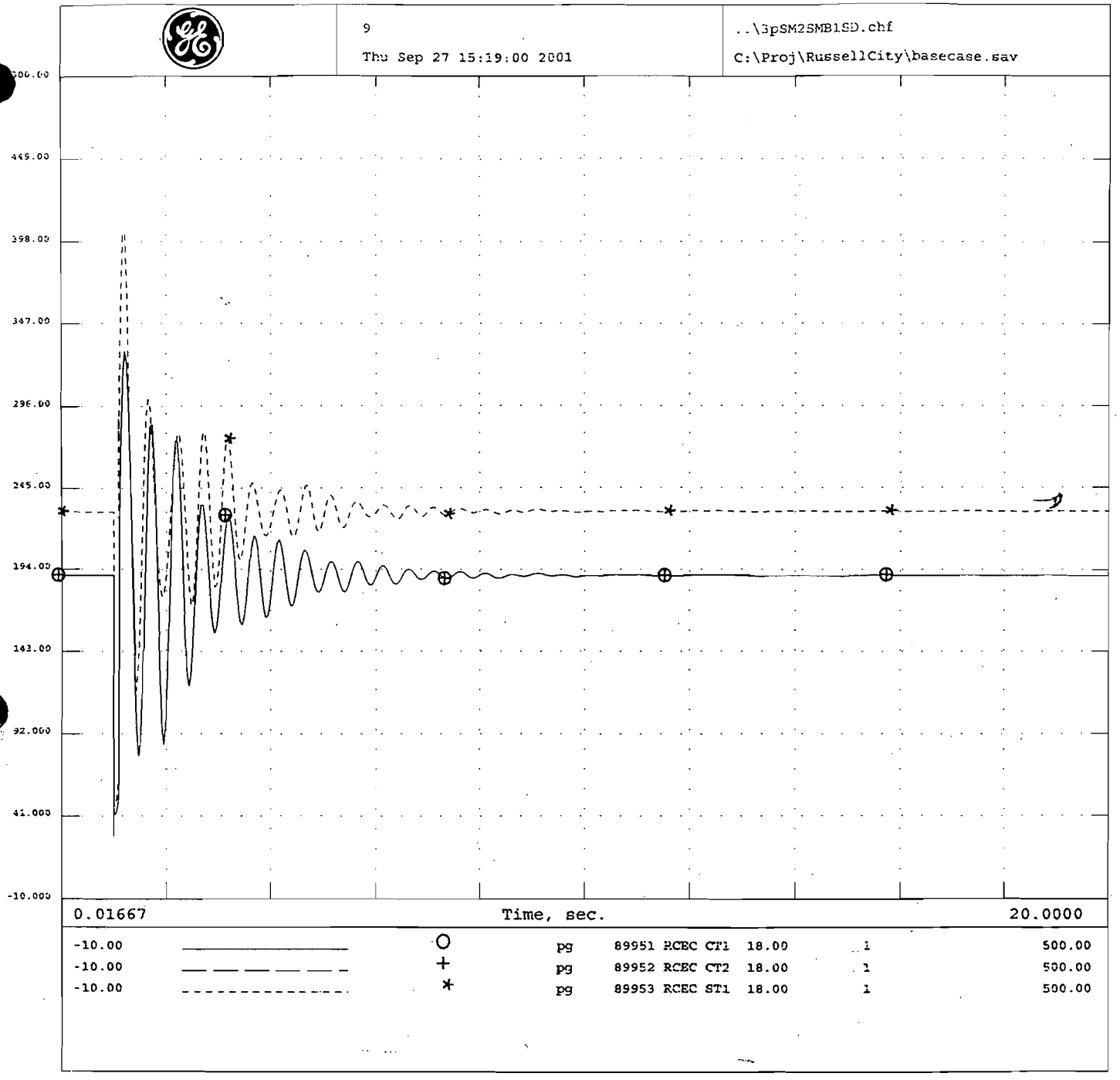

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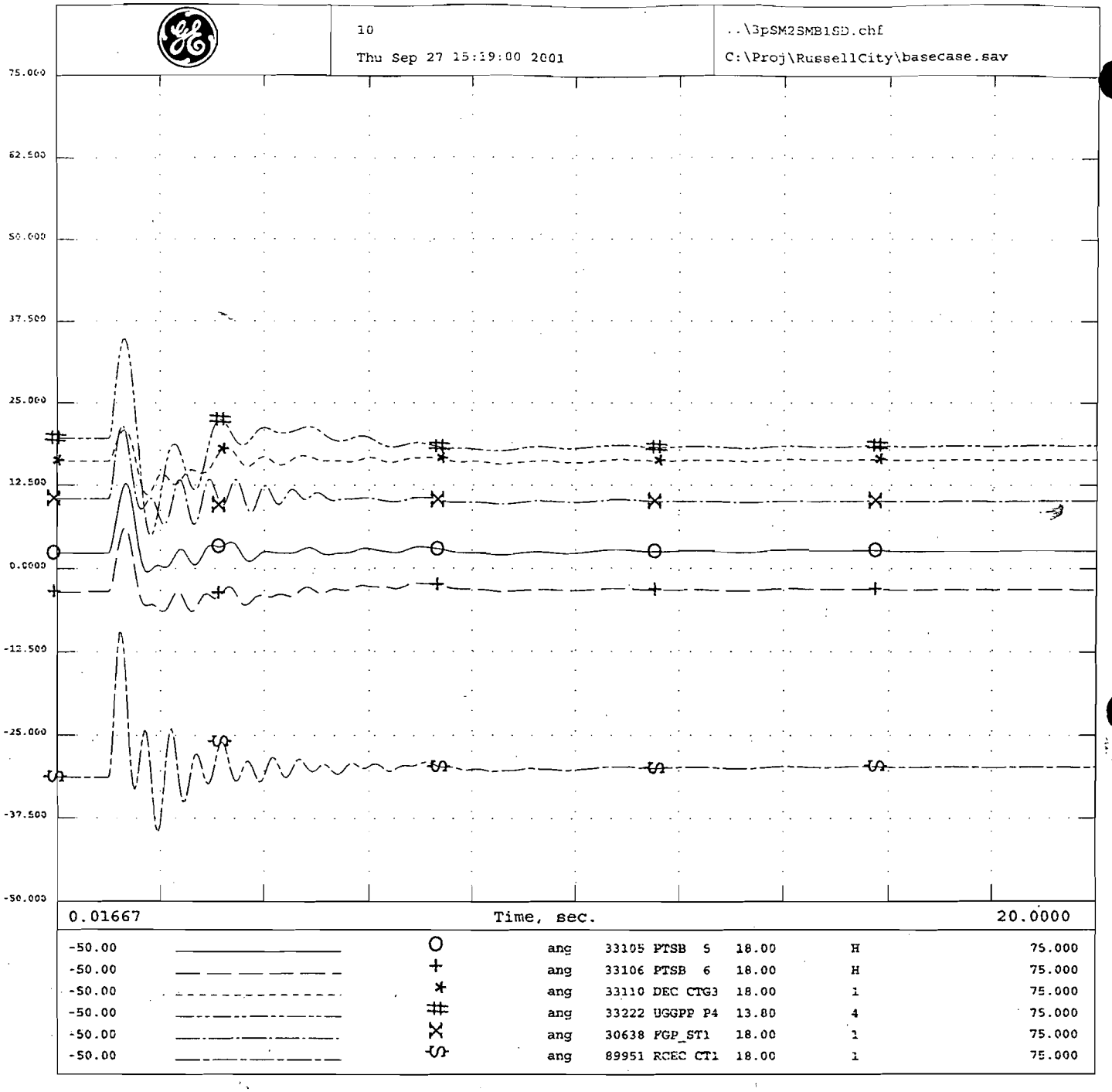

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Calpine/Bechtel Joint Development
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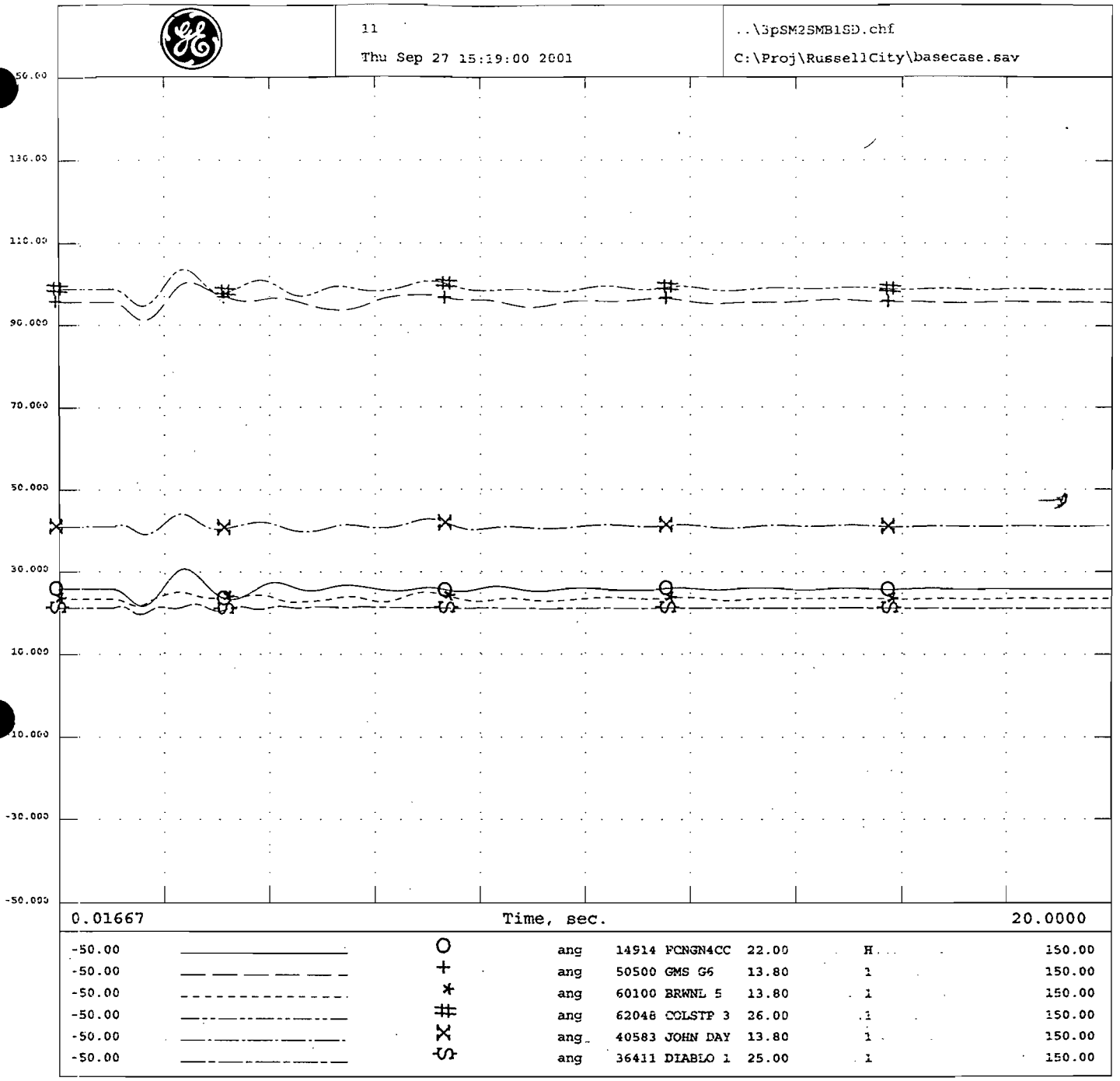

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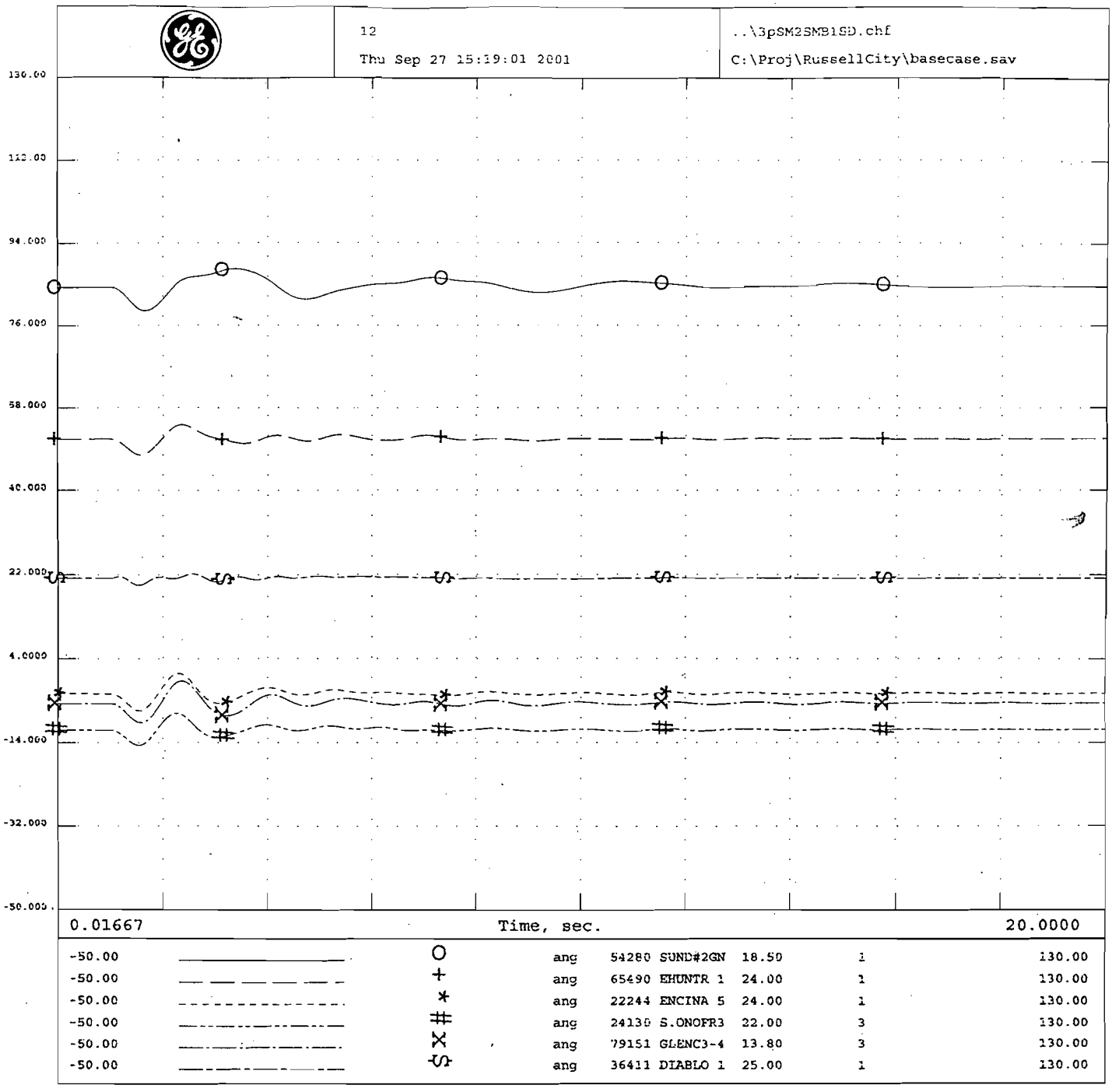
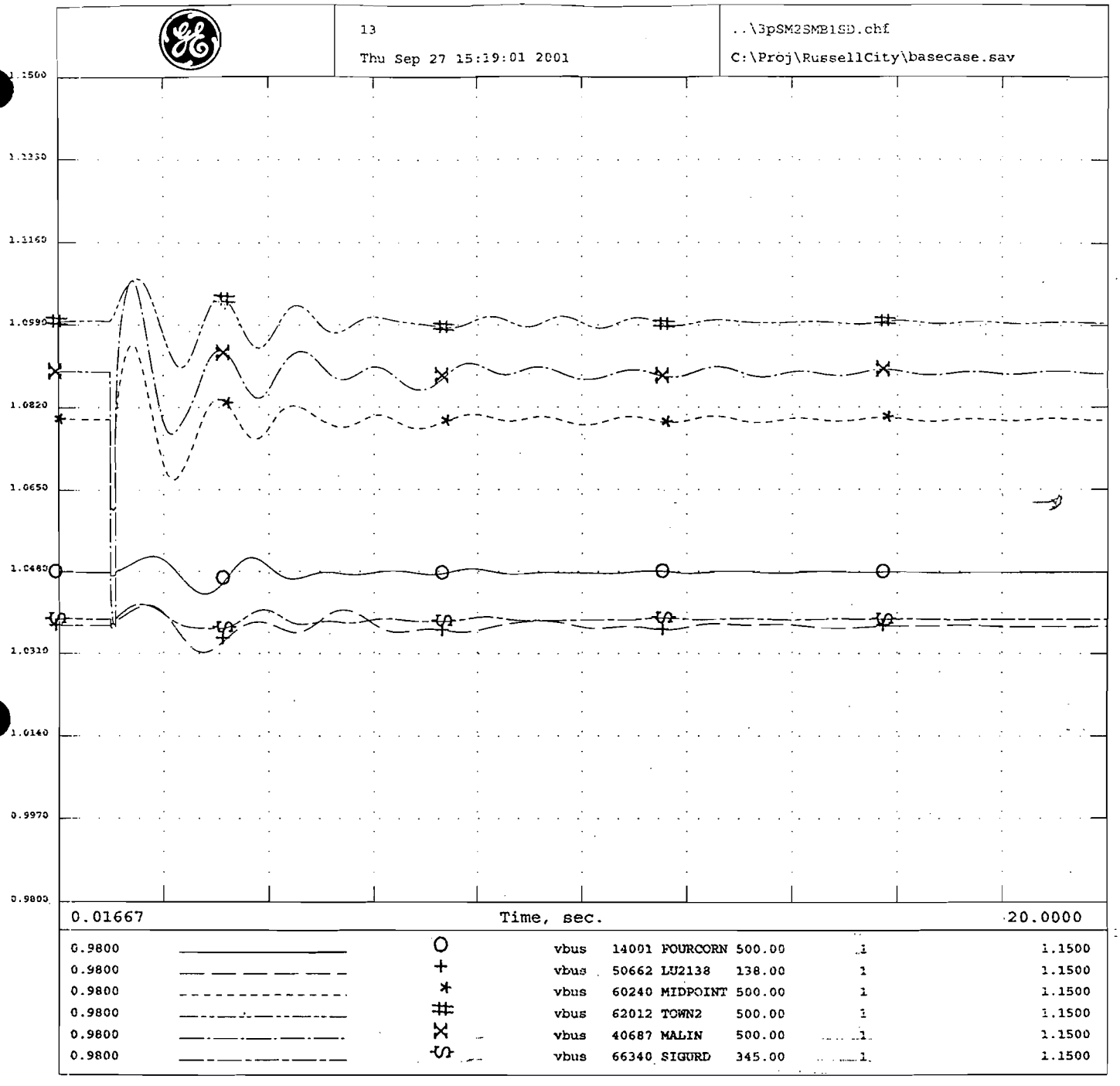


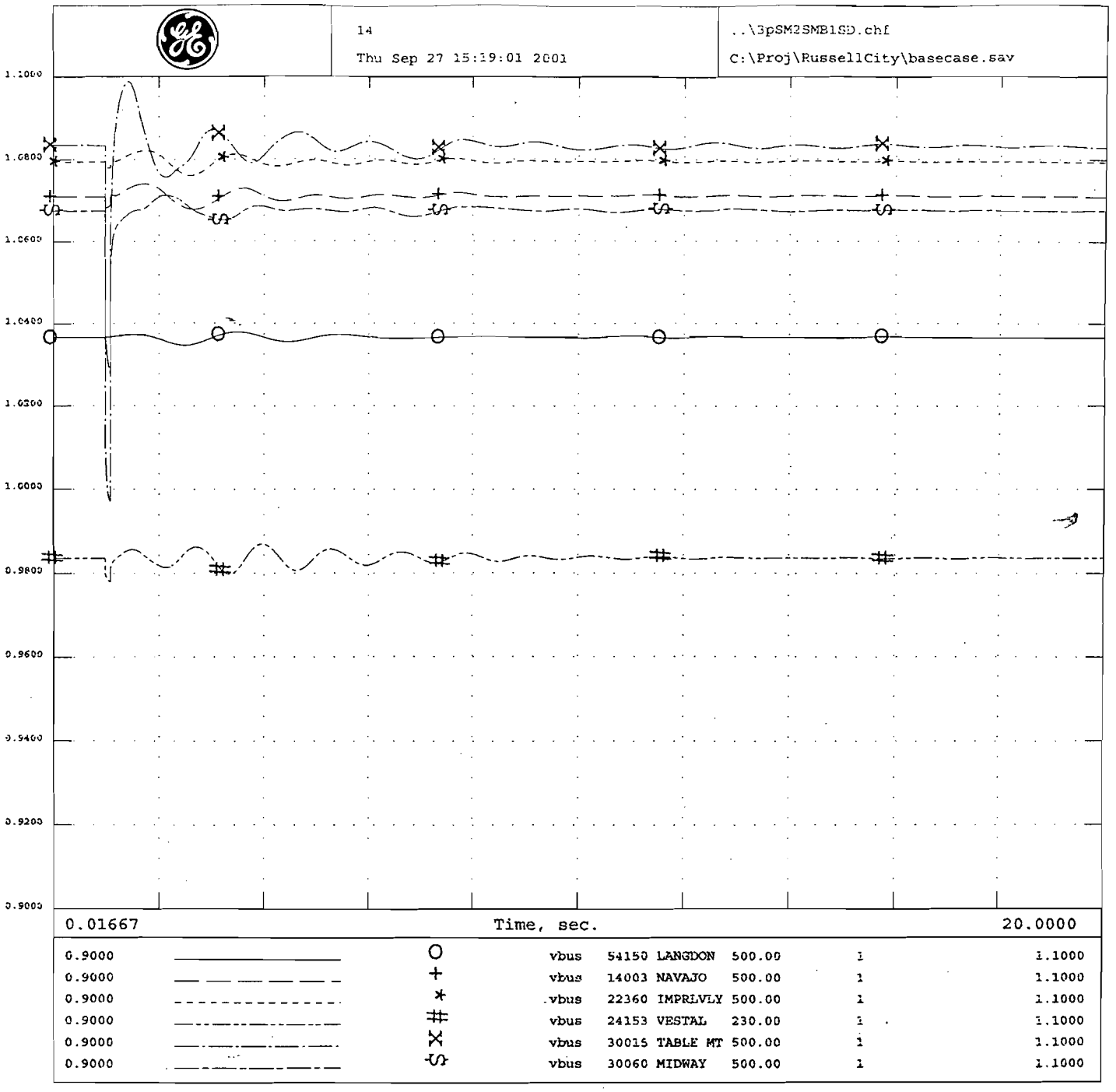
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



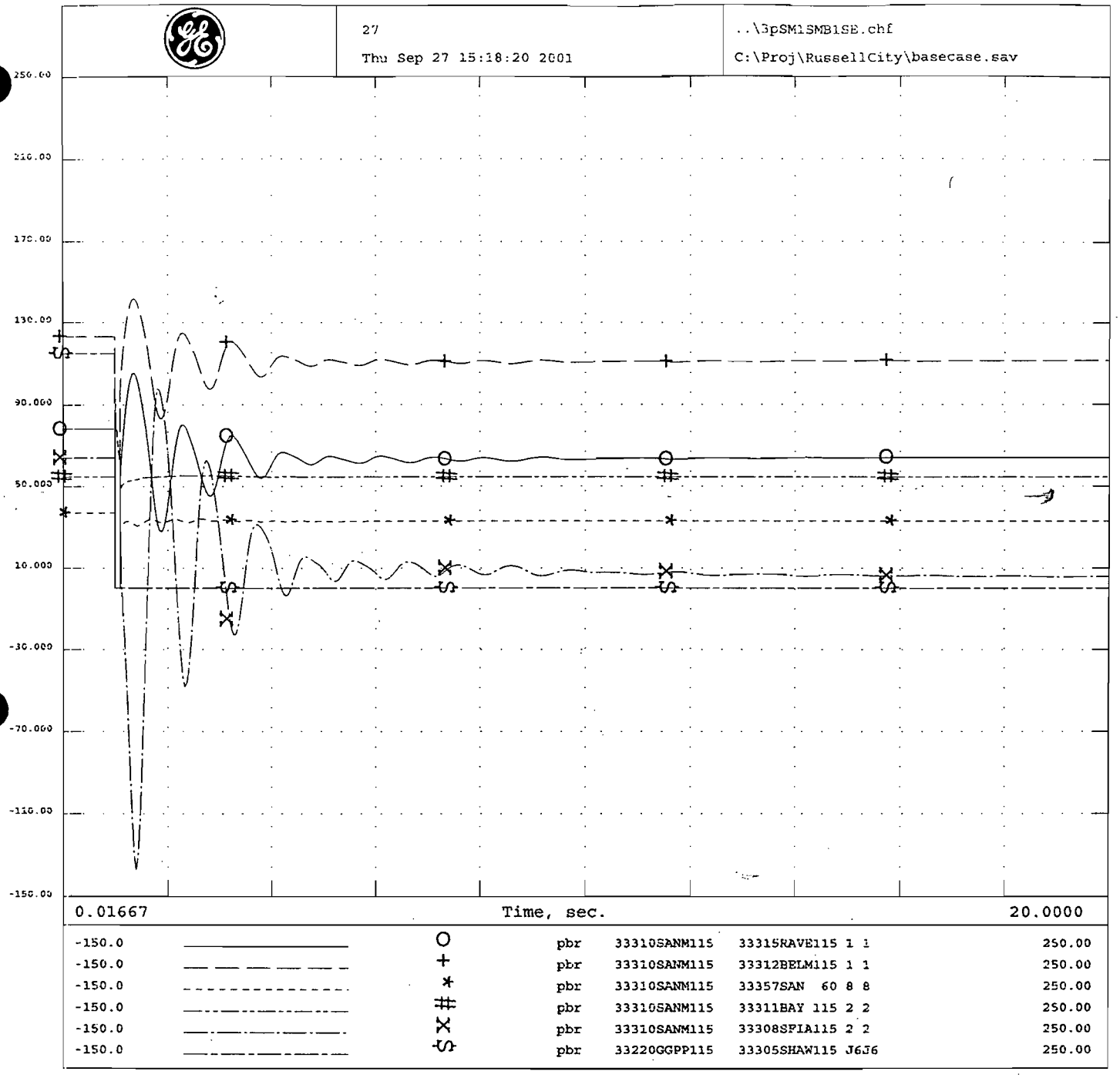
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D.
RUN  9
CC
CC   Fault San Mateo 115kV bus
FB   0.0 "SANMATEO" 115.
CC
CC   Clear fault at San Mateo 115kV bus
CFB  6.0 "SANMATEO" 115.
CC
CC   Trip San Mateo bus 2, section D
CC   The bus SANMATB5 is a dummy bus to allow plotting of transformer flow
DL   6.0 "SANMATB5" 115.00 "SANMATEO" 230.00 "5 "
TG   6.0 "SMATO2SC"  13.2 "1 "
DL   6.0 "SANMATEO" 115. "SFIA-MA " 115. "2 "
DL   6.0 "SANMATEO" 115. "BAY MDWS" 115. "2 "
CC
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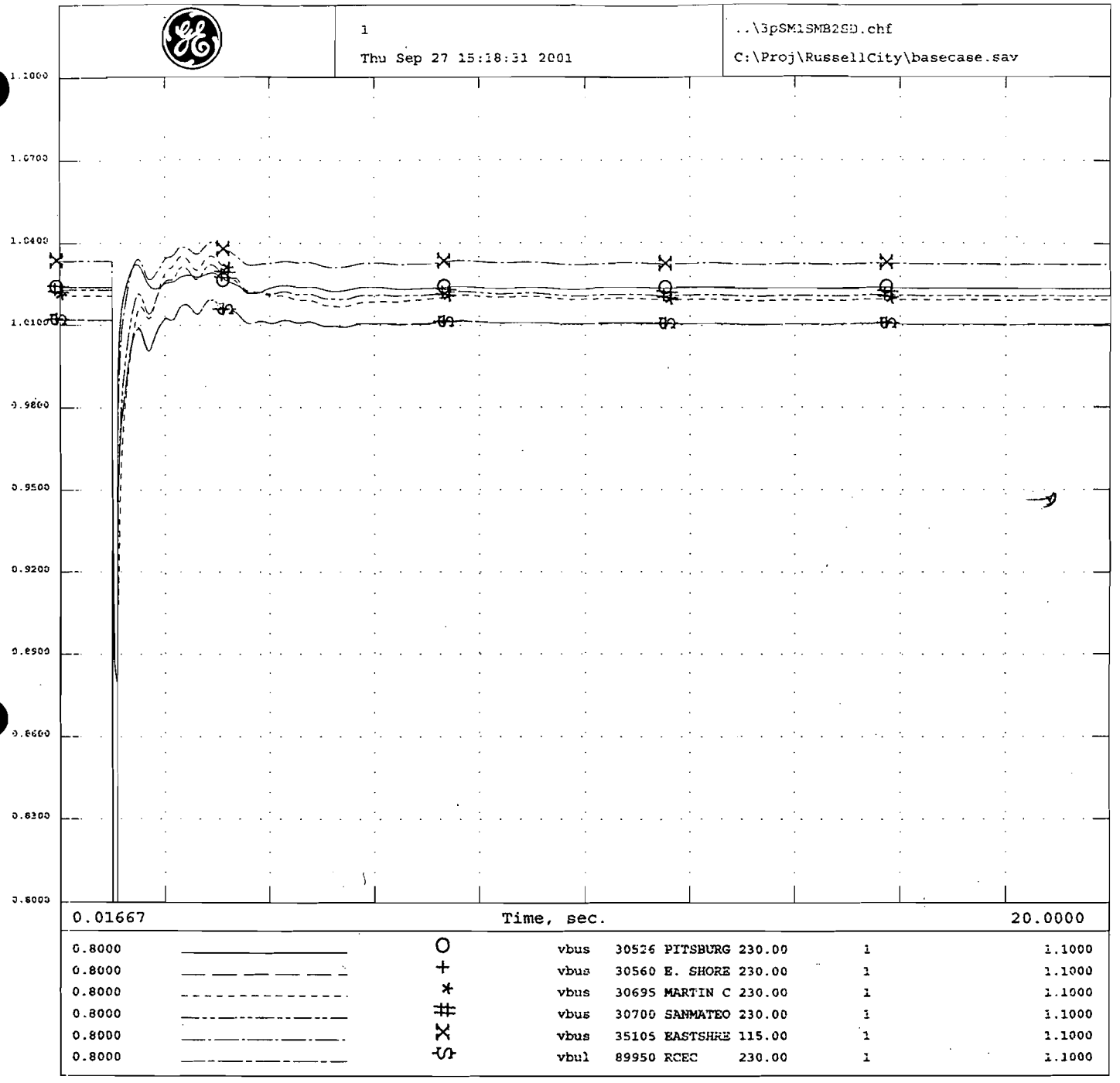
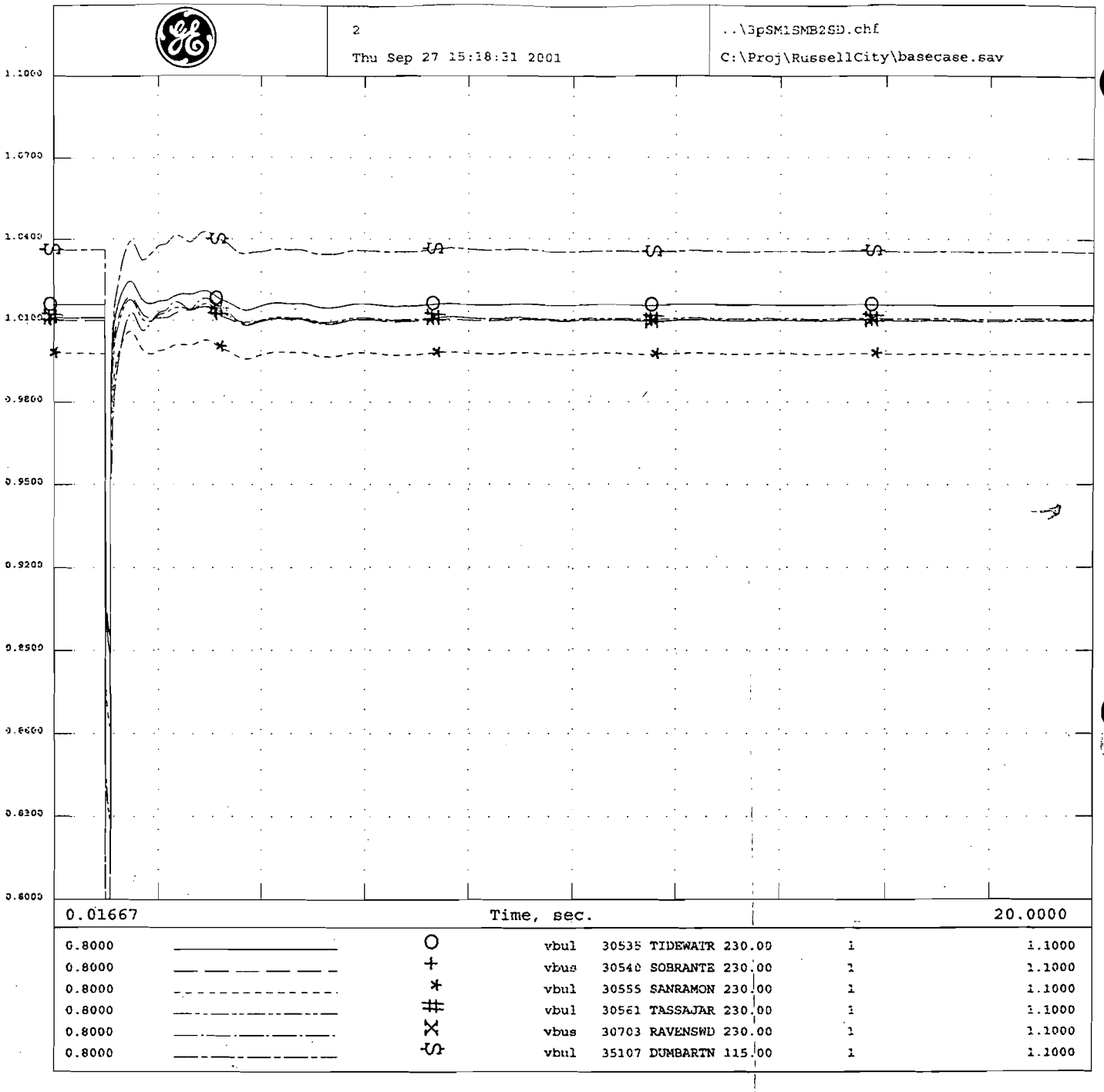


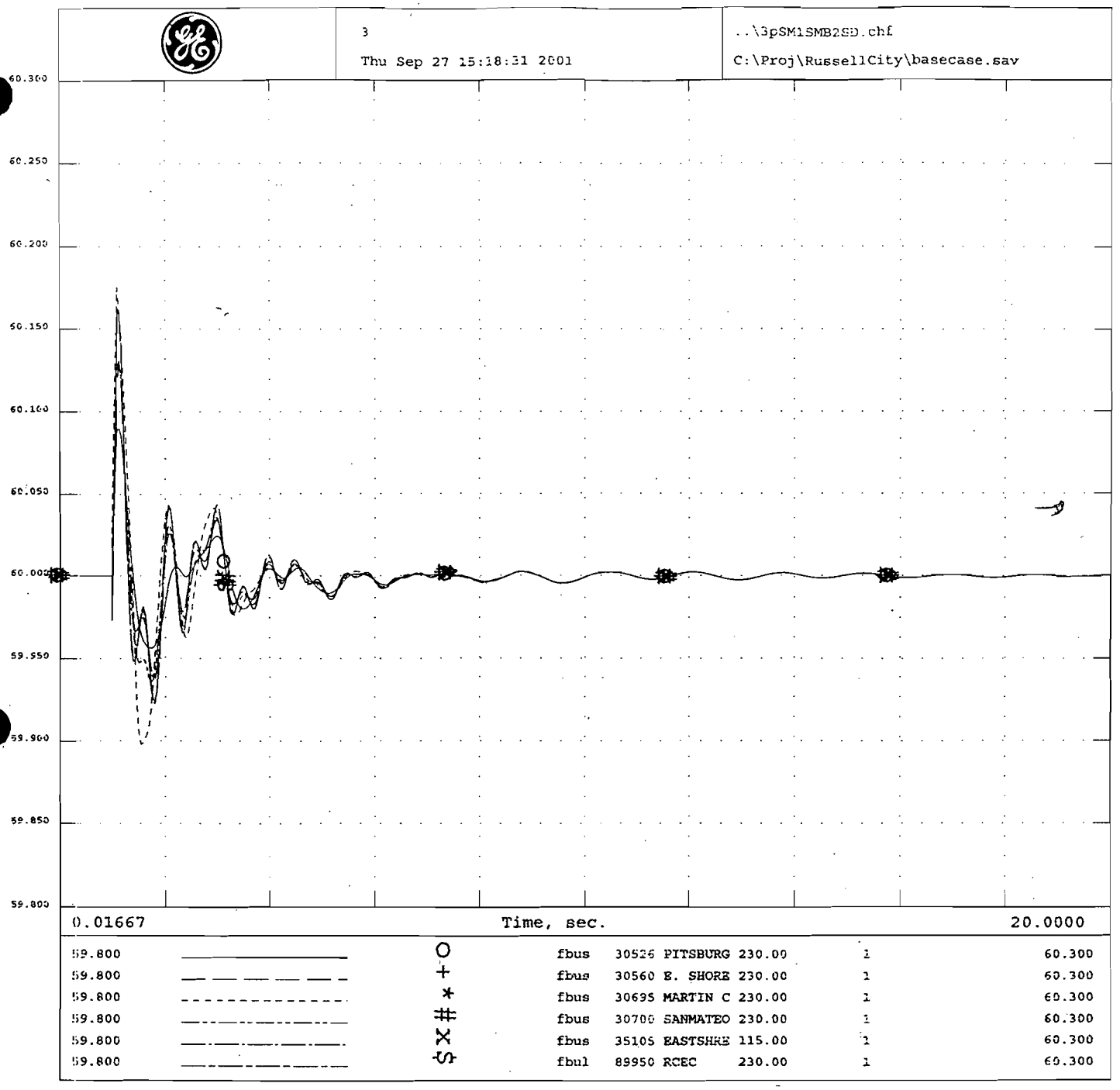
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



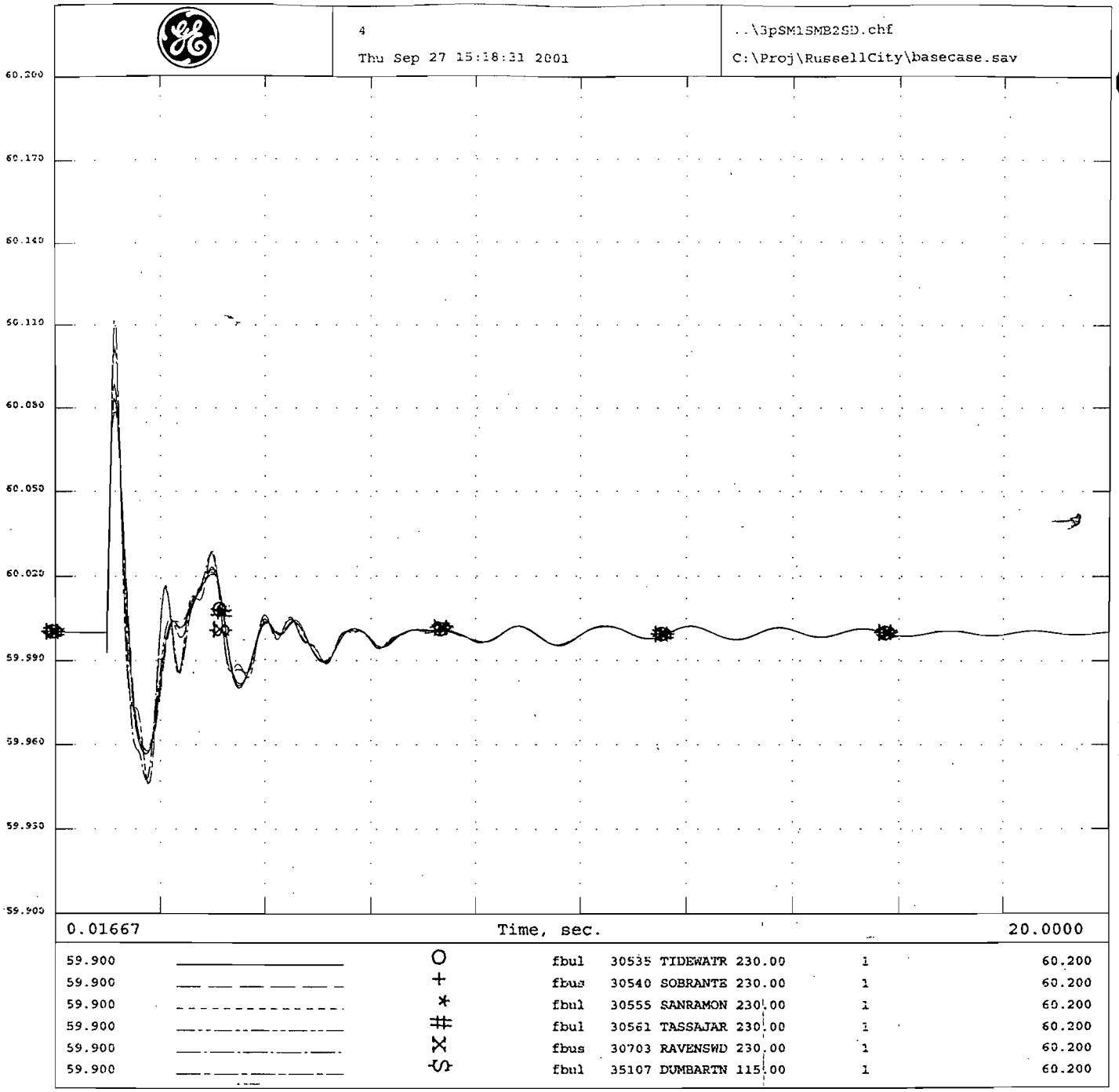
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



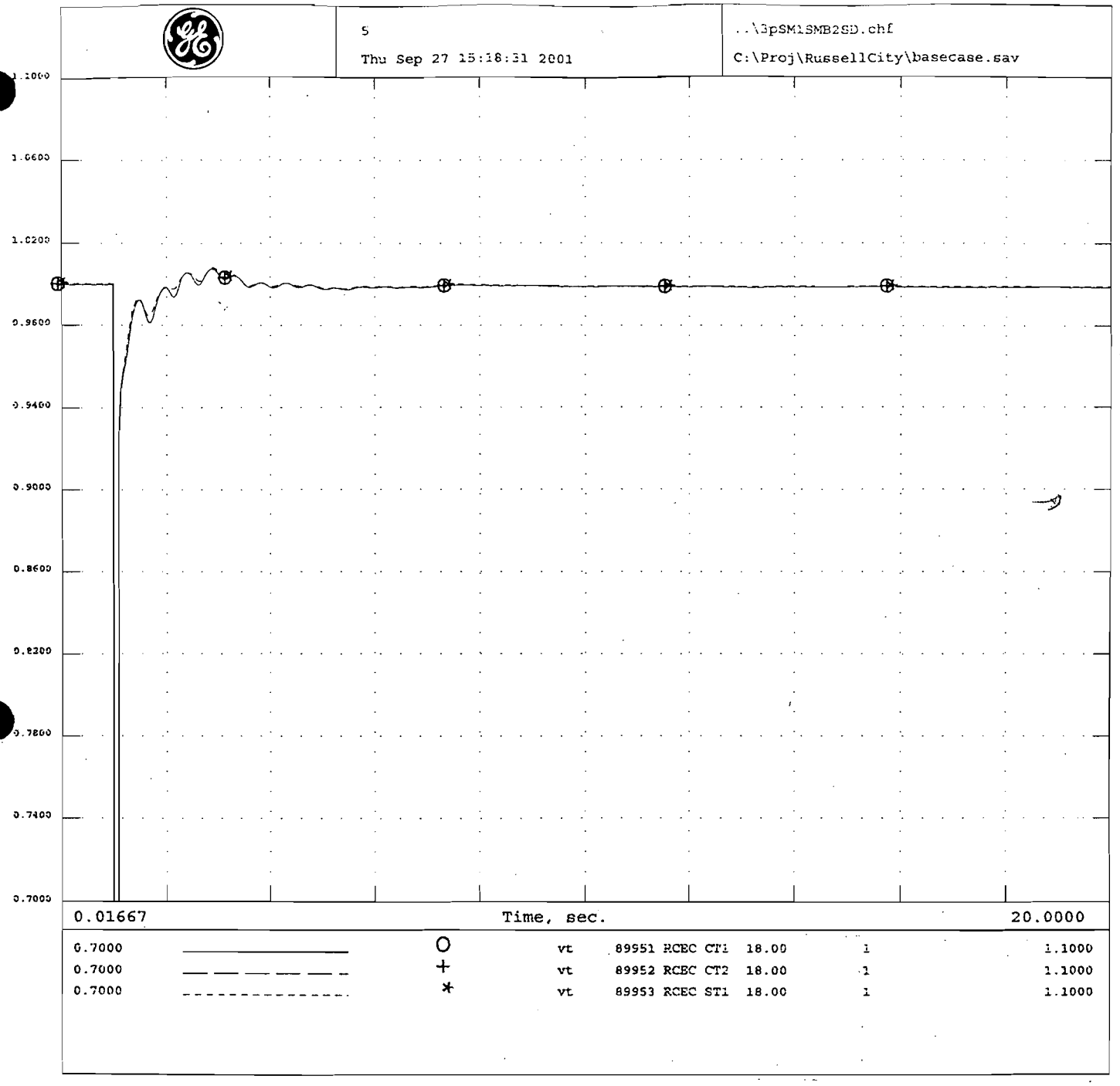
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



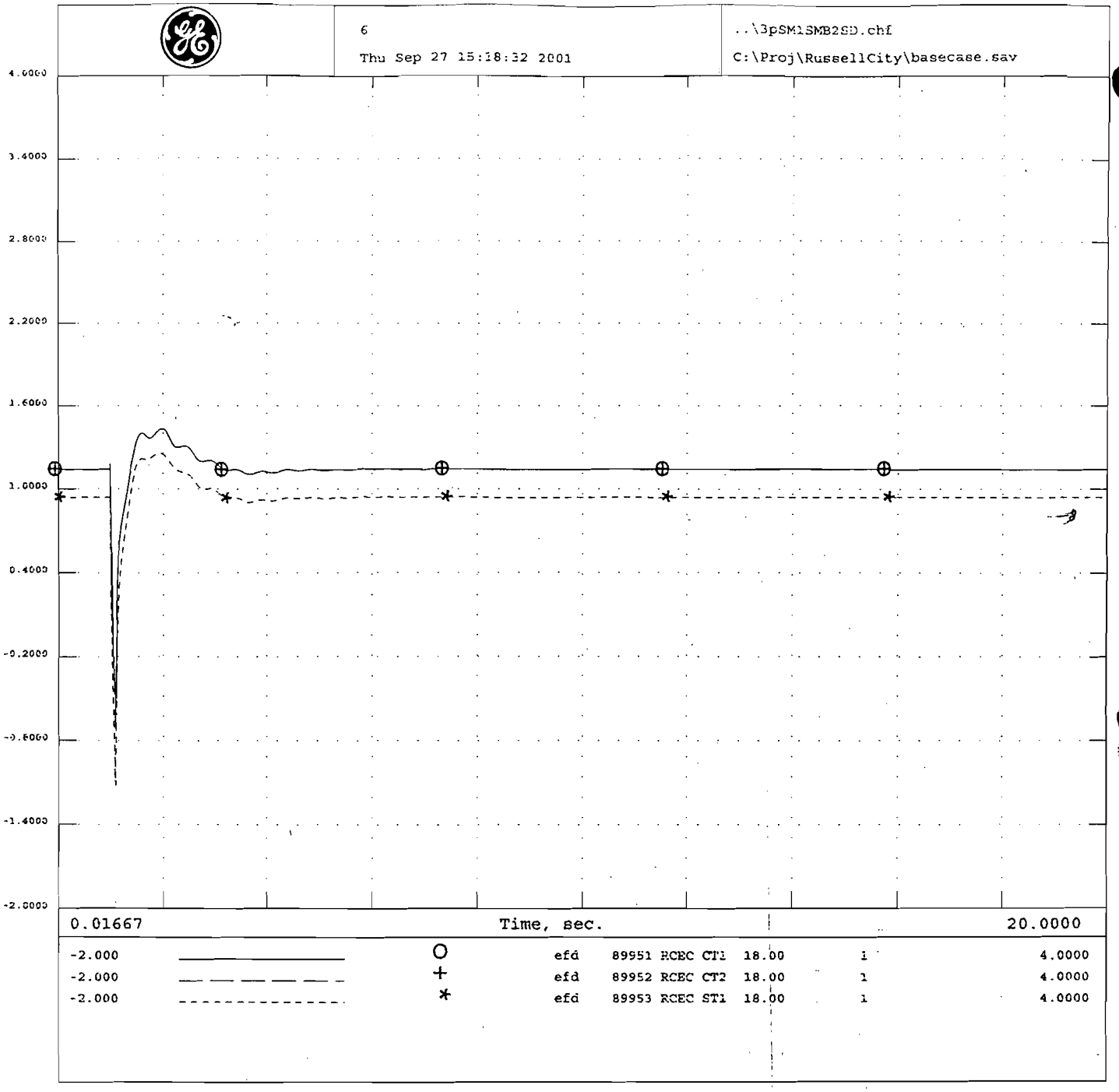
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



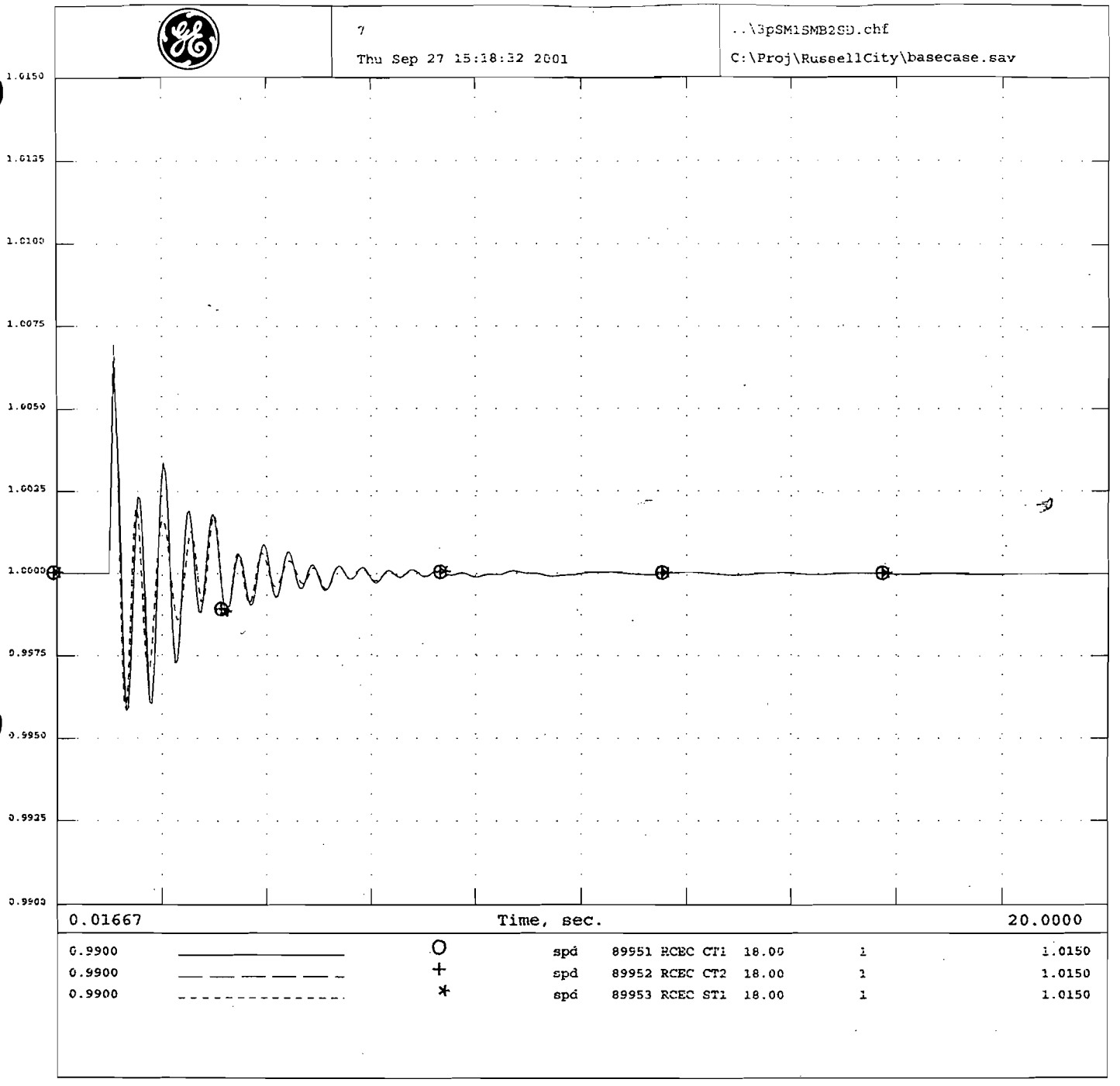
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



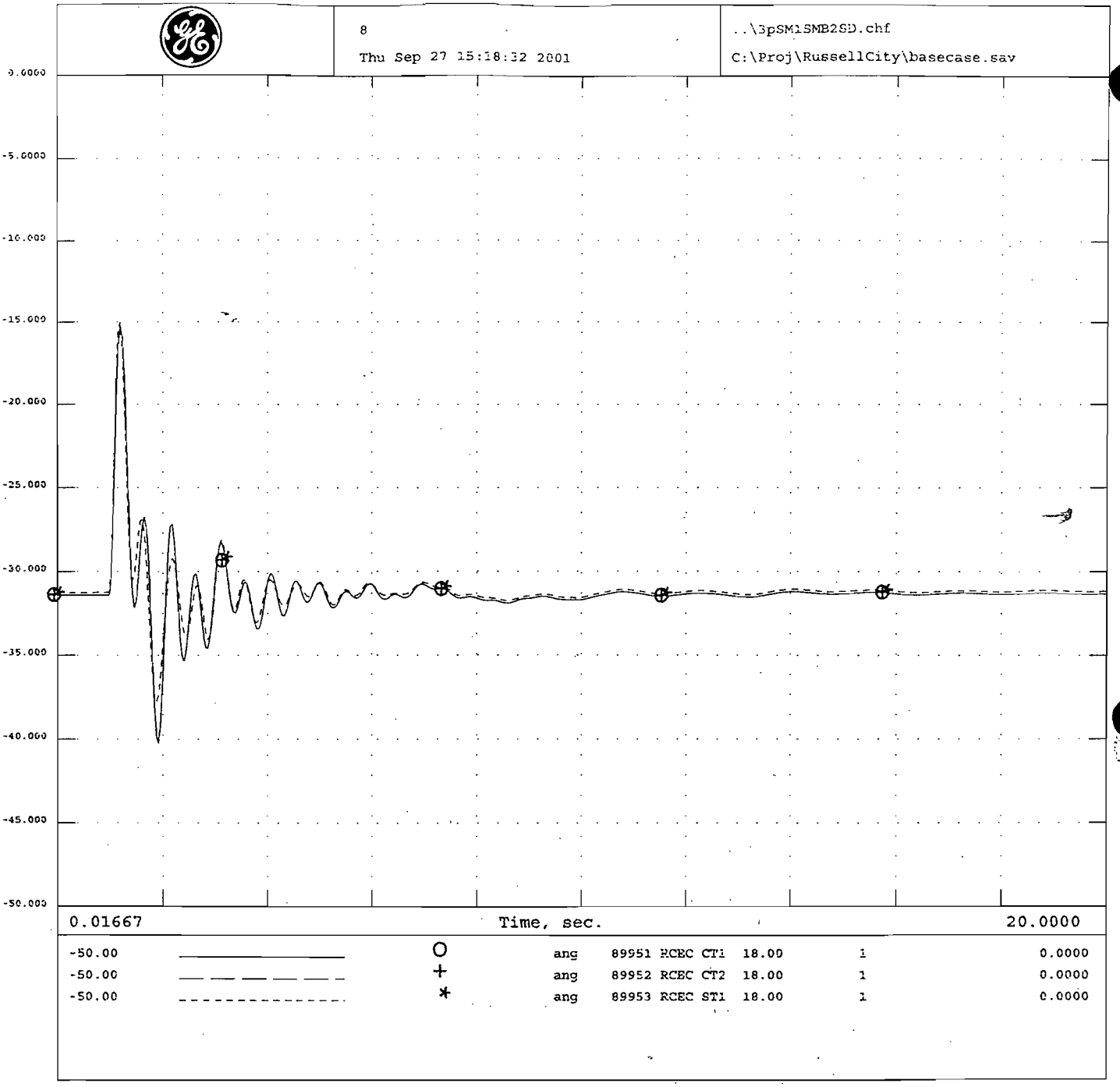
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



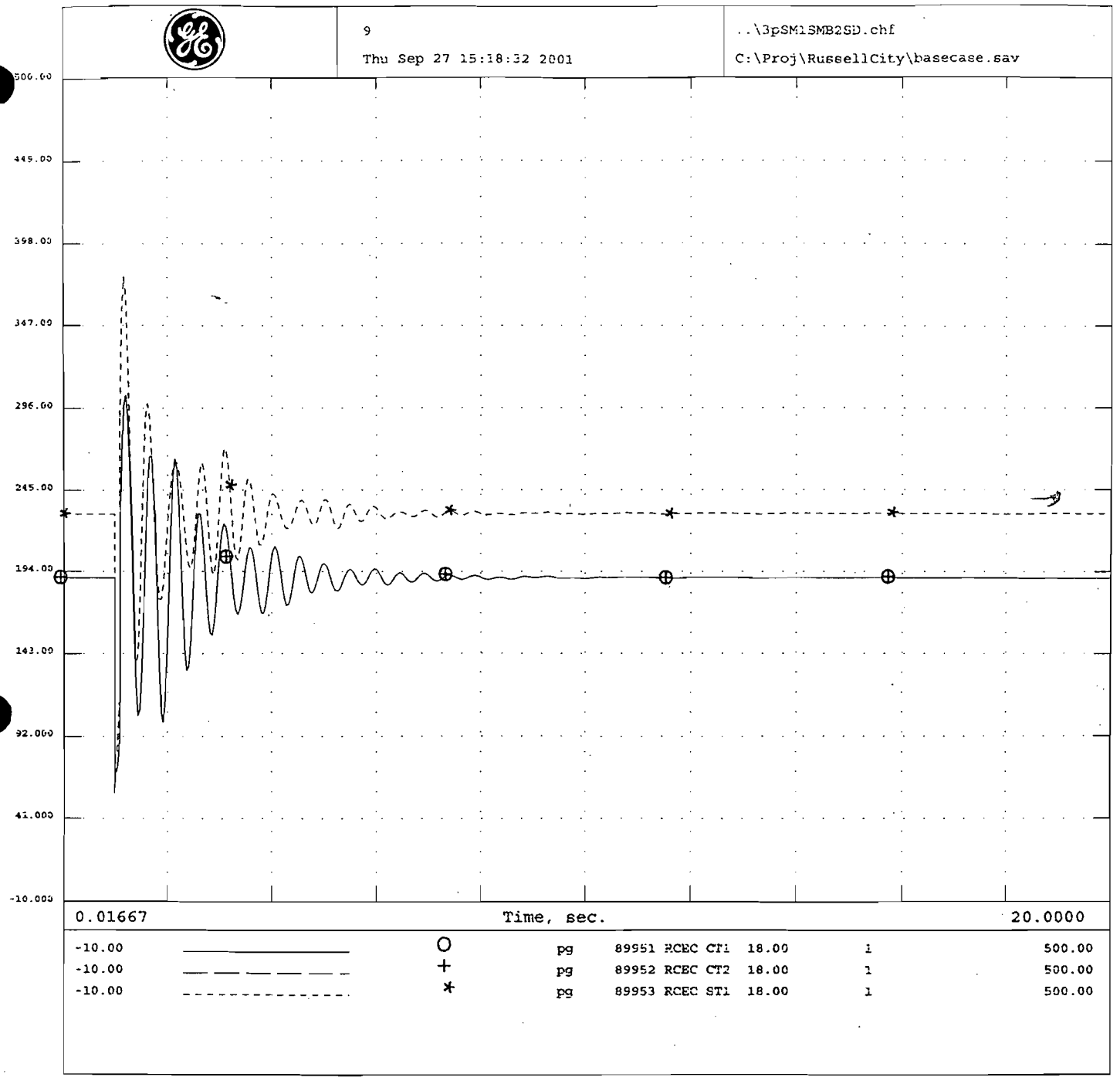
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



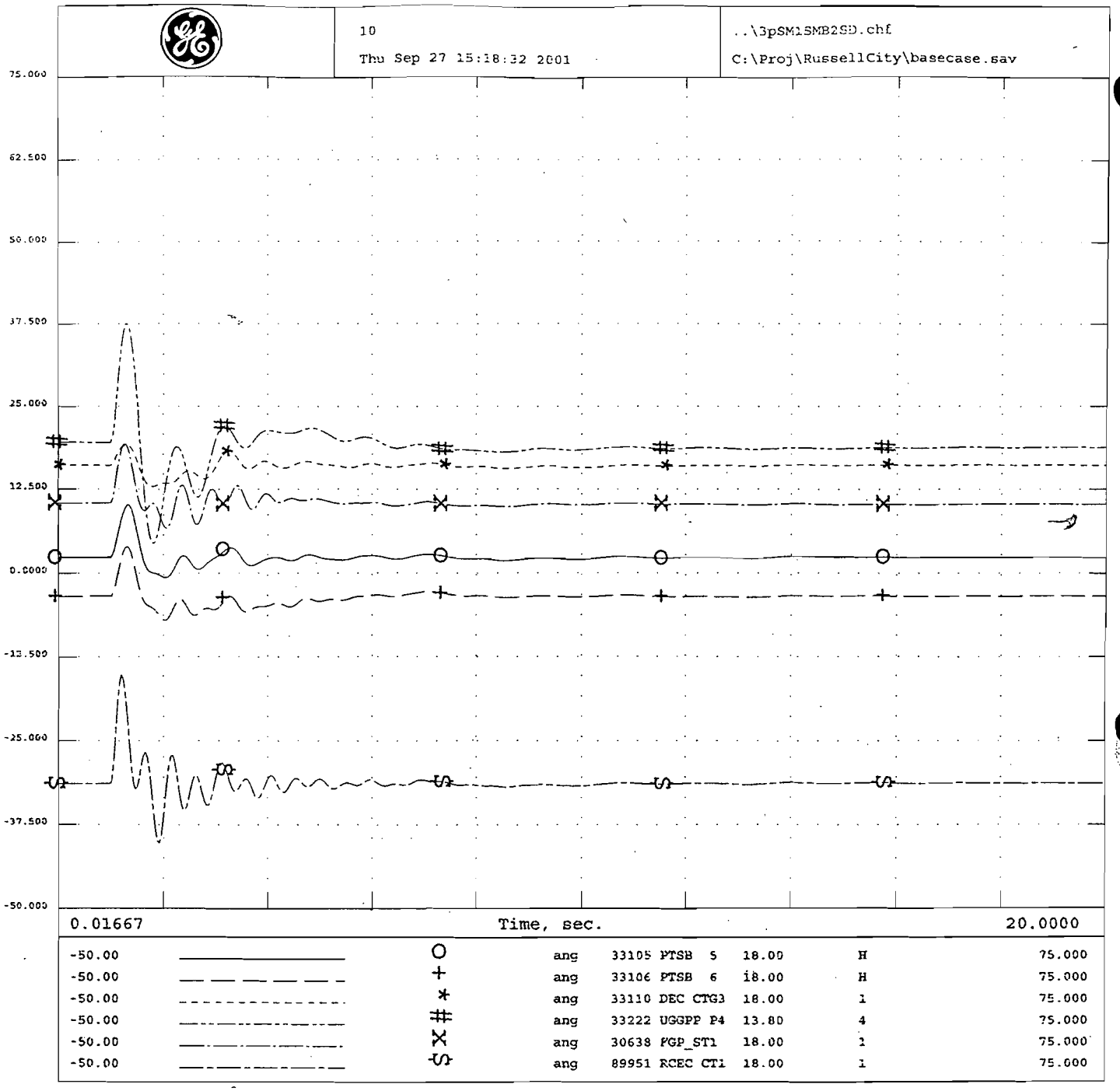
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



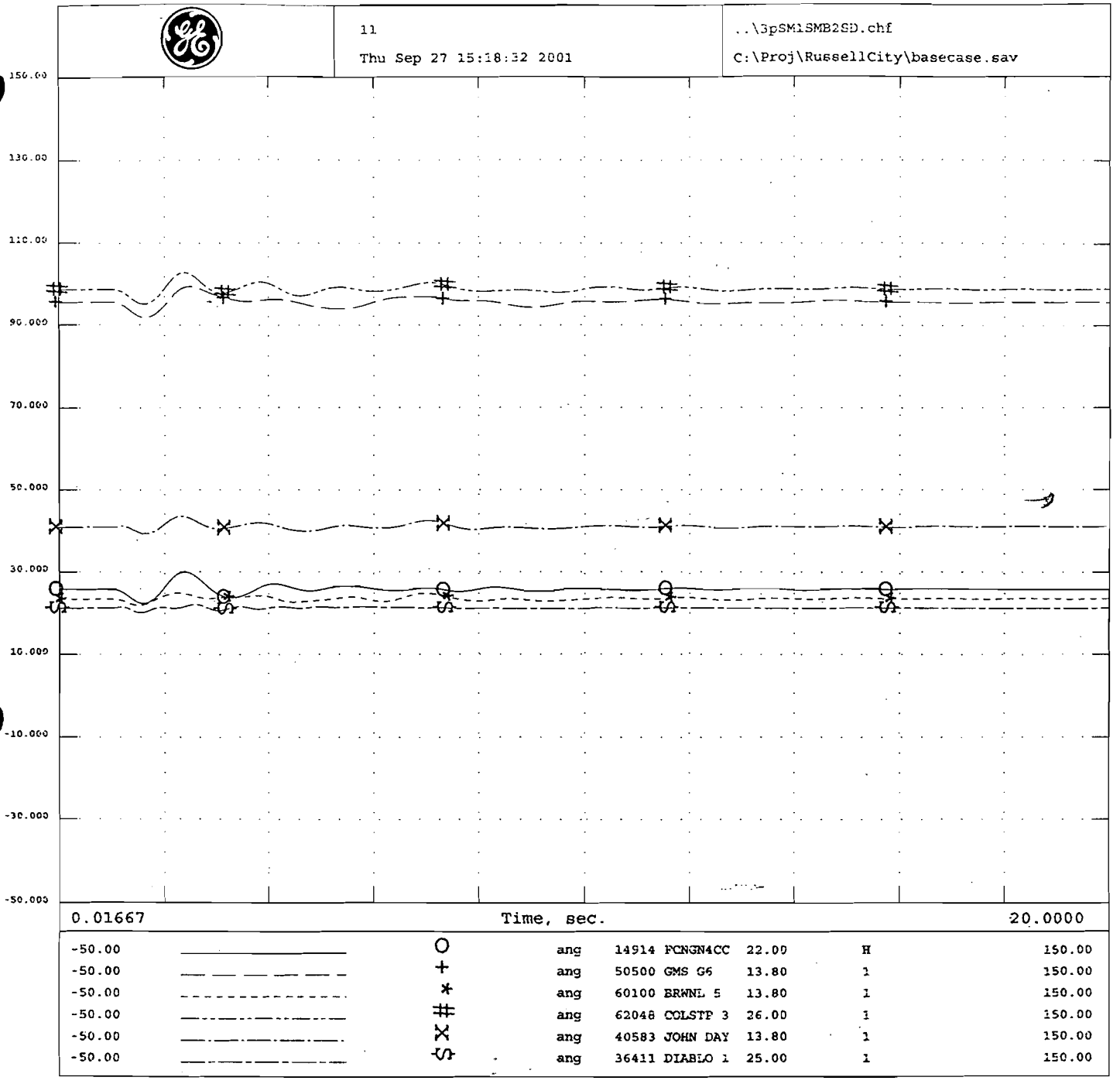
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



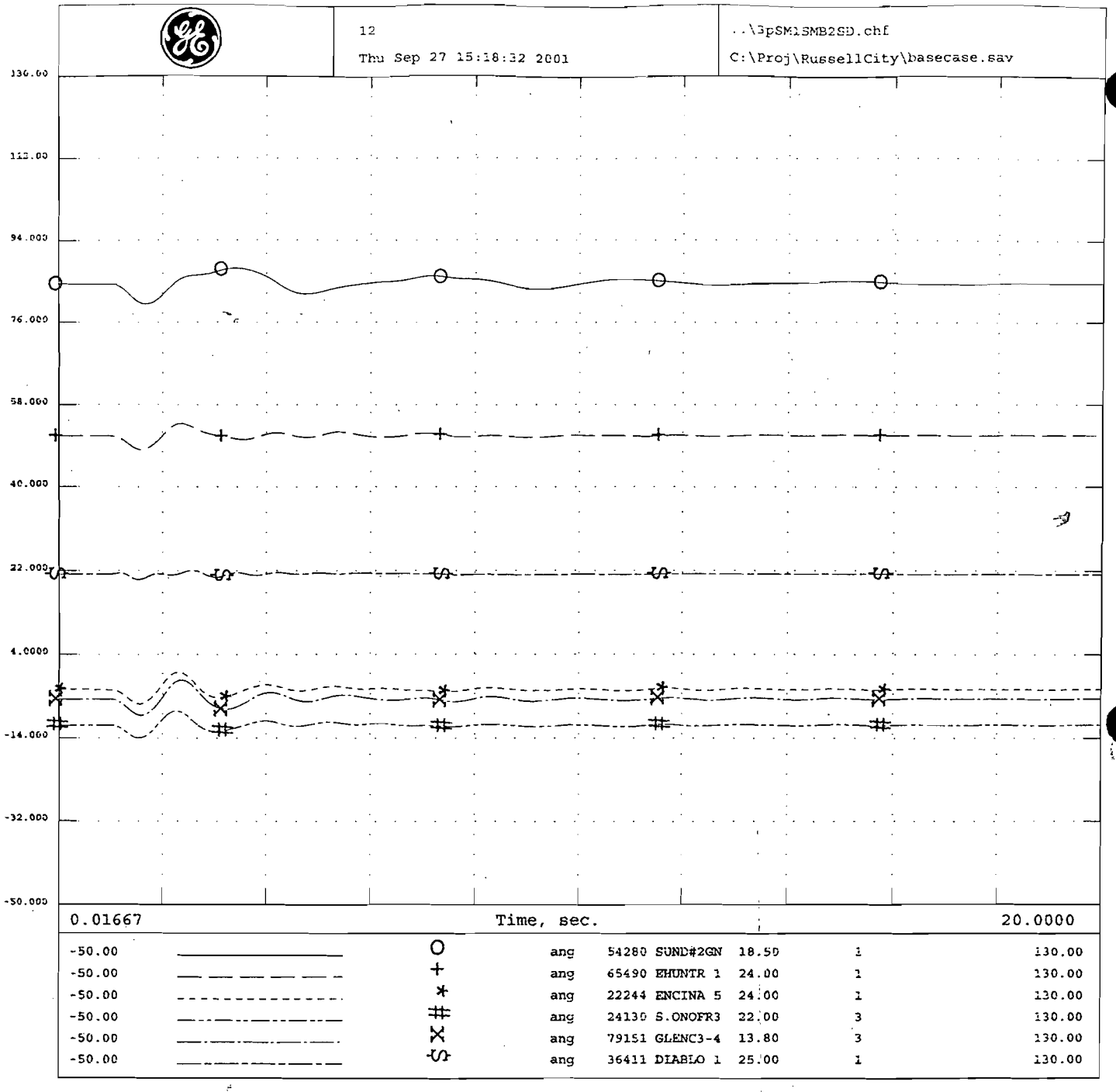
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



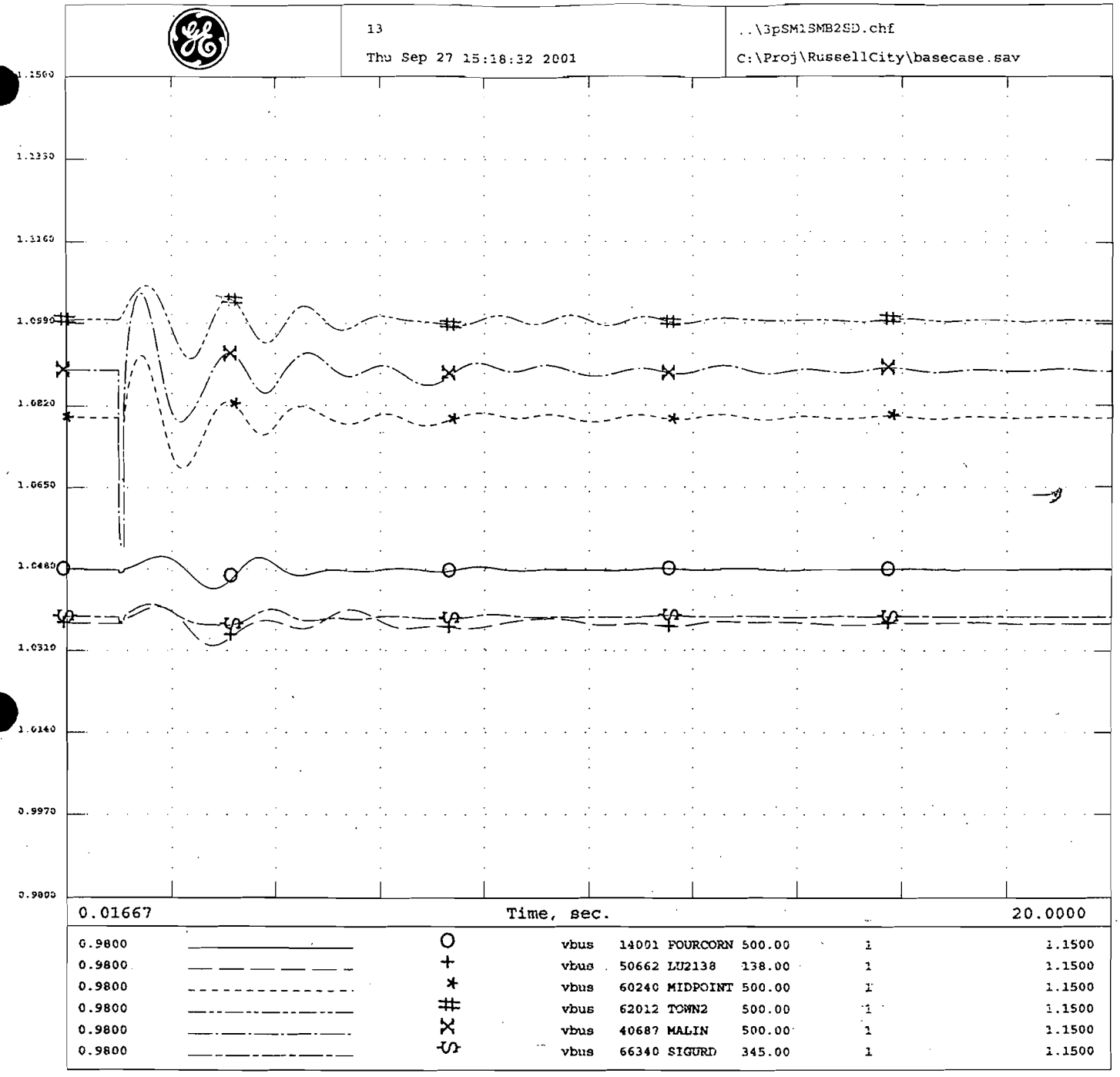
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



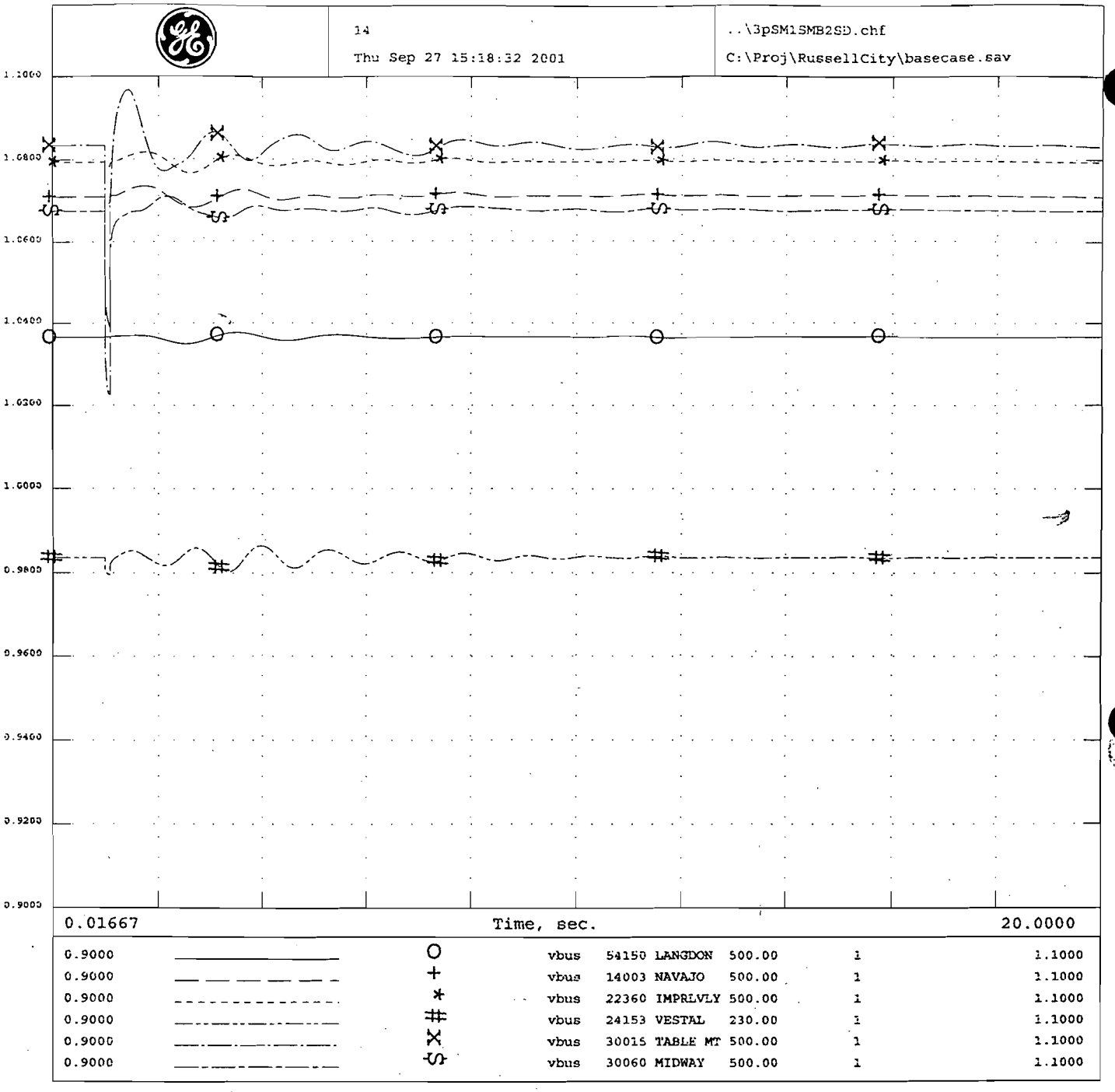
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



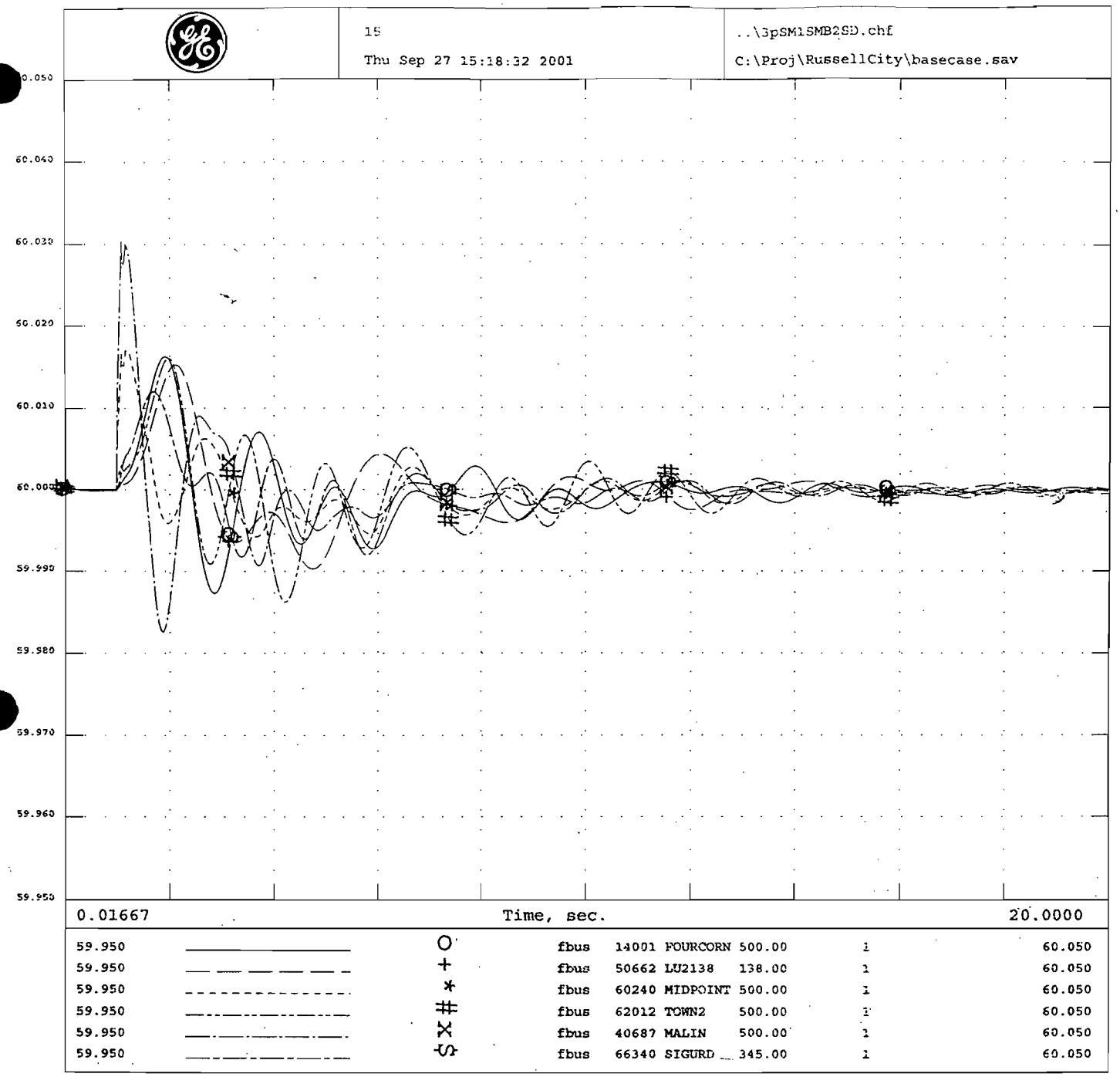
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



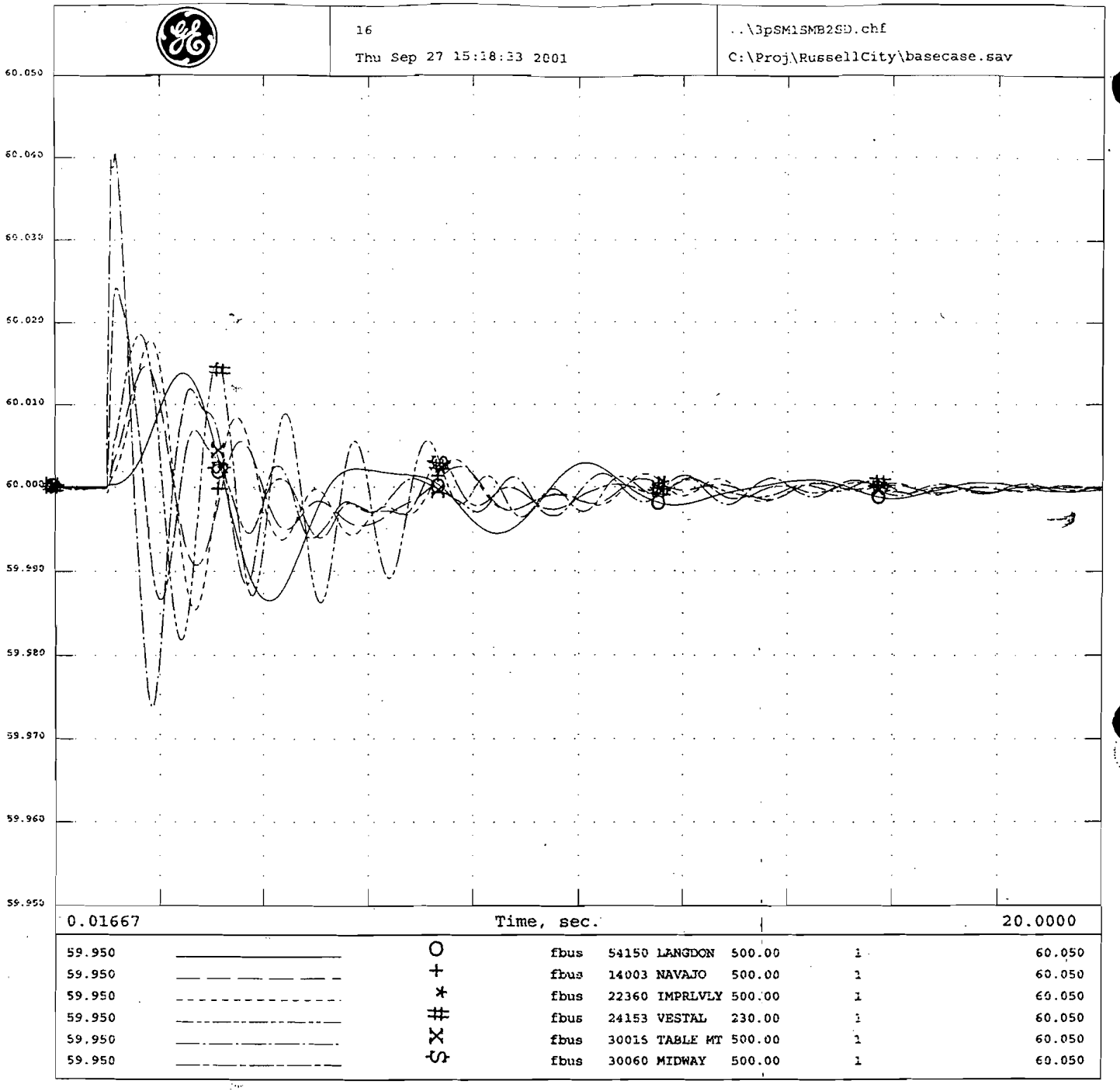
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



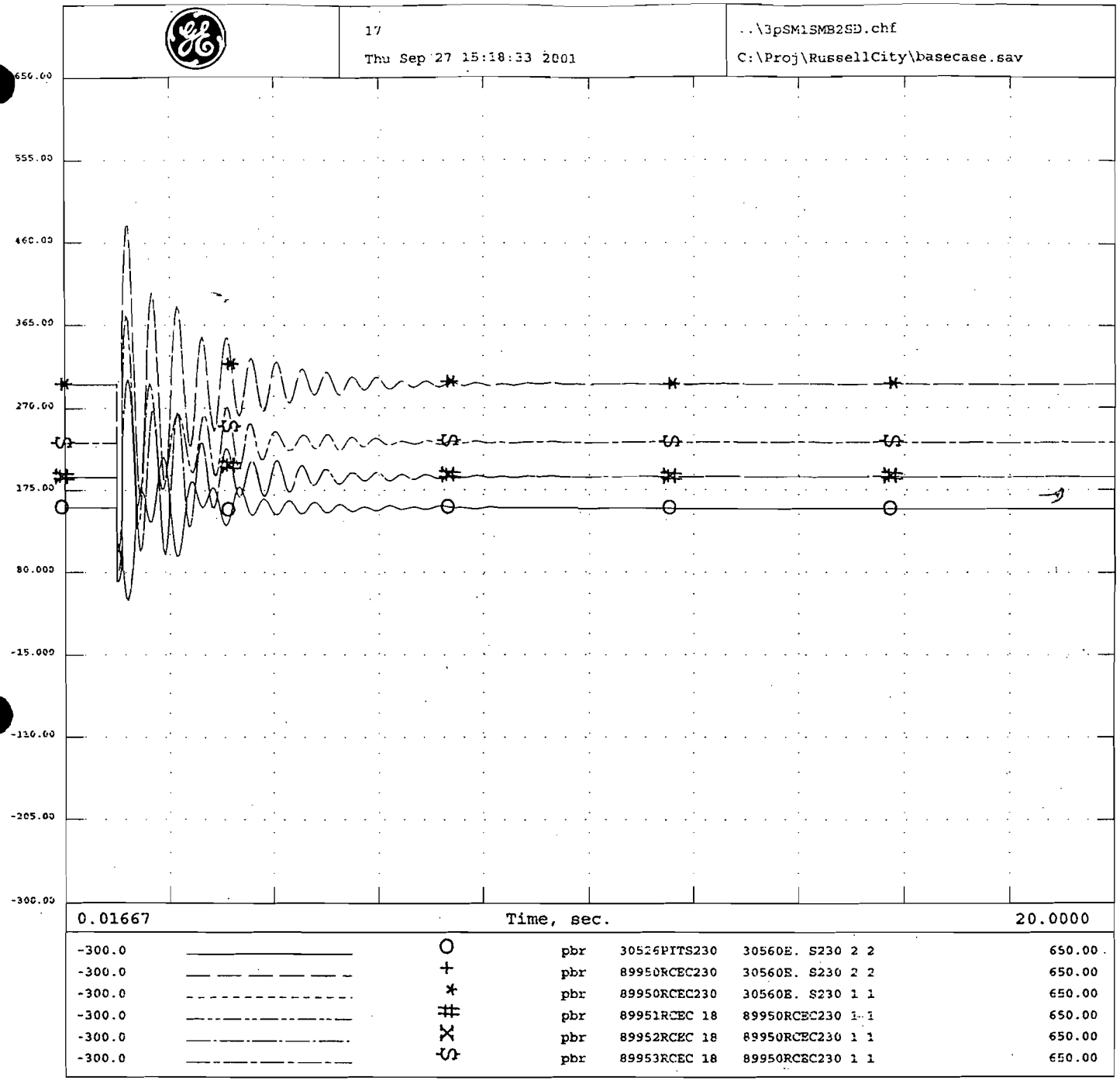
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



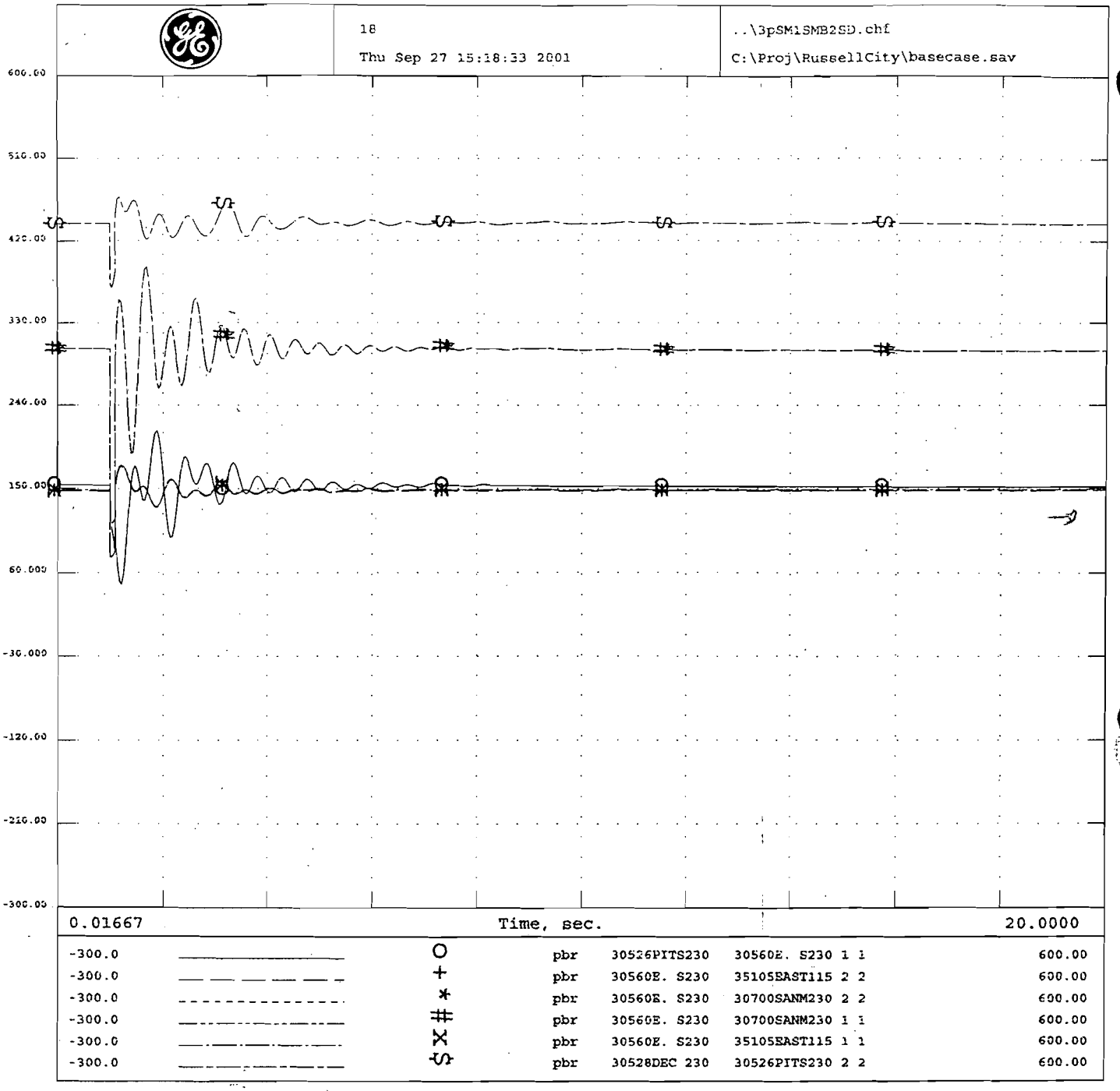
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



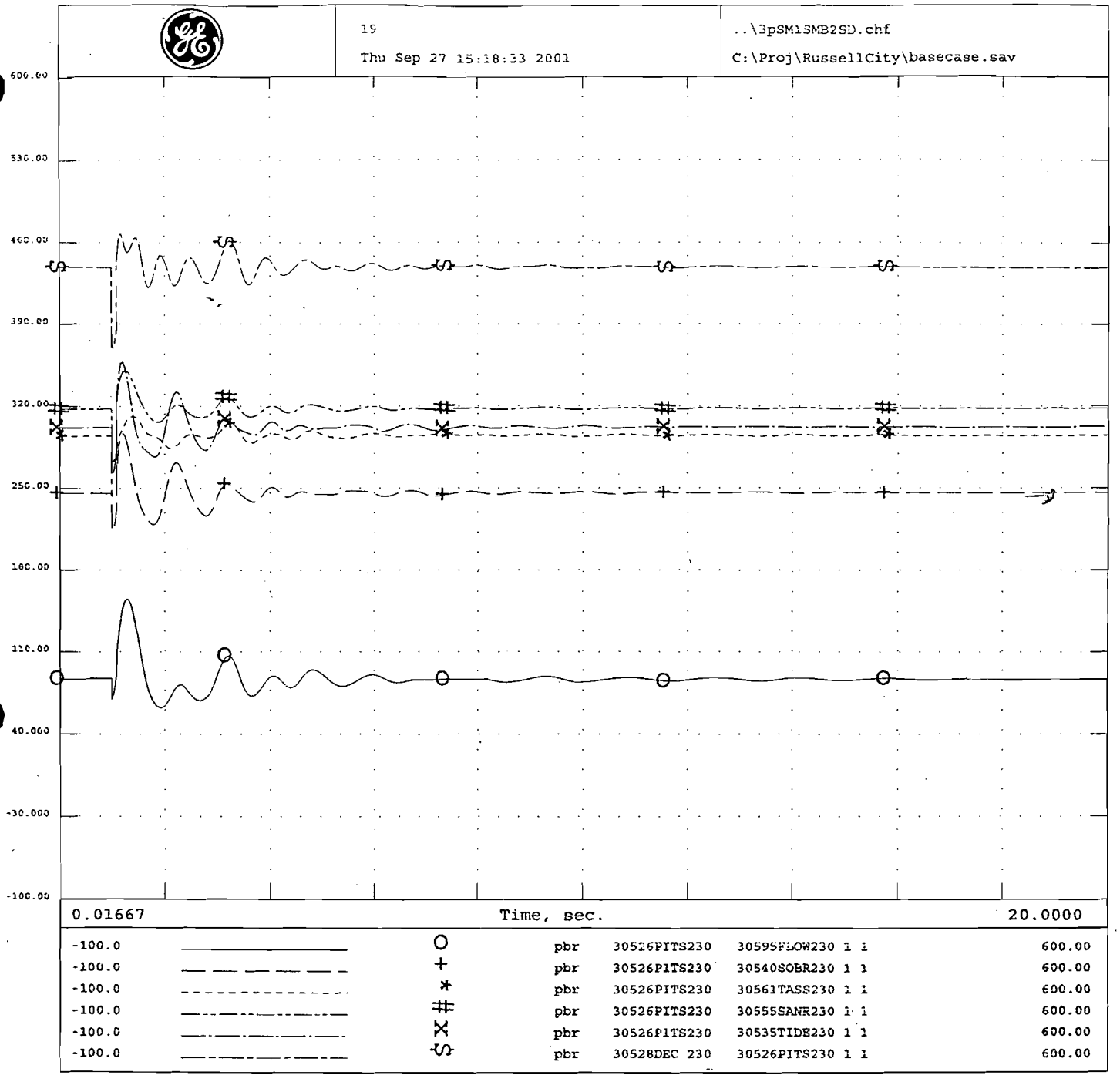
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



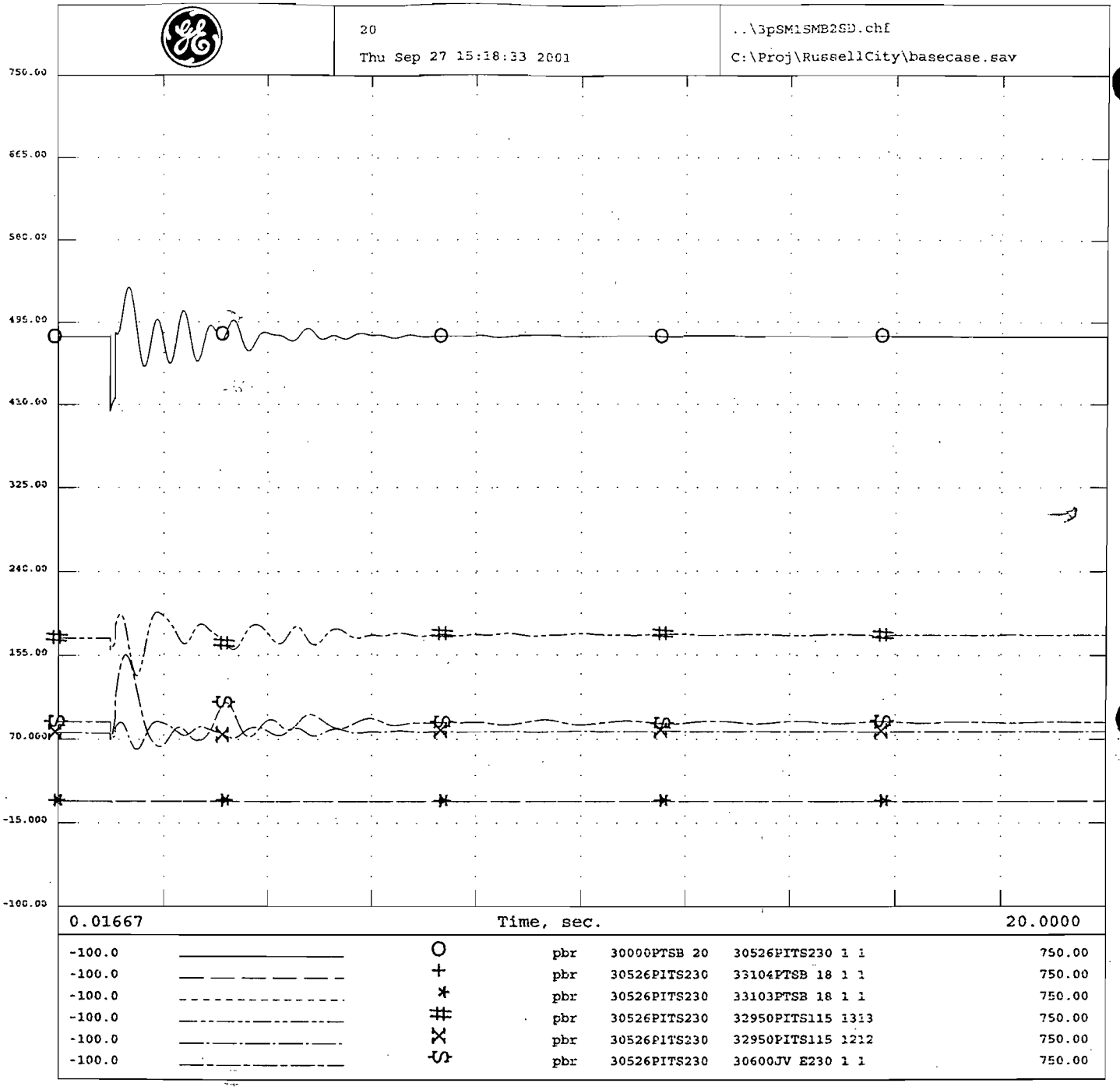
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



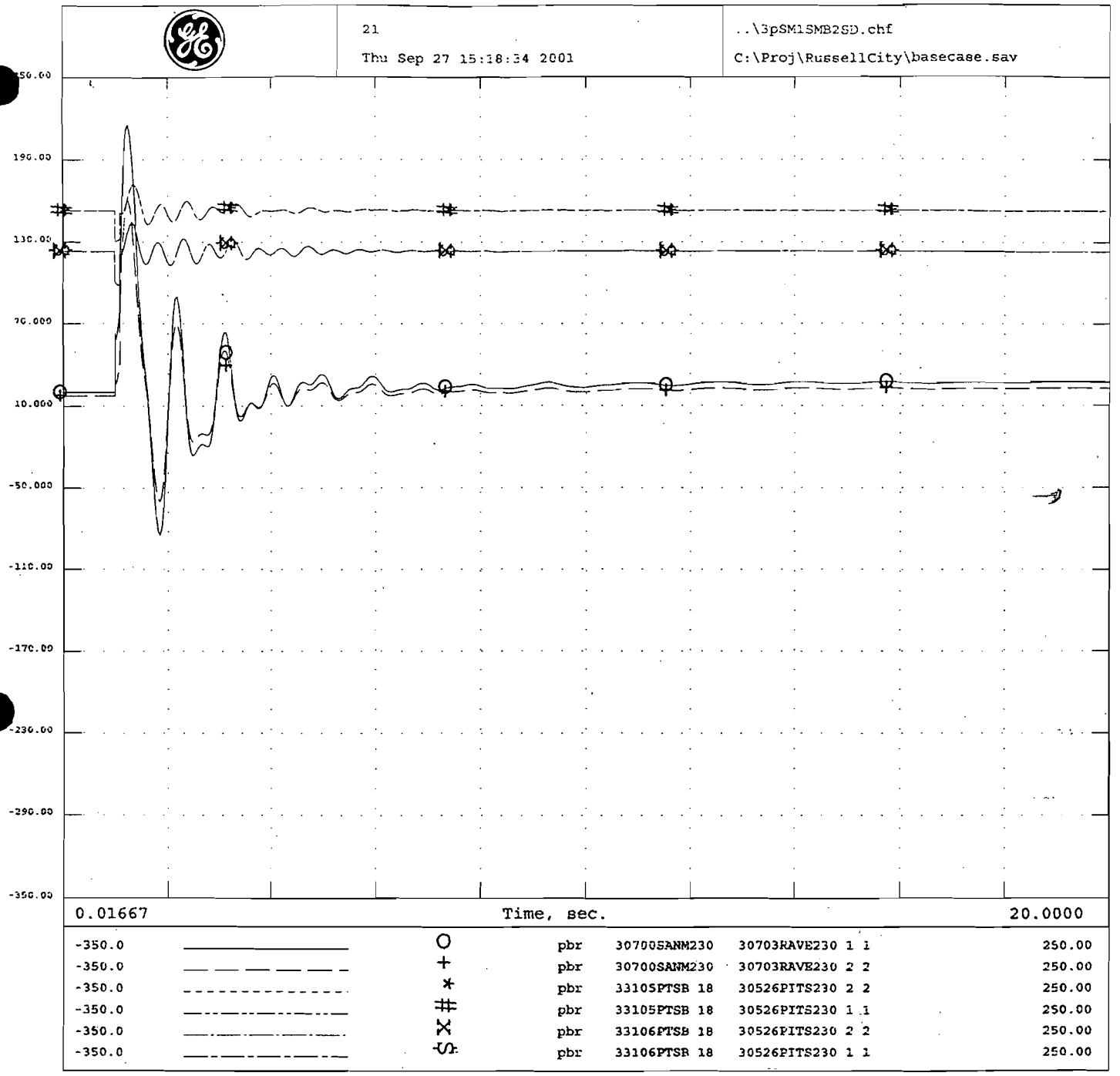
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



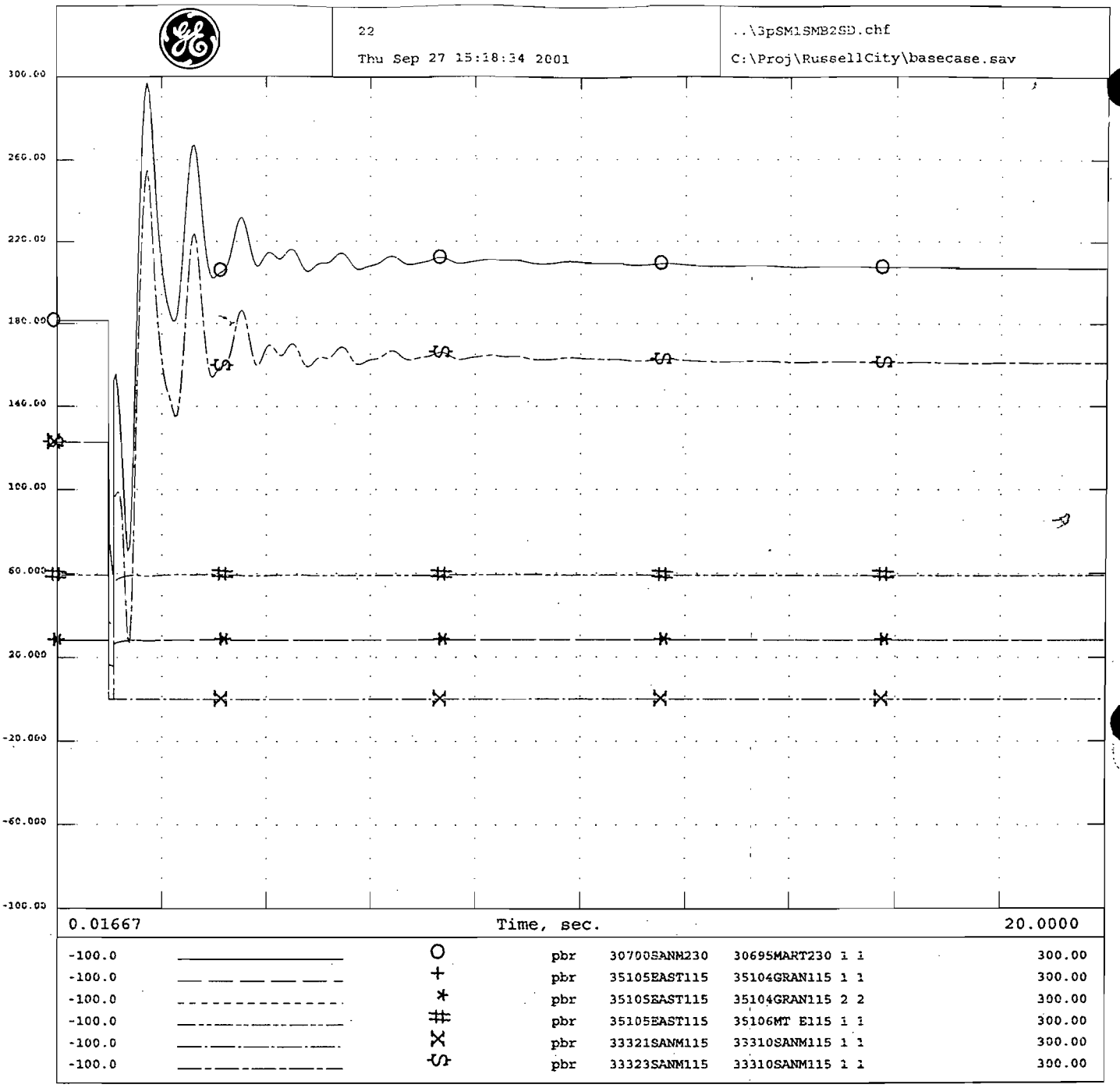
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



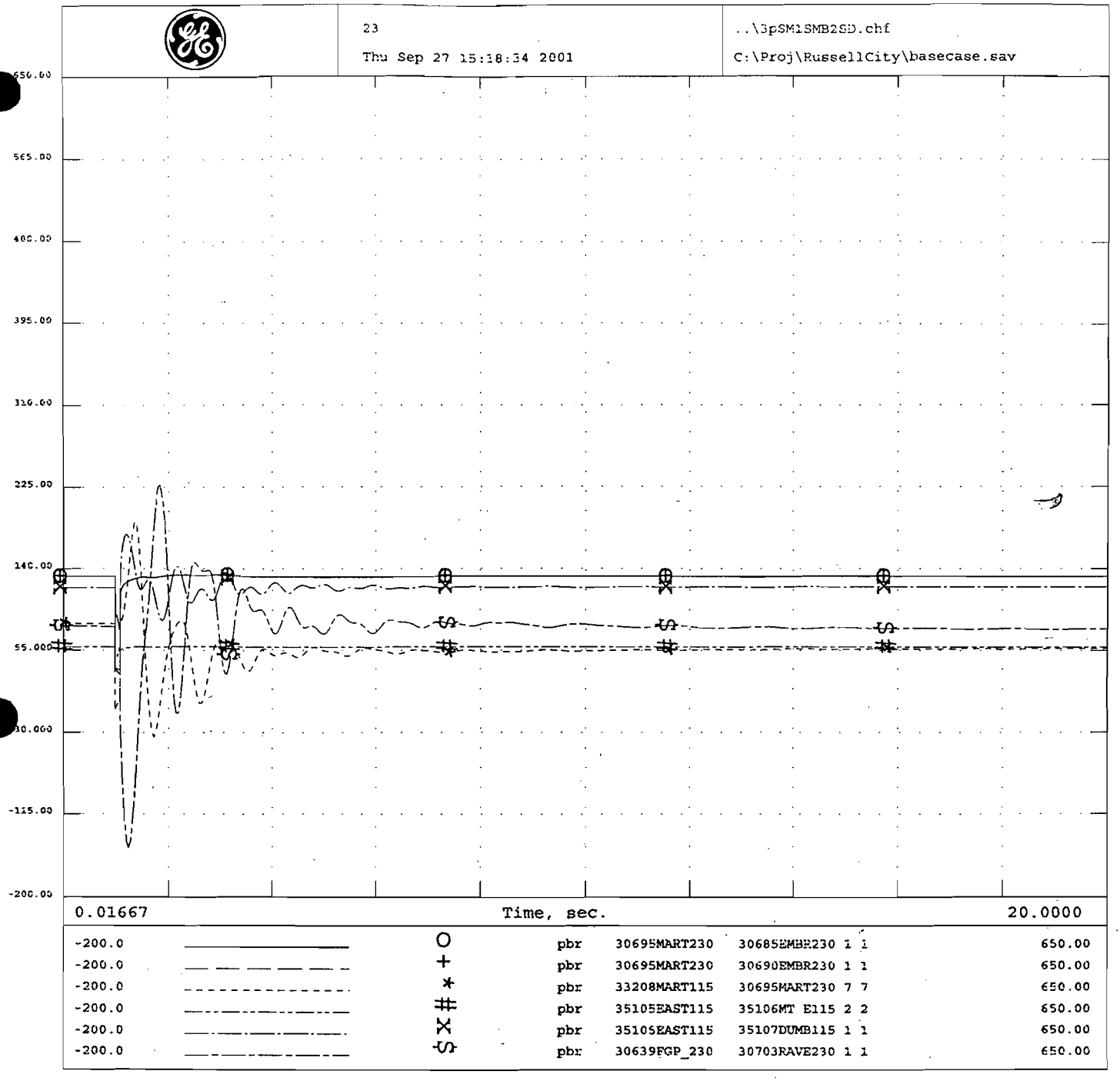
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



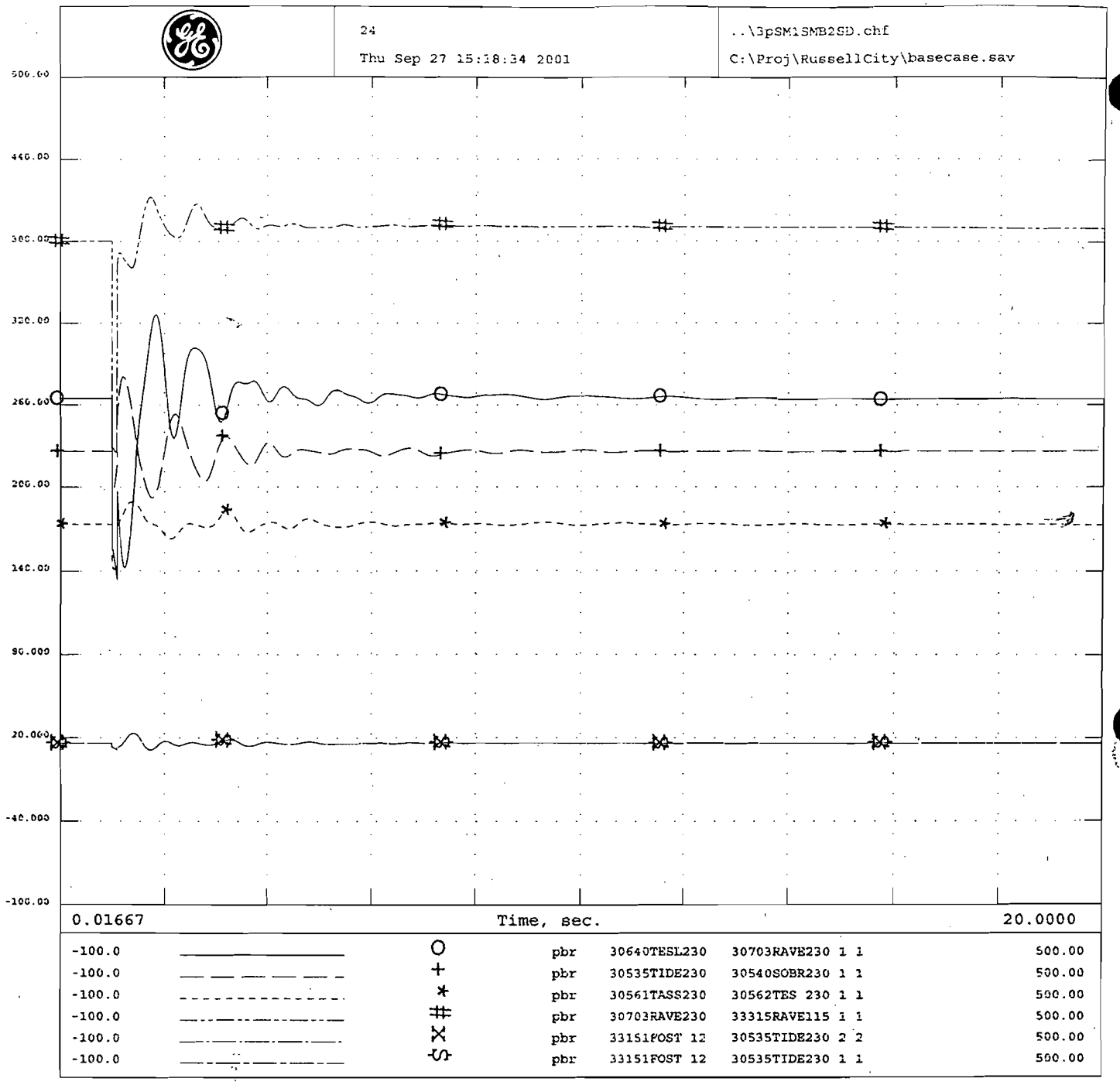
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



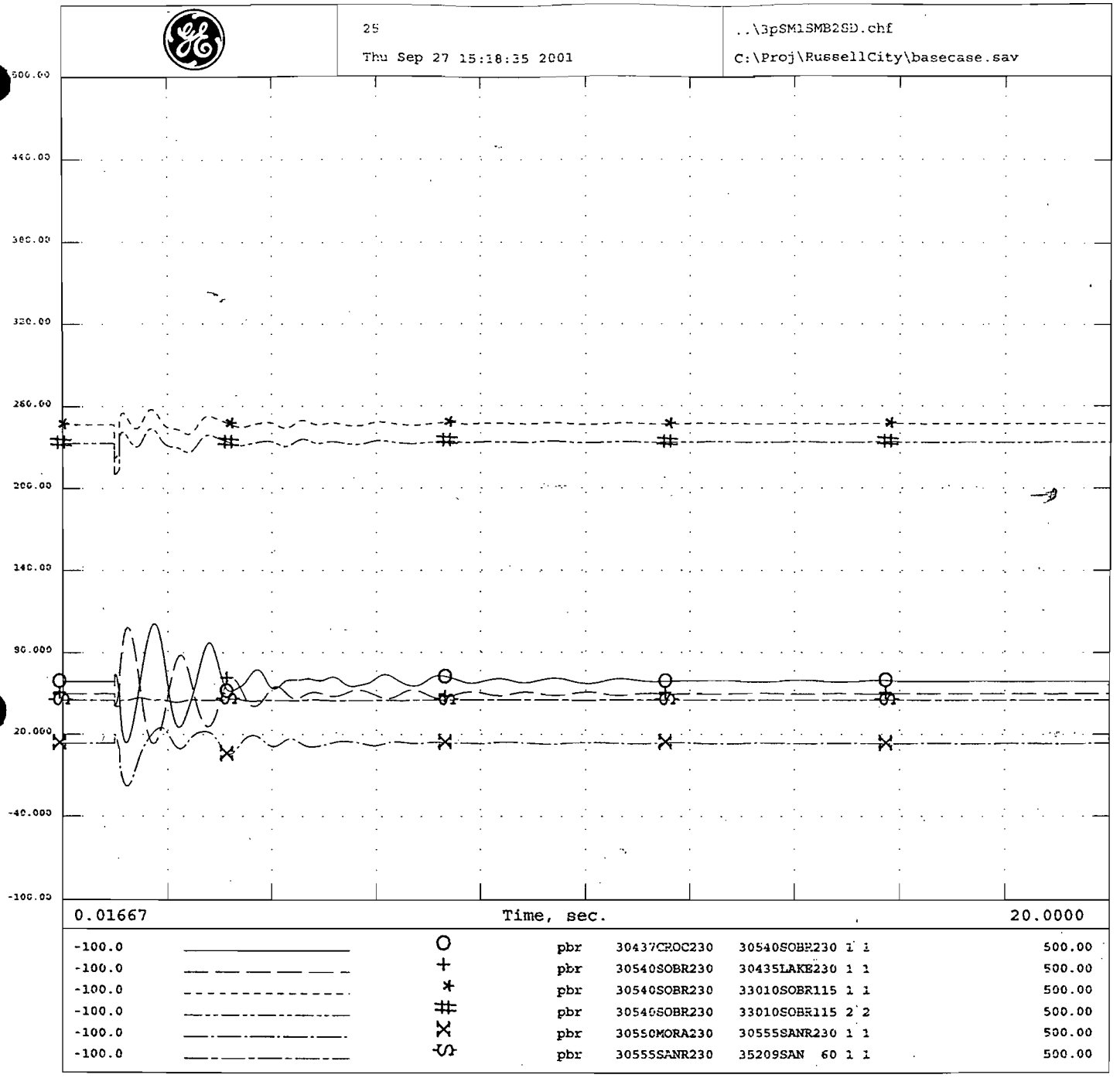
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



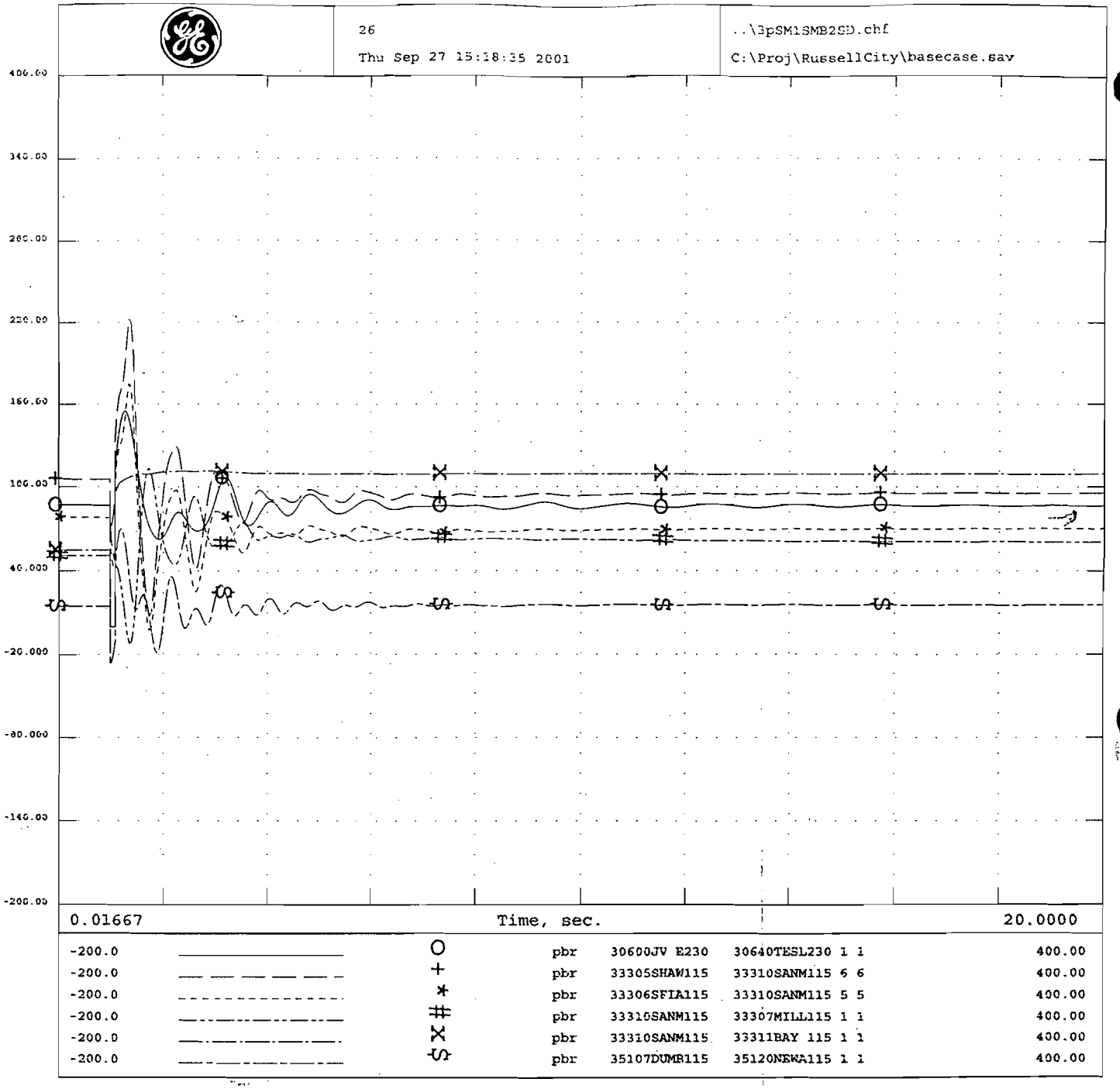
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



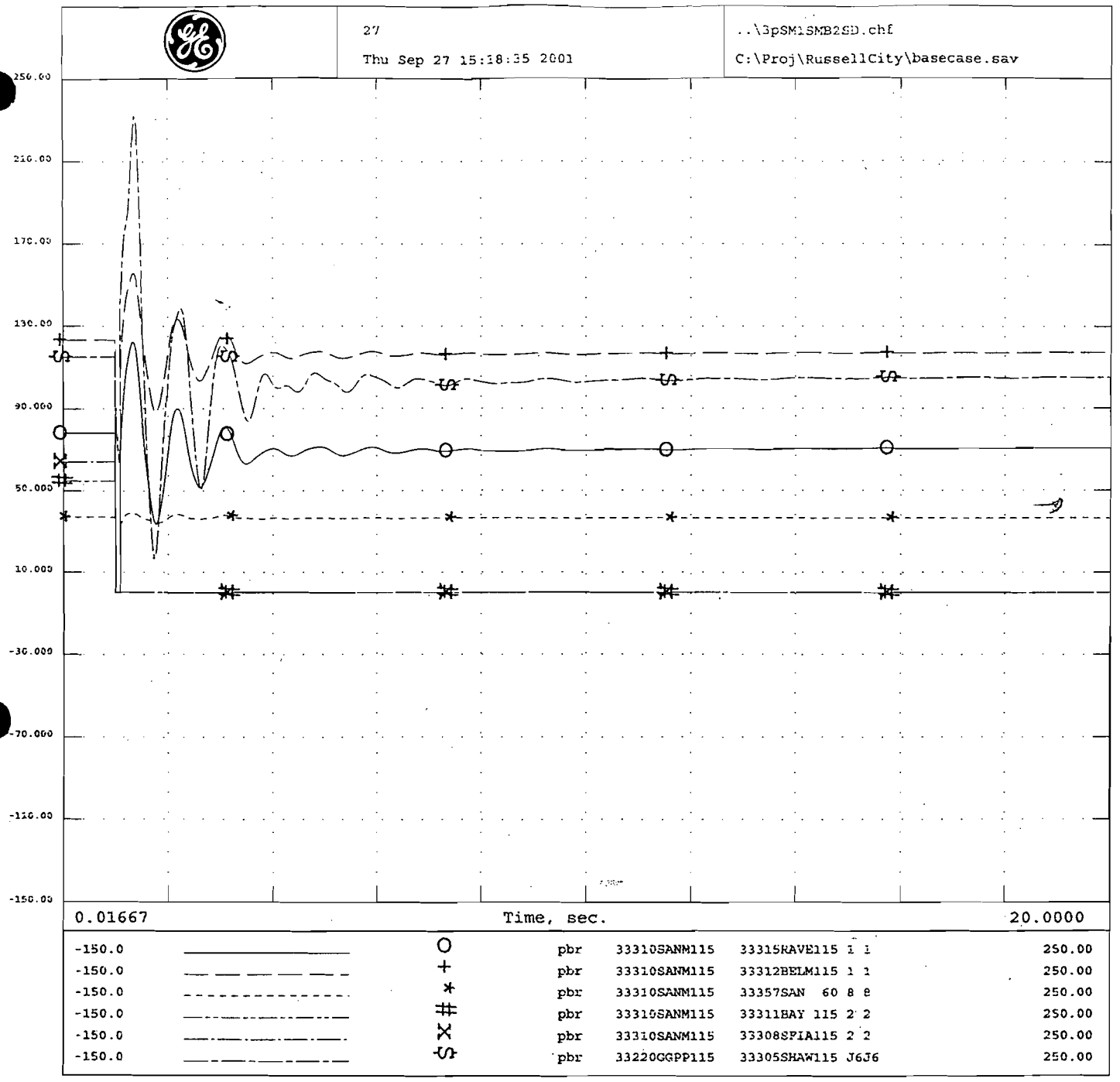
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 1, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 1, section E
RUN  9
CC
CC   Fault San Mateo 115kV bus
FB   0.0 "SANMATEO" 115.
CC
CC   Clear fault at San Mateo 115kV bus
CFB  6.0 "SANMATEO" 115.
CC
CC   Trip San Mateo bus 1, section E
CC   The bus SANMATB6 is a dummy bus to allow plotting of transformer flow
DL   6.0 "SANMATB6" 115.00 "SANMATEO" 230.00 "6 "
TG   6.0 "SMATO3SC"  13.2 "1 "
DL   6.0 "SANMATEO" 115. "MARTIN C" 115. "3 "
DL   6.0 "SANMATEO" 115. "SFIA    " 115. "5 "
DL   6.0 "SANMATEO" 115. "SHAWROAD" 115. "6 "
DL   6.0 "GGPP D  " 115. "SHAWROAD" 115. "J6"
MBL  6.0 "SHAWROAD" 115. "1 " D
CC DL   6.0 "SANMATEO" 115. "SAN MATO" 60.0 "1 "
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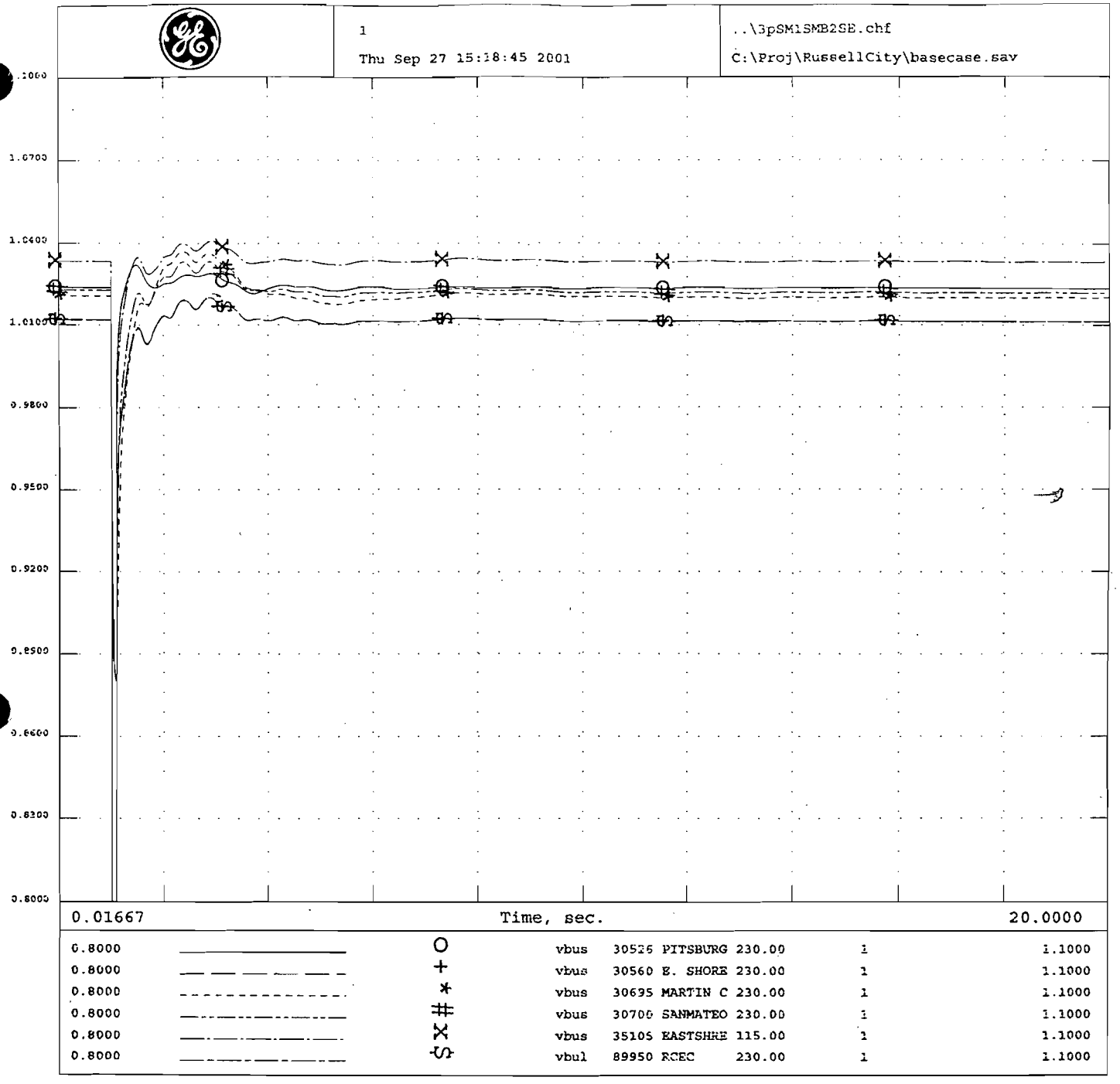
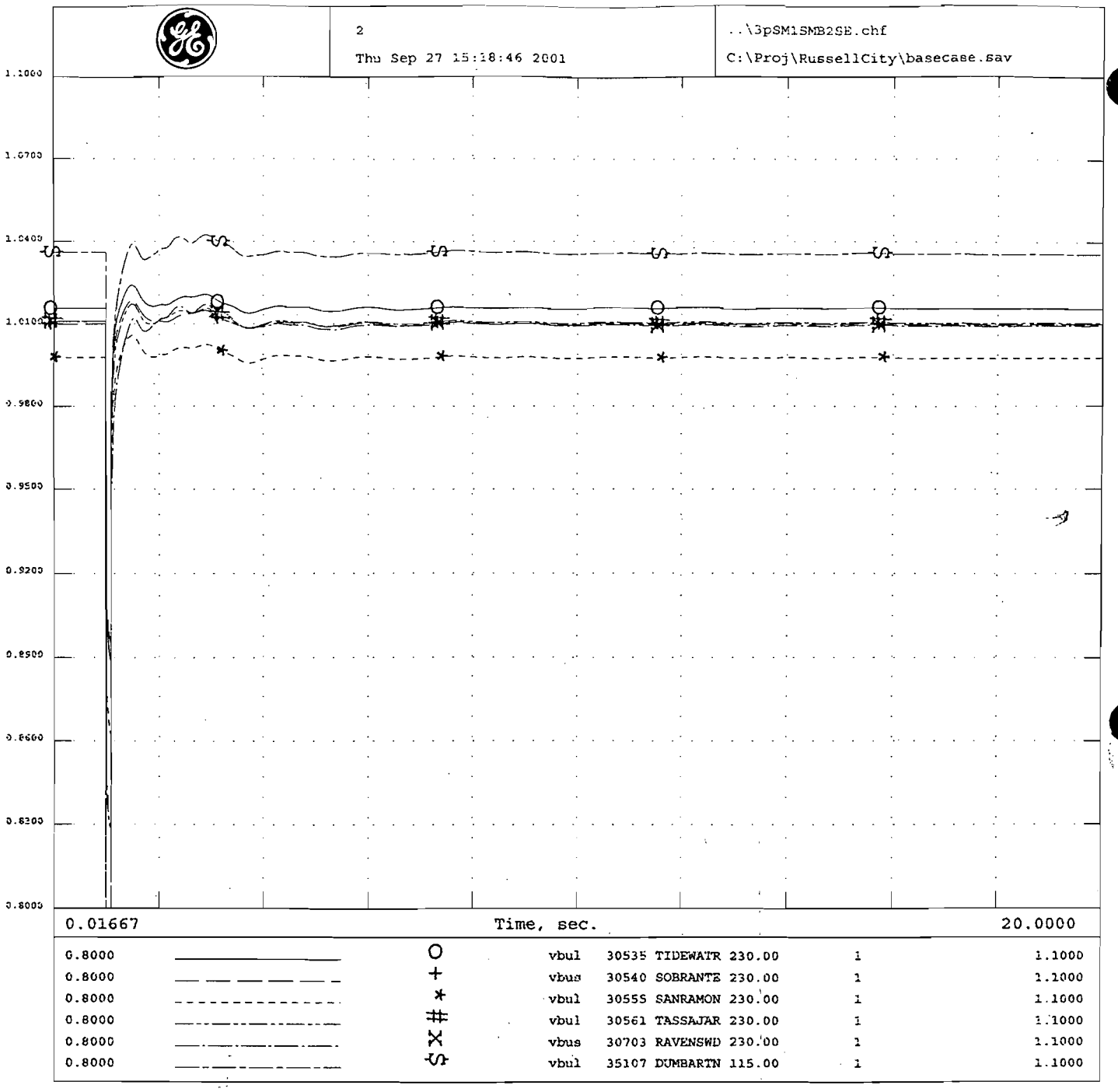


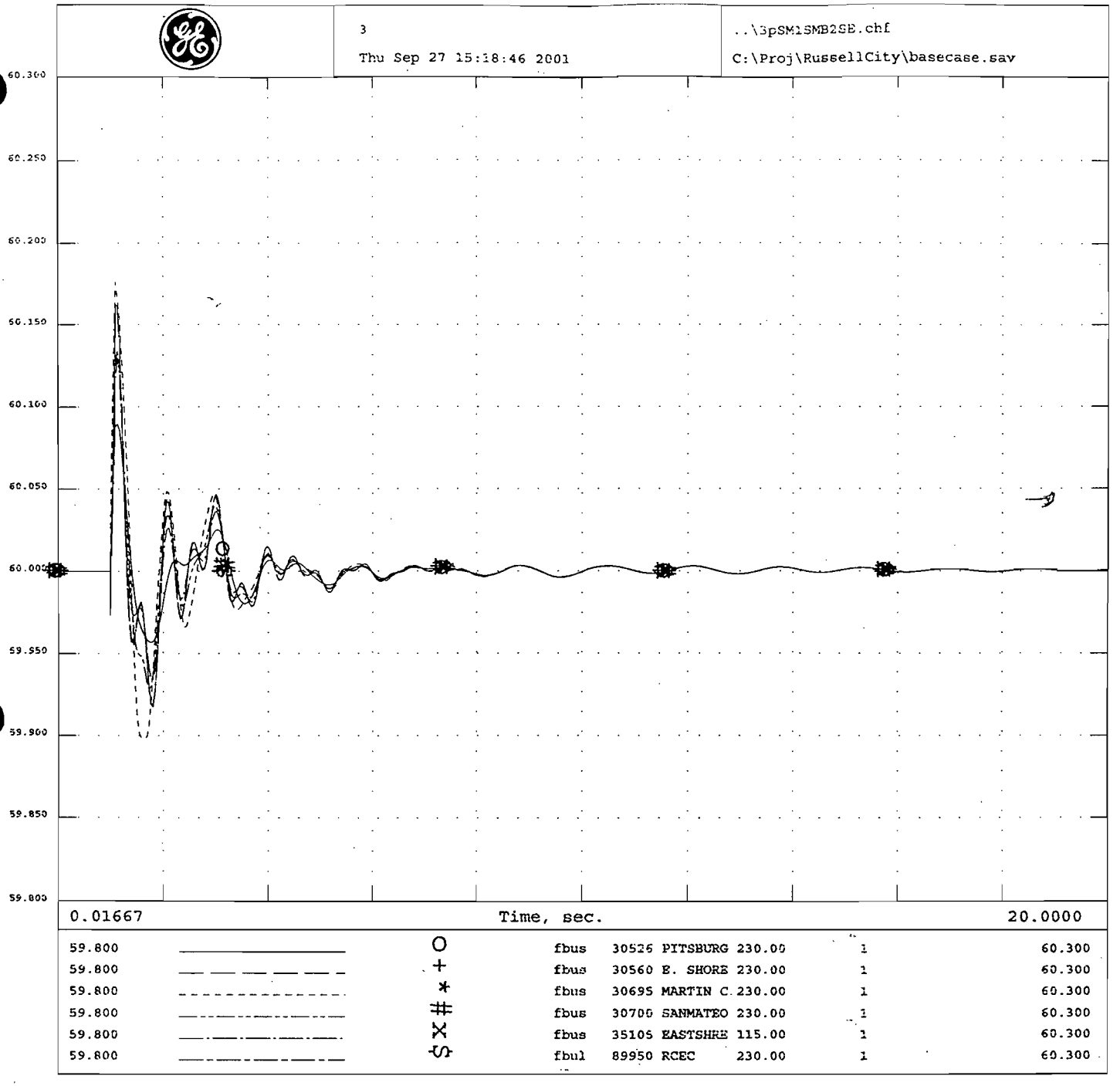
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 115 kV bus 2, section E
3 phase 6 cycle fault at San Mateo 115 kV bus and trip bus 2, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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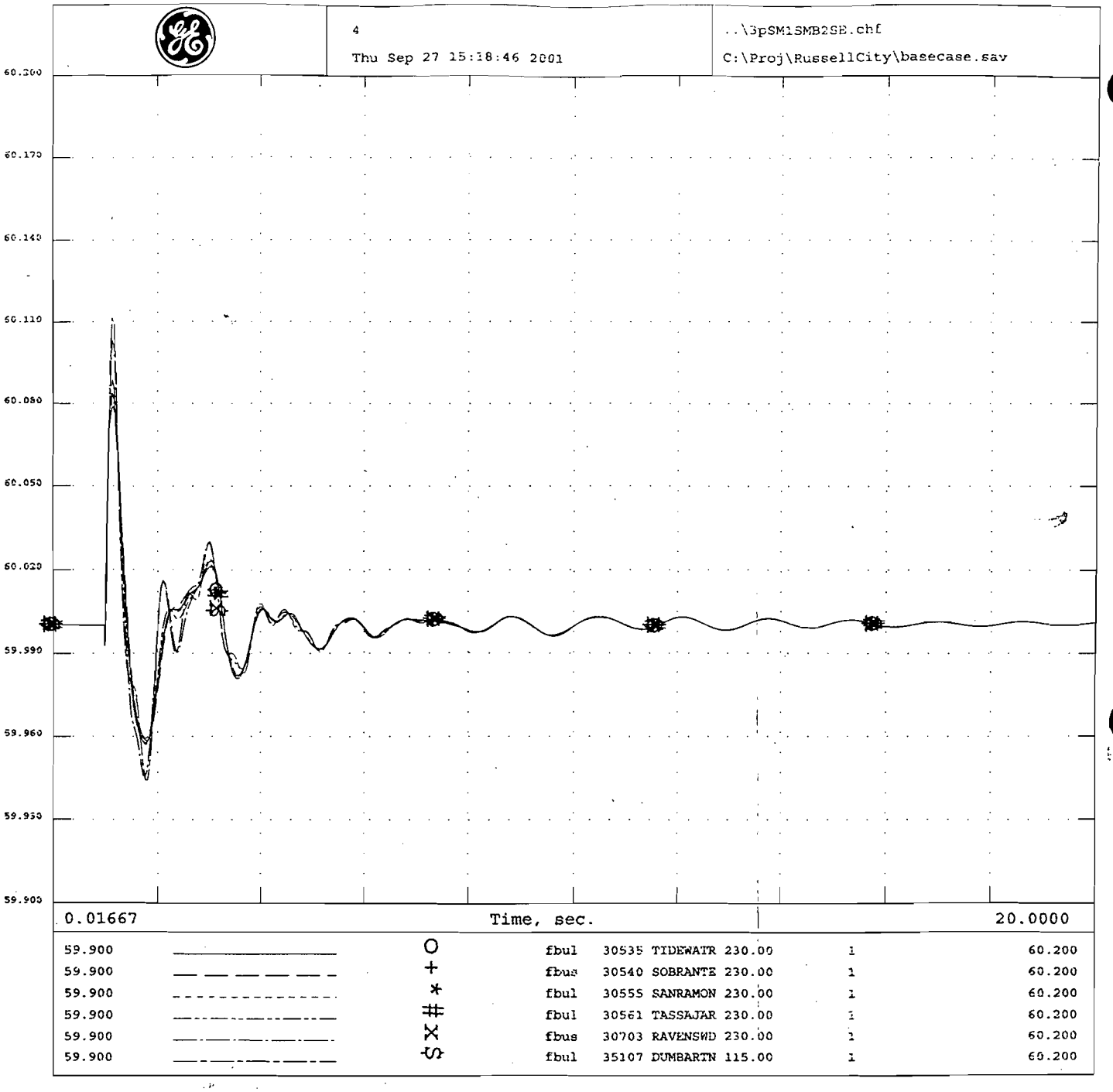
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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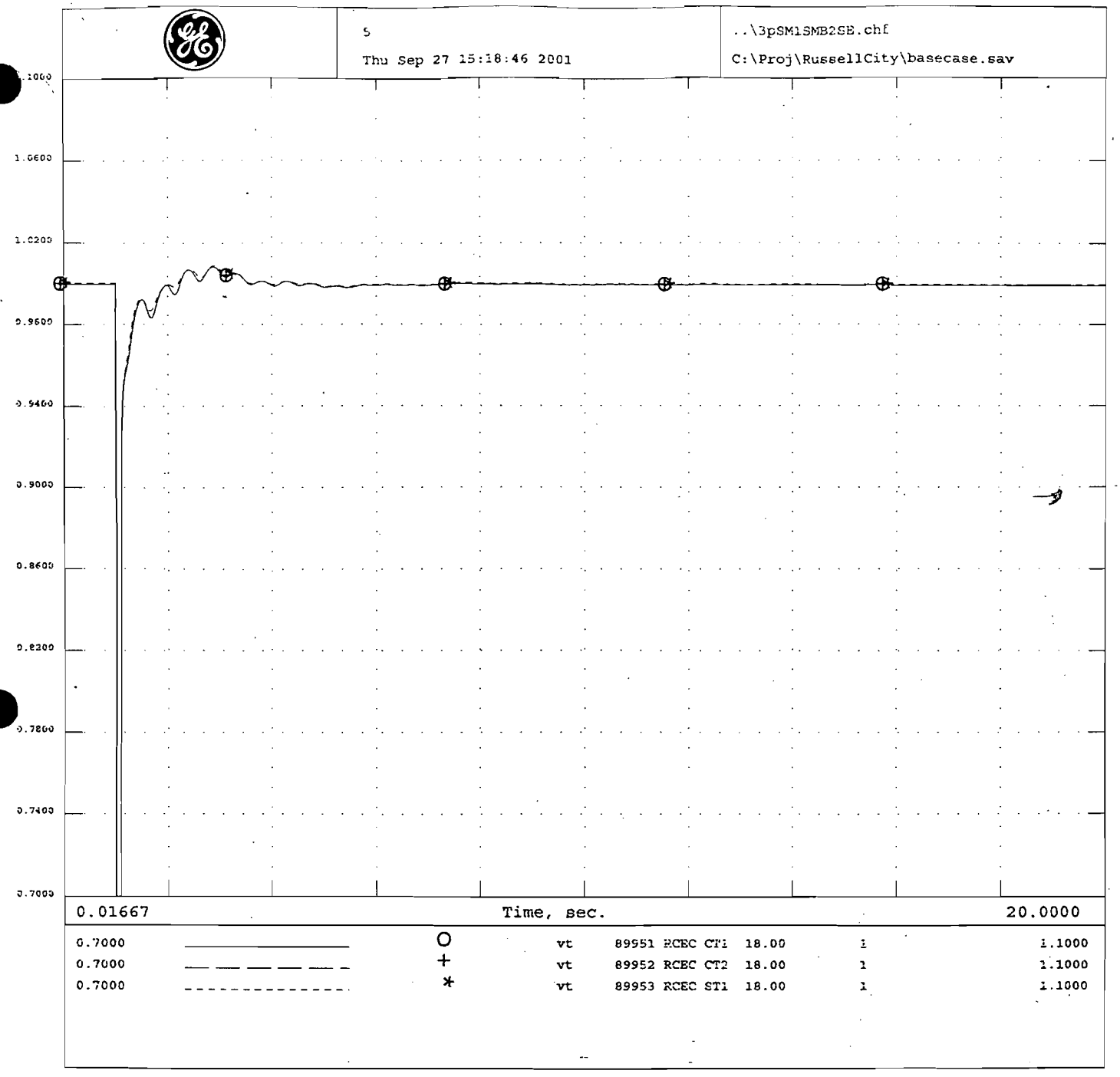
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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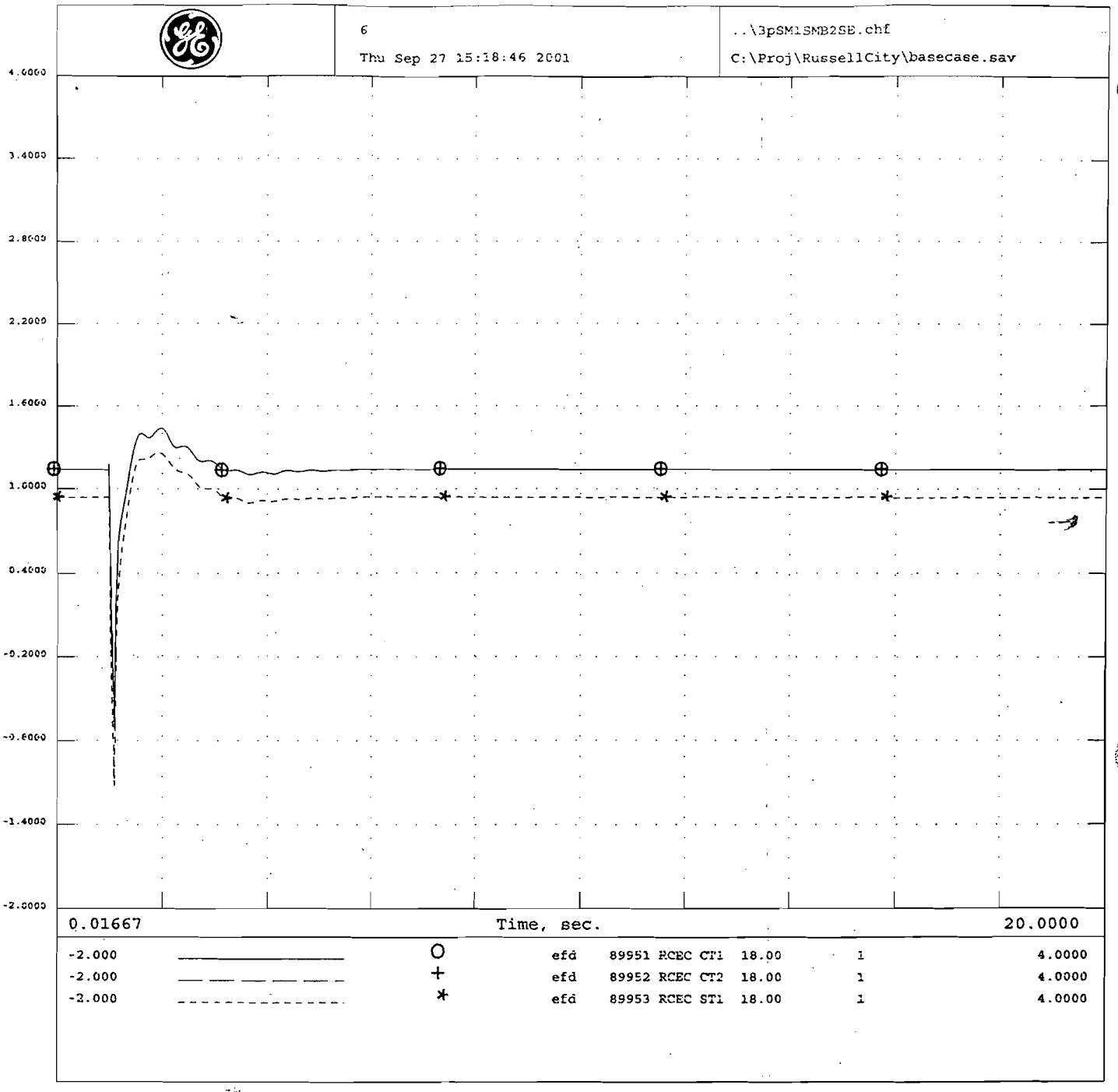
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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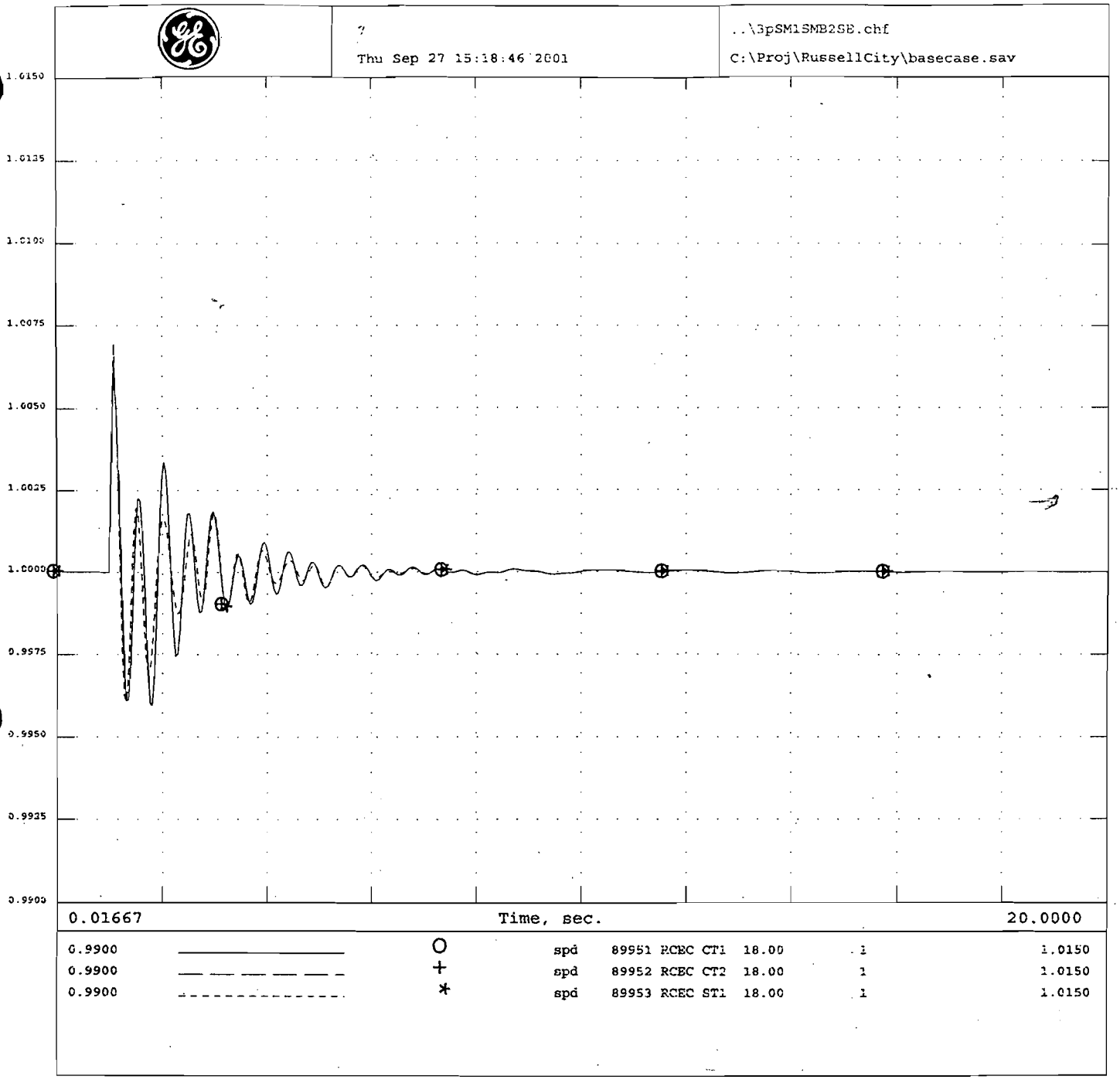
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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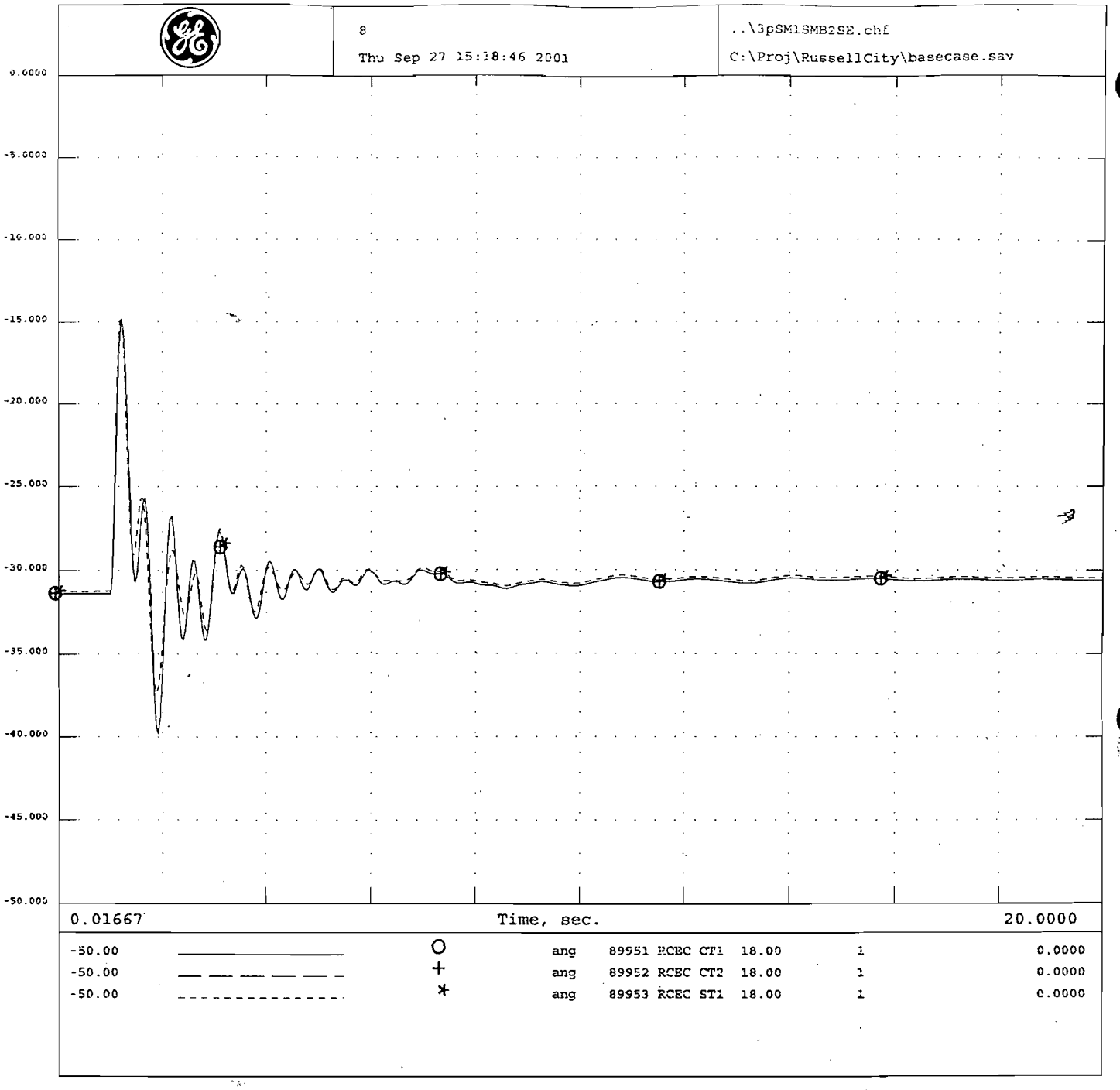
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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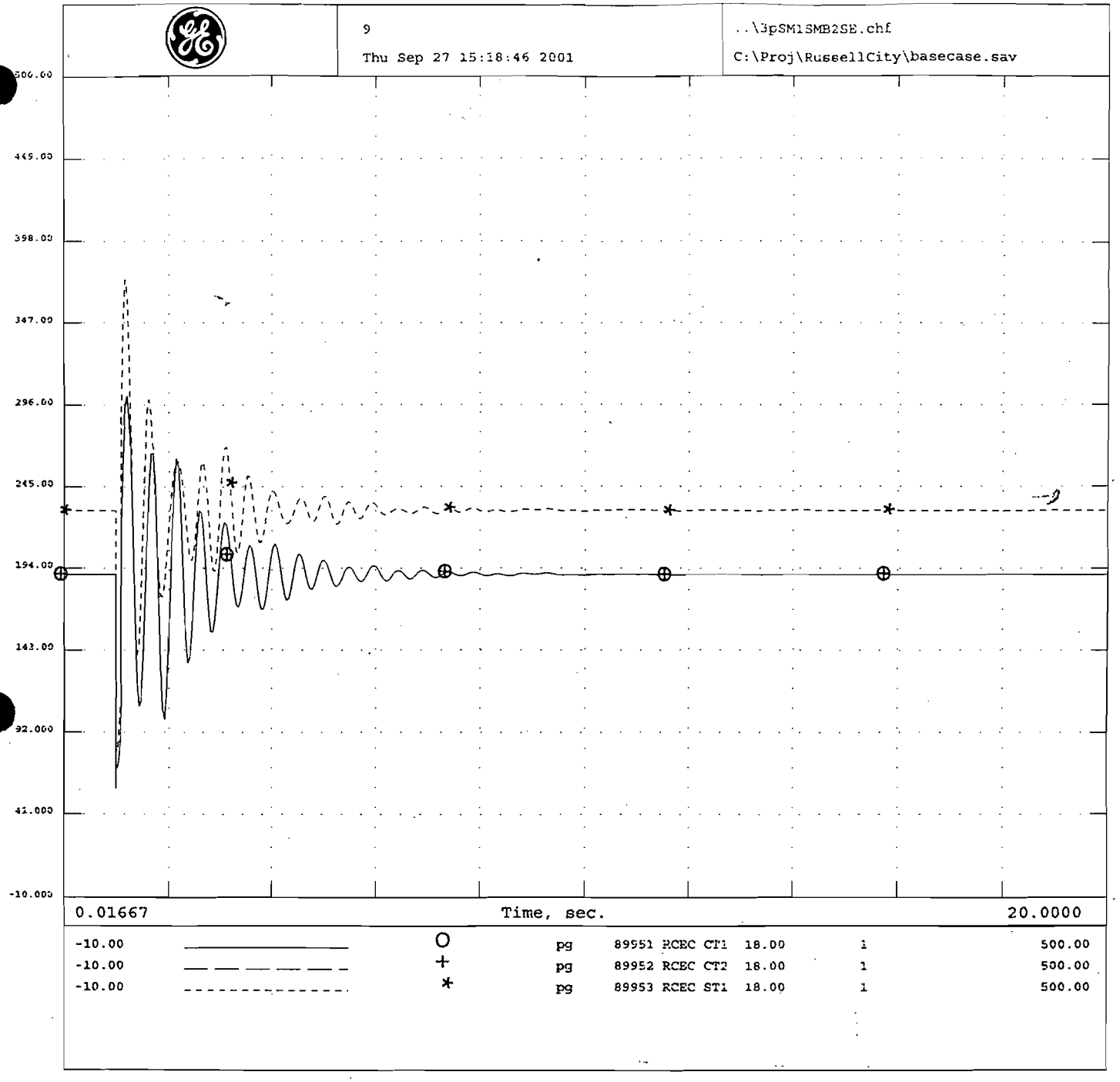
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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Calpine/Bechtel Joint Development
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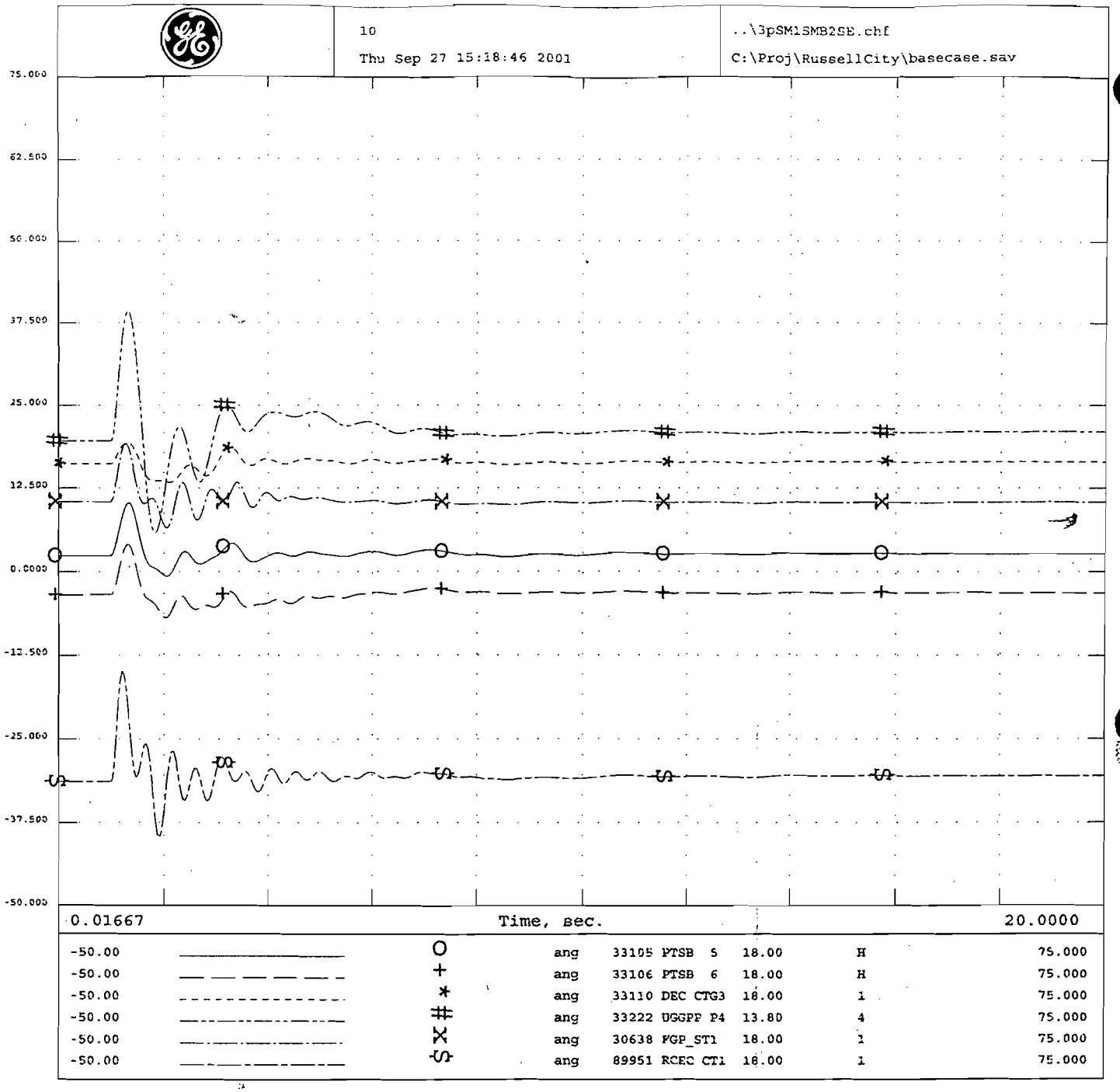

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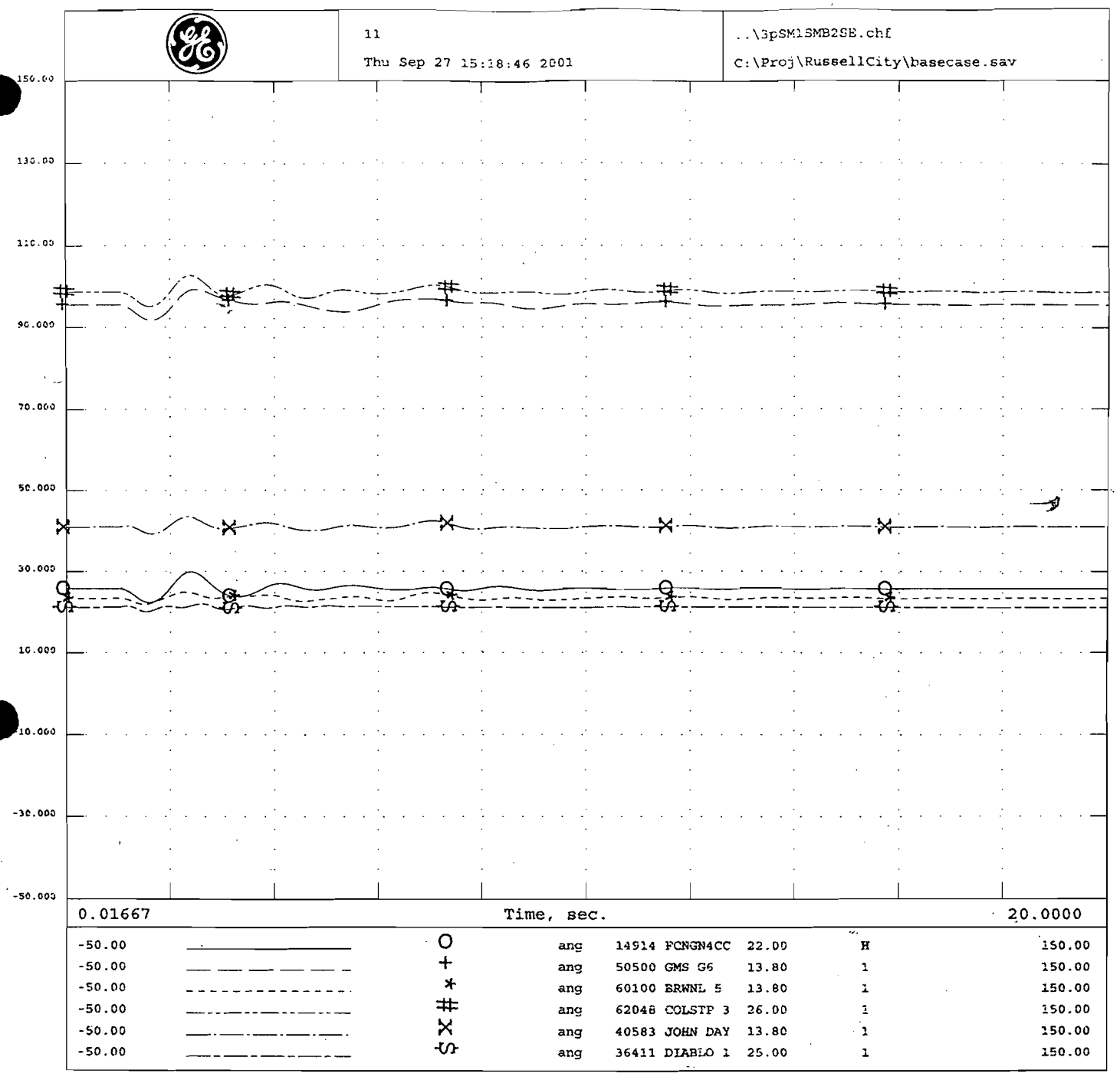
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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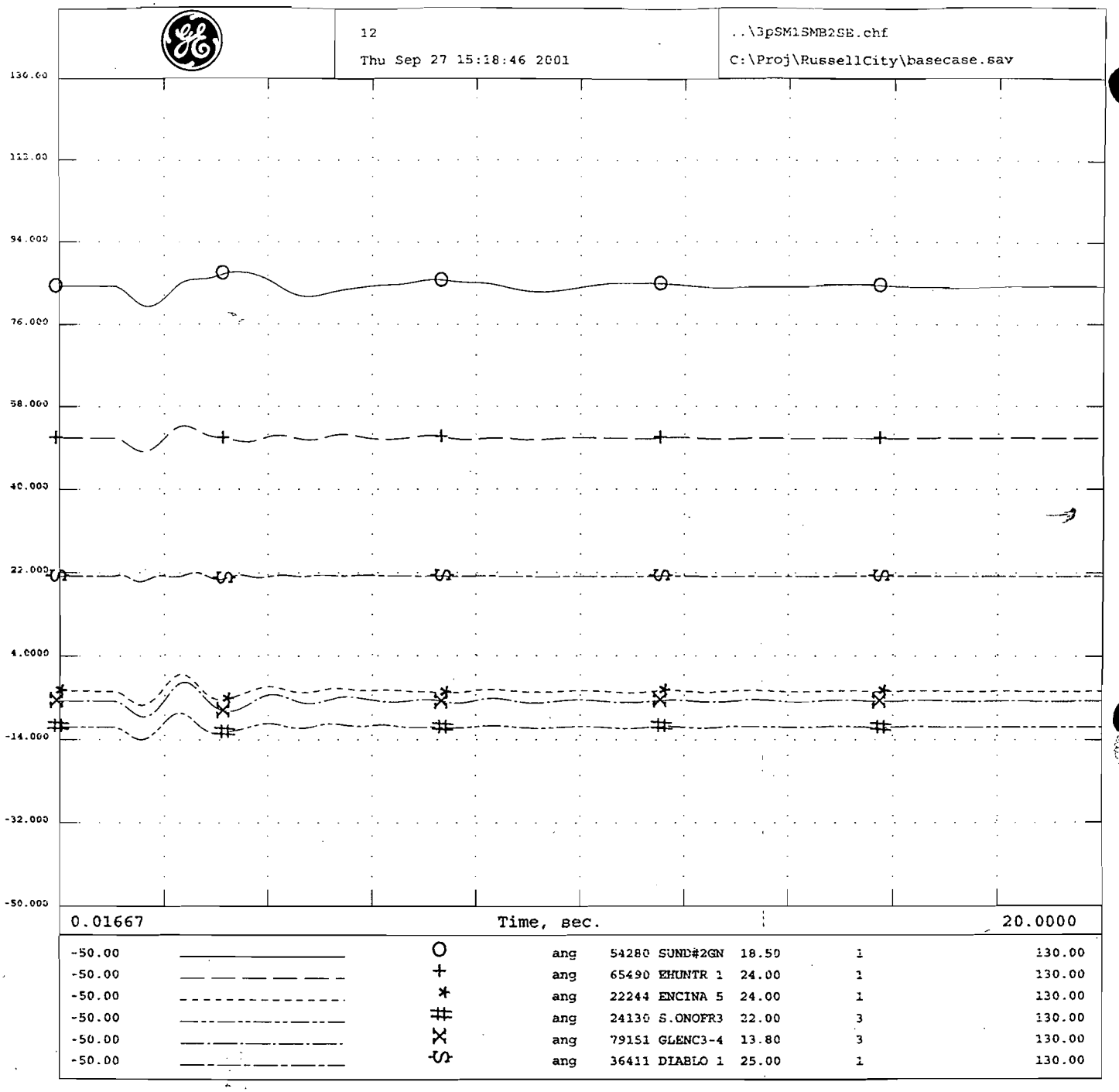
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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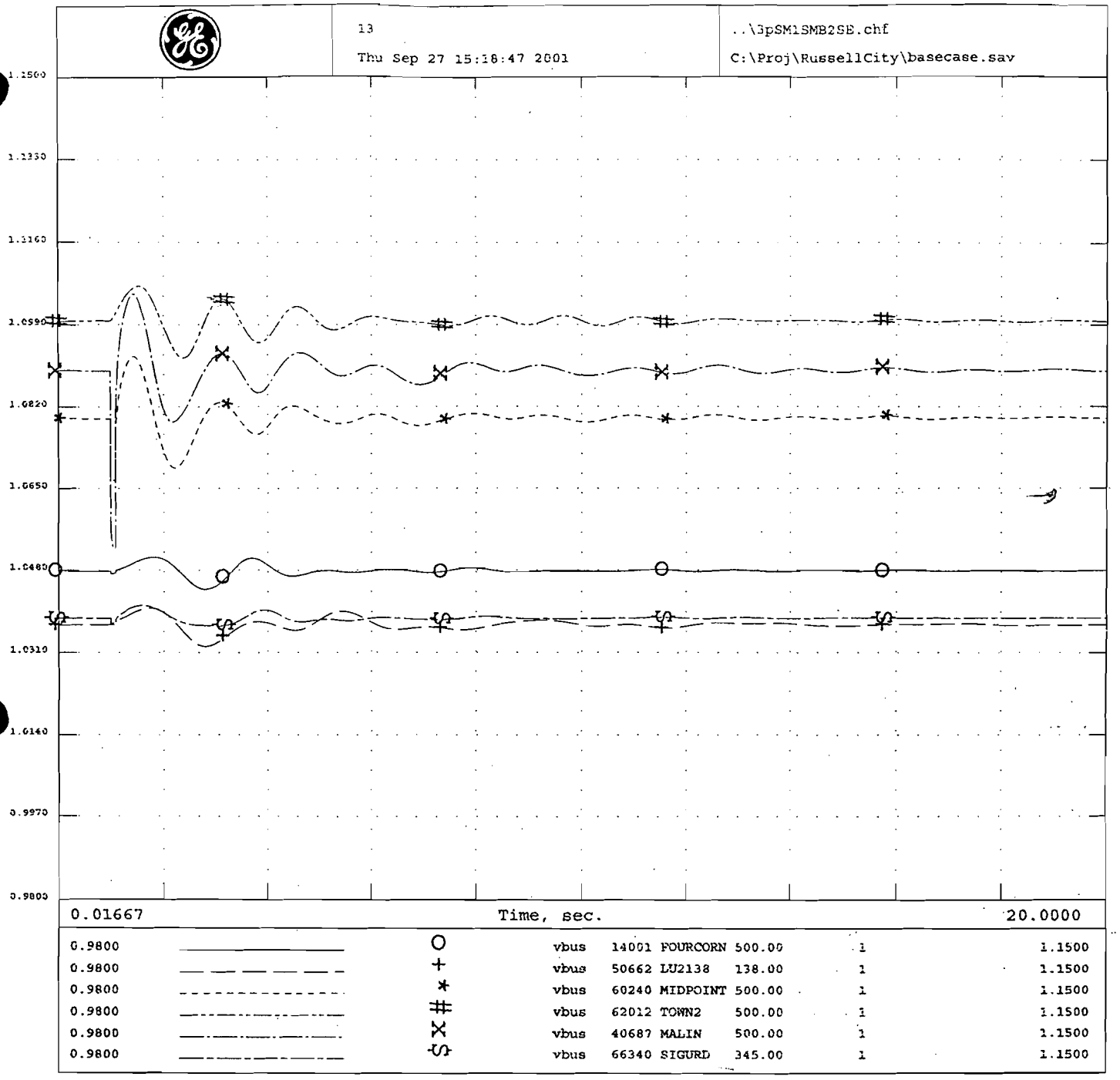

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Calpine/Bechtel Joint Development
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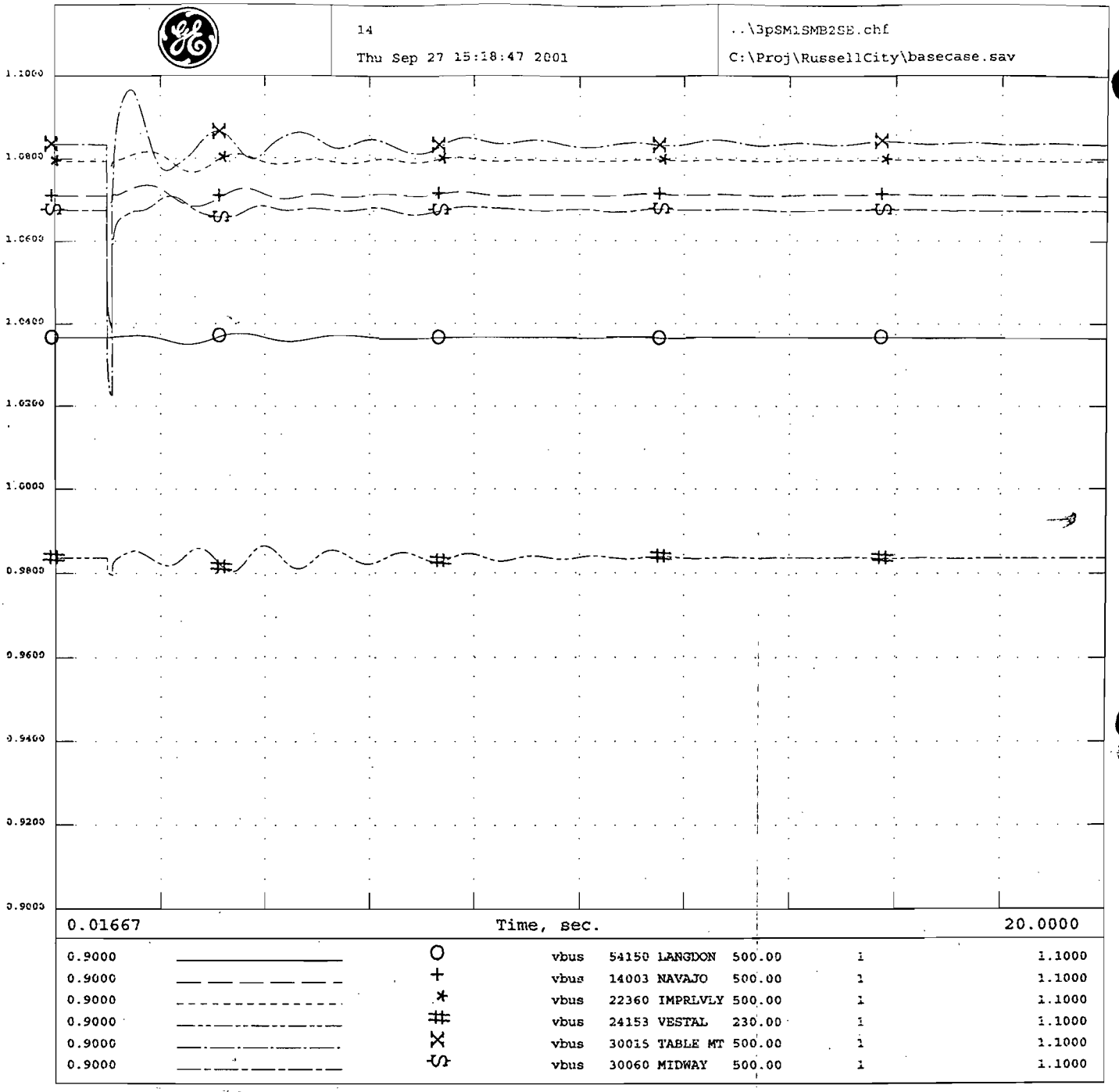

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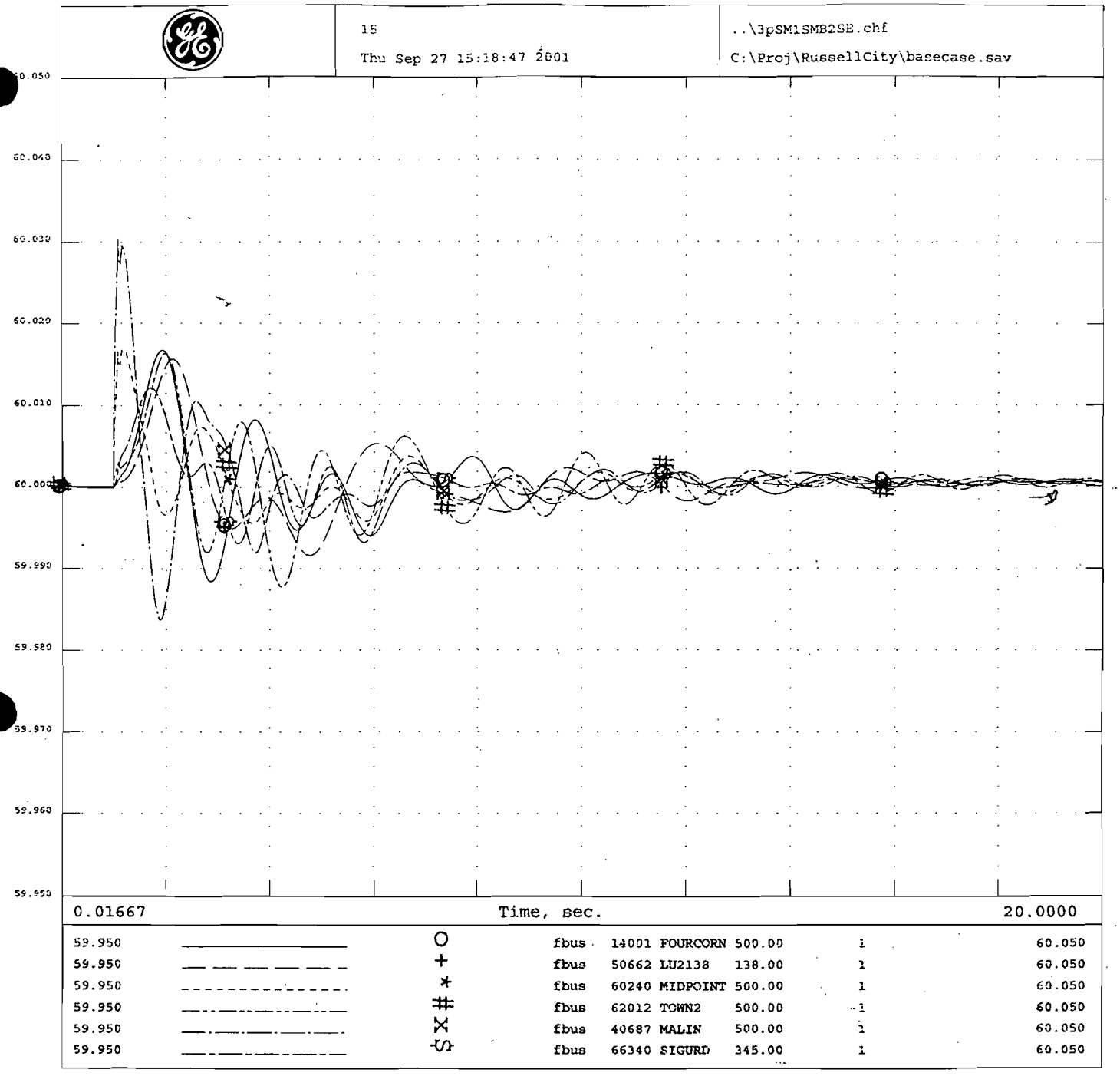

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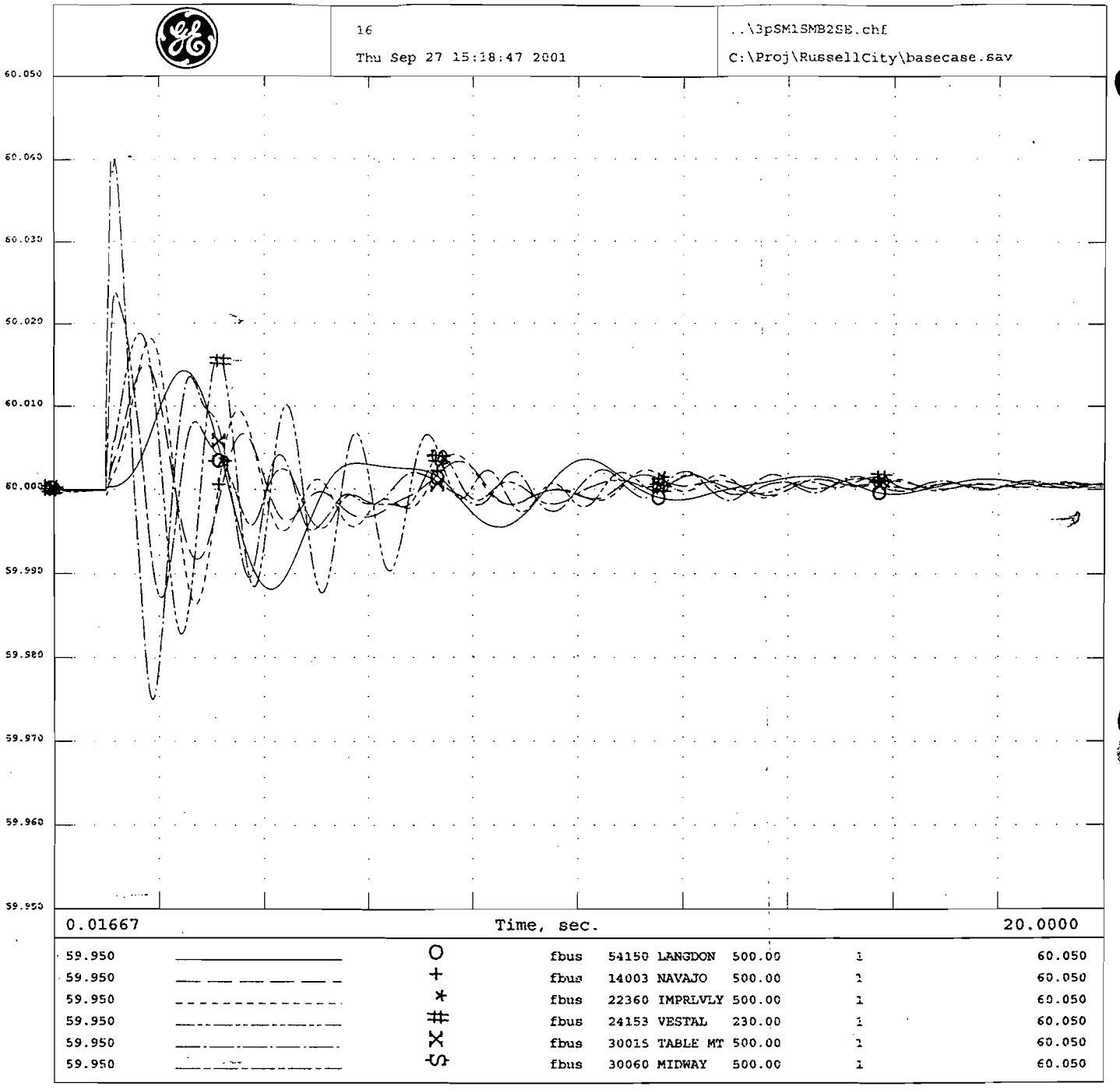

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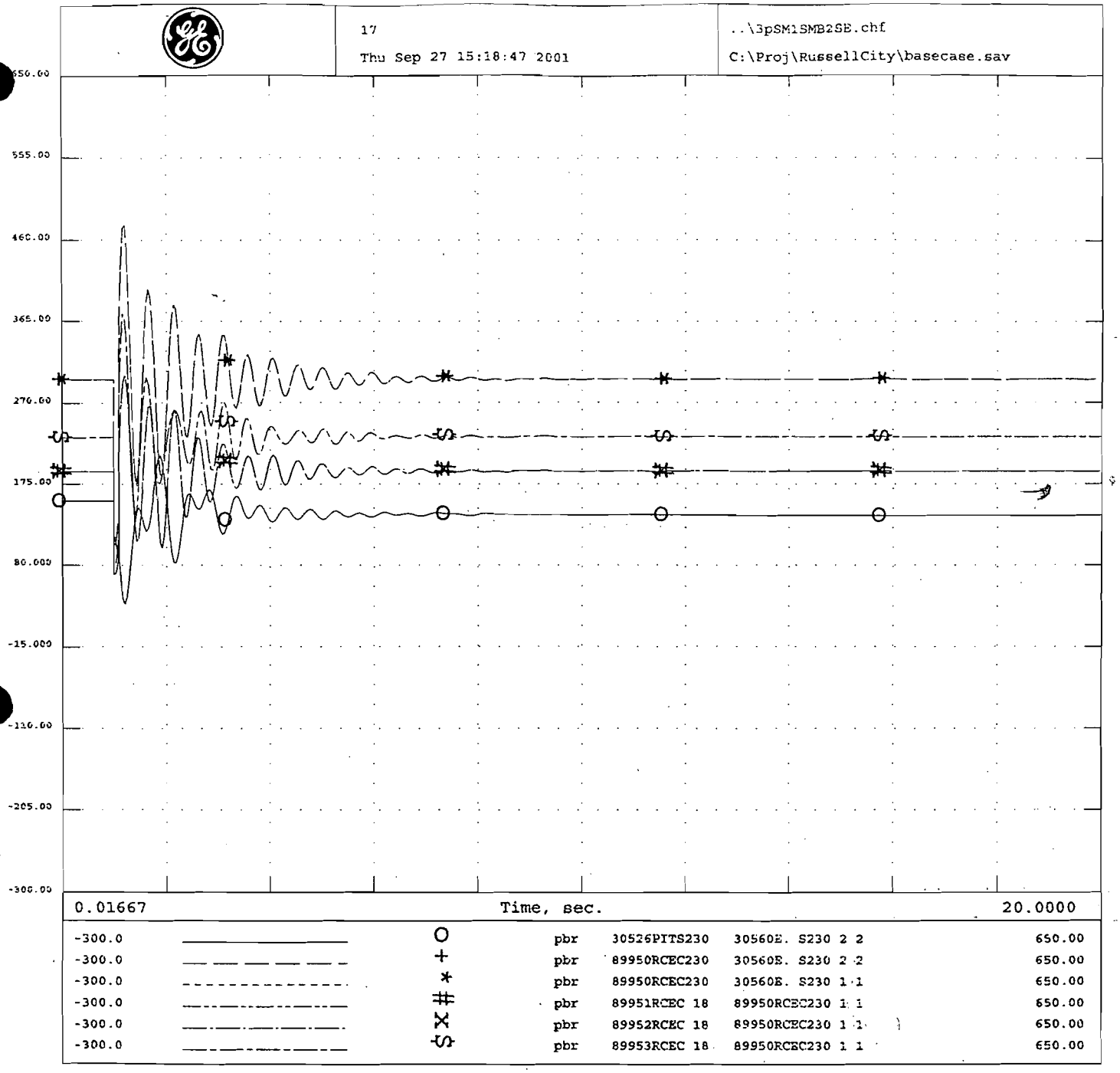

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Calpine/Bechtel Joint Development
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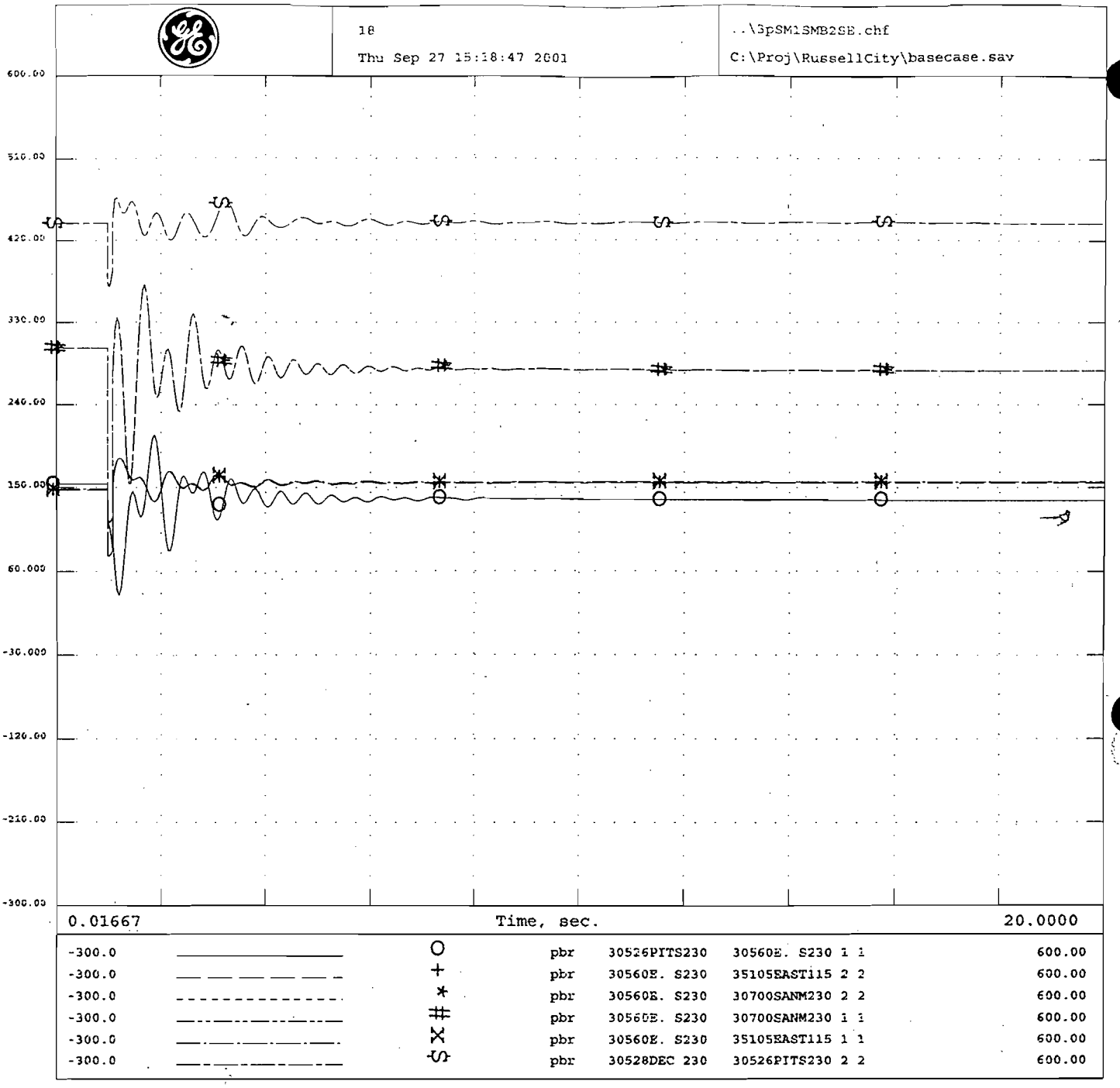

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Calpine/Bechtel Joint Development
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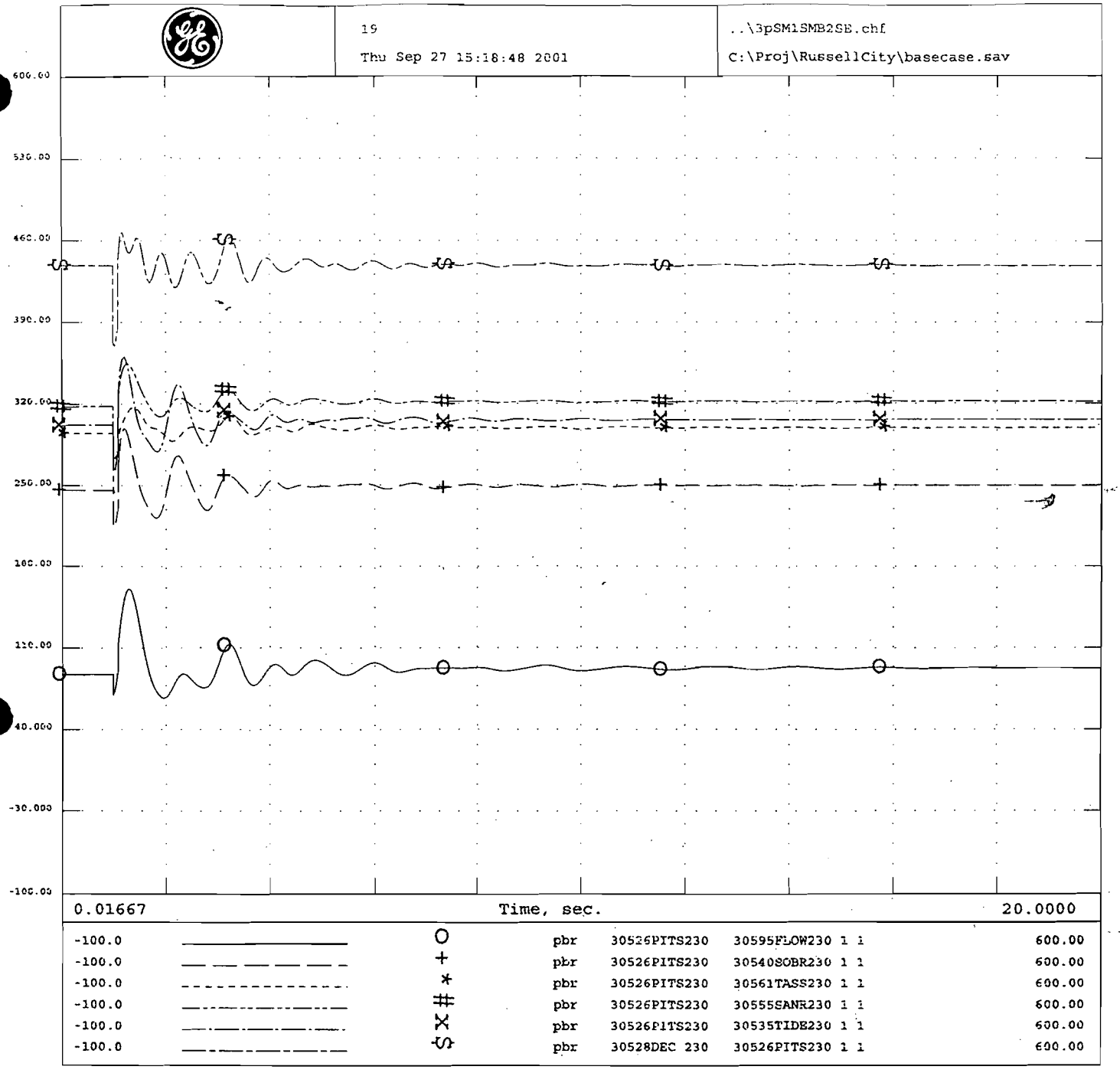

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Calpine/Bechtel Joint Development
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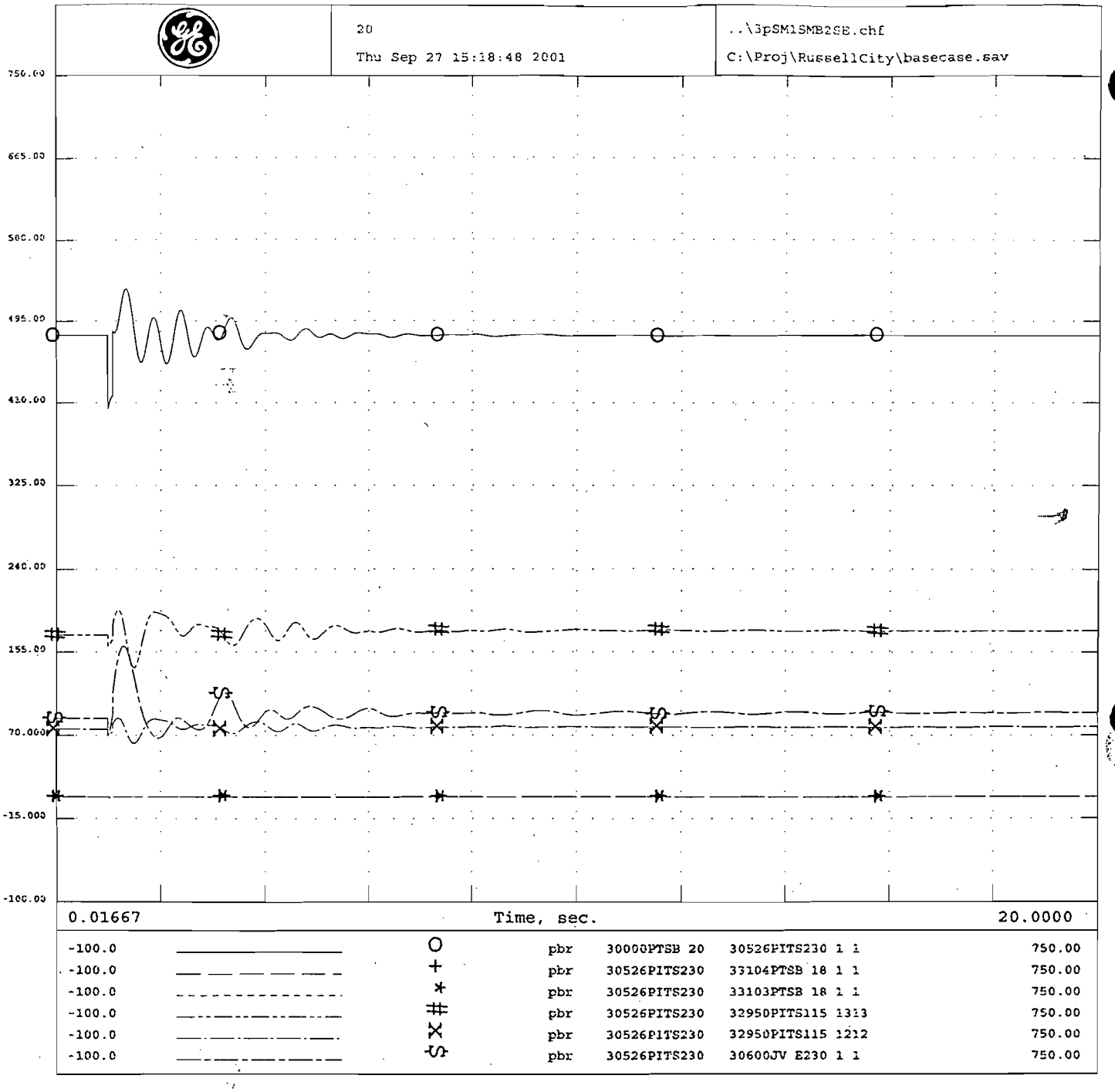

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Calpine/Bechtel Joint Development
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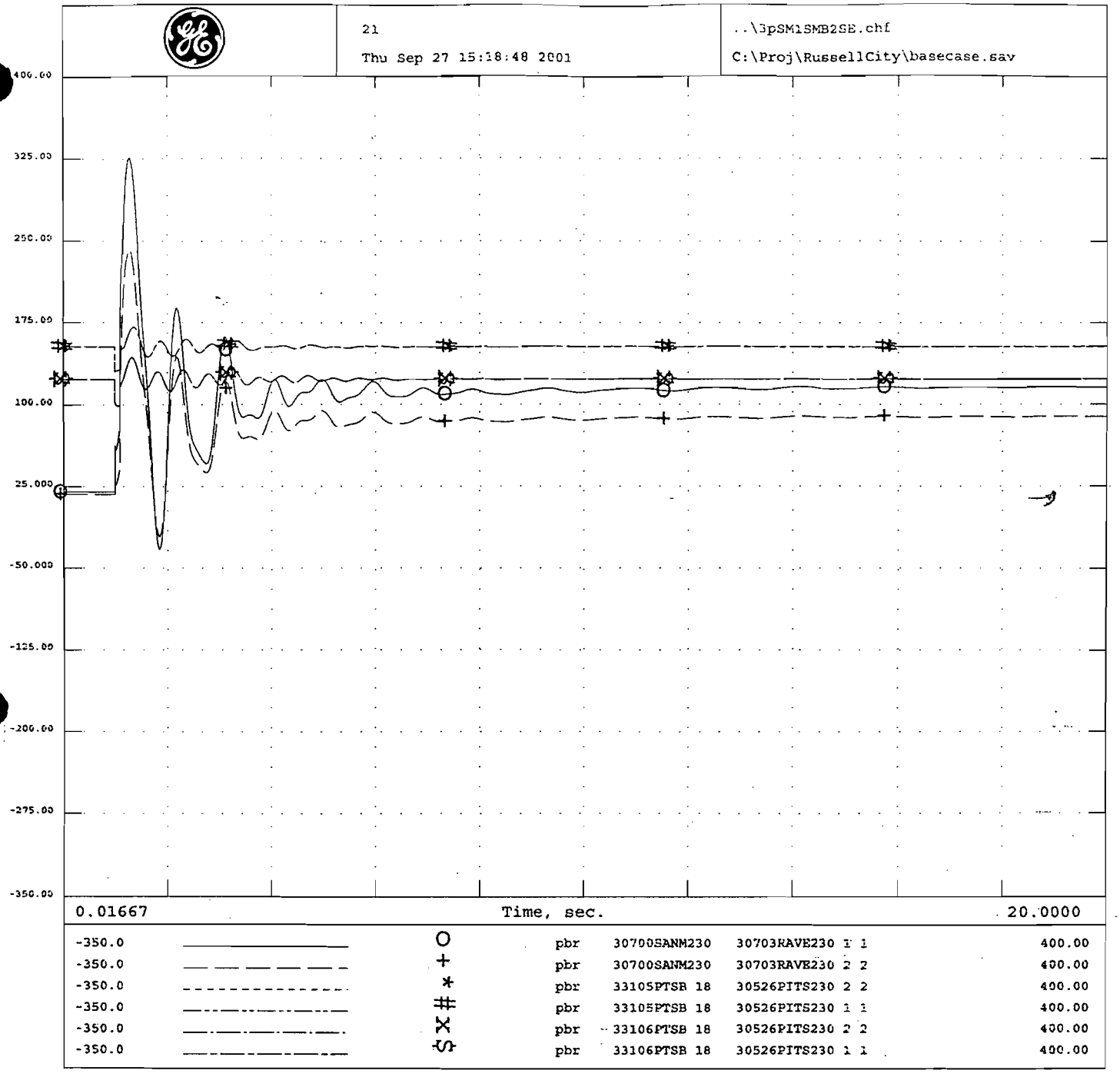

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Calpine/Bechtel Joint Development
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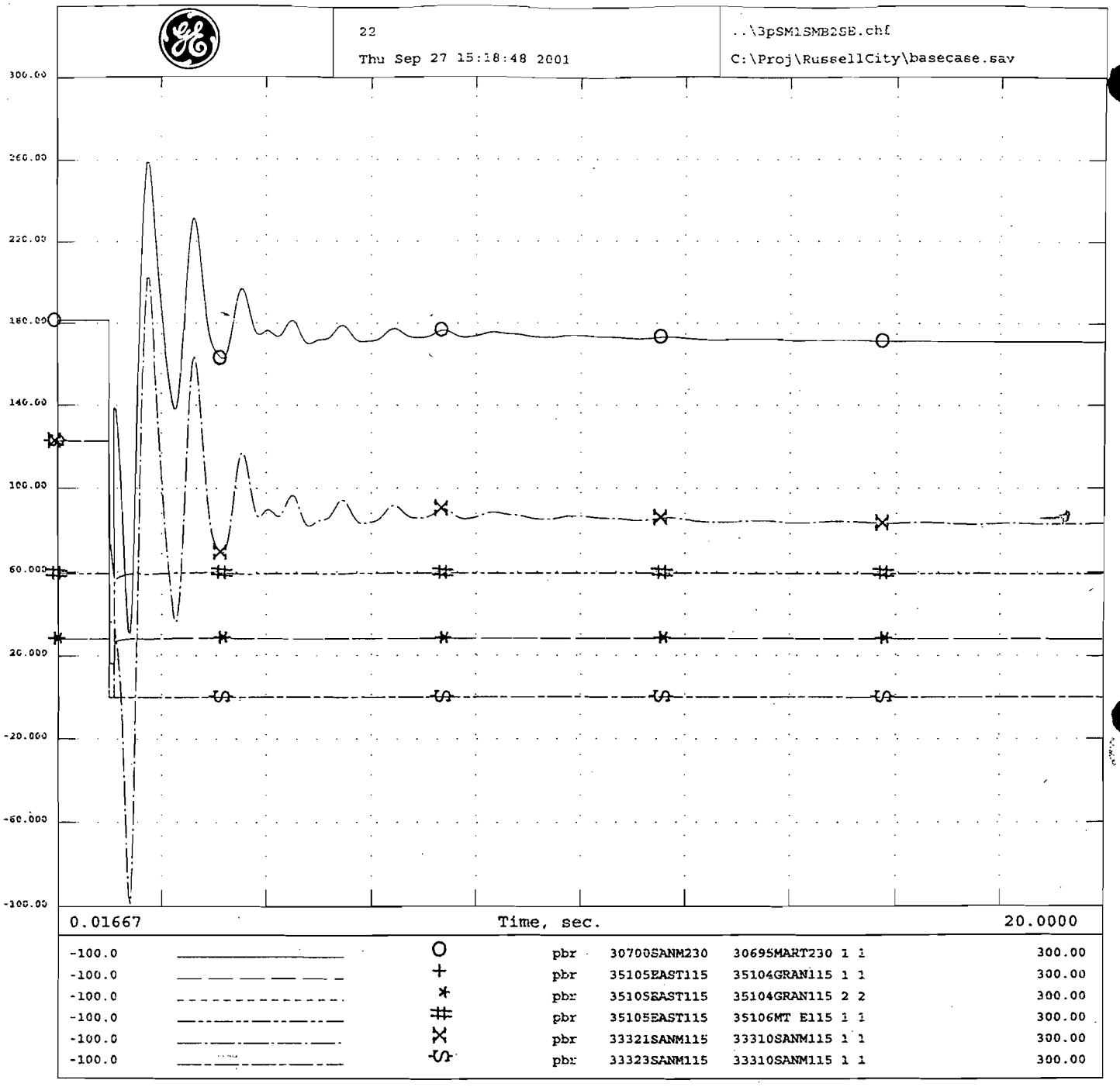

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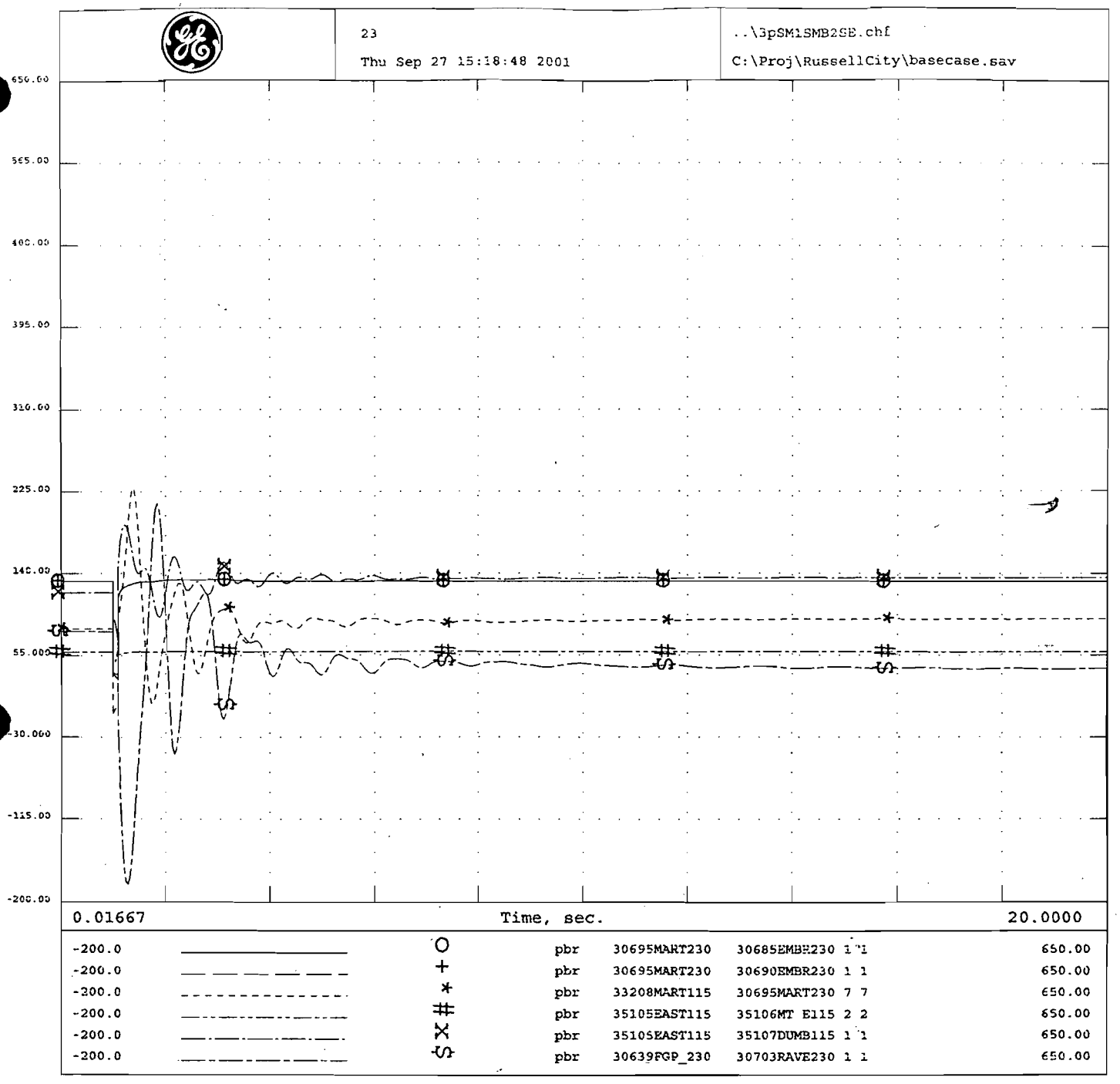

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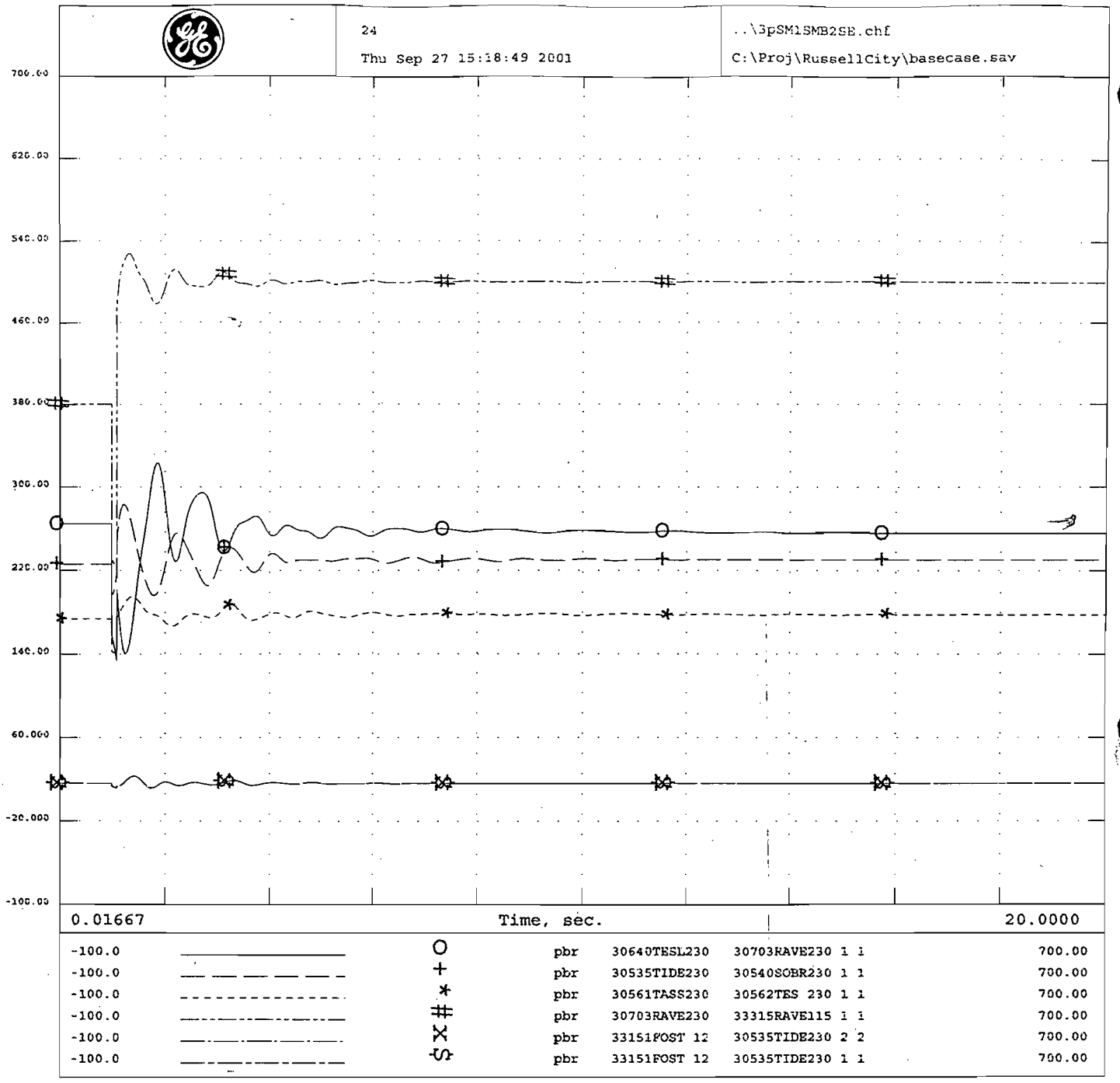

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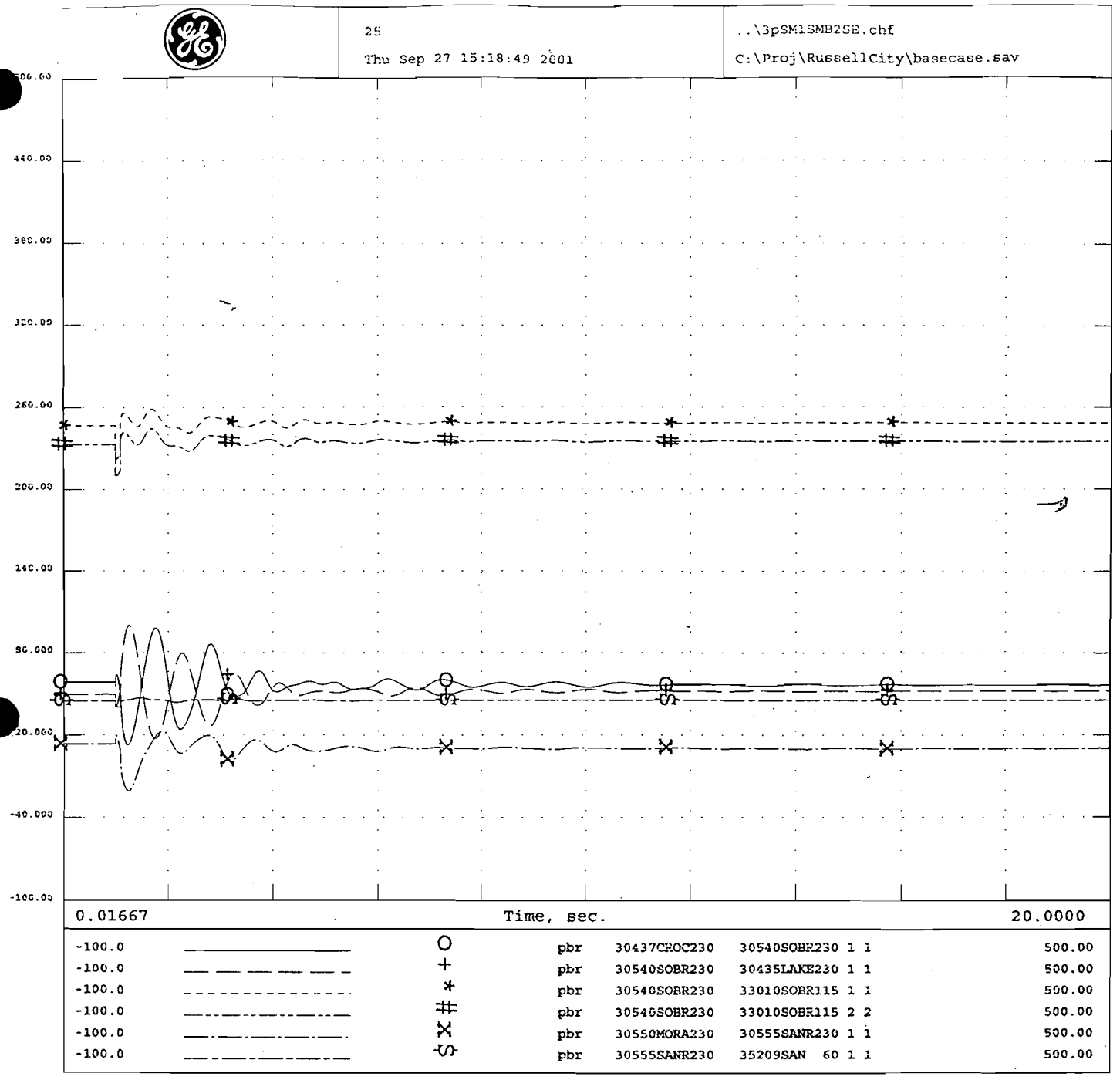

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Calpine/Bechtel Joint Development
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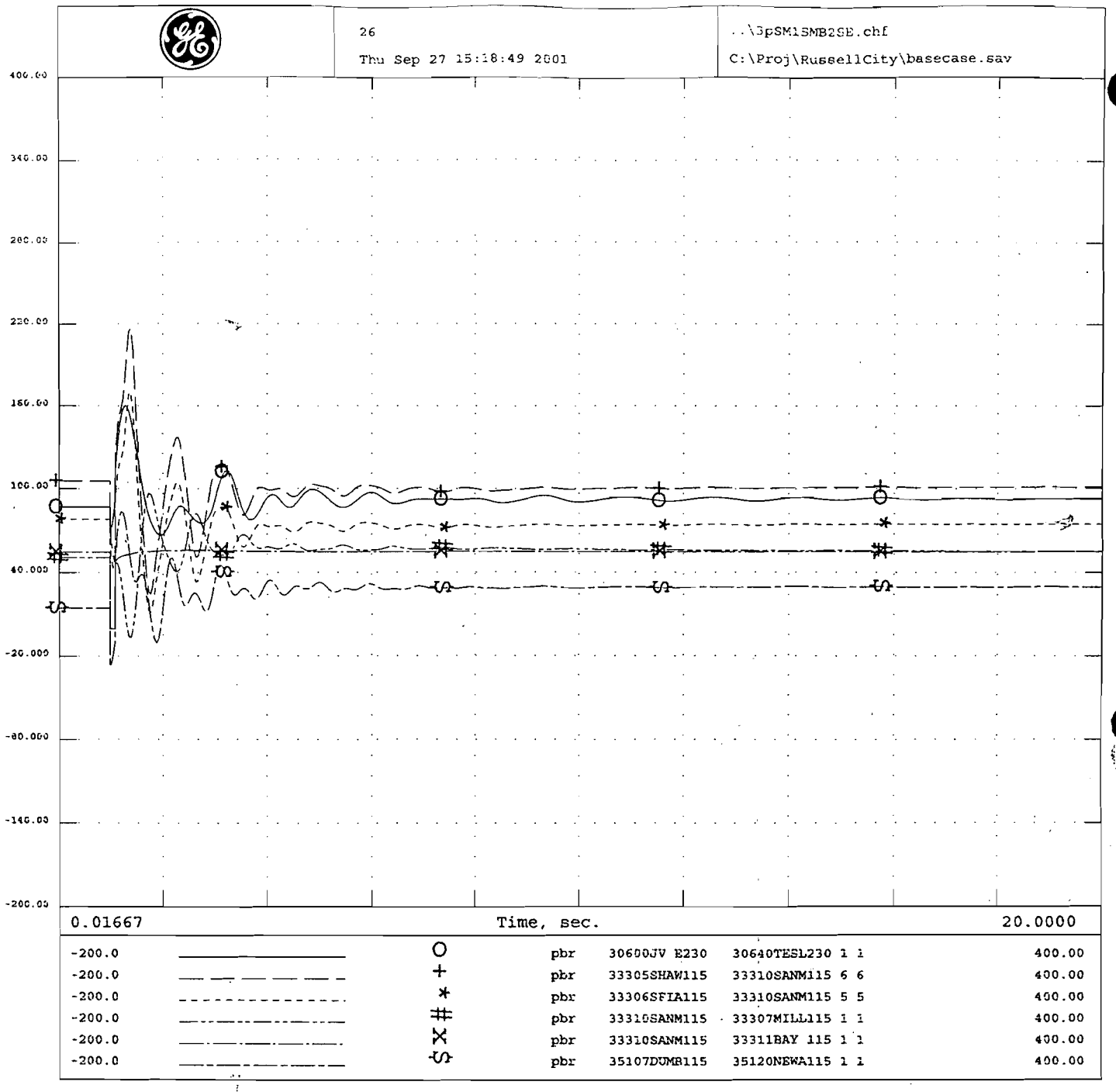

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Calpine/Bechtel Joint Development
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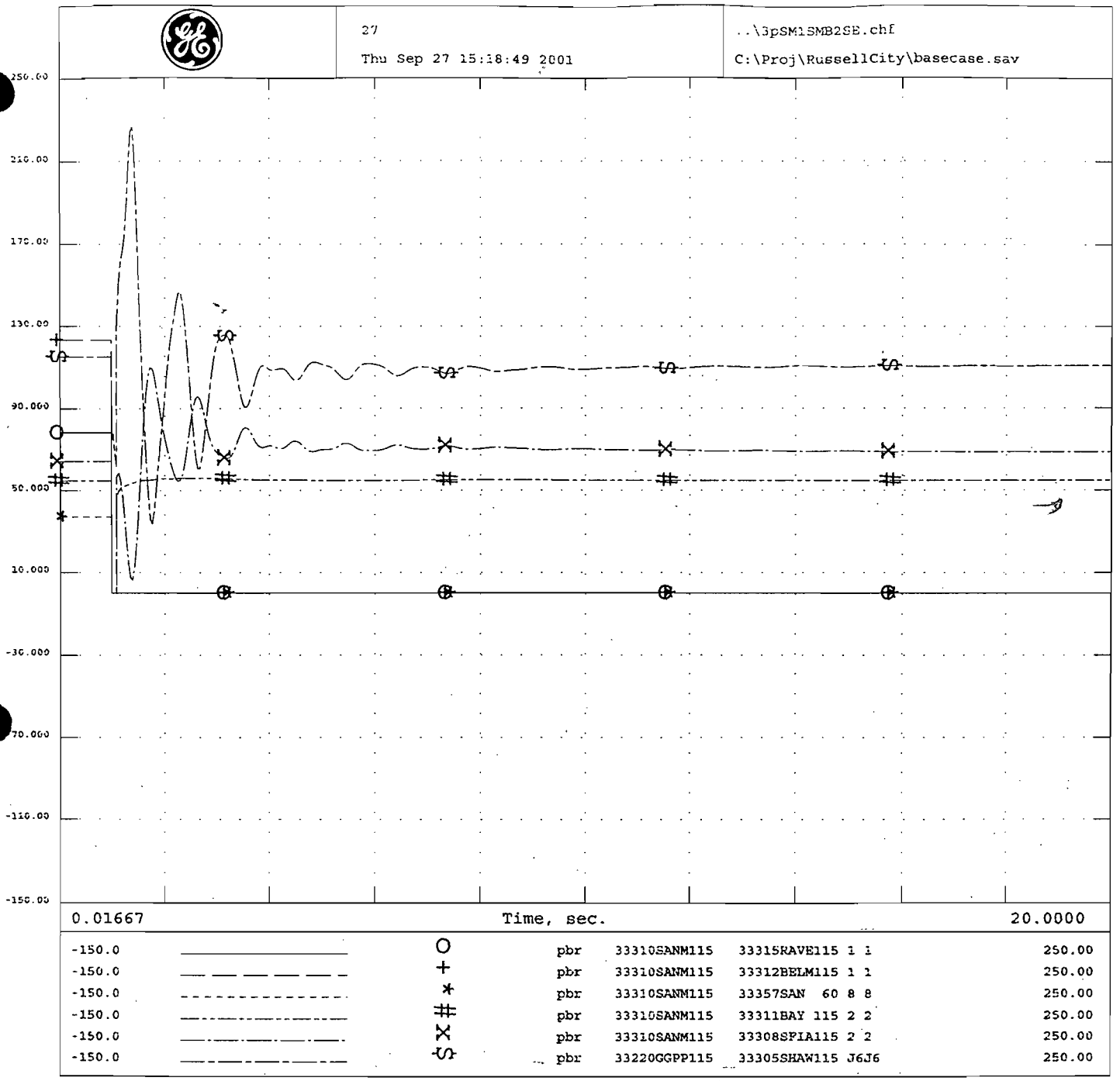

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section D
RUN  9
CC
CC   Fault San Mateo 230 kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230 kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip San Mateo bus 1, section D
CC   The bus SANMATB6 is a dummy bus to allow plotting of transformer flow
DL   6.0 "SANMATB6" 115.00 "SANMATEO" 230.00 "6 "
TG   6.0 "SMATO3SC"  13.2 "1 "
DL   6.0 "SANMATEO" 230. "E. SHORE" 230. "1 "
CC
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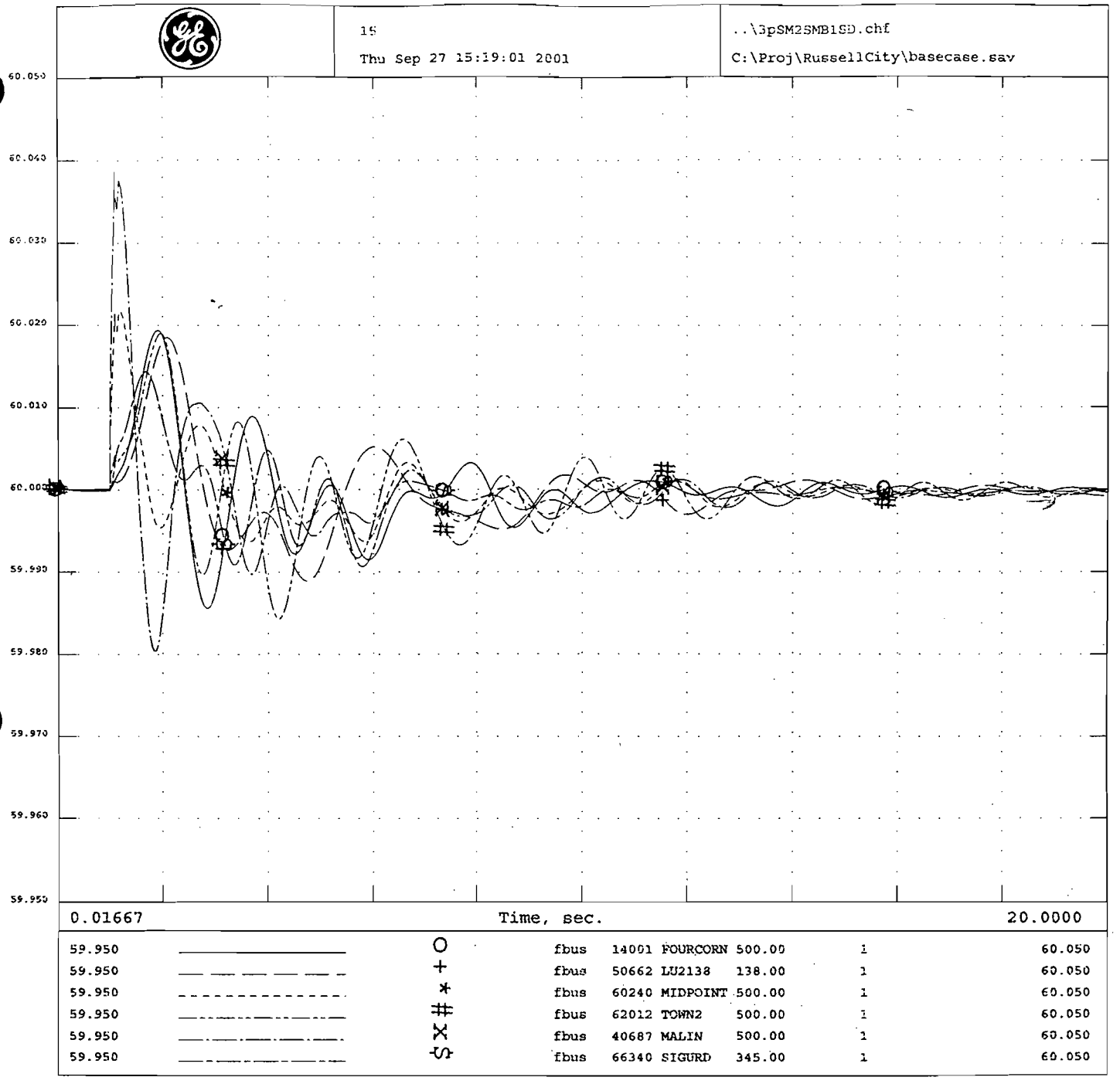

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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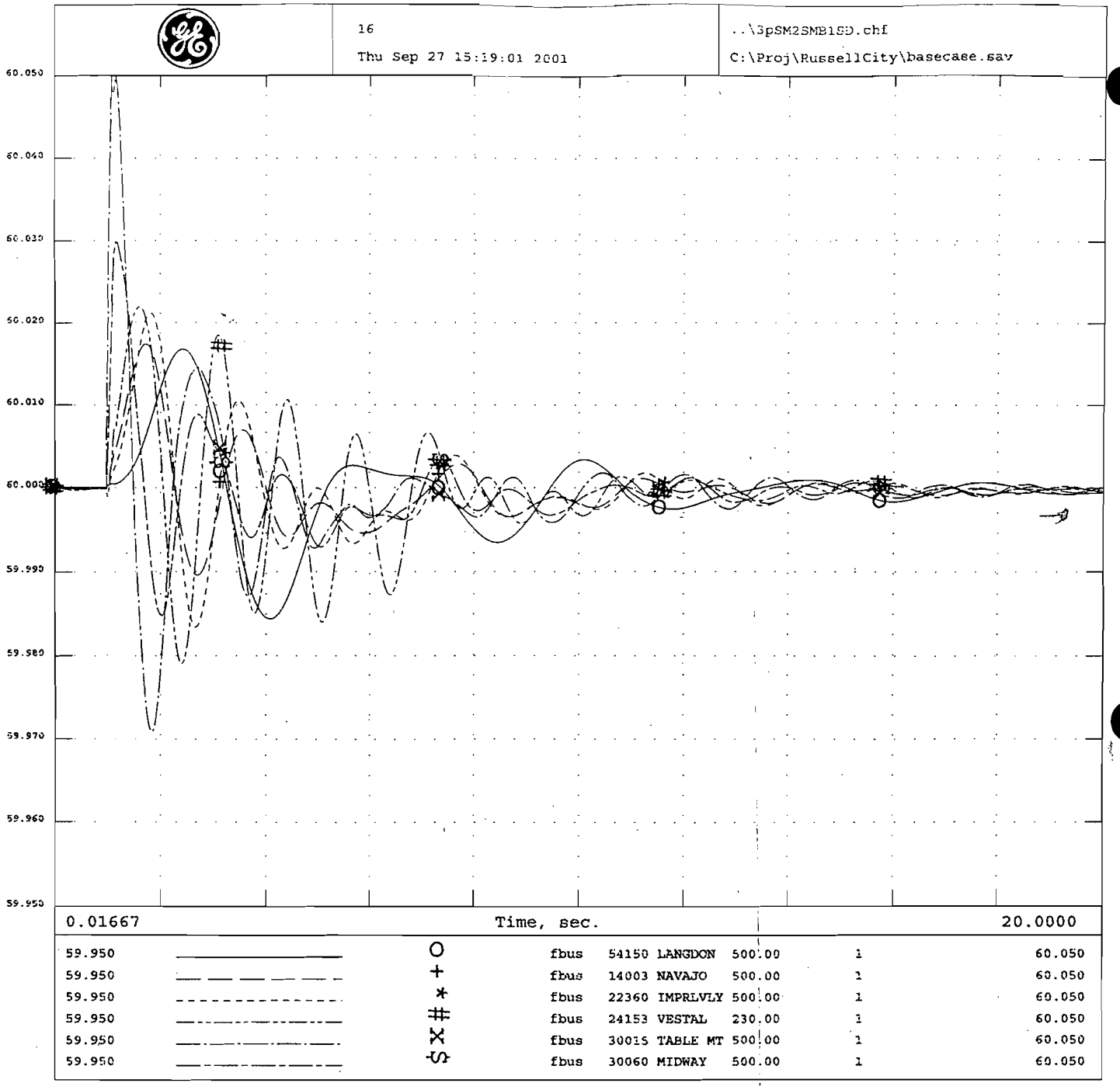

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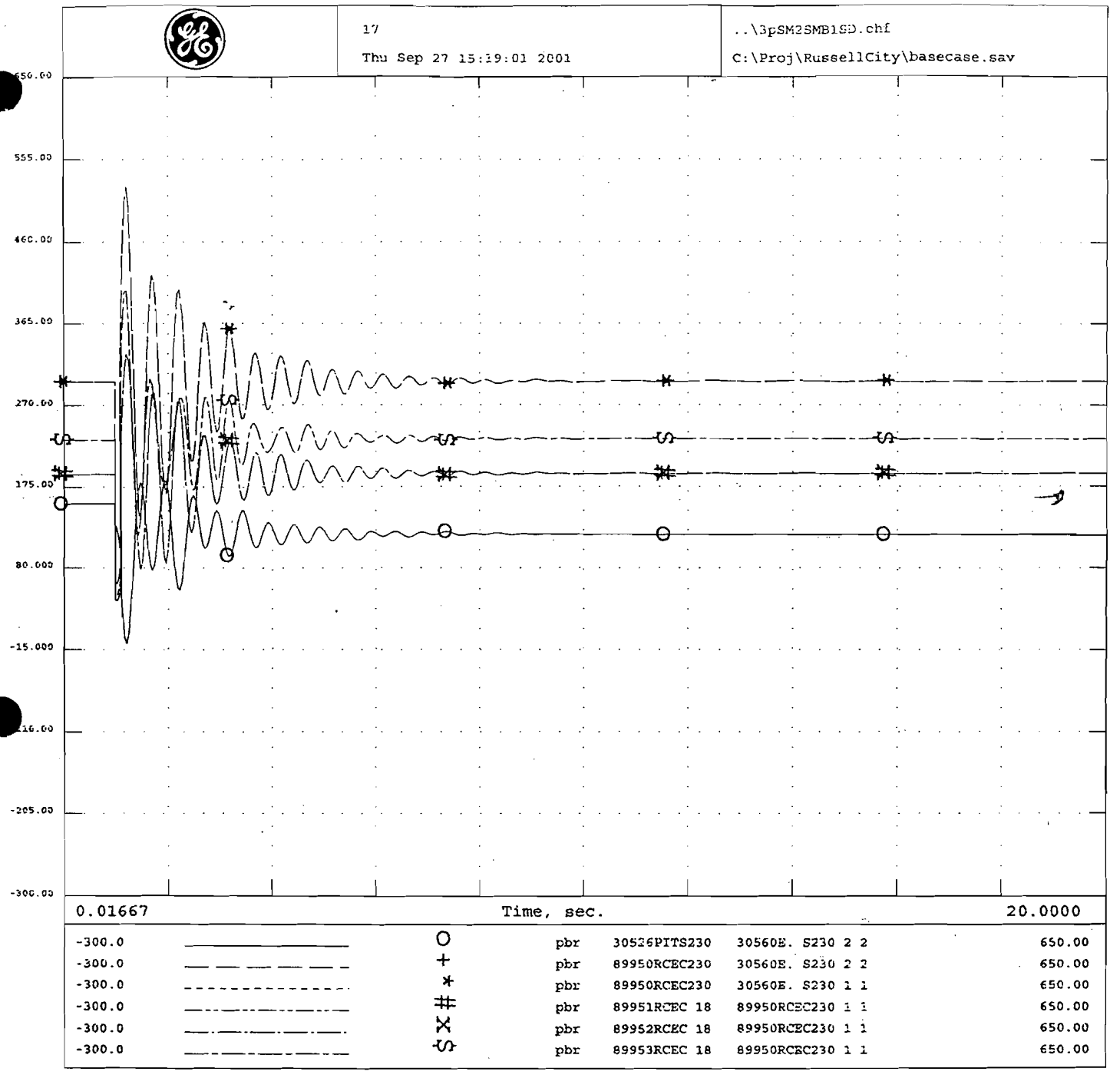

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Calpine/Bechtel Joint Development
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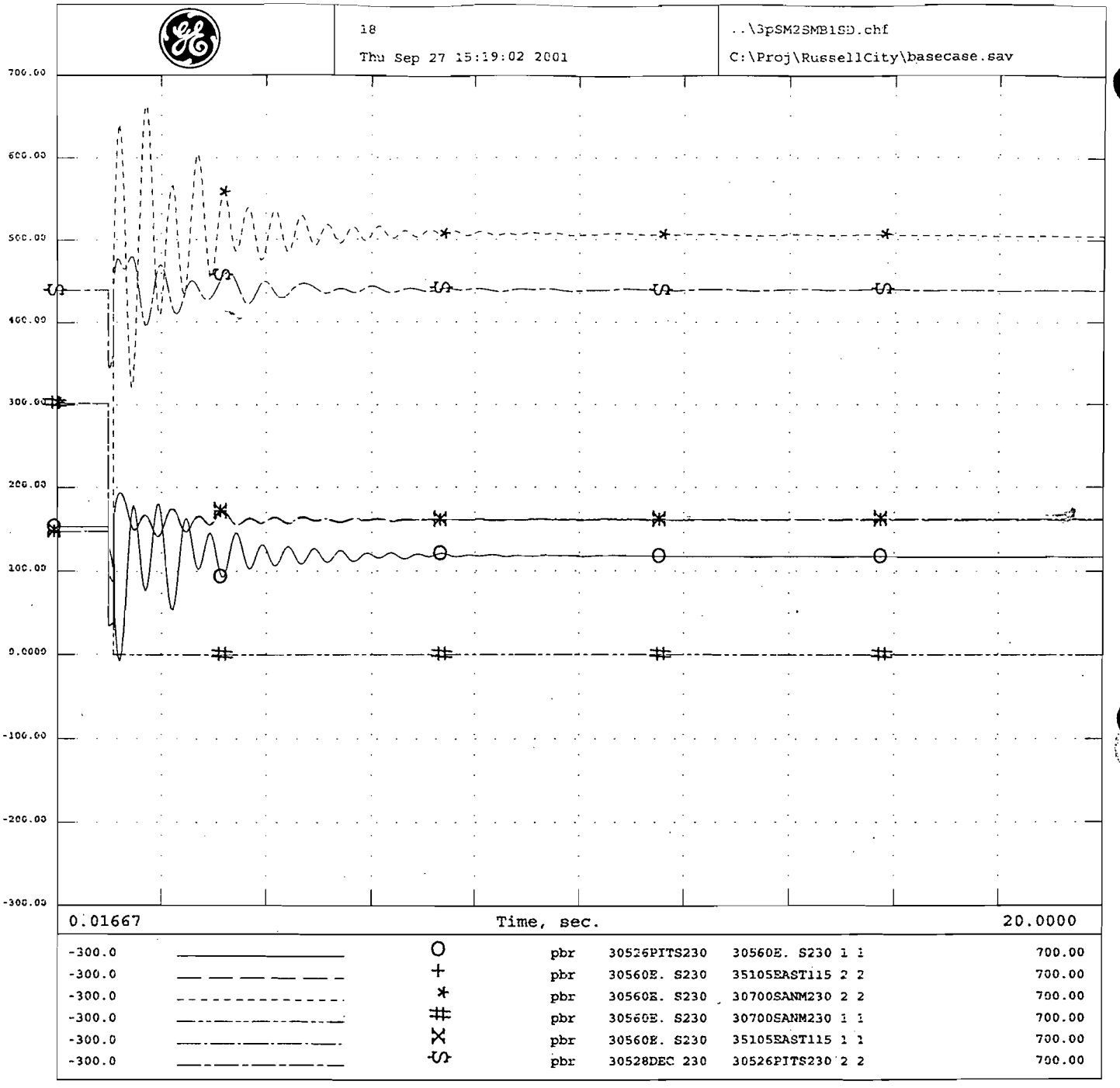

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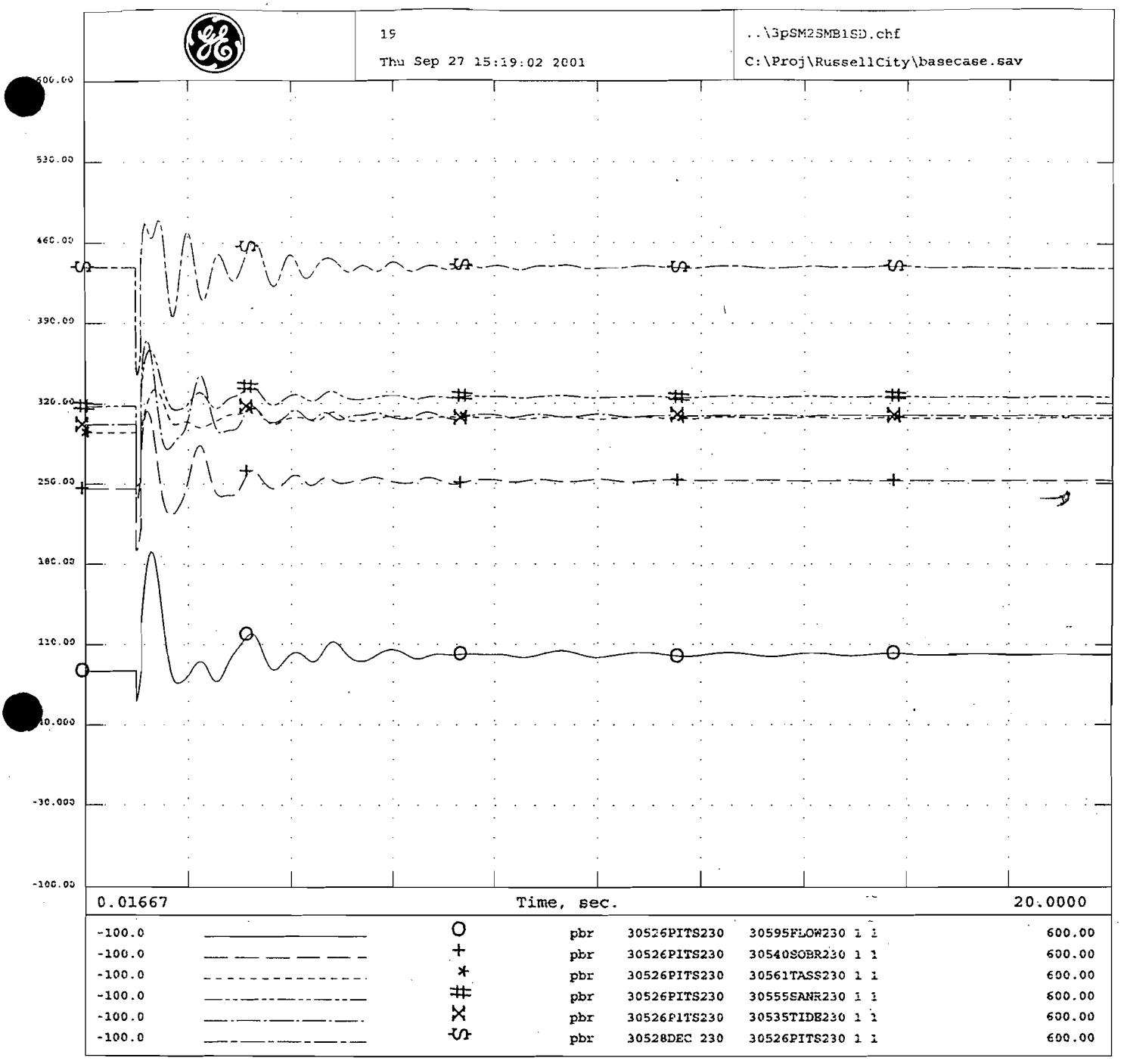

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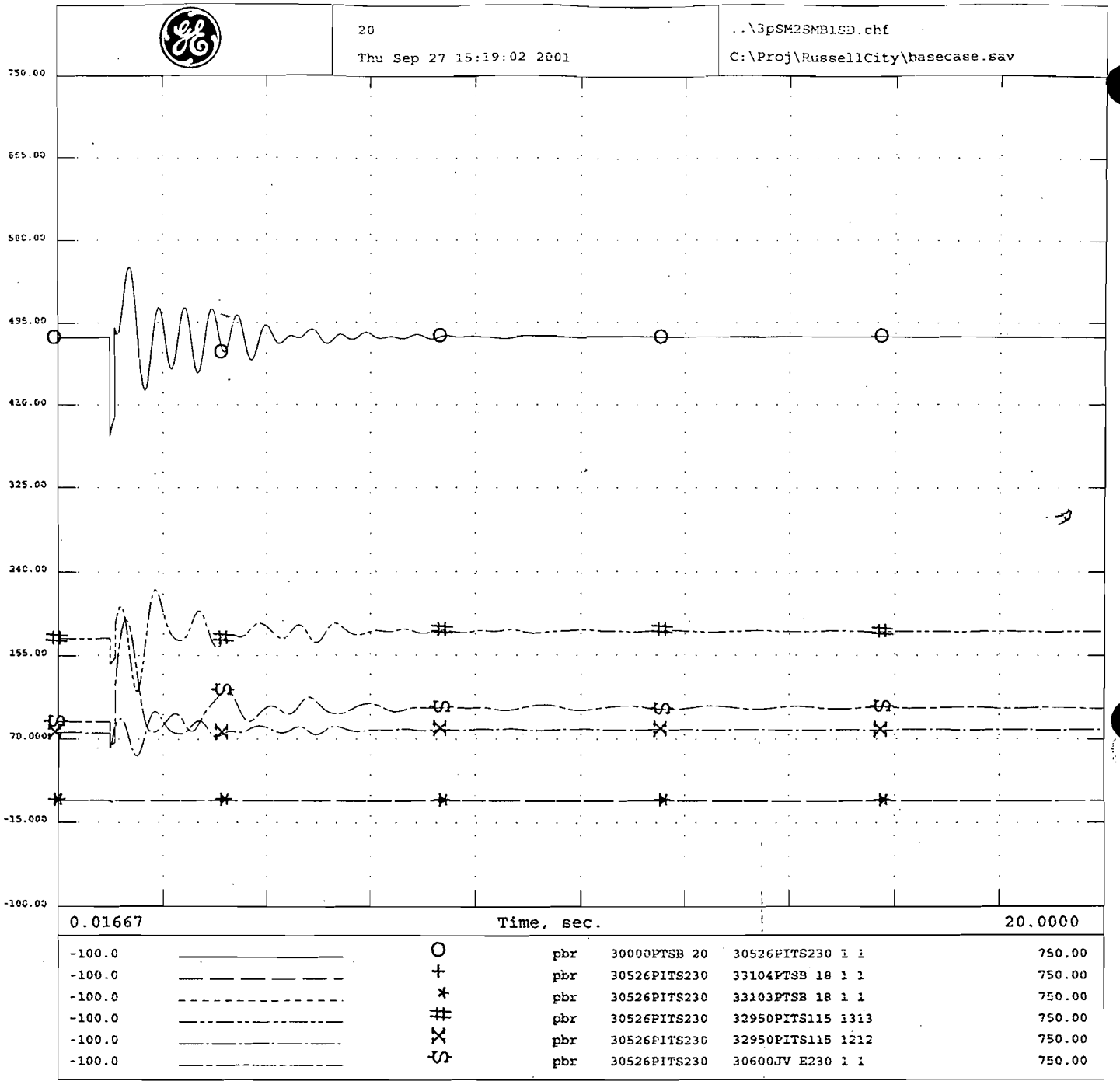

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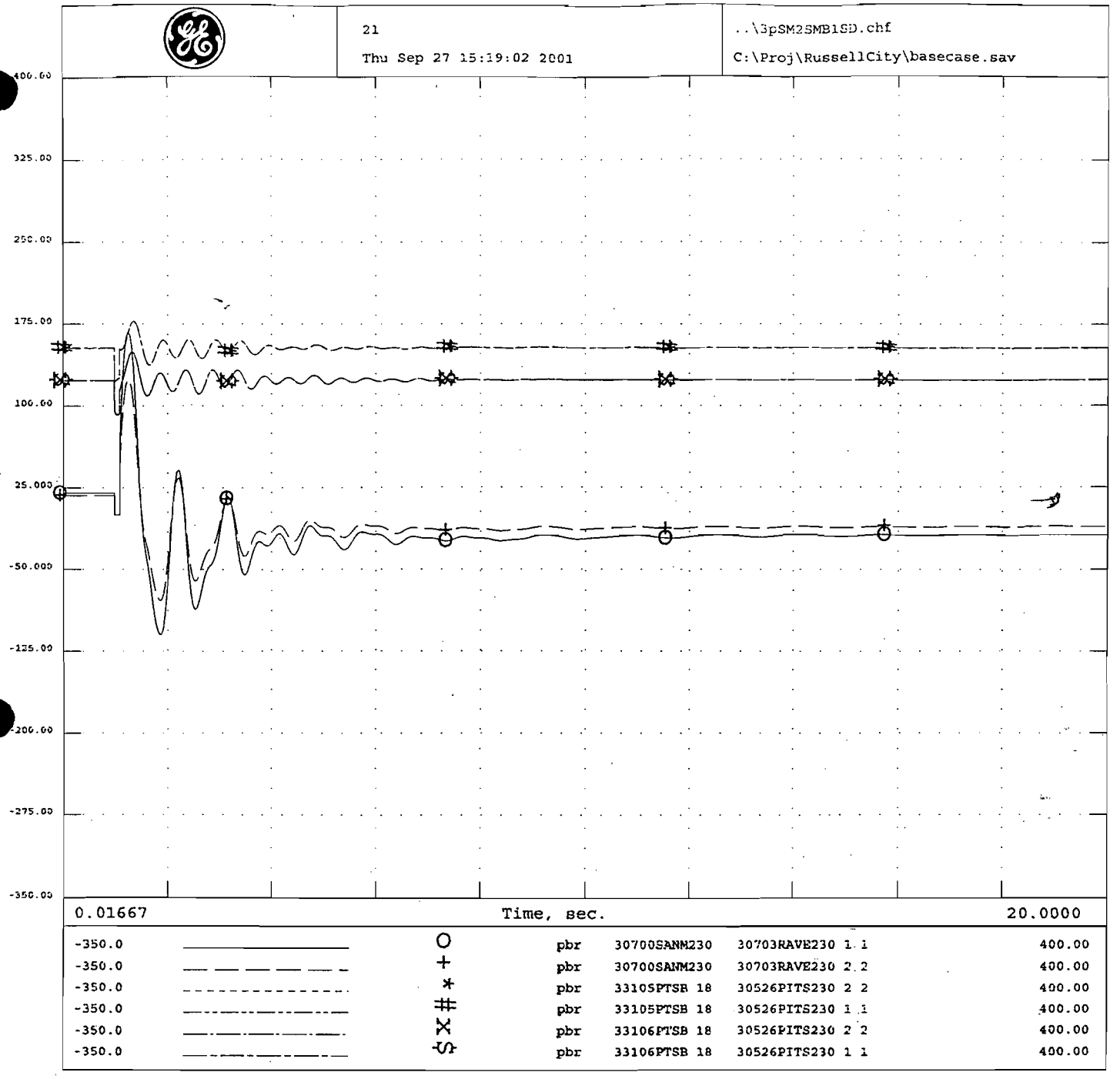

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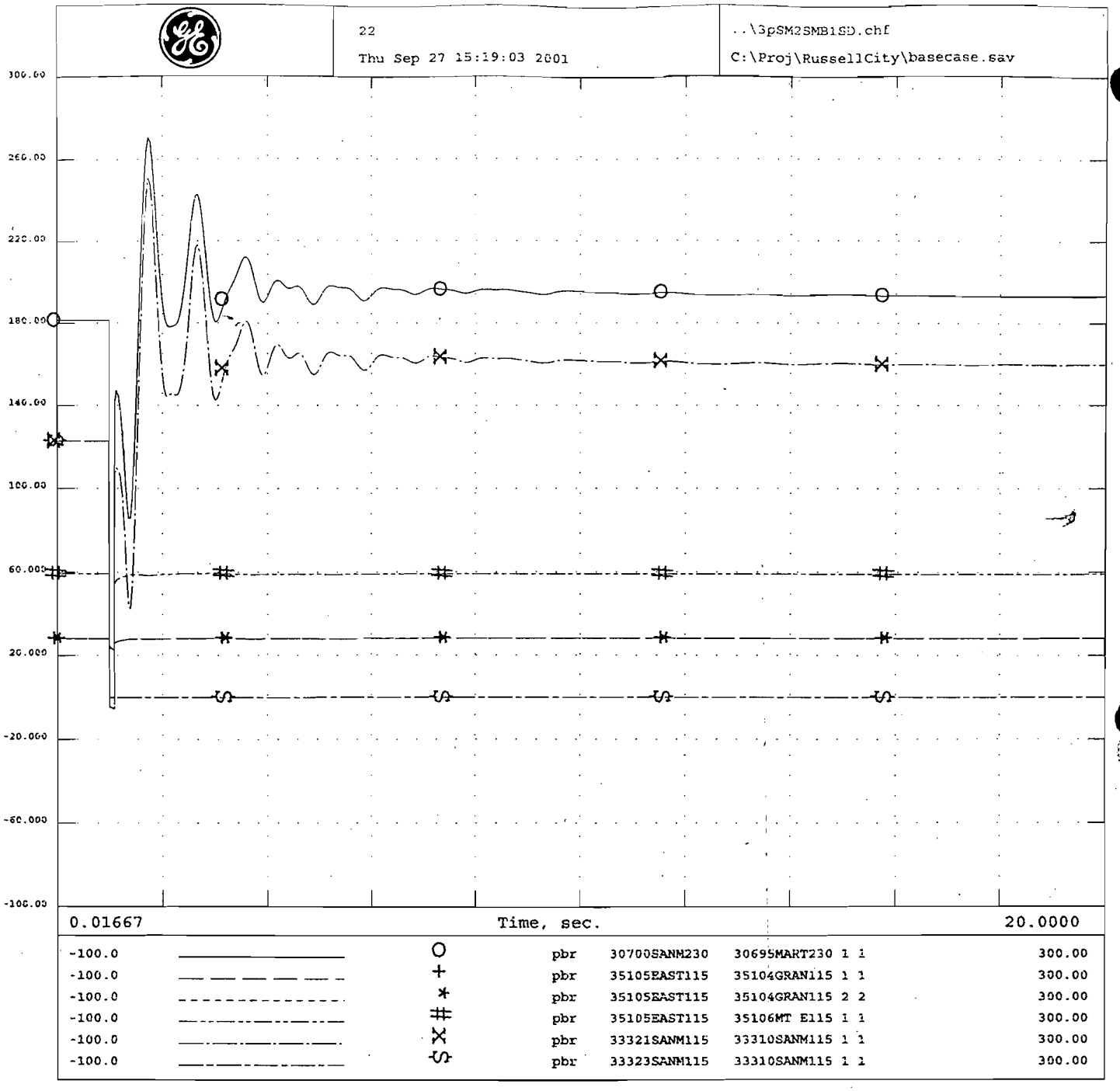

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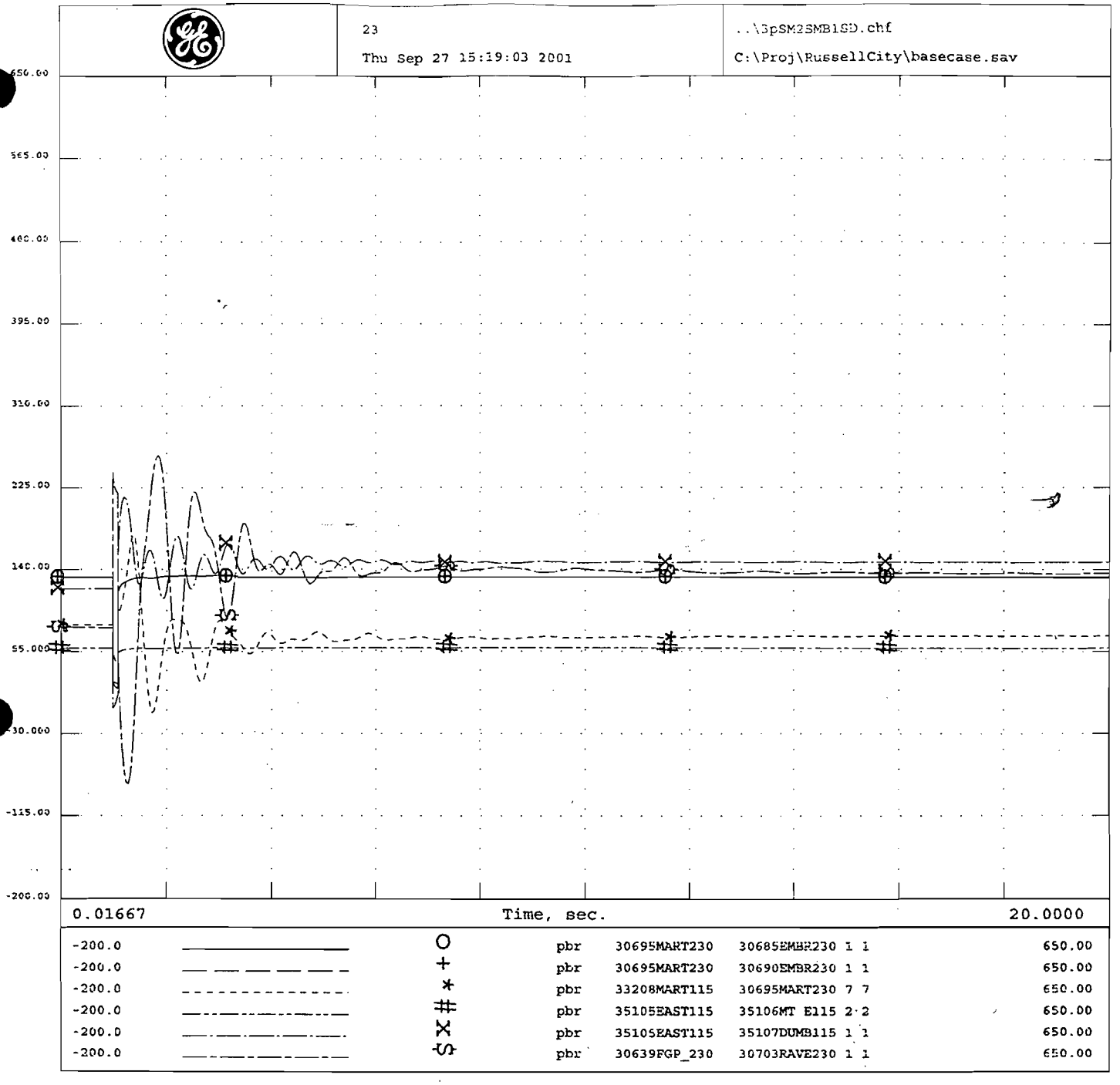

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Calpine/Bechtel Joint Development
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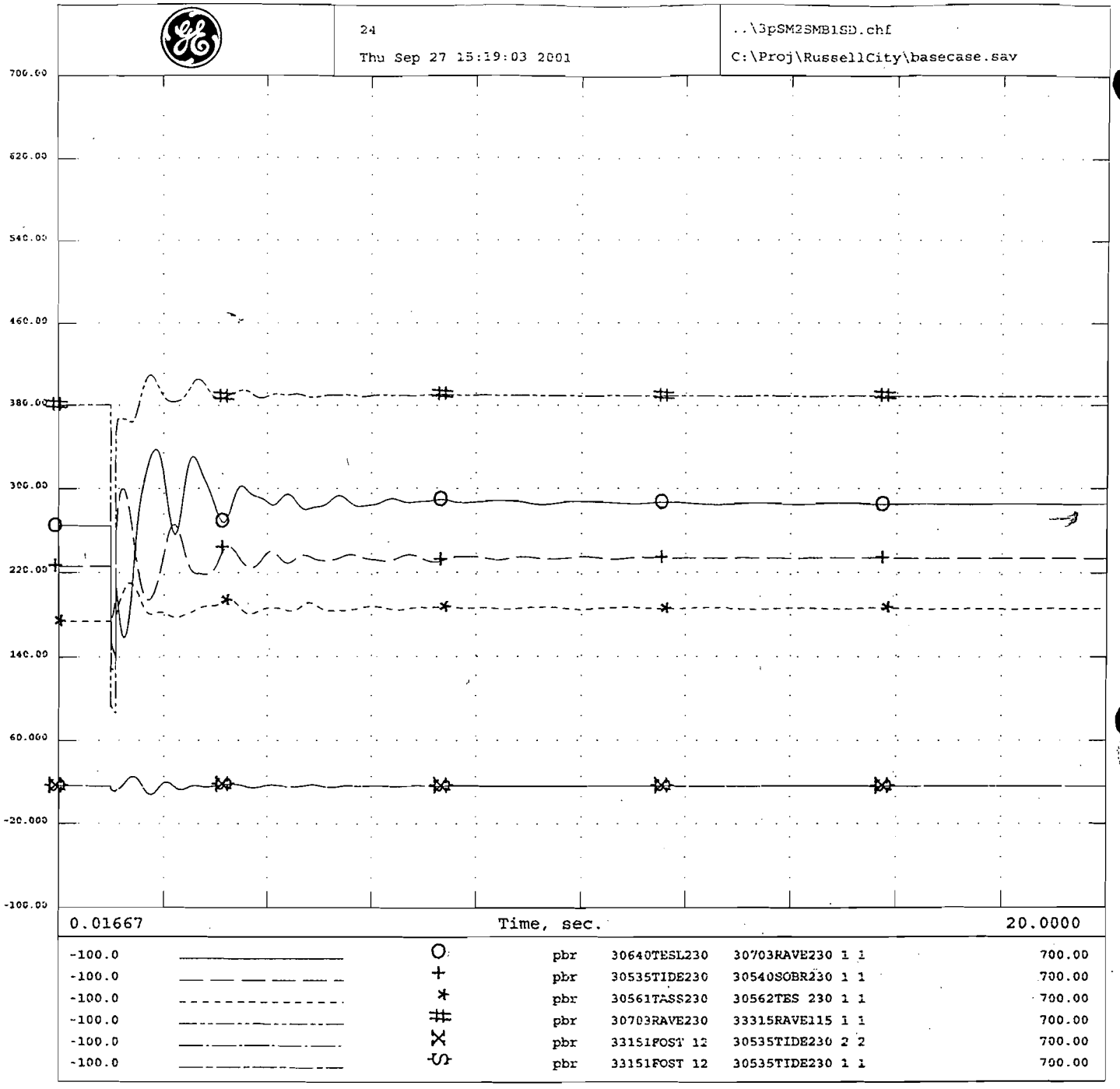
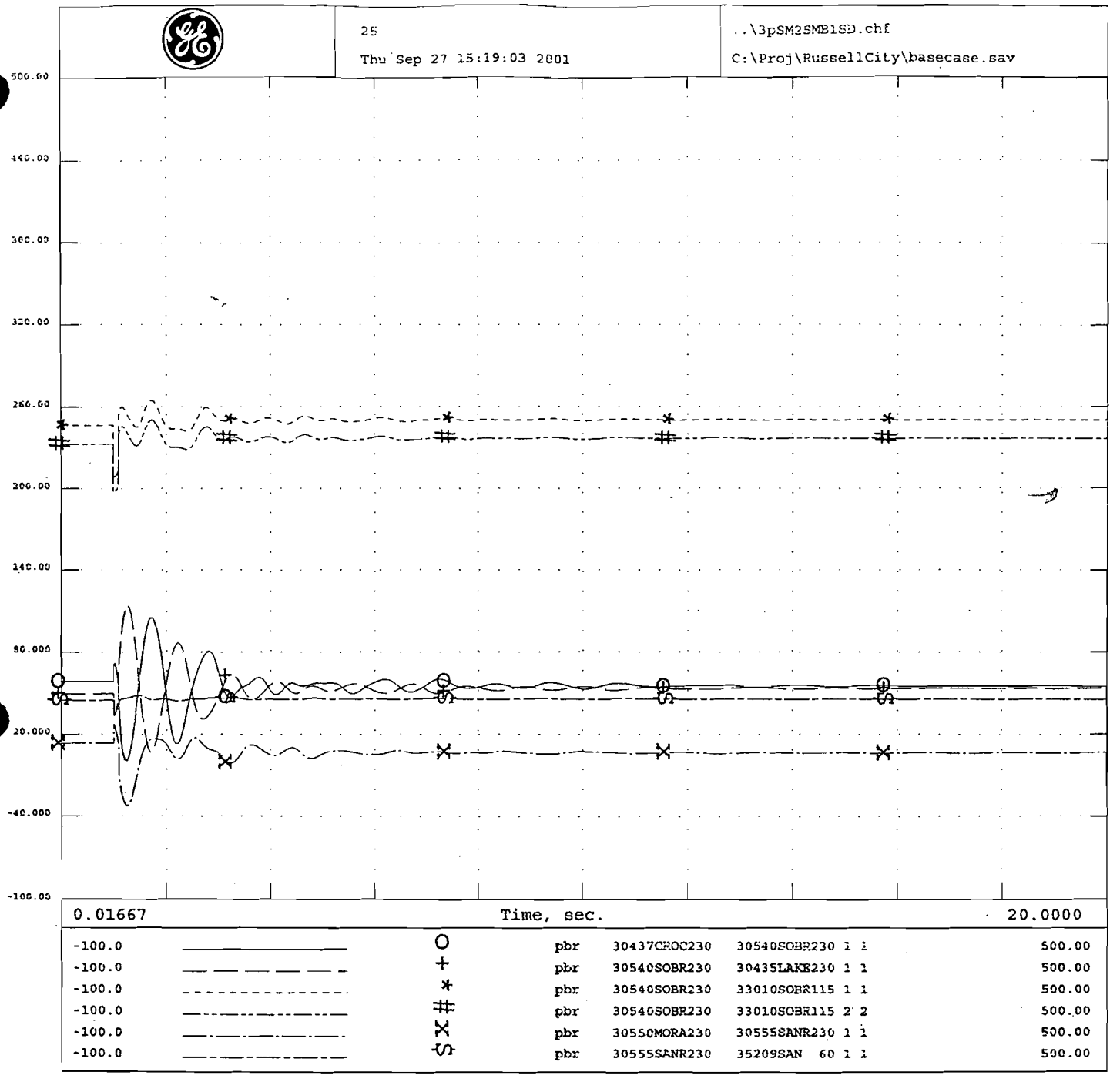


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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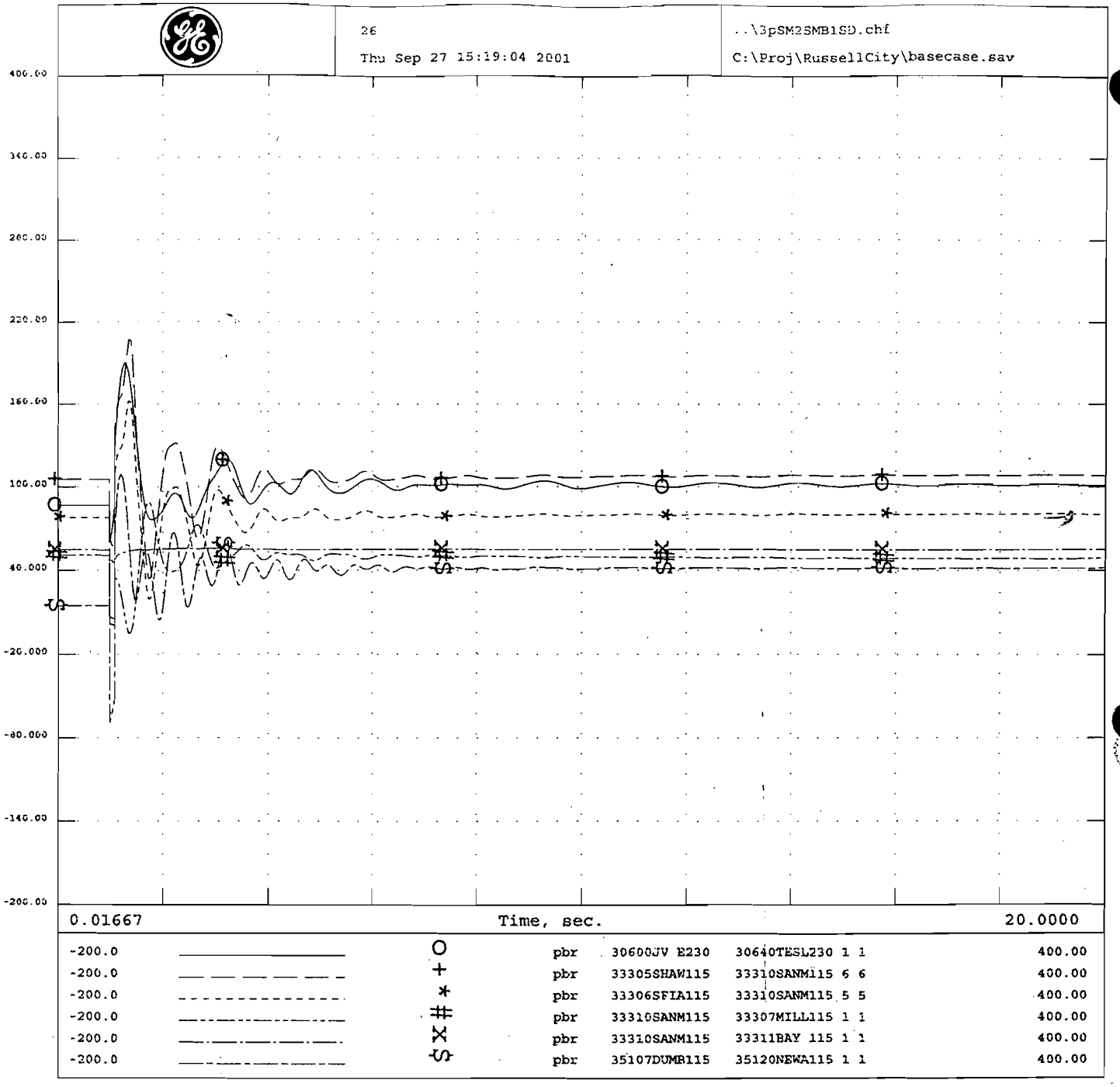

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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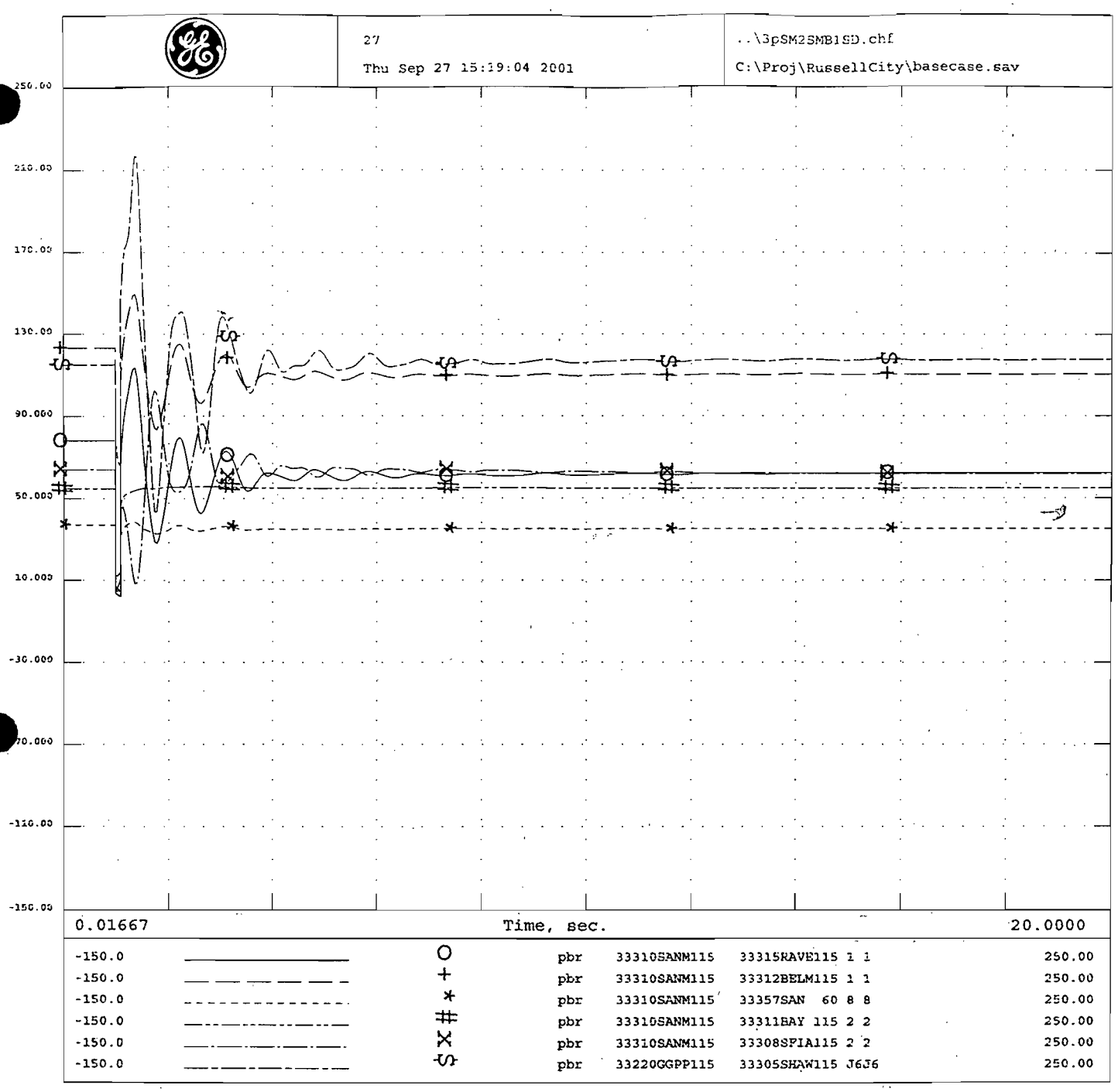
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 1, section E
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 1, section E
RUN  9
CC
CC   Fault San Mateo 230 kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230 kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip San Mateo bus 1, section E
DL   6.0 "SANMATEO" 230. "RAVENSWD" 230. "2 "
CC
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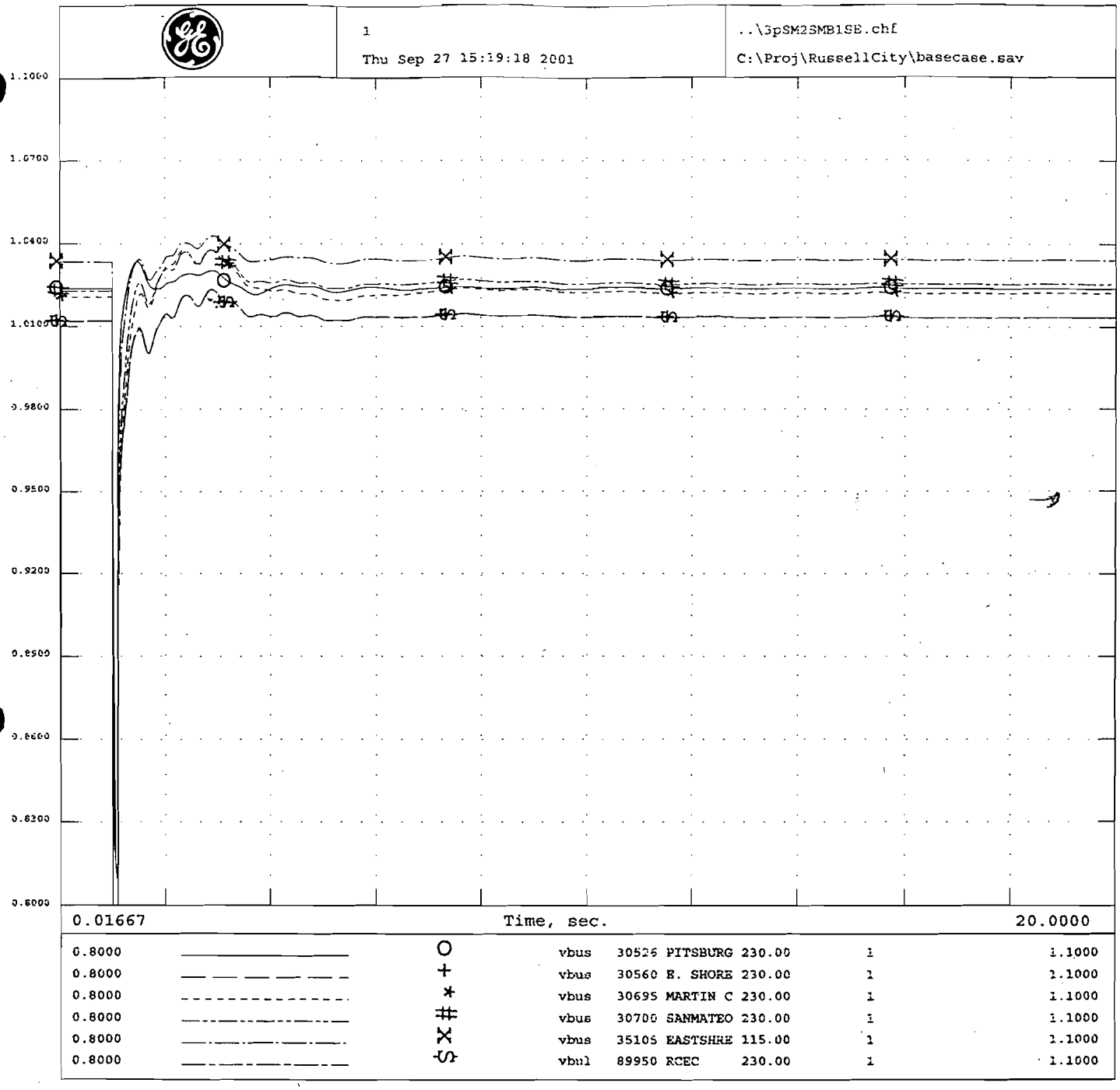

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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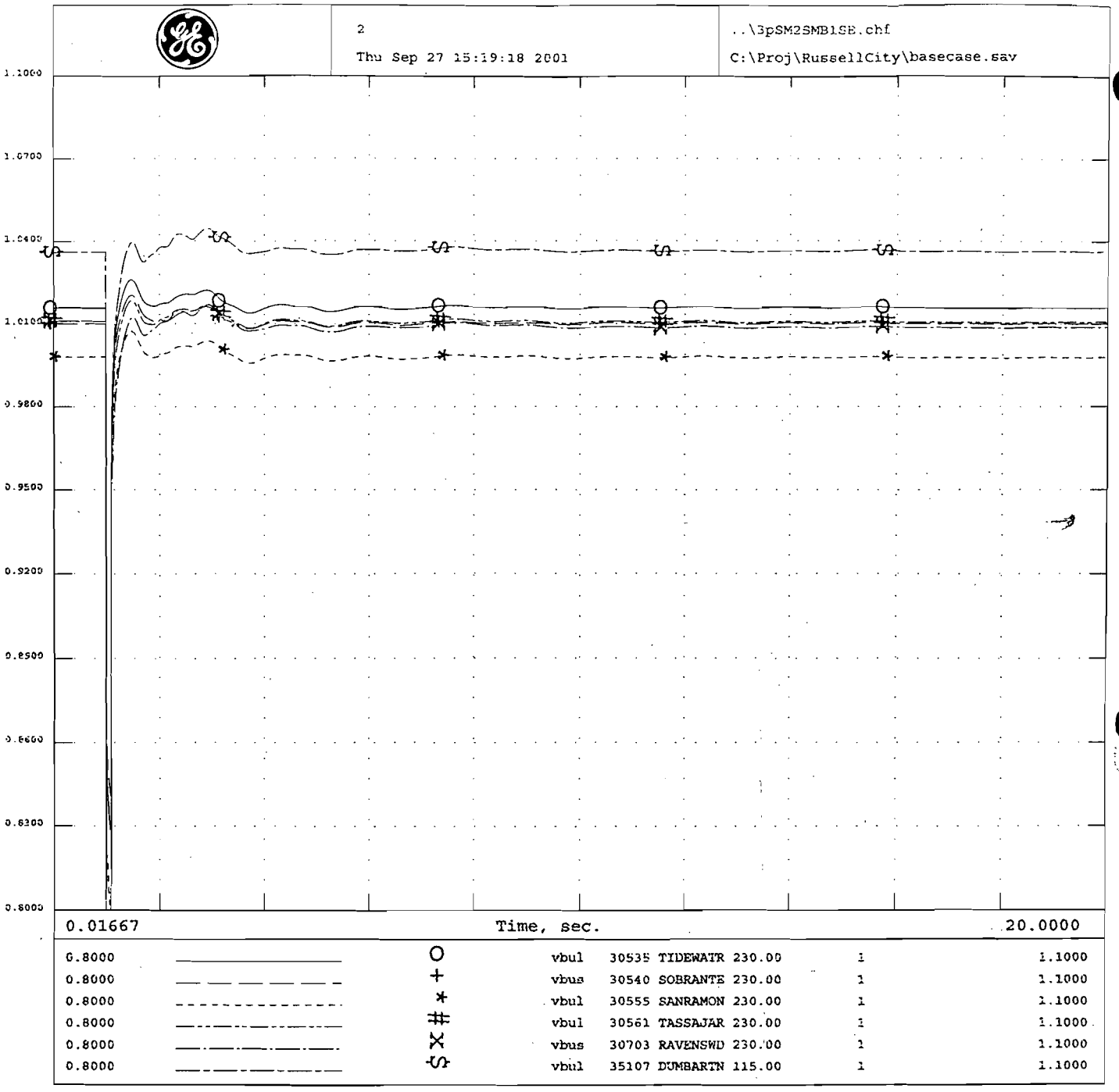
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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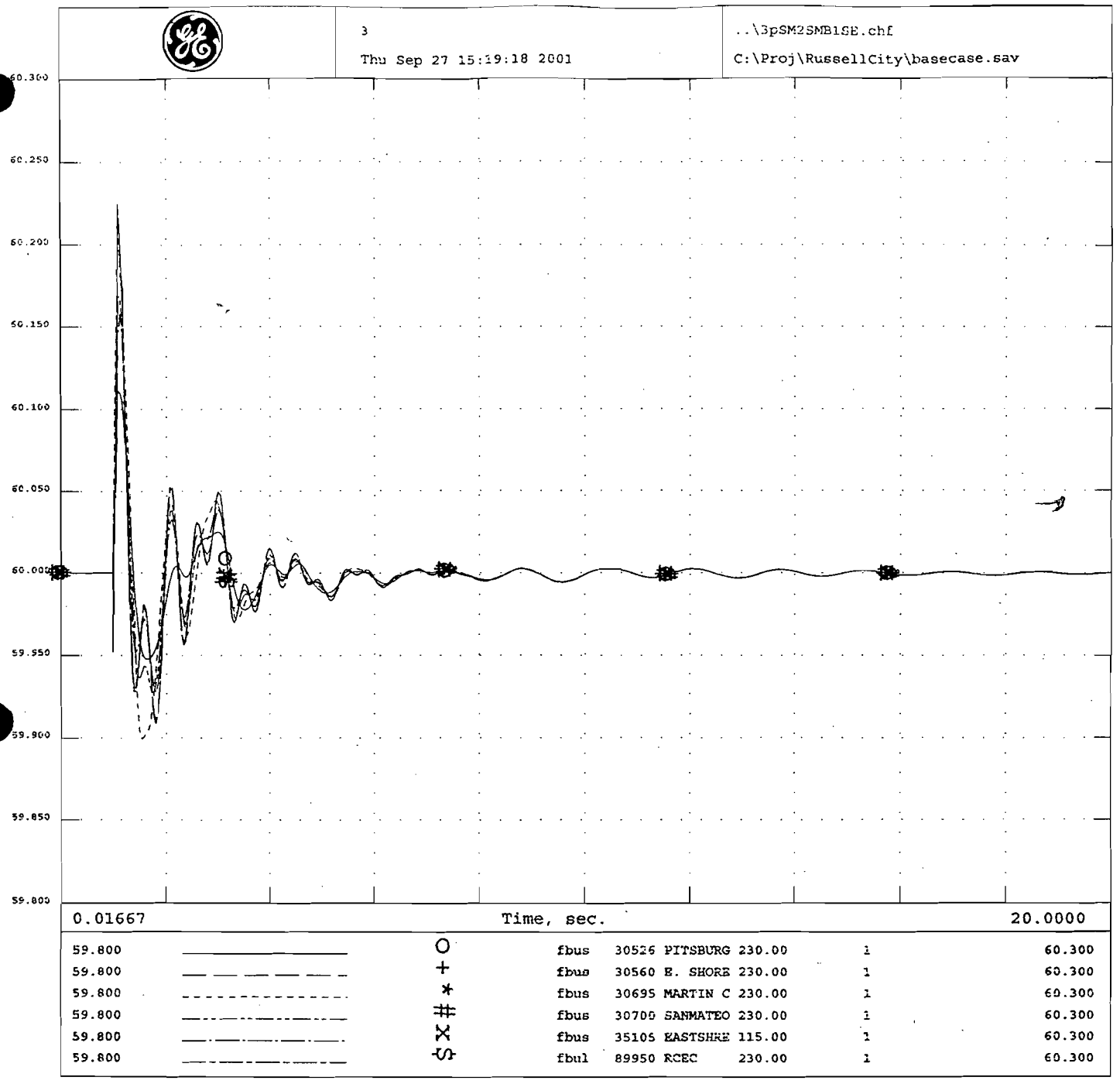
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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2004 Summer Peak Base Case
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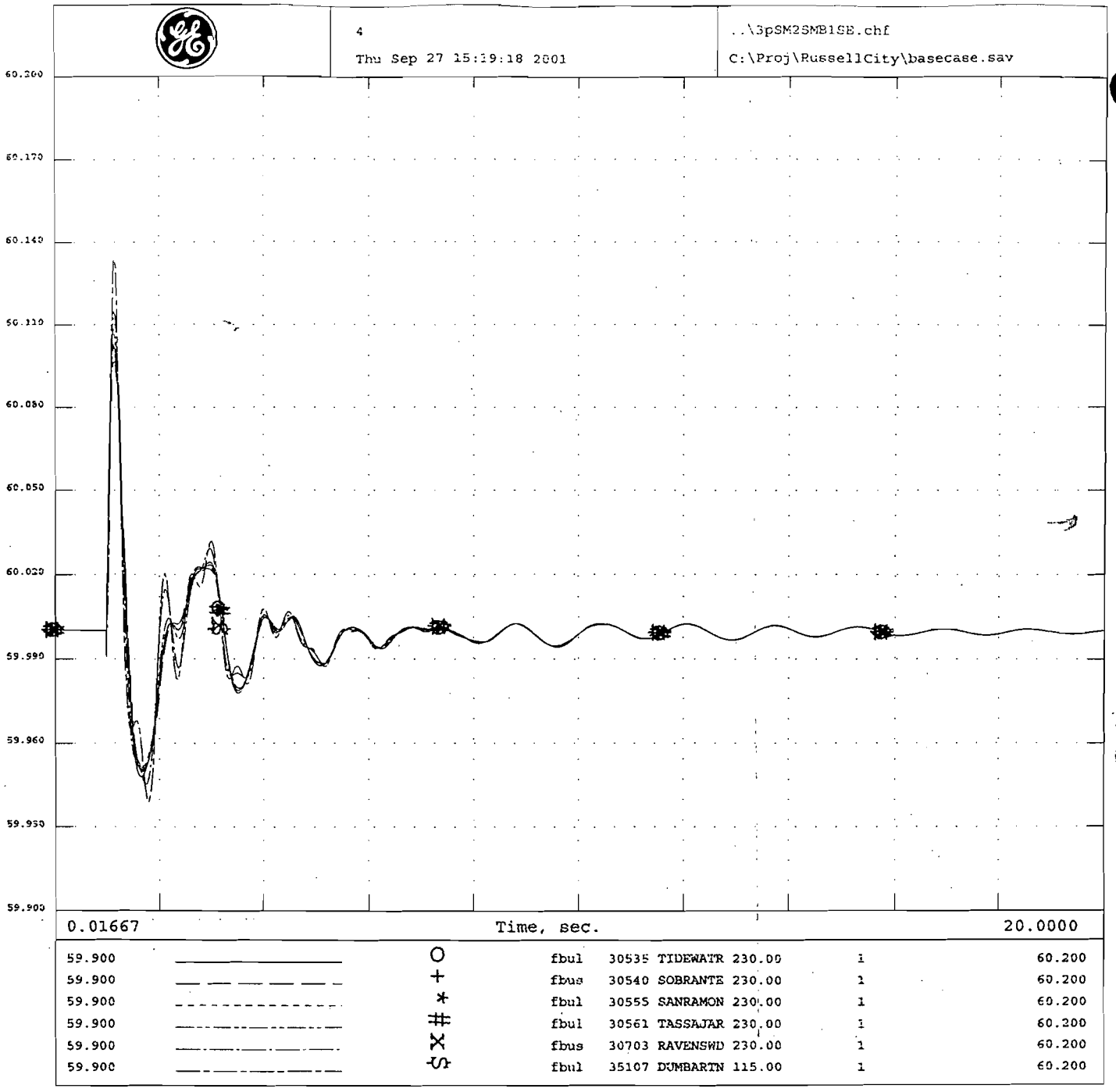
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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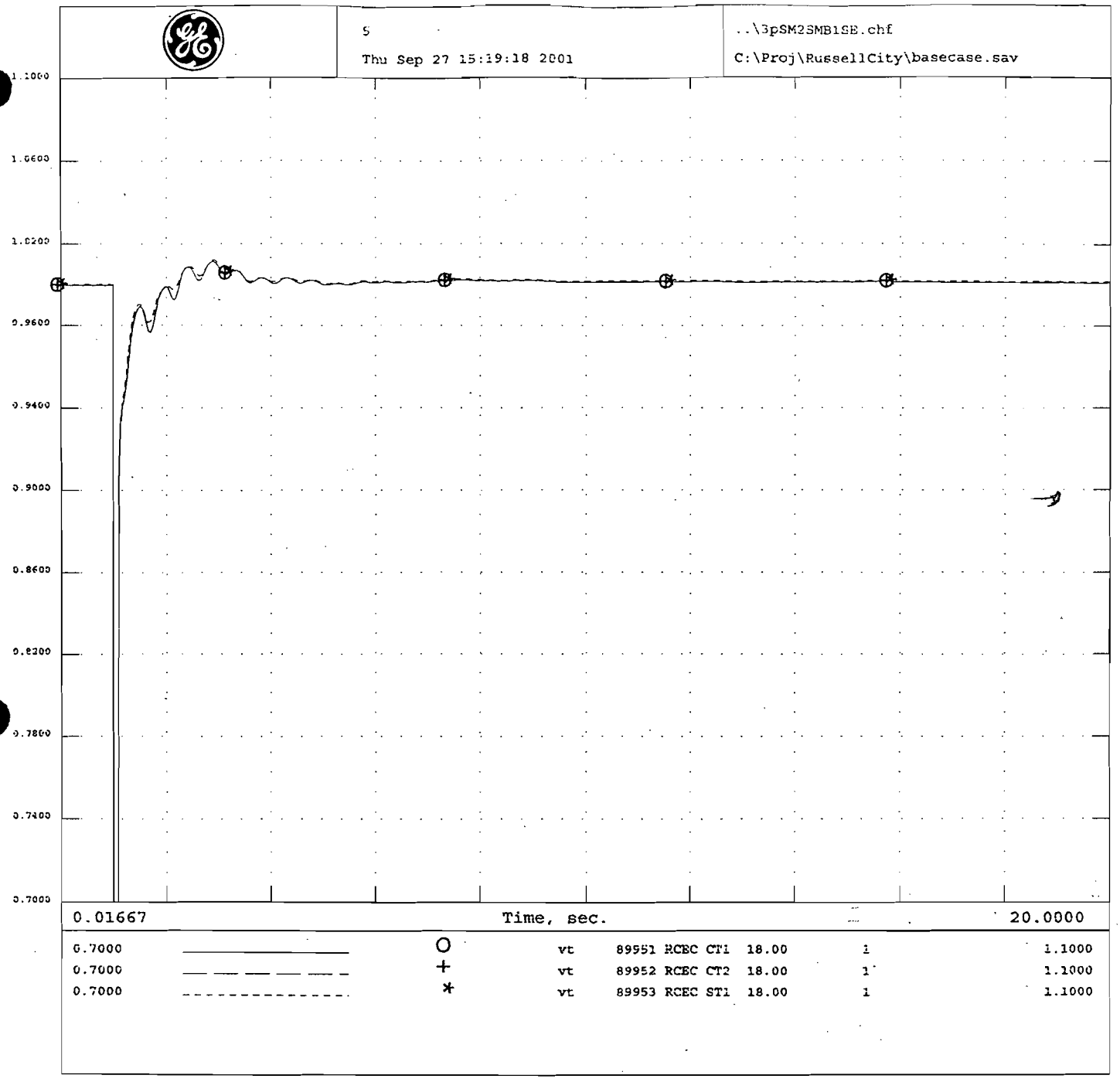

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2004 Summer Peak Base Case
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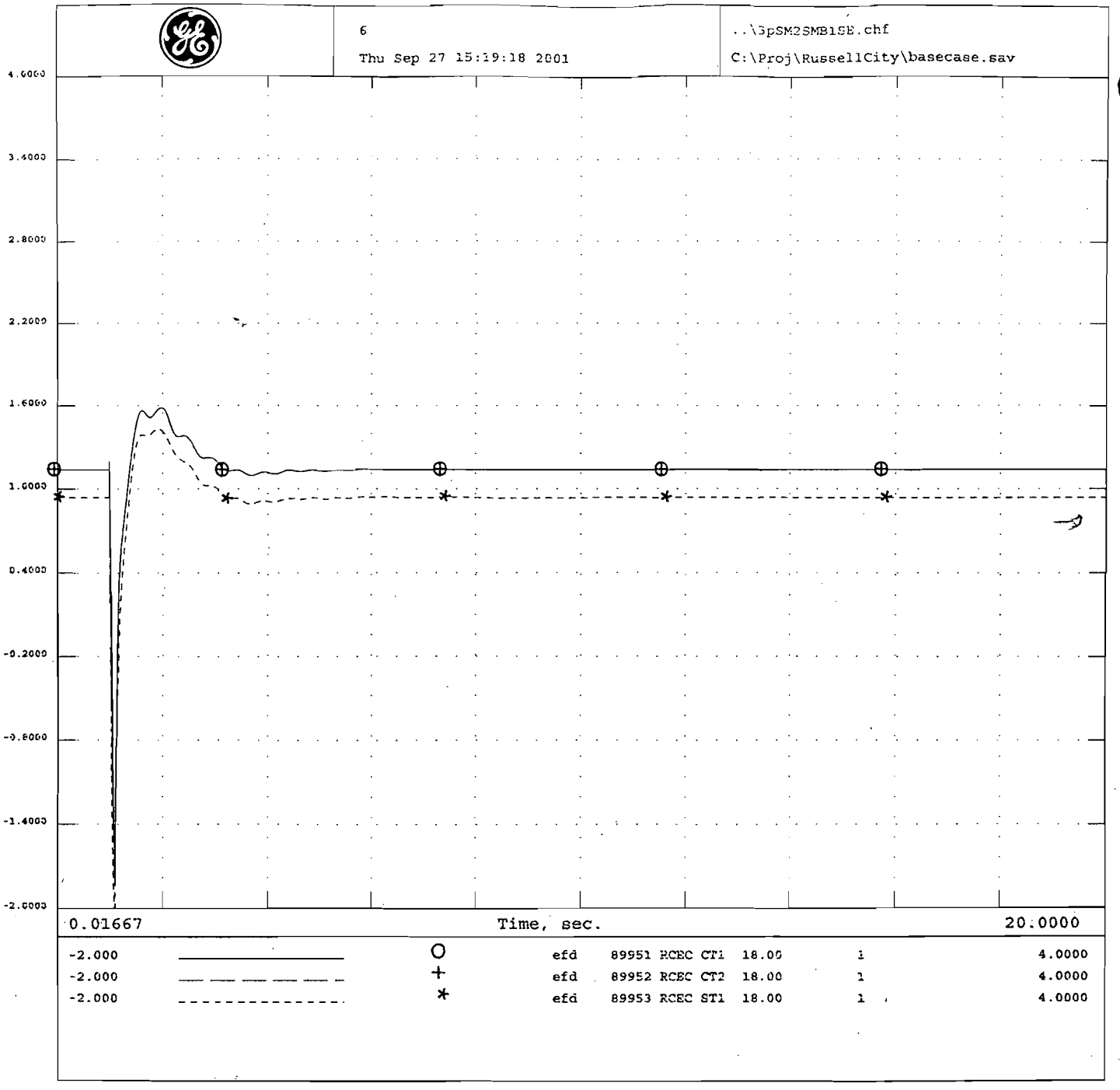
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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2004 Summer Peak Base Case
RCEC @ 610MW
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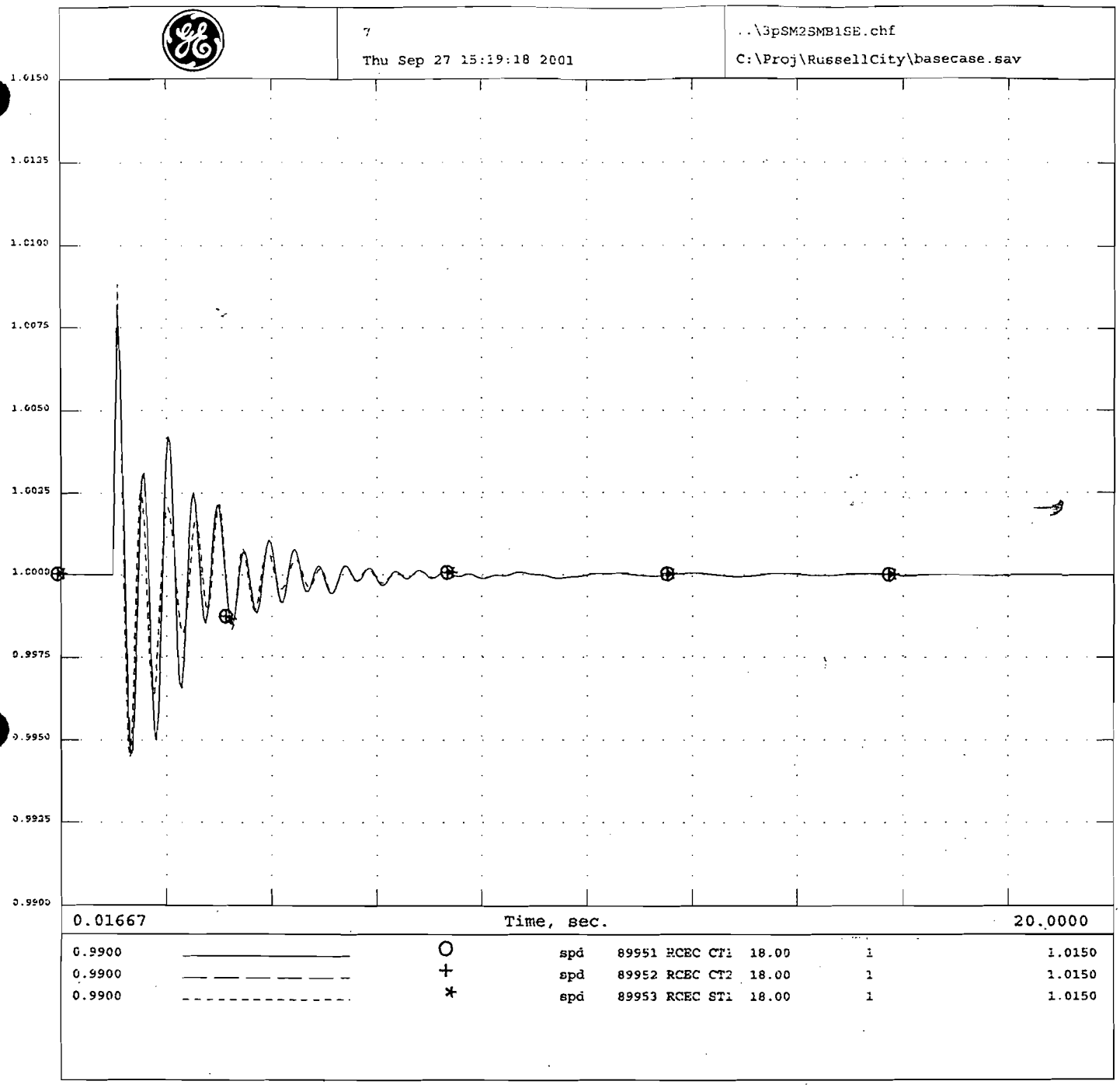
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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2004 Summer Peak Base Case
RCEC @ 610MW
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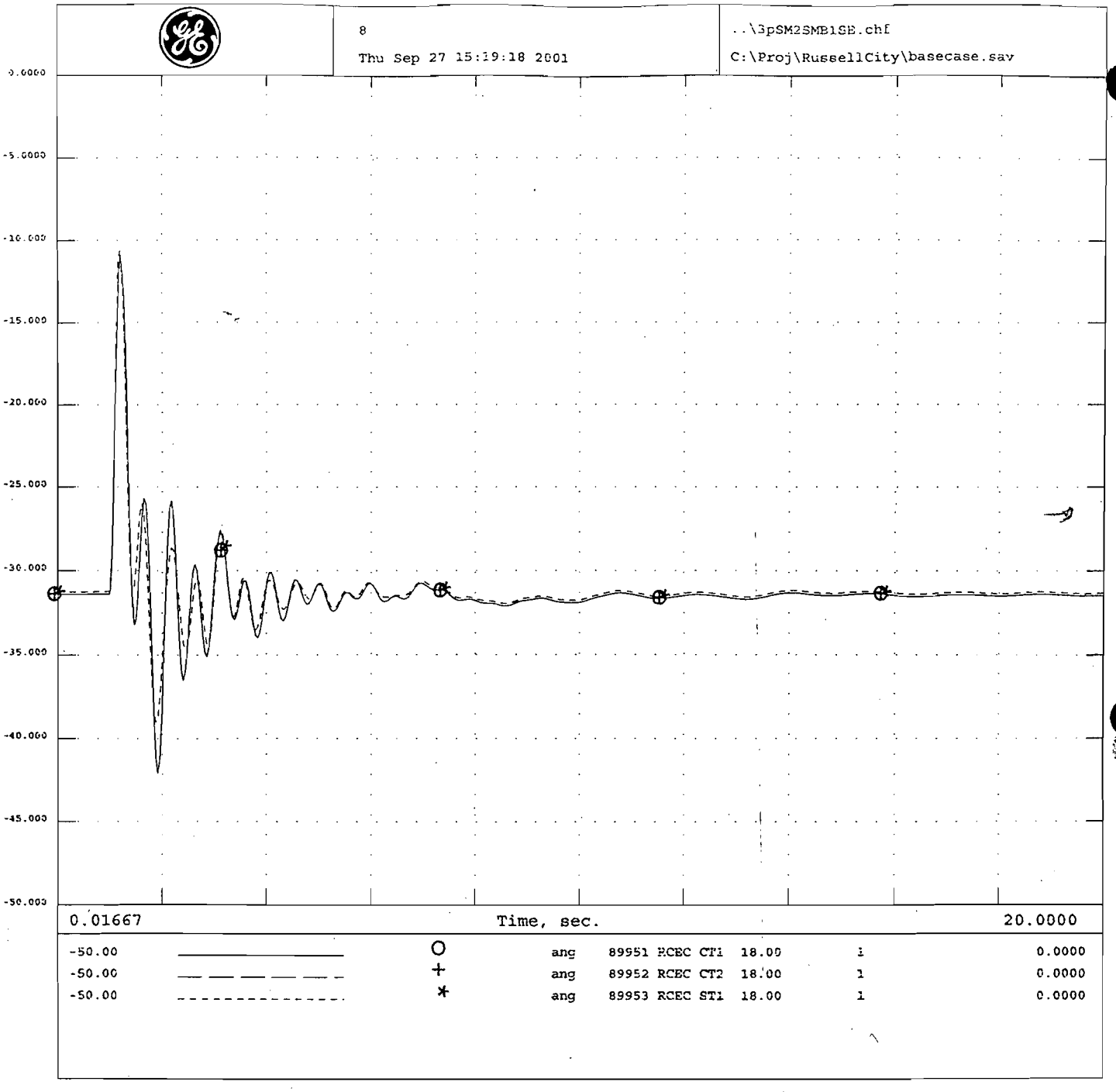
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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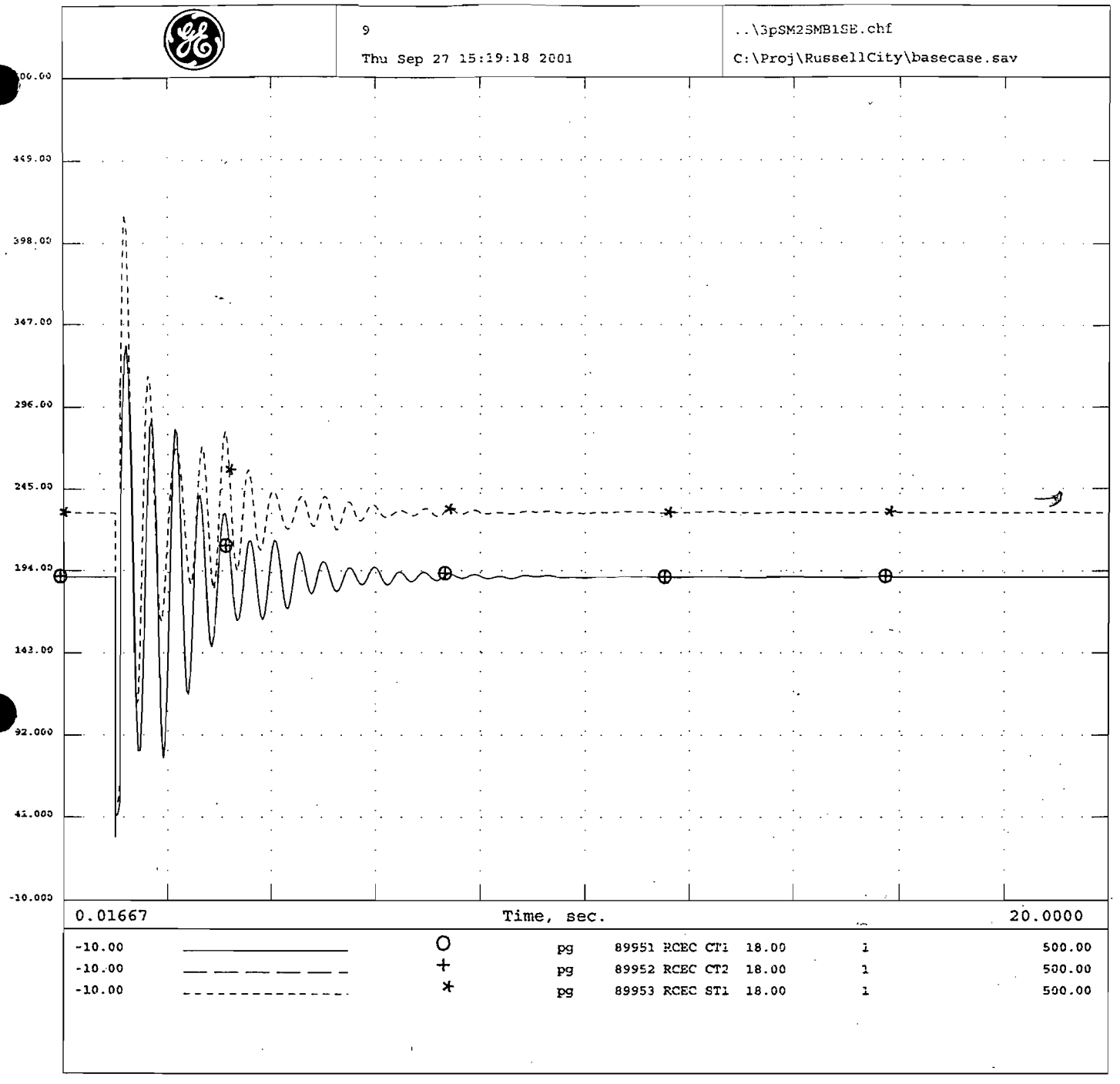
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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2004 Summer Peak Base Case
RCEC @ 610MW
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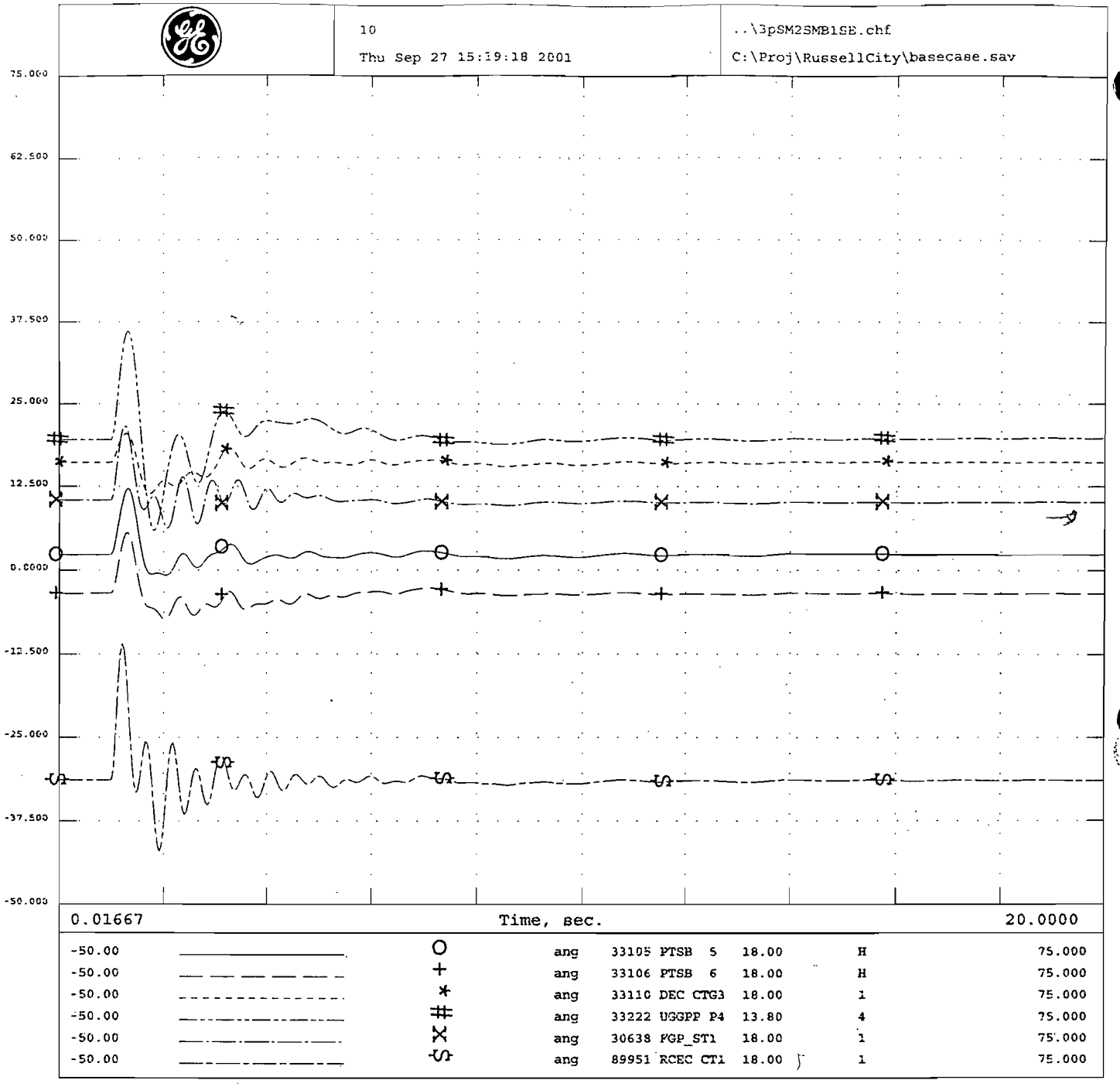
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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2004 Summer Peak Base Case
RCEC @ 610MW
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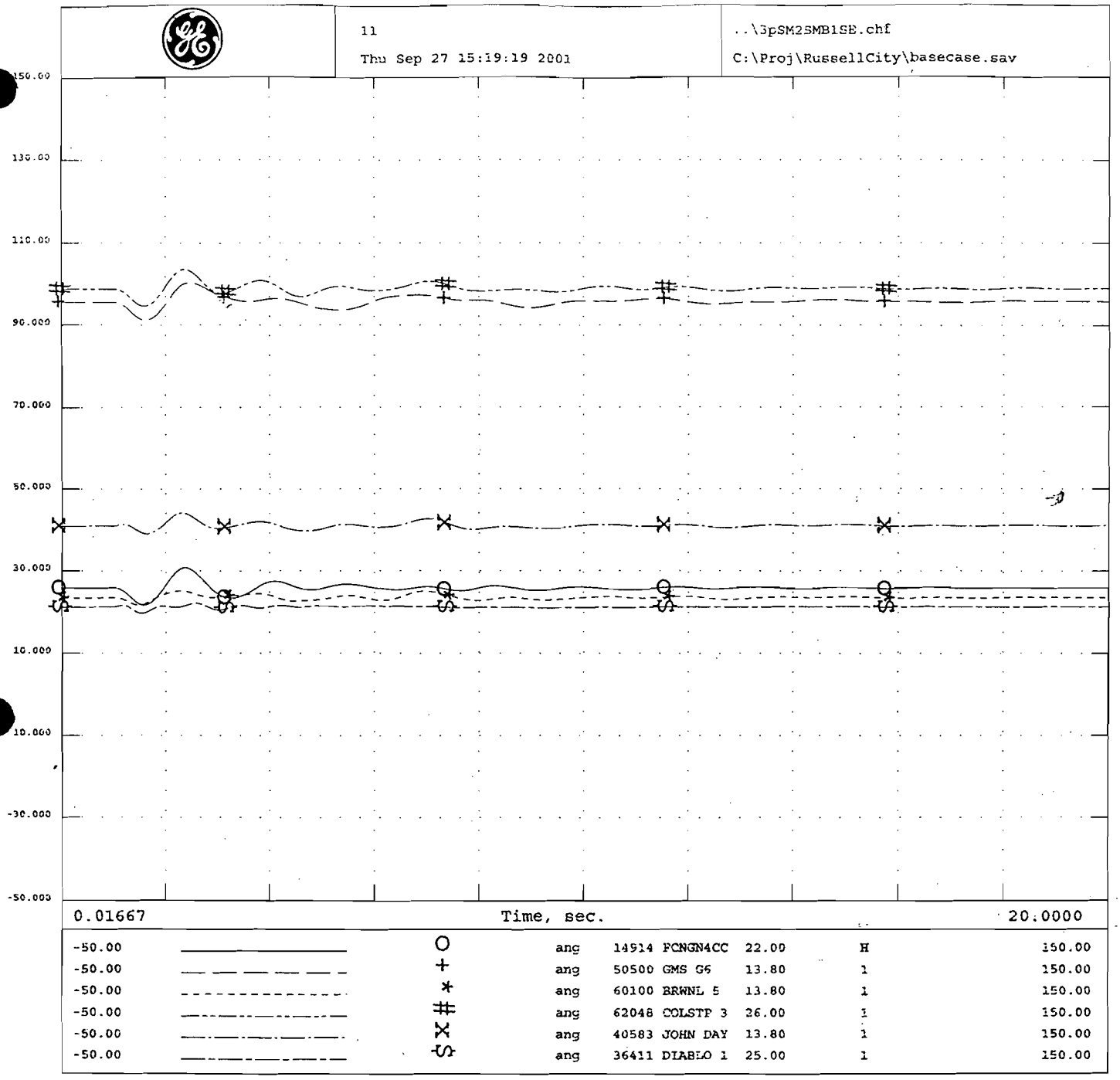
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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RCEC @ 610MW
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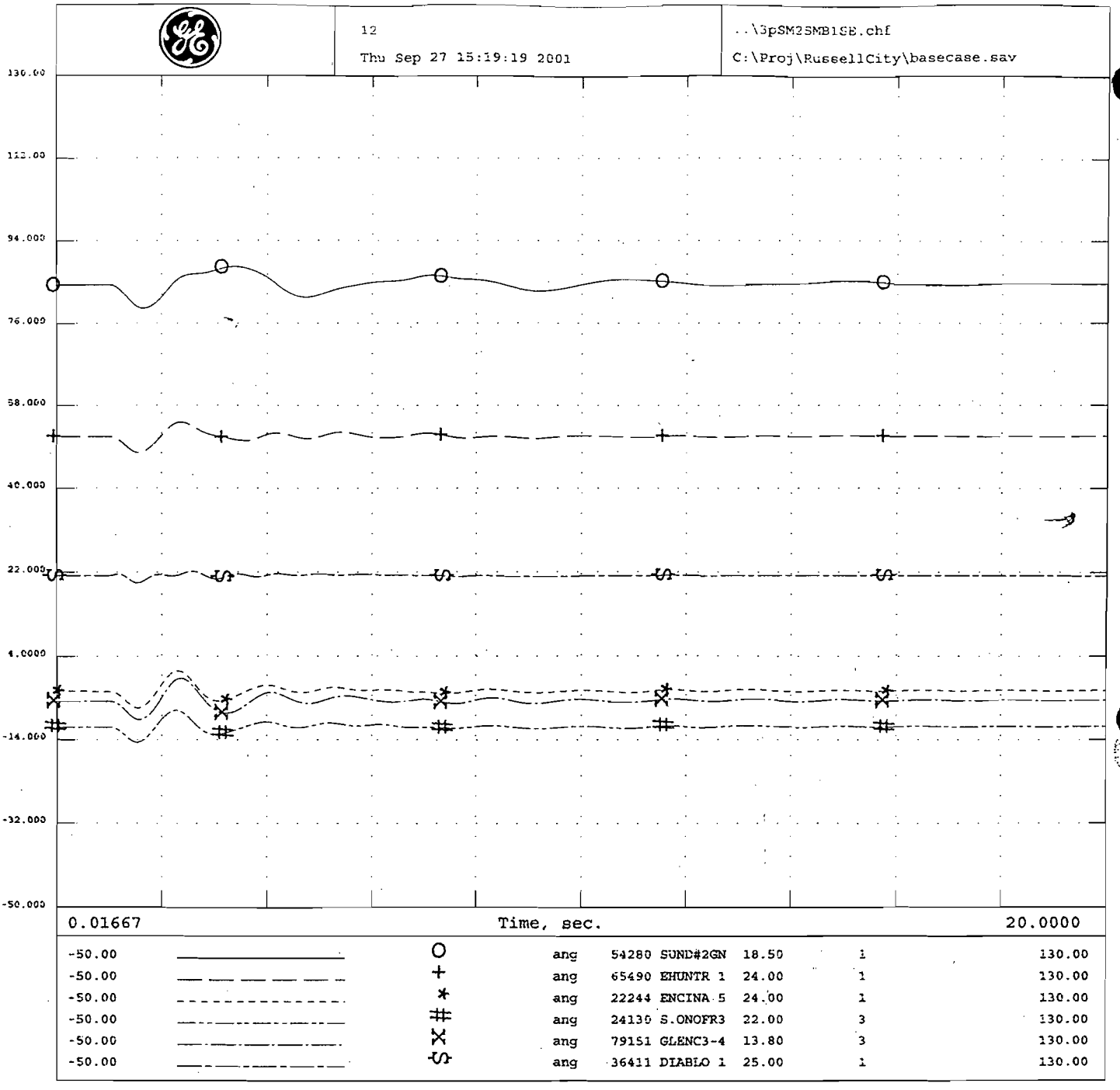
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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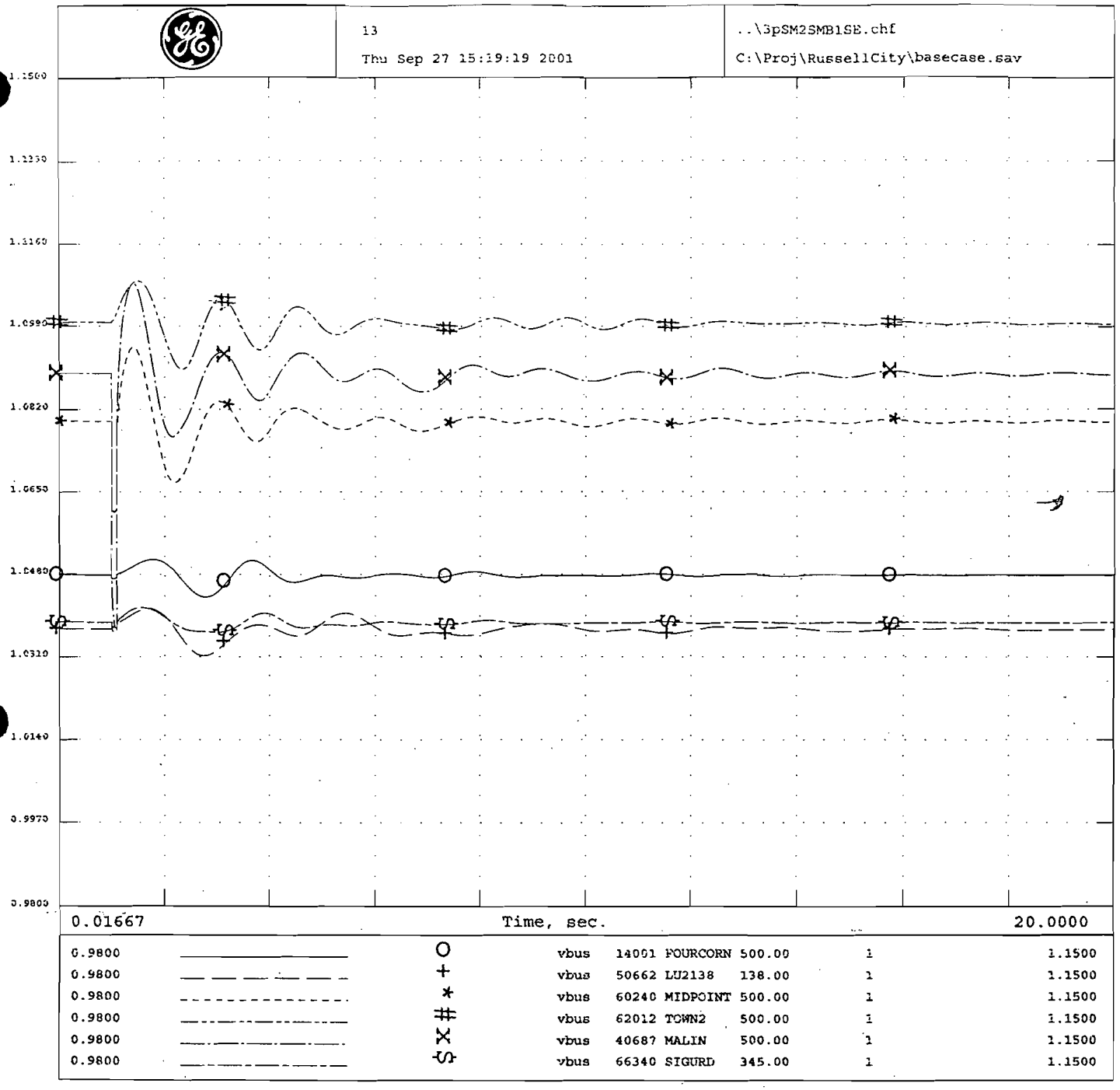
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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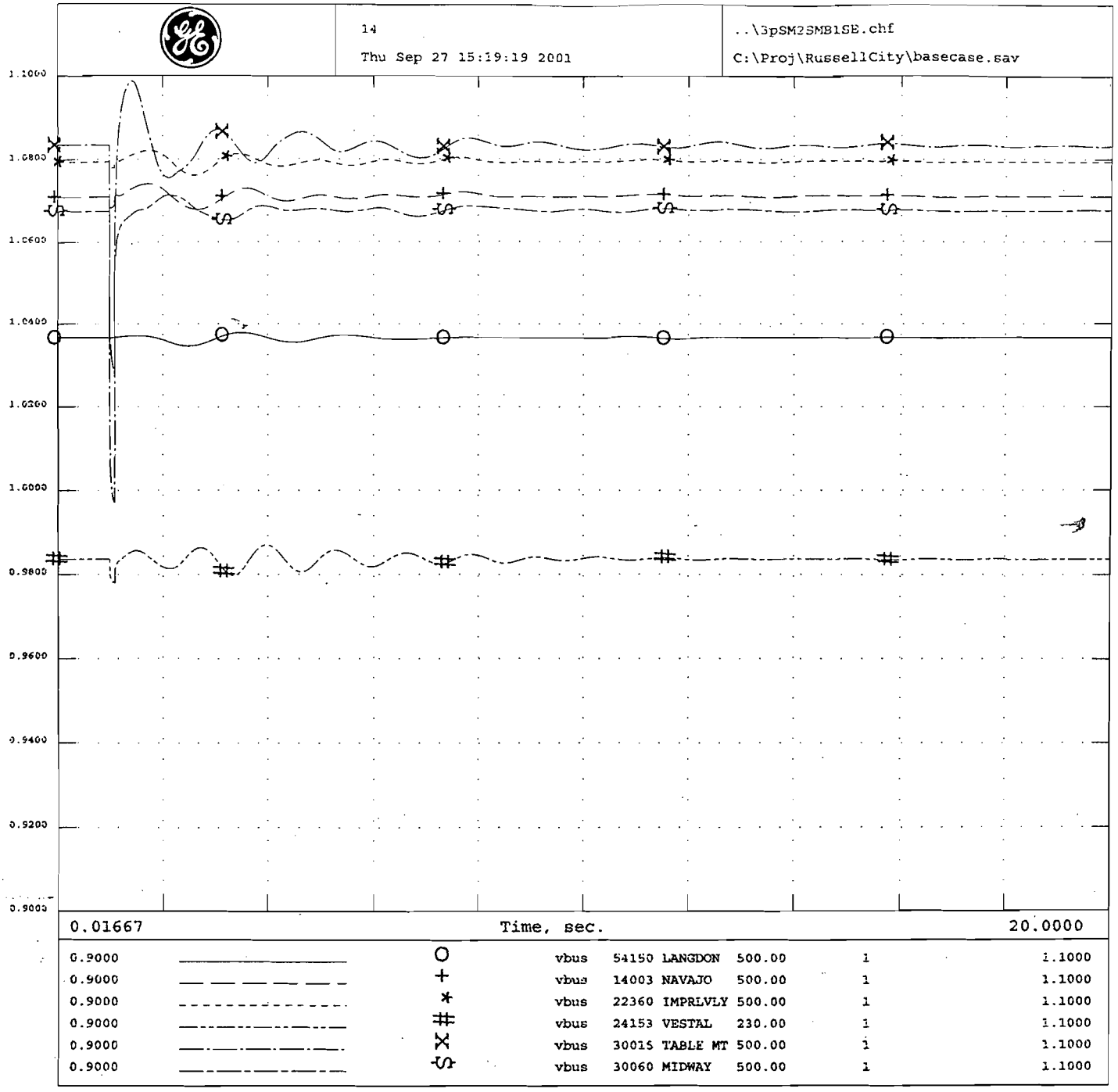
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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Calpine/Bechtel Joint Development
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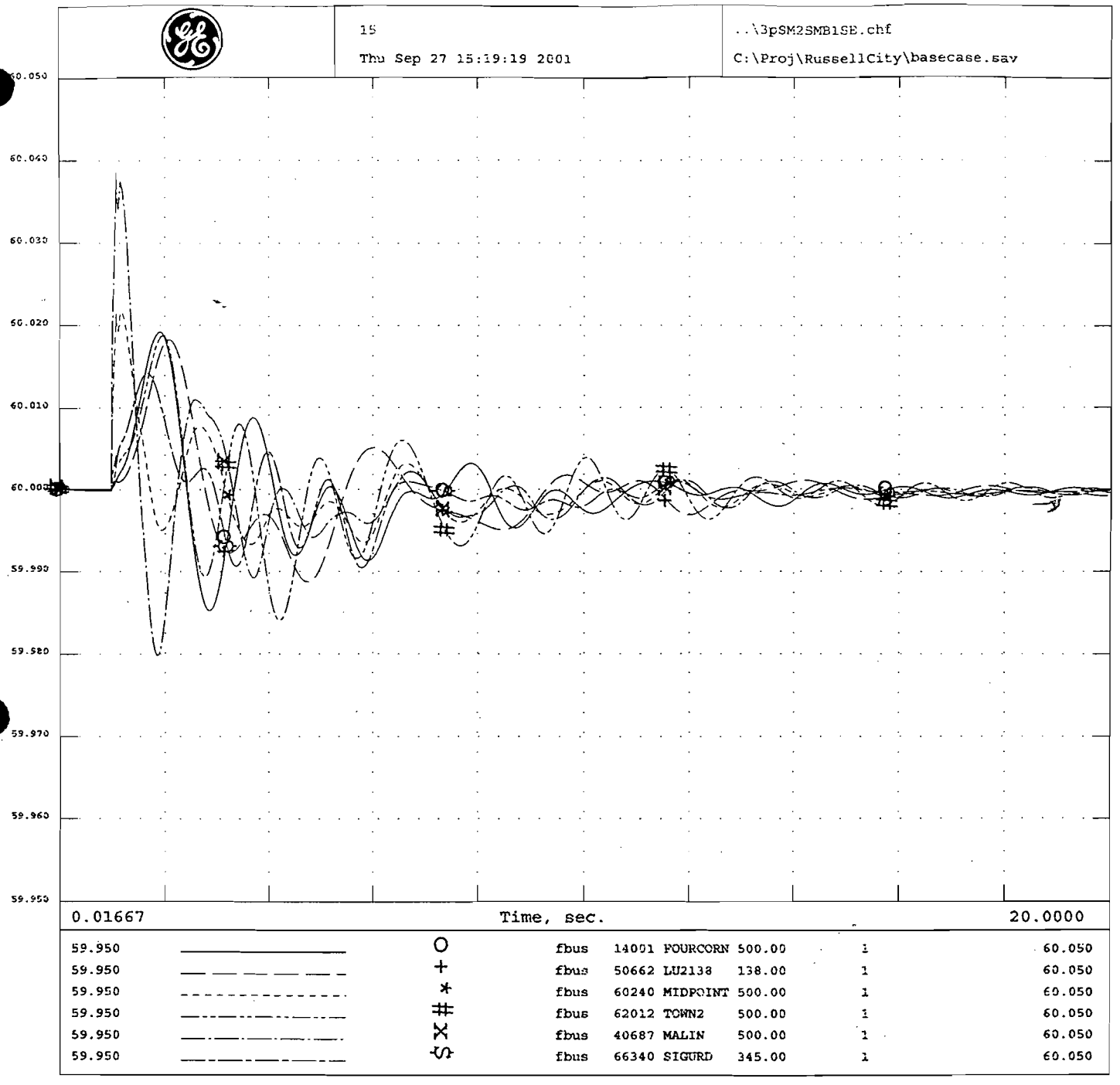

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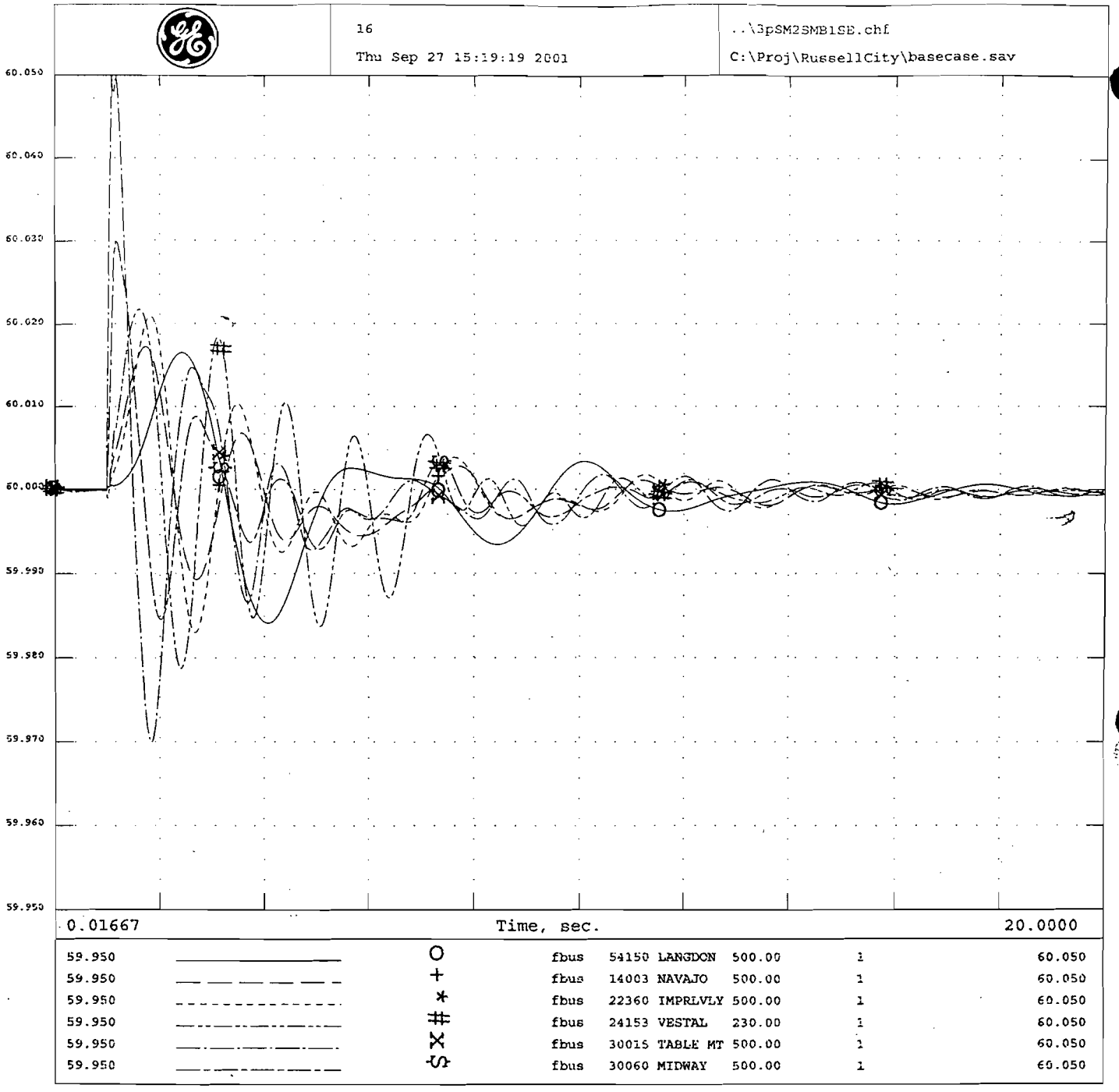
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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Calpine/Bechtel Joint Development
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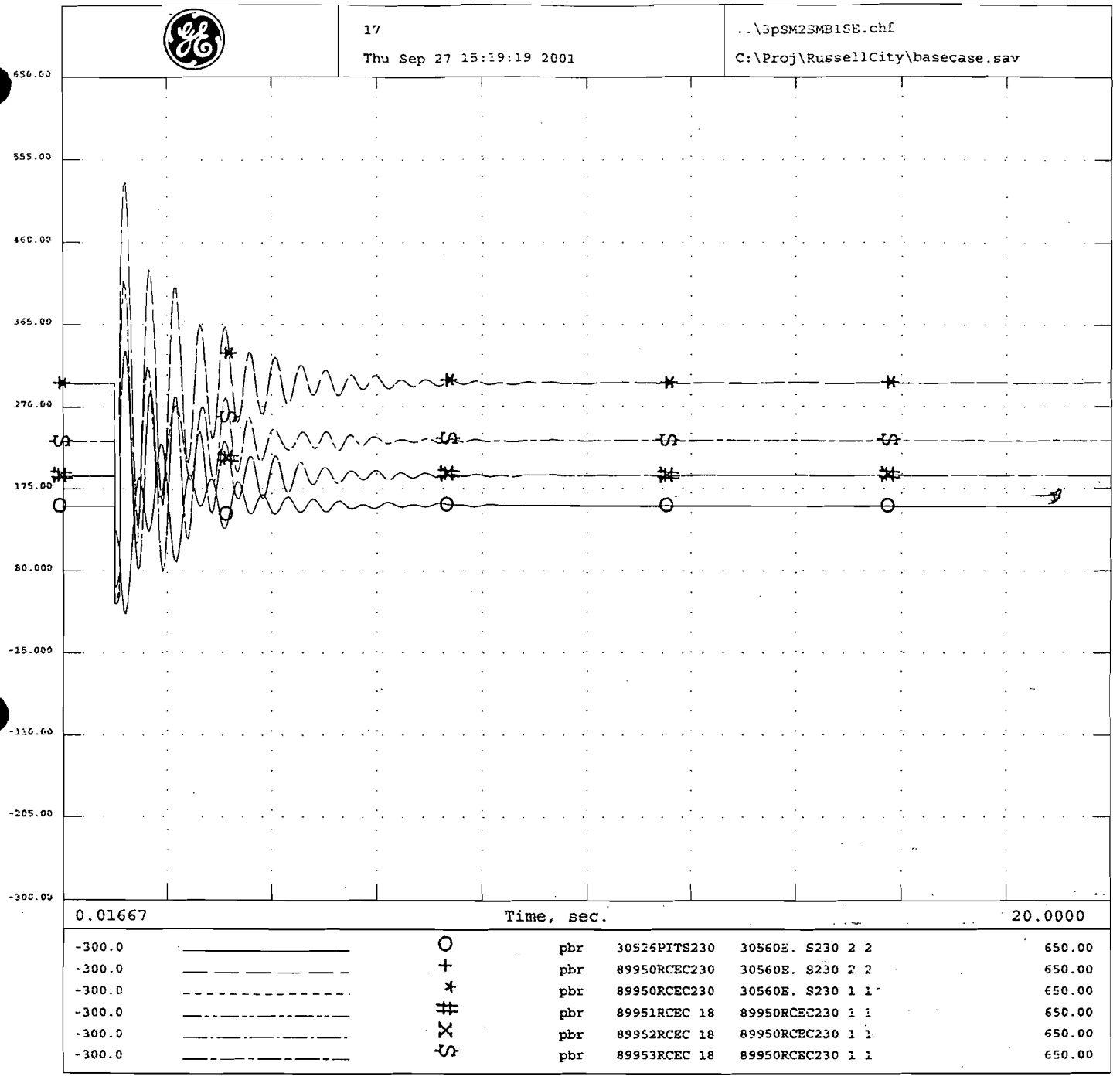

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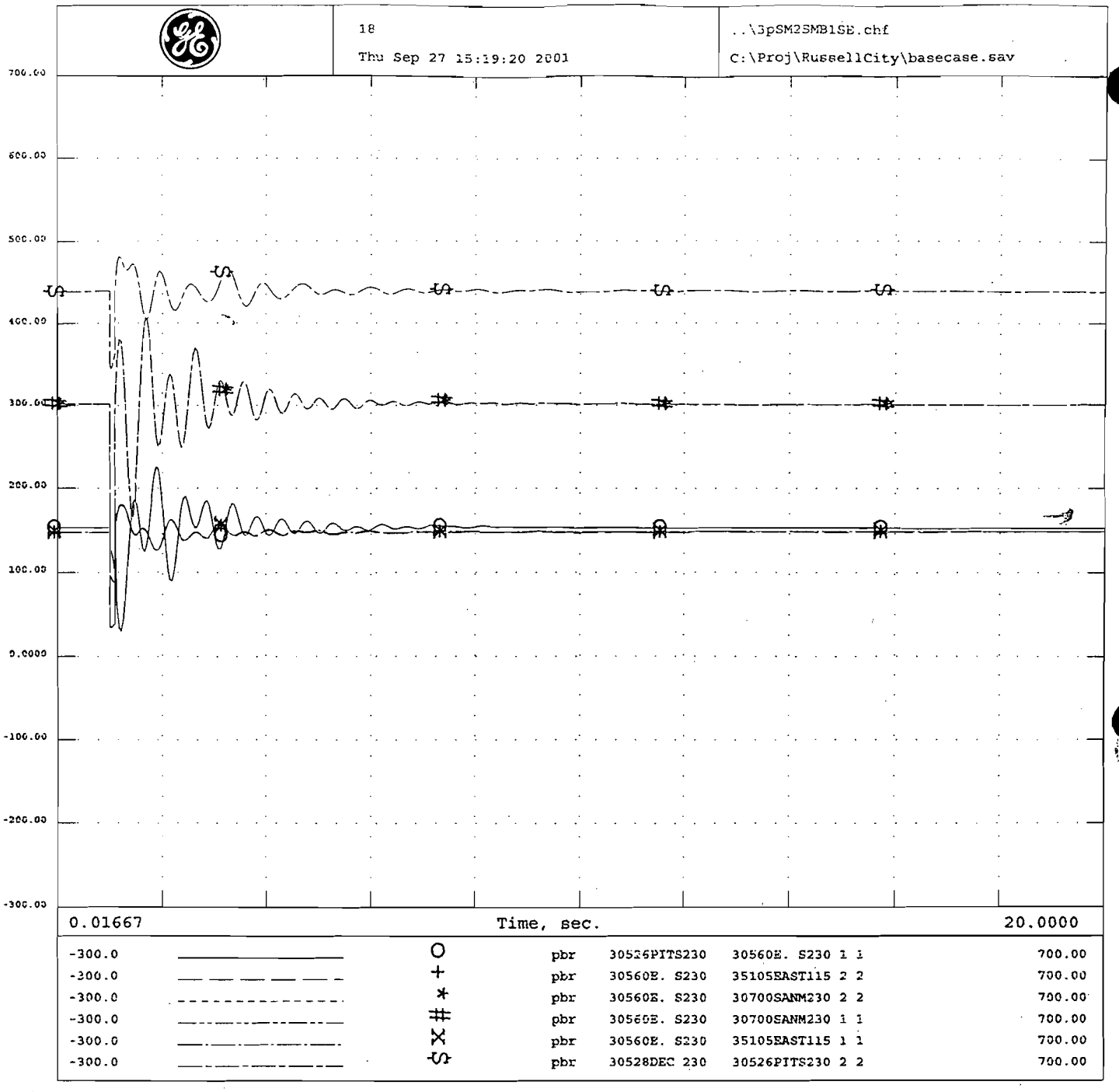
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Calpine/Bechtel Joint Development
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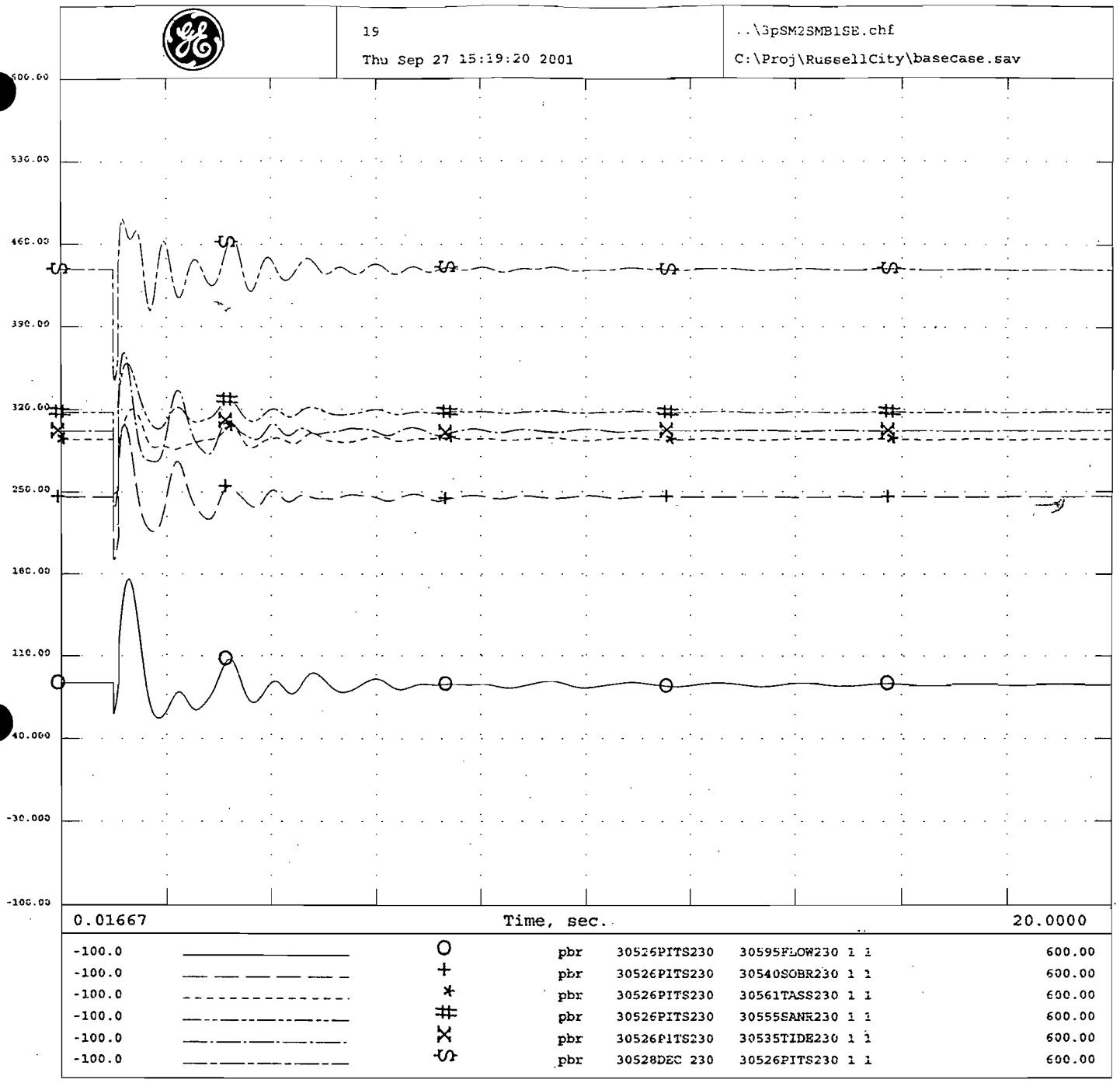

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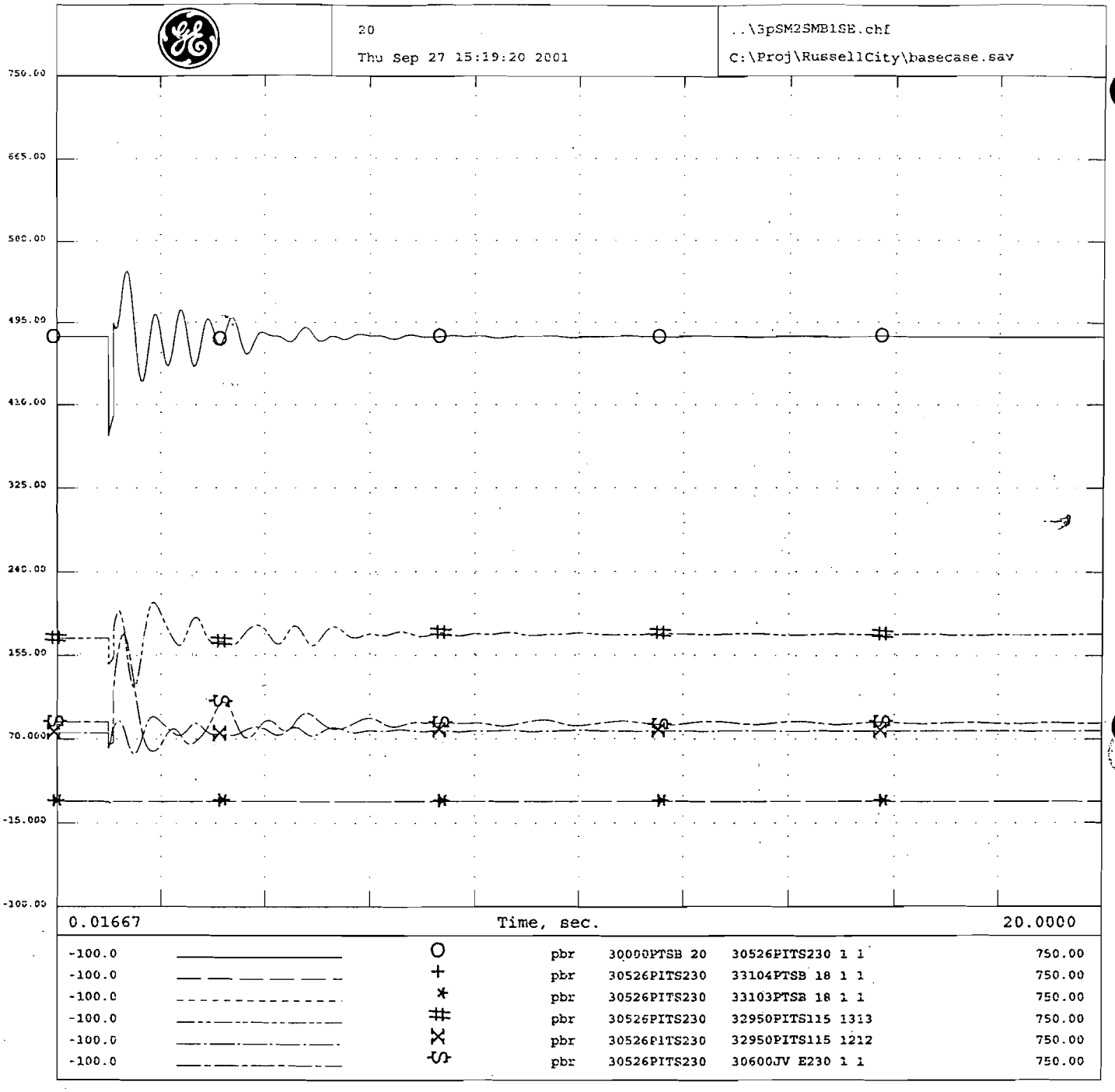
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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2004 Summer Peak Base Case
RCEC @ 610MW
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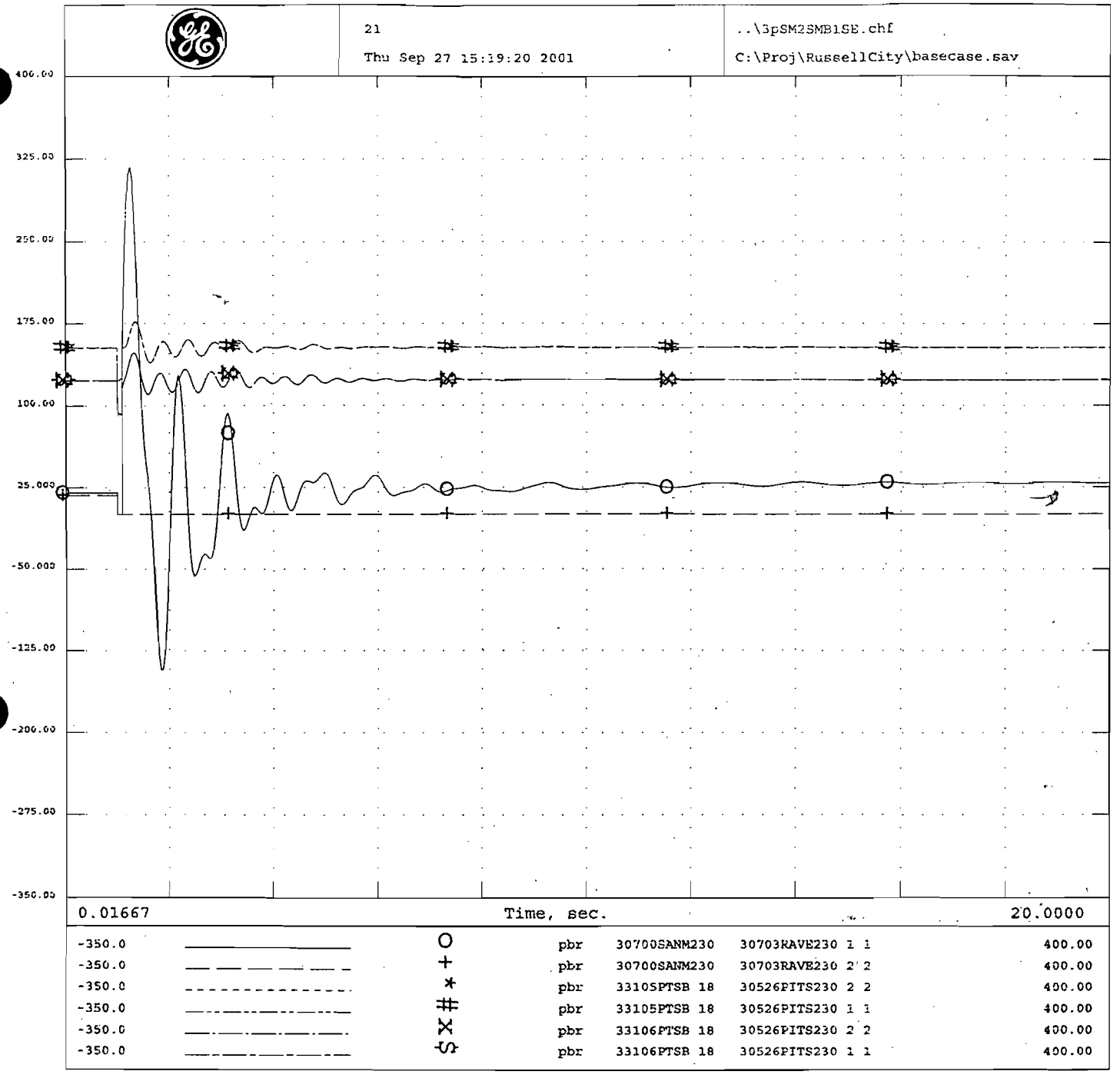
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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2004 Summer Peak Base Case
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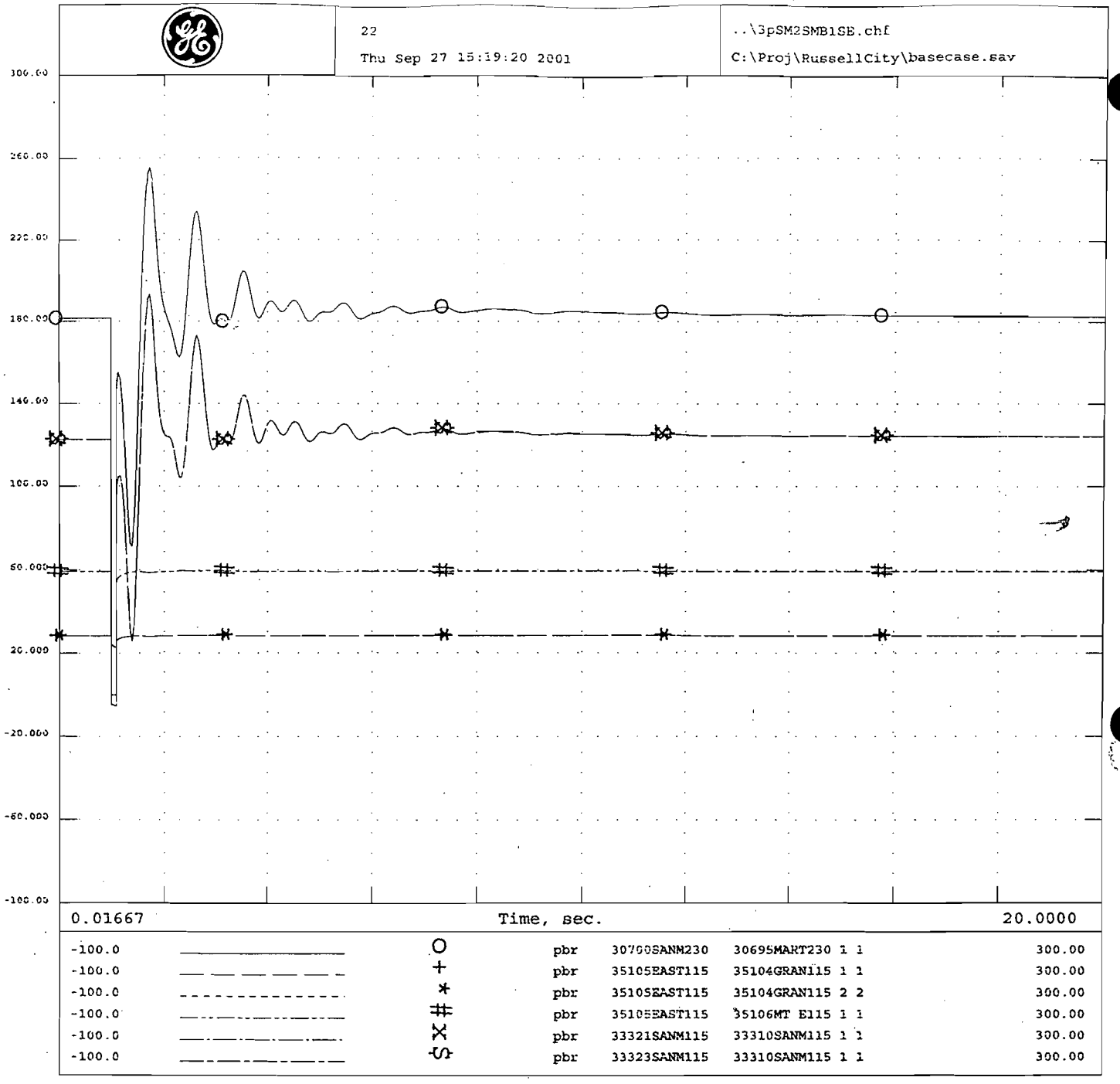
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Calpine/Bechtel Joint Development
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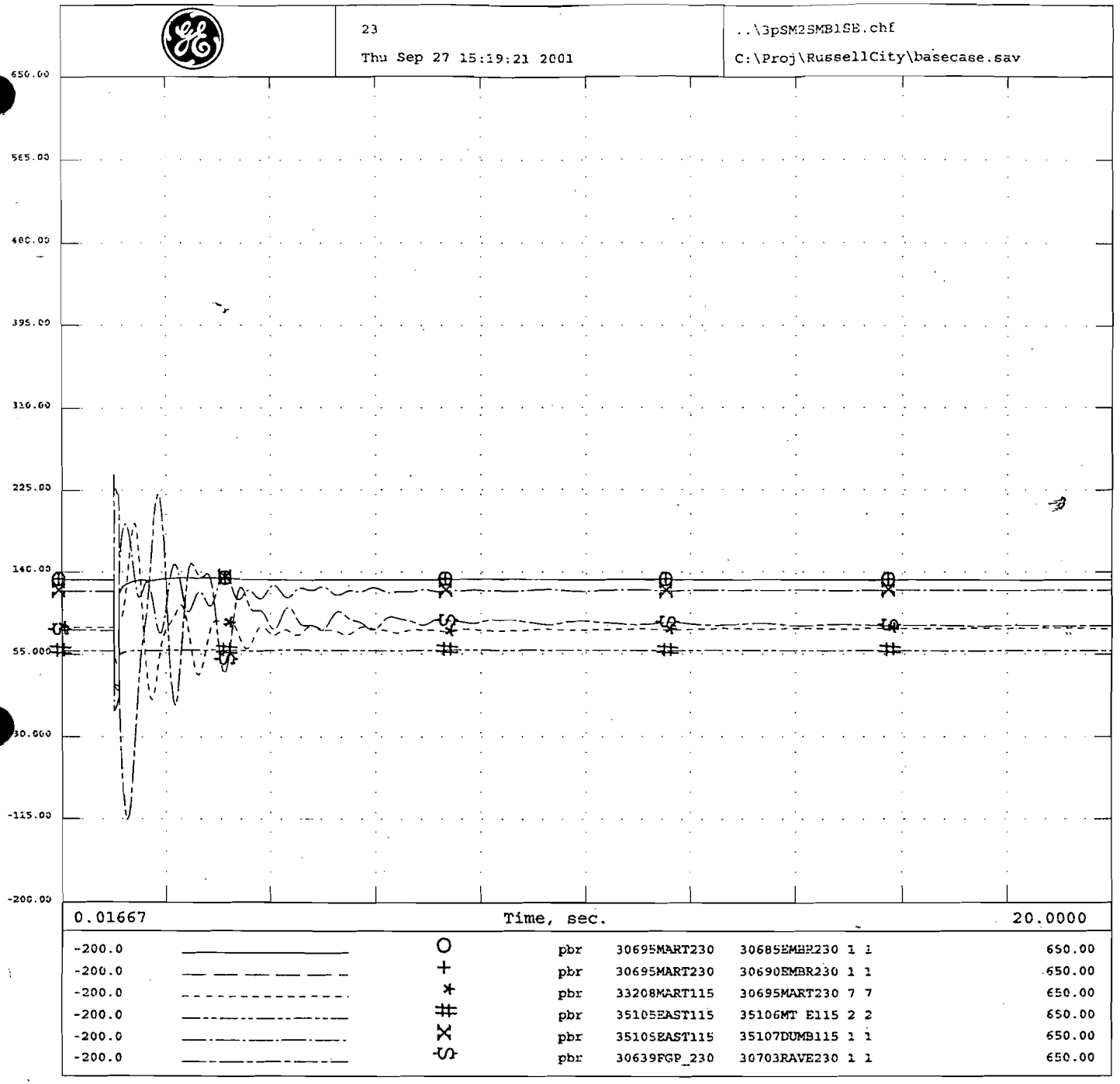

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Calpine/Bechtel Joint Development
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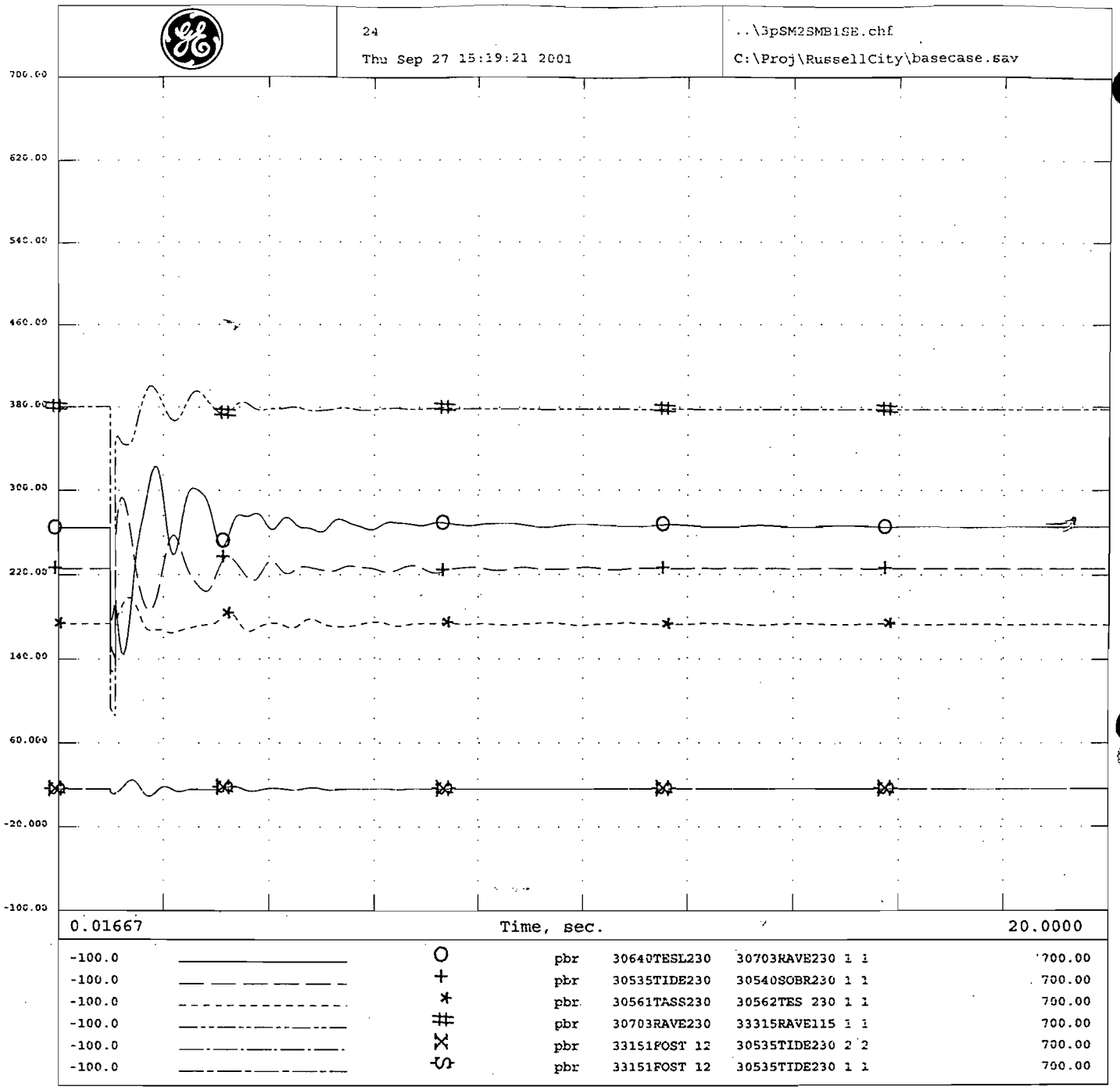

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Calpine/Bechtel Joint Development
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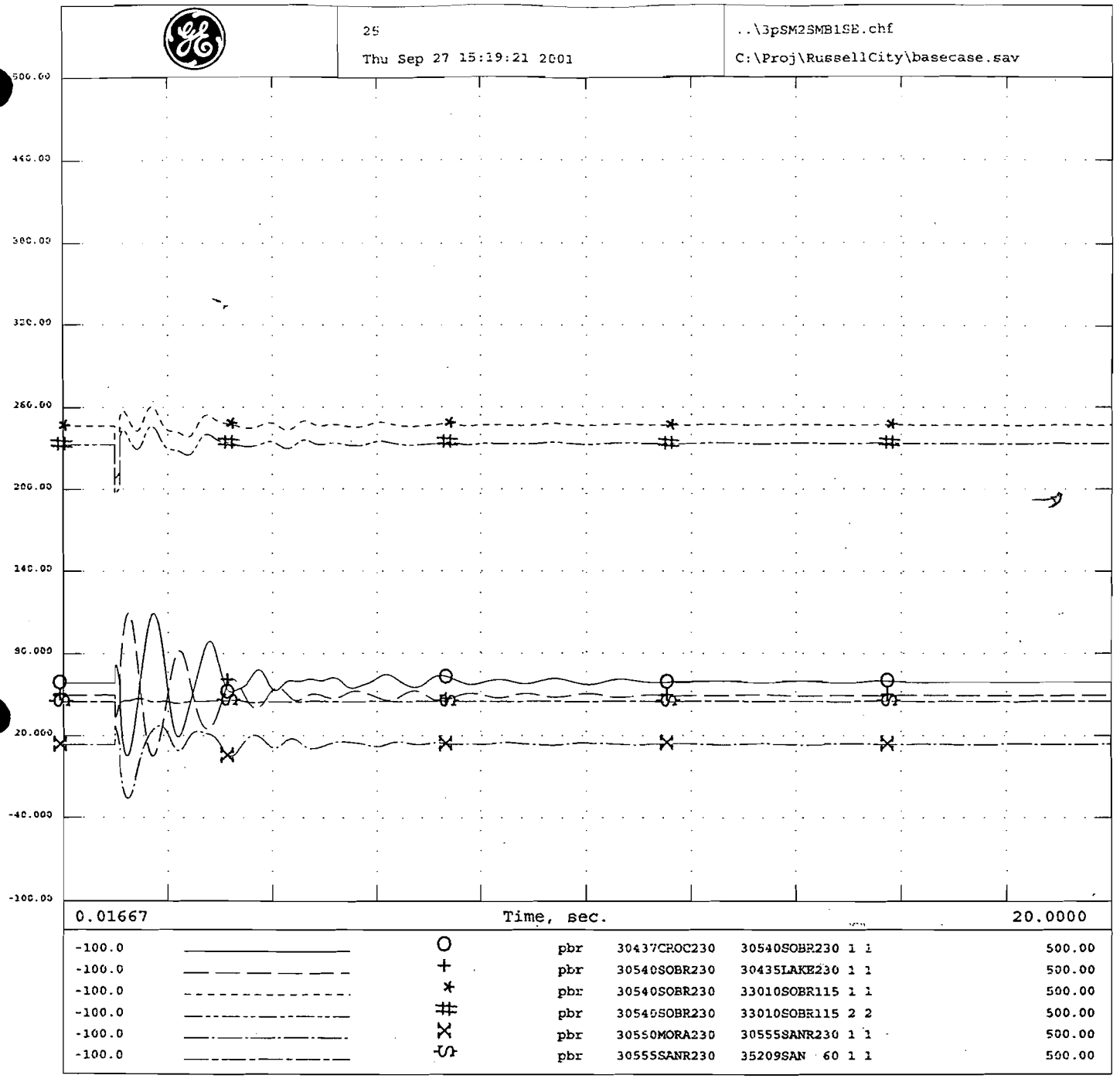

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Calpine/Bechtel Joint Development
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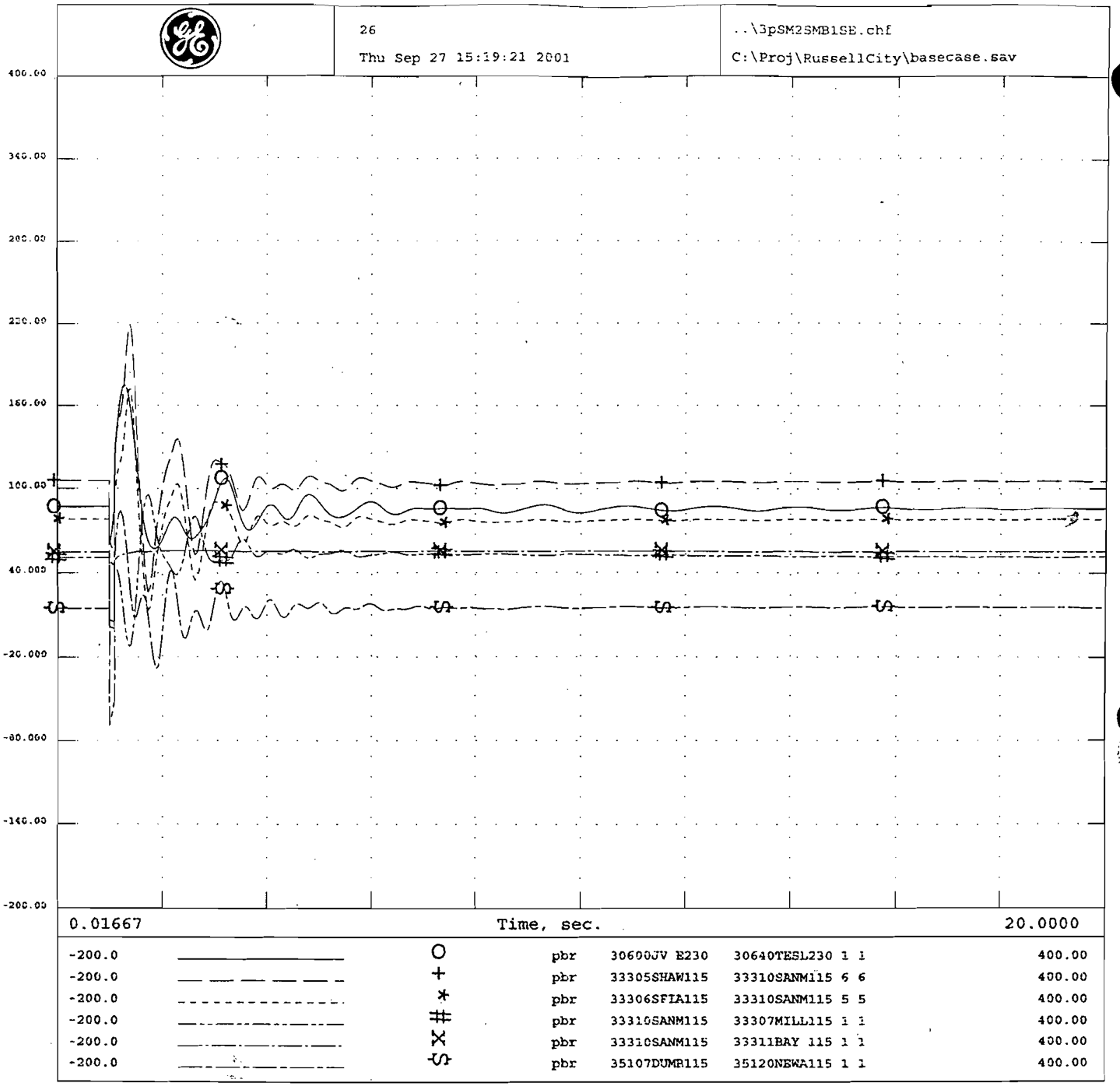

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Calpine/Bechtel Joint Development
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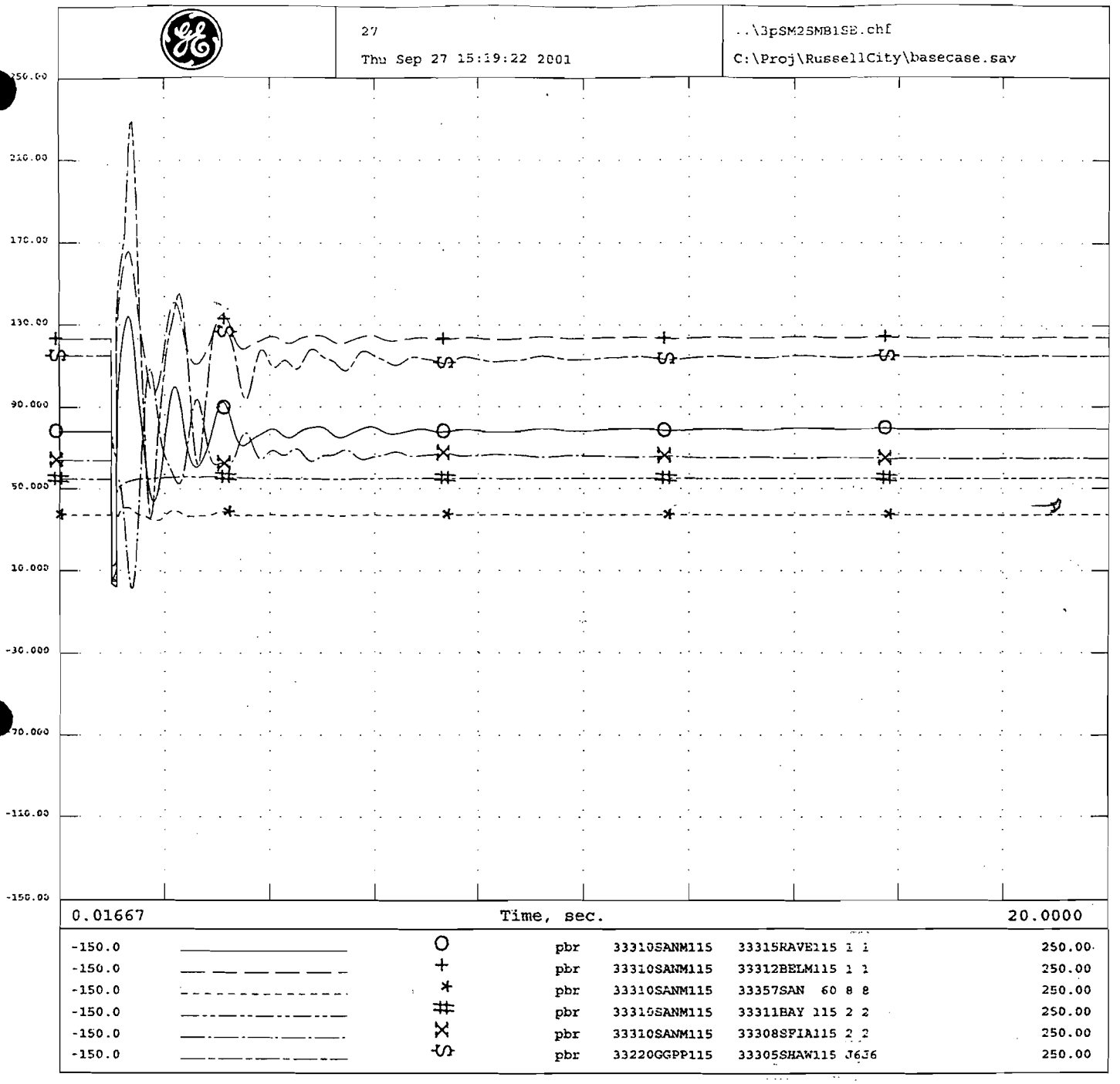

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 2, section D
RUN  9
CC
CC   Fault San Mateo 230 kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230 kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip San Mateo bus 2, section D
CC   The bus SANMATB5 is a dummy bus to allow plotting of transformer flow
DL   6.0 "SANMATB5" 115.00 "SANMATEO" 230.00 "5 "
TG   6.0 "SMATO2SC"  13.2 "1 "
DL   6.0 "SANMATEO" 230. "E. SHORE" 230. "2 "
CC
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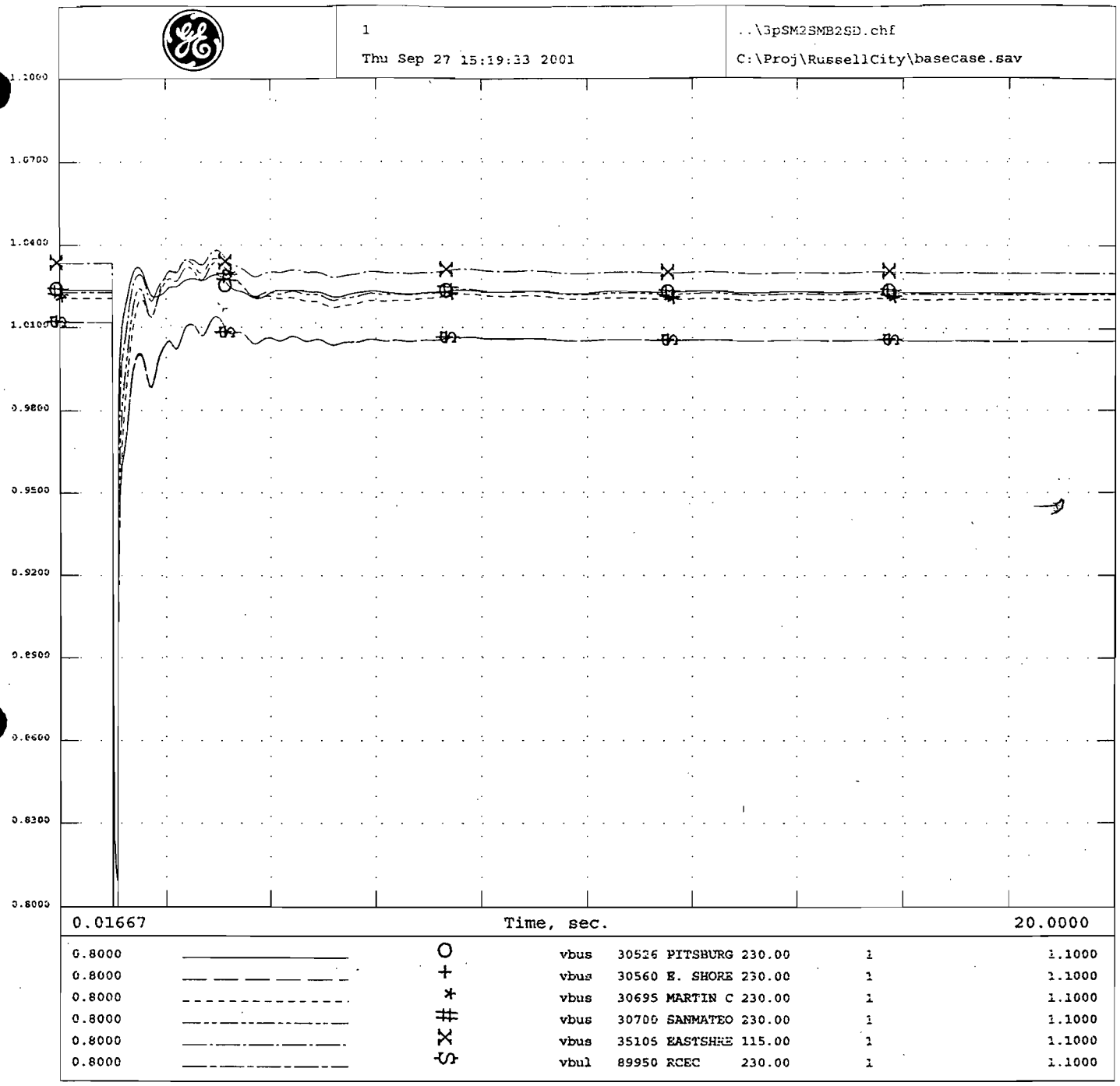

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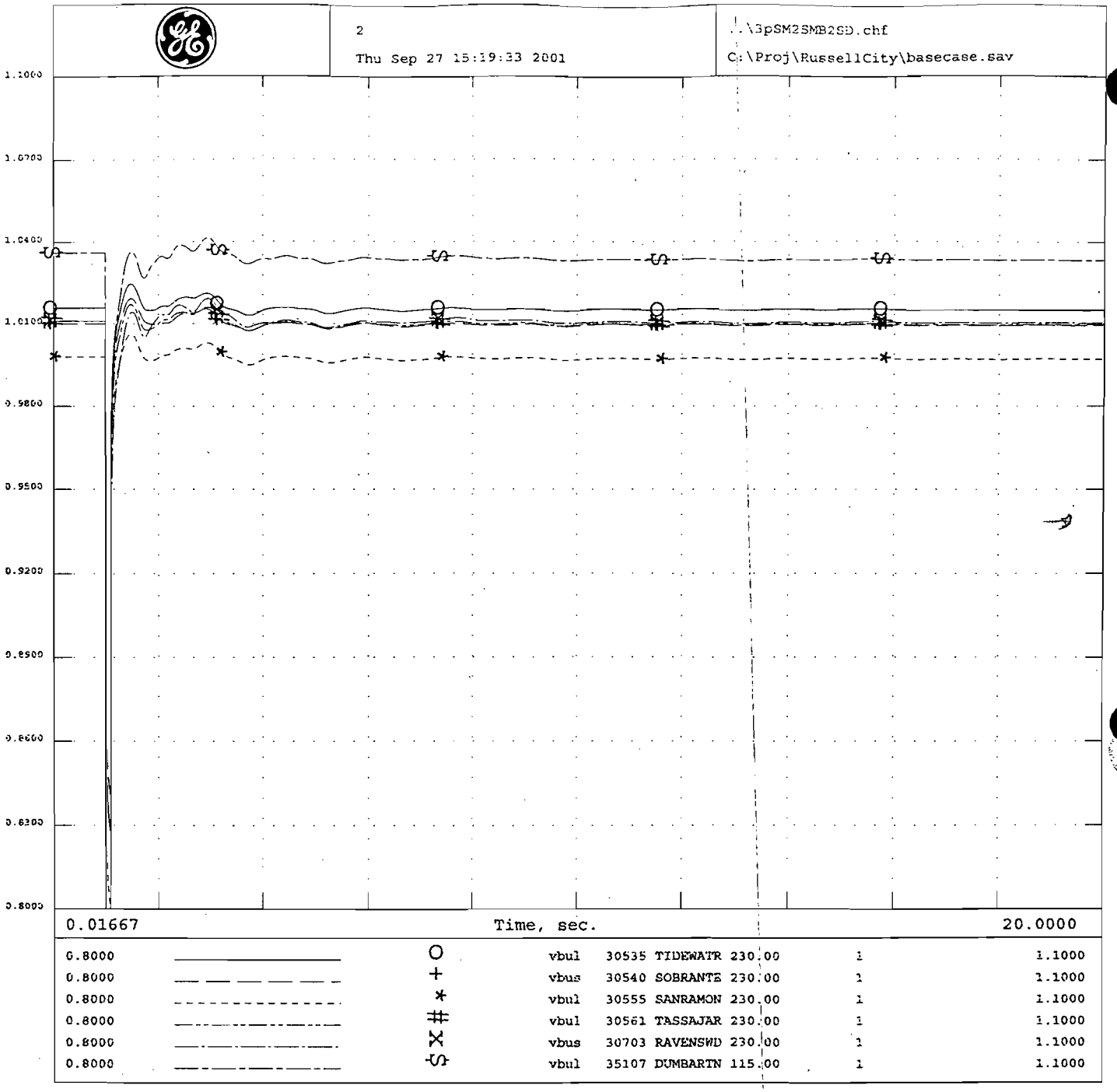
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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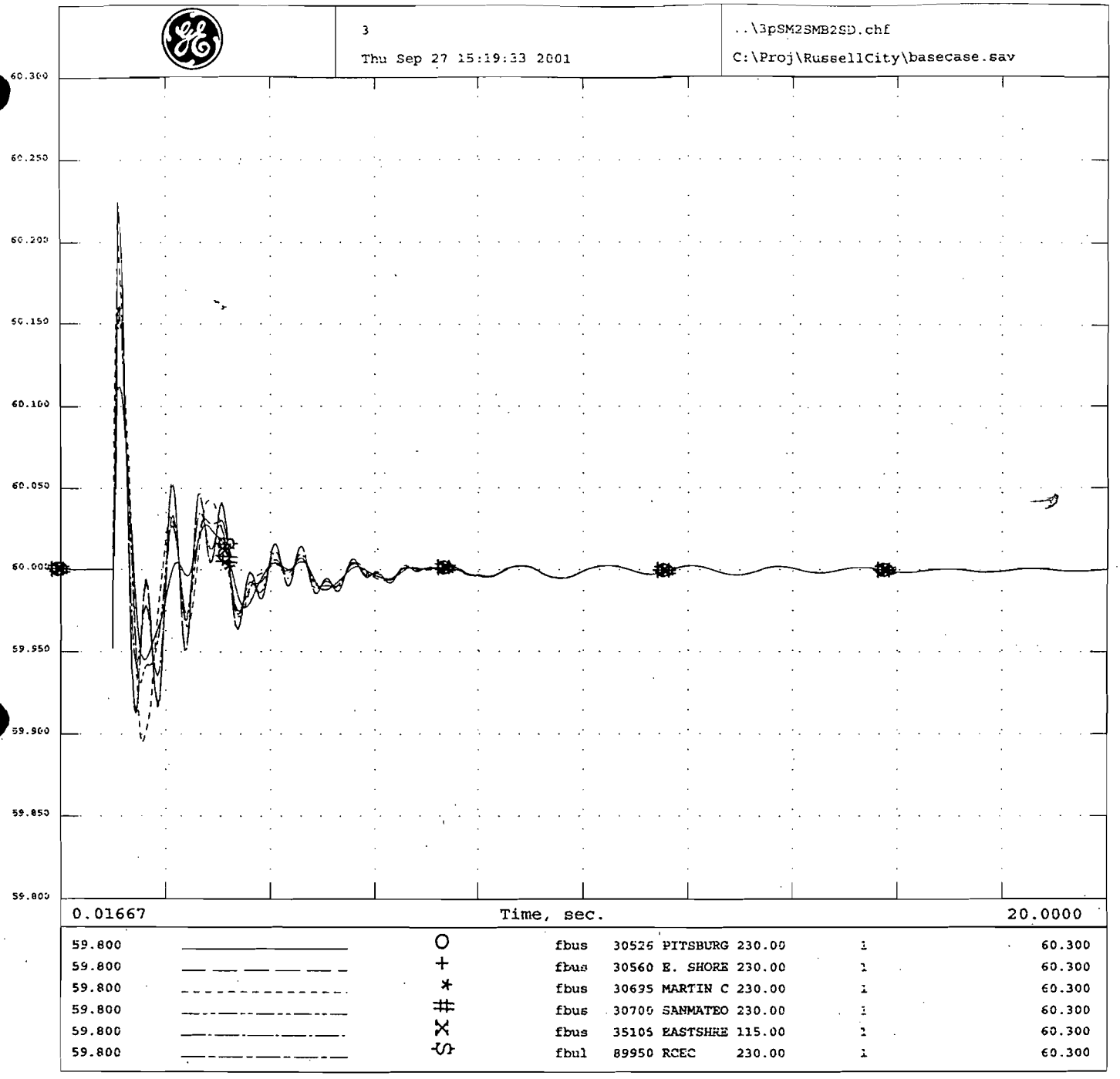
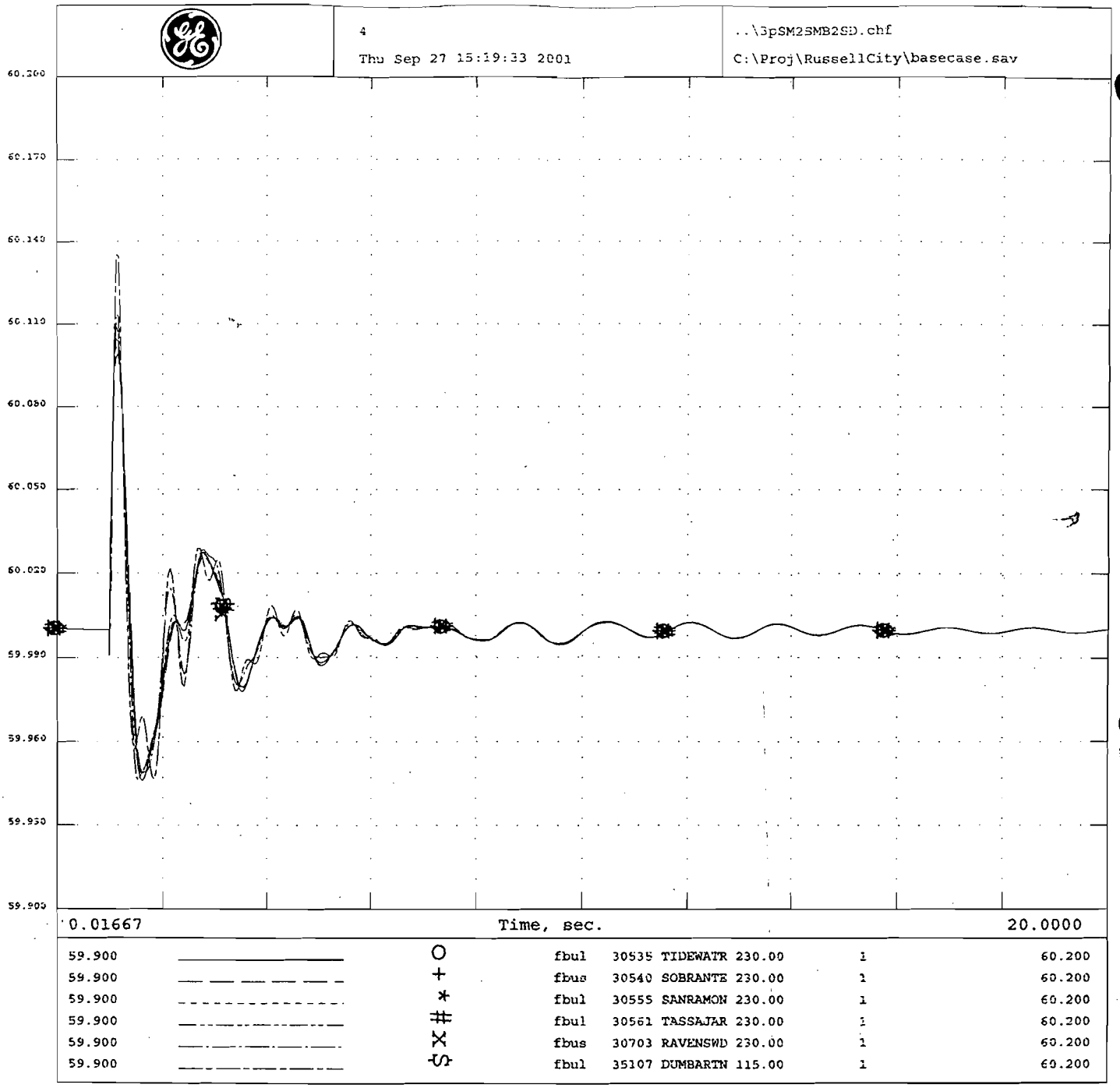


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 2, section D
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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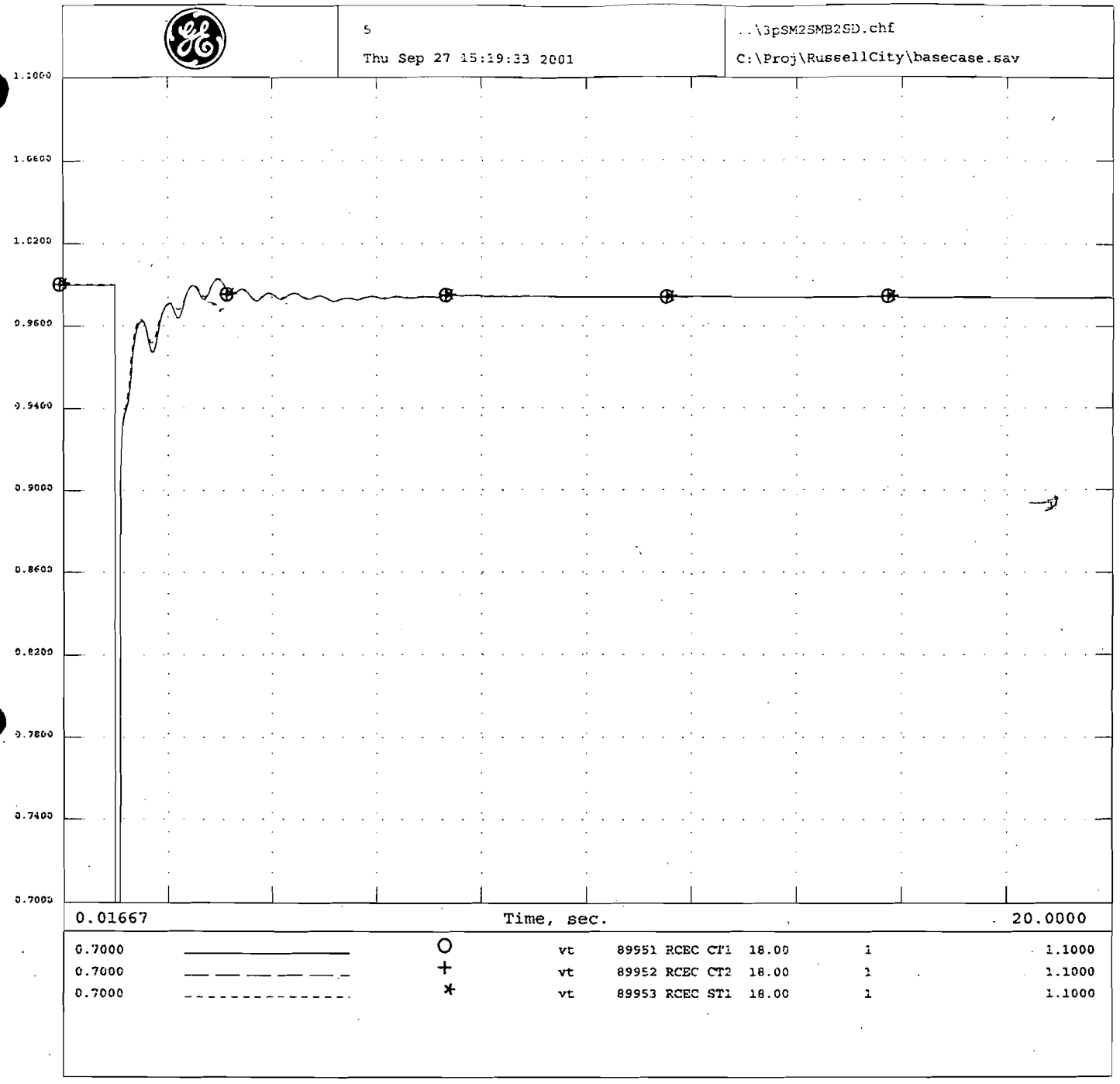

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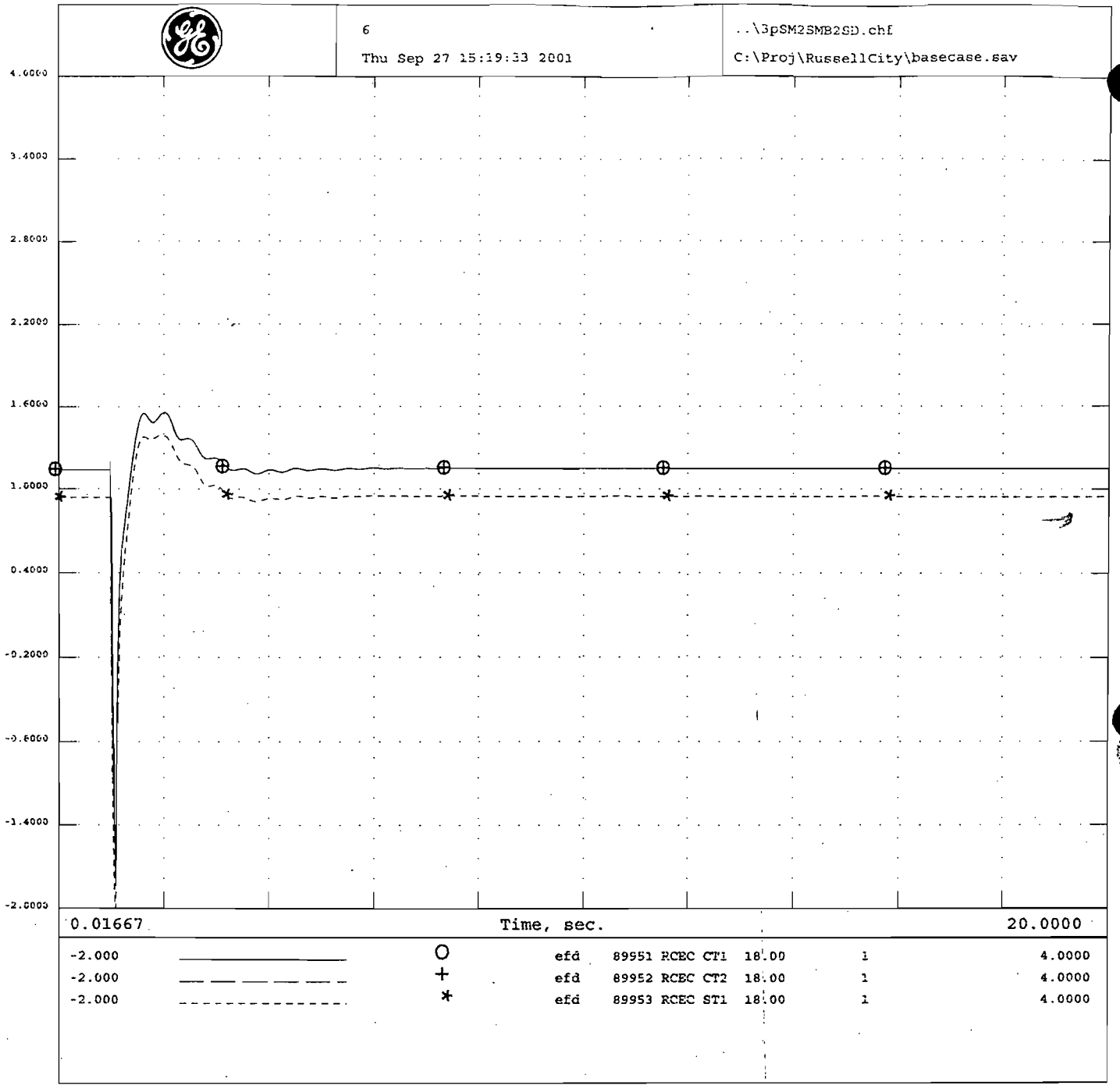
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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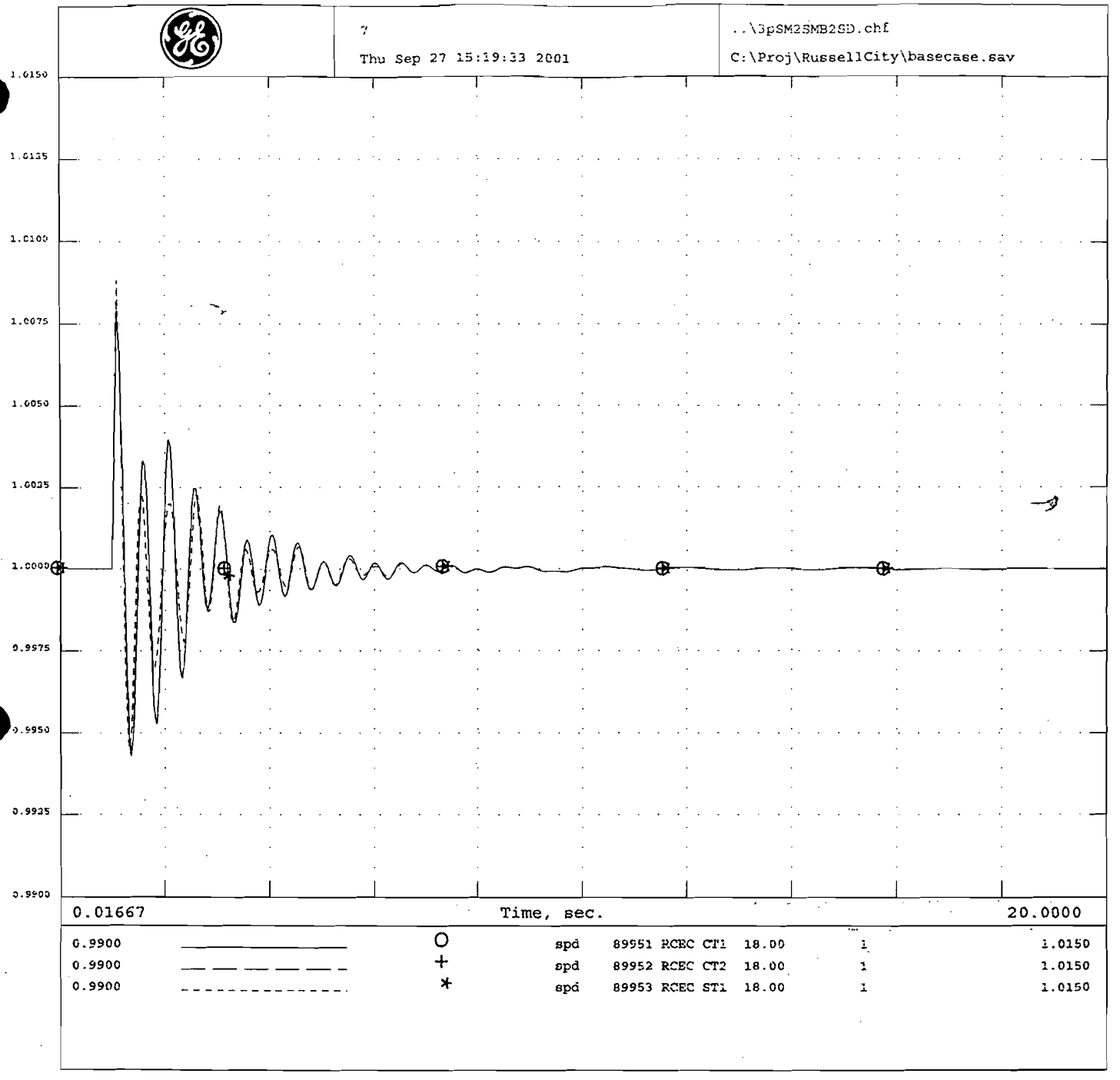
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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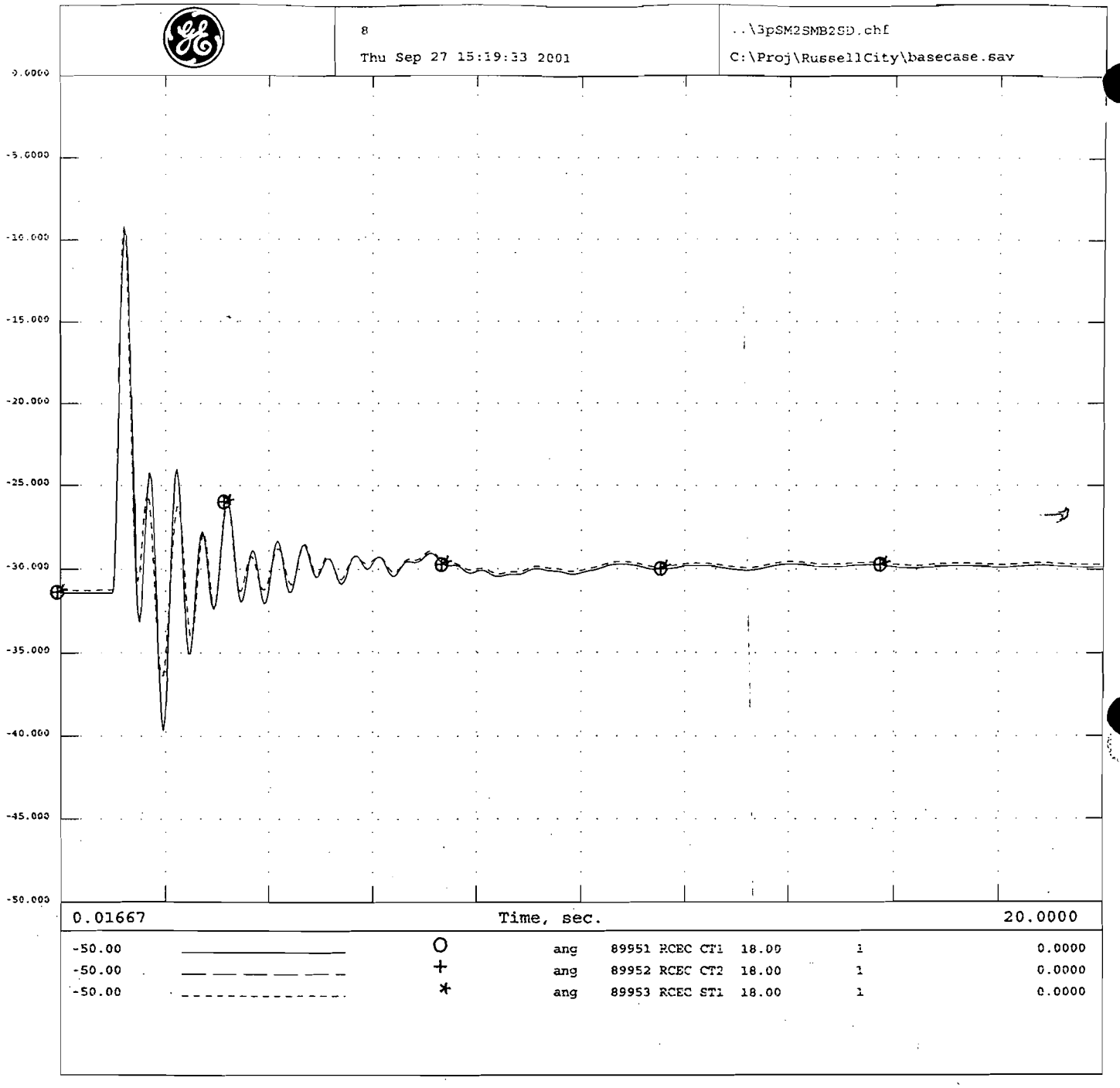
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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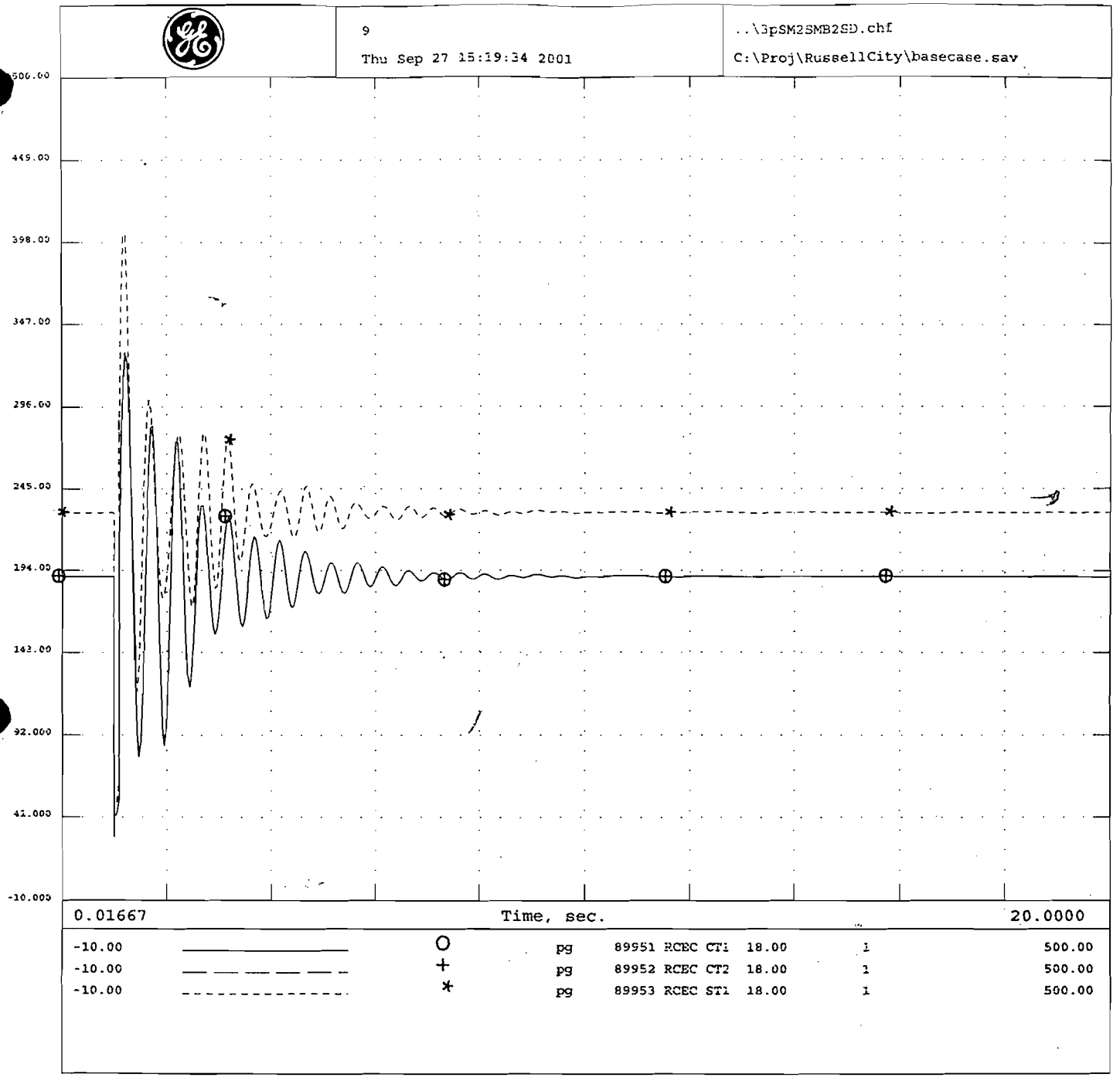
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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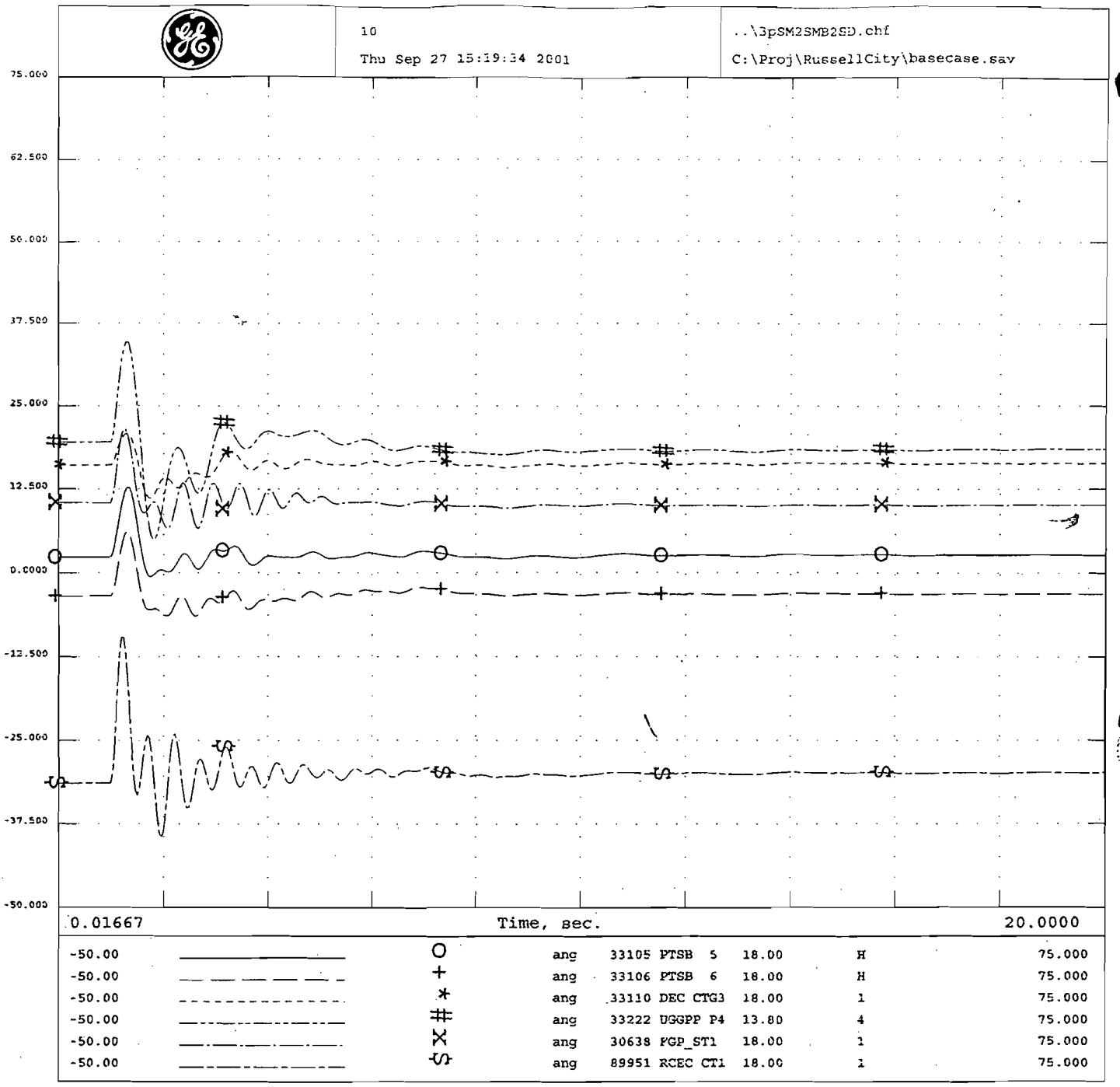
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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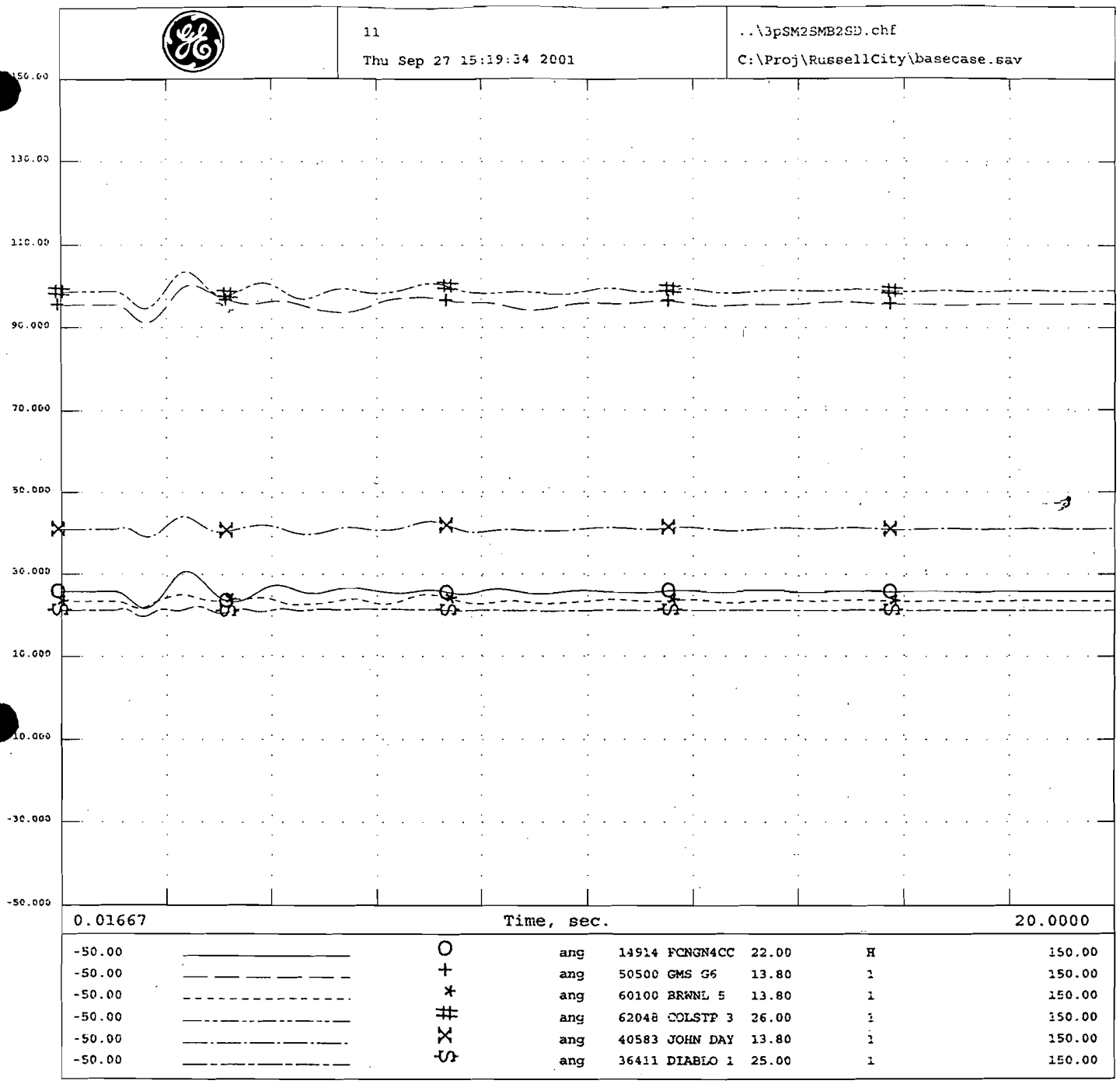
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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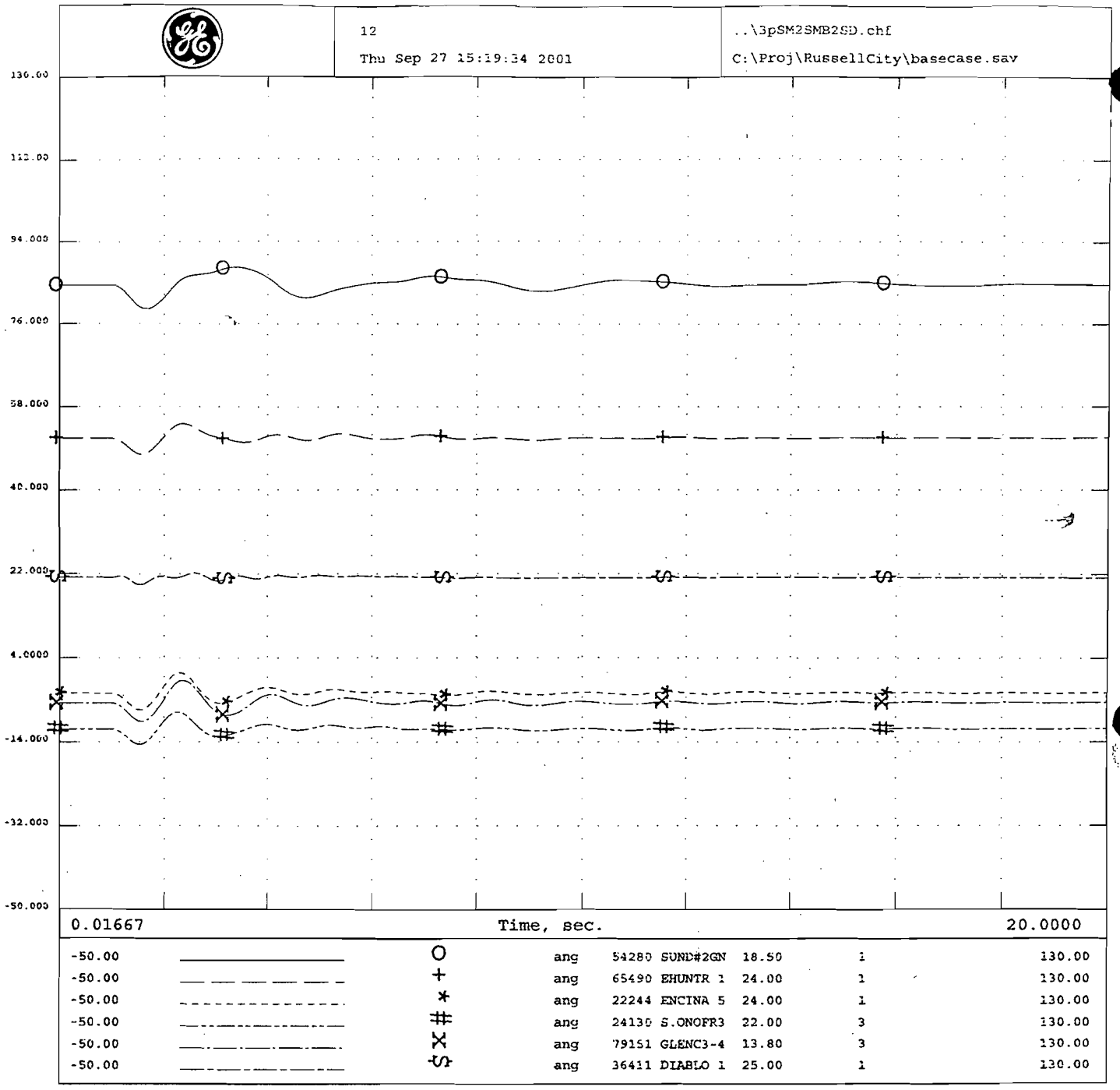
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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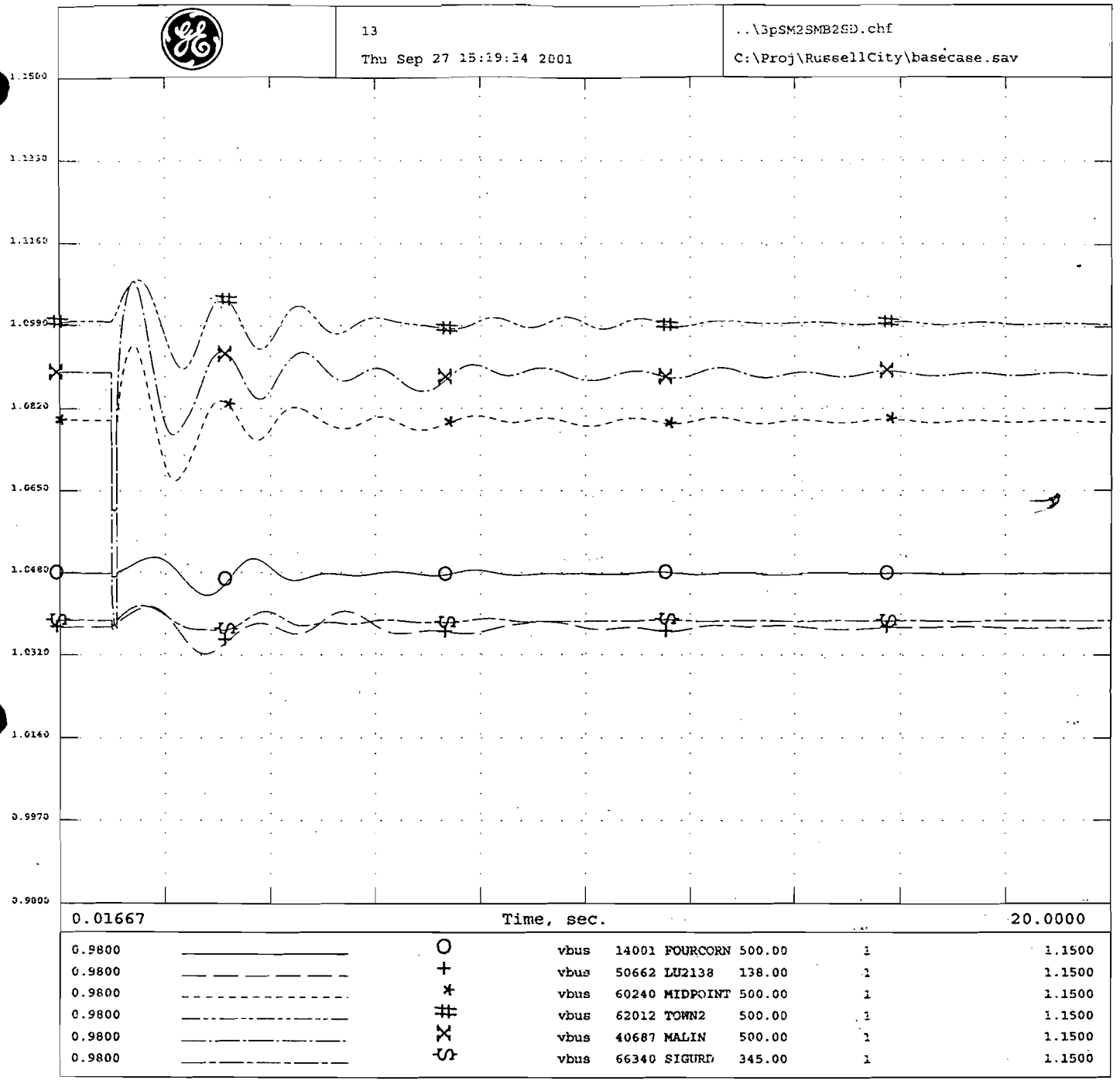
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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Calpine/Bechtel Joint Development
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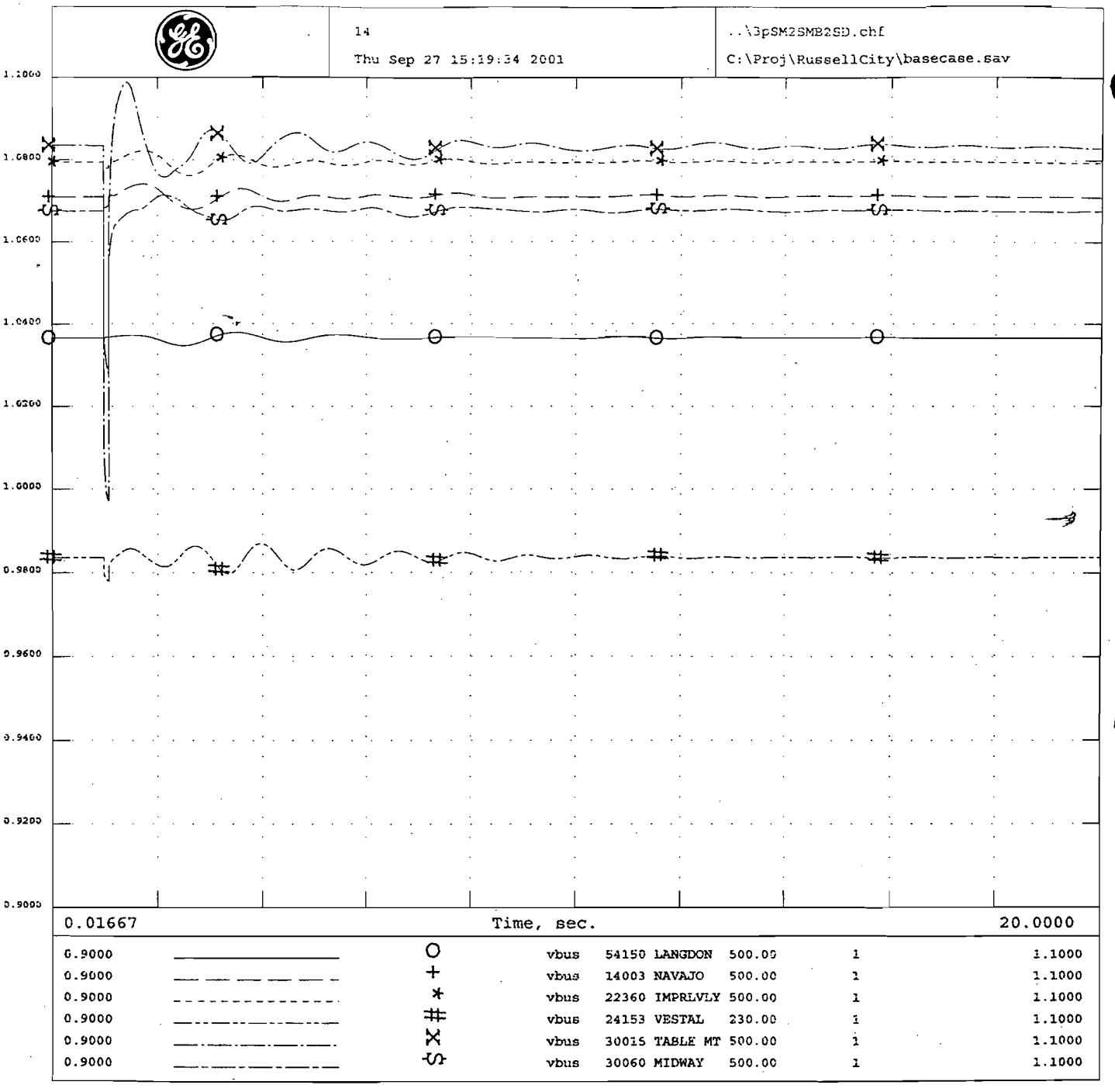

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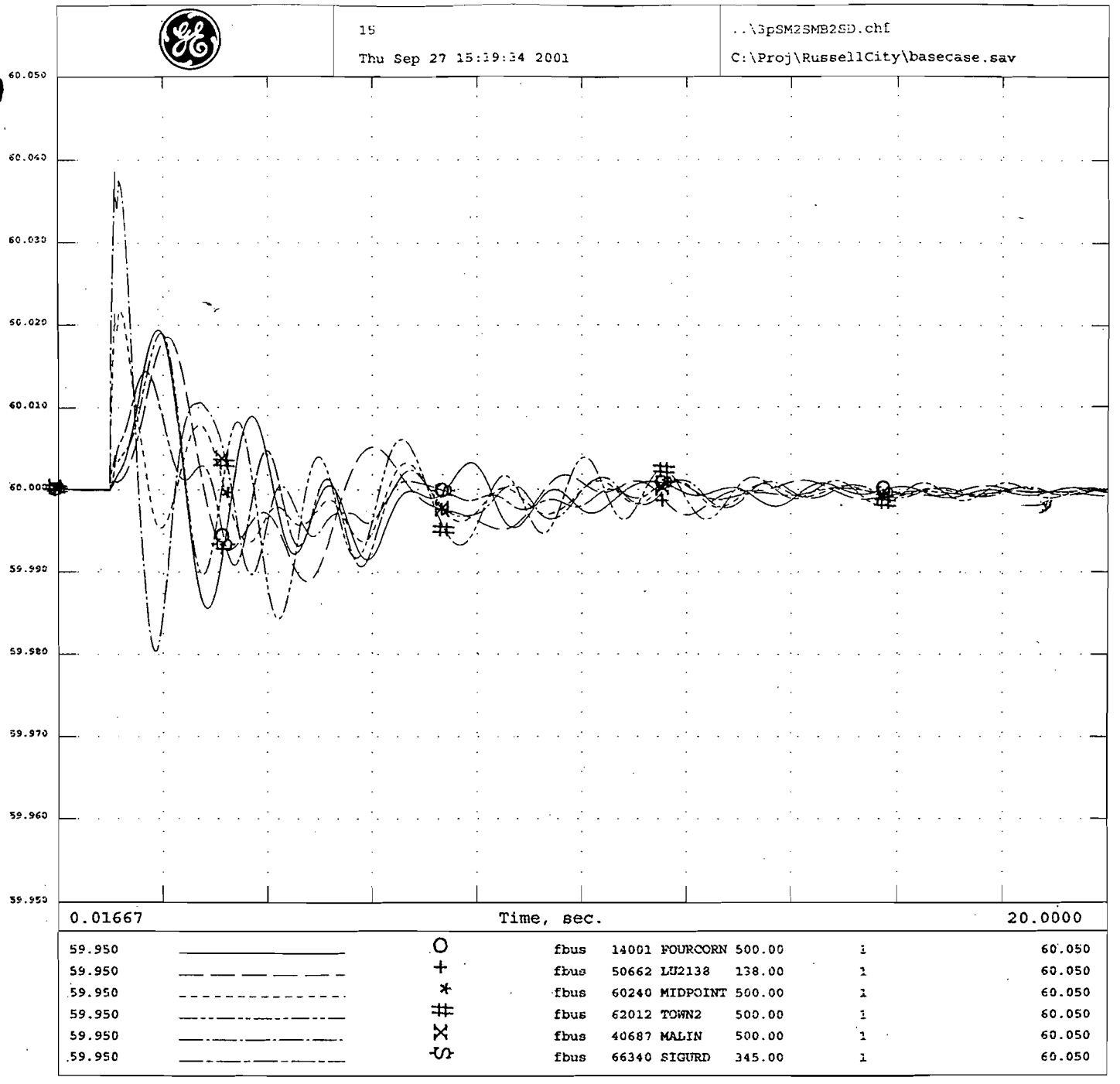

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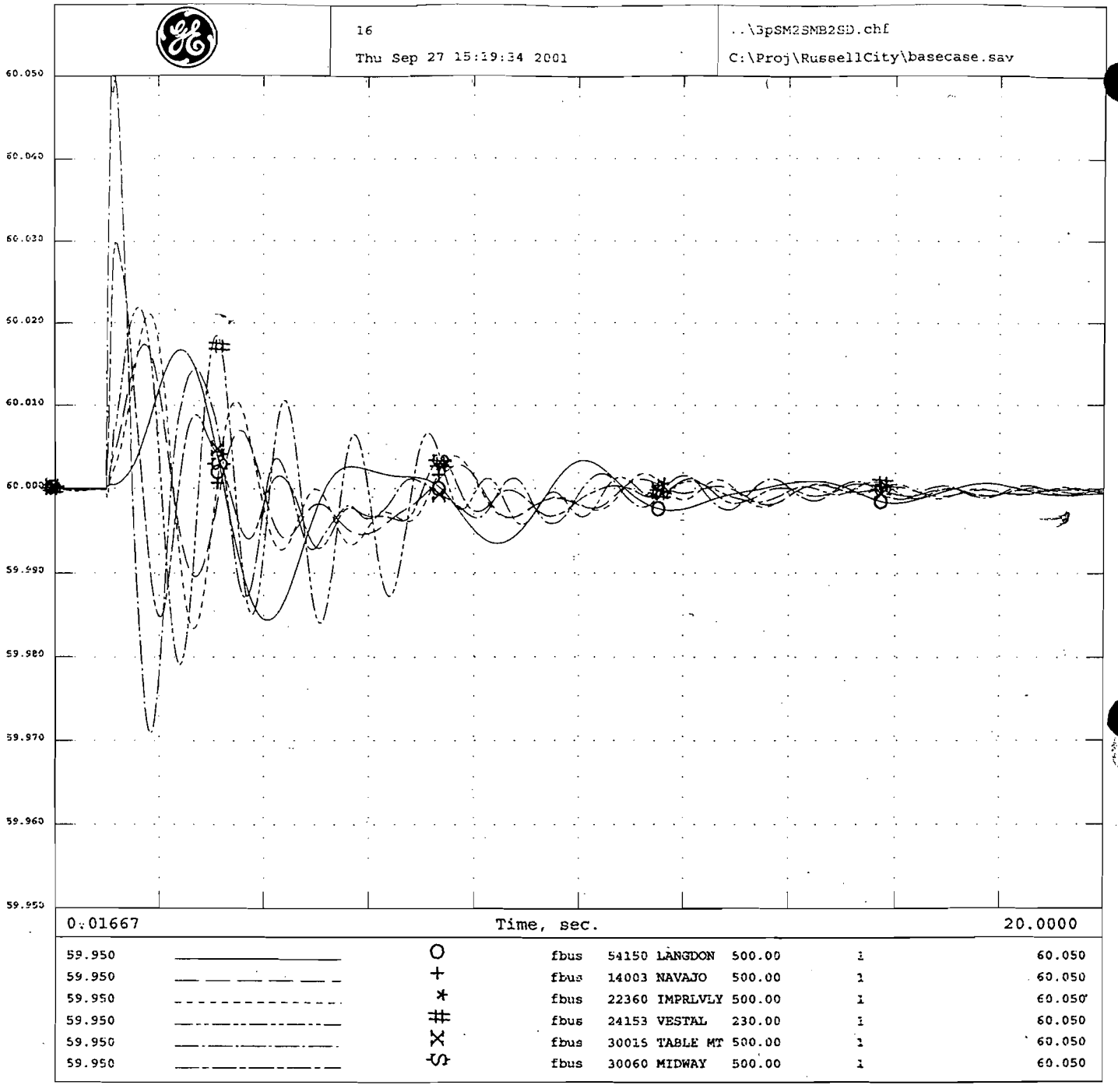
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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Calpine/Bechtel Joint Development
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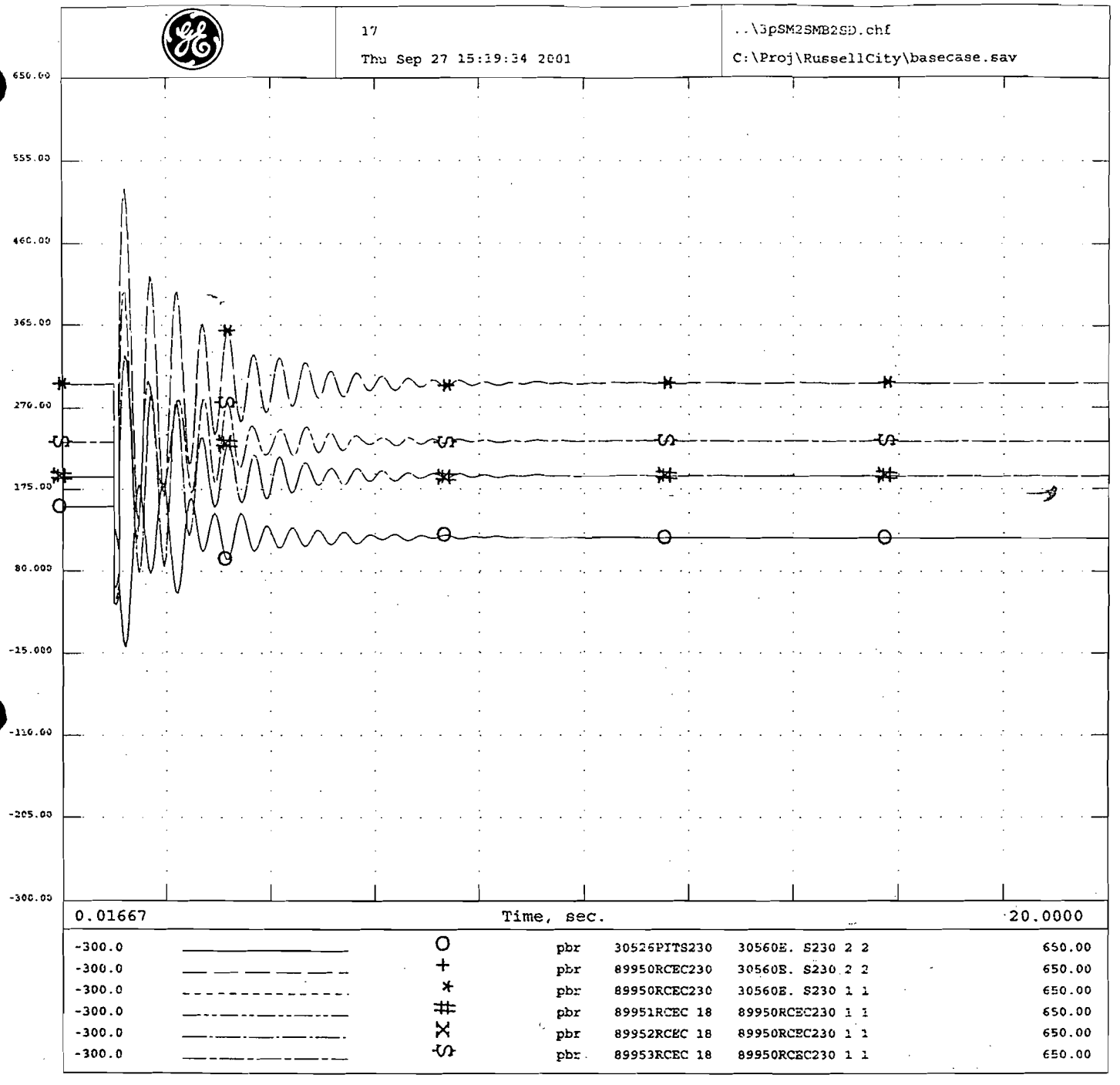

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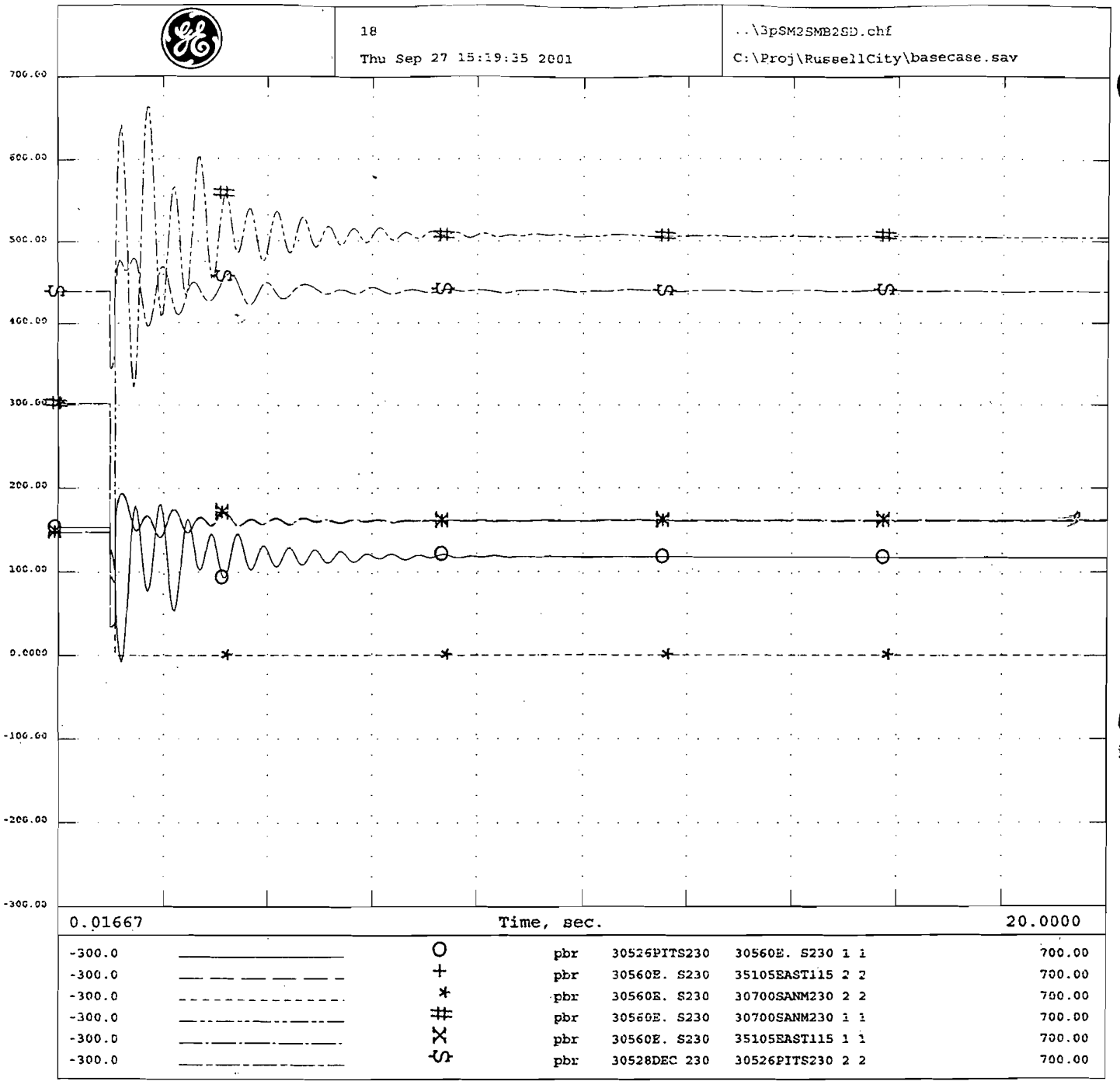
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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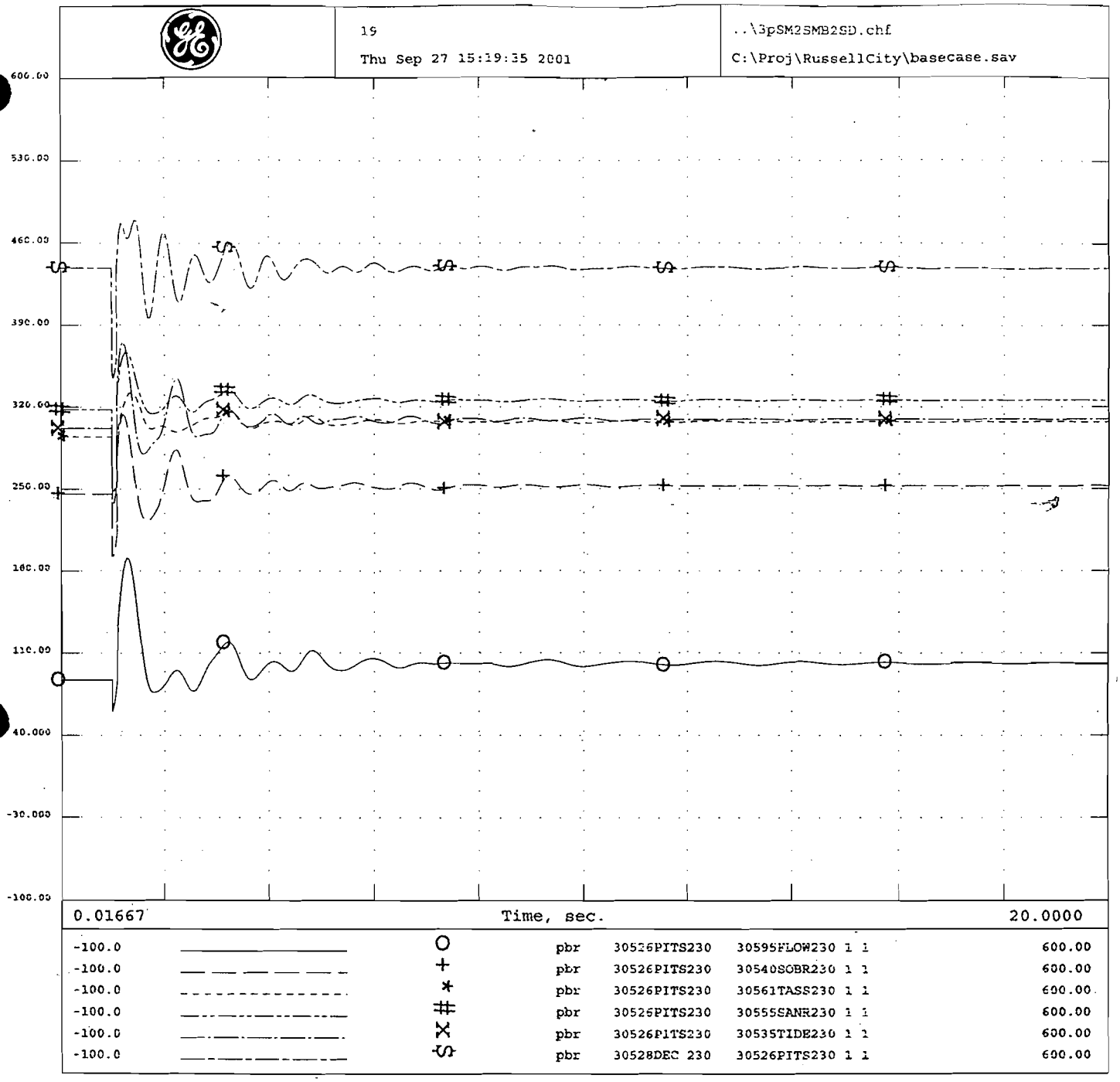

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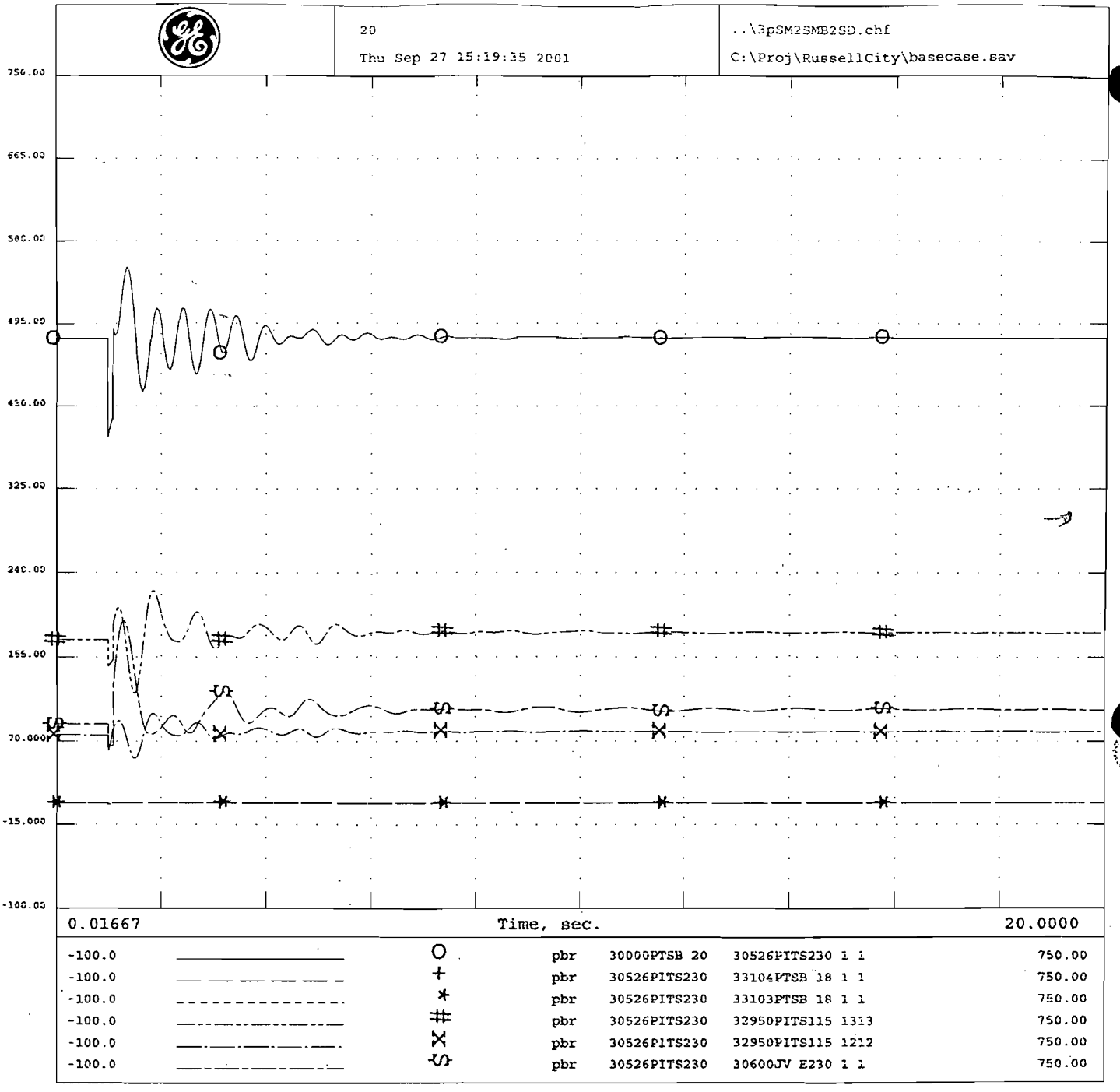

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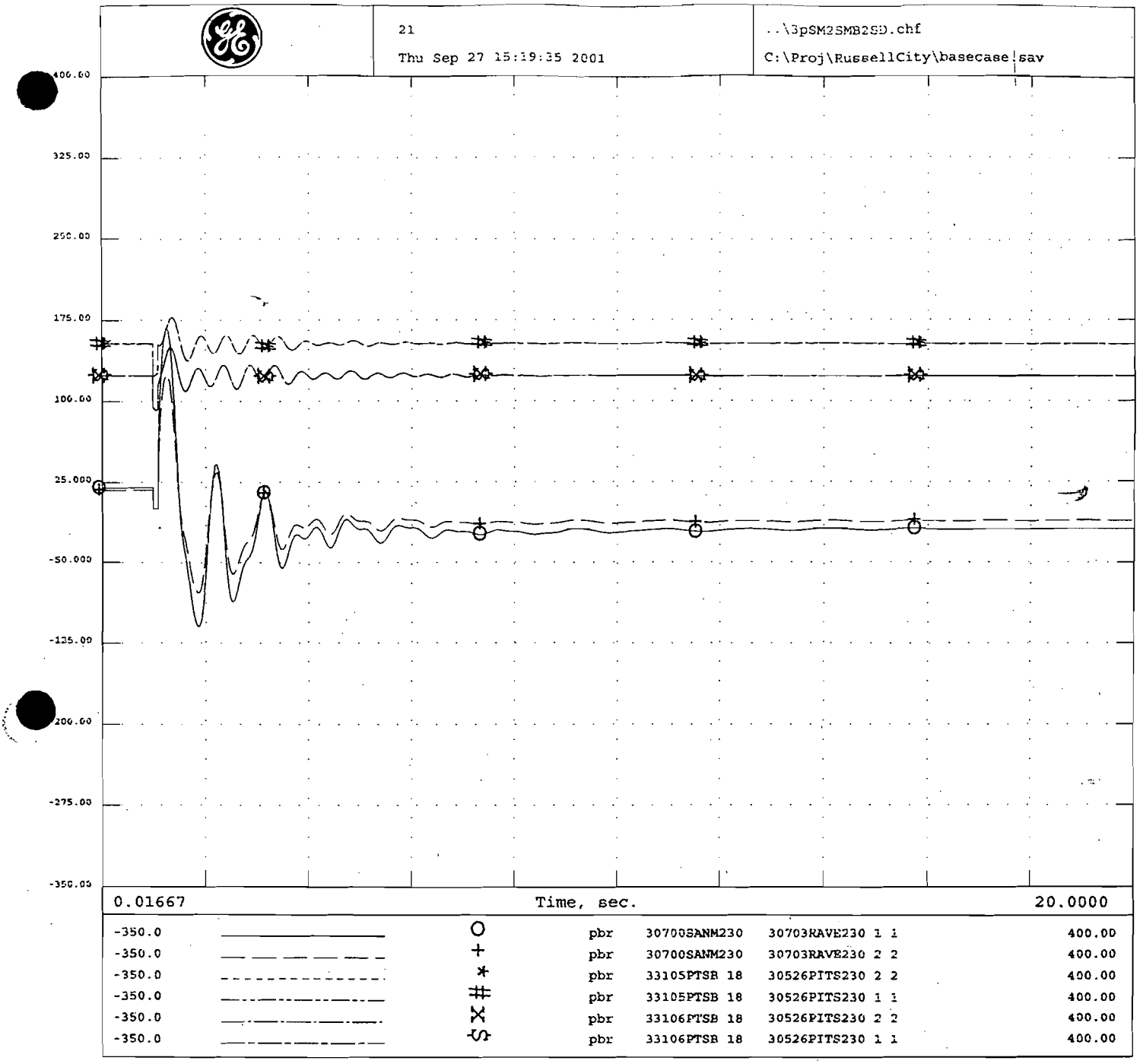

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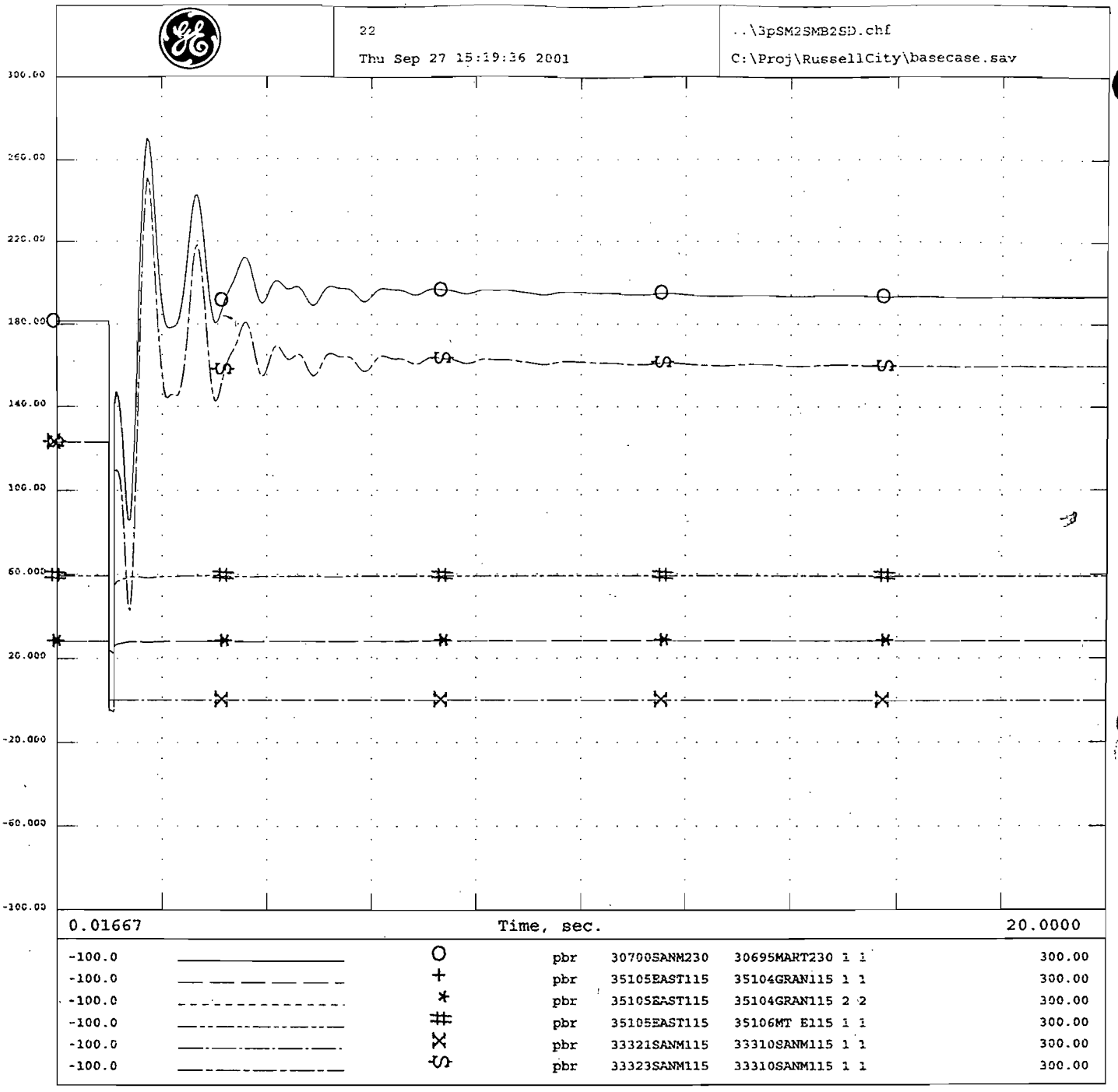

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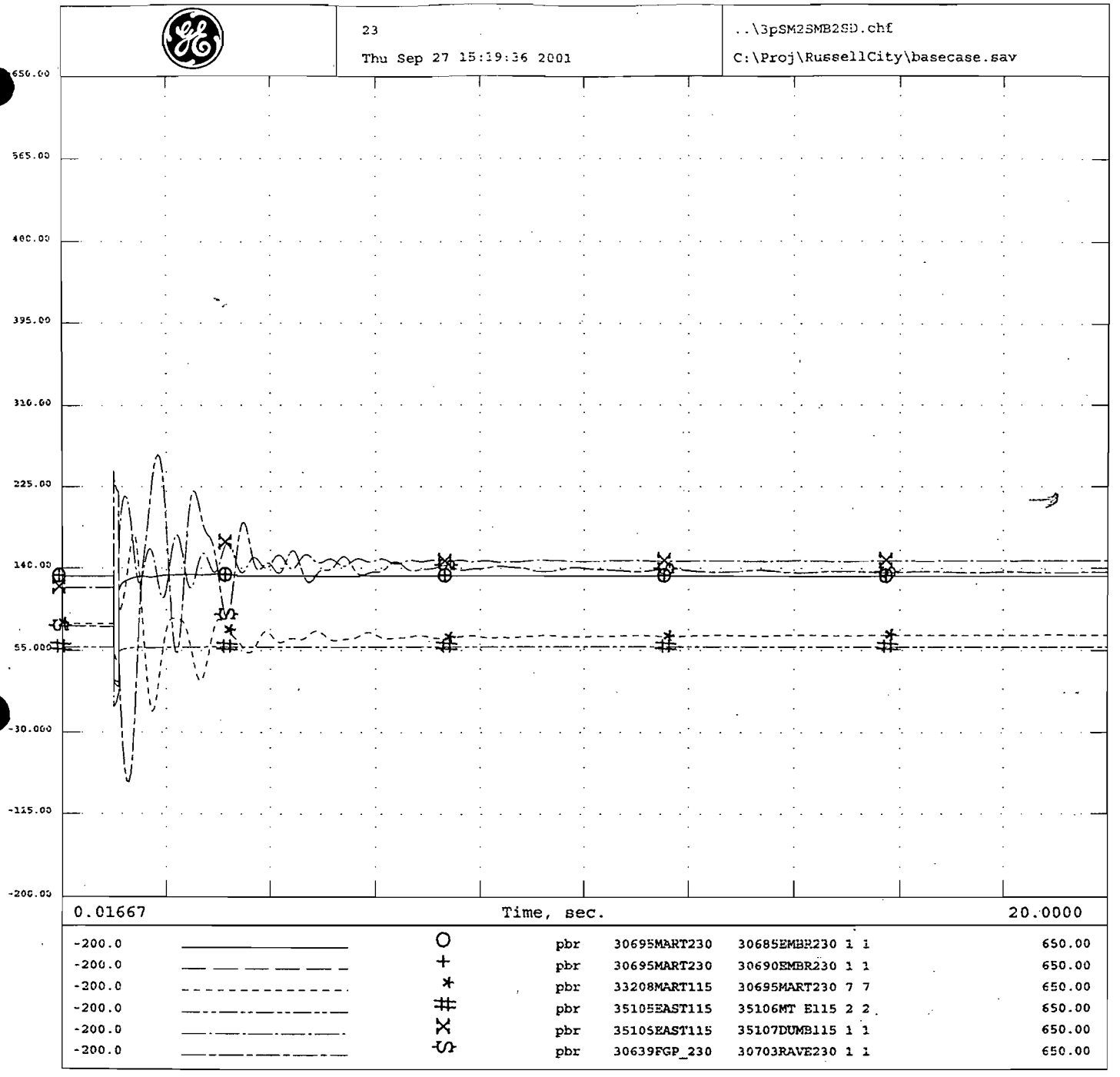

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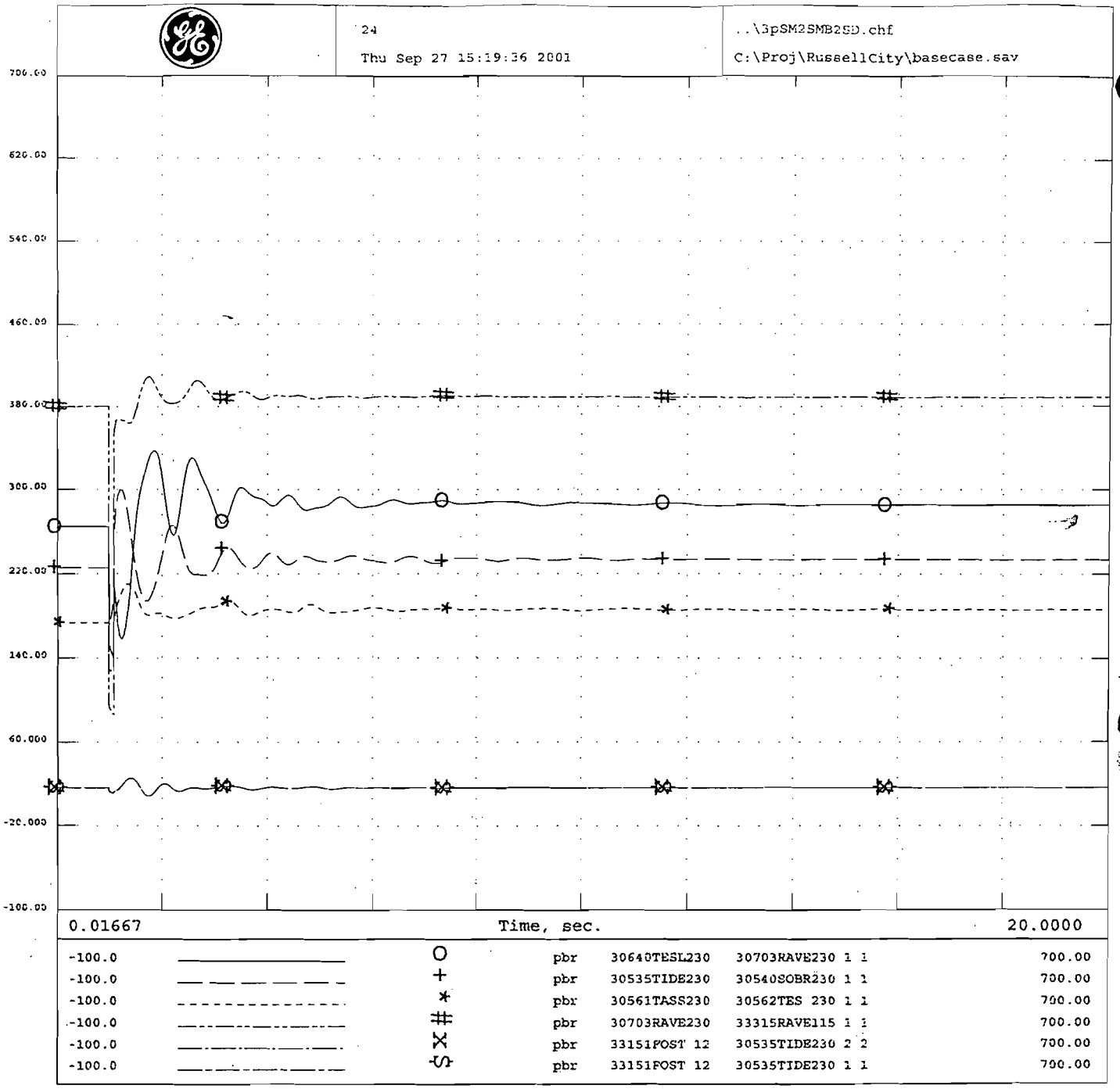

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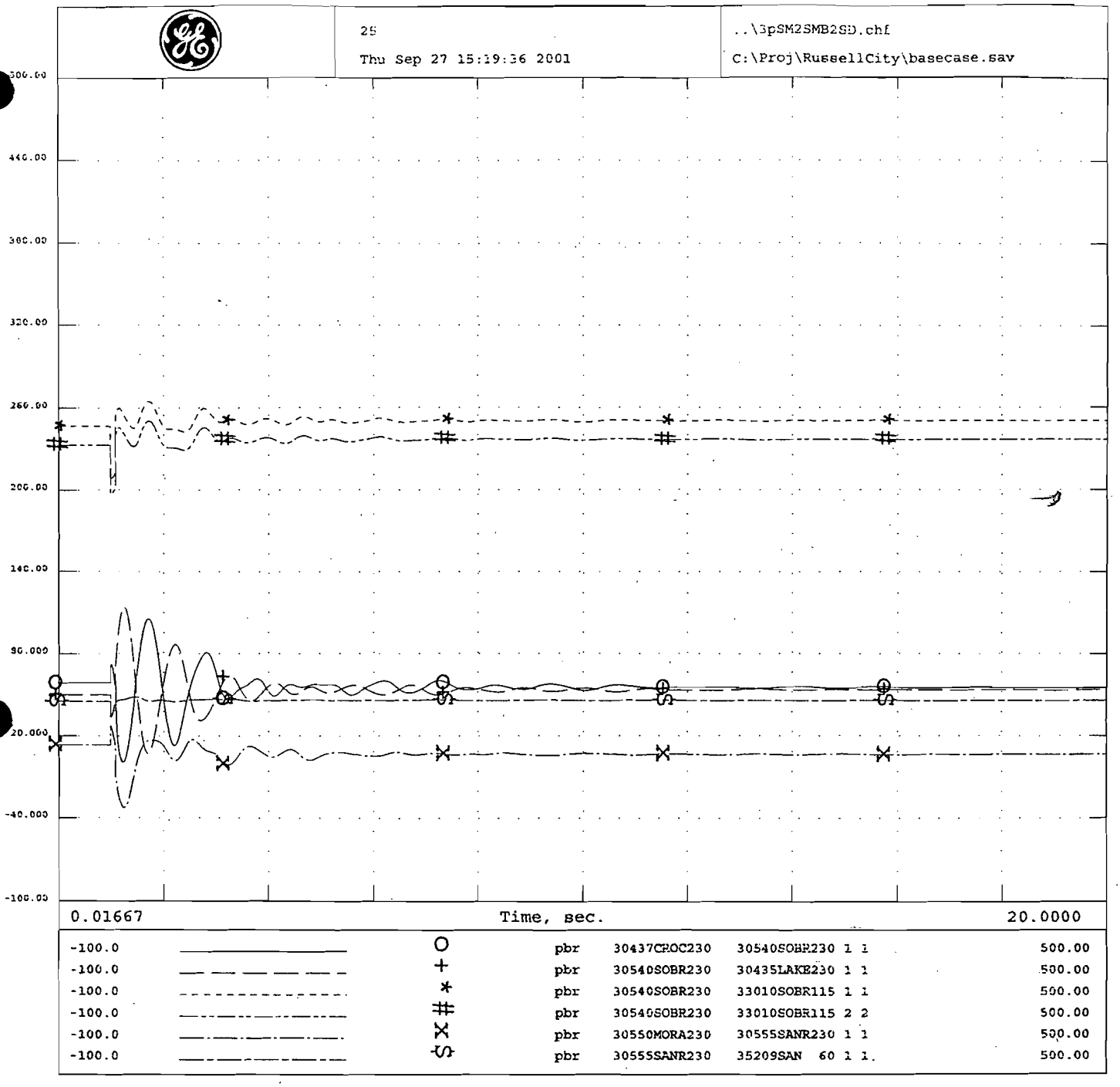

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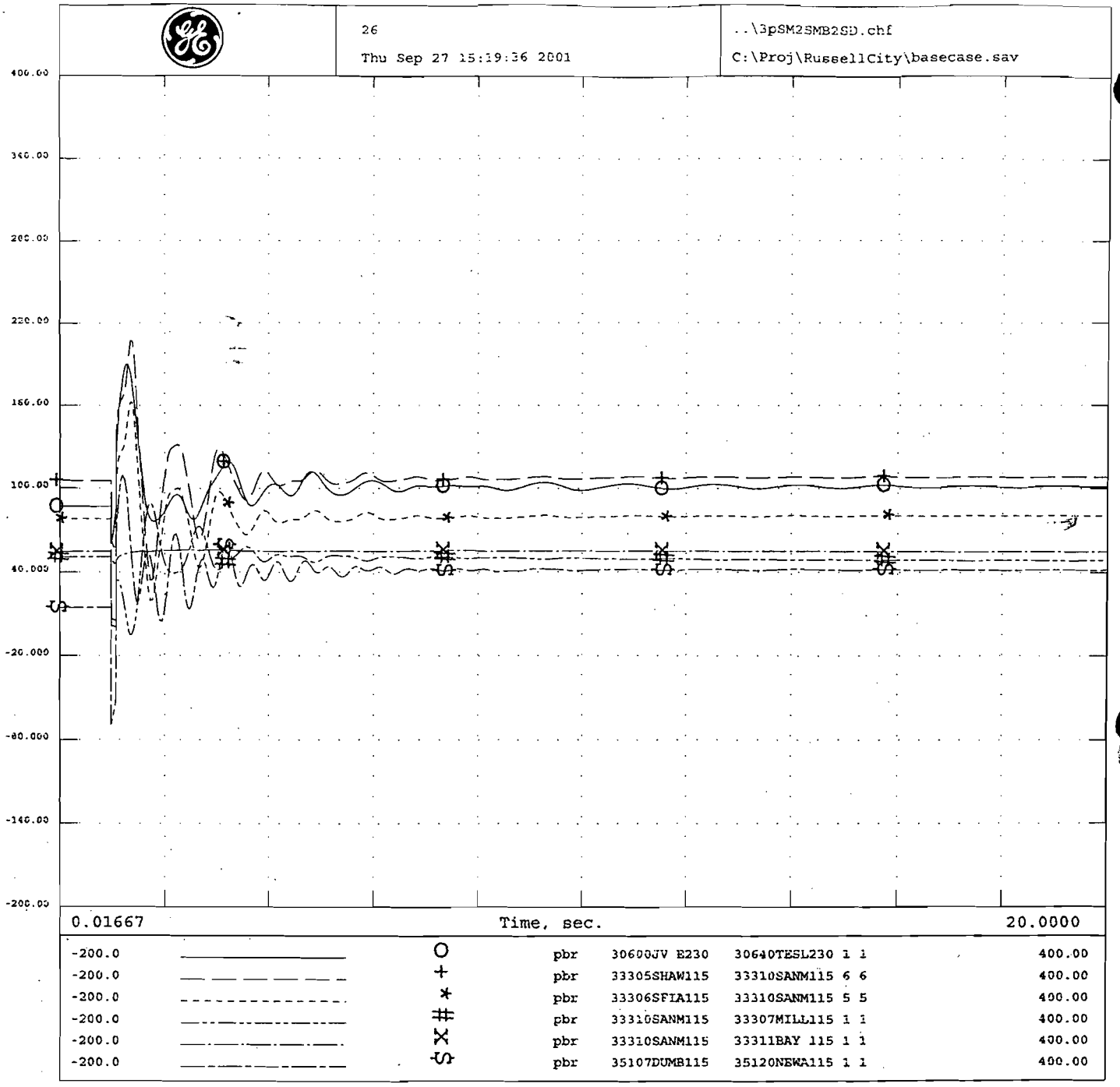

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Calpine/Bechtel Joint Development
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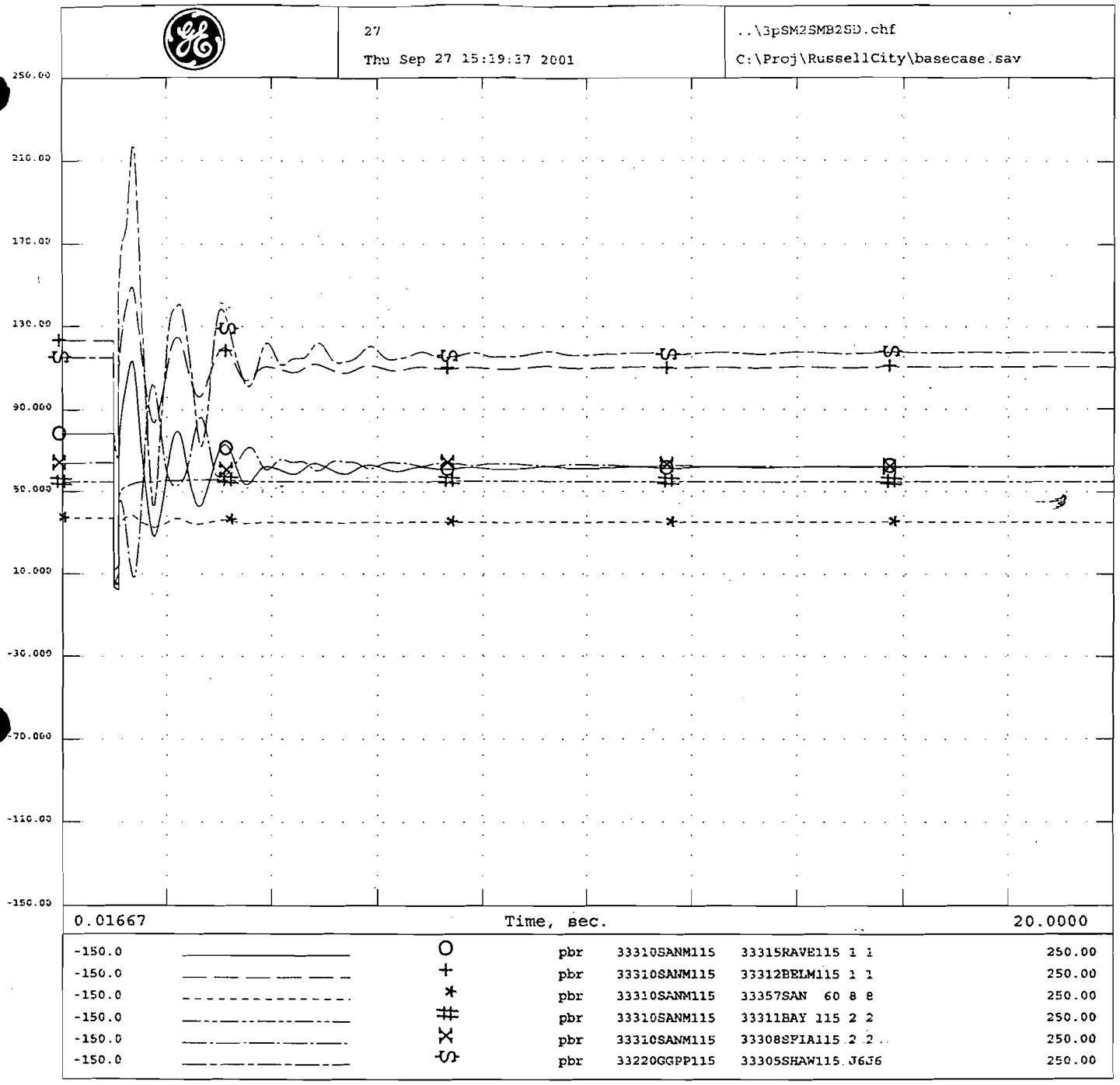

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of San Mateo 230 kV bus 2, section E
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 2, section E
RUN  9
CC
CC   Fault San Mateo 230 kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230 kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip San Mateo bus 2, section E
DL   6.0 "SANMATEO" 230. "RAVENSWD" 230. "1 "
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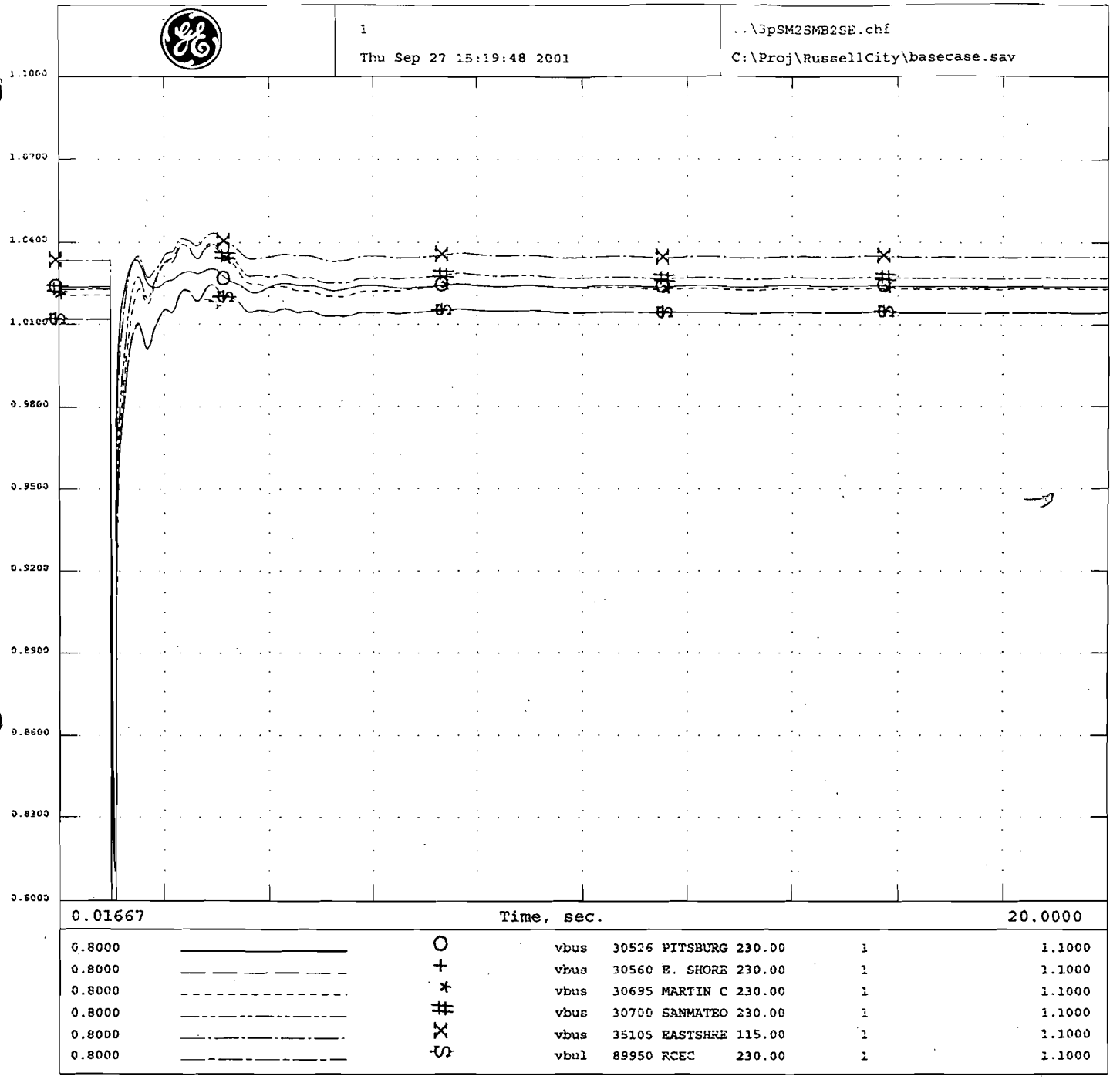

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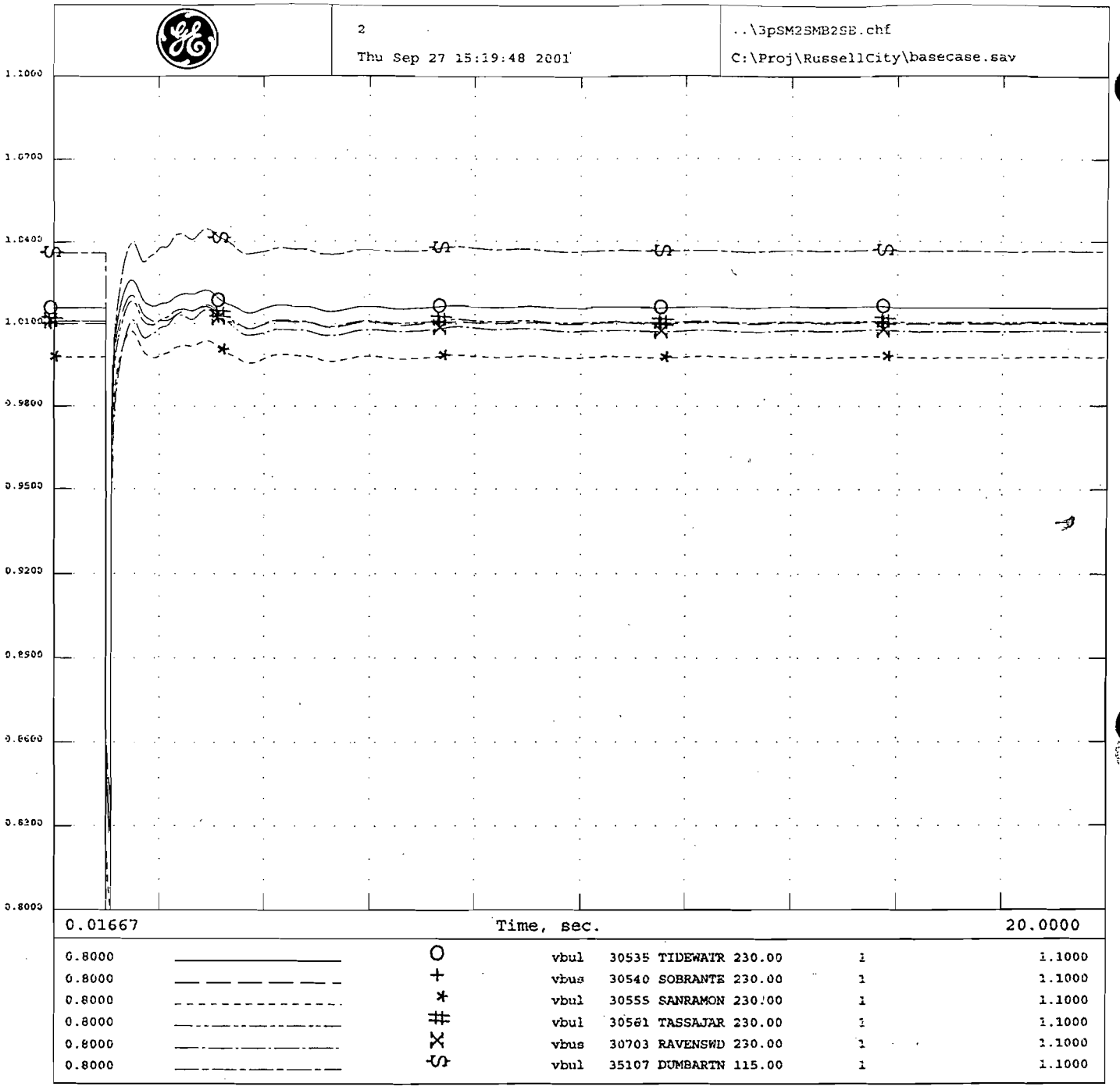
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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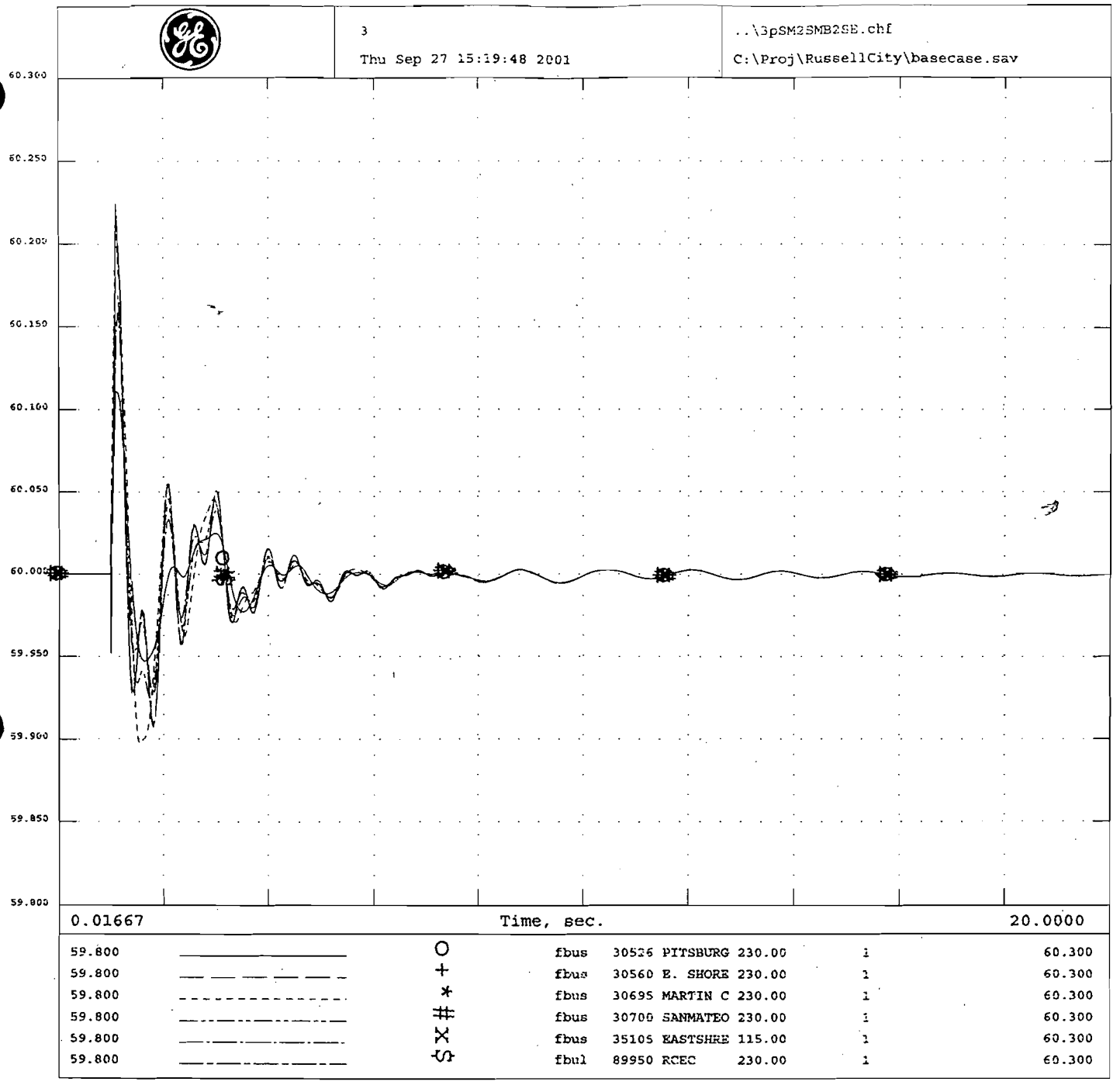

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Calpine/Bechtel Joint Development
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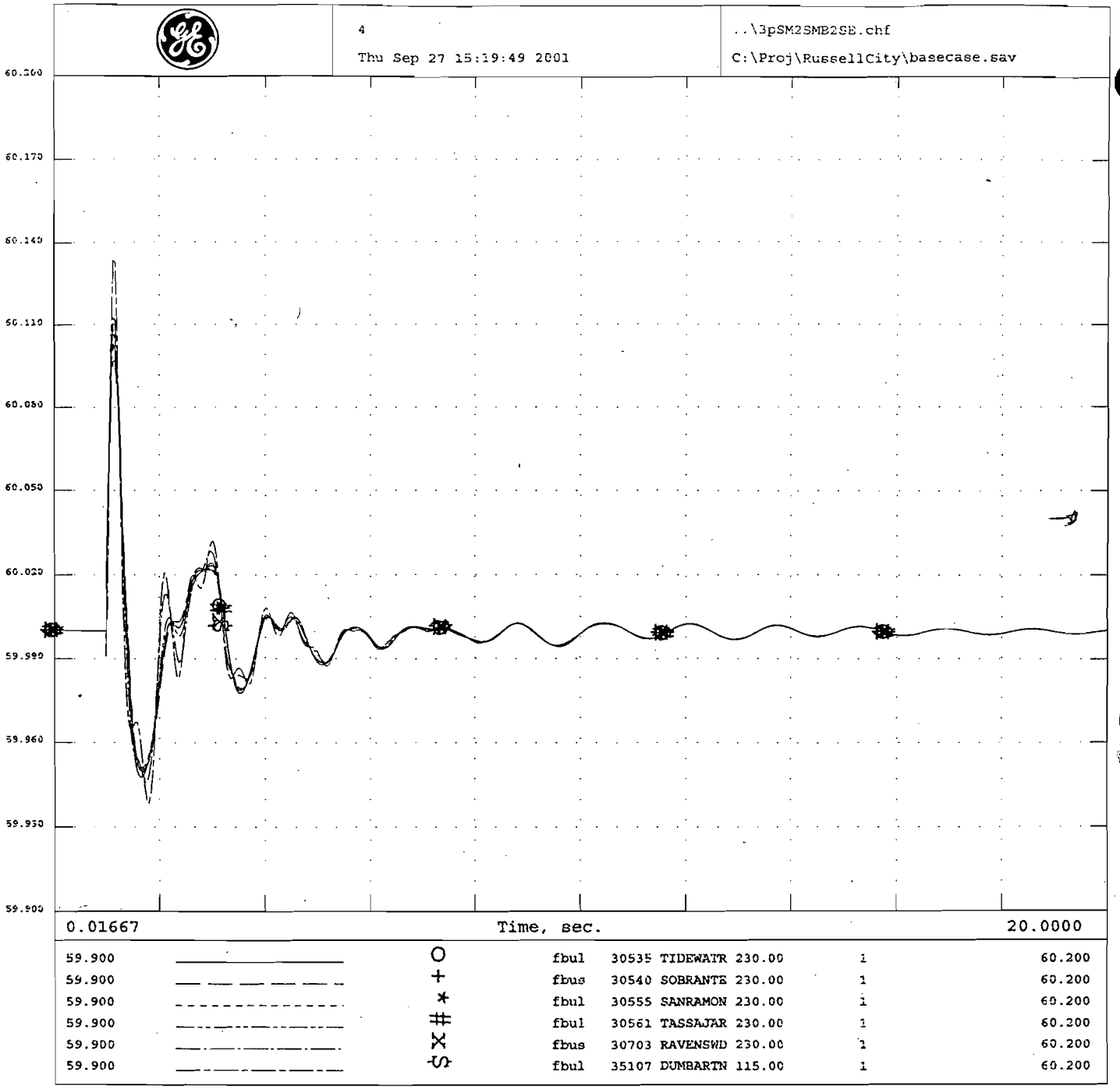

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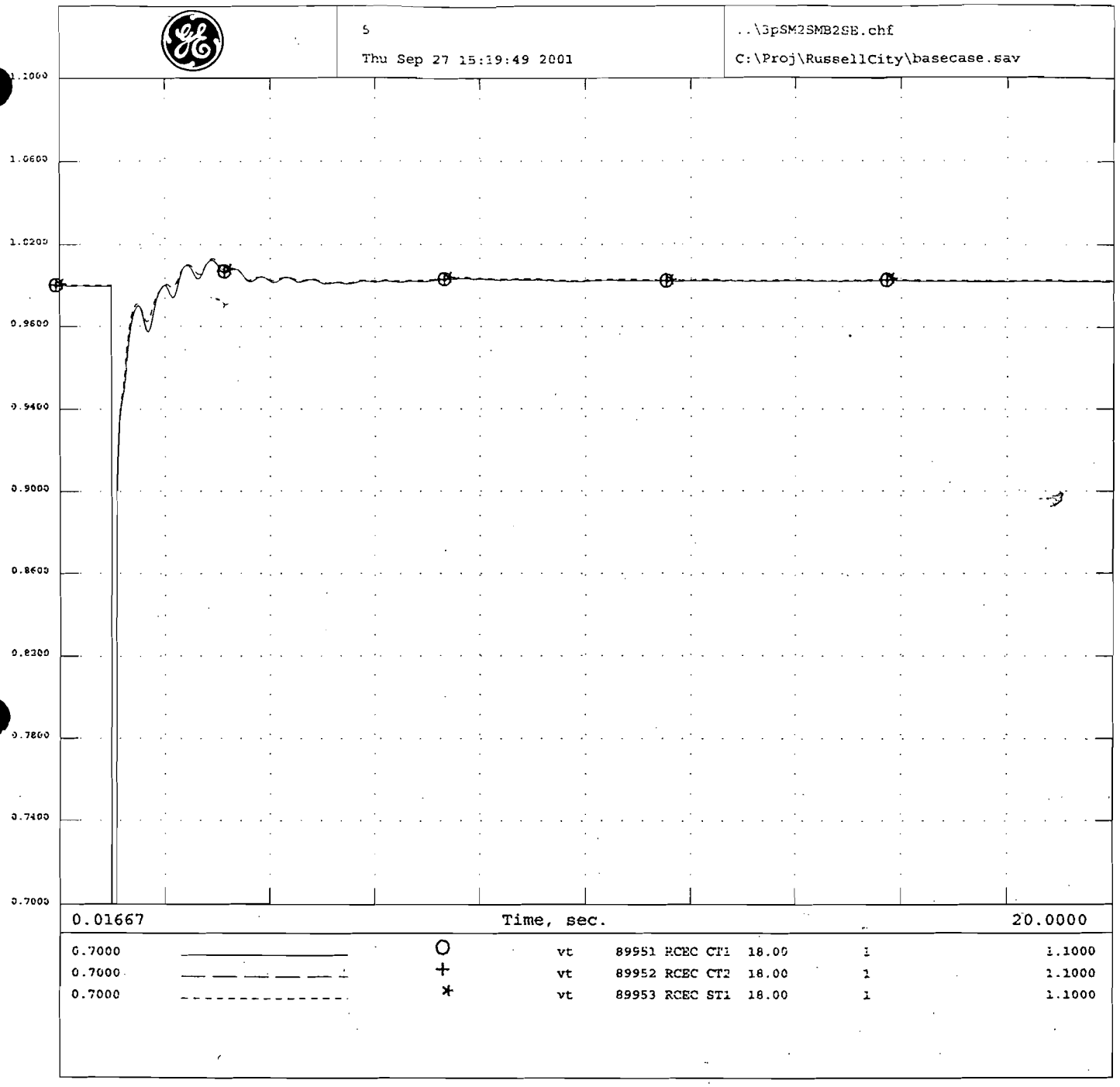

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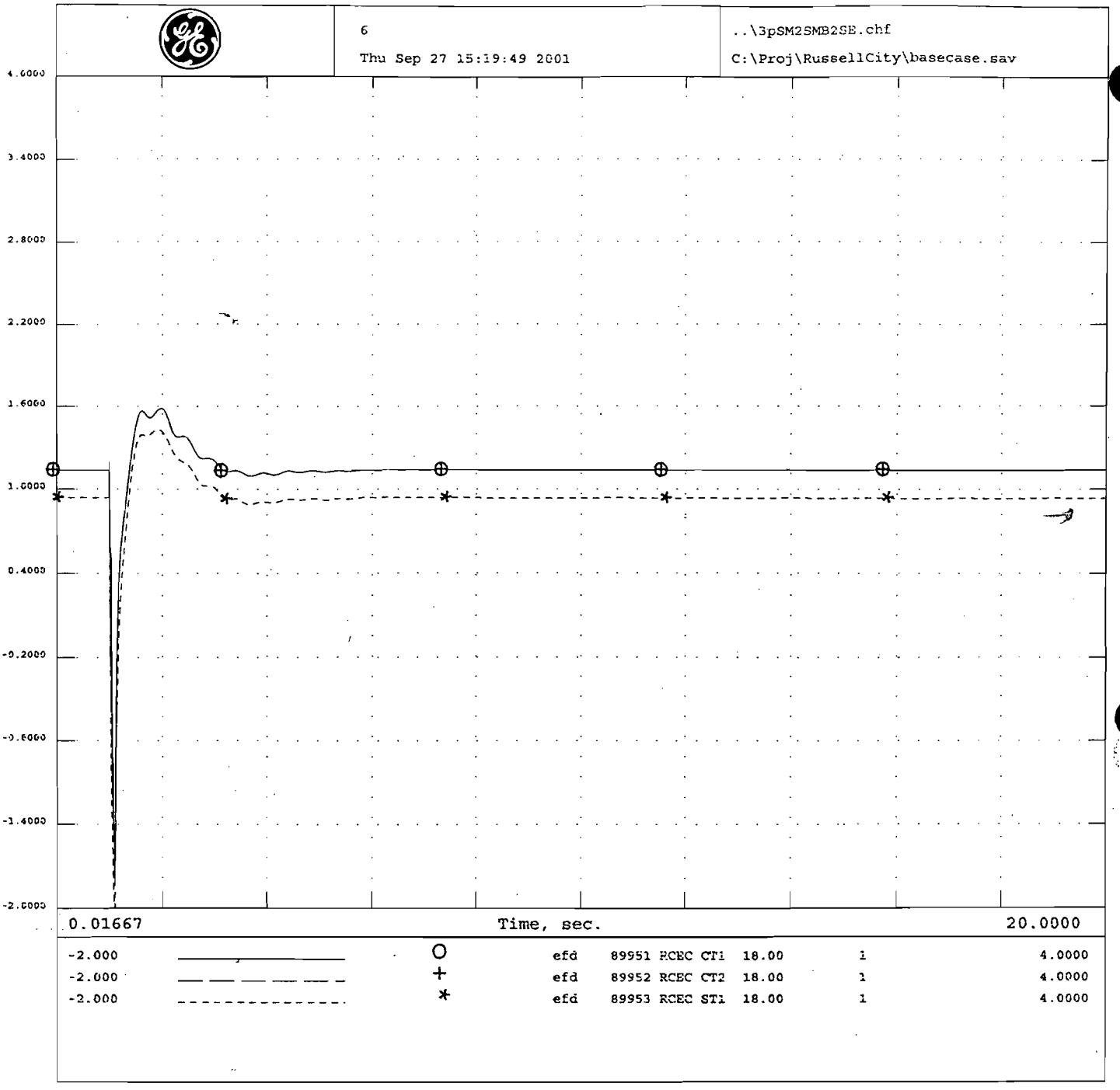
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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Calpine/Bechtel Joint Development
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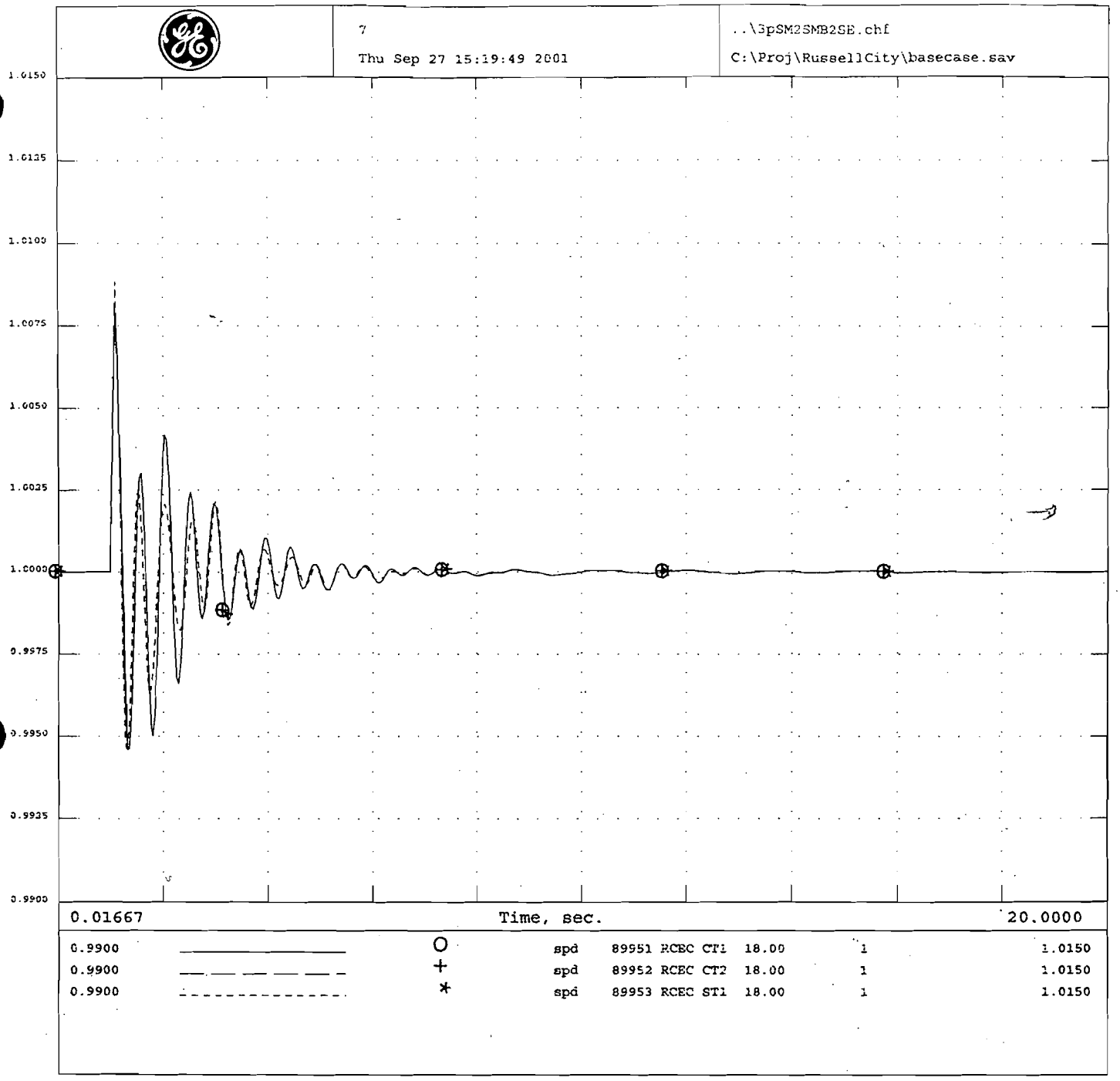

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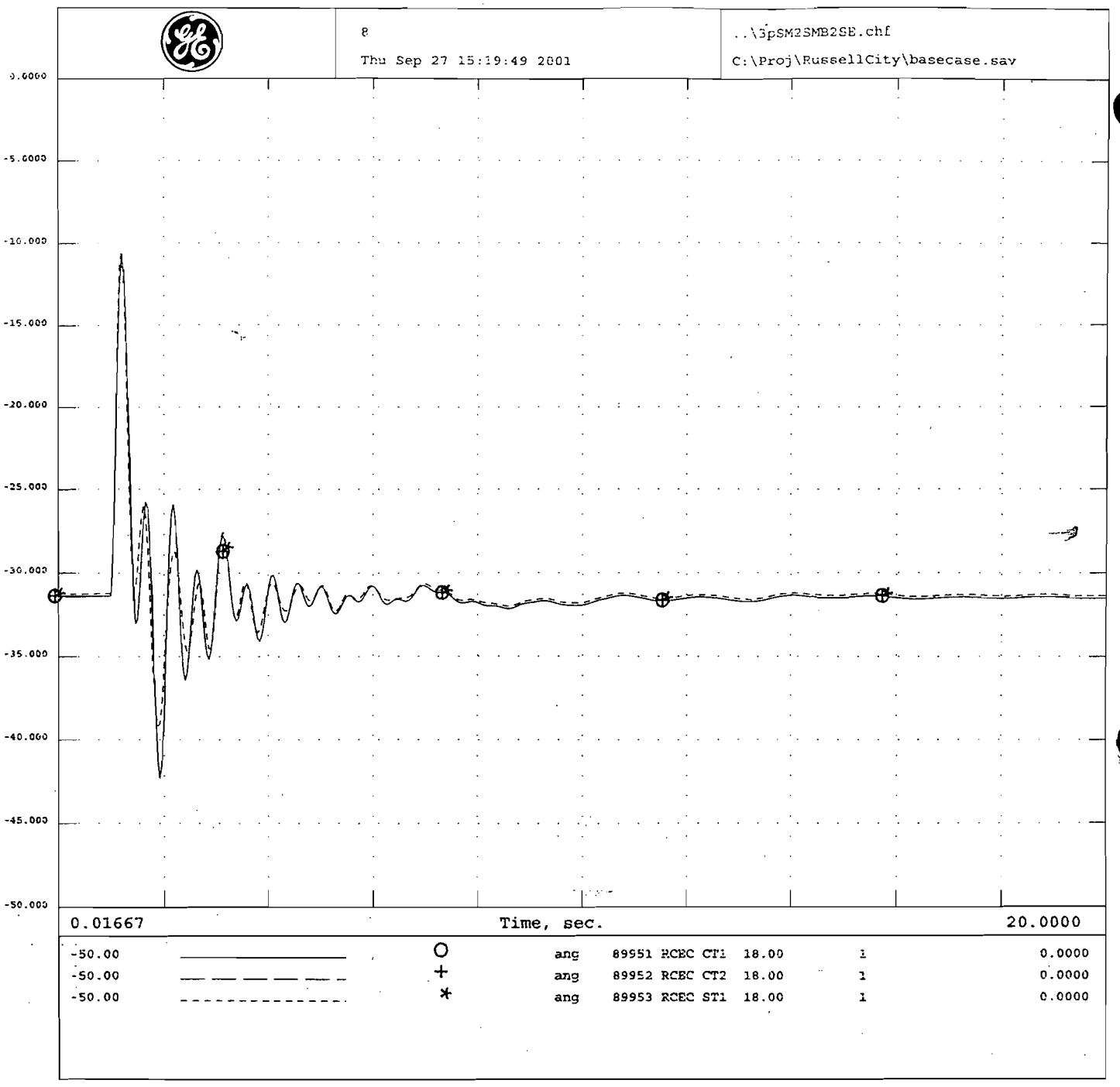
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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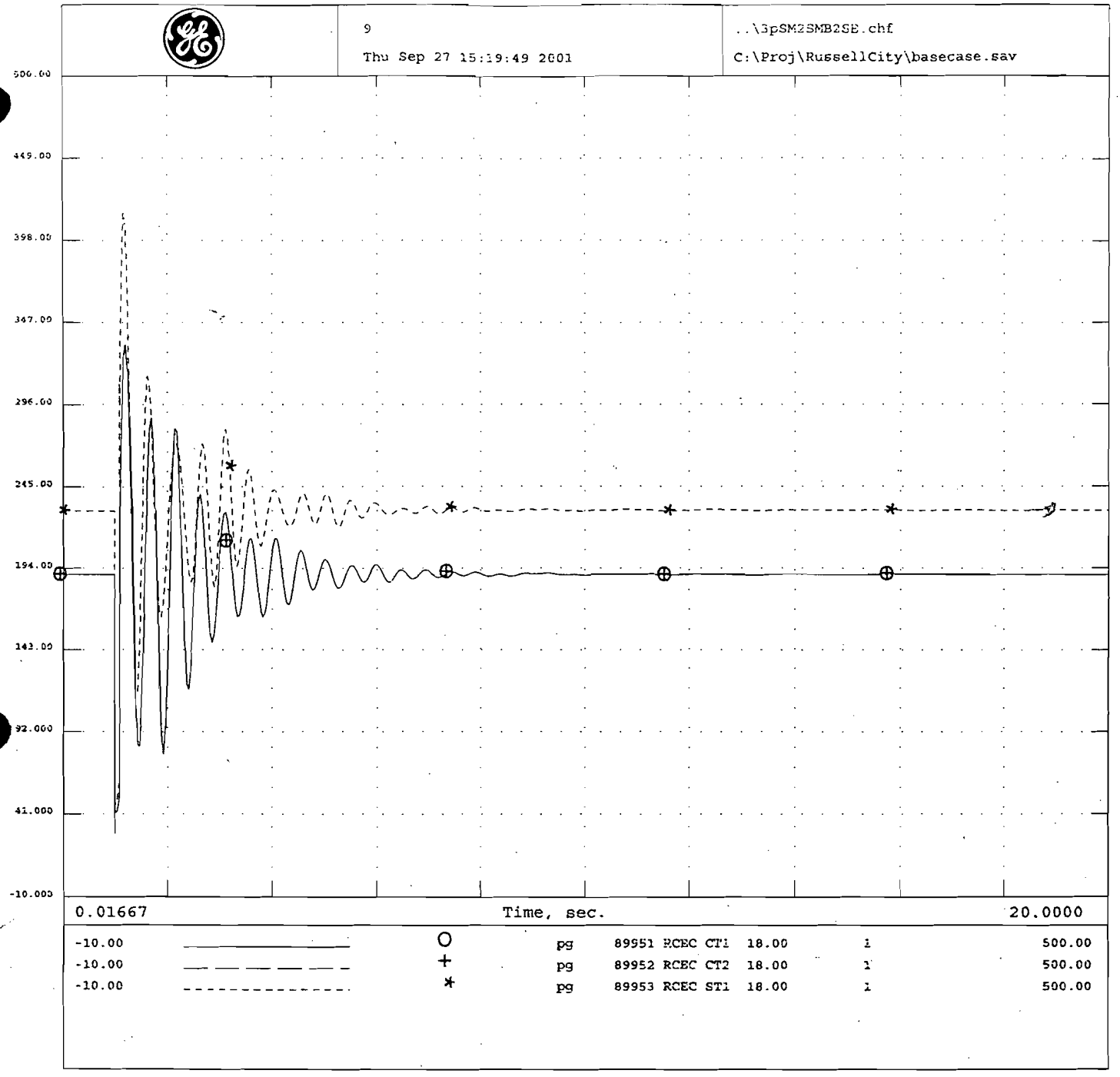
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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Calpine/Bechtel Joint Development
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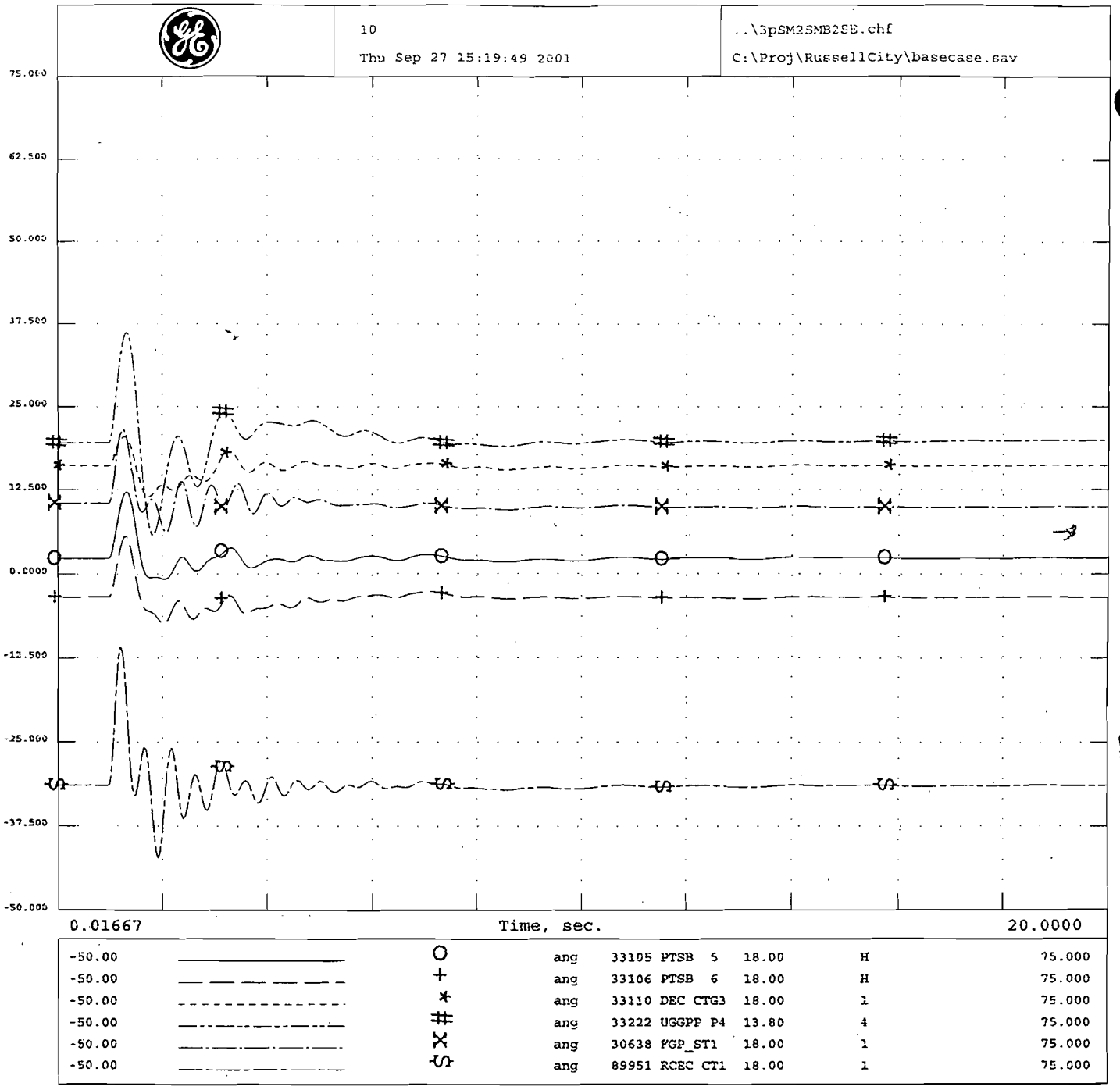

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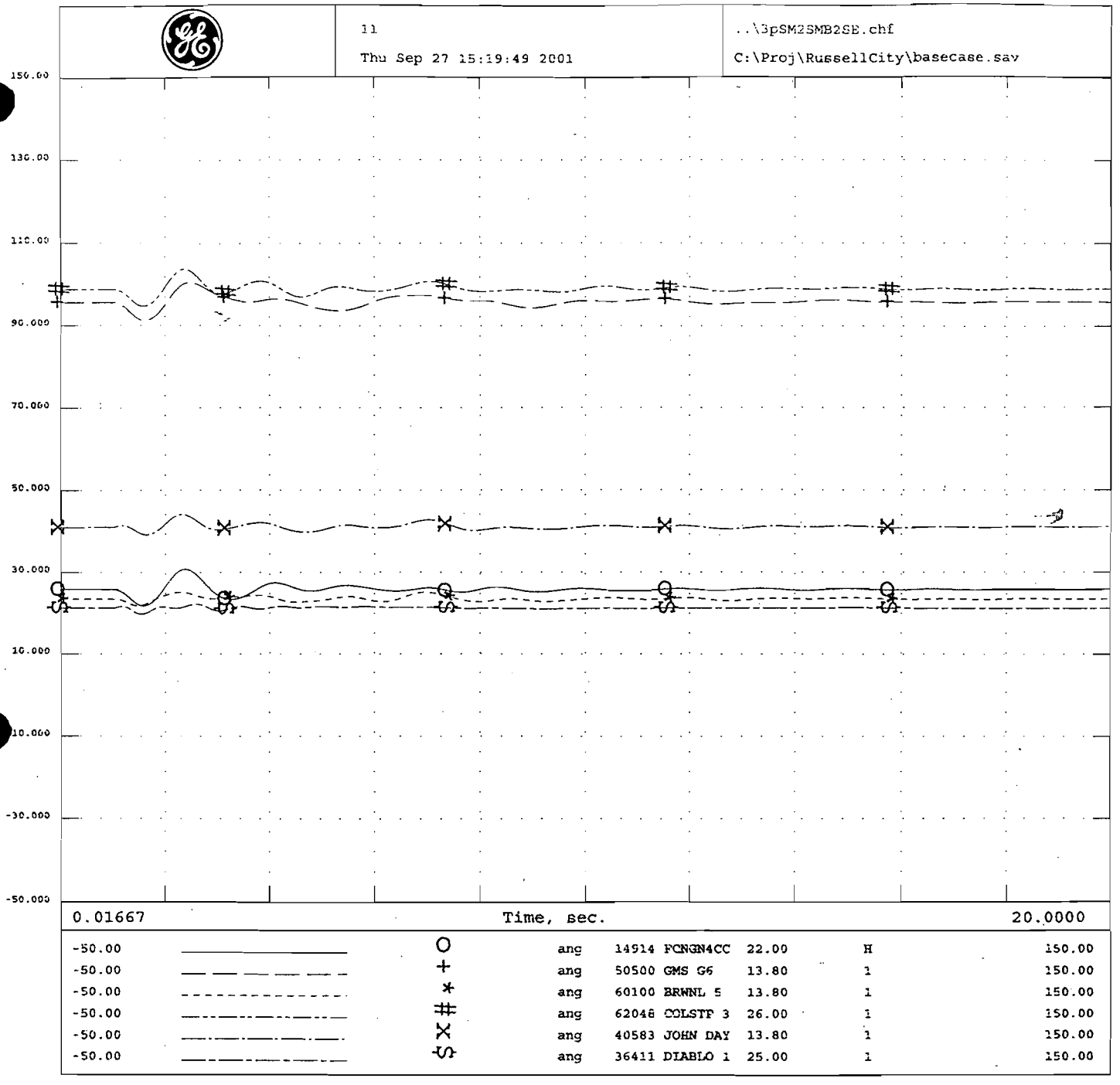
3 phase 6 cycle fault at San Mateo 230 kV bus and trip bus 2, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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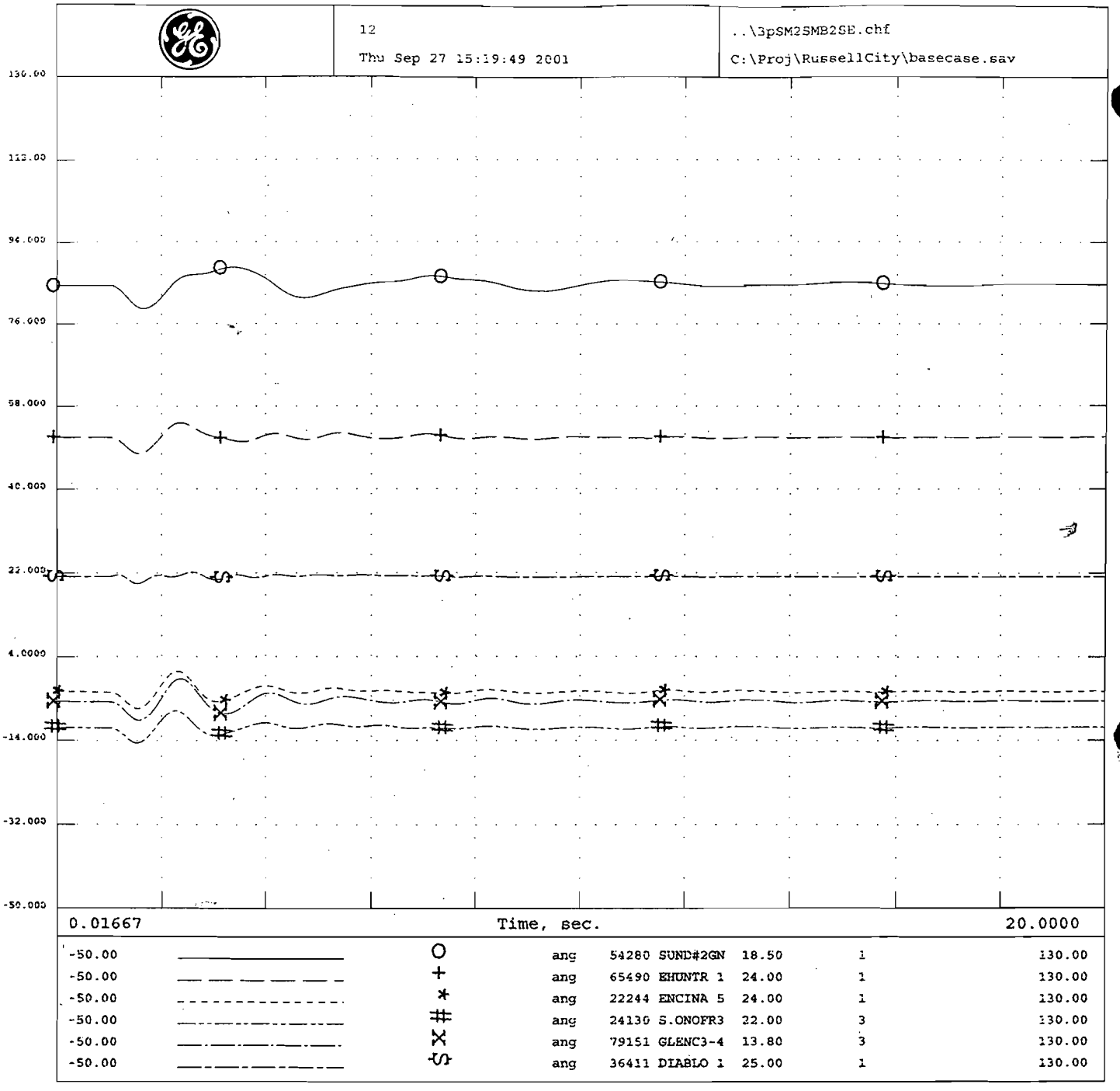
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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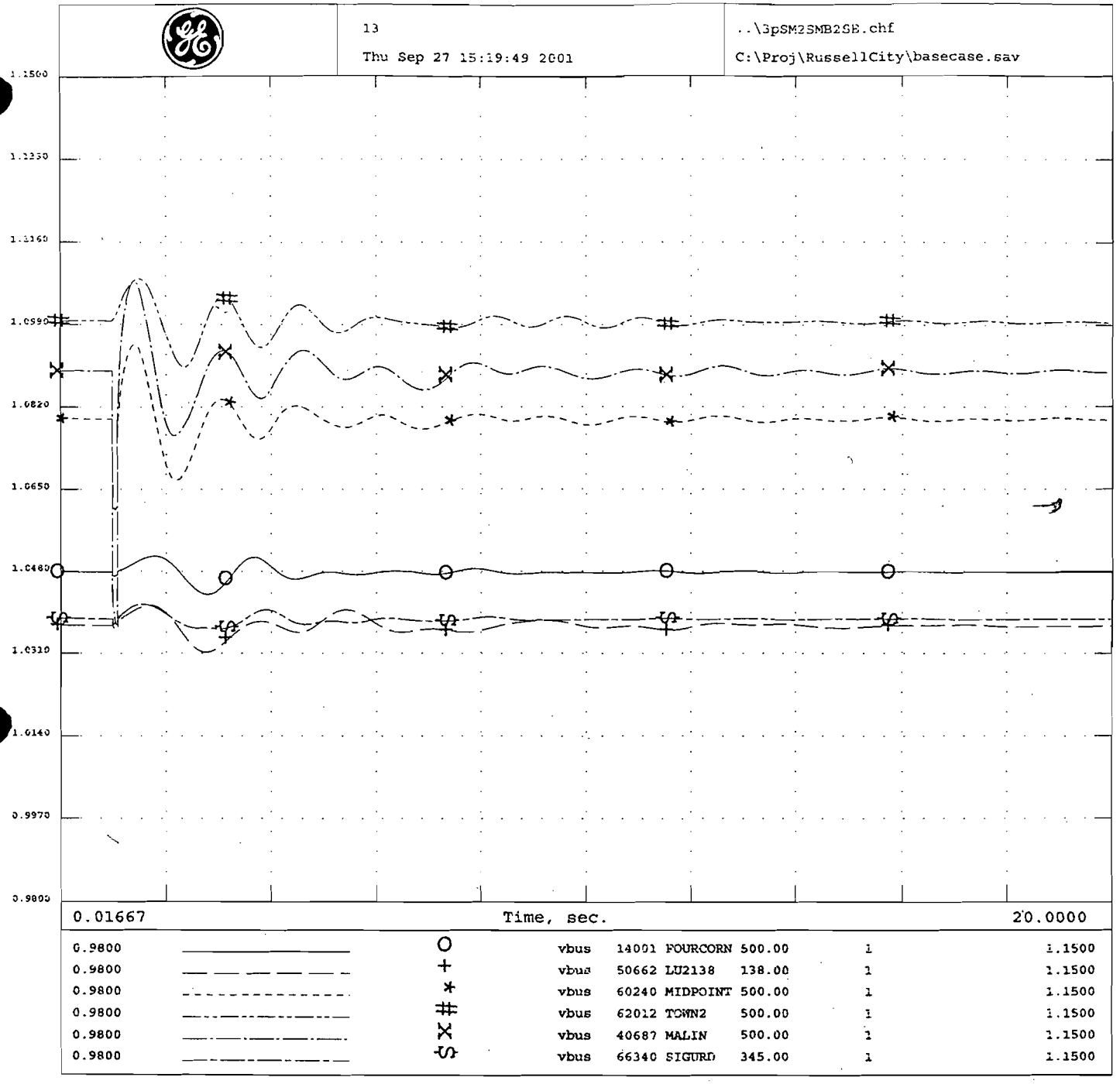

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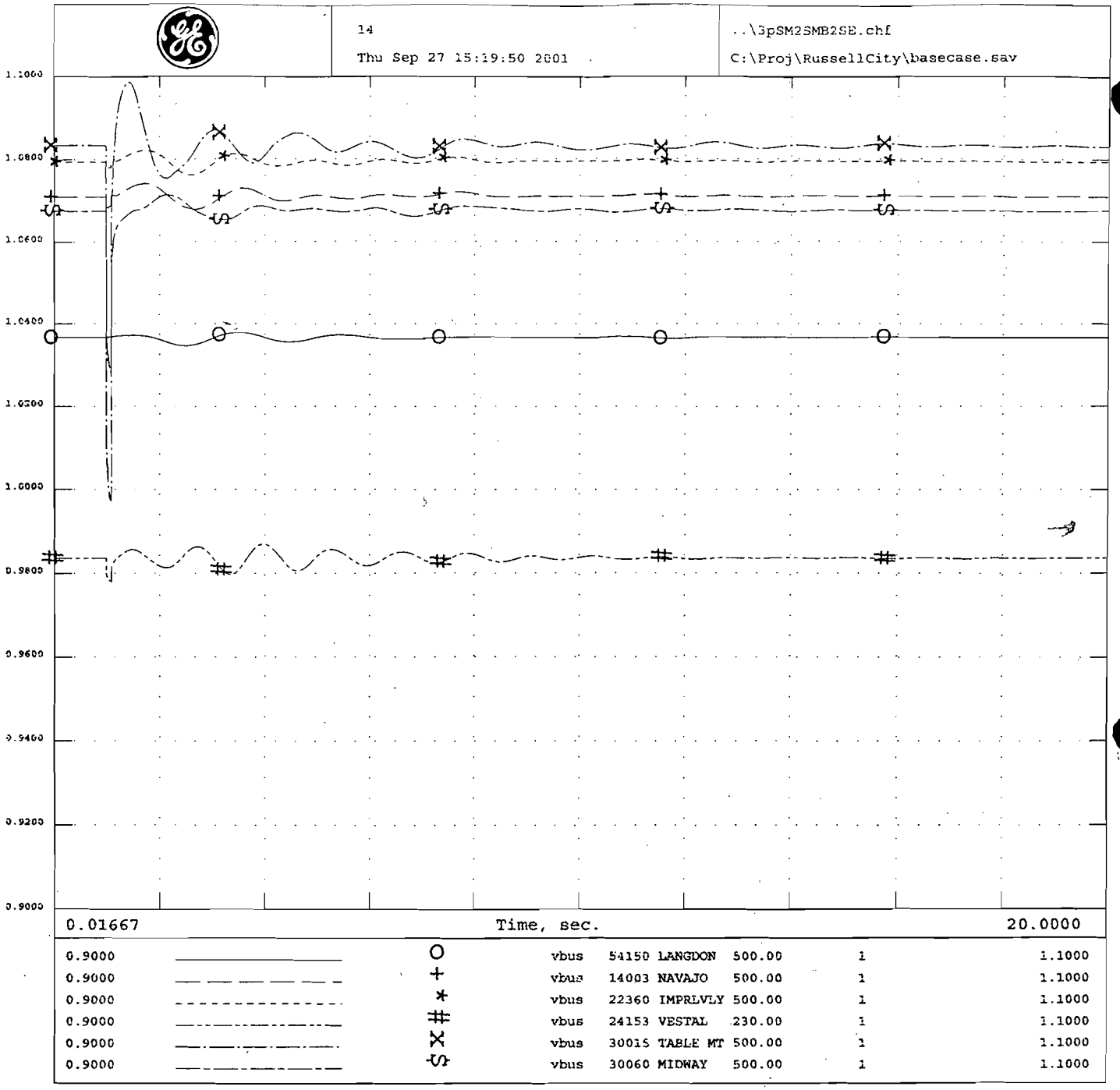
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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Calpine/Bechtel Joint Development
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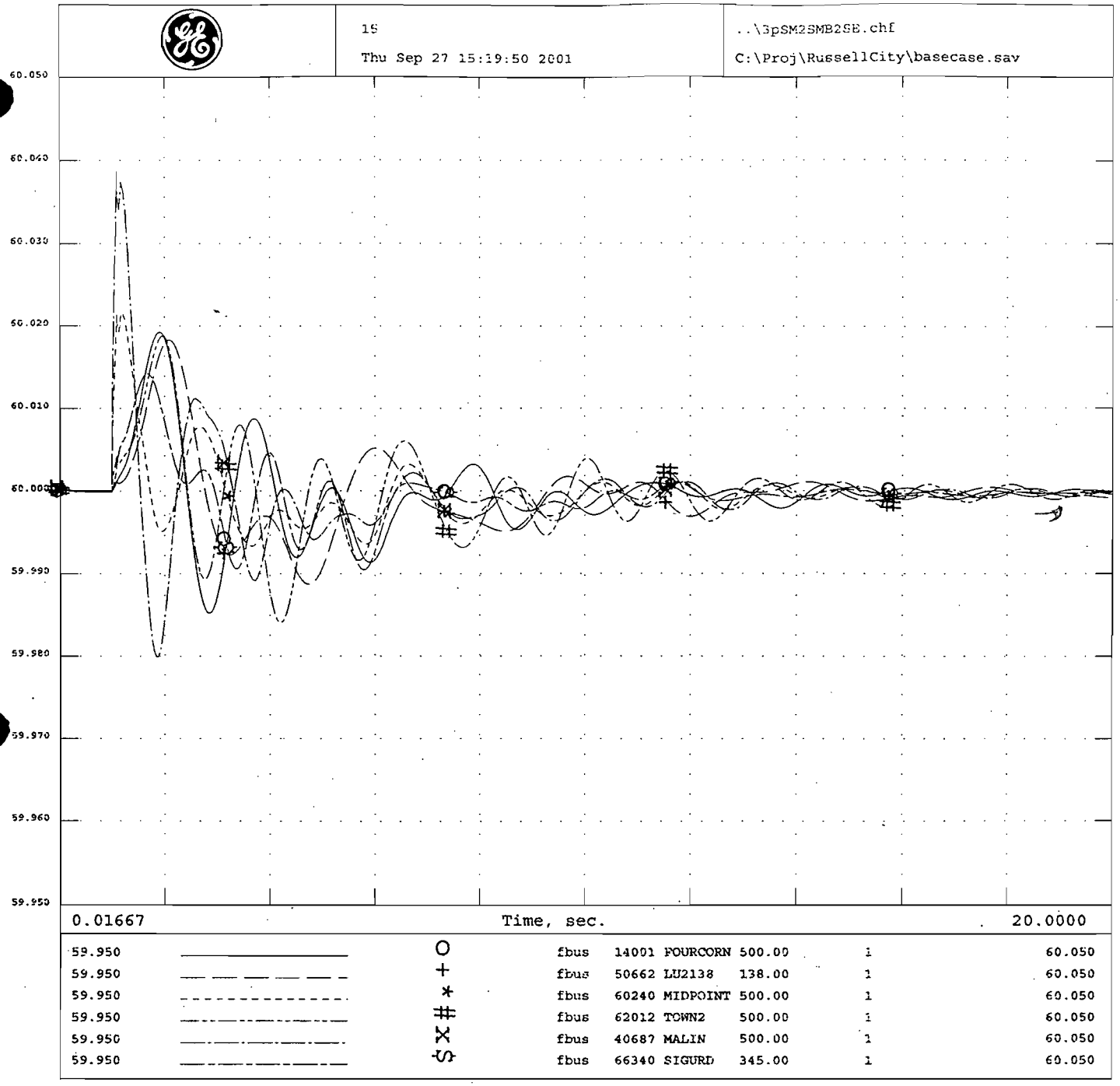

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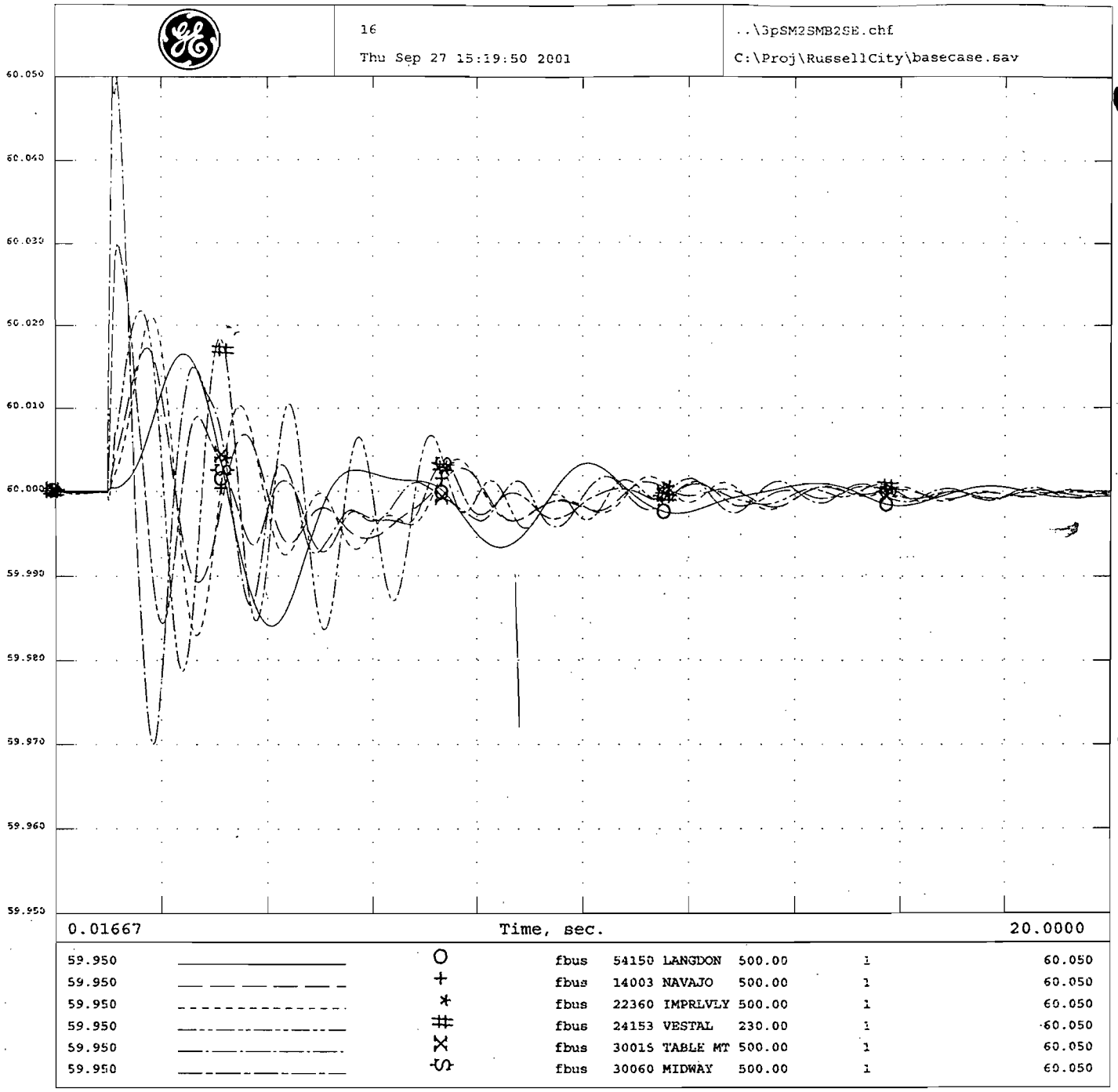
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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Calpine/Bechtel Joint Development
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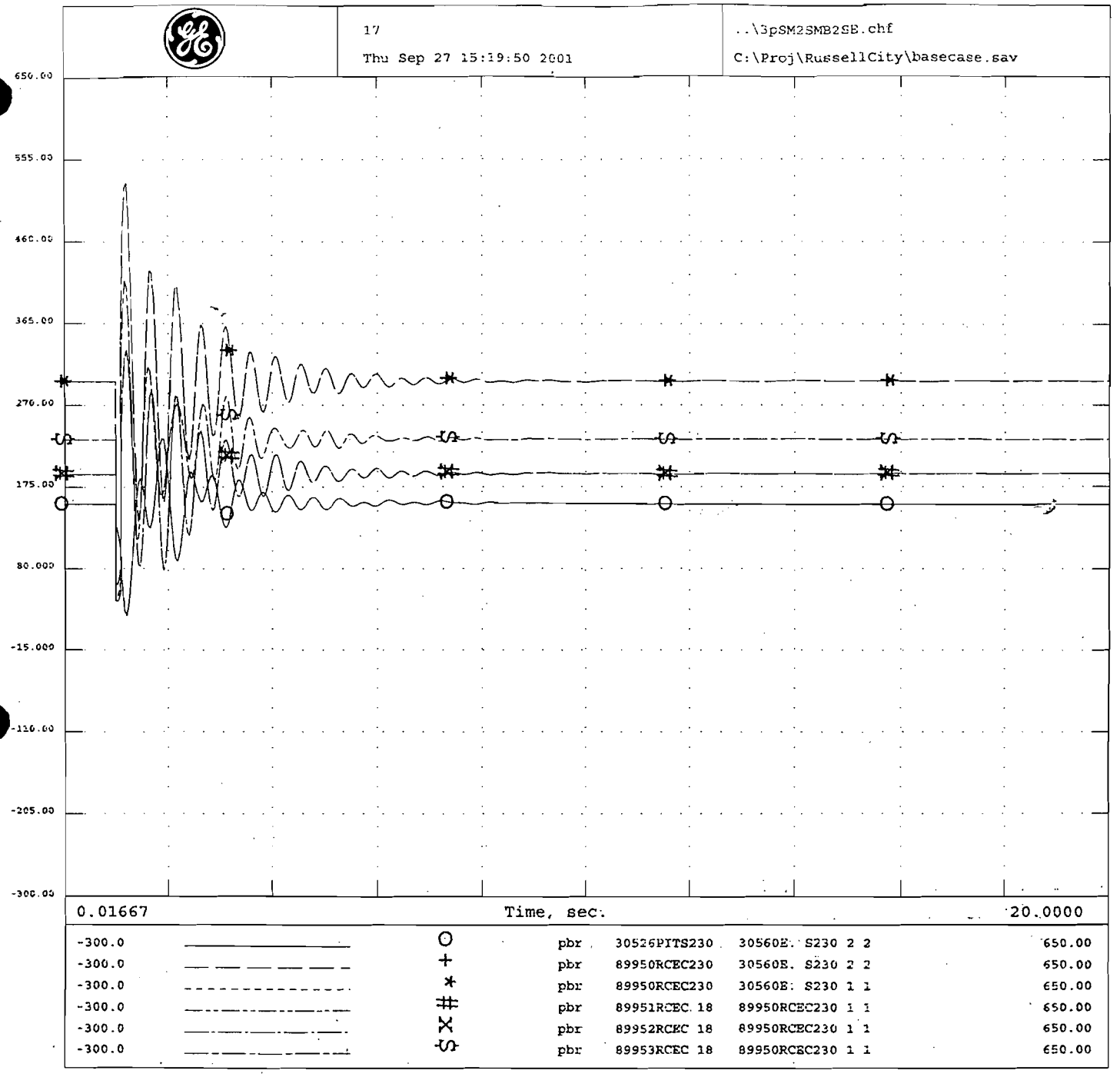

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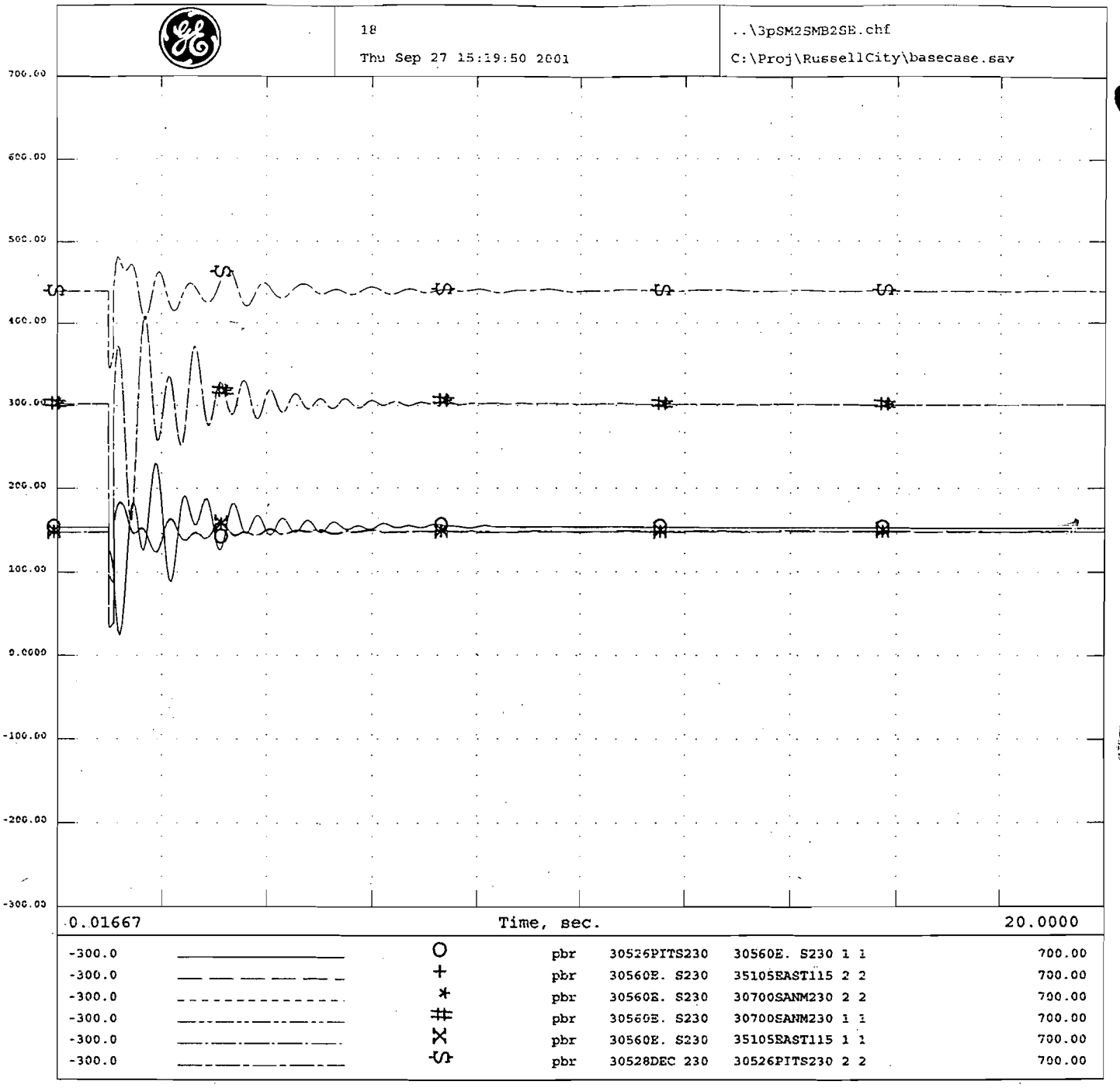
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Calpine/Bechtel Joint Development
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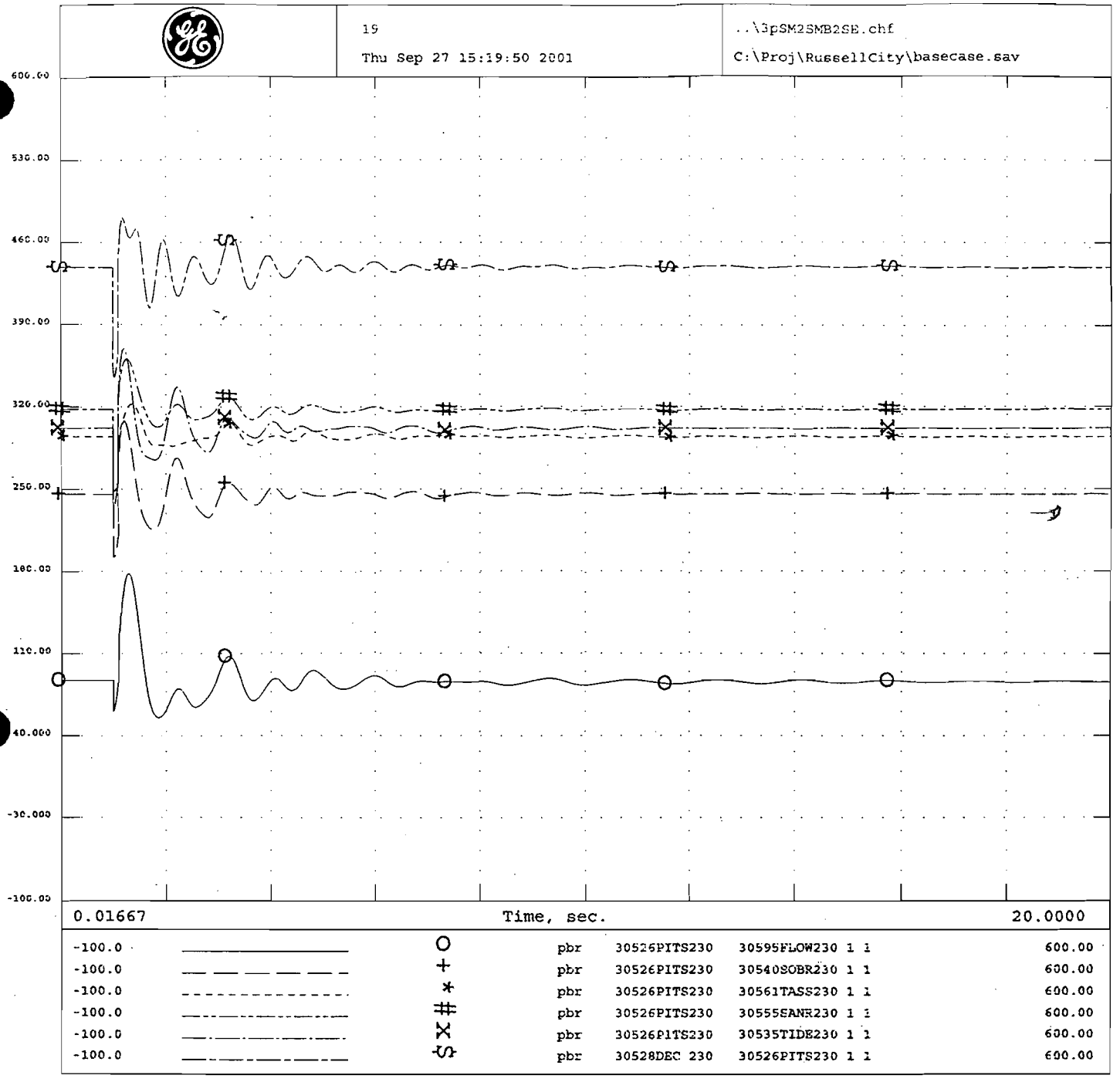

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Calpine/Bechtel Joint Development
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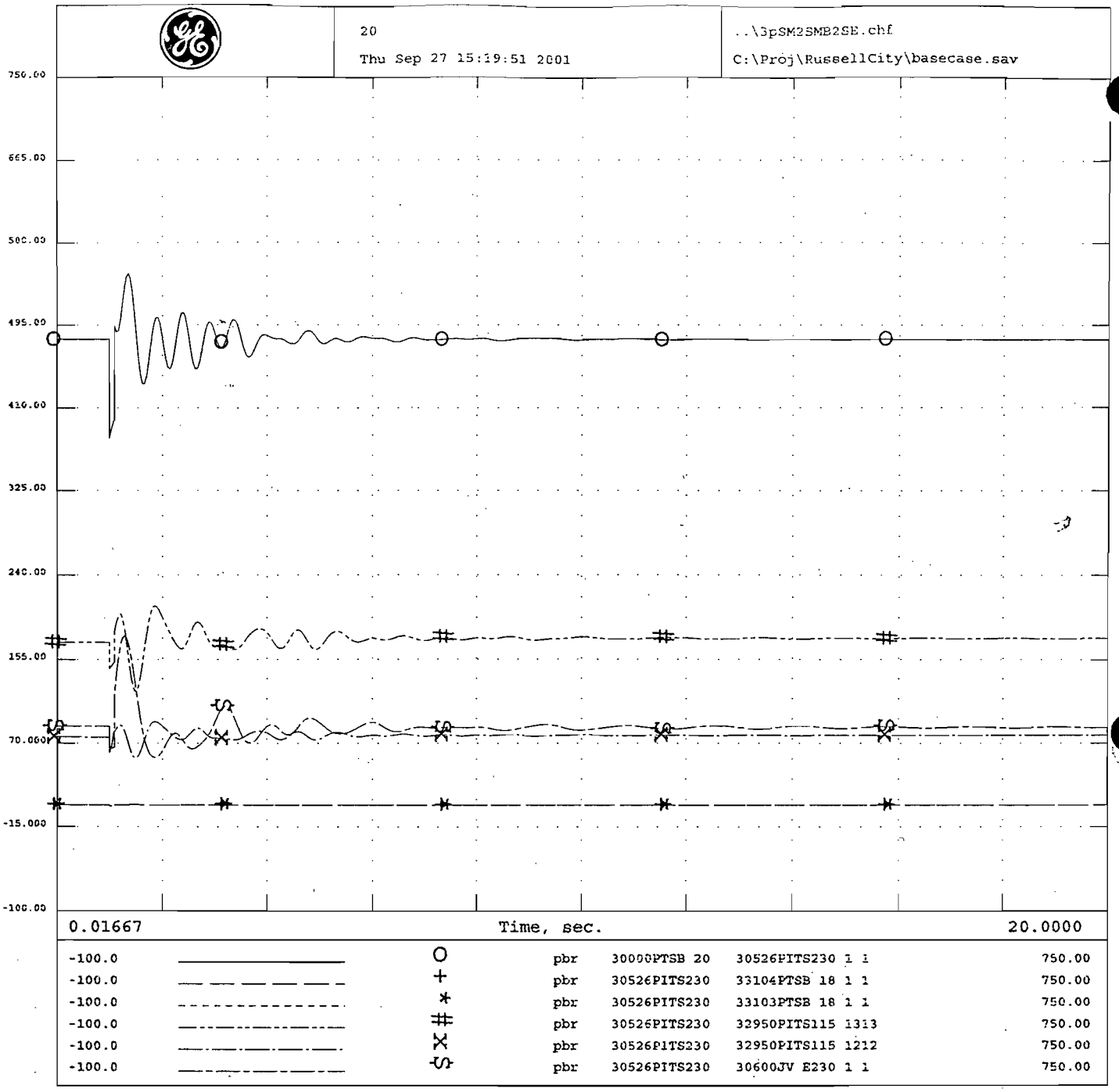

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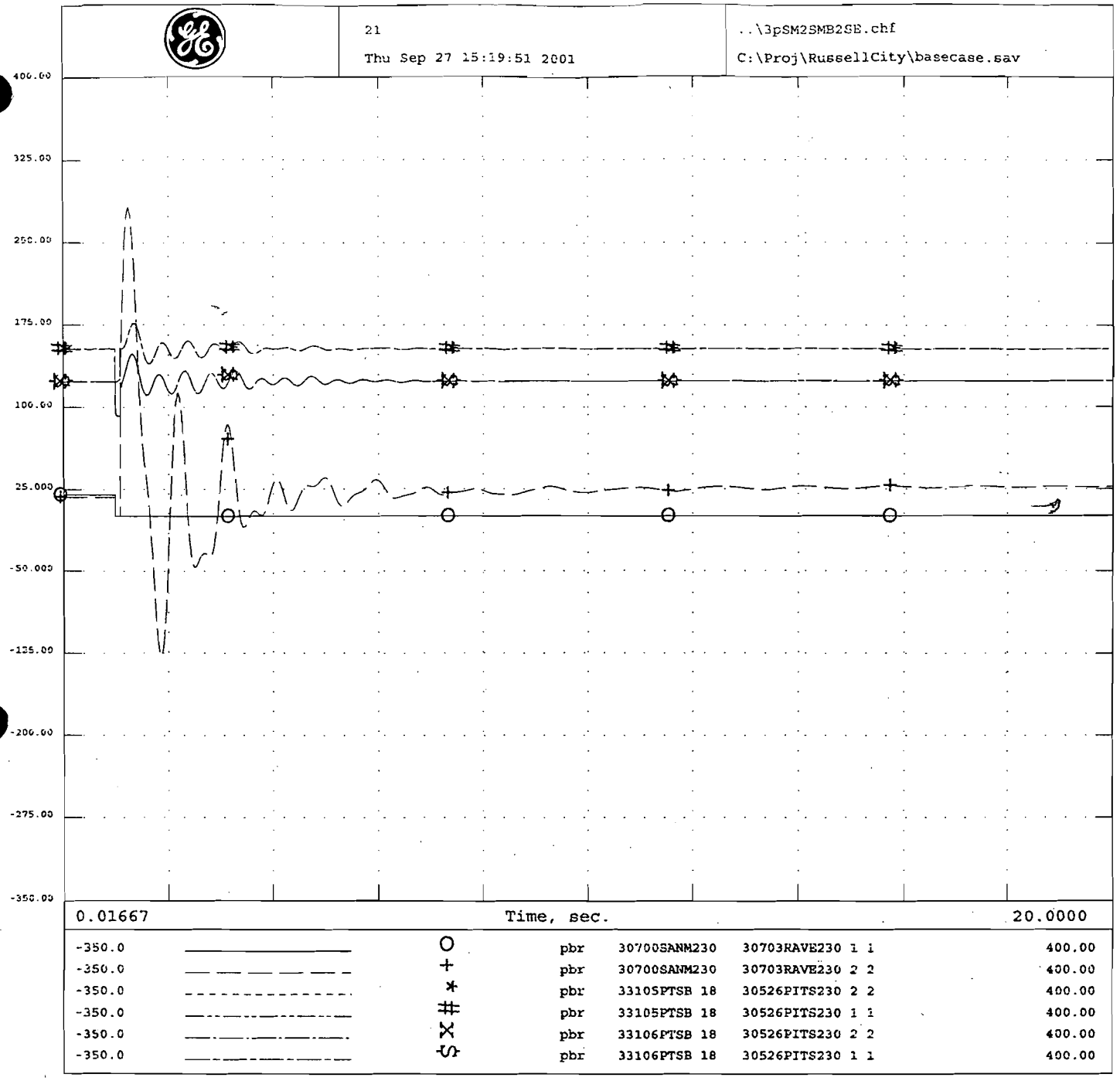

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Calpine/Bechtel Joint Development
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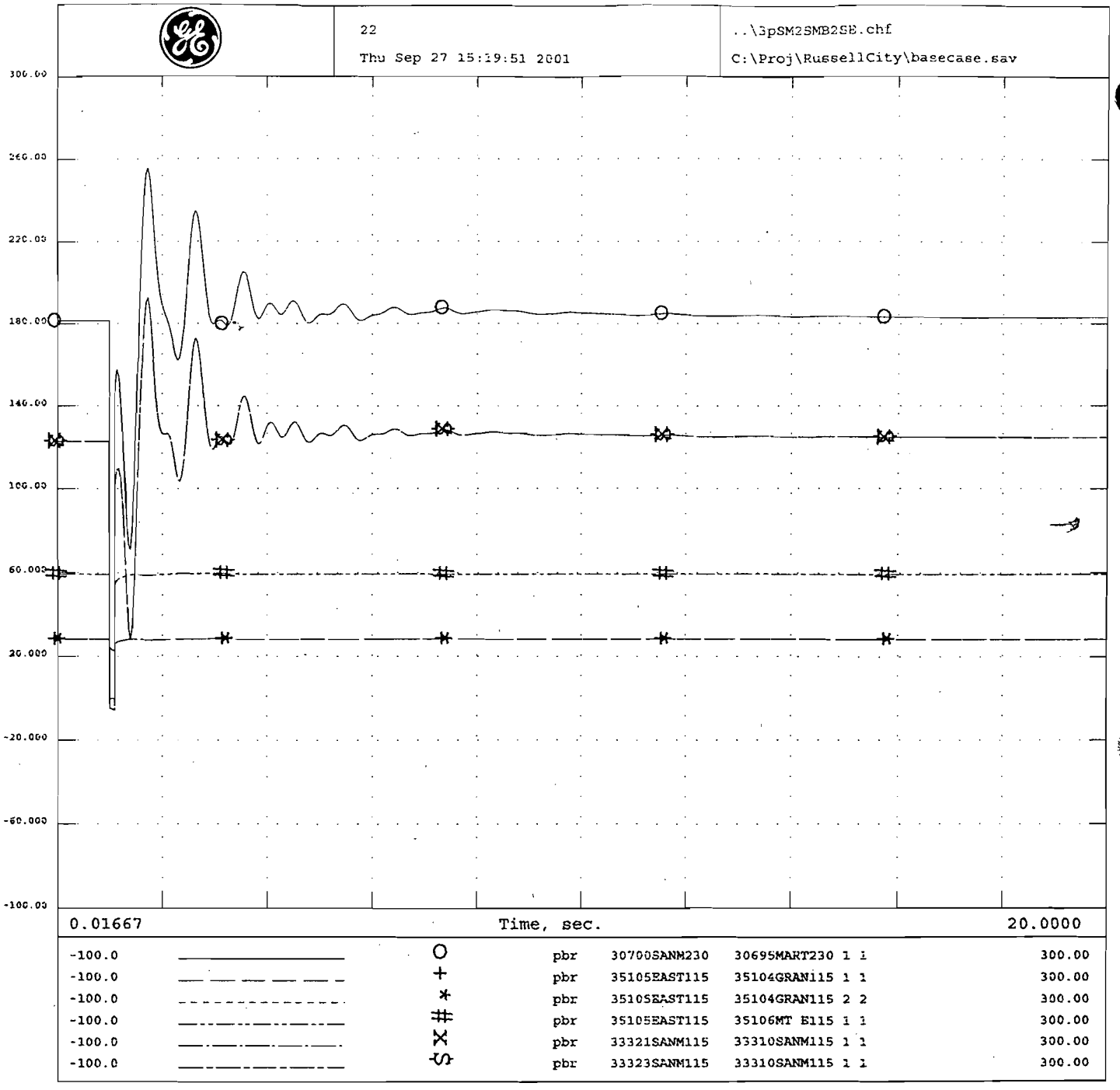

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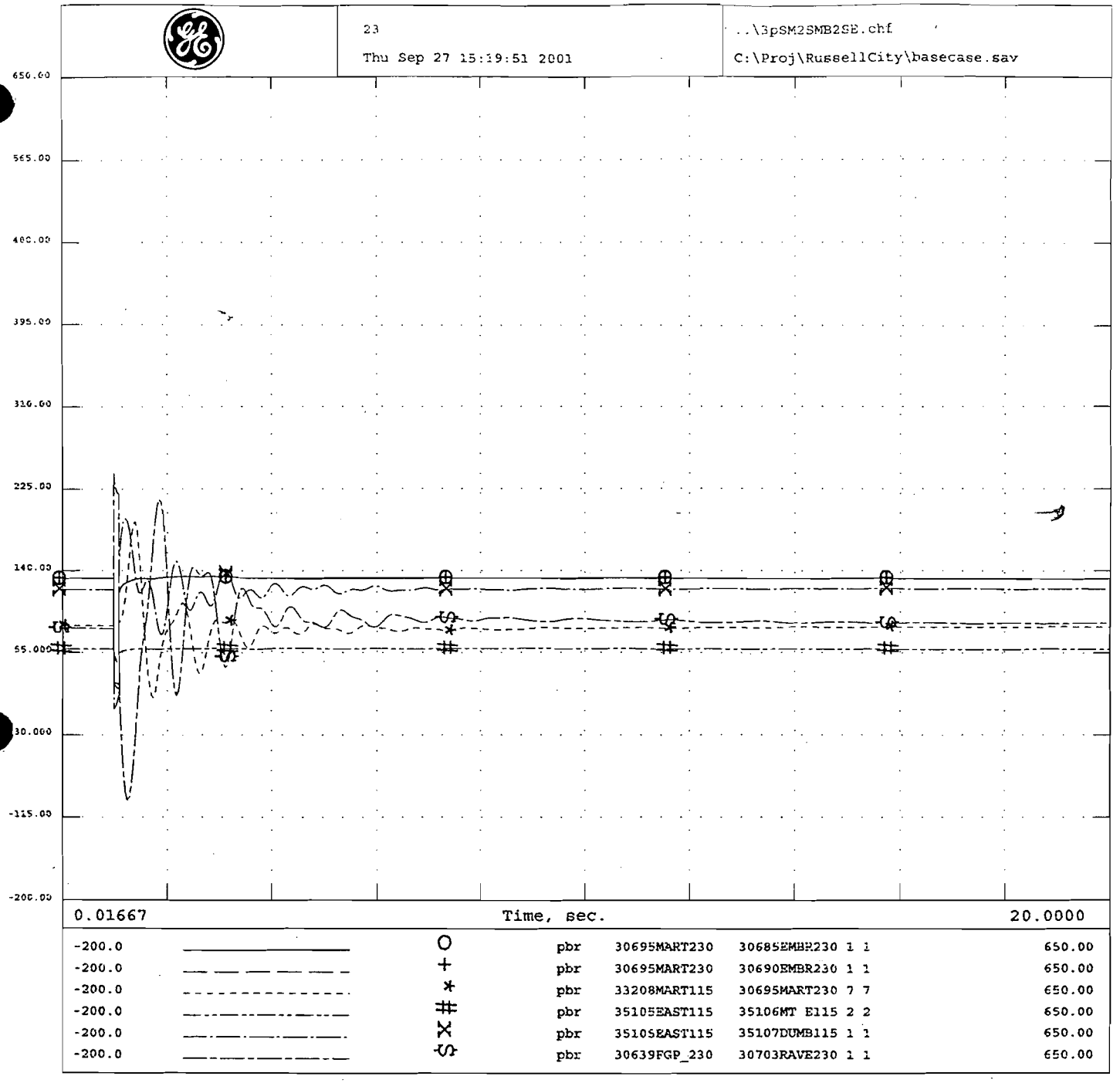

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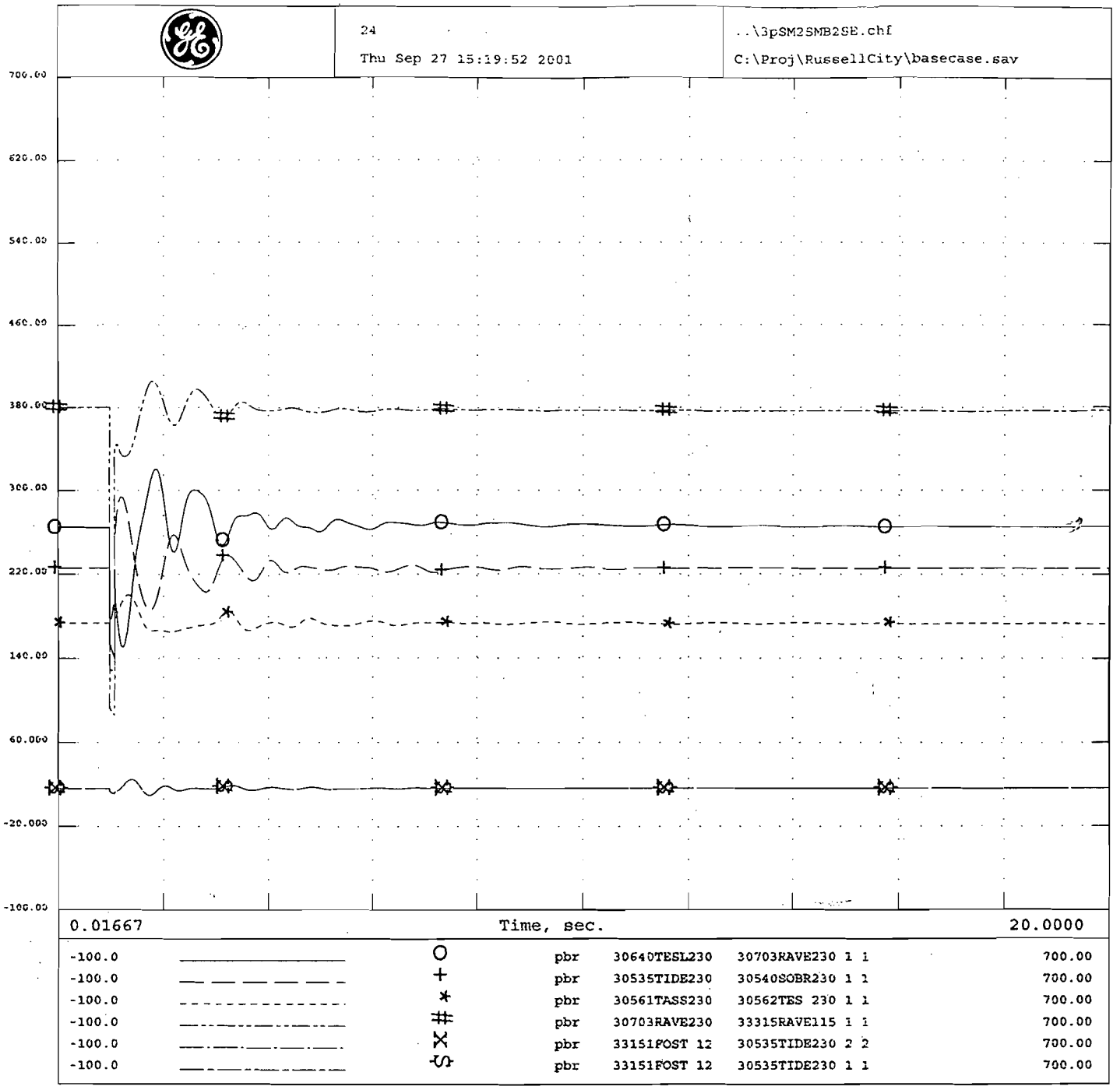

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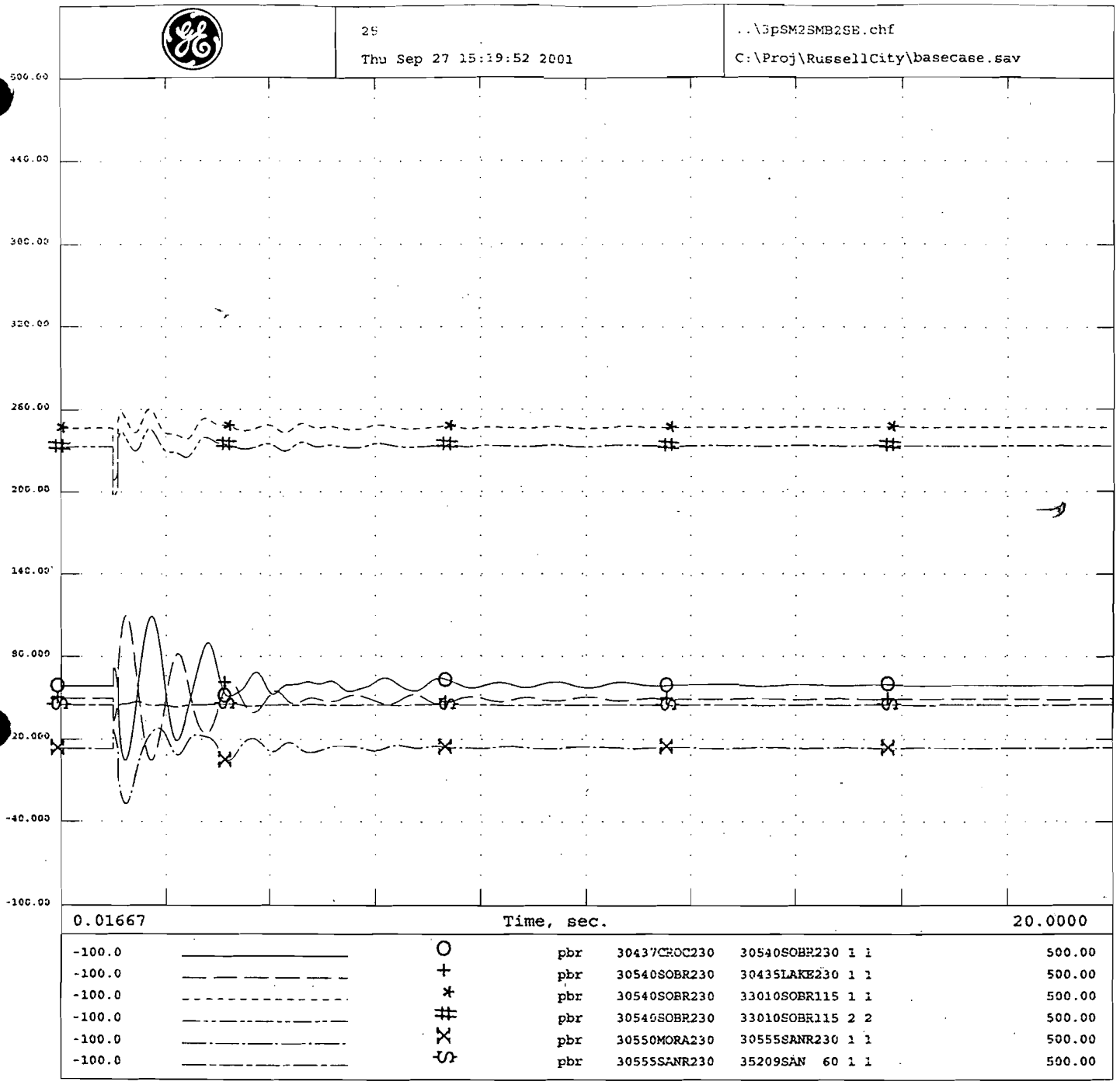
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Calpine/Bechtel Joint Development
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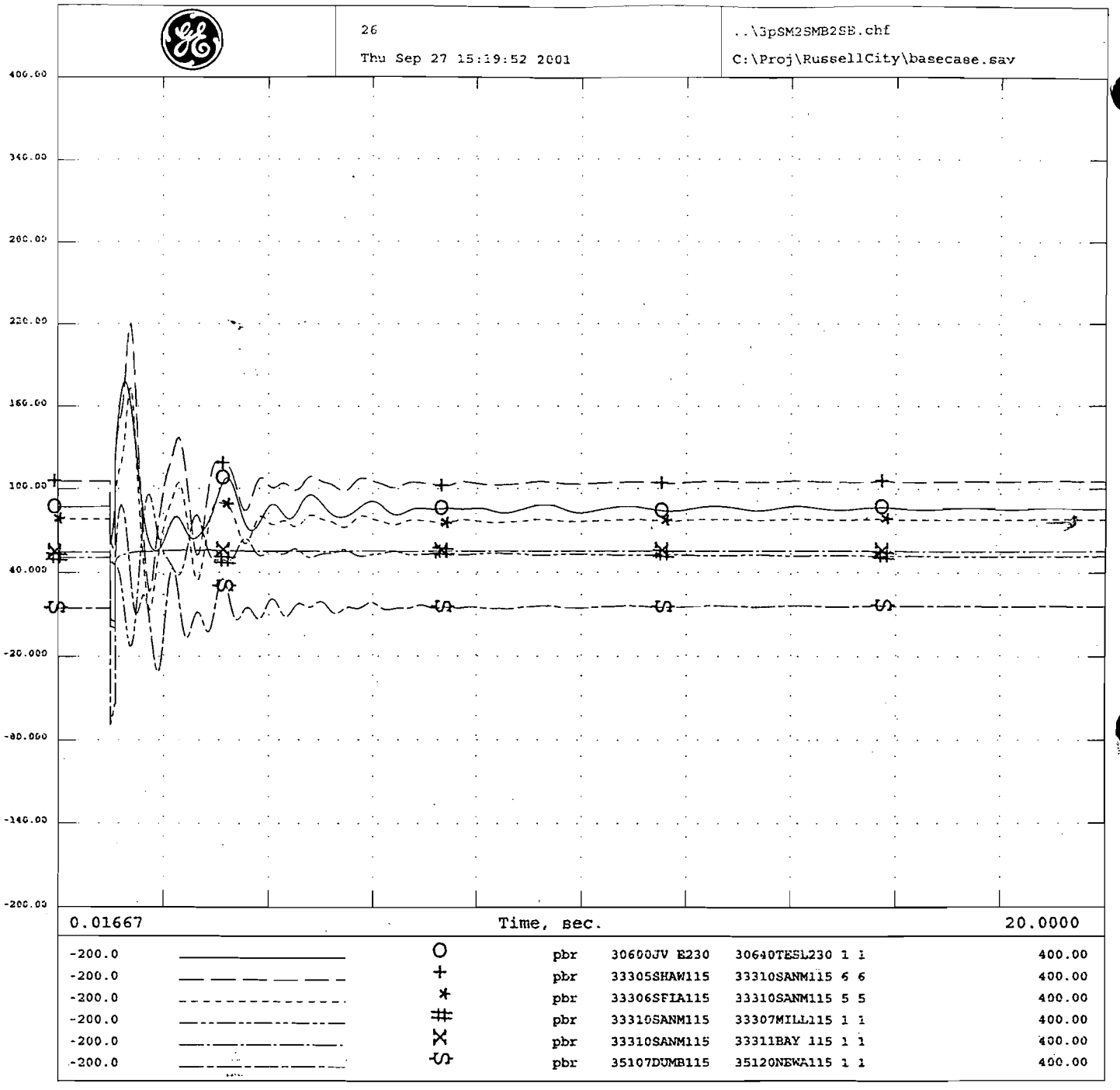

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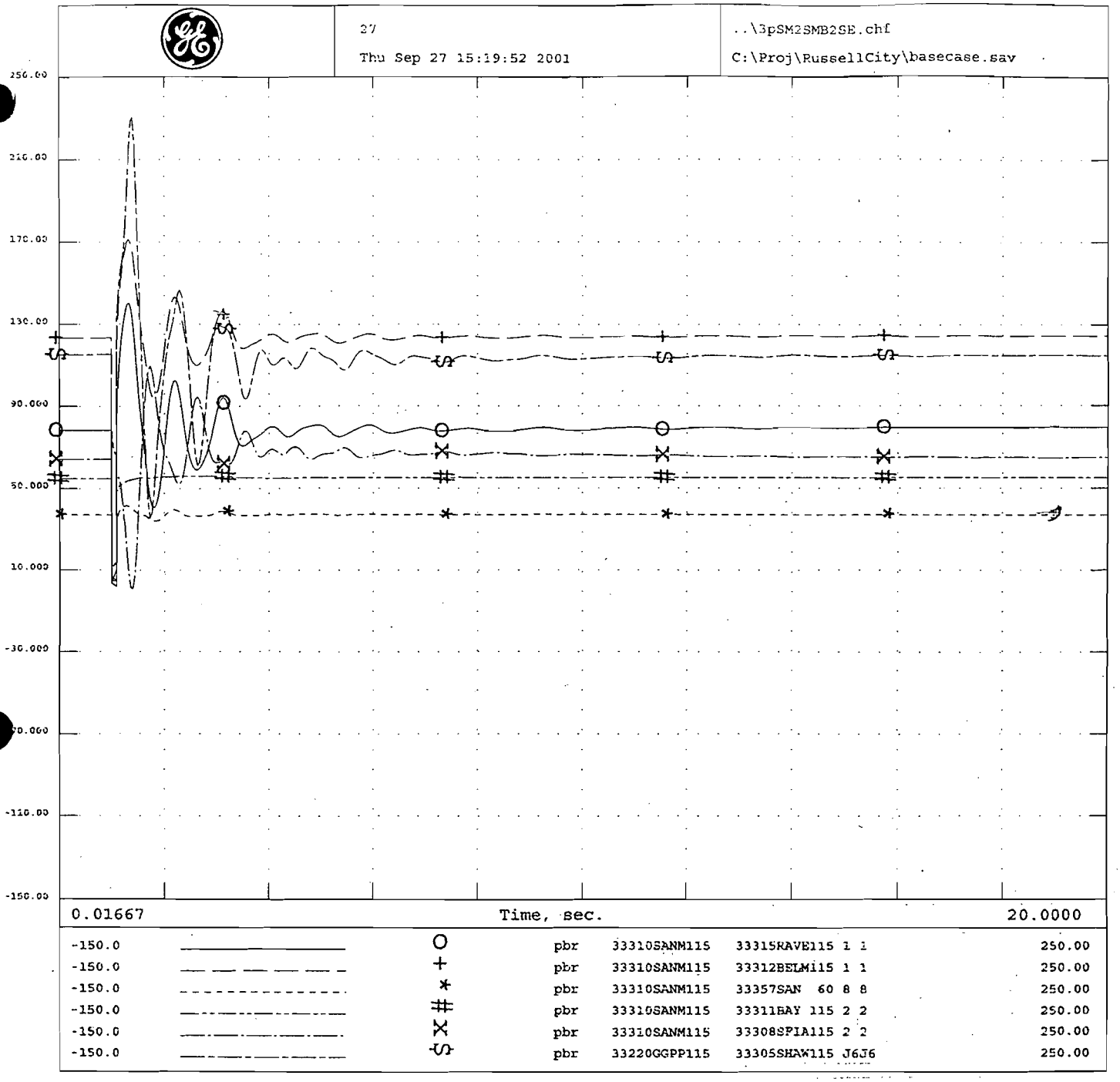
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo 230/115kV #5 bank outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip the San Mateo 230/115kV #5
bank
RUN  9
CC
CC   Fault San Mateo 230kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip the San Mateo 230/115kV #5 bank
CC   The bus SANMATb5 is a dummy bus to allow plotting of transformer flow
DL   6.0 "SANMATB5" 115.00 "SANMATEO" 230.00 "5 "
TG   6.0 "SMATO2SC"  13.2 "1 "
CC
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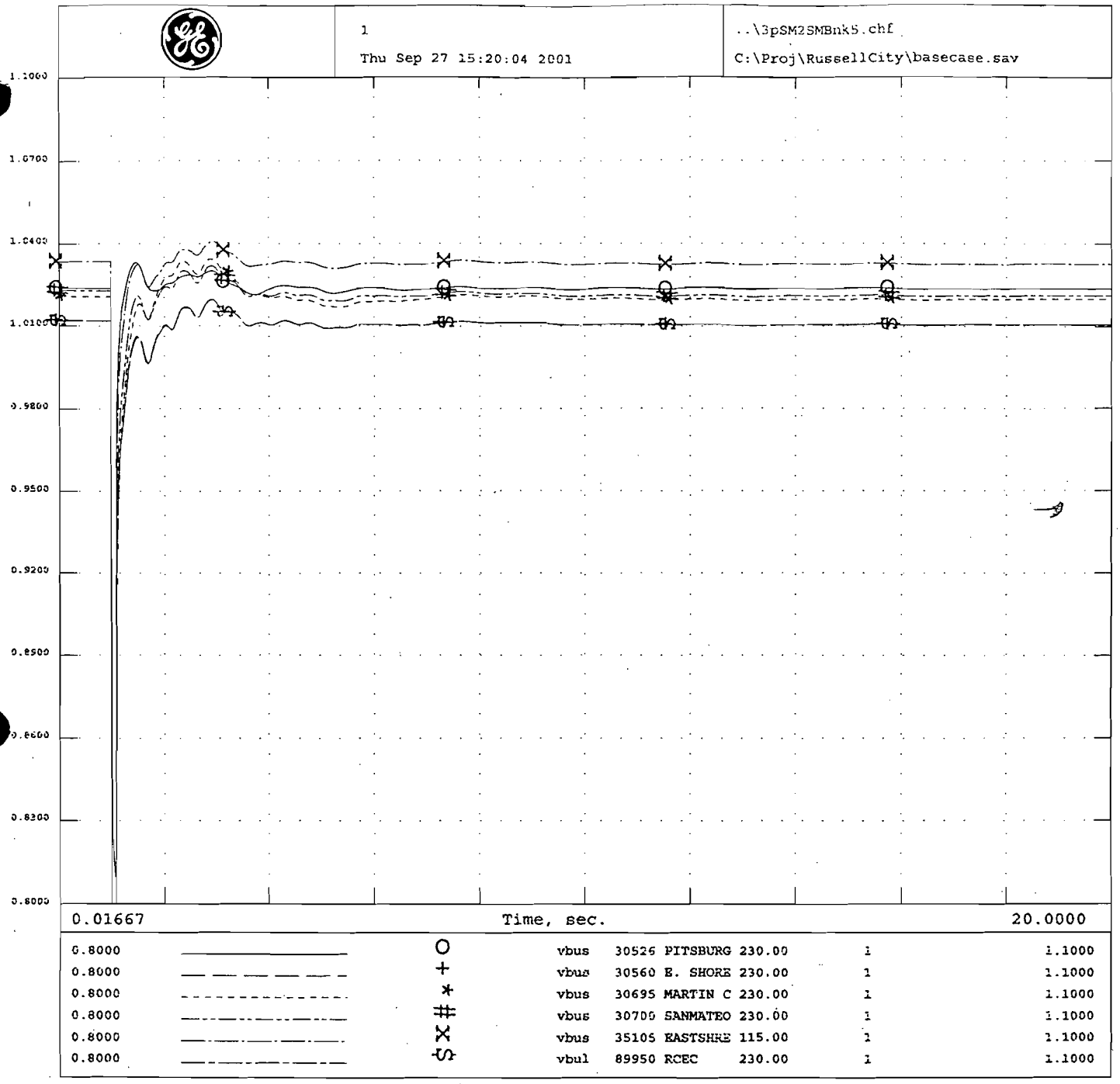
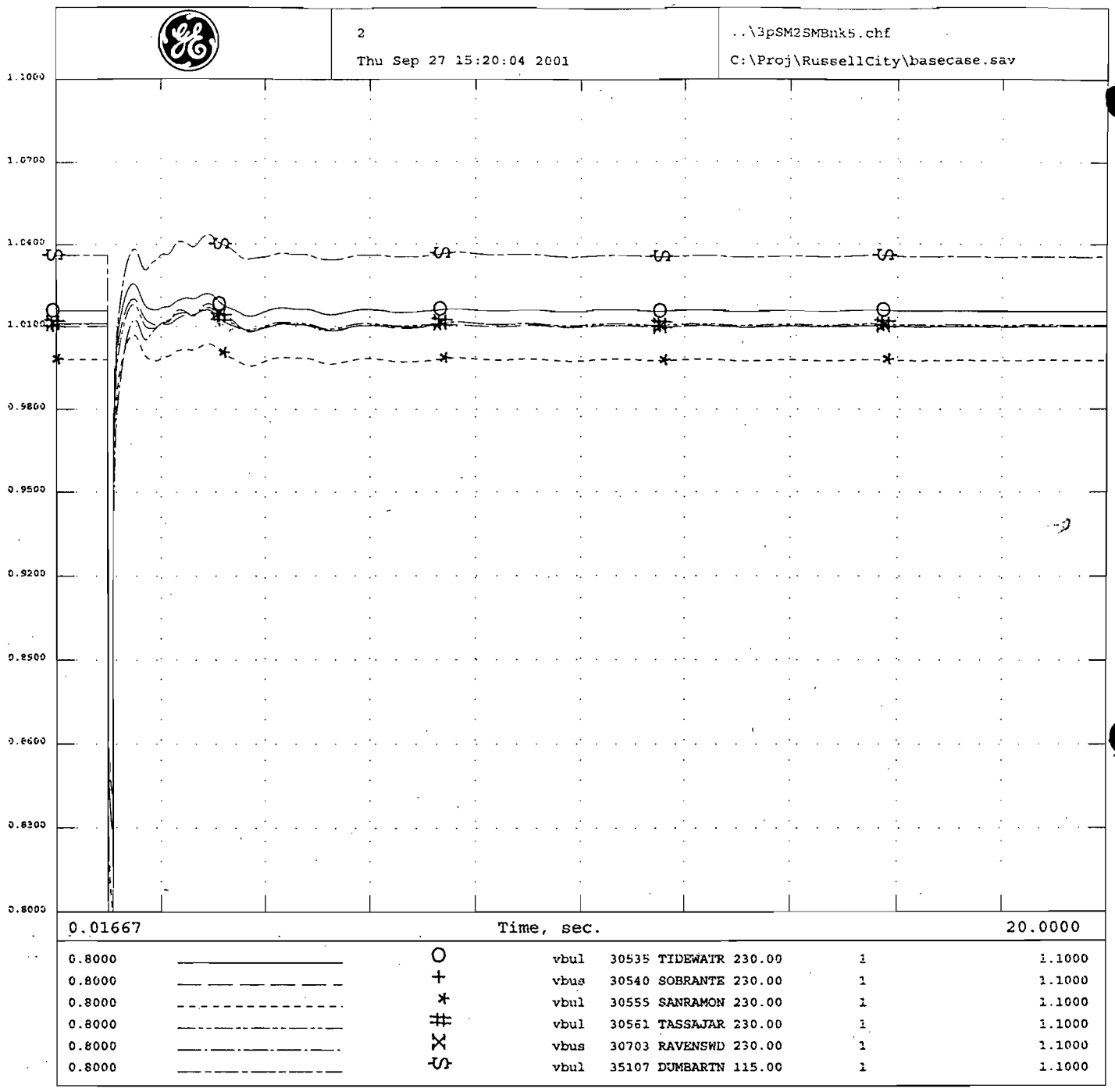


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo 230/115kV #5 bank outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip the San Mateo 230/115kV #

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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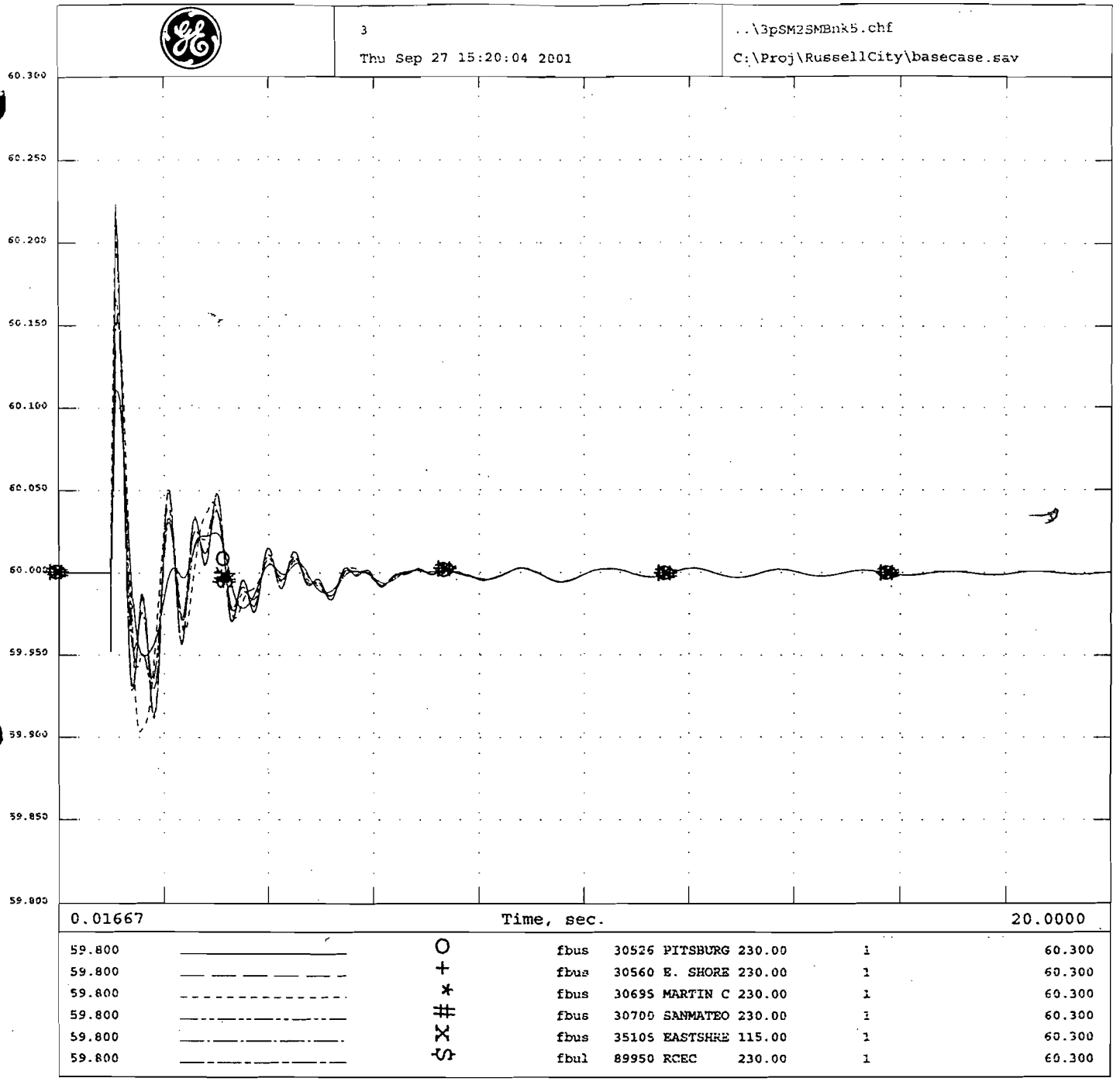

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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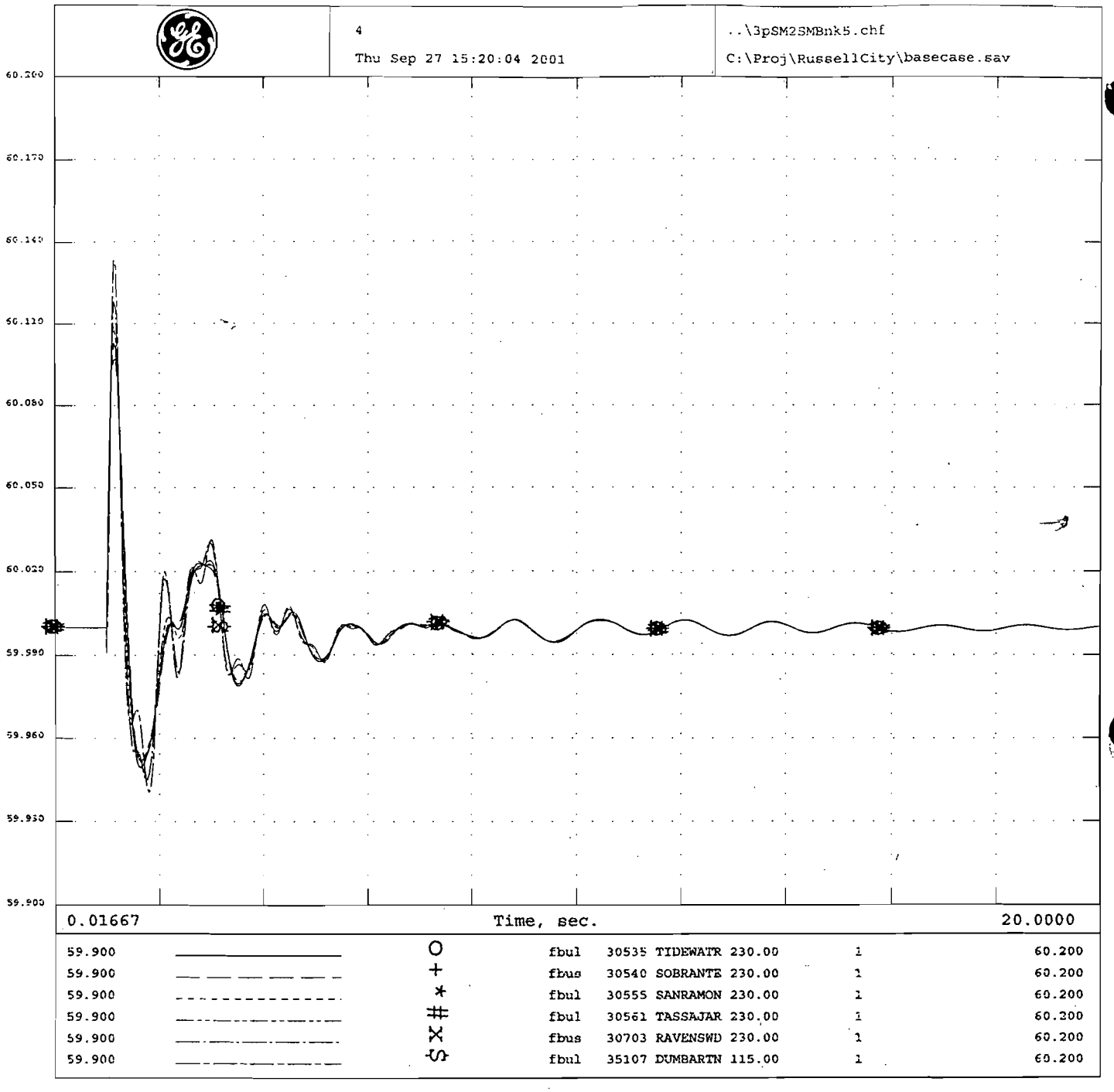
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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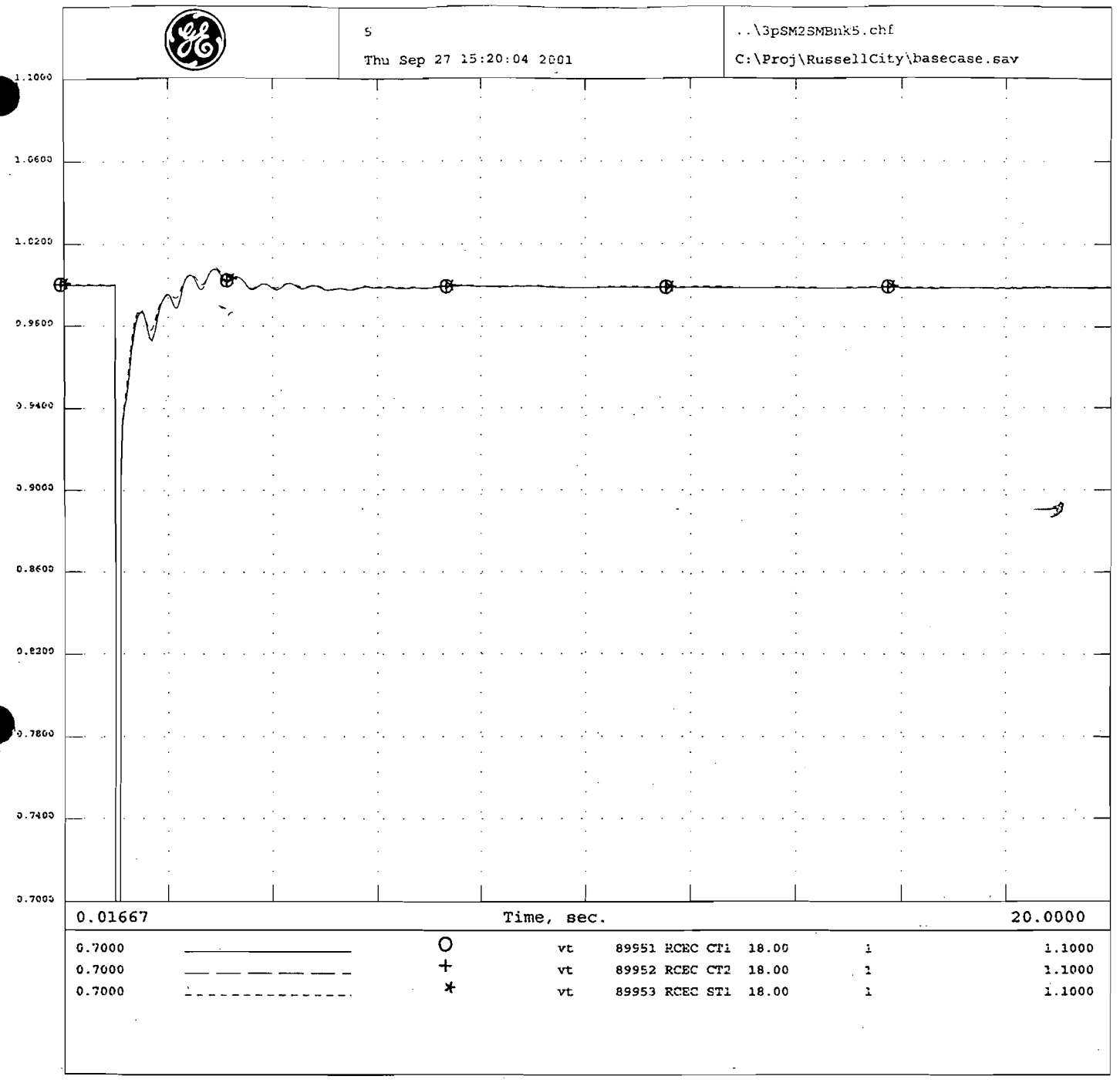

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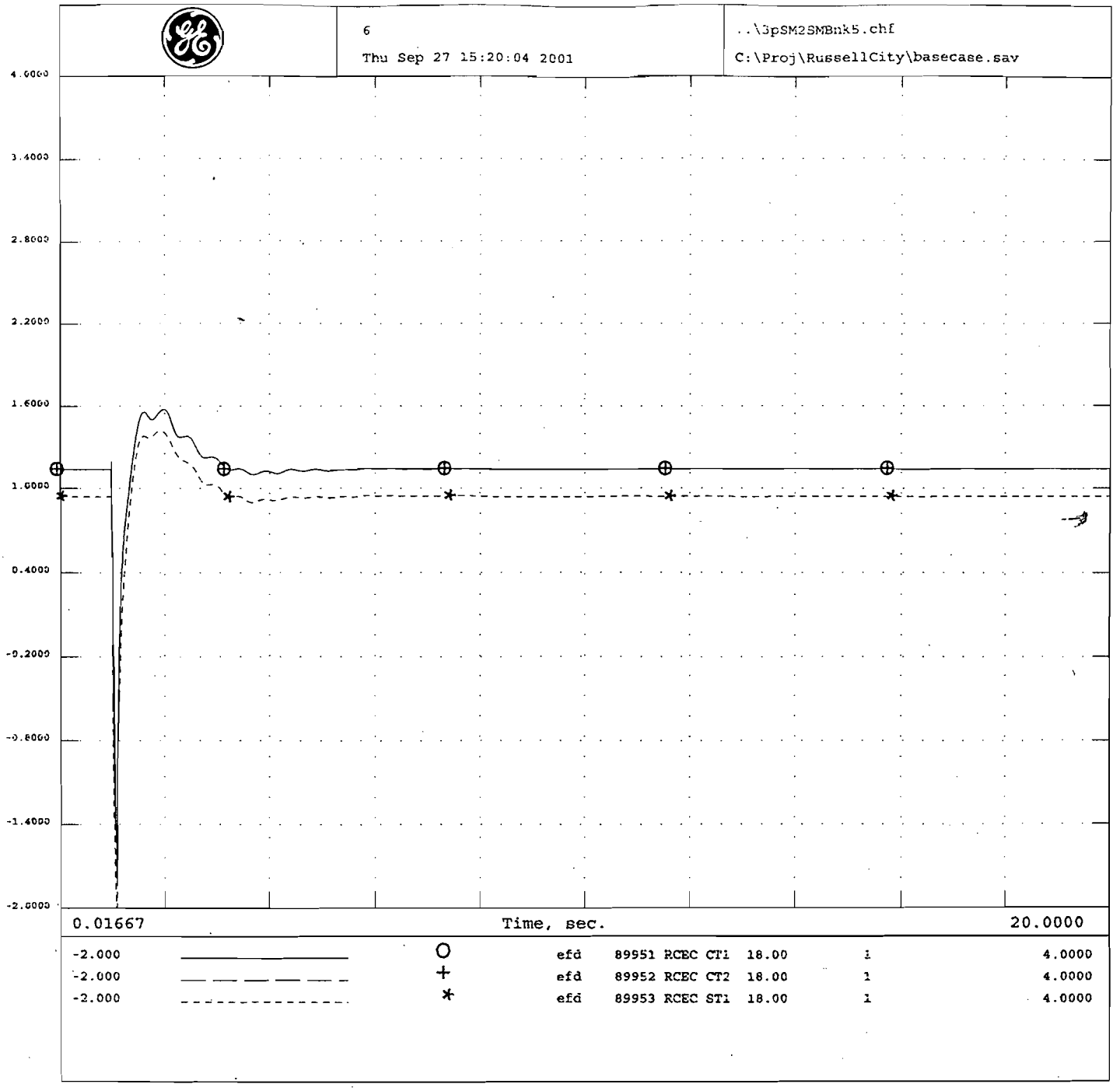
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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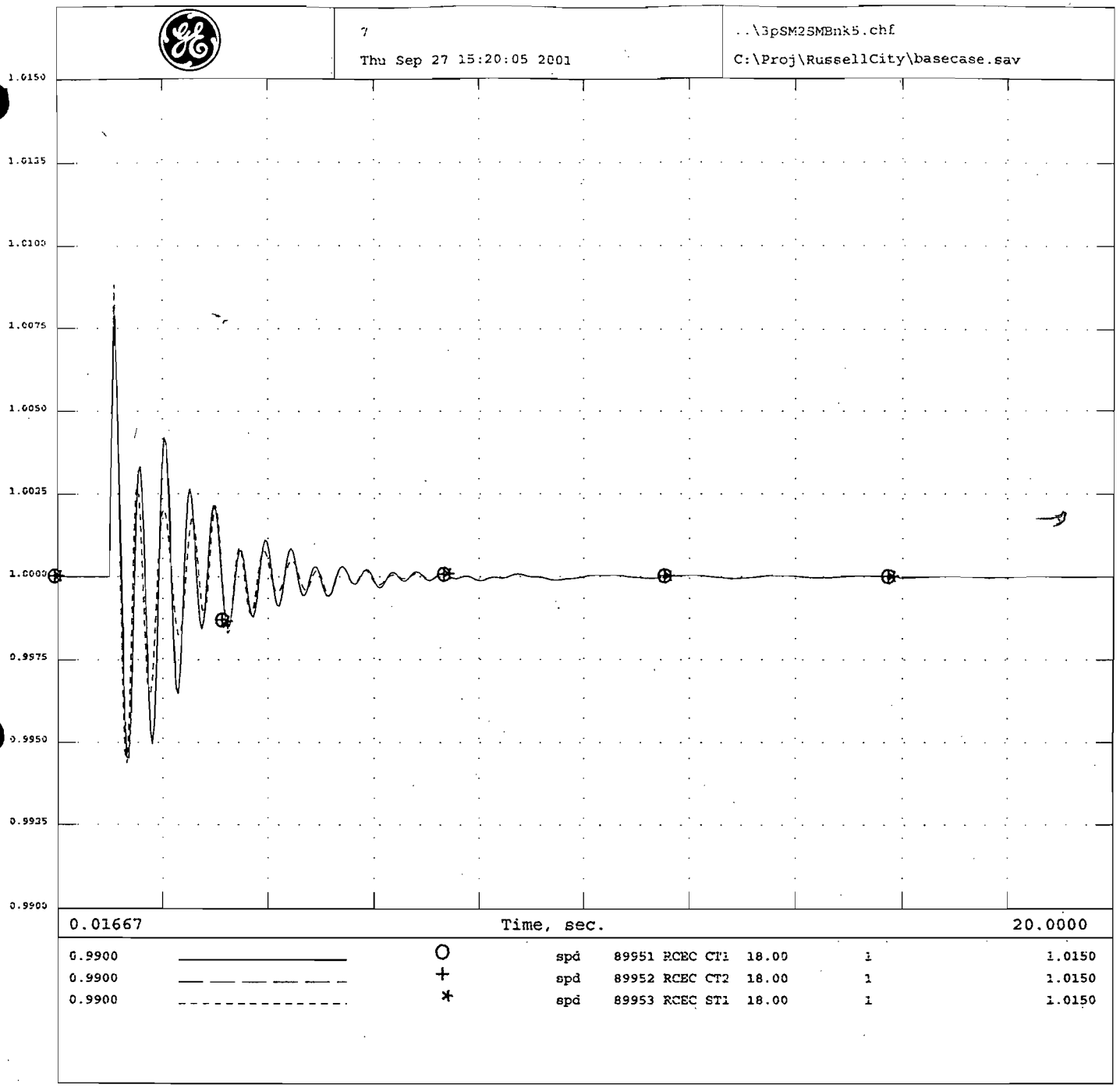
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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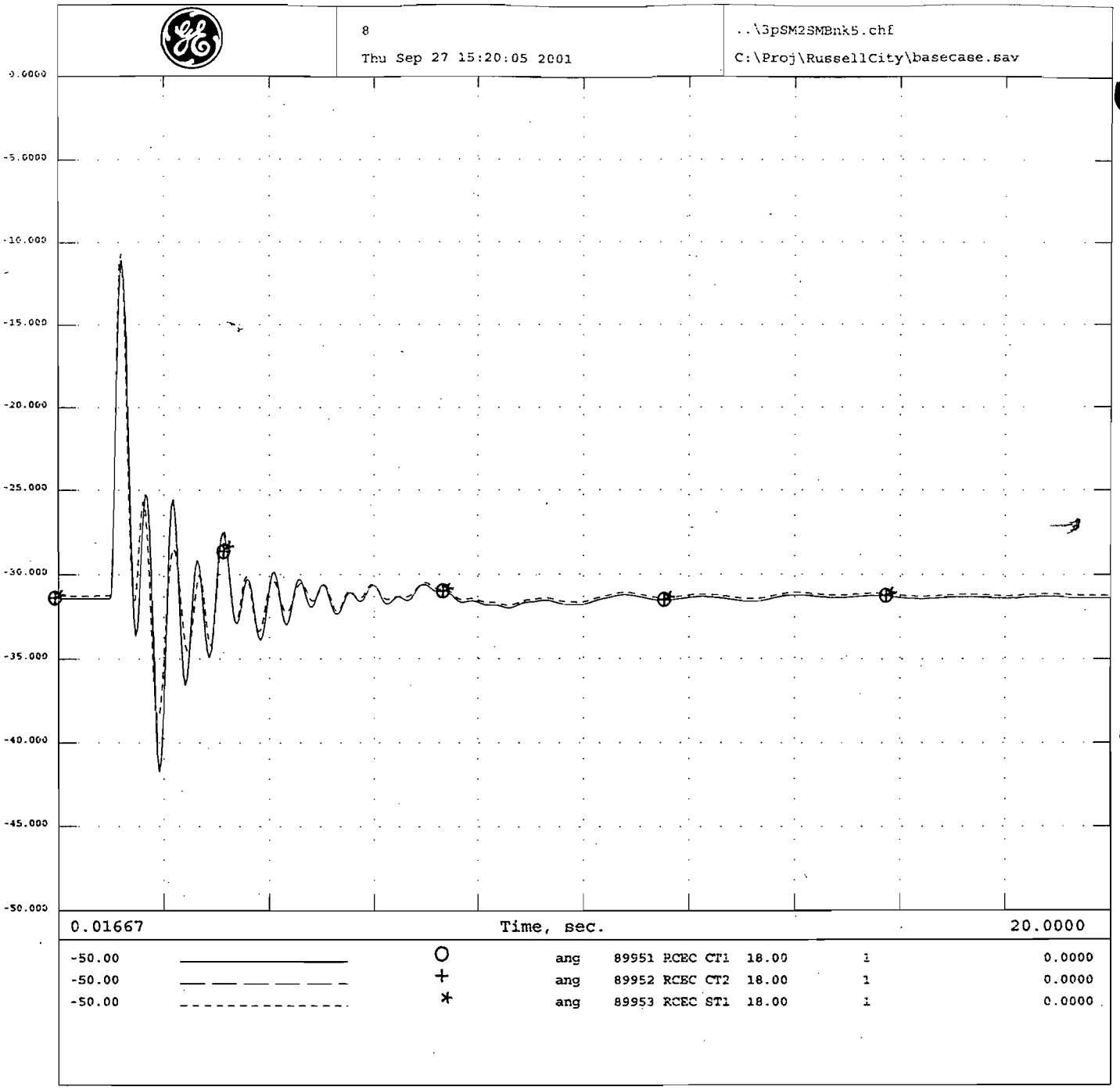
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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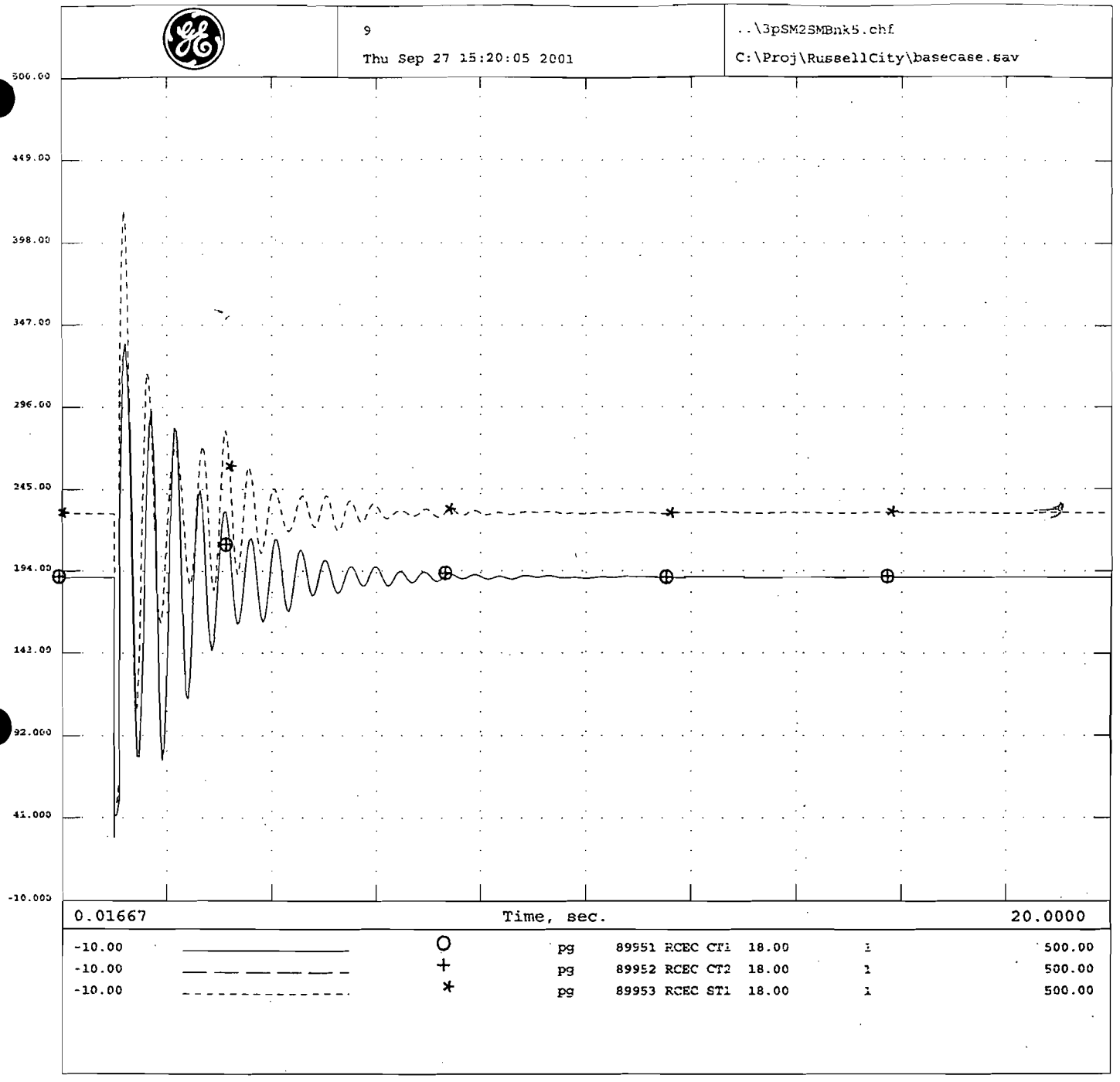
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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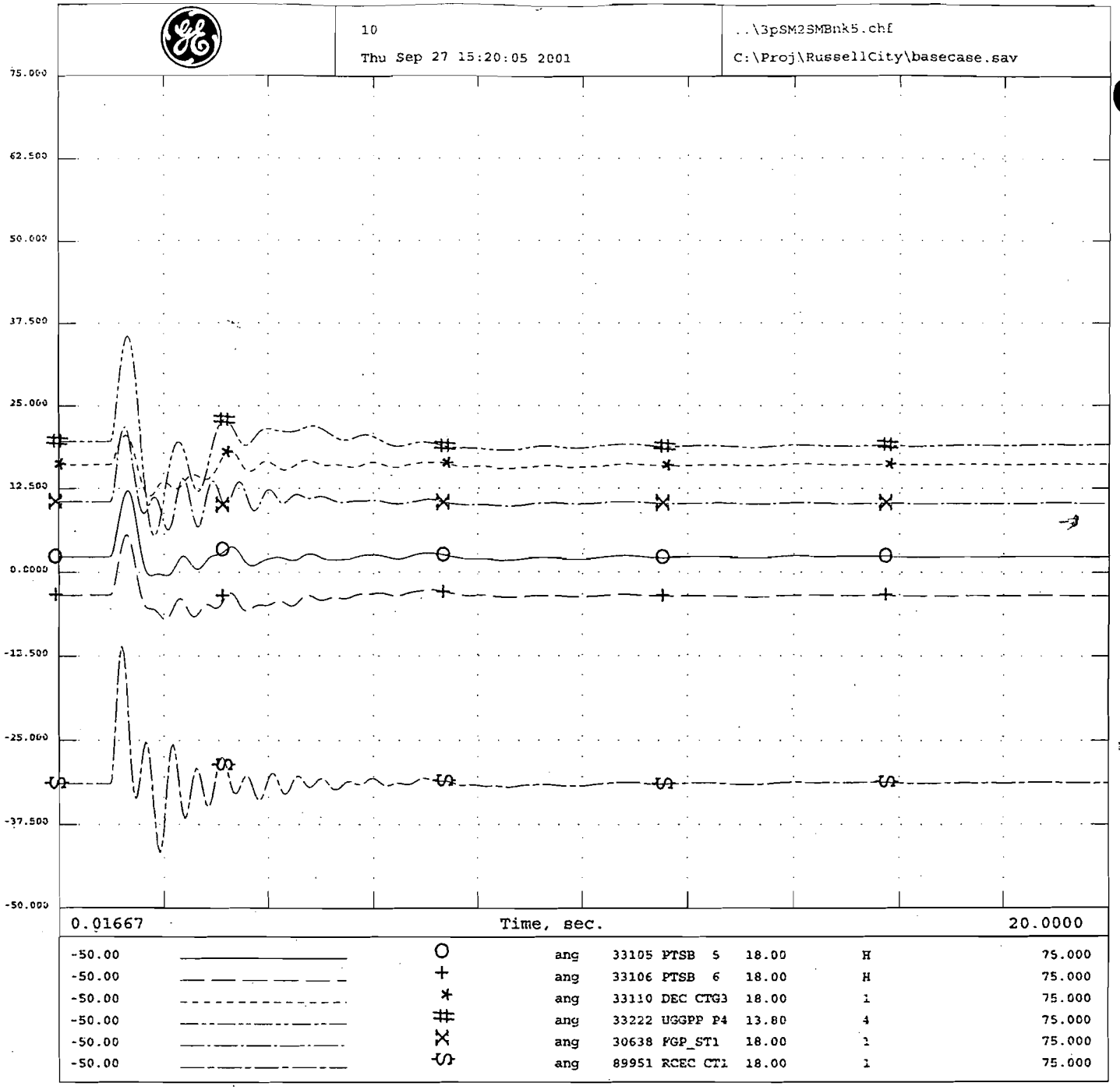
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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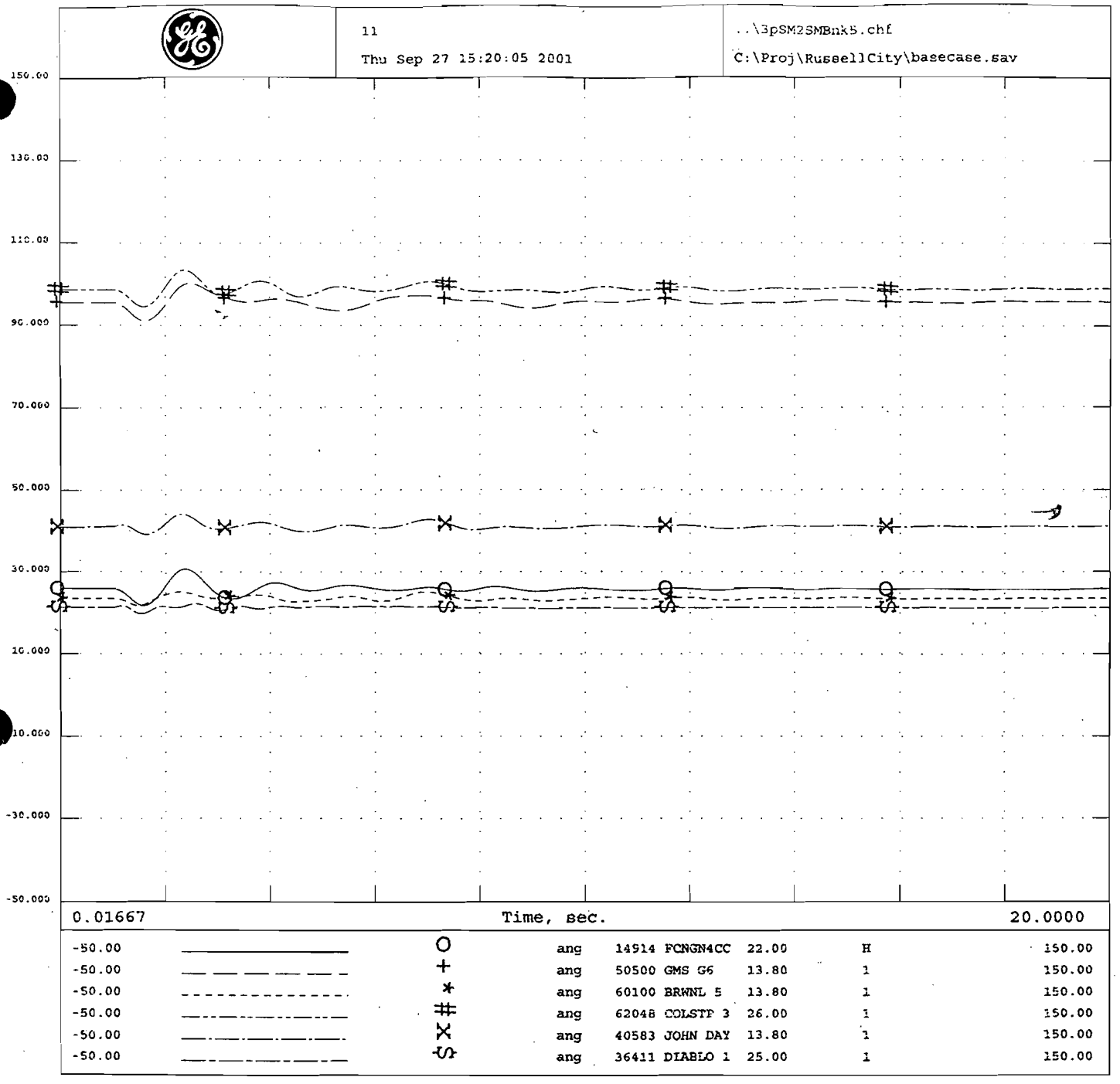
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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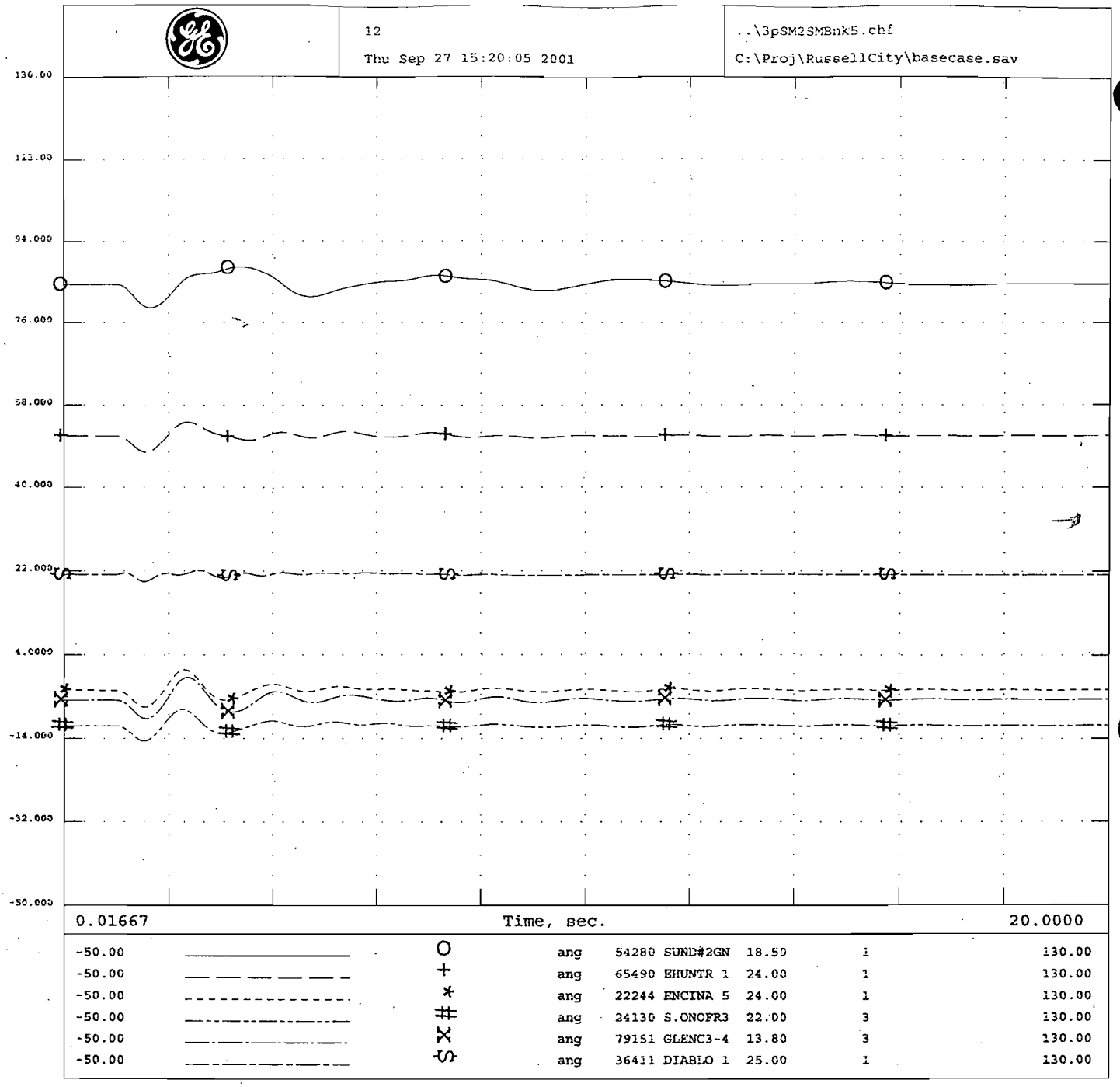

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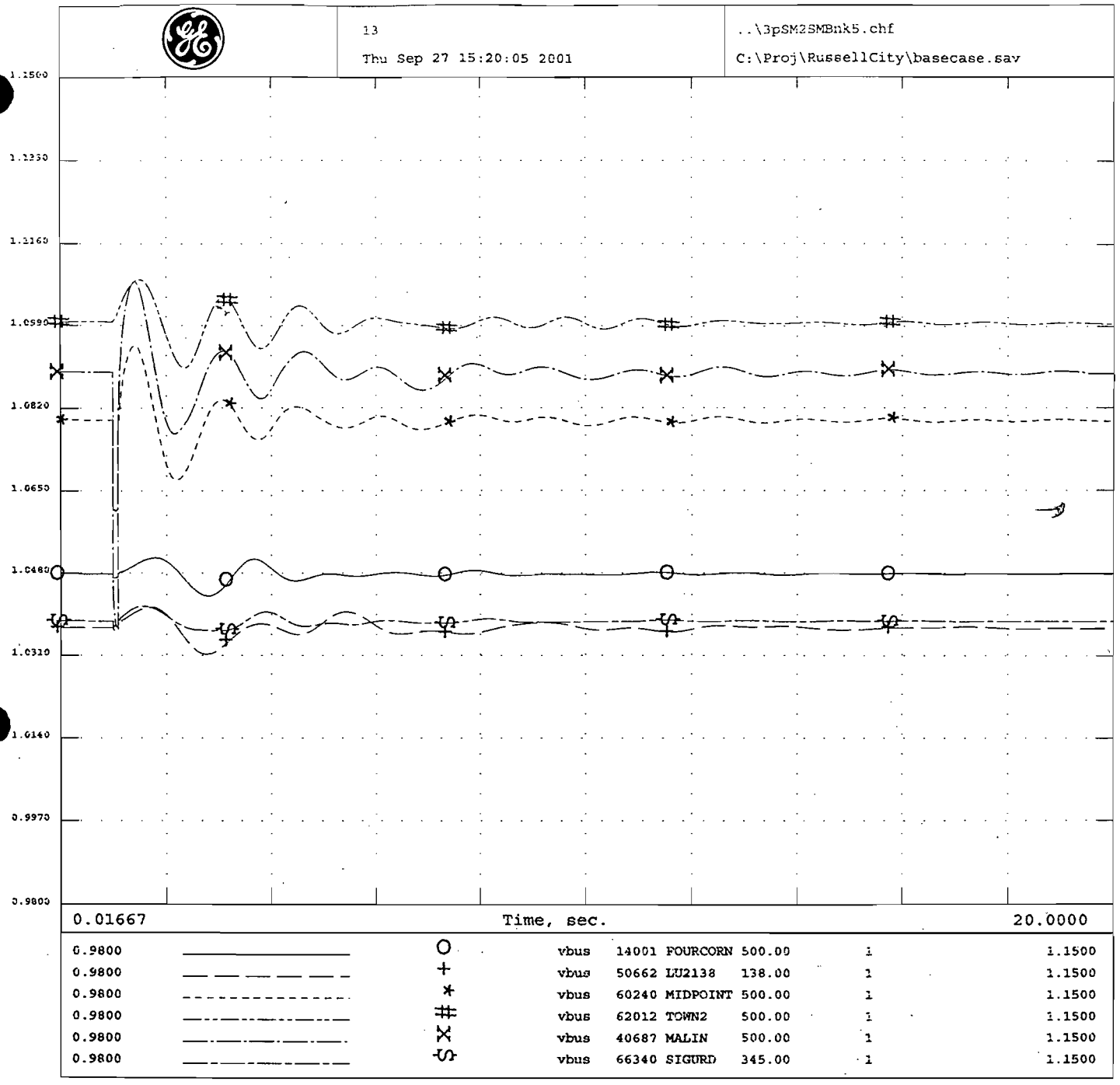

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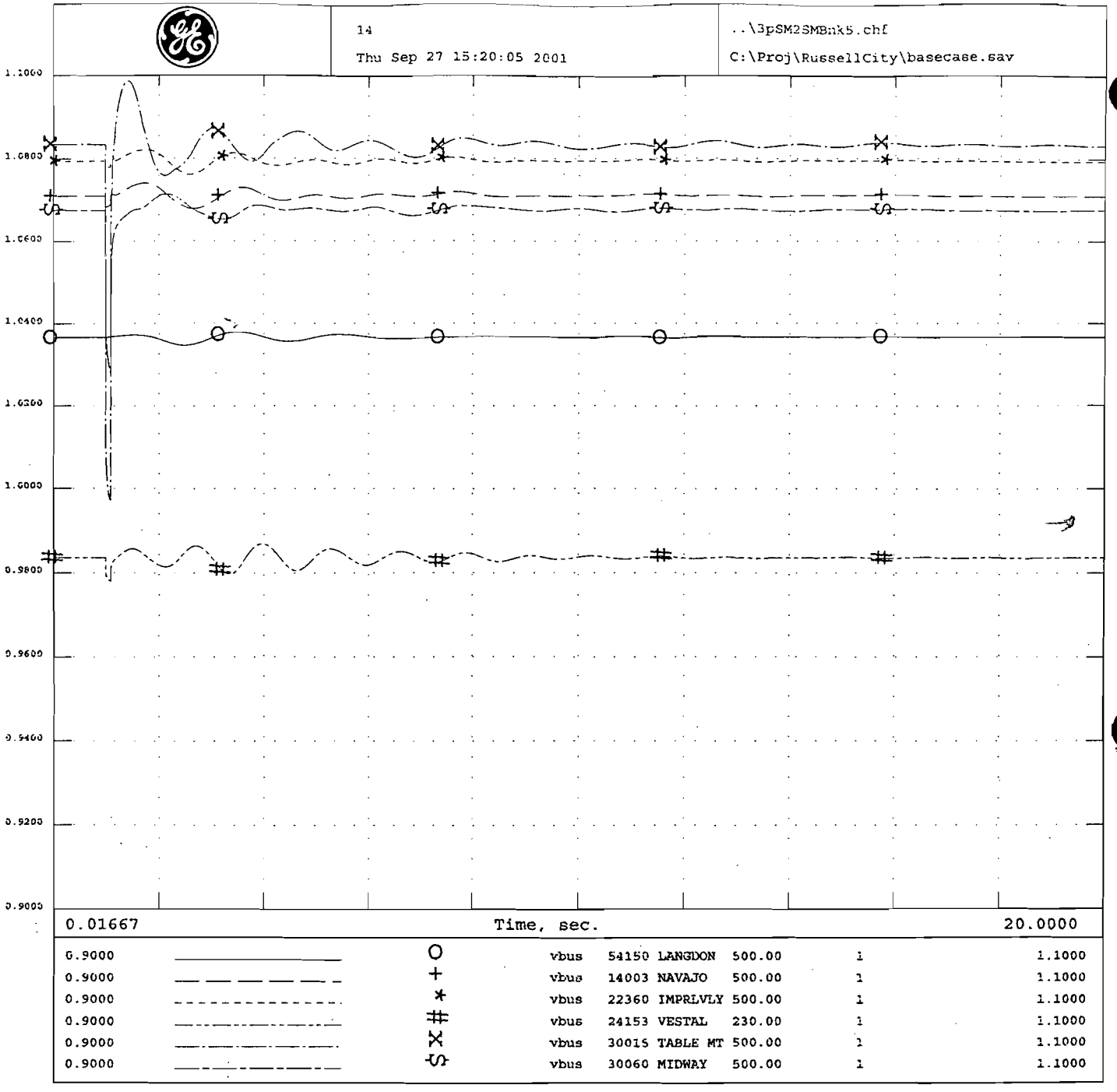

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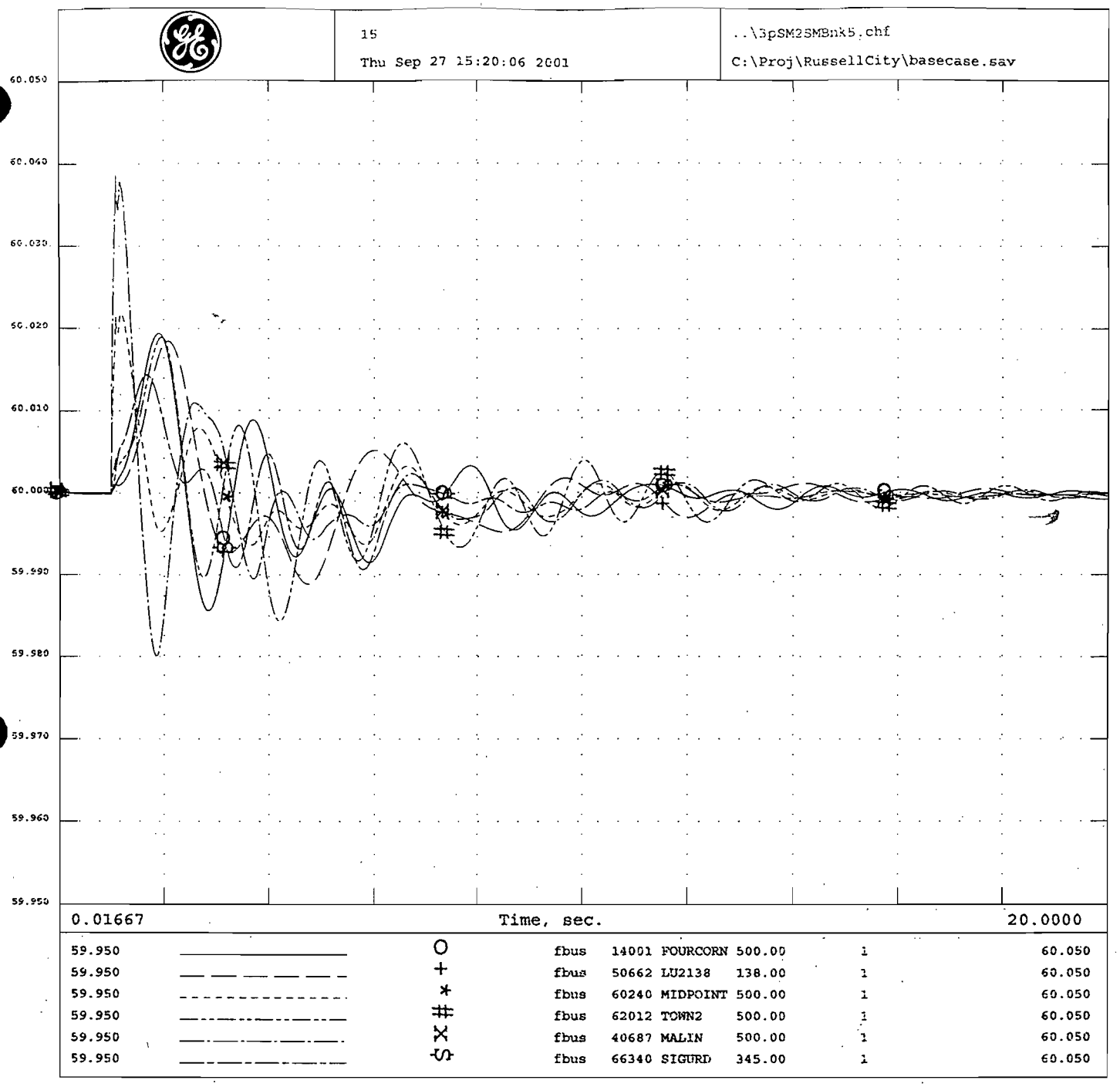

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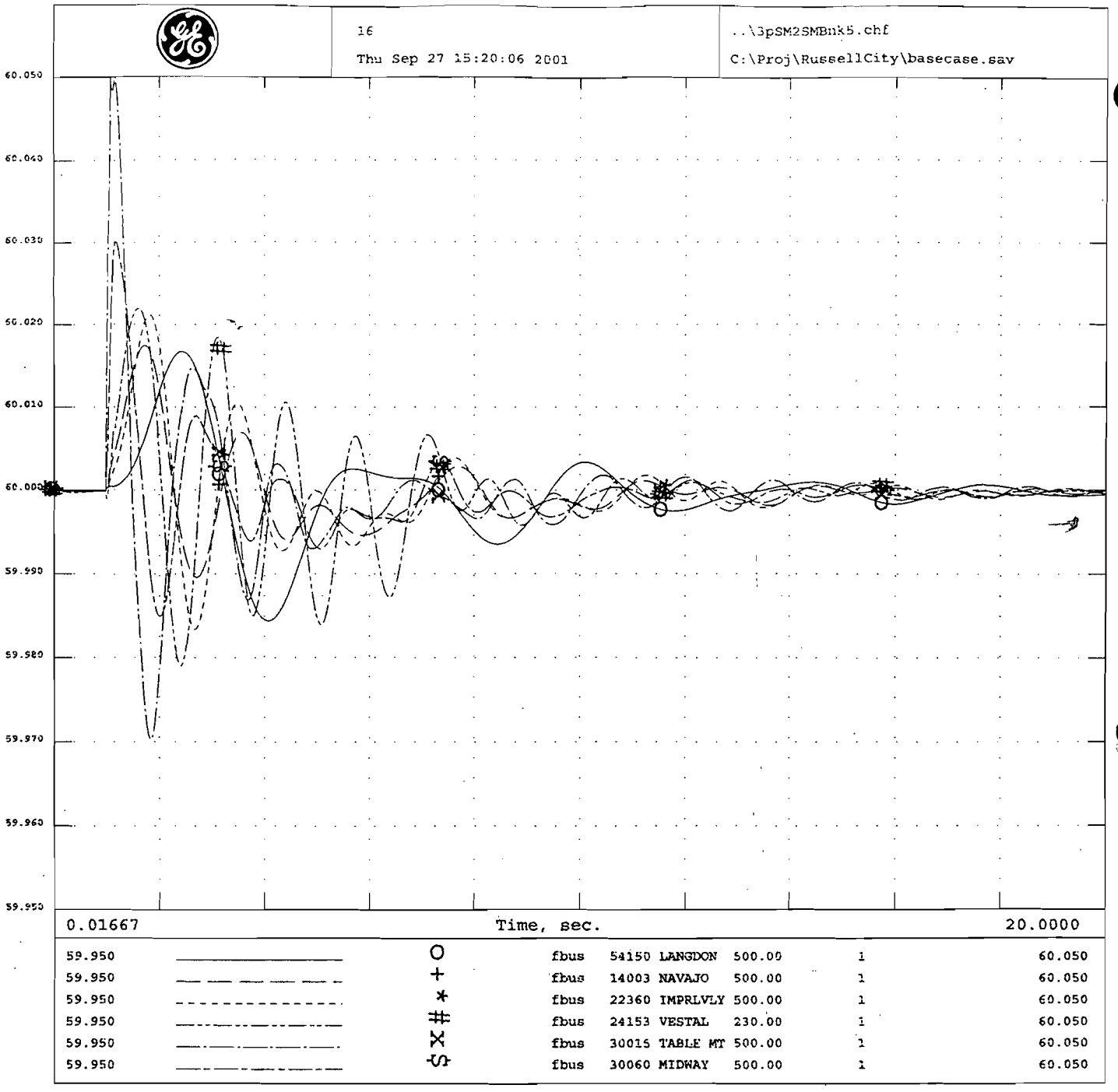

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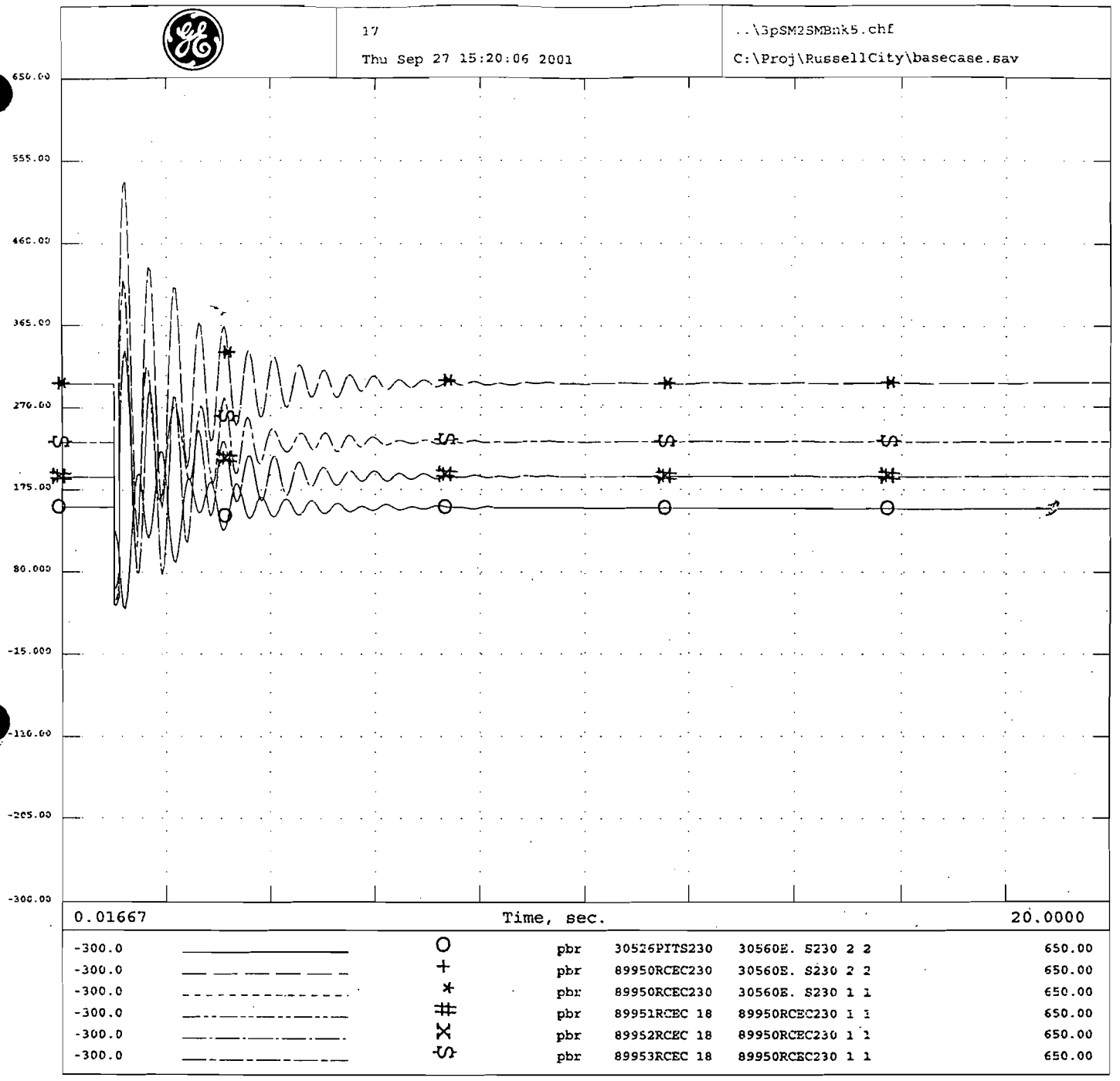

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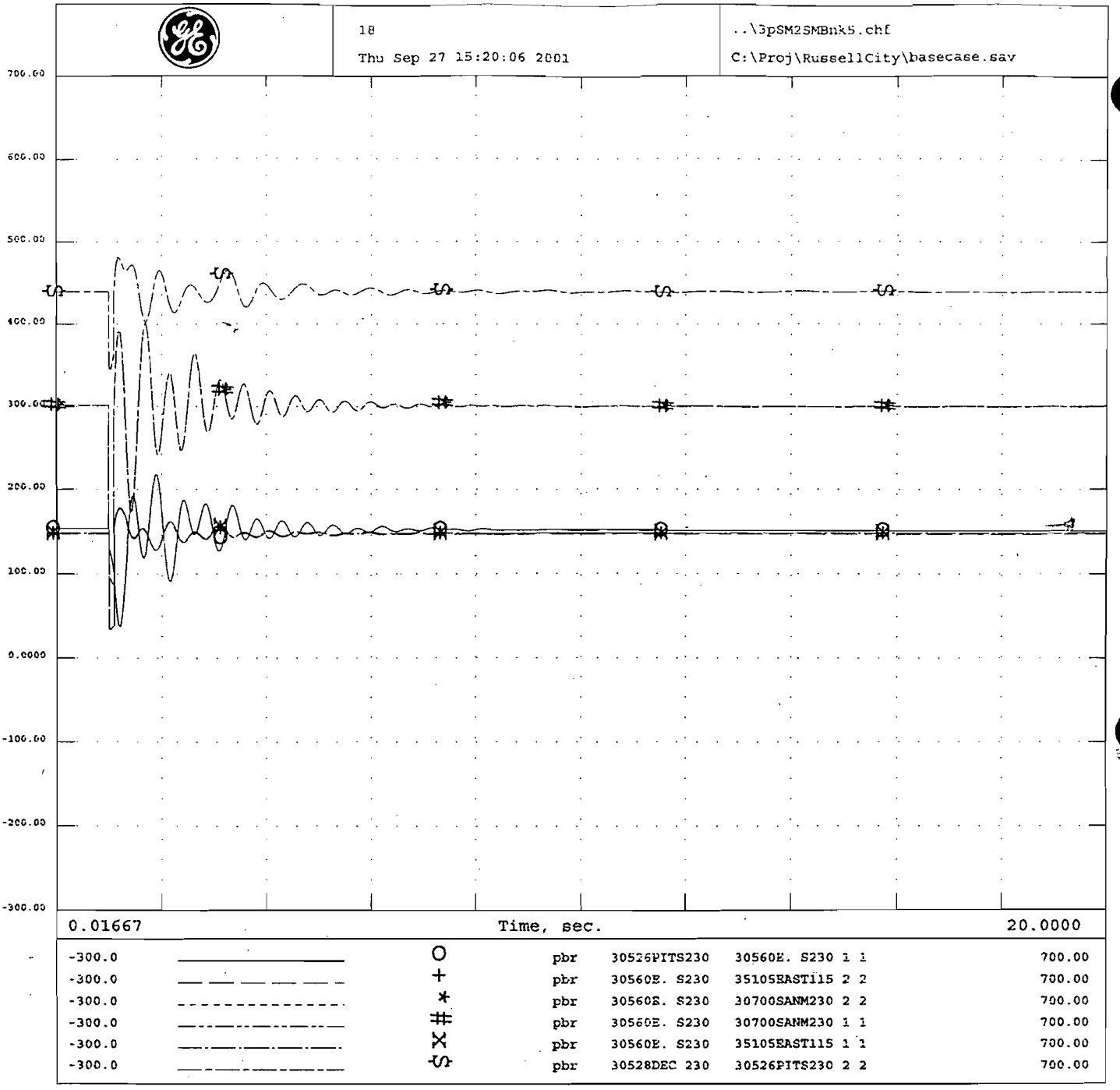
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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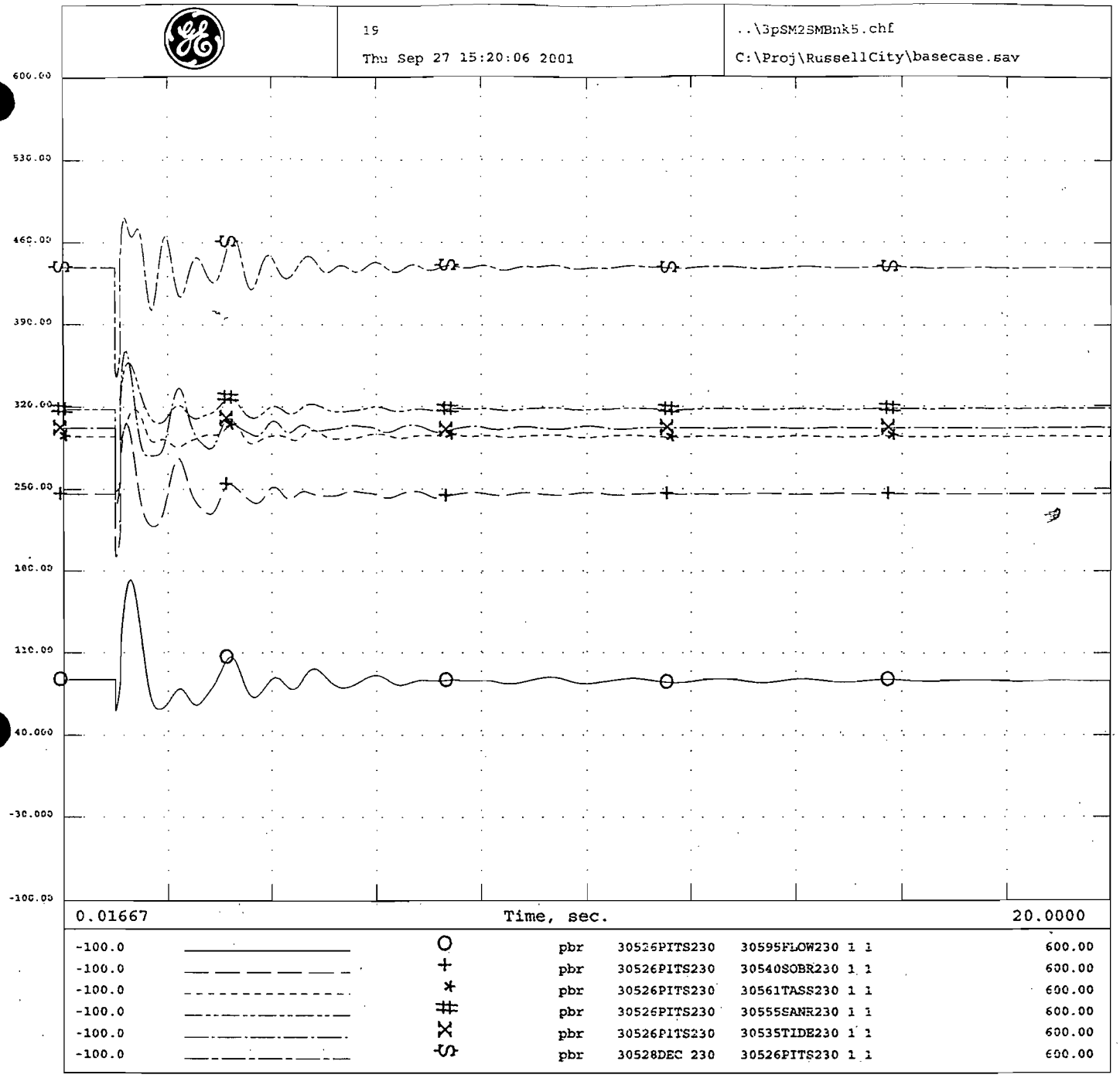

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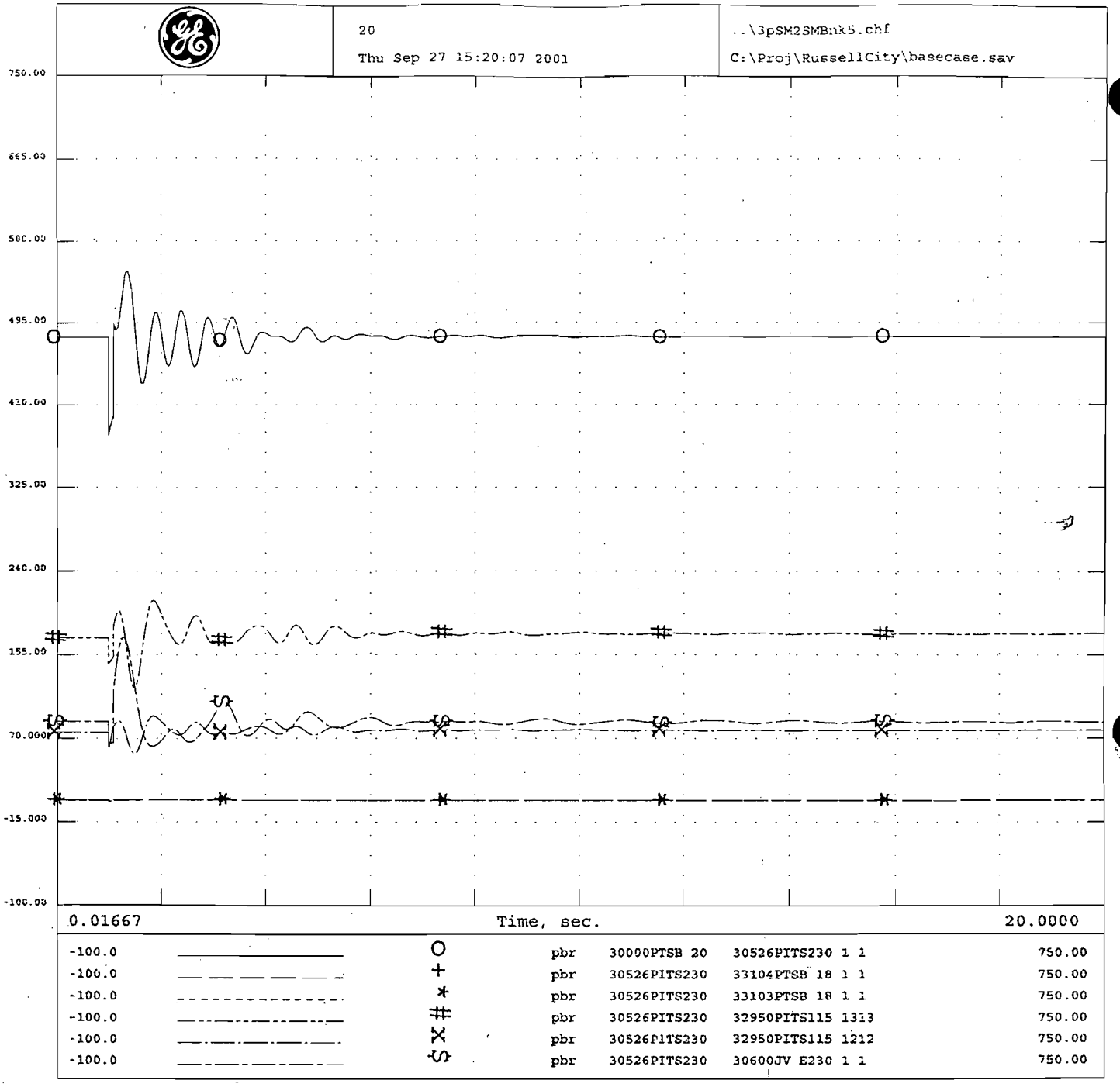

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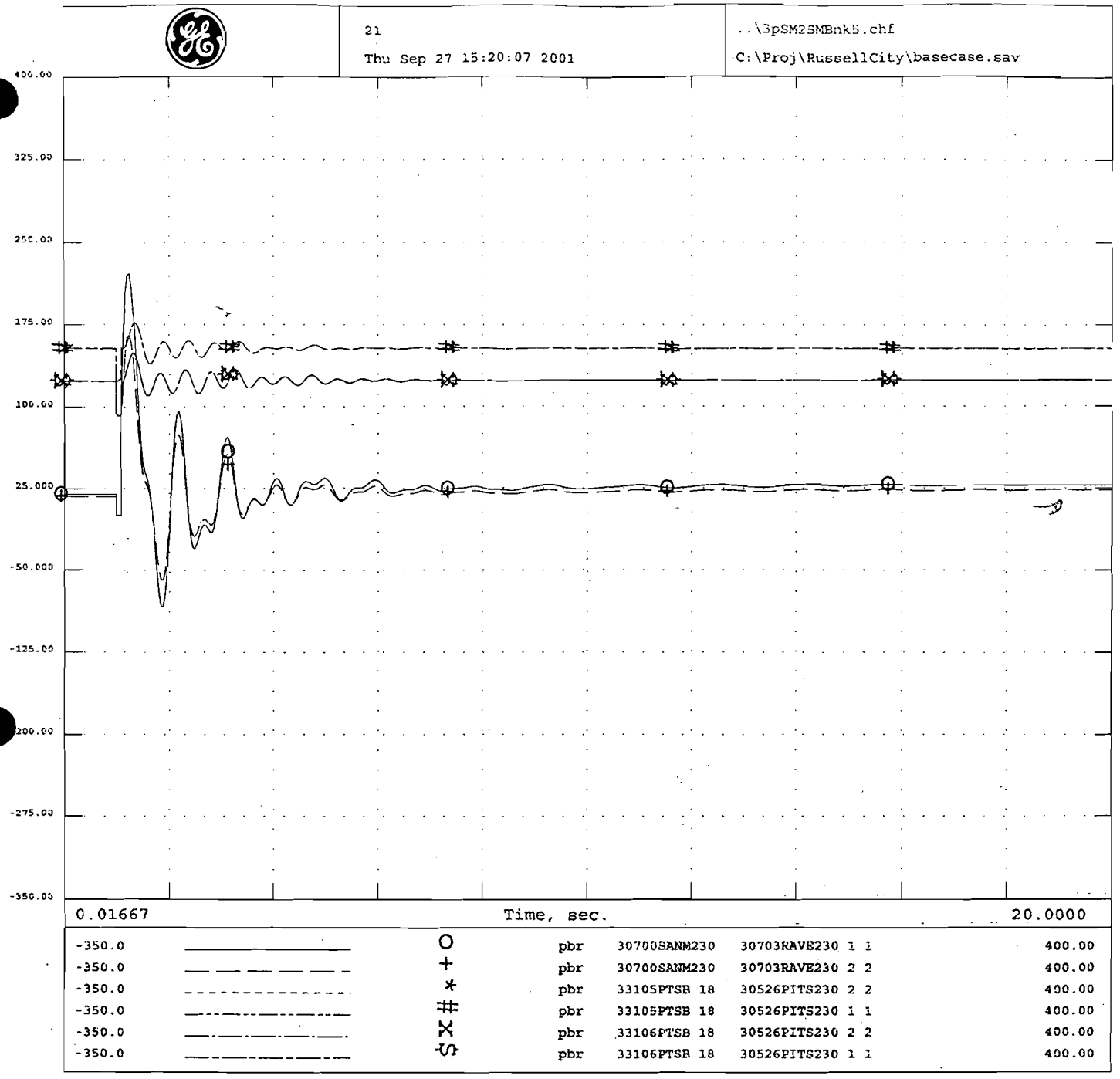

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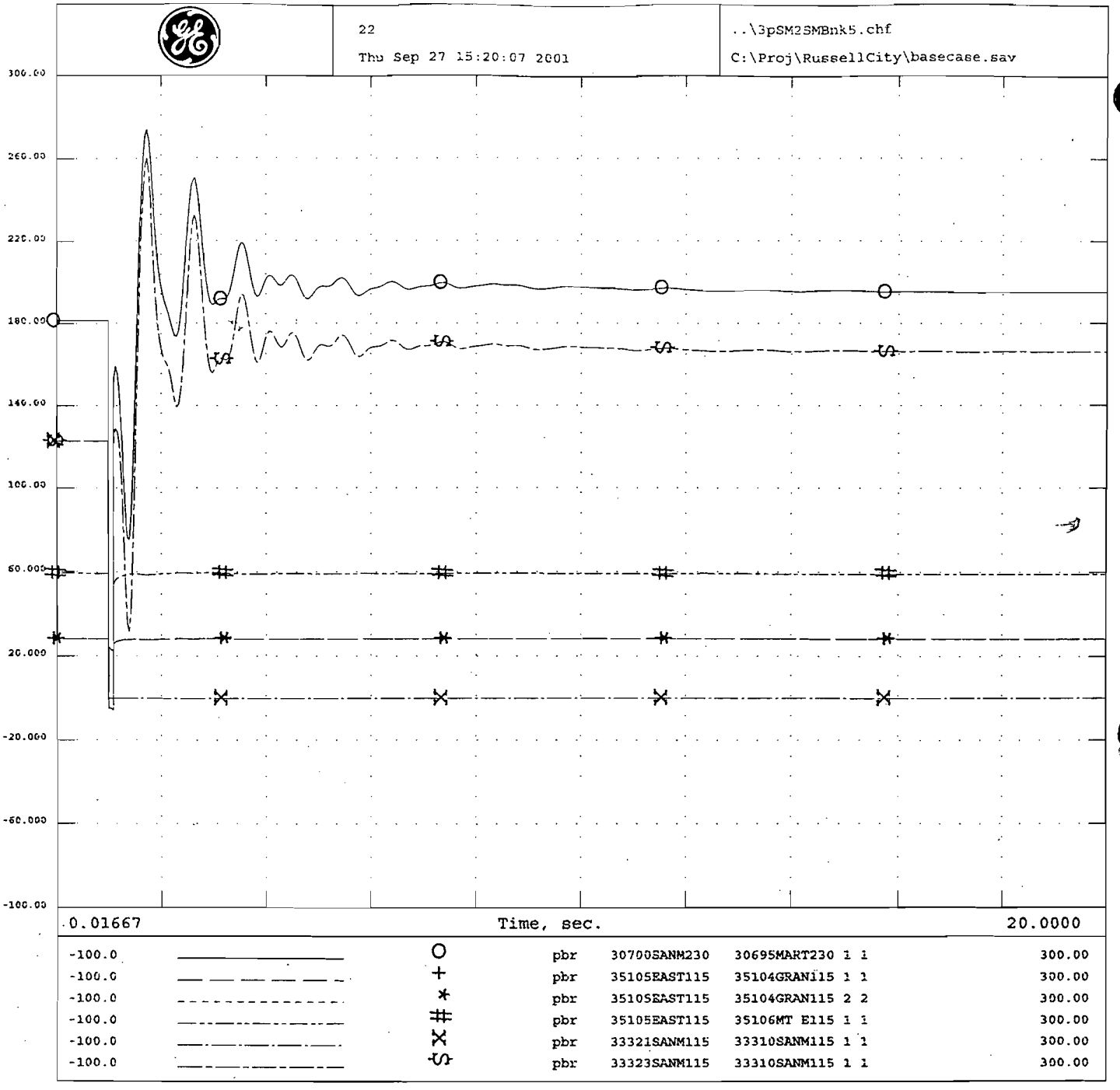

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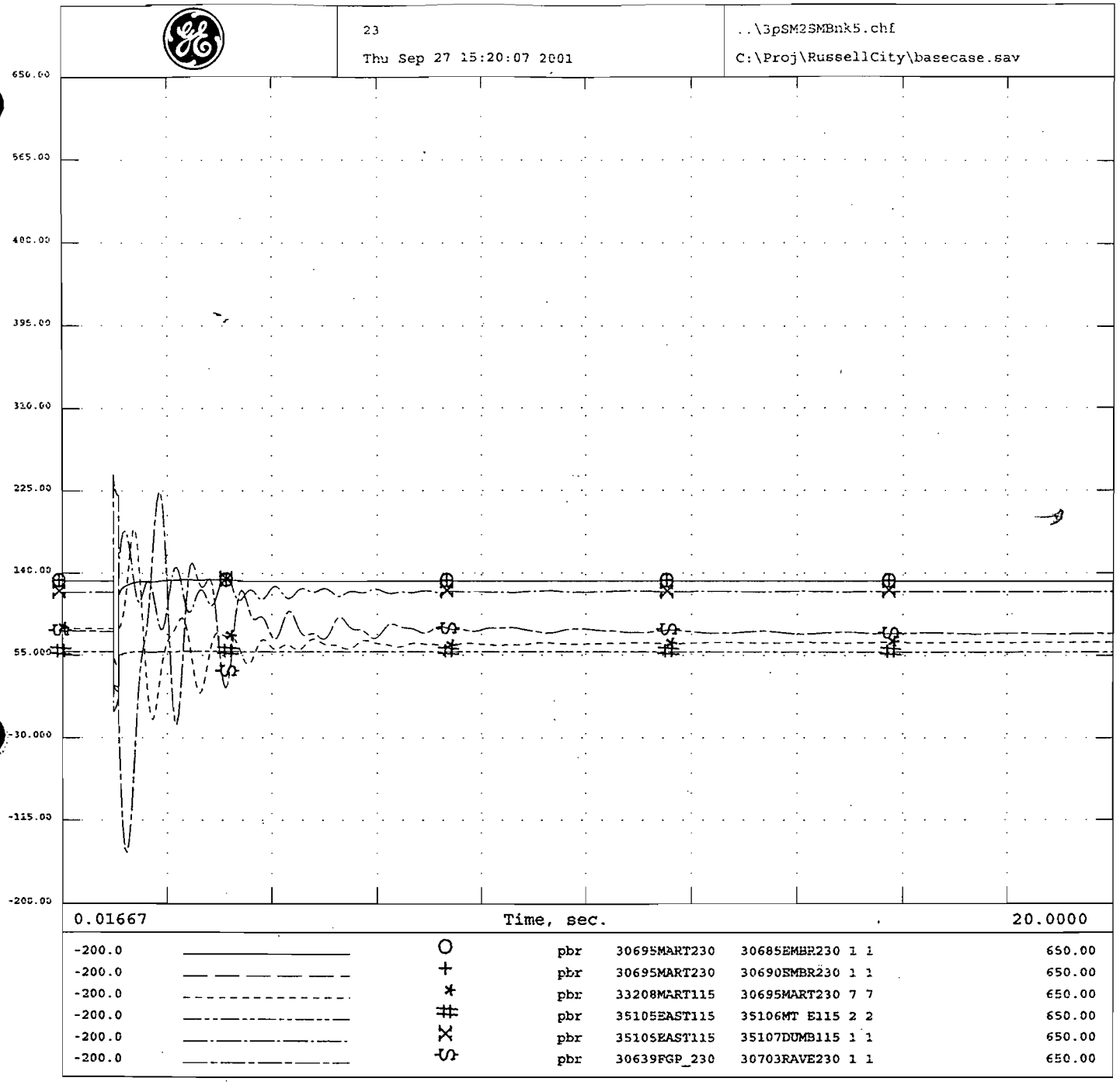

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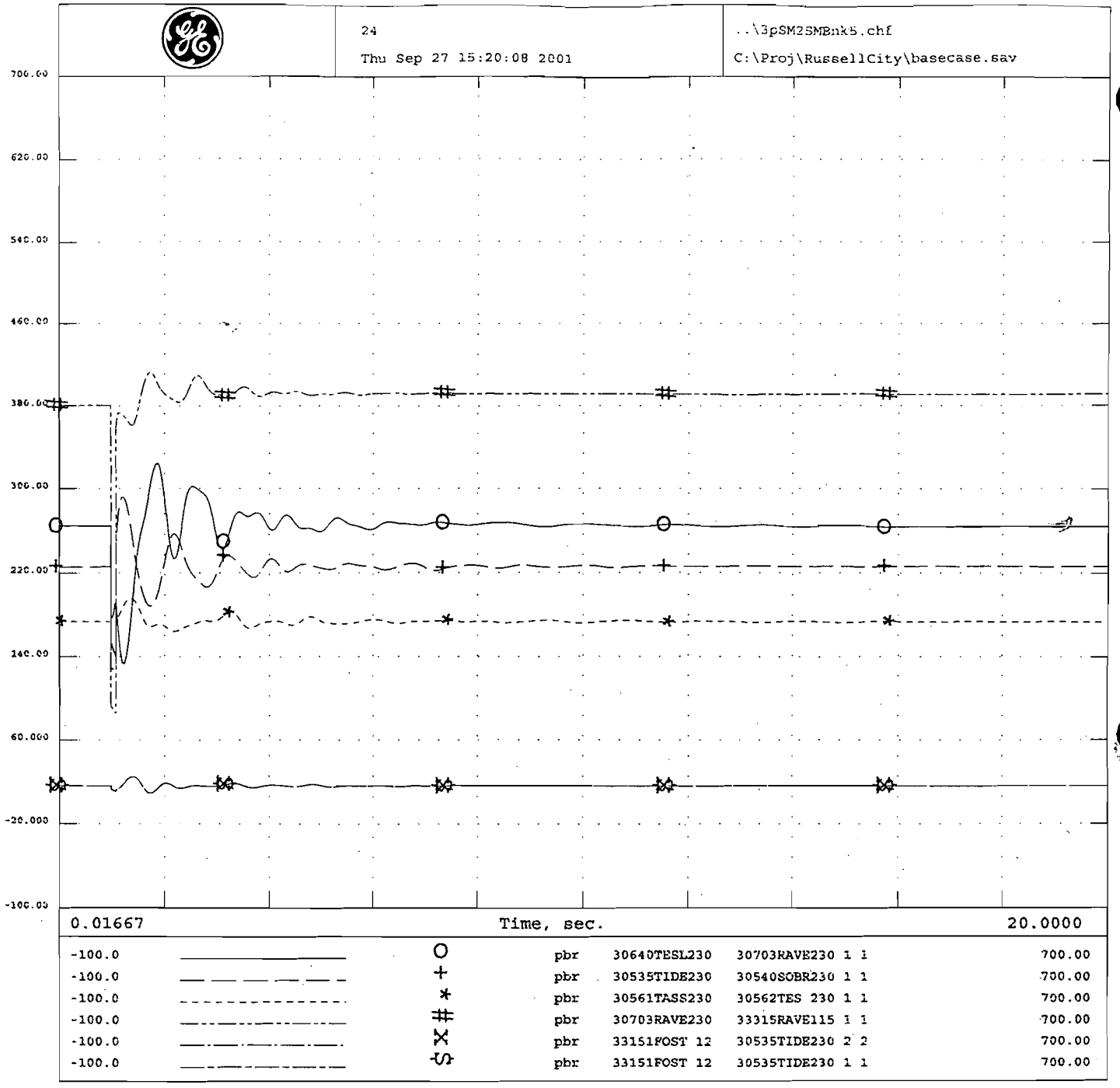

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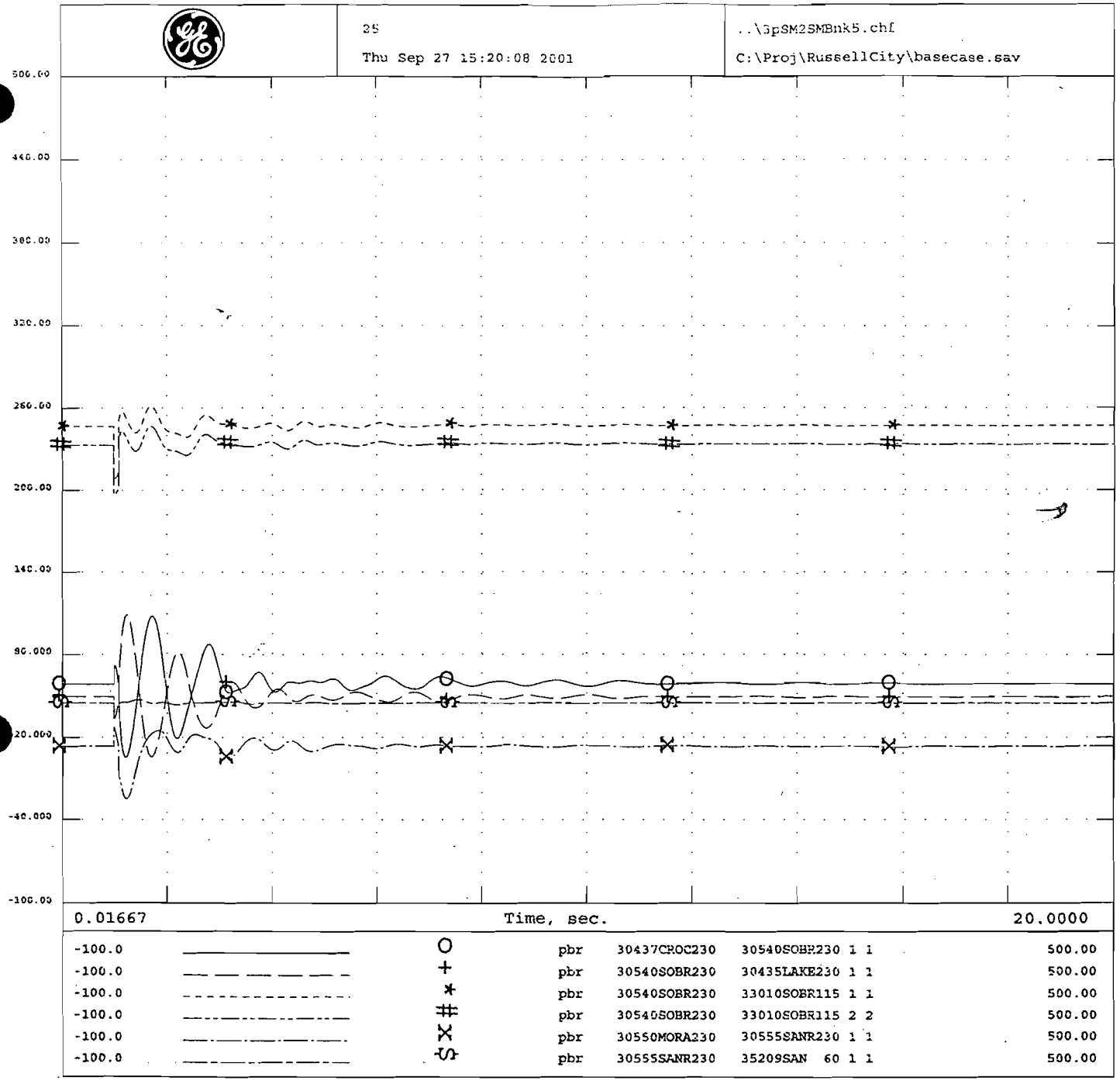

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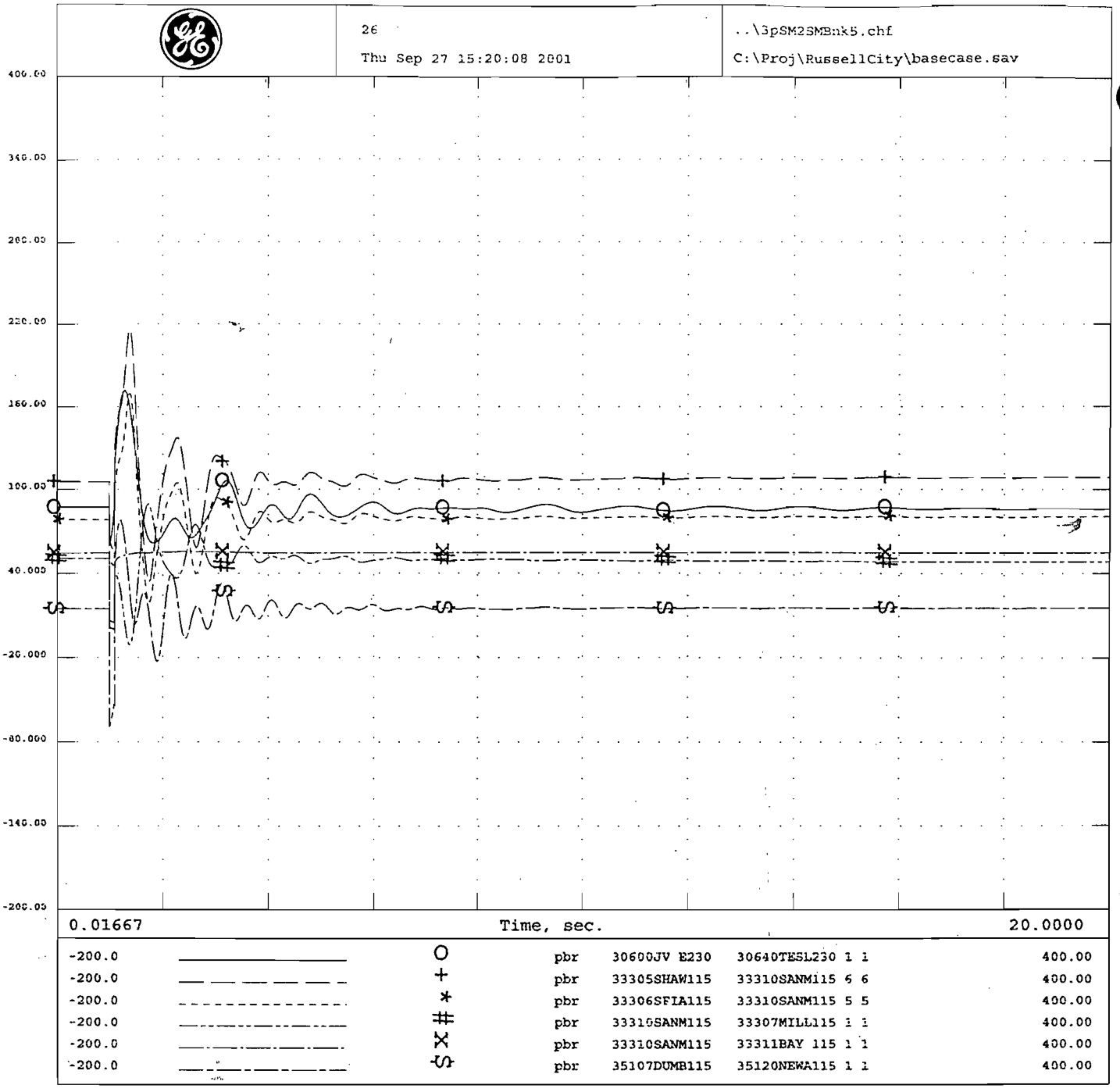

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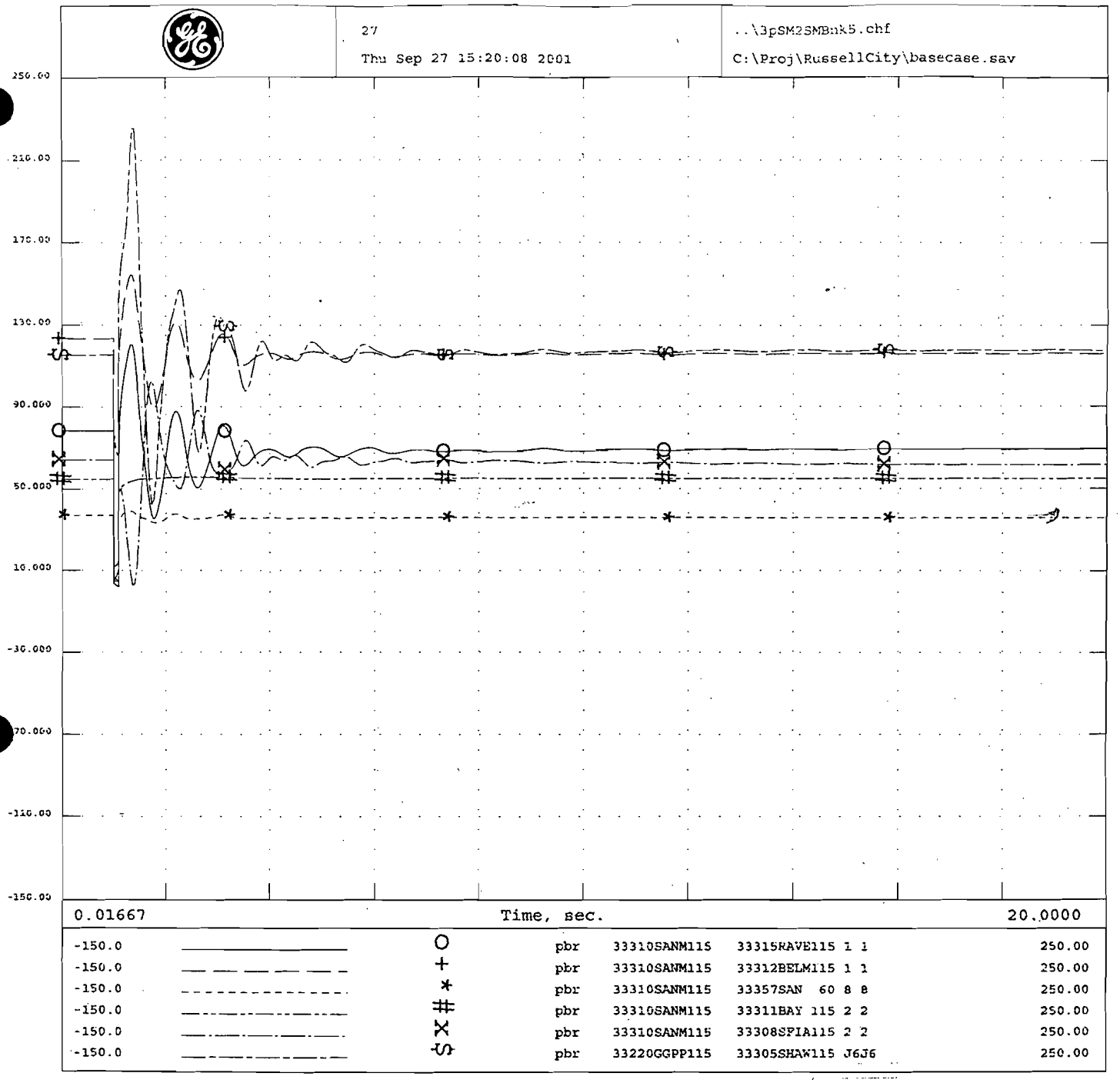

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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3 phase 6 cycle fault at San Mateo 230kV bus and trip both San Mateo-Ravenswood
230kV lines
RUN  9
CC
CC   Fault San Mateo 230kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip the San Mateo-Ravenswood #1 230kV line
DL  6.0 "SANMATEO" 230.00 "RAVENSWD" 230.00 "1 "
DL  6.0 "SANMATEO" 230.00 "RAVENSWD" 230.00 "2 "
CC
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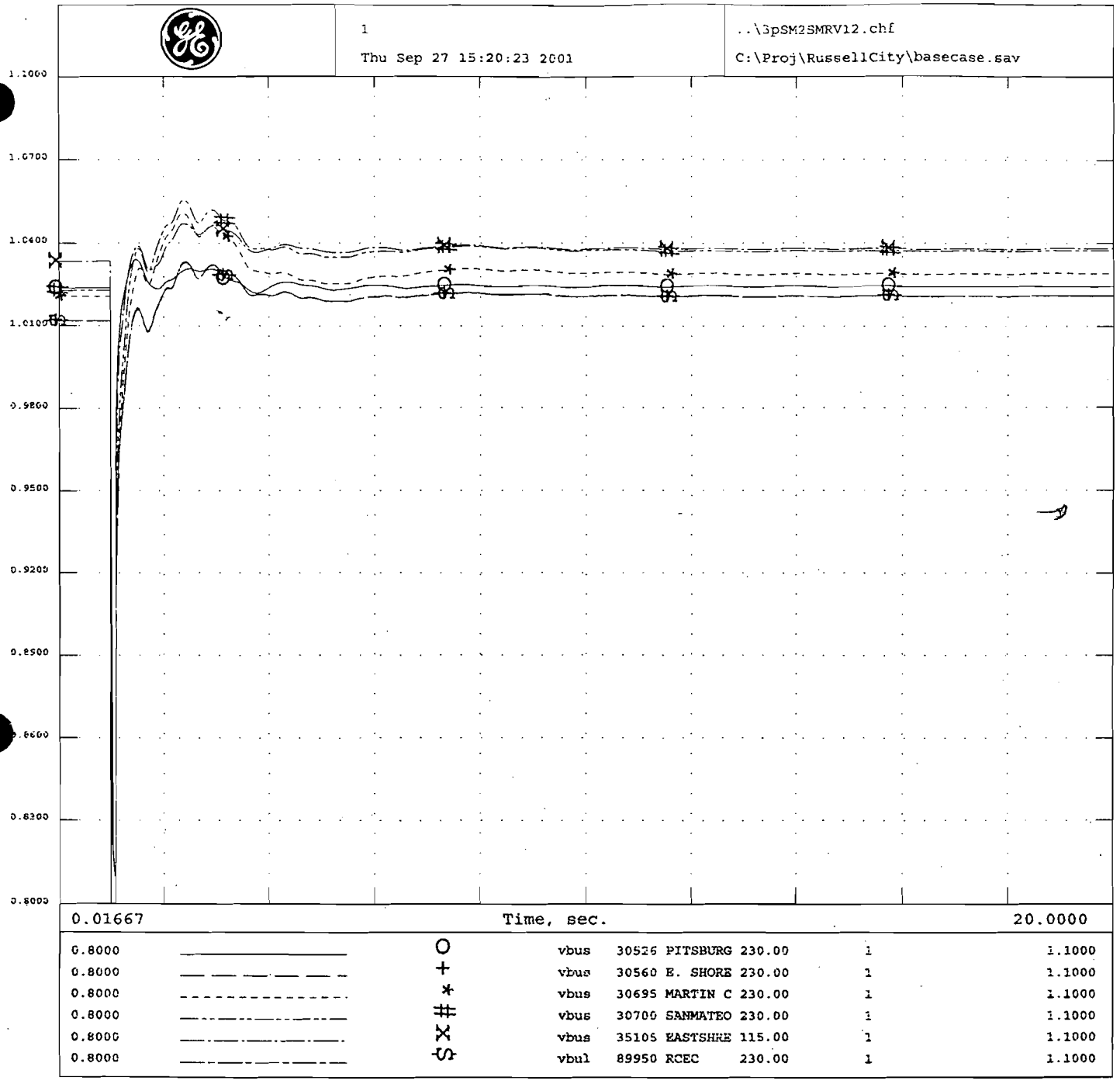

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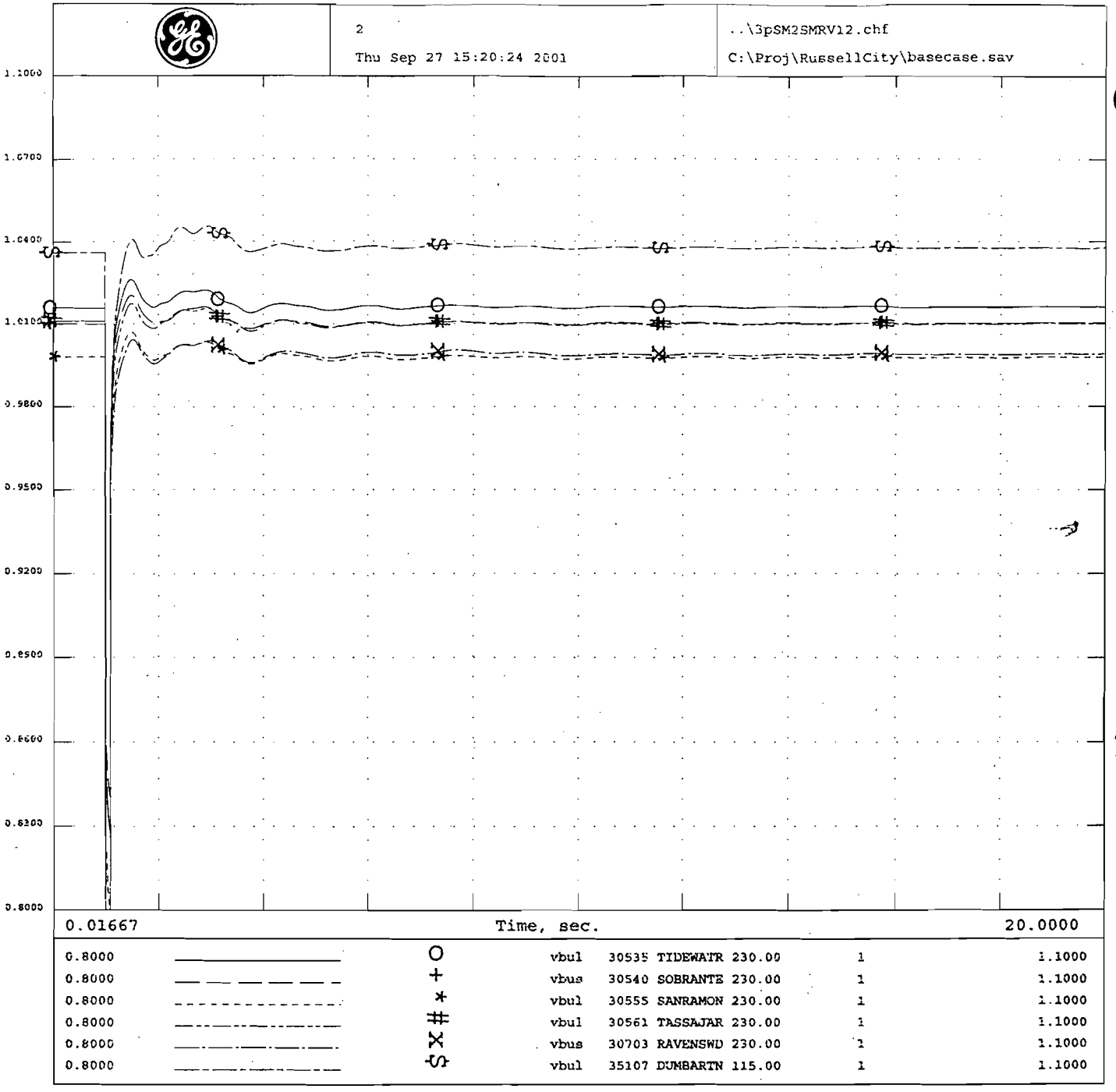
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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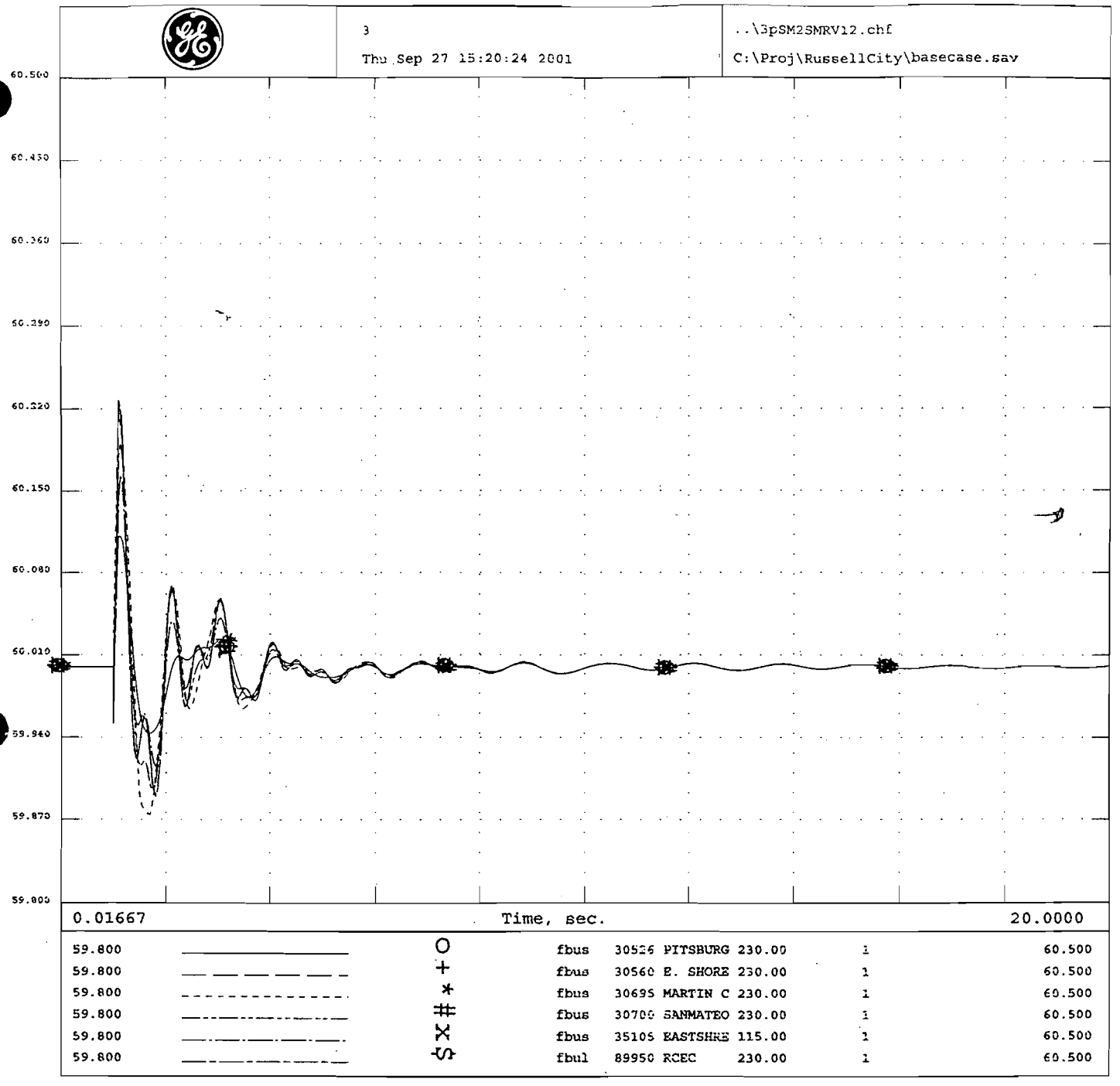

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Calpine/Bechtel Joint Development
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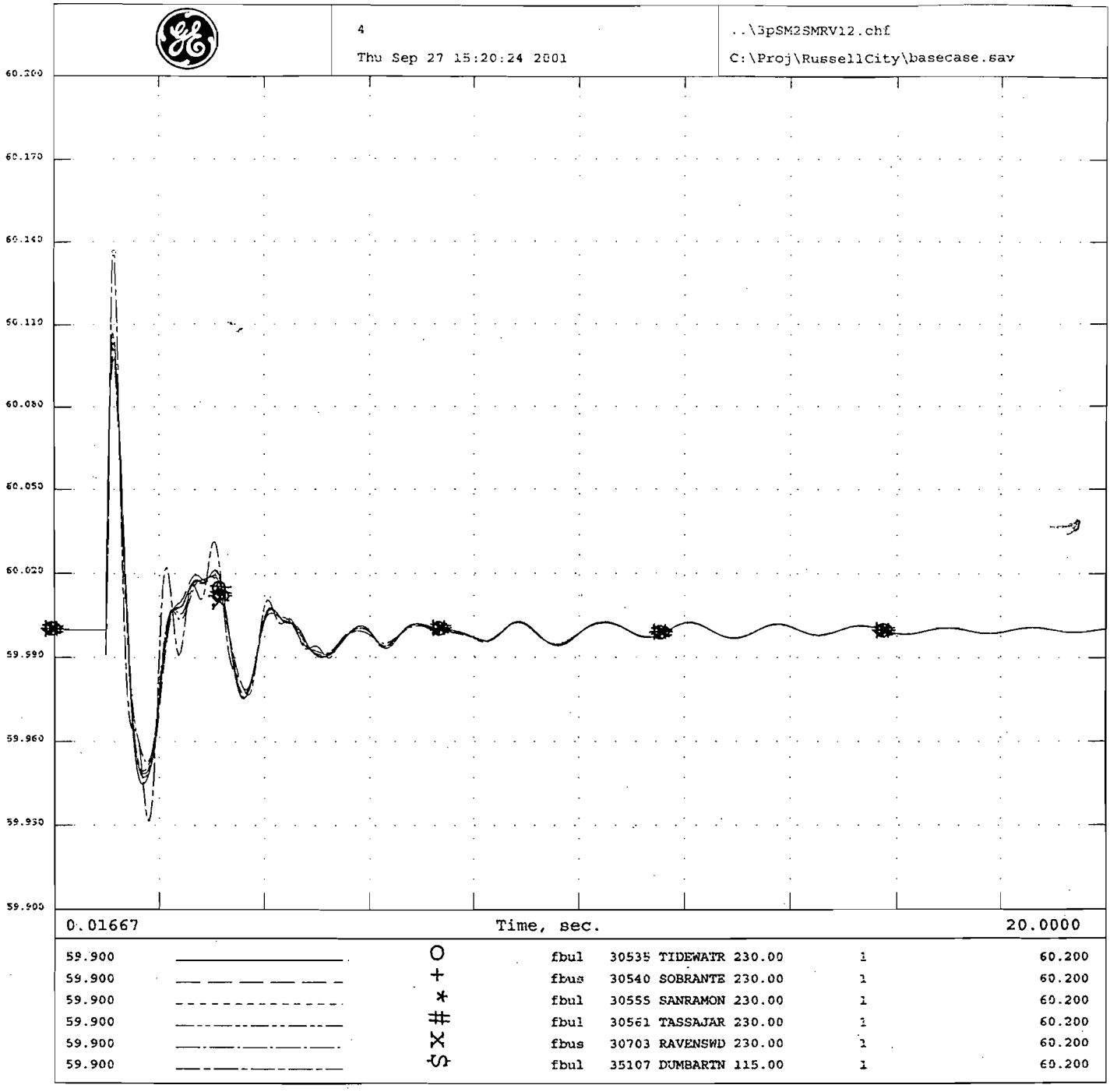

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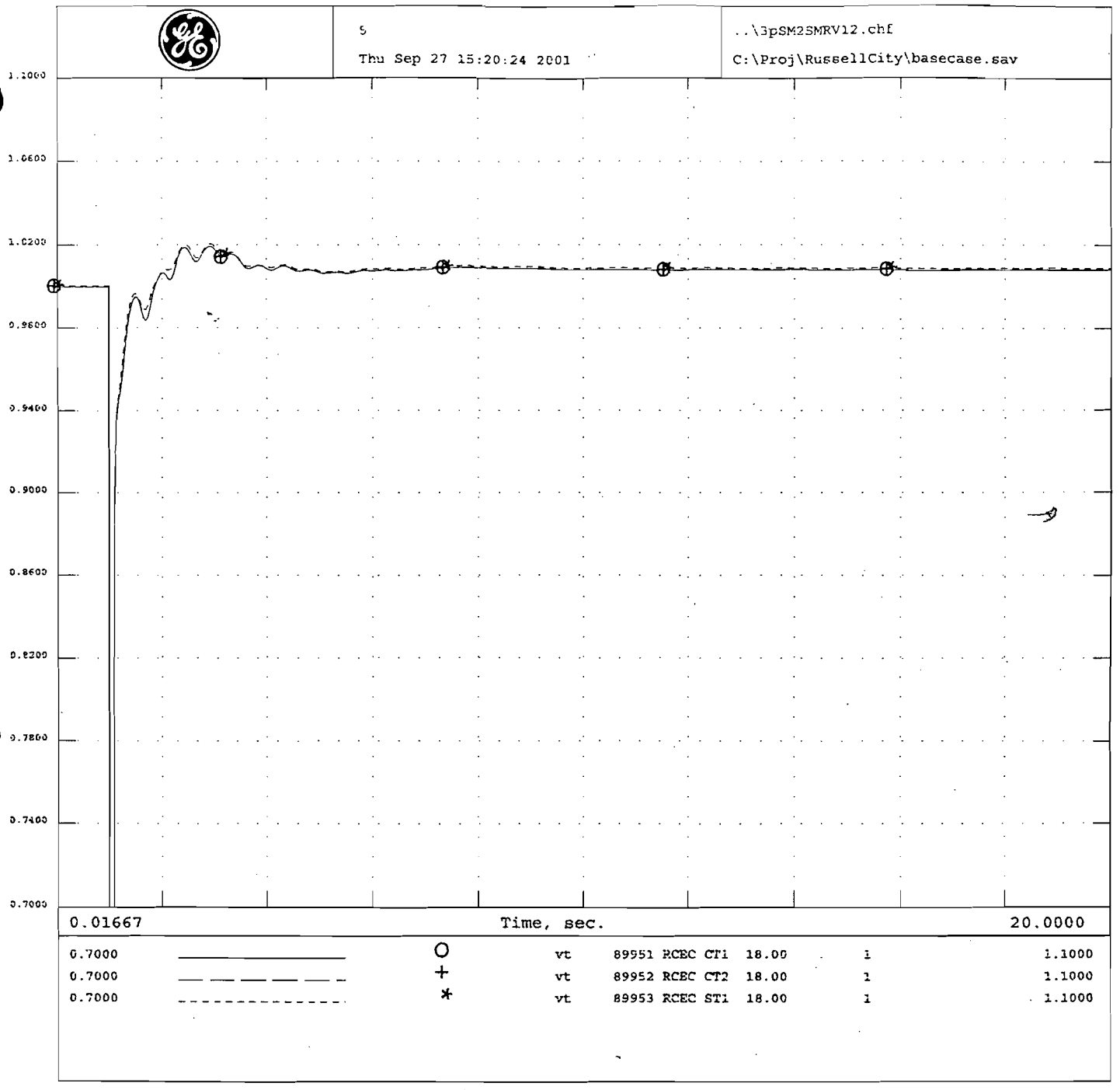

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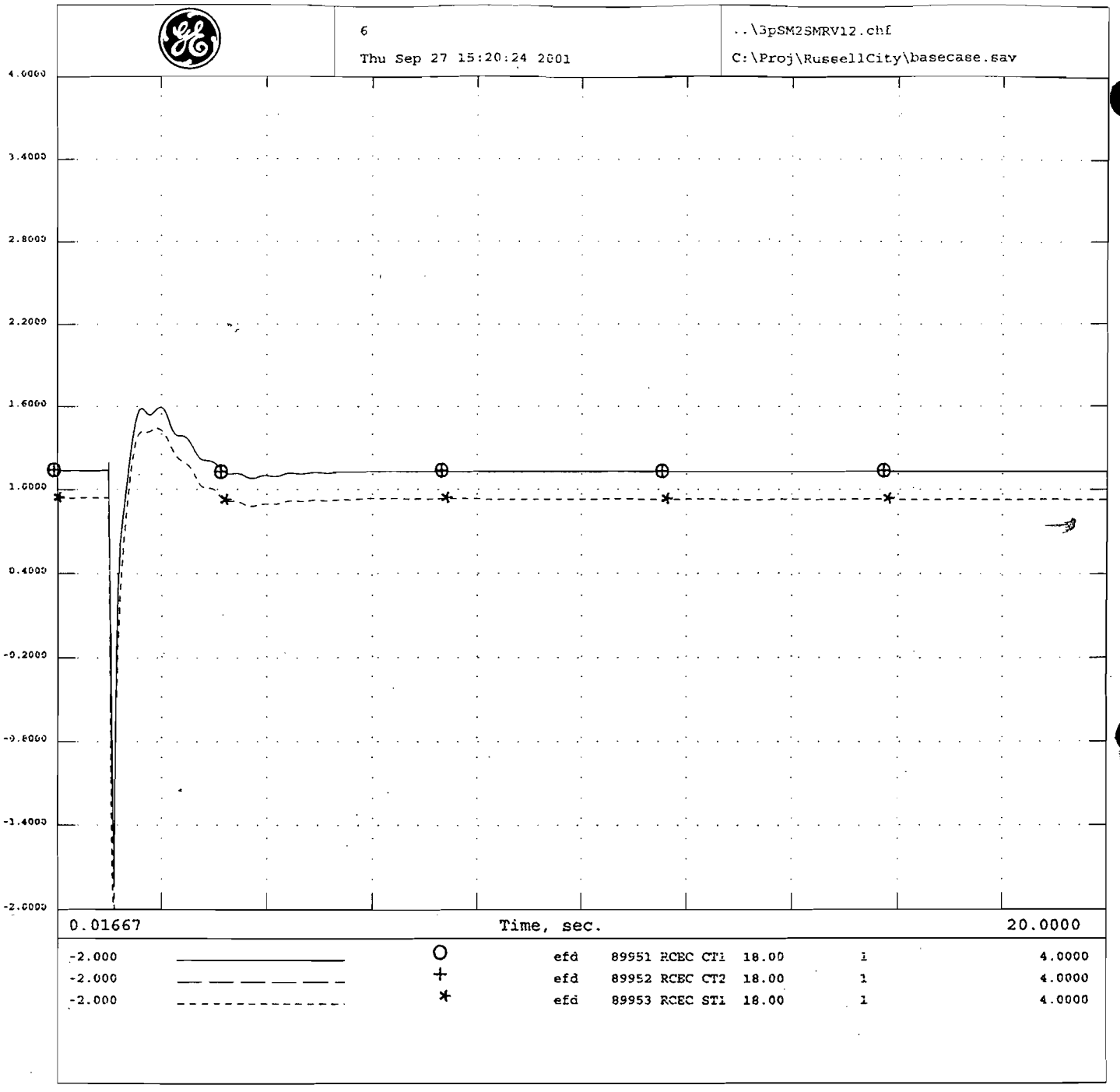
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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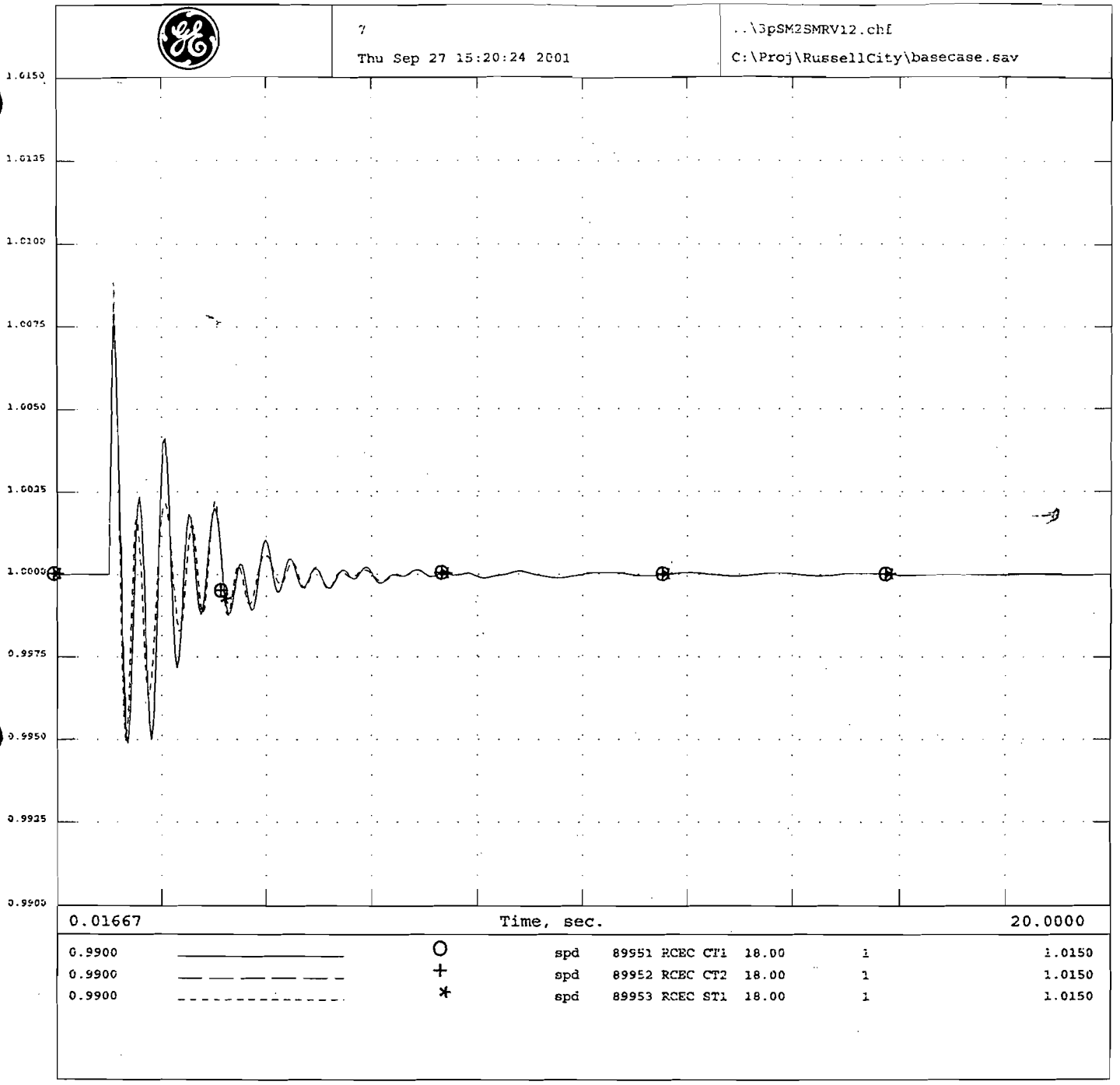
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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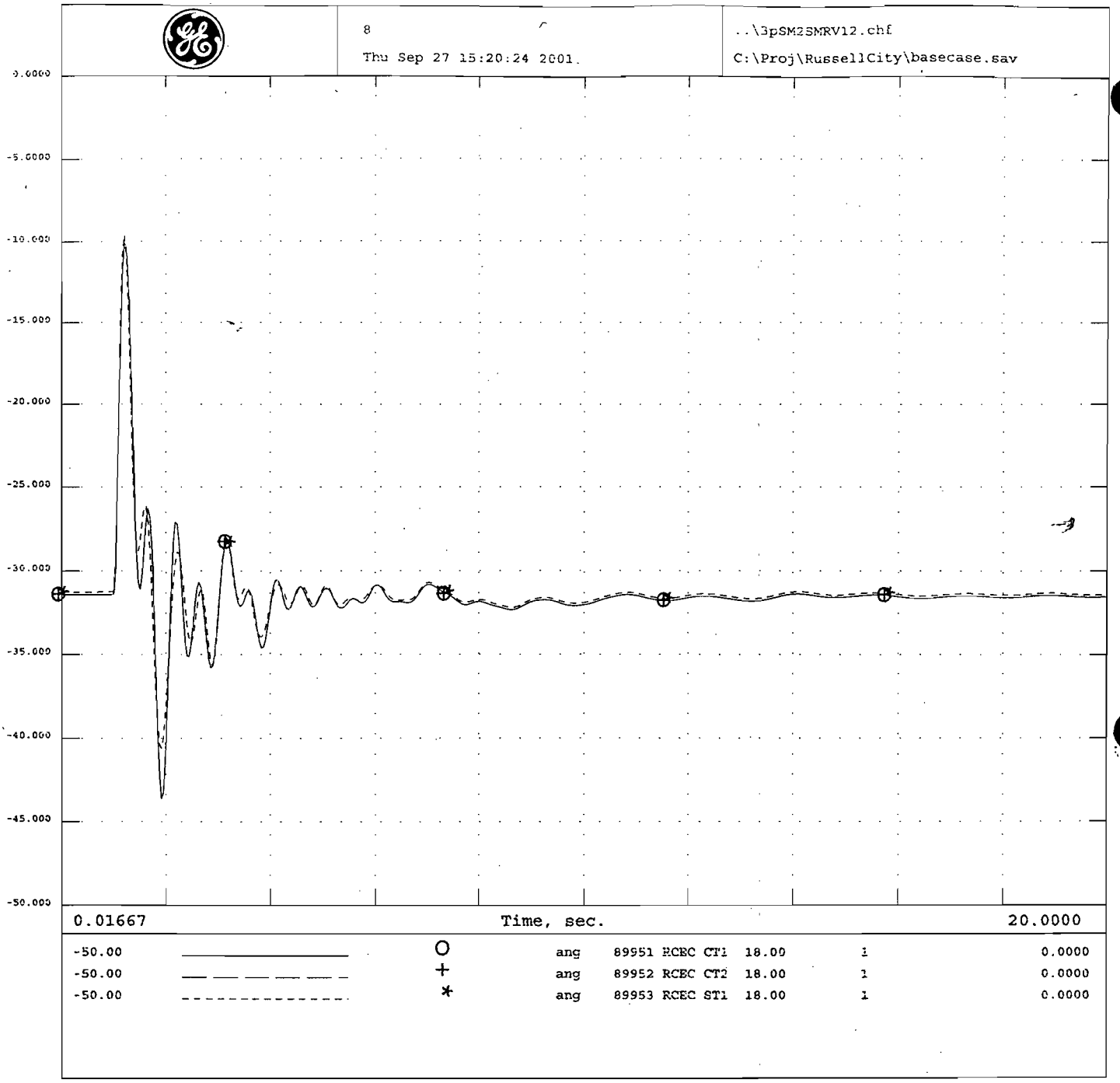
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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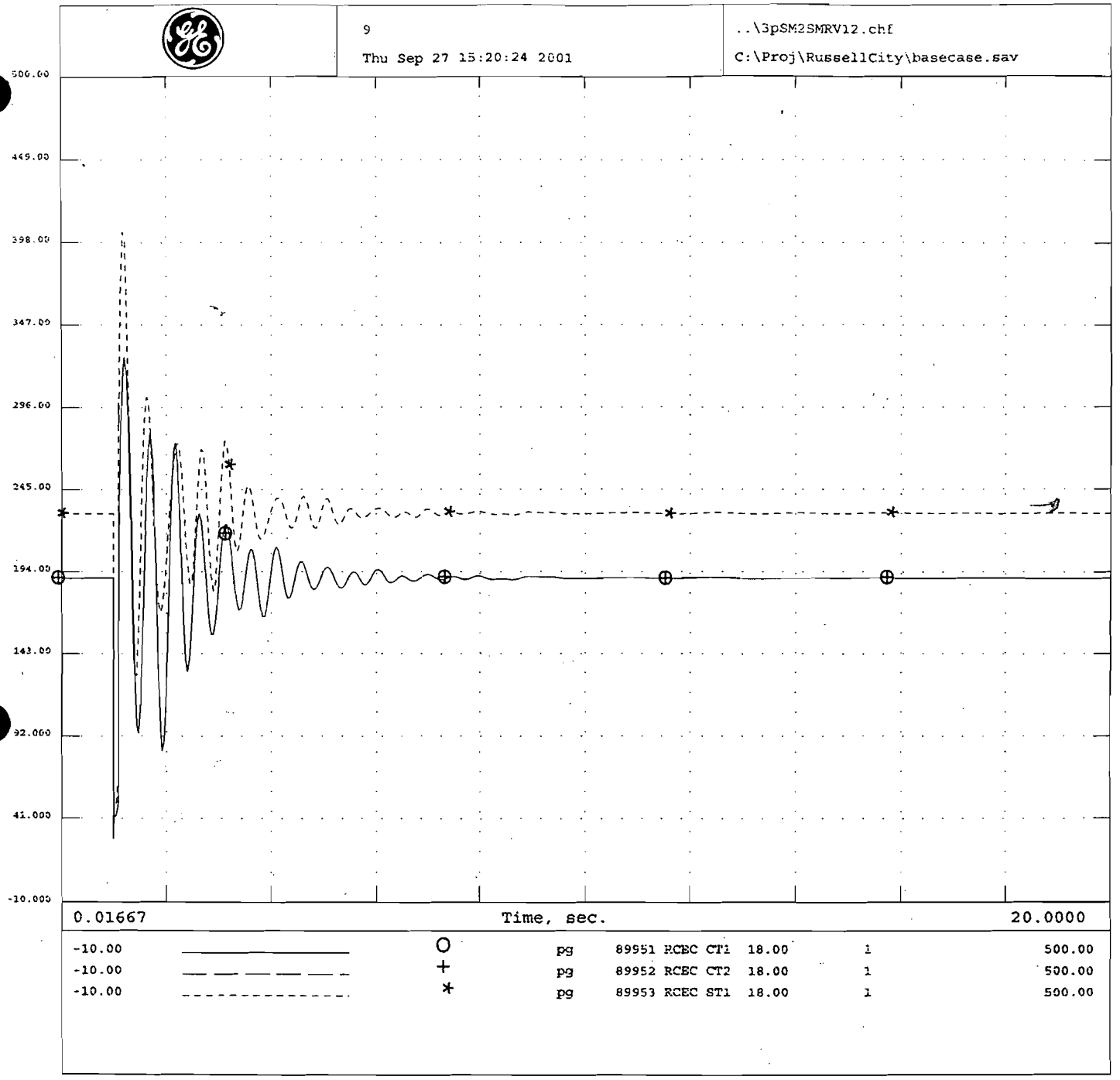
Project Generator Rotor Angle



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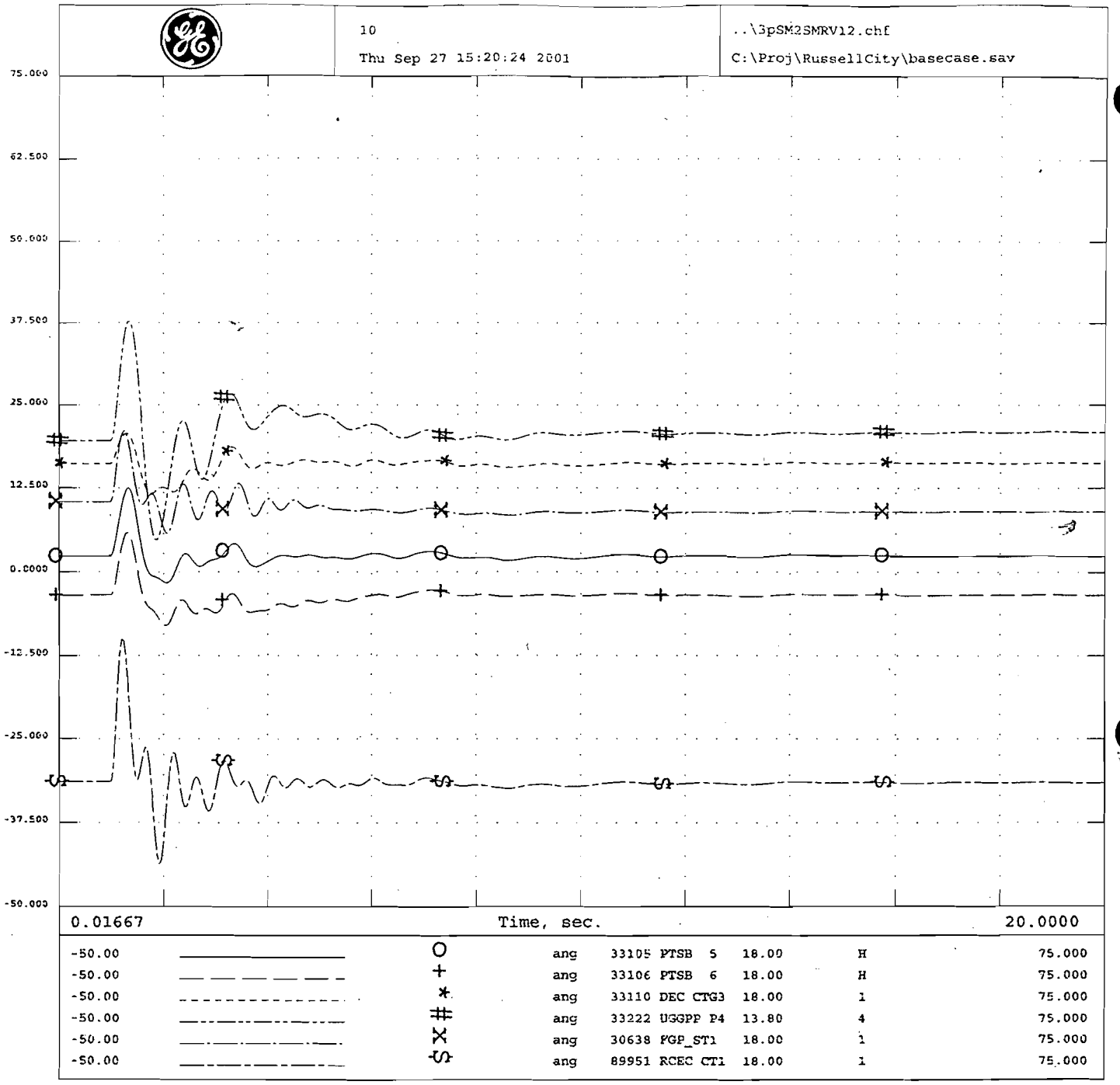

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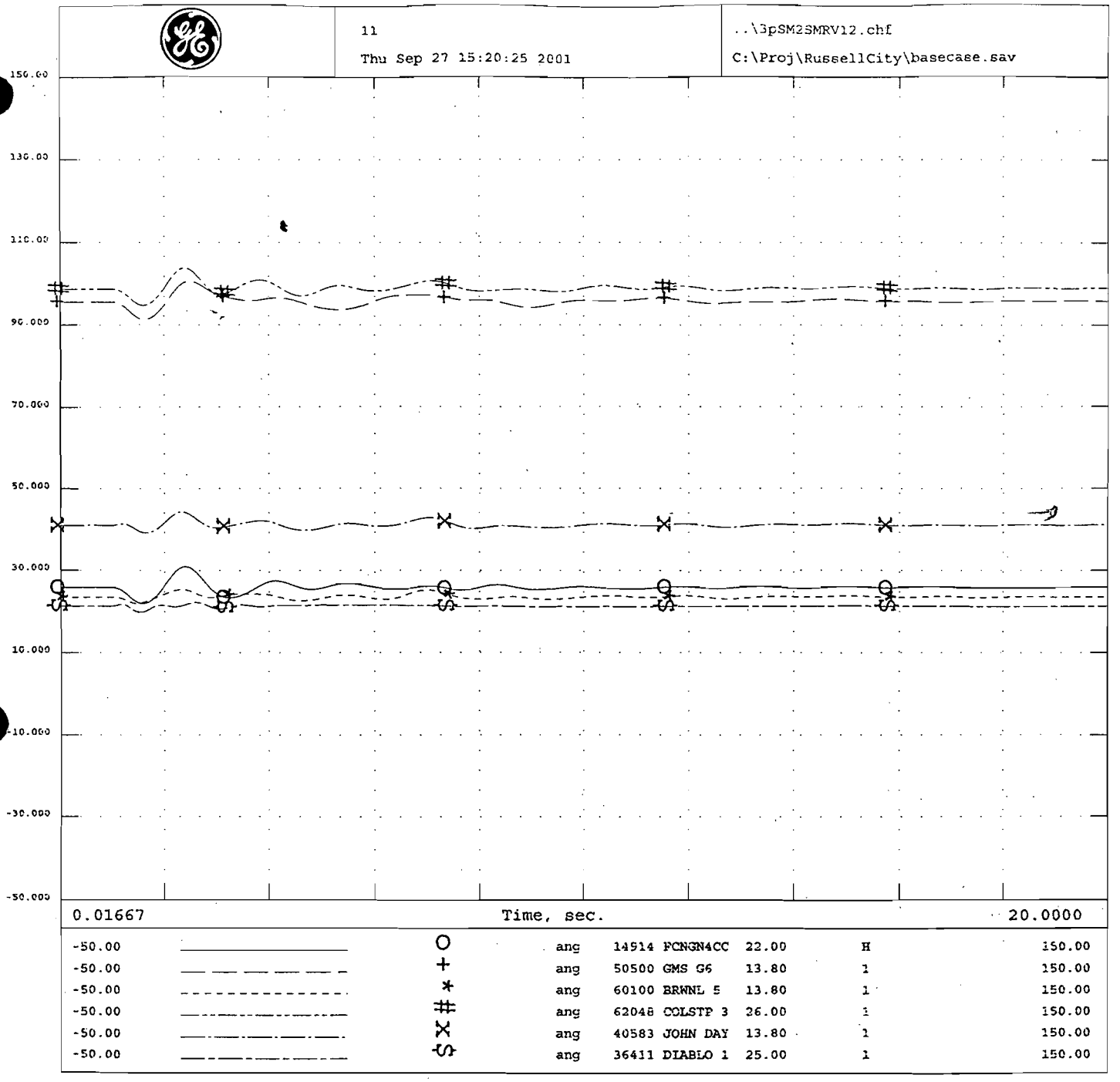
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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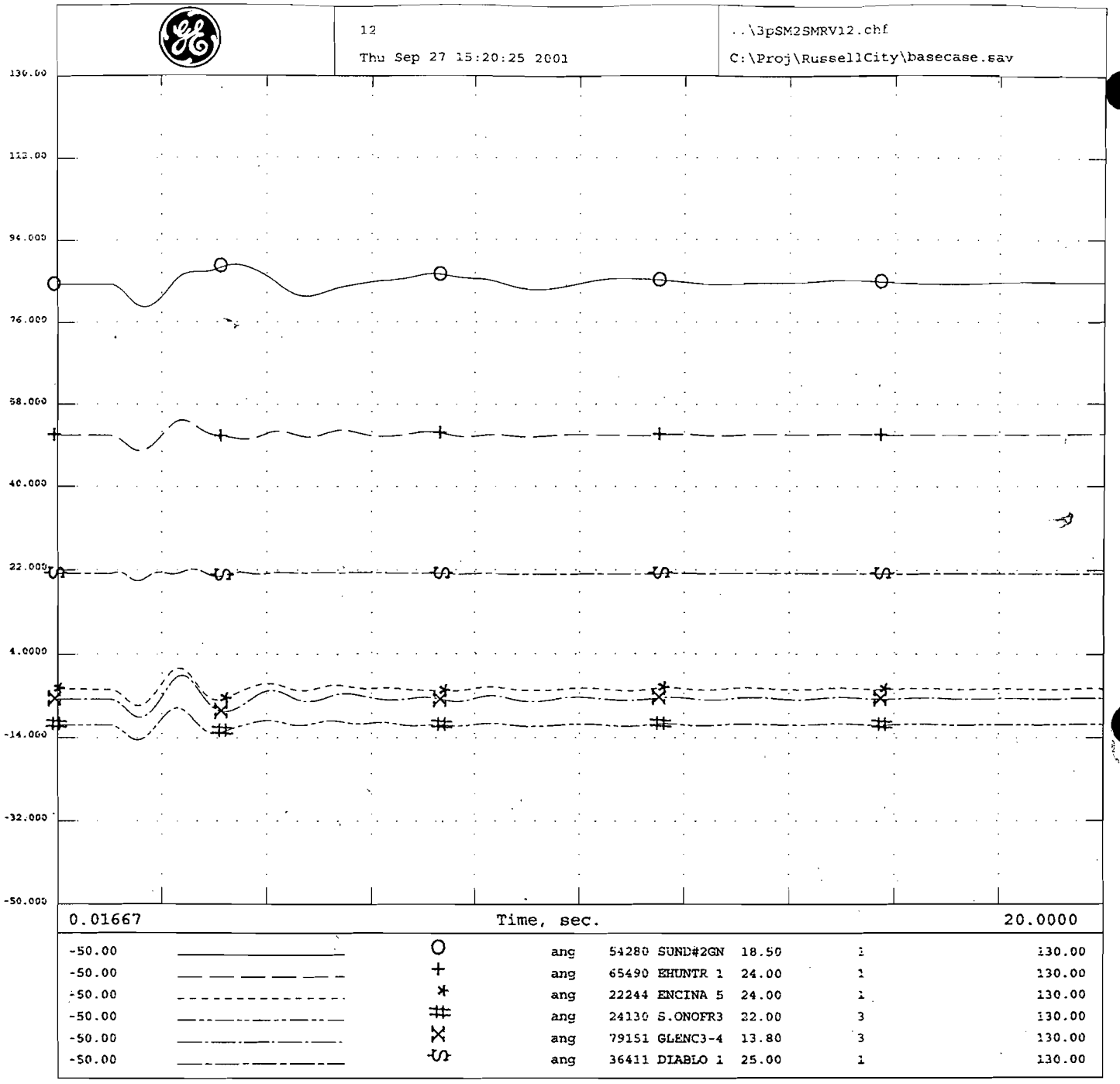
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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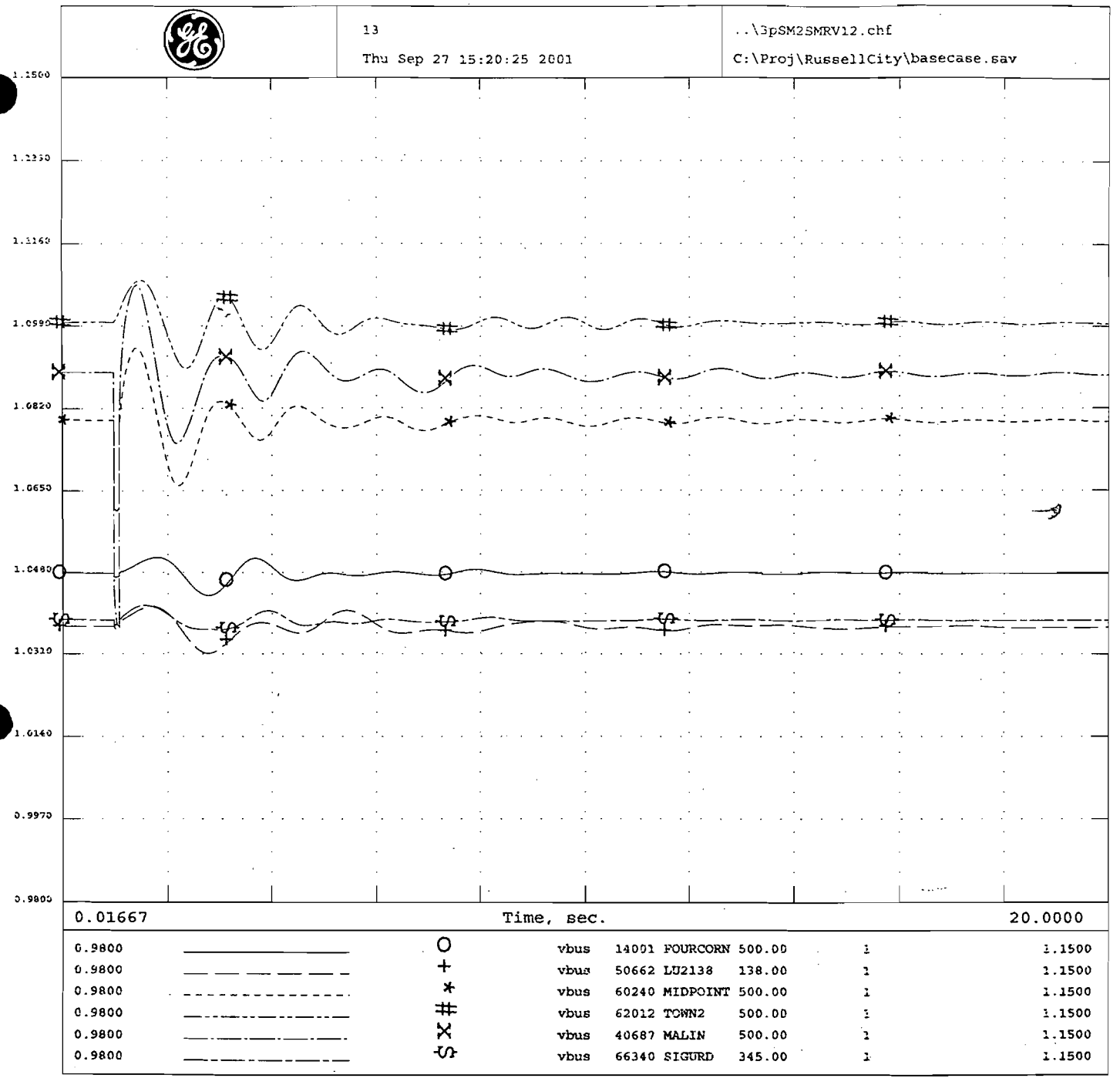

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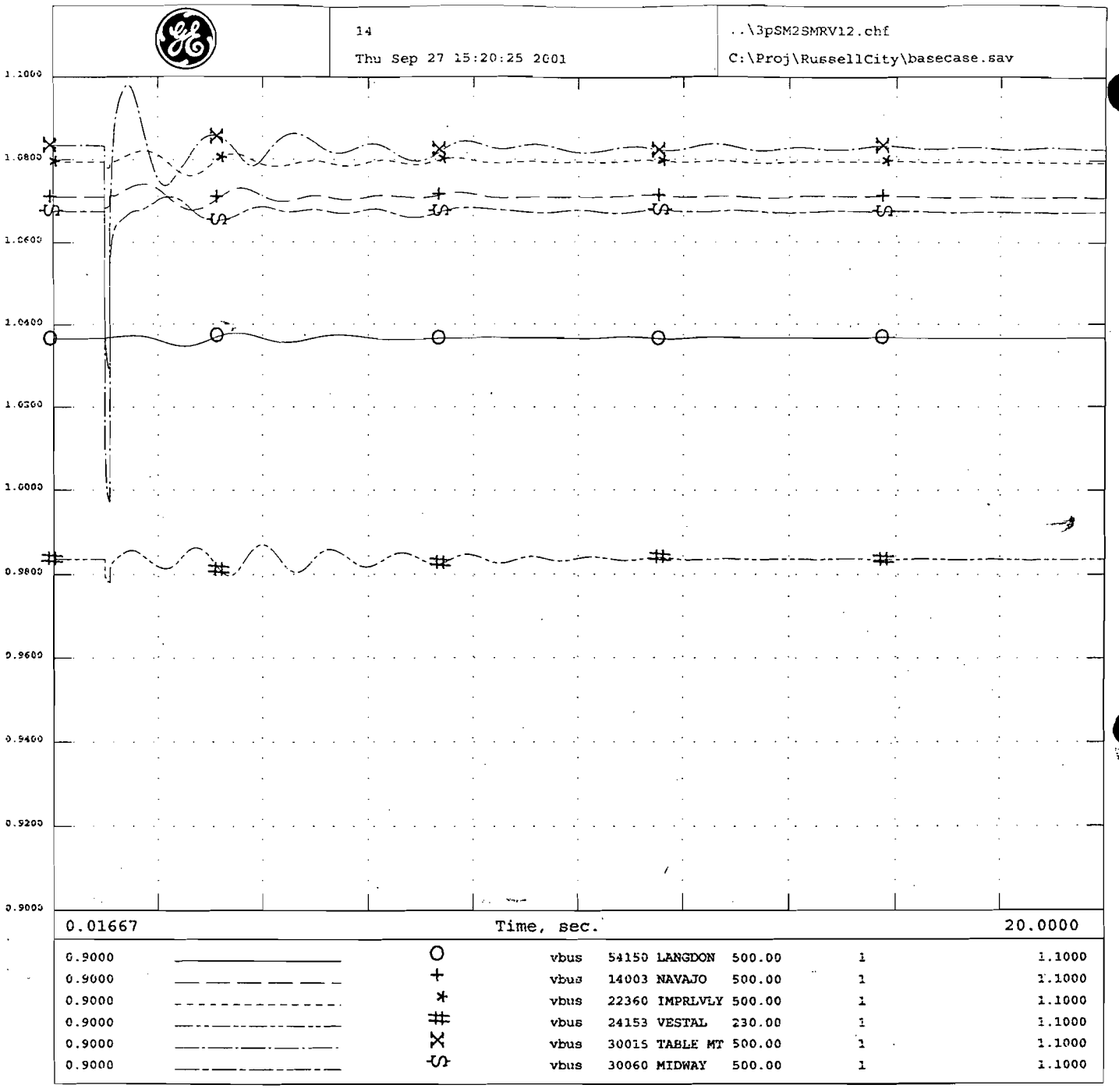

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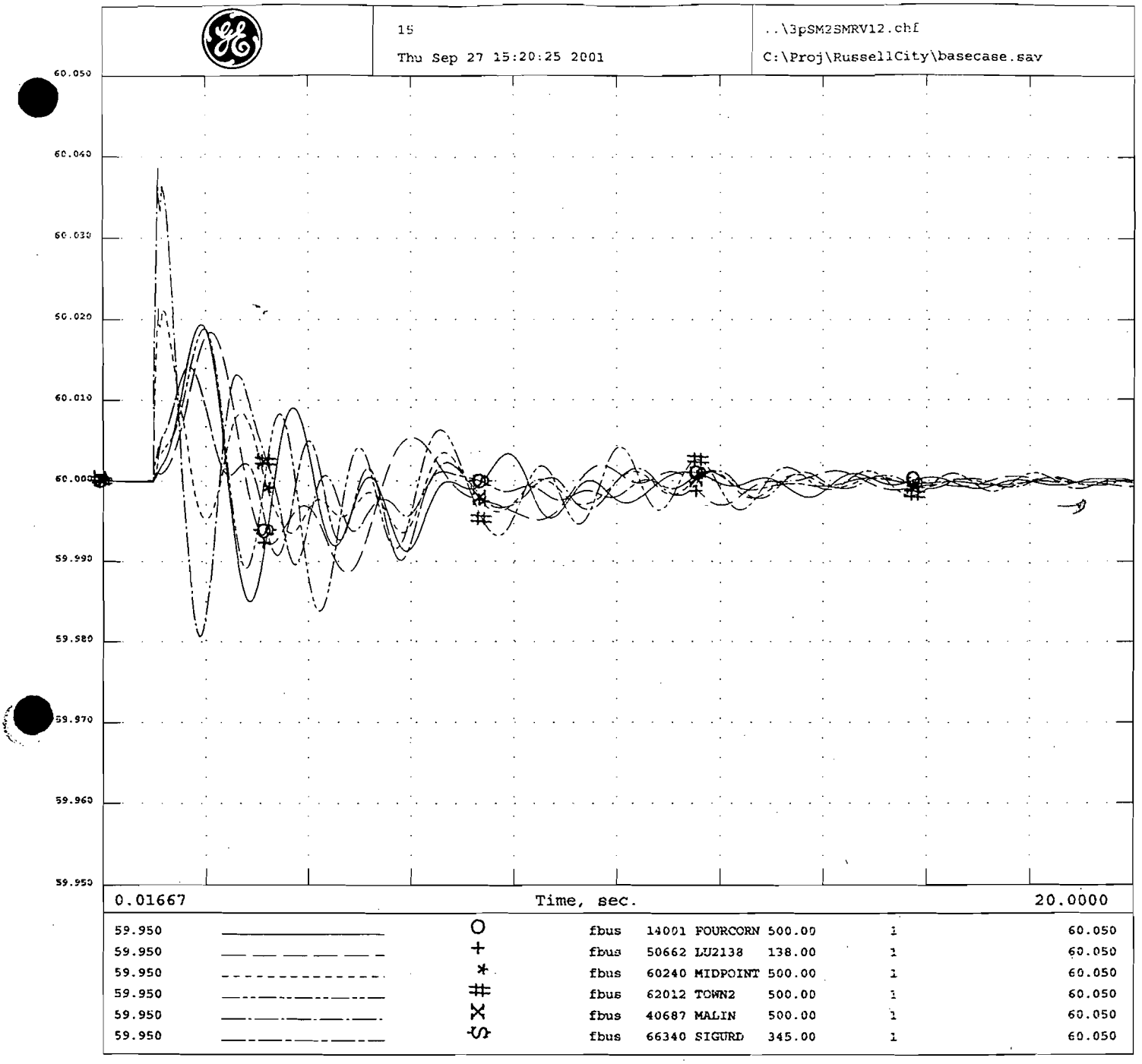

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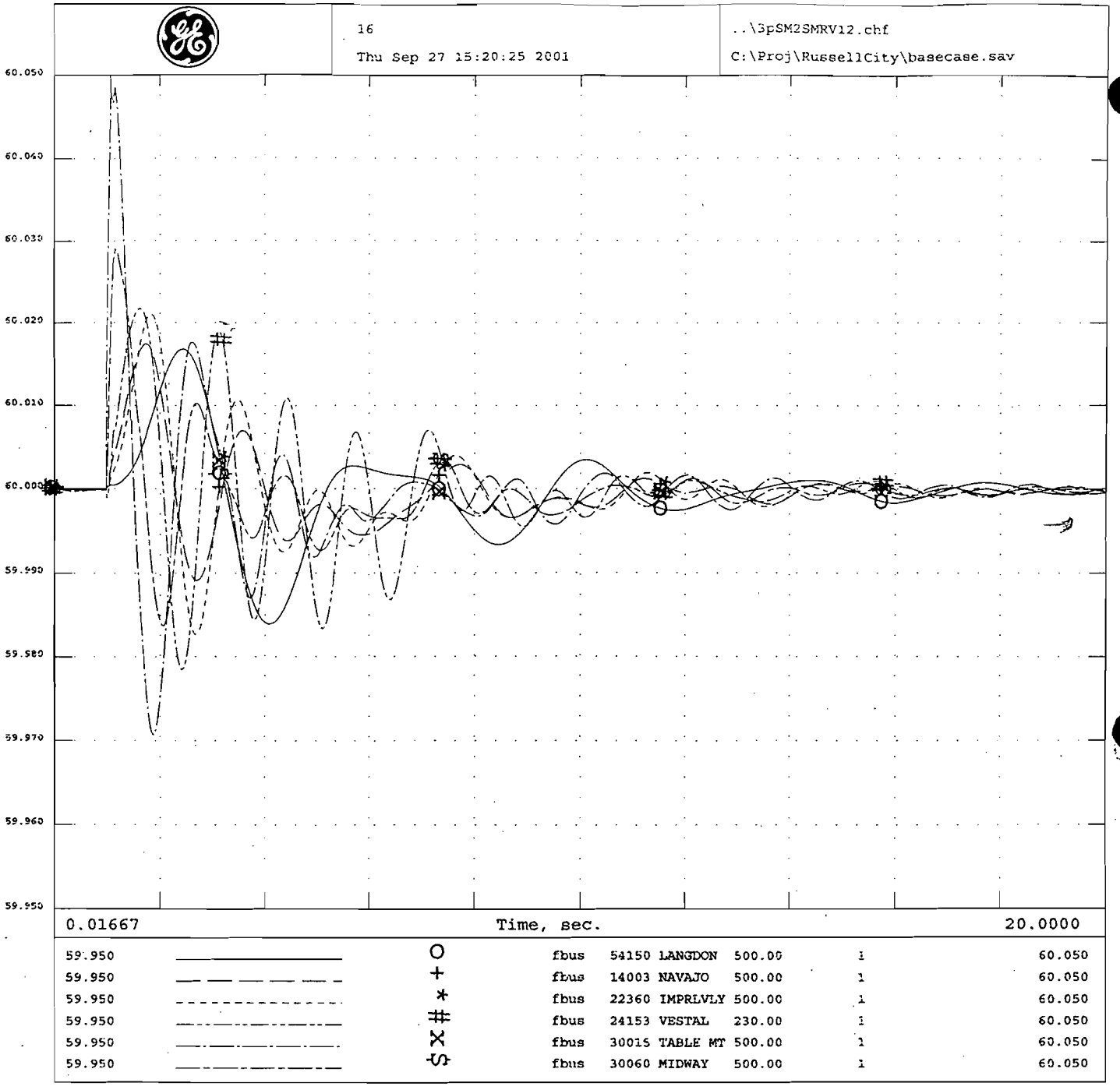

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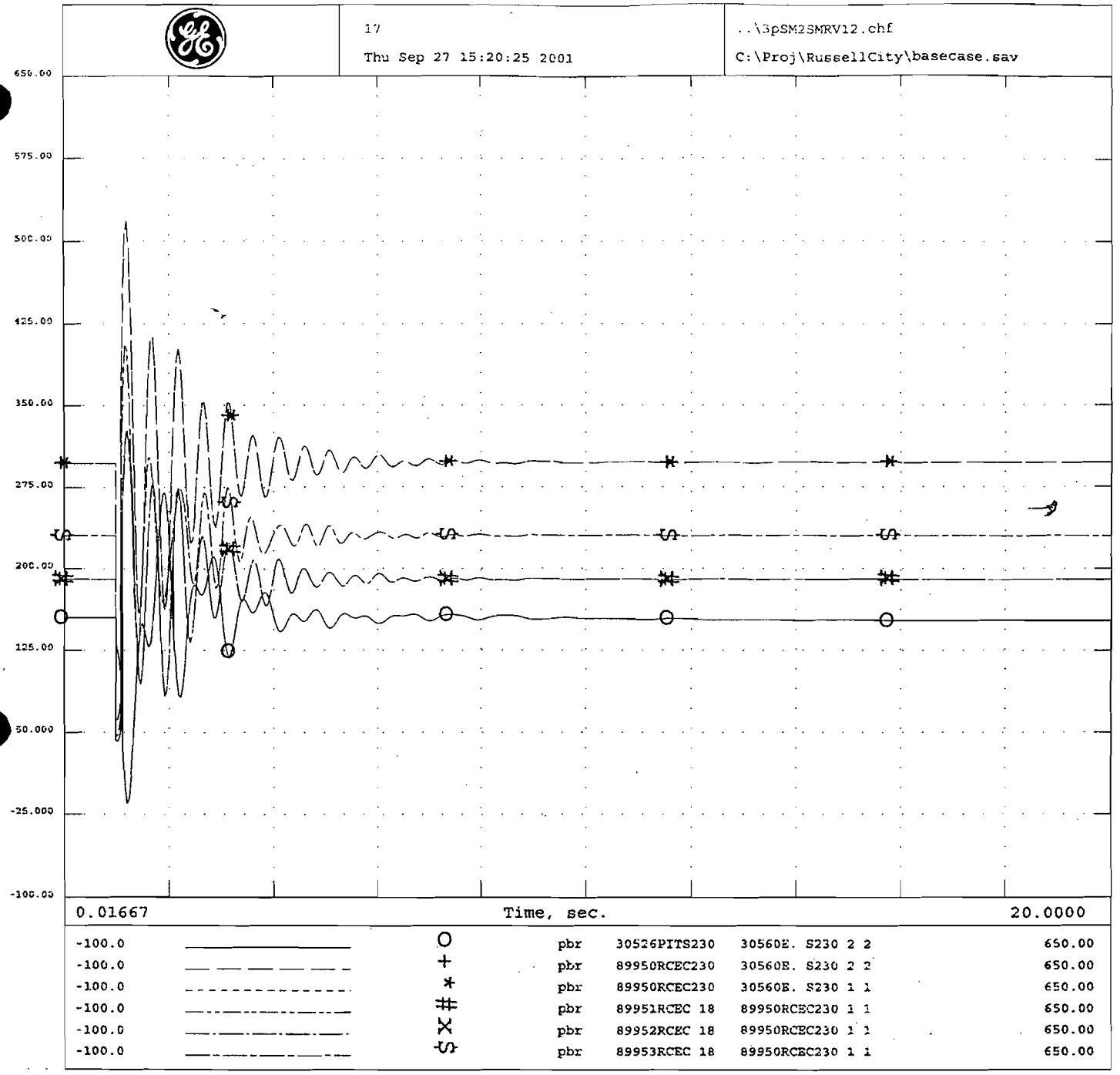

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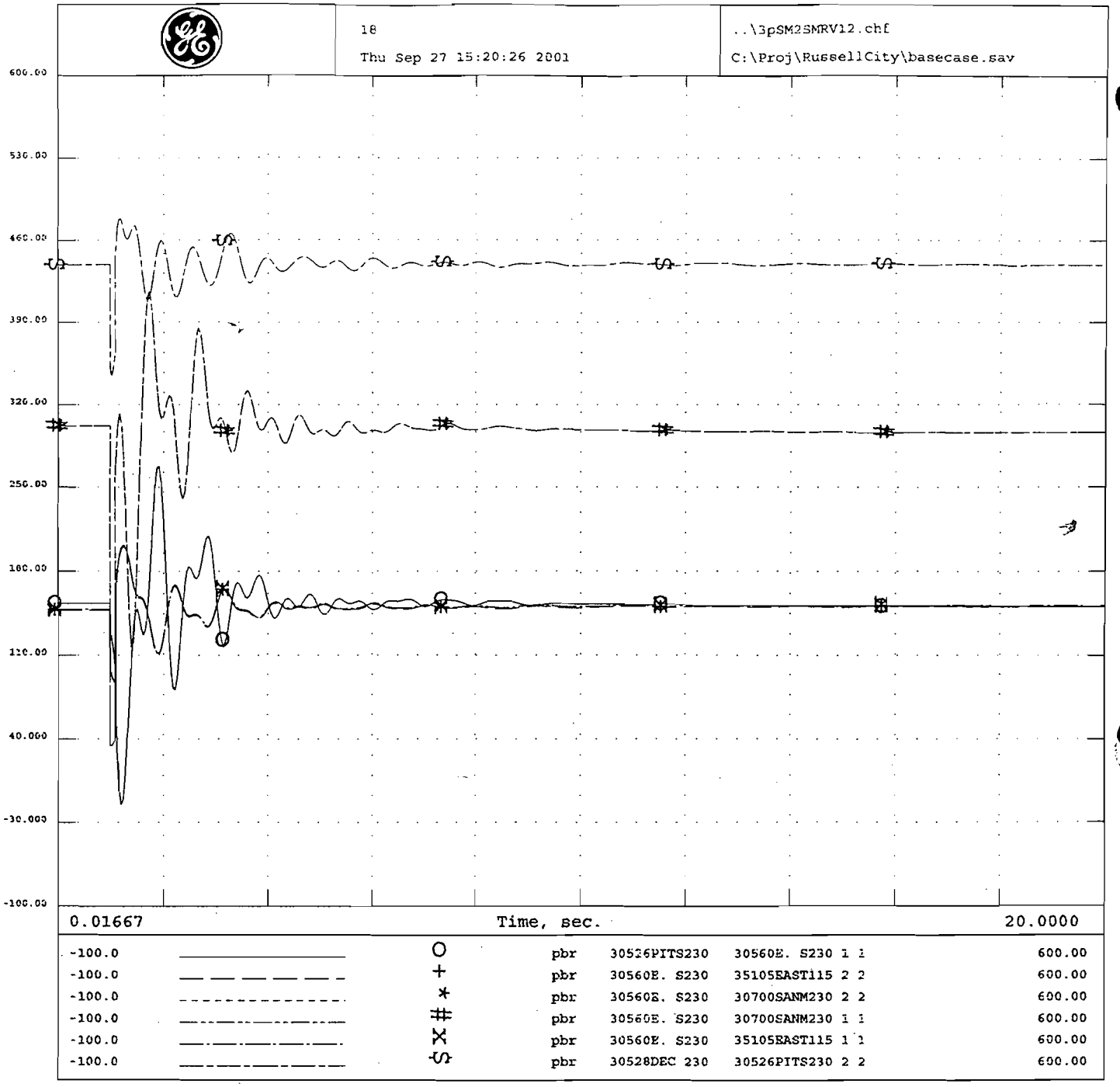

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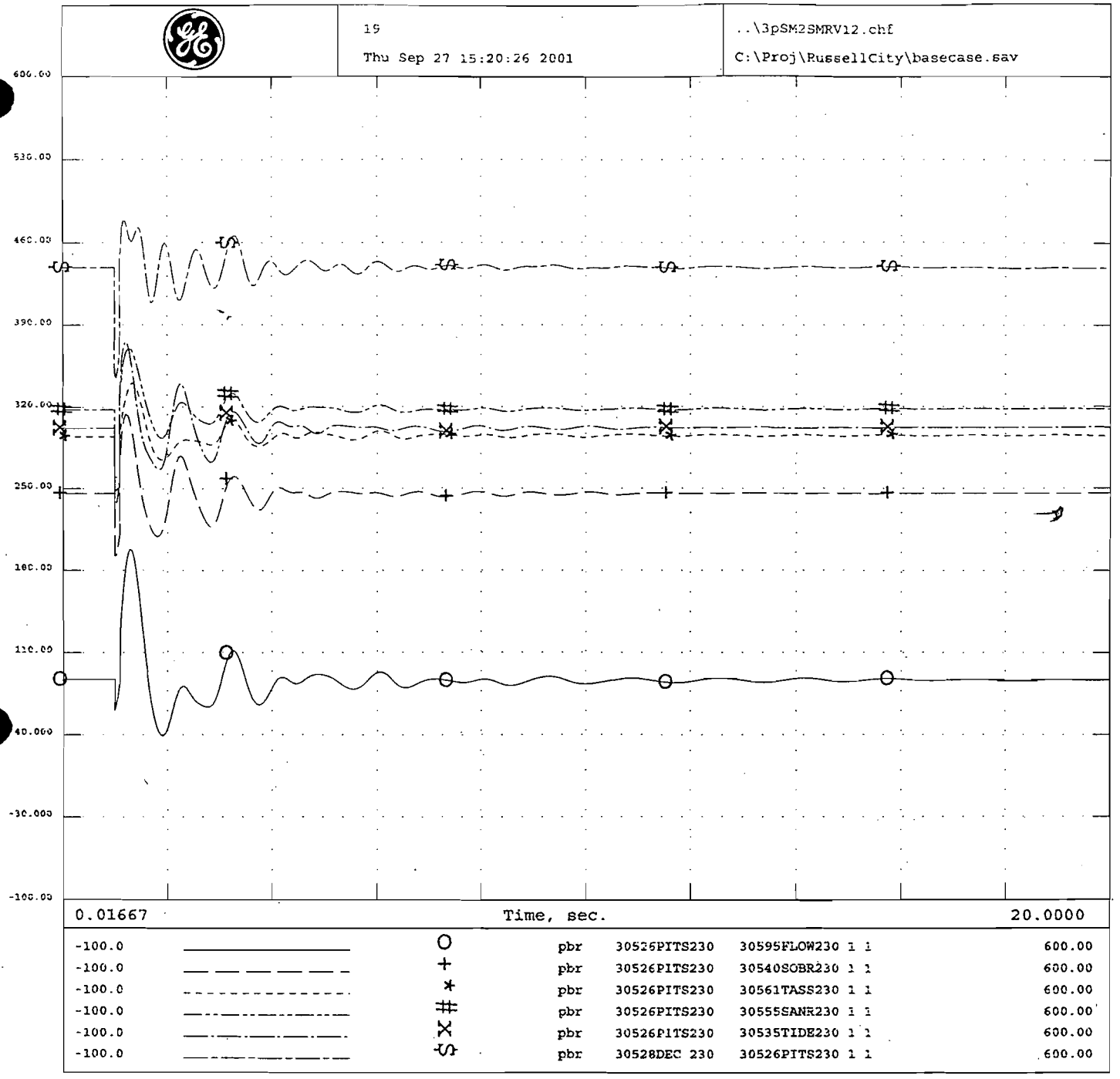

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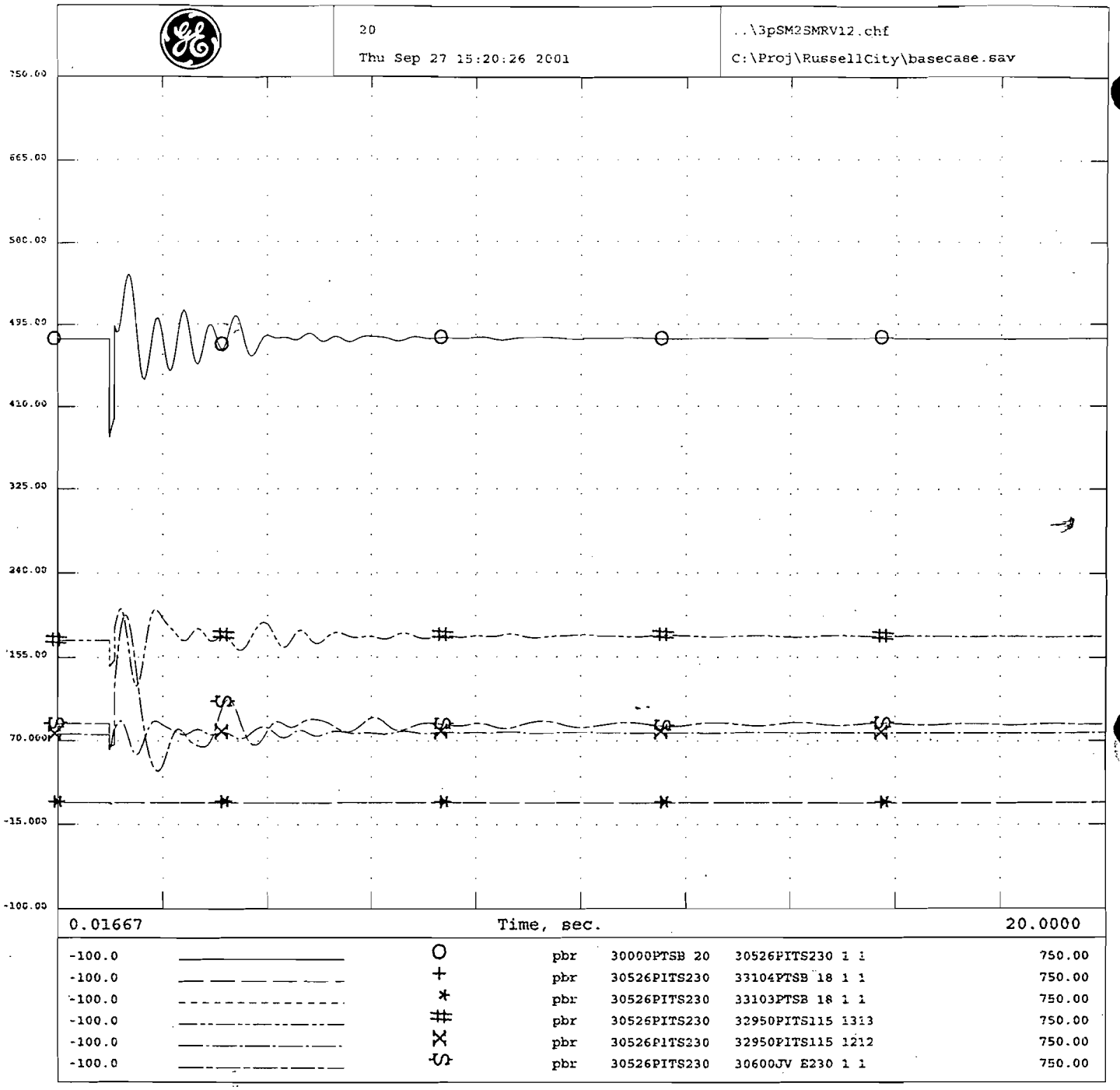

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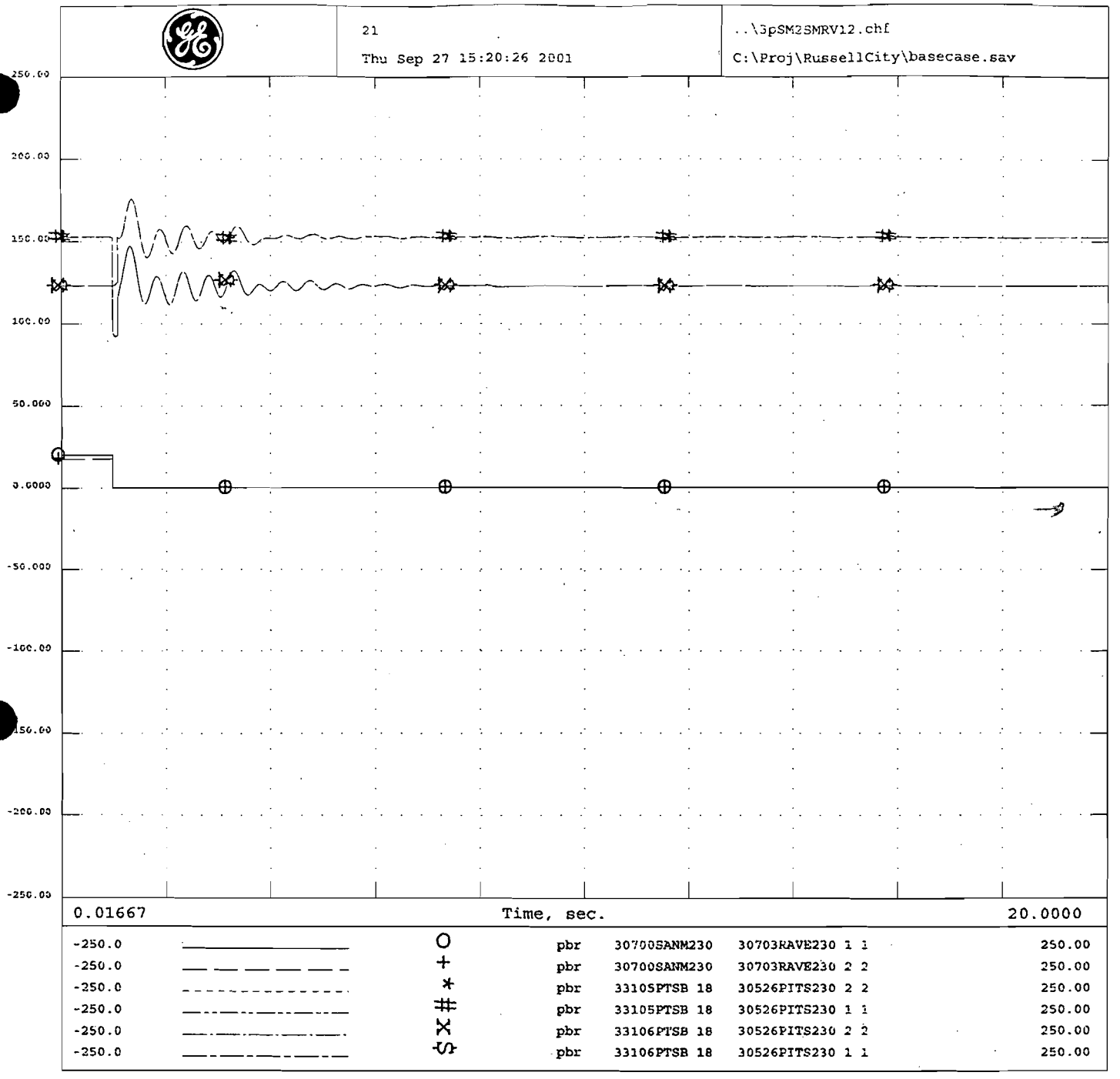

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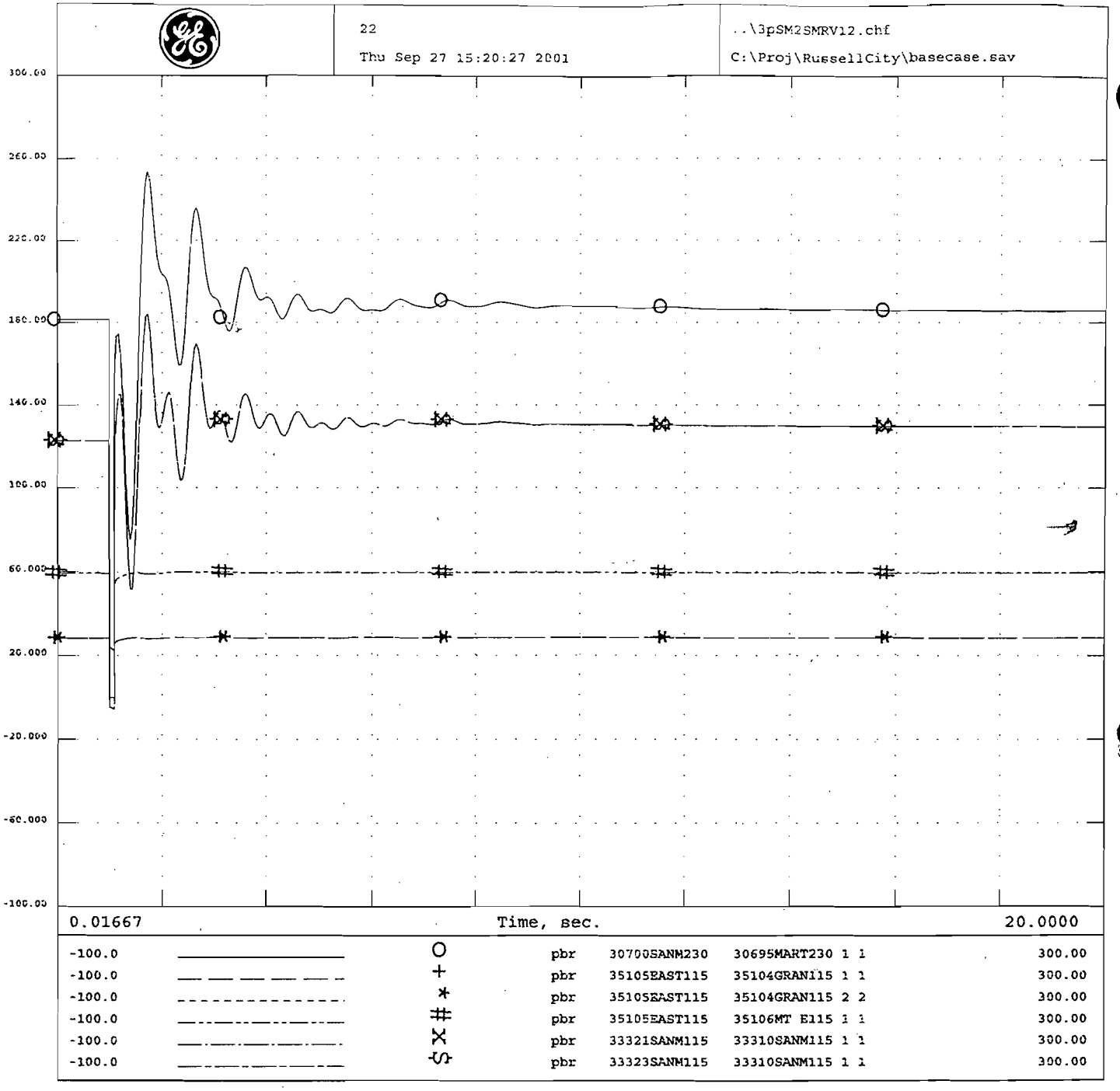

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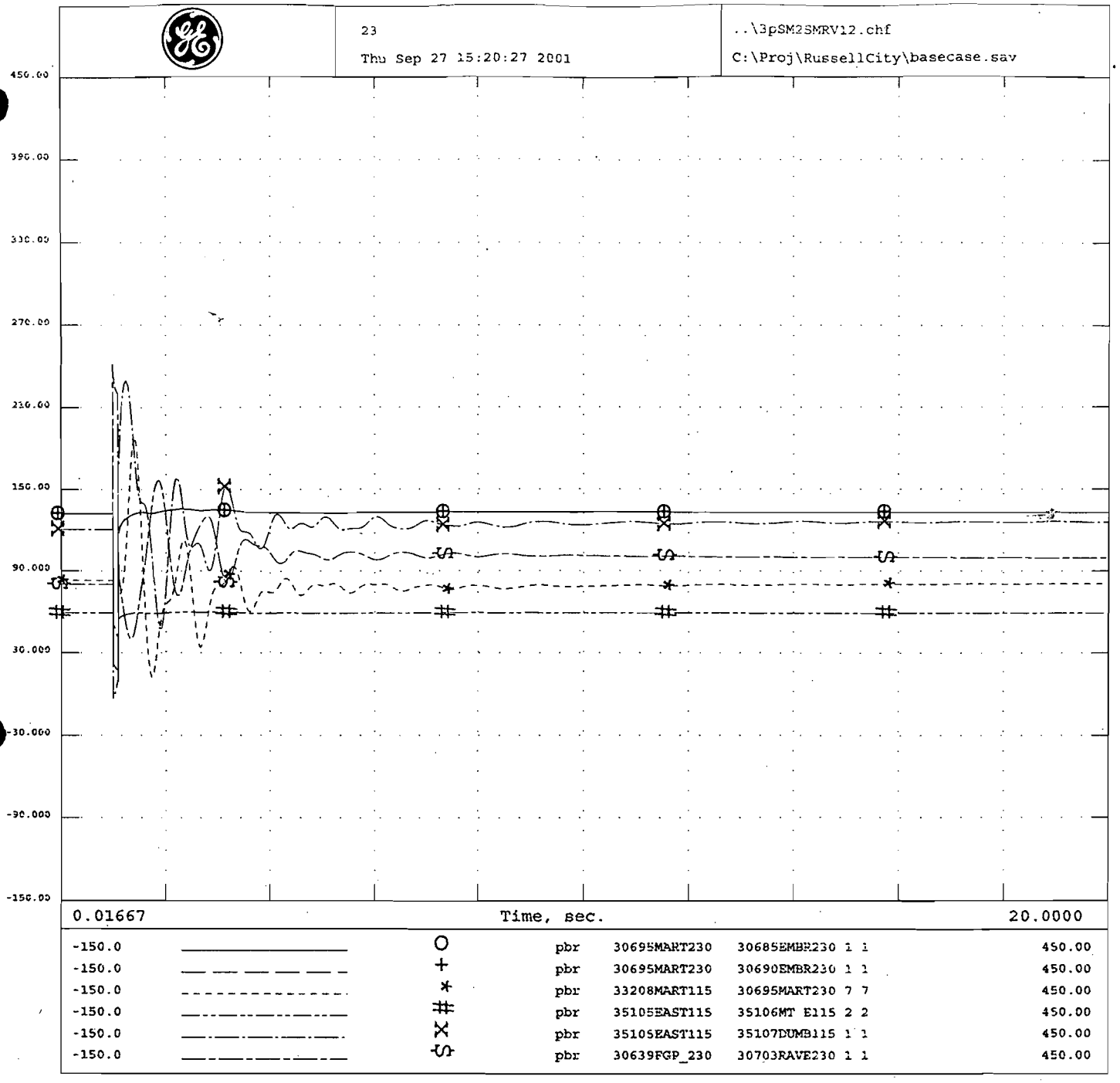

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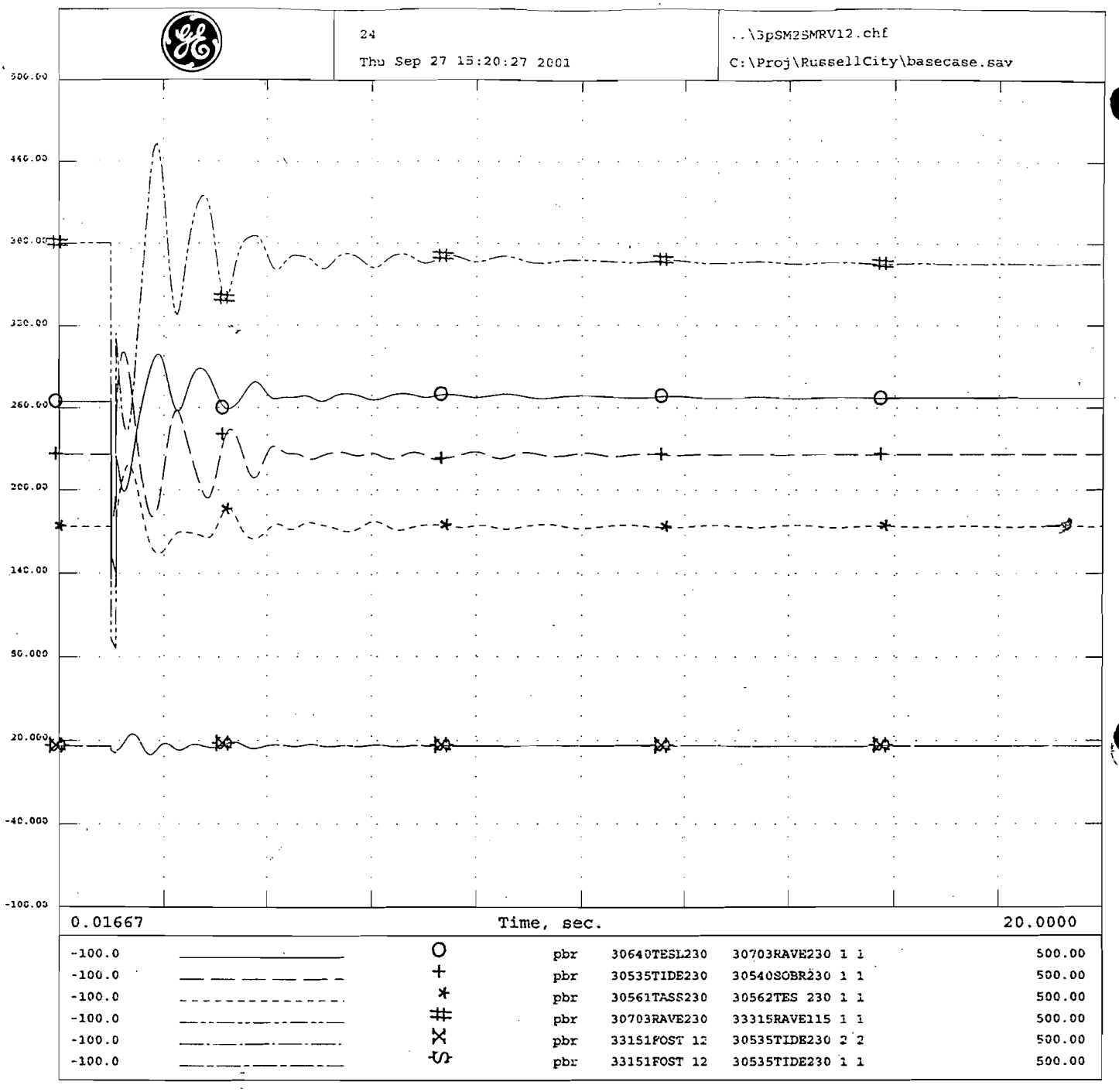

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1,2 230kV double line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip both San Mateo-Ravenswood

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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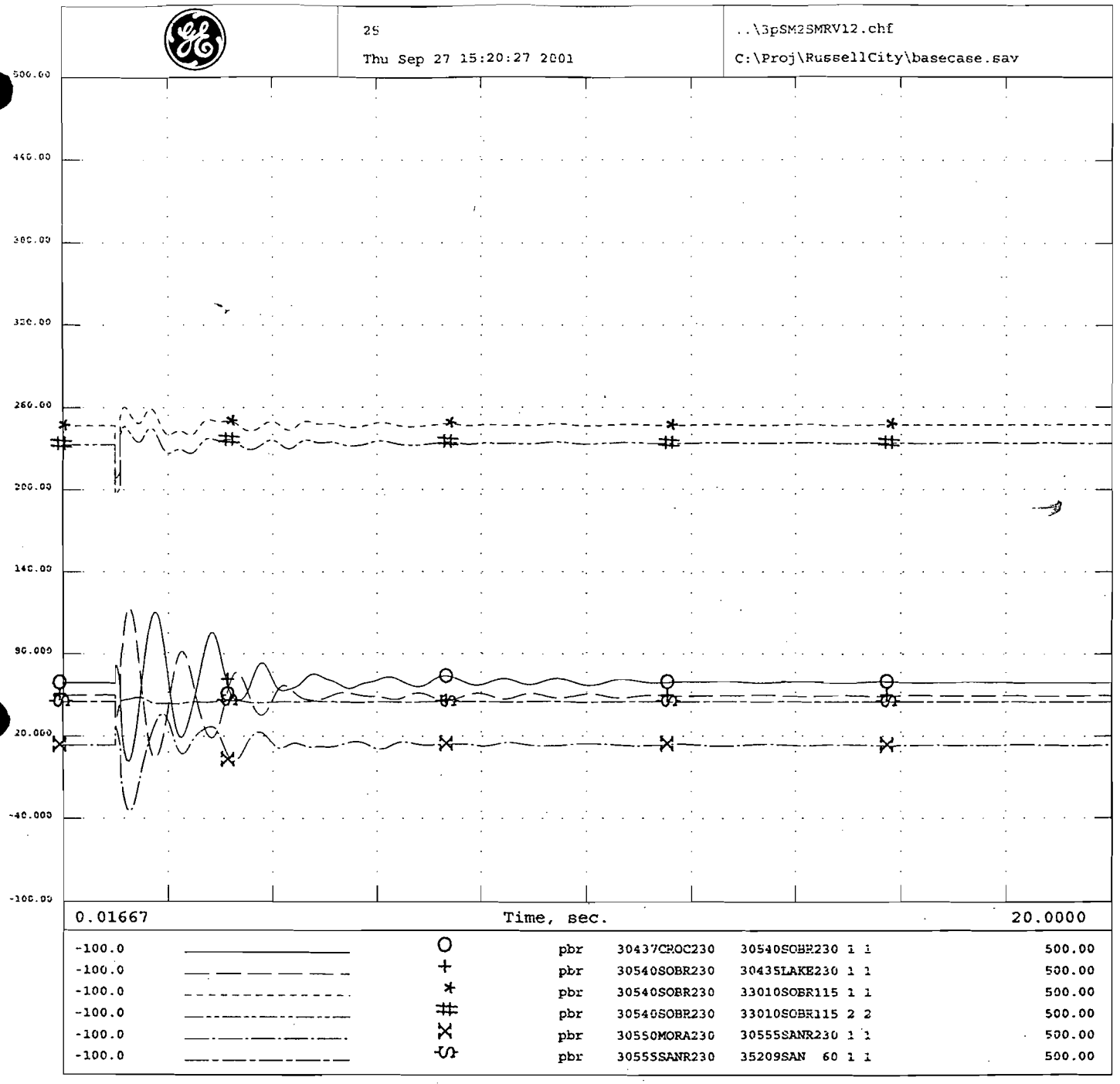

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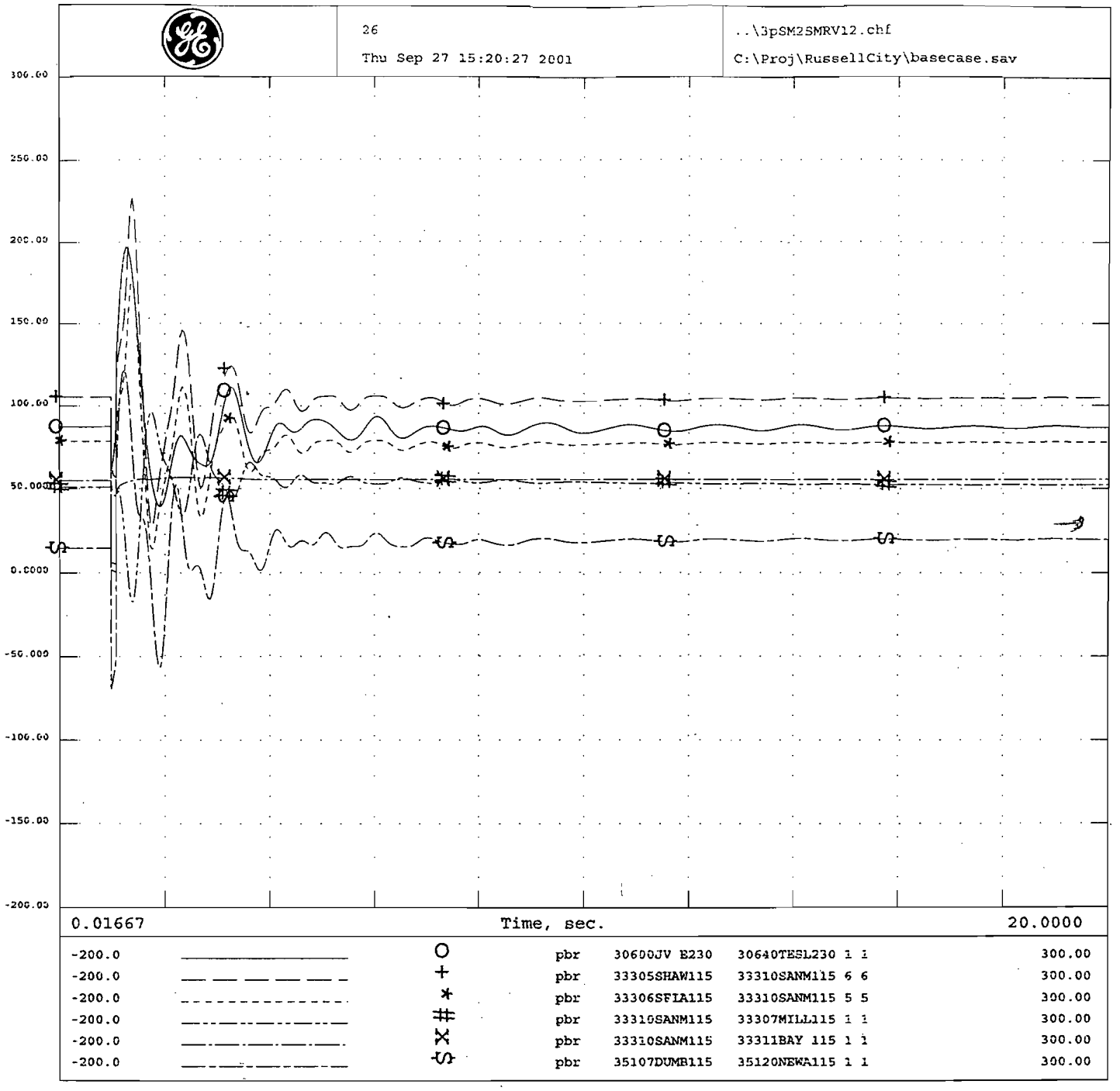

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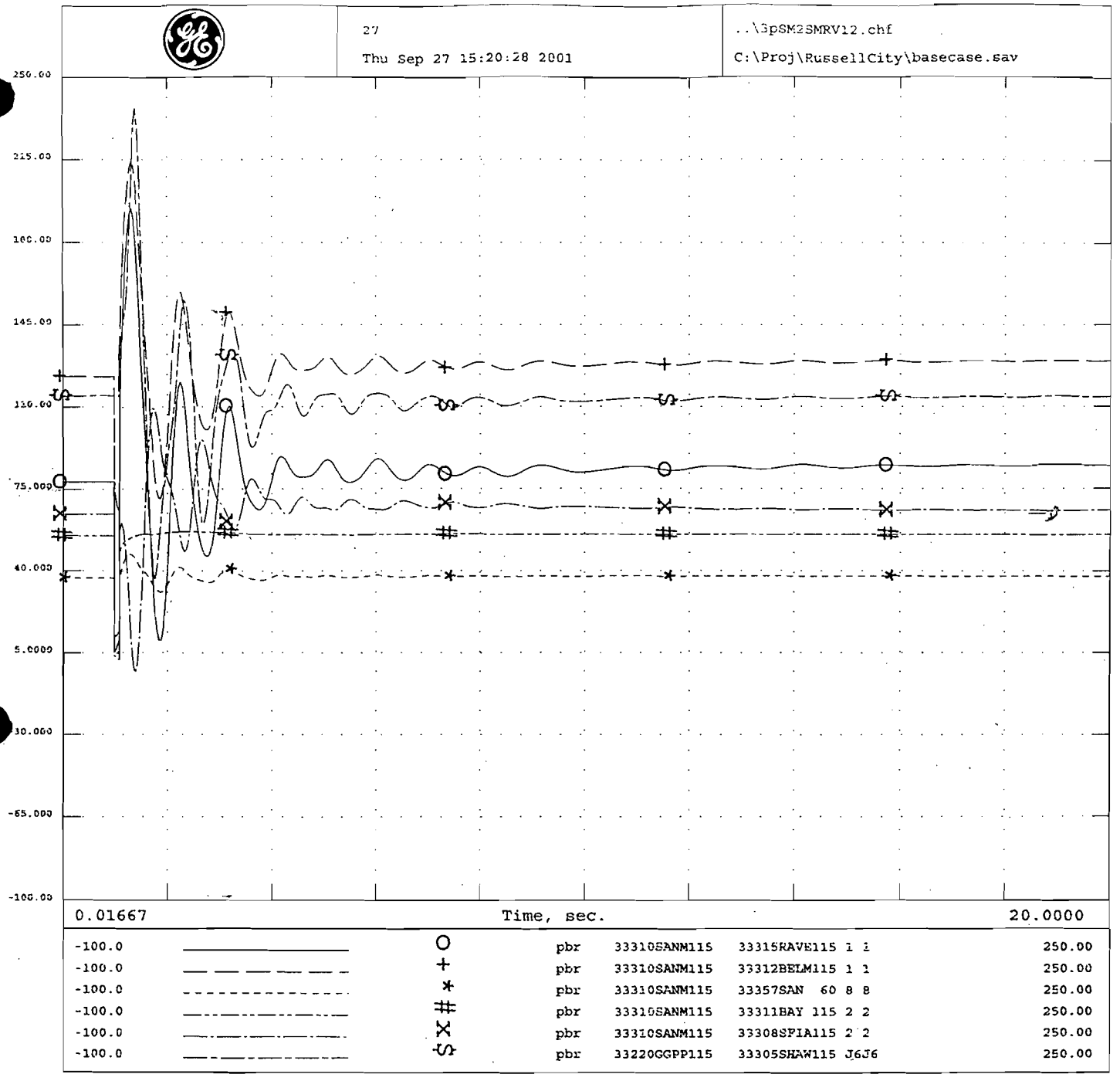

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1
230kV line
RUN  9
CC
CC   Fault San Mateo 230kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip the San Mateo-Ravenswood #1 230kV line
DL  6.0 "SANMATEO" 230.00 "RAVENSWD" 230.00 "1 "
CC
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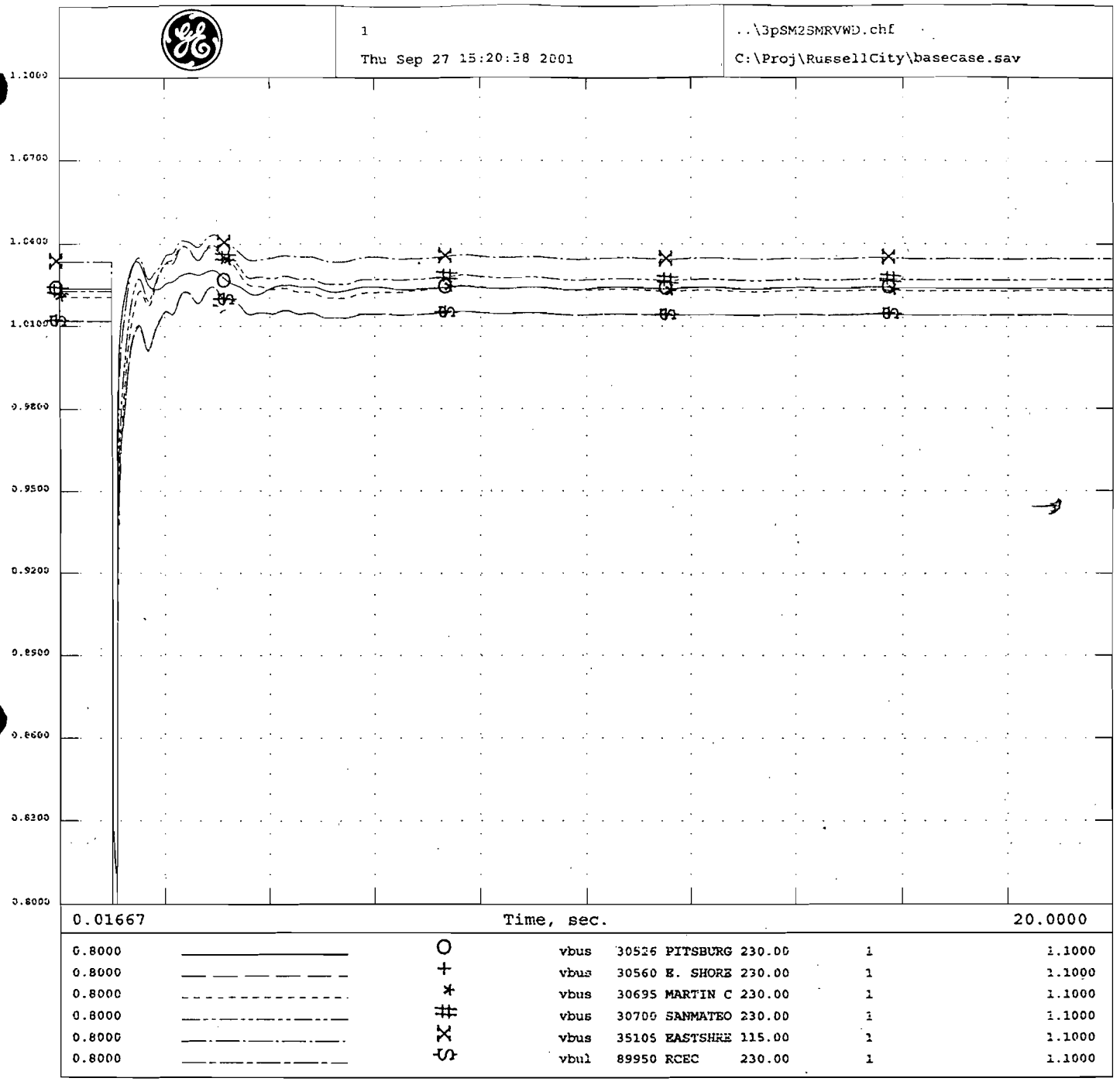

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Calpine/Bechtel Joint Development
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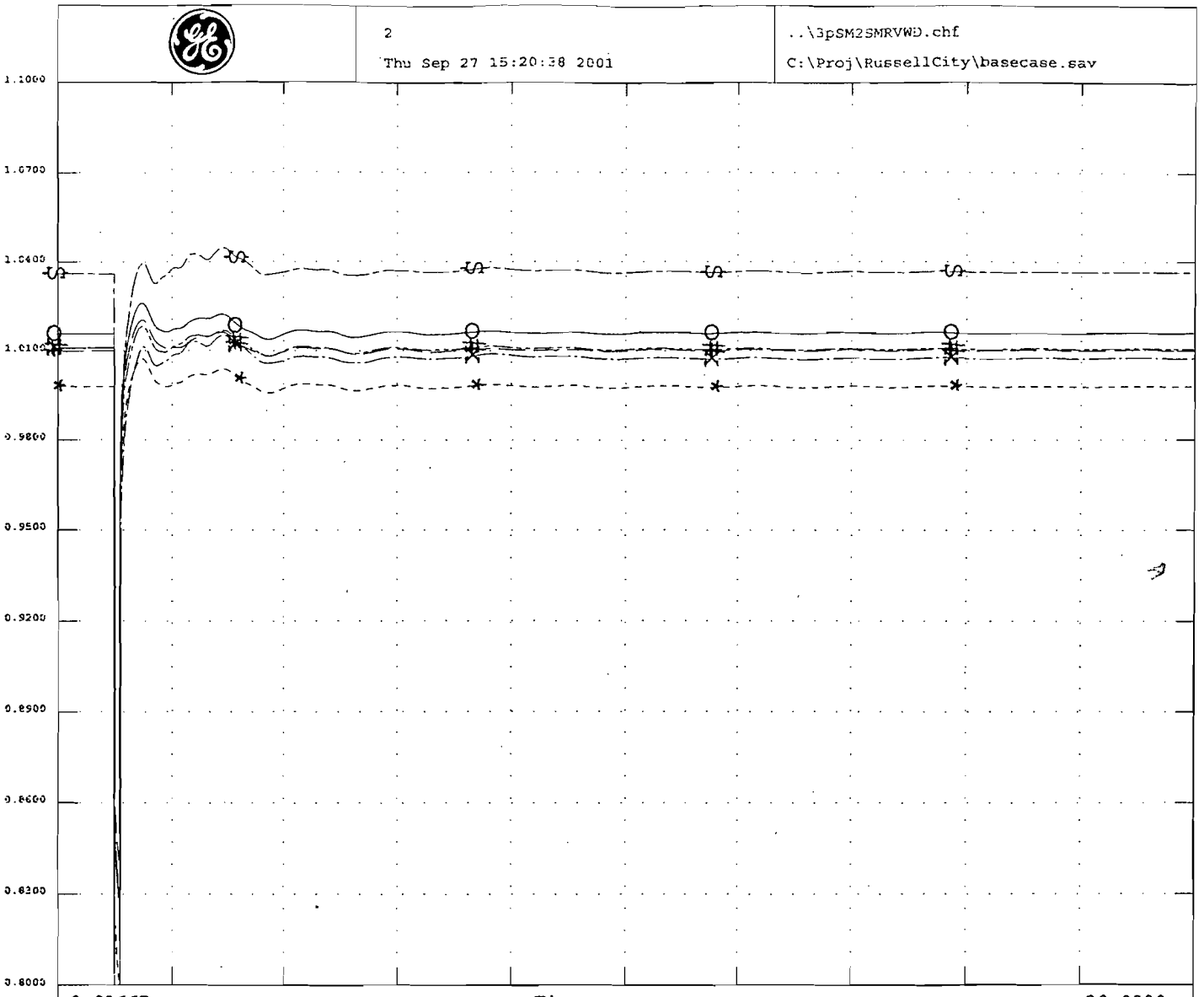

0.8000	———	O	vbul	30535	TIDEWATR 230.00	1	1.1000
0.8000	— — — —	+	vbus	30540	SOBRANTE 230.00	1	1.1000
0.8000	- - - - -	*	vbul	30555	SANRAMON 230.00	1	1.1000
0.8000	—-—-—	#	vbul	30561	TASSAJAR 230.00	1	1.1000
0.8000	—.—.—	X	vbus	30703	RAVENSWD 230.00	1	1.1000
0.8000	—-—-—	S	vbul	35107	DUMBARTN 115.00	1	1.1000

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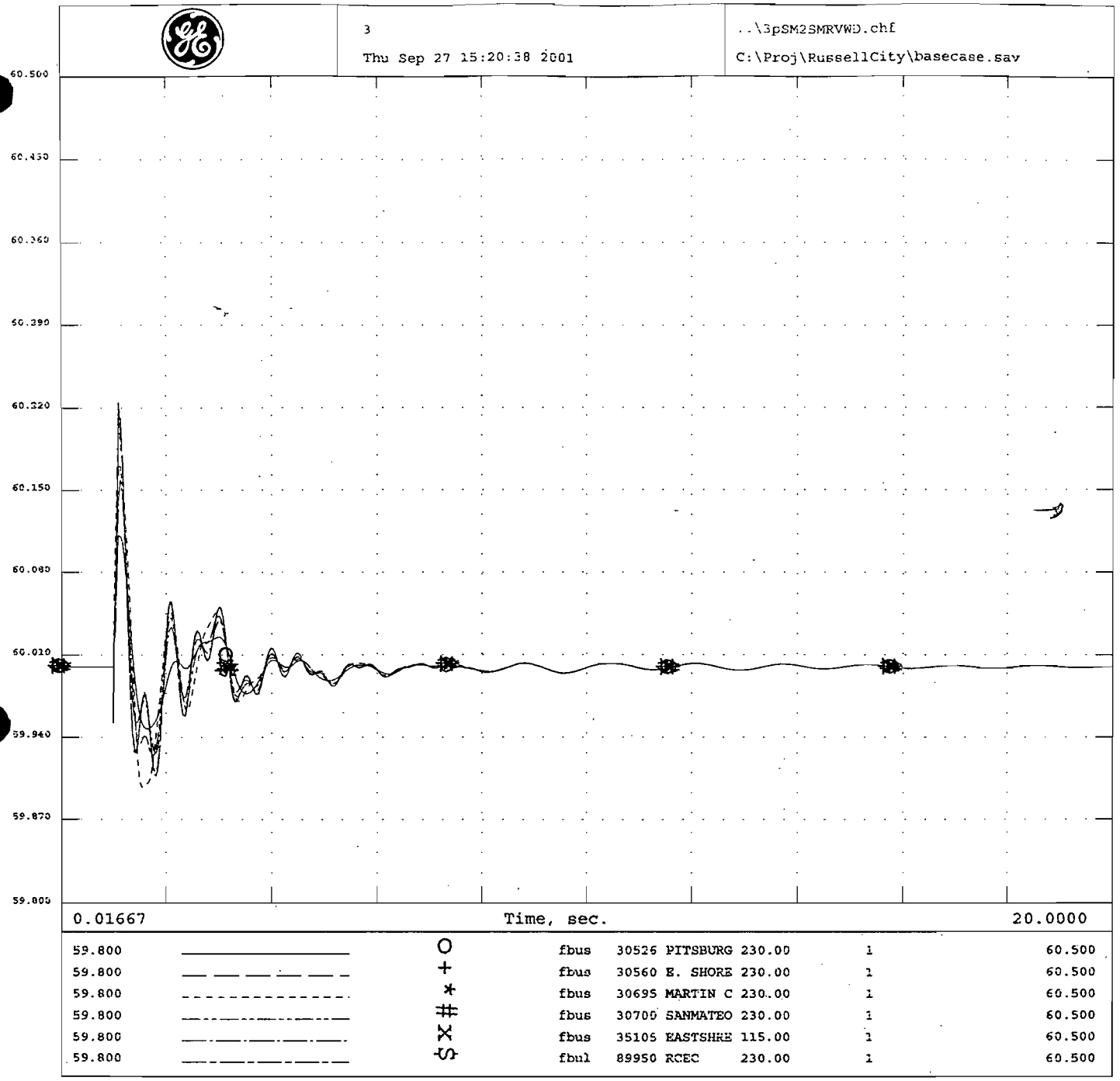

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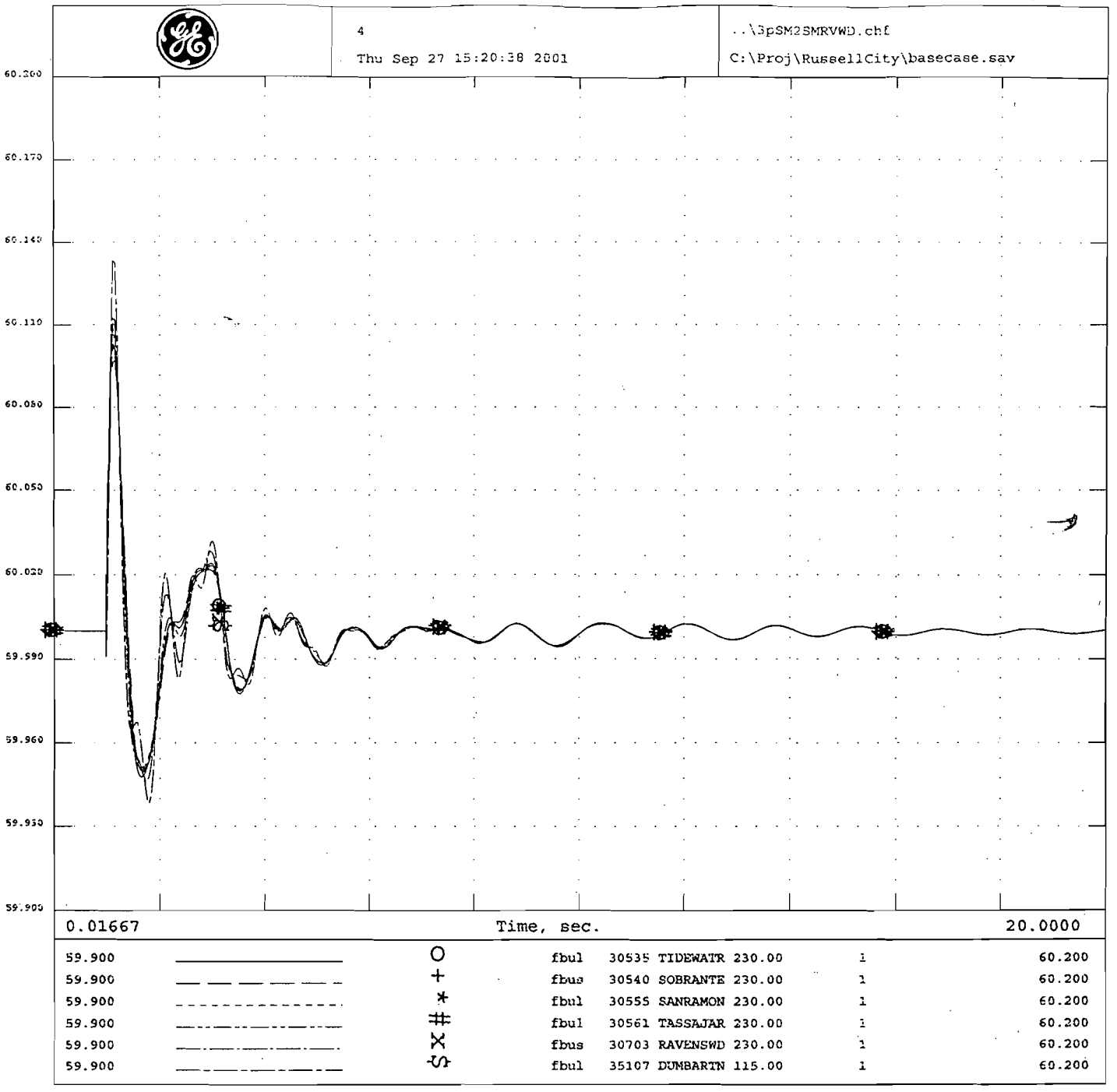

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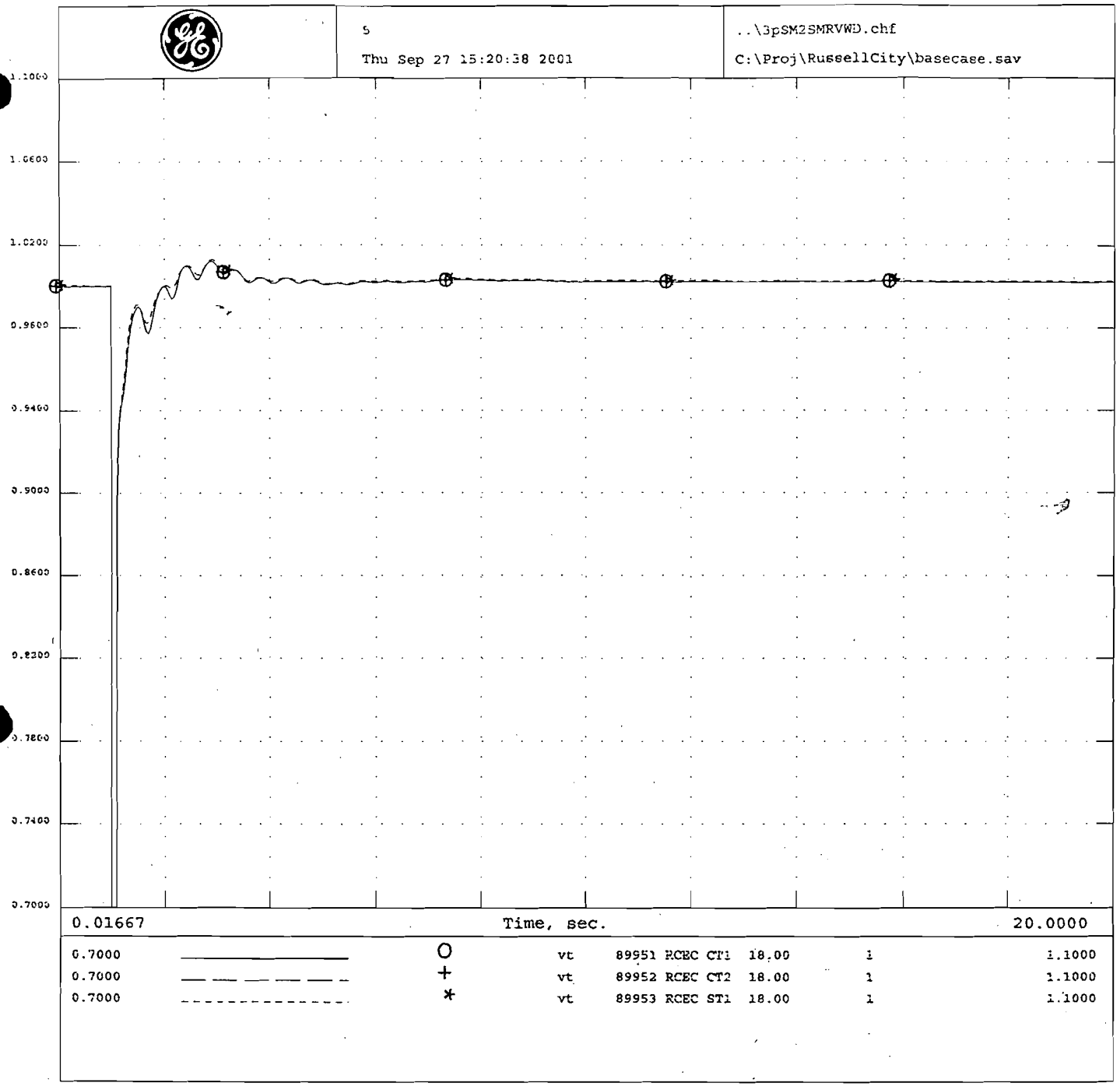

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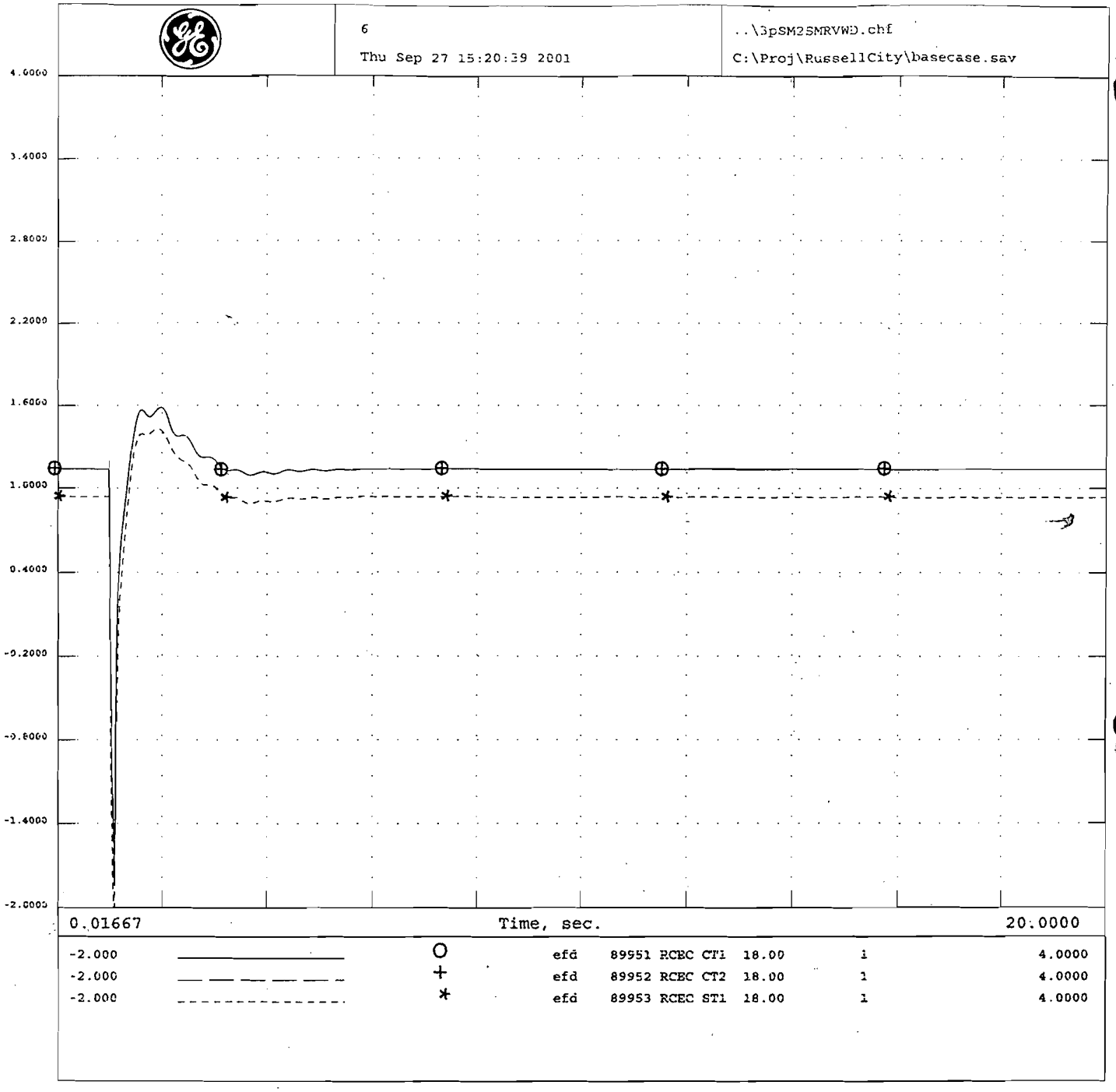
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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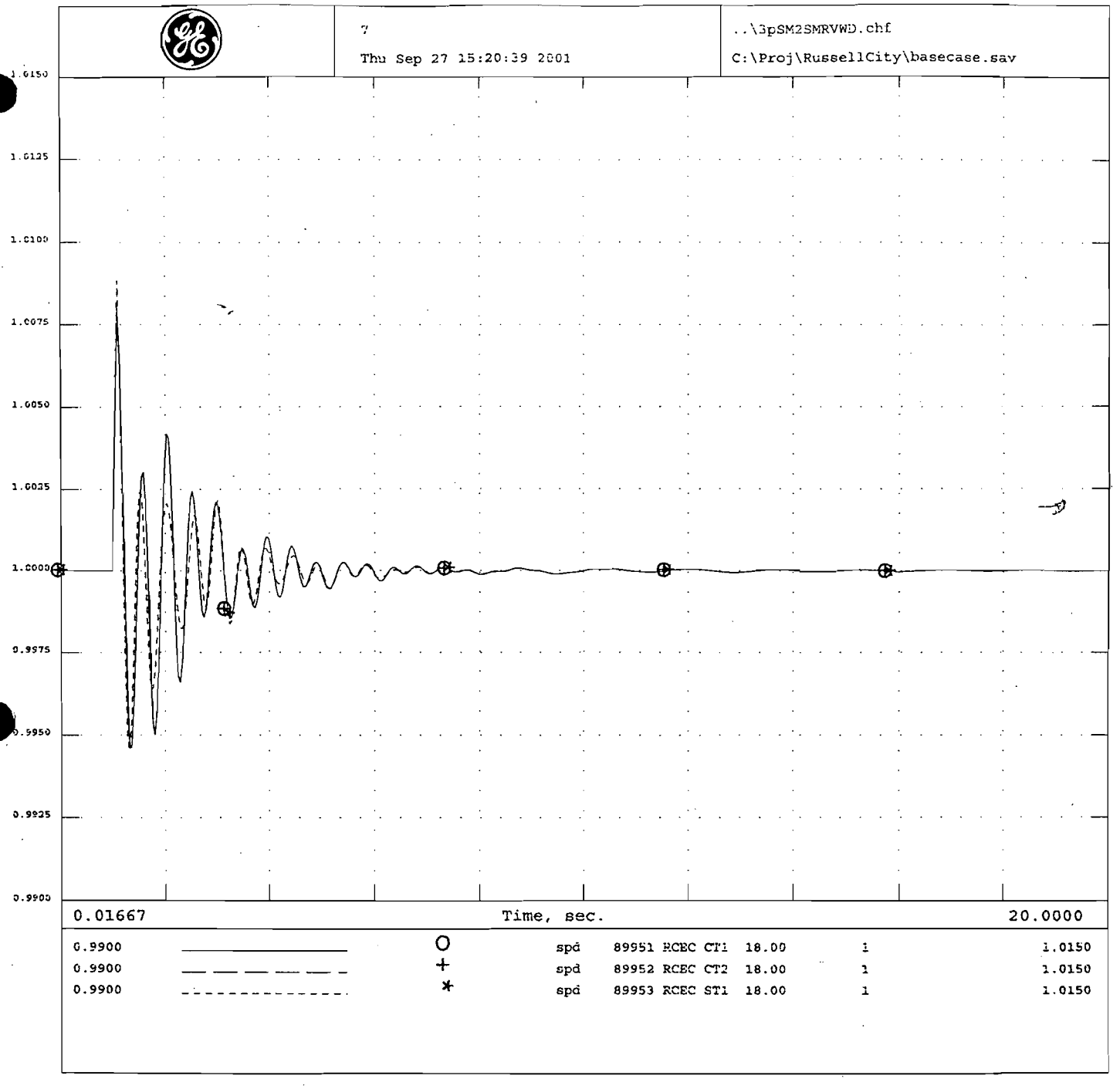
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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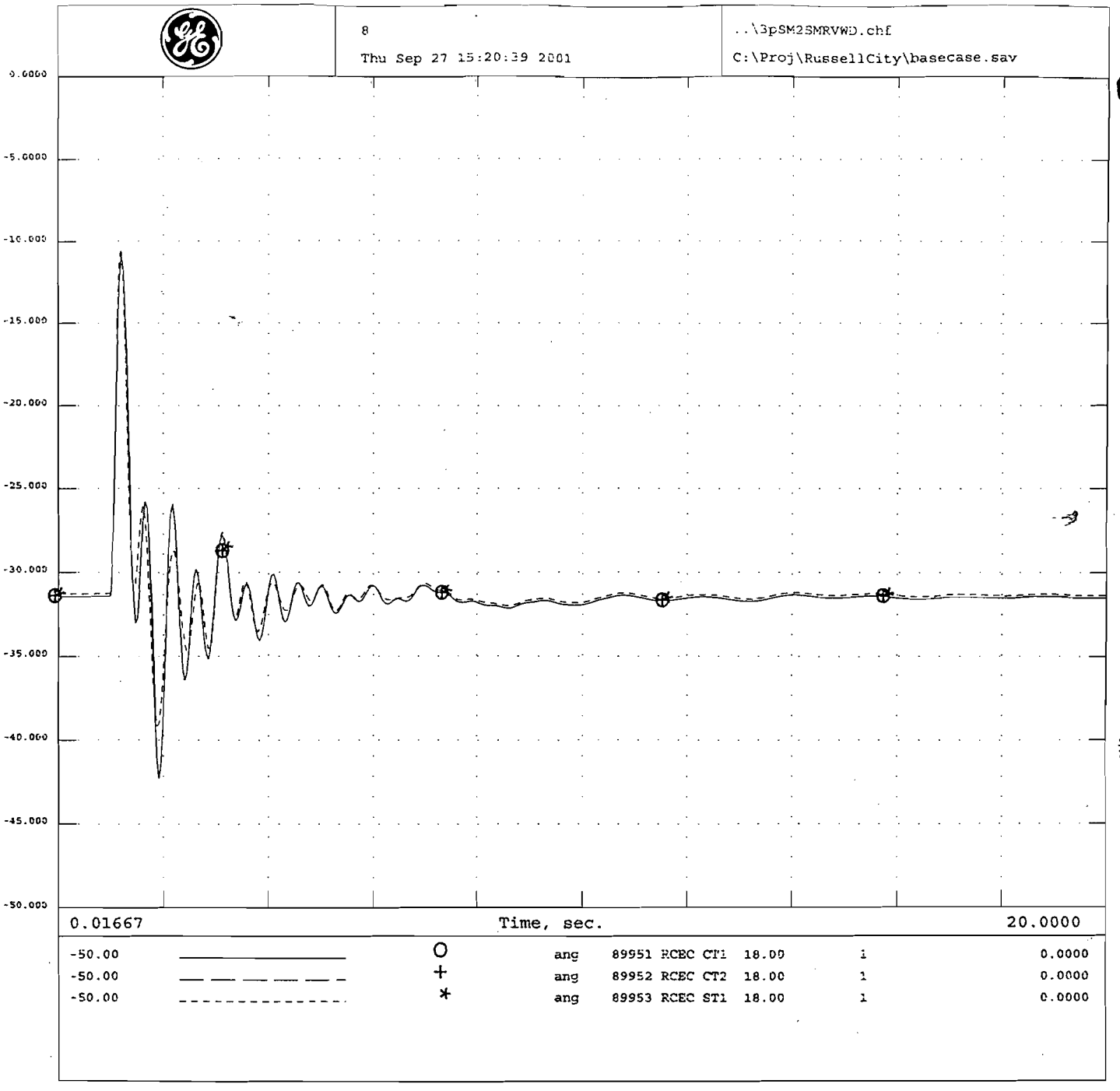
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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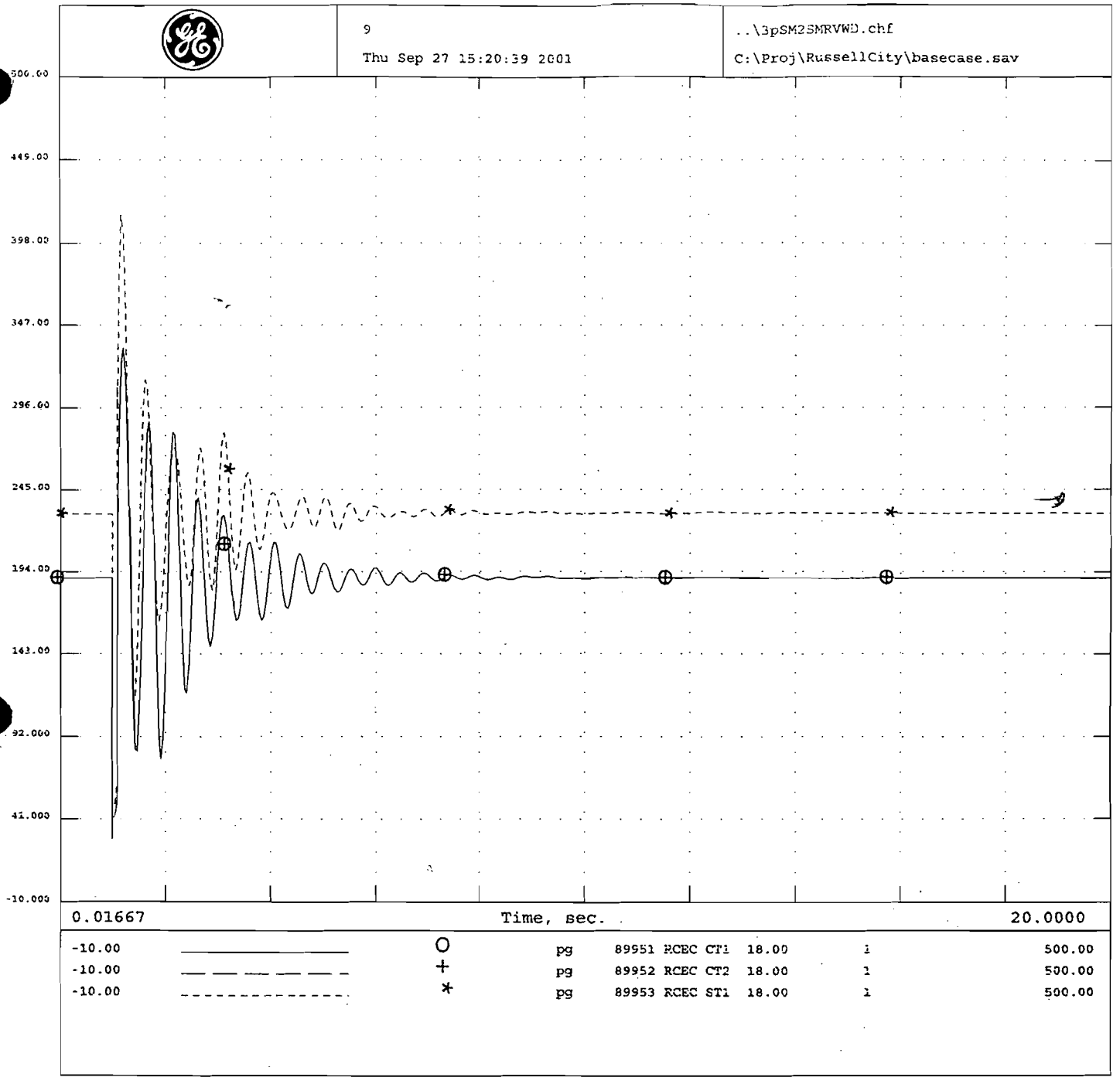
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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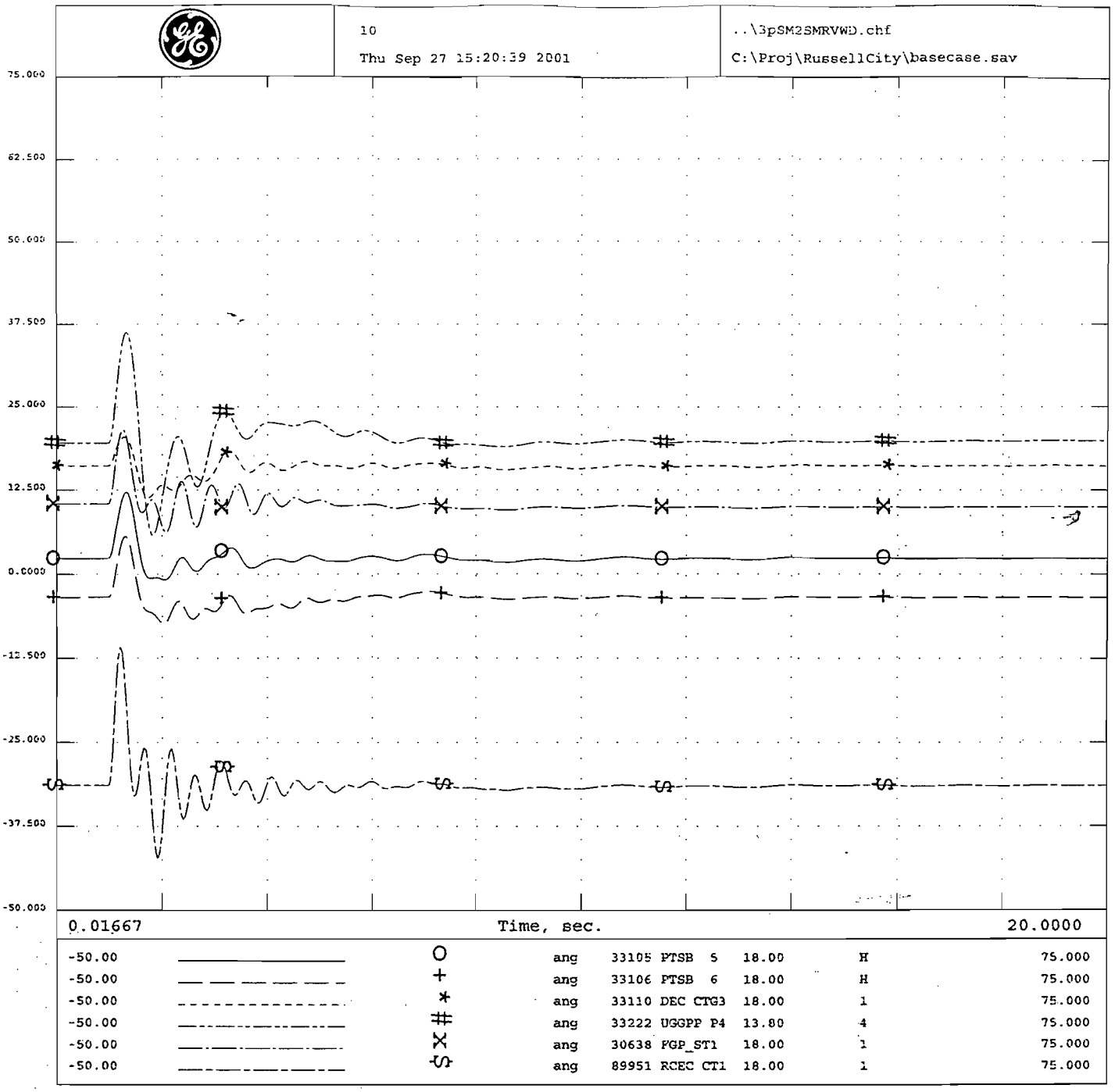

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Calpine/Bechtel Joint Development
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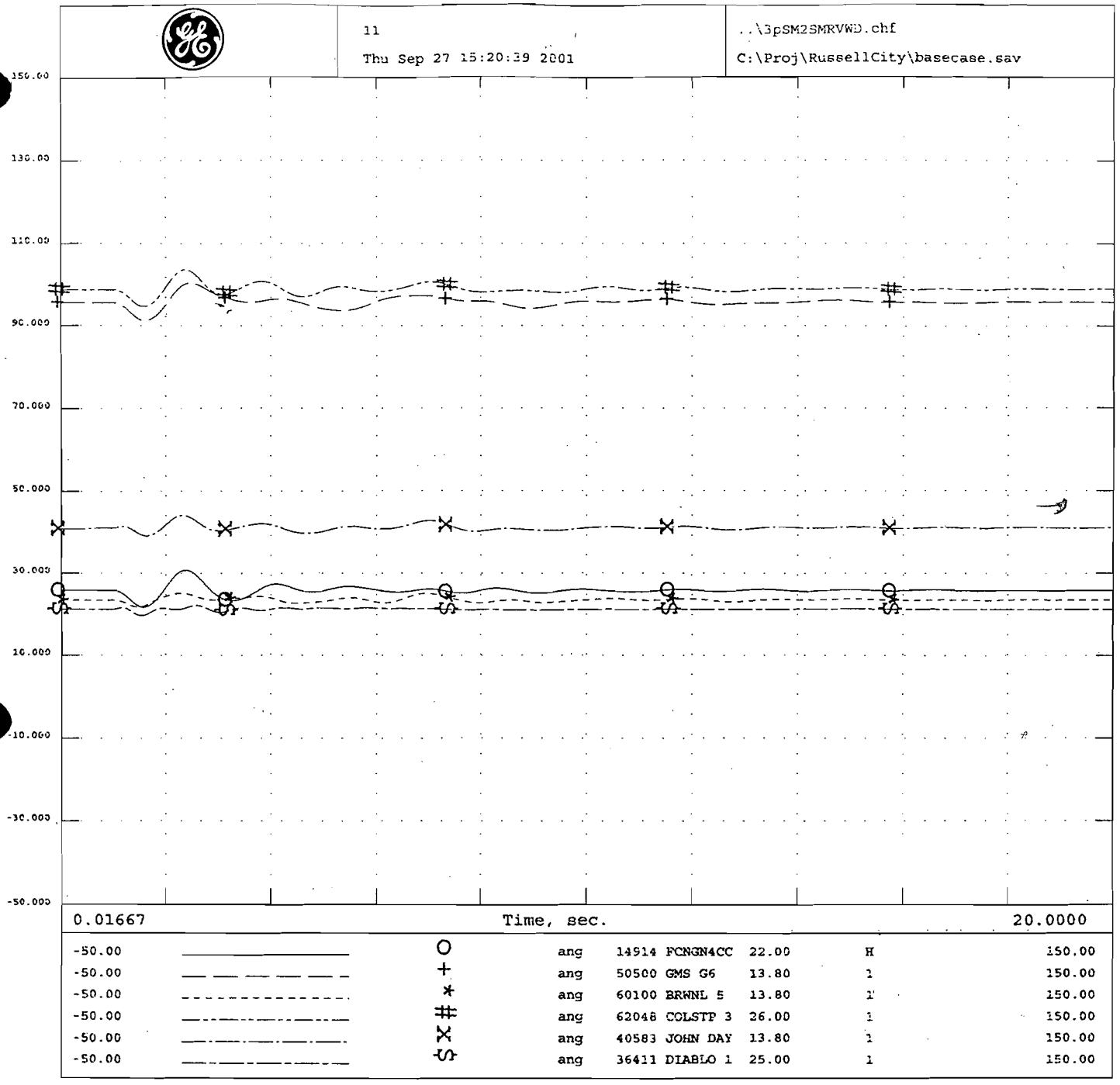

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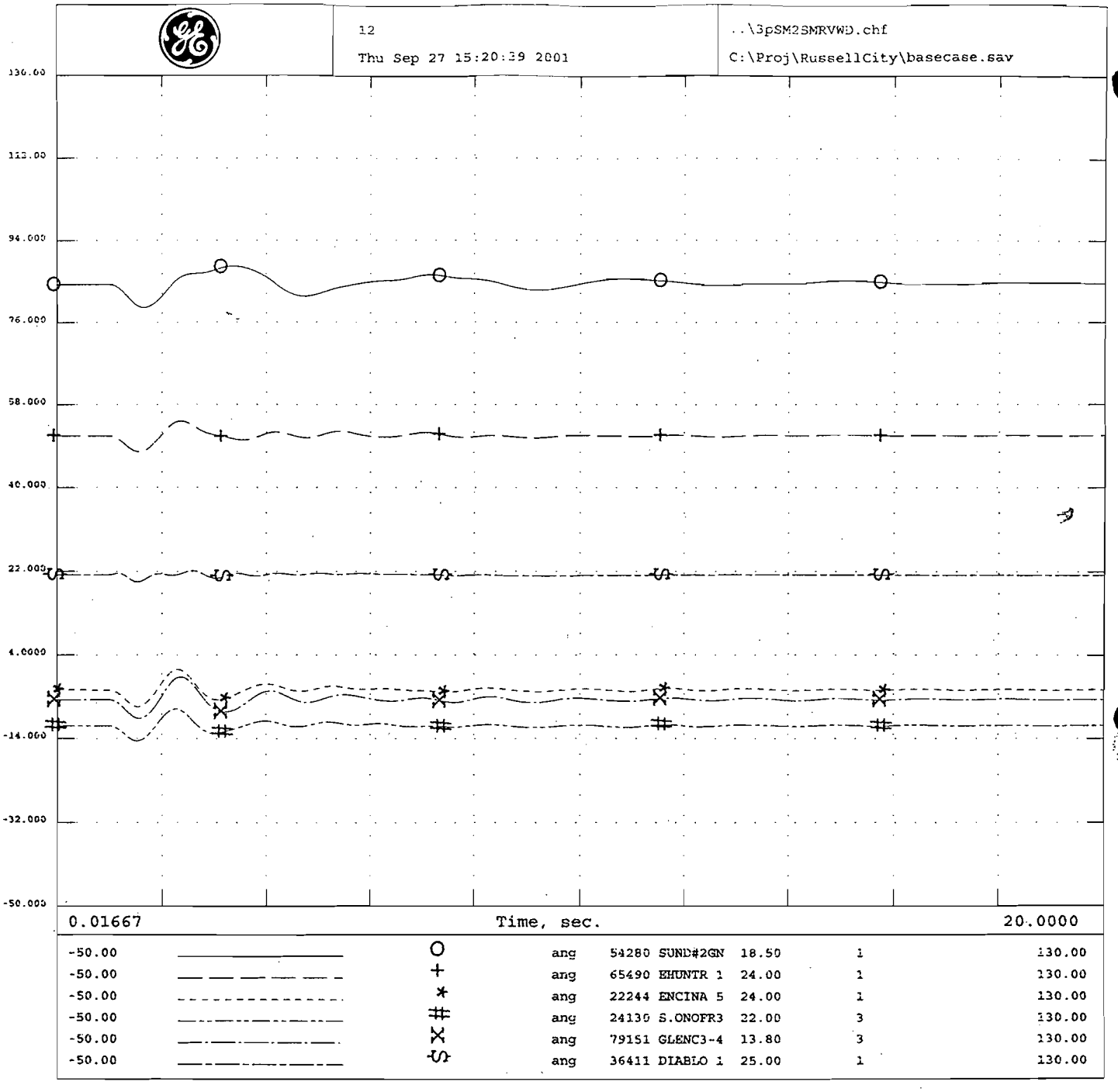
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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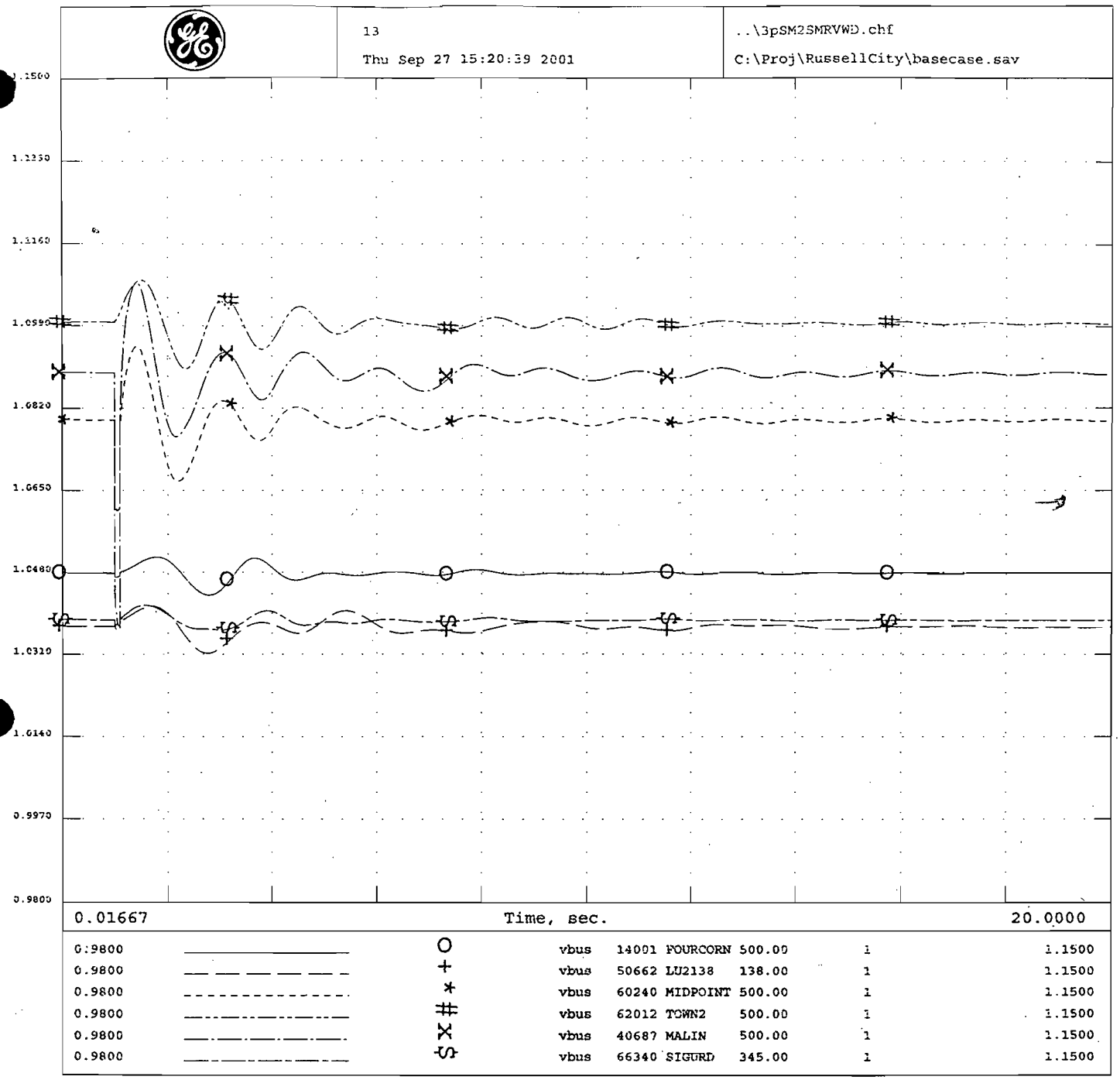

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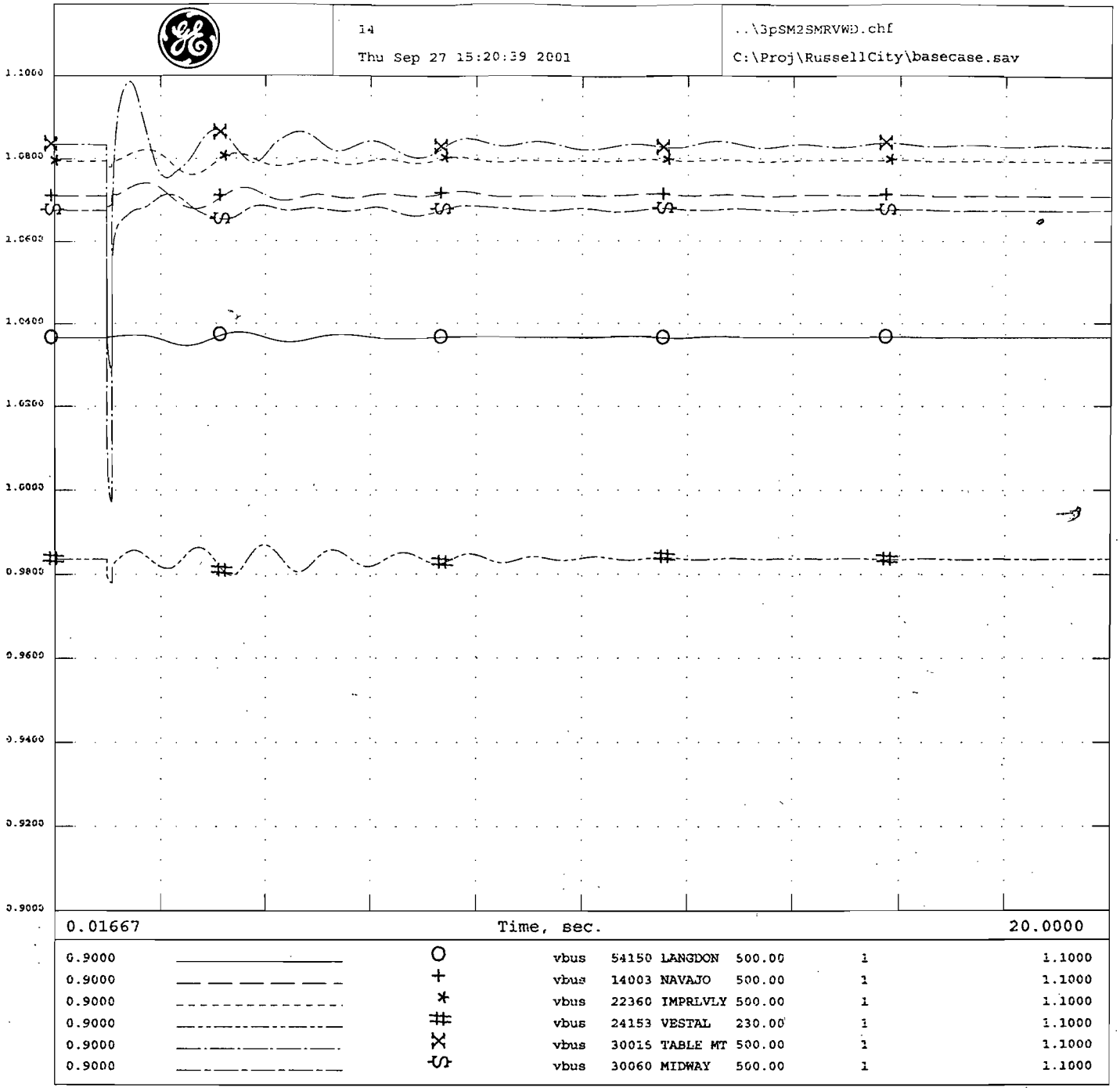

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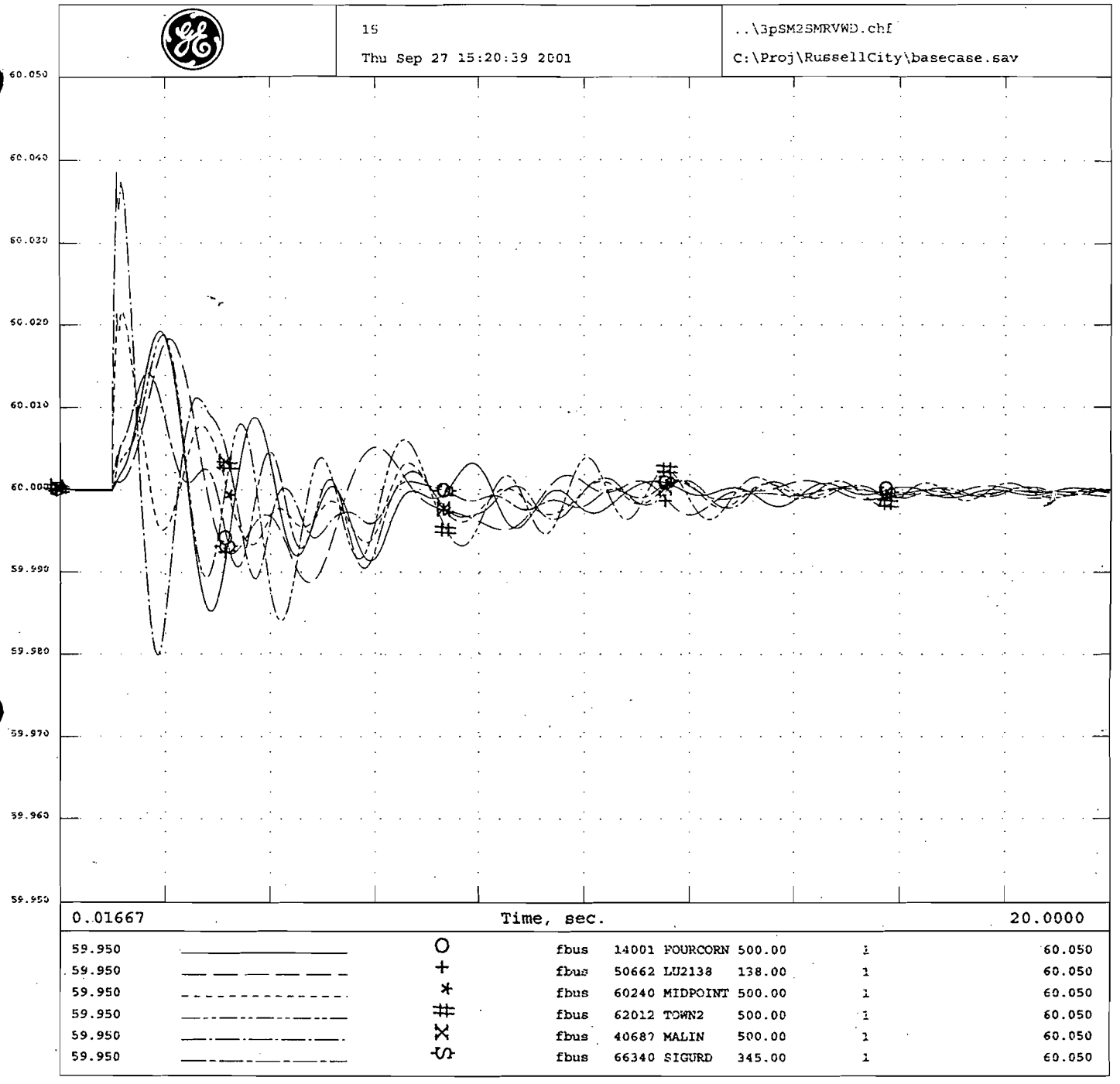

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Calpine/Bechtel Joint Development
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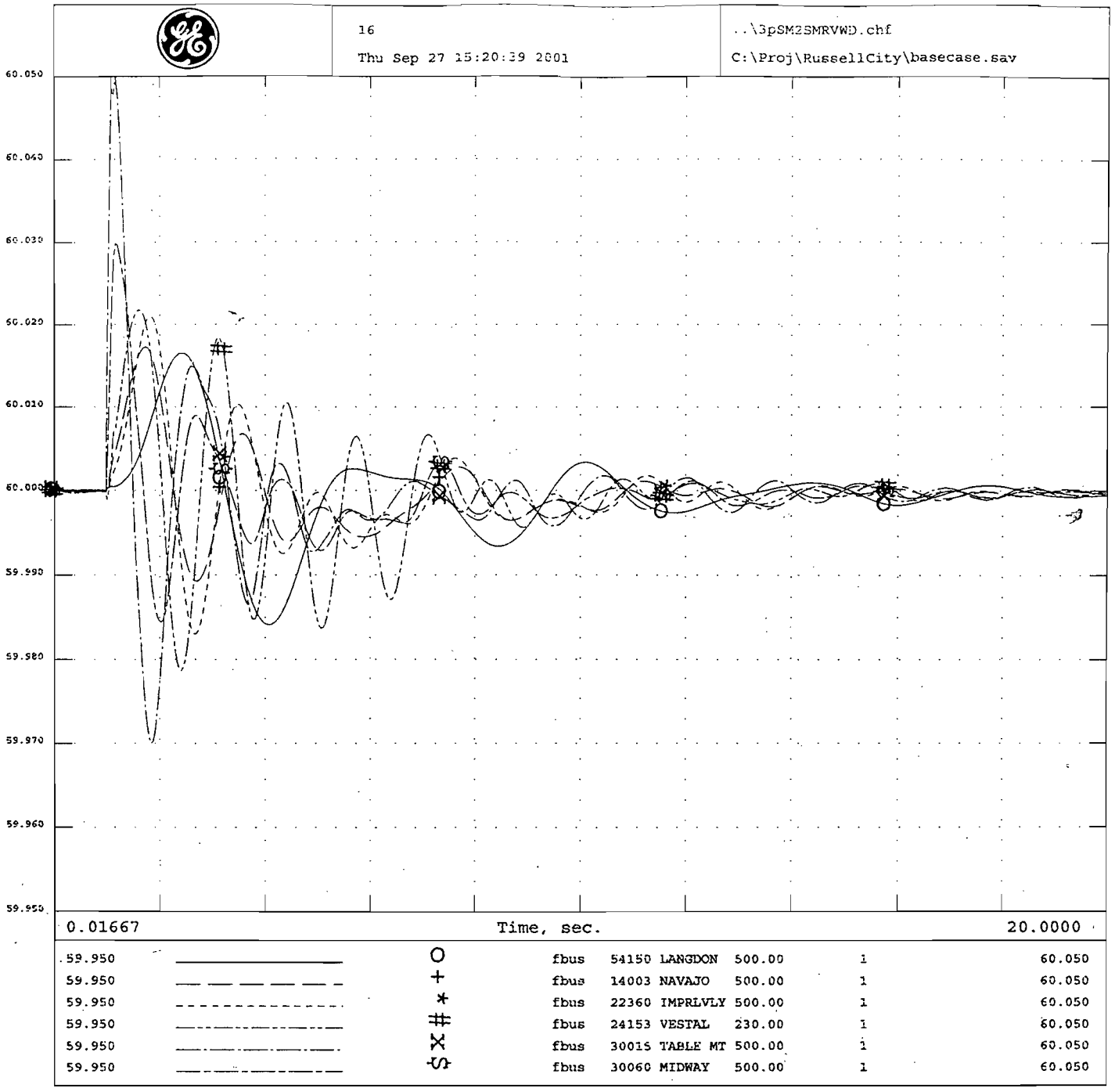

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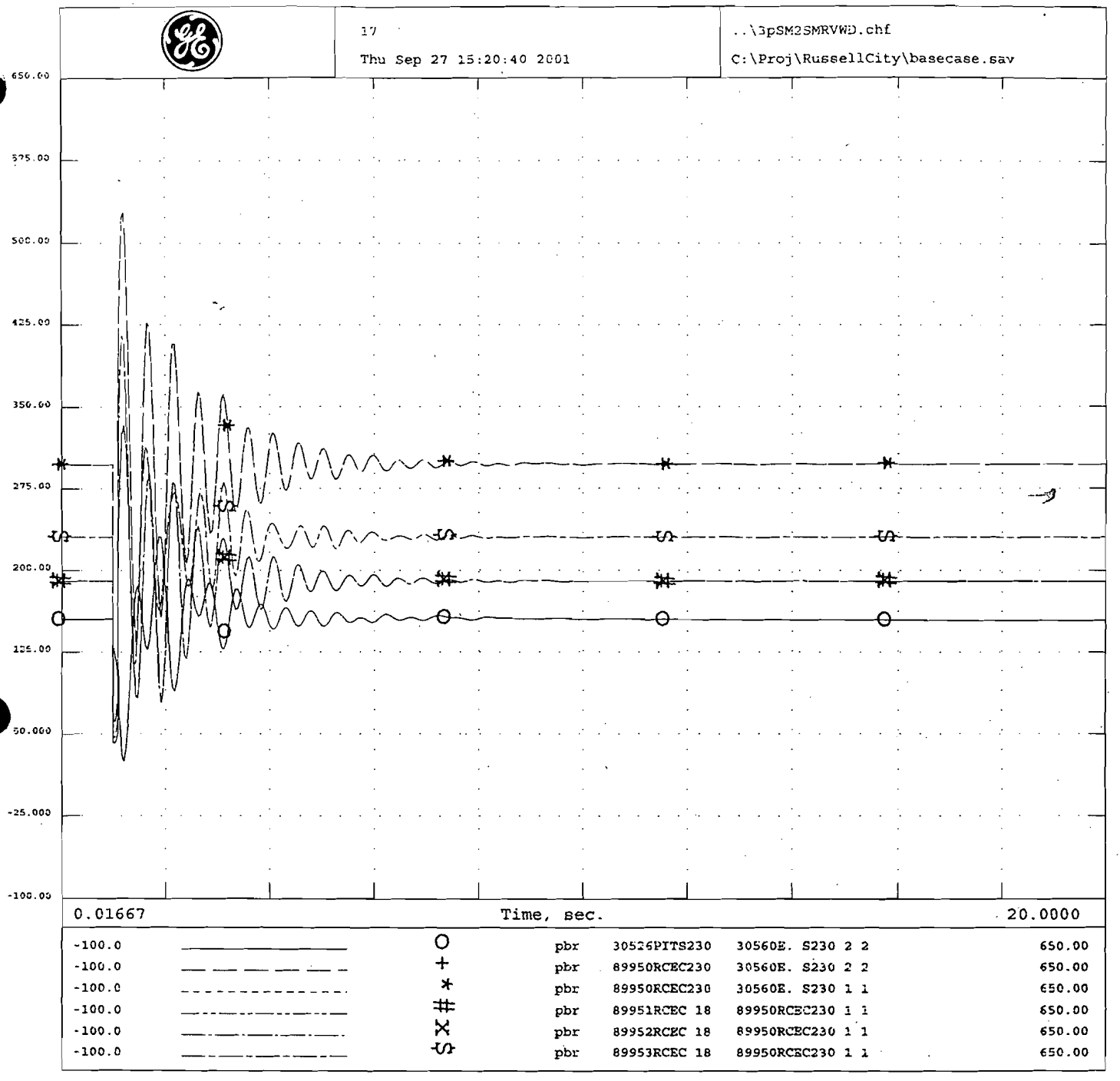

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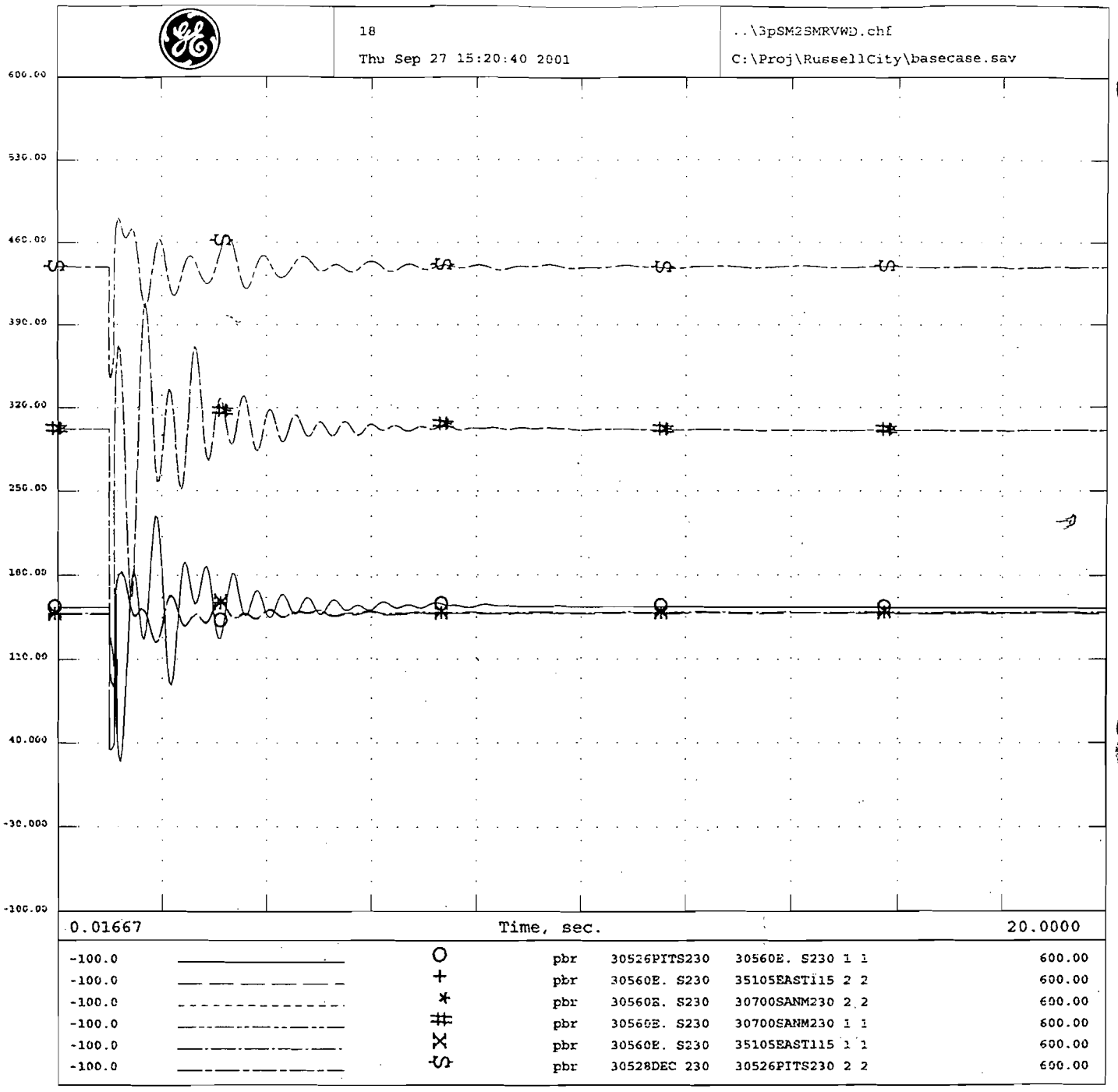

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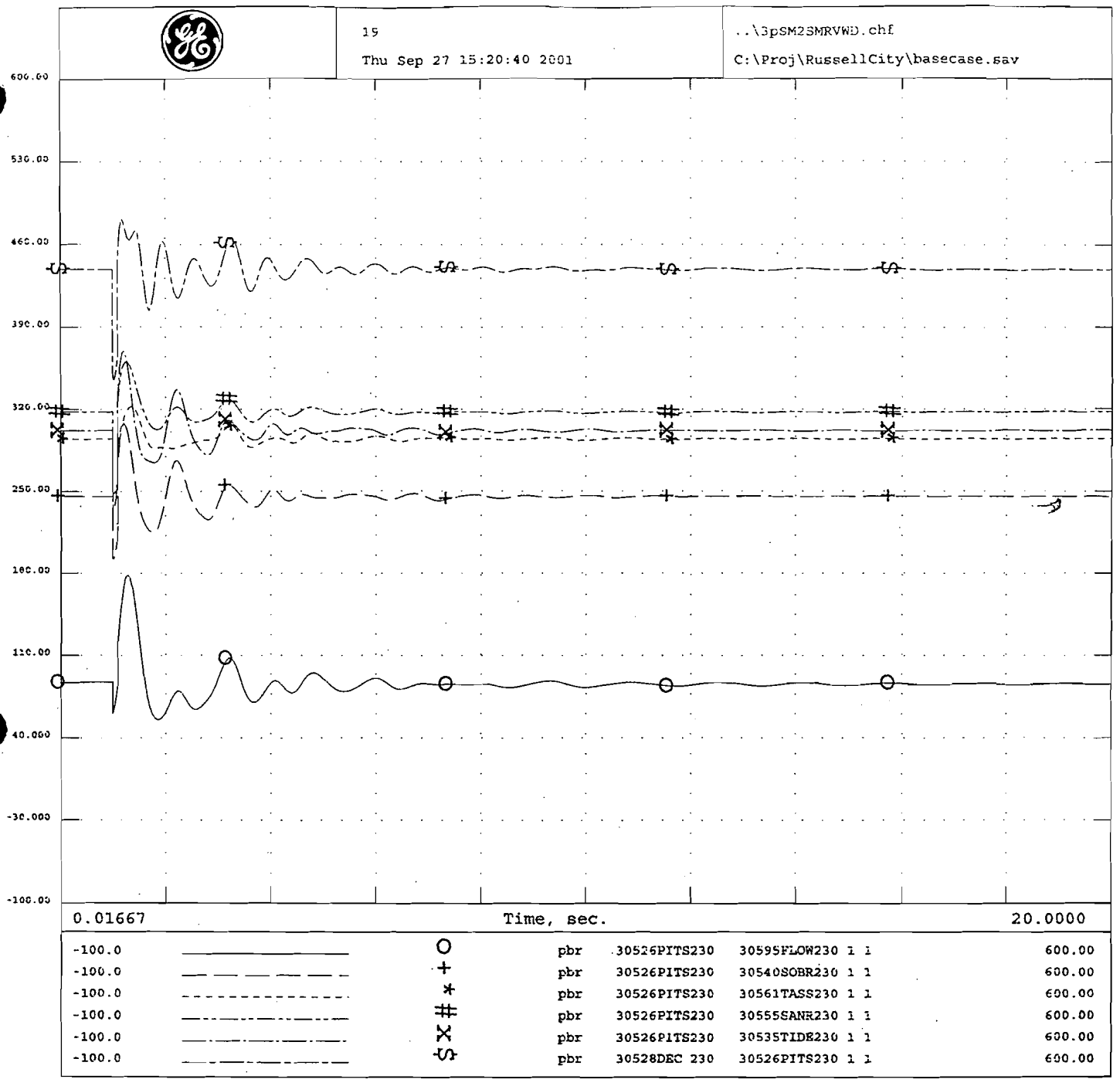

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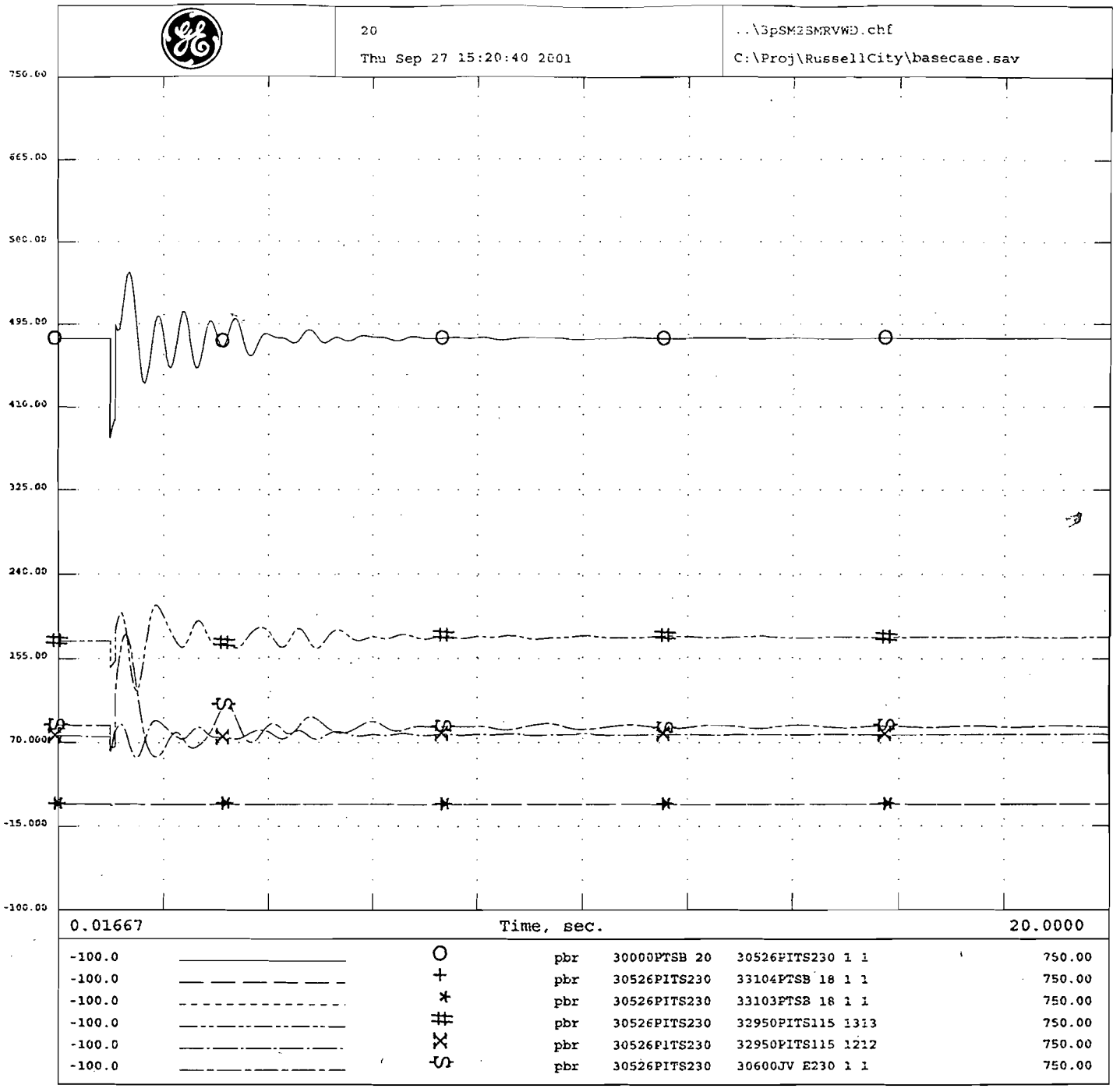

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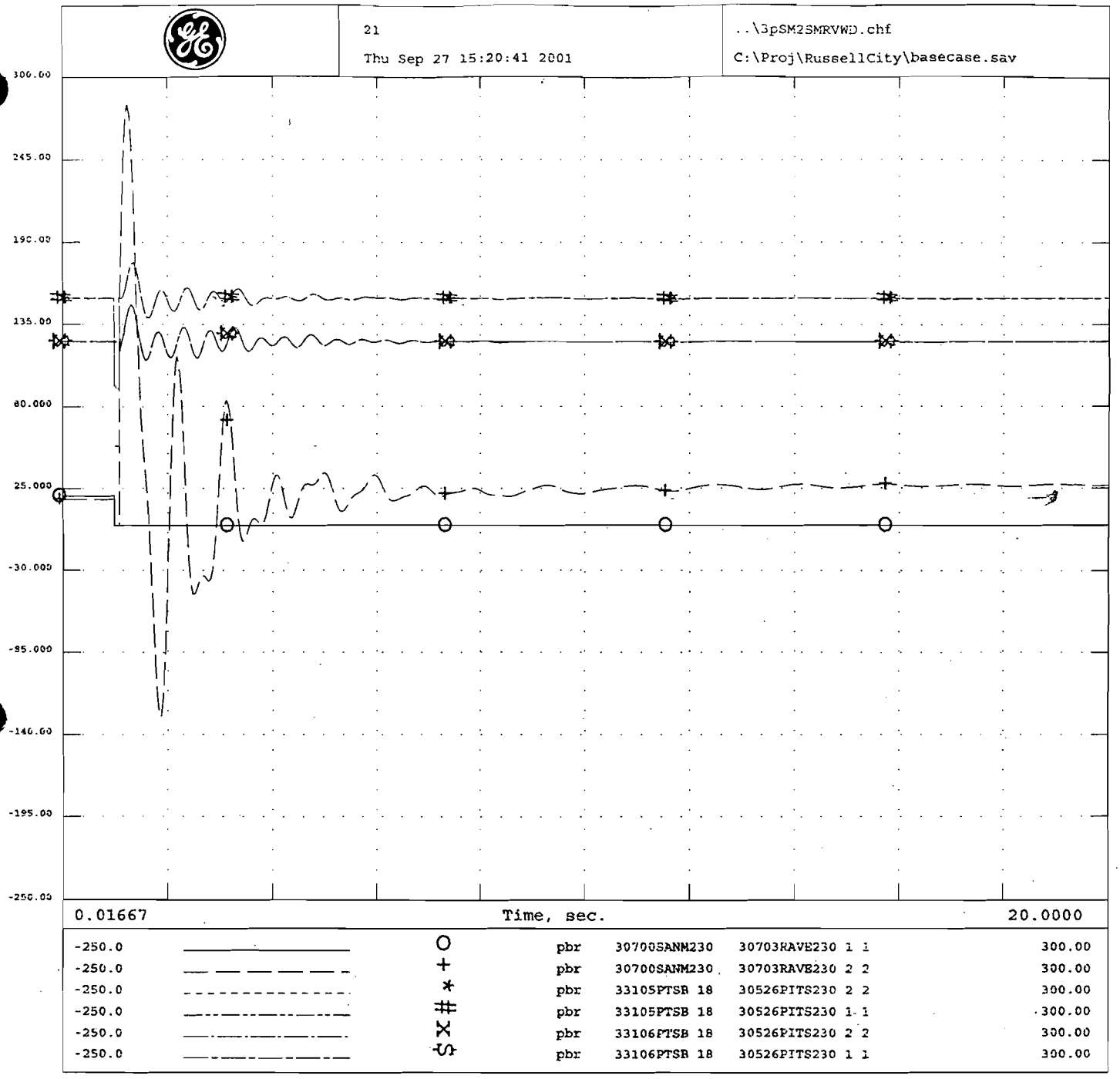

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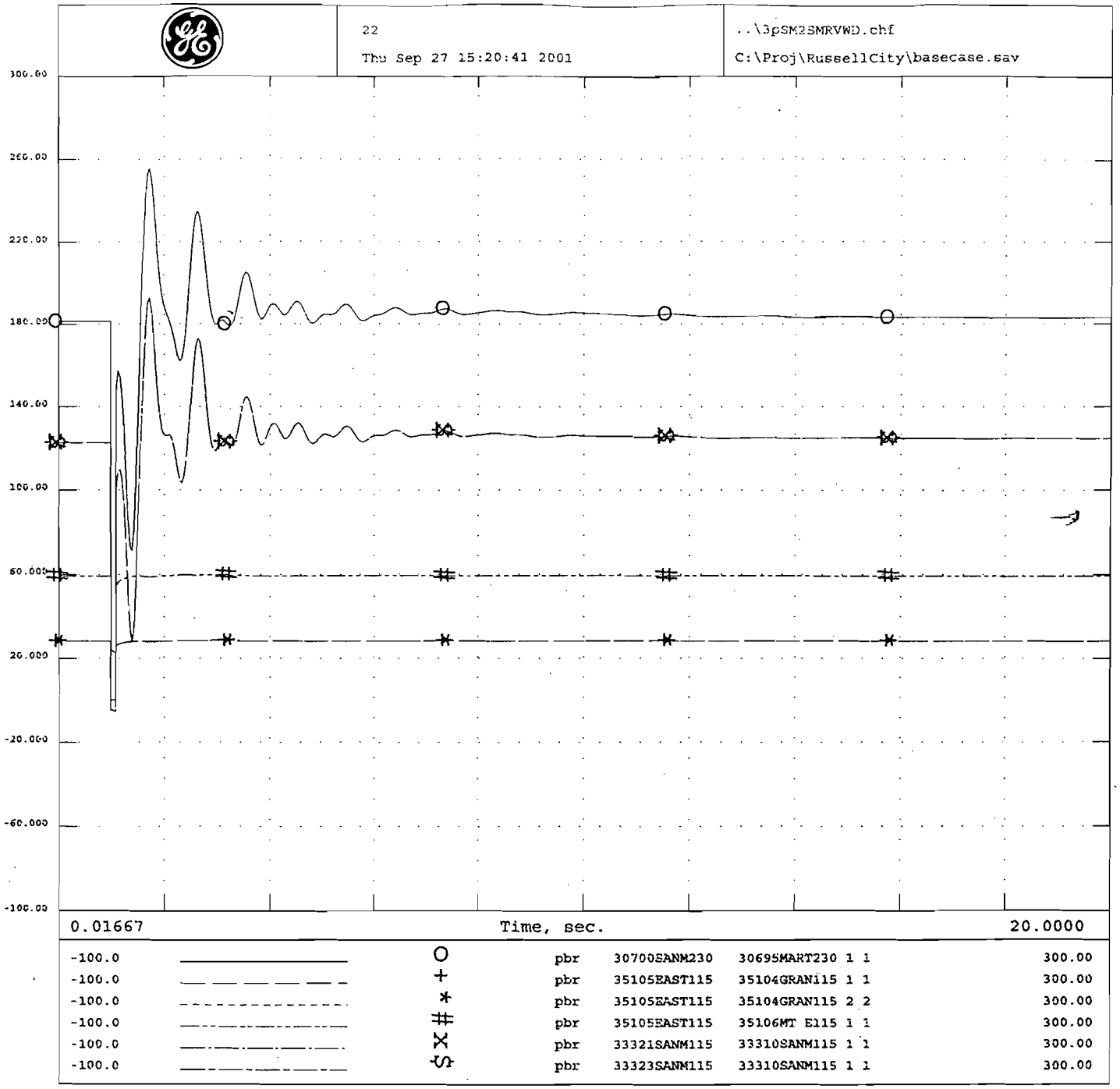

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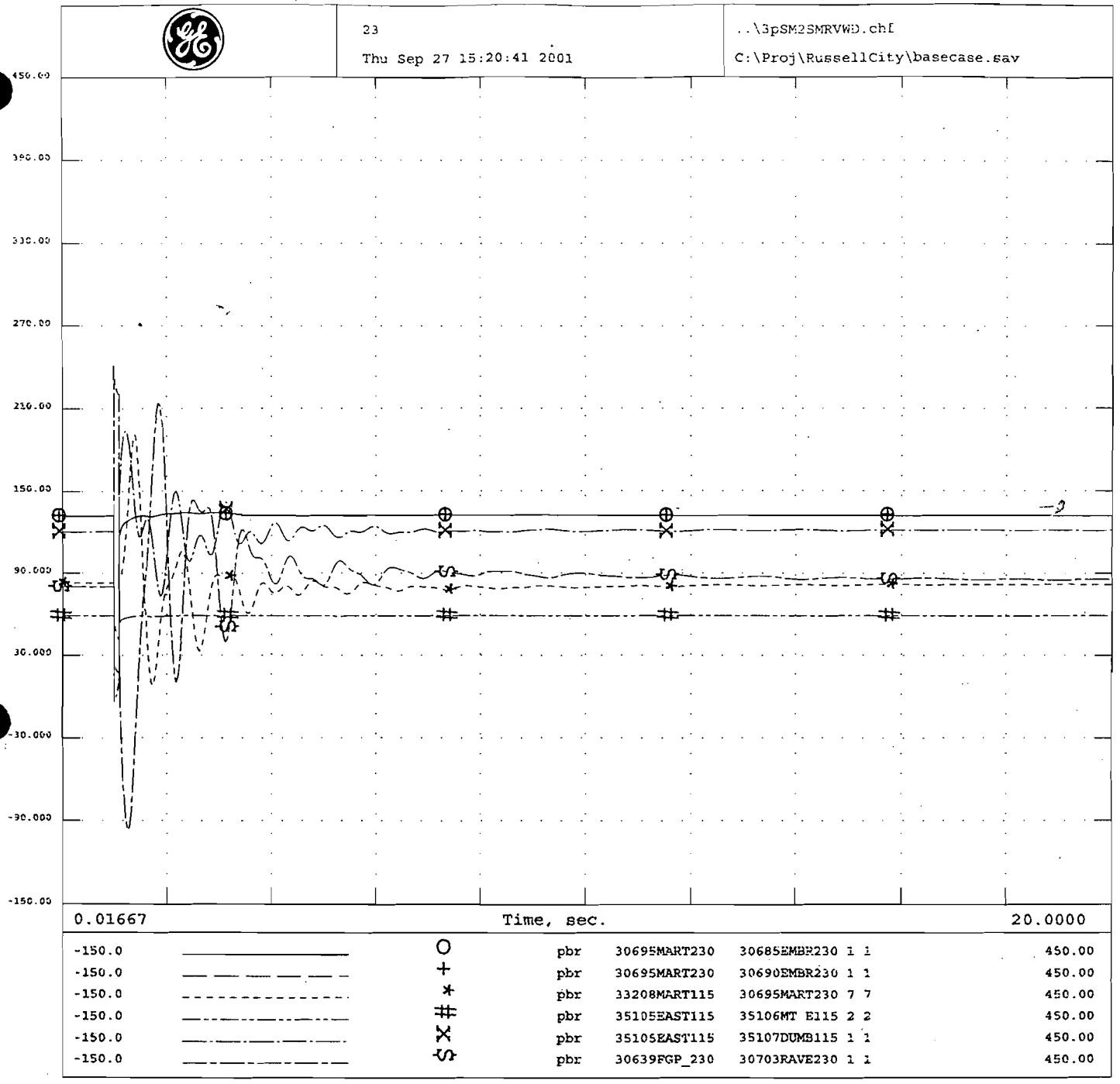

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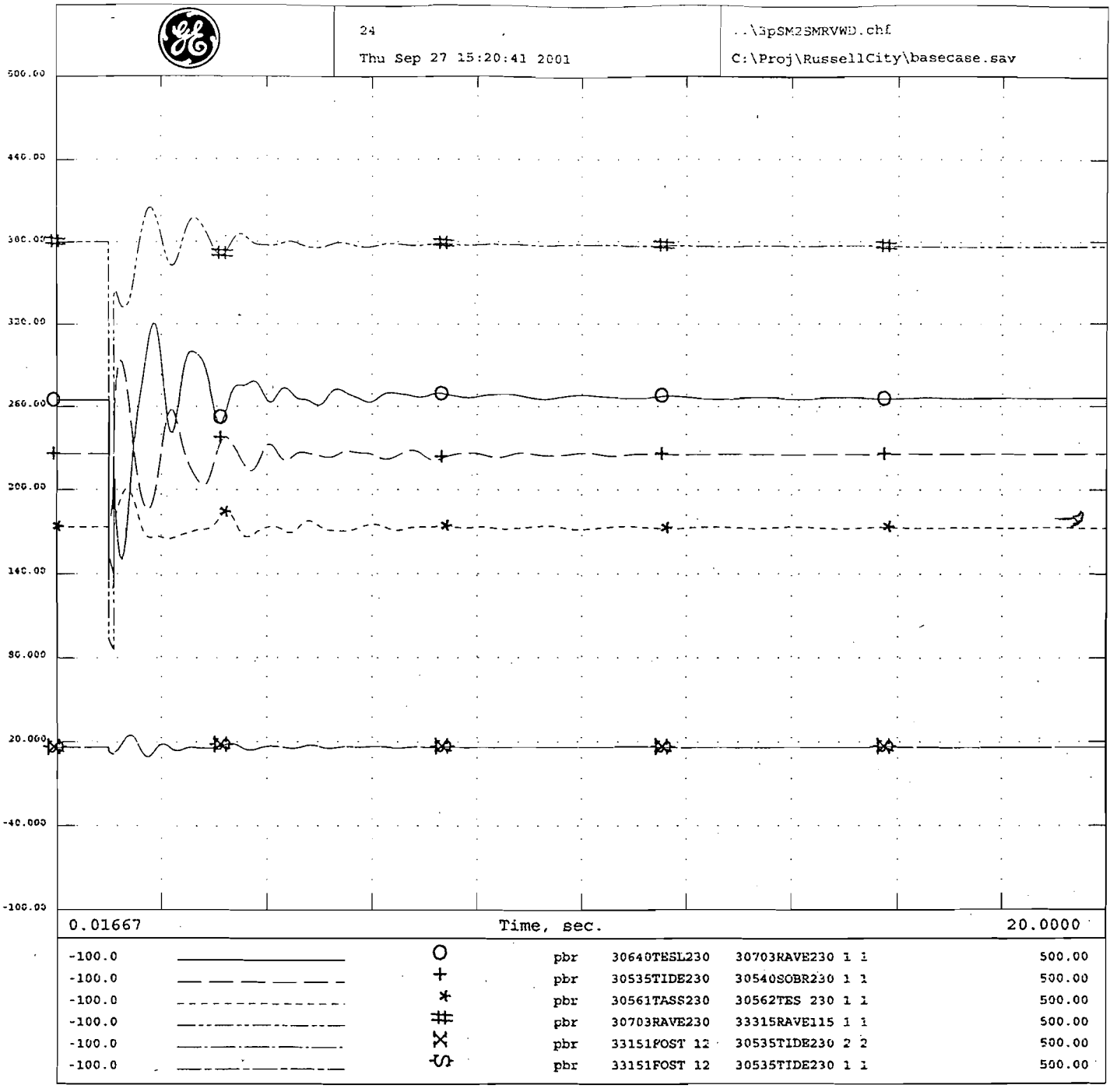

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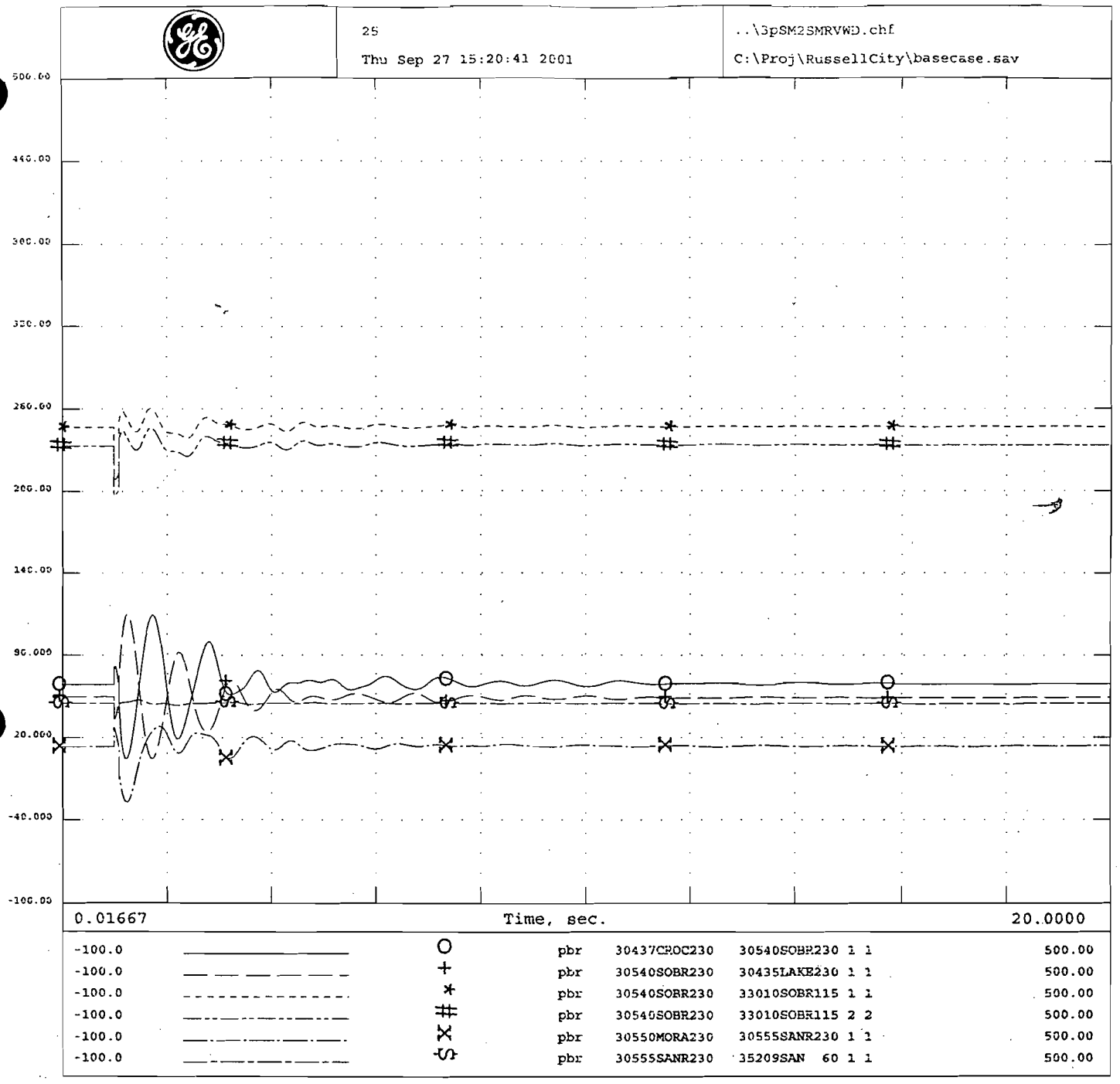

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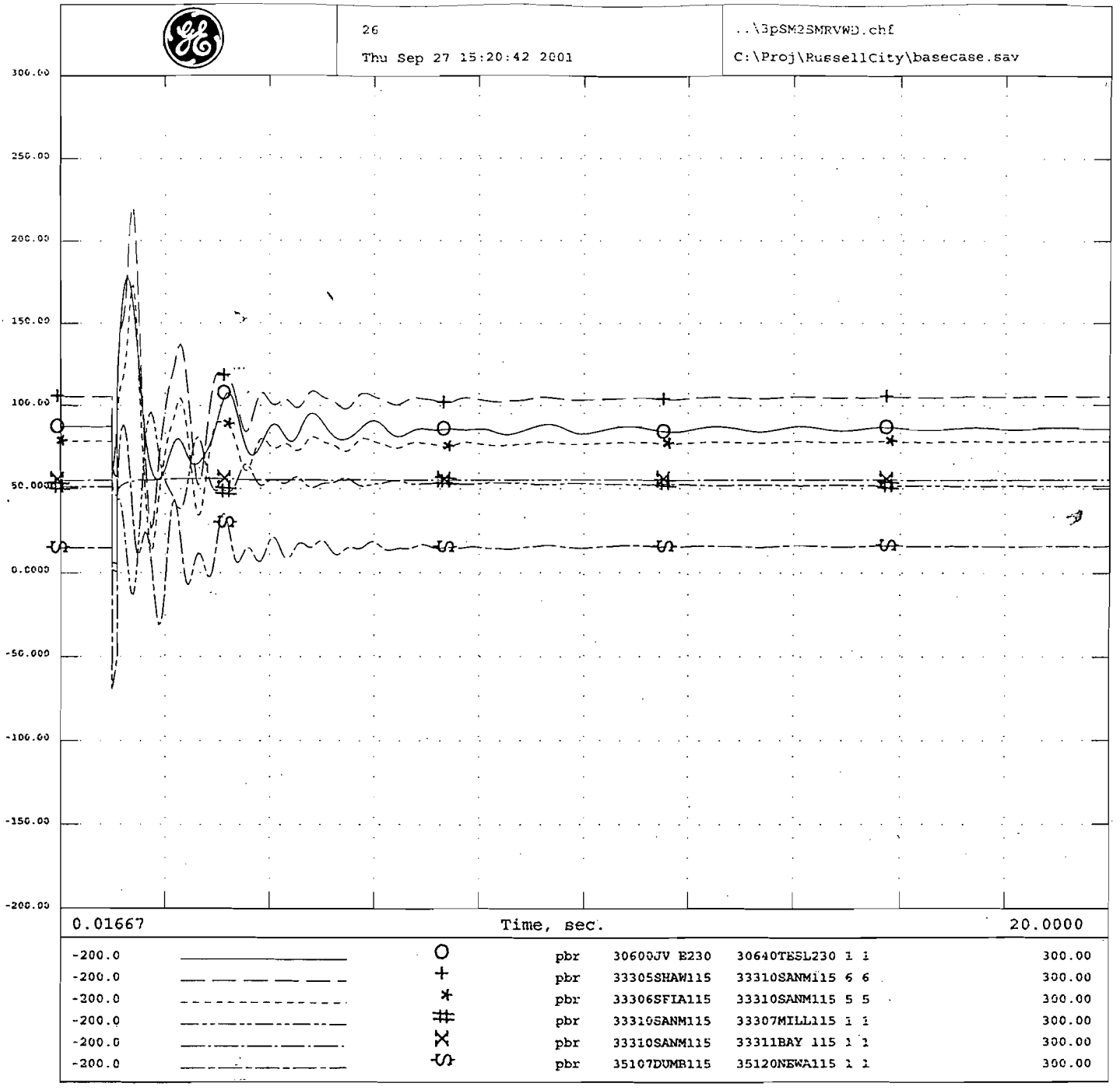

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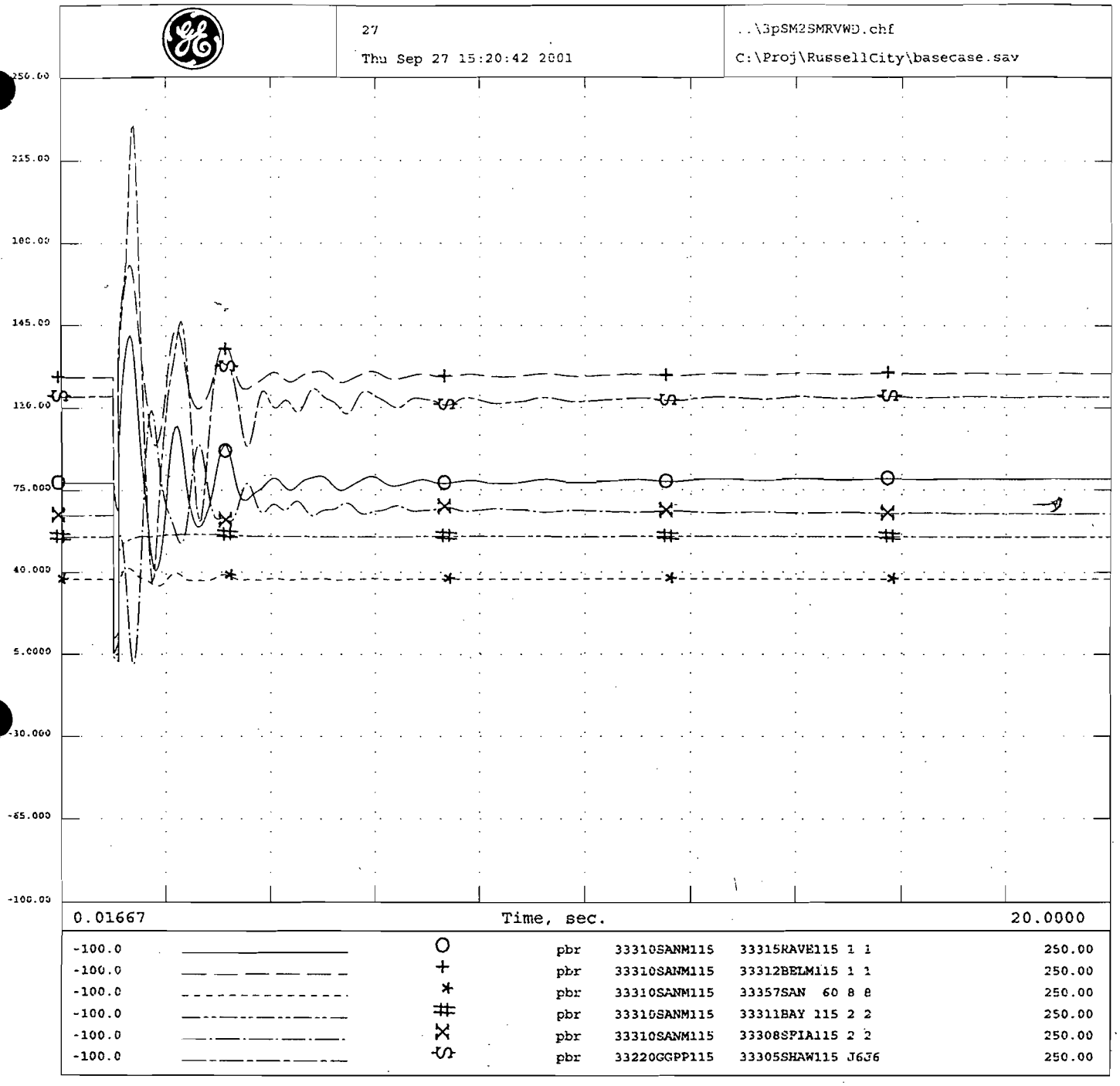

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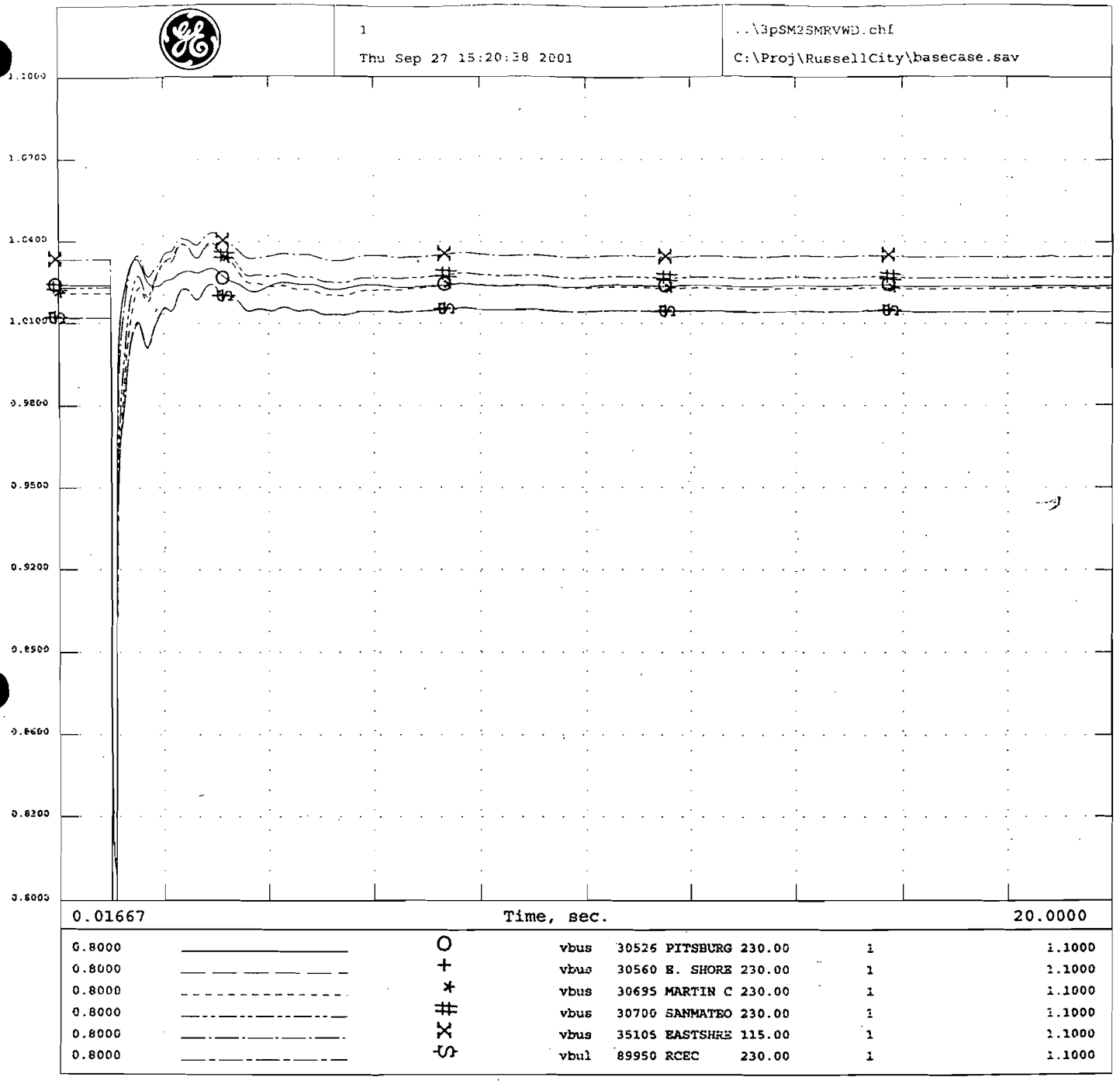

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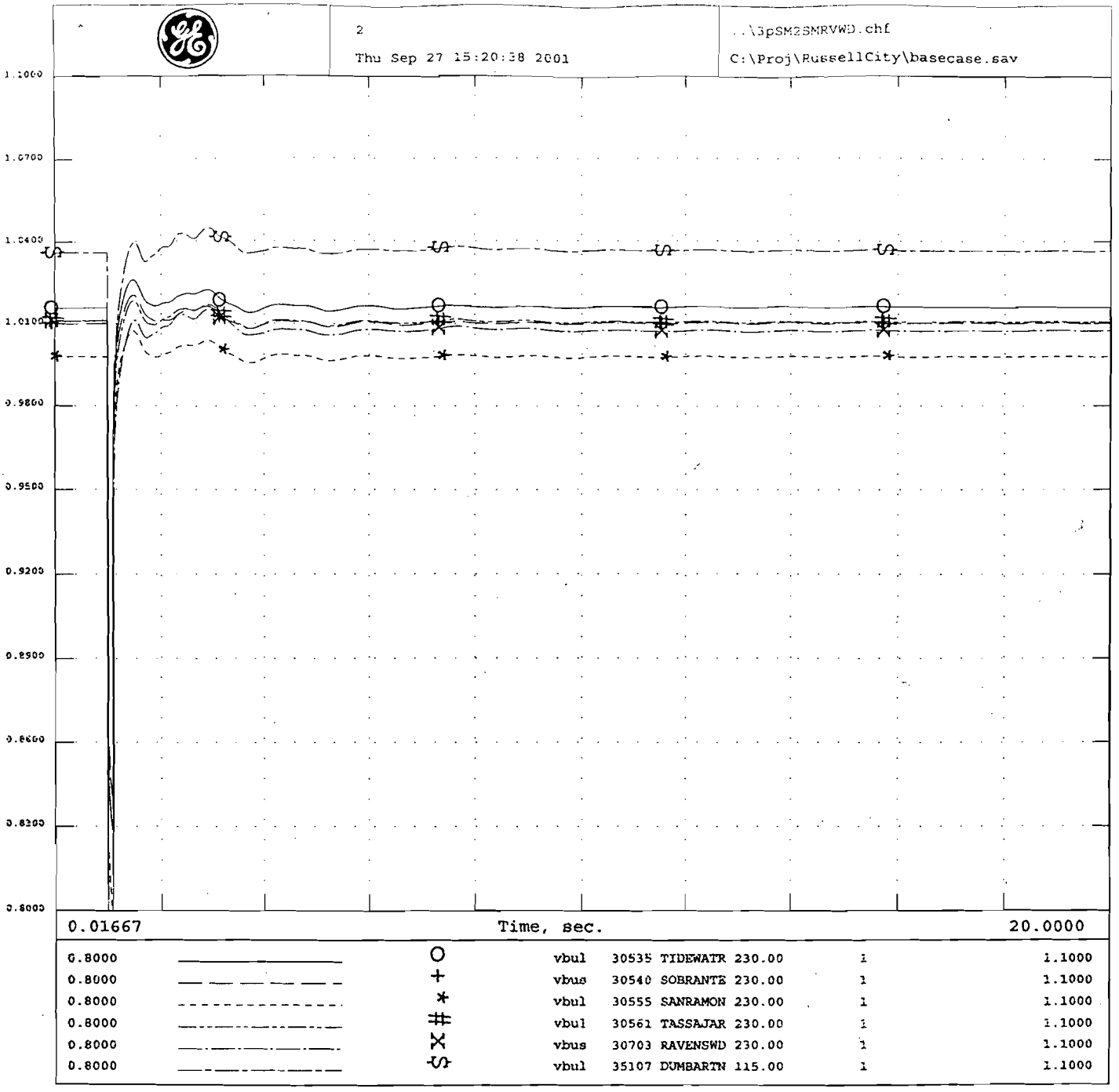
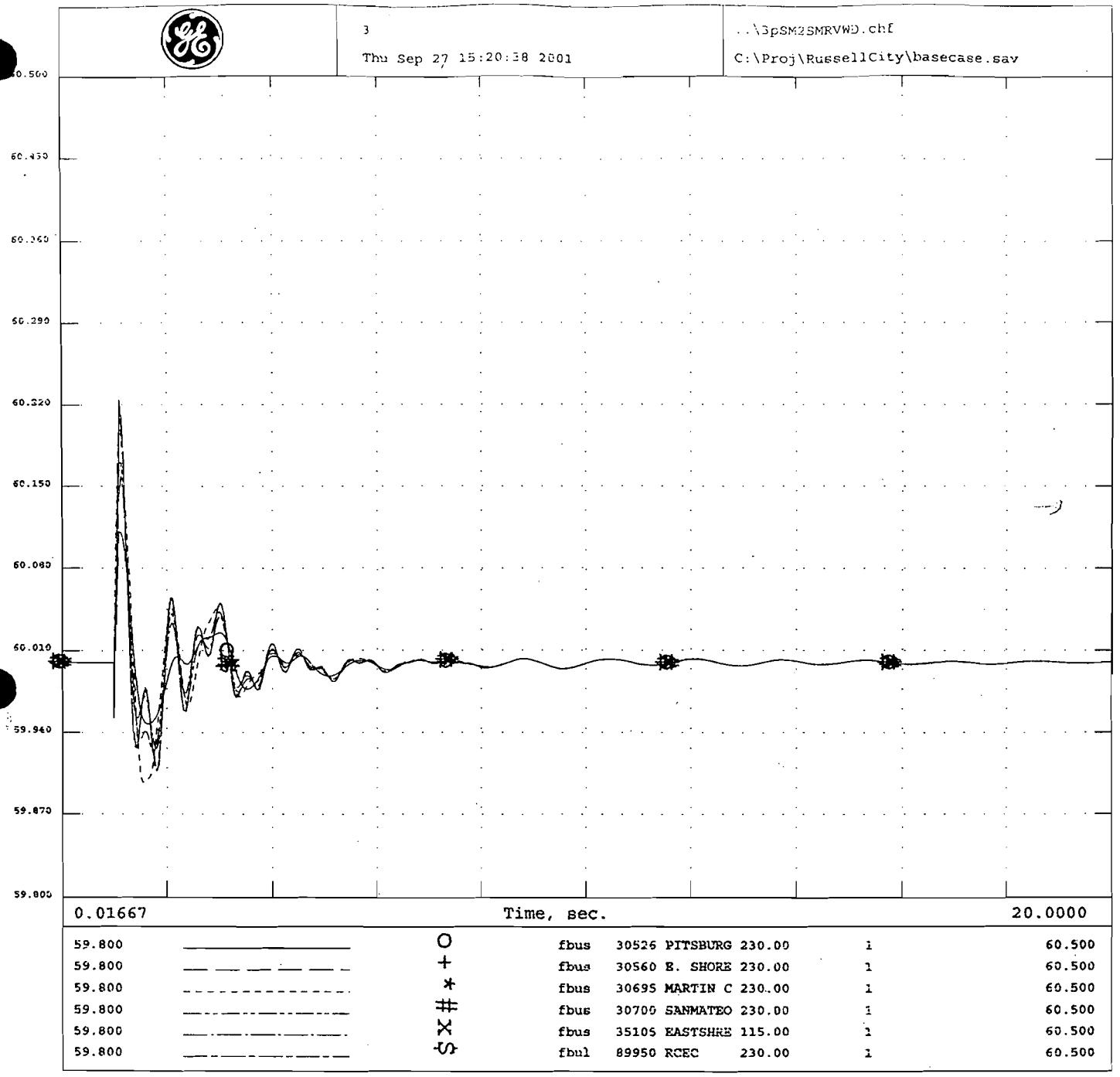
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
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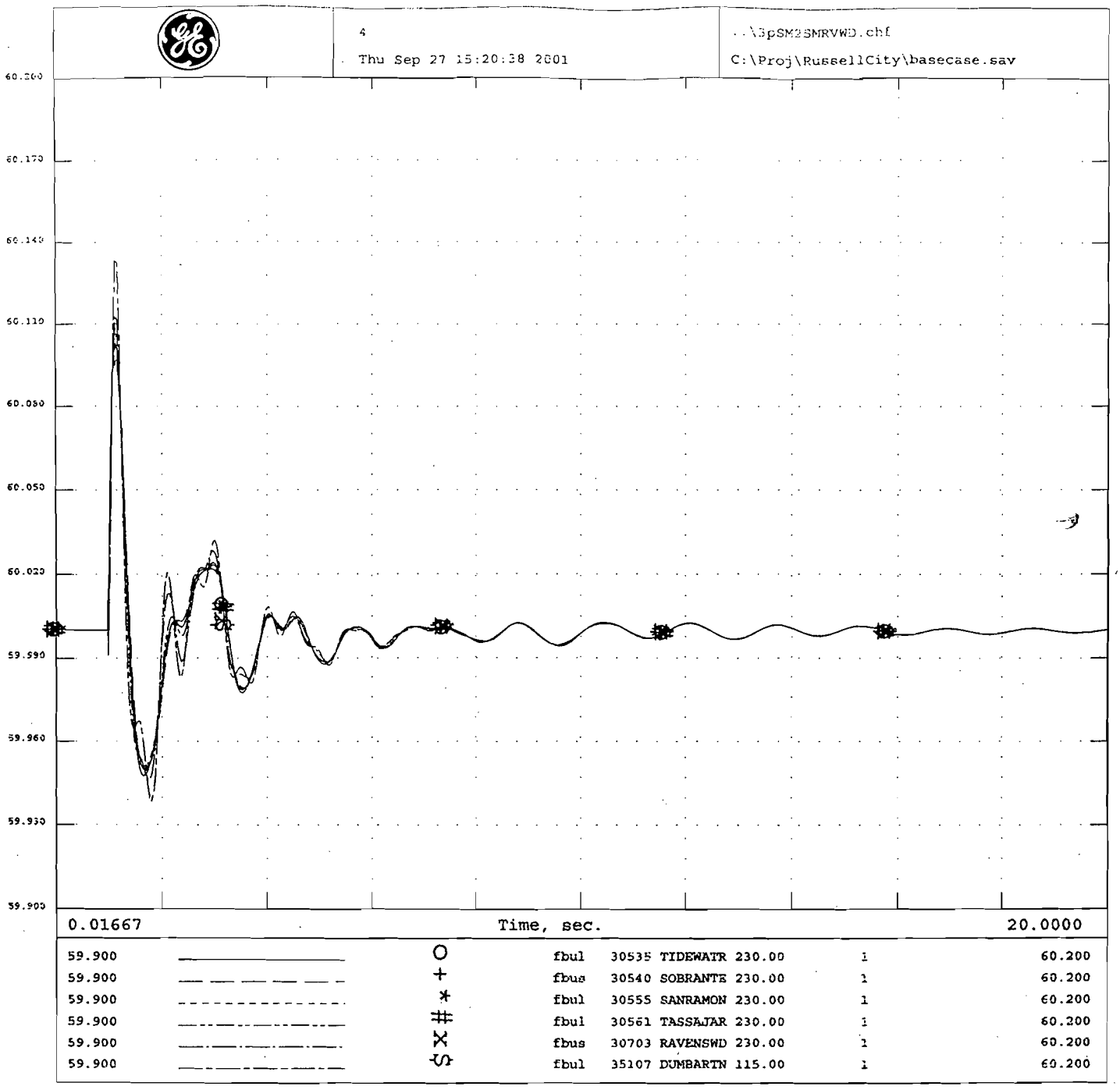
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
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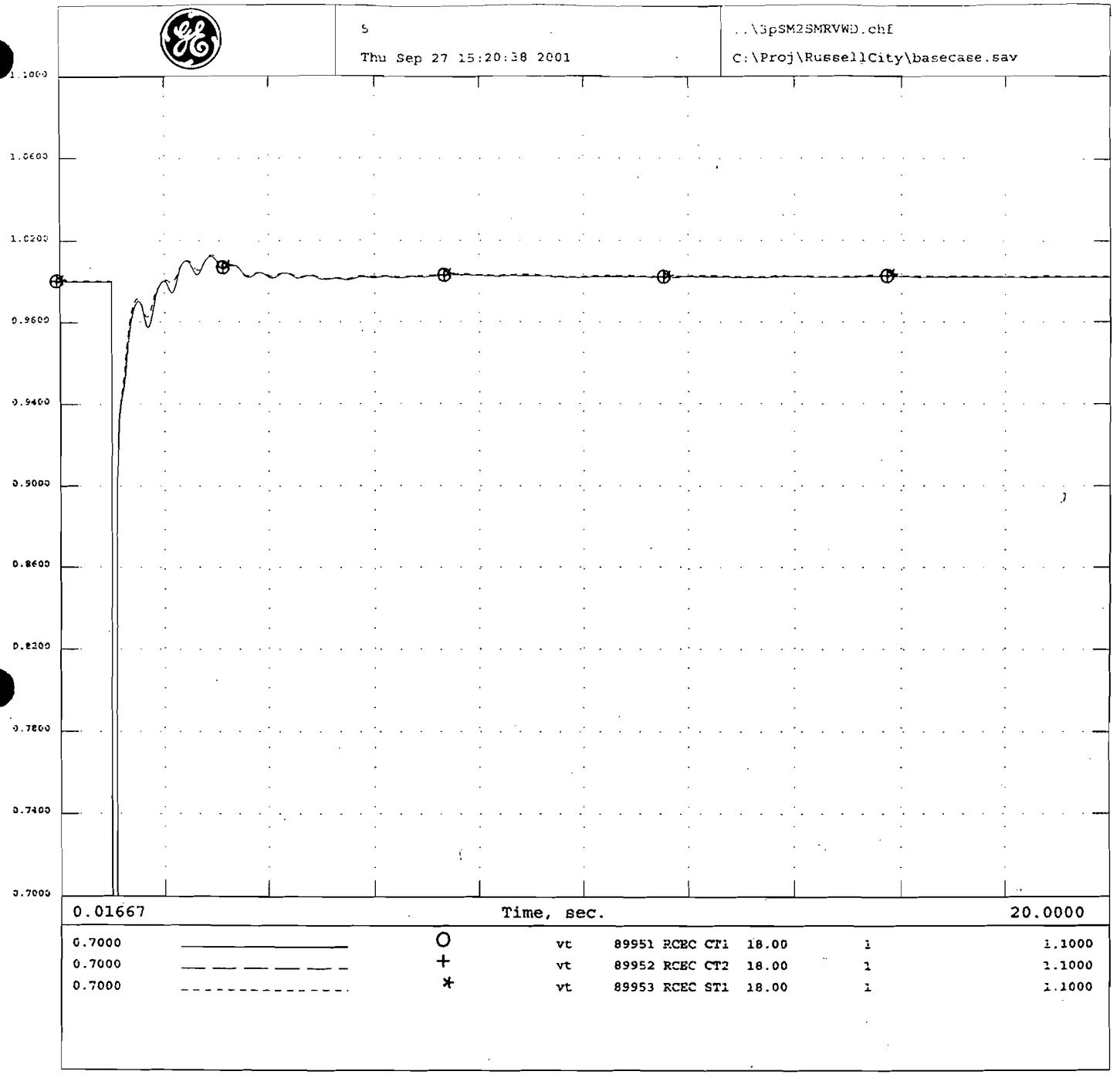
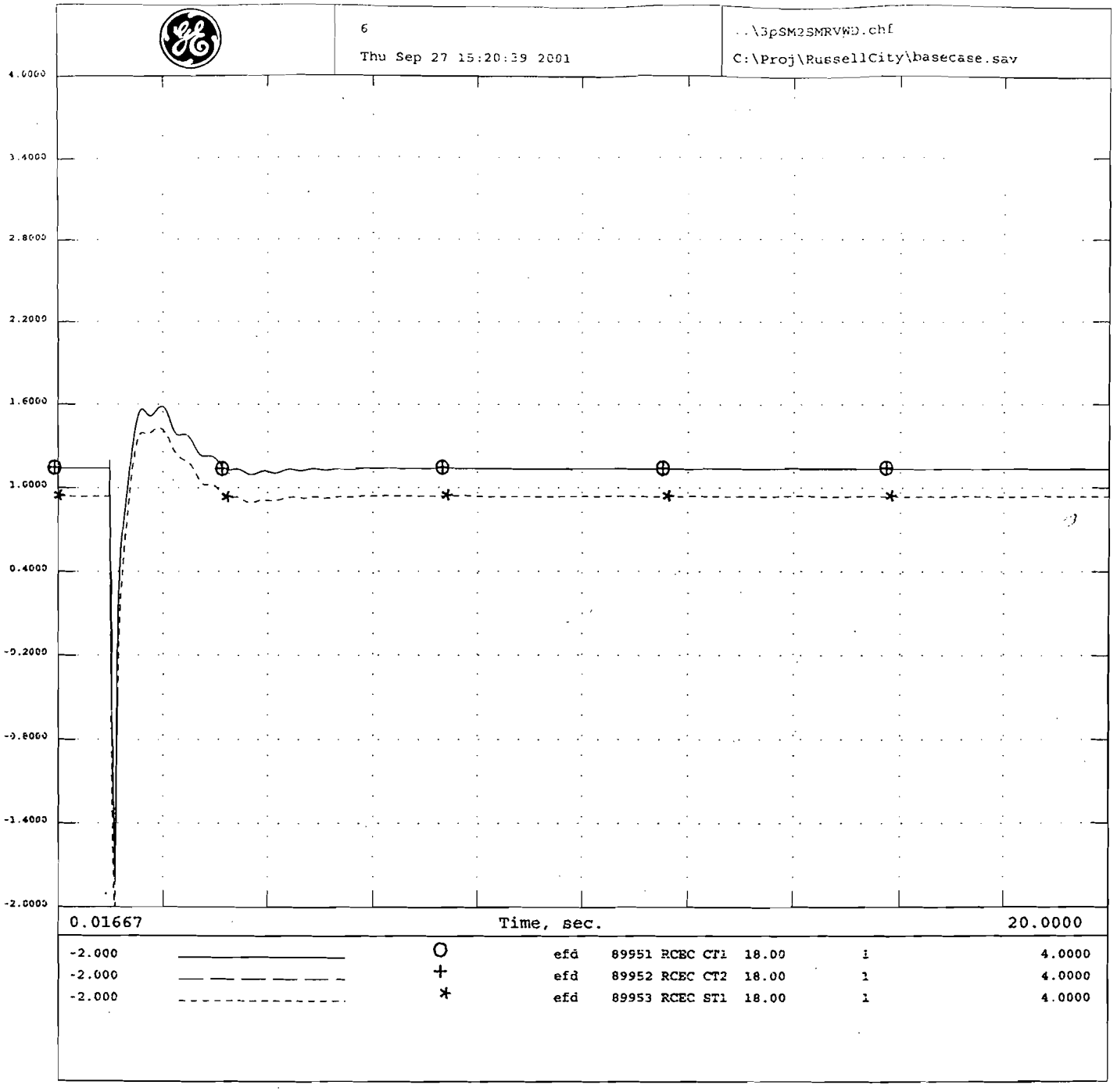
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



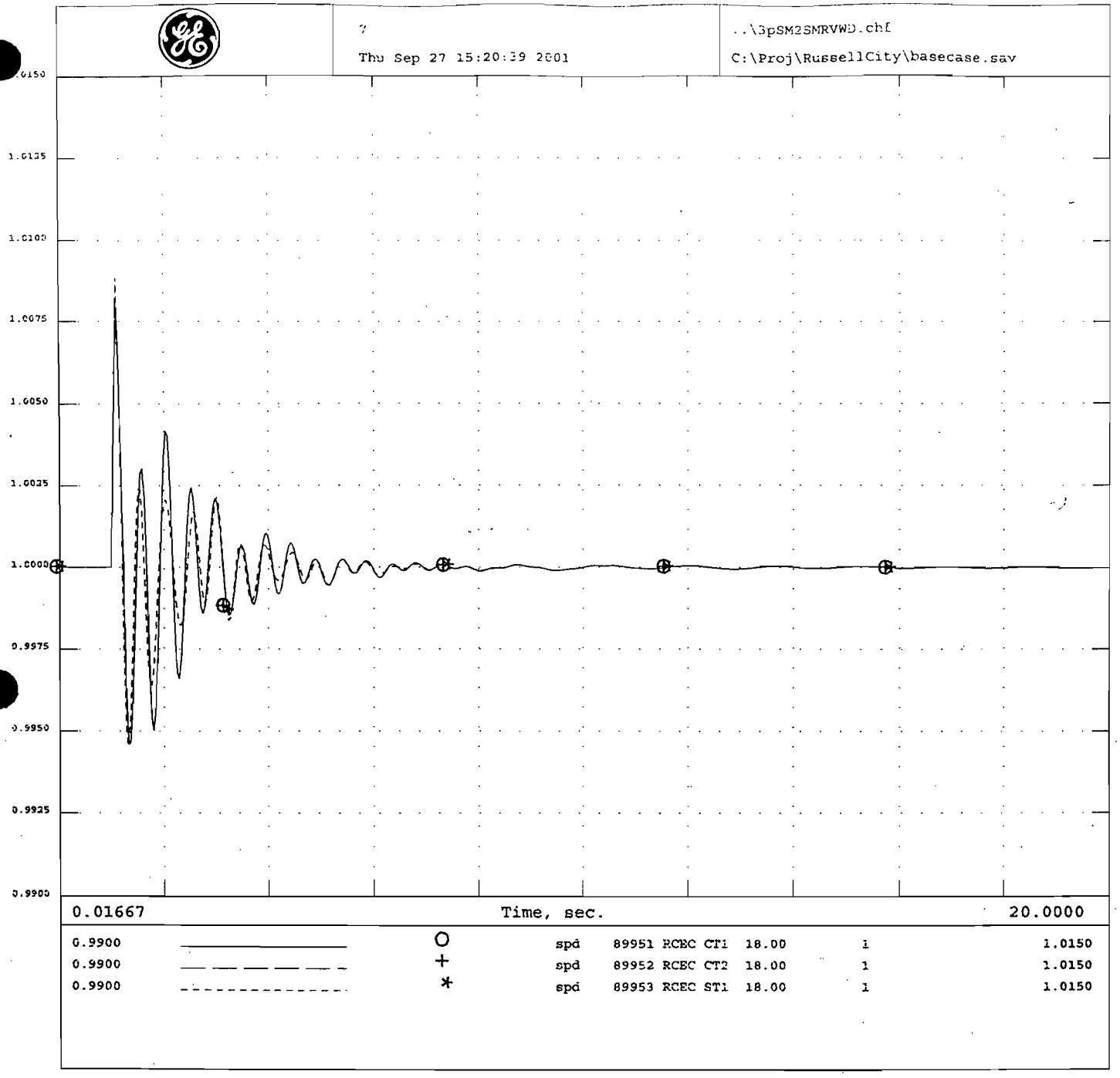
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



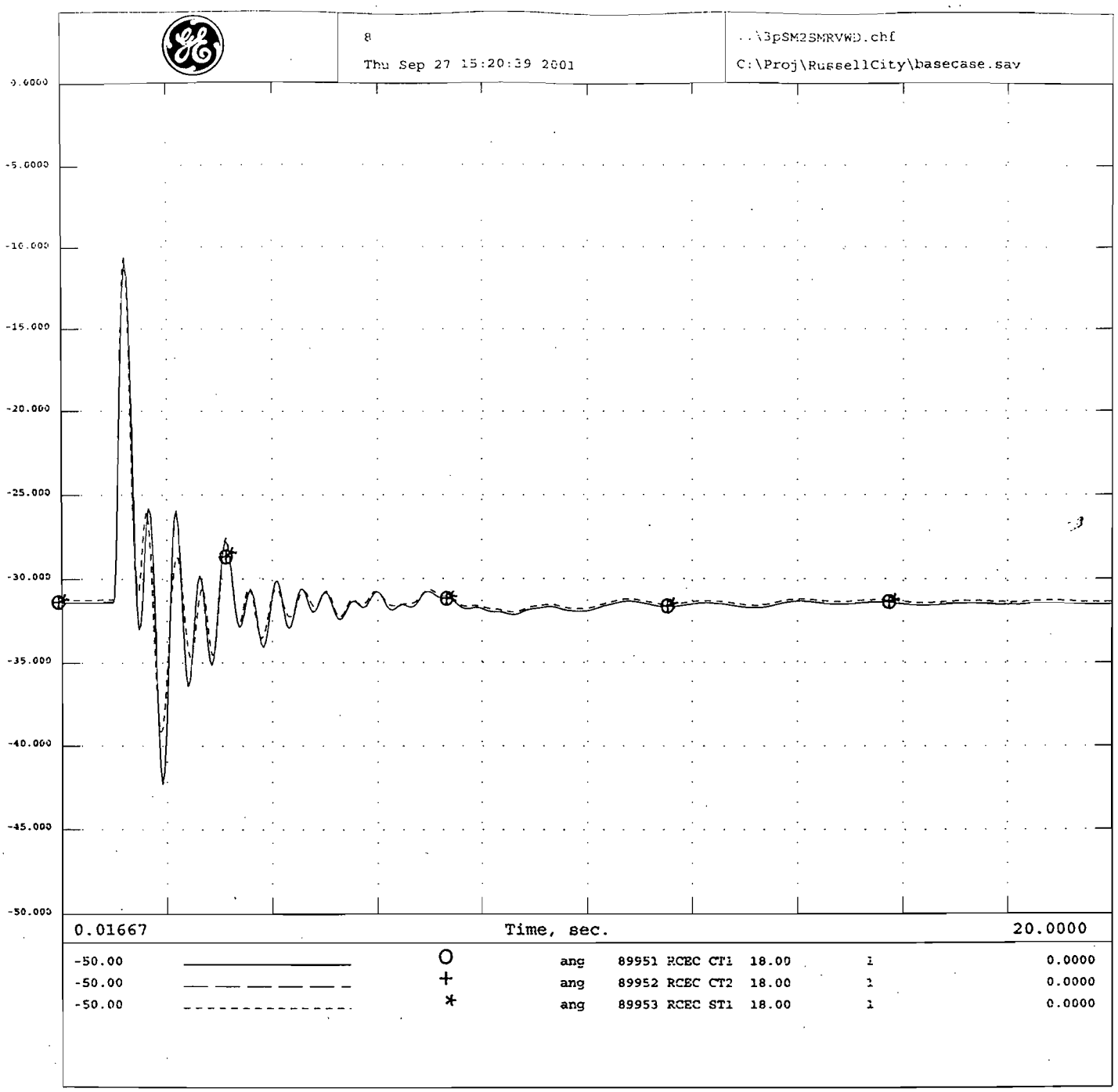
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



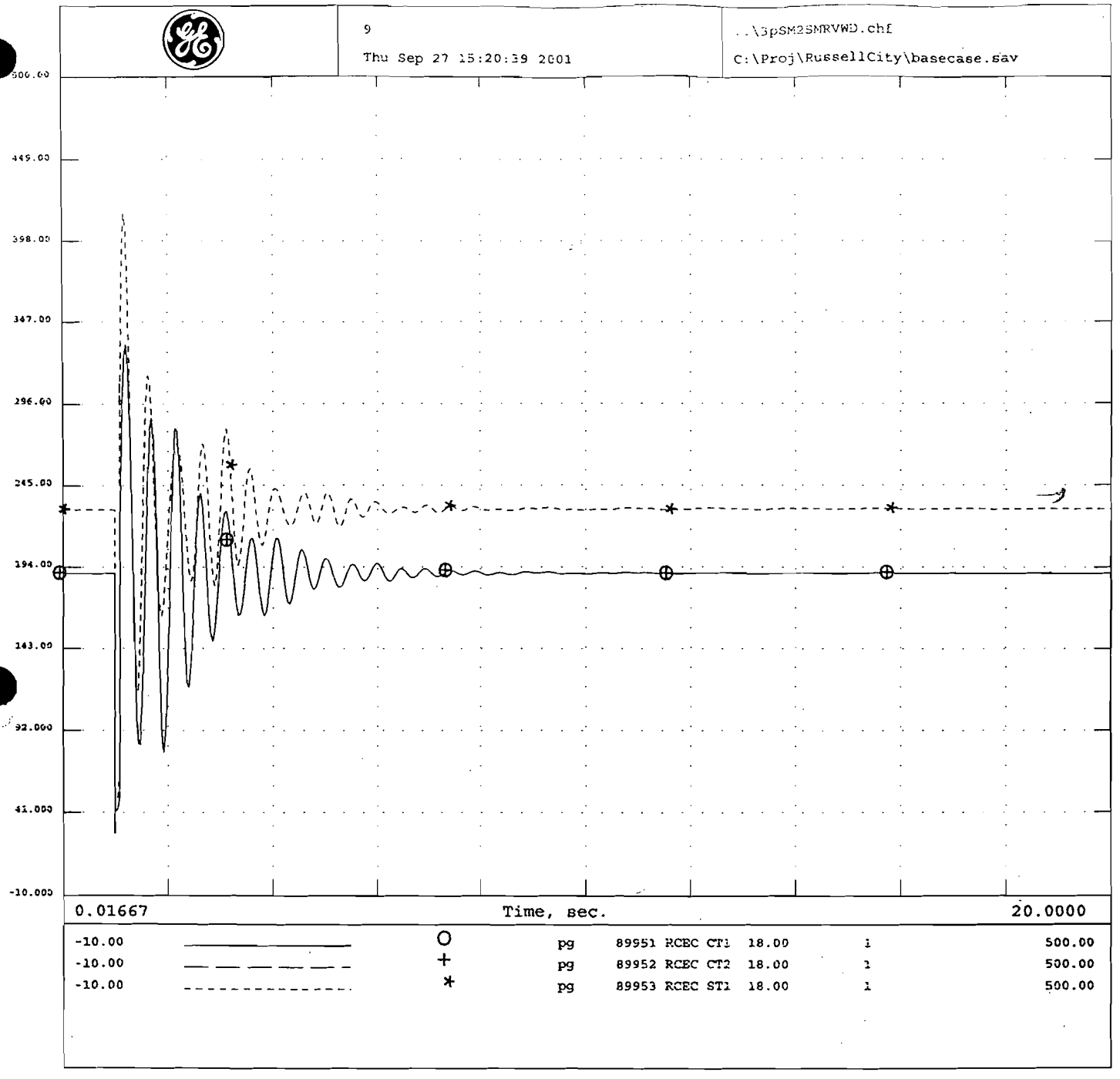
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



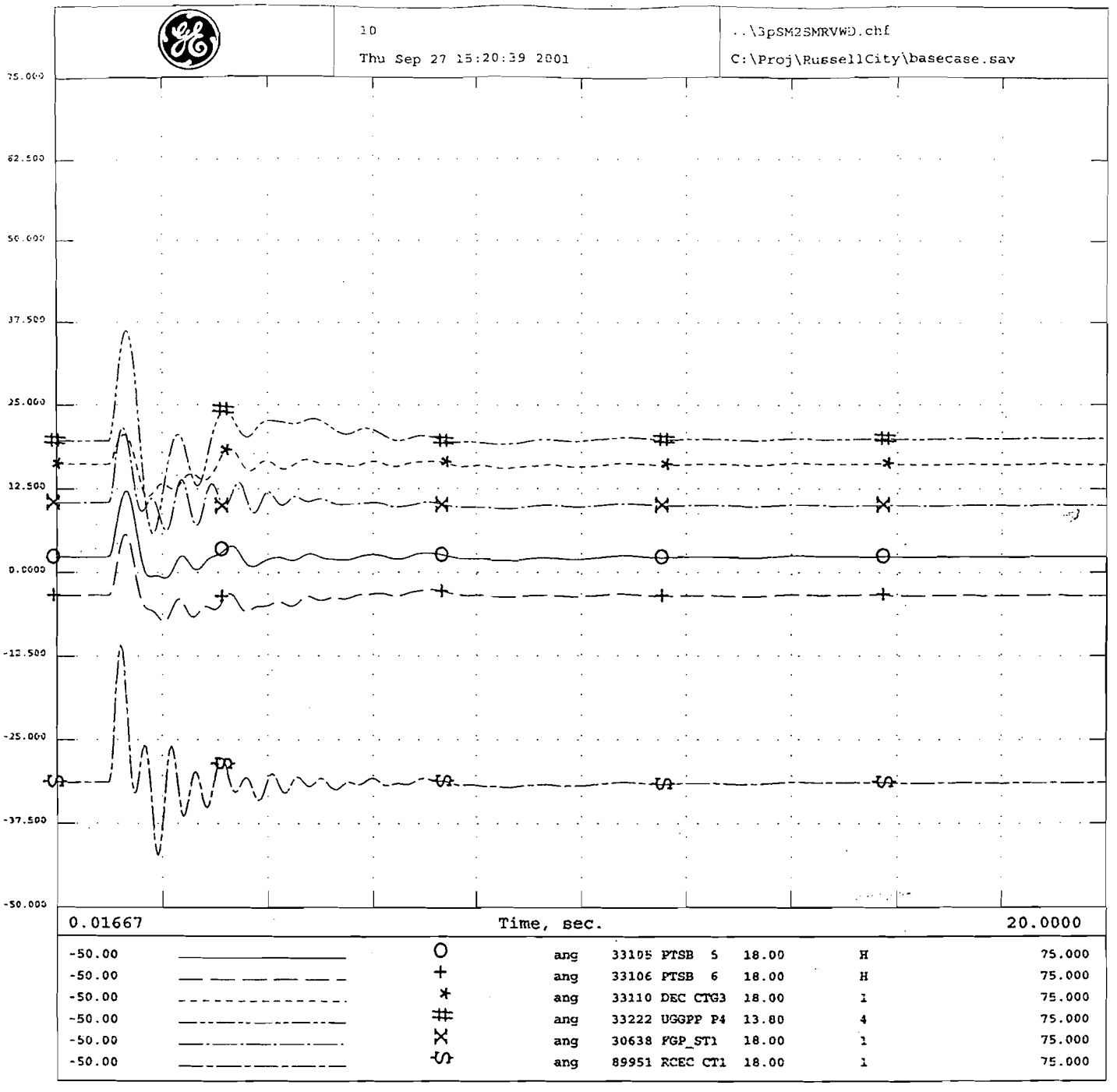
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
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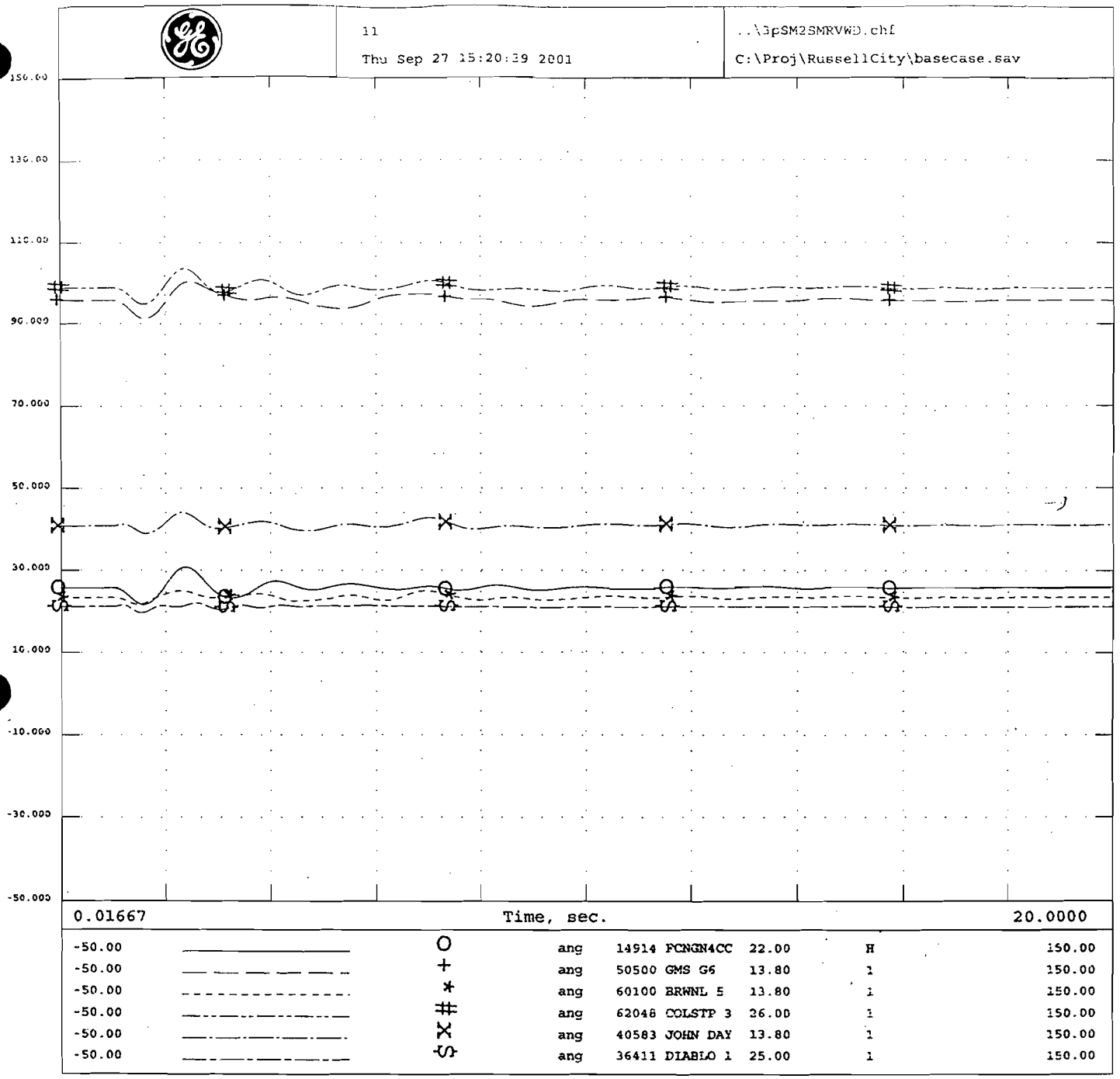
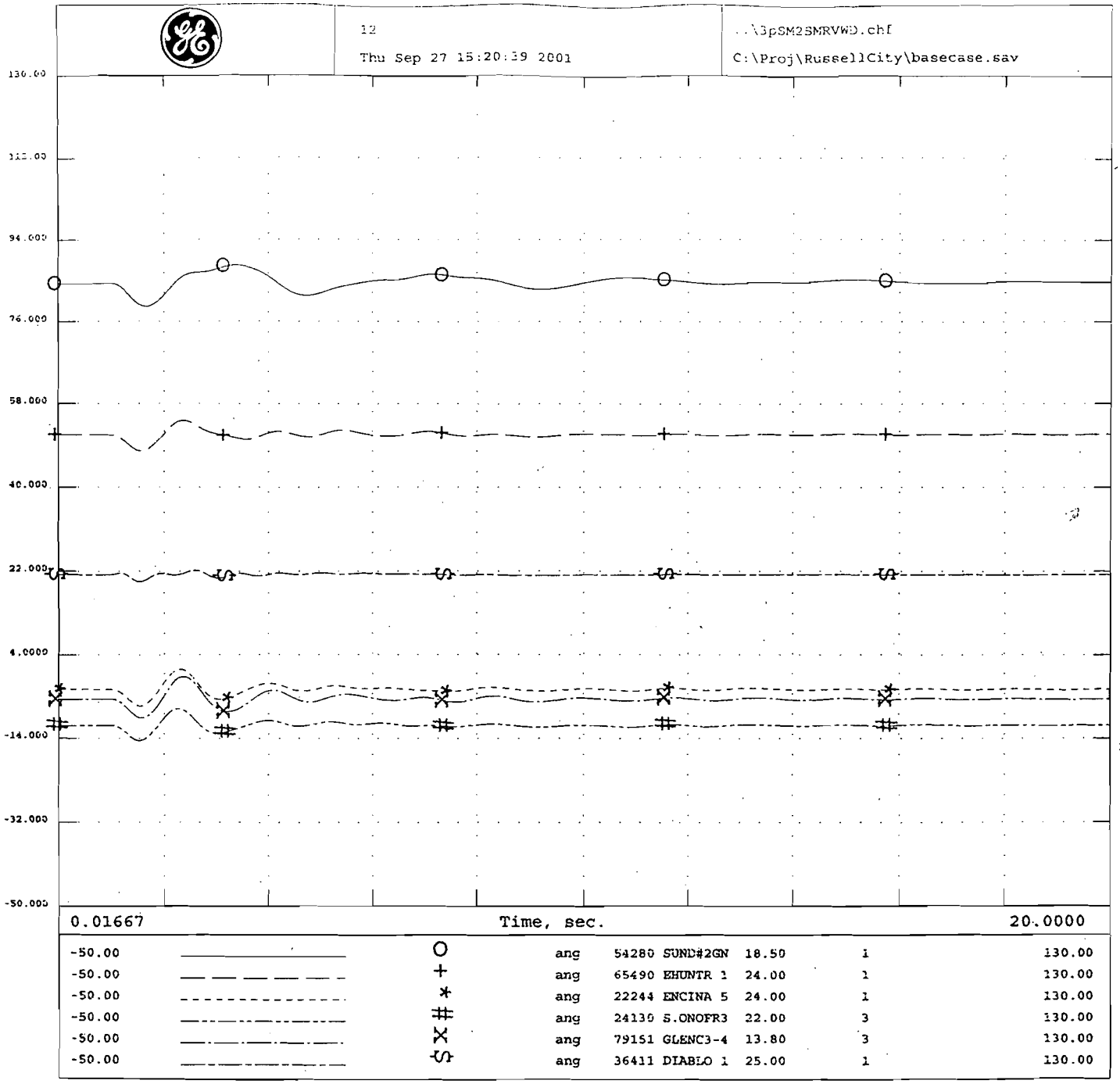
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



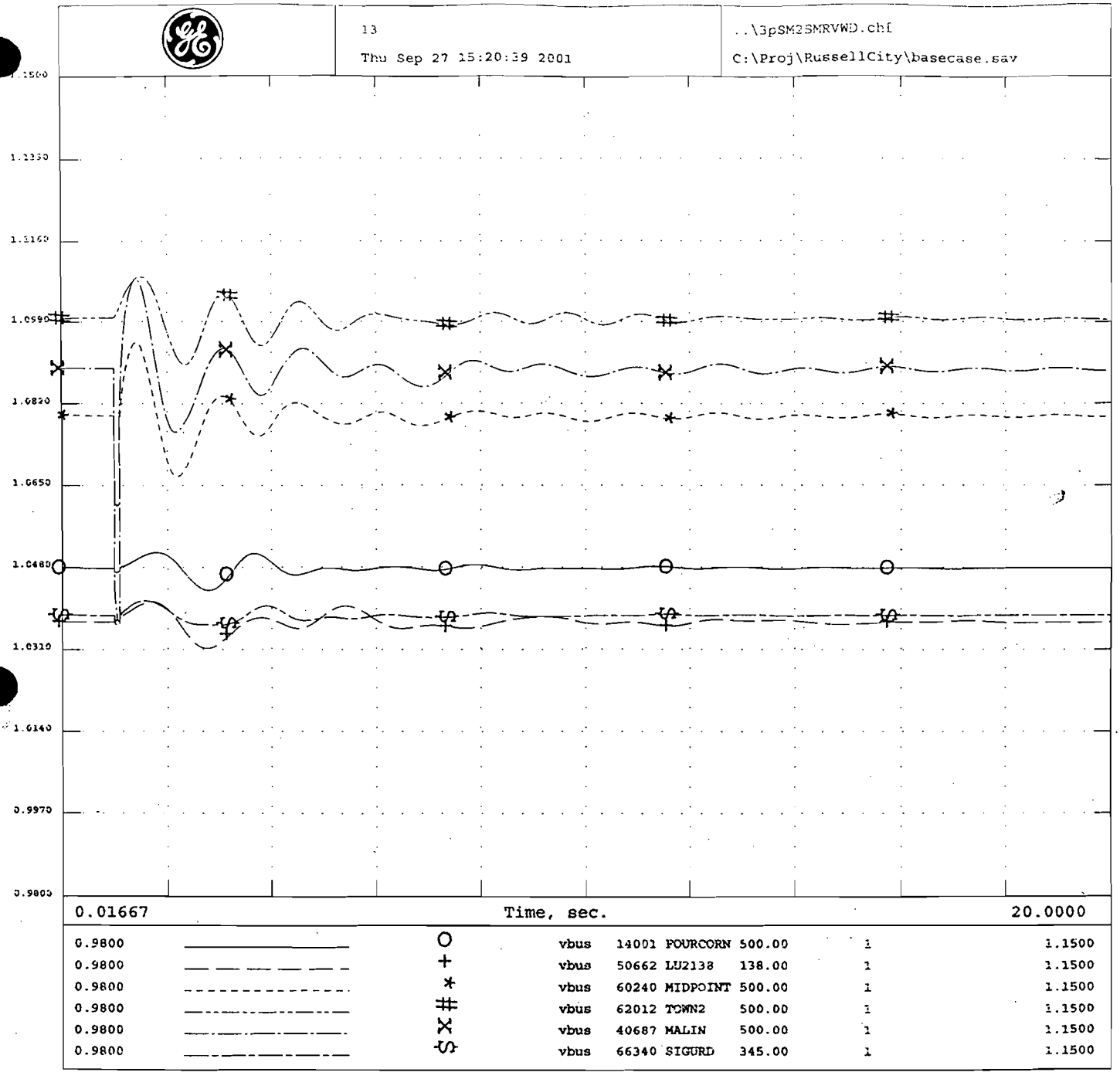
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
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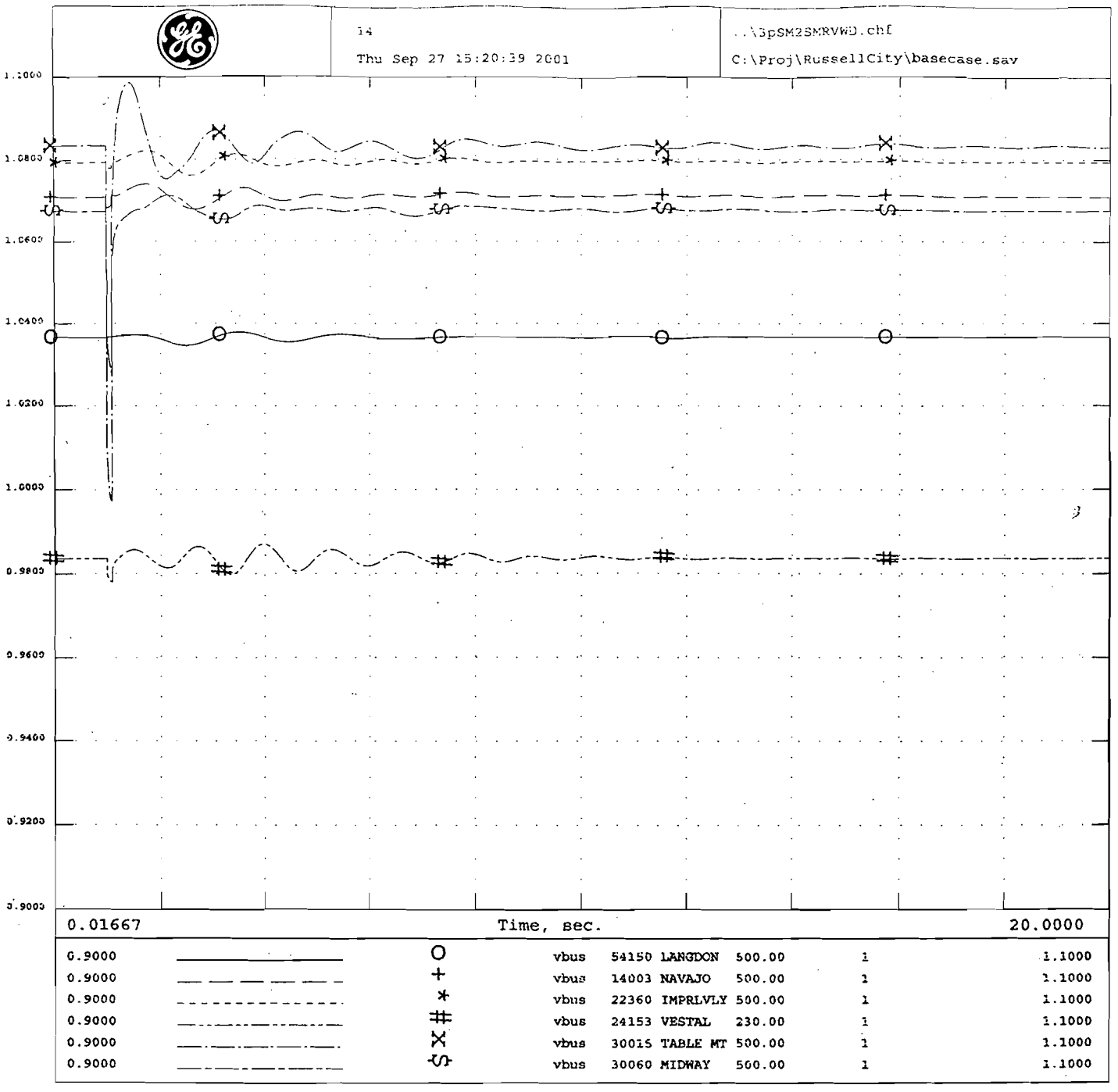
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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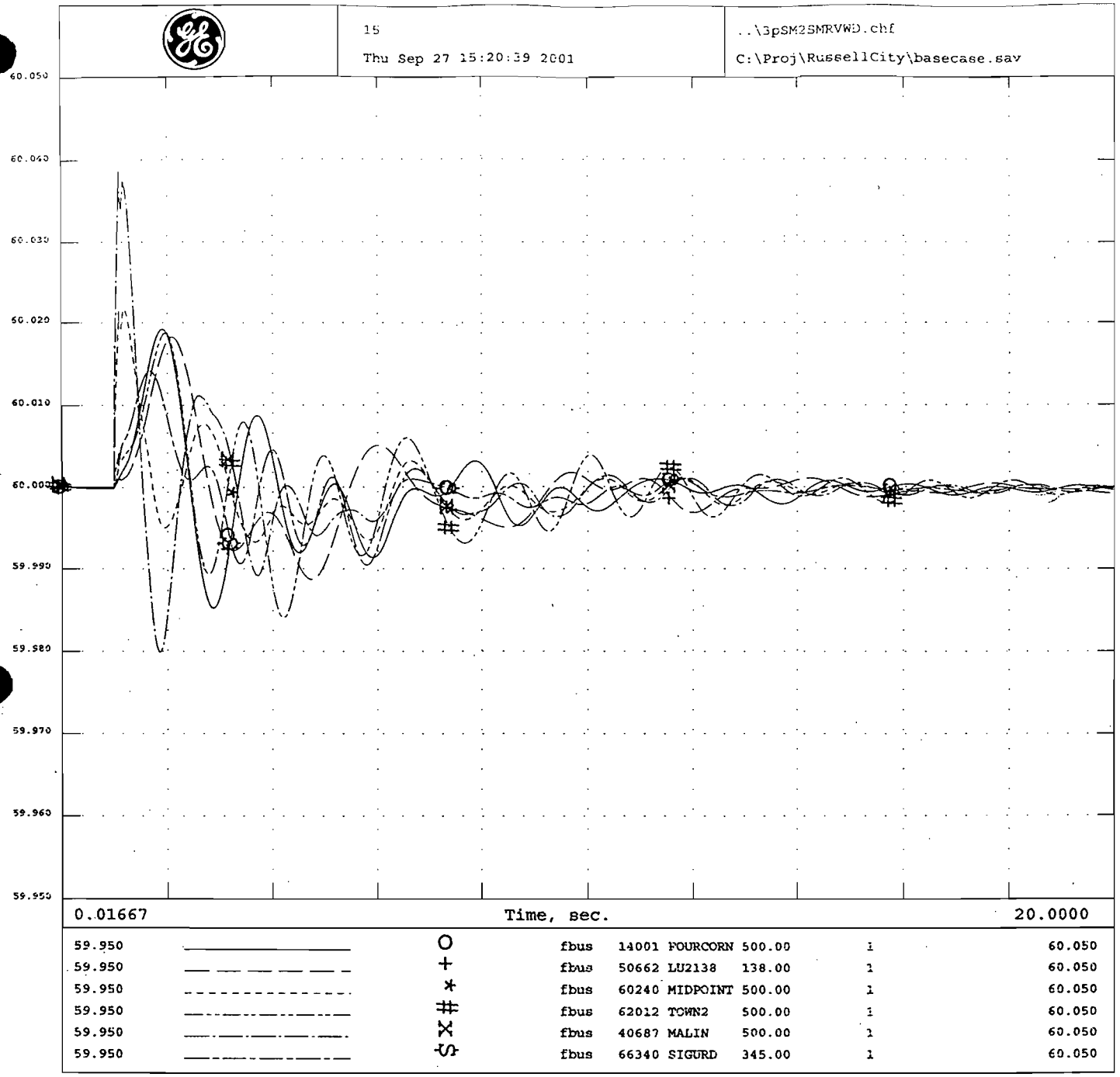

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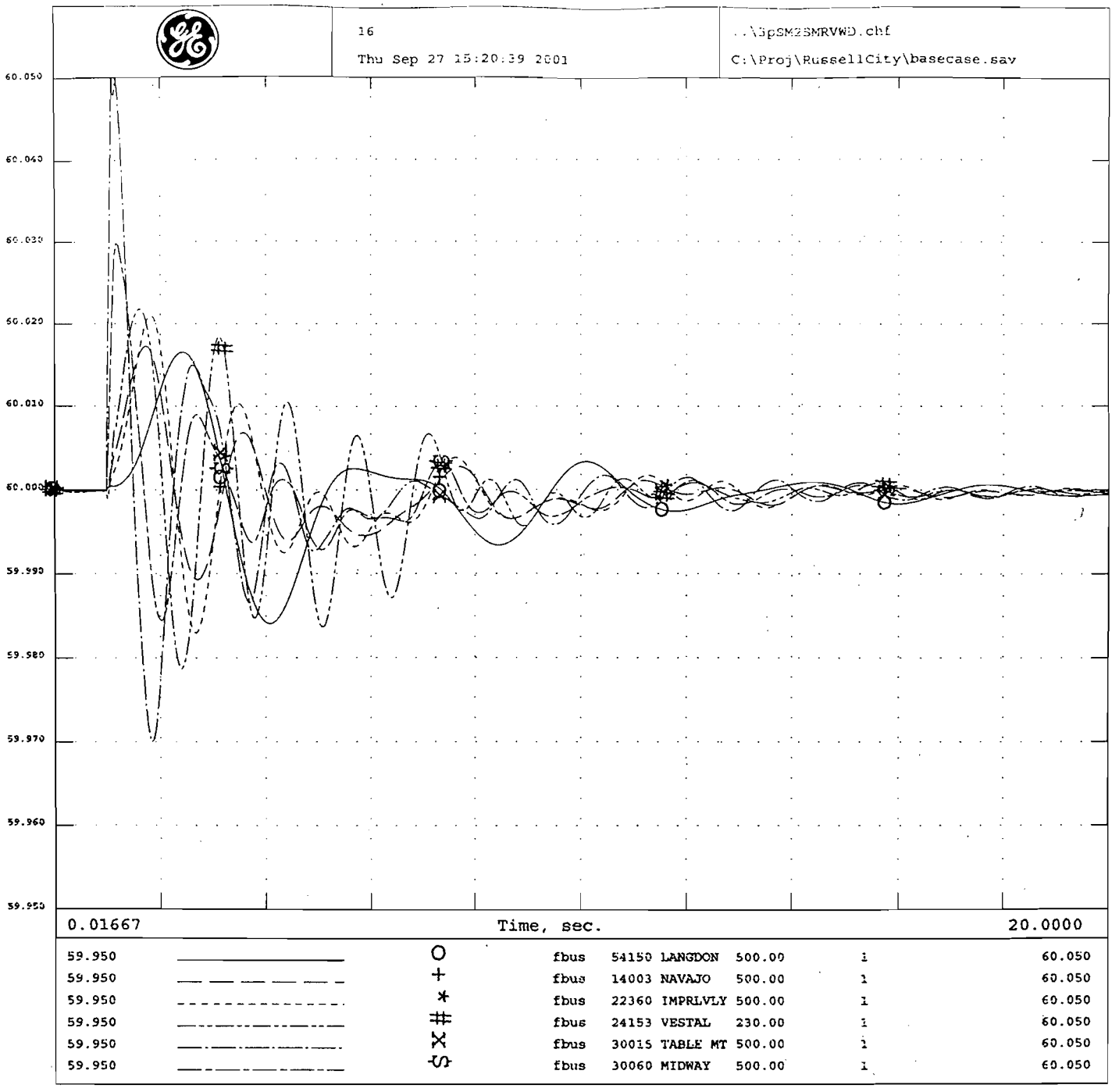
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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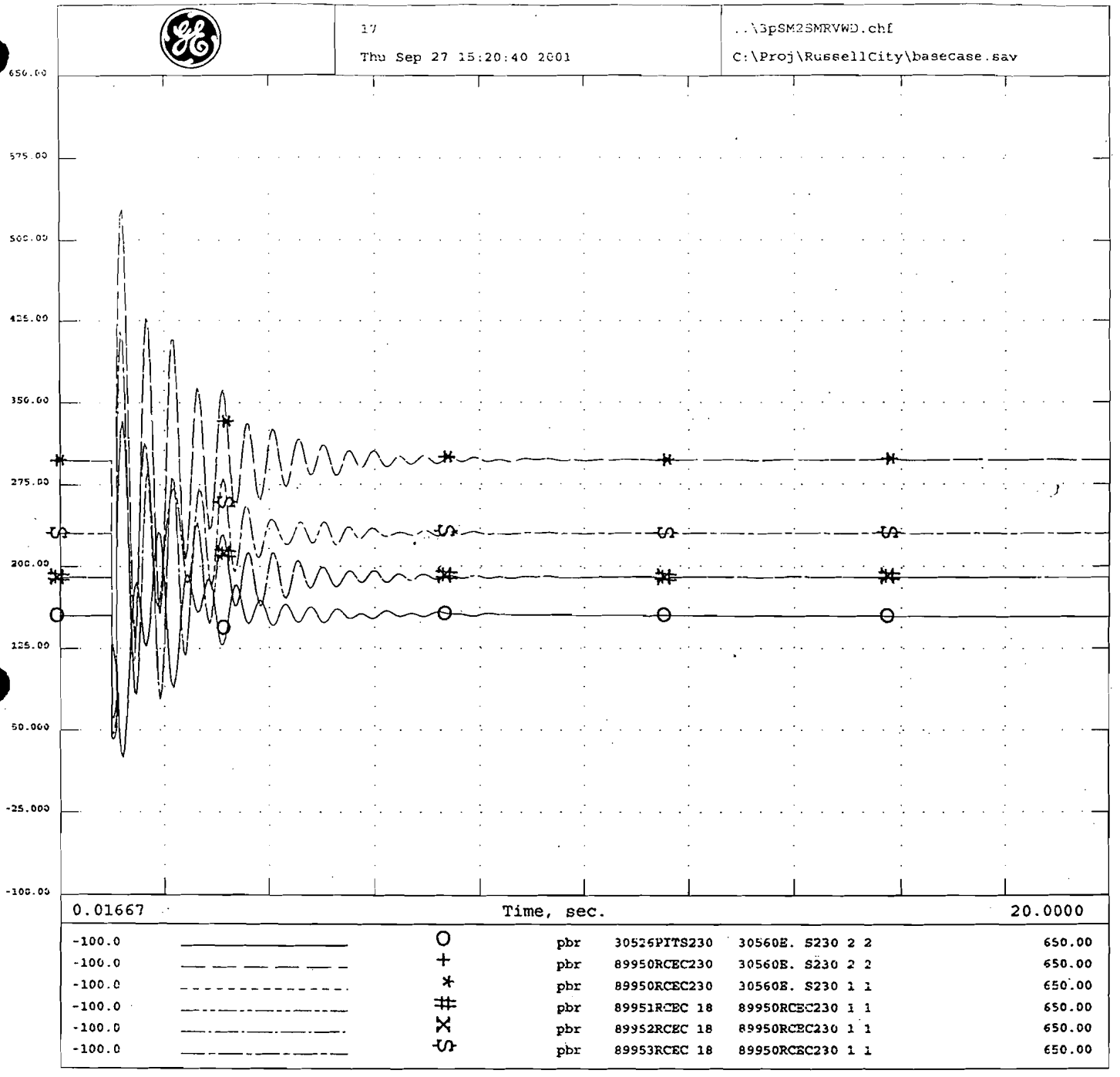
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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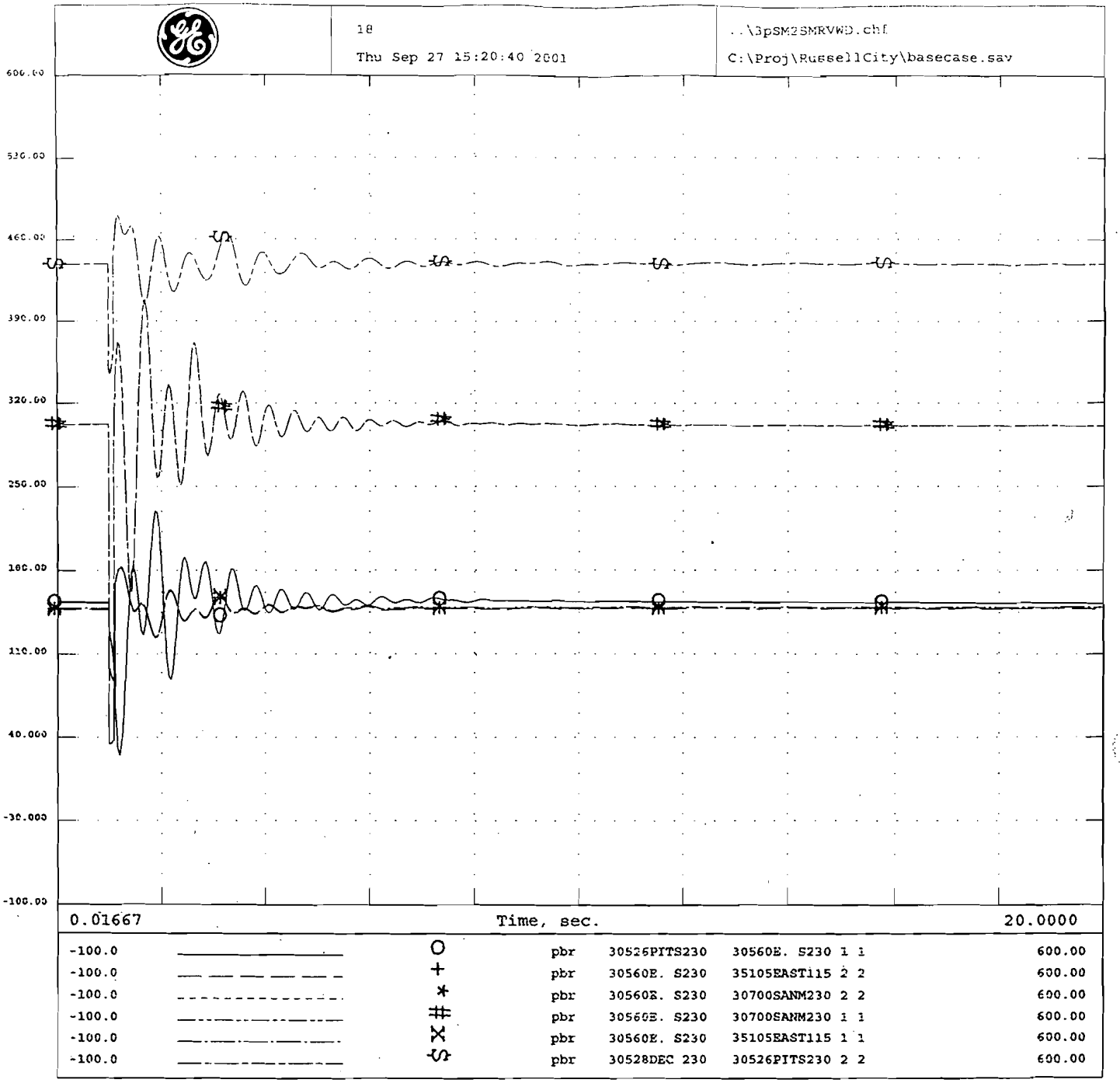
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

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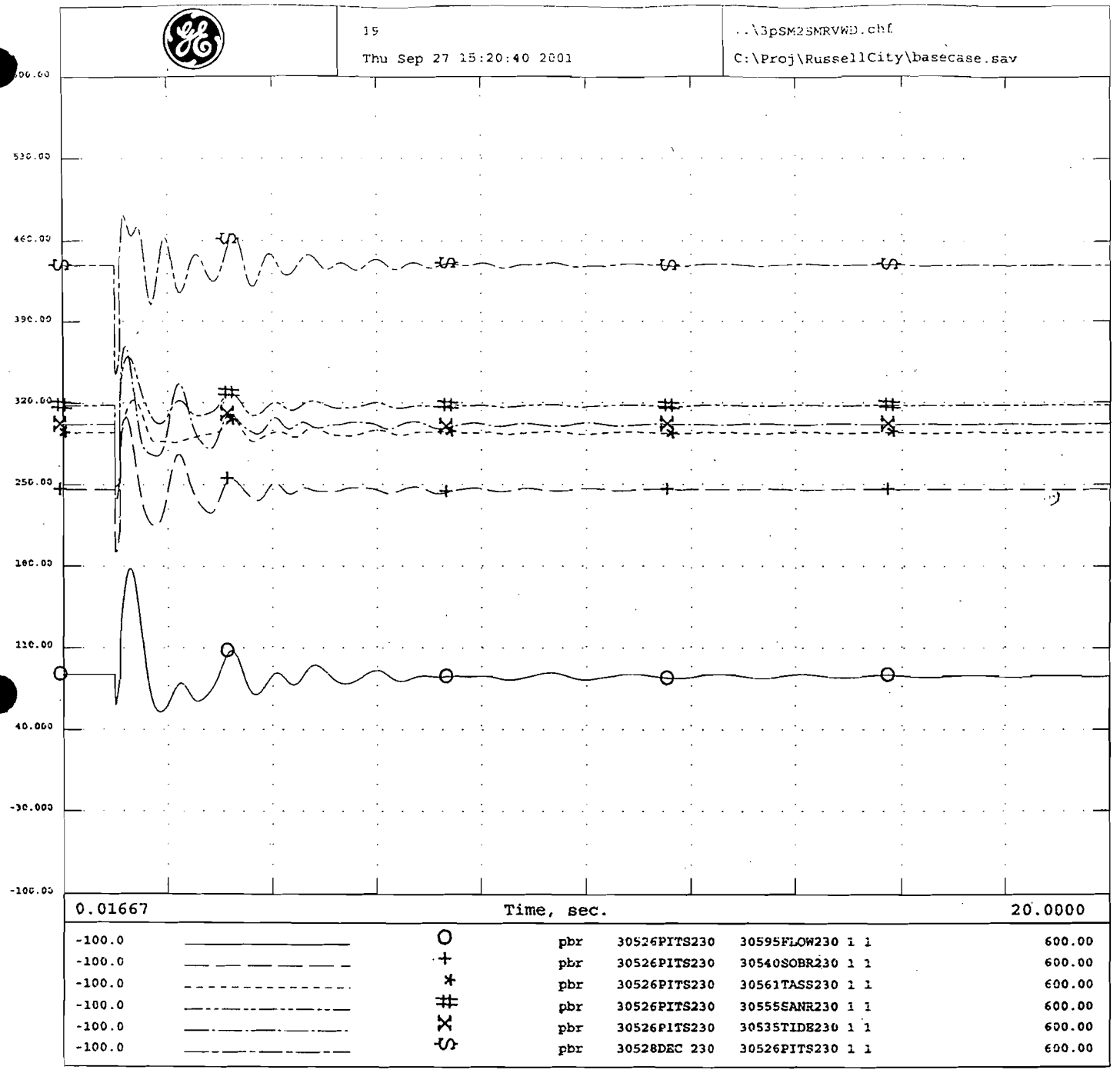
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

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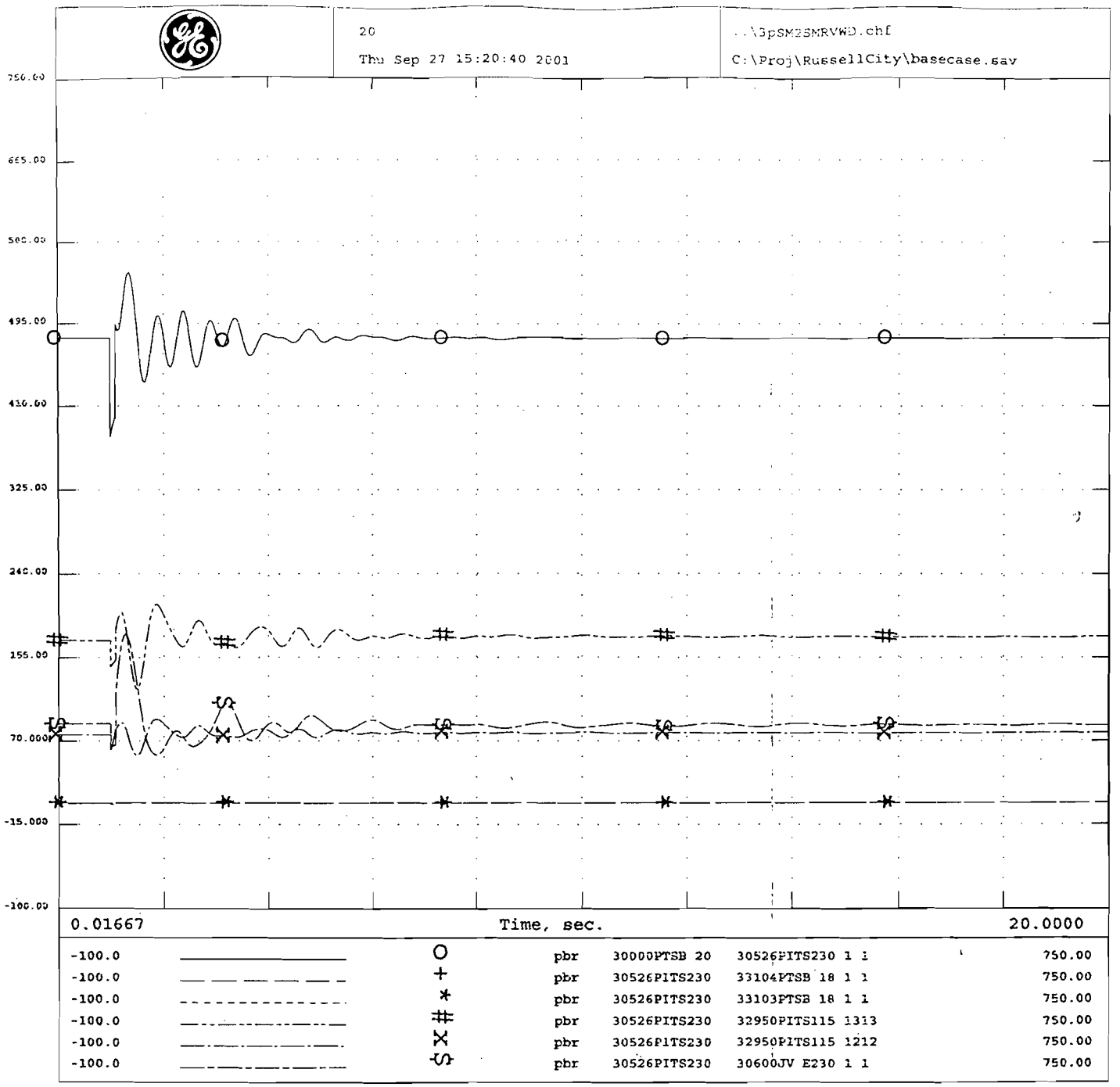
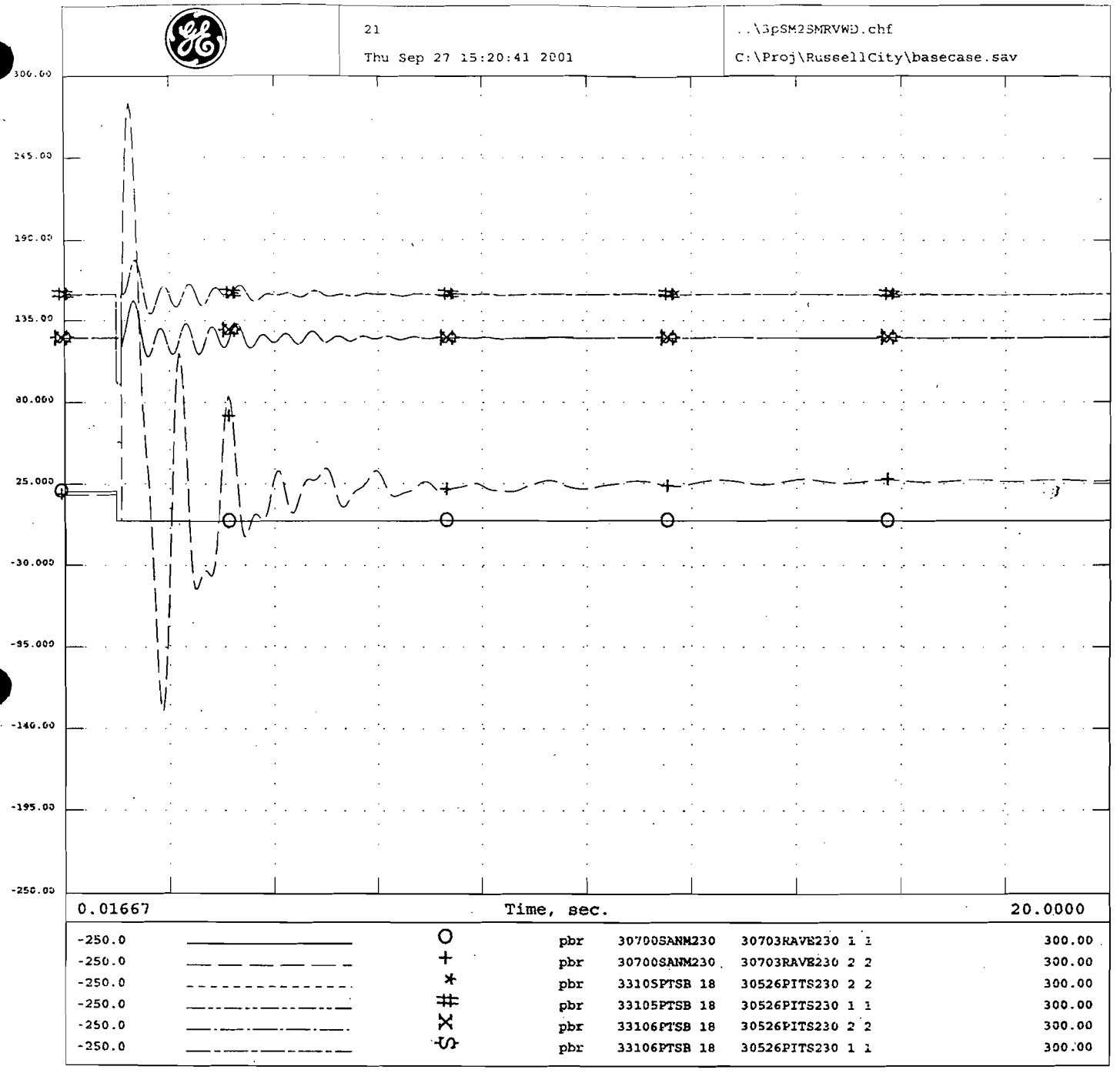
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



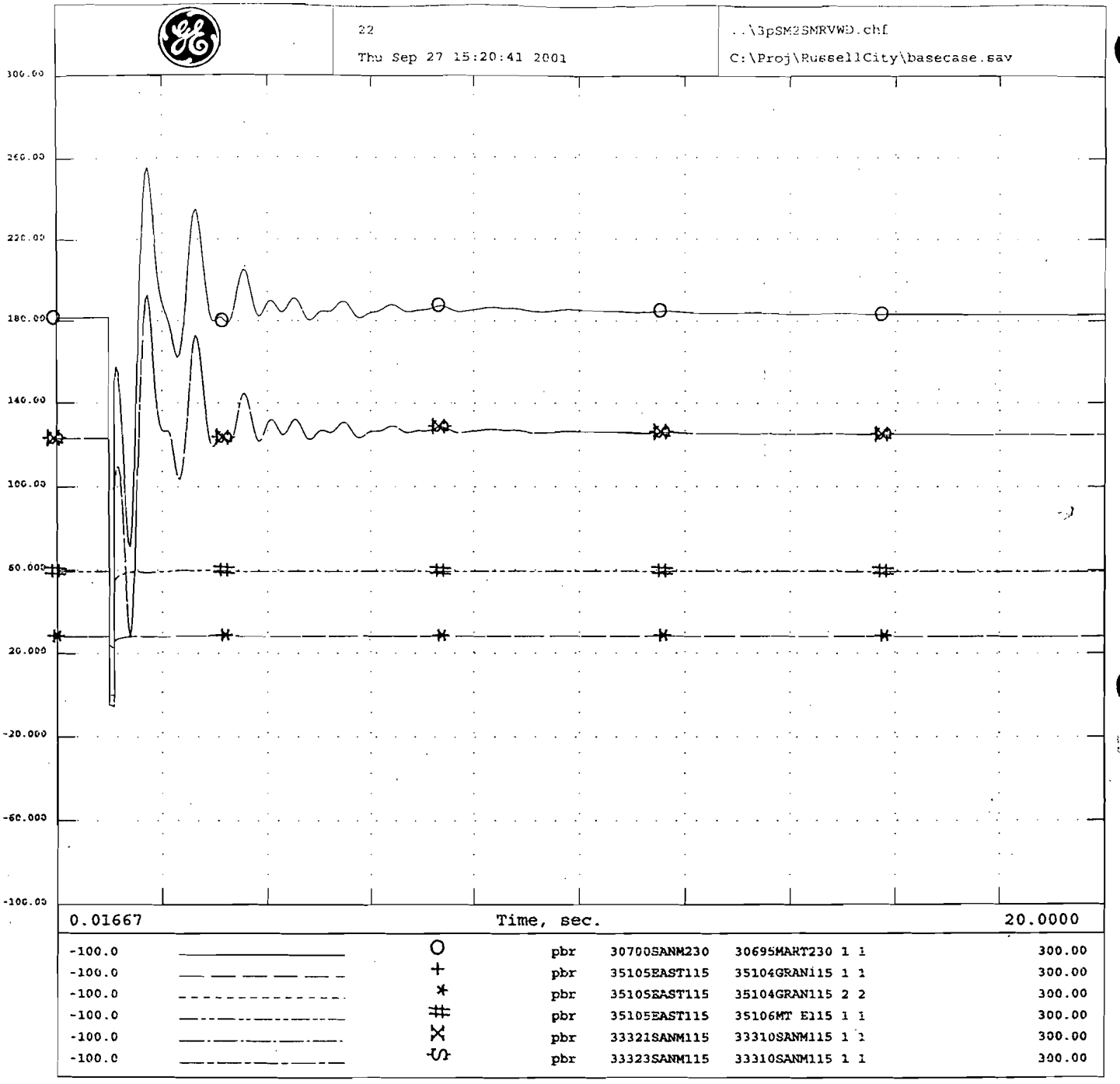
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



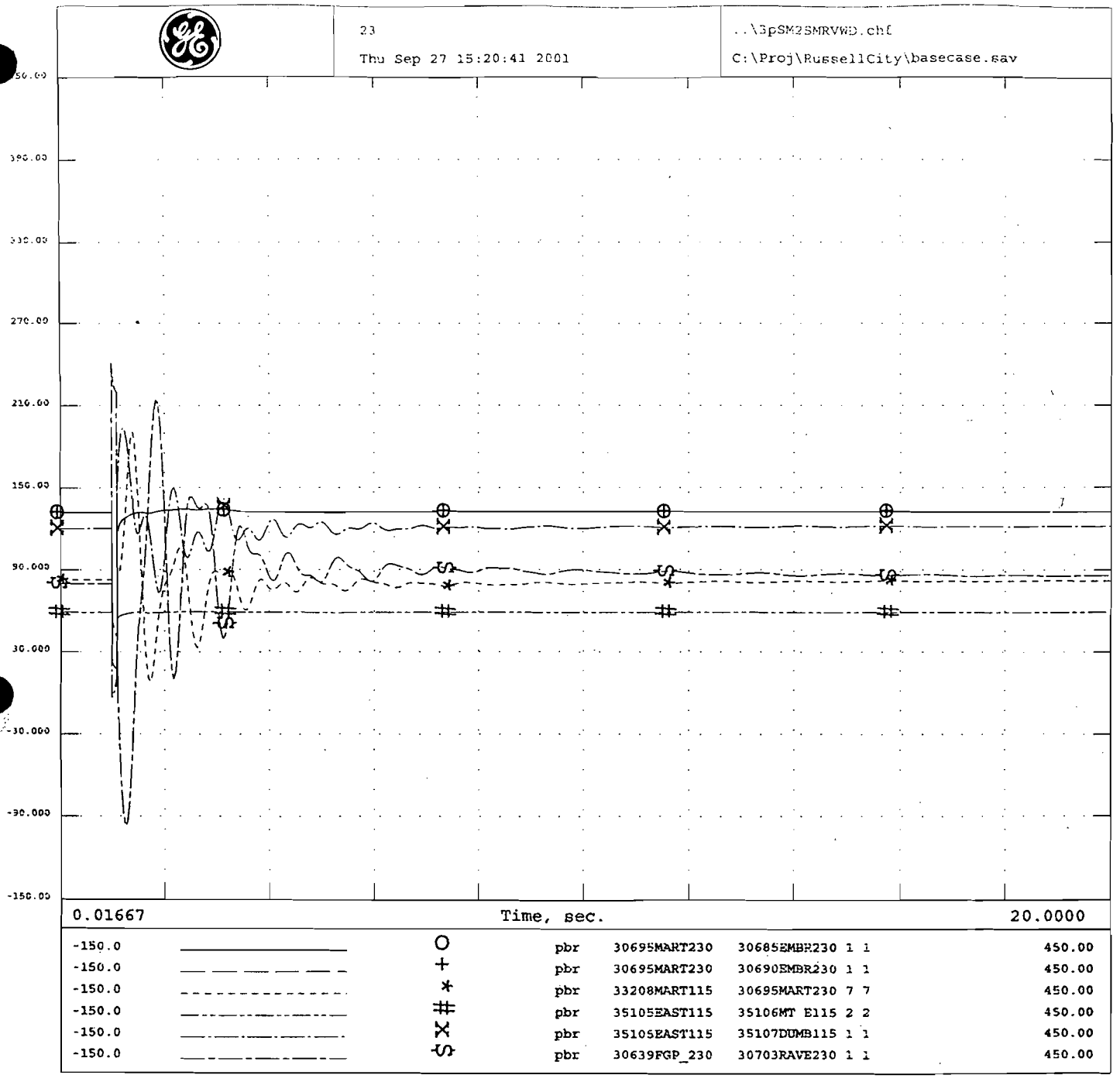
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



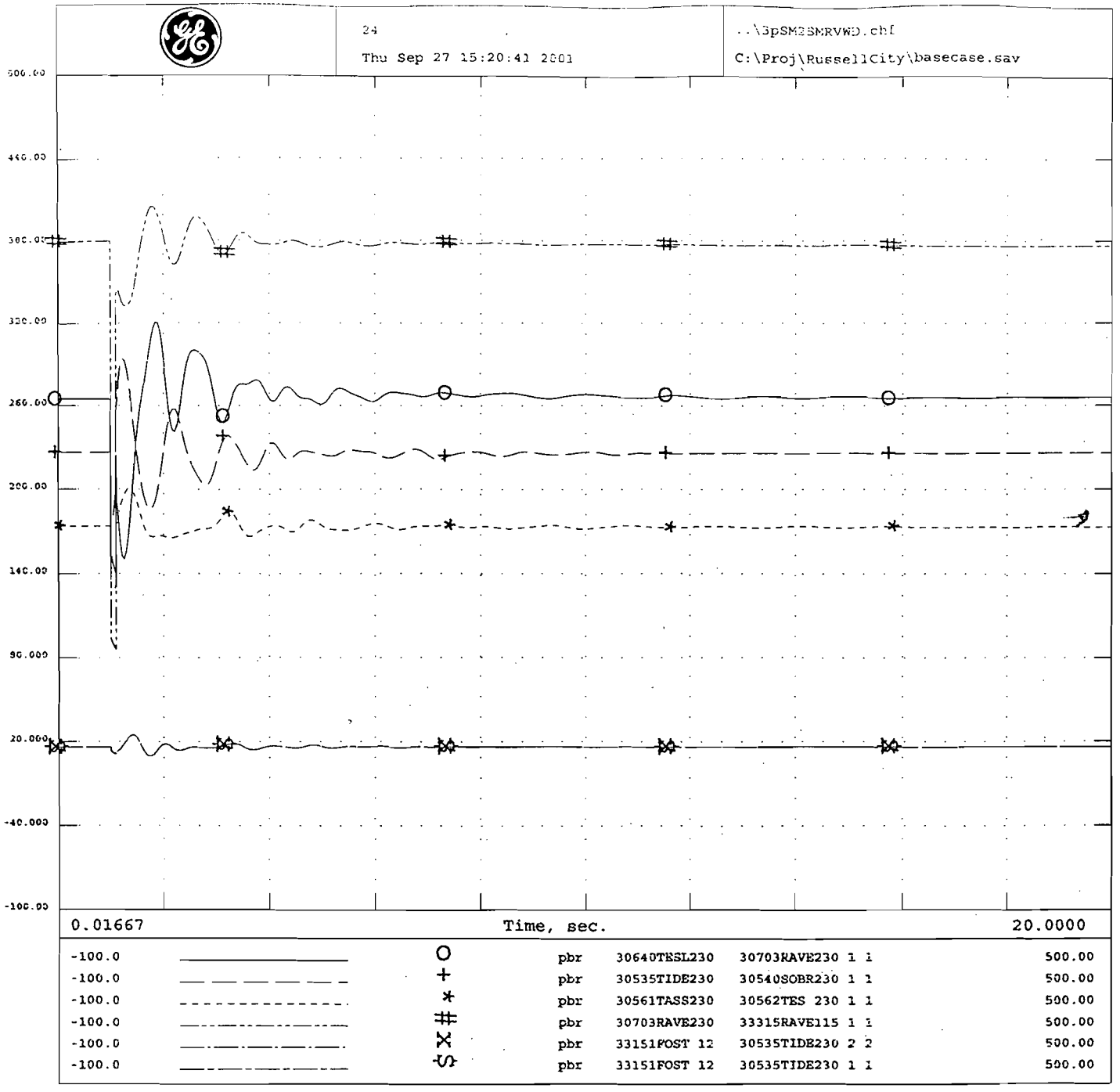
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



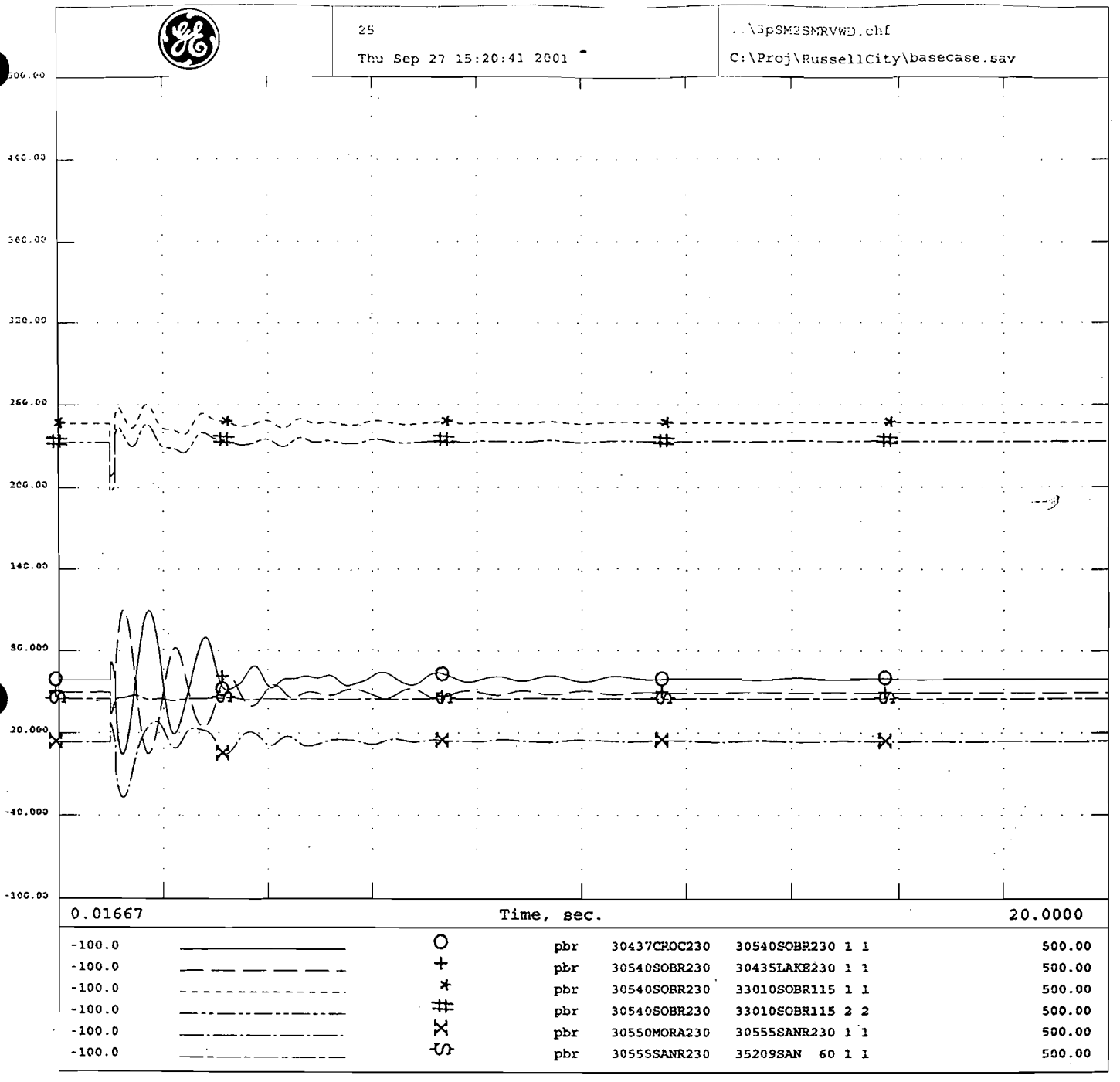
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



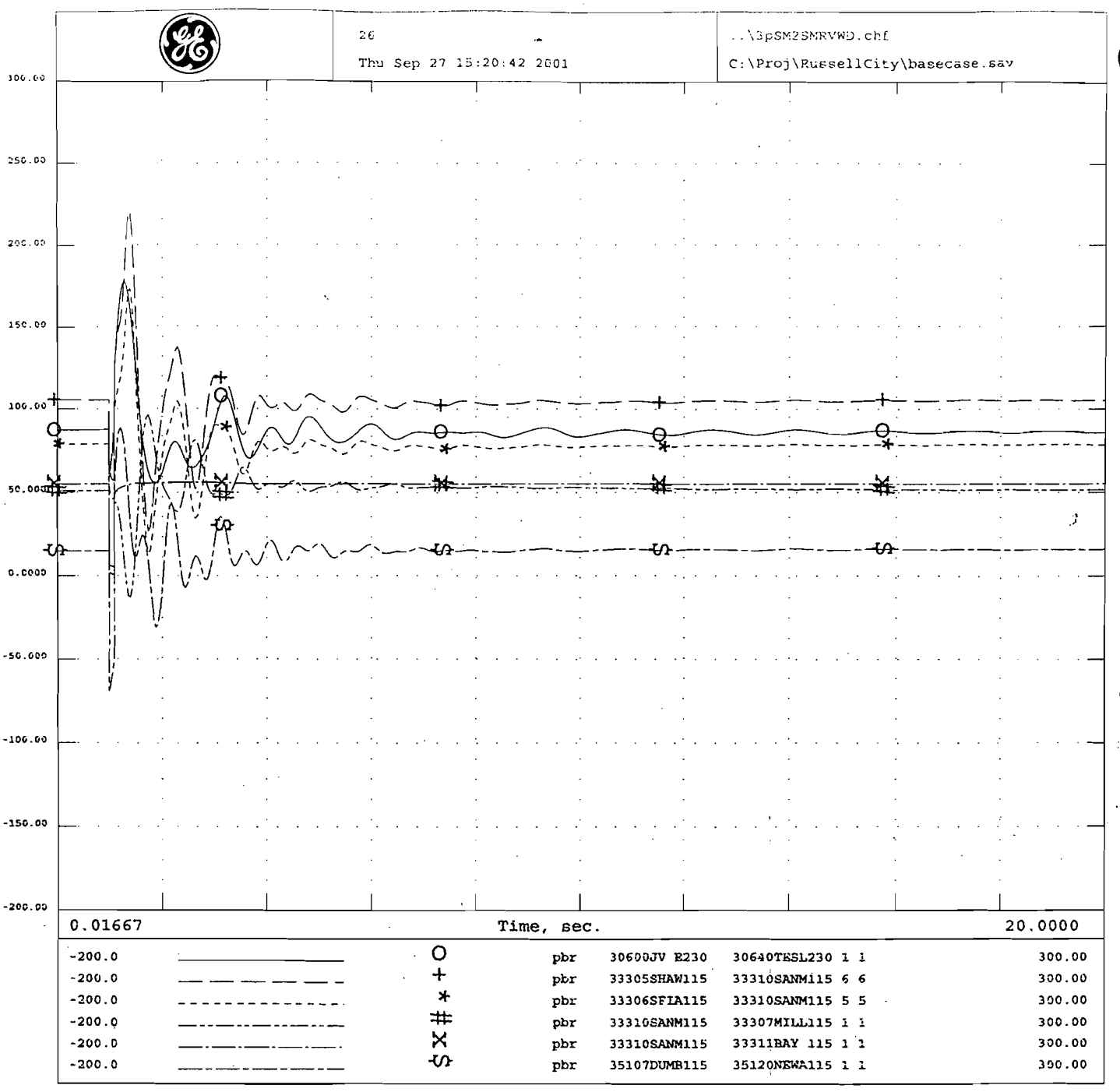
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



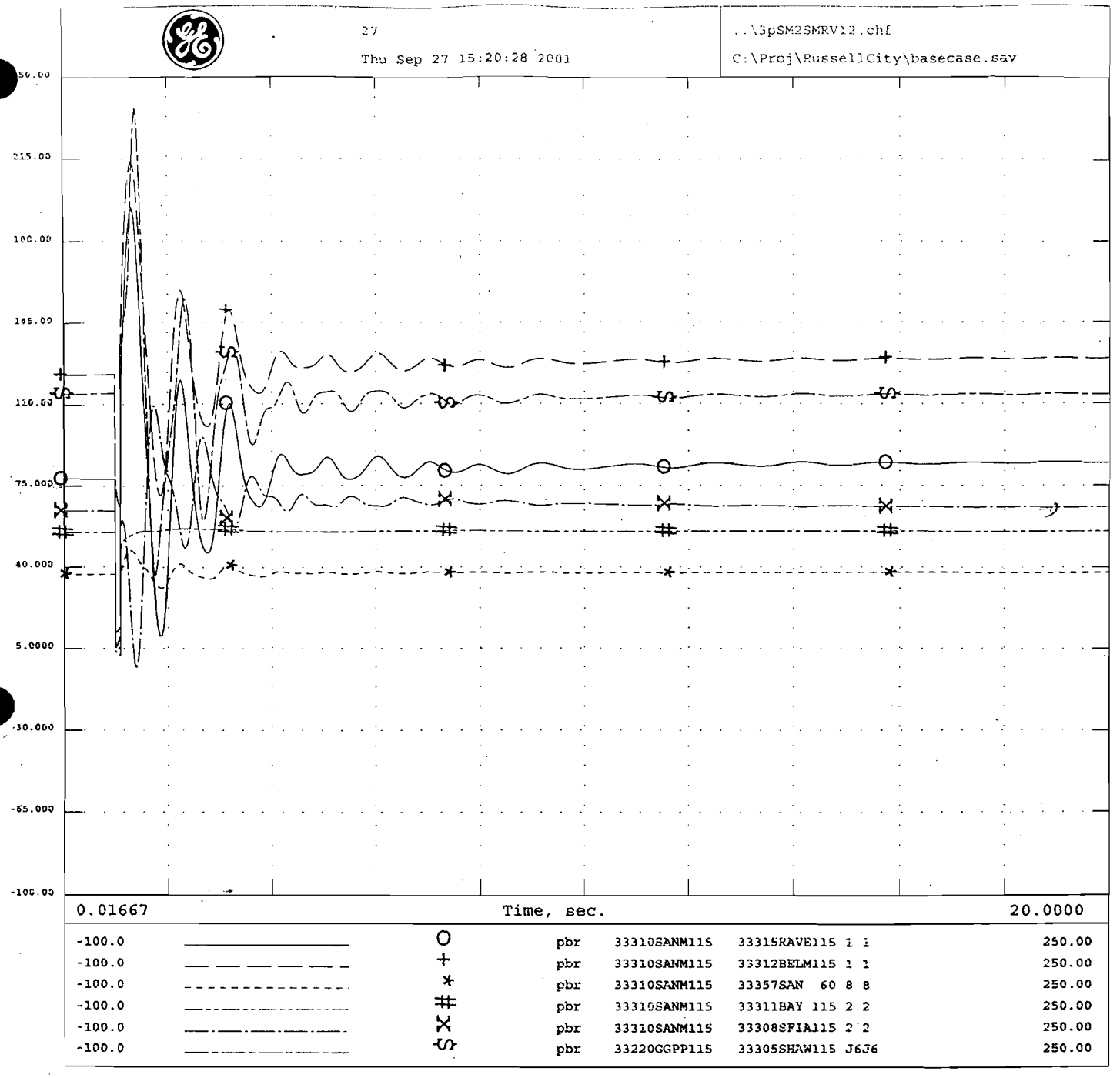
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1 2

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1,2 230kV double line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip both San Mateo-Ravenswood

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
San Mateo-Ravenswood #1 230kV line outage
3 phase 6 cycle fault at San Mateo 230kV bus and trip San Mateo-Ravenswood #1
230kV line
RUN  9
CC
CC   Fault San Mateo 230kV bus
FB   0.0 "SANMATEO" 230.
CC
CC   Clear fault at San Mateo 230kV bus
CFB  6.0 "SANMATEO" 230.
CC
CC   Trip the San Mateo-Ravenswood #1 230kV line
DL  6.0 "SANMATEO" 230.00 "RAVENSWD" 230.00 "1 "
CC
```

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 115kV Bus 1+2 outage
3 phase 6 cycle fault at East Shore 115kV bus and clear the East Shore 115kV
buses 1+2
RUN  9
CC
CC   Fault East Shore 115kV bus
FB   0.0 "EASTSHRE" 115.
CC
CC   Clear fault at East Shore 115kV bus
CFB  6.0 "EASTSHRE" 115.
CC
CC   Clear the East Shore 115kV bus
DL  6.0 "E. SHORE" 230.00 "EASTSHRE" 115.00 "1 "
DL  6.0 "E. SHORE" 230.00 "EASTSHRE" 115.00 "2 "
DL  6.0 "EASTSHRE" 115.00 "GRANT   " 115.00 "2 "
DL  6.0 "EASTSHRE" 115.00 "GRANT   " 115.00 "1 "
MBL  6.0 "GRANT   "115.00 "1 " D
MBL  6.0 "GRANT   "115.00 "2 " D
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DL  6.0 "EASTSHRE" 115.00 "MT EDEN " 115.00 "2 "
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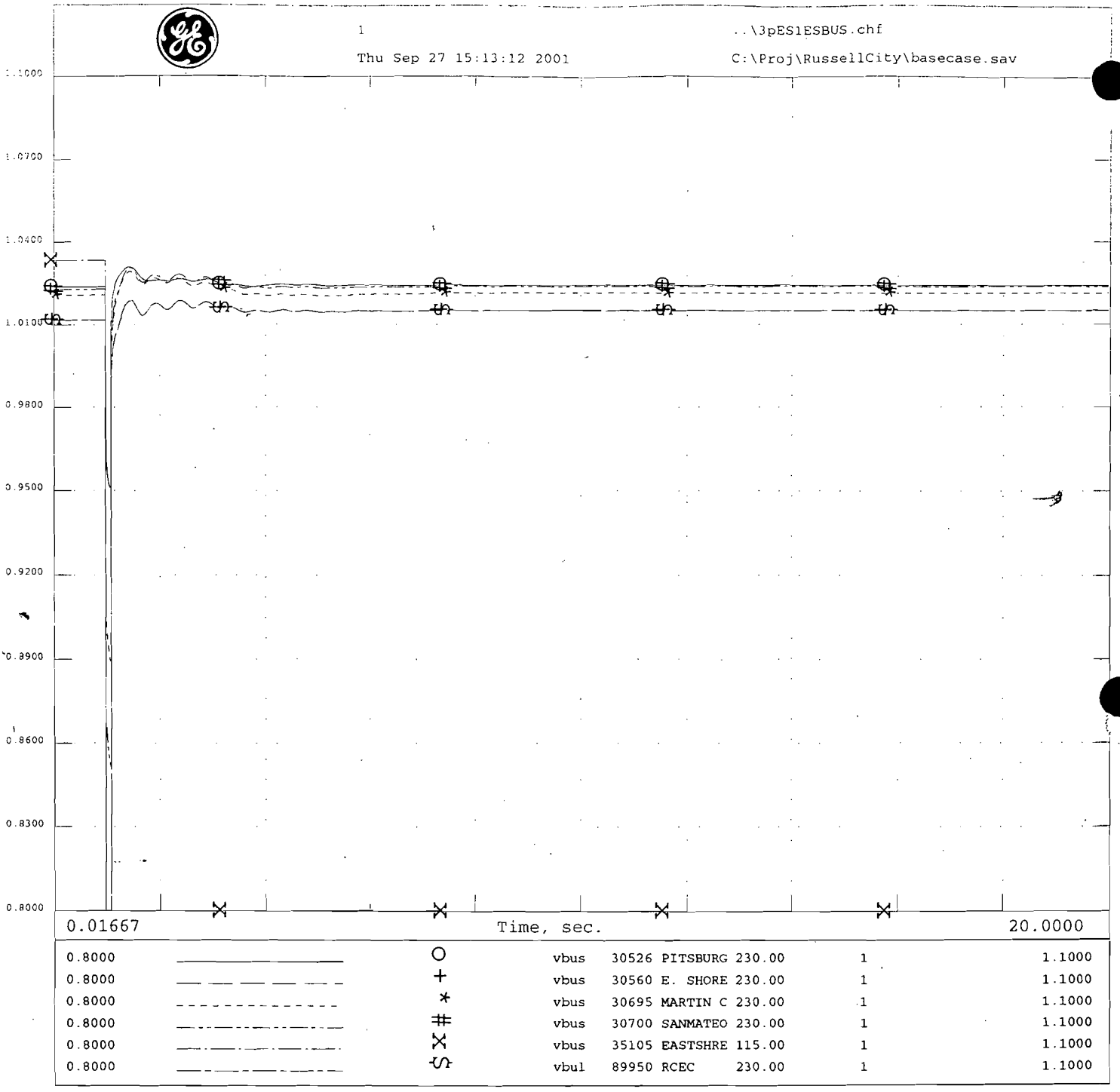
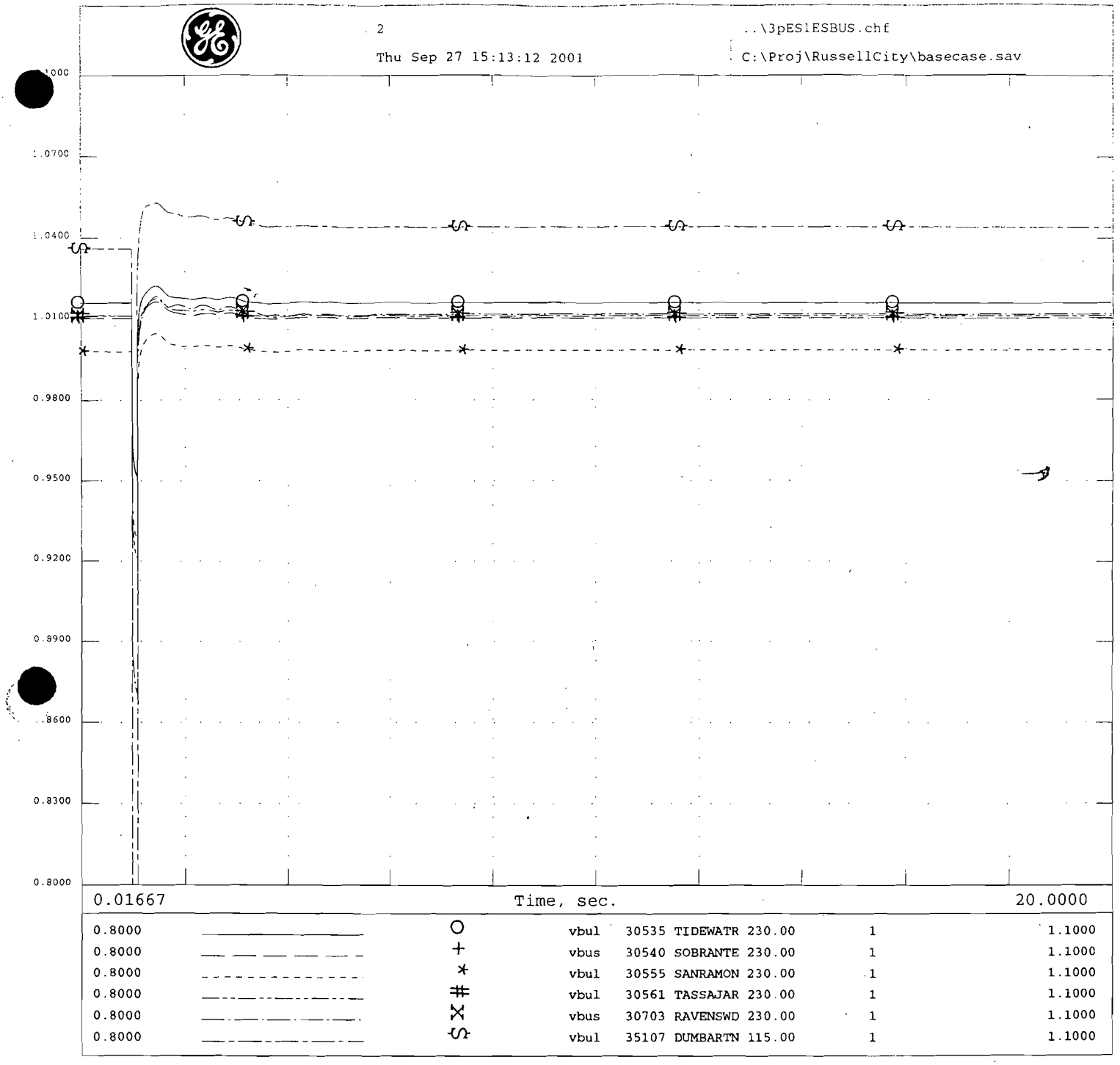


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 115kV Bus 1+2 outage
3 phase 6 cycle fault at East Shore 115kV bus and clear the East Shore 115kV bu

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 115kV Bus 1+2 outage
3 phase 6 cycle fault at East Shore 115kV bus and clear the East Shore 115kV bu

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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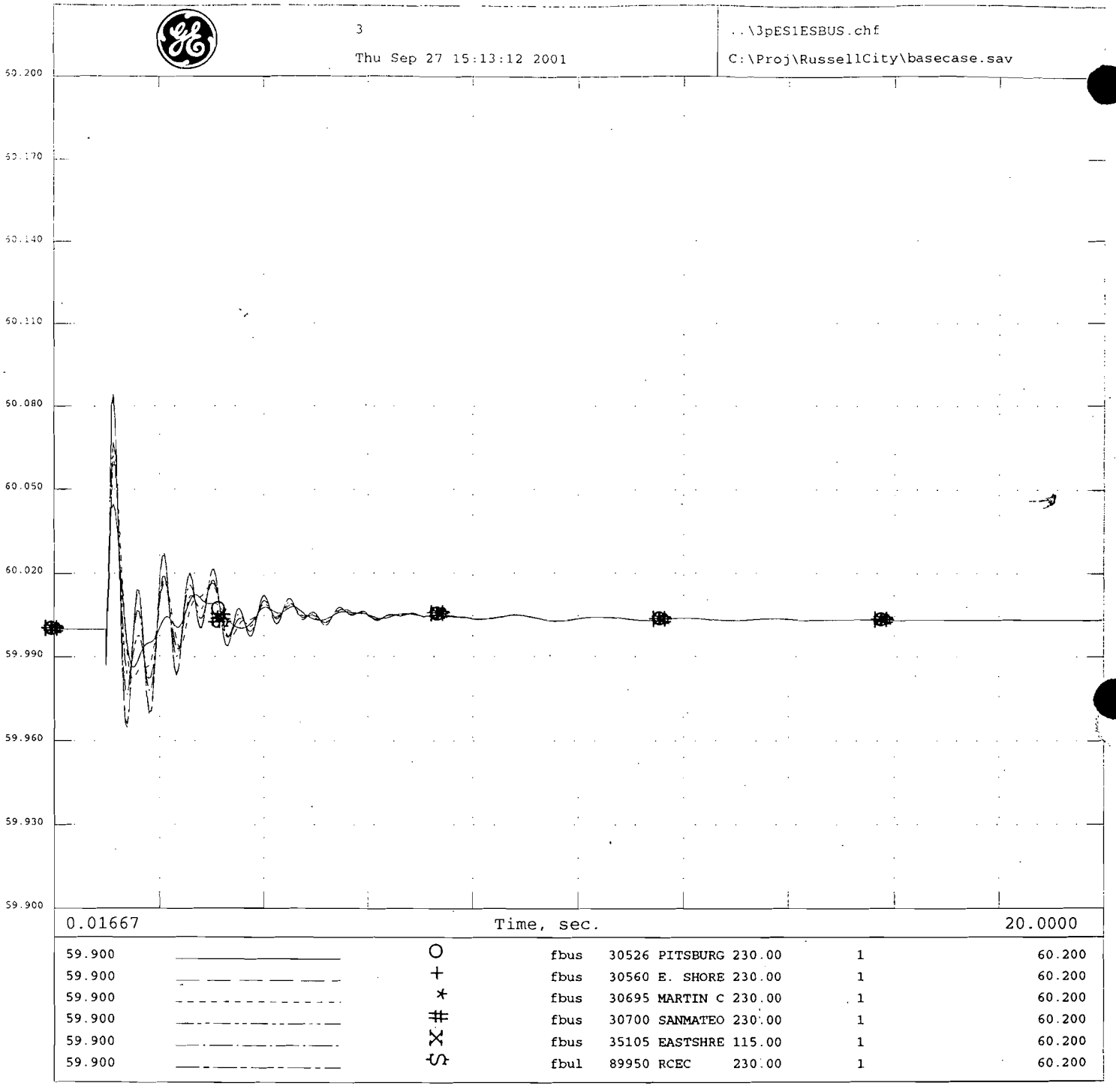
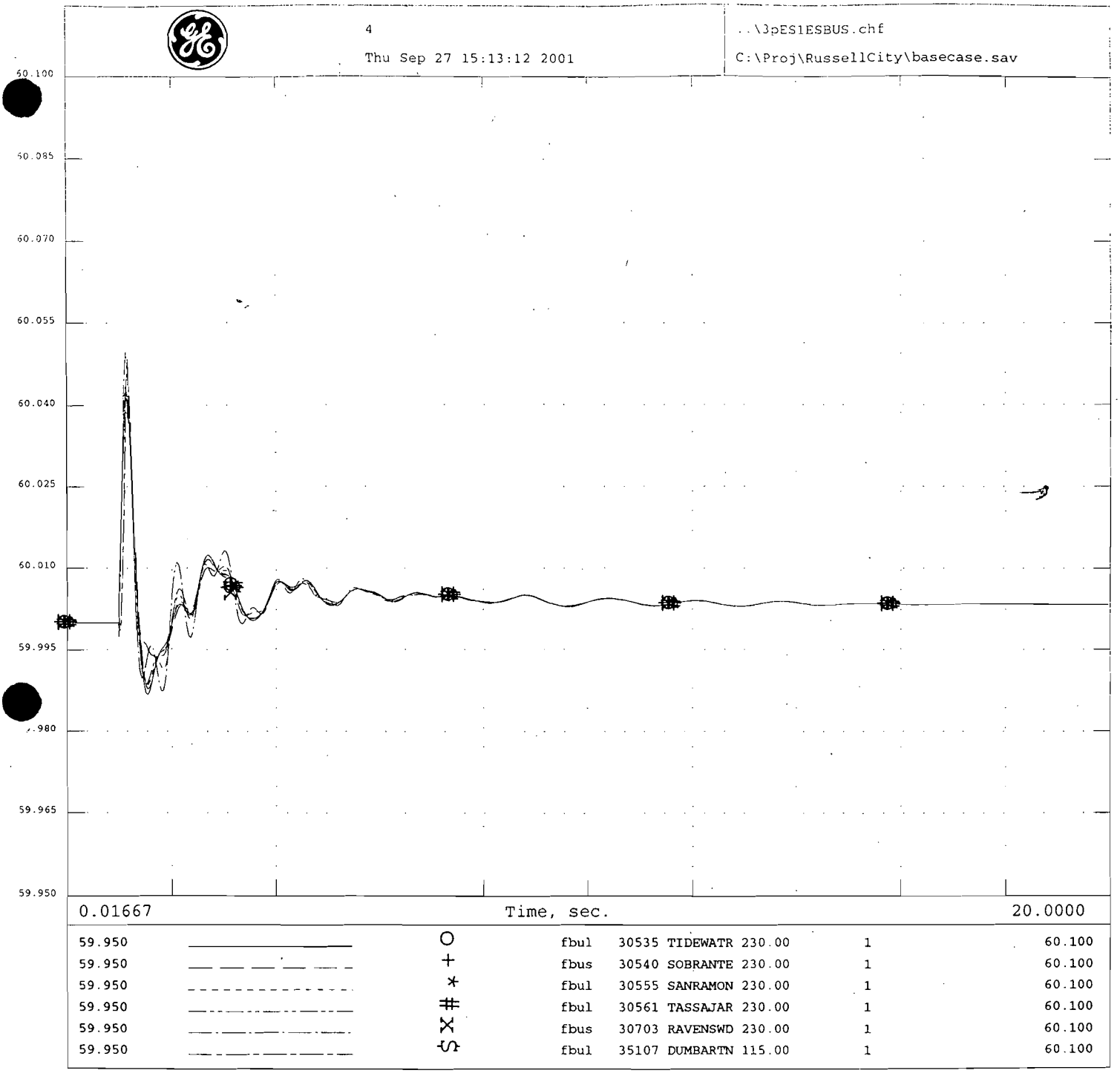


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 115kV Bus 1+2 outage
3 phase 6 cycle fault at East Shore 115kV bus and clear the East Shore 115kV bu

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 115kV Bus 1+2 outage
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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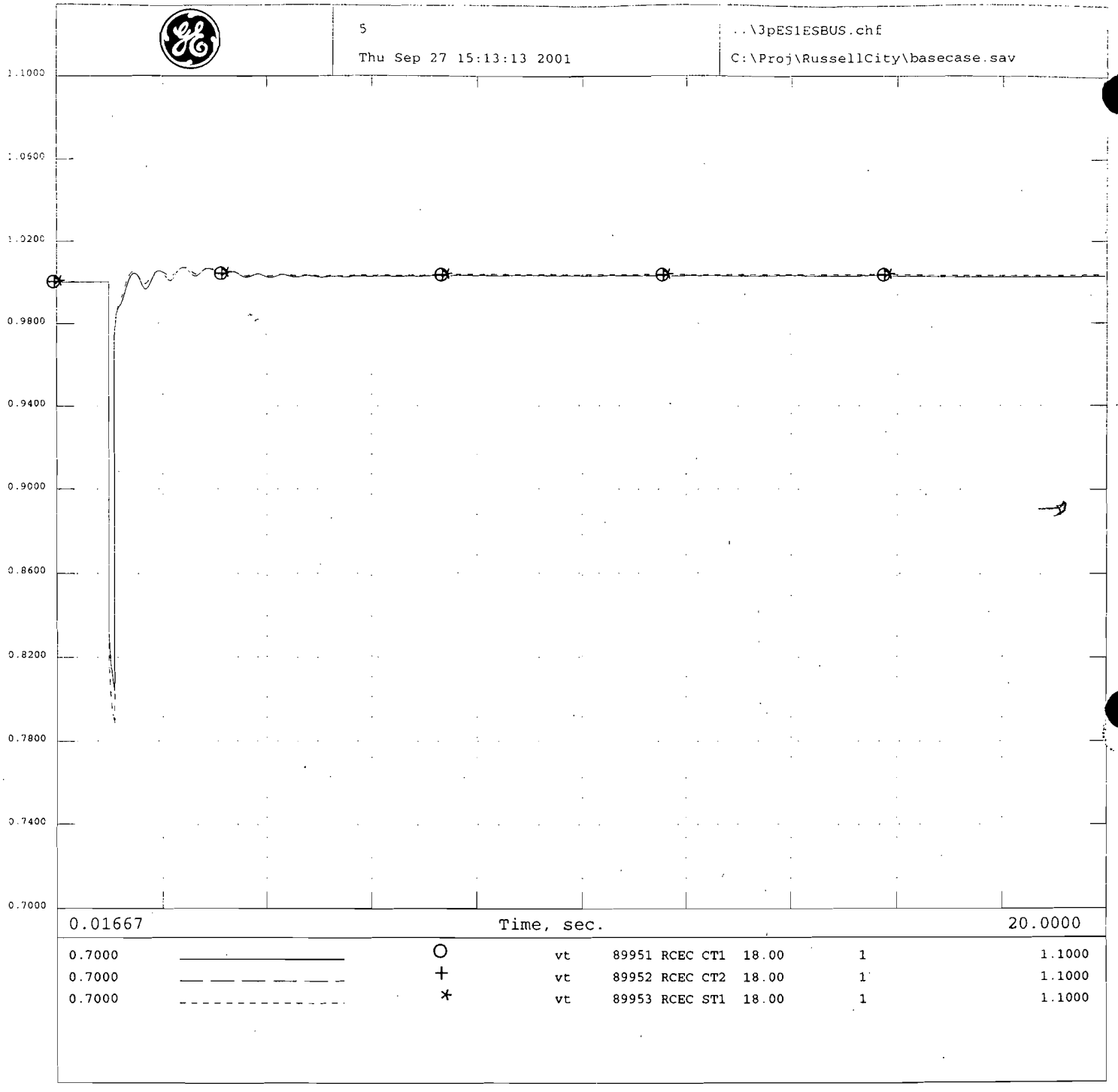

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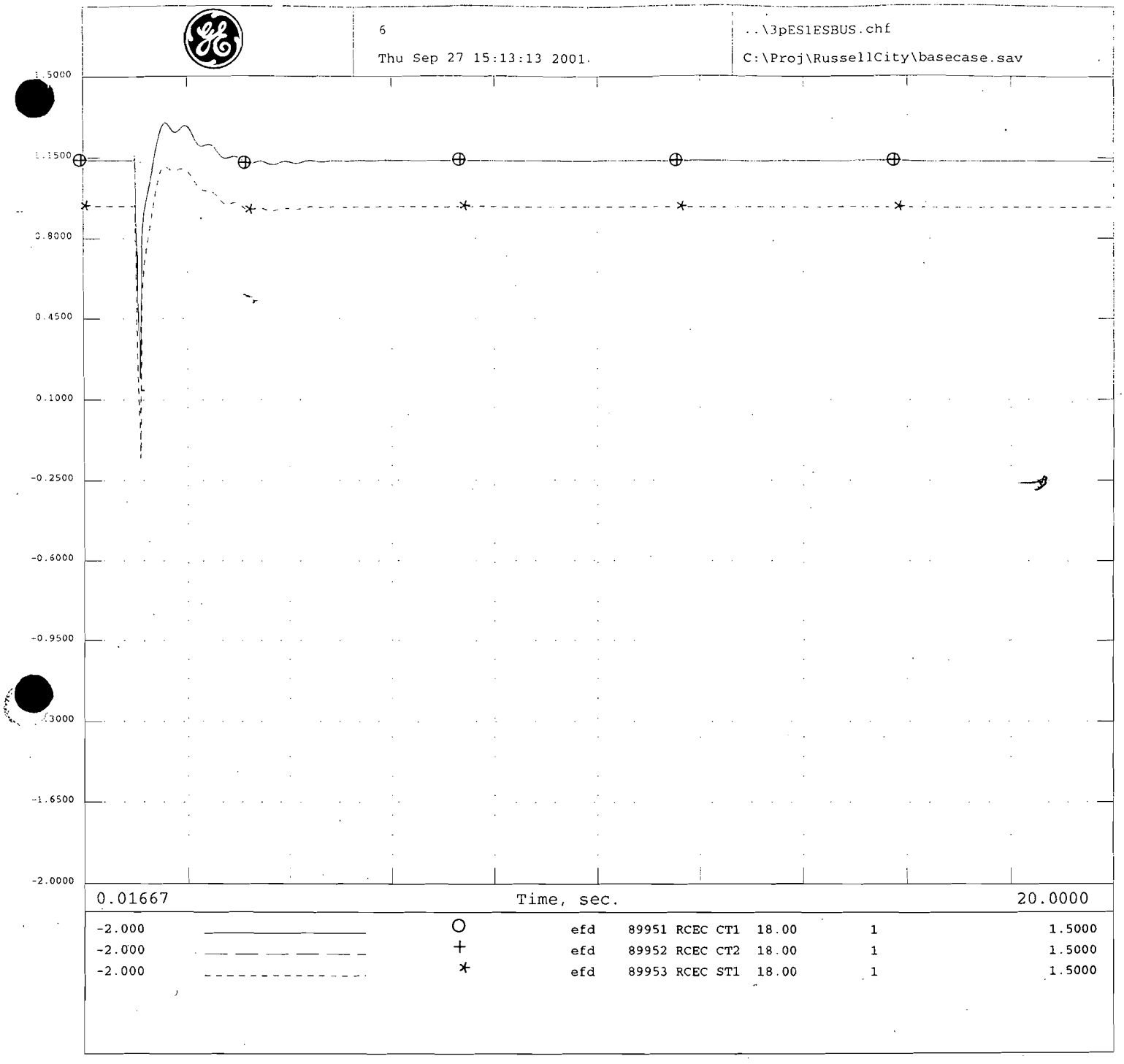
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 115kV Bus 1+2 outage
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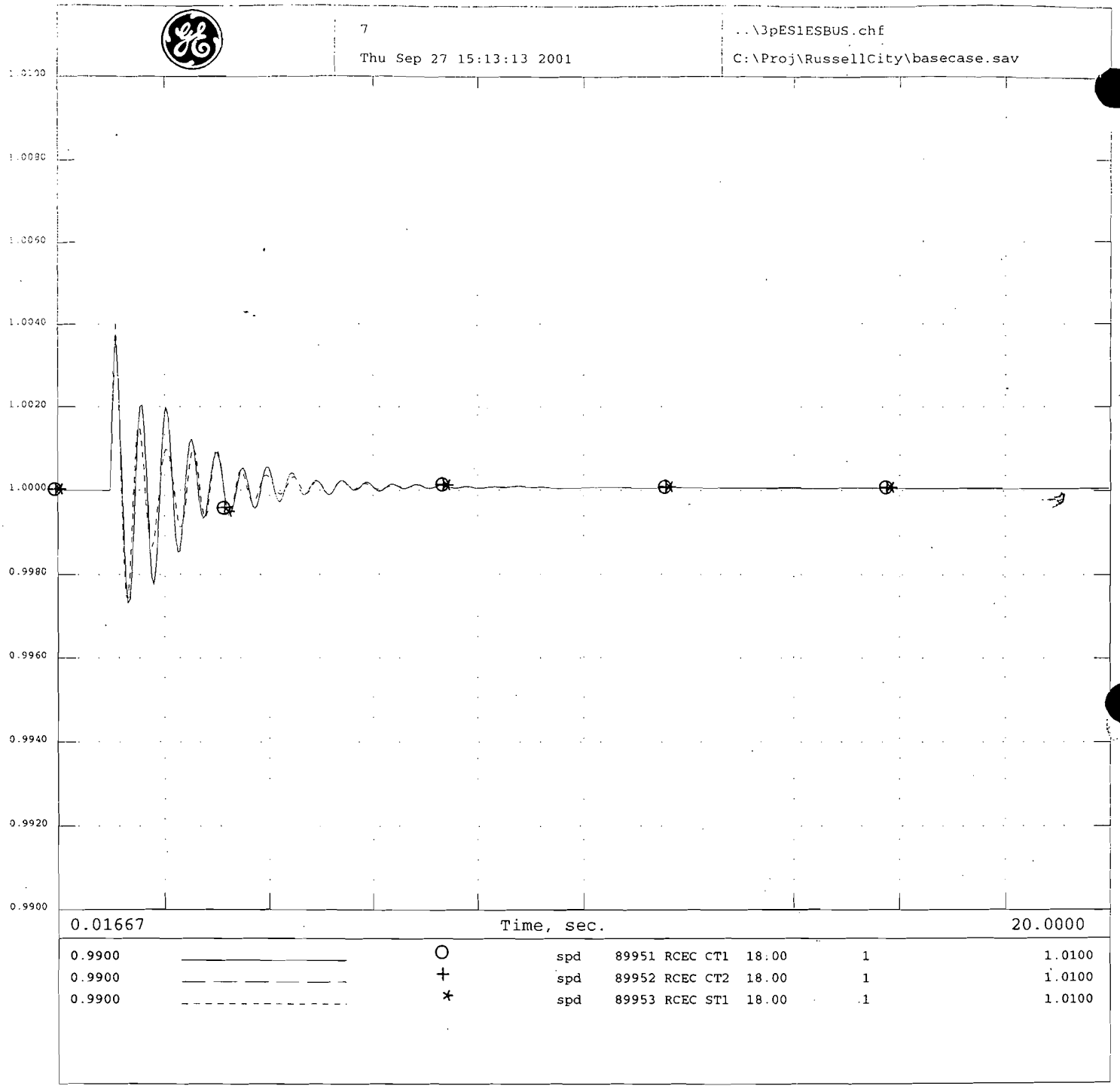
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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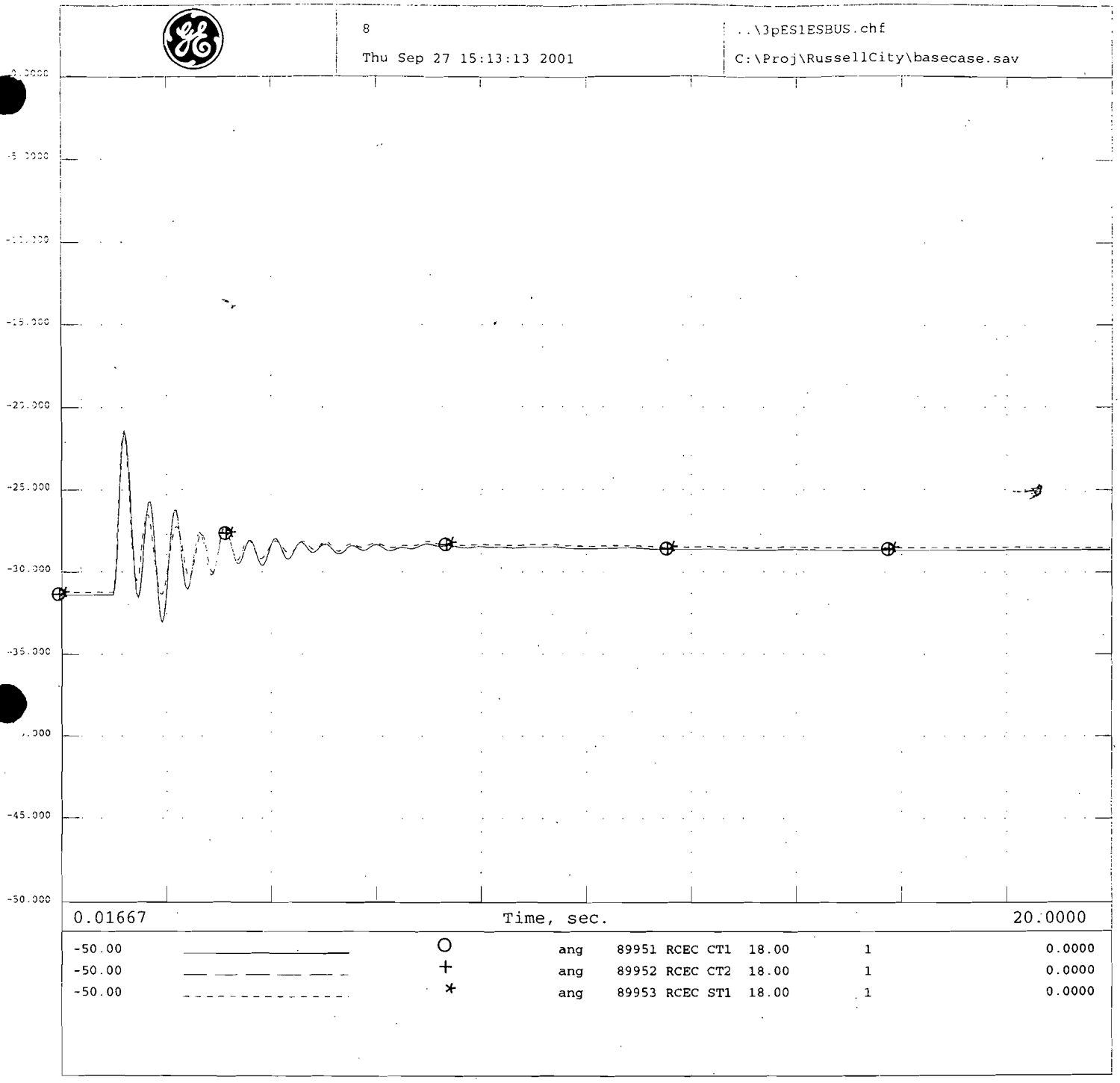

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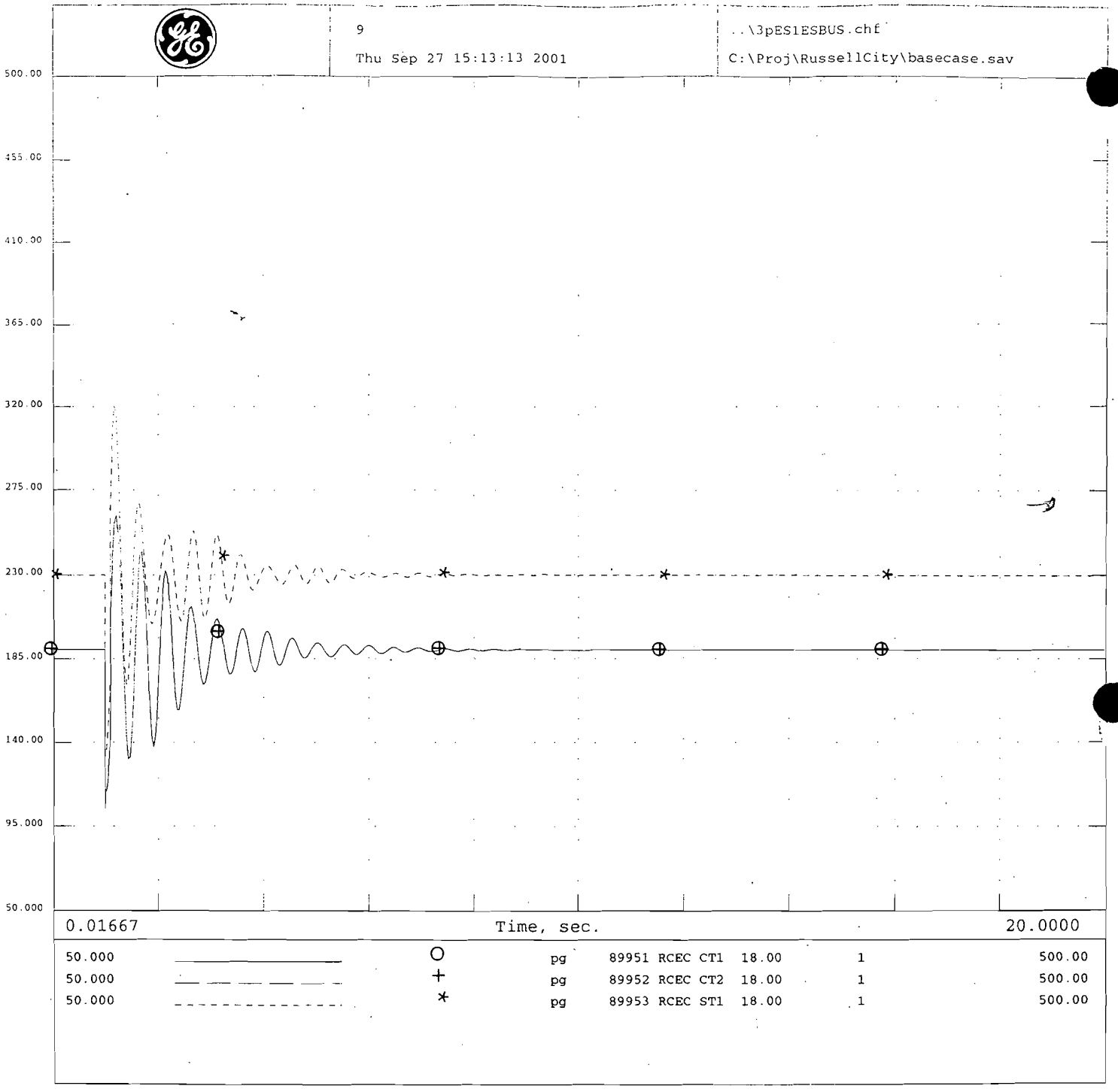
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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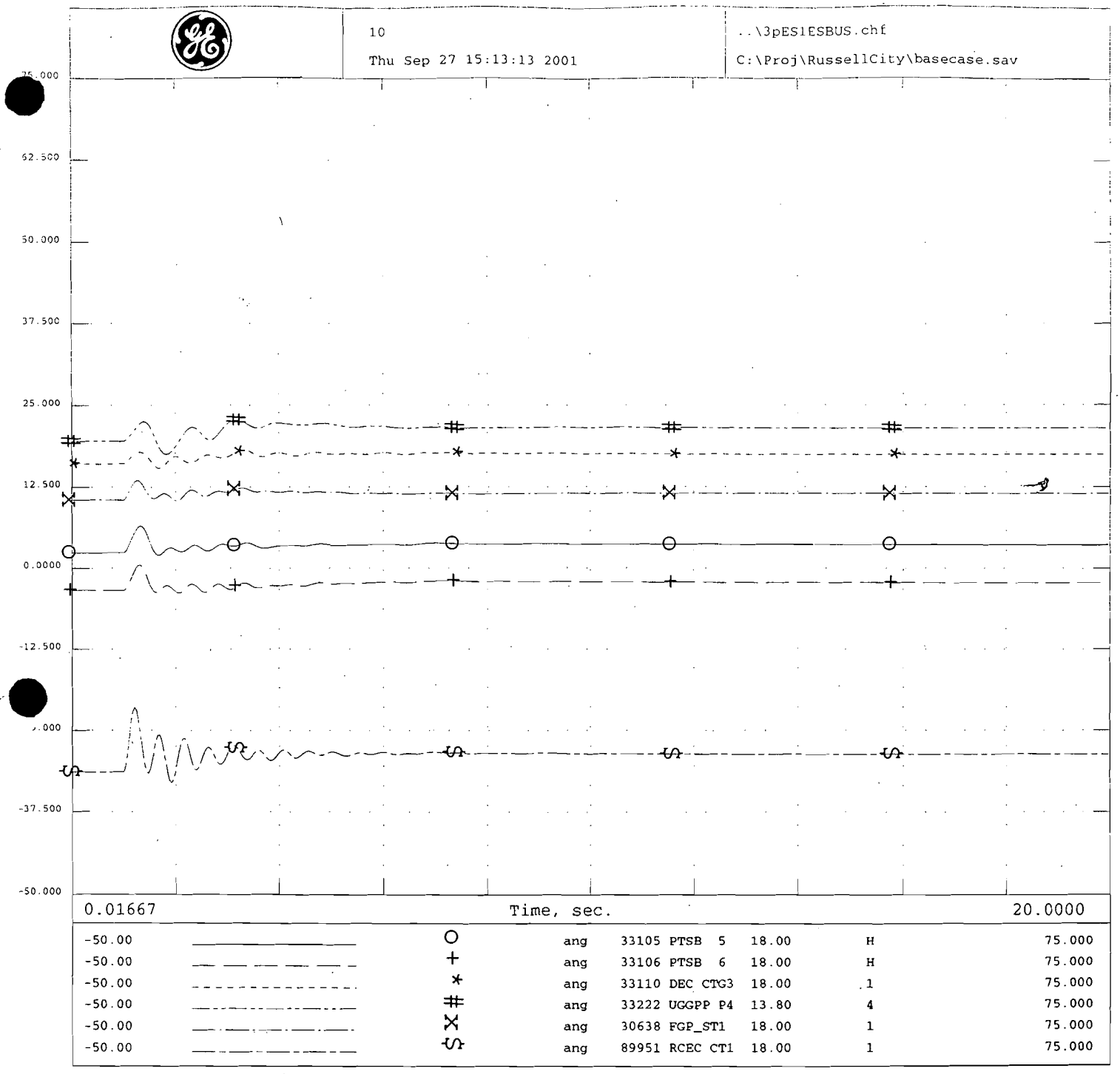

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Calpine/Bechtel Joint Development
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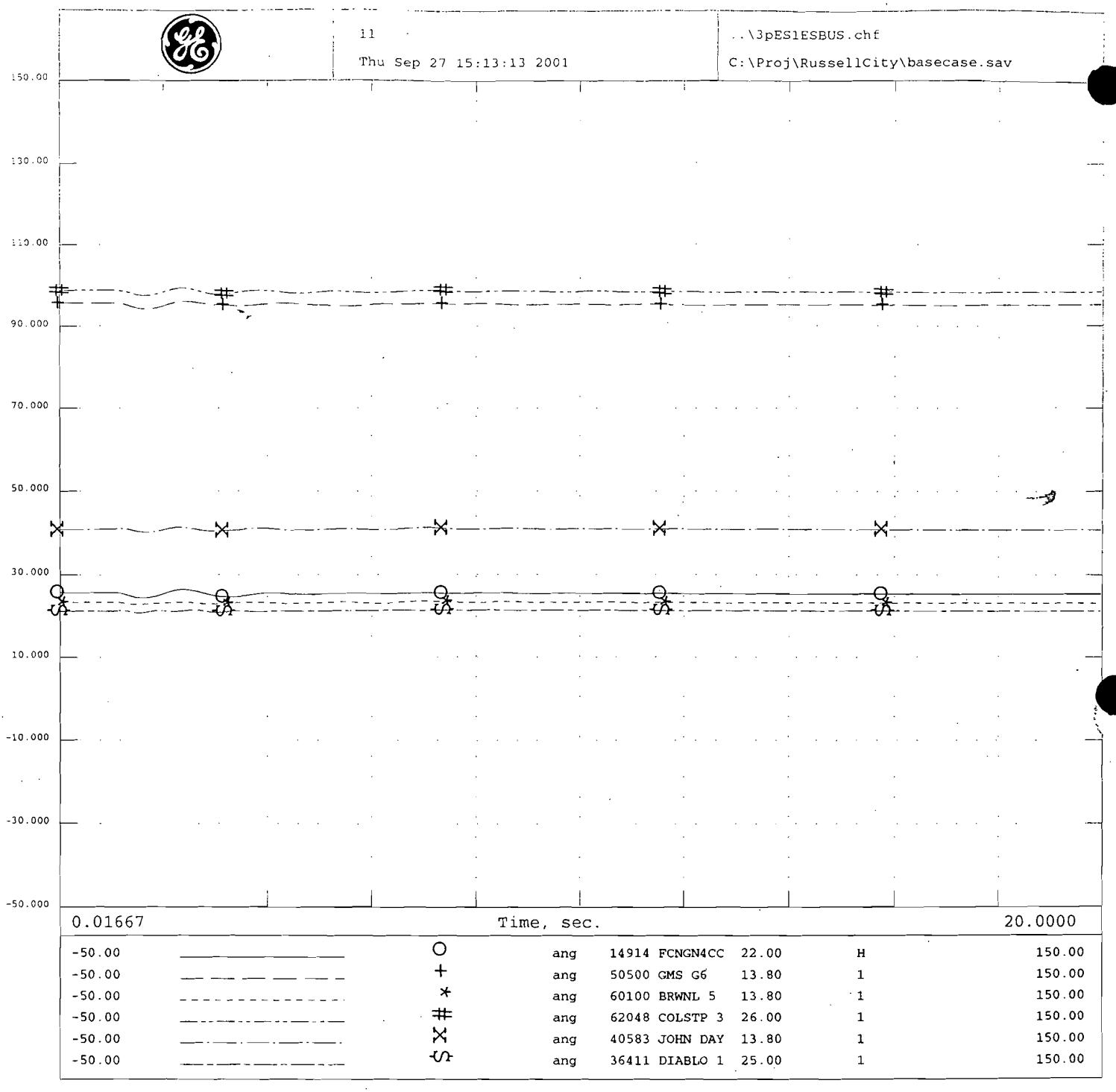

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Calpine/Bechtel Joint Development
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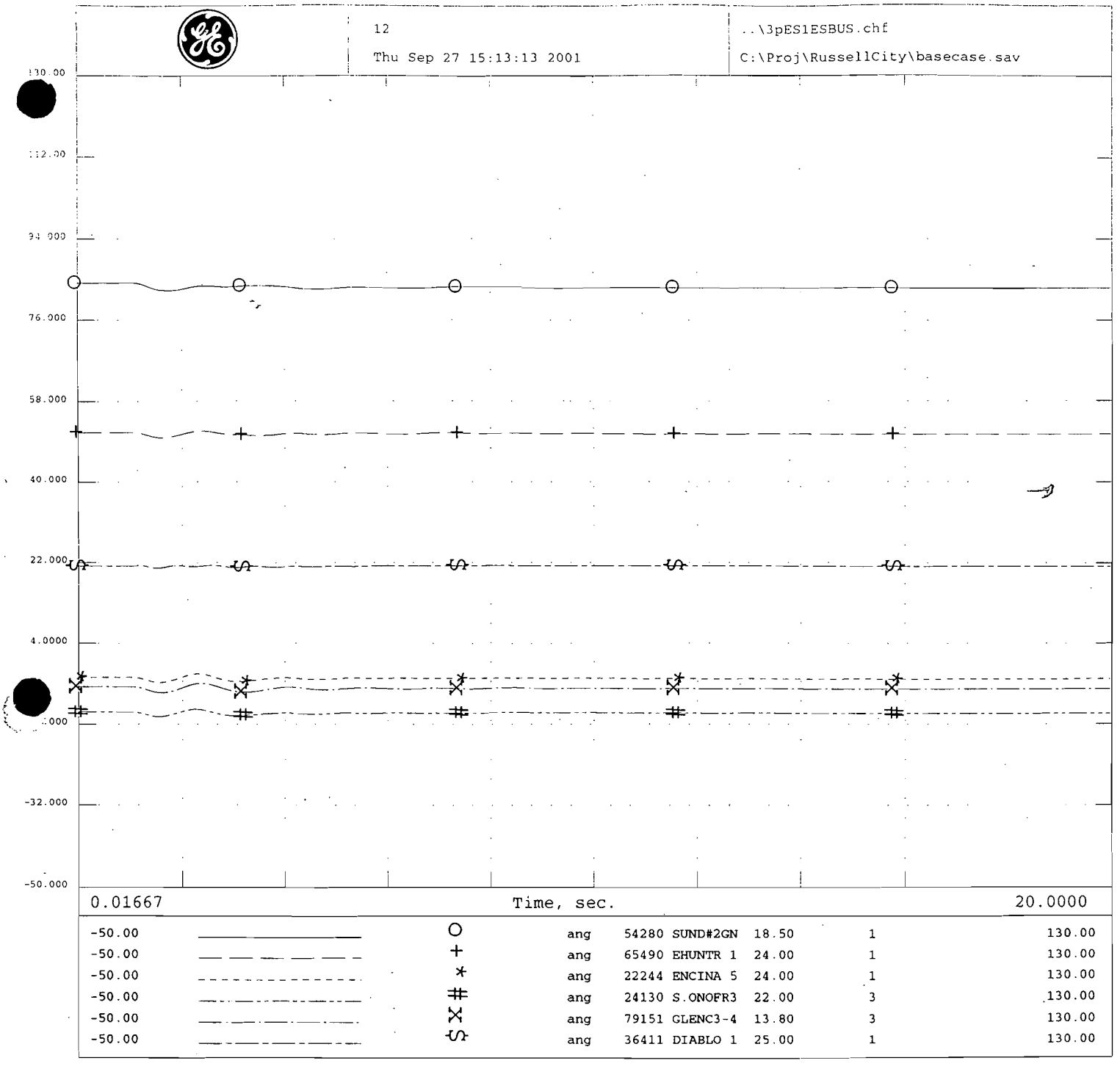

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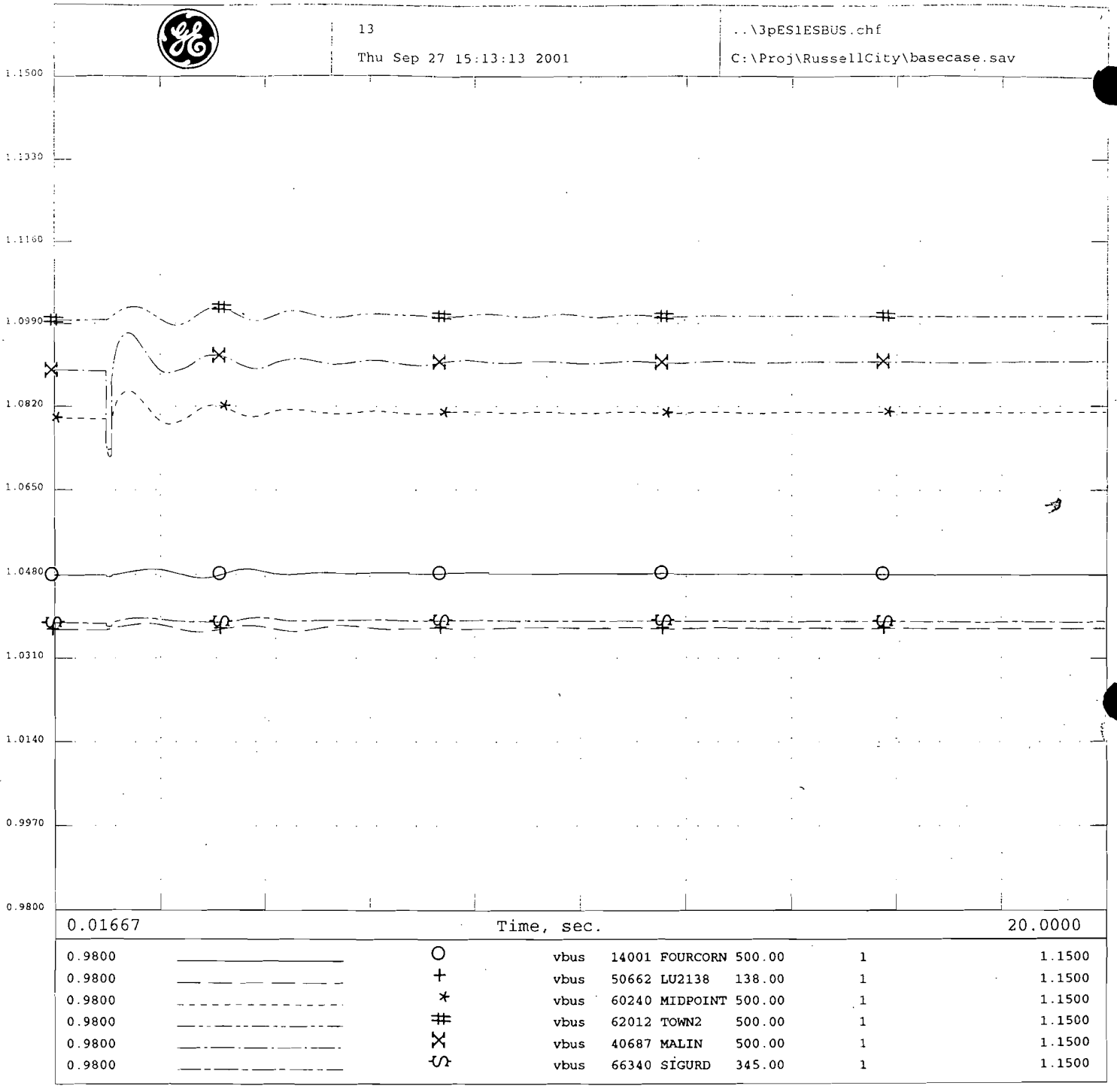

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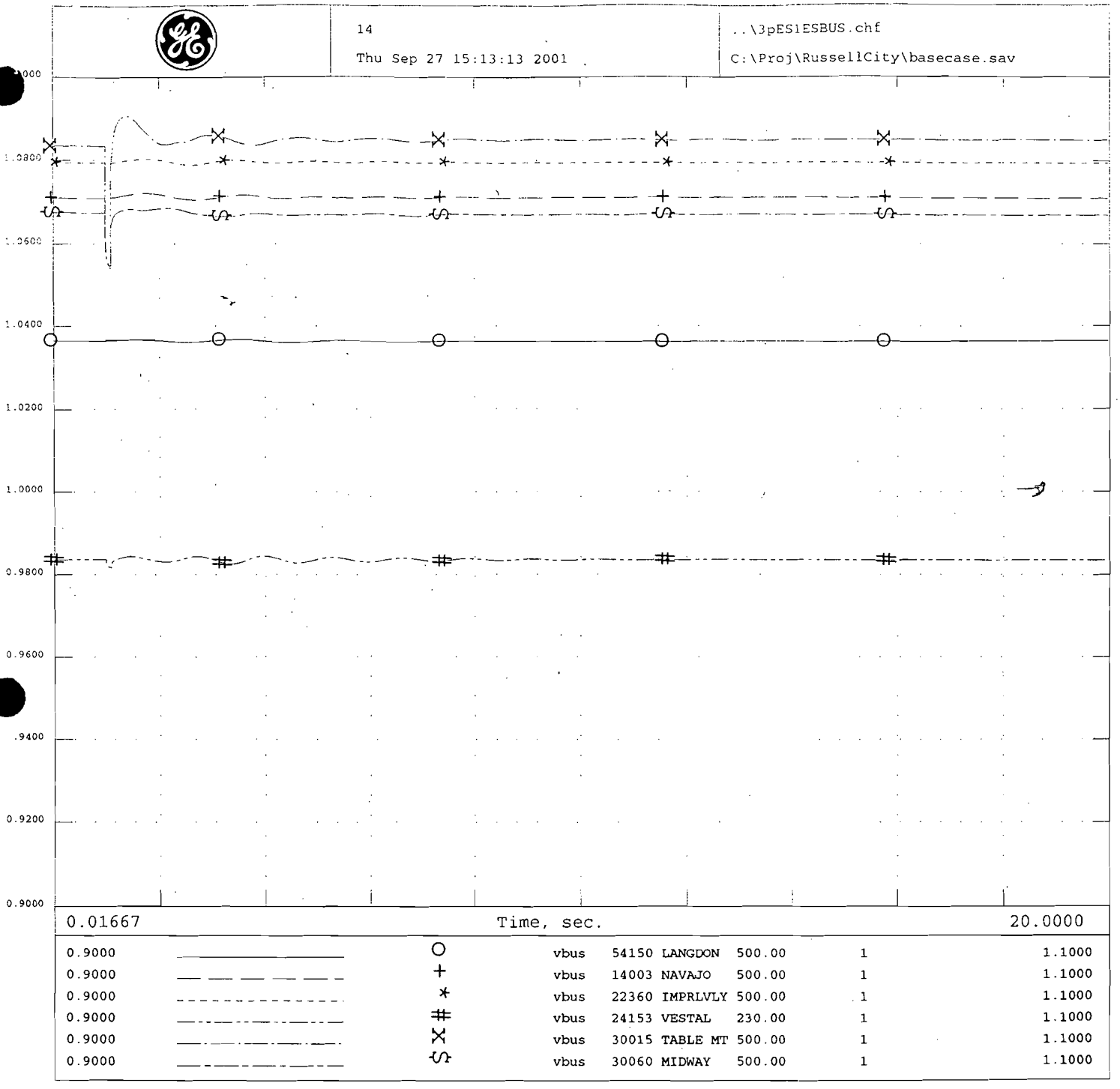

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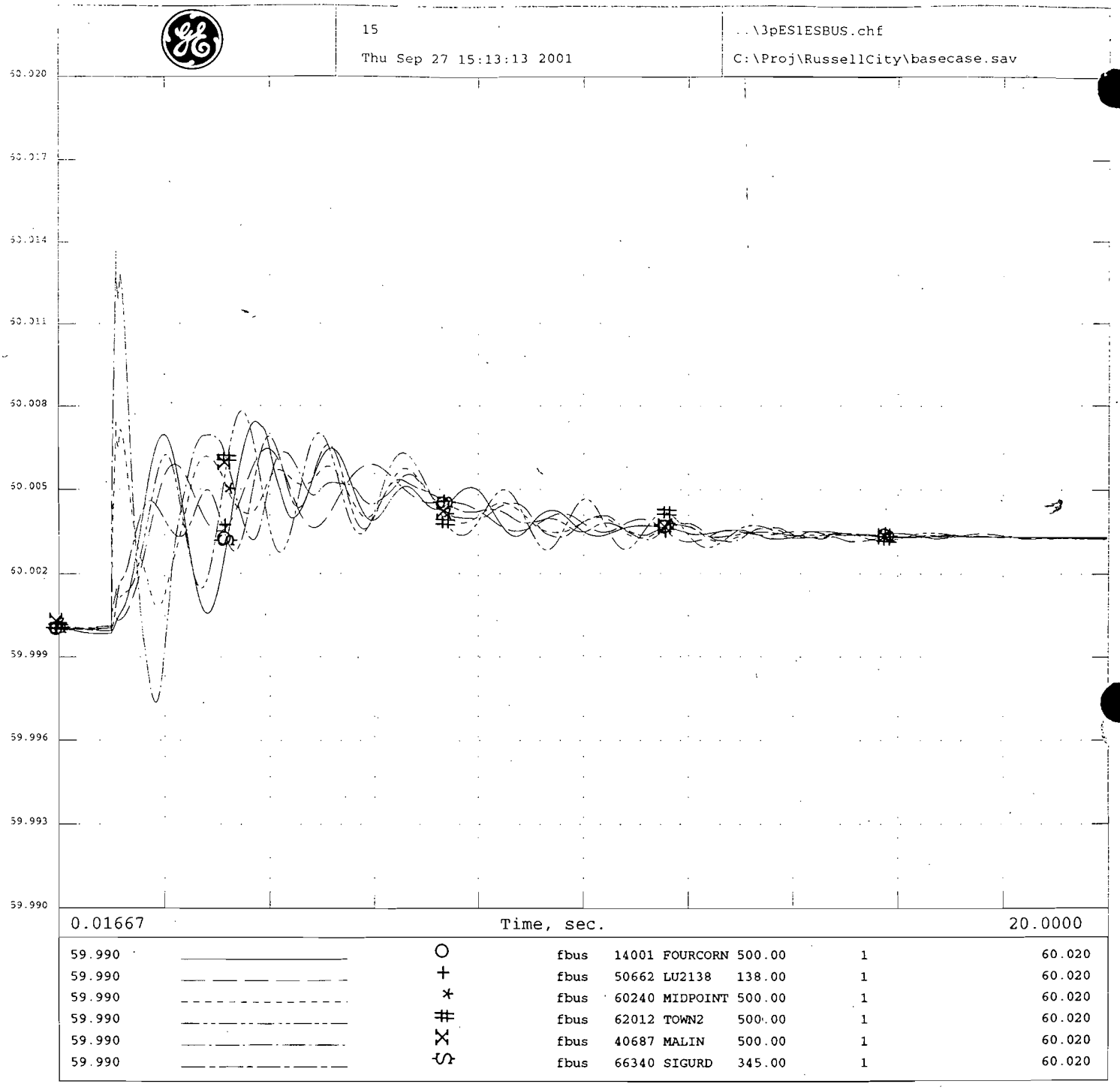

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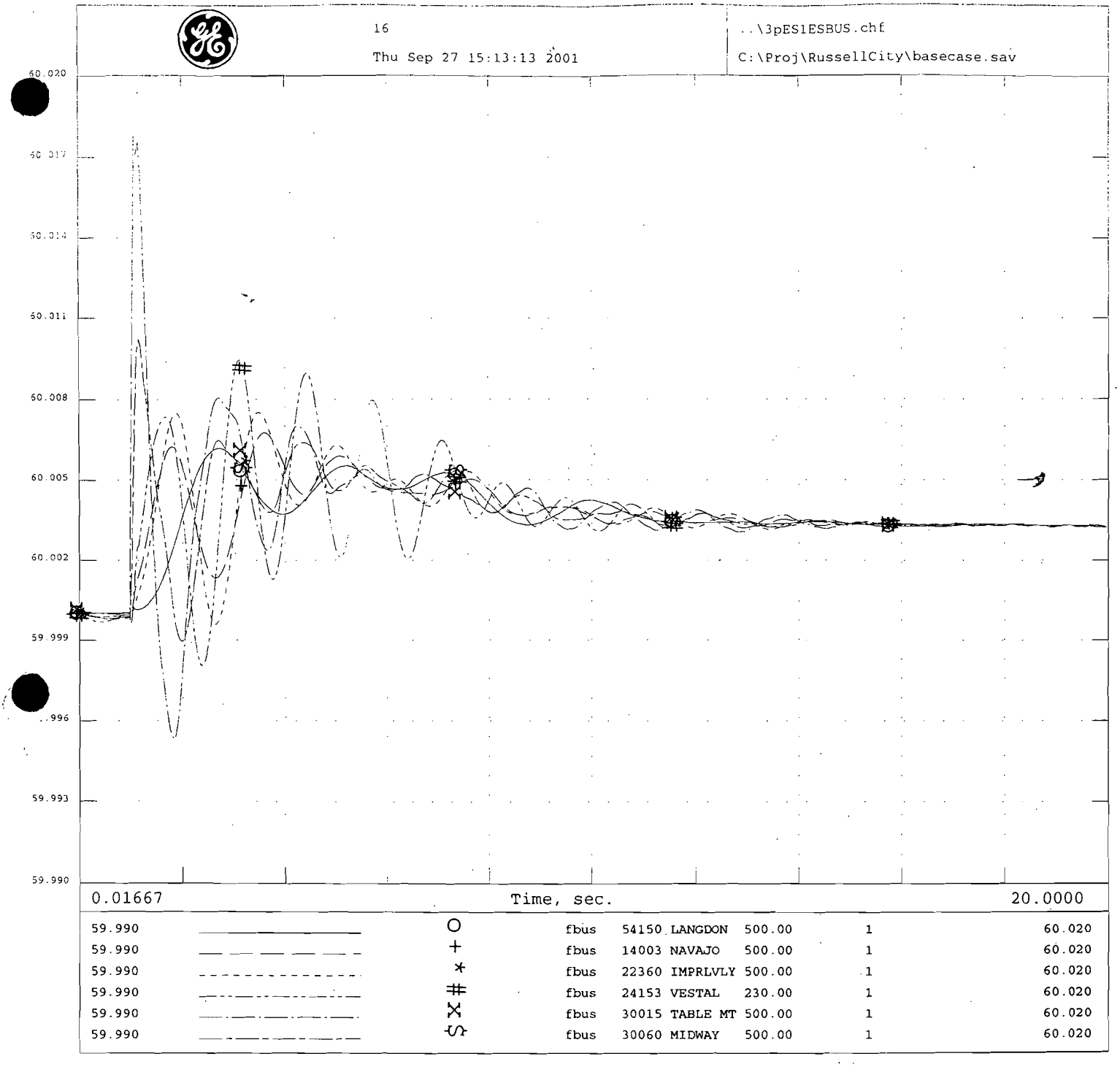

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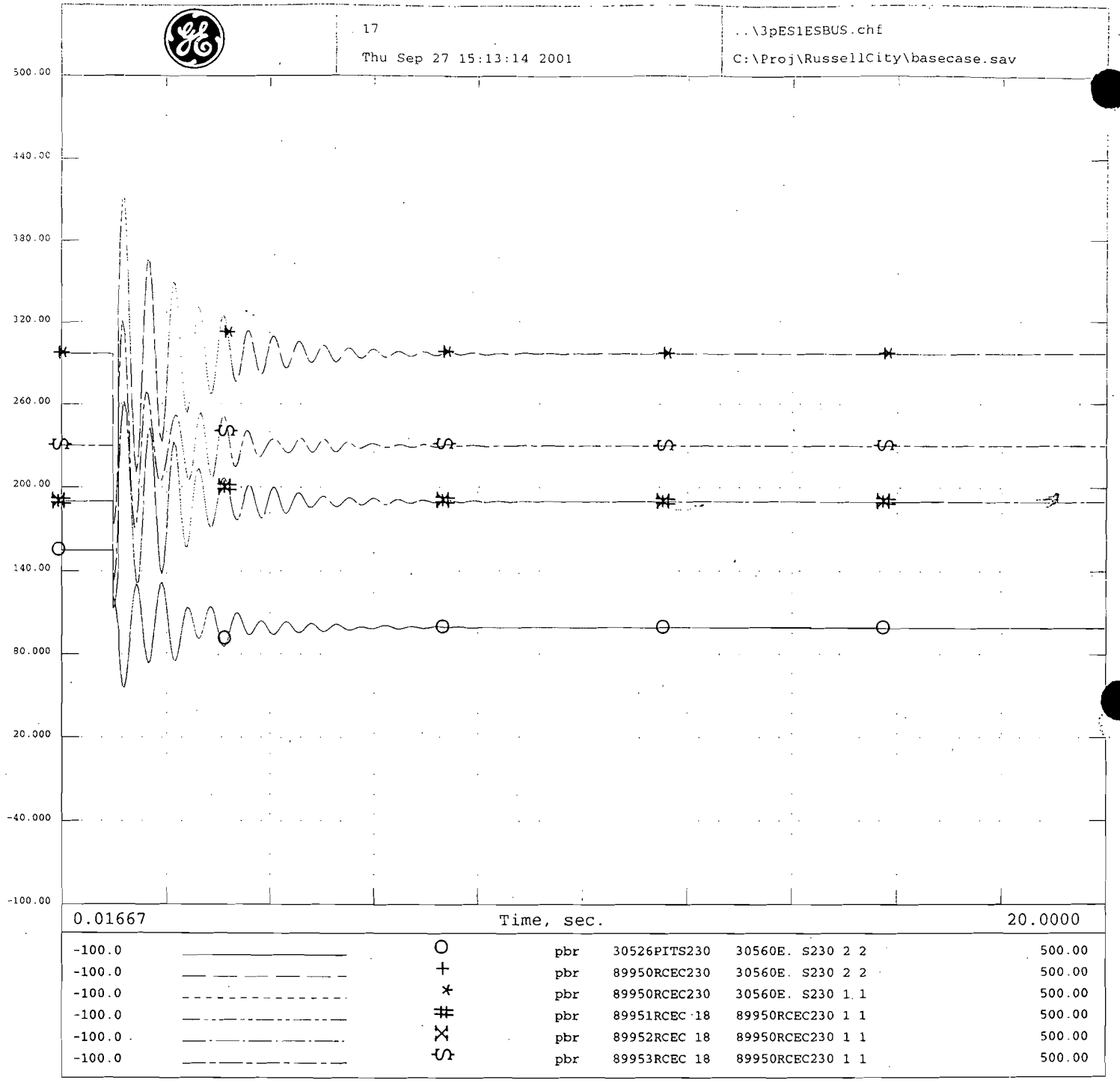

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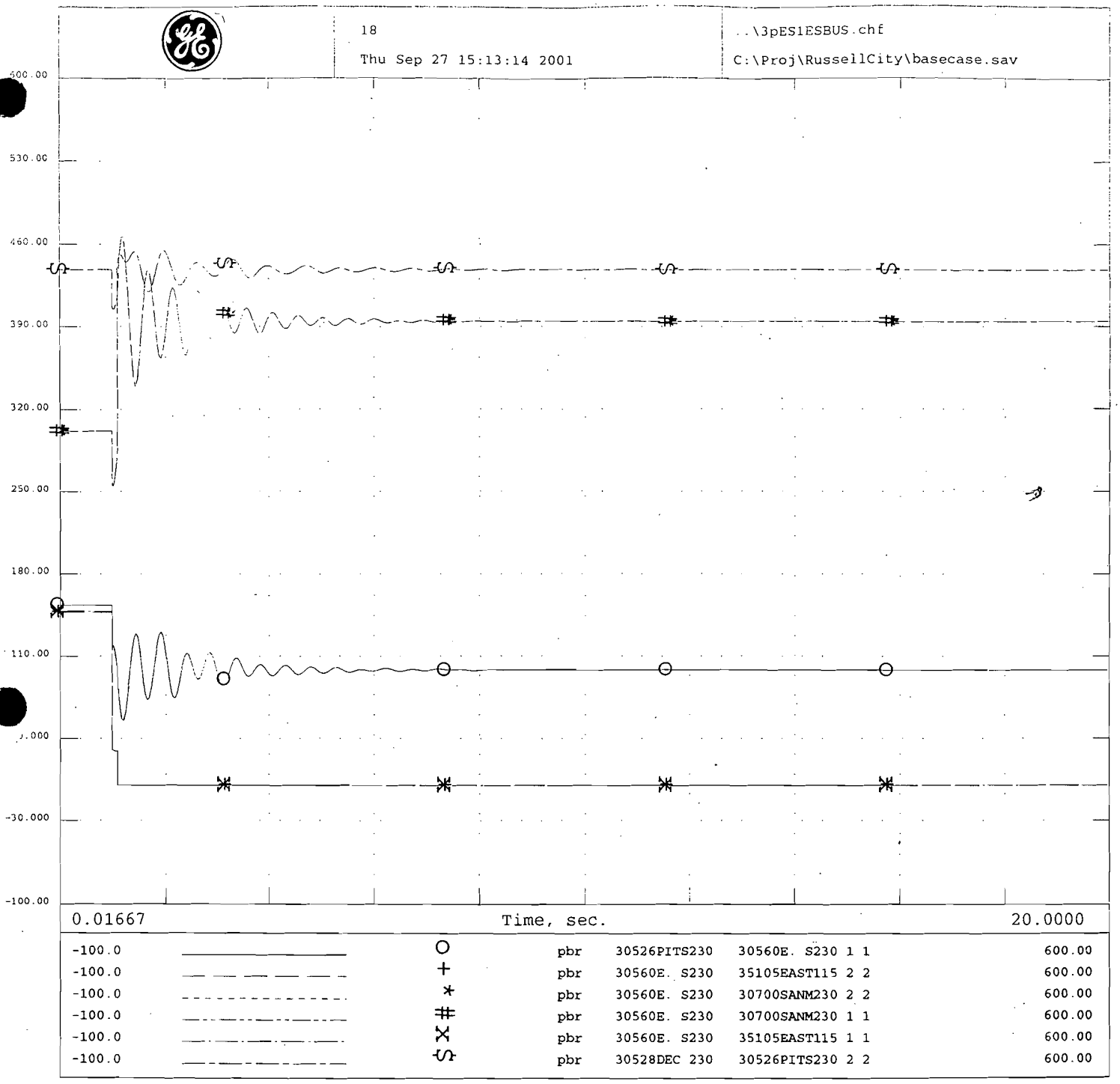
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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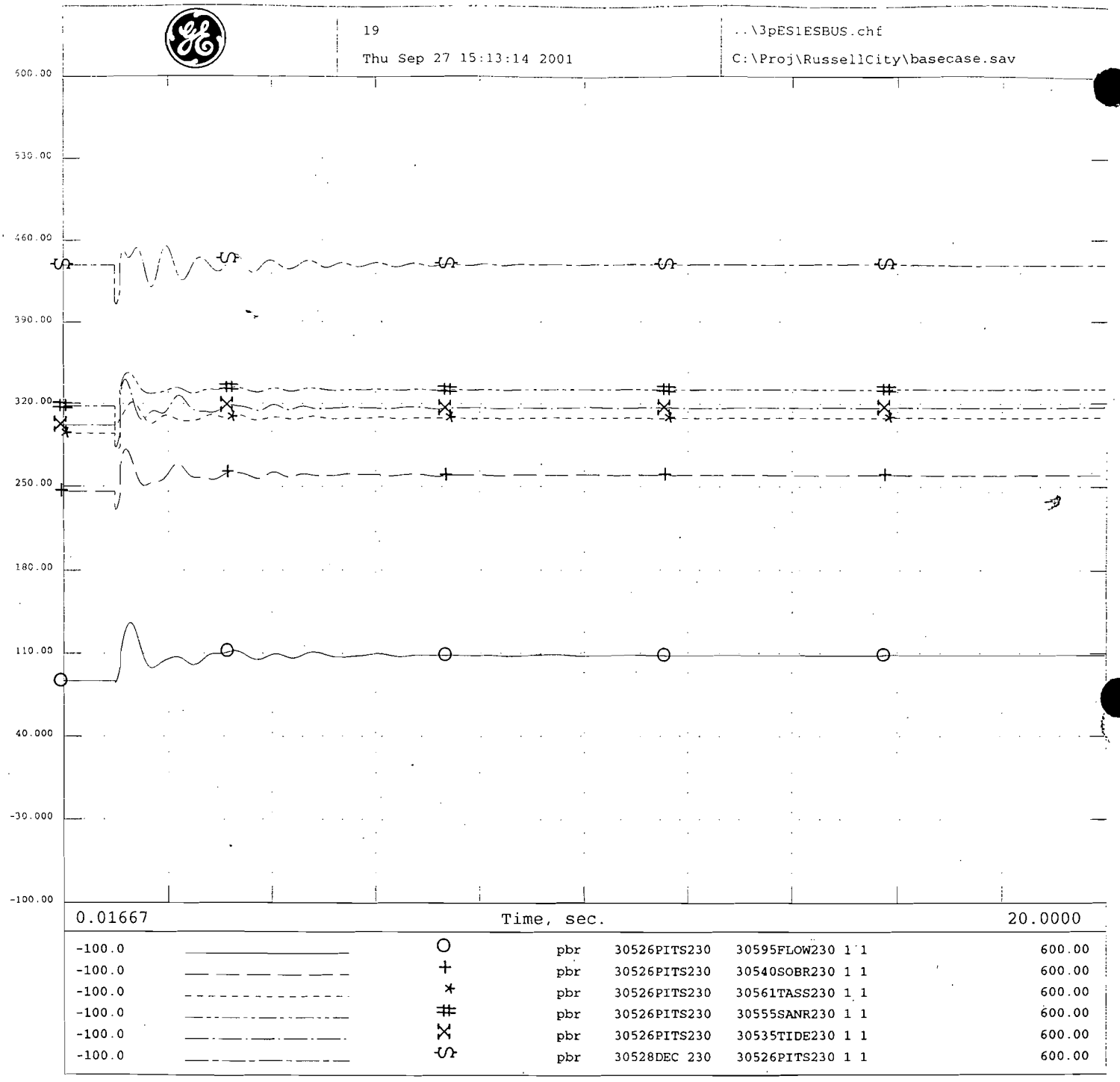

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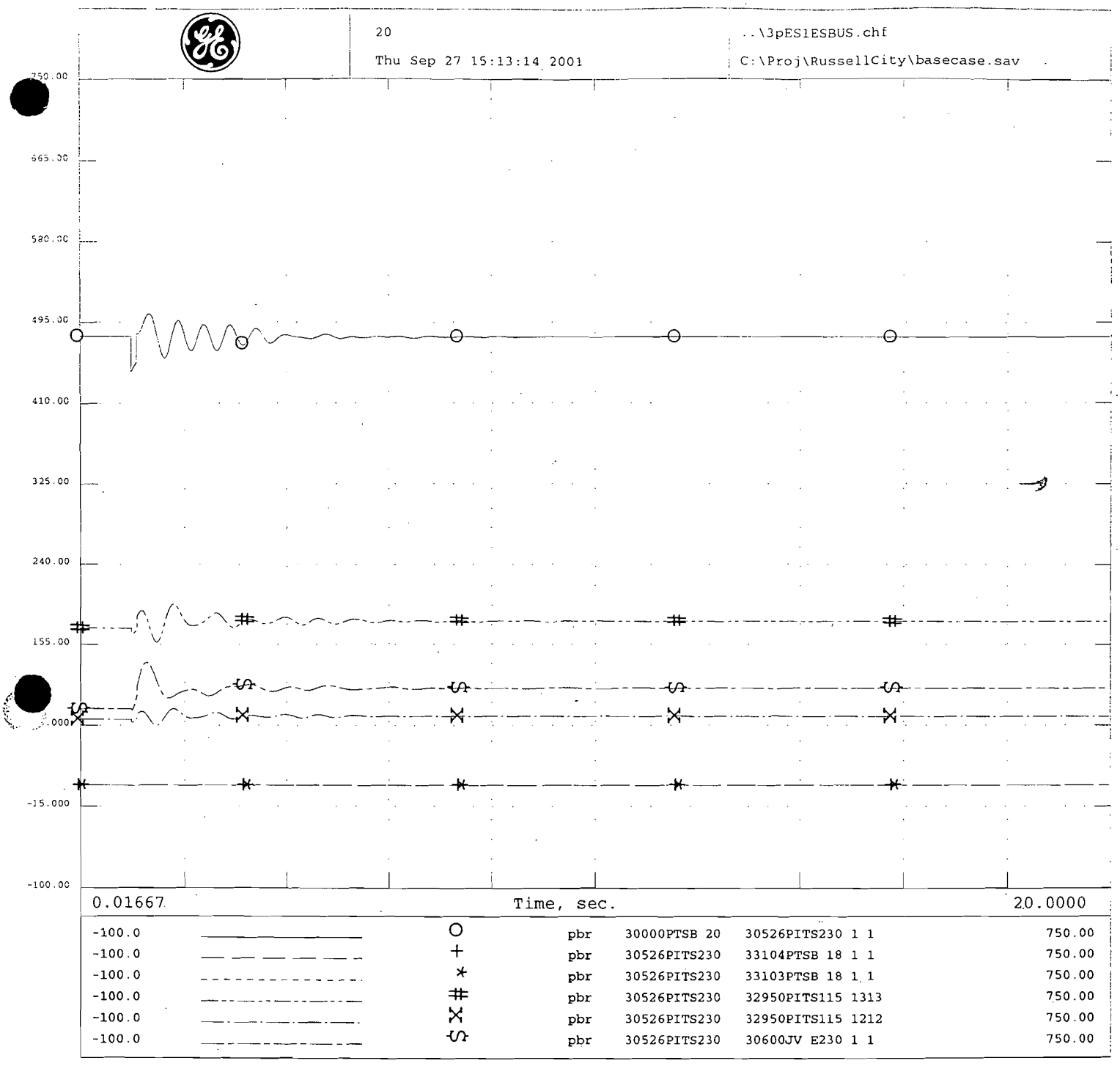

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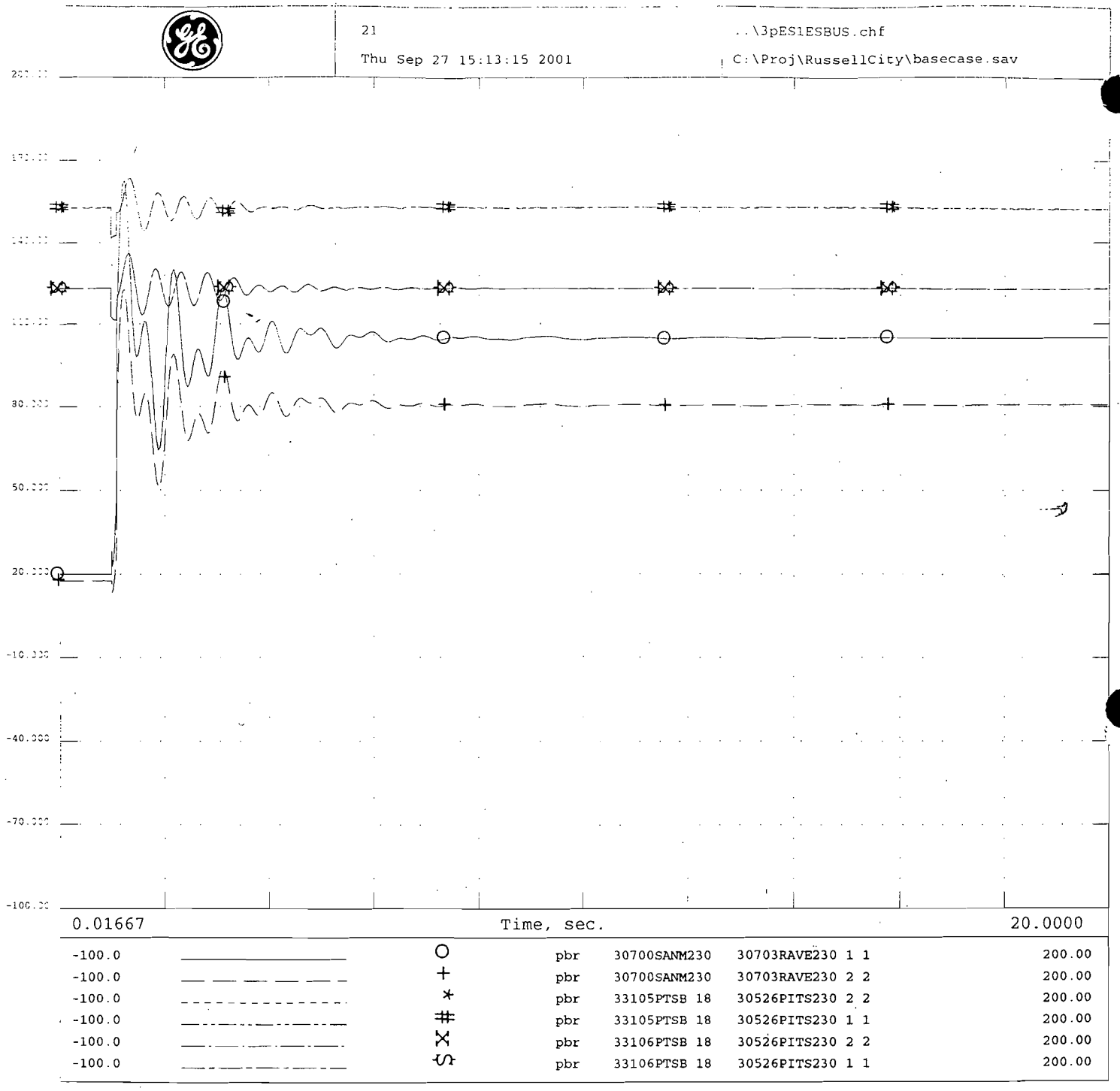

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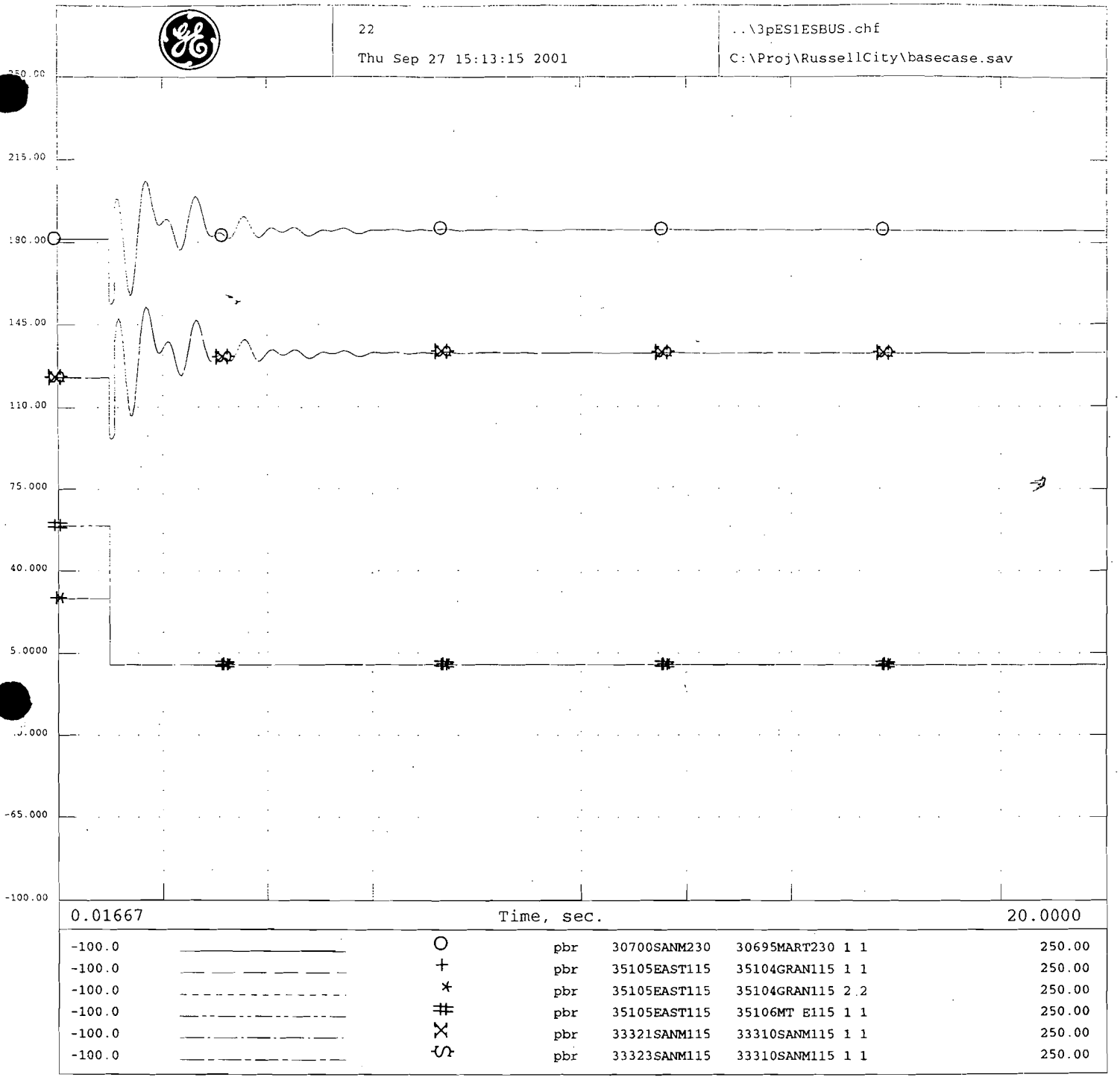

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Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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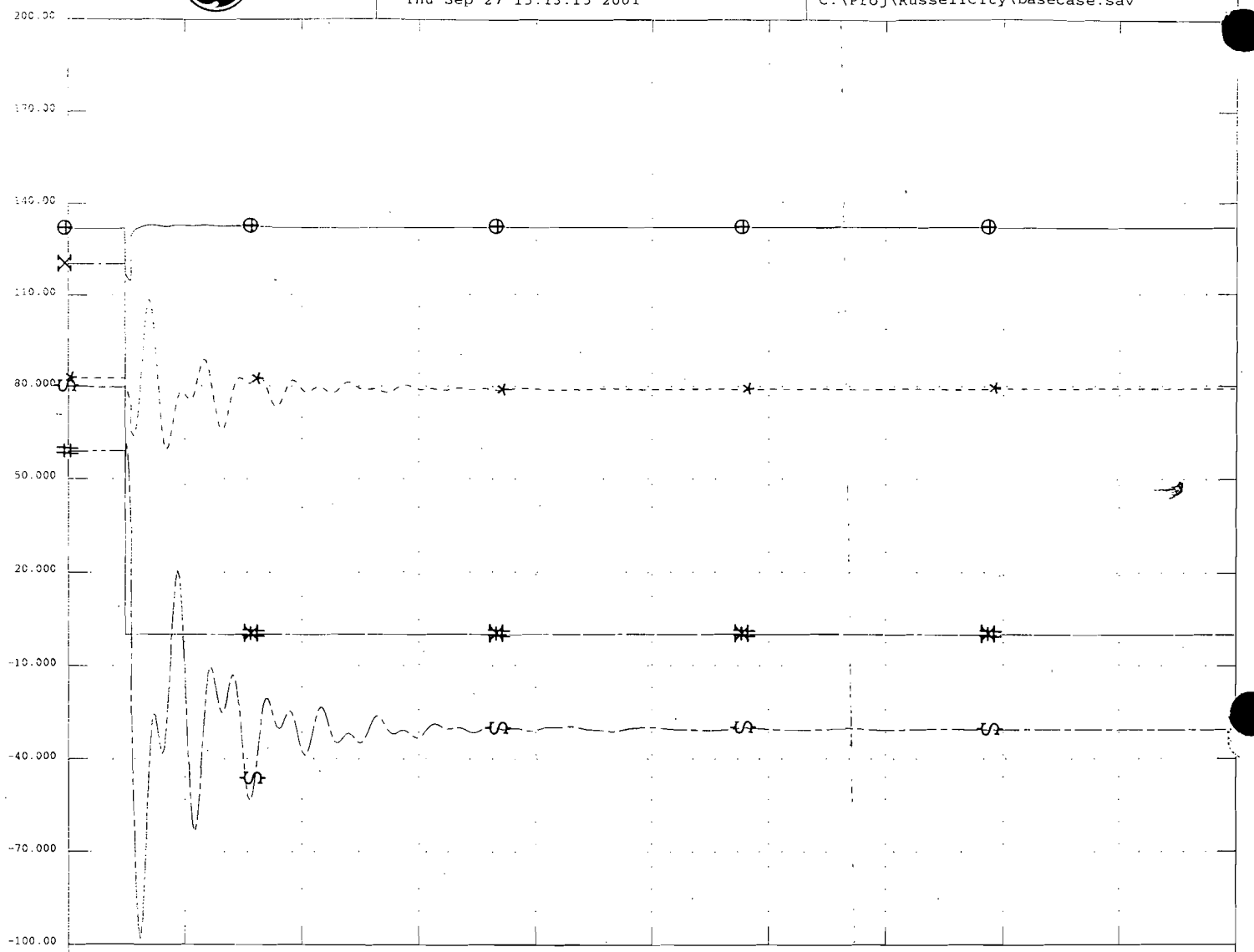

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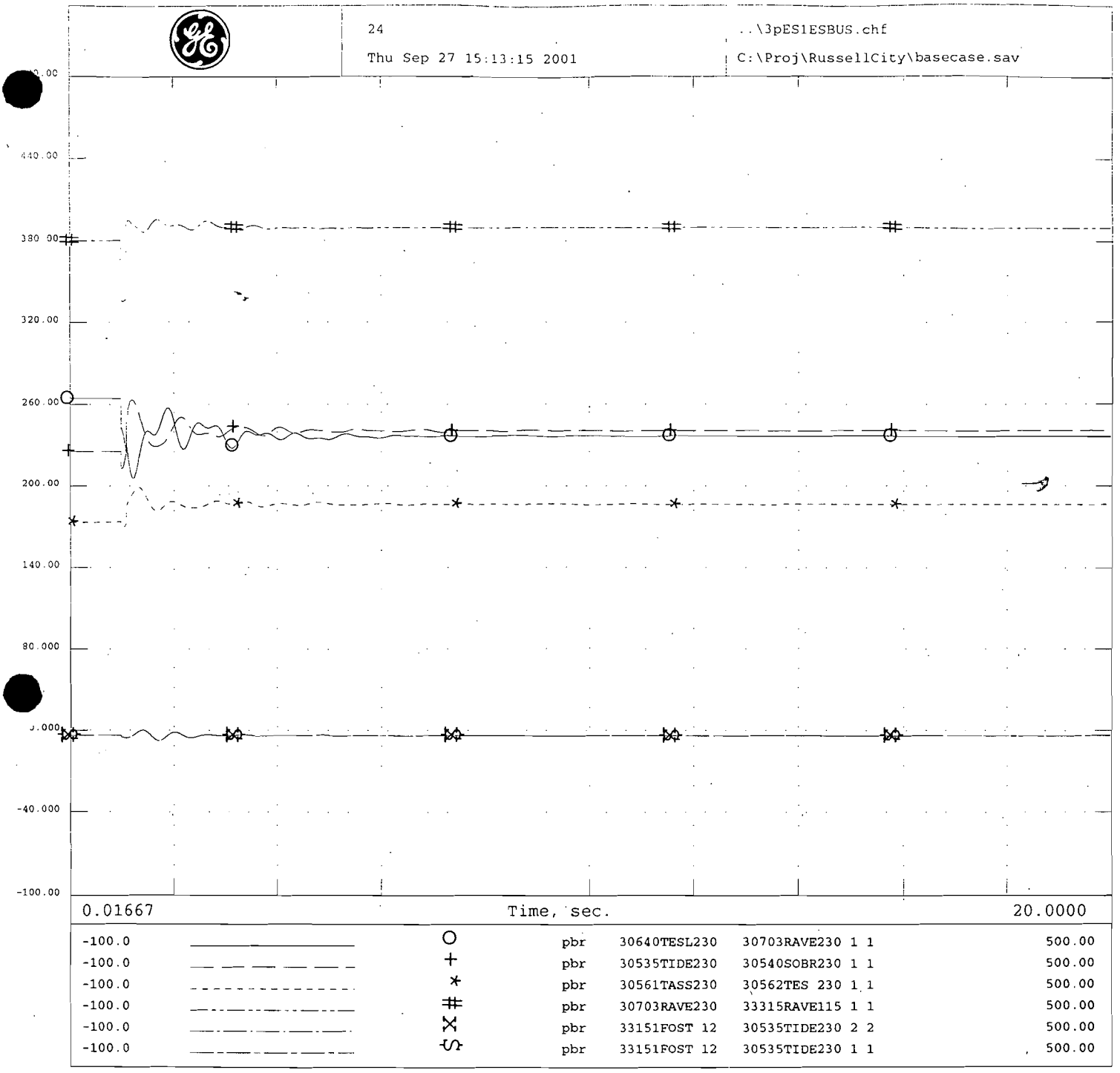

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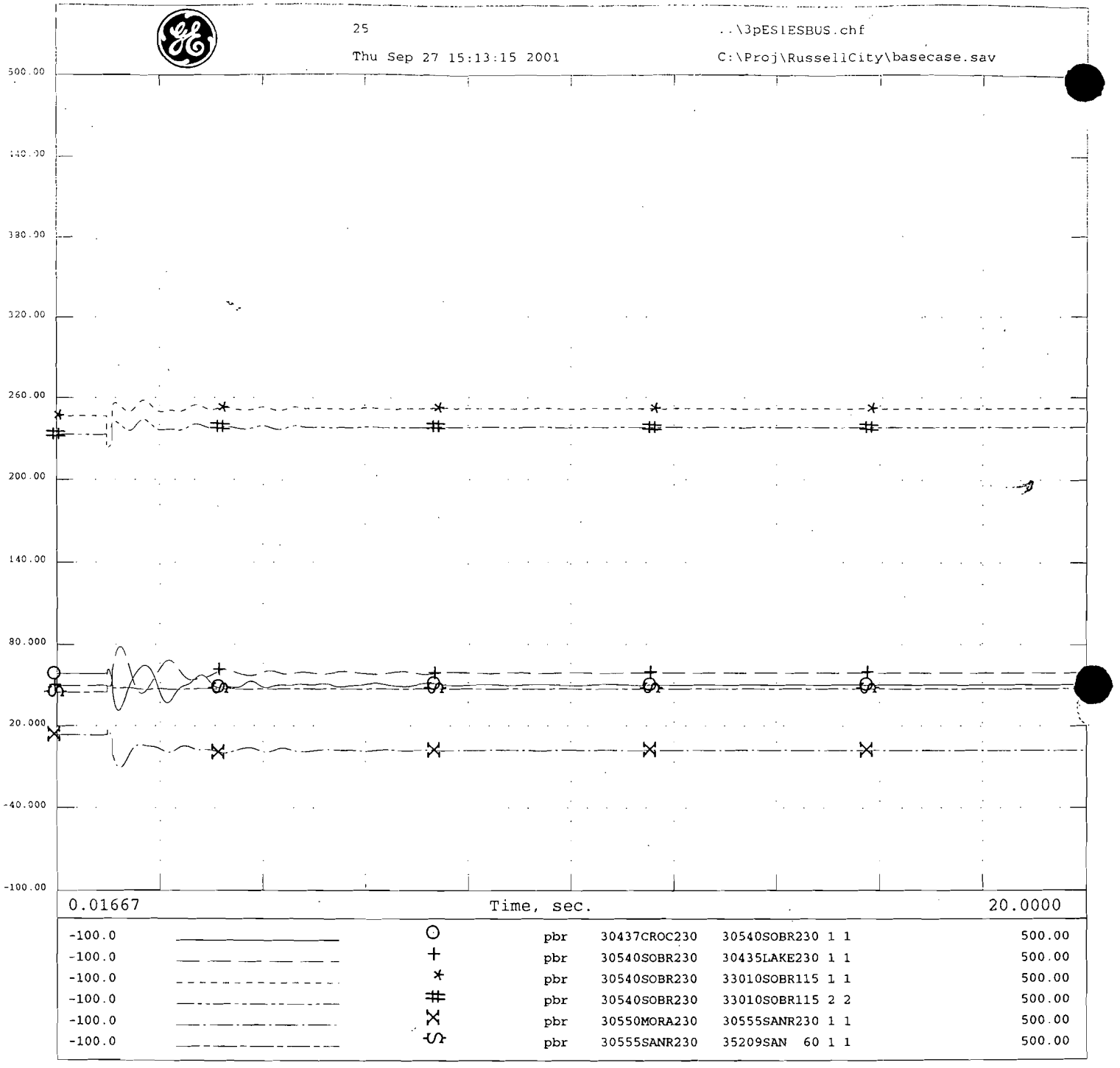

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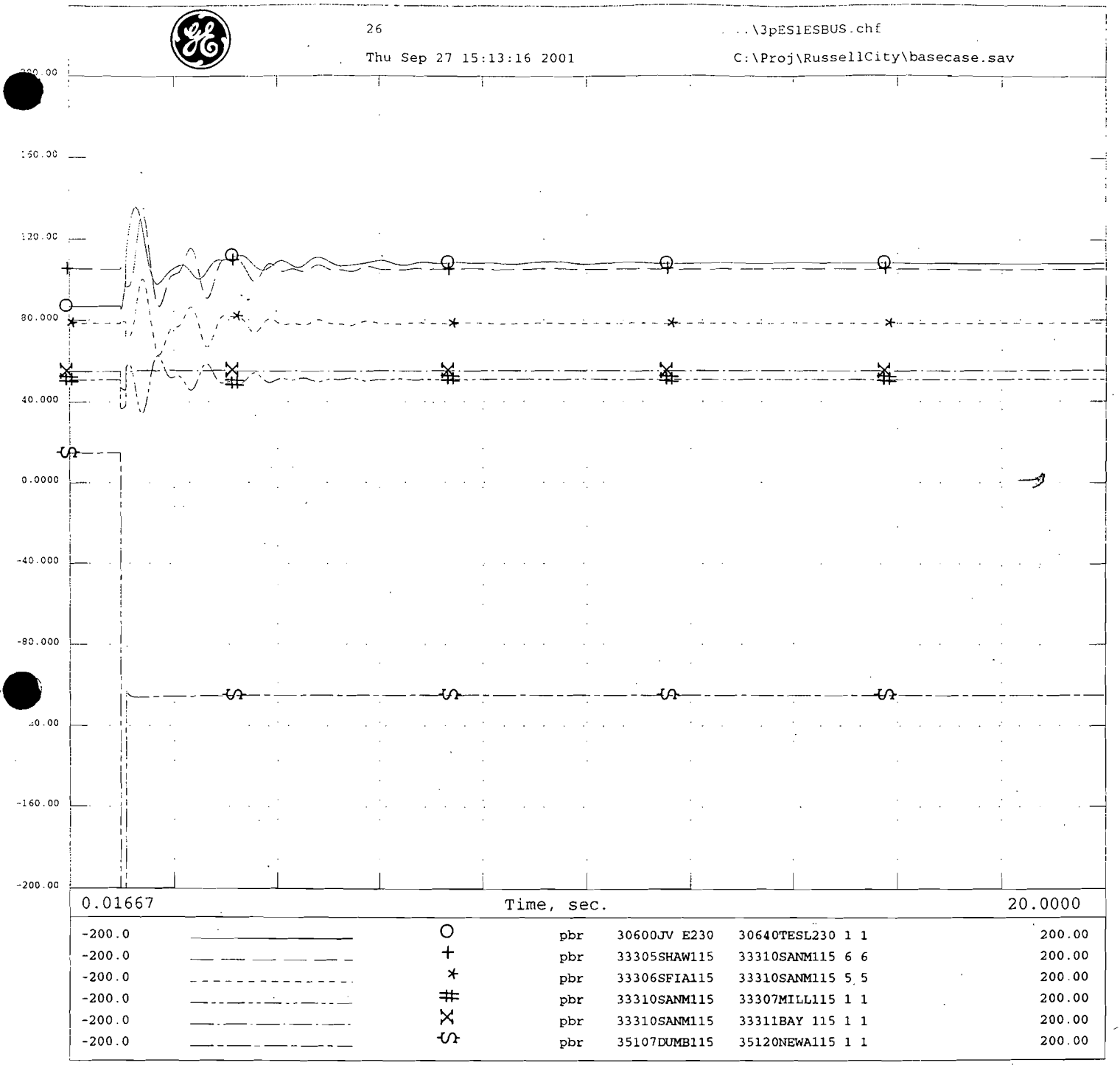

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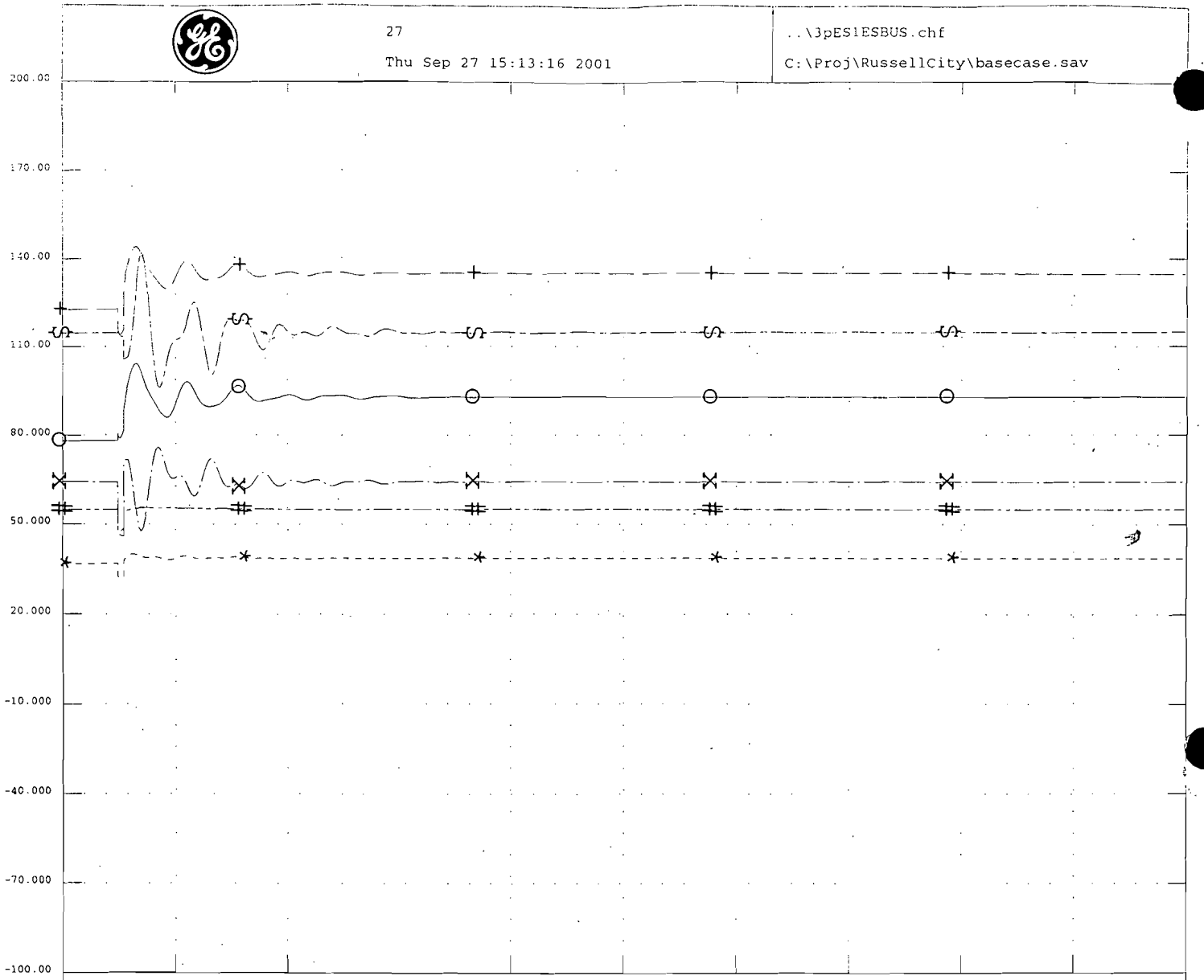

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Dumbarton #1 115kV line outage
3 phase 6 cycle fault at East Shore 115kV bus and trip East Shore-Dumbarton #1
115kV line
RUN  9
CC
CC   Fault East Shore 115kV bus
FB   0.0 "EASTSHRE" 115.
CC
CC   Clear fault at East Shore 115kV bus
CFB  6.0 "EASTSHRE" 115.
CC
CC   Trip the East Shore-Dumbarton #1 115kV line
DL  6.0 "EASTSHRE" 115.00 "DUMBARTN" 115.00 "1 "
CC
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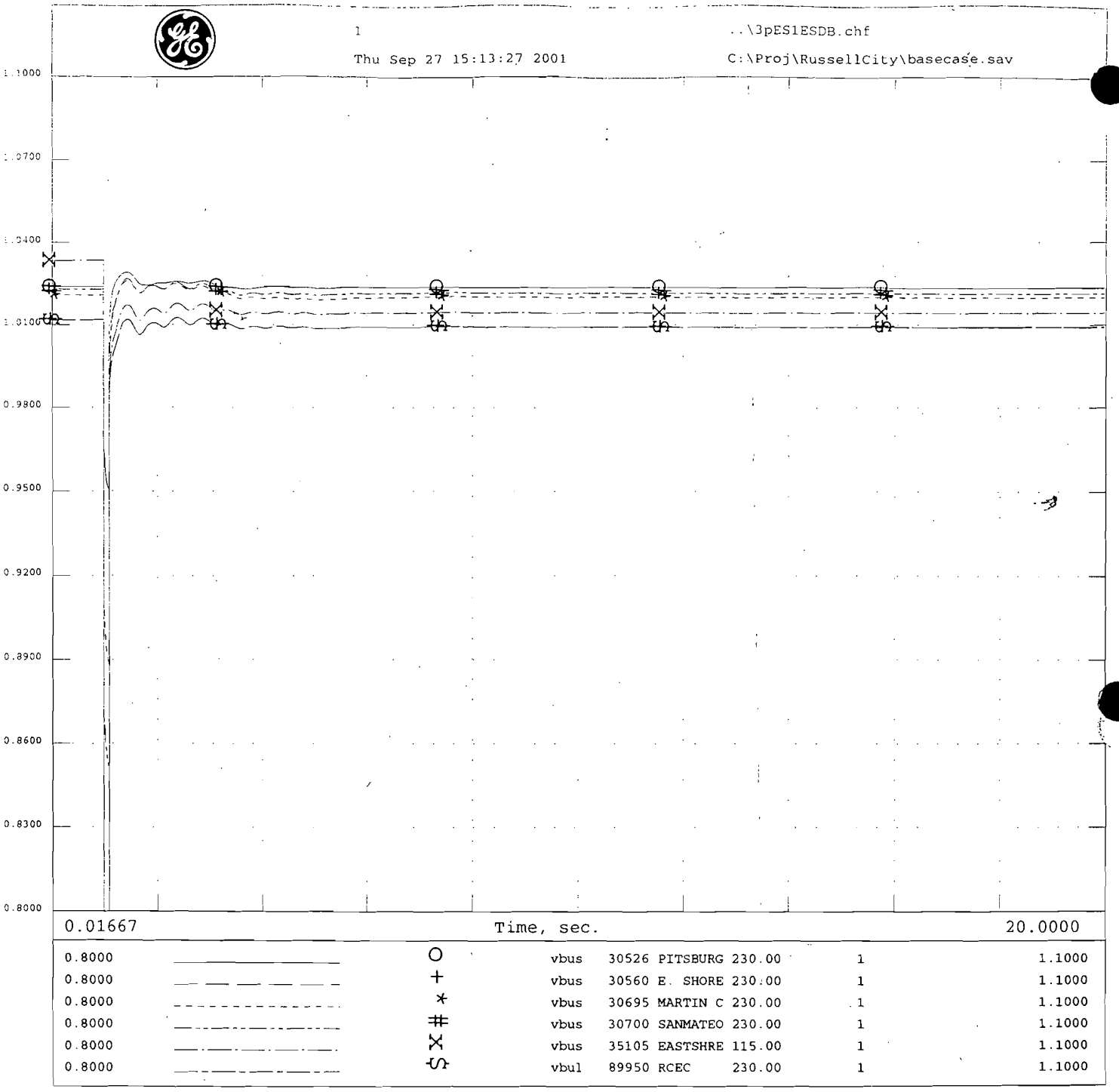

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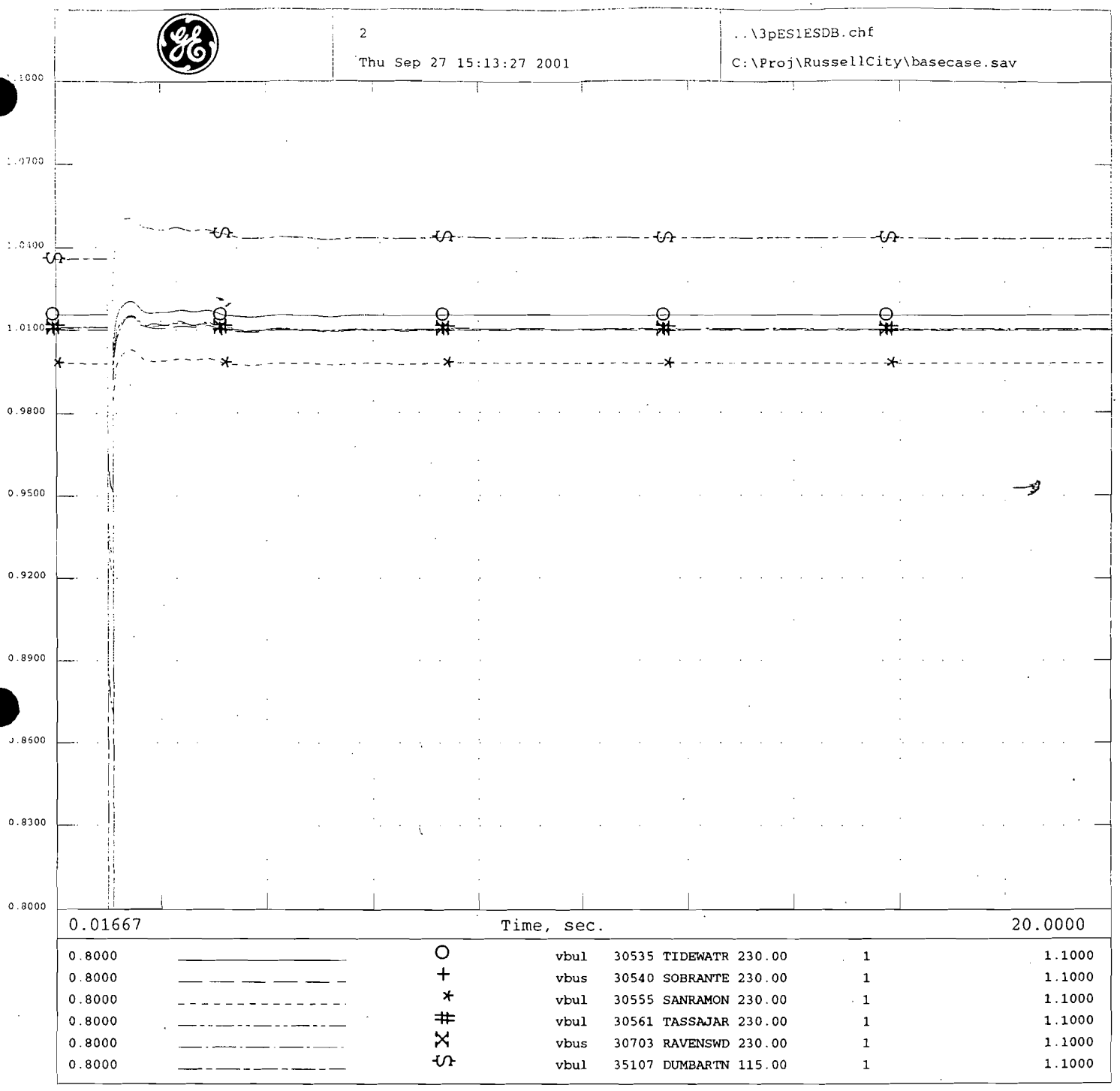
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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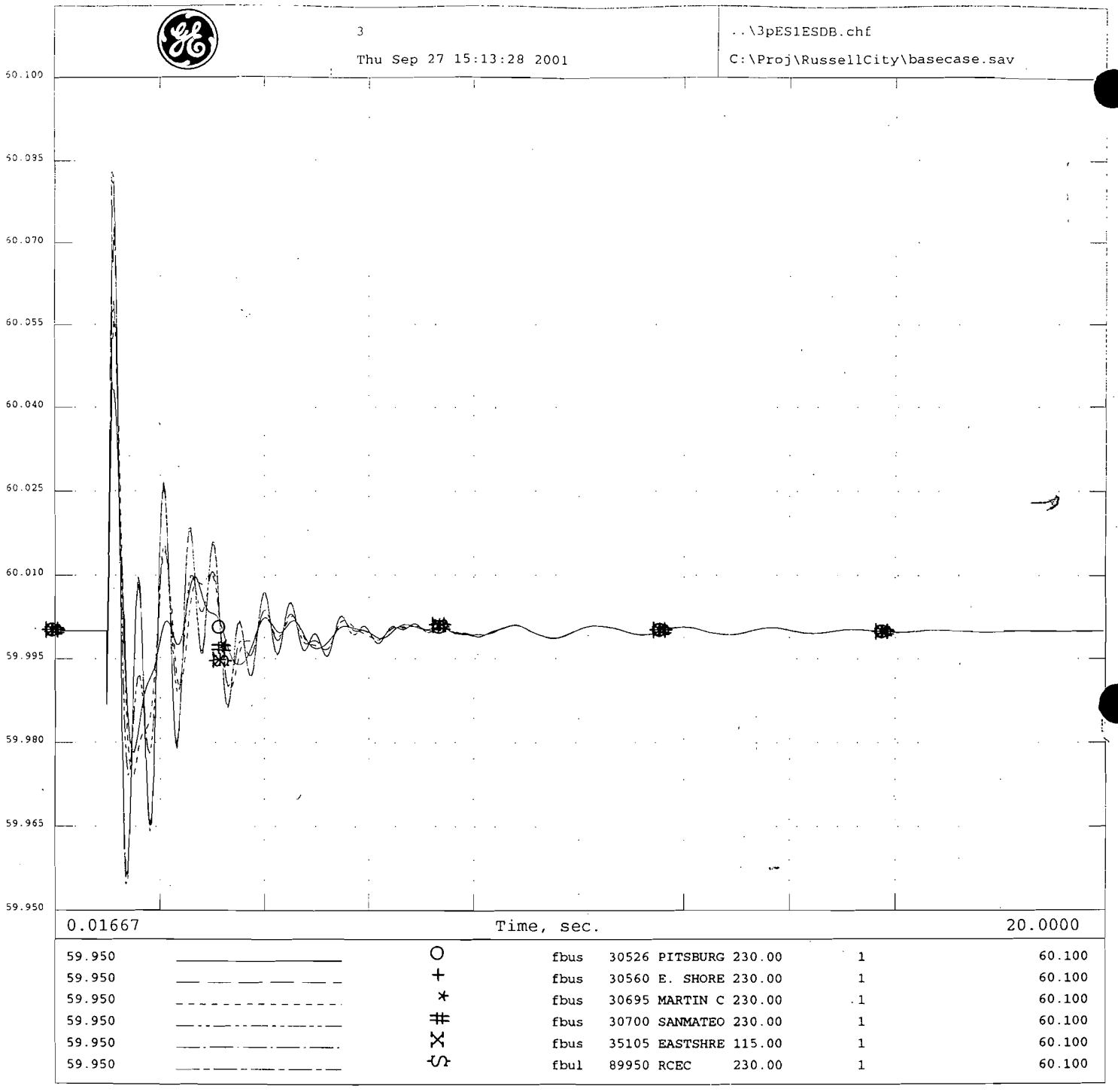

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Calpine/Bechtel Joint Development
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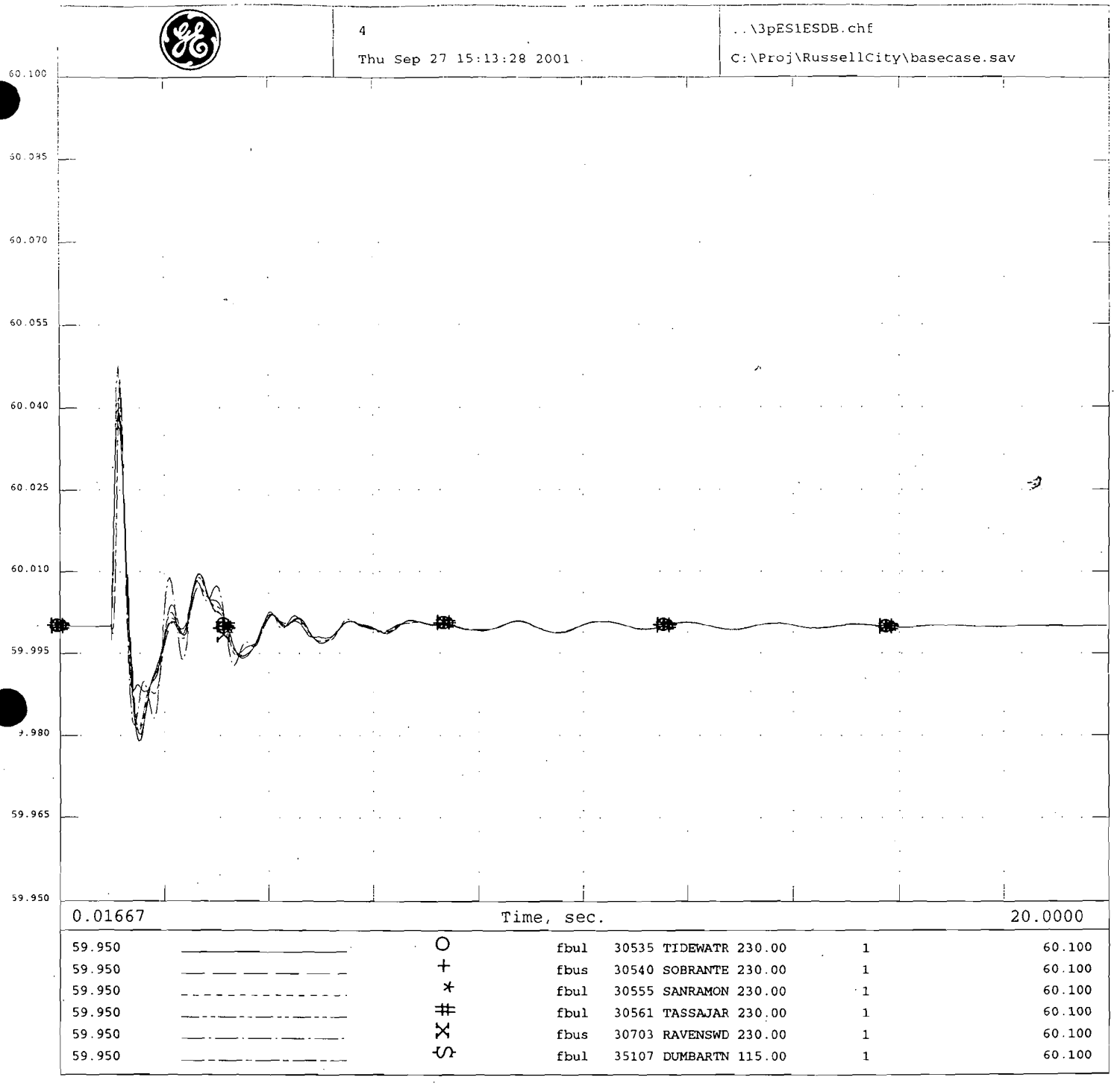

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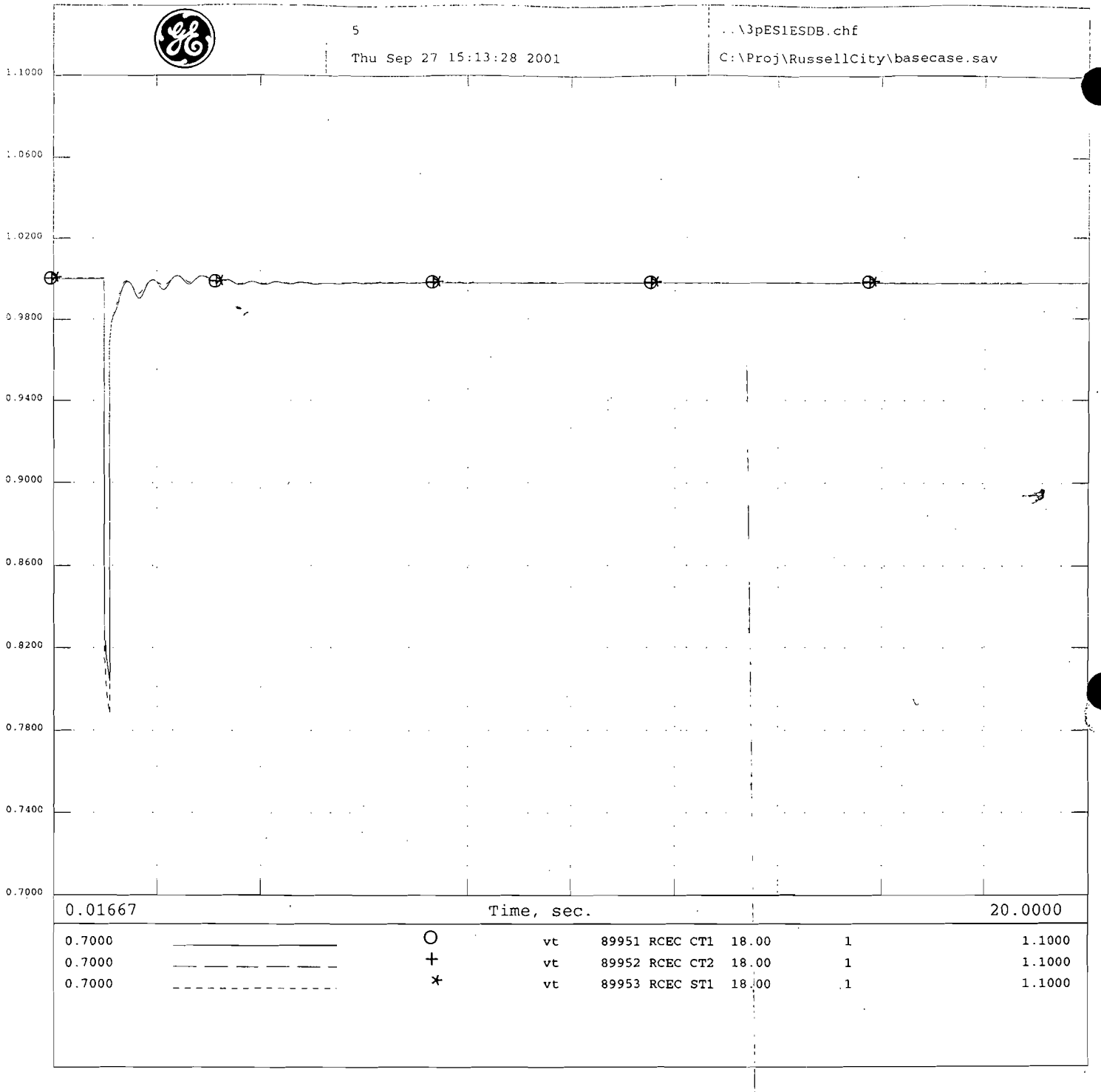

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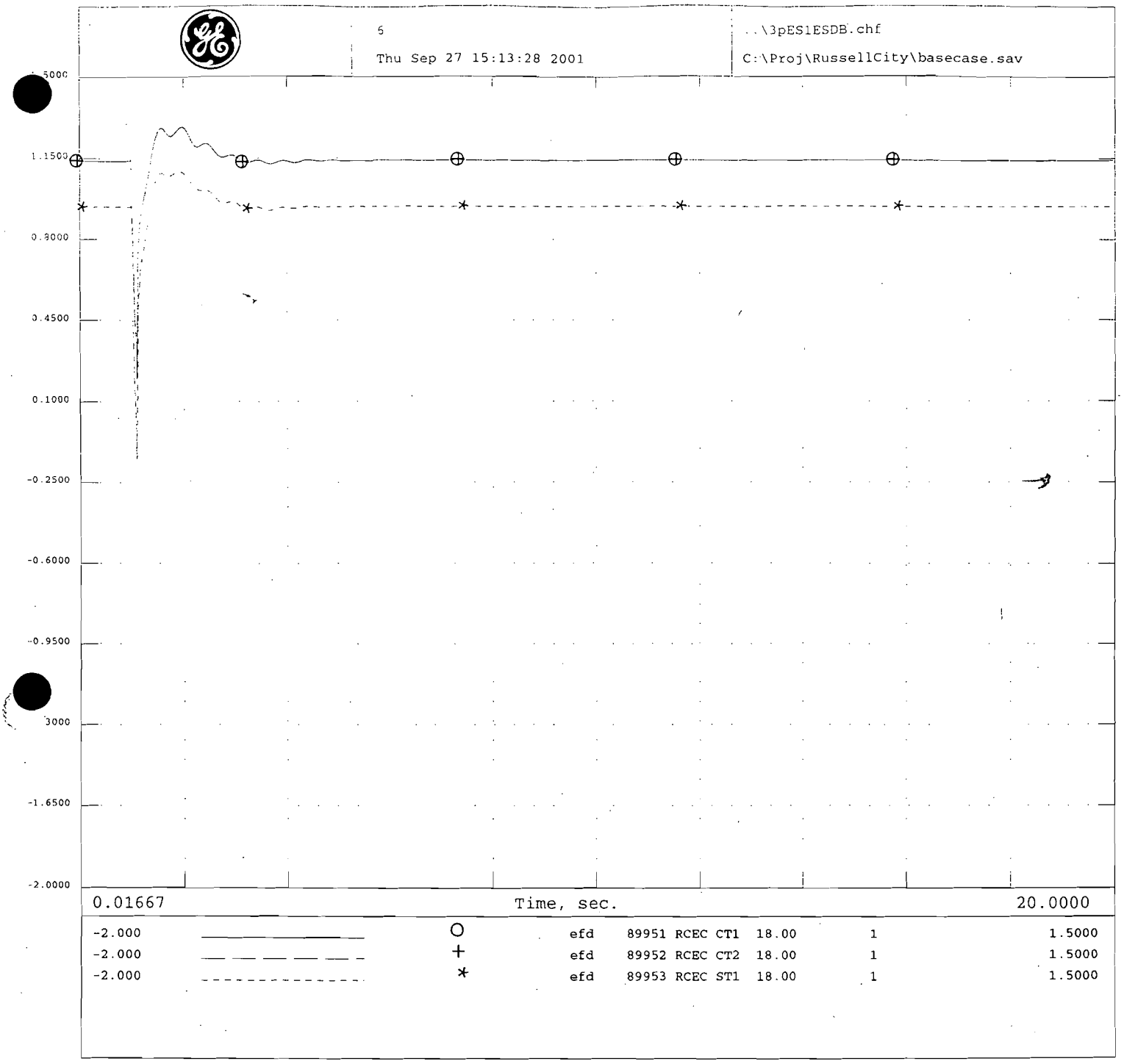

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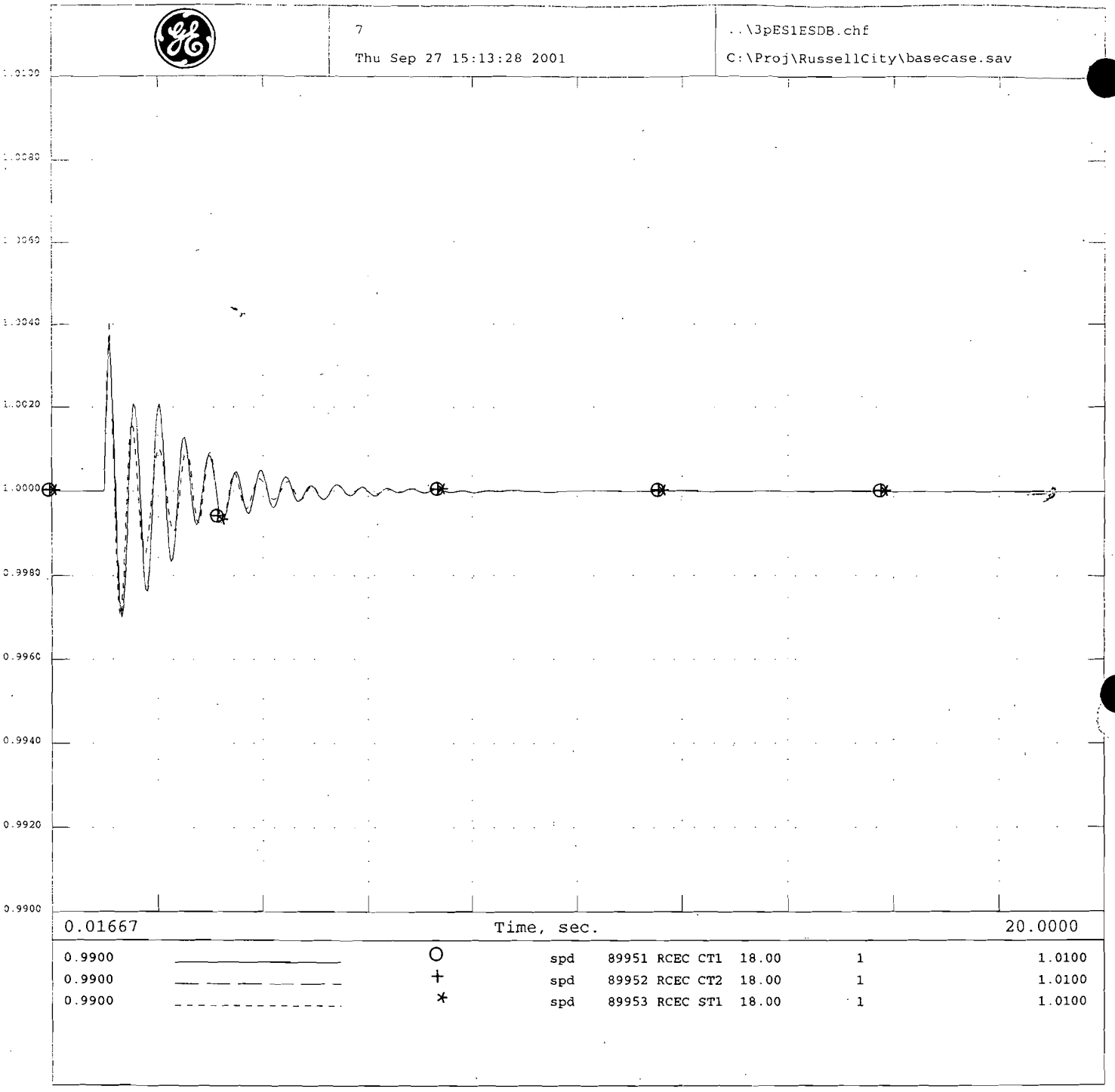

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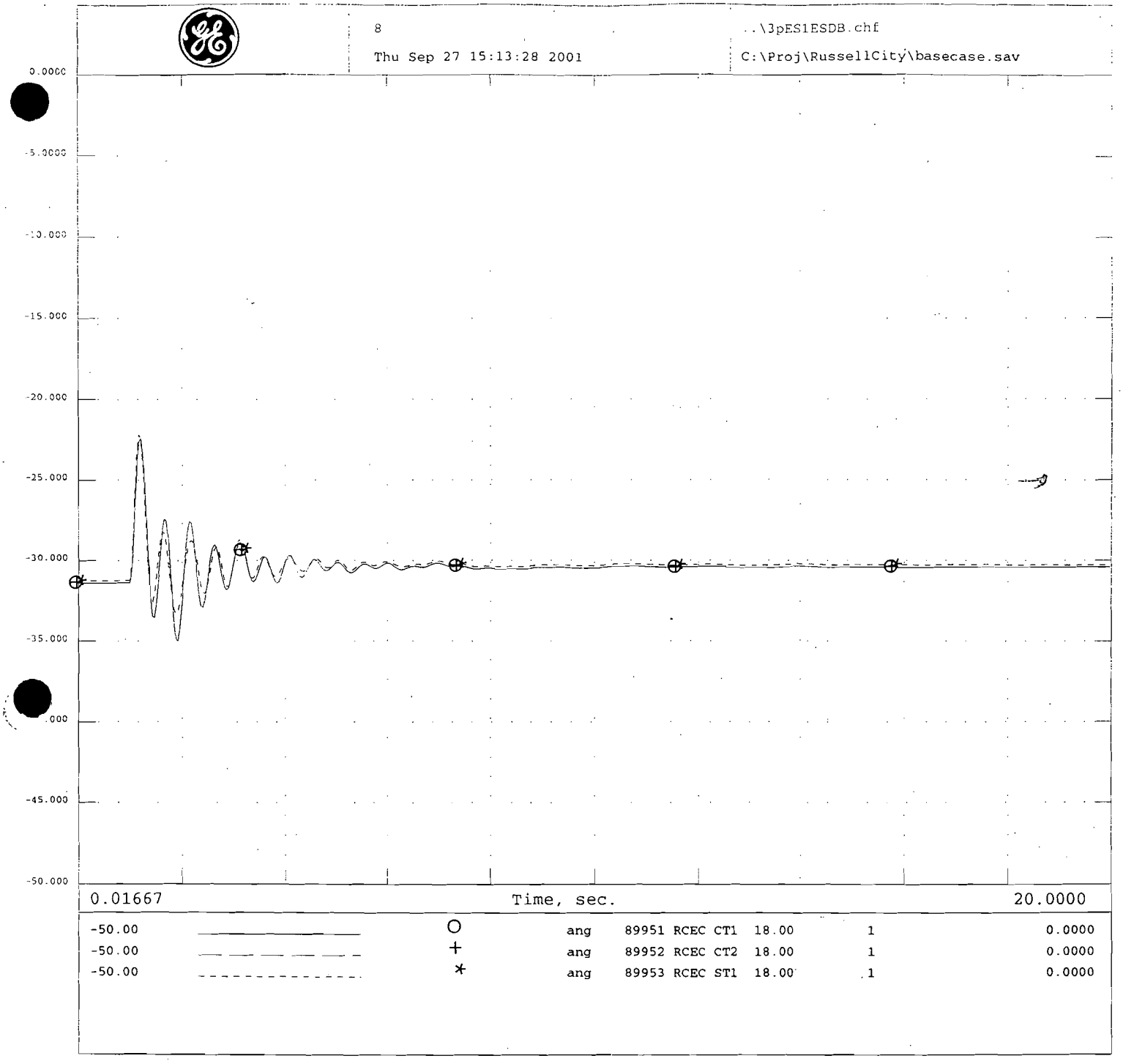

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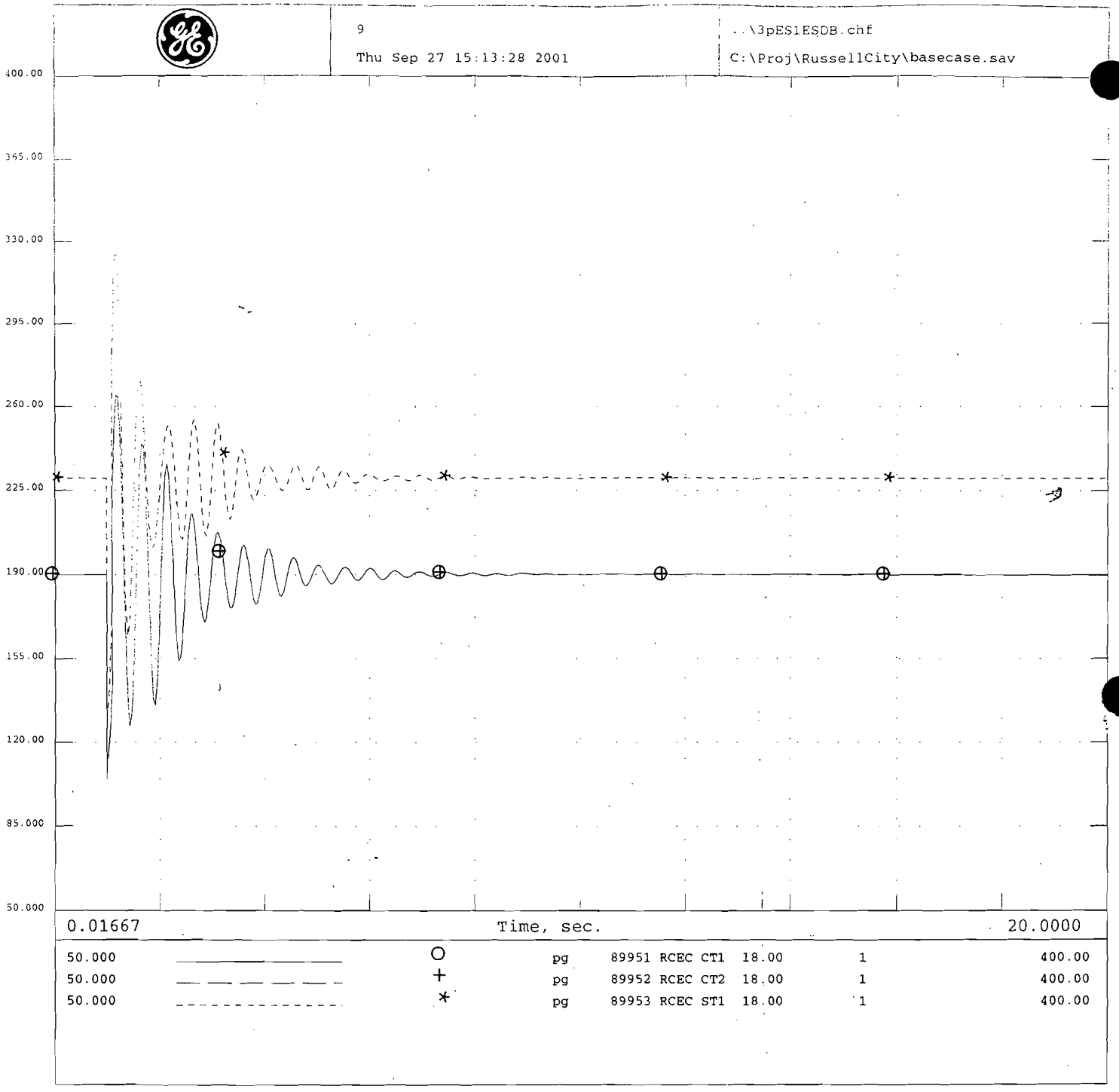

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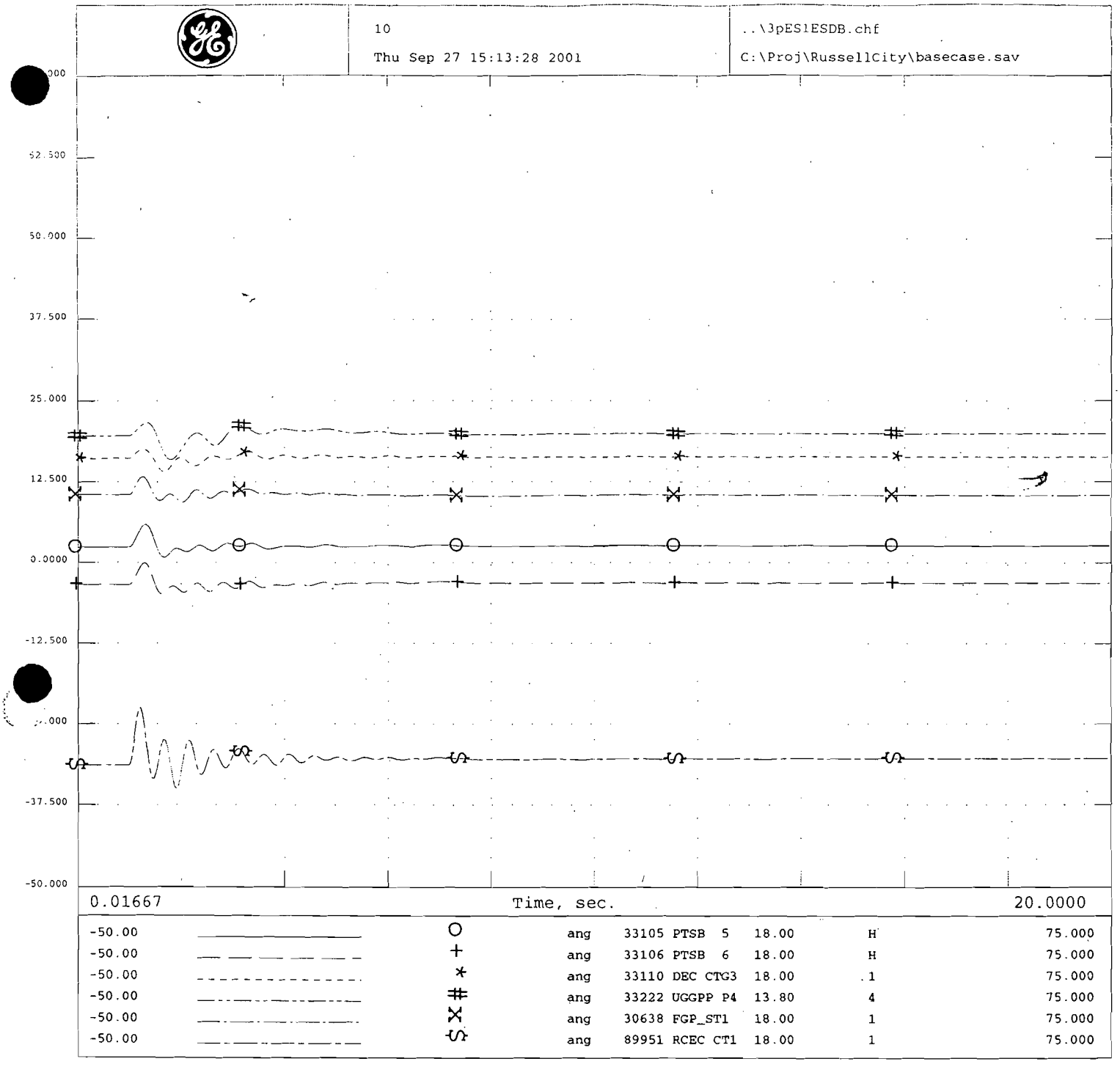

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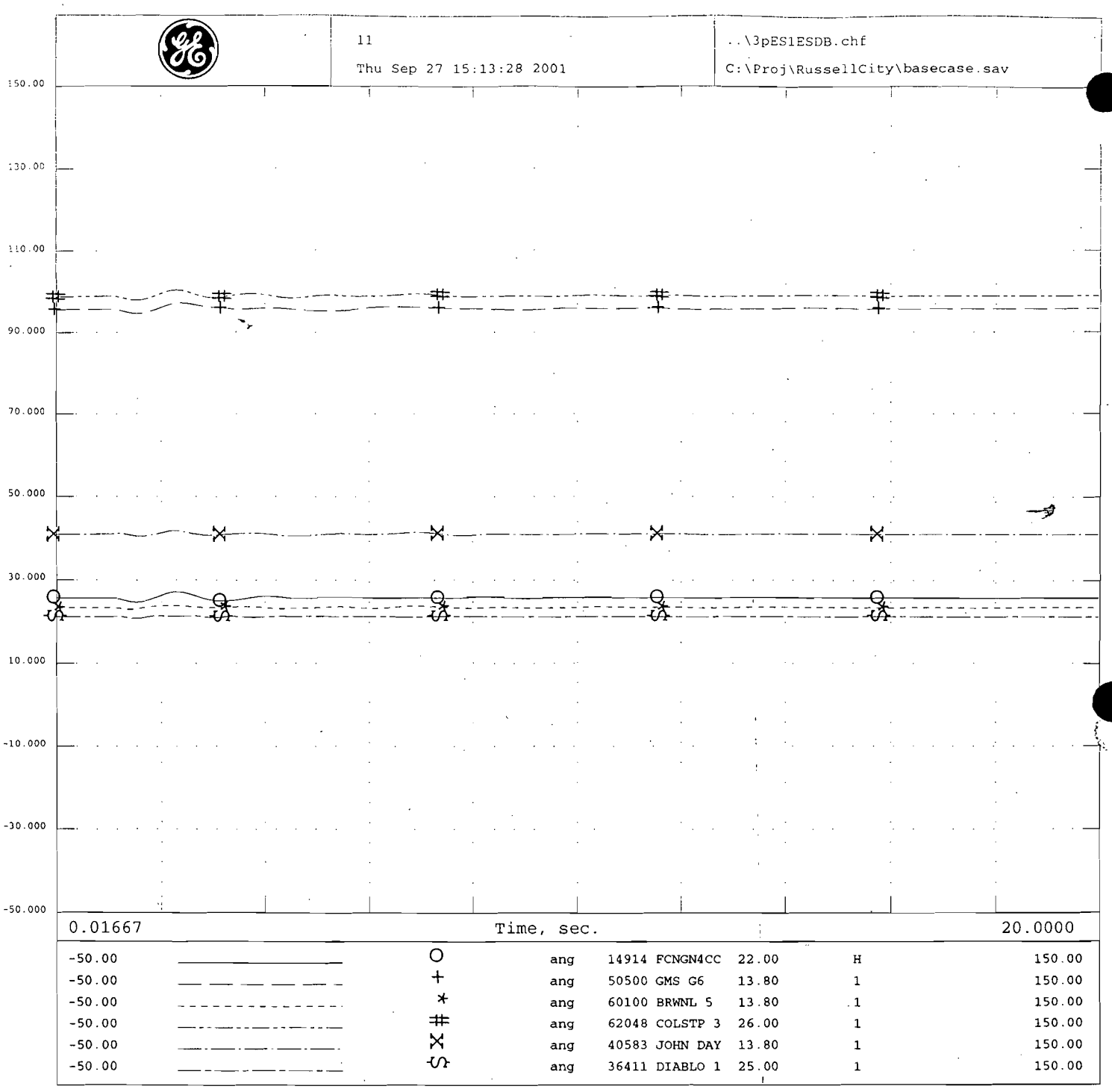

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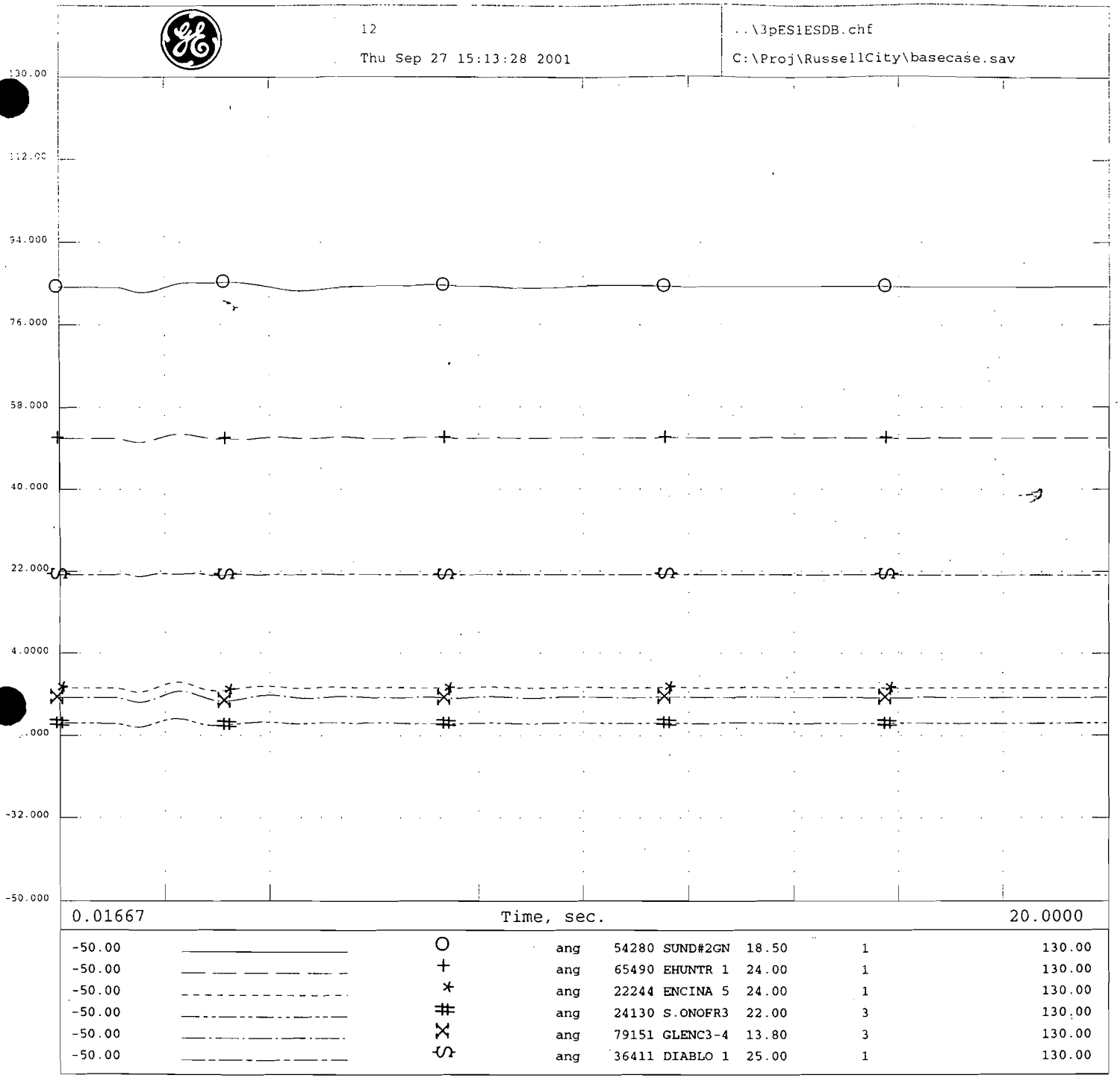
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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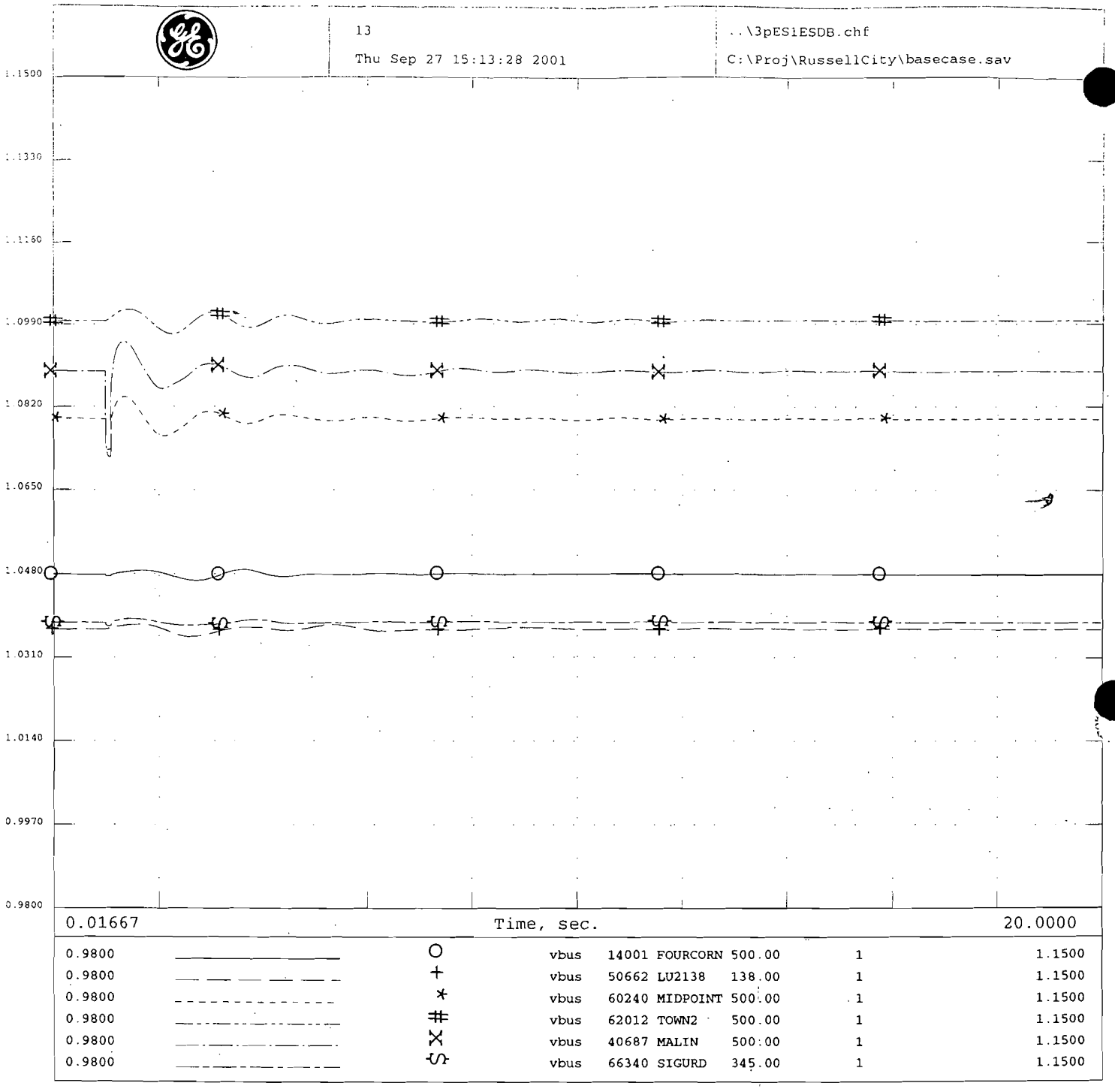

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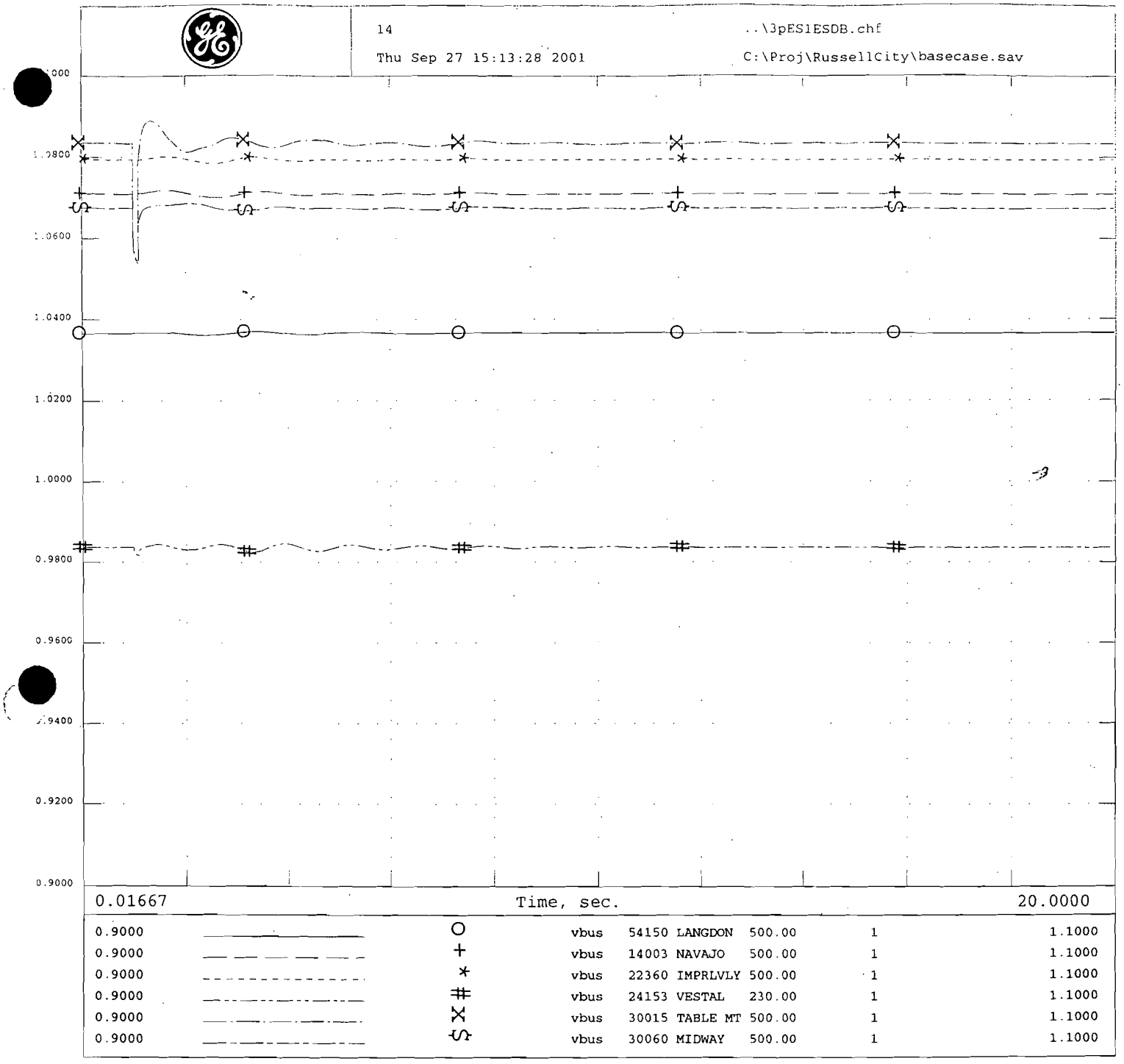

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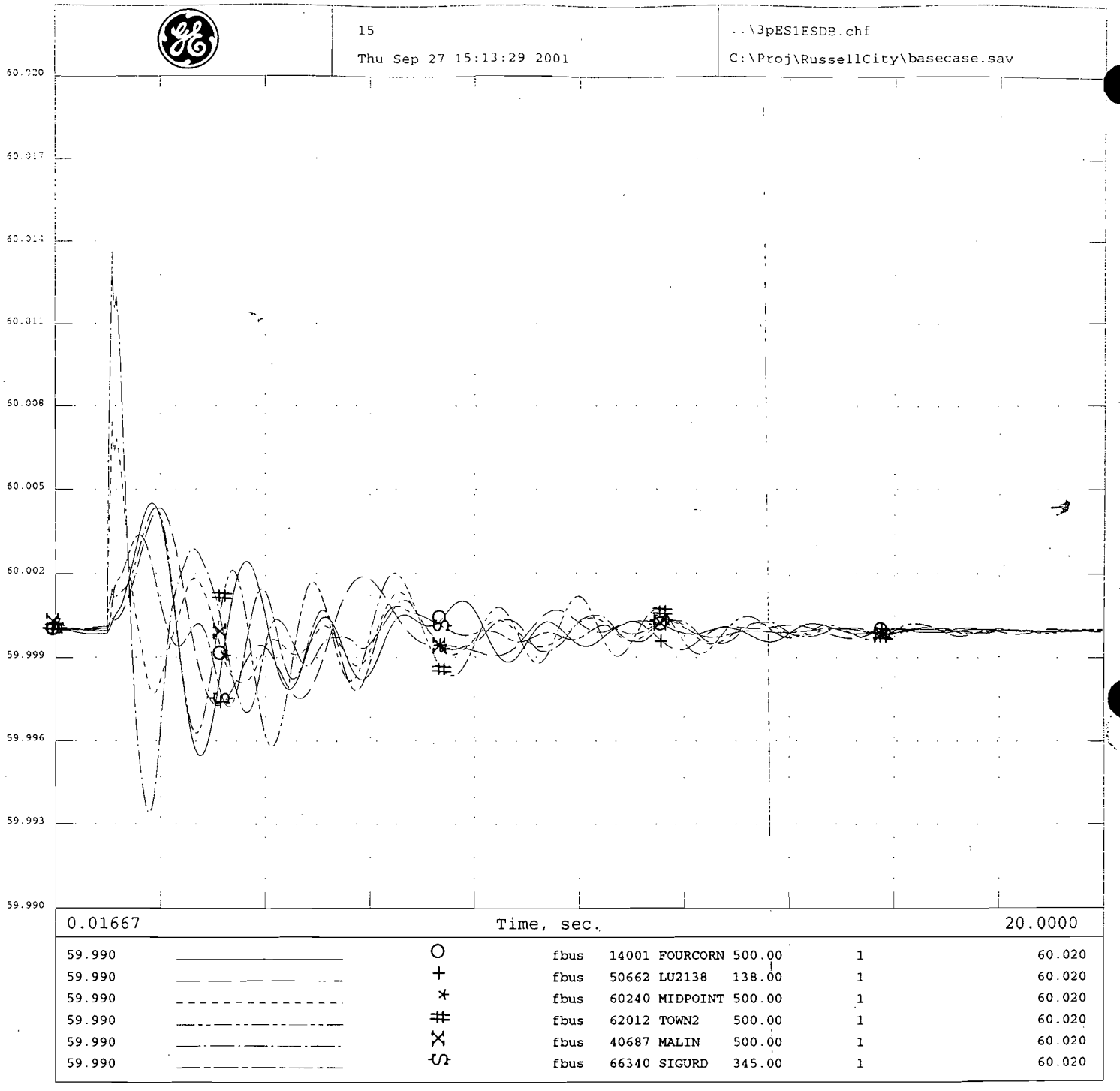

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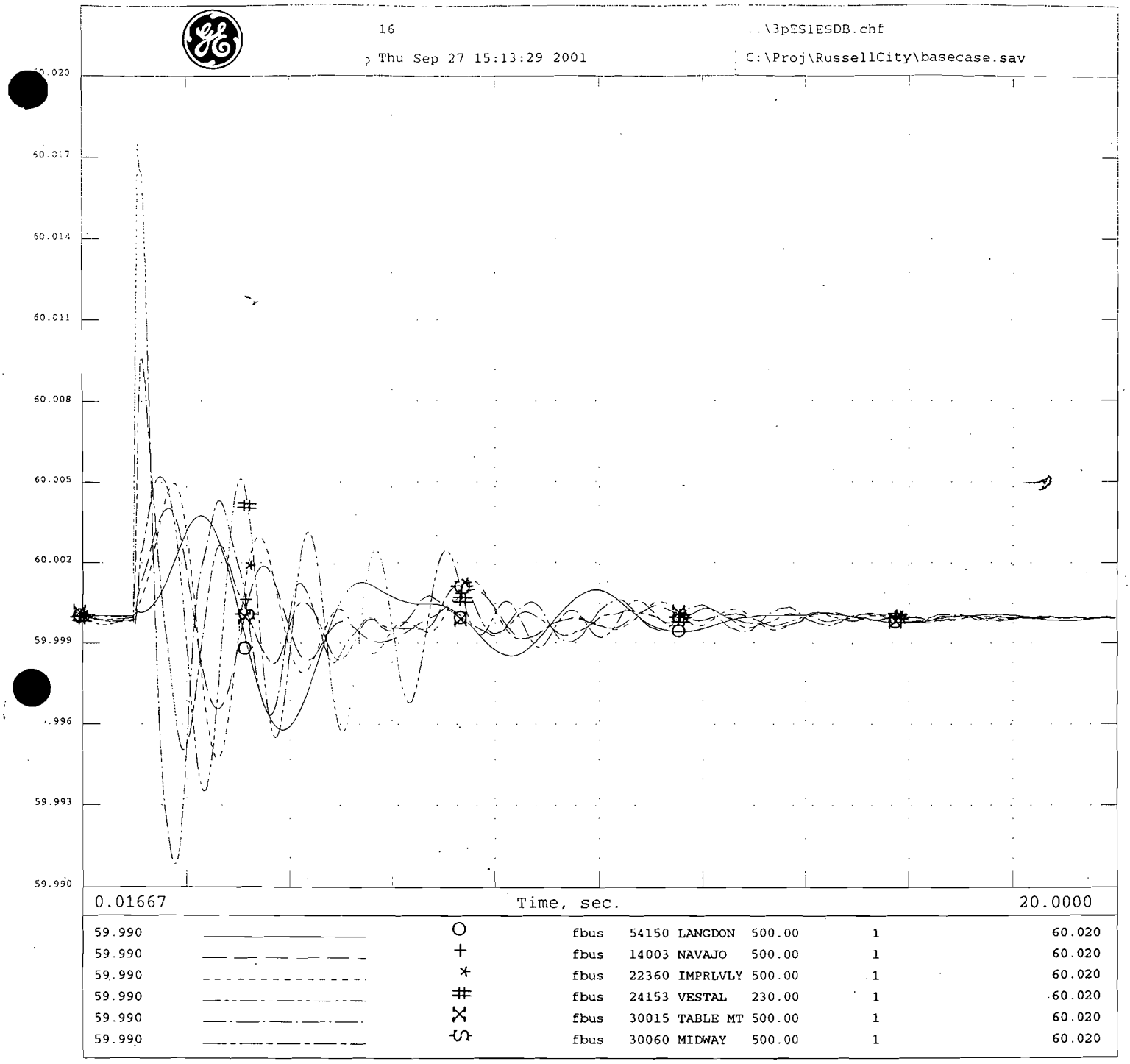

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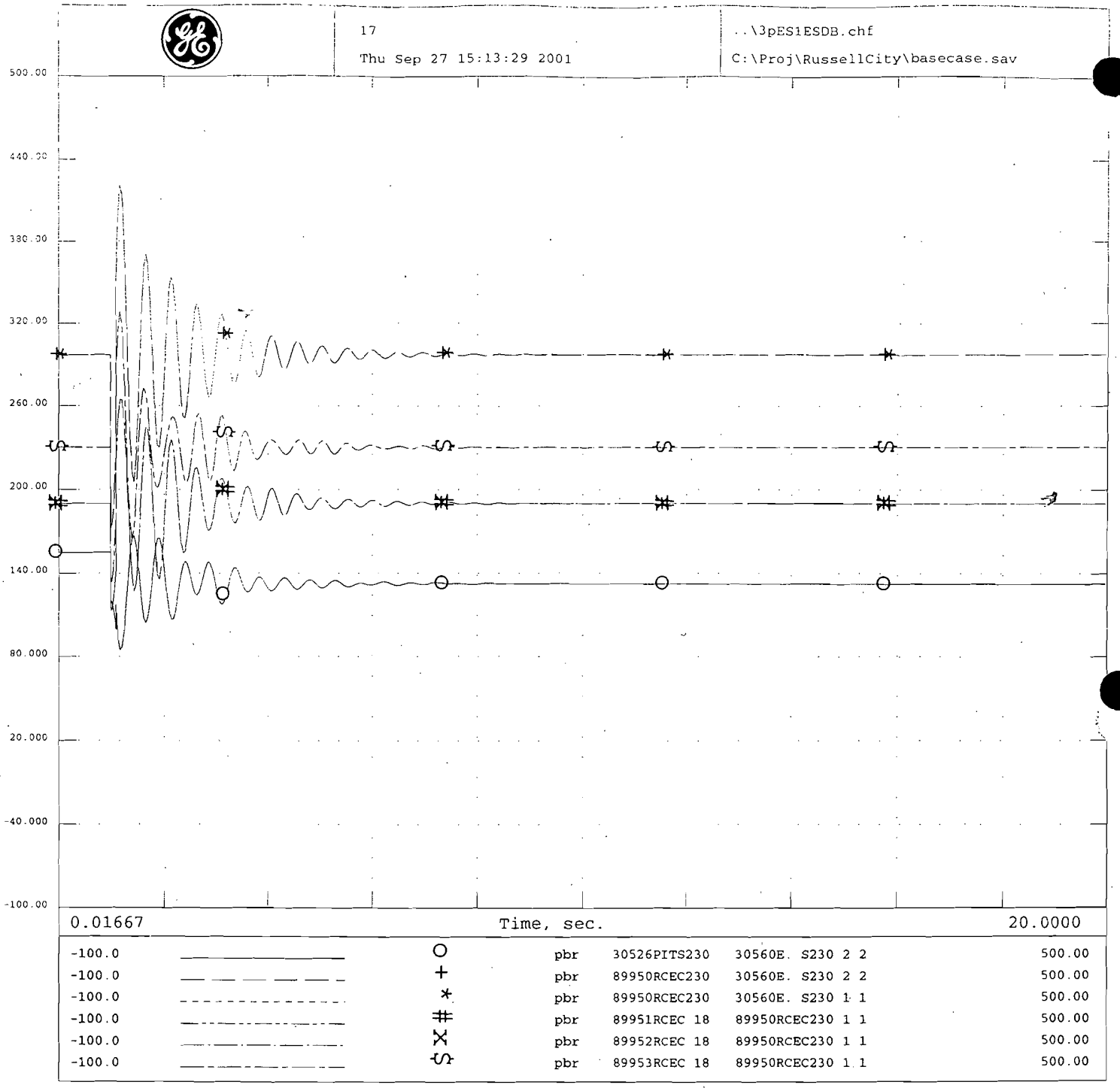

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Calpine/Bechtel Joint Development
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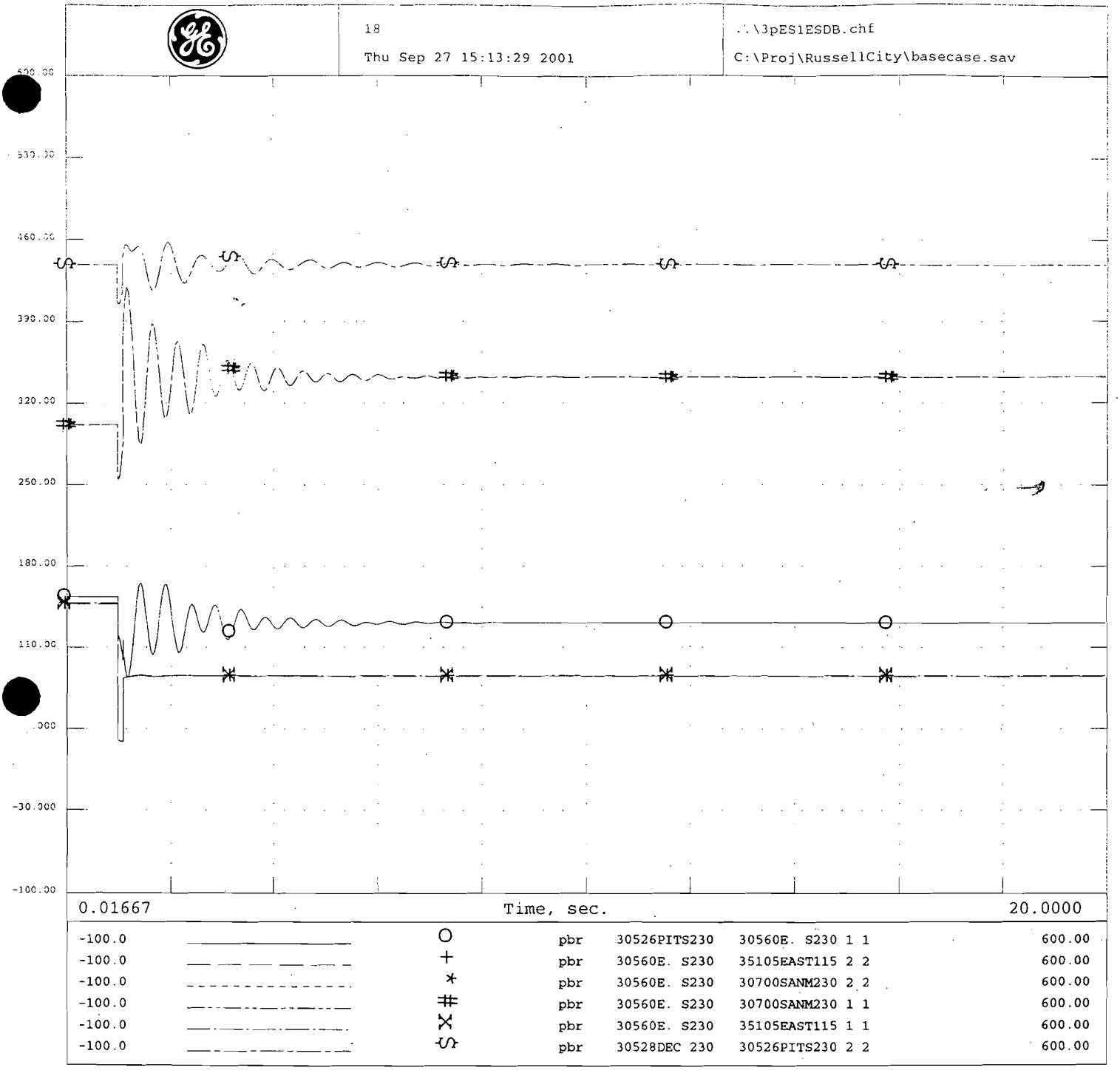

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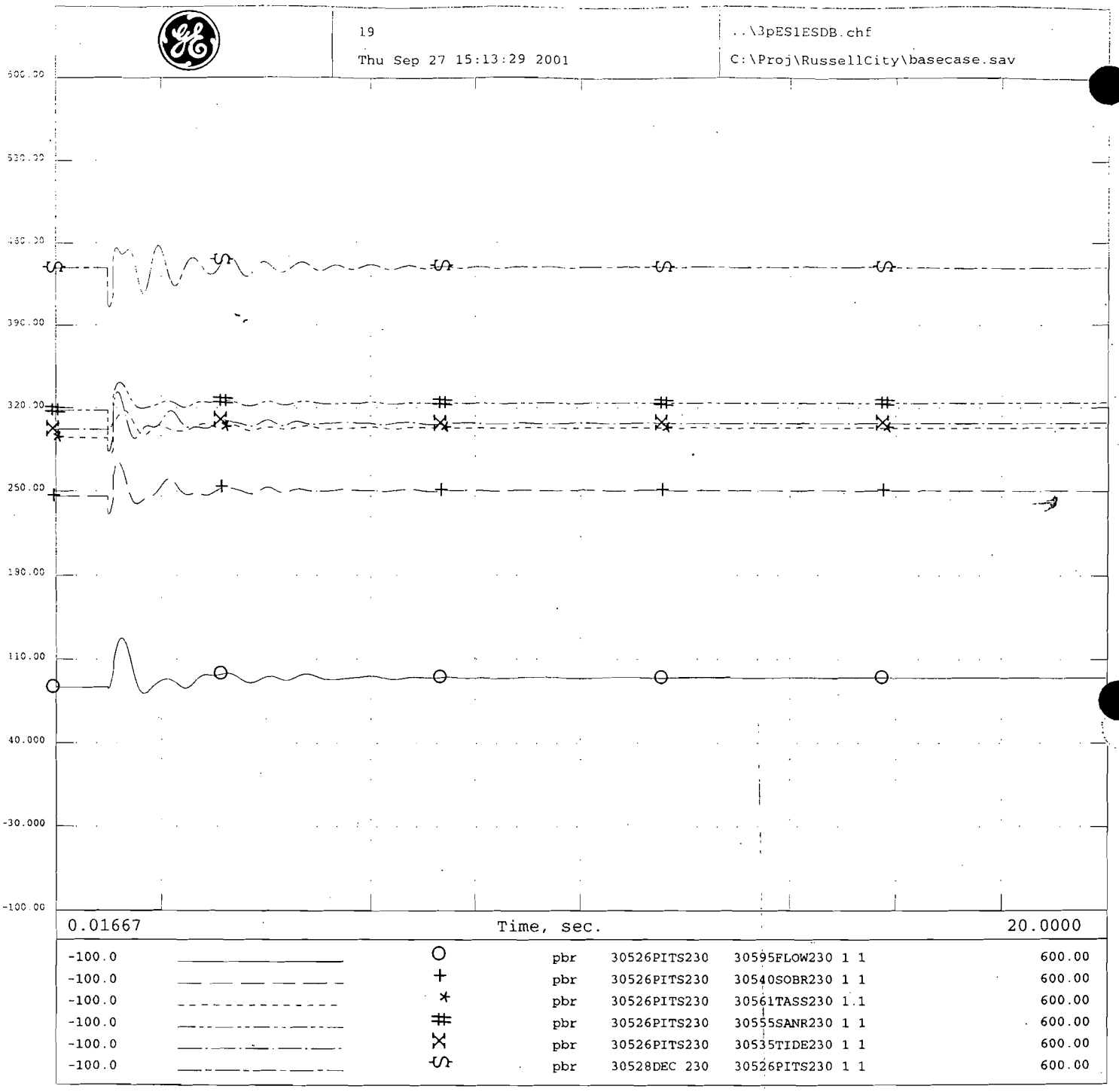

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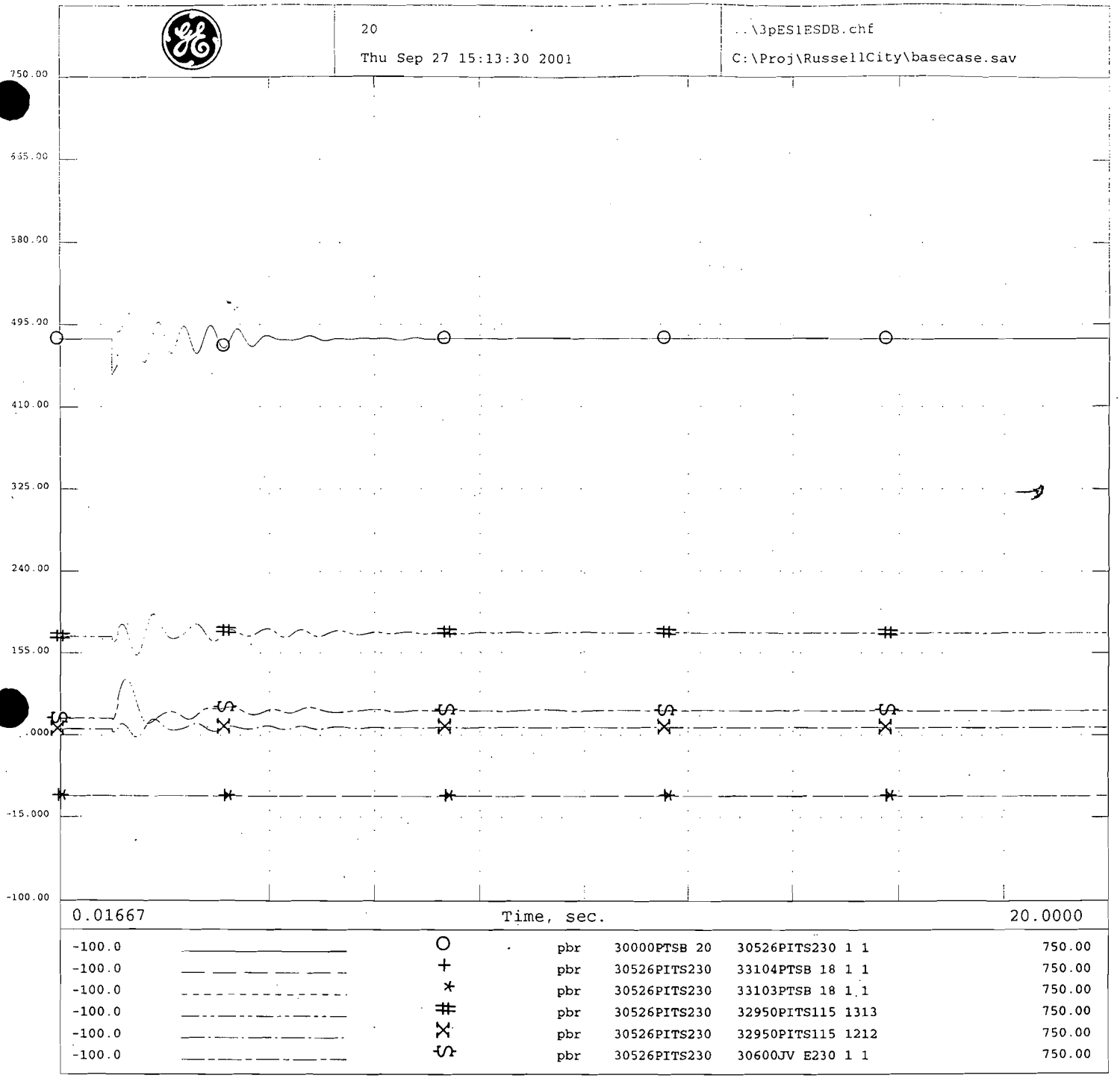

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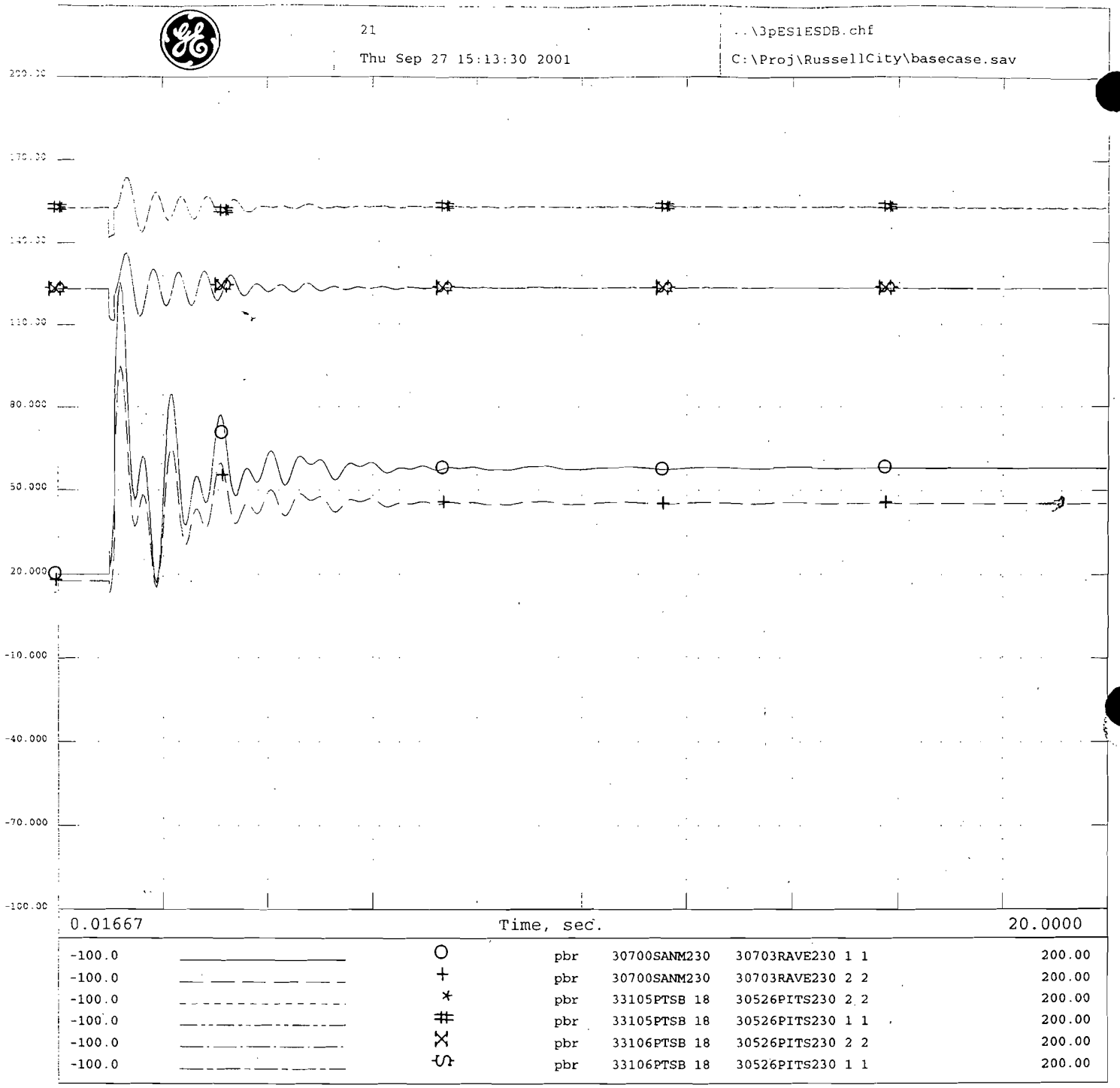

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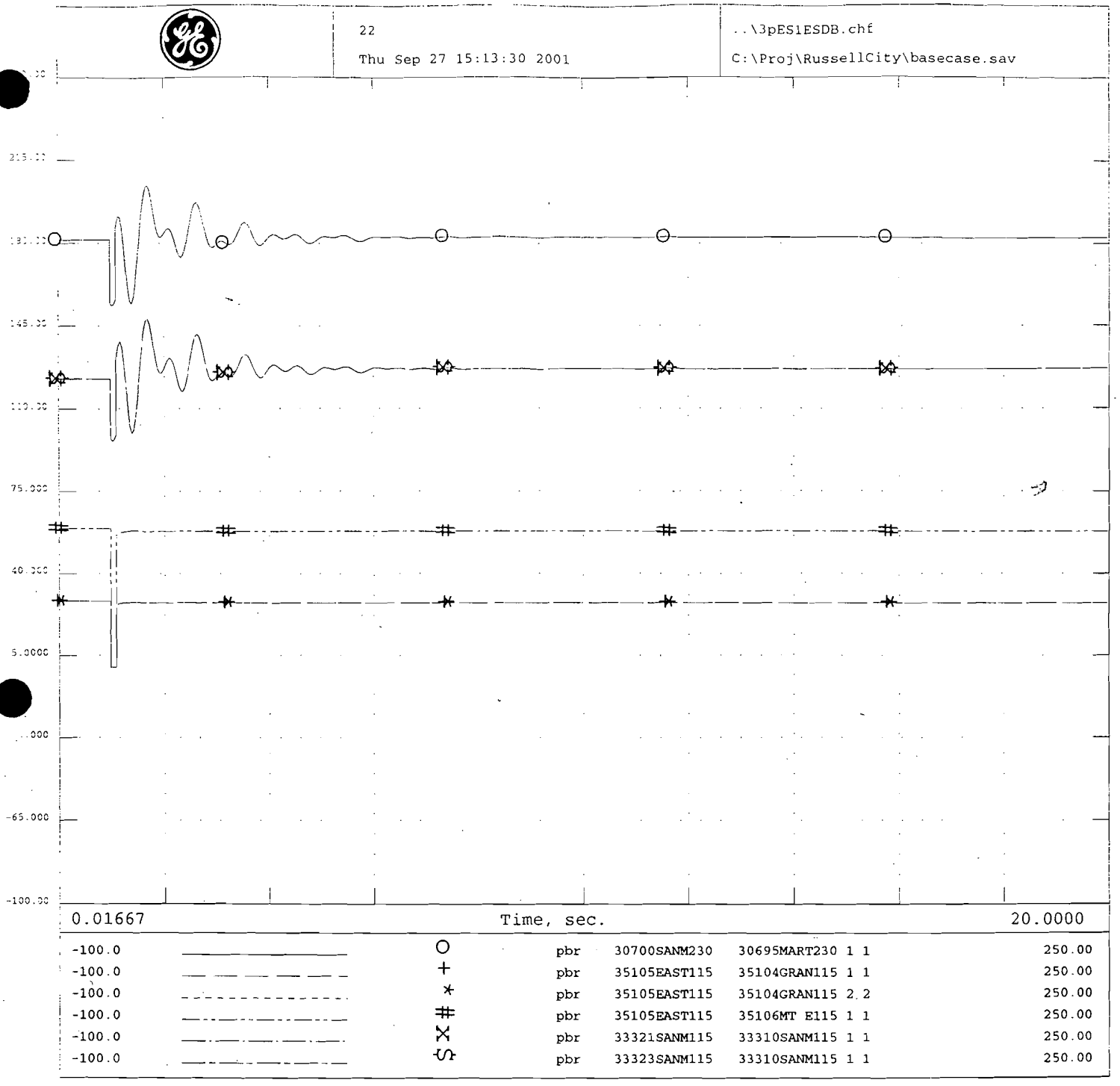

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Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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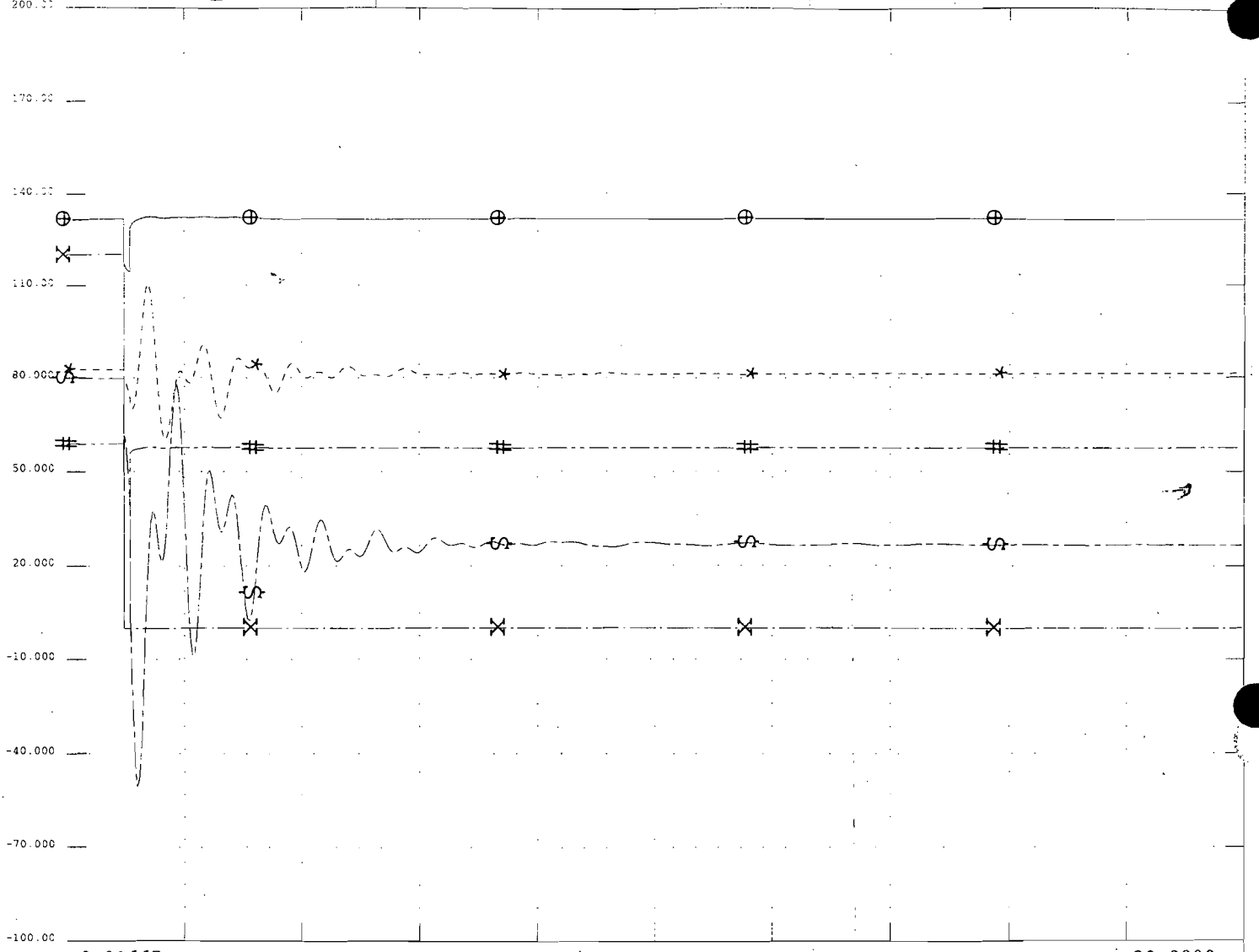

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Calpine/Bechtel Joint Development
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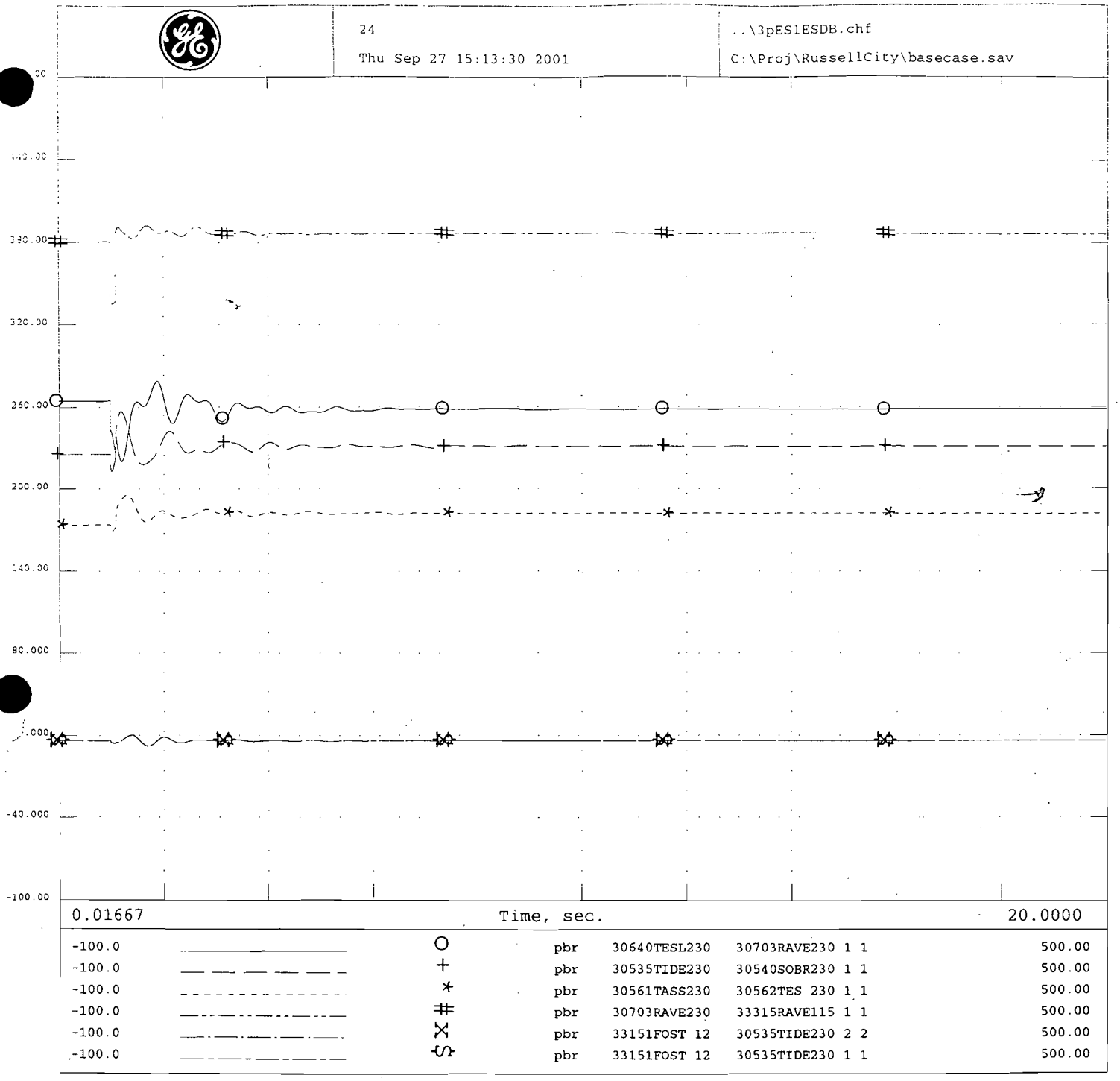

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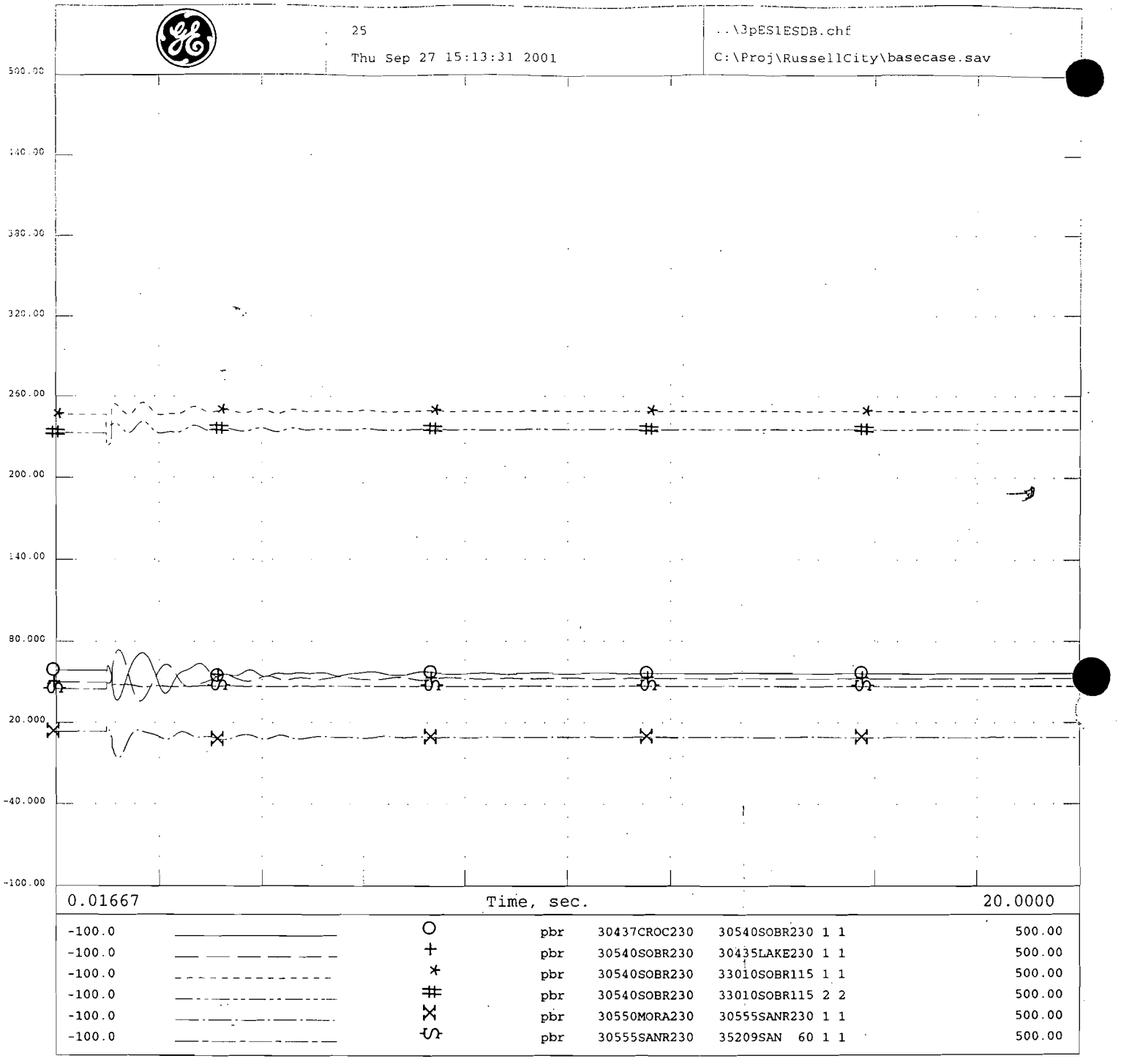

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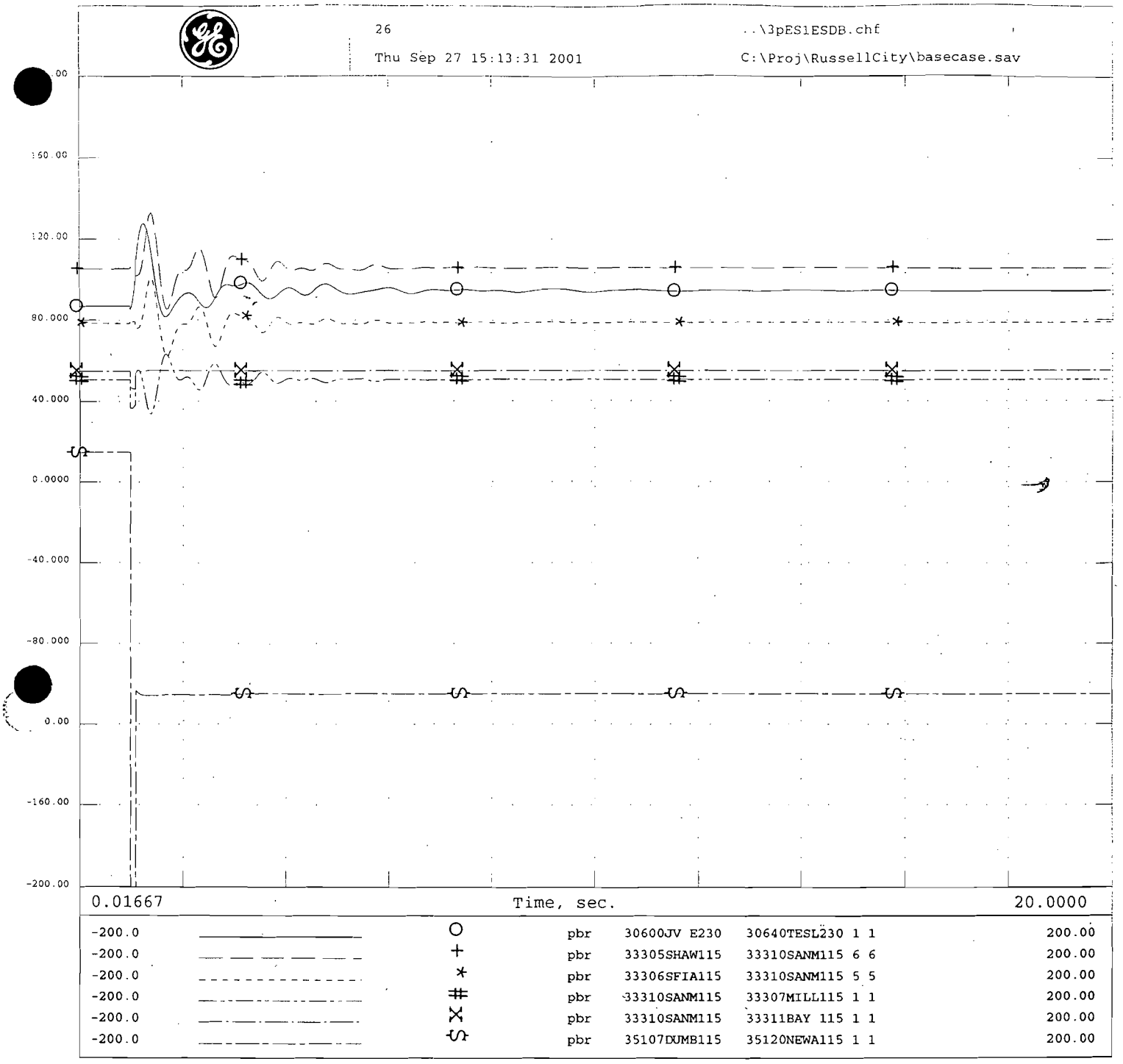

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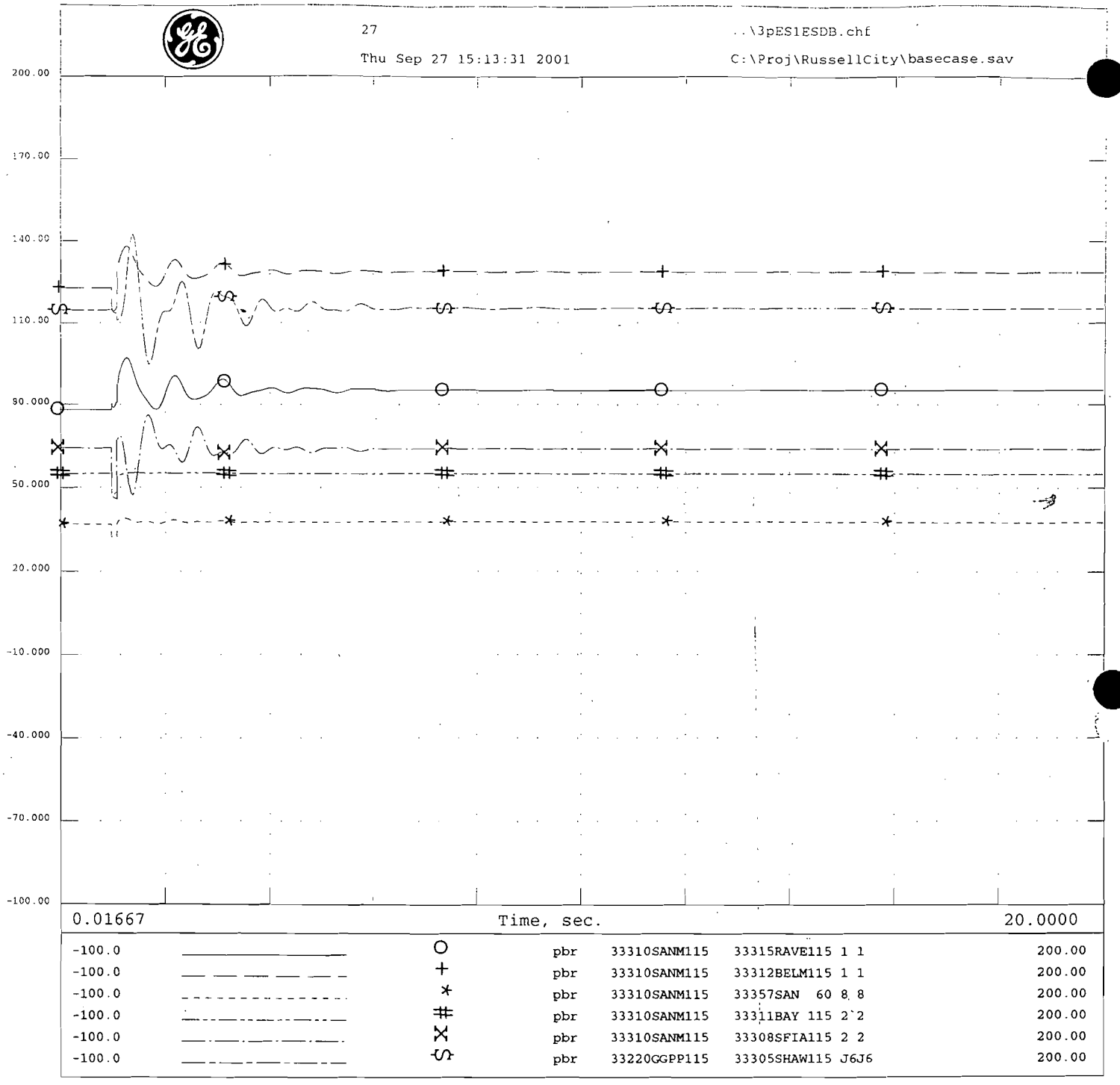

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Grant #1 115kV line outage
3 phase 6 cycle fault at East Shore 115kV bus and trip East Shore-Grant #1 115kV
line
RUN  9
CC
CC   Fault East Shore 115kV bus
FB   0.0 "EASTSHRE" 115.
CC
CC   Clear fault at East Shore 115kV bus
CFB  6.0 "EASTSHRE" 115.
CC
CC   Trip the East Shore-Grant #1 115kV line
DL  6.0 "EASTSHRE" 115.00 "GRANT   " 115.00 "1 "
CC
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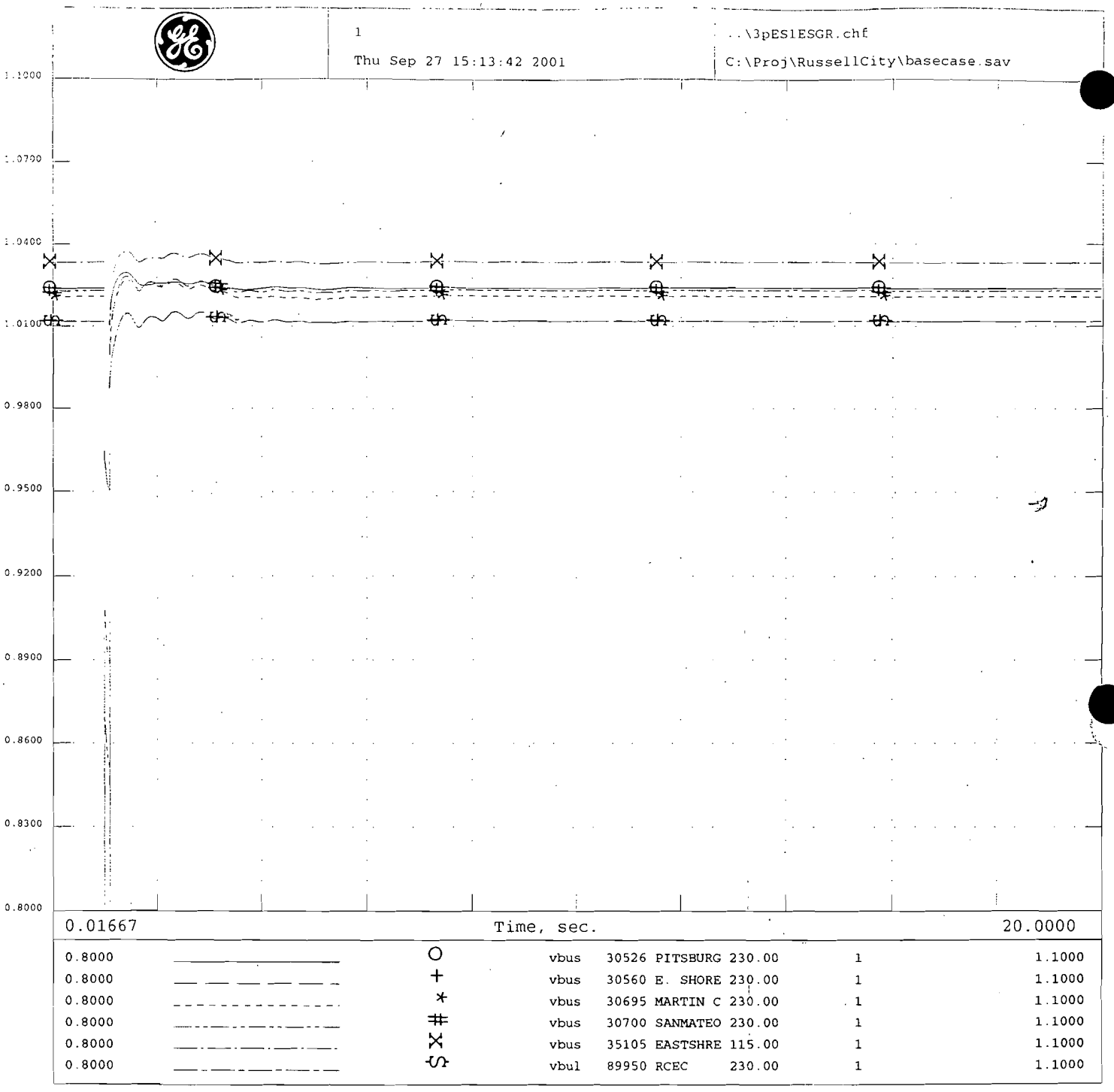

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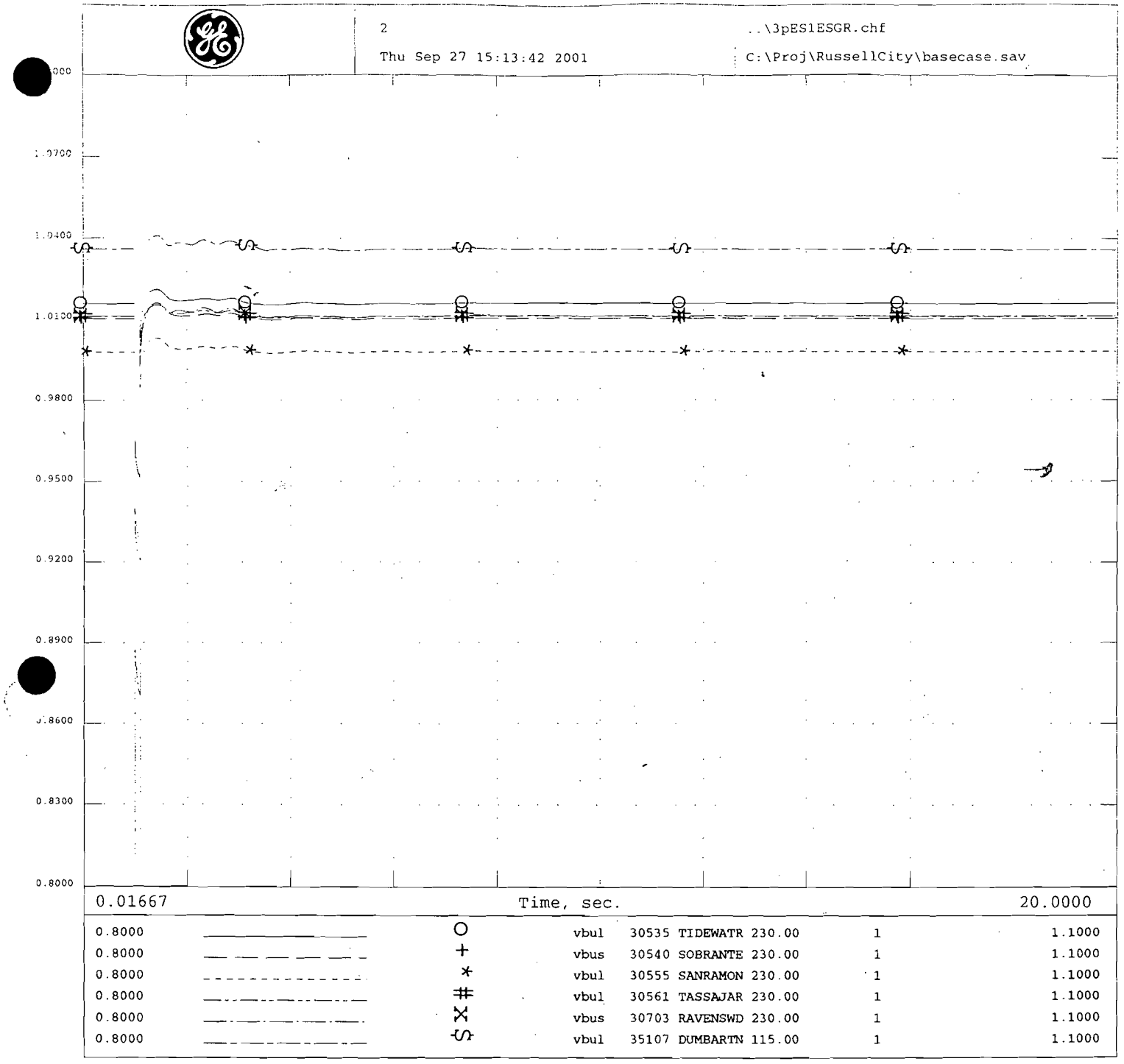
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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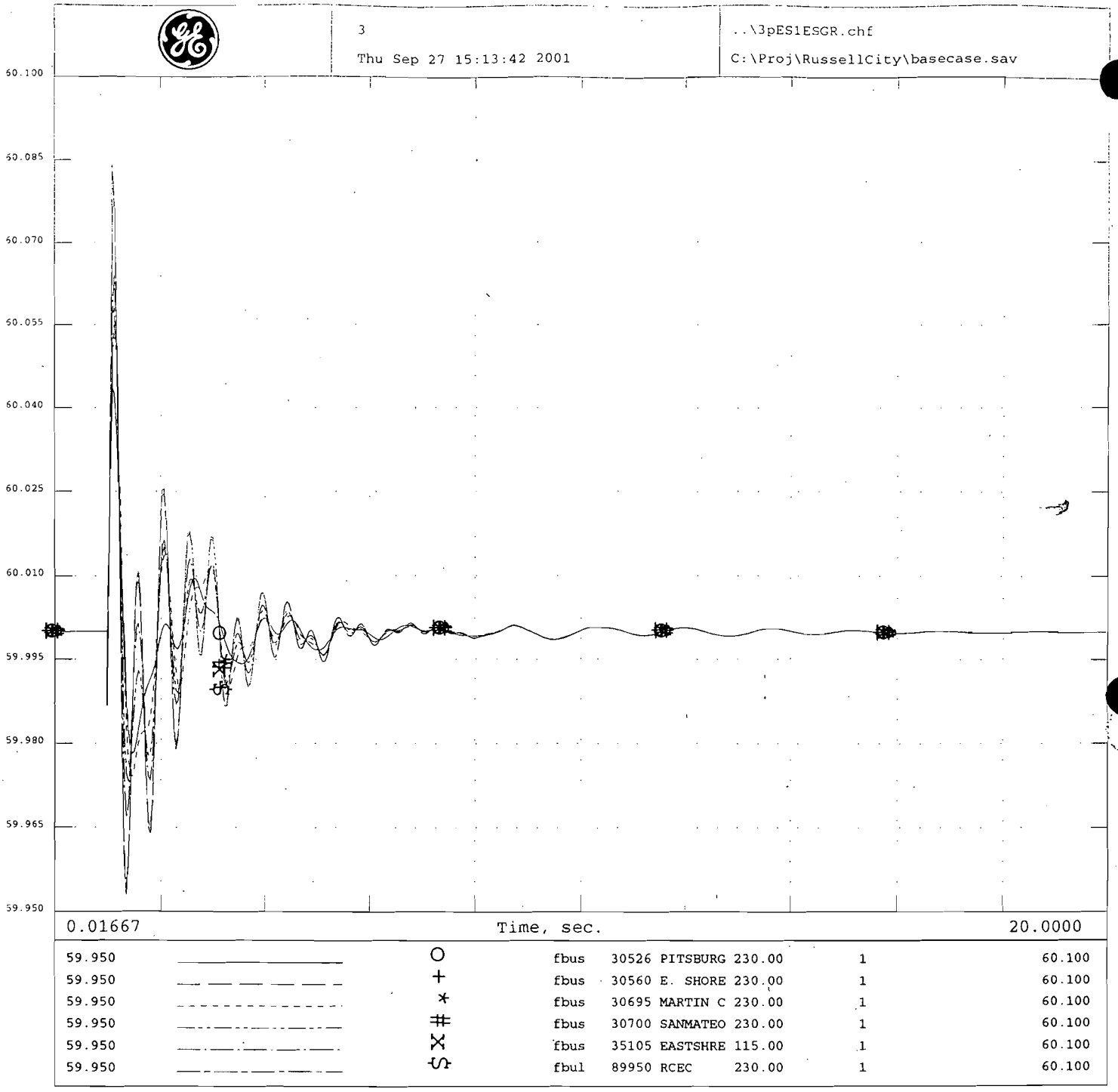

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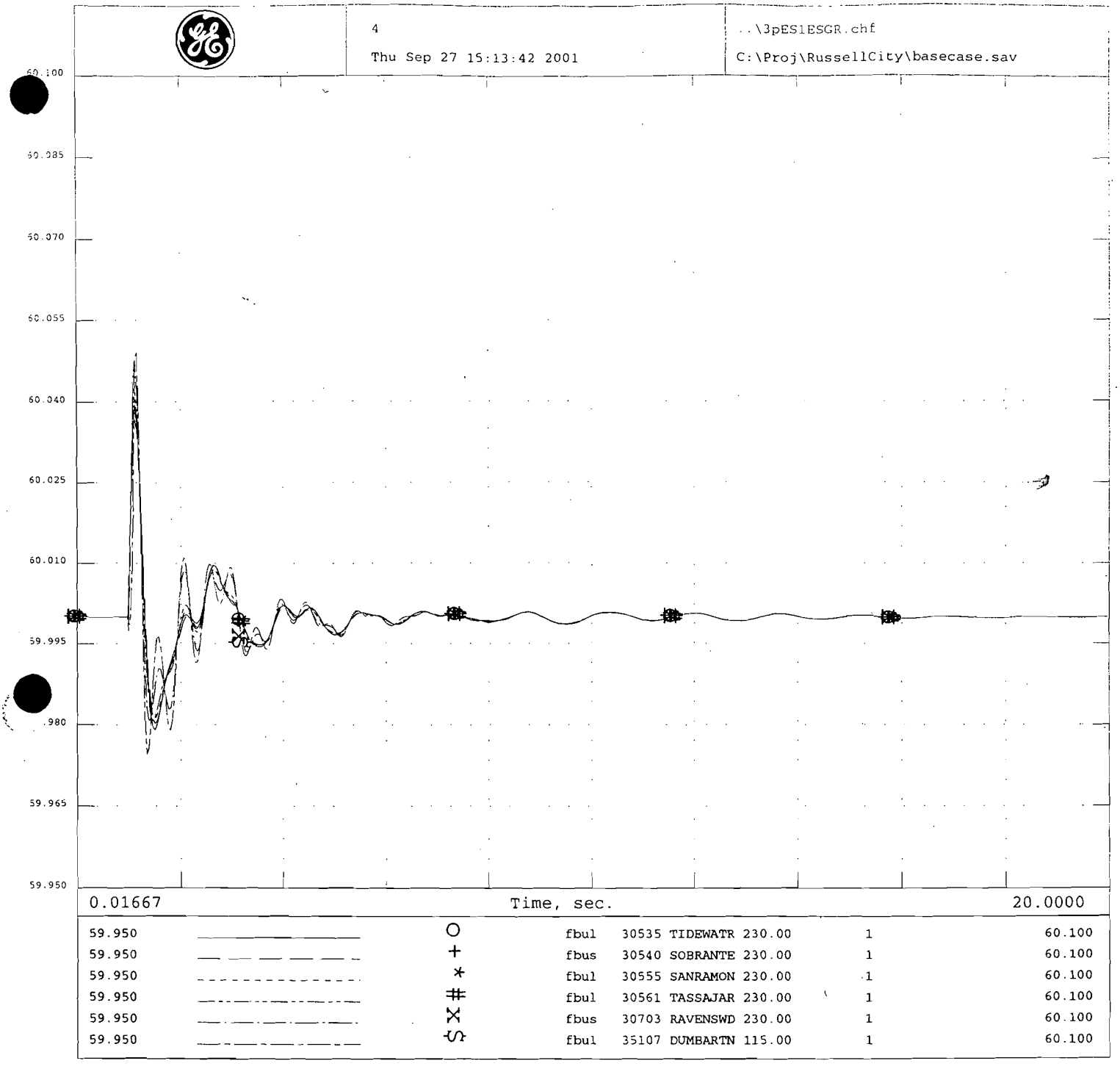
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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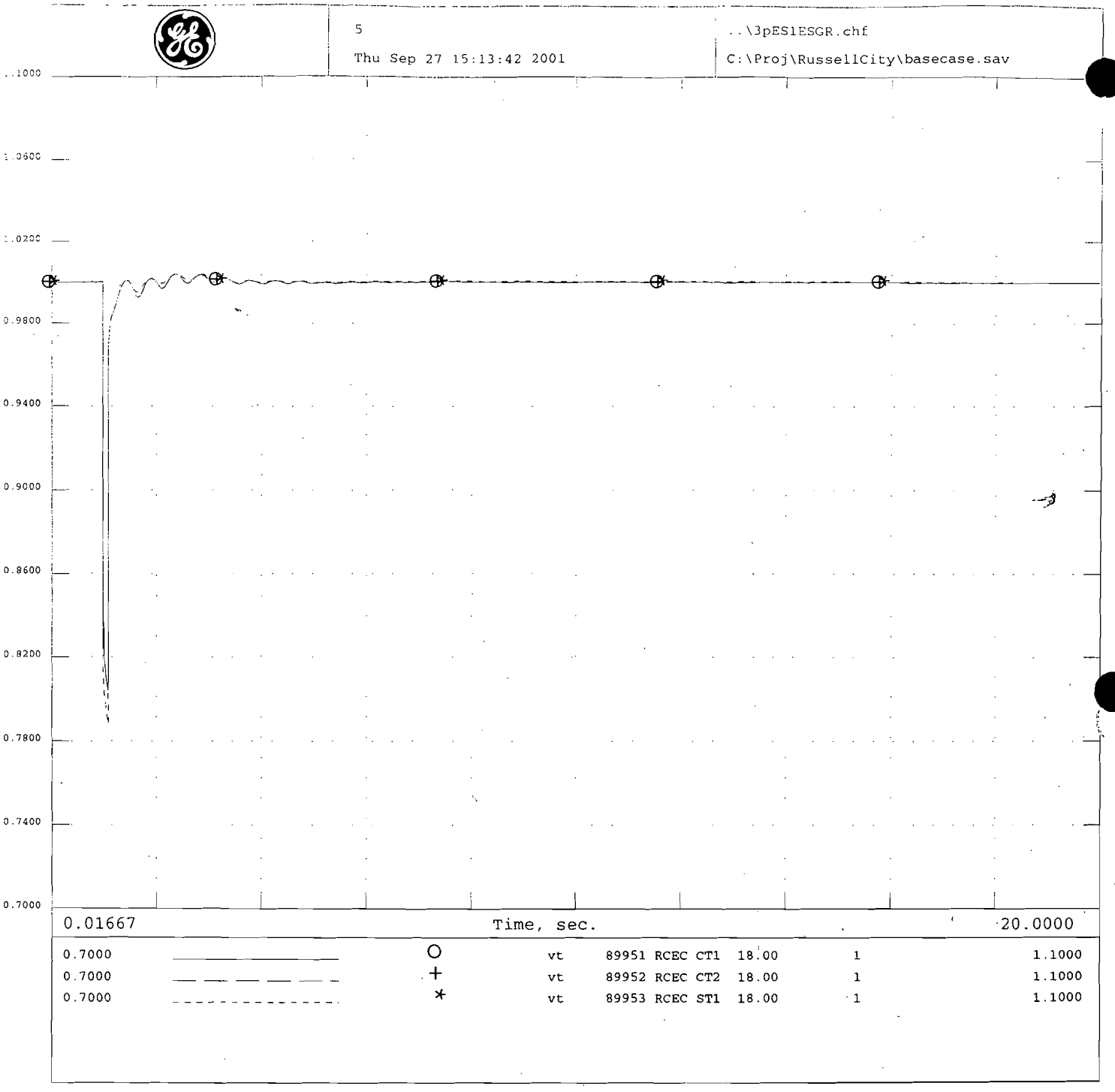

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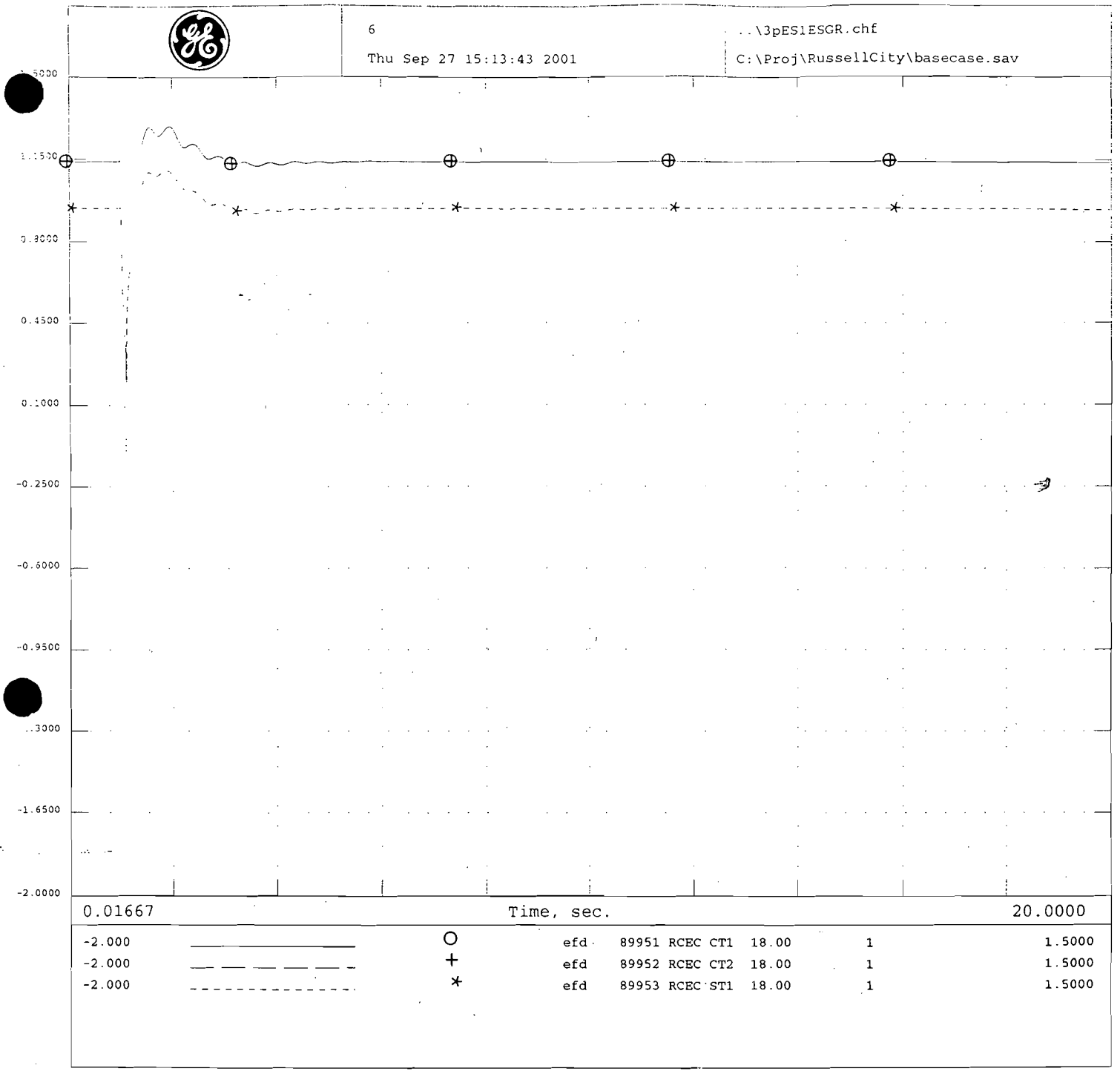
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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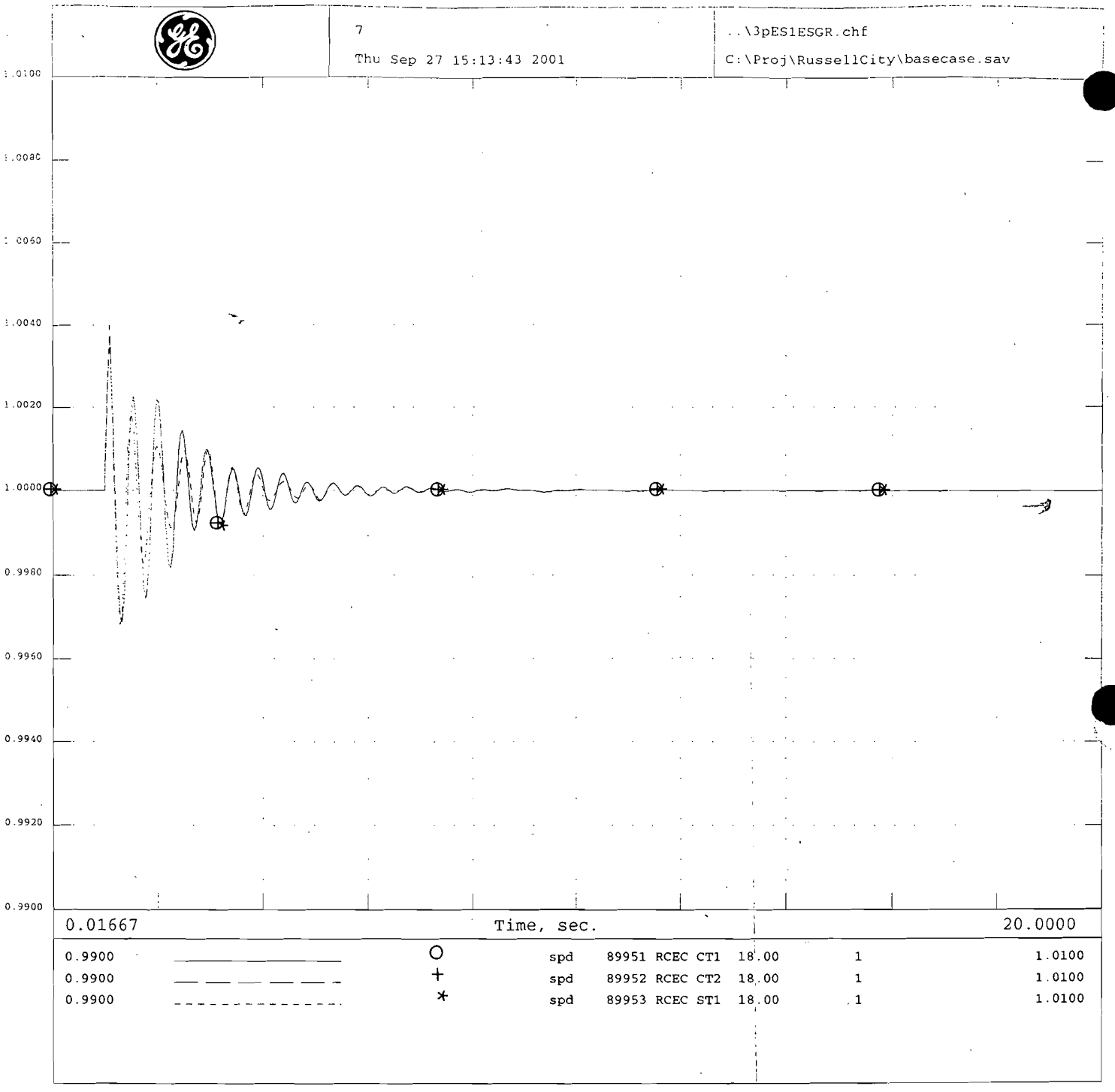
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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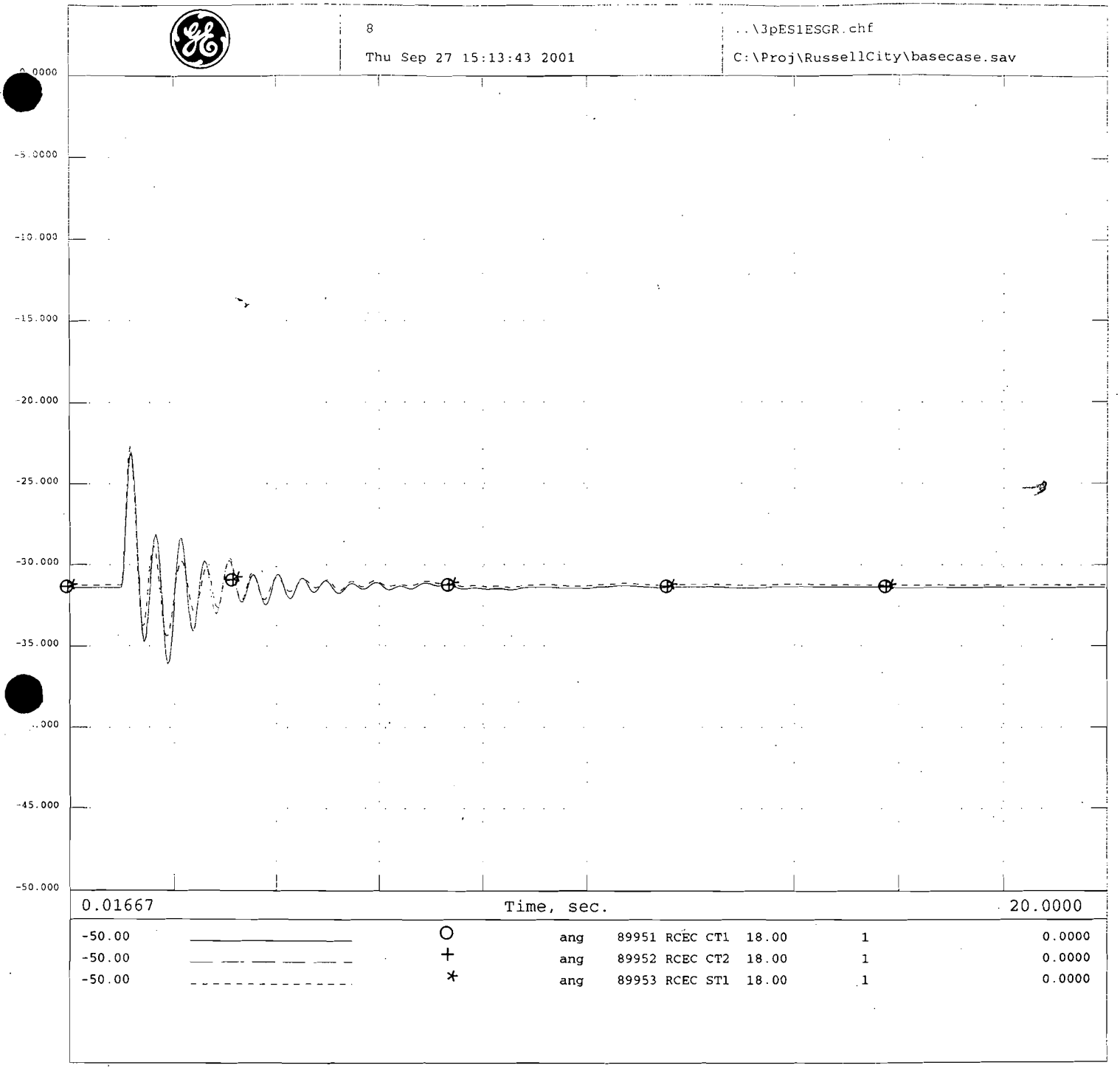
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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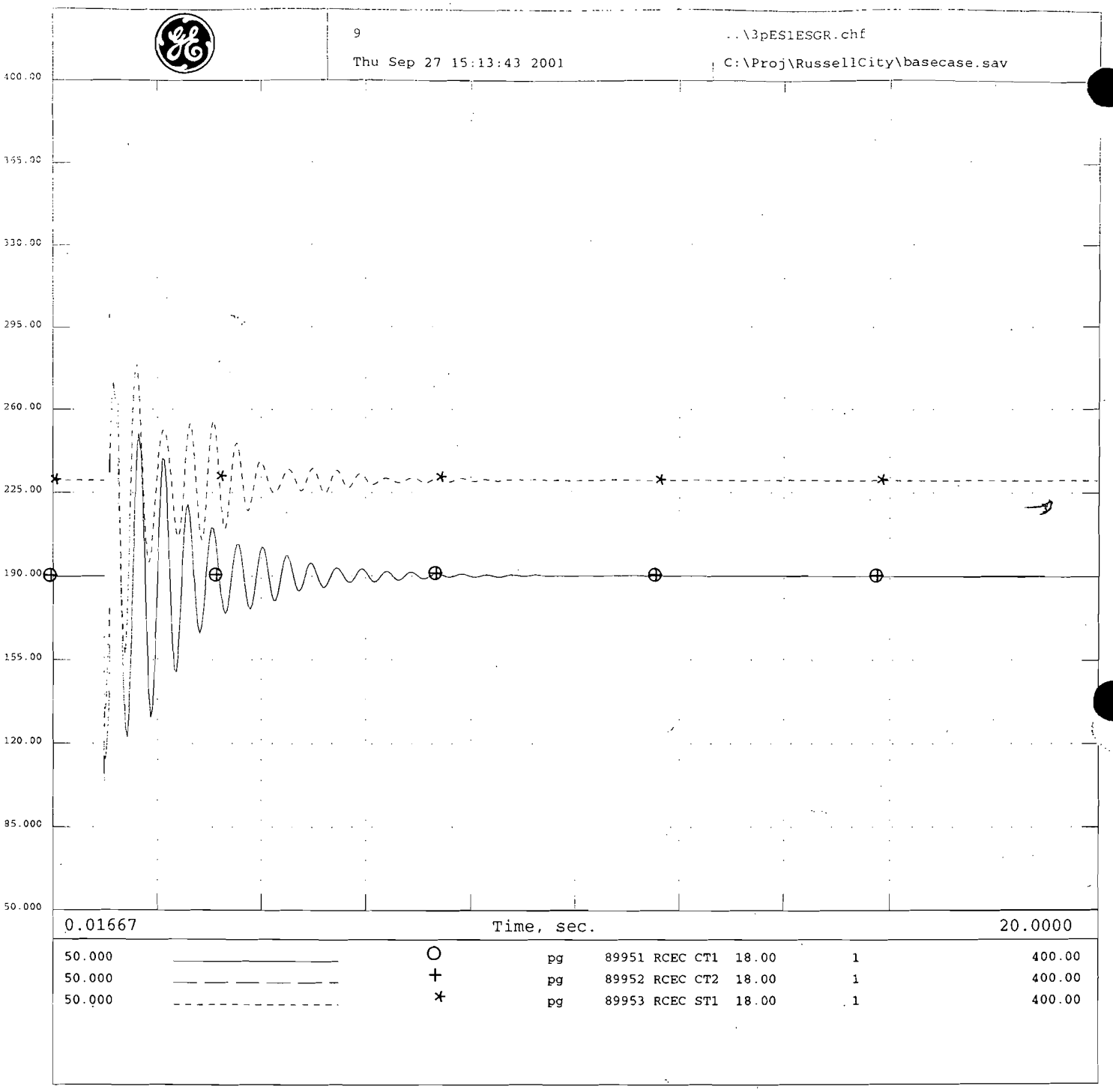
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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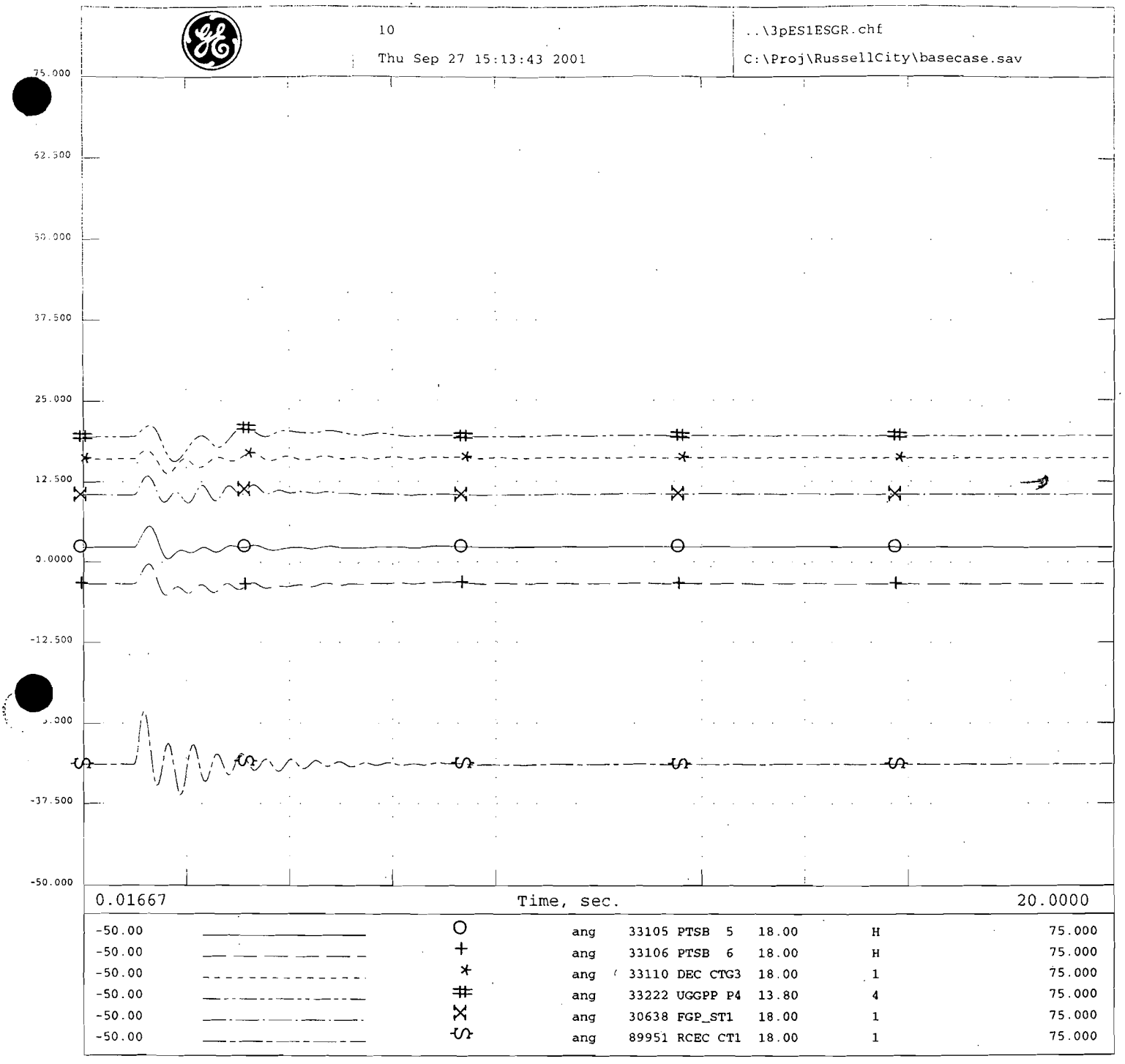

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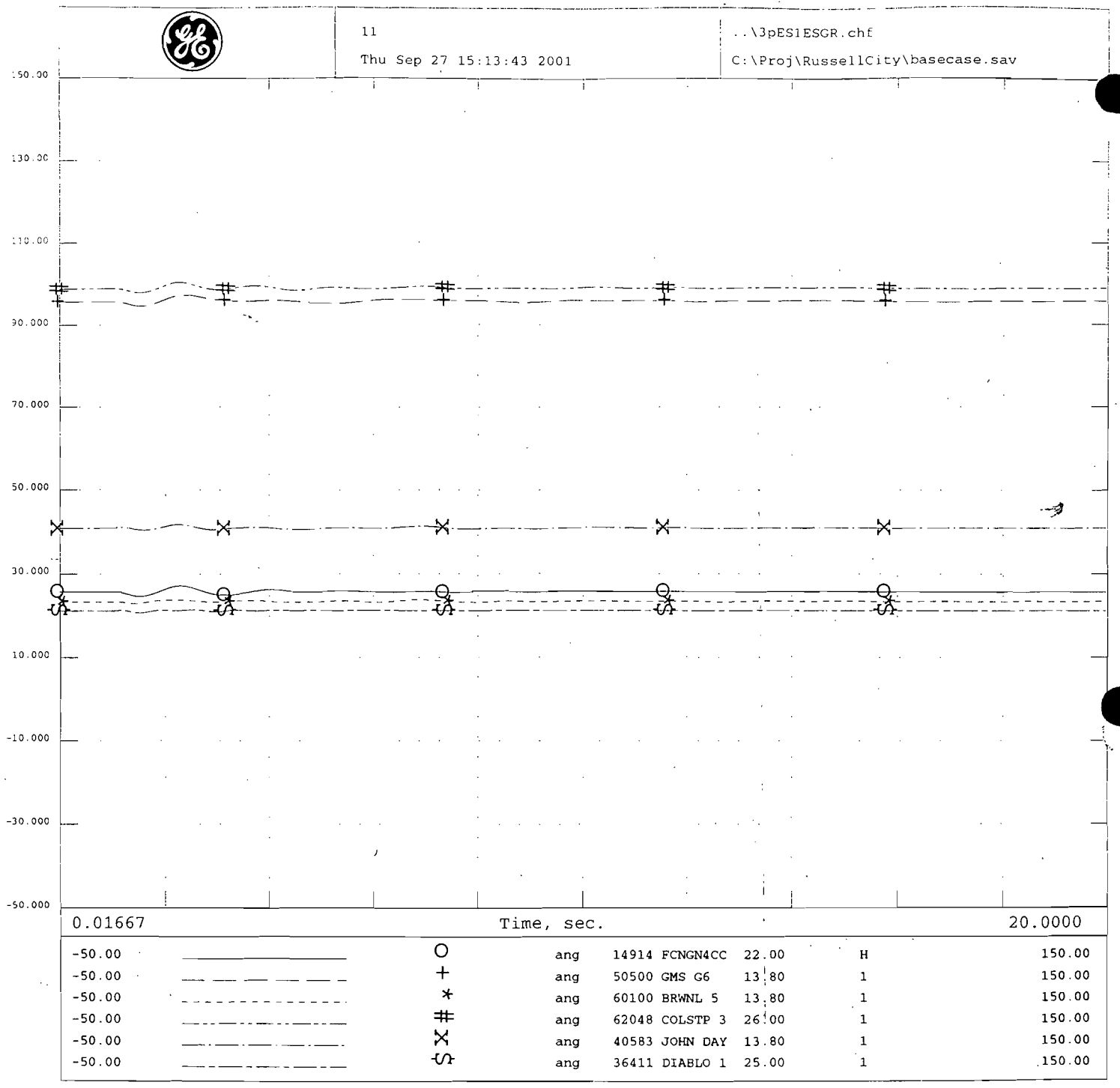
Selected Local Rotor Angle Plots



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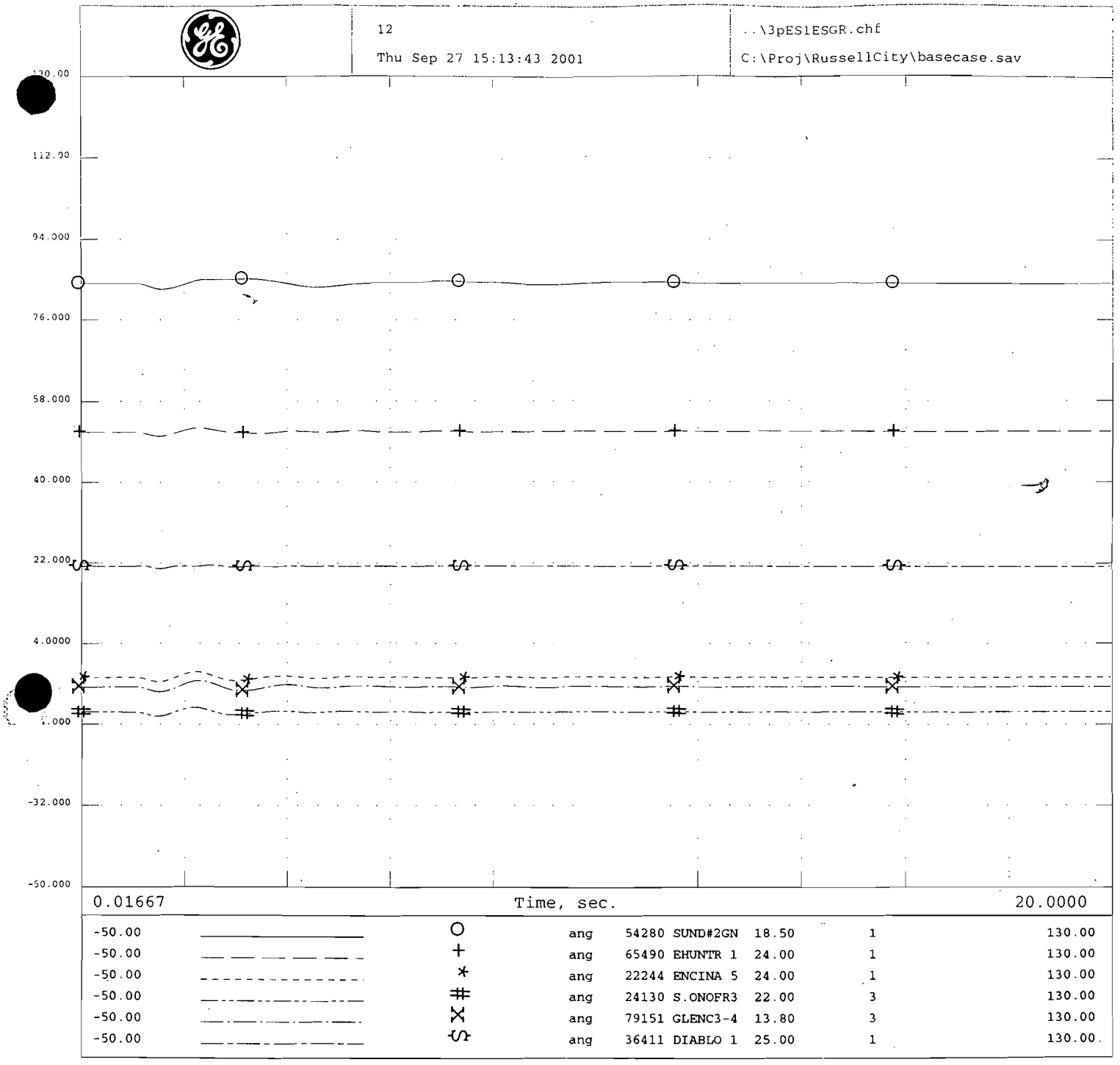

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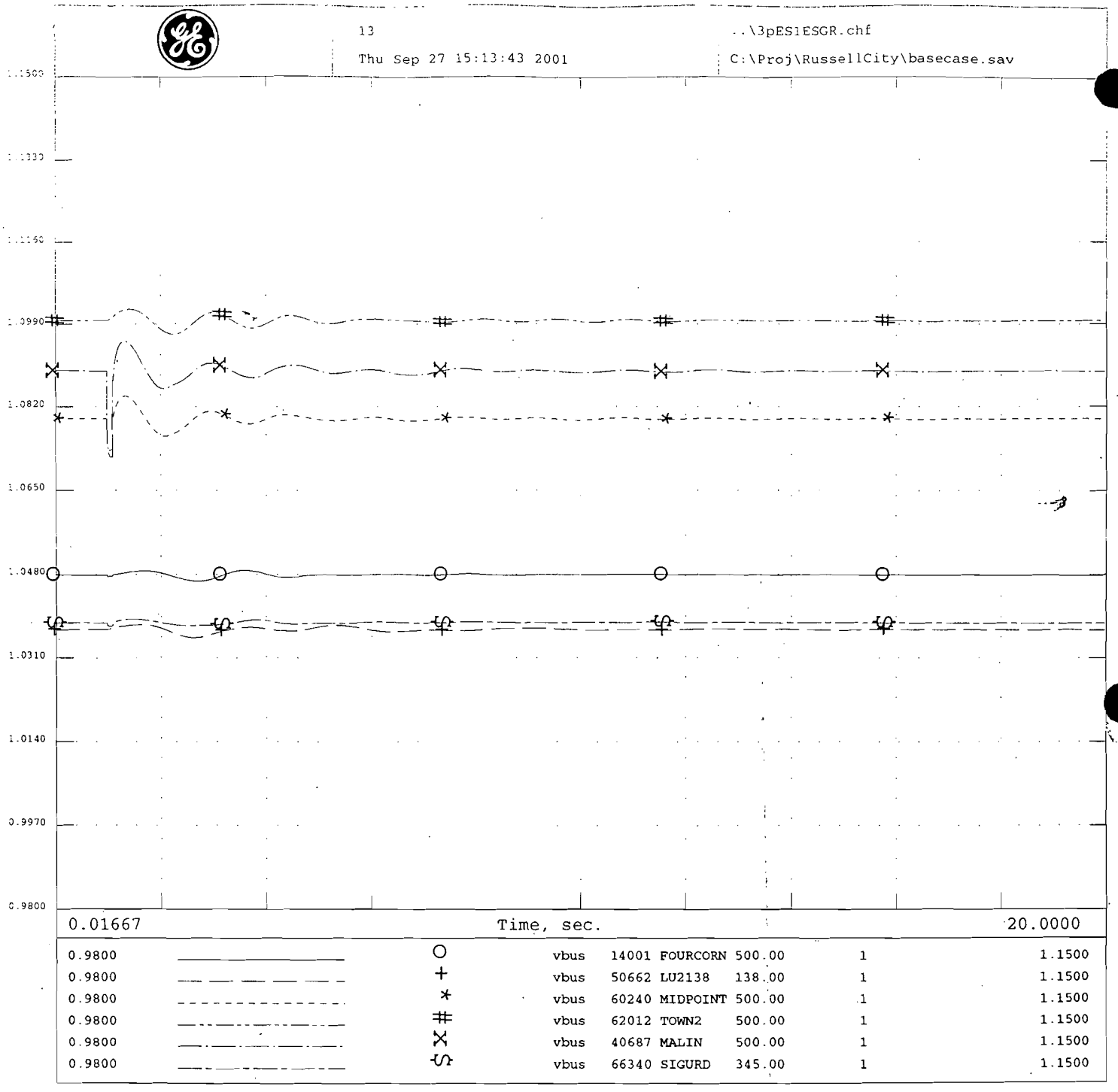

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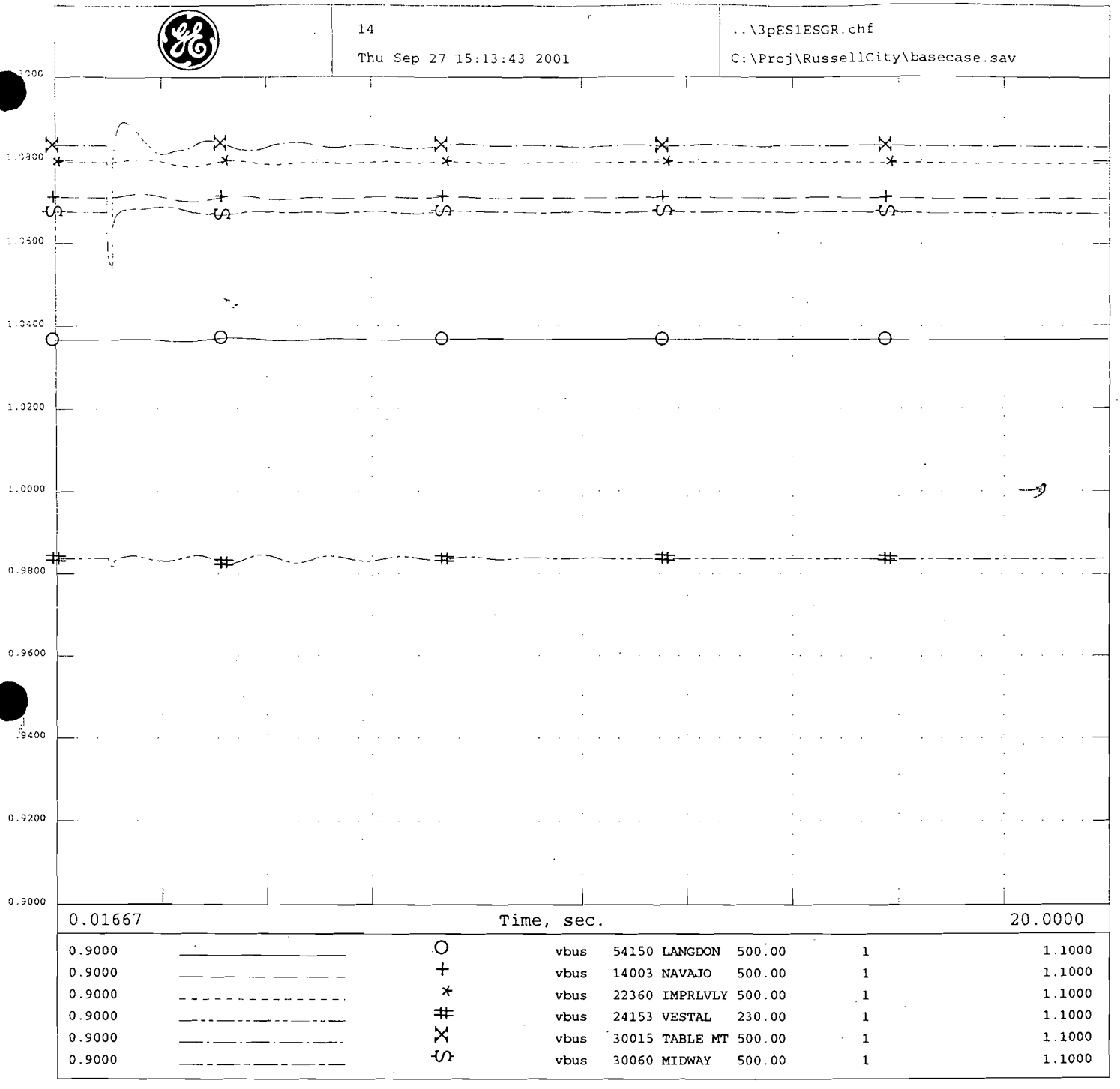

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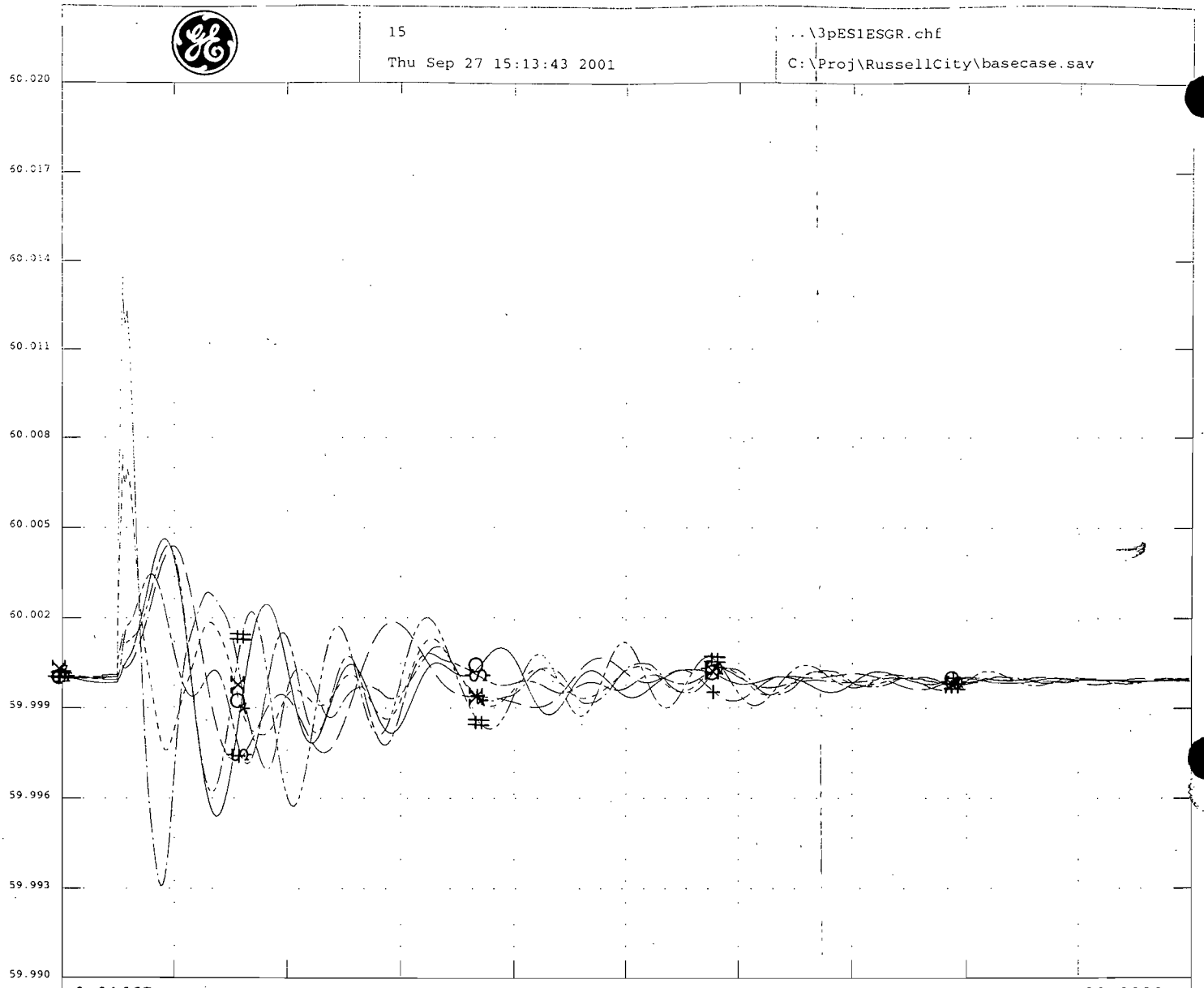

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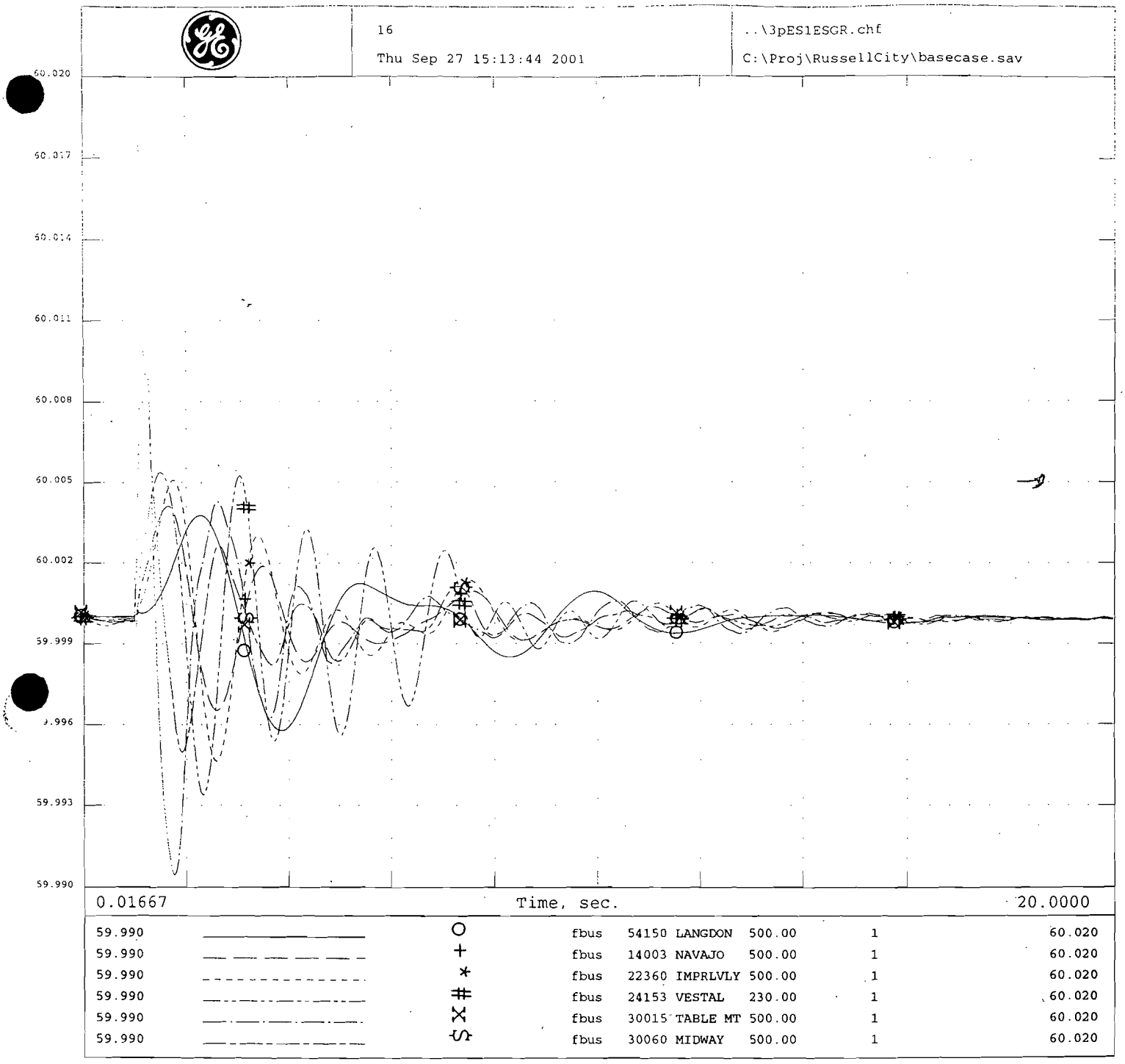

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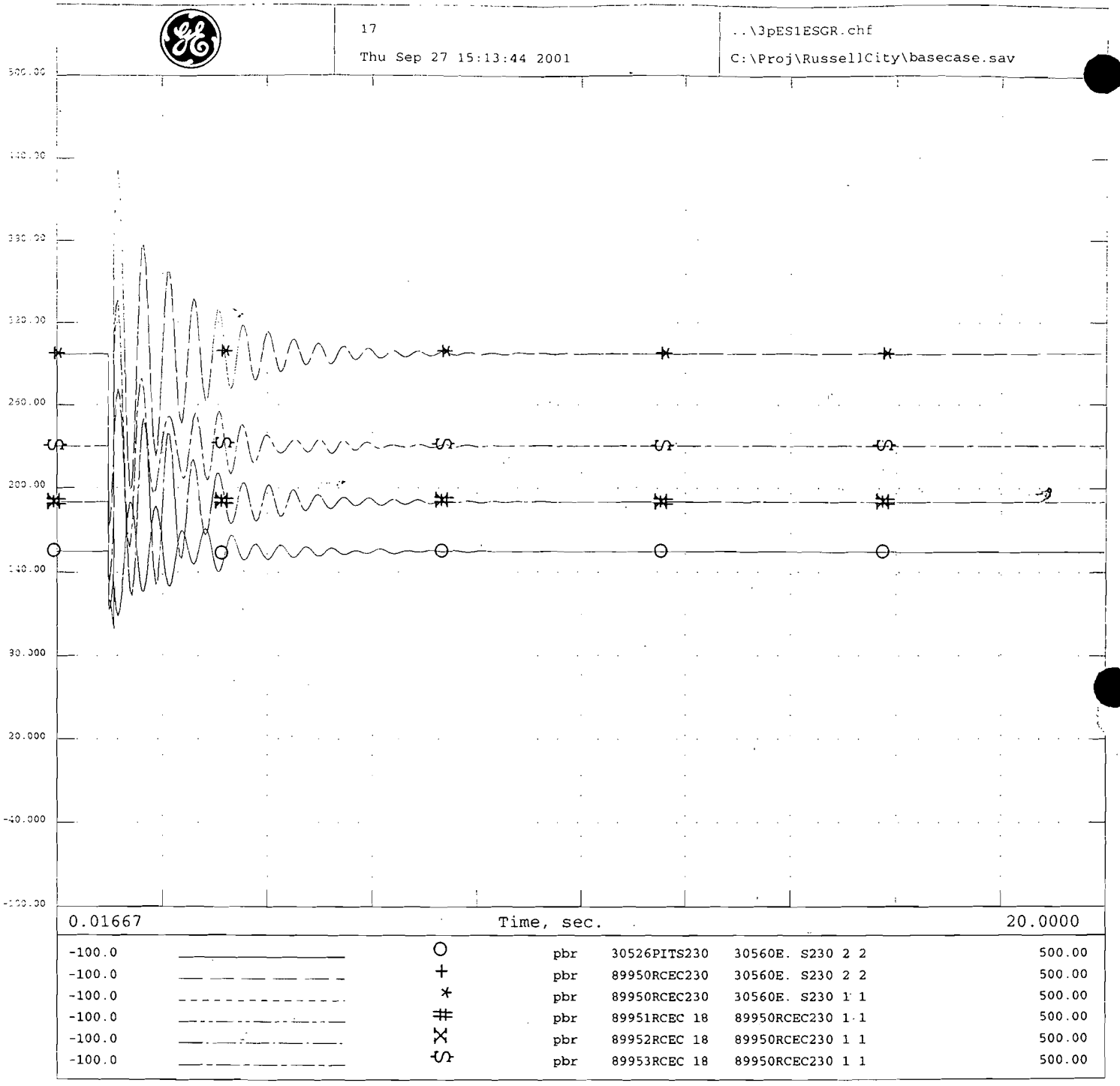

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Calpine/Bechtel Joint Development
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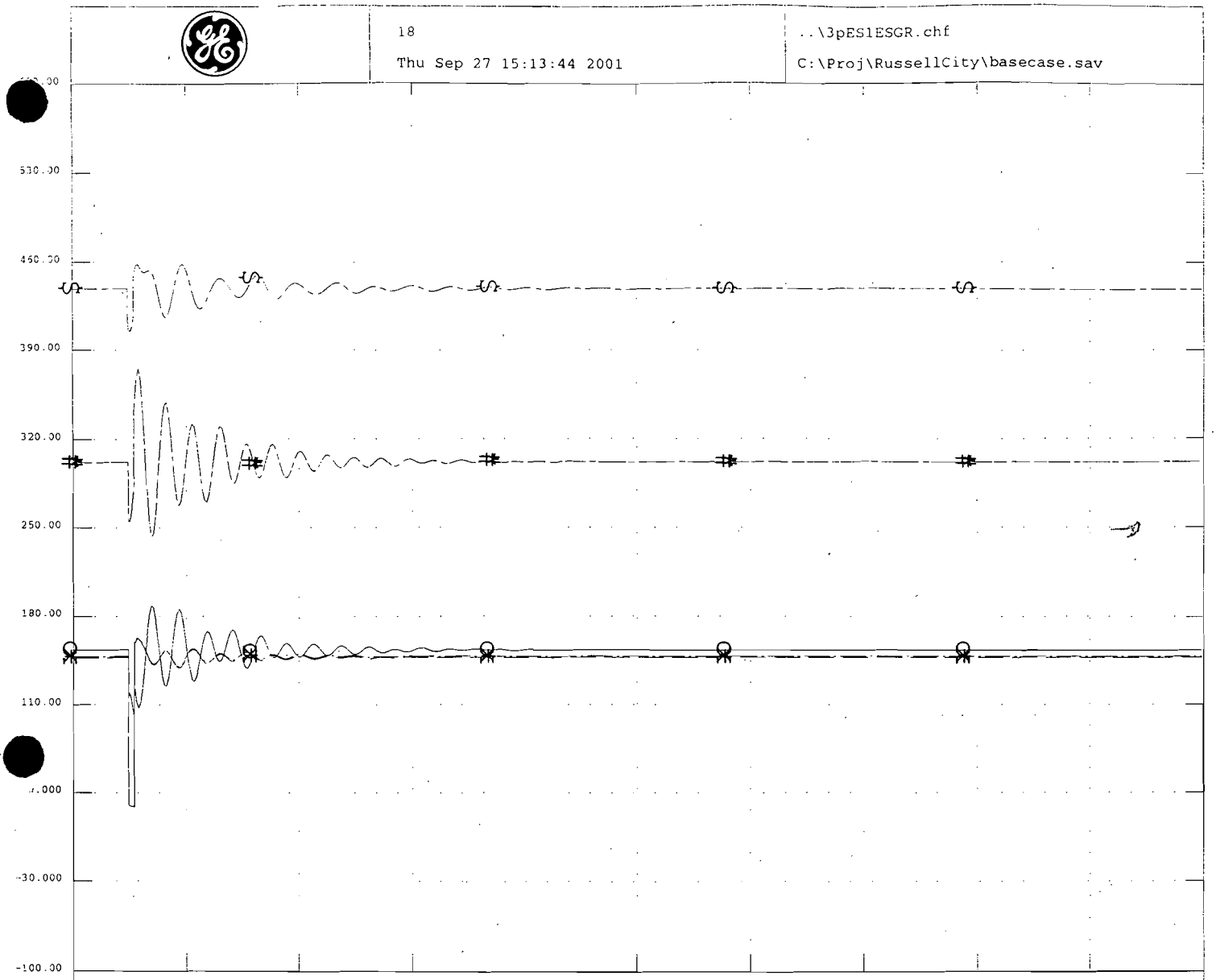

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-100.0		pbr	30560E. S230	35105EAST115	1 1	600.00
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Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Grant #1 115kV line outage
3 phase 6 cycle fault at East Shore 115kV bus and trip East Shore-Grant #1 115k

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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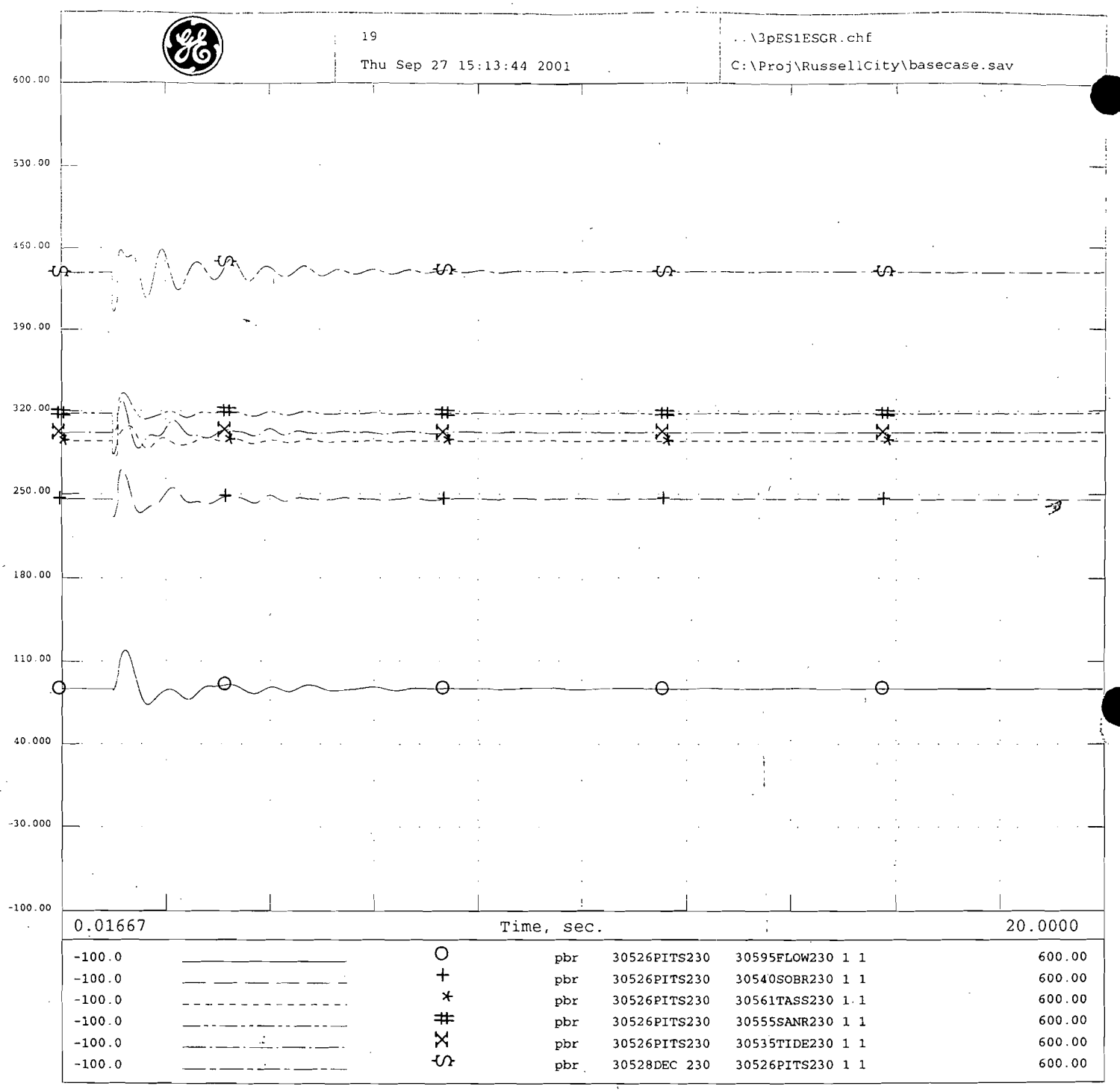

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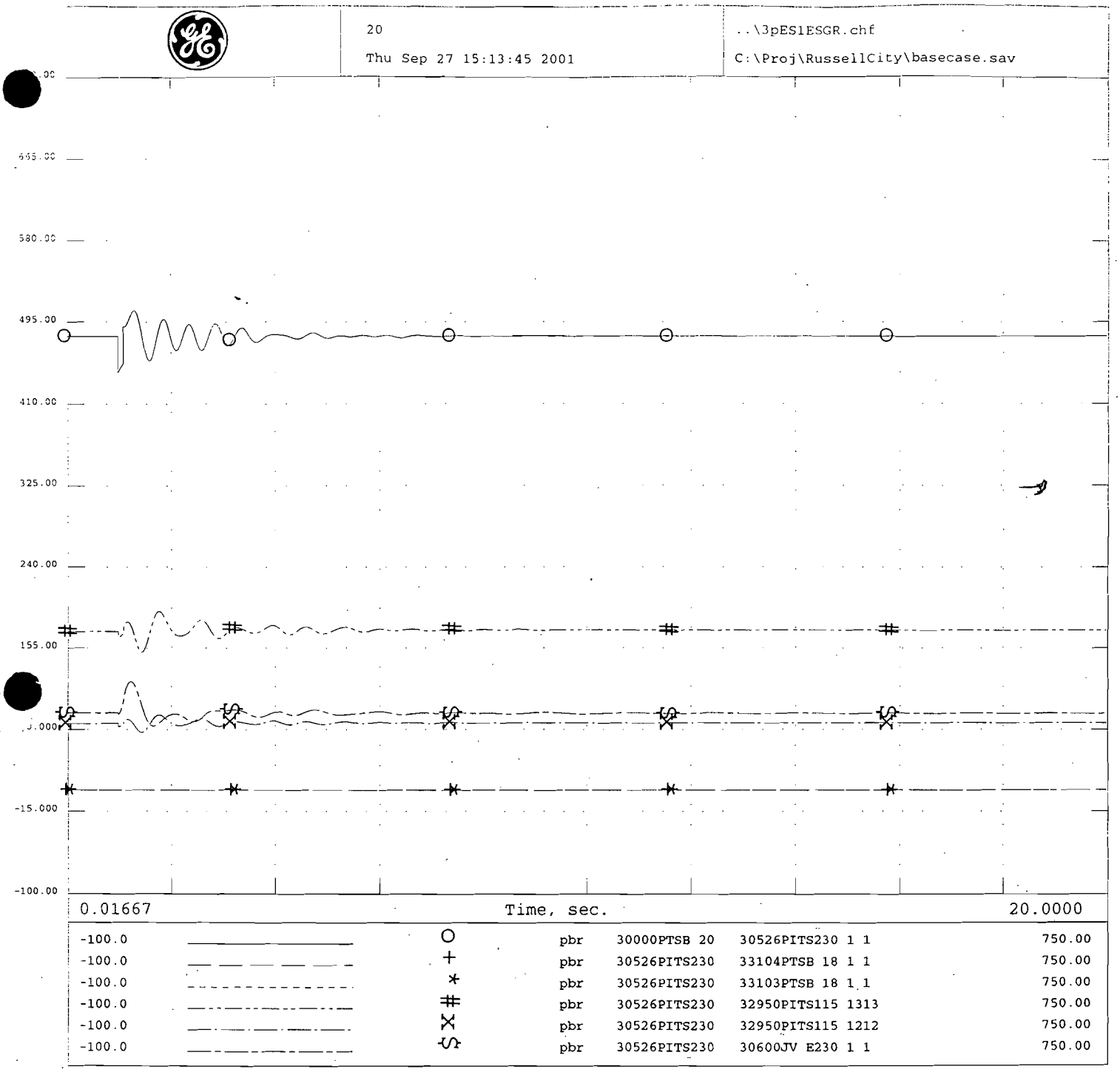

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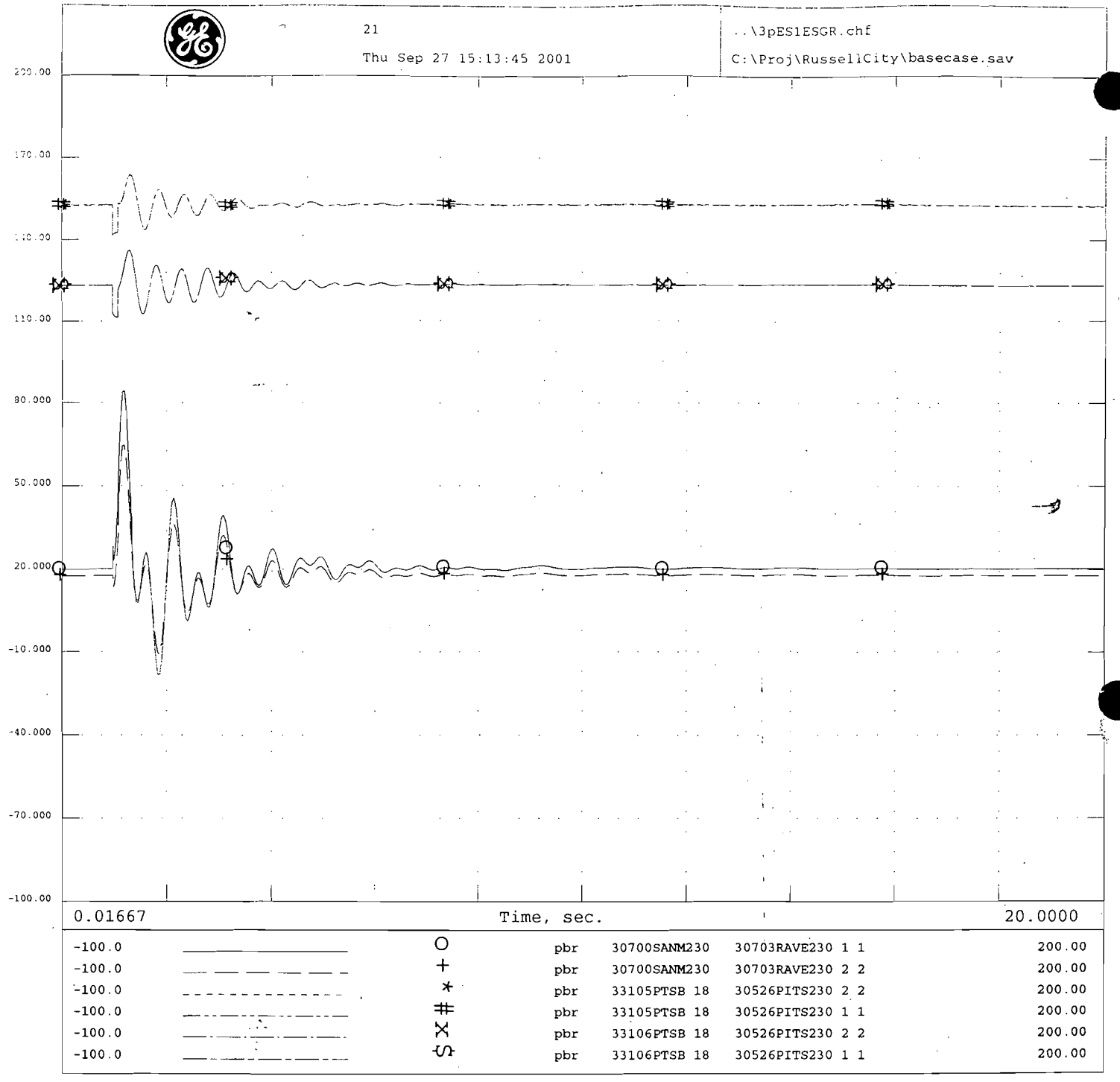

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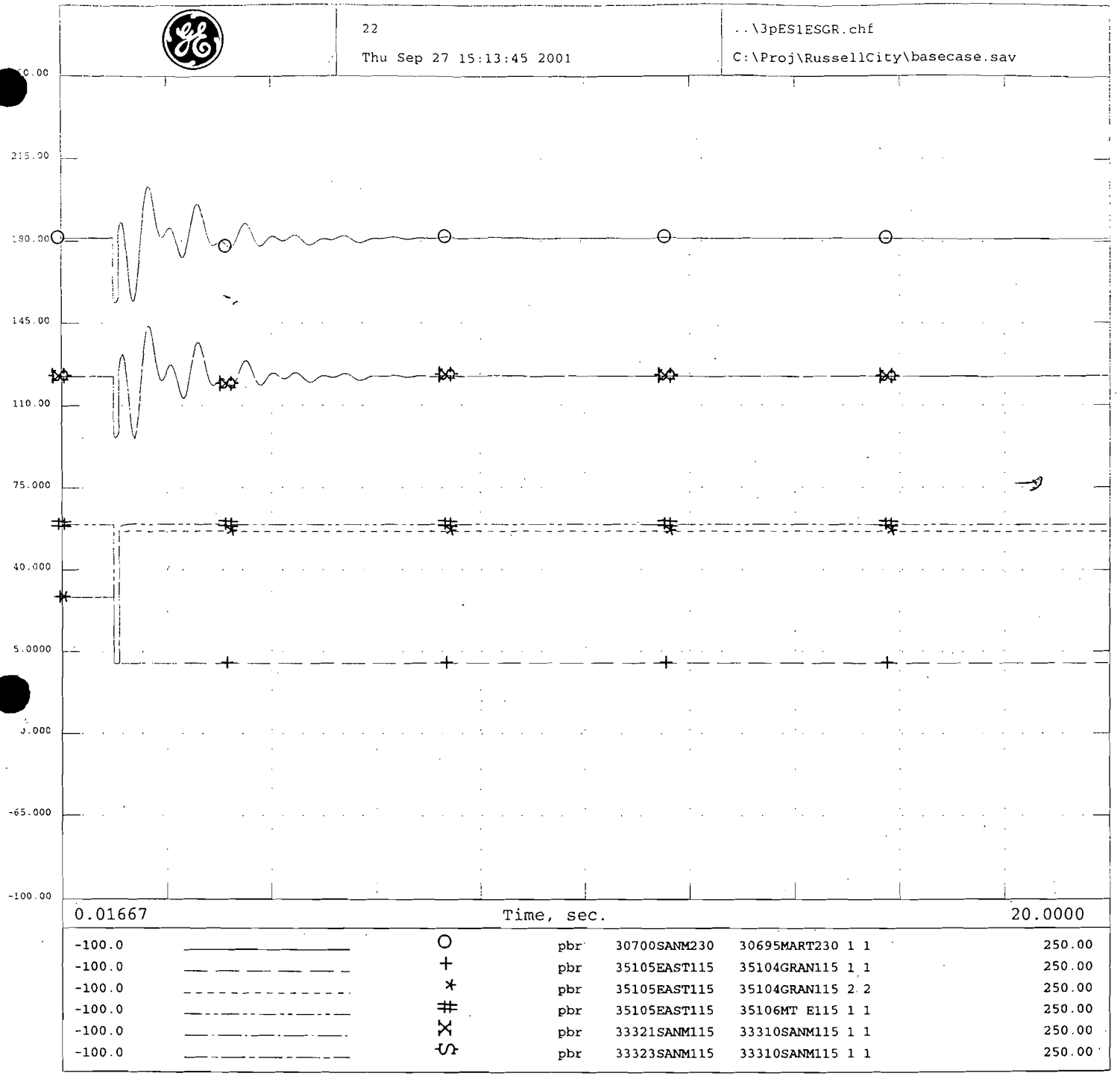

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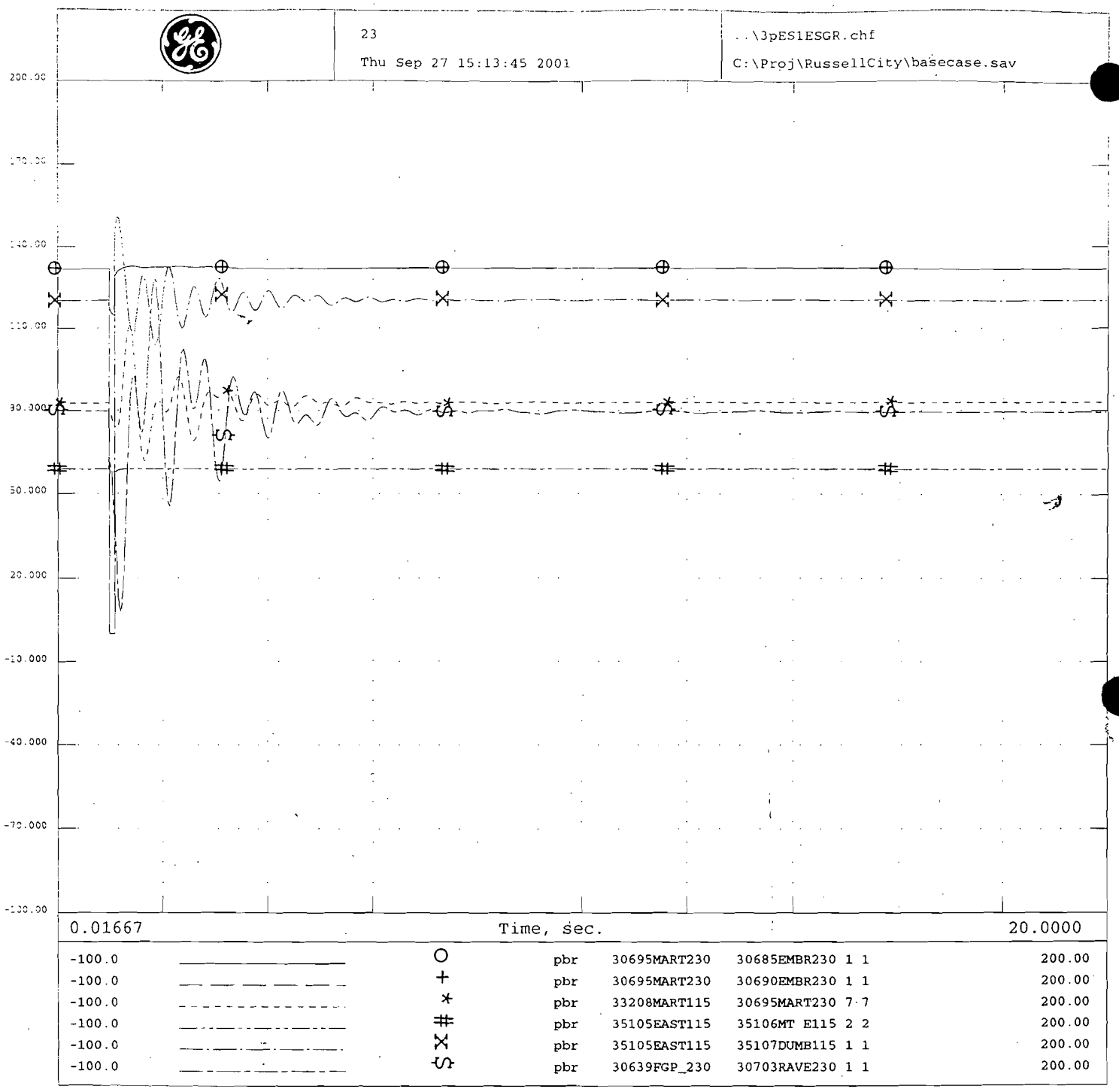

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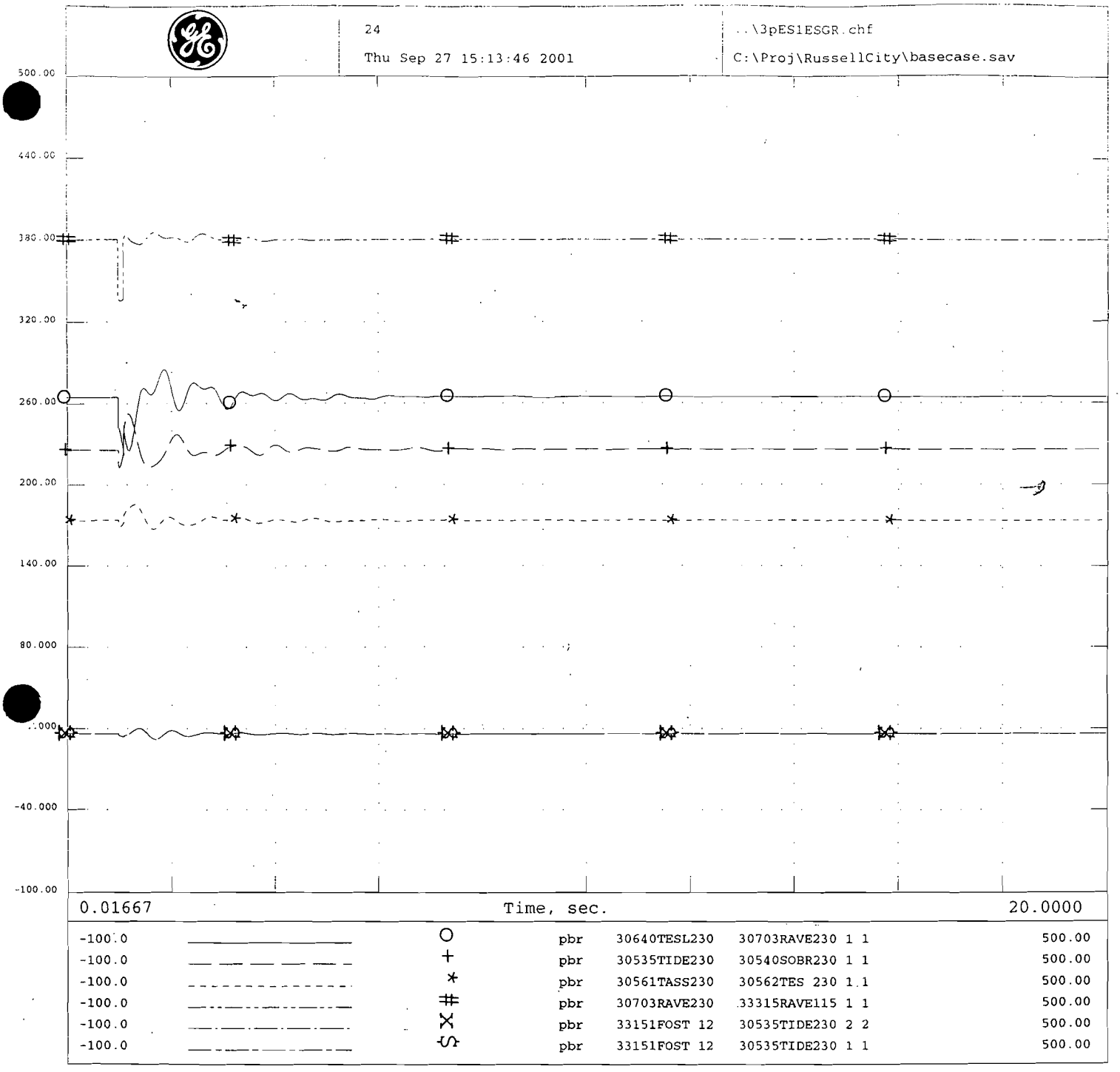

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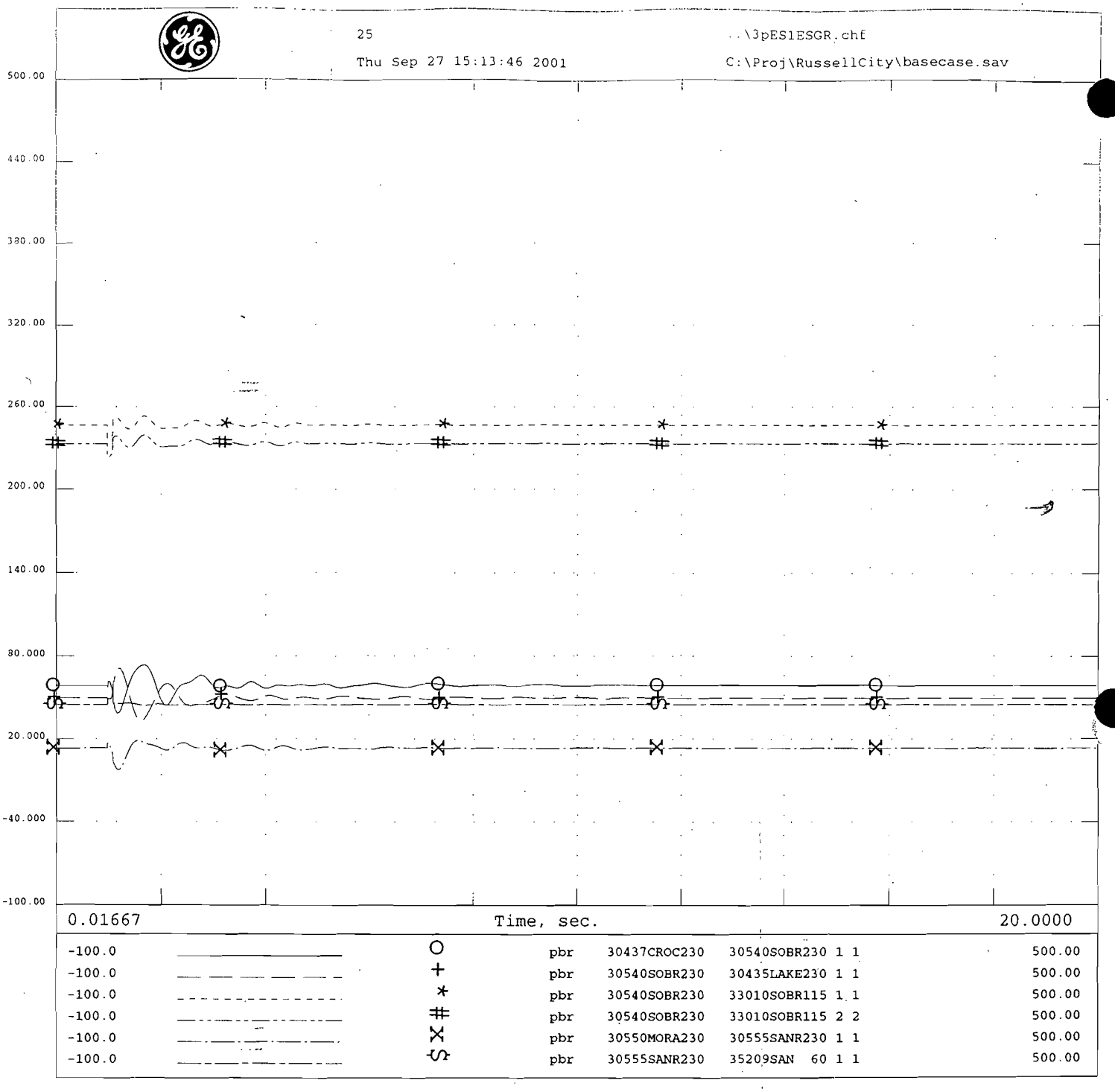

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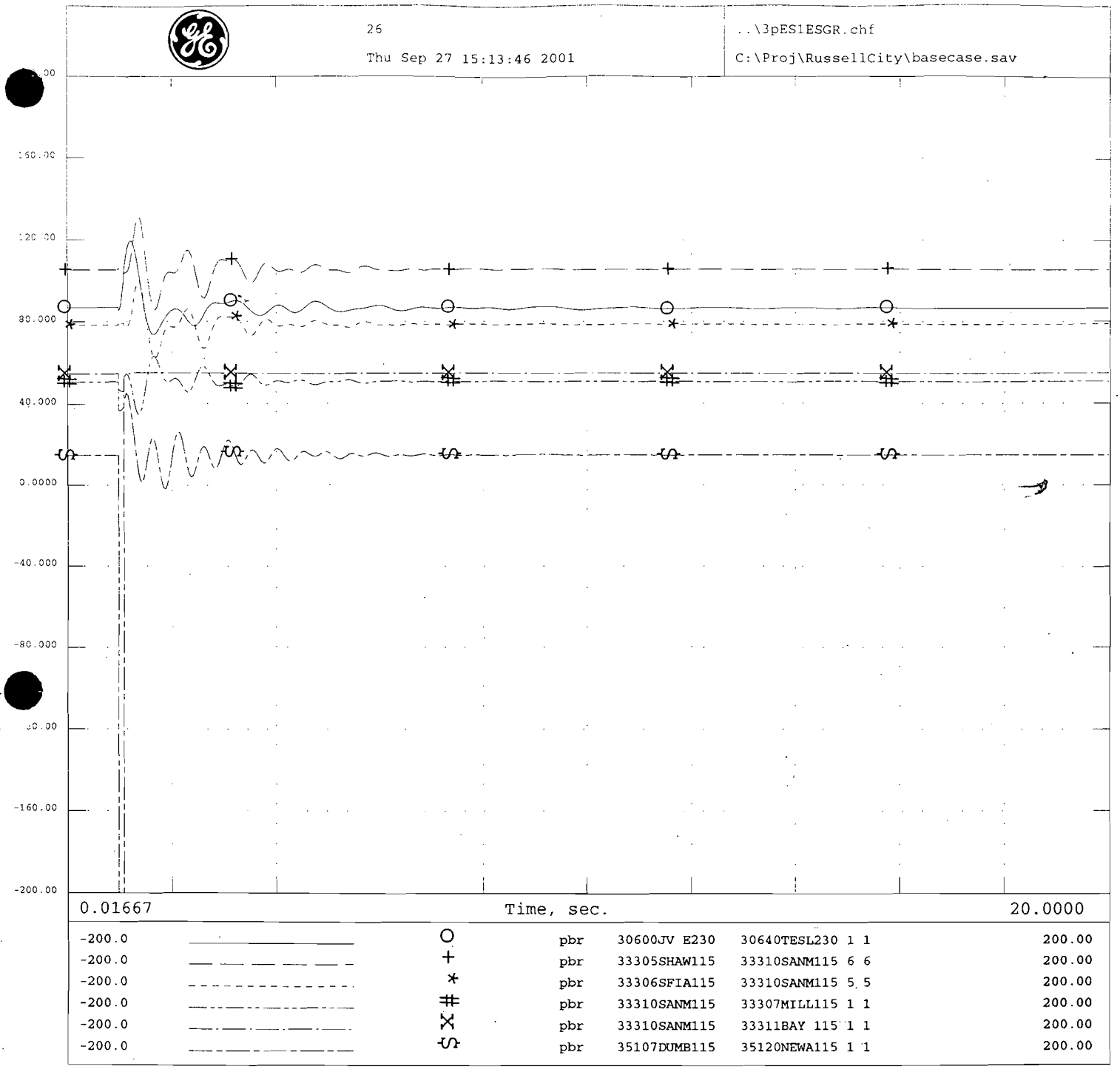

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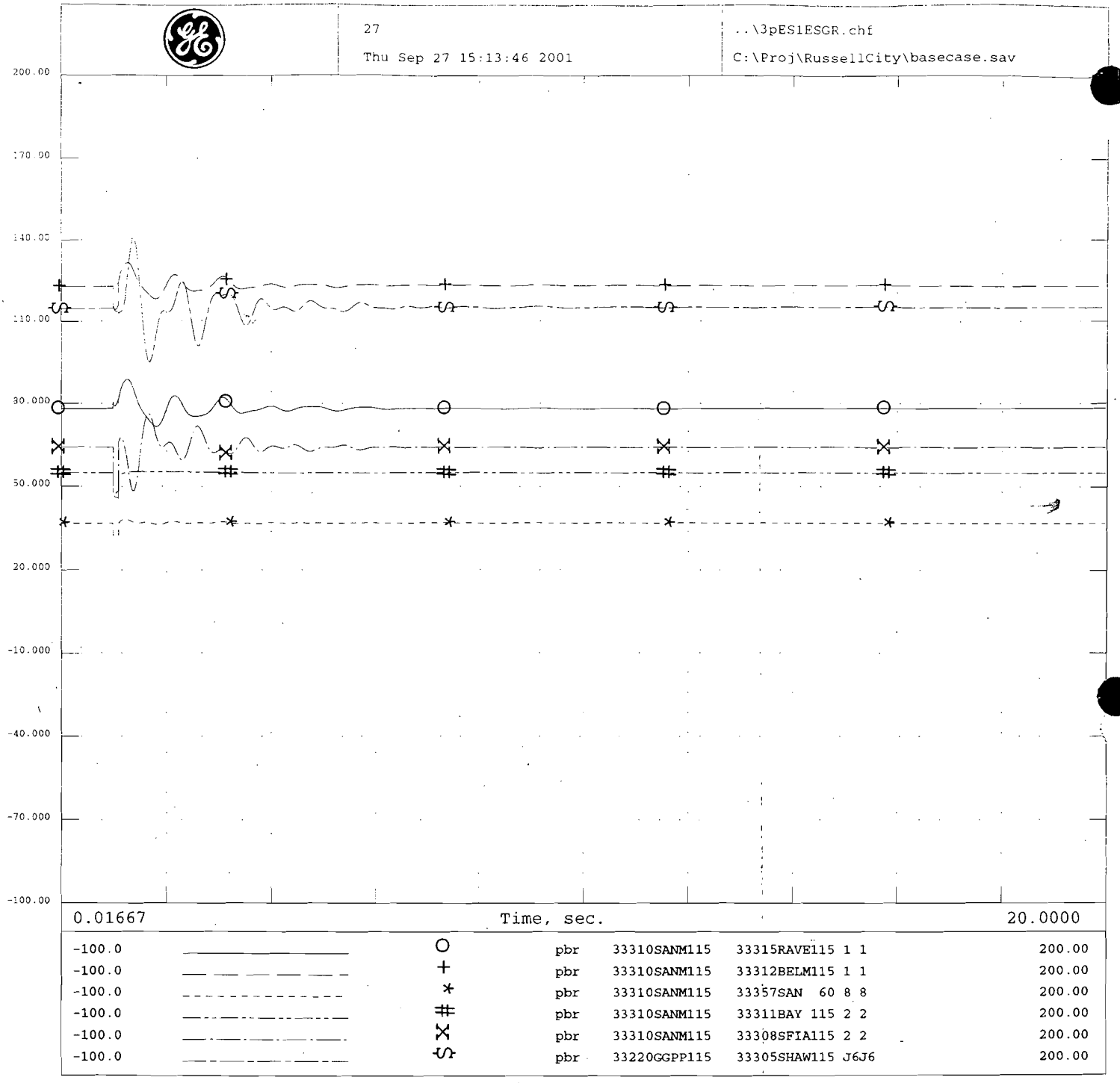

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Mt. Eden #1 115kV line outage
3 phase 6 cycle fault at East Shore 115kV bus and trip East Shore-Mt. Eden #1
115kV line
RUN  9
CC
CC   Fault East Shore 115kV bus
FB   0.0 "EASTSHRE" 115.
CC
CC   Clear fault at East Shore 115kV bus
CFB  6.0 "EASTSHRE" 115.
CC
CC   Trip the East Shore-Mt. Eden #1 115kV line
DL  6.0 "EASTSHRE" 115.00 "MT EDEN " 115.00 "1 "
CC
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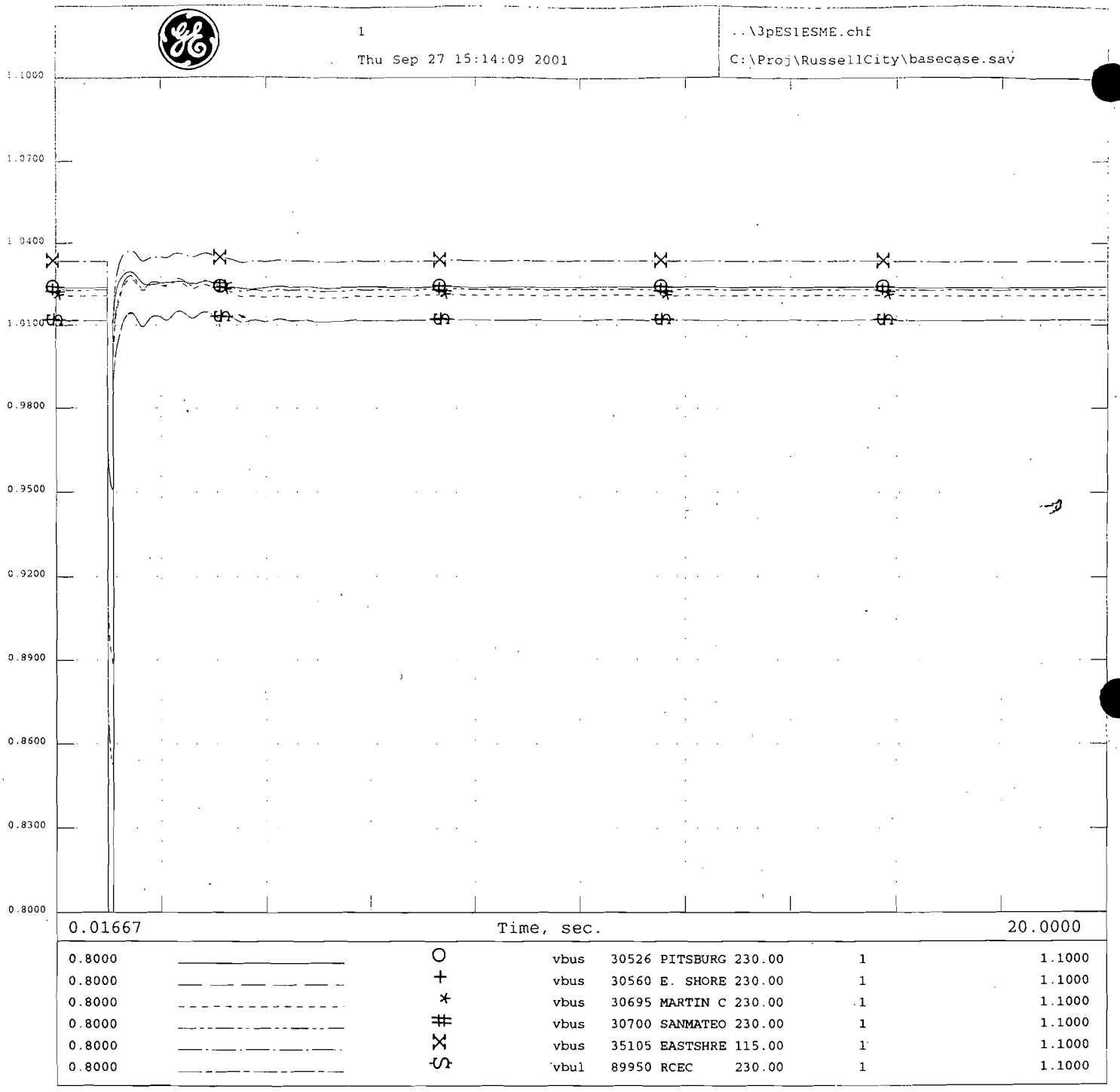

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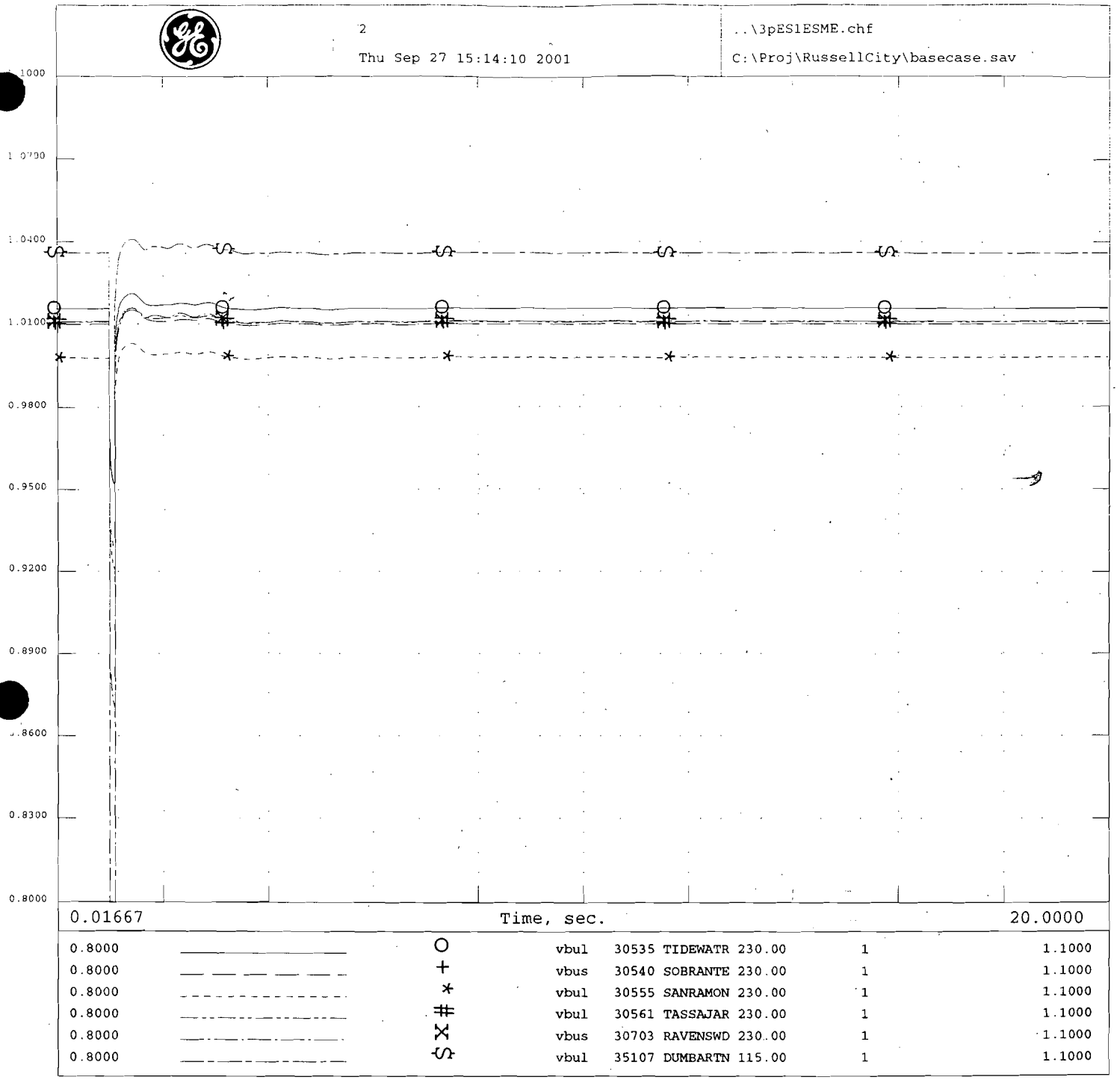
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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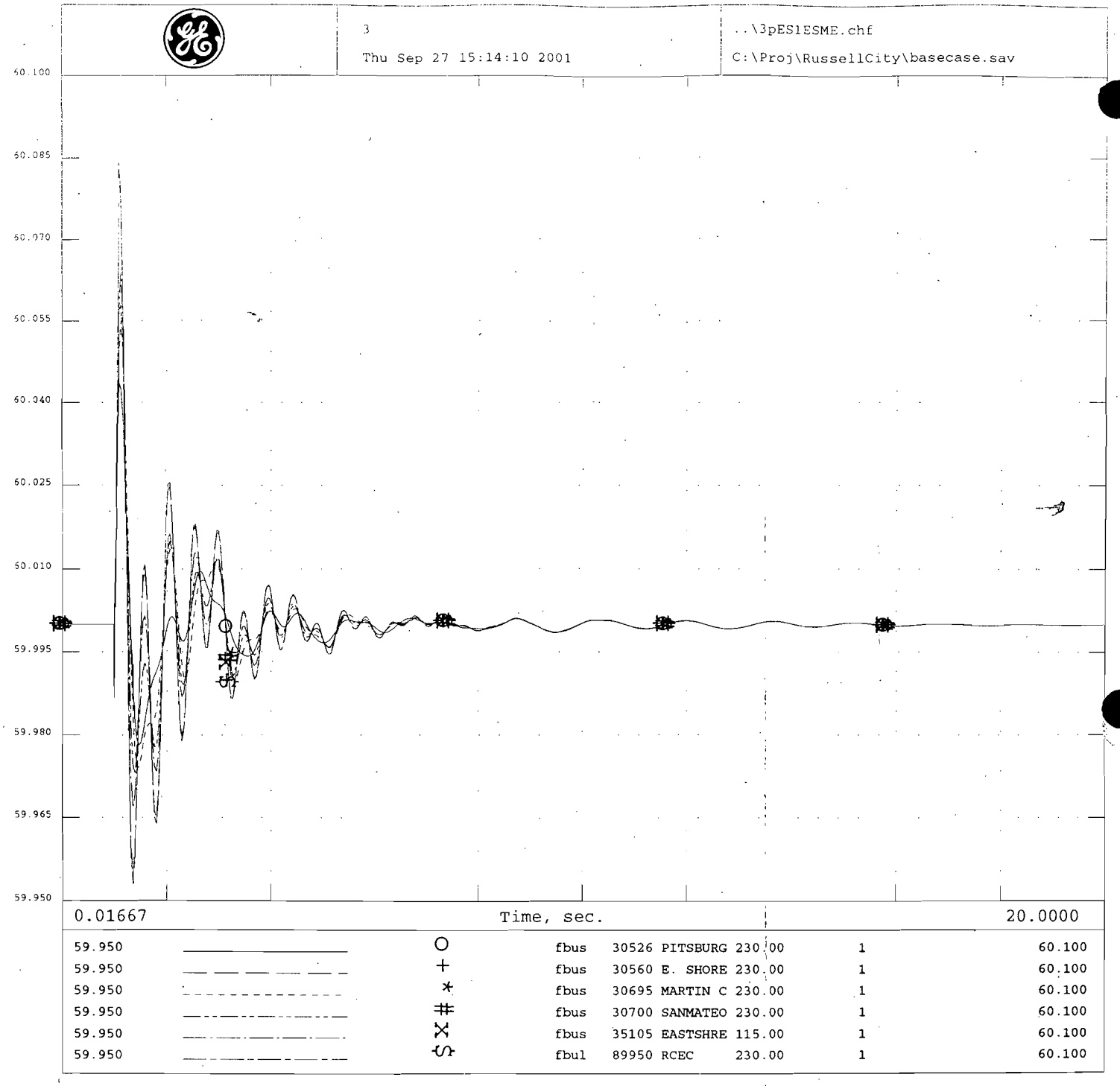

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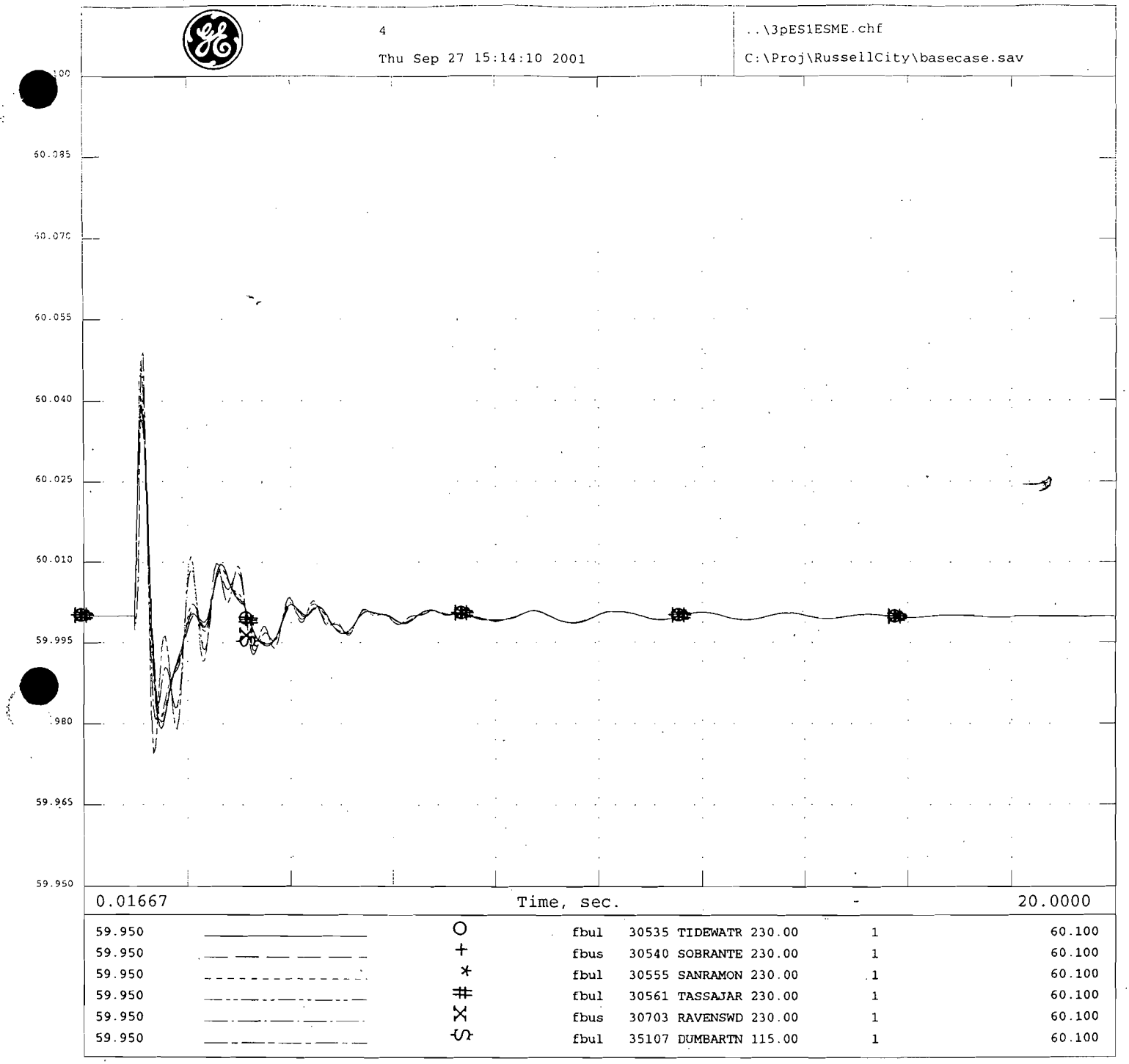
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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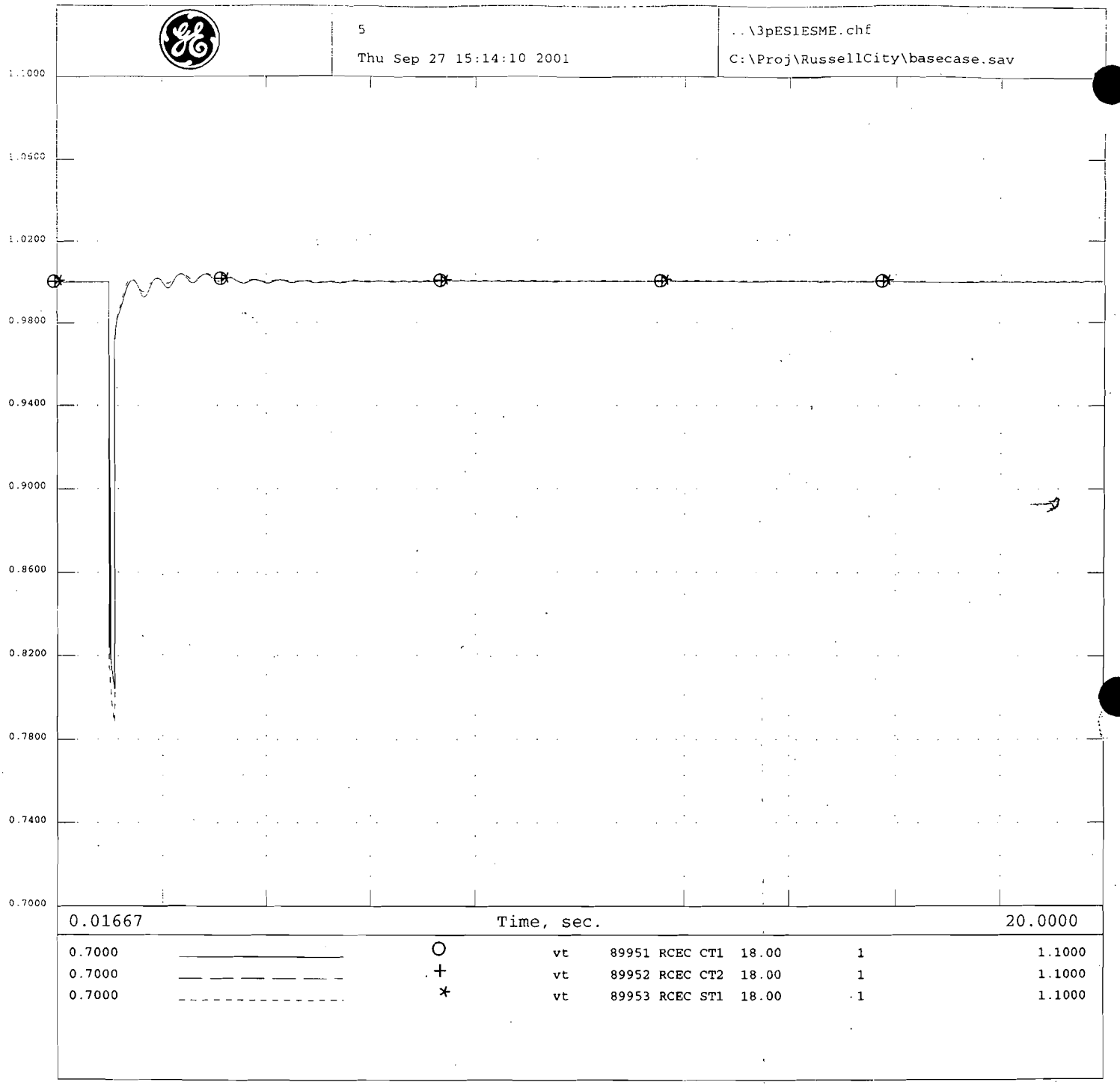

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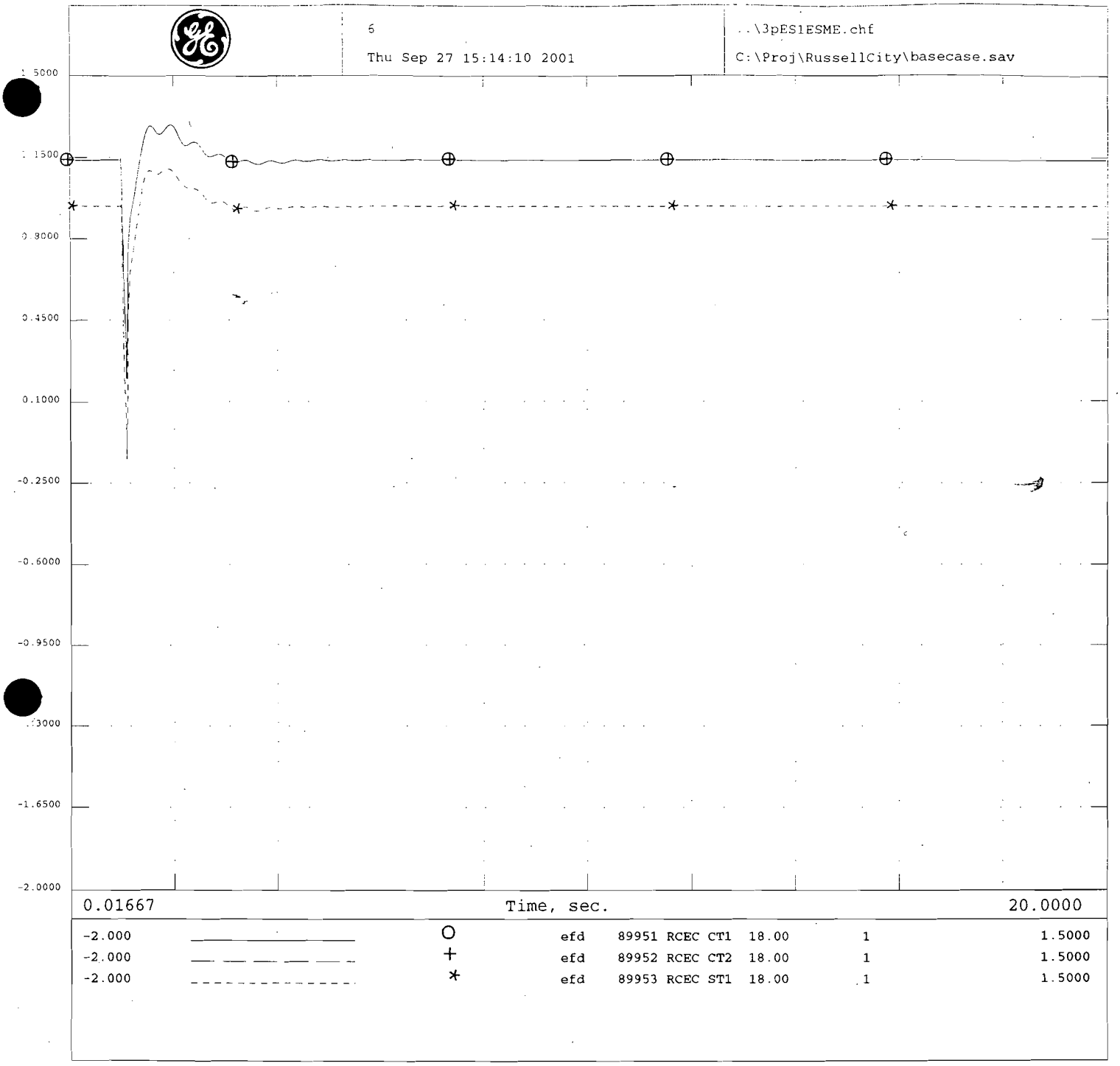
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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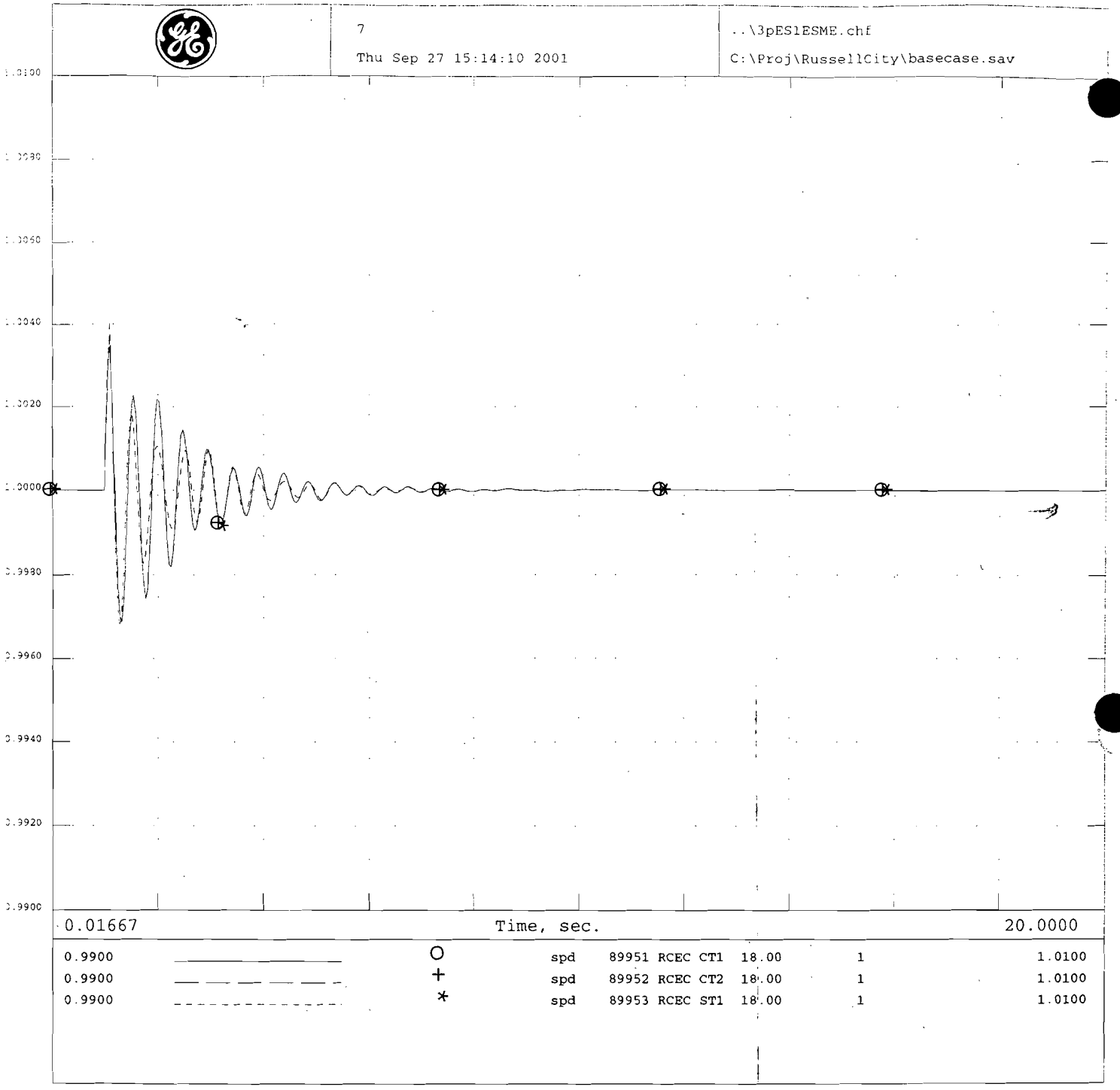
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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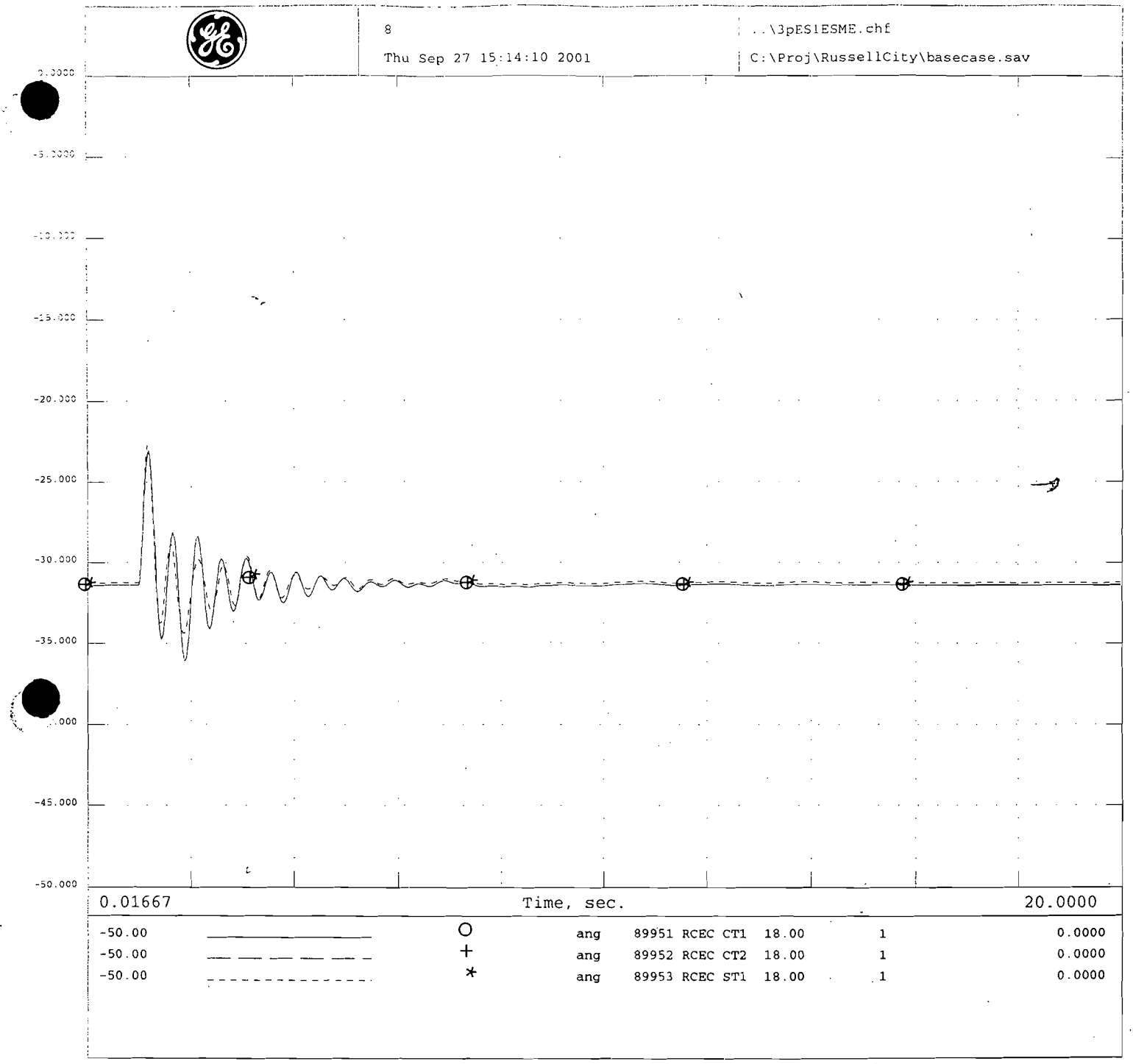
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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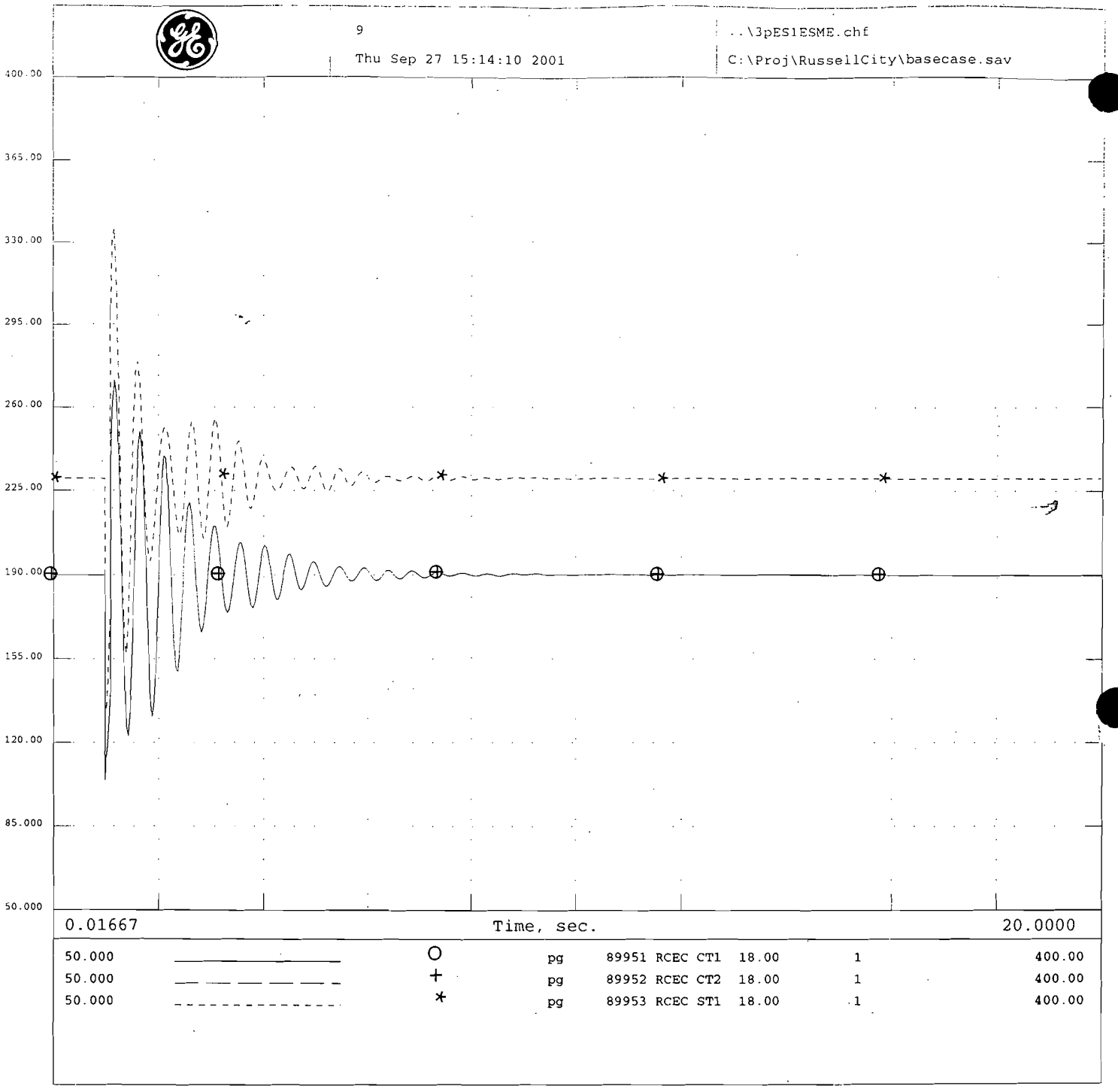
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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Calpine/Bechtel Joint Development
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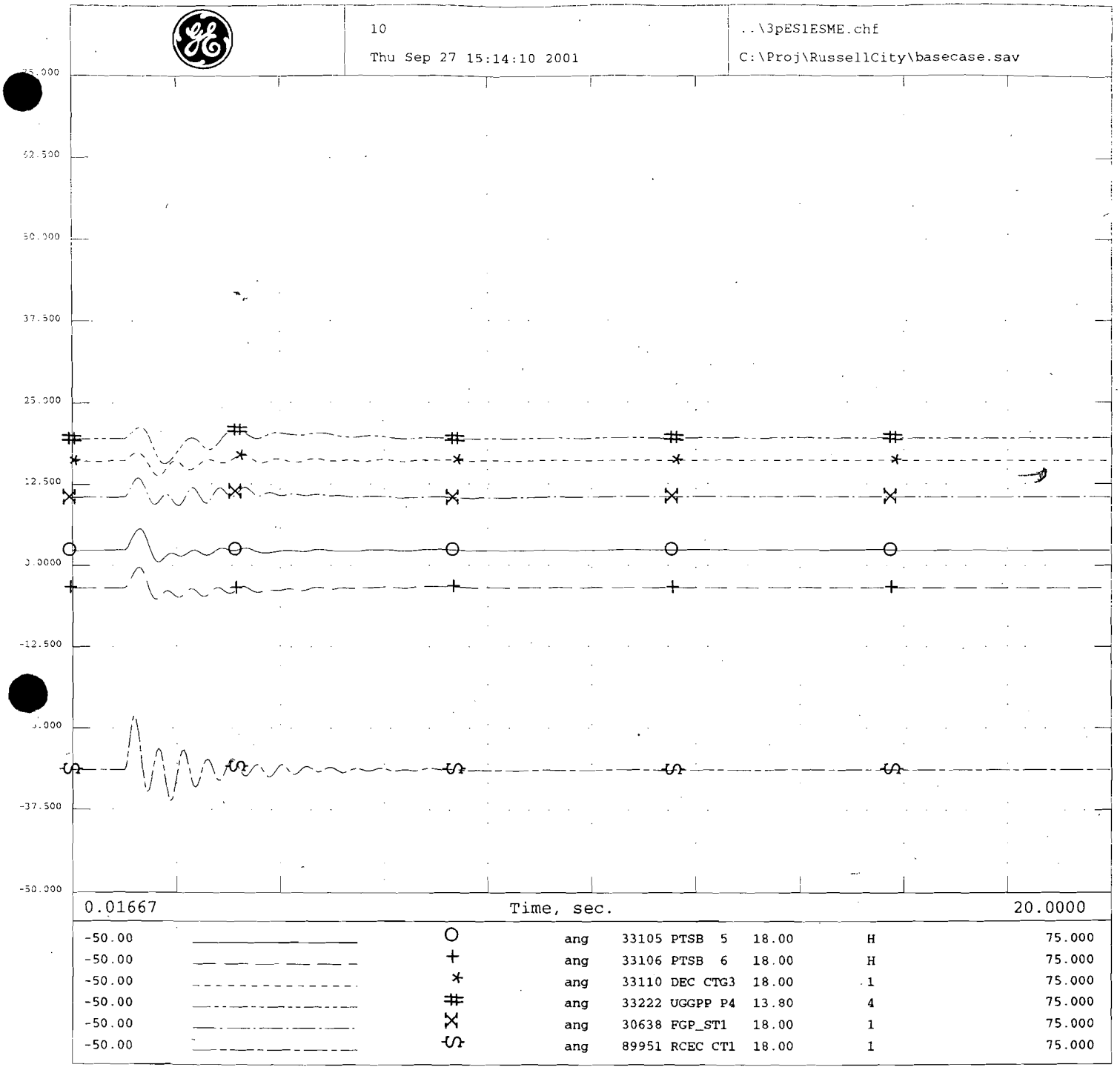

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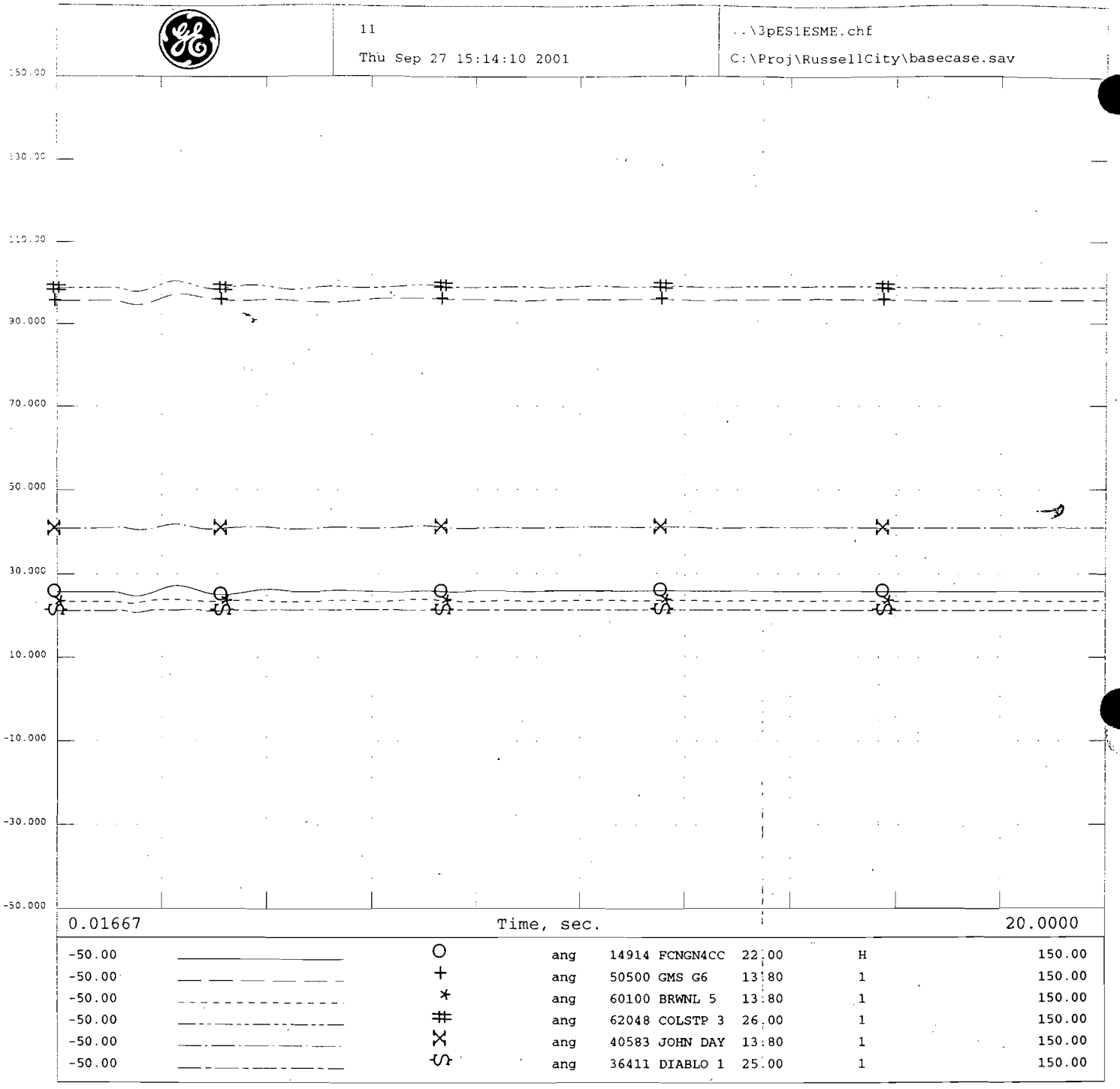
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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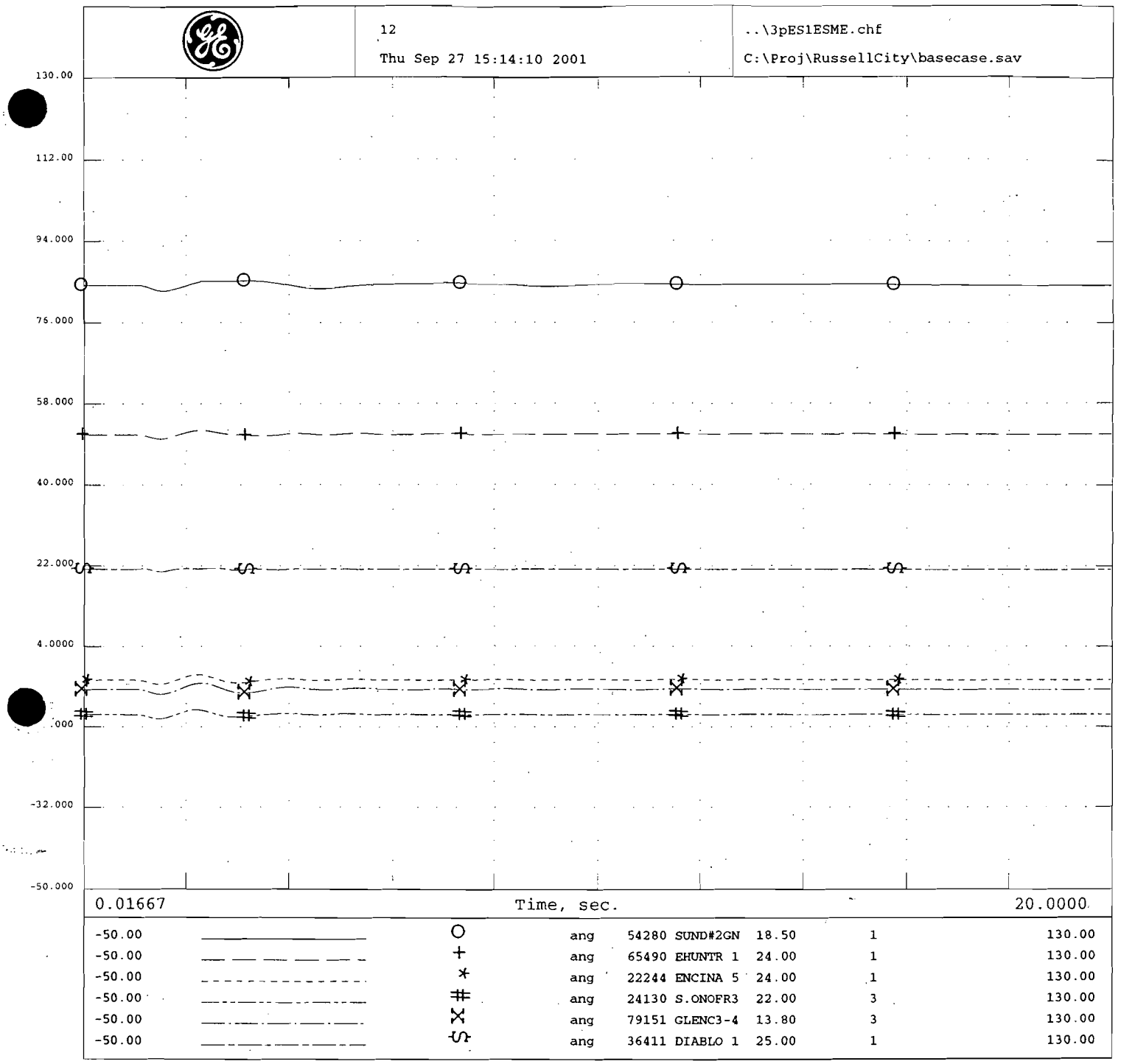
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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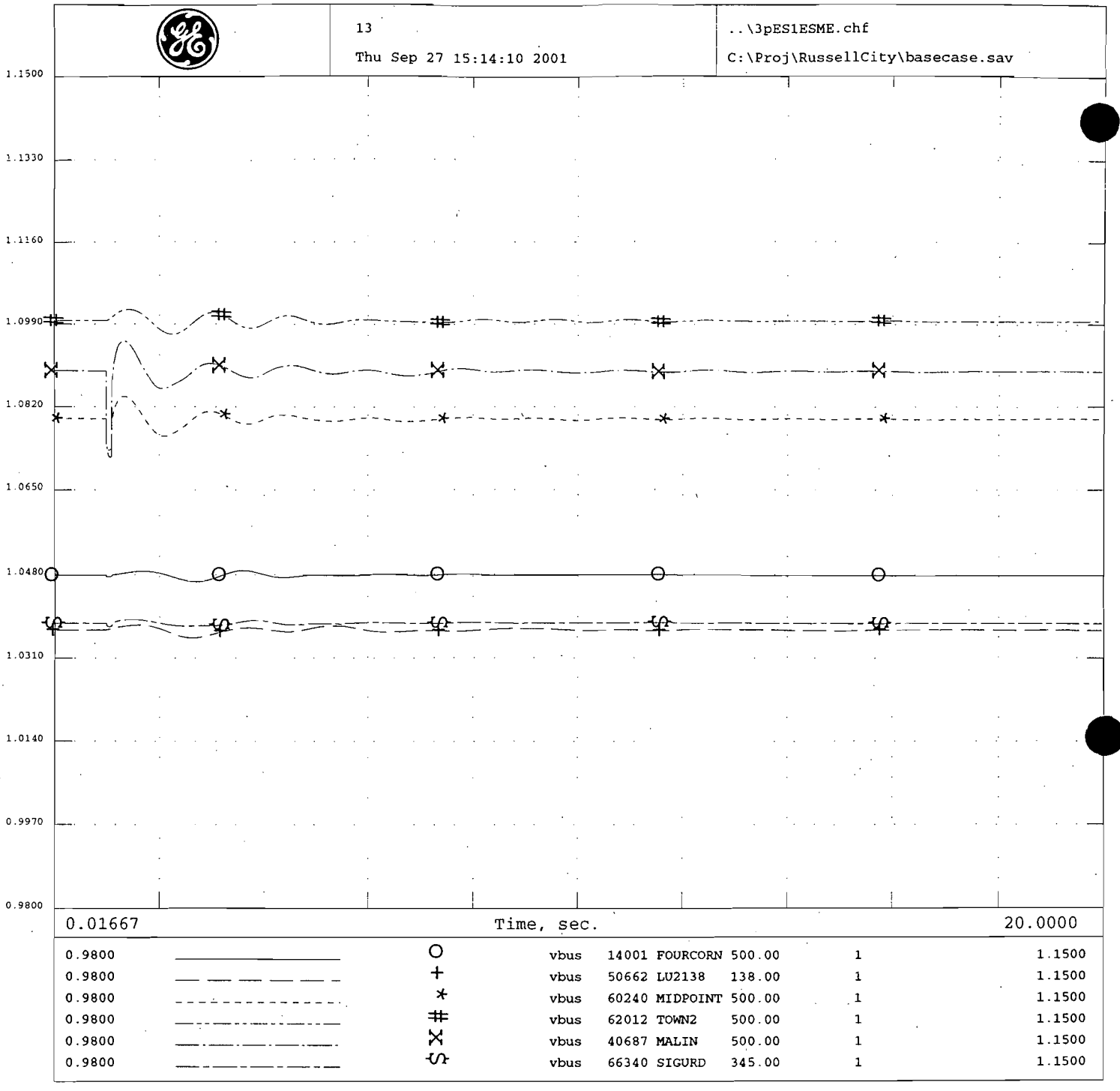

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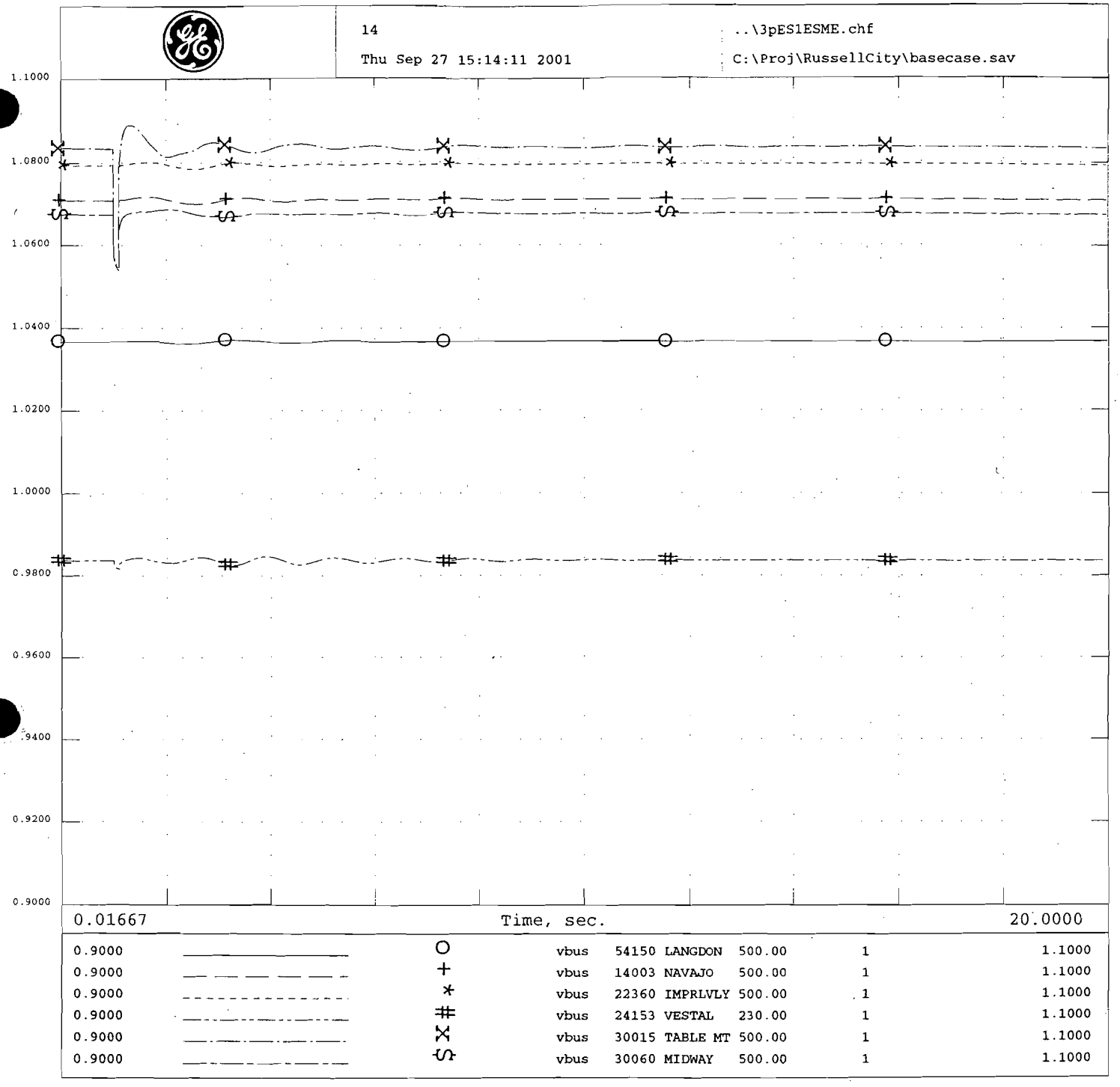

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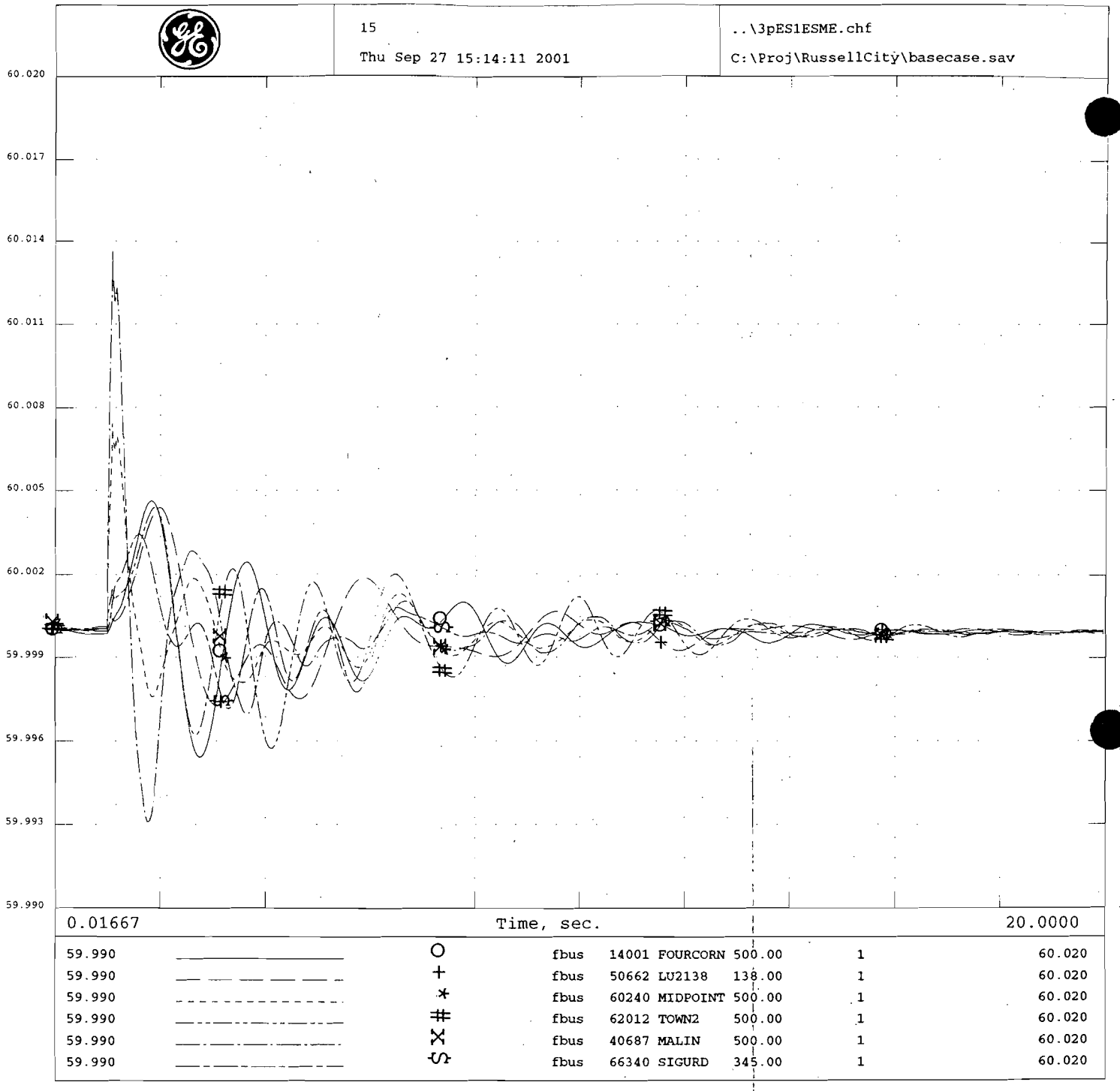

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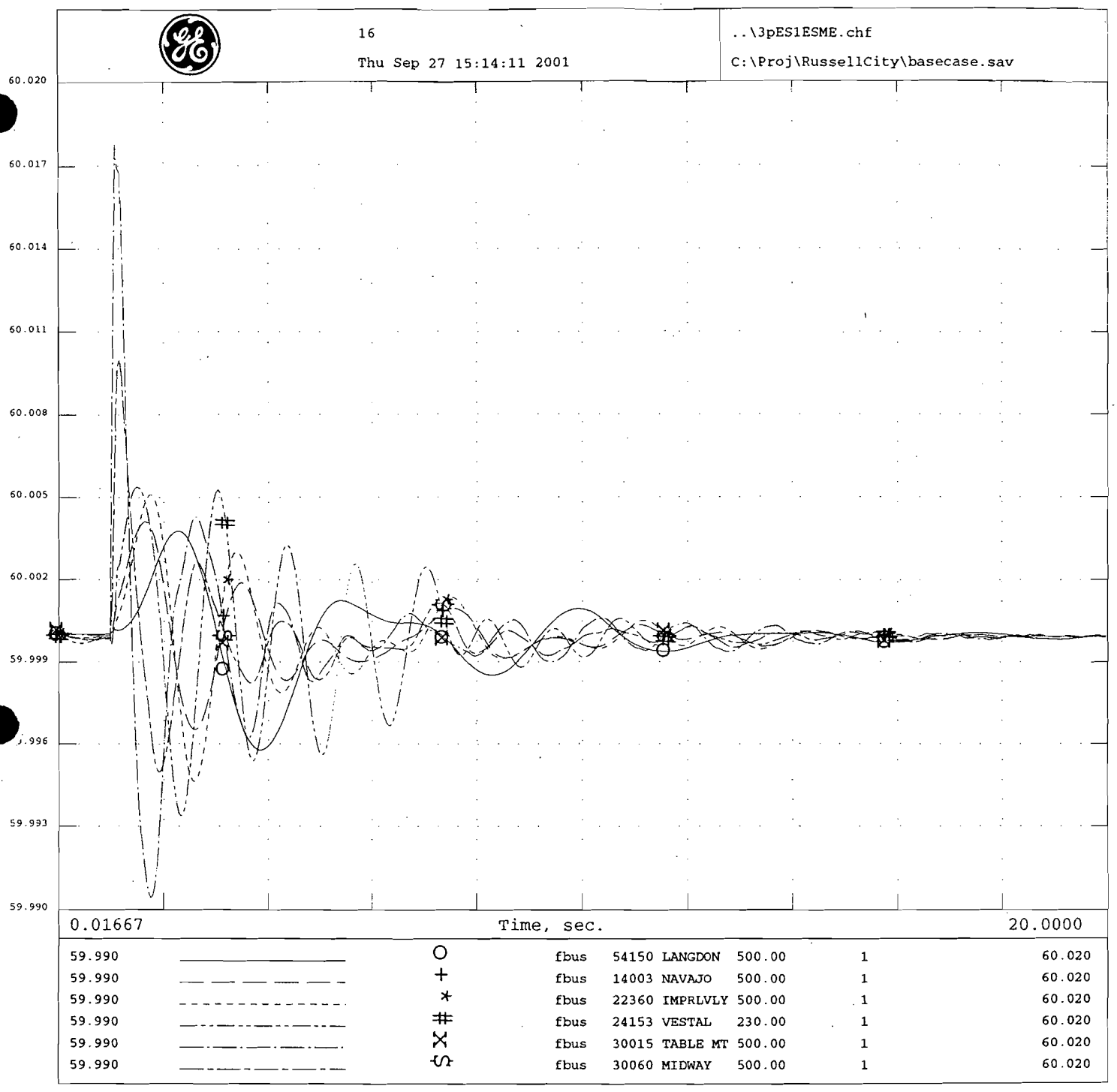

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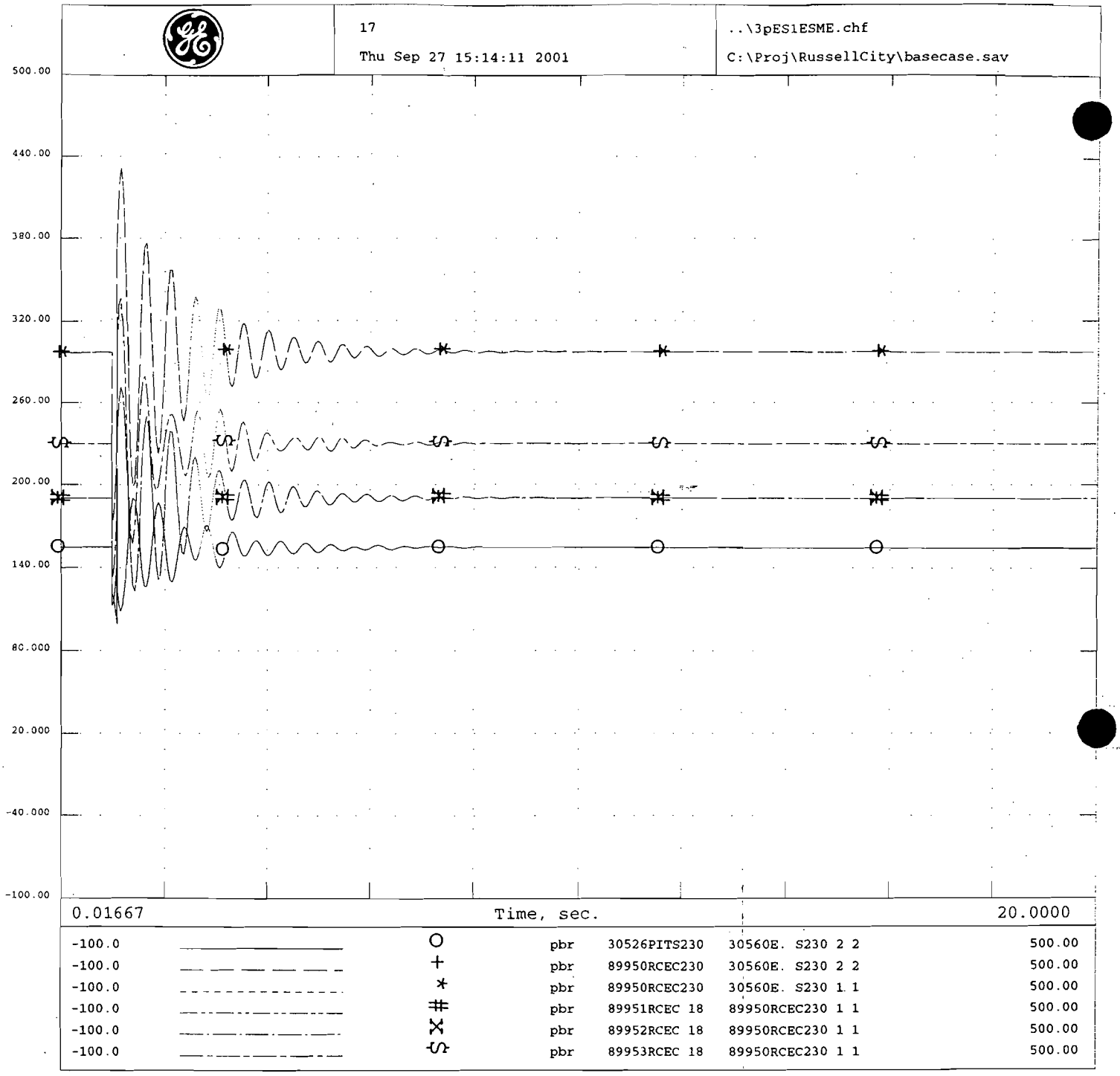

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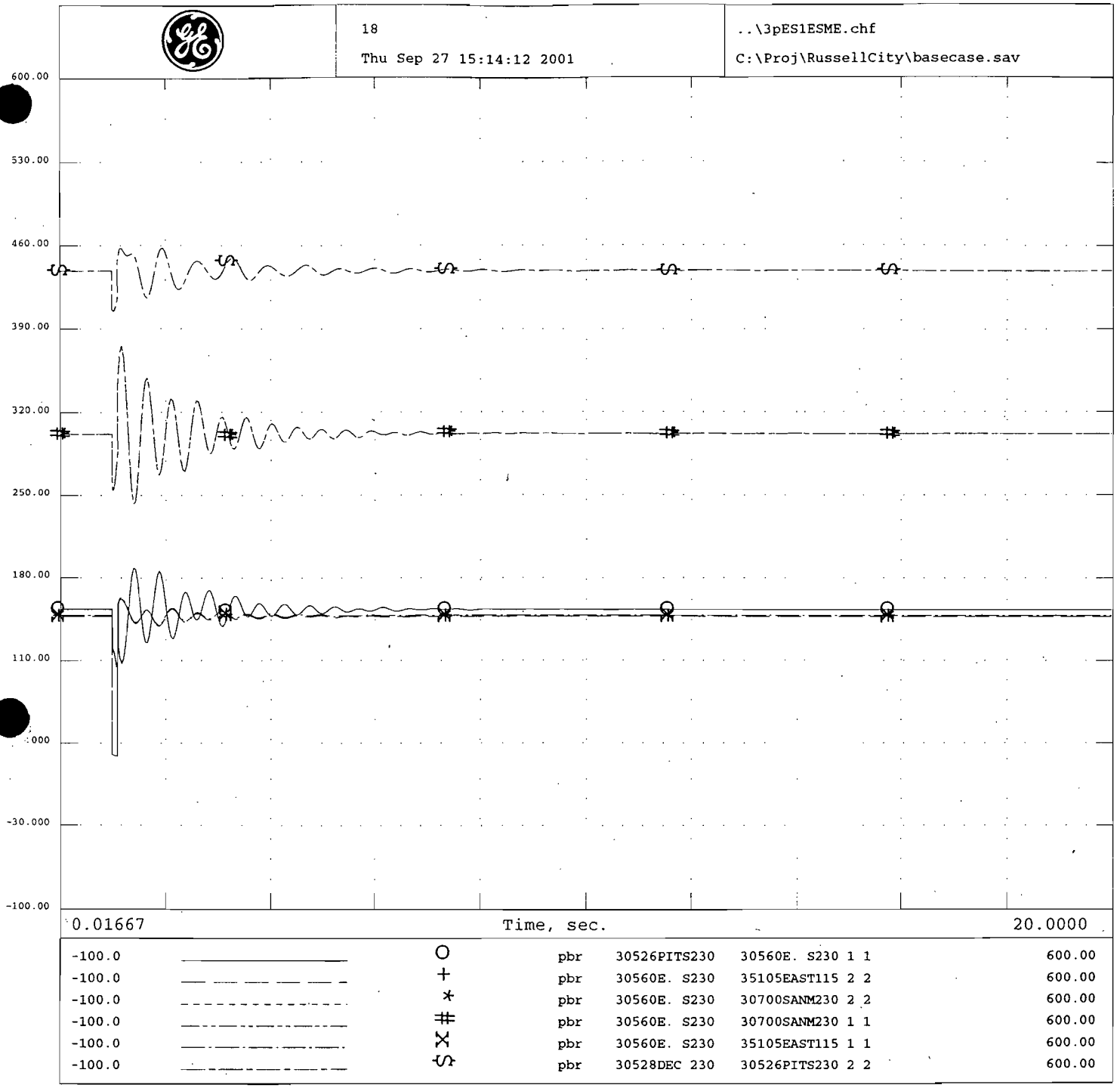

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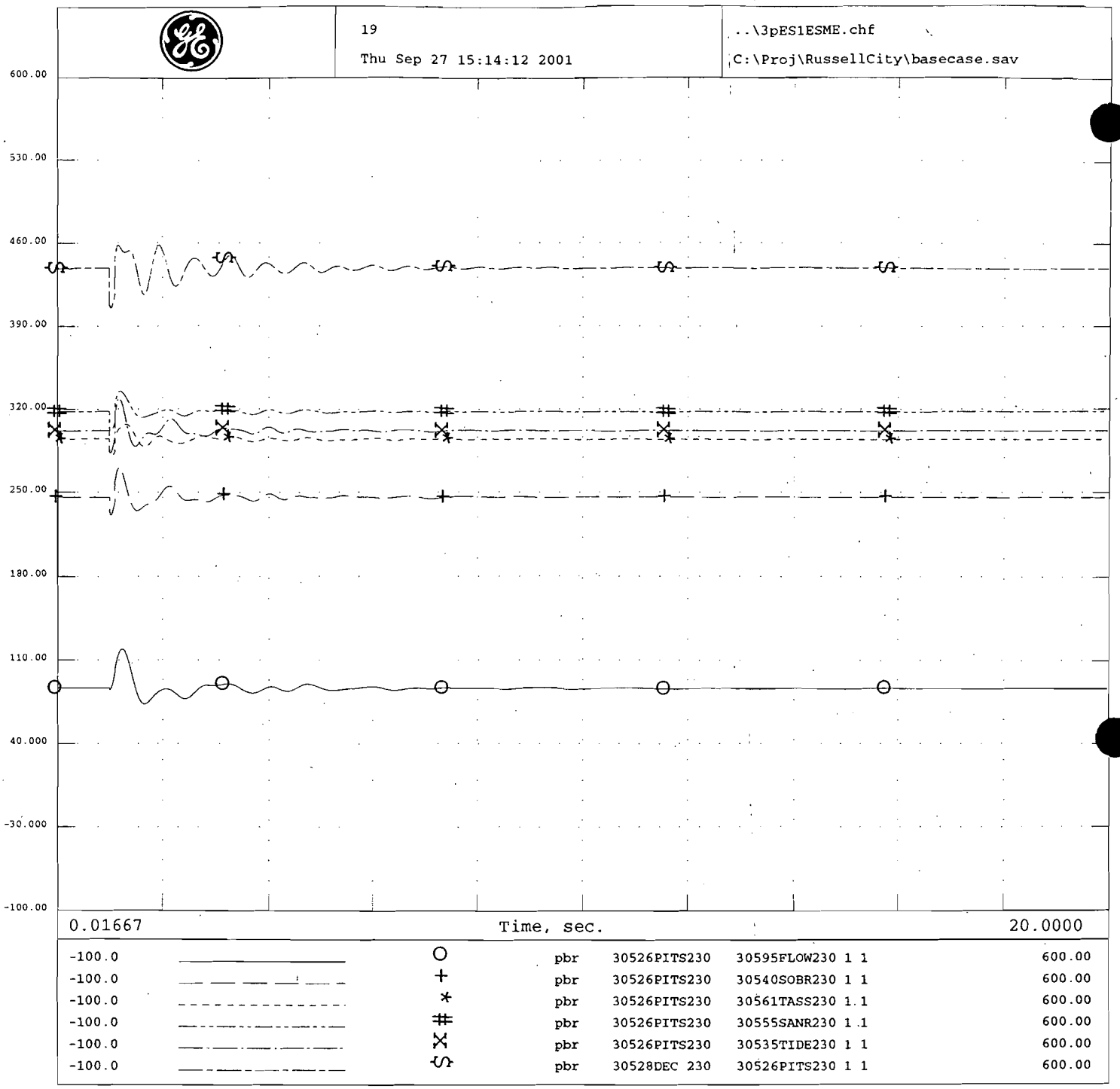

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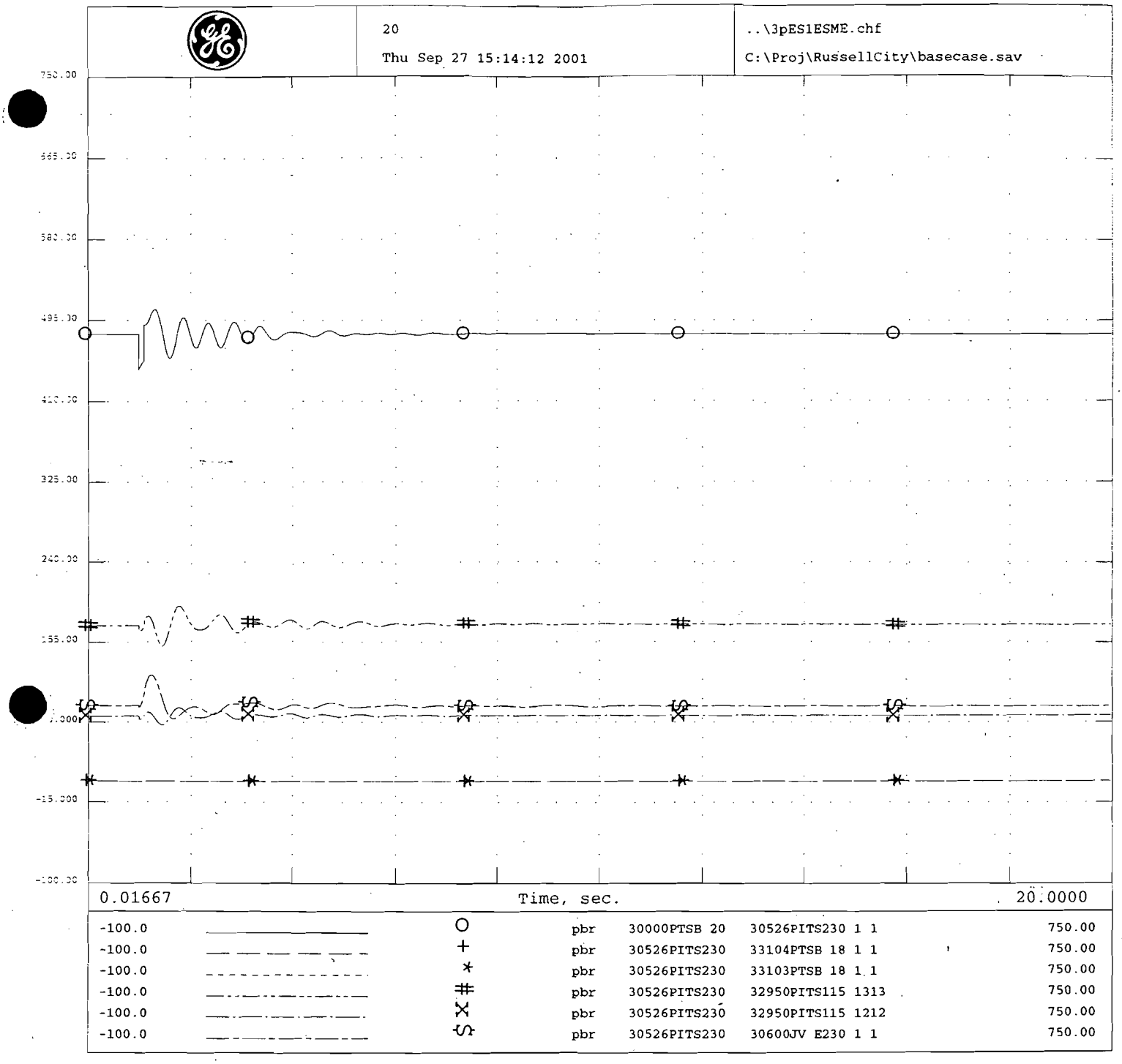

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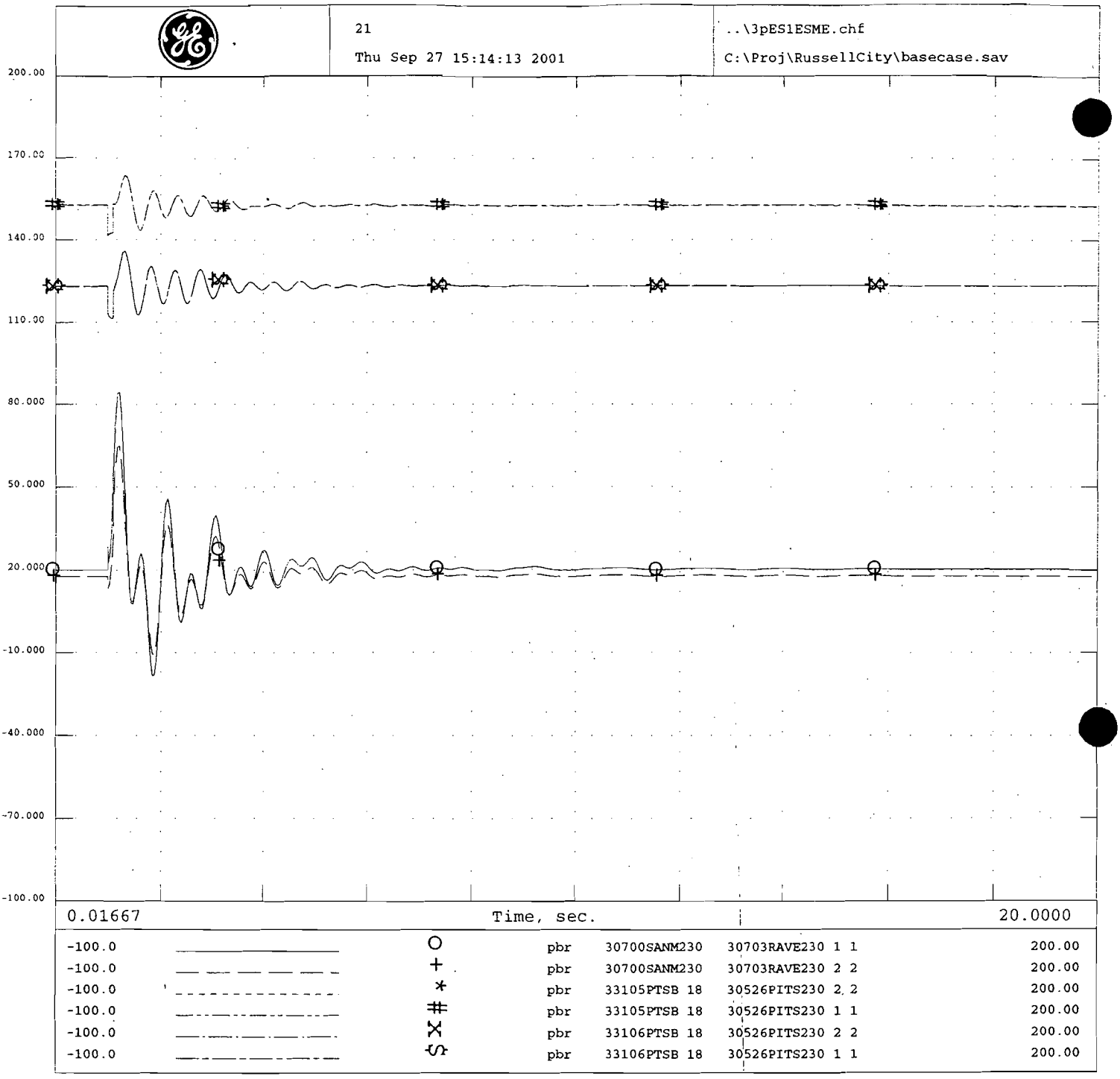

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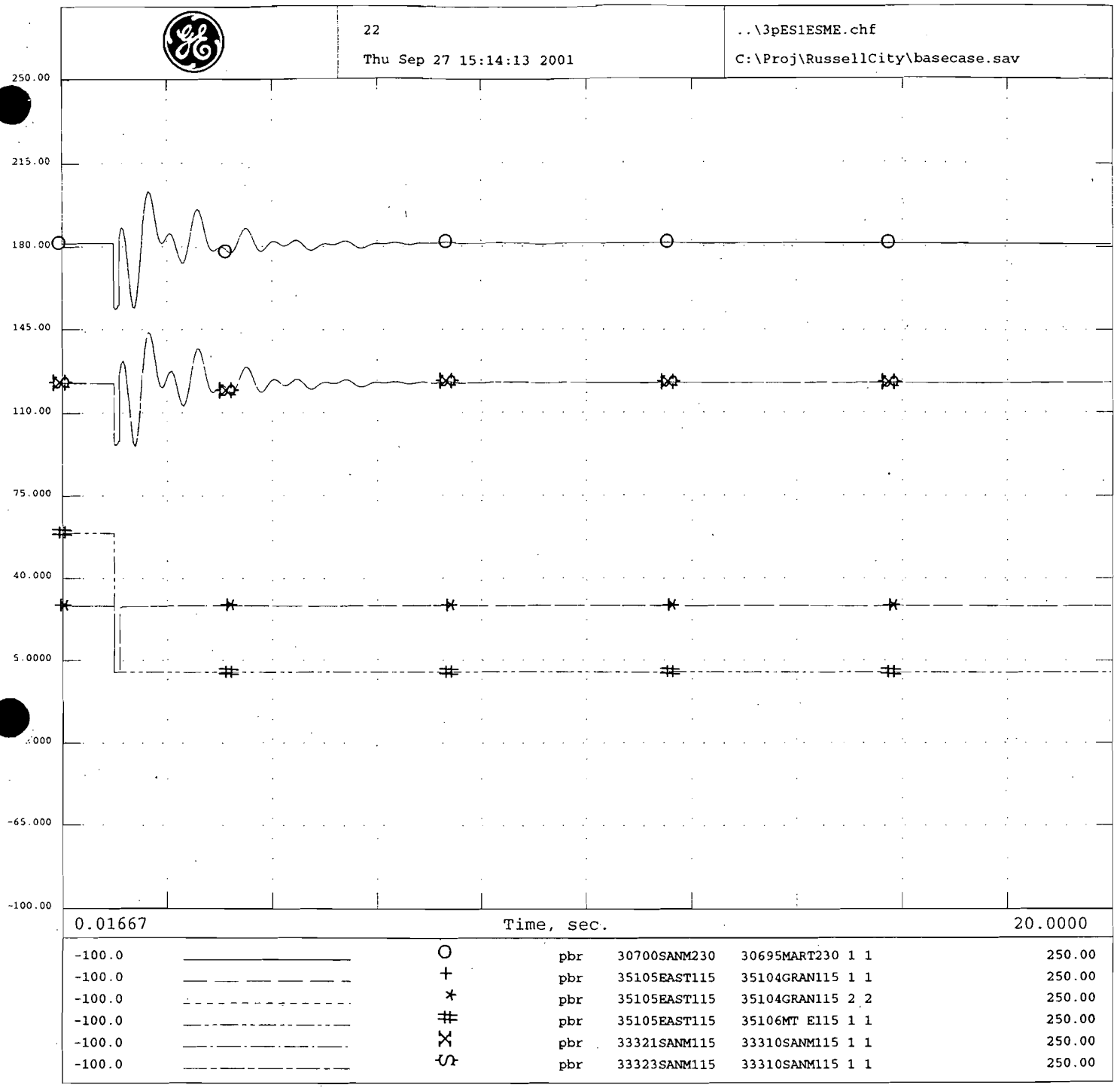

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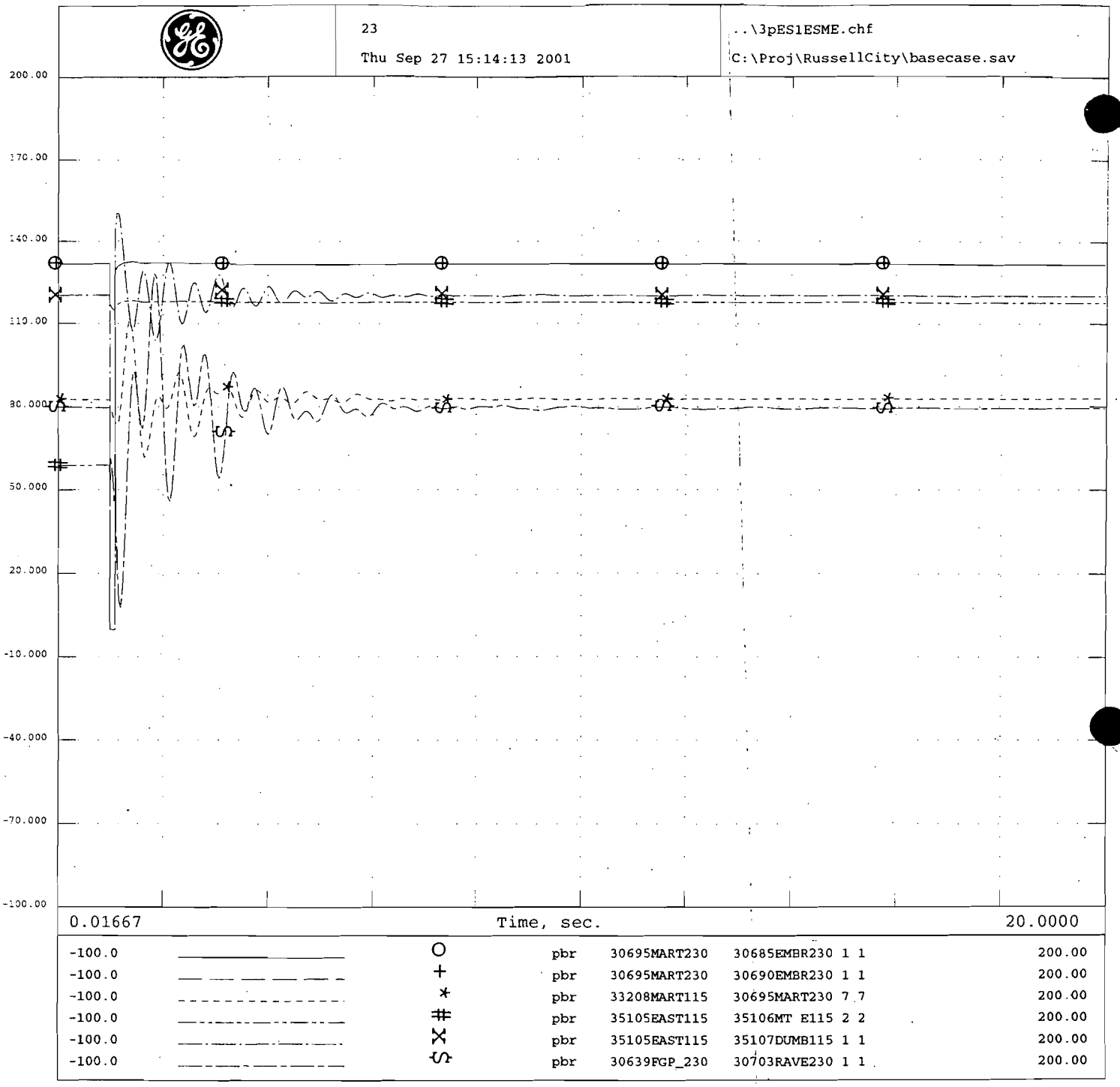

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Calpine/Bechtel Joint Development
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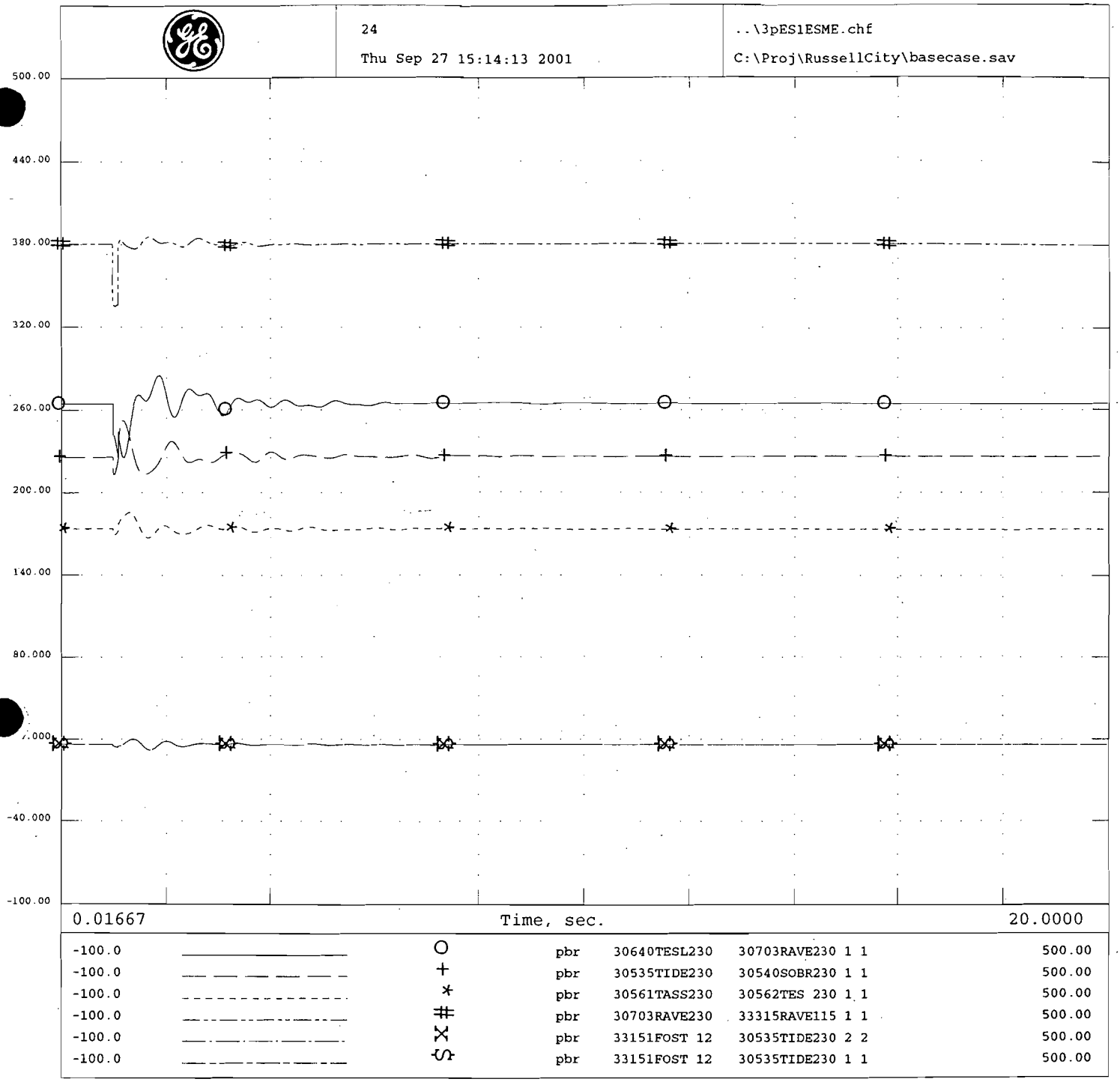
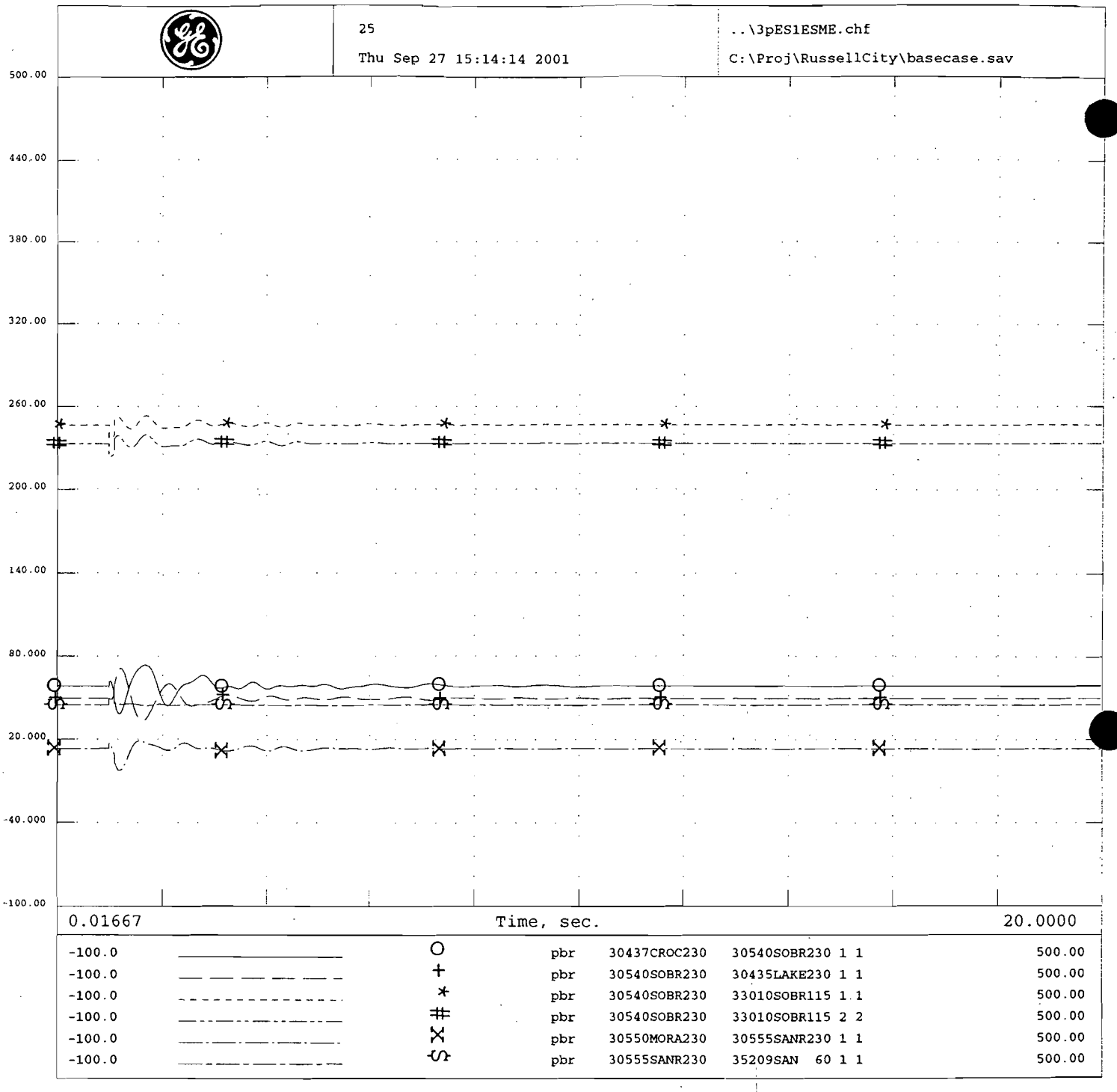


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Mt. Eden #1 115kV line outage
3 phase 6 cycle fault at East Shore 115kV bus and trip East Shore-Mt. Eden #1 1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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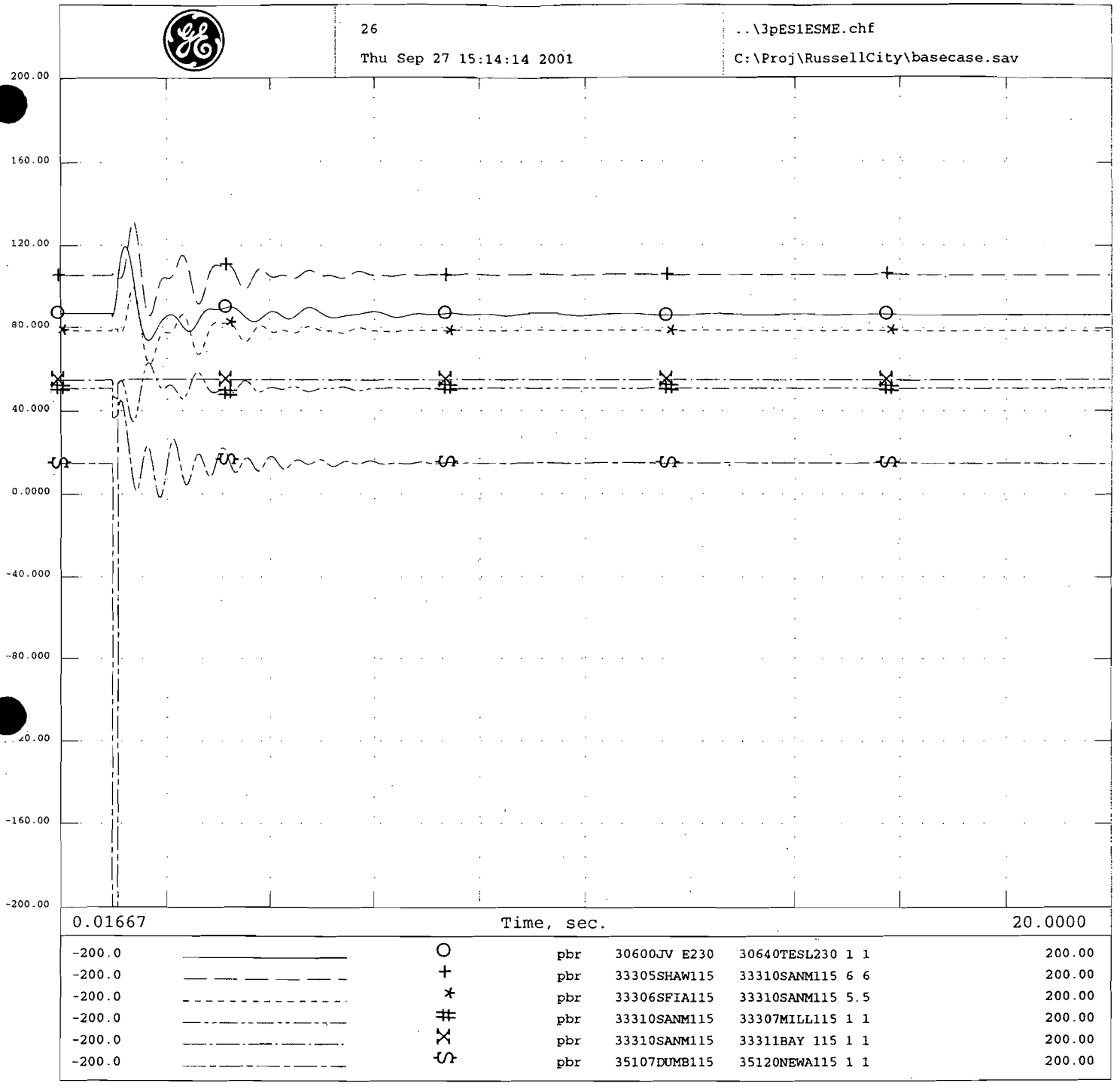
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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RCEC @ 610MW
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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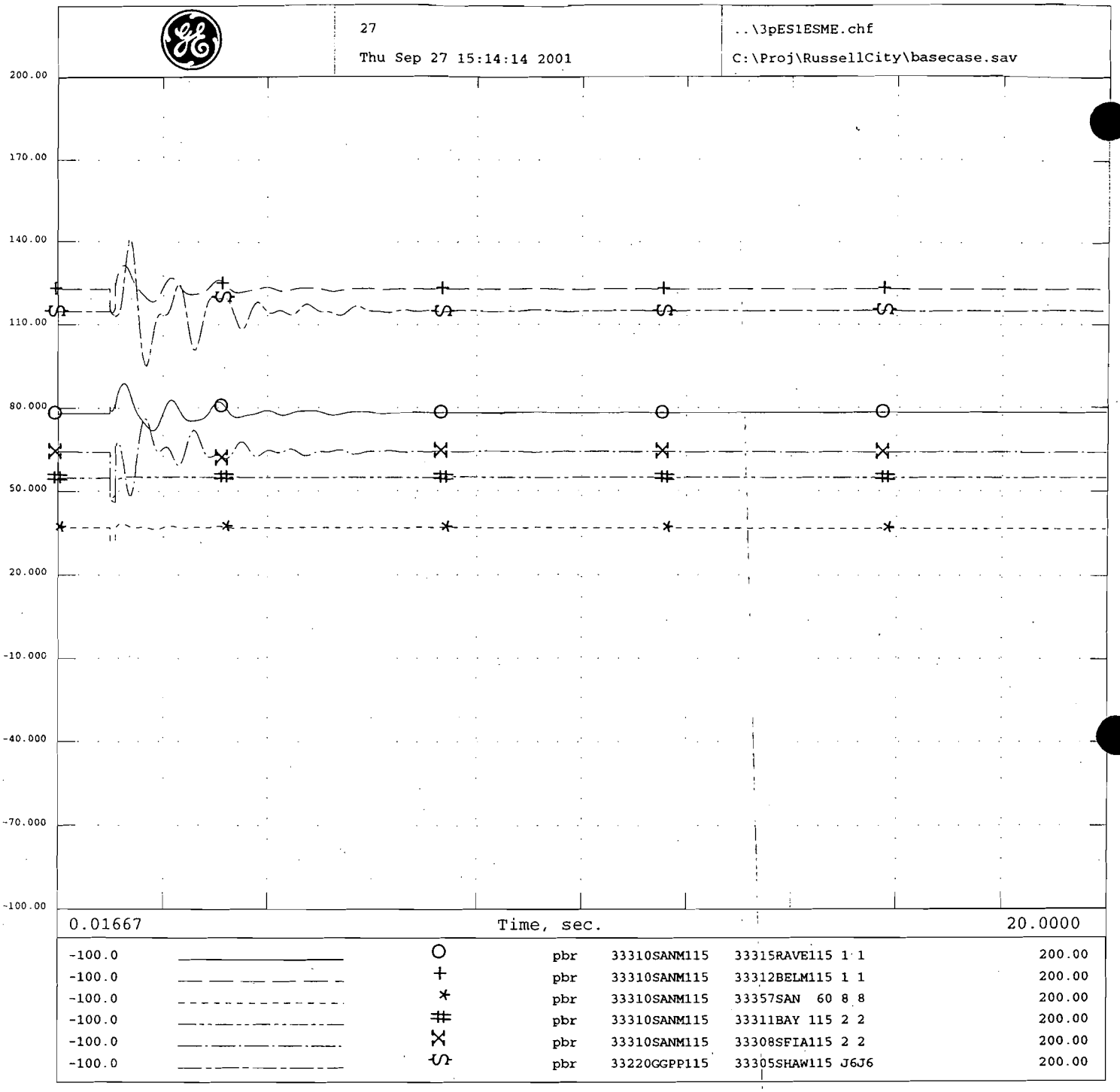

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
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TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 230/115kV bank #1 outage
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1
bank
RUN  9
CC
CC   Fault East Shore 230kV bus
FB   0.0 "E. SHORE" 230.
CC
CC   Clear fault at East Shore 230kV bus
CFB  6.0 "E. SHORE" 230.
CC
CC   Trip the East Shore 230/115kV bank #1
DL  6.0 "E. SHORE" 230.00 "EASTSHRE" 115.00 "1 "
CC
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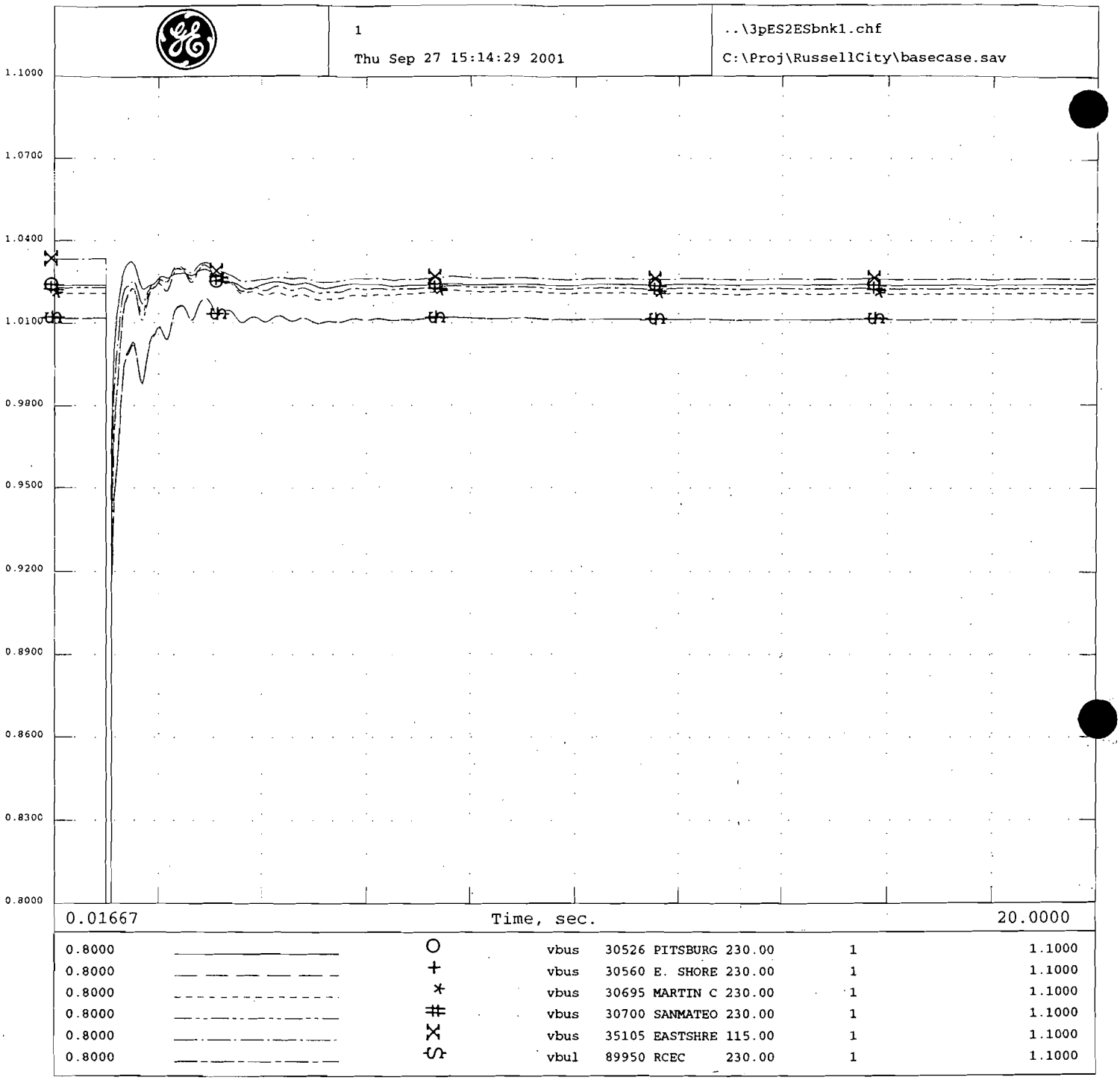

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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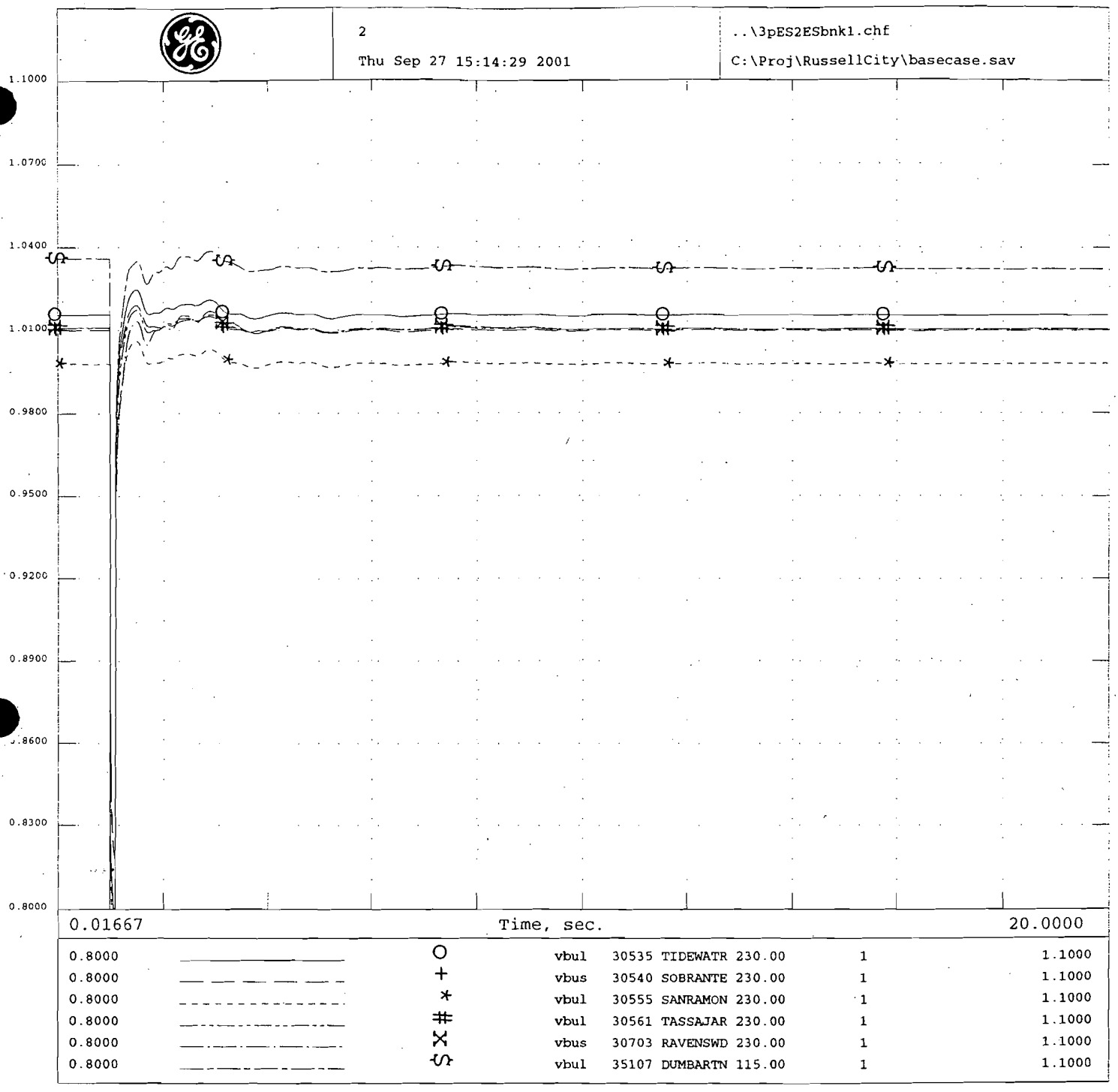
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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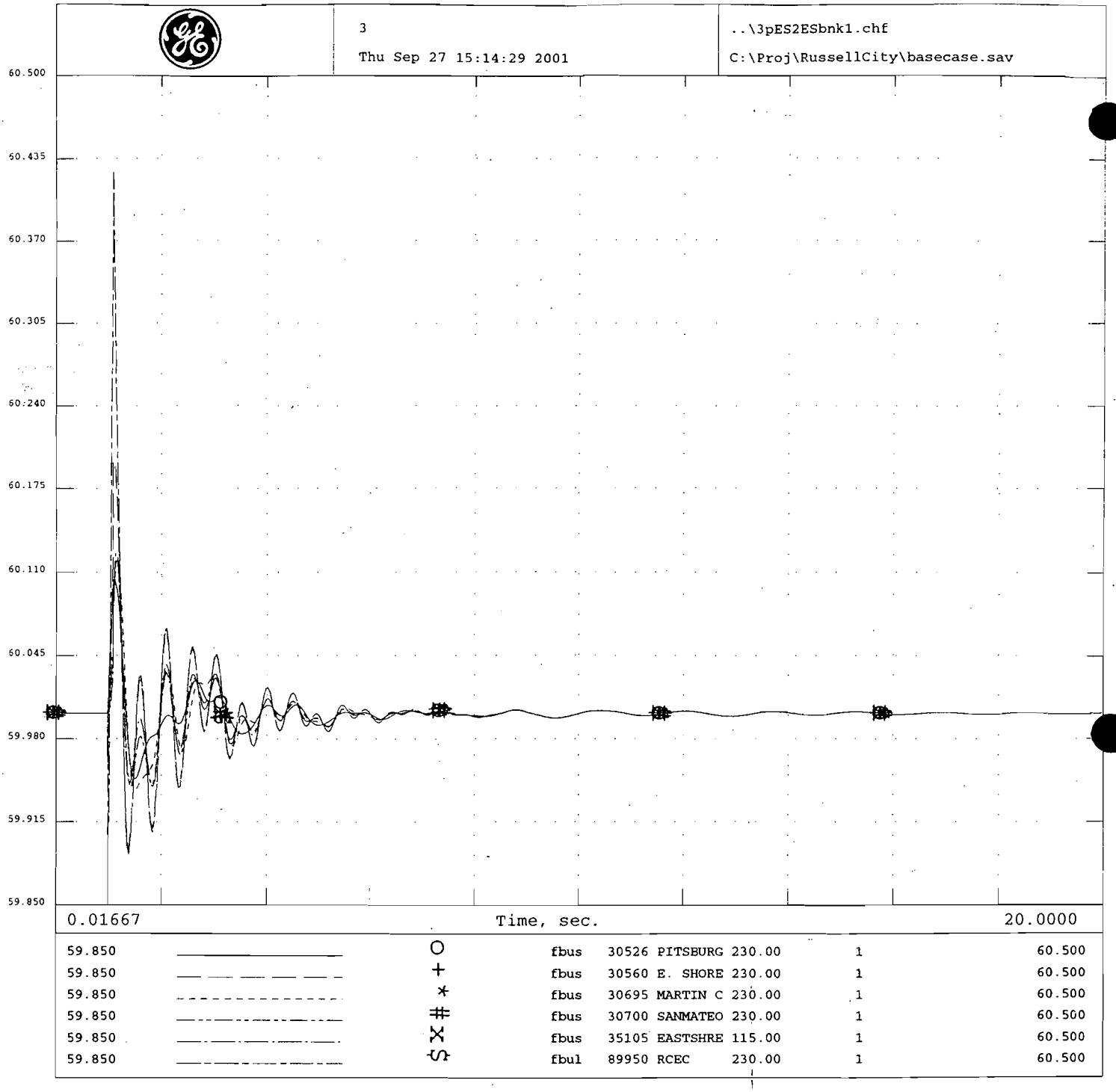
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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East Shore 230/115kV bank #1 outage
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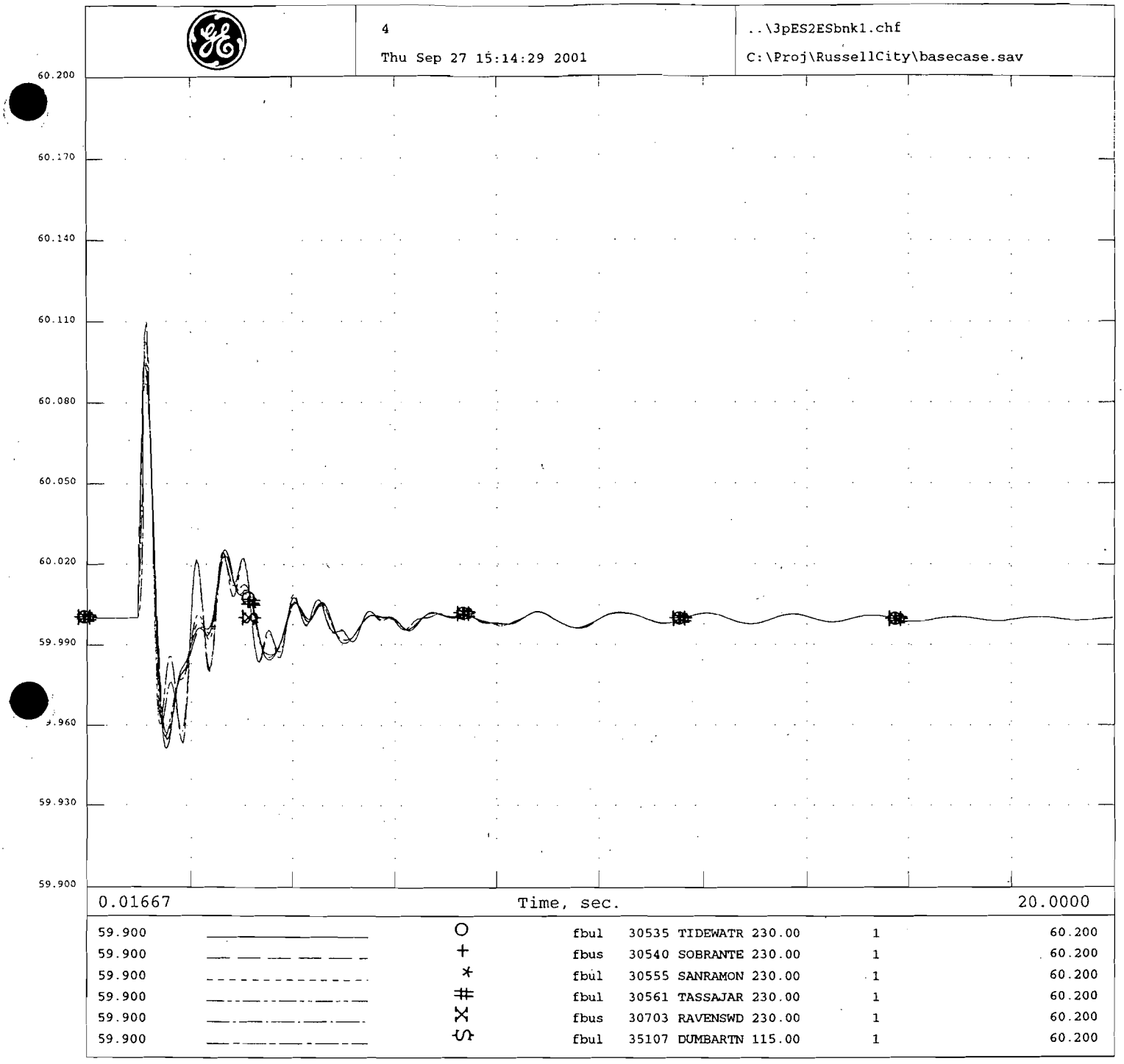
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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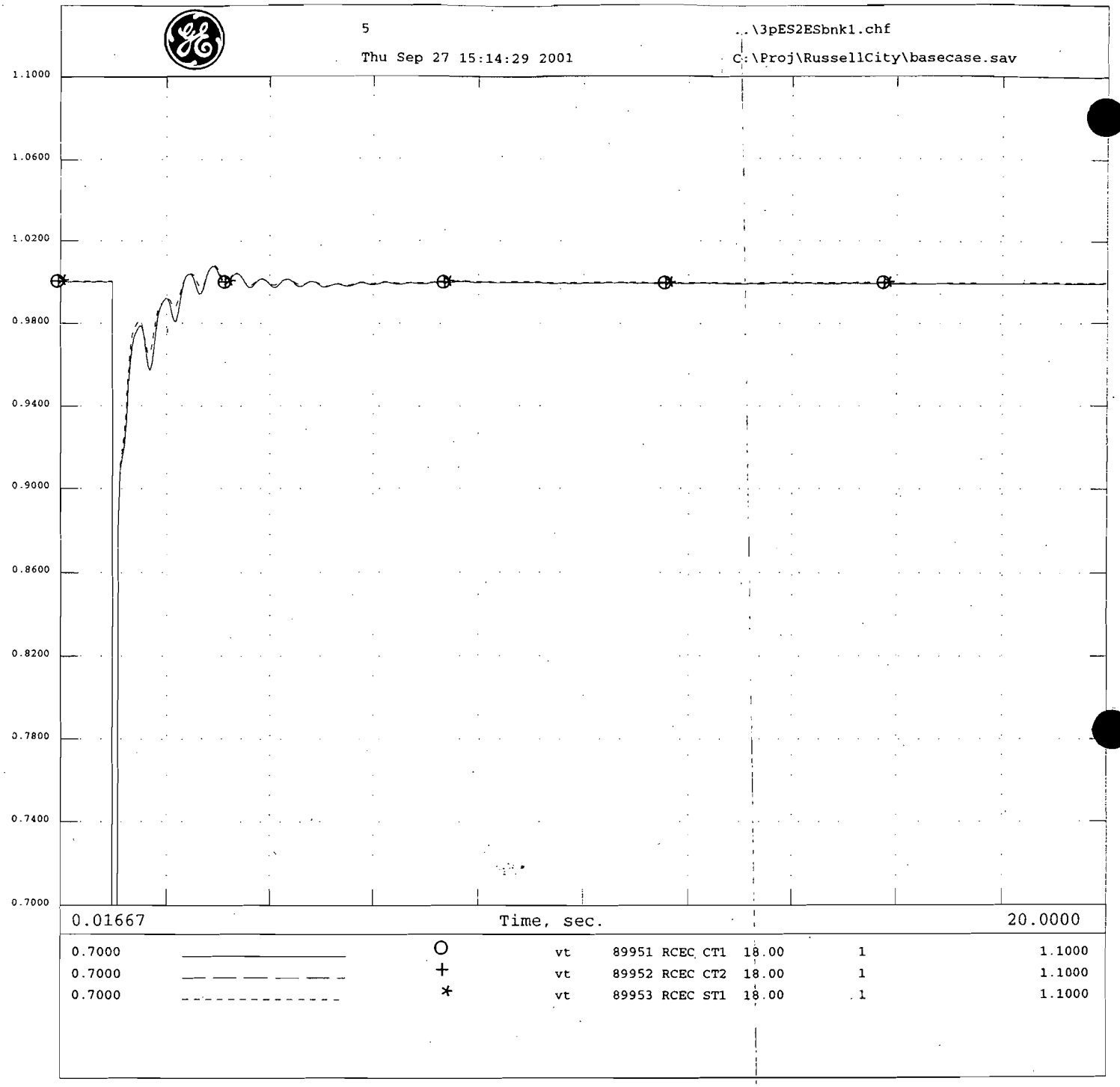

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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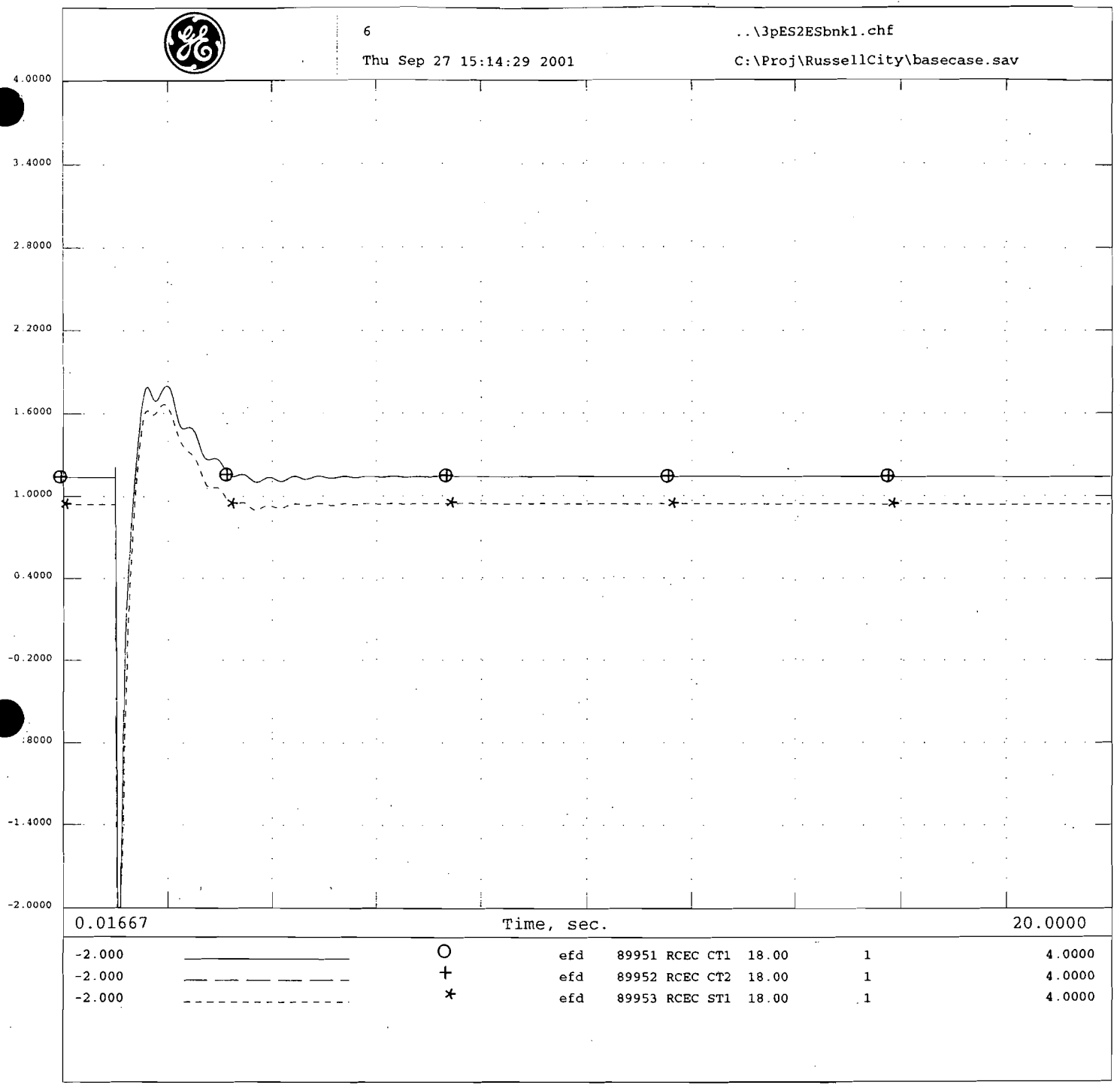
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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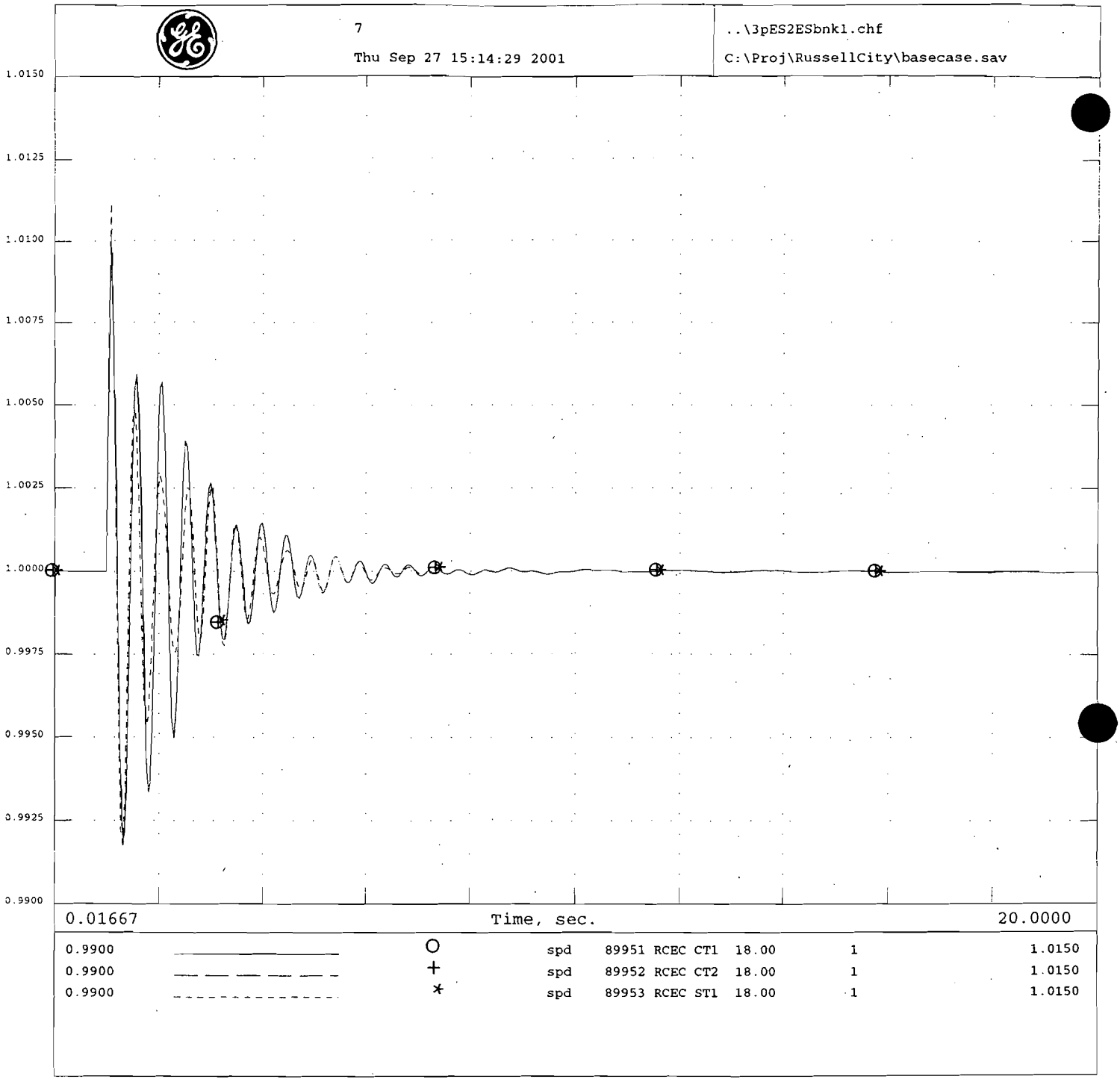
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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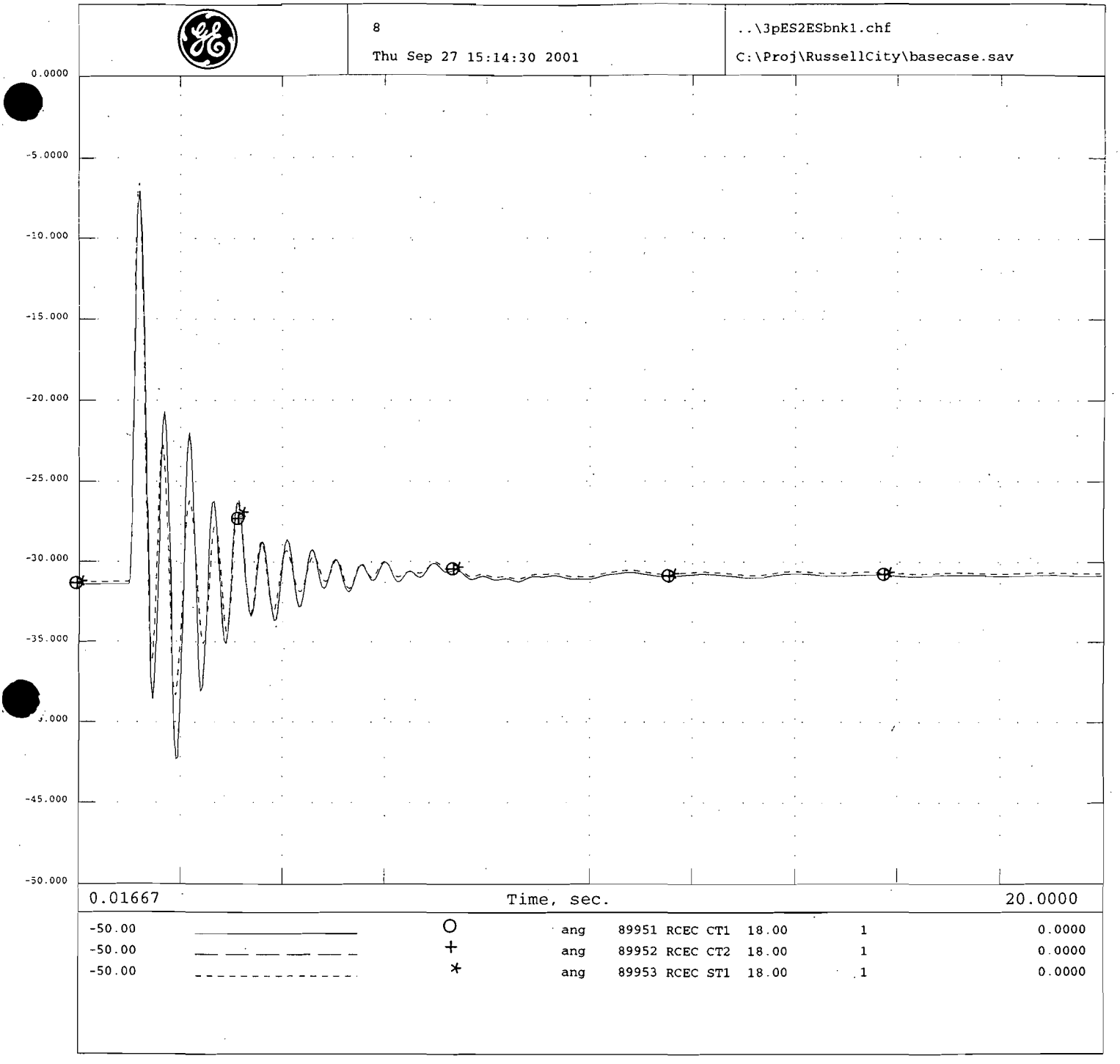
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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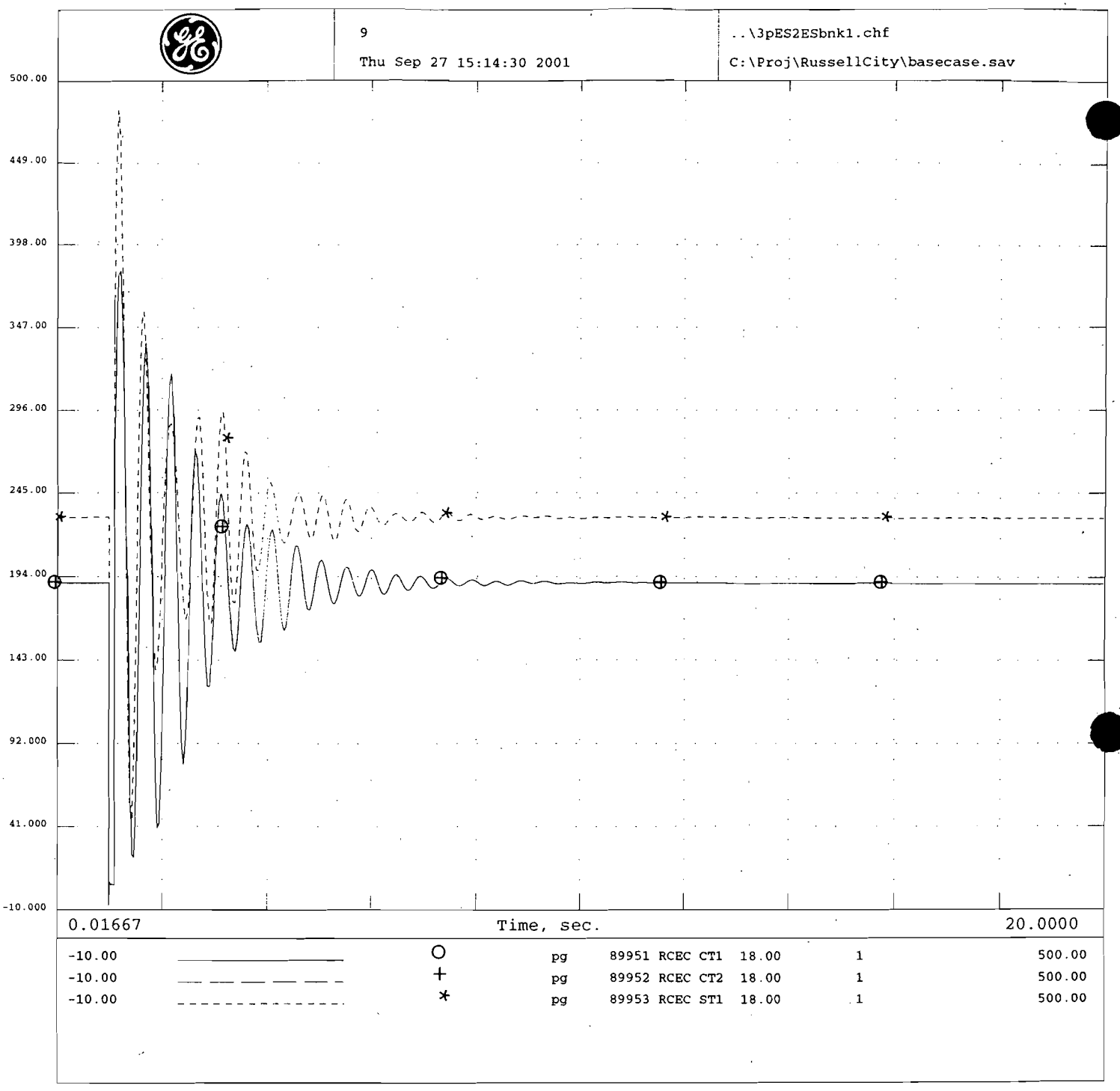
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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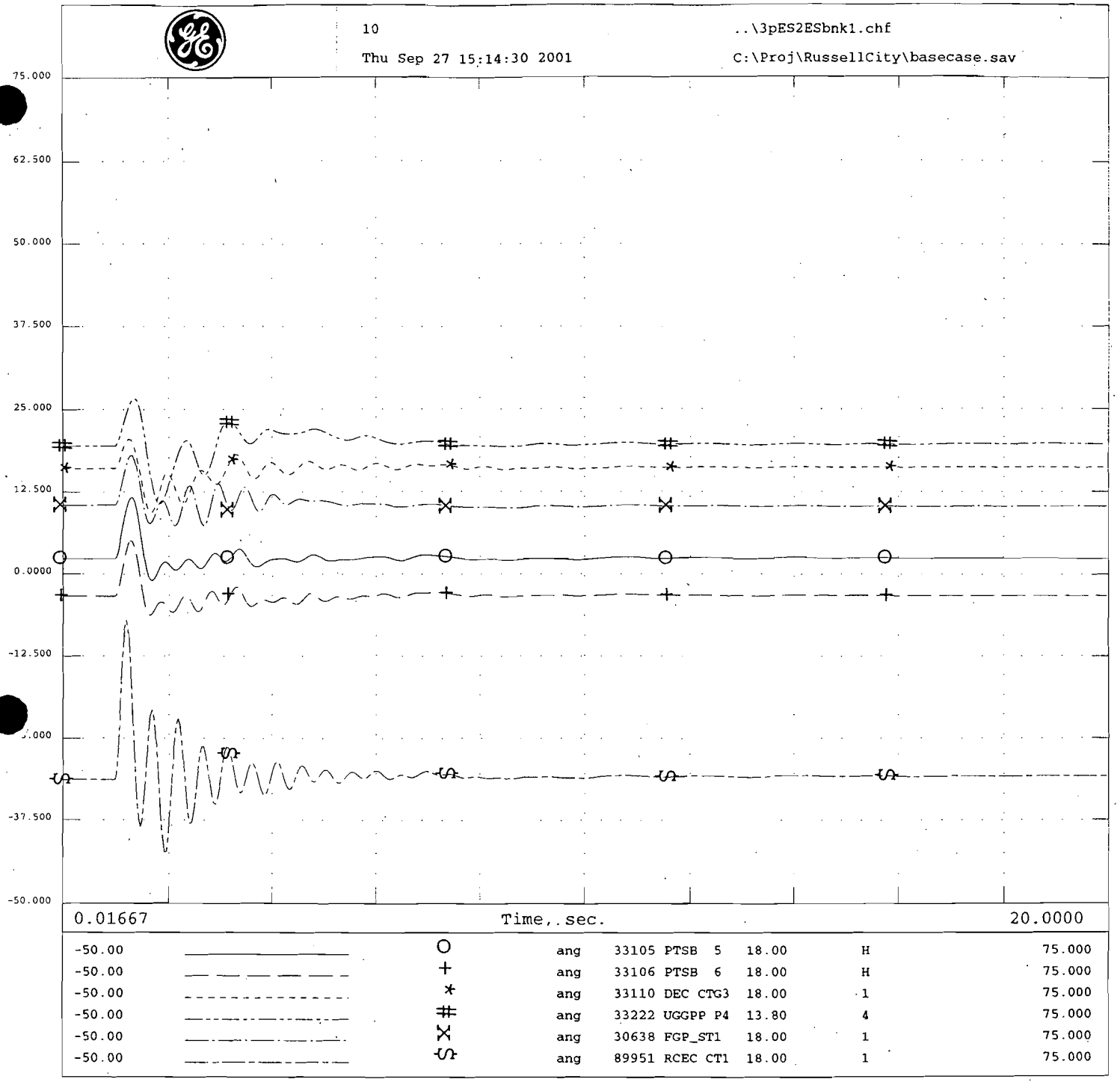
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 230/115kV bank #1 outage
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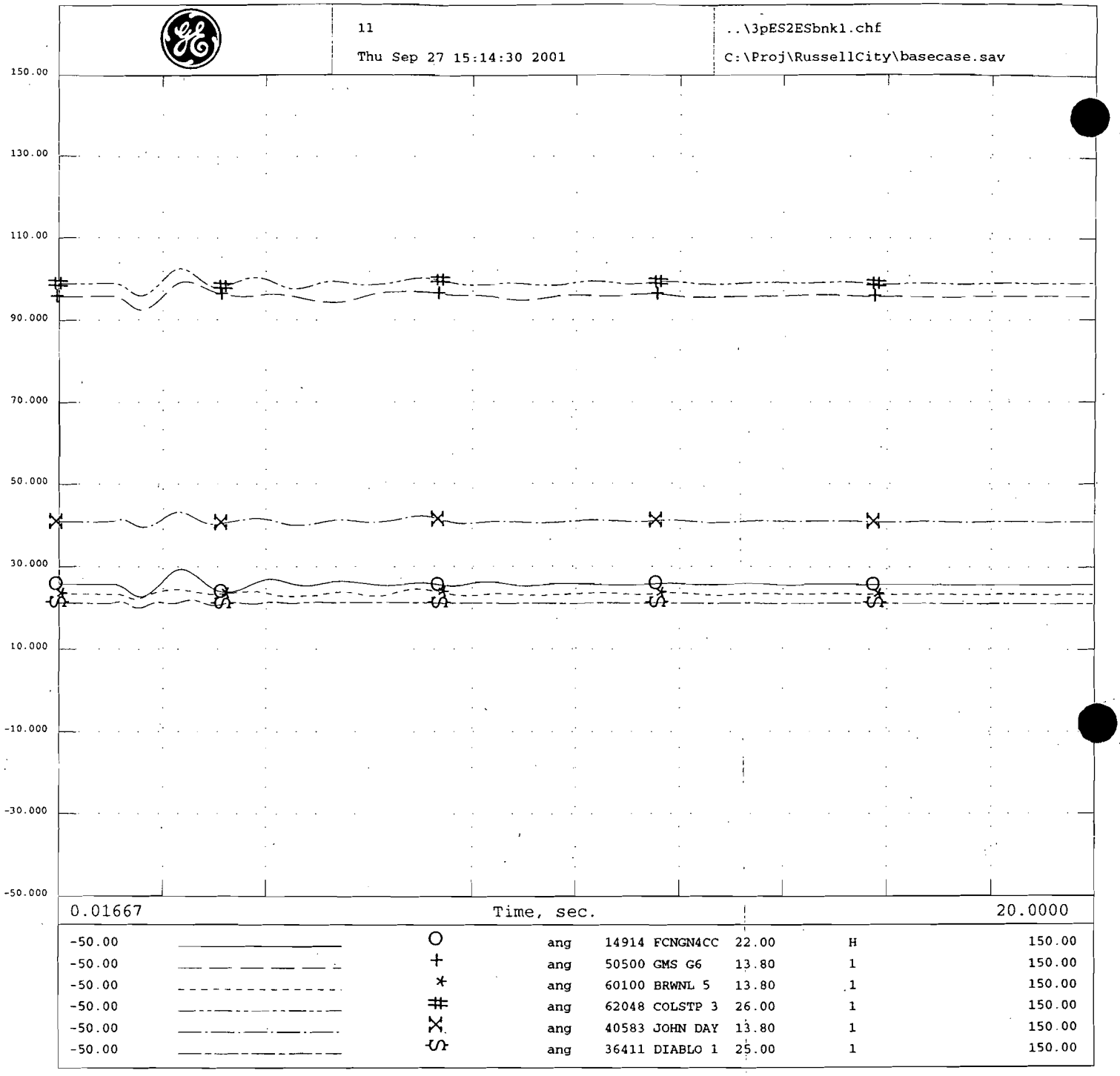
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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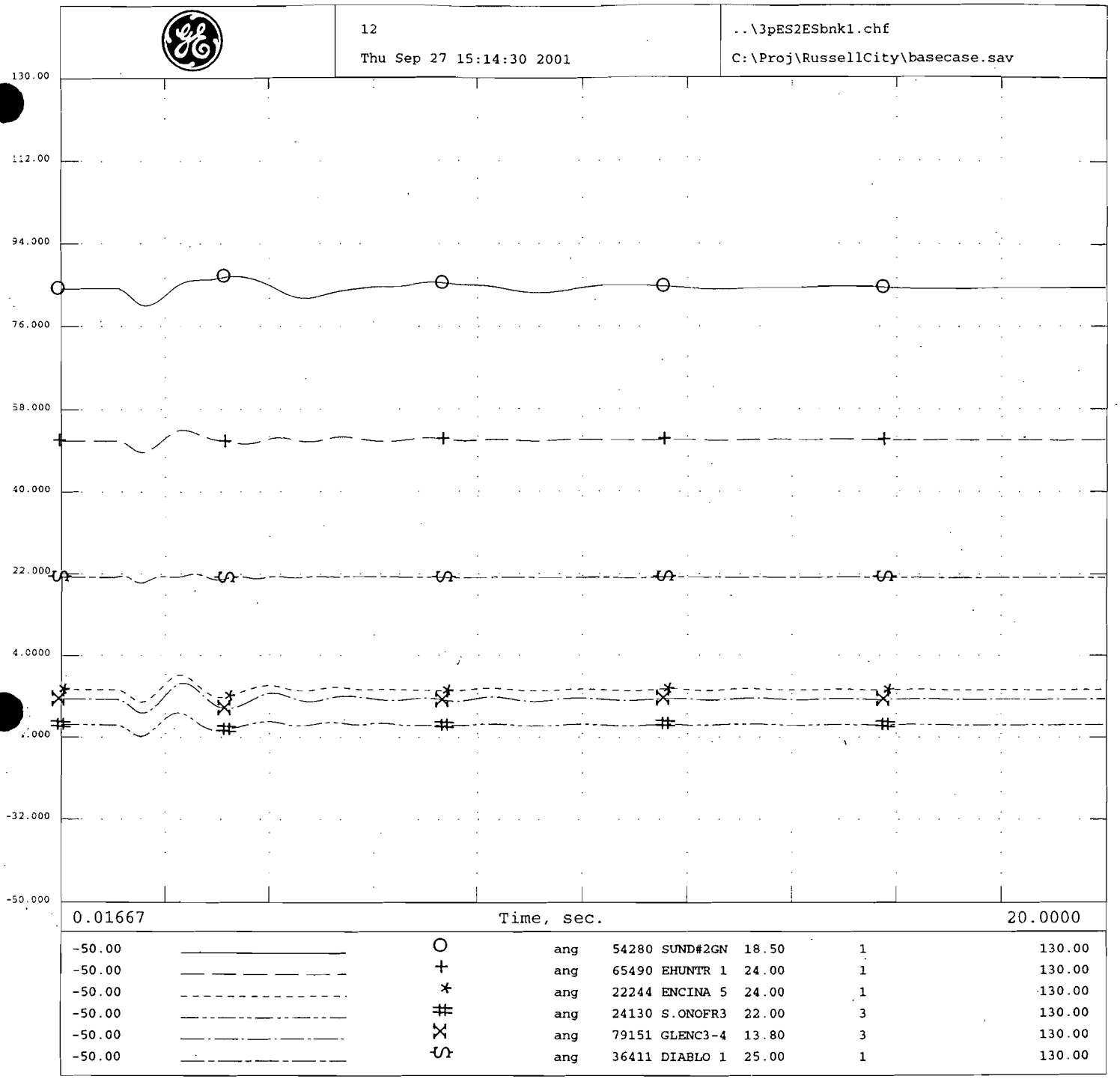
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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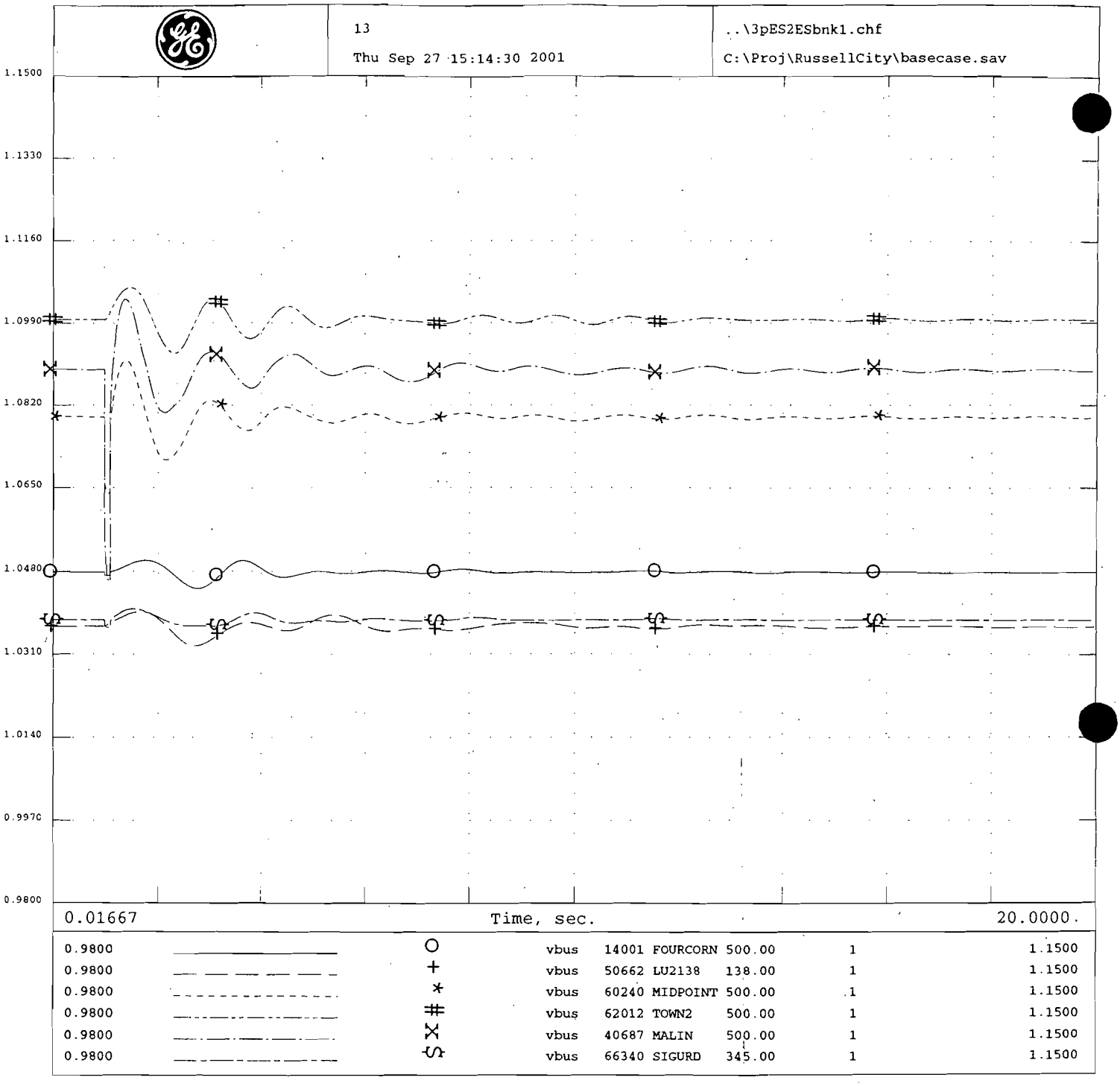
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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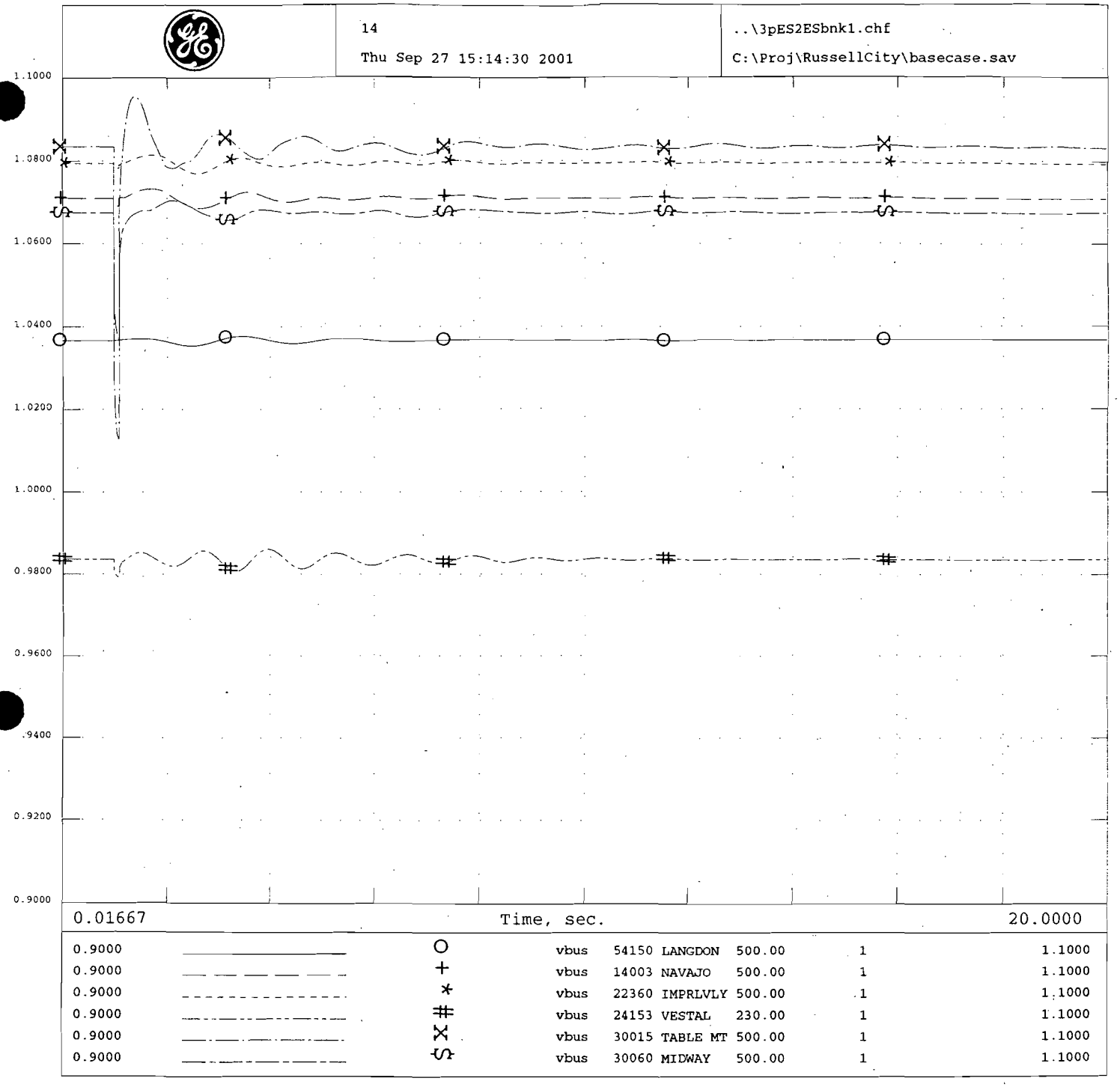
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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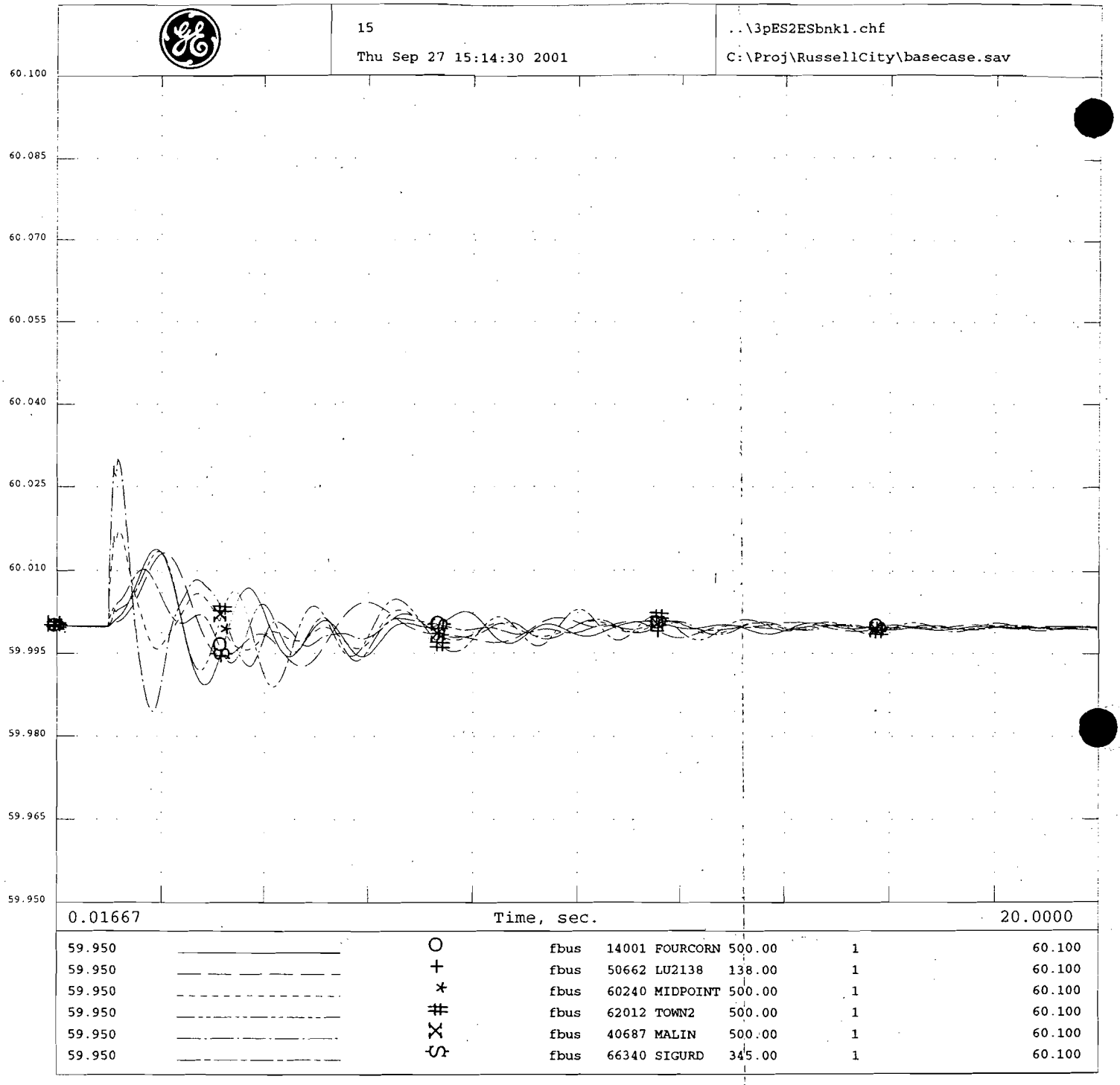
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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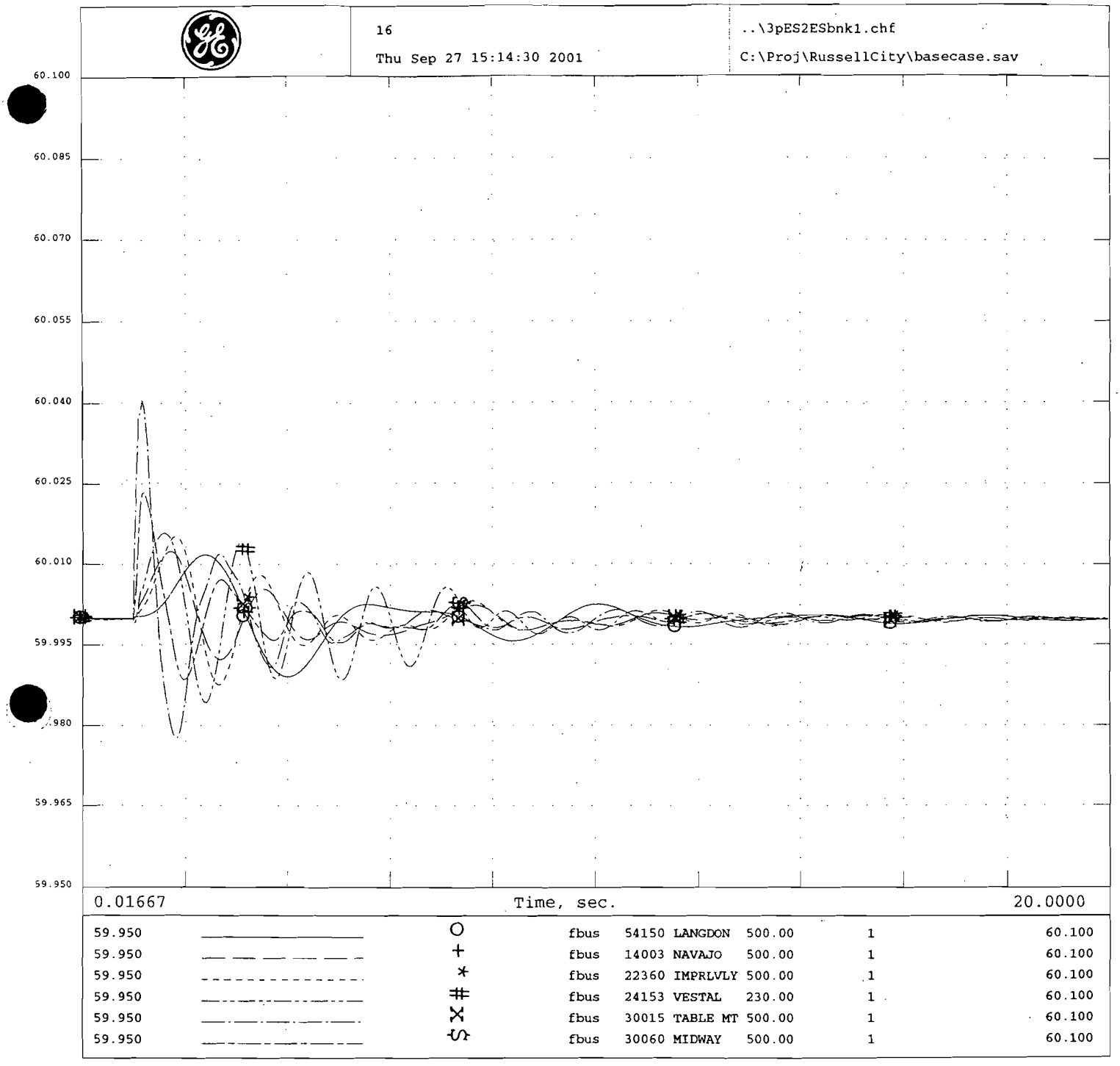
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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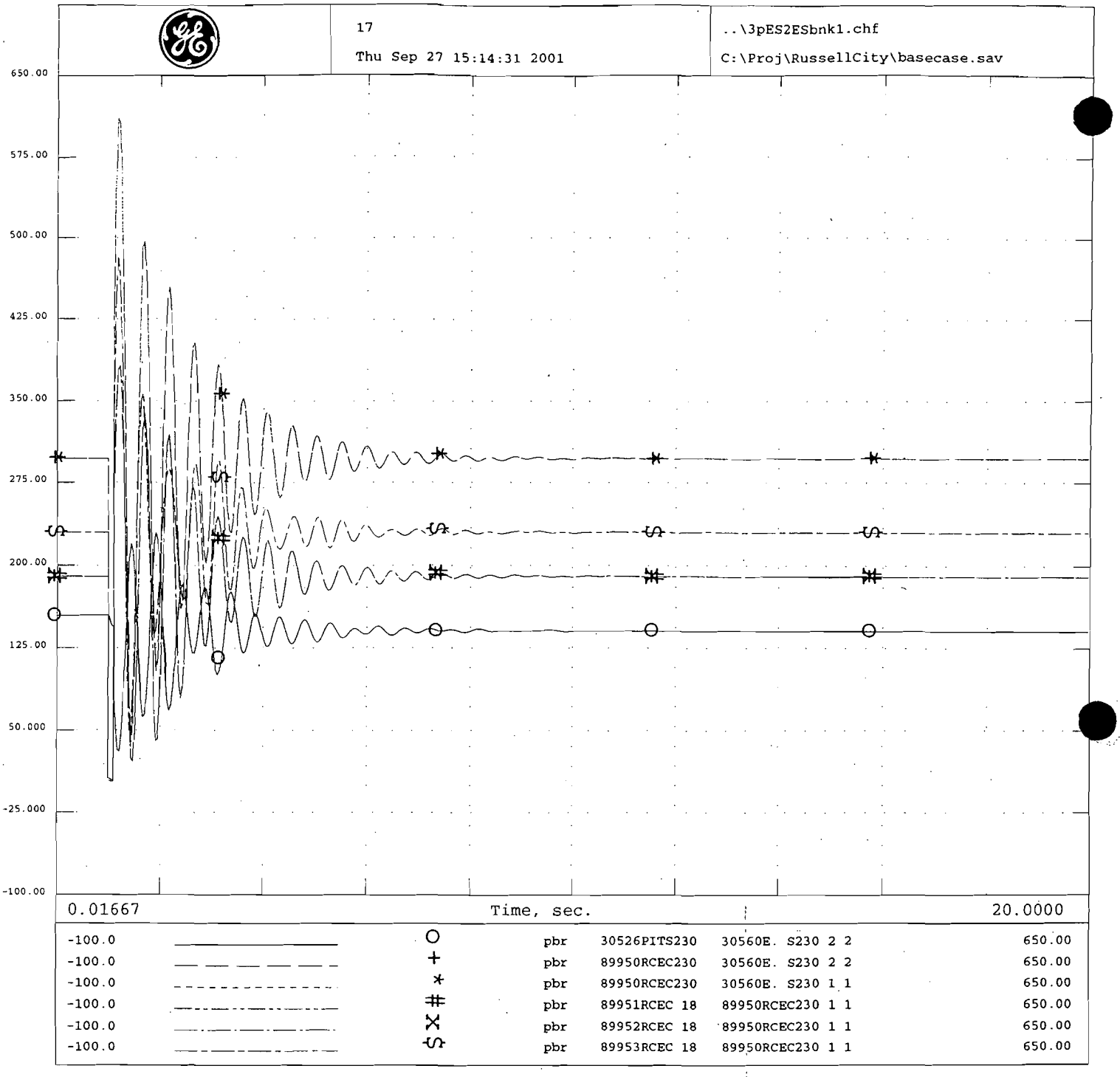
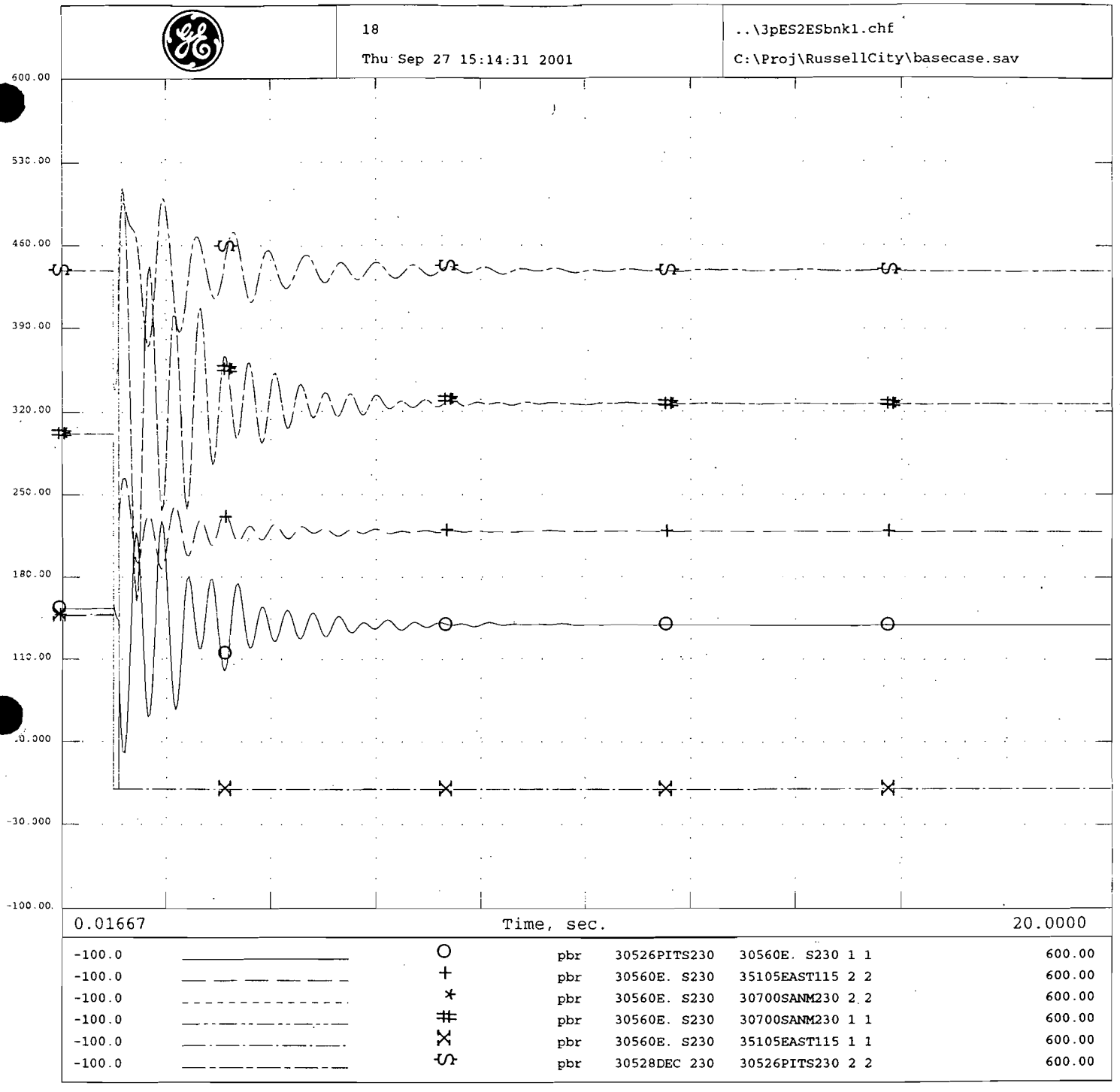
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore 230/115kV bank #1 outage
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore 230/115kV #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Calpine/Bechtel Joint Development
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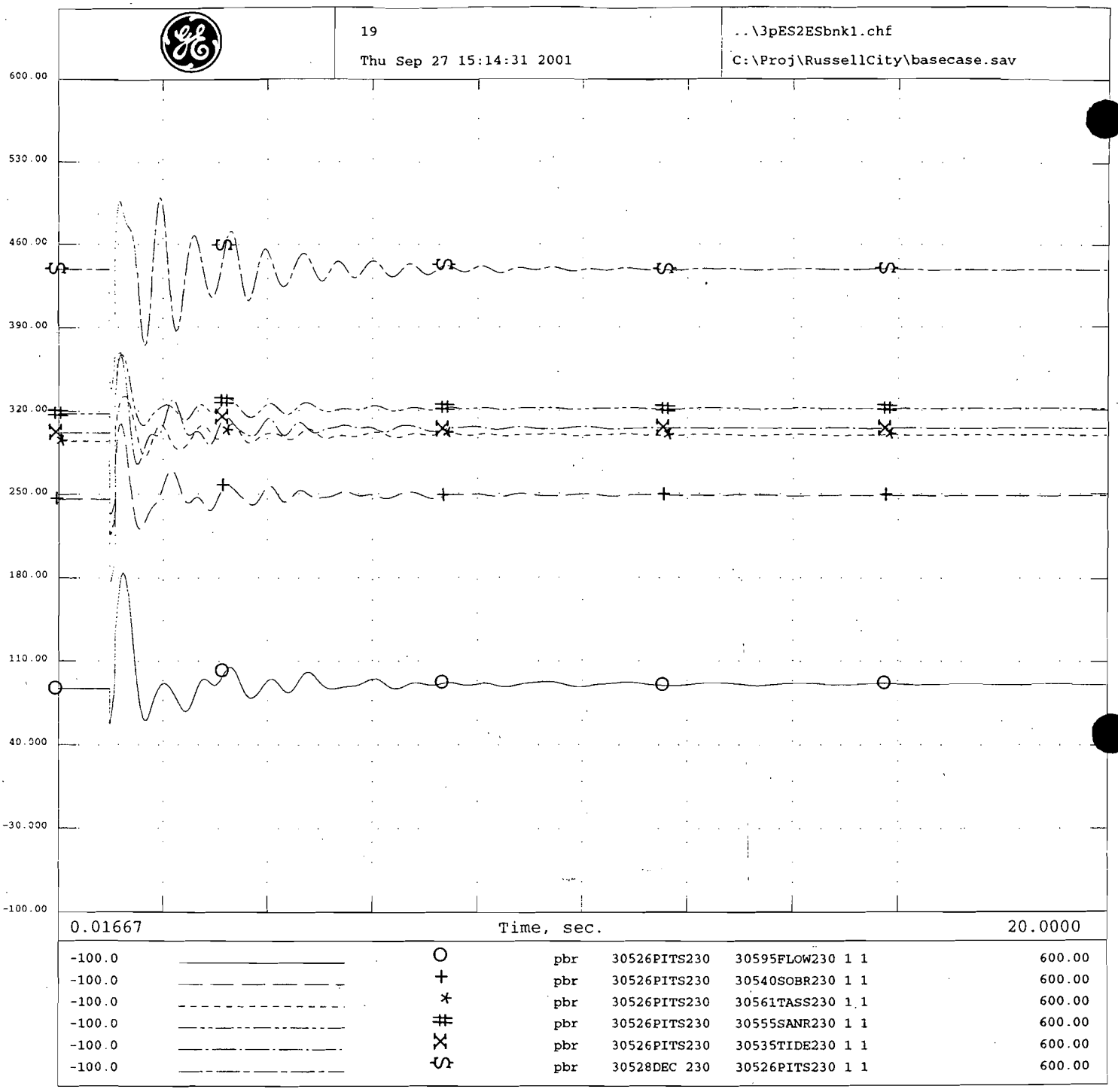

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2004 Summer Peak Base Case
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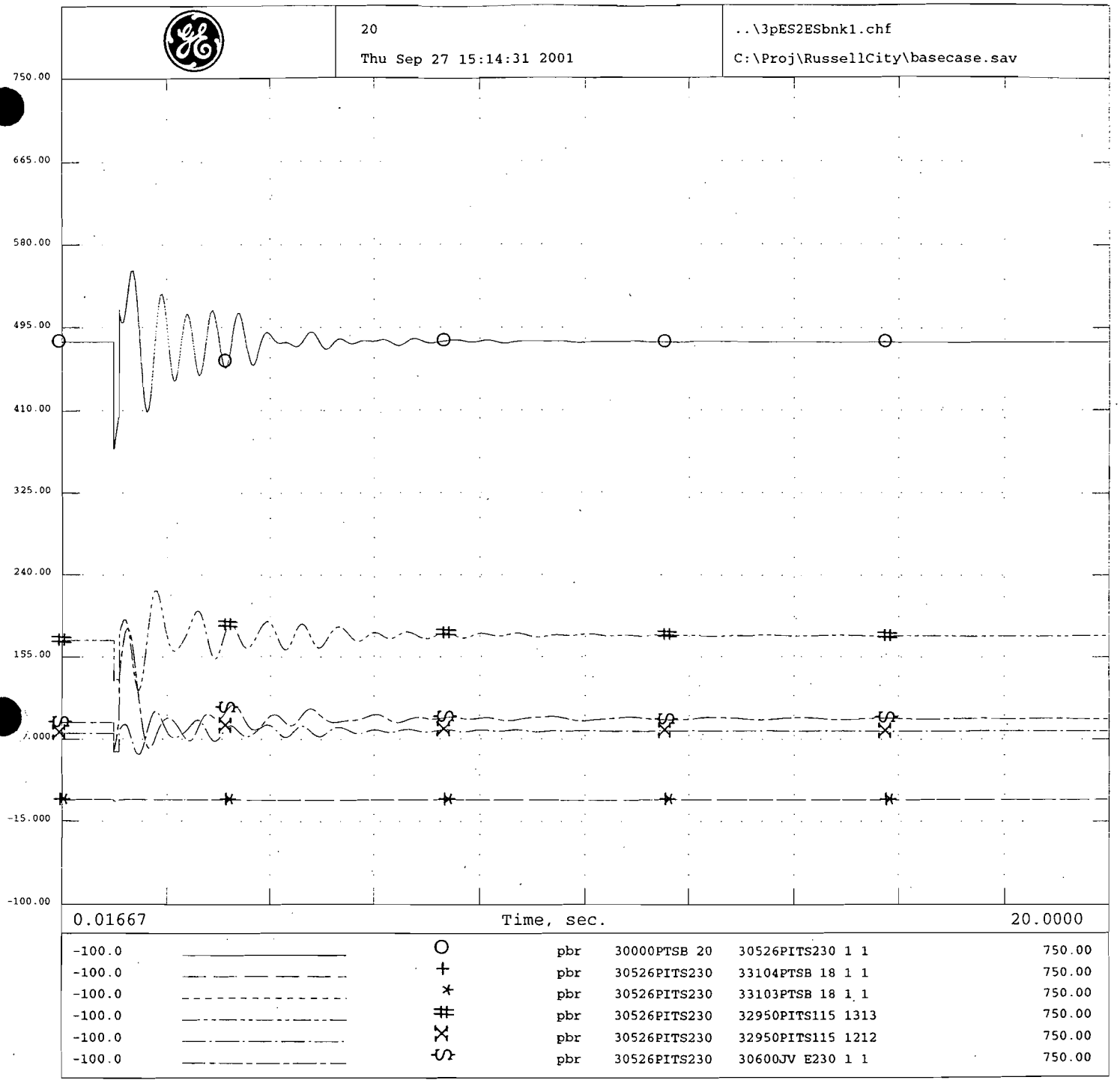
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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East Shore 230/115kV bank #1 outage
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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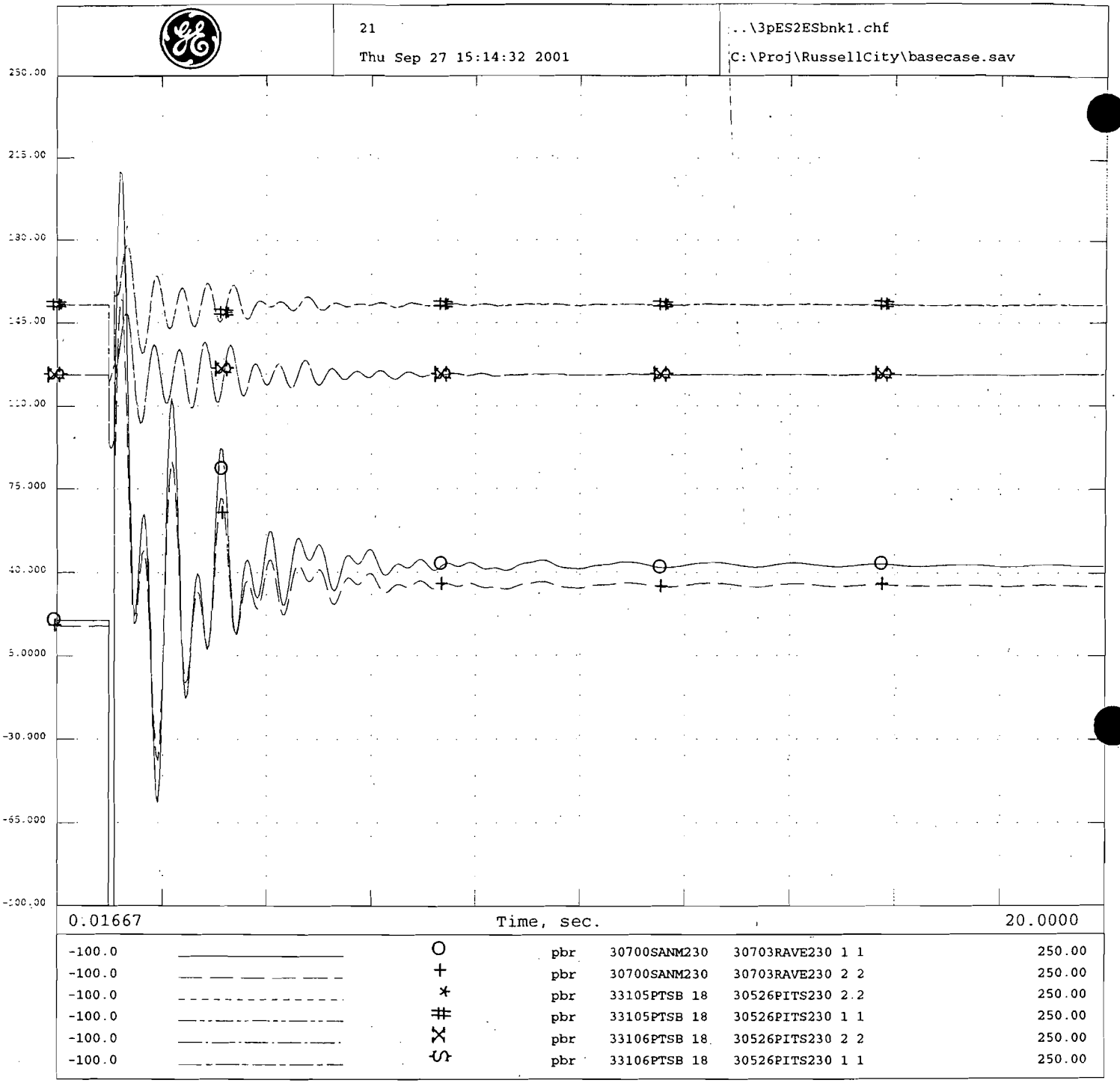

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Calpine/Bechtel Joint Development
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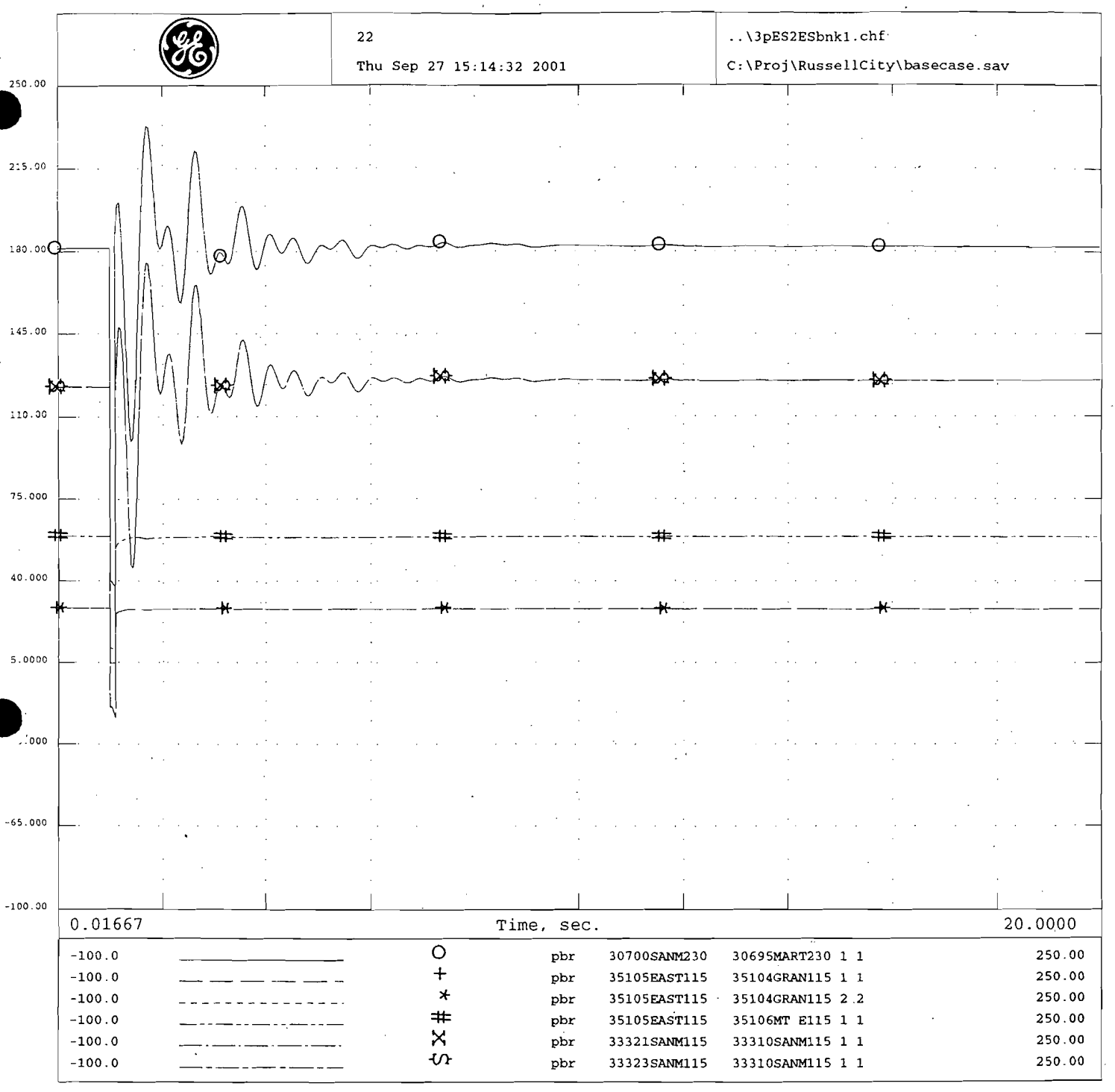

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Calpine/Bechtel Joint Development
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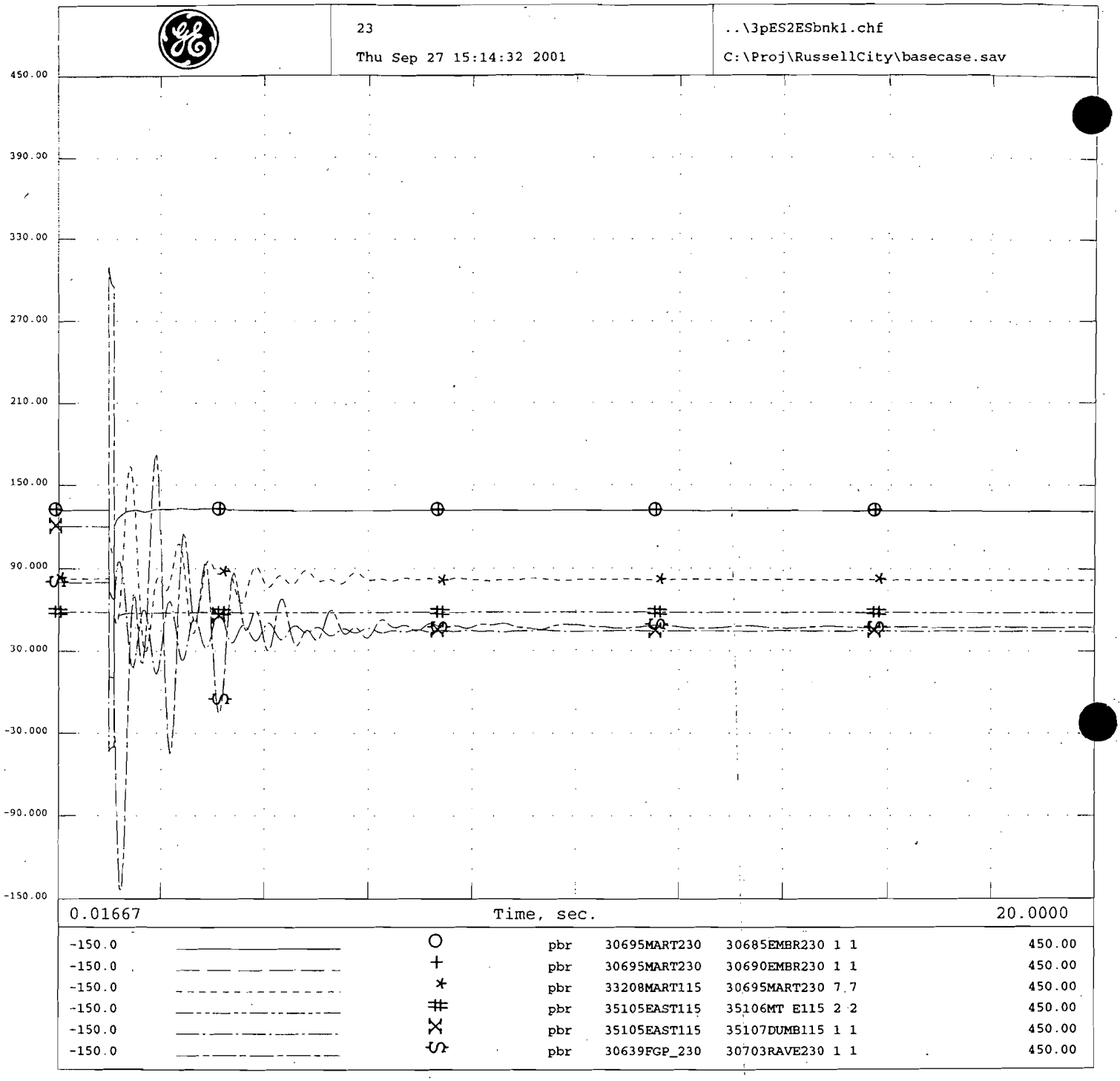

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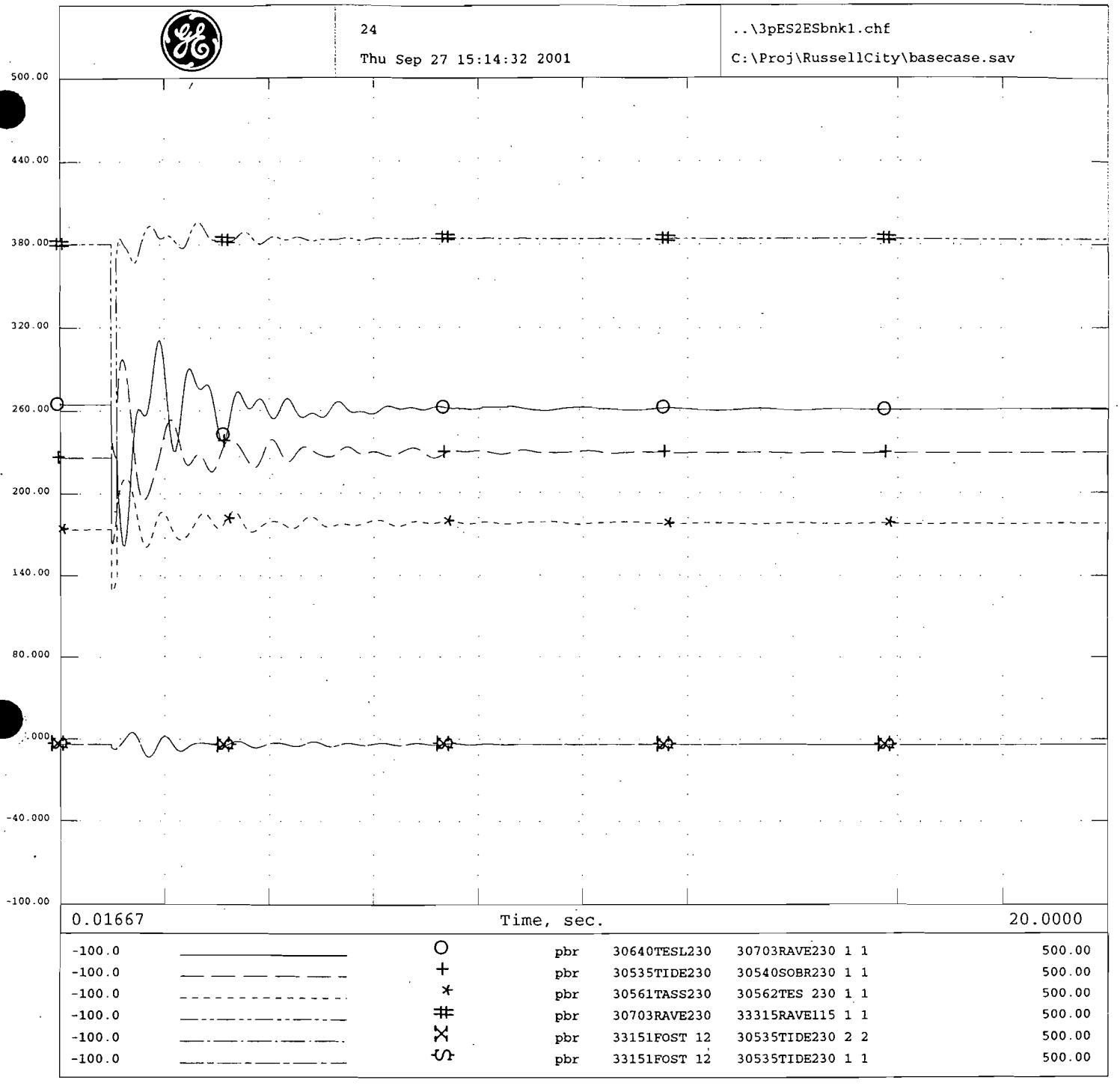

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Calpine/Bechtel Joint Development
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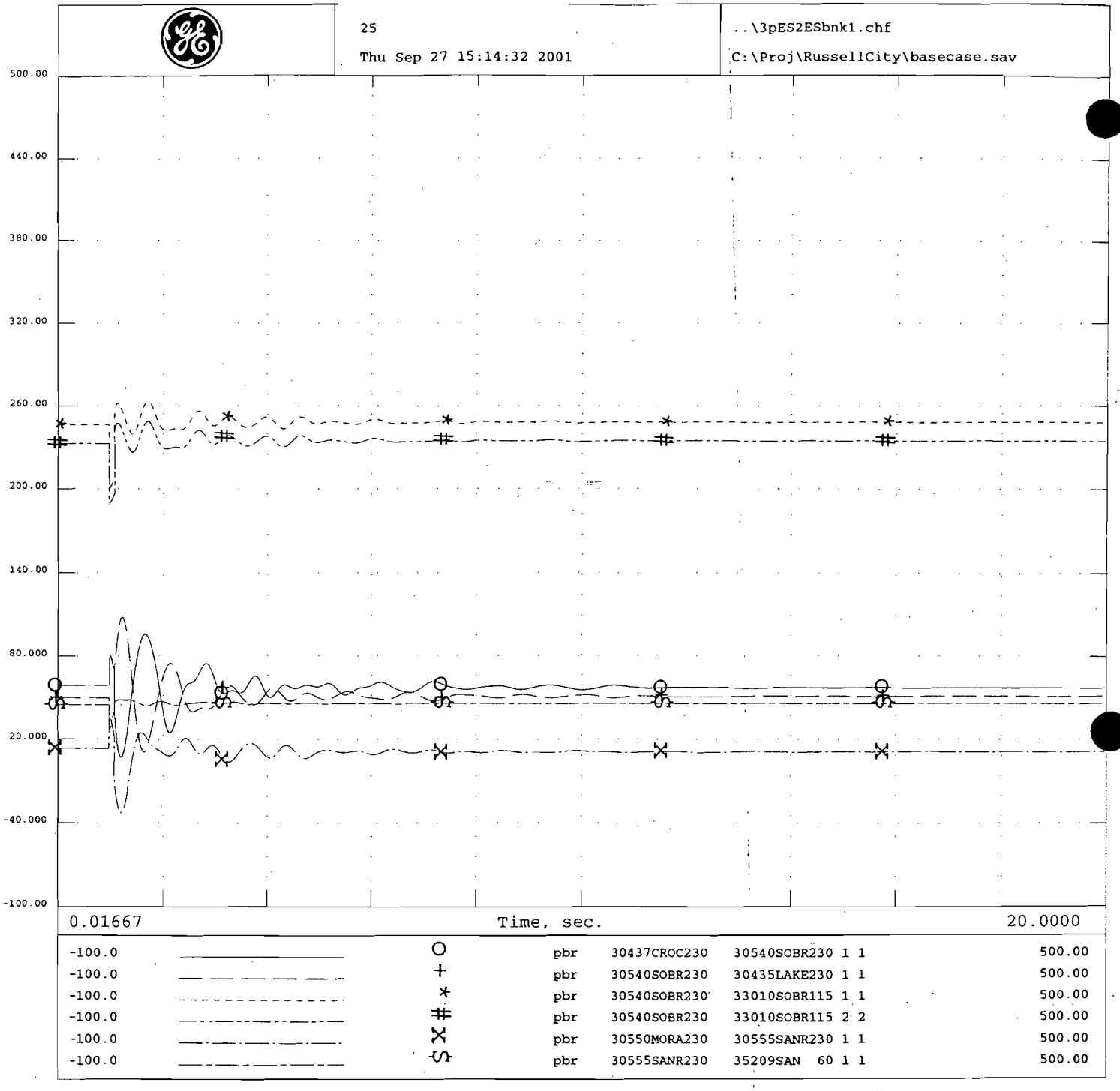

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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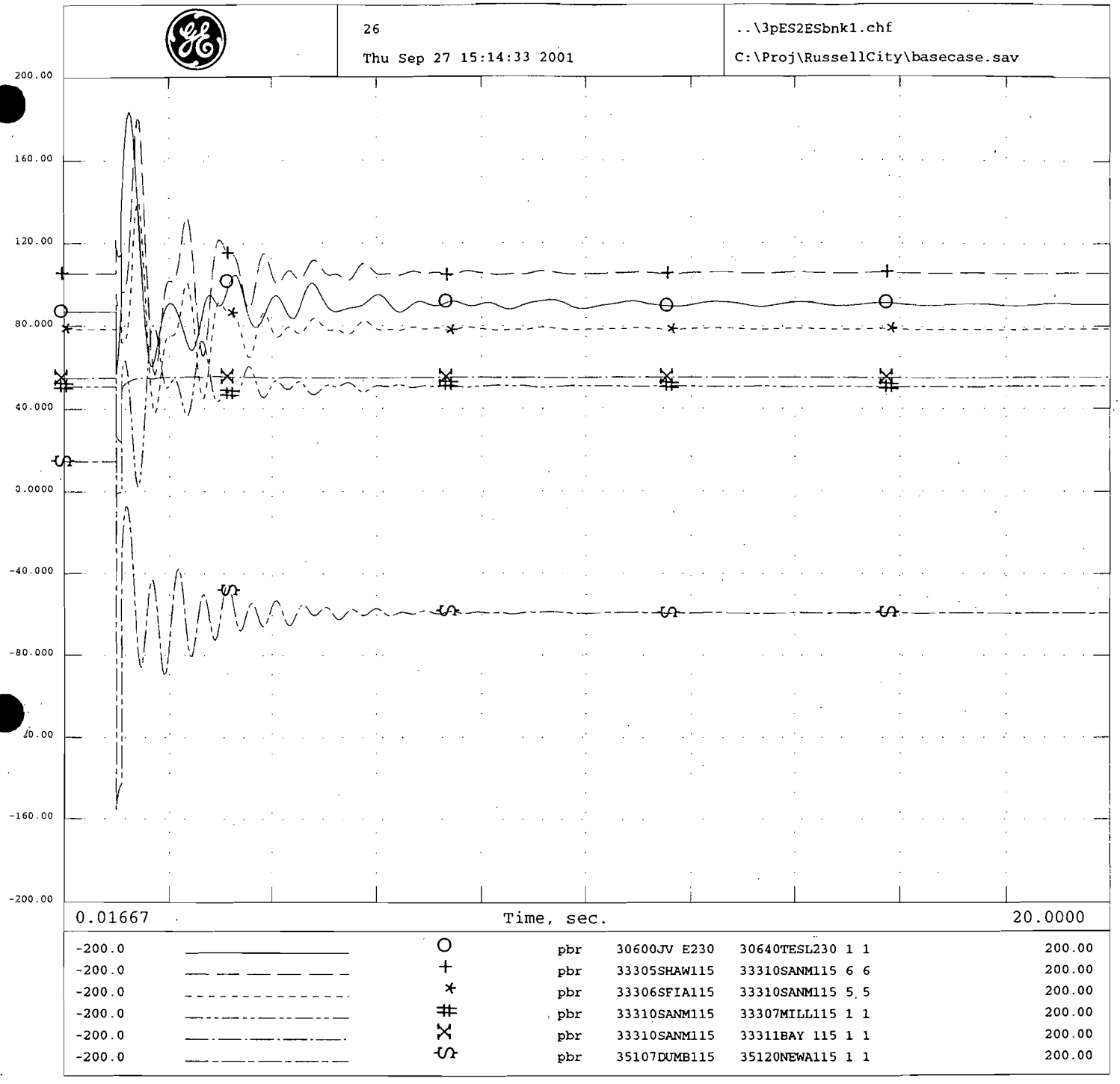

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RCEC @ 610MW
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Calpine/Bechtel Joint Development
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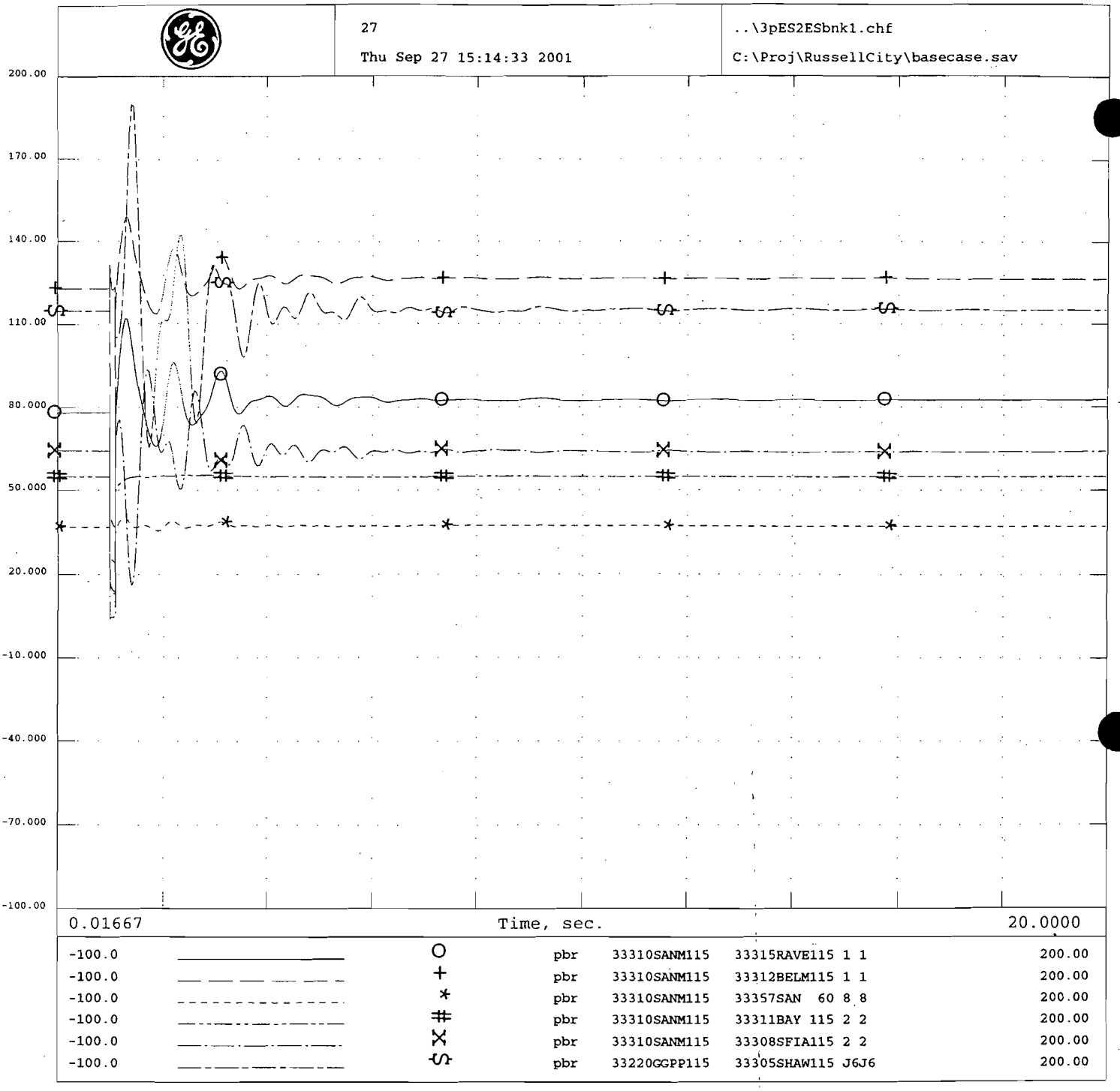

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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RCEC @ 610MW
East Shore 230/115kV bank #1 outage
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg #1 230kV line outage
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore-Pittsburg #1
230kV line
RUN  9
CC
CC   Fault East Shore 230kV bus
FB   0.0 "E. SHORE" 230.
CC
CC   Clear fault at East Shore 230kV bus
CFB  6.0 "E. SHORE" 230.
CC
CC   Trip the East Shore-Pittsburg #1 230kV line
DL  6.0 "PITSBURG" 230.00 "E. SHORE" 230.00 "1 "
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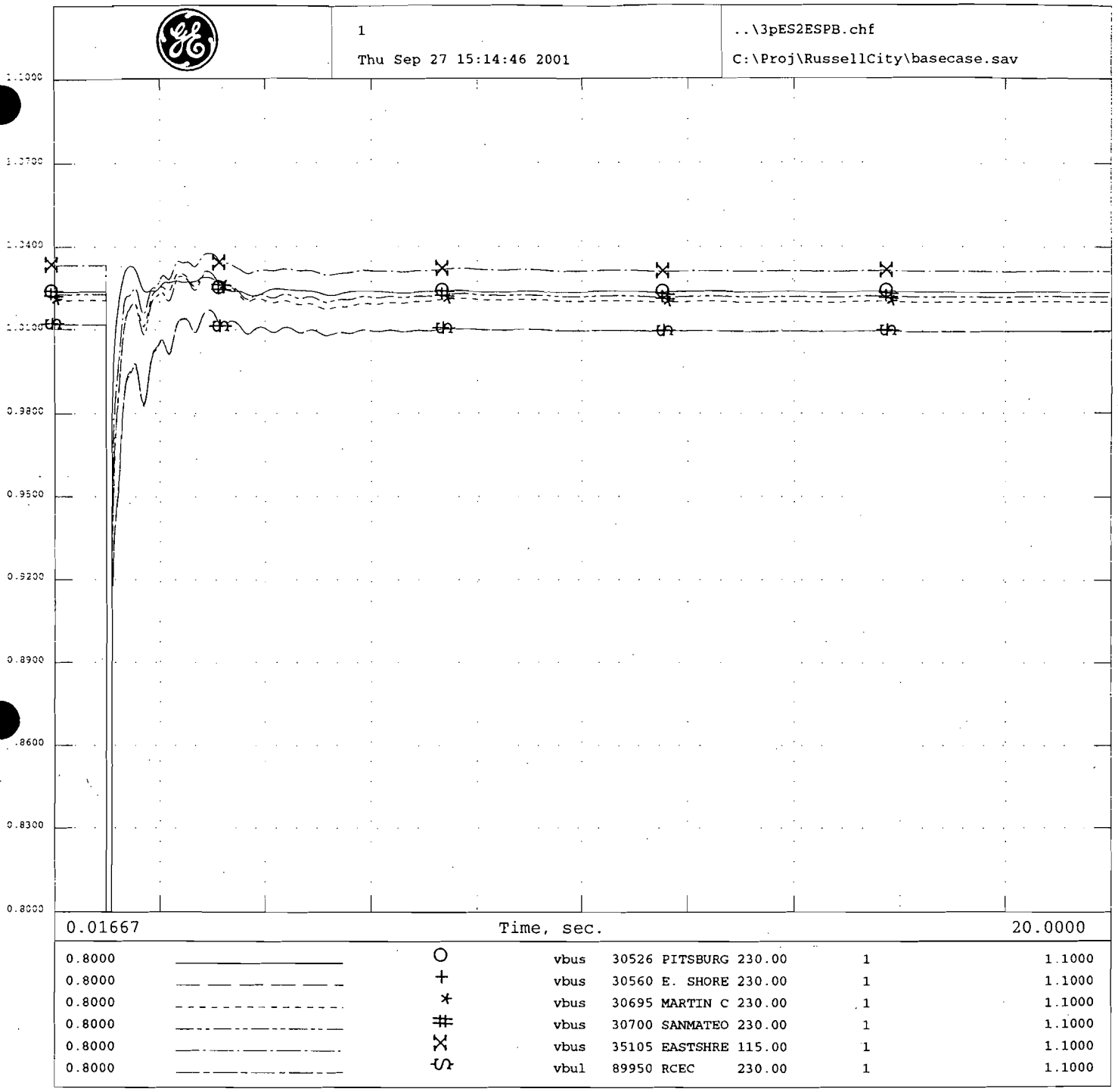

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2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg #1 230kV line outage
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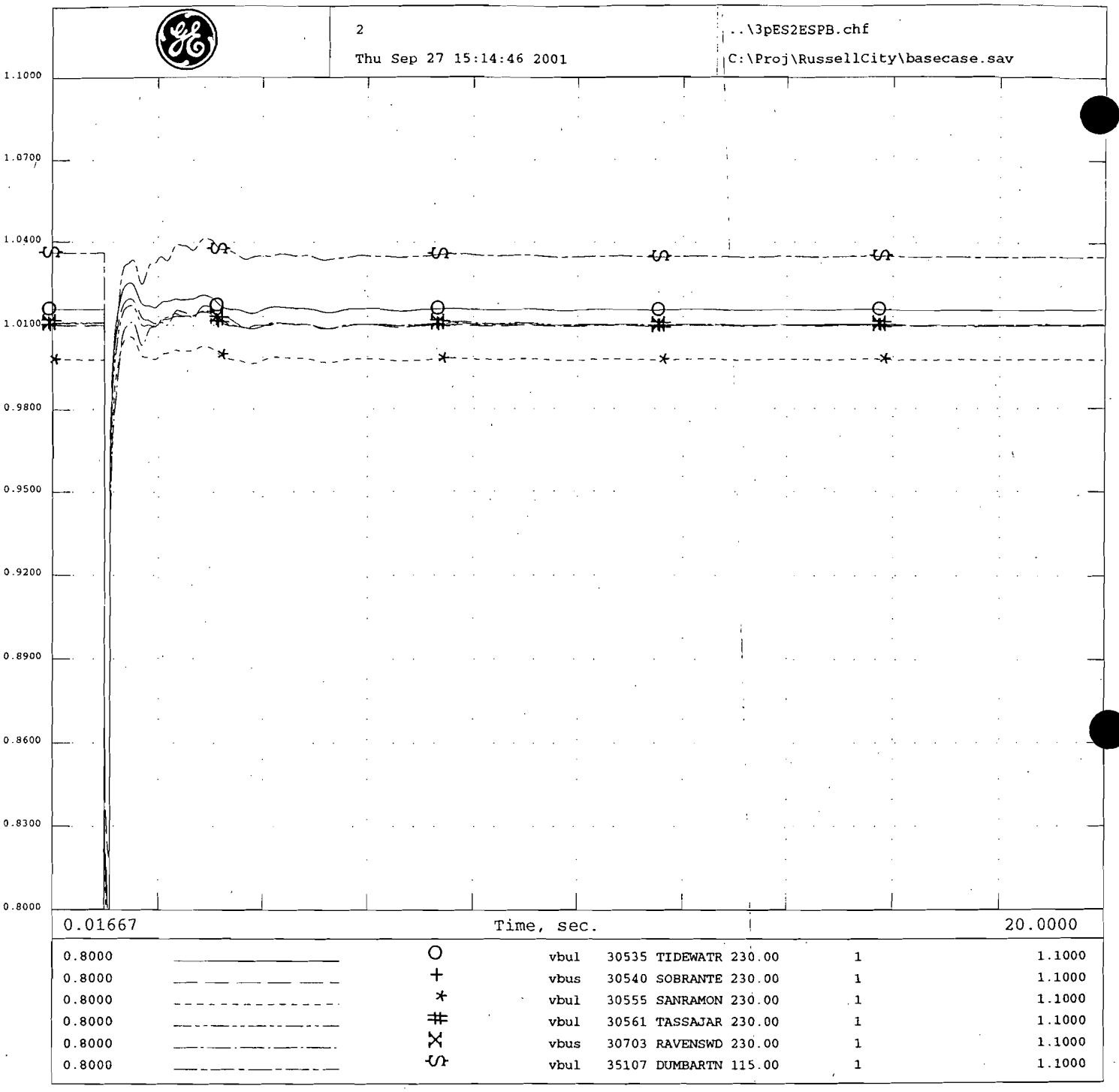
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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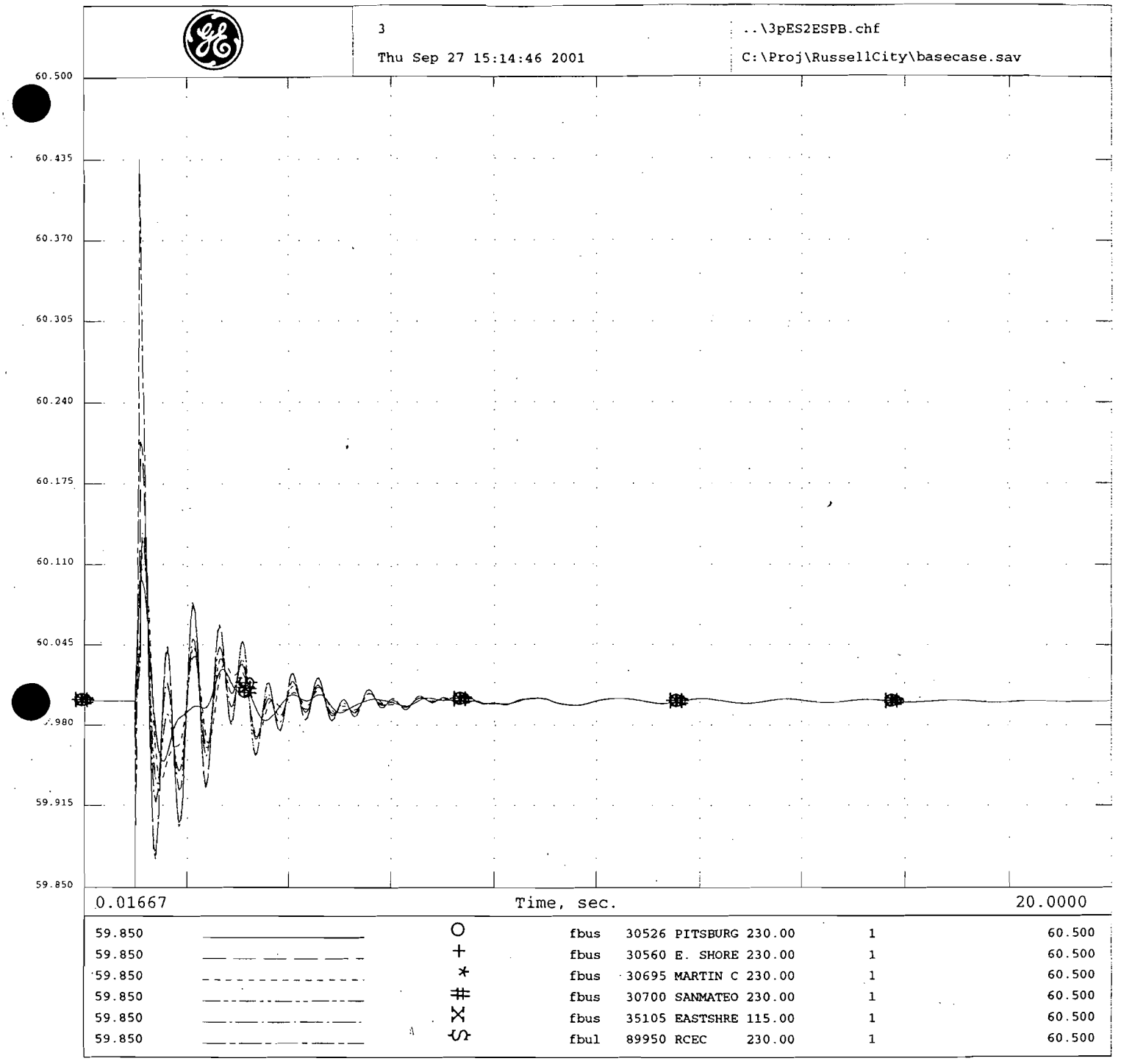
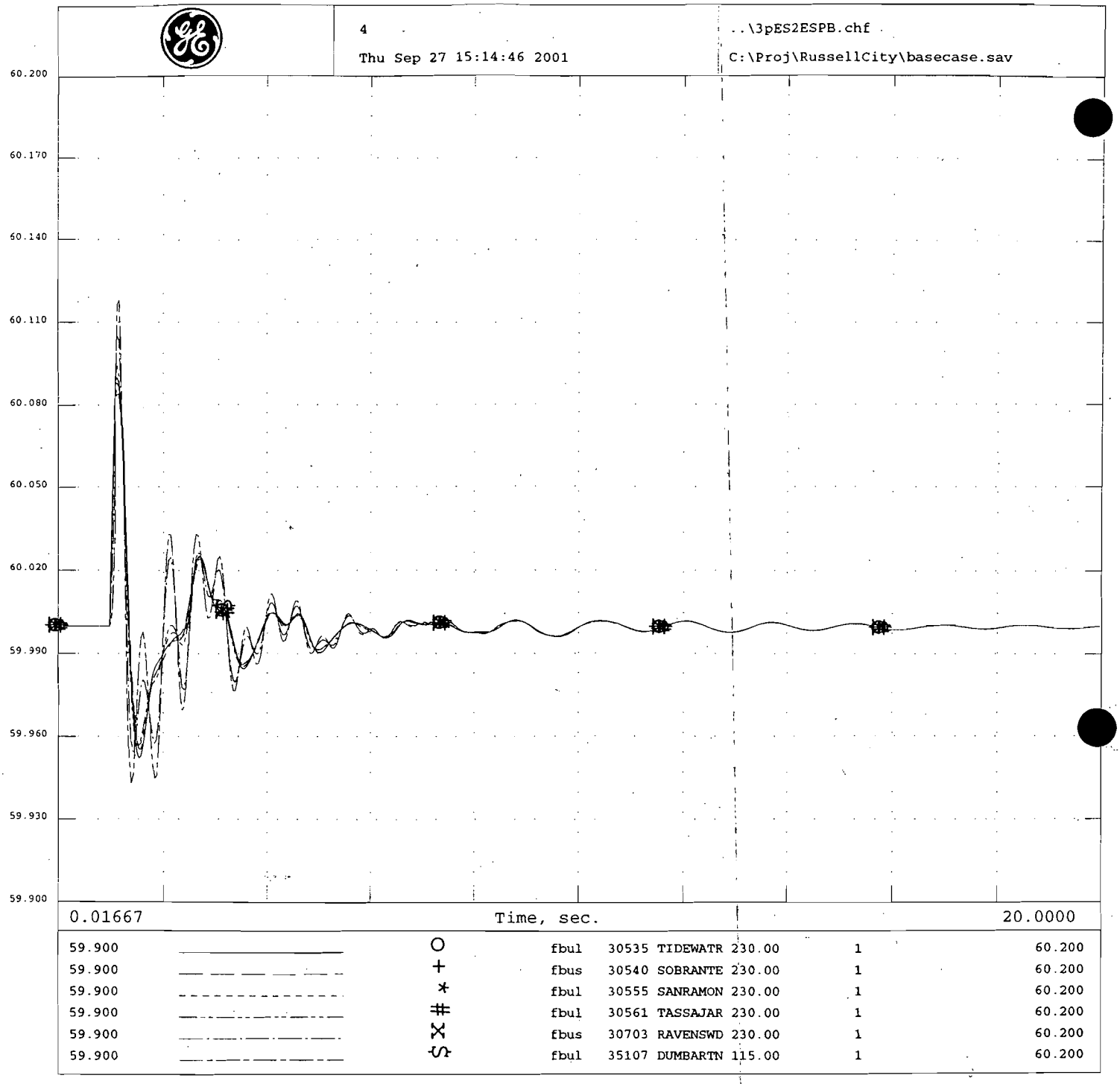


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg #1 230kV line outage
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore-Pittsburg #1

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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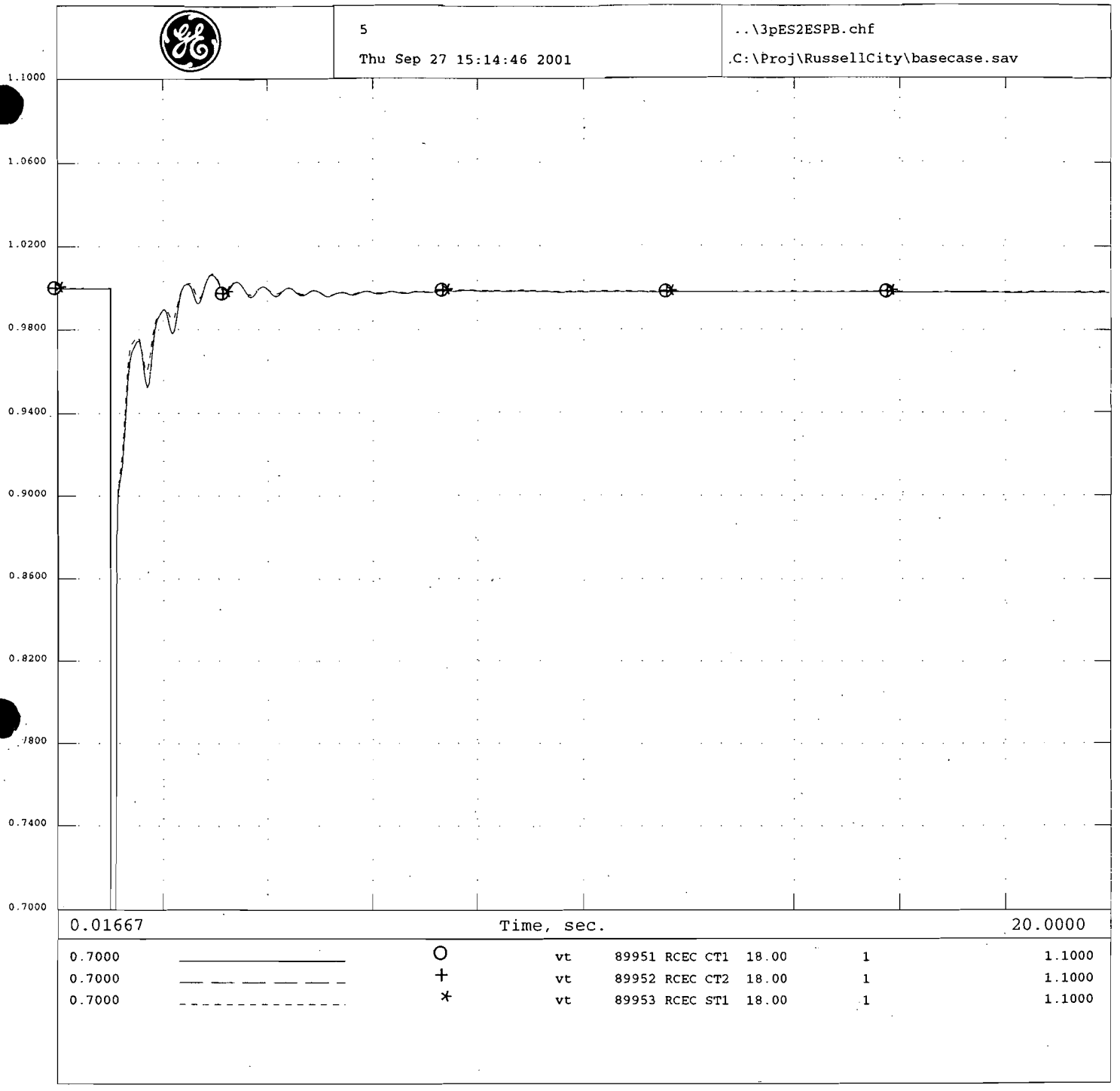

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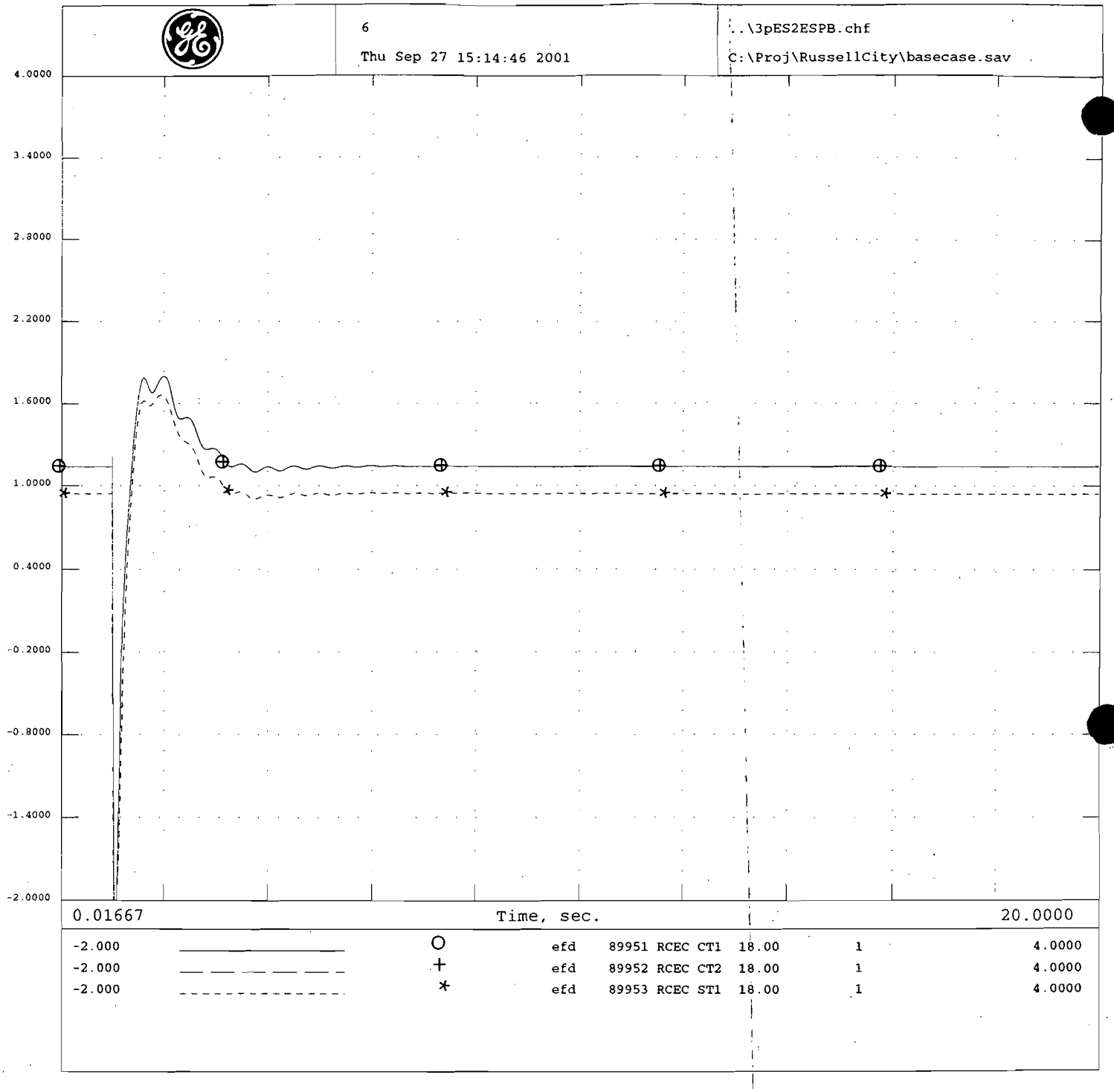
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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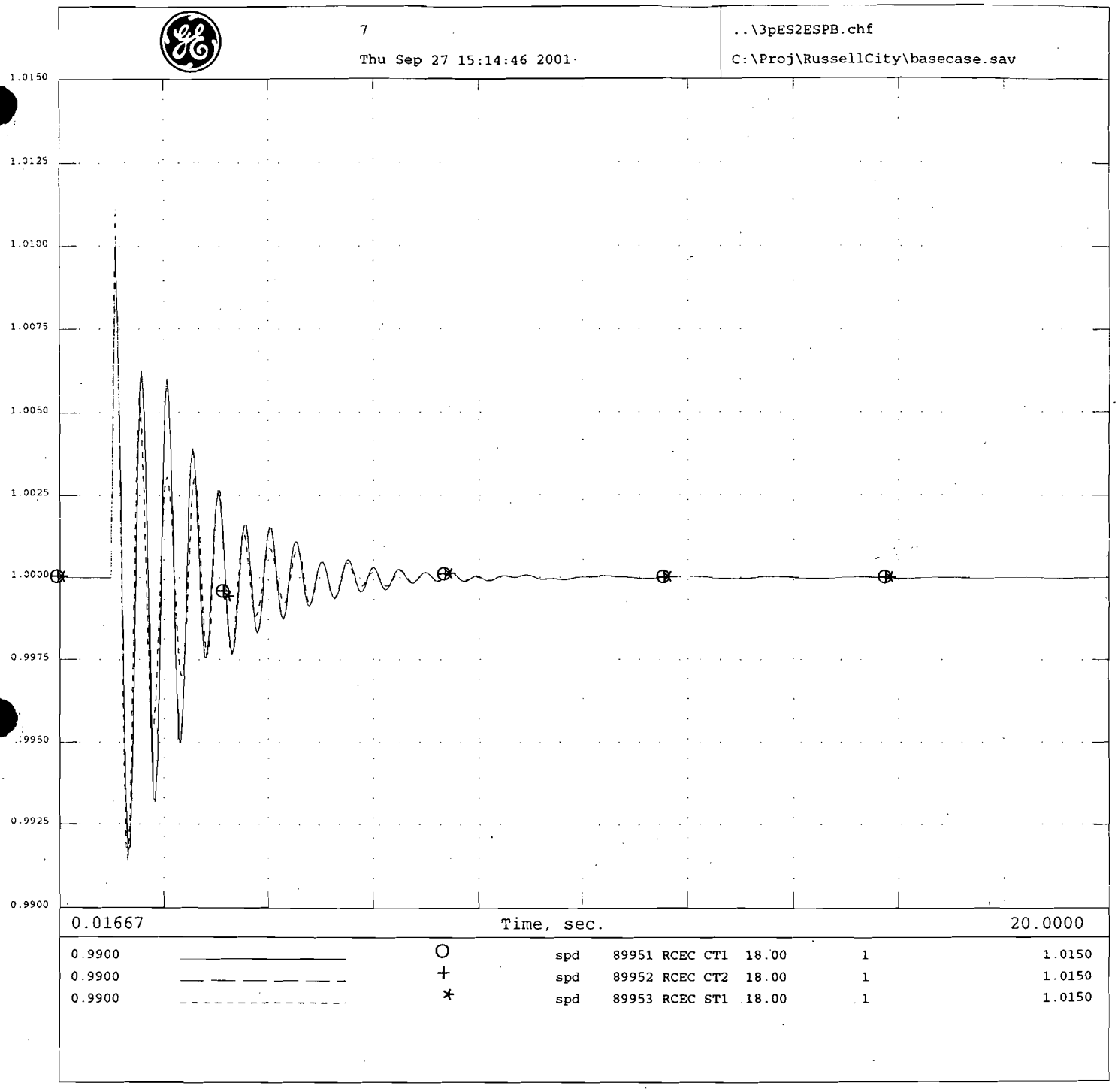

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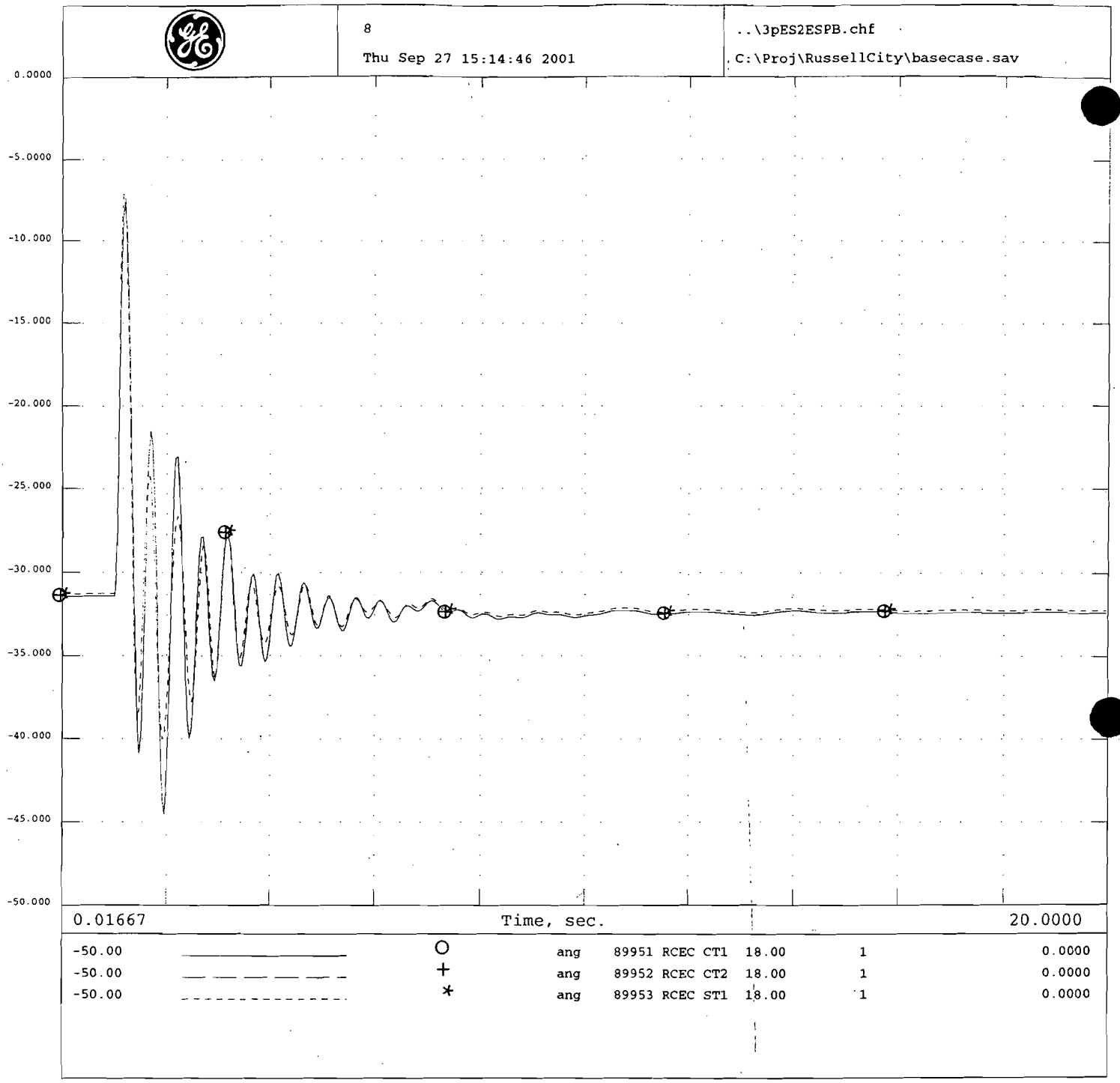
Project Generator Rotor Speed



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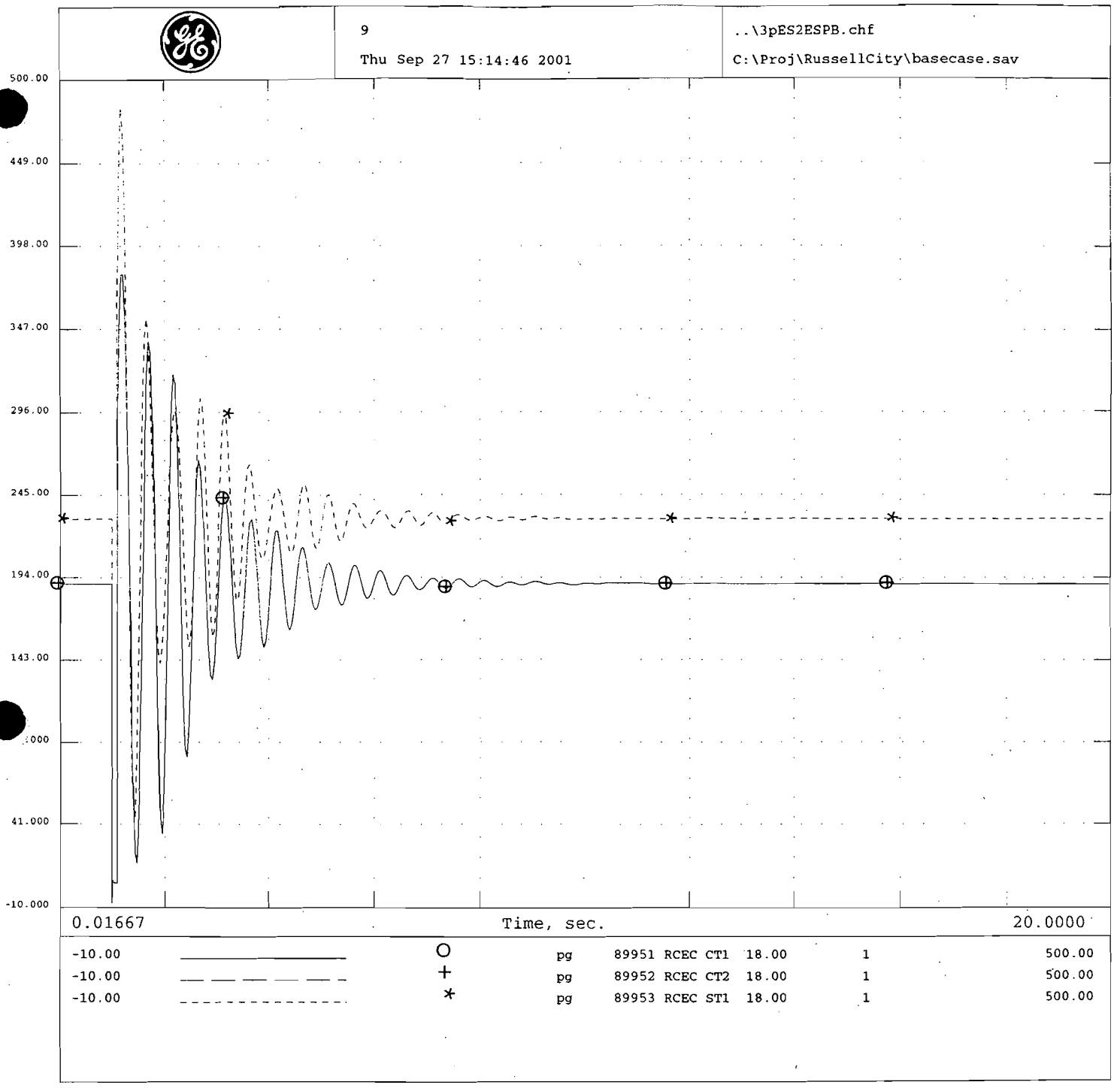
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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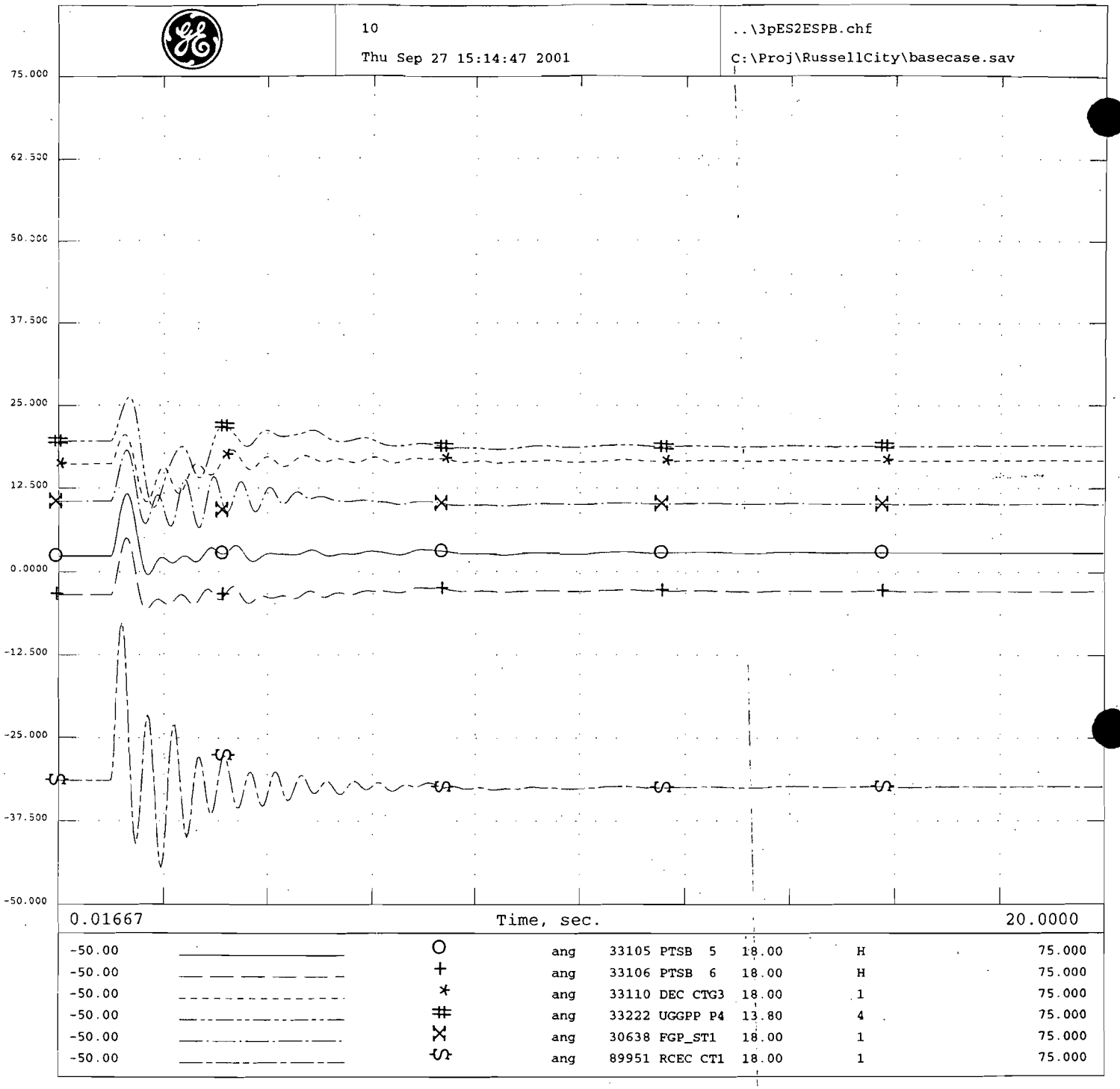

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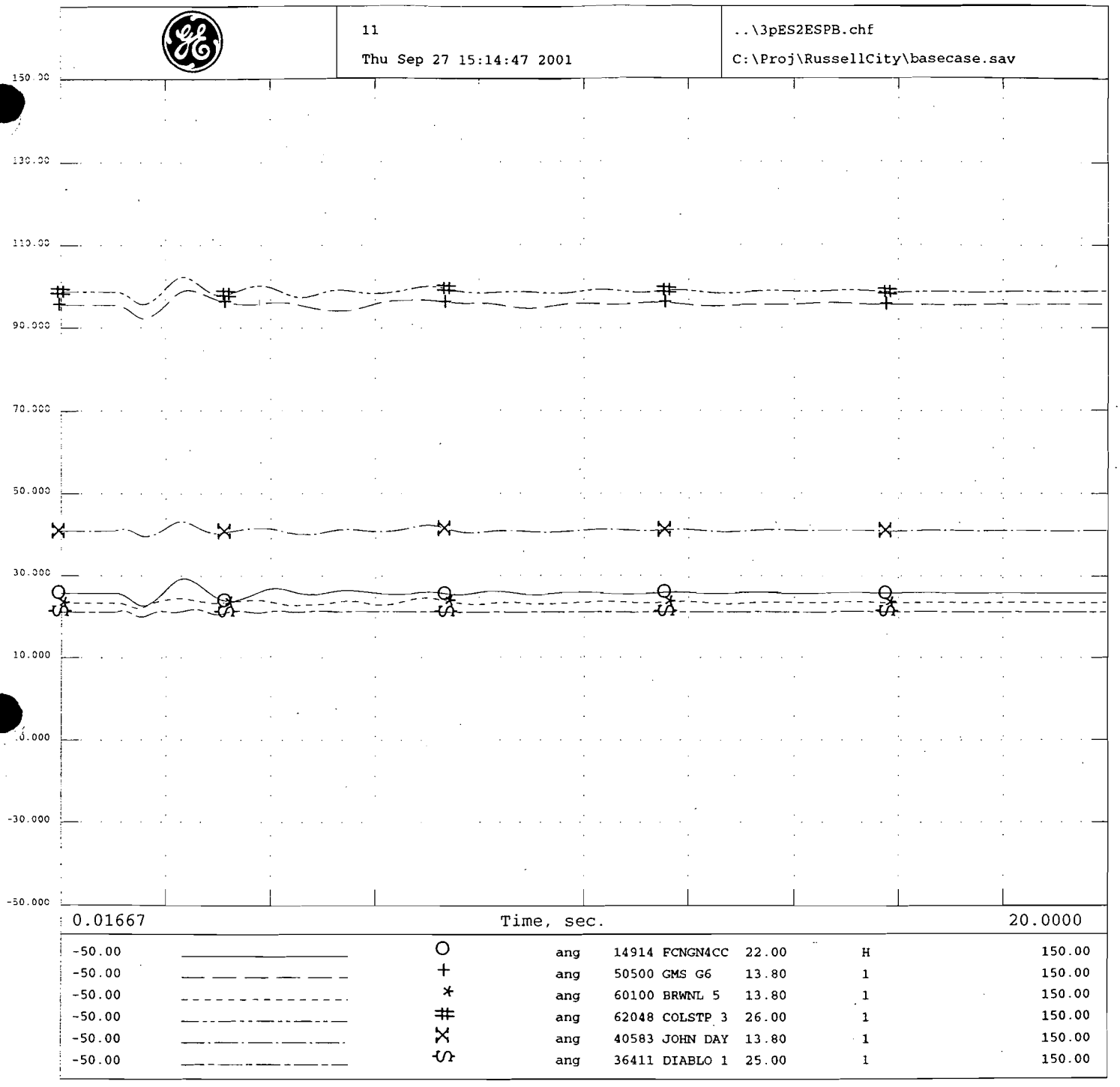
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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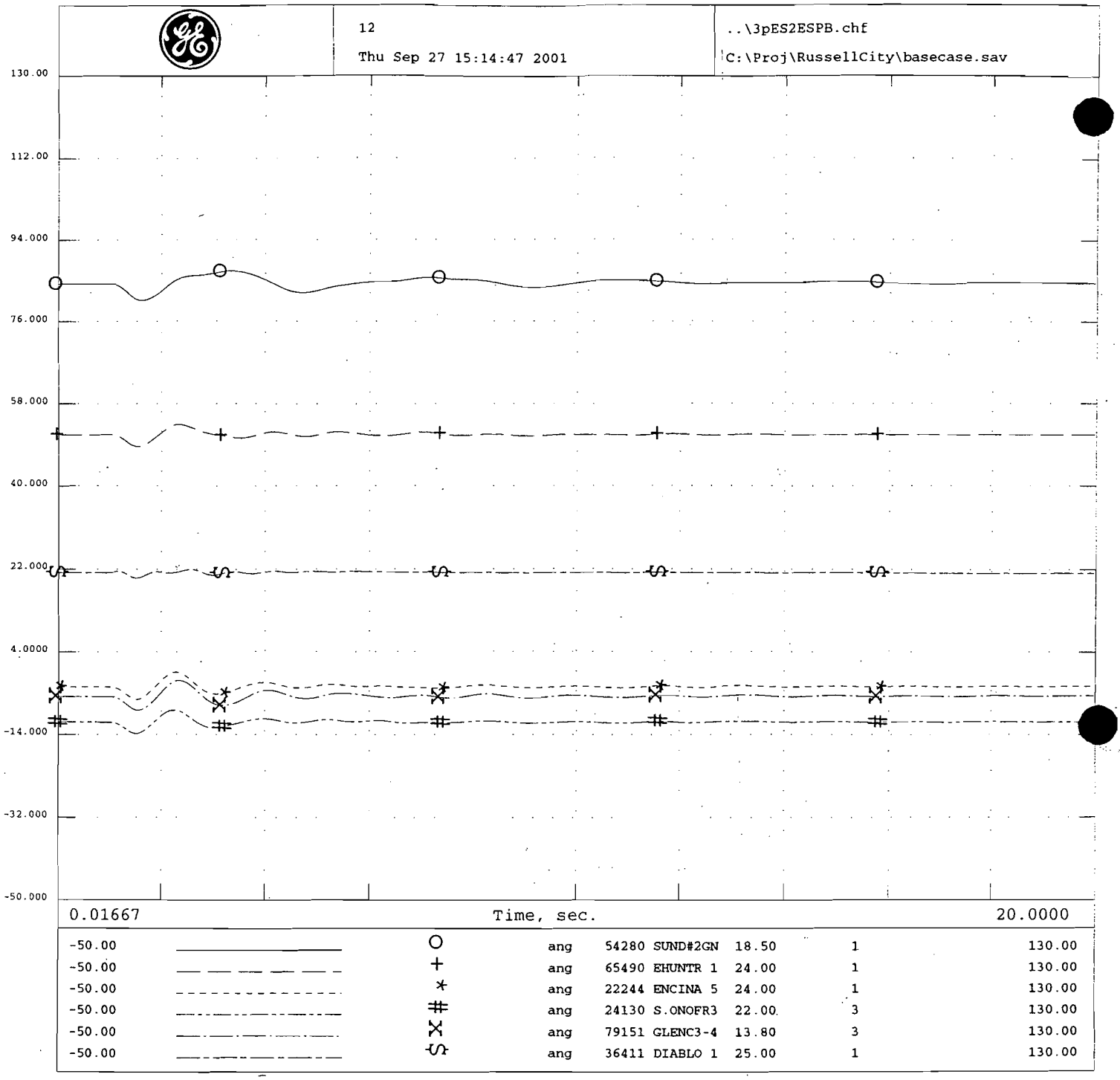
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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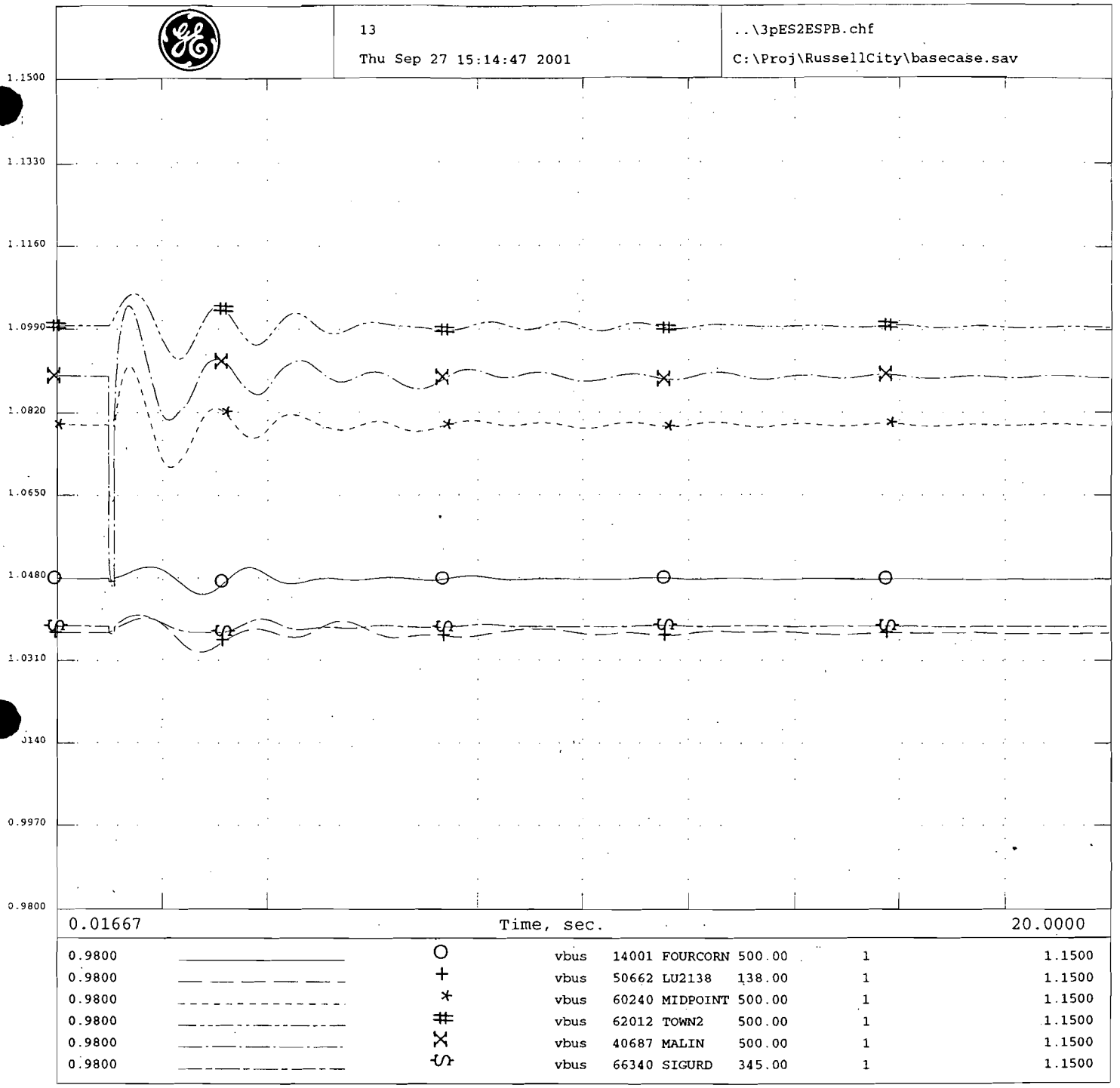

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Calpine/Bechtel Joint Development
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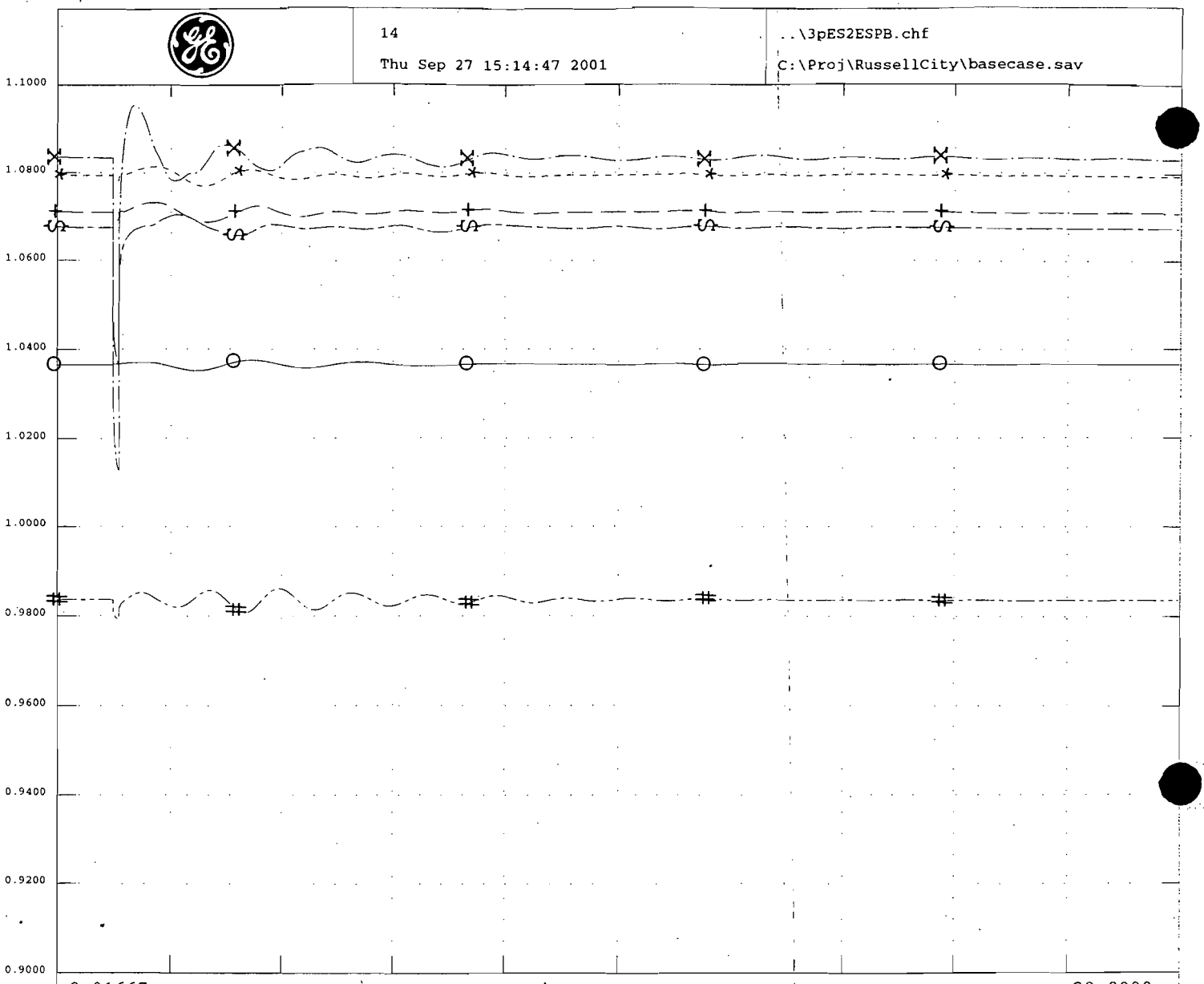

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0.9000	— — — — — —	+	vbus	14003	NAVAJO	500.00	1	1.1000
0.9000	- - - - - - - - - - - - -	*	vbus	22360	IMPRLVLY	500.00	1	1.1000
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0.9000	—.—.—.—.—.—	X	vbus	30015	TABLE MT	500.00	1	1.1000
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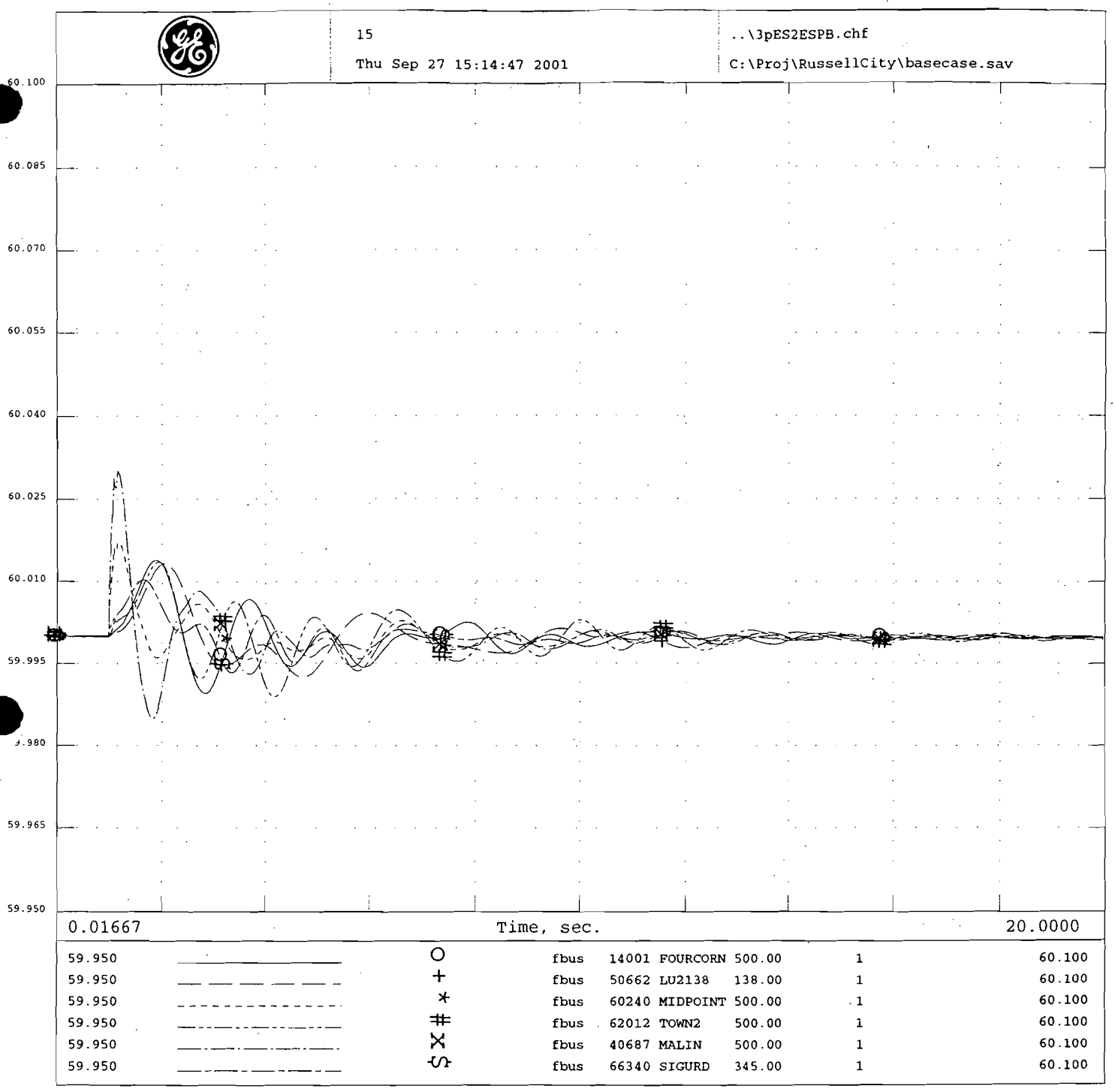

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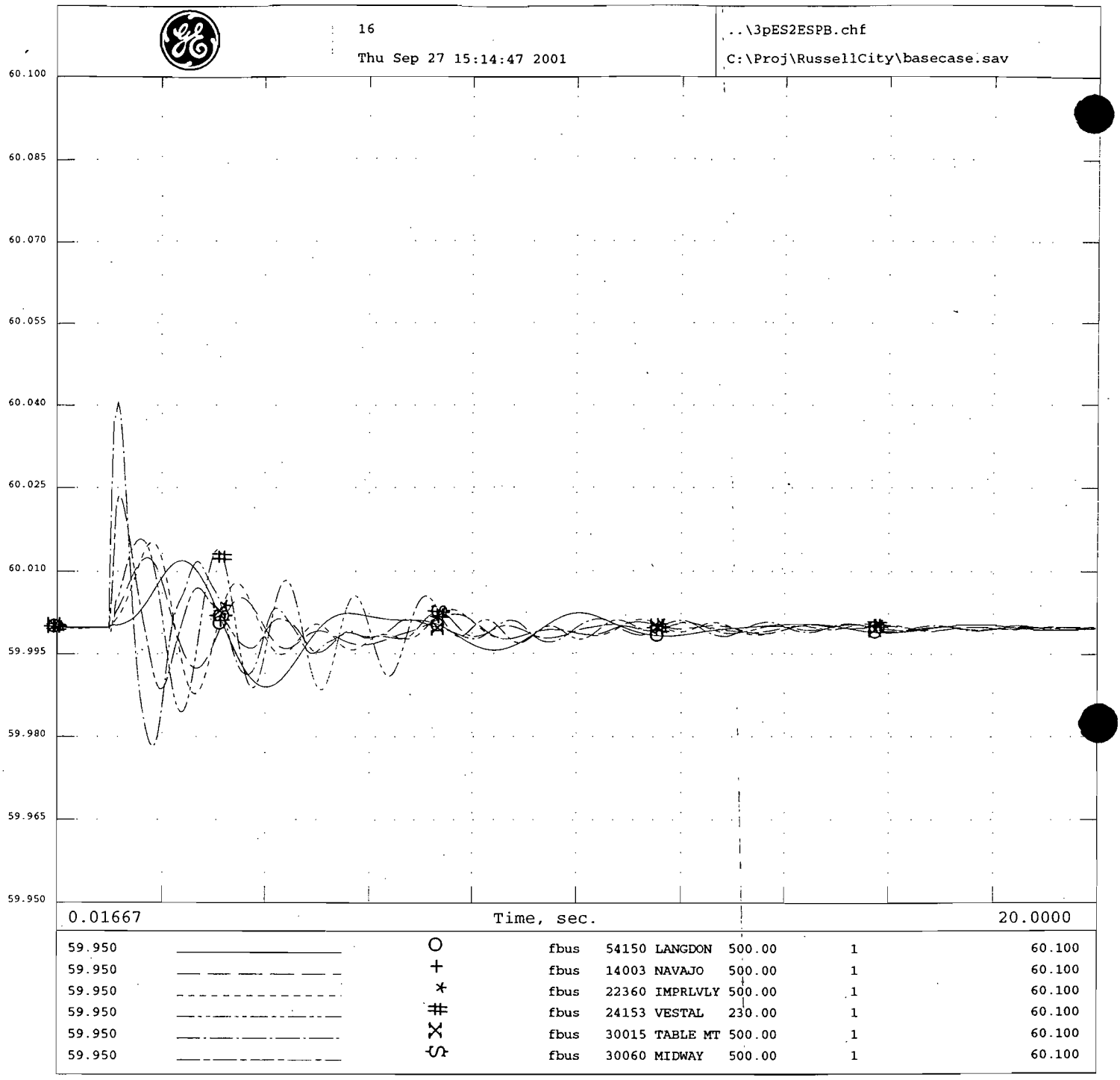

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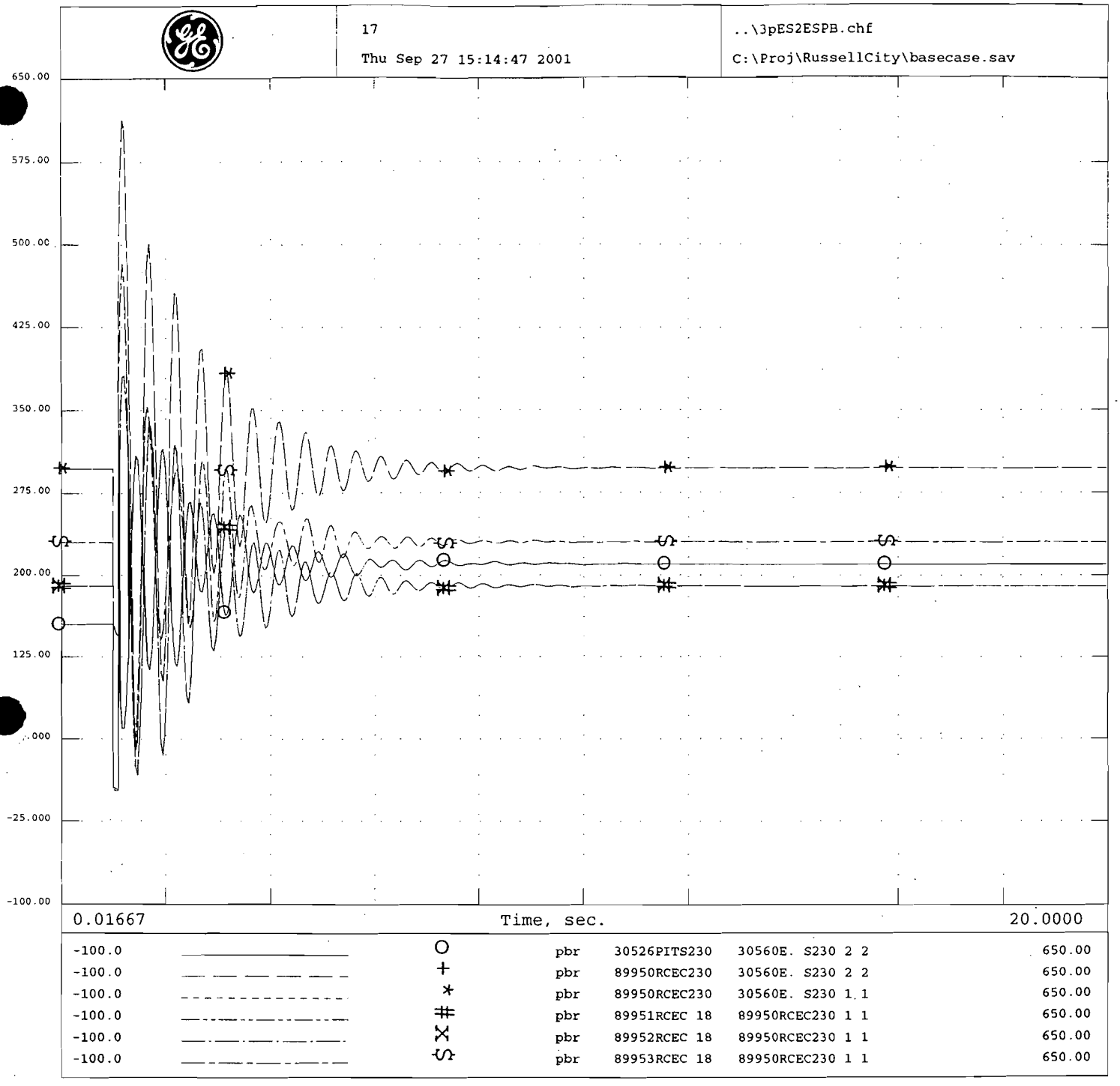

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Calpine/Bechtel Joint Development
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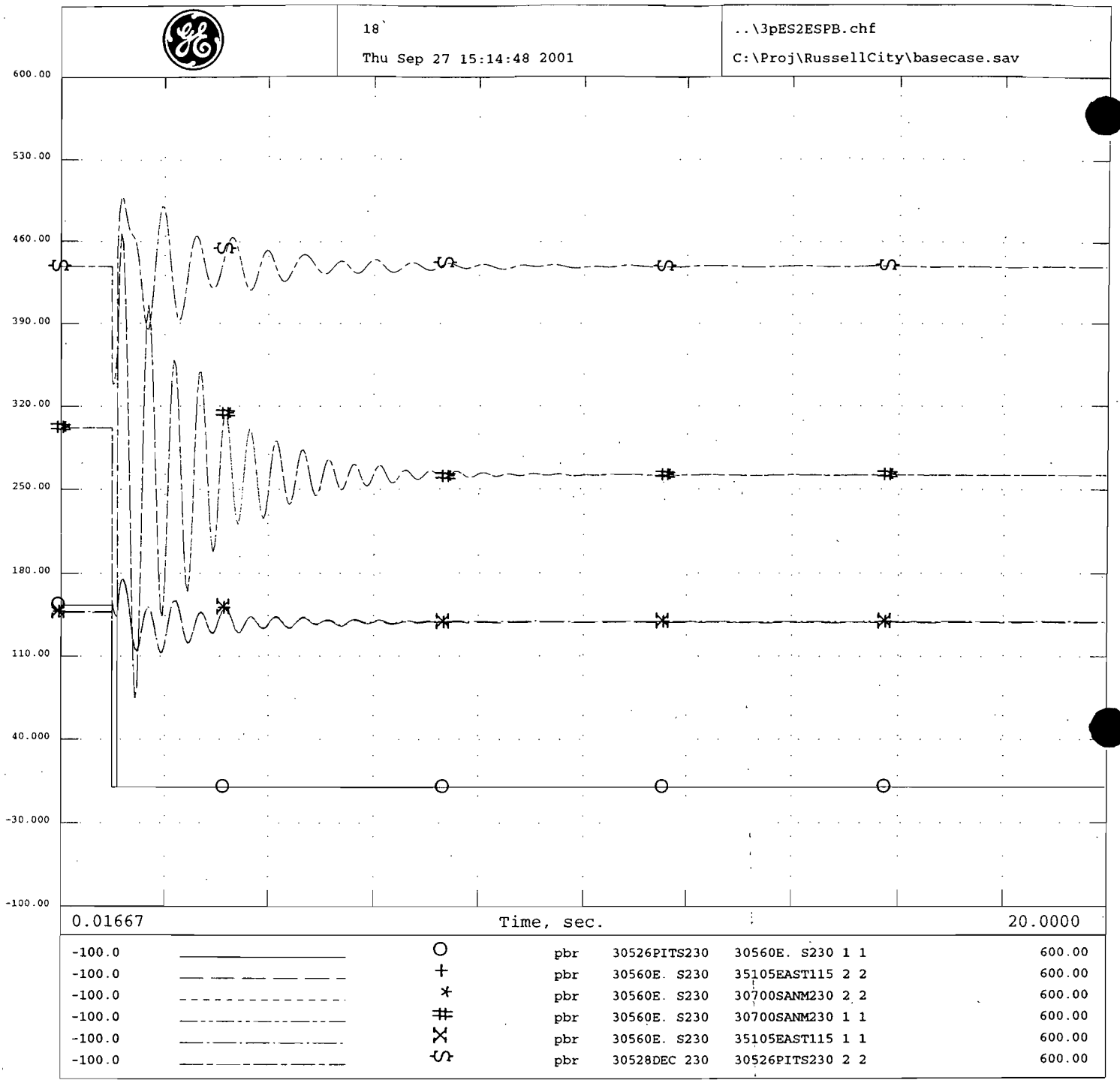

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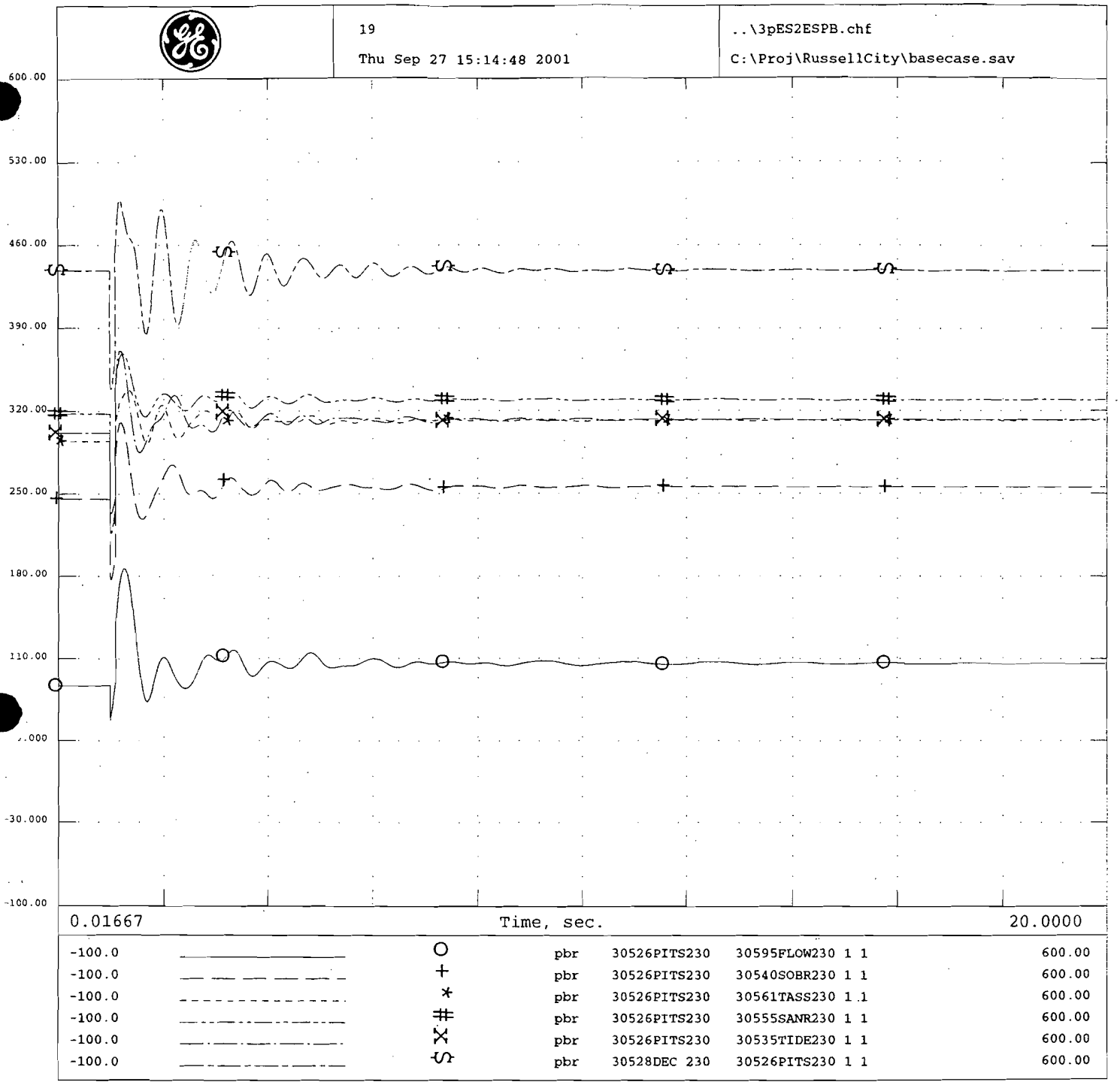

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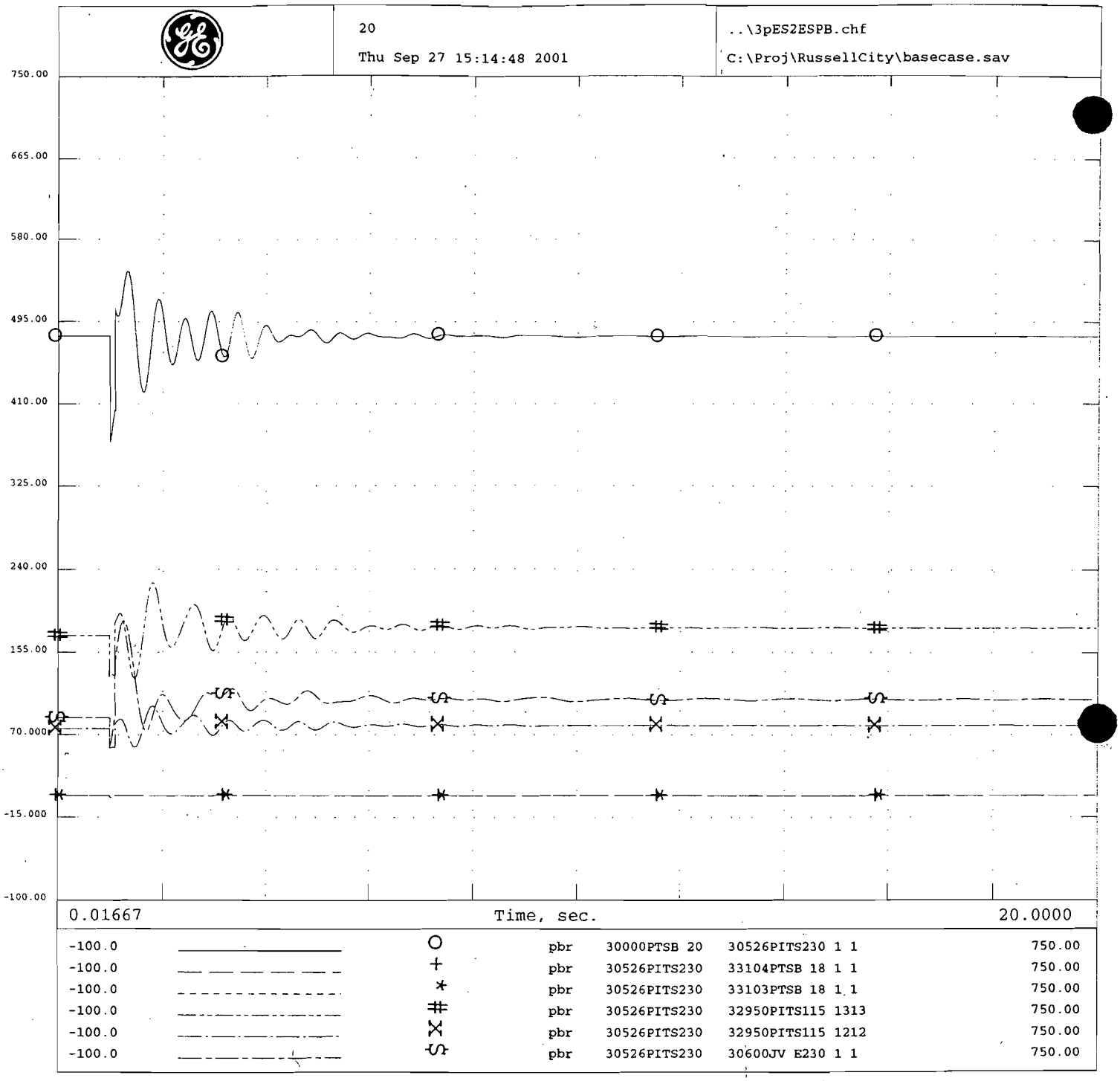

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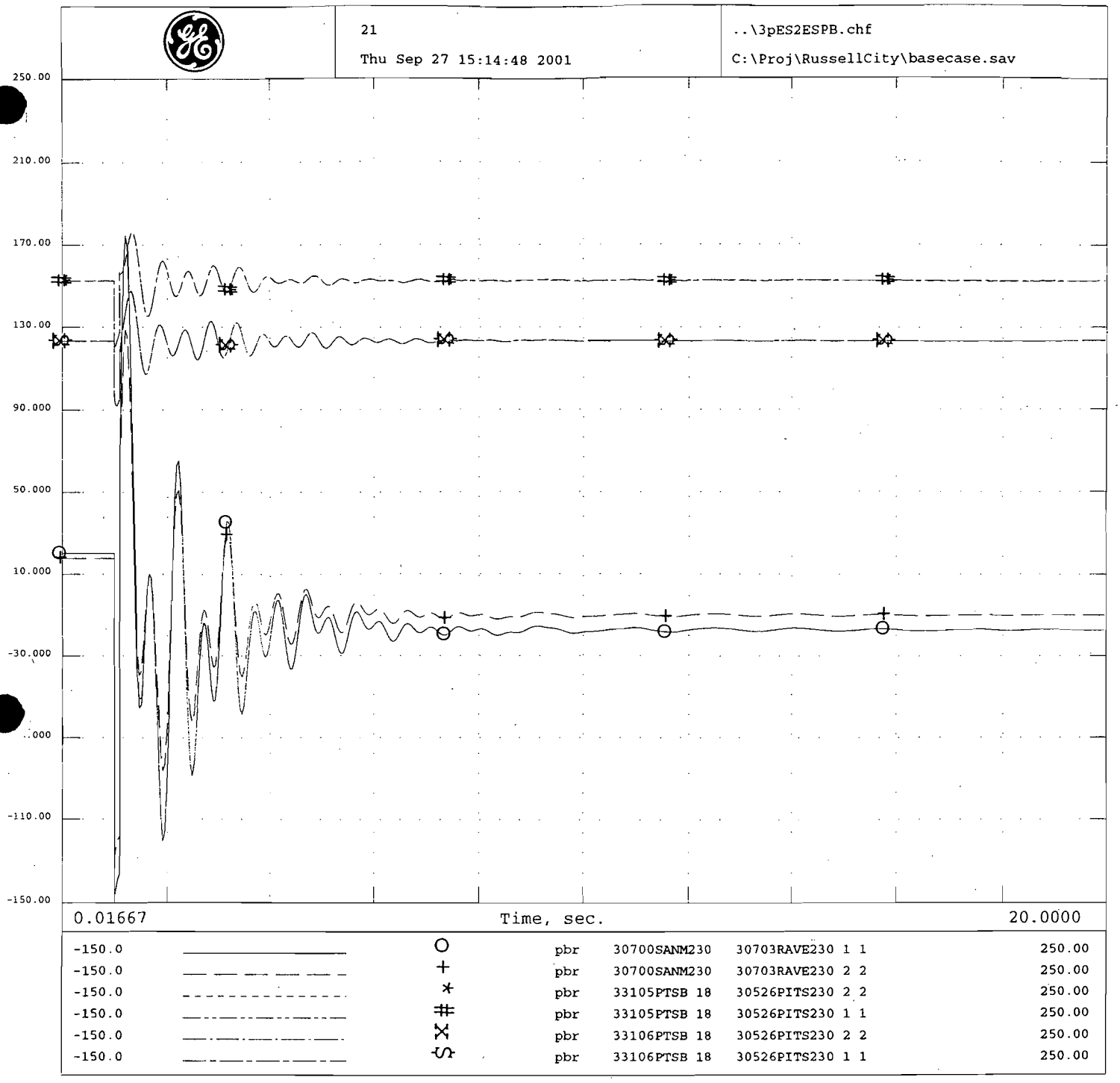

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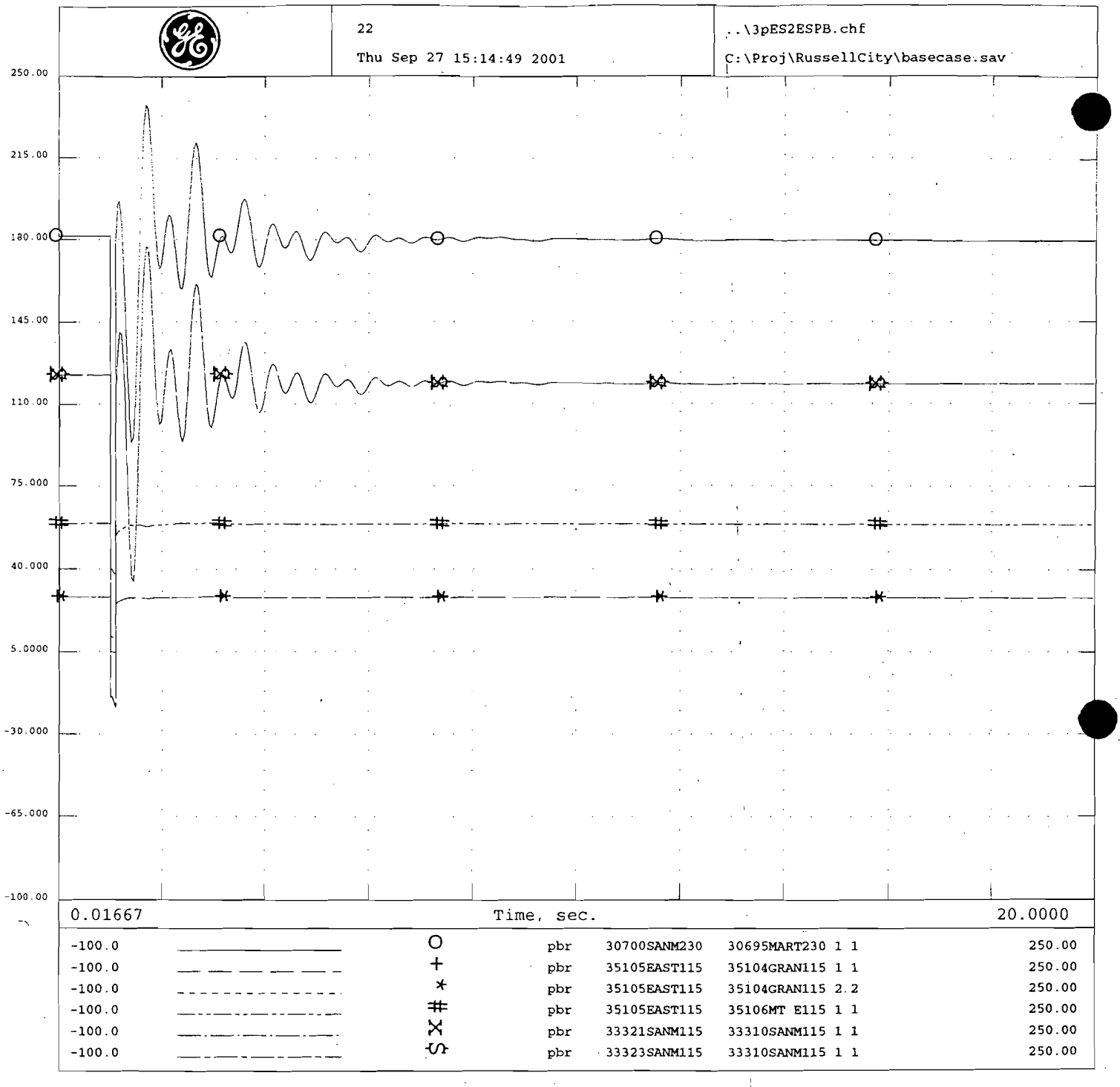

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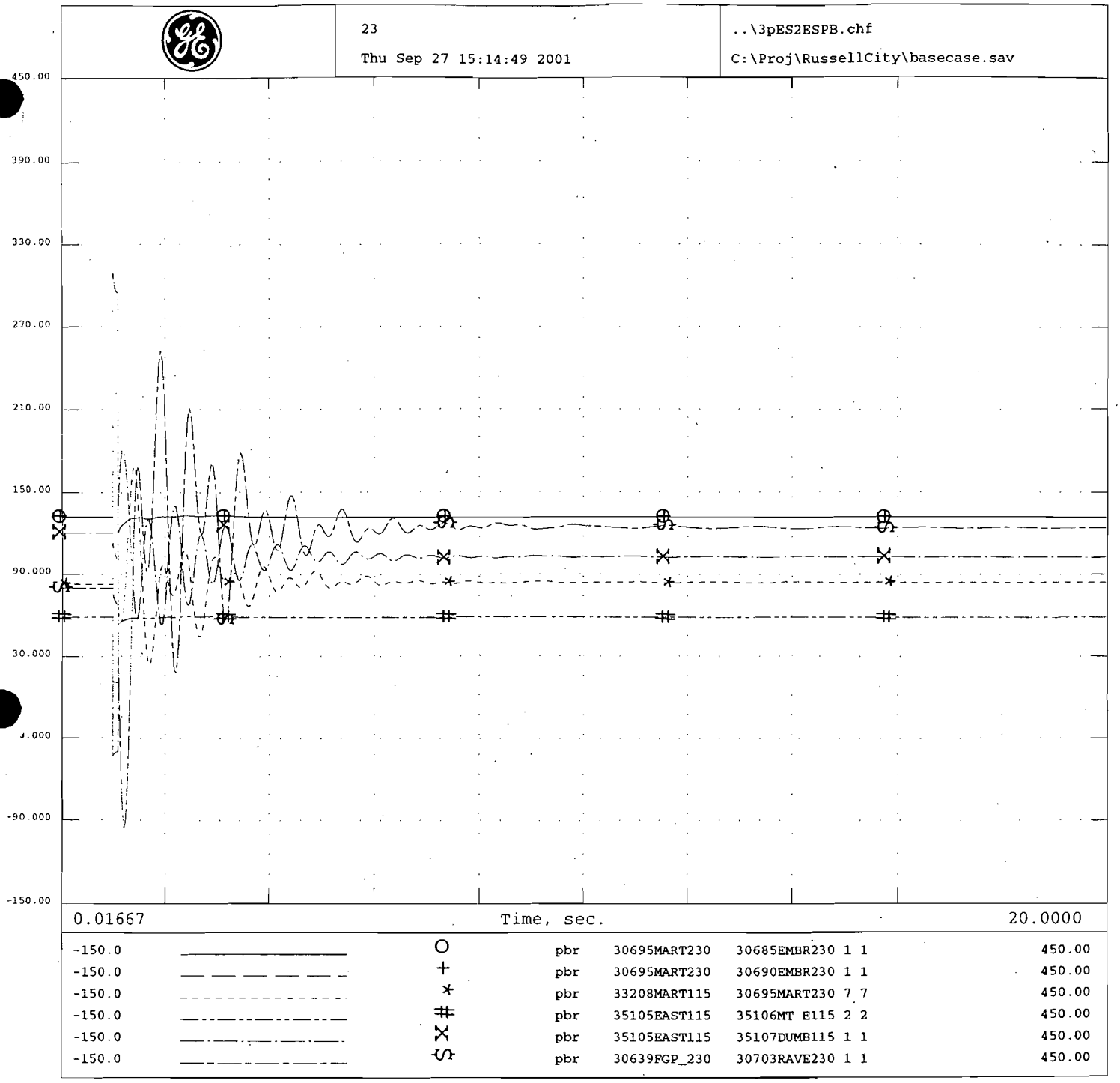

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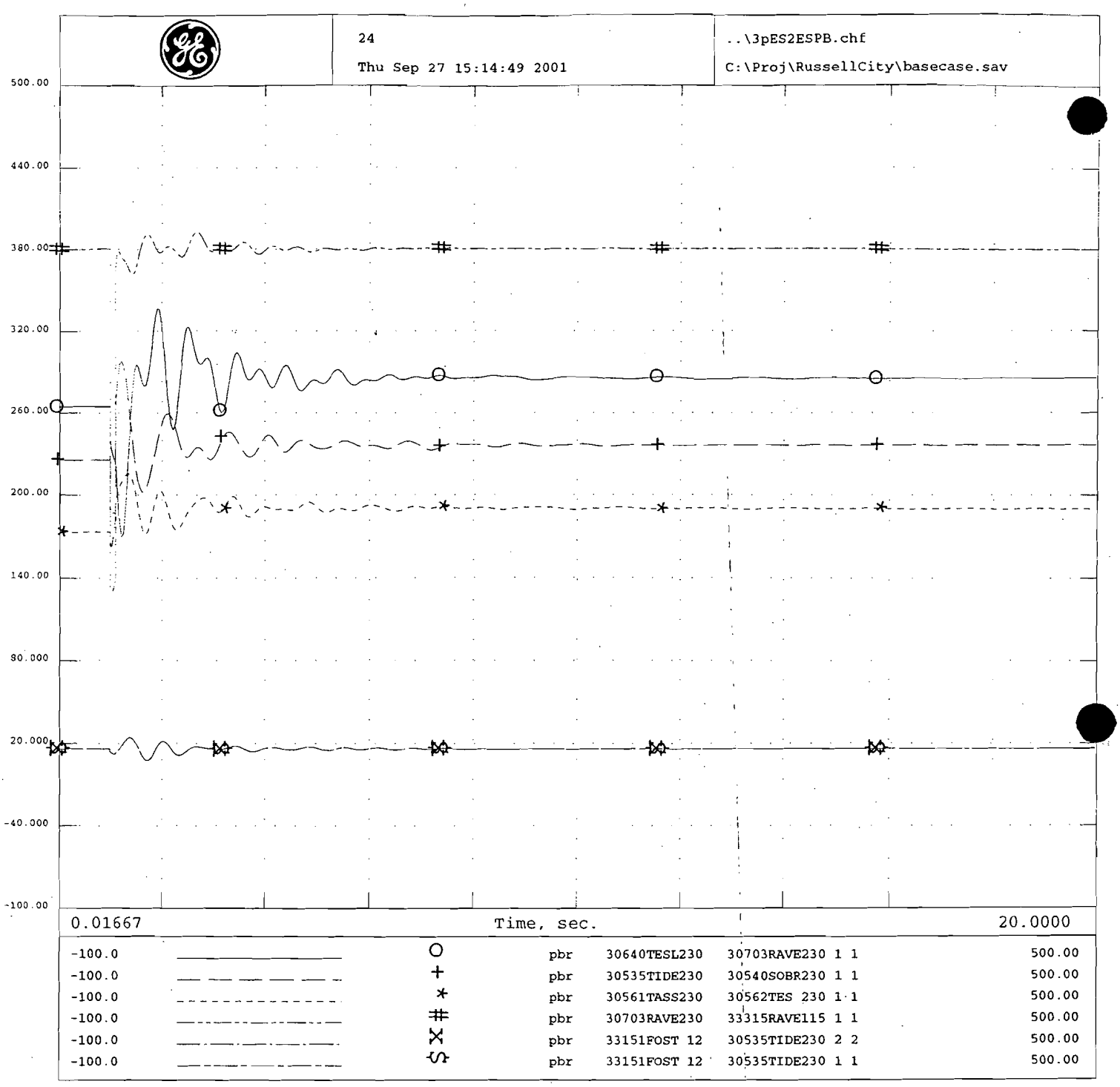

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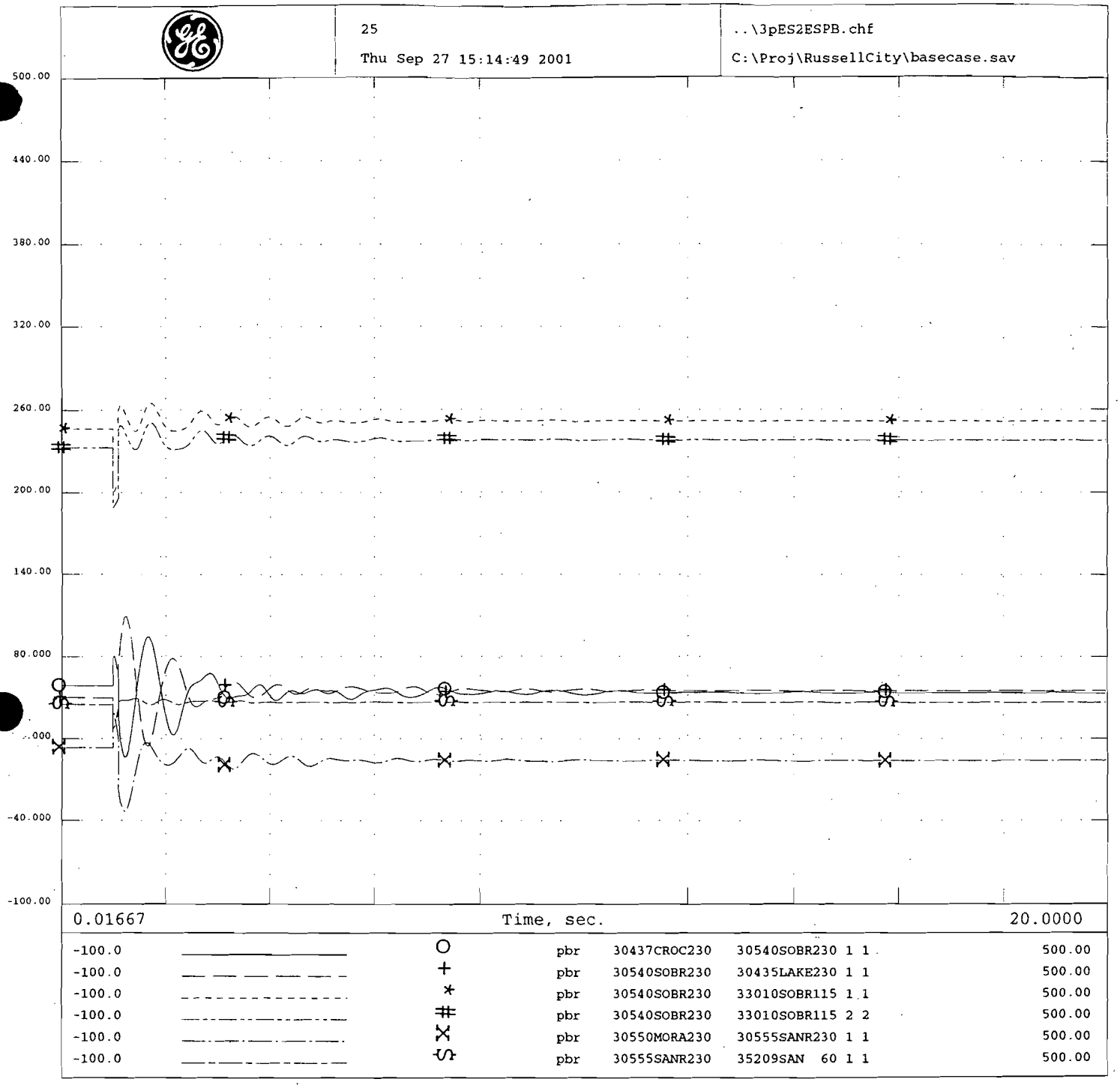

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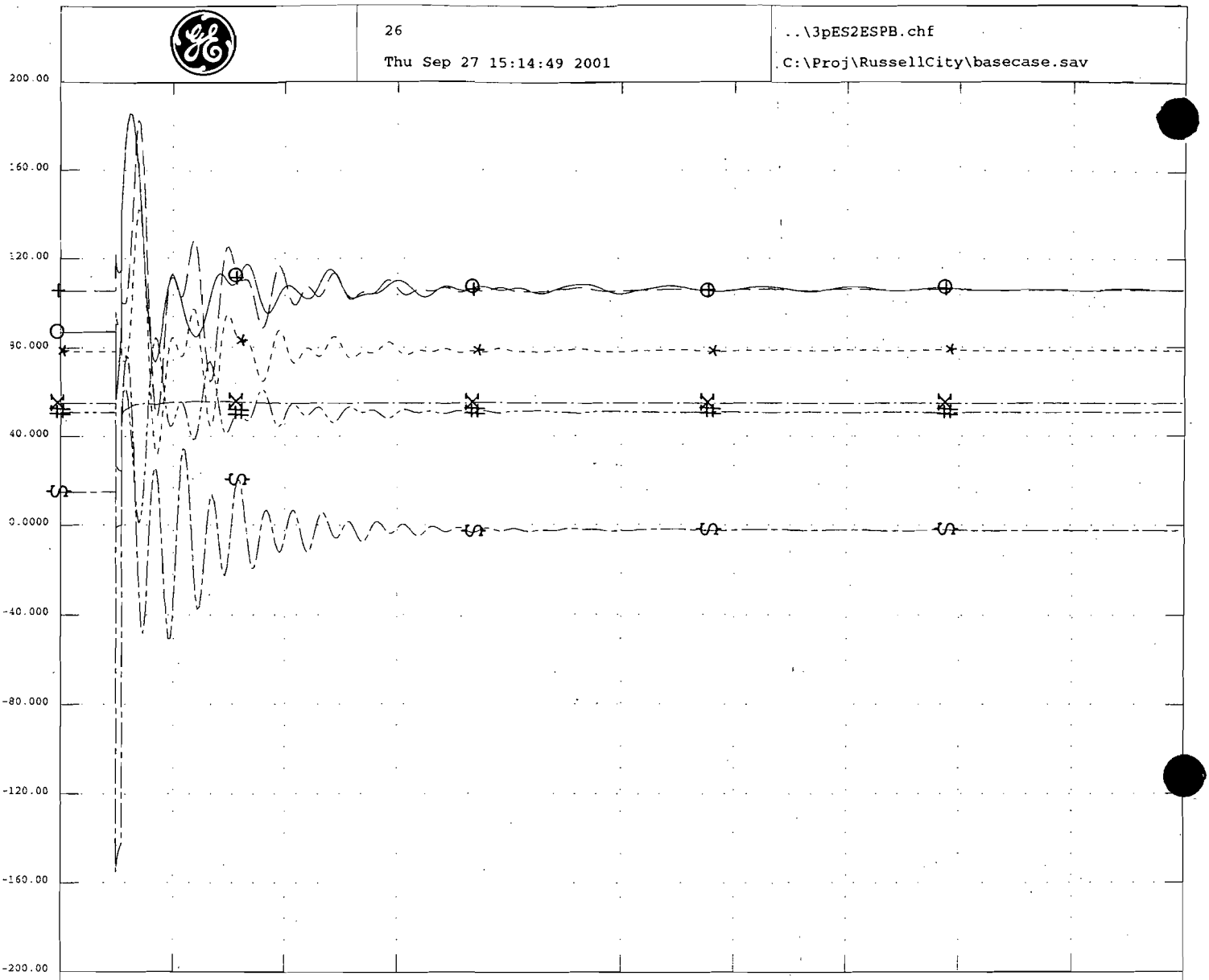

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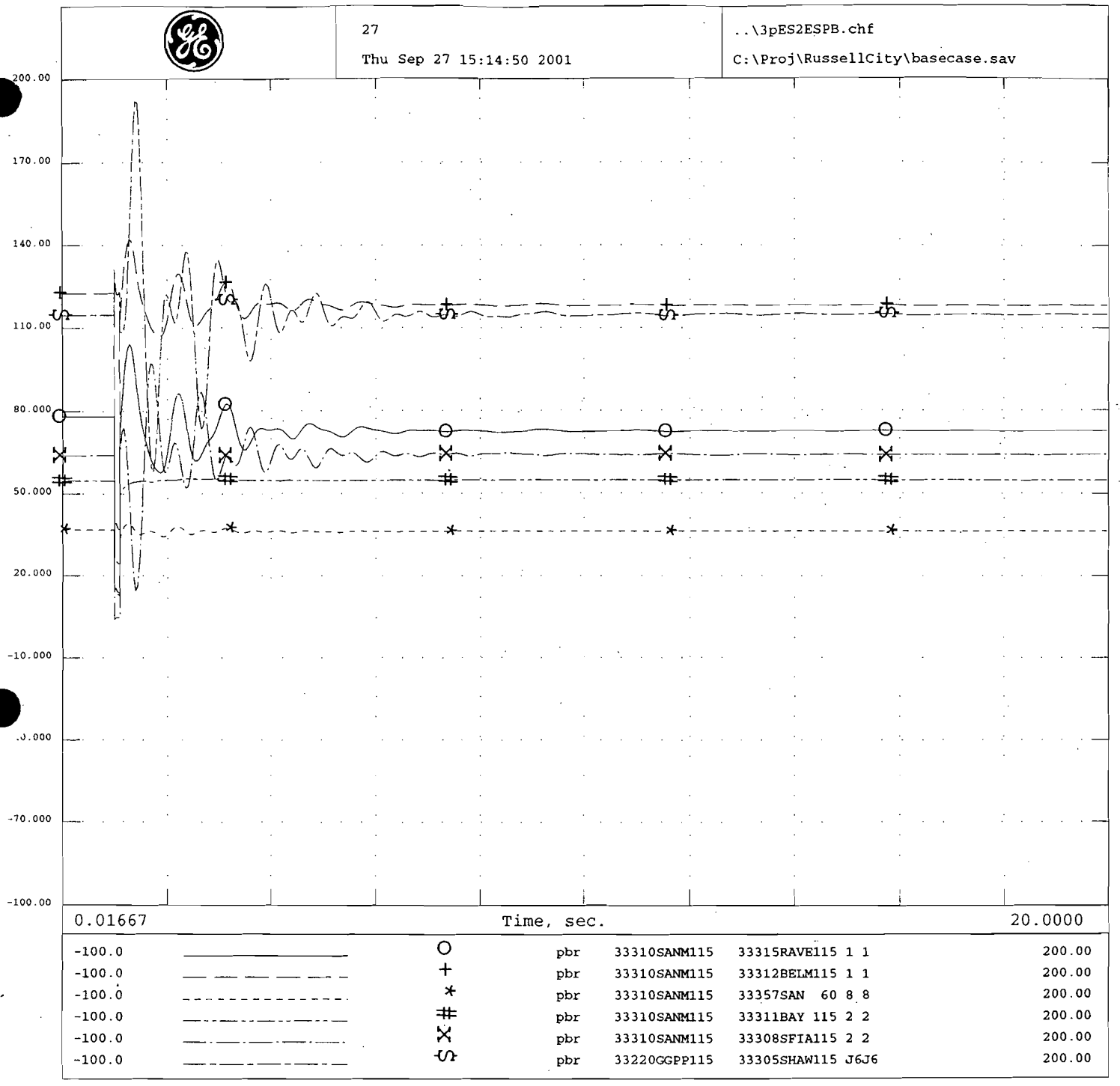

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg 1,2 230kV Line Outage
3 phase 6 cycle fault at East Shore 230kV bus and trip both East Shore-Pittsburg
230kV lines
RUN  9
CC
CC   Fault East Shore 230kV bus
FB   0.0 "E. SHORE" 230.
CC
CC   Clear fault at East Shore 230kV bus
CFB  6.0 "E. SHORE" 230.
CC
CC   Trip both East Shore-Pittsburg 230kV lines
DL  6.0 "PITSBURG" 230.00 "E. SHORE" 230.00 "1 "
DL  6.0 "PITSBURG" 230.00 "E. SHORE" 230.00 "2 "
CC
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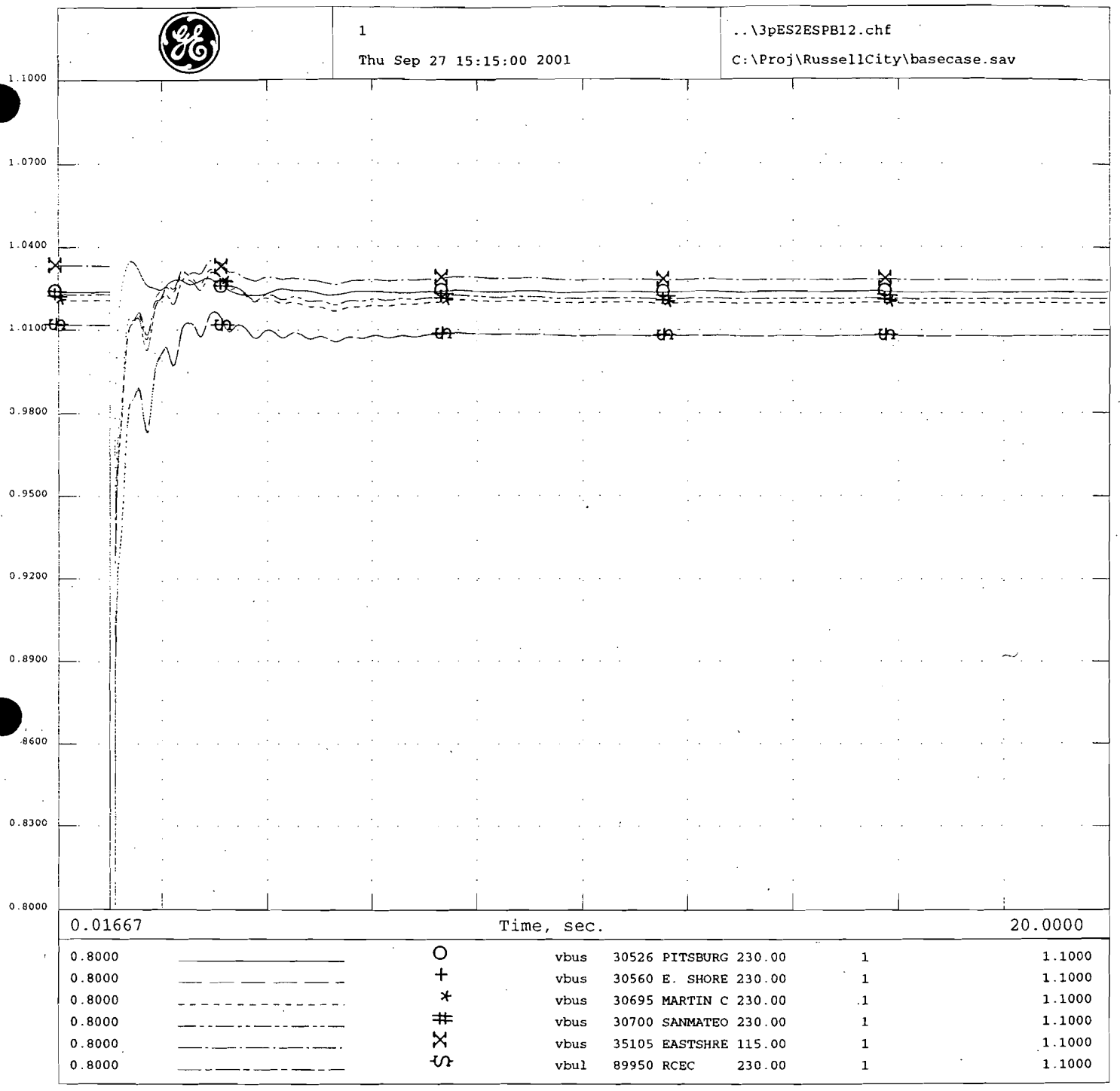

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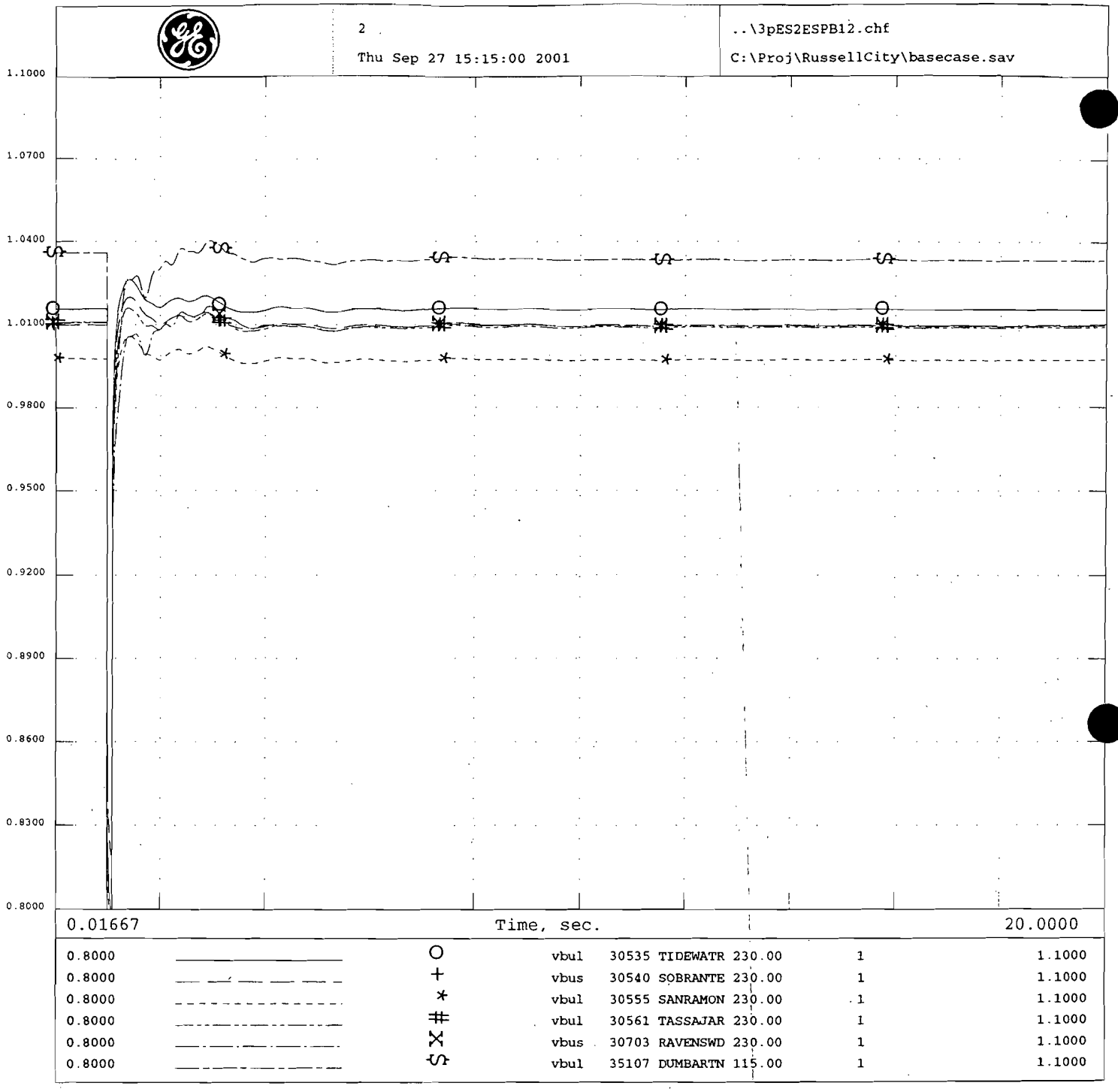

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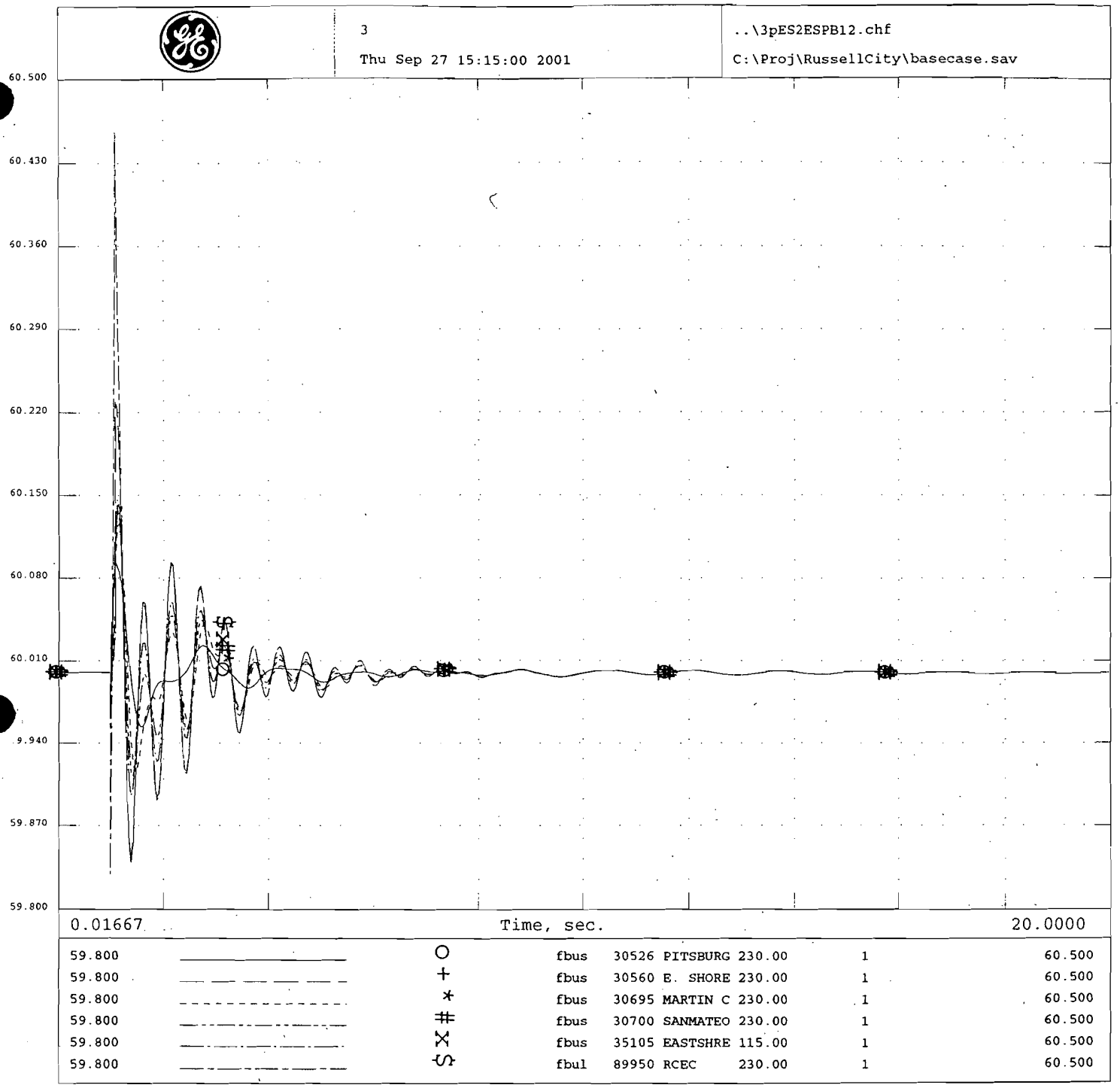

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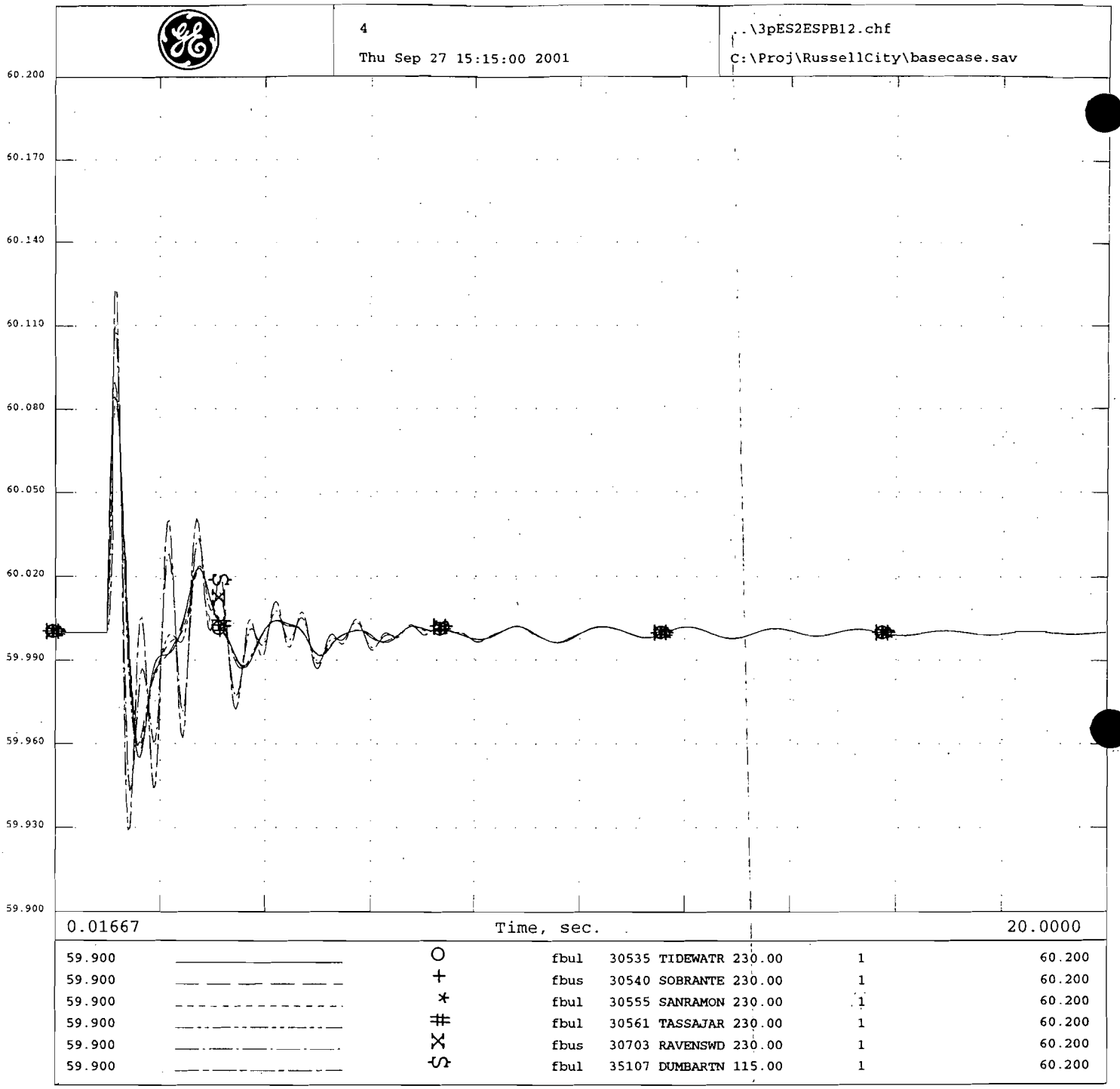

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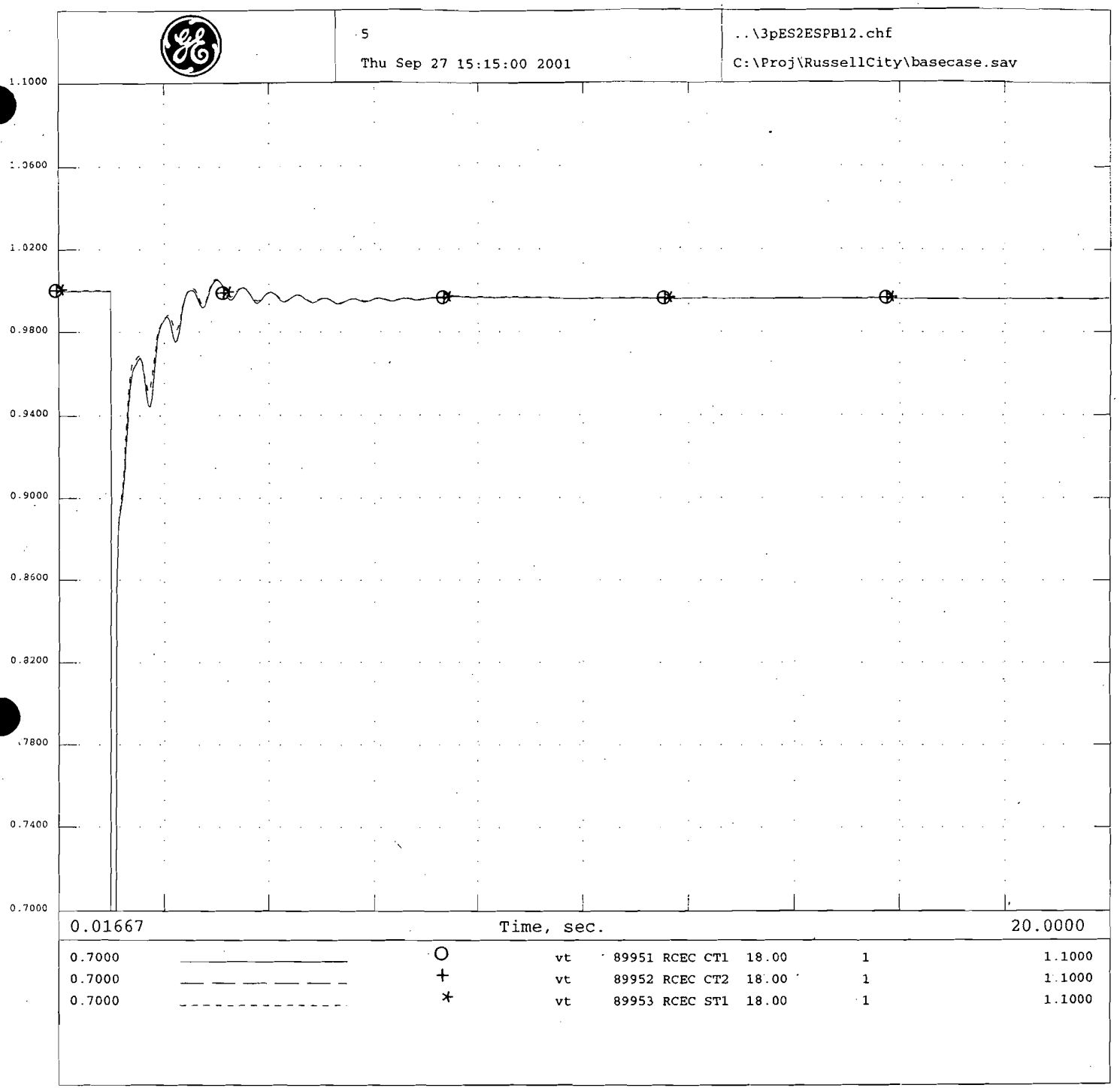

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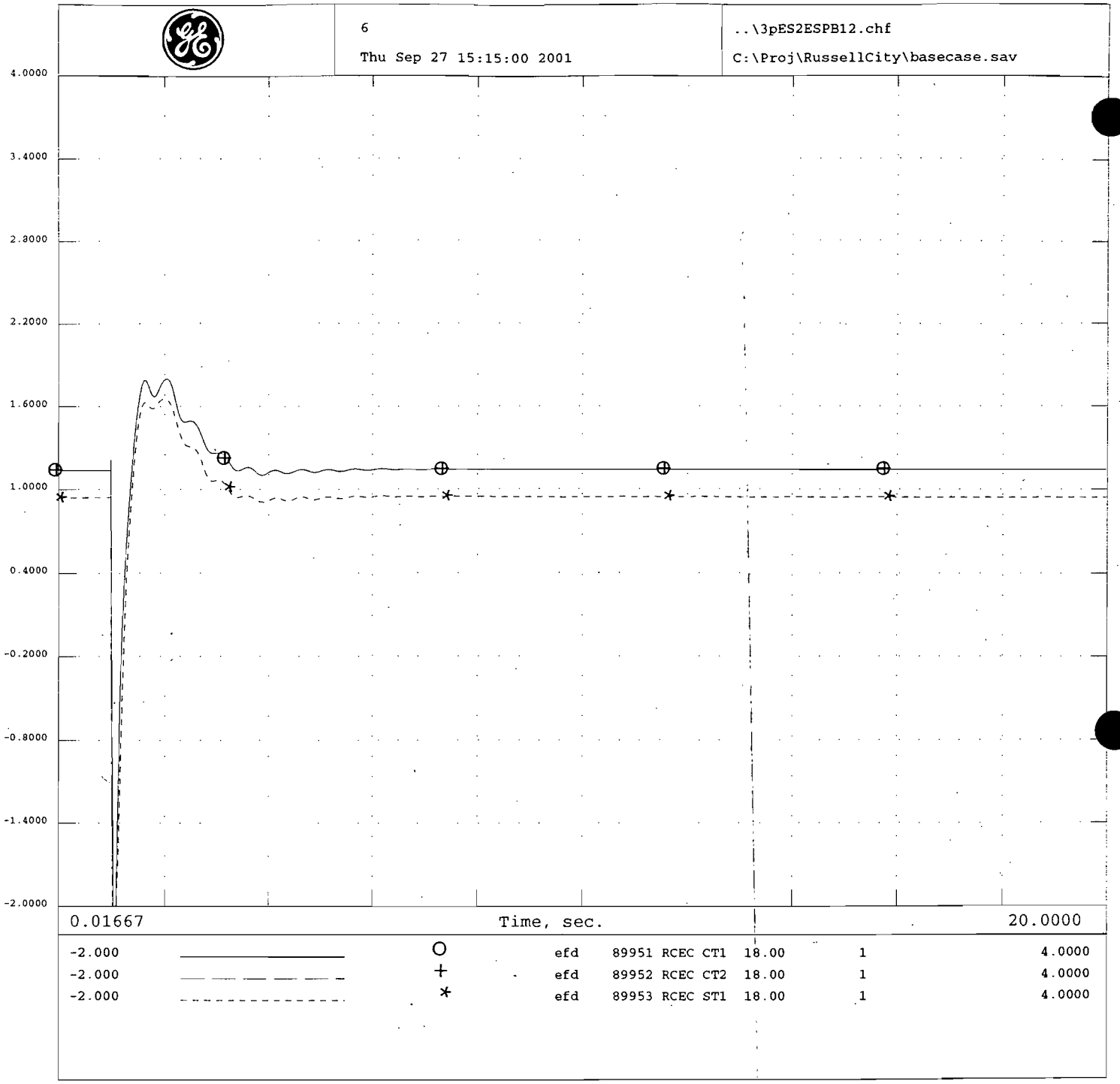

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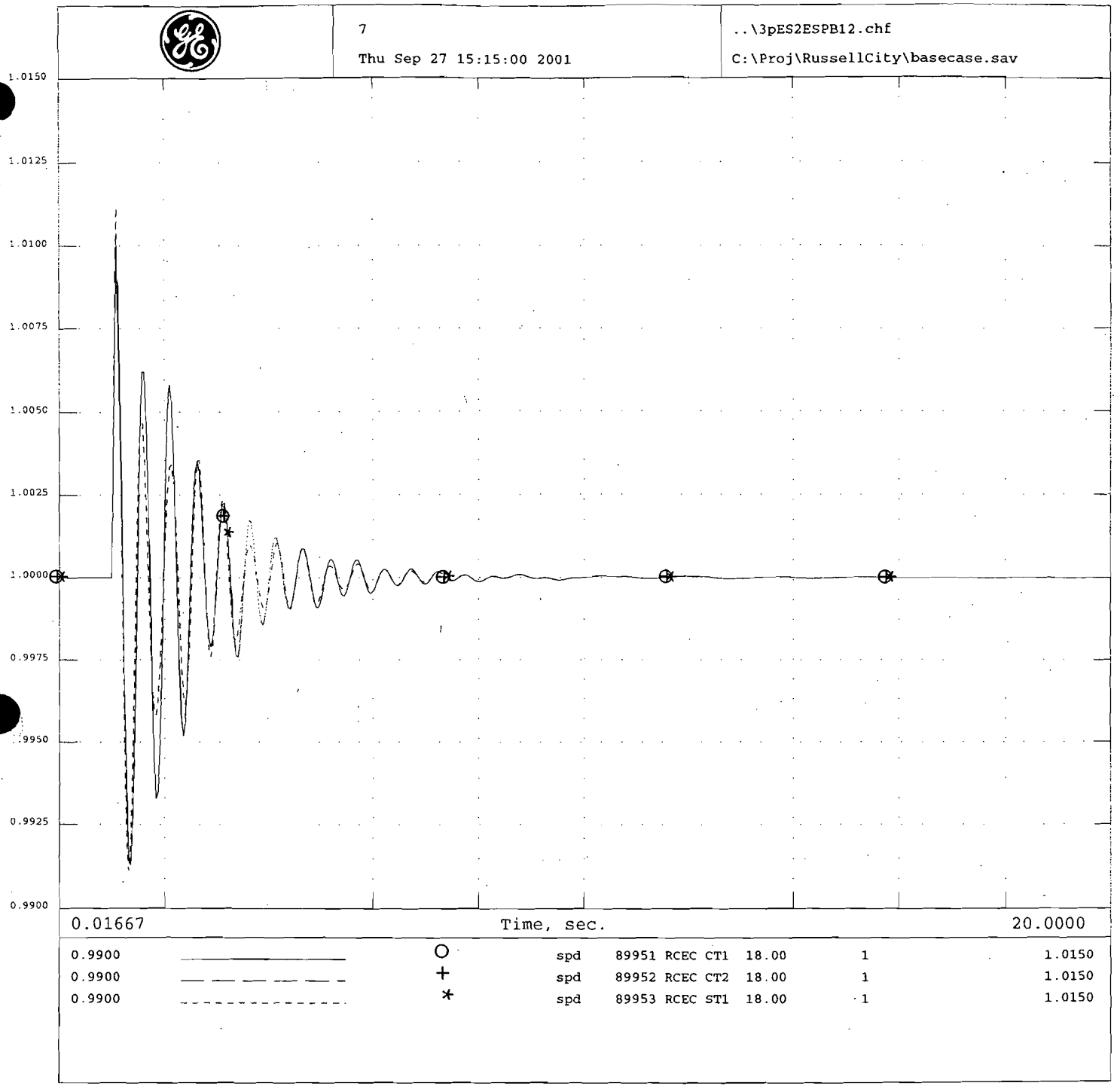

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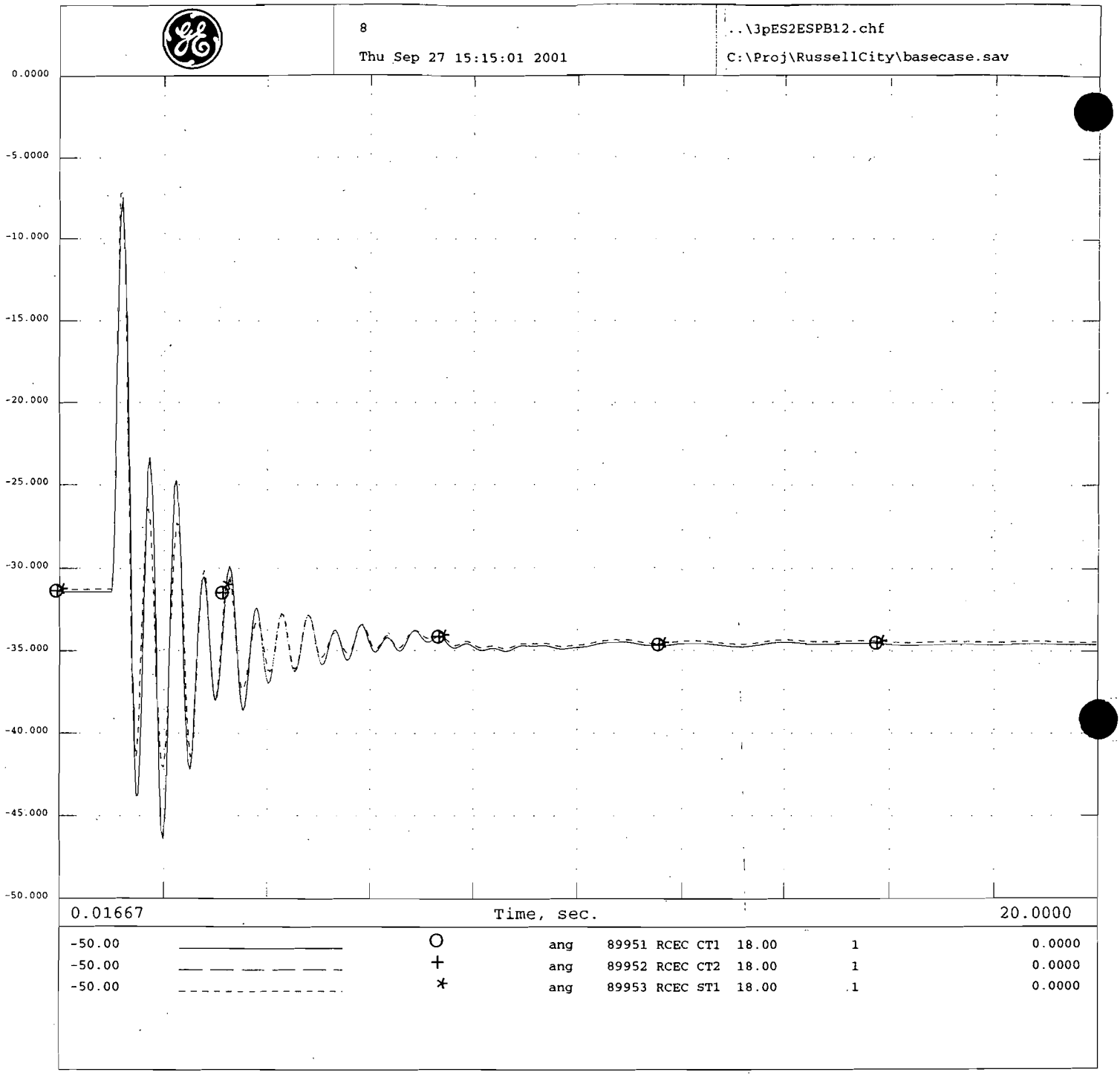

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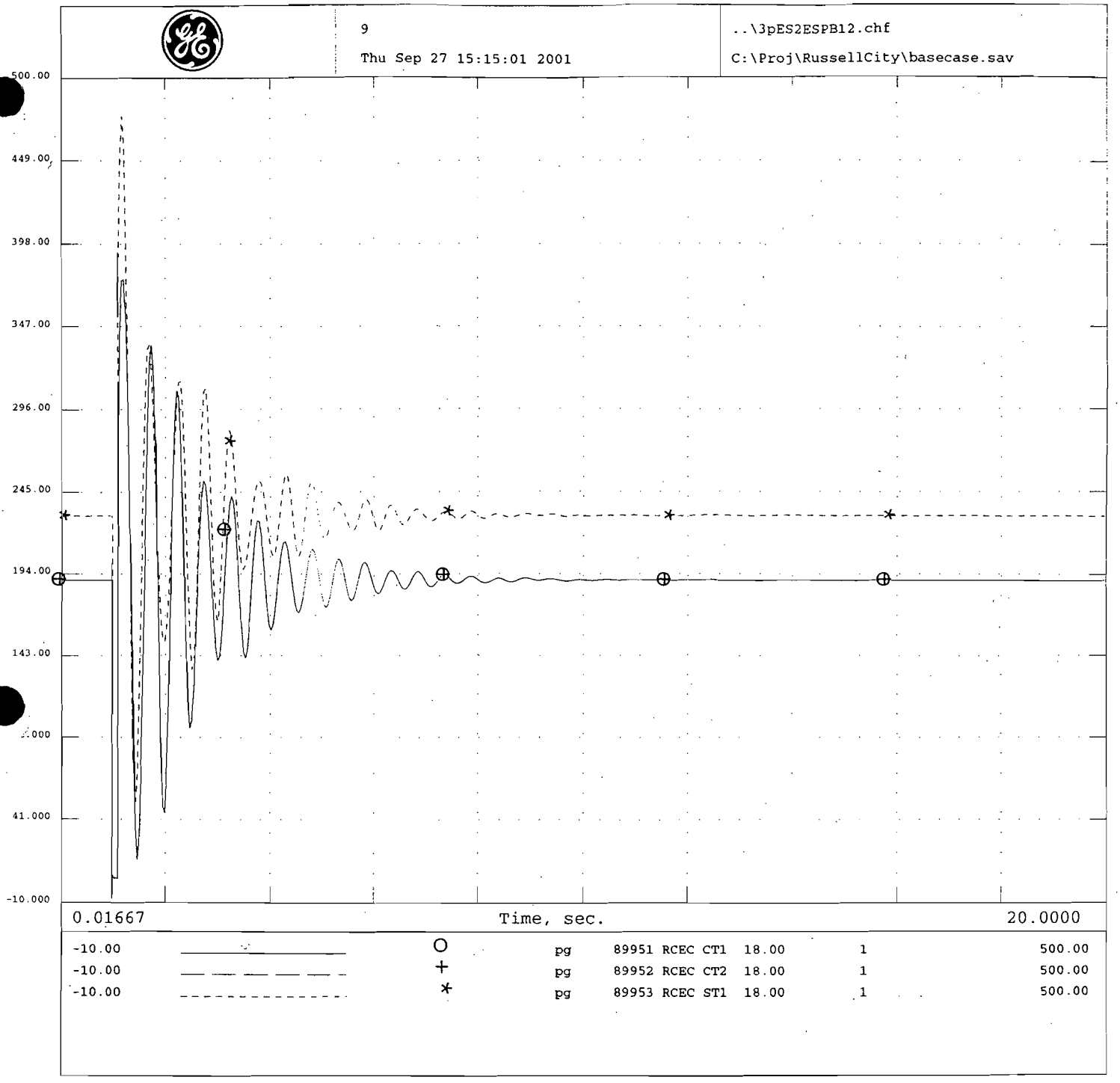
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg 1,2 230kV Line Outage
3 phase 6 cycle fault at East Shore 230kV bus and trip both East Shore-Pittsbur

Russell City Energy Center System Impact Study
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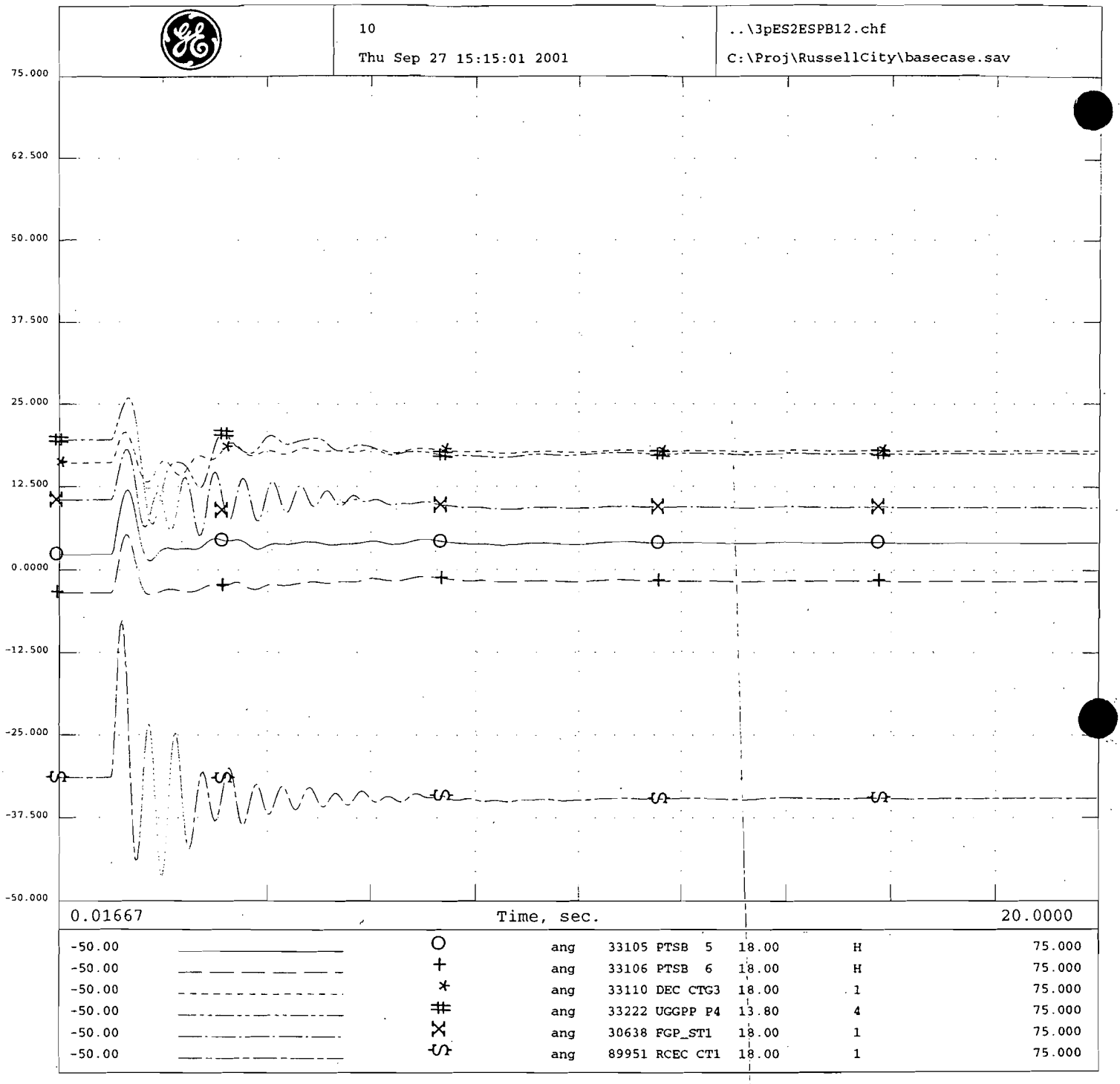
Project Generator Terminal Power



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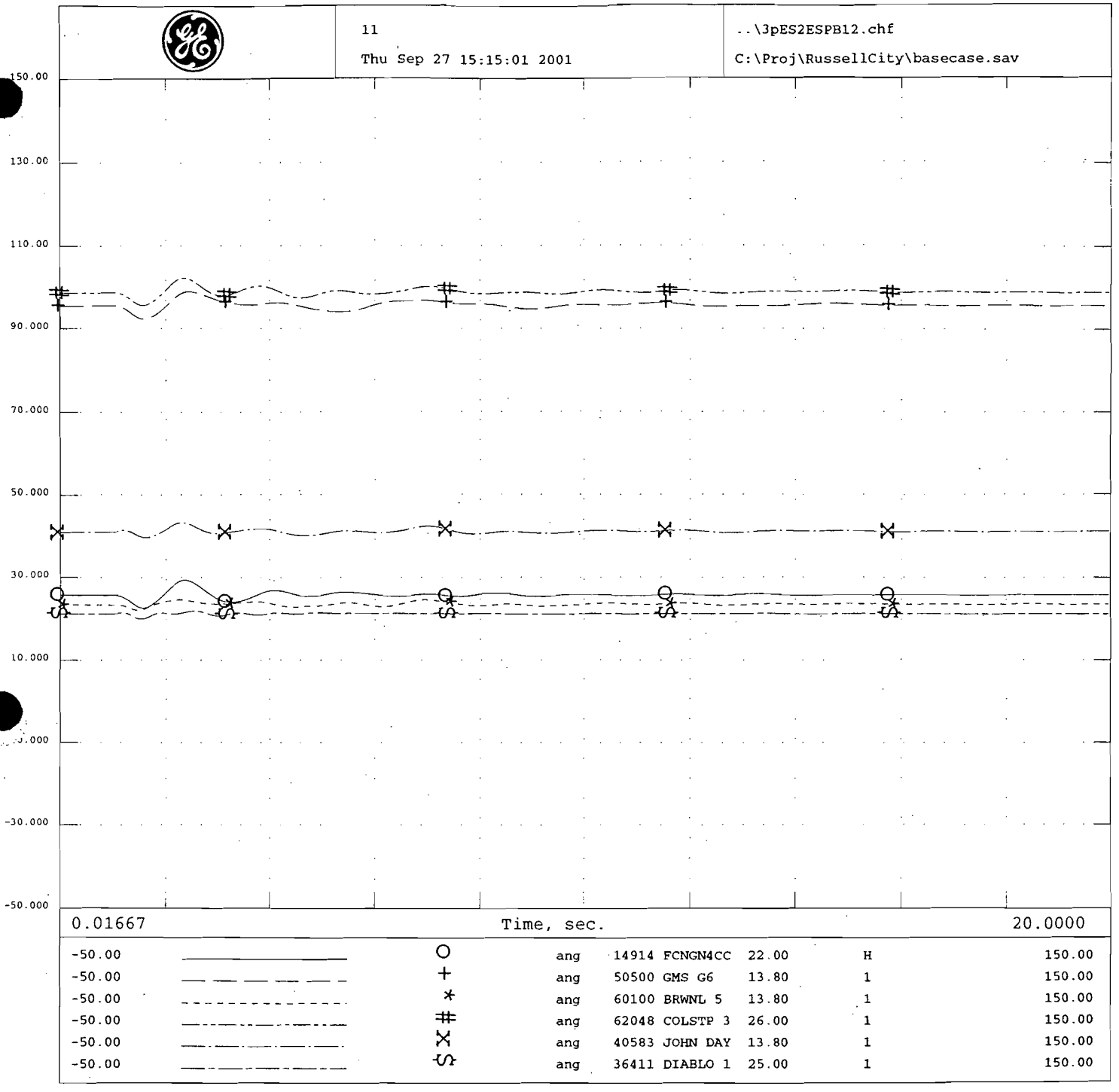
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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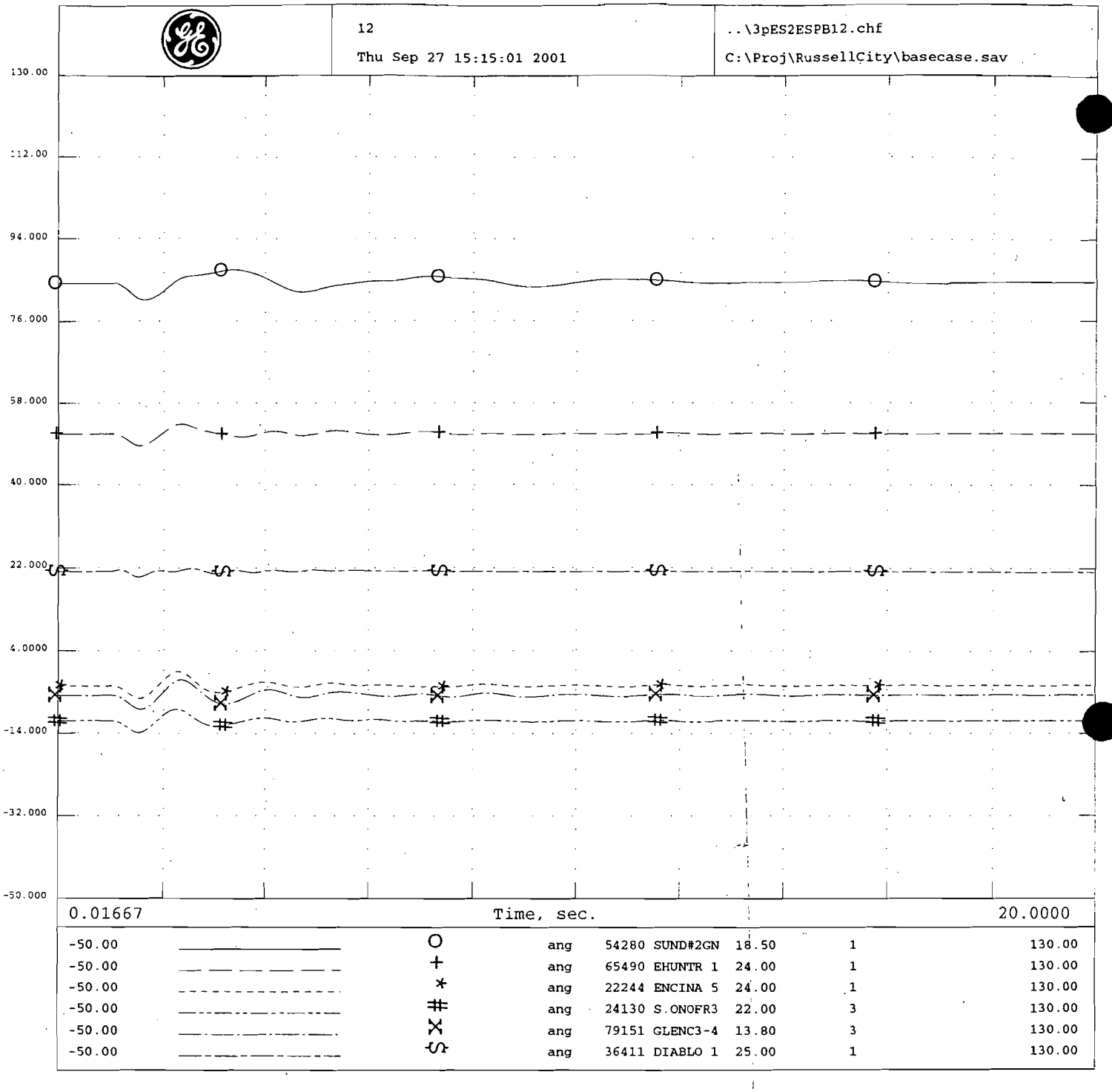

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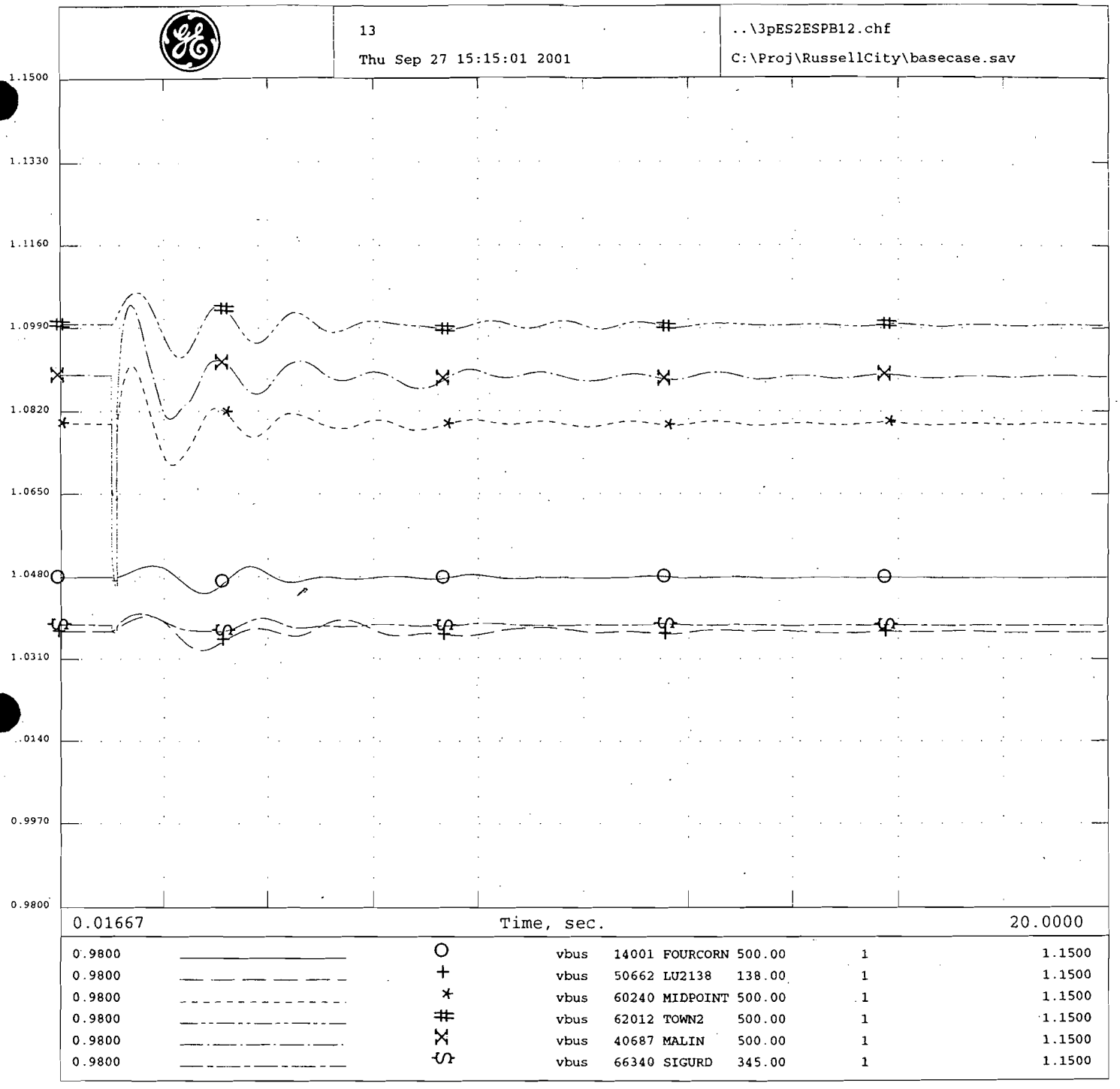

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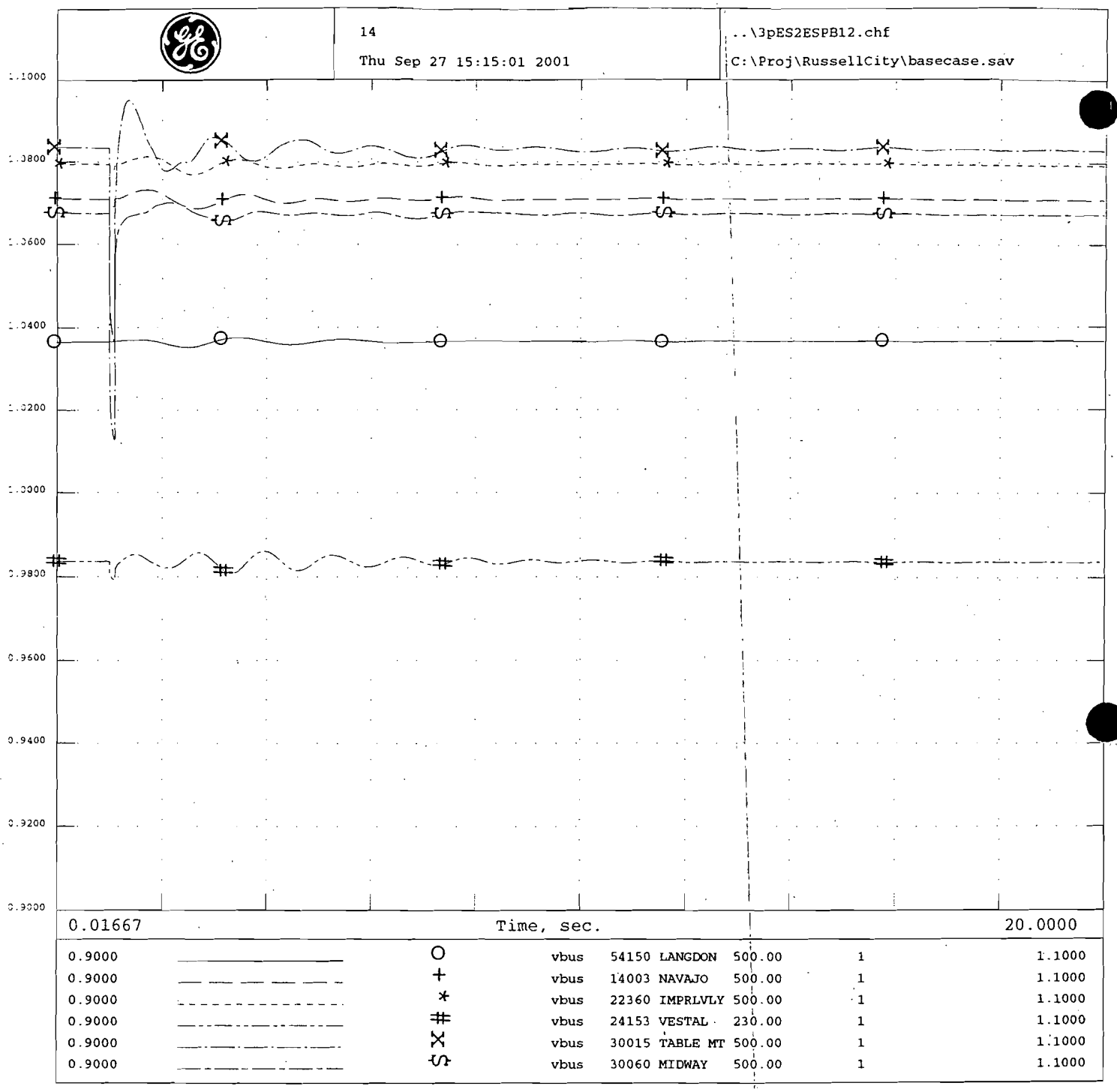

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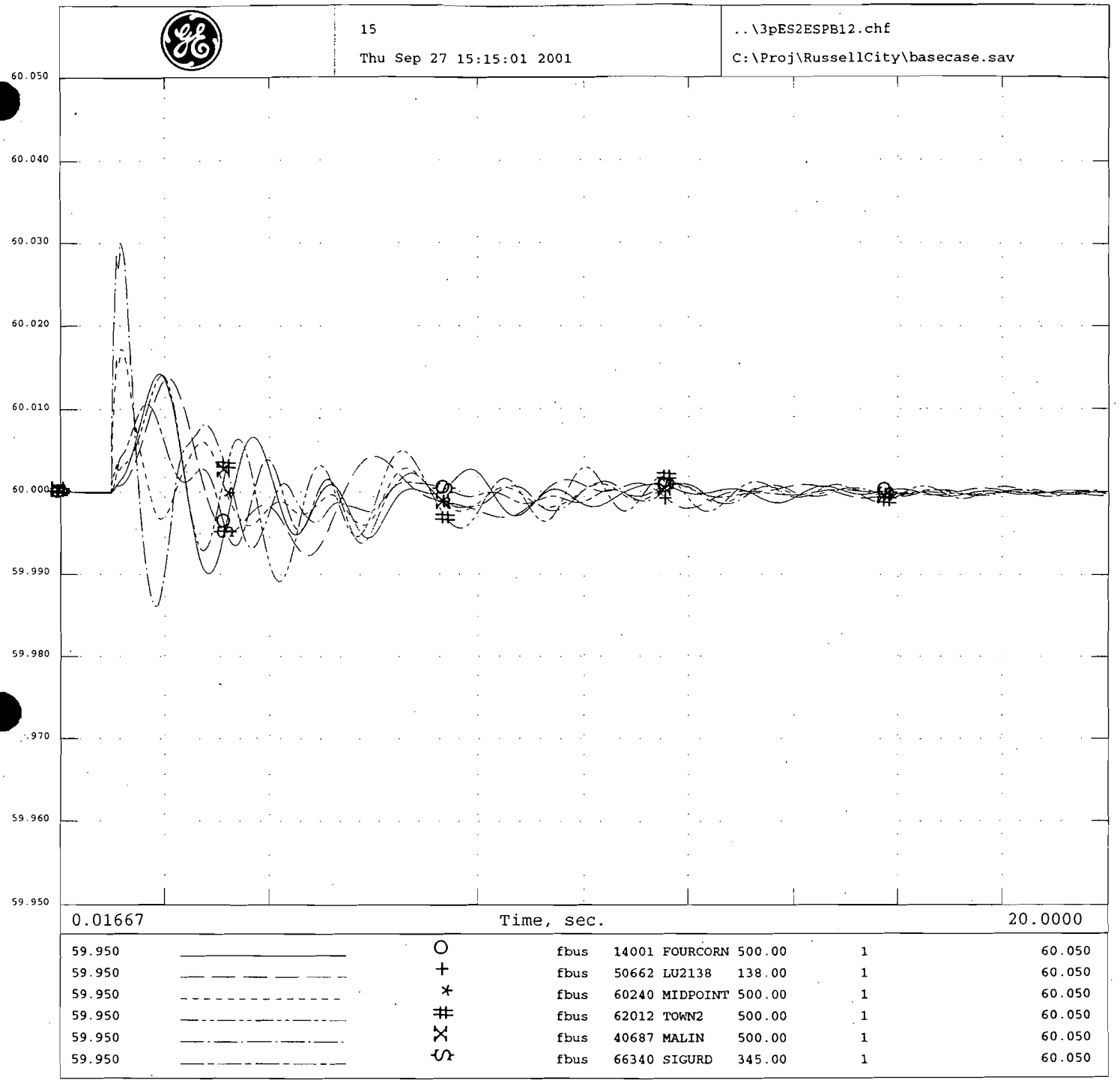

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Calpine/Bechtel Joint Development
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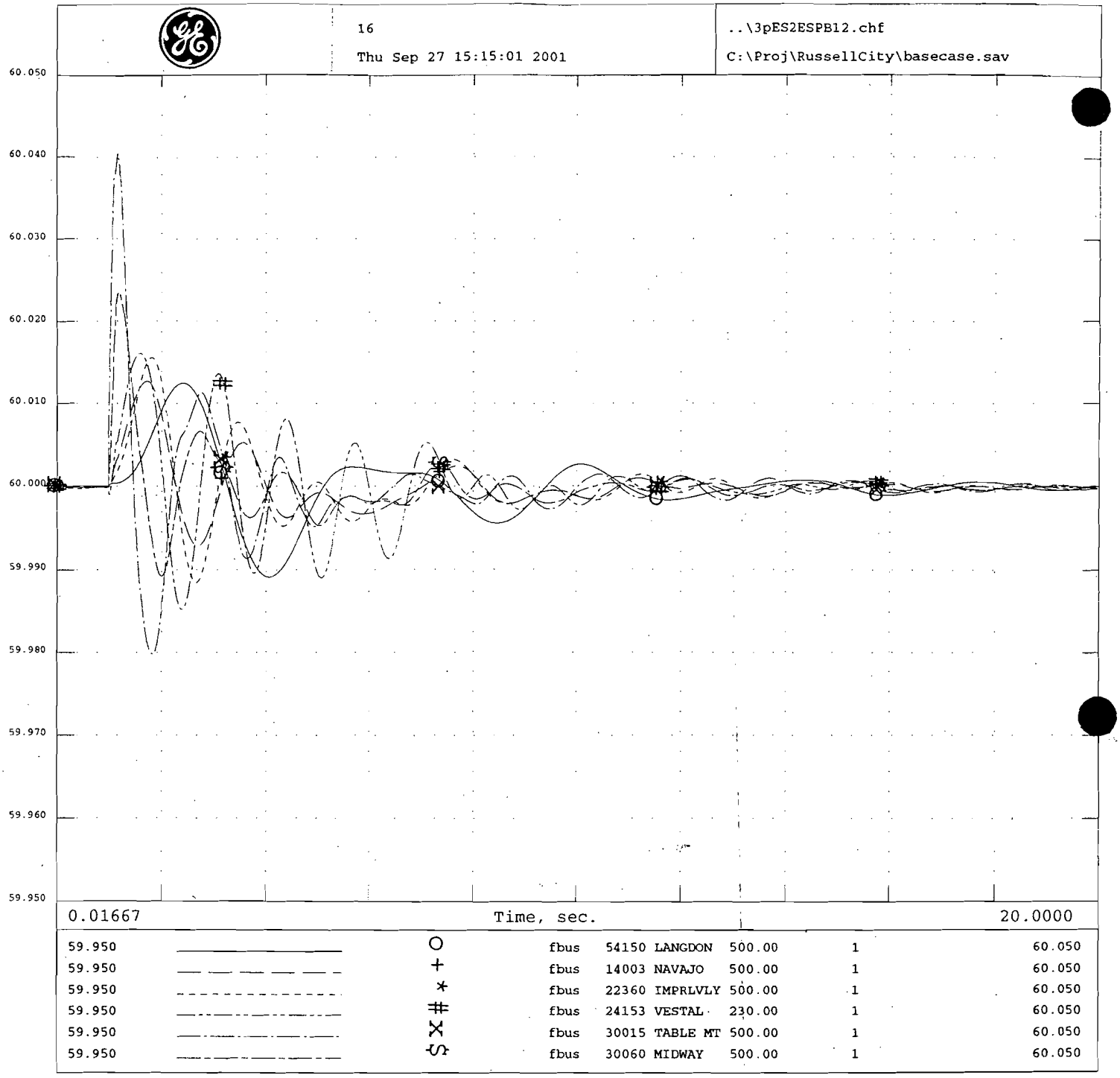

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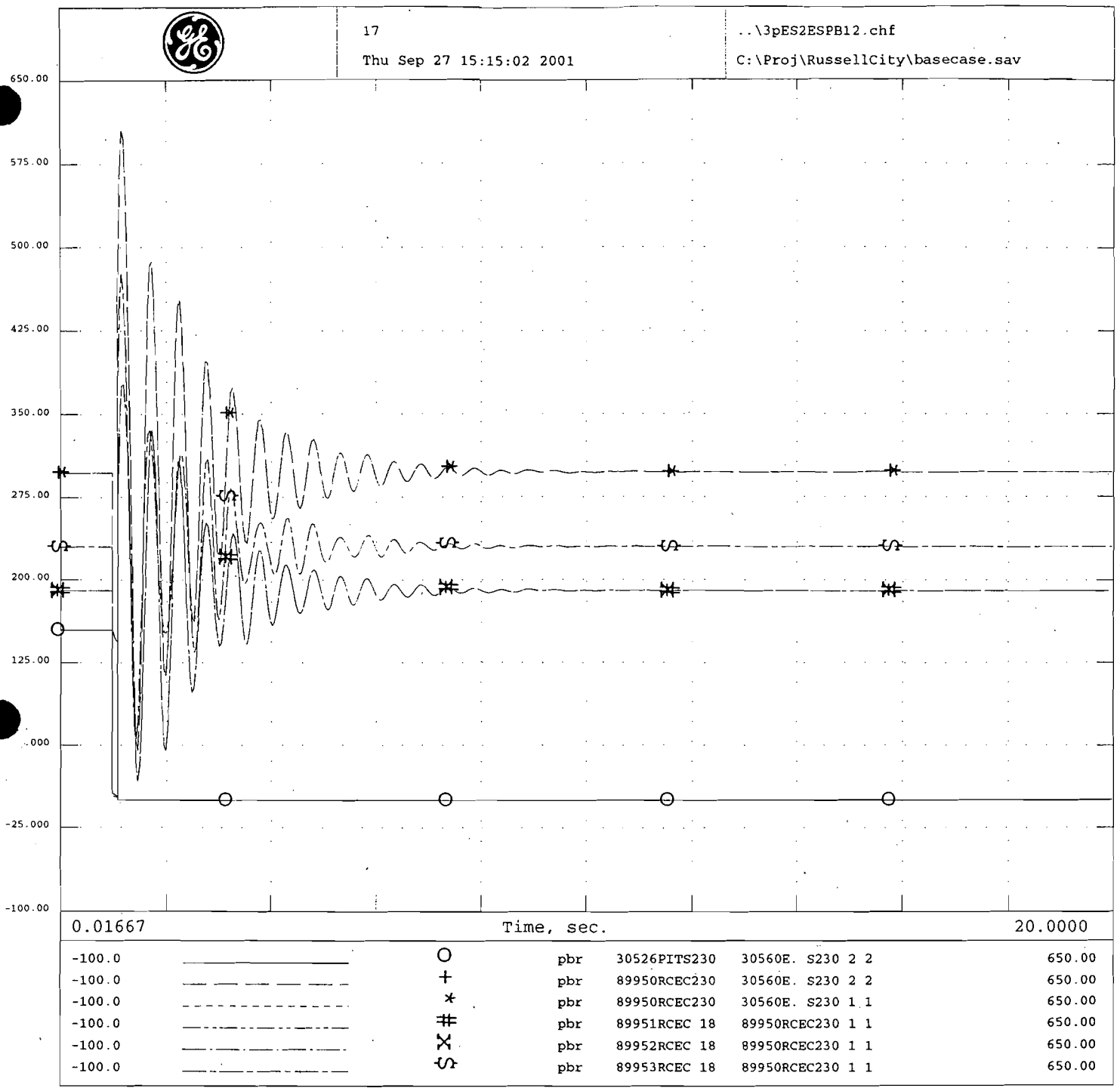

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Calpine/Bechtel Joint Development
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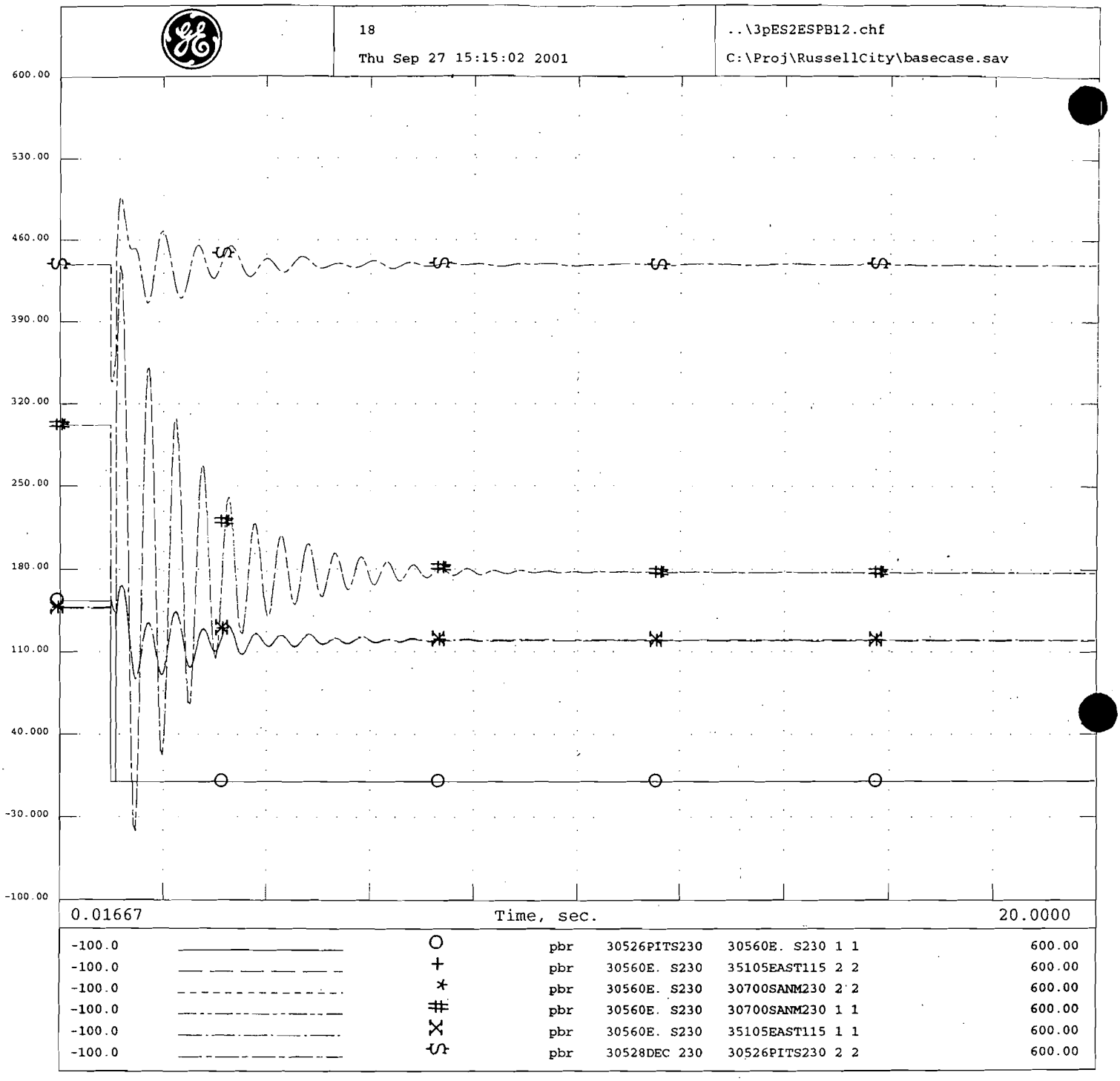

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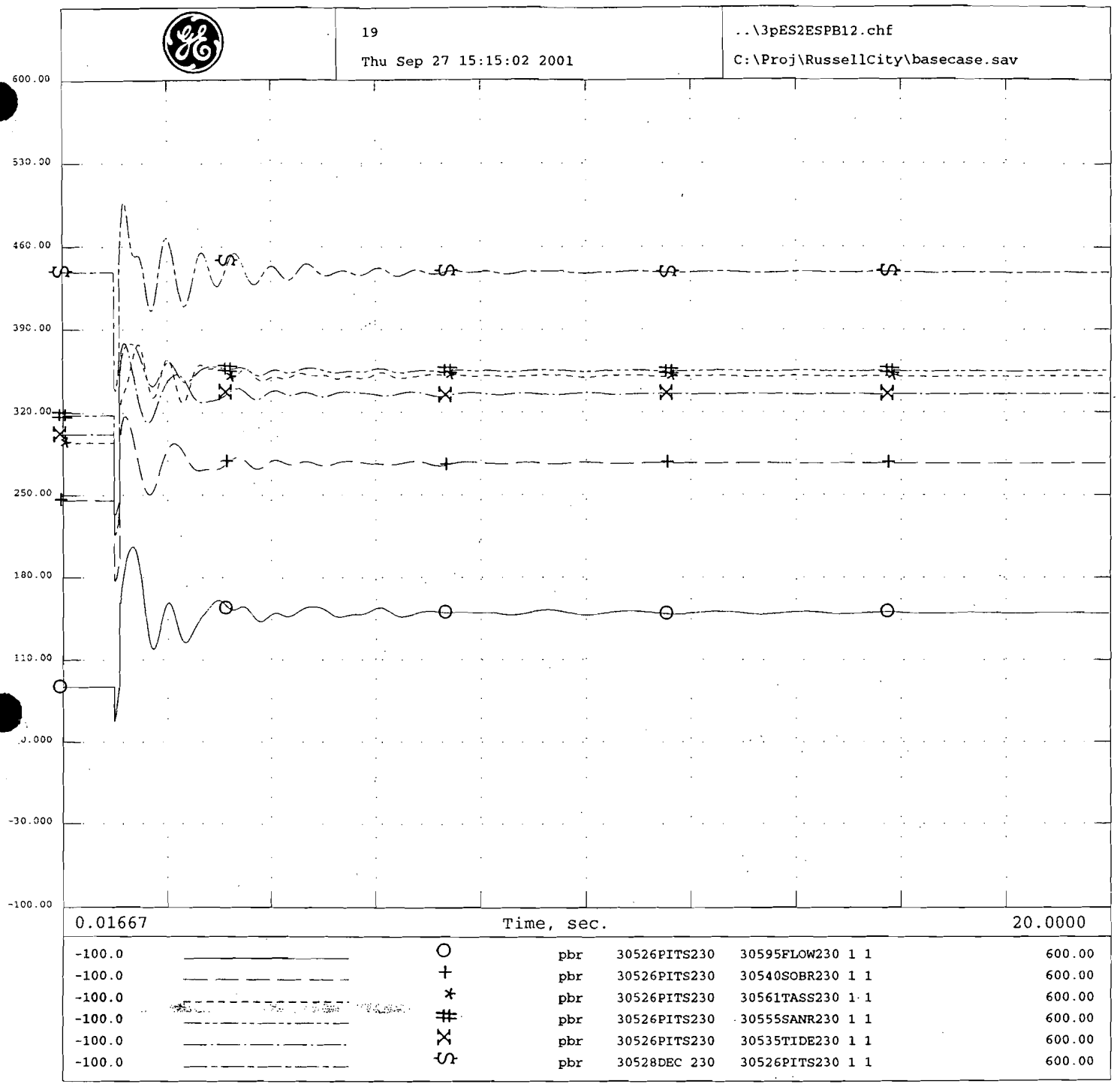

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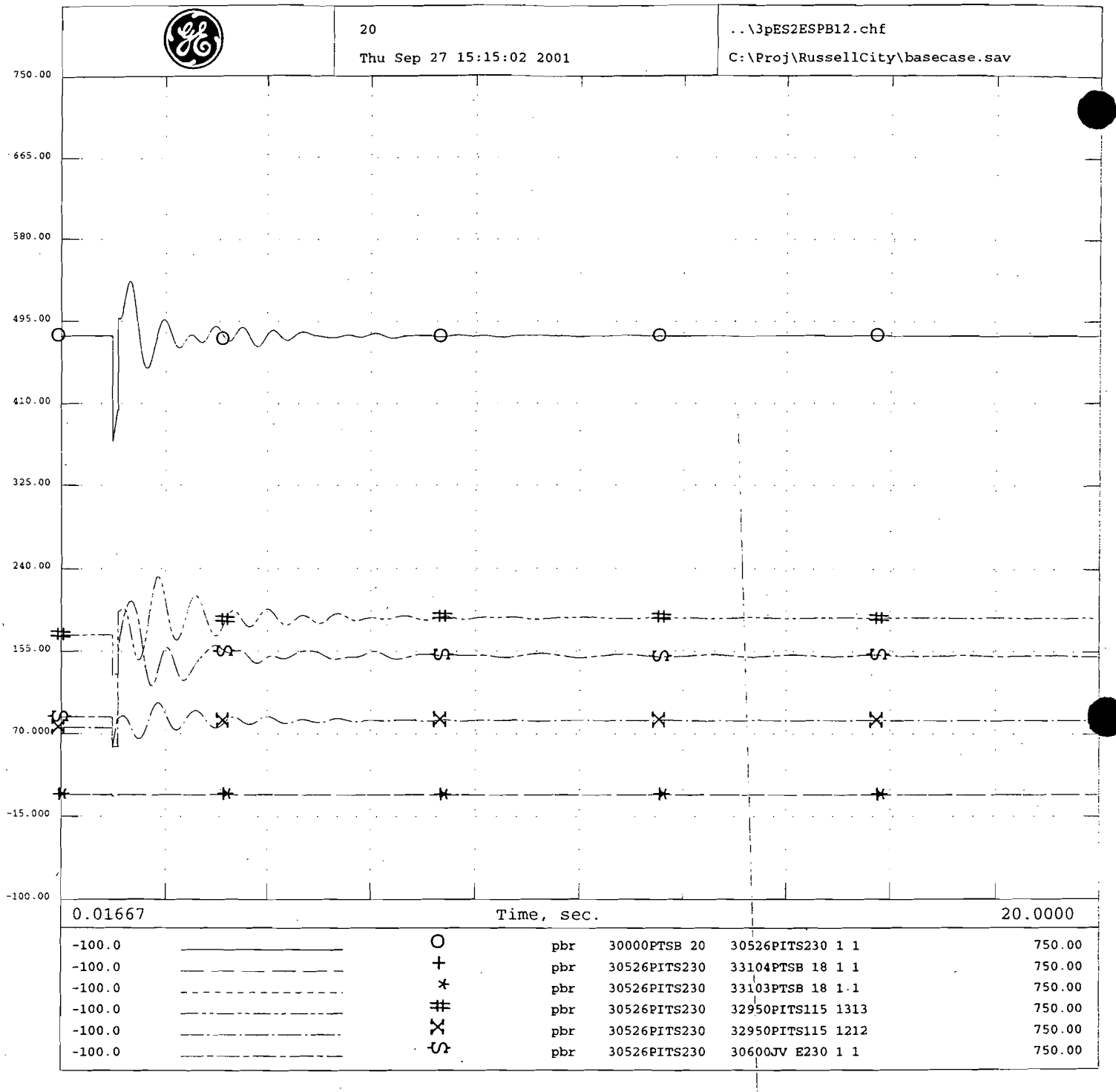

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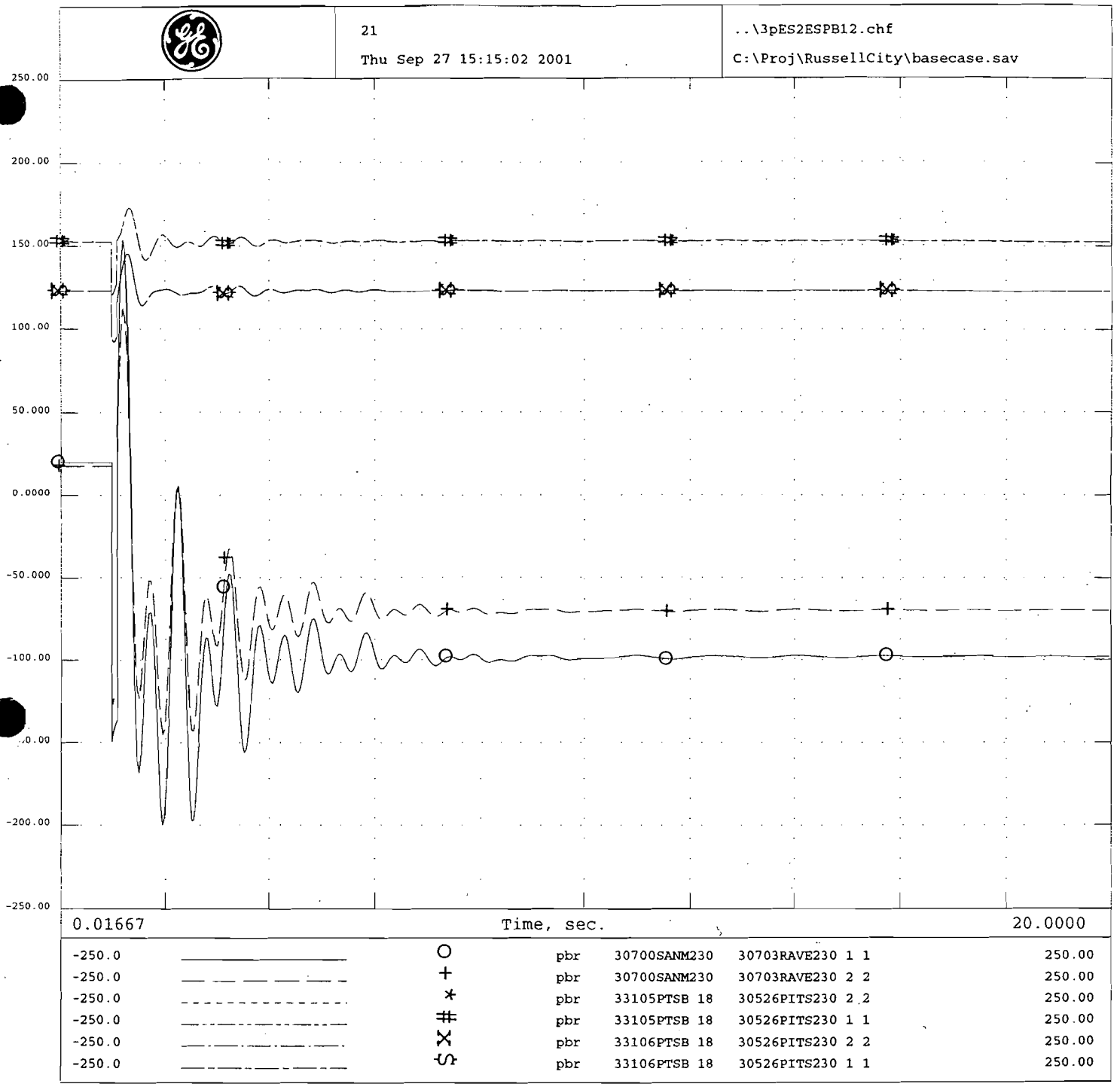

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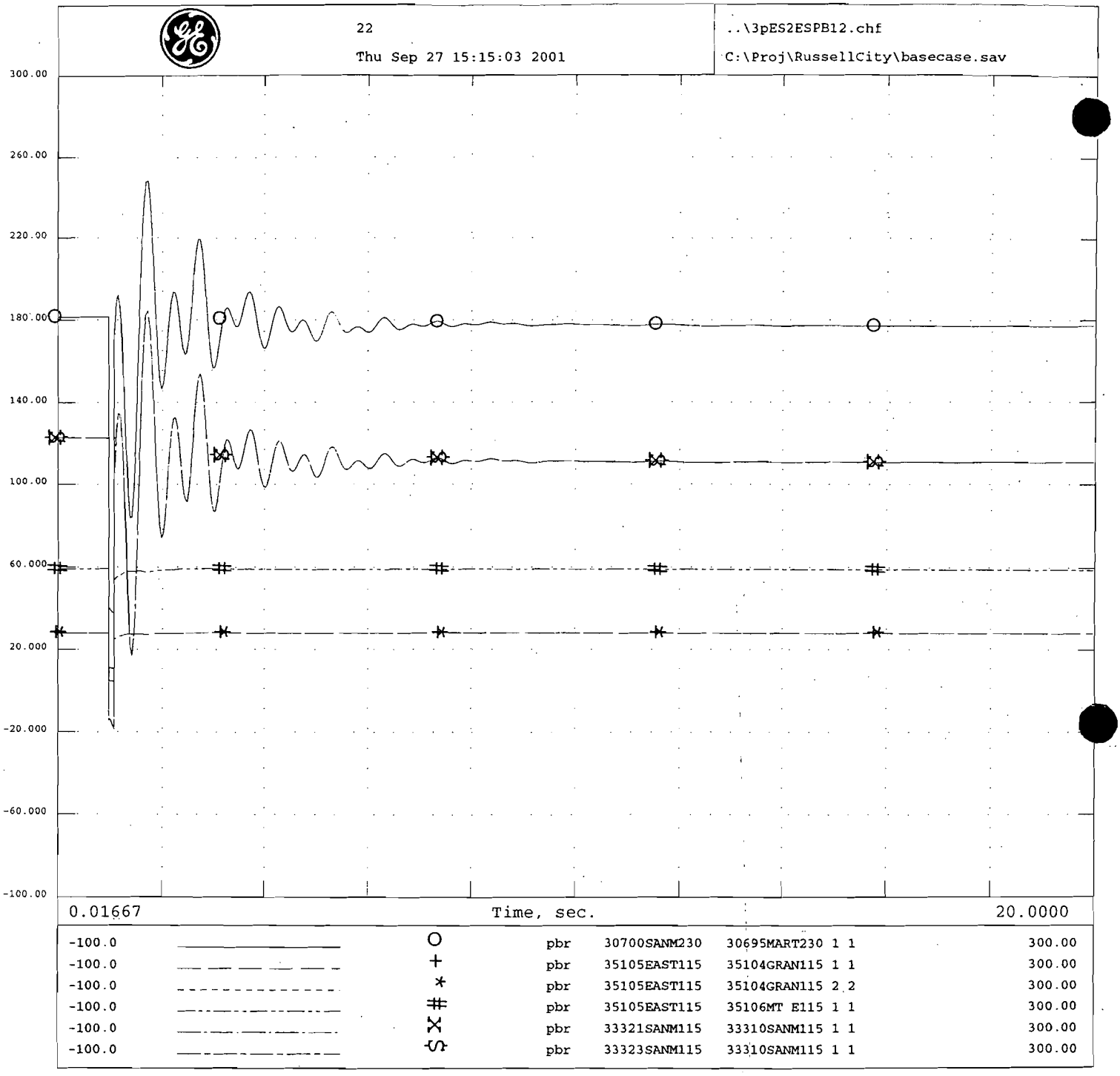

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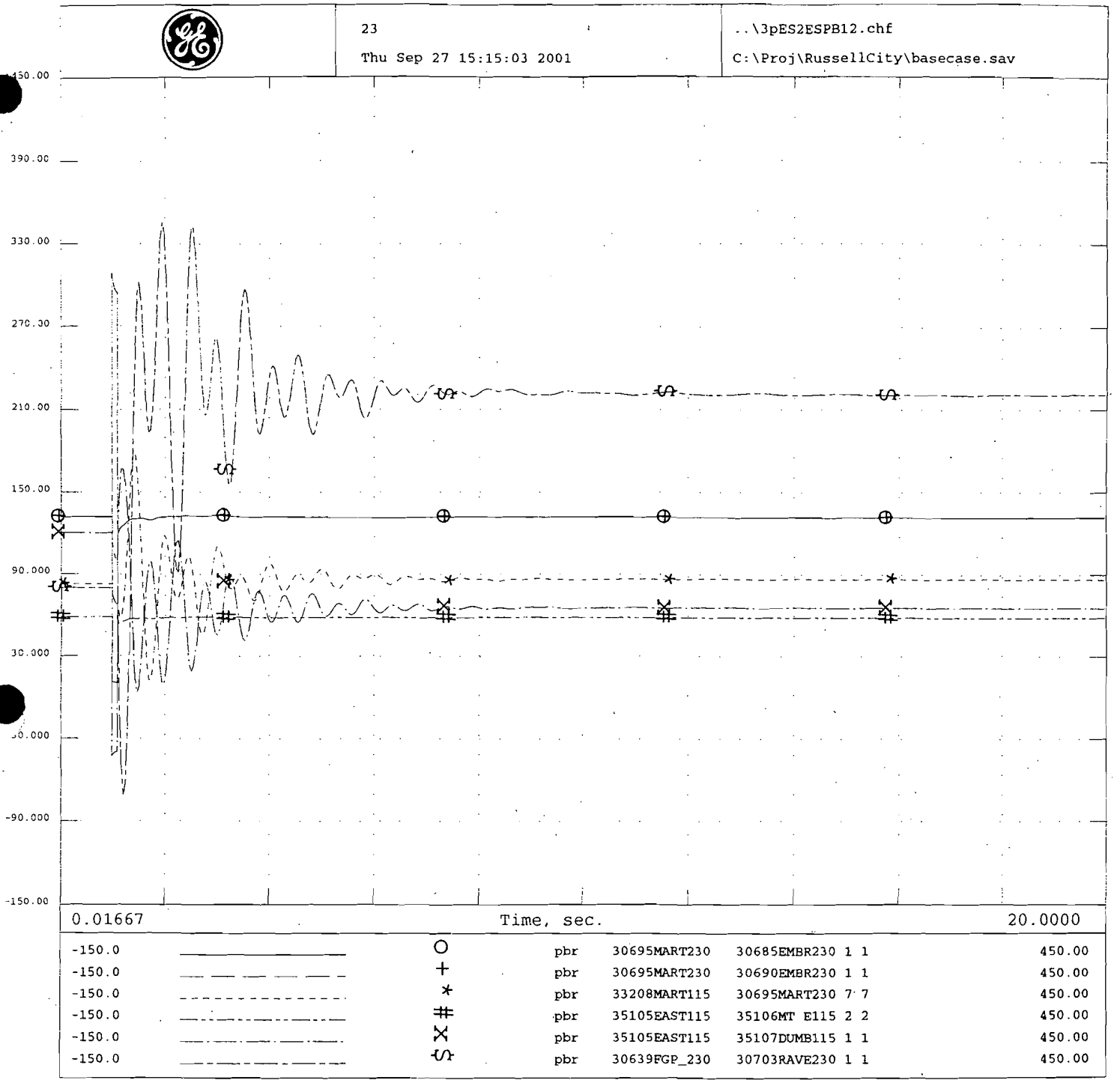

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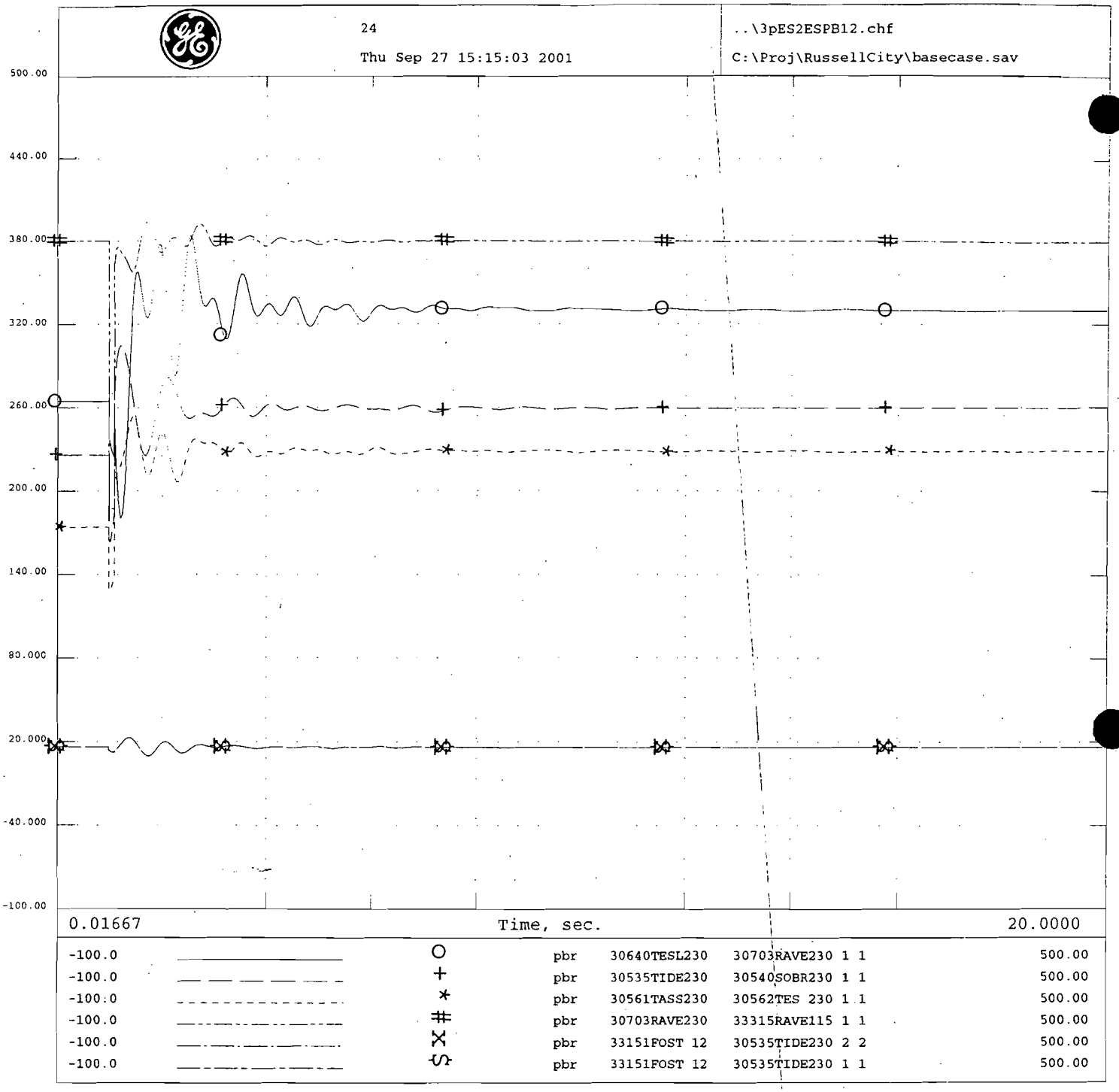

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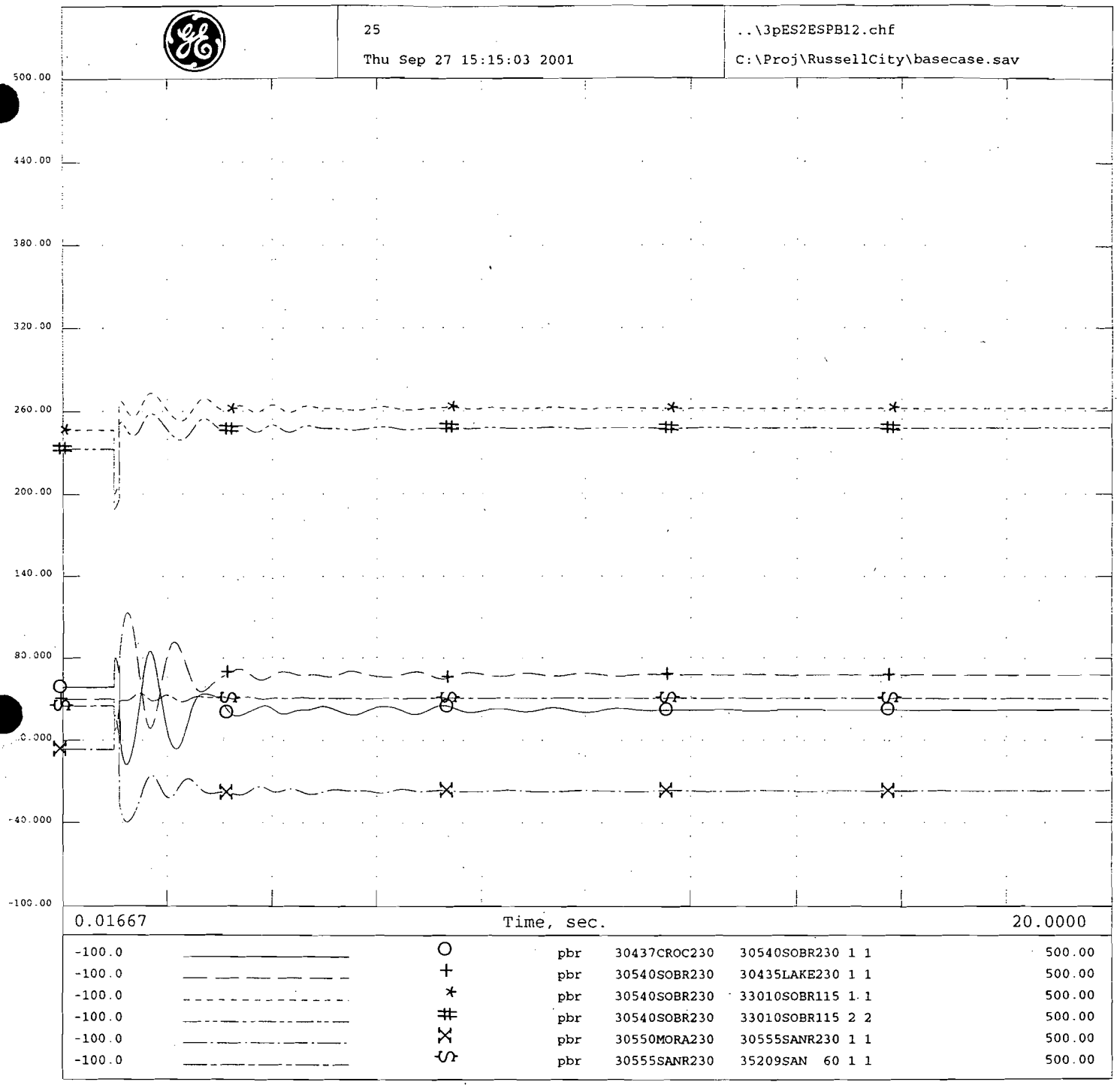

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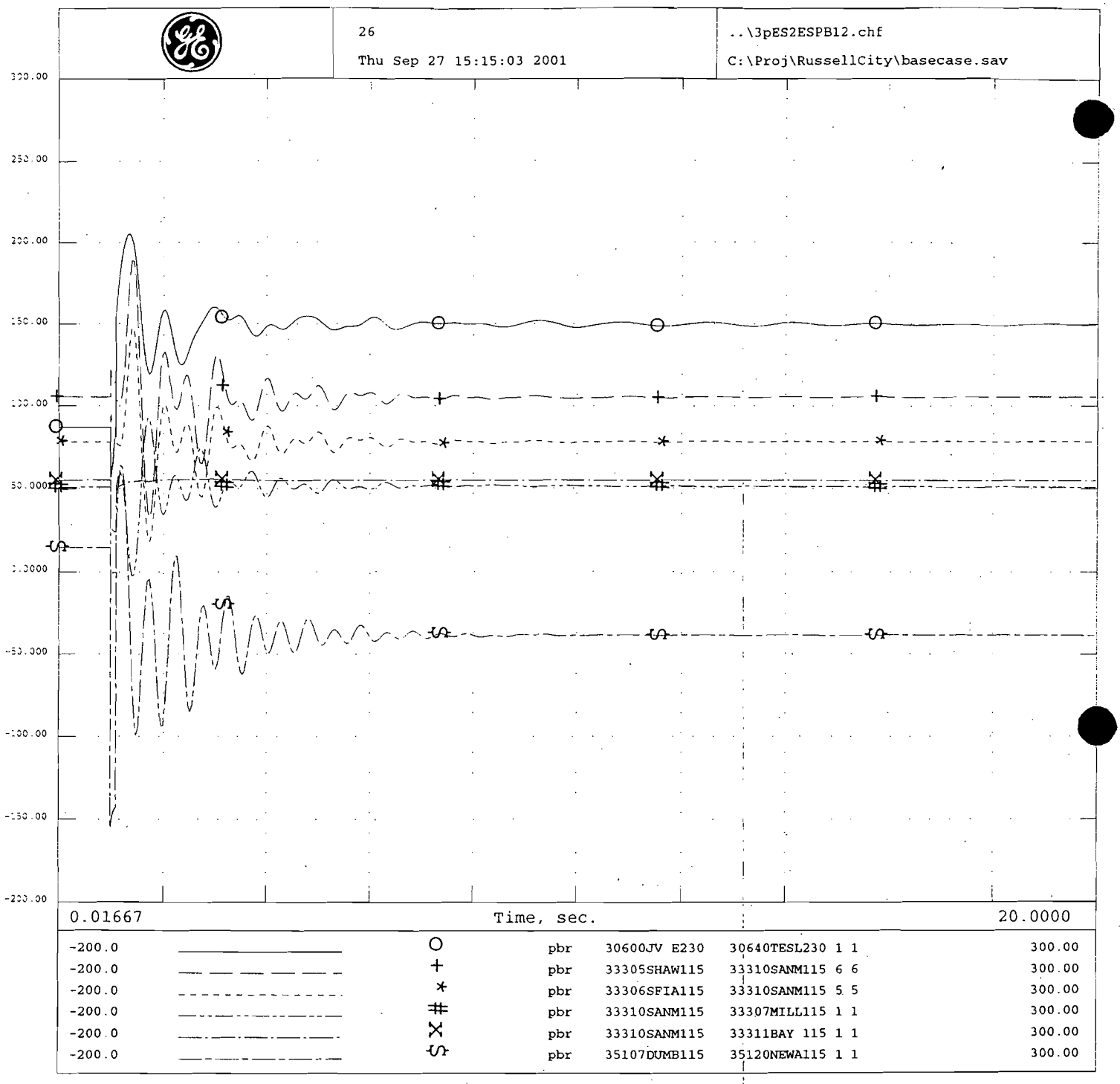

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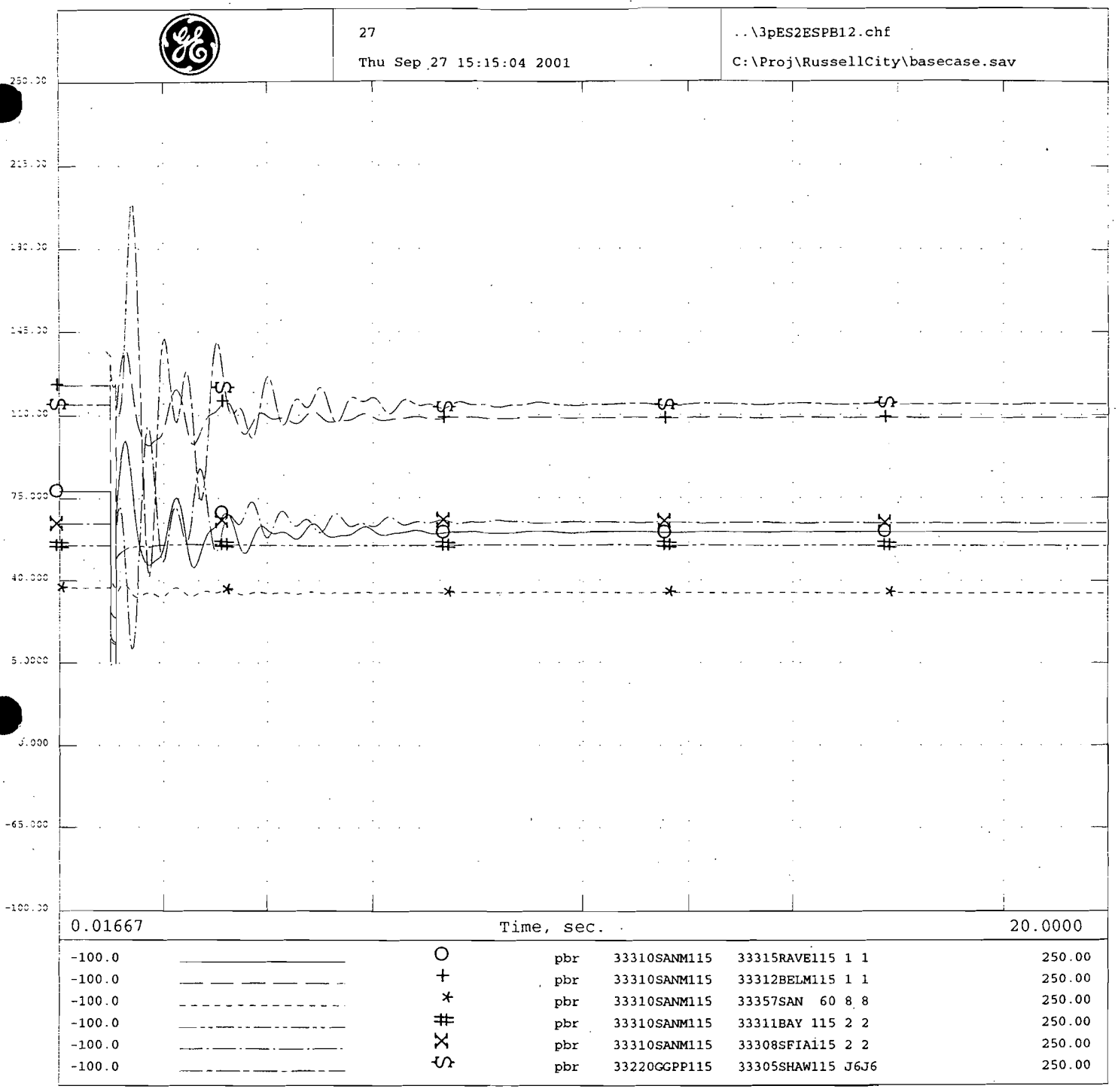

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
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Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg, San Mateo #1 230kV Line Outage
3 phase 6 cycle fault at E. Shore 230kV bus and trip the E. Shore-Pittsburg/San
Mateo #1 230kV lines
RUN  9
CC
CC   Fault East Shore 230kV bus
FB   0.0 "E. SHORE" 230.
CC
CC   Clear fault at East Shore 230kV bus
CFB  6.0 "E. SHORE" 230.
CC
CC   Trip the East Shore-Pittsburg/San Mateo #1 230kV lines
DL  6.0 "PITSBURG" 230.00 "E. SHORE" 230.00 "1 "
DL  6.0 "E. SHORE" 230.00 "SANMATEO" 230.00 "1 "
CC
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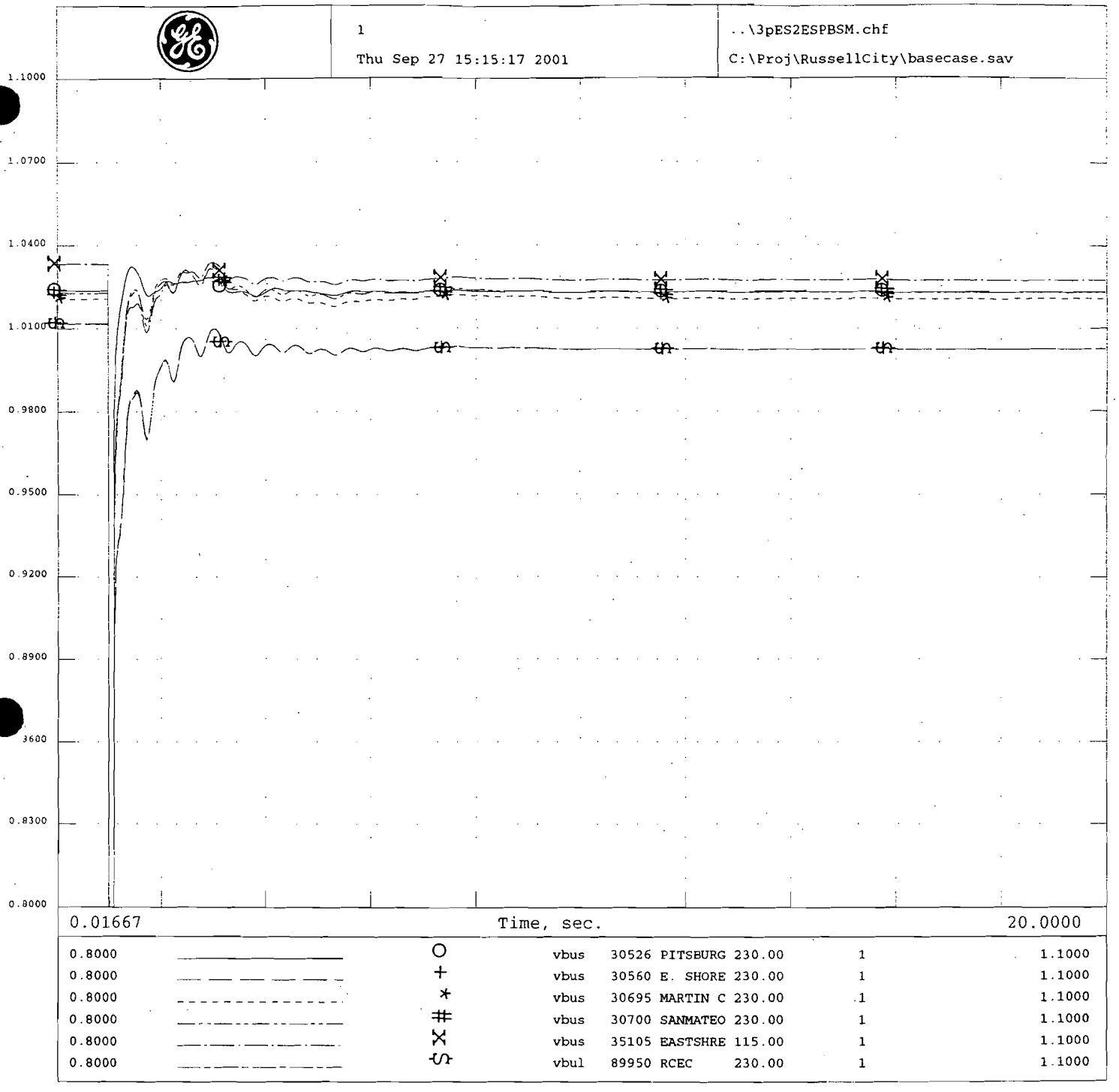

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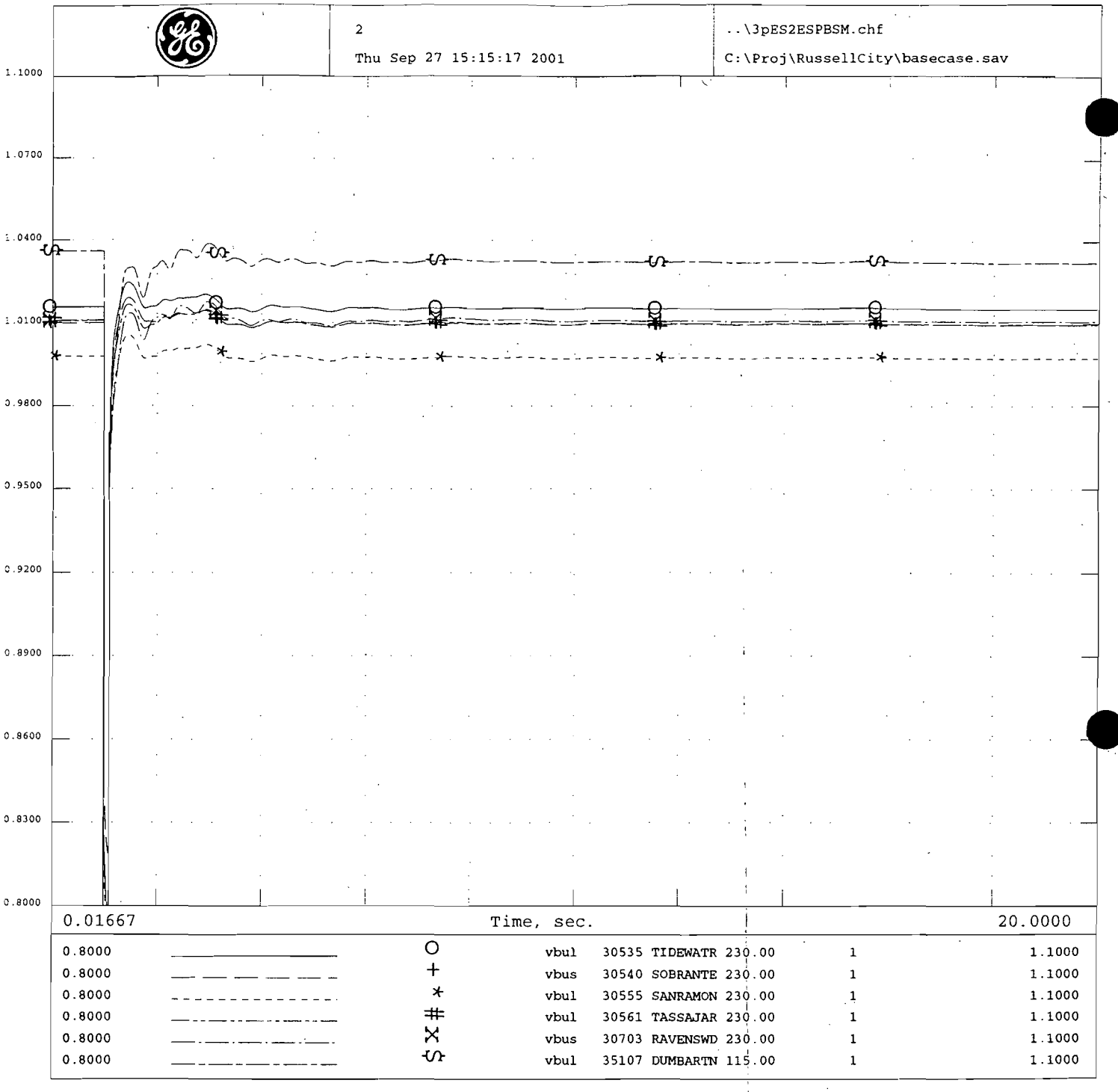
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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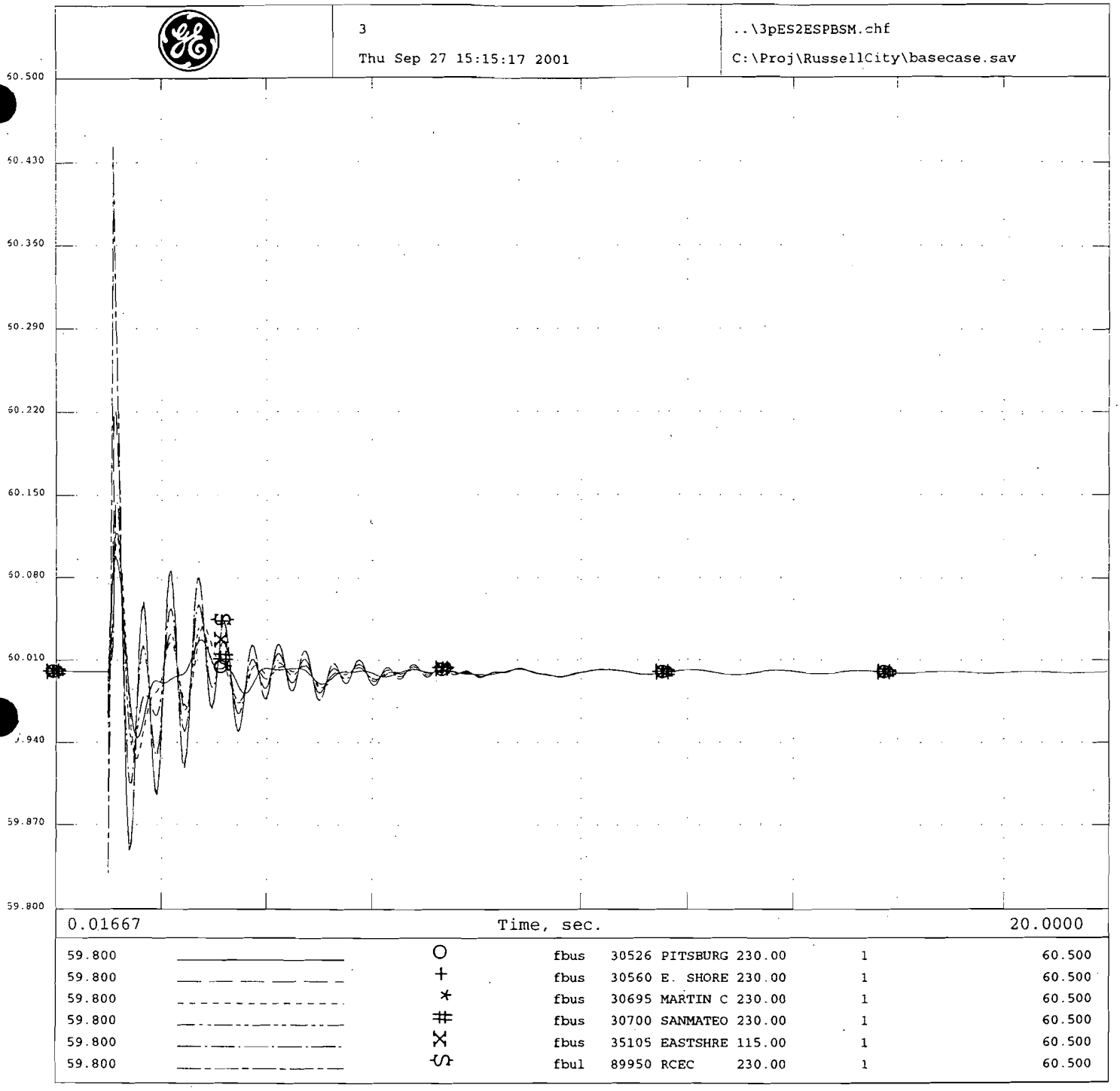

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Calpine/Bechtel Joint Development
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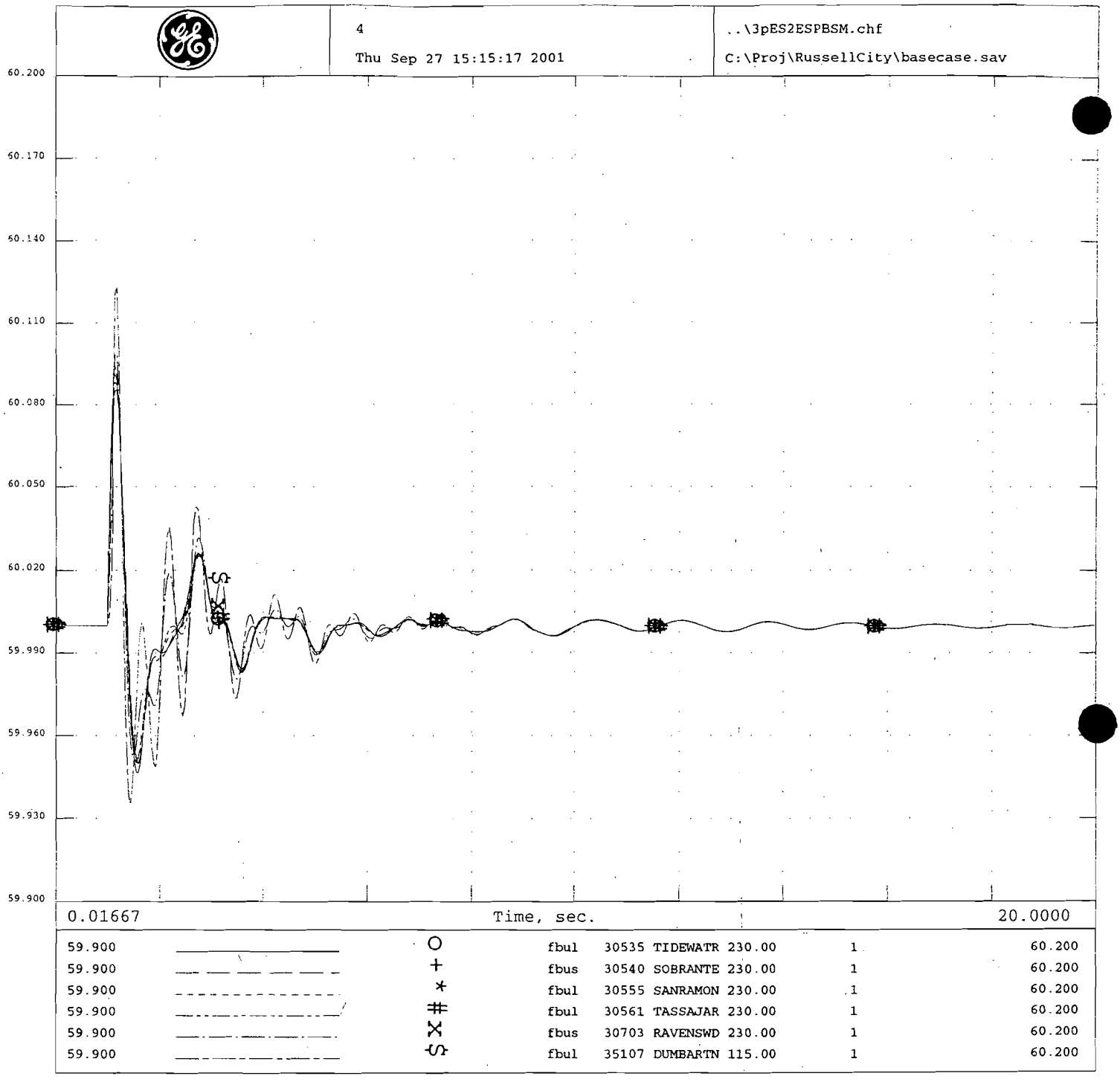

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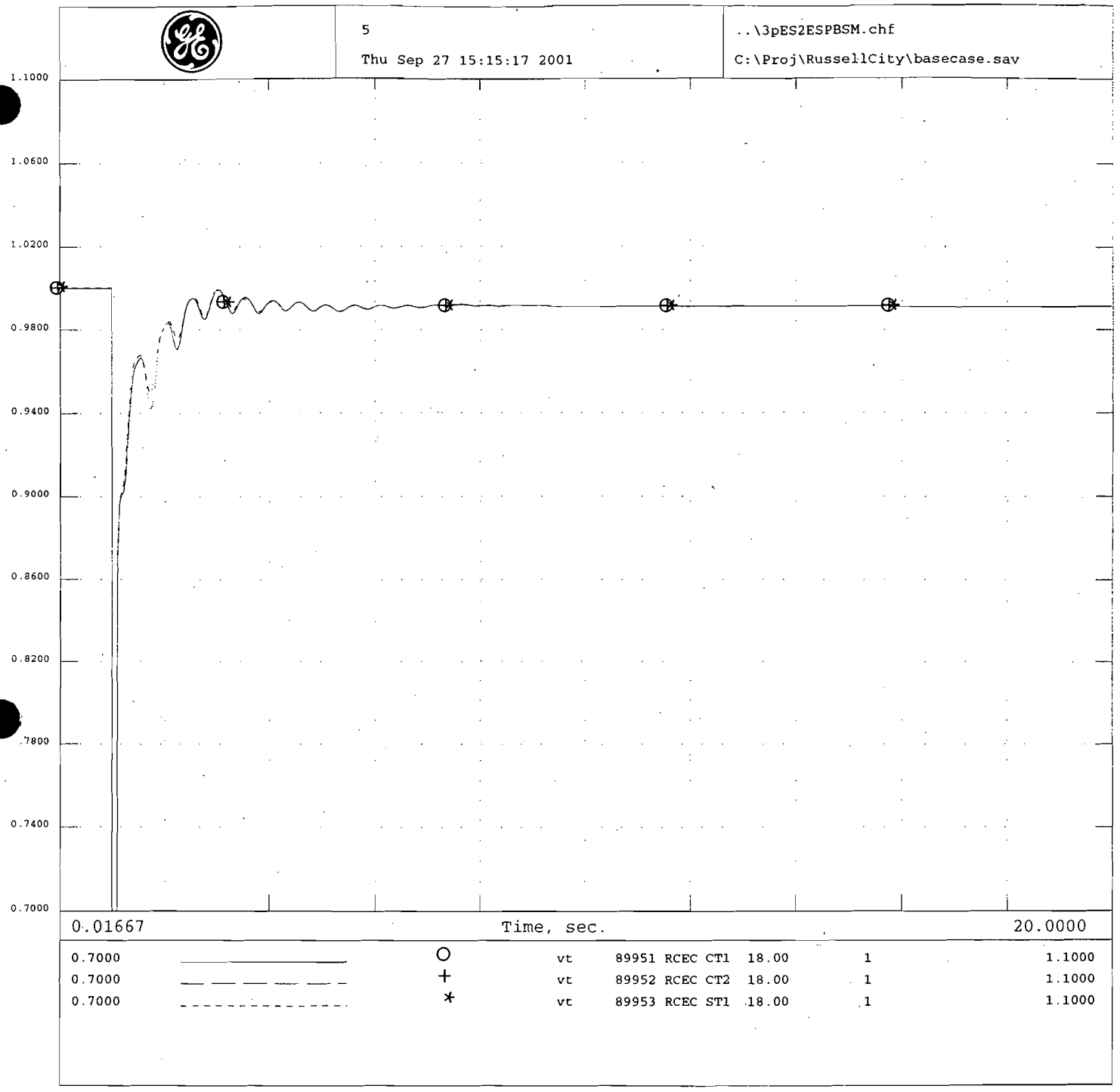

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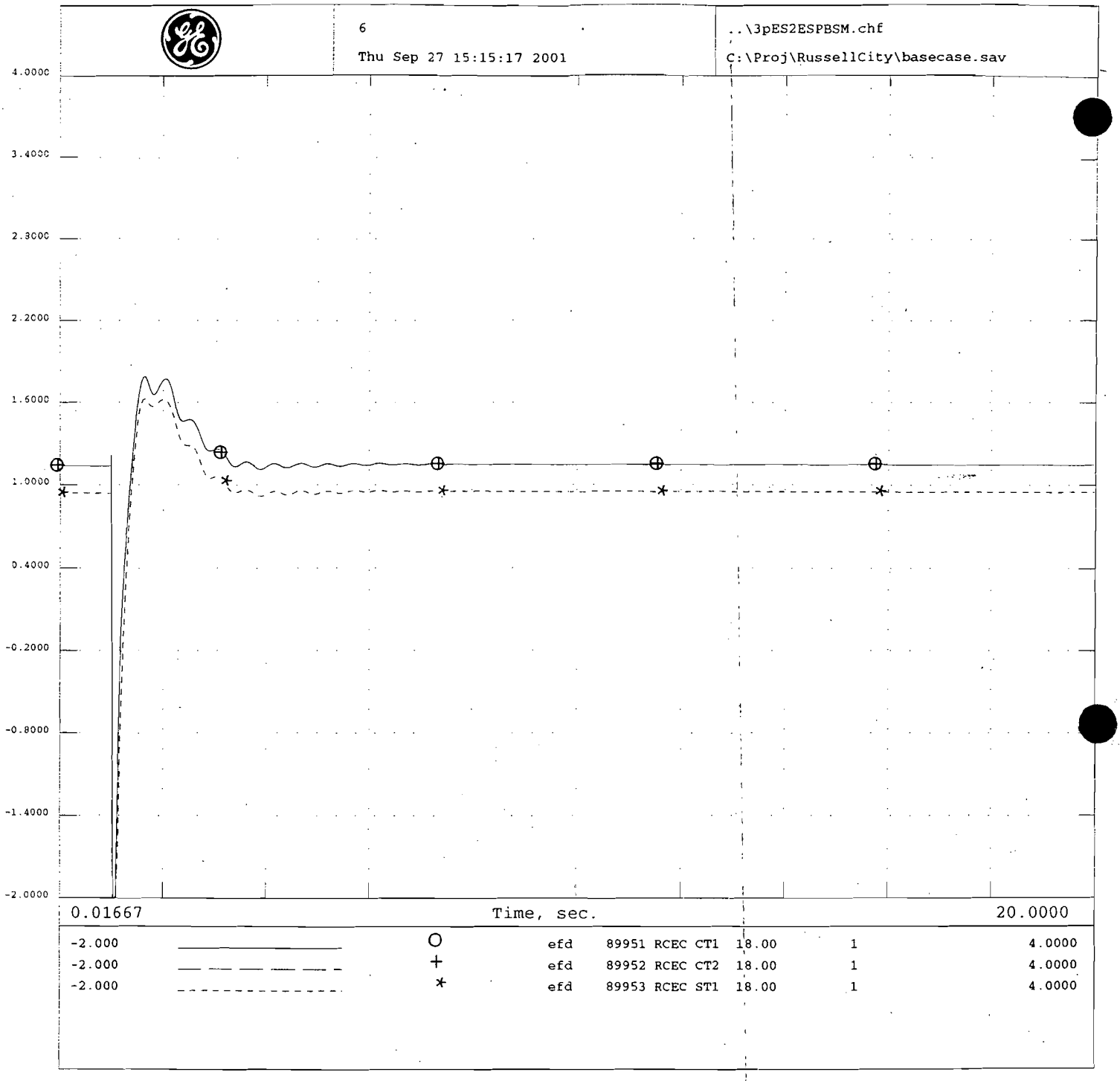
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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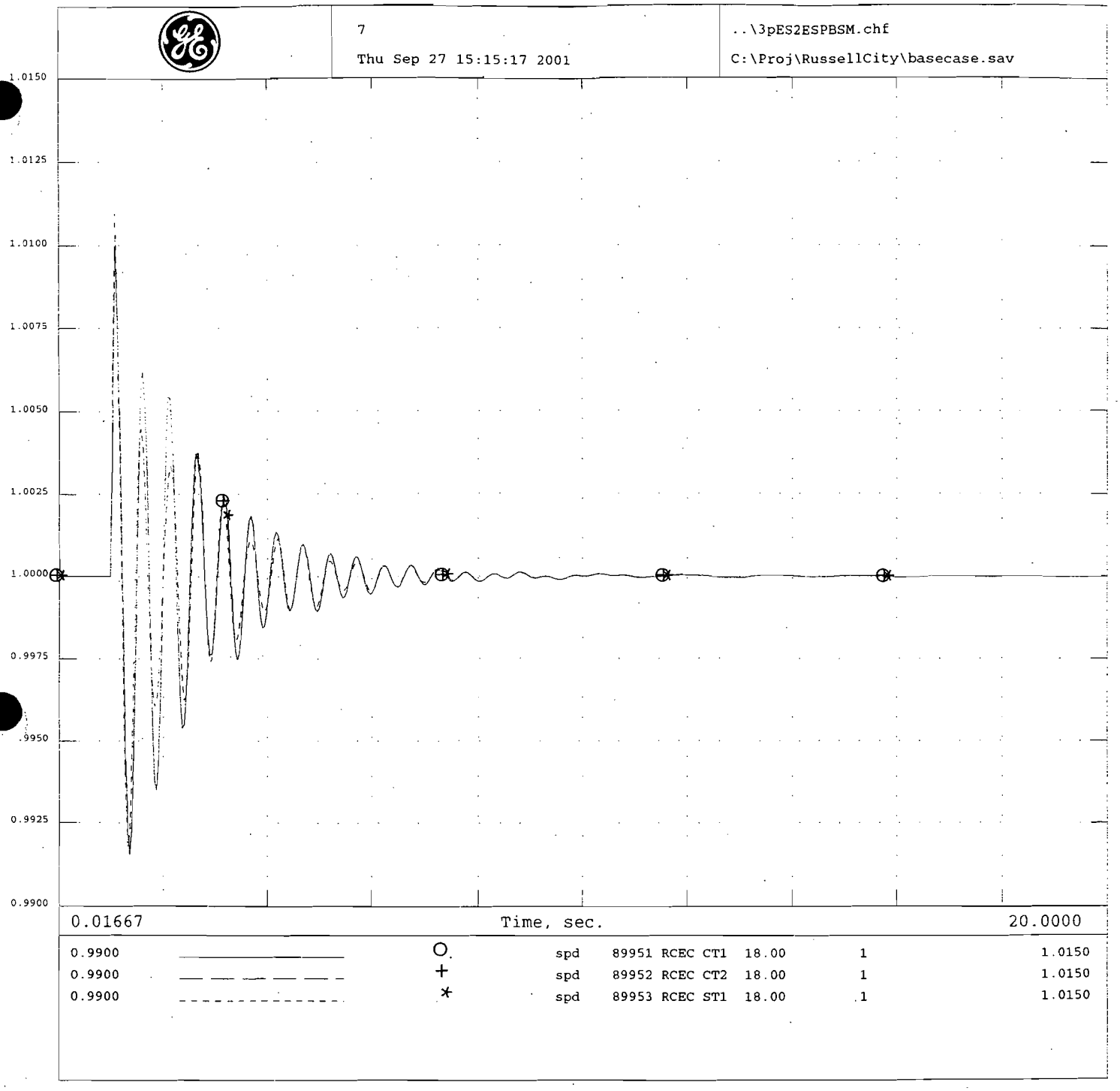

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Calpine/Bechtel Joint Development
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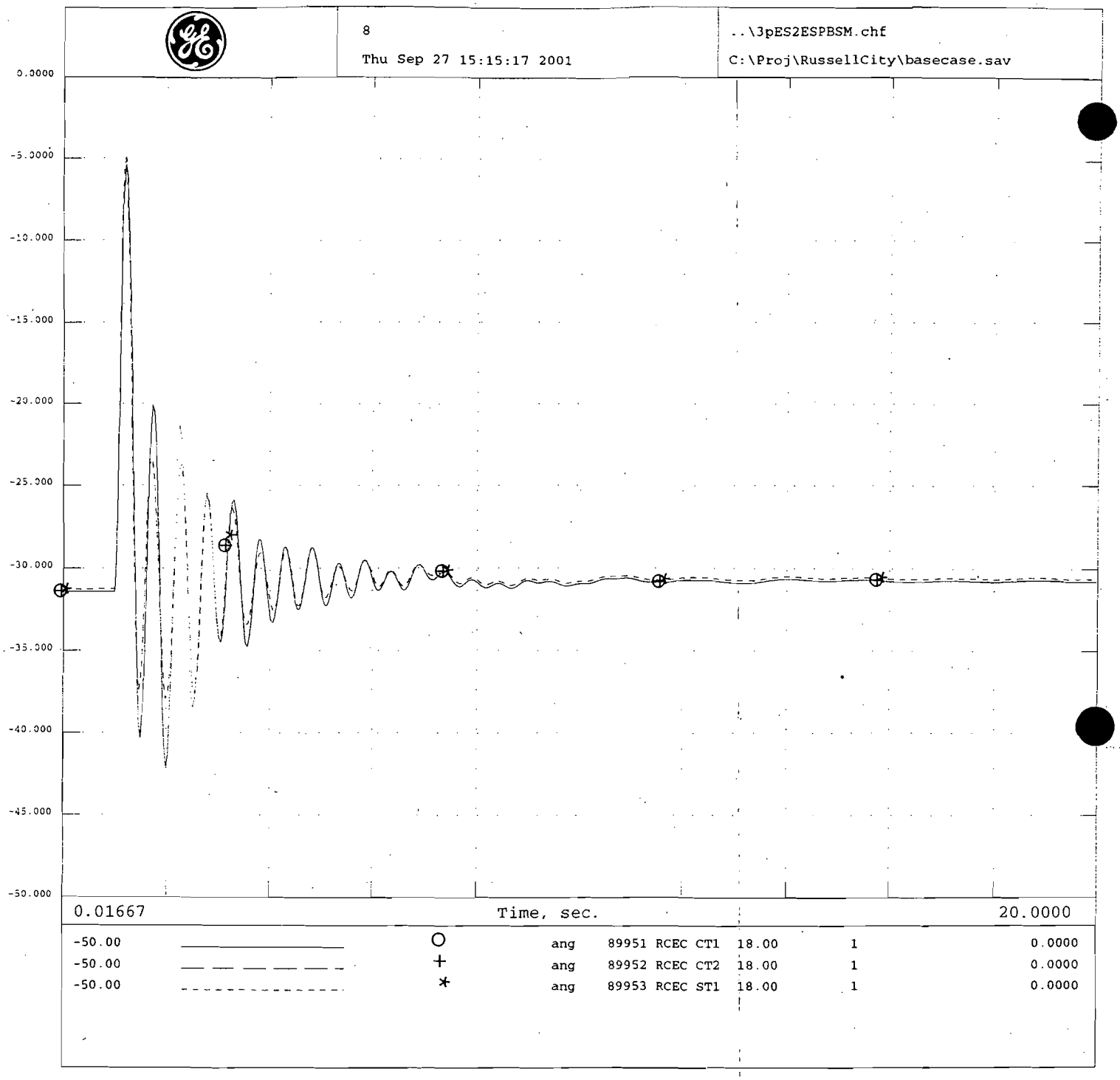

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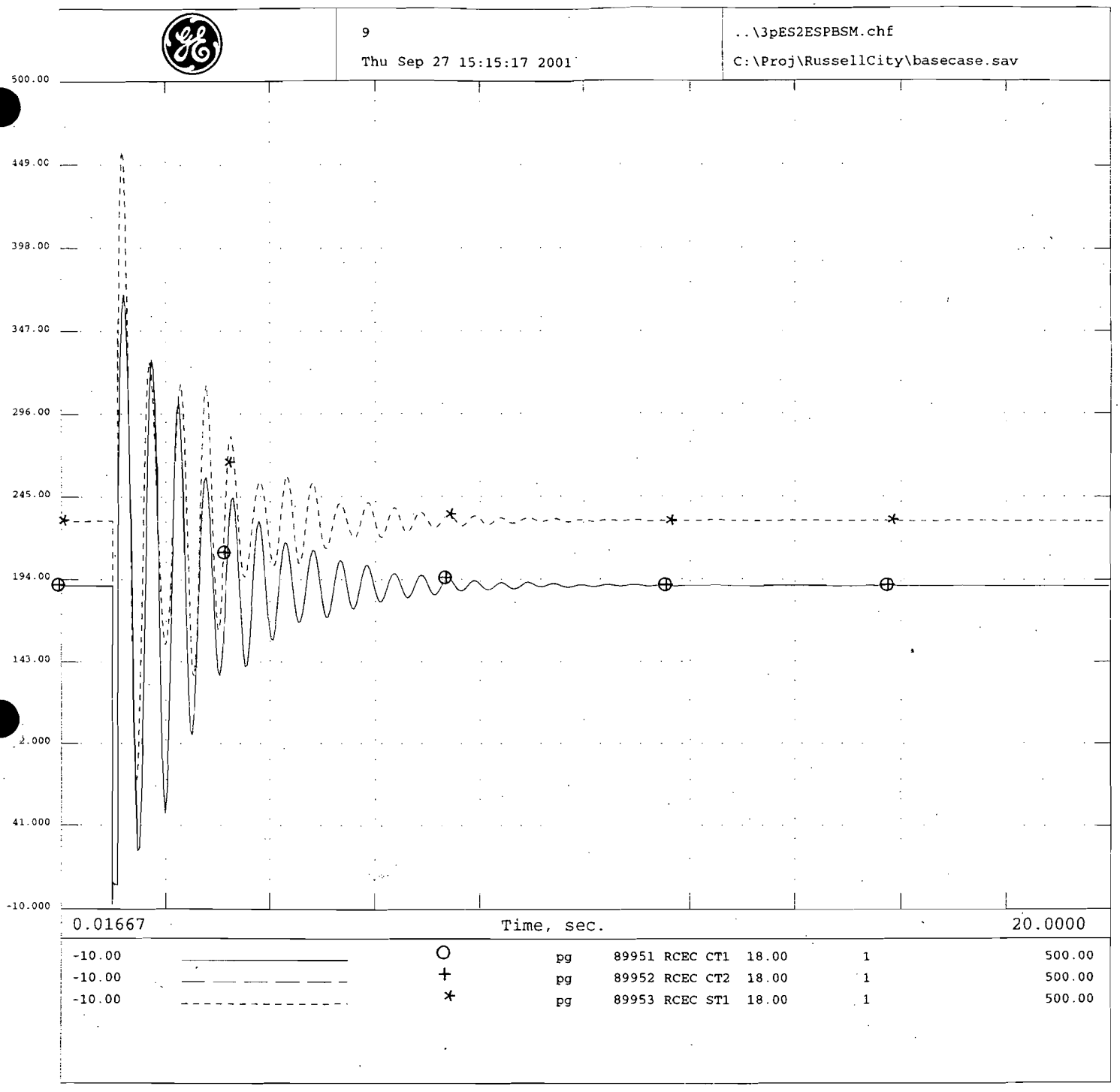

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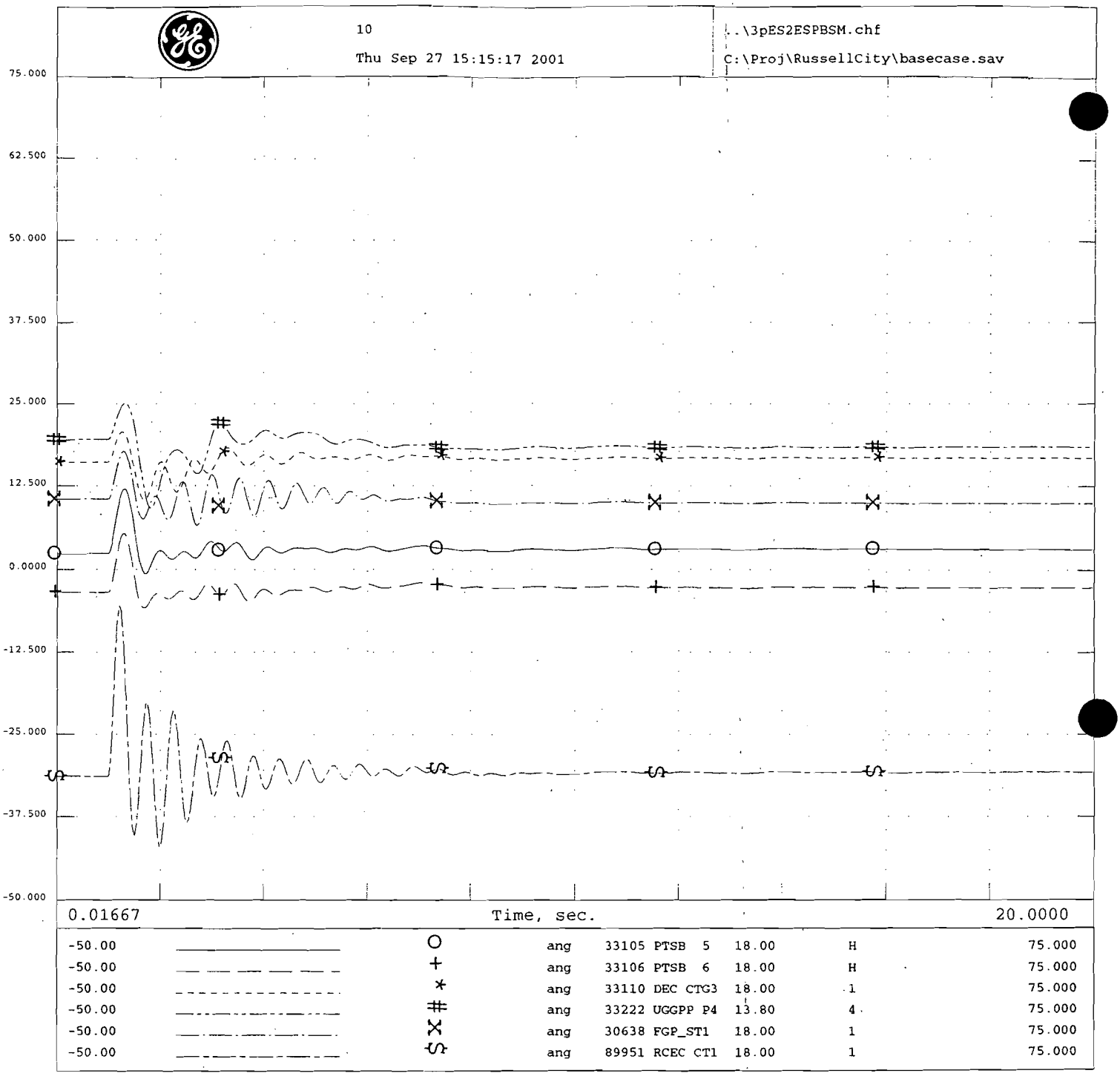

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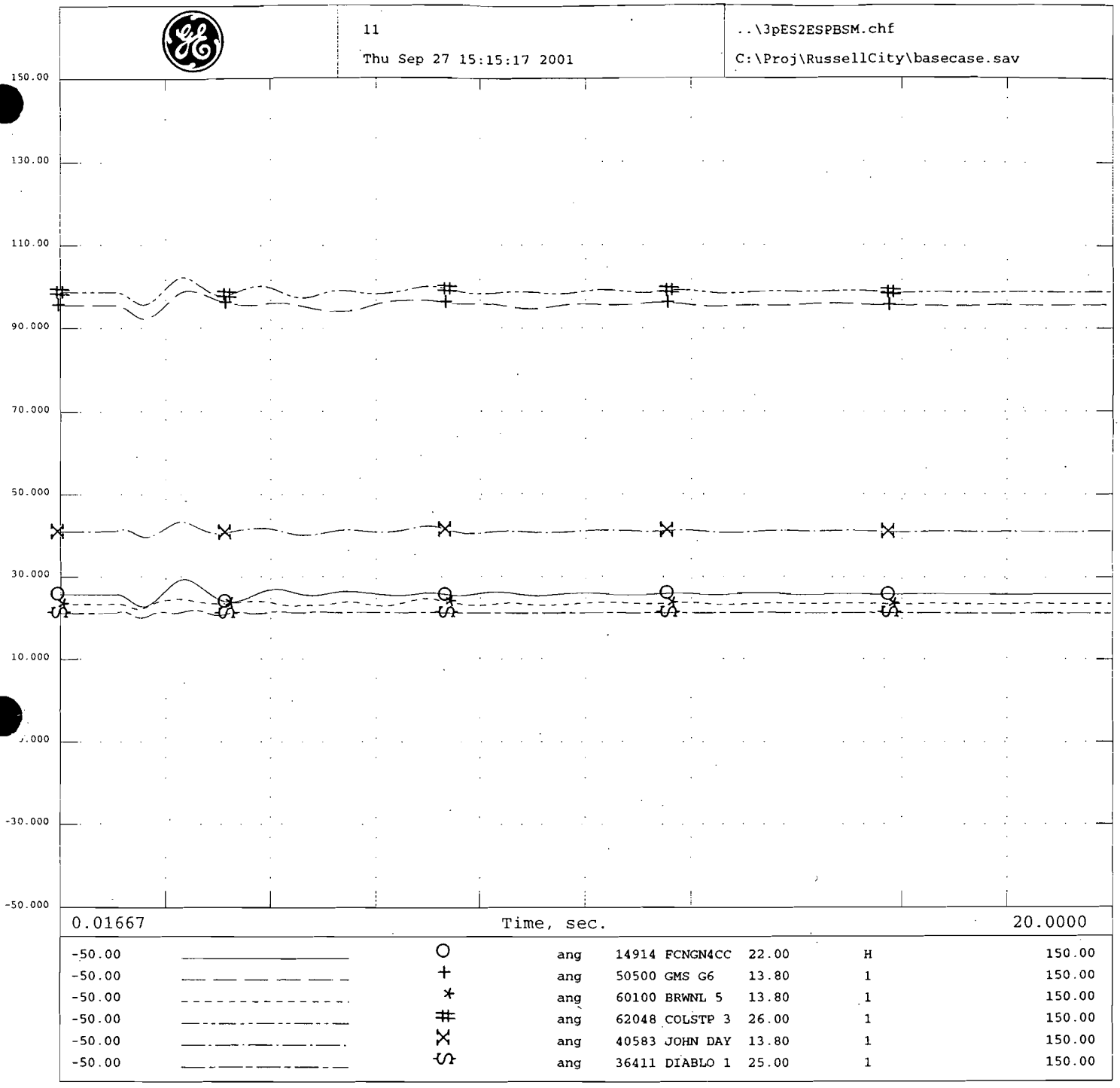

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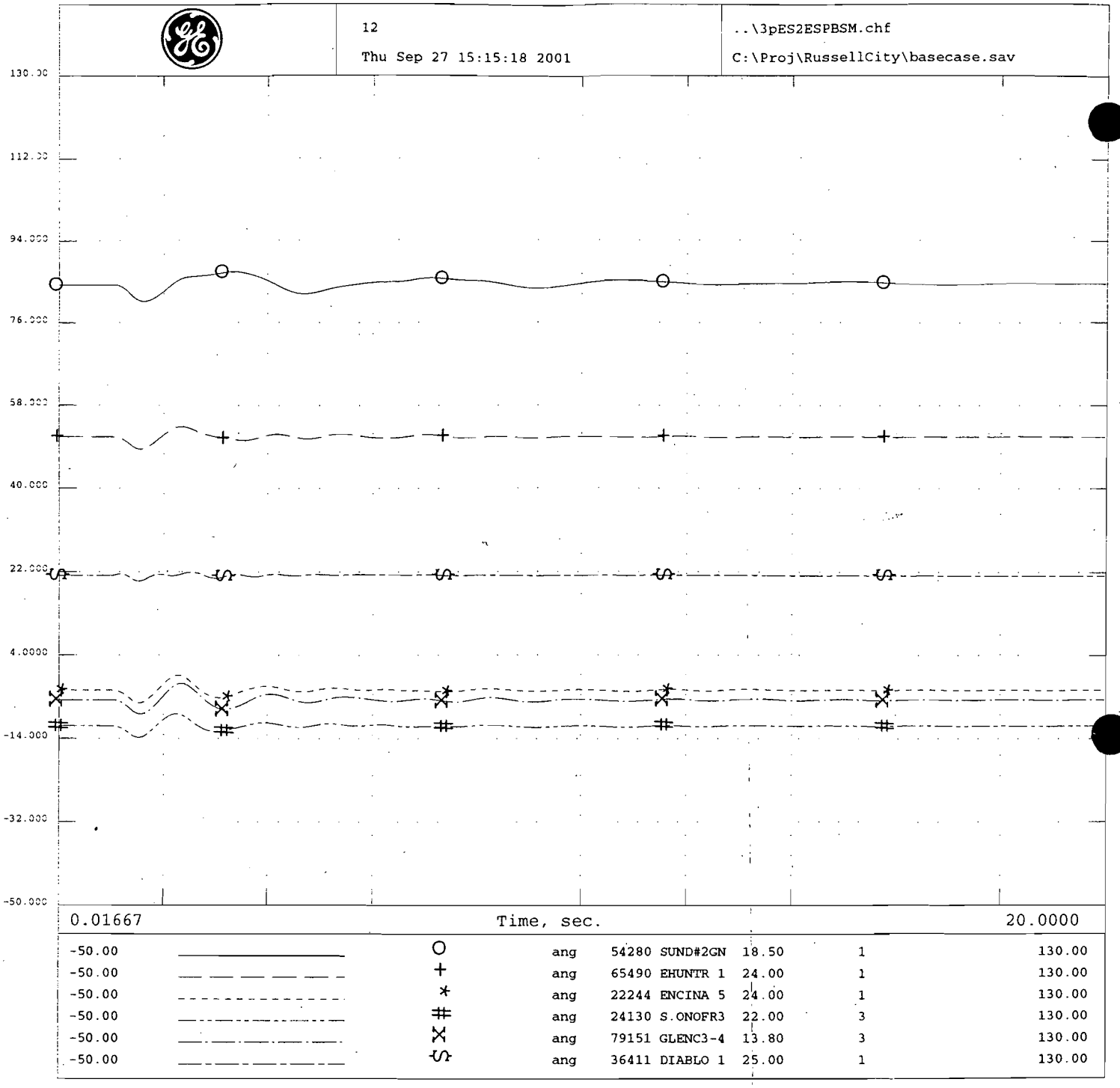

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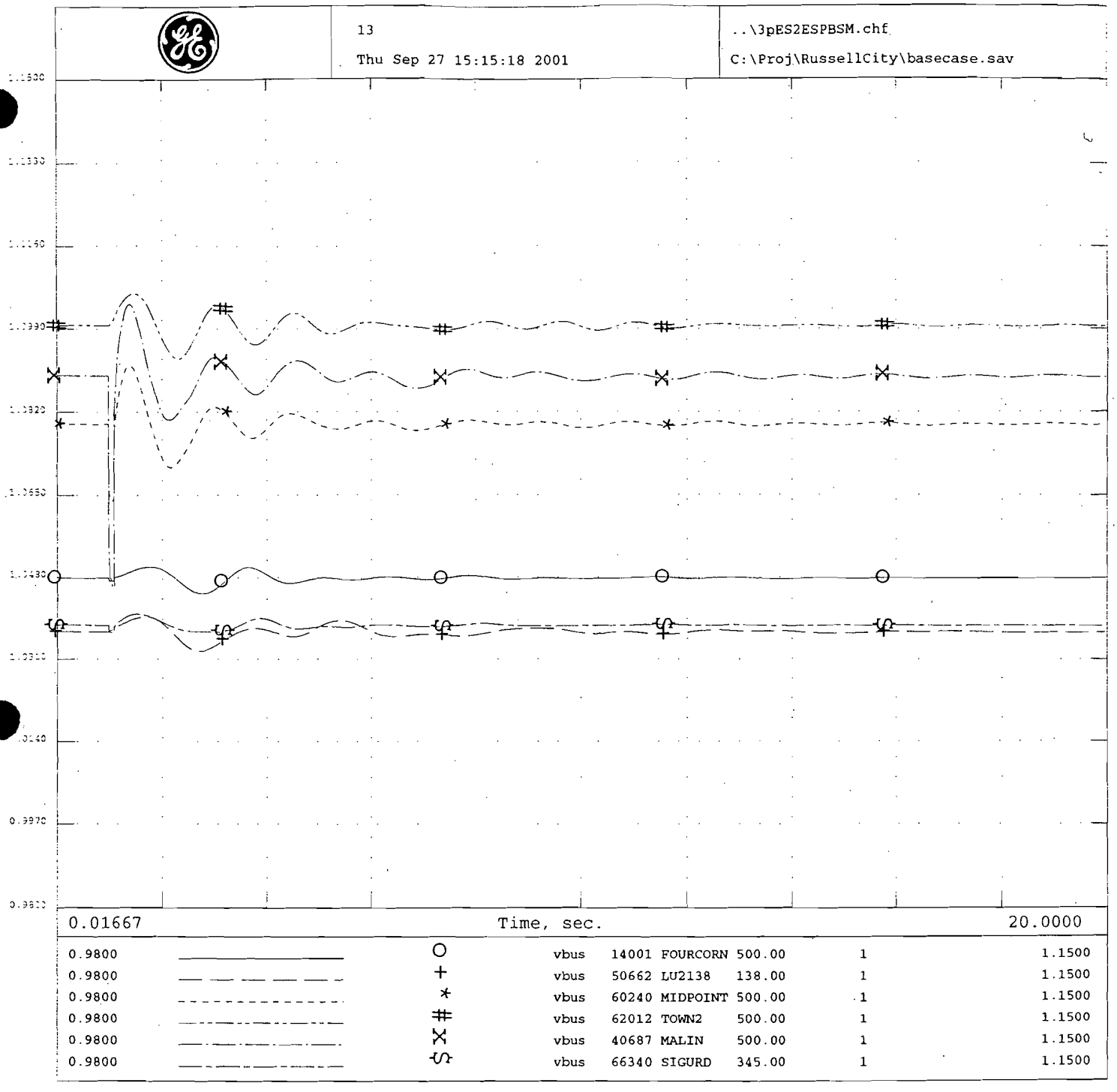

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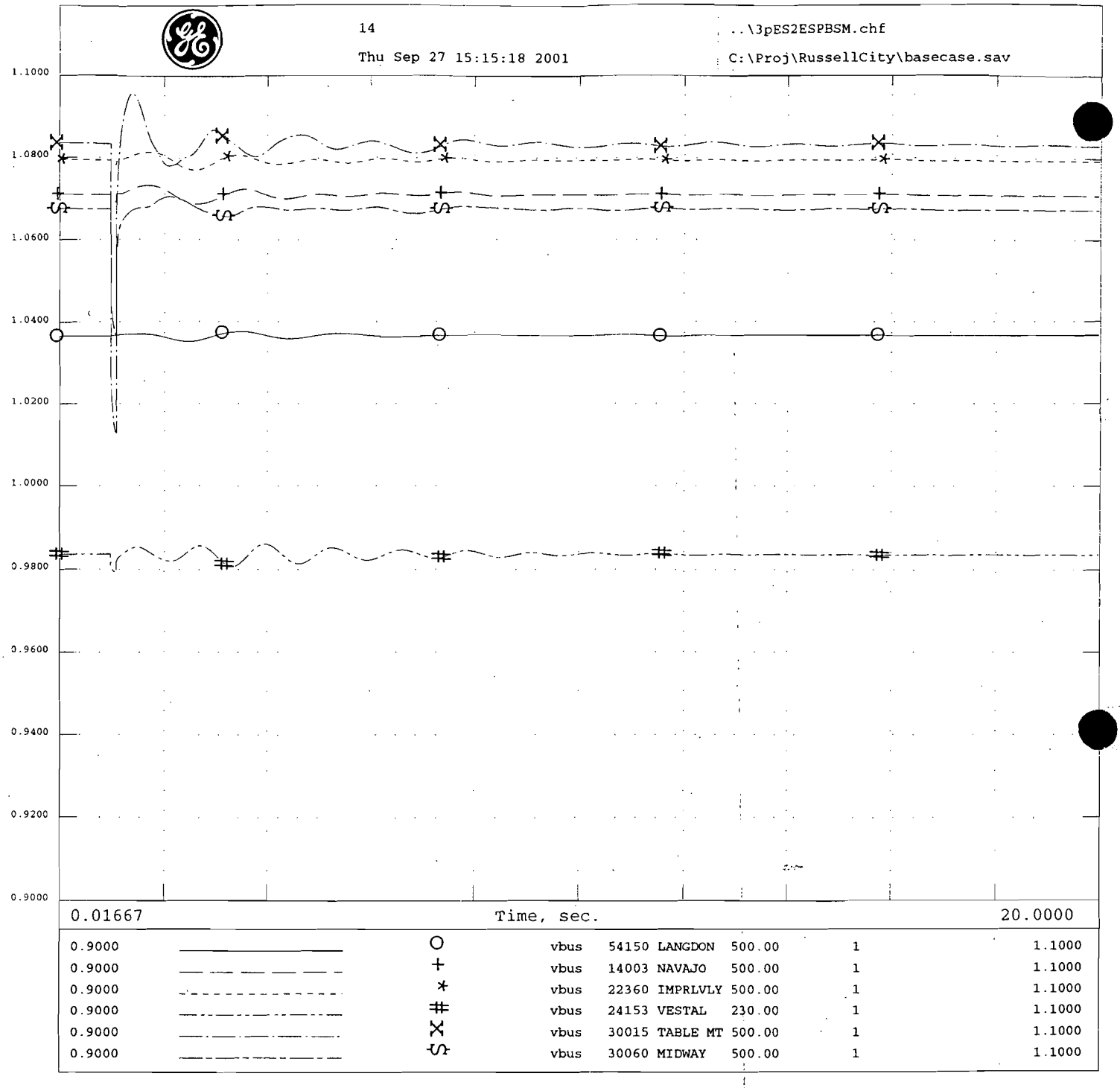

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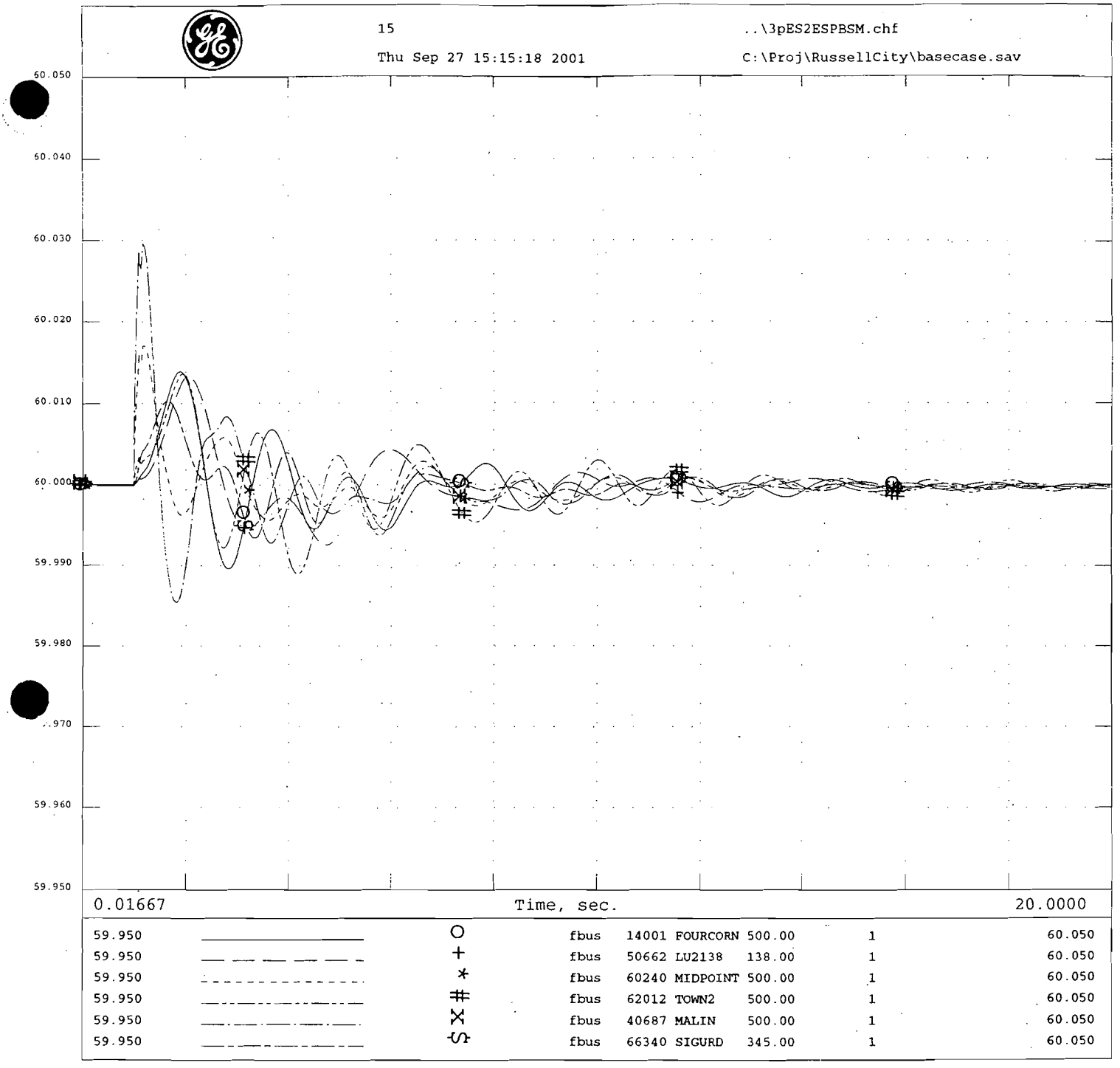

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-Pittsburg, San Mateo #1 230kV Line Outage
3 phase 6 cycle fault at E. Shore 230kV bus and trip the E. Shore-Pittsburg/San

Russell City Energy Center System Impact Study
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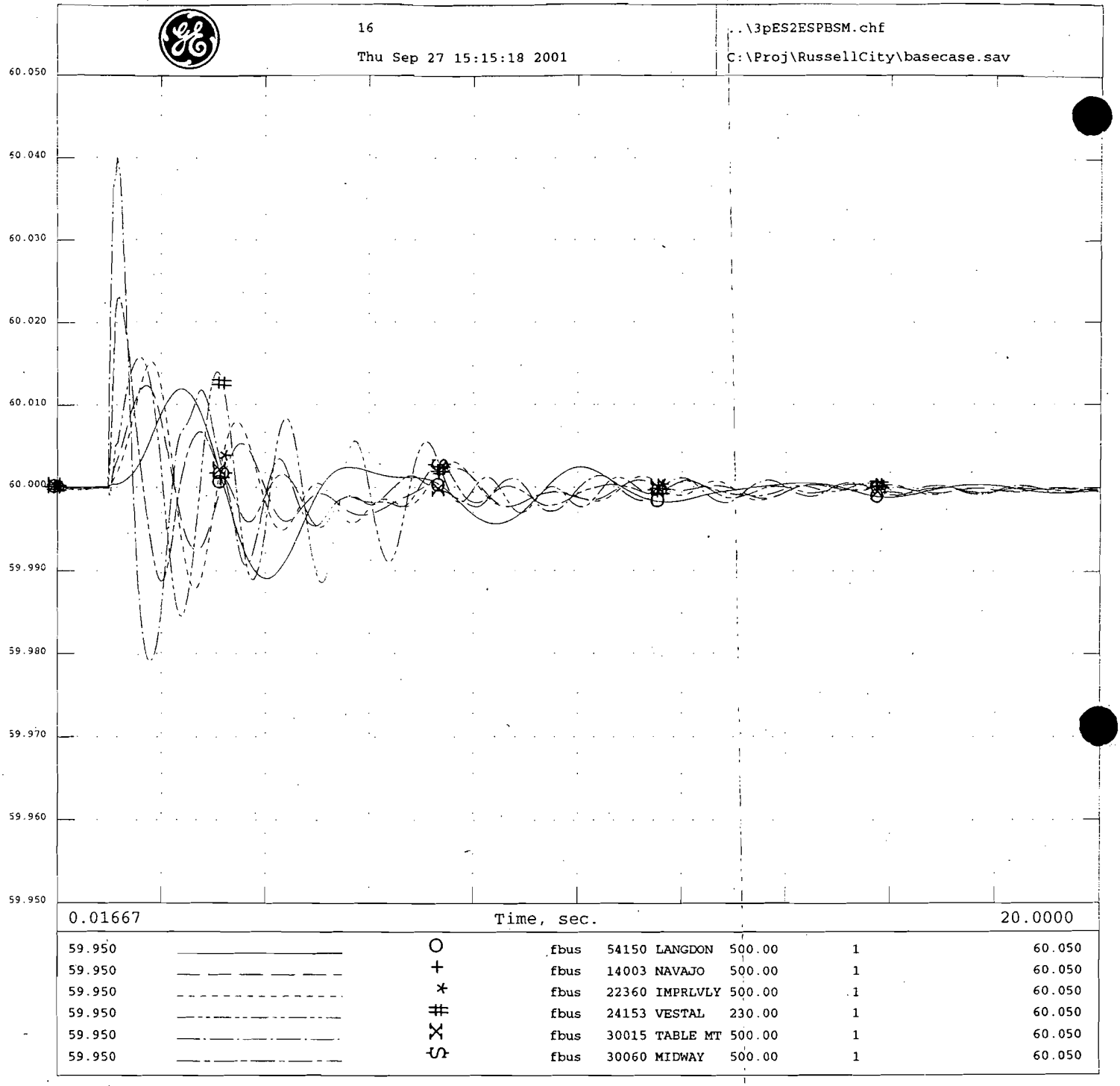

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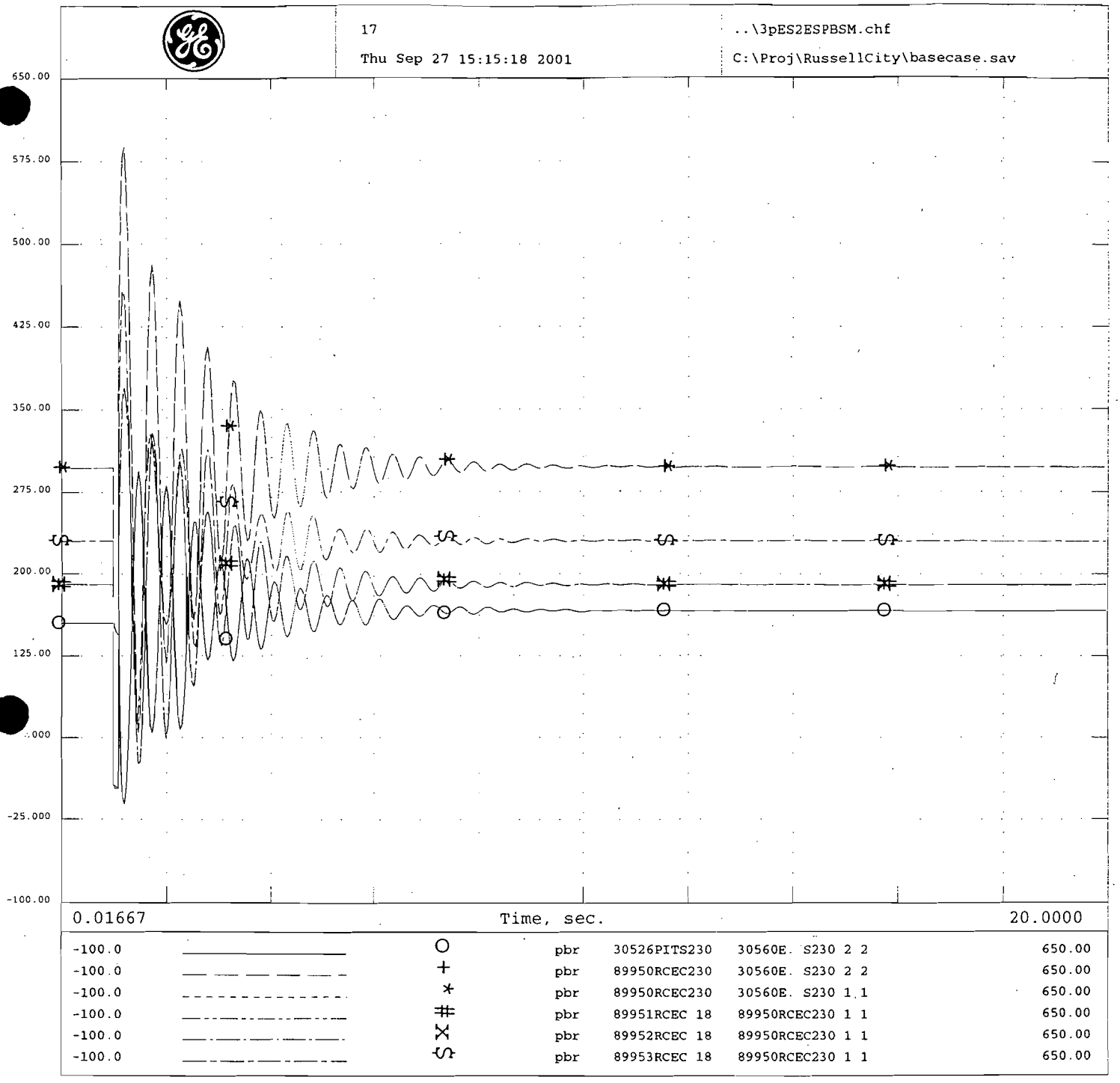

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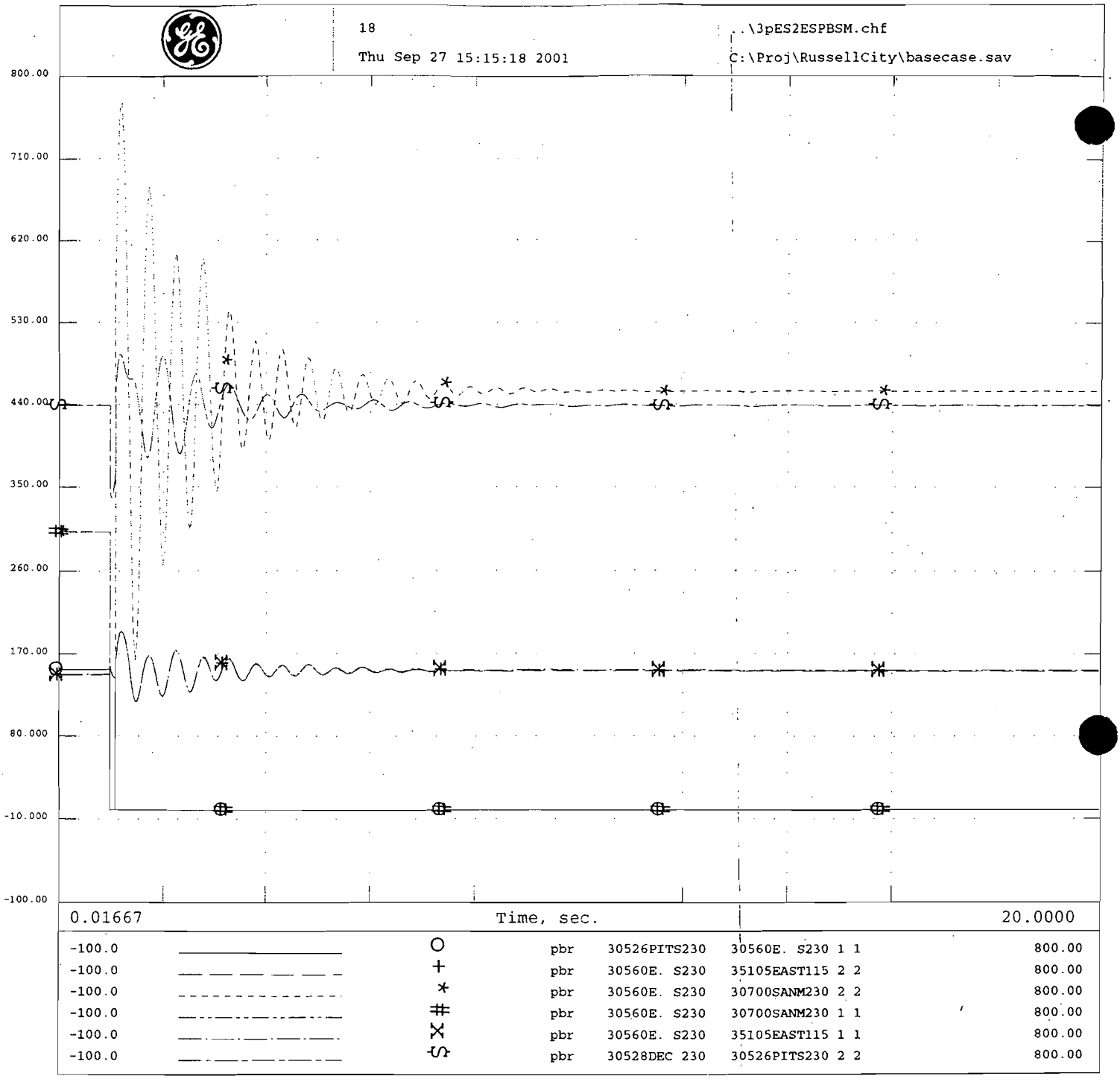
Selected Transmission Line Flows (MW)



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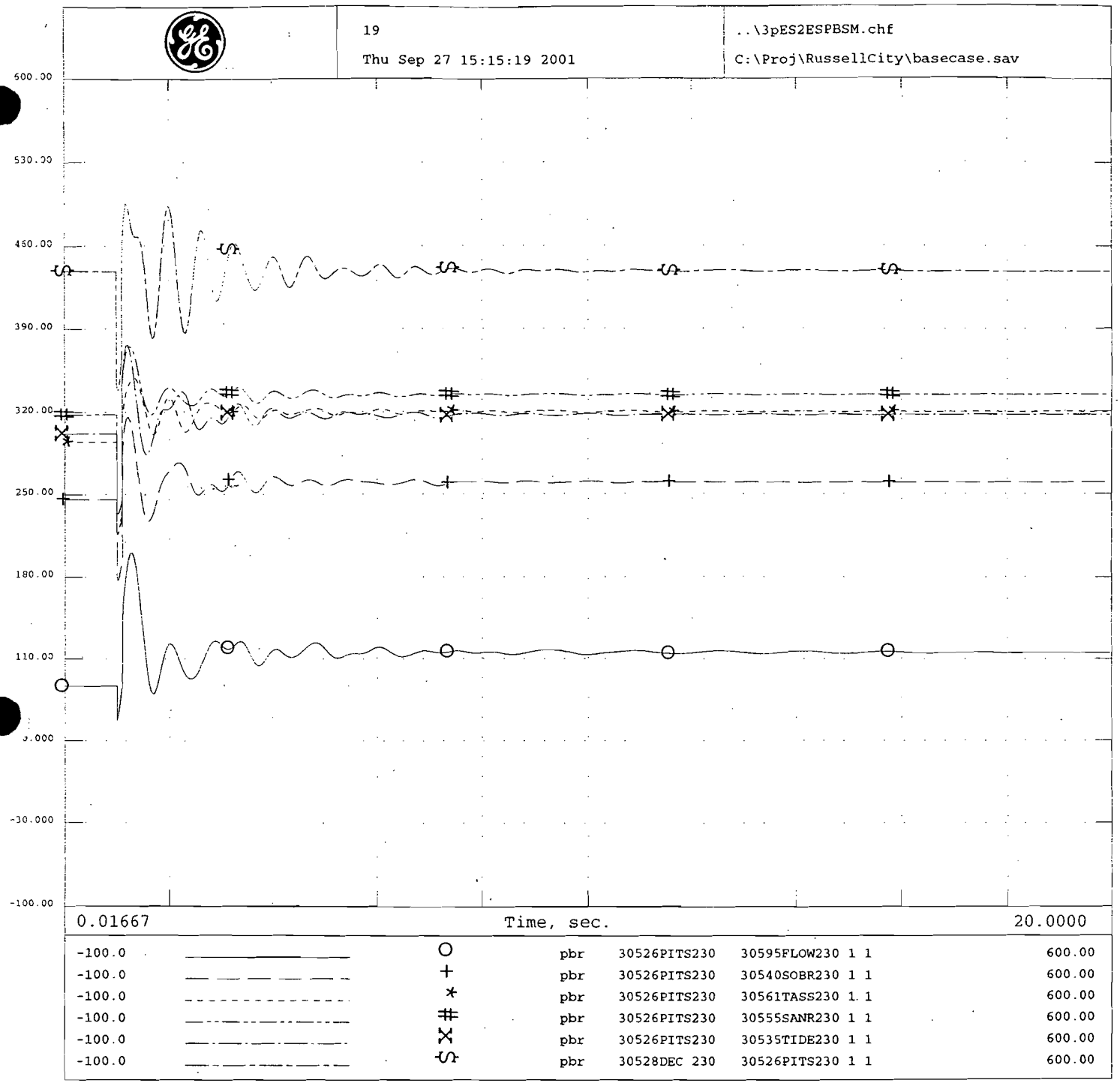

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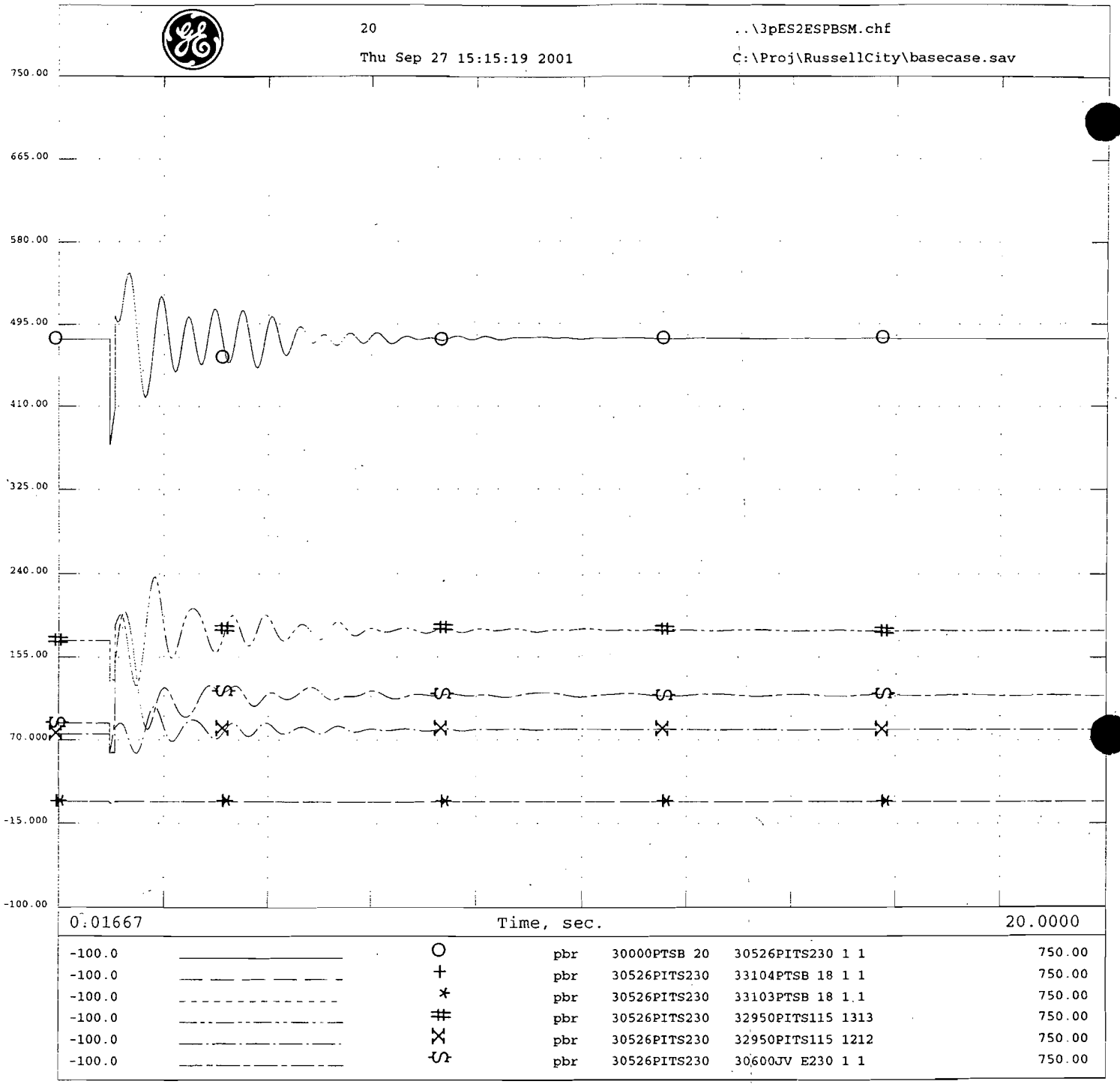

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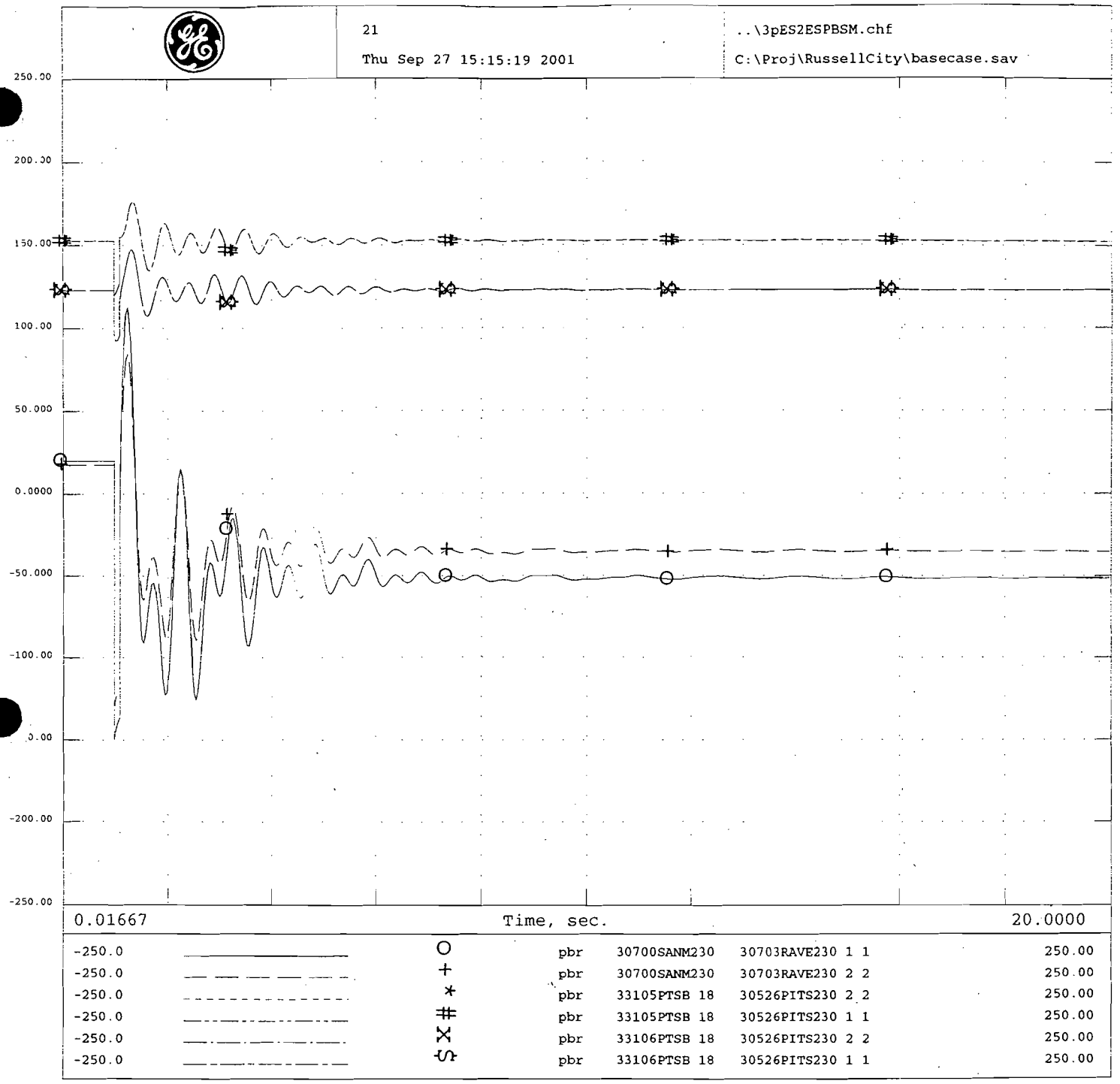

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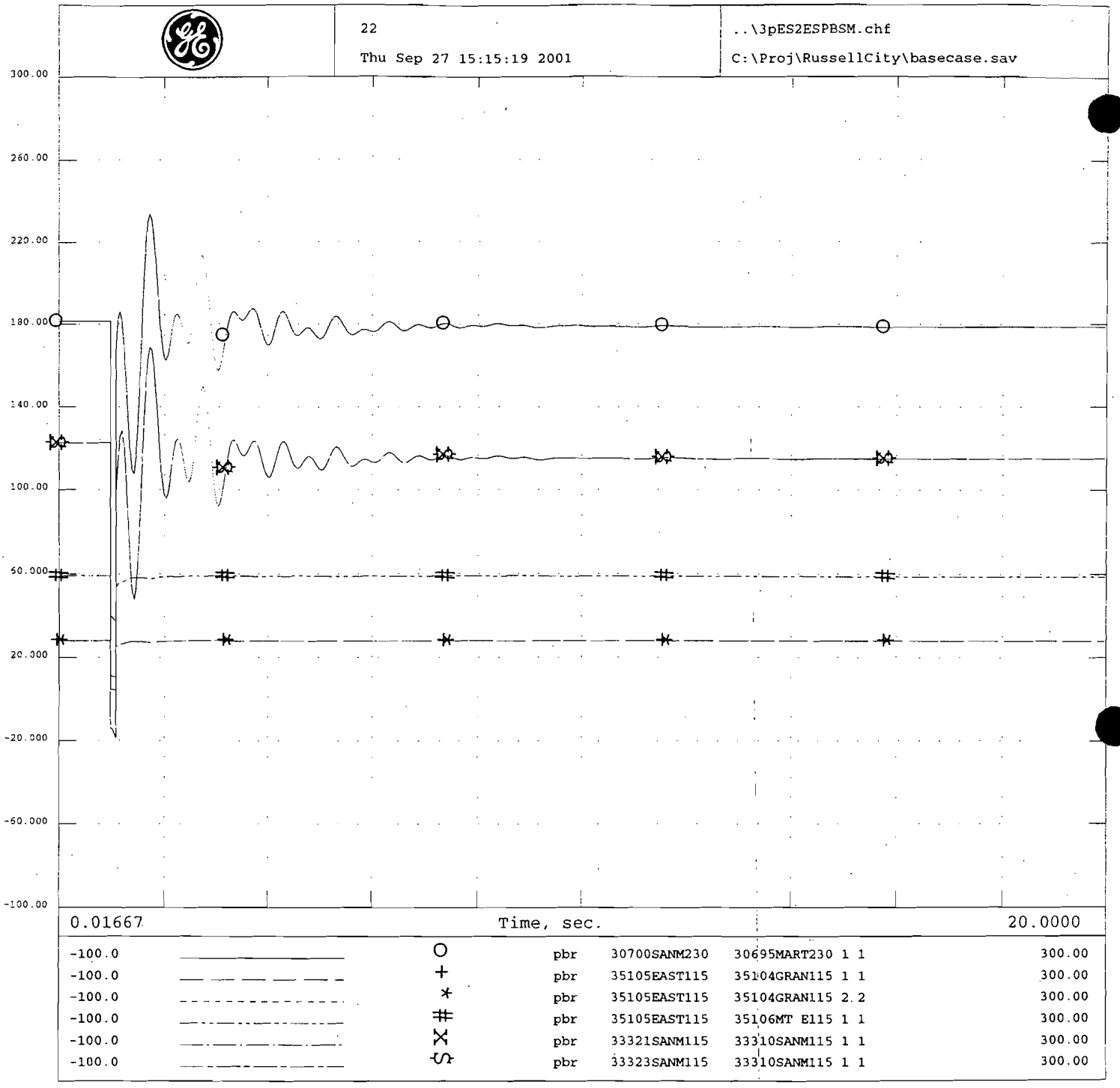

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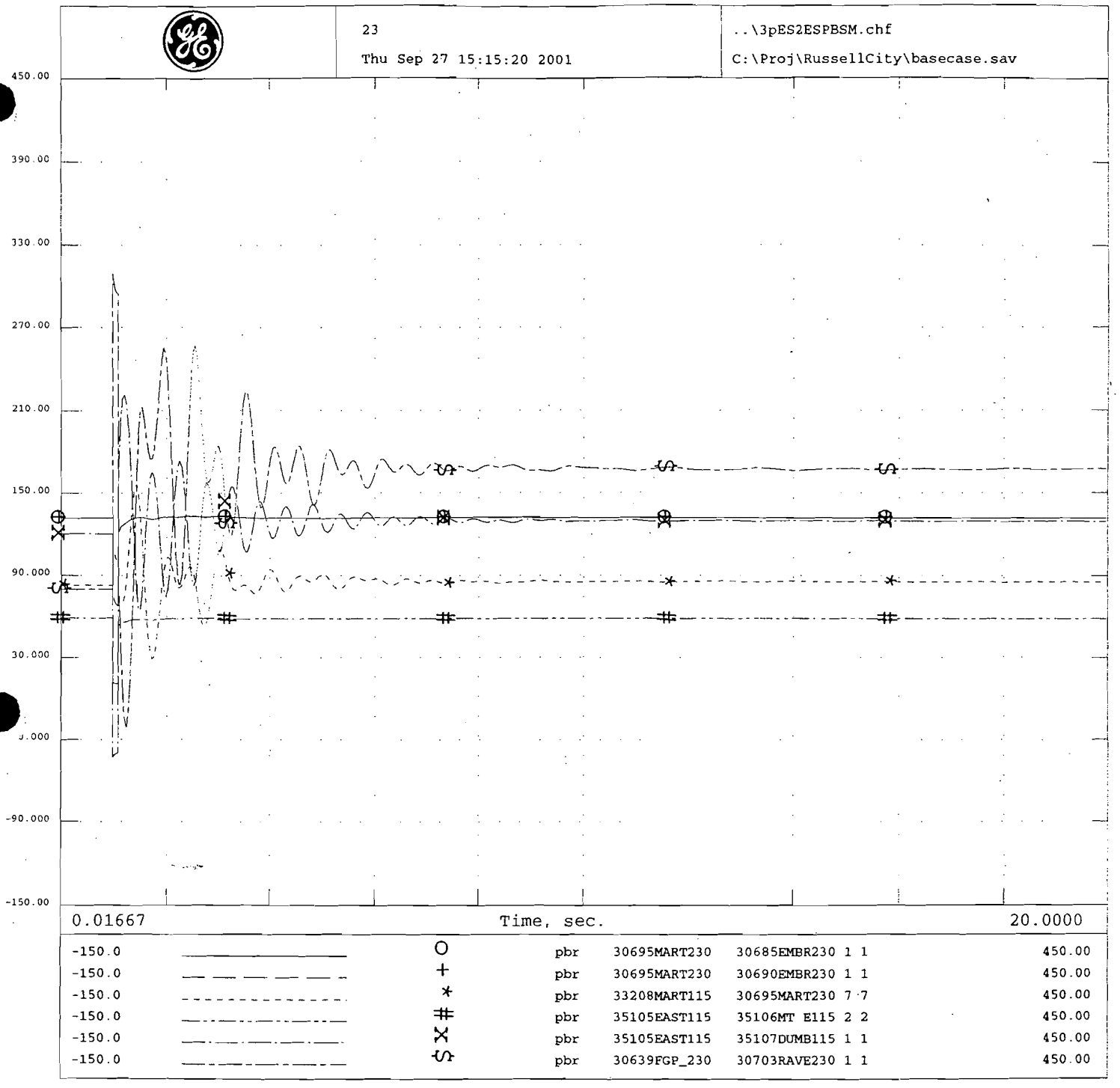

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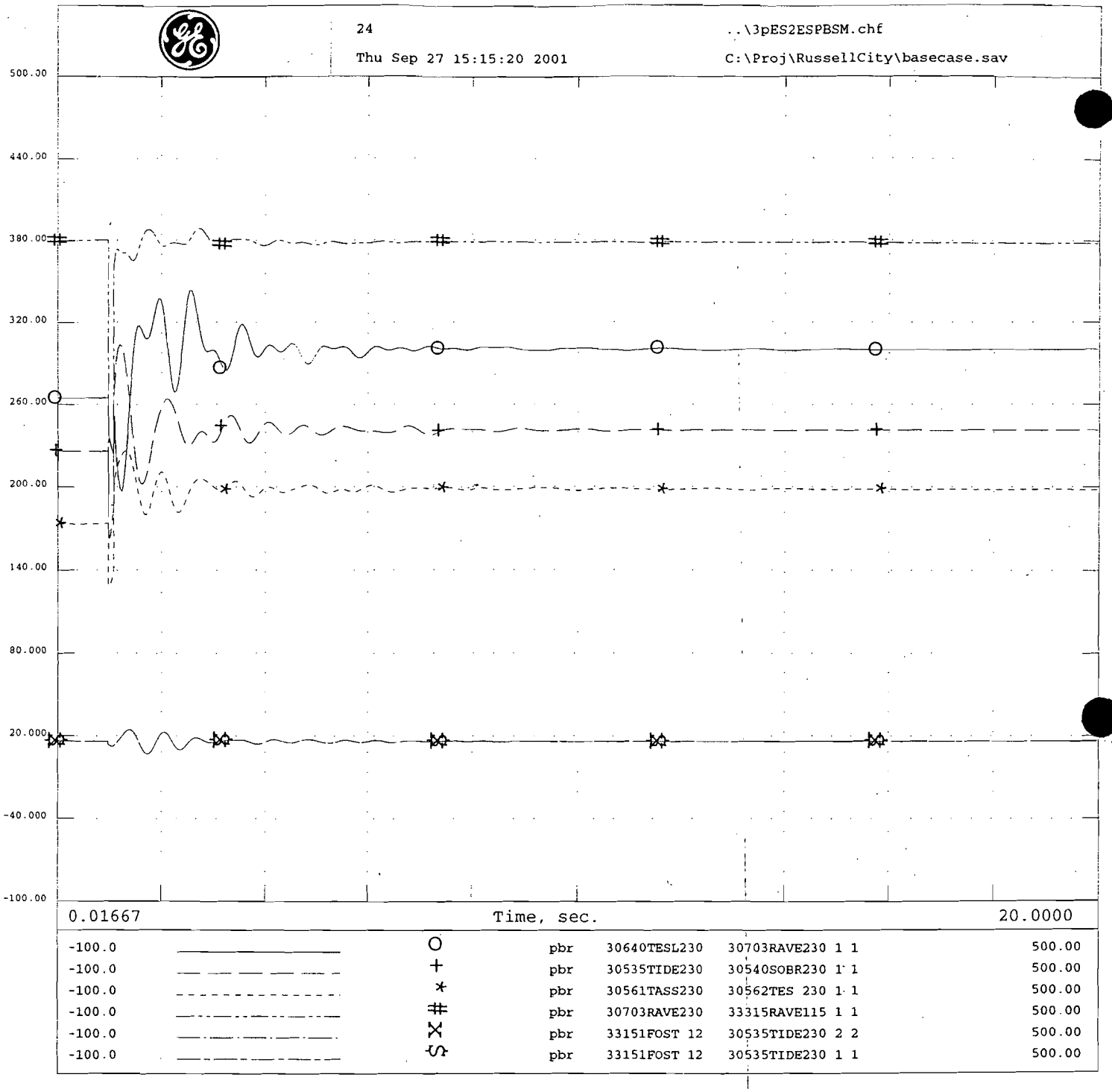

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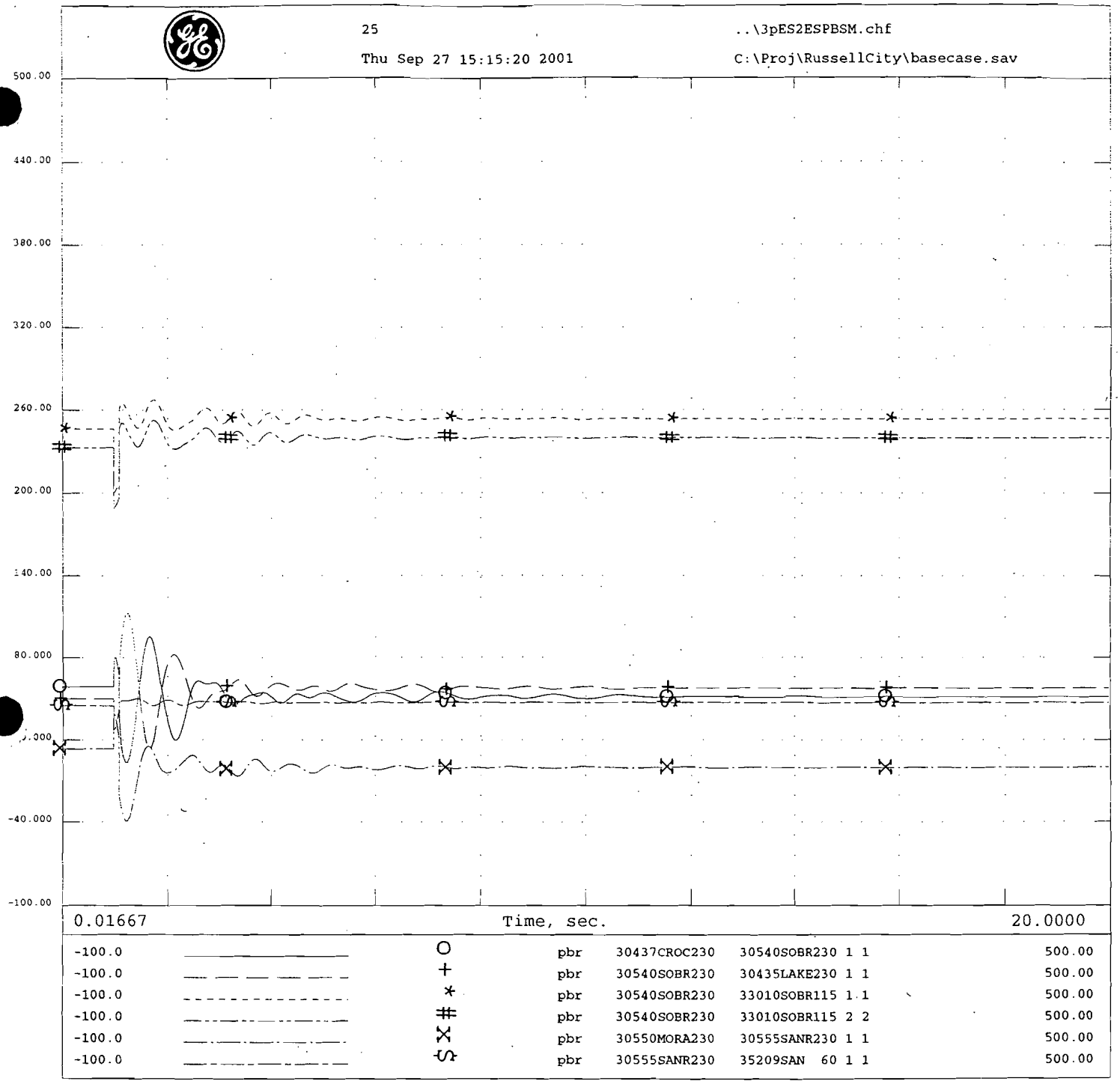

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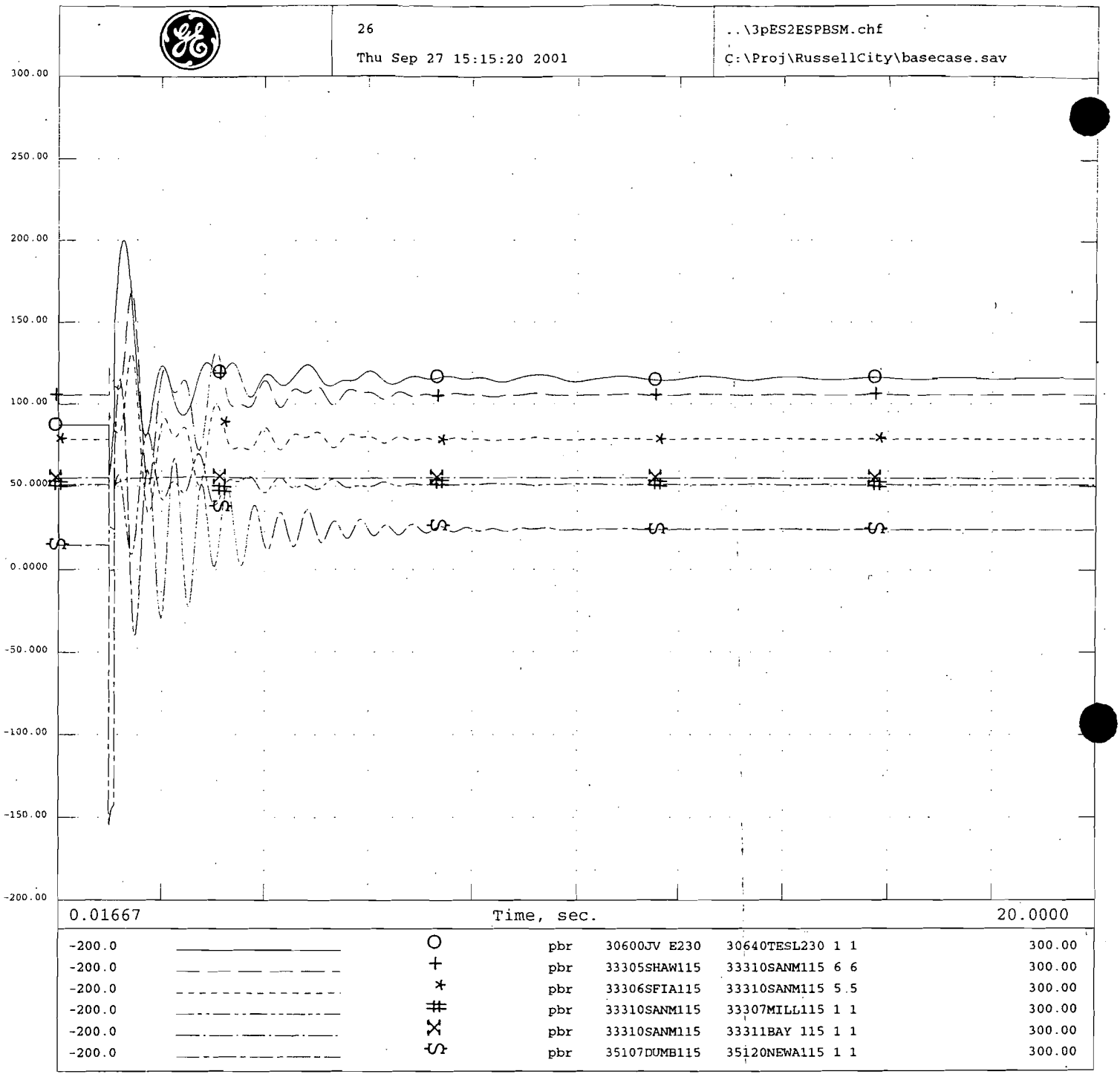

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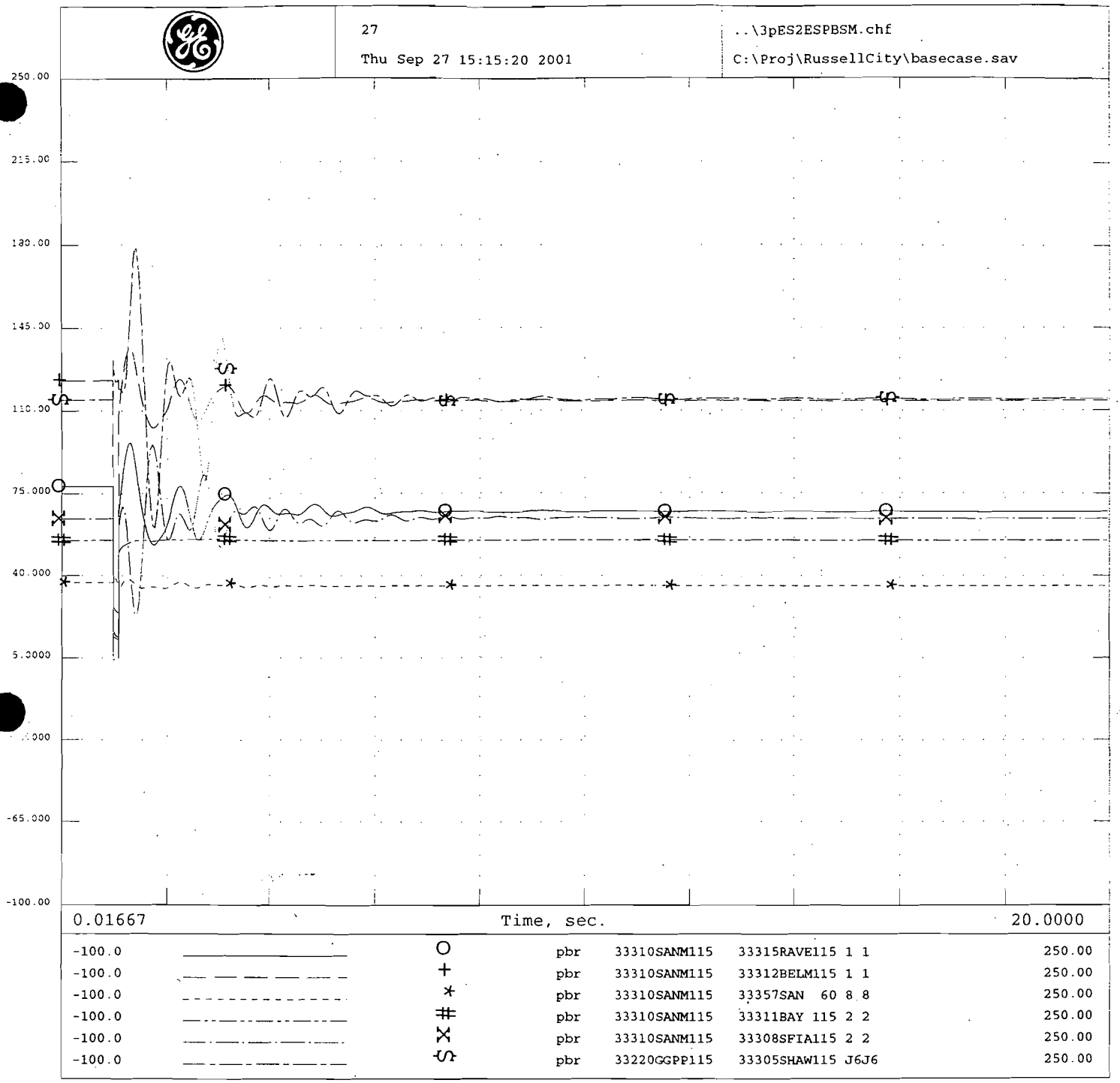

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-San Mateo #1 230kV line outage
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore-San Mateo
230kV #1 line
RUN  9
CC
CC   Fault East Shore 230kV bus
FB   0.0 "E. SHORE" 230.
CC
CC   Clear fault at East Shore 230kV bus
CFB  6.0 "E. SHORE" 230.
CC
CC   Trip the East Shore-San Mateo #1 230kV line
DL  6.0 "E. SHORE" 230.00 "SANMATEO" 230.00 "1 "
CC
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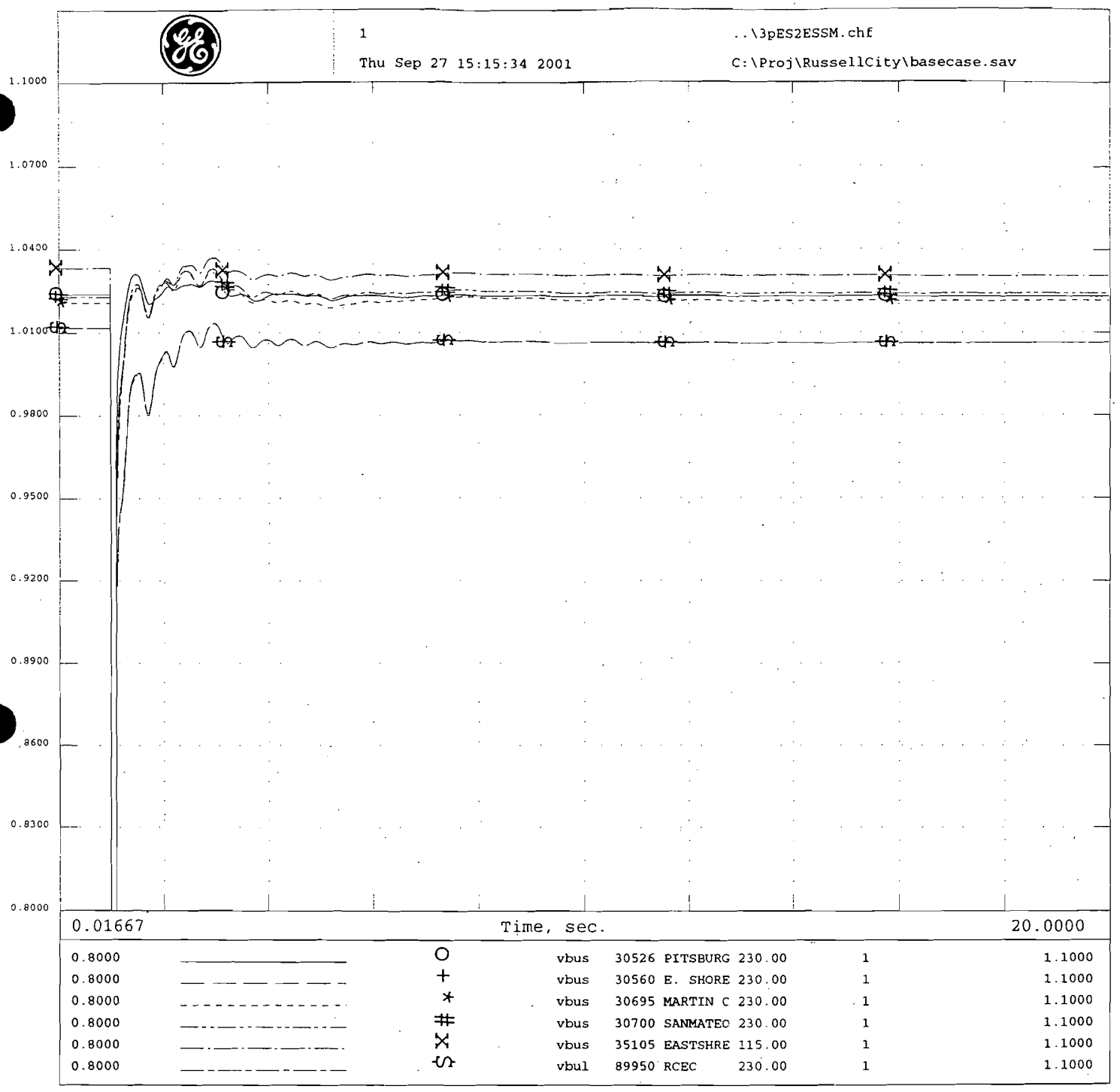

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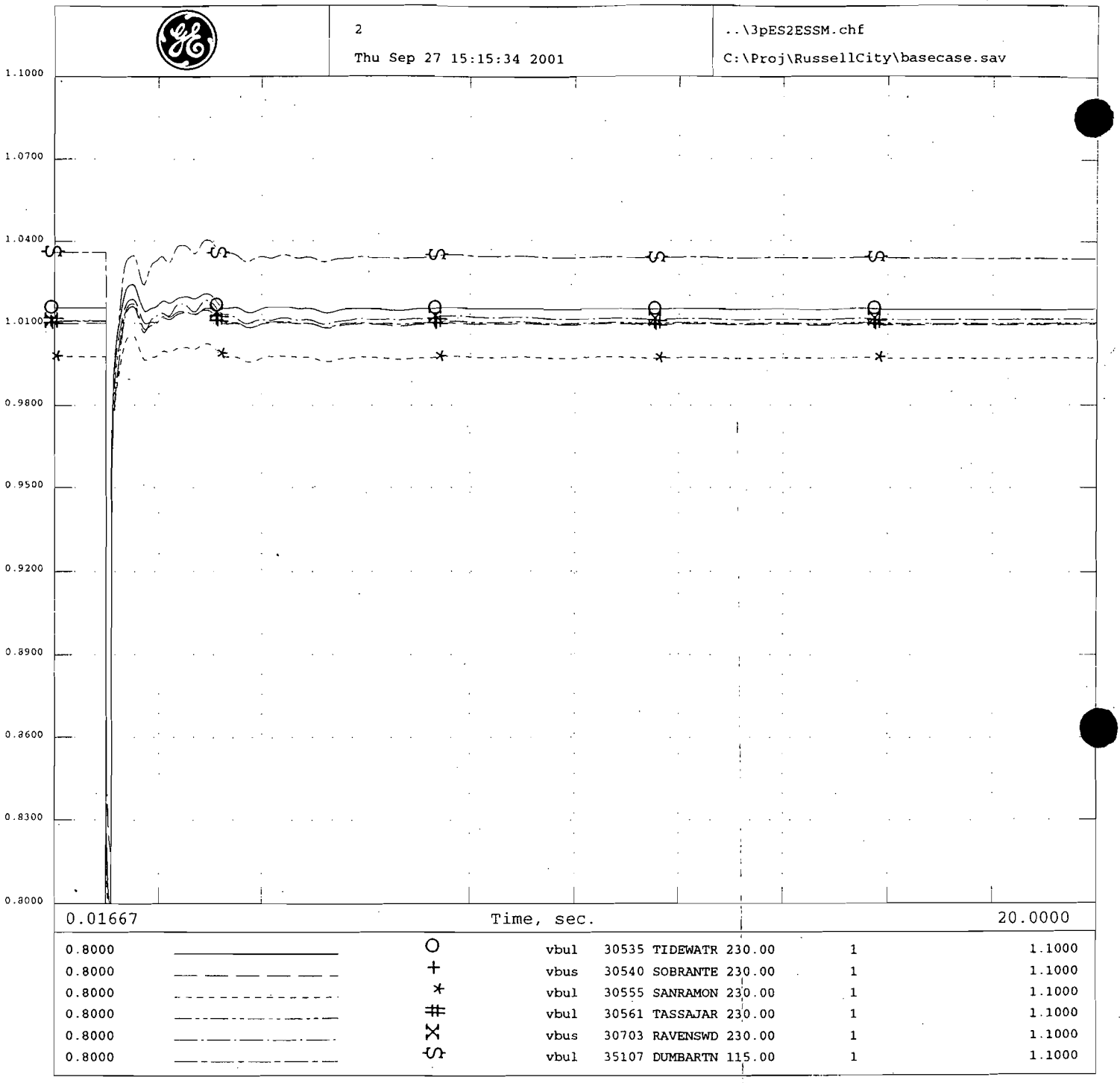
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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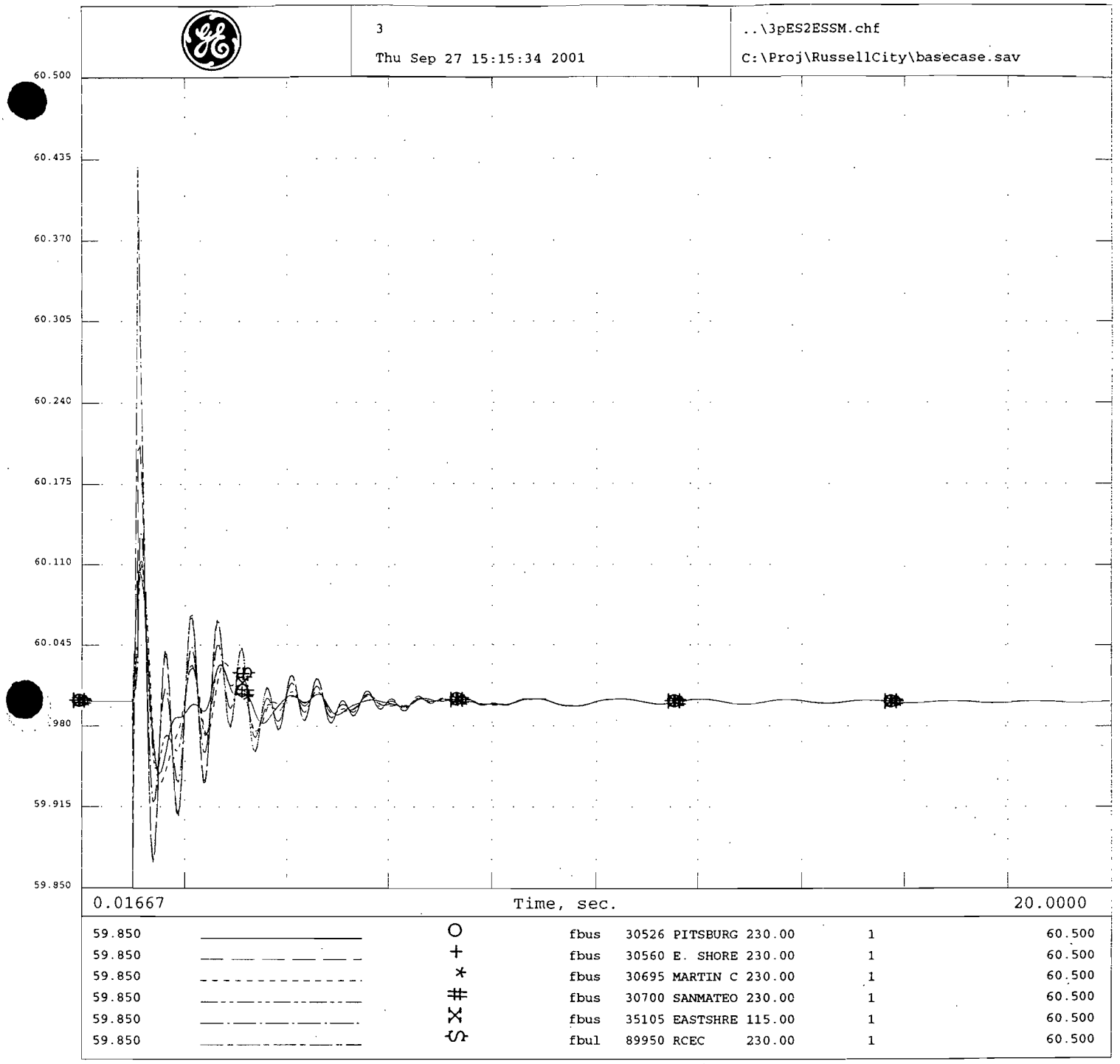

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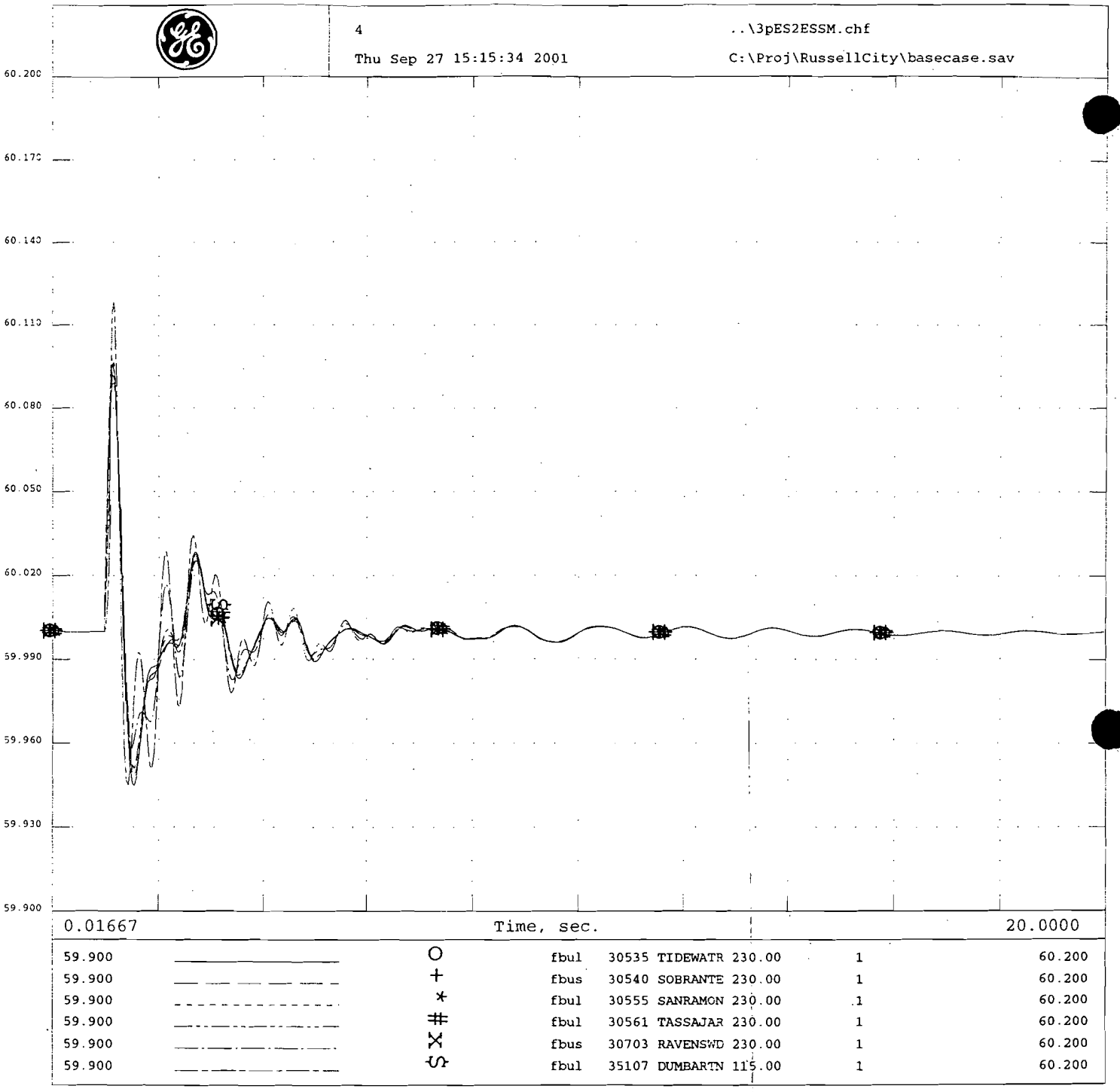
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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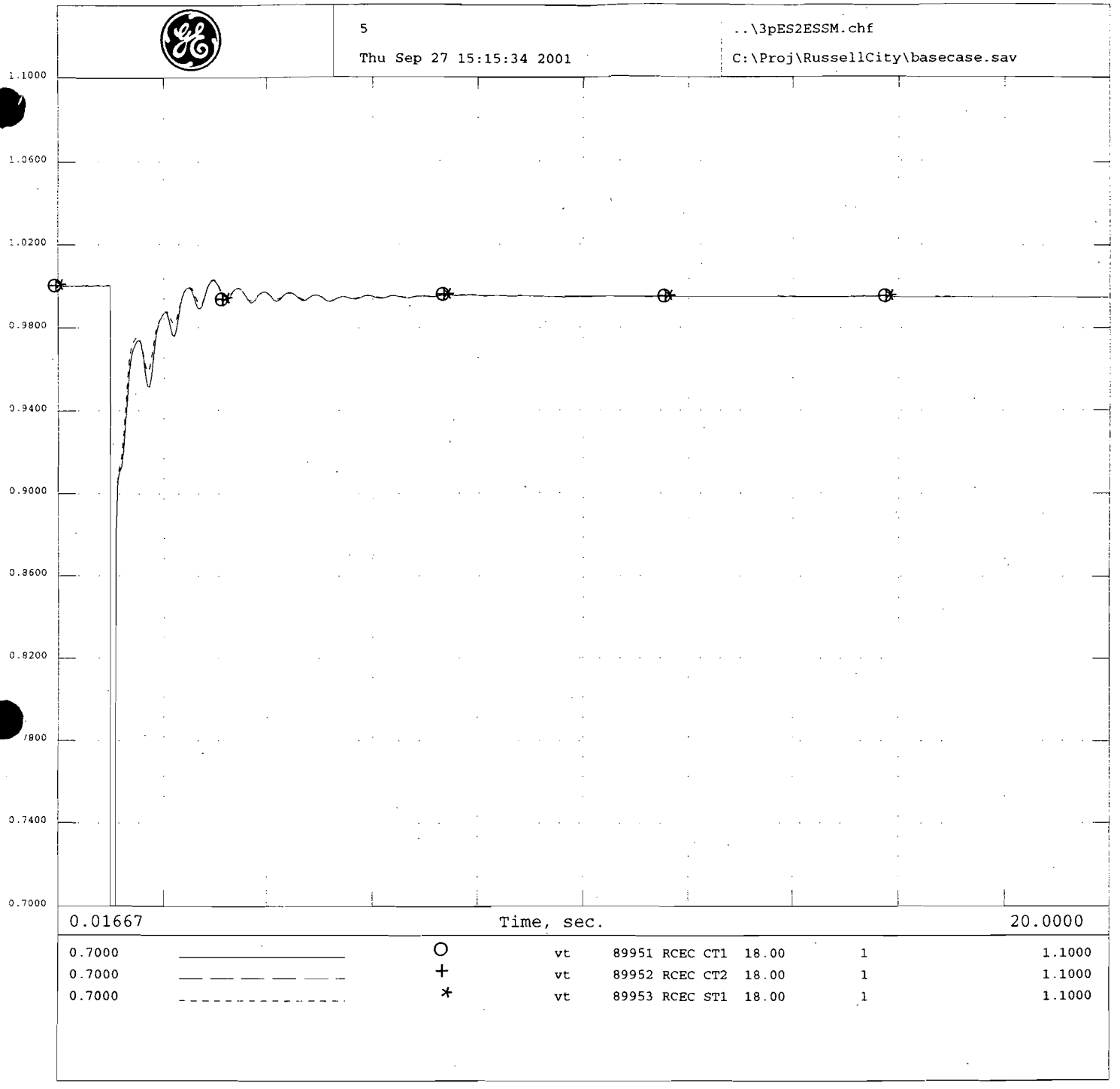

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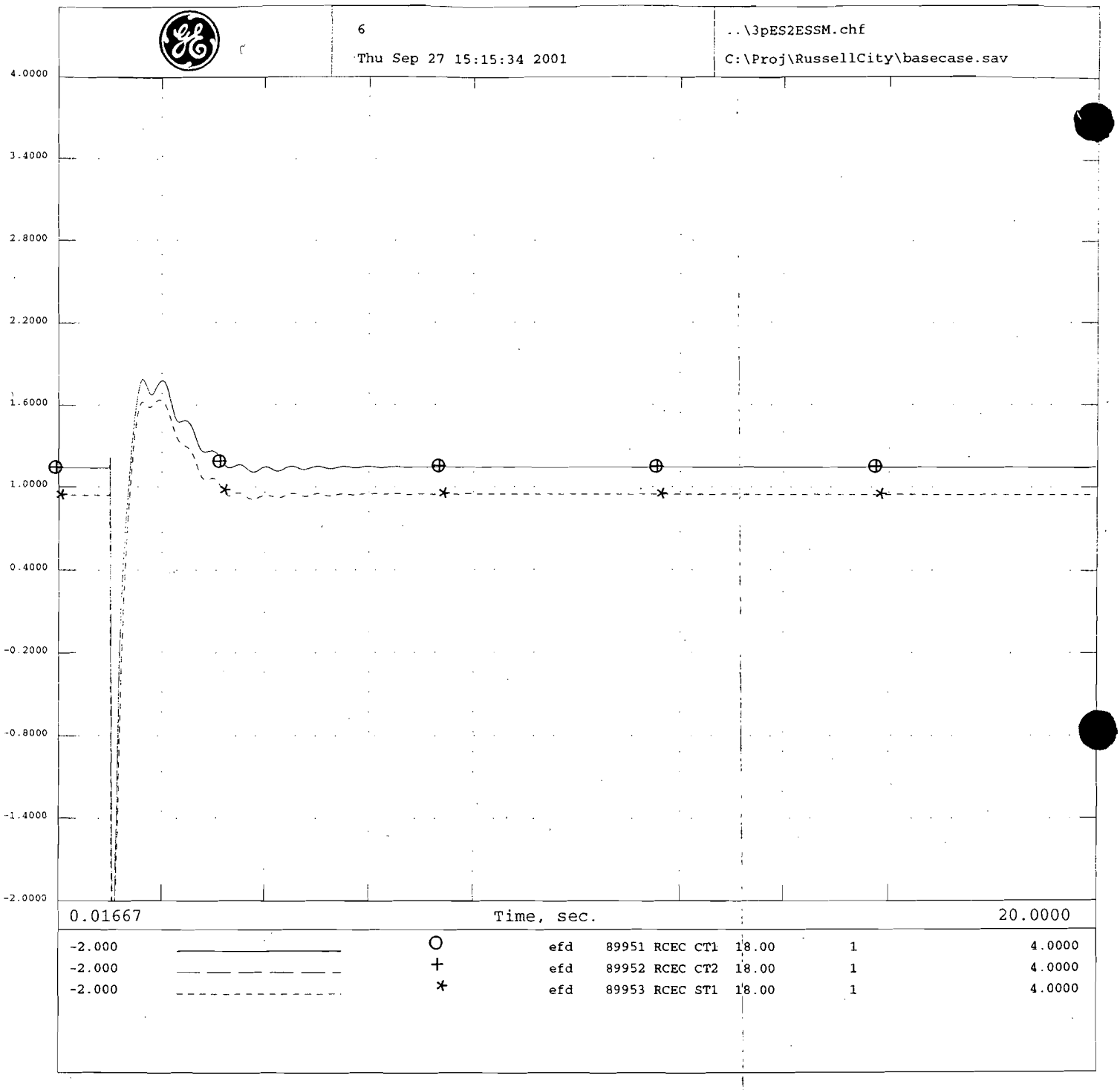
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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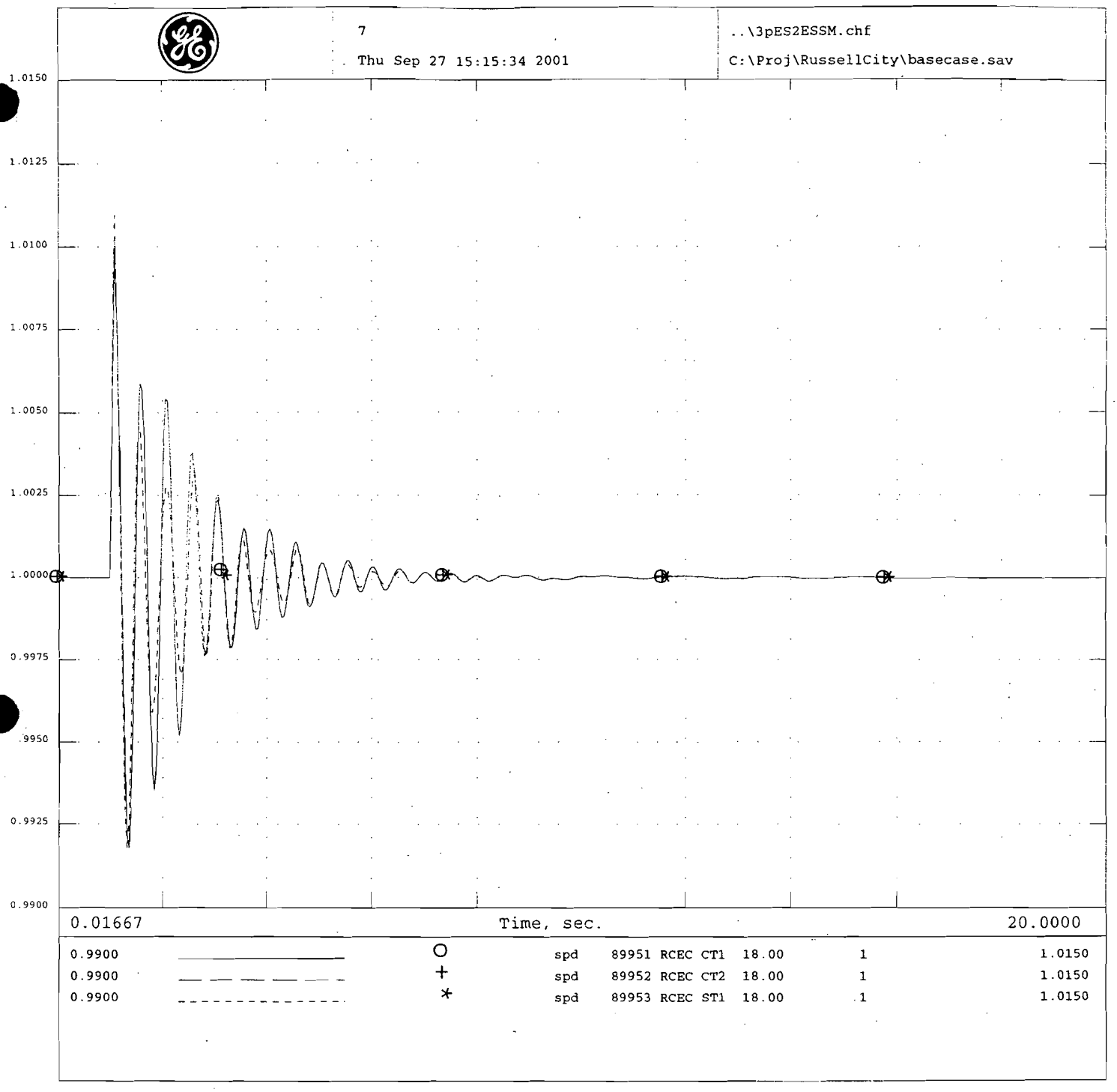
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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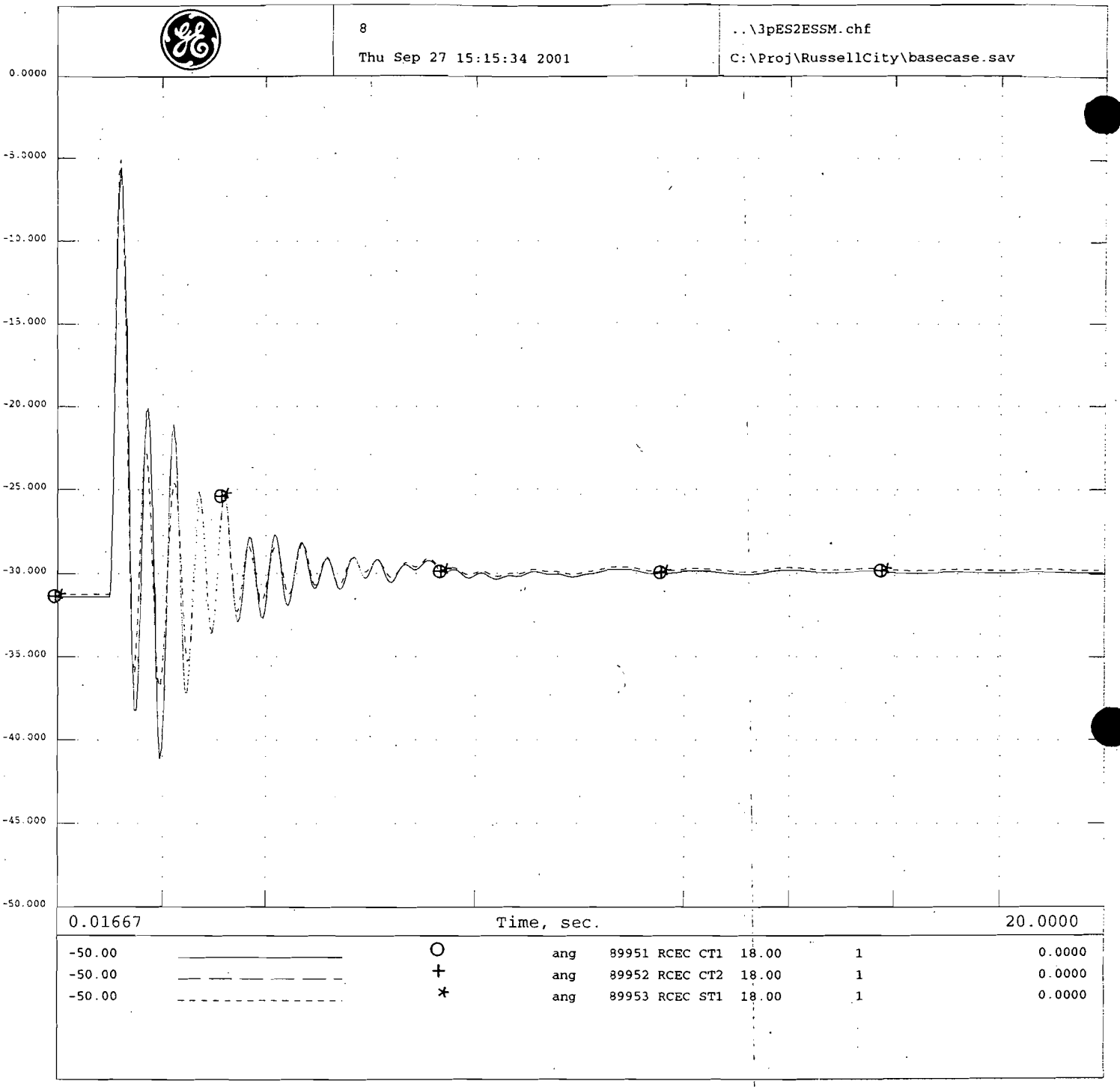
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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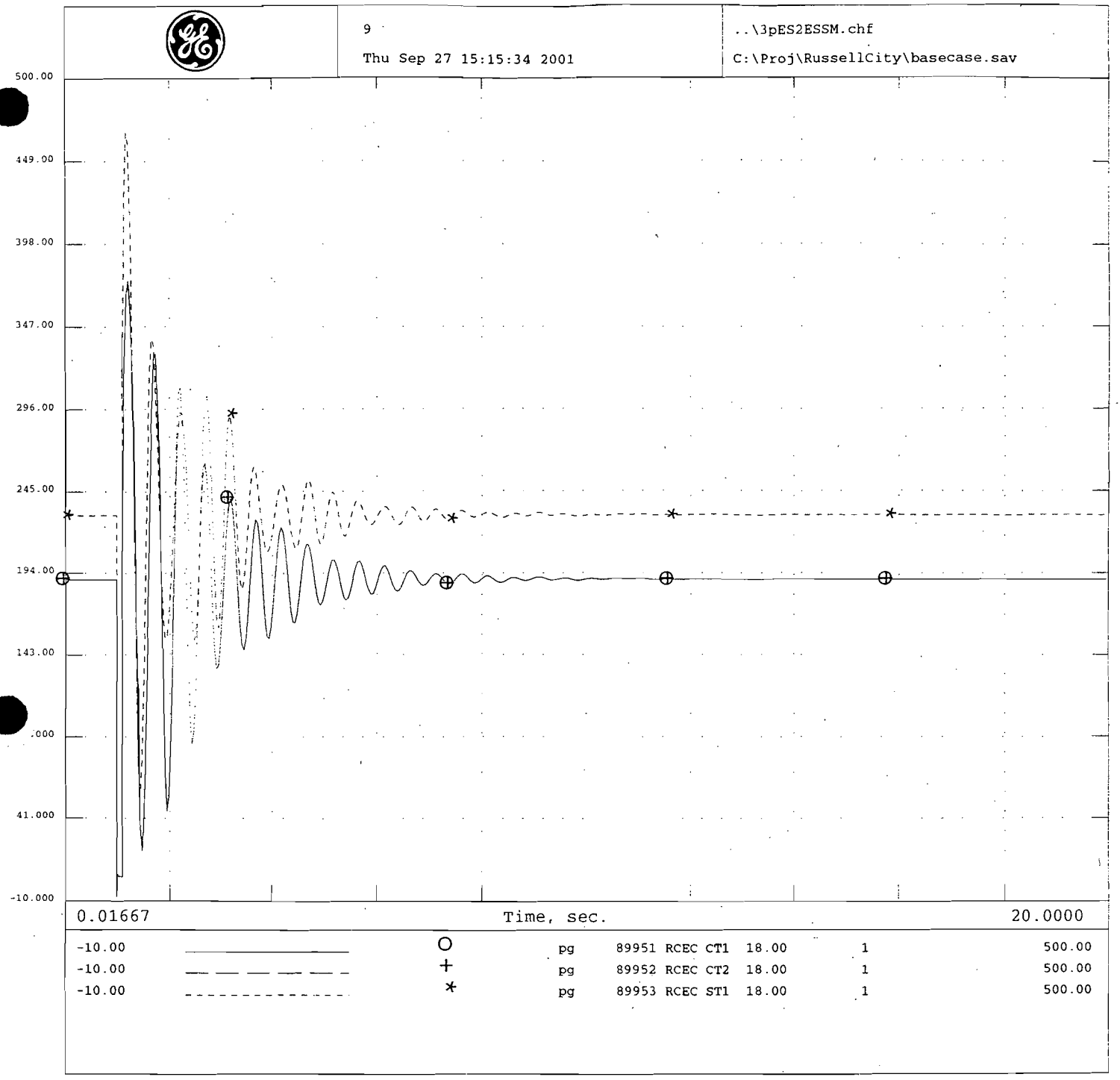
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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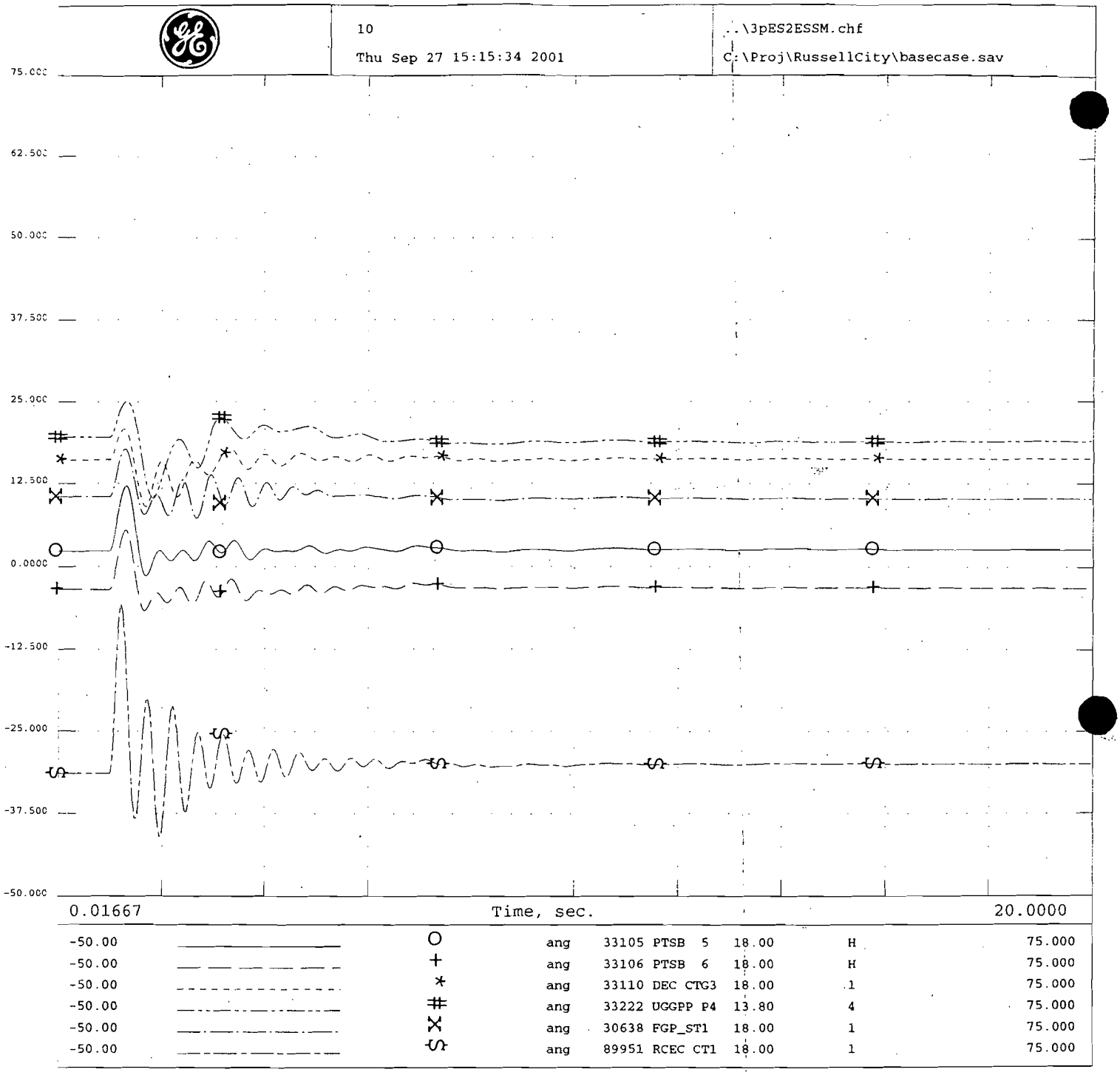

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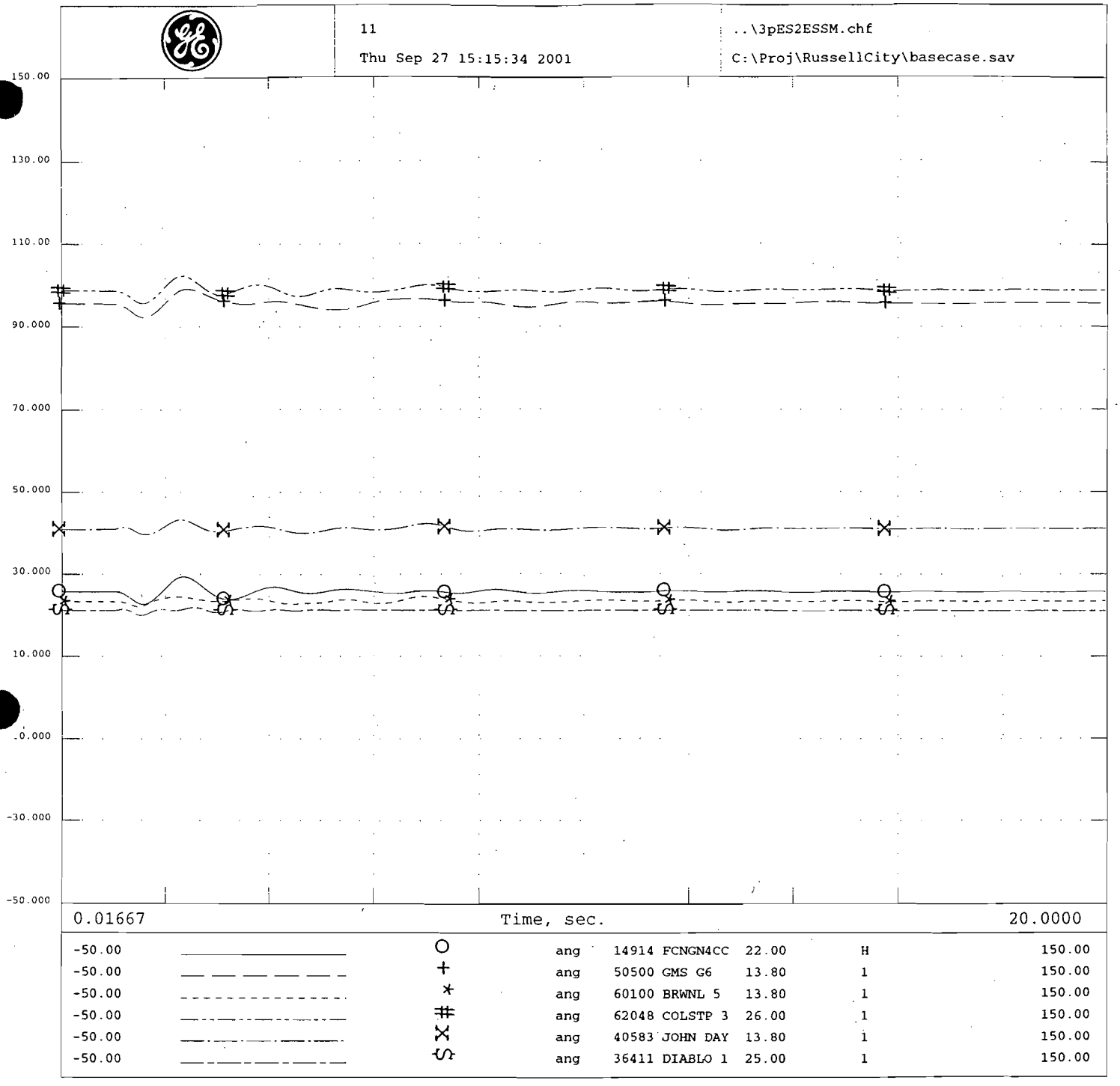
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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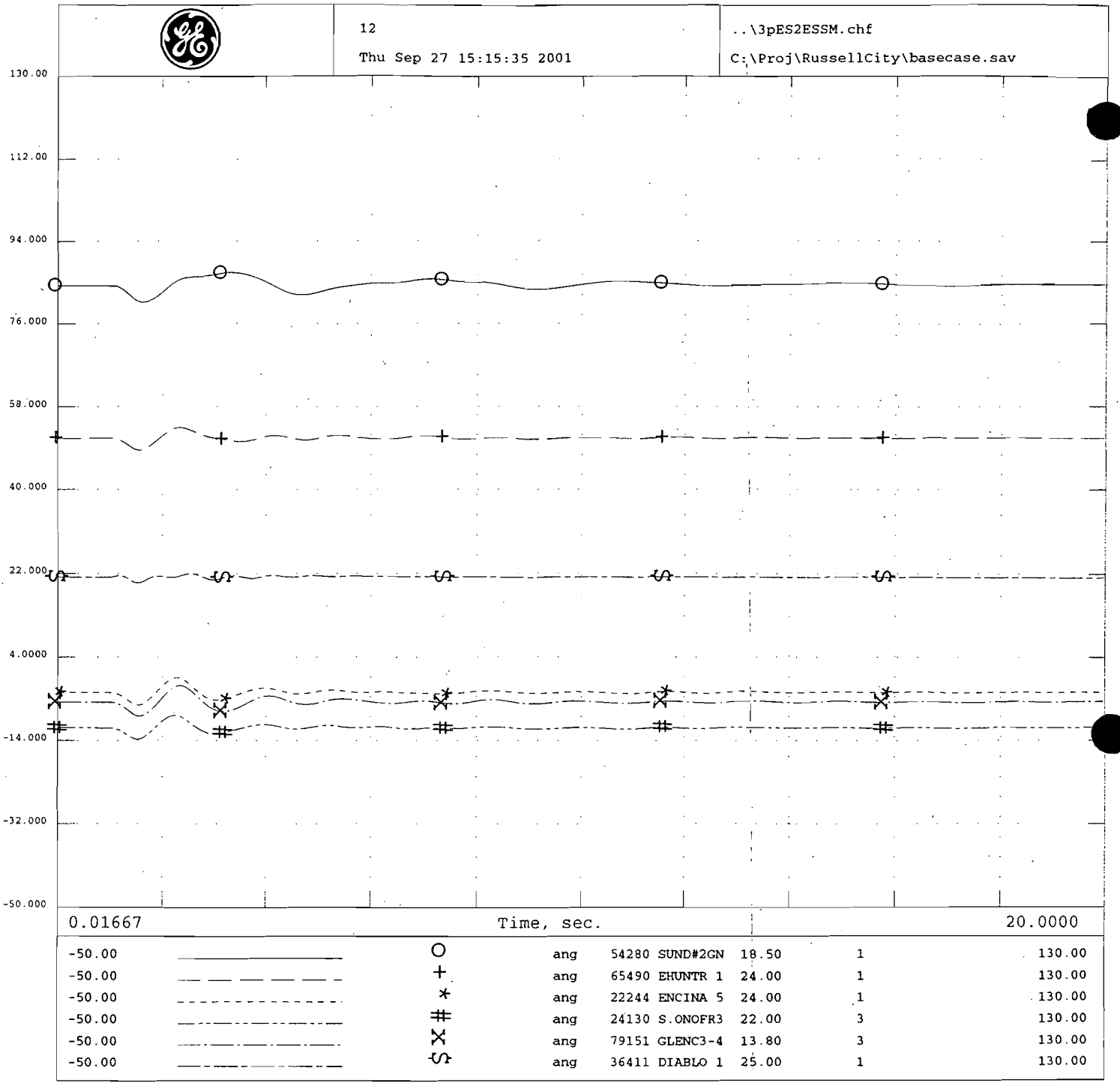

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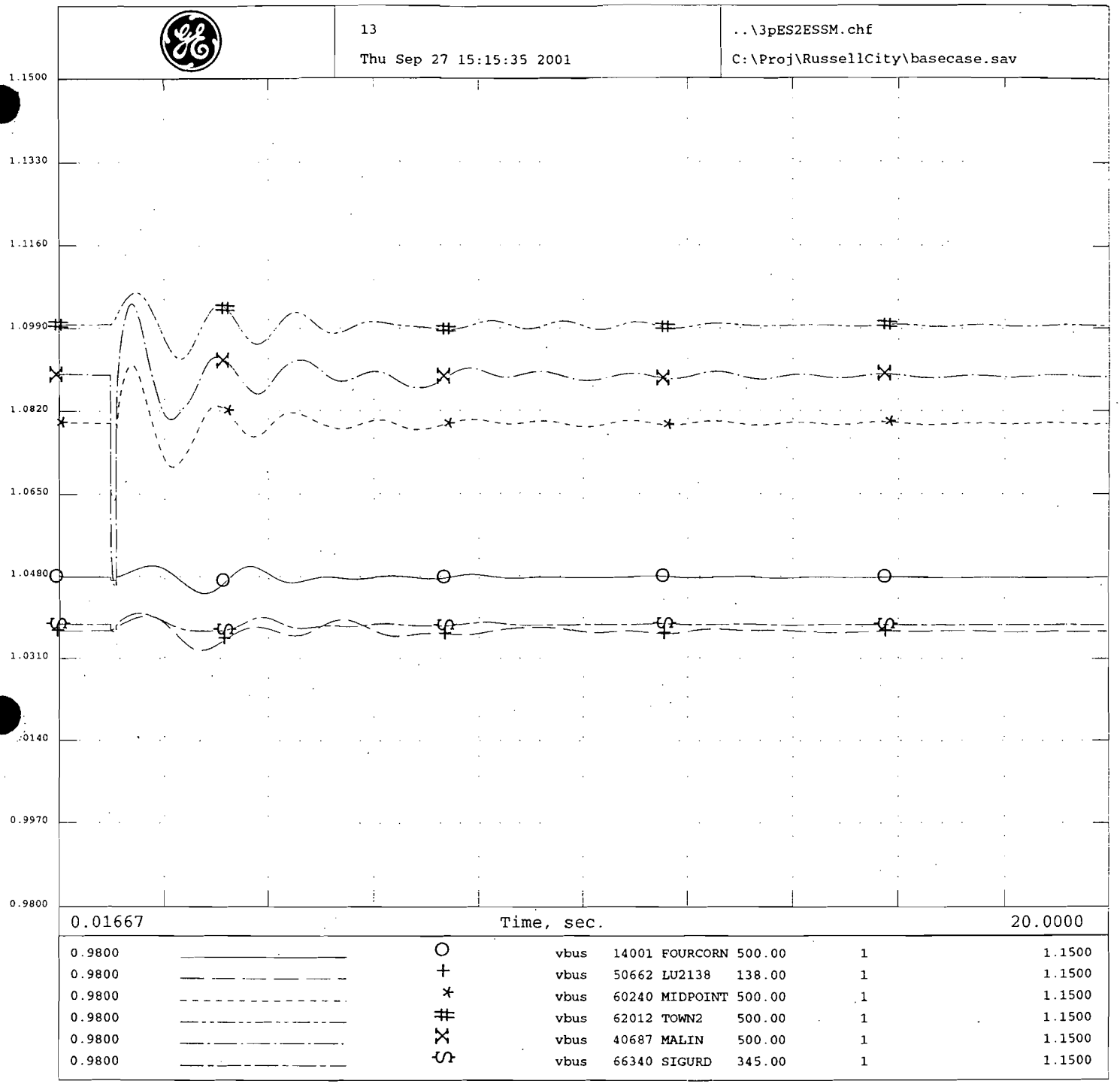

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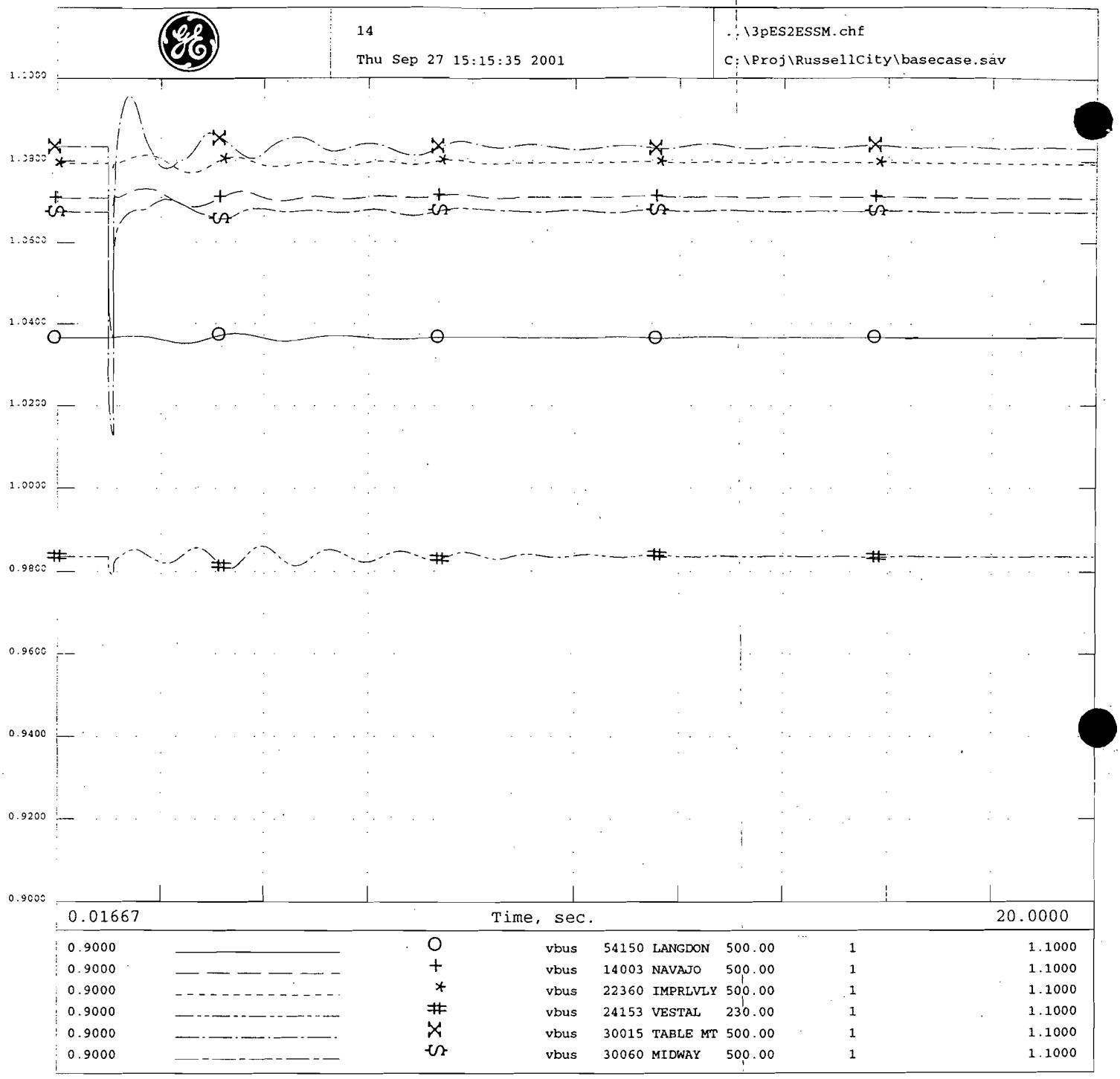

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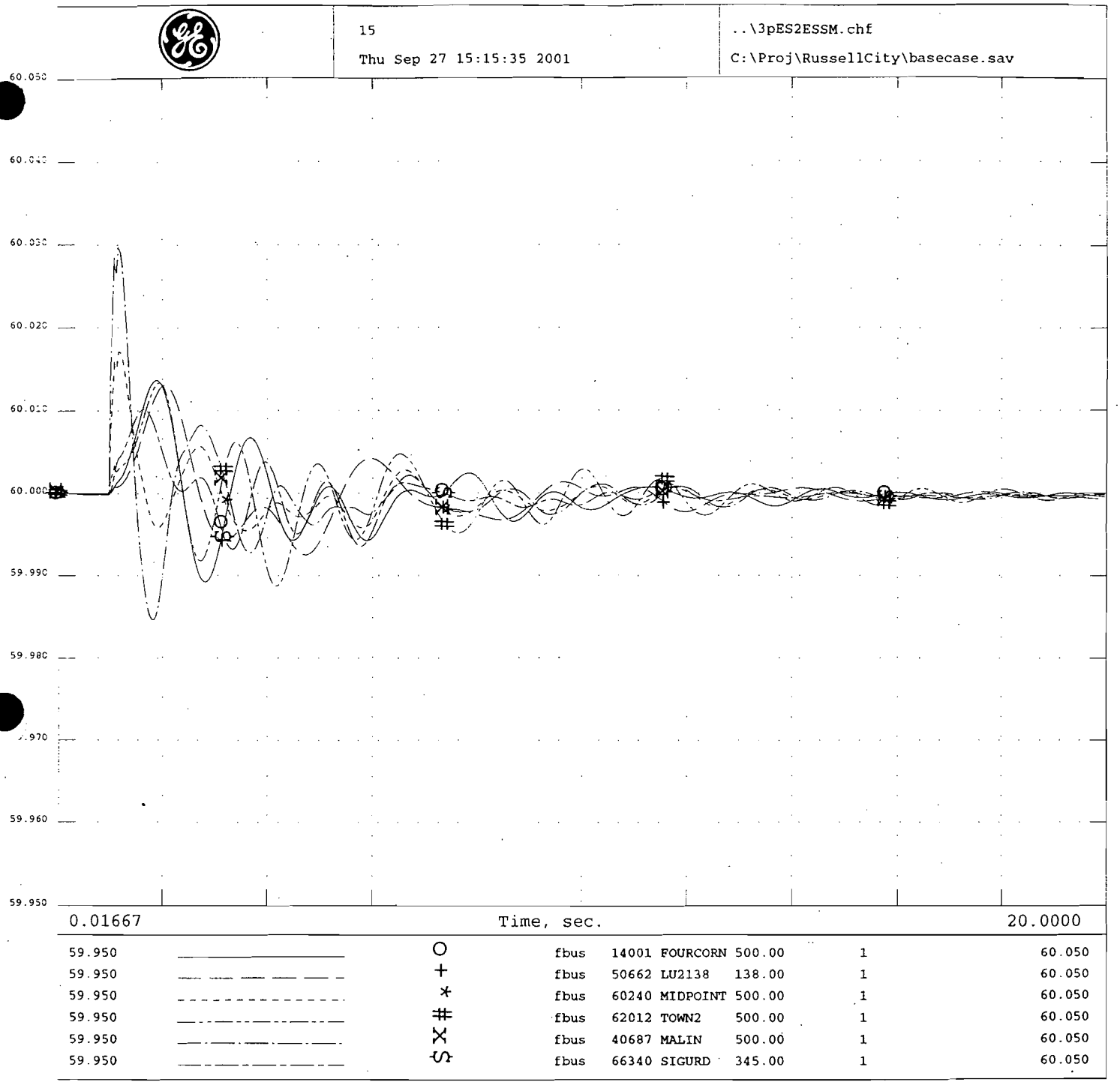

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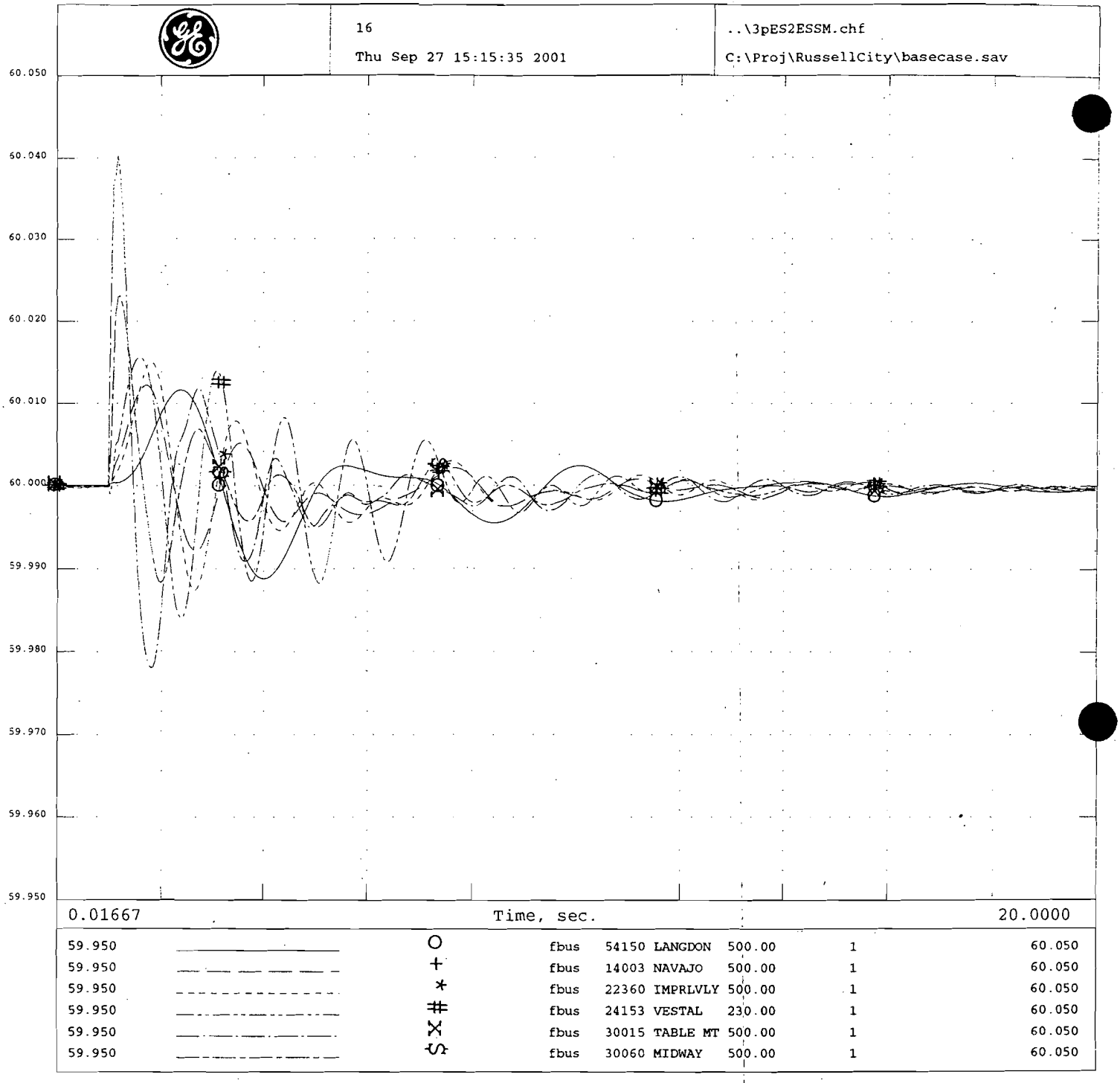

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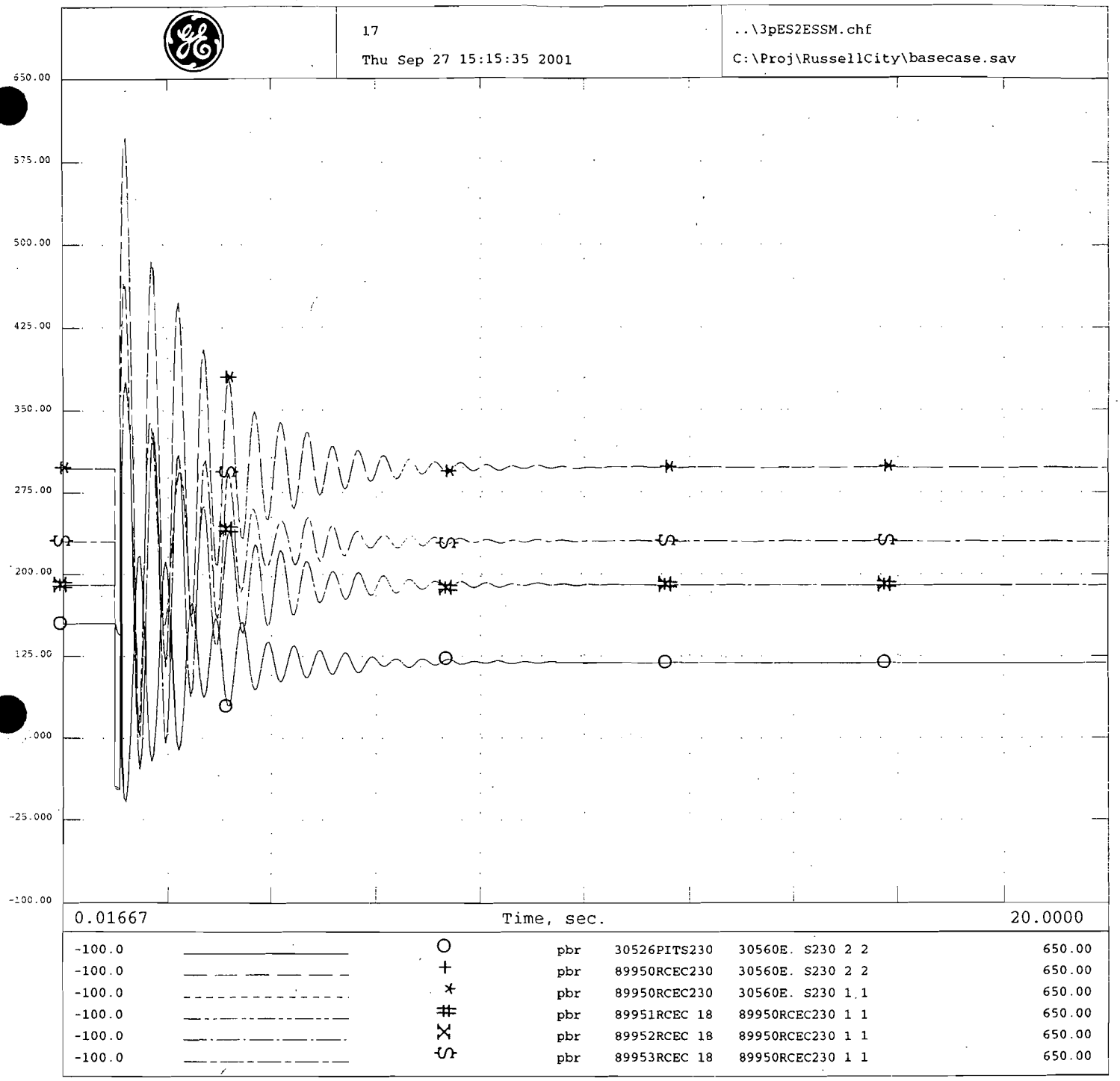

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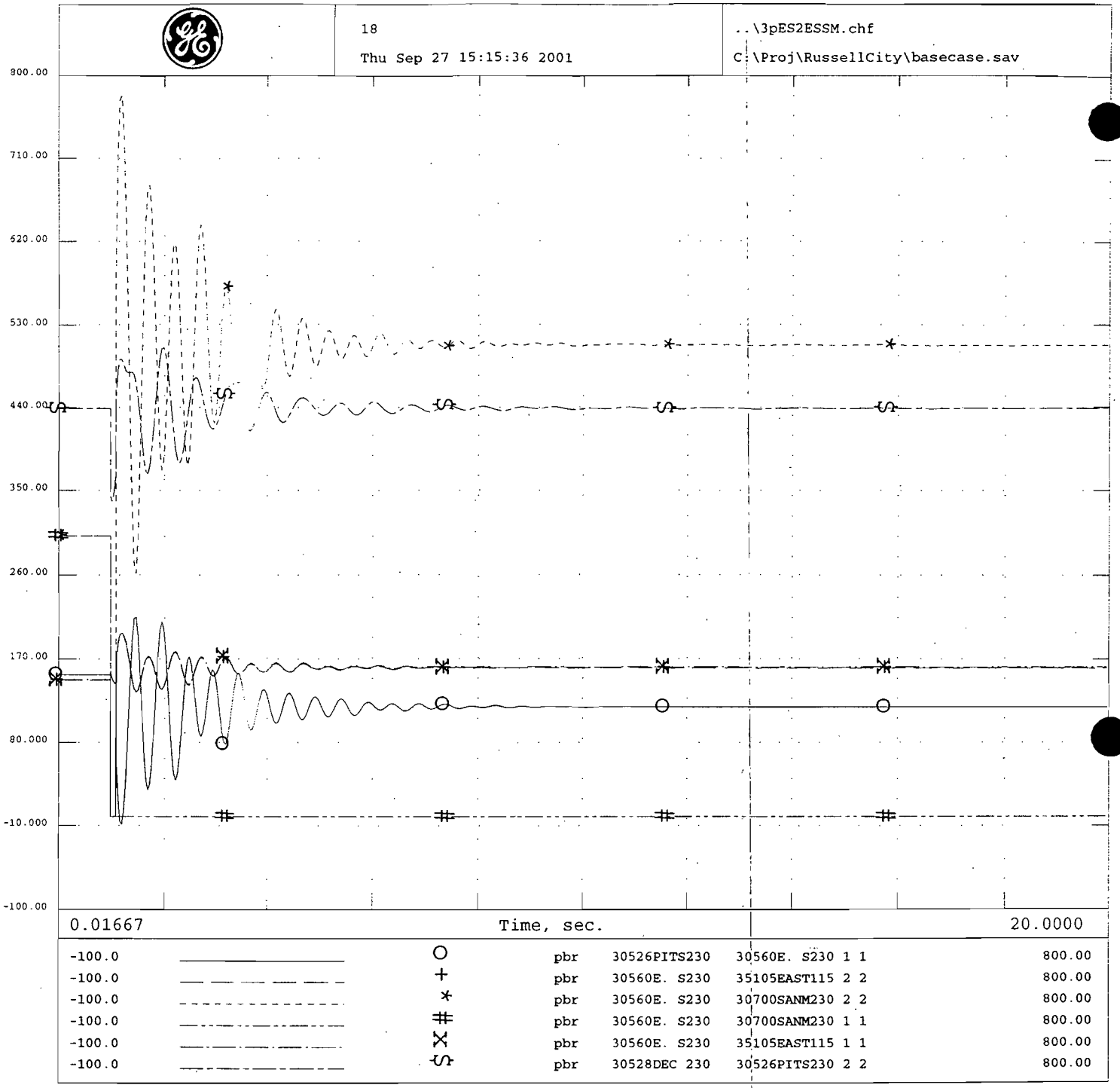

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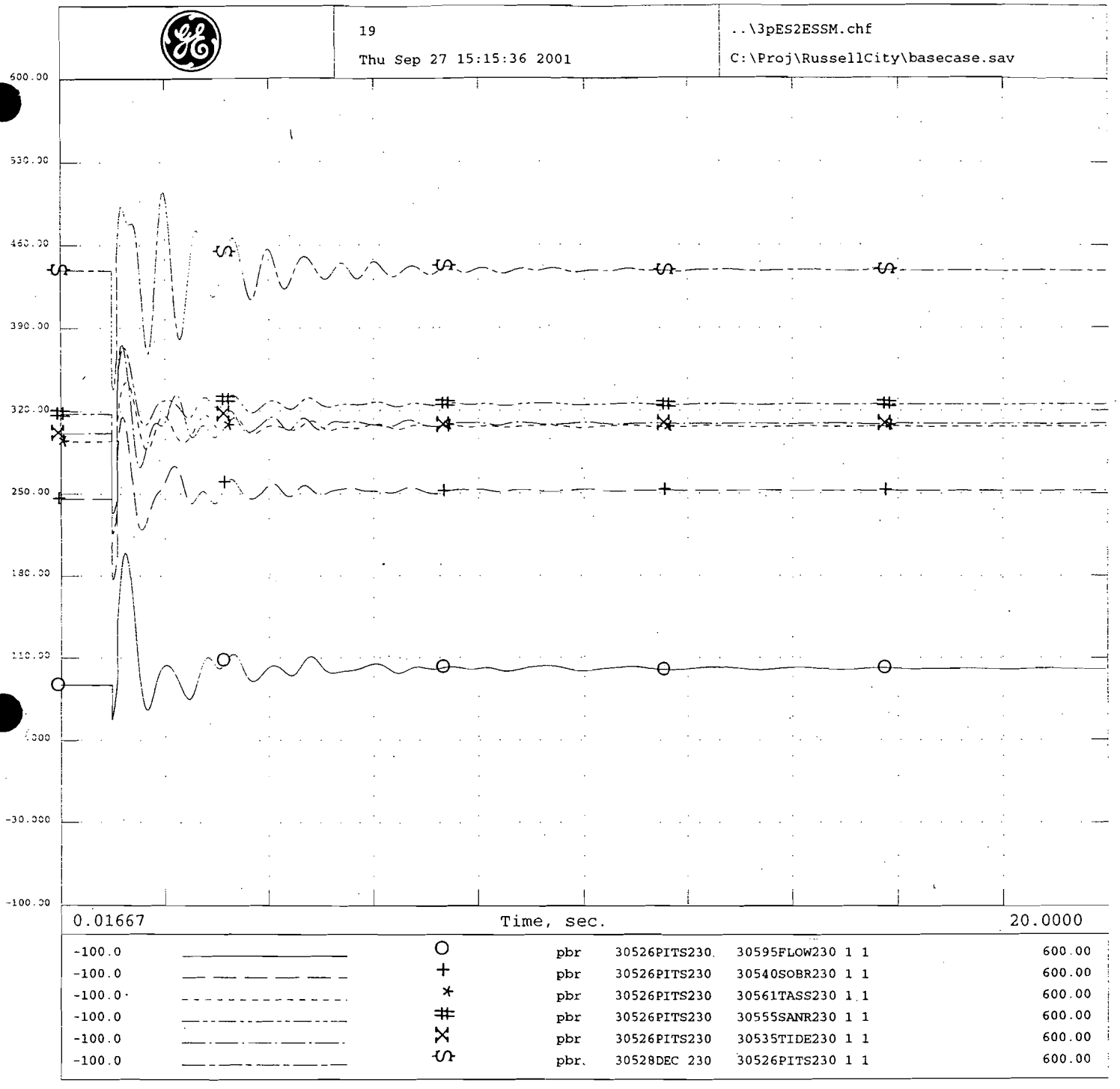

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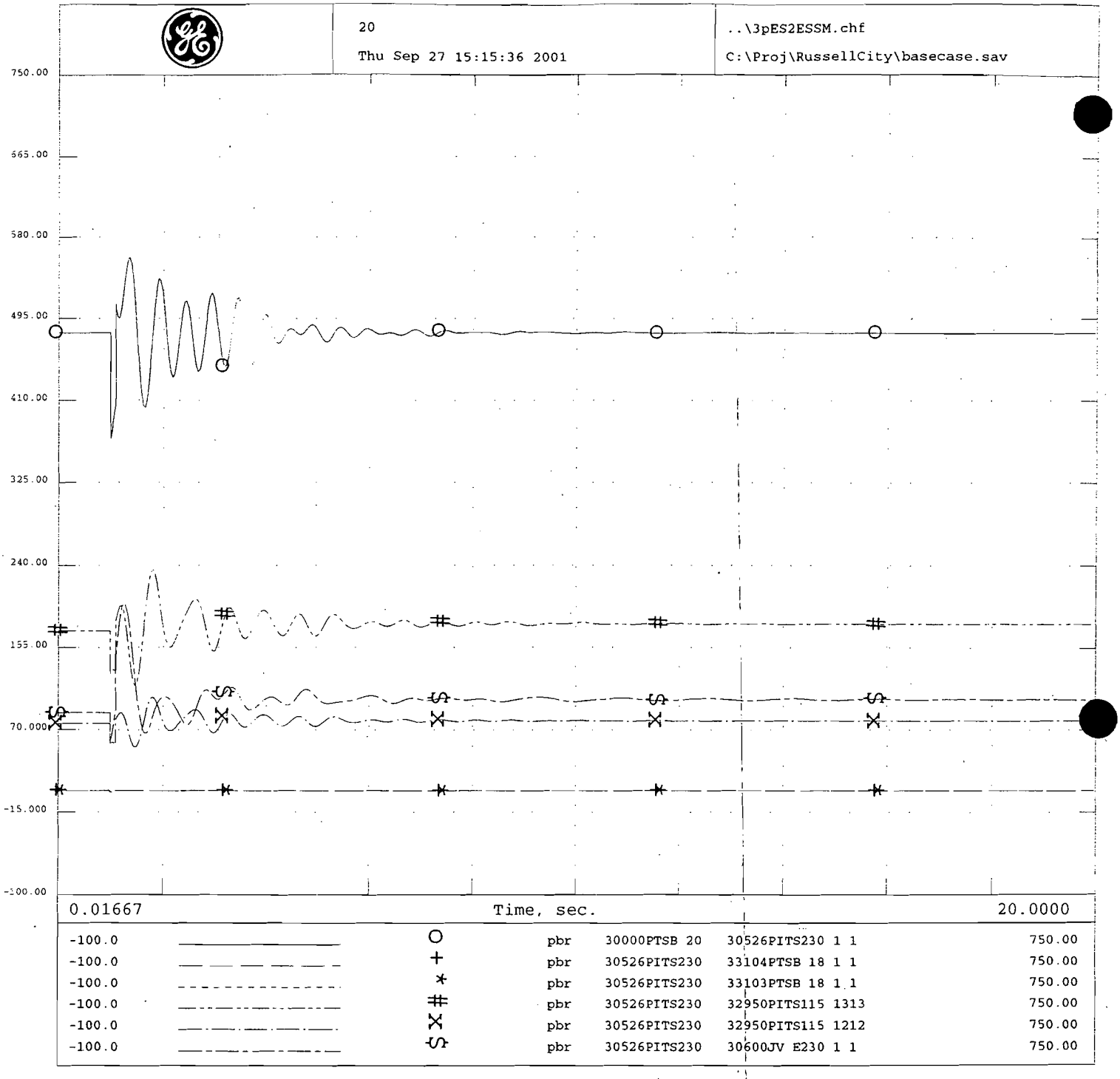

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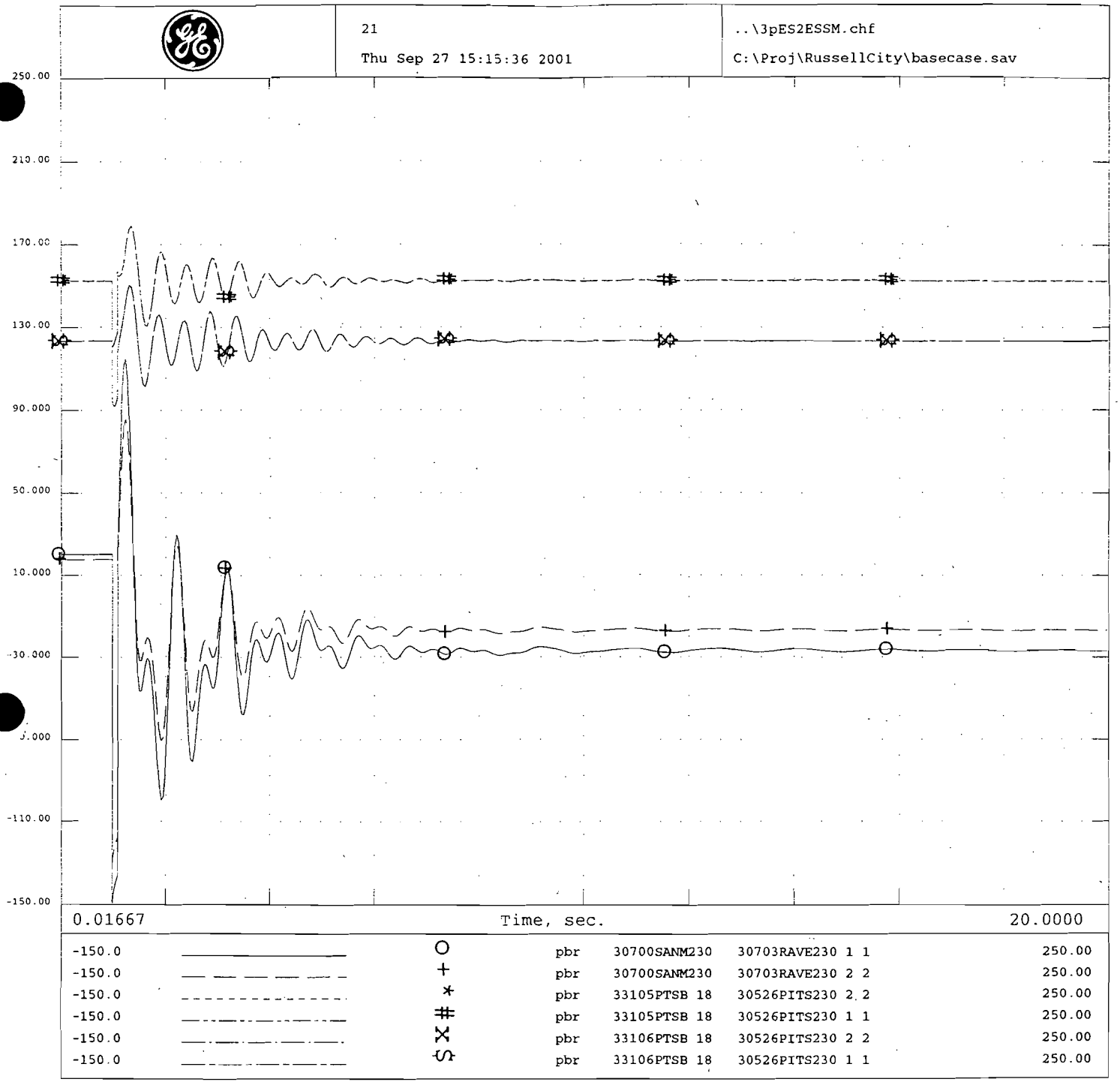

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Calpine/Bechtel Joint Development
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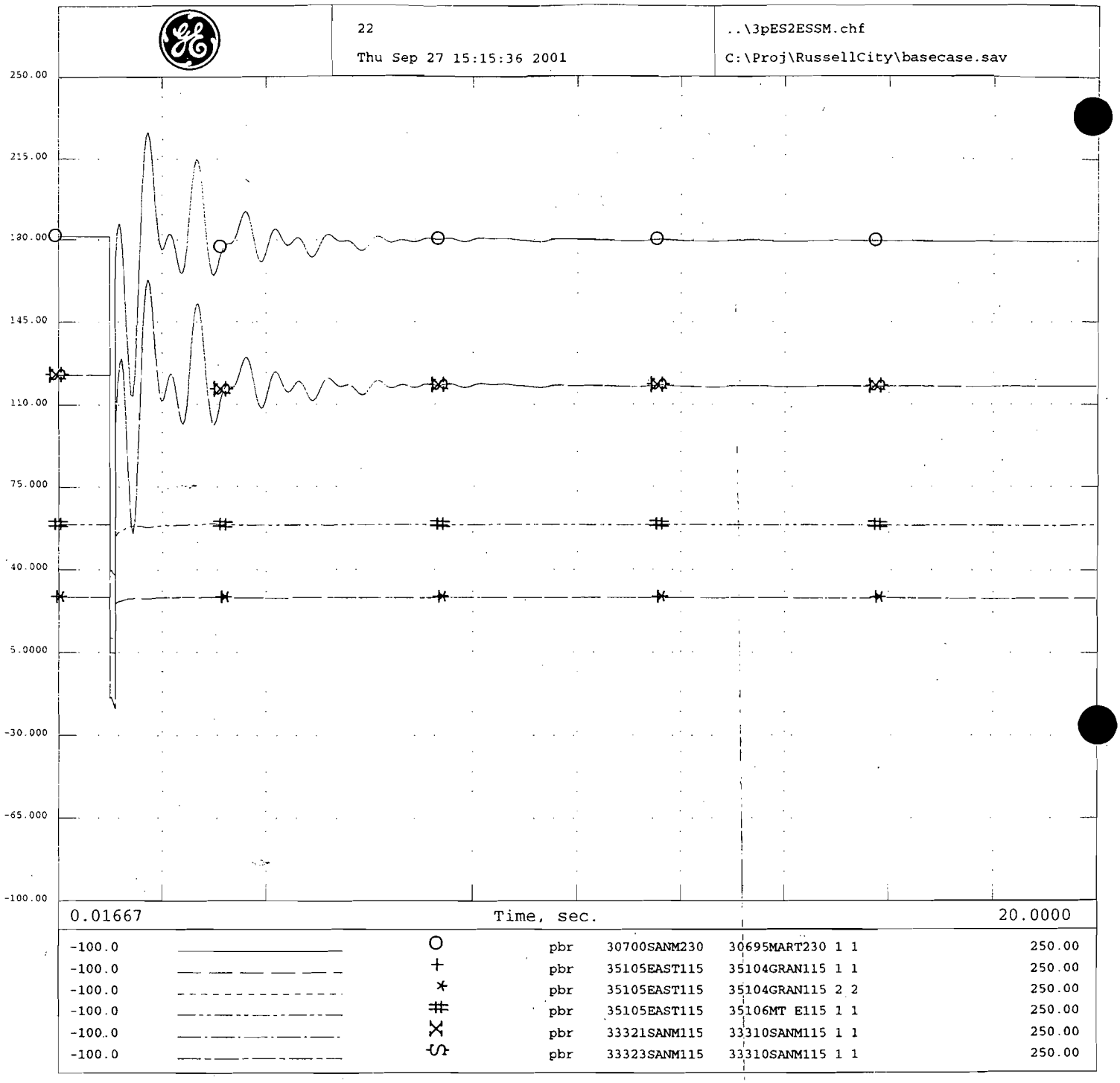
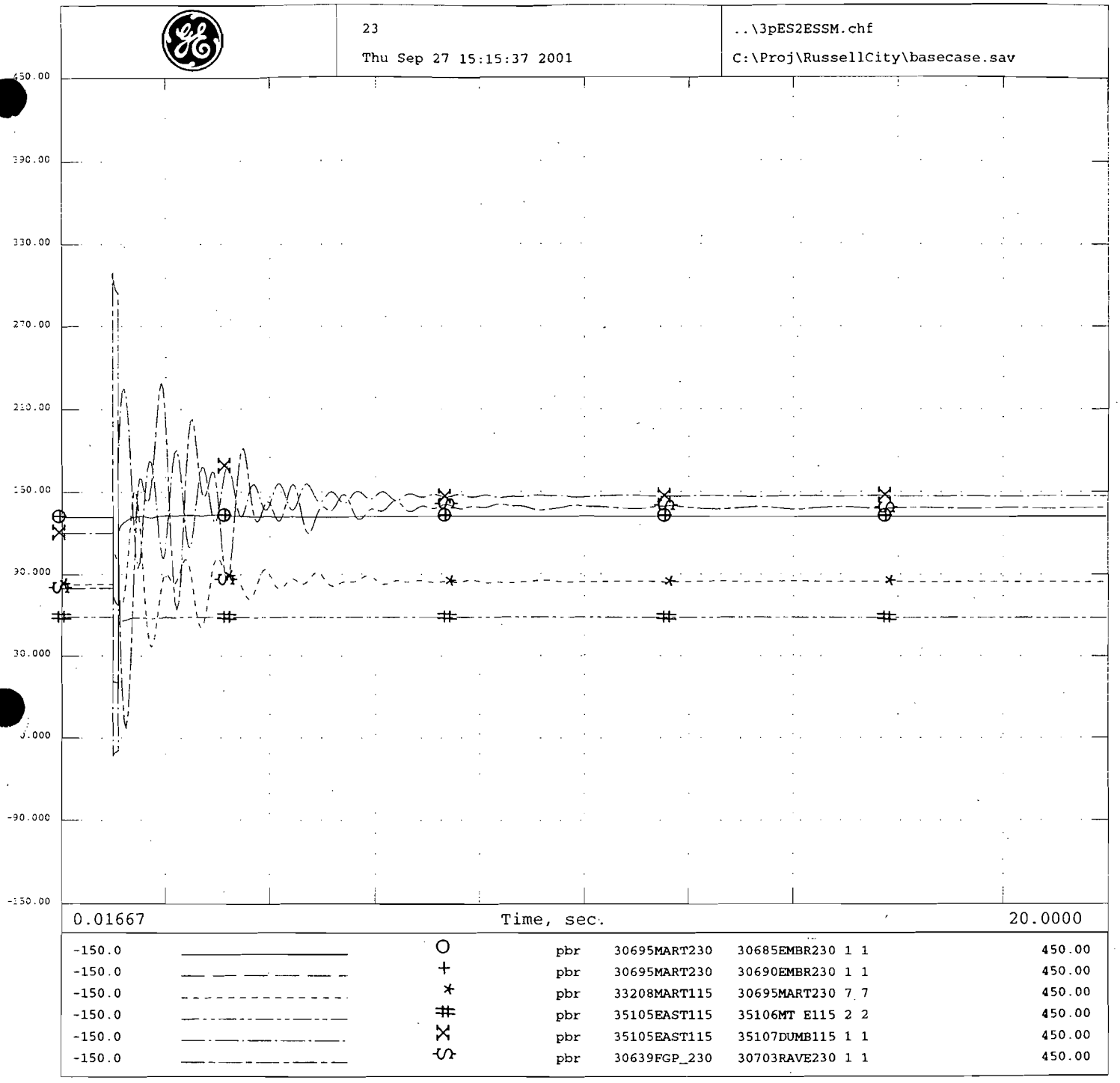


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
East Shore-San Mateo #1 230kV line outage
3 phase 6 cycle fault at East Shore 230kV bus and trip East Shore-San Mateo 230

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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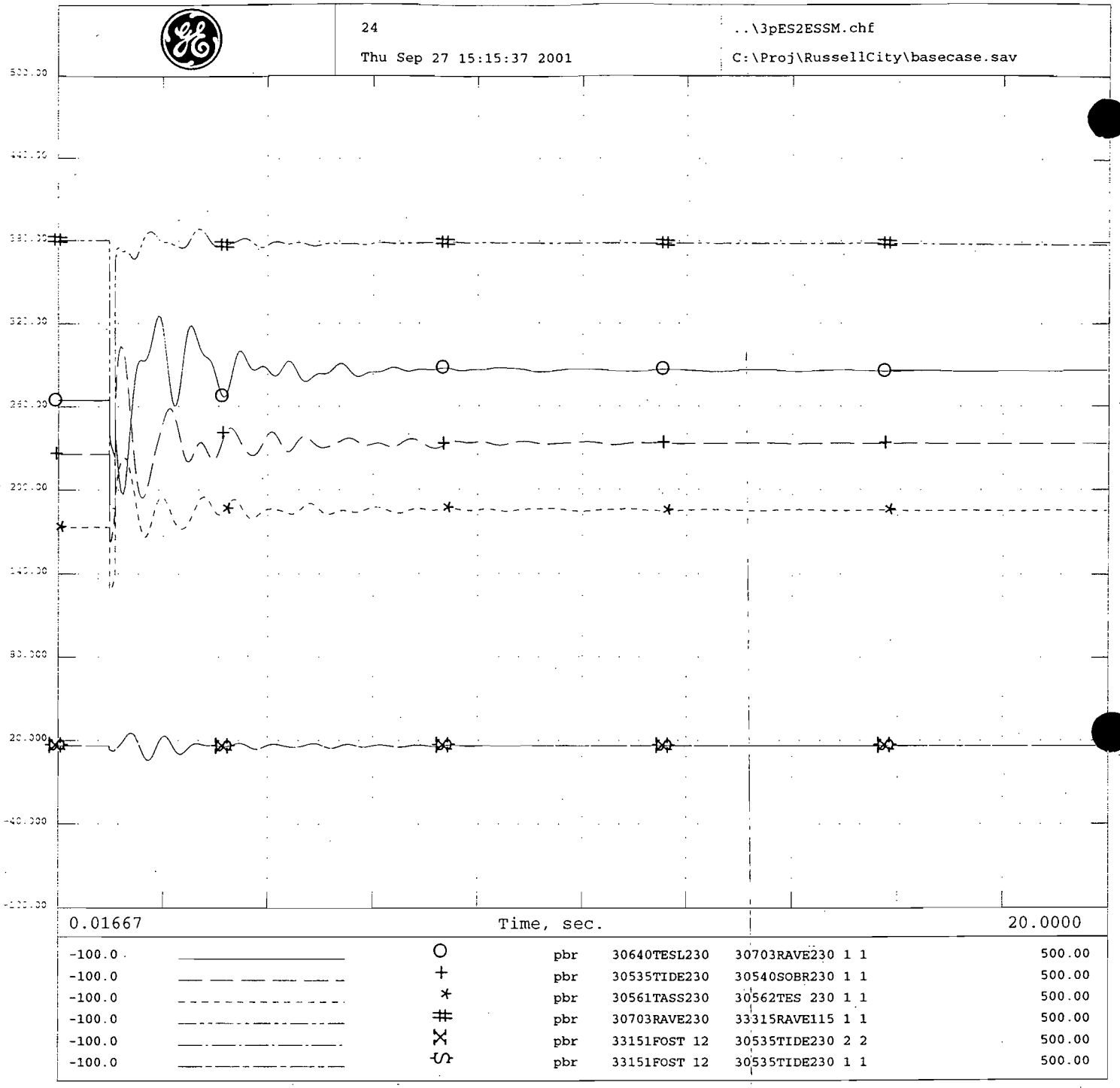

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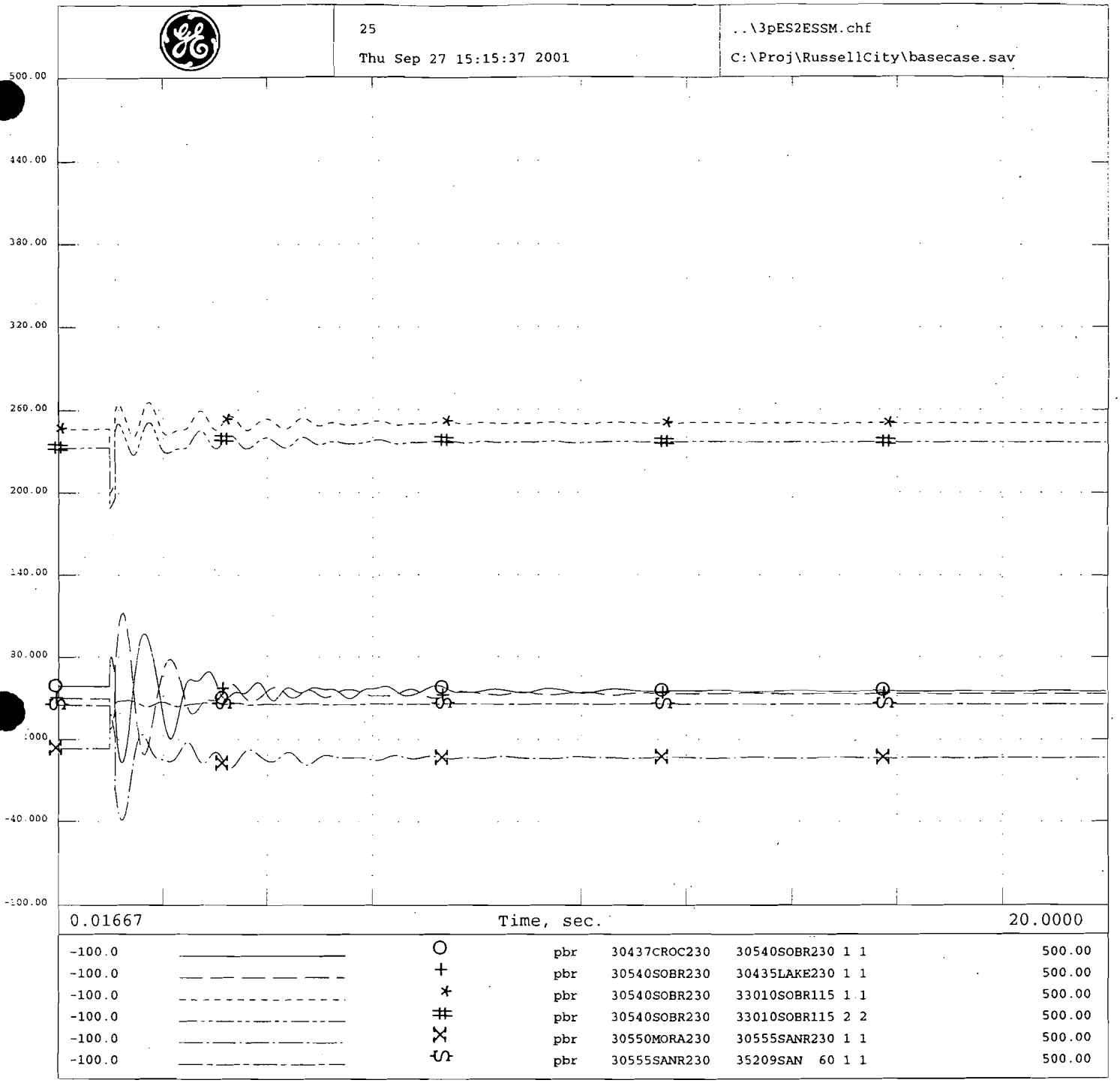

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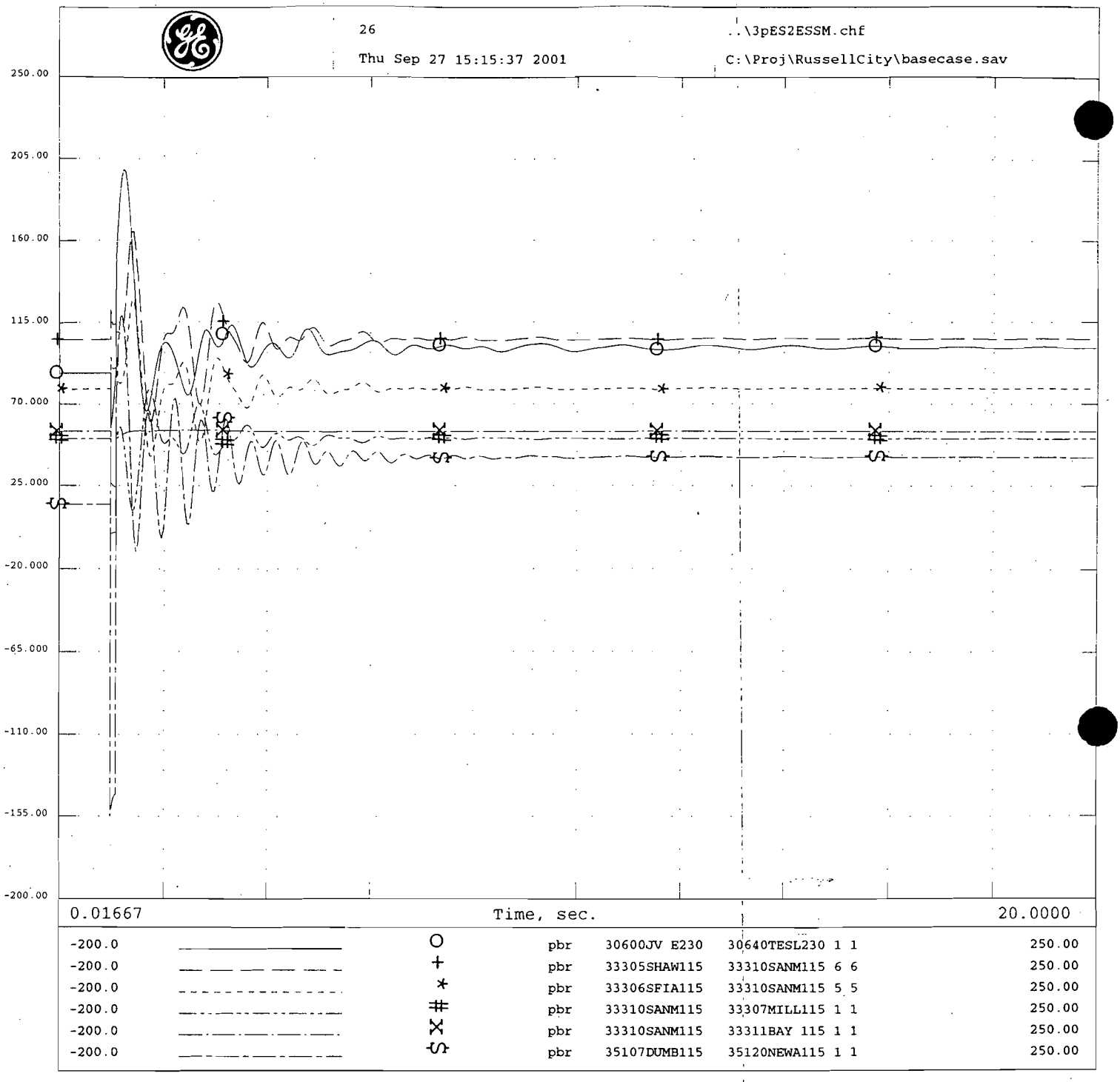

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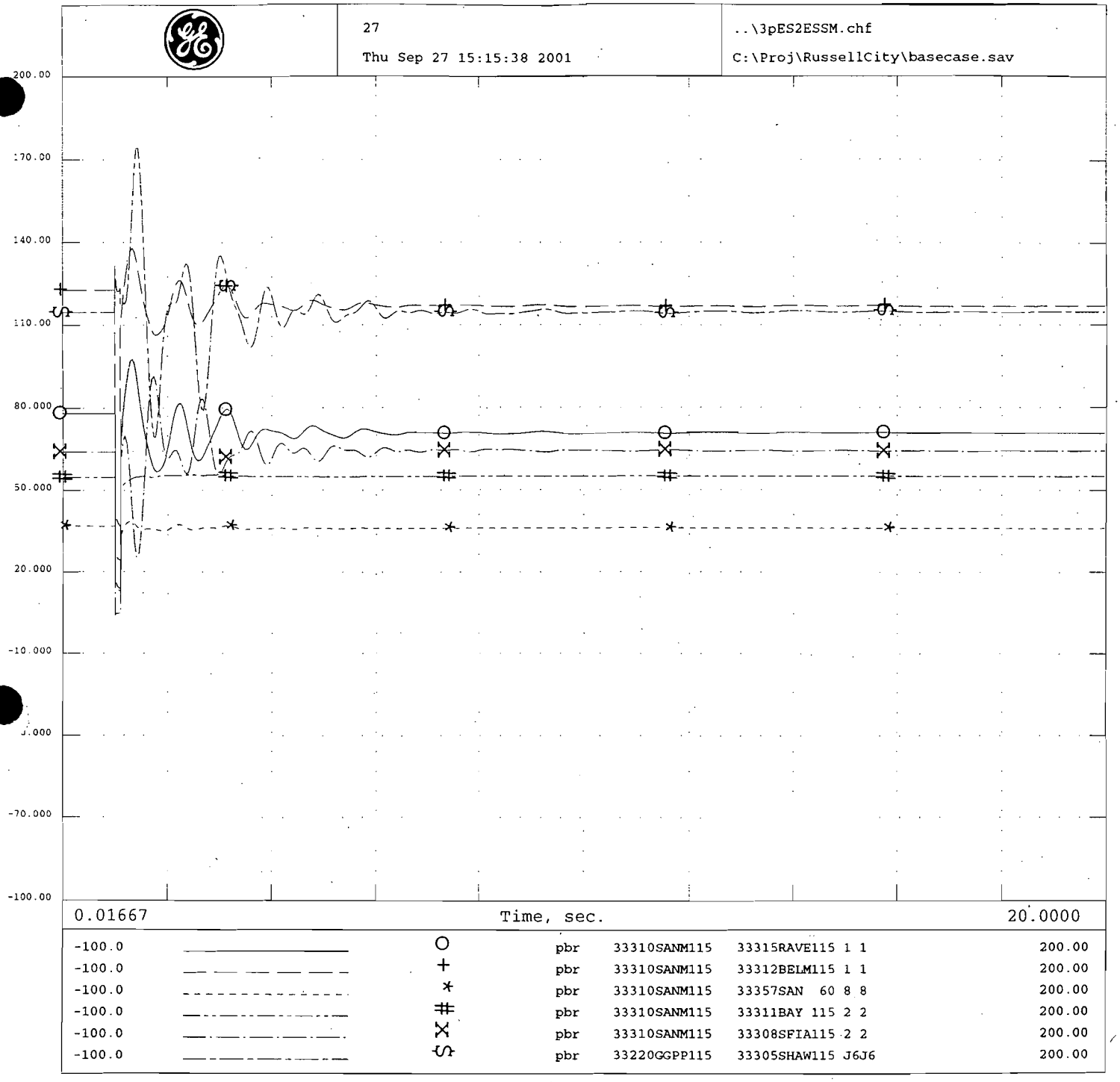

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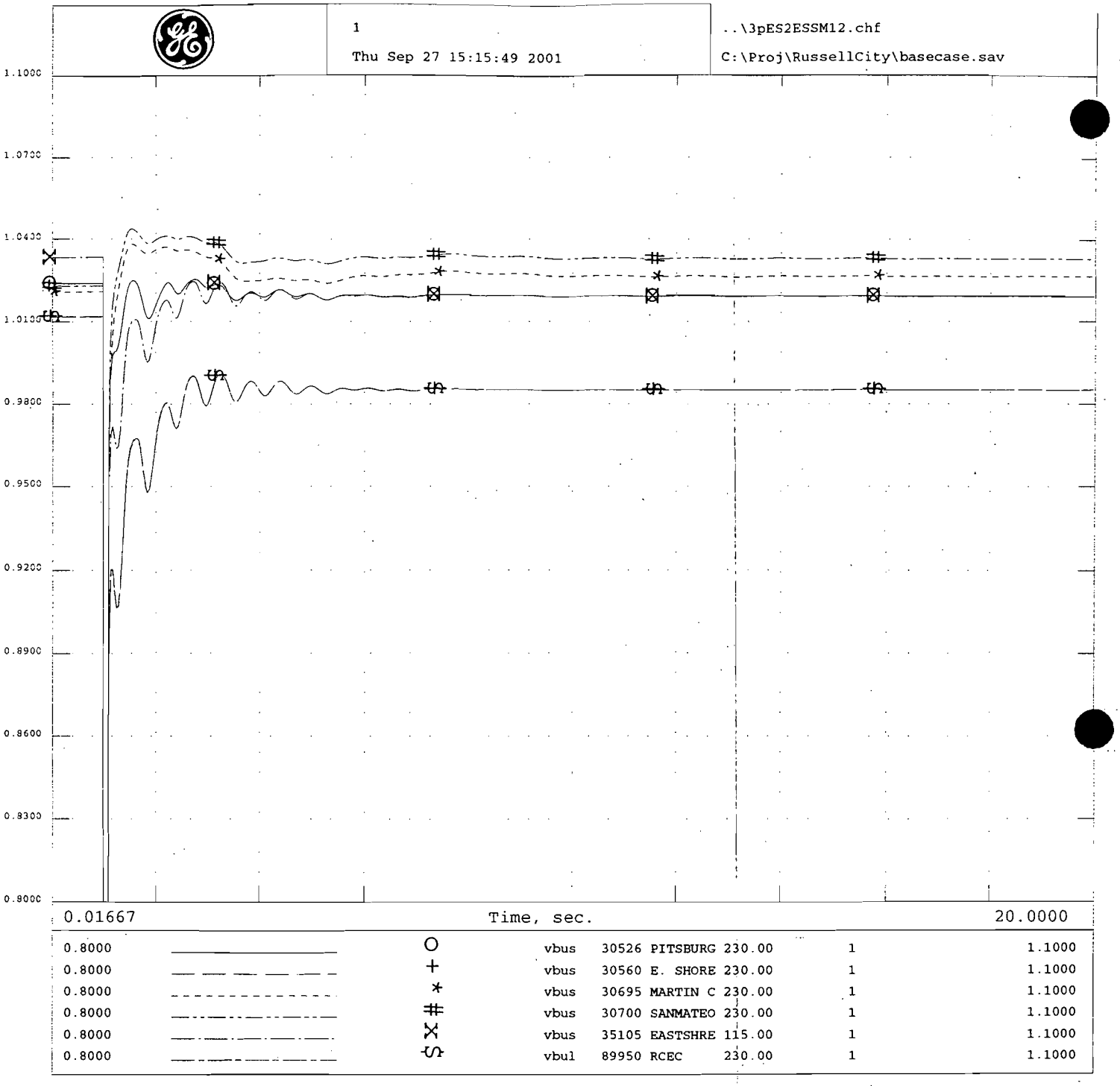

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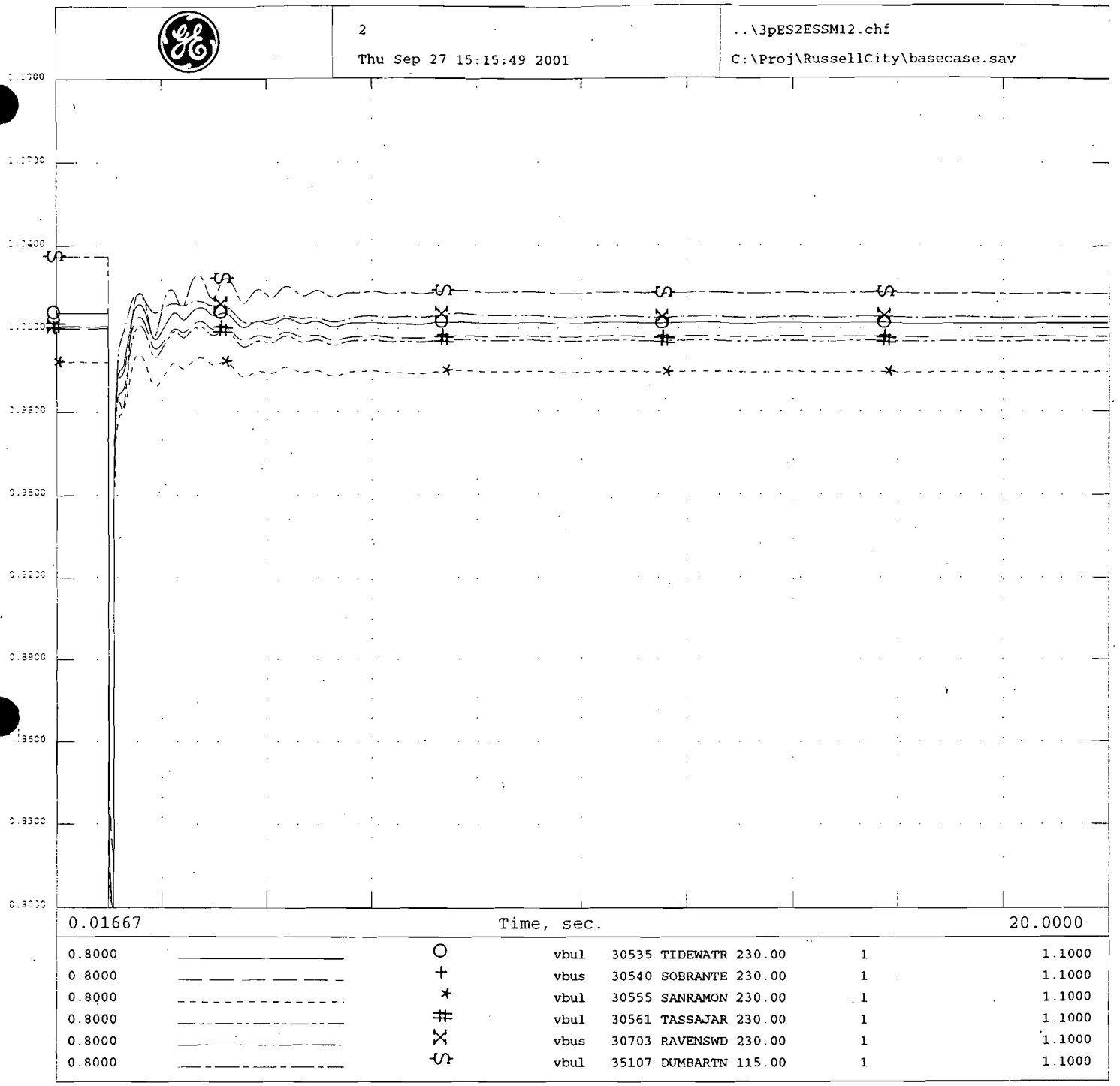
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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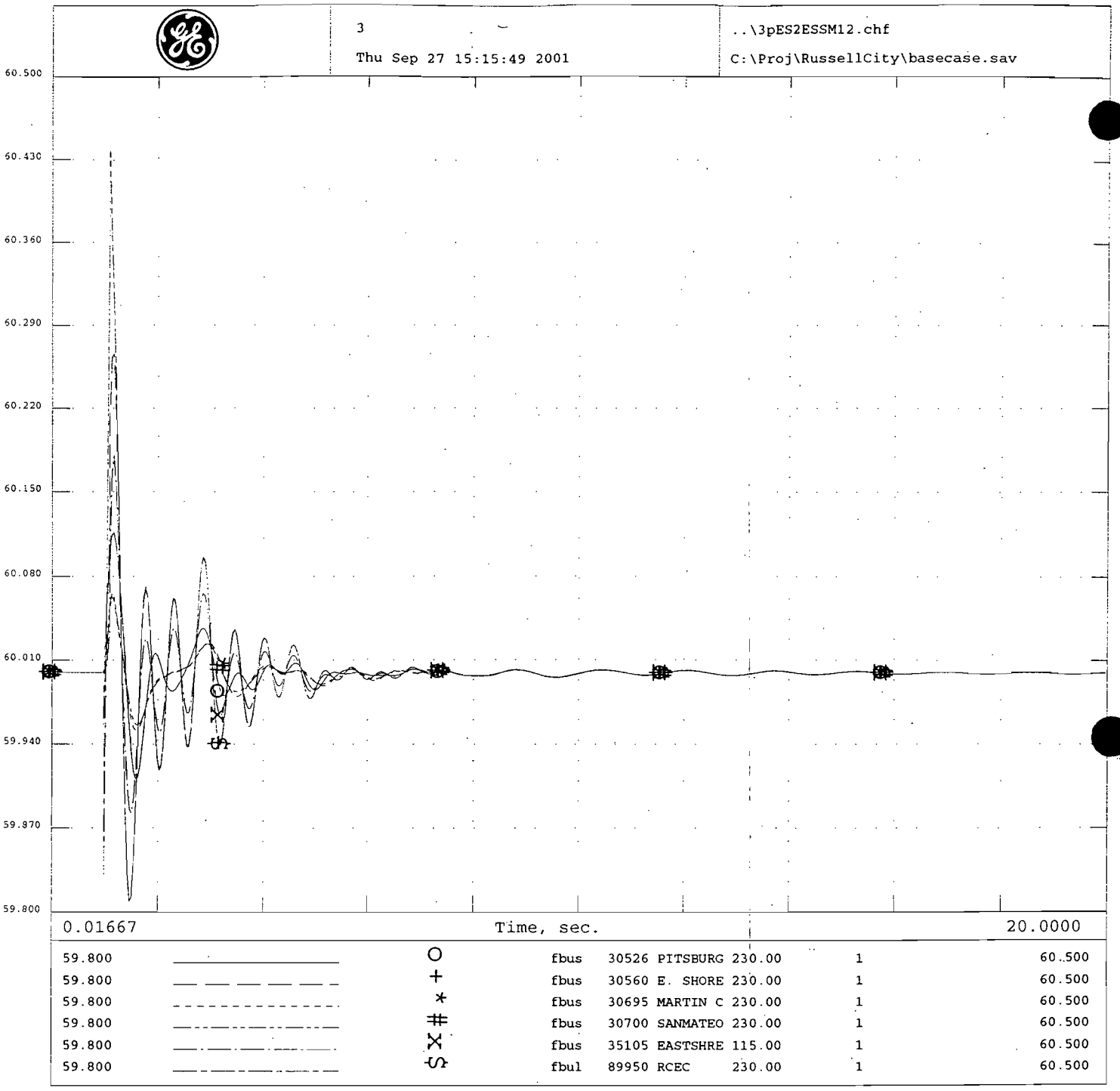

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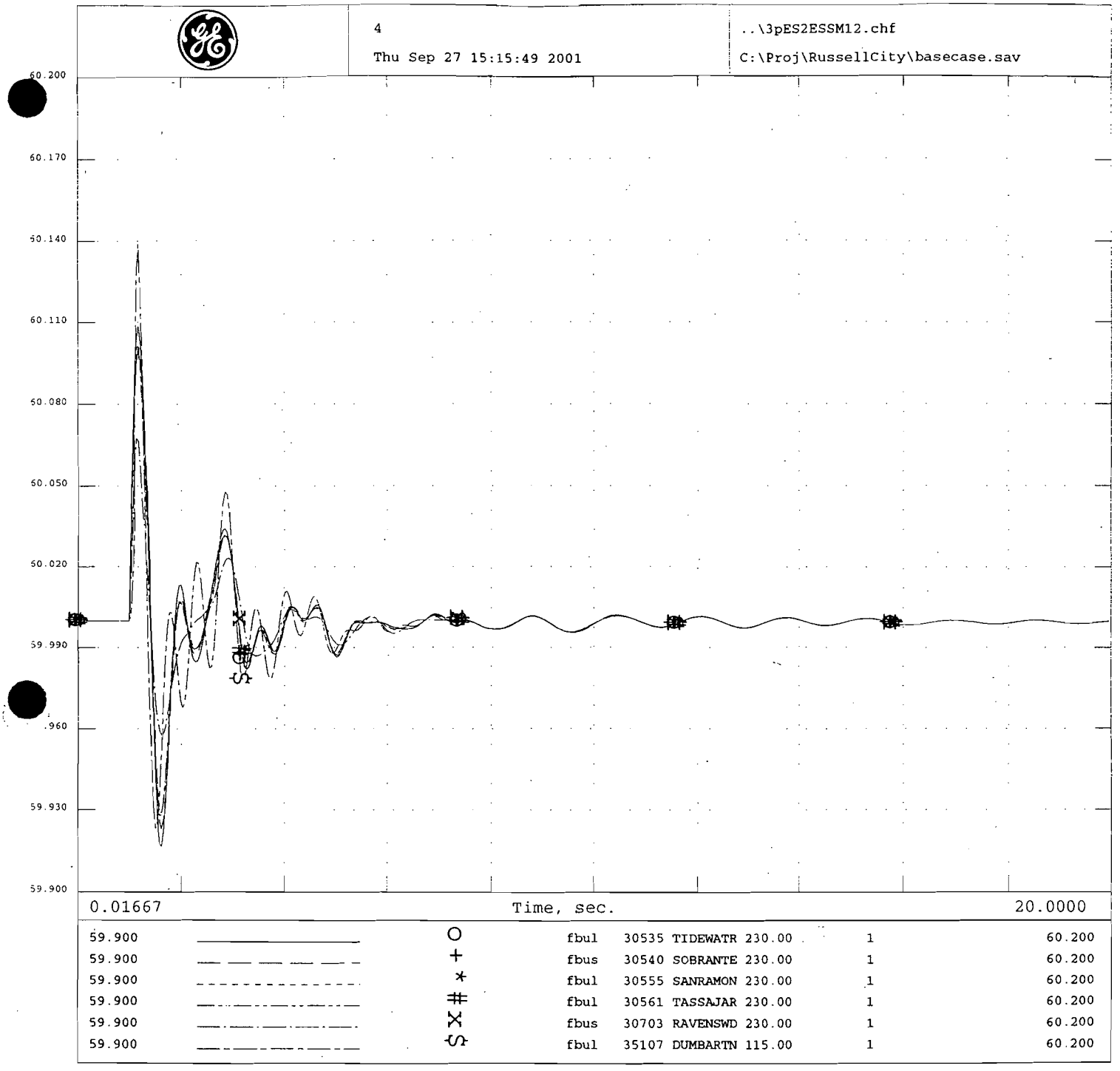
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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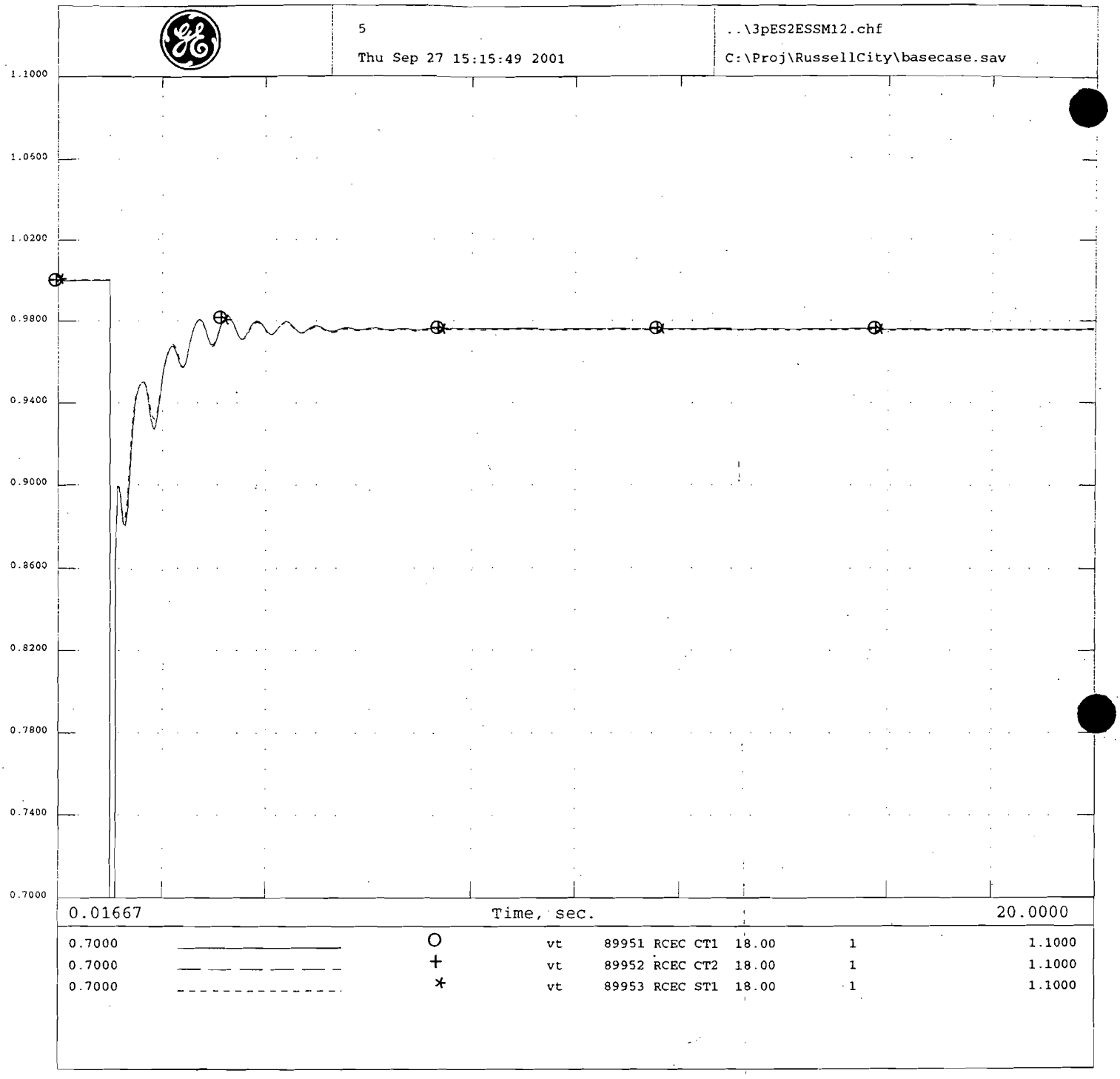

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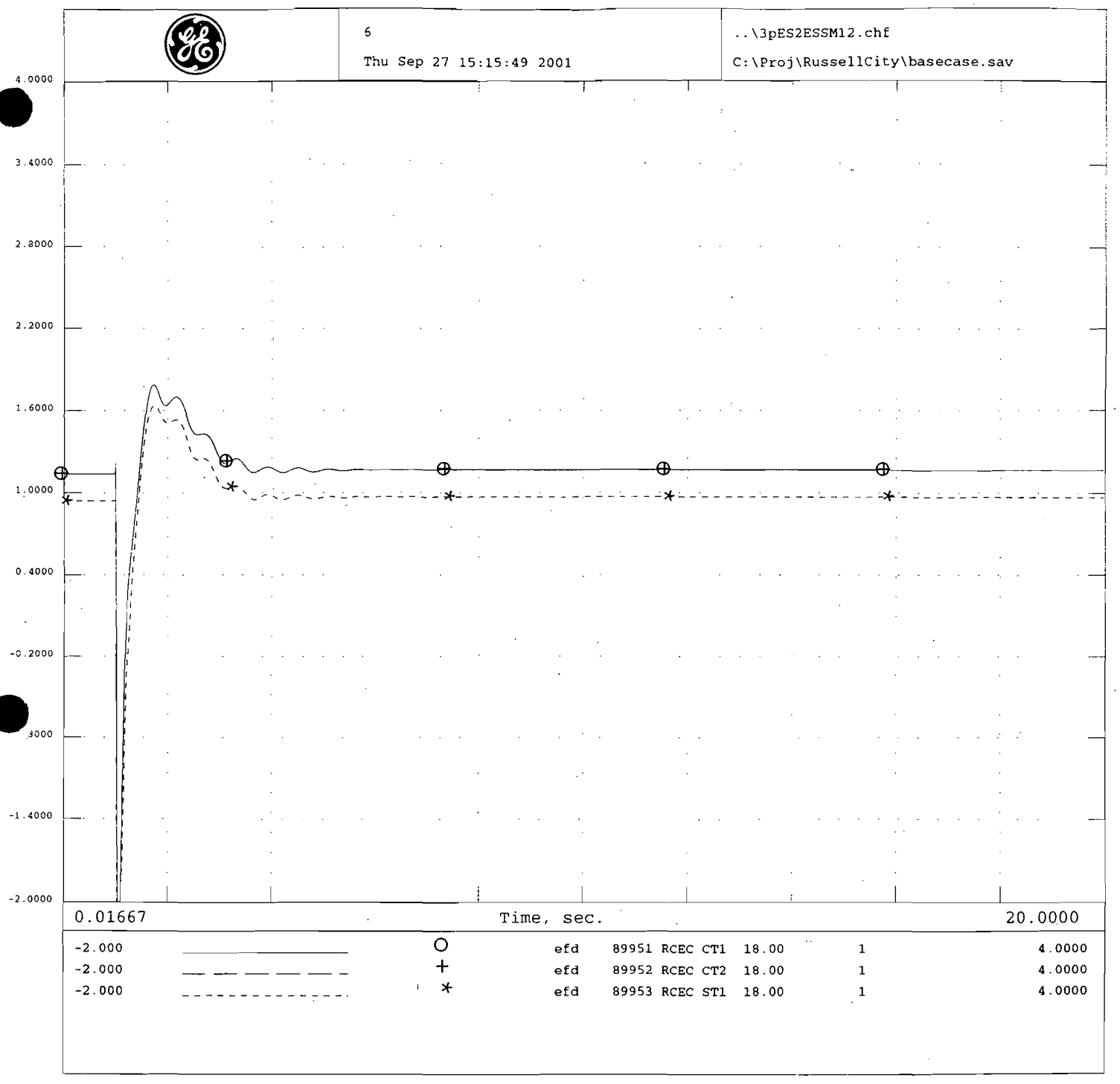
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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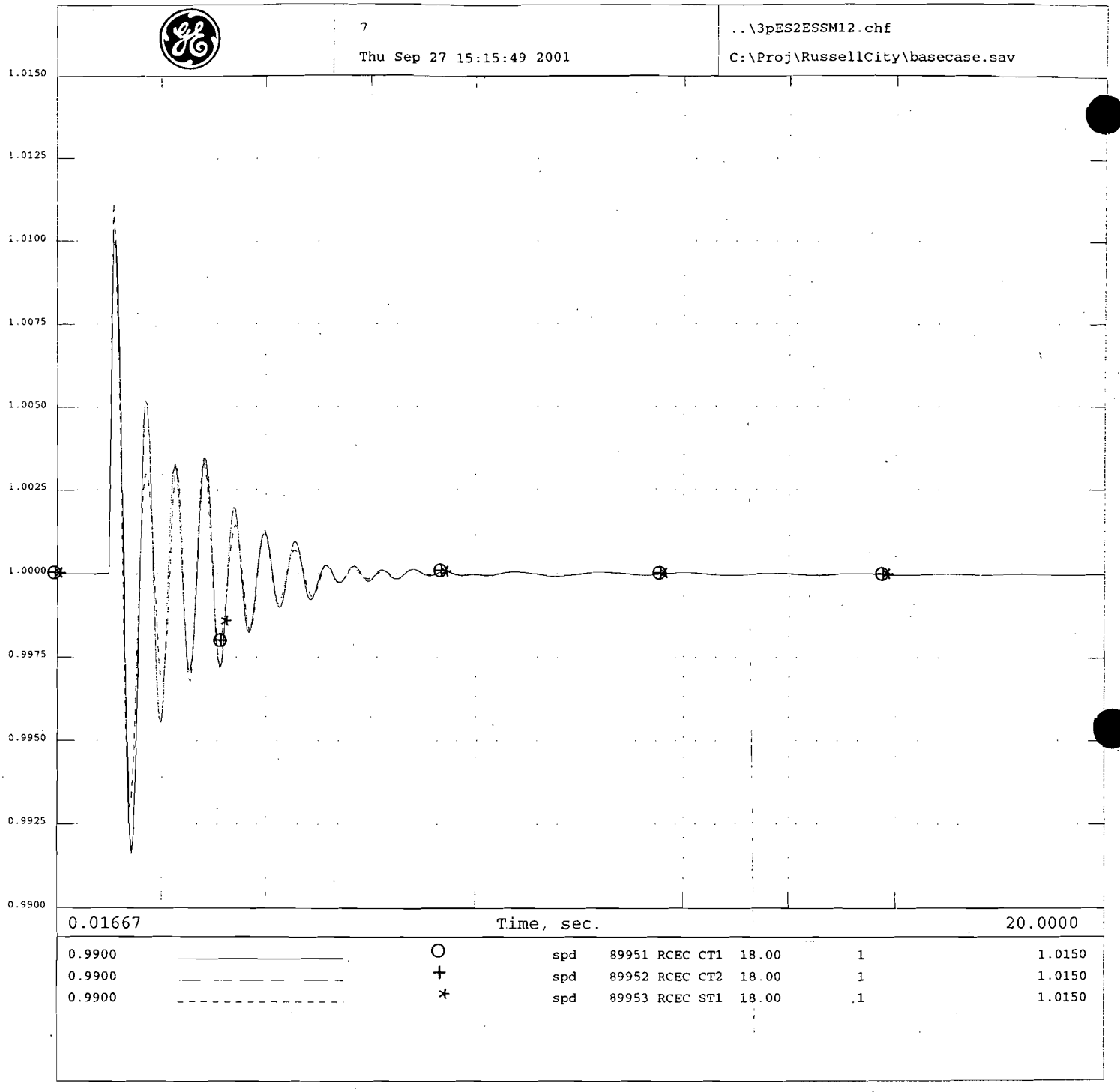
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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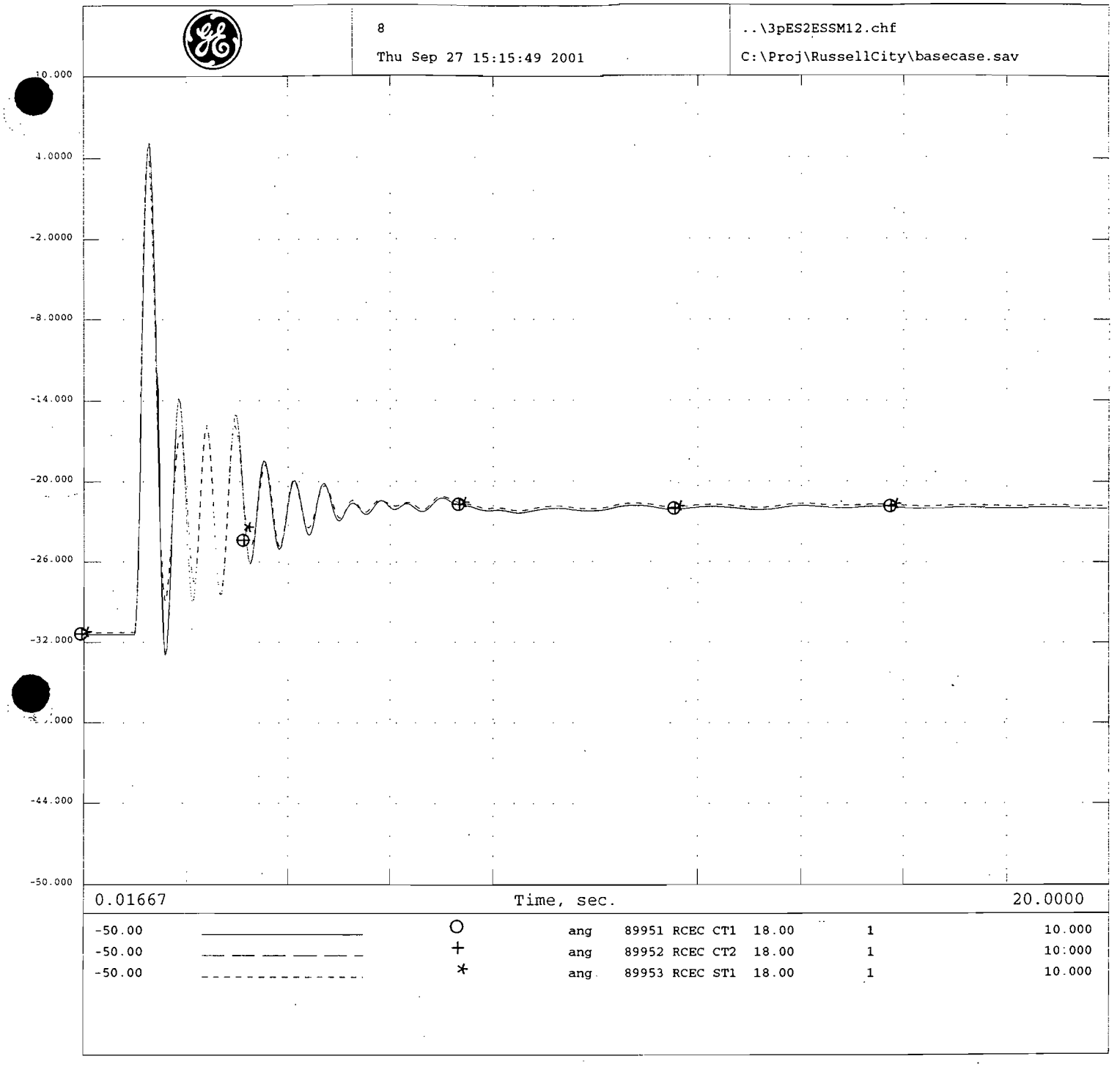
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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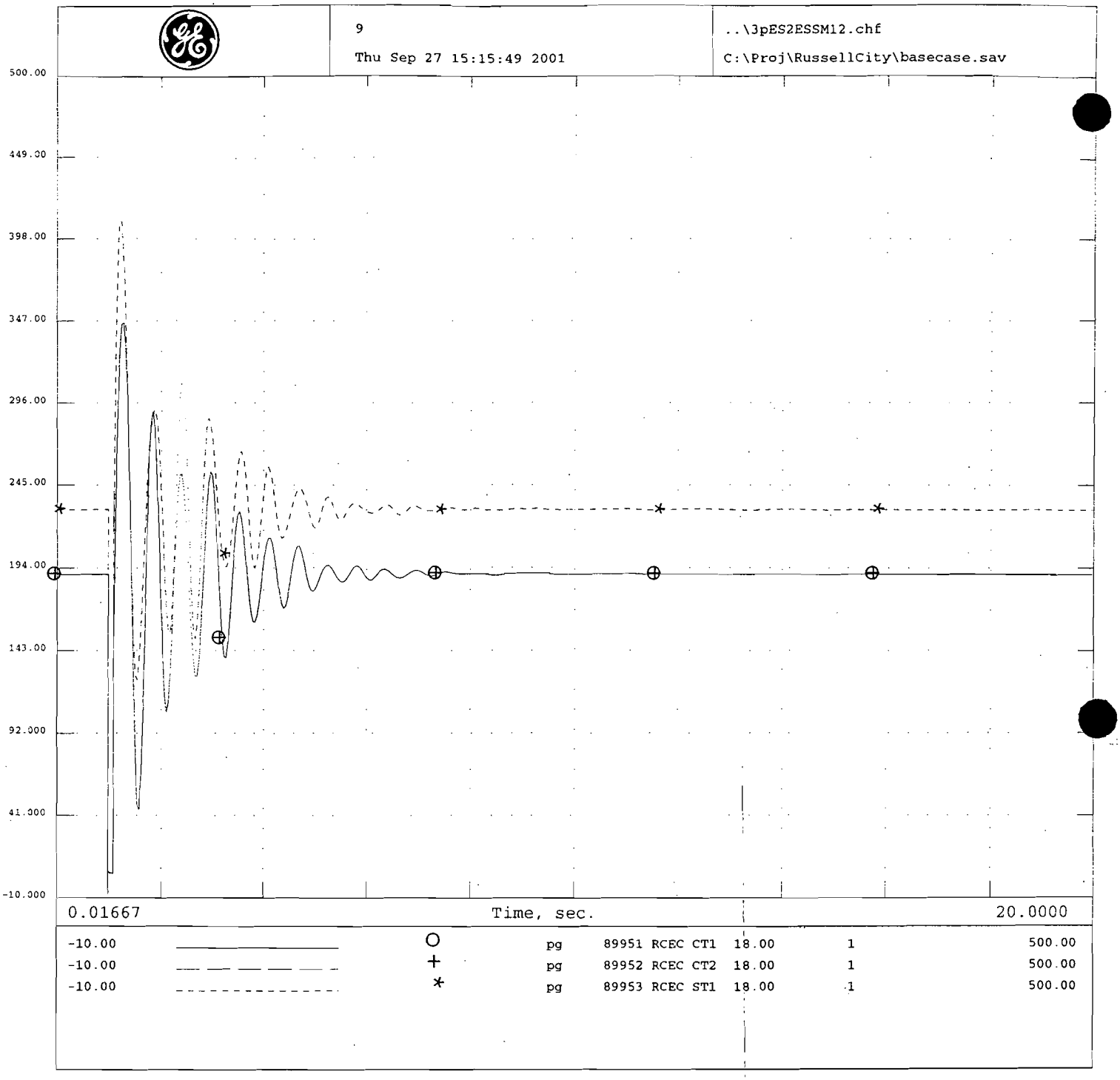
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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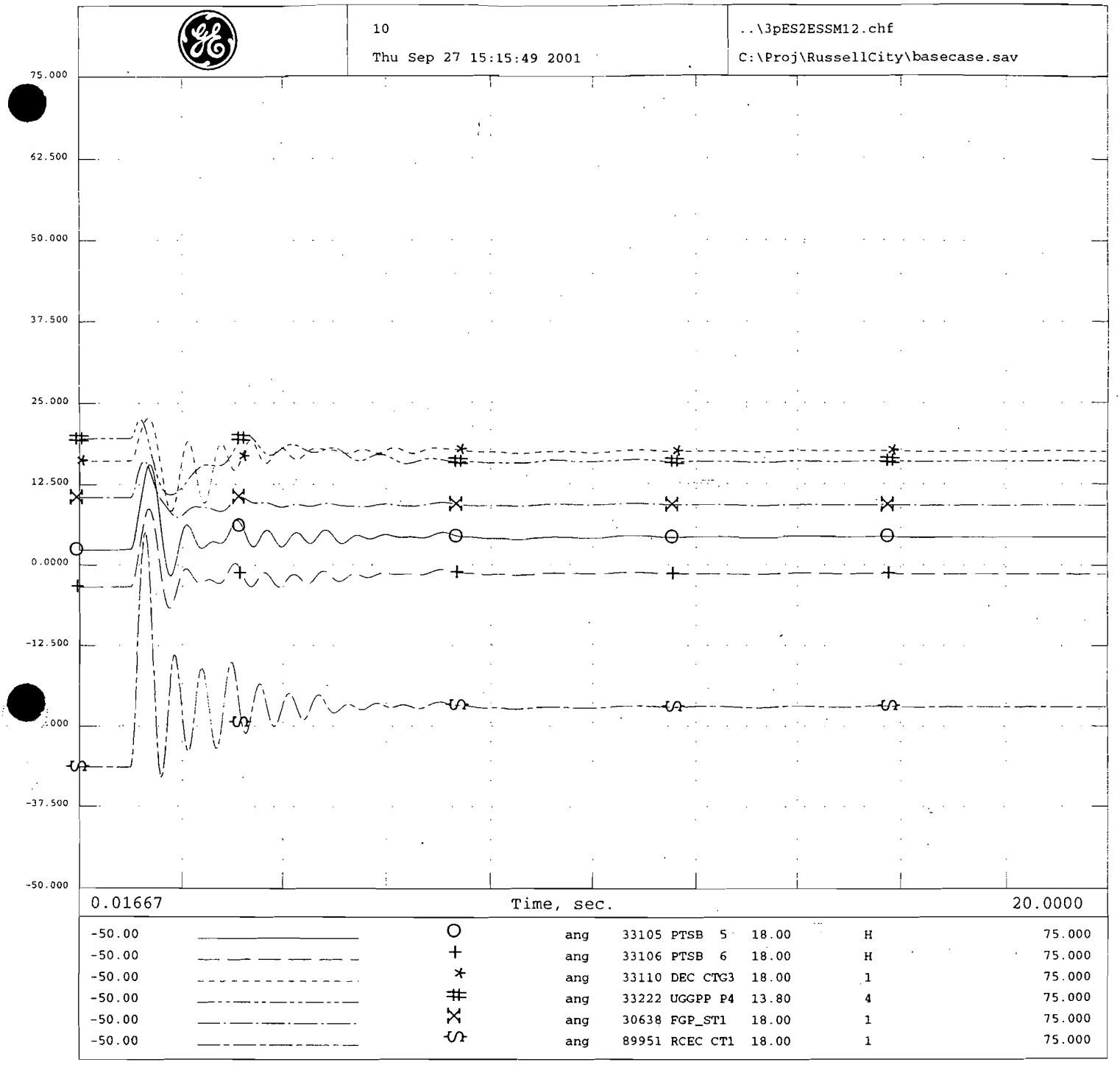
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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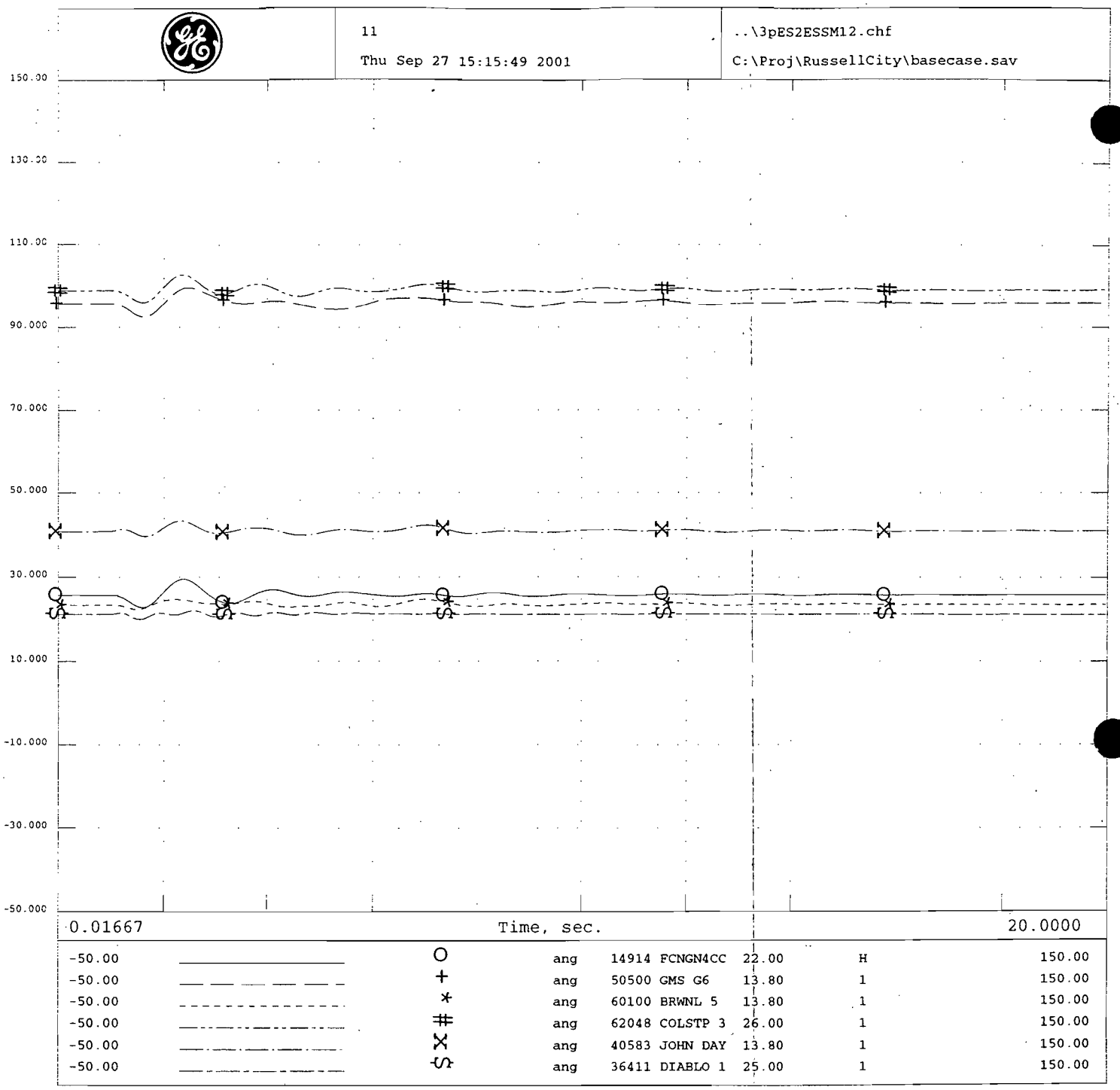
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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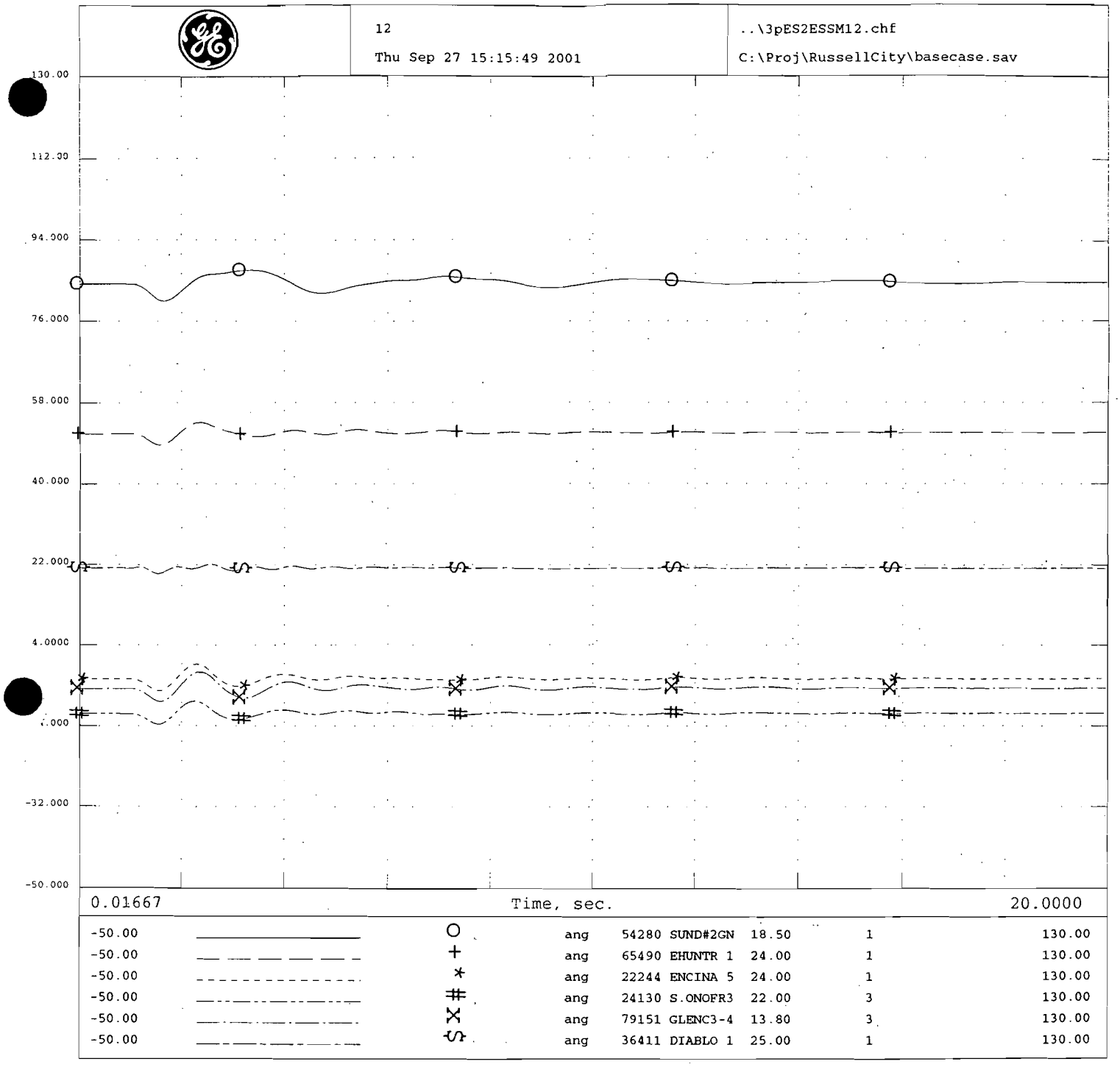
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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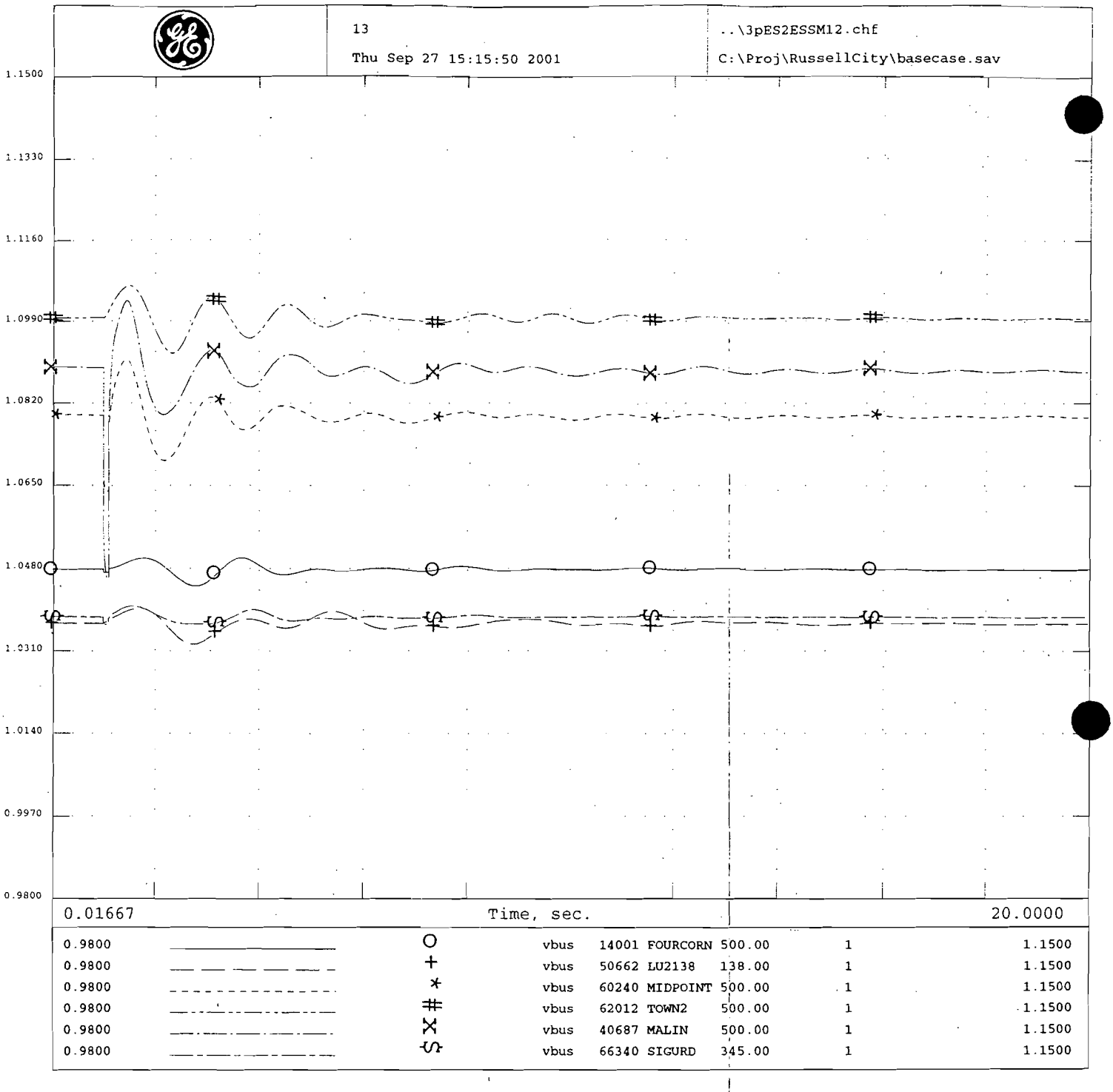

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Calpine/Bechtel Joint Development
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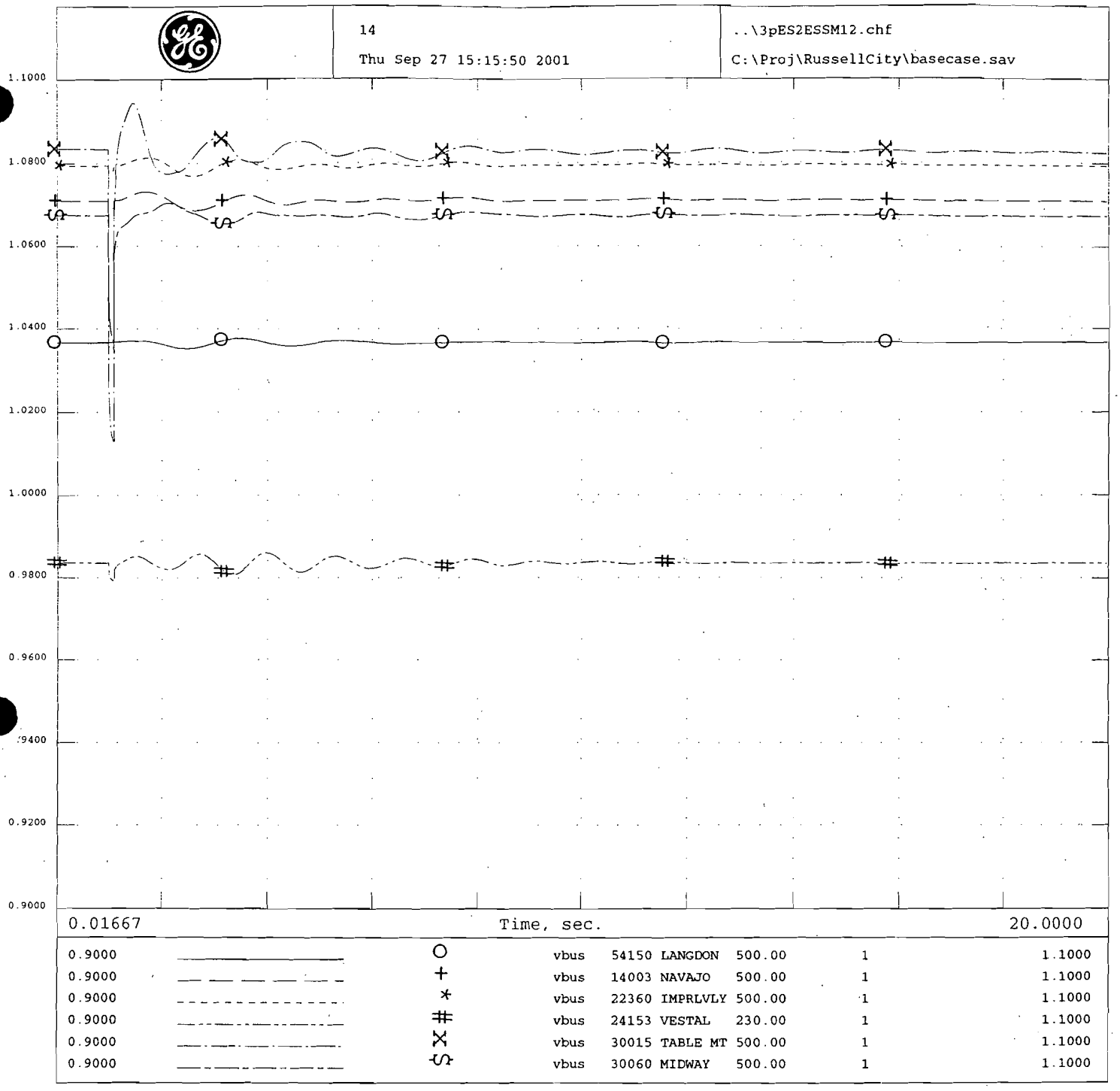

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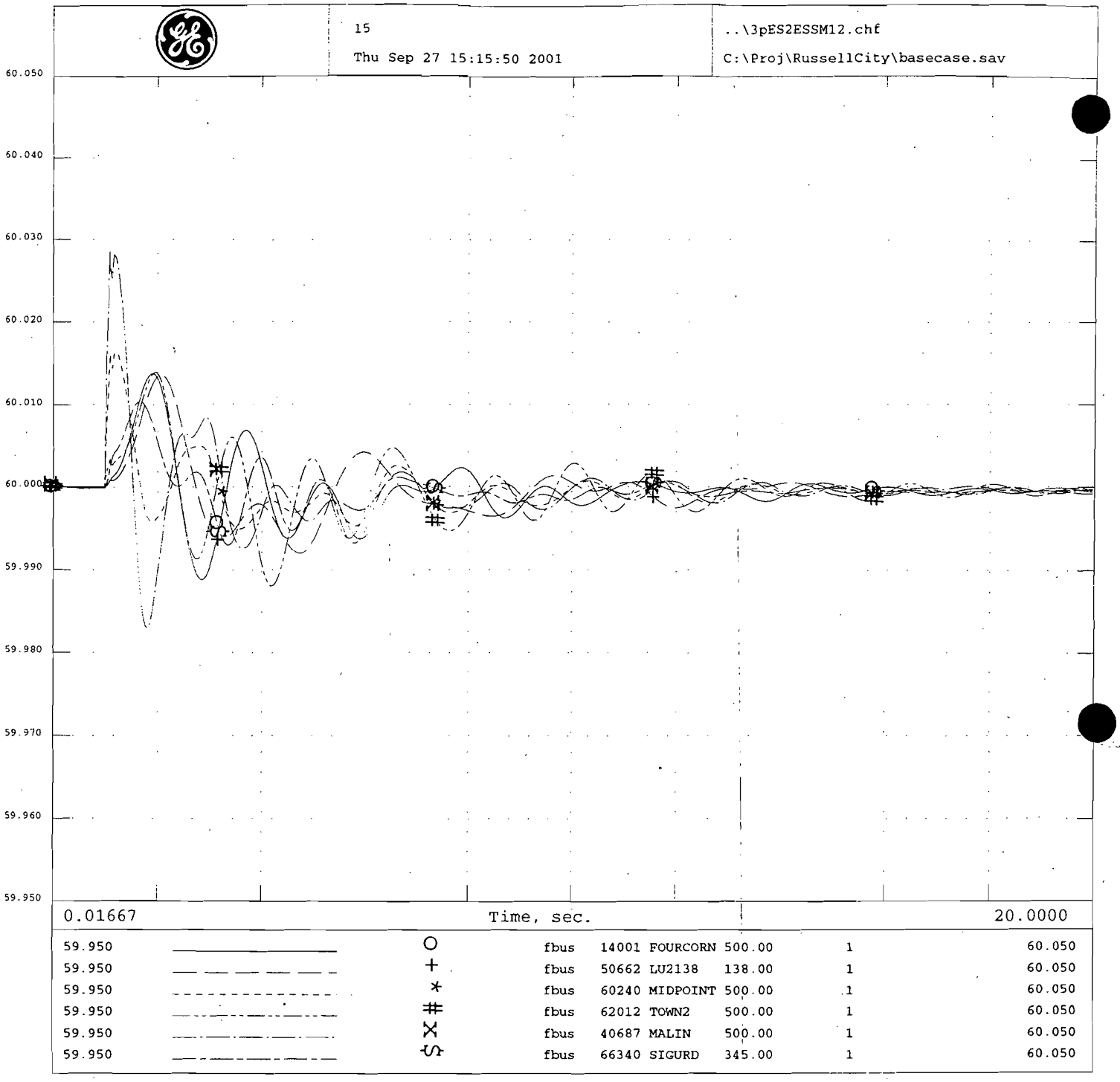

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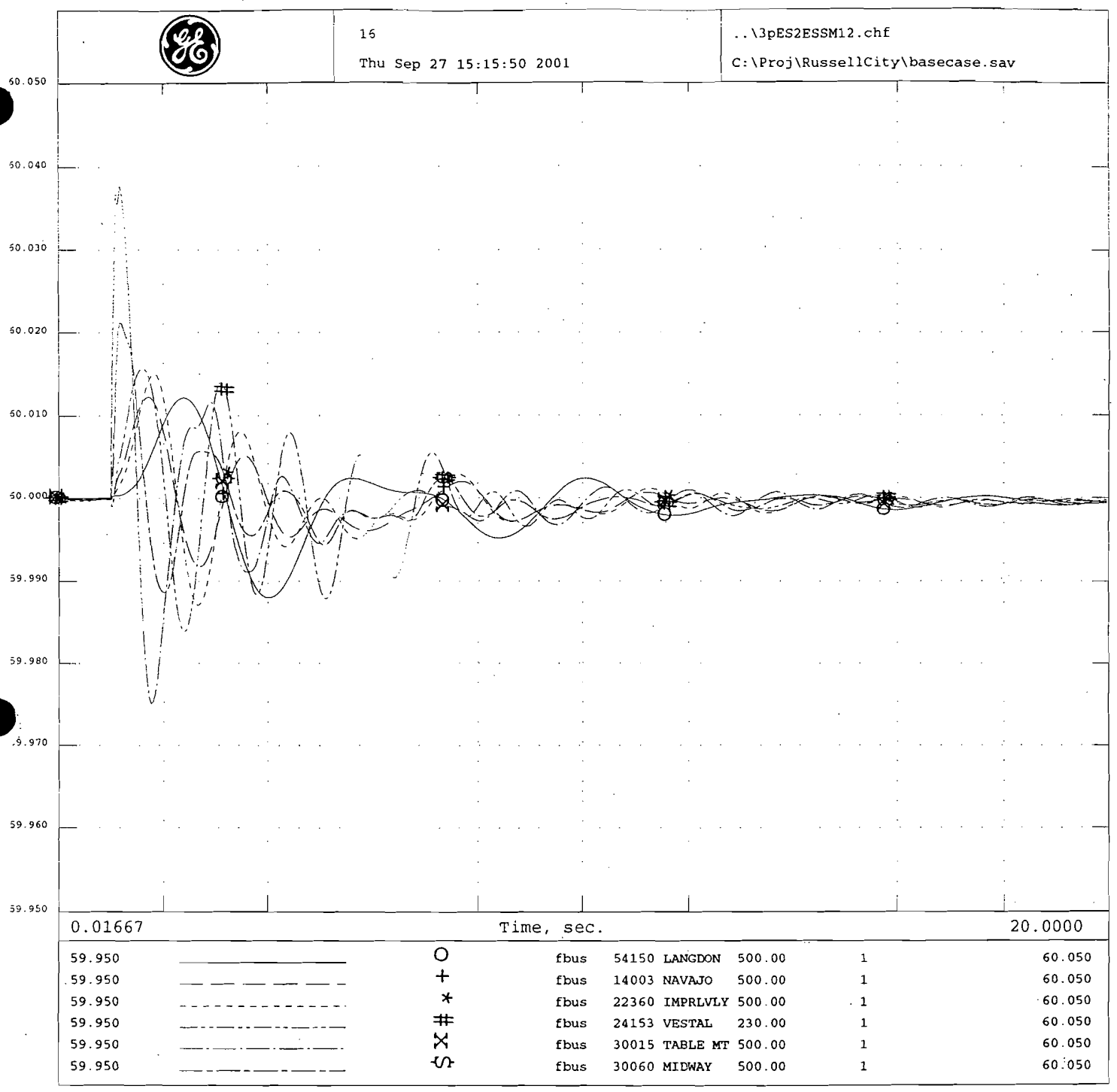

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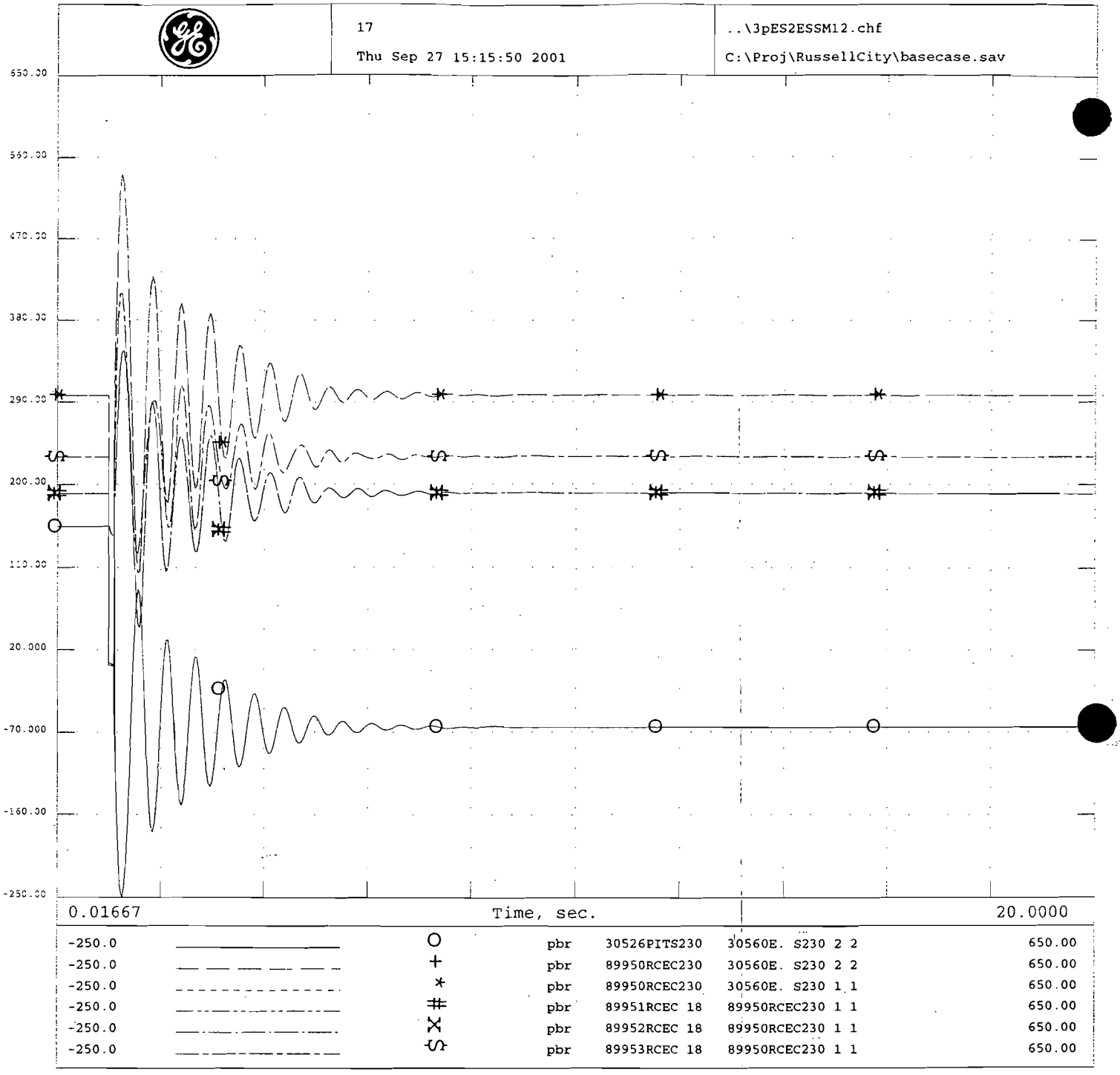

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Calpine/Bechtel Joint Development
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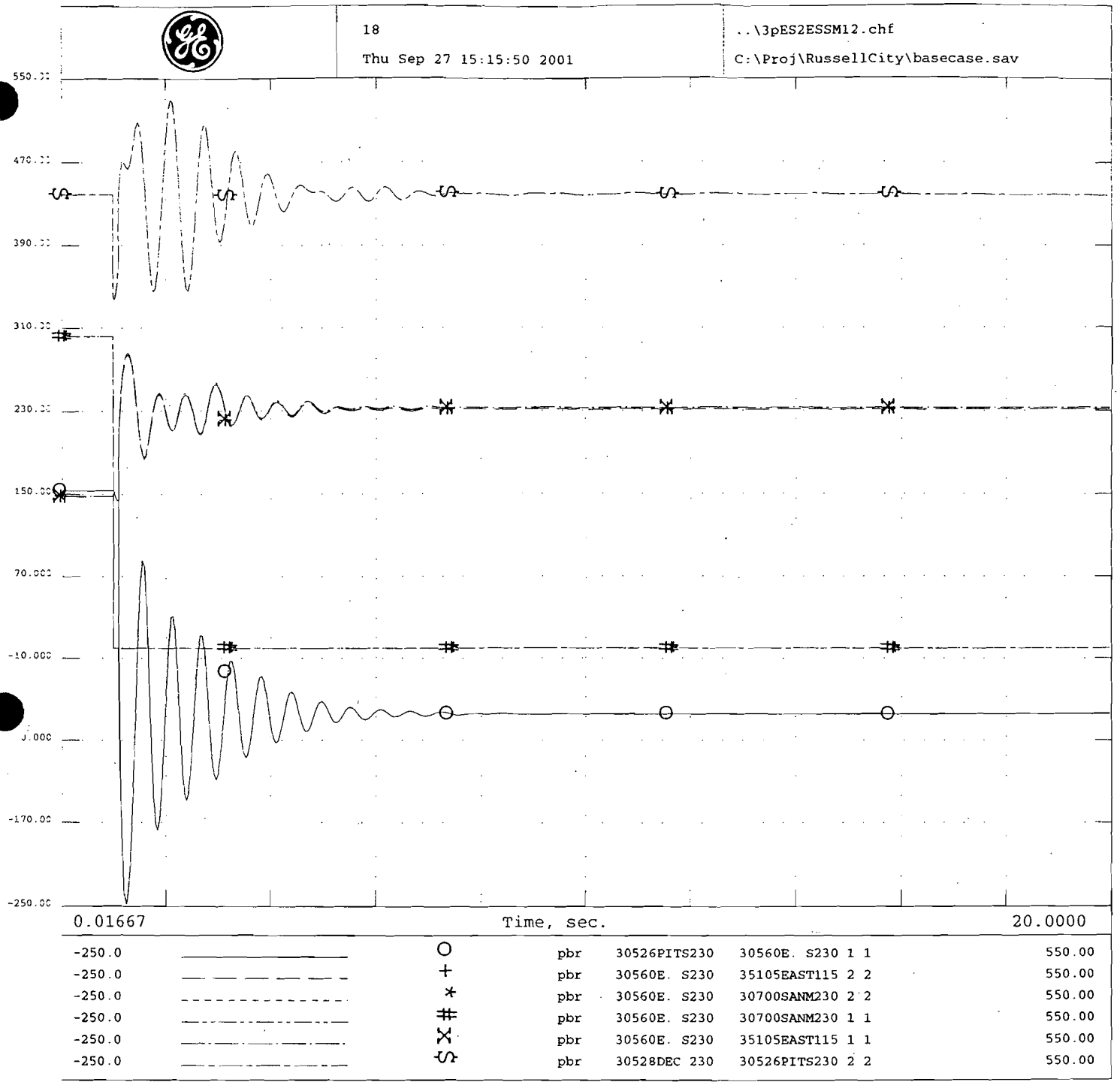

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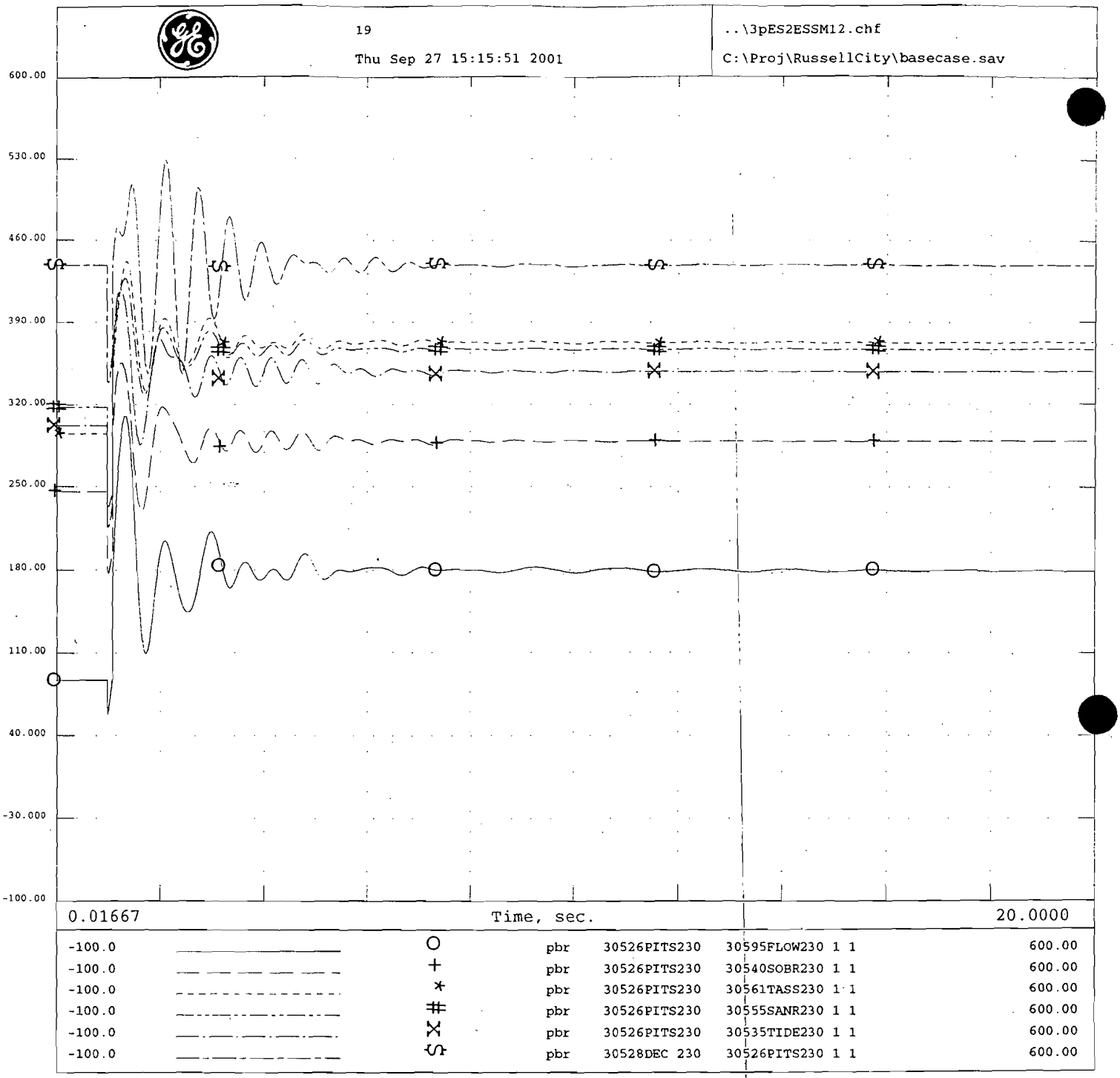

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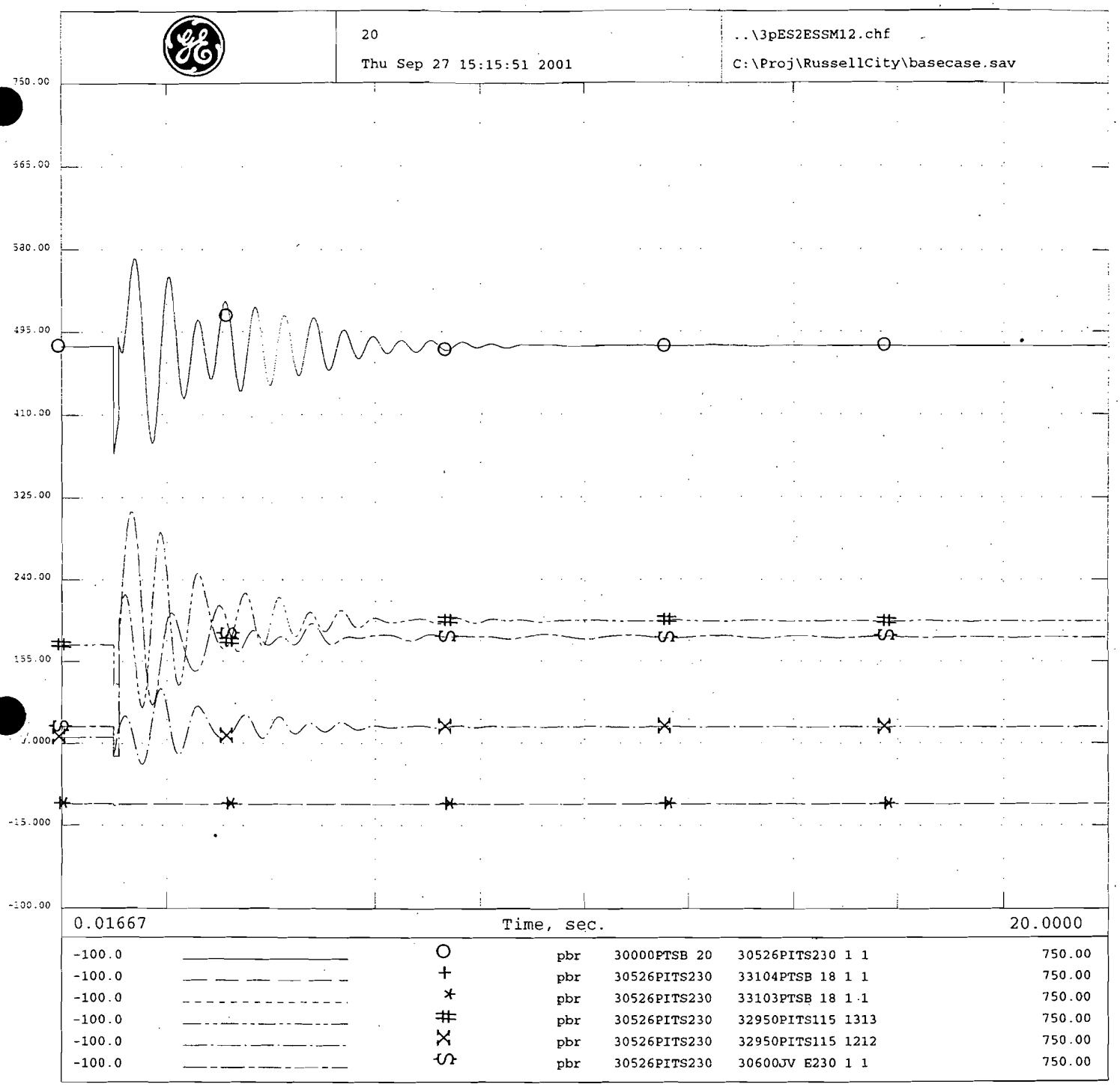

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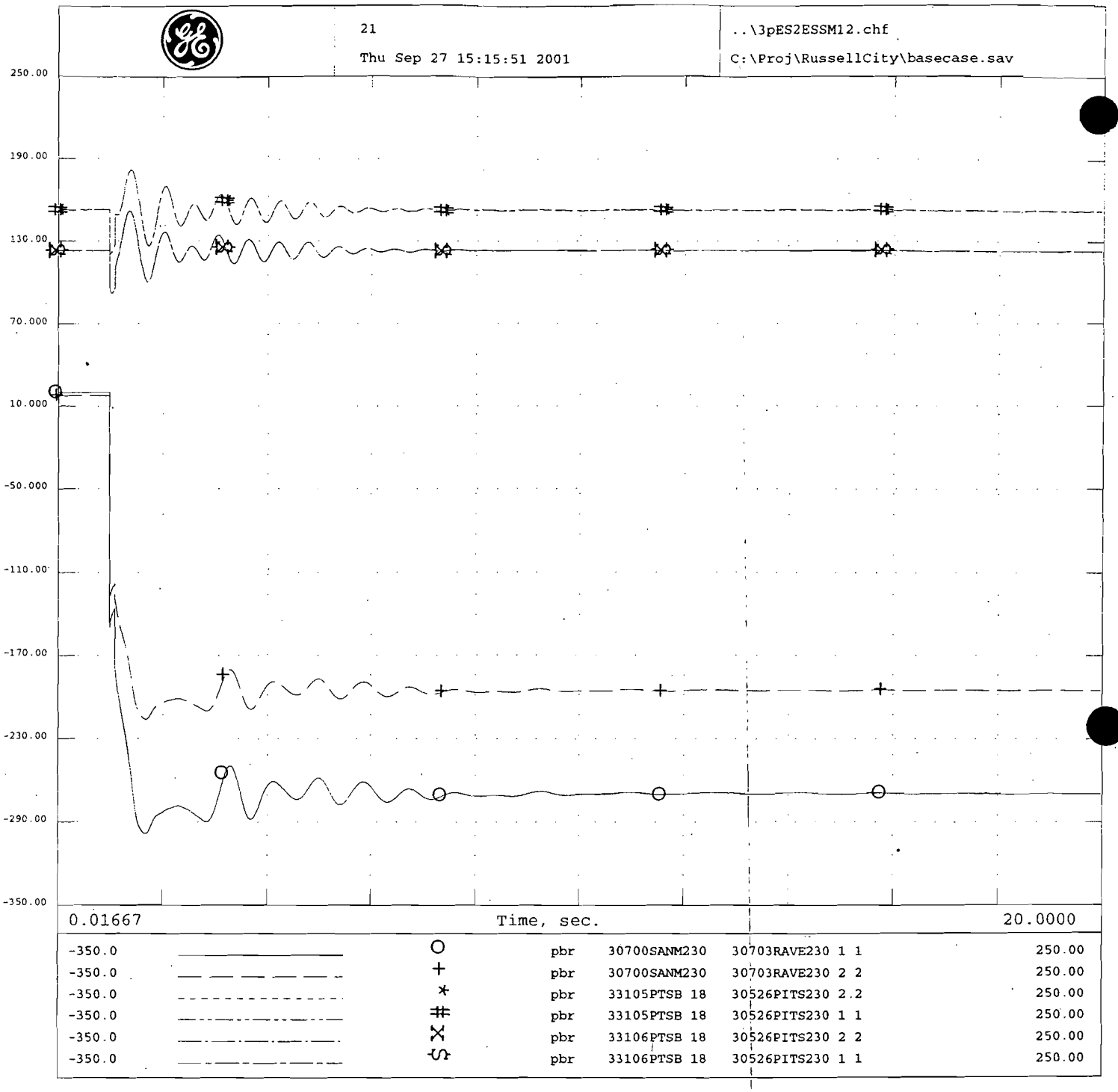

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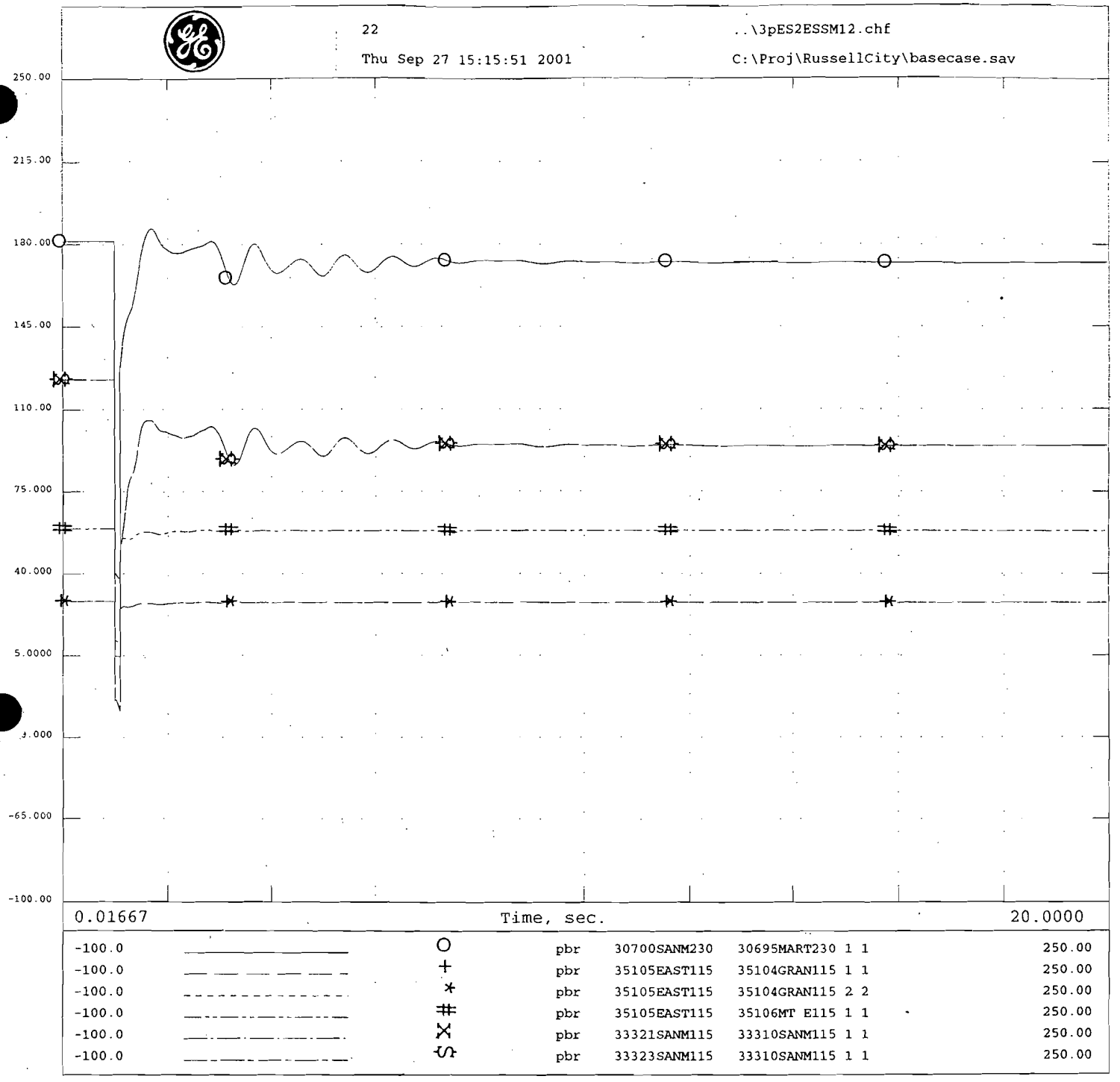

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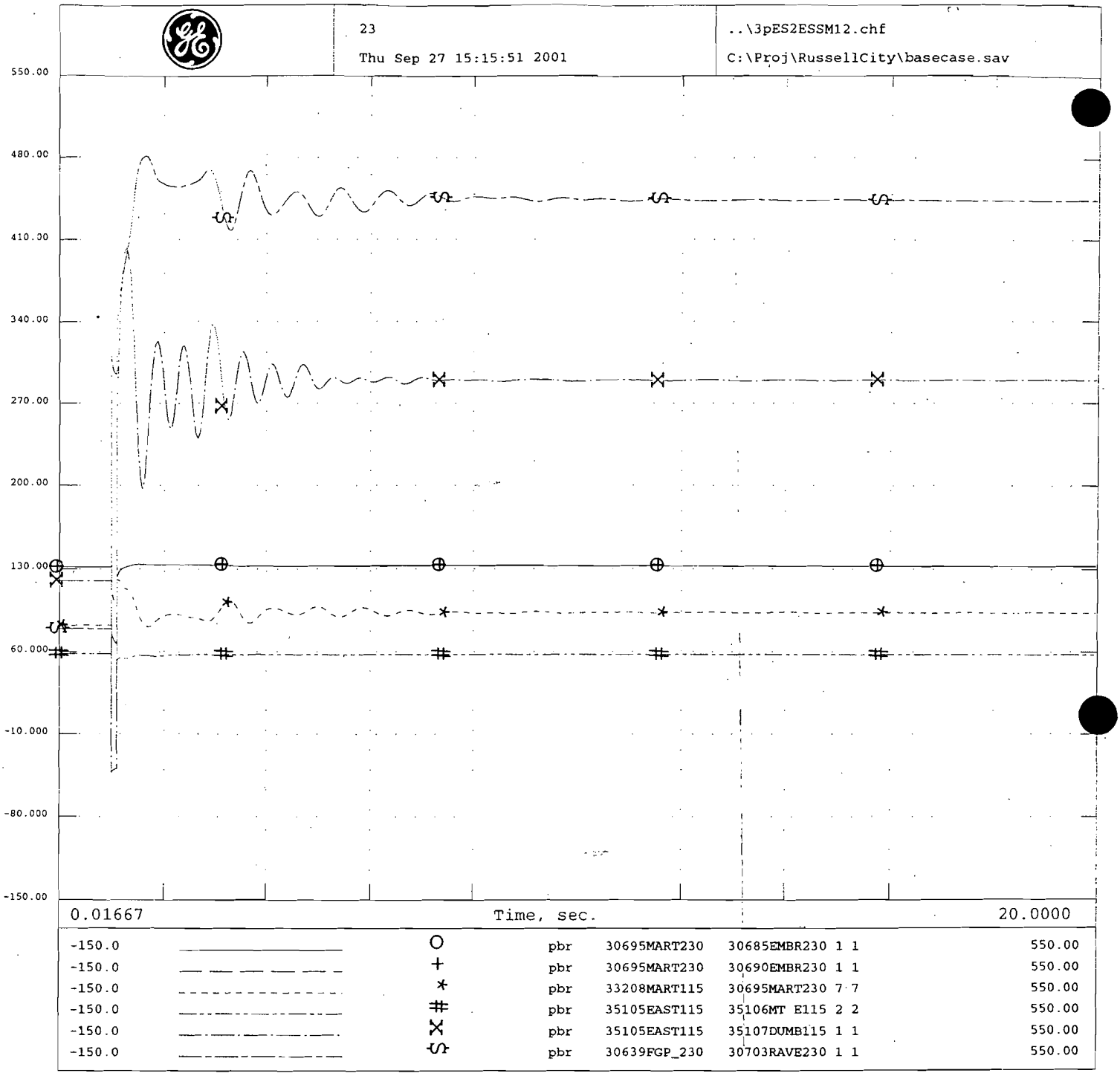

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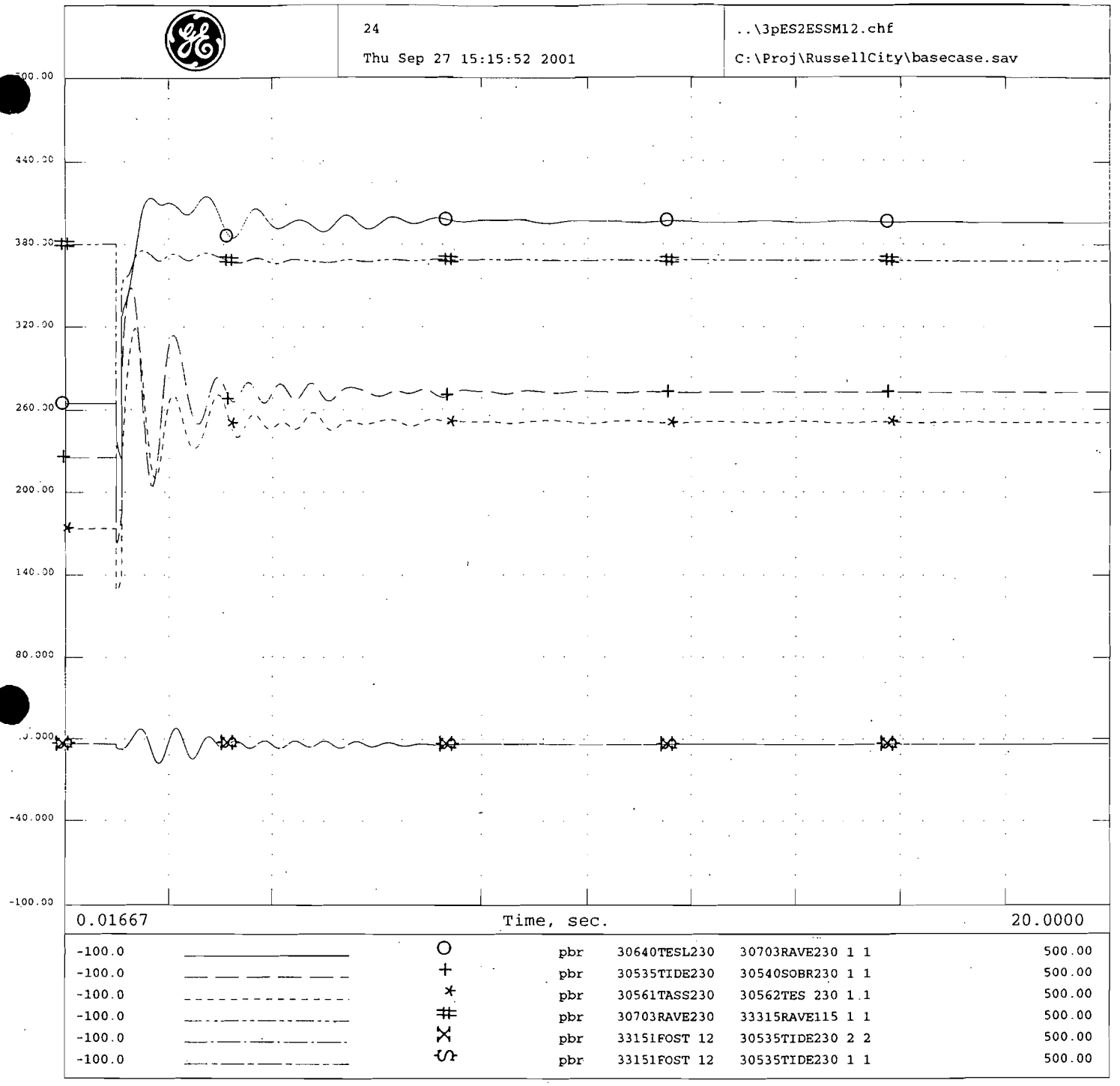

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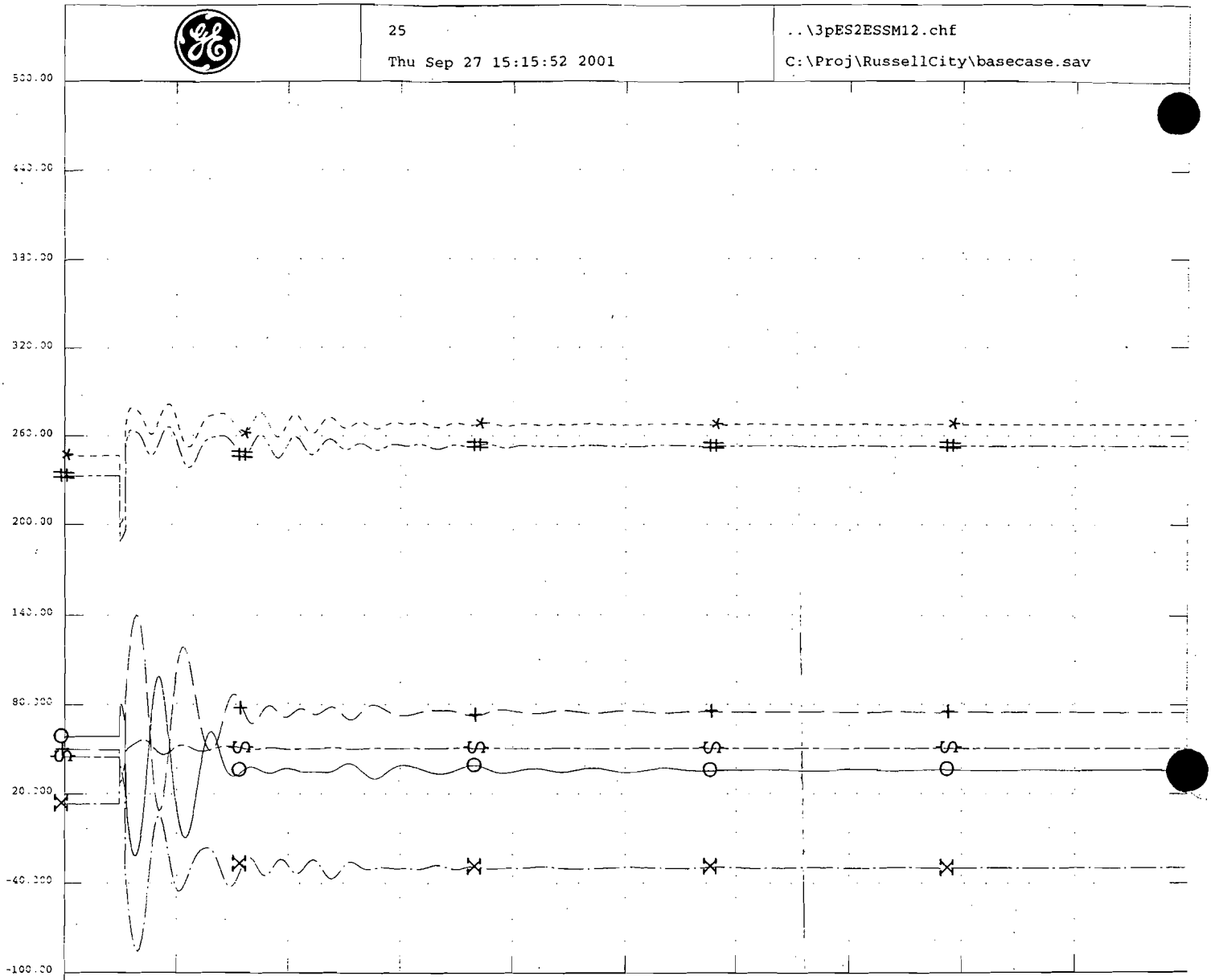

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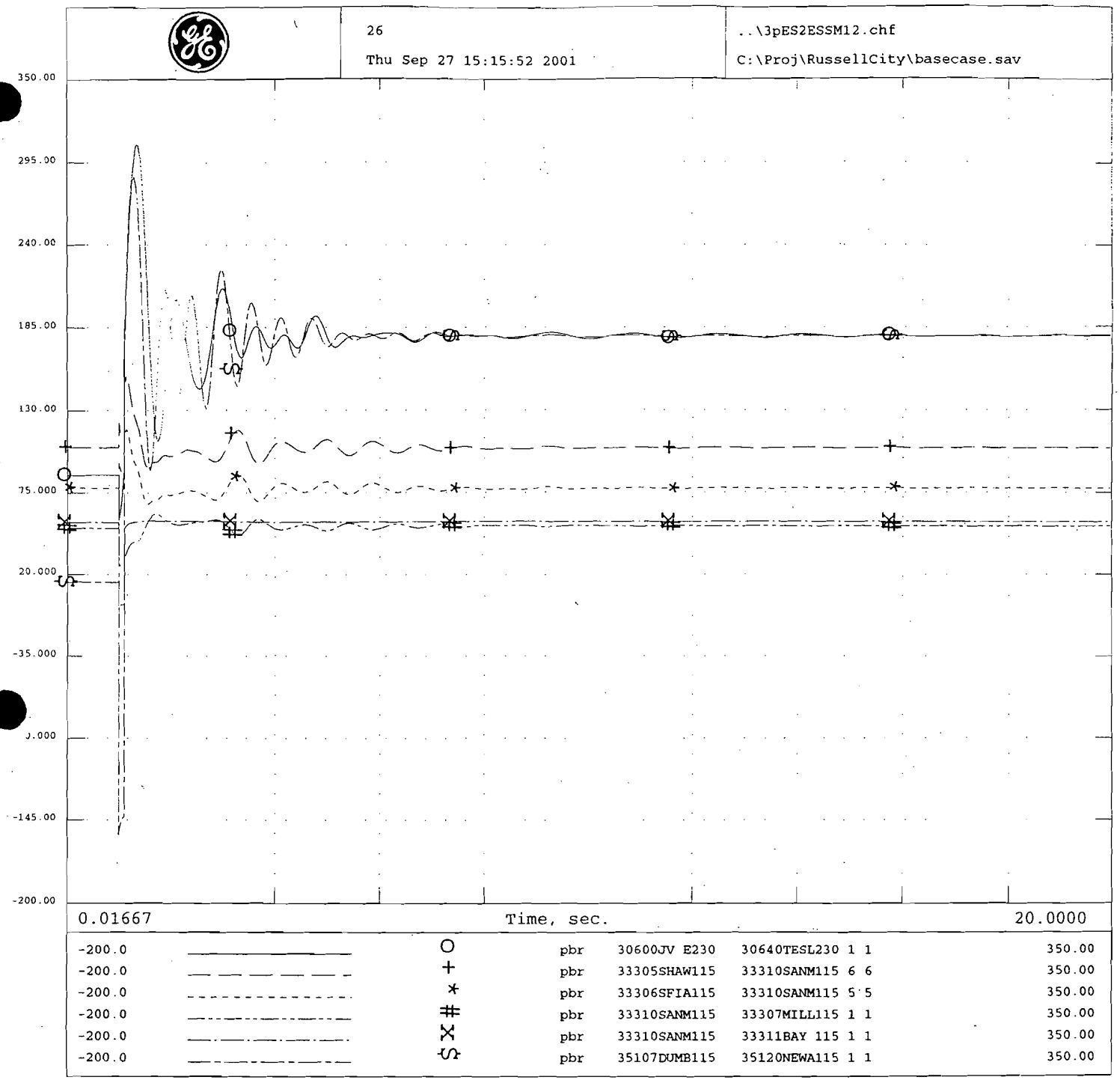

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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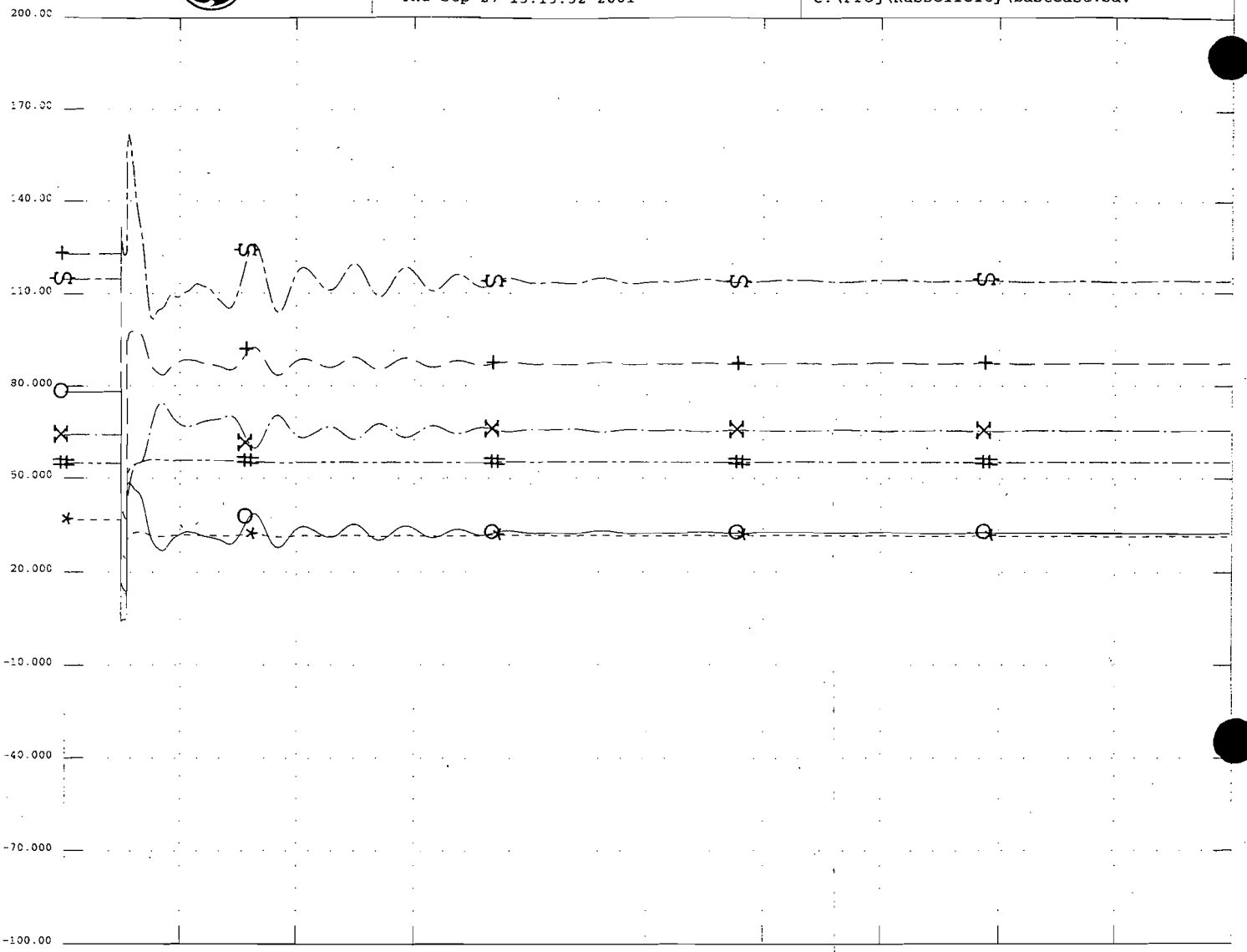

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 1, section D
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 1, section D
RUN  9
CC
CC   Fault Pittsburg 230 kV bus
FB   0.0 "PITSBURG" 230.
CC
CC   Clear fault at Pittsburg 230 kV bus 1D
CFB  6.0 "PITSBURG" 230.
CC
CC
DL  6.0 "PITSBURG" 230.00 "TASSAJAR" 230.00 "1 "
CC
DL  6.0 "PITSBURG" 230.00 "PITSBURG" 115.00 "12 "
MBL 6.0 "PTSB  3 " 18.0 "1 " D
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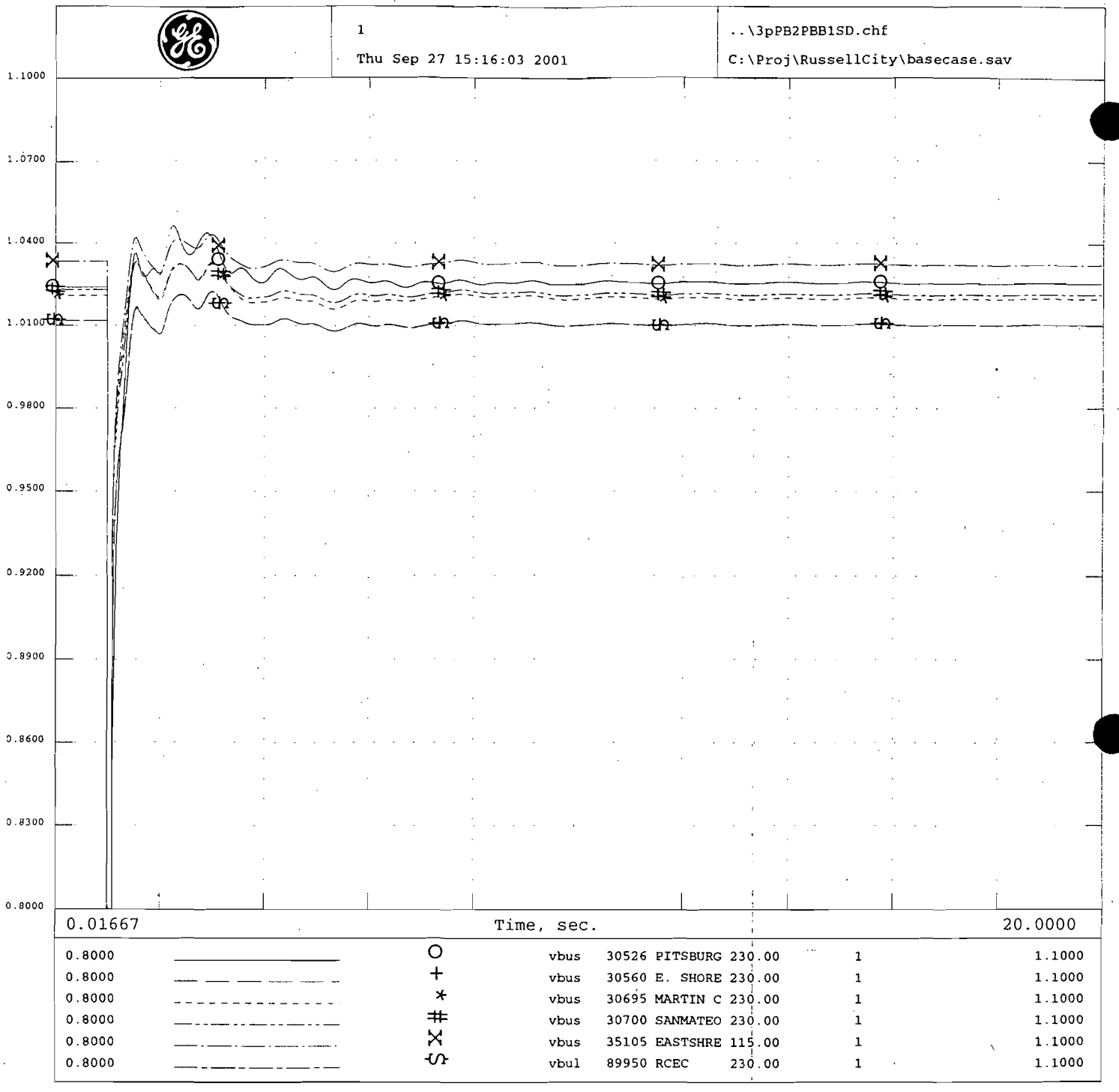
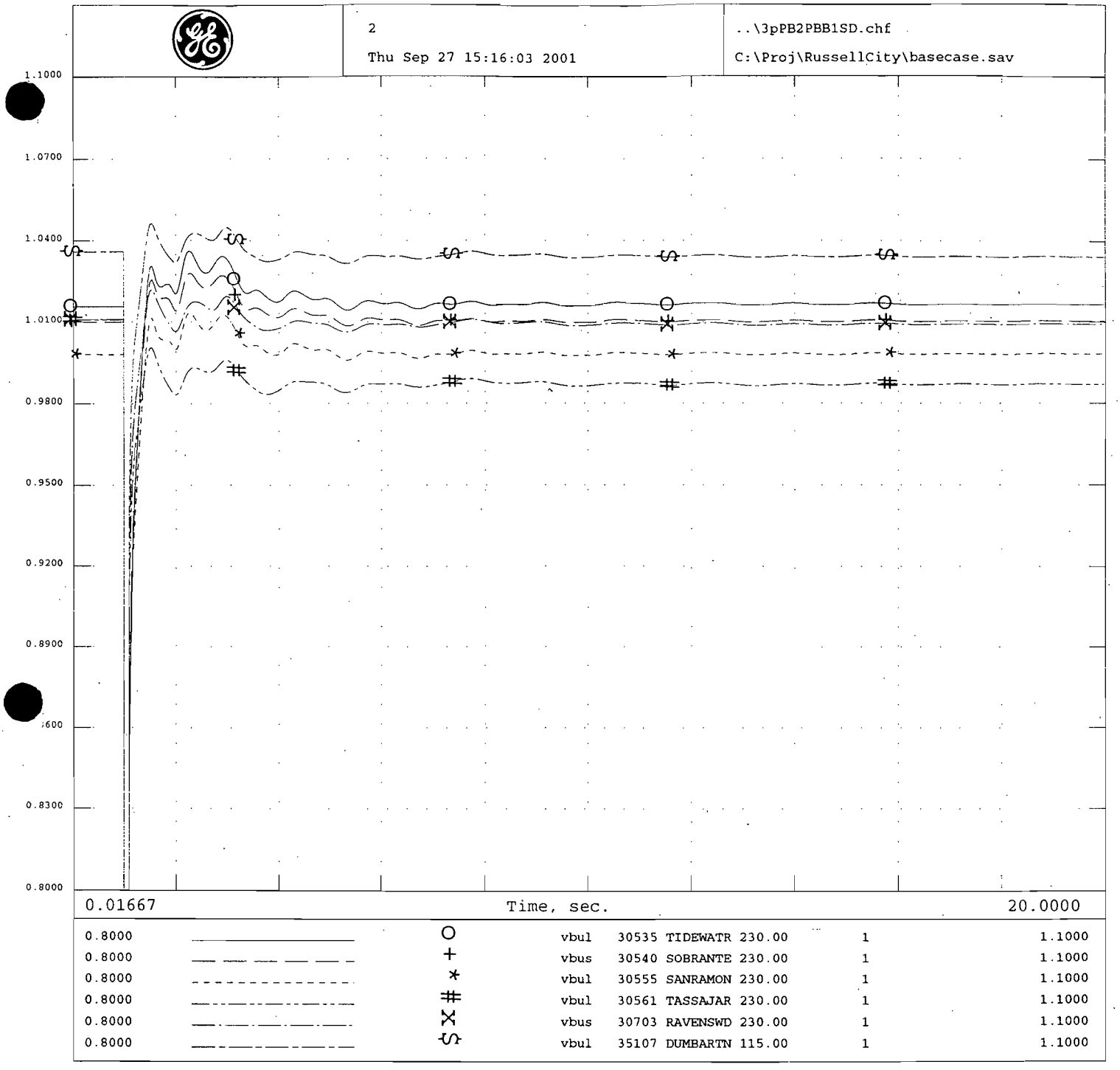


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 1, section D
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 1, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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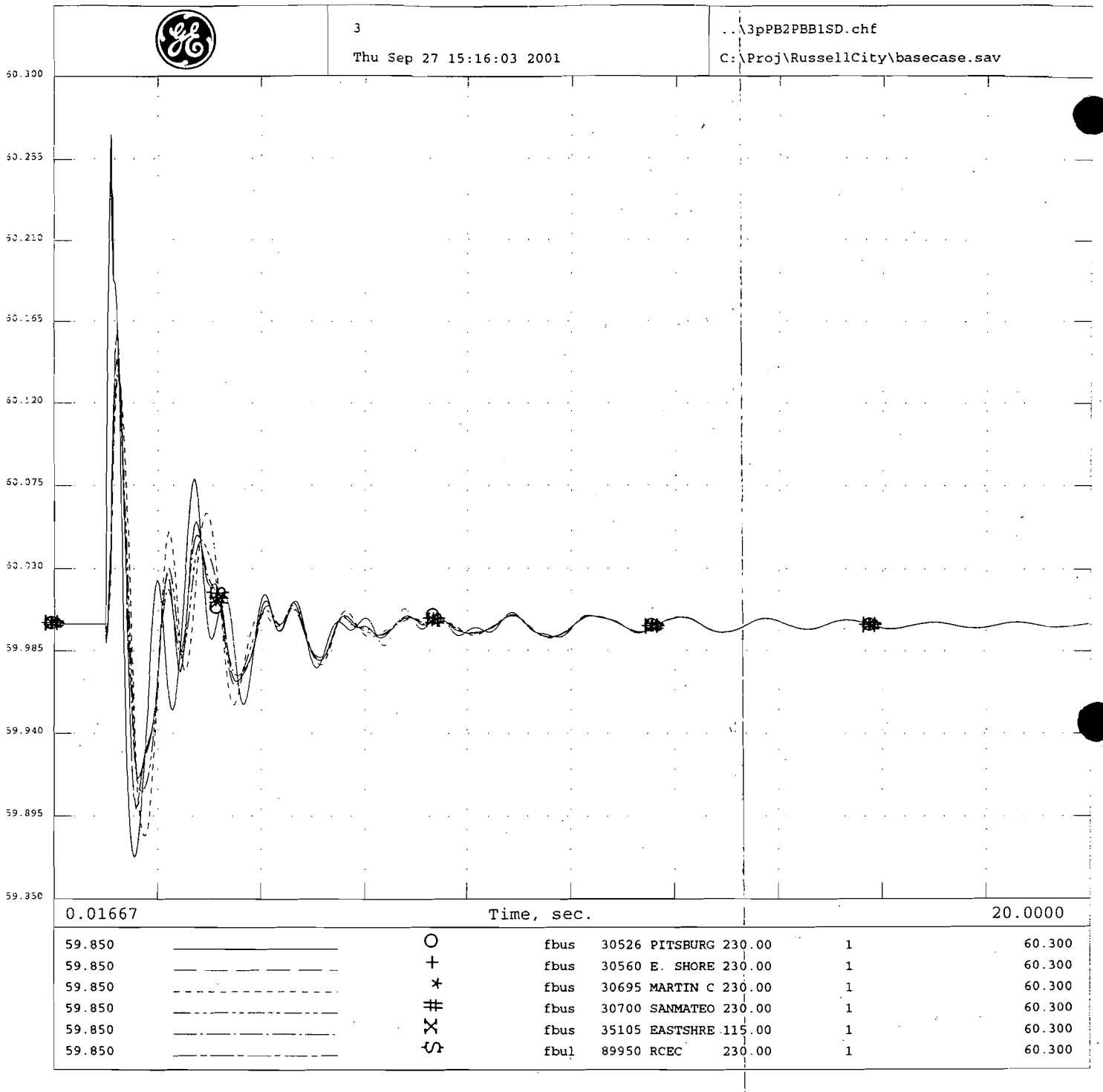

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2004 Summer Peak Base Case
RCEC @ 610MW
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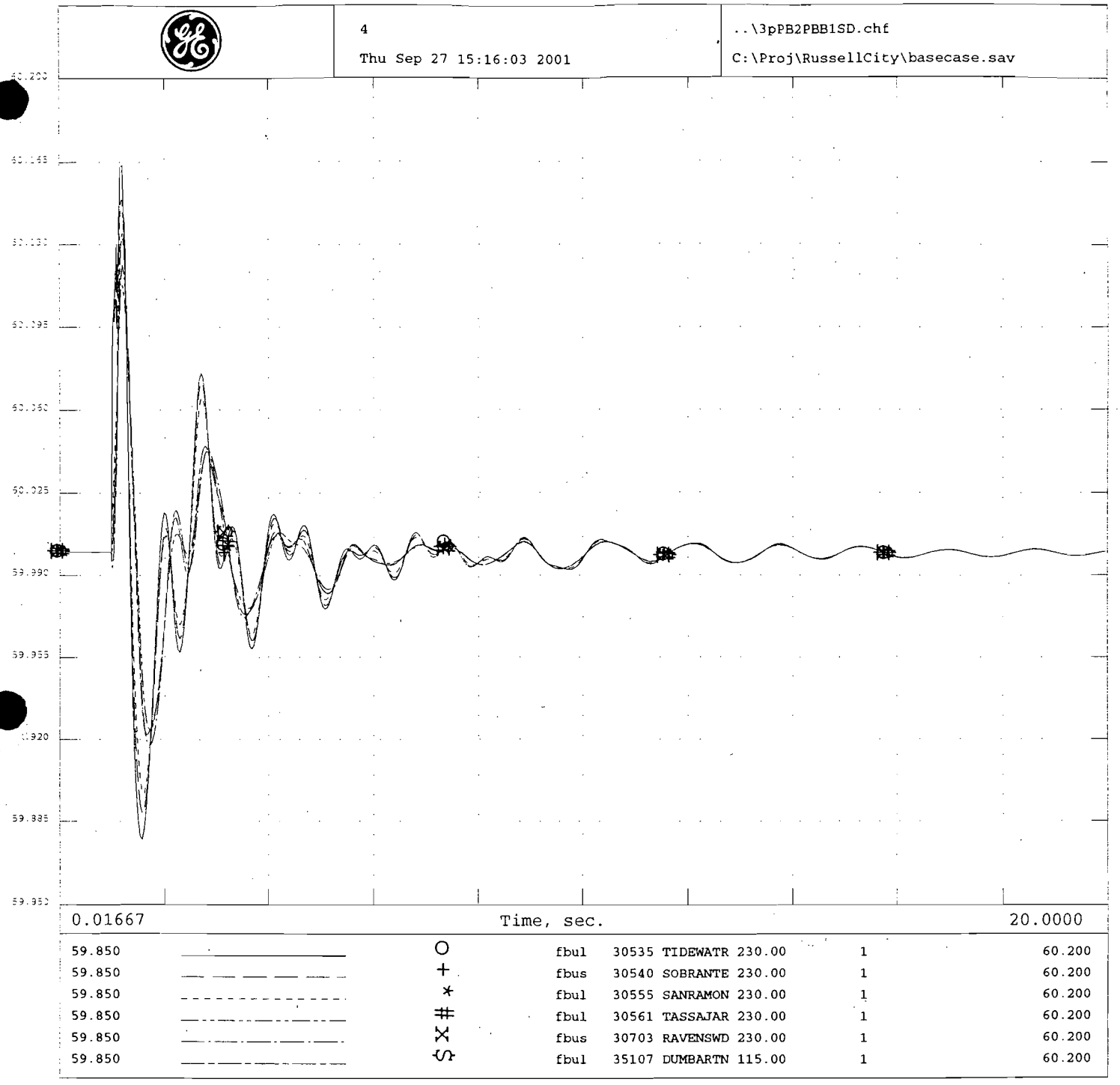
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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2004 Summer Peak Base Case
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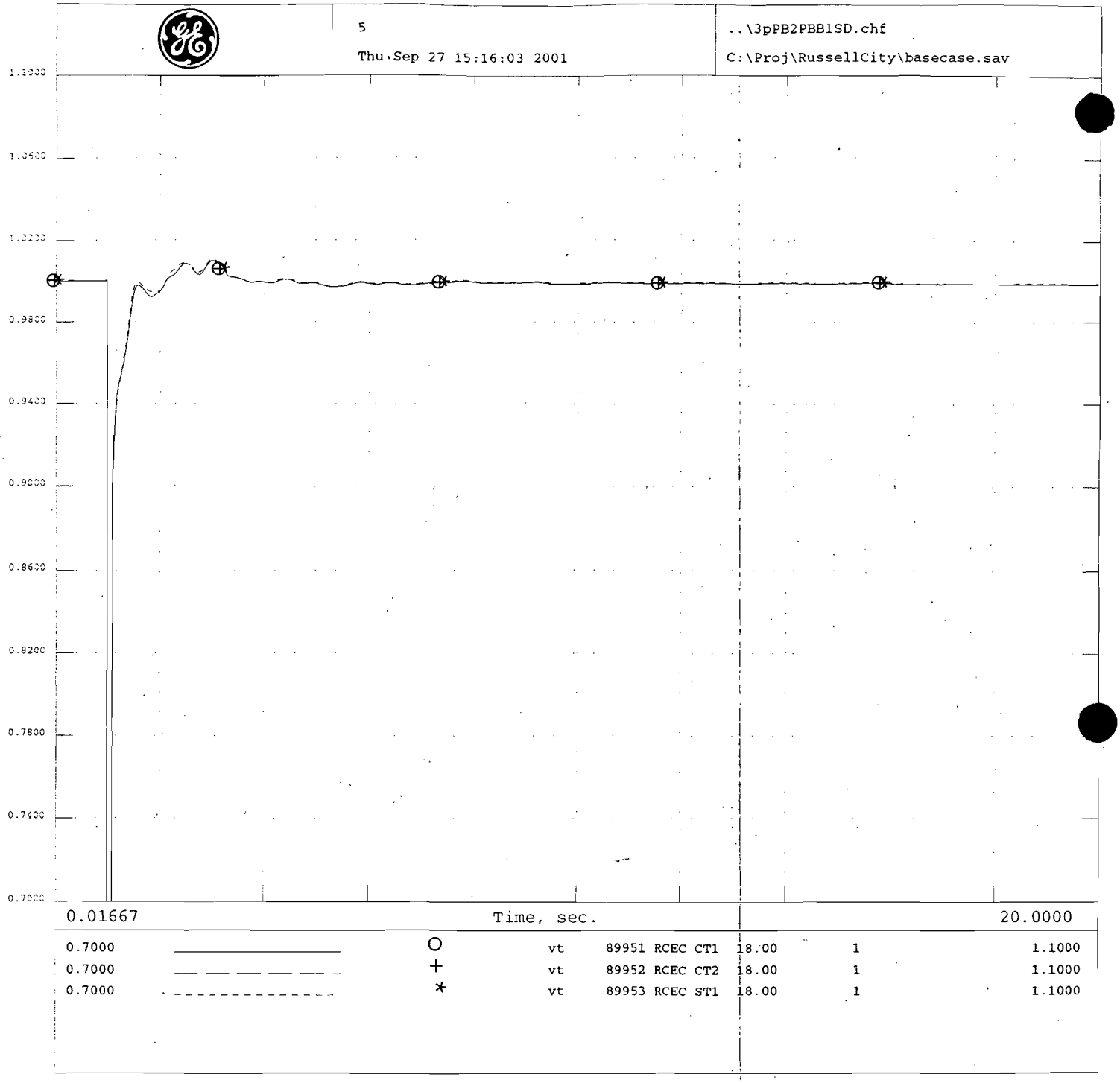
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 1, section D
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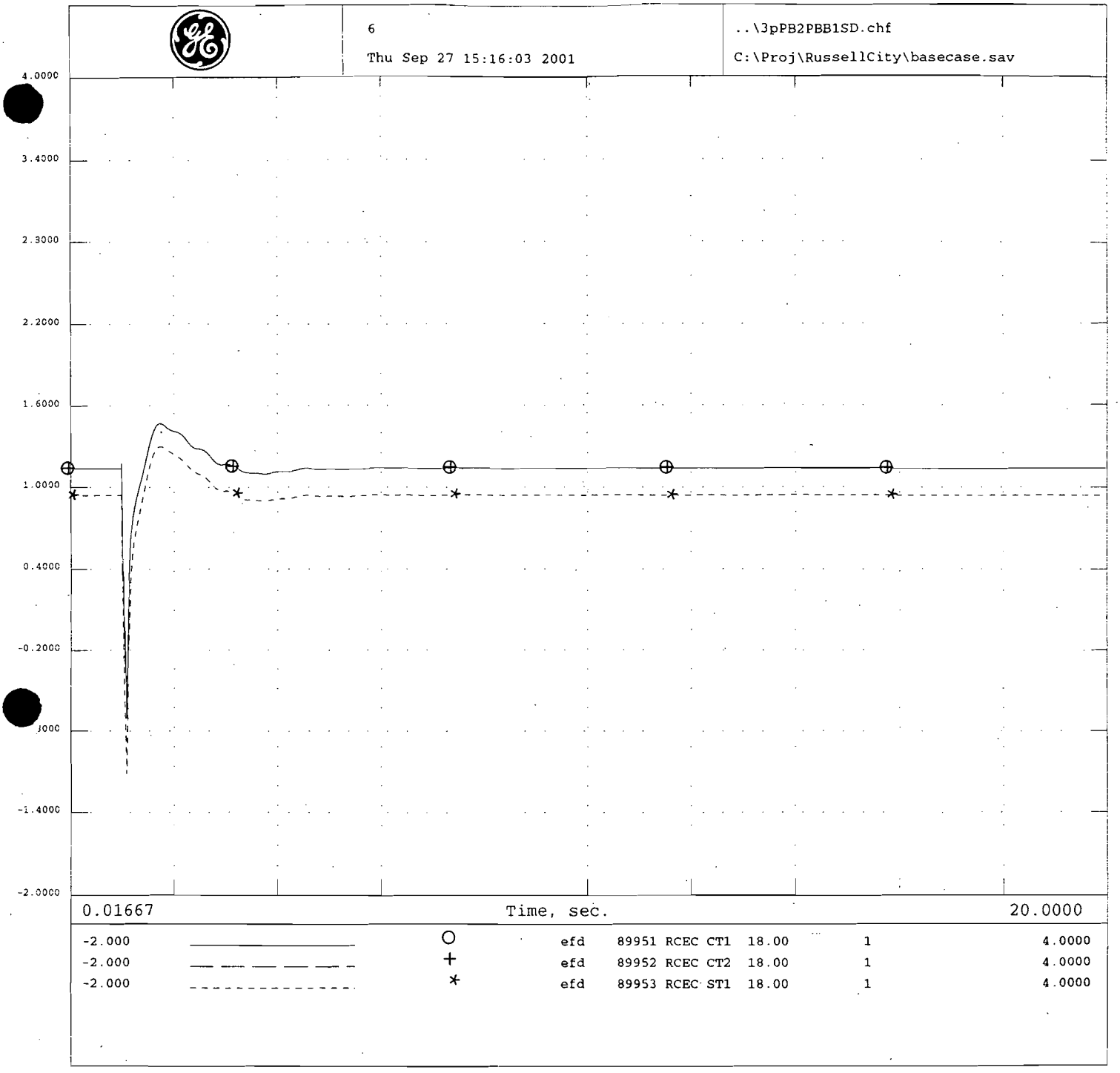
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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2004 Summer Peak Base Case
RCEC @ 610MW
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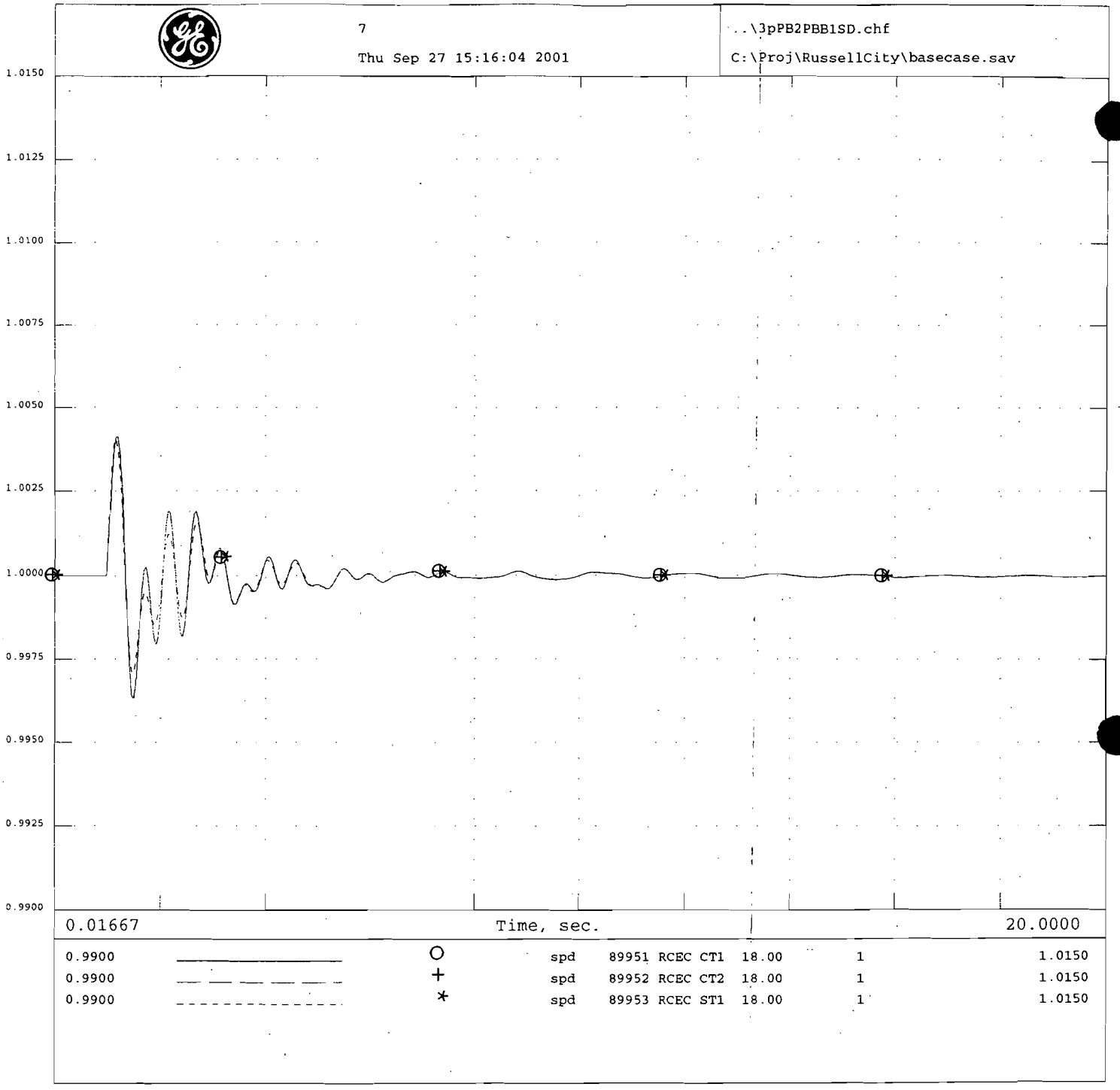
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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2004 Summer Peak Base Case
RCEC @ 610MW
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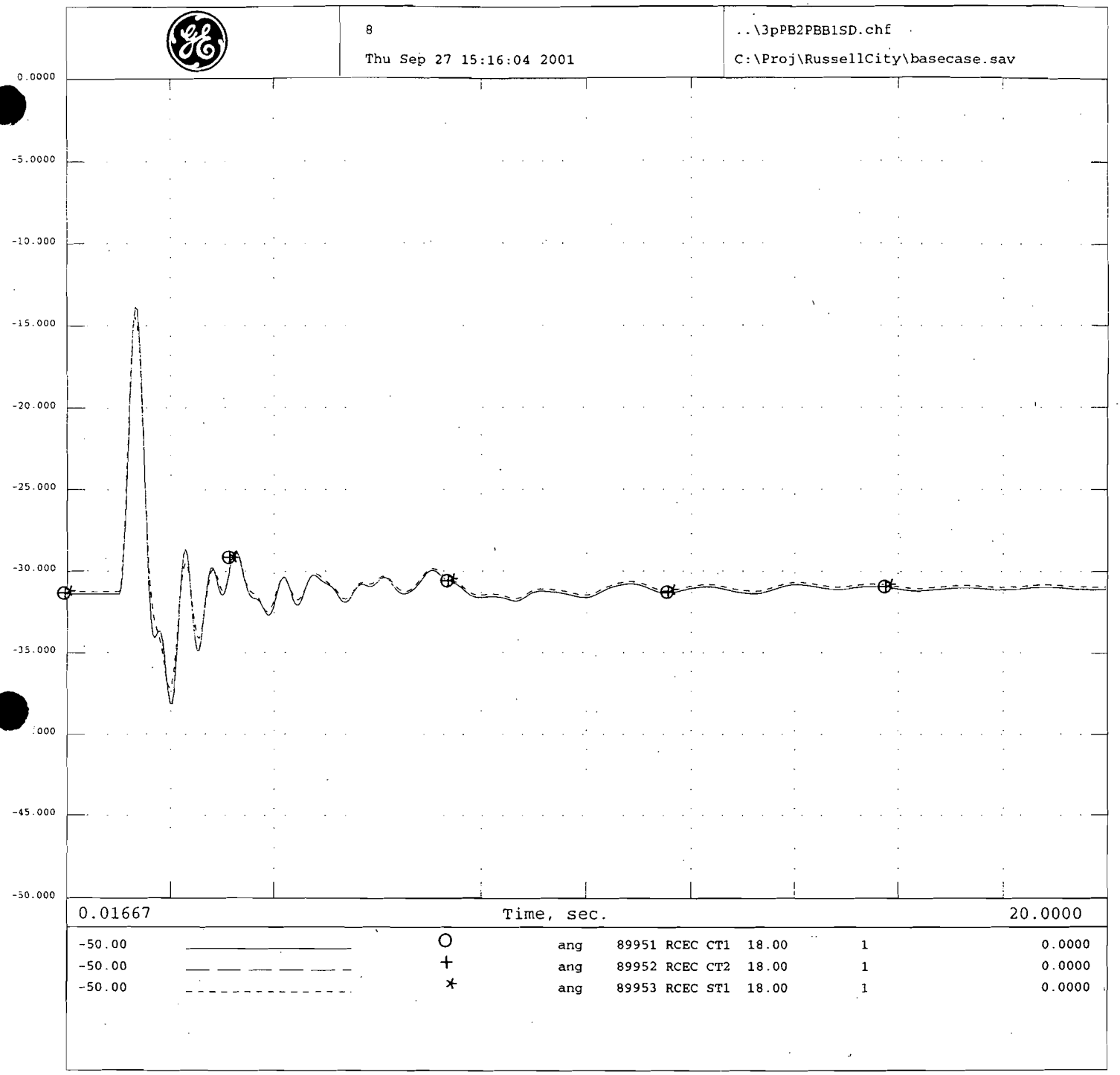
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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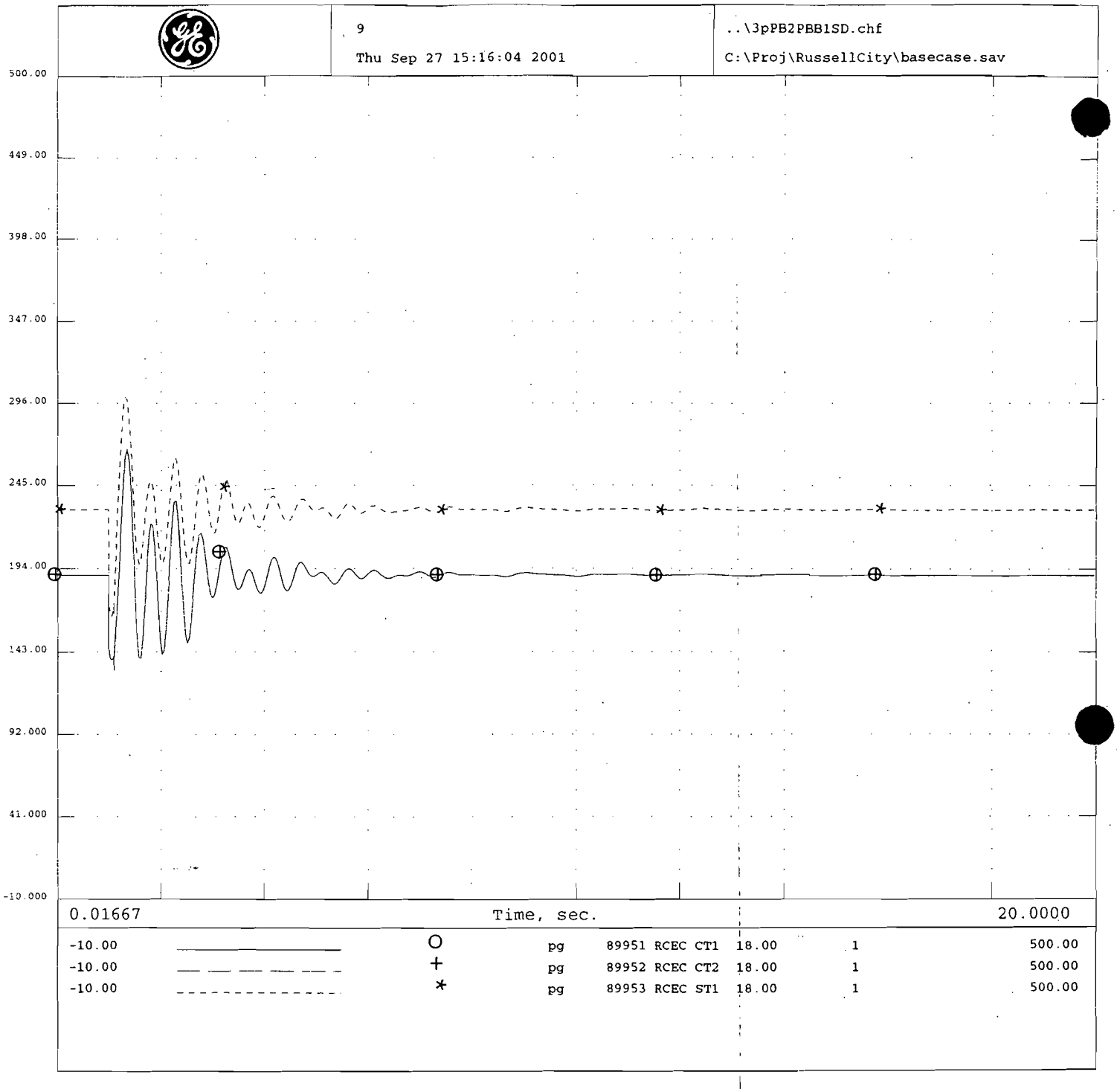
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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2004 Summer Peak Base Case
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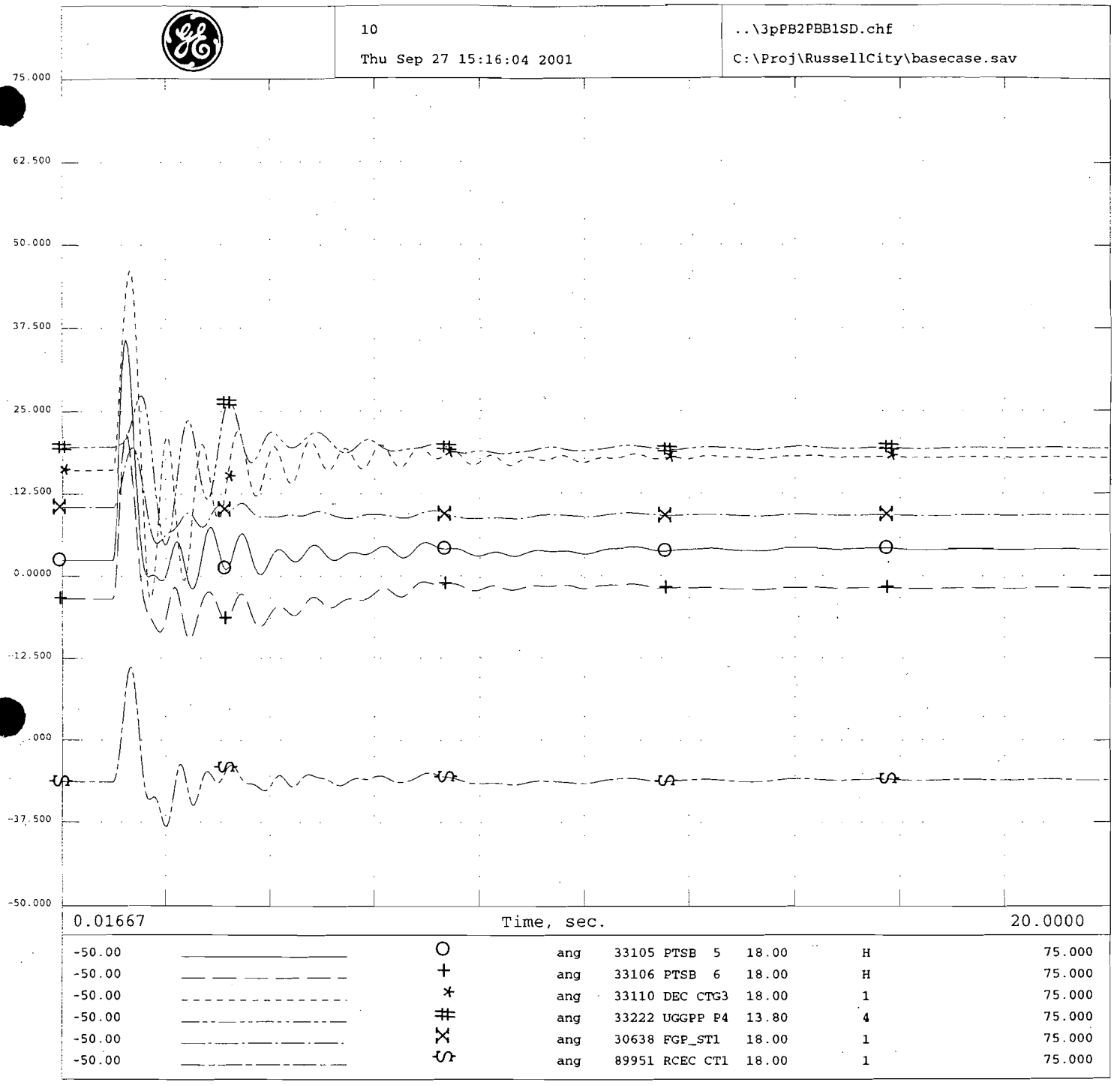
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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2004 Summer Peak Base Case
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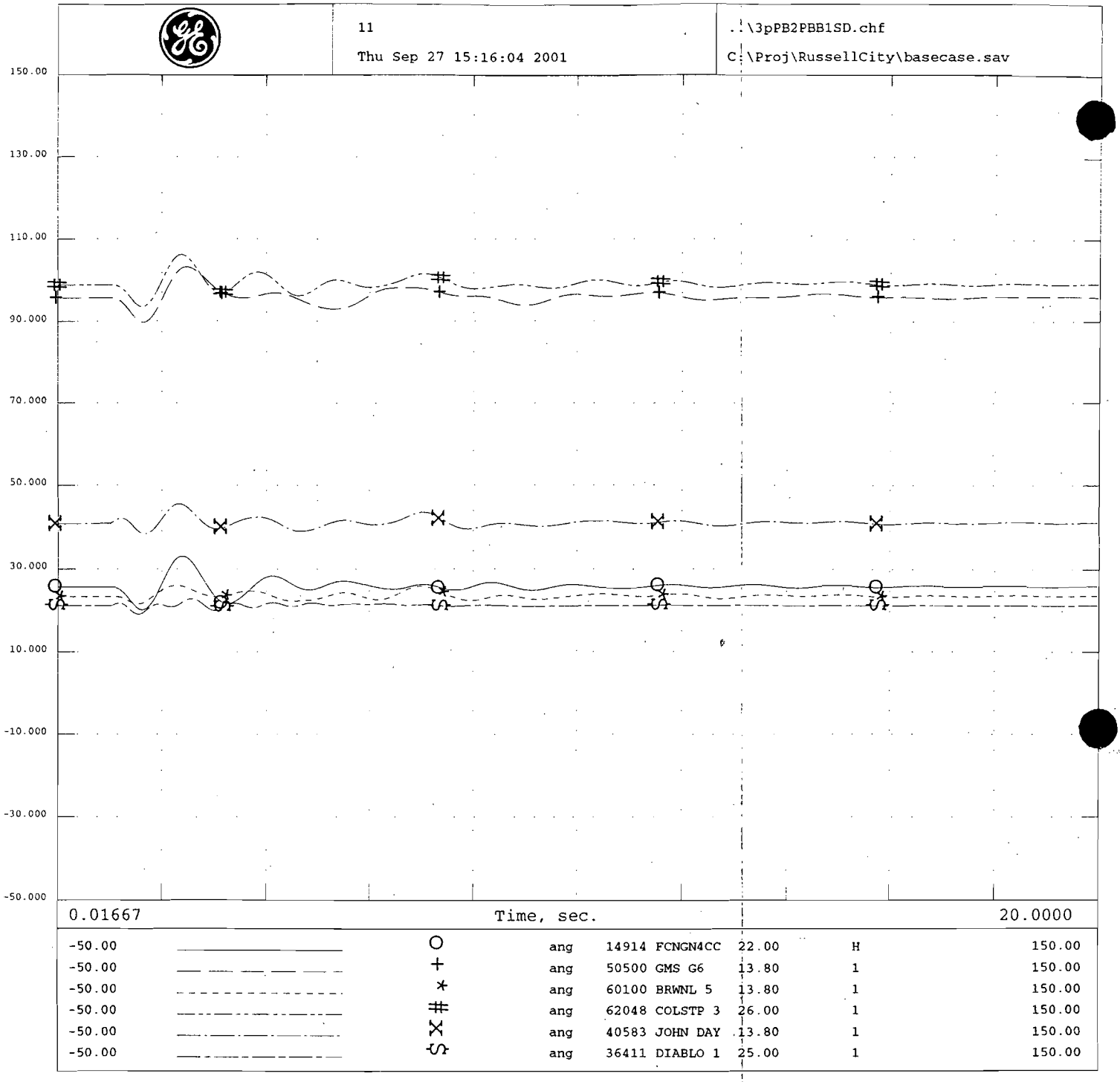
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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2004 Summer Peak Base Case
RCEC @ 610MW
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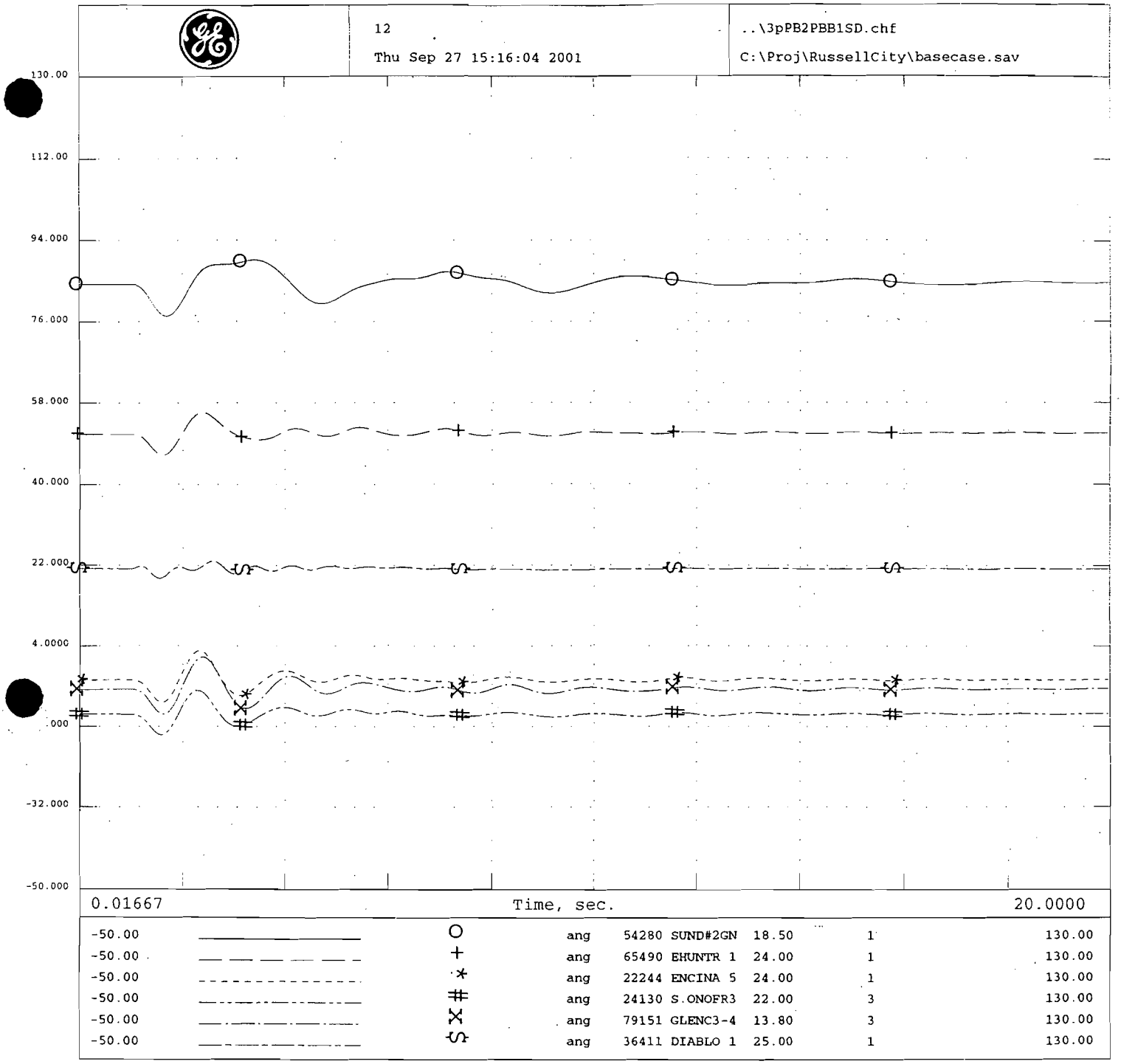
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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2004 Summer Peak Base Case
RCEC @ 610MW
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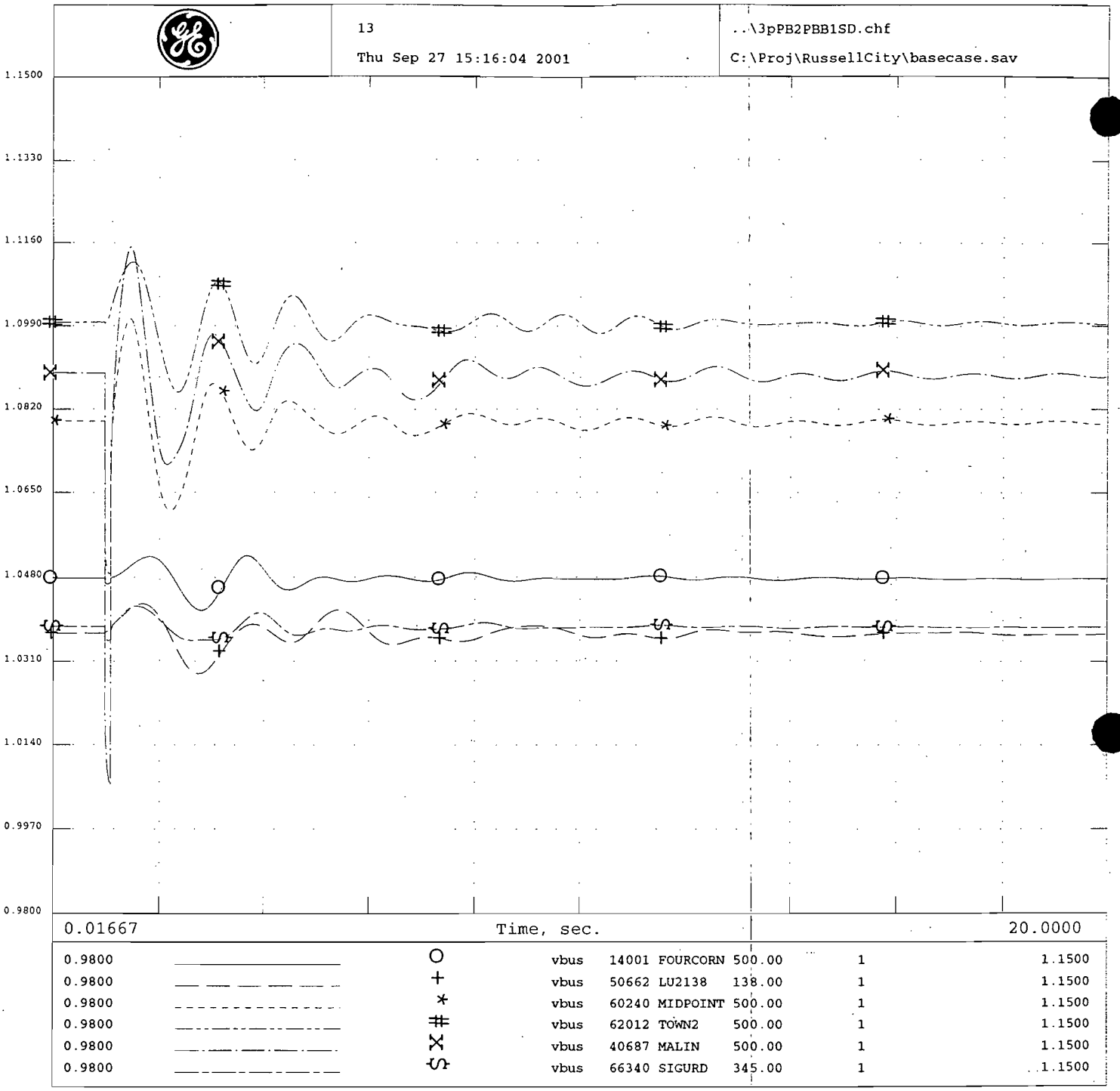
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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RCEC @ 610MW
Loss of Pittsburg 230 kV bus 1, section D
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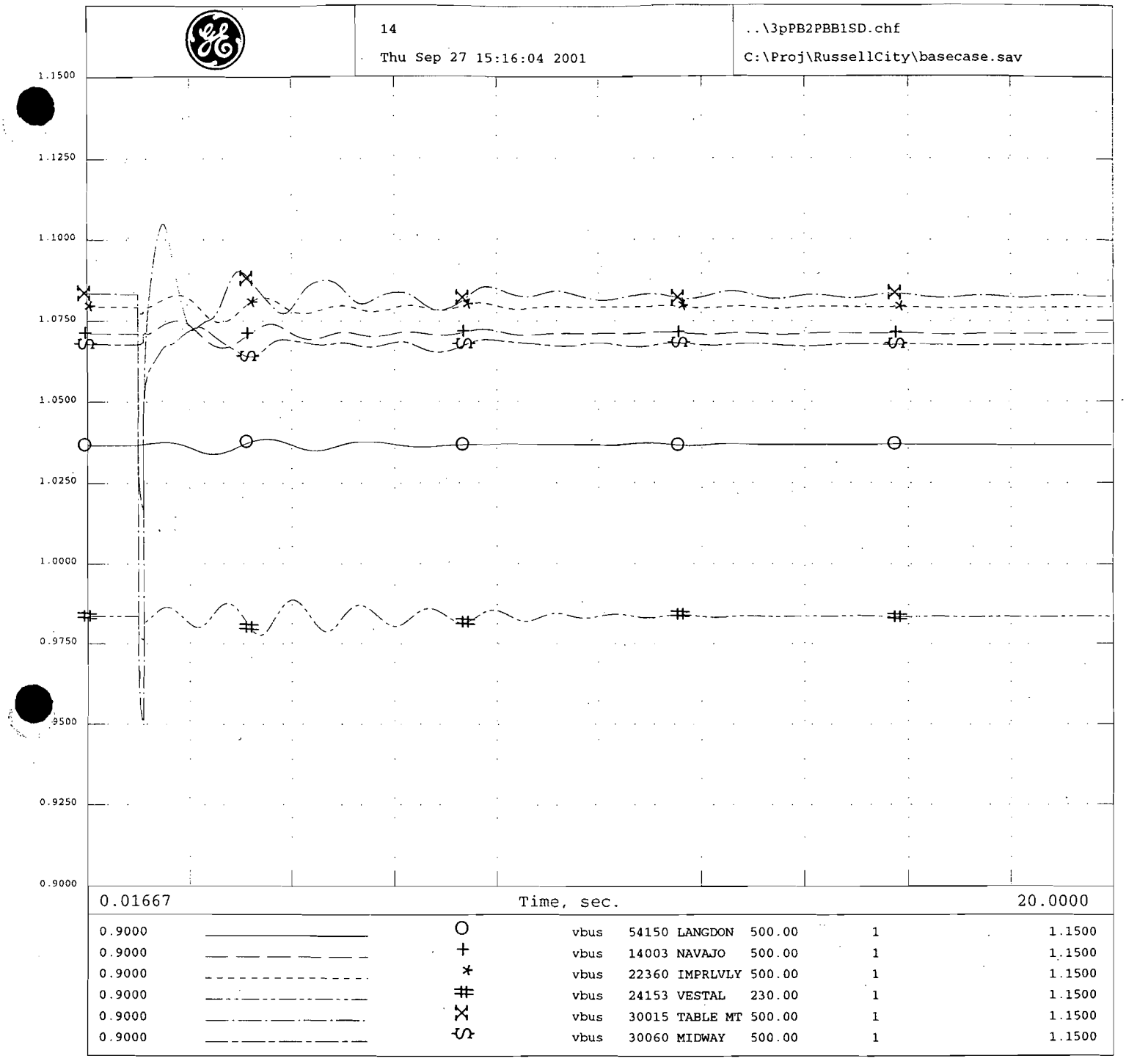
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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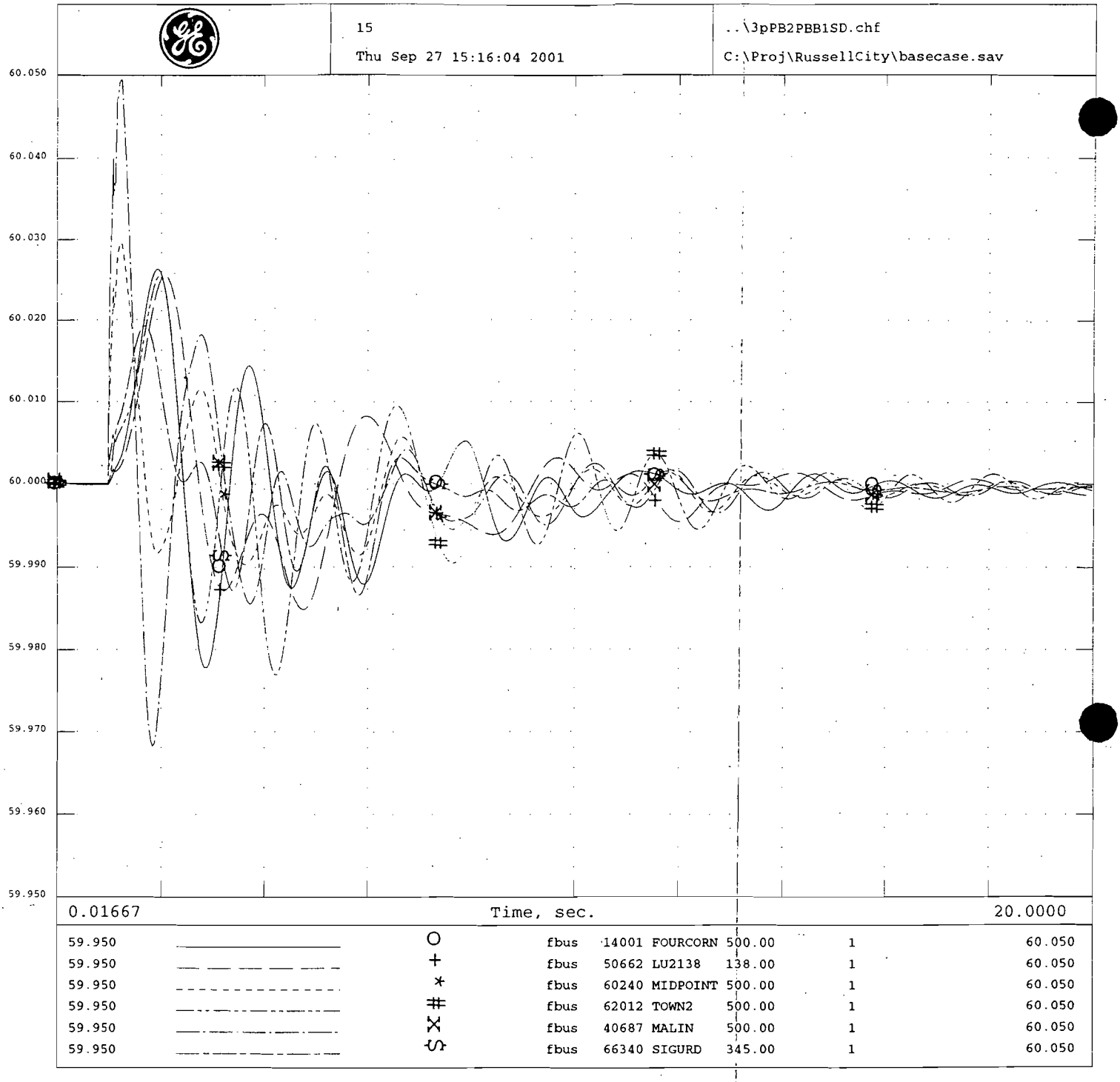
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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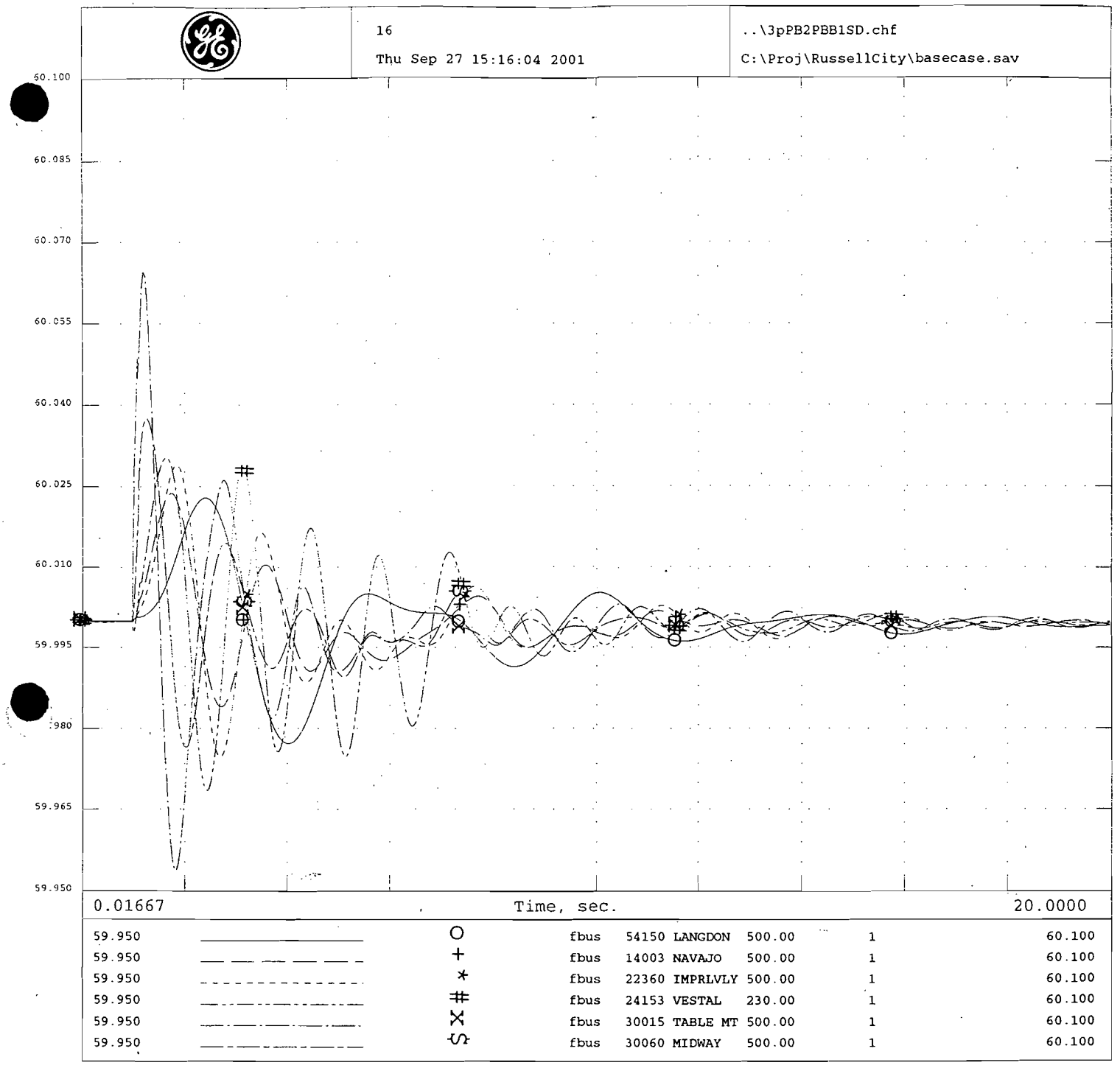
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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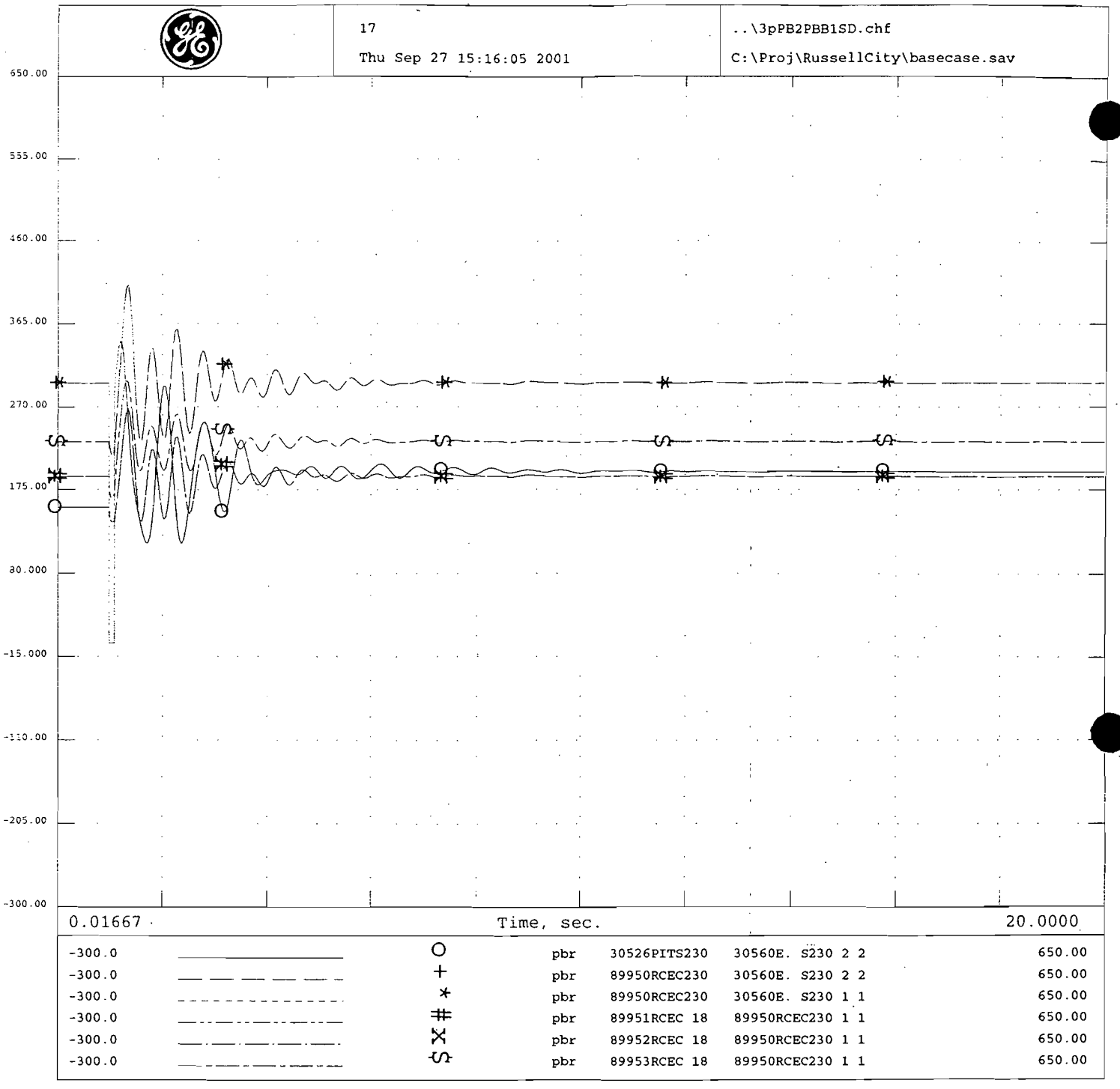
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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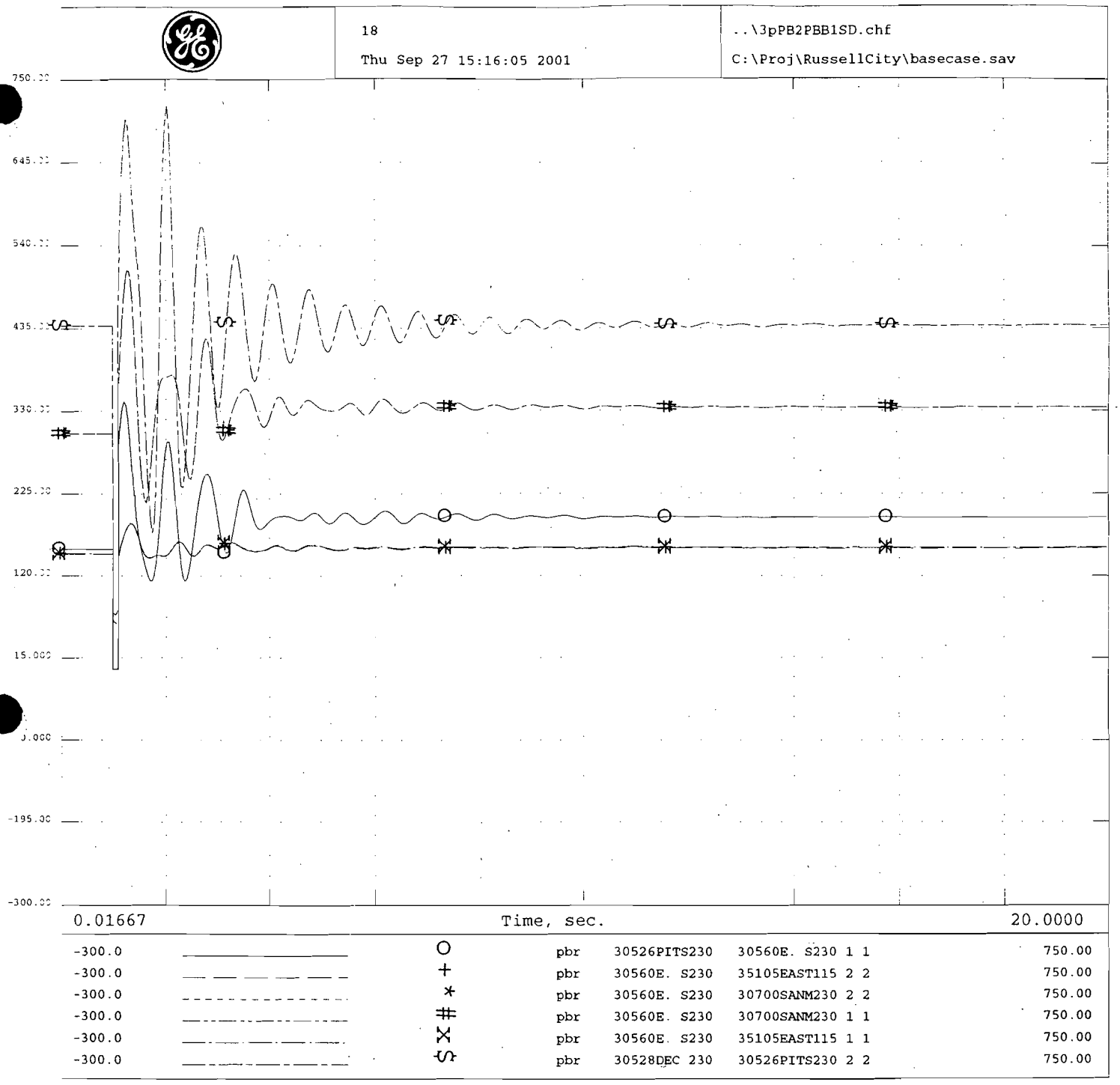
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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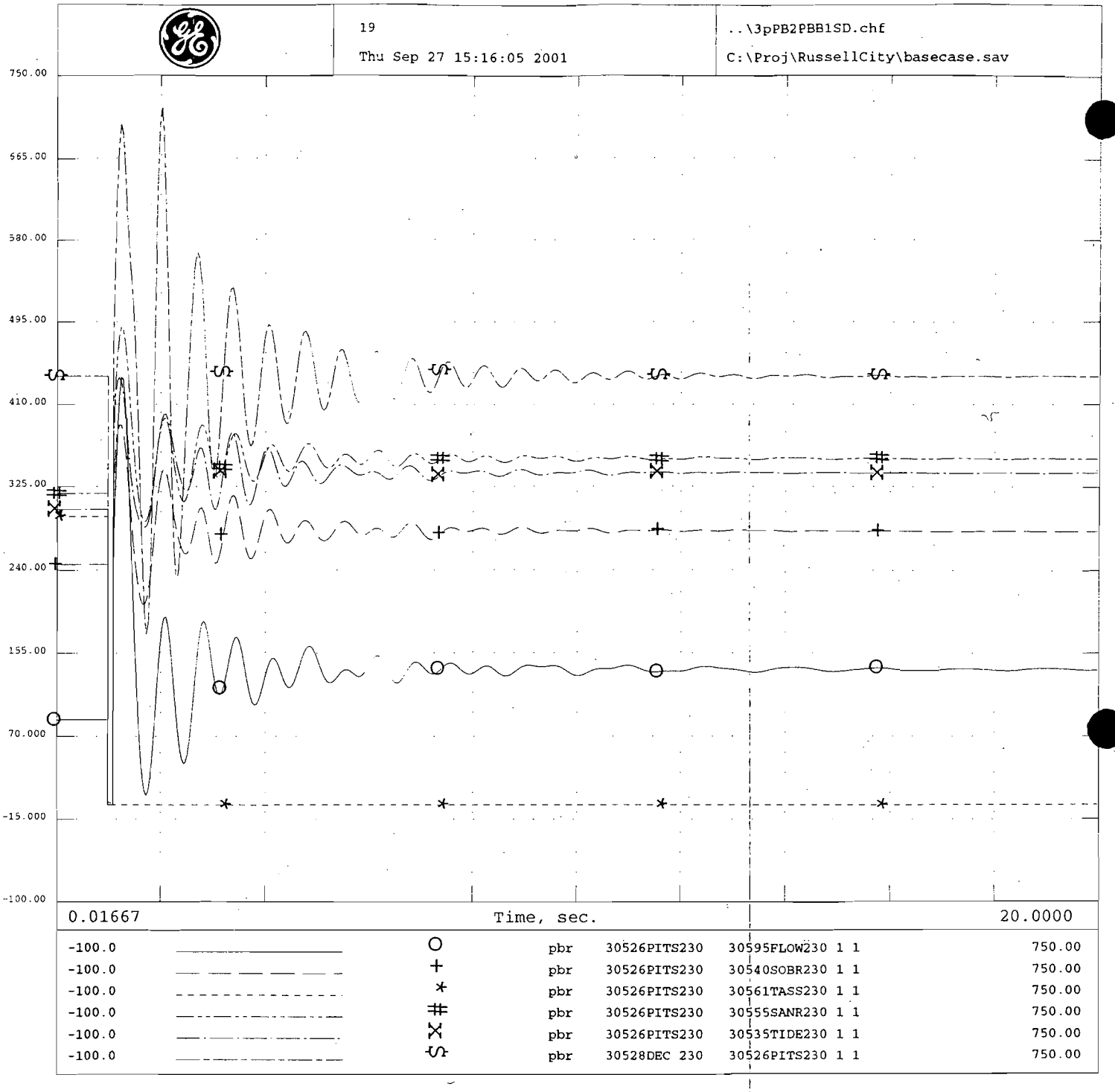

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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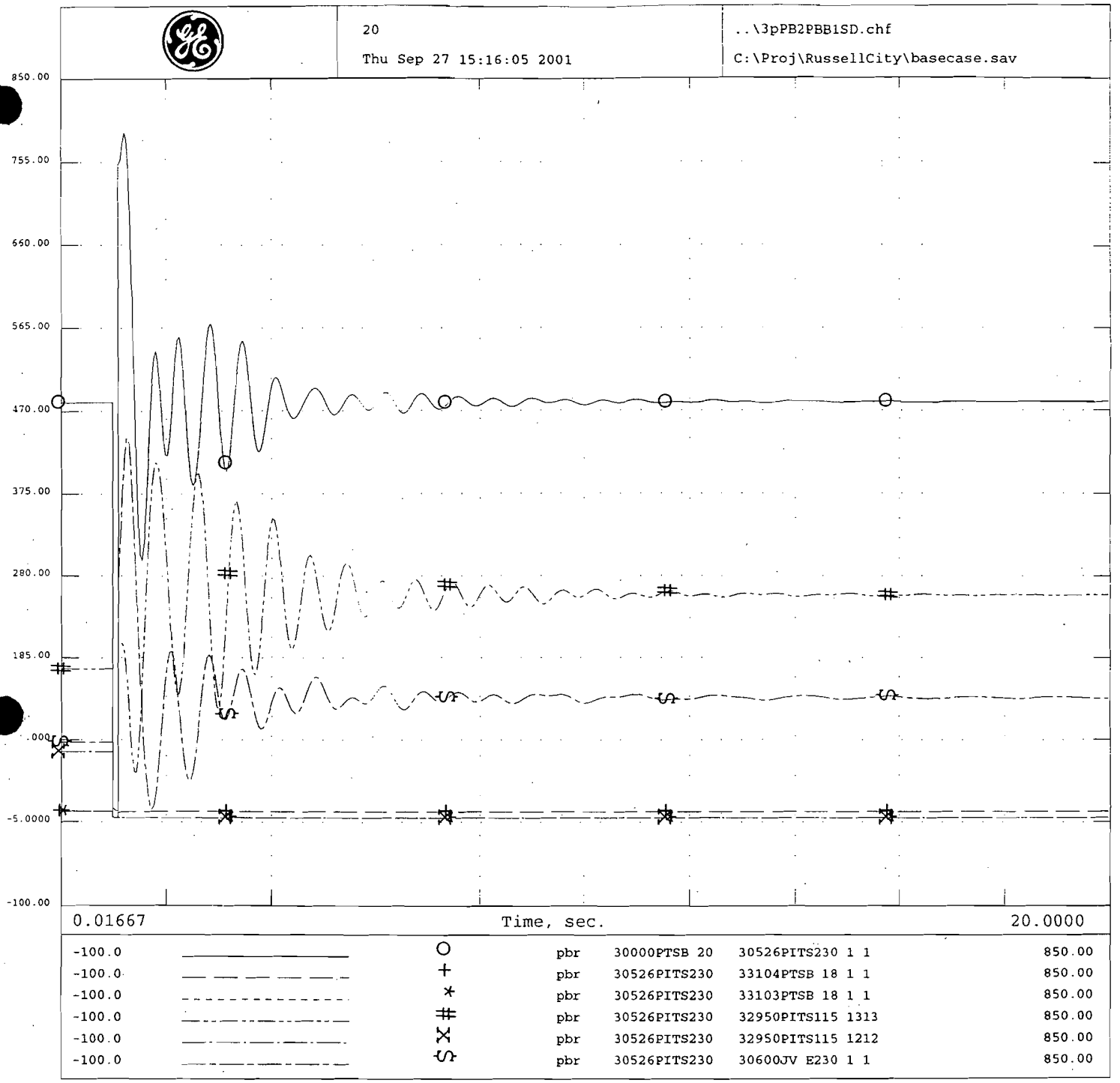

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Calpine/Bechtel Joint Development
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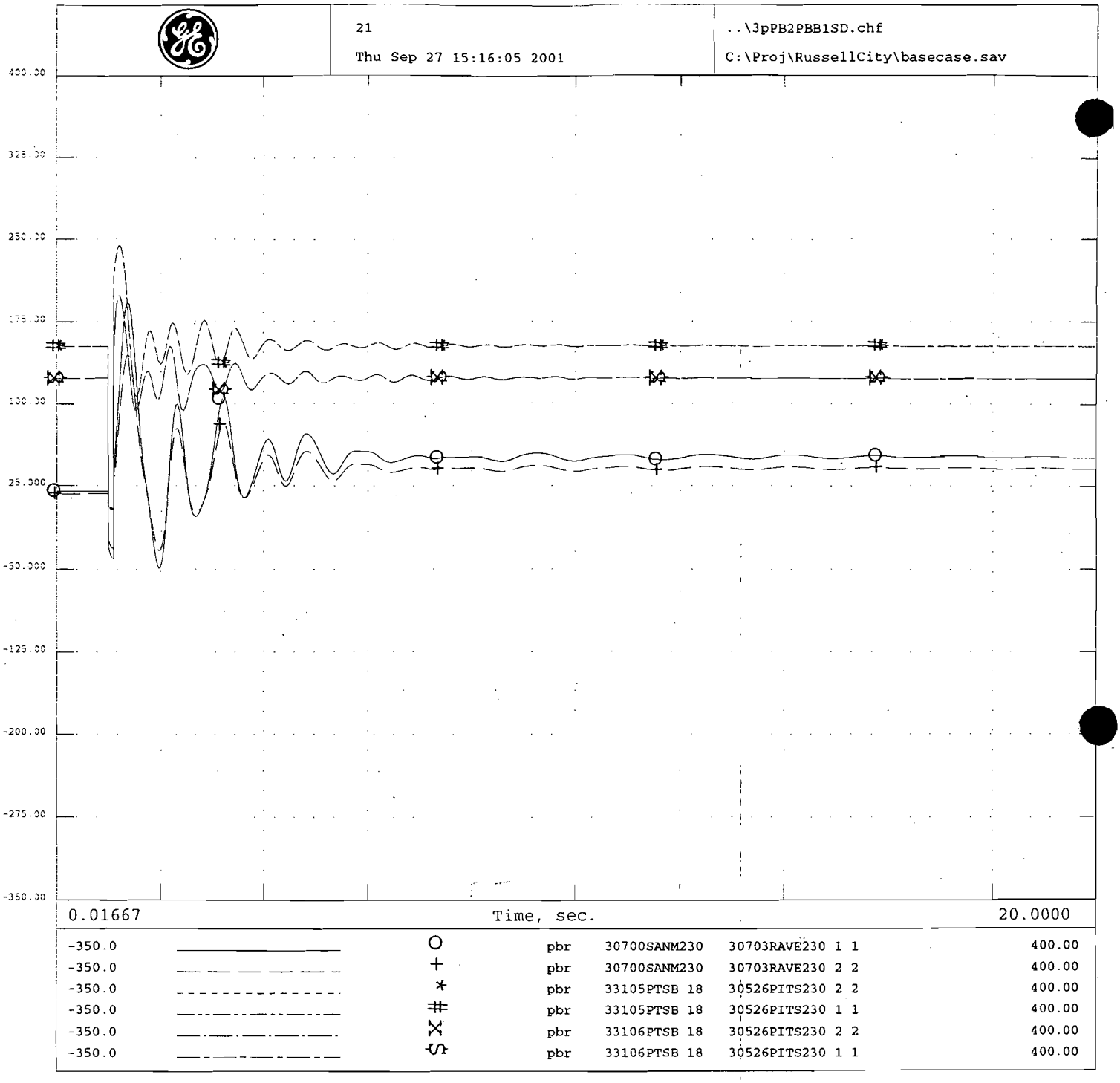

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Calpine/Bechtel Joint Development
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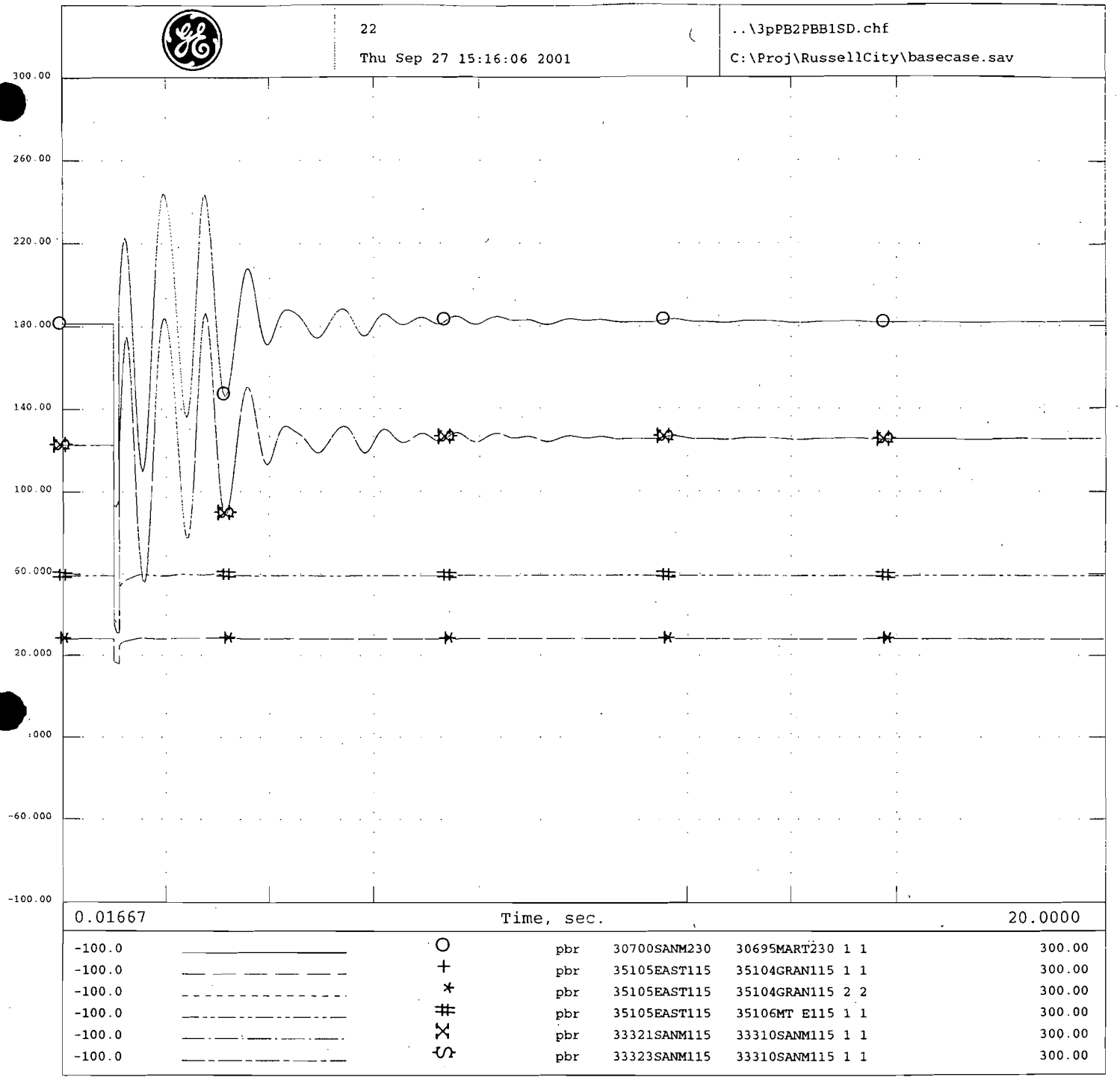

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Calpine/Bechtel Joint Development
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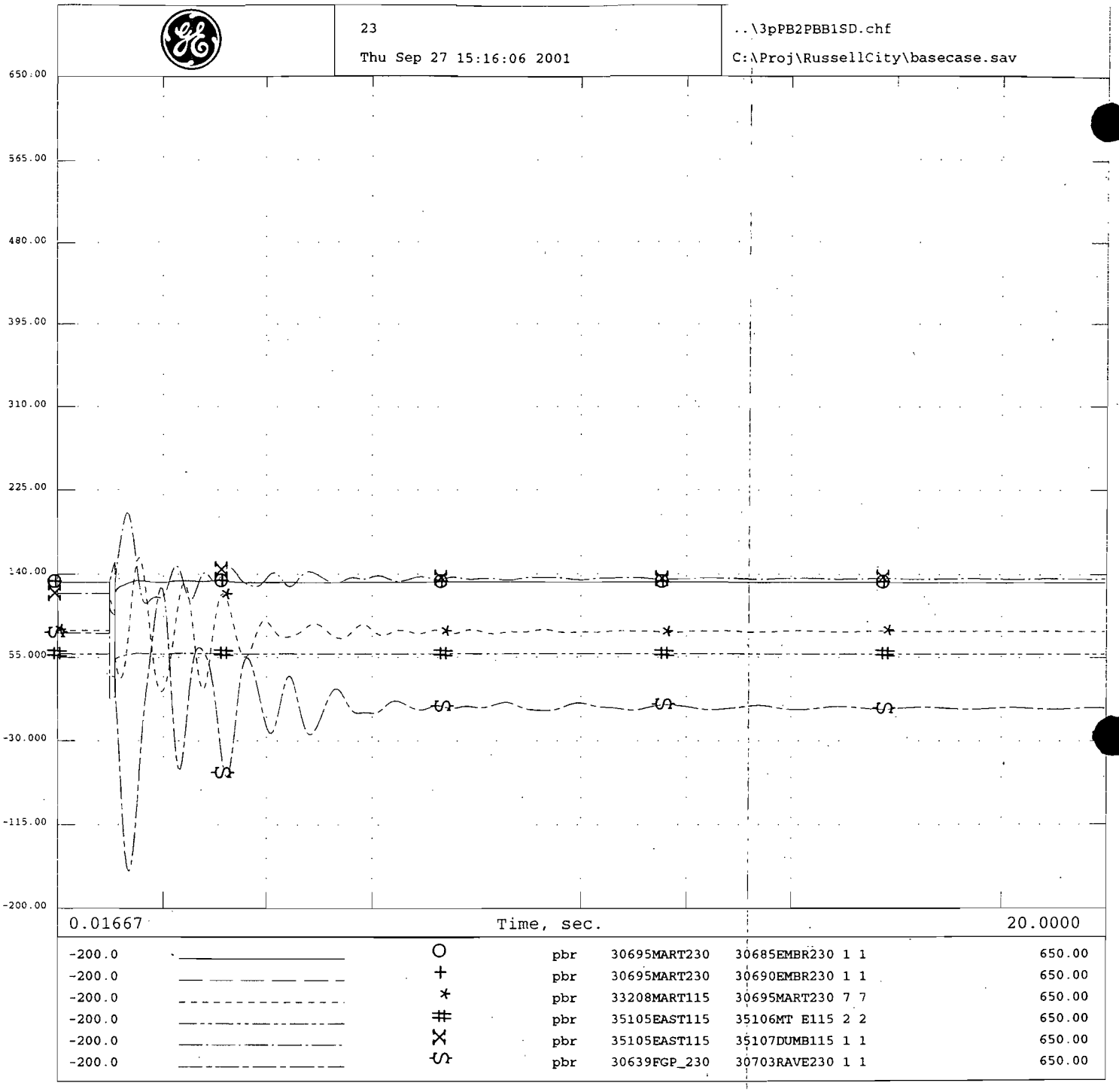

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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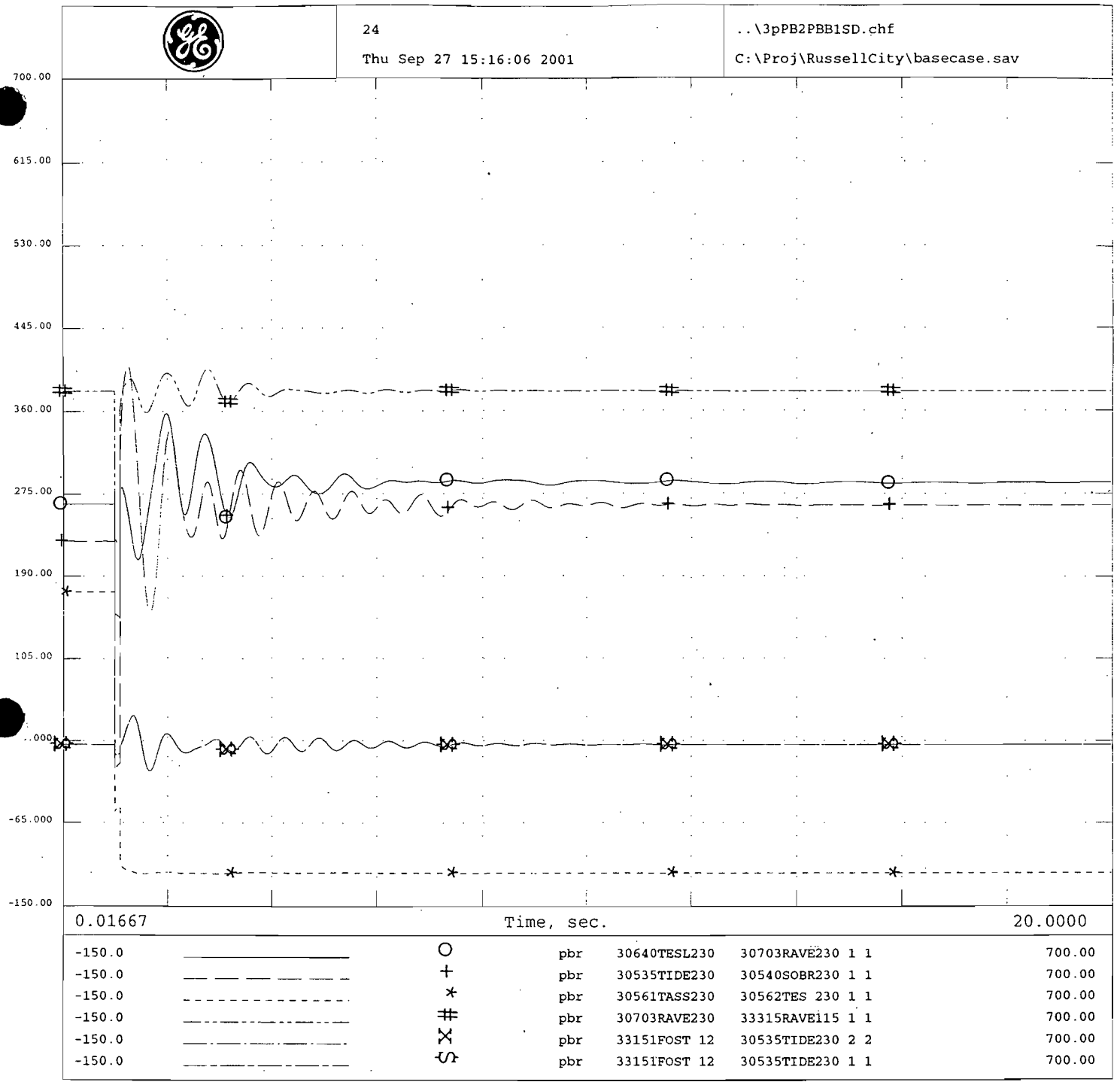

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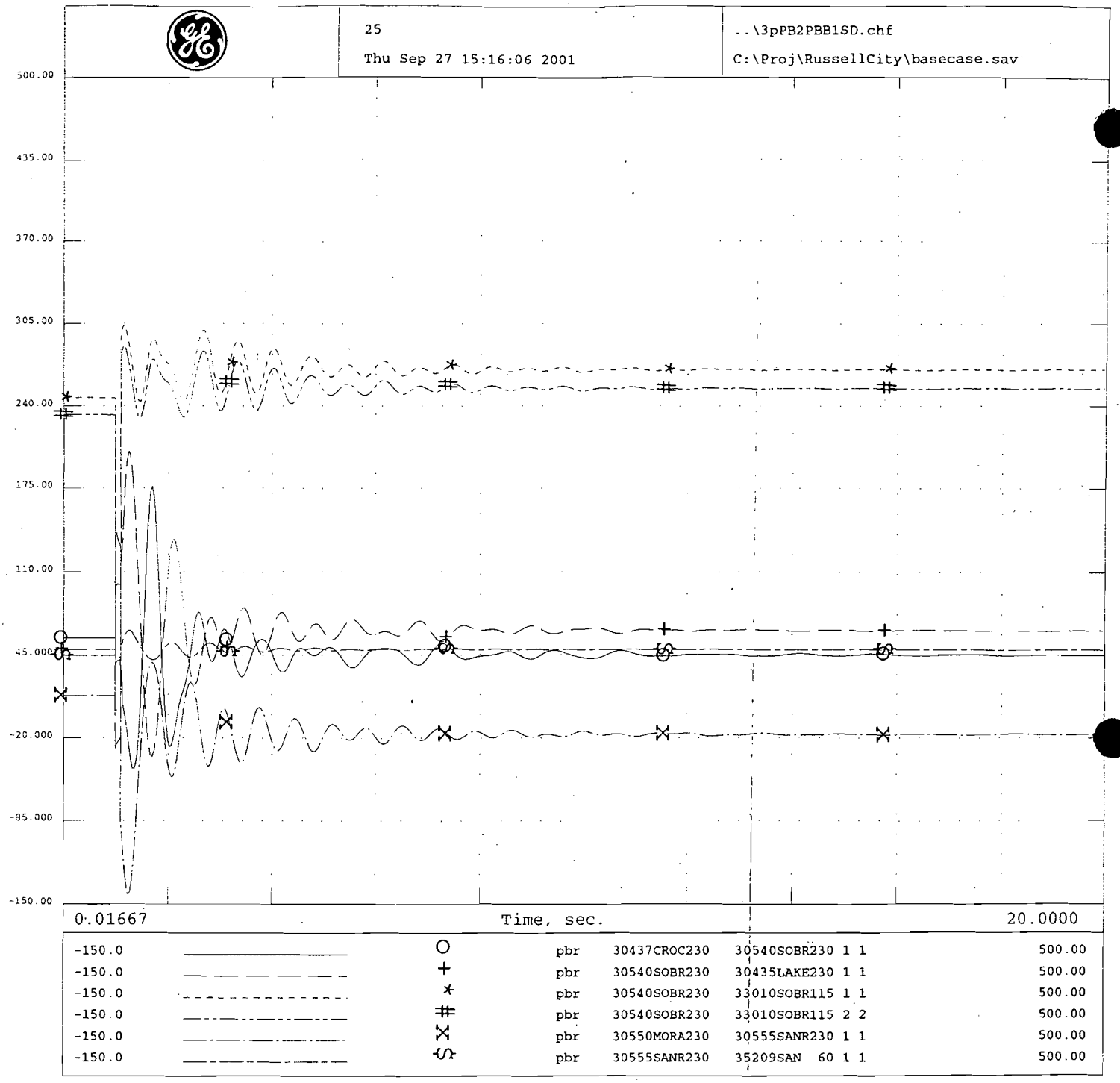
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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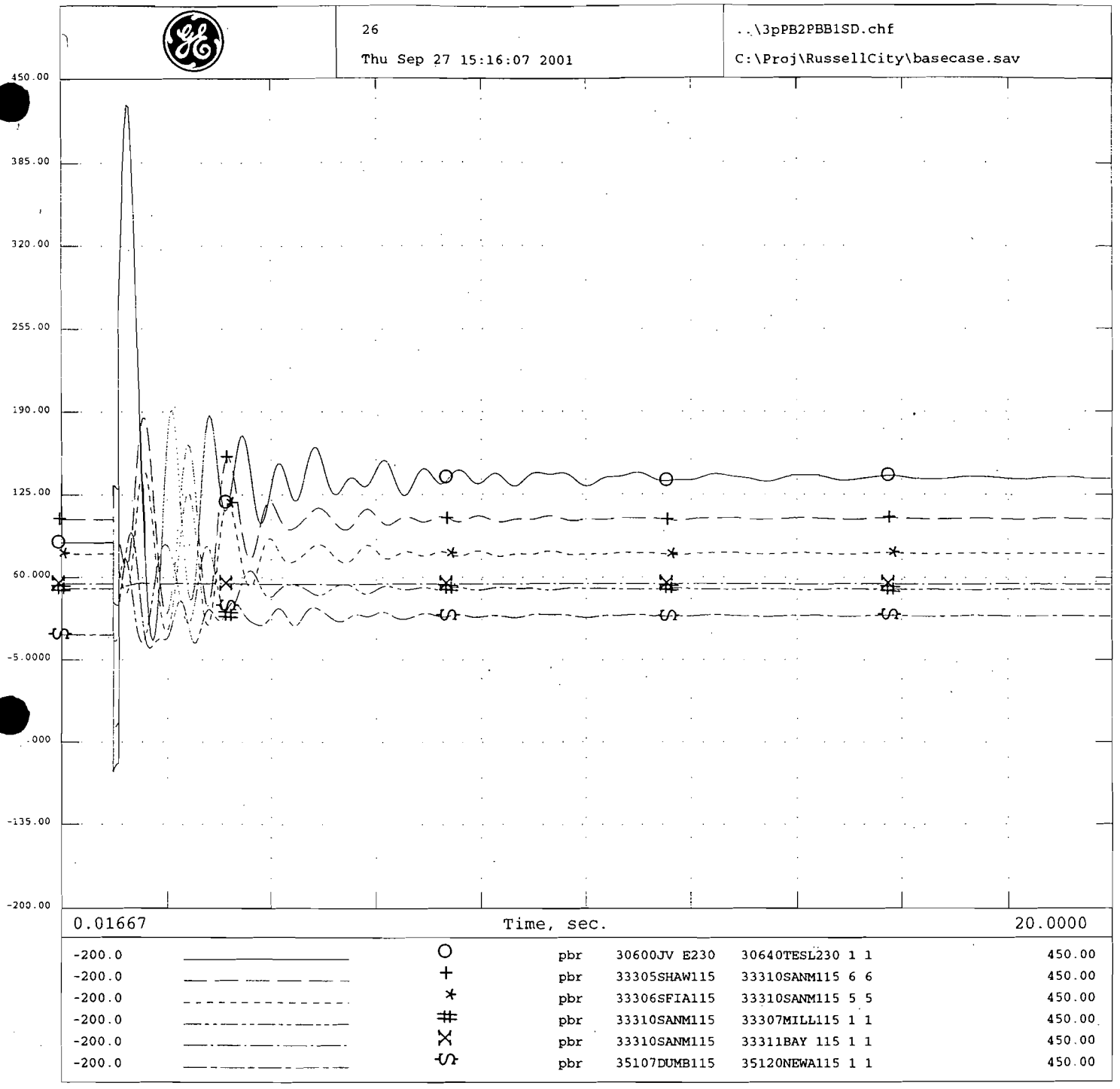

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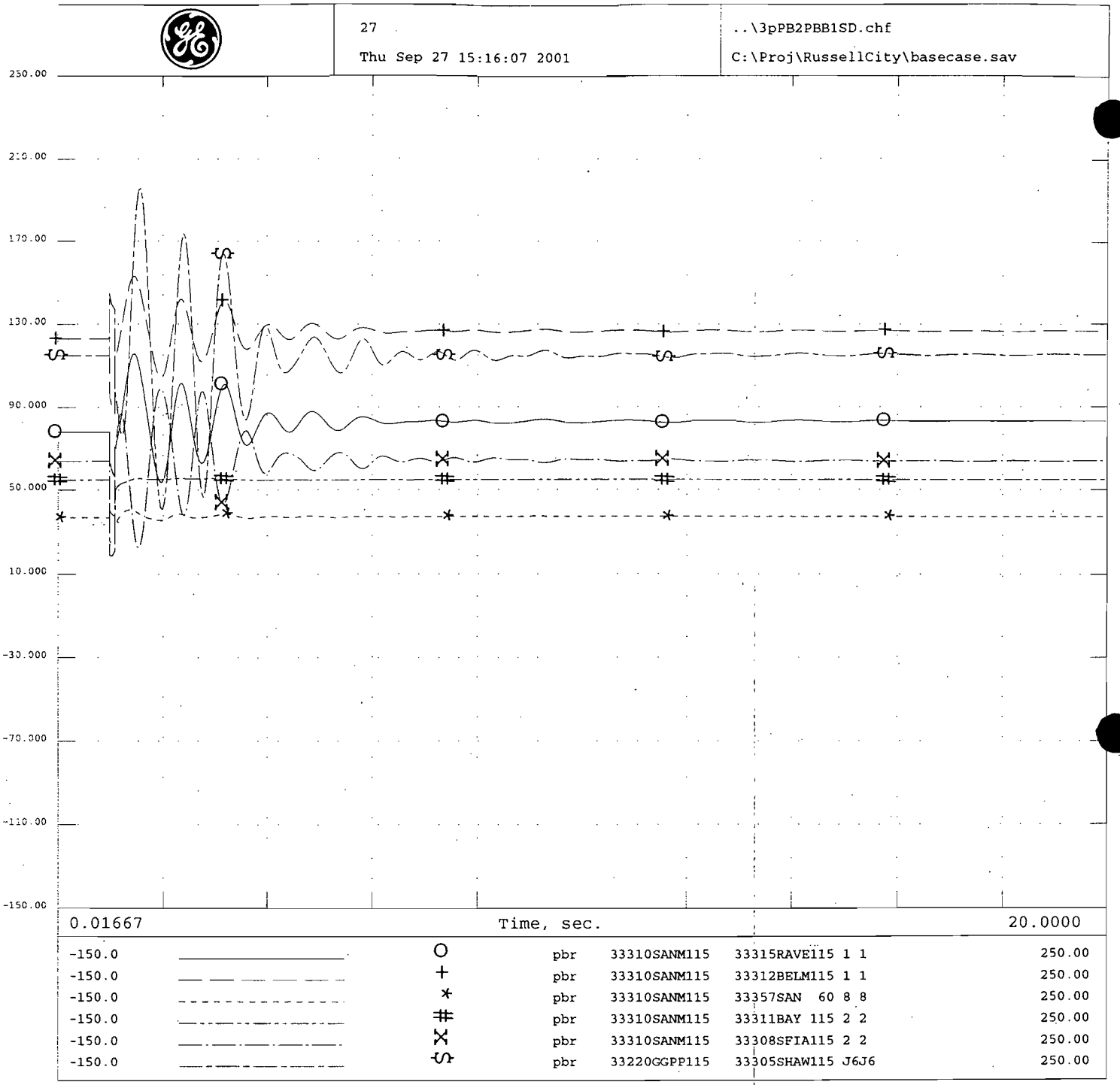
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 1, section E
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 1, section E
RUN  9
CC
CC   Fault Pittsburg 230 kV bus
FB   0.0 "PITSBURG" 230.
CC
CC   Clear fault at Pittsburg 230 kV bus 1E
CFB  6.0 "PITSBURG" 230.
CC
CC
DL  6.0 "PITSBURG" 230.00 "E. SHORE" 230.00 "2 "
DL  6.0 "DEC PTSG" 230.00 "PITSBURG" 230.00 "1 "
CC
DL  6.0 "PITSBURG" 230.00 "TIDEWATR" 230.00 "1 "
DL  6.0 "PITSBURG" 230.00 "FLOWIND2" 230.00 "1 "
DL  6.0 "TESLA F " 230.00 "FLOWIND2" 230.00 "1 "
TG  6.0 "FLOWD3-6"  9.11 "1 "
TG  6.0 "FLOWD3-6"  9.11 "4 "
MBL 6.0 "FLOWD3-6"  9.11 "1 " D
CC
DL  6.0 "PTSB  5 "  18.00 "PITSBURG" 230.00 "1 "
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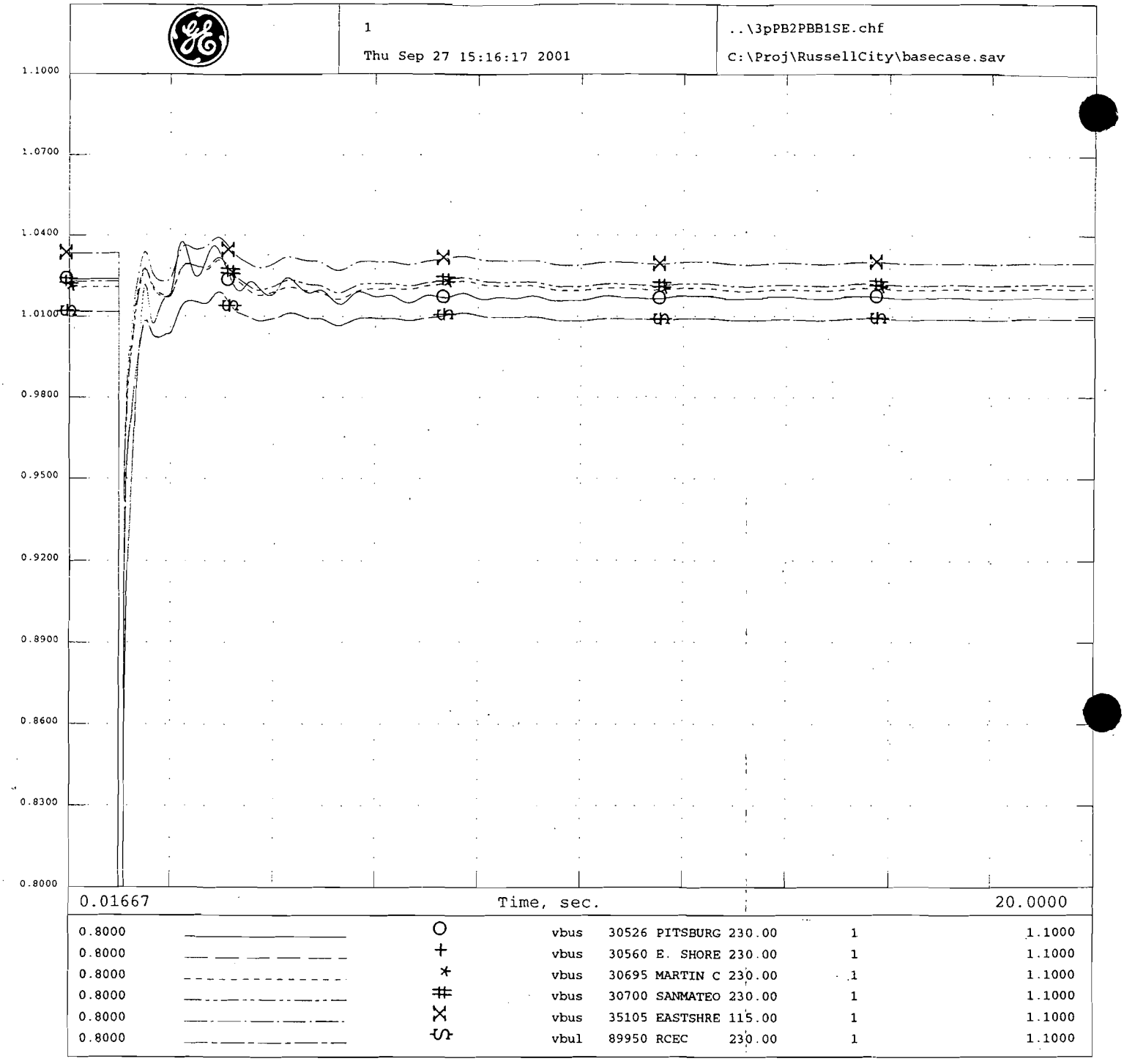

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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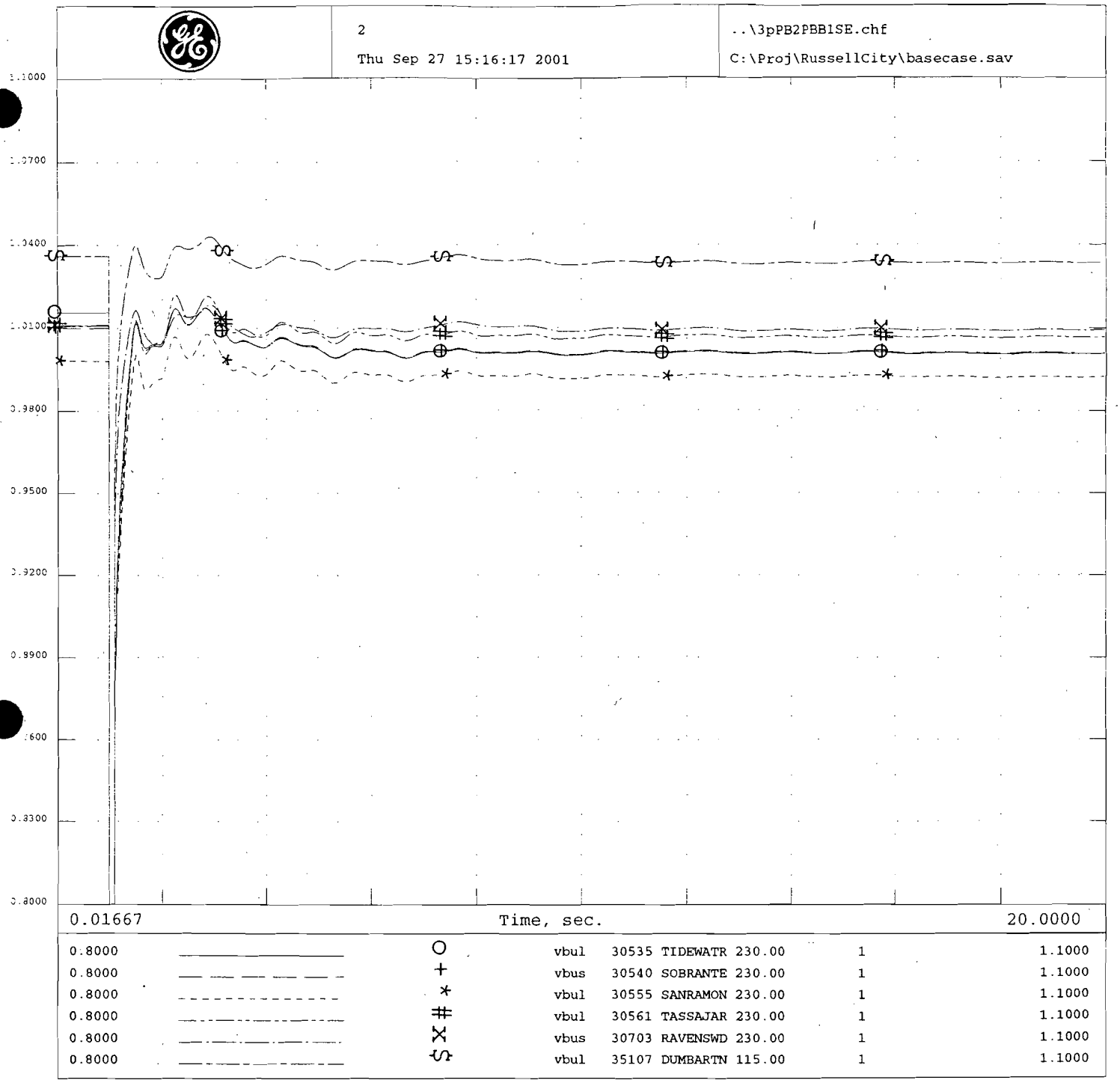
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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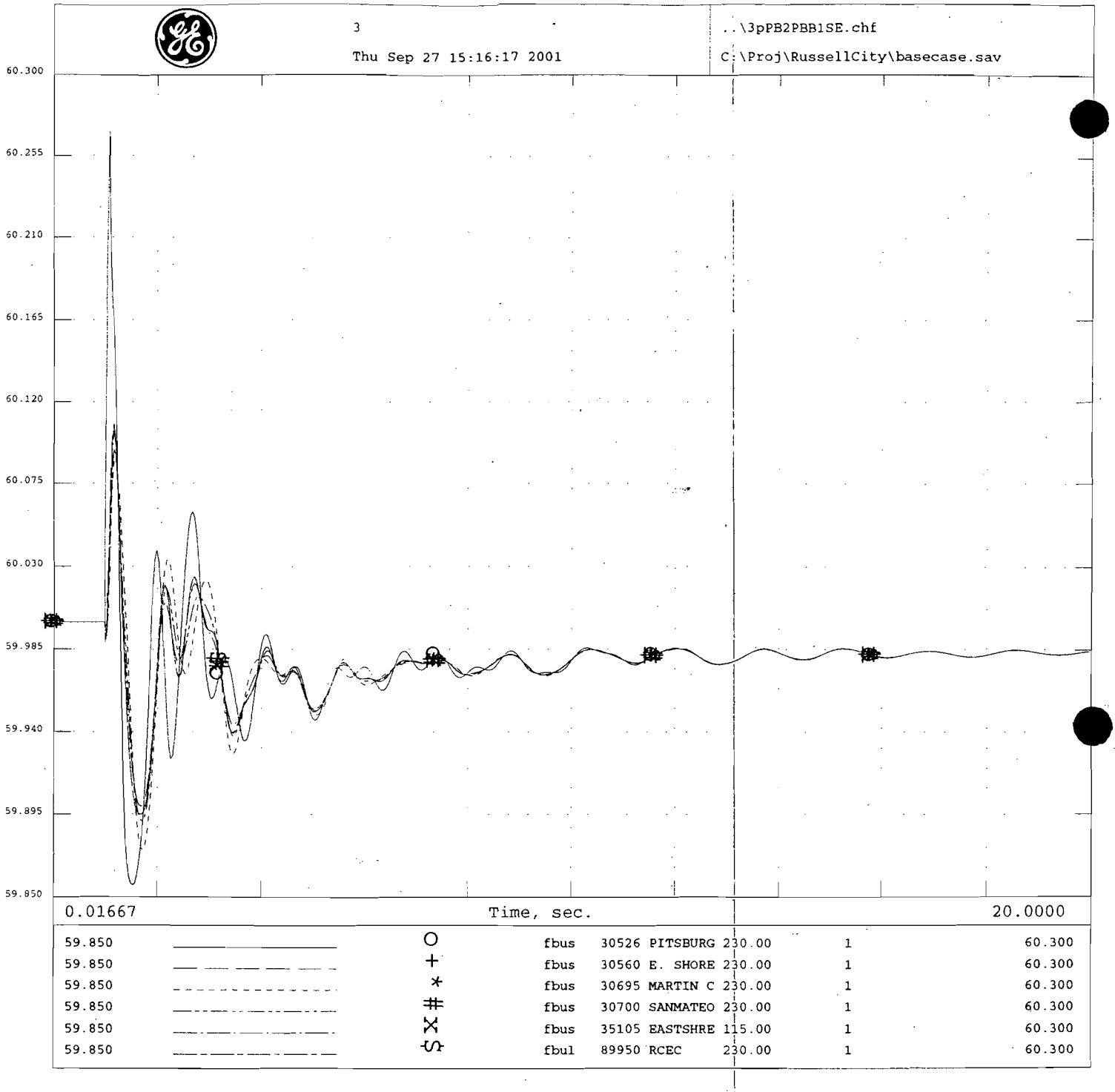

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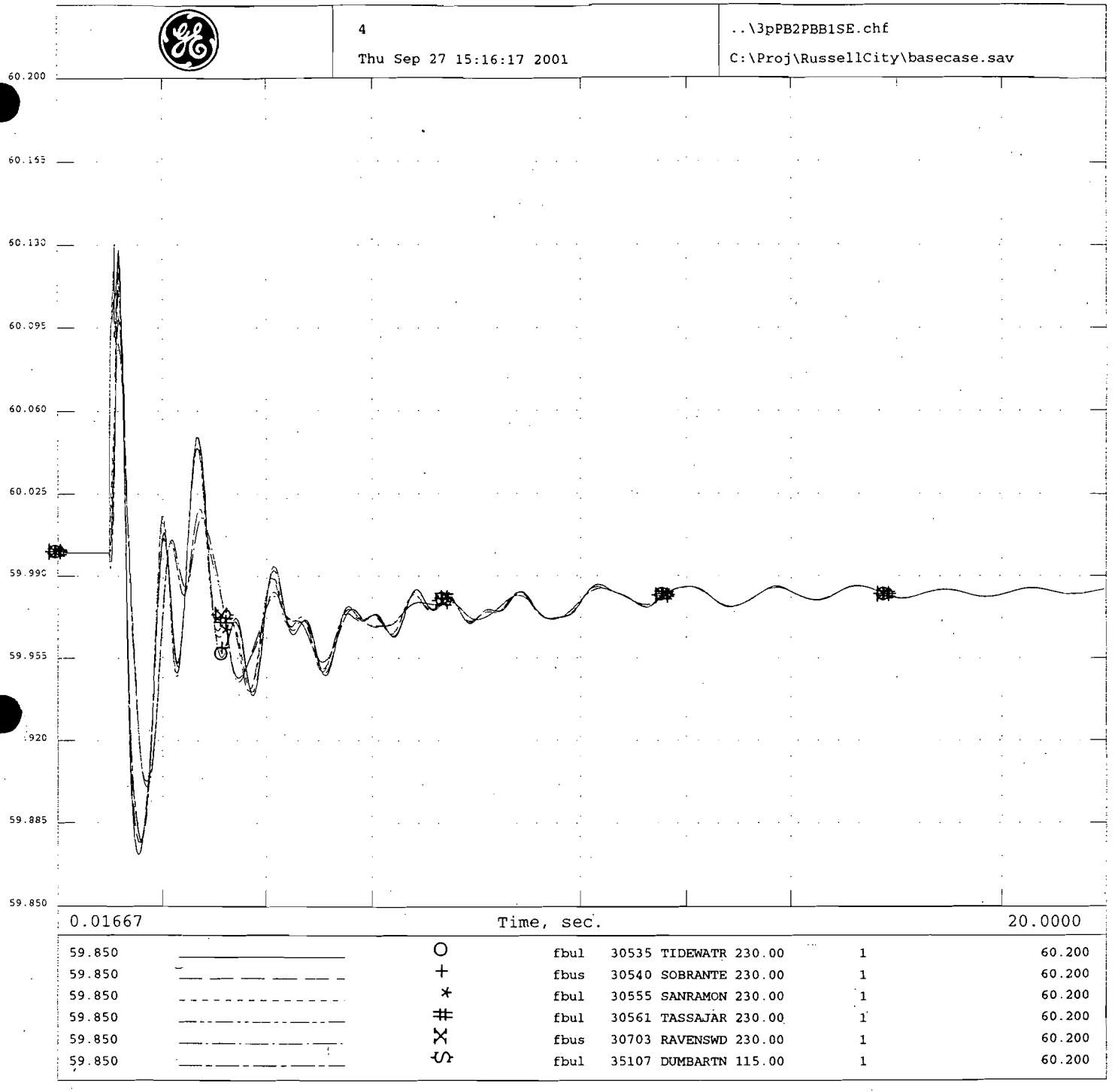
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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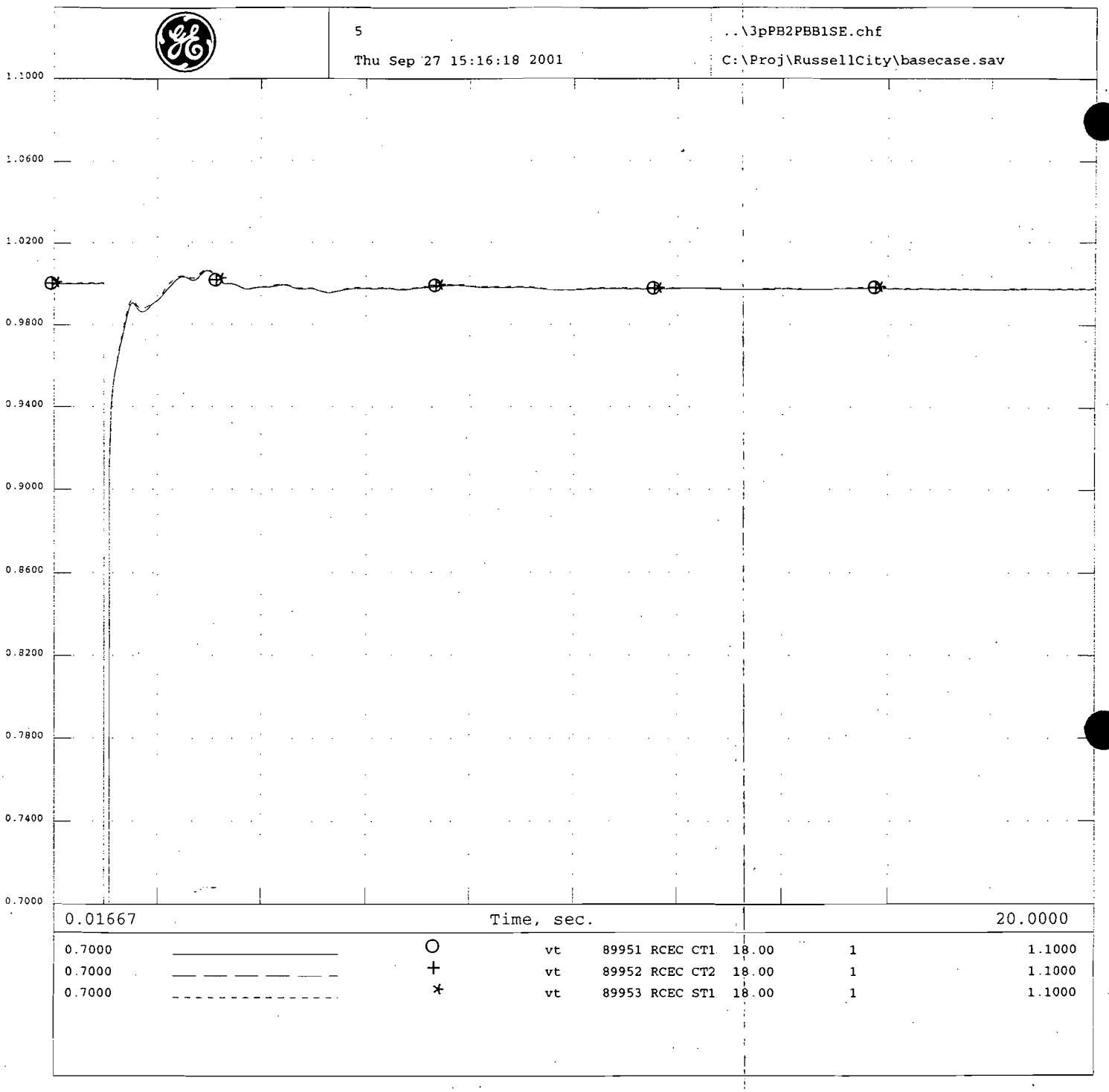

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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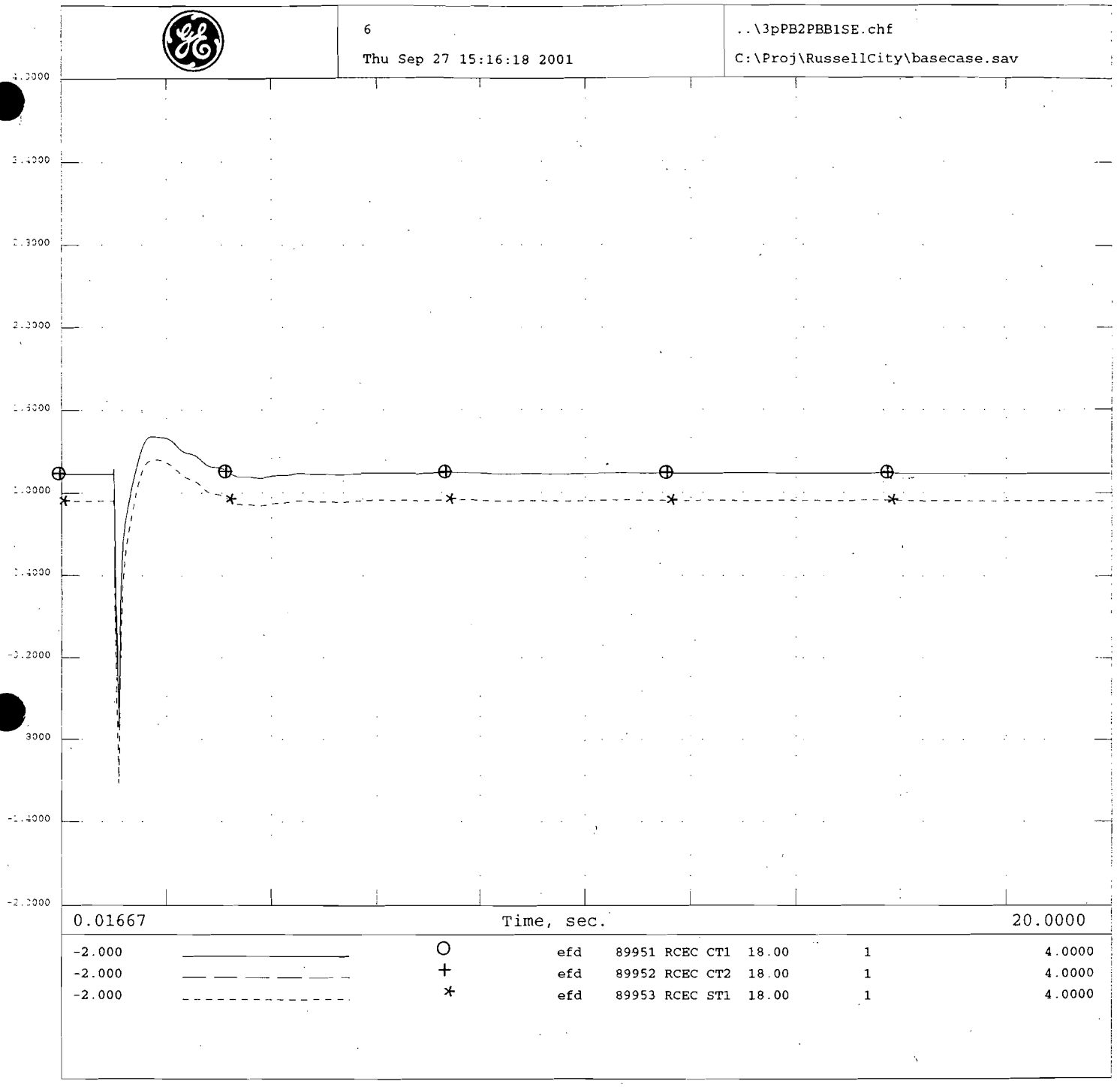

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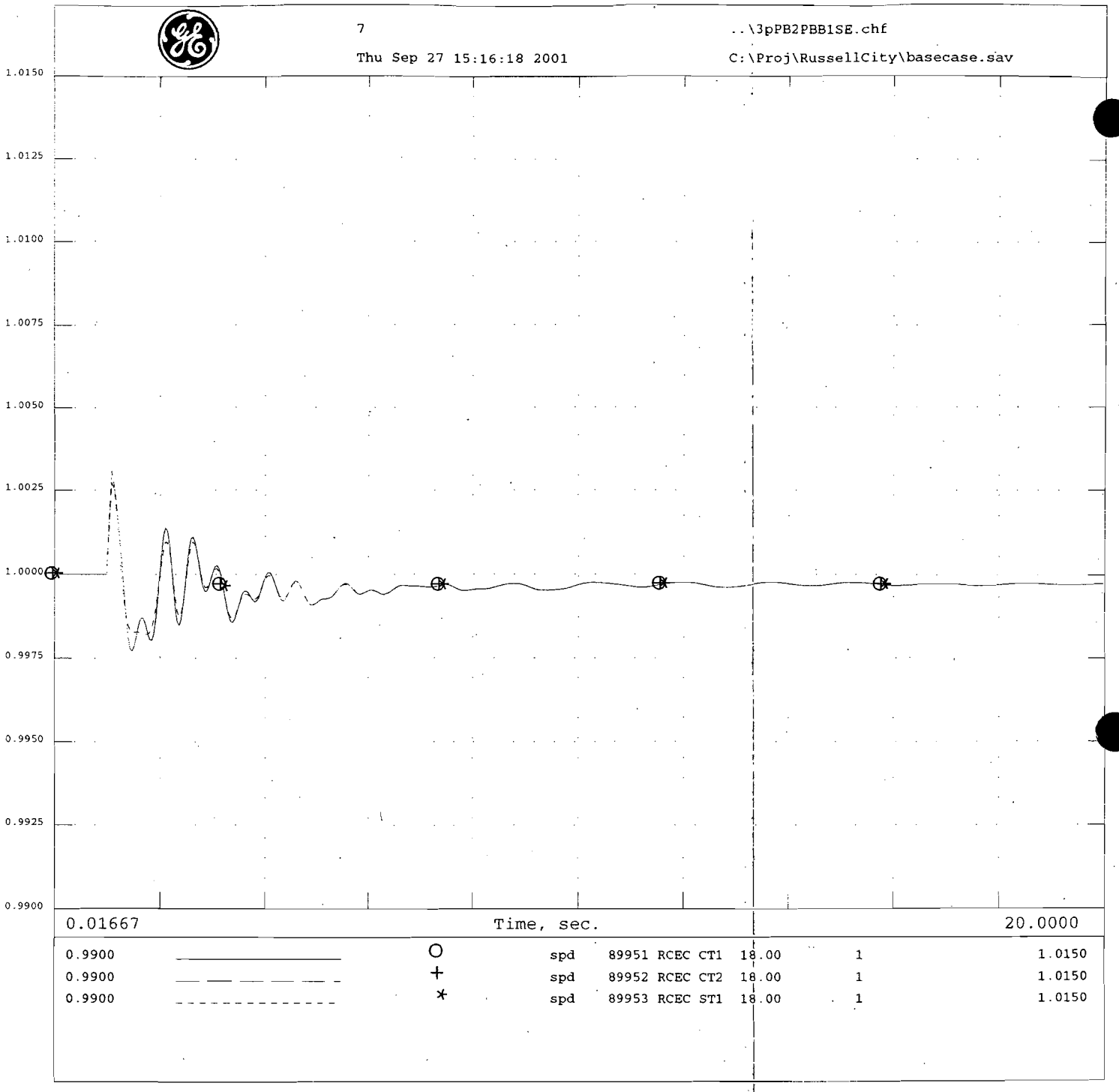
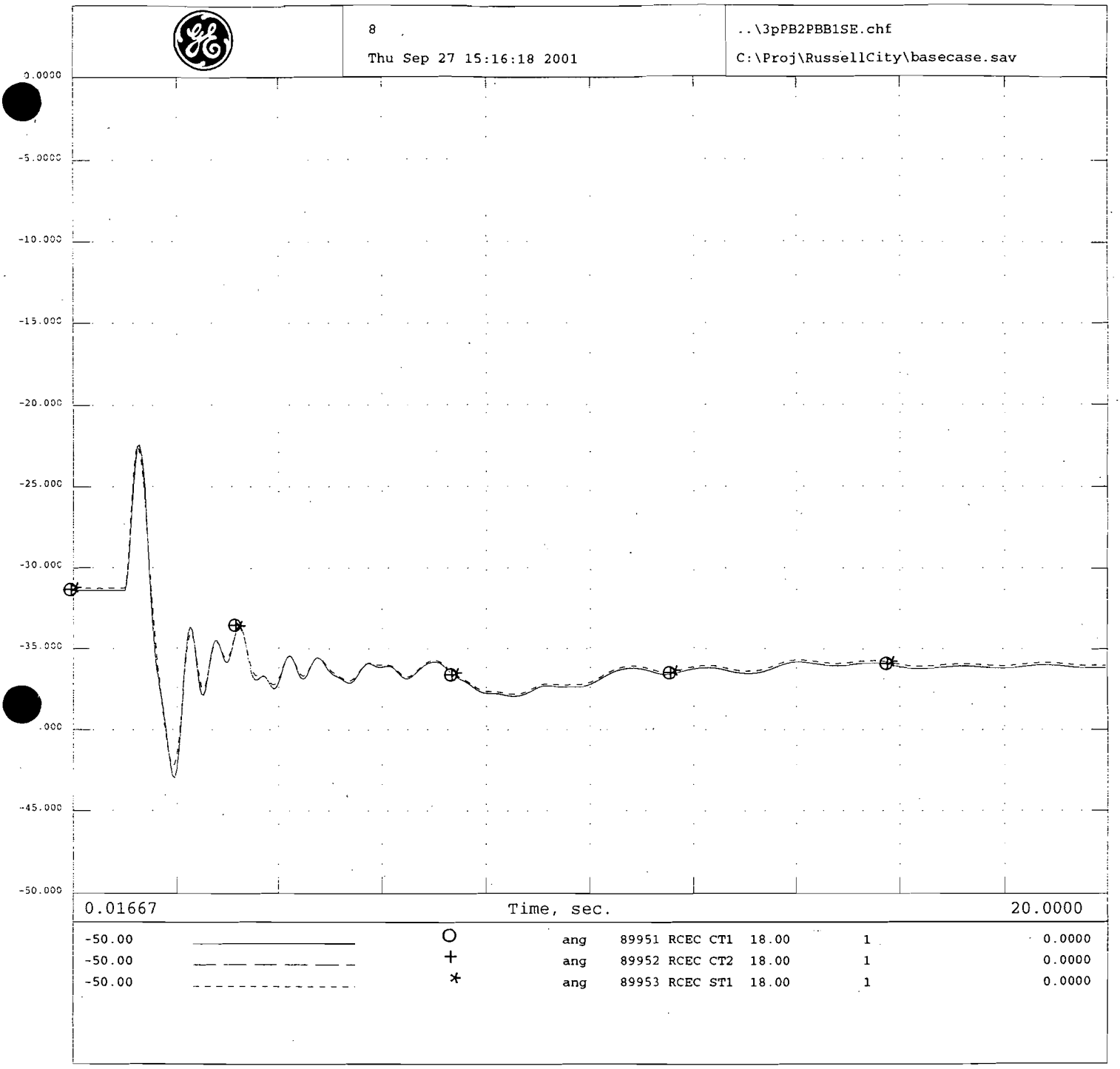
Calpine/Bechtel Joint Development
Project Generator Field Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 1, section E
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 1, section E

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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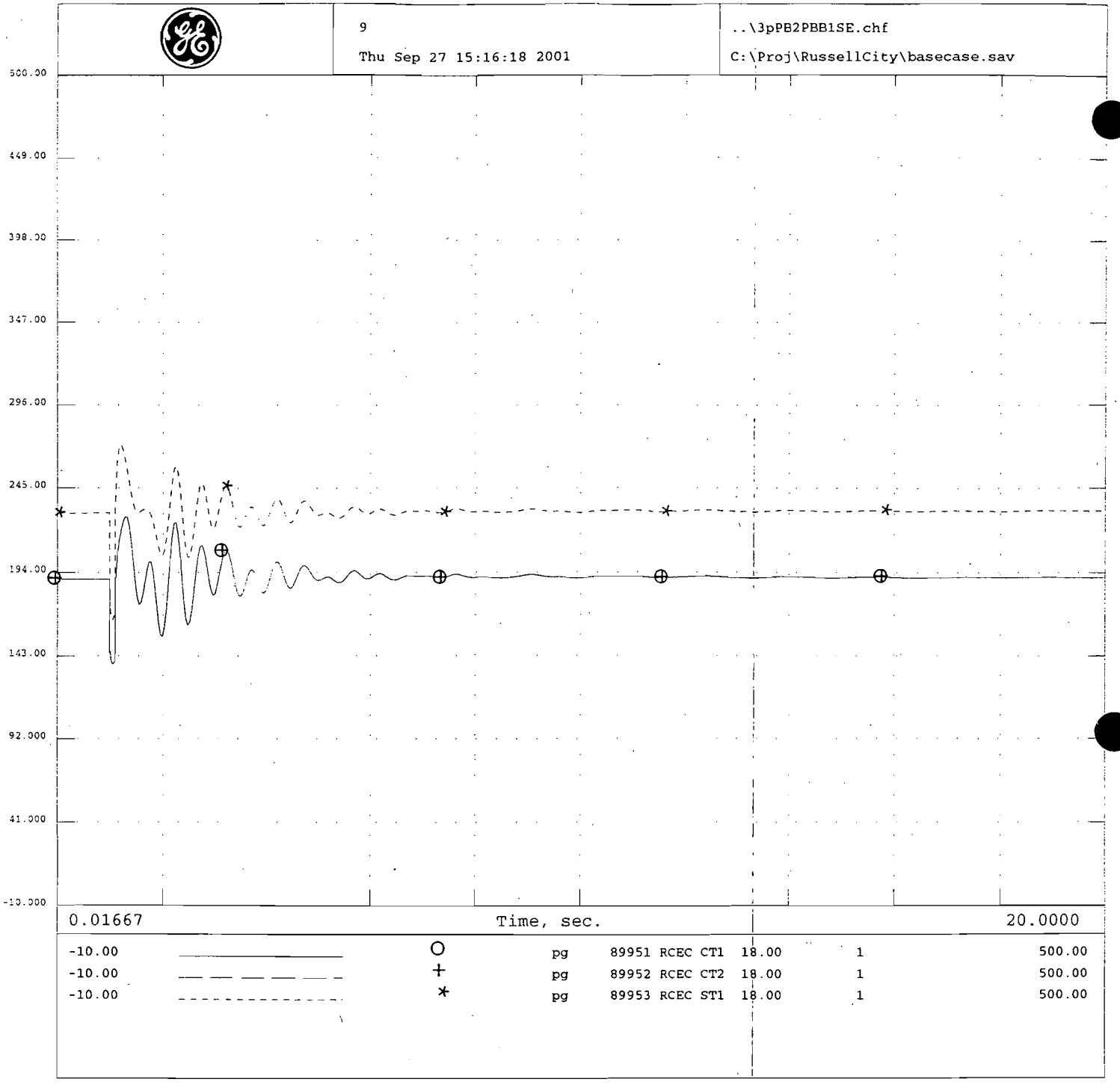
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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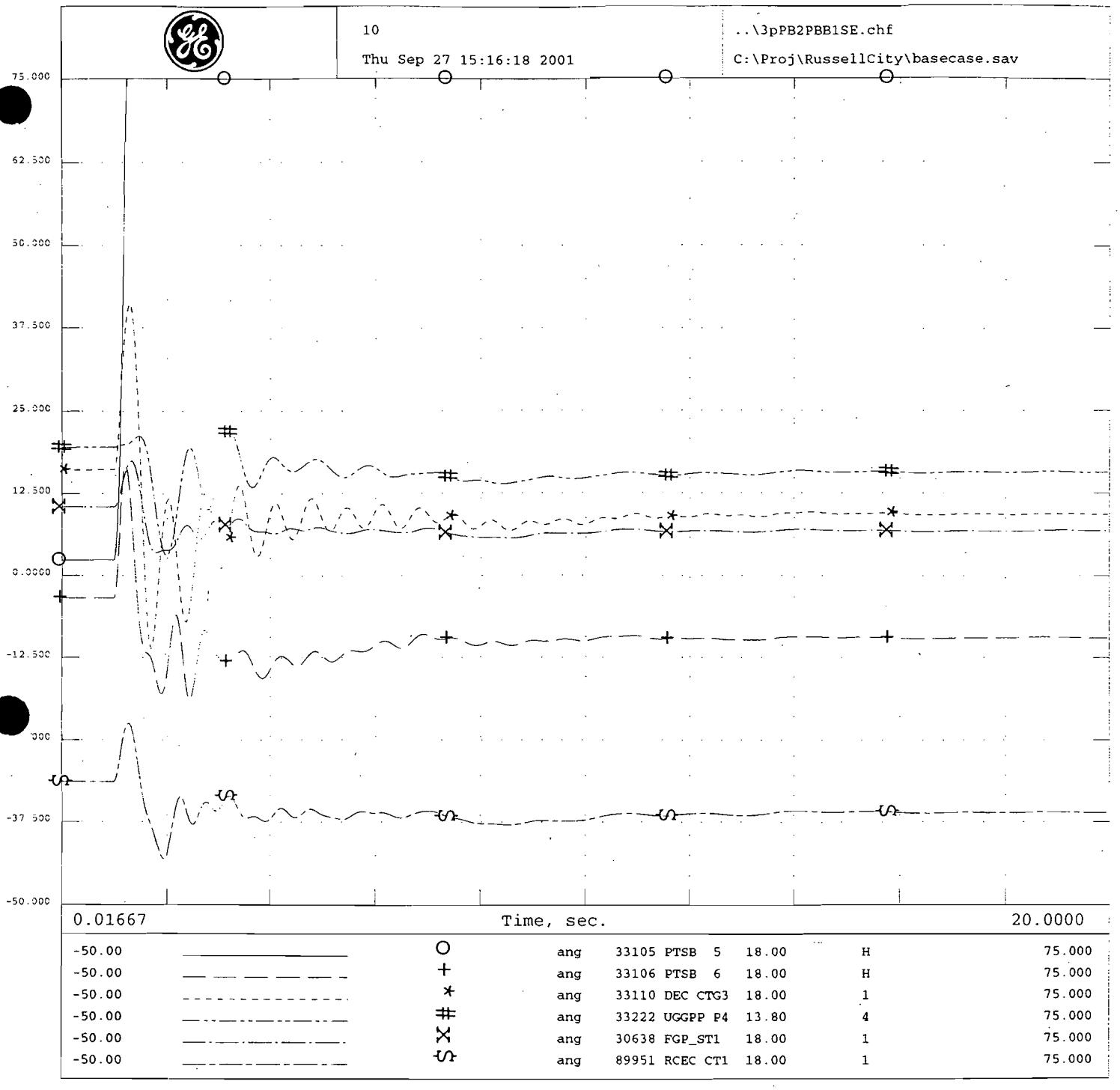
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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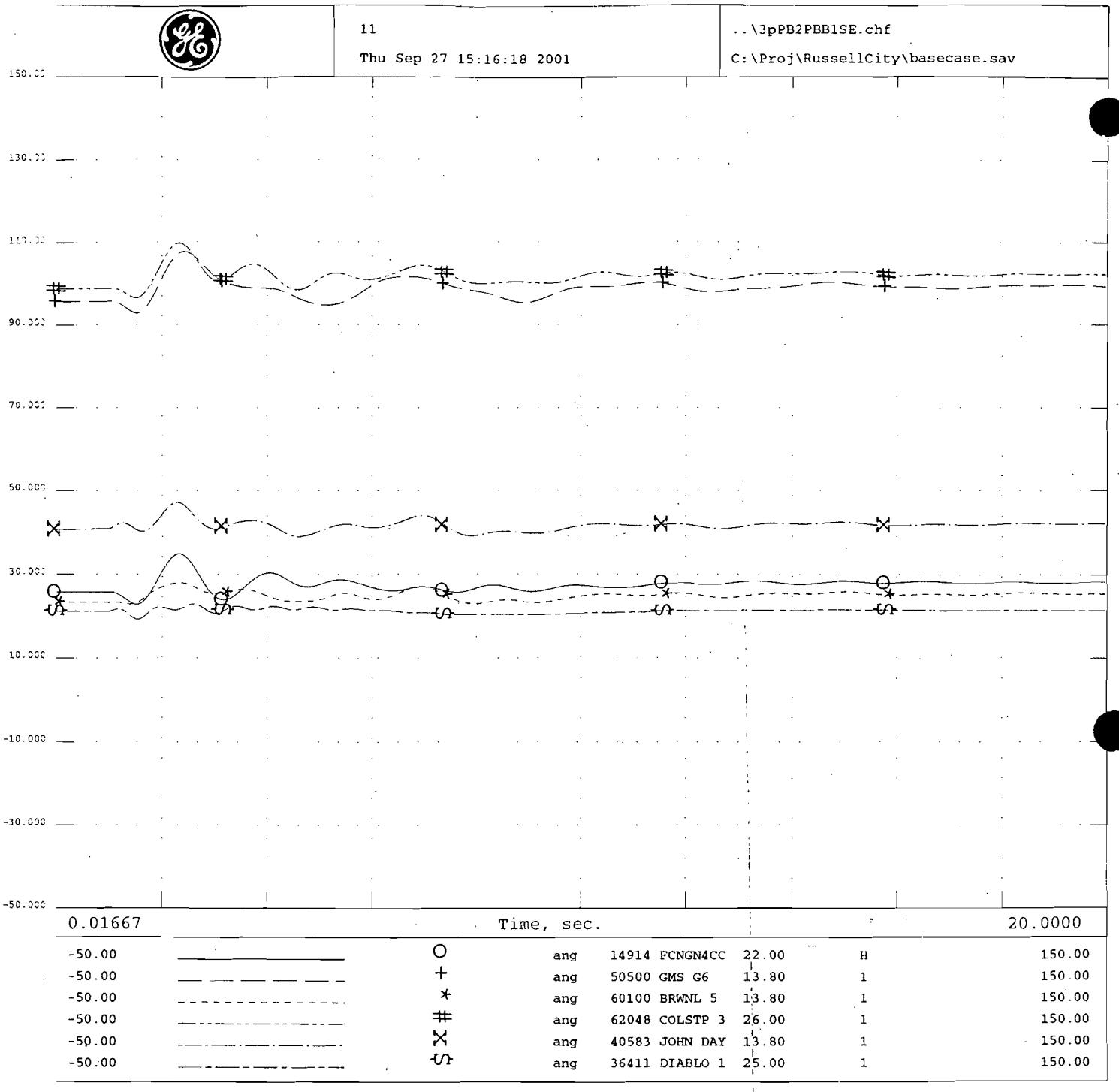
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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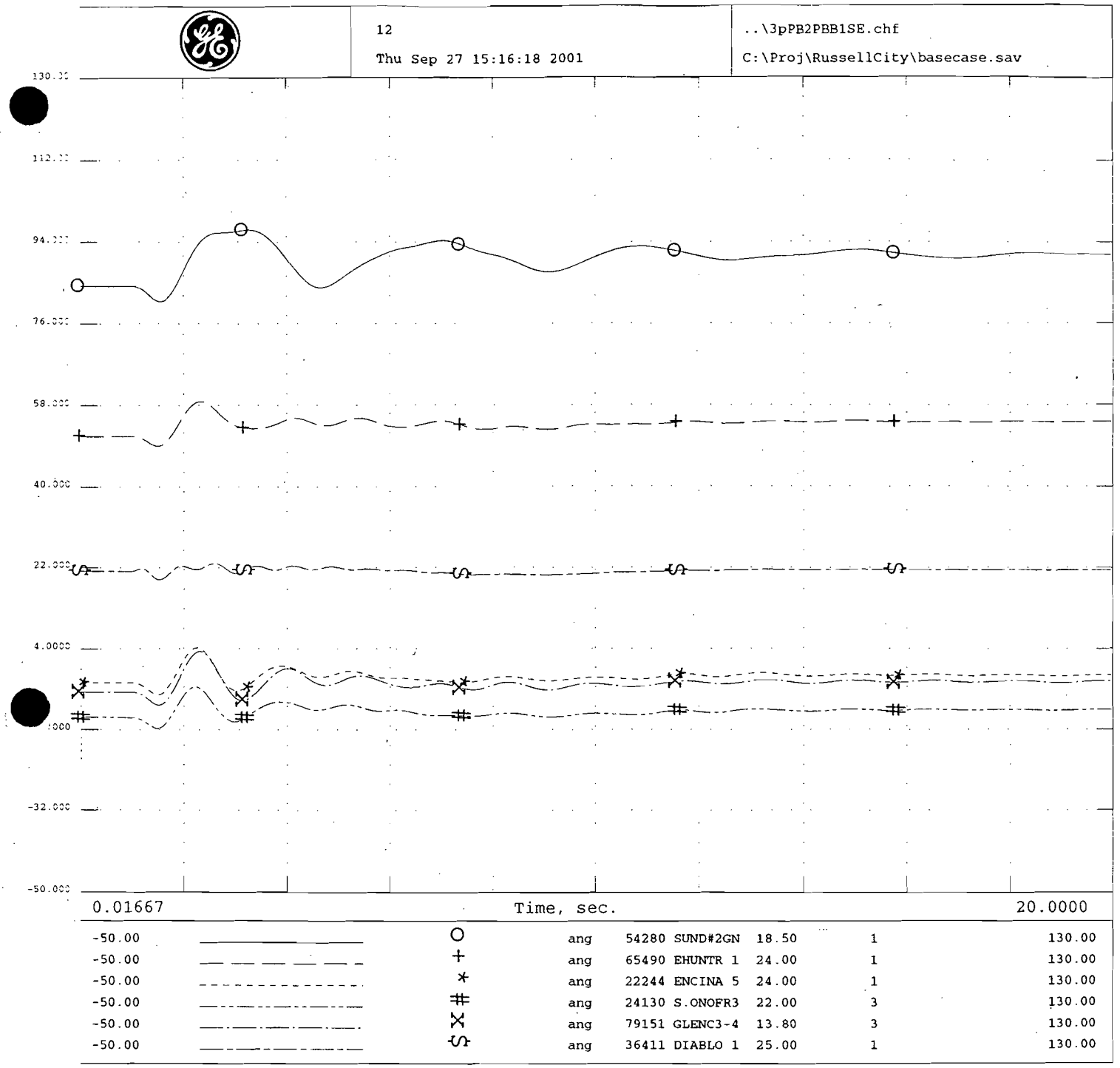
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



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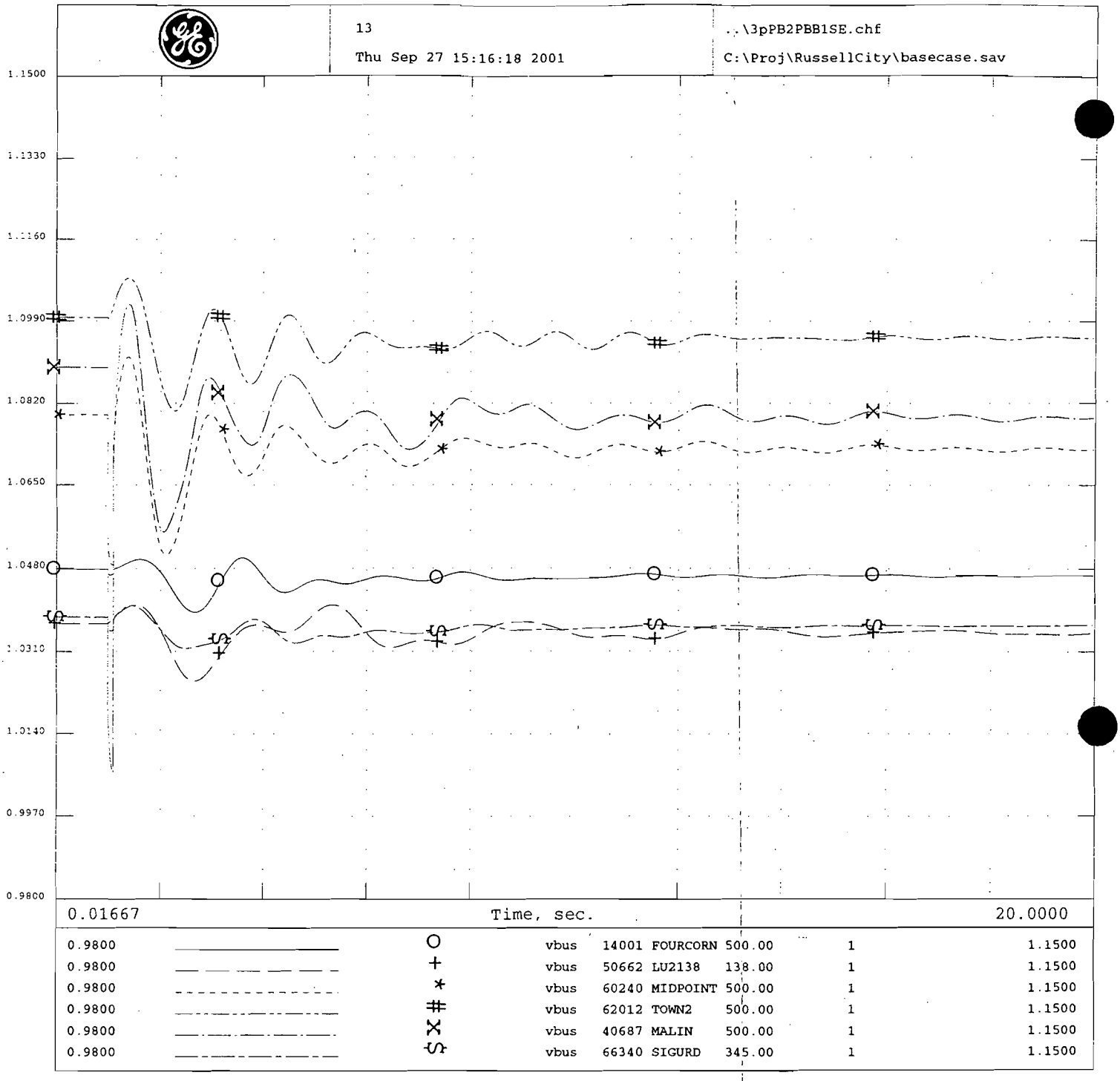

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Calpine/Bechtel Joint Development
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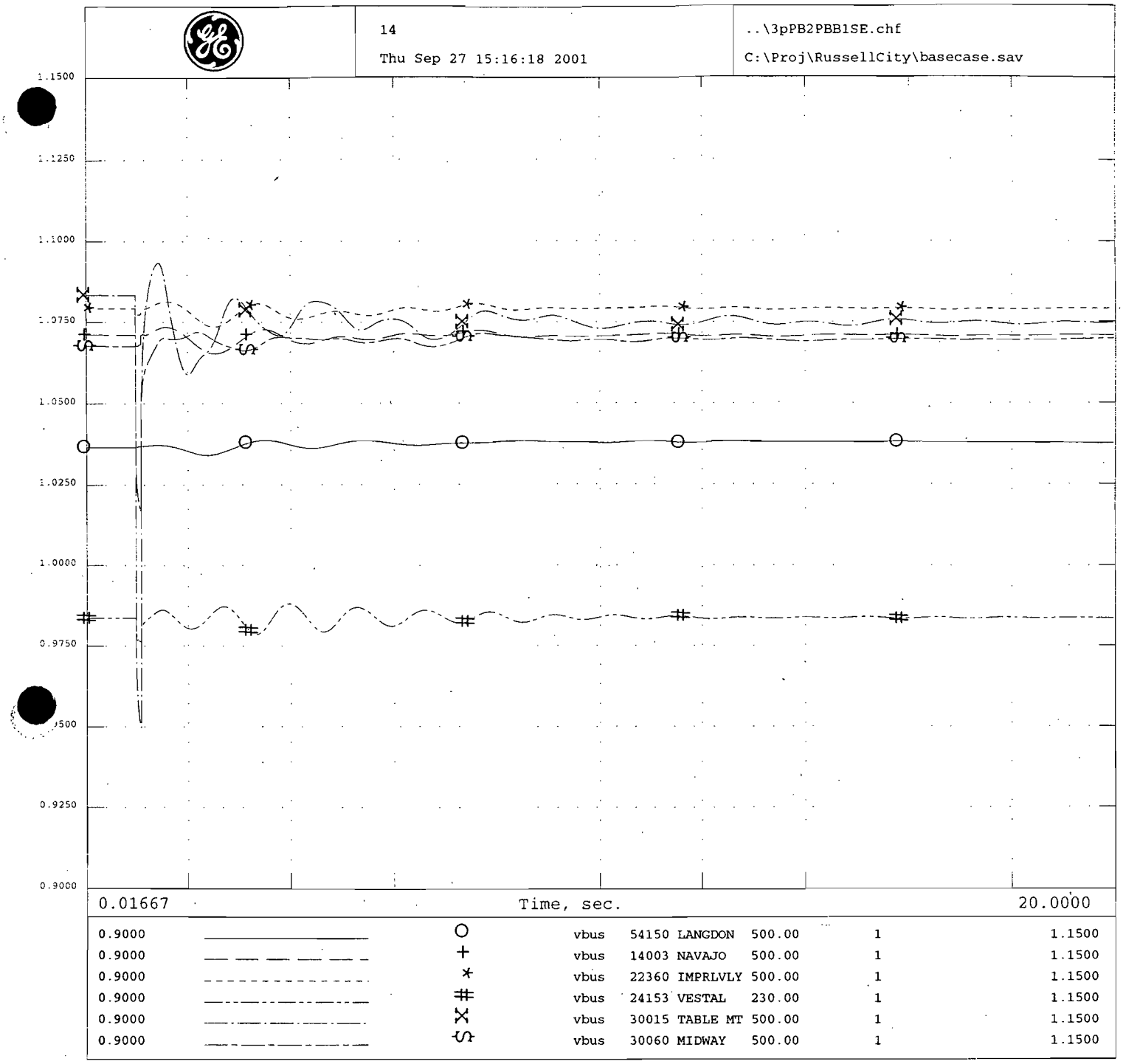

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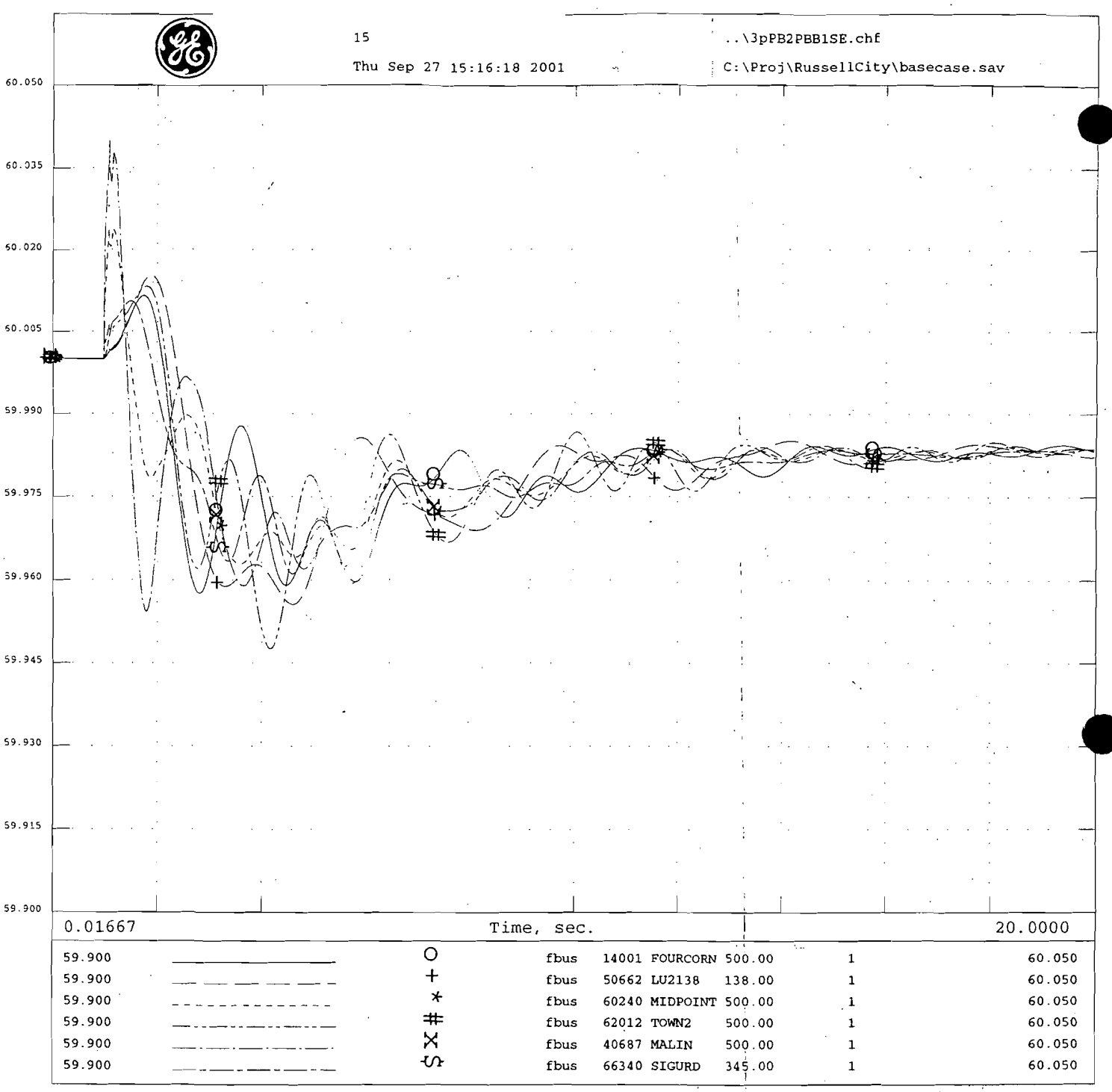

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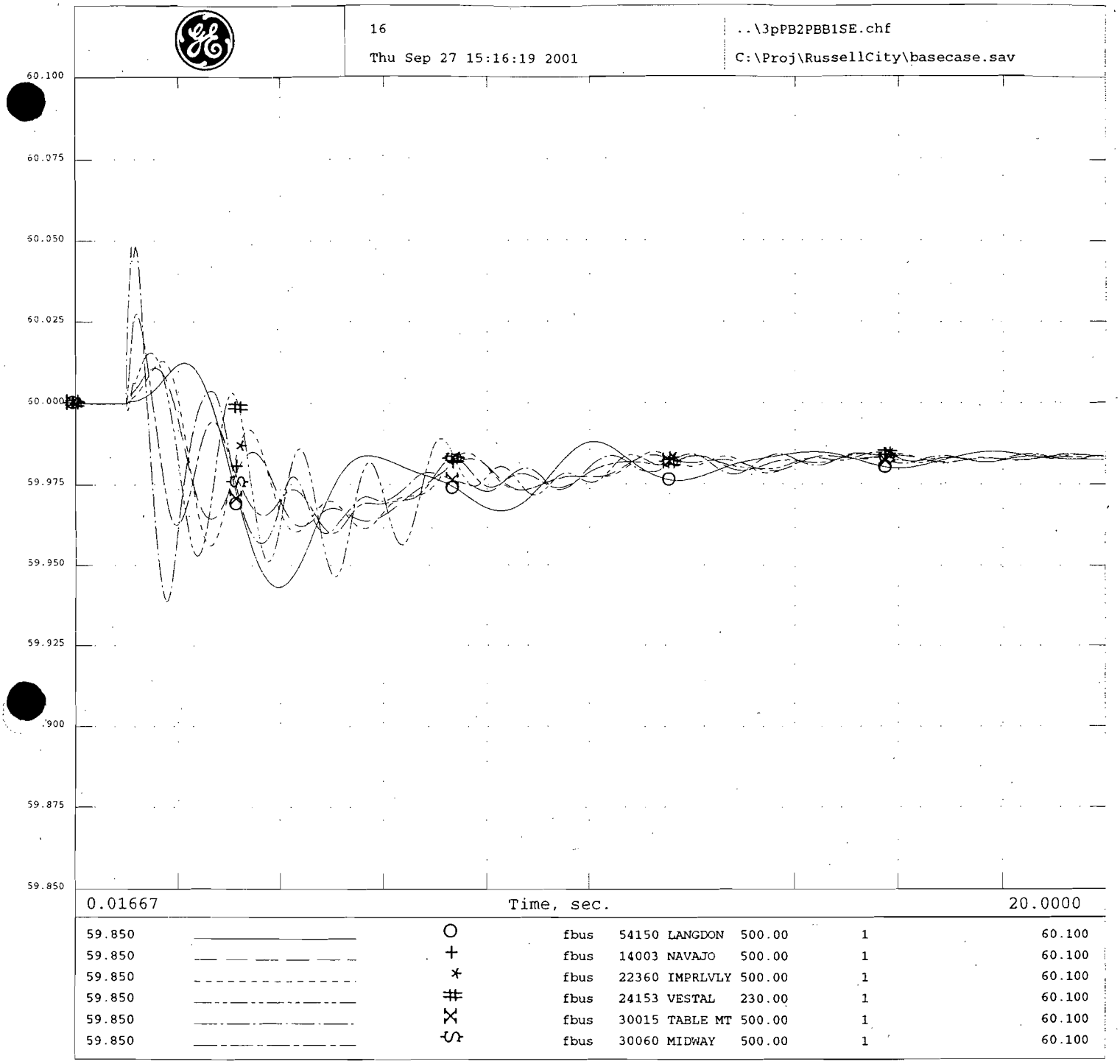
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



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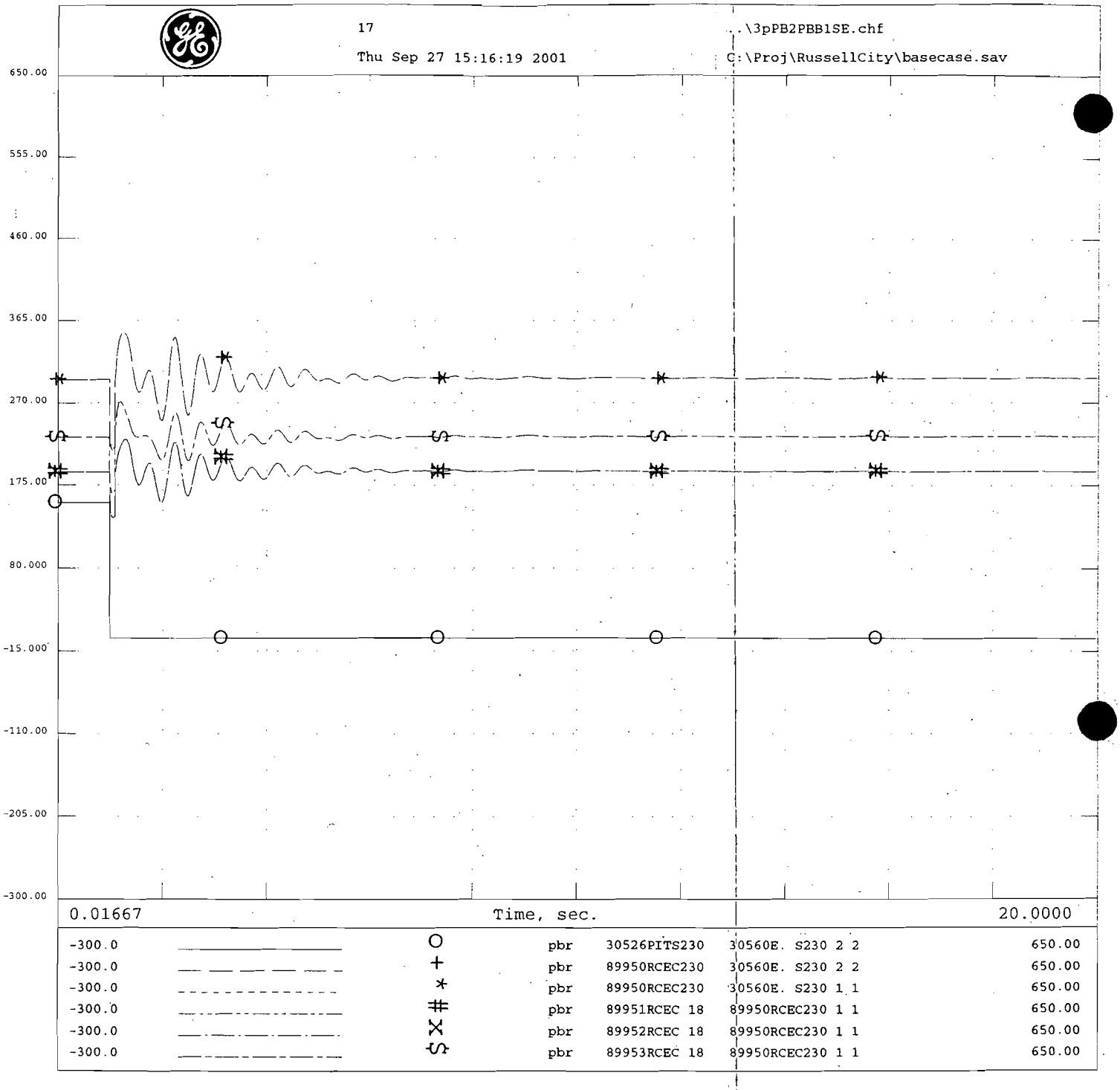

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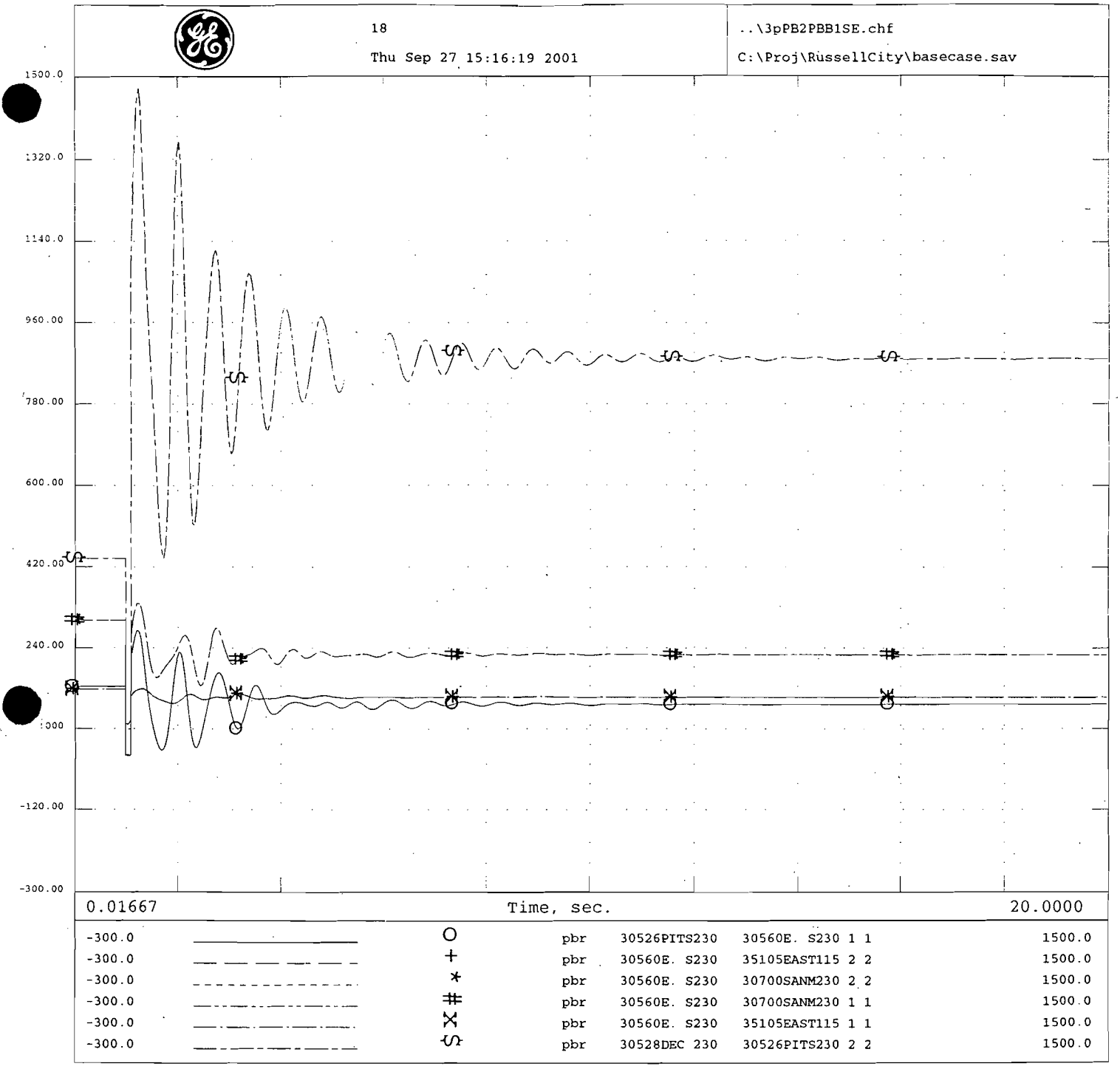
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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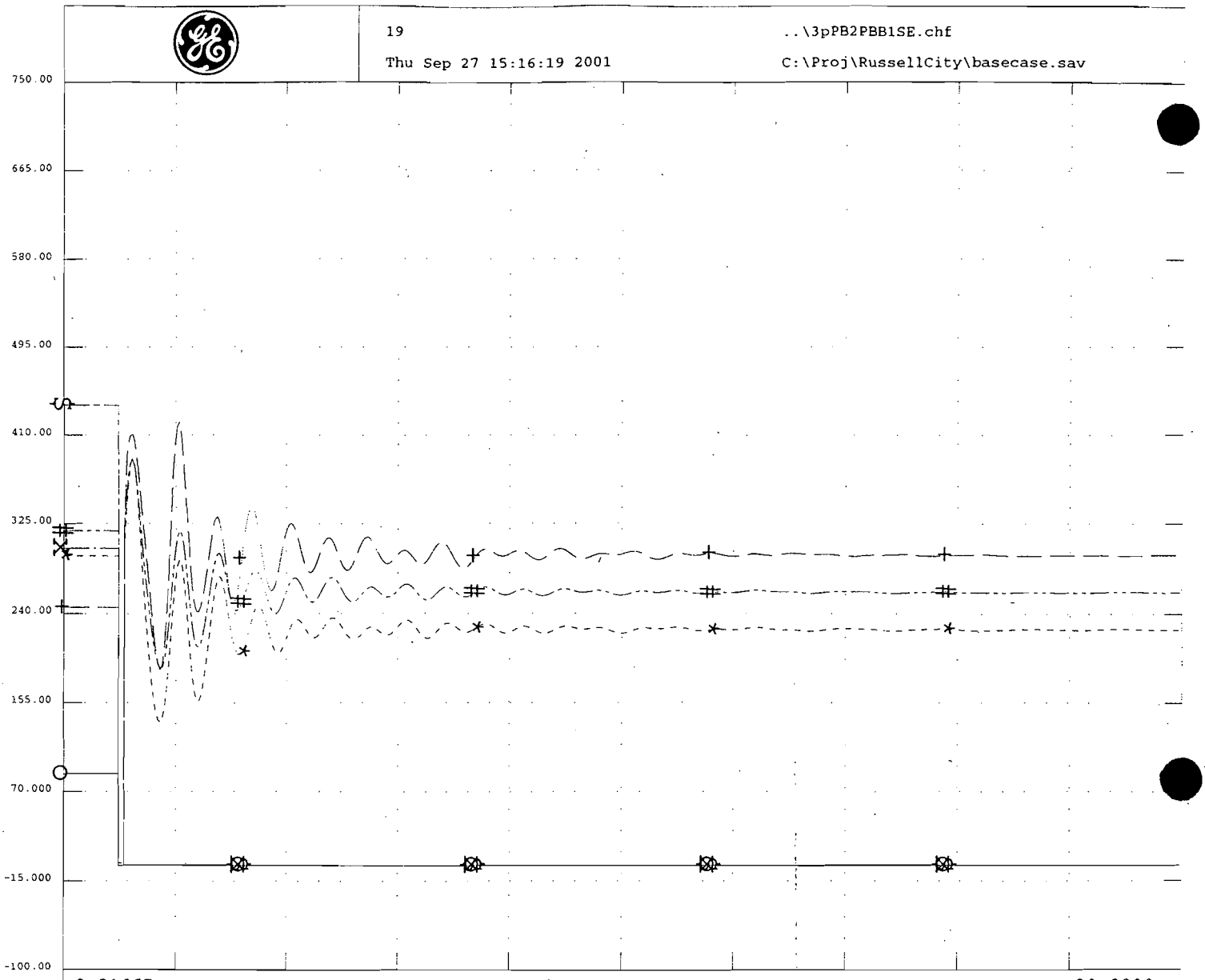

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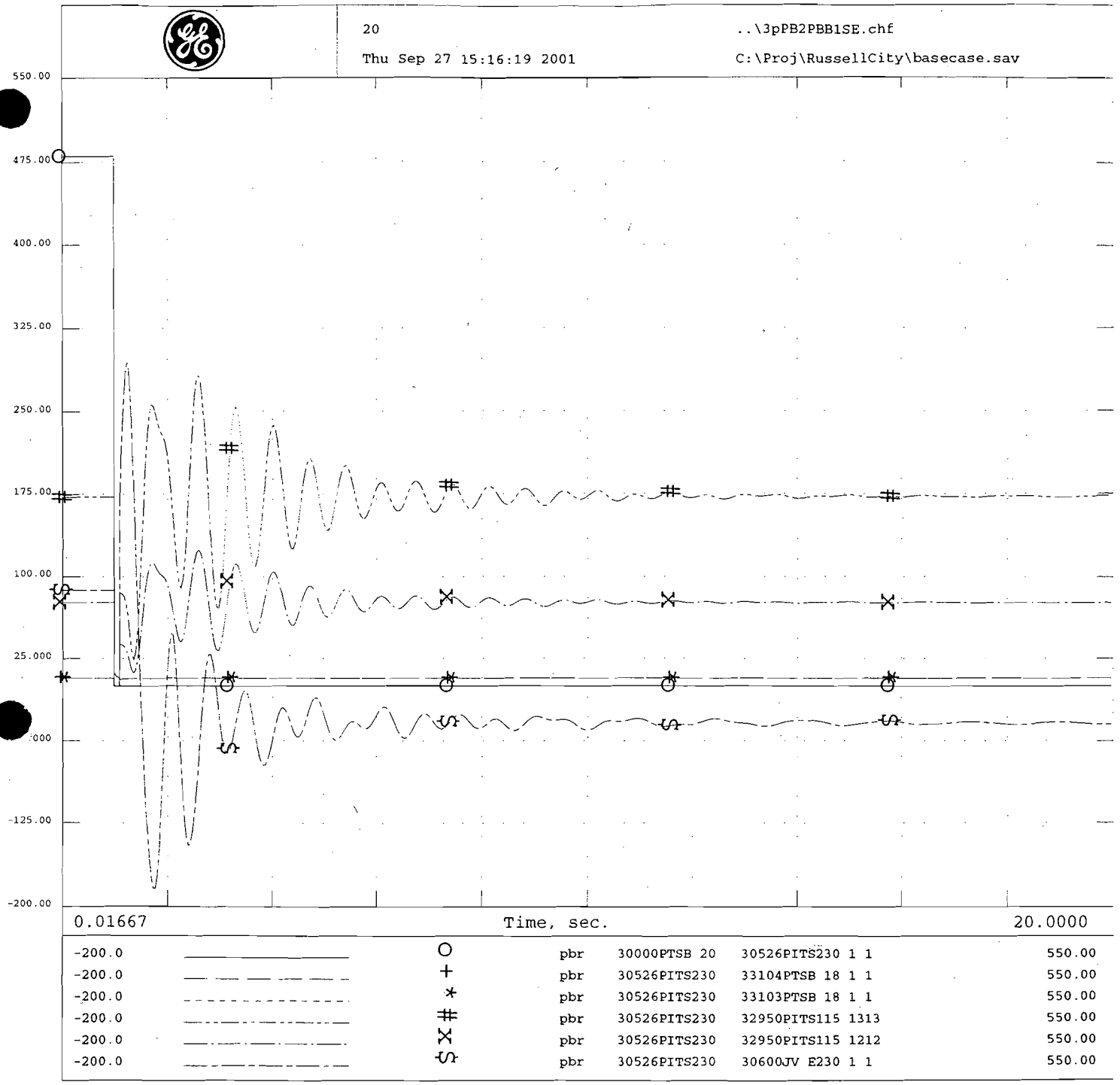

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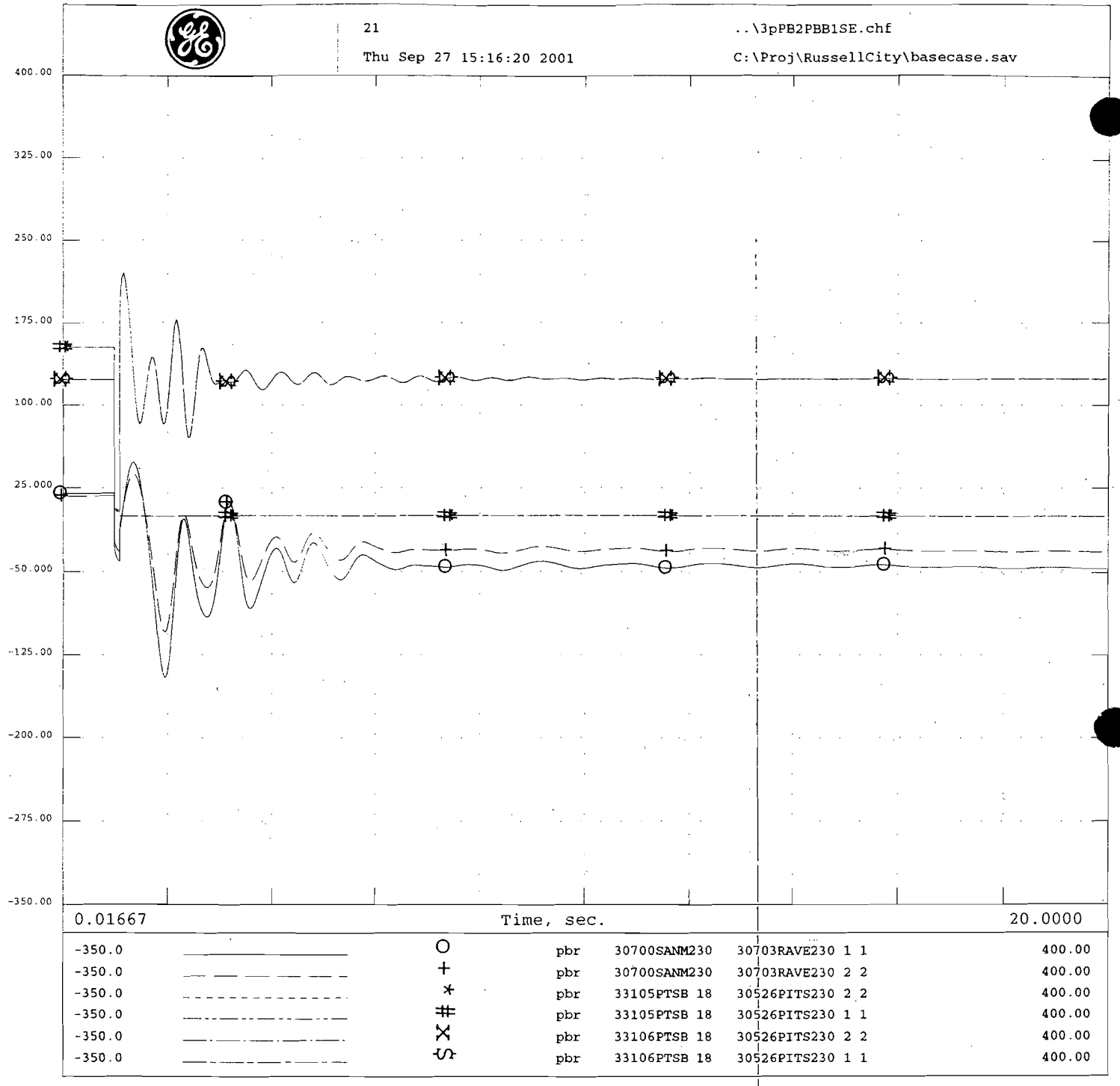

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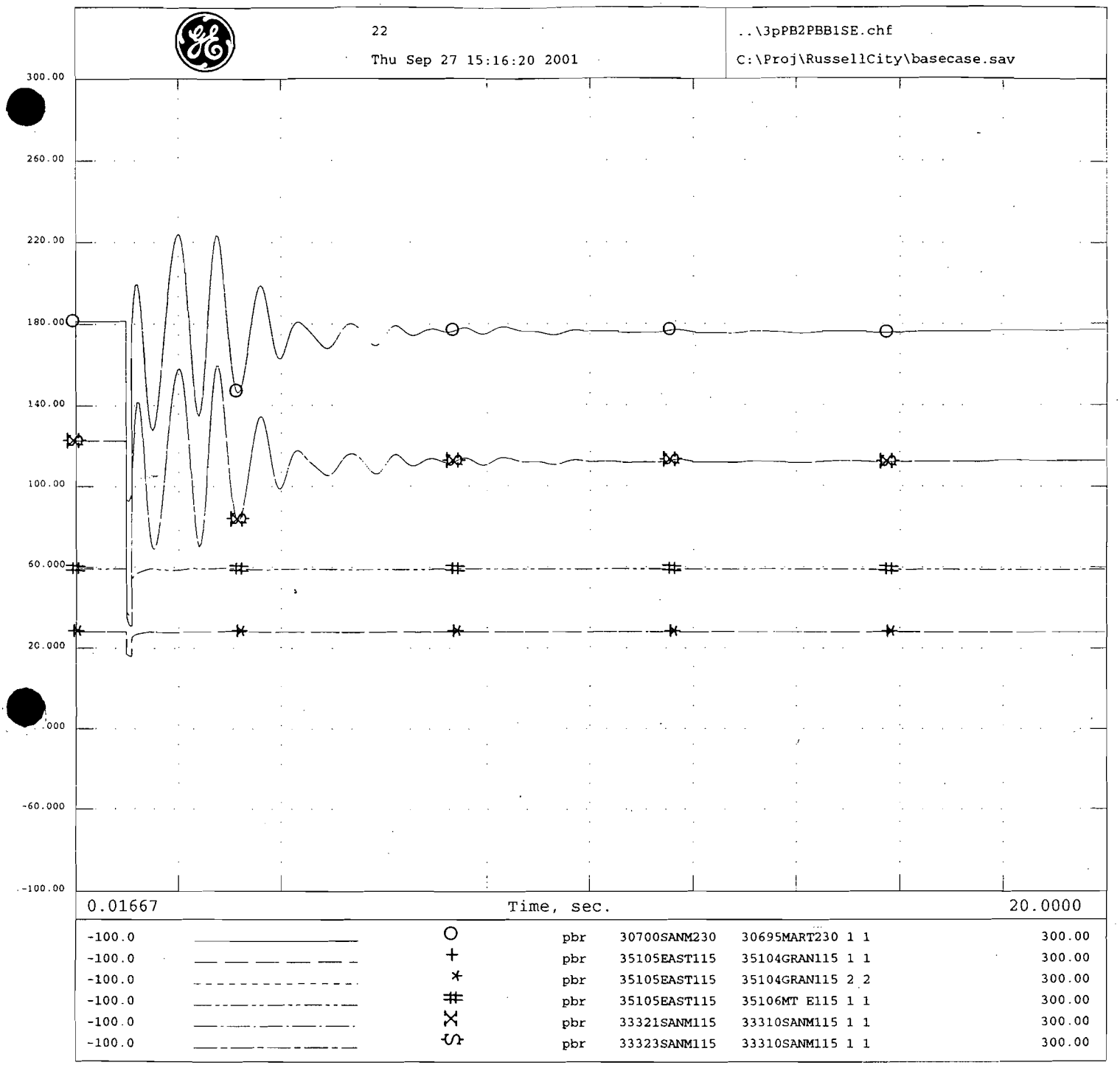

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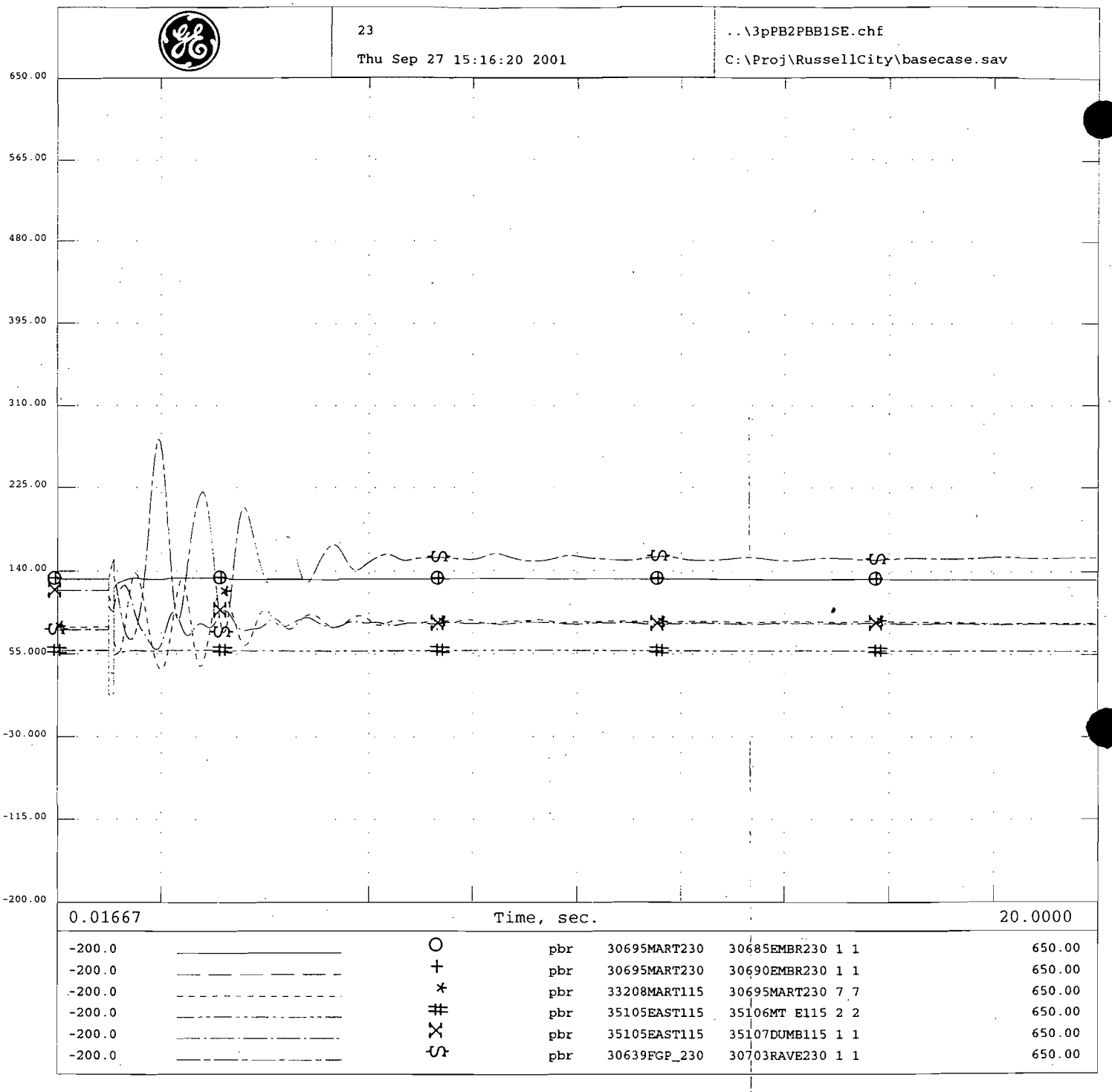

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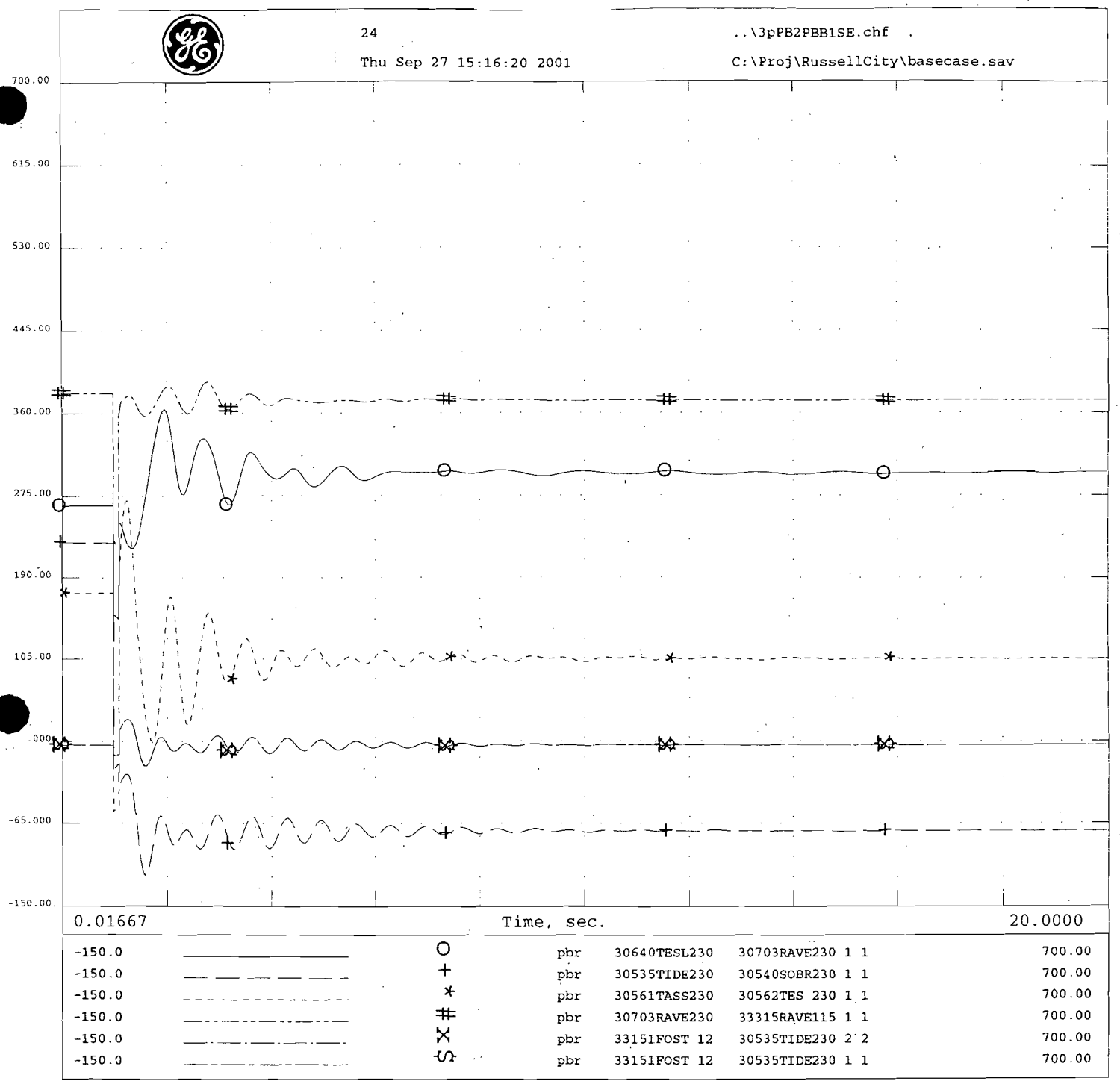

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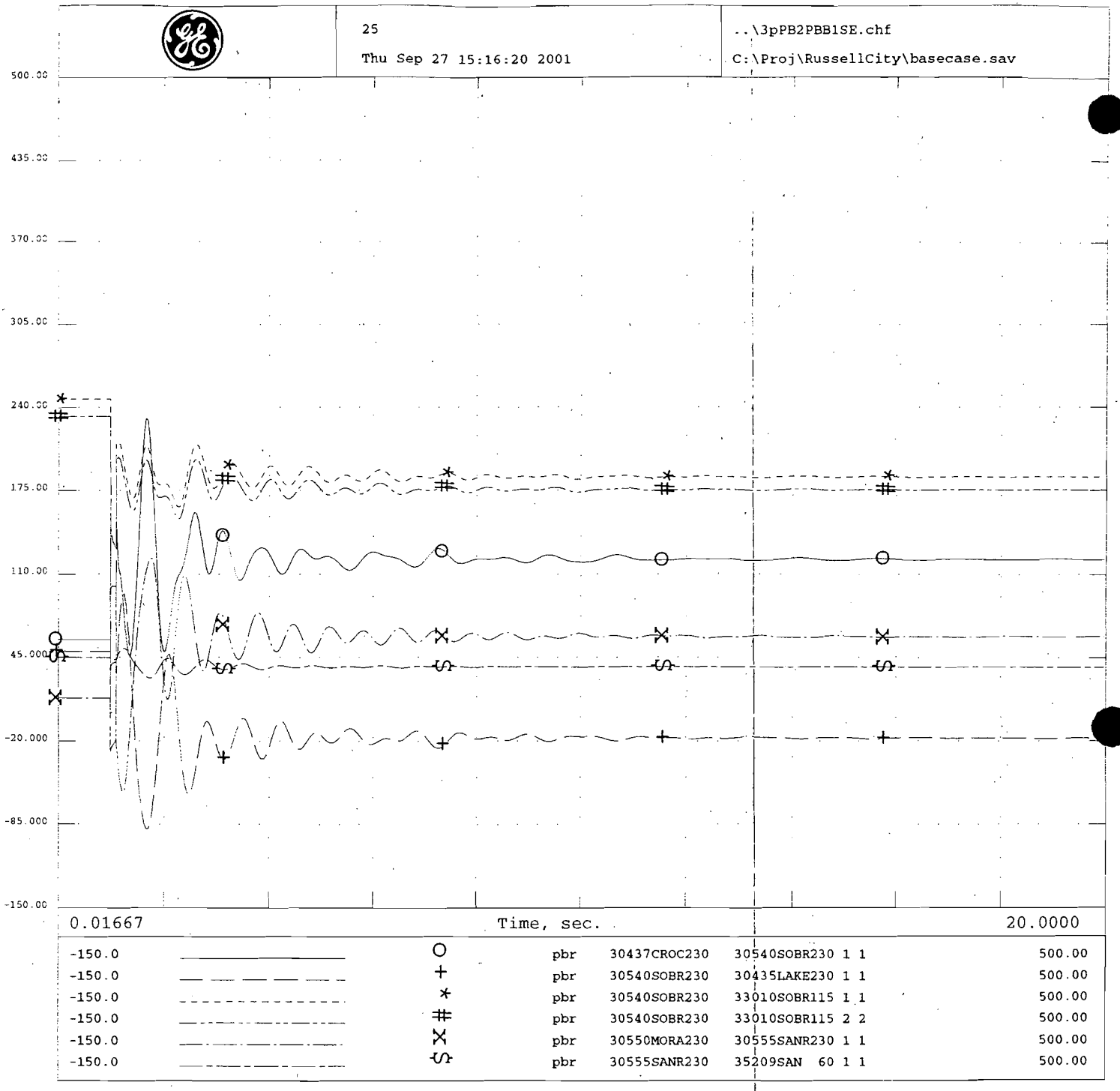

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Calpine/Bechtel Joint Development
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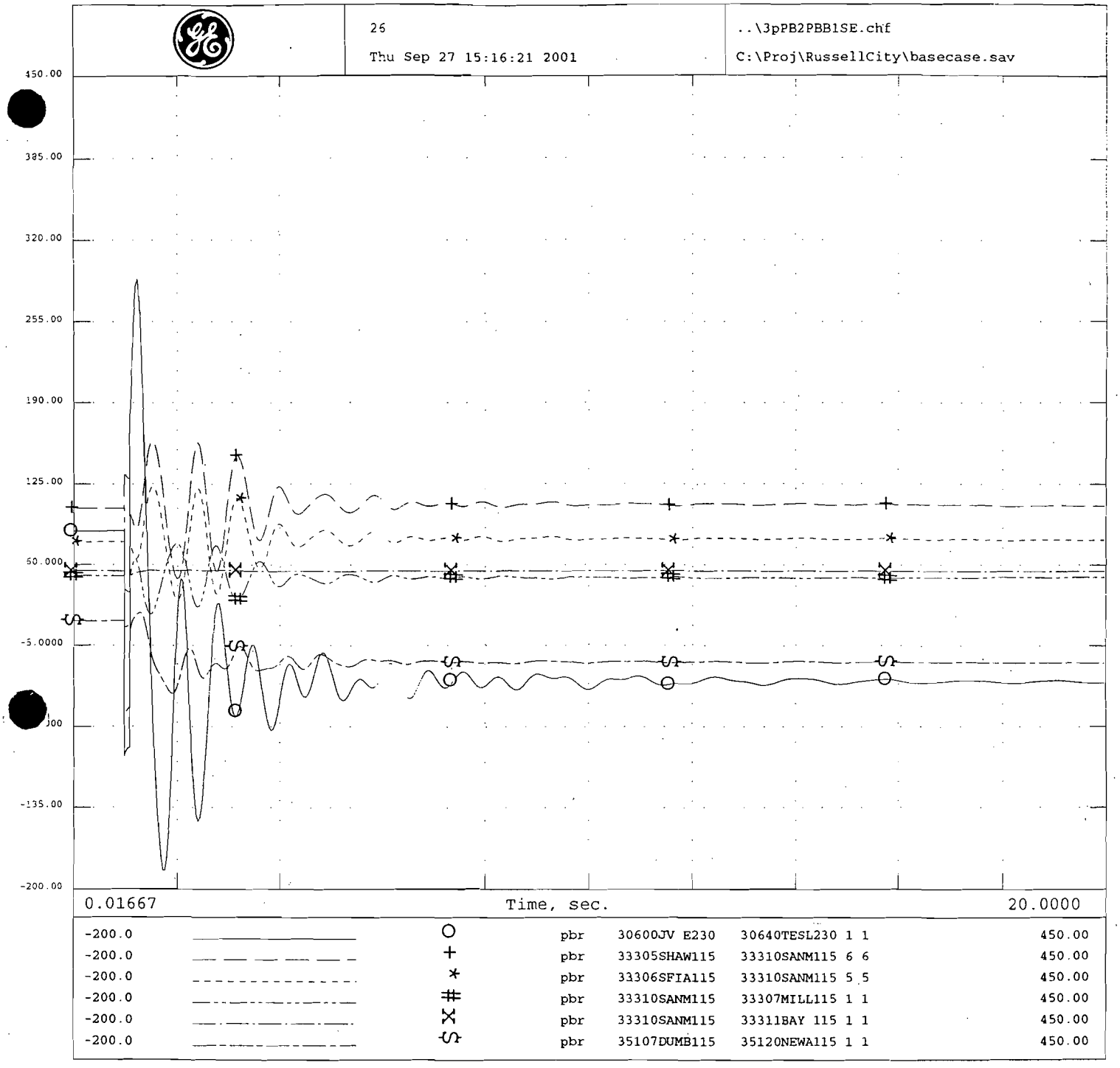

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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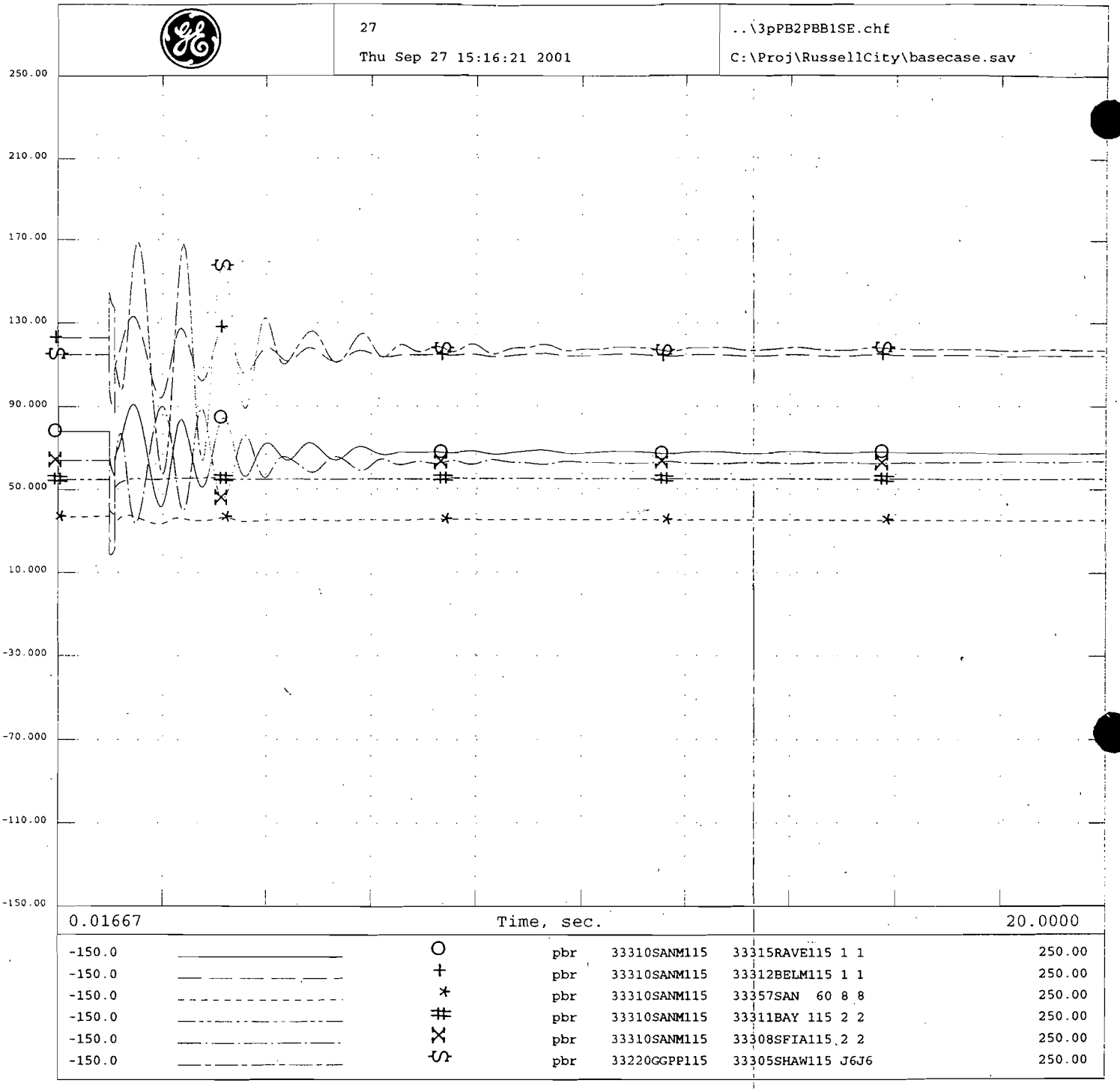

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

```
basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 2, section D
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 2, section D
RUN  9
CC
CC   Fault Pittsburg 230 kV bus
FB   0.0 "PITSBURG" 230.
CC
CC   Clear fault at Pittsburg 230 kV bus 2D
CFB  6.0 "PITSBURG" 230.
CC
CC
DL  6.0 "PITSBURG" 230.00 "SANRAMON" 230.00 "1 "
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MBL 6.0 "PTSB  4 " 18.0 "1 " D
CC
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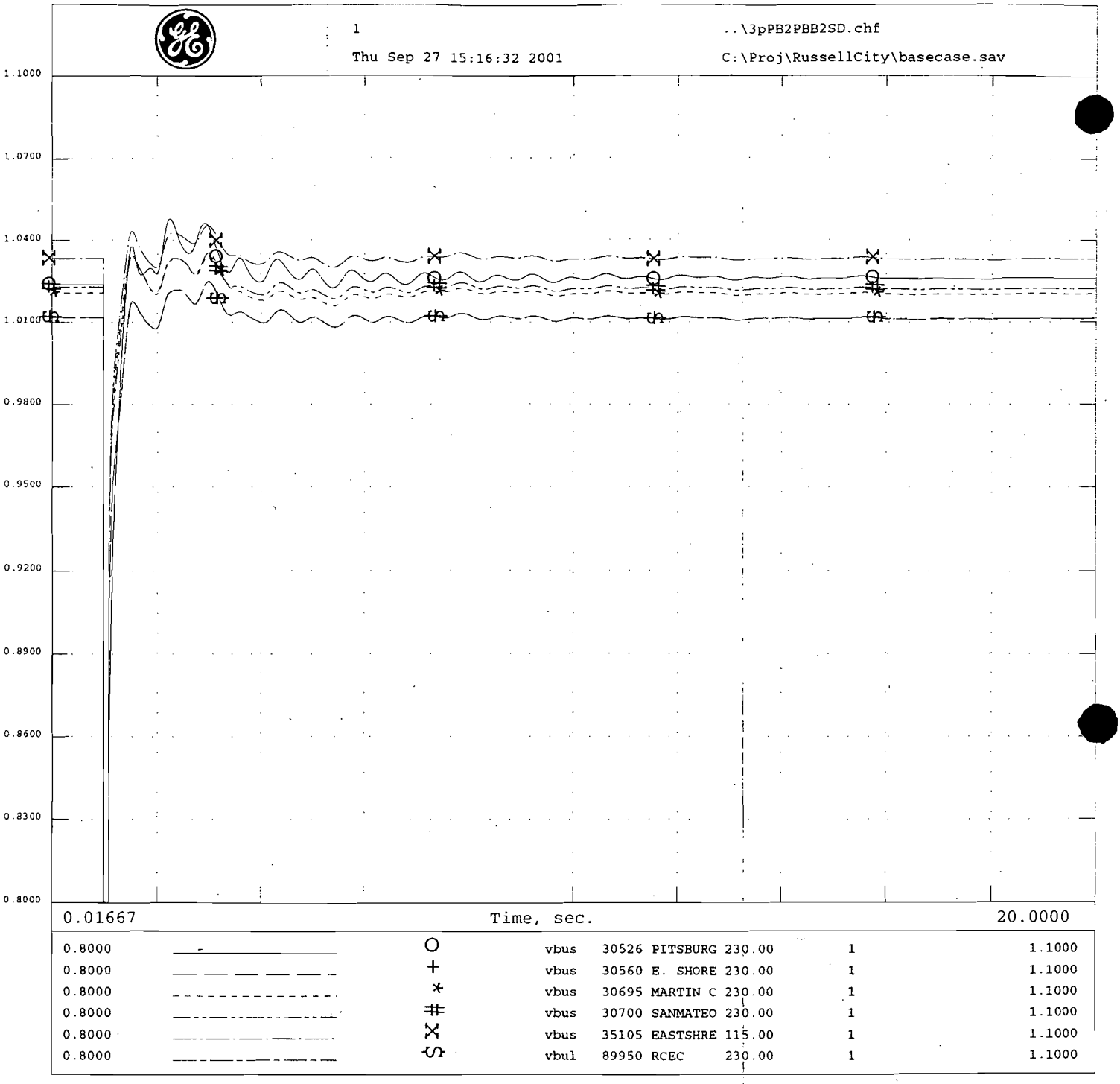

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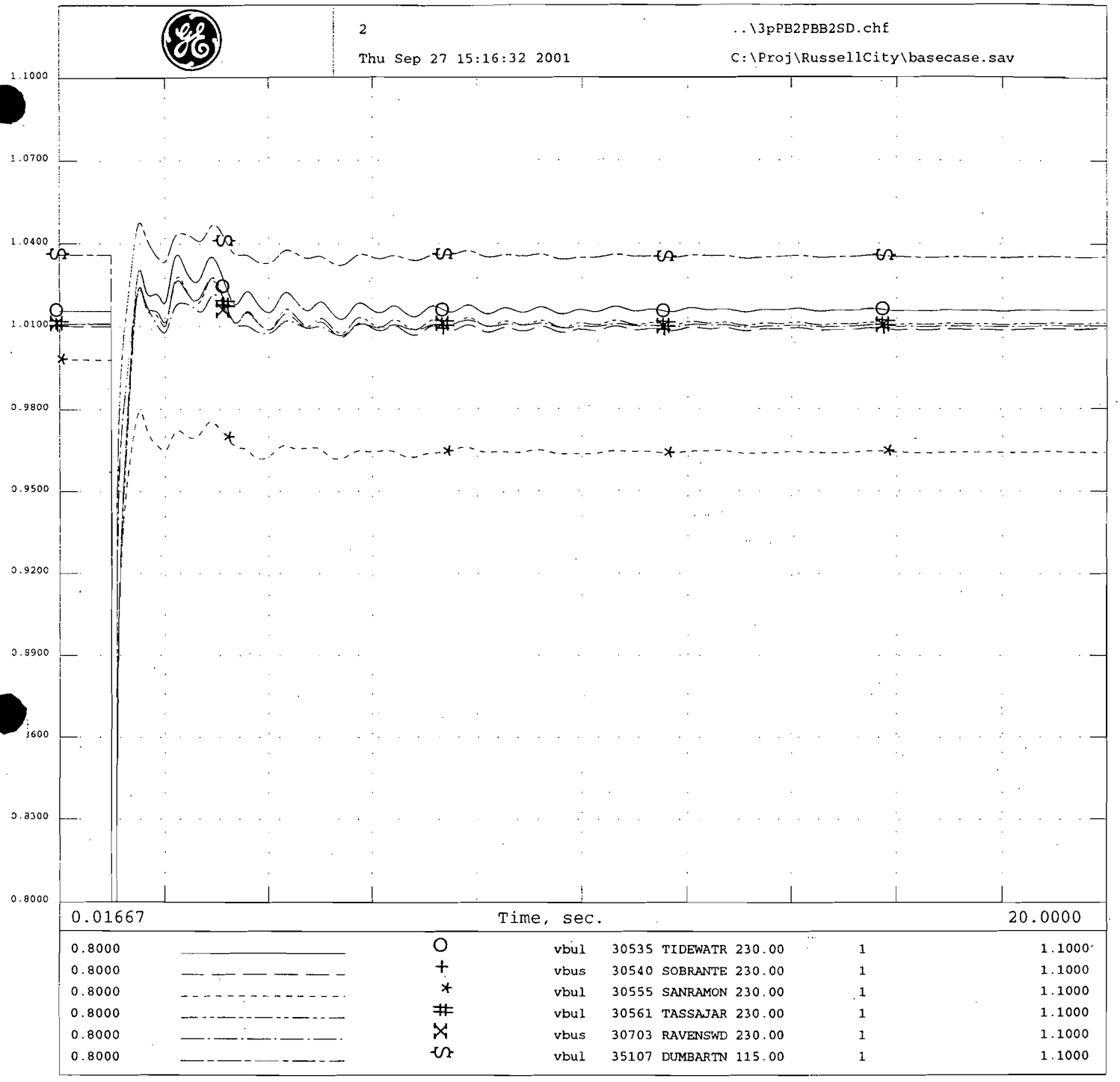
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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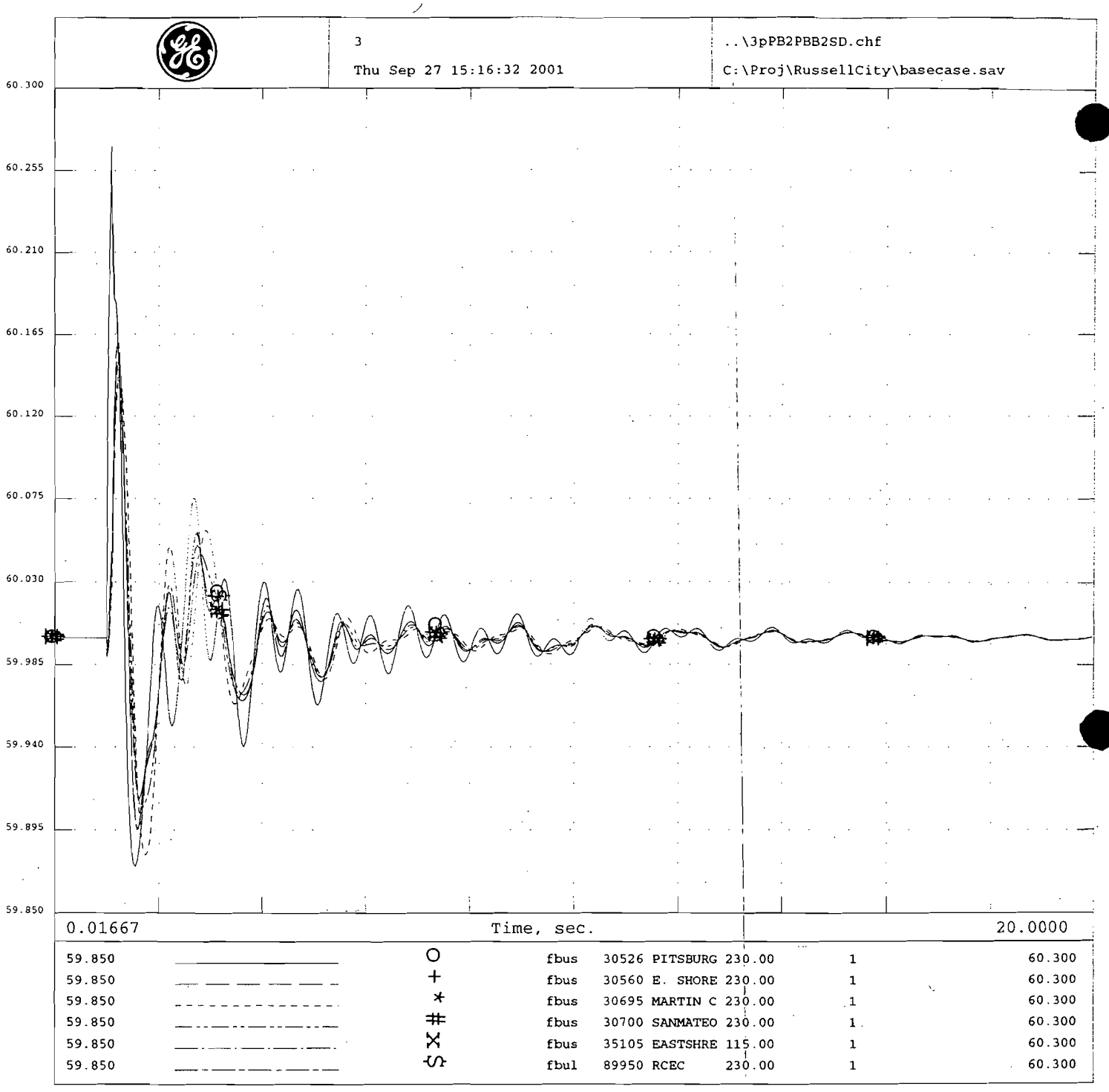

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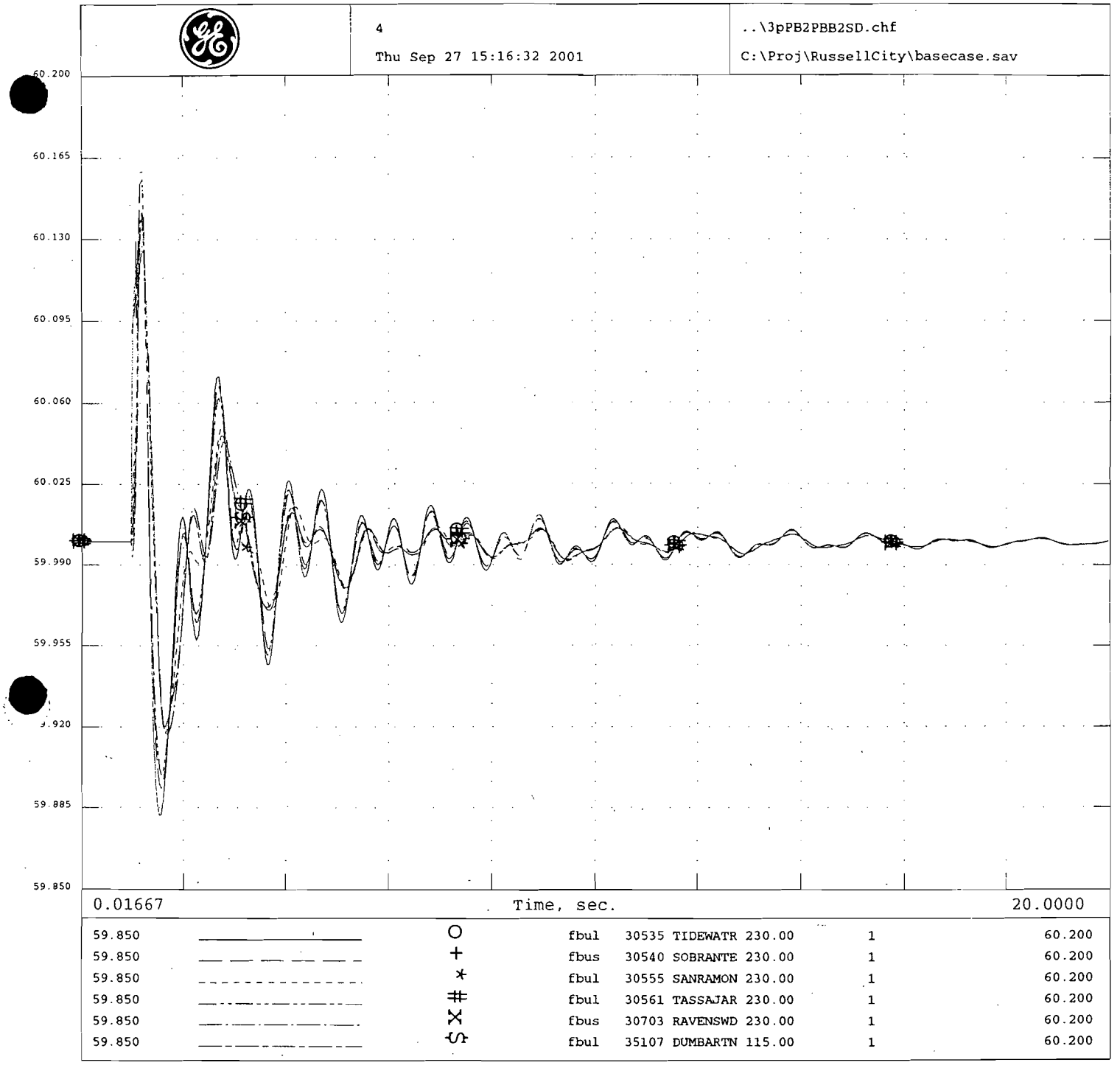
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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Calpine/Bechtel Joint Development
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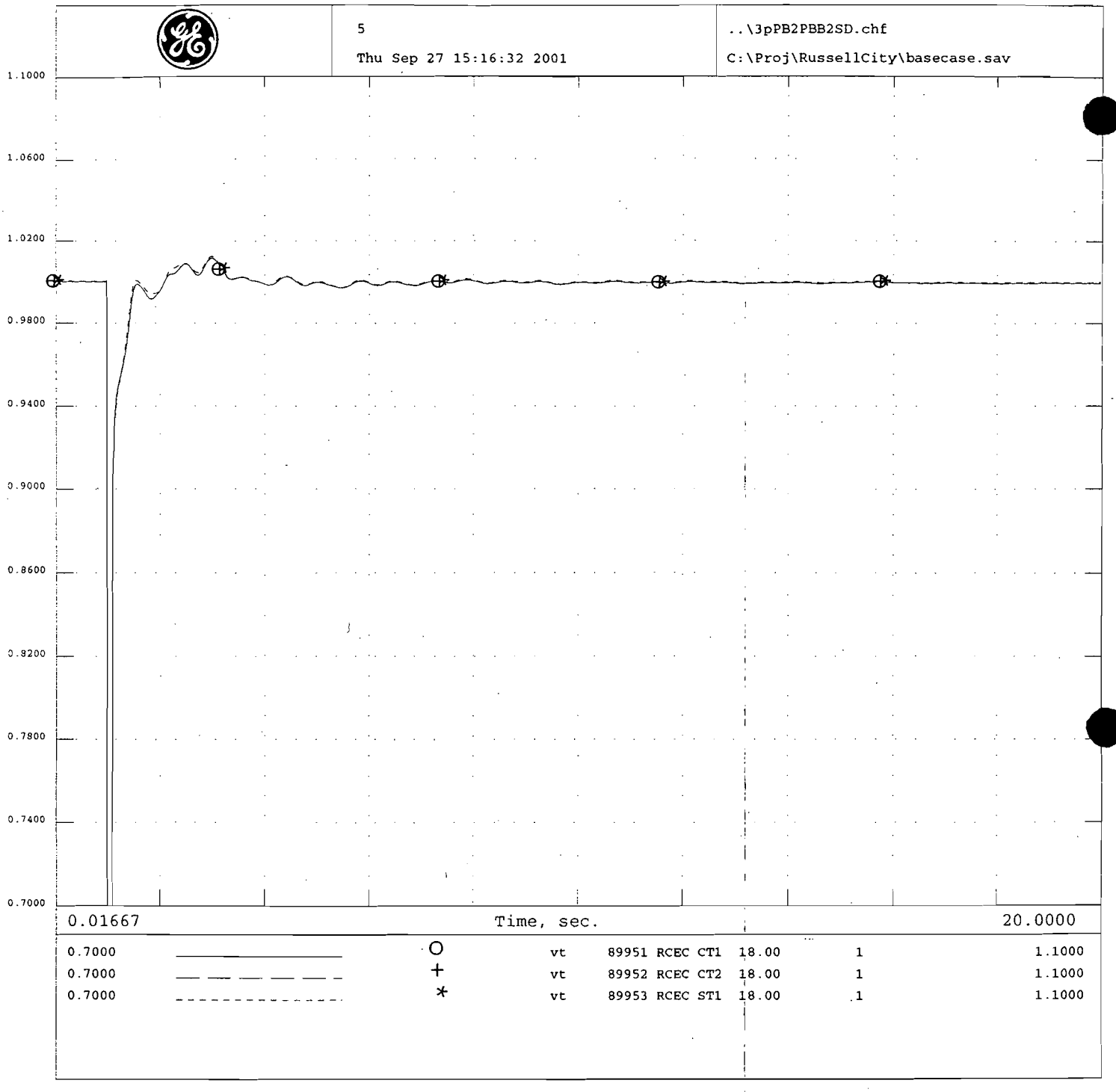

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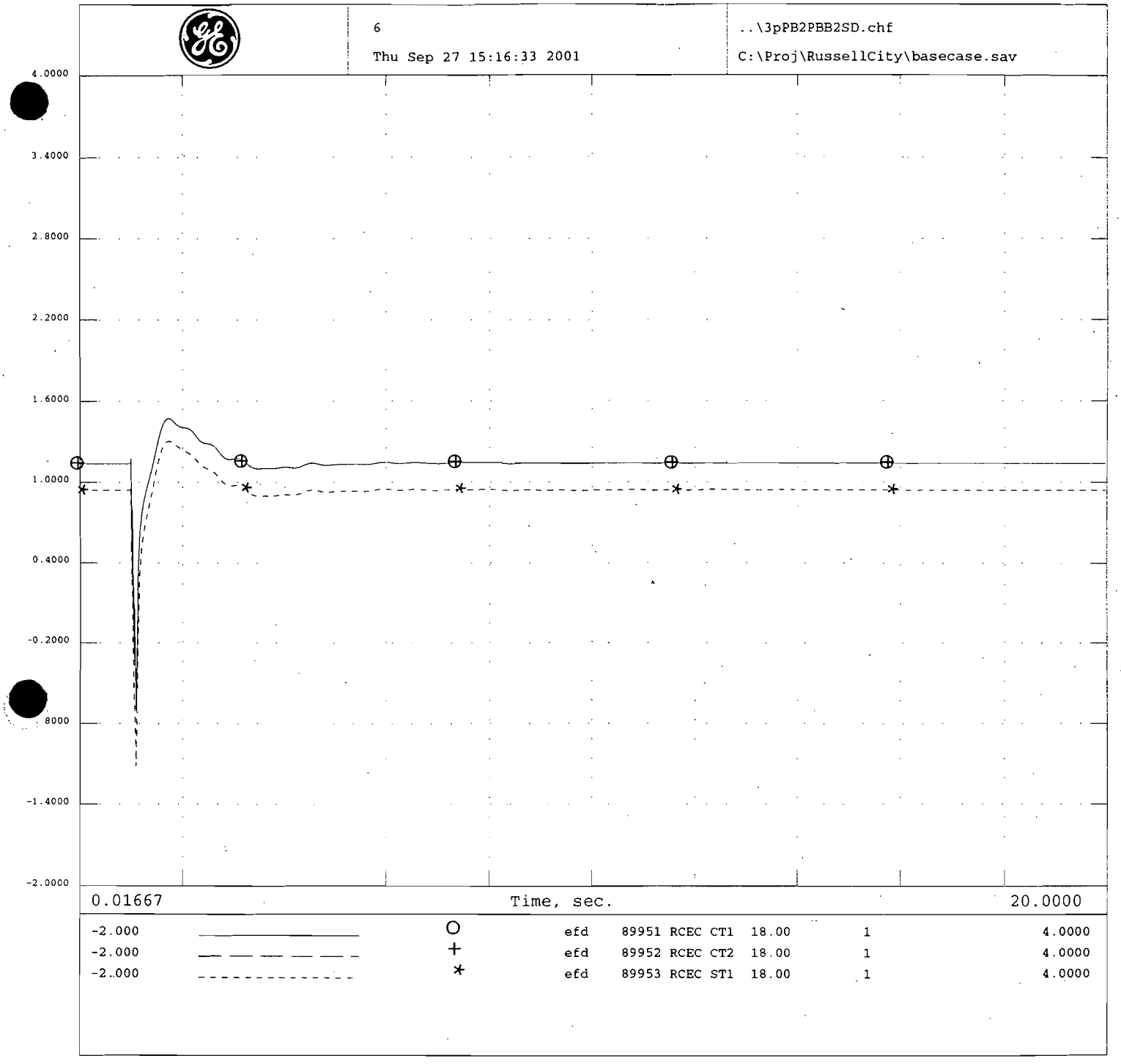
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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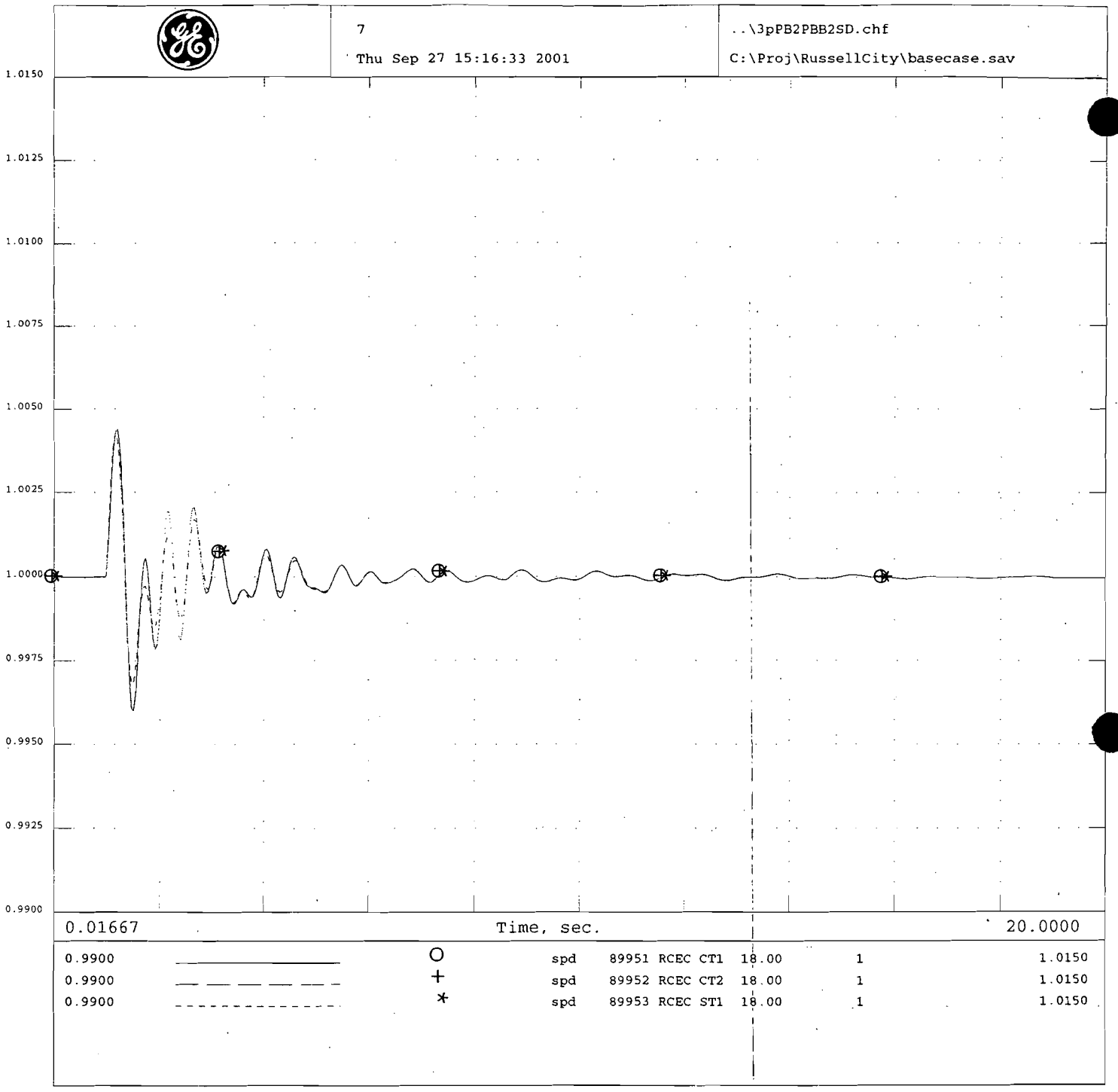

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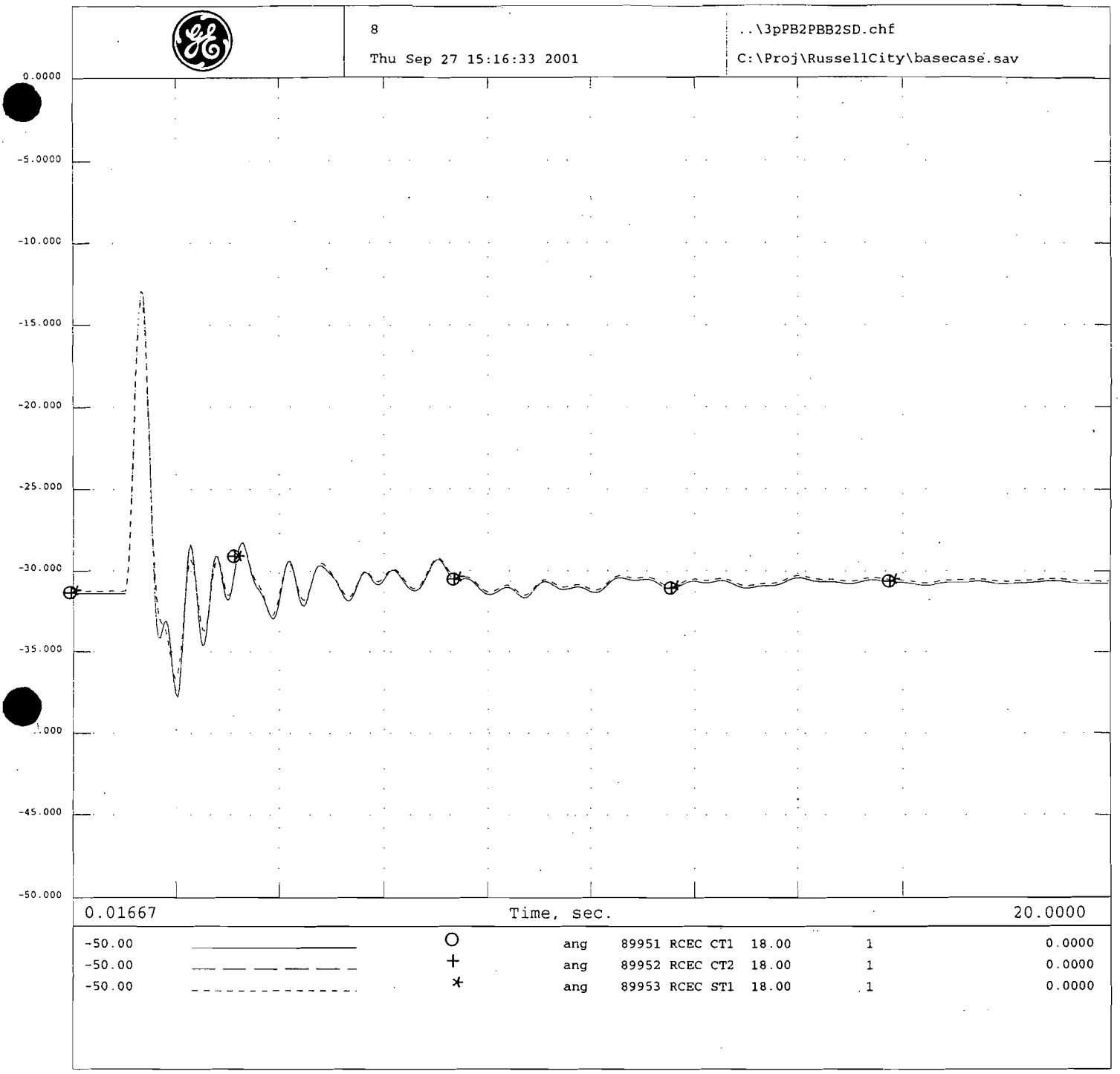
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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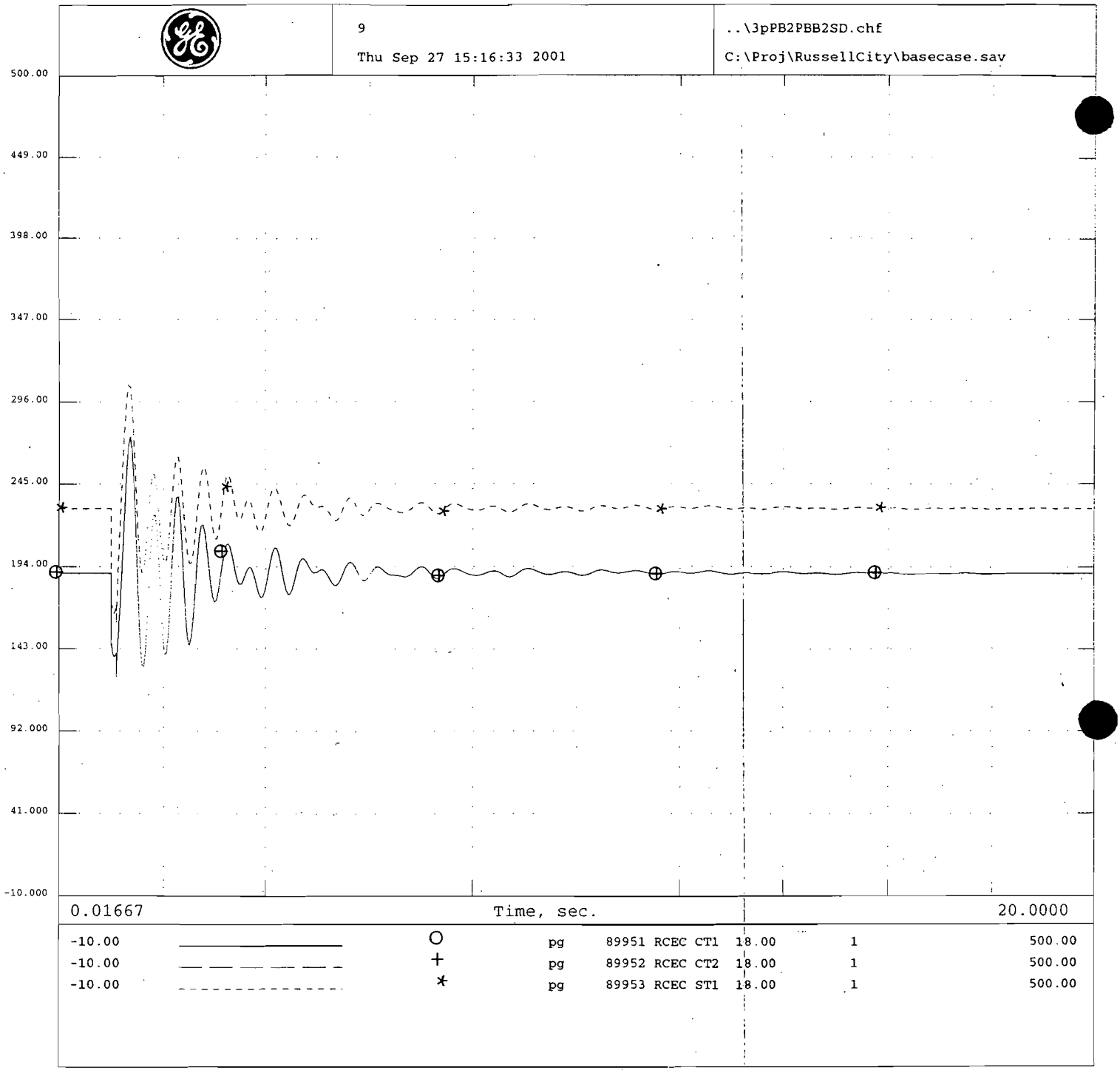

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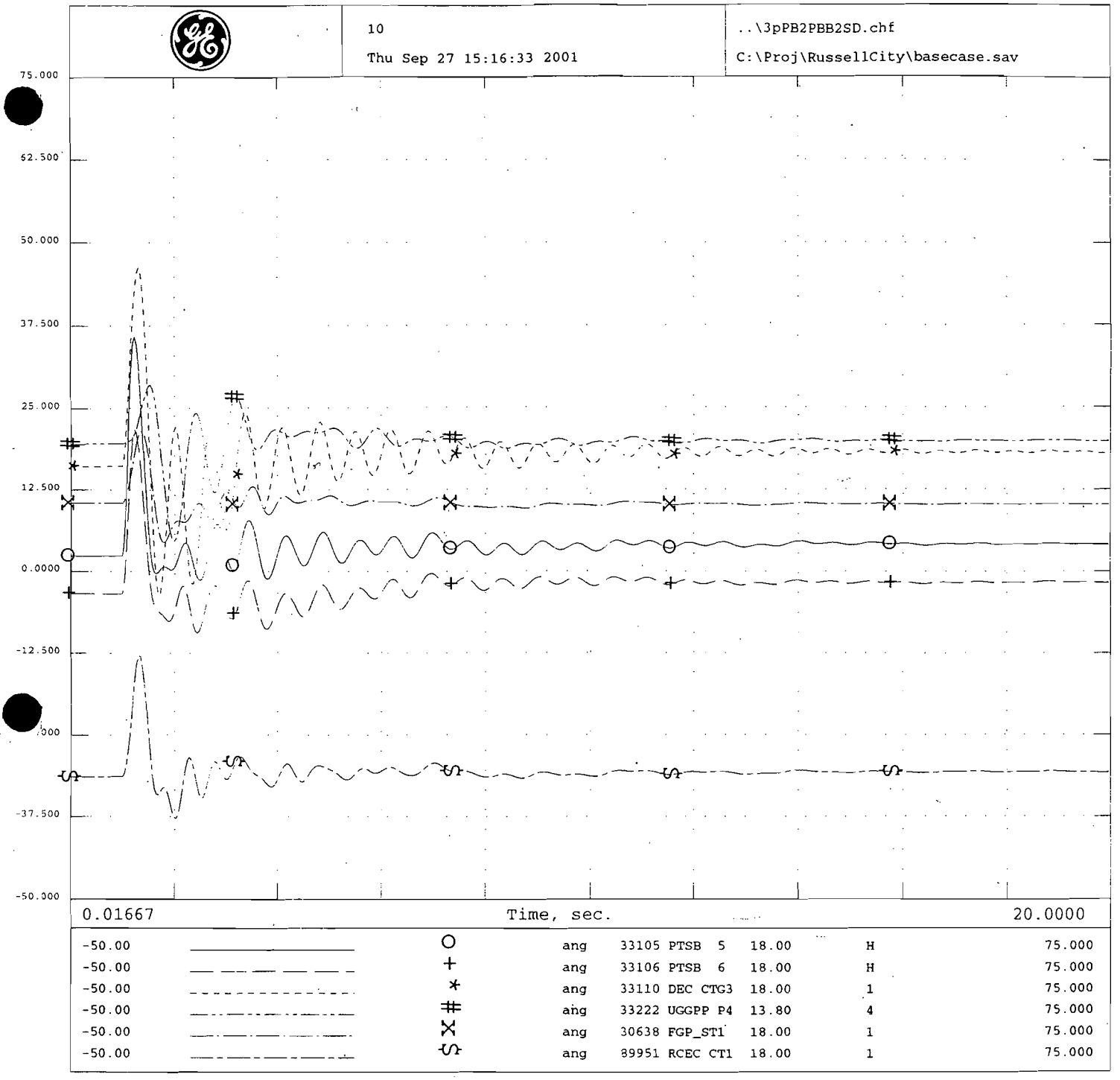
Calpine/Bechtel Joint Development
Project Generator Terminal Power



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Calpine/Bechtel Joint Development
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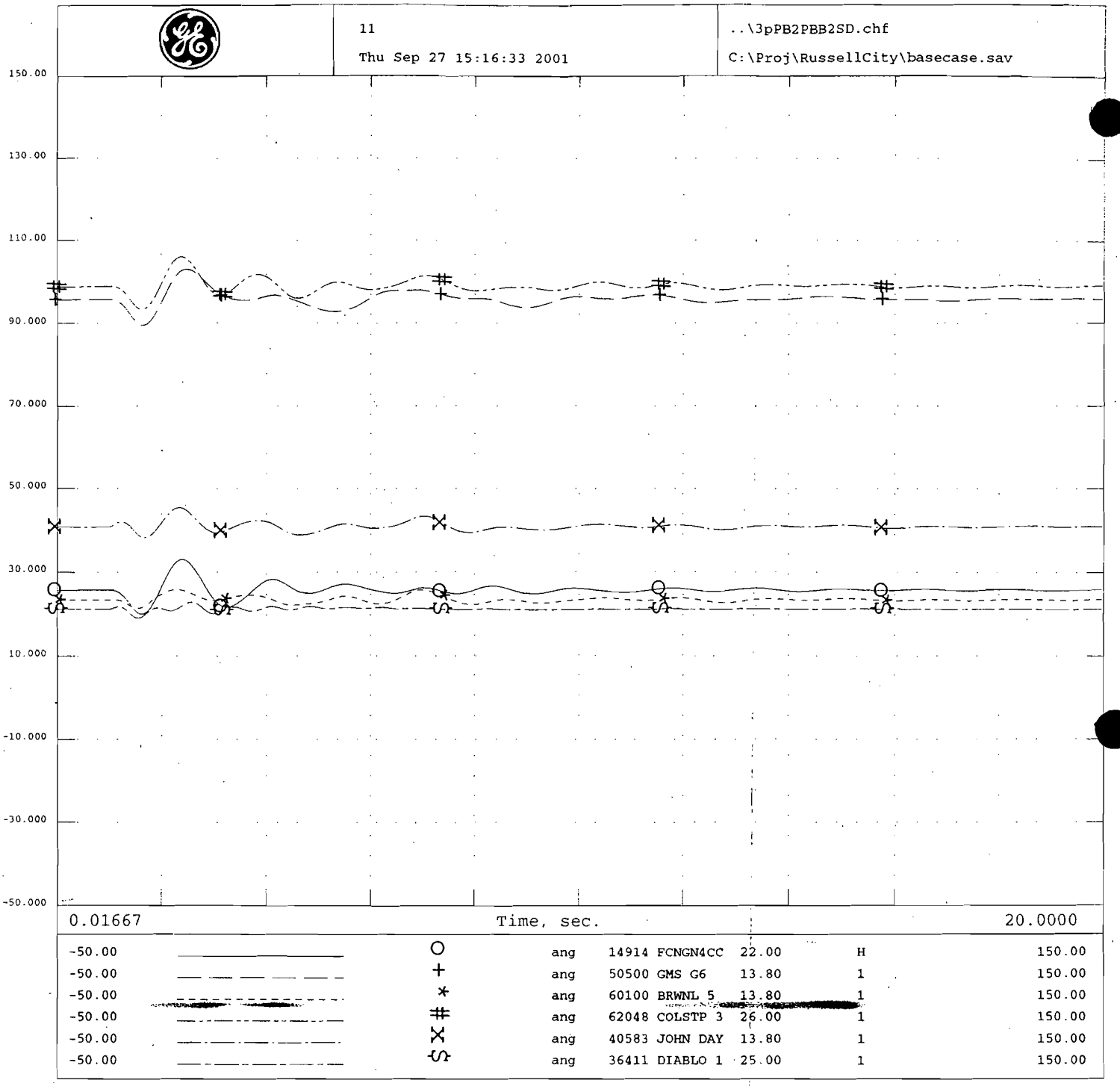

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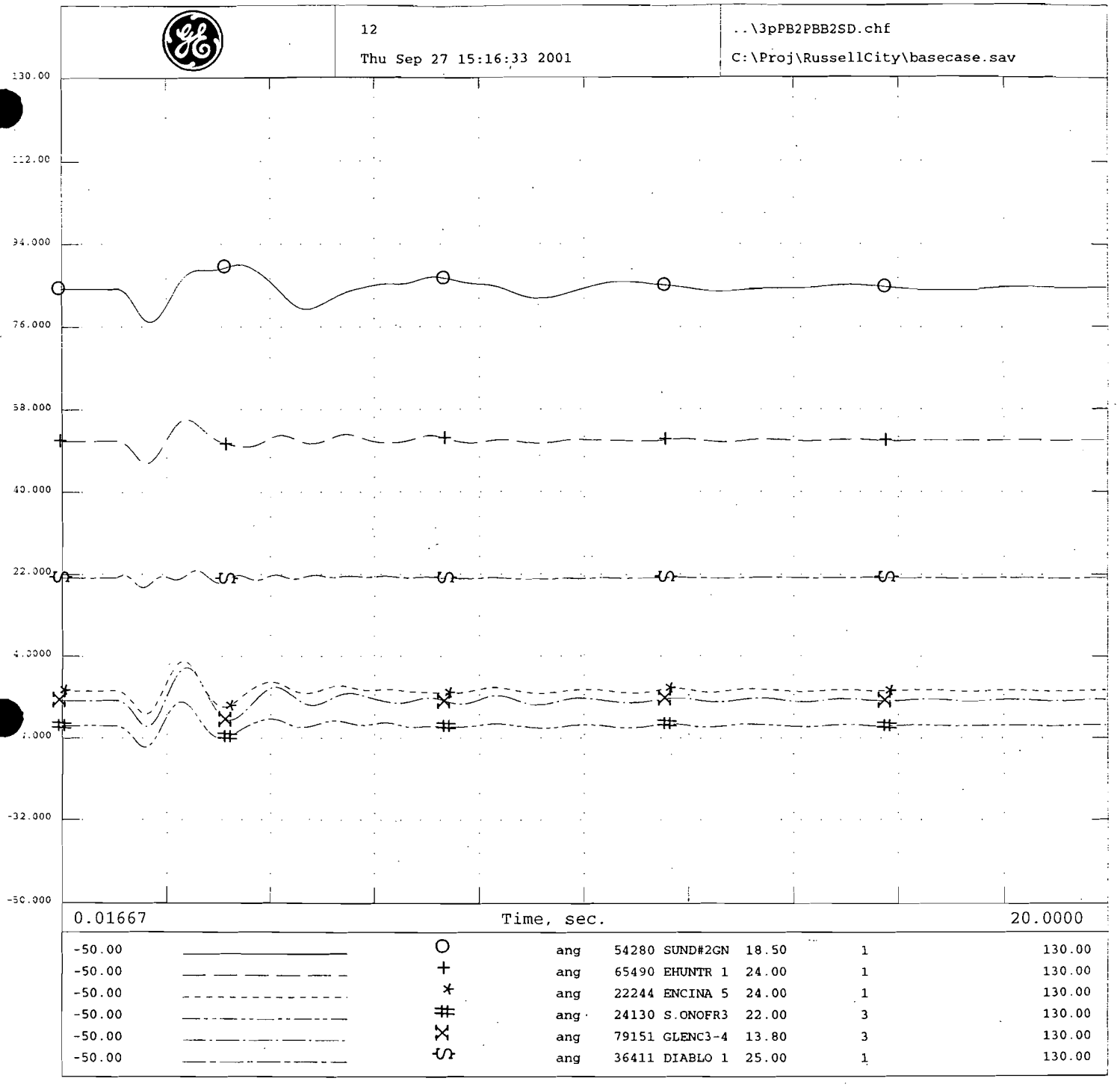

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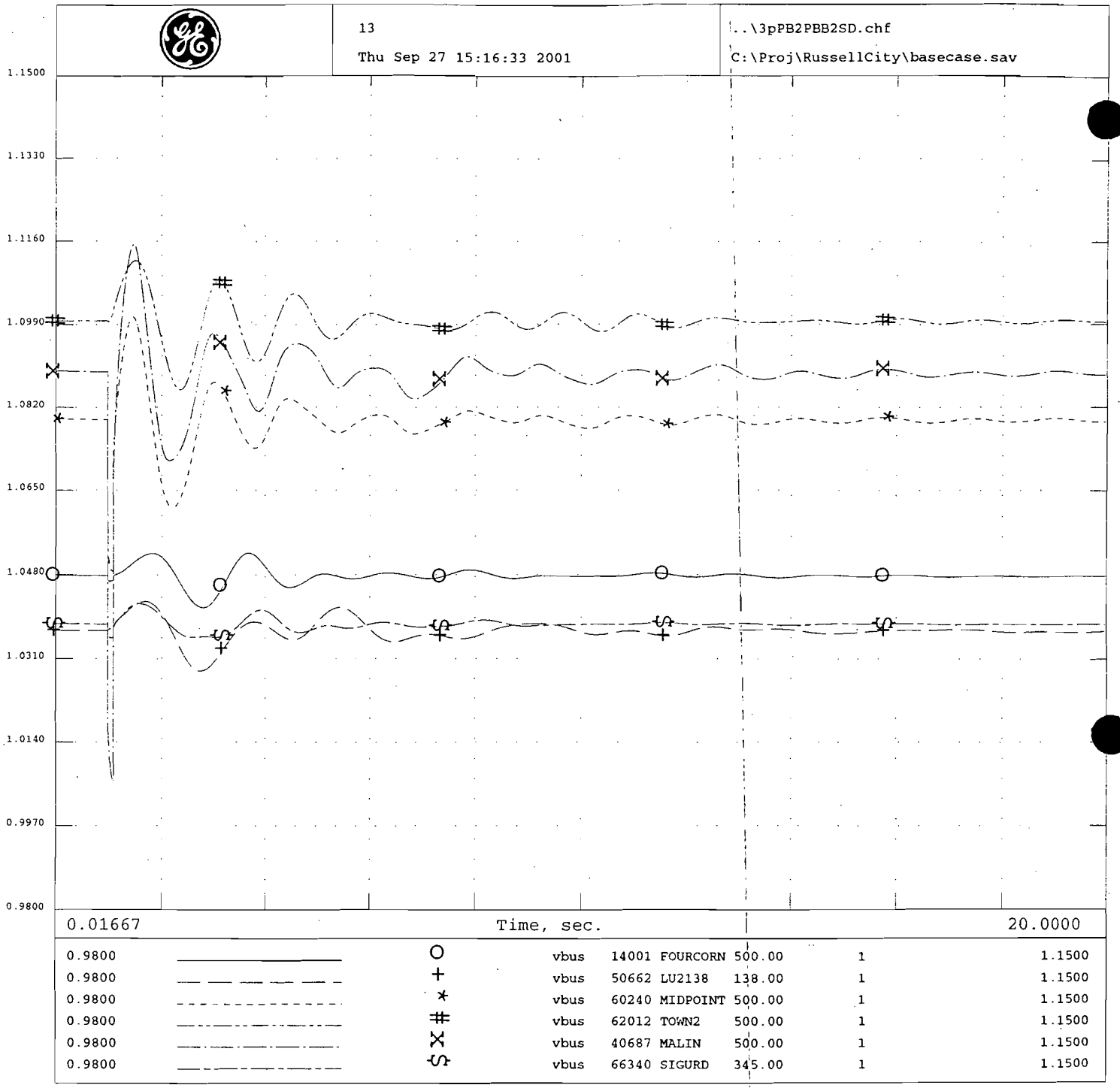

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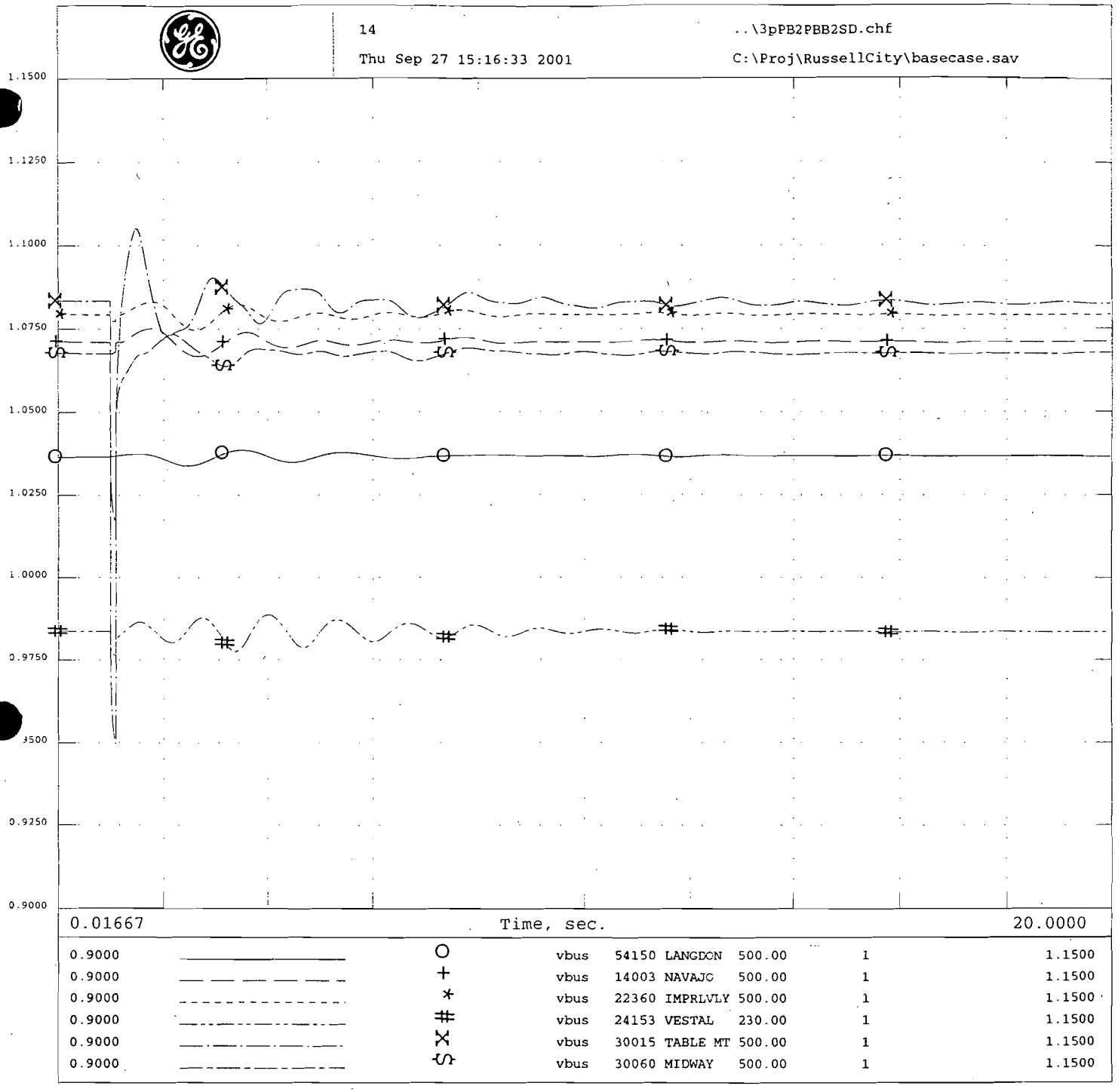

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 2, section D
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 2, section D

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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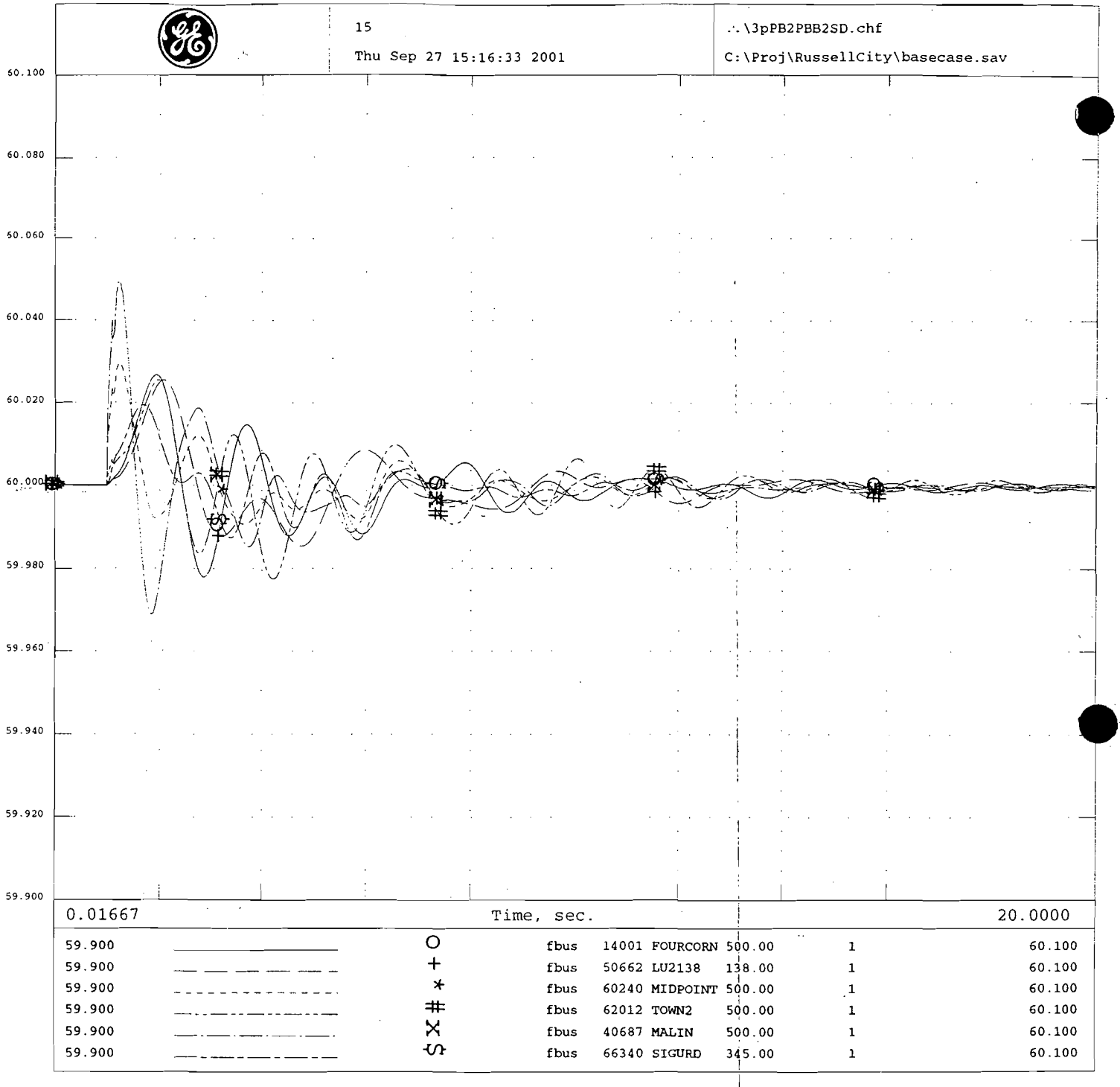

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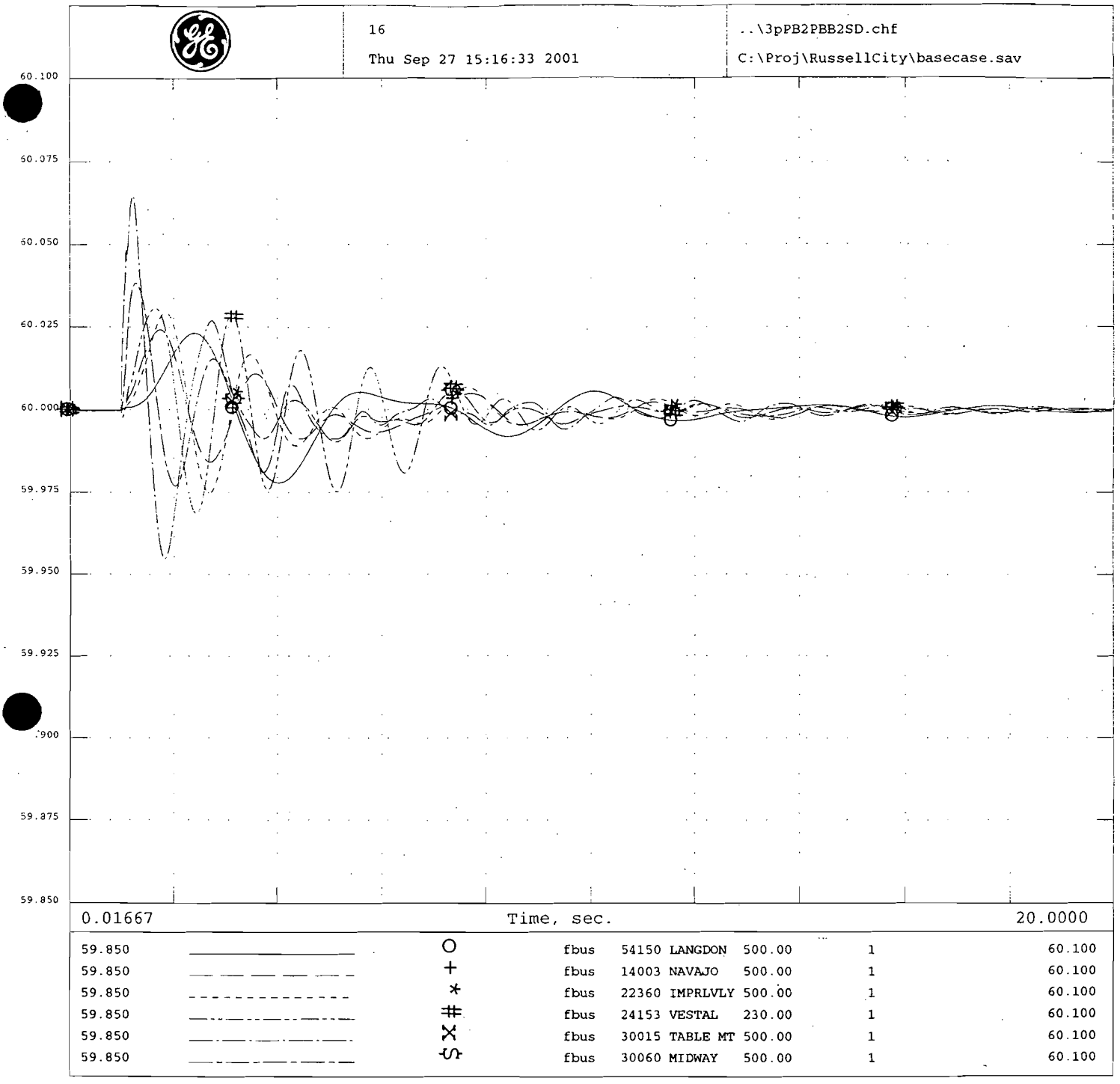

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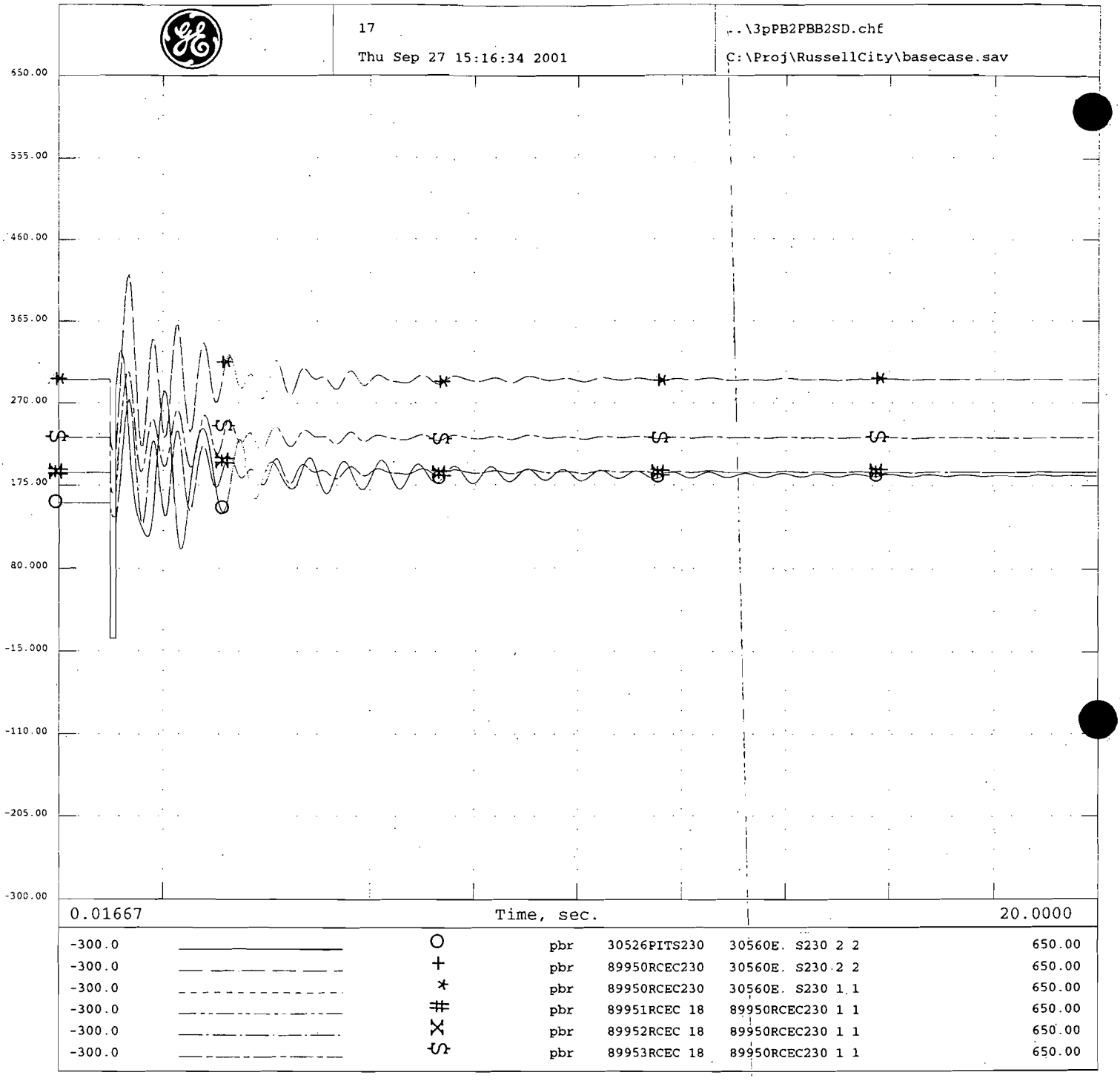

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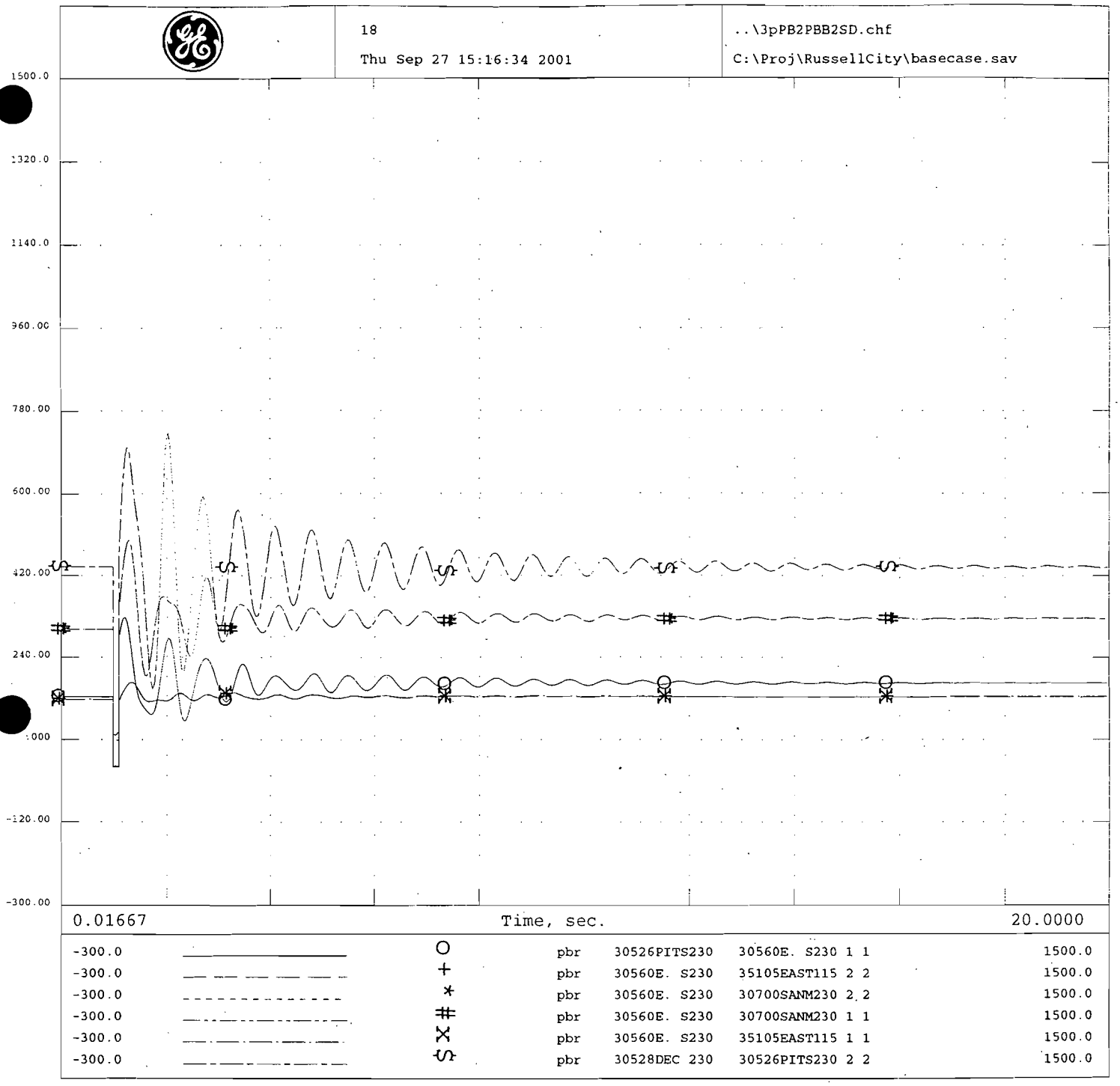
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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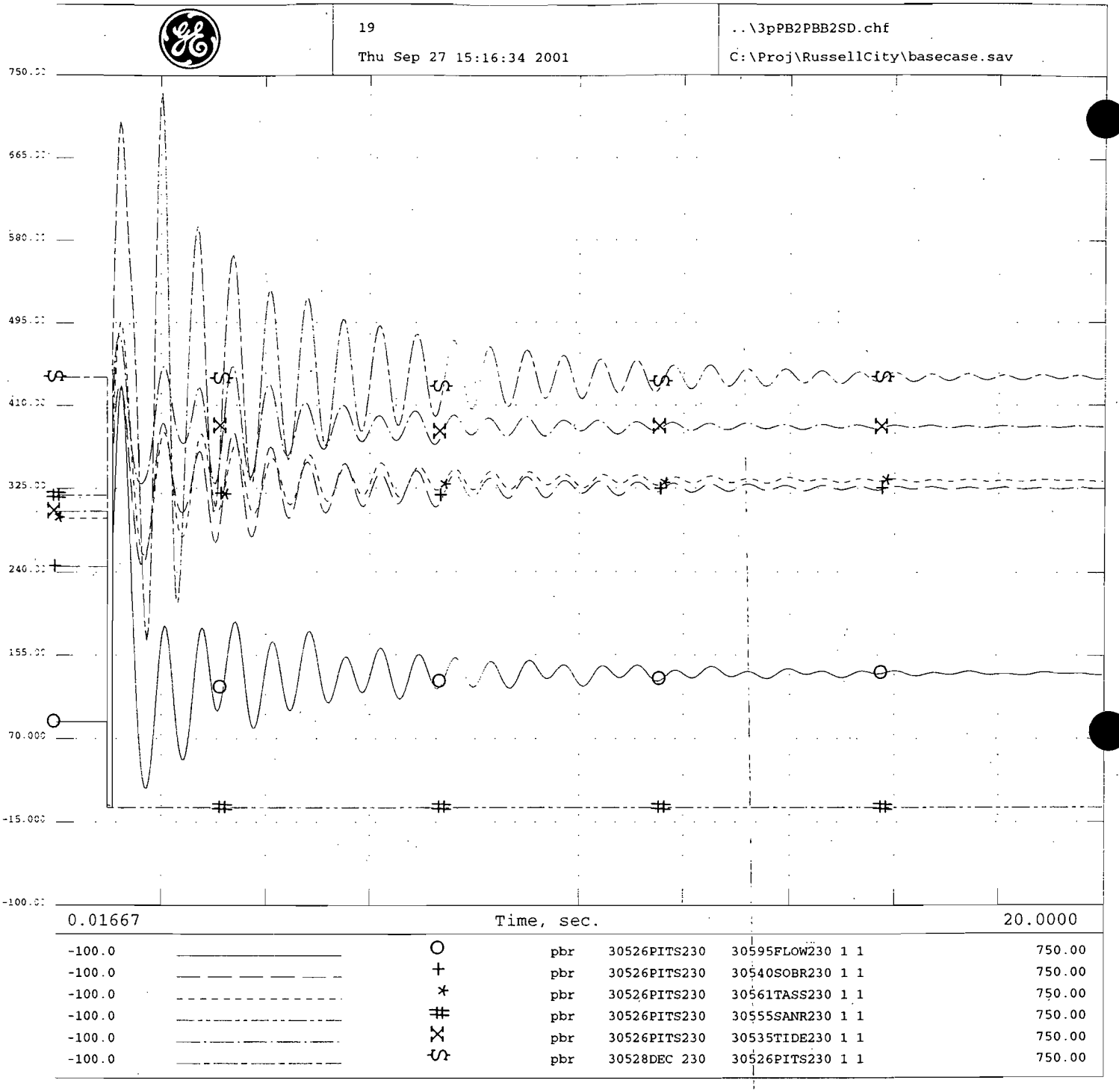

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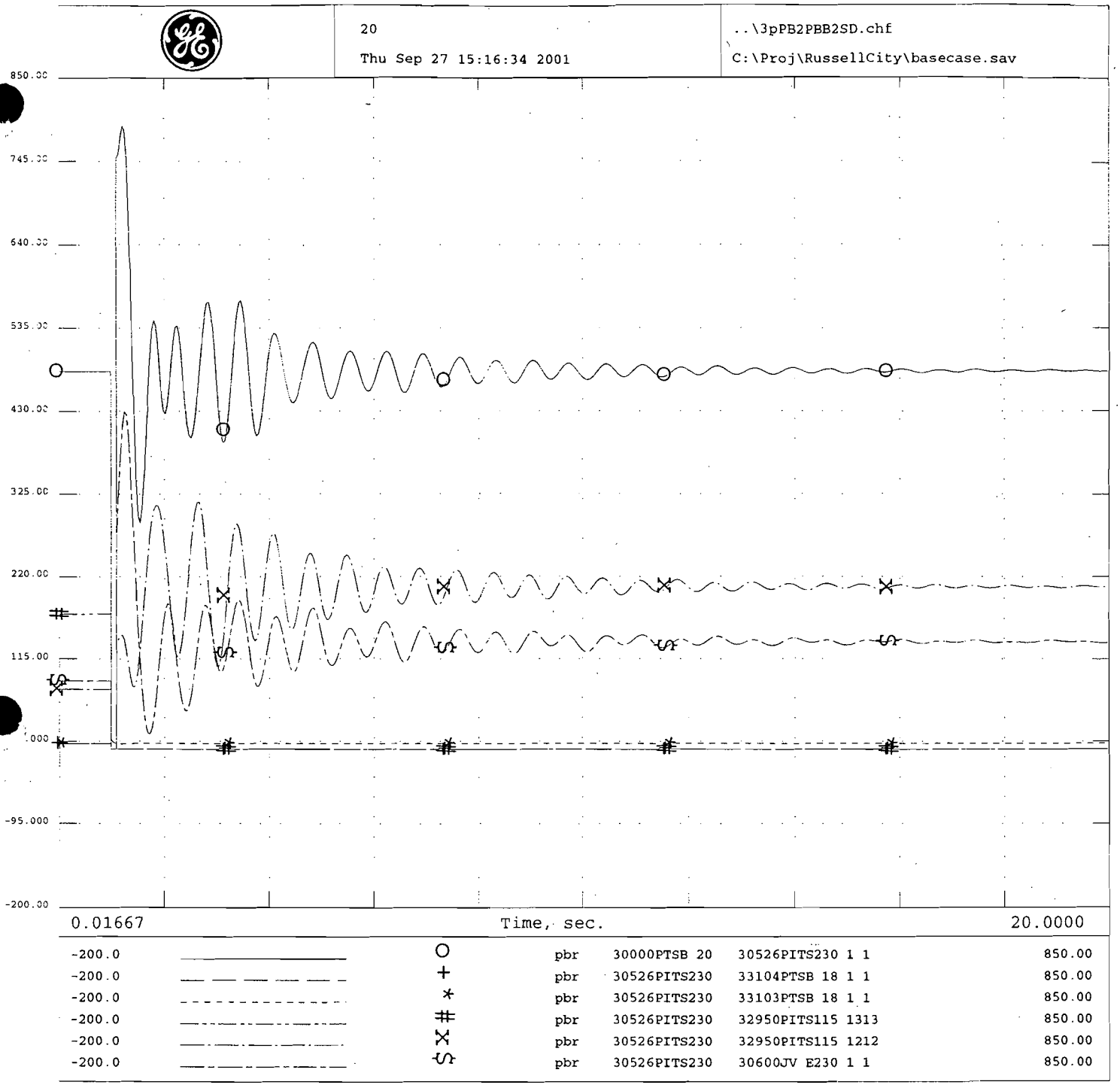

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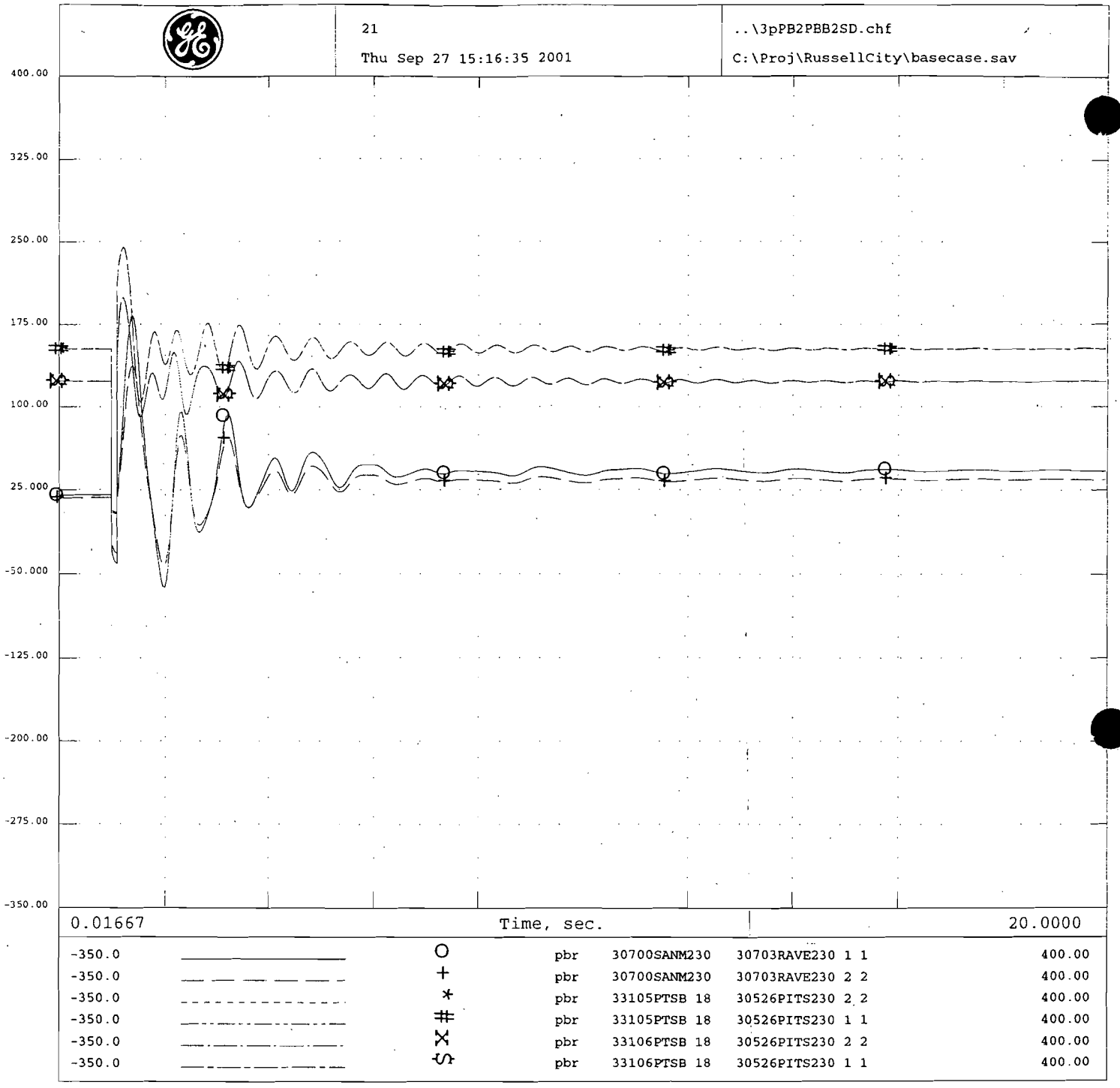

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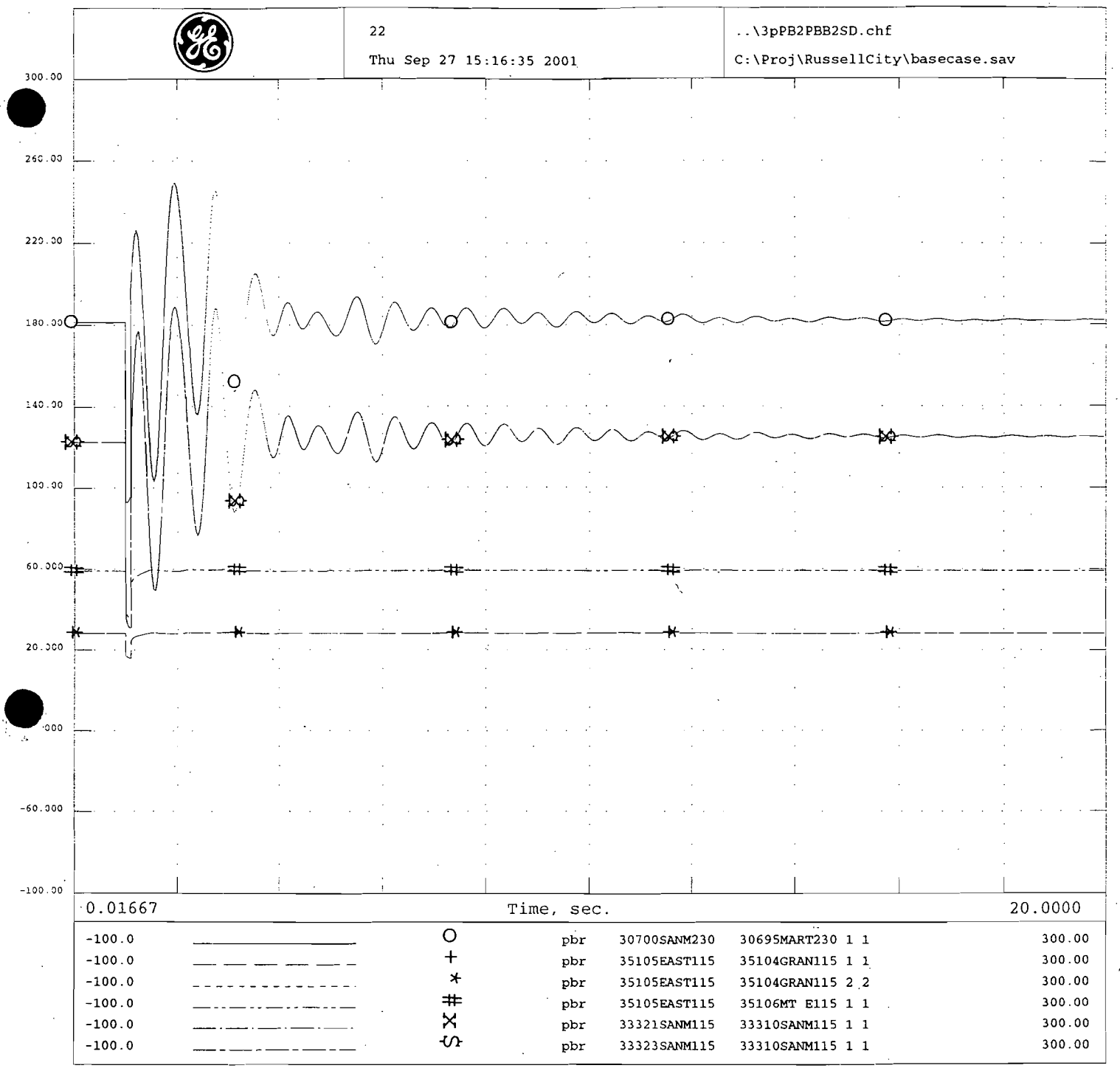

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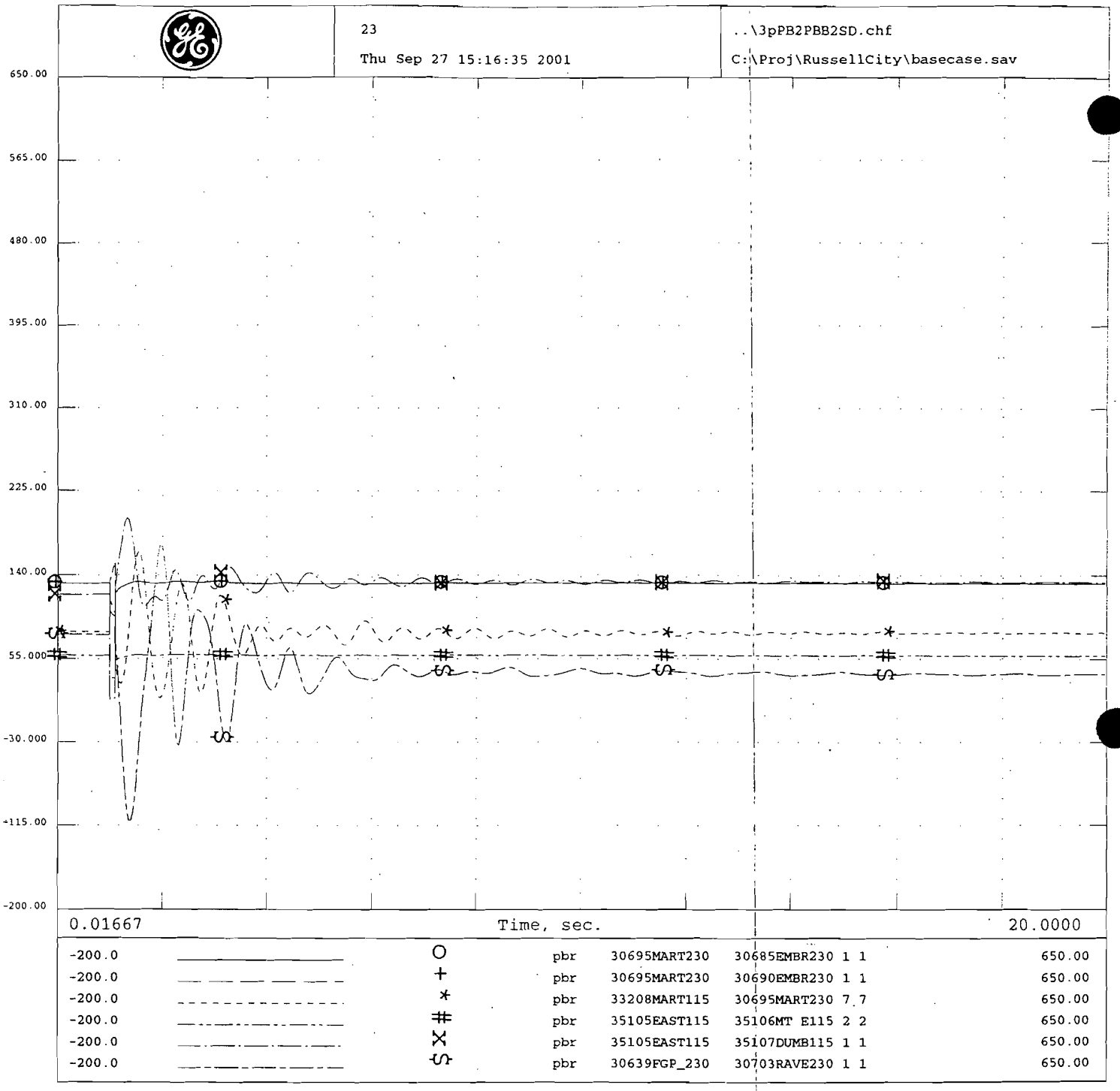

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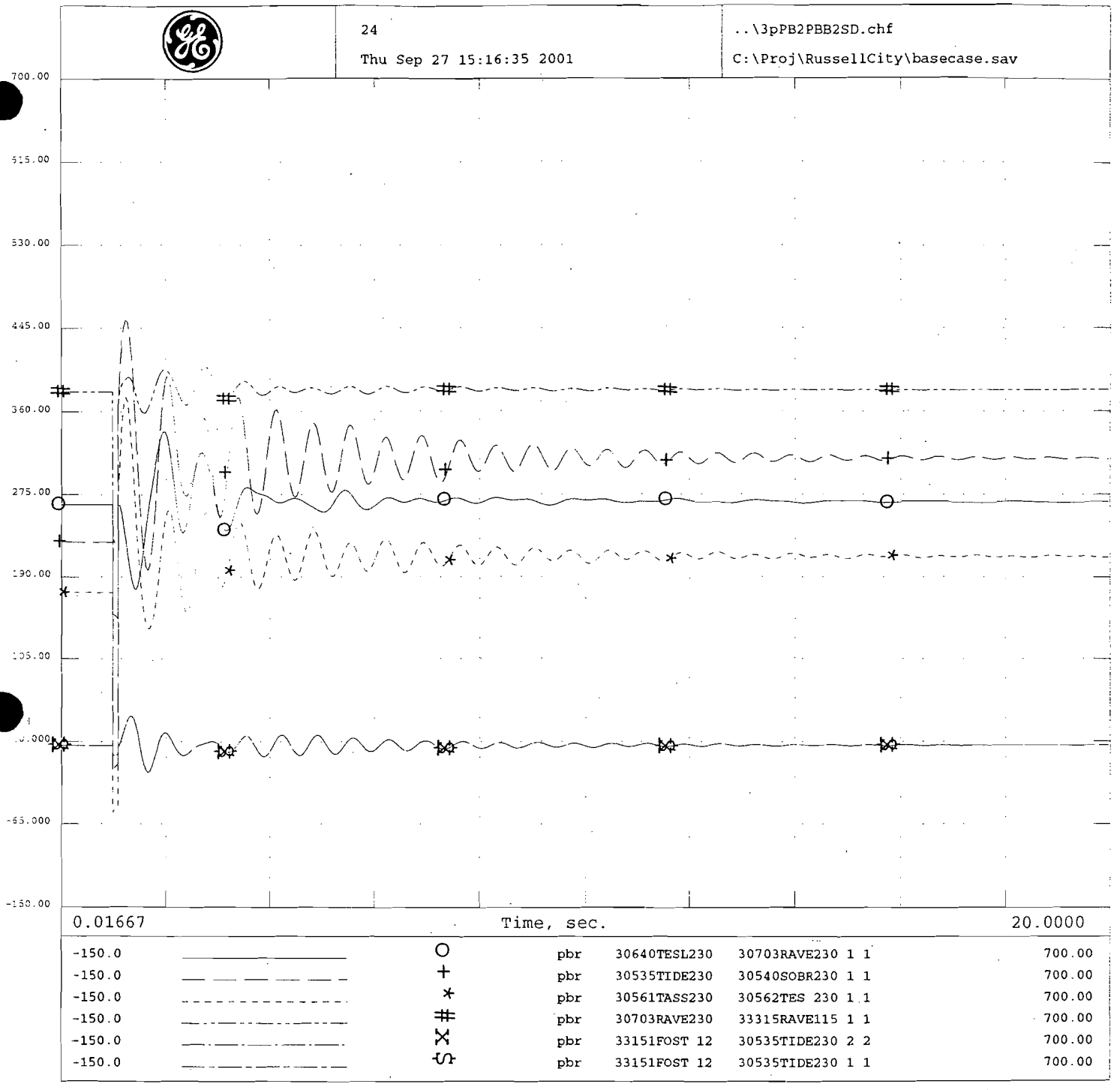

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Calpine/Bechtel Joint Development
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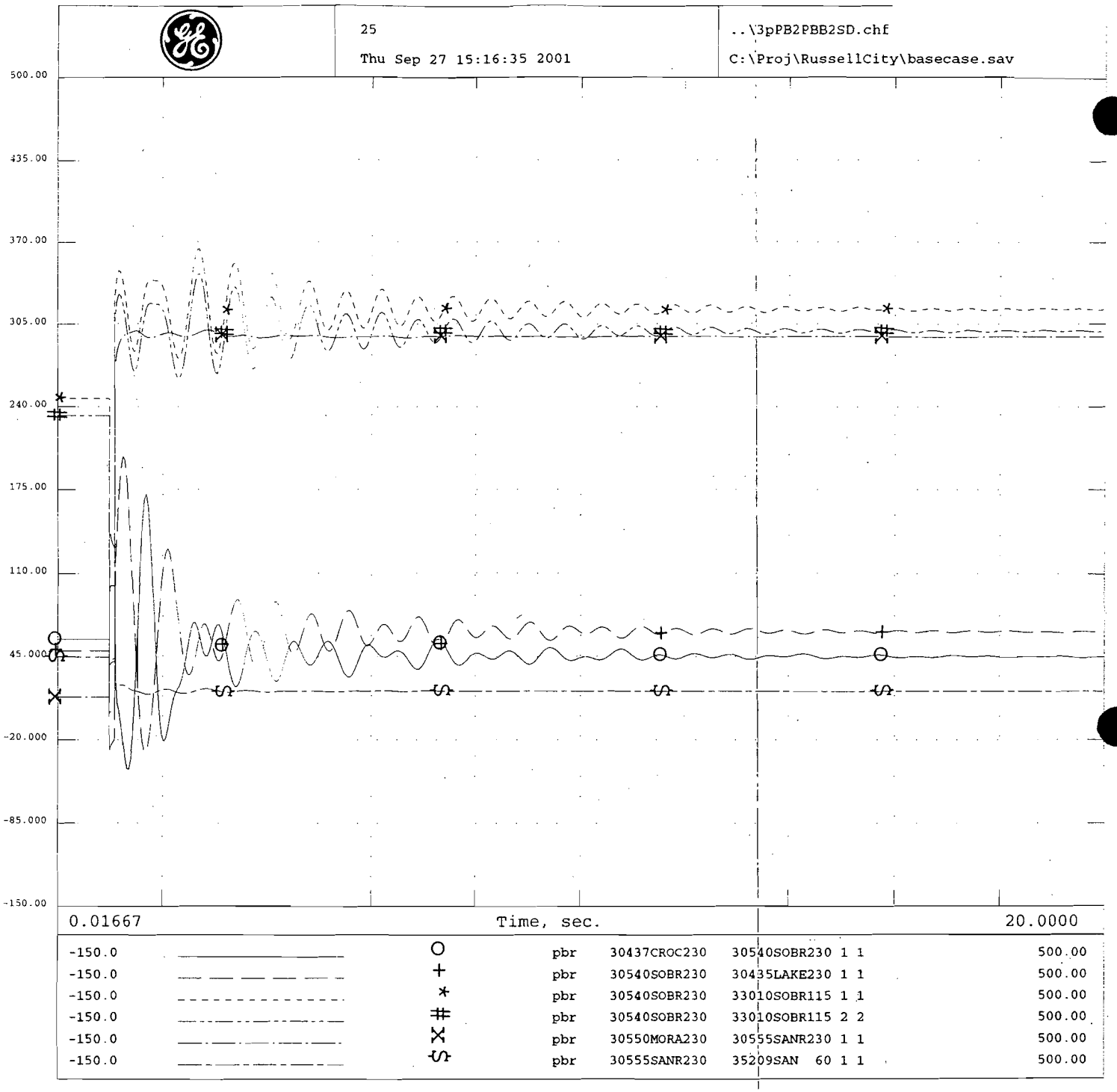

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Calpine/Bechtel Joint Development
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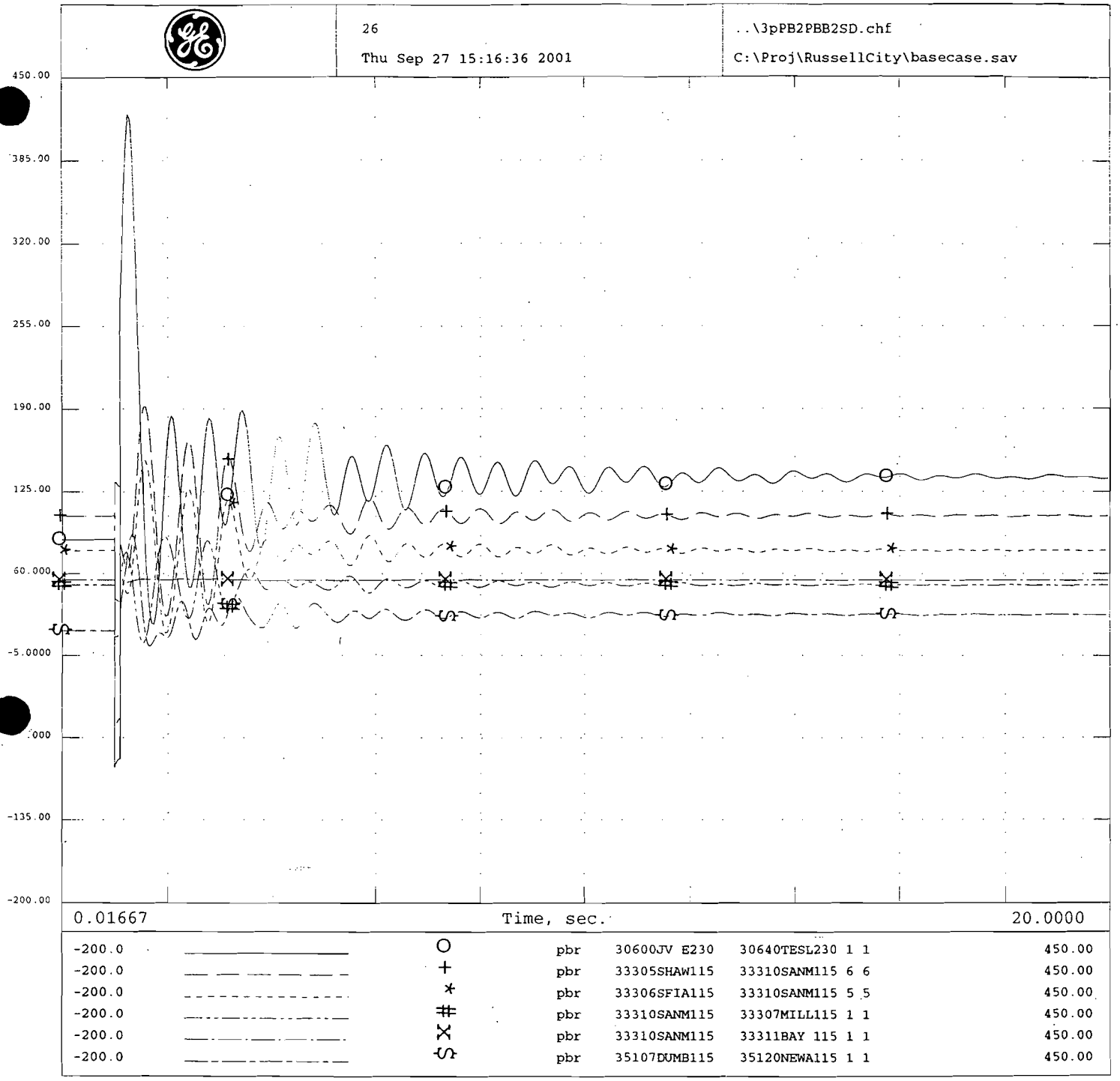

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Calpine/Bechtel Joint Development
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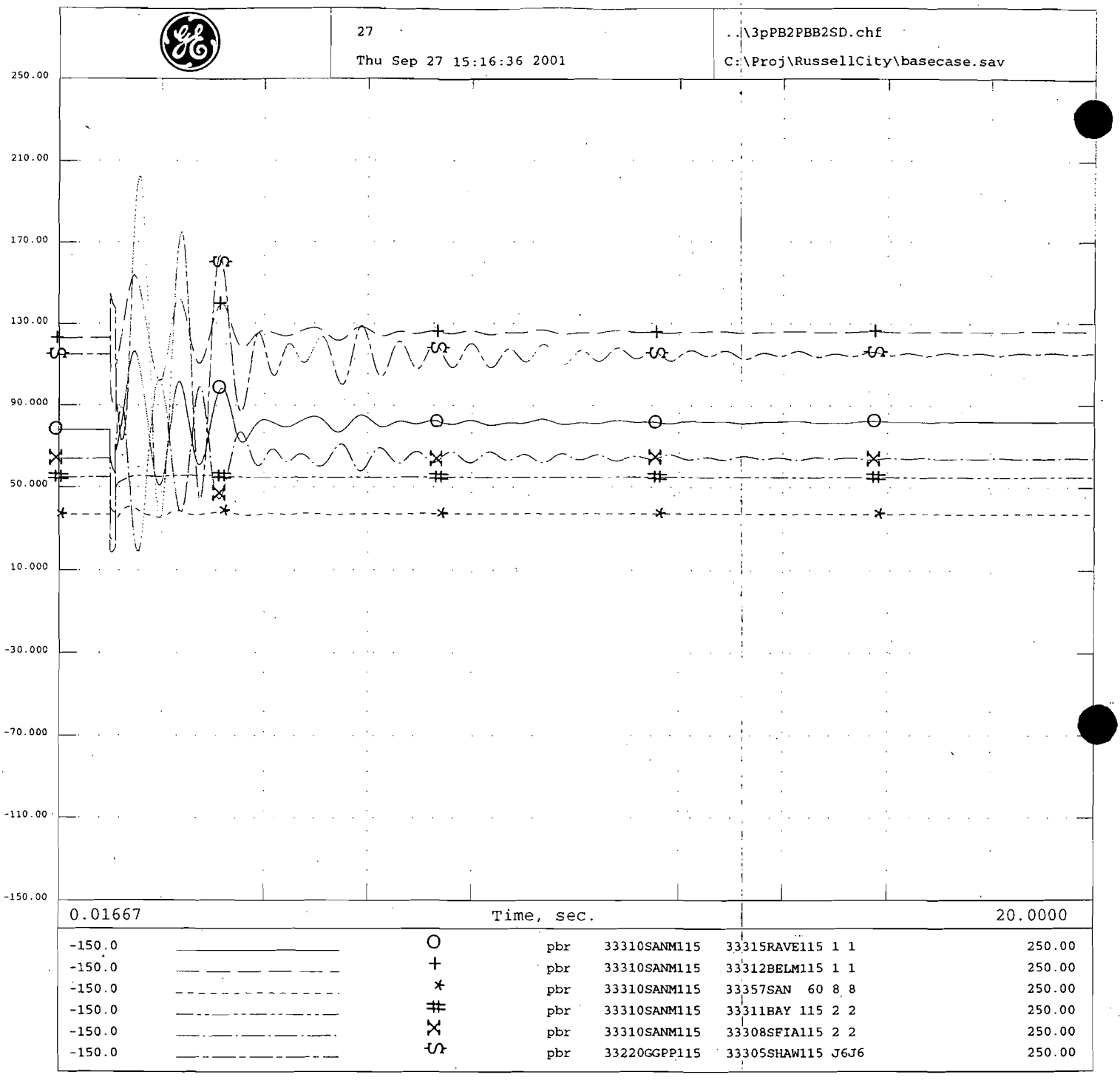

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2004 Summer Peak Base Case
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 2, section E
3 phase 6 cycle fault at Pittsburg 230 kV bus and trip bus 2, section E
RUN  9
CC
CC   Fault Pittsburg 230 kV bus
FB   0.0 "PITSBURG" 230.
CC
CC   Clear fault at Pittsburg 230 kV bus 2E
CFB  6.0 "PITSBURG" 230.
CC
CC
DL  6.0 "PITSBURG" 230.00 "E. SHORE" 230.00 "1 "
DL  6.0 "DEC PTSG" 230.00 "PITSBURG" 230.00 "2 "
CC
DL  6.0 "PITSBURG" 230.00 "SOBRANTE" 230.00 "1 "
DL  6.0 "PITSBURG" 230.00 "JV ENTER" 230.00 "1 "
DL  6.0 "TESLA F " 230.00 "JV ENTER" 230.00 "1 "
CC
DL  6.0 "PTSB  6 "  18.00 "PITSBURG" 230.00 "1 "
DL  6.0 "PTSB  6 "  18.00 "PITSBURG" 230.00 "2 "
MBL 6.0 "PTSB  6 " 18.0 "1 " D
TG  6.0 "PTSB  6 "  18.0 "1 "
CC
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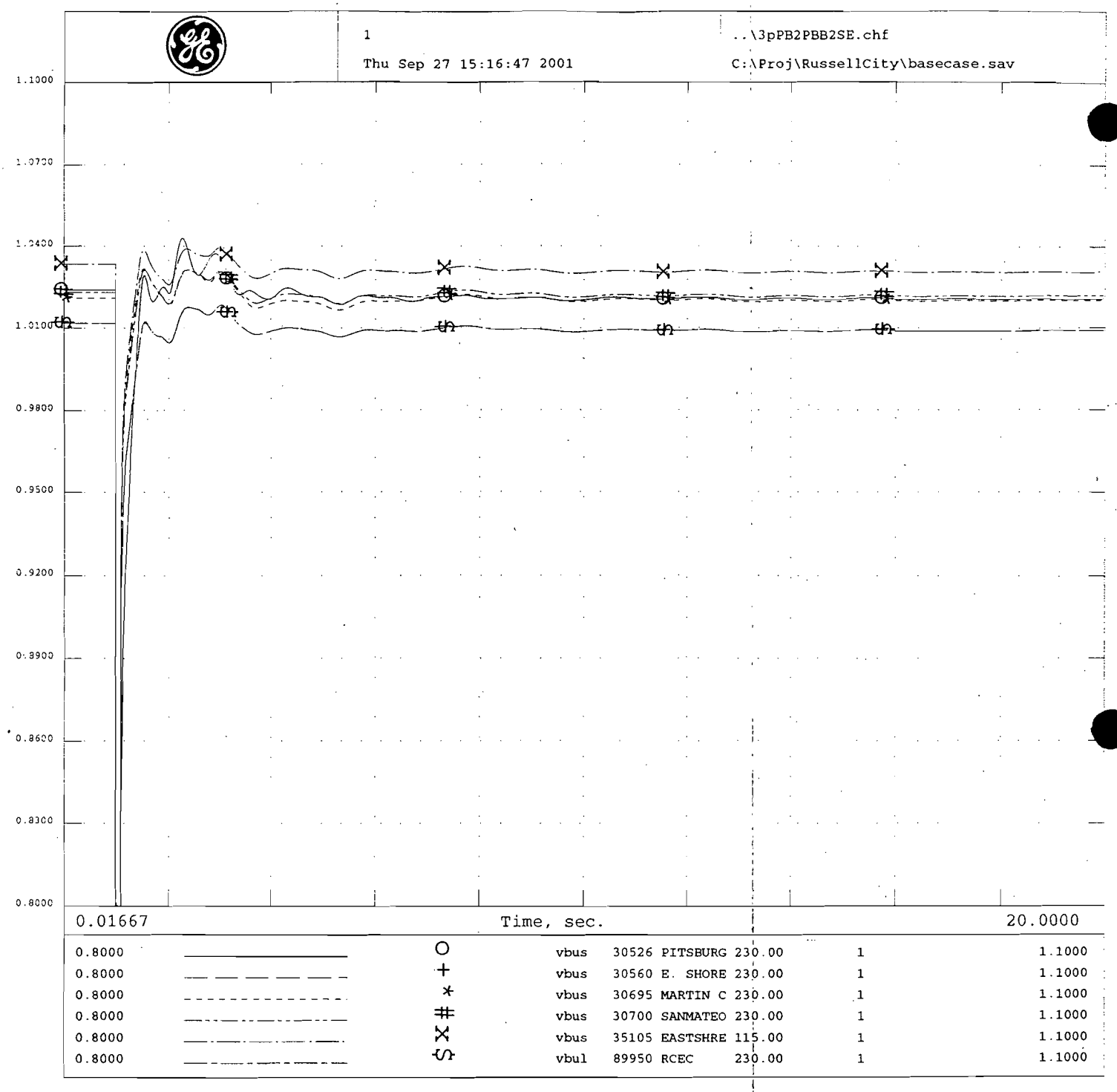

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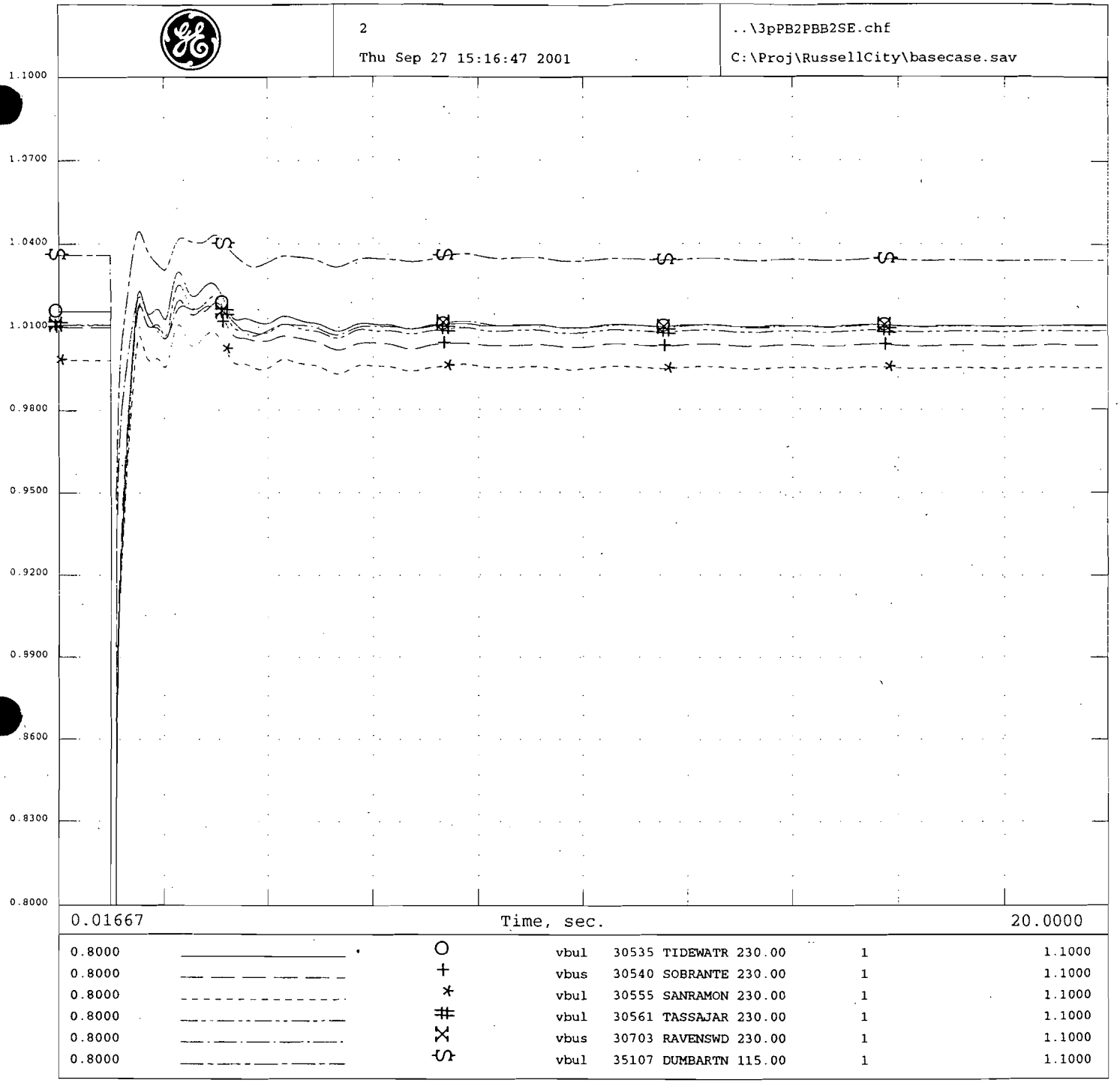
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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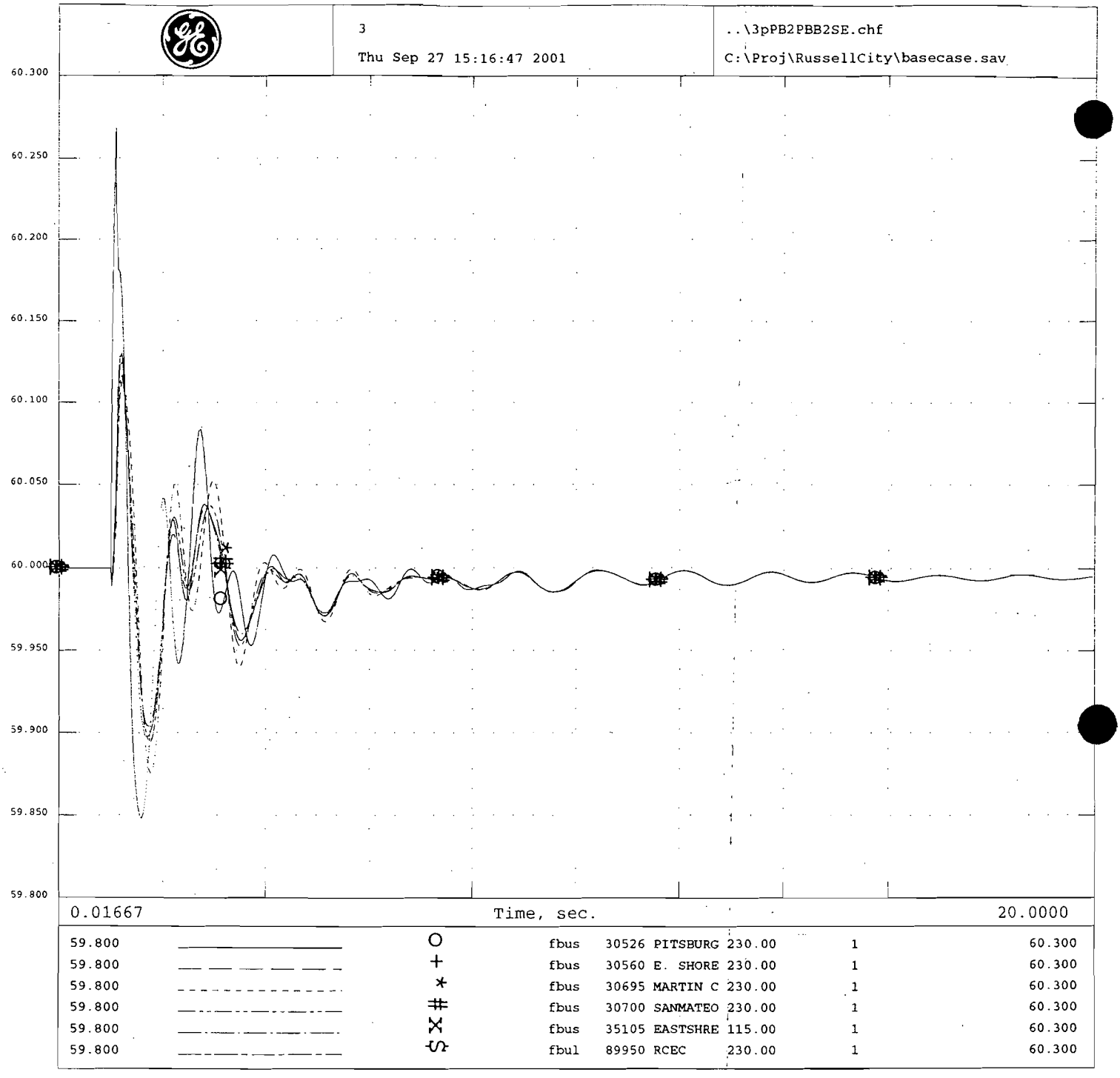

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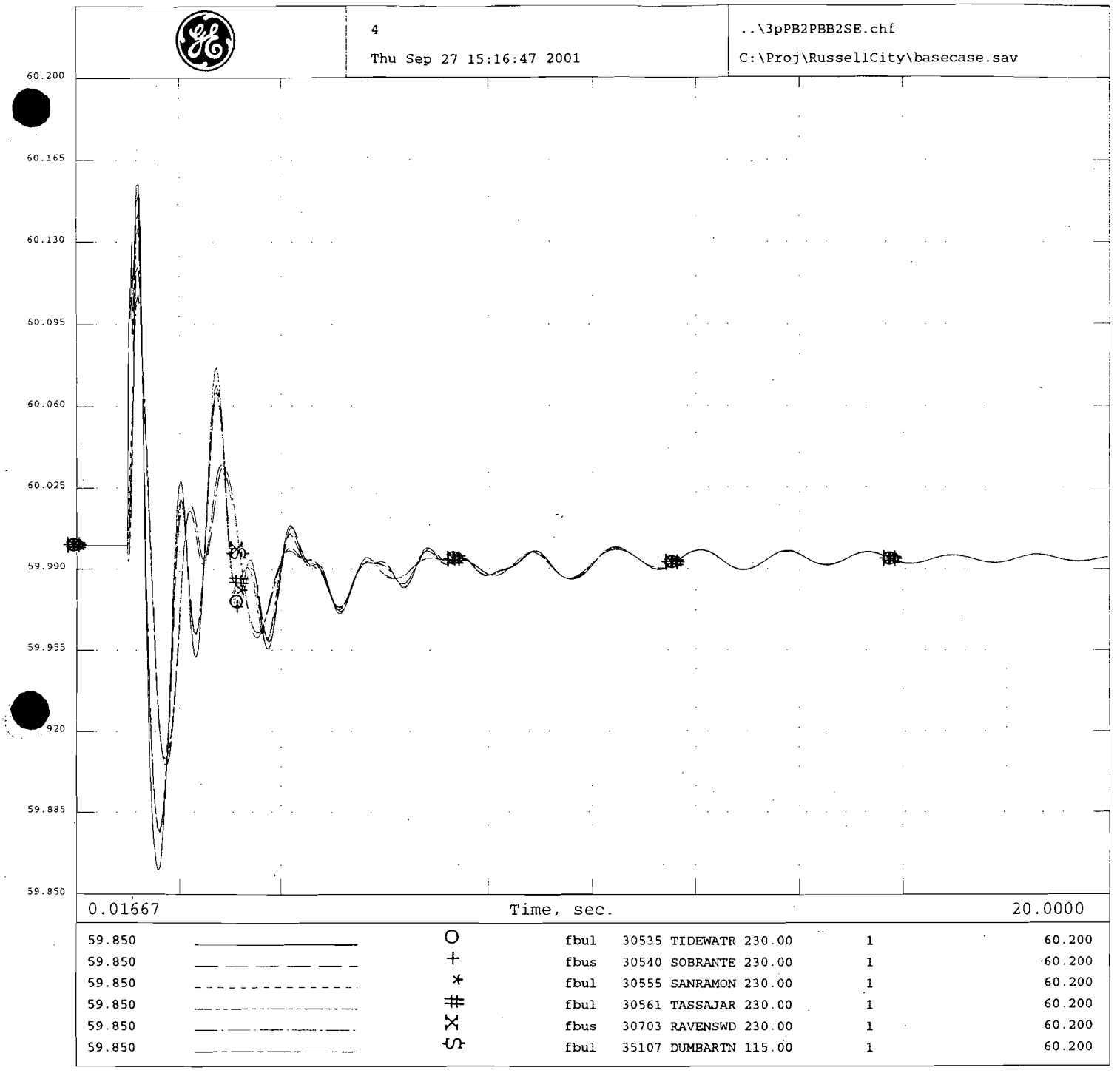
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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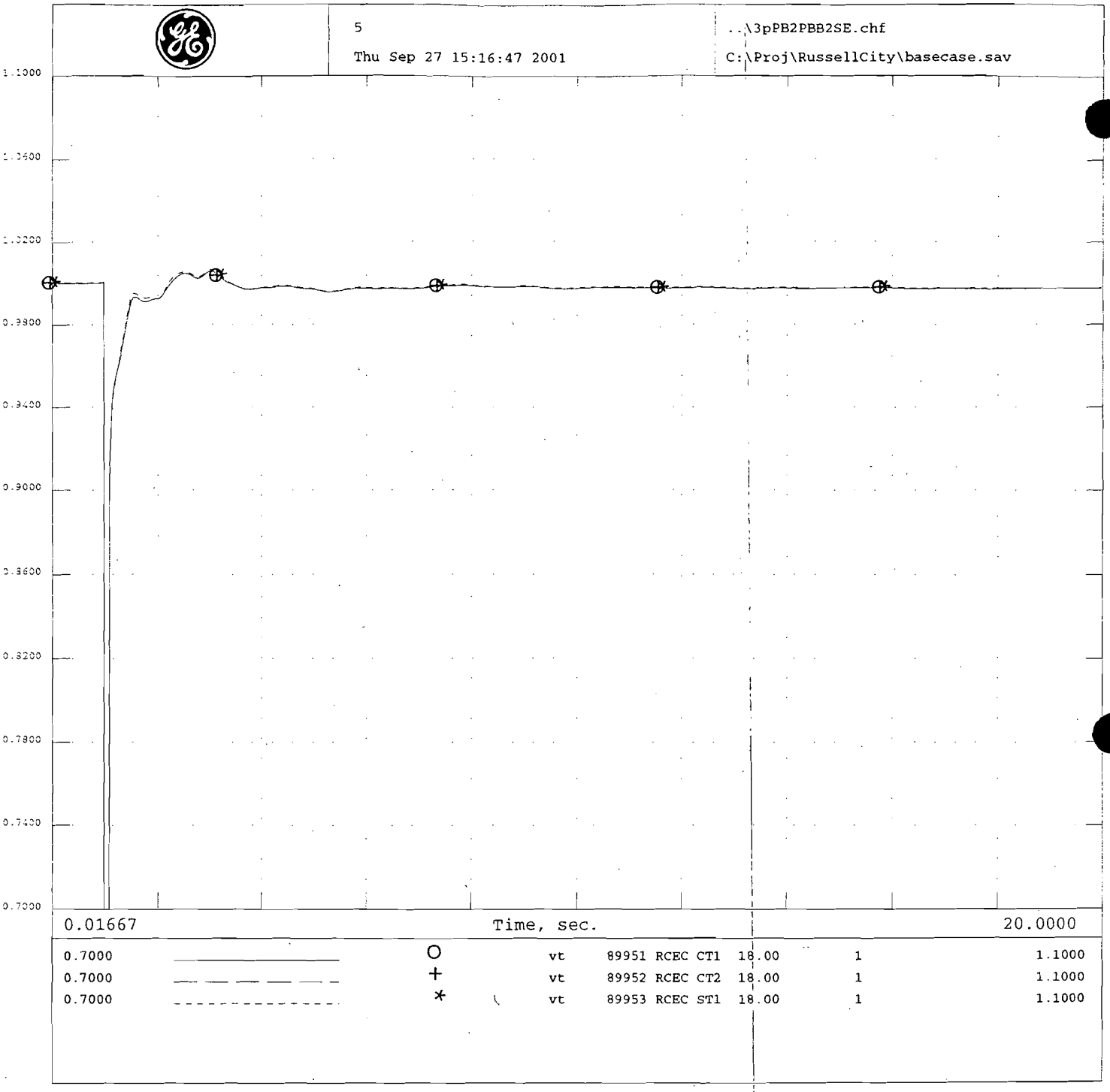

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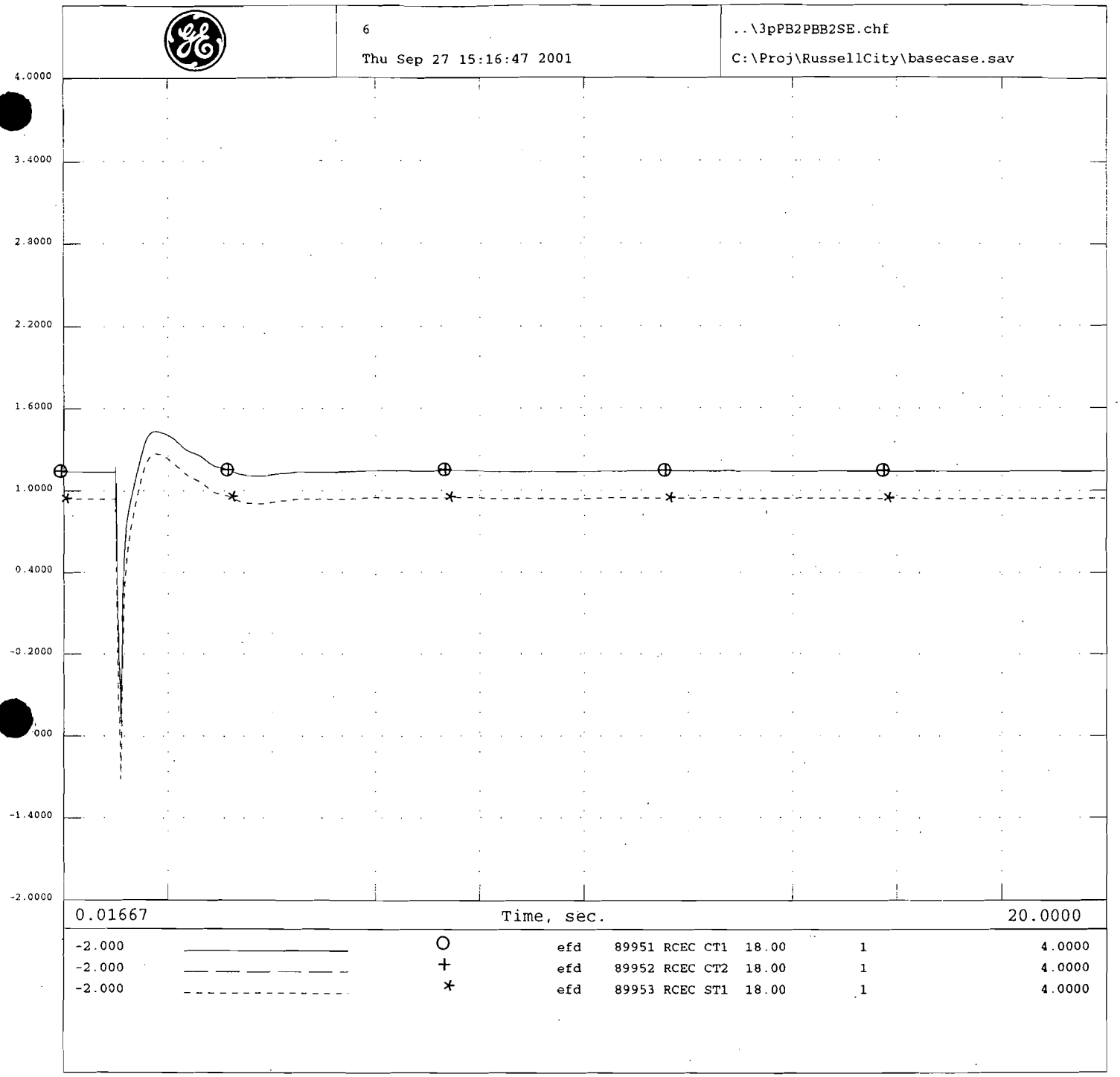
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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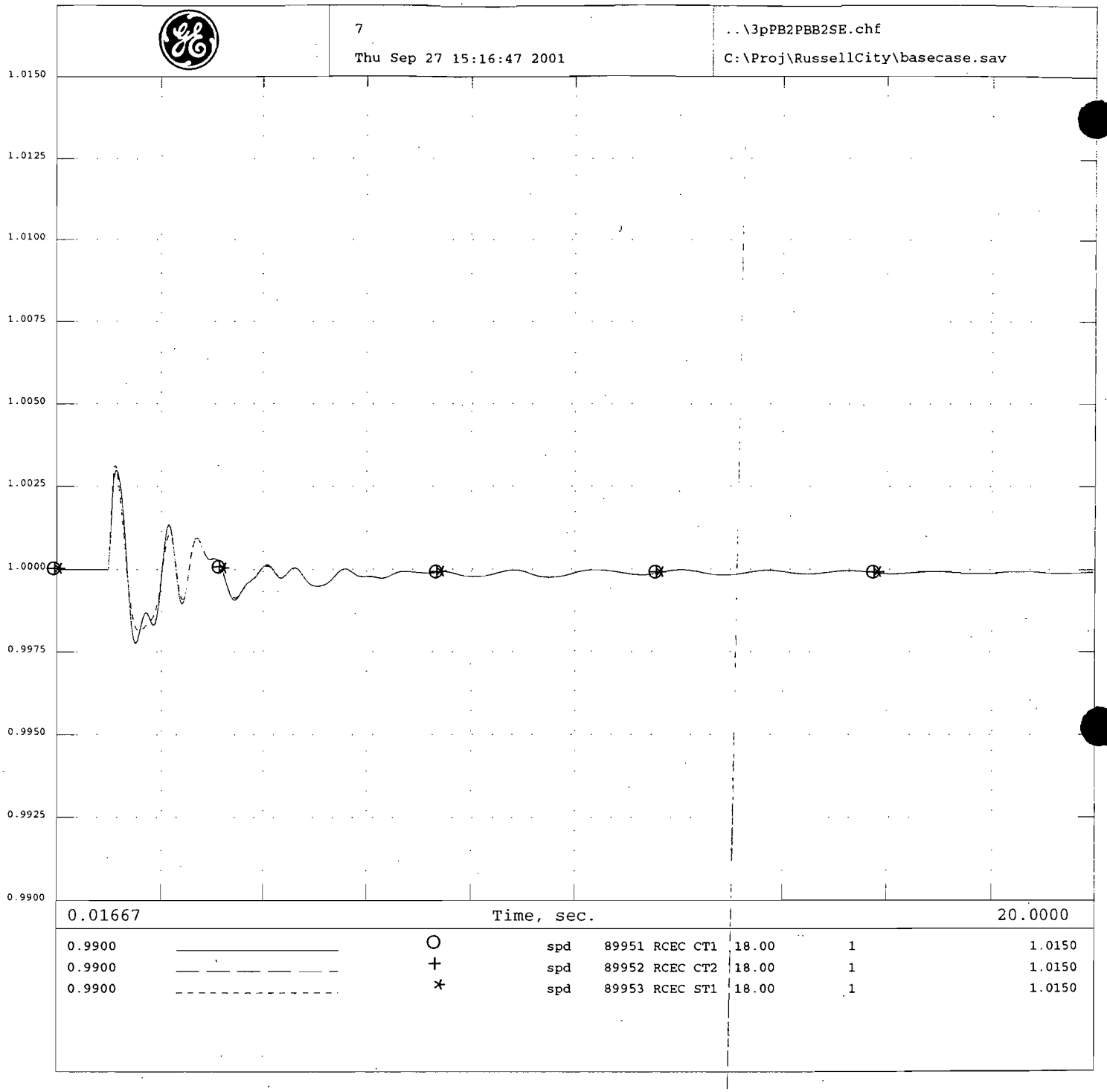
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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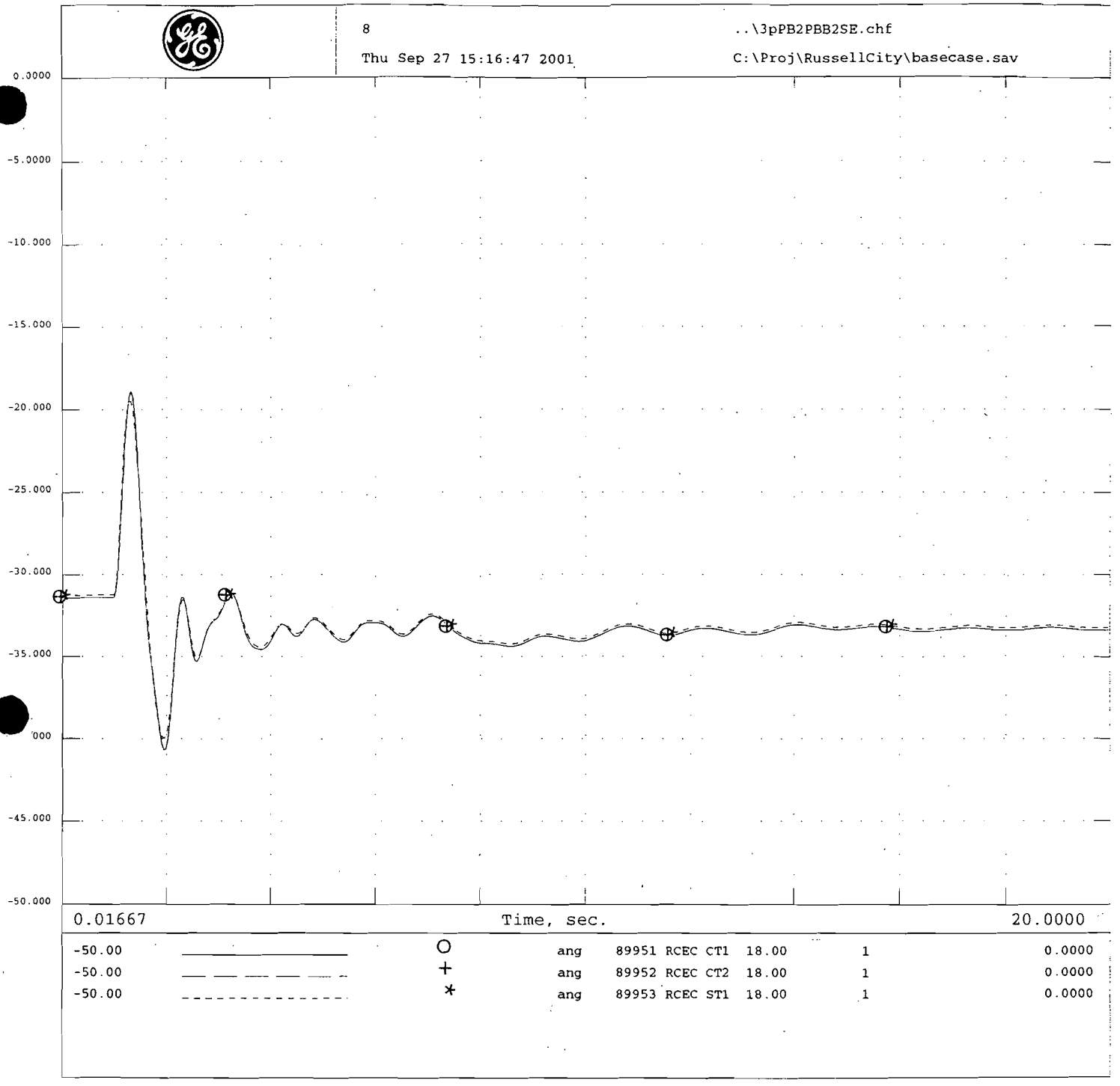
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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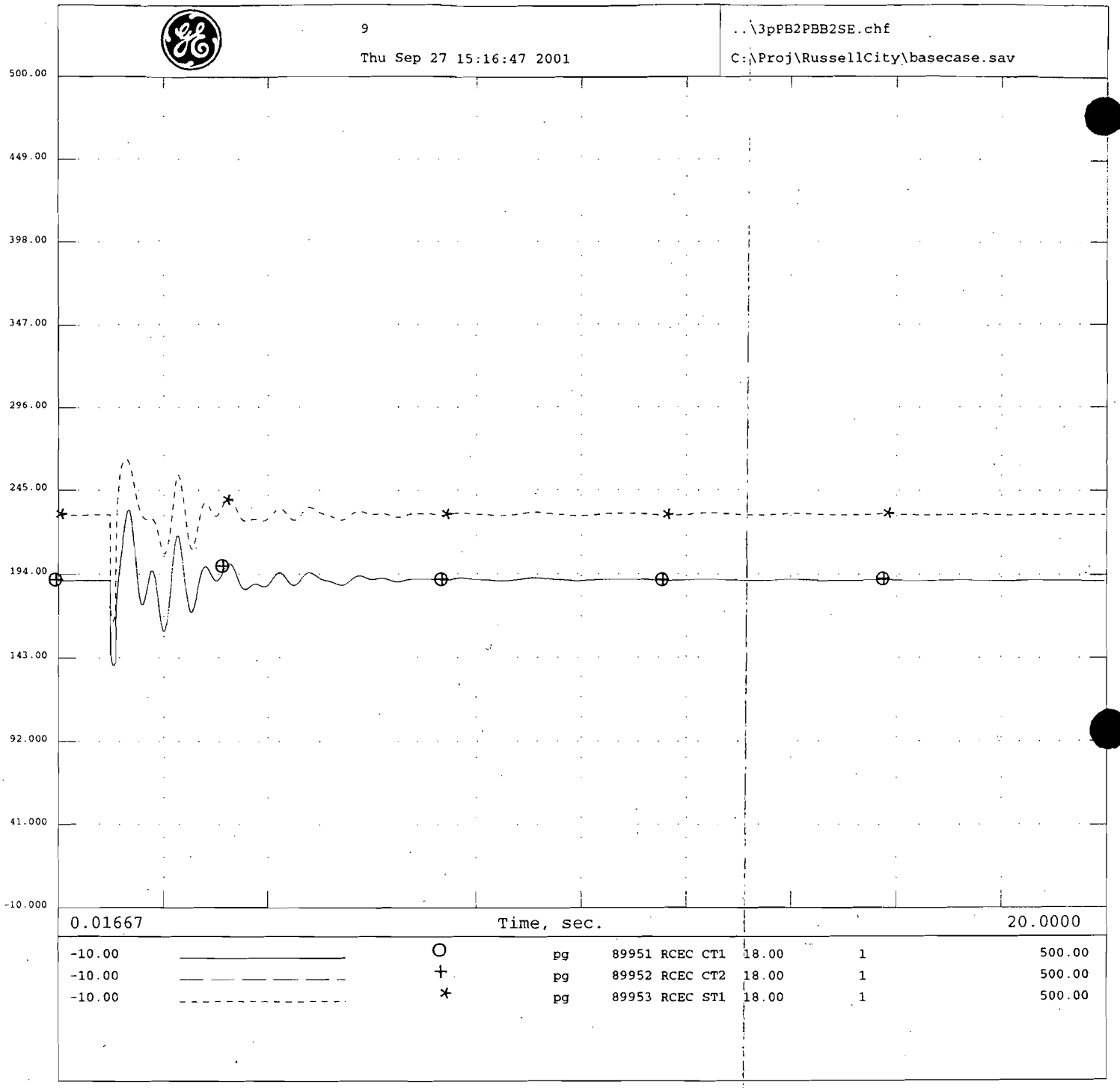
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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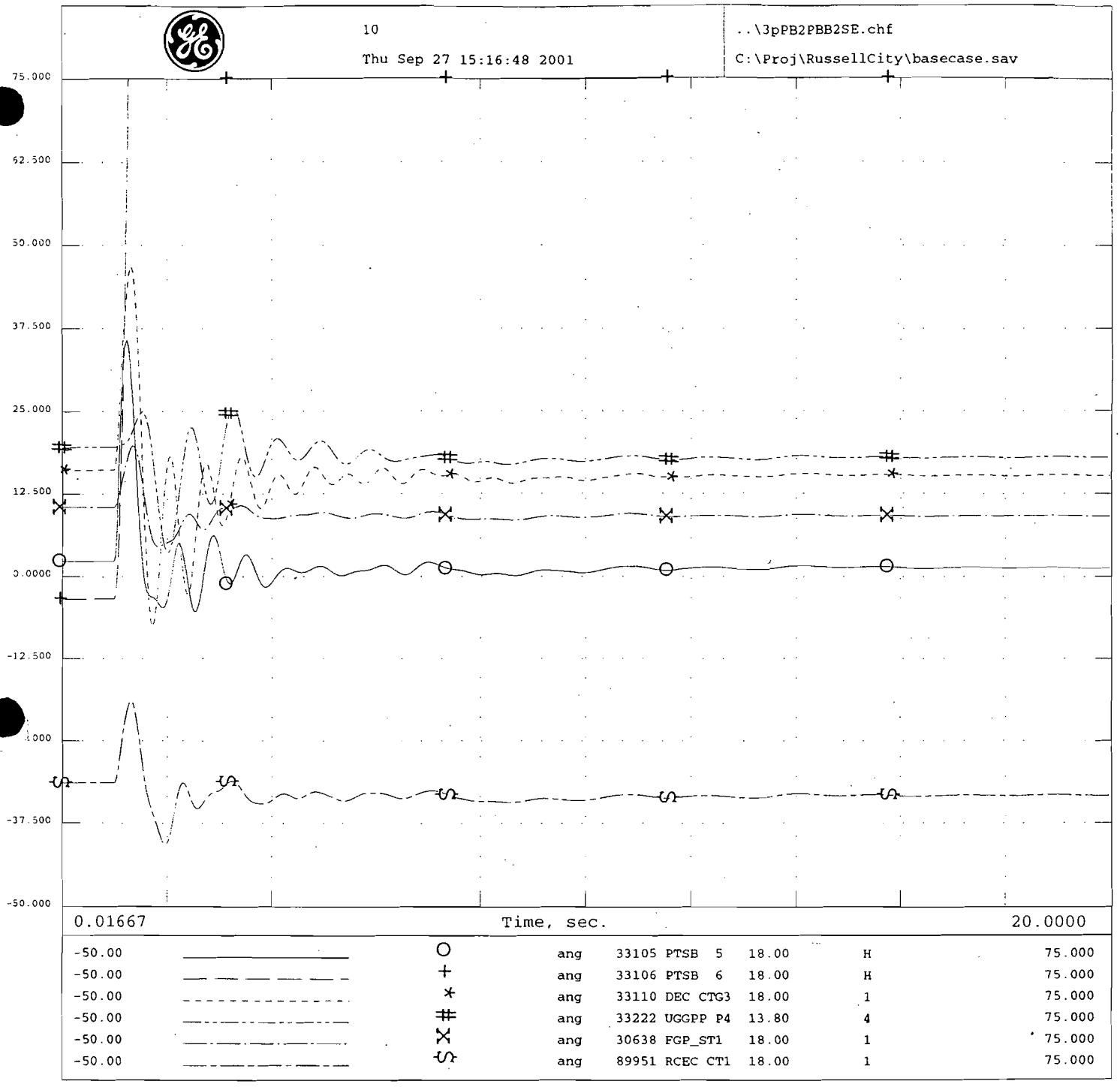

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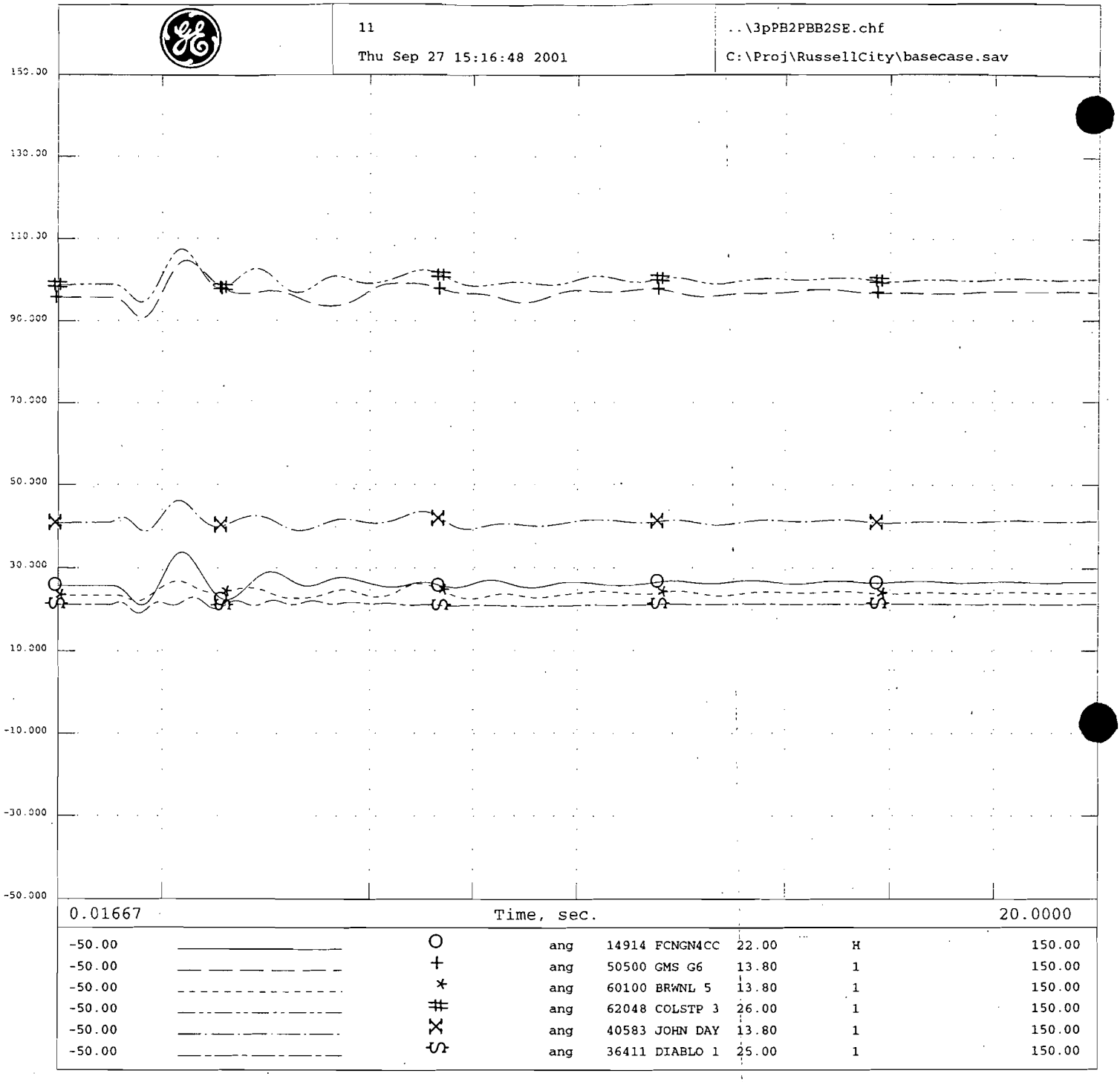
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



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Calpine/Bechtel Joint Development
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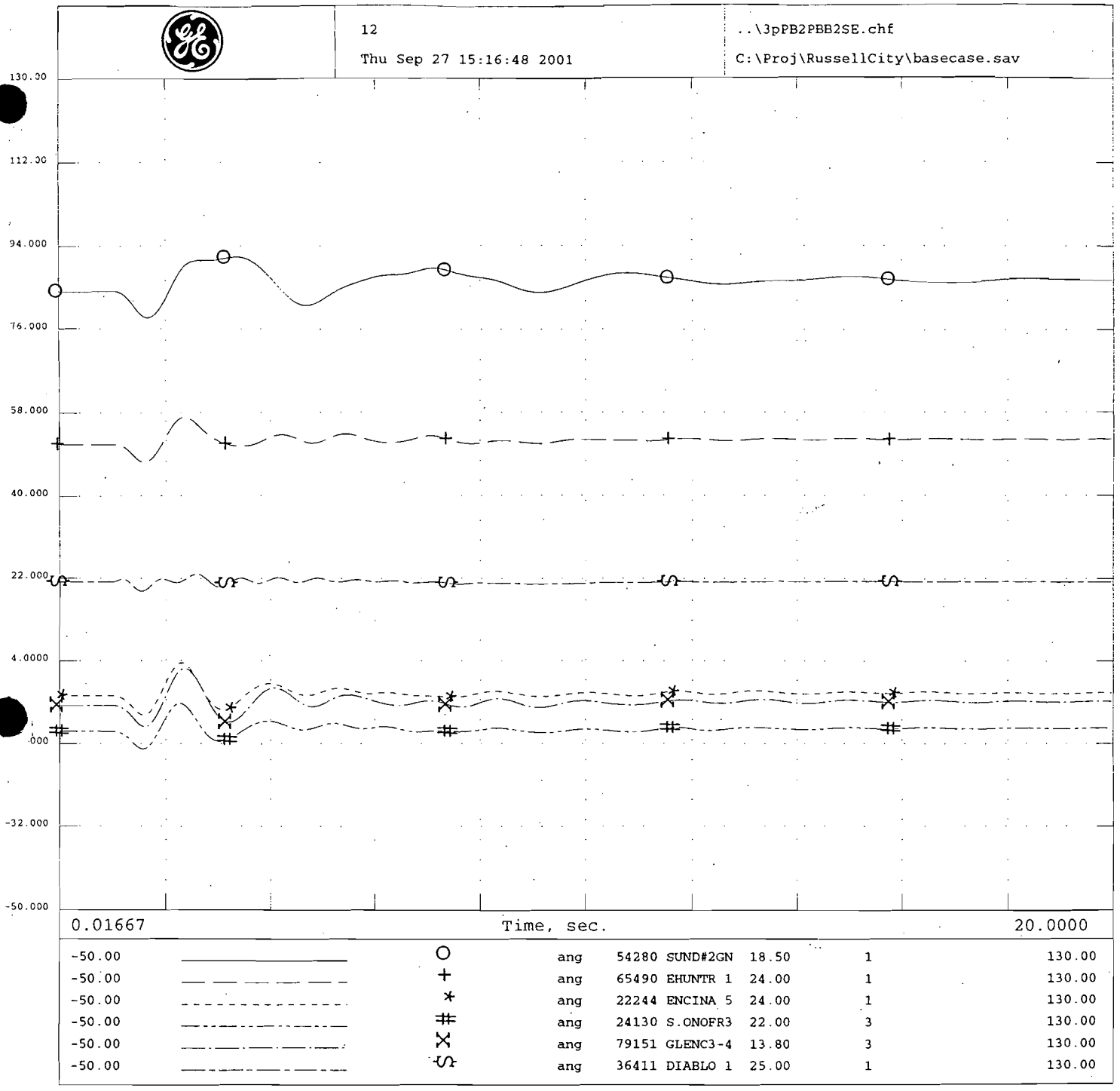

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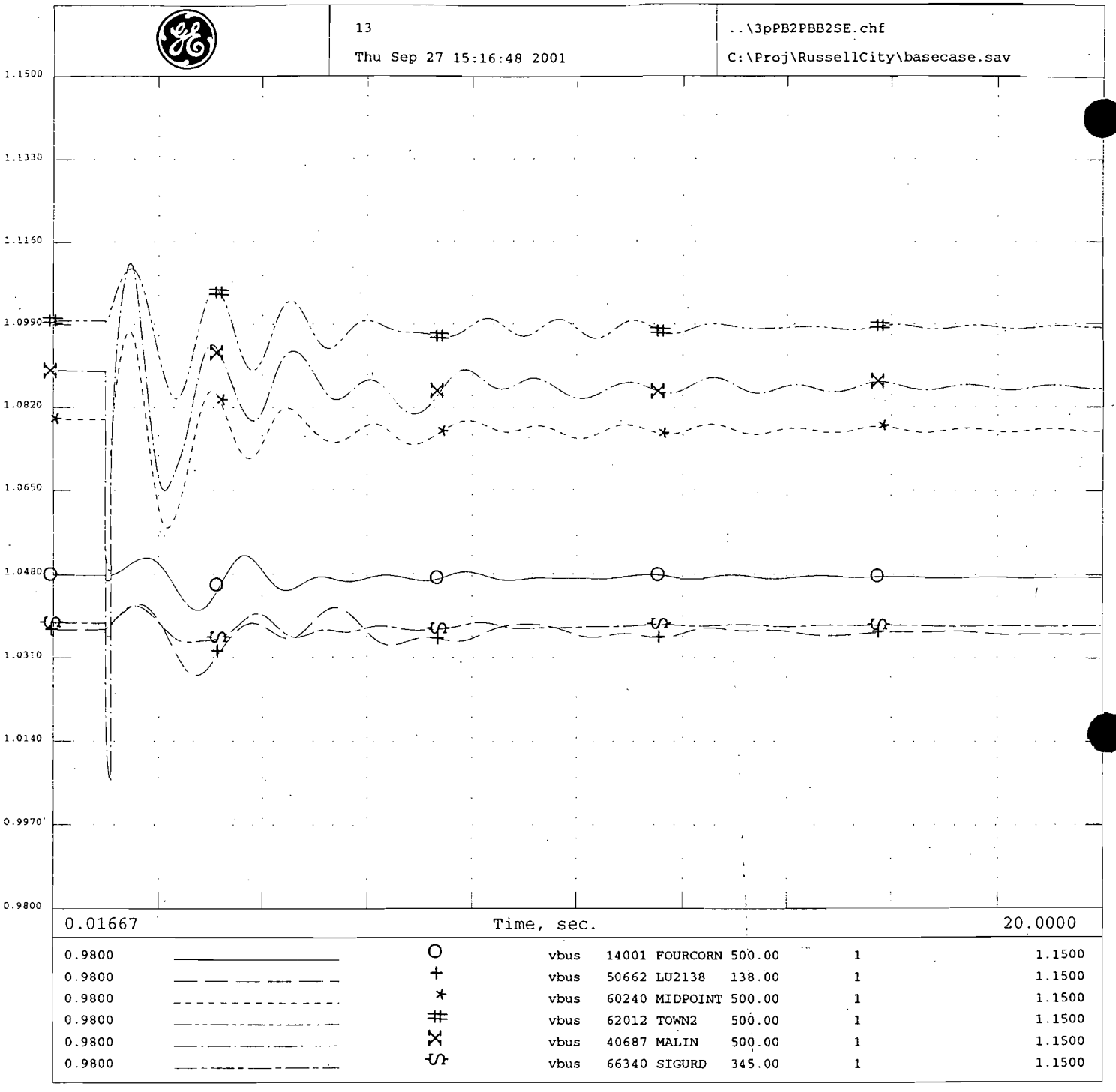

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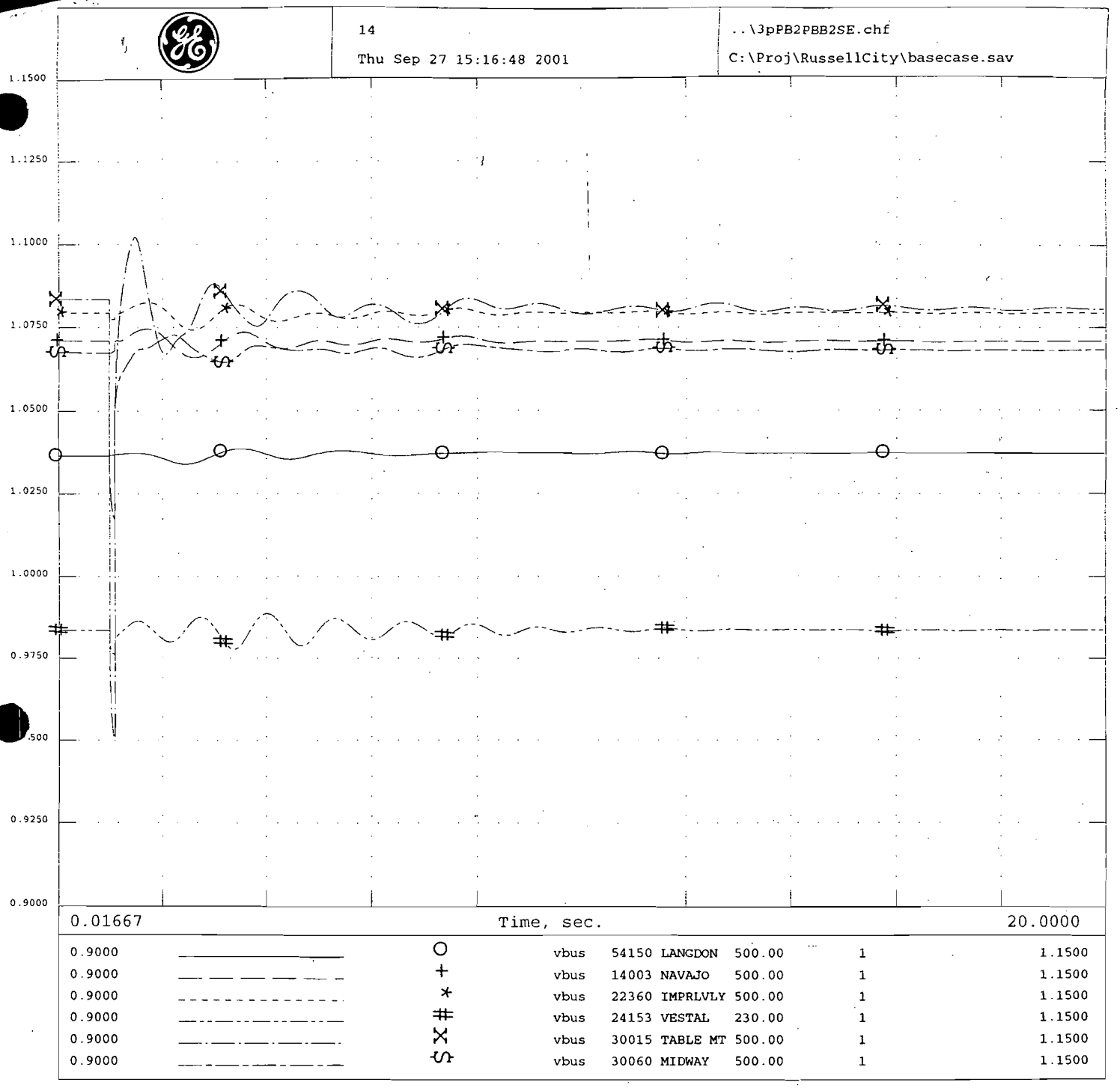

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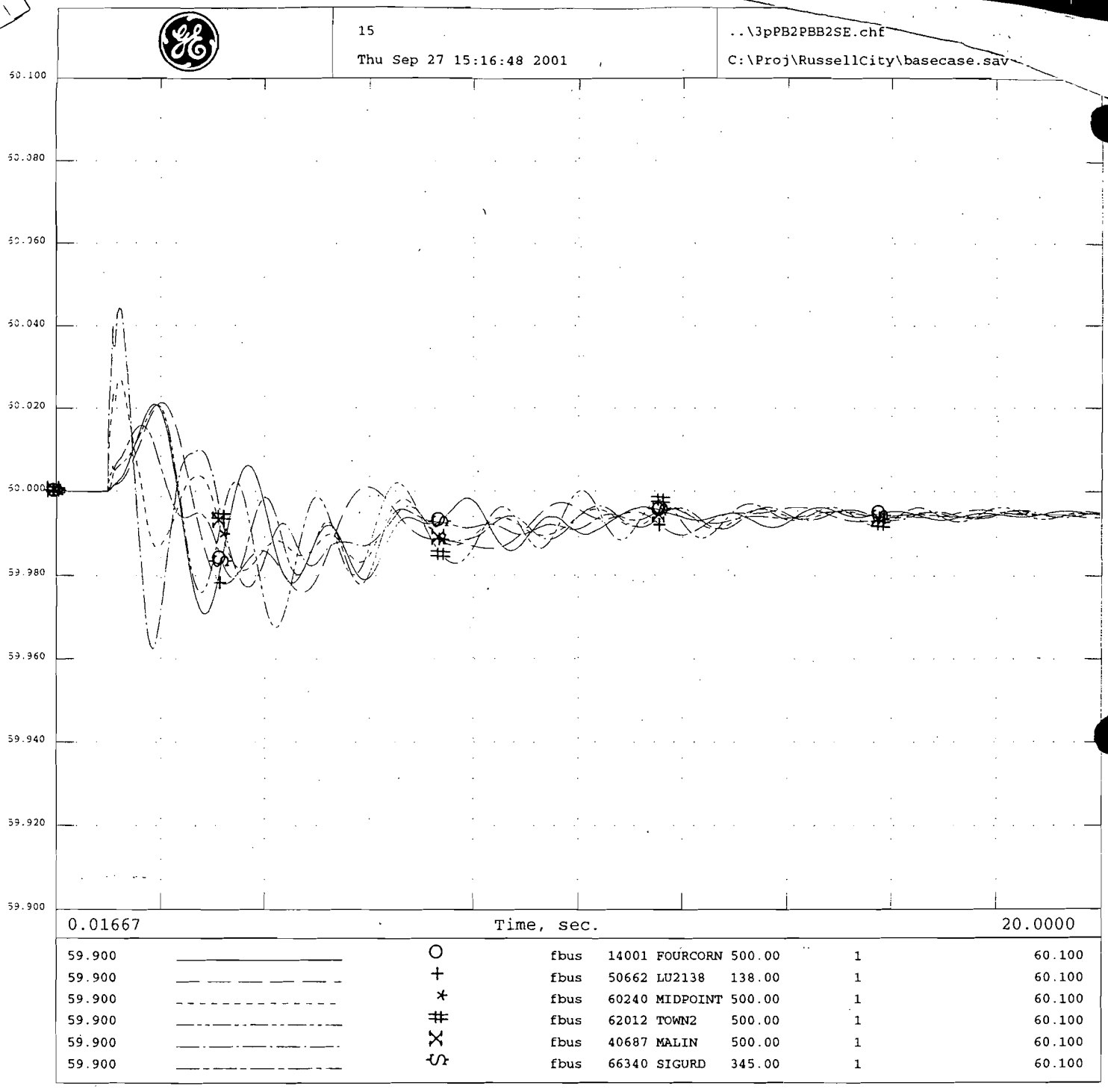

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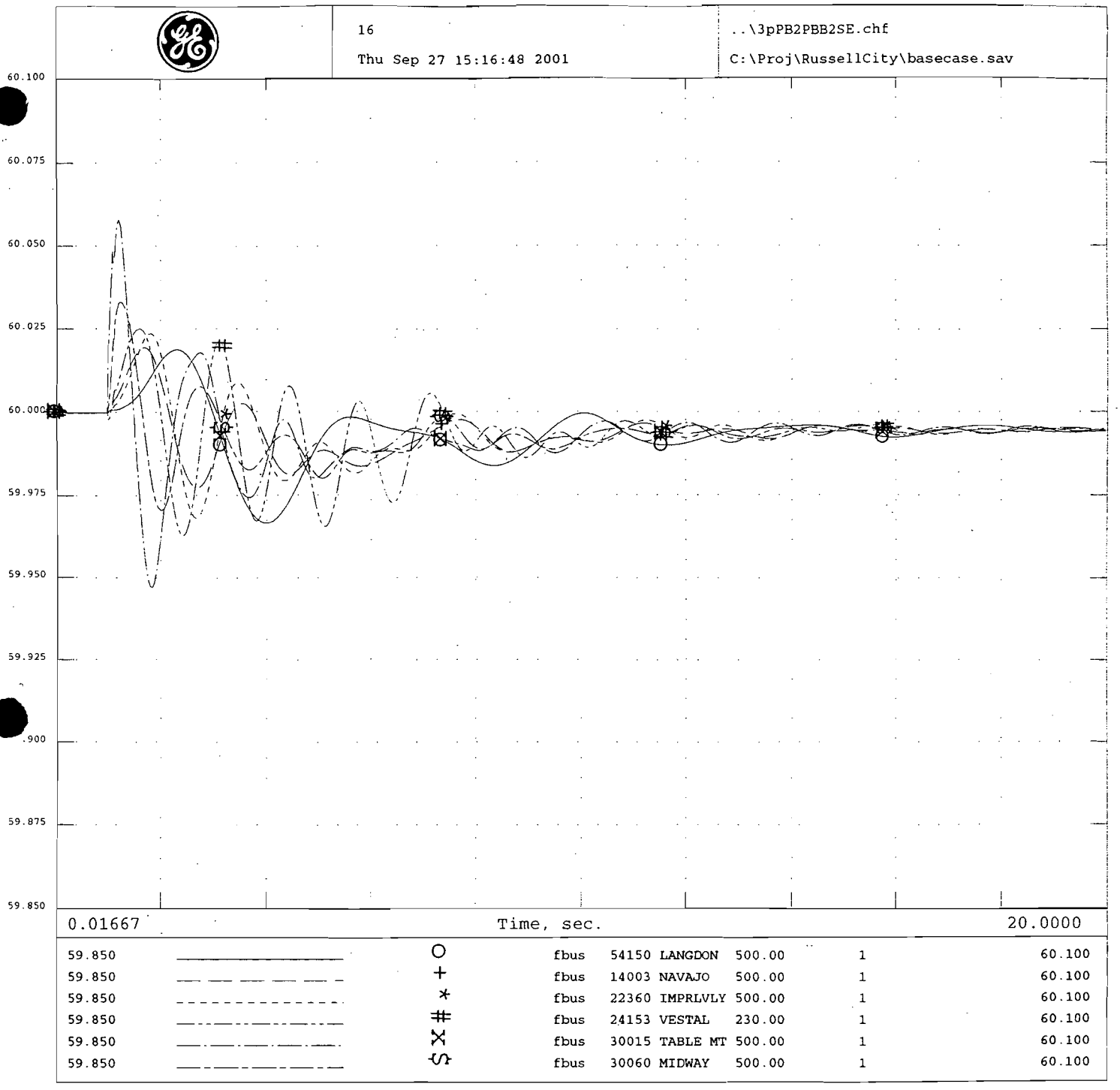

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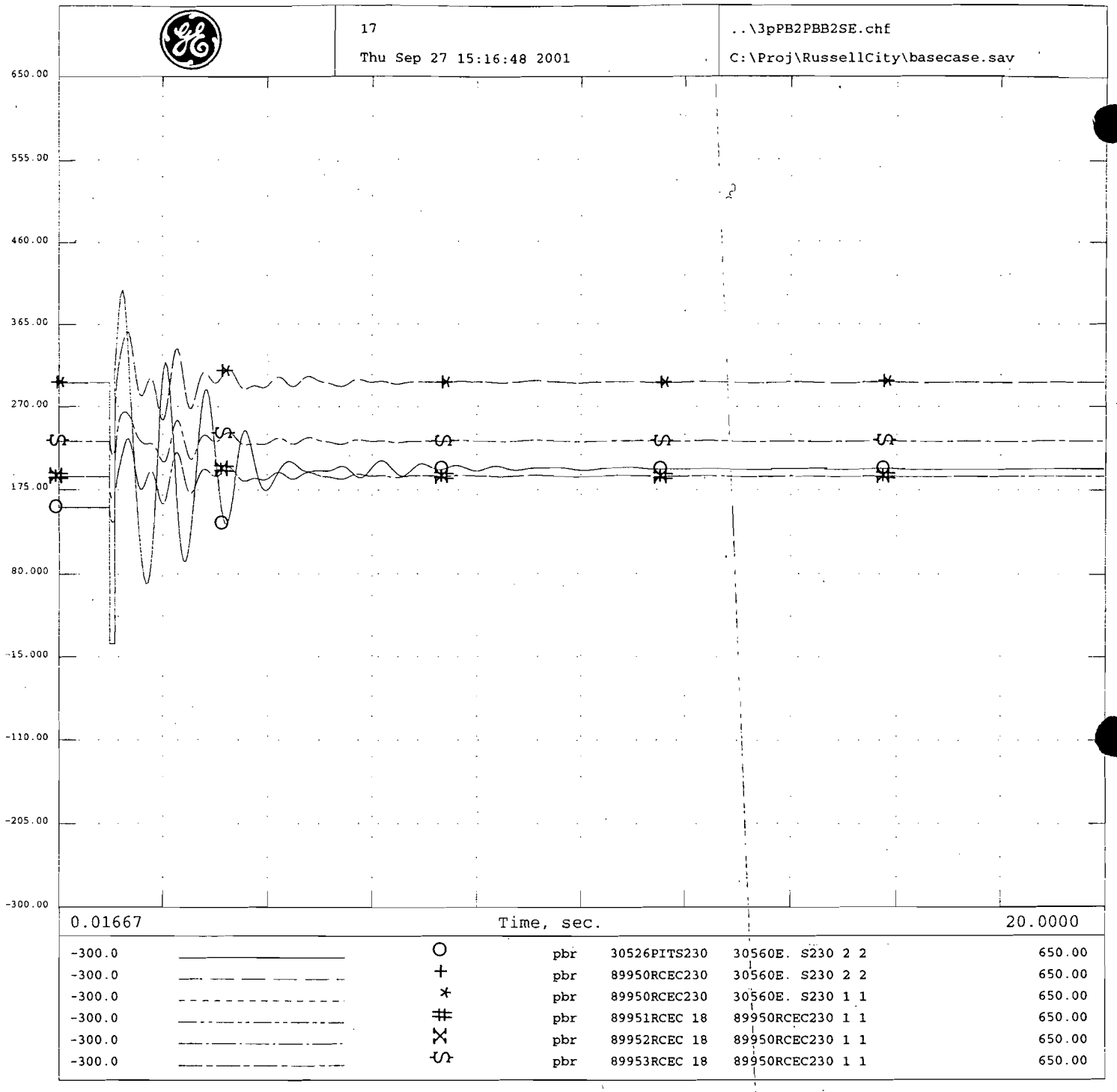

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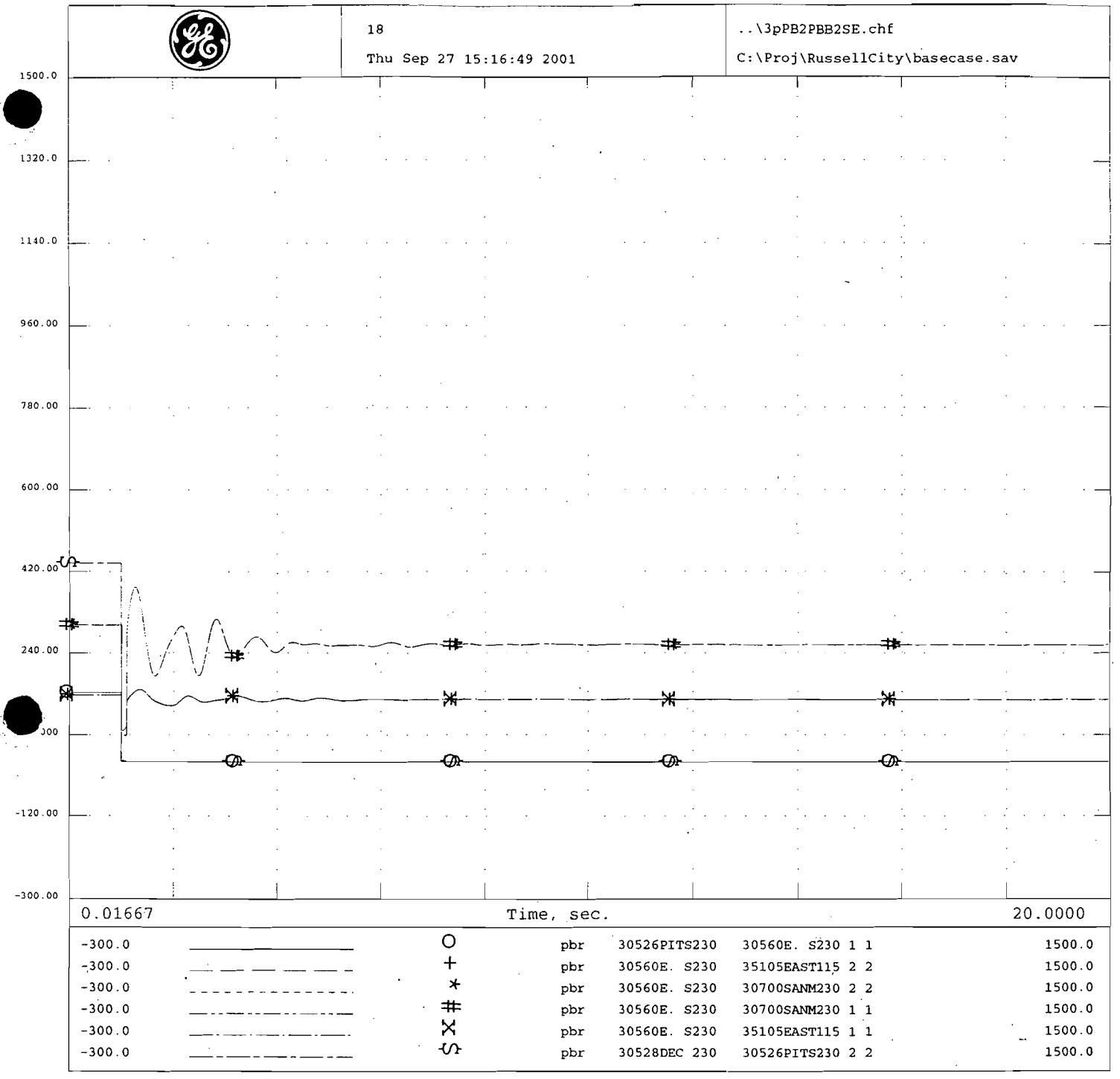

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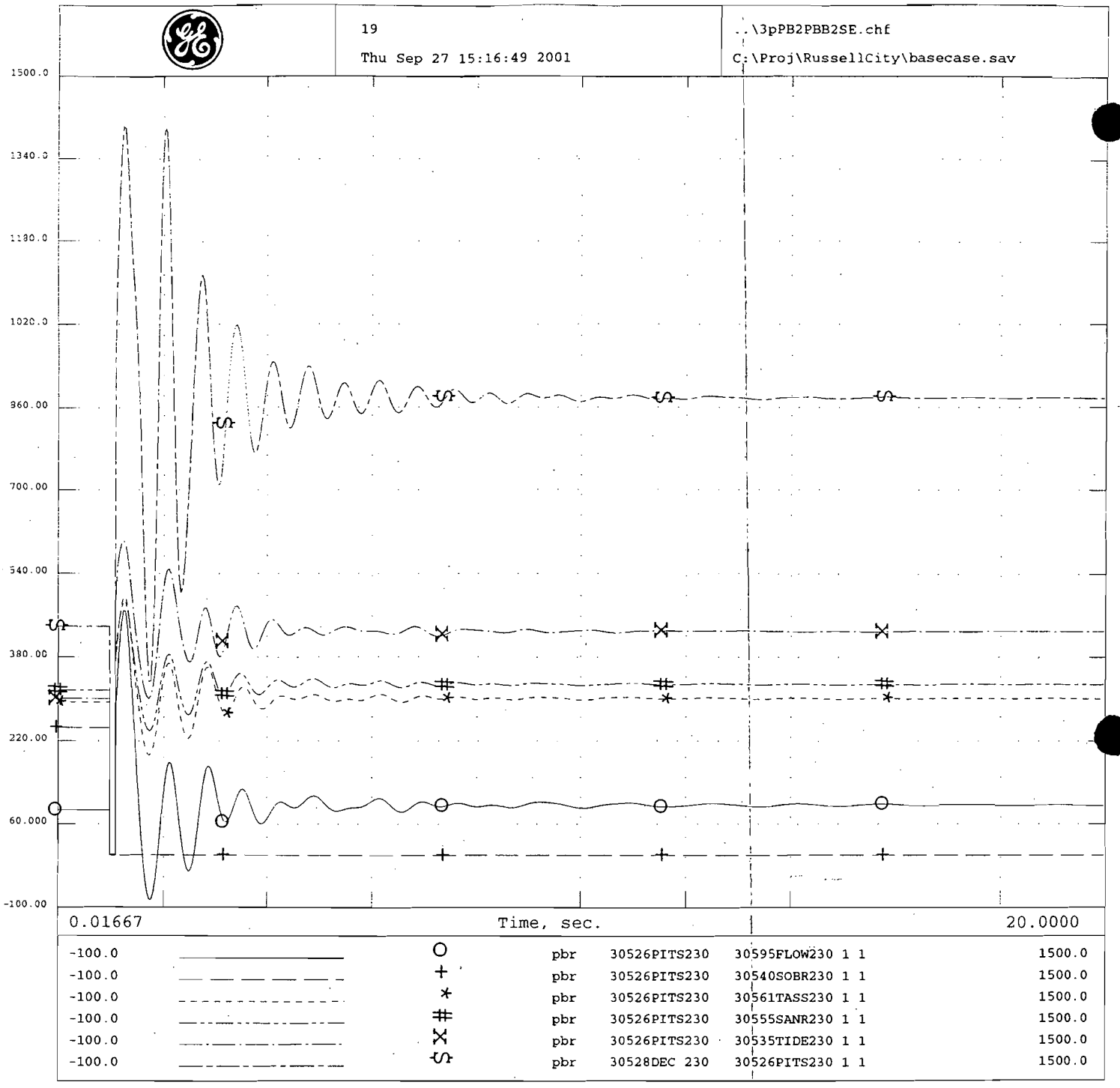

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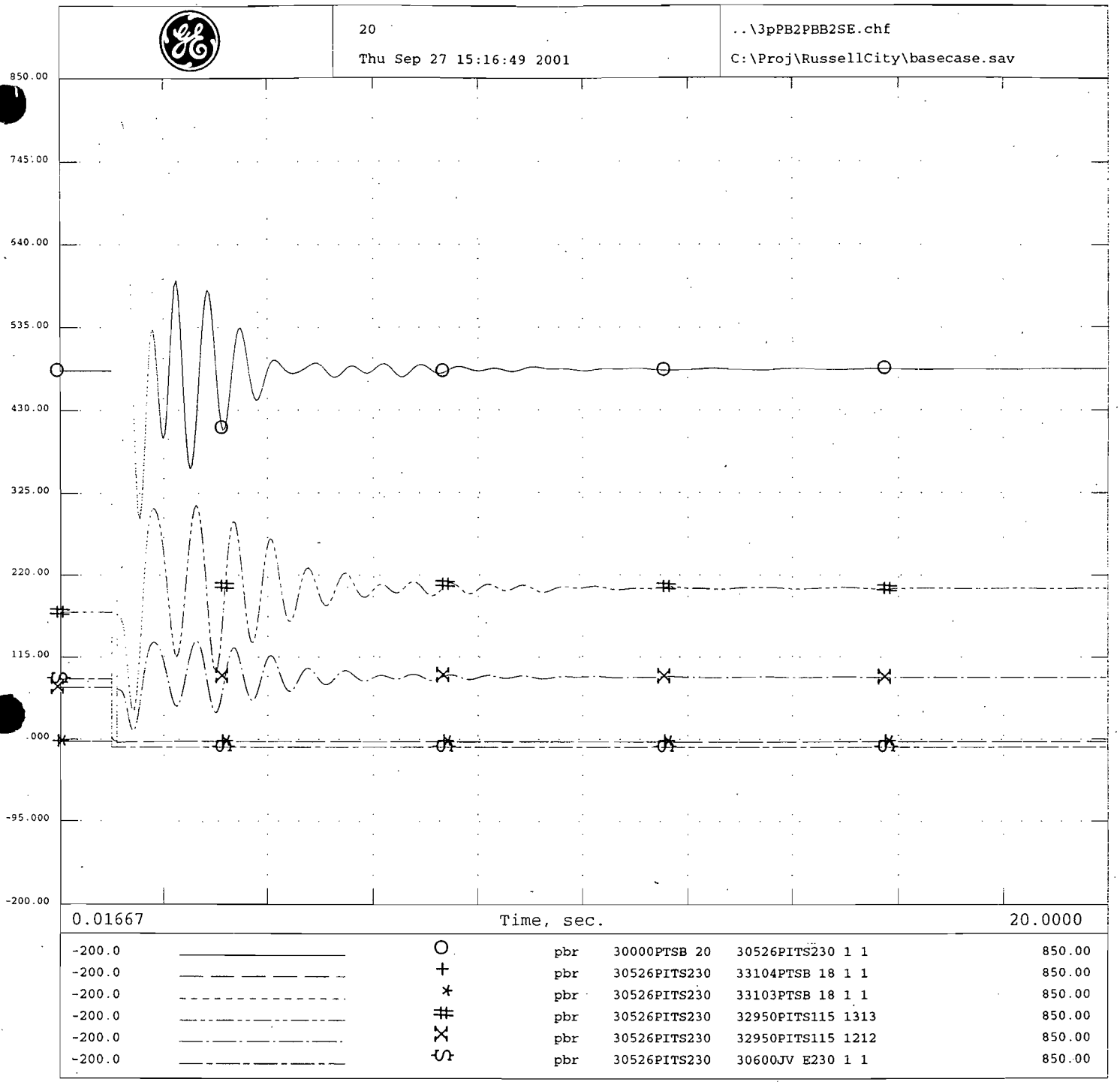

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Calpine/Bechtel Joint Development
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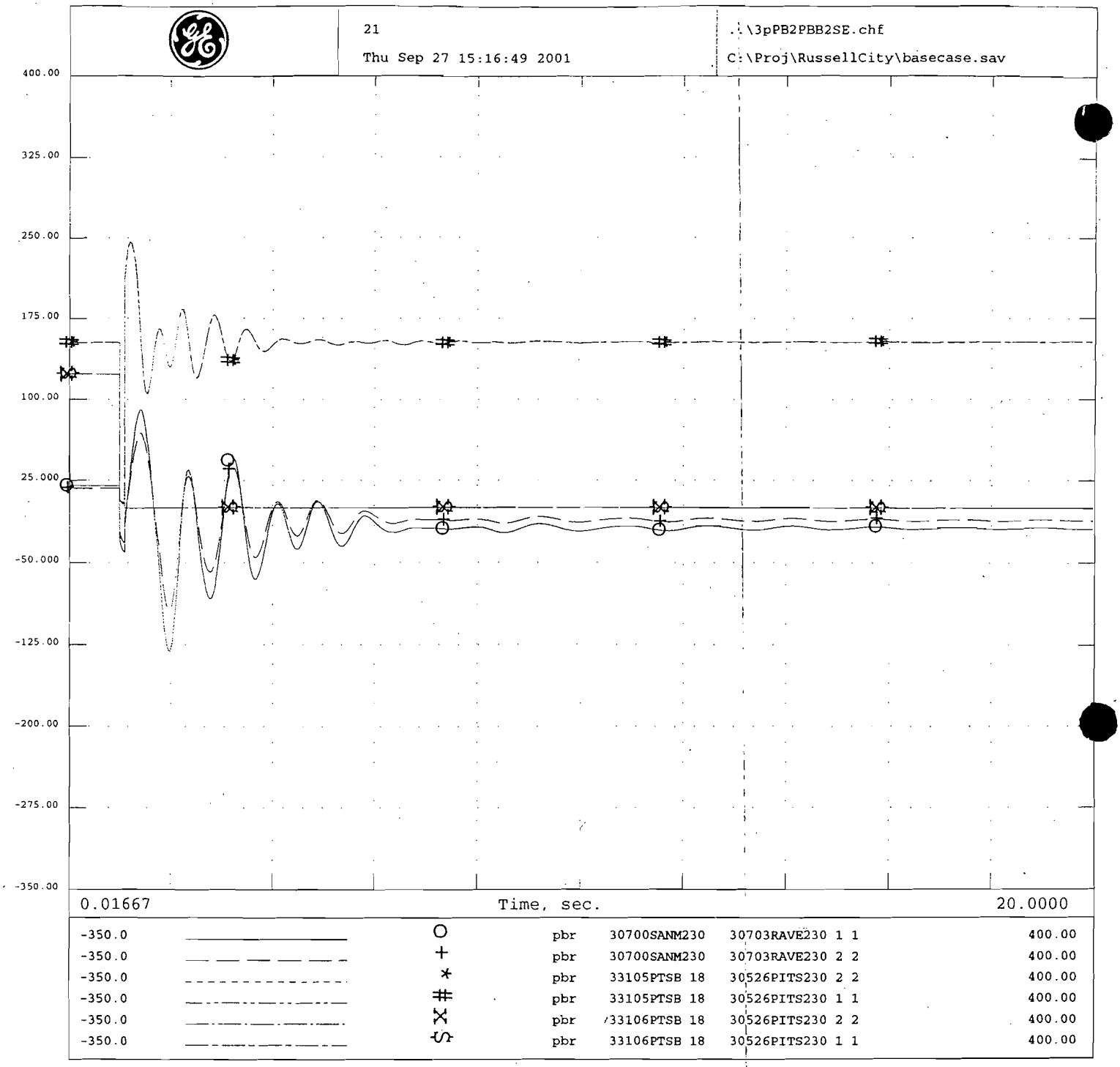

Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Loss of Pittsburg 230 kV bus 2, section E
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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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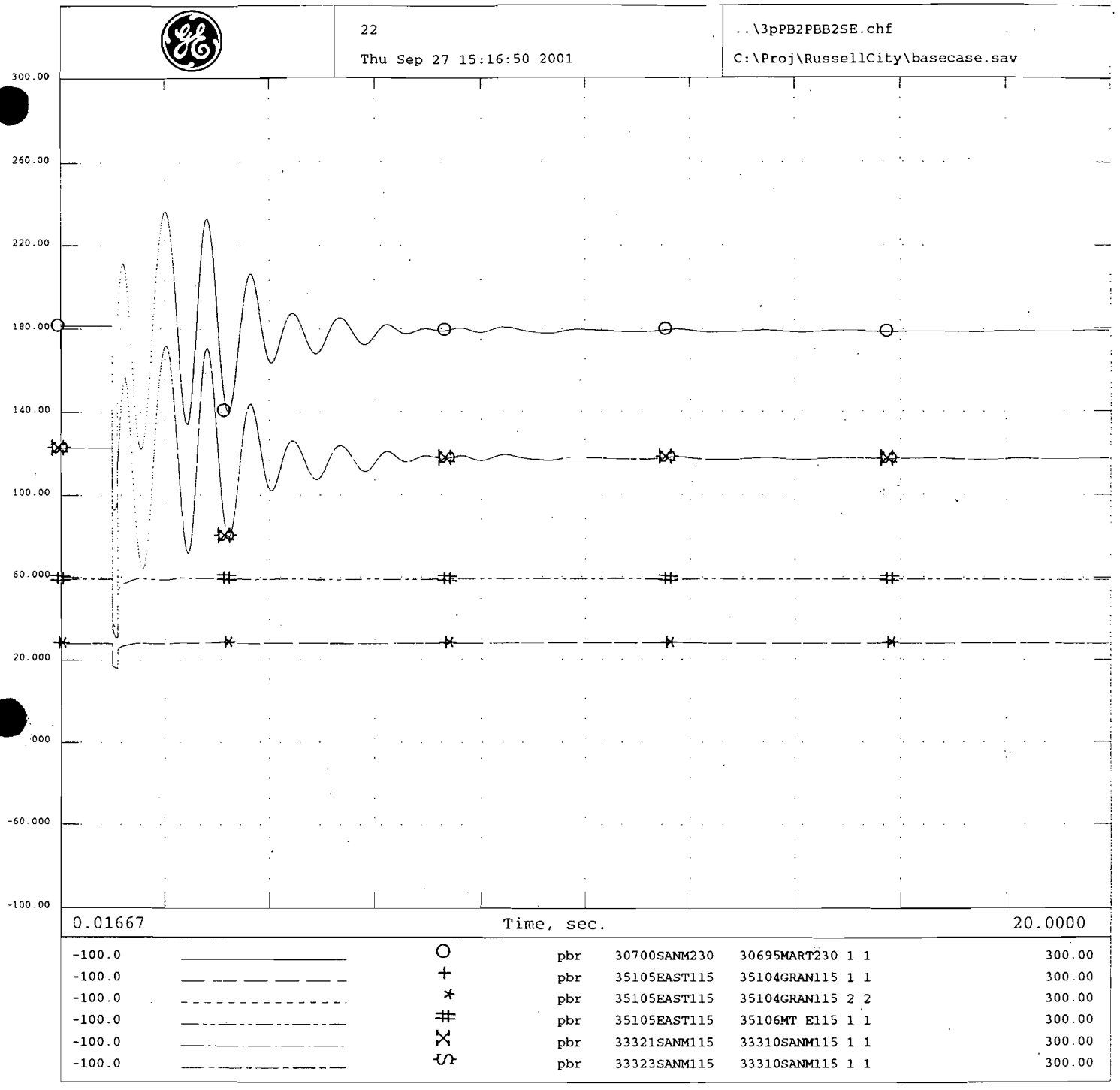

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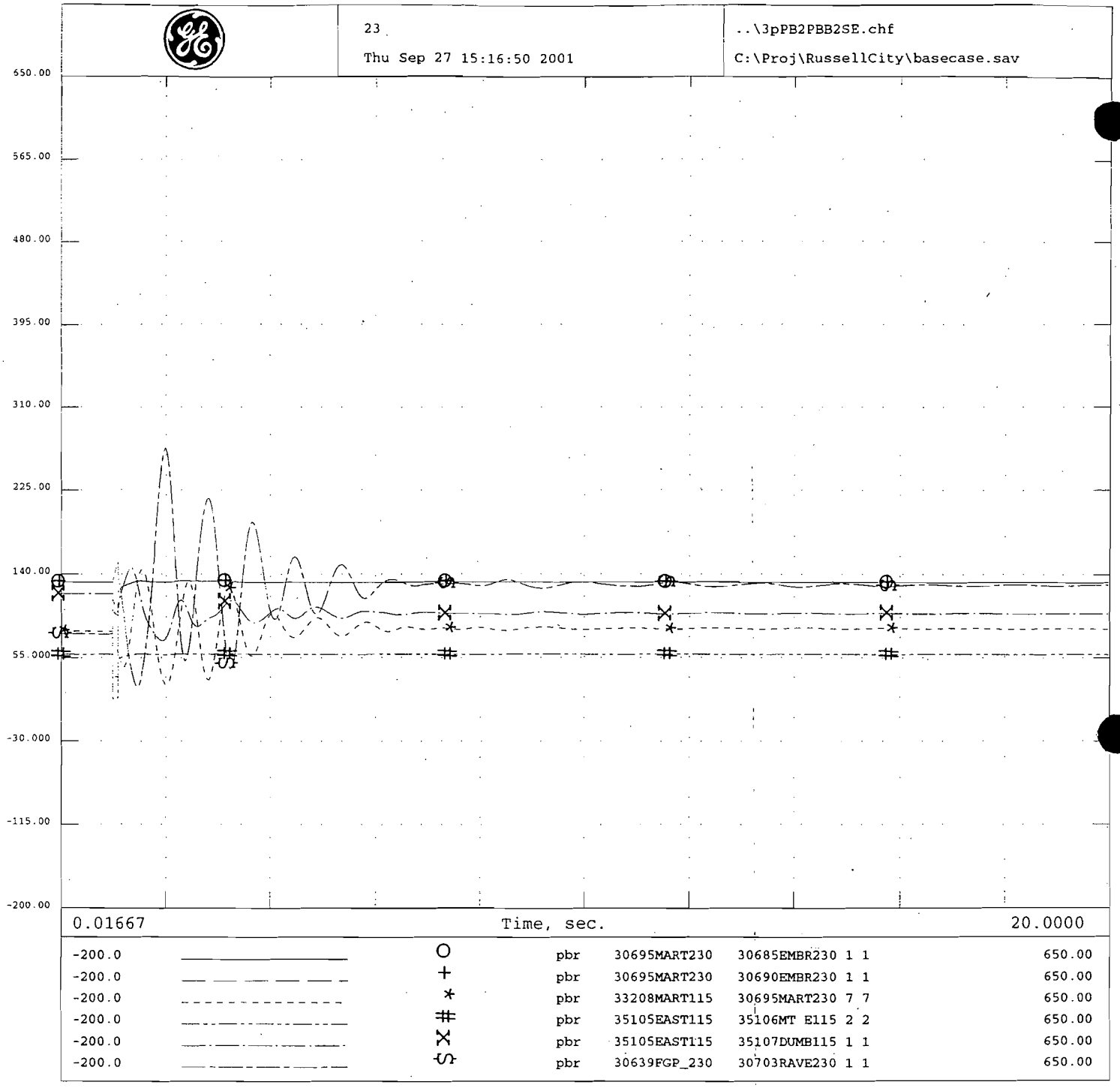

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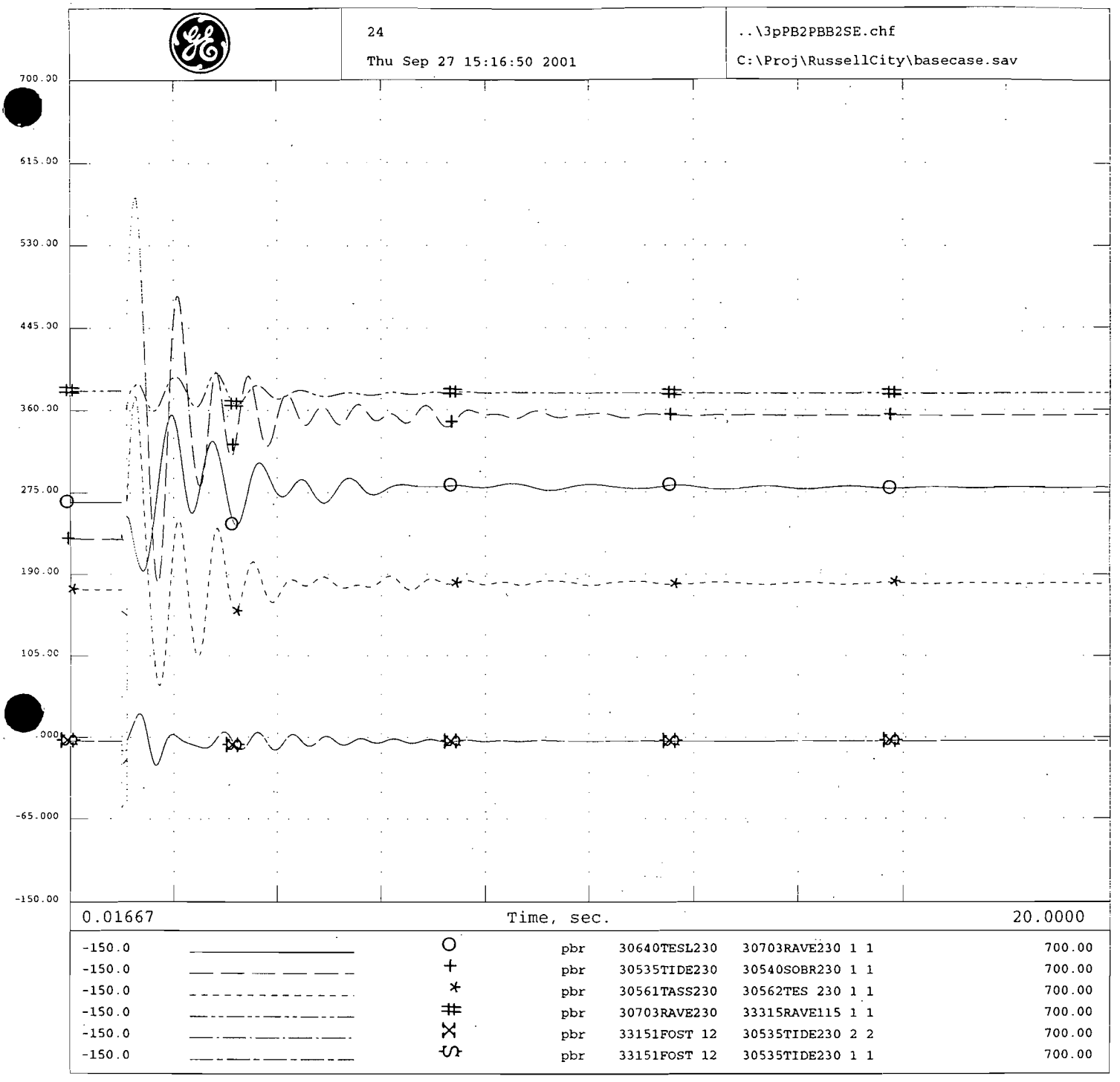

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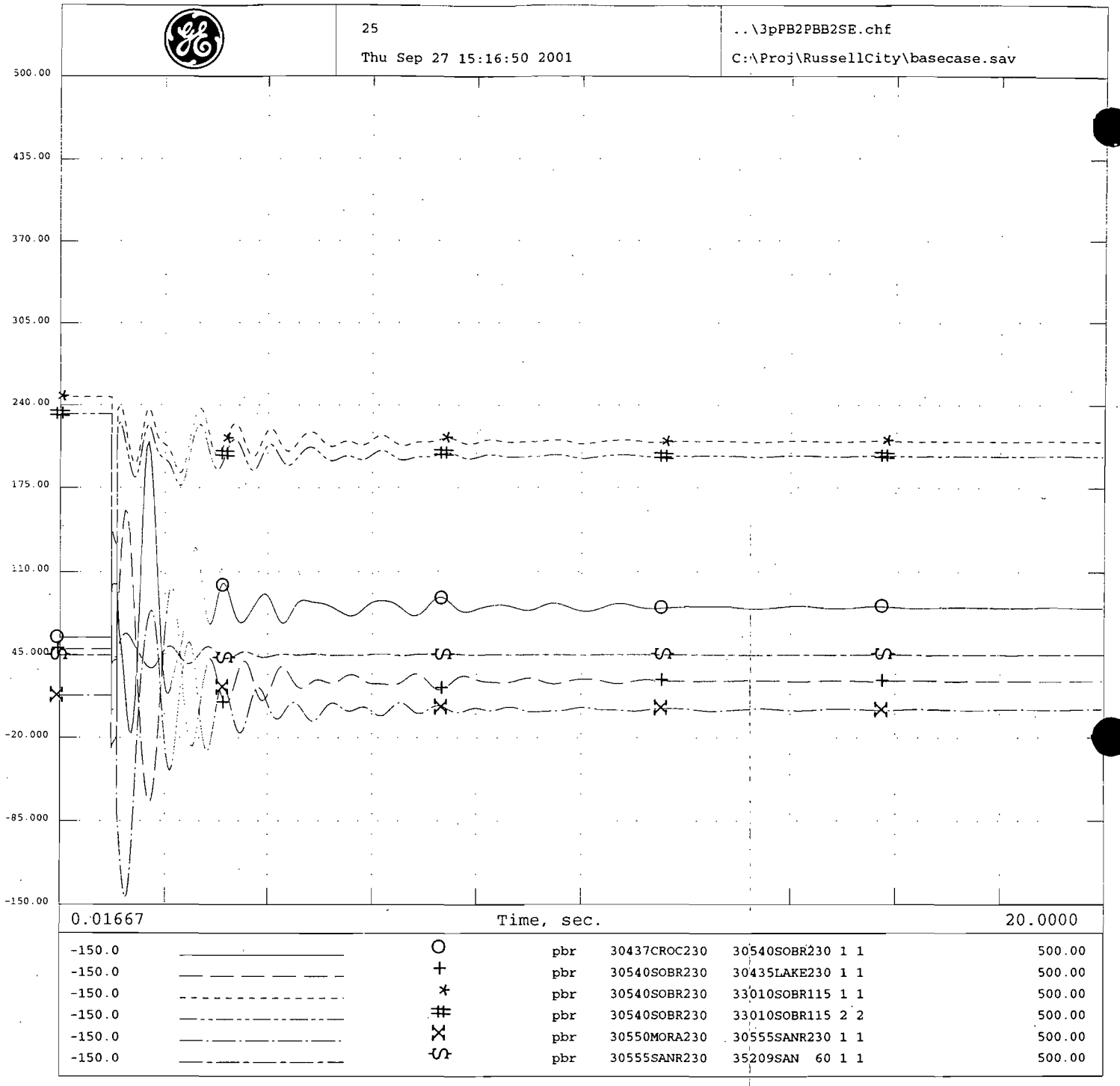

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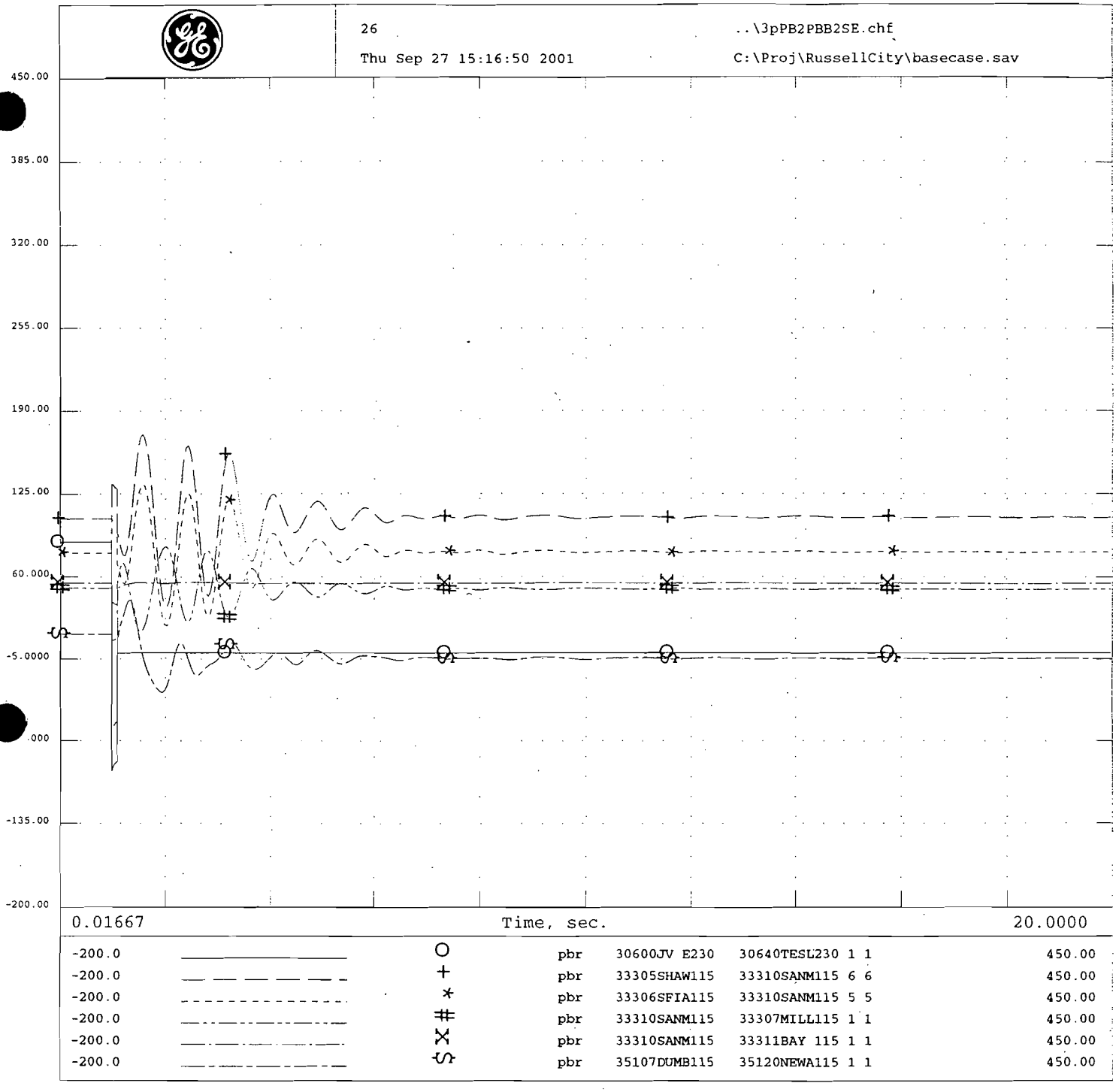

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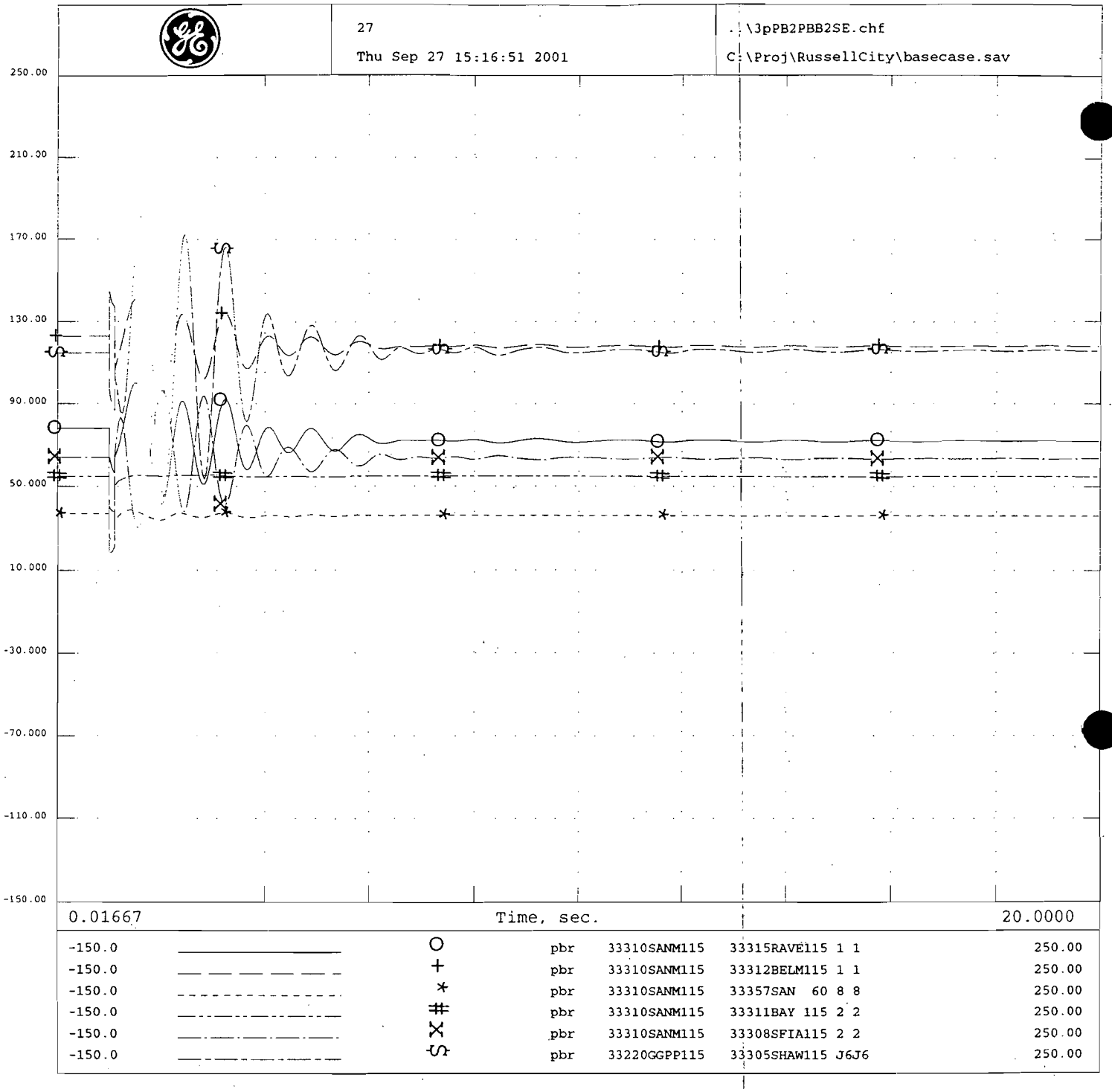

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
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TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
Pittsburg-Tesla #2 230kV line outage
3 phase 6 cycle fault at Pittsburg 230kV bus and trip Pittsburg-Tesla #2 230kV
line
RUN  9
CC
CC   Fault Pittsburg 230kV bus
FB   0.0 "PITSBURG" 230.
CC
CC   Clear fault at Pittsburg 230kV bus
CFB  6.0 "PITSBURG" 230.
CC
CC   Trip the Pittsburg-Tesla #2 230kV line
DL  6.0 "PITSBURG" 230.00 "JV ENTER" 230.00 "1 "
DL  6.0 "TESLA F " 230.00 "JV ENTER" 230.00 "1 "
CC
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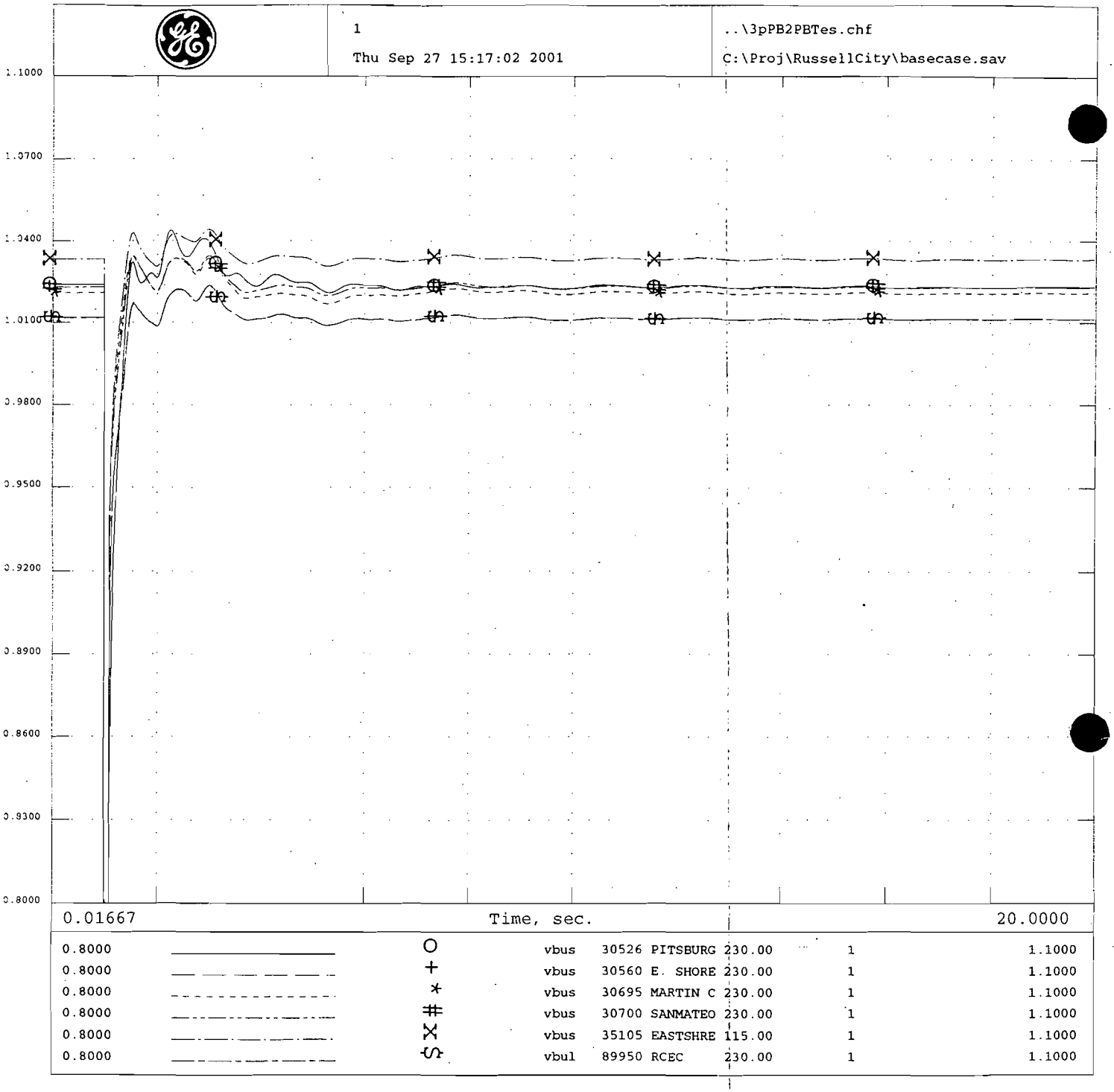

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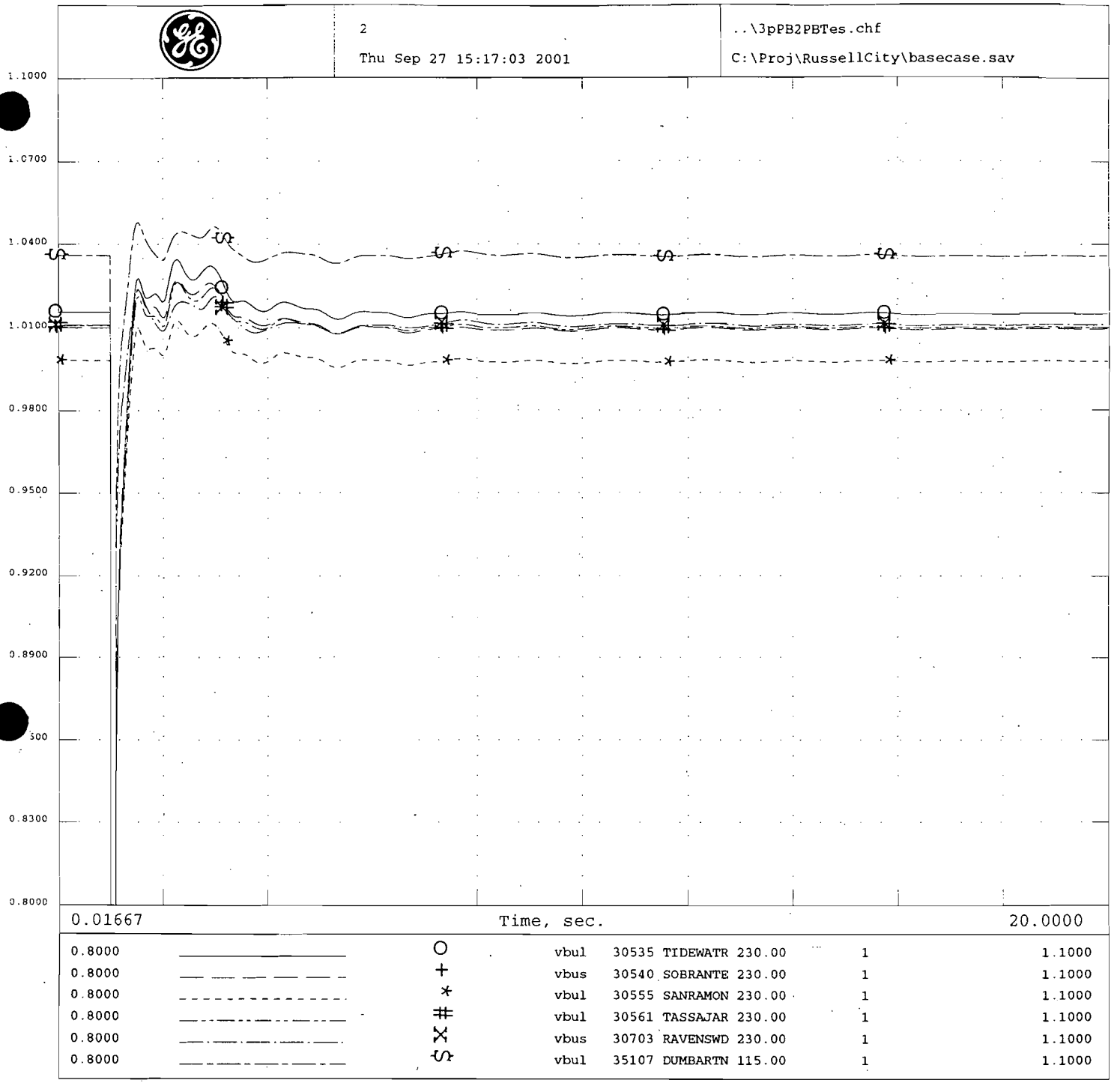

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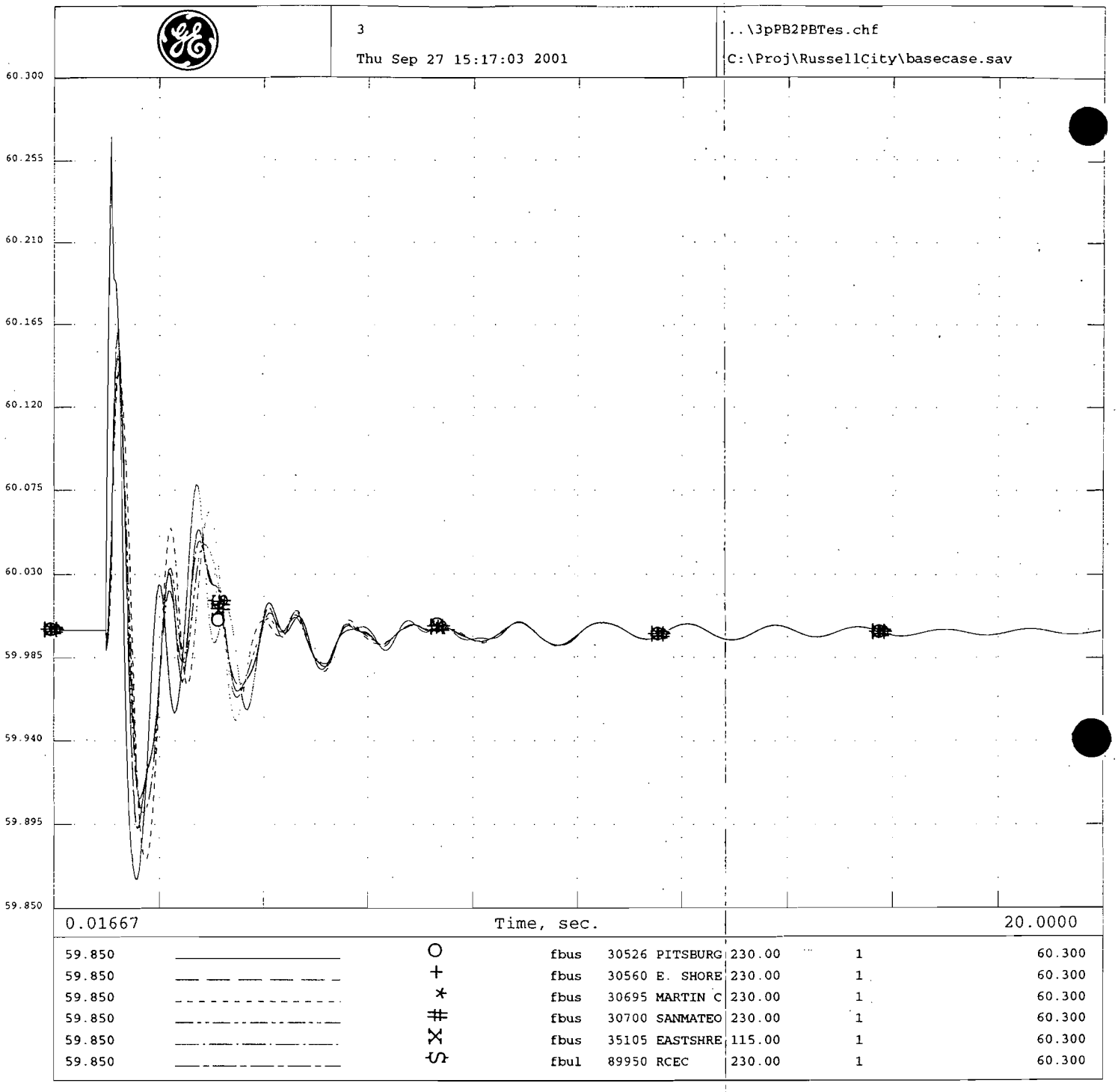

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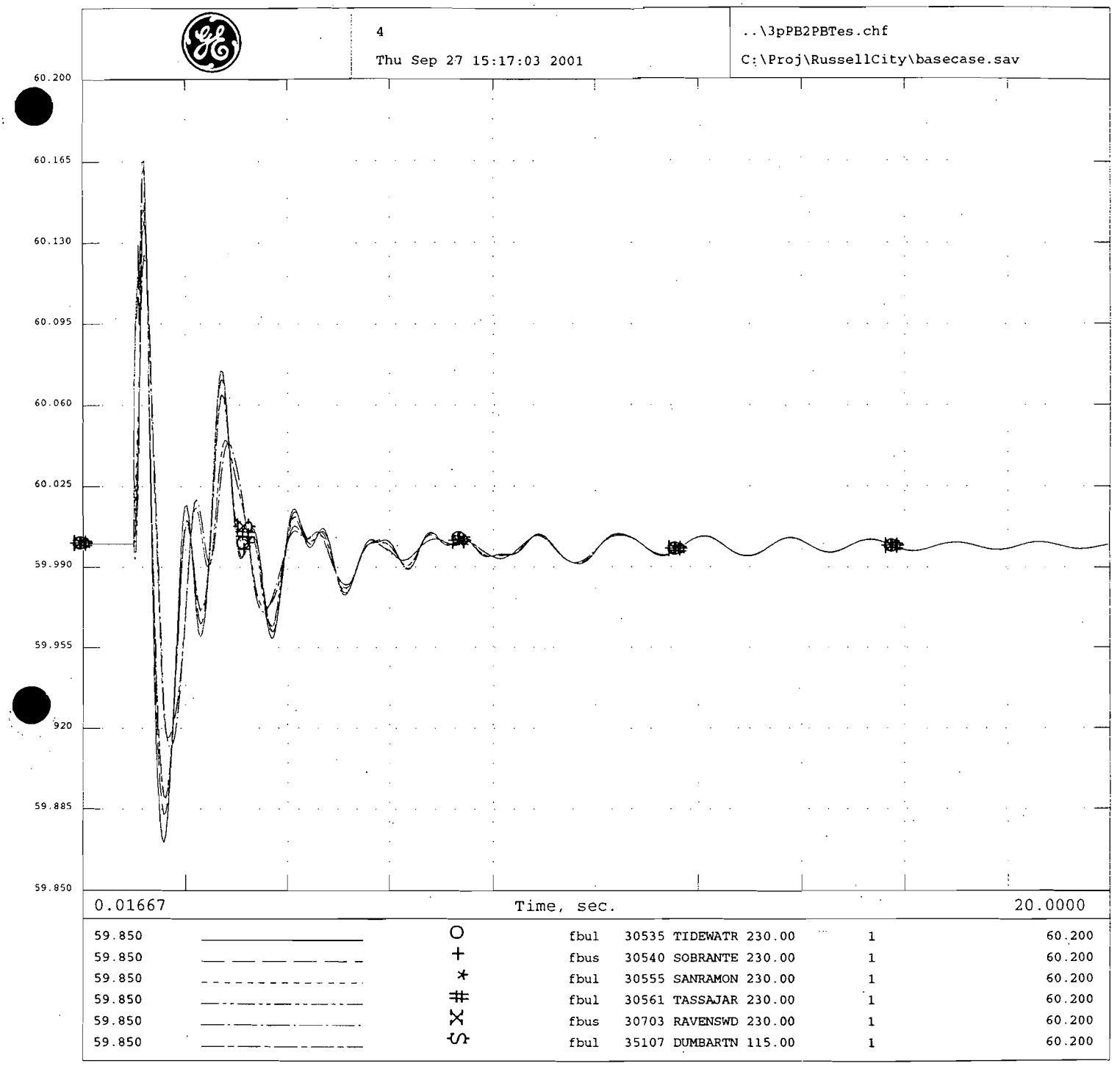

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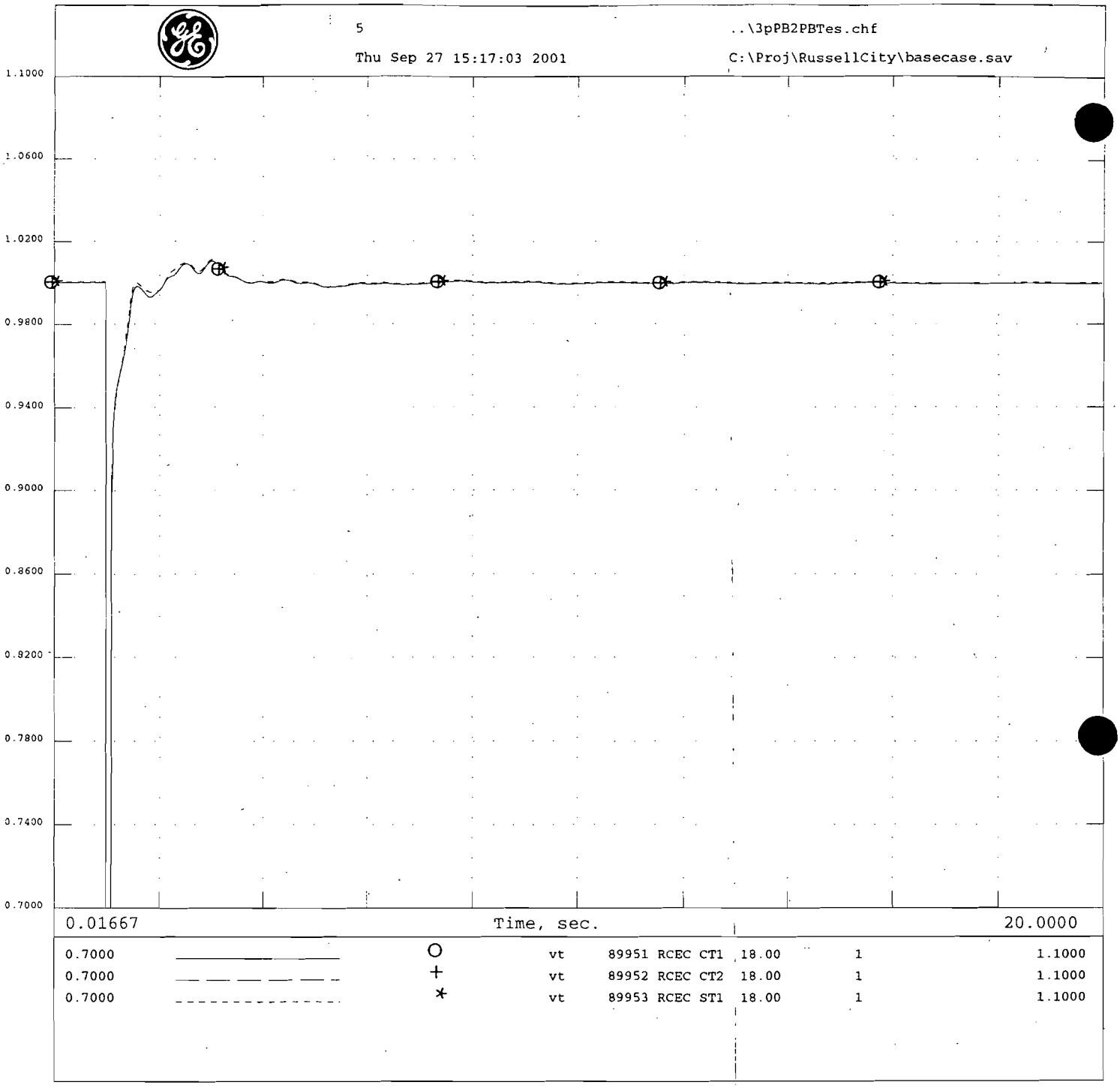

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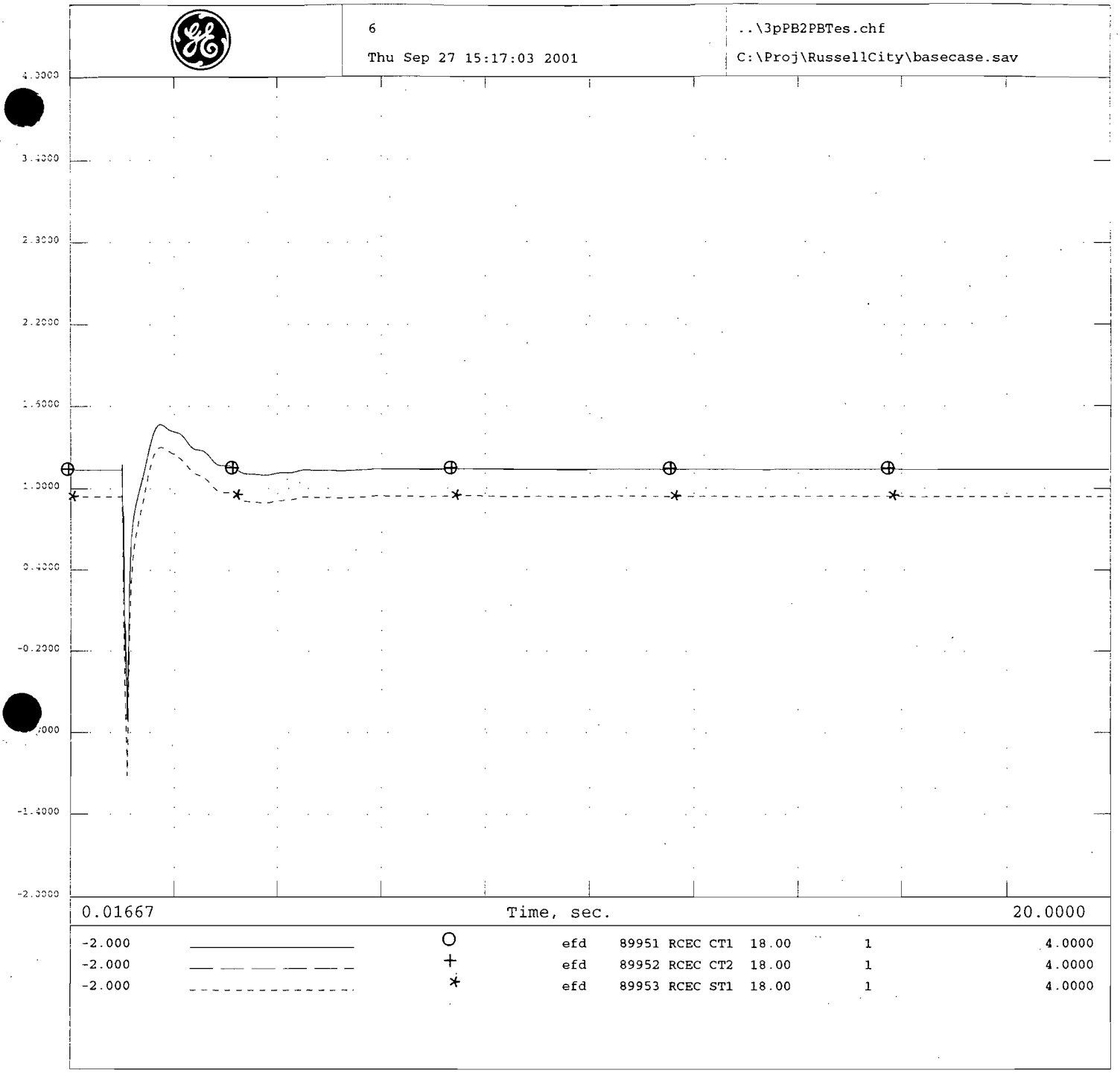
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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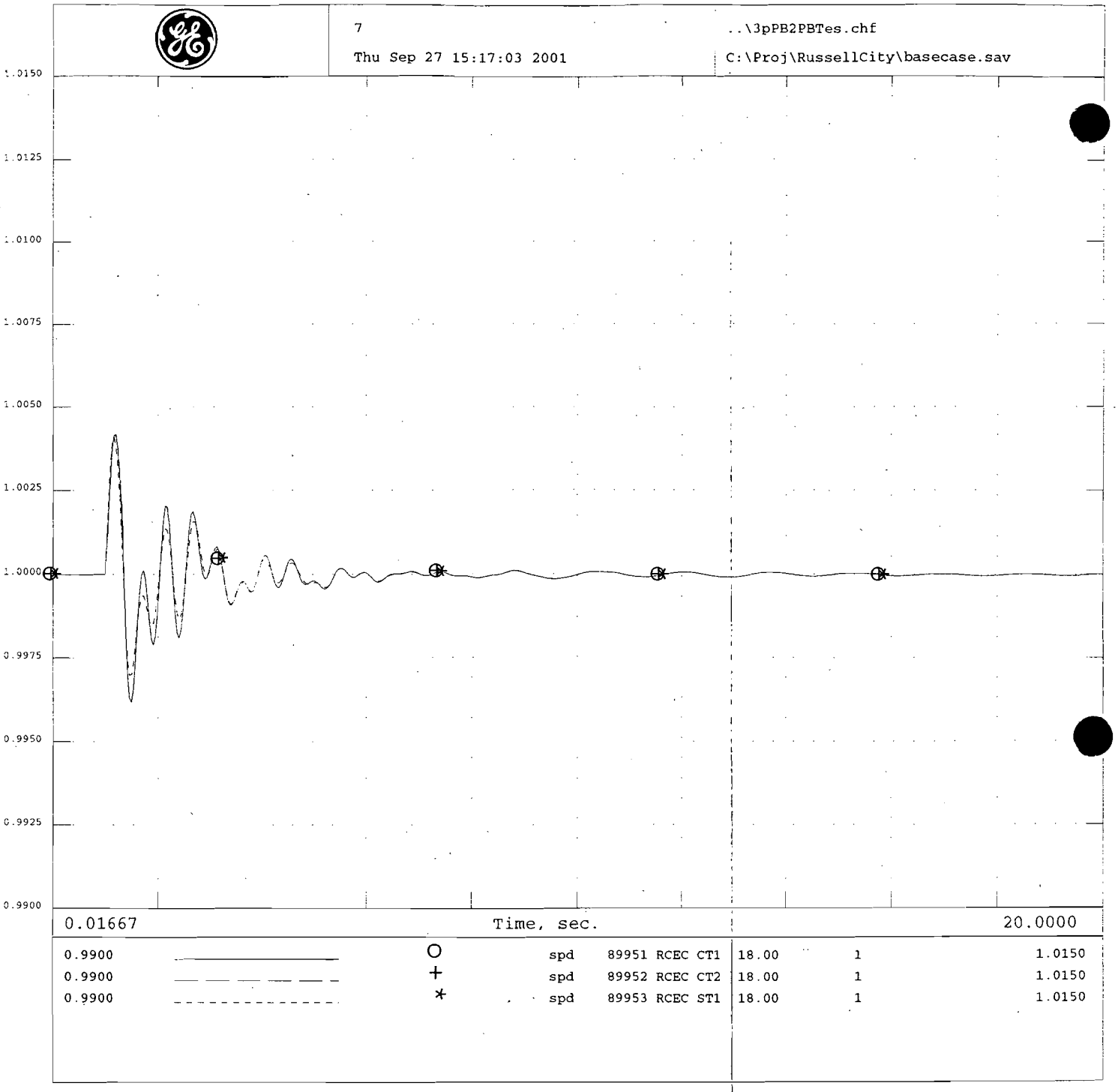
Calpine/Bechtel Joint Development
Project Generator Field Voltages



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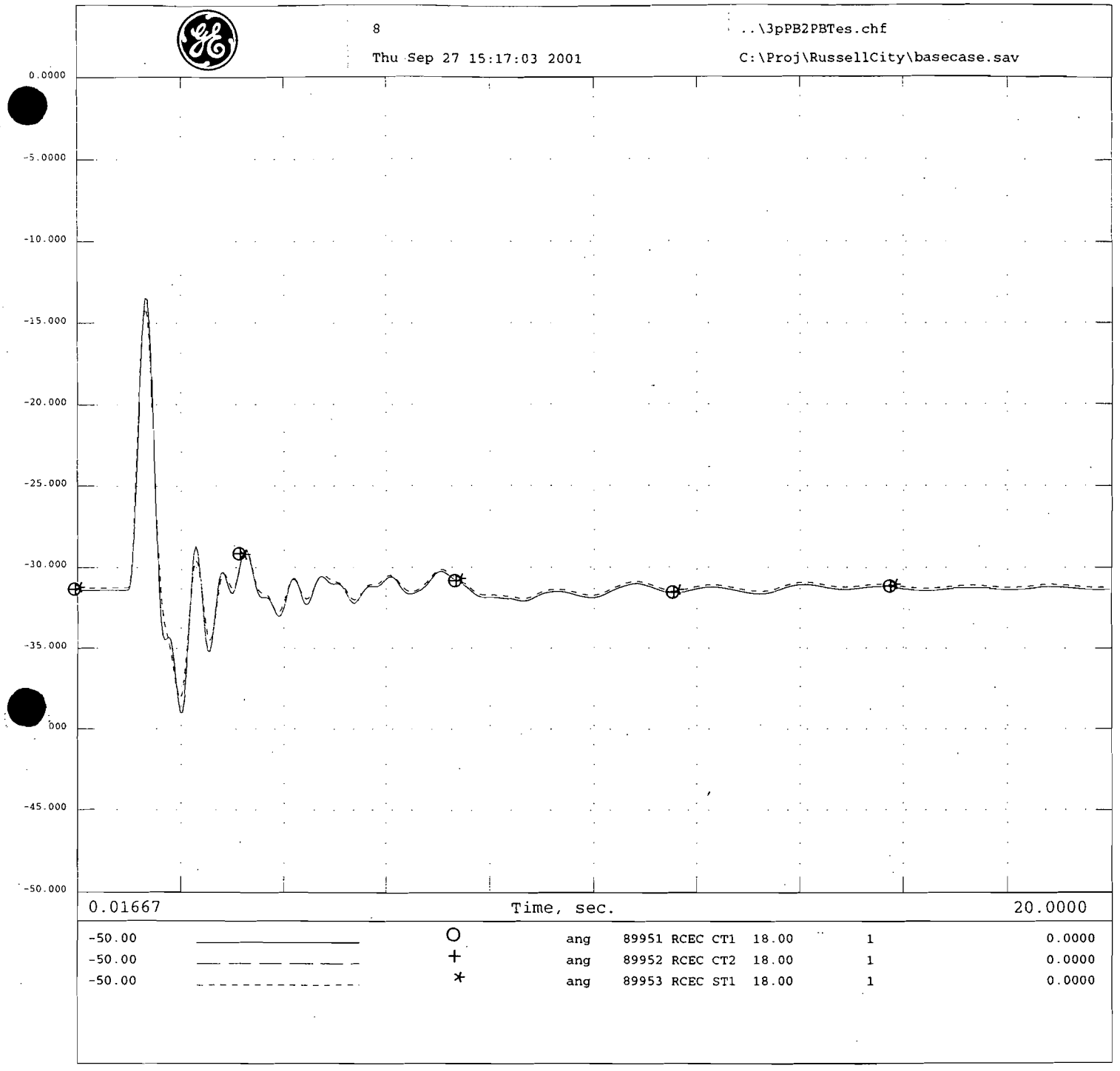
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



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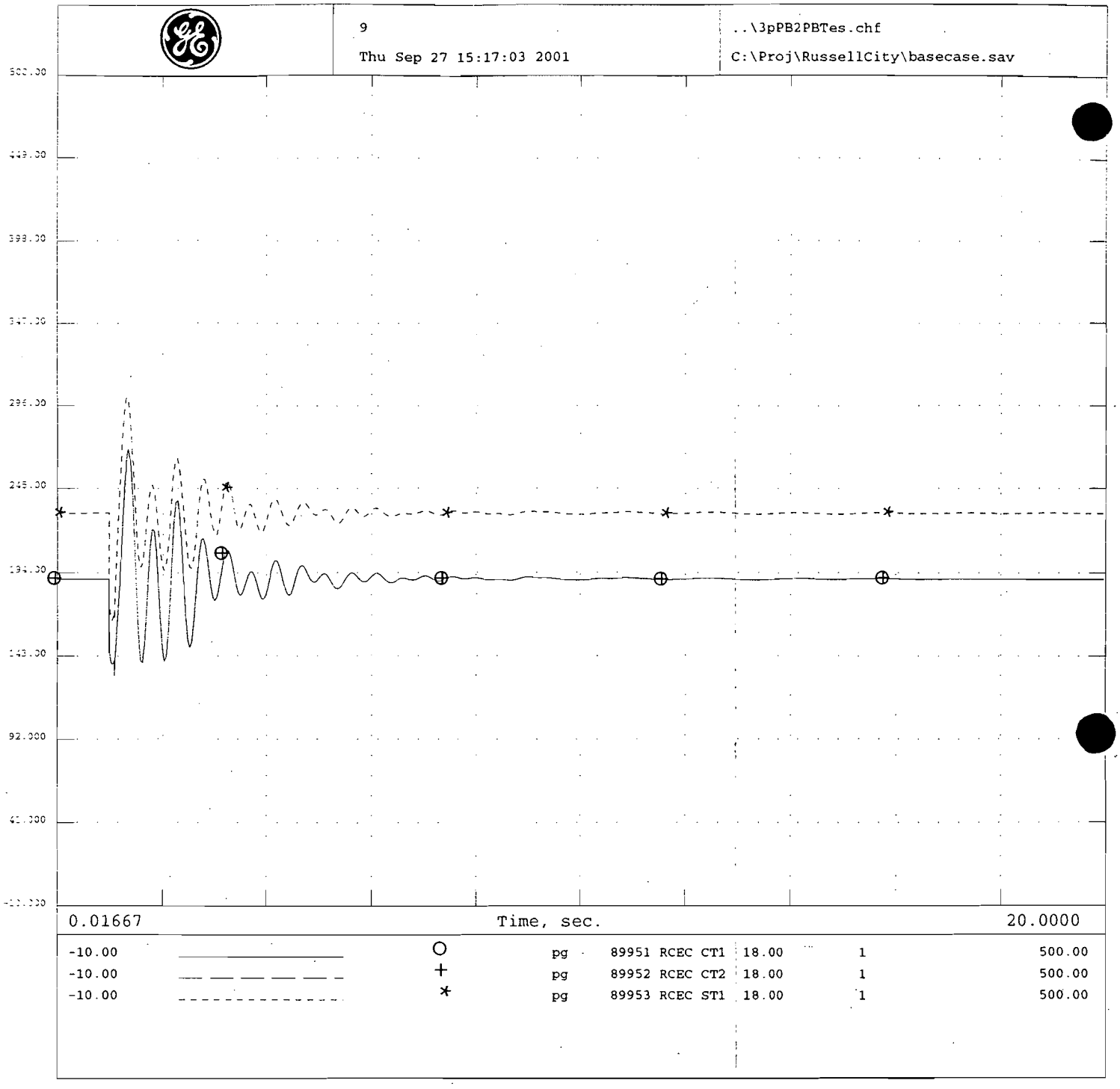
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



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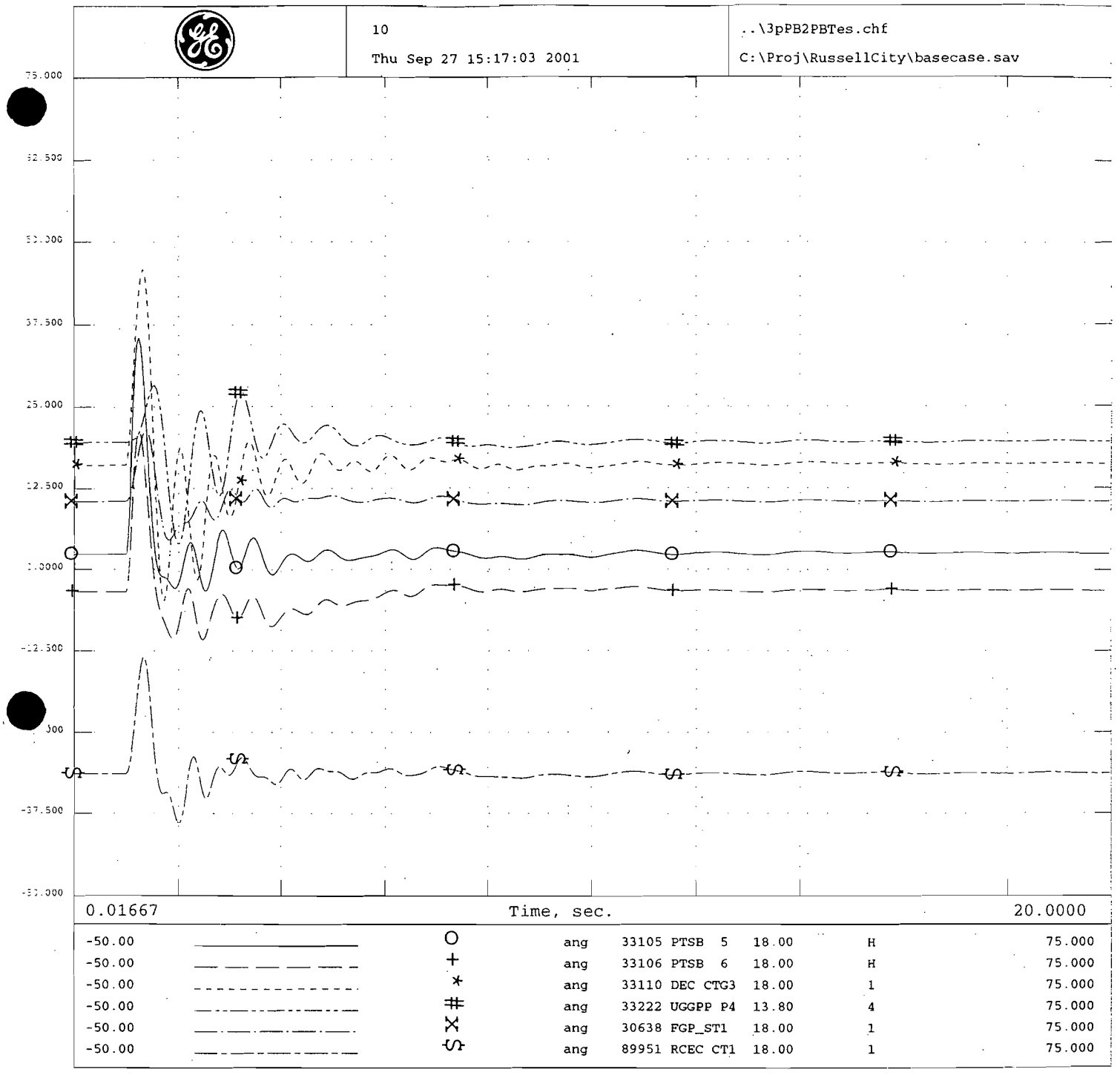

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Calpine/Bechtel Joint Development
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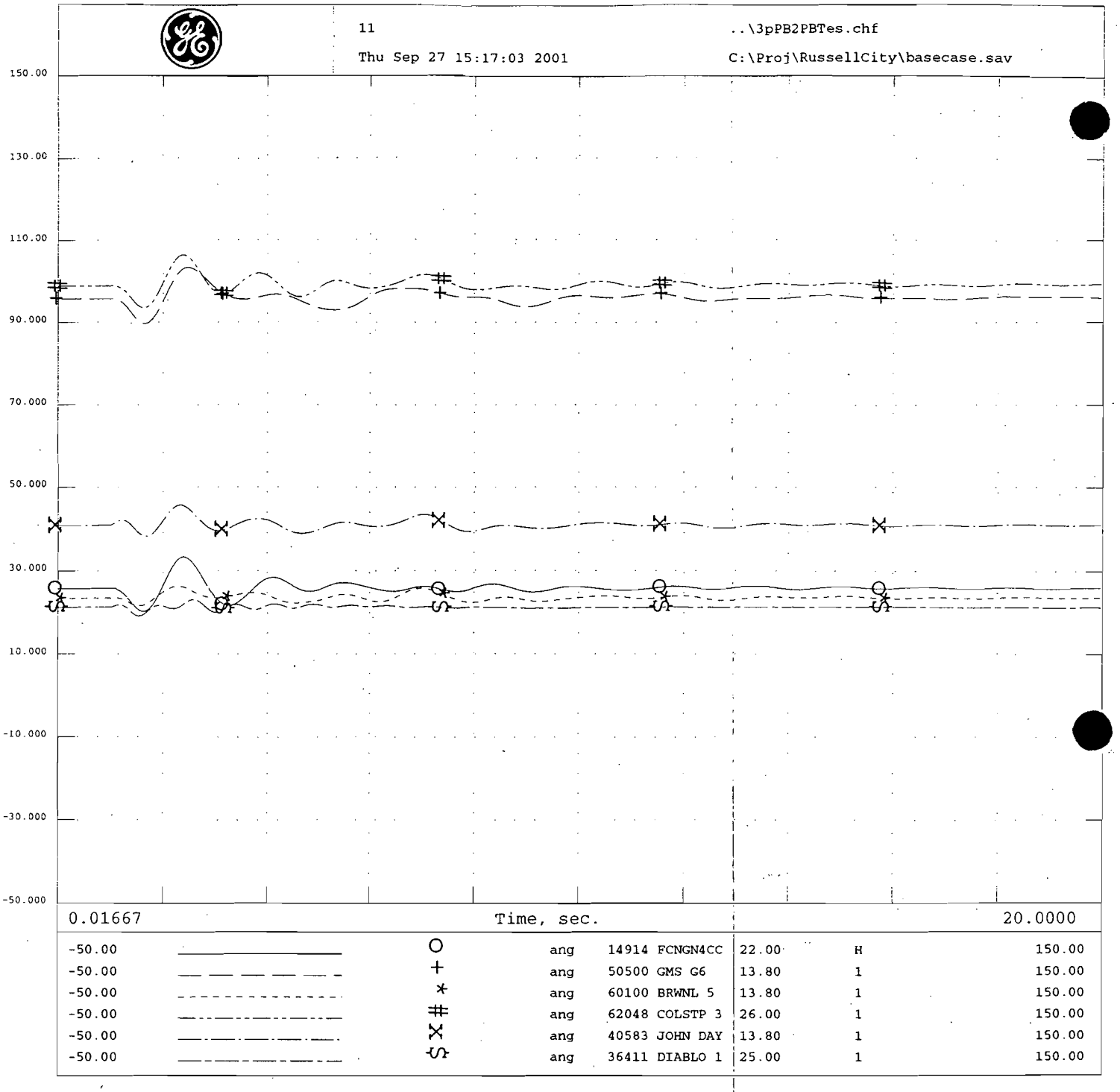

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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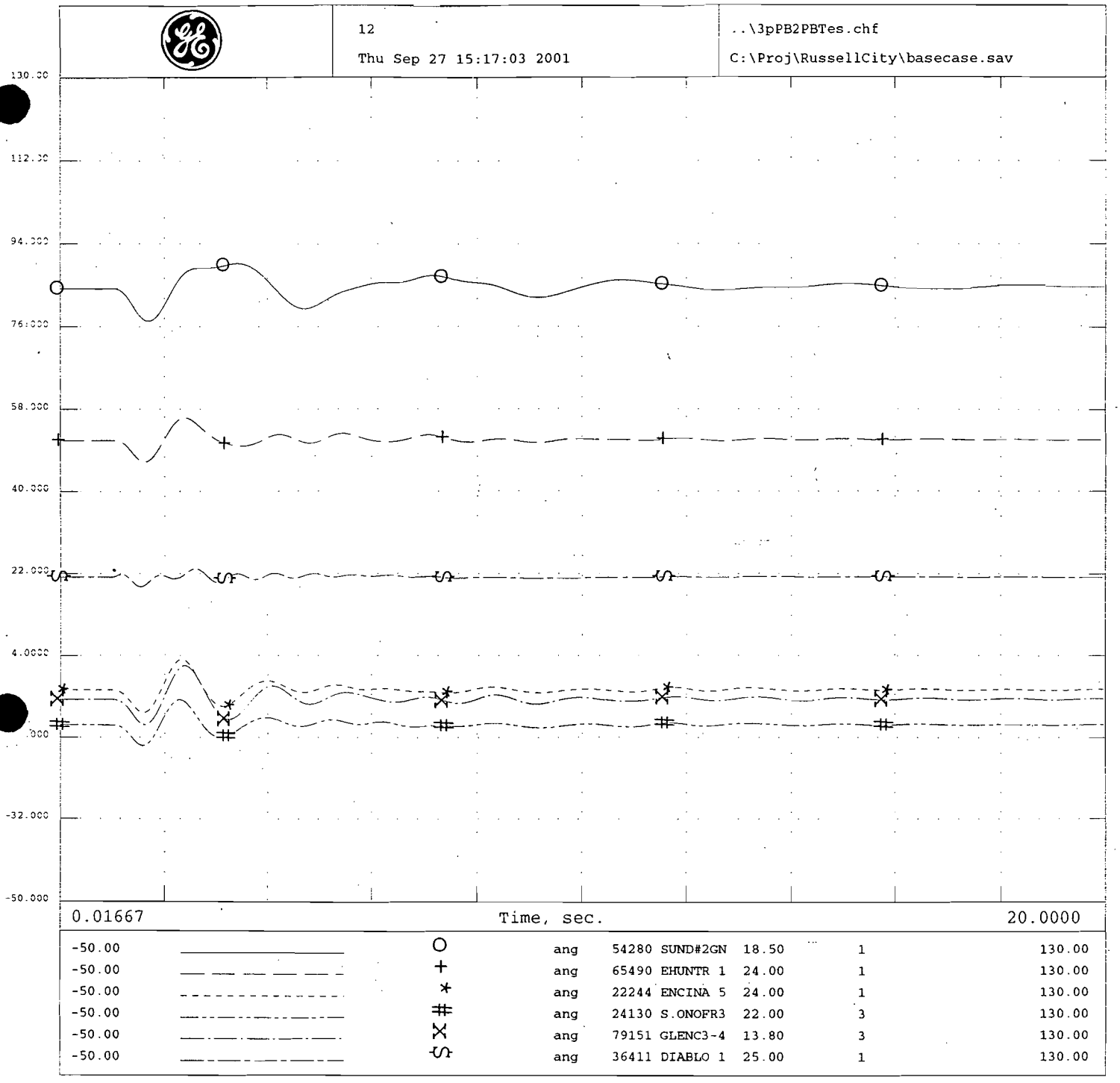

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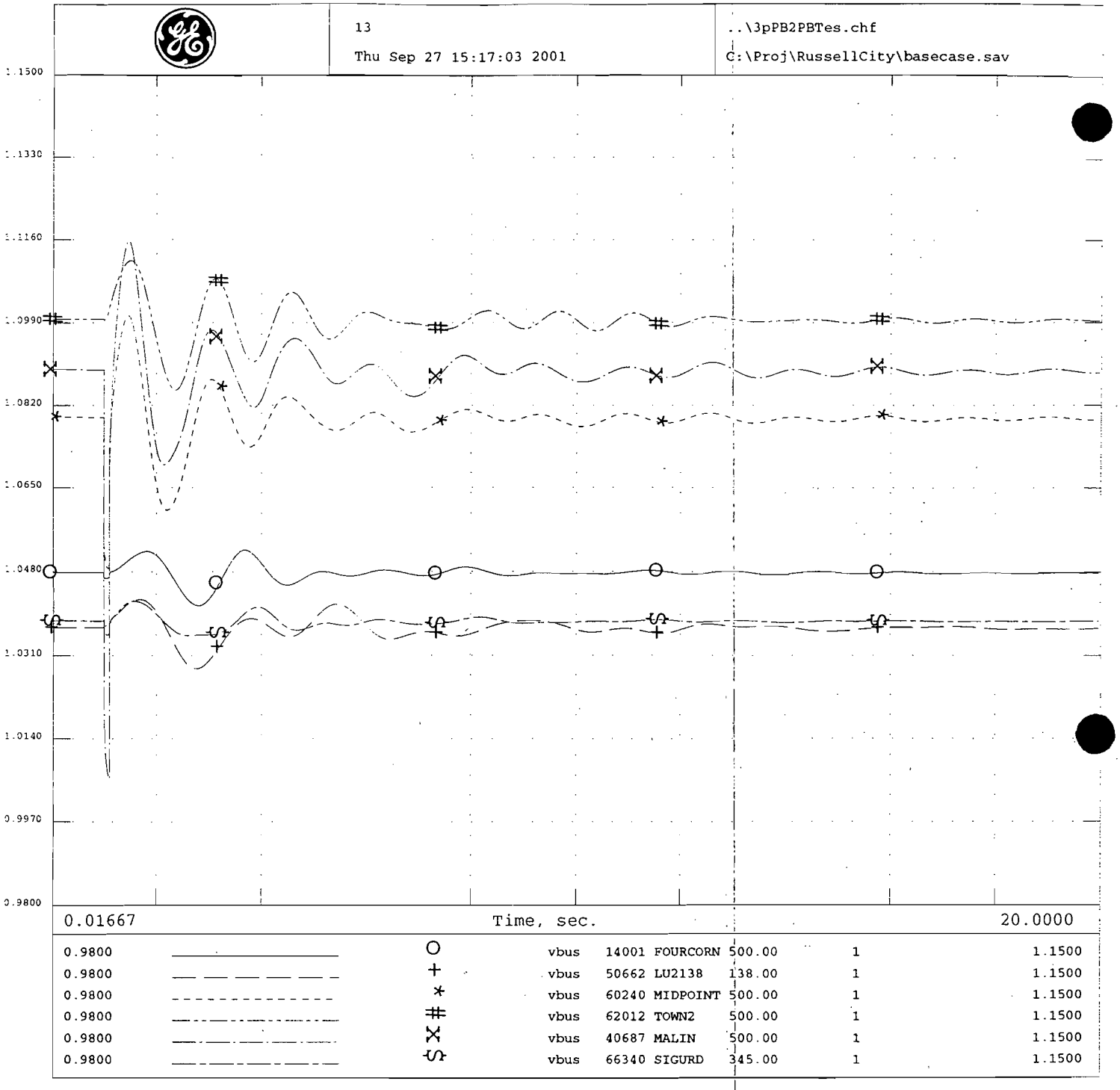

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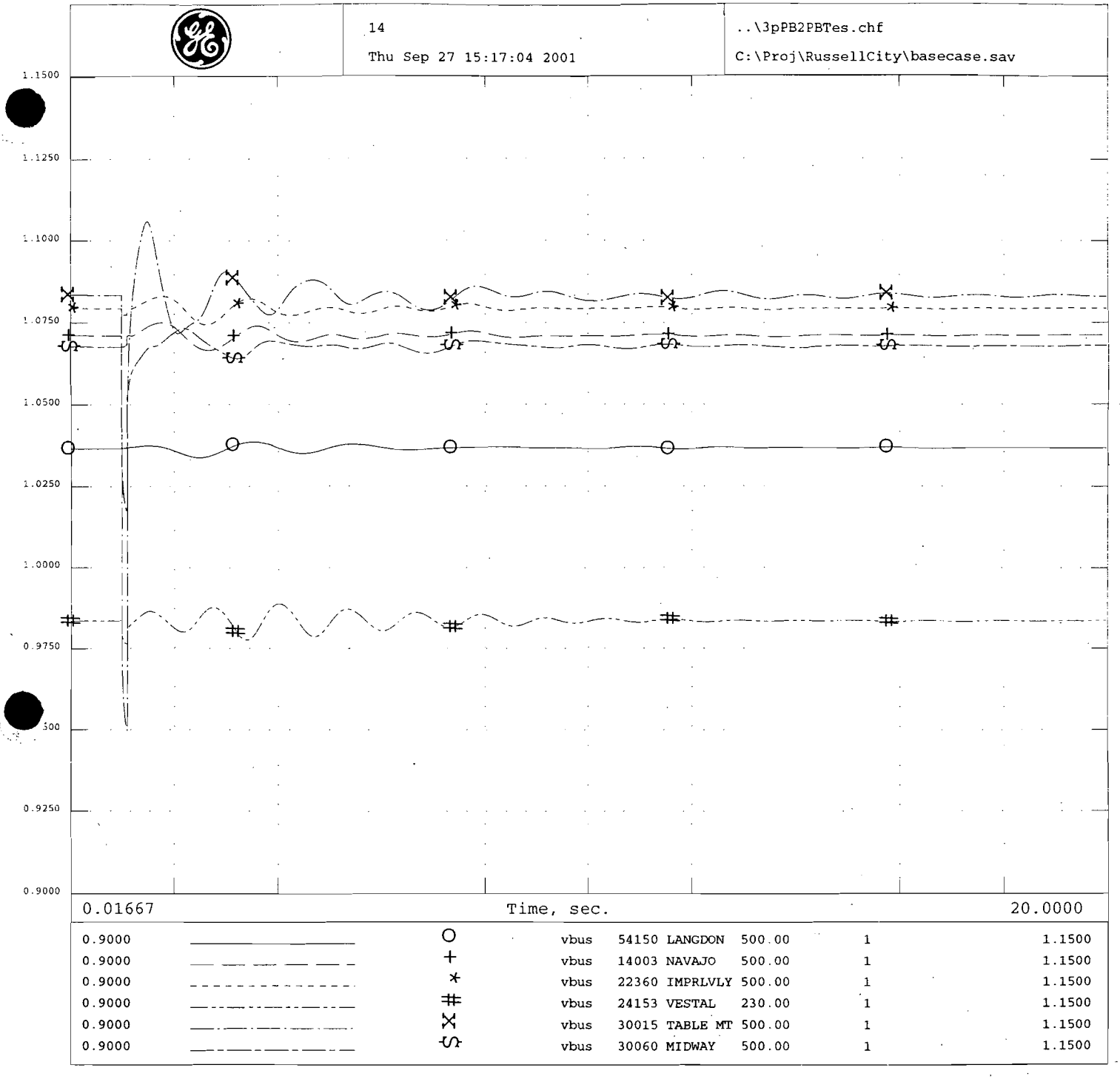

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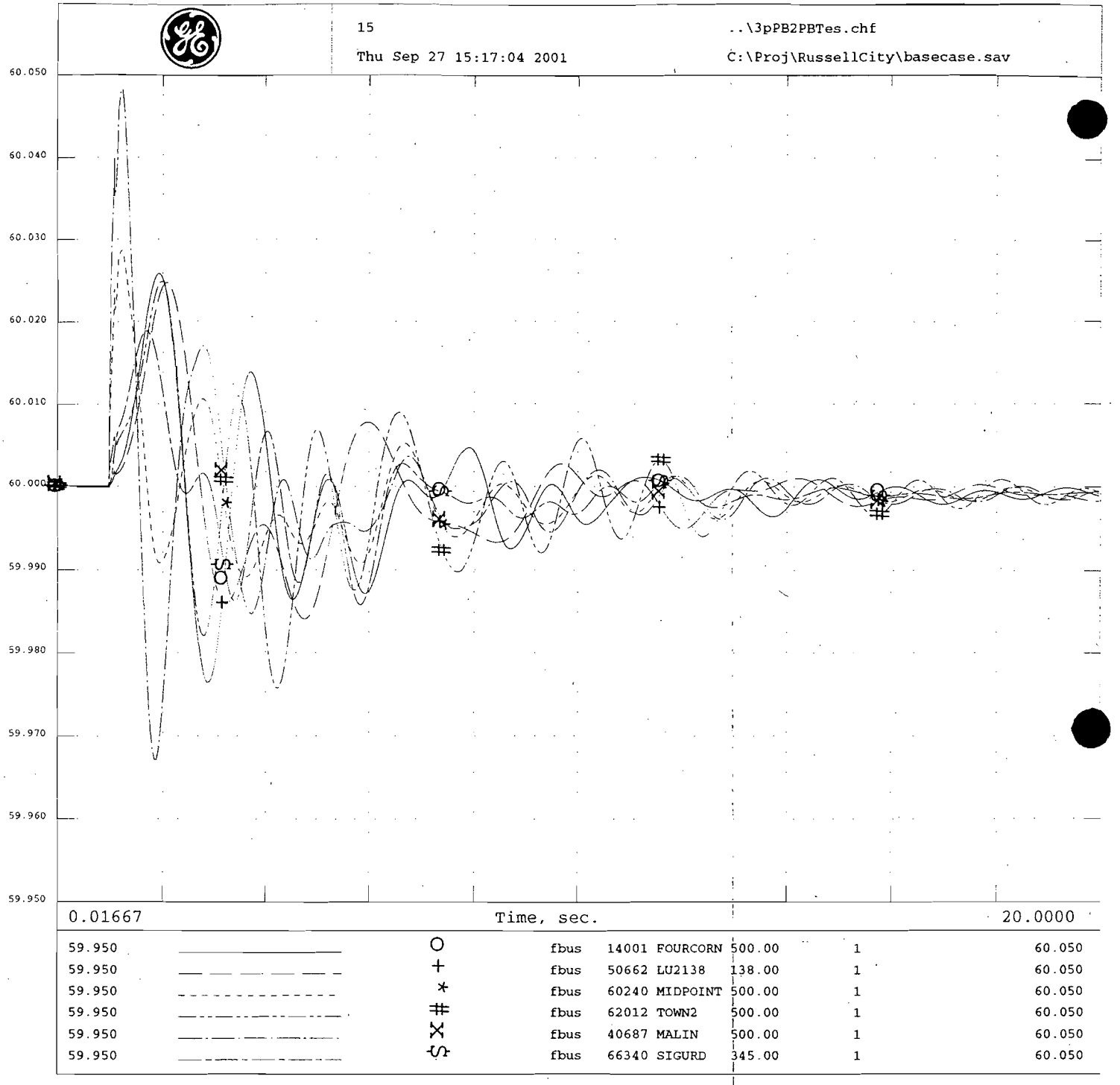

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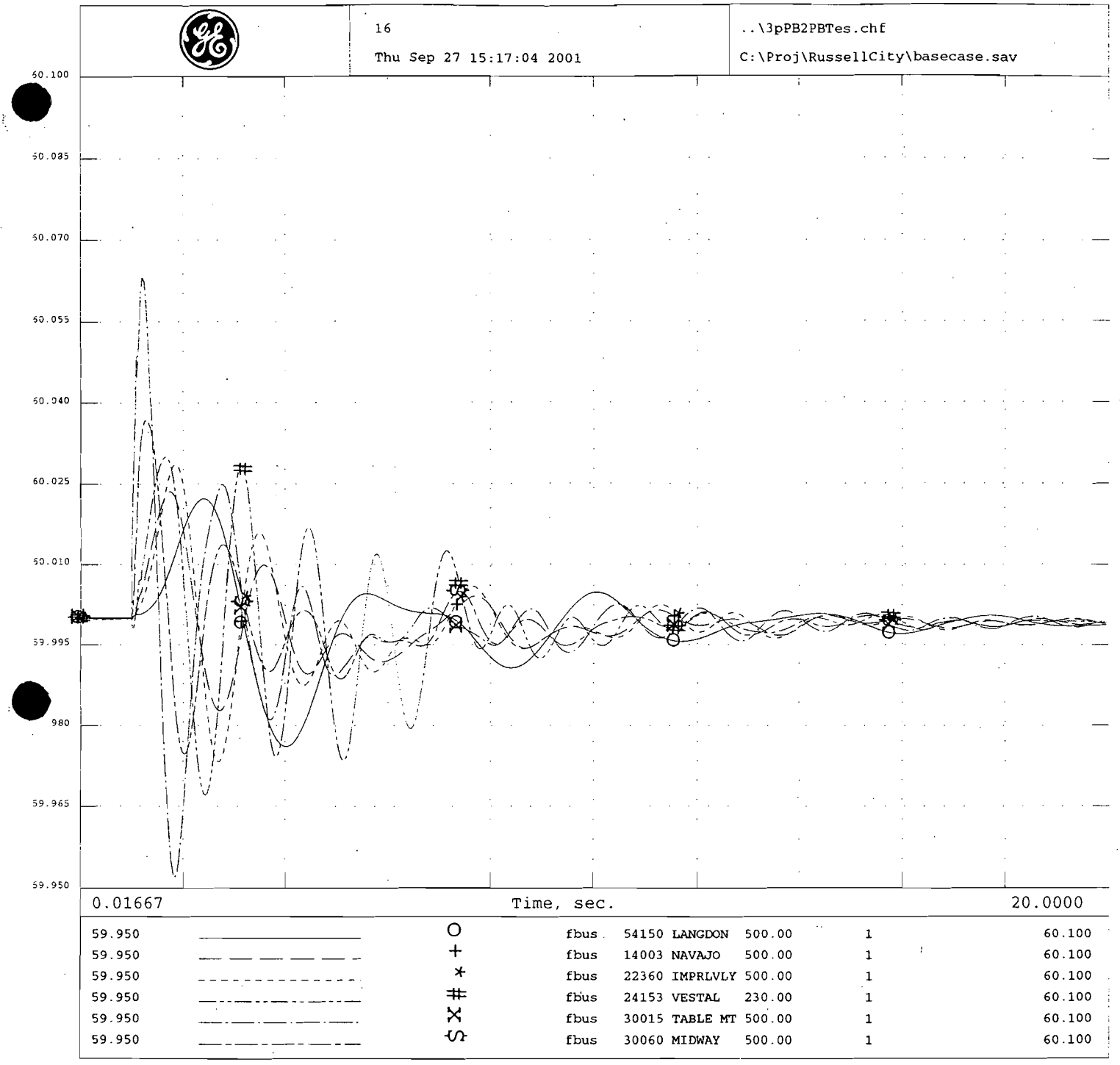

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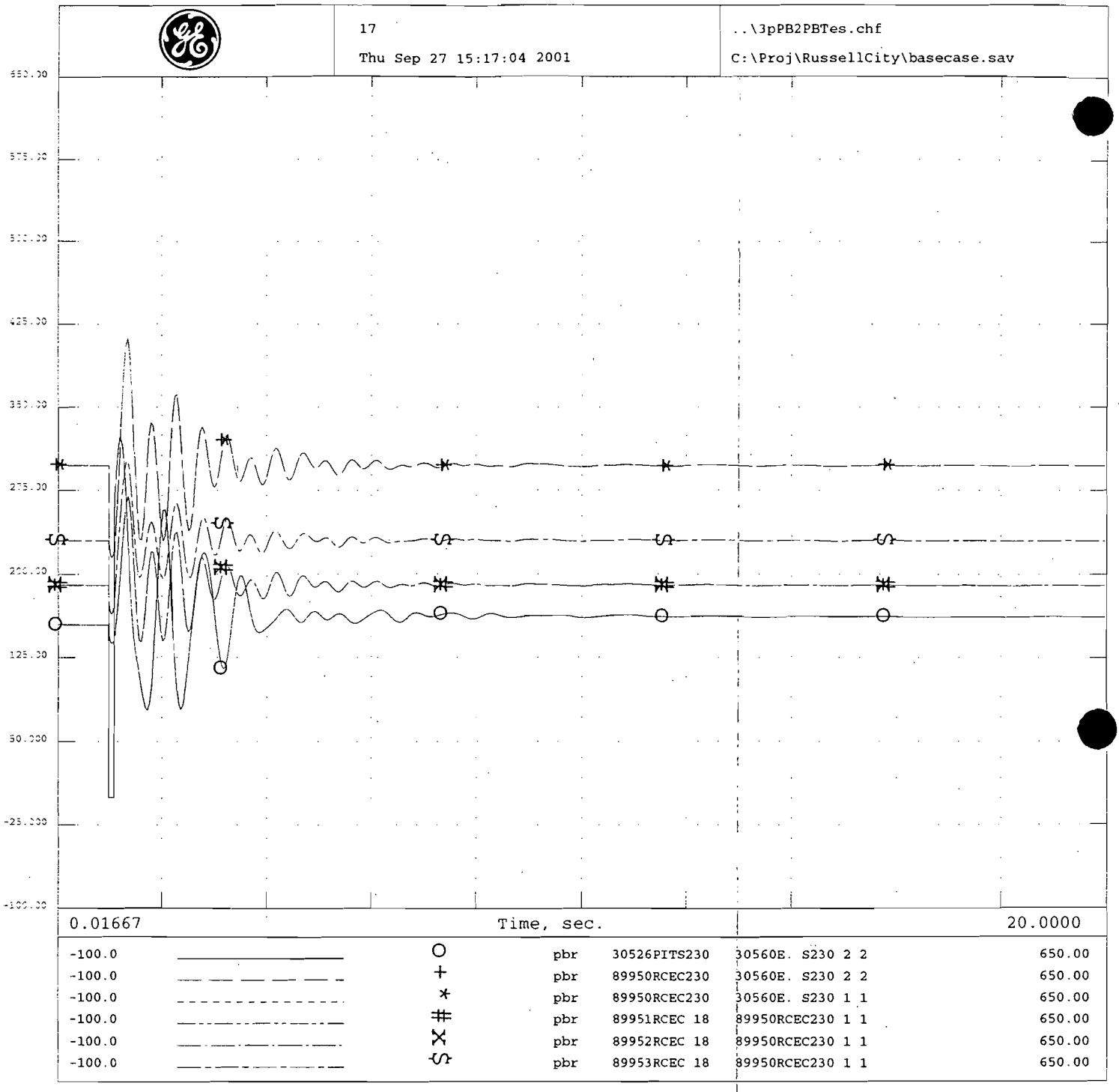

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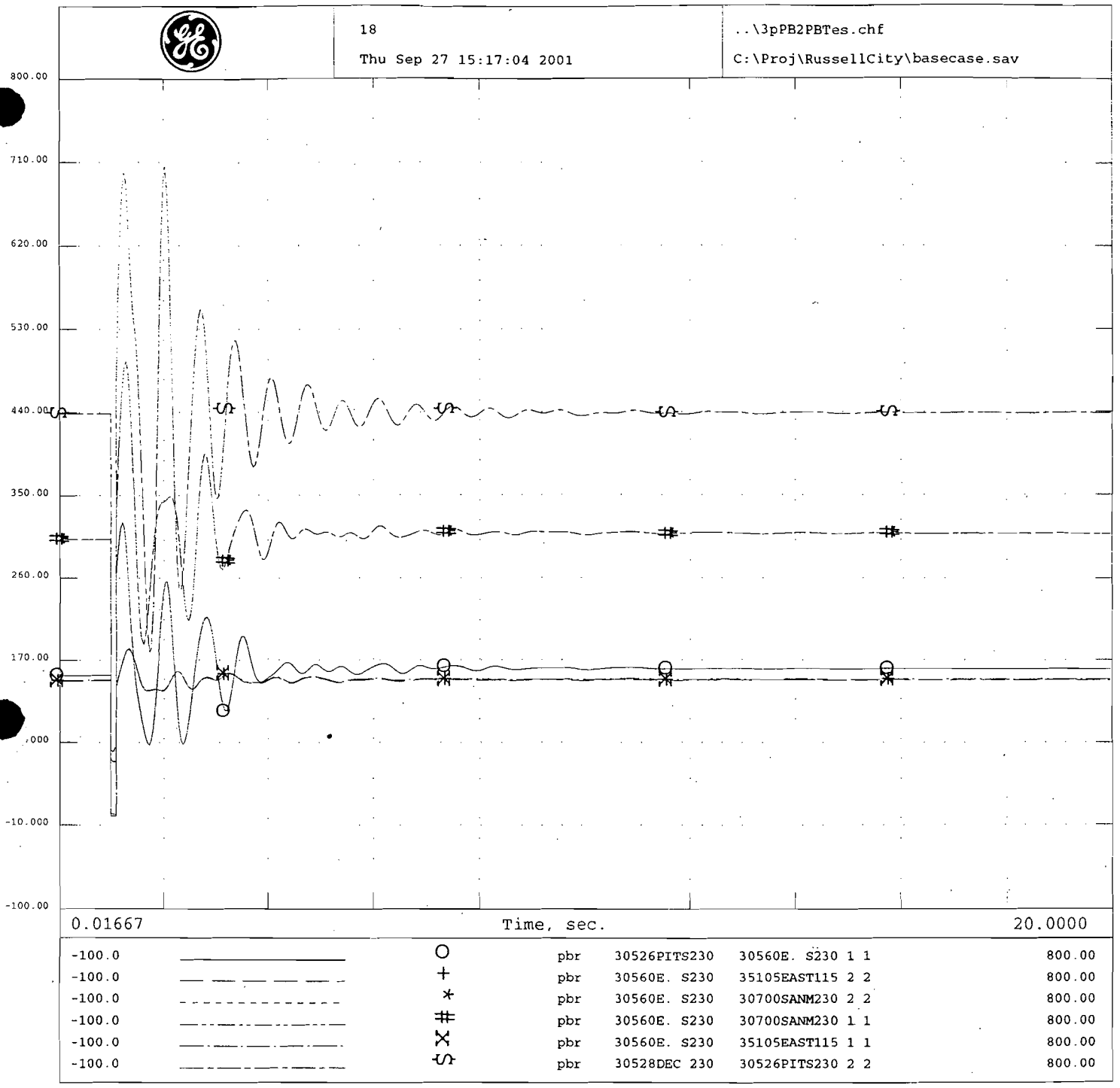

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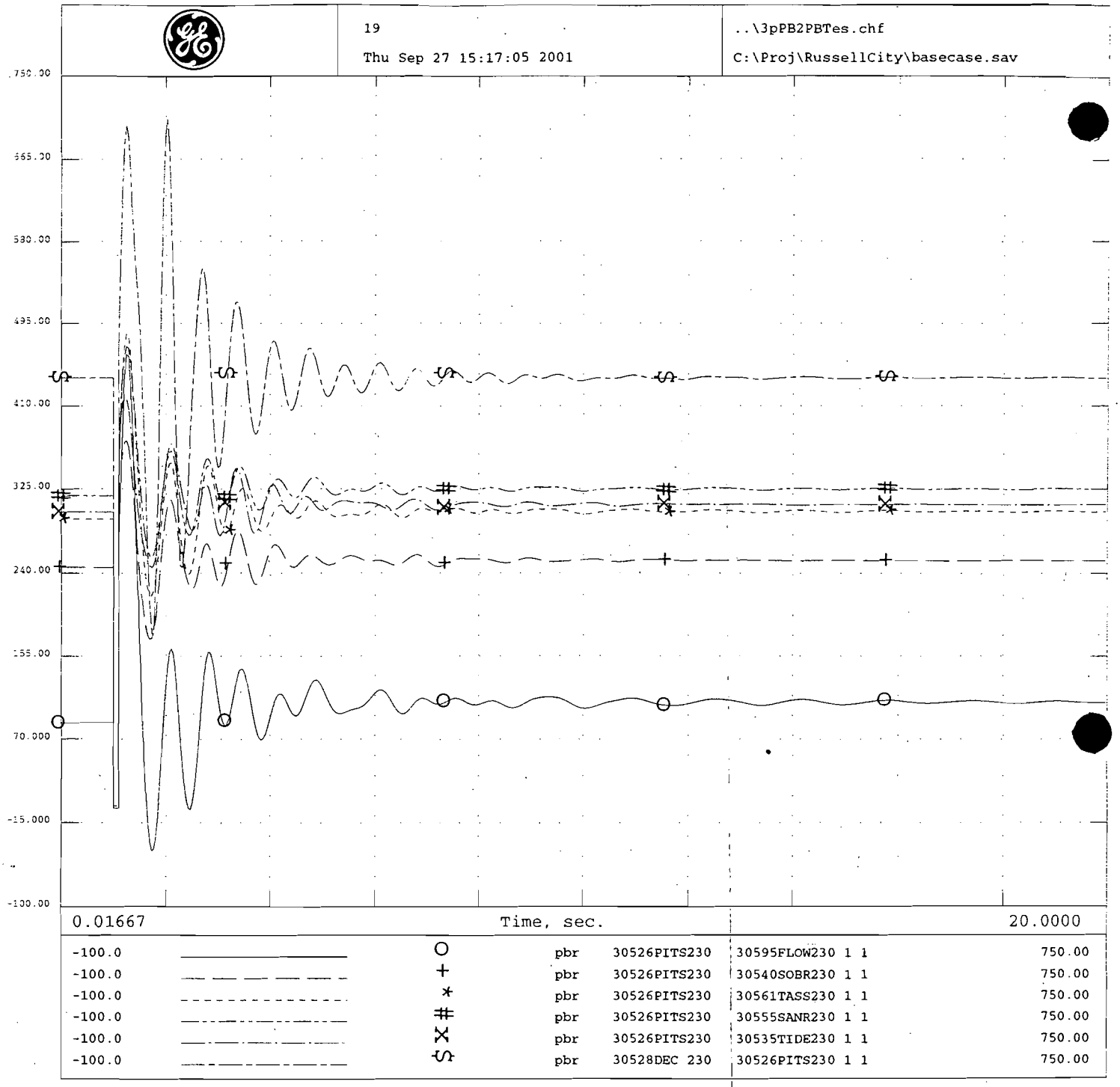

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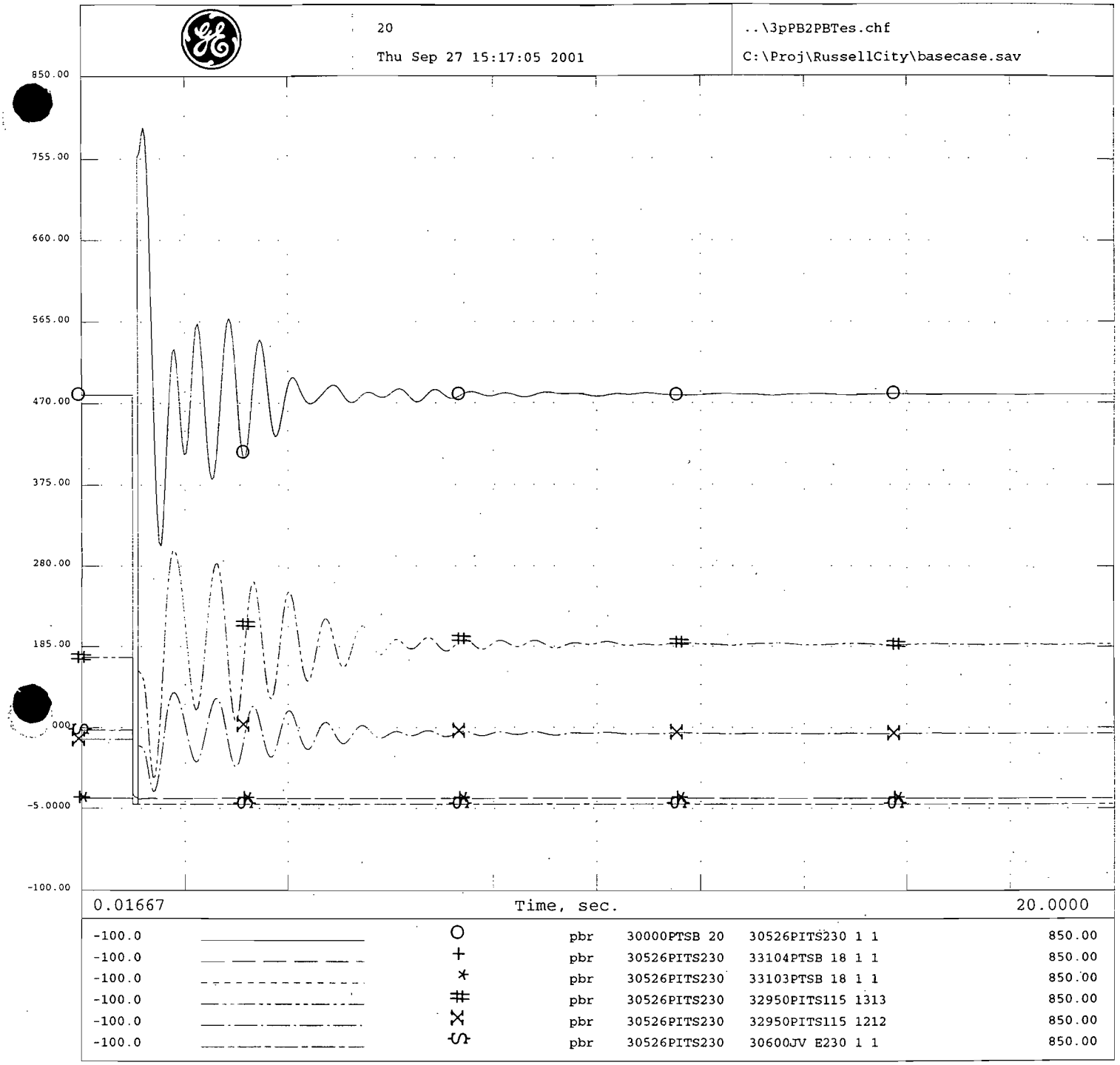

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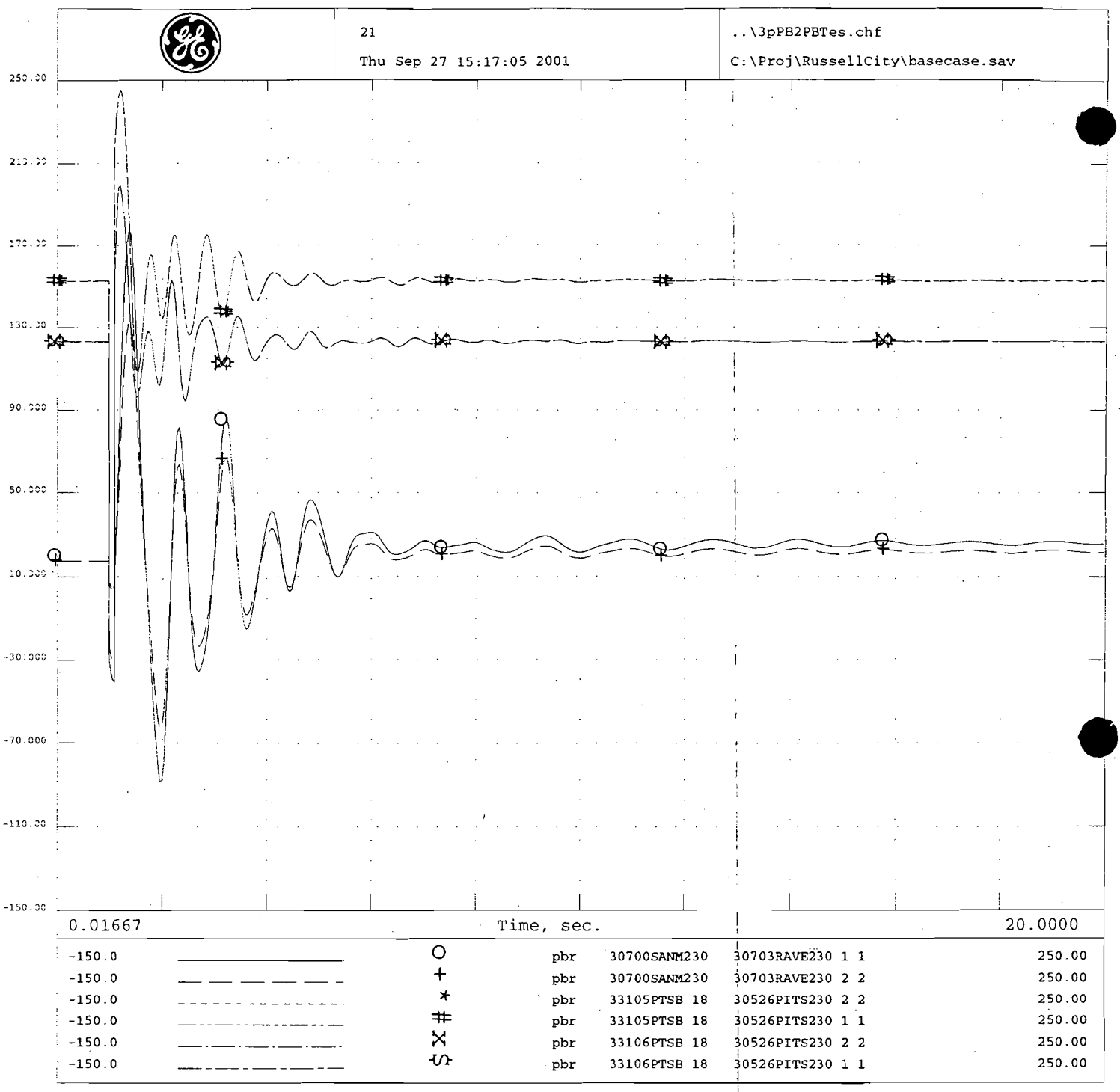

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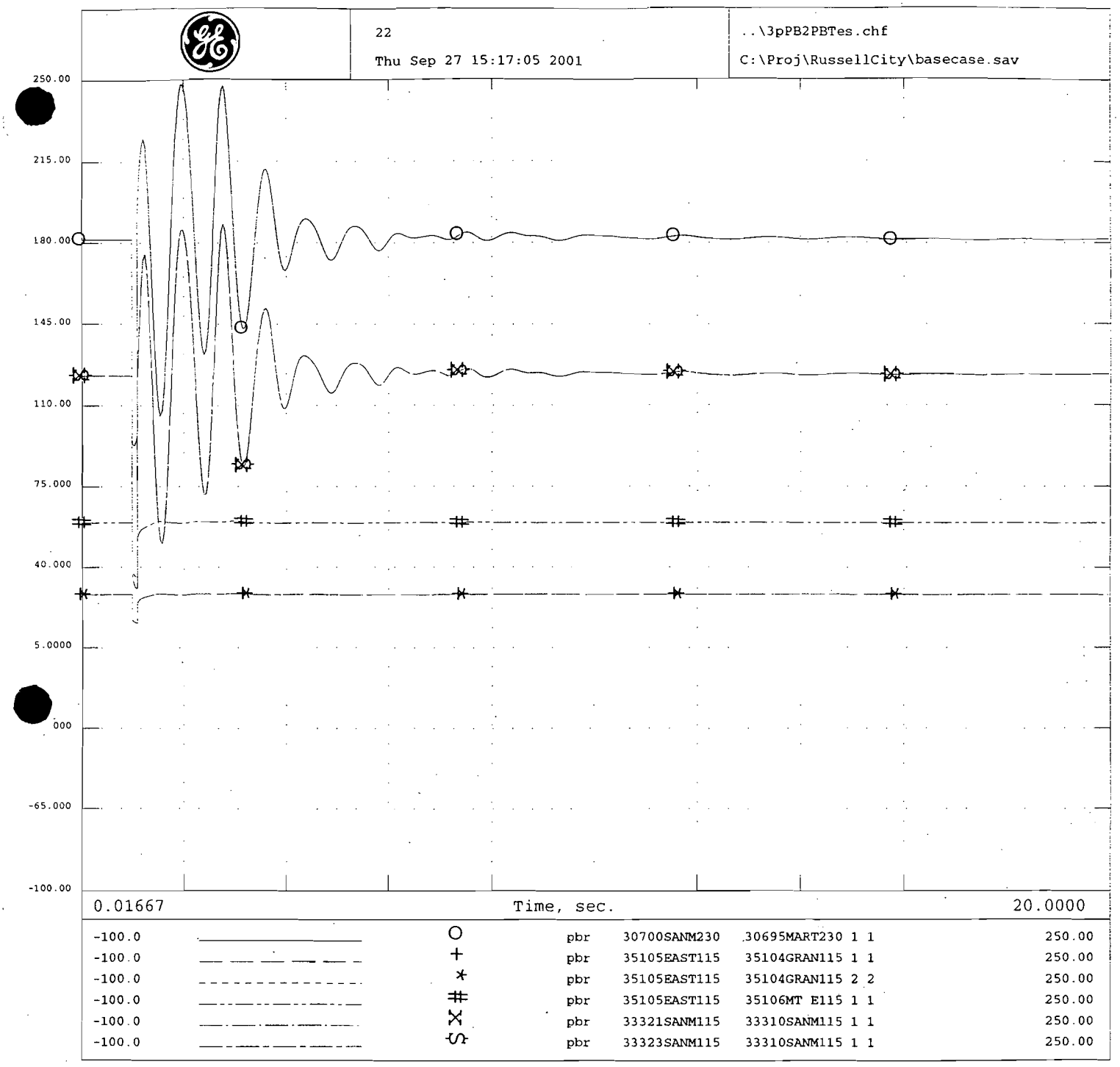

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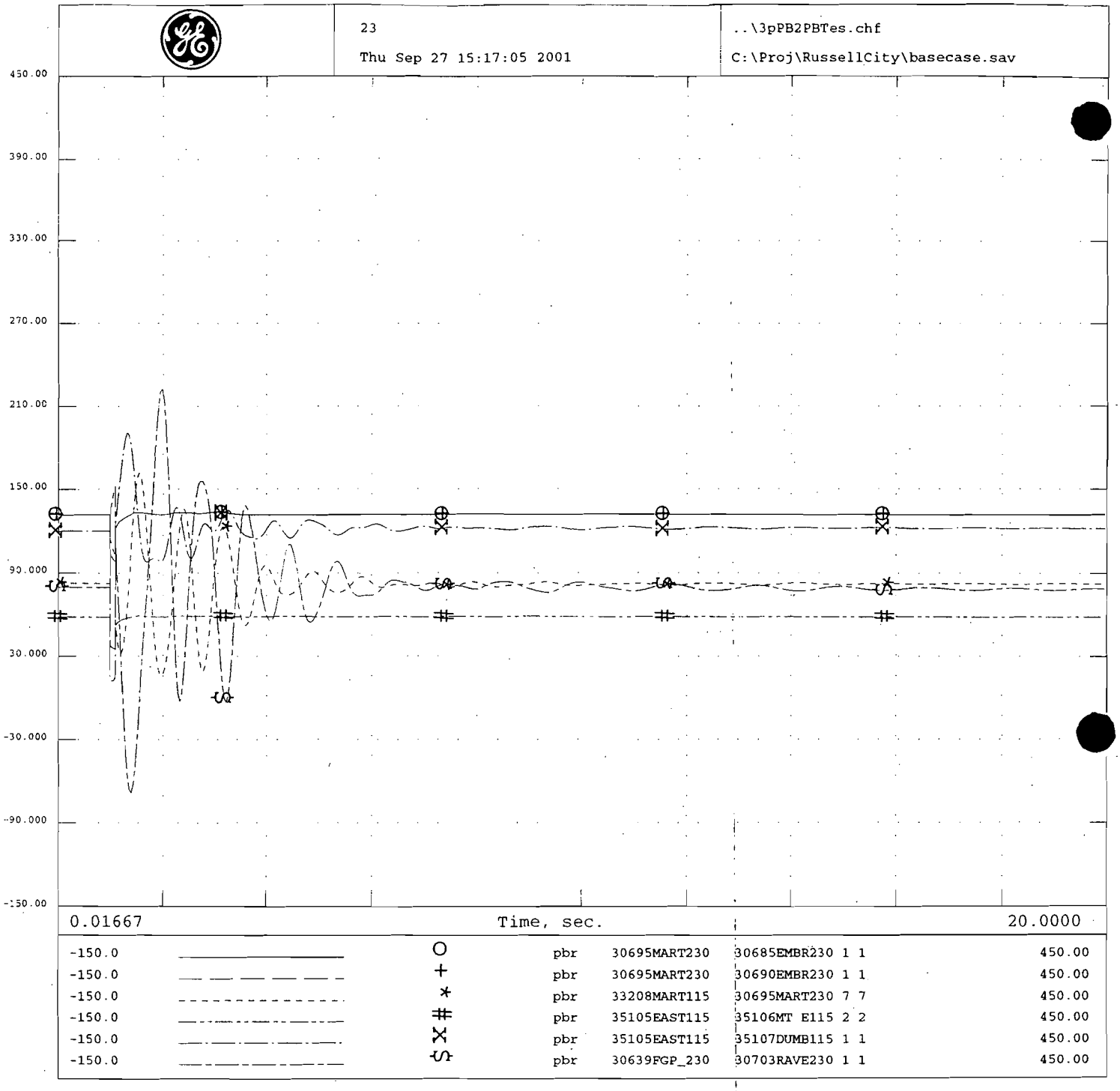

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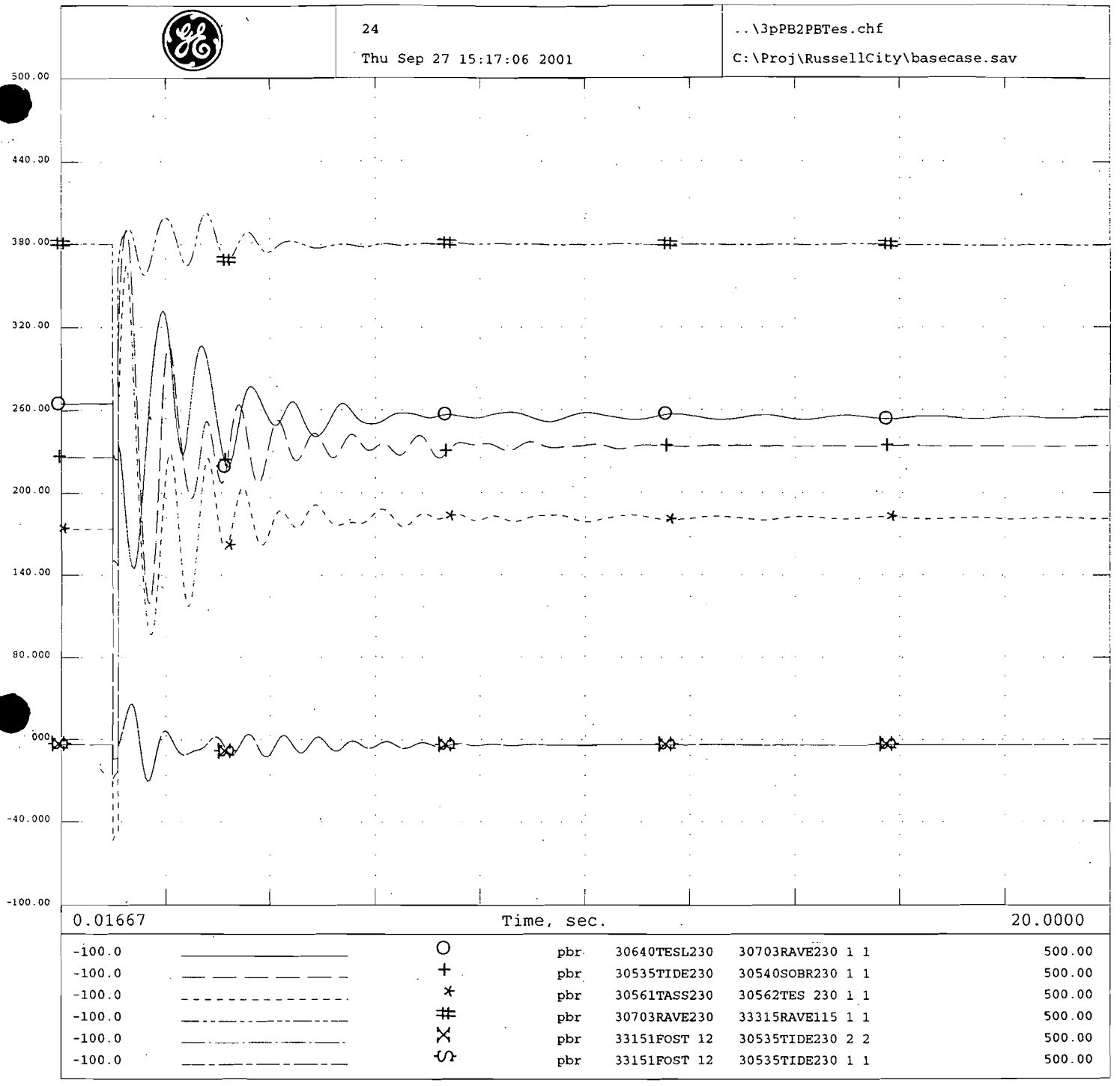

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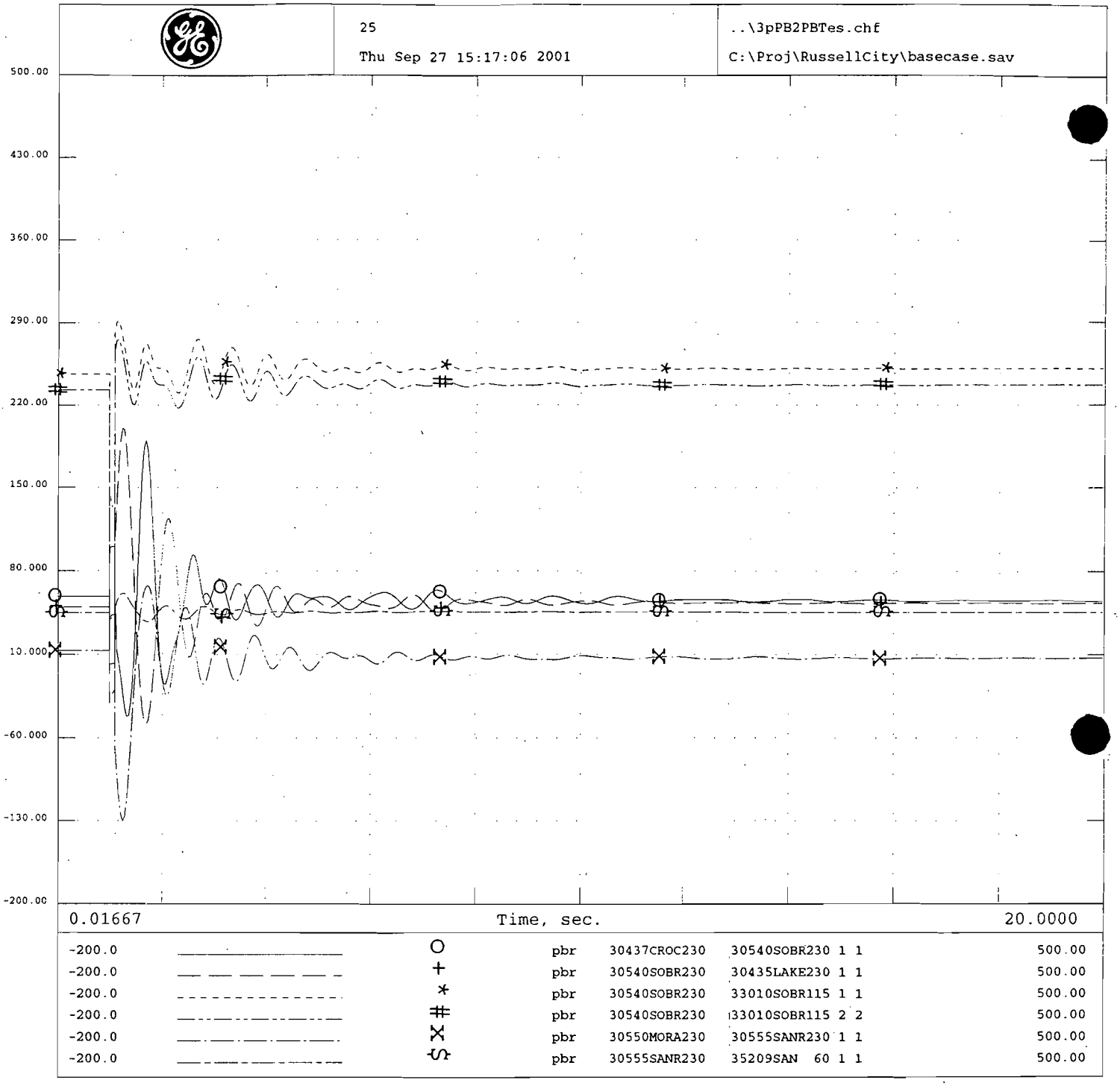

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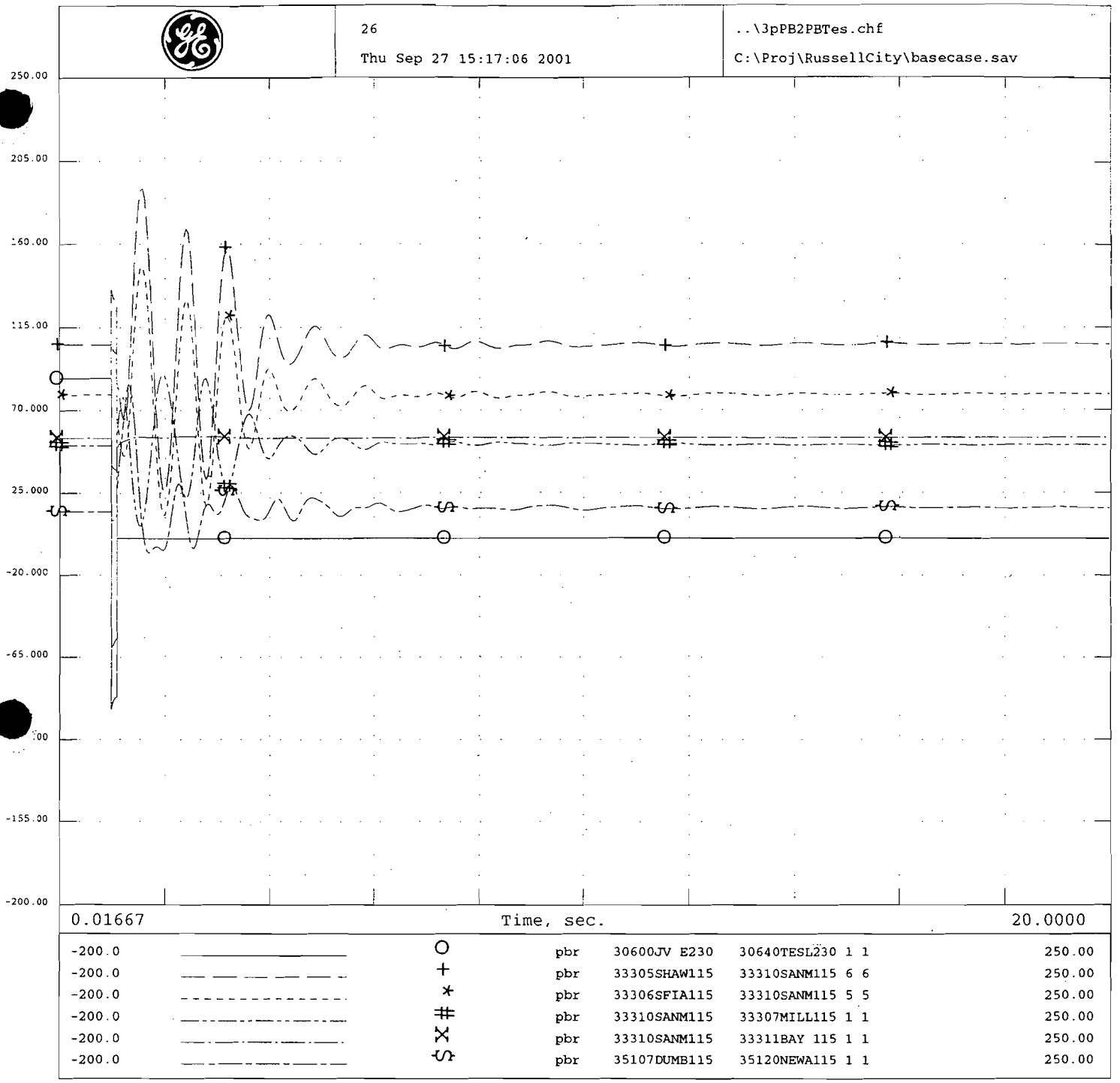

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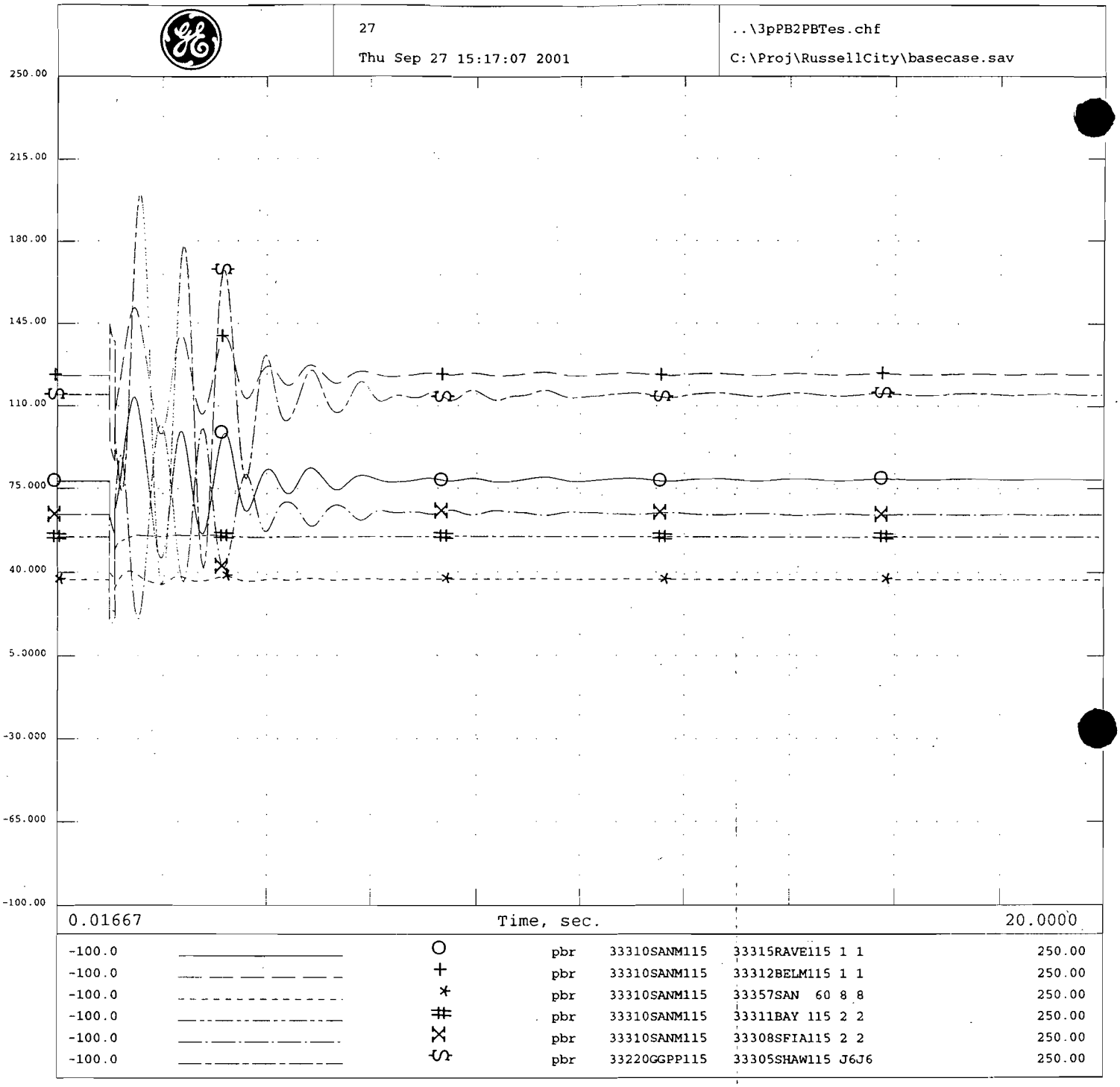

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3 phase 6 cycle fault at Pittsburg 230kV bus and trip Pittsburg-Tesla #2 230kV

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line
RUN  9
CC
CC   Fault RCEC 230kV bus
FB   0.0 "RCEC    " 230.
CC
CC   Clear fault at RCEC 230kV bus
CFB  6.0 "RCEC    " 230.
CC
CC   Trip the RCEC-East Shore #1 230kV line
DL  6.0 "RCEC    " 230.00 "E. SHORE" 230.00 "1 "
CC
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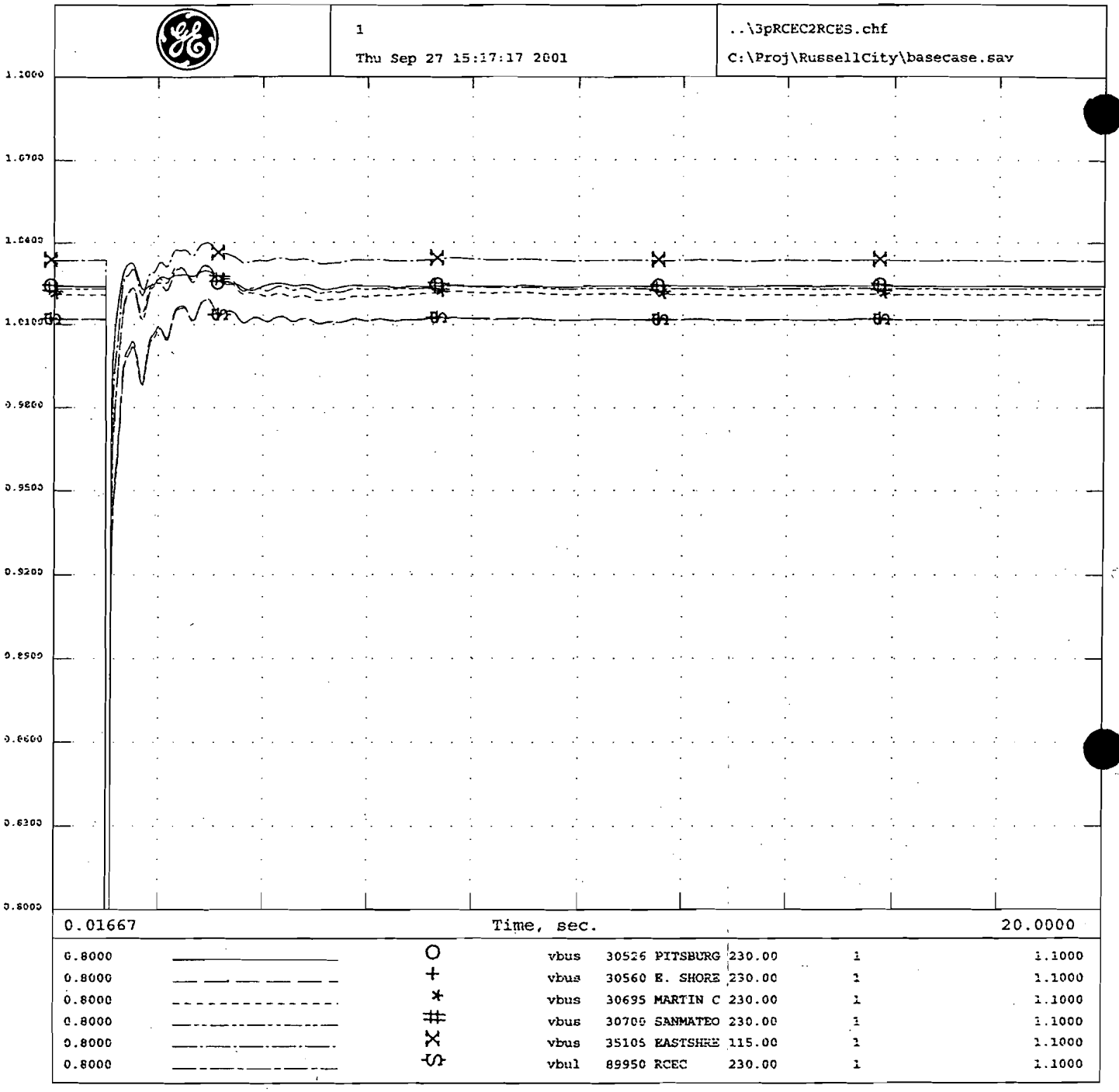
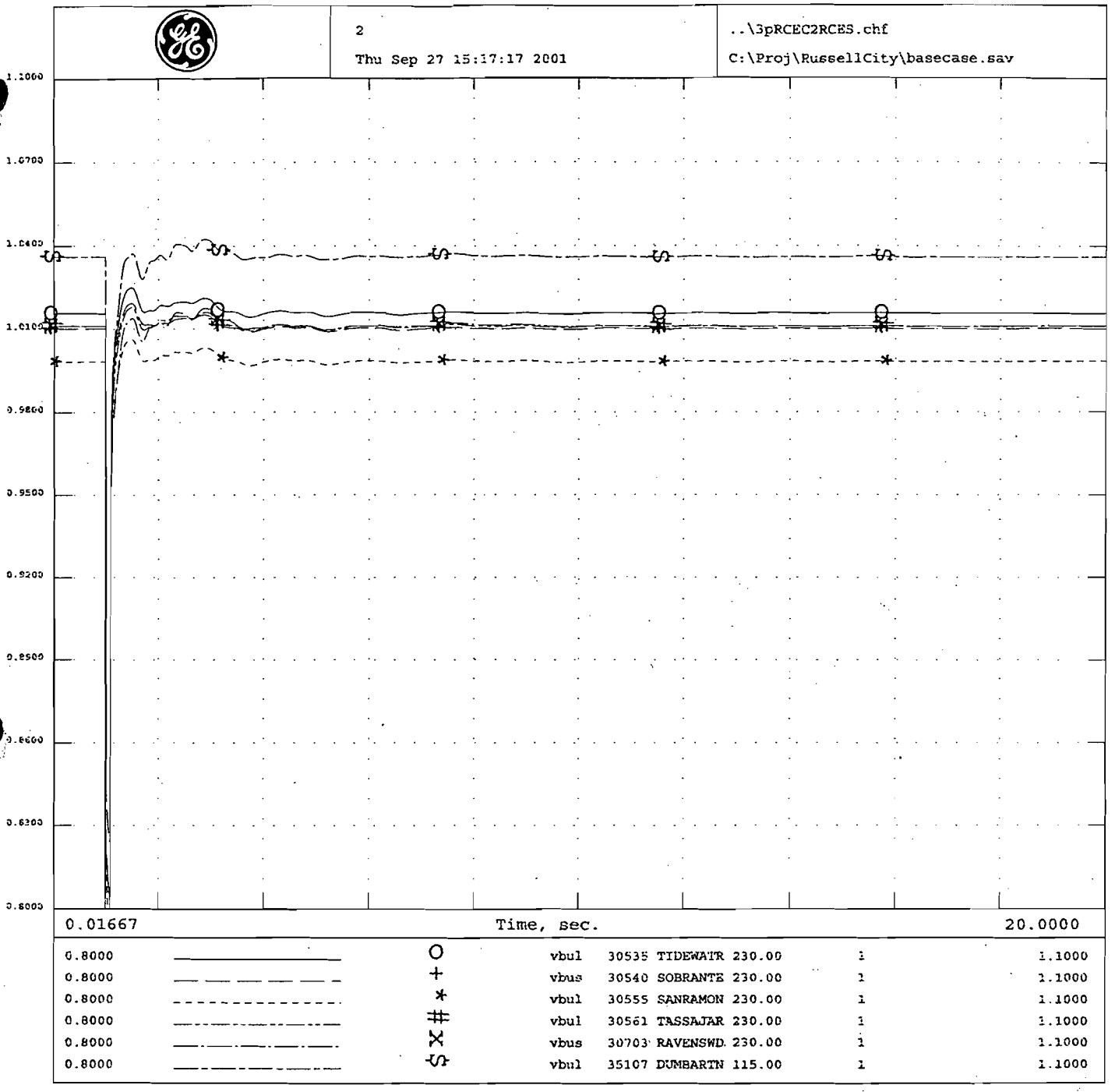


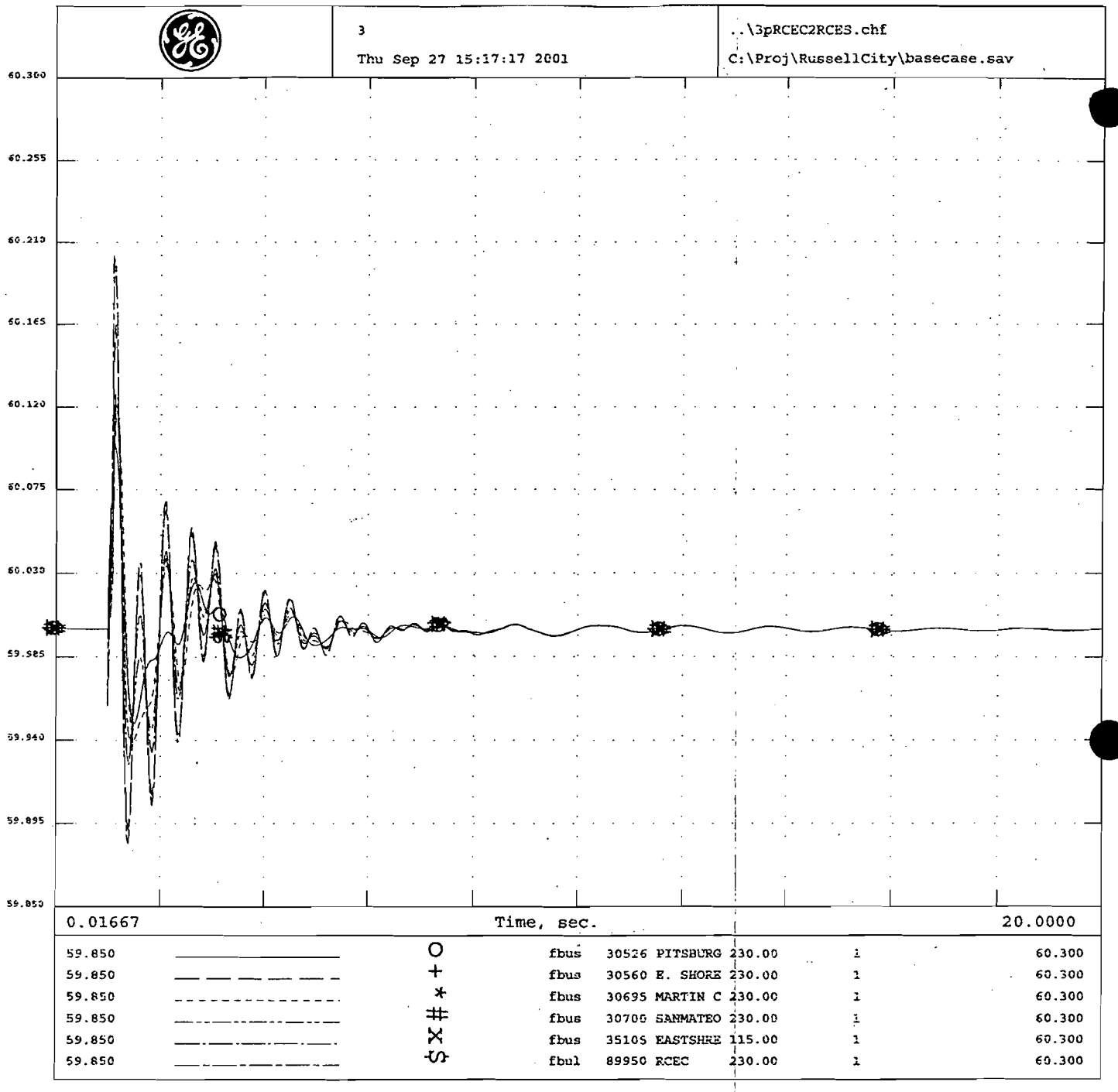
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



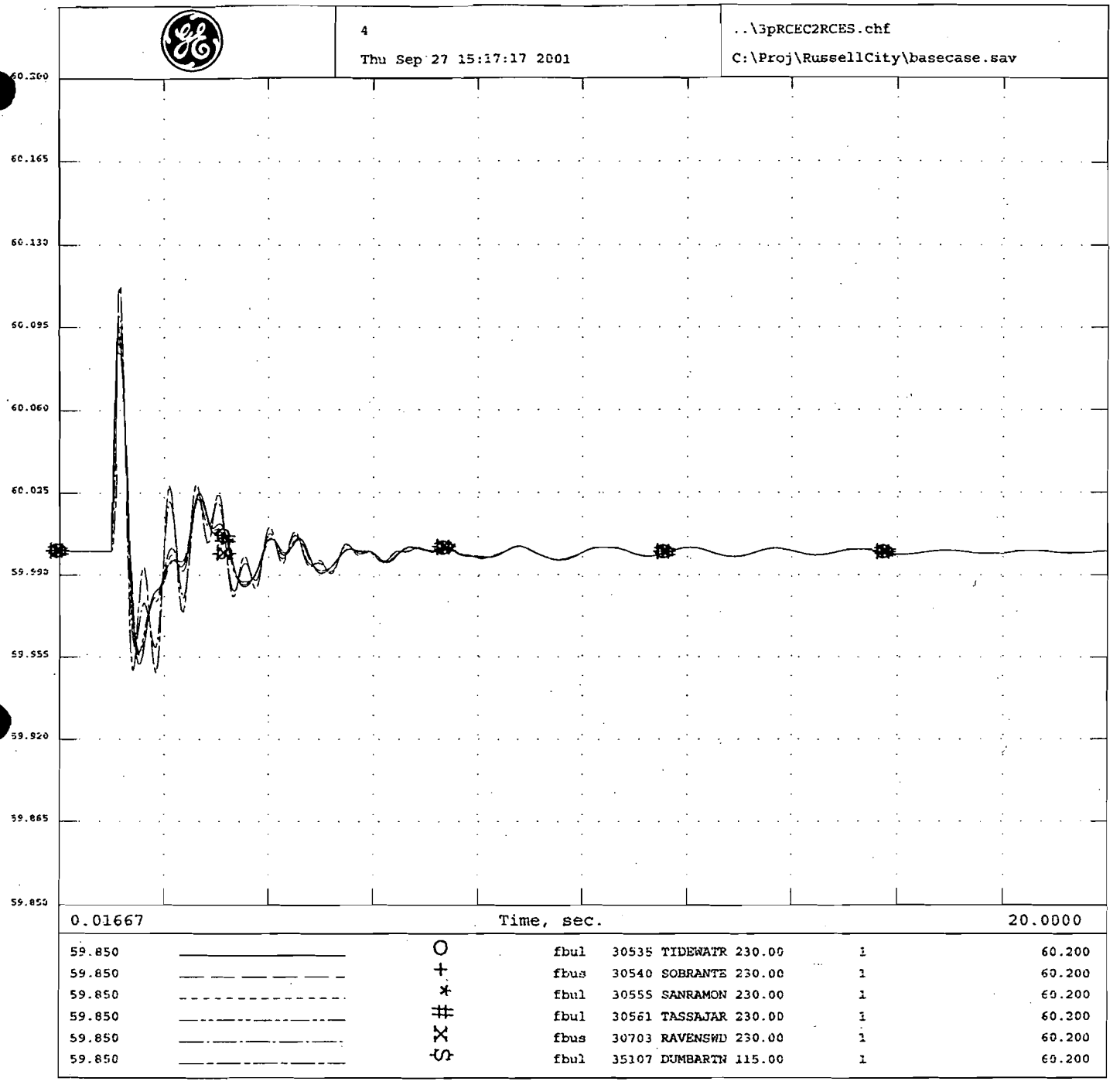
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



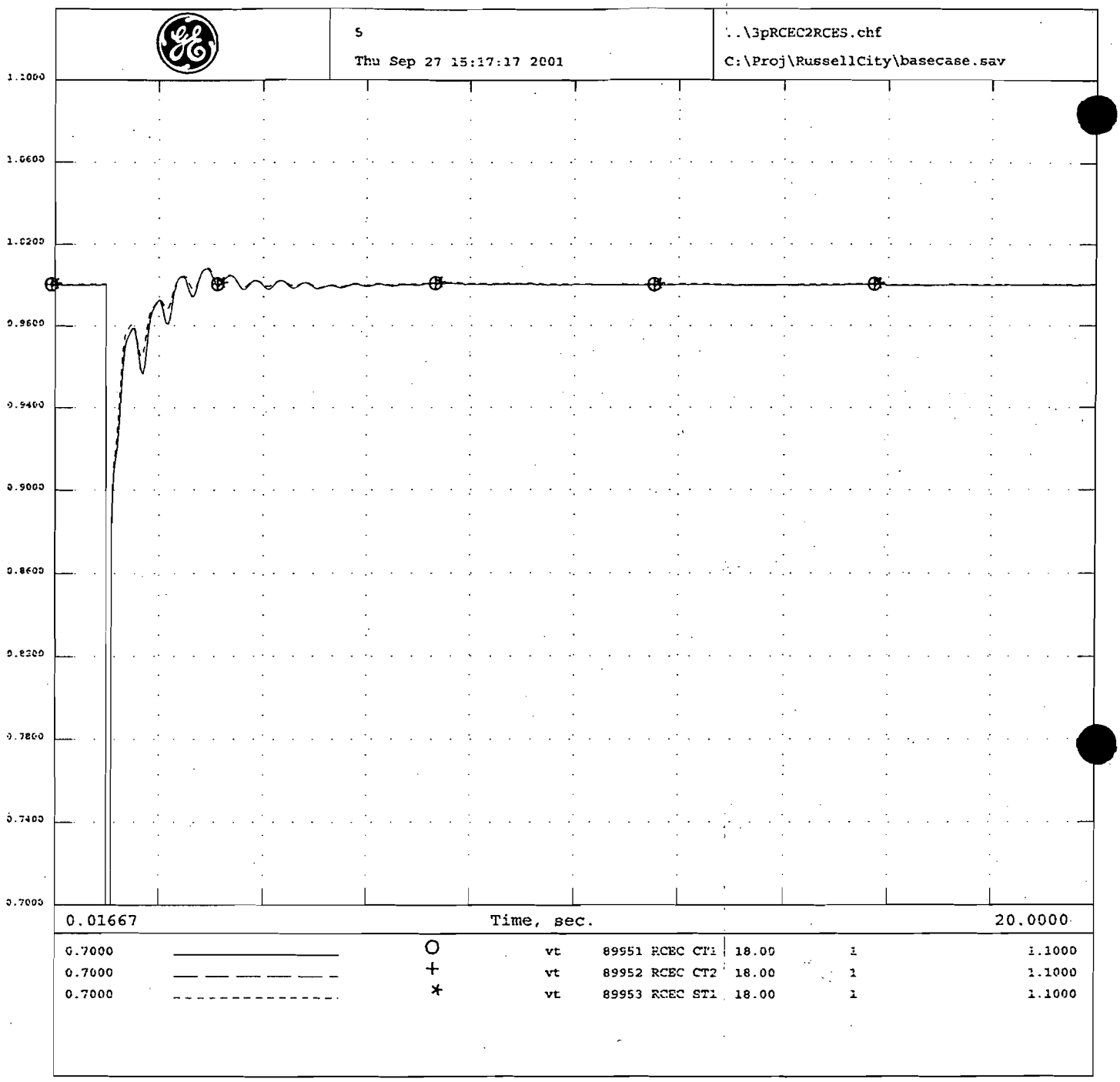
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



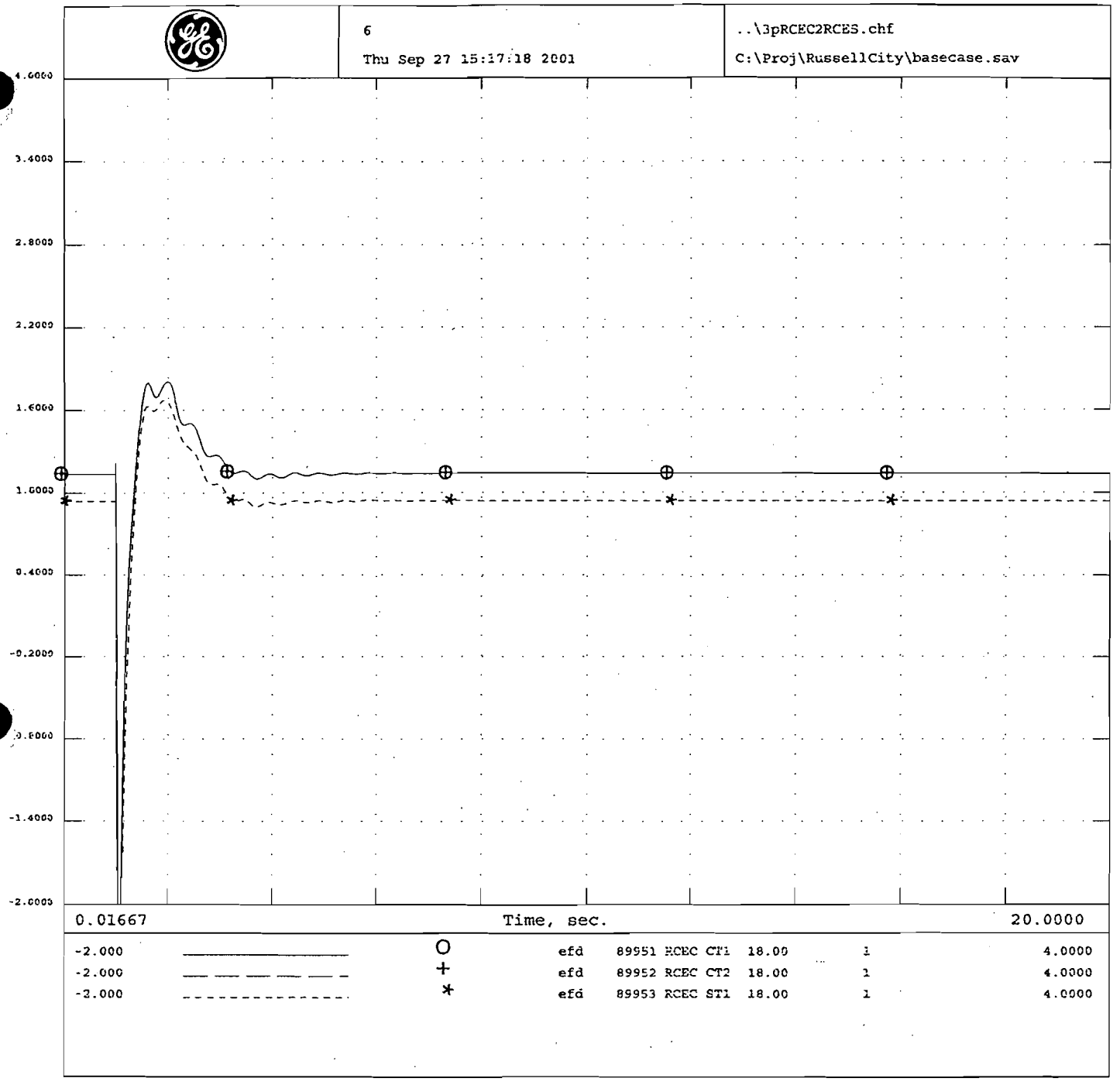
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



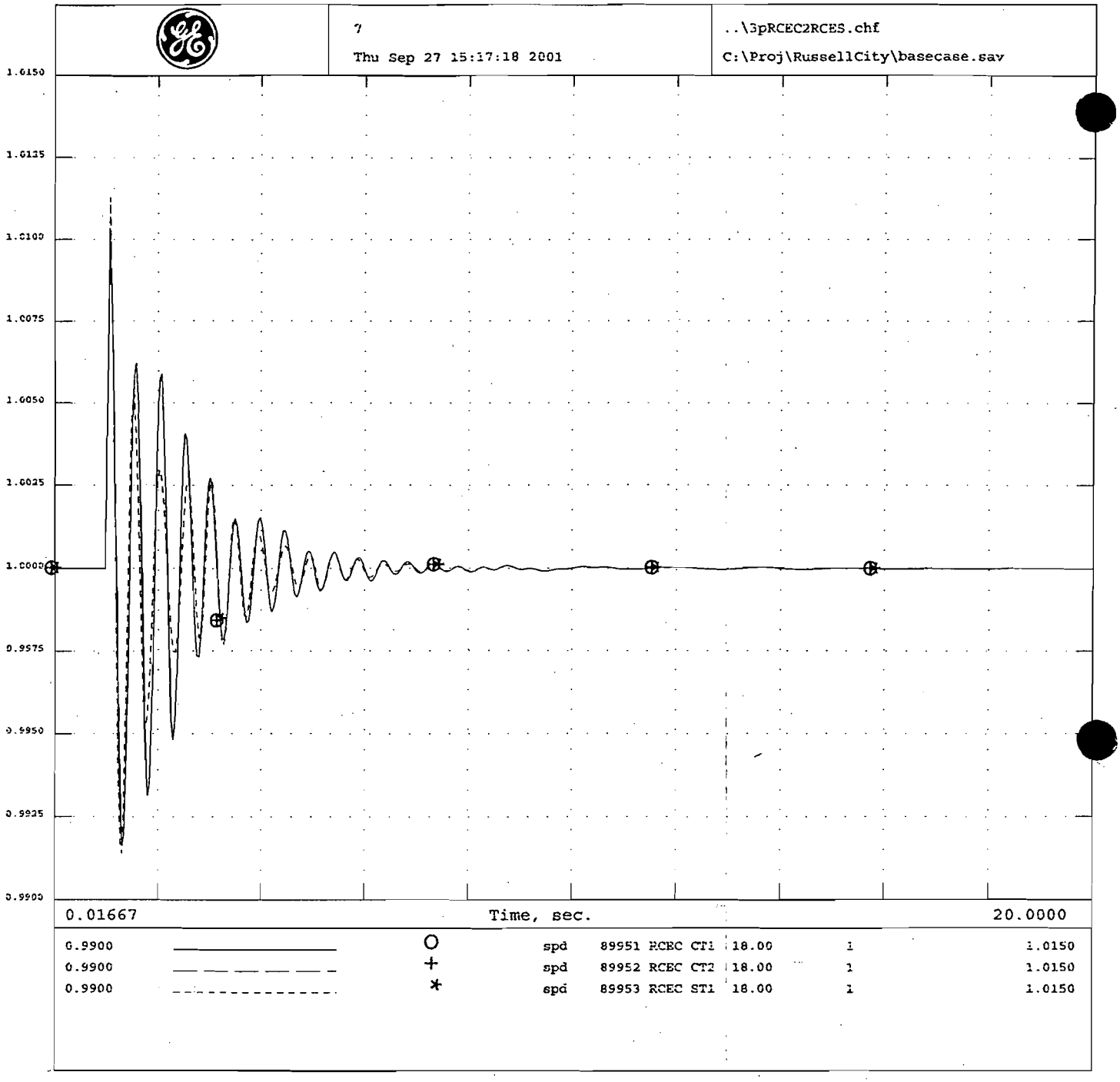
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



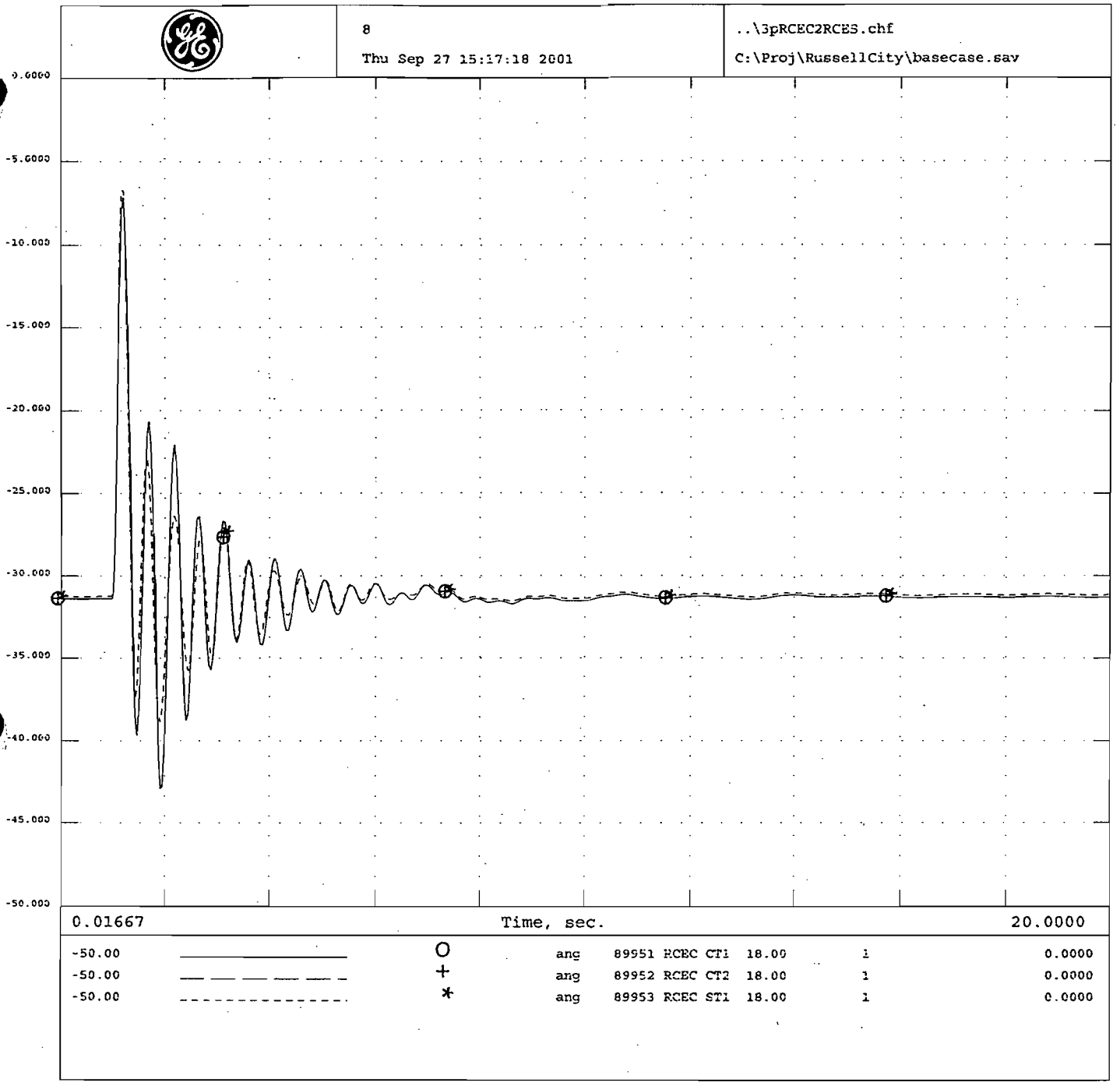
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



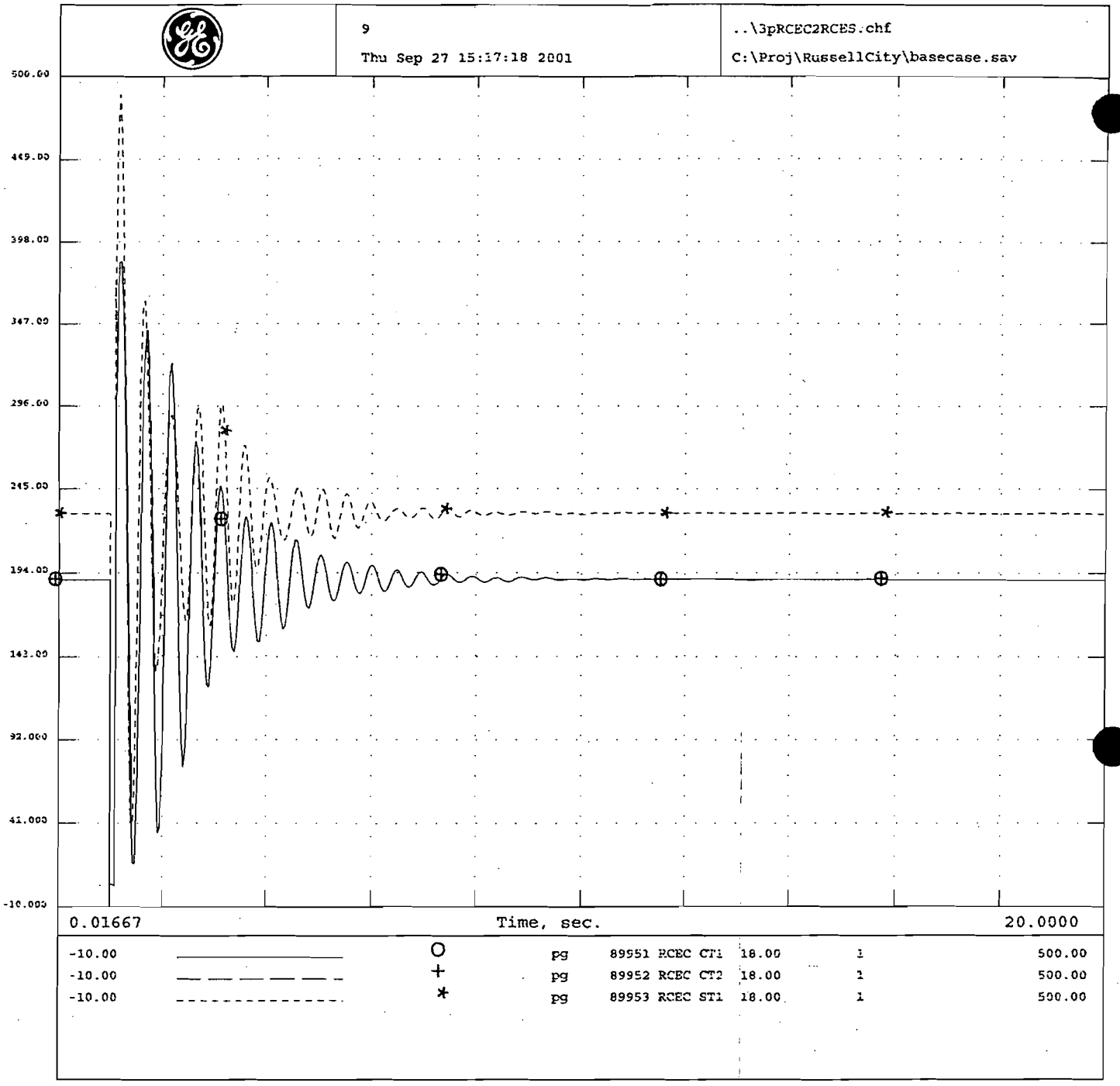
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Speed



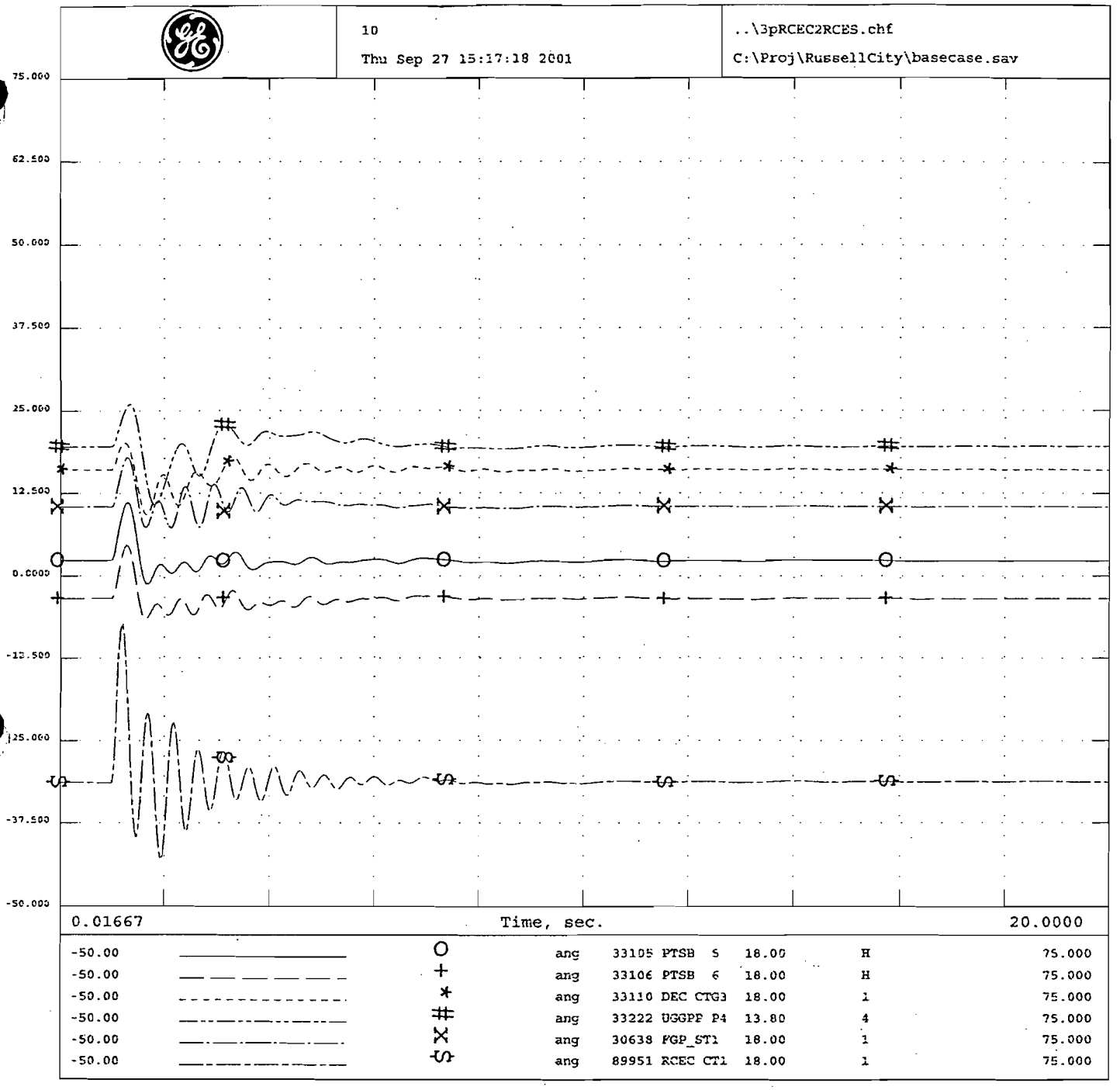
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Rotor Angle



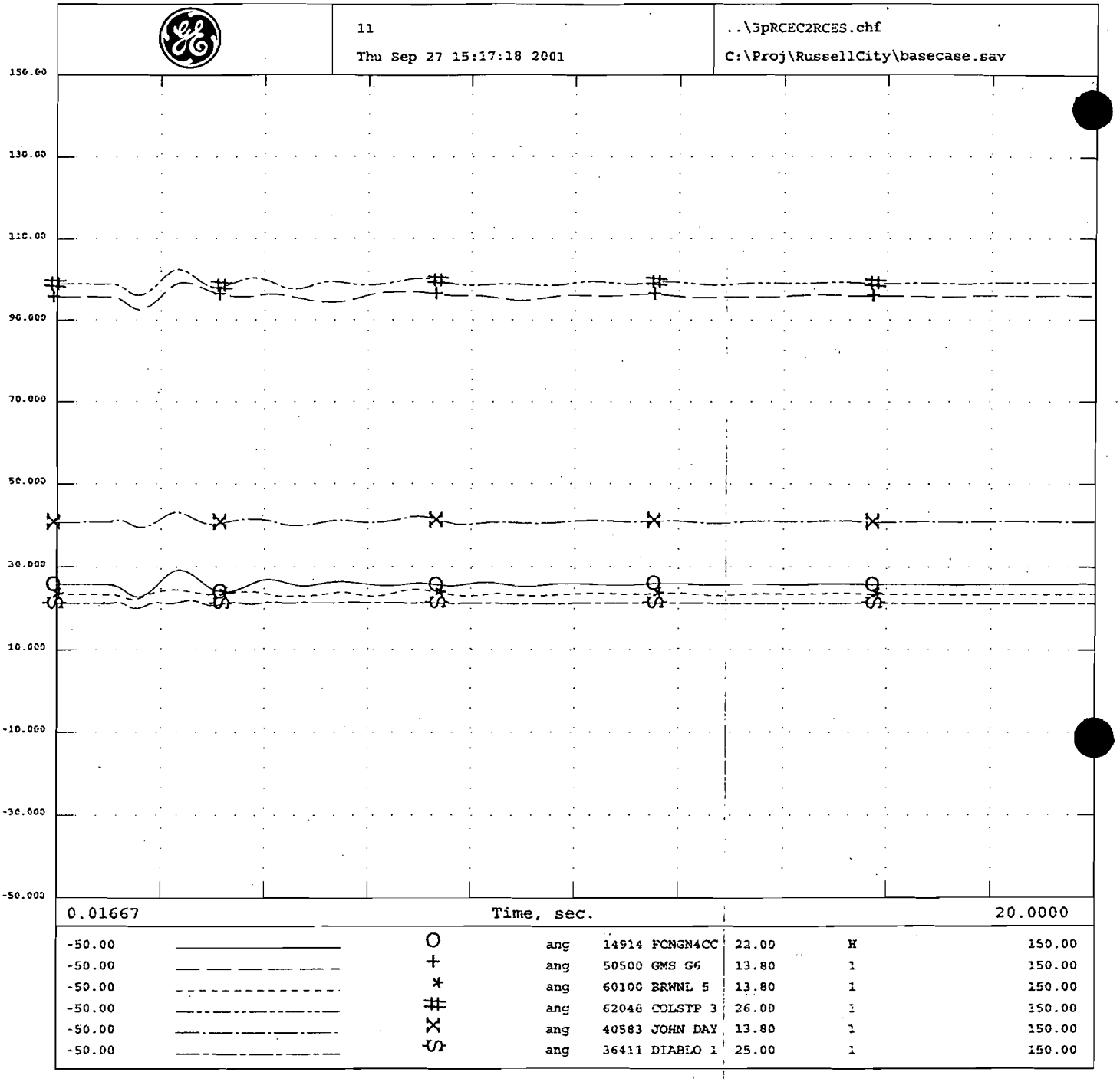
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Power



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Local Rotor Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
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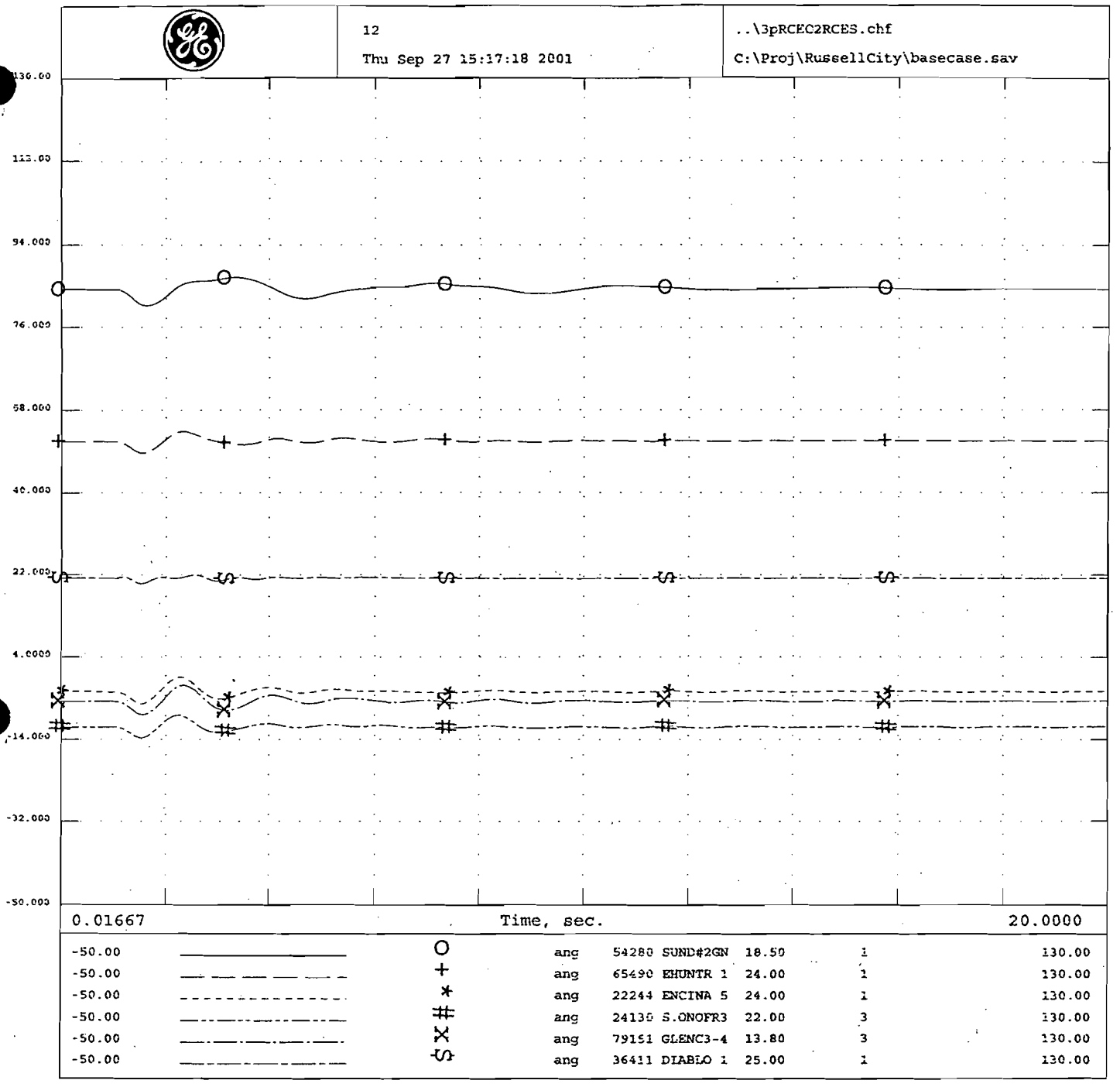
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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RCEC @ 610MW
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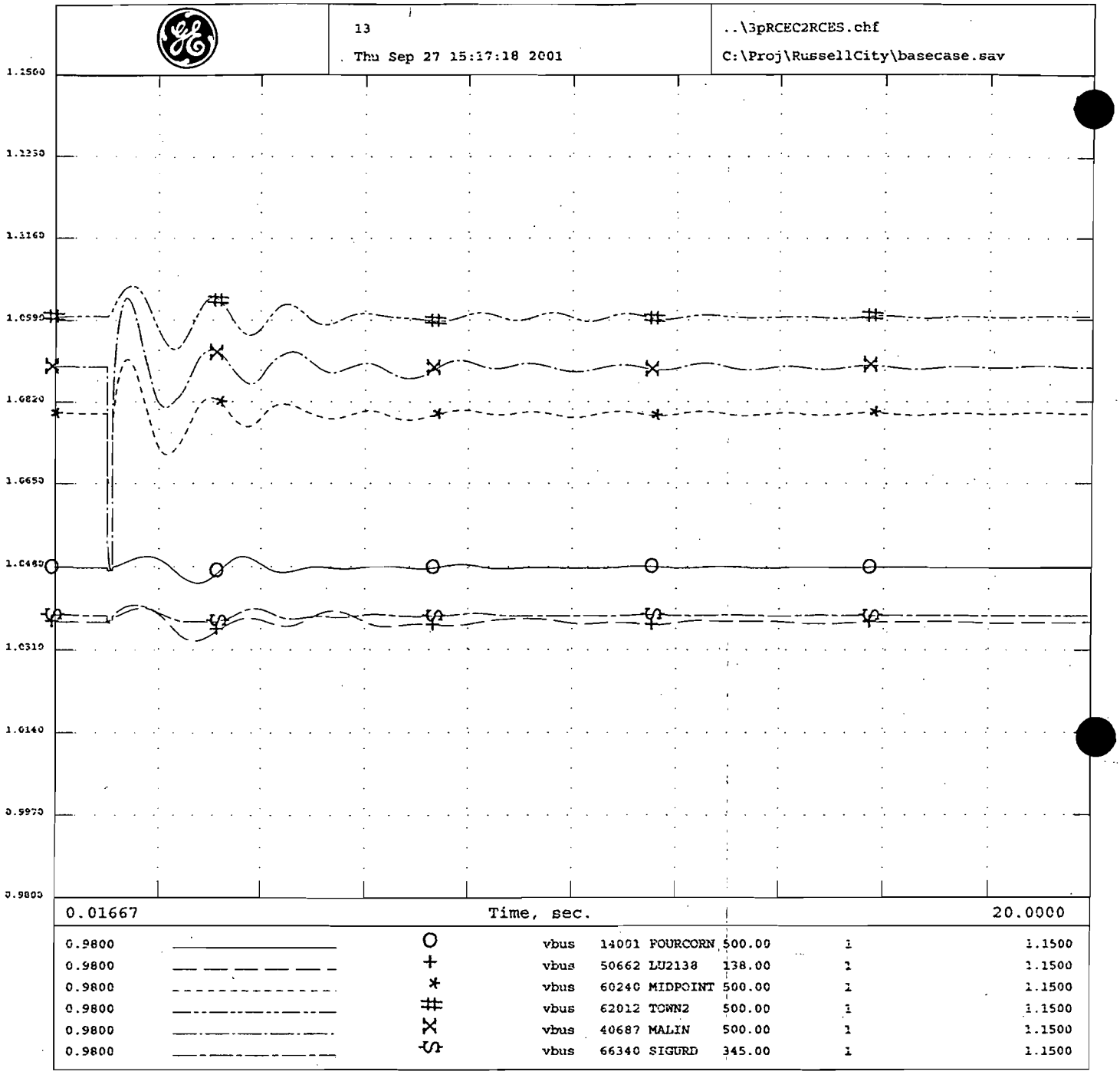
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Angle Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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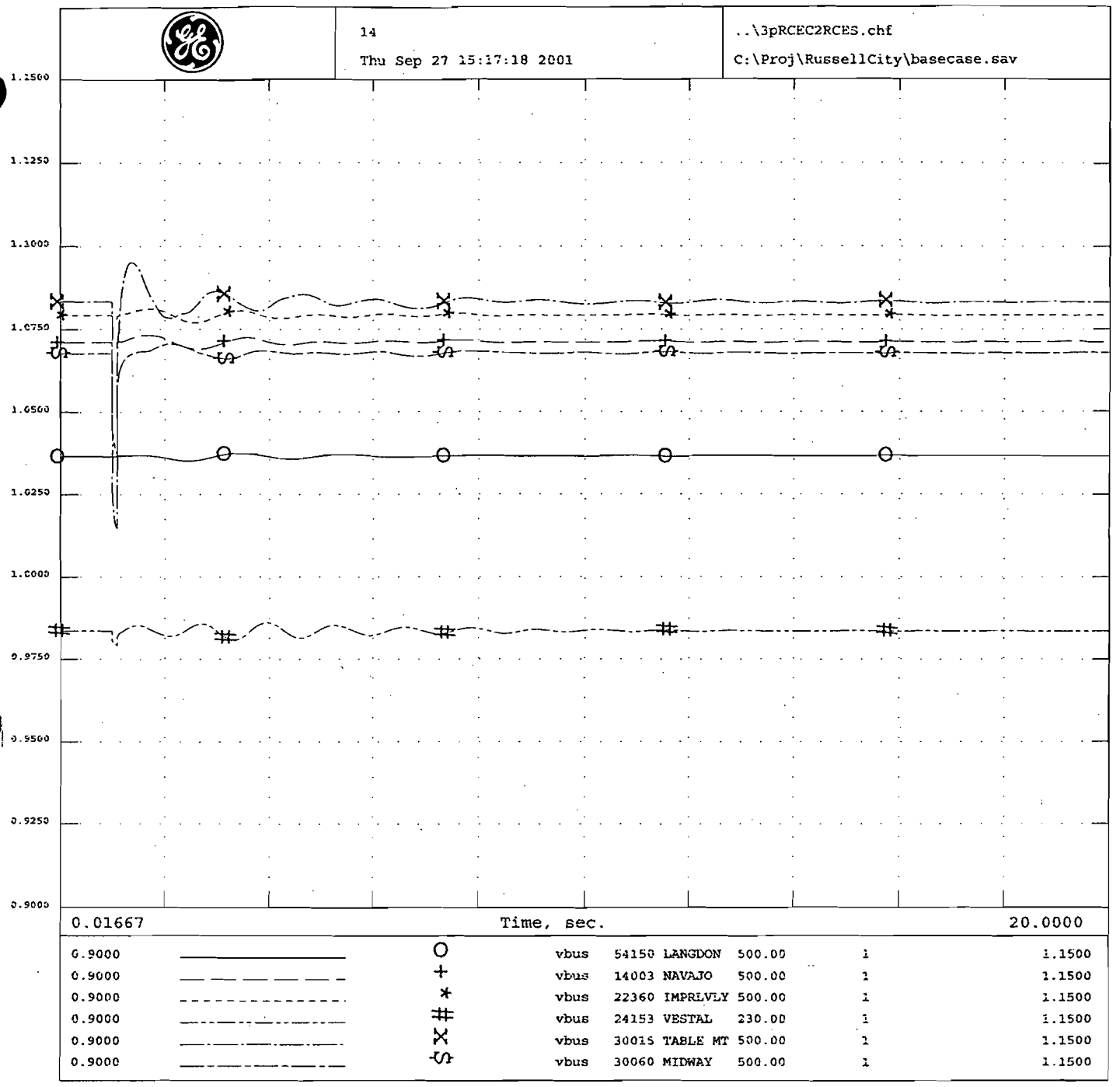
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



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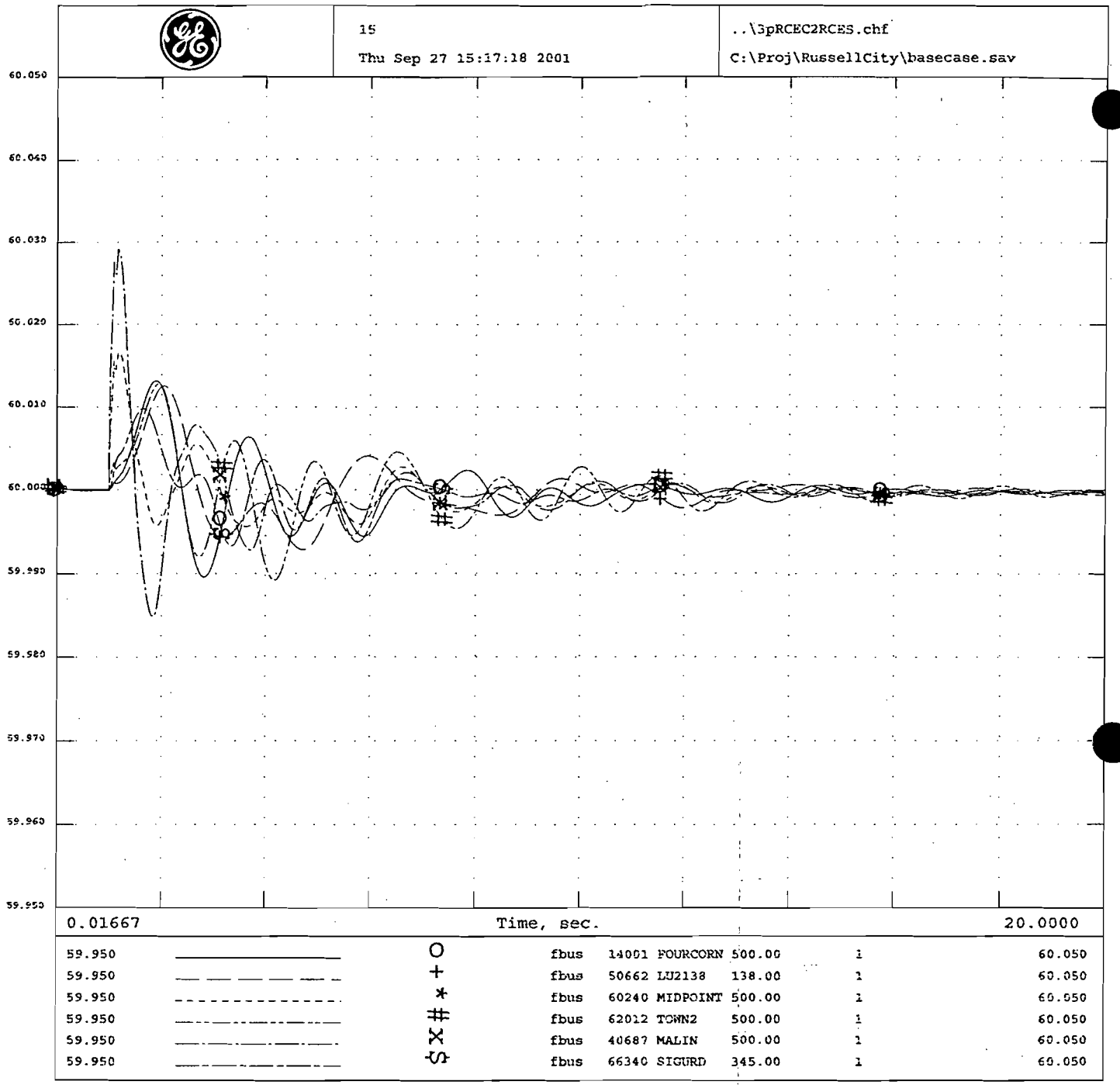
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Voltage Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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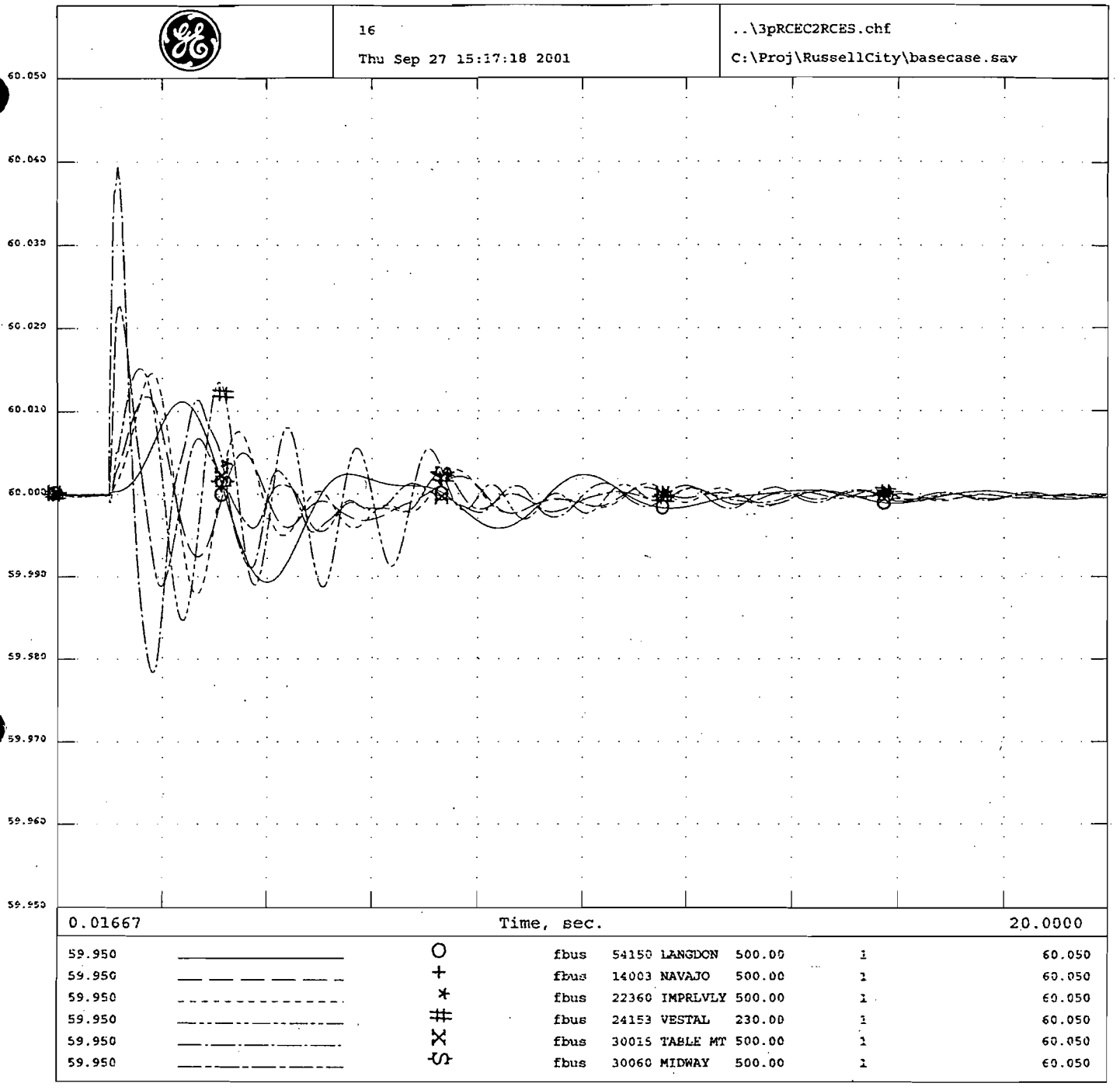
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
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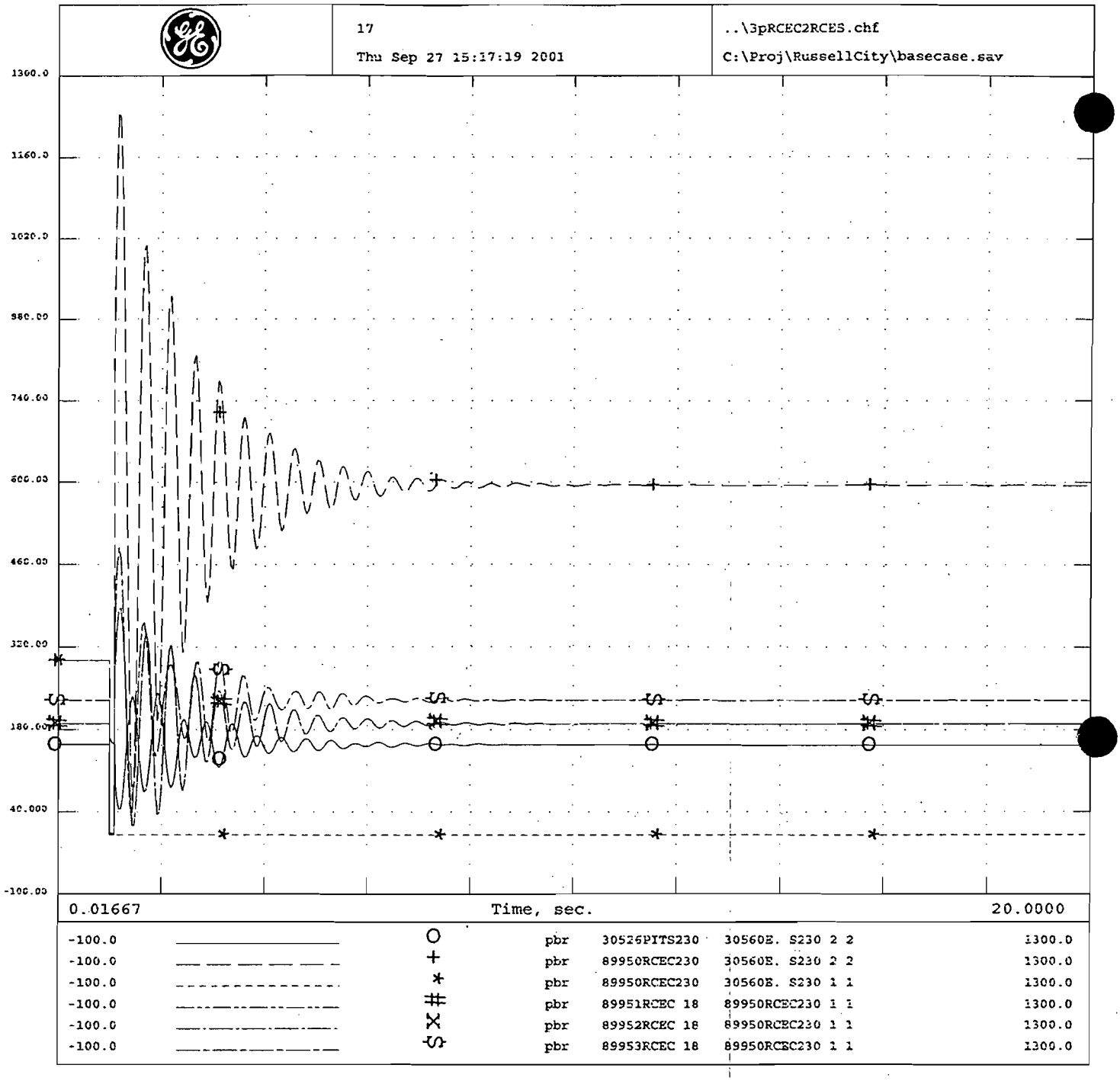
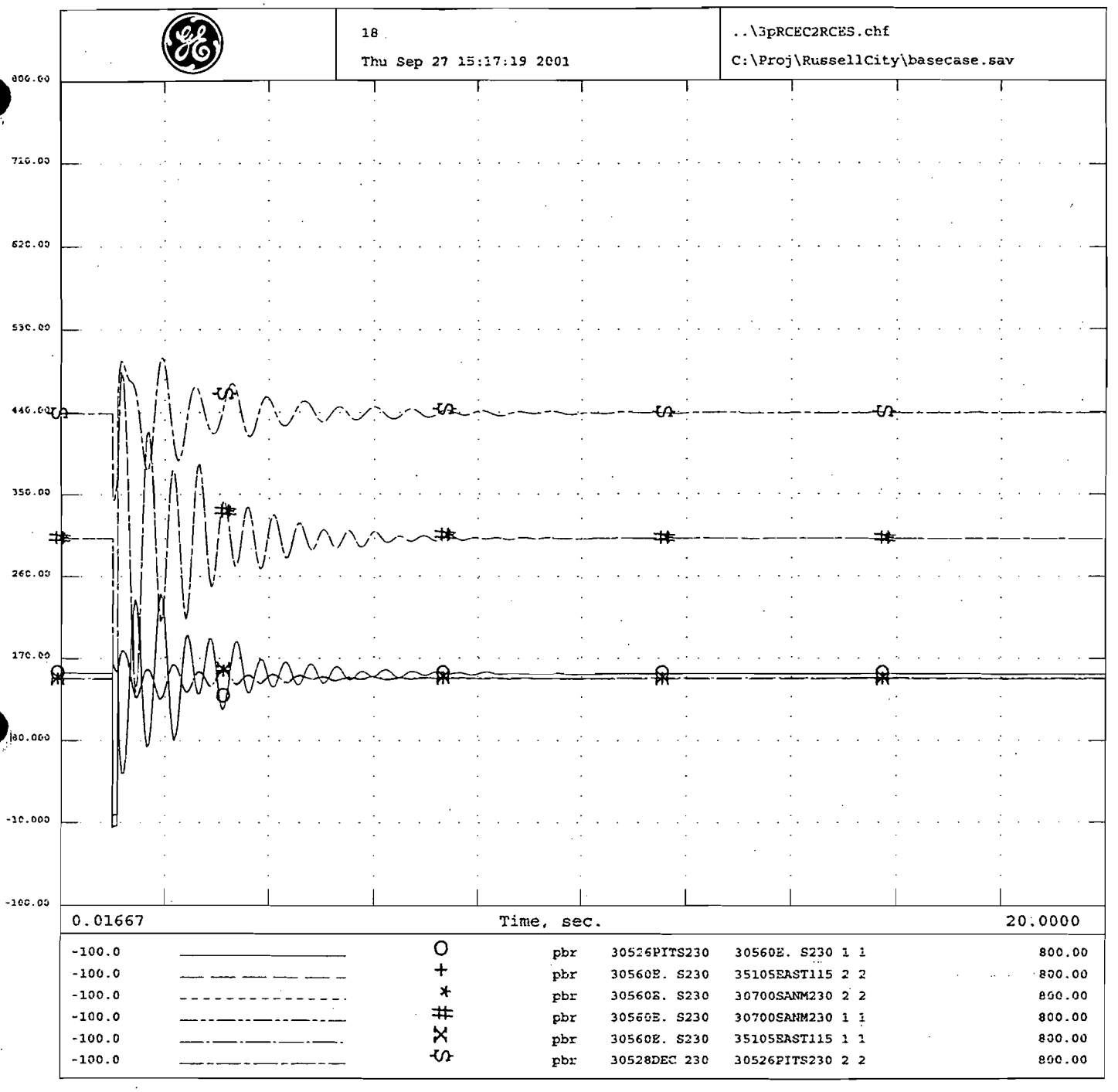
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected WSCC Transmission Bus Frequency Plots



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
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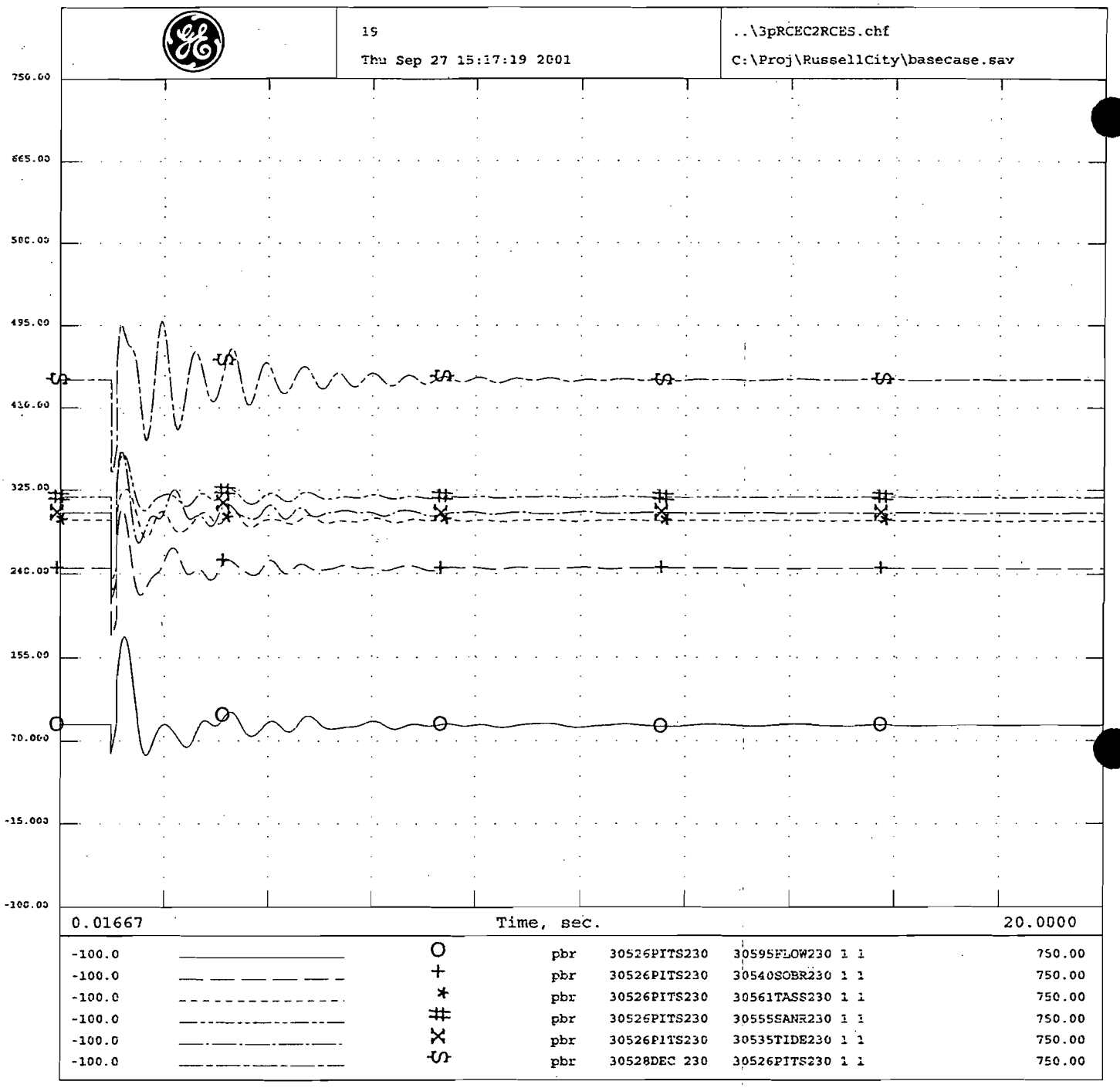
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
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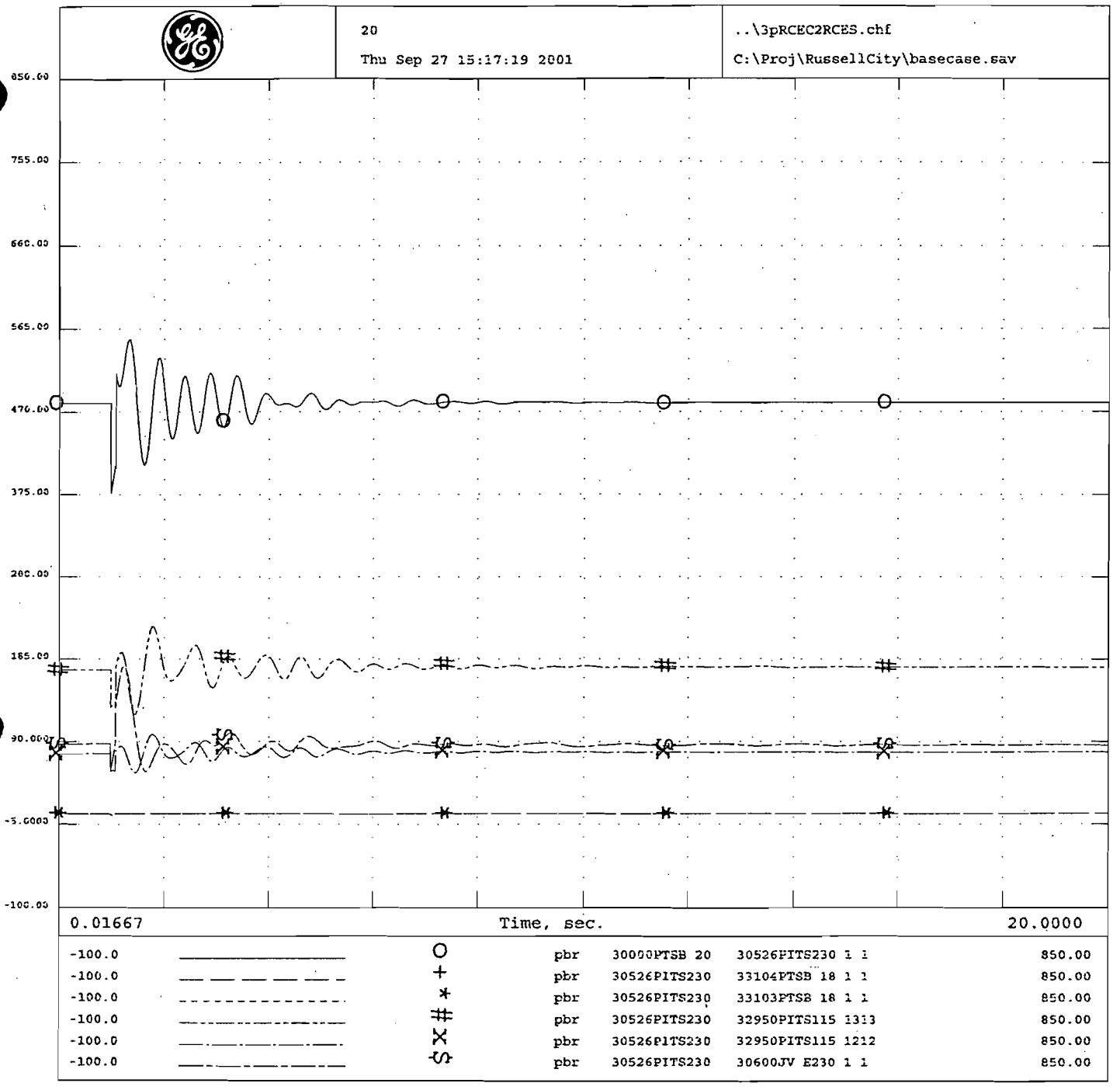
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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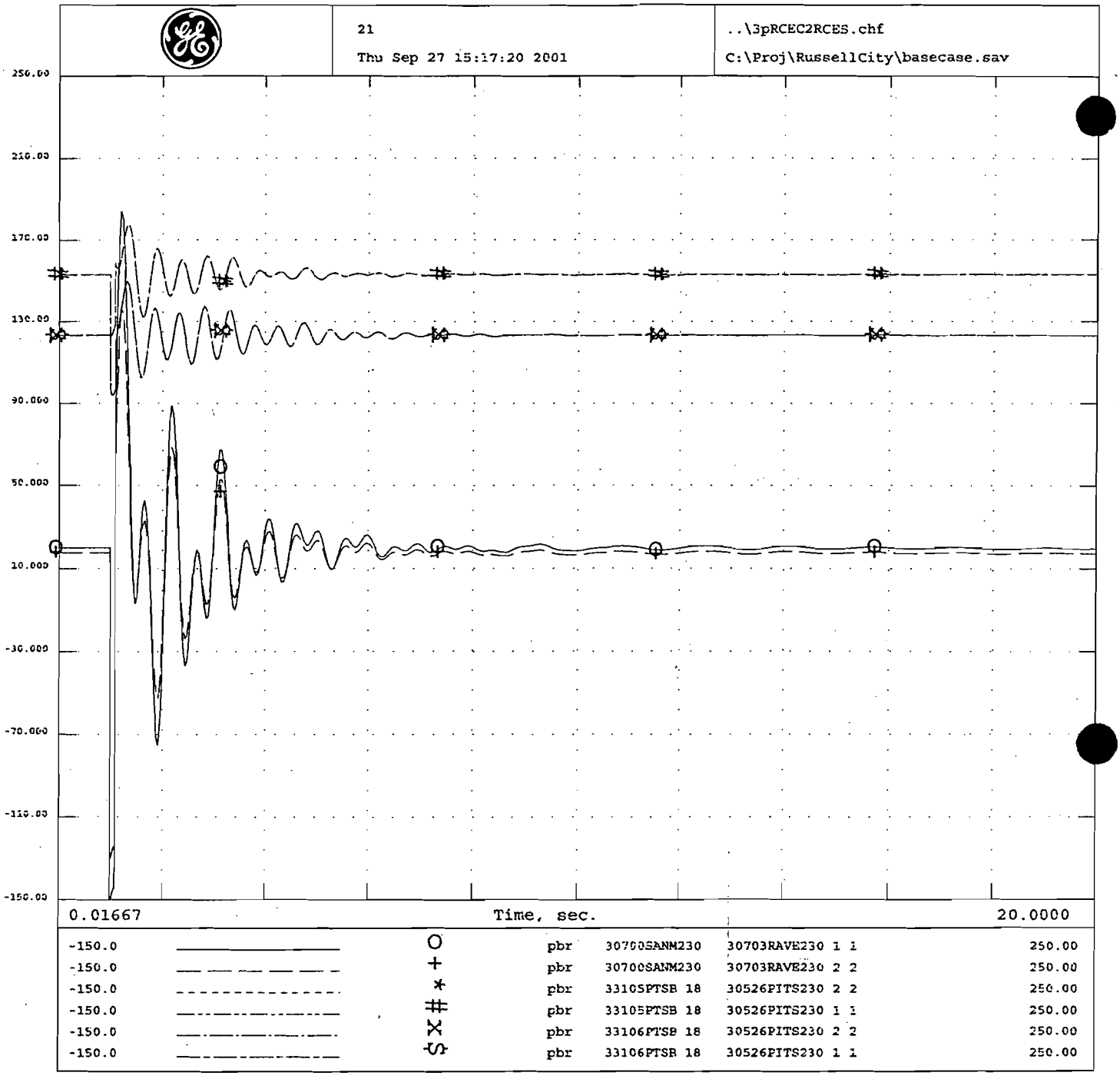
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
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RCEC-East Shore #1 230kV Line Outage
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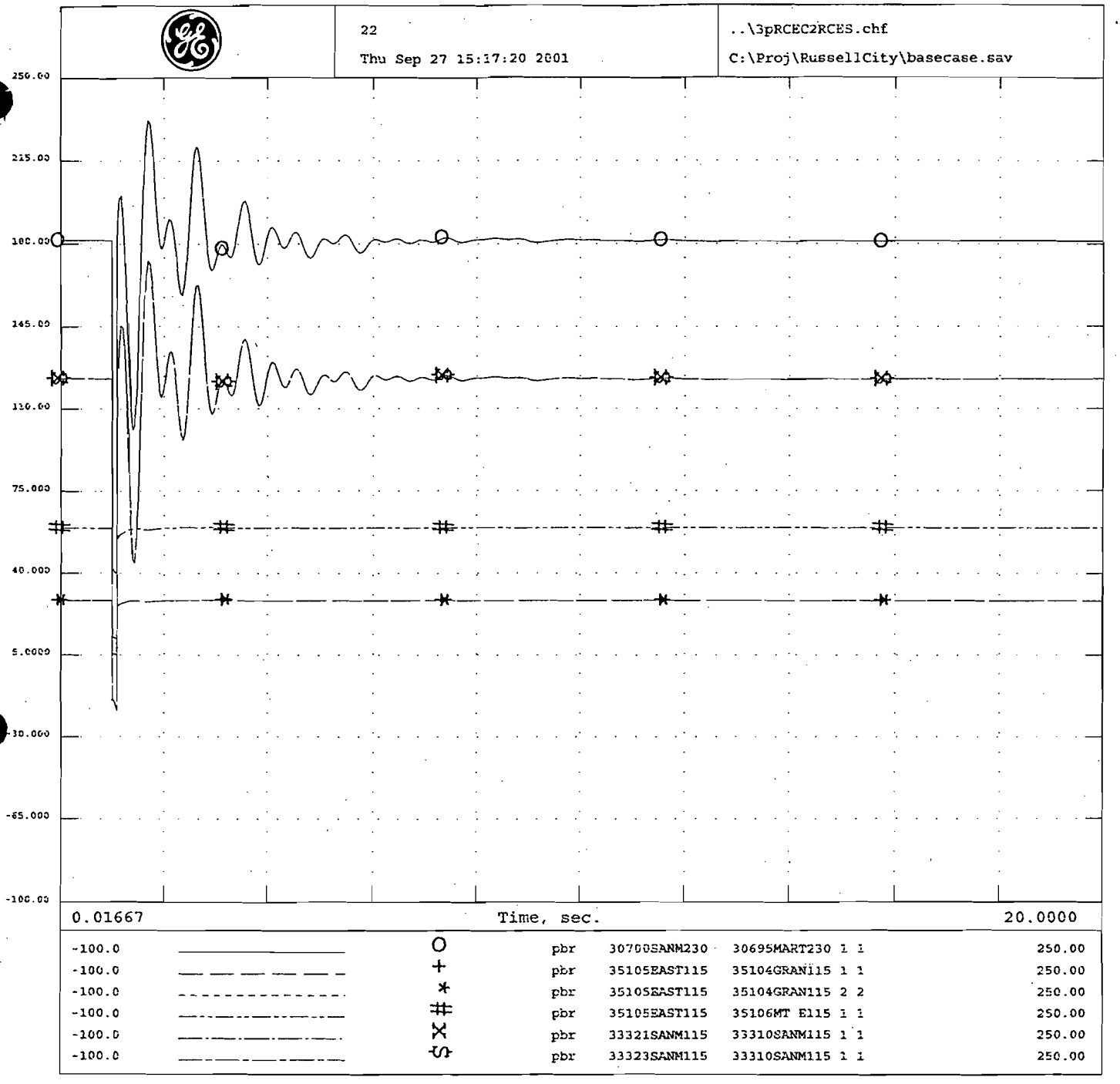
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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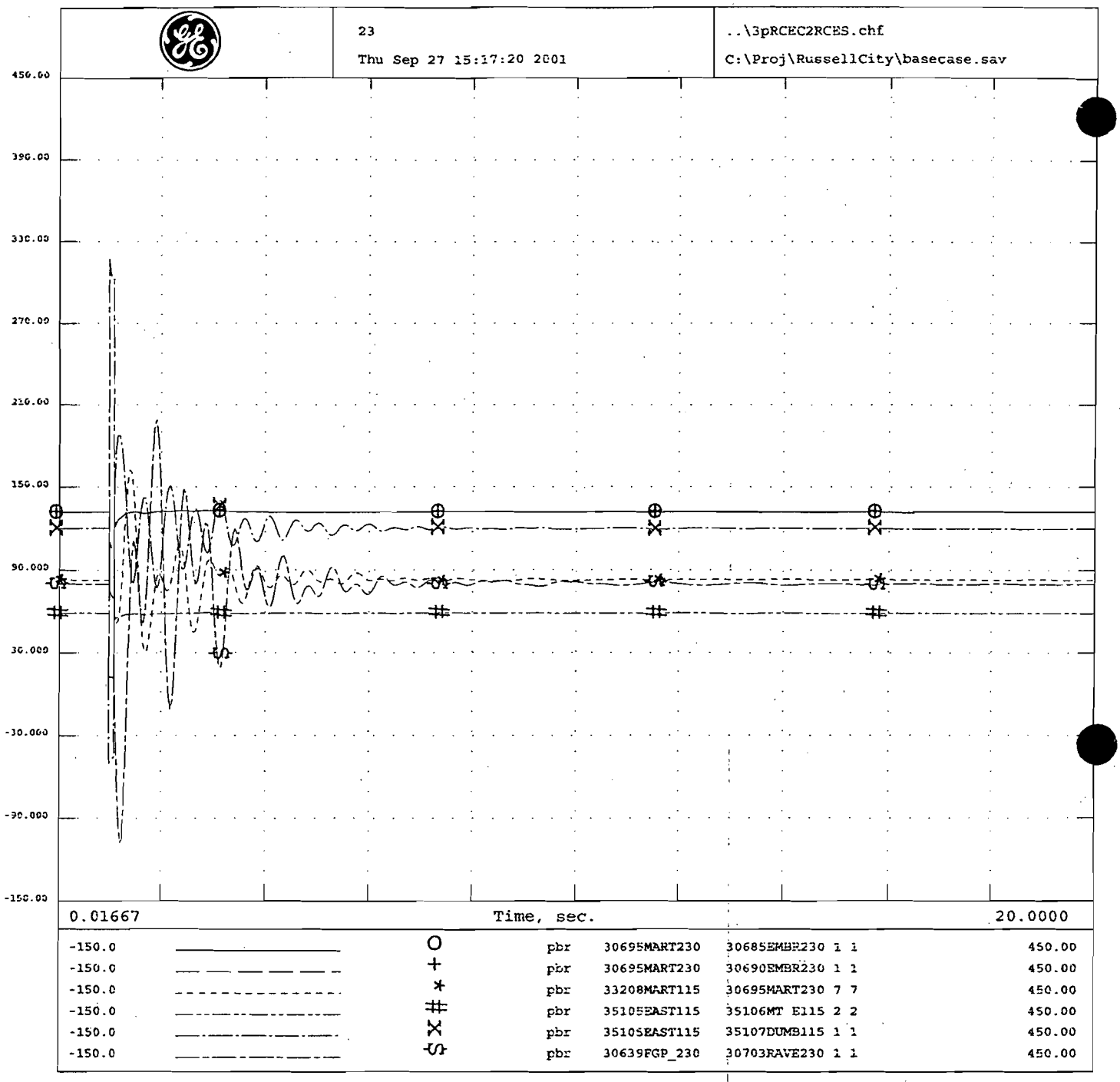
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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2004 Summer Peak Base Case
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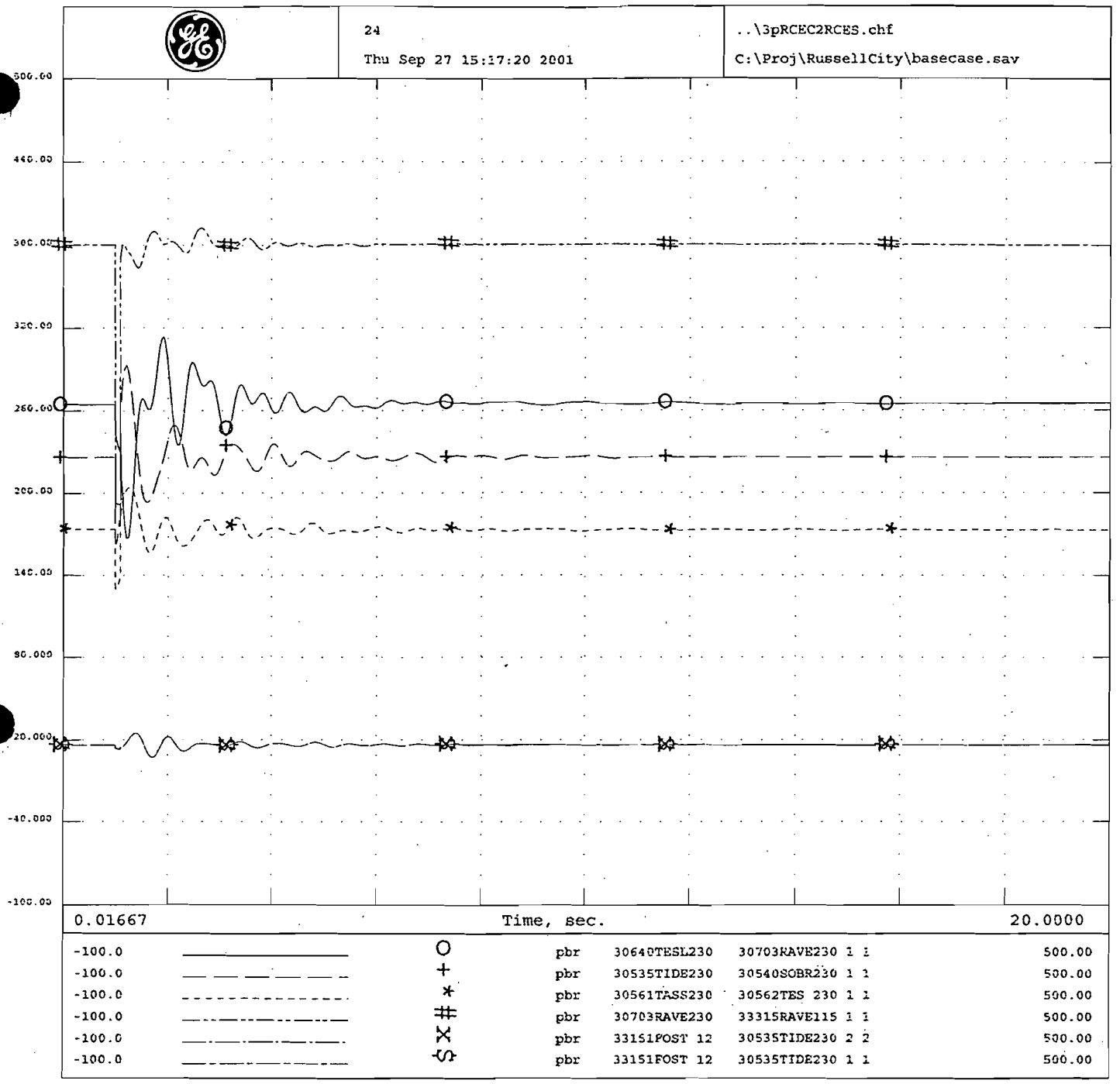
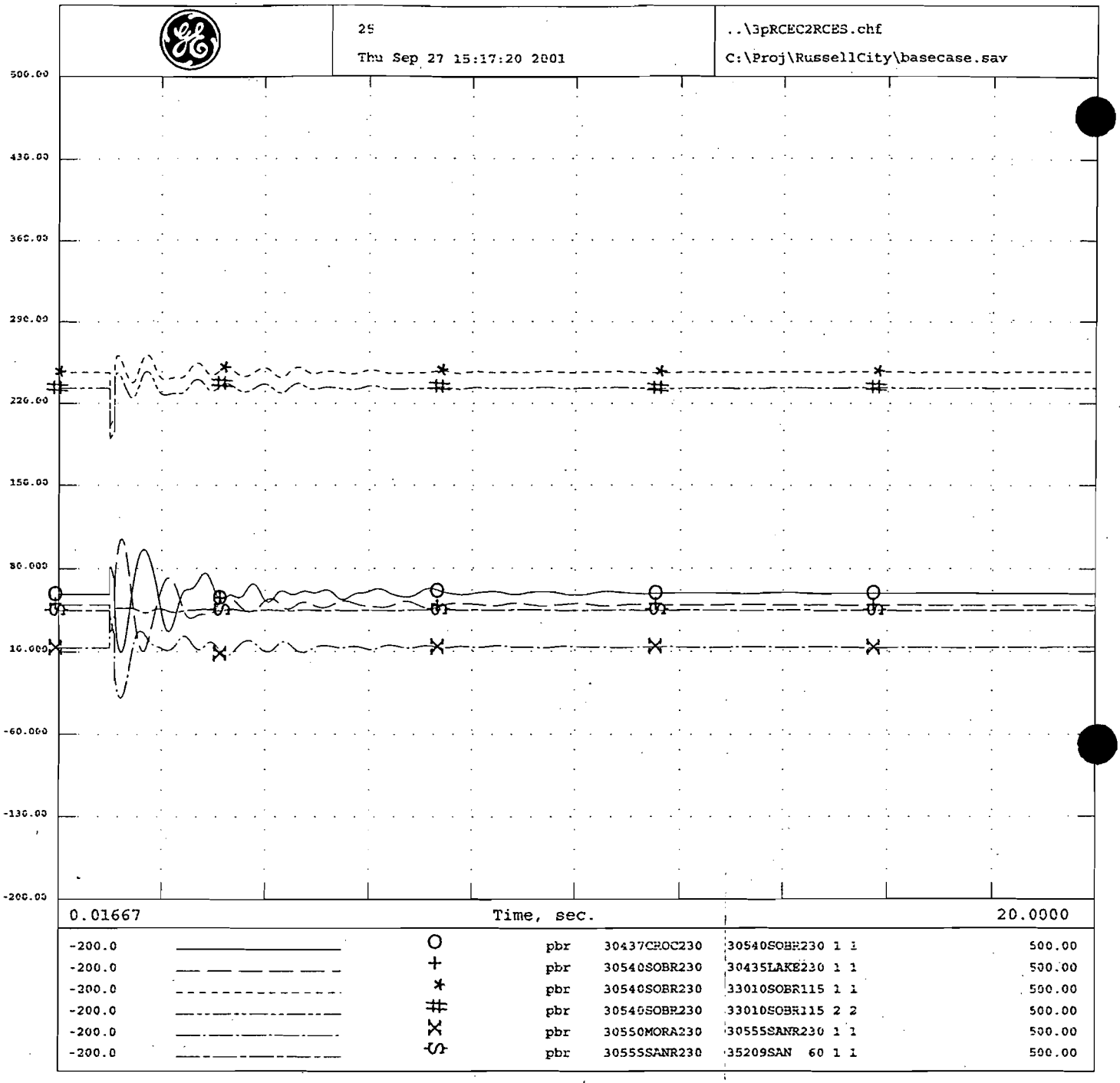
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
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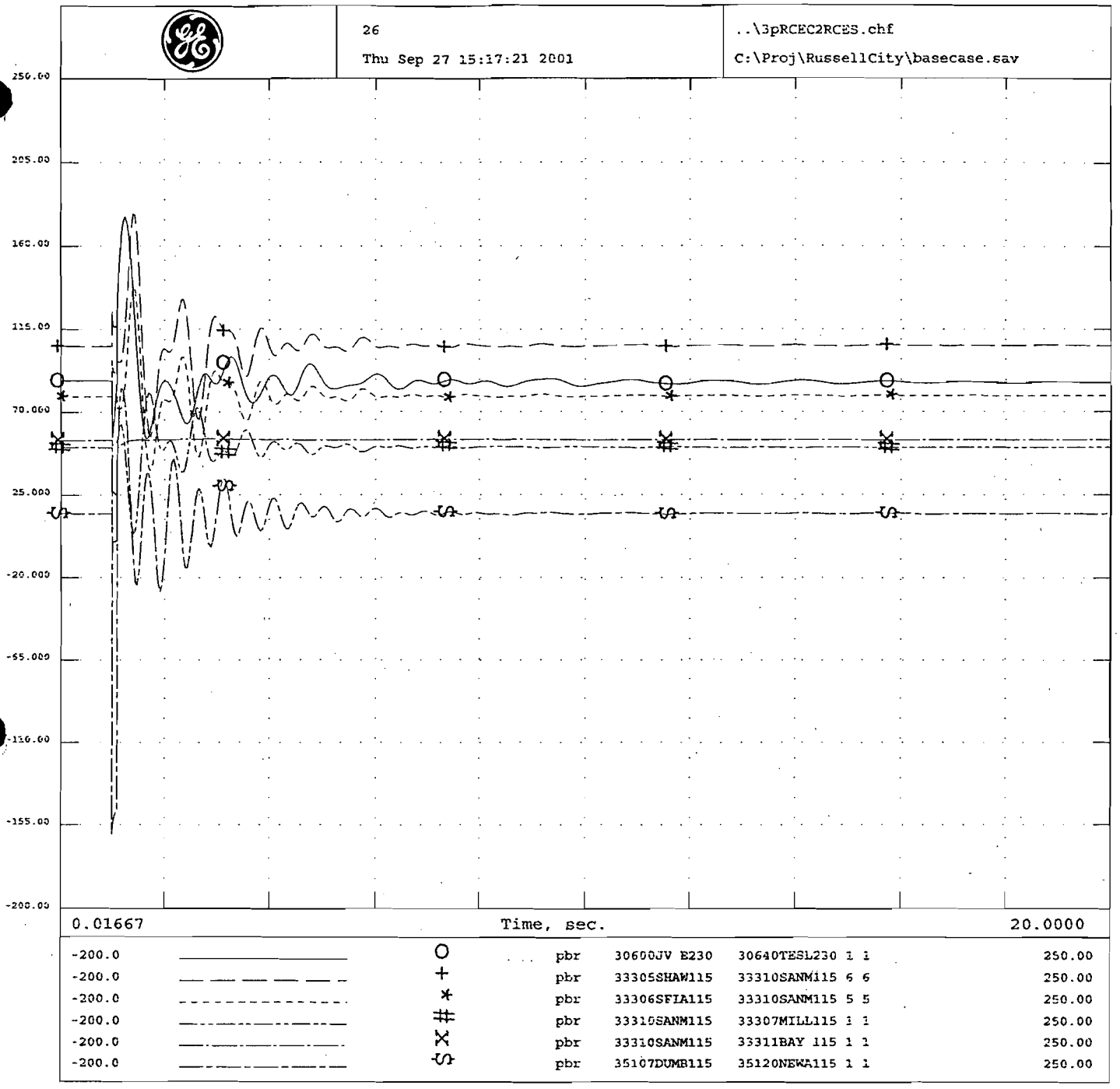
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



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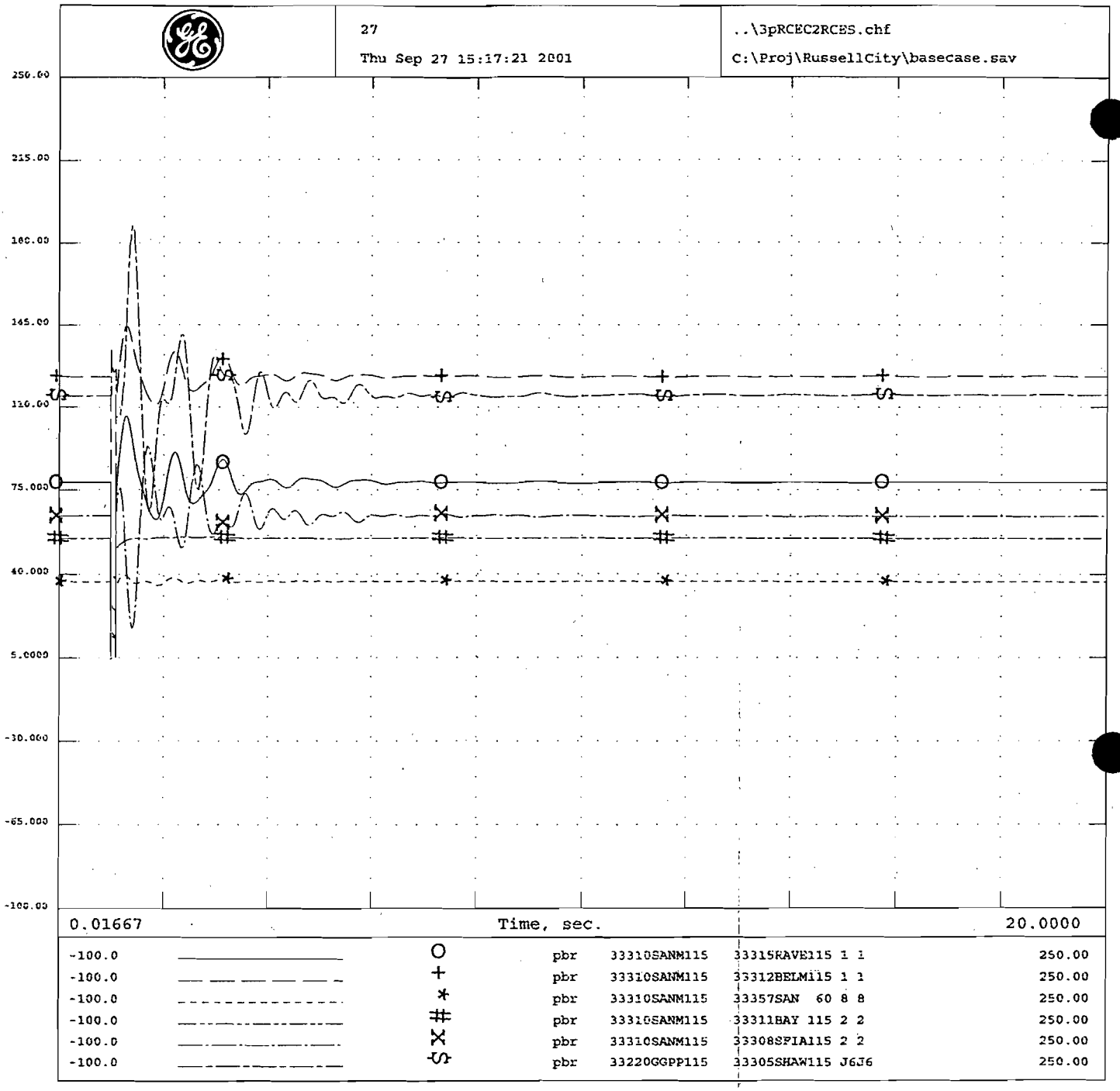
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC-East Shore #1 230kV Line Outage
3 phase 6 cycle fault at RCEC 230kV bus and trip RCEC-East Shore 230kV #1 line

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

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basecase.sav
basecase.dyd
TITLE
Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC steam unit outage
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC steam unit
RUN  9
CC
CC   Fault RCEC 230kV bus
FB   0.0 "RCEC    " 230.
CC
CC   Clear fault at RCEC 230kV bus
CFB  6.0 "RCEC    " 230.
CC
CC   Trip the RCEC-East Shore #1 230kV line
TG   6.0 "RCEC ST1"  18.0 "1 "
CC
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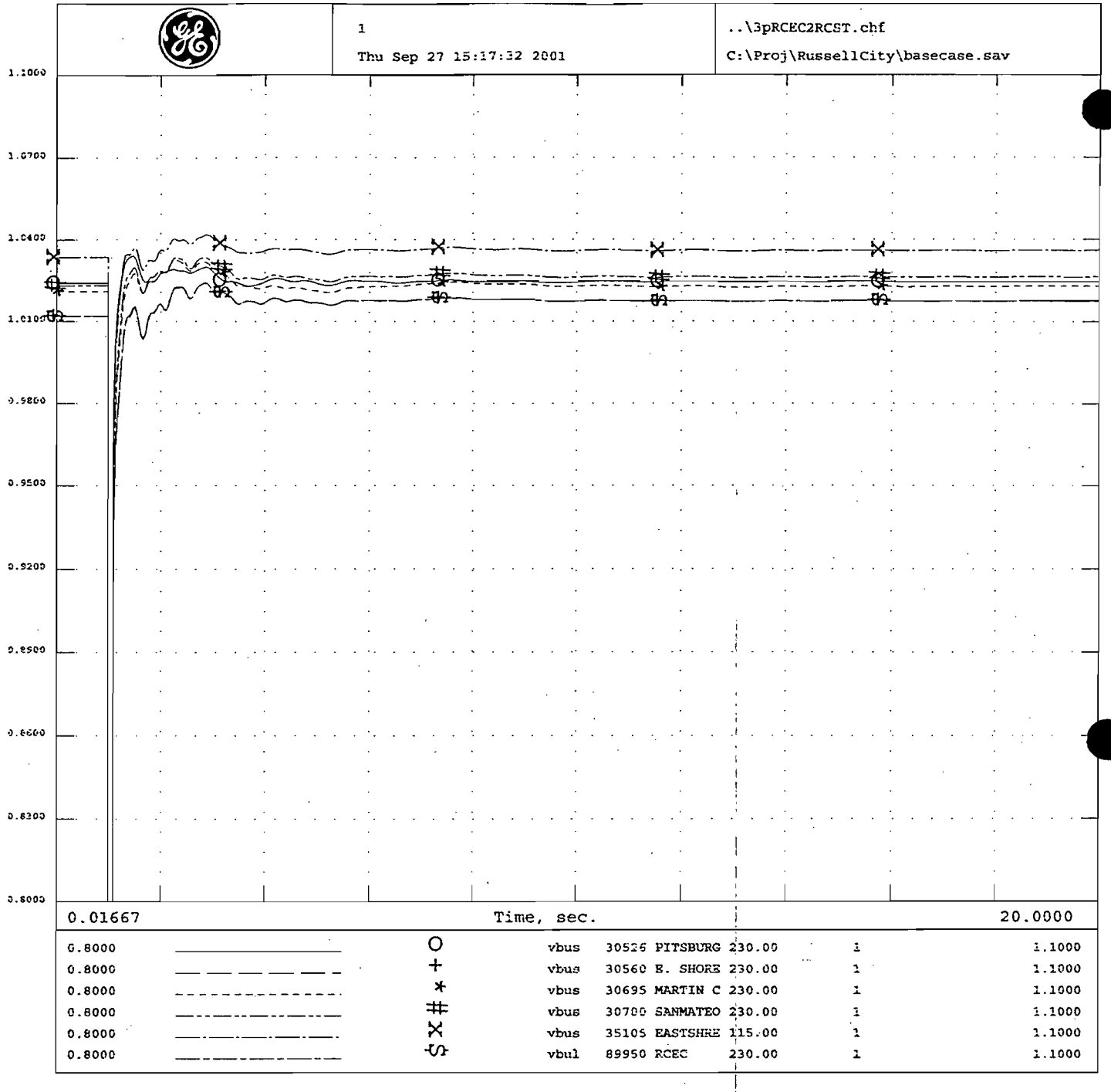
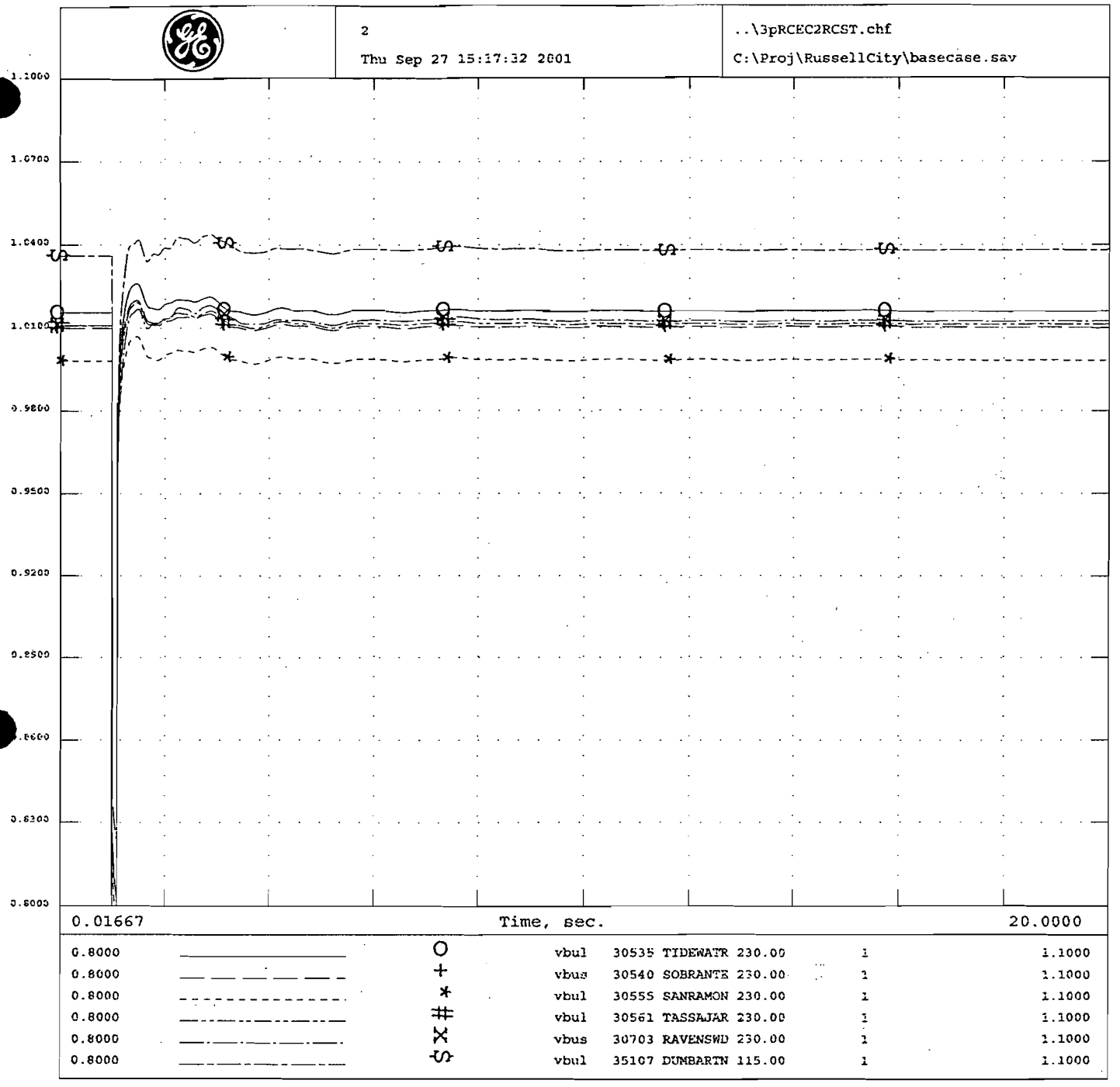


Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC steam unit outage
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC steam unit

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected PG&E Transmission Bus Voltage Plots Adjacent to Fault



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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
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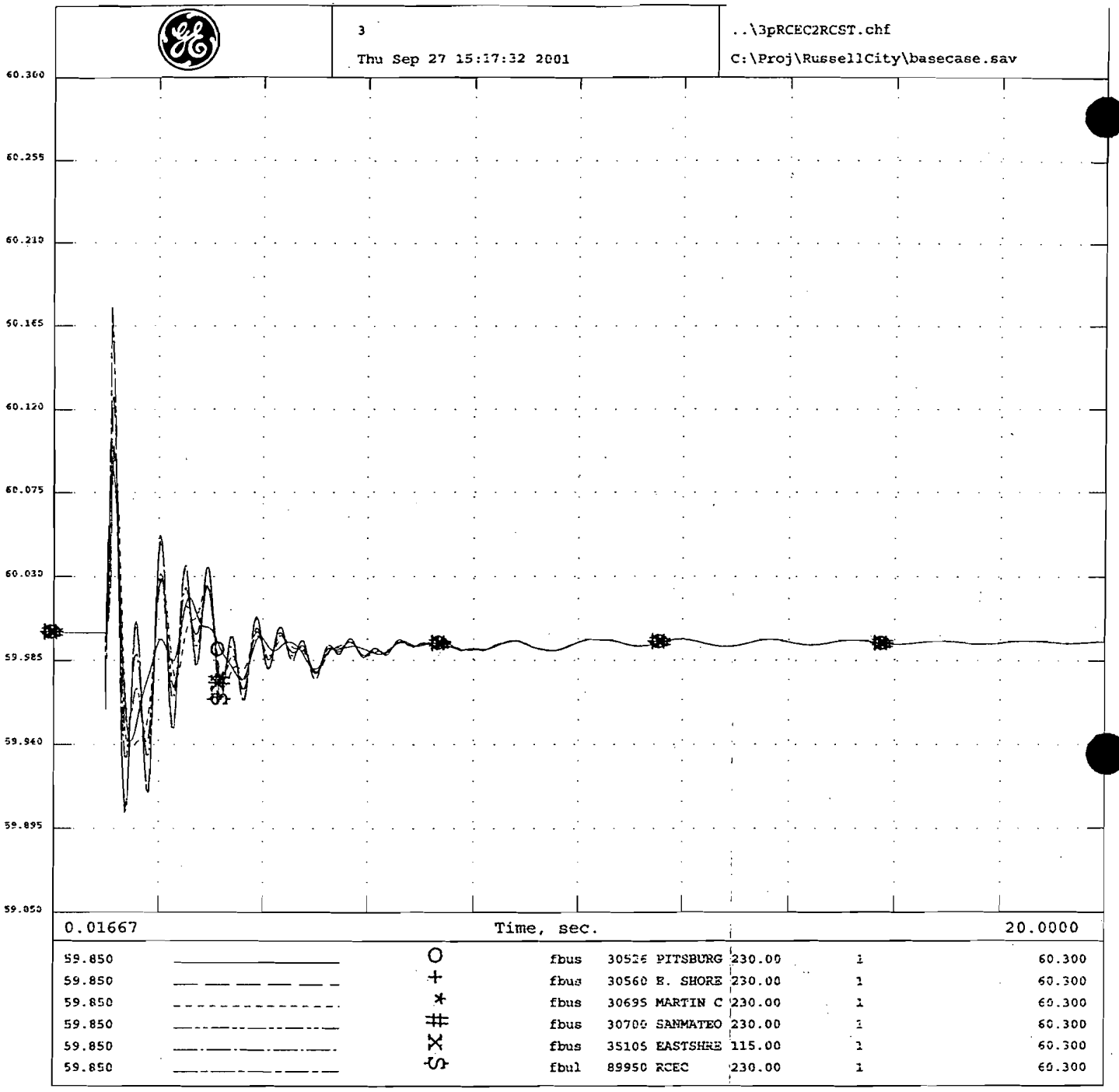

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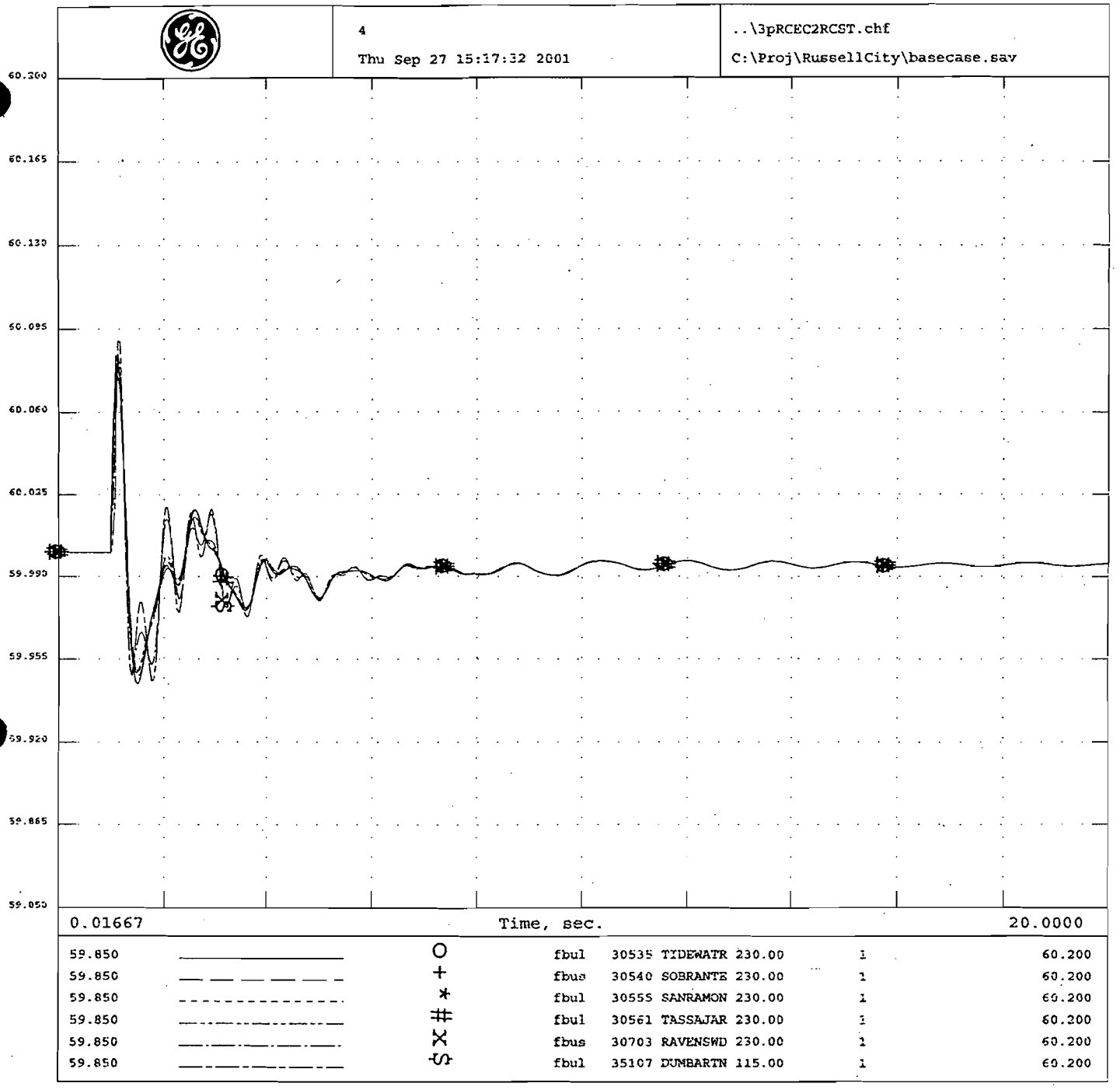
2004 Summer Peak Base Case
RCEC @ 610MW
RCEC steam unit outage
3 phase 6 cycle fault at RCEC 230kV bus and trip the RCEC steam unit

Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
2004 Summer Peak Base Case
RCEC @ 610MW
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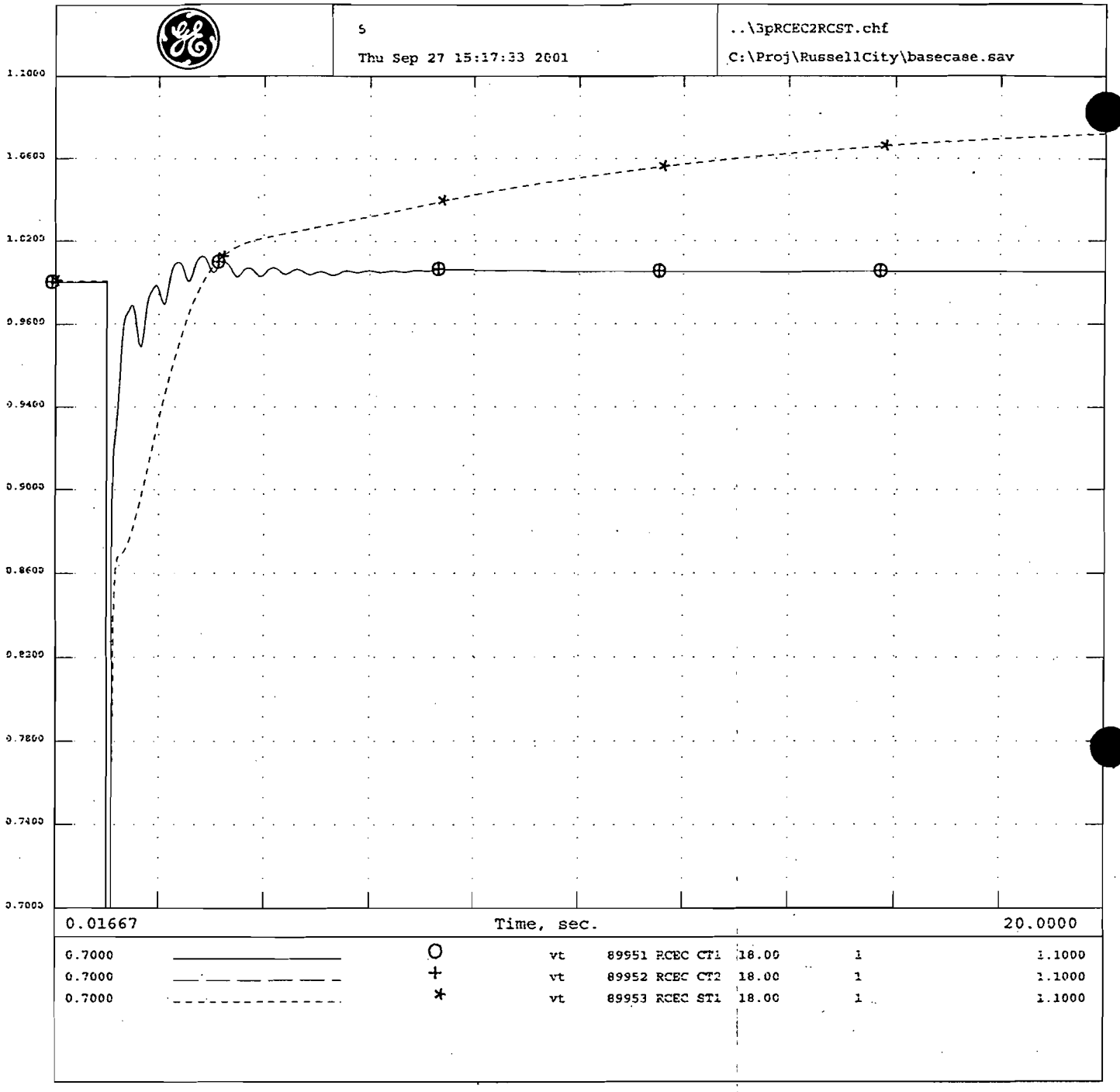
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Bus Frequency Plots Adjacent to Fault



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2004 Summer Peak Base Case
RCEC @ 610MW
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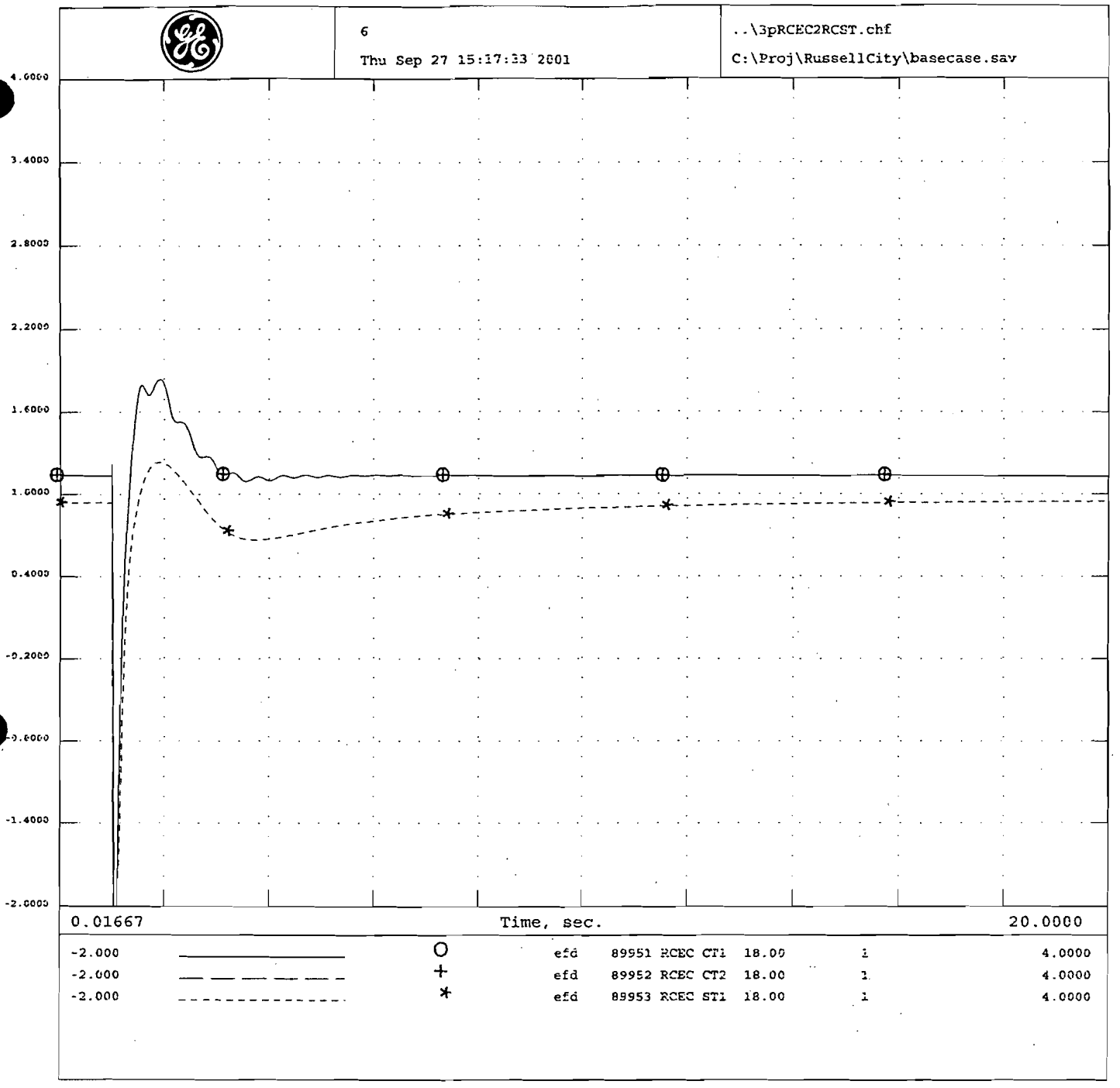
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Terminal Voltages



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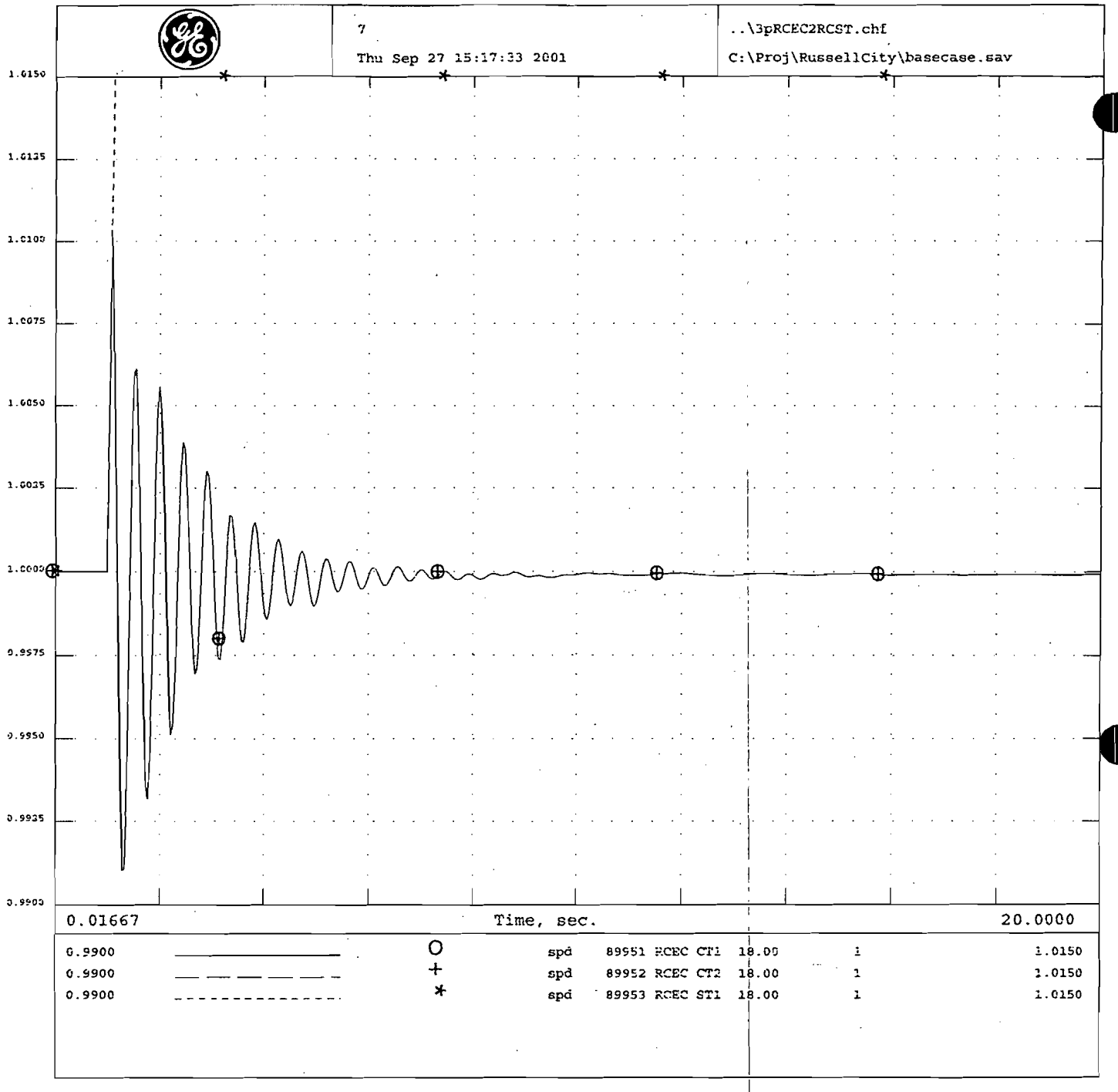
Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Project Generator Field Voltages



Calpine/Bechtel Joint Development - Russell City Energy Center SIS
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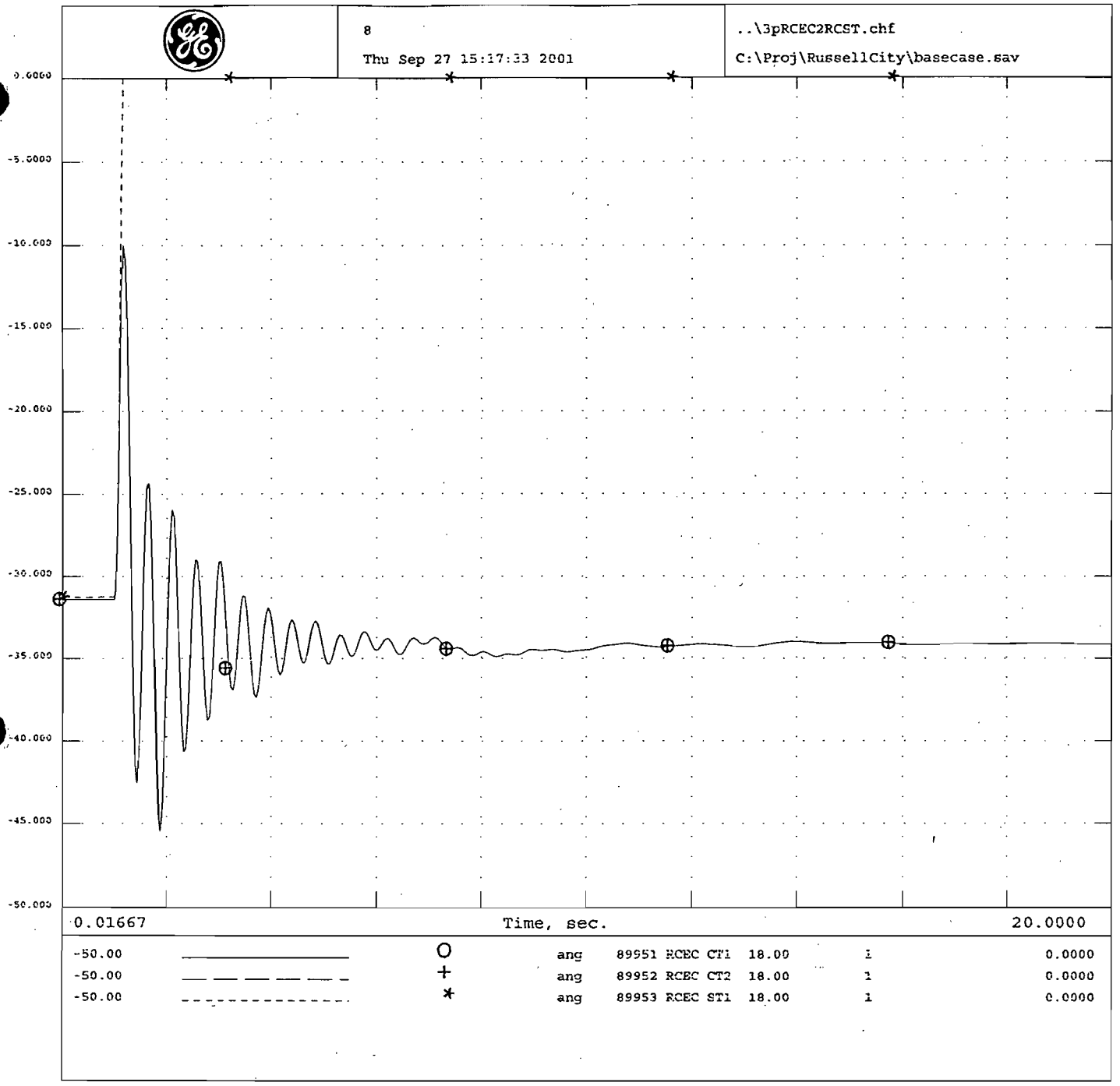
Project Generator Rotor Speed



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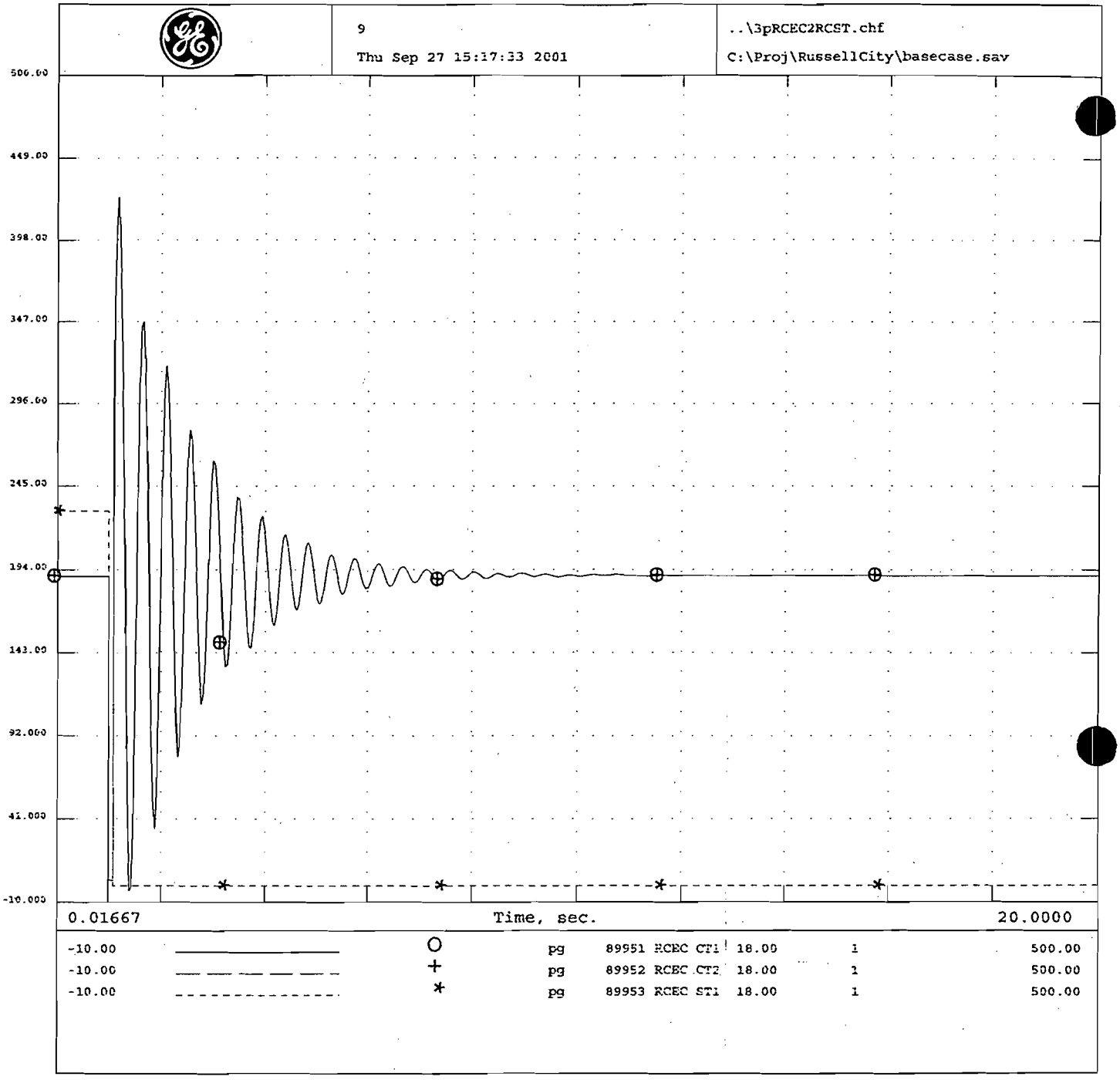
Project Generator Rotor Angle



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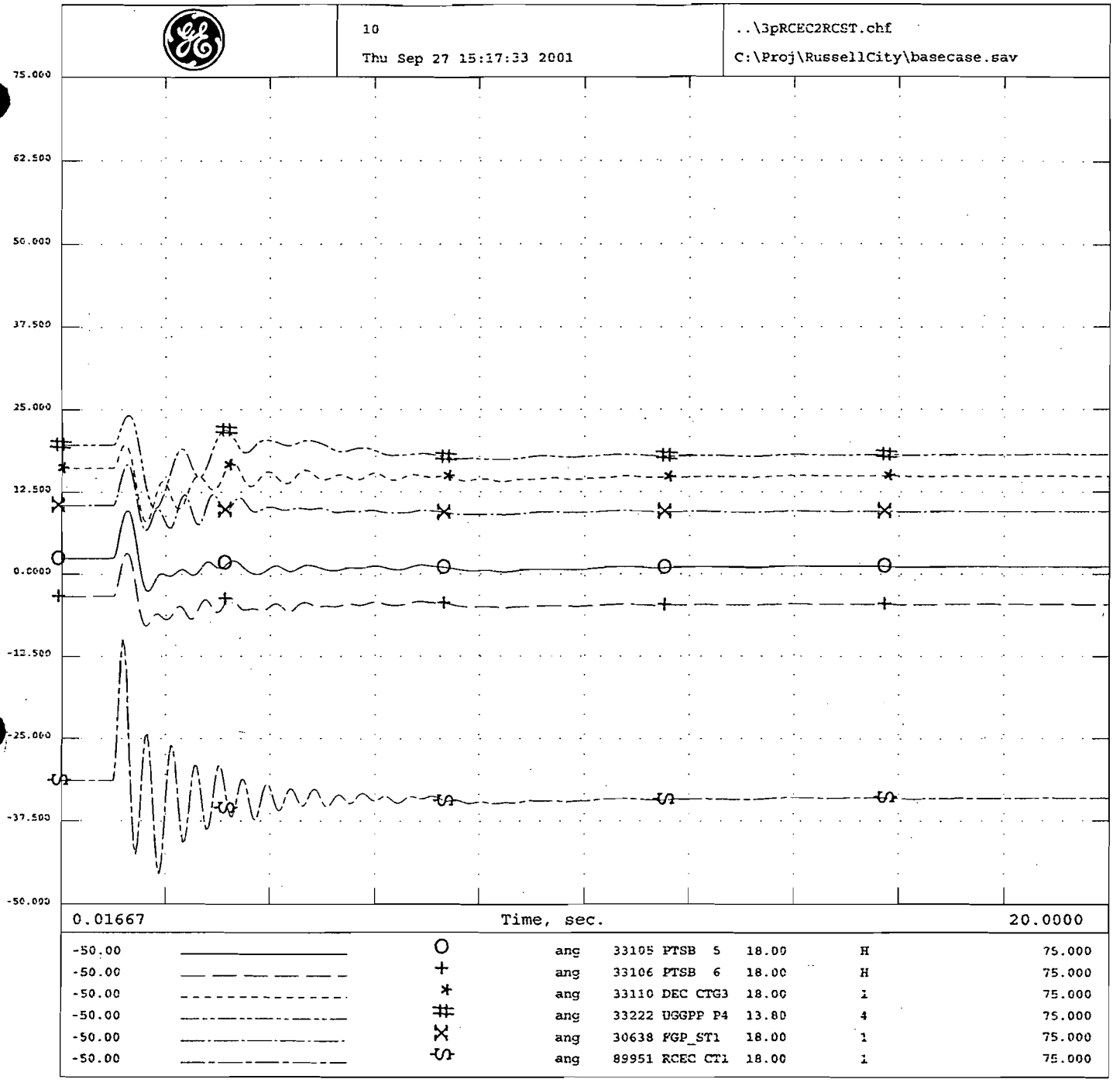
Project Generator Terminal Power



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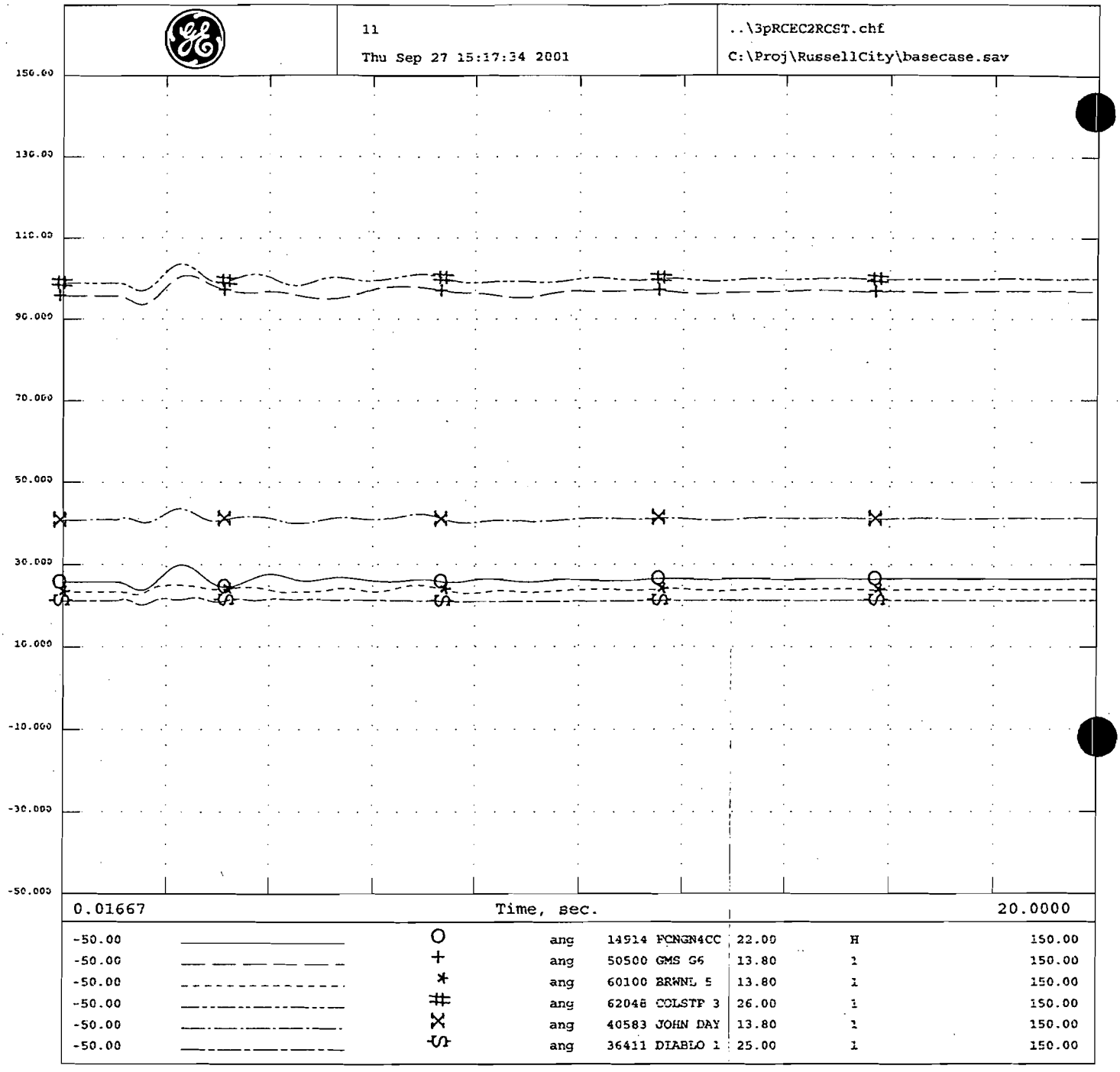

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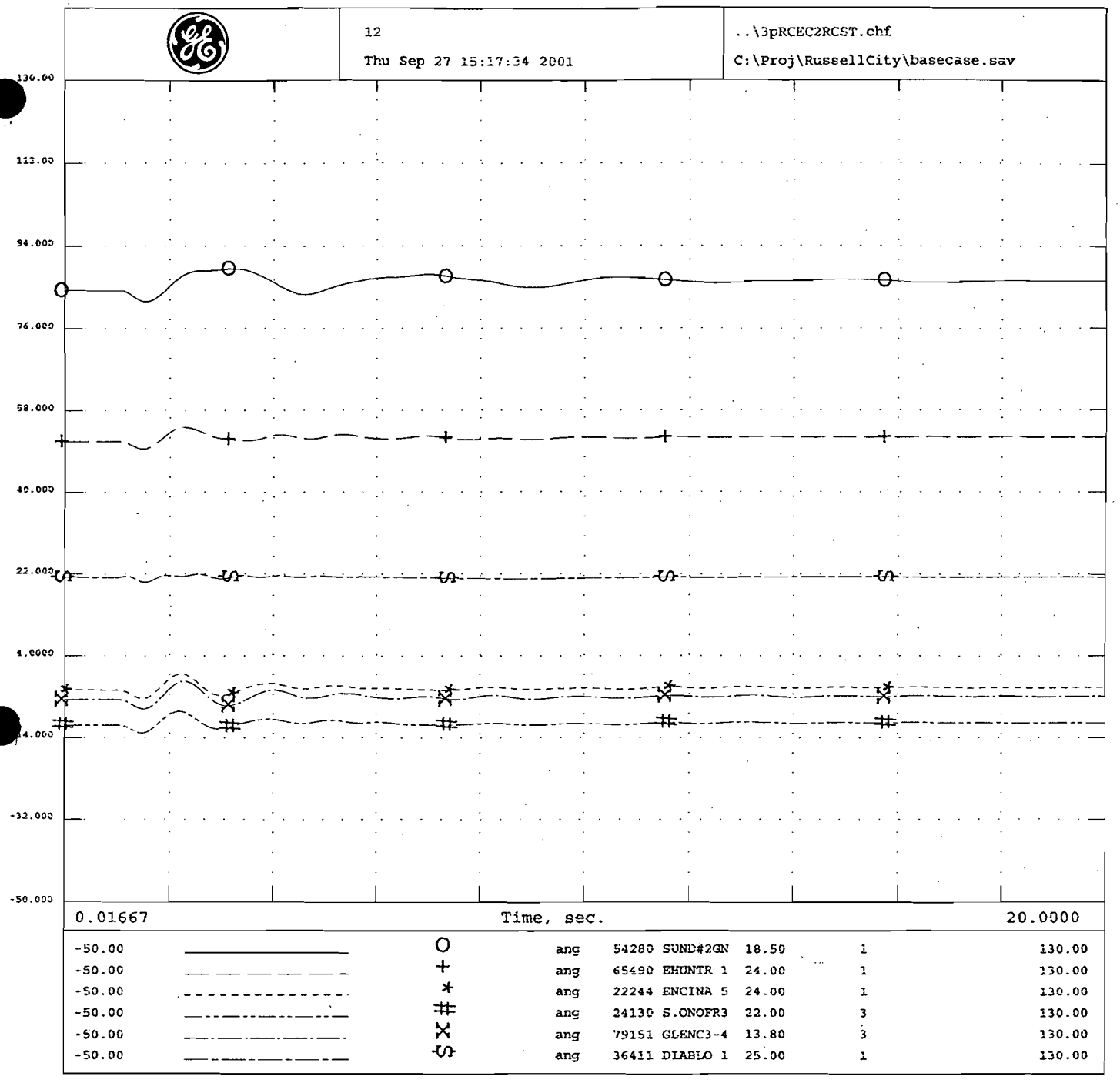
Selected WSCC Transmission Bus Angle Plots



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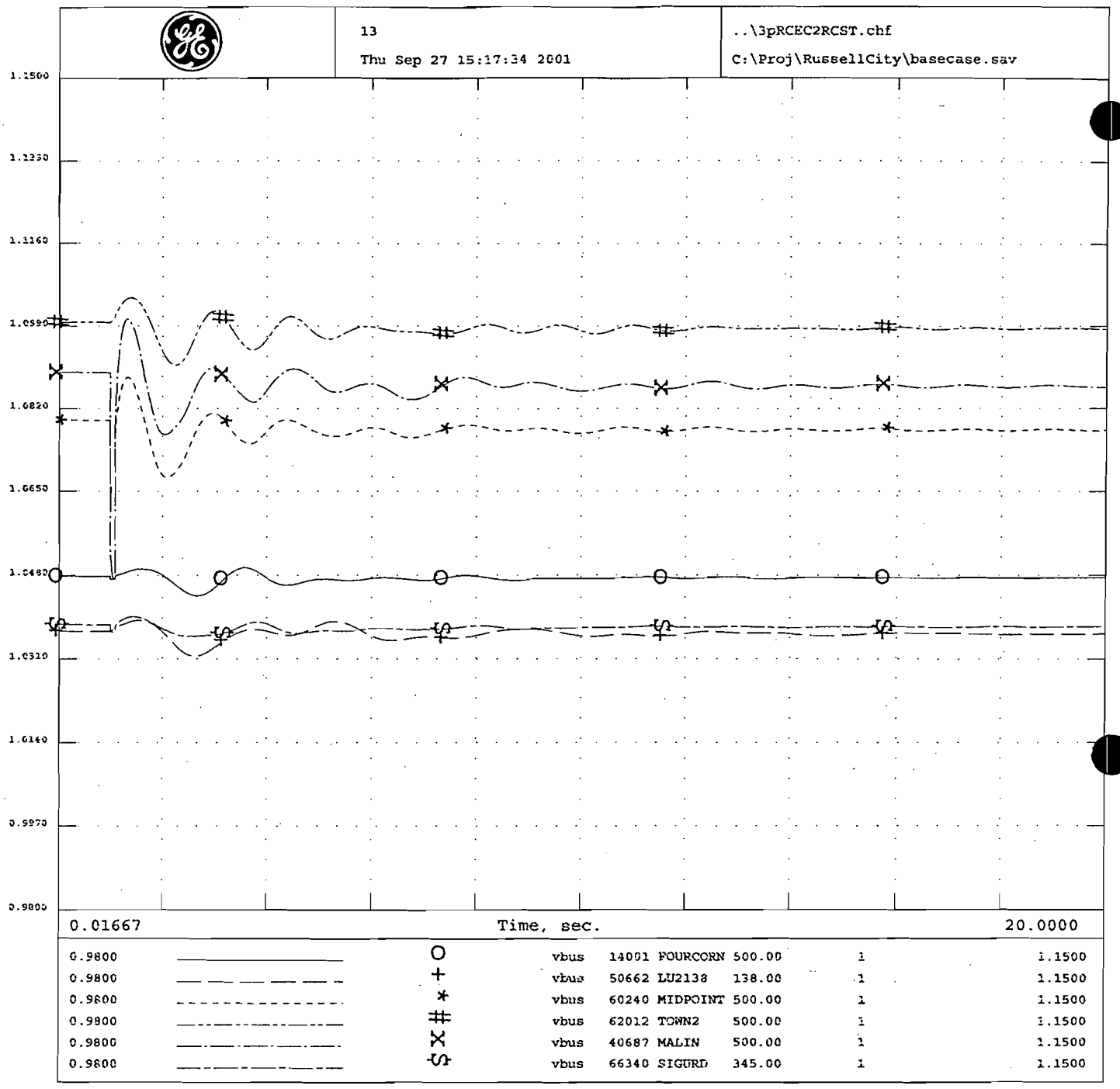

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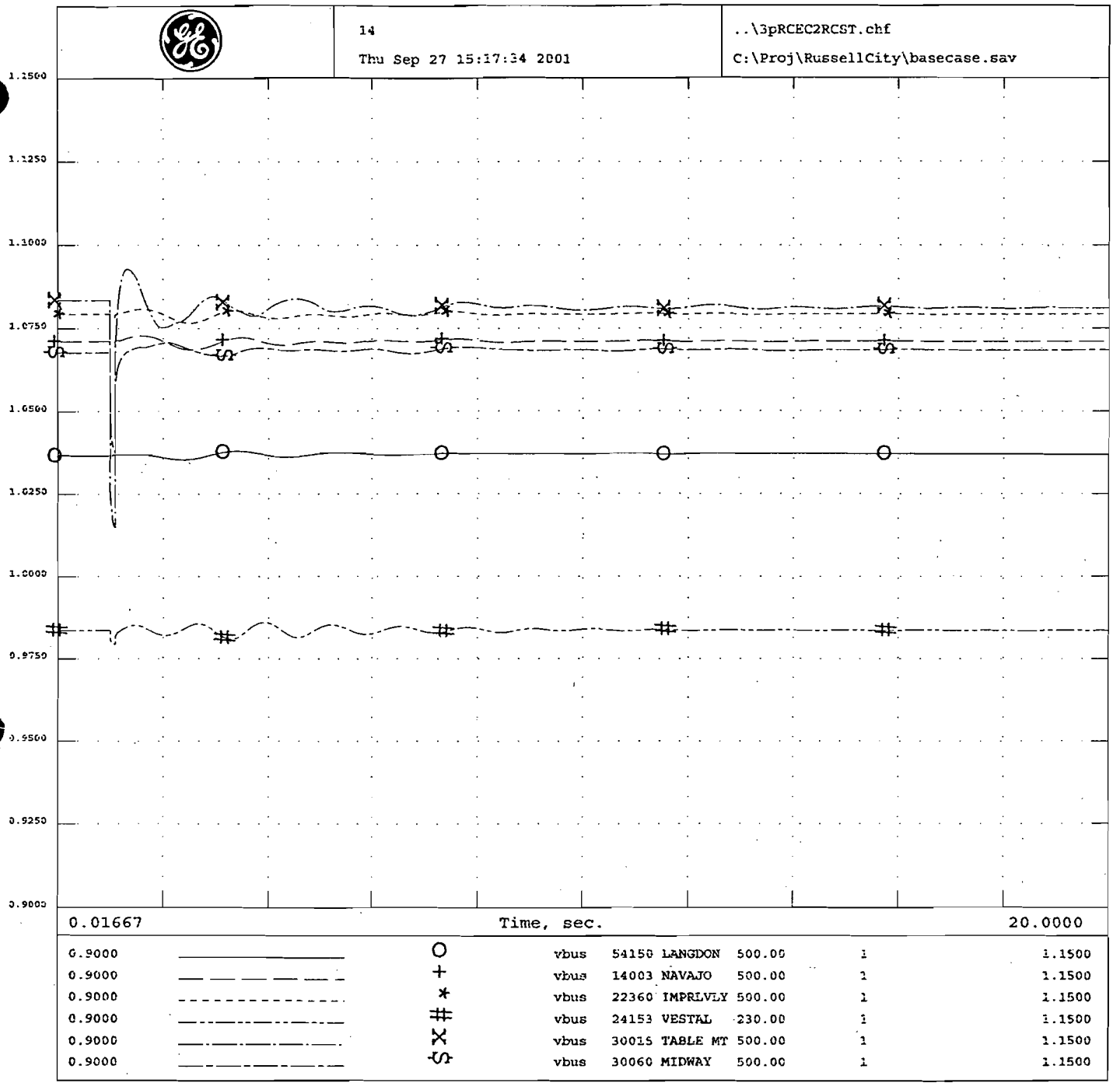

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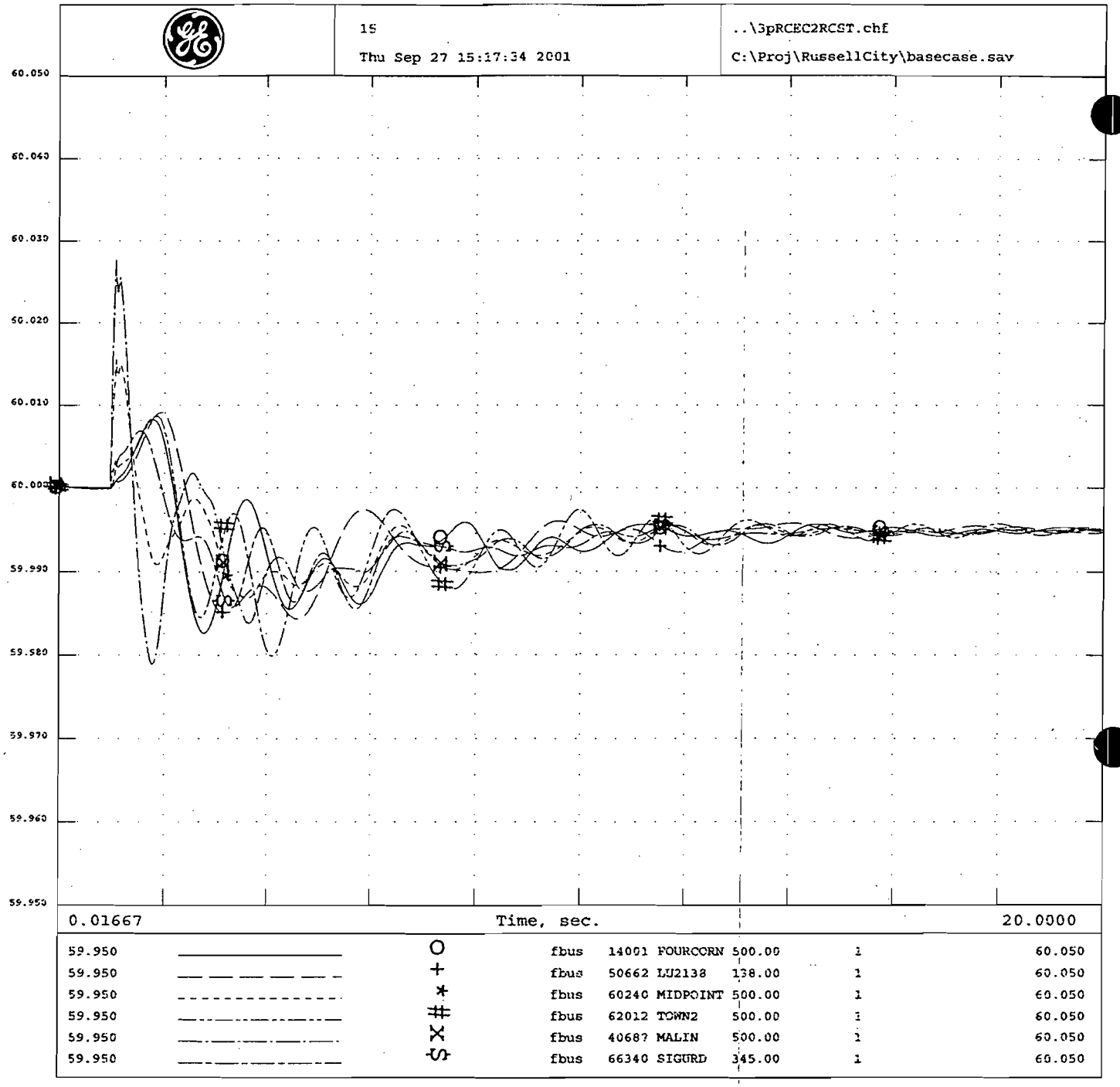

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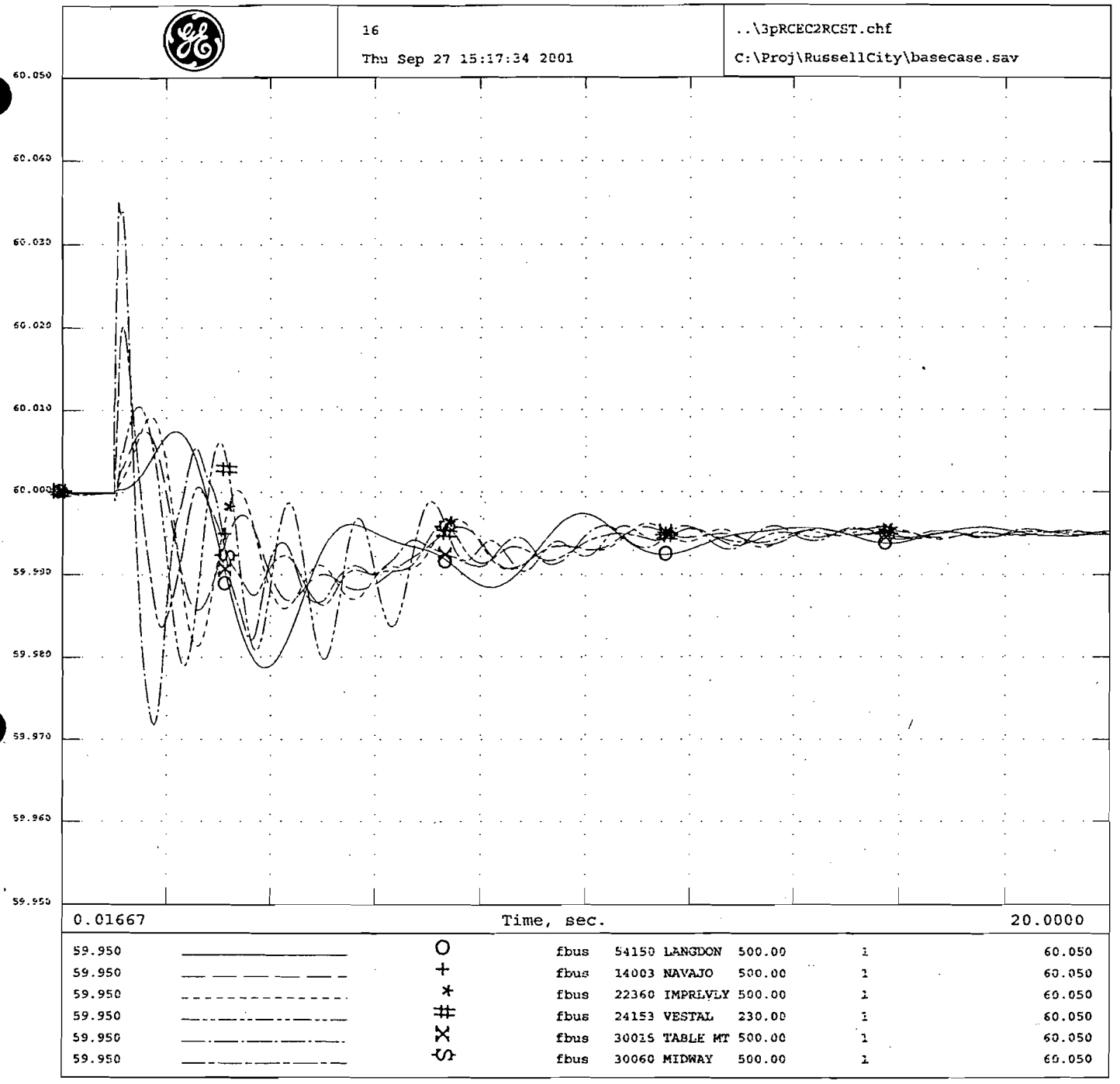

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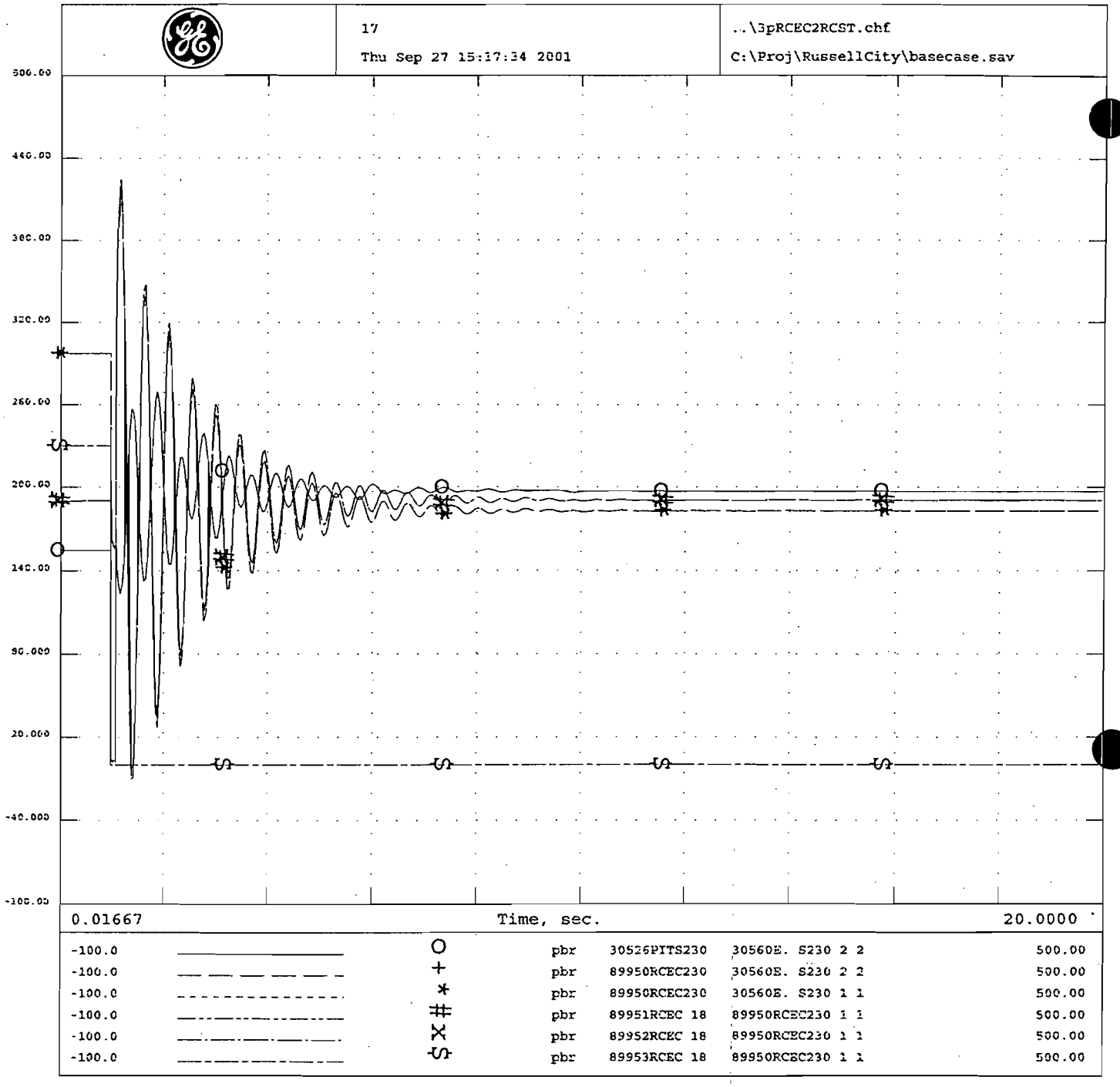

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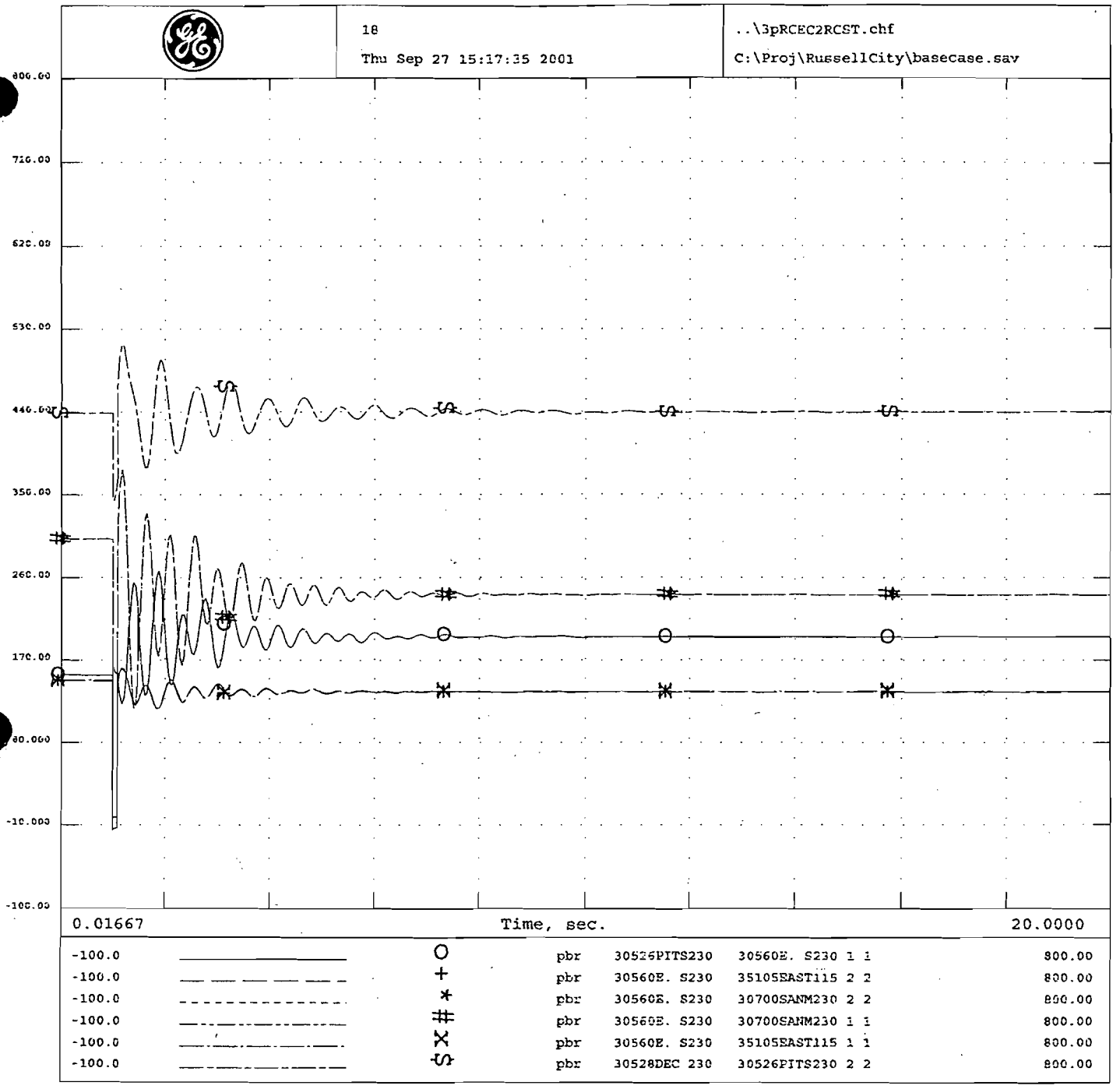

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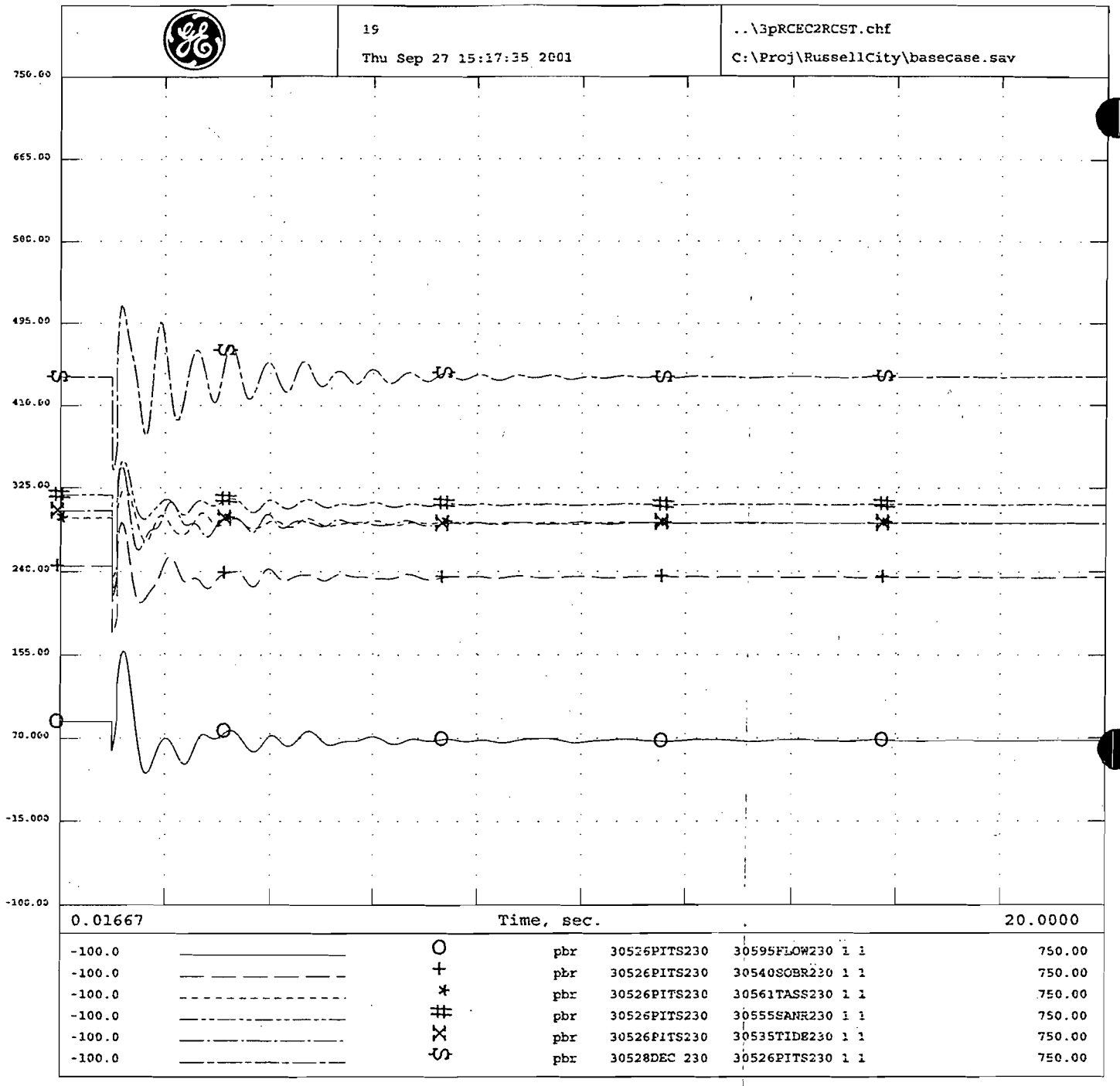

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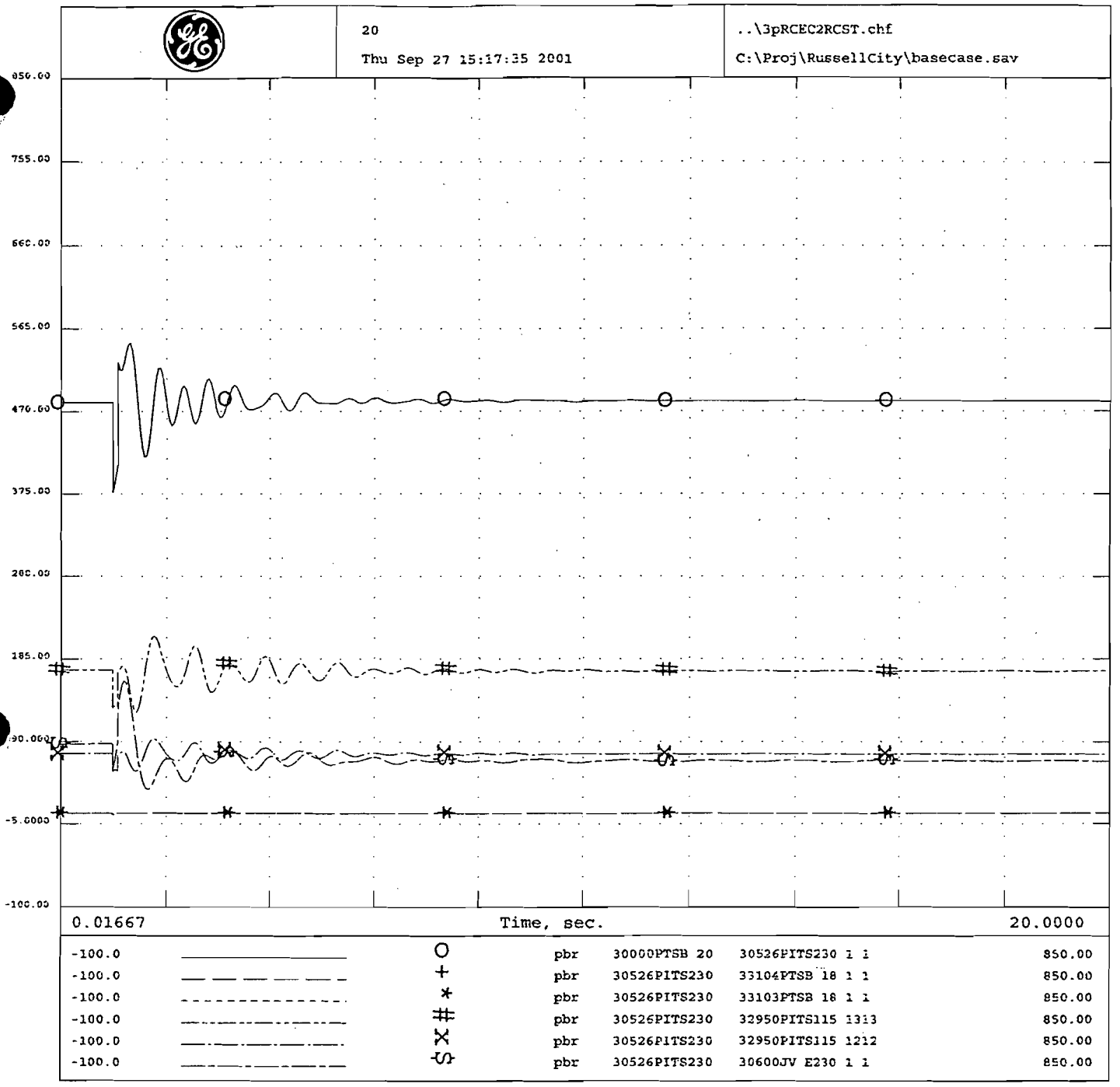

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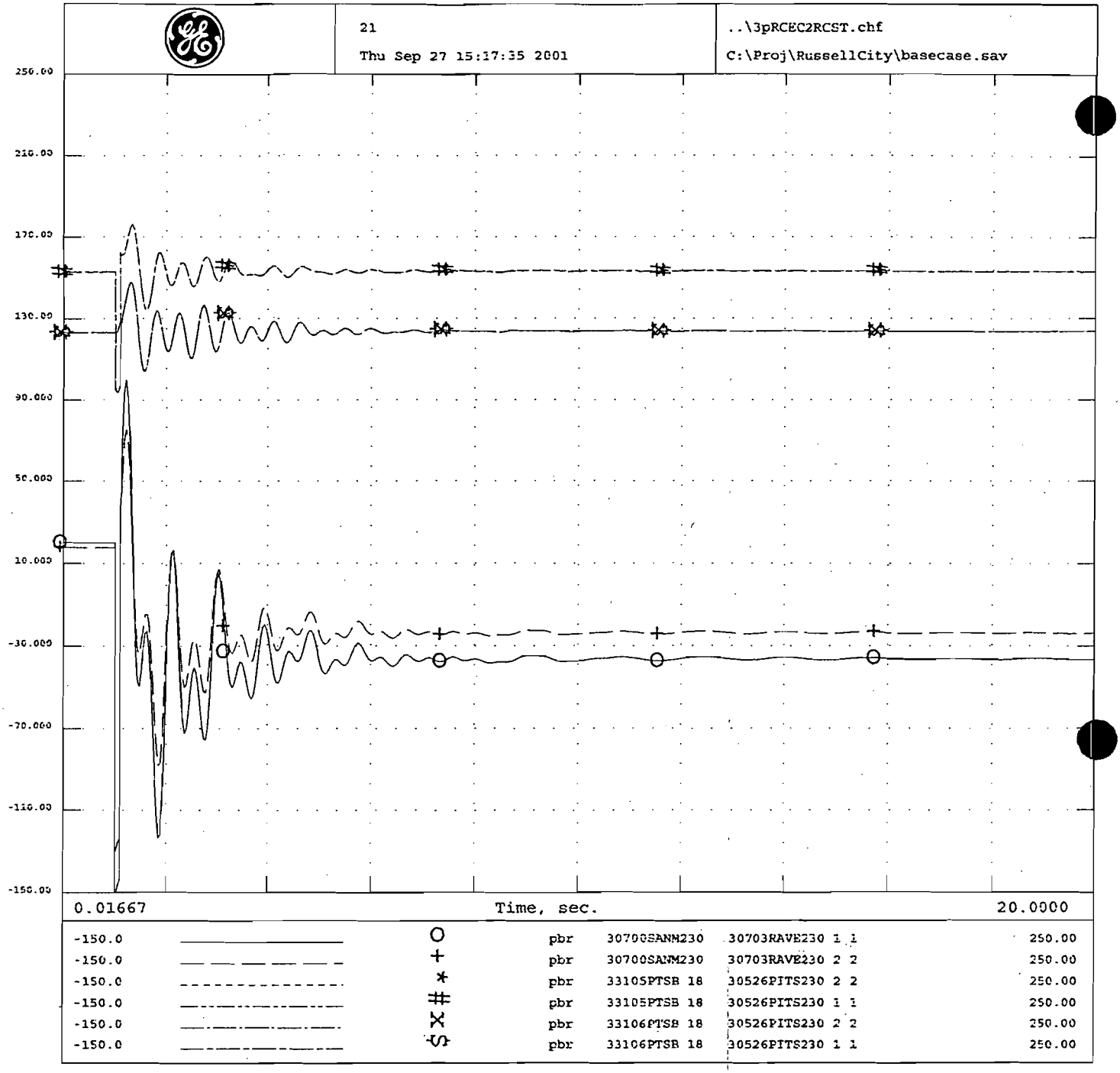

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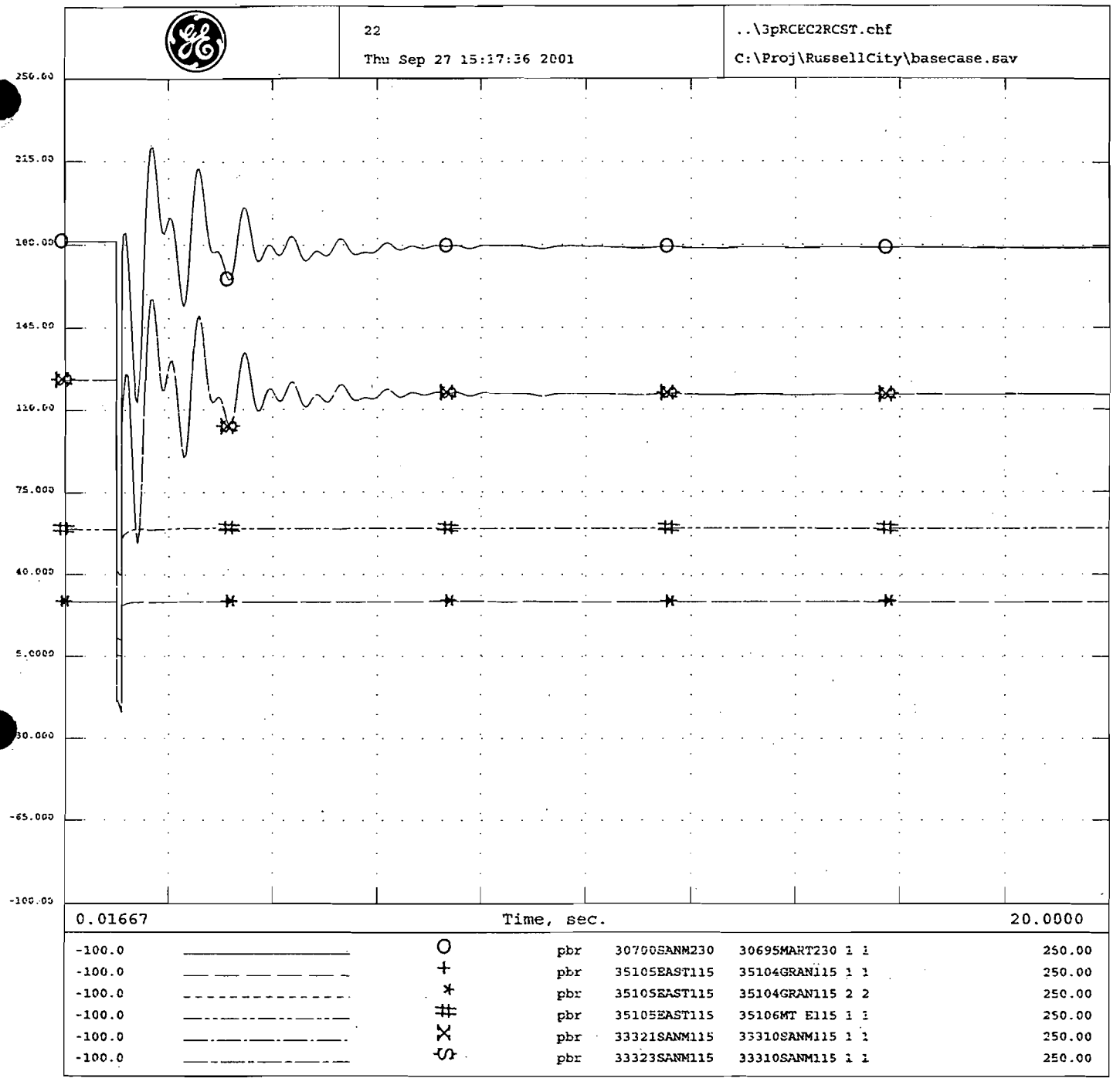

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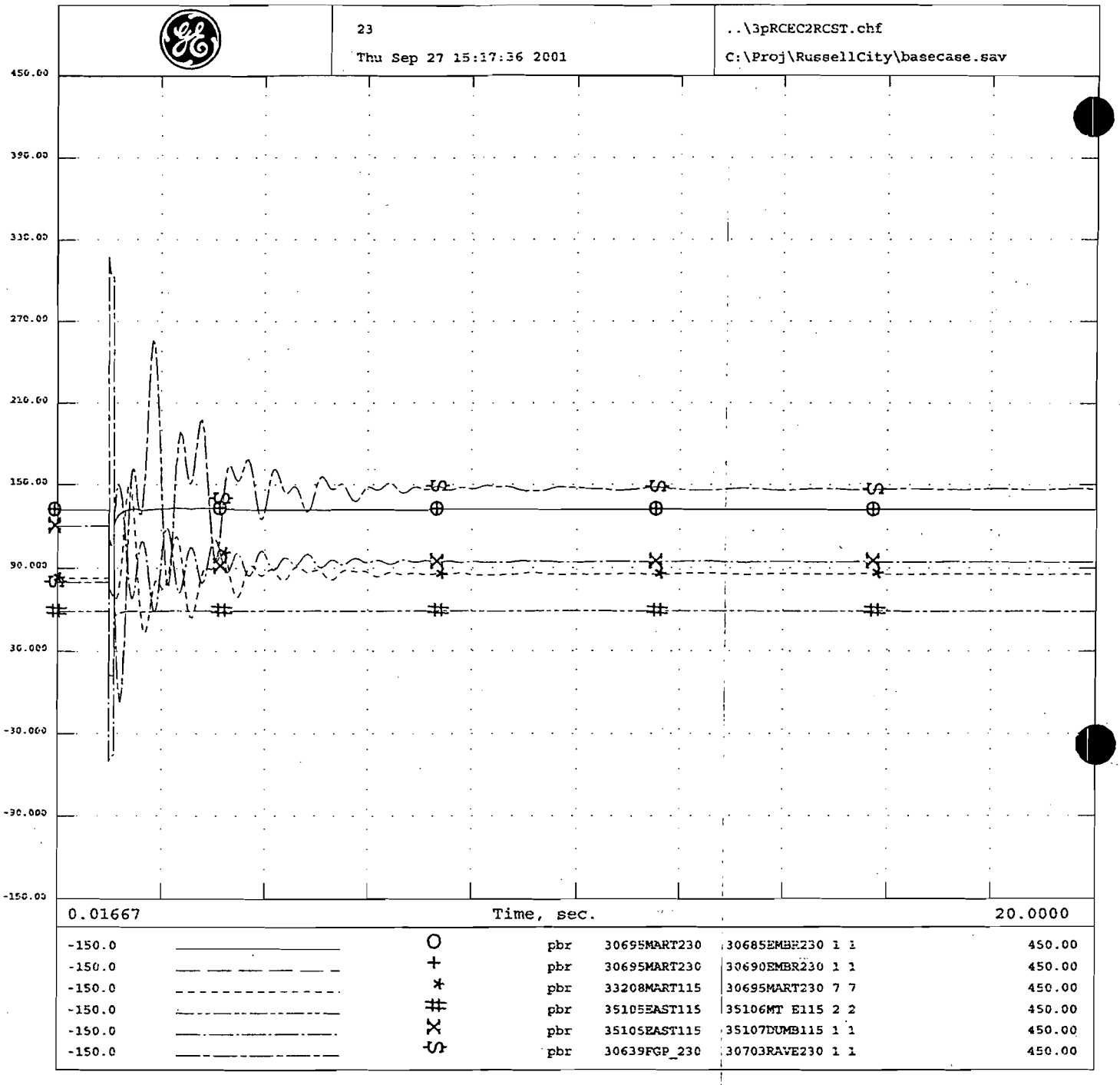

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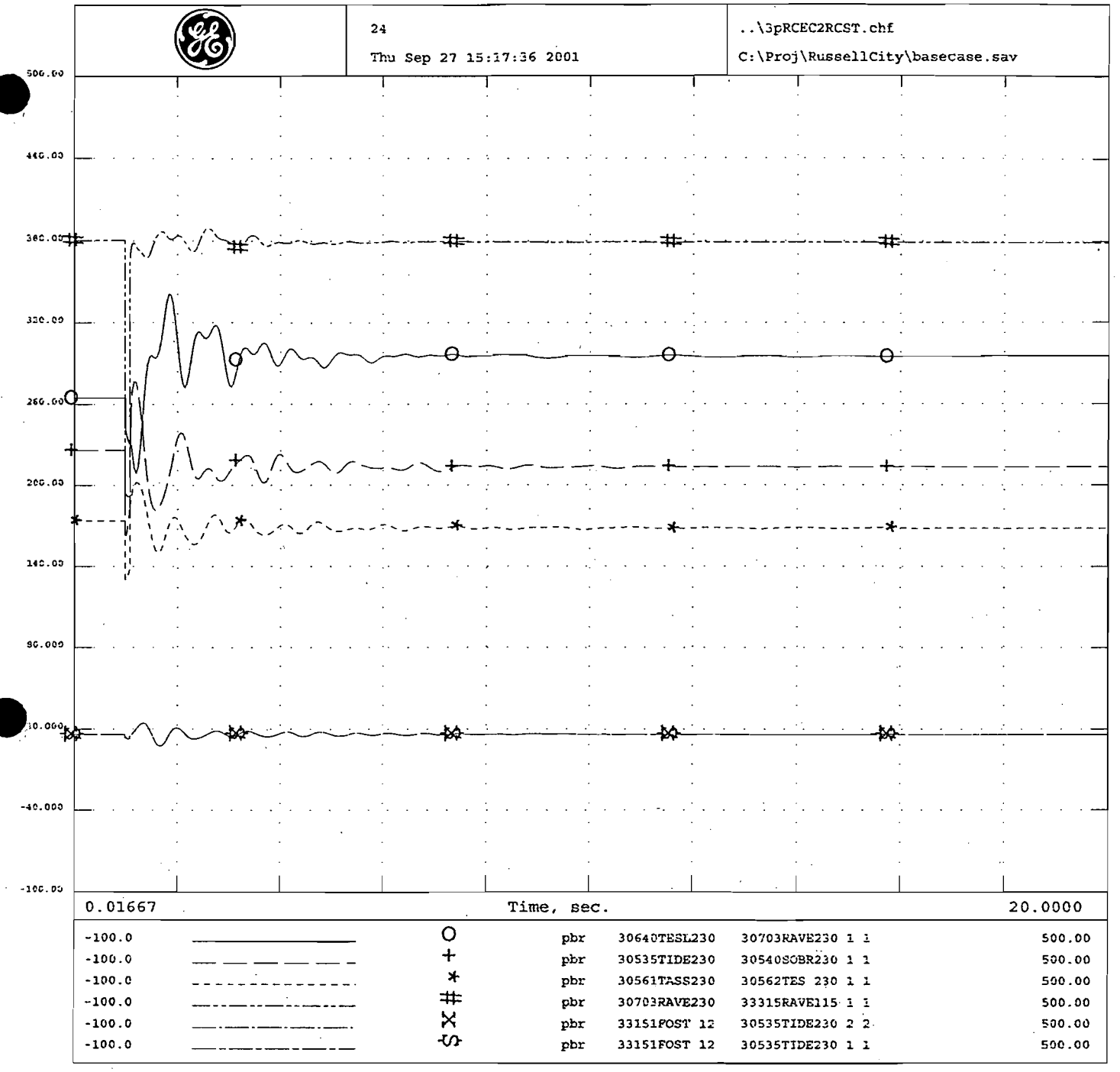

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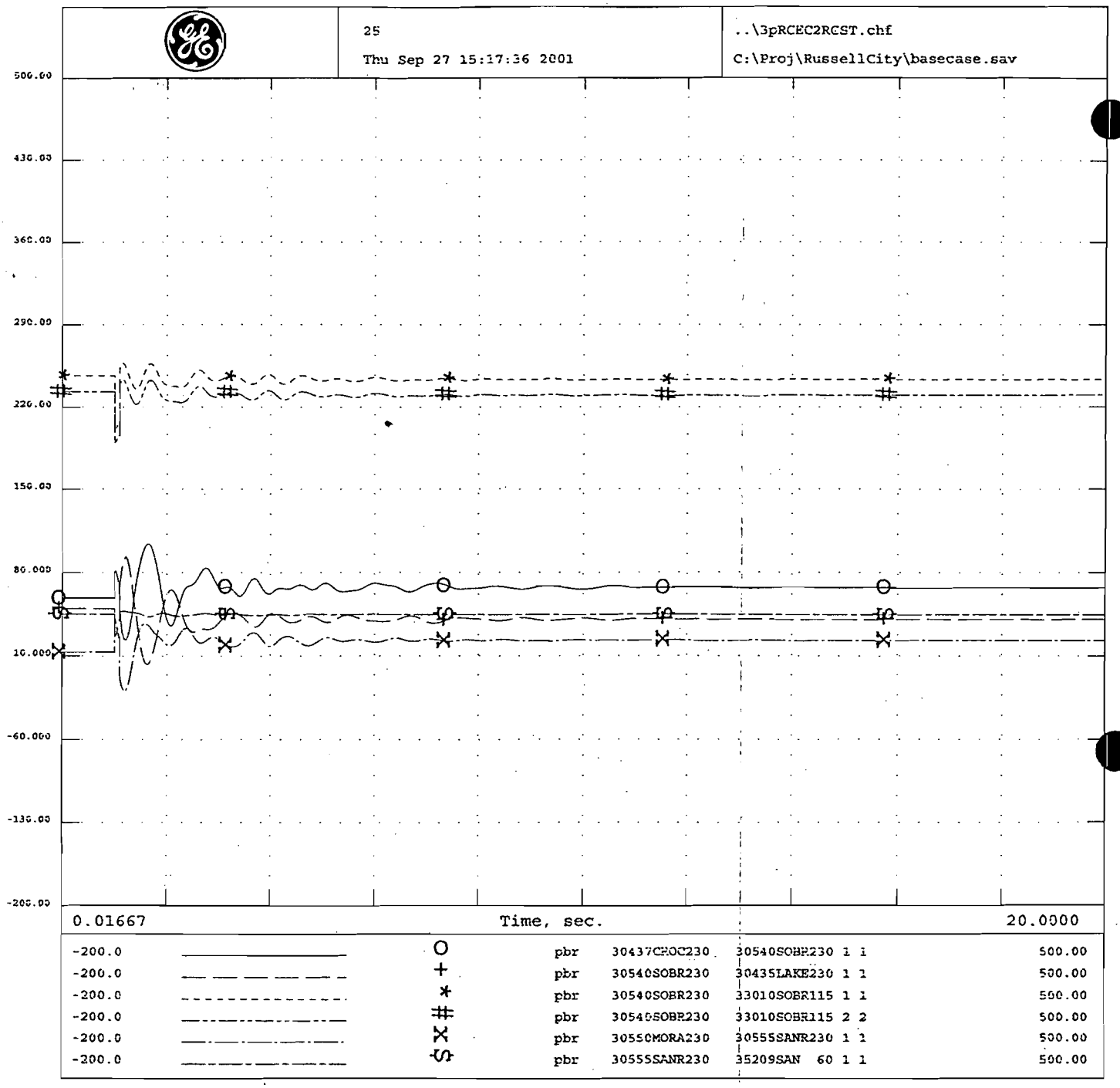

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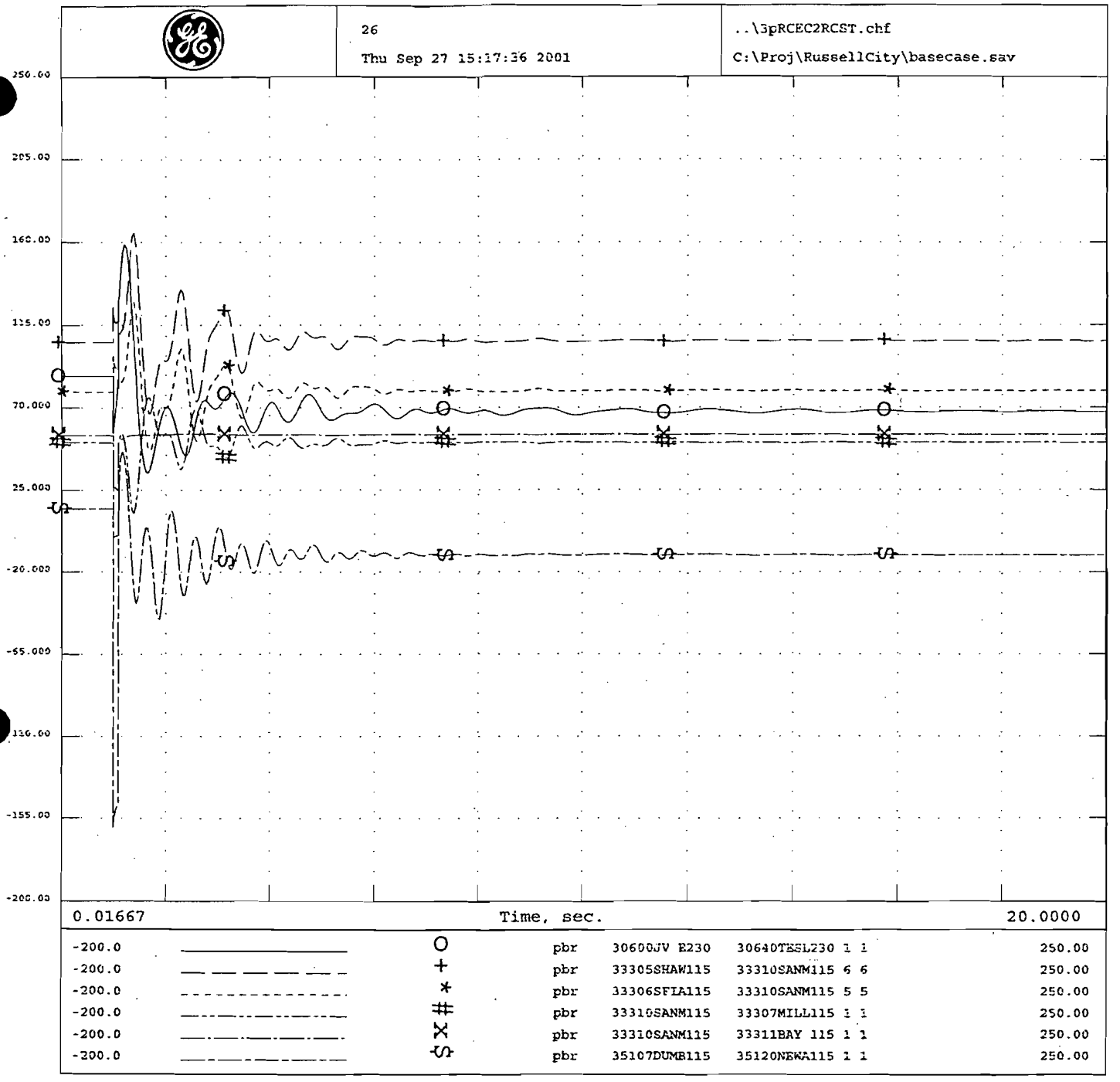

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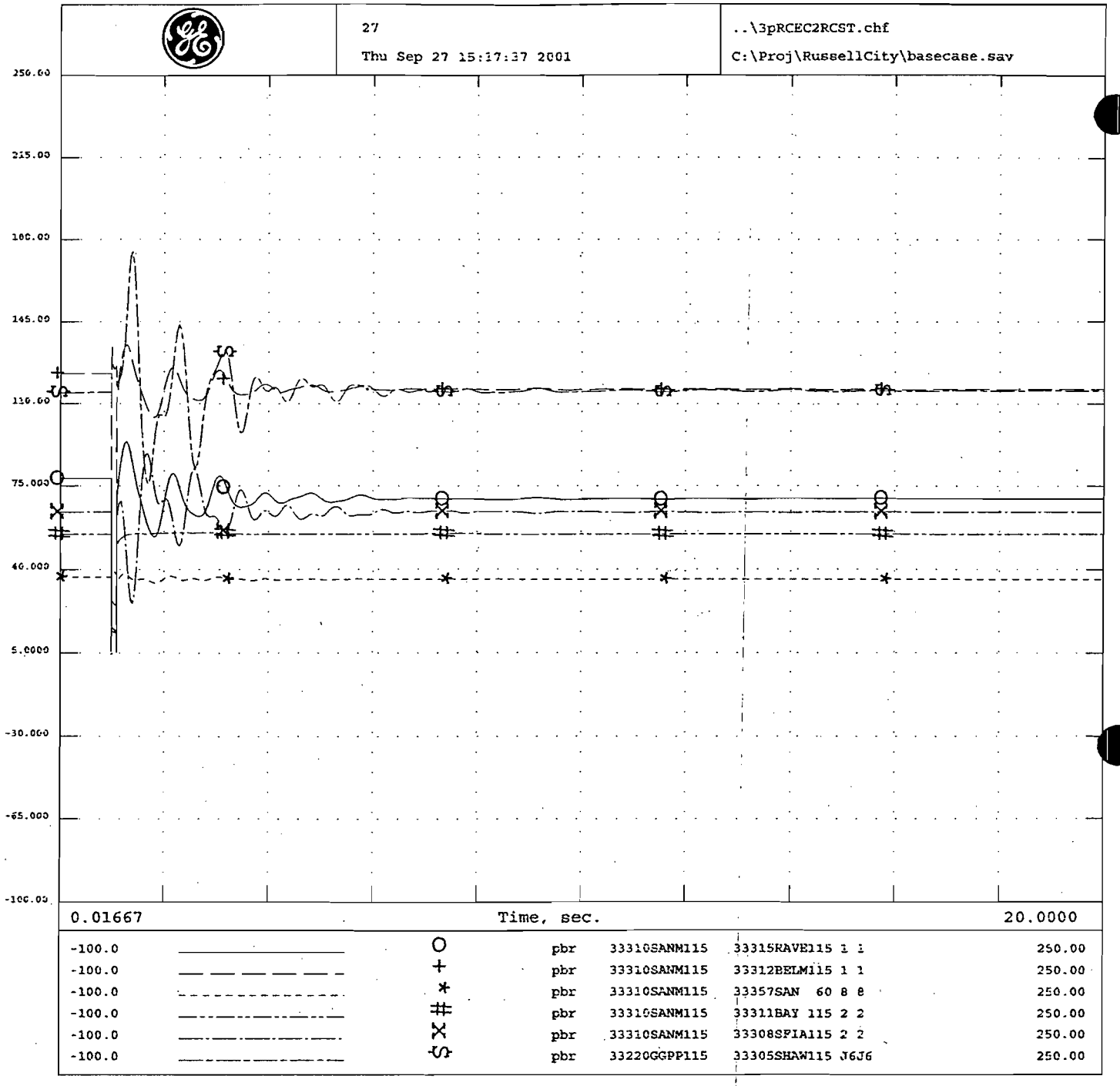

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Russell City Energy Center System Impact Study
Calpine/Bechtel Joint Development
Selected Transmission Line Flows (MW)

Appendix F - Study Plan

System Impact Study

Study Plan

FINAL

Calpine /Bechtel Joint Development
Russell City Energy Center

Pacific Gas and Electric Company

April 20 2001

APPENDIX E - 3

Table of Contents

Introduction and Project Description 1

Study Fee 2

Schedule 2

Cost Estimates 2

Project Information and Interconnection Plan 2

Study Assumptions 4

Power Flow Base Case Assumptions 4

Study Scope 7

- Steady State Power Flow Analysis 7
- System Protection Analysis 8
- Dynamic Stability Analysis 8
- Post Transient Analysis 9
- Transmission Line Evaluation 10
- Substation Evaluation 10
- Permitting 10
- Stand-by Power 10

Introduction and Project Description

Calpine/Bechtel Joint Development (Applicant) is evaluating the feasibility of a 635 MW (nominal rating) generating facility and substation in Pacific Gas and Electric Company's (PG&E's) East Bay Division. The project will be called the Russell City Energy Center Project (RCEC). The proposed project site is located at 3636 Enterprise Avenue, Hayward, CA 94545 and near PG&E's Grant - East Shore 115 kV lines.

Figure 1 provides an overview of the vicinity of the proposed project, as well as the transmission facilities in the area. The Applicant has requested that PG&E conduct a Systems Impact Study(SIS) for this project. The planned operational date of the proposed project is July 1, 2003. The SIS will determine:

1. The transmission system impacts caused solely by the addition of RCEC and

2. The system reinforcement necessary to mitigate the adverse impact of RCEC under various system conditions, if any.

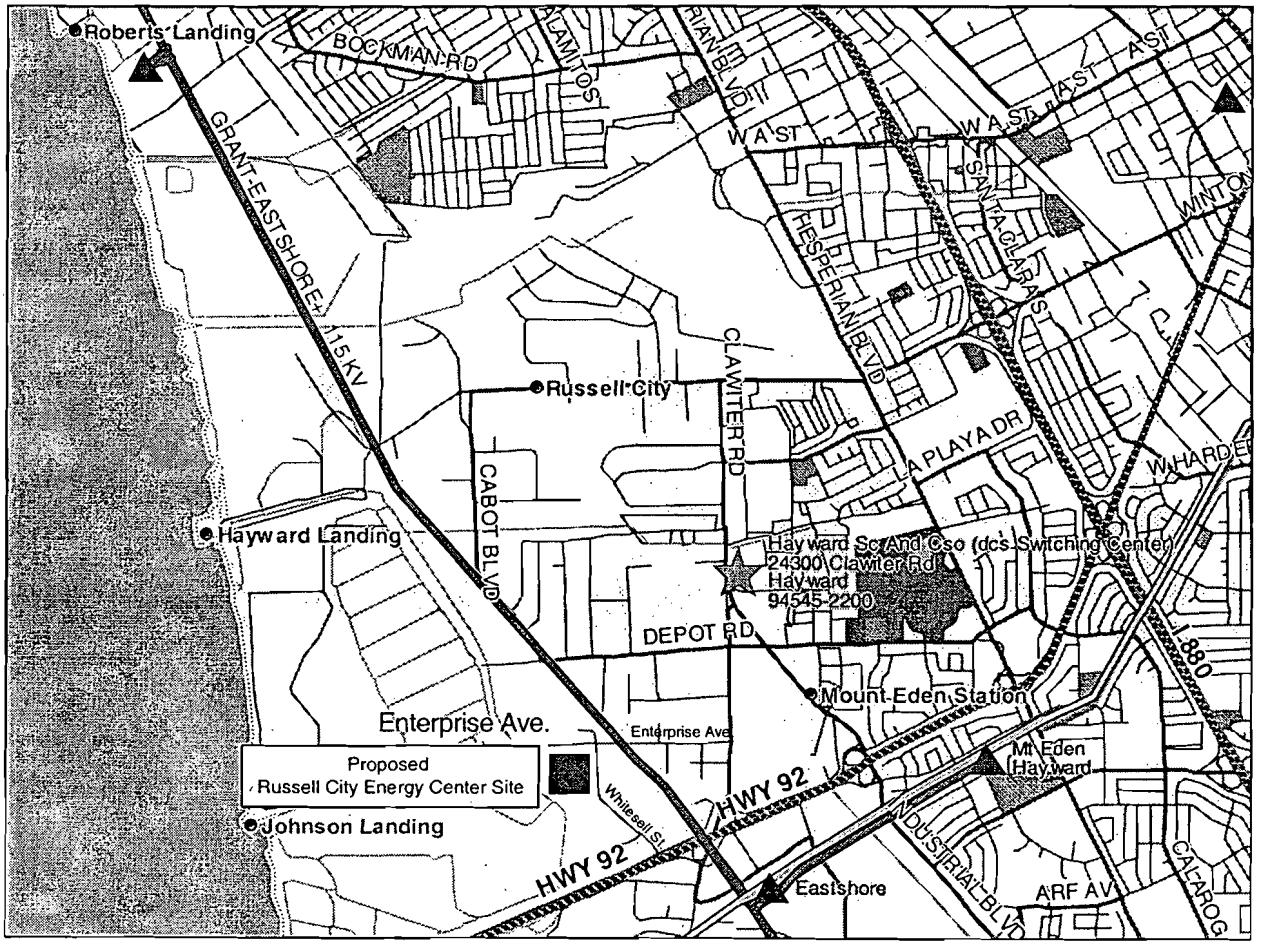


Figure 2: Vicinity Map – Russell City Energy Center Project

This Study Plan will form the basis for the SIS Agreement by defining the scope, content, assumptions, and terms of reference of the SIS.

Study Fee

The applicant must pay a one-time study fee for performing the SIS is $100,000. $50,000 is due with the submittal of SISA, and the balance of $50,000 will be due on June 1, 2001. If the Applicant chooses not to continue with the study after receiving this Study Plan, a fee of $5,000 shall be assessed to reimburse PG&E for the cost of processing the Study Request.[5]

Schedule

The following schedule shows the milestones associated with the study.

Task	Milestone Description	Target Date
1	Establish study commencement date based on receipt of study fee	4/13/01
2	Send draft report to Applicant and Cal-ISO for review and comments	7/9/01
3	Receive comments from Applicant and Cal-ISO	7/23/01
4	Issue Final SIS	8/6/01

PG&E must receive a completed System Impact Study Agreement from the Applicant (including the study fee) by April 13, 2001. If PG&E does not receive the completed Study Agreement by this date, the Interconnection Application will be considered as withdrawn and the Applicant's project position in the generation interconnection queue shall be lost.

Cost Estimates

No cost estimates will be provided in System Impact Study. Cost estimates will be provided when the project progresses to the Facilities Study.

Project Information and Interconnection Plan

The proposed RCEC will consist of a 635 MW (nominal) generating facility and a 230 kV swtichyard inside a new substation. The study plan will refer to this new substation as Russel Enterprise Substation.

The RCEC generating facility will have a maximum rated output of 635 MW with a plant load of 15 MW. Therefore, the maximum net generating capacity delivered to PG&E's transmission system will be 620 MW. REC will be a 2 X 1 combined cycle generating facility using the following turbine/generators:

[5] Refer to PG&E's Transmission Owner Tariff TO4 Terms and Conditions.

- Two - gas-fired combustion turbine/generators (CTG) rated at 190 MW (nominal) each.
- One - steam turbine/generator (STG) rated at 255 MW (nominal).

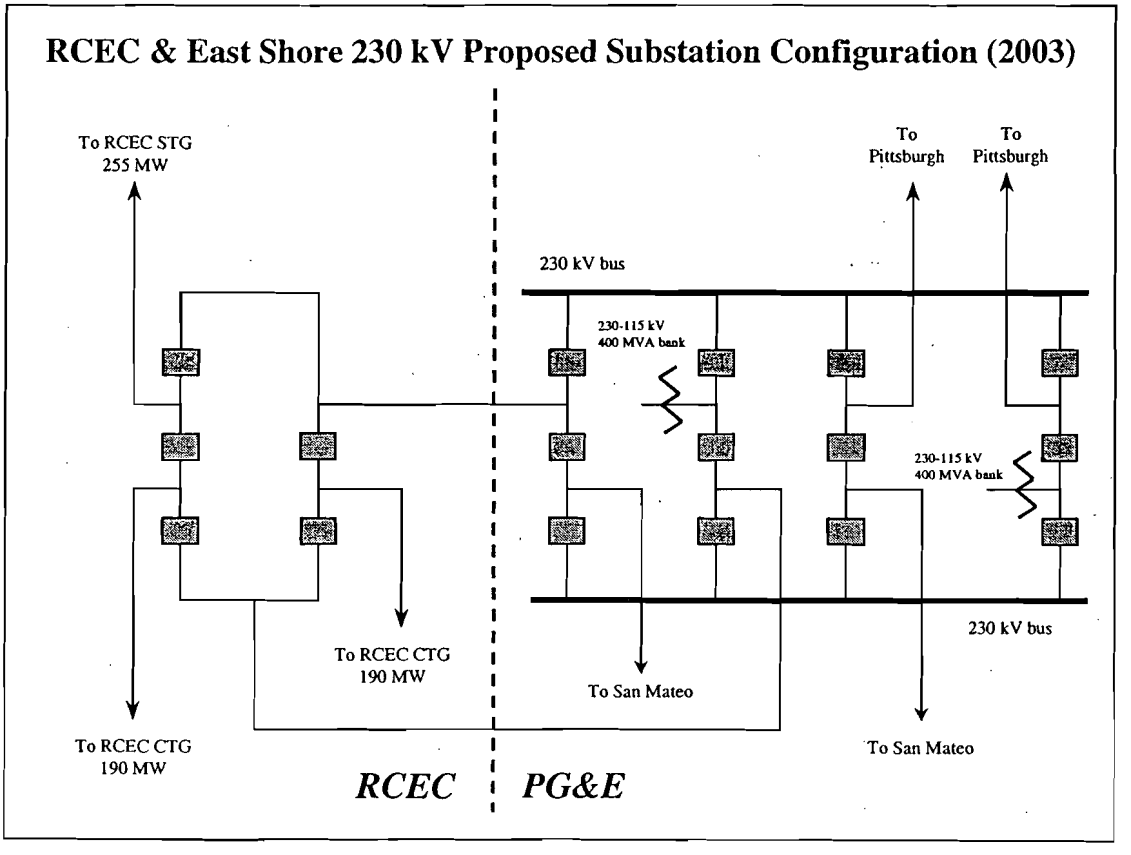
Each turbine/generator unit will have a dedicated 15/230 kV step-up transformer connecting the unit to the RCEC Switchyard.

The RCEC will be connected at the 230 kV voltage level to the PG&E transmission grid via two new 230 kV generation tie lines (about 4600 feet each) into the East Shore 230 kV bus. The turbine/generator units and the 230 kV transmission lines will be arranged in a ring bus configuration.

East Shore Substation currently has a single 230 kV bus configuration. For the System Impact Study, East Shore Substation will be modeled with six 230 kV lines (two from San Mateo, two from Pittsburg, and two from RCEC). The cost and feasibility of this arrangement will be addressed when the study progresses to the Facilities Study phase.

The proposed interconnection will be accomplished by constructing two 230 kV new lines to connect the generating plant switchyard with Eastshore substation. These two outlet circuits will be constructed using PG&E right-of-way (ROW) adjacent to the Grant - Eastshore 115kV lines which is available for use. A single-line diagram for Russell Enterprise Substation is shown in Figure 2.

Figure 2: Single Line Diagram - Area Transmission facilities and RCEC



Study Assumptions

PG&E will conduct the SIS under the following assumptions:

1) The maximum delivery from the proposed project to the PG&E transmission grid will be 620 MW modeled at 0.85 lagging power factor; and it will be on line at this capacity by July 1, 2003.

2) A power plant load of 15 MW will be modeled.

3) The generator ties from Russell Enterprise Substation to East Shore Substation will be modeled as sharing the right-of-way with PG&E's existing Grant - East Shore 115 kV lines.

4) As part of the transmission system mitigation plan for the Delta Energy Center, the existing San Mateo - Contra Costa 230 kV line will be converted to the San Mateo - Pittsubrg 230 kV line and the East Shore - Contra Costa 230 kV line will be converted to the East Shore - Pittsburg 230 kV line.

5) As requested by Calpine/Bechtel Joint Development, this study will also assume that the Pittsburg - San Mateo 230 kV Line (to be operational by 2002) will be looped into East Shore Substation as part of the Russell City Energy Center Project.

6) East Shore Substation will be modeled as having and six 230 kV transmission lines (San Mateo - East Shore #1 and #2, Pittsburg - East Shore #1 and #2, Russell Enterprise - East Shore #1 and #2). The required 230 kV bus configuration at East Shore Substation will be determined when the project progresses forward to the Facilities Study phase.

7) The study will take into account the planned generating facilities in Northern California whose schedules are concurrent with or precede RCEC's schedule. These facilities are described in the section discussing the power flow base cases.

8) The study will take into account all the approved PG&E transmission reliability projects that will be operational by summer 2003.

Note: These assumptions and any changes thereto must be confirmed before the SIS can commence.

Power Flow Base Case Assumptions

Two power flow cases will be used to evaluate the transmission system impact of the RCEC.

1) **2003 Summer Peak Full Loop Base Case:**

Power flow analysis will be performed using PG&E's 2003 Summer Peak Full Loop Base Case (in General Electric Power Flow format). This base case was developed

from PG&E's 2001 base case series and has a 1-in-10 year extreme weather load level for the Greater Bay Area.

2) **2003 Partial Peak Base Case:**

Power flow analysis will also be performed using the 2003 Summer Partial Peak Base Case. The Greater Bay Area load levels are reduced approximately 22% from the levels shown in the Summer Peak Base Case which is representative of a typical morning of a summer peak day.

Base Case Key Generation Assumptions

These two base cases will model all the approved PG&E transmission reliability projects that will be operational by summer 2003. The following major reliability projects will be included:

- Install a third 500/230 kV, 1120 MVA transformer at Tesla Substation
- Install a second 500/230 kV, 850 MVA transformer at Tracy Substation
- Install a third 500/230 kV, 1120 MVA transformer at Metcalf Substation
- A new Tesla-Newark 230 kV line
- Newark - San Mateo 230 kV line loop into Ravenswood Substation
- Static Capacitors (350 MVAR) at Metcalf 500 kV
- Static Capacitors (150 MVAR) at Martin 115 kV
- Newark Substation Bank #7, 9, and 11 TCAP
- Grant-Eastshore 115 kV Transmission Project
- Los Esteros Substation Project
- Tri-Valley Project - Phase I
- Pittsburg - Tassajara 230 kV Line Reconductoring
- Newark 230 230 kV - 100 to 200 MVAR Static VAR Compensator

The base case will also include the following major proposed generating facilities in Northern California:

1) Calpine/Bechtel - 880 MW Delta Energy Center (DEC), interconnecting with the 230 kV bus at the Pittsburg Power Plant switchyard.

2) Calpine/Bechtel - 600 MW Metcalf Energy Center (MEC), interconnecting with the Metcalf - Monta Vista #4 230 kV line, through the MEC switchyard.

3) PG&E NEG - La Paloma generation facility interconnecting at Midway 230 kV bus section D; La Paloma generation facility will be will be modeled at 1110 MW in summer and 1160 MW in spring and winter.

4) Calpine - 500 MW Los Medanos Energy Center (LMEC), interconnecting with the 115 kV bus at the Pittsburg Power Plant switchyard.

5) Texaco - 338 MW Sunrise Generation Facility interconnecting at La Paloma Switching Station.

6) Three Mountain Power Company - 530 MW project interconnecting to PG&E's Pit 1 – Pit 3 and Pit 1 – Cottonwood 230 kV lines.

7) GWF - 130 MW Hanford, interconnecting to Kingxburg - Henrietta 115 kV line in Fresno area.

8) Duke Energy North America Corporation (DENA) - 1080 MW Moss Landing project (MLPP), interconnecting with the existing 230 kV bus at the Moss Landing Power Plant.

9) Southern Energy Company of California - 530 MW Contra Costa Power Plant Capacity Increase Project, interconnecting to Contra Costa PP 230 kV bus.

10) Central Reliability Energy Center - 45 MW project in San Jose/San Clara area.

11) The Midway-Sunset generation facility will be 500 MW in summer, 540 MW in spring, and 540 MW winter. Midway-Sunset generation facility will be interconnected at Midway 230 kV bus section E.

12) Sempra - 500 MW Elk Hills Power Project, interconnecting at Midway 230 kV bus.

13) FPLE - 150 MW High Wind, tapping off the Vaca -Contra Costa #2 230 kV line.

14) United Golden Gate PP - 595 MW generating facilities, interconnecting with the San Mateo - Martin #5 and #6 115 kV lines.

15) Project A - 692 MW Tesla Generation Project , interconnecting near Tesla Substation.

16) Project B – 580 MW Fremont Generating Project interconnecting to the 230 kV bus at Newark Substation.

17) Project C – 581 MW Los Esteros Generating Project interconnecting to the 115 kV bus at Los Esteros Substation.

18) Wellhead Electric - 22 MW Stockton Cogen Project, interconnecting with Newark Sierra Paper Board 60 kV Tap on the Stockton "A" #1 60 kV line.

19) Morro Bay Modernization Project replacing the existing Morro Bay Power Plant with 1,200 MW of generation.

20) Panda - 150 MW West 1-3, interconnecting with Vaca Dixon - Contra Costa #1 230 kV line.

21) Mirant - 600 MW Potrero Unit 7 Project, interconnecting Potrero and Hunters Point Switching Stations.

22) Calpine Corporation - 500 MW Sutter facility, interconnecting with WAPA's Elverta - Olinda and Elverta - Keswick 230 kV.

23) FPLE - 560 MW Elverta Project, , interconnecting with WAPA system.

24) Calpine – 1,070 MW East Altamont Generating Project interconnecting at loop the Tracy - Westley 230 kV circuit near Tracy Substation.

25) Project D - 1000 MW in the Fresno area.

26) Project E - 630 MW in Glenn and Colusa counties.

27) Project F - 1350 MW in Solano county.

Study Scope

The SIS will study the impact of RCEC's added generation on PG&E's transmission system. The specific studies conducted by the SIS are outlined in this section.

Steady State Power Flow Analysis

The two base cases will be used to simulate the impact of the new facility during normal operating conditions, as well as, single and selected multiple (ISO Categories "B" and "C") outages. The study will cover the transmission facilities within PG&E's East Bay, Diablo, San Francisco, Peninsula, Mission, De Anza, and San Jose planning areas.

The single (ISO Category "B") and selected multiple (ISO Category "C") contingencies include the following outages[6]:

ISO Category "B"

- All single generator outages within the study area.
- All single (60-230 kV) transmission circuit outages within the study area.
- All single transformer outages within the study area.
- Overlapping single generator and transmission circuit outages for the transmission lines and generators within the study area.

ISO Category "C"

- Selected bus outages (115 and 230 kV) within the study area.
- Outages caused by breaker failures (excluding bus tie and sectionalizing breakers) at the same bus section above.
- Combination of any two-generator/transmission line/transformer outages (except ones included above in Category "B") within the study area.

[6] As soon as the "B" and "C" outage list is put together, PG&E will send it to Cal-ISO and the developer for review and comment prior to running the outage evaluation.

- Outages of double circuit tower lines (115 and 230 kV) within the study area.
- Overlapping loss of the two largest available generation units in addition to any generation unavailable due to regular overhaul schedules. (ISO Grid Criteria Level C)

System Protection Analysis

Short circuit studies will be performed to determine the impact of increased fault duty resulting from the added generation. The study will determine the maximum fault currents in the vicinity of the proposed project and it will identify equipment that becomes overstressed as a result of the added generation. New protection requirements together with protection modification at the nearby transmission substations, if needed, would also be identified.

Dynamic Stability Analysis

Dynamic stability studies will be conducted using the 2003 Summer Peak Full Loop Base Case with the addition of the Russell City Energy Center Project to ensure that the transmission system remains in operating equilibrium through abnormal operating conditions after the new facility begins operation. This full loop base case was developed from PG&E's 2001 base case series. Other PG&E approved transmission projects and new generation projects in the Bay Area that will be operational by Summer 2003 will also be modeled in this 2003 case.

Disturbance simulations will be performed for a study period of 20 seconds to determine whether the new facility will create any system instability during the following line and generator outages:

NERC/CAISO Category "B" Contingencies:

a) Full load rejection of the proposed 635 MW (nominal) generating facility.

b) A three-phase fault with the normal 6 cycles clearing time at the Russell Enterprise Substation 230 kV bus, followed by loss of one of the Russell Enterprise - East Shore 230 kV lines.

c) A three-phase fault with the normal 6 cycles clearing time at the Russell Enterprise Substation 230 kV bus, followed by loss of the 255 MW (nominal) STG.

d) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of one of the East Shore - San Mateo 230 kV lines.

e) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of one of the East Shore - Pittsburg 230 kV lines.

f) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of East Shore Bank #1 (230/115 kV bank).

g) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of one of the Grant - East Shore 115 kV lines.

h) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of one of the East Shore - Mt. Eden 115 kV lines.

i) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of the East Shore - Dumbarton 115 kV line.

j) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by loss of one of the San Mateo - Ravenswood 230 kV lines.

k) A three-phase fault with the normal 6 cycles clearing time at the Pittsburg 230 kV bus, followed by loss of one of the Pittsburg - Tesla 230 kV lines.

l) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by loss of San Mateo Bank #5 (230/115 kV bank).

NERC/CAISO Category "C" Contingencies:

a) A three-phase fault with the normal 6 cycles clearing time on East Shore 230 kV buses #1 and #2.

b) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - San Mateo #1 and #2 230 kV lines.

c) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - Pittsburg #1 and #2 230 kV lines.

d) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - Pittsburg #1 and East Shore - San Mateo #1 230 kV lines.

e) A three-phase fault with the normal 6 cycles clearing time on San Mateo 230 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

f) A three-phase fault with the normal 6 cycles clearing time on Pittsburg 230 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

g) A three-phase fault with the normal 6 cycles clearing time on East Shore 115 kV bus.

h) A three-phase fault with the normal 6 cycles clearing time on San Mateo 115 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

i) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by simultaneous loss of both San Mateo - Ravenswood 230 kV lines.

Post Transient Analysis

Post transient study will be performed on outages that cause greater than 5% bus voltage drops as indicated in the power flow analysis.

Transmission Line Evaluation

The transmission line evaluation will identify existing transmission line requiring upgrades in order to mitigate overloading due to the new generation, if any.

Substation Evaluation

The Substation evaluation will identify any existing equipment, if any, requiring upgrades to mitigate problems caused by overstress or overload.

Permitting

Calpine/Bechtel Joint Development will be responsible for including the two new overhead 230 kV lines, the new 635 MW generating facility, the new 230 kV substation, and work at existing transmission facilities as part of the project's Application For Certification (AFC) filing to the California Energy Commission (CEC). Calpine/Bechtel Joint Development will own and operate the generating facility. PG&E will not apply for any permits from the CPUC for these works. PG&E will submit an advice letter to CPCU in the form of a Notice of Construction (NOC), as required by General Order (GO) 131-D. The environmental impact component of these substation and transmission line work will be addressed in a broader-scope California Environmental Quality Act (CEQA) analysis that is part of the project's AFC filing.

Stand-by Power

This study does not address any requirements for stand-by power that the project may require. The Applicant should contact their local PG&E service office regarding this service.

Note: The developer is urged to contact their local service office promptly regarding stand-by service in order to ensure its availability for the project's start-up date.

Appendix G – RCEC-East Shore Conceptual Station Layout Diagram

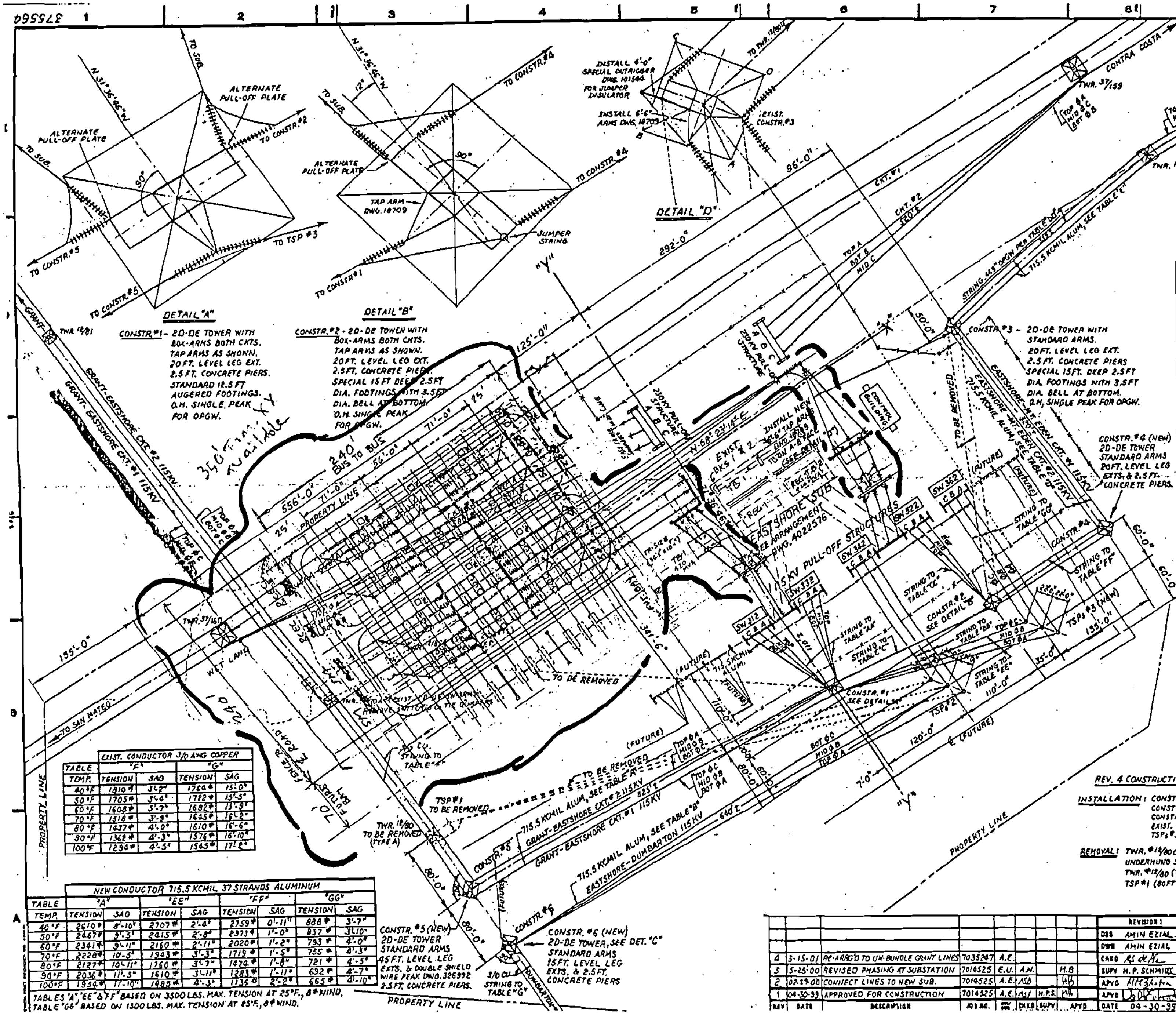


TABLE	EXIST. CONDUCTOR 3/0 AWG COPPER "F"		"G"	
TEMP.	TENSION	SAG	TENSION	SAG
40°F	1810#	3'-2"	1764#	15'-0"
50°F	1705#	3'-4"	1782#	15'-5"
60°F	1608#	3'-7"	1682#	15'-9"
70°F	1518#	3'-9"	1645#	16'-2"
80°F	1437#	4'-0"	1610#	16'-6"
90°F	1362#	4'-3"	1576#	16'-10"
100°F	1294#	4'-5"	1545#	17'-2"

TABLE	NEW CONDUCTOR 715.5 KCMIL 37 STRANDS ALUMINUM "A"		"EE"		"FF"		"GG"	
TEMP.	TENSION	SAG	TENSION	SAG	TENSION	SAG	TENSION	SAG
40°F	2610#	8'-10"	2707#	2'-4"	2759#	0'-11"	888#	3'-7"
50°F	2467#	9'-5"	2415#	2'-8"	2373#	1'-0"	837#	3'-10"
60°F	2341#	9'-11"	2160#	2'-11"	2020#	1'-2"	793#	4'-0"
70°F	2228#	10'-5"	1943#	3'-3"	1719#	1'-5"	755#	4'-3"
80°F	2127#	10'-11"	1760#	3'-7"	1474#	1'-8"	721#	4'-5"
90°F	2036#	11'-5"	1610#	3'-11"	1283#	1'-11"	692#	4'-7"
100°F	1954#	11'-10"	1485#	4'-3"	1136#	2'-2"	665#	4'-10"

TABLES 'A', 'EE' & 'FF' BASED ON 3500 LBS. MAX. TENSION AT 25°F., 8# WIND.
TABLE 'GG' BASED ON 1300 LBS. MAX. TENSION AT 25°F., 8# WIND.

TABLE	NEW CONDUCTOR 715.5 KCMIL 37 STRANDS ALUM. "AA"		"BB"		"CC"		.469" OPGW "DD"	
TEMP.	TENSION	SAG	TENSION	SAG	TENSION	SAG	TENSION	SAG
40°F	1321#	0'-9"	886#	3'-5"	1337#	1'-1"	1191#	4'-1"
50°F	1075#	0'-11"	833#	3'-8"	1123#	1'-3"	1129#	4'-0"
60°F	900#	1'-2"	787#	3'-10"	966#	1'-6"	1072#	4'-6"
70°F	776#	1'-4"	748#	4'-1"	850#	1'-8"	1020#	4'-9"
80°F	686#	1'-6"	714#	4'-3"	763#	1'-10"	972#	5'-0"
90°F	619#	1'-8"	684#	4'-5"	696#	2'-0"	929#	5'-3"
100°F	567#	1'-10"	657#	4'-7"	642#	2'-3"	889#	5'-6"

TABLES "AA" & "CC" BASED ON 2000 LBS. MAX. TENSION AT 25°F, 8 LBS. WIND.
TABLE "BB" BASED ON 1300 LBS. MAX. TENSION AT 25°F, 8 LBS. WIND.
TABLE "DD" BASED ON 1750 LBS. MAX. TENSION AT 25°F, 8 LBS. WIND.

TABLE	NEW CONDUCTOR 715.5 KCMIL 37 STRANDS ALUM. "B"		"C"		"D"		"E"	
TEMP.	TENSION	SAG	TENSION	SAG	TENSION	SAG	TENSION	SAG
40°F	2587#	13'-4"	2728#	1'-8"	1951#	4'-5"	2530#	14'-1"
50°F	2479#	13'-11"	2394#	1'-10"	1799#	4'-9"	2294#	14'-6"
60°F	2384#	14'-5"	2102#	2'-1"	1670#	5'-2"	2096#	14'-11"
70°F	2296#	15'-0"	1853#	2'-5"	1561#	5'-6"	1932#	15'-4"
80°F	2217#	15'-6"	1650#	2'-8"	1467#	5'-10"	1794#	15'-9"
90°F	2143#	16'-1"	1484#	3'-0"	1386#	6'-2"	1677#	16'-2"
100°F	2076#	16'-7"	1350#	3'-3"	1316#	6'-6"	1577#	16'-6"

TABLE "D" BASED ON 2700 LBS. MAX. TENSION AT 25°F., 8# WIND.
TABLES "B", "C" & "E" BASED ON 3500 LBS. MAX. TENSION AT 25°F., 8# WIND.

REFERENCES: — DRAWING

ARRANGEMENT OF TRANSM. LINES TEMP. SUB. (SUPERSEDED) — 218141
ARRANGEMENT OUTDOORS TEMP. SUB. — 443930
ARRANGEMENT OUTDOORS NEW SUB. — 4022576
ARRANGEMENT OF FOUNDATIONS NEW SUB. — 4018584
SITE PLAN NEW SUB. — 375456
REAL PROPERTY MAP — D-3920
S.D.S. CONTRA COSTA - SAN MATEO 230KV — 205607
S.D.S. NEWARK-STATION "J" 115KV — 217311
S.D.S. MOUNT EDEN LOOP 115KV — 207857
S.D.S. TEMP. EASTSHORE LOOP 230KV — 218138
S.D.S. DUMBARTON LOOP 115KV — 211960
PHASING AND TRANSPOSITIONS DIAGRAM — 464079

REV. 4 CONSTRUCTION WORK SCOPE:-

INSTALLATION: CONSTR. #4 - 2D-DE DWG. 406770, 20 FT. LEVEL LEG EXTS. DWG. 406796.
CONSTR. #5 - 2D-DE DWG. 406770, 45 [illegible] LEG [illegible] PEAKS DWG. 325992.
CONSTR. #6 - 2D-DE DWG. 406770 [illegible]FT. LEVEL LEG EXTS. DWG. 406796.
EXIST. CONSTR. #3 - ADD 6'-6" TAP [illegible]RMS DWG. 18709, SPECIAL OUTRIGGER DWG. 1015[illegible]
TSPs #3 - 65FT TYPE DVD-1 TUB[illegible]AR STEEL POLES DWG. 068436.

REMOVAL: TWR. #12/80C (2C-DE, 20' EXTS.)..
UNDERHUNG SWITCHES AT TWR. 12/80A
TWR. #12/80 (TYPE A)
TSP #1 (80FT TYPE SVD-3 DWG. 067658

CONCEPTUAL RCEC

REV	DATE	DESCRIPTION	JOB NO.	DWN	CHKD	SUPV	APVD
4	3-15-01	RE-ARR'G'D TO UN-BUNDLE GRANT LINES	7035247	A.E.			
3	5-25-00	REVISED PHASING AT SUBSTATION	7014525	E.U.	A.N.		H.B
2	02-23-00	CONNECT LINES TO NEW SUB.	7014525	A.E.	ASD		HB
1	04-30-99	APPROVED FOR CONSTRUCTION	7014525	A.E.	AS/	H.P.S.	HG

REVISION 1
DSG AMIN EZIAL
DWN AMIN EZIAL
CHKD RS de He
SUPV H. P. SCHMIDT
APVD [illegible]
APVD [illegible]
DATE 04-30-99

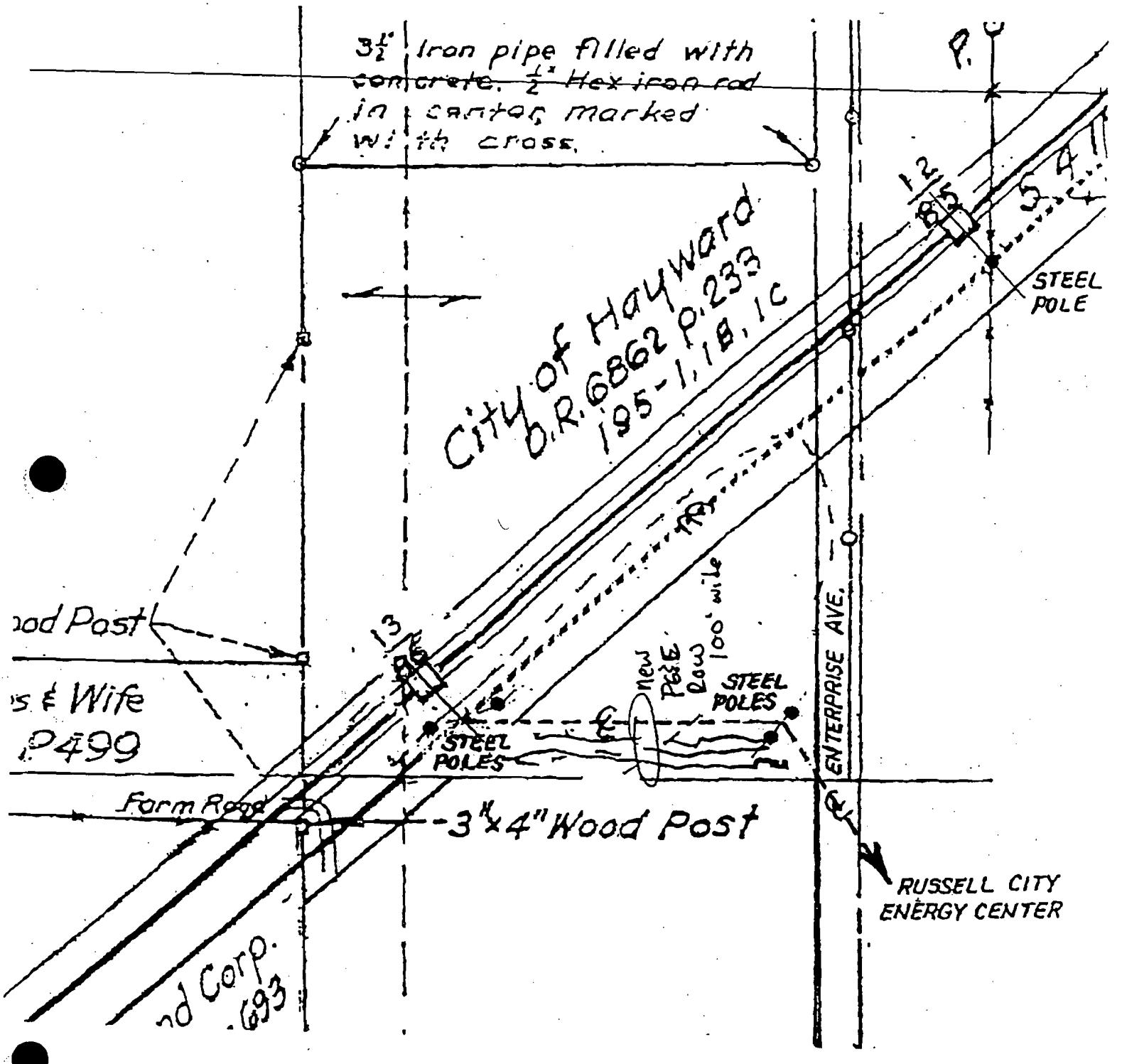
GENERAL ARRANGEMENT OF TRANSMISSION LINES IN VICINITY OF EASTSHORE SUBSTATION

(PERMANENT SITE)

ELECTRIC TRANSMISSION ENGINEERING & CONSTRUCTION

PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

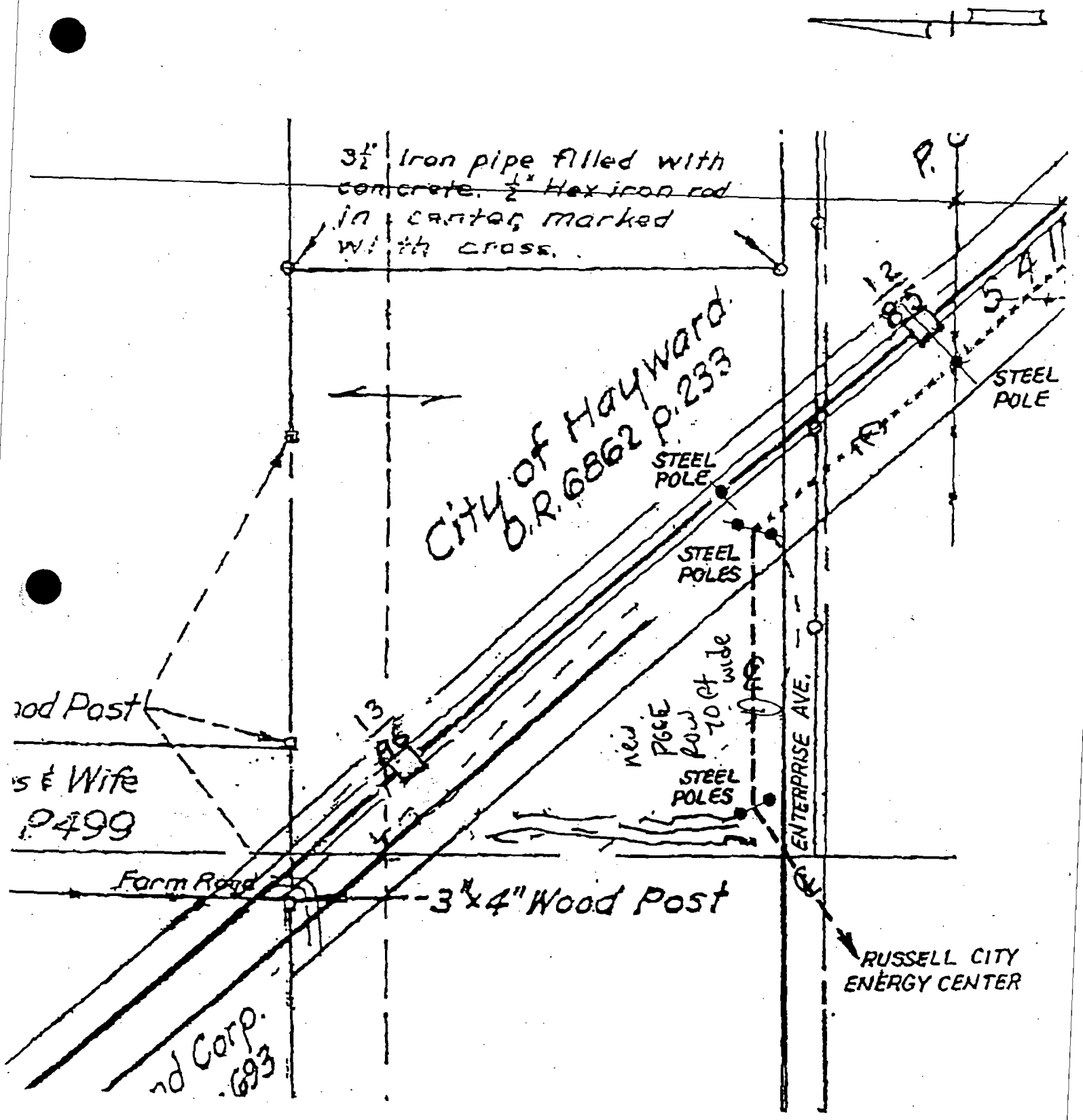
[illegible]SSION DIVISION
MICROFILM
BILL OF MAT'L
DWG LIST
SUPSDS 218141, 218138, 334330
SUPSD BY
SHEET NO. 1 OF 1 SHEETS
375564 REV. 4



ARRANGEMENT I

The right of way width of 100 feet is based on the assumptions that the line can be located as close to the edge of the property line as possible. Final surveying and engineering may change this requirement

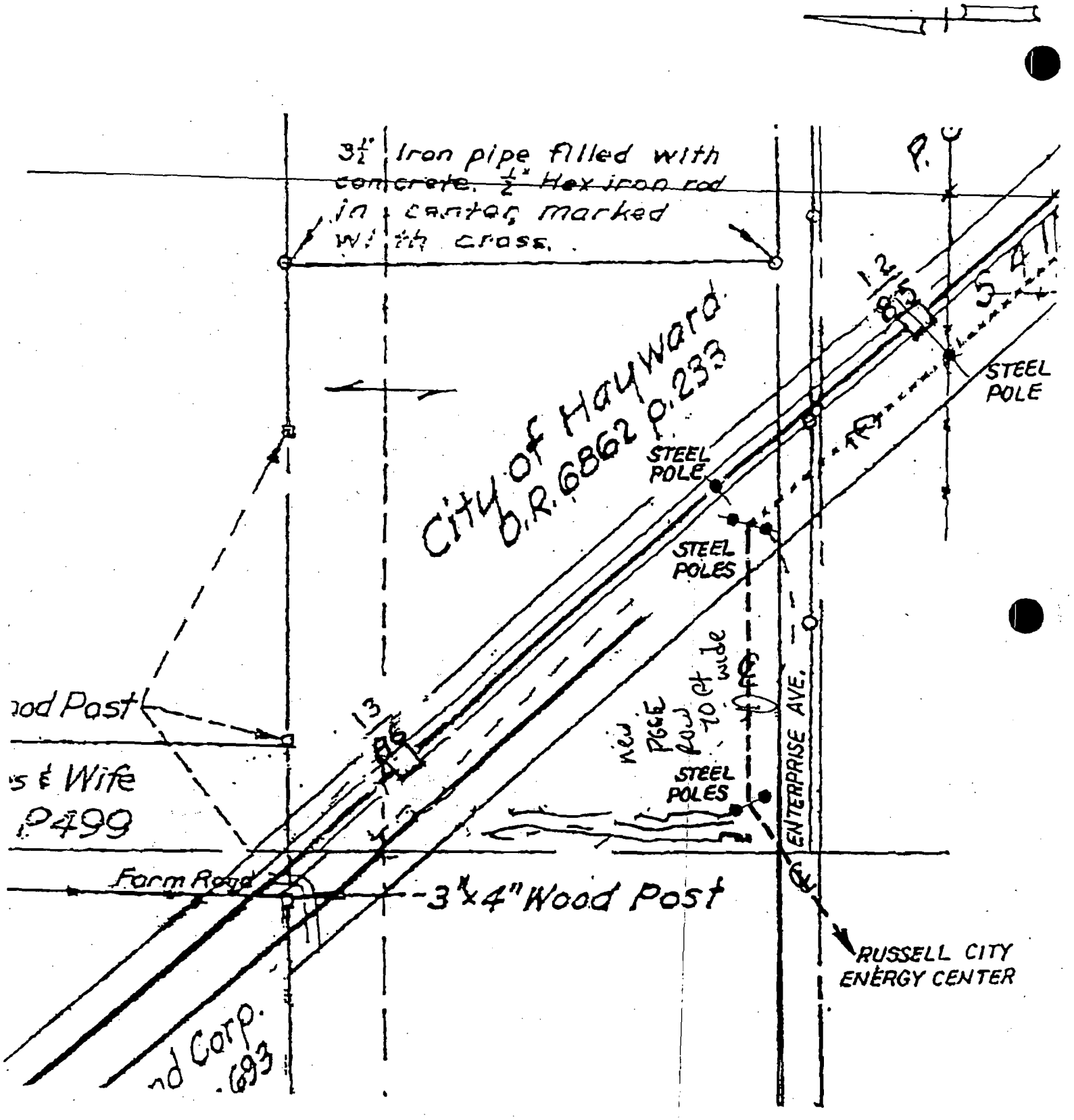
The right of way width of 75 feet assumes that the structures would be 20 feet within private property and the rest would be overhang of the Enterprise Road franchise. Final surveying and engineering may change this requirement.



ARRANGEMENT II

The right of way width of 100 feet is based on the assumptions that the line can be located as close to the edge of the property line as possible. Final surveying and engineering may change this requirement

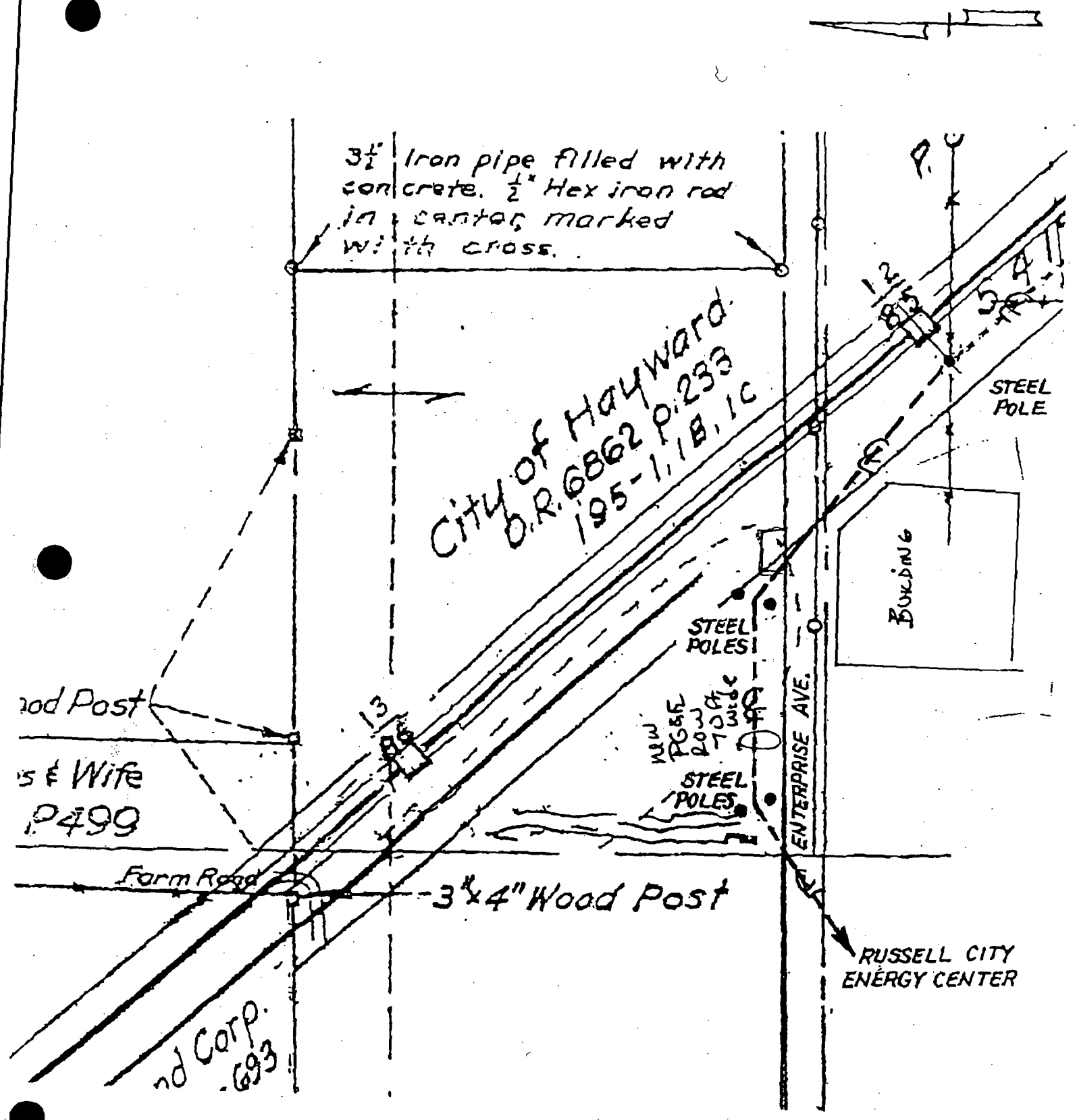
The right of way width of 75 feet assumes that the structures would be 20 feet within private property and the rest would be overhang of the Enterprise Road franchise. Final surveying and engineering may change this requirement.



ARRANGEMENT II

The right of way width of 100 feet is based on the assumptions that the line can be located as close to the edge of the property line as possible. Final surveying and engineering may change this requirement

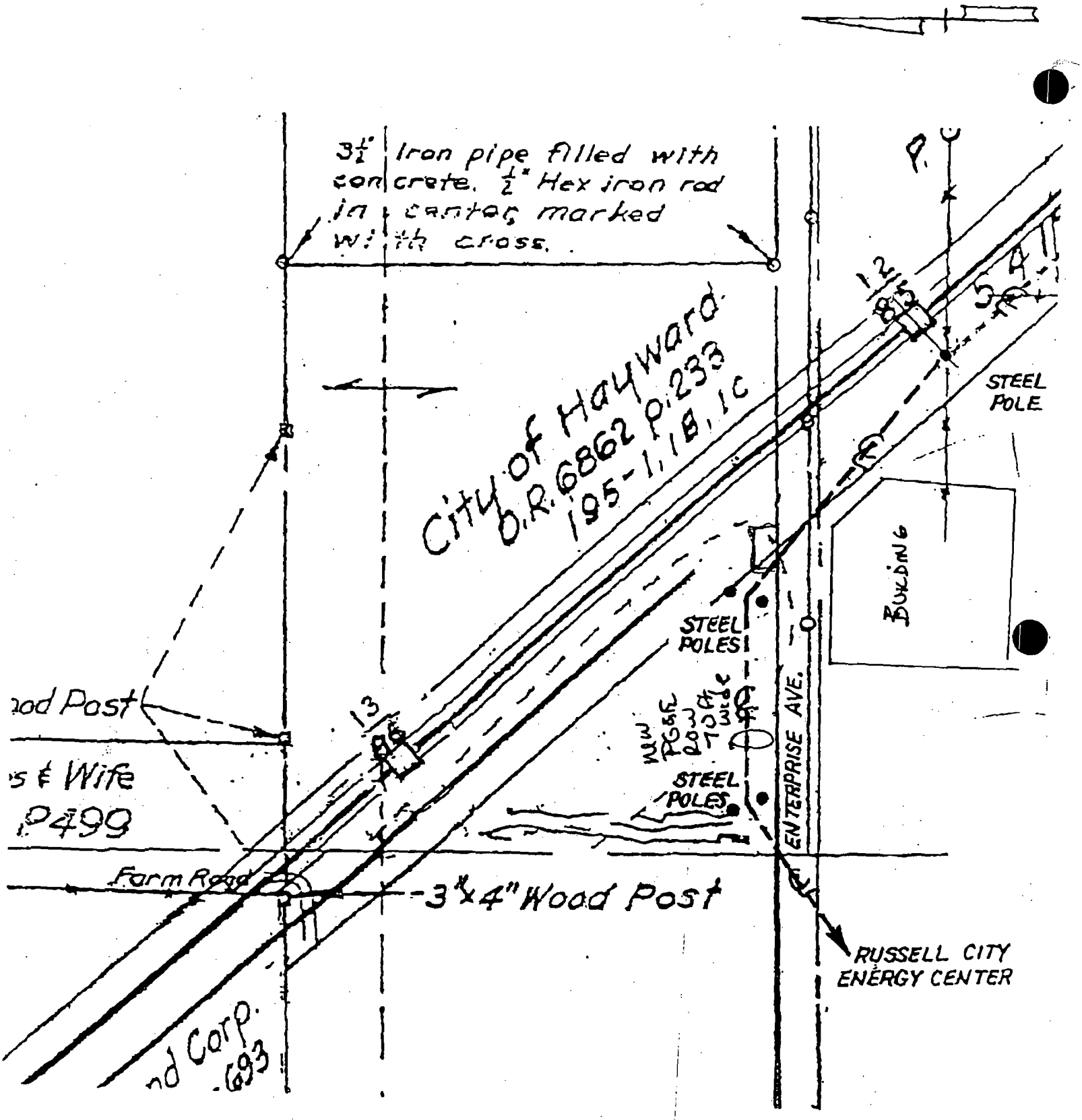
The right of way width of 75 feet assumes that the structures would be 20 feet within private property and the rest would be overhang of the Enterprise Road franchise. Final surveying and engineering may change this requirement.



ARRANGEMENT III

The right of way width of 100 feet is based on the assumptions that the line can be located as close to the edge of the property line as possible. Final surveying and engineering may change this requirement

The right of way width of 75 feet assumes that the structures would be 20 feet within private property and the rest would be overhang of the Enterprise Road franchise. Final surveying and engineering may change this requirement.



ARRANGEMENT III

The right of way width of 100 feet is based on the assumptions that the line can be located as close to the edge of the property line possible. Final surveying and engineering may change this requirement

The right of way width of 75 feet assumes that the structures would be 20 feet within private property and the rest would be overhang of the Enterprise Road franchise. Final surveying and engineering may change this requirement.

Appendix F - Study Plan

System Impact Study

Study Plan

FINAL

Calpine /Bechtel Joint Development
Russell City Energy Center

Pacific Gas and Electric Company

April 20 2001

Table of Contents

Introduction and Project Description 1

Study Fee 2

Schedule 2

Cost Estimates 2

Project Information and Interconnection Plan 2

Study Assumptions 4

Power Flow Base Case Assumptions 4

Study Scope 7

- Steady State Power Flow Analysis 7
- System Protection Analysis 8
- Dynamic Stability Analysis 8
- Post Transient Analysis 9
- Transmission Line Evaluation 10
- Substation Evaluation 10
- Permitting 10
- Stand-by Power 10

Introduction and Project Description

Calpine/Bechtel Joint Development (Applicant) is evaluating the feasibility of a 635 MW (nominal rating) generating facility and substation in Pacific Gas and Electric Company's (PG&E's) East Bay Division. The project will be called the Russell City Energy Center Project (RCEC). The proposed project site is located at 3636 Enterprise Avenue, Hayward, CA 94545 and near PG&E's Grant - East Shore 115 kV lines.

Figure 1 provides an overview of the vicinity of the proposed project, as well as the transmission facilities in the area. The Applicant has requested that PG&E conduct a Systems Impact Study(SIS) for this project. The planned operational date of the proposed project is July 1, 2003. The SIS will determine:

1. The transmission system impacts caused solely by the addition of RCEC and

2. The system reinforcement necessary to mitigate the adverse impact of RCEC under various system conditions, if any.

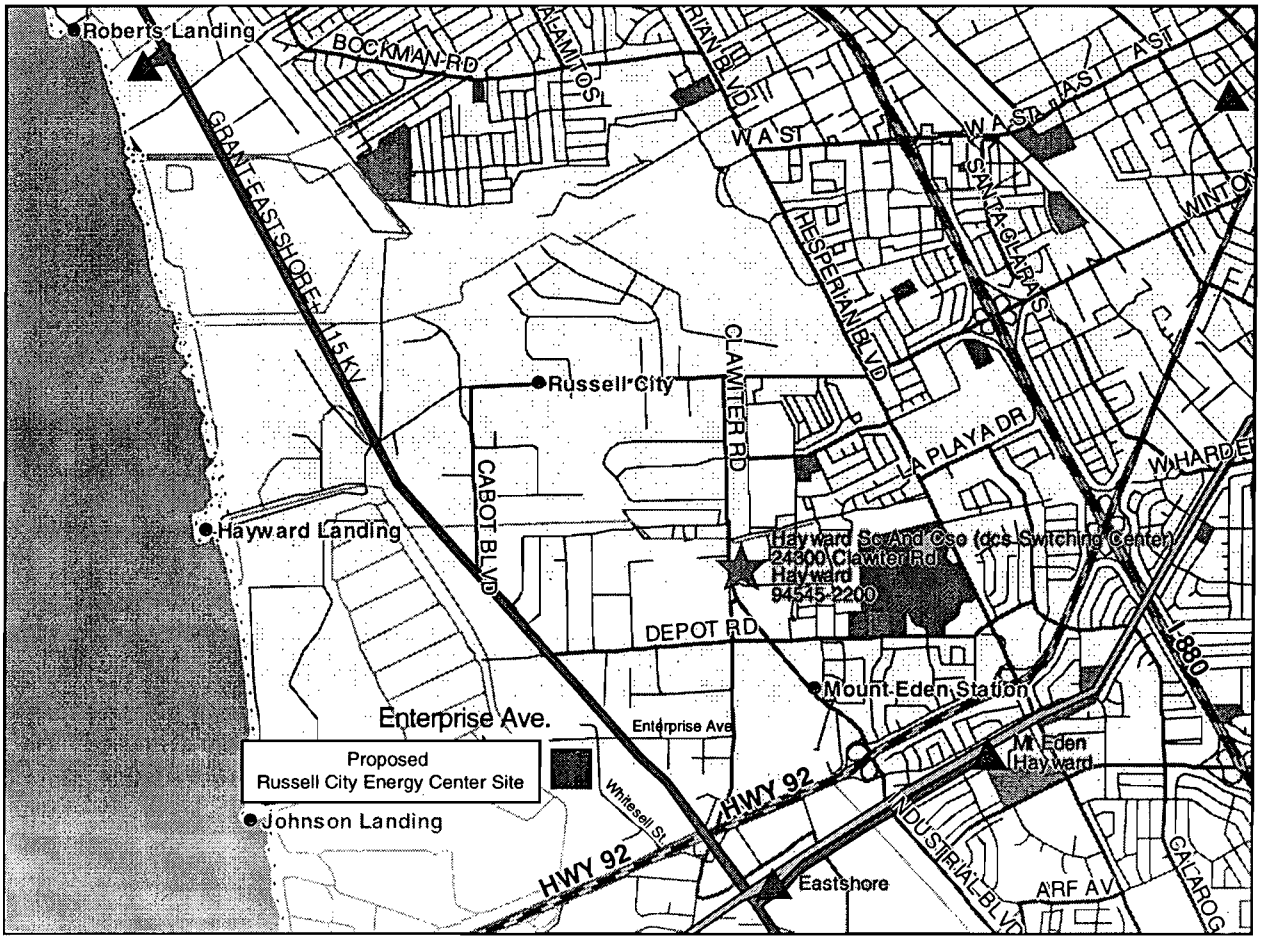


Figure 2: Vicinity Map – Russell City Energy Center Project

This Study Plan will form the basis for the SIS Agreement by defining the scope, content, assumptions, and terms of reference of the SIS.

Study Fee

The applicant must pay a one-time study fee for performing the SIS is $100,000. $50,000 is due with the submittal of SISA, and the balance of $50,000 will be due on June 1, 2001. If the Applicant chooses not to continue with the study after receiving this Study Plan, a fee of $5,000 shall be assessed to reimburse PG&E for the cost of processing the Study Request.[8]

Schedule

The following schedule shows the milestones associated with the study.

Task	Milestone Description	Target Date
1	Establish study commencement date based on receipt of study fee	4/13/01
2	Send draft report to Applicant and Cal-ISO for review and comments	7/9/01
3	Receive comments from Applicant and Cal-ISO	7/23/01
4	Issue Final SIS	8/6/01

PG&E must receive a completed System Impact Study Agreement from the Applicant (including the study fee) by April 13, 2001. If PG&E does not receive the completed Study Agreement by this date, the Interconnection Application will be considered as withdrawn and the Applicant's project position in the generation interconnection queue shall be lost.

Cost Estimates

No cost estimates will be provided in System Impact Study. Cost estimates will be provided when the project progresses to the Facilities Study.

Project Information and Interconnection Plan

The proposed RCEC will consist of a 635 MW (nominal) generating facility and a 230 kV swtichyard inside a new substation. The study plan will refer to this new substation as Russel Enterprise Substation.

The RCEC generating facility will have a maximum rated output of 635 MW with a plant load of 15 MW. Therefore, the maximum net generating capacity delivered to PG&E's transmission system will be 620 MW. REC will be a 2 X 1 combined cycle generating facility using the following turbine/generators:

[8] Refer to PG&E's Transmission Owner Tariff TO4 Terms and Conditions.

- Two - gas-fired combustion turbine/generators (CTG) rated at 190 MW (nominal) each.
- One - steam turbine/generator (STG) rated at 255 MW (nominal).

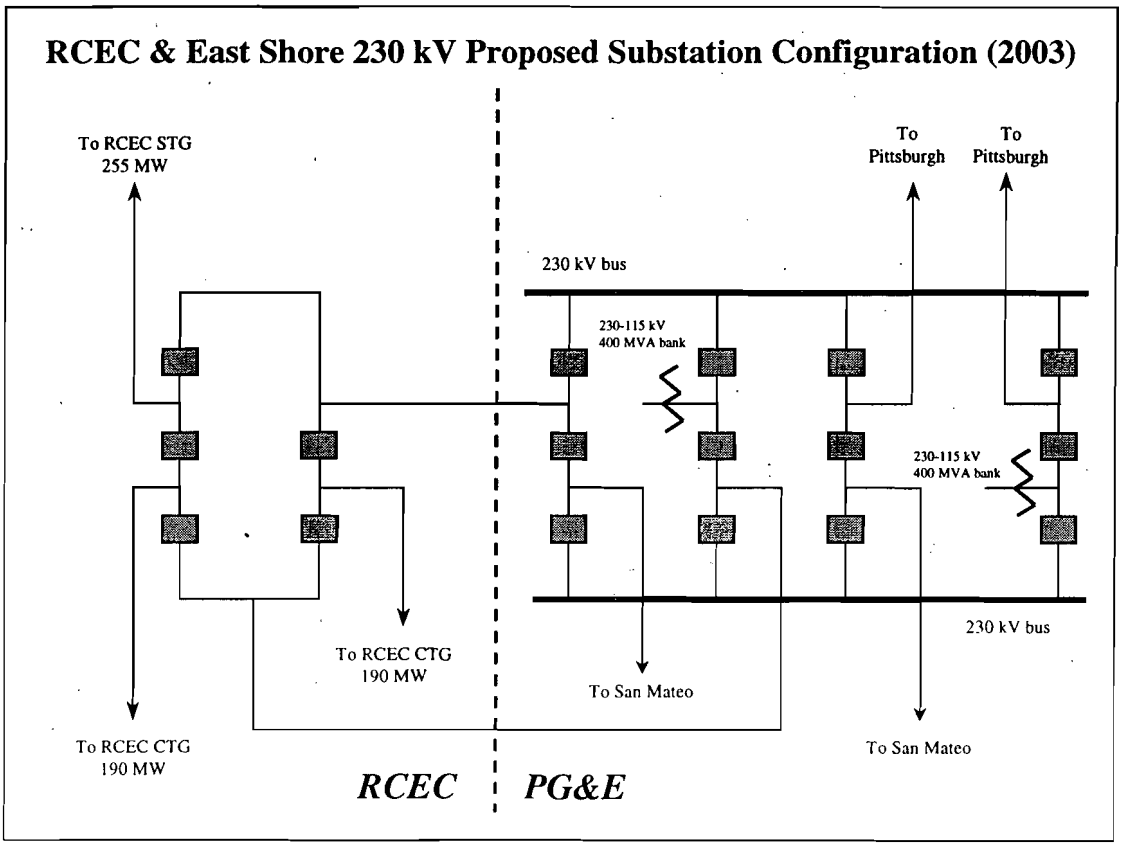
Each turbine/generator unit will have a dedicated 15/230 kV step-up transformer connecting the unit to the RCEC Switchyard.

The RCEC will be connected at the 230 kV voltage level to the PG&E transmission grid via two new 230 kV generation tie lines (about 4600 feet each) into the East Shore 230 kV bus. The turbine/generator units and the 230 kV transmission lines will be arranged in a ring bus configuration.

East Shore Substation currently has a single 230 kV bus configuration. For the System Impact Study, East Shore Substation will be modeled with six 230 kV lines (two from San Mateo, two from Pittsburg, and two from RCEC). The cost and feasibility of this arrangement will be addressed when the study progresses to the Facilities Study phase.

The proposed interconnection will be accomplished by constructing two 230 kV new lines to connect the generating plant switchyard with Eastshore substation. These two outlet circuits will be constructed using PG&E right-of-way (ROW) adjacent to the Grant - Eastshore 115kV lines which is available for use. A single-line diagram for RCECSubstation is shown in Figure 2.

Figure 2: Single Line Diagram - Area Transmission facilities and RCEC



Study Assumptions

PG&E will conduct the SIS under the following assumptions:

1) The maximum delivery from the proposed project to the PG&E transmission grid will be 620 MW modeled at 0.85 lagging power factor; and it will be on line at this capacity by July 1, 2003.

2) A power plant load of 15 MW will be modeled.

3) The generator ties from RCECSubstation to East Shore Substation will be modeled as sharing the right-of-way with PG&E's existing Grant - East Shore 115 kV lines.

4) As part of the transmission system mitigation plan for the Delta Energy Center, the existing San Mateo - Contra Costa 230 kV line will be converted to the San Mateo - Pittsubrg 230 kV line and the East Shore - Contra Costa 230 kV line will be converted to the East Shore - Pittsburg 230 kV line.

5) As requested by Calpine/Bechtel Joint Development, this study will also assume that the Pittsburg - San Mateo 230 kV Line (to be operational by 2002) will be looped into East Shore Substation as part of the Russell City Energy Center Project.

6) East Shore Substation will be modeled as having and six 230 kV transmission lines (San Mateo - East Shore #1 and #2, Pittsburg - East Shore #1 and #2, RCEC- East Shore #1 and #2). The required 230 kV bus configuration at East Shore Substation will be determined when the project progresses forward to the Facilities Study phase.

7) The study will take into account the planned generating facilities in Northern California whose schedules are concurrent with or precede RCEC's schedule. These facilities are described in the section discussing the power flow base cases.

8) The study will take into account all the approved PG&E transmission reliability projects that will be operational by summer 2003.

Note: These assumptions and any changes thereto must be confirmed before the SIS can commence.

Power Flow Base Case Assumptions

Two power flow cases will be used to evaluate the transmission system impact of the RCEC.

1) **2003 Summer Peak Full Loop Base Case:**

Power flow analysis will be performed using PG&E's 2003 Summer Peak Full Loop Base Case (in General Electric Power Flow format). This base case was developed from PG&E's 2001 base case series and has a 1-in-10 year extreme weather load level for the Greater Bay Area.

2) **2003 Partial Peak Base Case:**

Power flow analysis will also be performed using the 2003 Summer Partial Peak Base Case. The Greater Bay Area load levels are reduced approximately 22% from the levels shown in the Summer Peak Base Case which is representative of a typical morning of a summer peak day.

Base Case Key Generation Assumptions

These two base cases will model all the approved PG&E transmission reliability projects that will be operational by summer 2003. The following major reliability projects will be included:

- Install a third 500/230 kV, 1120 MVA transformer at Tesla Substation
- Install a second 500/230 kV, 850 MVA transformer at Tracy Substation
- Install a third 500/230 kV, 1120 MVA transformer at Metcalf Substation
- A new Tesla-Newark 230 kV line
- Newark - San Mateo 230 kV line loop into Ravenswood Substation
- Static Capacitors (350 MVAR) at Metcalf 500 kV
- Static Capacitors (150 MVAR) at Martin 115 kV
- Newark Substation Bank #7, 9, and 11 TCAP
- Grant-Eastshore 115 kV Transmission Project
- Los Esteros Substation Project
- Tri-Valley Project - Phase I
- Pittsburg - Tassajara 230 kV Line Reconductoring
- Newark 230 230 kV - 100 to 200 MVAR Static VAR Compensator

The base case will also include the following major proposed generating facilities in Northern California:

1) Calpine/Bechtel - 880 MW Delta Energy Center (DEC), interconnecting with the 230 kV bus at the Pittsburg Power Plant switchyard.

2) Calpine/Bechtel - 600 MW Metcalf Energy Center (MEC), interconnecting with the Metcalf - Monta Vista #4 230 kV line, through the MEC switchyard.

3) PG&E NEG - La Paloma generation facility interconnecting at Midway 230 kV bus section D; La Paloma generation facility will be will be modeled at 1110 MW in summer and 1160 MW in spring and winter.

4) Calpine - 500 MW Los Medanos Energy Center (LMEC), interconnecting with the 115 kV bus at the Pittsburg Power Plant switchyard.

5) Texaco - 338 MW Sunrise Generation Facility interconnecting at La Paloma Switching Station.

6) Three Mountain Power Company - 530 MW project interconnecting to PG&E's Pit 1 – Pit 3 and Pit 1 – Cottonwood 230 kV lines.

7) GWF - 130 MW Hanford, interconnecting to Kingxburg - Henrietta 115 kV line in Fresno area.

8) Duke Energy North America Corporation (DENA) - 1080 MW Moss Landing project (MLPP), interconnecting with the existing 230 kV bus at the Moss Landing Power Plant.

9) Southern Energy Company of California - 530 MW Contra Costa Power Plant Capacity Increase Project, interconnecting to Contra Costa PP 230 kV bus.

10) Central Reliability Energy Center - 45 MW project in San Jose/San Clara area.

11) The Midway-Sunset generation facility will be 500 MW in summer, 540 MW in spring, and 540 MW winter. Midway-Sunset generation facility will be interconnected at Midway 230 kV bus section E.

12) Sempra - 500 MW Elk Hills Power Project, interconnecting at Midway 230 kV bus.

13) FPLE - 150 MW High Wind, tapping off the Vaca -Contra Costa #2 230 kV line.

14) United Golden Gate PP - 595 MW generating facilities, interconnecting with the San Mateo - Martin #5 and #6 115 kV lines.

15) Project A - 692 MW Tesla Generation Project , interconnecting near Tesla Substation.

16) Project B – 580 MW Fremont Generating Project interconnecting to the 230 kV bus at Newark Substation.

17) Project C – 581 MW Los Esteros Generating Project interconnecting to the 115 kV bus at Los Esteros Substation.

18) Wellhead Electric - 22 MW Stockton Cogen Project, interconnecting with Newark Sierra Paper Board 60 kV Tap on the Stockton "A" #1 60 kV line.

19) Morro Bay Modernization Project replacing the existing Morro Bay Power Plant with 1,200 MW of generation.

20) Panda - 150 MW West 1-3, interconnecting with Vaca Dixon - Contra Costa #1 230 kV line.

21) Mirant - 600 MW Potrero Unit 7 Project, interconnecting Potrero and Hunters Point Switching Stations.

22) Calpine Corporation - 500 MW Sutter facility, interconnecting with WAPA's Elverta - Olinda and Elverta - Keswick 230 kV.

23) FPLE - 560 MW Elverta Project, , interconnecting with WAPA system.

24) Calpine – 1,070 MW East Altamont Generating Project interconnecting at loop the Tracy - Westley 230 kV circuit near Tracy Substation.

25) Project D - 1000 MW in the Fresno area.

26) Project E - 630 MW in Glenn and Colusa counties.

27) Project F - 1350 MW in Solano county.

Study Scope

The SIS will study the impact of RCEC's added generation on PG&E's transmission system. The specific studies conducted by the SIS are outlined in this section.

Steady State Power Flow Analysis

The two base cases will be used to simulate the impact of the new facility during normal operating conditions, as well as, single and selected multiple (ISO Categories "B" and "C") outages. The study will cover the transmission facilities within PG&E's East Bay, Diablo, San Francisco, Peninsula, Mission, De Anza, and San Jose planning areas.

The single (ISO Category "B") and selected multiple (ISO Category "C") contingencies include the following outages[9]:

ISO Category "B"

- All single generator outages within the study area.
- All single (60-230 kV) transmission circuit outages within the study area.
- All single transformer outages within the study area.
- Overlapping single generator and transmission circuit outages for the transmission lines and generators within the study area.

ISO Category "C"

- Selected bus outages (115 and 230 kV) within the study area.
- Outages caused by breaker failures (excluding bus tie and sectionalizing breakers) at the same bus section above.
- Combination of any two-generator/transmission line/transformer outages (except ones included above in Category "B") within the study area.
- Outages of double circuit tower lines (115 and 230 kV) within the study area.

[9] As soon as the "B" and "C" outage list is put together, PG&E will send it to Cal-ISO and the developer for review and comment prior to running the outage evaluation.

- Overlapping loss of the two largest available generation units in addition to any generation unavailable due to regular overhaul schedules. (ISO Grid Criteria Level C)

System Protection Analysis

Short circuit studies will be performed to determine the impact of increased fault duty resulting from the added generation. The study will determine the maximum fault currents in the vicinity of the proposed project and it will identify equipment that becomes overstressed as a result of the added generation. New protection requirements together with protection modification at the nearby transmission substations, if needed, would also be identified.

Dynamic Stability Analysis

Dynamic stability studies will be conducted using the 2003 Summer Peak Full Loop Base Case with the addition of the Russell City Energy Center Project to ensure that the transmission system remains in operating equilibrium through abnormal operating conditions after the new facility begins operation. This full loop base case was developed from PG&E's 2001 base case series. Other PG&E approved transmission projects and new generation projects in the Bay Area that will be operational by Summer 2003 will also be modeled in this 2003 case.

Disturbance simulations will be performed for a study period of 20 seconds to determine whether the new facility will create any system instability during the following line and generator outages:

NERC/CAISO Category "B" Contingencies:

a) Full load rejection of the proposed 635 MW (nominal) generating facility.

b) A three-phase fault with the normal 6 cycles clearing time at the RCECSubstation 230 kV bus, followed by loss of one of the RCEC- East Shore 230 kV lines.

c) A three-phase fault with the normal 6 cycles clearing time at the RCECSubstation 230 kV bus, followed by loss of the 255 MW (nominal) STG.

d) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of one of the East Shore - San Mateo 230 kV lines.

e) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of one of the East Shore - Pittsburg 230 kV lines.

f) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by loss of East Shore Bank #1 (230/115 kV bank).

g) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of one of the Grant - East Shore 115 kV lines.

h) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of one of the East Shore - Mt. Eden 115 kV lines.

i) A three-phase fault with the normal 6 cycles clearing time at the East Shore 115 kV bus, followed by loss of the East Shore - Dumbarton 115 kV line.

j) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by loss of one of the San Mateo - Ravenswood 230 kV lines.

k) A three-phase fault with the normal 6 cycles clearing time at the Pittsburg 230 kV bus, followed by loss of one of the Pittsburg - Tesla 230 kV lines.

l) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by loss of San Mateo Bank #5 (230/115 kV bank).

NERC/CAISO Category "C" Contingencies:

a) A three-phase fault with the normal 6 cycles clearing time on East Shore 230 kV buses #1 and #2.

b) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - San Mateo #1 and #2 230 kV lines.

c) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - Pittsburg #1 and #2 230 kV lines.

d) A three-phase fault with the normal 6 cycles clearing time at the East Shore 230 kV bus, followed by simultaneous loss of both East Shore - Pittsburg #1 and East Shore - San Mateo #1 230 kV lines.

e) A three-phase fault with the normal 6 cycles clearing time on San Mateo 230 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

f) A three-phase fault with the normal 6 cycles clearing time on Pittsburg 230 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

g) A three-phase fault with the normal 6 cycles clearing time on East Shore 115 kV bus.

h) A three-phase fault with the normal 6 cycles clearing time on San Mateo 115 kV buses (Bus 1, Section D; Bus 2, Section D; Bus 1, Section E; Bus 2, Section E).

i) A three-phase fault with the normal 6 cycles clearing time at the San Mateo 230 kV bus, followed by simultaneous loss of both San Mateo - Ravenswood 230 kV lines.

Post Transient Analysis

Post transient study will be performed on outages that cause greater than 5% bus voltage drops as indicated in the power flow analysis.

Transmission Line Evaluation

The transmission line evaluation will identify existing transmission line requiring upgrades in order to mitigate overloading due to the new generation, if any.

Substation Evaluation

The Substation evaluation will identify any existing equipment, if any, requiring upgrades to mitigate problems caused by overstress or overload.

Permitting

Calpine/Bechtel Joint Development will be responsible for including the two new overhead 230 kV lines, the new 635 MW generating facility, the new 230 kV substation, and work at existing transmission facilities as part of the project's Application For Certification (AFC) filing to the California Energy Commission (CEC). Calpine/Bechtel Joint Development will own and operate the generating facility. PG&E will not apply for any permits from the CPUC for these works. PG&E will submit an advice letter to CPCU in the form of a Notice of Construction (NOC), as required by General Order (GO) 131-D. The environmental impact component of these substation and transmission line work will be addressed in a broader-scope California Environmental Quality Act (CEQA) analysis that is part of the project's AFC filing.

Stand-by Power

This study does not address any requirements for stand-by power that the project may require. The Applicant should contact their local PG&E service office regarding this service.

Note: The developer is urged to contact their local service office promptly regarding stand-by service in order to ensure its availability for the project's start-up date.

Appendix G – Substation and Transmission Conceptual Station Layout Diagrams