Exhibit B

STUDY OF THE TECHNICAL ALTERNATIVES FOR ELECTRICAL SUPPLY TO THE CITY OF LAS CRUCES

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EL PASO ELECTRIC COMPANY, INC.

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EXECUTIVE SUMMARY

Disconnecting the City of Las Cruces (CLC) from the El Paso Electric Company (EPE) system will leave CLC with only one 24.9 kV substation and 8 feeders to serve the city load as compared to the present four substations and 17 feeders.

At the transmission level, the following will have to be done in order to sever CLC from EPE.

Disconnect the 115 kV lines connecting Las Cruces substation to Arroyo and Salopek Substations.

Construction by EPE of 16 miles of new 115 kV transmission line to provide the necessary path from Salopek to Picacho substations.

CLC will have to add two new 115 kV to 24.9 kV transformers at the Las Cruces substation.

At the distribution level in order to make the approximately 100 cuts at the city limits it will be necessary for:

EPE to build approximately 44 miles of 24.9 kV overhead and underground lines.

EPE to replace 24-2.4 kV distribution transformers with 14.4 kV distribution transformers.

CLC to build approximately 11 miles of 24.9 kV overhead and underground lines.

The total cost to EPE for the severance will be $ 7,006,420.

The total cost to CLC for the severance will be $ 756,100.

CLC has three possible avenues to power sources (excluding EPE). In very general terms these are from the west, north and east. Without regard to specific suppliers (except for power from the east), points were studied in the WSCC grid where power could be delivered by a supplier.

These are:

Artesia 345 kV Bus (east)
Four Corners 345 kV Bus (north)
Springerville 345 kV Bus (west)

Each path from a source to Las Cruces was evaluated to determine the cost of obtaining capacity under perceived "best" and "worst" case conditions. The costs associated with the six alternatives were used in the "Report & Study to Consider the Feasibility of Lowering Electric Rates Through the Development of a New Municipal Electric Utility by the City of Las Cruces, New Mexico and the Rate Impact upon El Paso Electric Company's Remaining New Mexico Consumers" under separate cover.

The least expensive transmission path alternative is to the west. Under the best conditions, wheeling would be arranged through EPE's system. Other costs would be associated with increaseing the Southern New Mexico (SNM) transfer limit and Area Control. Costs associated with this alternative are:

1.	115 kV to 24.9 kV Step-down in Las Cruces	$2.6 million
2.	Increase SNM transfer limit	$3.19 kW-Mo
3.	Wheeling across EPE's system	$3.00 kW-Mo
4.	Transmission power and energy losses	5 %
5.	Area Control	$1.00 kW-Mo

If wheeling from EPE cannot be secured, the most expensive transmission alternative is from the east. The cost of a DC tie coupled with 265 miles of 345 kV line overwhelms the alternatives from the west and north. The costs associated with the most expensive alternative are:

1.	Independent Artesia DC Tie	$40.0 million
2.	200 mile 345 kV Artesia to Las Cruces	$33.2 million
3.	65 mile 345 kV Luna to Las Cruces	$11.3 million
4.	345 kV to 115 kV Step-down in Las Cruces	$ 3.1 million
5.	115 kV to 24.9 kV Step-down in Las Cruces	$ 2.6 million
6.	Transmission power and energy losses	5 %
7.	Wheeling path to Luna 345 kV	$5.03 kW-Mo
8.	Backup power arrangement with "someone" (PNM, PG&T, other)	$1.80 kW-Mo
9.	Area Control	$1.00 kW-Mo

Between these extremes are a multitude of possibilities, but certain institutional and technical facts will remain. Among these are:

Transmission to the west and north is committed. If wheeling is available, it will be on a short term basis and will be expensive.

Transmission to an Eastern (SPS) source requires DC capacity.

DC capacity at Artesia is fully committed. If DC capacity is added at Artesia by CLC, the current path is sufficient for wheeling power from Artesia to Las Cruces.

If EPE and TNP upgrade their DC facility at Artesia, the Artesia to Las Cruces path would not be available. Although plans exist for an upgrade, it is uncertain when this will occur.

DC capacity further north (Blackwater) appears to be committed. If capacity is available, transmission would be required from the north. Over the long term, capacity to the north is committed.

EPE's loss of the CLC load does not free up capacity in any

transmission indefinitely. As EPE's load continues to grow it would use this capacity, once used to serve CLC, to serve EPE loads.

CLC may be able to secure short term (three to five years) wheeling rights to the west and north, and possibly longer term rights to the east. To secure a firm path over the long term, CLC would be required to participate in transmission projects to any source.

There is no mandatory legal requirement that utilities provide wheeling services to other utilities. Wheeling is a voluntary service, subject to negotiation between the parties to the transaction and the Federal Energy Regulatory Commission's approval of the negotiated wheeling rate. Antitrust laws may apply in the event that wheeling is denied for an unlawful purpose.

A utility providing wholesale power and wheeling services is not regulated by the New Mexico Public Service Commission and the provider of such services have no statutory duty or obligation to serve the purchaser of those services. Contract terms, rather than regulated statutory duty, govern the relationship of the parties.

Therefore, CLC must weigh each of the above stated institutional and technical facts and their attendant implications upon costs and reliability of service identified in this report. These facts and their attendant implications could significantly effect the economic and practical feasibility of the options for electrical supply to CLC identified in this report.

PRESENT SOUTHERN NEW MEXICO TRANSMISSION FACILITIES

Bulk power to Southern New Mexico (SNM) is delivered over 345 kV transmission lines that come from the west, north and east as shown in Figure 1. The ownership of the various lines is also shown in Figure 1. The power transfer limit, as established by an arbitration ruling of December 16, 1990 into SNM is 767 MW. The flow from the west is over the Springerville to Luna and Greenlee to Hidalgo lines. The northern flow is over the West Mesa to Arroyo 345 kV and the West Mesa to Belen 115 kV lines.

Flow into Southern New Mexico from the east is through the DC converter station located in Artesia. The rating of the converter station is 200 MW which, therefore sets the limit for the maximum power that can flow from the east.

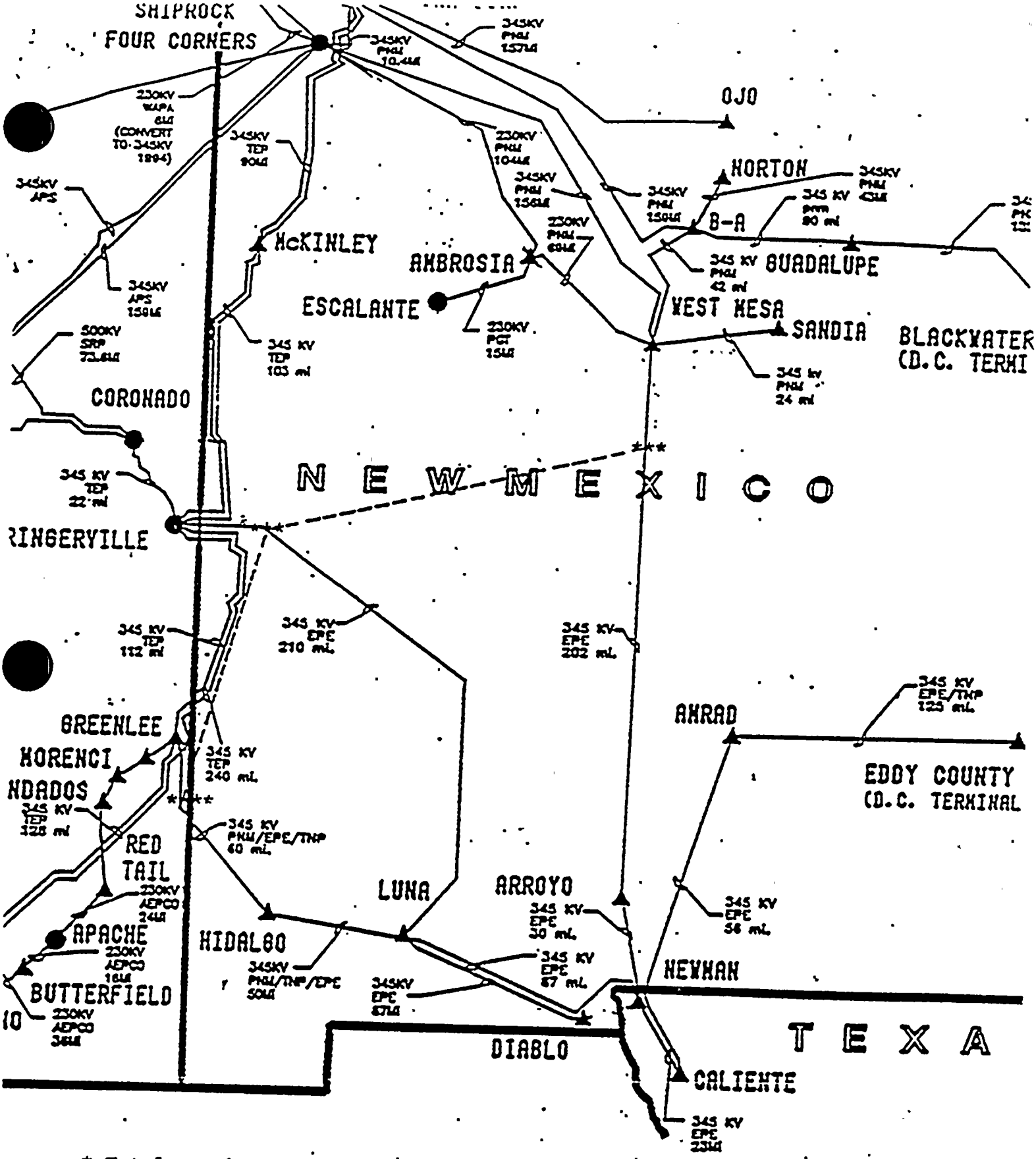
Power in the Southern New Mexico area is distributed to the bulk power substations over a 115 kV transmission system. This system is shown in Figure 2. The transformers reducing the voltage from 345 kV to 115 kV are located at the Arroyo substation in Las Cruces; Newman, Caliente and Diablo substations in El Paso; Luna substation in Deming and the Amrad substation near Alamogordo. In addition to the 115 kV lines originating at these substations, there is a 115 kV line that connects West Mesa substation in Albuquerque to Elephant Butte.

The power flowing over the 345 kV lines, as determined from a power-flow analysis used for planning the 1990 heavy summer loading basecase, is shown in Figure 3. The total power flowing into Southern New Mexico from the west and north is 780 MW which is greater than the arbitration ruling that did not go into effect until December of 1990. The flow from the east through the DC converter station is 200 MW, which is the maximum rating of the station. In addition to the flows into Southern New Mexico, El Paso Electric was generating 196.5 MW at their Newman plant and 50 MW at the Rio Grande plant.

Power flows over the 115 kV system for the 1990 Heavy Summer Case are shown in Figure 4. Of particular interest is the flow into the Las Cruces area to the five substations located in the area. Four of the substations (Las Cruces, Salopek, Picacho and Arroyo) contain 115 kV to 24.9 kV transformers while the fifth station (Dona Ana) is just a 115 kV switching station. Note in Figure 4 that the flow of power into the Las Cruces area is over the 115 kV lines that originate at the Arroyo 345 kV to 115 kV substation.

PRESENT DISTRIBUTION SYSTEM

The 24.9 kV distribution system in the Las Cruces area is served from four bulk power substations. Each substation transforms the voltage from 115 kV to 24.9 kV. The maximum rating of each of the substations and the metered peak demand of the four substations for June 1990 are as follows:



* Total southern New Mexico flow is 767 MW on these lines.

— — Indicates the southern New Mexico transmission system boundary.

Figure 1 - Bulk Power Transmission

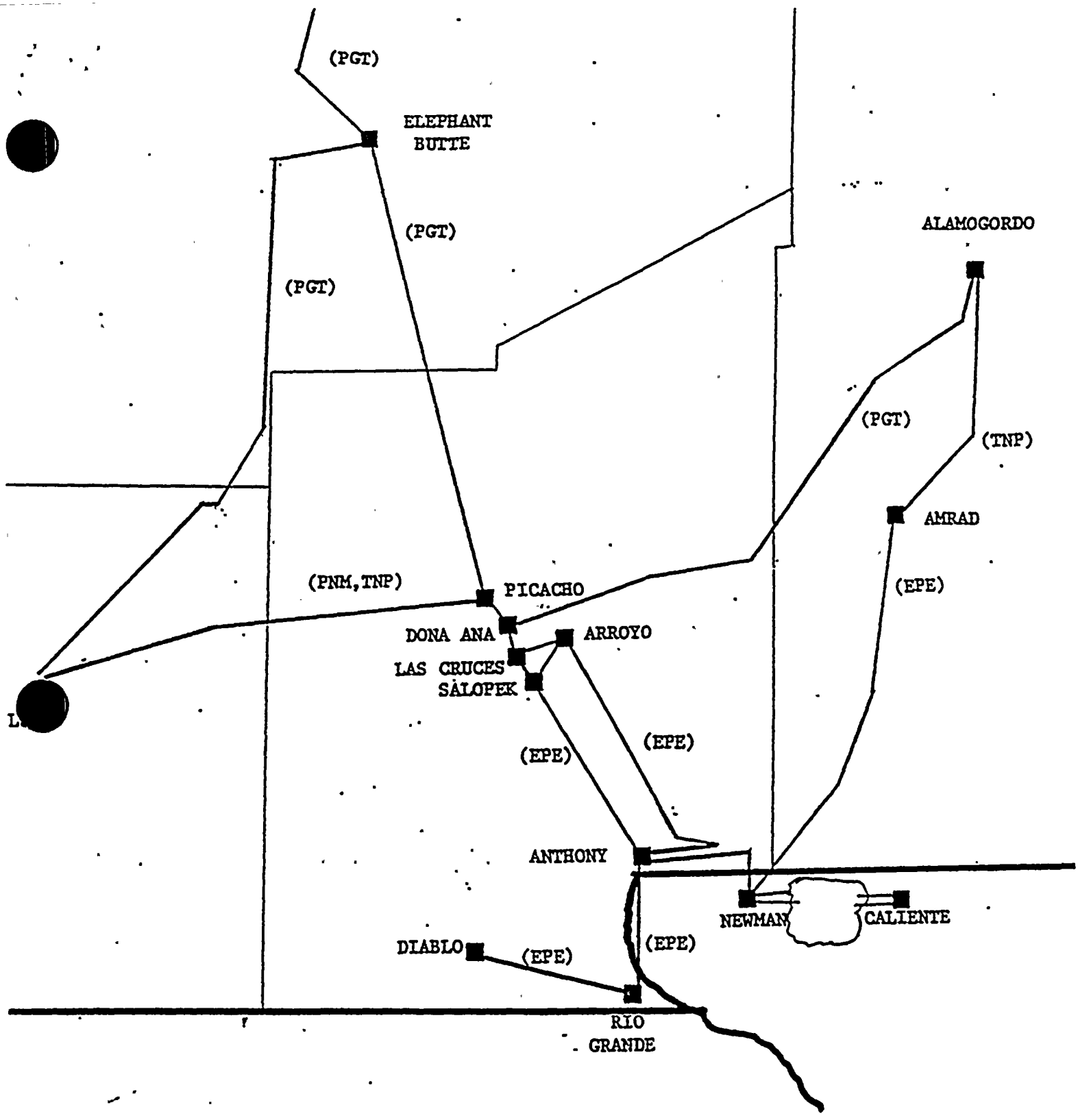


Figure 2 - 115 kV Transmission Lines

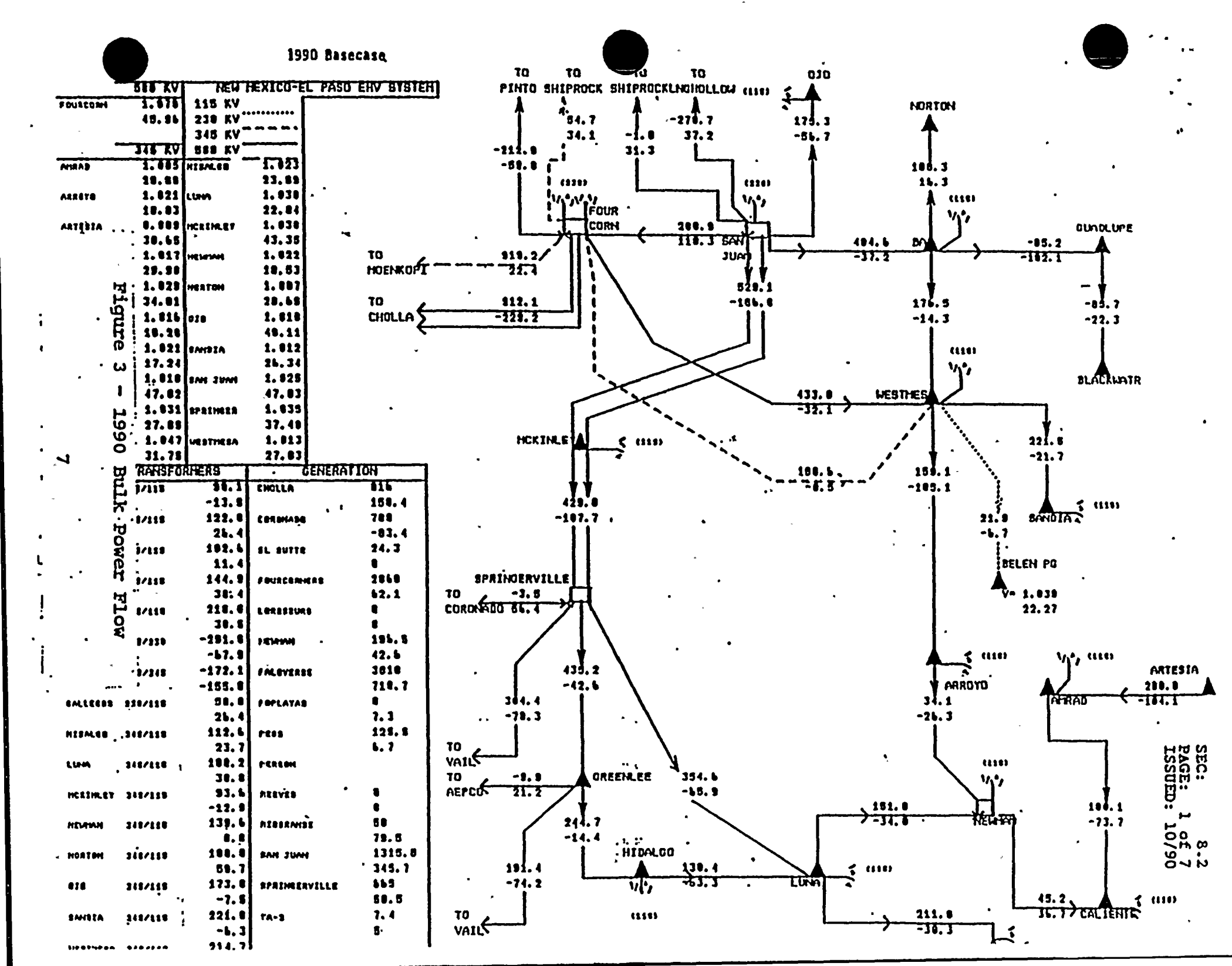

1990 Basecase
NEW MEXICO-EL PASO ERV SYSTEM
115 KV
230 KV
345 KV
500 KV
TO PINTO
TO SHIPROCK
TO SHIPROCK
TO HOLLOW
OJO
NORTON
FOUR CORN
SAN JUAN
GUADALUPE
BLACKWATR
TO MOENKOPI
TO CHOLLA
WESTMES
MCKINLEY
BANDIA
BELEN PG
SPRINGERVILLE
TO CORONADO
GREENLEE
ARROYO
ARTESIA
AFRAD
TO VAIL
TO AEPCO
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Figure 3 - 1990 Bulk Power Flow
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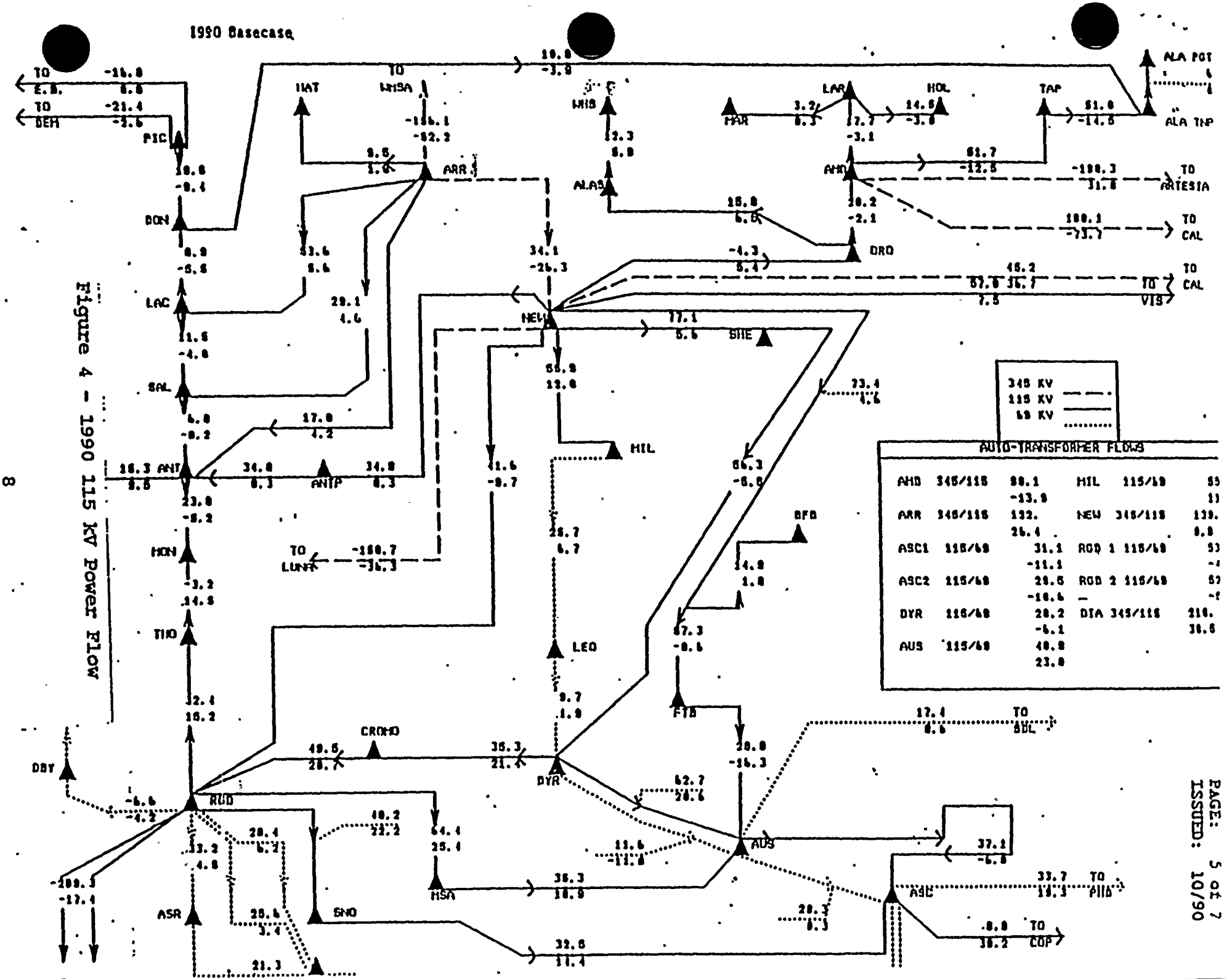


Figure 4 - 1990 115 kV Power Flow

Substation	Transformer Ratings	Total Rating	Peak Demand	Number of Feeders
Las Cruces	3-22.4 MVA	67.2 MVA	54.2 MVA	8
Salopek	2-25 MVA	50.0 MVA	33.7 MVA	5
Picacho	1-25 MVA	25.0 MVA	24.2 MVA	2
Arroyo	1-25 MVA	25.0 MVA	12.4 MVA	2
		167.2 MVA	124.5 MVA	17

These numbers indicate that at the present time EPE has sufficient substation capacity to survive the loss of the largest transformer (25 MVA) and still be able to provide service to all the customers.

The 24.9 kV system consists of 17 interconnected feeders. For future reference, the feeders served out of each substation and the June 1990 metered maximum demands for each feeder are as follows:

Substation	Feeder #	June 1990 Max. Demand
Las Cruces	4300	690 kVA
	4400	7,936 kVA
	4500	6,900 kVA
	4800	3,019 kVA
	14200	9,790 kVA
	14400	4,370 kVA
	L20	12,637 kVA
	L21	9,057 kVA
Salopek	S20	7,191 kVA
	S21	4,658 kVA
	S22	14,836 kVA
	S23	2,760 kVA
	S24	8,884 kVA
Picacho	P20	13,715 kVA
	P21	11,731 kVA
Arroyo	A20	energized in 1991
	A21	12,421 kVA

The physical locations of the four substations add to the high reliability of the system. Las Cruces substation is located close to downtown Las Cruces with its feeders heading towards the city limits in all directions. Picacho substation is located outside of the city limits north of town with its feeders coming in towards the center of town and also serving the loads north and east of town. Salopek substation is outside of the city limits south of town with its feeders coming into town and also

serving loads south and west of town and the NMSU campus. The newest substation, Arroyo, is outside of the city limits east of town with its feeders coming into town and also serving loads east of the city limits. It should be noted that only Las Cruces substation is located inside the city limits.

Figures 5, 6 and 7 are the one-line diagrams of the 24.9 kV distribution system. Although the feeders are interconnected by means of switches, the system is not operated as a network, rather, it is operated as 17 individual radial feeders by having open switches between the various feeders. The circled switches shown in the Figures are the "normally open" switches between feeders. This mode of operation allows EPE to open and close switches to either transfer load from one substation to another for load balancing or to pick up all or a portion of the load of an adjacent feeder in the event of a component failure in a feeder. The combination of the four substations and 17 feeders makes it possible for EPE to provide very reliable service to the Las Cruces area customers. The dashed line in the figures show the approximate location of the city limits.

In addition to the 24.9 kV distribution system, EPE also operates a 4.16 kV distribution system. This part of the system is relatively small and for the most part is located within the city limits of Las Cruces. This was the original distribution voltage level for the total city. Each 4.16 kV substation is fed off of the 24.9 kV feeders in such a way that the loss of a single 24.9 kV feeder will not cause a loss of service to any one substation. The 4.16 kV feeders are operated radially with normally open tie switches to adjacent feeders.

CONFIGURATION OF THE TRANSMISSION SYSTEM

If CLC decides to completely sever its connection to EPE within the city limits, the only bulk power substation that will be left to serve the city will be Las Cruces substation. In order to make this cut, it will be necessary to disconnect the 115 kV transmission line that connects Arroyo substation to Las Cruces substation and disconnect the line between Salopek and Las Cruces substation. In order for EPE to maintain a connection between Picacho and Salopek, it will be necessary for EPE to construct a new 16 mile long line between the two substations. The line would be routed west of town, beyond the city limits. With these disconnects, Las Cruces substation would only have the 115 kV tie to Dona Ana substation.

RECONFIGURATION OF THE DISTRIBUTION SYSTEM

In order for the CLC to sever the connection with EPE in the distribution system it will be necessary to "cut" all feeders when they cross a city limit. For each cut it will be necessary for EPE and/or CLC to construct new sections of feeders in order to reconnect the feeders on both sides of the city limit. El Paso Electric distribution maps have been used to determine

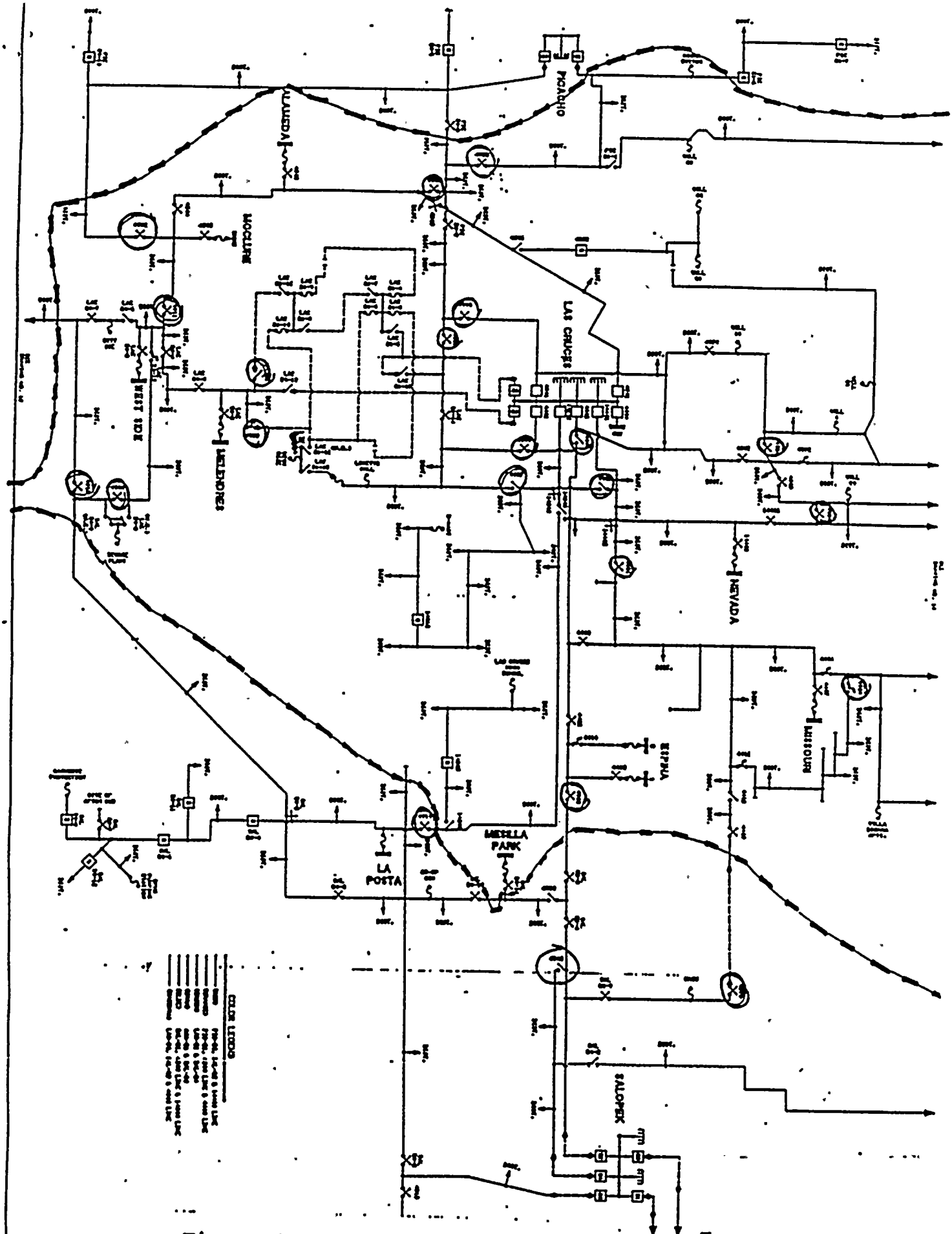


Figure 5 - 24.9 kV One-Line Diagram

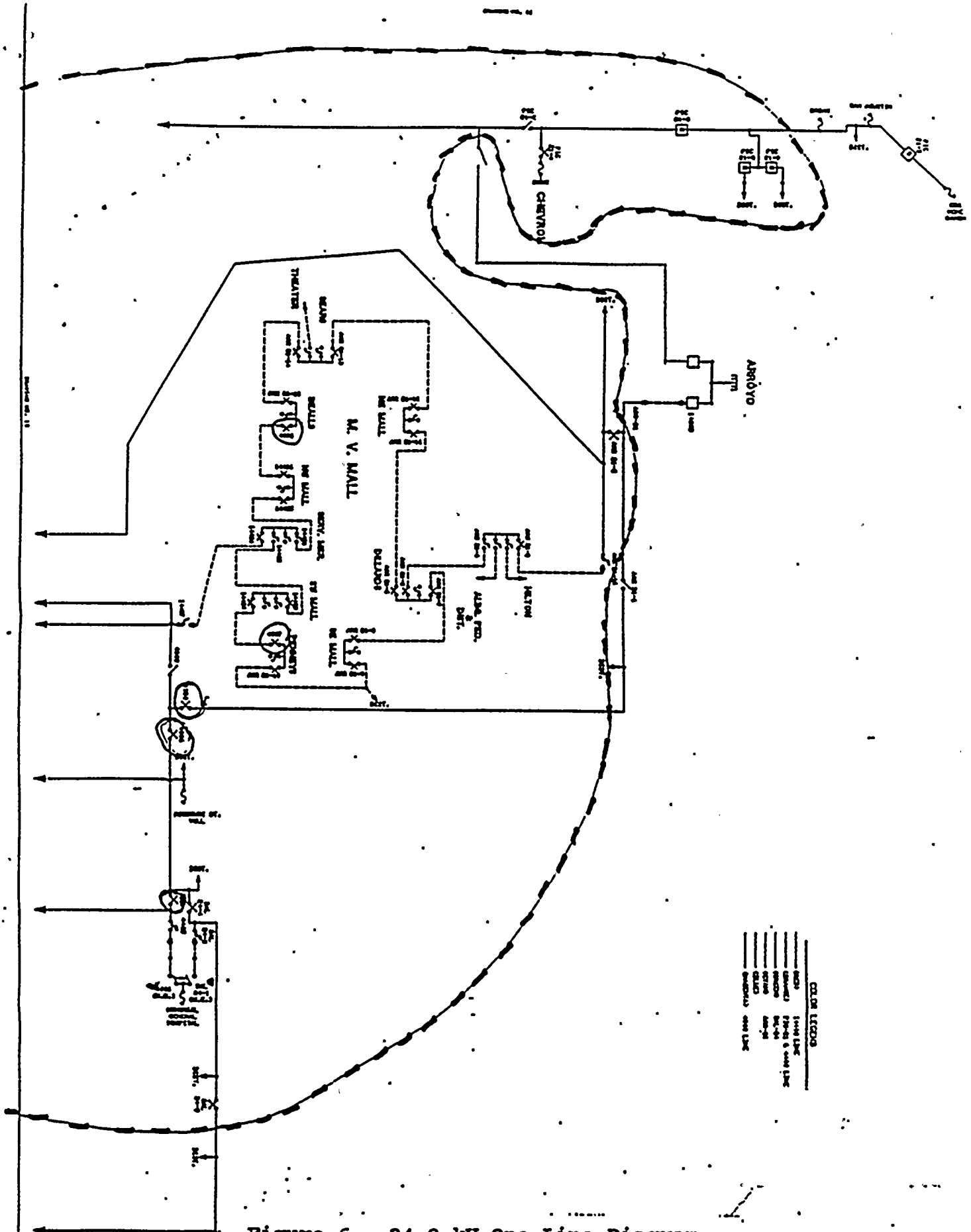


Figure 6 - 24.9 kV One-Line Diagram

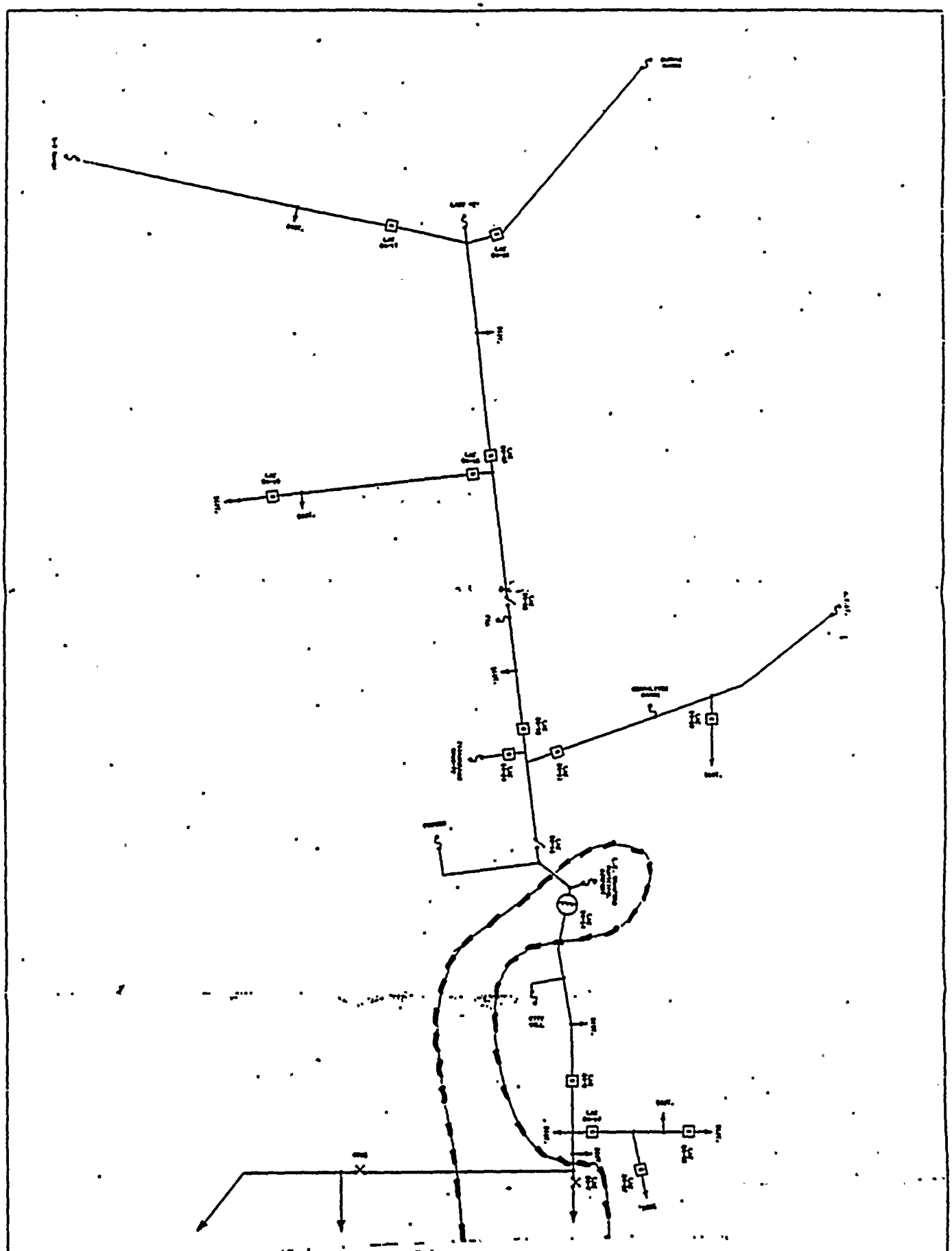


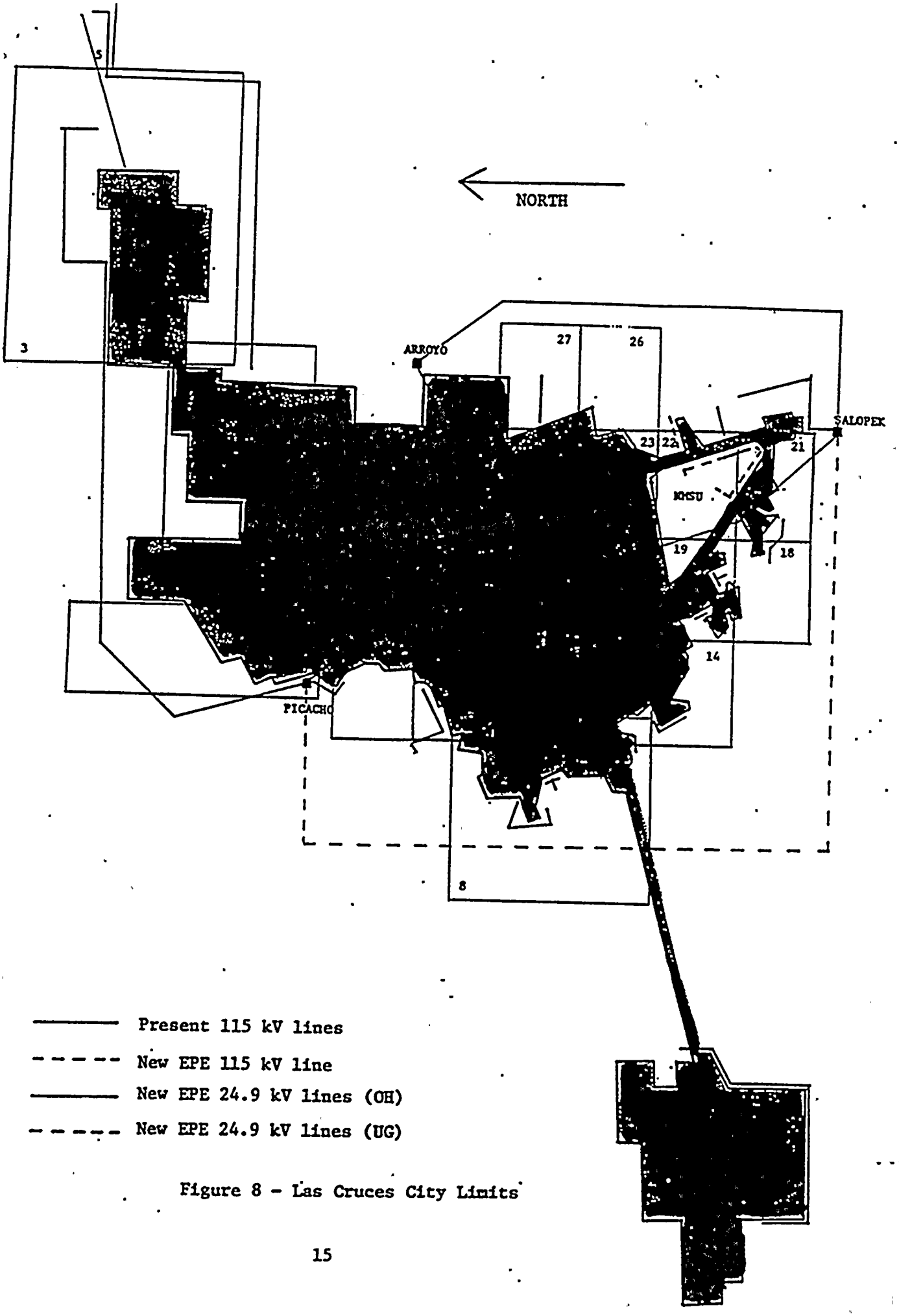
Figure 7 - 24.9 kV One-Line Diagram

the cuts and to route the new construction. For the purposes of this report, the distribution maps that contain a city limit have been numbered. The map numbers and other pertinent map information are as follows:

MAP #	EPE Map Title	Grid Coord.	Feeders
1	Dist. E.B.L.&T. Subdivisions	338.512	P20,P21
2	Organ Line	351.510	P21
3	Organ Line	356.517	P21
4	Organ Line	360.533	P21
5	Organ Line	377.526	P21
6	Organ Line	398.520	P21
7	Mesilla Valley - North Alameda	321.486	P20,4300,4500
8	Mesilla Valley - Picacho Brdg	314.481	S20,L20
9	Homested Sites West	307.474	L20
10	Rural Lines West	170.500	S20,L20
11	Las Alturas	356.457	S24
12	Salopek Distribution	350.458	S20,24
13	San Andres	320.480	4300
14	Old Mesilla	328.462	S20
15	Melendres	328.468	4400,14200
16	North Alameda	328.480	4500,P20
17	South Dona Ana Rd.	328.486	P20,P21,A21,4300
18	Watson Lane	336.456	S20,S24
19	Mesilla Park School	336.462	S21,S22,S24,14200
20	Four Hills	336.492	P21
21	University Estates	344.456	S22,S24
22	NMSU Campus	344.462	S20,S22,S24
23	Missouri-Telshor	344.468	4800,14400
24	Lohman/I10	344.474	4300,4800,14400
25	L.C. Dam South	344.480	A21
26	"A" Mountain	352.468	S24
27	Binns Enterprises	352.474	S24
N/M	No Map		

Figure 8 shows the location of each of these maps relative to the city limits. The figure also shows the location of the substations in the Las Cruces area and the existing 115 kV transmission lines.

The distribution maps were used to determine the cuts and total length of the various types of construction that will be needed. These are summarized below:



Present 115 kV lines

New EPE 115 kV line

New EPE 24.9 kV lines (OH)

New EPE 24.9 kV lines (UG)

Figure 8 - Las Cruces City Limits

Required New 24 kV Construction

MAP #	CUTS #	EPEC OH-3P (FT.)	EPEC OH-1P (FT.)	EPEC UG-3P (FT.)	CLC OH-3P (FT.)	CLC OH-1P (FT.)	CLC UG-3P (FT.)	CLC UG-1P (FT.)
10	2	30,000			32,000			
8	10	7,500	3,000					
15	3	700			600			
14	7	3,500	1,500		4,100			
19	17	6,600			1,000			
18	2	1,300						
21	10	4,100		2,800	1,900	2,500		
22	2	600		10,000			2,300	
11	11	1,300	1,200	9,500	1,000	500	1,500	500
12	0	17,000						
23	2						3,500	
26	1							
27	1	3,100						
24	0							
25	1							
3	13	58,100	1,200					
5	0	10,000						
N/M	0	18,000						
1	6	27,500	1,500					
17	5	700			1,000			
16	5	4,700	3,400					
13	1	500						
7	0	1,200						
	99	196,400	11,800	22,300	41,600	6,500	7,300	500

where: 3P-OH --- Three-phase overhead
1P-OH --- Single-phase overhead
3P-UG --- Three-phase underground
1P-UG --- Single-phase underground

Approximate costs for the 115 kV and 24.9 kV construction for EPE are shown below. The costs per foot are average costs to EPE for new construction in the Las Cruces area during the last few years.

El Paso Electric Co. Rebuild Costs

Construction Type	Length (ft.)	$/ft.	Cost
115 kV three-phase overhead	85,000	19.0	1,615,000
24.9 kV three-phase overhead	196,400	13.0	2,553,200
24.9 kV single-phase overhead	11,800	3.0	35,400
24.9 kV three-phase underground	22,300	125.0	2,787,500
		TOTAL COST	$6,991,100

Approximate costs for the 24.9 kV construction for CLC are shown below.

City of Las Cruces Rebuild Costs

Construction Type	Length (ft.)	$/ft.	Cost
24.9 kV three-phase overhead	41,600	13.0	540,800
24.9 kV single-phase overhead	6,500	3.0	19,500
24.9 kV three-phase underground	7,300	26.0	189,800
24.9 kV single-phase underground	500	12.0	6,000
		TOTAL COST	$756,100

There is a significant difference in cost per foot for the three-phase underground shown for EPE and CLC. For EPE the underground will be the main feed from Salopek substation for the Salopek #24 feeder. This is a heavily loaded feeder and will require 1000 MCM AL conductor. In addition, switches and fault detection will have to be installed for reliability purposes. For CLC, the required three-phase underground will only be a three-phase lateral and will not require the large conductor nor the switches and fault detectors.

A small amount of 4.16 kV distribution outside of the city limits will have to be upgraded to 24.9 kV by EPE. The line conversions are included above. The transformers that will have to be changed are as follows:

Required Replacement of
2.4 kV with 14.4 kV Single-Phase Transformers

MAP	50 kVA	25 kVA	15 kVA	10 kVA
19	5	4	5	3
16	2	2		3
	7	6	5	6

The costs for the transformer replacements are:

kVA Rating	Number	Unit Cost	Total Cost
50	7	810	5,670
25	6	635	3,810
15	5	520	2,600
10	6	540	3,240
		TOTAL COST	$15,320

EPE AND CLC TOTAL SEVERANCE COSTS

The total severance cost to EPE will be:

Total = Line rebuilds + transformers
= $ 6,991,100 + 15,320 = $ 7,006,420

The total construction cost to CLC will be $ 756,100.

RELIABILITY OF THE SEVERED SYSTEM

By severing from EPE, CLC will be forced to serve the total city from Las Cruces substation using the existing 8 feeders. The estimated maximum demand within the city limits last summer was 71 MW. As was shown earlier in this report, the maximum rating of the three transformers in Las Cruces substation is 67.2 MVA. In order to just meet the maximum demand of the city load, one new transformer will have to be added to an already overcrowded substation yard. The present system configuration will allow for the loss of service of one 25 MVA substation transformer. In order for CLC to maintain this same degree of reliability, a second new transformer will have to be added to the substation yard. The costs for these transformers and the costs of the transmission lines to serve Las Cruces substation will be presented in the next sections of the report.

The reliability of the distribution system will be greatly reduced when 8 feeders pick up the load that is presently shared by 17 feeders. While the feeders from the three substations outside of the city limits provide service to all of the customers outside of the city limits, these feeders provide service to many customers within the city limits. It will be possible to close existing normally open switches to provide these customers with service off of a feeder originating at the Las Cruces substation. Bear in mind that these customers will now be located near the ends of long radial feeders. If a portion of a radial feeder is out of service due to a line down, for example, there will not be the backfeed possibility that presently exists. Customers who are presently being served from one of the outside substations will not have the same degree of reliable service as before.

Two major loads within the city limits will have greatly reduced service. Memorial Medical Center is presently being served by the Salopek 24 feeder and the Las Cruces 4400 feeder. An automatic transfer switch is located within the center so that in the normal mode of operation, the center is served by Salopek 24. In the event that this feeder goes out of service for any reason, service to the center will continue by the automatic transfer to the Las Cruces 4400 feeder. In order to provide nearly the same degree of reliable service, it would be necessary for CLC to construct a new feeder from Las Cruces substation to the medical center.

The same situation exists at the city sewage plant. Presently the plant is served by Salopek 20 but there is an automatic switch at the plant that can connect the plant to Las Cruces 20. Again, if CLC is to provide nearly the same degree of service, a new line will have to be constructed from Las Cruces substation to the sewage plant. Costs for the construction of these new lines have not been included in this report.

DISTRIBUTION SYSTEM STUDY SUMMARY

This section of the report has presented what would have to be done in order to completely sever CLC from EPE at the distribution level. The costs associated with the severance and a short discussion about the reliability of the severed system have been presented.

The next section of the report will present an overview of the existing transmission system in southern New Mexico and an analysis of how the severed system could be served by a new supplier.

DEVELOPMENT OF THE BULK POWER SYSTEM

Bulk power transmission systems were originally built to transfer power from generating plants to load centers. Initially much of the generation was located fairly close to the actual loads. However, in the Western United States mine-mouth generation plants and hydroelectric plants are often several hundred miles away from load centers. Specific transmission lines were designed to transfer power from these remote sites to load centers.

As more of the facilities were installed, utilities soon saw the benefit of interconnecting systems for mutual backup. The interconnected system is more reliable than independent stand-alone systems. Utilities have also reduced their overall reserve margin requirements by setting up pools with their neighbors.

The problem with developing interconnections lay in the distances involved. Electrically the Western United States is characterized by systems of high load density amongst a vast geographical area. As a result interconnections in the West tend to be several hundred miles in length.

THE SOUTHERN NEW MEXICO SYSTEM

In West Texas and Southern New Mexico (SNM) the system developed along the scenarios outlined above. Originally the load was served by local plants. Hydroelectric power was brought in via the U.S. Bureau of Reclamation's 115 kV line from Elephant Butte. Power sources were developed in the Four Corners area and a 355+ mile 345 kV tie was made to this source in 1969. Since then two other 345 kV lines have connected SNM to Arizona. A tie has also been made to Eastern electrical systems via a fixed capacity Direct Current (DC) link.

The SNM bulk power system has been designed to transfer remotely generated power to serve the anticipated loads in the area. Specifically the following companies have load responsibility in SNM:

El Paso Electric (EPE)
Texas - New Mexico Power (TNP)
Plains Electric (PGT) - through their members
Public Service of New Mexico (PNM)
Western Area Power Administration (WAPA) New Mexico

The Eastern link is capable of 200 MW. The transfer into SNM from the west and north is over three 345 kV lines and a 115 kV circuit:

Greenlee to Hidalgo 345 kV
Springerville to Luna 345 kV
West Mesa to Arroyo 345 kV
West Mesa to Belen 115 kV

The transfer limit into SNM over the lines is 767 MW as outlined in an arbitration order between PNM and EPE dated December 16, 1990.

A simulation of 1993 conditions shows a 728 MW transfer into SNM over these lines or 95% of the limit. Figure 9 and 10 depict the Arizona and New Mexico bulk power system for 1993. Line flows are shown in MW's and MVAr's.

The total peak West Texas - Southern New Mexico load and losses in 1993 is anticipated to be 1504 MW. The loads and losses with the resources to serve them are shown below:

Load and Losses		Resources to serve the SNM Load and Losses	
EPE *	1059 MW	North & west transfers into SNM	728 MW
TNP	207 MW	Eastern transfer into SNM (DC)	200 MW
CFE **	150 MW	EPE generation	552 MW
PGT	65 MW	WAPA New Mexico generation	24 MW
PNM	17 MW		1504 MW
WAPA	6 MW		
	1504 MW		

* CLC is 7.5 % (79 MW) of EPE load
** CFE load is an EPE sale to Mexico

The 728 MW import into Southern New Mexico from the west and north consists of:

Four Corners	(EPE)	104 MW
Palo Verde	(EPE)	502 MW
Utah Economy	(EPE)	15 MW
Four Corners	(PNM)	60 MW
PEG's	(PGT)	47 MW
		728 MW

The 1990 simulated peak condition transfer into SNM from the west and north is 780 MW. The 1990 transfer is 52 MW higher than the 1993 projection of 728 MW. While transfers are generally expected to increase into SNM, anomalies such as this do occur. The decrease in transfer is a result of the 1990 system having greater dependency on remote generation from the west and north to serve the SNM loads. The trend beyond 1993 is expected to be the opposite with transfers increasing from the west and north into SNM.

The 200 MW import into Southern New Mexico from the east consists of:

SPS sale to EPE	173 MW
SPS sale to TNP	27 MW

The Texas - New Mexico (TNP) 207 MW power needs are supplied by:

EPE	137 MW
PNM	43 MW
SPS	27 MW
	207 MW

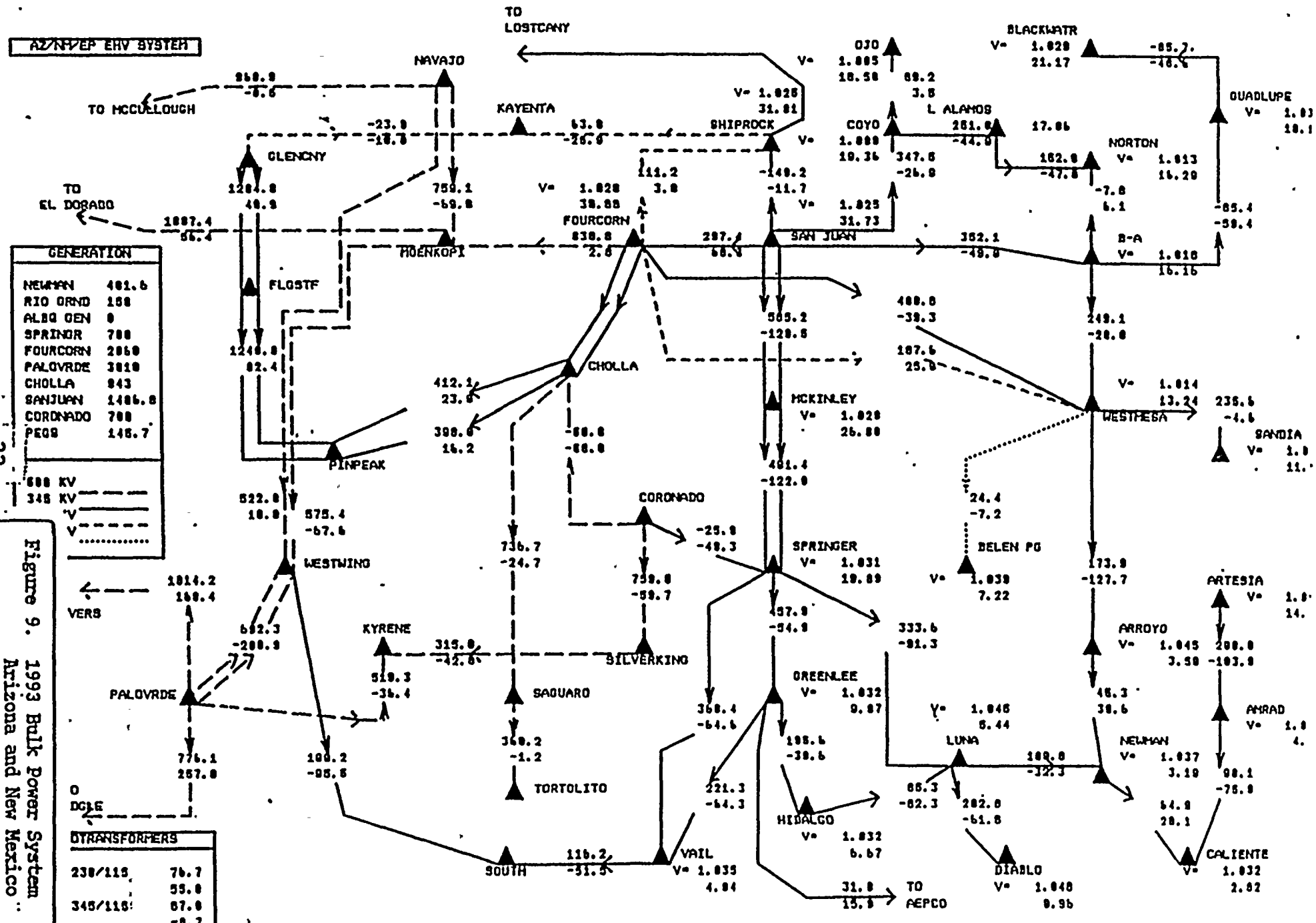


Figure 9. 1993 Bulk Power System Arizona and New Mexico

1993 BASE CASE FOR LAS CRUCES STUDY
CASE TAKEN FROM 1998 EPEC NEAR TERM PLAN
D MALONE 18 APRIL 1991

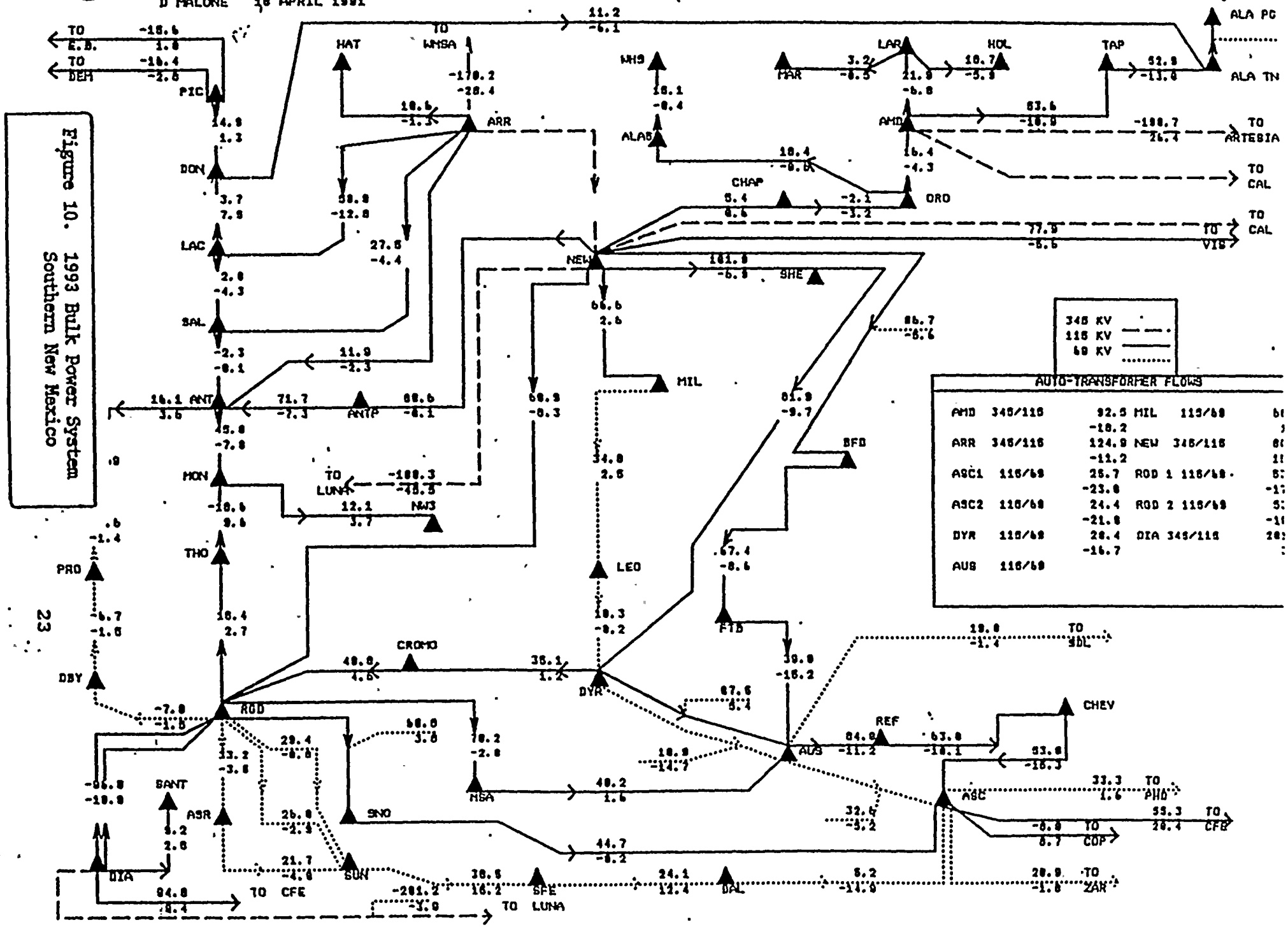


Figure 10. 1993 Bulk Power System
Southern New Mexico

The PGT load and losses of 65 MW is served by 47 MW from PEG's and 18 MW from WAPA NM.

INCREMENTAL FLOWS INTO SOUTHERN NEW MEXICO

It is important to know what path power travels from the resources to the loads. Note that schedules are planned from the west, north and east. The 1993 base case was used to determine the percentage of a schedule from these points to the Las Cruces 115 kV bus. Figures 11 through 16 show the change in flow for a 10 MW schedule. The normalized results are shown below:

	WEST Palo Verde	NORTH 4-Corn
Greenlee to Hidalgo 345 kV	36 %	33 %
Springerville to Luna 345 kV	30 %	29 %
West Mesa to Arroyo 345 kV	31 %	34 %
West Mesa to Belen 115 kV	4 %	5 %

(due to roundoff total percentage does not equal 100 %)

The lines represented are those used for the Southern New Mexico transfer limit. The west and north transfers must all pass over these lines. For a schedule from either location, the circuits share the power fairly evenly. An inconsequential amount of an Eastern transfer would pass over these lines.

The Arizona 345 kV lines carry 66 % of a west schedule and 62 % of a north schedule. These schedules pass through Luna substation and on towards Las Cruces with the following split:

	WEST Palo Verde	NORTH 4-Corn
Luna to Mimbres 115 kV	14 %	13 %
Luna to Diablo 345 kV	19 %	18 %
Luna to Newman 345 kV	32 %	30 %

(percentages do not total to 66 % and 62 % due to roundoff)

Figures 11 through 16 show the percentage of power flowing on the 345 kV system to the Arroyo substation. This is approximately 46% with the remaining power flowing via the 115 kV network.

How does an Eastern schedule flow across the system? Following the 345 kV path from Artesia, each point where power can be dropped is checked:

	EAST Artesia
AMRAD 345 kV to 115 kV	21 %
Caliente 345 kV to 115 kV	11 %
Newman 345 kV to 115 kV	13 %
Newman to Luna 345 kV	7 %
Newman to Arroyo 345 kV	47 %

(due to roundoff total percentage does not equal 100 %)

1993 INCREMENTAL CASE (IC)
10 MW INCREMENTAL PALO VERDE TO LAS CRUCES
D MALONE 22 APRIL 1991

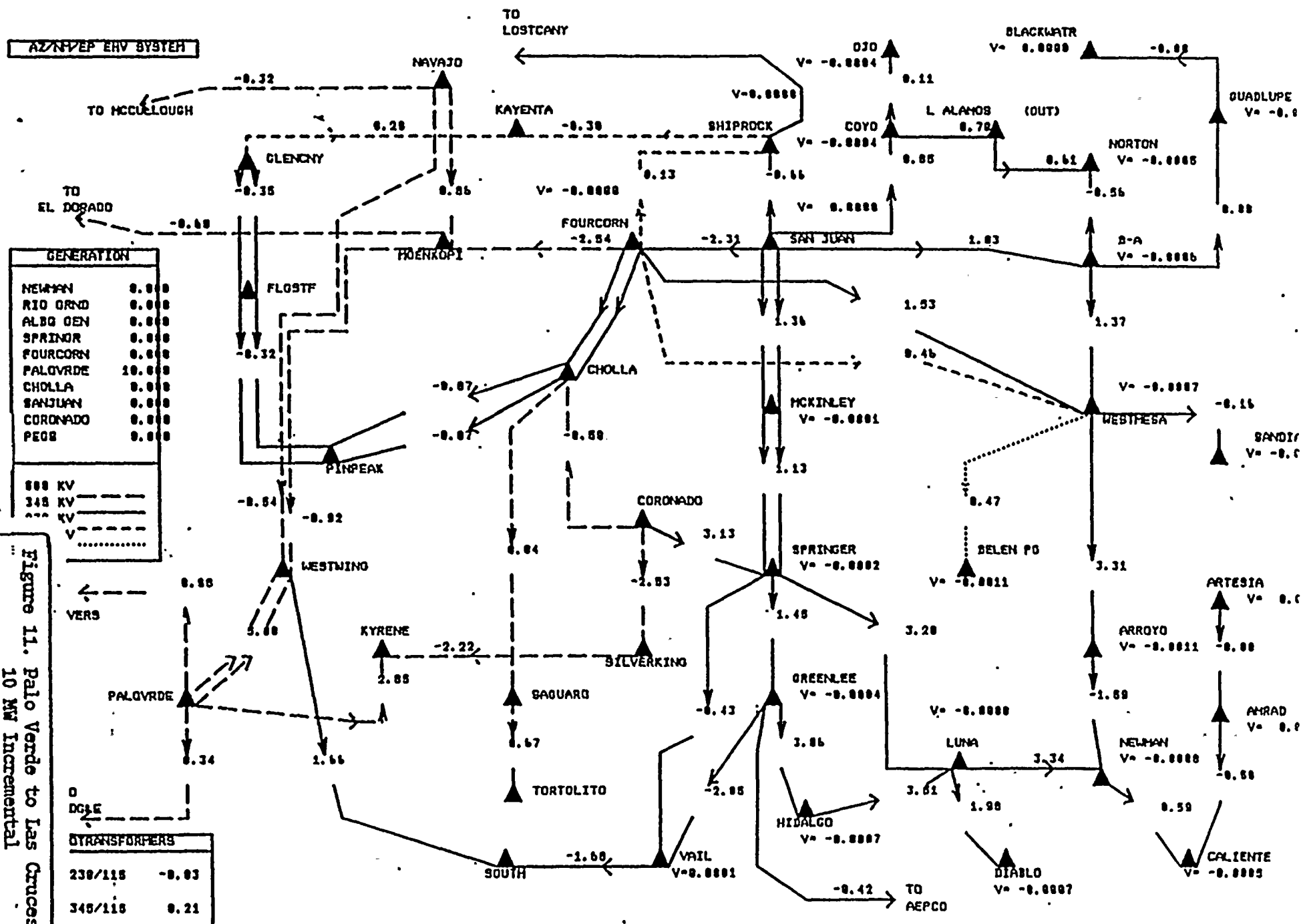


Figure 11. Palo Verde to Las Cruces
10 MW Incremental
AZ / NM 1993 Base

25

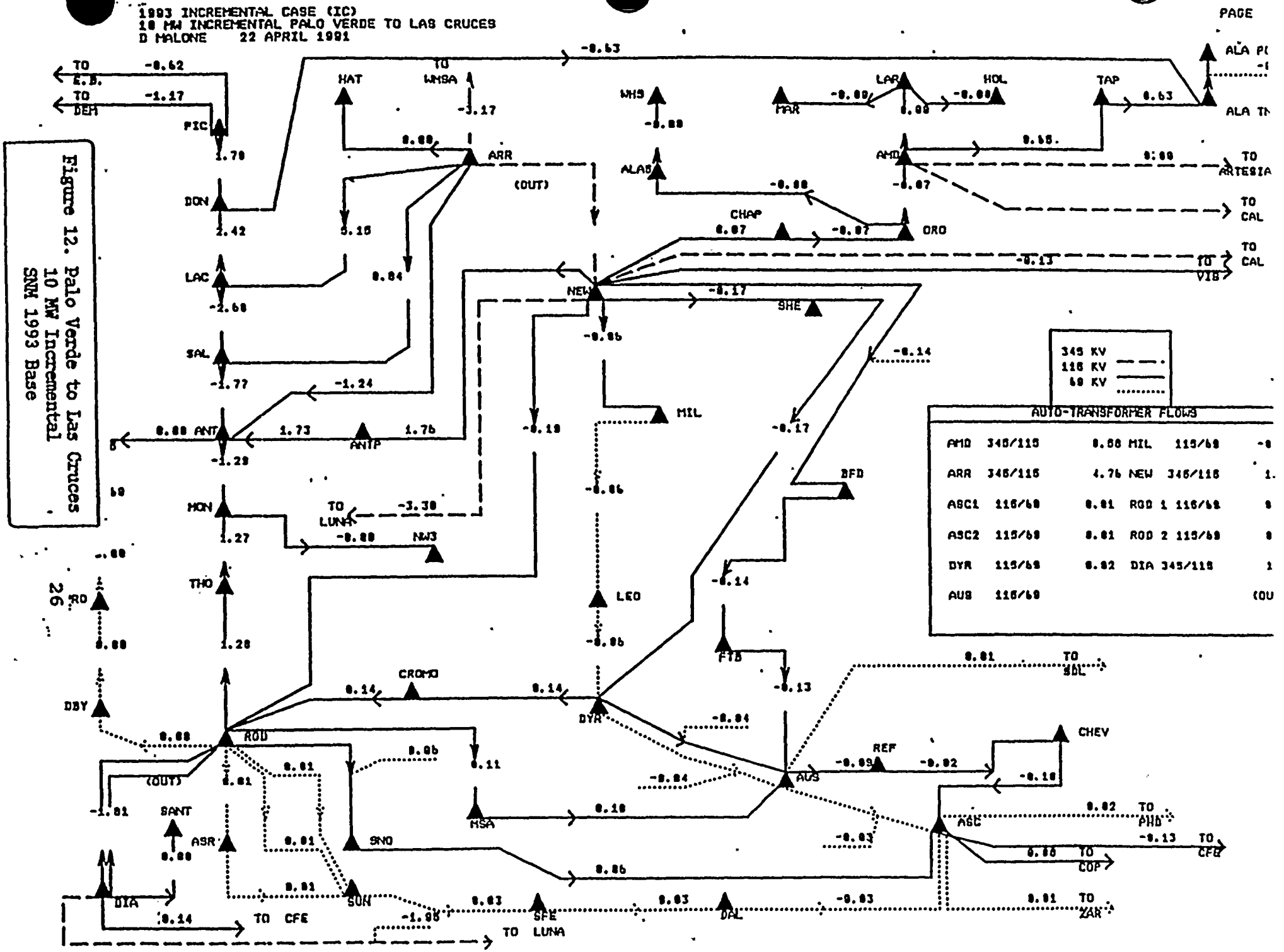


Figure 12. Palo Verde to Las Cruces
10 MW Incremental
SNM 1993 Base

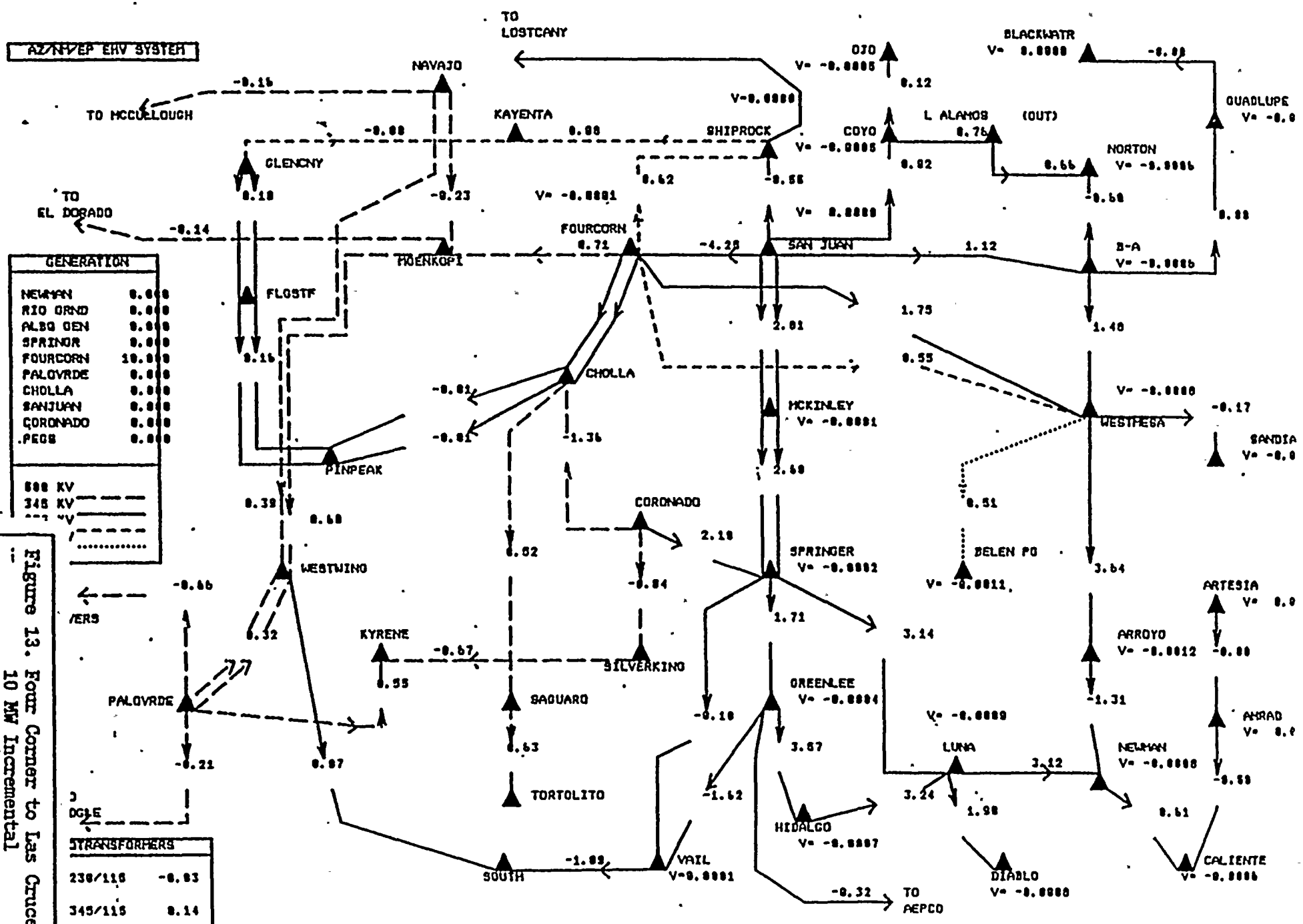


Figure 13. Four Corner to Las Cruces
10 MW Incremental
AZ / NM 1993 Base

27

1993 INCREMENTAL CASE (IC)
10 MW INCREMENTAL FOUR CORNERS TO LAS CRUCES
D MALONE 22 APRIL 1991

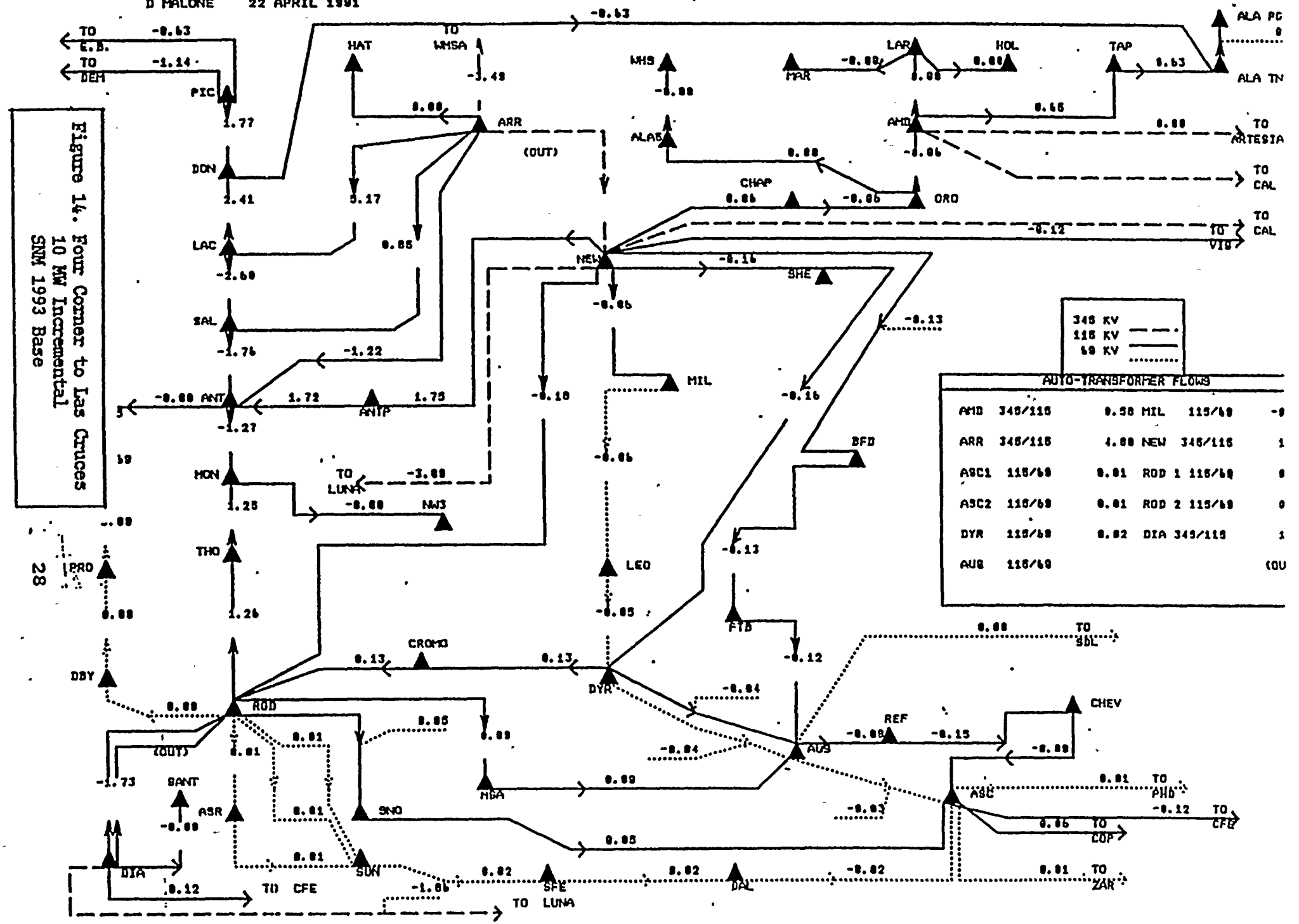


Figure 14. Four Corner to Las Cruces
10 MW Incremental
SNM 1993 Base

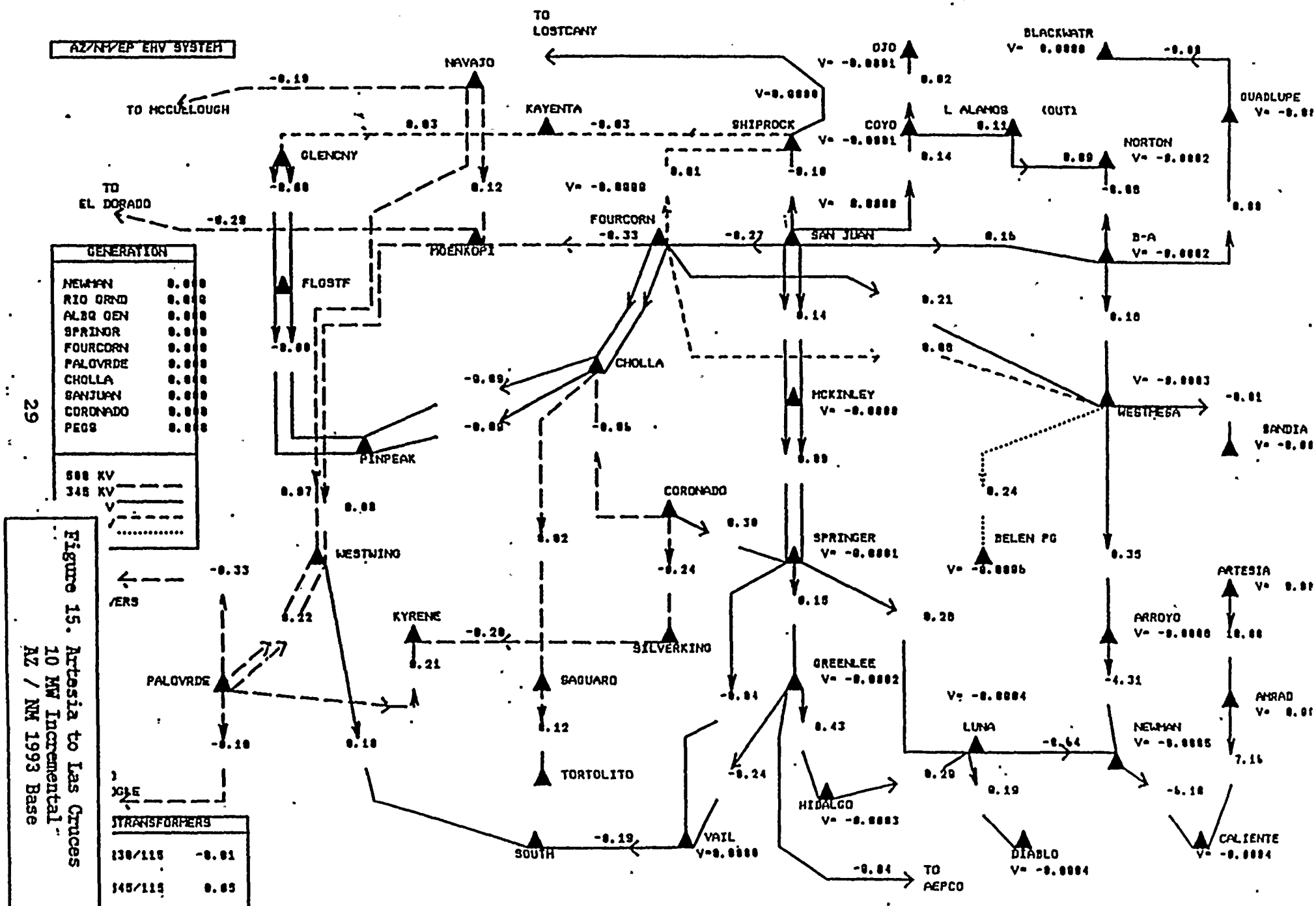
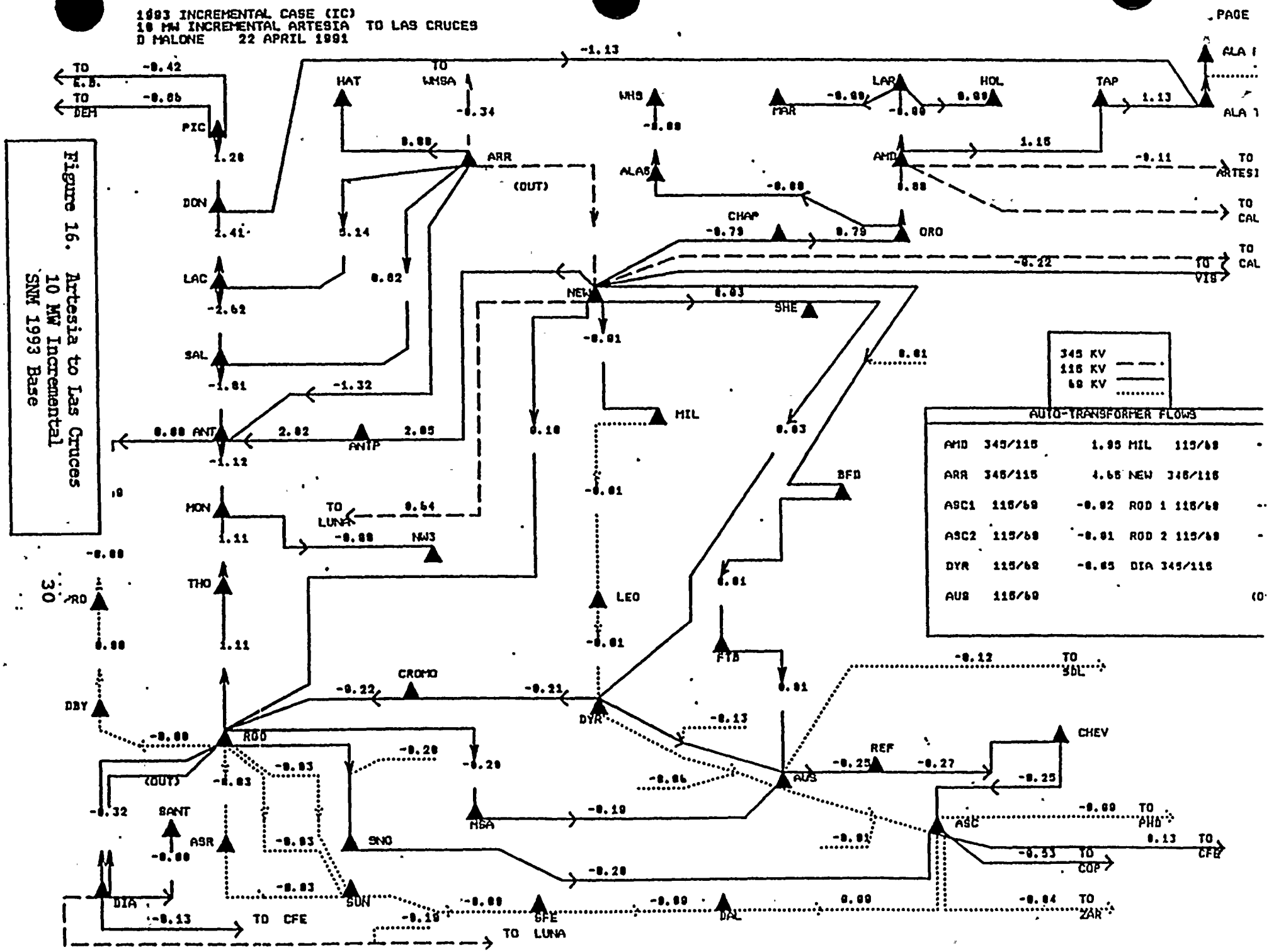


Figure 15. Artesia to Las Cruces
10 MW Incremental
AZ / NM 1993 Base


1993 INCREMENTAL CASE (IC)
10 MW INCREMENTAL ARTESIA TO LAS CRUCES
D MALONE 22 APRIL 1991
PAGE
Figure 16. Artesia to Las Cruces
10 MW Incremental
SNM 1993 Base
345 KV
115 KV
69 KV
AUTO-TRANSFORMER FLOWS
AMD 345/115 1.95 MIL 115/69
ARR 345/115 4.66 NEW 345/115
ASC1 115/69 -0.02 ROD 1 115/69
ASC2 115/69 -0.01 ROD 2 115/69
DYR 115/69 -0.65 DIA 345/115
AUS 115/69
PIC
DON
LAC
SAL
ANT
ANTP
MON
THO
PRO
DBY
HAT
ARR
(OUT)
CHAP
ORO
NEW
SHE
MIL
BFD
LEO
FTS
CROMO
ROD
DYR
AUS
REF
CHEV
ASC
SNO
SUN
SANT
ASR
DIA
HSA
SFE
DAL
MAR
LAR
HOL
TAP
AMD
ALAS
WHS
TO ARTESI
TO CAL
TO VIS
TO LUNA
TO SDL
TO PHO
TO CFE
TO COP
TO ZAR
TO CFE
TO LUNA

For the Eastern schedule, 47 % of the power will flow on the 345 kV system to the Arroyo substation. This corresponds closely with the figures for the west and north schedules.

Finally, focusing in on Las Cruces, a last set of lines are examined:

	WEST Palo Verde	NORTH 4-Corn	EAST Artesia
Luna to Picacho 115 kV	11 %	11 %	8 %
Elephant Butte to Picacho 115 kV	6 %	6 %	4 %
Alamogordo to Picacho 115 kV	6 %	6 %	11 %
Arroyo to Las Cruces 115 kV	51 %	51 %	50 %
Arroyo to Salopek 115 kV	8 %	8 %	8 %
Anthony to Salopek 115 kV	17 %	17 %	18 %

(due to roundoff total percentage does not equal 100 %)

The above set depicts all the local paths the schedule follows into Las Cruces.

Notice that there is no explicit control over the path taken by the flow of schedules from west, north and east to Las Cruces. The flow is wholly dependent on the impedance path from point to point regardless of who owns the lines. Electricity moves through the system in whatever paths afford it the least impedance according to the laws of physics.

If an additional 345 kV line is added to the system from the west, north or east to the Las Cruces area, it would share any schedule from these points with the existing 345 kV lines.

OUTAGES OF PRINCIPLE LINES INTO SOUTHERN NEW MEXICO

What happens when a circuit is lost? The remaining lines pick up the flow in relation to the inverse of the impedance. To prepare for this occurrence, the total transfer into SNM must be kept at a level that can be accommodated by the remaining lines.

Referring back to the 1993 Power Flow case, an outage was taken on each of the three principle lines into Southern New Mexico. Figures 17 through 19 depict the flows for these outages. The flows indicate that the remaining system is operating within acceptable limits for each of the outages.

It is interesting to know how the power redistributes itself over the remaining lines. The table below summarizes the redistribution of the power for the respective outage:

	Base Flow	Grn-Hdg	Spr-Lun	WMs-Arr
Greenlee to Hidalgo 345 kV	195 MW	--	68 %	49 %
Springerville to Luna 345 kV	333 MW	68 %	--	42 %
West Mesa to Arroyo 345 kV	173 MW	28 %	28 %	--
Other		4 %	4 %	9 %

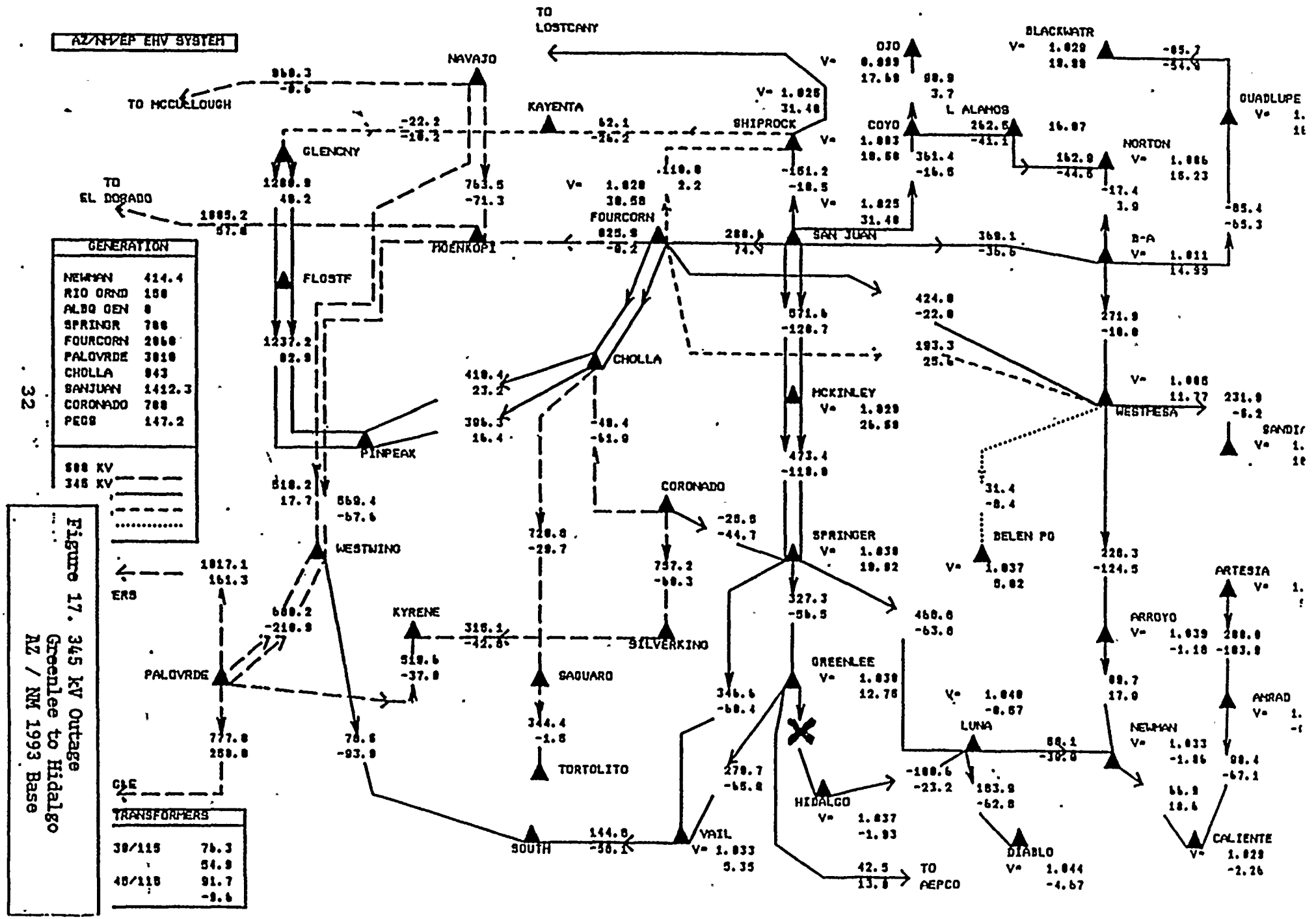


Figure 17. 345 kV Outage
Greenlee to Hidalgo
AZ / NM 1993 Base

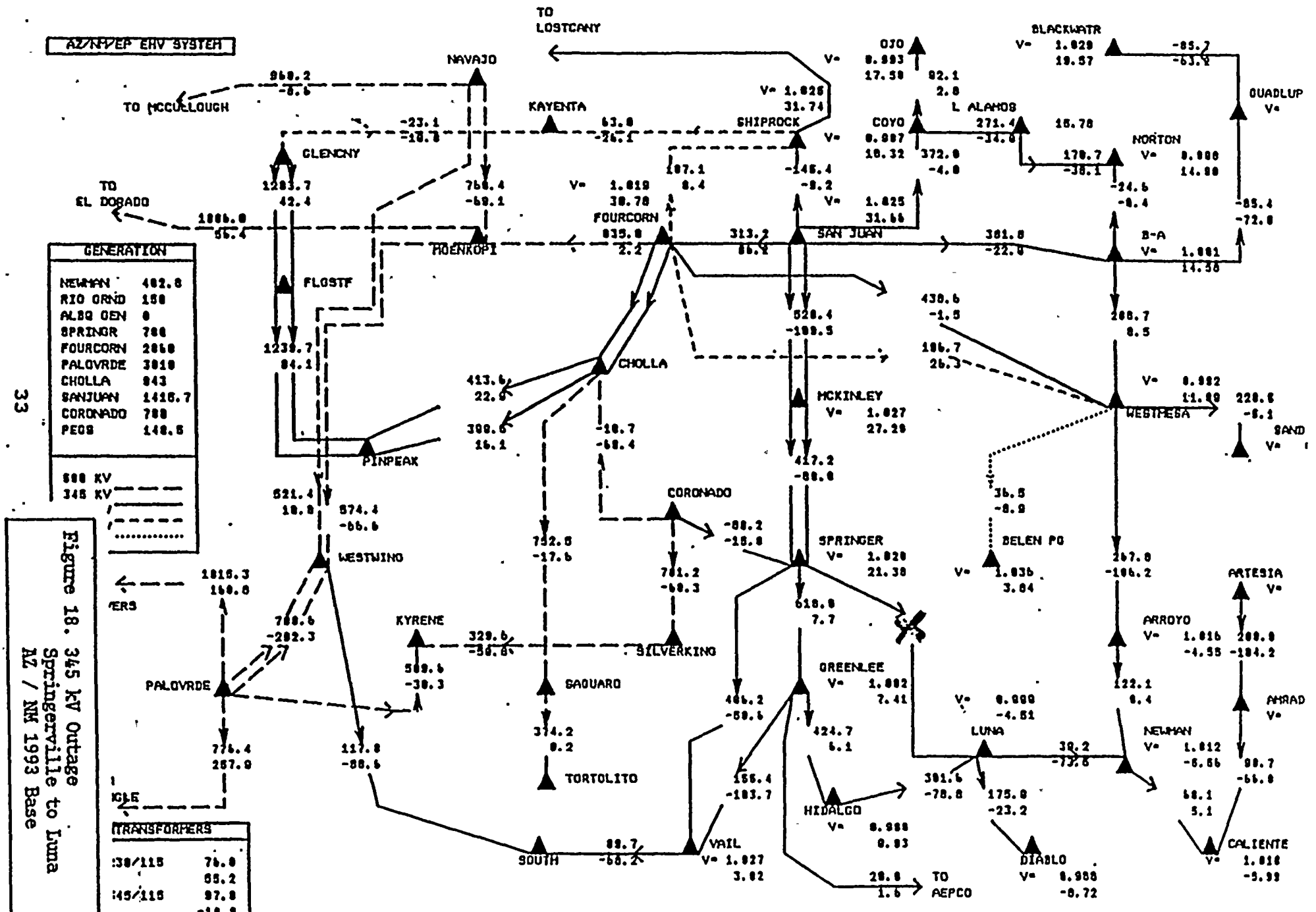


Figure 18. 345 kV Outage
Springerville to Luna
AZ / NM 1993 Base

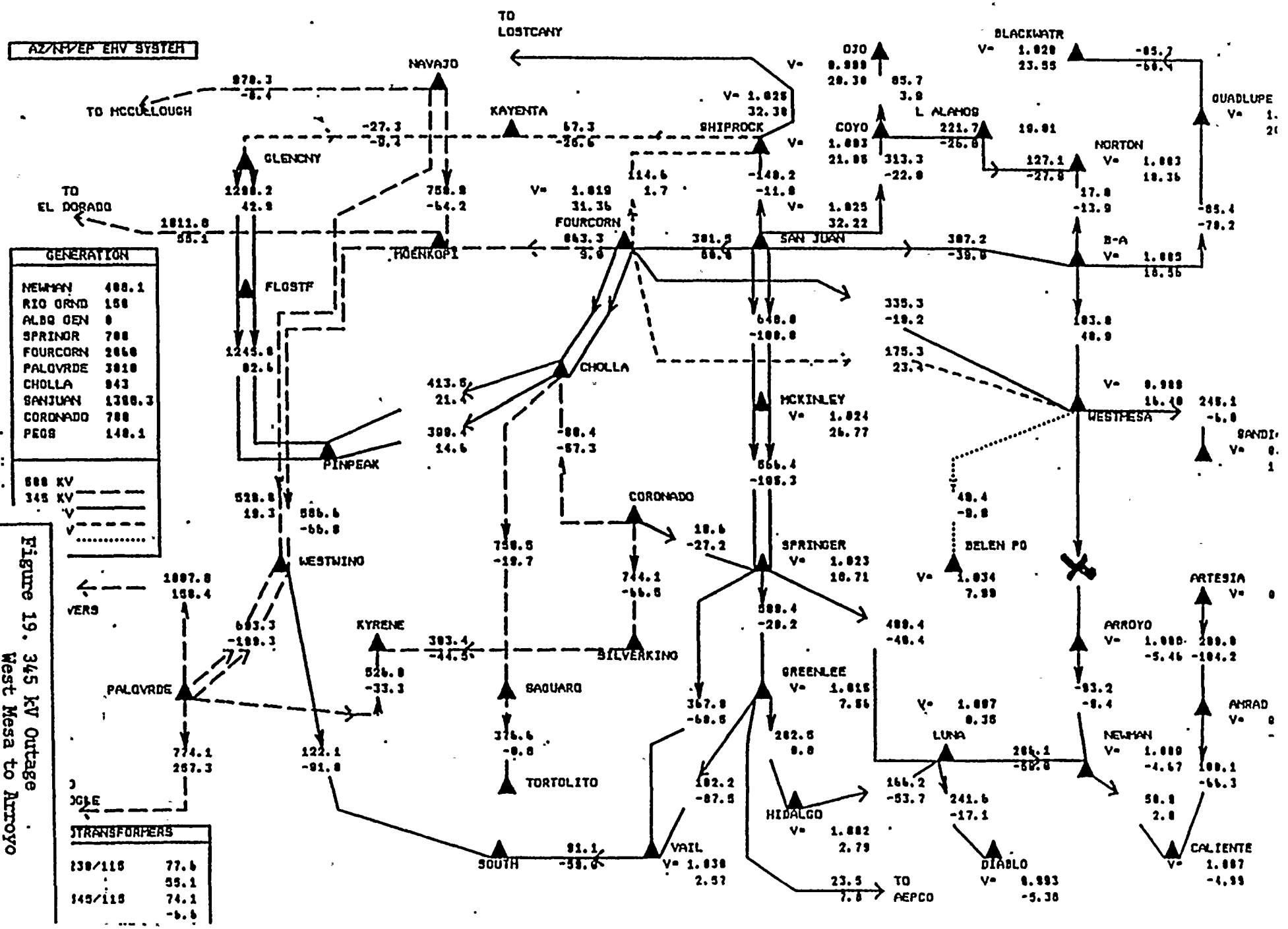


Figure 19. 345 kV Outage
West Mesa to Arroyo
AZ / NM 1993 Base

For loss of the Greenlee to Hidalgo circuit, 68 % of the 195 MW flow would redistribute to the Springerville to Luna line. Twenty-eight percent would go over West Mesa to Arroyo. The remainder would come down the 115 kV from Albuquerque.

For loss of the Springerville to Luna circuit the splits are identical to the loss of Greenlee to Hidalgo. Greenlee to Hidalgo picks up 68 % of the 333 MW flow and West Mesa to Arroyo picks up 28 %. Though the split percentages are the same, the amount of power being split is different.

For loss of the West Mesa to Arroyo circuit the remaining two circuits share the split more evenly. Greenlee to Hidalgo picks up 49 % of the 173 MW flow and Springerville to Luna picks up 42 %.

Are these results what might be expected? While it has been shown a schedule from the west or north roughly divides equally among the paths, the total flow over each of the paths is not equal. Nor does power spit evenly among the remaining lines after an outage.

The system is a complex arrangement of circuits connecting loads and resources. While intuitively it may appear that the system will respond in a certain manner, it takes studies to determine the effect of schedules, outages, and circuit additions.

FUTURE NEED FOR TRANSMISSION ENHANCEMENT

All the columns of numbers tell a story, but only for one instant in time. The system is dynamic and the load is changing. The change is constant - hourly, daily, seasonally, yearly. The cases discussed above are for the anticipated peak hour in 1993. Loads will continue to grow beyond those depicted for 1993 (albeit at probably a modest 2 to 3 percent a year). The parties responsible for serving load in Southern New Mexico must anticipate this growth and ensure that there are adequate resources to meet the load. While short term plans show the addition of some resources within Southern New Mexico, most future resources lie outside the region.

While the transmission system is adequate today, it will reach its capacity at some point in the future. At that point those having load responsibility in Southern New Mexico will have to enhance the bulk power system.

The present limit for resources to the west and north of the SNM region is 767 MW. The four utilities with load responsibility in SNM currently have plans that require a combined transfer of 904 MW from the west and north.

POSSIBLE AVENUES FOR POWER TRANSFERS

Whatever supplier is selected to meet the needs of the City of Las Cruces (CLC), an adequate transmission path will be required between the source and the load. The City has stated that any system they may establish will have the same degree of "reliability" as that which has been provided by EPE.

EPE, as a member of the Western Systems Coordinating Council (WSCC), adheres to a deterministic reliability criterion. In part this criteria requires that the bulk power system must be able to survive the loss of the single largest hazard. With respect to transmission, this means that the system must withstand the loss of any transmission element with no degradation of service to customers.

The bulk power system as used here will be from a supplier's firm point of delivery to the City's 24.9 kV bus.

At the distribution level, this single contingency criteria may also be used for large customers if provisions have been made for an uninterruptable power supply. The criteria is not normally used for residential or commercial customers.

With this criteria in mind, there are three possible sources for power (excluding EPE). In very general terms these are from the west, north and east. Without regard to specific suppliers (except for power from the east), points were established in the WSCC grid where power could be delivered by a supplier.

These are:

Springerville 345 kV Bus (west)
Four Corners 345 kV Bus (north)
Artesia 345 kV Bus (east)

Two sets of conditions were explored for deliver of power from each of these points to the City:

"Best" Case Conditions:

That there is full cooperation of all the utilities in the area (including EPE) allowing access to transmission capacity where available.

That the City remains interconnected with EPE.

That wheeling paths are "firm", i.e. meet the reliability single contingency criteria.

That the owners of the systems are willing to provide wheeling at a tariff rate established with the FERC.

That the suppliers will provide firm power, i.e. an alternate supply of backup power is not required (with the exception of SPS).

"Worst" Case Conditions:

That there is no access to EPE system including any backup capability.

That the City is completely severed from system components wholly owned by EPE.

That the reliability criteria requires two feeds from source of supply to the City's 24.9 kV bus. Each feed must be capable of serving the entire City load.

With the criteria established, six alternatives were developed:

CLC purchase from the east (Artesia delivery point - SPS)

"Best" Case

1.	Artesia DC Tie upgrade	$40.0 million
2.	115 kV to 24.9 kV Step-down in Las Cruces	$ 2.6 million
3.	Wheeling across EPE's system	$3.00 kW-Mo
4.	Transmission power and energy losses	5 %
5.	Backup power arrangement with EPE.	$1.80 kW-Mo
6.	Area Control	$1.00 kW-Mo

"Worst" Case

1.	Independent Artesia DC Tie	$40.0 million
2.	200 mile 345 kV Artesia to Las Cruces	$33.2 million
3.	65 mile 345 kV Luna to Las Cruces	$11.3 million
4.	345 kV to 115 kV Step-down in Las Cruces	$ 3.1 million
5.	115 kV to 24.9 kV Step-down in Las Cruces	$ 2.6 million
6.	Transmission power and energy losses	5 %
7.	Wheeling path to Luna 345 kV	$5.03 kW-Mo
8.	Backup power arrangement with "someone" (PNM, PG&T, other)	$1.80 kW-Mo
9.	Area Control	$1.00 kW-Mo

CLC purchase from the north (Four Corners delivery point)

"Best" Case

1.	115 kV to 24.9 kV Step-down in Las Cruces	$ 2.6 million
2.	Wheeling across PNM's system	$10.62 kW-Mo
3.	Wheeling across EPE's system	$ 3.00 kW-Mo
4.	Transmission power and energy losses	5 %
5.	Area Control	$ 1.00 kW-Mo

"Worst" Case

1.	355 mile 345 kV Four Corners to Las Cruces	$58.3 million
2.	65 mile 345 kV Luna to Las Cruces	$11.3 million
3.	345 kV to 115 kV Step-down in Las Cruces	$ 3.1 million
4.	115 kV to 24.9 kV Step-down in Las Cruces	$ 2.6 million
5.	Transmission power and energy losses	5 %
6.	Wheeling path to Luna 345 kV	$5.03 kW-Mo
7.	Area Control	$1.00 kW-Mo

CLC purchase from the west (Springerville delivery point)

"Best" Case

1.	115 kV to 24.9 kV Step-down in Las Cruces	$2.6 million
2.	Increase SNM transfer limit	$3.19 kW-Mo
3.	Wheeling across EPE's system	$3.00 kW-Mo
4.	Transmission power and energy losses	5 %
5.	Area Control	$1.00 kW-Mo

"Worst" Case

1.	285 mile 345 kV Springerville to Las Cruces	$47.0 million
2.	65 mile 345 kV Luna to Las Cruces	$11.3 million
3.	345 kV to 115 kV Step-down in Las Cruces	$ 3.1 million
4.	115 kV to 24.9 kV Step-down in Las Cruces	$ 2.6 million
5.	Transmission power and energy losses	5 %
6.	Wheeling path to Luna 345 kV	$5.03 kW-Mo
7.	Area Control	$1.00 kW-Mo

The least expensive alternative is a supply from the west under the "Best" Case conditions.

The most expensive alternative is a supply from the east under the "Worst" Case conditions. The expenses of a DC tie and 265 miles of 345 kV transmission overwhelms the other alternatives.

ASSUMPTIONS FOR FUTURE TRANSFERS

Inherent with each alternative are underlying assumptions that would have to occur in order to obtain the respective transmission path. Among these assumptions are:

WHEELING

Note that fees used in the analysis are values currently in effect. They are subject to change as additional facilities are added or other costs change. No attempt was made to forecast fee changes.

Eastern Supplier

A $3 kW-Month fee is used for wheeling across EPE's system. It is assumed that capacity in the 345 kV path from Artesia to AMRAD is sufficient for all the parties needs for a ten year period 1993-2002. Beyond ten years, the City would be able to cooperate with EPE and TNP in additional transmission capacity.

This assumes that EPE's and TNP's need for the path remain at 200 MW with the capacity above this going to the City. The City's expected load in 2002 is 108 MW (medium growth) putting the load on the line at 308 MW.

The remaining system from AMRAD to Las Cruces would also be able to accommodate the expected flow for the ten year period.

If EPE or TNP require more than 200 MW over this path in the ten year period, the City would be obliged to participate in projects with EPE and TNP to enhance the transmission capability.

Western and Northern Suppliers

Transfers from the north and west are complicated by limits on the existing system. The system into Southern New Mexico is limited to 767 MW as established under an arbitration ruling dated December 16, 1990 between PNM and EPE:

Transfer limit	560 MW
Threshold Band	40 MW
Pre-compensation limit	600 MW
Adder for compensation provided by EPE capacity purchase of 50 MWs from PNM (50 / 0.3).	167 MW
Total	767 MW

EPE and others will need transfer capability totaling 904 MW:

EPE (Palo Verde)	600 MW
EPE (Four Corners)	104 MW
PNM Rights	75 MW
TNP Rights	75 MW
PGT Rights	50 MW
	904 MW

The 1993 WSCC Power Flow Study discussed earlier shows a transfer into Southern New Mexico of 728 MW or 95% of the limit (peak condition). By 1995 the 767 MW limit will be reached.

Two things can be done to increase the limit:

1. Add transmission capacity
2. Run PNM units in the Albuquerque area (PNM has quoted a $5.03 kW-Month capacity charge + fuel).

For the north transfer, it was assumed that the total PNM cost of transmission backed wheeling would be incurred. Total cost for wheeling and increasing the transfer limit would be $13.62 kW-Month:

$3.00 kW-Month (EPE wheeling)
$3.00 kW-Month (PNM wheeling)
$2.03 kW-Month (Albuquerque unit capacity charge to increase transfer limit)
$5.59 kW-month (Albuquerque unit energy charge to increase transfer limit)

For the west transfer, it was assumed that 0.3 MW of the transfer would impact PNM. This translates to $3.19 kW-Month ($10.62 * 0.3). Wheeling would be on the EPE system at $3.00 kW-Month. Total cost for the" Best" case scenarios for wheeling and increasing the transfer limit would be $6.19 kW-Month:

$3.00 kW-Month (EPE wheeling)
$3.19 kW-Month (PNM charge to increase transfer limit)

No estimate is made on how long this arrangement would work. The number of players in the game adds to the uncertainty. At some point additional transmission will be required. The City would probably have to participate in such additions.

"BEST" CASE BACKUP POWER

Eastern Supplier

The Eastern Supplier alternative is unique due to the requirement for a DC tie. If it is lost, the firm supply is lost. Capacity in paralleling DC ties is fully committed. It follows that these other DC ties cannot be used for backup. That leaves the City with the necessity of finding an alternate supply on its side of the DC tie for backup. It is assumed that securing an alternate backup supply is cheaper than building a duplicate DC tie.

The backup source would also be required for an outage of any section along the Artesia - AMRAD - Caliente - Newman 345 kV line. The system would be treated as if the DC tie had been lost.

EPE has quoted a $1.80 per kW-Month charge for backup. This is used for the "Best" cases. Energy charge associated with backup are ignored.

Western and Northern Suppliers

Western and Northern Suppliers are all within WSCC and as such no bottleneck is foreseen in the transmission arrangements as described for the alternatives.

"WORST" CASE BACKUP POWER

For each case it is assumed that the City is severed from EPE.

Eastern Supplier

For loss of the primary bulk power circuit, backup would come from the Luna 345 kV line. A backup supplier could be PNM which has capacity into Luna. A capacity charge of $6.83 per kW-Month would cover the backup:

$3.00 kW-Month (PNM wheeling)
$2.03 kW-Month (Albuquerque unit capacity charge to increase transfer limit)
$1.80 kW-Month (Backup power arrangement)

Since the capacity would just be "available" and not running continuously, energy charges associated with backup are ignored. PNM's capacity into Luna to provide backup might be questioned.

Western and Northern Suppliers

While the Western and Northern Suppliers are firm, a path from the supply point to Luna is necessary to complete the system. PNM has transmission capacity into Luna. A $5.03 per kW-Month capacity backed wheeling charge is used for these alternatives:

$3.00 kW-Month (PNM wheeling)
$2.03 kW-Month (Albuquerque unit capacity charge to increase transfer limit)

Since the capacity would just be "available" and not running continuously, energy charge associated with backup are ignored. PNM's capacity into Luna to provide backup might be questioned.

TRANSMISSION COSTS

It is assumed that Right-of-Way could be obtained for all transmission projects. Land costs were ignored. These are major assumptions given the realities of constructing transmission lines in todays environment.

All costs are for new construction in todays dollars assuming wood pole construction across the plains. No operation and maintenance costs for transmission or the DC Tie are included. Basis for costs are given in Appendix A.

TRANSMISSION LOSSES

A loss estimate of five percent for power and energy was assumed for all alternatives. The five percent number is based on average loss increases from flow analysis and loss adjustments used in wheeling agreements. No specific analysis was done for the alternatives.

REACTIVE POWER REQUIREMENTS

No facilities were included for reactive power control of the 345 kV systems suggested in the "Worst" cases. It is anticipated that control would be necessary if the systems are to operate within acceptable voltage limits.

115 kV TO 24.9 kV STEP-DOWN CAPACITY

The current 115 kV to 24.9 kV transformation capacity is 67.2 MVA. The "mid-growth" 1993 load for the city is projected to be 79 MW with the 2012 load at 108 MW. During the ten year period it is assumed that two 66.7 MVA 115 kV to 24.9 kV transformers would be added.

"WORST" CASE 345 kV TO 115 kV STEP-DOWN CAPACITY

Step-down would be required between 345 kV and 115 kV. With the "mid-growth" load projection for 2012 at 108 MW, it is anticipated that two 100 MVA transformers would be necessary. The Dona Ana 115 kV circuit would be counted on for 8 MW.

AREA CONTROL

Control areas are established throughout WSCC with interchange points at the boundaries between areas. Within an area, voltage is controlled and "load following" is maintained with swing generation. EPE has established a control area in West Texas and Southern New Mexico in which the City resides. In the above scenarios, the City's sources would all be outside of the EPE control area. The suppliers would not be able to offer area control services to the City. The EPE $1.00 per kW-Month reflects costs associated with the ongoing operation of a control area and the services it provides.

For the "Worst" Case alternatives where the City is severed from EPE, control could come from some adjoining area (PNM). The same $1.00 fee was used for these alternatives.

BASIS FOR THE SYSTEM COMPONENTS

Upon initial inspection, the alternatives may seem to be inconsistent or that some premises are not logical. Points that may be called to question are:

The requirement for backup power for the Eastern Supplier.

This is predicated on a loss of the DC tie. Although the supply may be firm up to the tie, any malfunction of this single element renders the firm supply useless. So a backup supply on the Las Cruces side of the DC tie must be secured.

Wheeling through EPE's system for an Eastern Supplier.

This assumes that EPE and TNP would agree to an upgrade of the DC tie to 400 MW with the cost to be borne by the City. No credit was given to the City for initial excess capacity they would have in the tie. Short term lease of capacity to others could be made.

The 345 kV path capacity from Artesia to Las Cruces would be sufficient to handle the currently committed 200 MW (EPE and TNP) and the City's load. Loss of any section of this path would be treated the same as a loss of the DC Tie, requiring backup generation on the City's side of the tie (and concurrent reduction of flow across the tie).

Choice of Four Corners as the Northern Supplier source.

Most Northern Suppliers would have their power flow through the Four Corners area. The exception would be PG&T's PEG's plant. A schedule from PEG's would still impact the Northern New Mexico transfer capability from Four Corners. Any purchase from a Northern Supplier would require a secure path to this general location.

Choice of Springerville as the Western Supplier source.

The Springerville 345 kV bus is in a central location accessible to many Western Suppliers. All Western sources of power are in the Springerville vicinity or further west. Any purchase from a Western Supplier would require a secure path to this general location.

Choice of 345 kV for transmission.

The distances between supply points and the City dictate that the lines be 345 kV. The primary line in each alternative is at least 200 miles long. For 115 kV lines of this length, typical maximum loading would be 53 MVA. The next suitable voltage for transmission

is 345 kV. While 345 kV lines will be capable of transferring considerably more power than the City initially requires, 115 kV lines would be immediately inadequate.

TRANSMISSION COSTS

EAST

Artesia to Las Cruces			
200 miles 345 kV * $162,000/mile	=	$32,400,000	
2 - 345 kV Bays * $400,000/bay	=	800,000	
		$33,200,000	(33.2)
Luna to Las Cruces			
65 miles 345 kV * $162,000/mile	=	$10,530,000	
2 - 345 kV Bays * $400,000/bay	=	800,000	
		$11,330,000	(11.3)
Las Cruces Substation 345 kV / 115 kV			
345 kV to 115 kV Autotransformer 100 MVA	=	$900,000	
345 kV Bay	=	400,000	
115 kV Bay	=	240,000	
		$1,540,000	
		* 2	
		$3,080,000	(3.1)
Las Cruces Substation 115 kV / 24.9 kV			
115 kV to 24.9 kV Transformer 66.7 MVA	=	$900,000	
115 kV Bay	=	240,000	
24.9 kV Bay	=	150,000	
		$1,290,000	
		* 2	
		$2,580,000	(2.6)

NORTH

Four Corners to Las Cruces			
355 miles 345 kV * $162,000/mile	=	$57,510,000	
2 - 345 kV Bays * $400,000/bay	=	800,000	
		$58,310,000	(58.3)
Luna to Las Cruces		$11,330,000	(11.3)
Las Cruces Substation 345 kV / 115 kV		$3,080,000	(3.1)
Las Cruces Substation 115 kV / 24.9 kV		$2,580,000	(2.6)

WEST

Springerville to Las Cruces			
285 miles 345 kV * $162,000/mile	=	$46,170,000	
2 - 345 kV Bays * $400,000/bay	=	800,000	
		$46,970,000	(47.0)
Luna to Las Cruces		$11,330,000	(11.3)
Las Cruces Substation 345 kV / 115 kV		$3,080,000	(3.1)
Las Cruces Substation 115 kV / 24.9 kV		$2,580,000	(2.6)

Peak load in 2012 is 108 MW, so 345 kV to 115 kV capacity was set at 2 x 100 MVA and assume the 115 kV line from Dona Ana would be good for 8+ MVA for an outage of one of the transformers.

115 kV to 24.9 kV capacity is now 67.2 MVA. Provide for additional two 66.7 MVA transformers for ten year period. Loss of the largest transformer leaves 133.9 MVA of capacity.

345 kV bay cost assumes continuation of a ring arrangement. At Las Cruces Substation the estimate is low due to no 345 kV facilities currently present. Also there is a question as to the room available at the sub much-less access for two 345 kV lines. Never the less, no additional funds were put in for these contingencies.

115 kV costs assumes a breaker-and-a-half arrangement at a sub.

345kV line costs were based on a comparison of:

EPE estimate $125 k / mile
AIP EIS est. $162 k / mile (includes ROW)
PSCO estimate $242 k / mile

Went with $162 k / mile

115 kV breaker estimates were:

EPE - $200 k
PSCo - $213 k to $275 k

Went with $240 k

345 kV breaker estimates were:

EPE - $210 k
PSCo - $418 k (actually 230 kV)

Went with $400 k

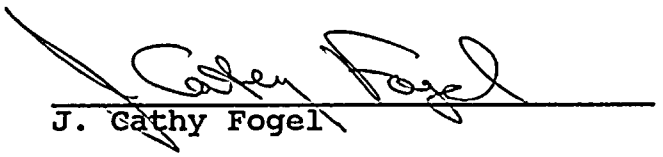
Transformer costs went with EPE $900 k for 100 MVA no LTC. Used same for the 66.7 MVA 115 kV to 24.9 kV.

UNITED STATES OF AMERICA
BEFORE THE
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
ARIZONA PUBLIC SERVICE CO., et al.	)	Docket No. STN 50-528
	)	Docket No. STN 50-529
(Palo Verde Nuclear Generating Station, Unit 1	)	Docket No. STN 50-530
Facility Operating License No. NPF-41)	)	(Indirect Transfer of Control; Antitrust Issues)
	)	
(Palo Verde Nuclear Generating Station, Unit 2	)	
Facility Operating License No. NPF-51)	)	
	)	
(Palo Verde Nuclear Generating Station, Unit 3	)	
Facility Operating License No. NPF-74)	)	

CERTIFICATE OF SERVICE

The undersigned hereby certifies that one copy of the foregoing Comments of the City of Las Cruces, New Mexico, has this day been served upon the following persons by first class United States mail in accordance with the requirements of Section 2.712 of the Commission's Rules of Practice (10 CFR § 2.712), dated at Washington, D.C. this 13th day of April, 1994.



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