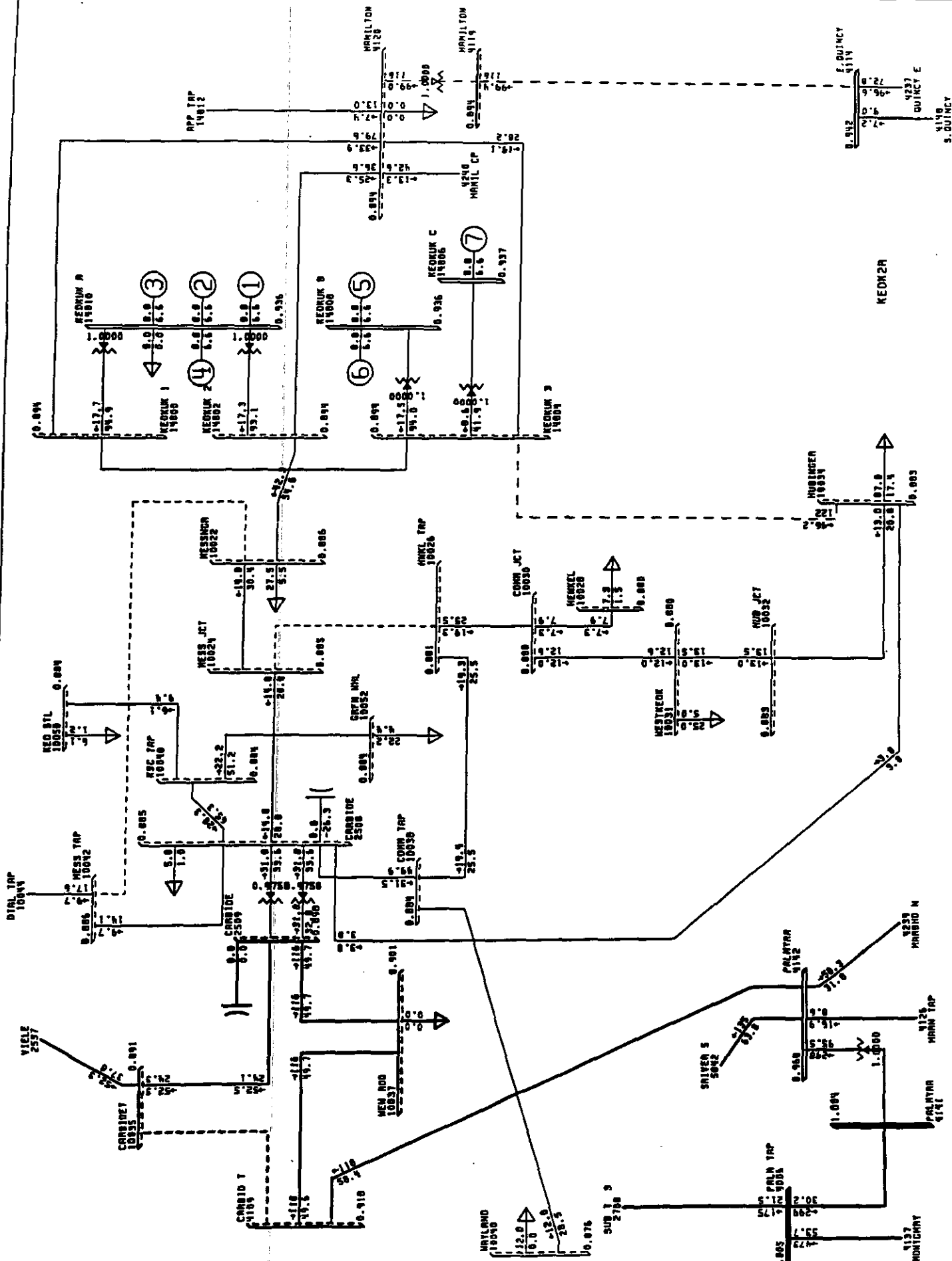
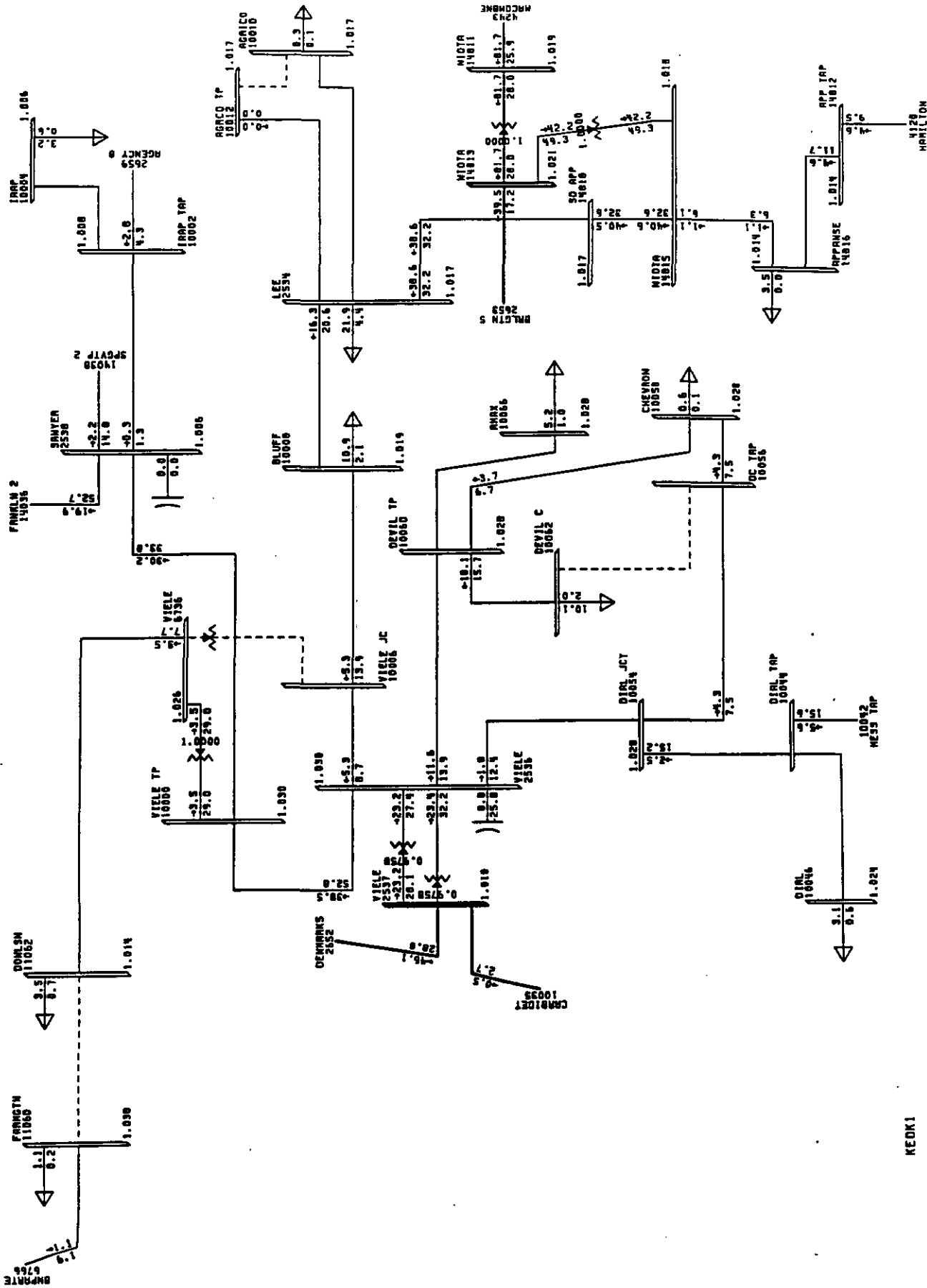




2006B. 69KV PLAN
 CONT 7: BGS OUTAGE
 100% RAIER
 0.925UV
 1.050 OV
 KV: 69
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MW/MVAR



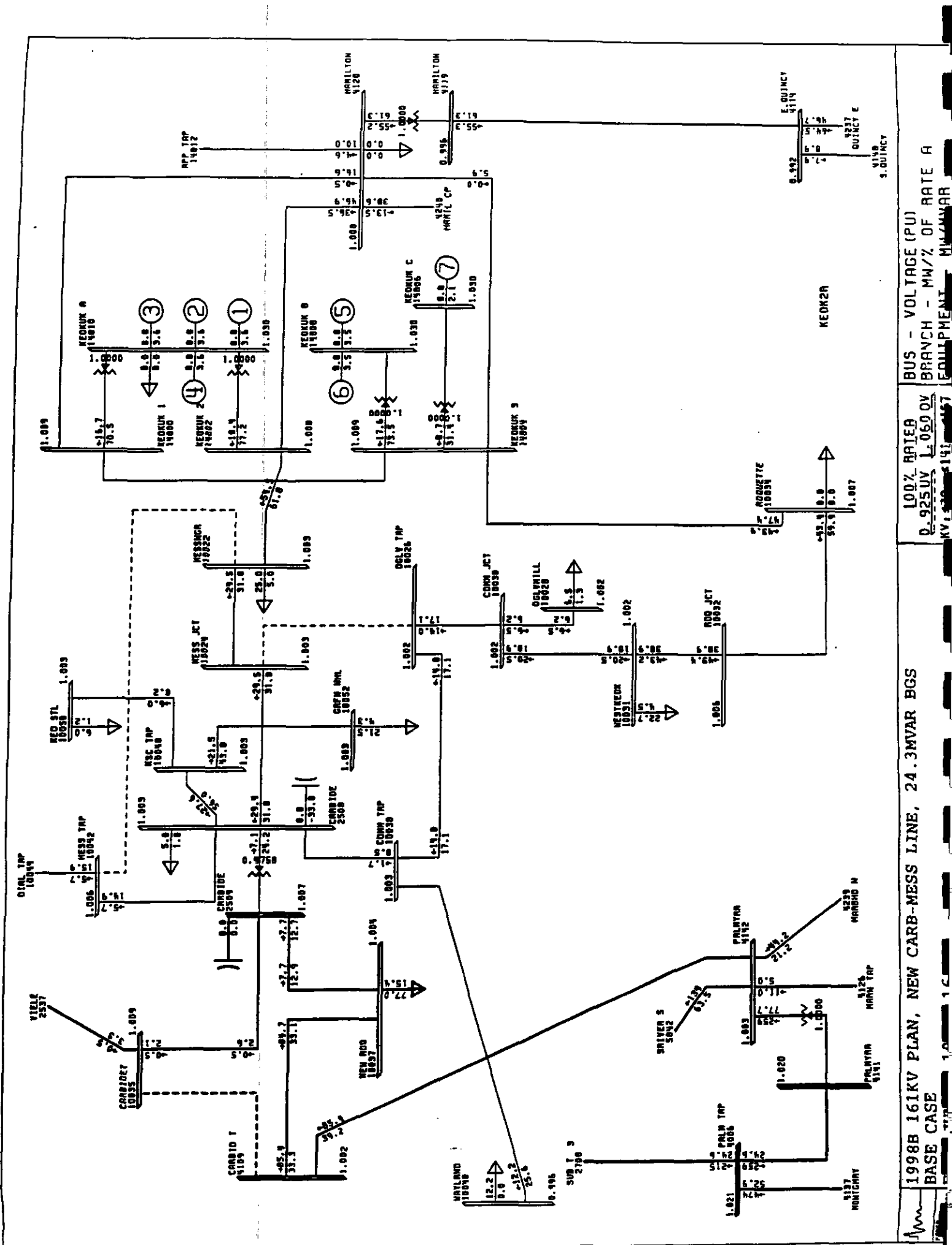
KECK1

1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS

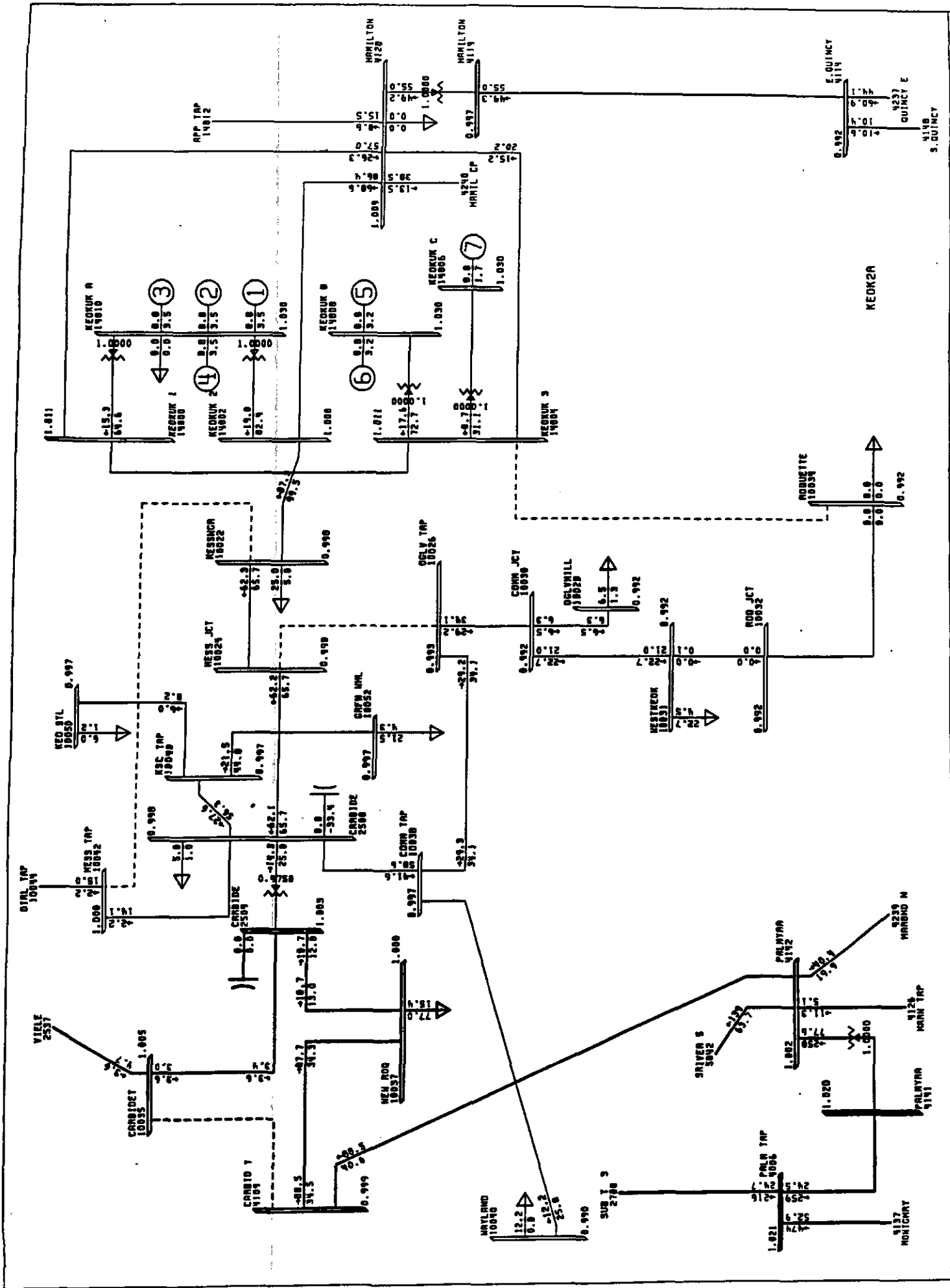
BASE CASE
JUN 02 1995 16:03

100% RATER
0.925UV 1.060 OV
KV: 572, 5141, 5167

BUS - VOLTAGE (PU)
BRANCH - MW/% OF RATE A
EQUIPMENT - MW/MVAR



	1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS			100% RATER			BUS - VOLTAGE (PU)
	BASE CASE			0.925UV L 050 OV			BRANCH - MW/% OF RATE A
						KV, 500 5141 457	EQUIPMENT MW/MVAR



1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS

CONT 1: LOSS OF NEW HYDRO-ROUQUETTE LINE

100% RATE

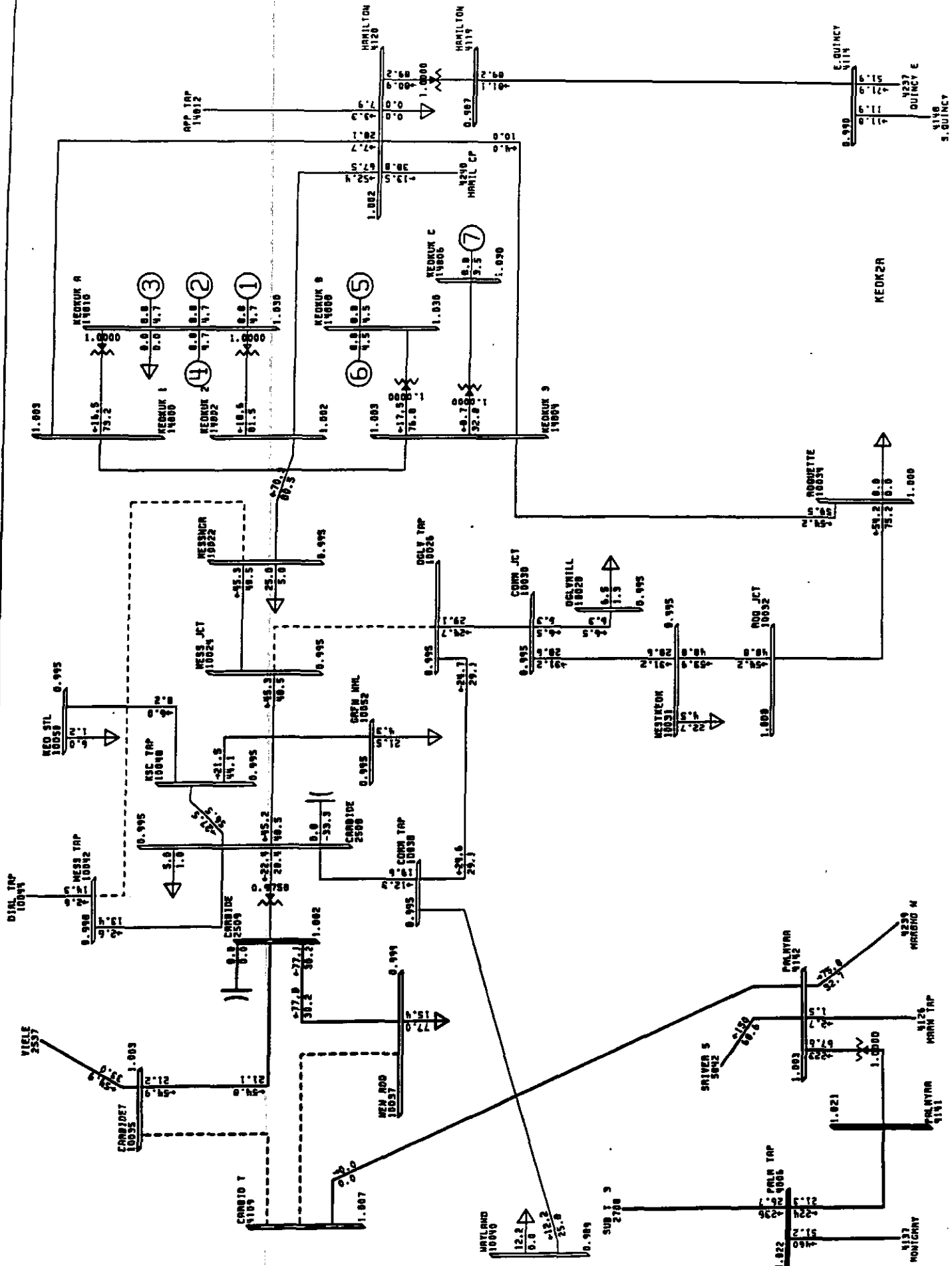
0.925UV 1.060 QV

BUS - VOLTAGE (PU)

BRANCH - MW/% OF RATE A

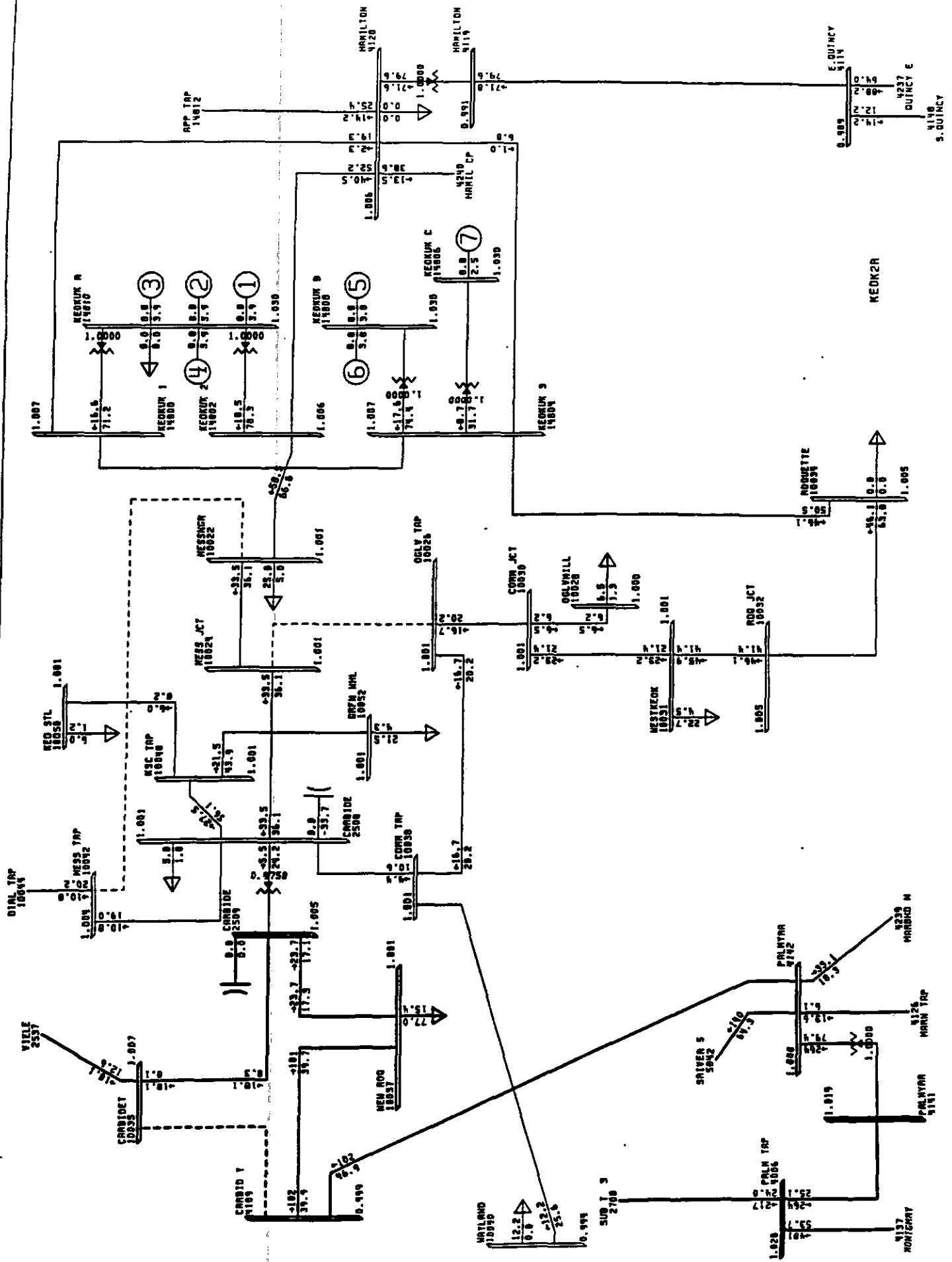
161KV

161KV

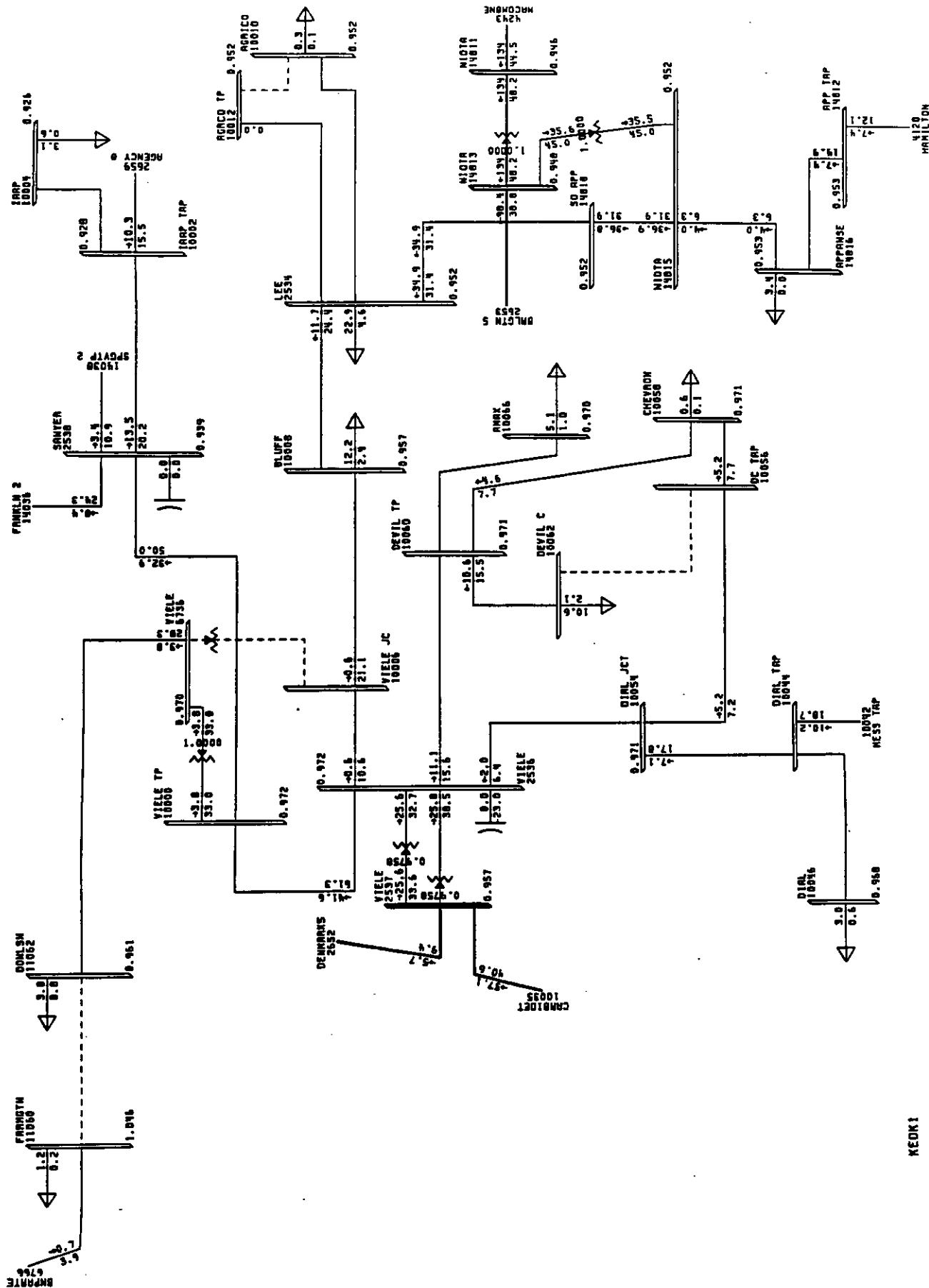


1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS
 100% RATED
 0.925UV 1.050 OV
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MOUNTAIN

CONT 4: LOSS OF CARBIDE T - NEW ROQUETTE

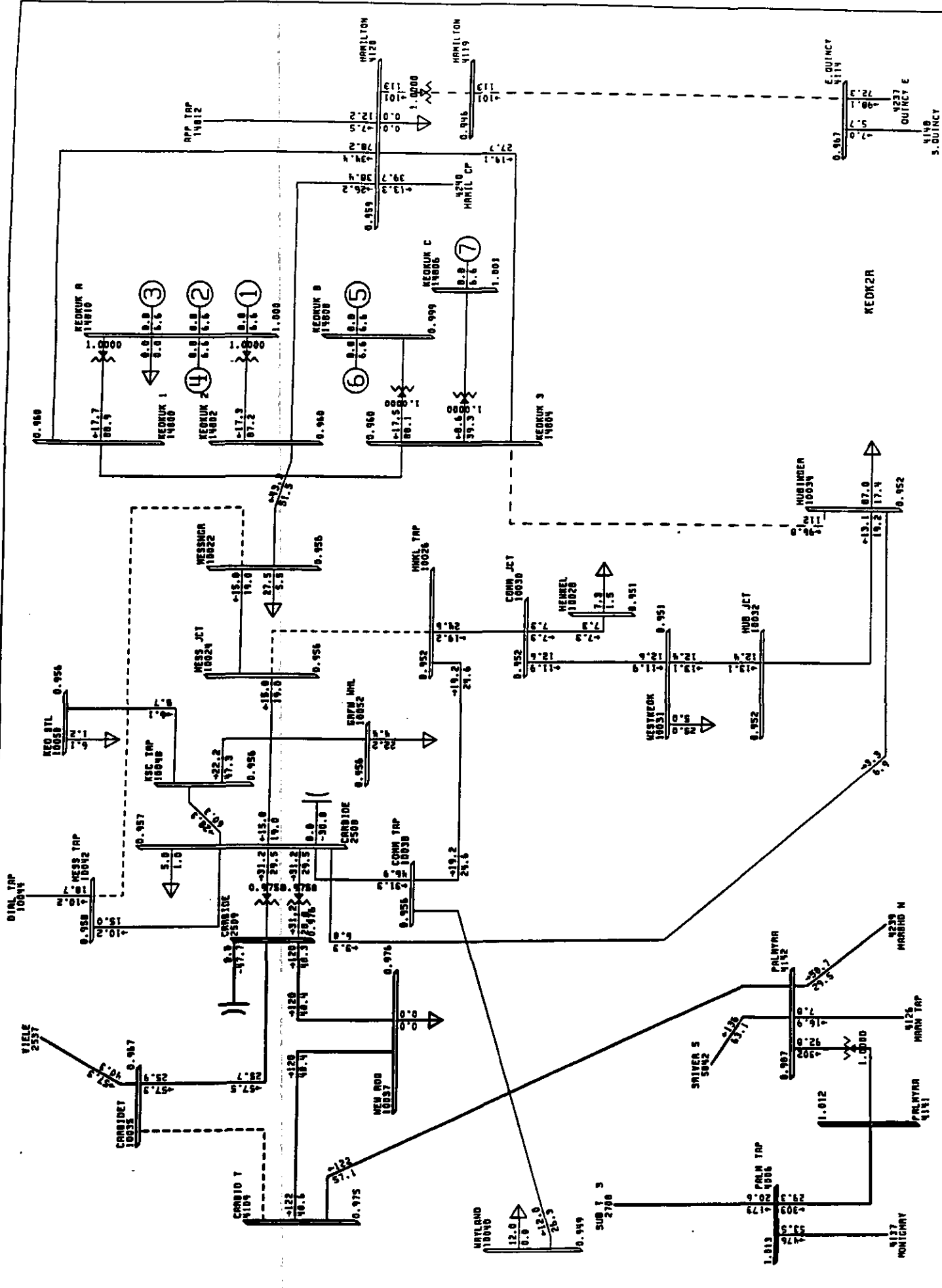


1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS
 CONT 6: LOSS OF NIOTA XFMR
 100% RAIER
 0.925UV 1.060 OV
 KV 1.22 5141 5157
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MW/MVAR

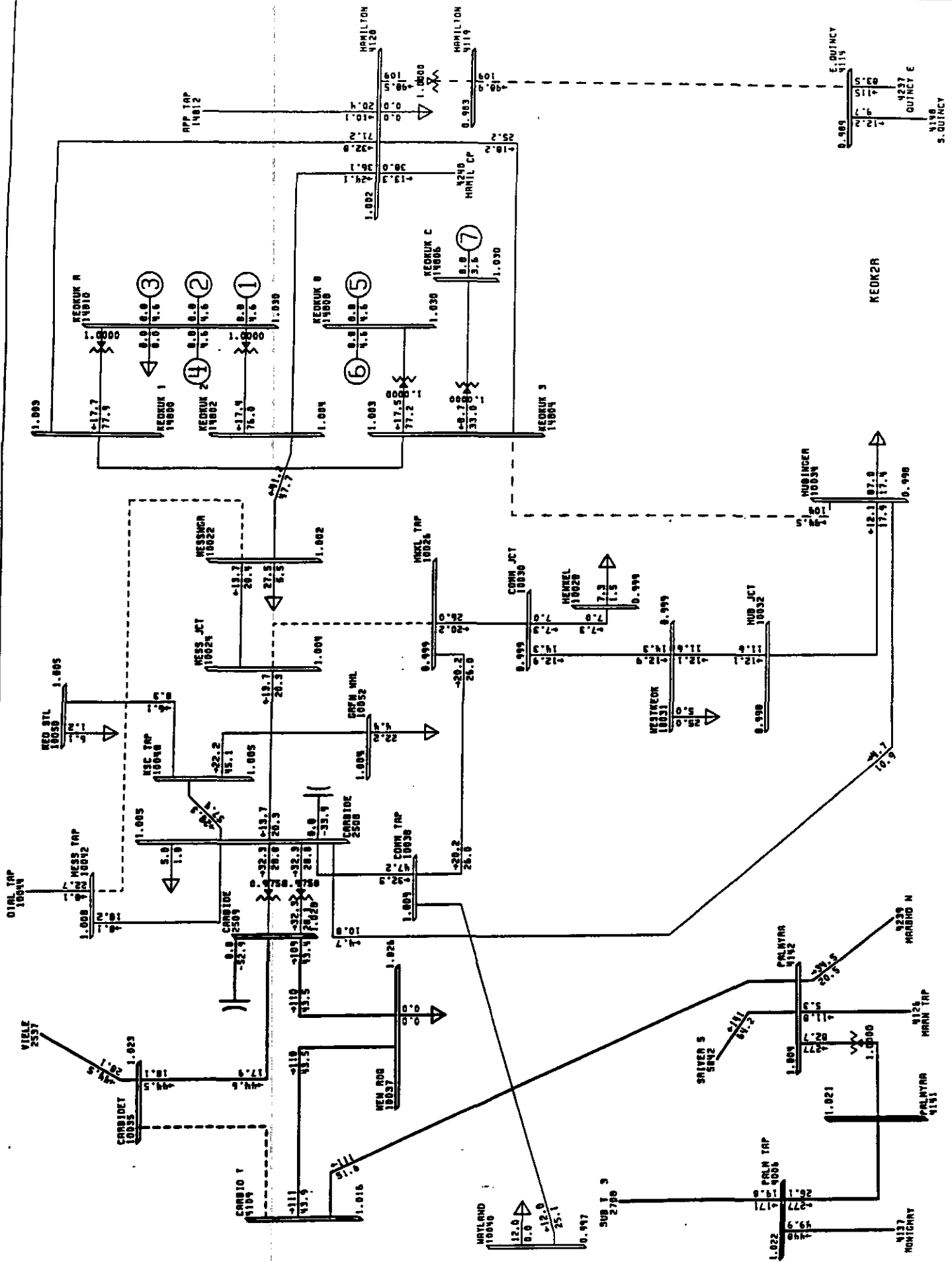


KEDK1

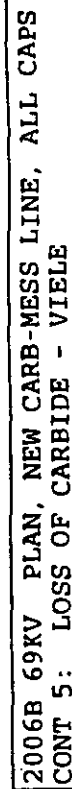
2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS CONT 7: BGS OUTAGE MON, JUN 05 1995 07:54	100% RATE 0.925UV 1.060 QV KV: 572 .5141 .5167	BUS - VOLTAGE (PU) BRANCH - MW/% OF RATE A EQUIPMENT - MW/MVAR
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2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 CONT 7: BGS OUTAGE
 100% RATER
 0.925UV 1.050 QV
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MW/MVAR

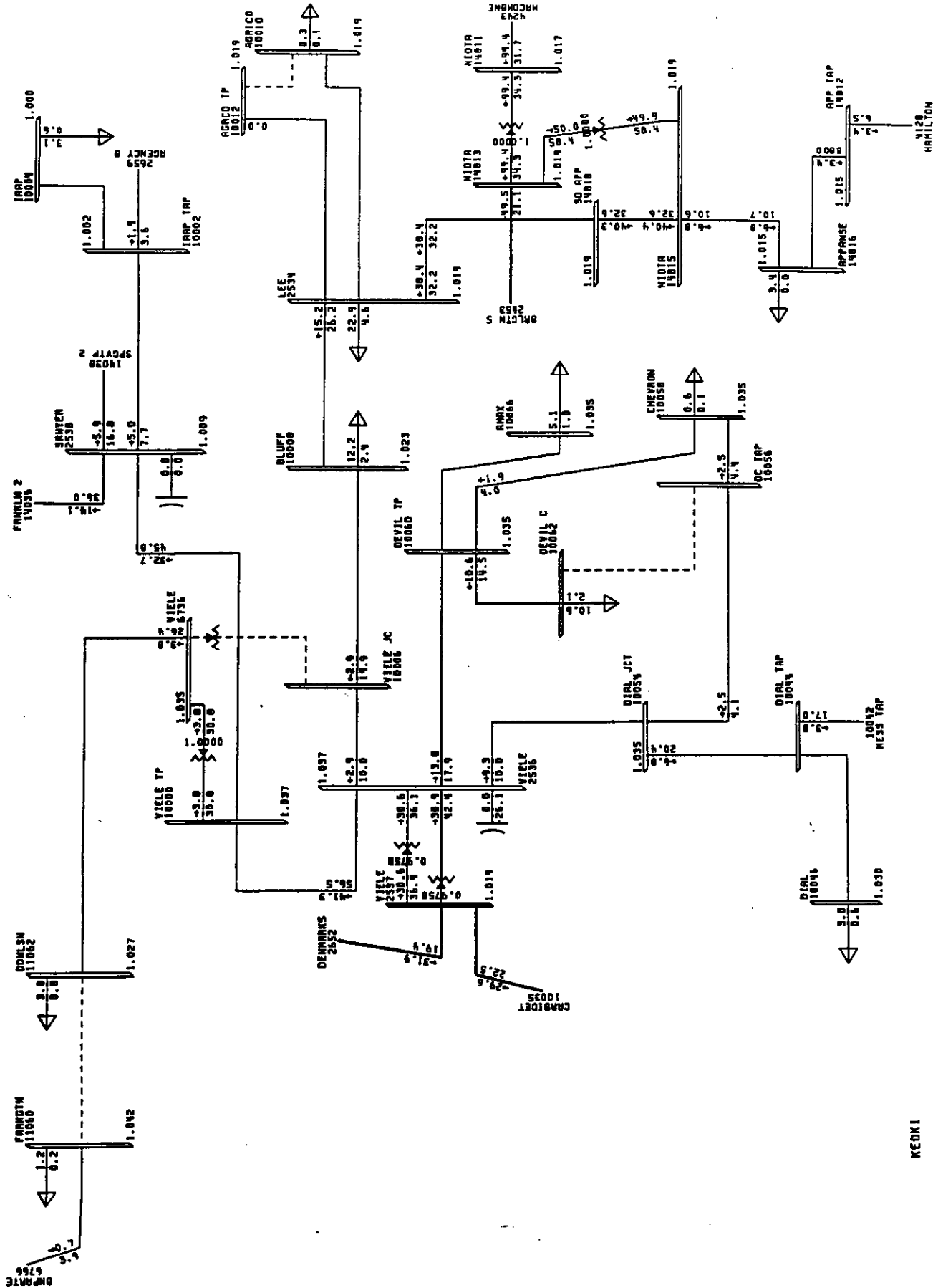


2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 CONT 6: LOSS OF NIOTA XFMR
 100% RATER
 0.925UV 1.050 DV
 V.S. 141
 EQUIPMENT
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT



BUS - VOLTAGE (PU)
BRANCH - MW/% OF RATE A
EQUIPMENT - MW/MVAR

100% RAIA
0.925UV 1.060OV



KEDKI

2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS

CONT 3: LOSS OF CARBIDE XFMR

MON, JUN 05 1995 07:53

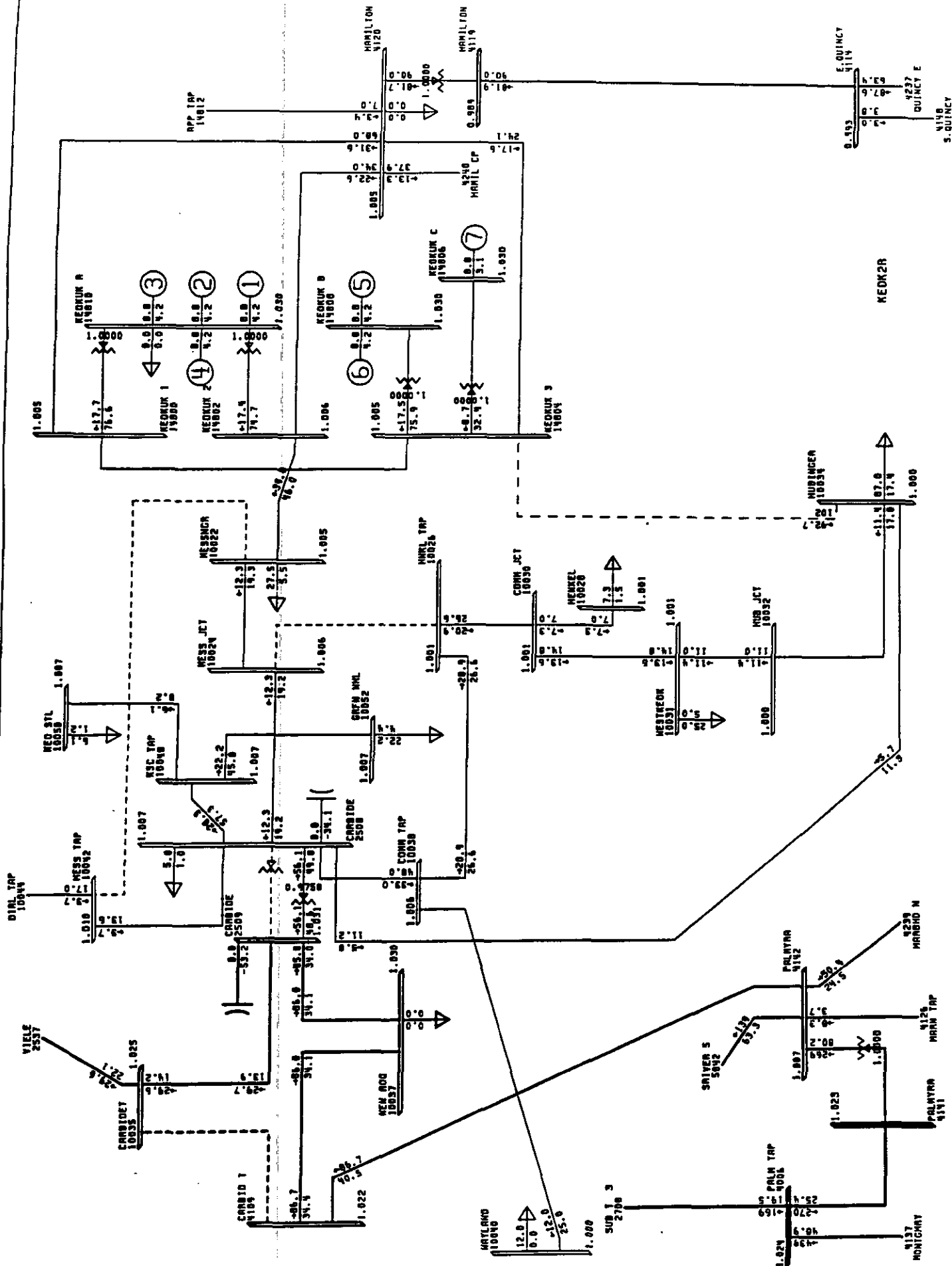
100% RAIER
0.925UV 1.060 OV

KV: 572, 5191, 5167

BUS - VOLTAGE (PU)

BRANCH - MW/% OF RATE A

EQUIPMENT - MW/MVAR



2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS

CONT 3: LOSS OF CARBIDE XFMR

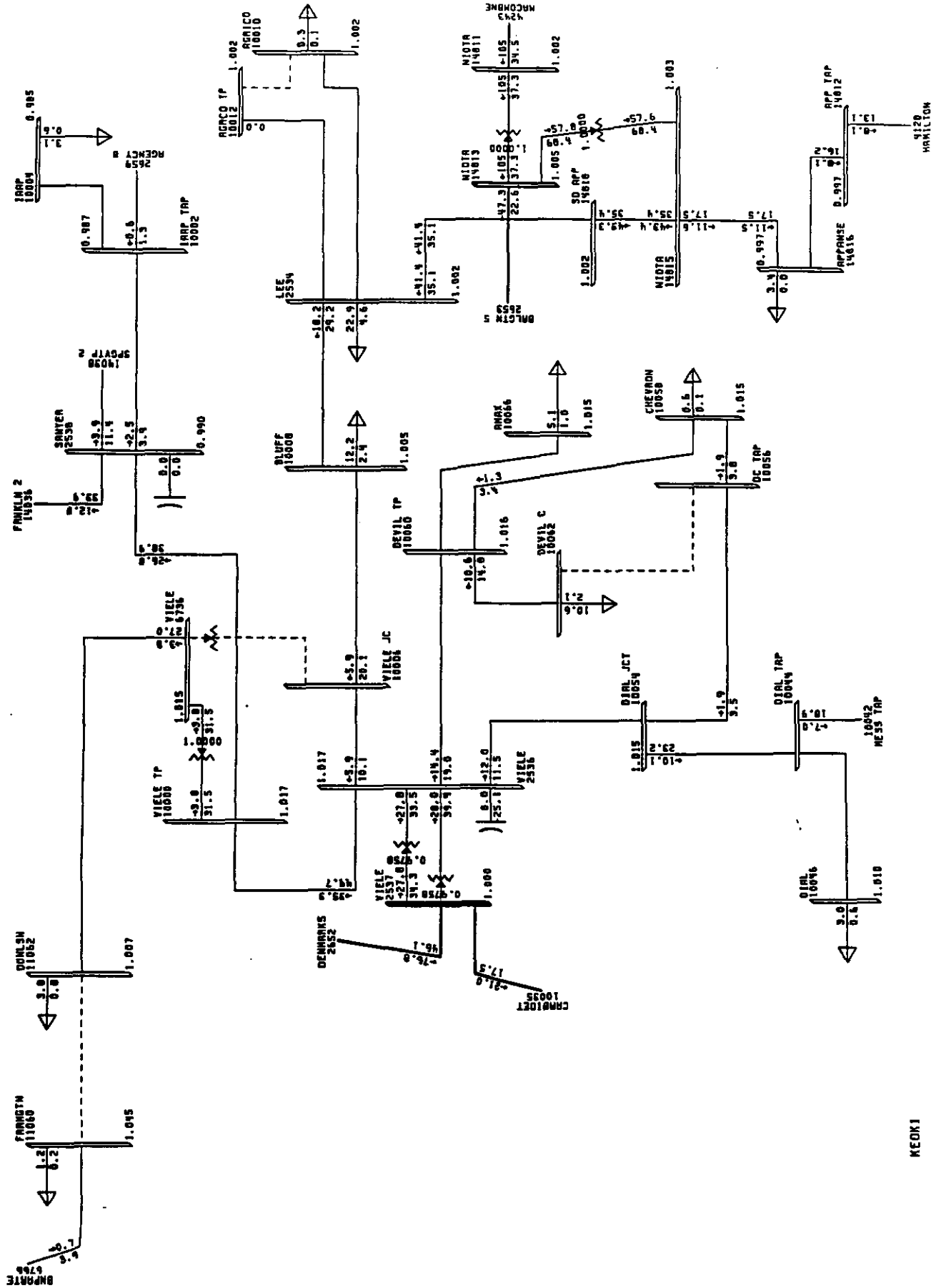
100% RATER
0.925UV 1.0600V

BUS - VOLTAGE (PU)
BRANCH - MW/% OF RATE A

100% RATER

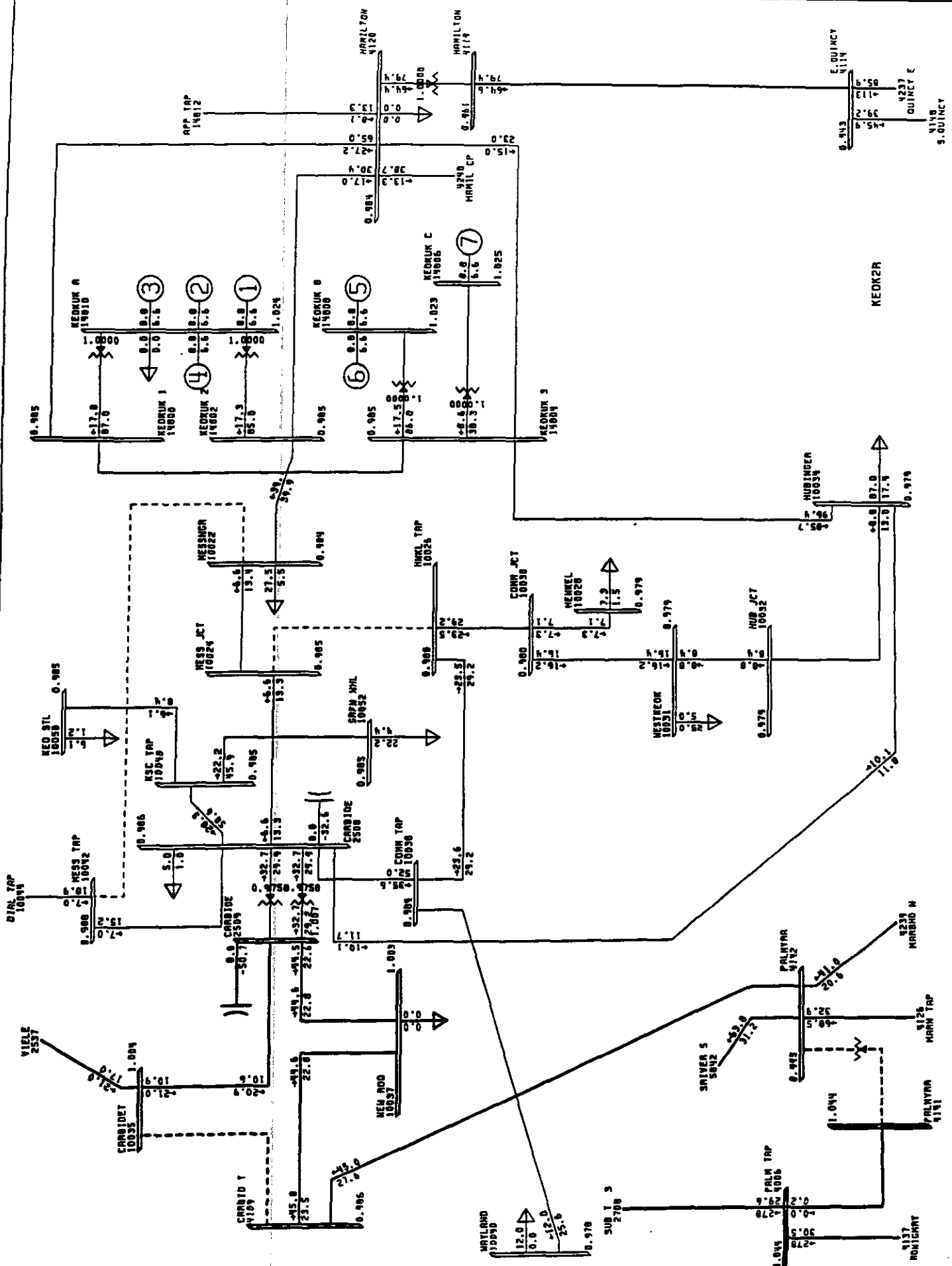
0.925UV 1.0600V

BUS - VOLTAGE (PU)
BRANCH - MW/% OF RATE A

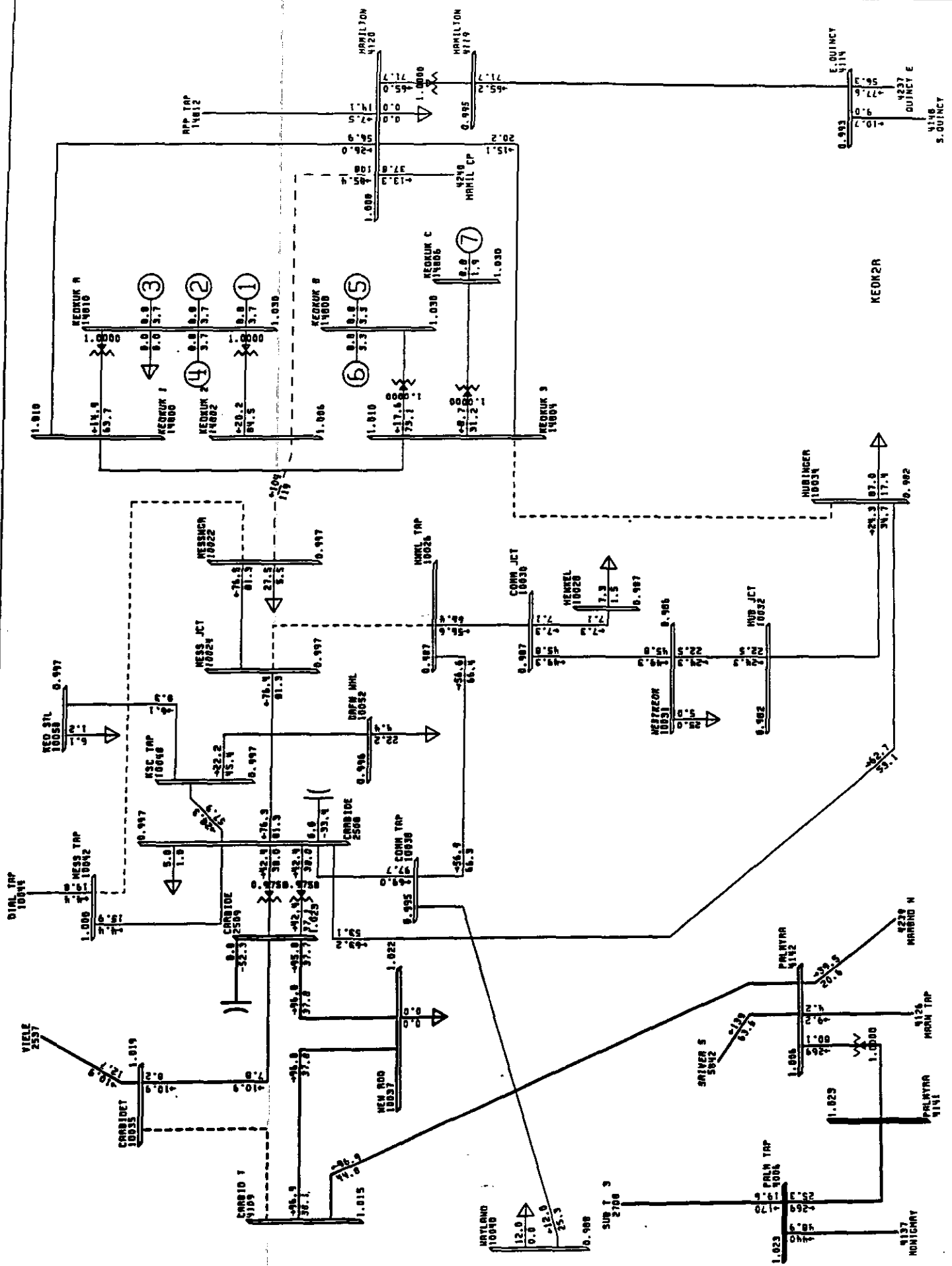


KEOK1

2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS CONT 2: LOSS OF PALMYRA 345/161 MON, JUN 05 1995 07:53	100% RAIER 0.925UV, 1.060 OV KV: 572, 5141, 5167	BUS - VOLTAGE (PU) BRANCH - MW/% OF RATE A EQUIPMENT - MW/MVAR
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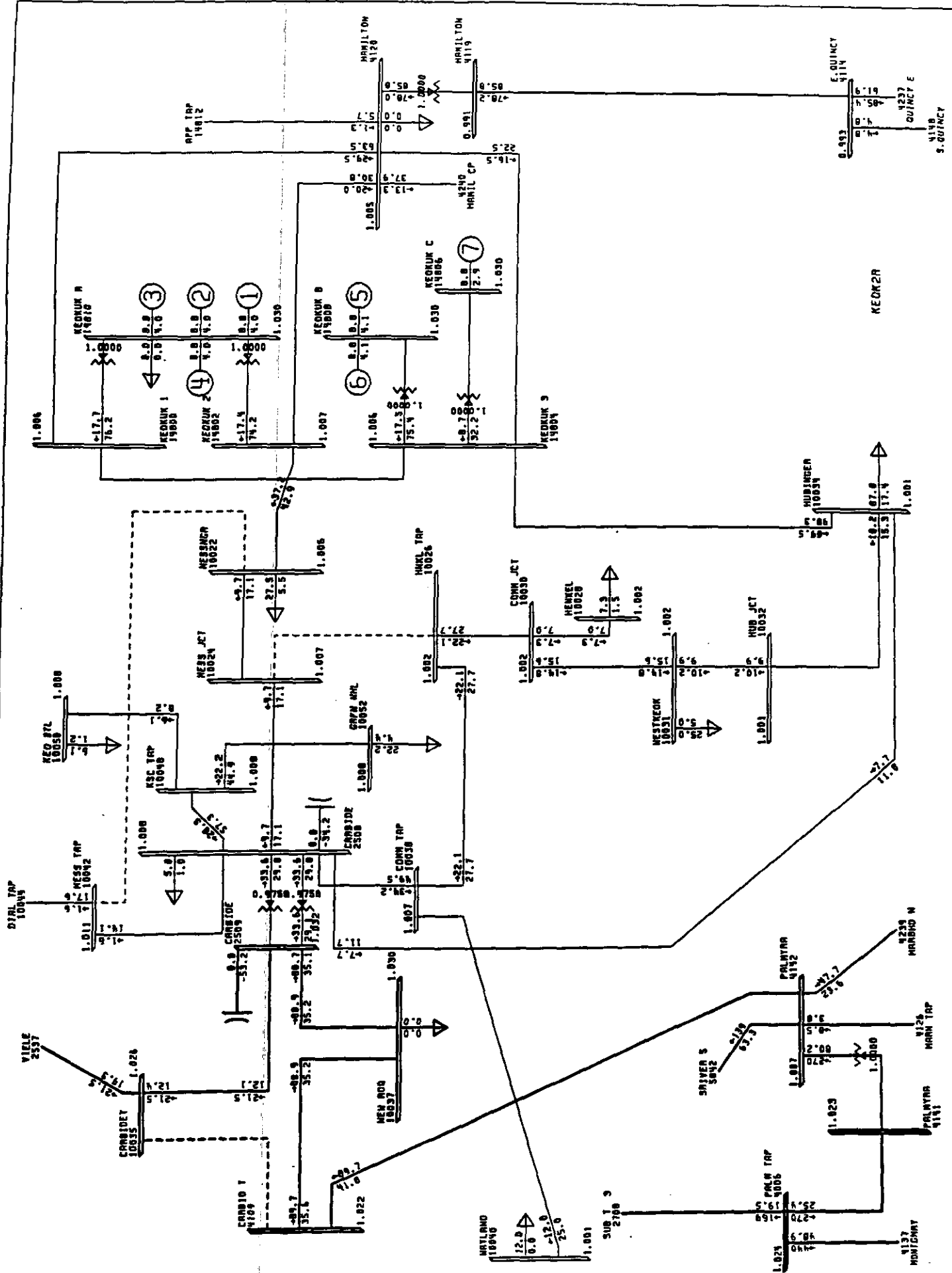


2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 CONT 2: LOSS OF PALMYRA 345/161
 100% RATER 0.925UV 1.060 QV
 BUS - VOLTAGE (PU) 0.925UV 1.060 QV
 EQUIPMENT MW-MVRA

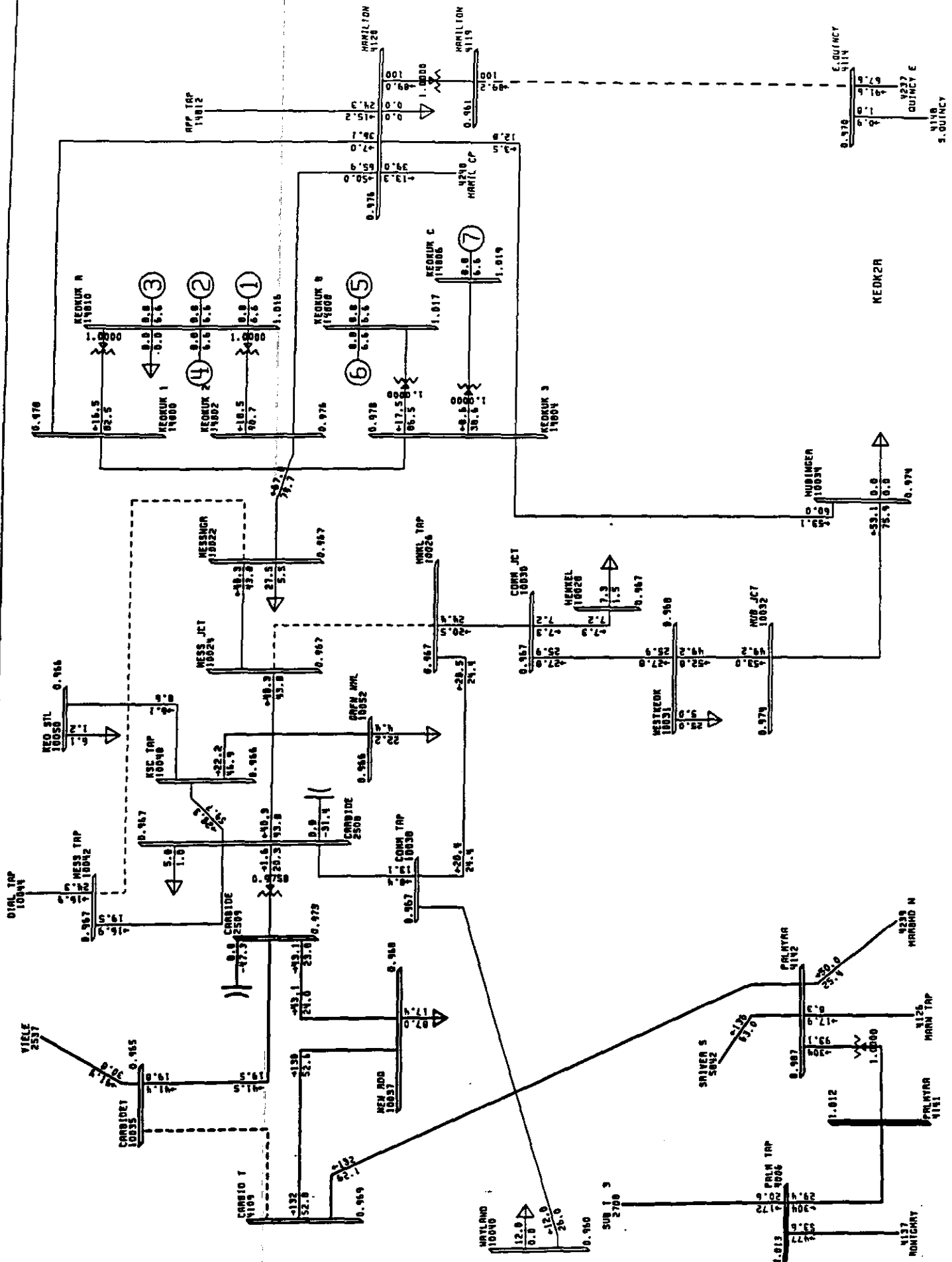


2006B 69KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 CONT 1: LOSS OF NEW HYDRO-ROQUETTE LINE

BUS - VOLTAGE (PU)	100% RAIER	0.925UV	1.060 OV
BRANCH - MW/% OF RATE A	0.925UV	1.060 OV	
EQUIPMENT			



2006B.69KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 100% AREA
 0.925UV
 1.060V
 BRANCH - 100% OF RATE A
 EQUIPMENT - 100% OF RATE A
 BUS - VOLTAGE (PU)
 BRANCH - 100% OF RATE A
 EQUIPMENT - 100% OF RATE A



2006B.161KV PLAN, NEW CARB-MESS LINE, ALL CAPS

CONTR 7: BGS OUTAGE

100% RATER

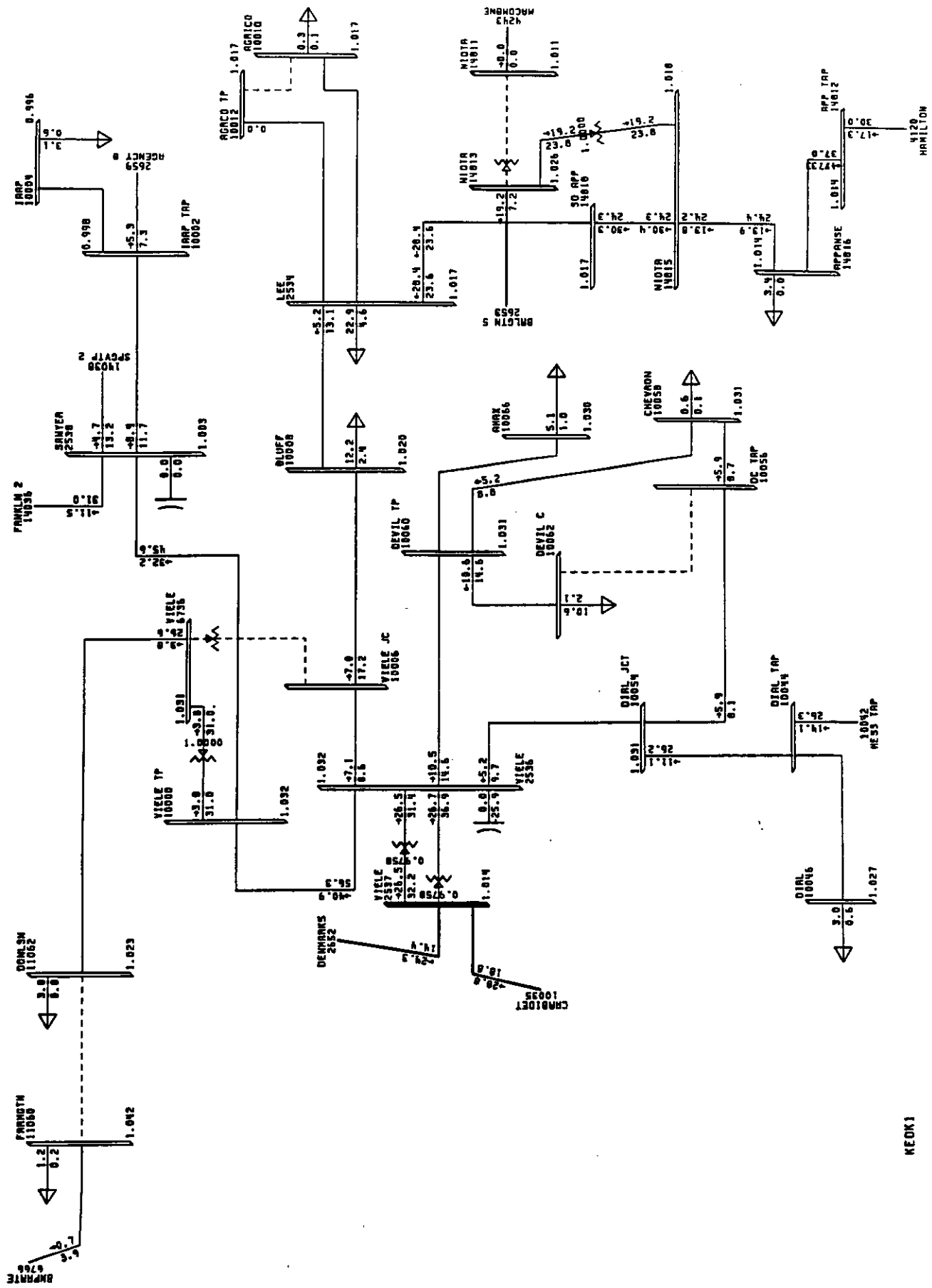
0.925UV 1.050OV

BUS - VOLTAGE (PU)

BRANCH - MW/% OF RATE A

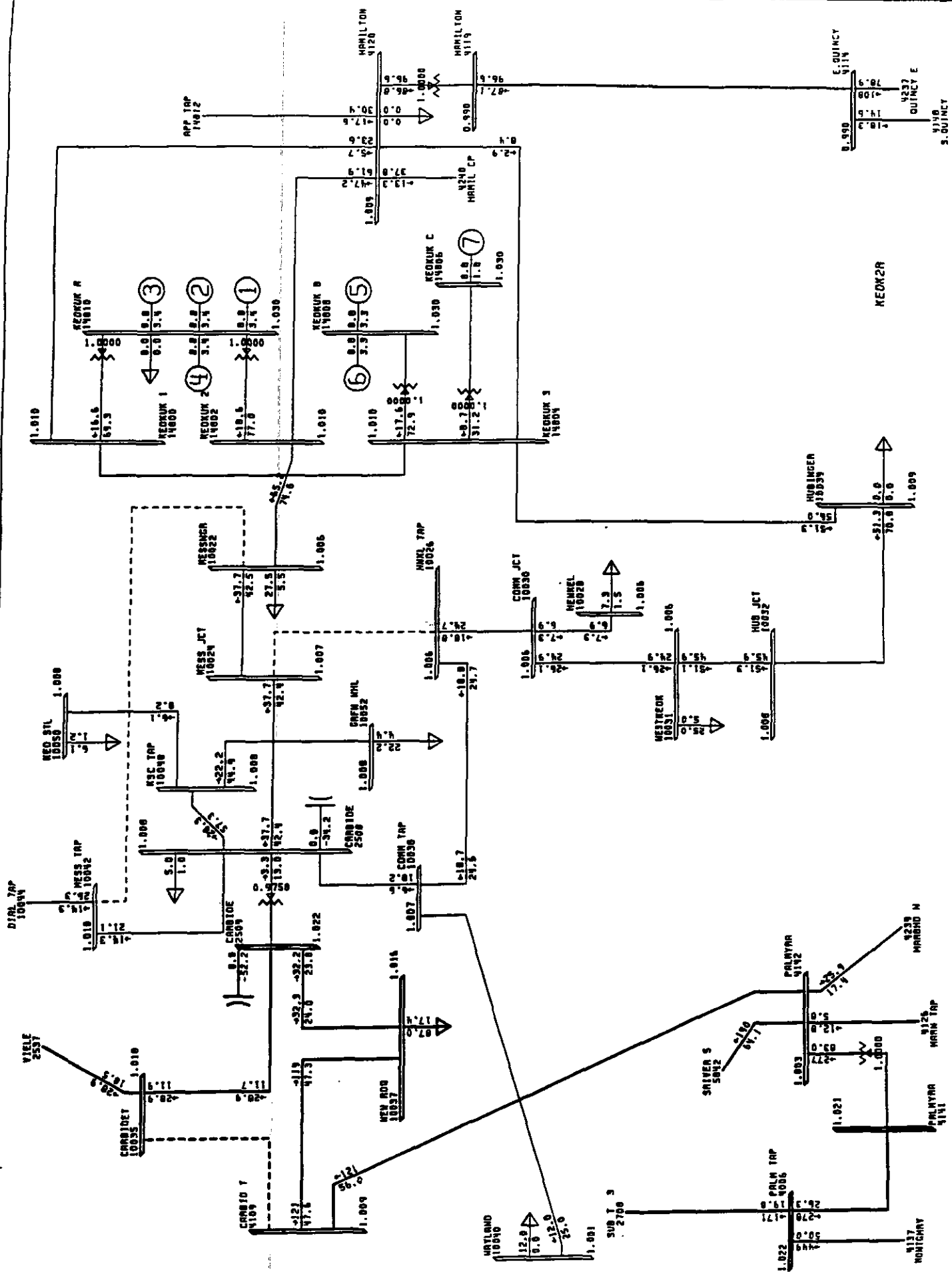
EQUIPMENT

MI-MVAVR



KEDK1

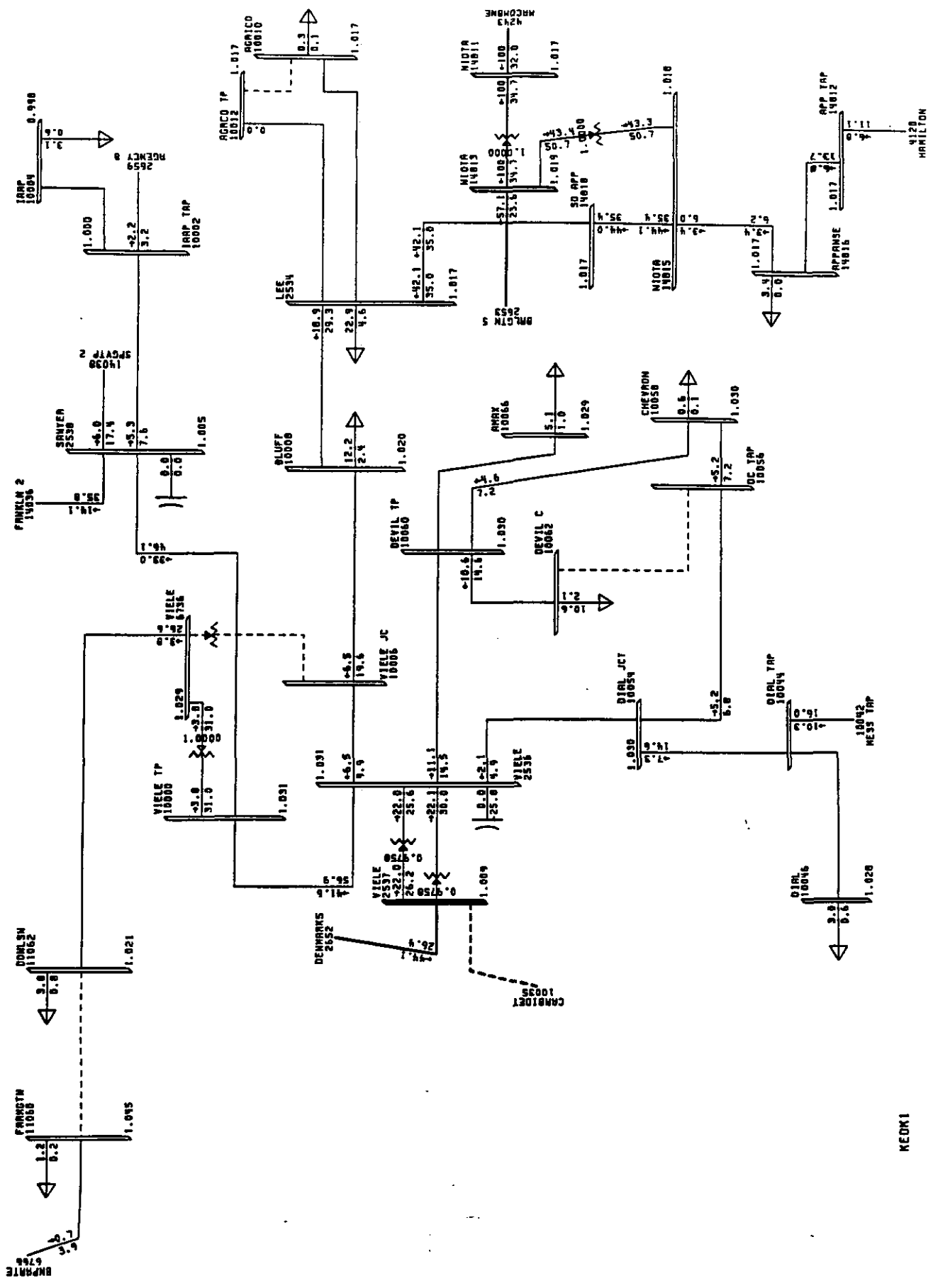
2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS CONT 6: LOSS OF NIOTA XFMR MON, JUN 05 1995 08:04	100% RAIED 0.925UV 1.060 OV KV: \$72 . \$141 . \$167	BUS - VOLTAGE (PU) BRANCH - MW/% OF RATE A EQUIPMENT - MW/MVAR
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2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 CONT 6: LOSS OF NIOTA XFMR

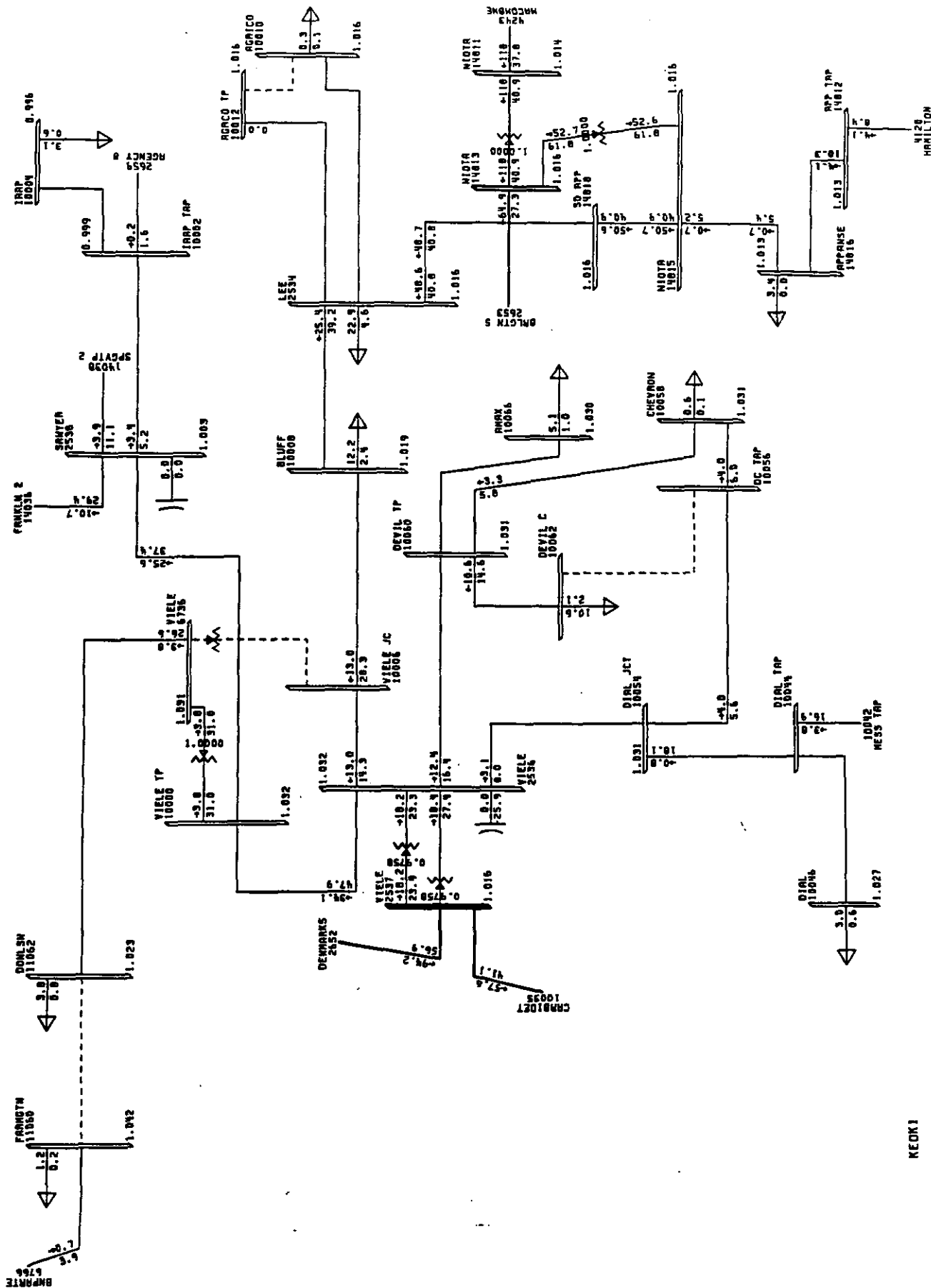
100% RATER
 0.925UV
 KV: 572 5141 5157

BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MW/MVAR



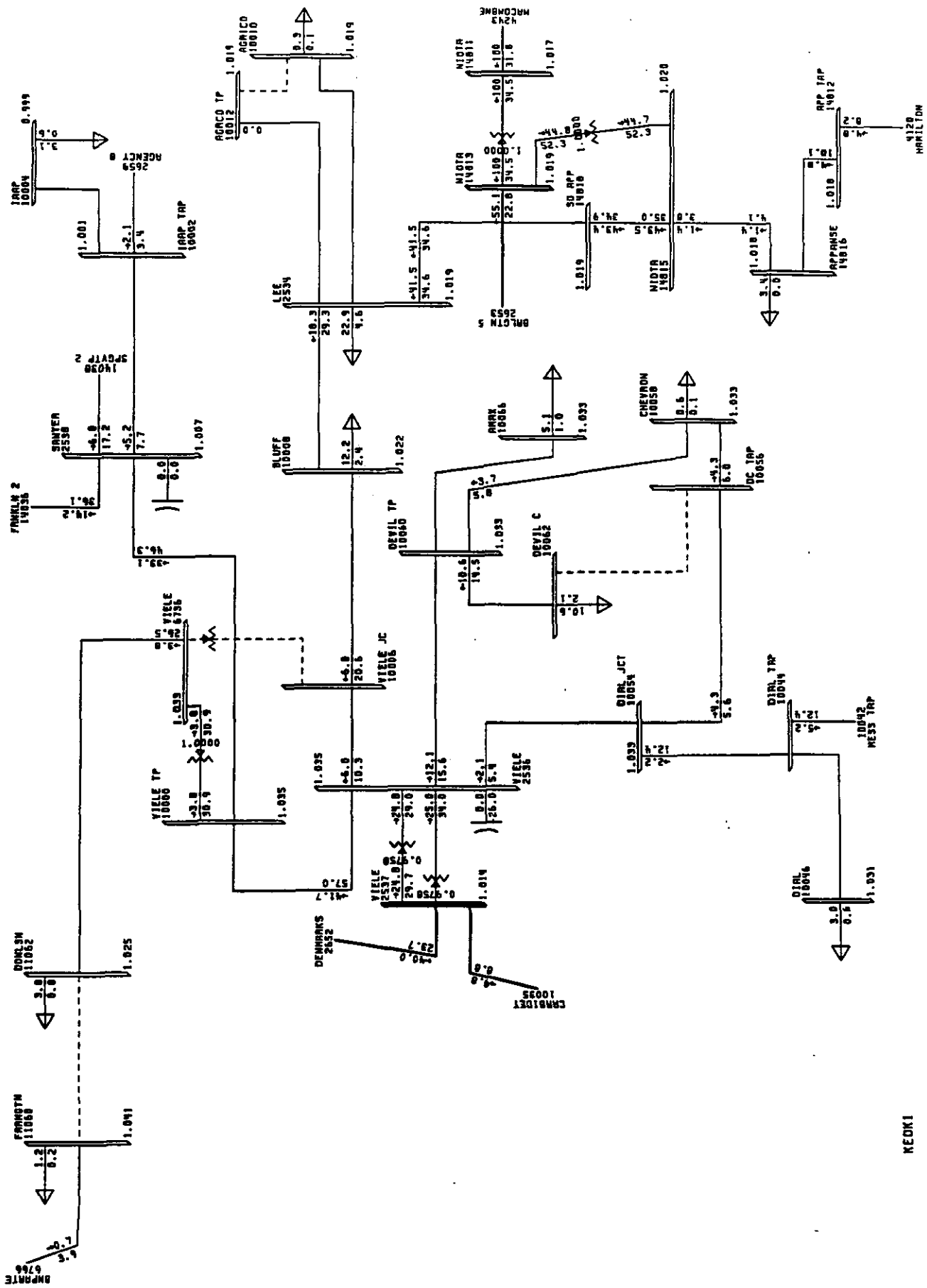
KEOKI

2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS CONT 5: LOSS OF CARBIDE - VIELE MON, JUN 05 1995 07:47	100% RAIER 0.925UV KV: 572.5141	BUS - VOLTAGE (PU) BRANCH - MW/% OF RATE A EQUIPMENT - MW/MVAR
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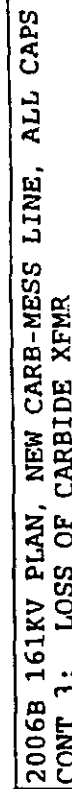
KEOKI

2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS	100% RATED	BUS - VOLTAGE (PU)
CONT 4: LOSS OF CARBIDE T - NEW ROQUETTE	0.925UV	BRANCH - MW/% OF RATE A
MON, JUN 05 1995 07:47	KV, 572.5141, 5167	EQUIPMENT - MW/MVAR



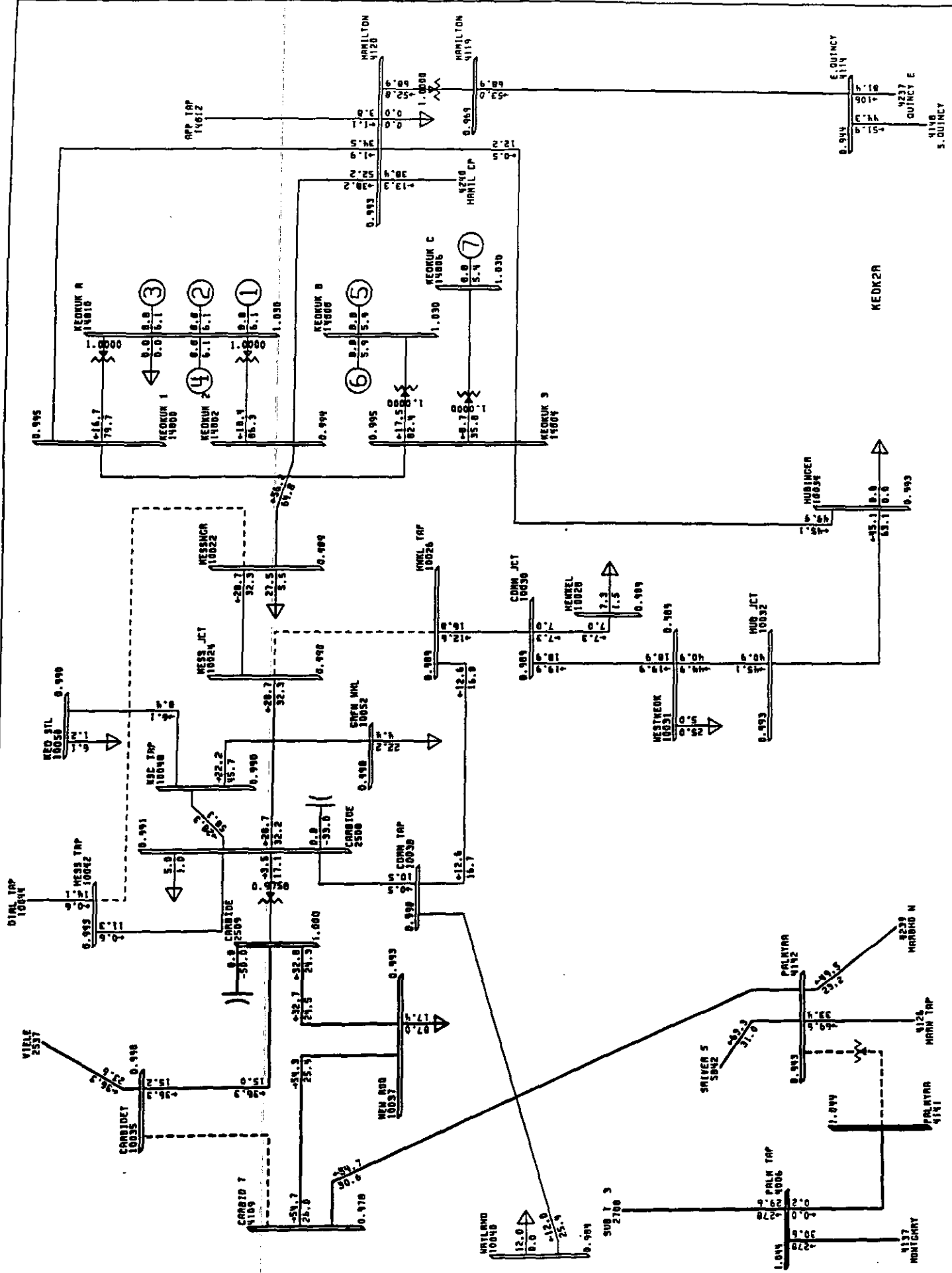
KEDK1

2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS CONT 3: LOSS OF CARBIDE XFMR MON, JUN 05 1995 07:46	100% RAIER 0.925UV 1.050 OV KV: \$72 . \$141 . \$167	BUS - VOLTAGE (PU) BRANCH - MW/% OF RATE A EQUIPMENT - MW/MVAR
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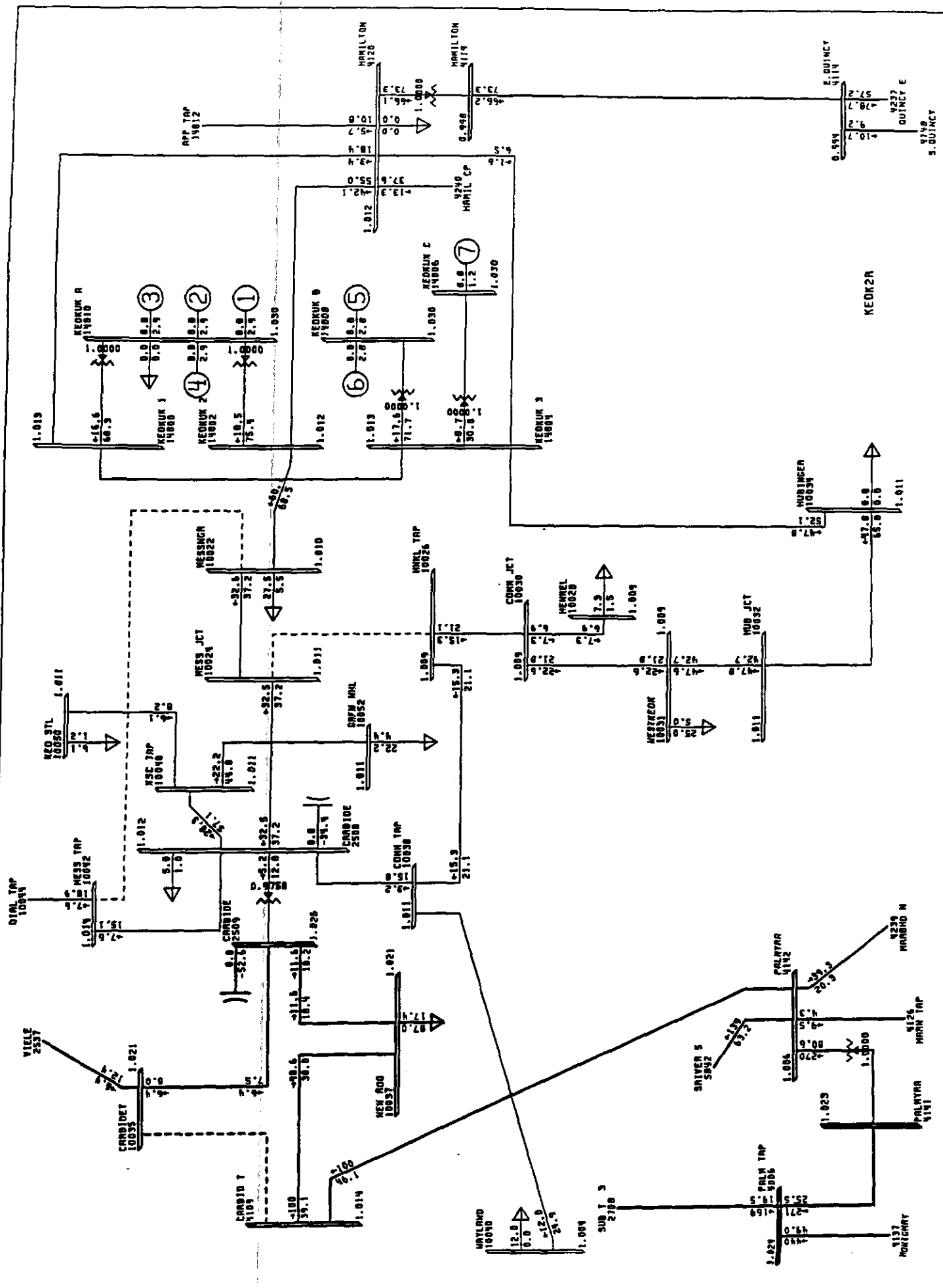


BUS - VOLTAGE (PU)
BRANCH - MW/% OF RATIO
EQUIPMENT - MW/MVAR

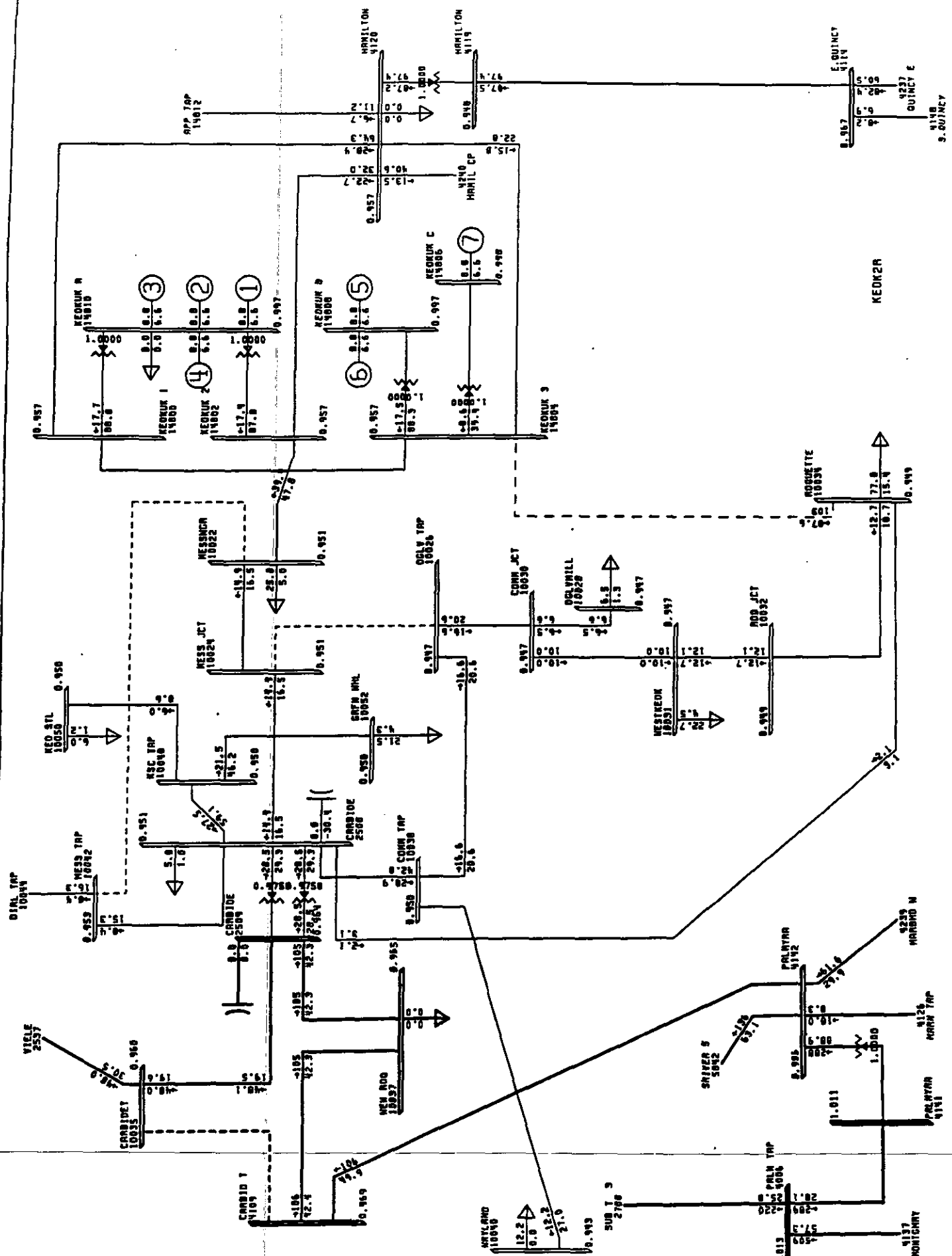
153



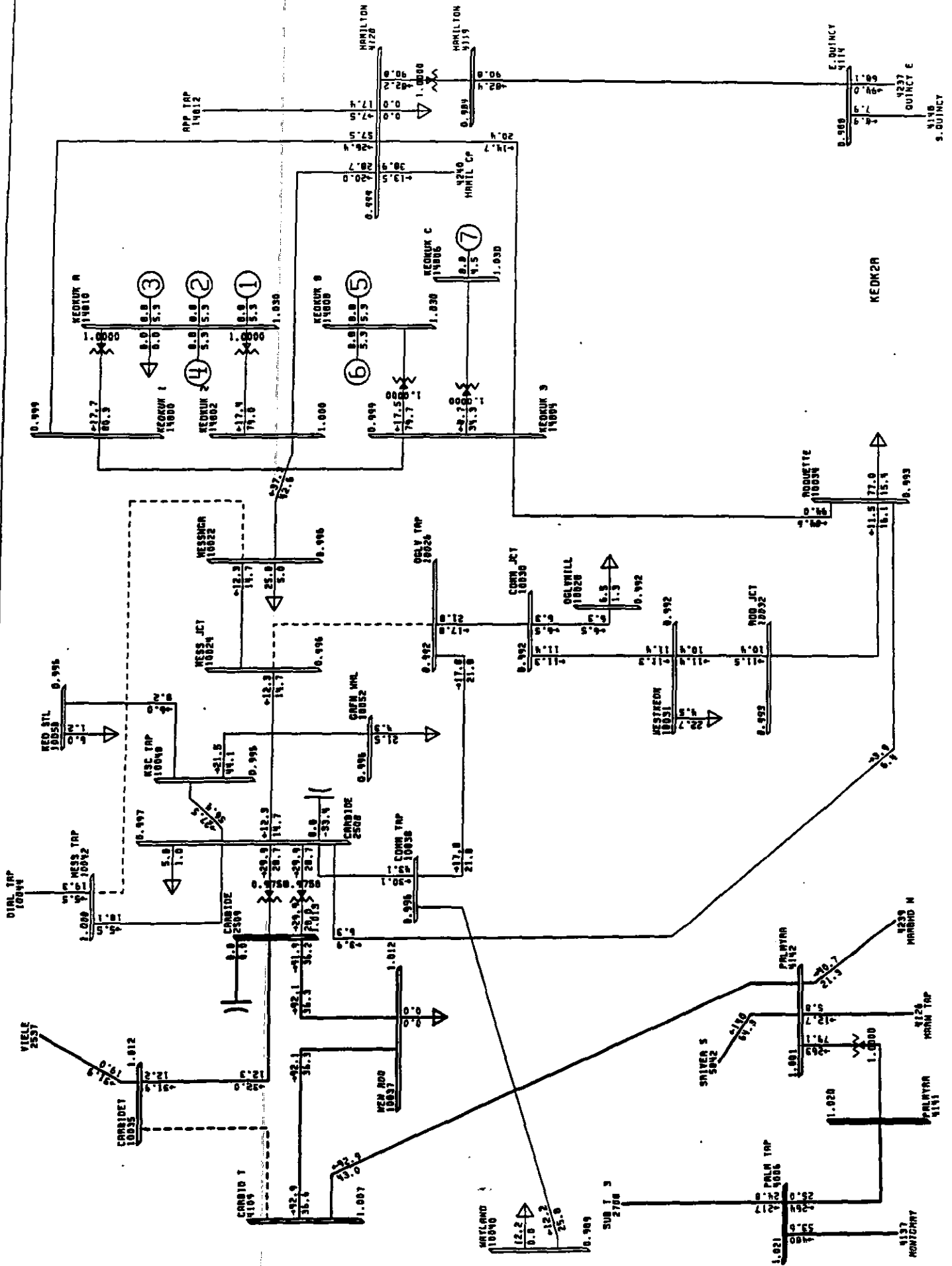
2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS	100% RATER	BUS - VOLTAGE (PU)
2: LOSS OF PALMVA 345/161	0.925UV 1.050 OV	BRANCH - MW/% OF RATE A
	KV. 345/161	EQUIPMENT - MW/MVAR



2006B 161KV PLAN, NEW CARB-MESS LINE, ALL CAPS
 100% RATED
 0.925UV 1.050UV
 BRANCH - MW/% OF RATE
 EQUIPMENT MW/MVAR
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE
 EQUIPMENT MW/MVAR



1998B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69
 CONT 7: BGS OUTAGE
 100% RATEA
 0.925UV 1.050 OV
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MW/MVAR



1998B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69

CONT 6: LOSS OF NIOTA XFMR

100% RAIER

0.925UV 1.060 DV

BUS - VOLTAGE (PU)

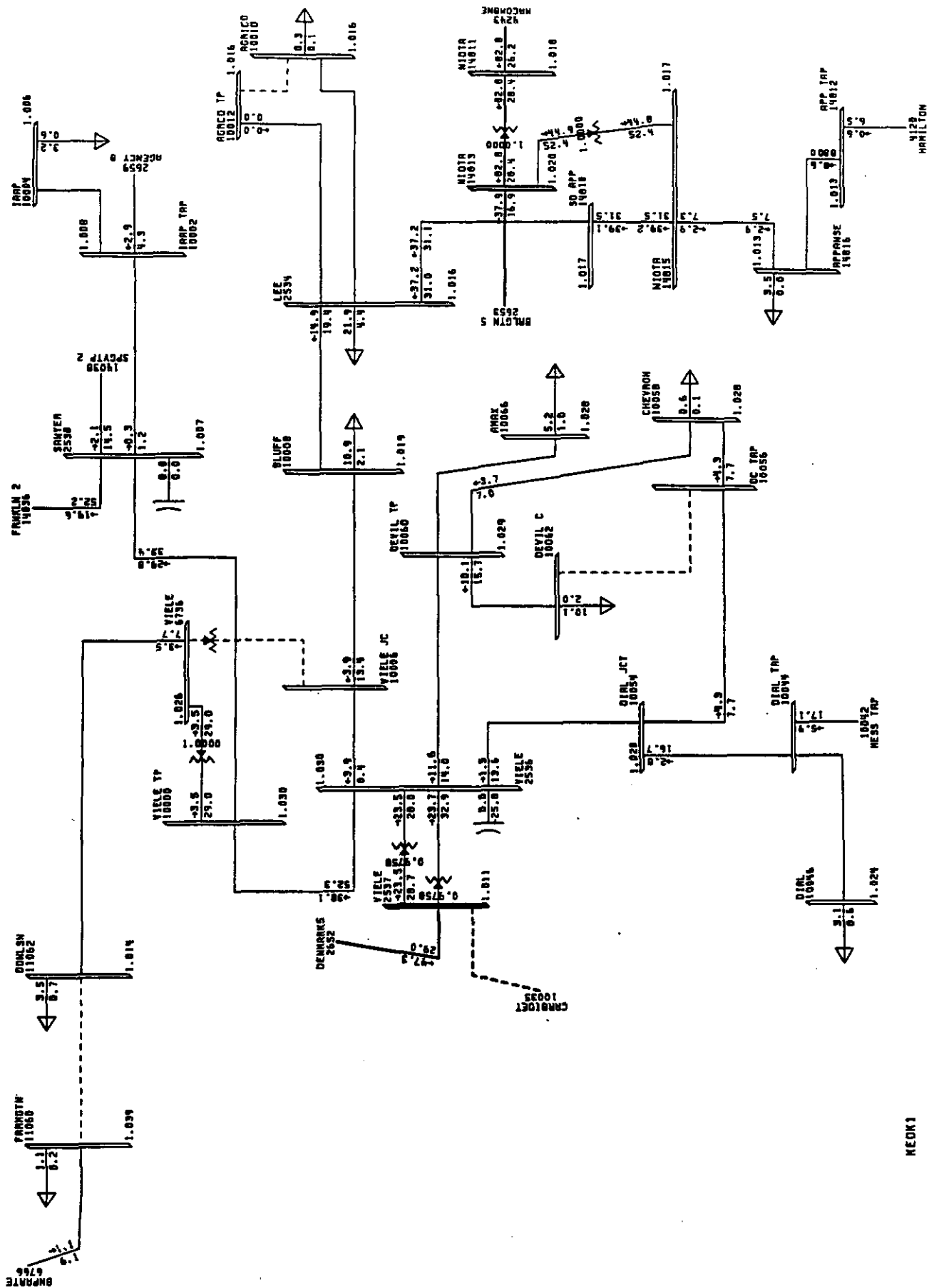
BRANCH - MW/% OF RATE P

100%

100%

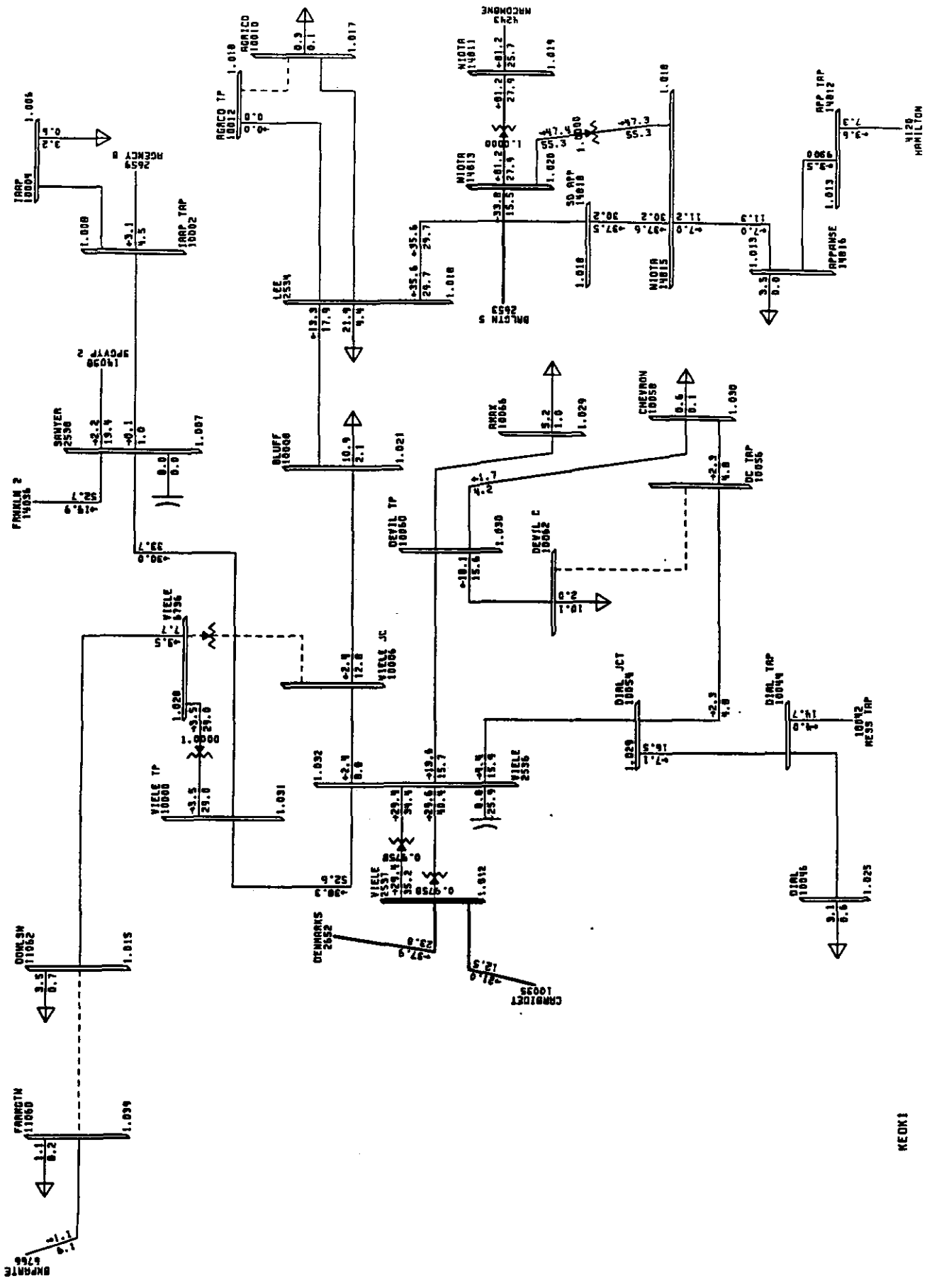
100%

100%



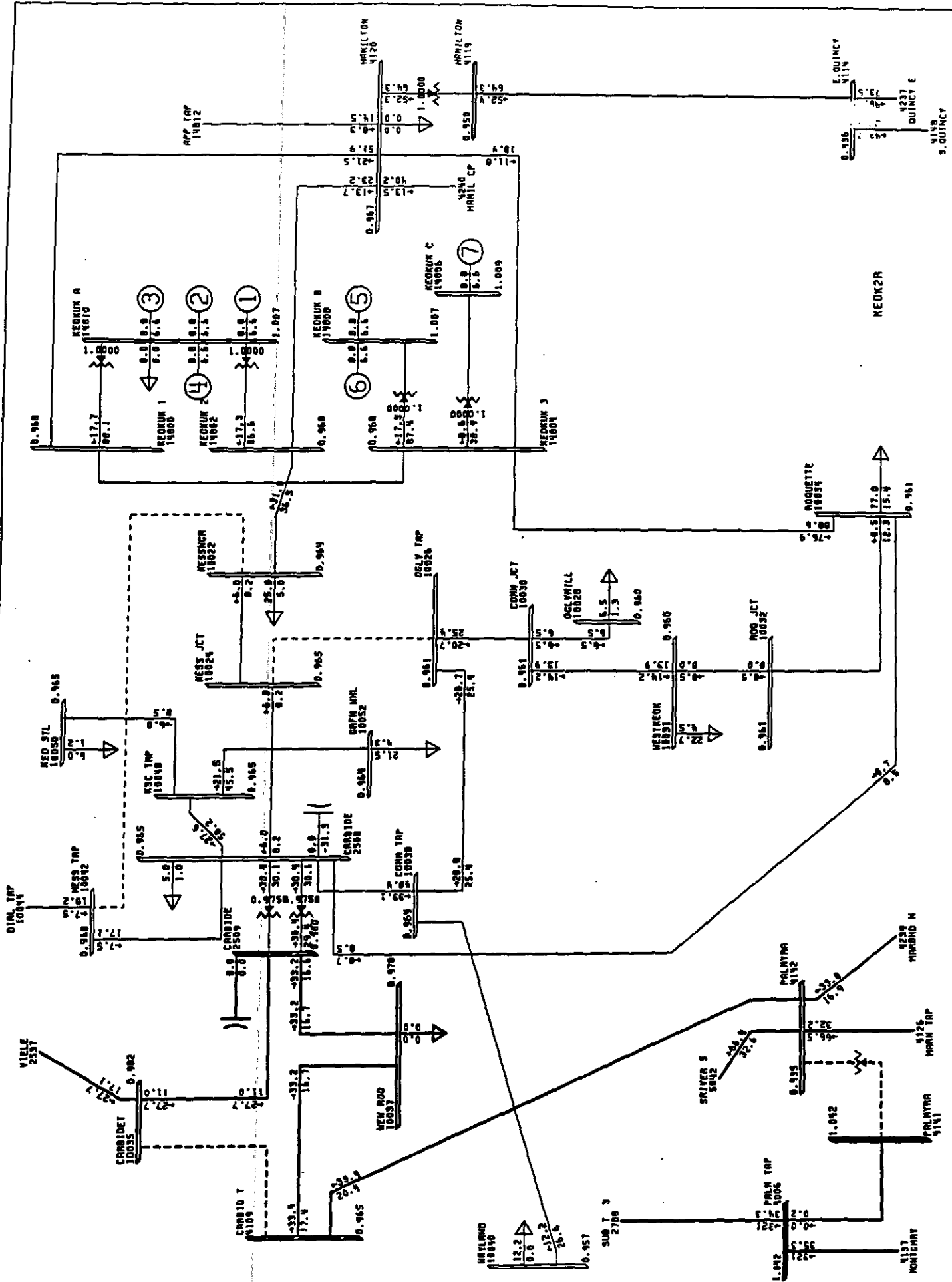
KEDK1

1998B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69	100% RATE A	BUS - VOLTAGE (PU)
CONT 5: LOSS OF CARBIDE - VIELE	0.925UV	BRANCH - MW/% OF RATE A
FRI, JUN 02 1995 16:01	KV: 572, 5141, 5167	EQUIPMENT - MW/MVAR

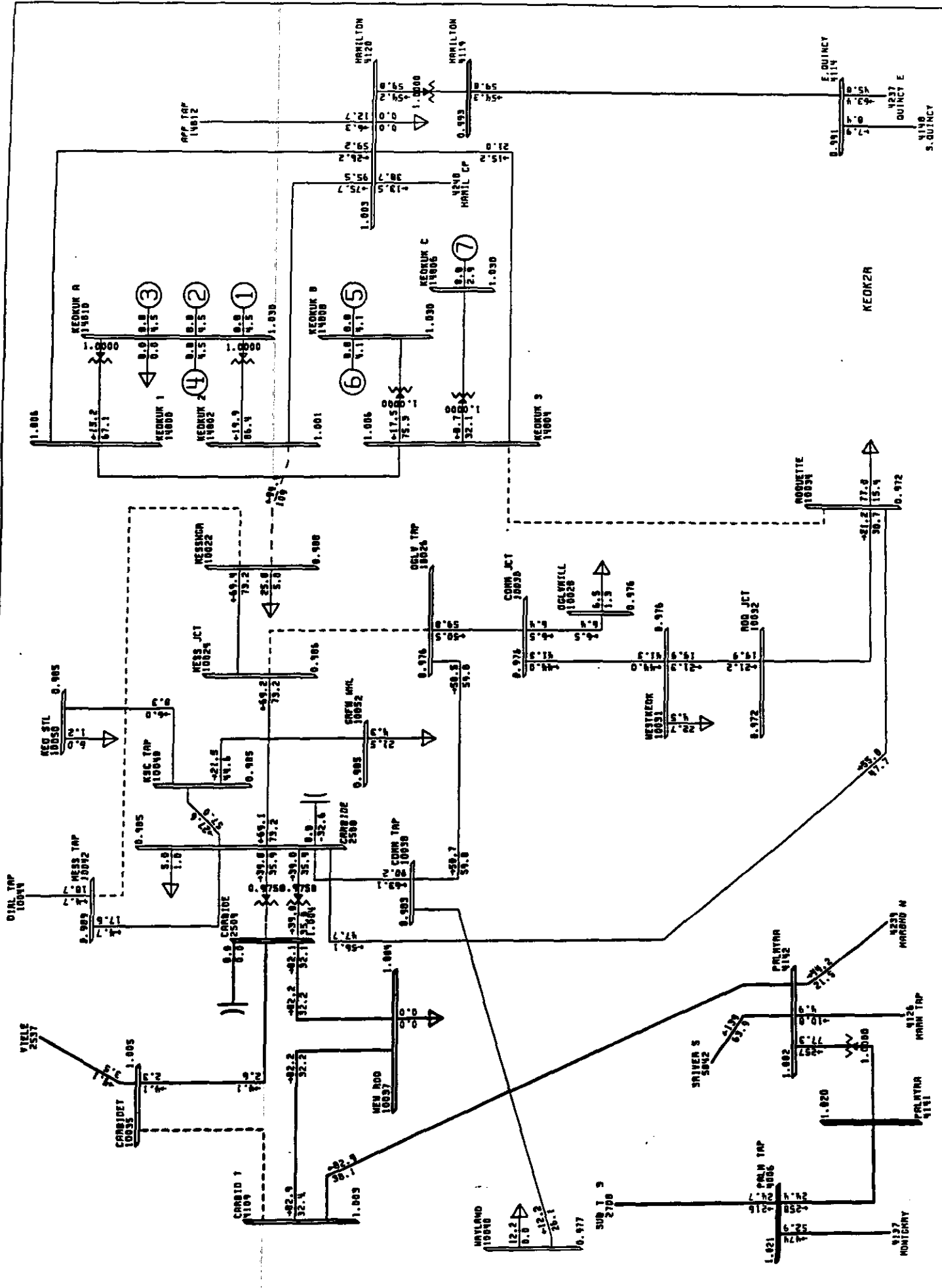


KEOKS

1998B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69 CONT 3: LOSS OF CARBIDE XFMR FRI, JUN 02 1995 16:00	100% RATER 0.9250V 1.0600V KV: 572, 5191, 5167	BUS - VOLTAGE (PU) BRANCH - MW/% OF RATE A EQUIPMENT - MW/MVAR
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1998B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69	100% RATER	BUS - VOLTAGE (PU)
2: LOSS OF PALMYRA 345/161	0.925UV	BRANCH - MW/% OF RATE A
	KV	EQUIPMENT - MW/MVAR



1988B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69

CONT 1: LOSS OF NEW HYDRO-ROQUETTE LINE

100% RATED

0.925 UV

1.050 OV

KV, 572

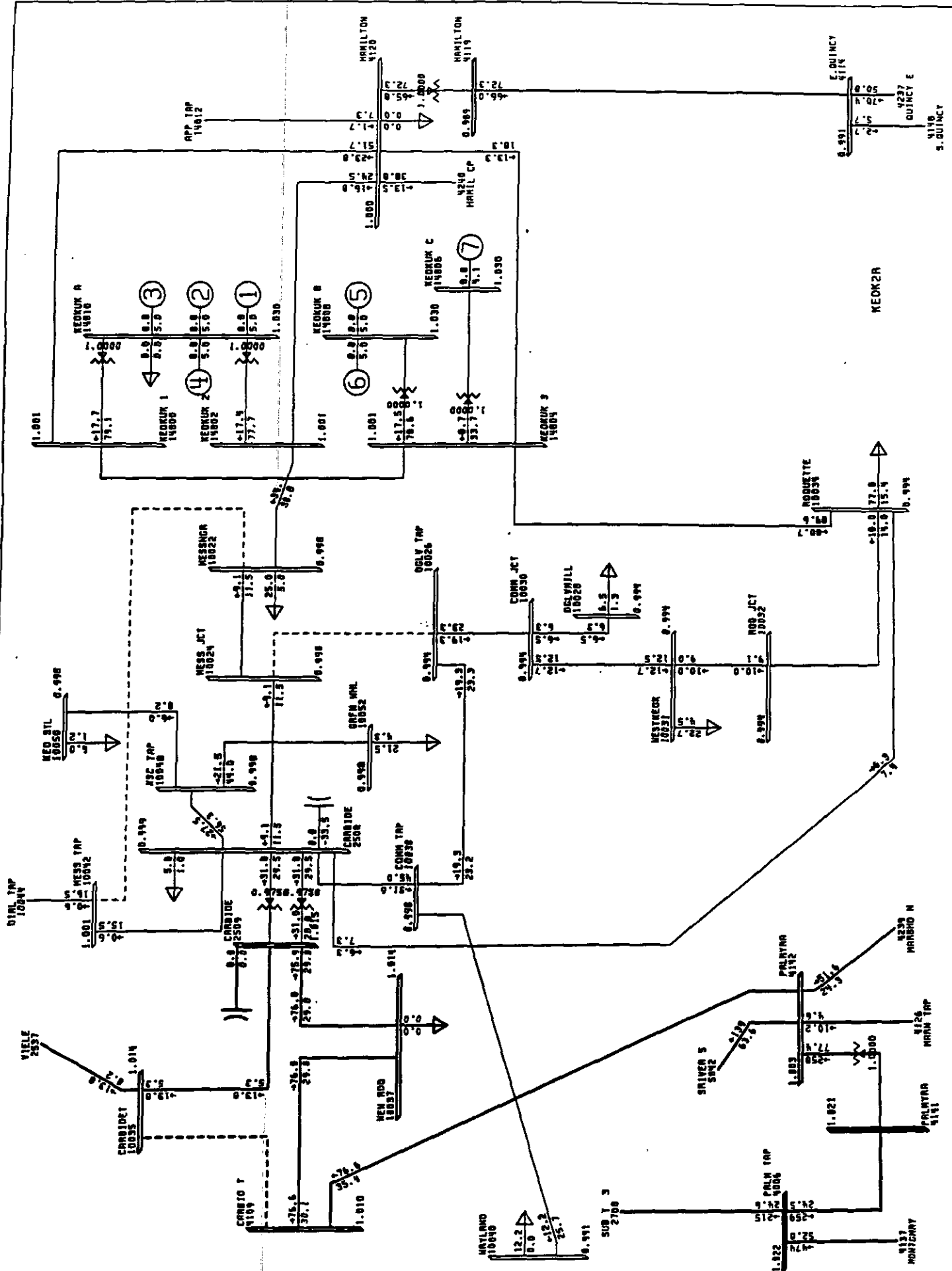
5141

5167

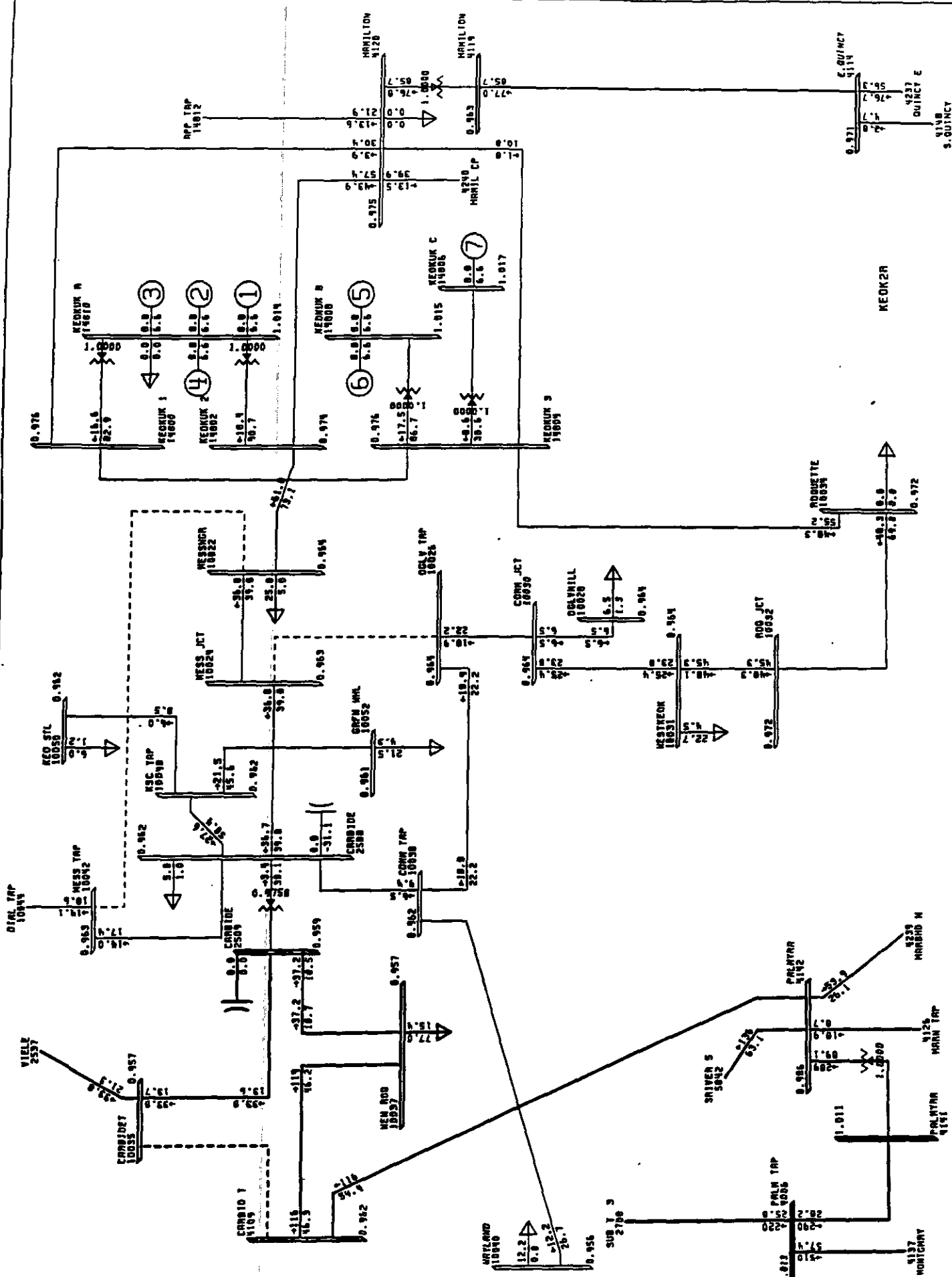
BUS - VOLTAGE (PU)

BRANCH - MW/% OF RATE A

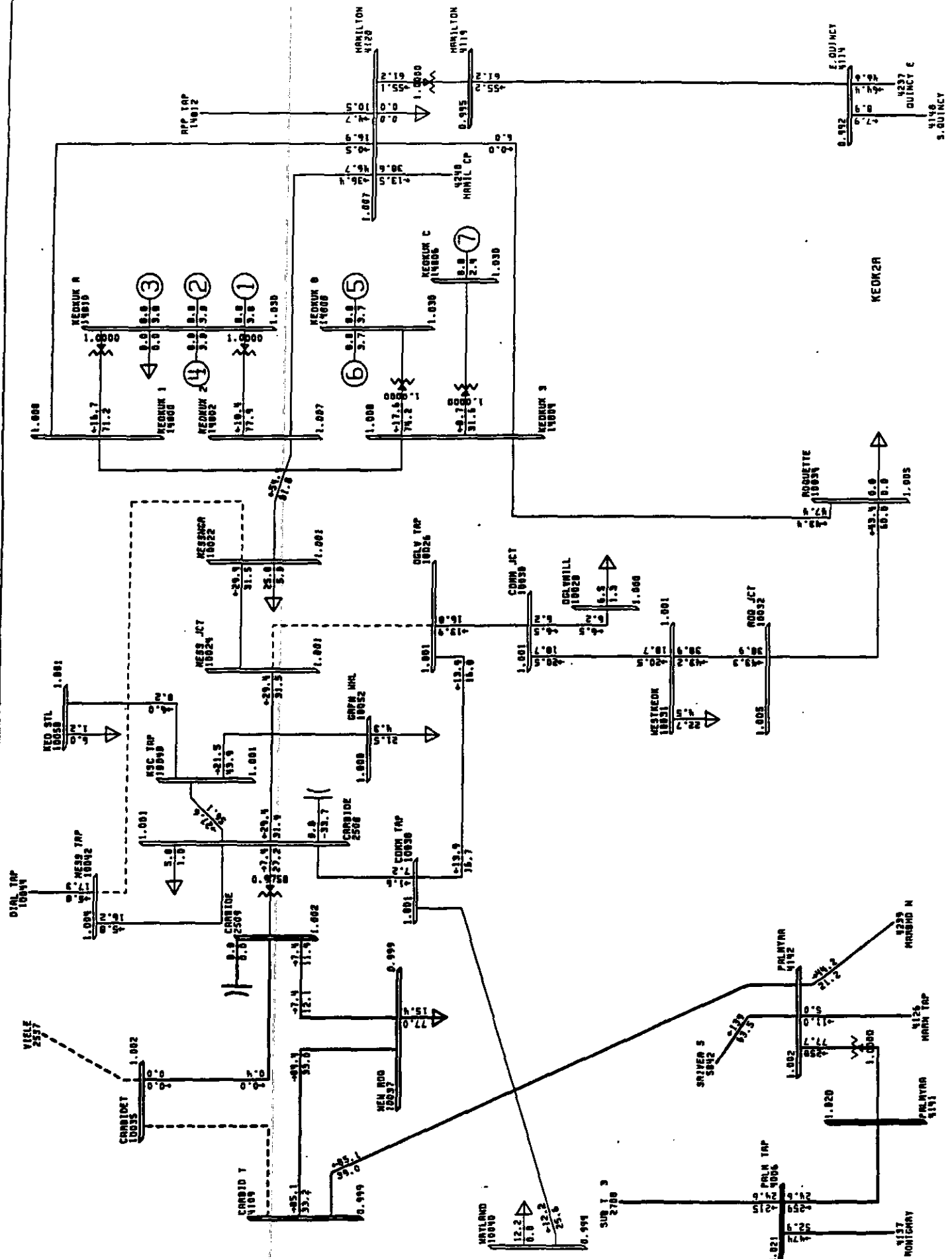
EQUIPMENT - MW/MVAR



1998B 69KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS 69	100% RATER	BUS - VOLTAGE (PU)
BASE CASE	0.925UV	BRANCH - MW/% OF RATE A
	KV: 572, 5151, 5157	EQUIPMENT - MW/MVAR

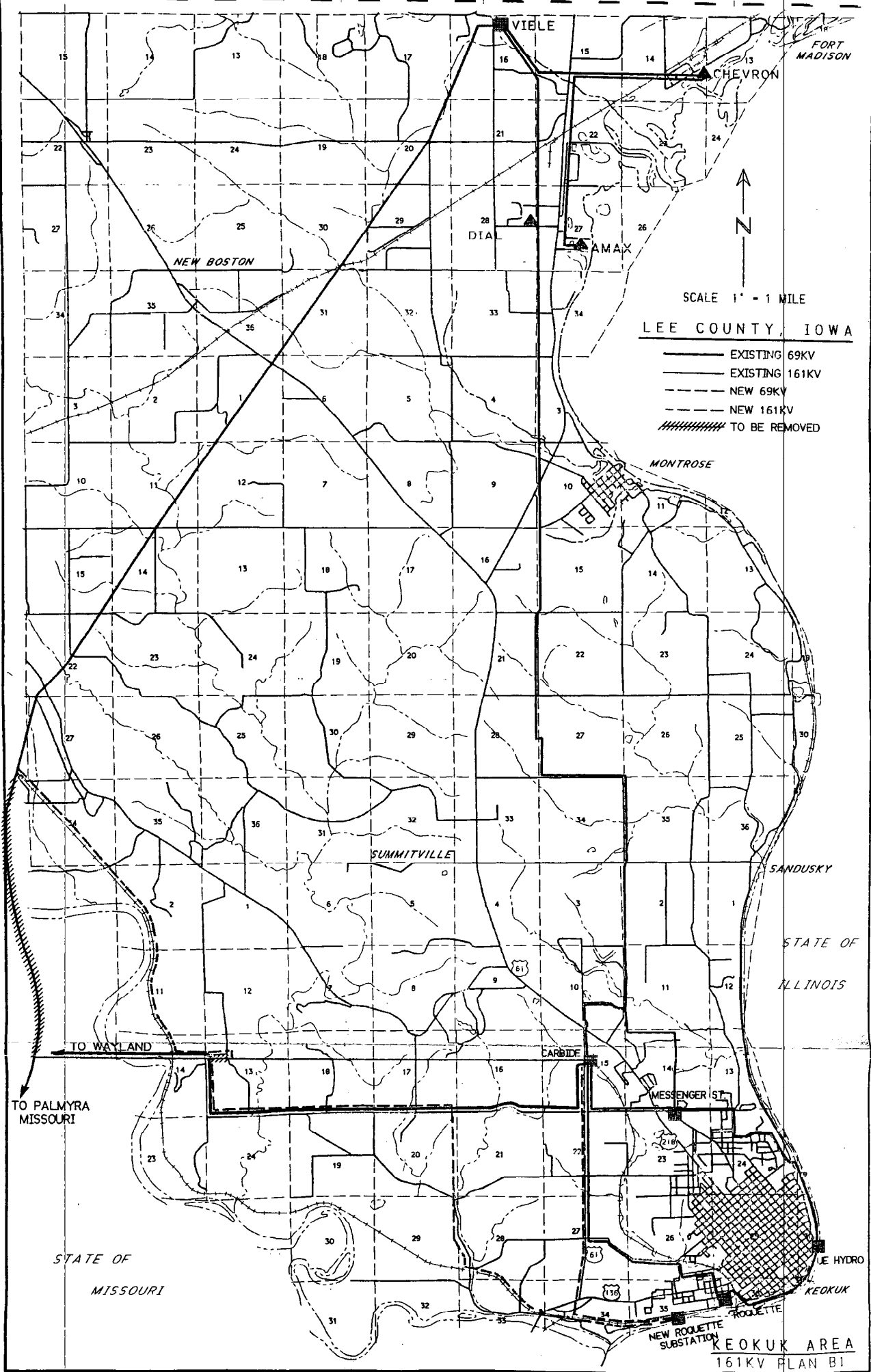


1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS
 100% RAIER
 0.925UV
 1.060 OV
 BRANCH - MW/2 OF RATE A
 EQUIPMENT - MW/MVAR



1998B 161KV PLAN, NEW CARB-MESS LINE, 24.3MVAR BGS
 CONT 5: LOSS OF CARBIDE - VIELE
 JUNE-02 1995 16-04

100% ARIER
 Q.925UV 1.060 QV
 KV, 572, 5141, 5167
 BUS - VOLTAGE (PU)
 BRANCH - MW/% OF RATE A
 EQUIPMENT - MW/MVAR



SCALE 1" = 1 MILE
LEE COUNTY, IOWA

- EXISTING 69KV
- EXISTING 161KV
- NEW 69KV
- NEW 161KV
- TO BE REMOVED

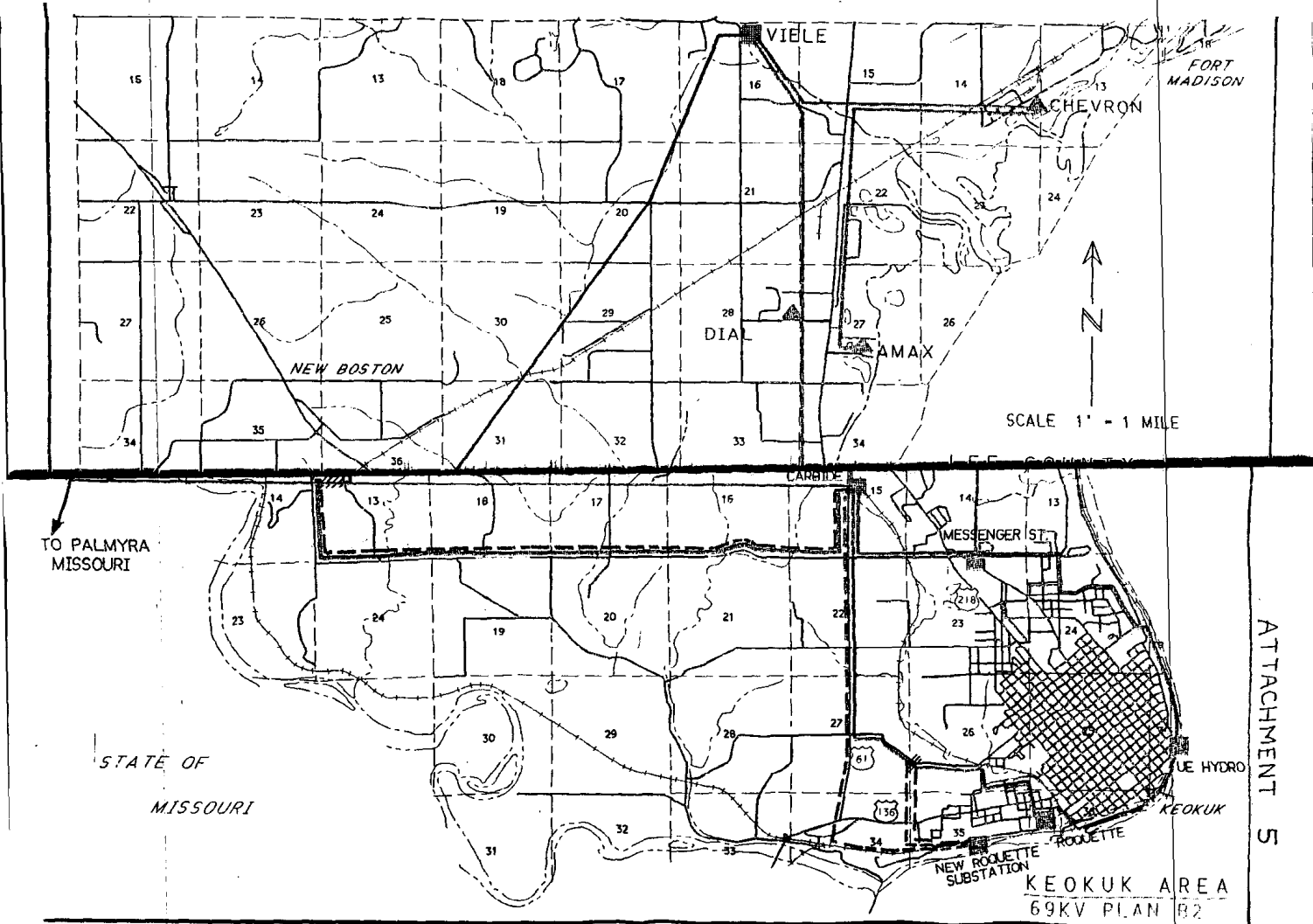
MONTROSE

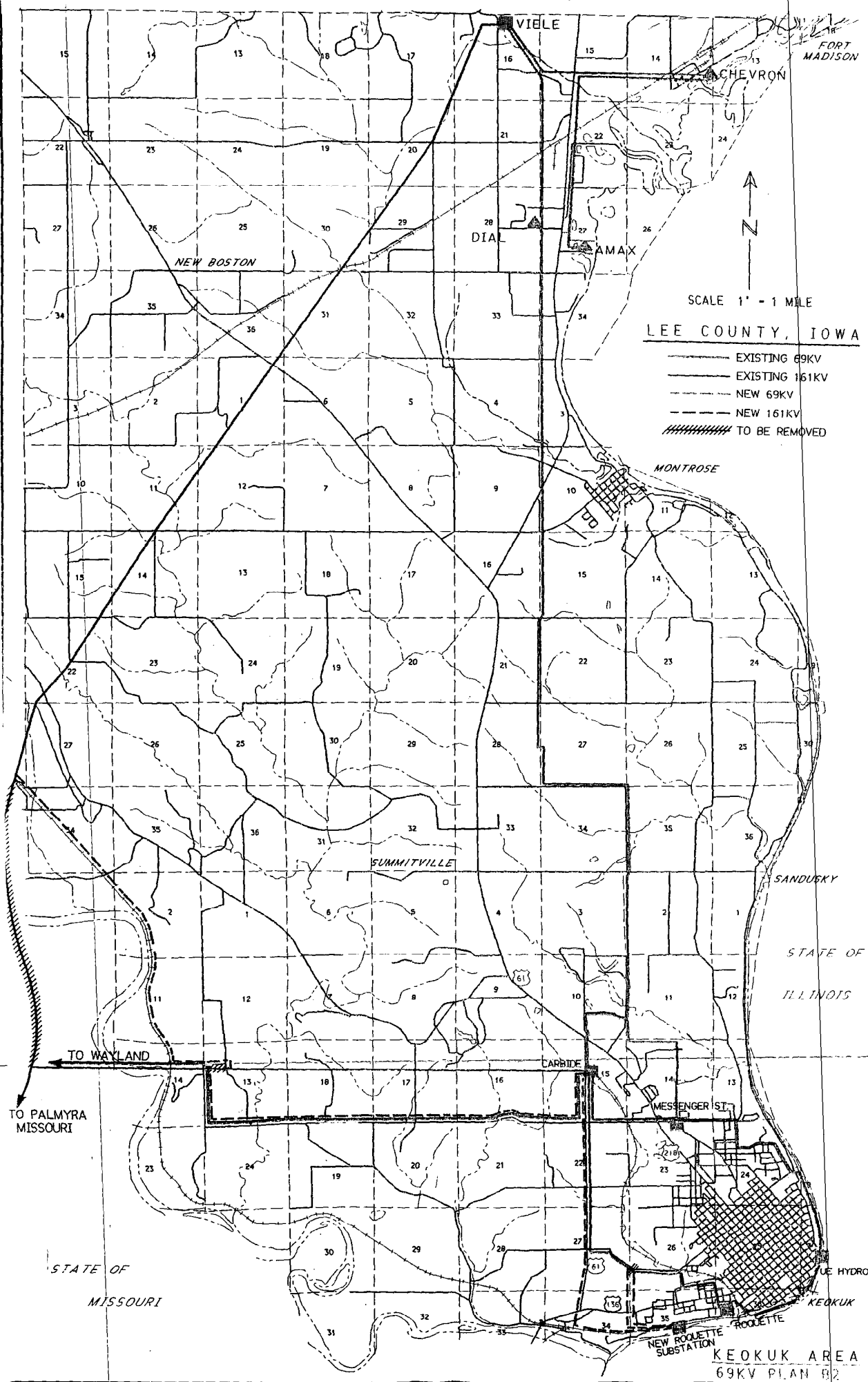
SUMMITVILLE

STATE OF ILLINOIS

STATE OF MISSOURI

KEOKUK AREA
161KV PLAN B1





ATTACHMENT 5

ATTACHMENT 6

MEGAWATT LOADS ON THE 69/161KV KEOKUK SYSTEM DUE TO EXPECTED CHANGES ASSOCIATED WITH ROQUETTE, FERROSIL, MIDWEST CARBIDE, TERMINAL SUBSTATION REMOVAL

	1995 (existing)	1996	1998	2006
ROQUETTE	27	34	37	47
FERROSIL	0	16	40	40
MIDWEST CARBIDE	0	0	5	5
TERMINAL SUB REMOVAL	0*	0*	7.9**	7.9**

* - Terminal sub load is not currently on the 69 or 161kv system in Keokuk therefore it is shown as 0 load.

** - The 7.9mw of expected load to be transferred when Terminal sub is removed has been split between Messenger and West Keokuk for modeling purposes.

ATTACHMENT 5

