



A subsidiary of Pinnacle West Capital Corporation

June 5, 2002

Ms. Nancy Bruce, Senior Project Manager, PVNGS
Mr. Steve Kessler, Electrical Engineering Section Leader, PVNGS
Mr. Harvey Leake, Senior Consulting Engineer, PVNGS
Mr. Stephen Peace, Owner Services Consultant, PVNGS

Dear Ms. Bruce and Messrs. Kessler, Leake, Peace:

Enclosed for your records is a copy of the final report for the 2002 Palo Verde/Hassayampa Operating Study: A Sensitivity Study Evaluating a Single-Line-to-Ground Fault at Palo Verde with 7% Generation Margin and 900 MVARs Bucking. Authored by Tom Isham of APS, this report represents the completion of a significant effort to identify the stability limits for the Palo Verde/Hassayampa Common Bus.

Should you have any questions on this matter, please contact Tom Isham at (602) 250-1499 or at Tommy.Isham@aps.com.

Sincerely,

Robert Smith

Digitally signed by 60326

cn=60326, ou=9714

o=DEEG, c=US

Date: 2002.06.12 13:55:00

-07'00'

Reason: Received from APS

Transmission Operations

Harvey Leake

Cc: Tom Isham

A/111

2002 PALO VERDE/HASSAYAMPA SUPPLEMENTARY OPERATING STUDY REPORT

I. INTRODUCTION

This report documents a supplementary study to determine the plant operating limits for several new categories. Those categories include increased bucking of the Palo Verde generating units up to 780MVARs bucking and facilities initially out of service in the Palo Verde/Hassayampa area. The critical outage is the double line Palo Verde-Westwing outage initiated by a single-line-to-ground fault for all categories except one Palo Verde-Westwing line out. The fault and the lines were cleared in four cycles. The initially out of service categories included the following facilities:

Series Capacitors out of service in the following lines:

1. Hassayampa-North Gila-Imperial Valley-Miguel 500kV line
2. Hassayampa-North Gila 500kV line
3. North Gila-Imperial Valley-Miguel 500kV line
4. Palo Verde-Devers 500kV line two segments
5. Palo Verde-Devers 500kV line one segment out on the Arizona side

Lines out of service:

6. Hassayampa-North Gila 500kV line
7. Hassayampa-Kyrene 500kV line
8. Palo Verde-Devers 500kV line
9. One Palo Verde-Westwing 500kV line

With one Palo Verde-Westwing 500kV line out, the critical outage is loss of the remaining Westwing line but initiated by a three-phase fault. The single-line-to-ground fault only applies to a double line outage.

II. RESULTS/CONCLUSIONS

The original study was most limited by the light spring base case with the Palo Verde/Hassayampa units bucking and the double line outage of the Palo Verde-Westwing 500kV lines. The Light Spring base case with three Palo Verde units and all three new units (1600 MW of new generation) represented and the units bucking a total of approximately 450 MVARs was the starting point for this study. The voltage at Palo Verde was represented at 525kV, which again produced the most conservative results. The study results are summarized in Tables 1 through 4. A summary of the new operating limits for the new categories can be seen in Table 5 and Figure 1.

All lines in service with Palo Verde units bucking up to 780MVARs.

The original SLG study evaluated the Palo Verde units bucking up to 450MVARs. The results from that study indicated that the system was stable with 1600MW of additional generation. This study evaluated increasing the amount of bucking at Palo Verde from 450MVARs to 780MVARs. The results indicate that 1600MW of new generation for a

total of 5461MW of Palo Verde/Hassayampa generation can be realized up to 565MVARs bucking. Beyond 565MVARs, the total generation has to be reduced. A second point was found at 780MVARs bucking. At 780MVARs bucking, the total generation had to be reduced to 5361MW. From these two points, the operating nomogram shown in Figure 1 was obtained up to a total of 1000MVARs bucking. The powerflow base cases and stability results are summarized in Table 1.

Series capacitors initially-out-of-service.

The results for series capacitors initially out of service are summarized below. Tables 2 and 3 summarize the powerflow and stability results for all categories.

1. Hassayampa-North Gila-Imperial Valley-Miguel 500kV line

With all the series compensation out of the Hassayampa to Miguel line(3 segments), the stability limit without unit tripping was reduced from 5461MW to 5261MW. An increase of 100MW more resulted in an unstable case. Unit tripping 500MW with the maximum generation output of 5461MW was stable.

With two new units on at Hassayampa with 1100MW for a total of 4961MW, the single-line-to-ground fault and double line outage was stable.

2. Hassayampa-North Gila 500kV line

With the series compensation out of the Hassayampa to North Gila line, the stability limit without unit tripping was reduced from 5461MW to 5411MW. The limitation was the 40-cycle voltage dip duration at the Palo Verde 500kV bus. Unit tripping 160MW with the maximum generation output of 5461MW was stable.

3. North Gila-Imperial Valley-Miguel 500kV line

With the series compensation out of the North Gila to Miguel line, the stability limit without unit tripping was reduced from 5461MW to 5411MW. The limitation was the 40-cycle voltage dip duration at the Palo Verde 500kV bus. Unit tripping 160MW with the maximum generation output of 5461MW was stable.

4. Palo Verde-Devers 500kV line two segments

With all the series compensation out of the Palo Verde to Devers line(2 segments), the stability limit without unit tripping was reduced from 5461MW to 5261MW. An increase of 100MW more resulted in an unstable case. Unit tripping 500MW with the maximum generation output of 5461MW was stable.

With two new units on at Hassayampa with 1100MW for a total of 4961MW, the single-line-to-ground fault and double line outage was stable.

5. Palo Verde-Devers 500kV line one segment out on the Arizona side

With the series compensation segment out of the Palo Verde to Devers line on the Arizona side of the line, the stability limit without unit tripping was reduced from 5461MW to 5361MW. The limitation was the 40-cycle voltage dip duration at the

Palo Verde 500kV bus. Unit tripping 320MW with the maximum generation output of 5461MW was stable.

Lines out of service:

6. Hassayampa-North Gila 500kV line

With the Hassayampa to North Gila line initially out of service, the stability limit is 3601MW. An increase of 100MW more resulted in an unstable case. This was with the Palo Verde generating units bucking a net 300MVARs.

7. Hassayampa-Kyrene 500kV line

With the Hassayampa to Kyrene line initially out of service, the stability limit is 3152MW. An increase of 50MW more resulted in an unstable case. This was with the Palo Verde generating units bucking a net 235MVARs.

8. Palo Verde-Devers 500kV line

With the Palo Verde to Devers line initially out of service, the stability limit is 3701MW. An increase of 100MW more resulted in an unstable case. This was with the Palo Verde generating units bucking a net 294MVARs.

9. One Palo Verde-Westwing 500kV line

For this category, the critical outage is loss of the remaining Palo Verde-Westwing line initiated by a three-phase fault at Palo Verde. With the three new units on line, the stability limit was 5111MW, 1250MW above the 3861MW maximum Palo Verde generation level. This was with the Palo Verde generating units bucking a net 230MVARs. This was consistent with the original all lines in service operating study that evaluated a three-phase fault with the double line outage. The results for two units were taken from that original study. The stability limit with two units generating 790MW was 4651MW. This was with the Palo Verde generating units bucking a net 363MVARs. Unit tripping was not applied. The result for one unit was taken from that original study. The stability limit with one unit generating 410MW was 4271MW. This was with the Palo Verde generating units bucking a net 321MVARs. Unit tripping was not applied.

FIGURE 1
2002 PALO VERDE/HASSAYAMPA OPERATING LIMITS
WITH UP TO THREE NEW UNITS ON LINE
(MAXIMUM 1600 MW)

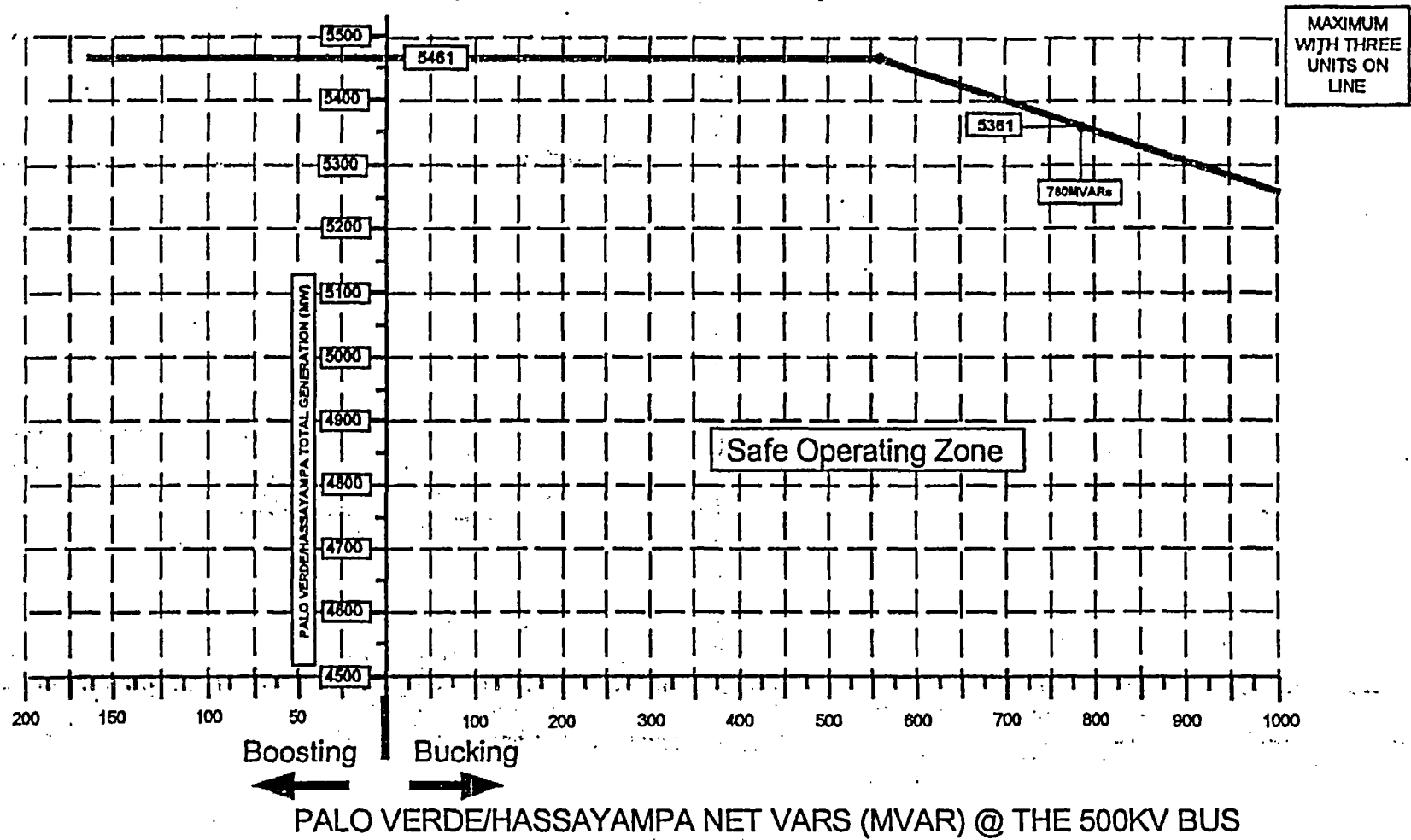


TABLE 1

2002 SINGLE-LINE-TO-GROUND SUPPLEMENTARY STABILITY STUDY SUMMARY
ALL LINES IN SERVICE

SE O.	PRE-PROJECT CASE DESCRIPTION	POWER FLOW (MW)										COMMENTS	
		SCIT FLOW	EOR FLOW	PCI FLOW	PV BIASS VAR FLOW	PV GEN GROSS	PV NET VARS	HASS NET VARS	NEW GEN	PV WEST	PV EAST		PV/HSP TOT
	A - (02LSP-567ME1600)	10522	3977	1858	-168	4056	-567	9	1600	1980	3473	5453	2 REDHAWK + 1 ARLINGTON
	B - (02LSP-780ME1500)	10524	3986	1859	-31	4056	-781	3	1500	1970	3383	5353	2 REDHAWK + 1 ARLINGTON

	STABILITY RESULTS			COMMENTS
	BUS	Vd/p	%	
BASSLG FLT TWO PV-WWG	PV500	0.820	21.9%	Stable and well damped; another 50MVARs unstable
BASSLG FLT TWO PV-WWG	PV500	0.745	29.0%	Stable and well damped; another 50MW unstable

TABLE 2
2002 SINGLE-LINE-TO-GROUND STUDY SUMMARY
PALO VERDE/HASSAYAMPA POWER FLOW SUMMARY TABLE

CASE NO.	PRE-PROJECT CASE DESCRIPTION	POWER FLOW (MW)											COMMENTS
		SCOT FLOW	EOR FLOW	POC FLOW	PV-HASS VAR FLOW	PV GEN GROSS	PV NET VARS	HASS NET VARS	NEW GEN	PV WEST	PV EAST	PV/HSP TOT	
A - (ZLSP-430ME1600)		10522	3979	1859	.111	4056	429	.9	1600	1902	3471	5453	2 REDHAWK + 1 ARLINGTON
B - (ZLSP-HASNIGSC1400)		10525	3928	1859	.191	4056	462	.8	1400	1805	3448	5253	2 REDHAWK + 1 ARLINGTON
B1 - (ZLSP-HASNIGSC)		10525	3946	1859	.175	4056	441	.9	1600	1830	3623	5453	2 REDHAWK + 1 ARLINGTON
B2 - (ZLSP-HASNIGSC1100)		10525	3905	1859	.189	4056	483	-.15	1100	1774	3159	4933	1 REDHAWK + 1 ARLINGTON
C - (ZLSP-HASNIGSC1550)		10528	3948	1857	-.132	4056	450	.3	1550	1881	3522	5403	2 REDHAWK + 1 ARLINGTON
C1 - (ZLSP-HASNIGSC)		10528	3955	1848	-.105	4056	393	.9	1600	1888	3565	5453	2 REDHAWK + 1 ARLINGTON
D - (ZLSP-HGMIGSC1590)		10520	3960	1847	.281	4056	495	.4	1350	1897	3506	5403	2 REDHAWK + 1 ARLINGTON
D1 - (ZLSP-HGMIGSC)		10521	3964	1847	.192	4056	483	.9	1600	1902	3551	5453	2 REDHAWK + 1 ARLINGTON
E - (ZLSP-PVDVSC1400)		10522	3928	1847	15	4056	441	6	1400	1722	3531	5253	2 REDHAWK + 1 ARLINGTON
E1 - (ZLSP-PVDVSC)		10522	3944	1847	22	4056	450	.9	1600	1745	3708	5453	2 REDHAWK + 1 ARLINGTON
E2 - (ZLSP-PVDVSC1100)		10522	3903	1847	17	4056	468	-.15	1100	1693	3240	4933	1 REDHAWK + 1 ARLINGTON
F - (ZLSP-PVDV1SC1977)		10522	3947	1847	9	4056	462	.9	1500	1808	3545	5353	2 REDHAWK + 1 ARLINGTON
F1 - (ZLSP-PVDV1SC)		10522	3995	1847	9	4056	438	.9	1600	1817	3636	5453	2 REDHAWK + 1 ARLINGTON
G - (ZLSP-HANG3601)		10291	3497	1847	.75	3856	311	-.24	0	1899	2582	3681	
H - (ZLSP-HAKYR3152)		10269	3651	1847	48	3406	233	-.24	0	1705	1448	3153	
I - (ZLSP-PVDV1781)		10243	3514	1847	13	3556	195	-.24	0	979	2722	3701	

TABLE 3
2002 SINGLE-LINE-TO-GROUND STUDY SUMMARY
PALO VERDE/HASSAYAMPA STABILITY SUMMARY TABLE

		STABILITY RESULTS			COMMENTS	
		BUS	Vdip	%		
ST-1	BASE A*	SLG FLT TWO PV-WWG	PV500	0.840	20.0%	Stable and well damped
ST-2	BASE B	SLG FLT TWO PV-WWG	PV500	0.780	24.8%	Stable and well damped; unstable with 100MW more
ST-3	BASE B1	SLG FLT 2 PV-WWG OUT U/T RED 500MW	PV500	0.770	26.7%	Stable and well damped
ST-4	BASE B2	SLG FLT 2 PV-WWG OUT	PV500	0.780	27.6%	Stable and well damped
ST-5	BASE C	SLG FLT TWO PV-WWG	PV500	0.78	27.6%	Stable and well damped; 40 cycle duration
ST-6	BASE C1	SLG FLT 2 PV-WWG OUT U/T RED 160MW	PV500	0.78	25.7%	Stable and well damped
ST-7	BASE D	SLG FLT TWO PV-WWG	PV500	0.78	25.7%	Stable and well damped; 36 cycle duration
ST-8	BASE D1	SLG FLT 2 PV-WWG OUT U/T RED 160MW	PV500	0.79	24.8%	Stable and well damped
ST-9	BASE E	SLG FLT TWO PV-WWG	PV500	0.780	25.7%	Stable and well damped; 40 cycle duration
ST-10	BASE E1	SLG FLT 2 PV-WWG OUT U/T RED 500MW	PV500	0.750	28.6%	Stable and well damped; 40 cycle duration
ST-11	BASE E2	SLG FLT 2 PV-WWG OUT	PV500	0.770	26.7%	Stable and well damped
ST-12	BASE F	SLG FLT TWO PV-WWG	PV500	0.780	25.7%	Stable and well damped; 38 cycle duration
ST-13	BASE F1	SLG FLT 2 PV-WWG OUT U/T RED 320MW	PV500	0.780	25.7%	Stable and well damped; 40 cycle duration
ST-14	BASE G	SLG FLT TWO PV-WWG	PV500	0.770	28.7%	Stable and well damped; unstable with 100MW more
ST-15	BASE H	SLG FLT TWO PV-WWG	PV500	0.820	21.9%	Stable and well damped; unstable with 50MW more
ST-16	BASE I	SLG FLT TWO PV-WWG	PV500	0.750	28.6%	Stable and well damped; unstable with 100MW more

* Base case identifying letter can be found in Table 2.

TABLE 4

2002 SINGLE-LINE-TO-GROUND SUPPLEMENTARY STABILITY STUDY SUMMARY
 ONE PALO VERDE-WESTWING 500KV LINE INITIALLY OUT OF SERVICE

CASE NO.	PRE-PROJECT CASE DESCRIPTION	POWER FLOW (MW)											COMMENTS
		SCT. FLOW	EOR FLOW	POI FLOW	PV-HASS VAR FLOW	PV GEN GROSS	PV NET VARS	HASS NET VARS	NEW GEN	PV WEST	PV EAST	PV/HSP TOT	
J.	(02LSP-231PVIWW1250)	10522	3968	1858	-120	4058	-231	14	1250	2073	3030	5103	2 REDHAWK + 1 ARLINGTON
K.	(02LSP-R450A360)*	10271	3721	1859	-32	4056	-363	-28	810	1774	2877	4651	1 REDHAWK + 1 ARLINGTON
L.	(02LSP-1R450)*	10271	3669	1859	-16	4056	-321	-25	450	1721	2550	4271	1 REDHAWK or 1 ARLINGTON

	STABILITY RESULTS			COMMENTS
	BUS	Vdip	%	
1 BASE J 3P FLT PV-WWG OUT	PV500	0.820	21.9%	Stable and well damped; another 50MW unstable
2 BASE K 3P FLT PV-WWG OUT	PV500	0.720	31.4%	Stable and well damped; another 50MW unstable
3 BASE L 3P FLT PV-WWG OUT	PV500	0.730	30.5%	Stable and well damped; another 50MW unstable

* Results taken from original study titled "2002 Palo Verde/Hessayampa Operating Study".

TABLE 5

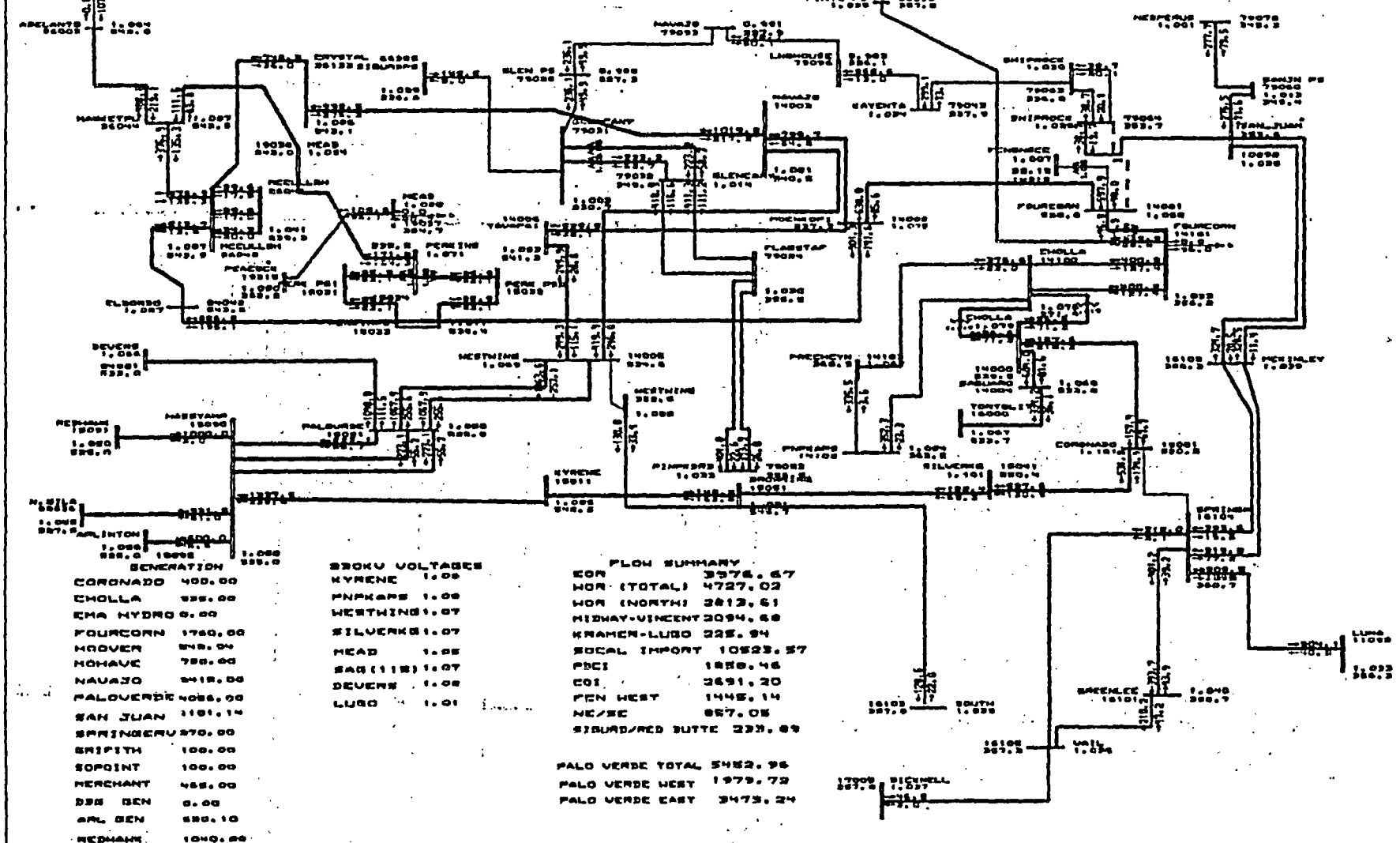
2002 SINGLE-LINE TO-GROUND SUPPLEMENTARY STUDY OPERATING LIMITS

CATEGORY	Maximum Net Generation Level at:			Total Generation	Amount of Hass. Generation required to tripped
	Palo Verde	Hassayampa	# of New Units		
All lines in service	3861	1600	3	5461(-565MVARs)	N/A
All lines in service (See Nomogram in Figure 1)	3861	1500	3	5361(-780MVARs)	N/A
Hassayampa-Miguel series comp. Bypassed	3861	1400	3	5261	N/A
	3861	1600	3	5461	660
	3861	1100	2	4961	N/A
Hassayampa-N.Gila series comp. Bypassed	3861	1550	3	5411	320
	3861	1600	3	5461	N/A
N.Gila-Miguel series comp. Bypassed	3861	1550	3	5411	320
	3861	1600	3	5461	N/A
Palo Verde-Devers series comp.	3861	1400	3	5261	N/A
	3861	1600	3	5461	660
Bypassed(2 segments)	3861	1100	2	4961	N/A
Palo Verde-Devers series comp.	3861	1600	3	5361	500
Bypassed(1 seg. in AZ)	3861	1600	3	5461	N/A
Hassa-N.Gila line Initially out of service	3601	0	0	3601	N/A
Hassa-Kyrene line Initially out of service	3152	0	0	3152	N/A
PV-Devers line Initially out of service	3701	0	0	3701	N/A
One PV-WWG line	3861	1250	3	5111	N/A
Initially out of service	3861	790*	2	4741	N/A
	3861	410*	1	4271	N/A

* Obtained from the original study titled "2002 Palo Verde/Hassayampa Operating Study".

Arizona 500 & 345kV EHV System

AZ500a2_hv01a.dwg



GENERATION

CORNADO	400.00
CHOLLA	335.00
EMA HYDRO	0.00
FOURCORN	1750.00
HOOVER	545.04
MOHAVE	750.00
NAVAJO	5412.00
PALO VERDE	4058.00
SAN JUAN	1191.14
SPRINGERVU	270.00
BRIPITH	100.00
SOPPOINT	100.00
MERCHANT	455.00
DES DEN	0.00
APL DEN	550.10
MEDMANK	1040.00

330KV VOLTAGE

KYRENE	1.00
PNPKAPS	1.00
WESTHIN	1.07
SILVERKS	1.07
HEAD	1.05
SAR (118)	1.07
DEVERE	1.00
LUGO	1.01

FLOW SUMMARY

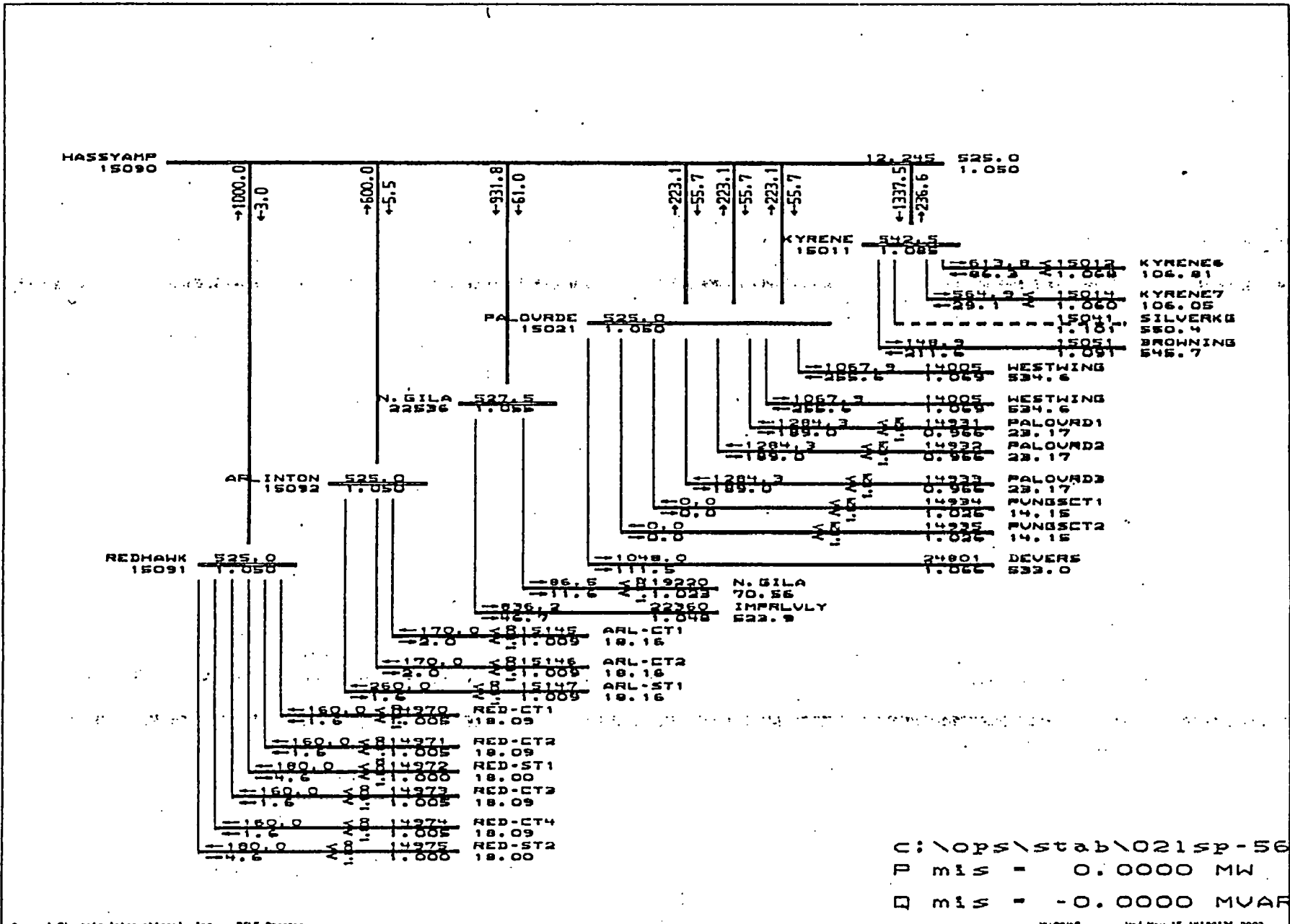
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NOR (TOTAL)	4727.02
NOR (NORTH)	3213.61
HIDWAY-VINCENT	2094.68
KRAMER-LUGO	225.94
SOCAL IMPORT	10523.57
PDCI	1850.46
COI	2691.20
PEN WEST	1445.14
NE/SE	857.05
SIBURD/RED BUTTE	233.89
PALO VERDE TOTAL	5452.96
PALO VERDE WEST	1979.72
PALO VERDE EAST	3473.24

General Electric International, Inc.
 APS
 TRANSMISSION
 OPERATIONS

PLF Program
 WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

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General Electric International, Inc. PSF Program

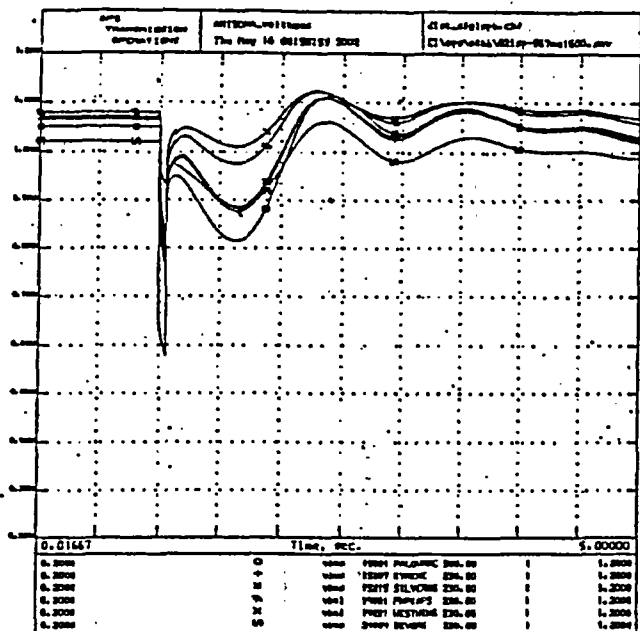
APS
 TRANSMISSION
 OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

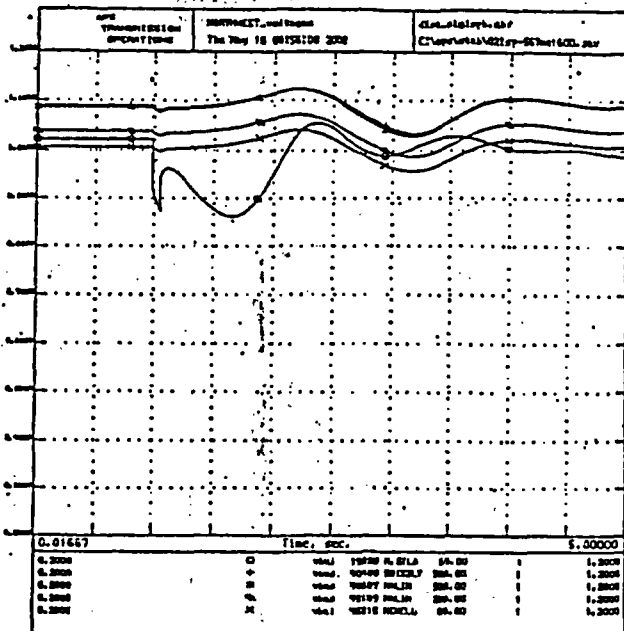
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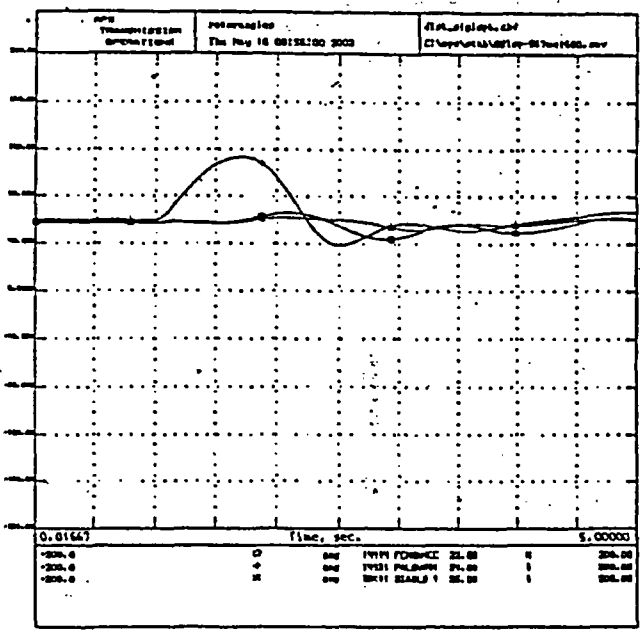
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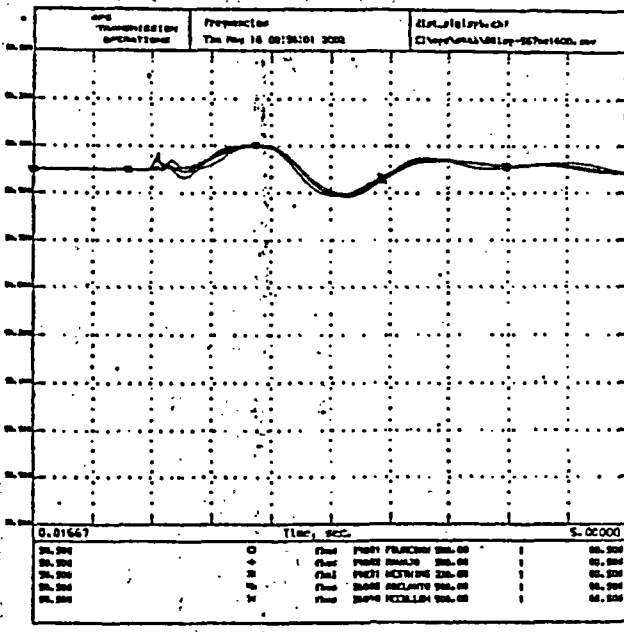
MEXION SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CMC
 MAY 11, 2001
 STATE, S.C. FAULT ON PV 200 BY BUS/TO PHASE B/UT/C CLR FLT W/PH-440
 TO TRIP RECLOSE, 200 INJECT. NETWORK/OLSP1.PYS
 CONVERTS B.C. TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS B.C. TO STAFF MAY 25, 2001



MEXION SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CMC
 MAY 11, 2001
 STATE, S.C. FAULT ON PV 200 BY BUS/TO PHASE B/UT/C CLR FLT W/PH-440
 TO TRIP RECLOSE, 200 INJECT. NETWORK/OLSP1.PYS
 CONVERTS B.C. TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS B.C. TO STAFF MAY 25, 2001



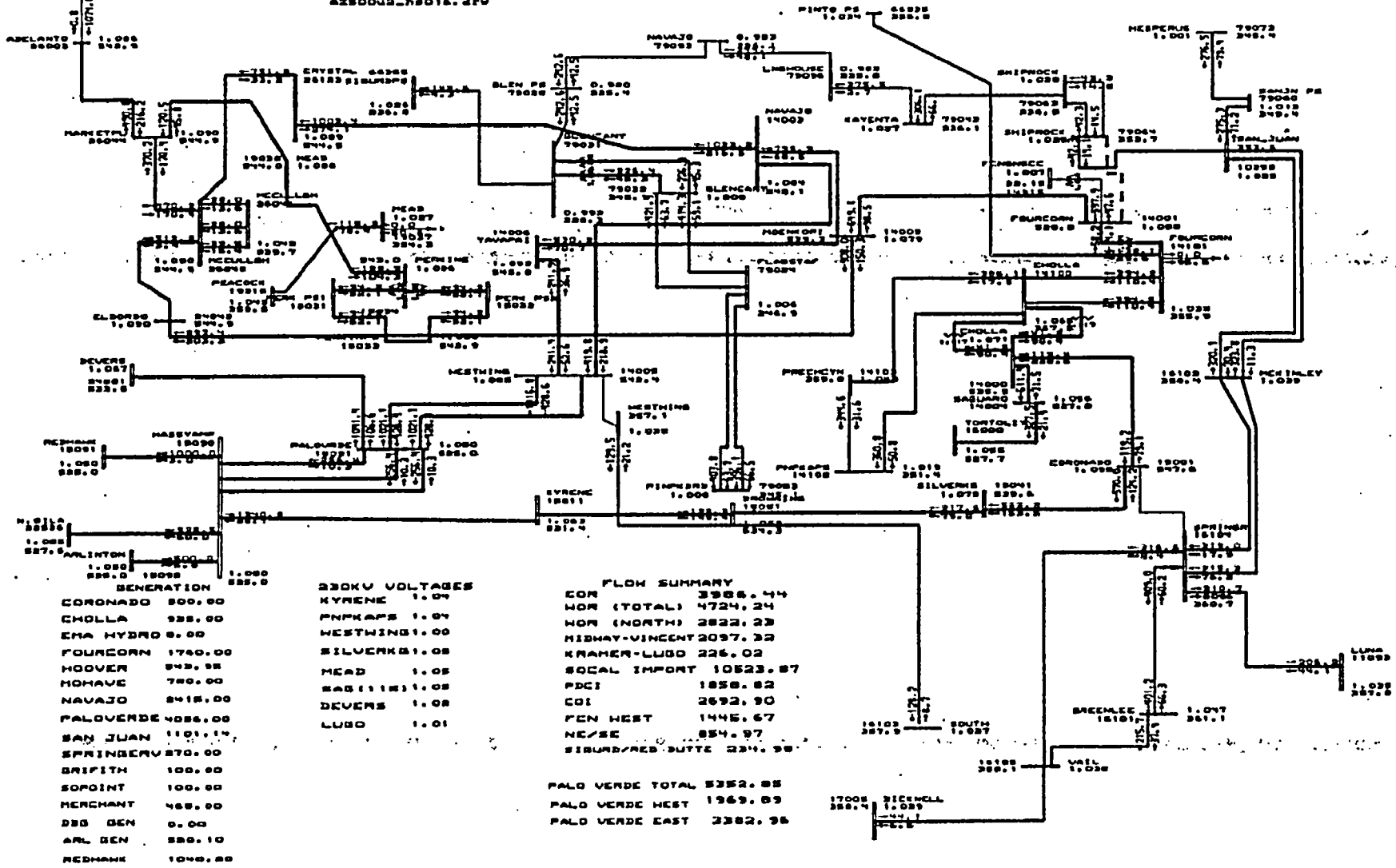
MEXION SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CMC
 MAY 11, 2001
 STATE, S.C. FAULT ON PV 200 BY BUS/TO PHASE B/UT/C CLR FLT W/PH-440
 TO TRIP RECLOSE, 200 INJECT. NETWORK/OLSP1.PYS
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MEXION SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CMC
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 TO TRIP RECLOSE, 200 INJECT. NETWORK/OLSP1.PYS
 CONVERTS B.C. TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS B.C. TO STAFF MAY 25, 2001

Arizona 500 & 345kV EHV System

AZ500us_hsq01a.drv



GENERATION	
CORONADO	500.00
CHOLLA	322.00
EMA HYDRO	0.00
FOURCORN	1740.00
HOOVER	543.98
NOMAVE	780.00
NAVAJO	2415.00
PALO VERDE	4056.00
SAN JUAN	1101.17
SPRINGER	870.00
BRIFITH	100.00
SOPPOINT	100.00
MERCHANT	458.00
DBB DEN	0.00
ARL DEN	590.10
REDHAWK	1048.80

330KV VOLTAGE	
KYREN	1.07
PNPKAPS	1.04
WESTING	1.00
SILVERH	1.08
HEAD	1.05
SAB (118)	1.08
DEVERS	1.08
LUGO	1.01

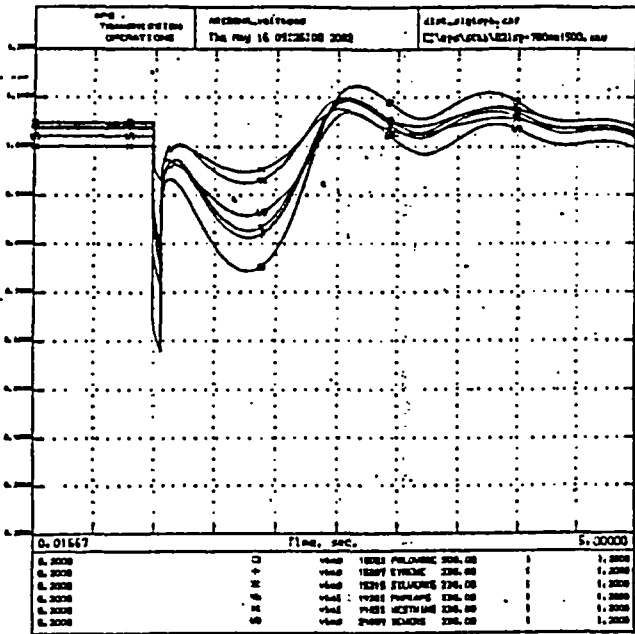
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KRAMER-LUGO	226.02
SOCAL IMPORT	10523.87
PDCI	1858.82
COI	2592.90
FCN WEST	1445.67
NE/SE	854.97
SIBURG/FRED BUTTE	234.98
PALO VERDE TOTAL	5352.85
PALO VERDE WEST	1963.83
PALO VERDE EAST	3389.02

General Electric International, Inc. PSLE Program
 APS TRANSMISSION OPERATIONS

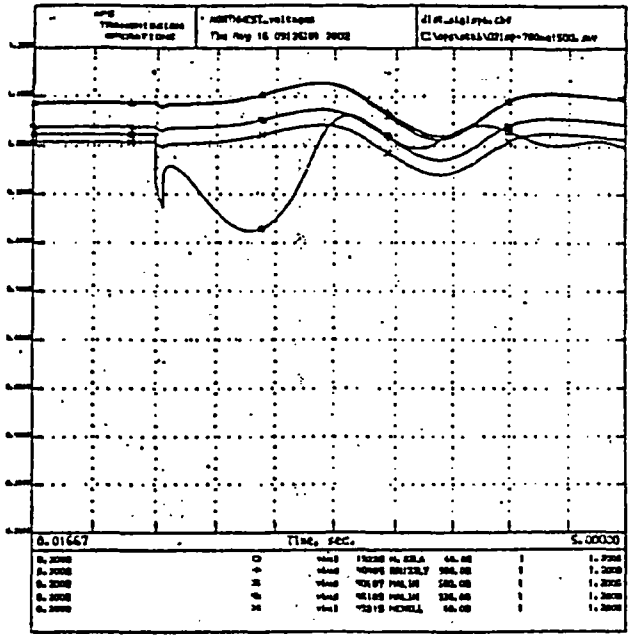
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 2002 LSP2 OPERATING CASE
 MAY 11, 2001

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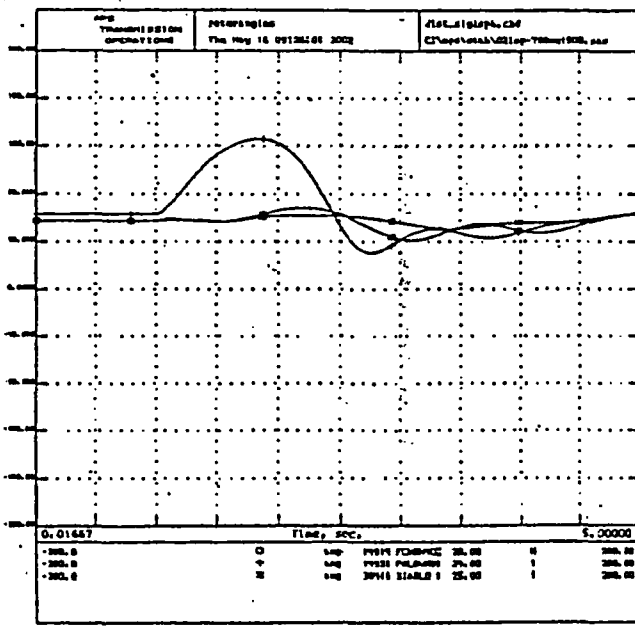
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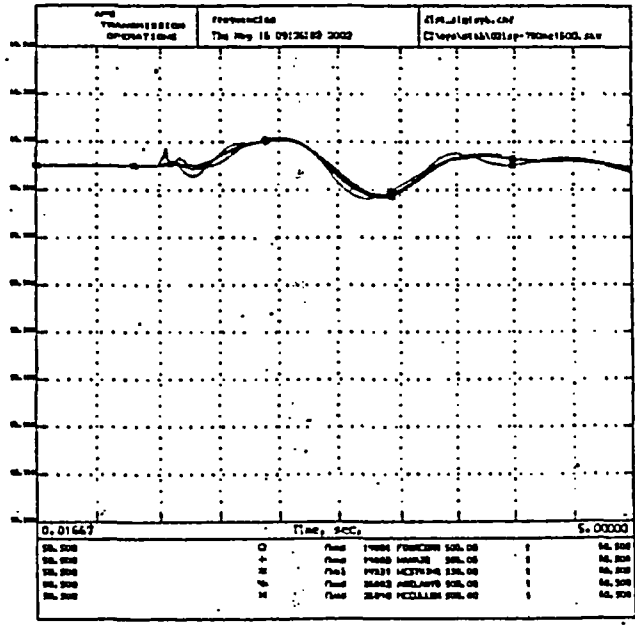
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 508 BY BUS(T)S P-448 OUT(1) C CLR FLT WPP-448
 TC TRIP MOD, AML, 208 (IMUCT, MOTOR) (0.01667, 0.01667)
 COMMENTS RUC TO AREA COORDINATOR MAY 16, 2001
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2001



WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 508 BY BUS(T)S P-448 OUT(1) C CLR FLT WPP-448
 TC TRIP MOD, AML, 208 (IMUCT, MOTOR) (0.01667, 0.01667)
 COMMENTS RUC TO AREA COORDINATOR MAY 16, 2001
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2001



WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 508 BY BUS(T)S P-448 OUT(1) C CLR FLT WPP-448
 TC TRIP MOD, AML, 208 (IMUCT, MOTOR) (0.01667, 0.01667)
 COMMENTS RUC TO AREA COORDINATOR MAY 16, 2001
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2001

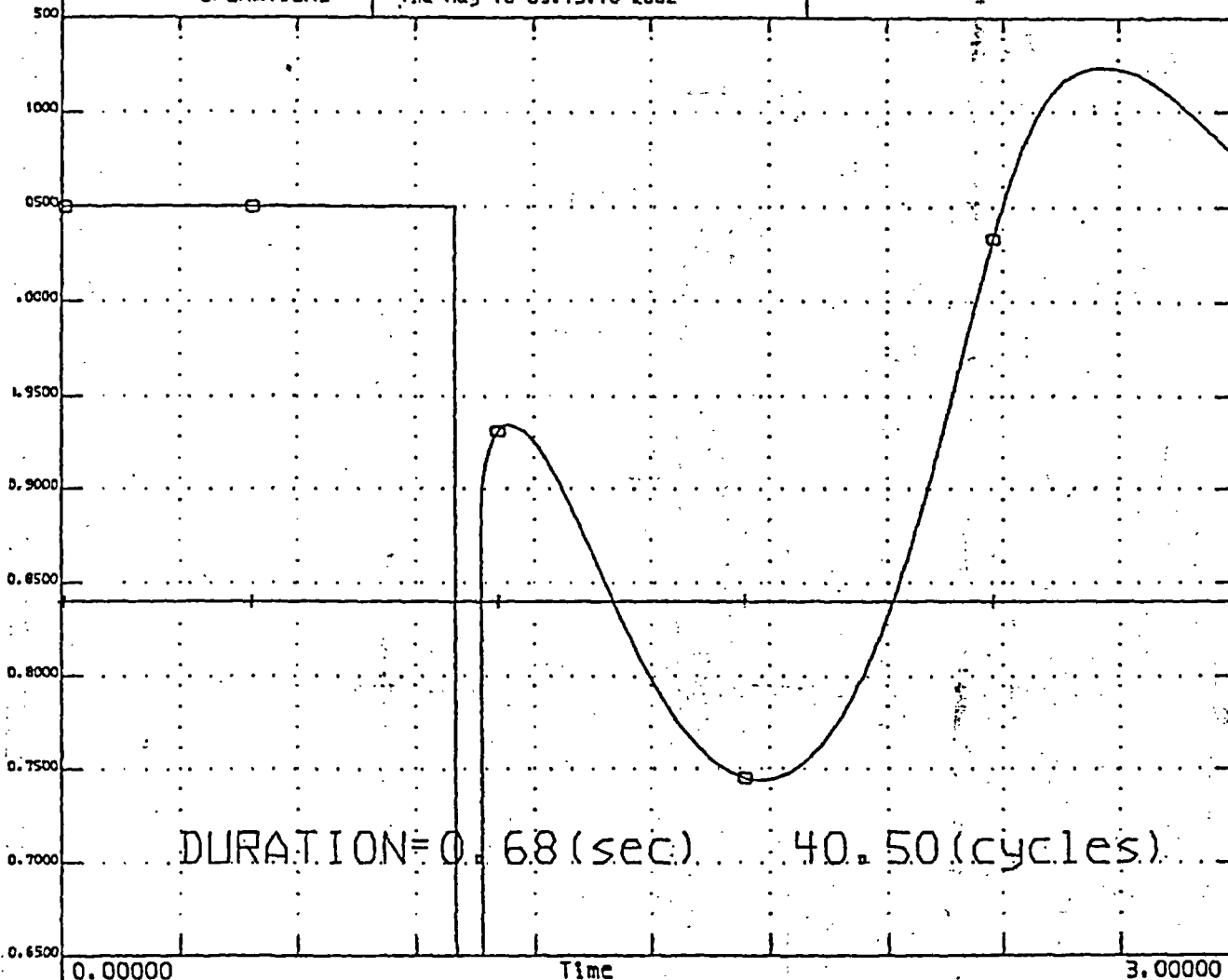


WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 508 BY BUS(T)S P-448 OUT(1) C CLR FLT WPP-448
 TC TRIP MOD, AML, 208 (IMUCT, MOTOR) (0.01667, 0.01667)
 COMMENTS RUC TO AREA COORDINATOR MAY 16, 2001
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2001

APS
TRANSMISSION
OPERATIONS

15021 PALOVRDE 500
Thu May 16 09:15:18 2002

plot2.acf



DURATION=0.68(sec)...40.50(cycles)

0.0000 Time 3.0000

0.6500 + Voltage 1.1500
0.6500 + Threshold 1.1500

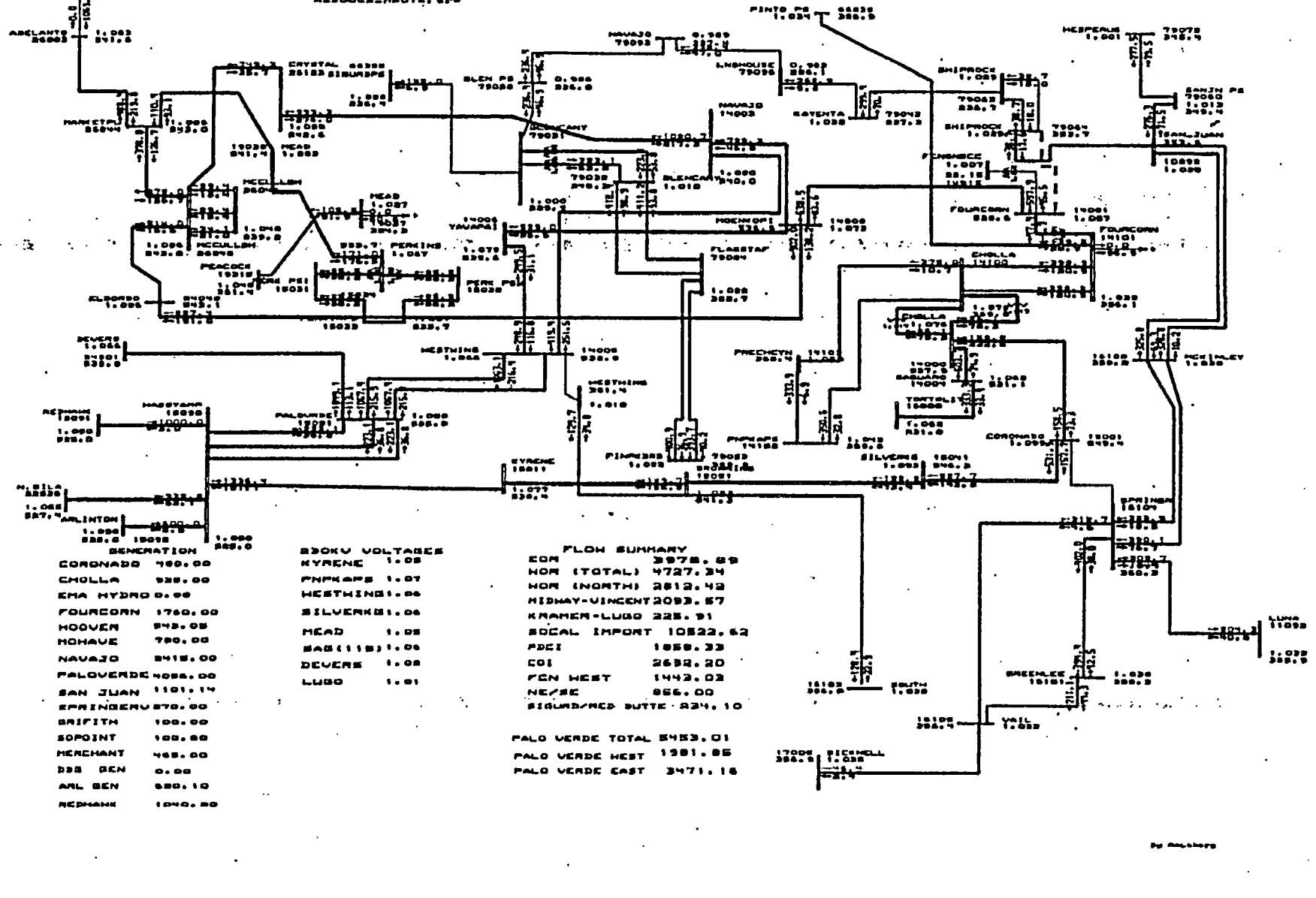
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

STAB, SLG FAULT ON PV 500 KV BUS; TWO PV-HWG OUT; 4 C CLR FLT W/PV-HWG;
7c TRIP REDO, ARLO, 20% INDUCT. MOTORS; 02LSP21.DYD

COMMENTS DUE TO AREA COORDINATORS MAY 18, 2001
AREA COORDINATOR COMMENTS DUE TO STAFF MAY 25, 2001

Arizona 500 & 345KV EHV System

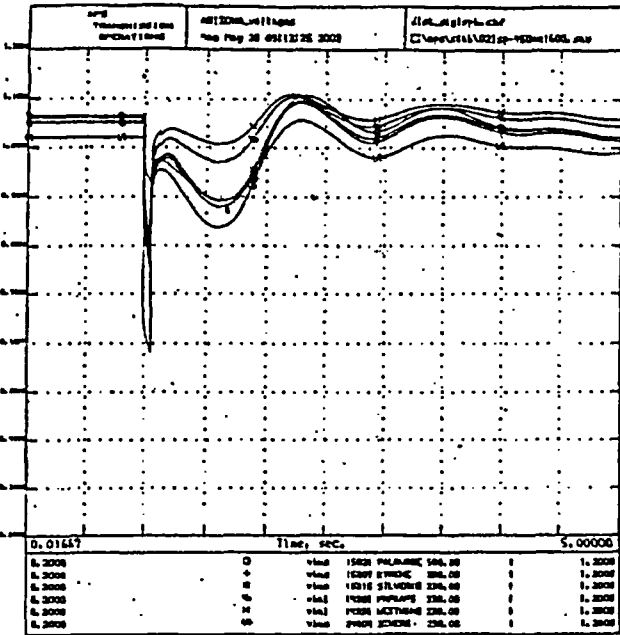
AZ50042-hs01a.dpw



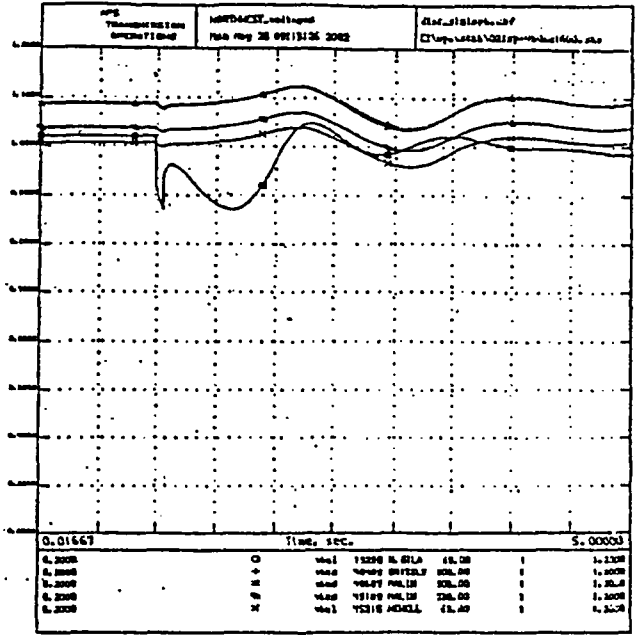
GENERATION	
CORNADO	100.00
CHOLLA	325.00
EMA HYDRO	0.00
FOURCORN	1750.00
HOOVER	545.00
NOHAVE	750.00
NAVAJO	5415.00
PALOVERDE	4055.00
SAN JUAN	1101.14
SPRINGBUSH	0.00
BRIFITH	100.00
SOPOINT	100.00
MERCHANT	465.00
DSS GEN	0.00
ARL GEN	550.10
REDHAWK	1040.50

330KV VOLTAGE	
KYRENE	1.00
PHOENIX	1.00
MESTHINE	1.00
SILVERHILL	1.00
HEAD	1.00
SAB (115)	1.00
DEVERS	1.00
LUGD	1.00

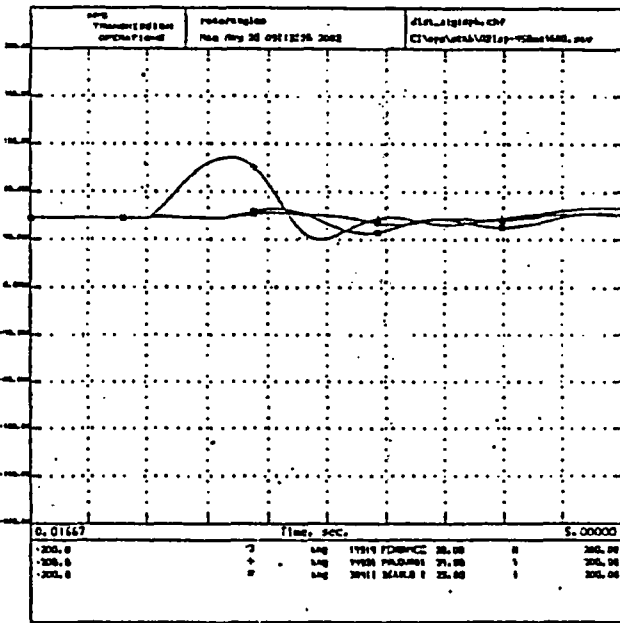
FLOW SUMMARY	
EDR	3975.89
NOR (TOTAL)	4727.34
NOR (NORTH)	2512.42
MIDWAY-VINCENT	2093.57
KRAMER-LUGD	225.91
SO CAL IMPORT	10522.52
PDCI	1055.33
COI	2632.20
FCN WEST	1442.02
NE/SE	555.00
SILVERHILL BUTTE	224.10
PALO VERDE TOTAL	5453.01
PALO VERDE WEST	1581.85
PALO VERDE EAST	3471.16



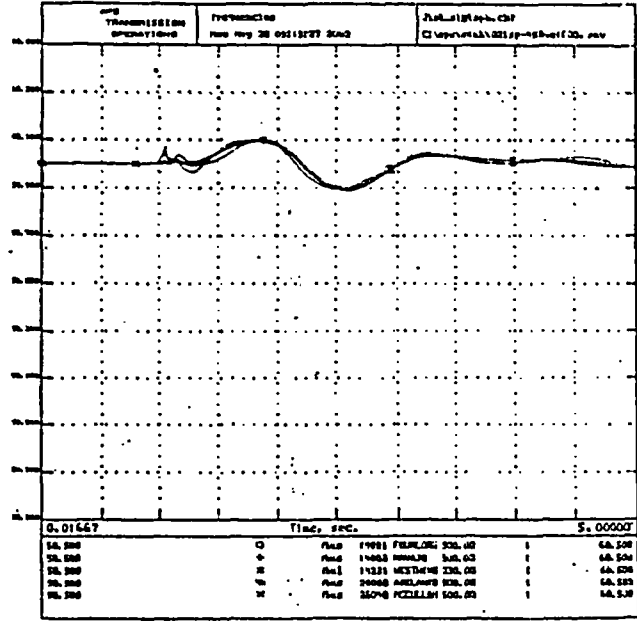
WESTERN SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3.6 FAULT ON PV 500 BY BUS100 PV-446 BUS119 C CLR FLT WPP-446
 TC TRIP REG-ARL-306 IMUCT. MOTOR02LSPN1.PYS
 CONVERTS BUC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS BUC TO STAFF MAY 25, 2001



WESTERN SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3.6 FAULT ON PV 500 BY BUS100 PV-446 BUS119 C CLR FLT WPP-446
 TC TRIP REG-ARL-306 IMUCT. MOTOR02LSPN1.PYS
 CONVERTS BUC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS BUC TO STAFF MAY 25, 2001



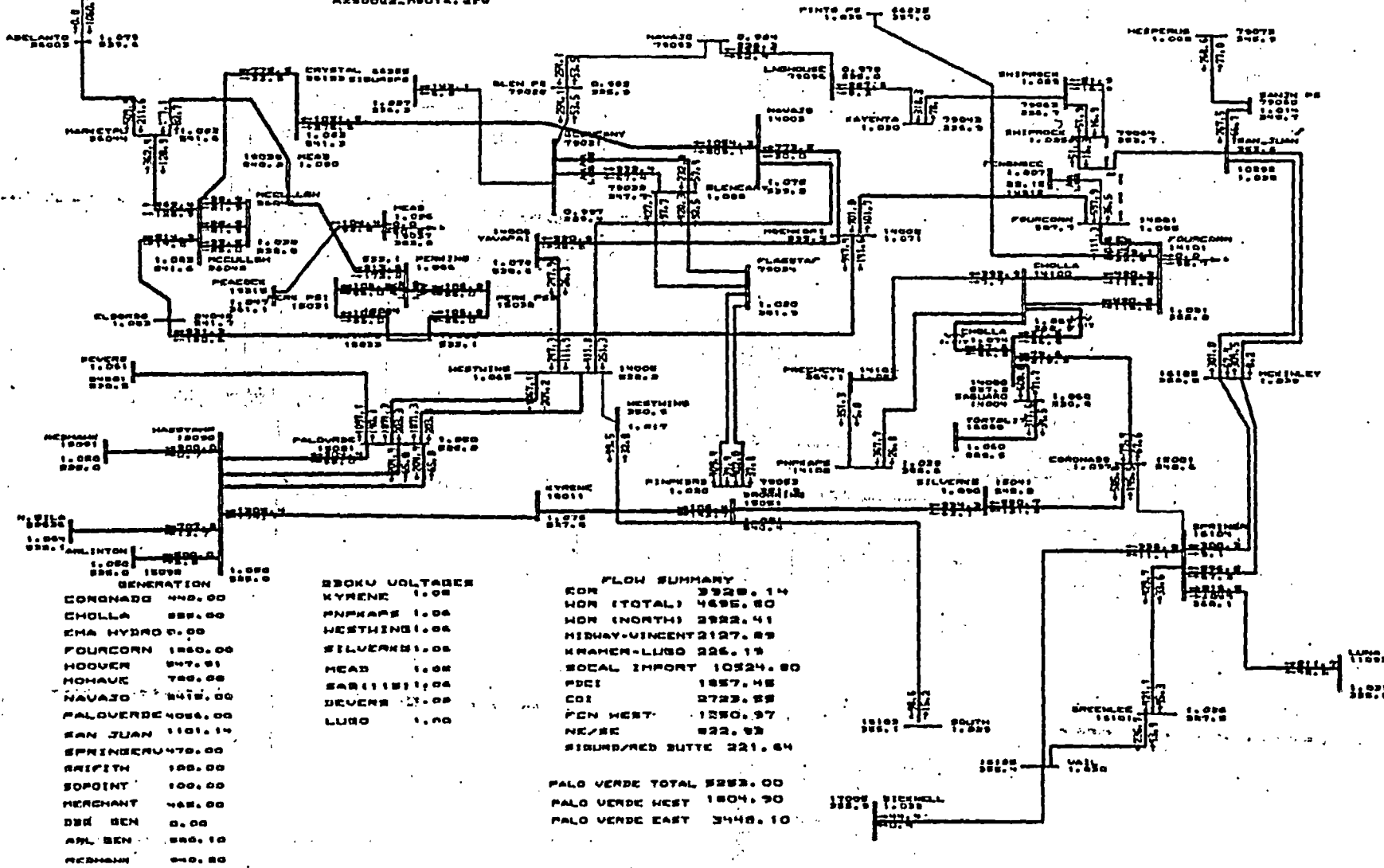
WESTERN SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3.6 FAULT ON PV 500 BY BUS100 PV-446 BUS119 C CLR FLT WPP-446
 TC TRIP REG-ARL-306 IMUCT. MOTOR02LSPN1.PYS
 CONVERTS BUC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS BUC TO STAFF MAY 25, 2001



WESTERN SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3.6 FAULT ON PV 500 BY BUS100 PV-446 BUS119 C CLR FLT WPP-446
 TC TRIP REG-ARL-306 IMUCT. MOTOR02LSPN1.PYS
 CONVERTS BUC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR CONVERTS BUC TO STAFF MAY 25, 2001

Arizona 500 & 345KV EHV System

ARZ0042.hv01A.dfw

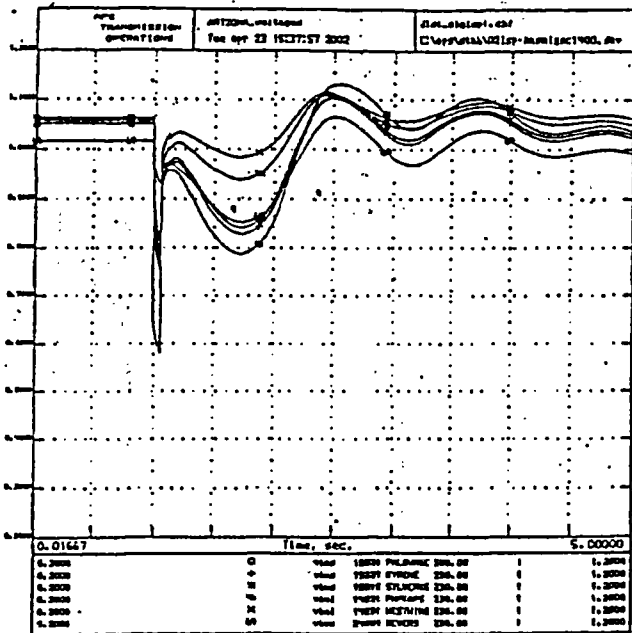


GENERATION	
CORONADO	440.00
CHOLLA	550.00
EMA HYDRO	0.00
FOURCORN	1800.00
HOOVER	947.01
HOUAUE	780.00
NAVAJO	8410.00
PALO VERDE	4056.00
SAN JUAN	1101.14
SPRINGBR	470.00
SRIPTH	100.00
SOPPOINT	100.00
MERCHANT	460.00
DBB GEN	0.00
ARL GEN	500.10
NEWMAN	540.00

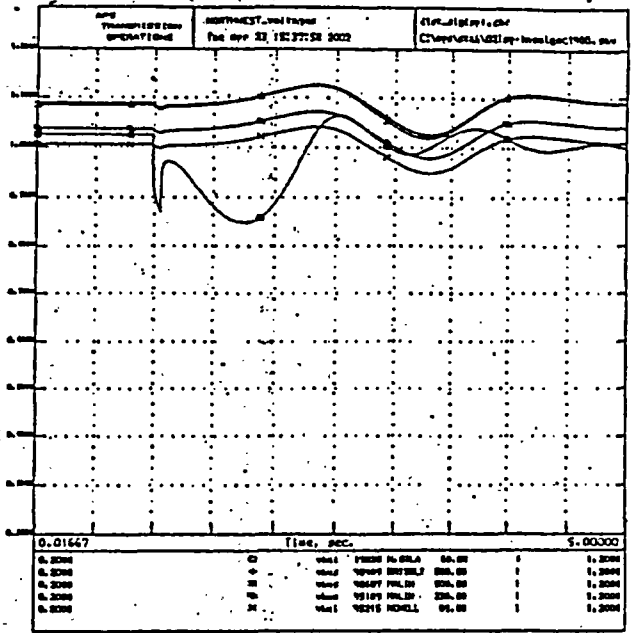
380KV VOLTAGE	
KYRENE	1.00
PHOENIX	1.00
WESTING	1.00
SILVER	1.00
HEAD	1.00
SARIBI	1.00
DEVERE	1.00
LUGO	1.00

FLOW SUMMARY	
FOR	3220.14
NOR (TOTAL)	4695.80
NOR (NORTH)	2922.41
MIDWAY-VINCENT	2127.89
KRAHER-LUGO	226.19
SOCAL IMPORT	10524.80
PDCI	1857.48
COI	2723.88
PEN WEST	1280.97
NE/SE	822.08
SIBUND/RED BUTTE	221.64

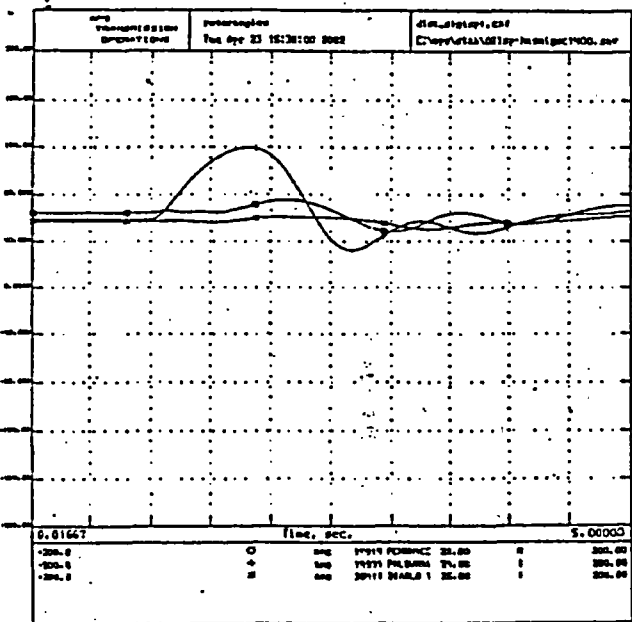
PALO VERDE TOTAL	5283.00
PALO VERDE WEST	1804.90
PALO VERDE EAST	3448.10



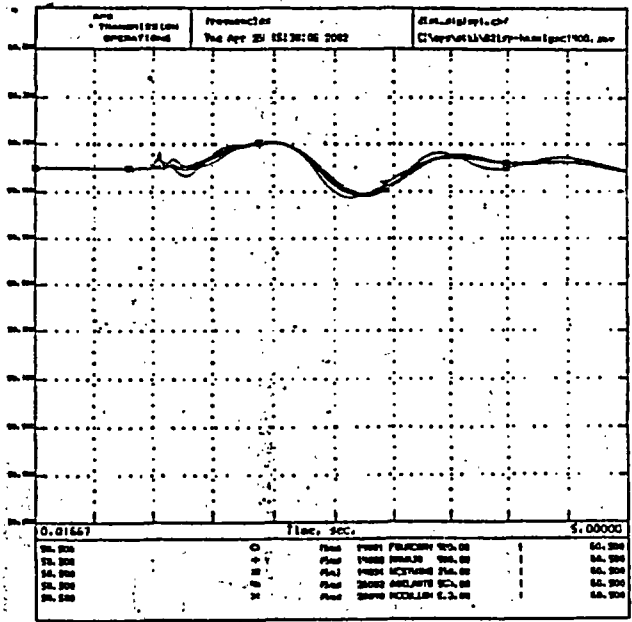
WESTERN SYSTEM COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 REF ID: 2001
 STAB, SLS FALL ON PV 500 BY BUSING PV-445 OUT/4 C CLR FLT WPP-445
 TC TRIP REC, 445, 2002 DIRECT. MOTOR/02LSP21.PYS
 Motor/02LSP21.PYS



WESTERN SYSTEM COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 REF ID: 2001
 STAB, SLS FALL ON PV 500 BY BUSING PV-445 OUT/4 C CLR FLT WPP-445
 TC TRIP REC, 445, 2002 DIRECT. MOTOR/02LSP21.PYS
 Motor/02LSP21.PYS



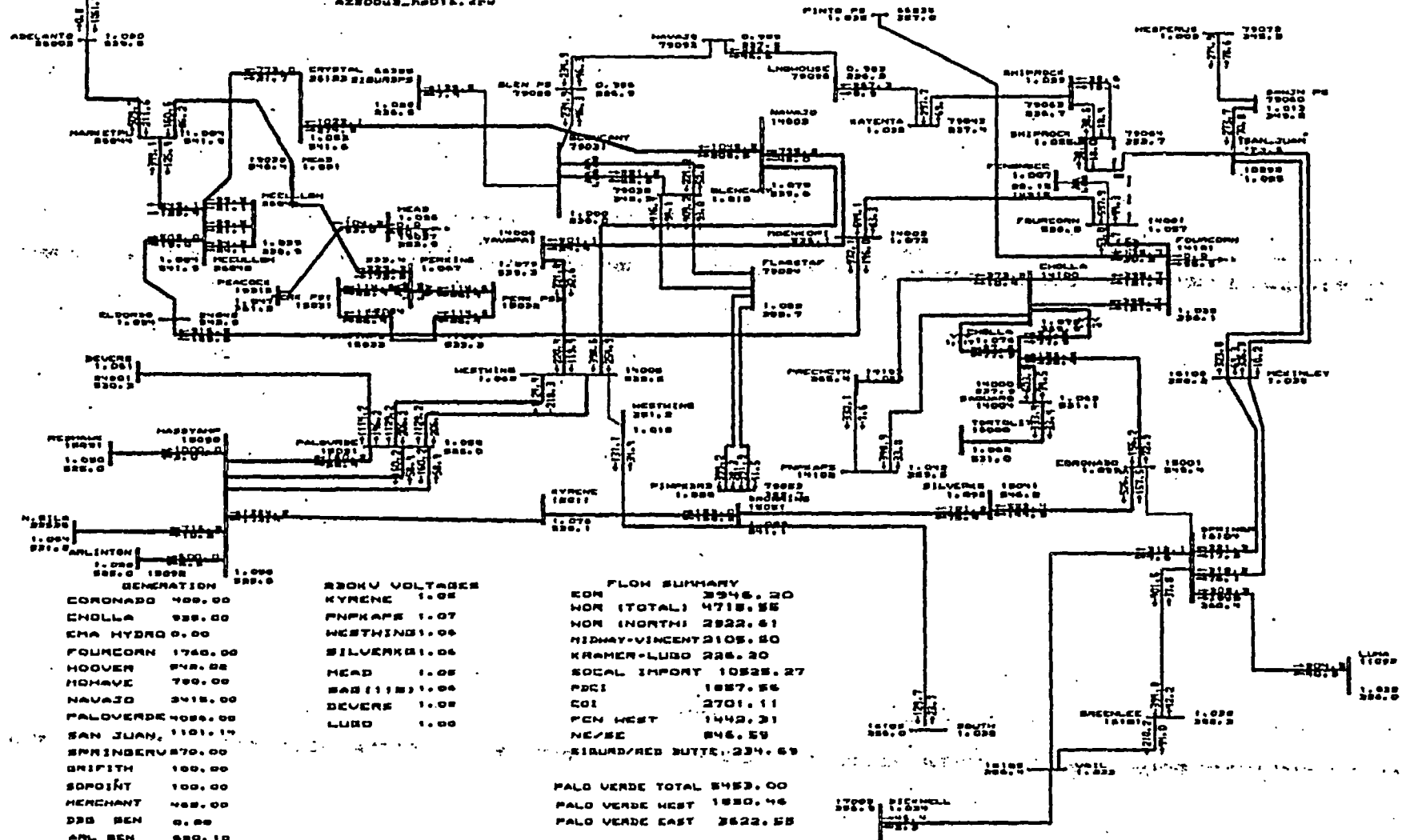
WESTERN SYSTEM COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 REF ID: 2001
 STAB, SLS FALL ON PV 500 BY BUSING PV-445 OUT/4 C CLR FLT WPP-445
 TC TRIP REC, 445, 2002 DIRECT. MOTOR/02LSP21.PYS
 Motor/02LSP21.PYS



WESTERN SYSTEM COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 REF ID: 2001
 STAB, SLS FALL ON PV 500 BY BUSING PV-445 OUT/4 C CLR FLT WPP-445
 TC TRIP REC, 445, 2002 DIRECT. MOTOR/02LSP21.PYS
 Motor/02LSP21.PYS

Arizona 500 & 345KV EHV System

AZ20042_hsd1a.dwg



GENERATION	
CORONADO	400.00
CHOLLA	900.00
CHA HYDRO	0.00
FOURCORN	1760.00
HOOVER	540.00
HOHAVE	700.00
NAVAJO	3410.00
PALO VERDE	4000.00
SAN JUAN	1101.14
SPRINGBERG	570.00
GRIFITH	100.00
SOPHINT	100.00
MERCHANT	400.00
DBS BEN	0.00
ARL BEN	0.00
REDHANK	1040.00

230KV VOLTAGE	
KYRENE	1.00
PNPKAPE	1.07
WESTHIND	1.00
SILVERKID	1.00
HEAD	1.00
SAB (1)	1.00
DEVERE	1.00
LUBO	1.00

FLOW SUMMARY	
COM	3346.20
NOR (TOTAL)	4710.55
NOR (NORTH)	2022.61
MIDWAY-VINCENT	2100.50
KRAMER-LUBO	220.20
SOCAL IMPORT	1000.27
PCI	1000.00
COI	2701.11
PCN WEST	1440.31
NE/SE	046.59
SIBUARD/RED BUTTE	234.69
PALO VERDE TOTAL	5453.00
PALO VERDE WEST	1000.40
PALO VERDE EAST	2022.50

25

HASSYAMP
15090

→1000.0
←3.0

→600.0
←5.5

←716.2
→10.2

→150.2
←58.4

→150.2
←58.4

→150.2
←58.4

13.513 528.0
1.050

←1364.2
→173.4

KYRENE
15011

→623.3
→571.7
→525.0
→452.1

15012
15014
15011
15011

KYRENE6
108.69
KYRENE7
108.13
SILVERK6
546.2
BROWNING
441.1

FAL OVRDR
15021

N. BILA
22576

AN INTON
15092

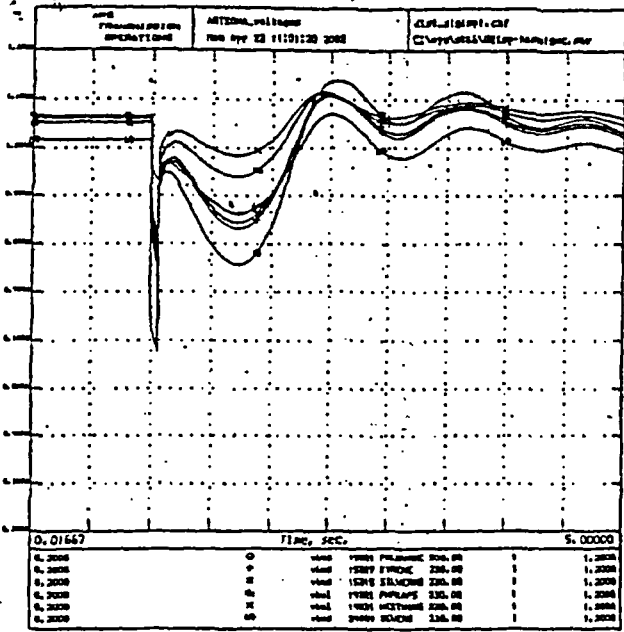
REDHANK
15091

N. BILA
70.75
IMRELULY
528.9

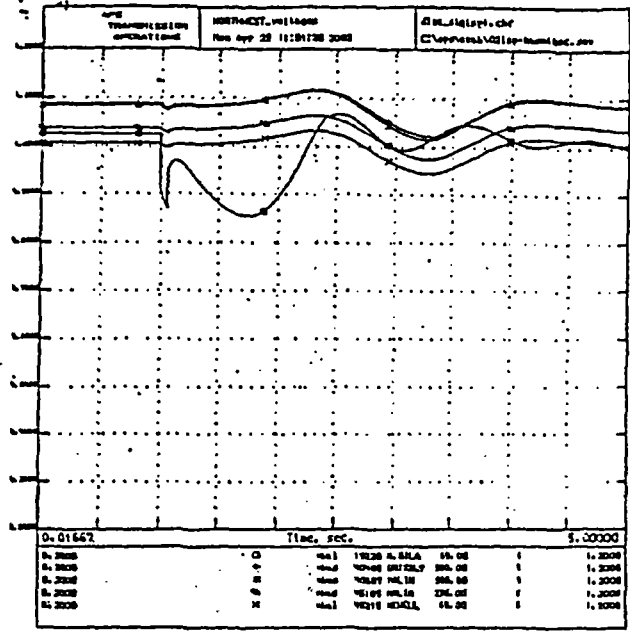
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18.16
ANL-CT2
18.16
ANL-ST1
18.16

RED-CT1
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RED-CT2
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RED-CT3
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RED-CT4
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RED-ST2
18.00

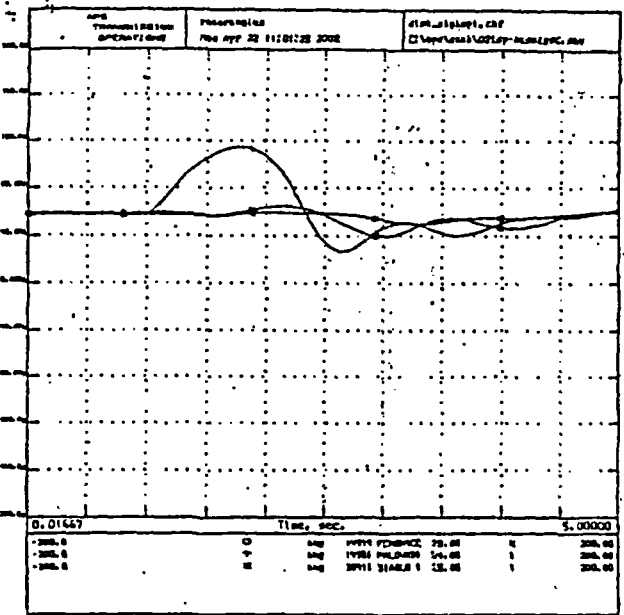
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Q MVAR = -0.0000 MVAR



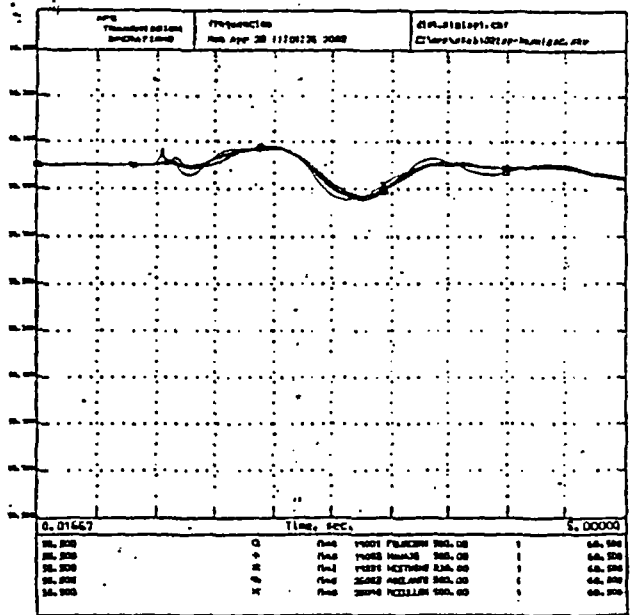
WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LIPS OPERATING CASE
 RWF 11, 2008
 STATE: SLS FAULT ON PV 500 BY BUS THE PHASES ARE C CLR FLT W/PHASE
 TO TRIP RESS00, MLLA, 302 (DIRECT, ROTOR) (CLSP1), PV5
 (Standard) (Direct) series comp. bypassed



WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LIPS OPERATING CASE
 RWF 11, 2008
 STATE: SLS FAULT ON PV 500 BY BUS THE PHASES ARE C CLR FLT W/PHASE
 TO TRIP RESS00, MLLA, 302 (DIRECT, ROTOR) (CLSP1), PV5
 (Standard) (Direct) series comp. bypassed



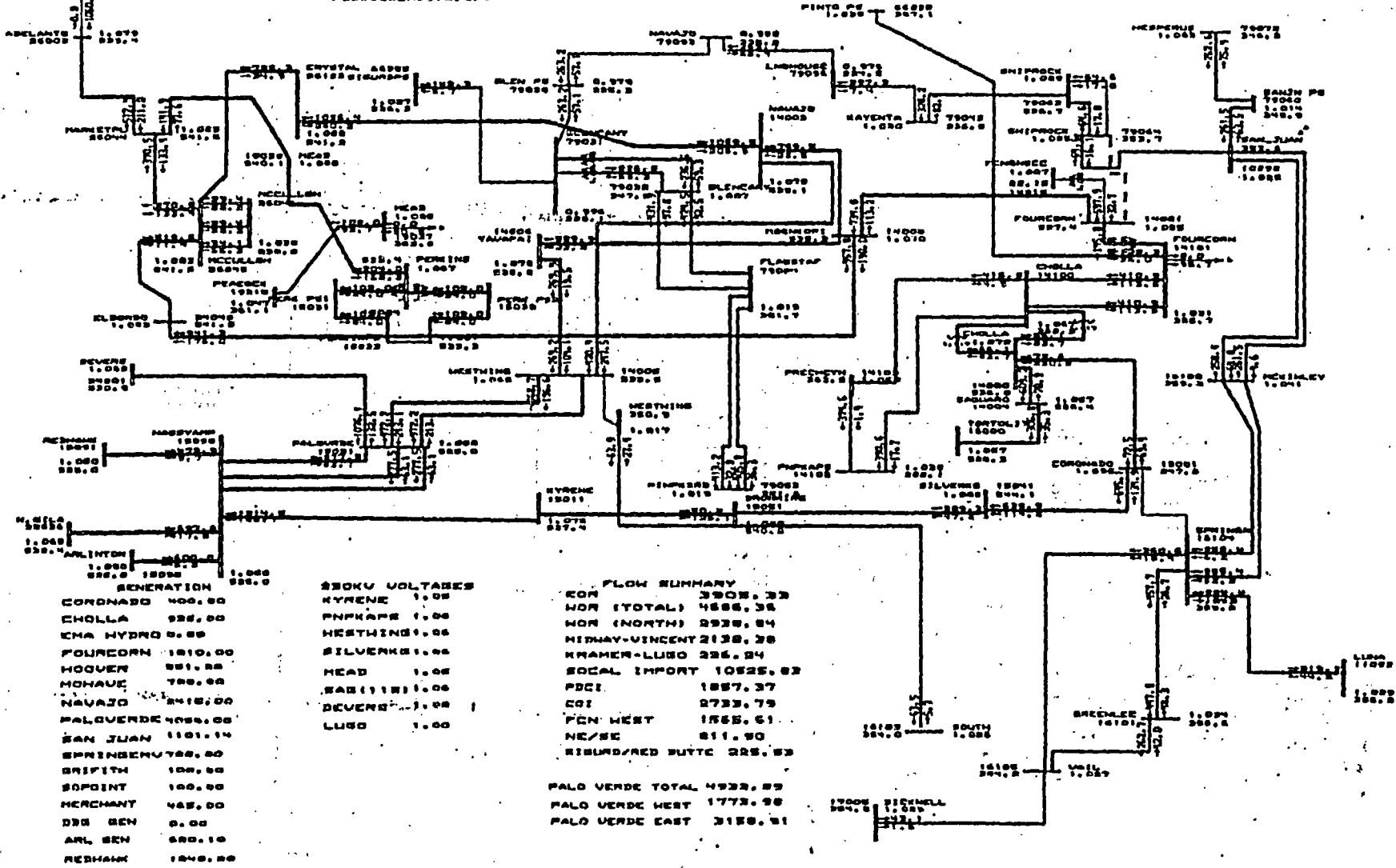
WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LIPS OPERATING CASE
 RWF 11, 2008
 STATE: SLS FAULT ON PV 500 BY BUS THE PHASES ARE C CLR FLT W/PHASE
 TO TRIP RESS00, MLLA, 302 (DIRECT, ROTOR) (CLSP1), PV5
 (Standard) (Direct) series comp. bypassed



WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LIPS OPERATING CASE
 RWF 11, 2008
 STATE: SLS FAULT ON PV 500 BY BUS THE PHASES ARE C CLR FLT W/PHASE
 TO TRIP RESS00, MLLA, 302 (DIRECT, ROTOR) (CLSP1), PV5
 (Standard) (Direct) series comp. bypassed

Arizona 500 & 345KV EHV System

AZ500&345KV_EHV.dwg



GENERATION

CORNADO	400.00
CHOLLA	326.00
EMA HYDRO	0.00
FOURCORN	1810.00
HOOVER	881.00
MOHAVE	780.00
NAVAJO	2418.00
PALOVERDE	4055.00
SAN JUAN	1101.14
SPRINGMOUNT	780.00
GRIFITH	100.00
SOPPOINT	100.00
MERCHANT	448.00
DBB GEN	0.00
ARL GEN	680.10
REDHAWK	1840.00

350KV VOLTAGES

KYRENE	1.00
PNKRAPE	1.00
HESTING	1.00
SILVERHILL	1.00
HEAD	1.00
SAB(11E)	1.00
DEVEREUX	1.00
LUGO	1.00

FLOW SUMMARY

CON	3908.33
NOR (TOTAL)	4886.36
NOR (NORTH)	2936.84
MIDWAY-VINCENT	2138.38
KRAMER-LUGO	226.84
SOCAL IMPORT	1025.82
PDCI	1887.37
COI	2733.75
FCN WEST	1855.61
NE/SE	811.90
RIBURD/RED BUTTE	225.83
PALO VERDE TOTAL	4922.89
PALO VERDE WEST	1773.98
PALO VERDE EAST	3158.91

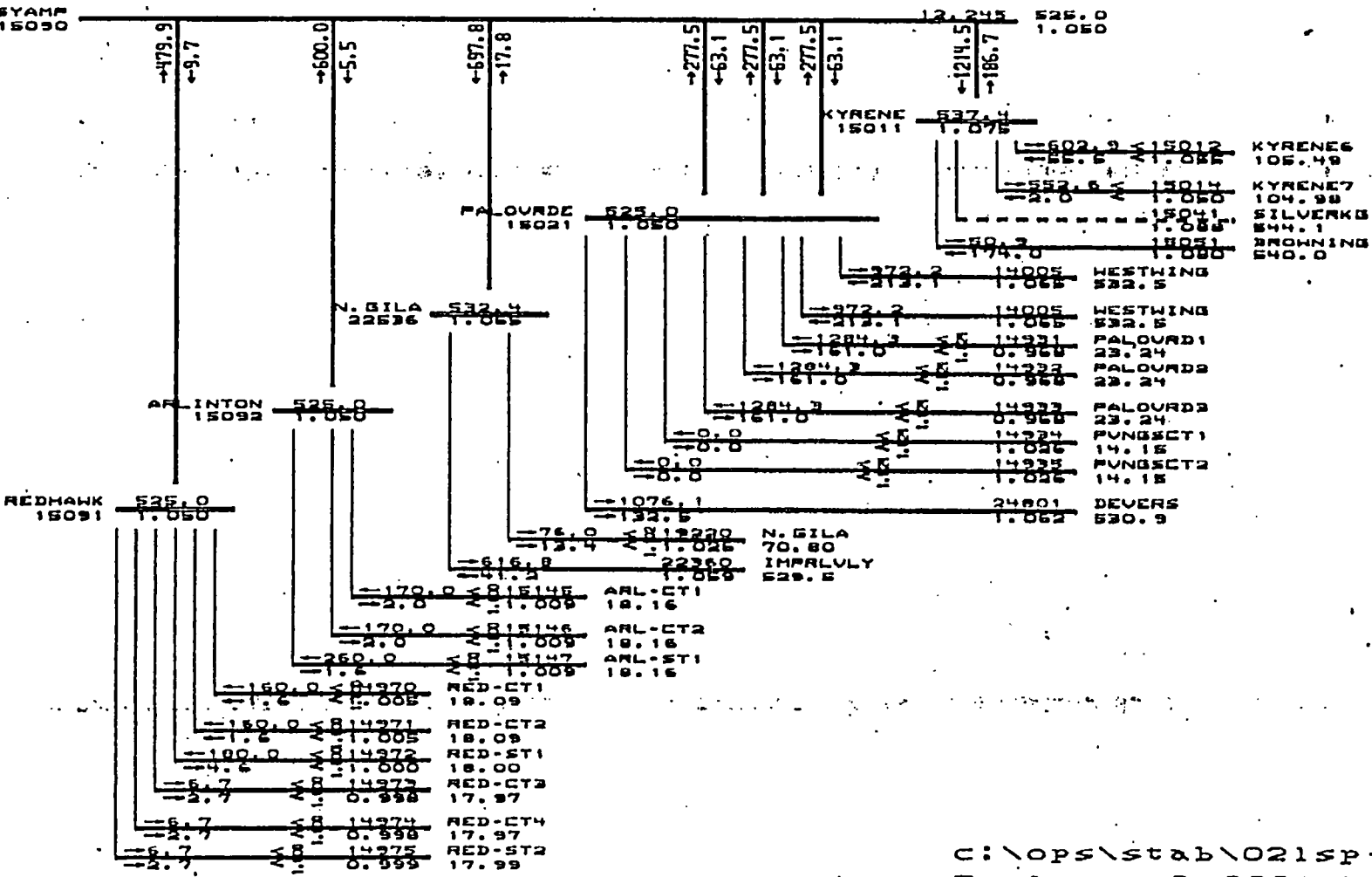
General Electric International, Inc.
APS
TRANSMISSION
OPERATIONS

PSL Program
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

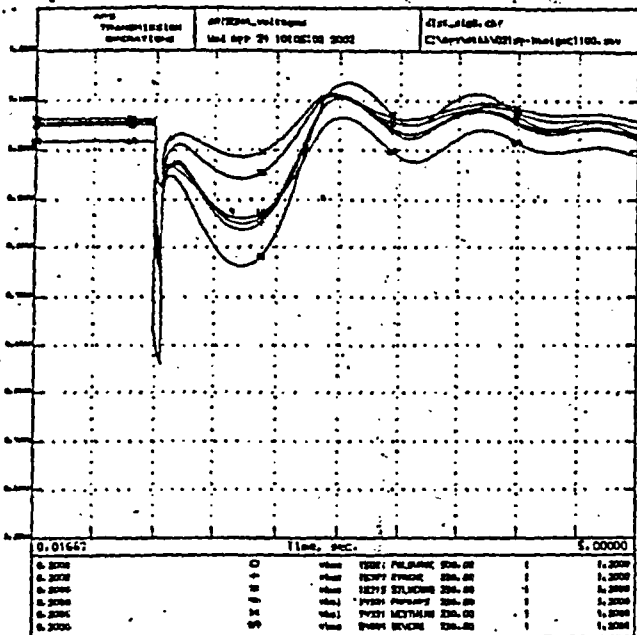
NEW GEN-1100MVA(2 UNITS)
MCS-116 SC 105
B.2-02 LSP-11A MFG SC 1100, 345V

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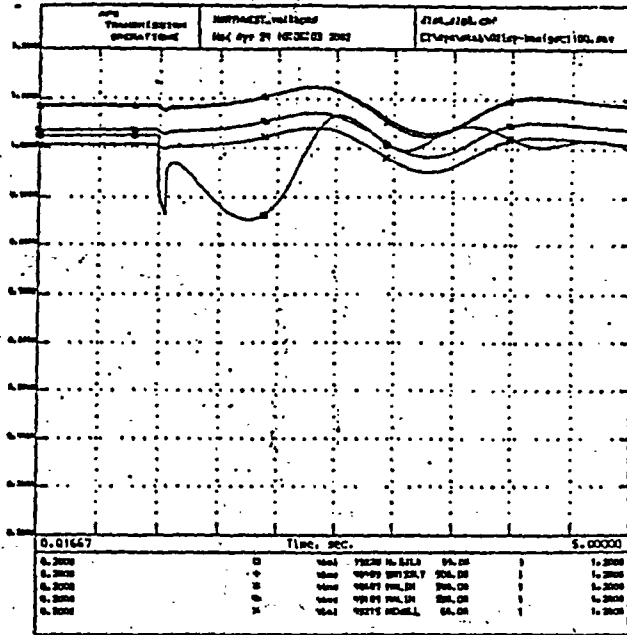
HASSYAMP
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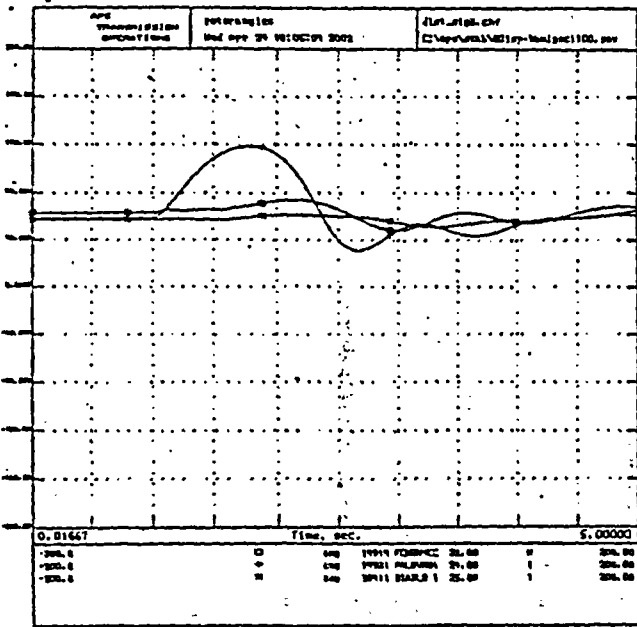
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Q miv = 0.0000 MVAR



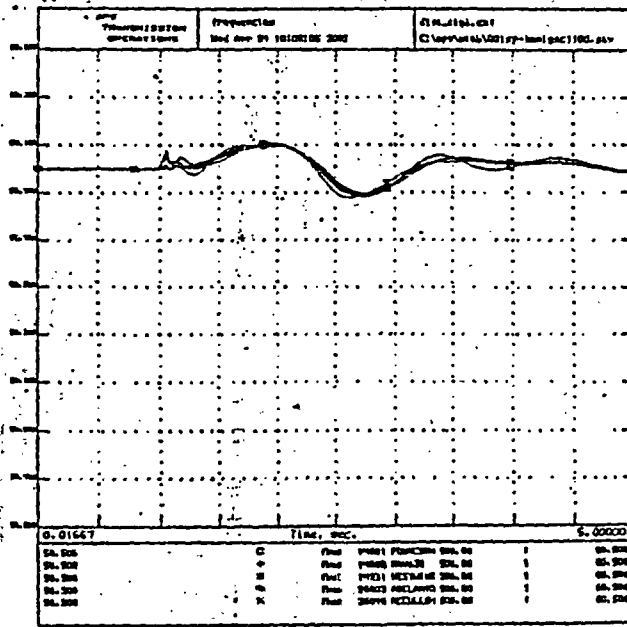
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOOFING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PV 500 BY BUS: THE P-446 BUS IN C CLR FLT MPP-446;
 TC TRIP RCD, A4L6, 20K IMPACT. HISTORY: (02, SP21, BY)
 COMMENTS: SLC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS: SLC TO STAFF MAY 26, 2001



WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOOFING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PV 500 BY BUS: THE P-446 BUS IN C CLR FLT MPP-446;
 TC TRIP RCD, A4L6, 20K IMPACT. HISTORY: (02, SP21, BY)
 COMMENTS: SLC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS: SLC TO STAFF MAY 26, 2001



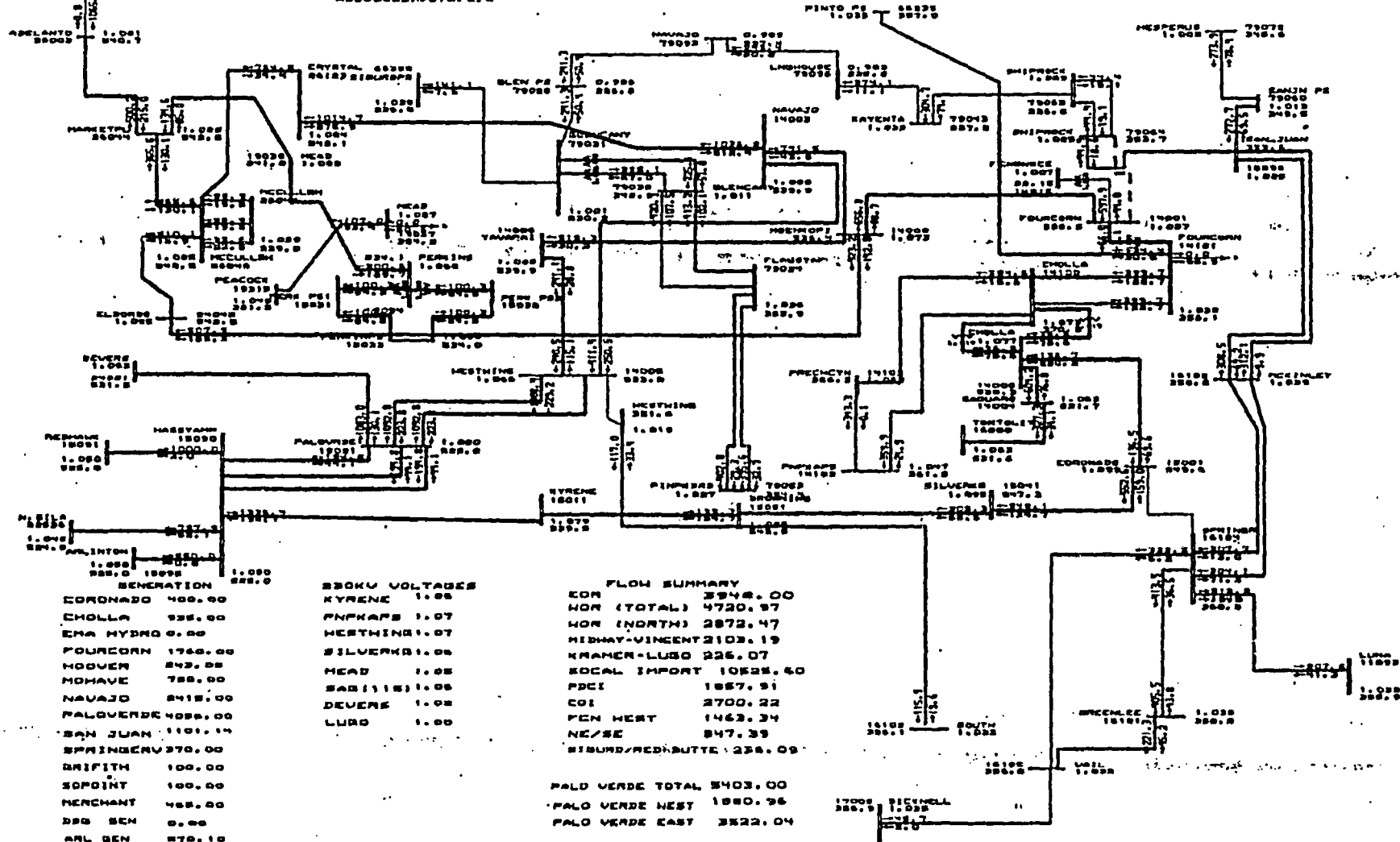
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOOFING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PV 500 BY BUS: THE P-446 BUS IN C CLR FLT MPP-446;
 TC TRIP RCD, A4L6, 20K IMPACT. HISTORY: (02, SP21, BY)
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WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOOFING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PV 500 BY BUS: THE P-446 BUS IN C CLR FLT MPP-446;
 TC TRIP RCD, A4L6, 20K IMPACT. HISTORY: (02, SP21, BY)
 COMMENTS: SLC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS: SLC TO STAFF MAY 26, 2001

Arizona 500 & 345KV EHV System

A280048-NP01a.dwg



GENERATION

CORONADO	400.00
CHOLLA	226.00
EMA HYDRO	0.00
FOURCORN	1740.00
HOOVER	242.00
MOHAVE	780.00
NAVAJO	2418.00
PALOVERDE	4088.00
SAN JUAN	1101.14
SPRINGERV	370.00
BRIFITH	100.00
SOPHINT	100.00
MERCHANT	468.00
DBB SEN	0.00
ANL SEN	870.10
REDHAWK	1040.00

330KV VOLTAGES

KYRENE	1.00
PNKPAPS	1.07
WESTHIND	1.07
SILVERKRI	1.00
HEAD	1.00
SABINIS	1.00
SEVERE	1.00
LUGO	1.00

FLOW SUMMARY

CON	3948.00
NOR (TOTAL)	4720.97
NOR (NORTH)	2872.47
MIDWAY-VINCENT	2103.19
KRAMER-LUGO	226.07
LOCAL IMPORT	1028.60
PDCE	1867.91
COI	2700.22
FCN WEST	1462.34
NE/SE	847.39
SILVER/REDHAWK	226.09

PALO VERDE TOTAL 5403.00

PALO VERDE WEST	1880.26
PALO VERDE EAST	3522.04

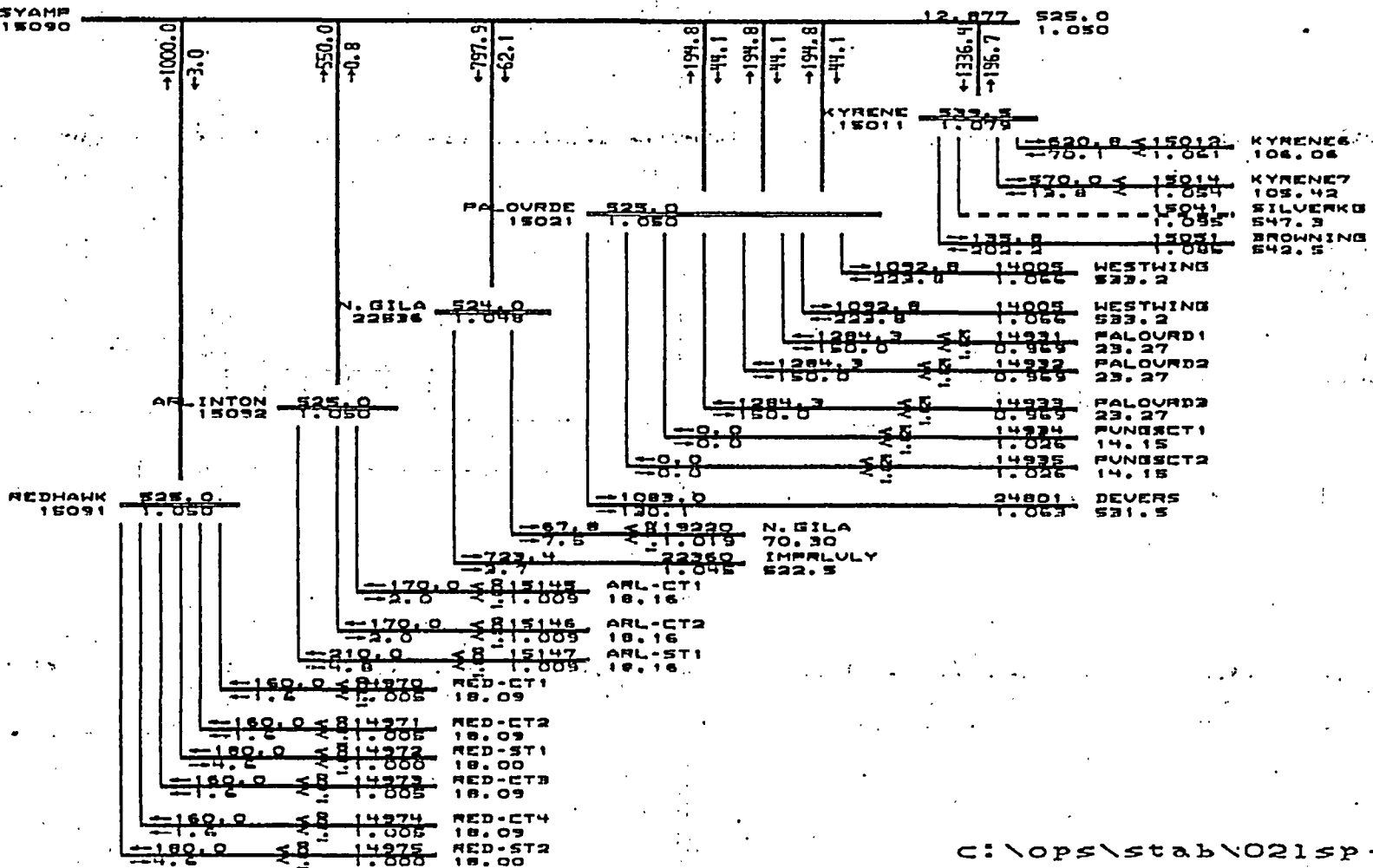
General Electric International, Inc.
APS
TRANSMISSION
OPERATIONS

PSLF Project
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

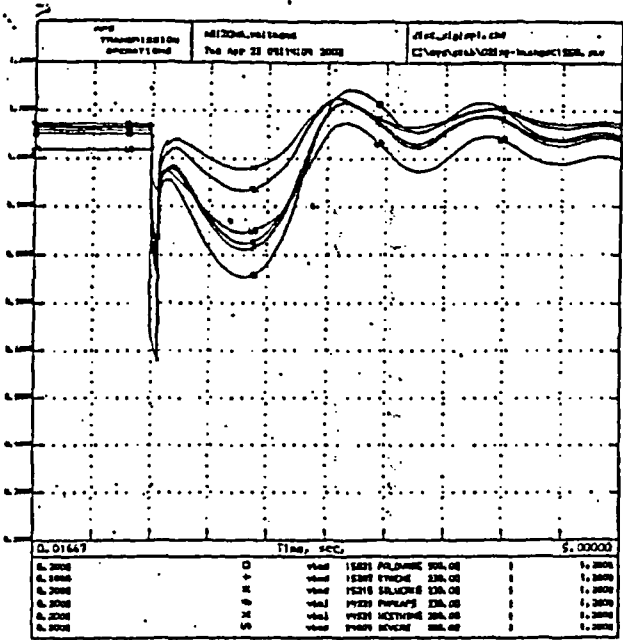
Hassayampa-M. Gila SC Out
New gen 1550MW
C-02L3P-1-HASNGSC1550.SAV

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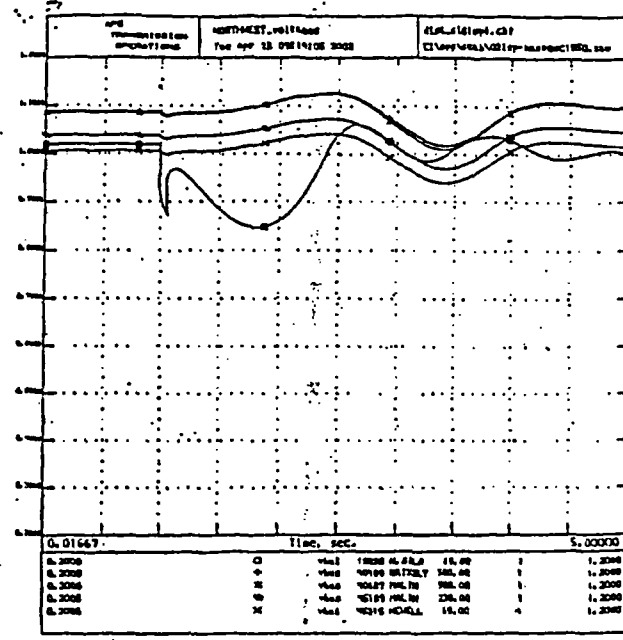
HASSYAMP
15090



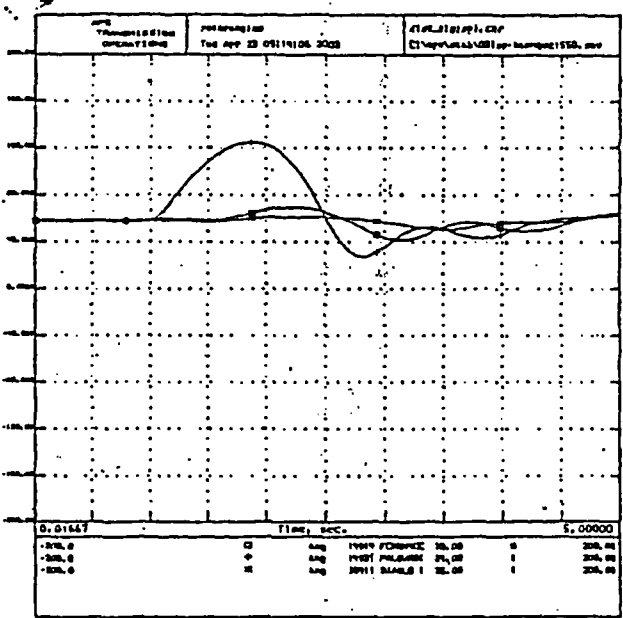
C: \ops\stab\021sp-ha
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Q MVA = -0.0000 MVAR



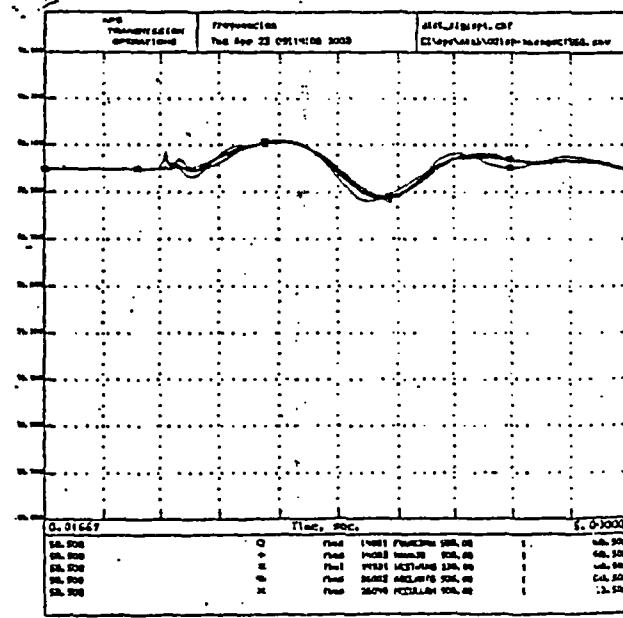
WESTERN SYSTEMS COORDINATING COUNCIL
 2003 LINE OPERATING CASE
 MAY 11, 2003
 STAB, SLS FAULT ON PV 508 BY BUSING PHASE OUTY C CLR FLT WPP-440
 TC TRIP REGR, AMLA, 208 (IMLECT, ROTORS) COLSPN, FYS
 COMMENTS RUC TO AREA COORDINATORS MAY 18, 2003
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2003



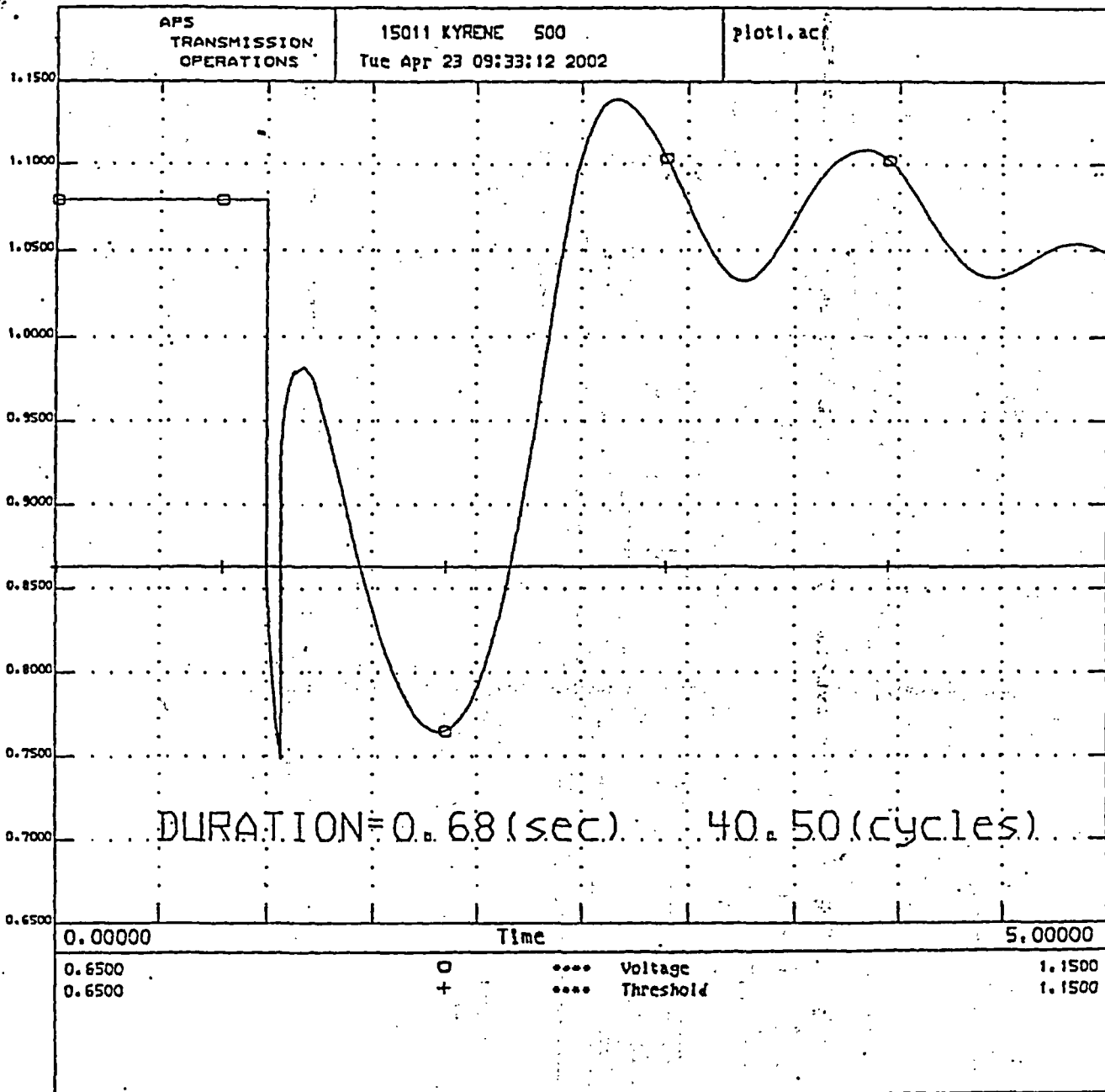
WESTERN SYSTEMS COORDINATING COUNCIL
 2003 LINE OPERATING CASE
 MAY 11, 2003
 STAB, SLS FAULT ON PV 508 BY BUSING PHASE OUTY C CLR FLT WPP-440
 TC TRIP REGR, AMLA, 208 (IMLECT, ROTORS) COLSPN, FYS
 COMMENTS RUC TO AREA COORDINATORS MAY 18, 2003
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2003



WESTERN SYSTEMS COORDINATING COUNCIL
 2003 LINE OPERATING CASE
 MAY 11, 2003
 STAB, SLS FAULT ON PV 508 BY BUSING PHASE OUTY C CLR FLT WPP-440
 TC TRIP REGR, AMLA, 208 (IMLECT, ROTORS) COLSPN, FYS
 COMMENTS RUC TO AREA COORDINATORS MAY 18, 2003
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2003



WESTERN SYSTEMS COORDINATING COUNCIL
 2003 LINE OPERATING CASE
 MAY 11, 2003
 STAB, SLS FAULT ON PV 508 BY BUSING PHASE OUTY C CLR FLT WPP-440
 TC TRIP REGR, AMLA, 208 (IMLECT, ROTORS) COLSPN, FYS
 COMMENTS RUC TO AREA COORDINATORS MAY 18, 2003
 AREA COORDINATOR COMMENTS RUC TO STAFF MAY 26, 2003

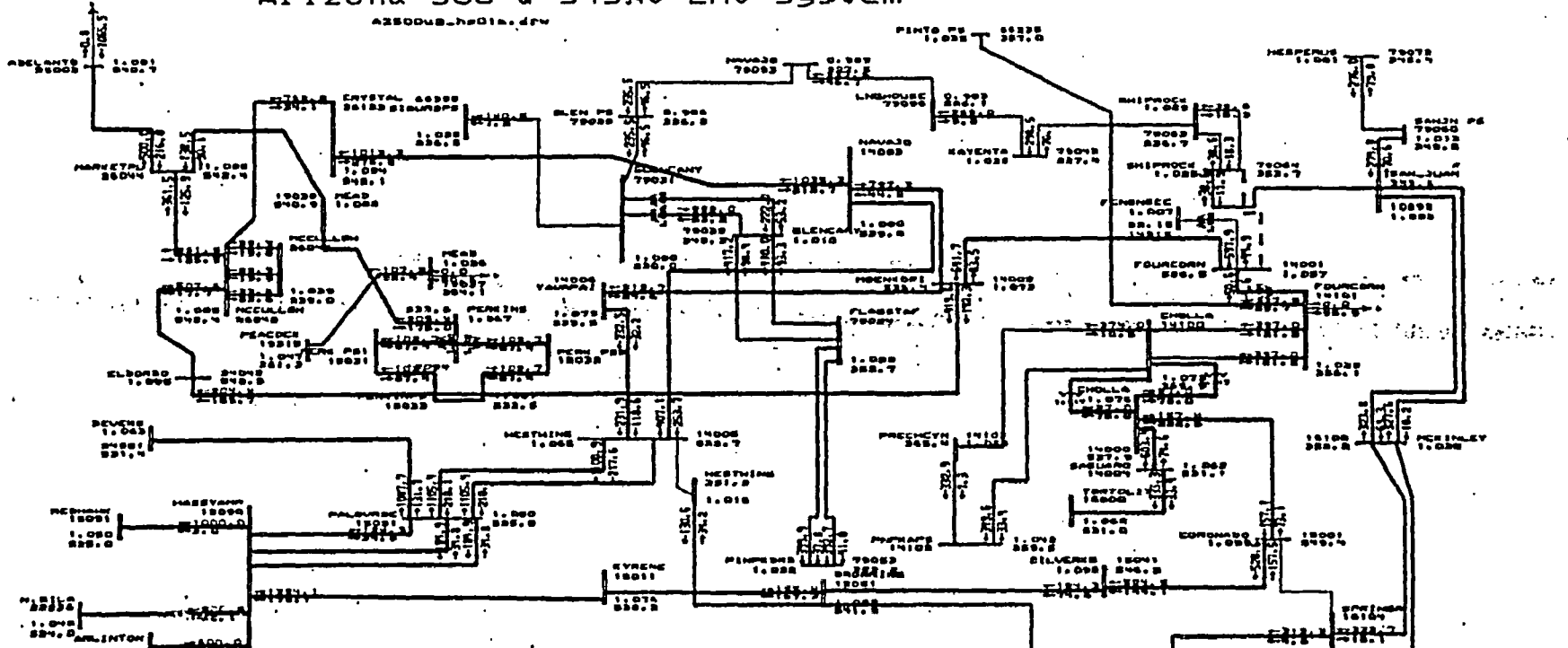


WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLG FAULT ON PV 500 KV BUS; TWO PV-WMG OUT; 4 C CLR FLT W/PV-WMG;
 7c TRIP REDO, ARLO, 20% INDUCT. MOTORS; 02LSP21.DYD

COMMENTS DUE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS DUE TO STAFF MAY 25, 2001

Arizona 500 & 345kV EHV System

AS2004B-ha01a.dwg



GENERATION

CORNADO	400.00
CHOLLA	928.00
EMA HYDRO	0.00
FOURCORN	1760.00
HOOVER	843.00
MOHAVE	789.00
NAVAJO	8415.00
PALO VERDE	4000.00
SAN JUAN	1101.14
SPRINGERV	370.00
BRIFITH	100.00
SOPPOINT	100.00
MERCHANT	465.00
DBB BEN	0.00
ARL BEN	690.10
REDHAWK	1040.00

230KV VOLTAGES

KYRENE	1.00
PNPKAPE	1.07
METHINE	1.00
SILVERK	1.00
HEAD	1.00
SAB (115)	1.00
SEVERE	1.00
LUGO	1.00

FLOW SUMMARY

COM	2385.04
WOR (TOTAL)	4726.10
WOR (NORTH)	2870.55
MIDWAY-VINCENT	2099.28
KRAMER-LUGO	227.74
SOCAL IMPORT	1027.66
PCI	1957.33
COI	2696.88
FEN WEST	1442.57
NE/SE	850.46
SIGURD/RED BUTTE	234.44
PALO VERDE TOTAL	5463.02
PALO VERDE WEST	1888.12
PALO VERDE EAST	3564.90

33
General Electric International, Inc.
APS
TRANSMISSION
OPERATIONS

PSLT Problem
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

Hassayampa-N.Gila SC Out
C1-0265P-HASNG SC, SAV

PL/TRANS
MAY 22 13:39:58 2002
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C:\apps\stab\021sp_hasngsc.sav
Rating = 1

BY MALABO

HASSYAMP
15090

REDHAWK
15091

AR-INTON
15092

KYRENE
15011

FALOURDE
15021

N. BILA
22552

N. BILA
70.28
IMPRULY
522.4

KYRENE6
105.70
KYRENE7
105.13
SILVERKIE
546.2
BROWNING
541.2

WESTWING
332.7

WESTWING
332.7

FALOURD1
29.31

FALOURD2
29.31

FALOURD3
29.31

FUNGET1
14.15

FUNGET2
14.15

DEVERS
531.4

ARL-CT1
18.18

ARL-CT2
18.16

ARL-ST1
18.16

RED-CT1
18.09

RED-CT2
18.09

RED-ST1
18.00

RED-CT3
18.09

RED-CT4
18.09

RED-ST2
18.00

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P MW = -0.0000 MW
Q MVAR = 0.0000 MVAR

General Electric International, Inc. PRF Project

34
APS
TRANSMISSION
OPERATIONS

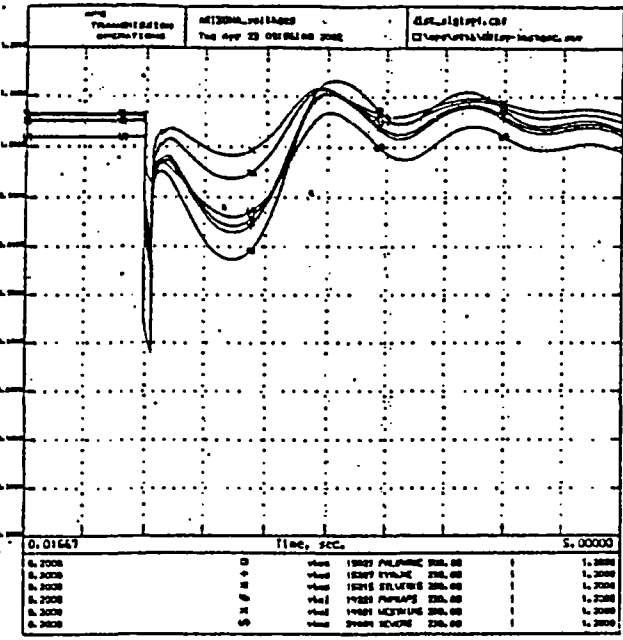
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

Hassyampa-K.Gilla SC Out

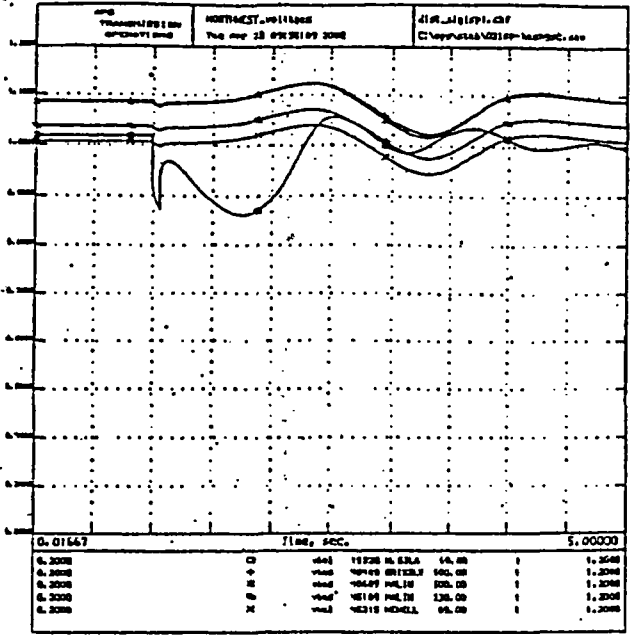
PLATTMAN

Mon Apr 22 13:29:14 2002

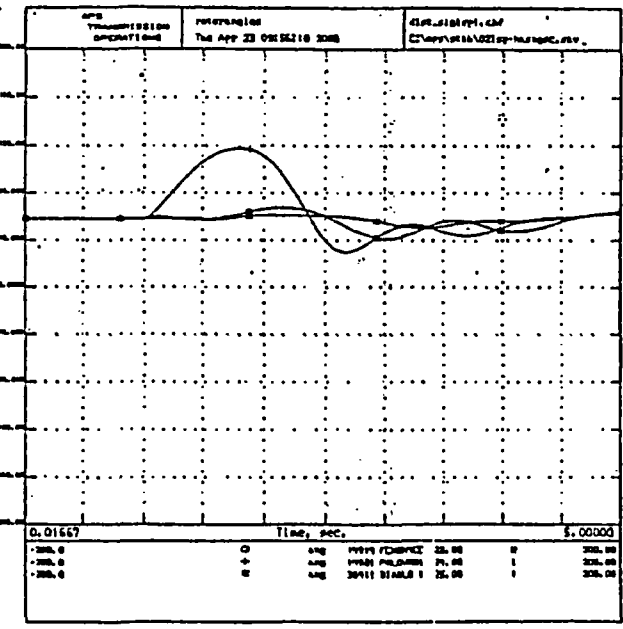
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Rating = 1



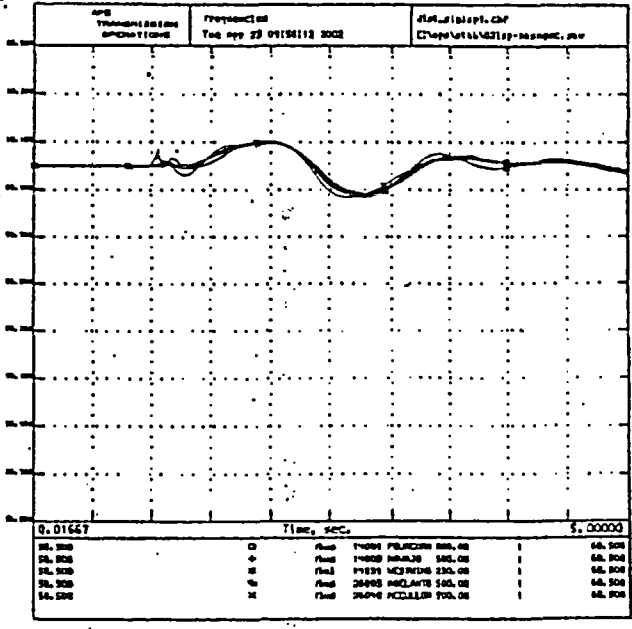
WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PW 300 IN BUS THE PW-446 BUS(1) C CLR FLT WPP-446
 TC TRIP RCH146,MLA,300 IMPACT. MOTOR(02LSP11,17)



WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PW 300 IN BUS THE PW-446 BUS(1) C CLR FLT WPP-446
 TC TRIP RCH146,MLA,300 IMPACT. MOTOR(02LSP11,17)



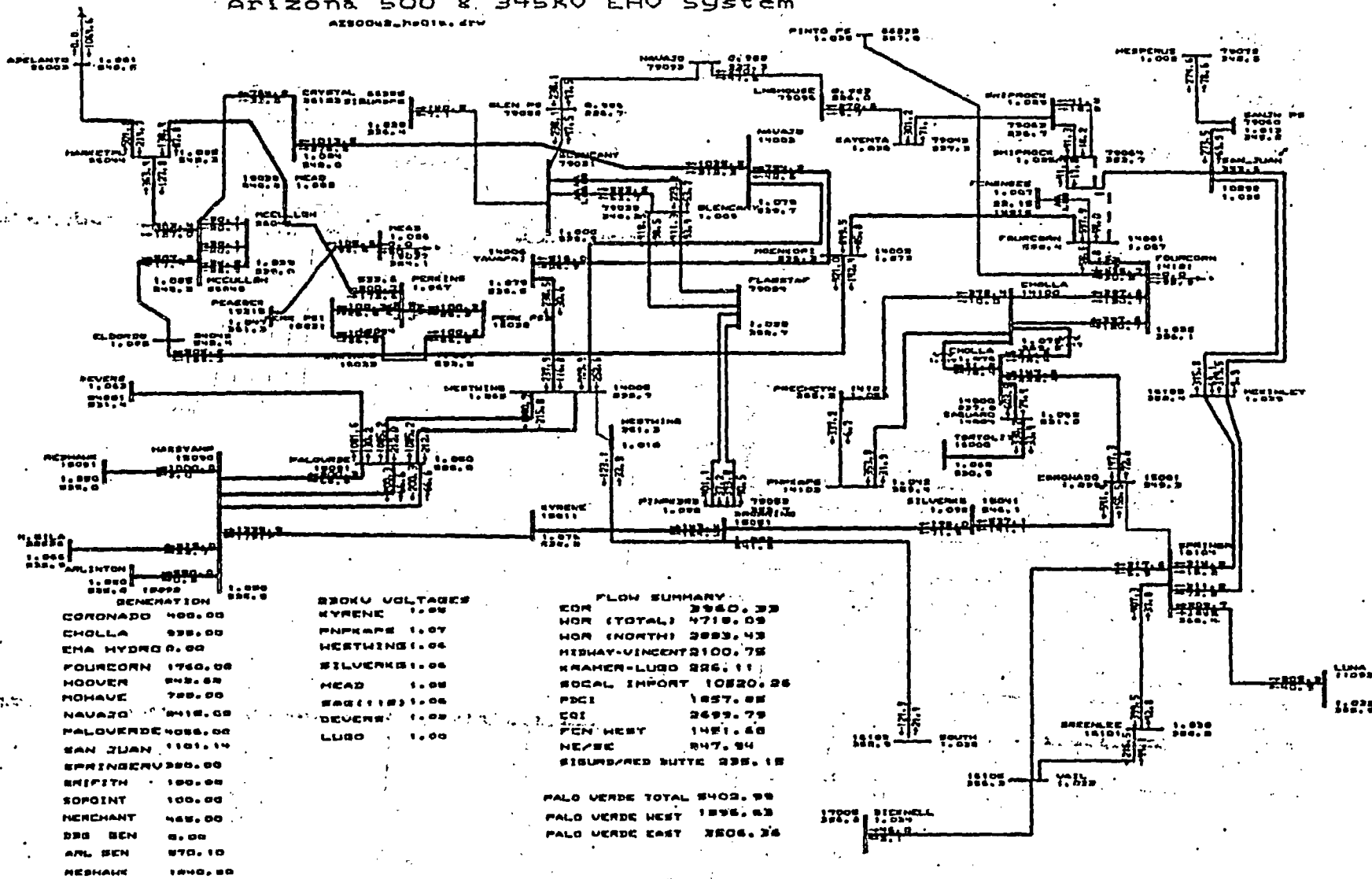
WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PW 300 IN BUS THE PW-446 BUS(1) C CLR FLT WPP-446
 TC TRIP RCH146,MLA,300 IMPACT. MOTOR(02LSP11,17)



WESTERN SYSTEMS COORDINATING COUNCIL
 2008 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PW 300 IN BUS THE PW-446 BUS(1) C CLR FLT WPP-446
 TC TRIP RCH146,MLA,300 IMPACT. MOTOR(02LSP11,17)

Arizona 500 & 345kV EHV System

AS50042_Rev 01a.dwg



GENERATION	
CORONADO	400.00
CHOLLA	330.00
EHA HYDRO	0.00
FOURCORN	1750.00
HOOVER	240.00
NOHAVE	700.00
NAVAJO	2410.00
PALOVERDE	4000.00
SAN JUAN	1101.14
SPRINGERVILLE	300.00
BRIFITH	100.00
SOPOINT	100.00
MERCHANT	400.00
DBS GEN	0.00
ARL GEN	0.00
MESHAWK	1000.00

320KV VOLTAGES	
KYRENE	1.00
FINNMARK	1.07
WESTWING	1.04
SILVERHILL	1.06
HEAD	1.08
SEA (112)	1.06
DEVERE	1.00
LUGO	1.00

FLOW SUMMARY	
ECR	2360.33
NOR (TOTAL)	4710.00
NOR (NORTH)	2003.43
HIGHWAY-VINCENT	2100.75
KRAMER-LUGO	226.11
SOCAL IMPORT	10020.26
PDCI	1057.00
COI	2693.79
FCN WEST	1401.00
NE/SE	047.94
SIGURS/RED BUTTE	030.10
PALO VERDE TOTAL 2402.00	
PALO VERDE WEST 1096.00	
PALO VERDE EAST 1306.00	

General Electric International, Inc.
 APS
 TRANSMISSION
 OPERATIONS

PSF Project
 WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

N. Gila-Miguel series cap. Bypassed
 NCI GEN-15500M

D = 02651-NGMIGSC1500.SAV

MUMMAR
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 Rating = 1

72

HASSYAMP
15090

REDHAWK
15091

ARLINTON
15092

KYRENE
15011

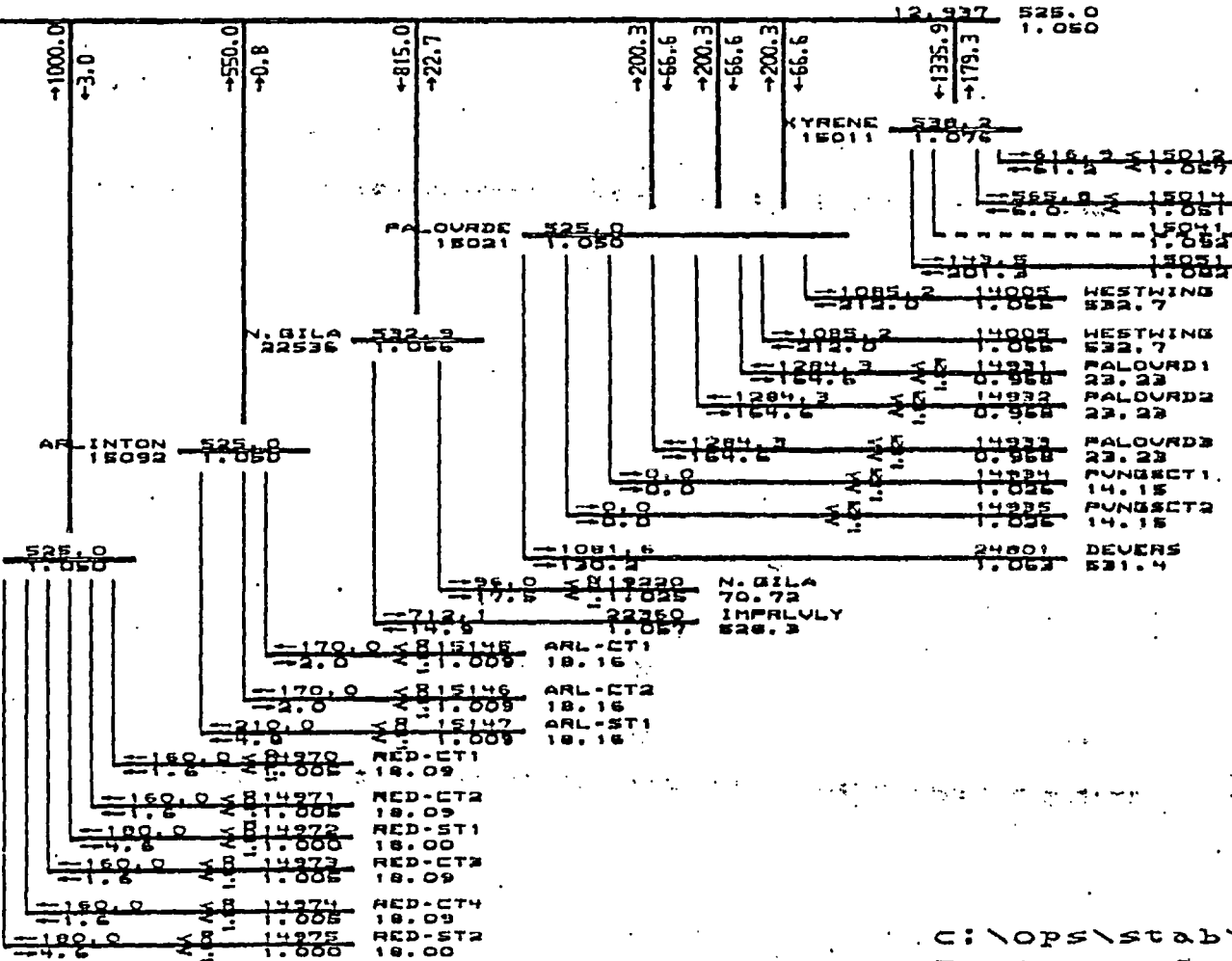
PALOURDE
15021

N. BILA
22536

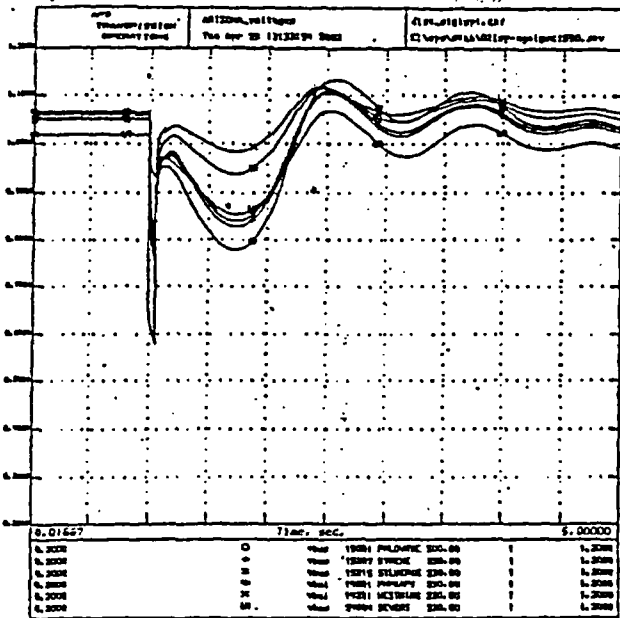
N. BILA
70.73
IMPRVLVLY
228.3

KYRENE6
105.70
KYRENE7
105.14
SILVERKE
546.1
BROWNING
541.2

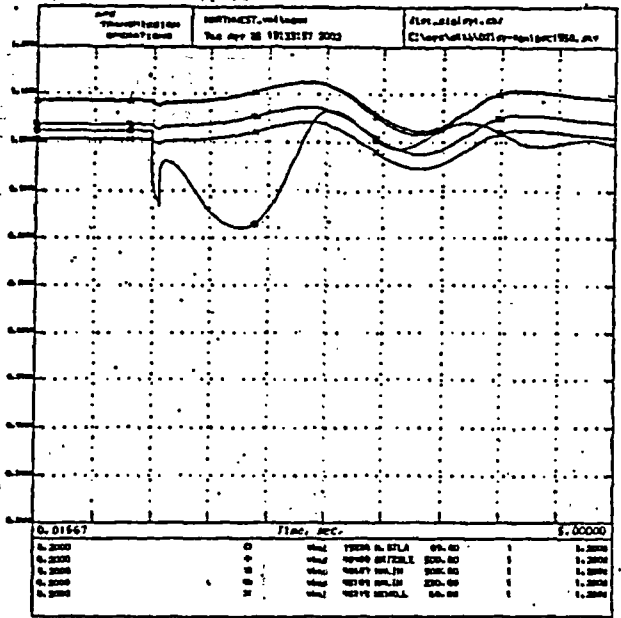
HESTING
532.7
HESTING
532.7
PALOURD1
23.23
PALOURD2
23.23
PALOURD3
23.23
PUNJECT1
14.15
PUNJECT2
14.15
DEVERS
531.4



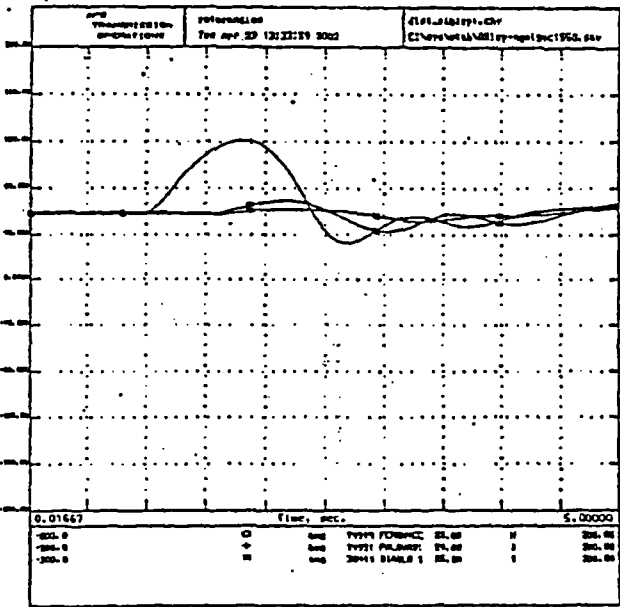
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 Q MVAR = -0.0000 MVAR



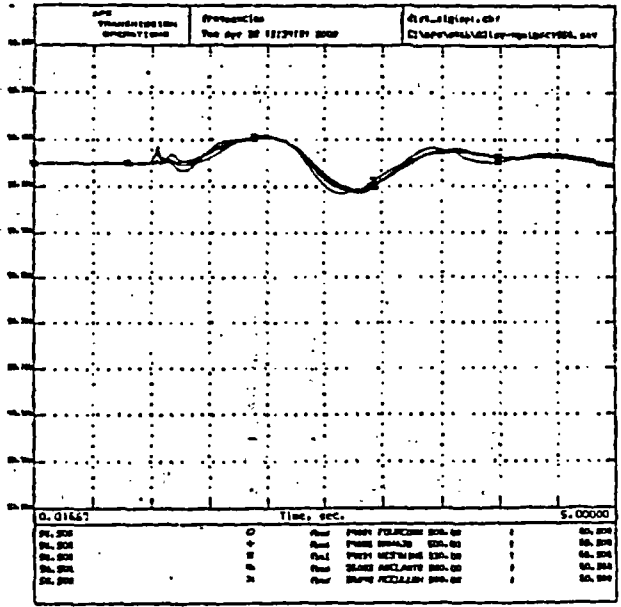
MOSTON SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 NET 11, 2001
 STAB, SLS FAULT ON PV 202 BY BUS; THE PHASE OUT/IN C CLR FLT WPP-042;
 TC TRIP REC-A,LA,202 DIRECT. ROTORS/CL-SP21-279



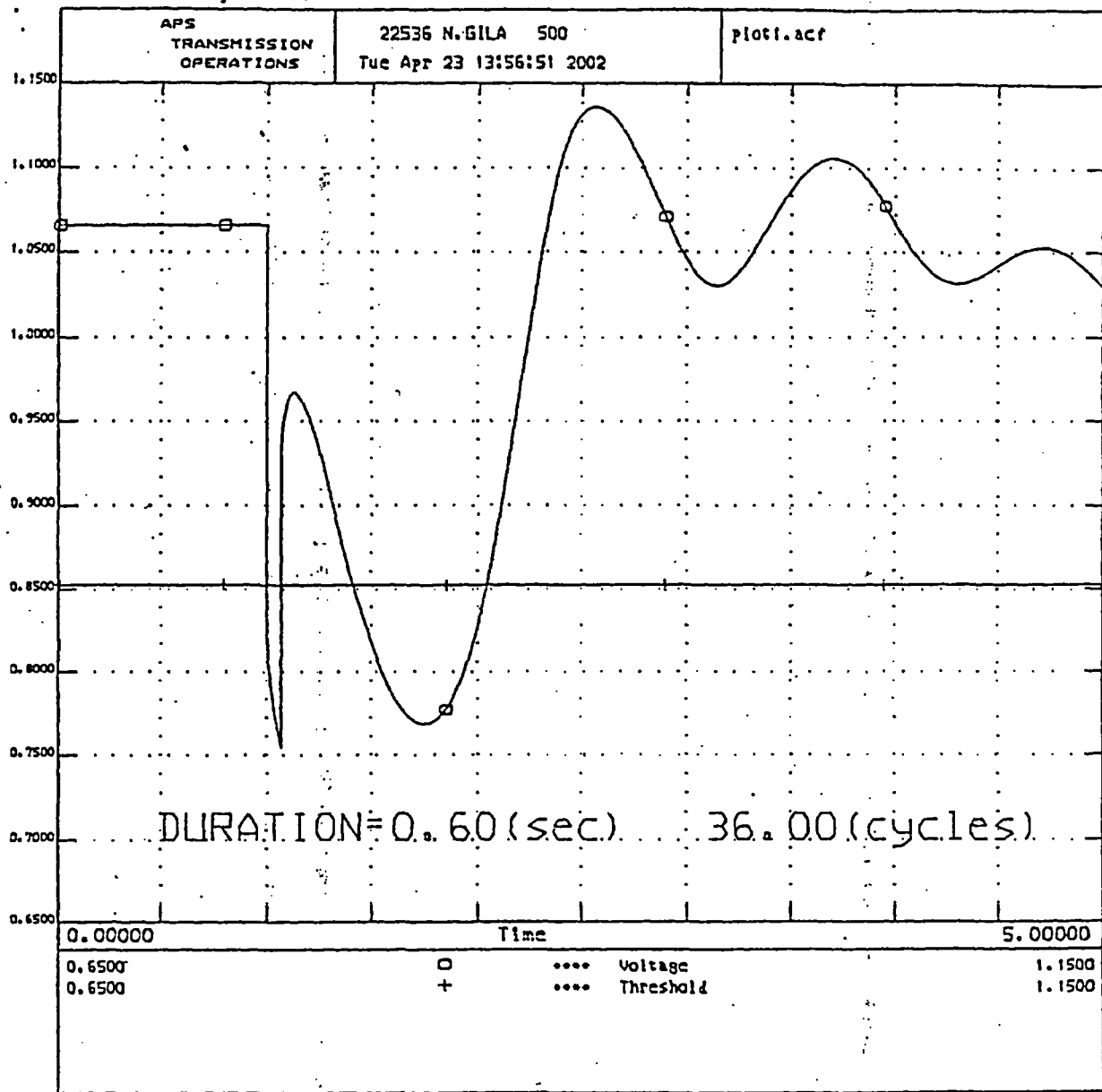
MOSTON SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 NET 11, 2001
 STAB, SLS FAULT ON PV 202 BY BUS; THE PHASE OUT/IN C CLR FLT WPP-042;
 TC TRIP REC-A,LA,202 DIRECT. ROTORS/CL-SP21-279



MOSTON SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 NET 11, 2001
 STAB, SLS FAULT ON PV 202 BY BUS; THE PHASE OUT/IN C CLR FLT WPP-042;
 TC TRIP REC-A,LA,202 DIRECT. ROTORS/CL-SP21-279



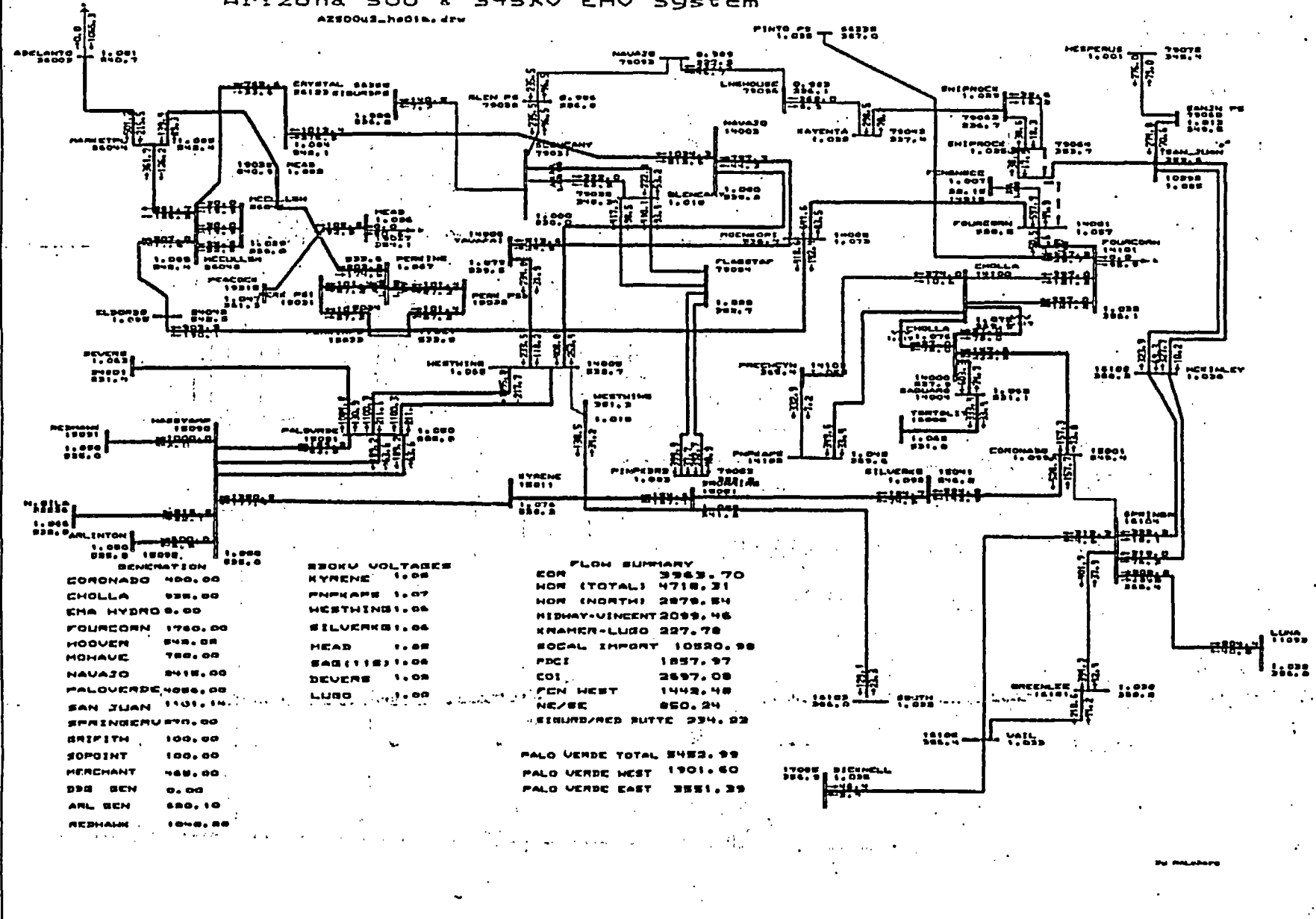
MOSTON SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 NET 11, 2001
 STAB, SLS FAULT ON PV 202 BY BUS; THE PHASE OUT/IN C CLR FLT WPP-042;
 TC TRIP REC-A,LA,202 DIRECT. ROTORS/CL-SP21-279



WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLG FAULT ON PV 500 KV BUS; THO PV-WHG OUT; 4 C CLR FLT W/PV-WHS;
 7C TRIP REDO, ARLO, 20% INDUCT. MOTORS; 02LSP21.DYD

Arizona 500 & 345kV EHV System

AZ500u3_ho01a.drv



GENERATION

CORONADO	400.00
CHOLLA	938.00
EHA HYDRO	0.00
FOURCORN	1760.00
HOOVER	548.00
MOHAVE	780.00
NAVAJO	2418.00
PALO VERDE	4060.00
SAN JUAN	1101.14
SPRINGMOUNT	570.00
BRIFITH	100.00
SOPPOINT	100.00
MERCHANT	460.00
DEE SEN	0.00
ARL SEN	680.10
REDHAWK	1040.00

345KV VOLTAGES

KYRENE	1.00
PNPKAPE	1.07
WESTHIND	1.04
SILVERB	1.04
HEAD	1.00
SAG (118)	1.00
DEVERS	1.00
LUGO	1.00

FLOW SUMMARY

FOR	3983.70
NOR (TOTAL)	4718.31
NOR (NORTH)	2878.84
MIDWAY-VINCENT	2099.46
KRAMER-LUGO	227.78
SOCAL IMPORT	10820.98
PDCI	1857.97
COI	2697.08
FCN WEST	1442.48
NE/SE	850.24
SILVER/RED BUTTE	234.92
PALO VERDE TOTAL	5482.99
PALO VERDE WEST	1901.60
PALO VERDE EAST	3581.39

HASSYAMP
15090

→1000.0
→-3.0

→600.0
→+5.5

→816.8
→-22.1

→189.2
→-63.6

→189.2
→-63.6

→189.2
→-63.6

→1350.8
→-177.4

528.0
1.050

KYRENE
15011

538.2
1.076

→1618.7
→-218.8

KYRENE6
105.72

KYRENE7
105.15

SILVERK
116.2

BROOKING
111.2

PAOURDE
15021

525.0
1.050

N. GILA
22596

532.8
1.056

ARLINTON
15092

528.0
1.050

REDHAWK
15091

528.0
1.050

N. GILA
70.71

IMPRULY
528.2

ARL-CT1
18.18

ARL-CT2
18.18

ARL-ST1
18.18

RED-CT1
18.09

RED-CT2
18.09

RED-ST1
18.00

RED-CT3
18.09

RED-CT4
18.09

RED-ST2
18.00

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P mis = 0.0001 MW
Q mis = -0.0000 MVAR

General Electric International, Inc. P&T Project

74
APS
TRANSMISSION
OPERATIONS

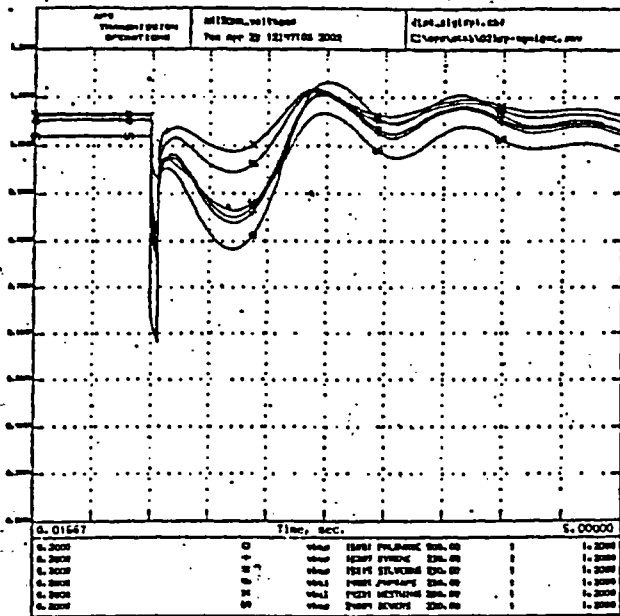
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

N. Gila-Miguel series comp. bypassed

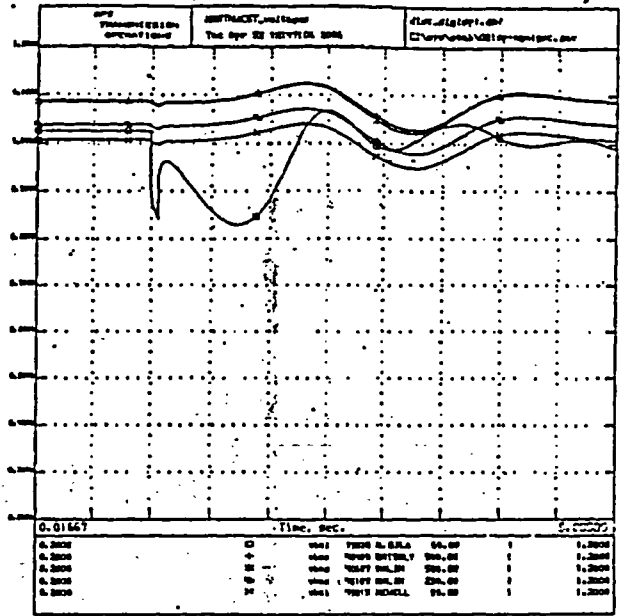
MW/MVAR

Run Apr 22 12:31:47 2002

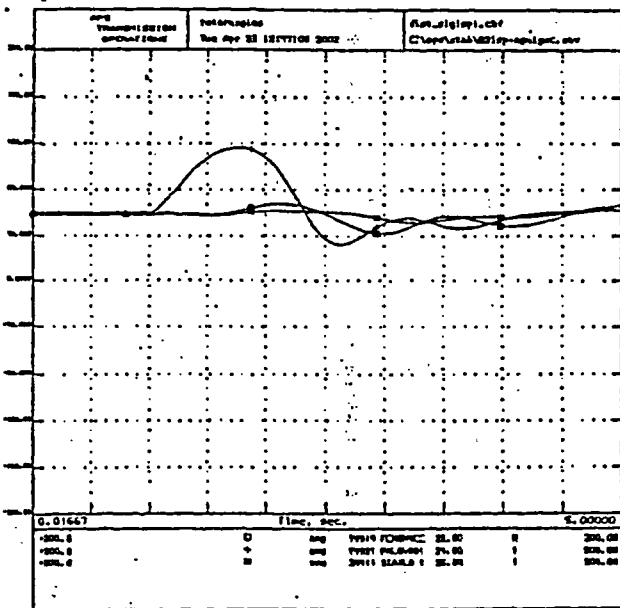
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Rating: 1



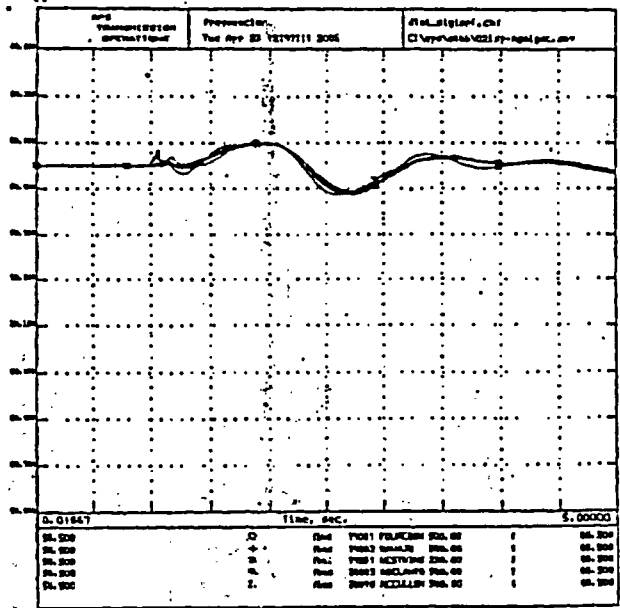
METSON SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. BUS FAULT ON PV BUS BY BUS/TM PHASE B/1/C CLR FLT W/PH-440
 TC TRIP REC160, MLA, 200 INDUCT. MOTOR/02LSP21, 070
 Bus/Phase-Vol/ang/Phase Amp. Sp/ang/ang



METSON SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. BUS FAULT ON PV BUS BY BUS/TM PHASE B/1/C CLR FLT W/PH-440
 TC TRIP REC160, MLA, 200 INDUCT. MOTOR/02LSP21, 070
 Bus/Phase-Vol/ang/Phase Amp. Sp/ang/ang



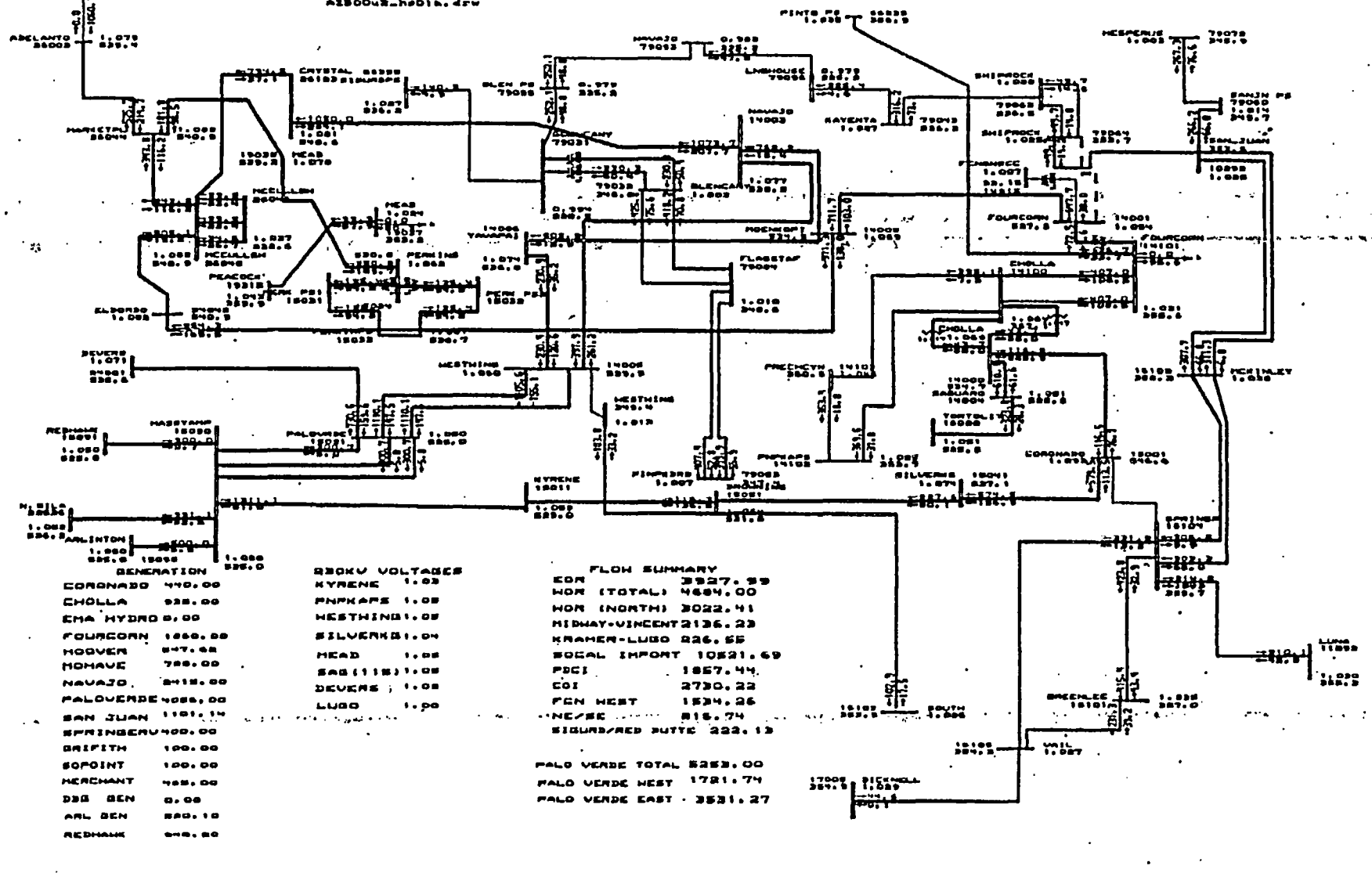
METSON SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. BUS FAULT ON PV BUS BY BUS/TM PHASE B/1/C CLR FLT W/PH-440
 TC TRIP REC160, MLA, 200 INDUCT. MOTOR/02LSP21, 070
 Bus/Phase-Vol/ang/Phase Amp. Sp/ang/ang



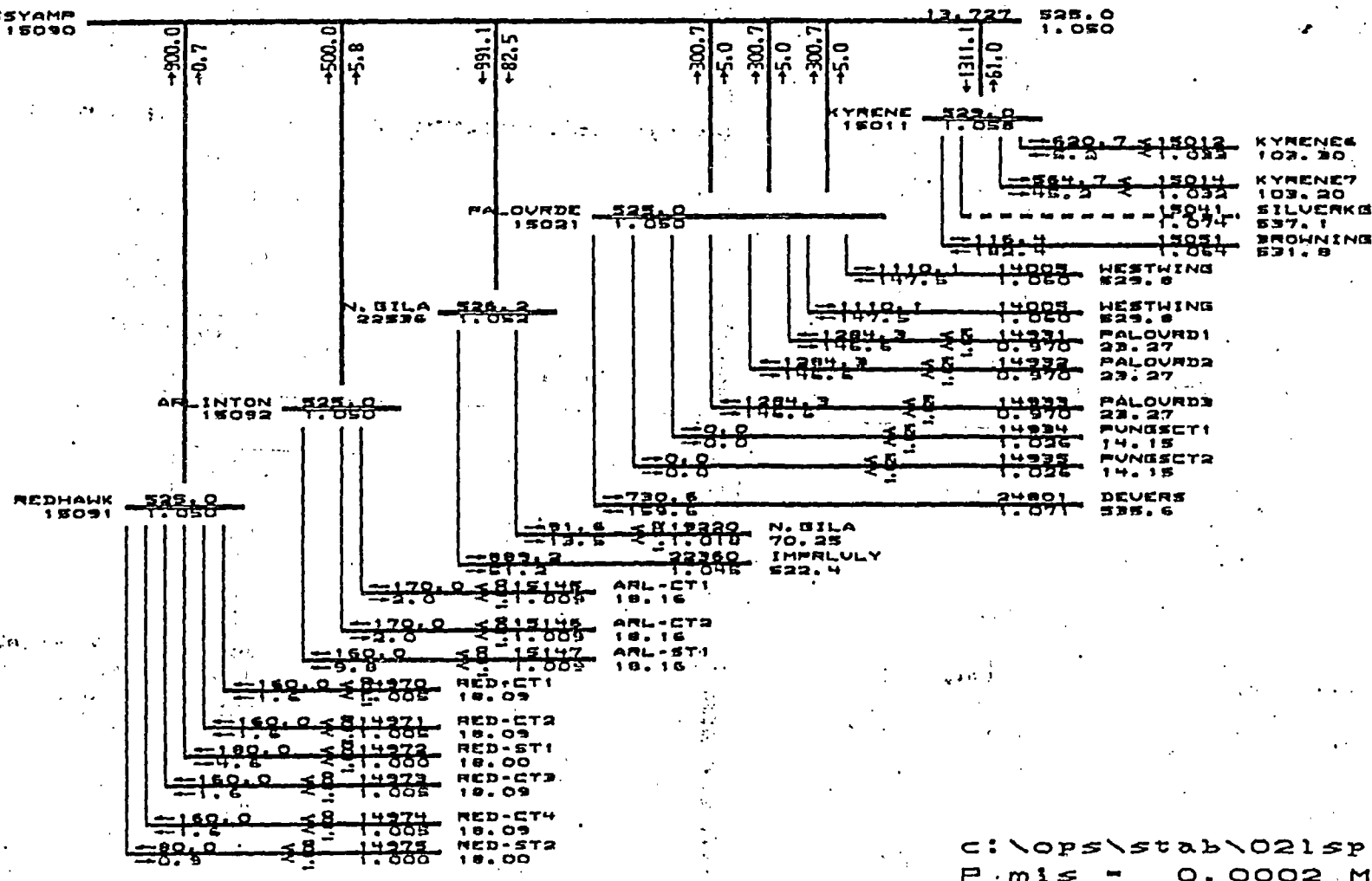
METSON SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB. BUS FAULT ON PV BUS BY BUS/TM PHASE B/1/C CLR FLT W/PH-440
 TC TRIP REC160, MLA, 200 INDUCT. MOTOR/02LSP21, 070
 Bus/Phase-Vol/ang/Phase Amp. Sp/ang/ang

Arizona 500 & 345KV EHV System

AZ50042-HADIA.45V



HASSYAMP
15090



KYRENE 103.20
KYRENE7 103.20
SILVERK 537.1
BROWNING 511.8

WESTING 529.8
WESTING 529.8
PALOURD1 23.27
PALOURD2 23.27
PALOURD3 23.27
FCNGSCT1 14.15
FCNGSCT2 14.15
DEVERS 585.6

N. BILA 70.25
INTERLU 522.1

ARL-CT1 18.16
ARL-CT2 18.16
ARL-ST1 18.16

RED-CT1 18.09
RED-CT2 18.09
RED-ST1 18.09
RED-CT3 18.09
RED-ST2 18.09

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Q.M.W. = 0.0000 MVAR

Westal Electric International, Inc.
AP5
TRANSMISSION
OPERATIONS

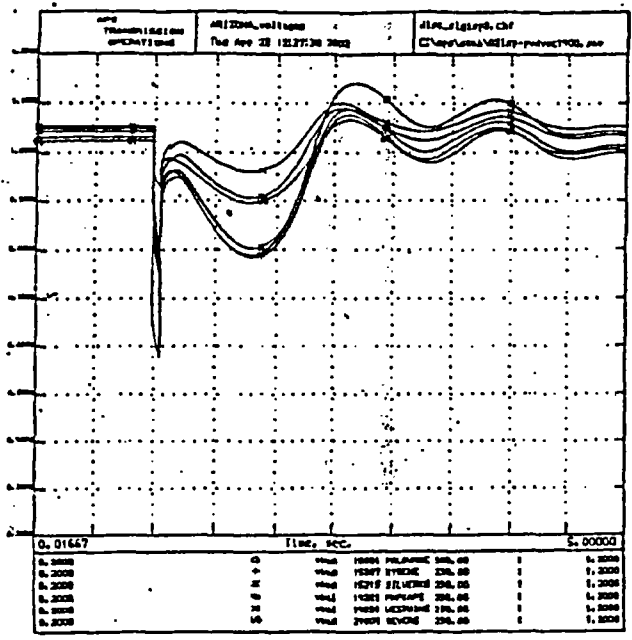
PRT Program
WESTERN SYSTEMS COORDINATING EXERCISE
2002 LSP2 OPERATING CASE
MAY 11, 2001

PA10 VERDC-DEVERS series comp. Bypassed
Hass. Gen = 1400MW

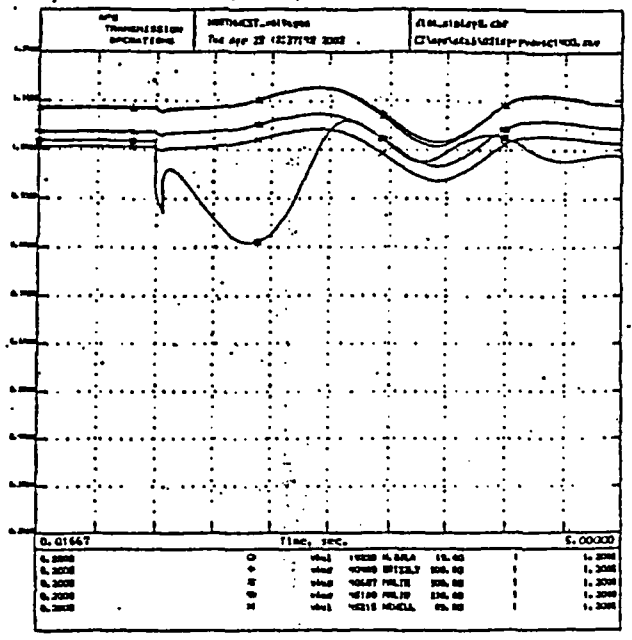
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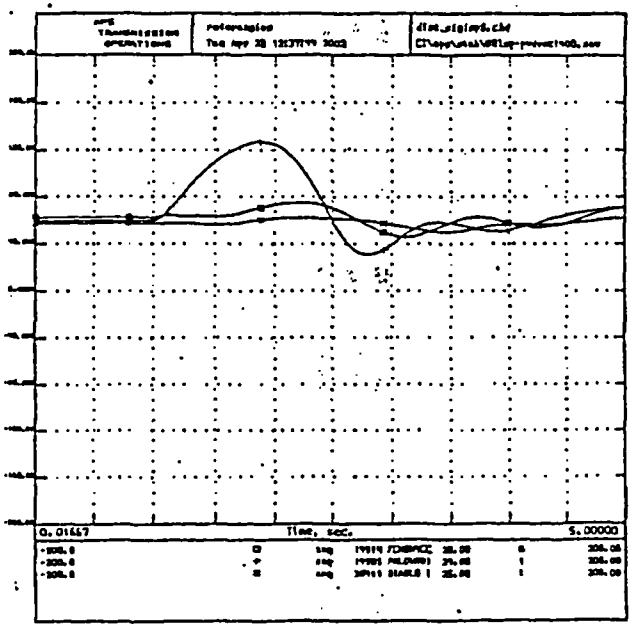
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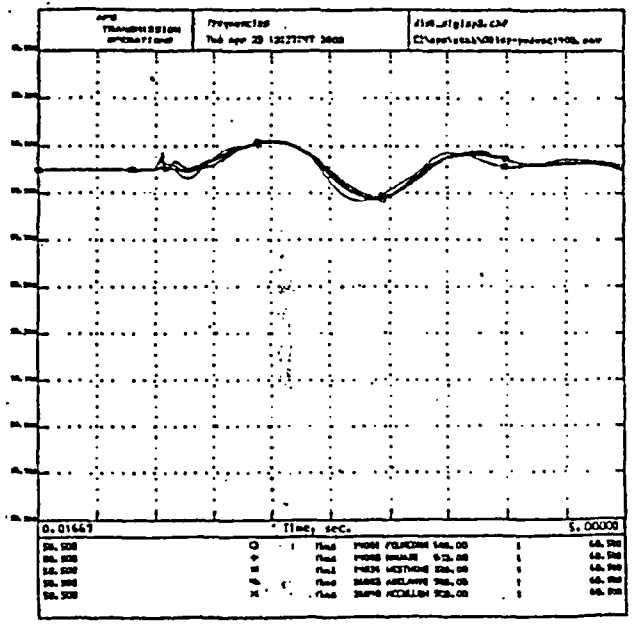
WESTERN SYSTEM COORDINATING COUNCIL
 3000 LSP OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PU 500 BY BUS/MS PHASE OUT/4 C CLR FLT W/RY-404
 TC TRIP RECD. ARLS, 202 INTRCT. MOTORS (08LSP21, 27)



WESTERN SYSTEM COORDINATING COUNCIL
 3000 LSP OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PU 500 BY BUS/MS PHASE OUT/4 C CLR FLT W/RY-404
 TC TRIP RECD. ARLS, 202 INTRCT. MOTORS (08LSP21, 27)



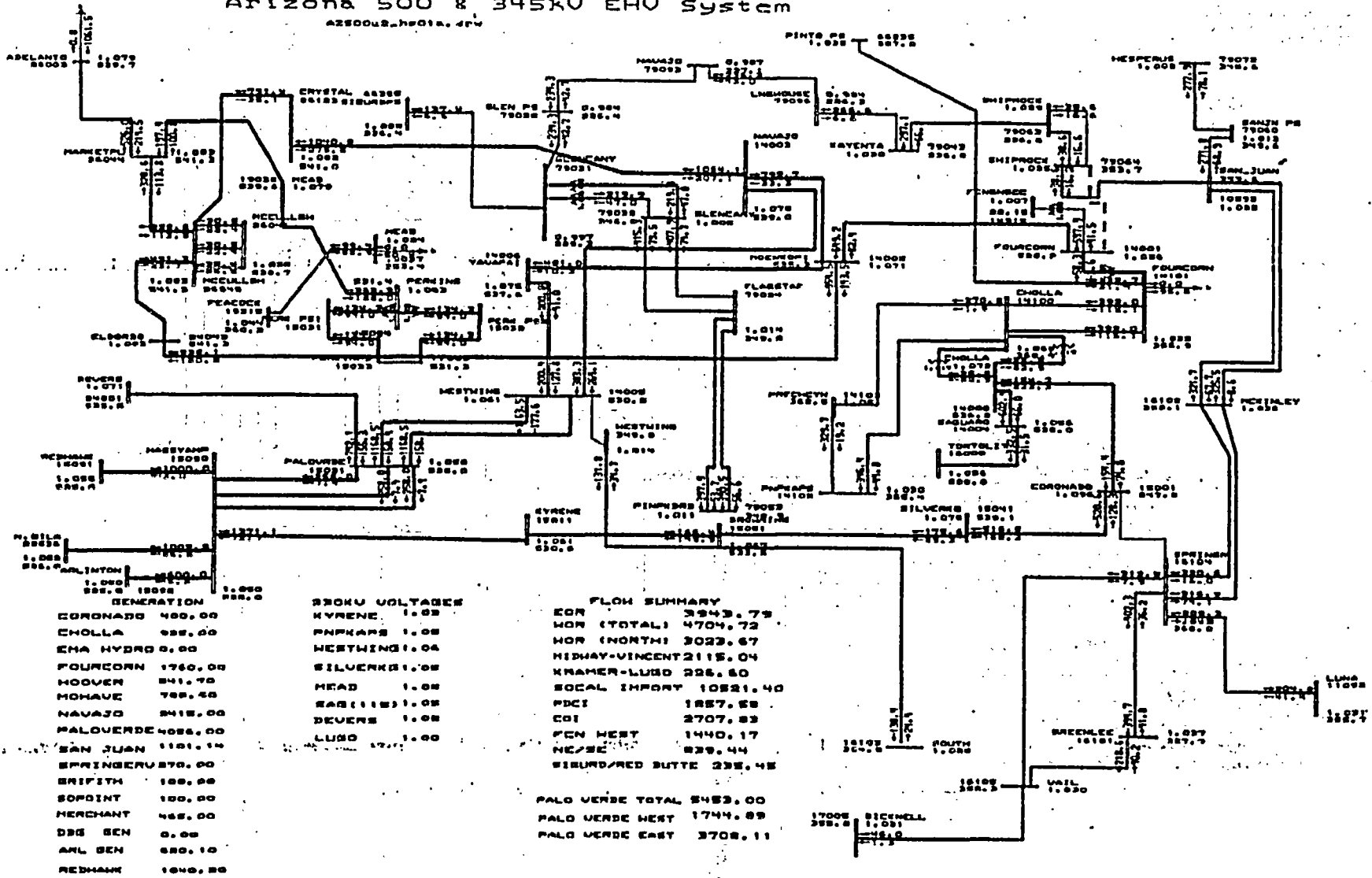
WESTERN SYSTEM COORDINATING COUNCIL
 3000 LSP OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PU 500 BY BUS/MS PHASE OUT/4 C CLR FLT W/RY-404
 TC TRIP RECD. ARLS, 202 INTRCT. MOTORS (08LSP21, 27)



WESTERN SYSTEM COORDINATING COUNCIL
 3000 LSP OPERATING CASE
 MAY 11, 2001
 STAB. SLS FAULT ON PU 500 BY BUS/MS PHASE OUT/4 C CLR FLT W/RY-404
 TC TRIP RECD. ARLS, 202 INTRCT. MOTORS (08LSP21, 27)

Arizona 500 & 345KV EHV System

AZ500U2.H001A.DTU



General Electric International, Inc.

PSL7 Program

10/1/2000

Tue Apr 22 10:18:19 2002

47

APS
TRANSMISSION
OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

PV-REVERS SC OUT

EI-02 LSP-PV DUSC, SAV

C:\apps\stall\az500_hess\maps.dr
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Rating = 1

HASSYAMP
15090

→1000.0
←3.0
←600.0
←5.5
←1002.8
←86.5
←258.0
→7.9
←258.0
→7.4
←258.0
→7.4
←1371.1
→72.7

KYRENE
15011

525.0
1.050

FALCOURDE
15021

525.0
1.050

15012

KYRENE6
103.74

15014

KYRENE7
103.84

15015

SILVERKE
538.1

15016

BROWNING
538.5

N. GILA
22536

525.0
1.050

INTON
15092

525.0
1.050

REDHAWK
15091

525.0
1.050

HEATHING
530.5

HEATHING
530.5

FALCOURD1
23.27

FALCOURD2
23.27

FALCOURD3
23.27

PUNBECT1
14.15

PUNBECT2
14.15

DEVERS
538.5

N. GILA
70.23
IMPALULY
532.1

ARL-CT1
18.16

ARL-CT2
18.16

ARL-ST1
18.16

RED-CT1
18.09

RED-CT2
18.09

RED-ST1
18.00

RED-CT3
18.09

RED-CT4
18.09

RED-ST2
18.00

C:\ops\at\02L1SP-P
P MW = 0.0001 MW
Q MW = -0.0000 MVAR

General Electric Inspectional, Inc. PS&E Division

APE
TRANSMISSION
OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

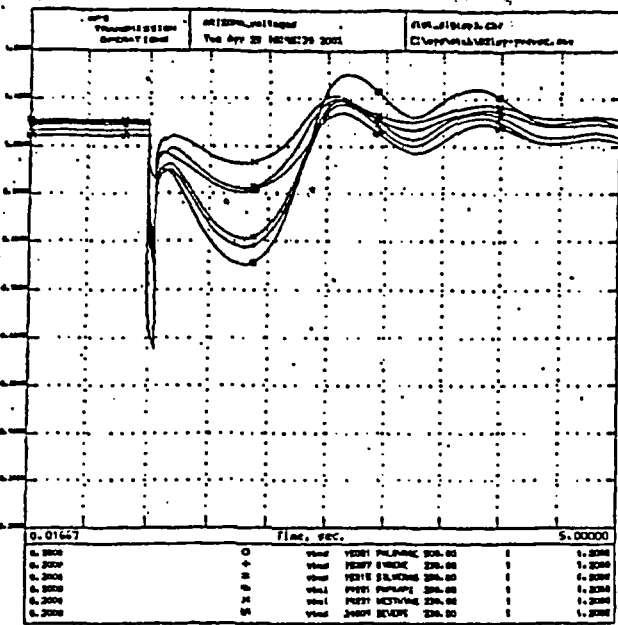
PV-DEVERS SC OUT

REATHAP

Thu Apr 23 10:13:01 2002

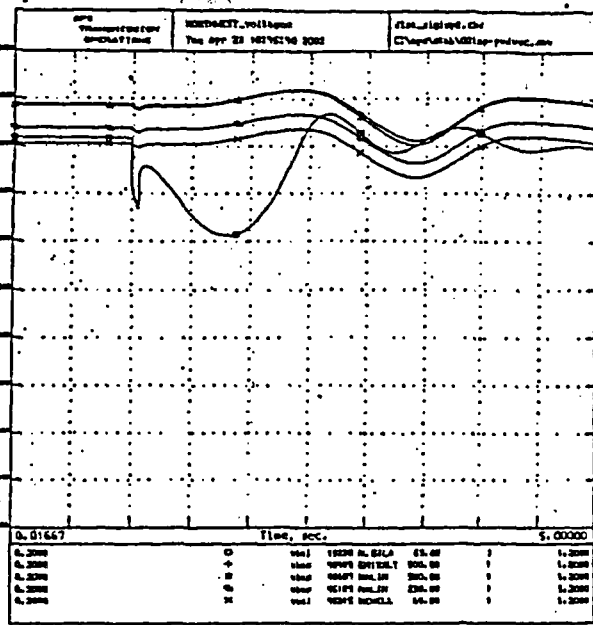
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Rating = 1

47



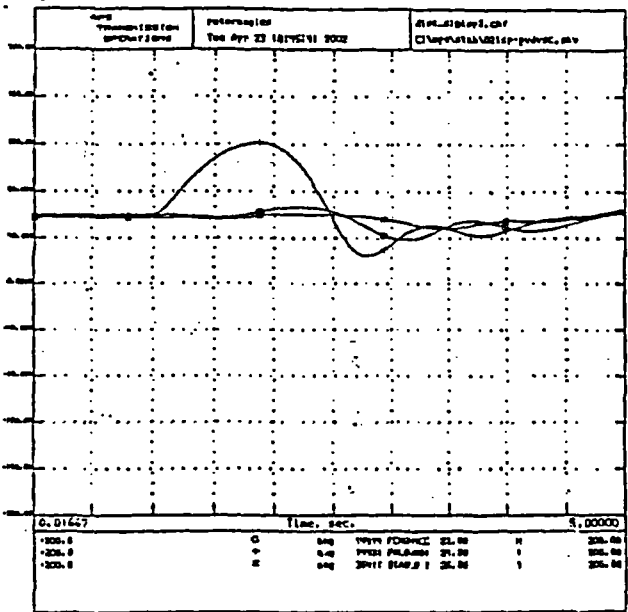
METER SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUSING PHASE OUTY C CLF FLT WPP-44G;
 TC TRIP RECD, ARLS, 30S IMPLCT. MOTORS (02, SP21, 37)

COMMENTS: SEE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS: SEE TO STAFF MAY 25, 2001



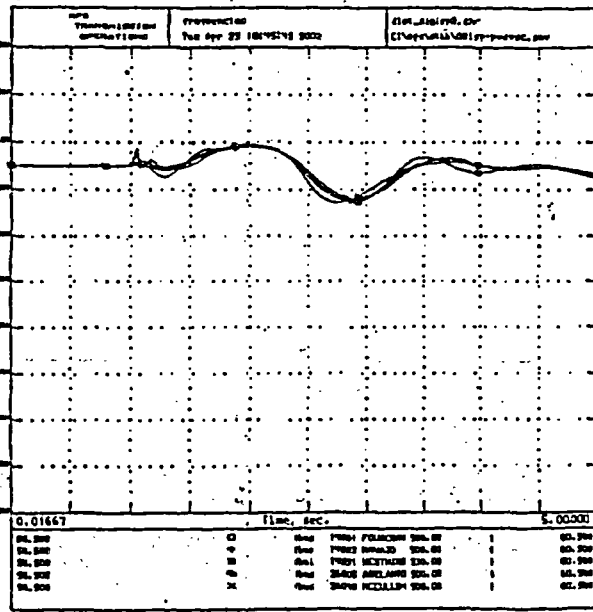
METER SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUSING PHASE OUTY C CLF FLT WPP-44G;
 TC TRIP RECD, ARLS, 30S IMPLCT. MOTORS (02, SP21, 37)

COMMENTS: SEE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS: SEE TO STAFF MAY 25, 2001



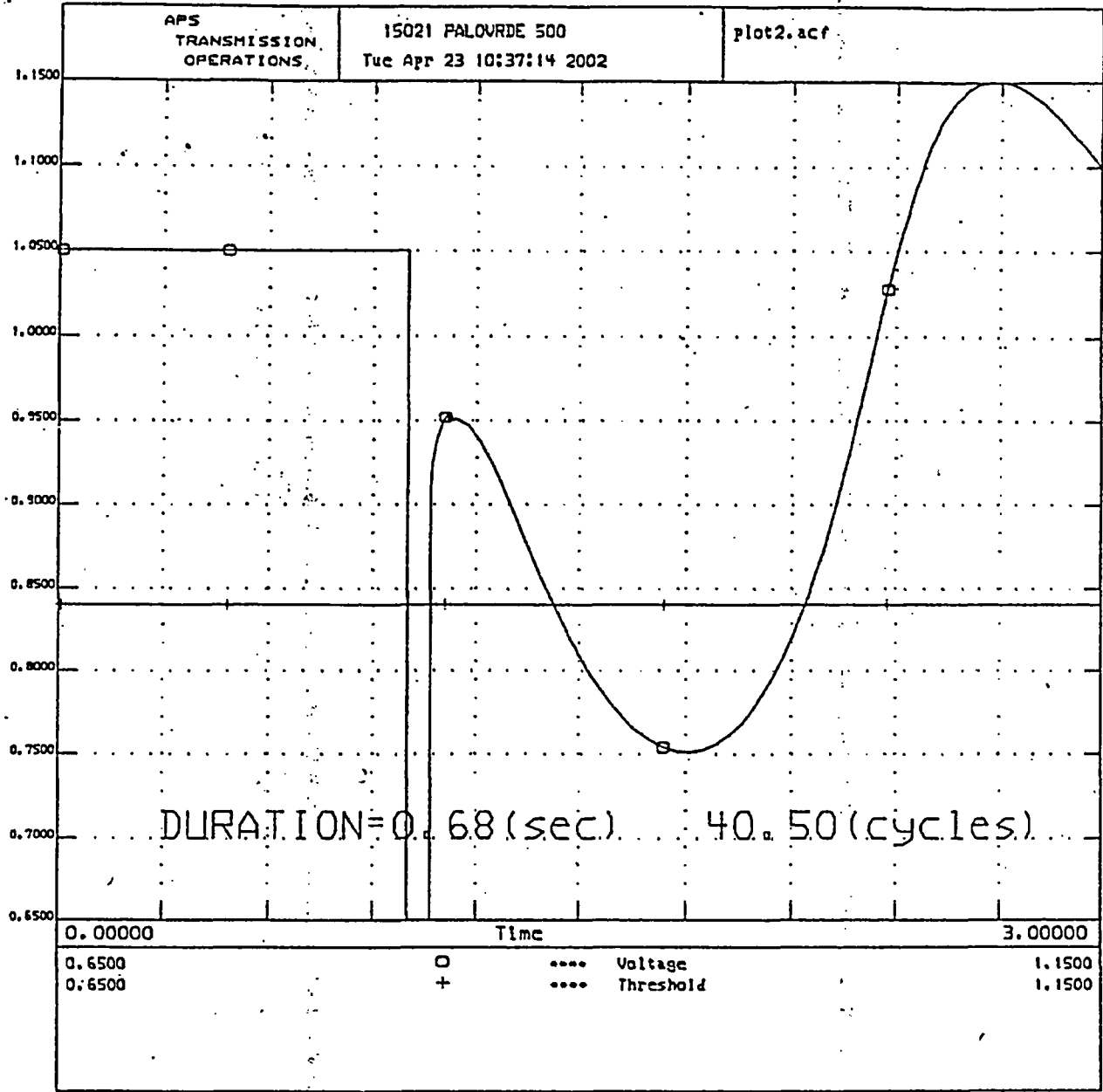
METER SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUSING PHASE OUTY C CLF FLT WPP-44G;
 TC TRIP RECD, ARLS, 30S IMPLCT. MOTORS (02, SP21, 37)

COMMENTS: SEE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS: SEE TO STAFF MAY 25, 2001



METER SYSTEMS COORDINATING COUNCIL
 3000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUSING PHASE OUTY C CLF FLT WPP-44G;
 TC TRIP RECD, ARLS, 30S IMPLCT. MOTORS (02, SP21, 37)

COMMENTS: SEE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS: SEE TO STAFF MAY 25, 2001

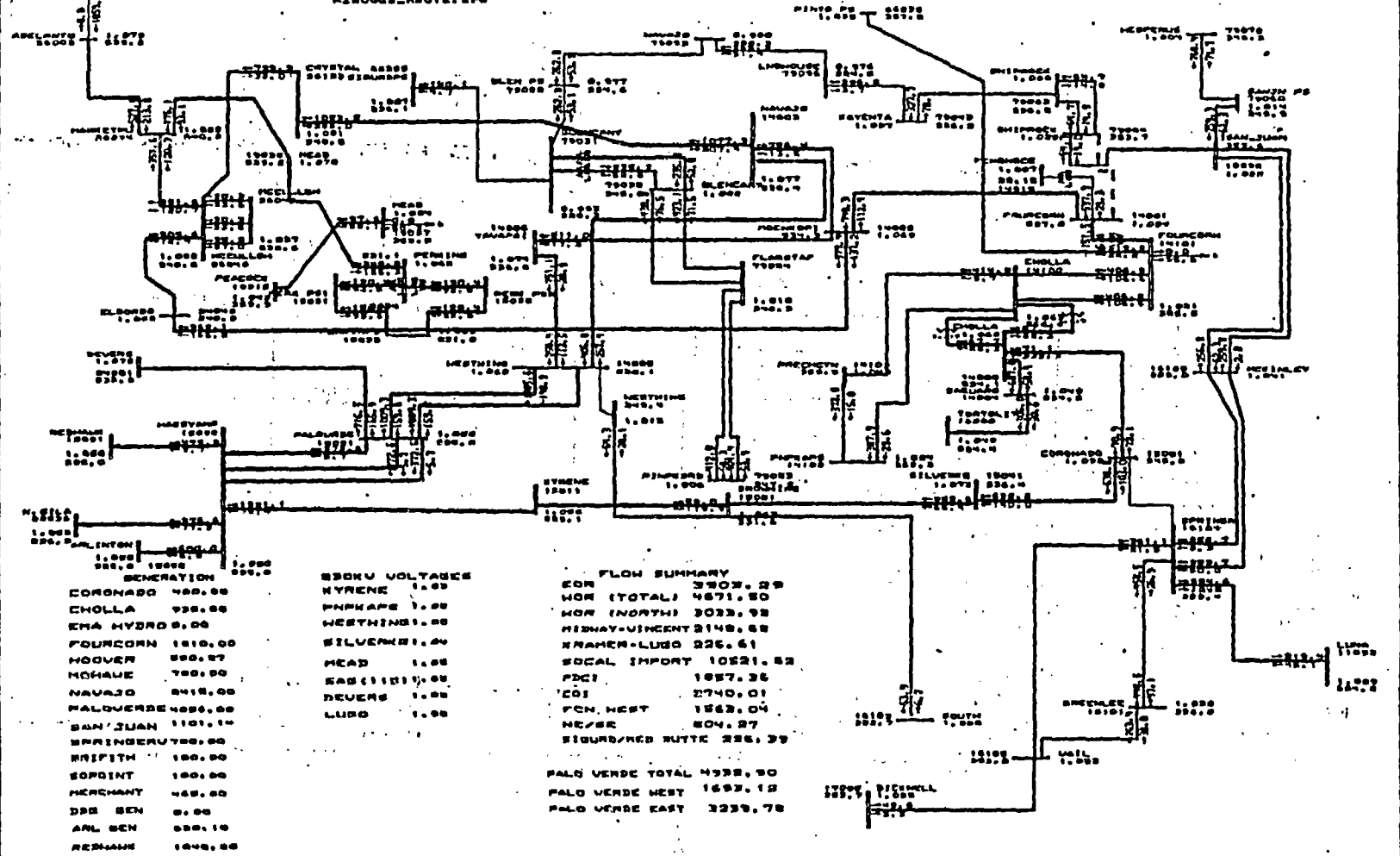


WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLG FAULT ON PV 500 KV BUS; TWO PV-WMG OUT; 4 C CLR FLT W/PV-WMG;
 7C TRIP RED500,ARLO,20% INDUCT. MOTORS; 02LSP21.DYD

COMMENTS DUE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS DUE TO STAFF MAY 25, 2001

Arizona 500 & 345KV EHV System

AR30004-hv01a.dwg

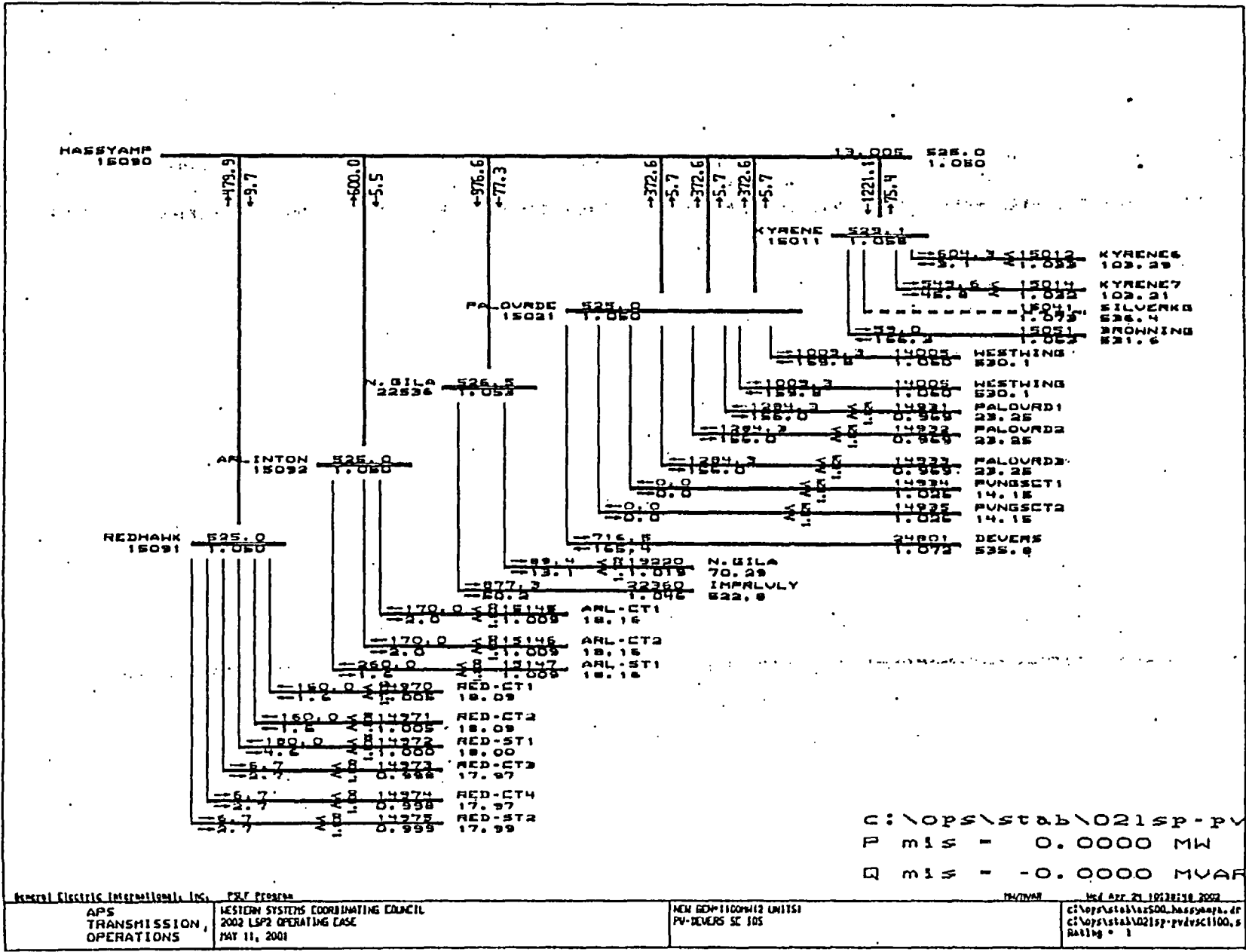


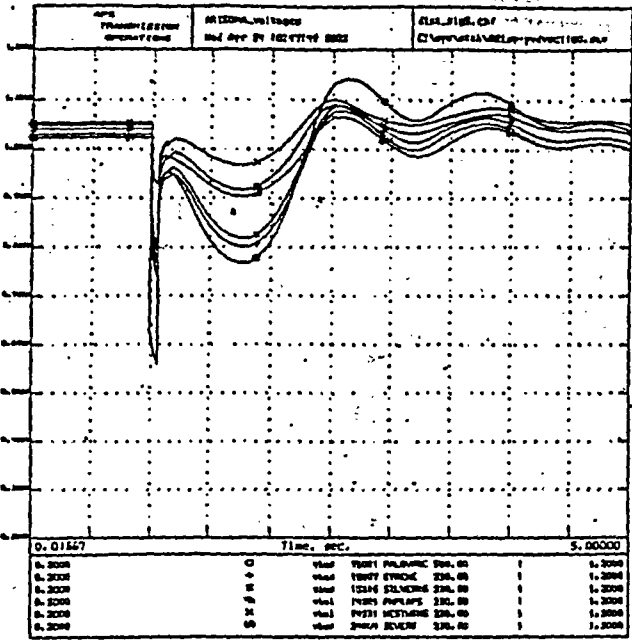
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CORNADO	400.00
CHOLLA	950.00
EMA HYDRO	0.00
FOURCORN	1010.00
HOOVER	550.07
MOHAVE	700.00
NAVAJO	2410.00
PALQUERDE	4000.00
SAN JUAN	1101.14
SPRINGERVILLE	700.00
BRIFITH	100.00
SOPHINT	100.00
MERCHANT	400.00
DBB SCH	0.00
ARL SCH	000.10
REMANE	1040.00

345KV VOLTAGE	
HYRENE	1.00
PHOENIX	1.00
WESTHIND	1.00
SILVERMOUNT	1.00
HEAD	1.00
SAB (110)	1.00
DEVERS	1.00
LUGO	1.00

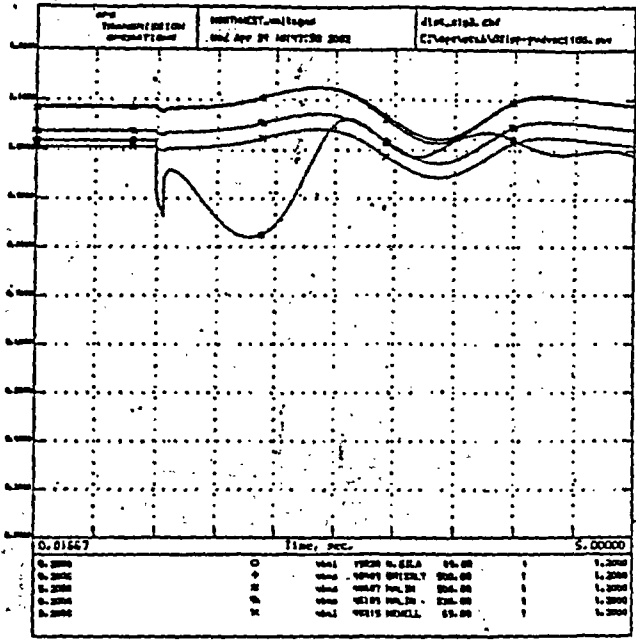
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FOR	3903.29
WOR (TOTAL)	4871.00
WOR (NORTH)	3033.98
REDWAY-VINCENT	2148.68
FRANER-LUGO	226.61
SDCAL IMPORT	10521.52
FCI	1857.36
COI	2740.01
FCN WEST	1562.04
NEVER	804.27
SIGUR/RED BUTTE	226.39
PALO VERDE TOTAL 4938.90	
PALO VERDE WEST 1652.10	
PALO VERDE EAST 3286.78	

56

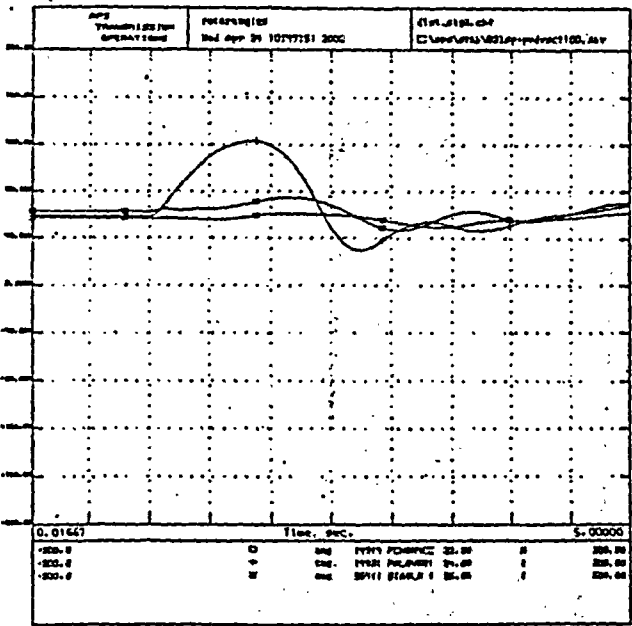




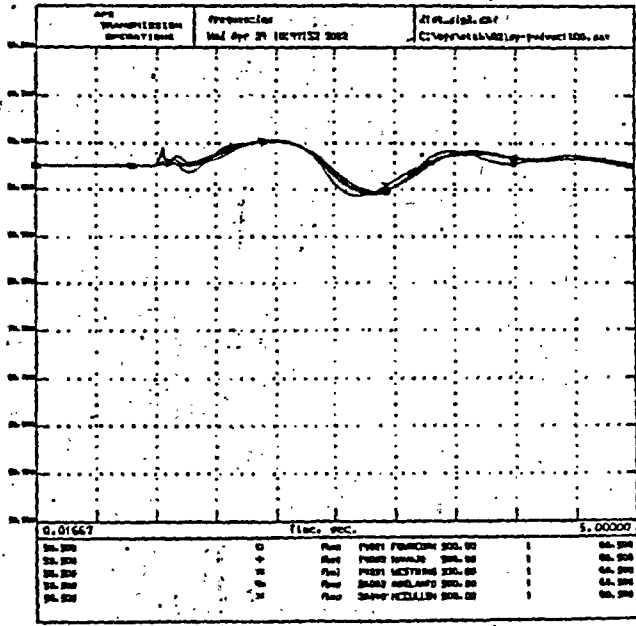
WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 800 BY BUSING PHASE BUTY C CLR FLT WPP-046;
 TC TRIP 800, 404, 204 (INACT. ROTORS) (CLSP1, P7)
 COMMENTS REL TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS REL TO STAFF MAY 25, 2001



WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 800 BY BUSING PHASE BUTY C CLR FLT WPP-046;
 TC TRIP 800, 404, 204 (INACT. ROTORS) (CLSP1, P7)
 COMMENTS REL TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS REL TO STAFF MAY 25, 2001



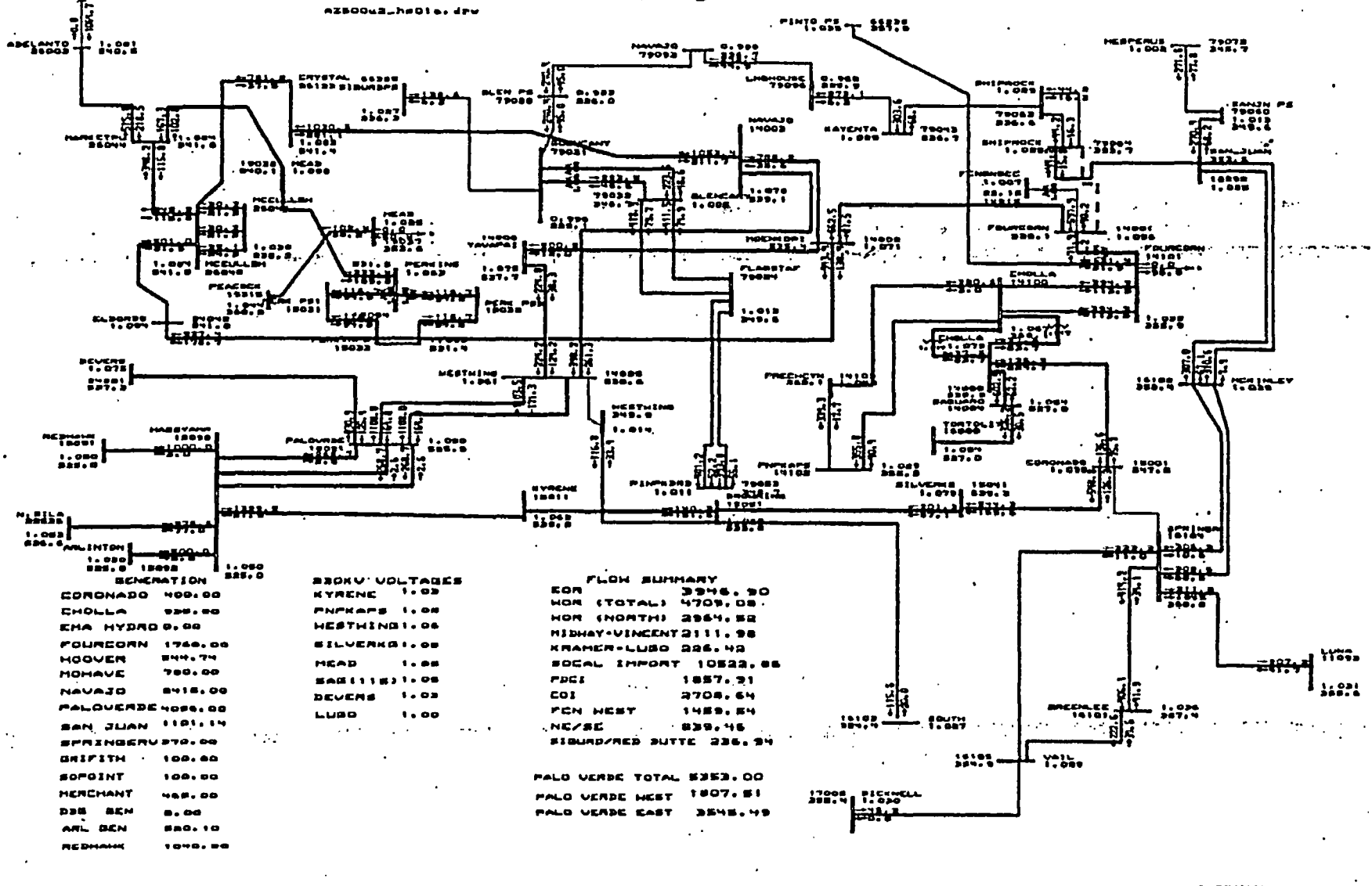
WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 800 BY BUSING PHASE BUTY C CLR FLT WPP-046;
 TC TRIP 800, 404, 204 (INACT. ROTORS) (CLSP1, P7)
 COMMENTS REL TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS REL TO STAFF MAY 25, 2001



WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 800 BY BUSING PHASE BUTY C CLR FLT WPP-046;
 TC TRIP 800, 404, 204 (INACT. ROTORS) (CLSP1, P7)
 COMMENTS REL TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS REL TO STAFF MAY 25, 2001

Arizona 500 & 345KV EHV System

AZ500&345_EHV1a.dwg



GENERATION

CORONADO	400.00
CHOLLA	930.00
EMA HYDRO	0.00
FOURCORN	1740.00
HOOVER	844.74
MOHAVE	700.00
NAVAJO	8418.00
PALOVERDE	4080.00
SAN JUAN	1101.14
SPRINGER	270.00
GRIFFITH	100.00
SOPHINT	100.00
MERCHANT	460.00
DBE BEN	0.00
ARL BEN	800.10
REDHAWK	1040.00

330KV VOLTAGES

KYRENE	1.00
PNFRAP	1.00
WESTHIND	1.00
SILVERH	1.00
HEAD	1.00
SABIE	1.00
DEVENS	1.00
LUSD	1.00

FLOW SUMMARY

KOR	3946.90
NOR (TOTAL)	4709.08
NOR (NORTH)	2964.82
MIDWAY-VINCENT	2111.98
KRAMER-LUSD	326.42
SOCIAL IMPORT	10522.86
FRCE	1857.31
COI	2708.64
PCN WEST	1489.54
NE/SE	839.46
SIBOURD/RED BUTTE	236.24
PALO VERDE TOTAL	8353.00
PALO VERDE WEST	1807.51
PALO VERDE EAST	3545.49

By BALDWIN

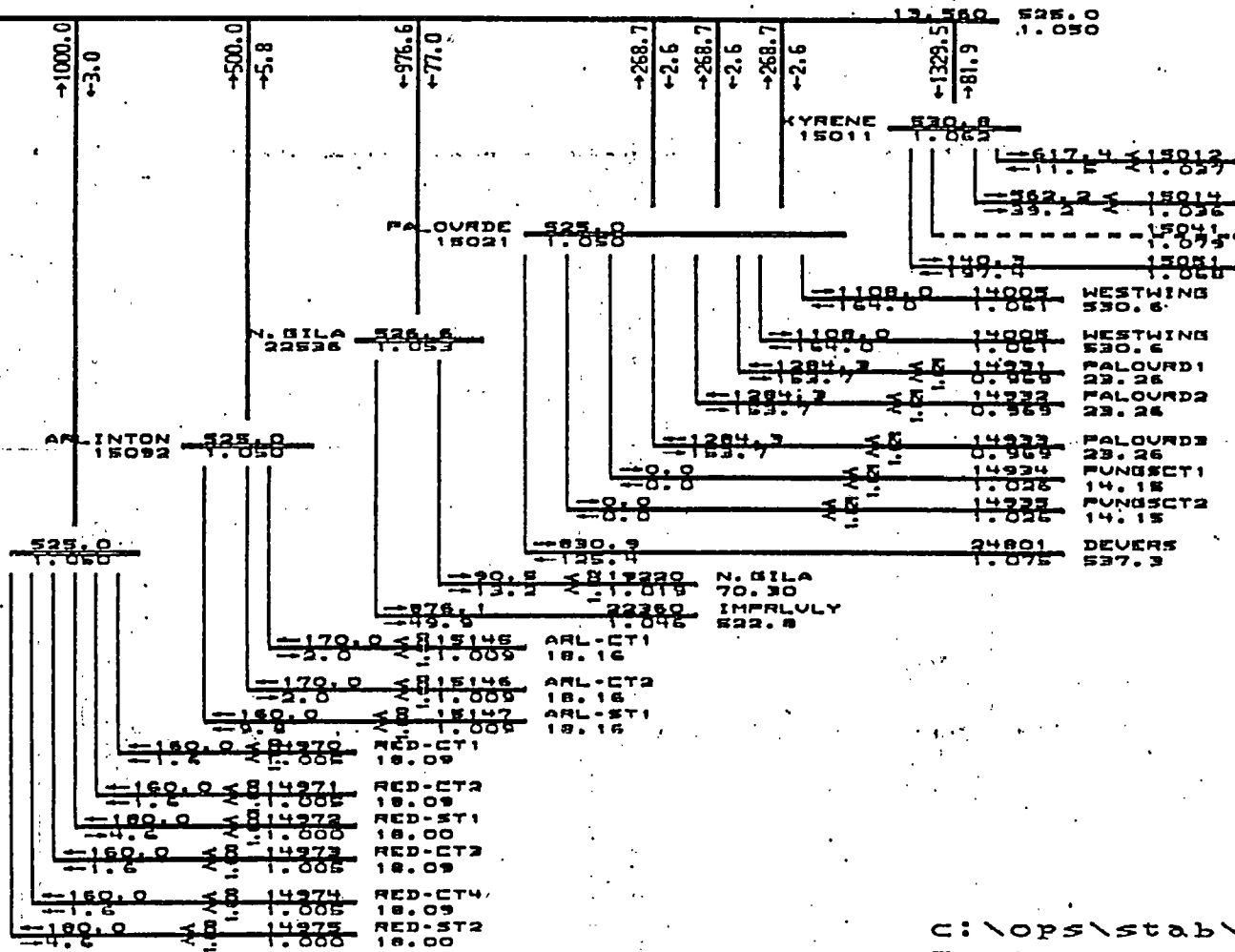
HASSYAMP
15090

REDHAWK
15091

APLINTON
15092

PAOURDE
15021

KYRENE
15011



KYRENE6
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KYRENE7
103.86
SILVERB
103.86
BROWNBR
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WESTING
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WESTING
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PAOURD1
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 Q MW = 0.0000 MVAR

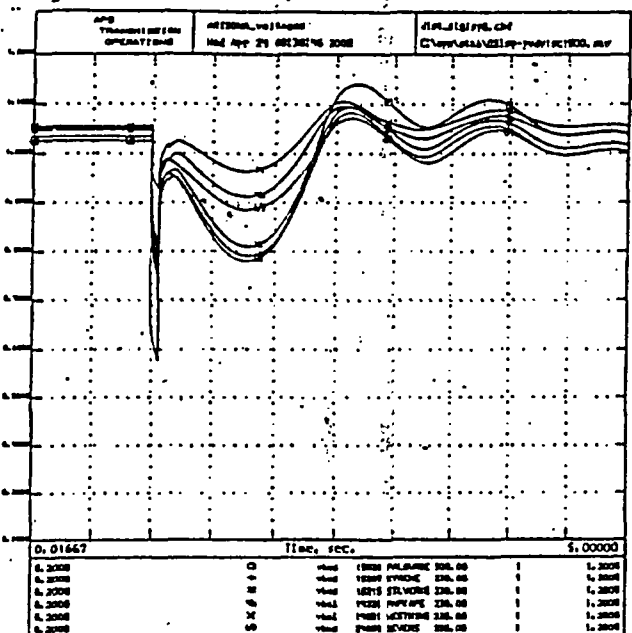
General Electric International, Inc.
 APS
 TRANSMISSION,
 OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

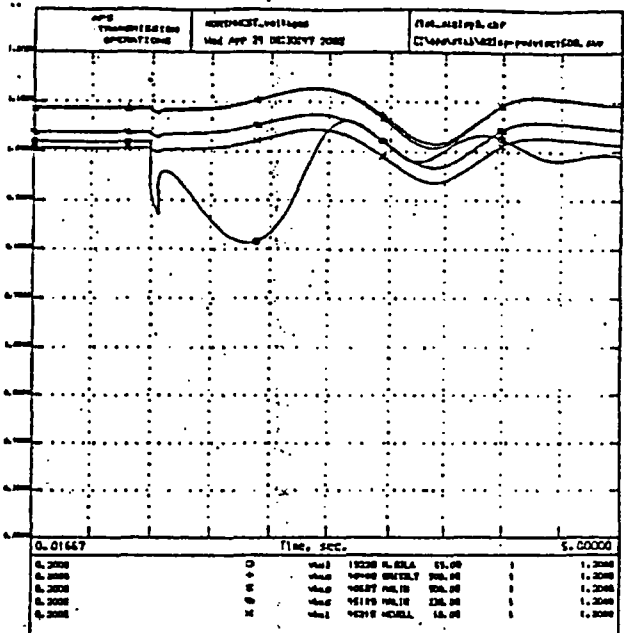
PV-DV SC (0S IAZ SIDE)
 NEW GEN-1500MW

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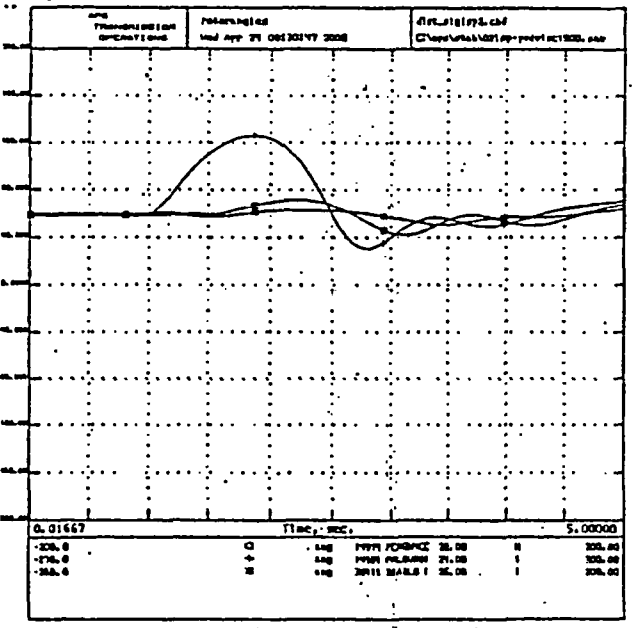
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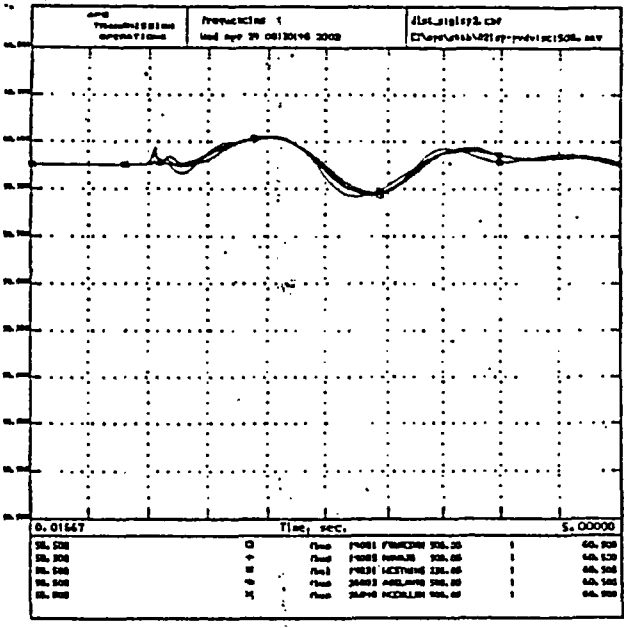
MOTION SYSTEMS COORDINATING COUNCIL
 2008 LPS OPERATING CASE
 MAY 11, 2008
 STAB, SLS FAULT ON PV 508 BY BUS; THE PV-HAS OUT19 C CLR FLT WPP-HAS
 7% TRIP RED, ARL, 20% (IMPLY, MOTOR) COLSP21, BY2
 COMMENTS SUE TO AREA COORDINATORS MAY 16, 2008
 AREA COORDINATOR COMMENTS SUE TO STAFF MAY 25, 2008



MOTION SYSTEMS COORDINATING COUNCIL
 2008 LPS OPERATING CASE
 MAY 11, 2008
 STAB, SLS FAULT ON PV 508 BY BUS; THE PV-HAS OUT19 C CLR FLT WPP-HAS
 7% TRIP RED, ARL, 20% (IMPLY, MOTOR) COLSP21, BY2
 COMMENTS SUE TO AREA COORDINATORS MAY 16, 2008
 AREA COORDINATOR COMMENTS SUE TO STAFF MAY 25, 2008



MOTION SYSTEMS COORDINATING COUNCIL
 2008 LPS OPERATING CASE
 MAY 11, 2008
 STAB, SLS FAULT ON PV 508 BY BUS; THE PV-HAS OUT19 C CLR FLT WPP-HAS
 7% TRIP RED, ARL, 20% (IMPLY, MOTOR) COLSP21, BY2
 COMMENTS SUE TO AREA COORDINATORS MAY 16, 2008
 AREA COORDINATOR COMMENTS SUE TO STAFF MAY 25, 2008

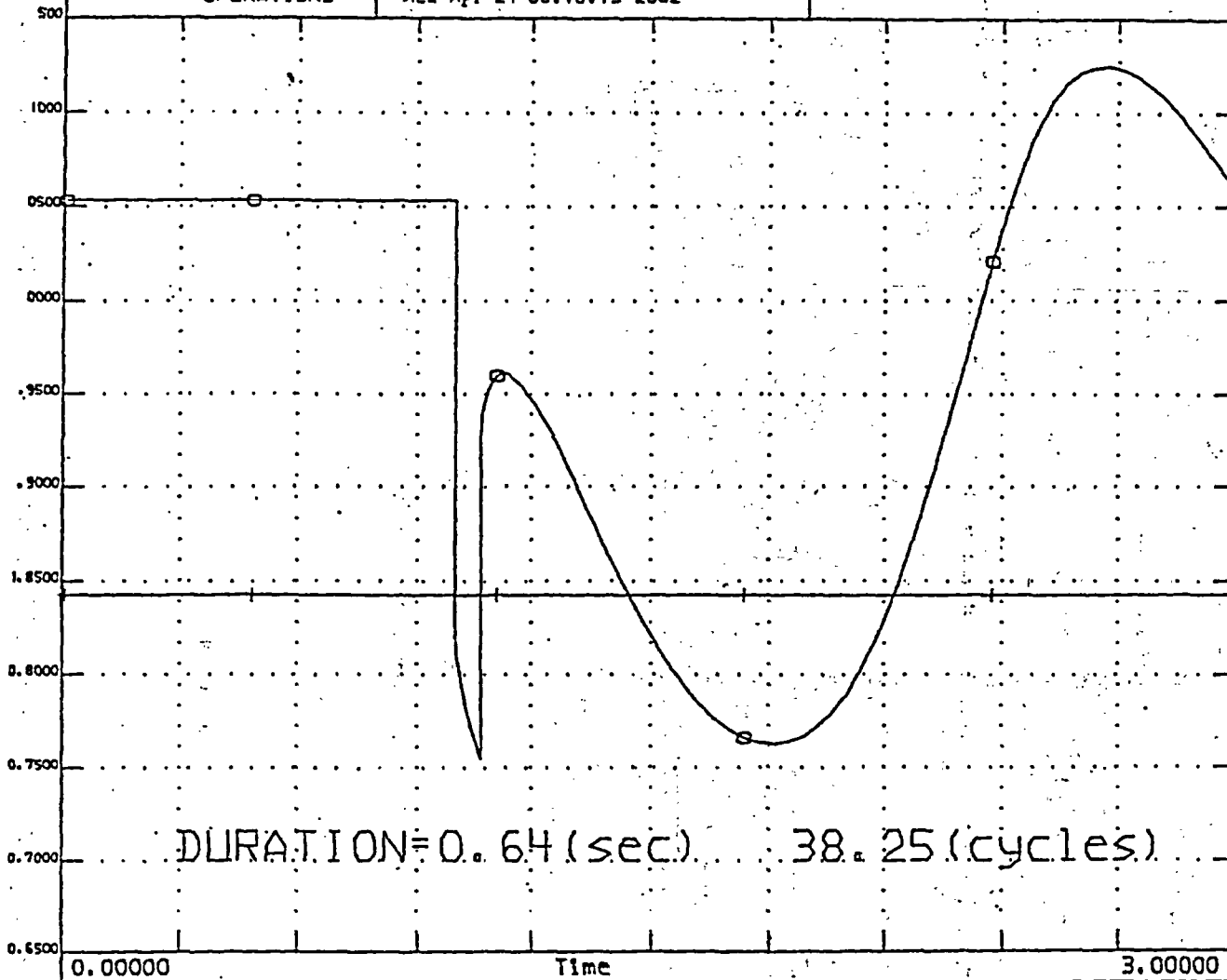


MOTION SYSTEMS COORDINATING COUNCIL
 2008 LPS OPERATING CASE
 MAY 11, 2008
 STAB, SLS FAULT ON PV 508 BY BUS; THE PV-HAS OUT19 C CLR FLT WPP-HAS
 7% TRIP RED, ARL, 20% (IMPLY, MOTOR) COLSP21, BY2
 COMMENTS SUE TO AREA COORDINATORS MAY 16, 2008
 AREA COORDINATOR COMMENTS SUE TO STAFF MAY 25, 2008

APS
TRANSMISSION
OPERATIONS

22536 N.GILA 500
Wed Apr 24 08:18:13 2002

plot4.act



0.6500	+	Voltage	1.1500
0.6500	+	Threshold	1.1500

WESTERN SYSTEMS COORDINATING COUNCIL

2002 LSP2 OPERATING CASE

MAY 11, 2001

STAB, SLG FAULT ON PV 500 KV BUS; TWO PV-WHG OUT; 4 C CLR FLT W/PV-WHG;

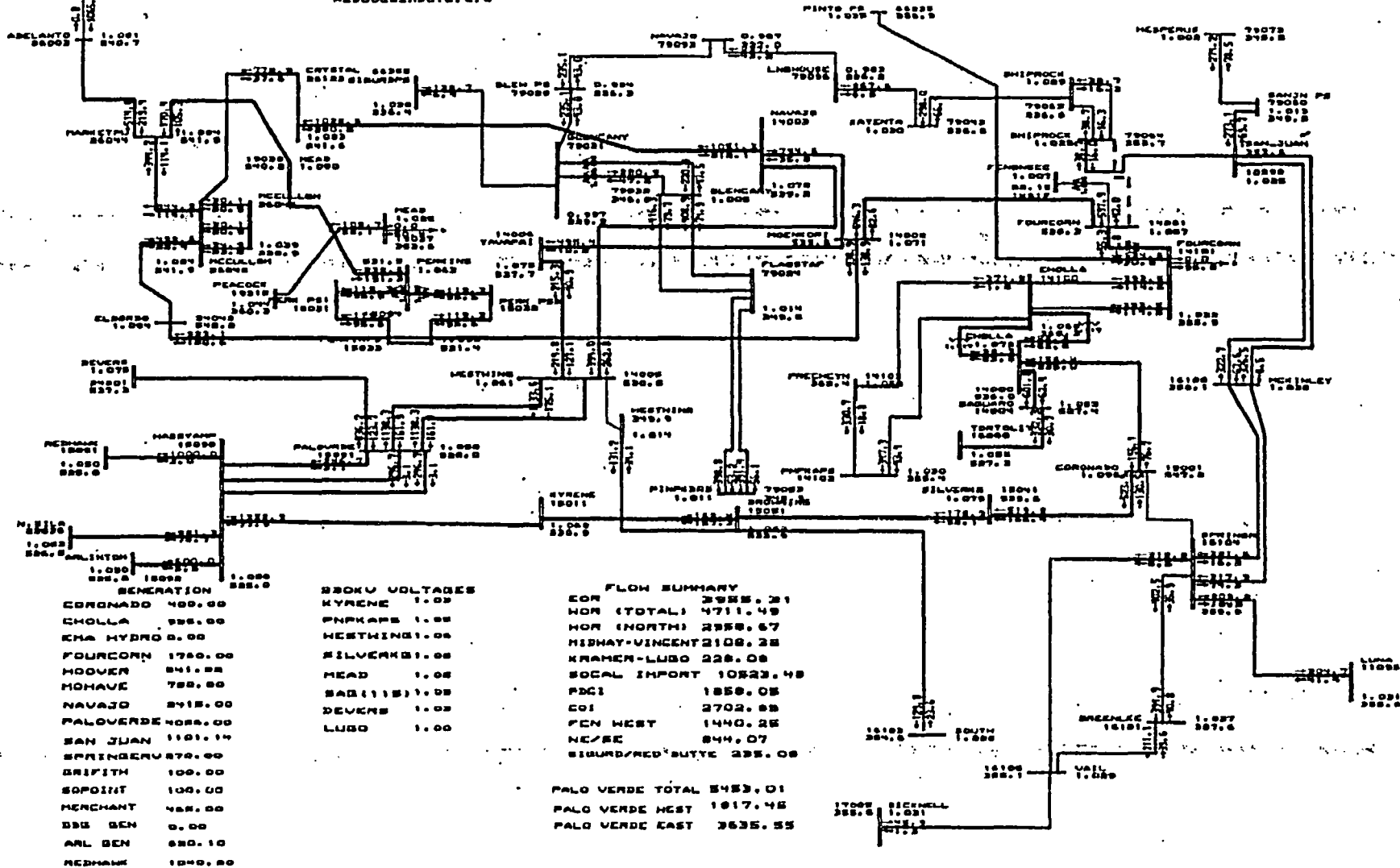
7c TRIP REDO, ARLO, 20% INDUCT. MOTORS; 02LSP21.DYD

COMMENTS DUE TO AREA COORDINATORS MAY 18, 2001

AREA COORDINATOR COMMENTS DUE TO STAFF MAY 25, 2001

Arizona 500 & 345kV EHV System

AS2004B-0901a.dfw



General Electric International, Inc. PAV Program

AFS
TRANSMISSION
OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

PU-DV SC 1051A2 (SIDE)

EI-02LSP-PU-DV SC, SAV

12/07/99

Thu Apr 22 15:26:57 2002

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Rating = 1

57

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15090

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←3.0

←600.0
←5.5

←581.3
←78.7

→216.7
→3.1

→216.7
→3.1

→216.7
→3.1

←1358.9
→77.9

→338.0
→1.080

KYRENE
15011

PA OVRDE
15021

ANTON
15092

REDHAWK
15091

KYRENE6
103.74
KYRENE7
103.58
SILVERKE
233.8
BROWNING
233.9

WESTING
230.5

WESTING
230.5

BALOURD1
23.28

BALOURD2
23.28

BALOURD3
23.28

FUNDET1
14.15

FUNDET2
14.15

DEVENS
237.2

N. BILA
70.29
IMPRULY
222.7

ARL-CT1
18.16

ARL-CT2
18.16

ARL-ST1
18.16

RED-CT1
18.09

RED-CT2
18.09

RED-ST1
18.00

RED-CT3
18.09

RED-CT4
18.09

RED-ST2
18.00

C : \OP\STAT\021SP-PV
P M W = -0.0001 MW
Q M W = 0.0000 MVAR

General Electric International, Inc. P&F Project

58
APS
TRANSMISSION,
OPERATIONS

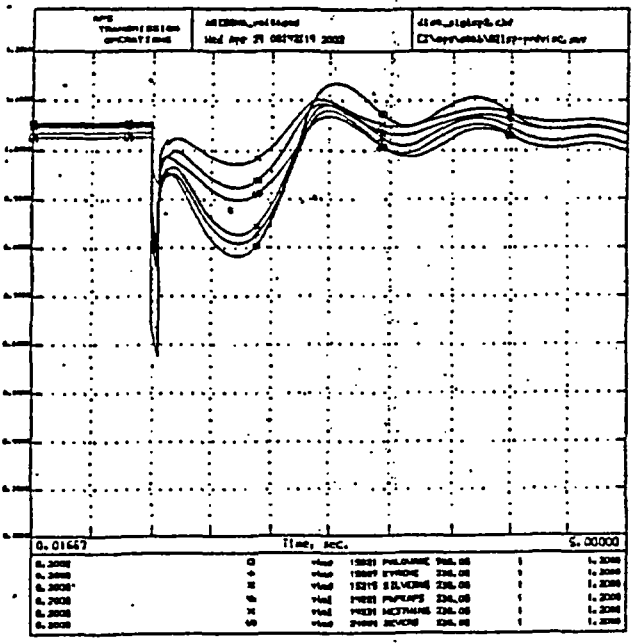
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

PV-DV SC IDS(AZ SIDE)

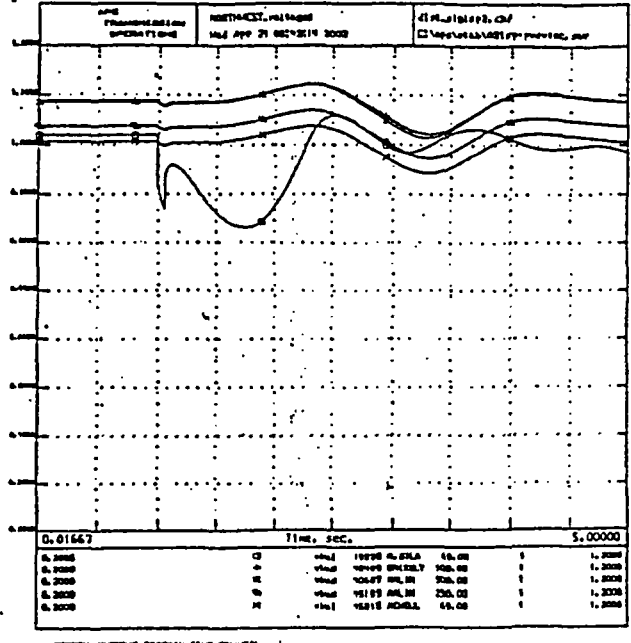
PLATTMAN

Tue Apr 23 15:17:11 2002

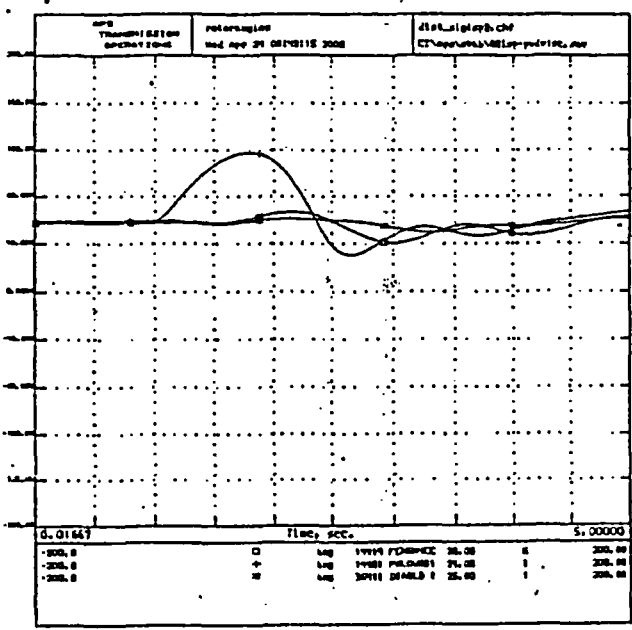
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Rating = 1



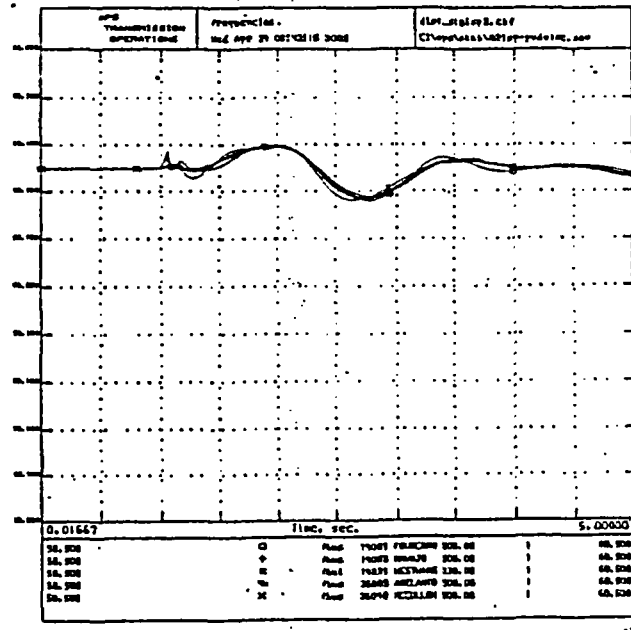
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS/TH PHASE 01/1 C CLR FLT W/PH-046
 TC TRIP REC230, AMLA, 200 INDUCT, MOTOR(CLS271, 272)
 COMMENTS REC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS REC TO STAFF MAY 25, 2001



WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS/TH PHASE 01/1 C CLR FLT W/PH-046
 TC TRIP REC230, AMLA, 200 INDUCT, MOTOR(CLS271, 272)
 COMMENTS REC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS REC TO STAFF MAY 25, 2001



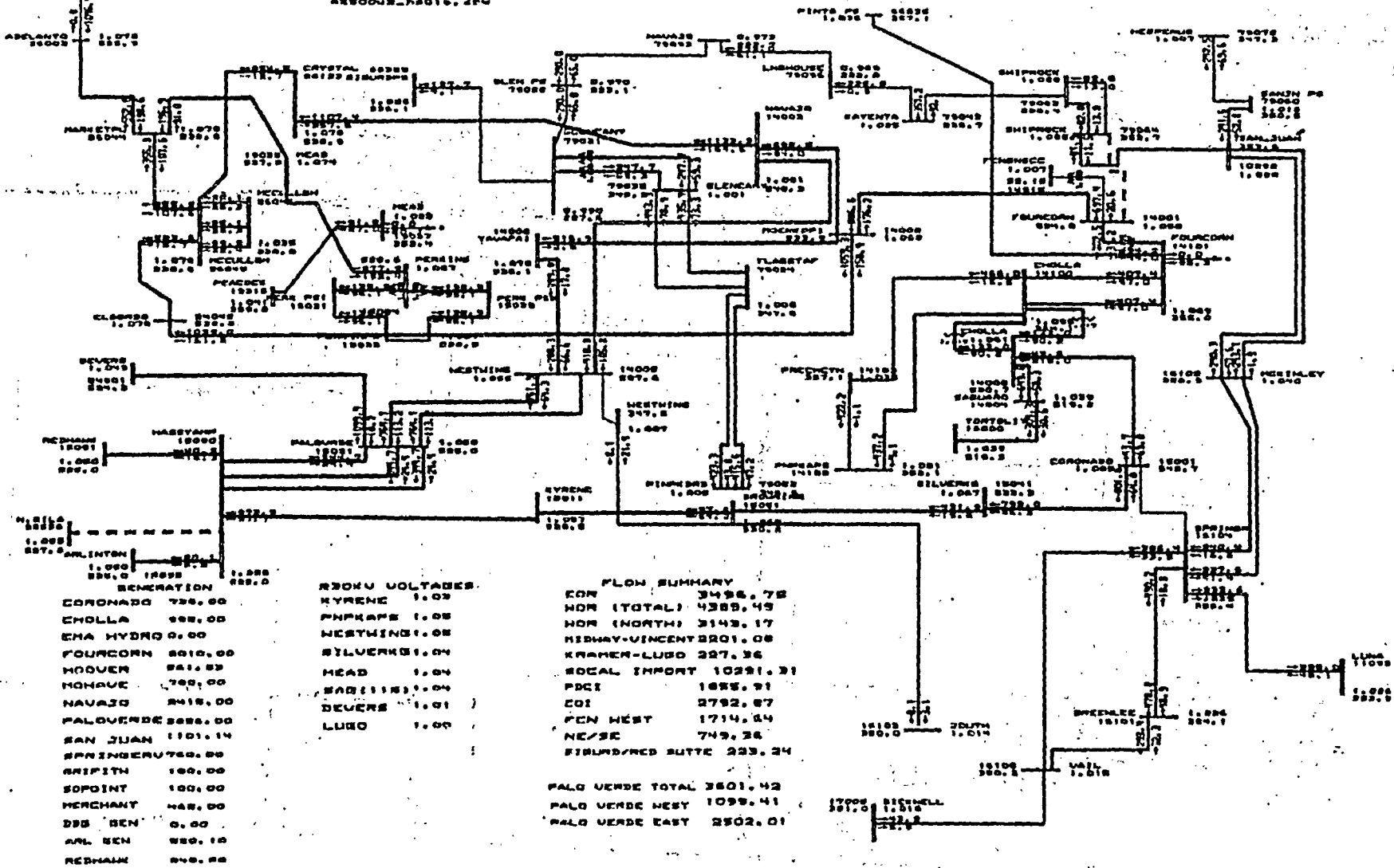
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS/TH PHASE 01/1 C CLR FLT W/PH-046
 TC TRIP REC230, AMLA, 200 INDUCT, MOTOR(CLS271, 272)
 COMMENTS REC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS REC TO STAFF MAY 25, 2001



WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS/TH PHASE 01/1 C CLR FLT W/PH-046
 TC TRIP REC230, AMLA, 200 INDUCT, MOTOR(CLS271, 272)
 COMMENTS REC TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS REC TO STAFF MAY 25, 2001

Arizona 500 & 345kV EHV System

AS500AZ-24010.dwg



Remedial Electric International, Inc.

PSLV Project

11/11/00

File Apr 26 11:09:28 2002

09
APS
TRANSMISSION
OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

HASS-N. GILA 105
PV GEN-3601M

G-02LSP-HANG 3601-SAV

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Rating = 1

HASSYAMP
15090

MEDHANK
15091

AR-INTON
15092

FALOURDE
15021

KYRENE
15011

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109.15
KYRENE7
109.11
SILVERK6
899.3
BROWNING
890.2

HEETLING
827.6

HEETLING
827.6

FALOURD-
82.34

FALOURD2
82.36

FALOURD3
82.36

PUNGET1
14.15

PUNGET2
14.15

DEVERS
824.3

N. GILA
89.46
IMPALVLY
829.3

ARL-CT1
17.96

ARL-CT2
17.96

ARL-ST1
17.97

RED-CT1
17.97

RED-CT2
17.97

RED-ST1
17.98

RED-CT3
17.97

RED-CT4
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RED-ST2
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021sp-hang3601.sav

P mis = 0.0000 MW

Q mis = 0.0000 MVAR

General Electric International, Inc. PS&P Program

APS
TRANSMISSION
OPERATIONS

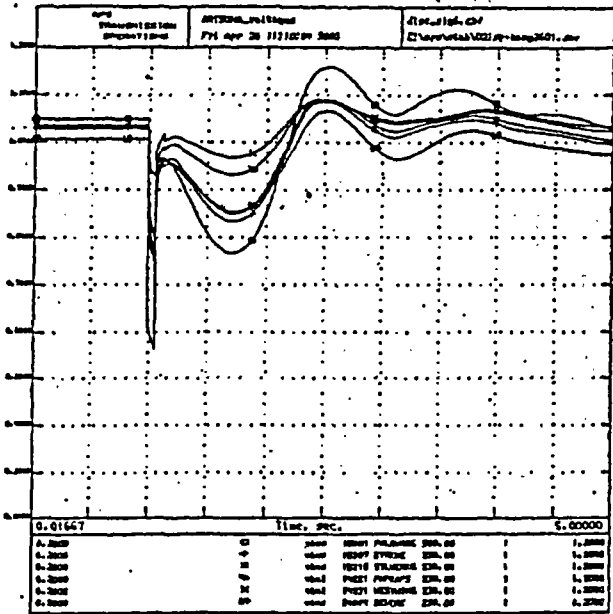
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

HASS-N. GILA 10S
PV ECR-3601HM

PM/VM

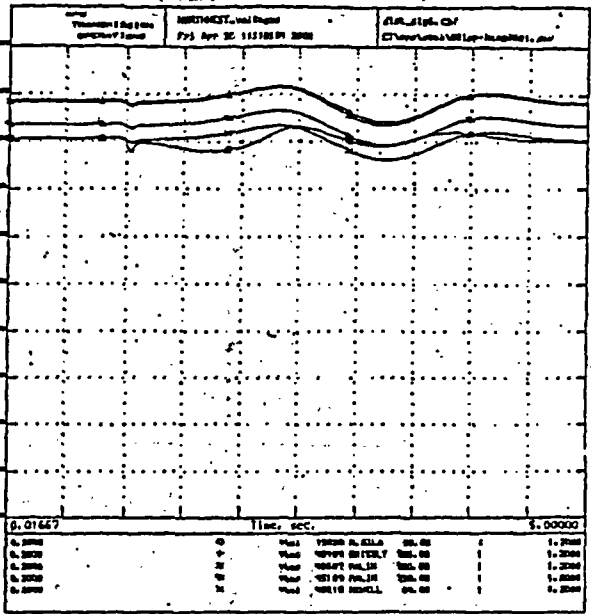
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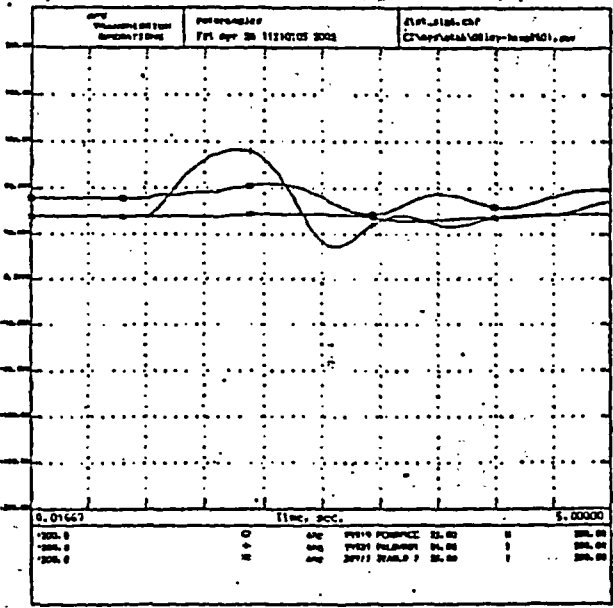
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOKE/TIME CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV BUS BY BUS/TAP P0-446 BUS/C CLR FLT MPP-444
 TC TRIP MCB, A/LA, 200 INDUCT. MPP-444/201, 202

COPIES B/C TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COPIES B/C TO STAFF MAY 25, 2001



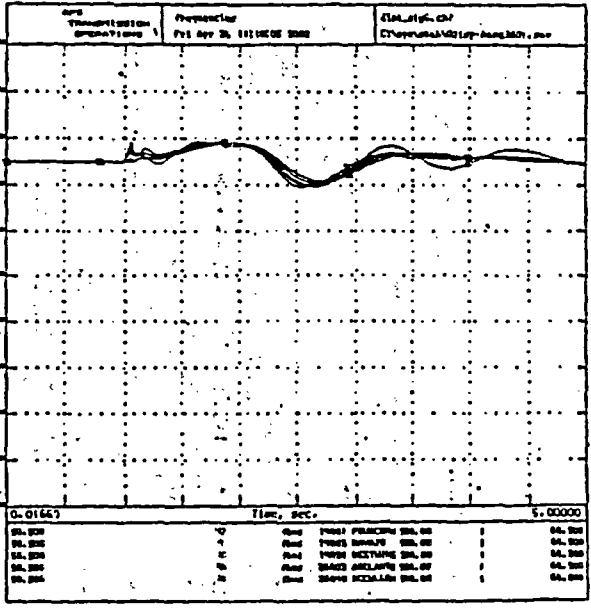
WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOKE/TIME CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV BUS BY BUS/TAP P0-446 BUS/C CLR FLT MPP-444
 TC TRIP MCB, A/LA, 200 INDUCT. MPP-444/201, 202

COPIES B/C TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COPIES B/C TO STAFF MAY 25, 2001



WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOKE/TIME CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV BUS BY BUS/TAP P0-446 BUS/C CLR FLT MPP-444
 TC TRIP MCB, A/LA, 200 INDUCT. MPP-444/201, 202

COPIES B/C TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COPIES B/C TO STAFF MAY 25, 2001

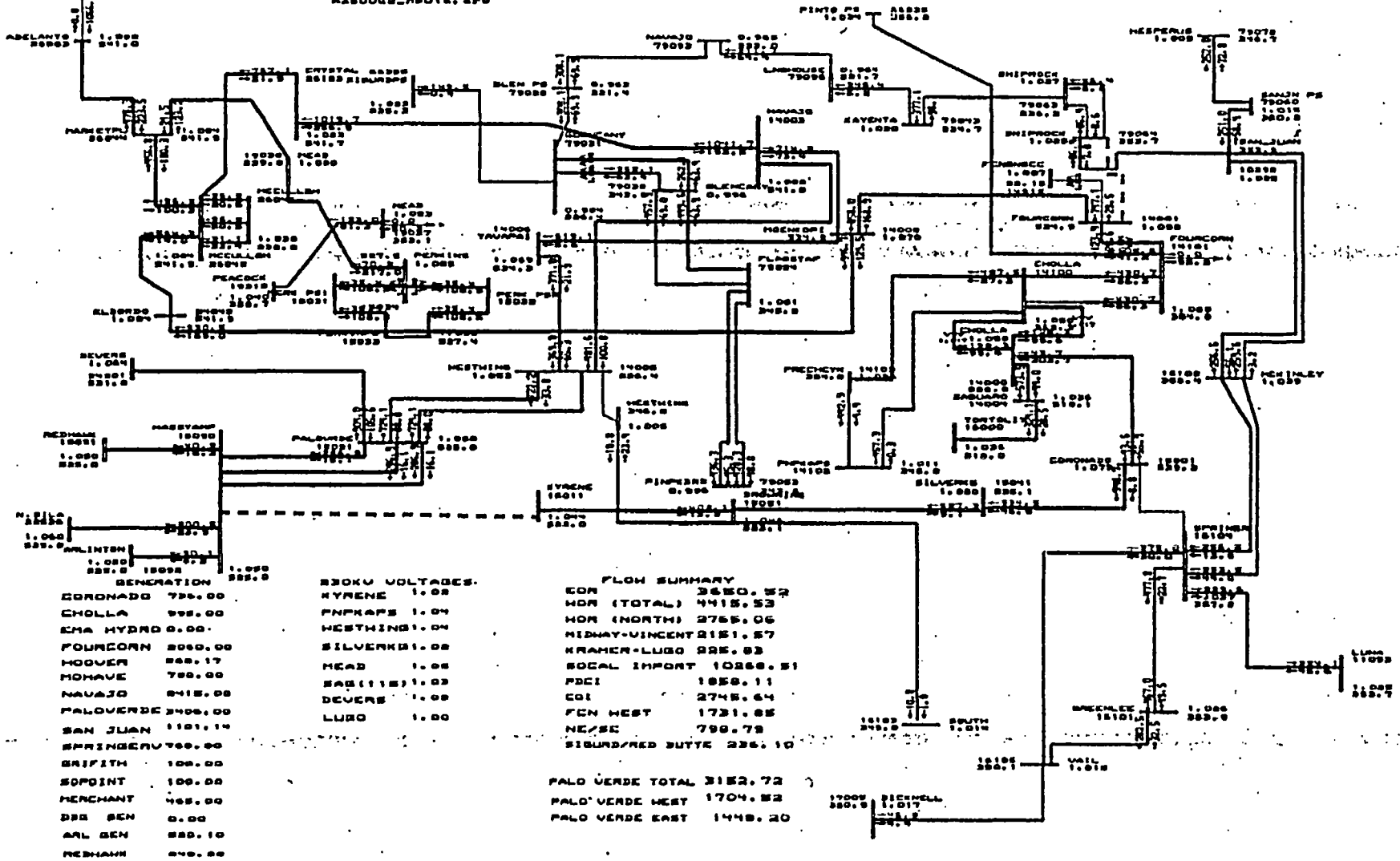


WESTON SYSTEMS COORDINATING COUNCIL
 2000 LSPS SPOKE/TIME CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV BUS BY BUS/TAP P0-446 BUS/C CLR FLT MPP-444
 TC TRIP MCB, A/LA, 200 INDUCT. MPP-444/201, 202

COPIES B/C TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COPIES B/C TO STAFF MAY 25, 2001

Arizona 500 & 345kV EHV System

AZ500AB_hsp01a.dwg



GENERATION	
CORONADO	795.00
CHOLLA	995.00
EMA HYDRO	0.00
FOURCORN	2050.00
HOOVER	222.17
MOHAVE	790.00
NAVAJO	2415.00
PALOVERDE	2400.00
SAN JUAN	1101.14
SPRINGERV	760.00
GRIFFITH	100.00
SDFPOINT	100.00
MERCHANT	465.00
DBS GEN	0.00
ARL GEN	220.10
REHMAN	240.00

330KV VOLTAGES	
KYRENE	1.00
PHOENIX	1.04
WESTING	1.04
SILVERM	1.00
HEAD	1.00
SAB (115)	1.00
DEVERS	1.00
LUGO	1.00

FLOW SUMMARY	
CON	3650.52
MOR (TOTAL)	4415.53
MOR (NORTH)	2755.06
MIDWAY-VINCENT	2151.57
KRAMER-LUGO	225.03
SOCAL IMPORT	1026.51
PDCI	1850.11
COI	2745.64
FCN WEST	1731.05
NE/SE	799.73
SIBURG/RED BUTTE	225.10
PALO VERDE TOTAL	3152.72
PALO VERDE WEST	1704.52
PALO VERDE EAST	1448.20

General Electric International, Inc. P&T Project
 63
 APS TRANSMISSION OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

MAS-RTH 105
 PU/MAS GEN# 3152M
 14-02LSP-HAKYR 3152.SAV

14/11/01
 May 09 24 14:23:47 2002
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HASSYAMP
15090

R. BO1 525.0
1.050

REDHAWK
15091

AR-INTON
15092

PALOUNDE
15021

KYRENE
15011

KYRENE6
101.87
KYRENE7
101.87
SILVERK6
525.1
BROWNING
525.1

WESTING
525.4

WESTING
525.4

PALOUND1
23.38

PALOUND2
23.37

PALOUND3
23.37

PUNDSCT1
14.15

PUNDSCT2
14.15

DEVERS
521.8

N. GILA
70.11
IMPRULY
525.8

ARL-CT1
17.96

ARL-CT2
17.96

ARL-ST1
17.97

RED-CT1
17.97

RED-CT2
17.97

RED-ST1
17.99

RED-CT3
17.97

RED-CT4
17.97

RED-ST2
17.99

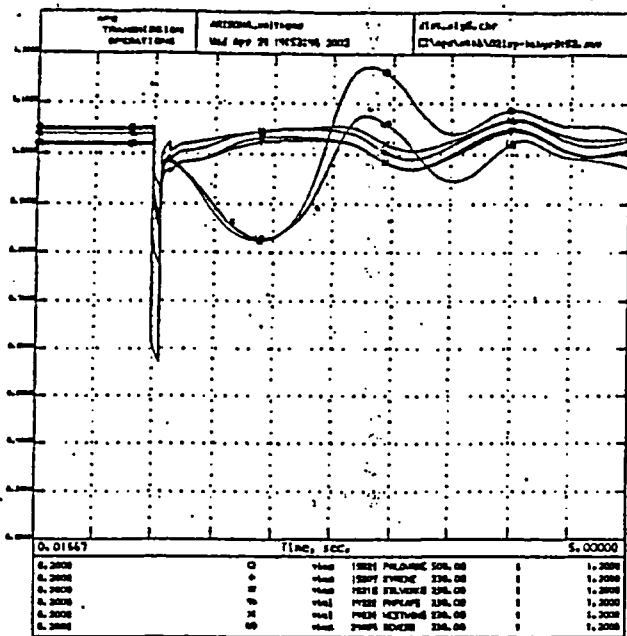
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Q MW I 0.0000 MVAR

AP5
TRANSMISSION
OPERATIONS

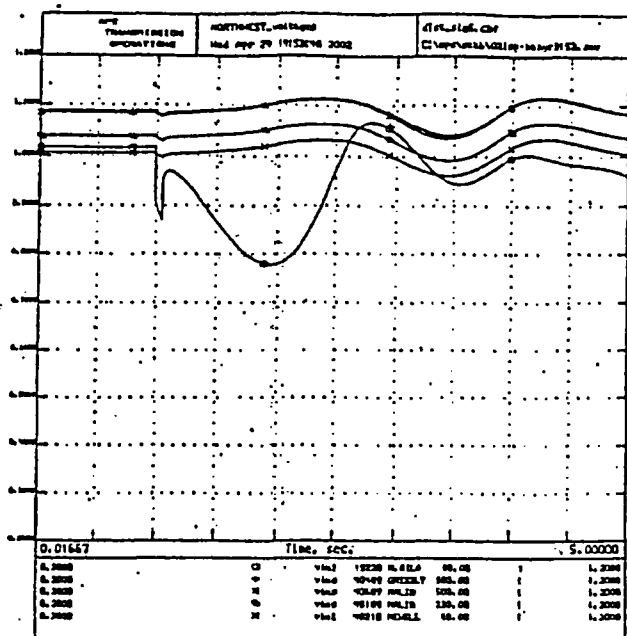
WESTERN SYSTEMS COORDINATING COUNCIL
2002 LSP2 OPERATING CASE
MAY 11, 2001

HAS-RTR 105
PV/ISS ETR- 3152M

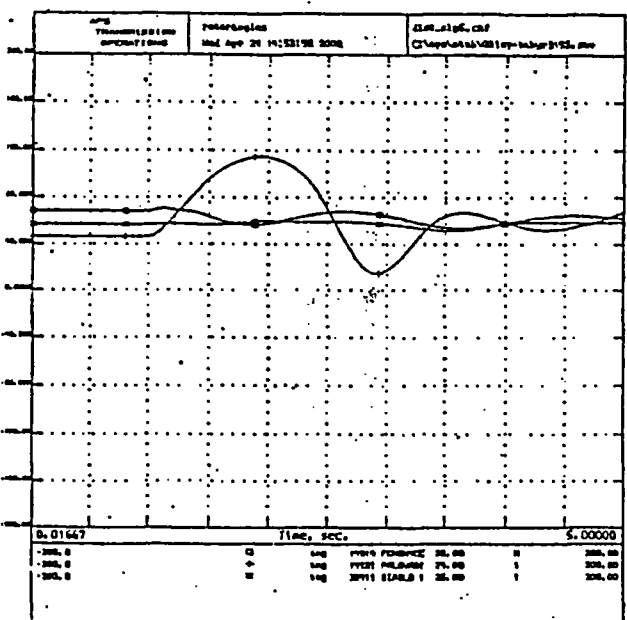
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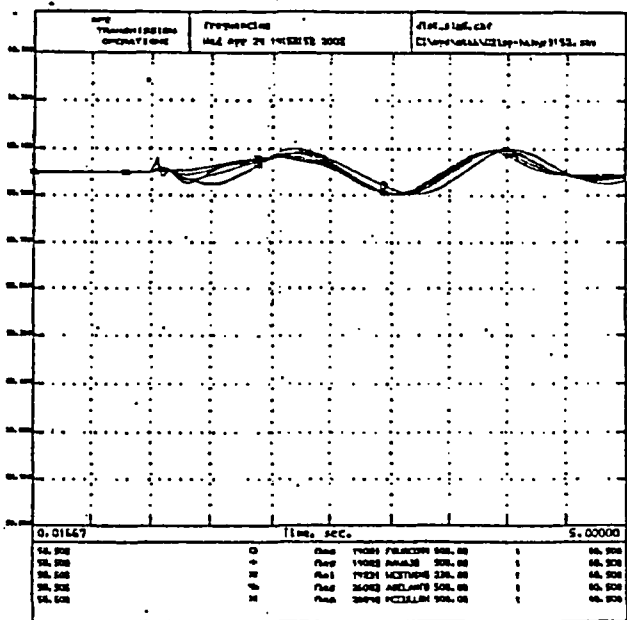
METRO SYSTEMS COORDINATING COUNCIL
 2002 LSPS OPERATING CASE
 MAY 11, 2001
 STAB: BUS FAULT ON PV 500 BY BUS THE PHOLANE OUTIN C CLR FLT WPP-444
 7C TRIP RECLARLA,30K INDUCT. MOTORS(04LSP1).BY
 COMMENTS R/E TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS R/E TO STAFF MAY 26, 2001



METRO SYSTEMS COORDINATING COUNCIL
 2002 LSPS OPERATING CASE
 MAY 11, 2001
 STAB: BUS FAULT ON PV 500 BY BUS THE PHOLANE OUTIN C CLR FLT WPP-444
 7C TRIP RECLARLA,30K INDUCT. MOTORS(04LSP1).BY
 COMMENTS R/E TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS R/E TO STAFF MAY 26, 2001



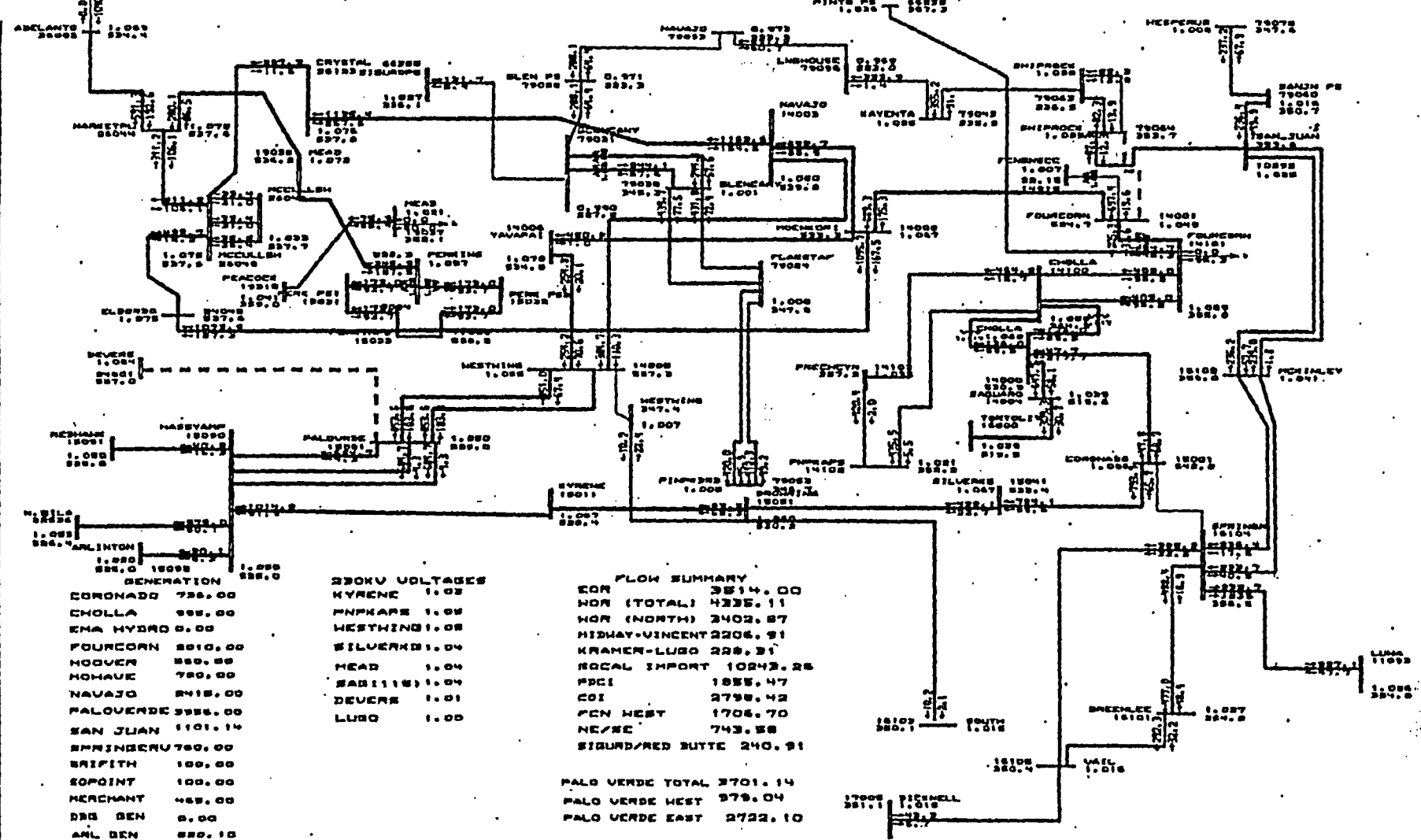
METRO SYSTEMS COORDINATING COUNCIL
 2002 LSPS OPERATING CASE
 MAY 11, 2001
 STAB: BUS FAULT ON PV 500 BY BUS THE PHOLANE OUTIN C CLR FLT WPP-444
 7C TRIP RECLARLA,30K INDUCT. MOTORS(04LSP1).BY
 COMMENTS R/E TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS R/E TO STAFF MAY 26, 2001



METRO SYSTEMS COORDINATING COUNCIL
 2002 LSPS OPERATING CASE
 MAY 11, 2001
 STAB: BUS FAULT ON PV 500 BY BUS THE PHOLANE OUTIN C CLR FLT WPP-444
 7C TRIP RECLARLA,30K INDUCT. MOTORS(04LSP1).BY
 COMMENTS R/E TO AREA COORDINATORS MAY 16, 2001
 AREA COORDINATOR COMMENTS R/E TO STAFF MAY 26, 2001

Arizona 500 & 345KV EHV System

AR5000R-REV01a.drv



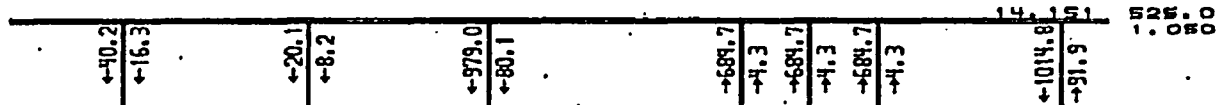
GENERATION	
CORONADO	738.00
CHOLLA	335.00
EMA HYDRO	0.00
FOURCORN	2010.00
HOOVER	250.00
HONAUE	780.00
NAVAJO	2415.00
PALO VERDE	3355.00
SAN JUAN	1101.14
SPRINGERVU	760.00
BRIFITH	100.00
SOPINT	100.00
MERCHANT	455.00
DBS BEN	0.00
ANL BEN	220.10
REDNAK	248.50

230KV VOLTAGES	
KYRENE	1.03
PNPKARE	1.05
WESTWIND	1.08
SILVERND	1.04
HEAD	1.04
SADILLIE	1.04
DEVERE	1.01
LUGO	1.00

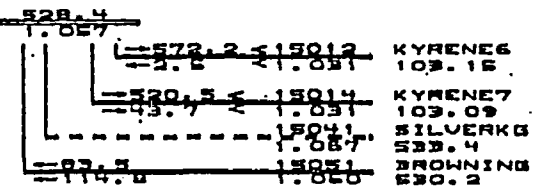
FLOW SUMMARY	
FOR	3514.00
NOR (TOTAL)	4335.11
NOR (NORTH)	2402.87
HIGHWAY-VINCENT	2206.91
KRAMER-LUGO	228.31
SOCAL IMPORT	10242.25
PCI	1855.47
COI	2758.42
PCN WEST	1705.70
NE/SE	743.58
SIGURD/RED BUTTE	240.91

PALO VERDE TOTAL	3701.14
PALO VERDE WEST	379.04
PALO VERDE EAST	2722.10

HASSYAMP
15090



KYRENE
15011

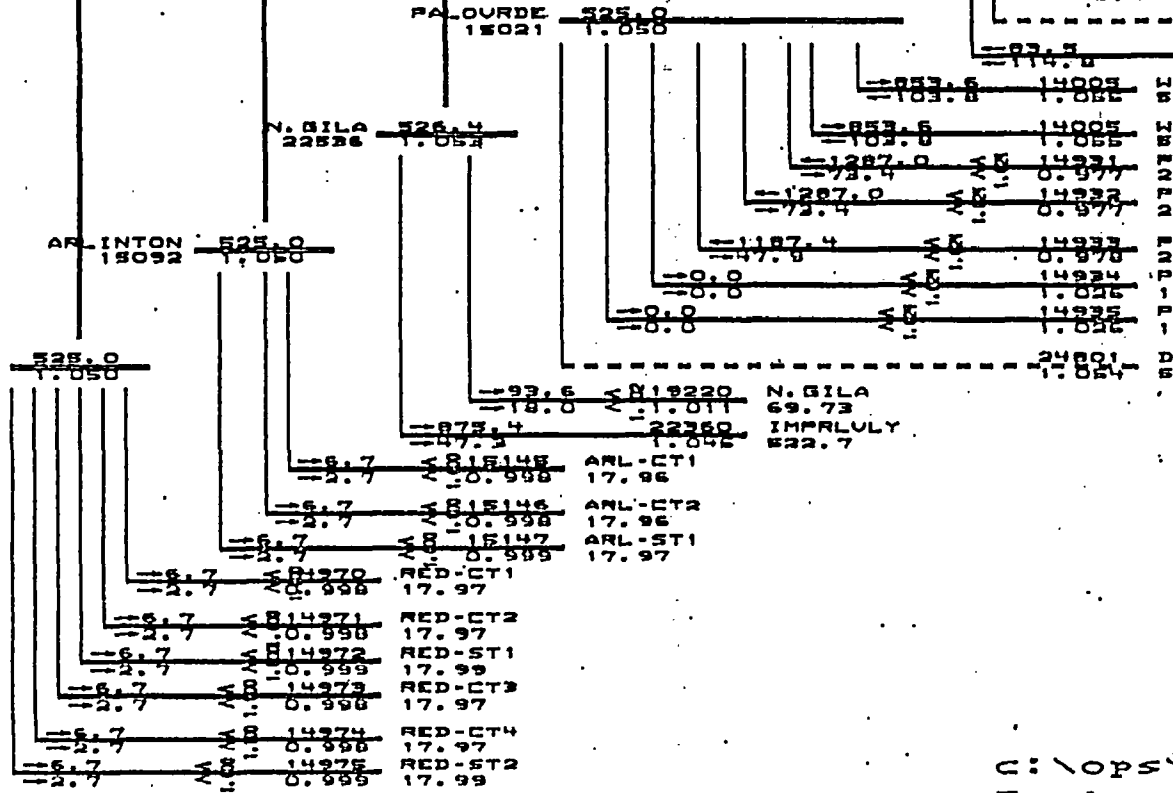


PA-OURDE
15021

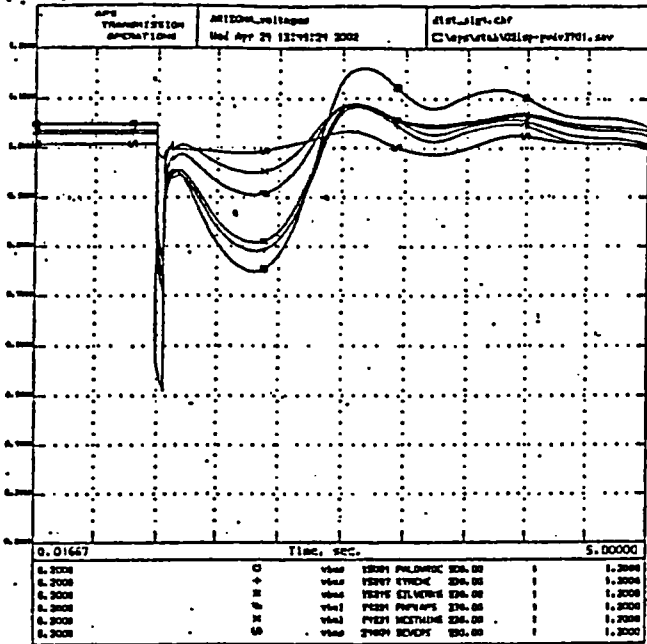
N. GILA
22556

AR-INTON
15092

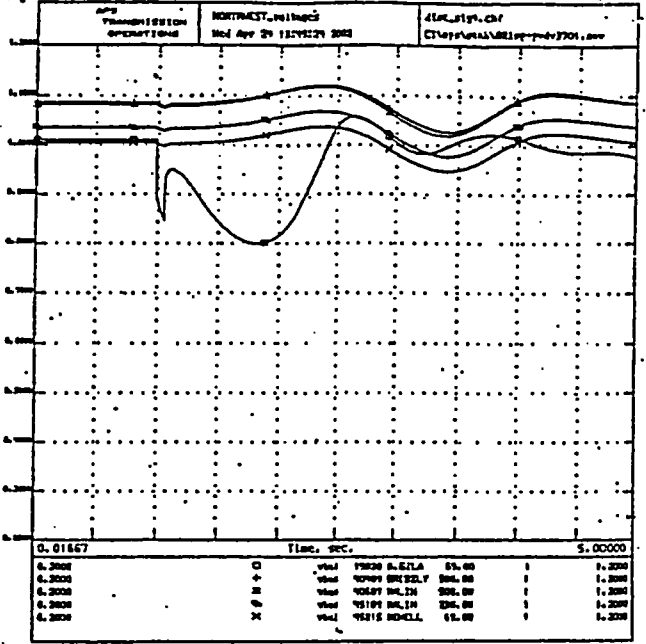
REDHANK
15091



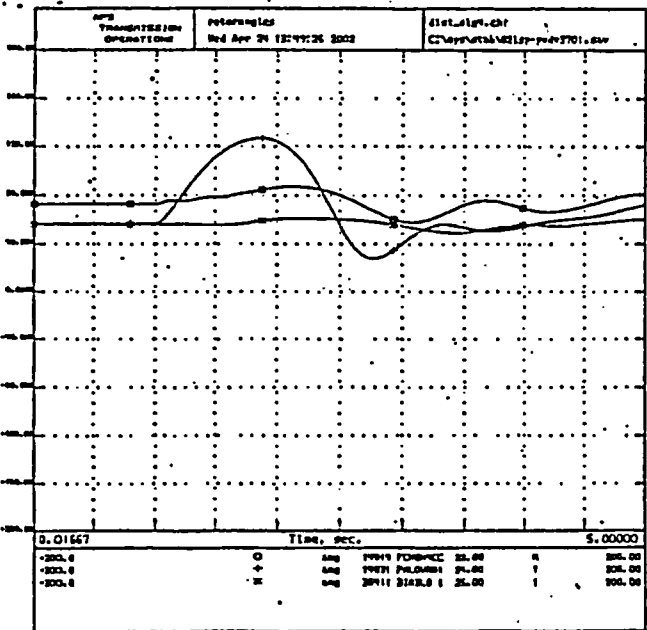
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Q MW = -0.0000 MVAR



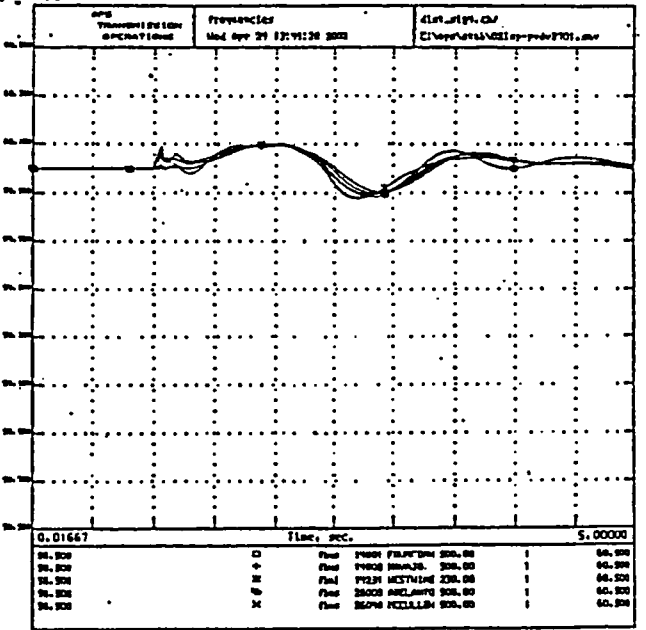
MESTON SYSTEMS COORDINATING COUNCIL
 2001 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS100 PV-400 OUT14 C CLR FLT MPP-400
 TC TRIP RCD,ARL0,300 INDUCT. MOTOR02LSP21,273
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



MESTON SYSTEMS COORDINATING COUNCIL
 2001 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS100 PV-400 OUT14 C CLR FLT MPP-400
 TC TRIP RCD,ARL0,300 INDUCT. MOTOR02LSP21,273
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



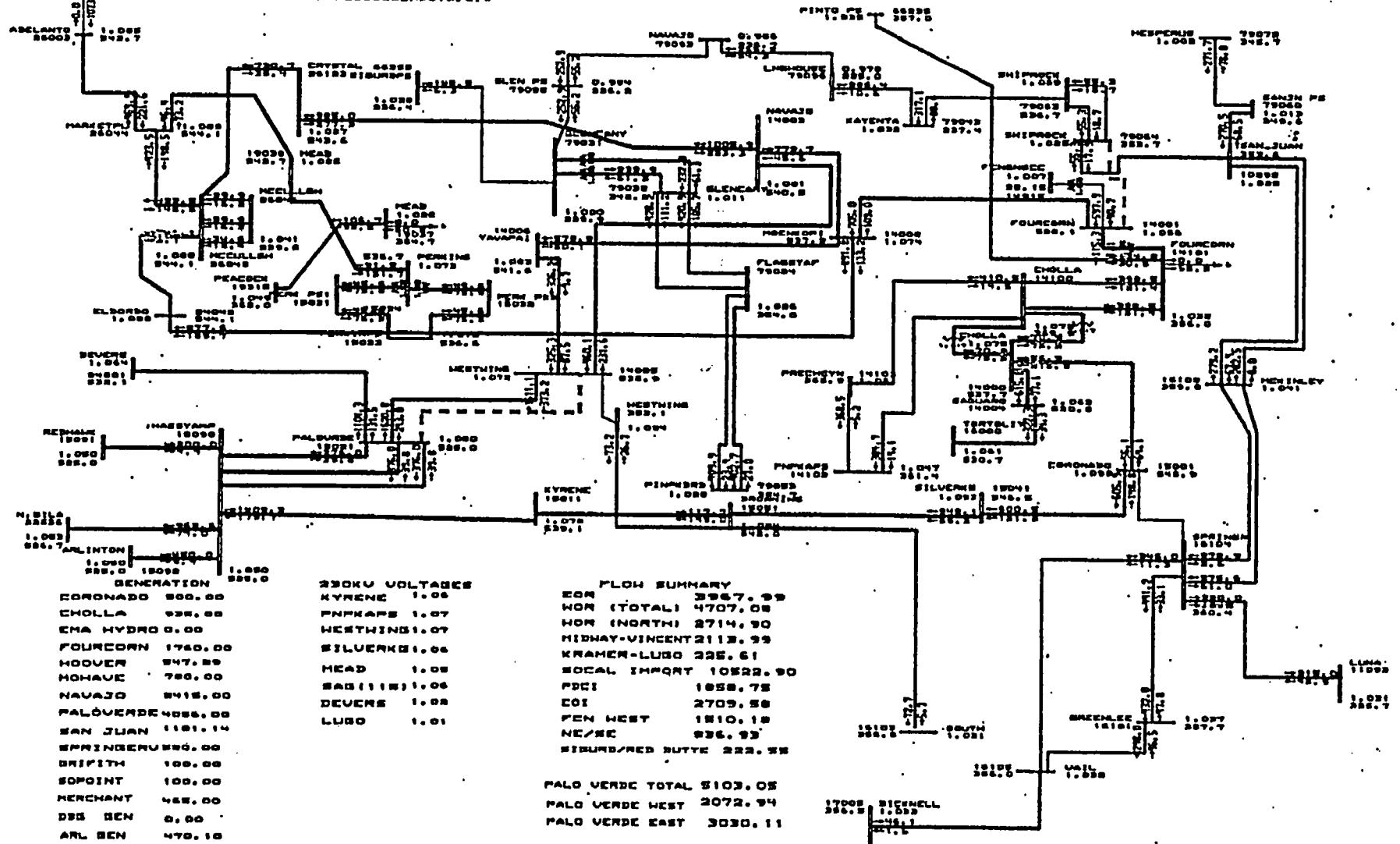
MESTON SYSTEMS COORDINATING COUNCIL
 2001 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS100 PV-400 OUT14 C CLR FLT MPP-400
 TC TRIP RCD,ARL0,300 INDUCT. MOTOR02LSP21,273
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



MESTON SYSTEMS COORDINATING COUNCIL
 2001 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, SLS FAULT ON PV 500 BY BUS100 PV-400 OUT14 C CLR FLT MPP-400
 TC TRIP RCD,ARL0,300 INDUCT. MOTOR02LSP21,273
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001

Arizona 500 & 345KV EHV System

AZ500&345KV.dwg



GENERATION	
CORONADO	800.00
CHOLLA	938.00
EMA HYDRO	0.00
FOURCORN	1750.00
HOOVER	847.89
MOHAVE	780.00
NAVAJO	8418.00
PALO VERDE	4058.00
SAN JUAN	1181.14
SPRINGBURN	880.00
DRIFTH	100.00
SOPOINT	100.00
MERCHANT	458.00
DBS GEN	0.00
ARL GEN	470.18
REDHAWK	848.00

230KV VOLTAGE	
KYRENE	1.05
PNFKAPE	1.07
WESTHINE	1.07
SILVERKNE	1.06
HEAD	1.08
SAB (112)	1.08
DEVERE	1.08
LUGO	1.01

FLOW SUMMARY	
EGM	3867.99
NOR (TOTAL)	4707.08
NOR (NORTH)	2714.90
MIDWAY-VINCENT	2113.99
KRAMER-LUGO	328.61
SOCAL IMPQRT	10822.90
PDCI	1858.78
COI	2709.58
FEN WEST	1810.18
NE/SE	836.93
SIBURD/RED BUTTE	222.88

PALO VERDE TOTAL	5103.05
PALO VERDE WEST	2072.94
PALO VERDE EAST	3030.11

General Electric International, Inc. PS&T Project
 APS TRANSMISSION OPERATIONS

WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

PV-WEG 12 105

PL/NAME THE MW IS 1010104 2002
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 Rating *

69

J-02LSP-231 PV | W1250.SAU

BY 04/20/02

HASSYAMP
15090

REDHAWK
15091

ARINTON
15092

FALOURDE
15021

KYRENE
15011

KYRENE6
108.11
KYRENE7
108.36
MILVERKE
848.5
MIDWINE
820.0

WESTING
578.9

WESTING
578.9

FALOURD1
44.44

FALOURD2
44.44

FALOURD3
29.44

PUNGET1
14.18

PUNGET2
14.18

DEVERS
592.1

N. BILA
70.35
IMPRULY
823.0

ARL-CT1
18.16

ARL-CT2
18.16

ARL-ST1
18.16

RED-CT1
18.09

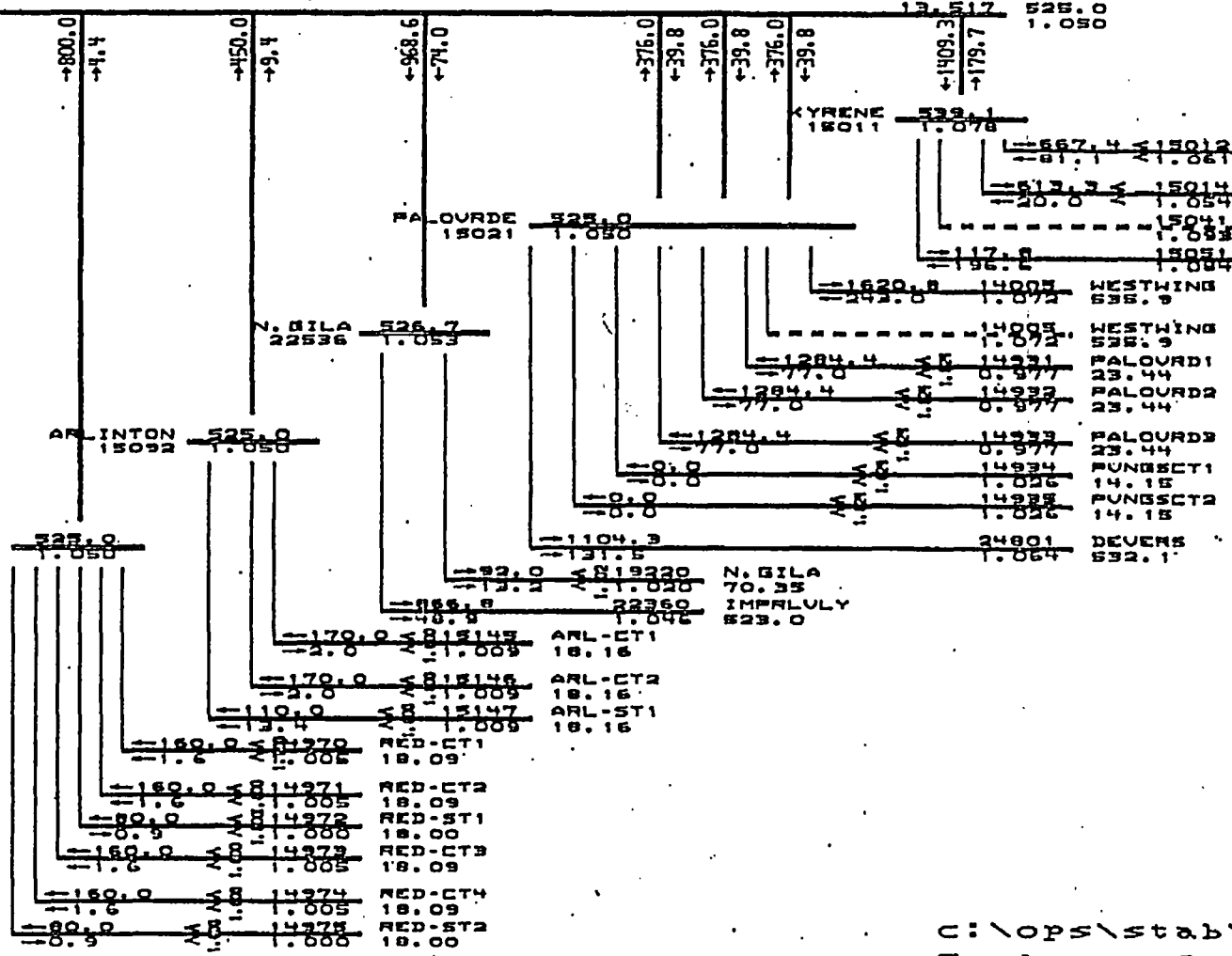
RED-CT2
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RED-ST1
18.00

RED-CT3
18.09

RED-CT4
18.09

RED-ST2
18.00



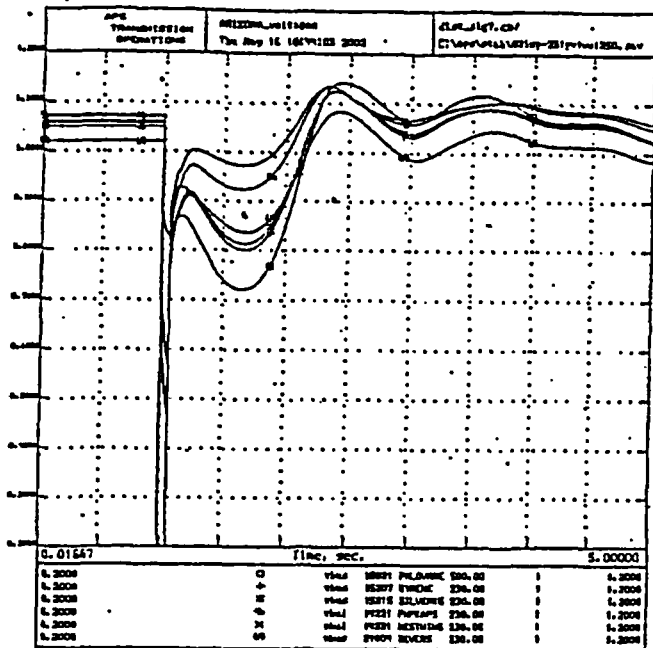
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 Q mis = -0.0000 MVAR

70
 General Electric International, Inc.
 APS
 TRANSMISSION,
 OPERATIONS

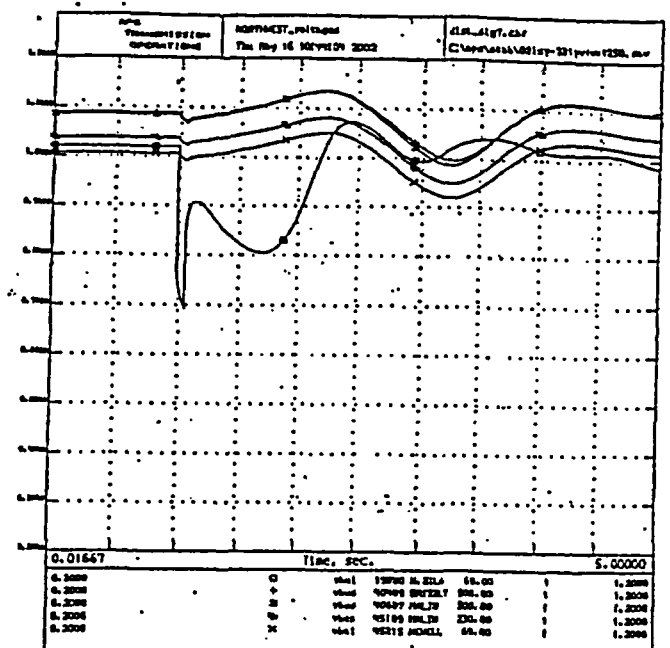
PSLF Program
 WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001

PV-146 12 105

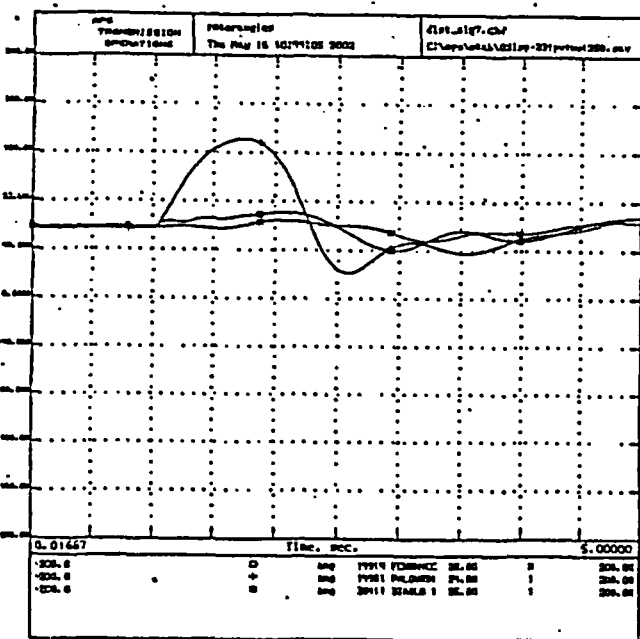
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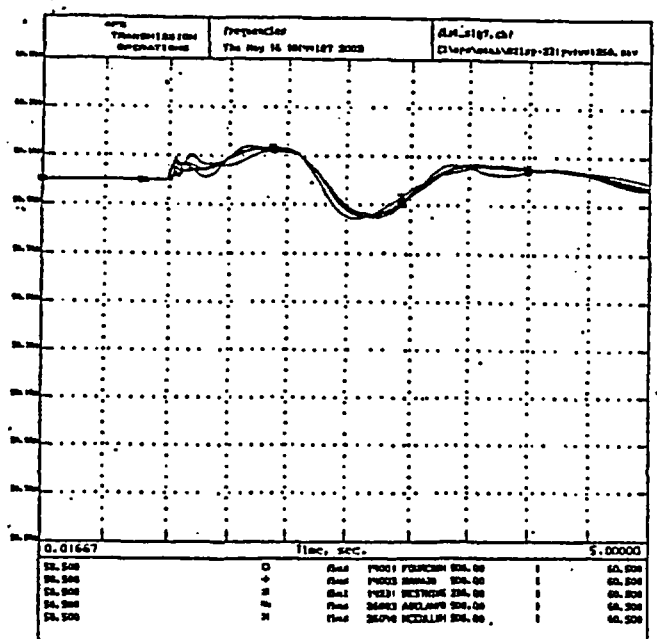
MOTION SYSTEMS COORDINATING COUNCIL
 2001 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3P FAULT ON PV 500 BY BUS; P-HAS OUTY C CLR FLT MPP-446;
 TC TRIP RCD,ARL,22X DIRACT. NOTES:GOLSP71.D75
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



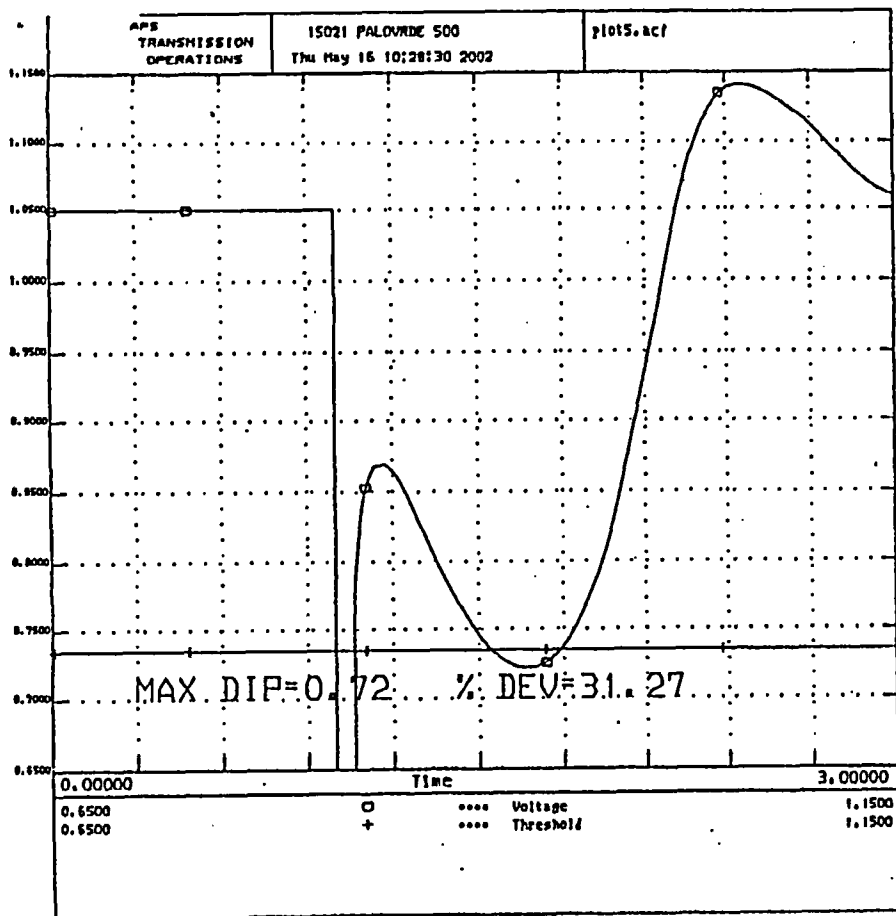
MOTION SYSTEMS COORDINATING COUNCIL
 2001 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3P FAULT ON PV 500 BY BUS; P-HAS OUTY C CLR FLT MPP-446;
 TC TRIP RCD,ARL,22X DIRACT. NOTES:GOLSP71.D75
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



MOTION SYSTEMS COORDINATING COUNCIL
 2001 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3P FAULT ON PV 500 BY BUS; P-HAS OUTY C CLR FLT MPP-446;
 TC TRIP RCD,ARL,22X DIRACT. NOTES:GOLSP71.D75
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



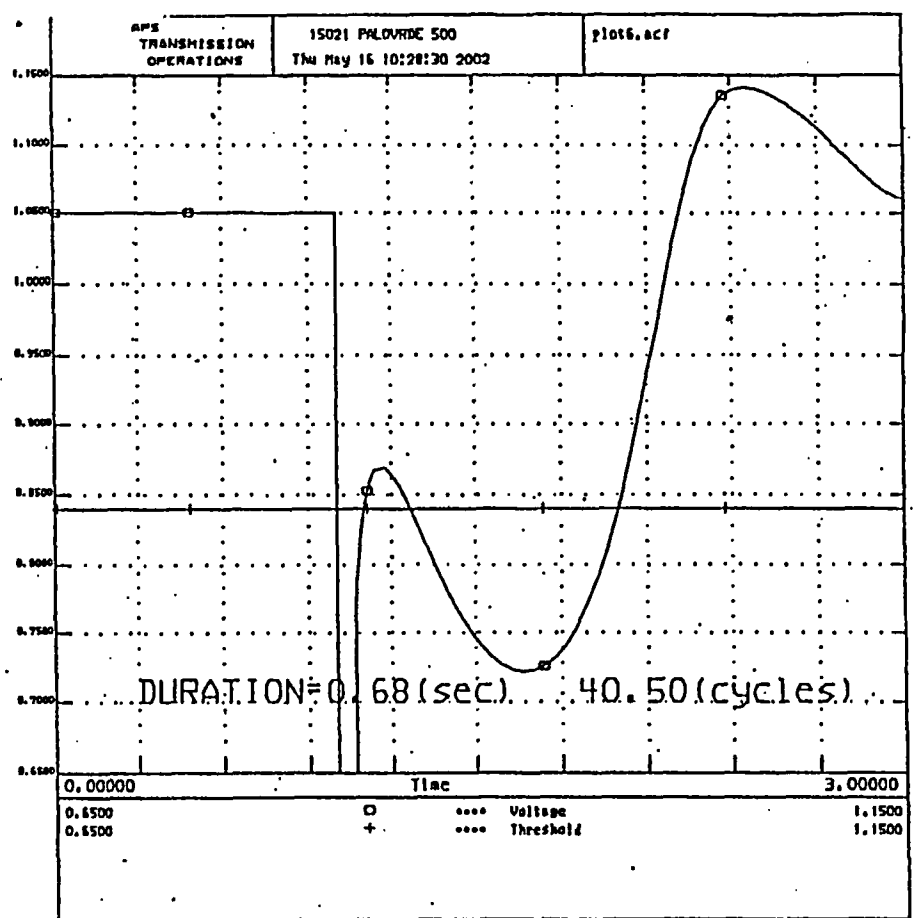
MOTION SYSTEMS COORDINATING COUNCIL
 2001 LSPS OPERATING CASE
 MAY 11, 2001
 STAB, 3P FAULT ON PV 500 BY BUS; P-HAS OUTY C CLR FLT MPP-446;
 TC TRIP RCD,ARL,22X DIRACT. NOTES:GOLSP71.D75
 COMMENTS BUC TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS BUC TO STAFF MAY 25, 2001



WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, 3P FAULT ON PV 500 KV BUS; PV-143 OUT/14 C CLR FLT W/PV-143;
 7C TRIP REDO,ARLO,20% INDUCT. MOTORS;02LSP21.DYD

COMMENTS DUE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS DUE TO STAFF MAY 25, 2001

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WESTERN SYSTEMS COORDINATING COUNCIL
 2002 LSP2 OPERATING CASE
 MAY 11, 2001
 STAB, 3P FAULT ON PV 500 KV BUS; PV-143 OUT/14 C CLR FLT W/PV-143;
 7C TRIP REDO,ARLO,20% INDUCT. MOTORS;02LSP21.DYD

COMMENTS DUE TO AREA COORDINATORS MAY 18, 2001
 AREA COORDINATOR COMMENTS DUE TO STAFF MAY 25, 2001