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AUTHORITY

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2006, ONR ltr, 31 Jan 2006**

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MC REPORT 011
Volume 5

ACOUSTIC ENVIRONMENTAL SCENARIOS
AND
PREDICTIONS FOR ASW

VOLUME 5
AREA 2, SUMMER
PREDICTIONS FOR PASSIVE SONAR

October 1972

LONG RANGE ACOUSTIC PROPAGATION PROJECT



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OCEAN SCIENCE PROGRAM
MAURY CENTER FOR OCEAN SCIENCE
Department of the Navy
Washington, D.C.

D D C
JUN 27 1973
B

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Test and Evaluation; 27 JUN 1973. Other requests
for this document must be referred to

This document

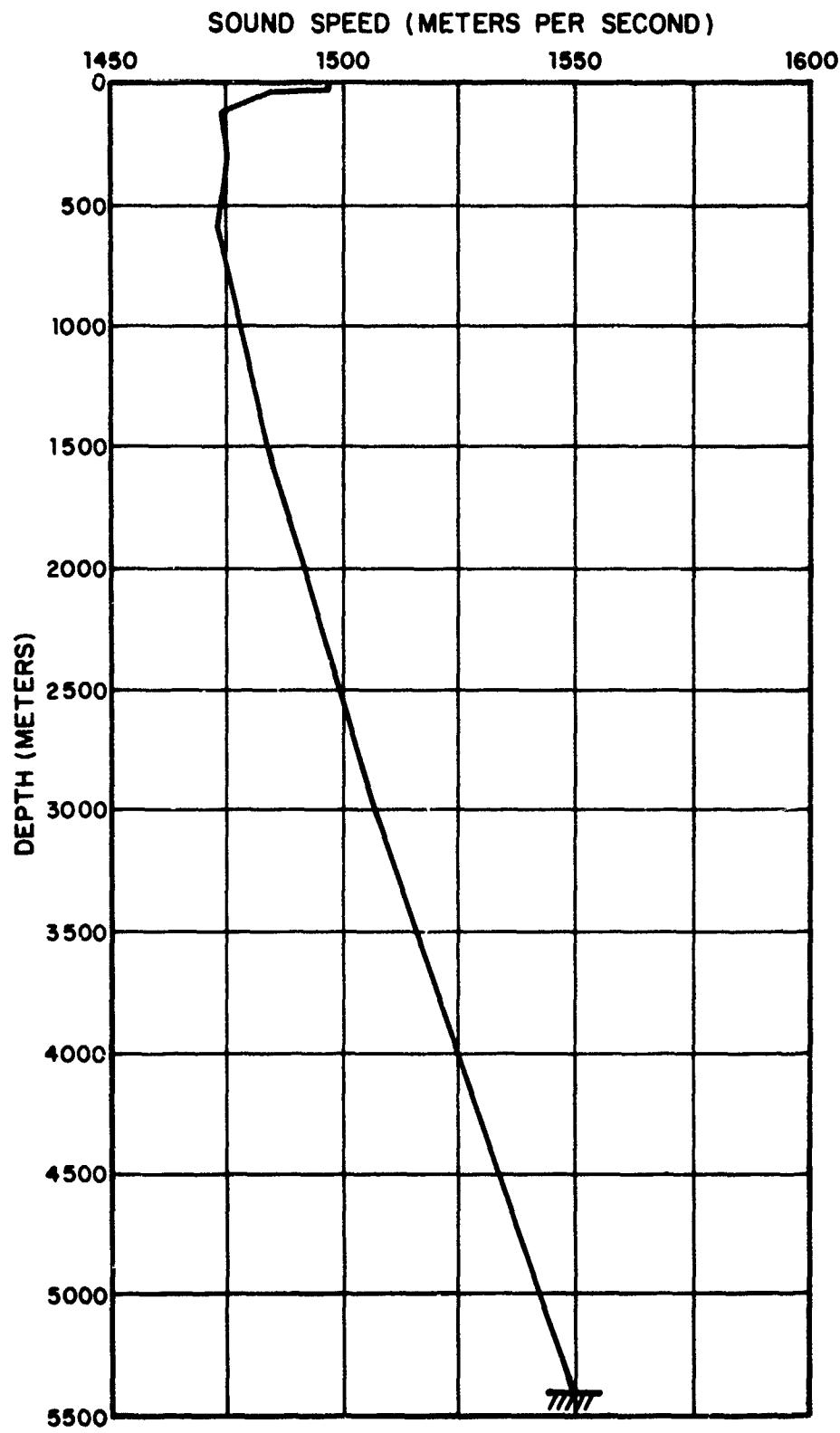
Director, Long Range Acoustic Propagation Project (ONR Code 102-OS)

Arlington, Va. 22217

ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS
FOR ASW

Volume V: Area 2 Summer
PREDICTIONS FOR PASSIVE SONAR

Refer to Volume 1 of this report for an explanation of the plot format and descriptions of models and ocean areas.



SOUND SPEED PROFILE
AREA 2, SUMMER

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70

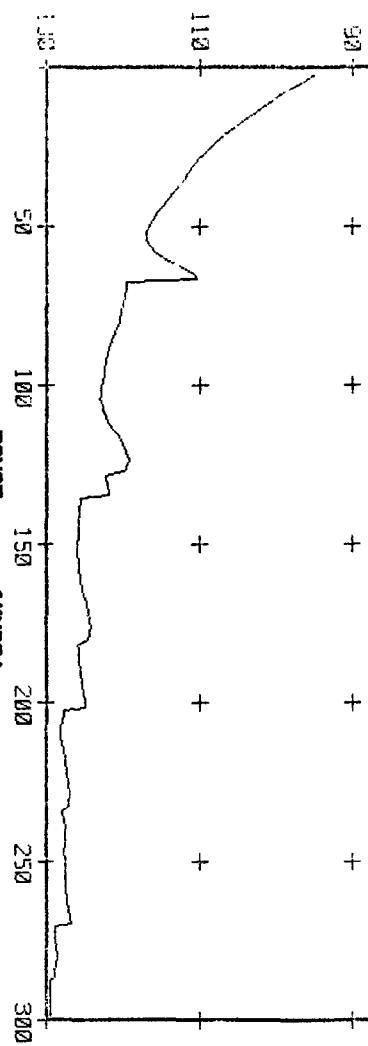
FRIED 2 SUMMER

S 24 R 69 F 10

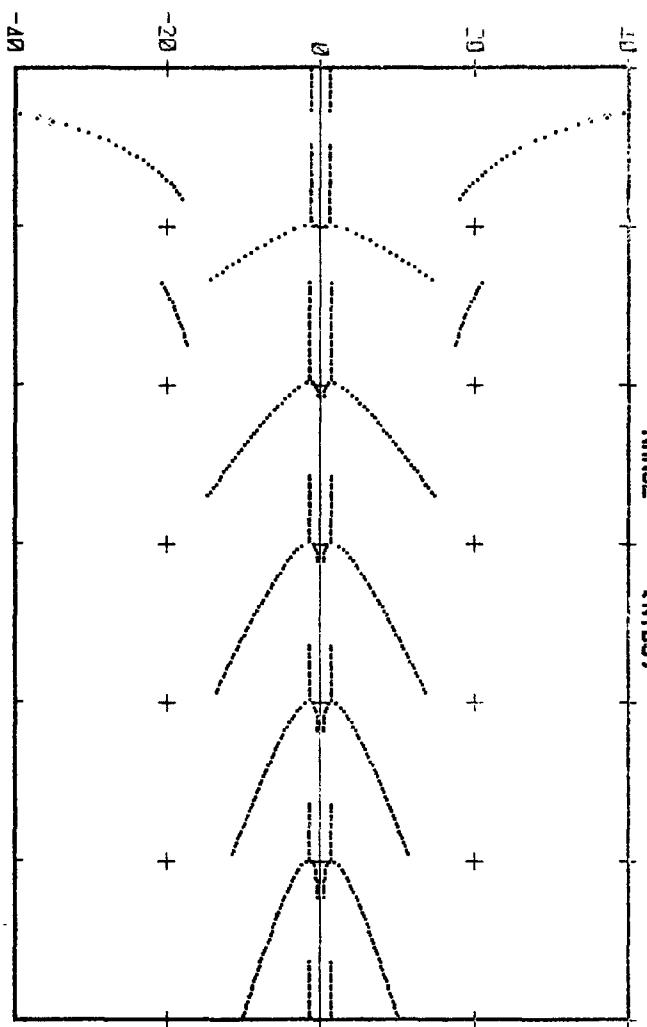
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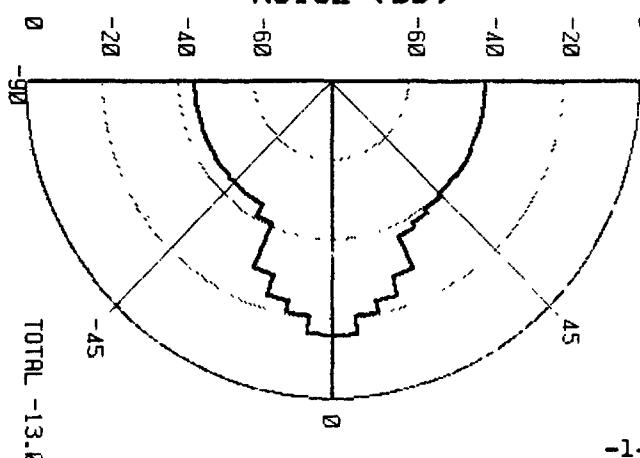
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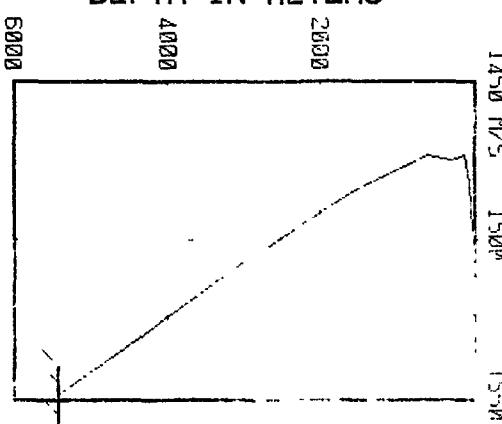
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



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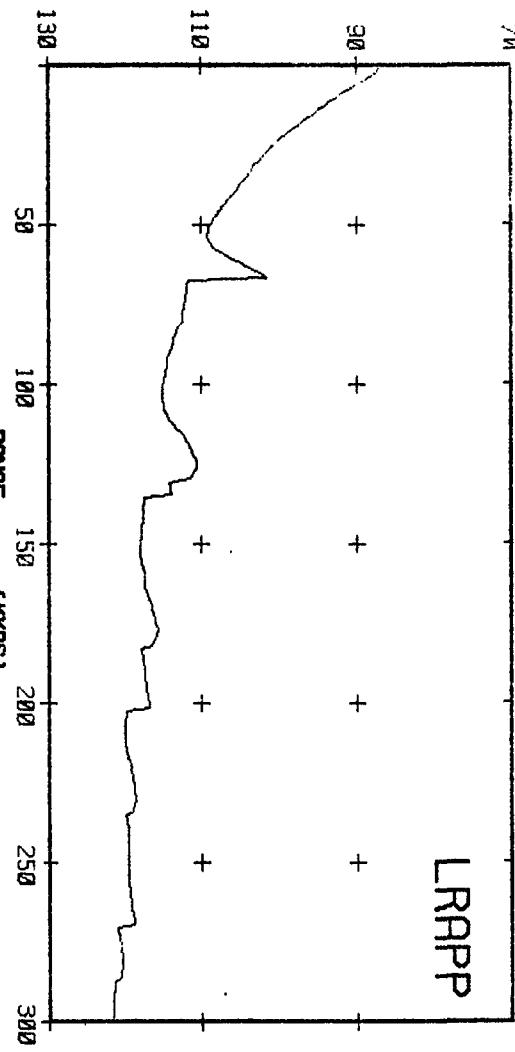
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AREA 2 SUMMER

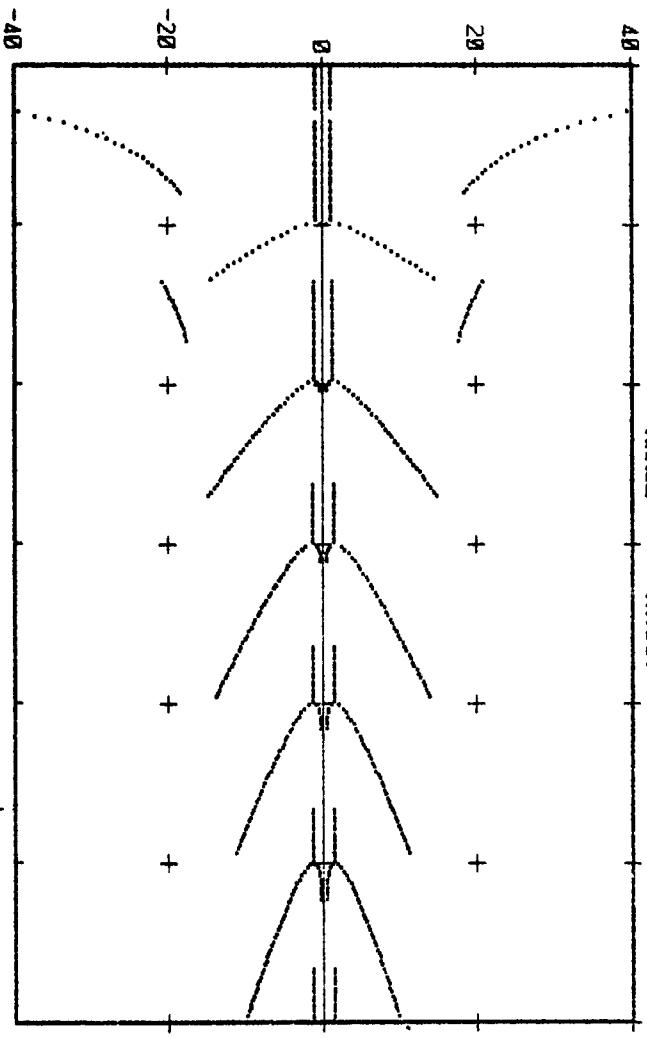
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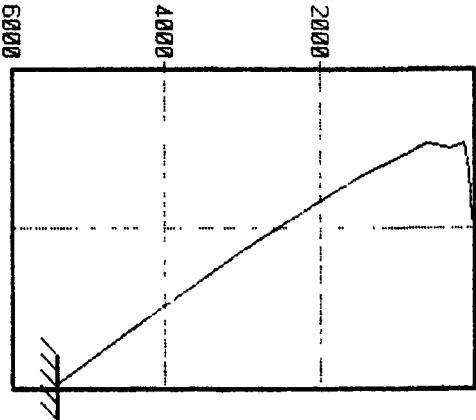
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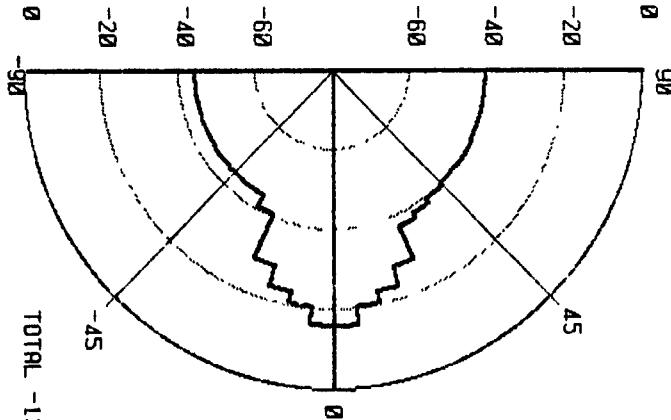
ARRIVAL ANGLE



DEPTH IN METERS

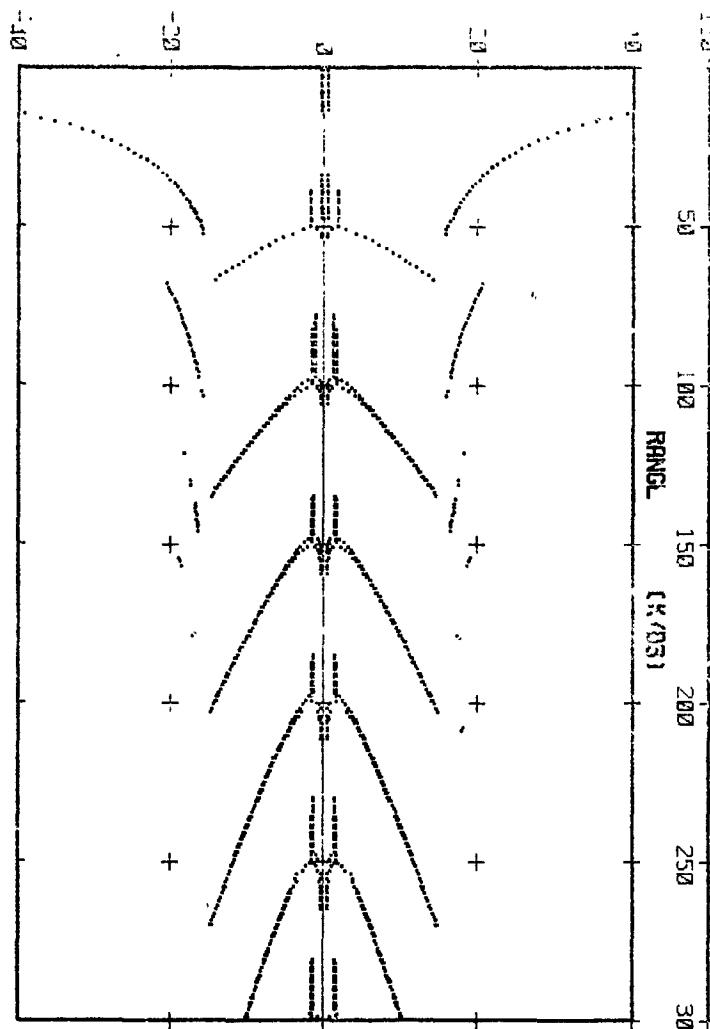


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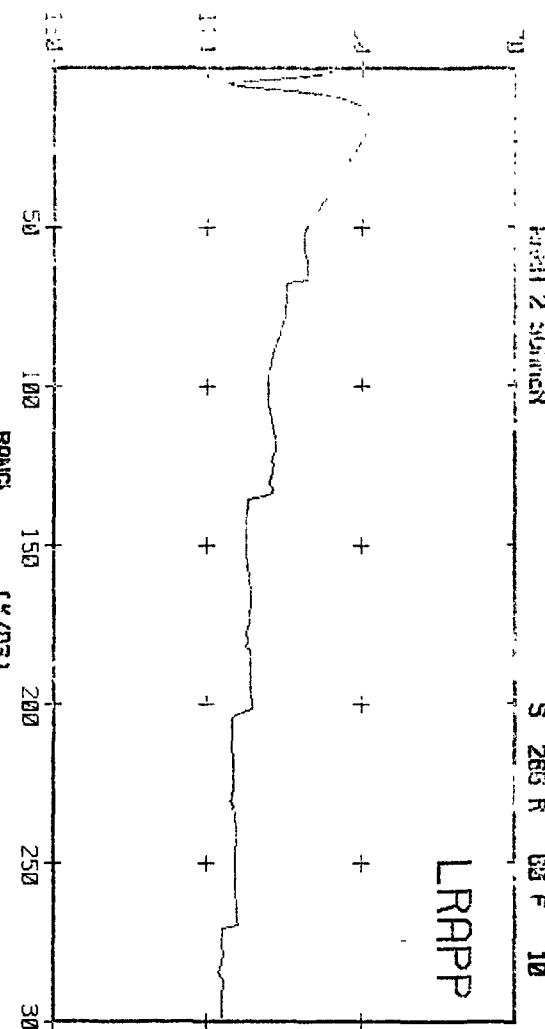


TOTAL -13.0 DB

ARRIVAL ANGLE



DB LOSS



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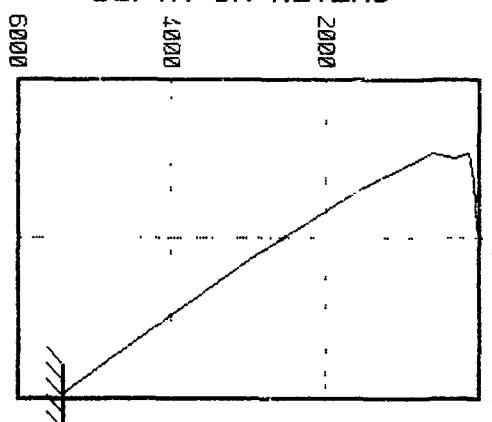
FRI 2 SLINGER

S 285 R 63 F 10

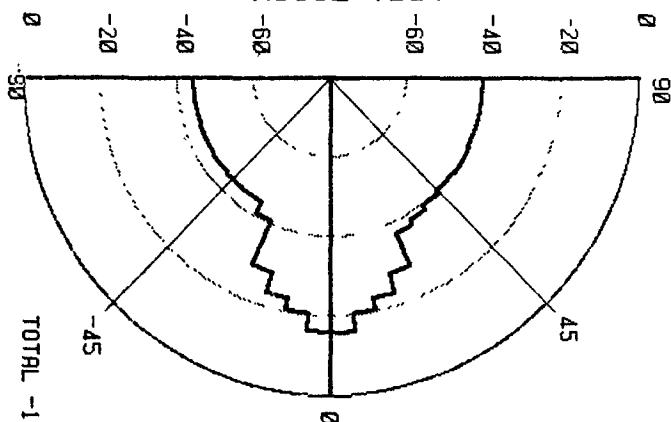
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LRAPP

DEPTH IN METERS



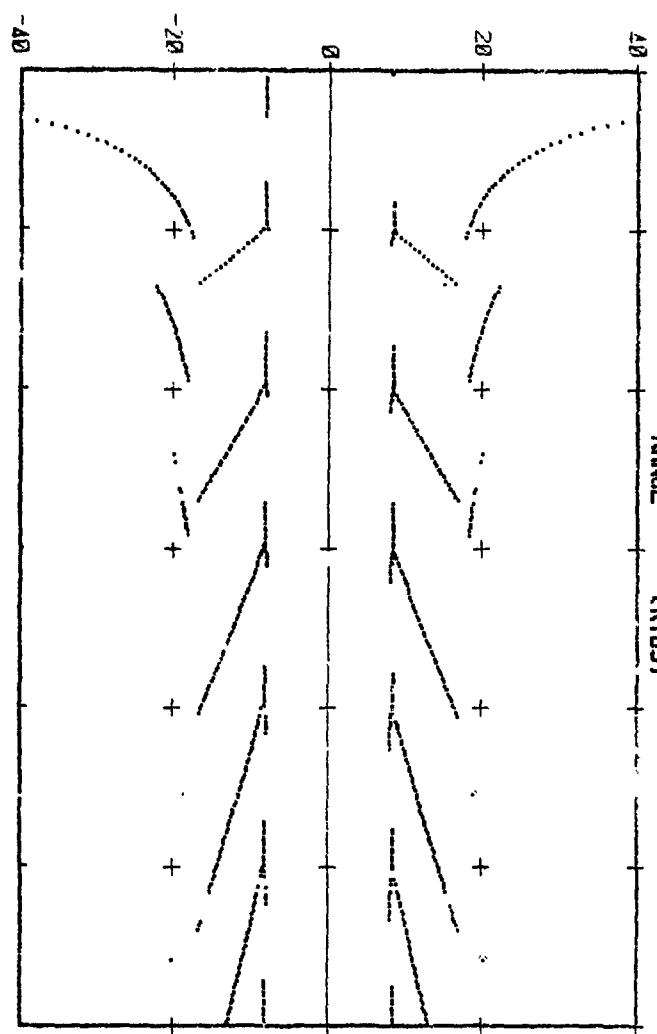
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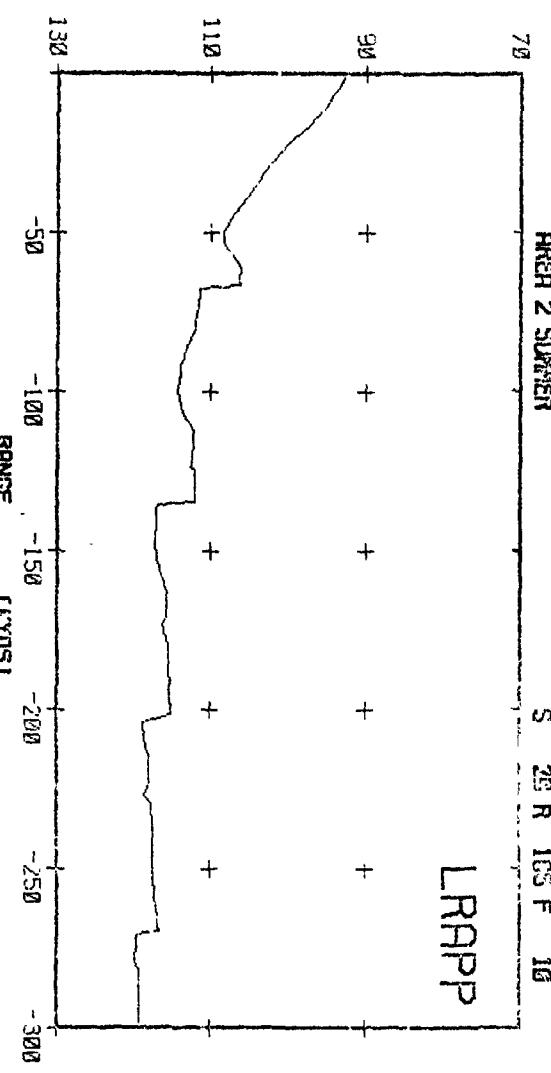
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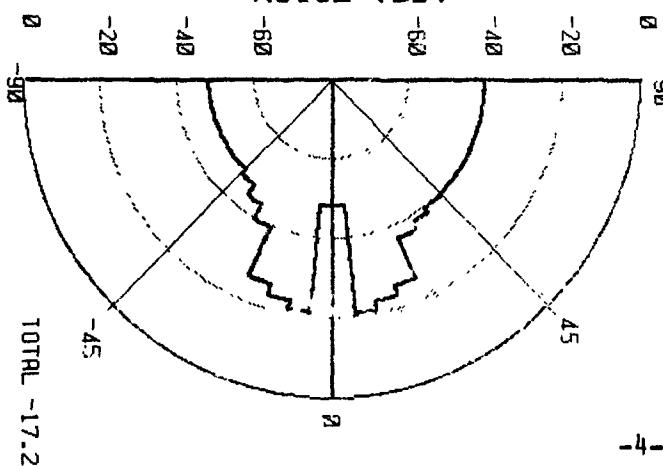
ARRIVAL ANGLE



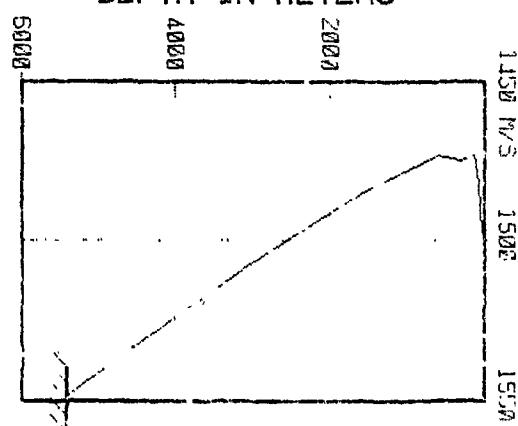
DB LOSS



NOISE (DB)



DEPTH IN METERS



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ARR 2 SUMMER

S 25 R 165 F 16

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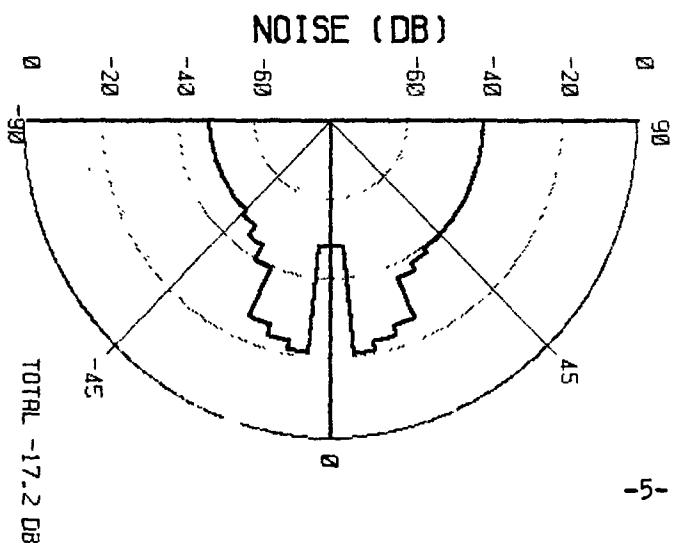
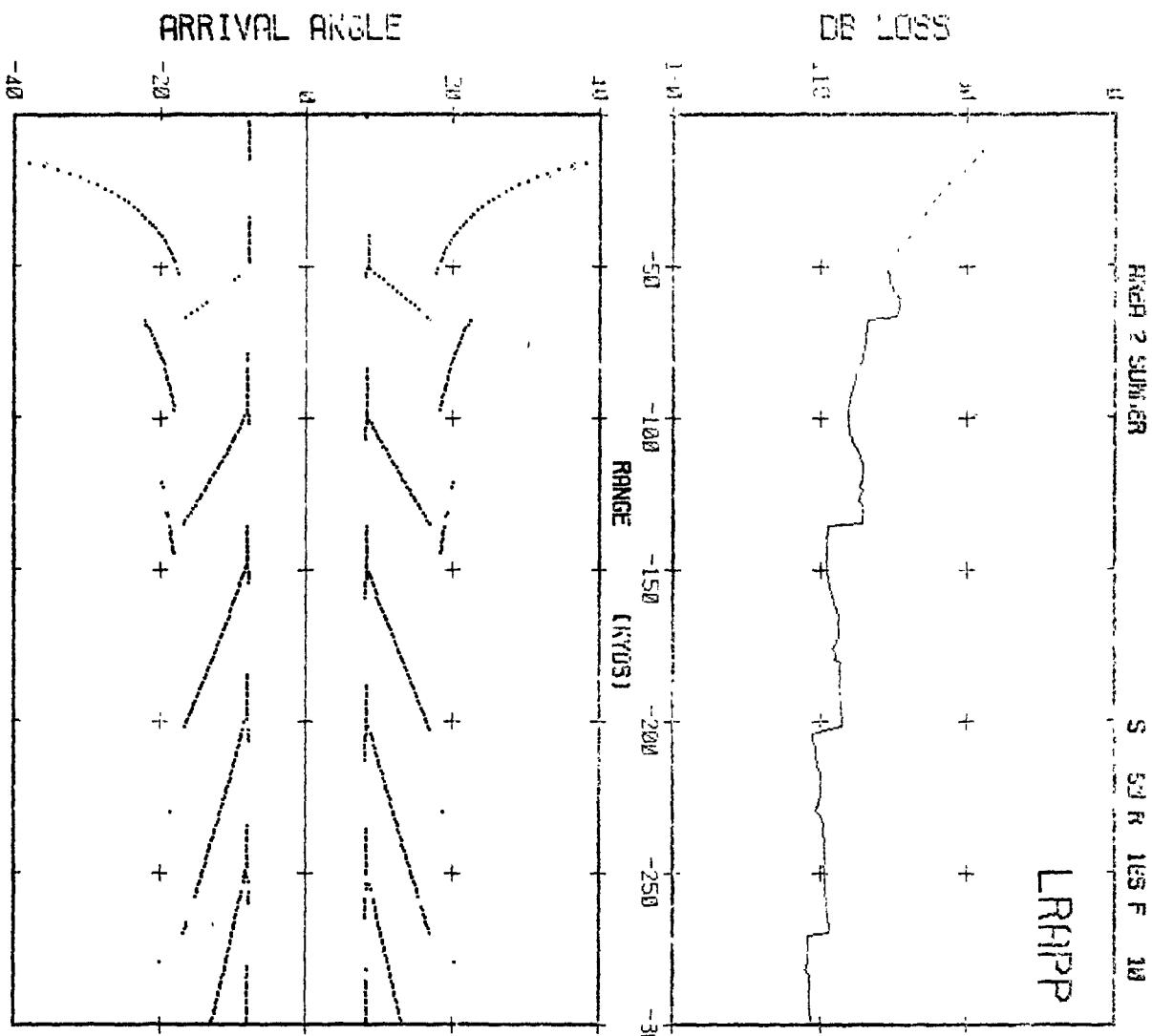
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LRAPP

-4-



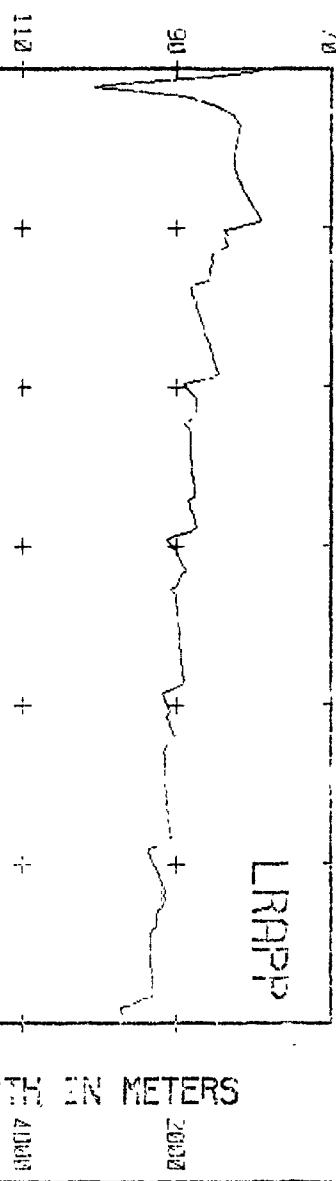
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YEAR 2 SUMMER

S 263 R 100 T 11

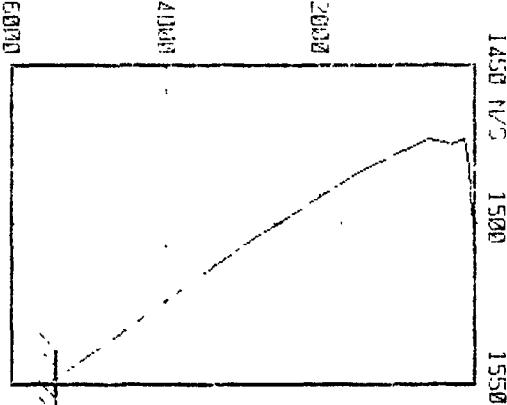
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DB LOSS

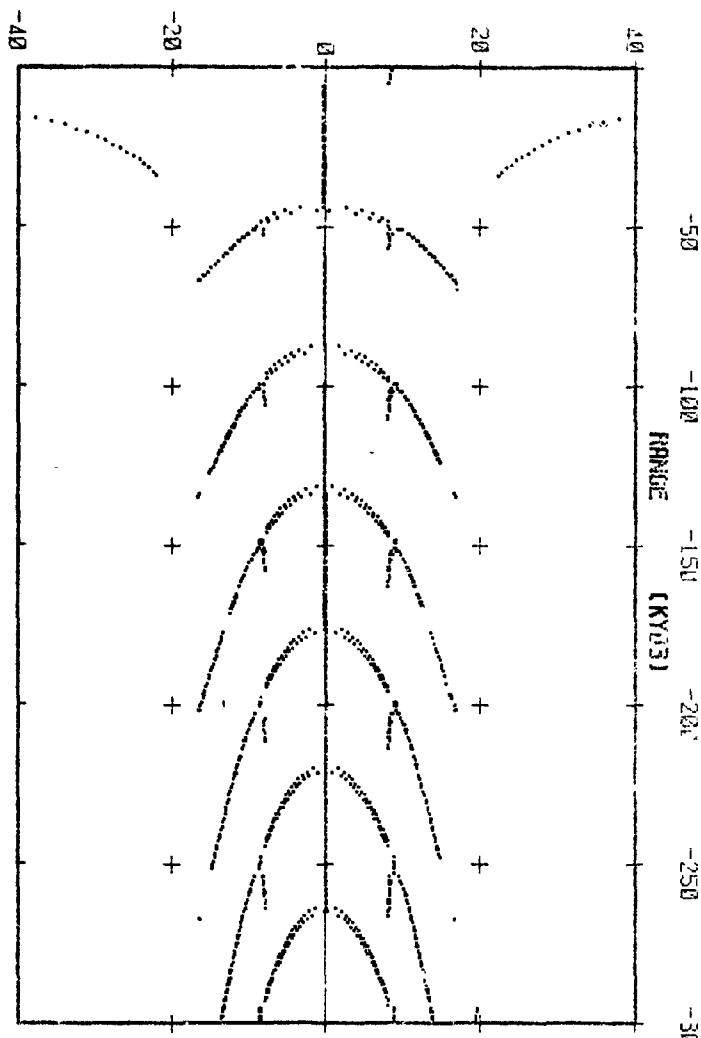


LRAPP

DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)

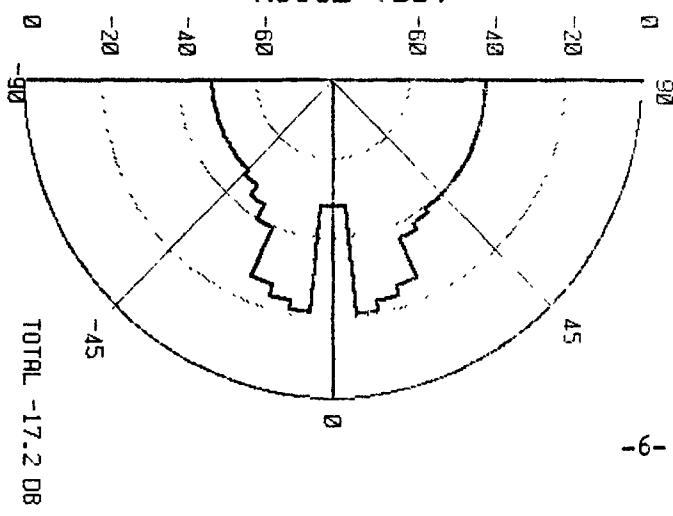


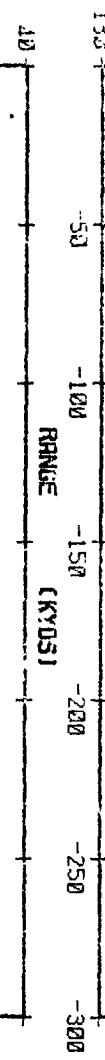
FIGURE 2 SLIDER

S 20 R 32 F 19

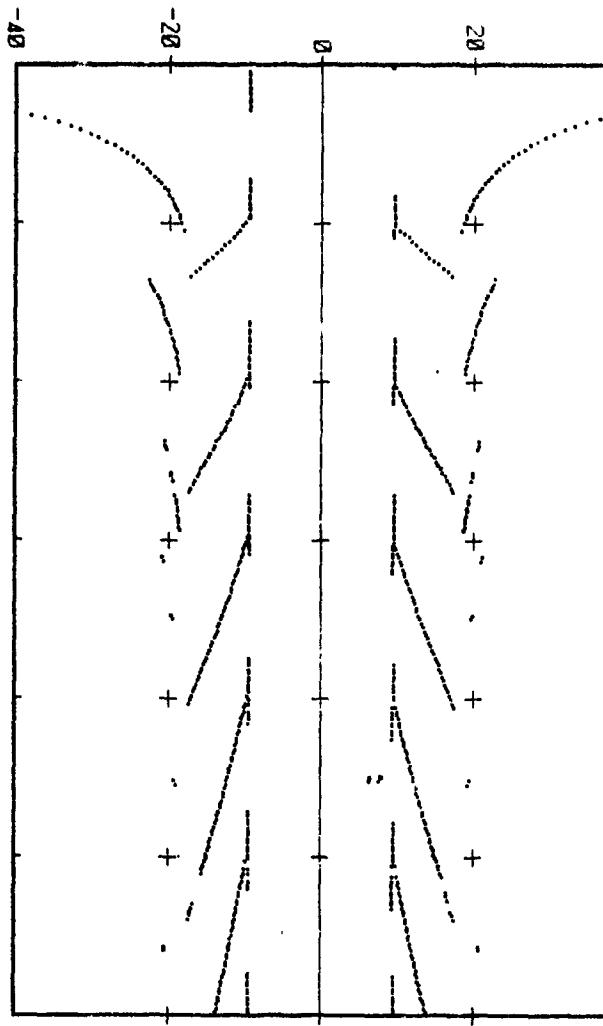
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LRAAPP

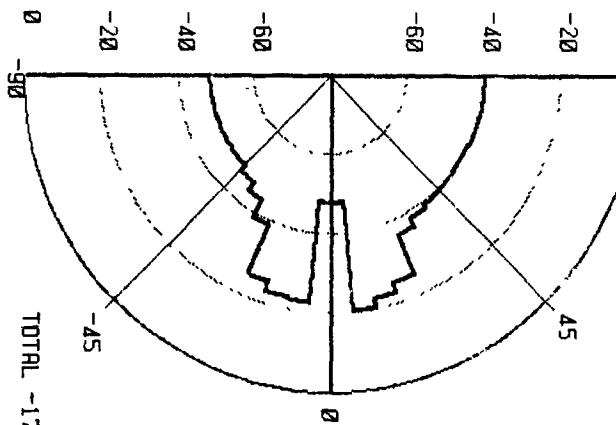
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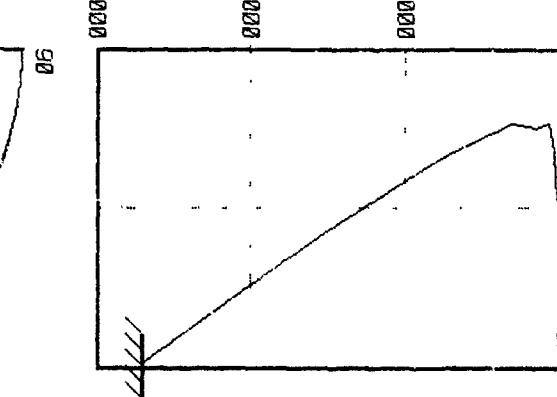
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



-7-

TOTAL -17.2 DB

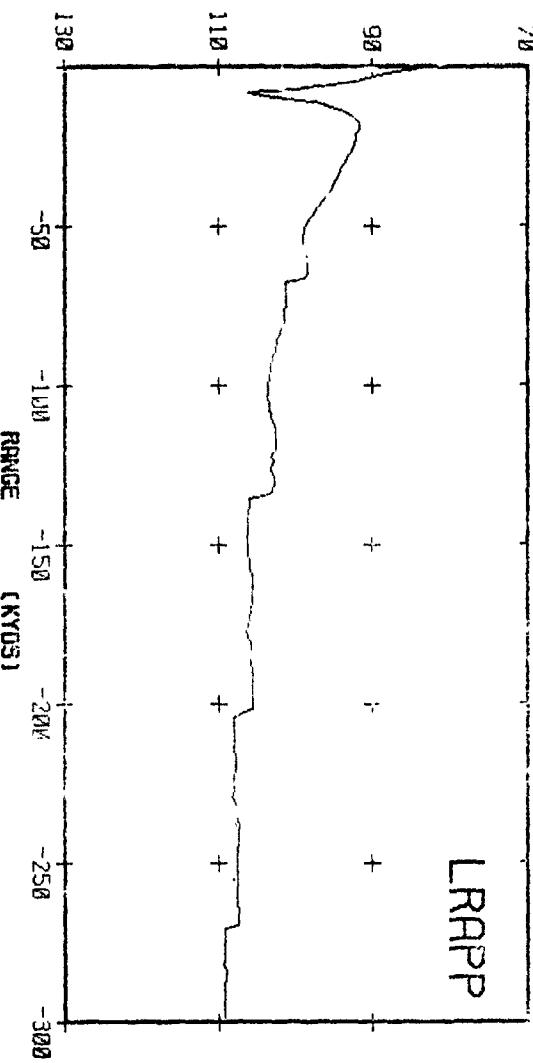
AREA 2 SUMMER

S 50 R 30W F 18

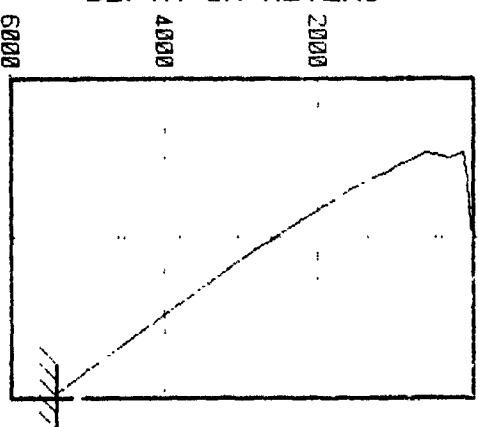
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LRAPP

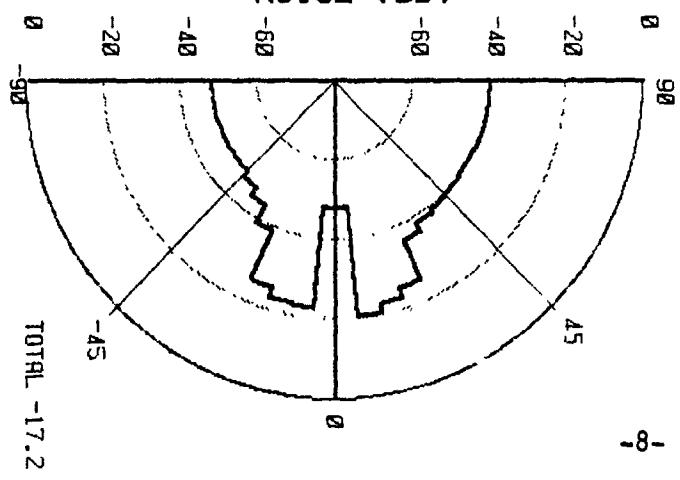
DB LOSS



DEPTH IN METERS



NOISE (DB)



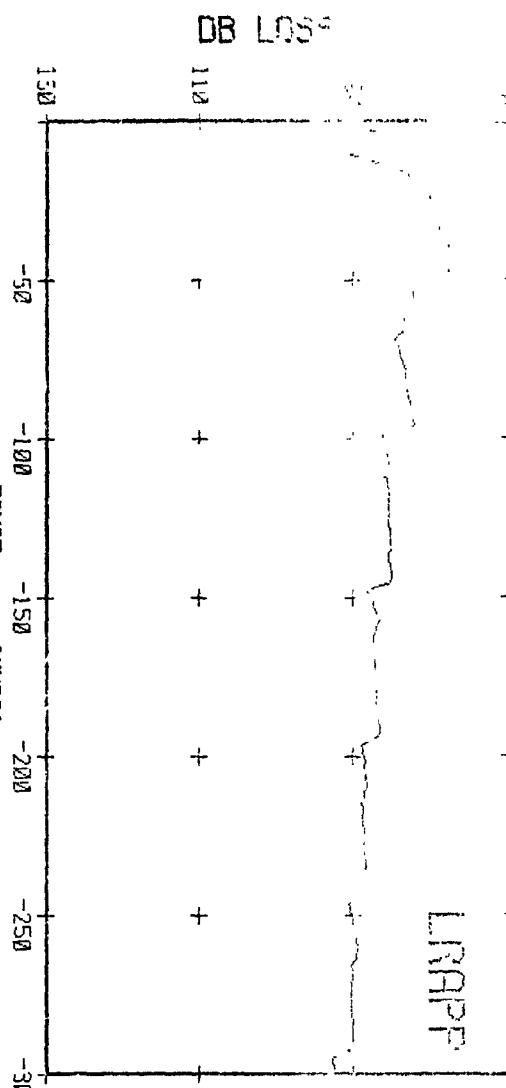
ARRIVAL ANGLE

AREA 2 SHIPPER

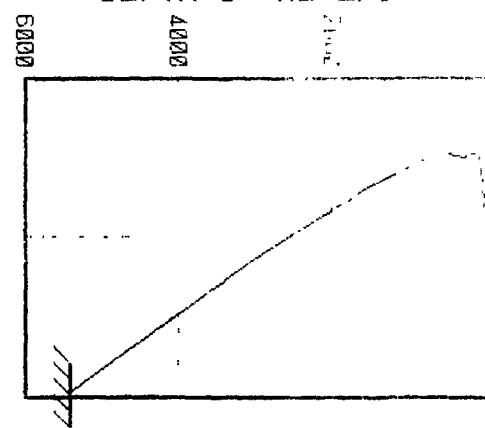
S 200 R 300 F 10

1450 N 5 1500 1550

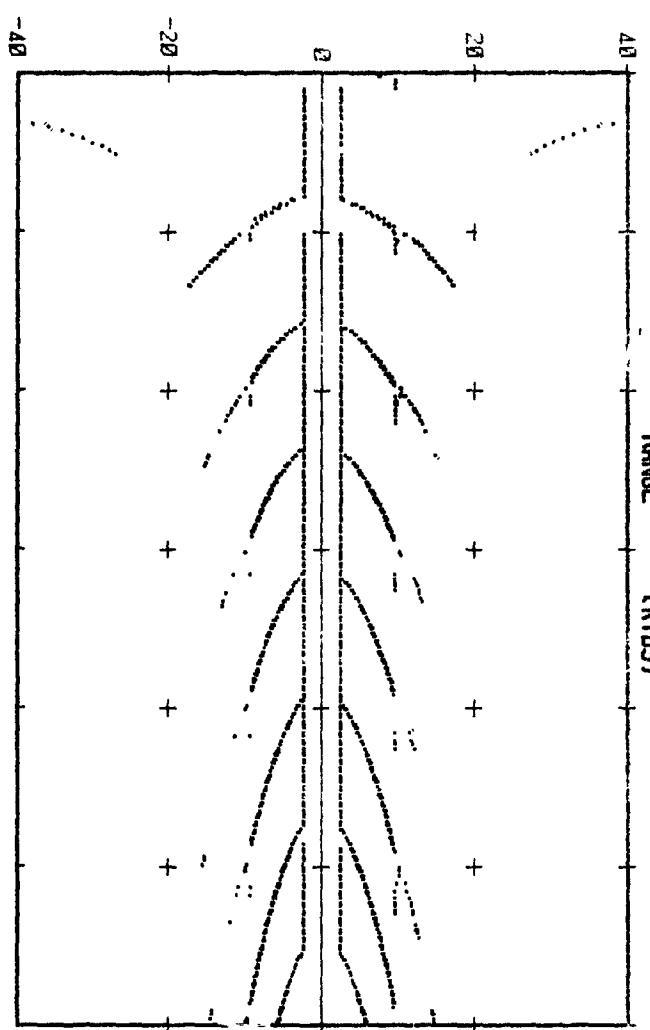
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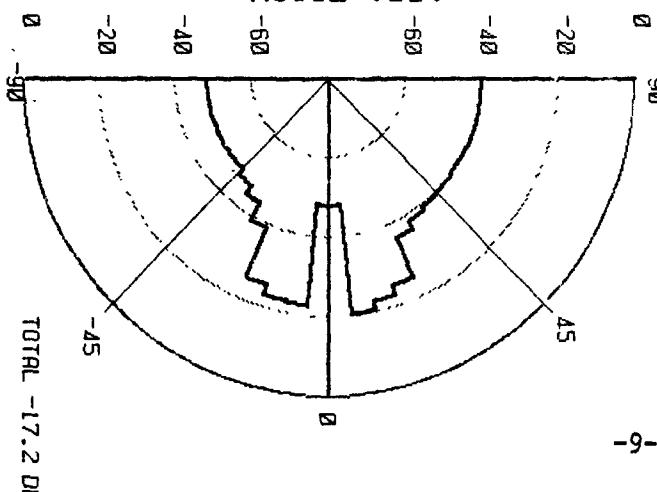
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



TOTAL -17.2 DB

70

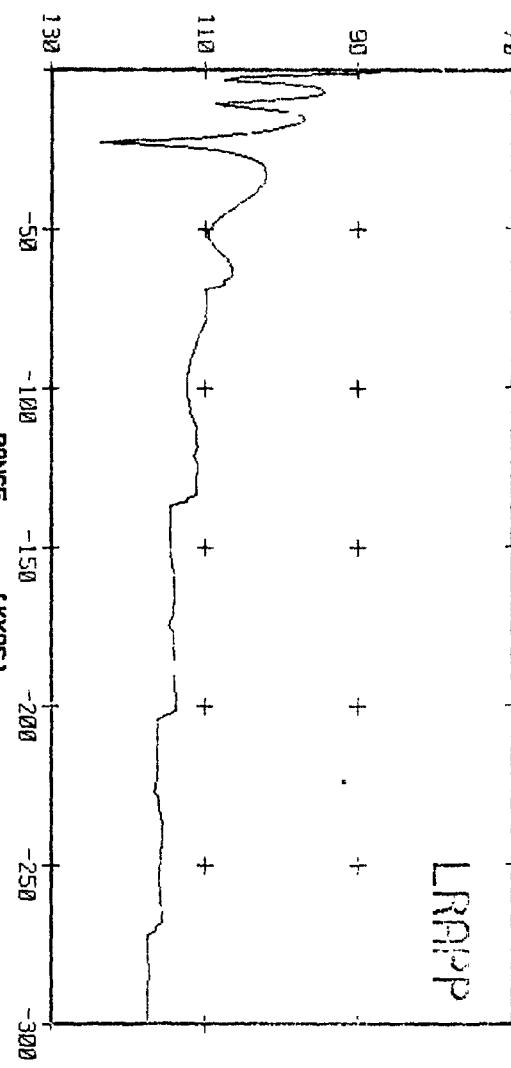
FIRE 2 SLINGER

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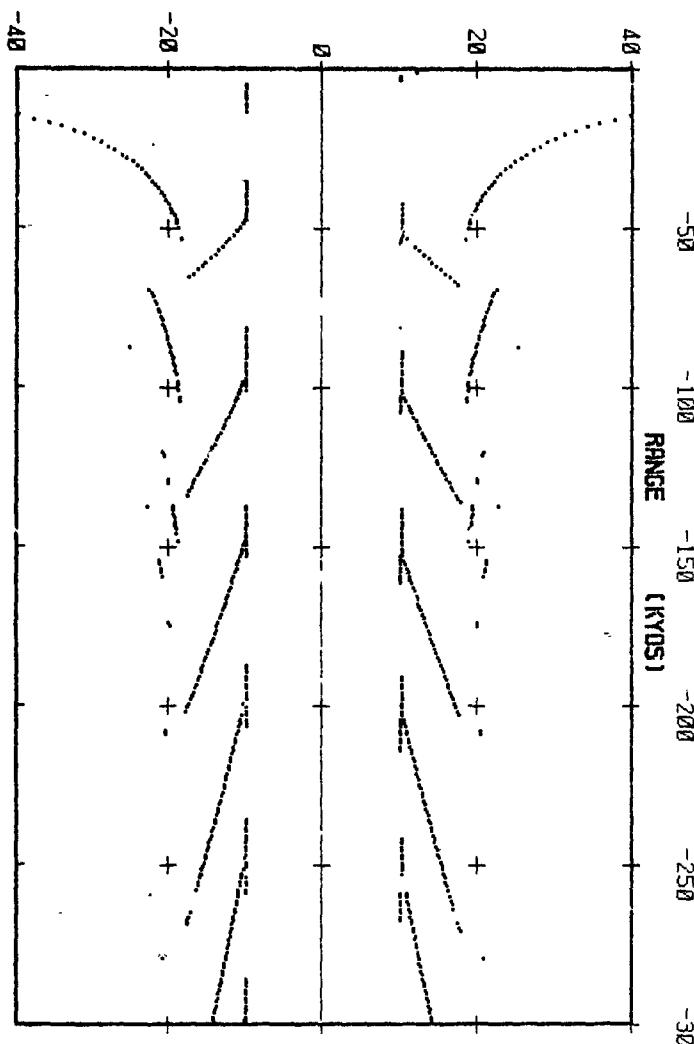
LRAPP

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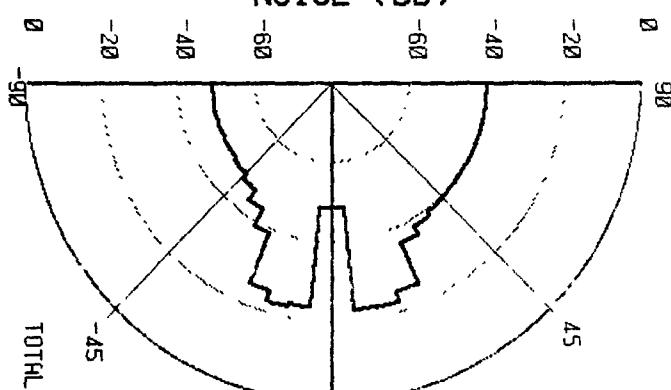
DB LOSS



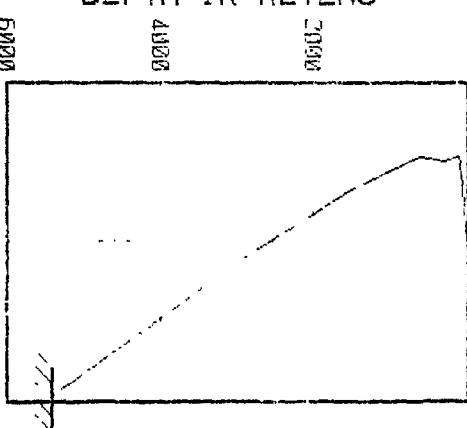
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



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AREA 2 SUMMER

S 50 R 1000 F 10

1450 M/S 1500 1550

LRAPP

DB LOSS

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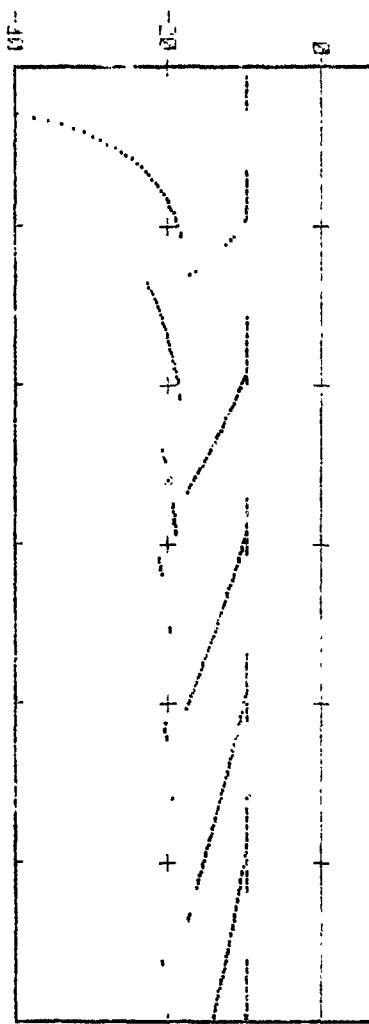
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RANGE (KYDS)

ARRIVAL ANGLE



DEPTH IN METERS

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4000

6000

8000

10000

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9010
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9030
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9060
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9080
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9890
9900
9910
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9940
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9960
9970
9980
9990
10000

-11-

NOISE (DB)

A polar plot showing noise levels in decibels (DB) as a function of depth in meters. The radial axis represents noise levels from 0 to 90 DB in increments of 10. The angular axis represents depth from 0 to 10000 meters in increments of 1000. The data shows a sharp increase in noise level starting around 5000 meters, reaching a peak of approximately 85 DB at 7000 meters, and then decreasing to about 70 DB at 10000 meters.

Depth (Meters)	Noise (DB)
0	0
1000	10
2000	15
3000	20
4000	25
5000	30
6000	35
7000	85
8000	75
9000	70
10000	70

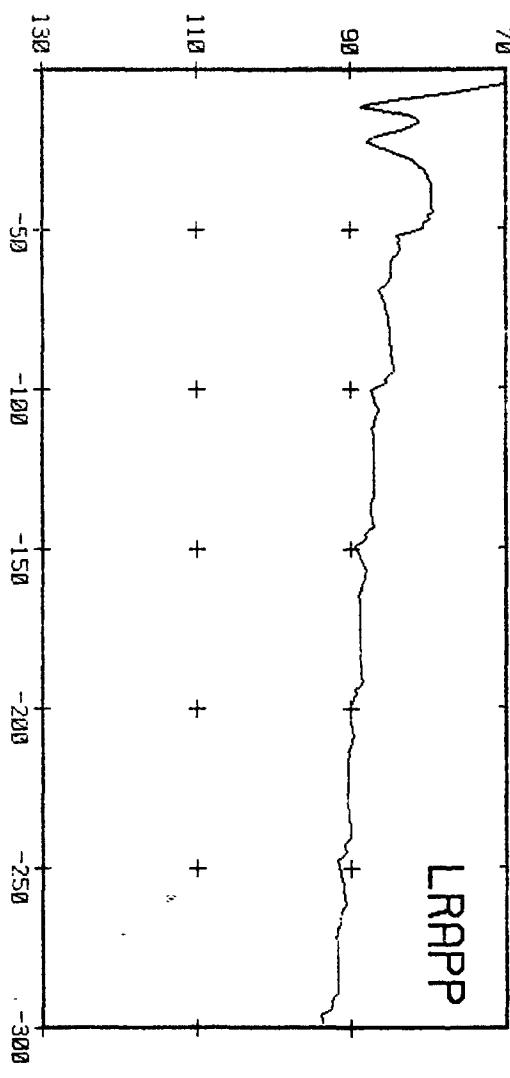
TOTAL -17.7 DB

AREA 2 SUMMER

S 266 R 1003 F 10

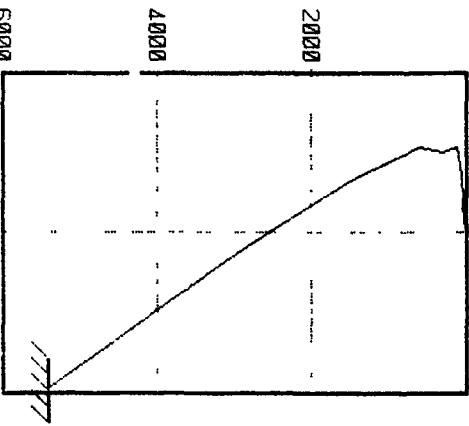
1450 M/S 1500 1550

DB LOSS

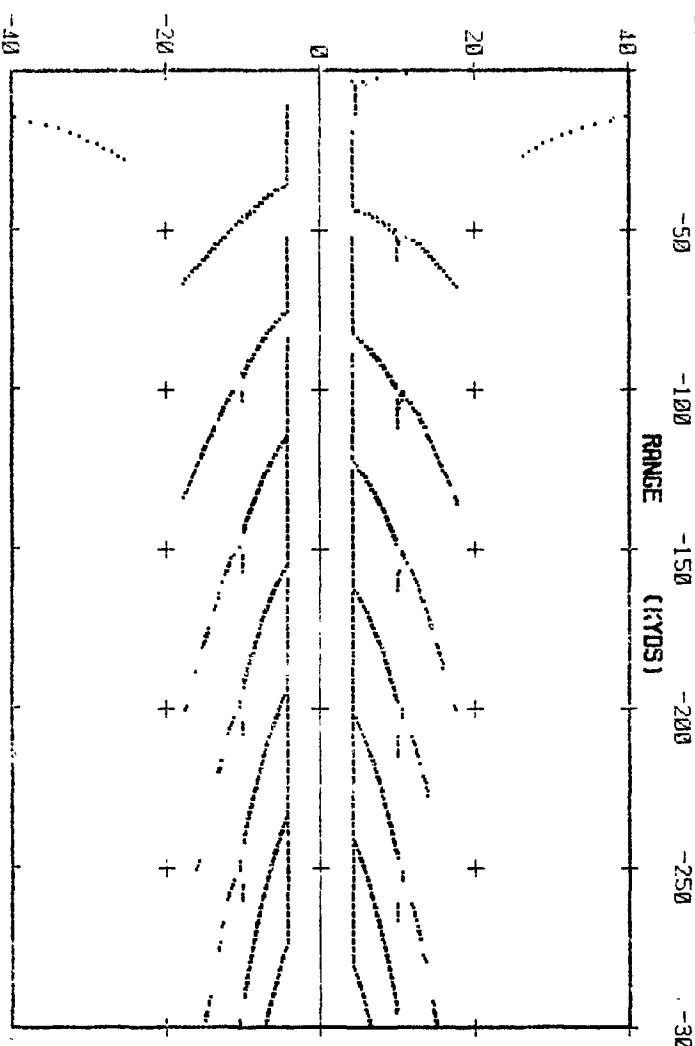


LRAPP

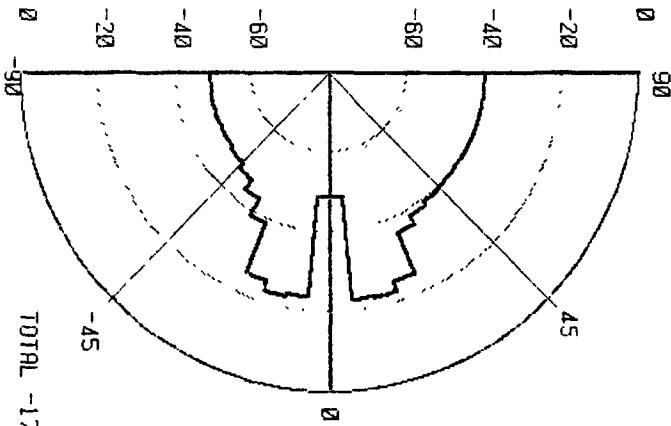
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



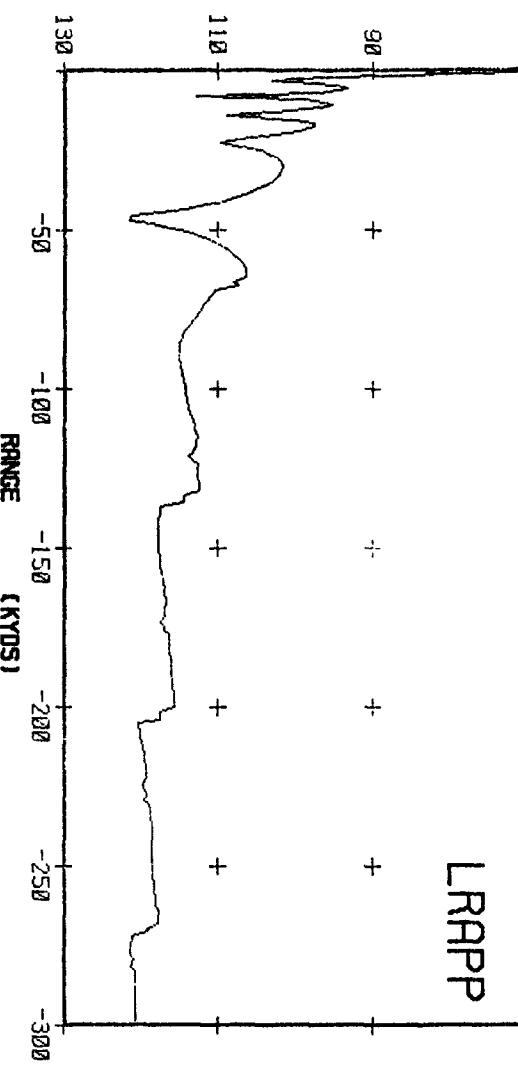
70

RIVER 2 SUMMER

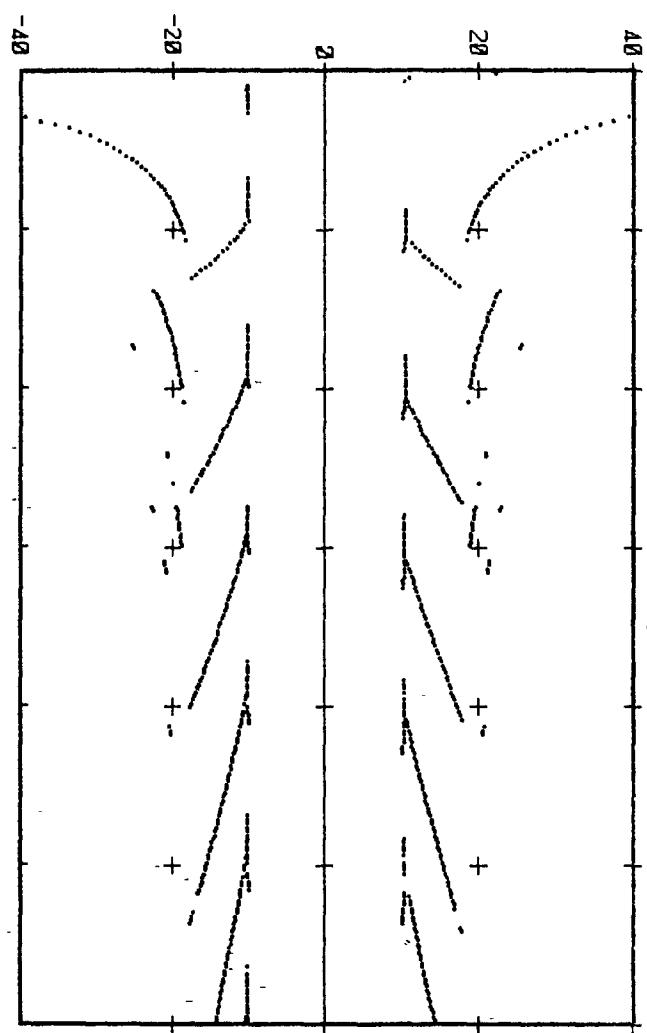
S 20 R 1500 F 18

145 M/S 1500 1550

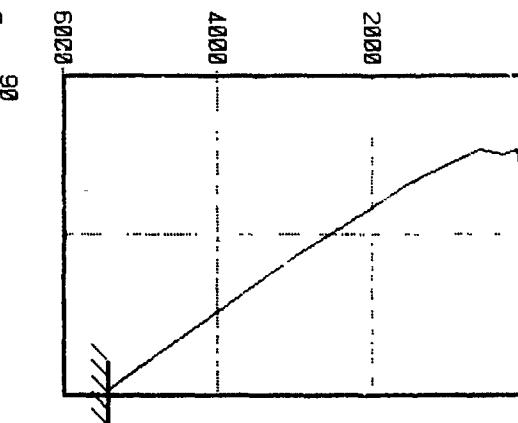
DB LOSS



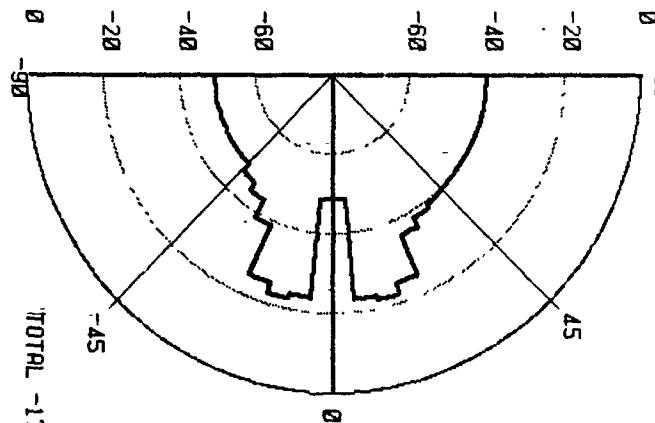
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



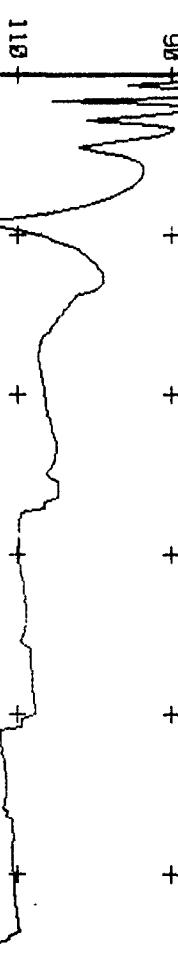
RER 2 SUMMER

S 59 R 1500 F 10

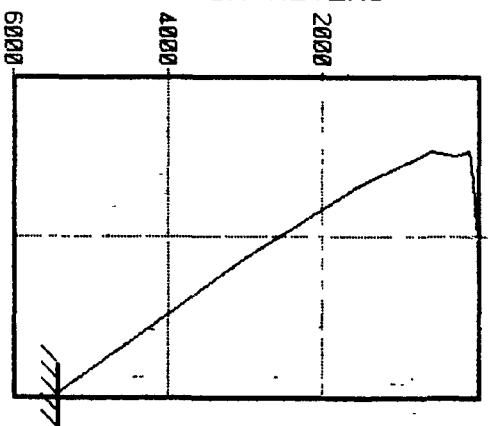
1450 M/S 1500 1550

LRAPP

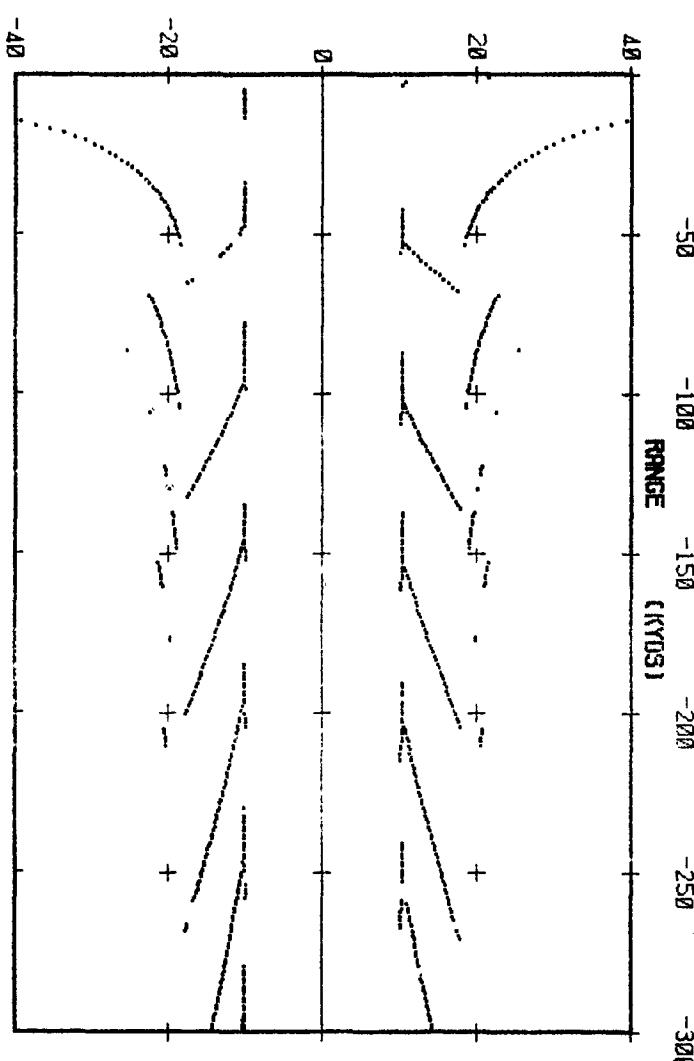
DB LOSS



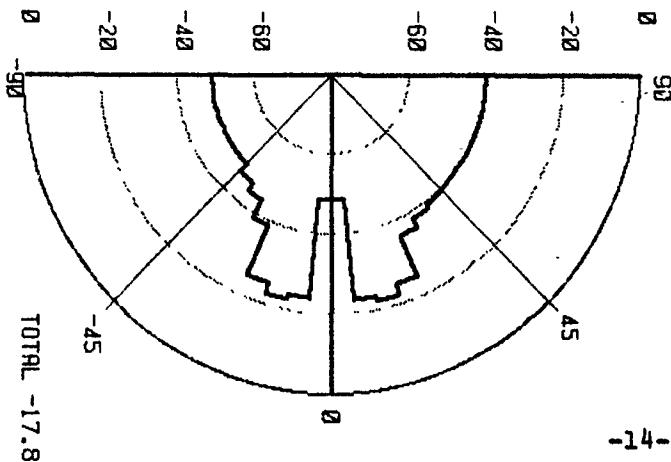
DEPTH IN METERS



ARRIVAL ANGLE

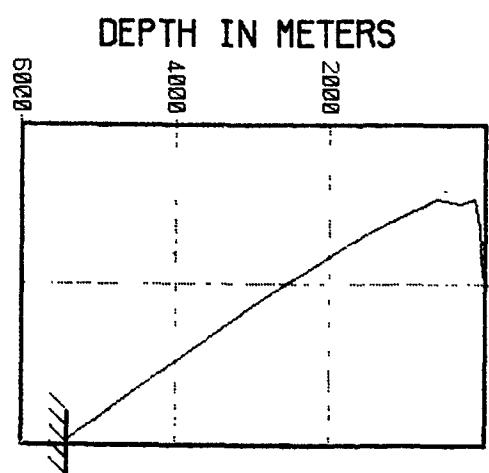
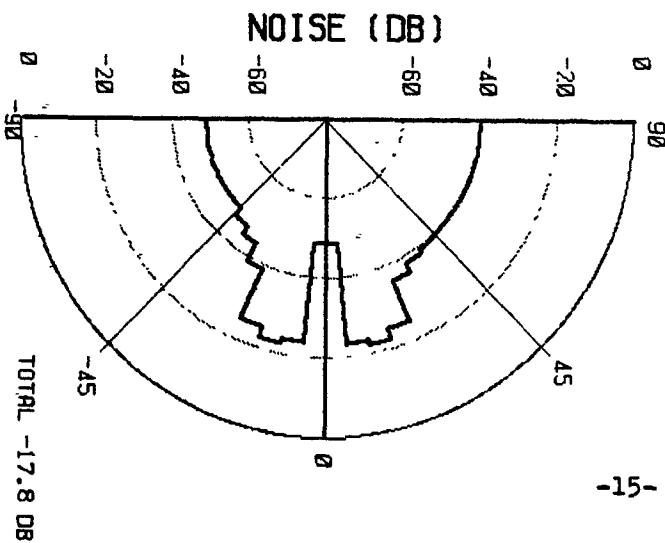
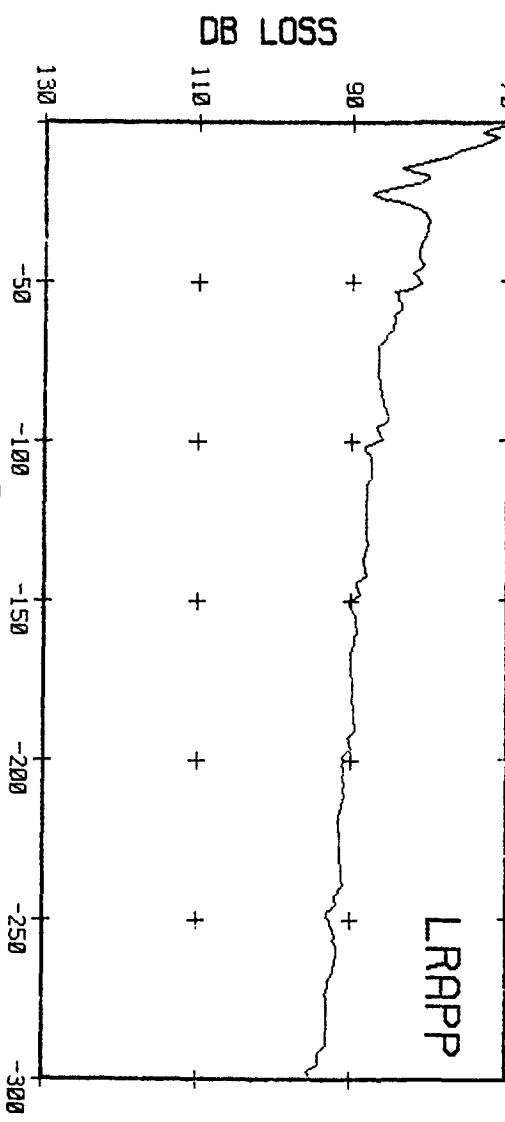
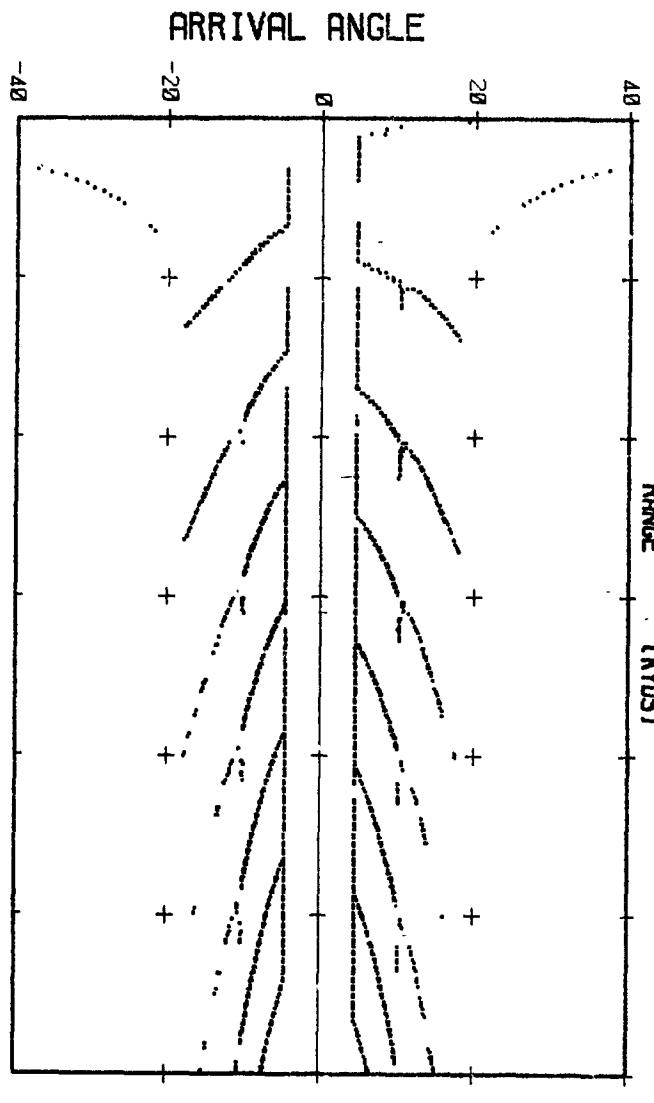


NOISE (DB)



78 AREA 2 SUMMER S 266 R 1540 F 10 1450 M/S 1500 1550

LRAPP



70

AREA 2 SUMMER

S 20 R 1968 F 18

LRAPP

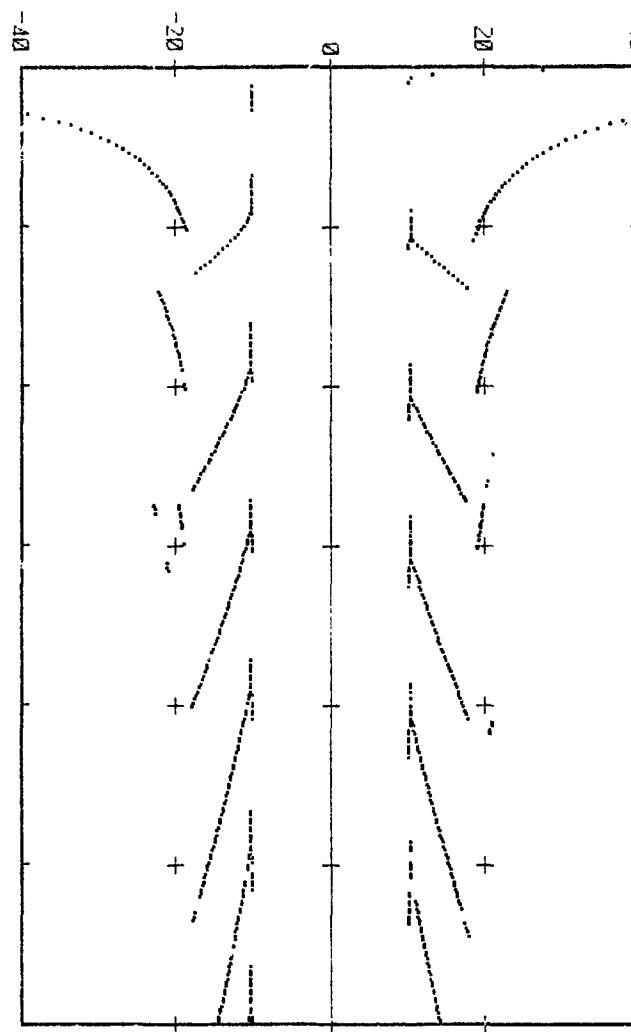
1450 M/S 1500 1550

DB LOSS

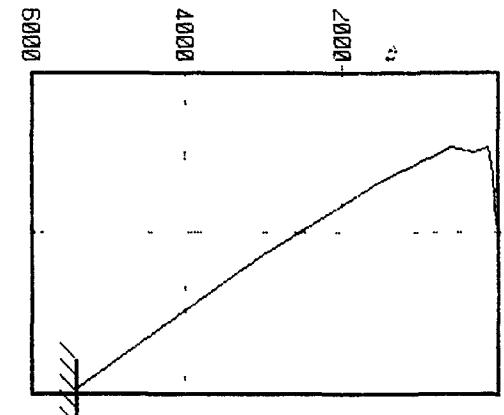
130
110
90

RANGE (KMS)

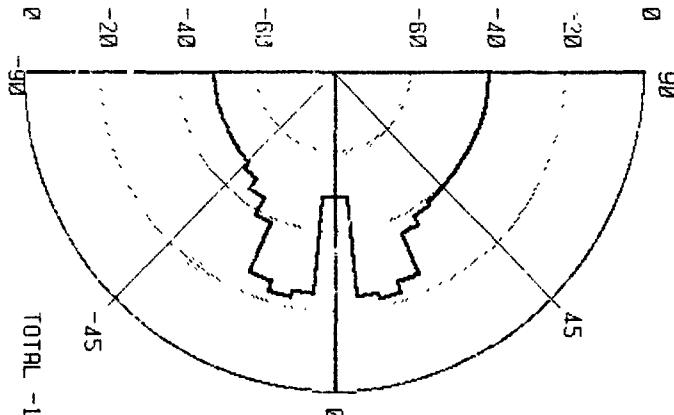
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -17.8 DB

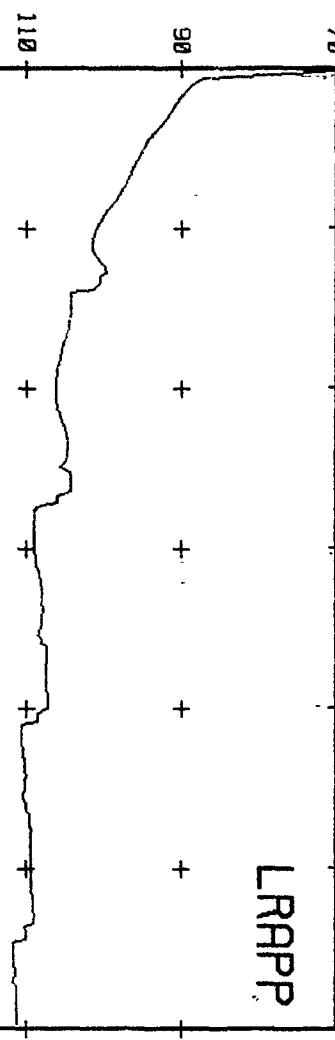
PIER 2 SUMMER

S 50 R 1968 F 18

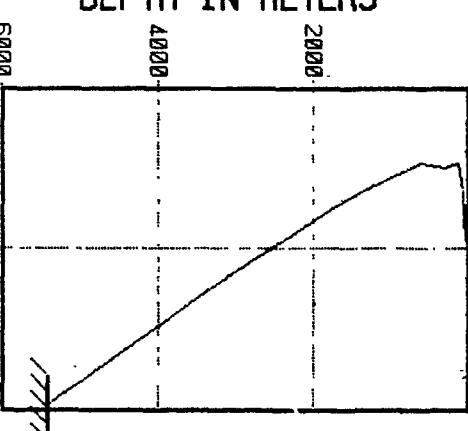
1450 M/S 1500 1550

LRAPP

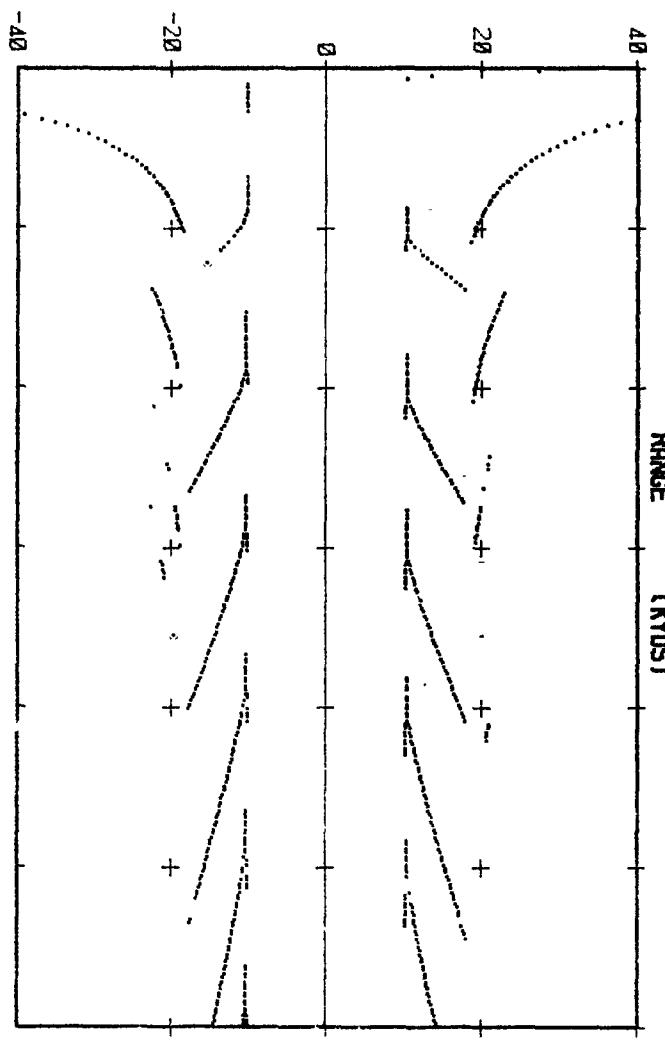
DB LOSS



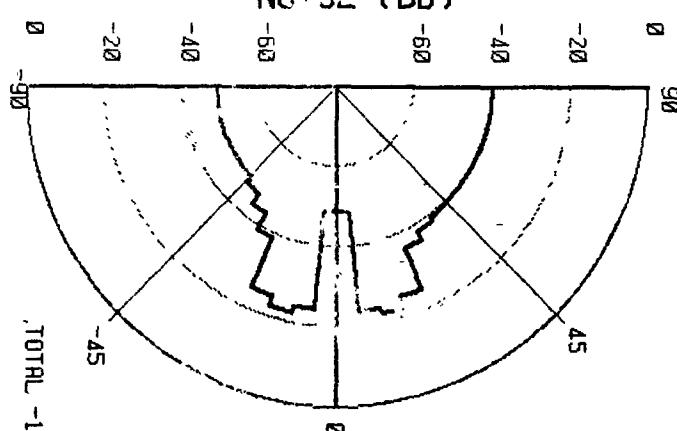
DEPTH IN METERS



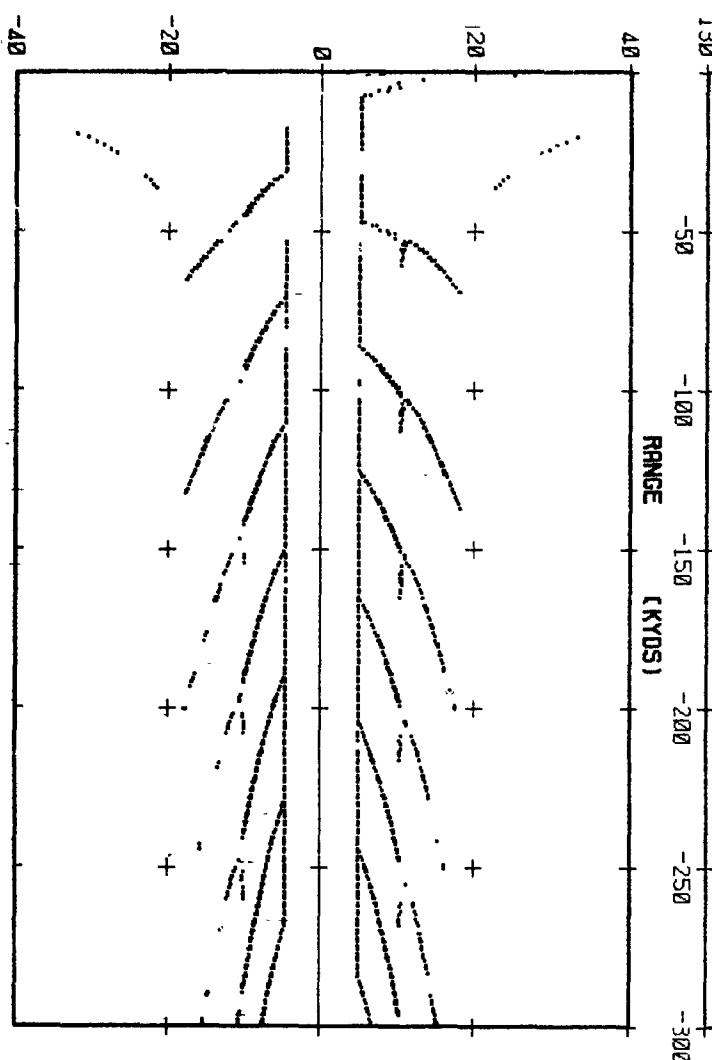
ARRIVAL ANGLE



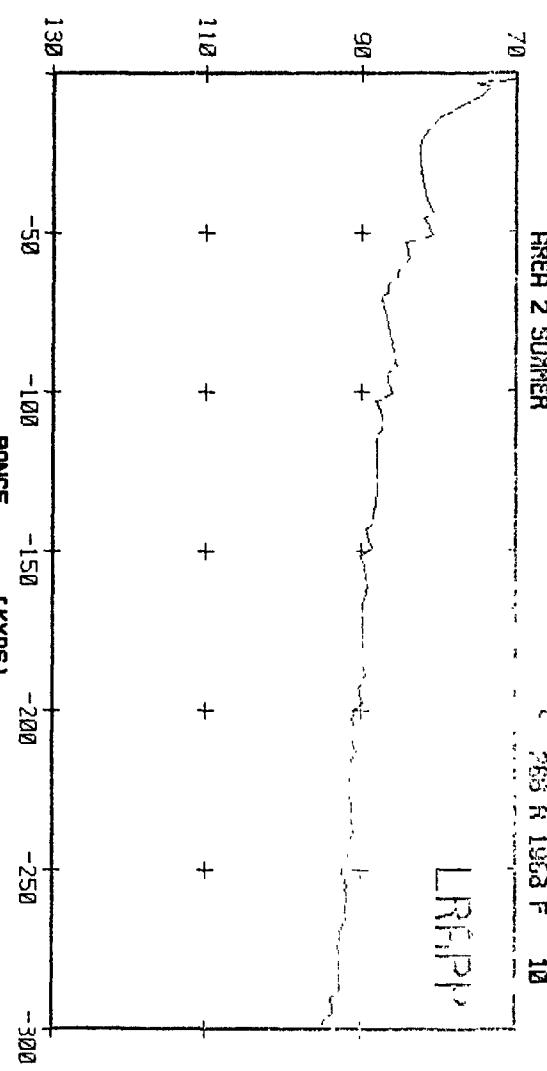
NOISE (DB)



ARRIVAL ANGLE



DB LOSS



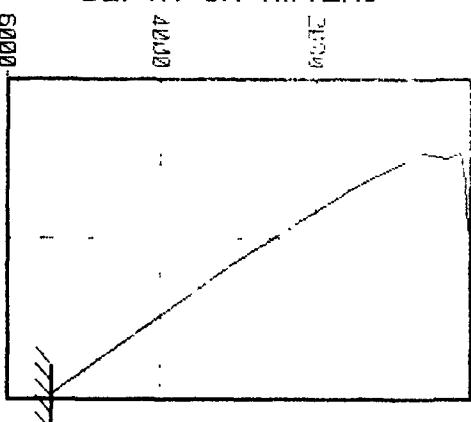
LRFIP

AREA 2 SUMMER

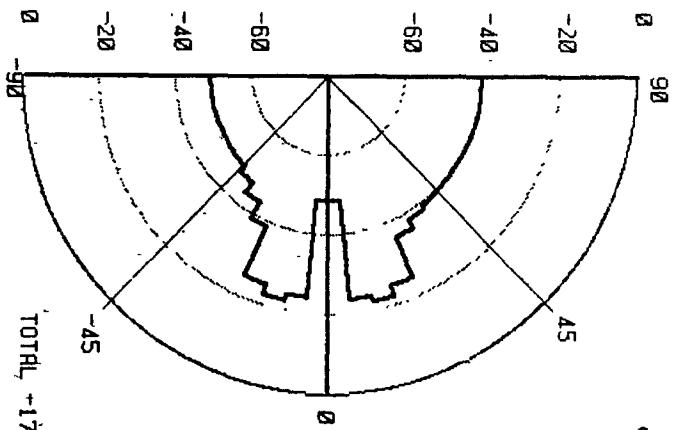
763 R 1463 F 10

1450 1475 1500 1550

DEPTH IN METERS



NOISE (DB)



TOTAL +17.8 dB

70

AREA 2 SUMMER

S 20 R 7874 F 10

1450 M/S 1500 1550

LRAPP

DB LOSS

110

90

70

50

30

10

0

130 -50 -100 -150 -200 -250 -300

RANGE (KIOS)

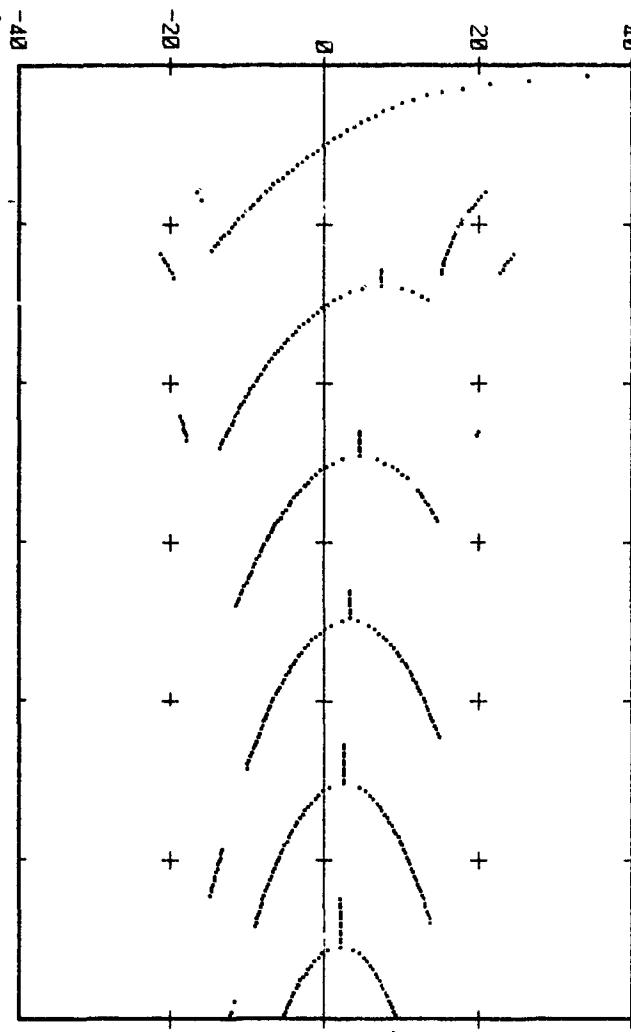
0 6000 4000 2000

DEPTH IN METERS

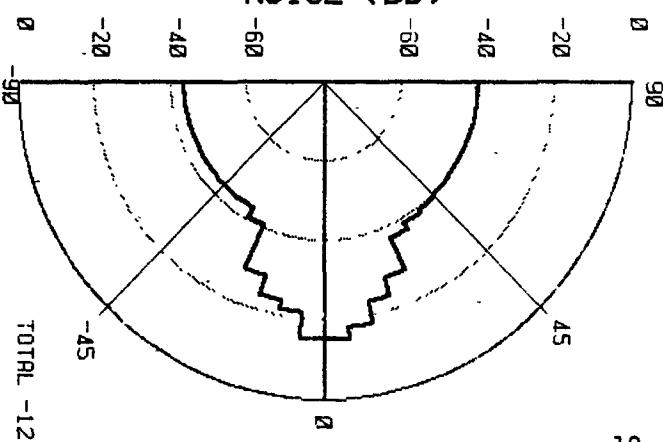
4000
2000

0

ARRIVAL ANGLE



NOISE (DB)



TOTAL -12.4 DB

-19-

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permit fully legible reproduction

78

AREA 2 SUMMER

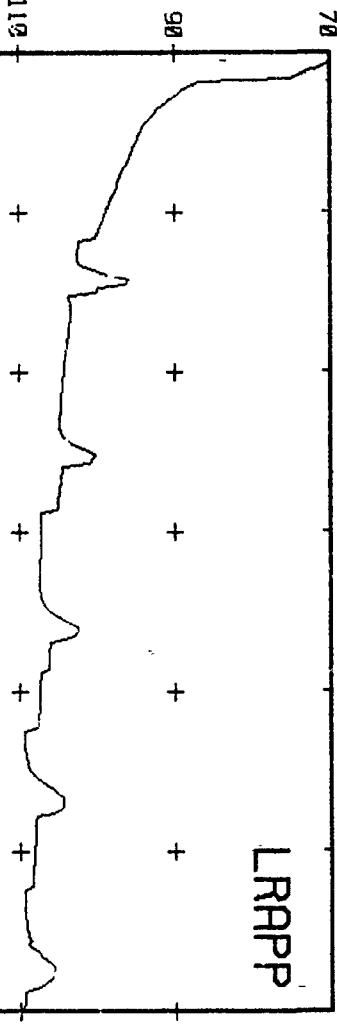
S

LRAPP

1450 M/S 1500 1550

DB LOSS

112



130

-50

-100

-150

-200

-250

-300

0

-20

-40

-60

-80

-100

ARRIVAL ANGLE

-20

0

20

40

60

80

100

120

140

160

180

200

220

240

260

280

300

112

90

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

+ + + + +

NOISE (DB)

0

90

45

0

-20-

-40

-60

-80

-100

-120

-140

-160

-180

-200

-220

-240

-260

-280

-300

DEPTH IN METERS

4000

2000

0

-2000

-4000

-6000

-8000

-10000

-12000

-14000

-16000

-18000

-20000

-22000

-24000

-26000

-28000

-30000

-32000

-34000

-36000

-38000

-40000

-42000

-44000

-46000

-48000

-50000

-52000

-54000

-56000

-58000

-60000

-62000

-64000

-66000

-68000

-70000

-72000

-74000

-76000

-78000

-80000

-82000

-84000

-86000

-88000

-90000

-92000

-94000

-96000

-98000

-100000

-102000

-104000

-106000

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-118000

-120000

-122000

-124000

-126000

-128000

-130000

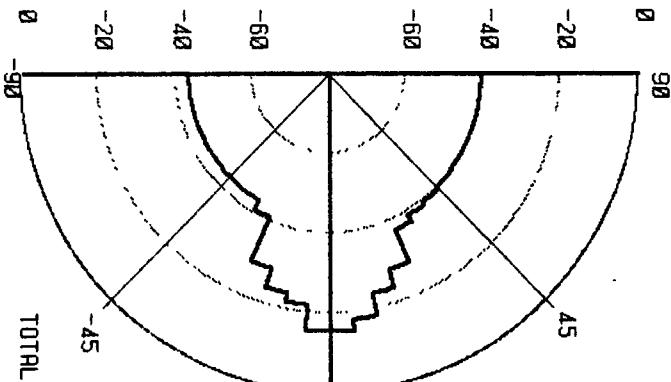
-132000

-134000

-136000

-138000

-140000



TOTAL -12.4 DB

-20-

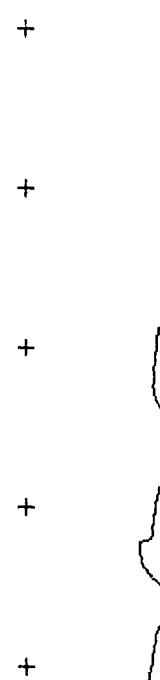
70

AREA 2 SUMMER

S 266 R 7874 F 10

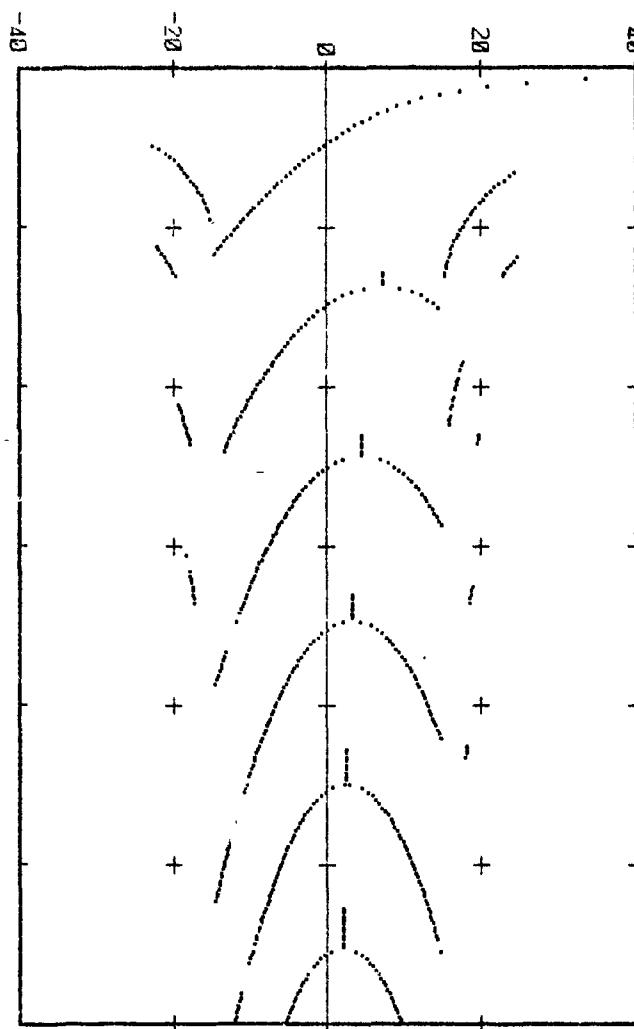
1450 M/S 1520 1550

DB LOSS

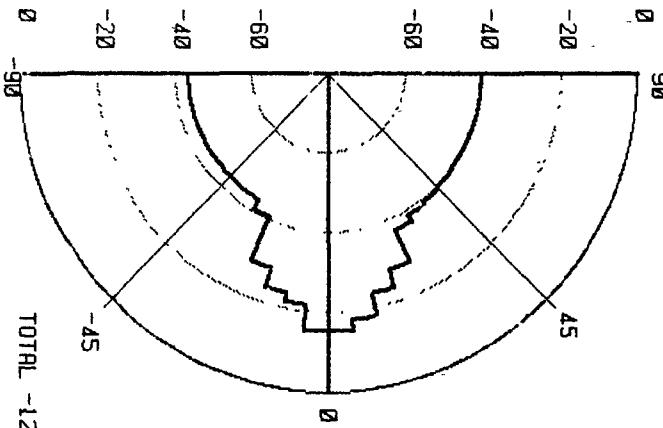
130
110
90

RANGE (KIOS)

ARRIVAL ANGLE

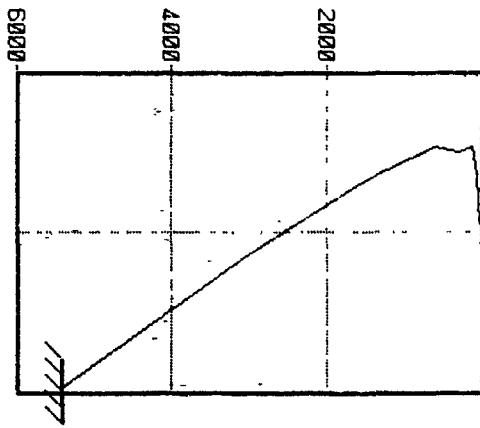


NOISE (DB)



TOTAL -12.4 DB

DEPTH IN METERS

0
2000
4000

-21-

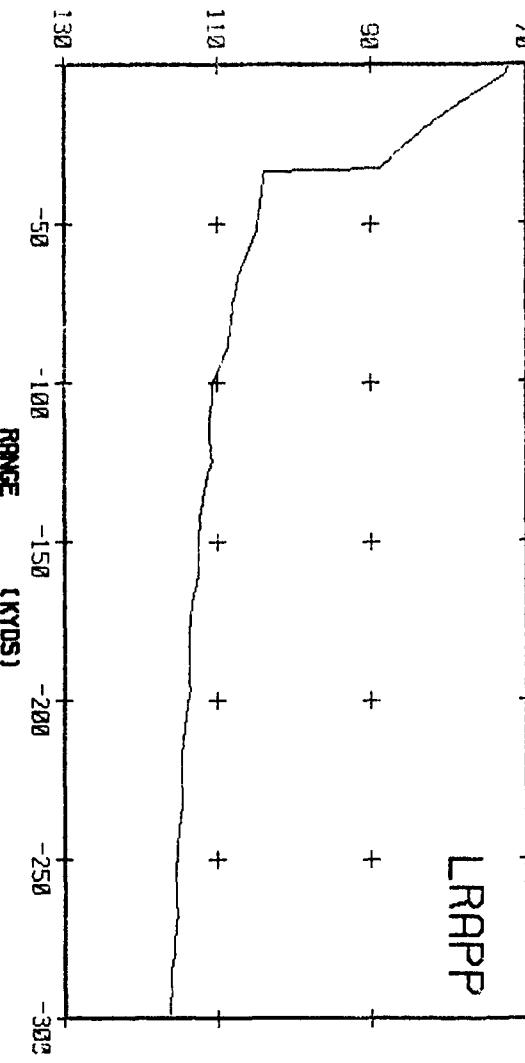
PRED 2 SUMMER

S 28 R1759 F 10

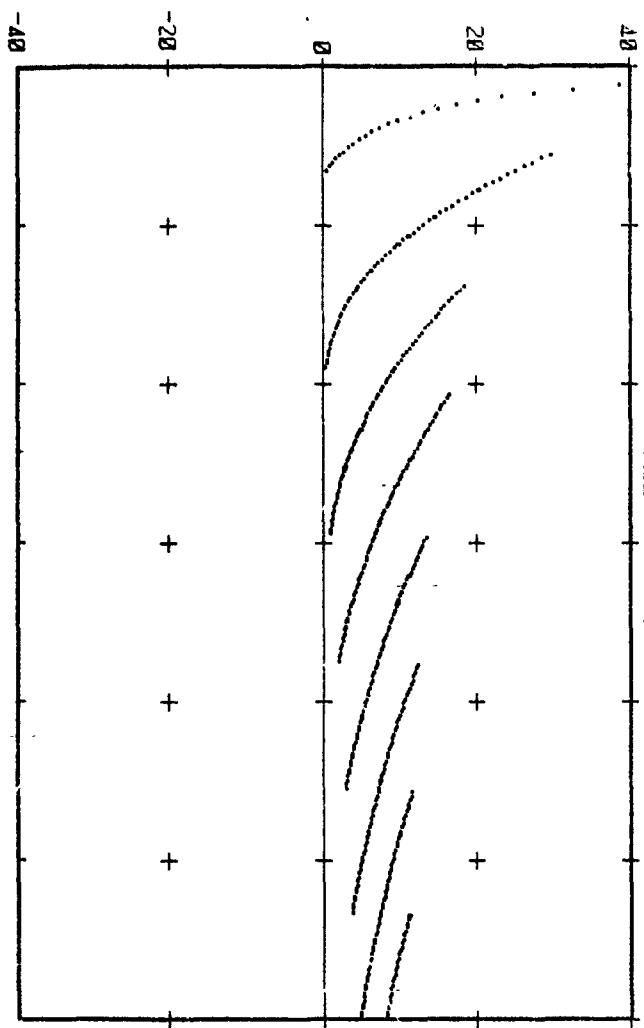
1450 M/S 1500 1550

LRAPP

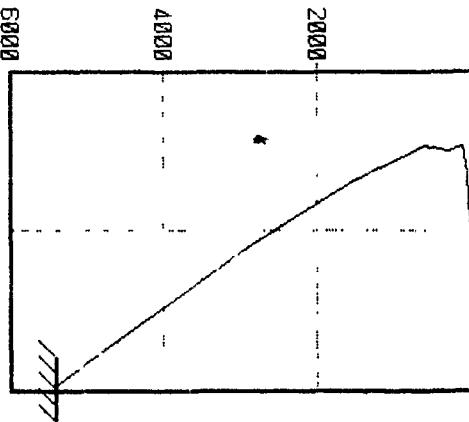
DB LOSS



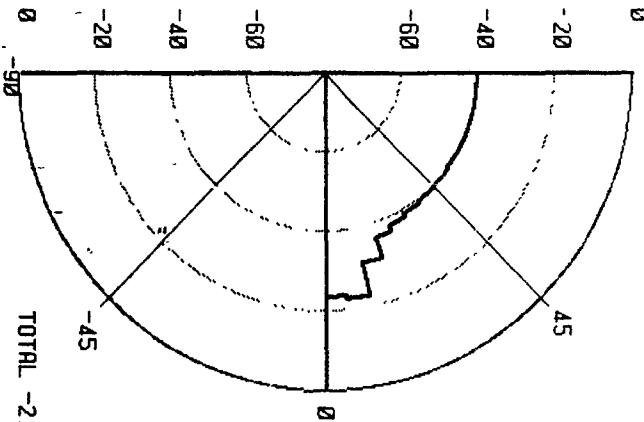
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



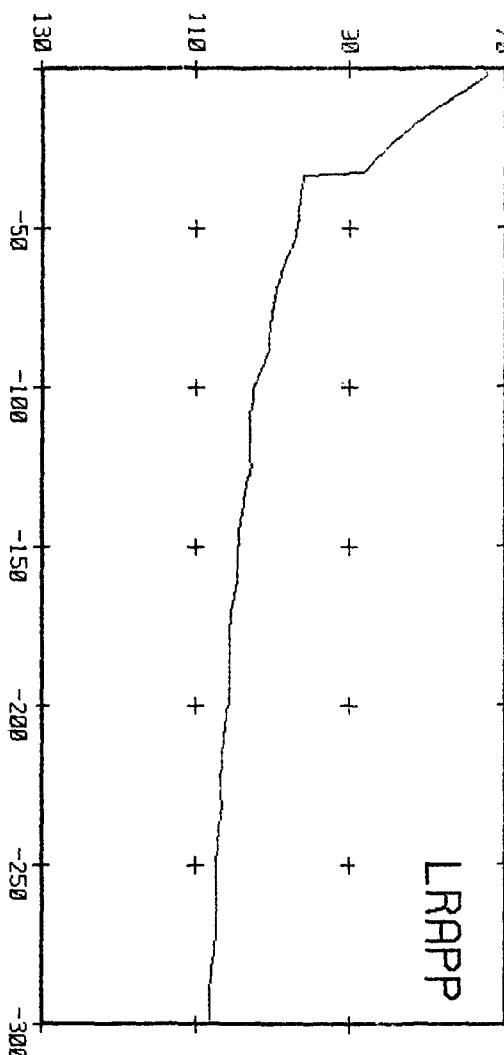
72

AREA 2 SUMMER

S 50 N17759 F 10

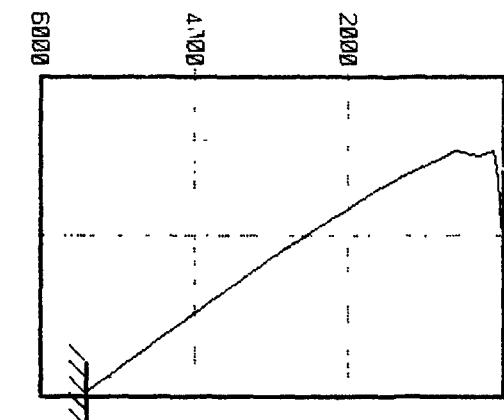
1450 M/S 1500 1550

DB LOSS

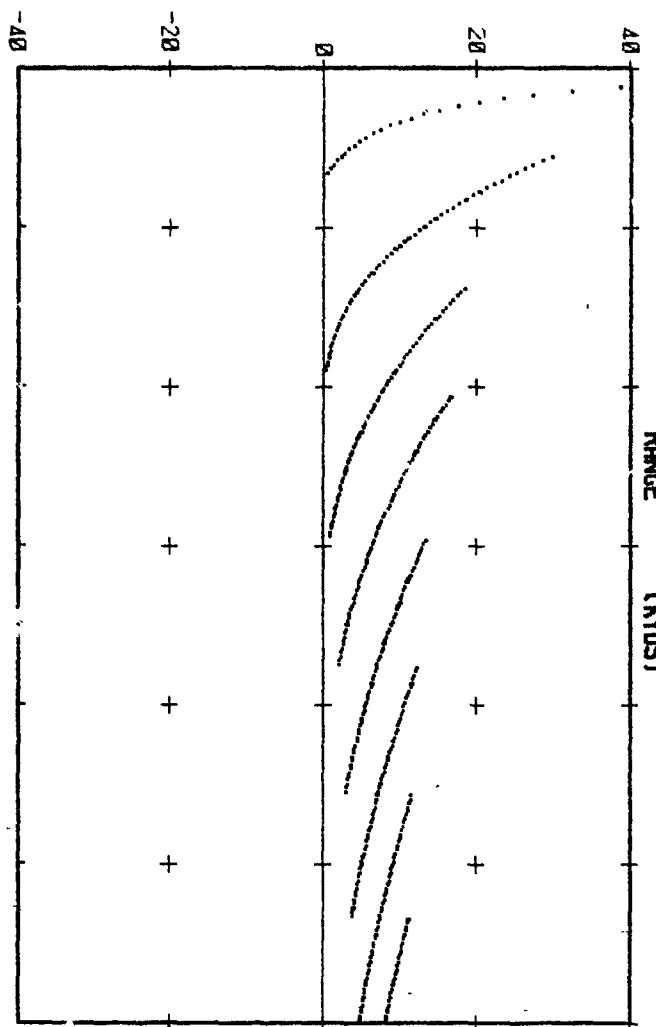


LRAPP

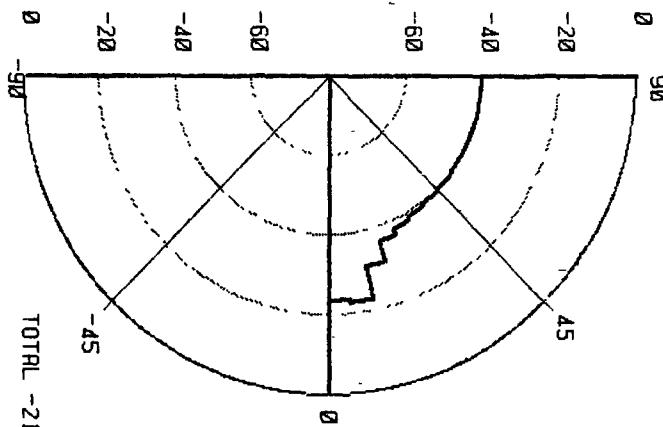
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



-23-

78

AREA 2 SUMMER

S 20 R17759 F 18

1450 M/S 1500 1550

LRAPP

DB LOSS

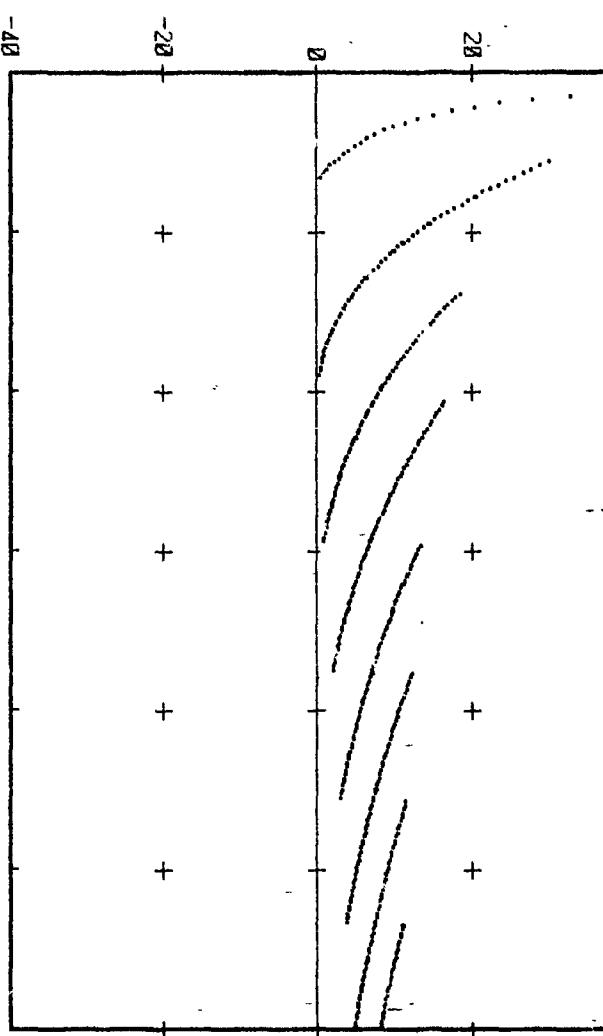
130
110
90+
+
+
+
+

-50 -100 -150 -200 -250 -300

RANGE (KMS)

ARRIVAL ANGLE

-40

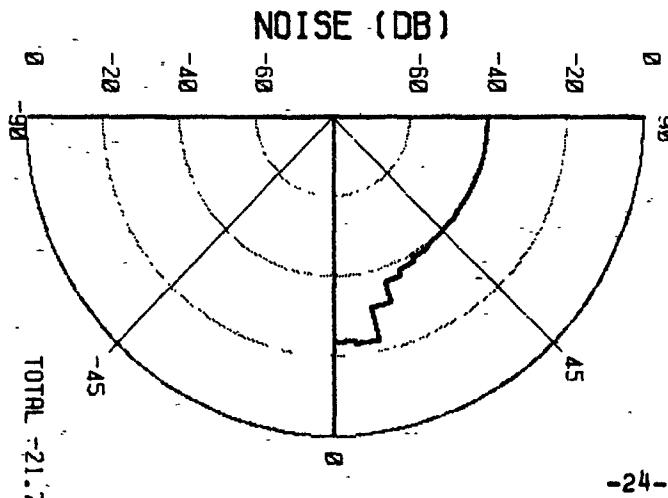


DEPTH IN METERS

6000
4000
2000

0

B



TOTAL -21.7 DB

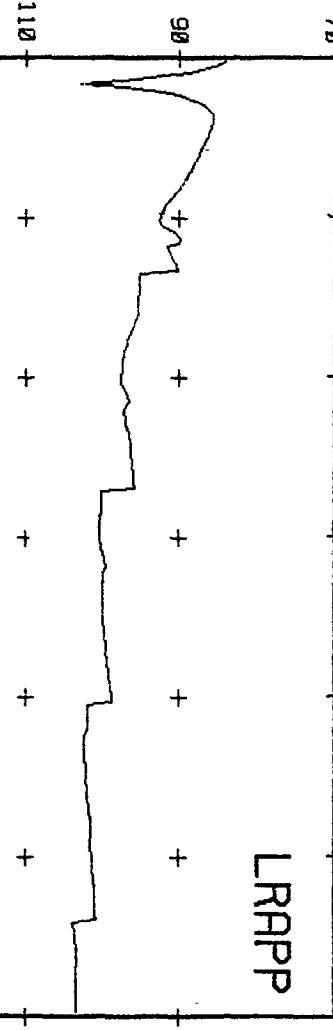
-24-

PREF 2 SUMMER

S 28 R 62 F 59

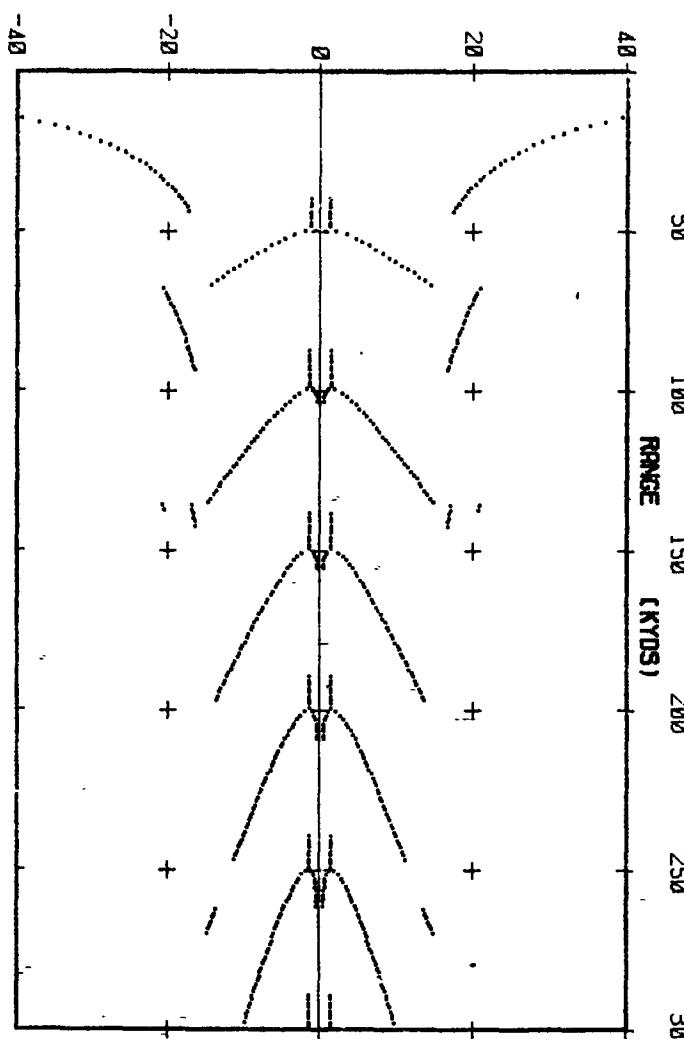
1450 M/S 1500 1550

DB LOSS

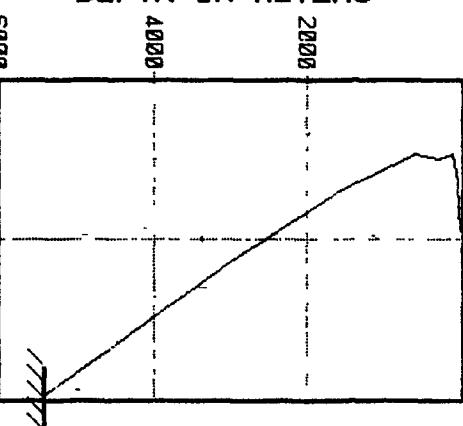


L RAPP

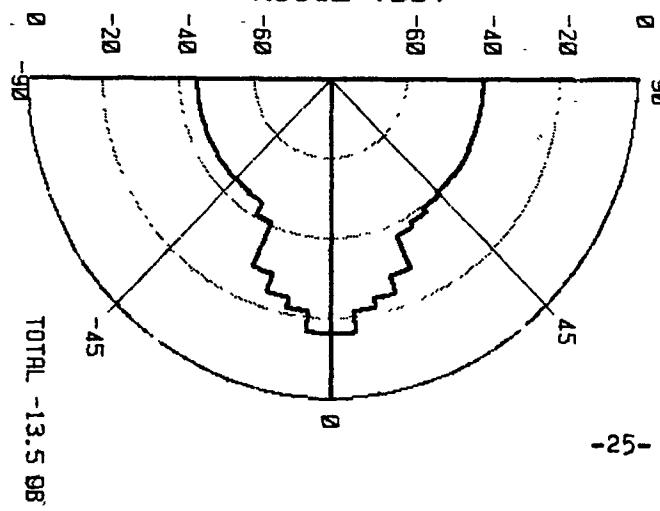
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



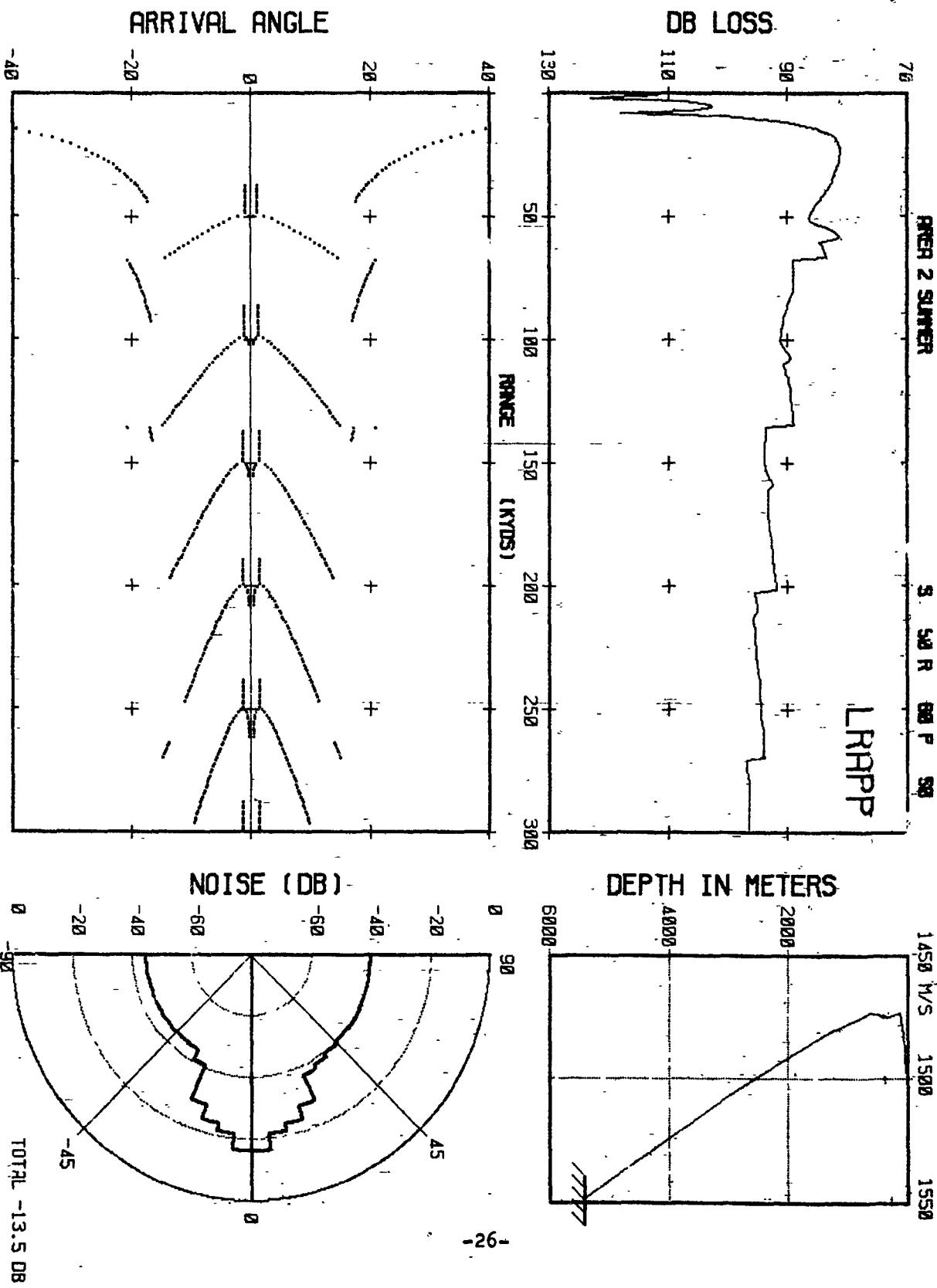
-25-

76

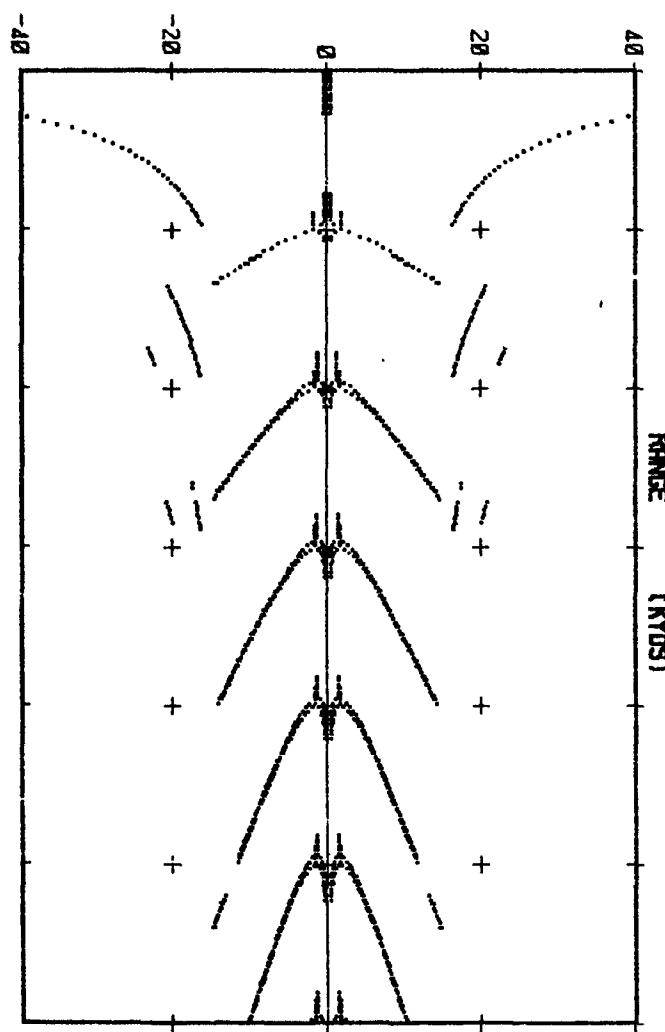
AREA 2 SUMMER

S. S&R S&P S&

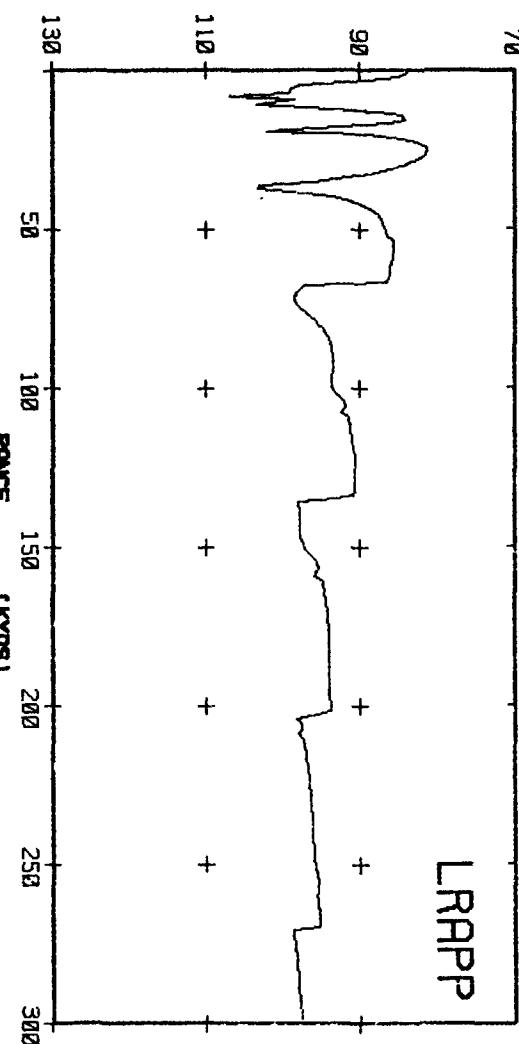
1450 M/S 1500 1550



ARRIVAL ANGLE



DB LOSS

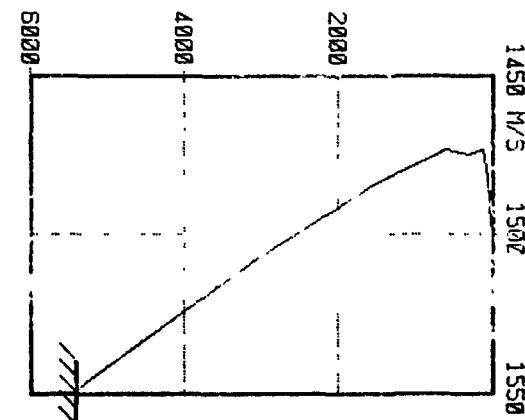


AREA 2 SUMMER

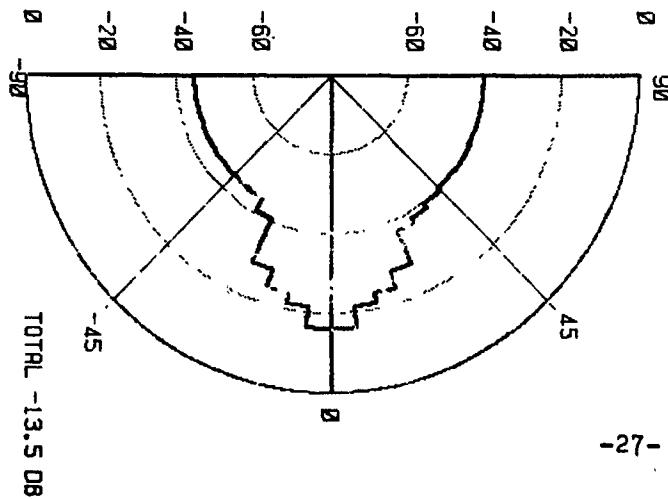
S 266 R 60 F 50

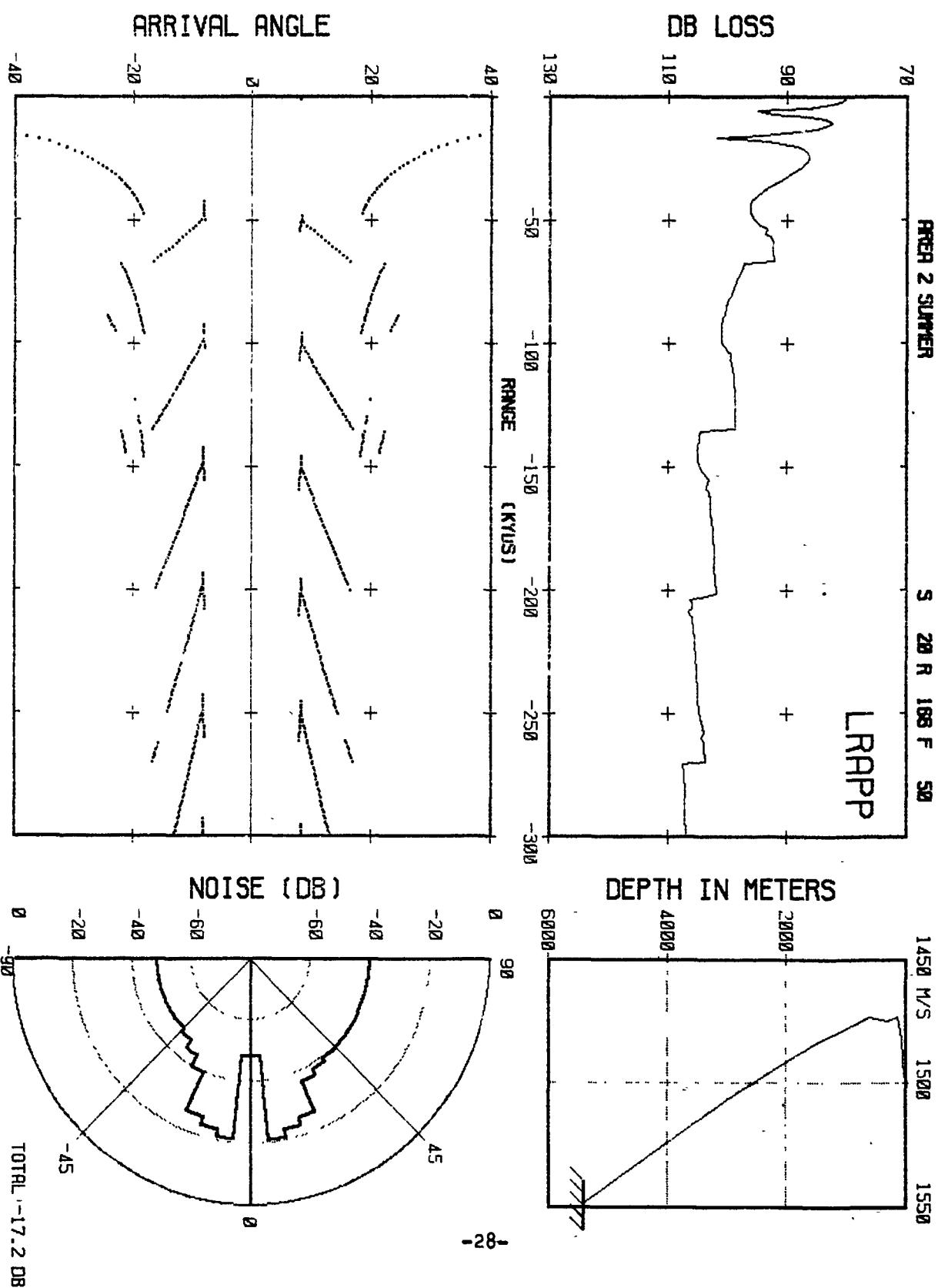
LRAAPP

DEPTH IN METERS



NOISE (DB)





70

AREA 2 SUMMER

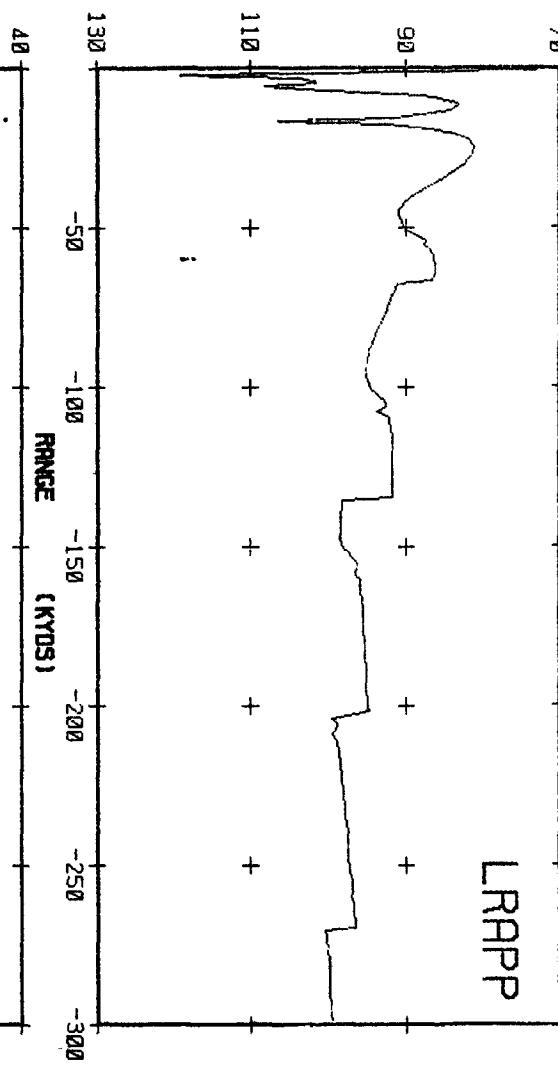
S

50 R 166 F 50

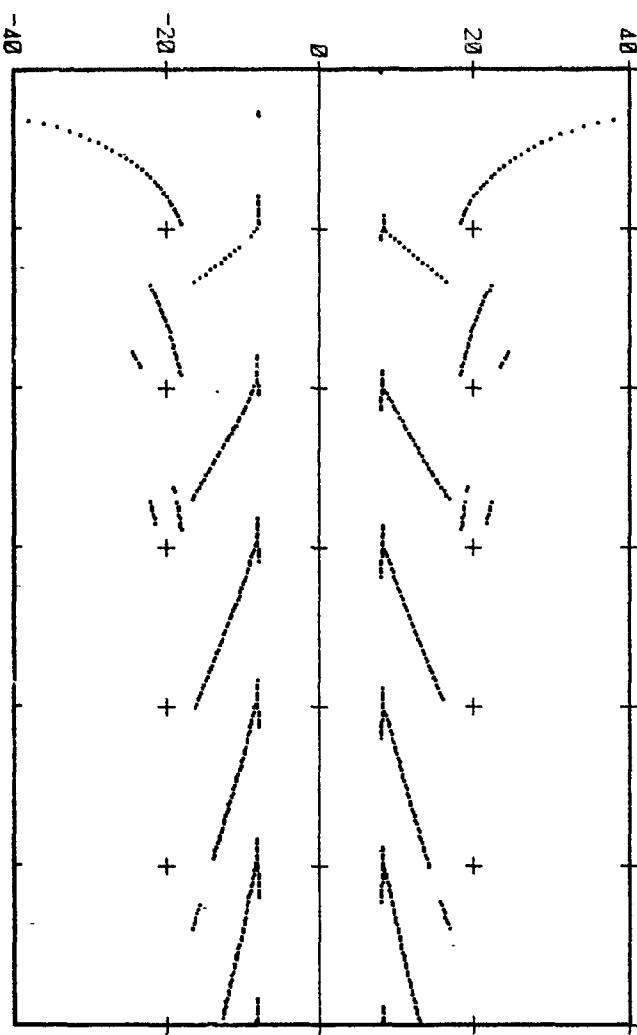
1450 M/S 1500

1550

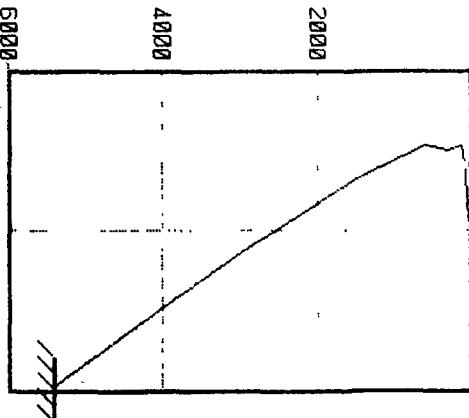
DB LOSS



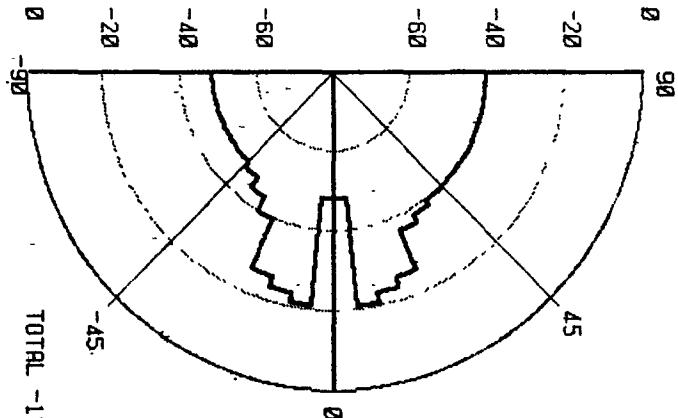
ARRIVAL ANGLE



DEPTH IN METERS

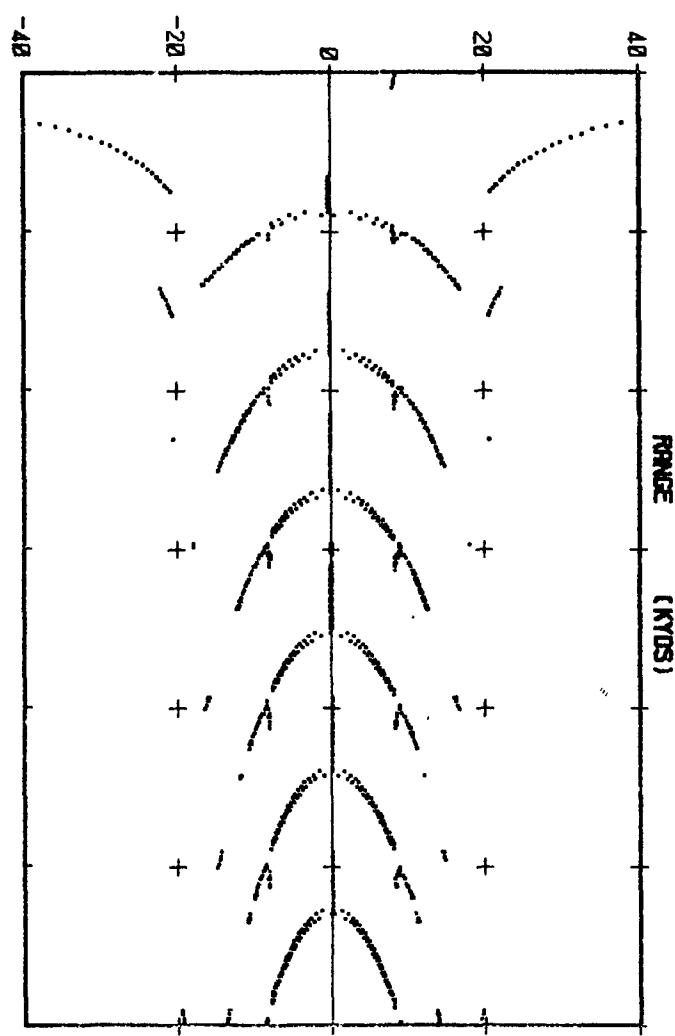


NOISE (DB)

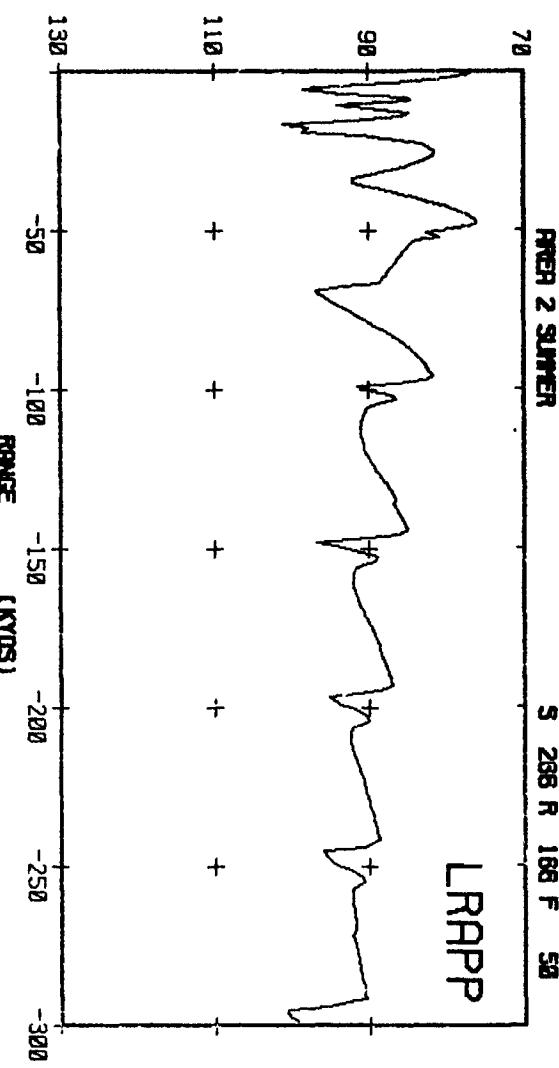


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ARRIVAL ANGLE



DB LOSS

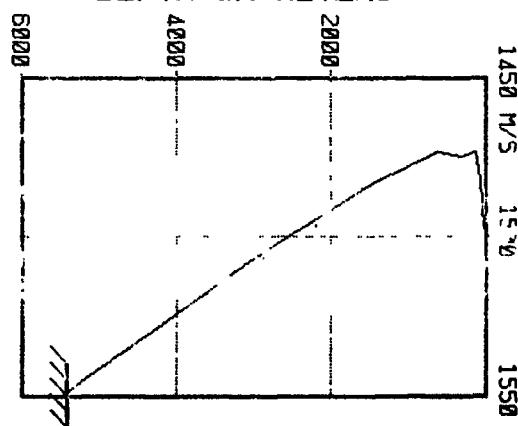


AREA 2 SUMMER

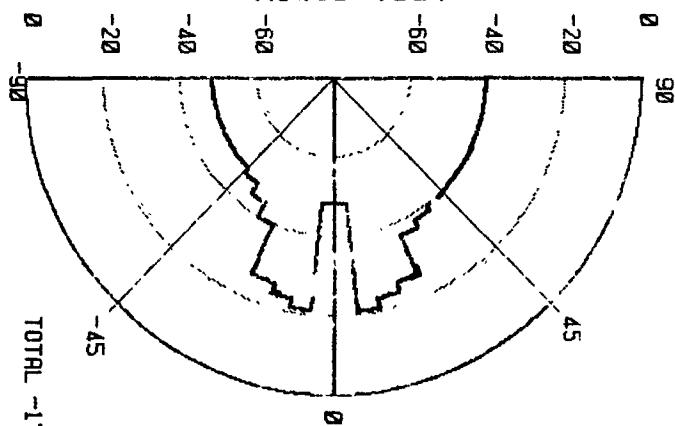
S 236 R 166 F 59

LRAPP

DEPTH IN METERS



NOISE (DB)



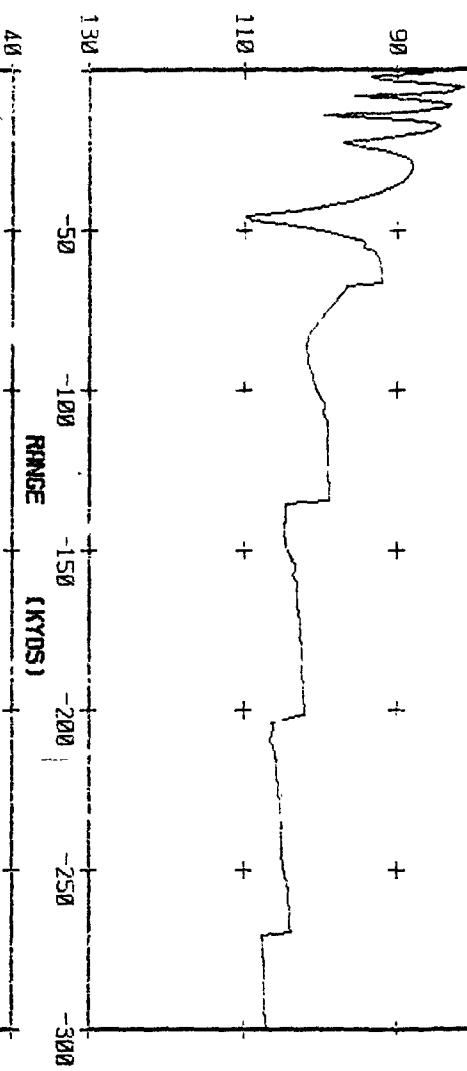
ATLANTIC OCEAN
ATLANTIC OCEAN

RHEN 2 SUMMER S 20 R 31 F 54

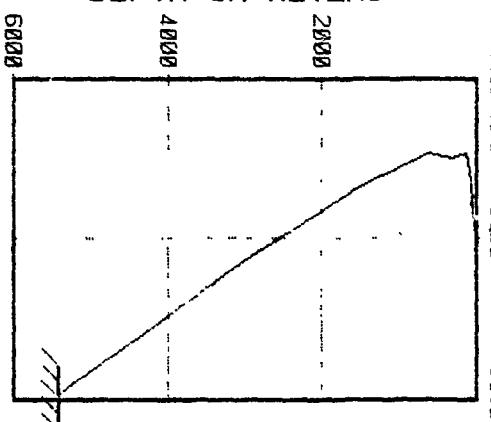
1450 M/S 1500 1550

LRAFP

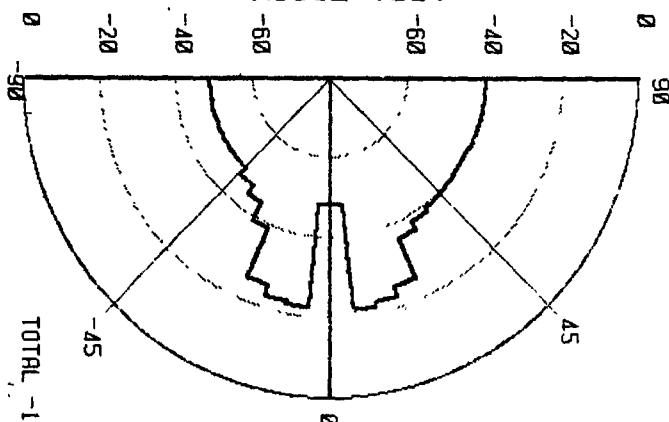
DB LOSS



DEPTH IN METERS



NOISE (DB)



TOTAL -17.4 DB

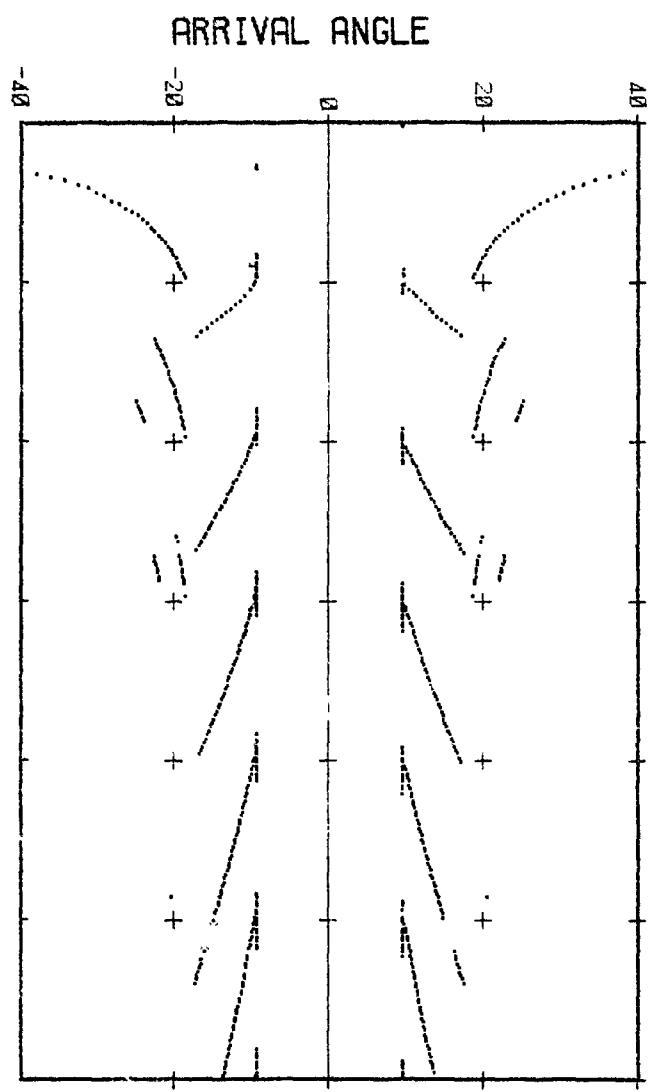
70
RIVER 2 SUMMER S 50 R 300 F 50

LRAPP

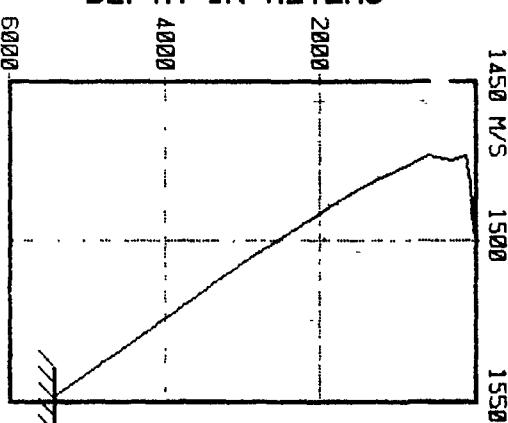
DB LOSS

130
110
90
70
50
30
10
0

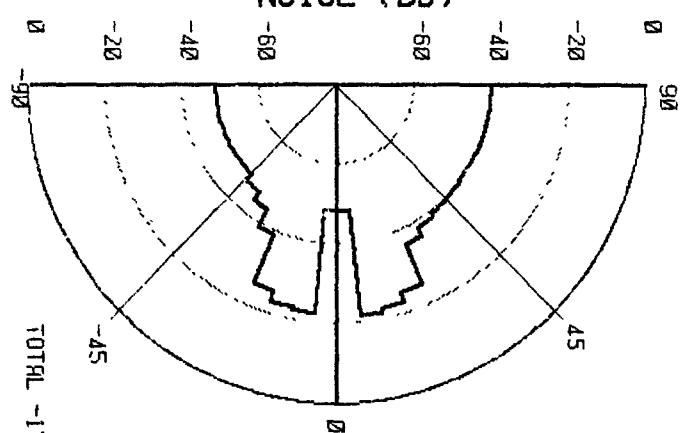
RANGE (KILOMETERS)



DEPTH IN METERS



NOISE (DB)



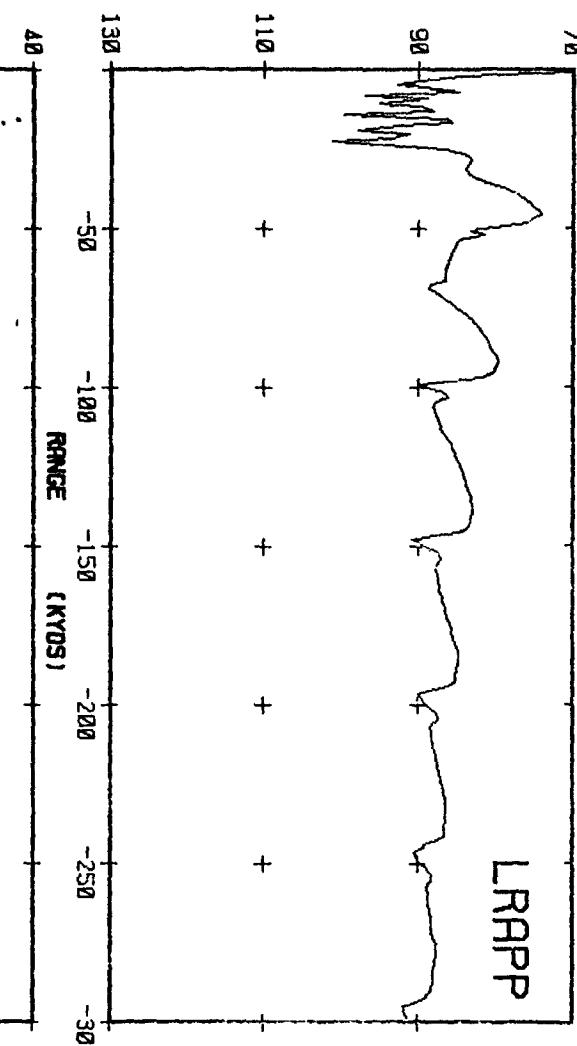
70

AREA 2 SUMMER

S 268 R 300 F 50

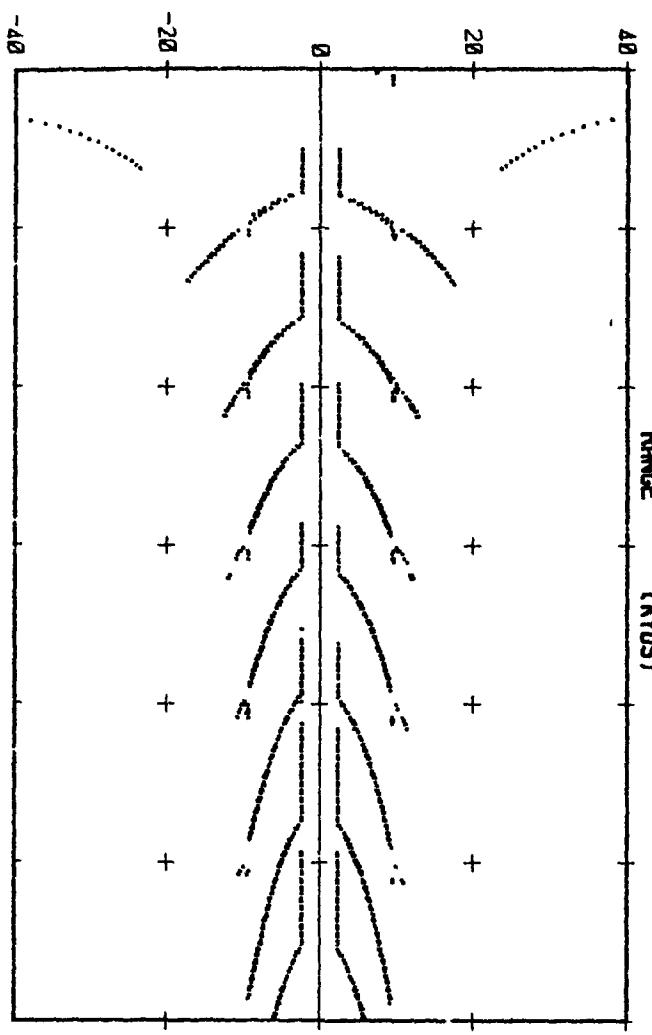
1450 M/S 1500 1550

DB LOSS

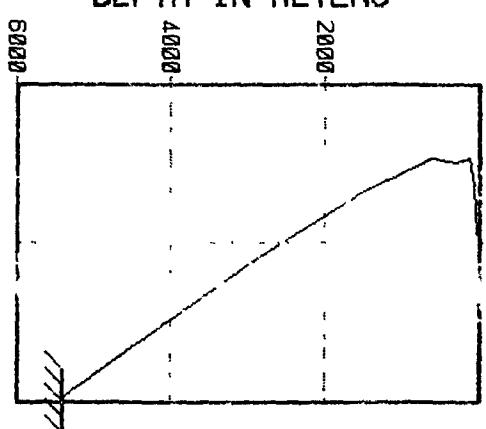


LRAPP

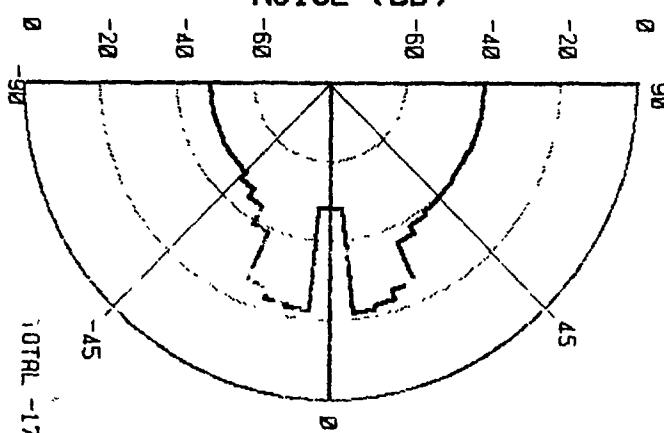
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -17.4 DB

-33-

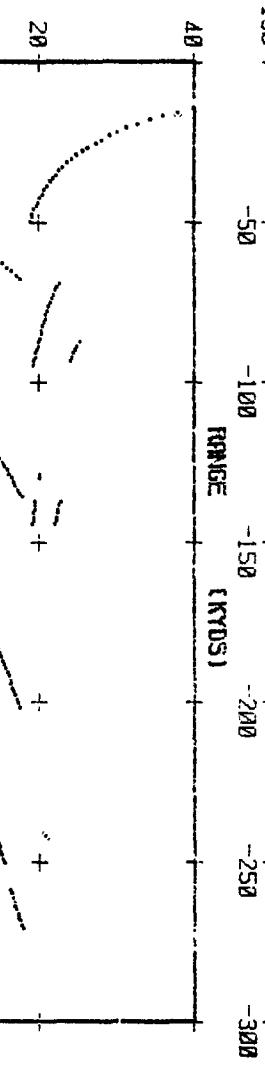
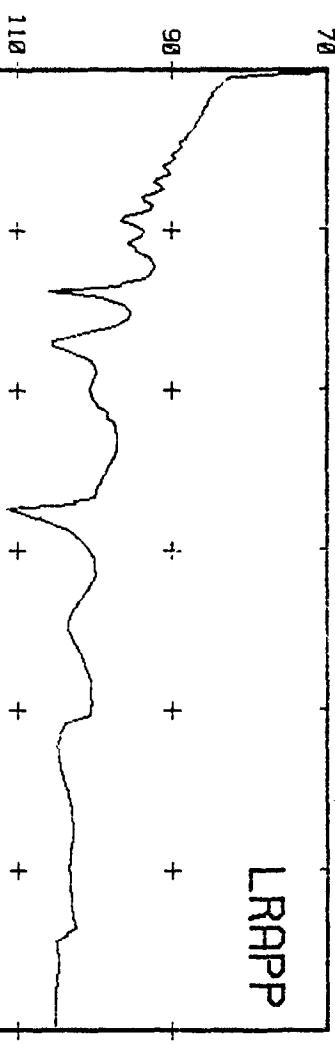
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permit fully legible reproduction

ARR 2 SUMMER S 20 R 1000 F 50

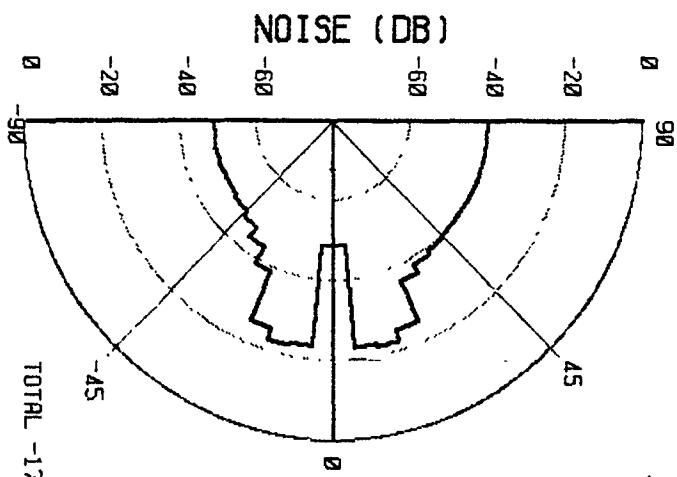
1450 M/S 1500 1550

LRAPP

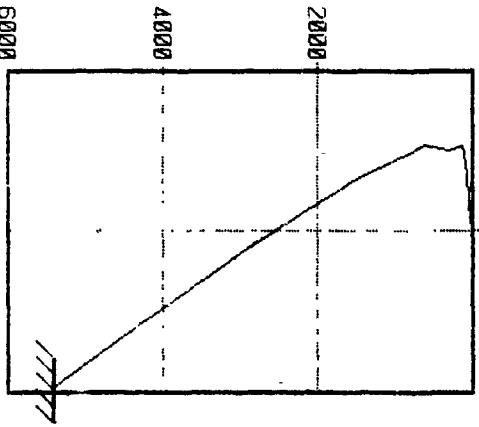
DB LOSS



NOISE (DB)



DEPTH IN METERS



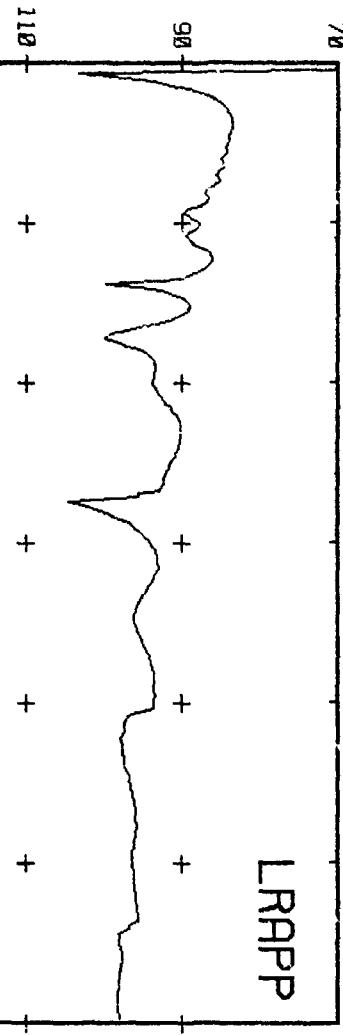
TOTAL -17.7 DB

PAGE 2 SUMMER

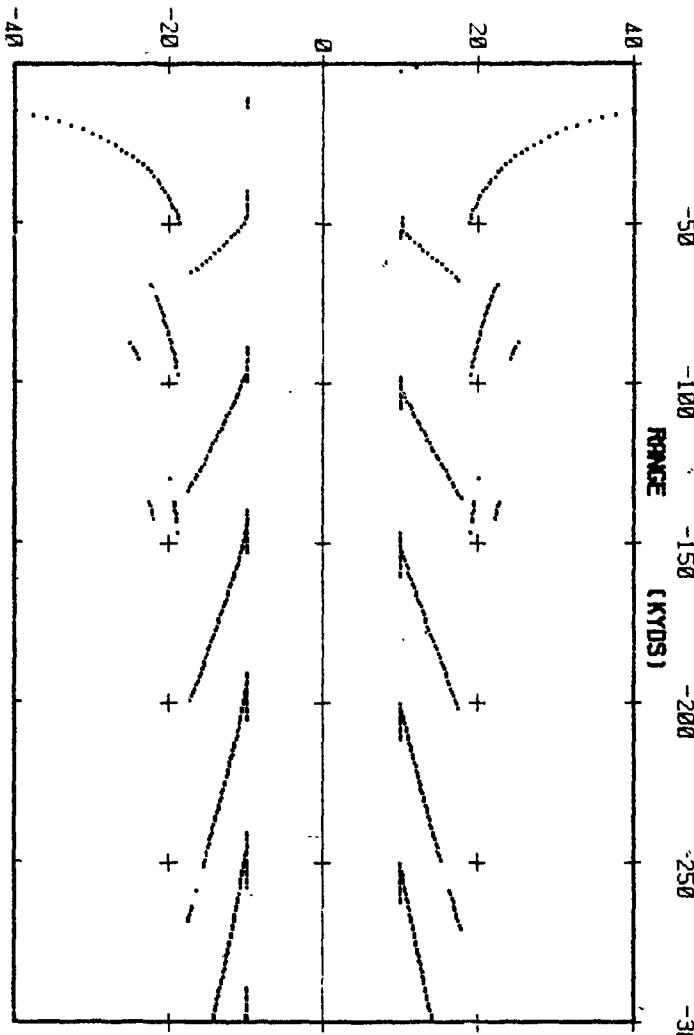
S 50 R 1800 F 50

1450 M/S 1500 1550

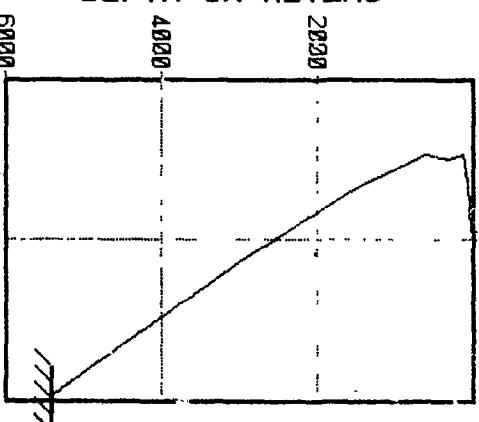
DB LOSS



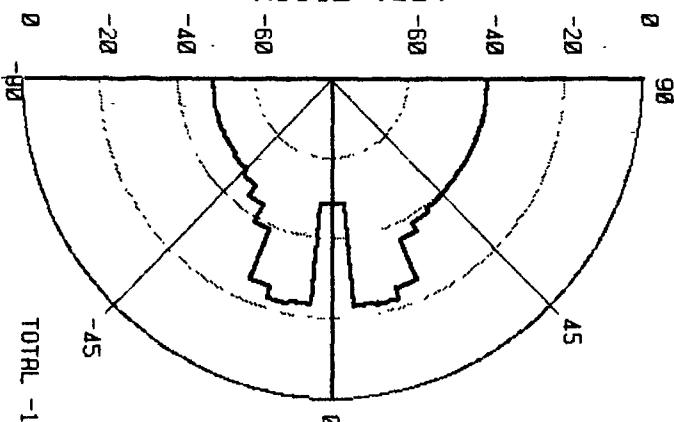
ARRIVAL ANGLE



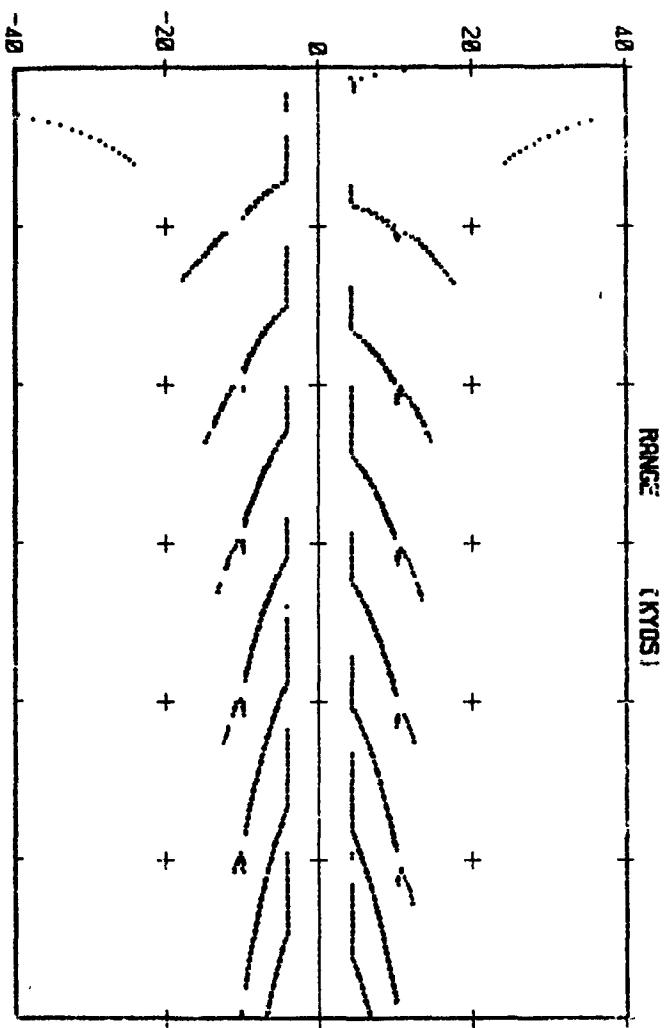
DEPTH IN METERS



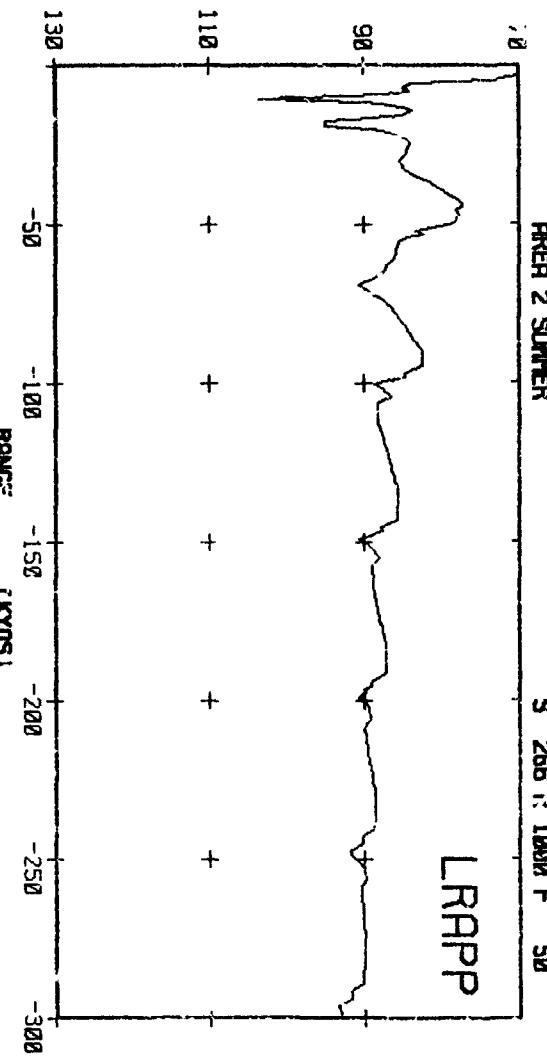
NOISE (DB)



ARRIVAL ANGLE

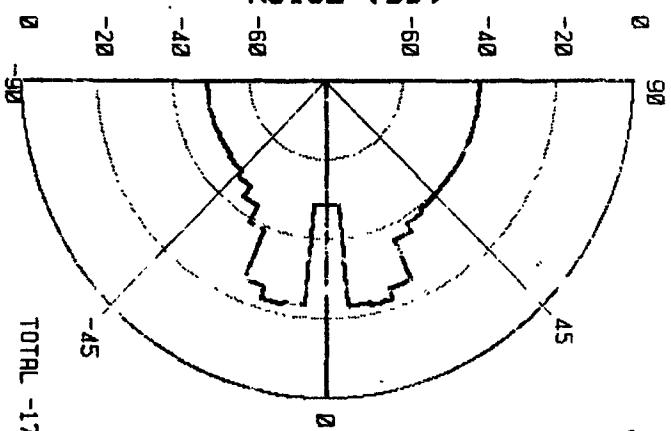


DB LOSS

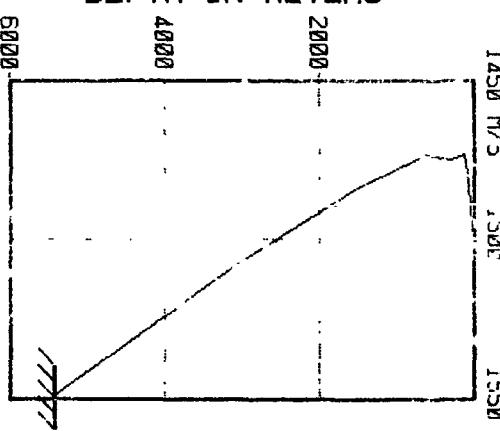


LRAAPP

NOISE (DB)



DEPTH IN METERS



TOTAL -17.7 DB

73

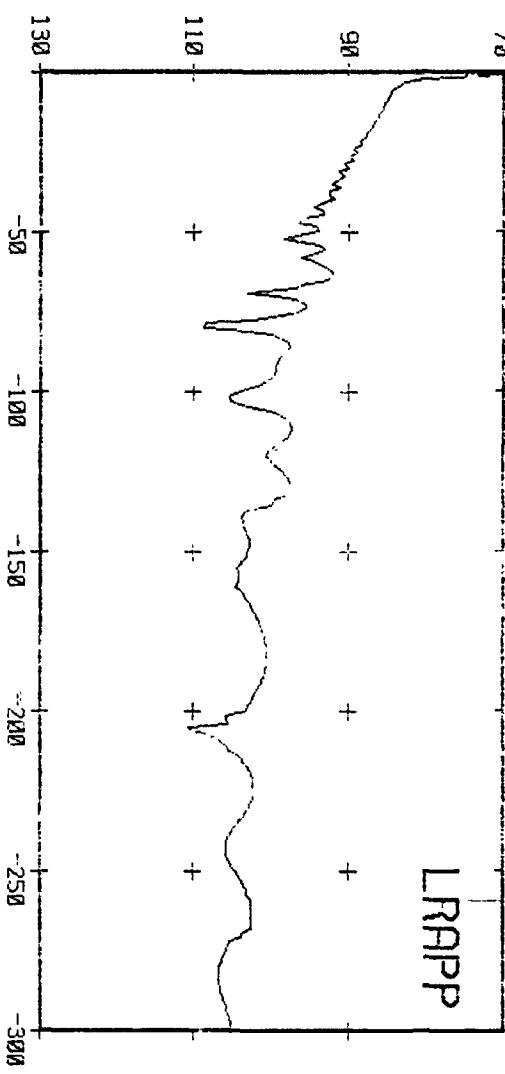
ARR 2 SUMMER

S 2B R 1500 F 50

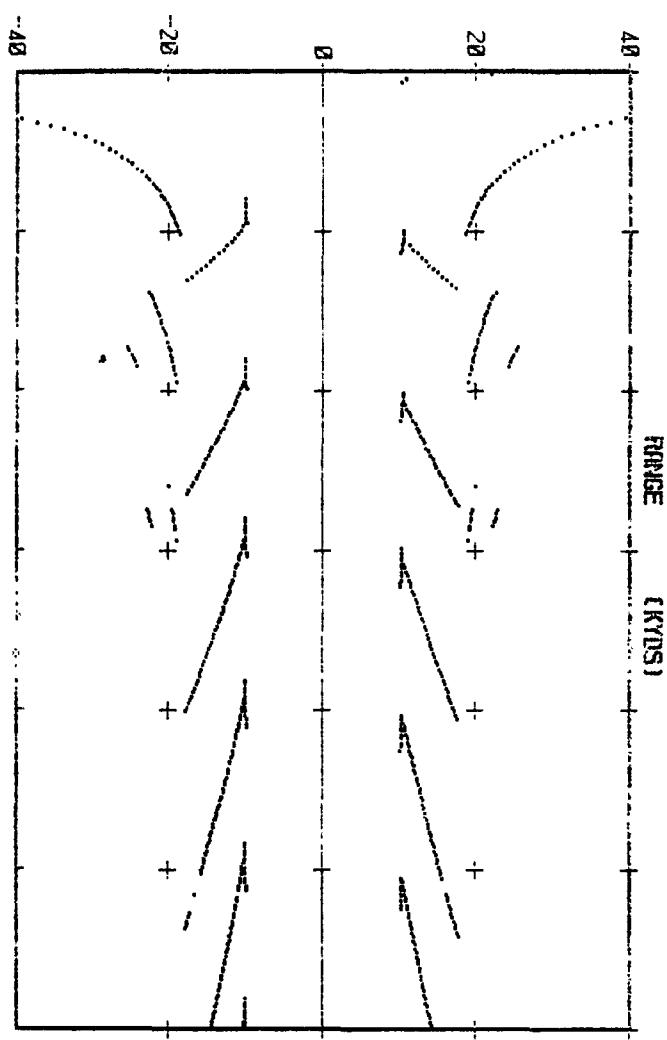
1450 M/S 1500 + 558

DB LOSS

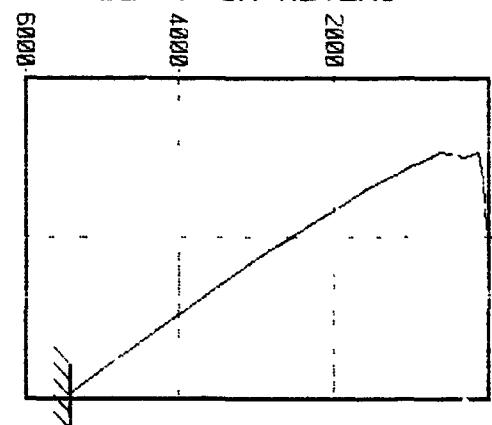
LRAPP



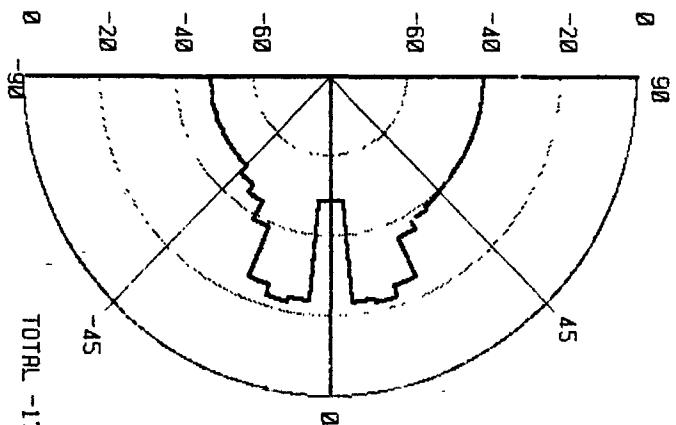
ARRIVAL ANGLE



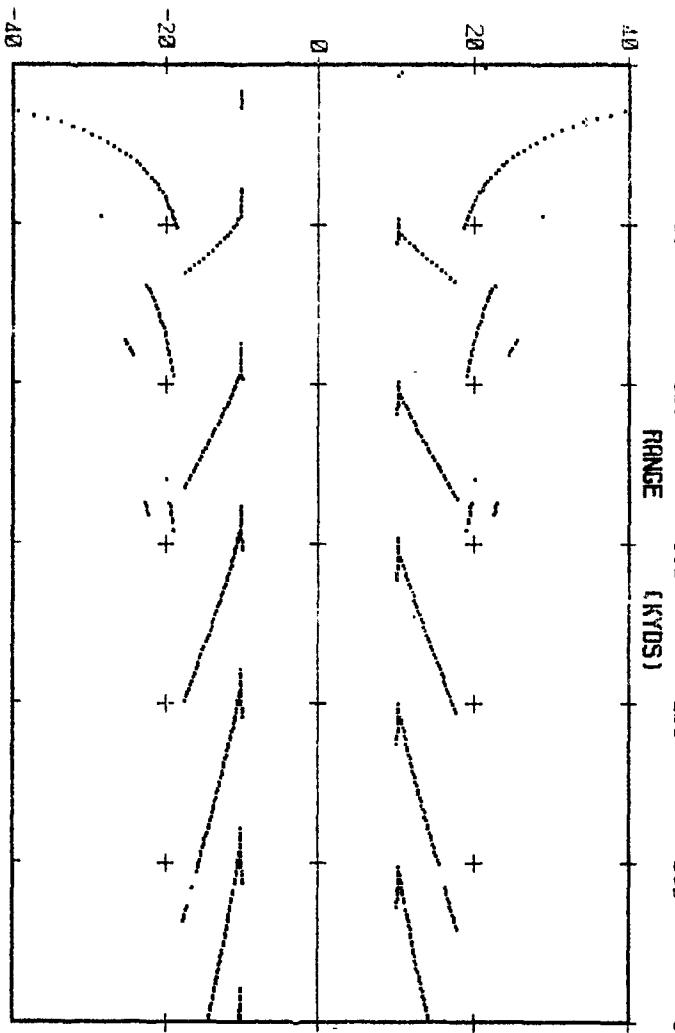
DEPTH IN METERS



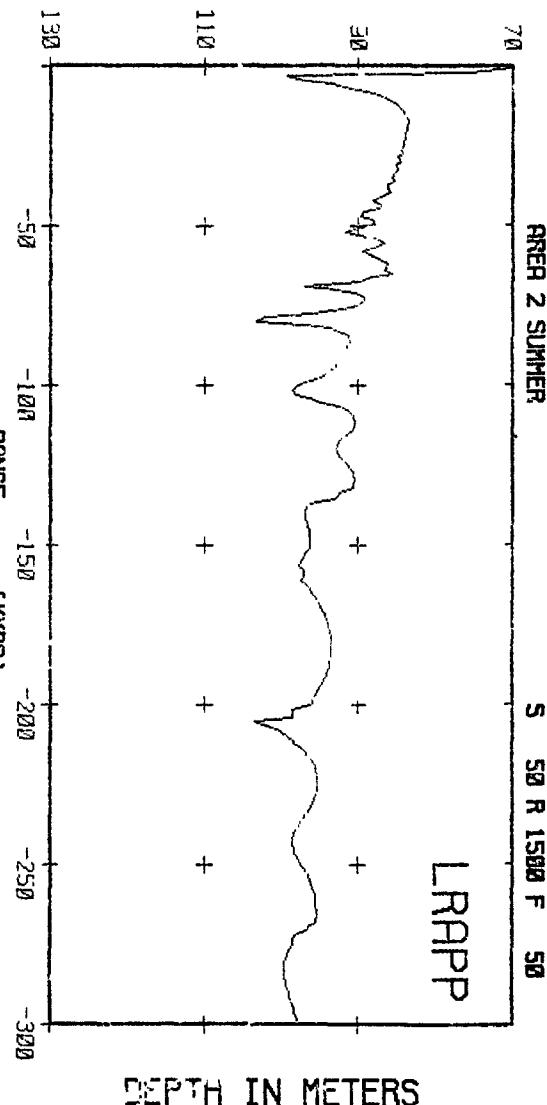
NOISE (DB)



ARRIVAL ANGLE

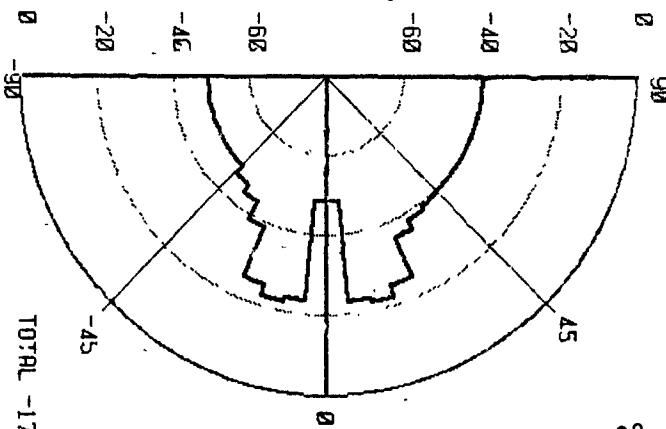


DB LOSS

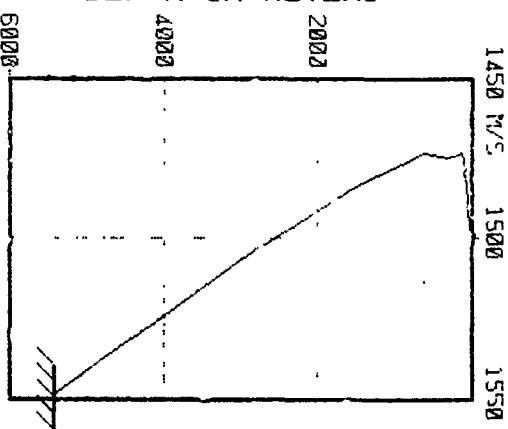


LRAAPP

NOISE (DB)



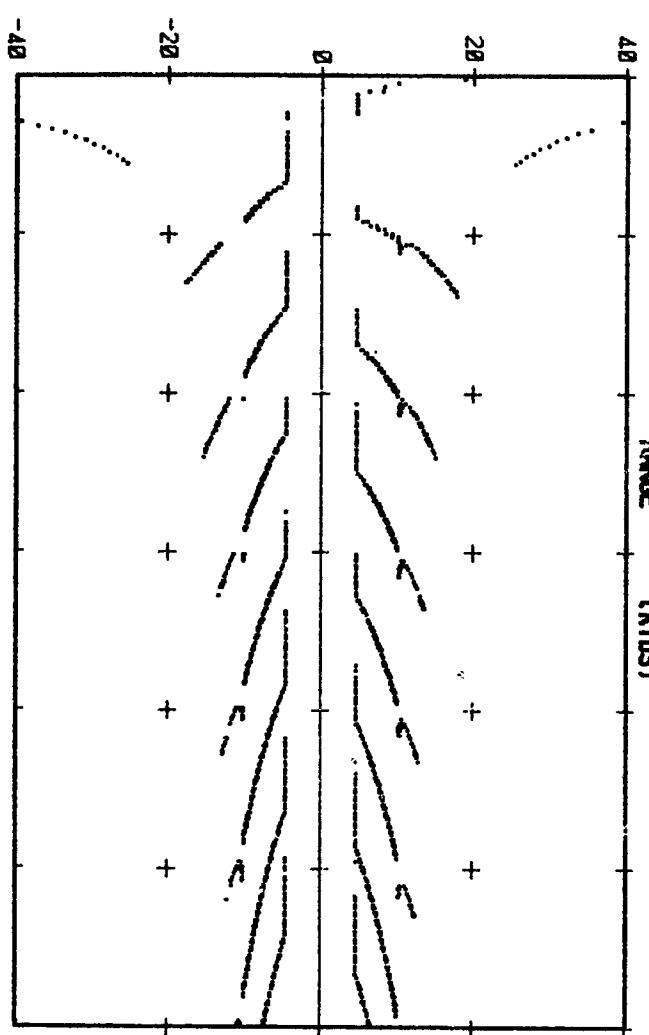
DEPTH IN METERS



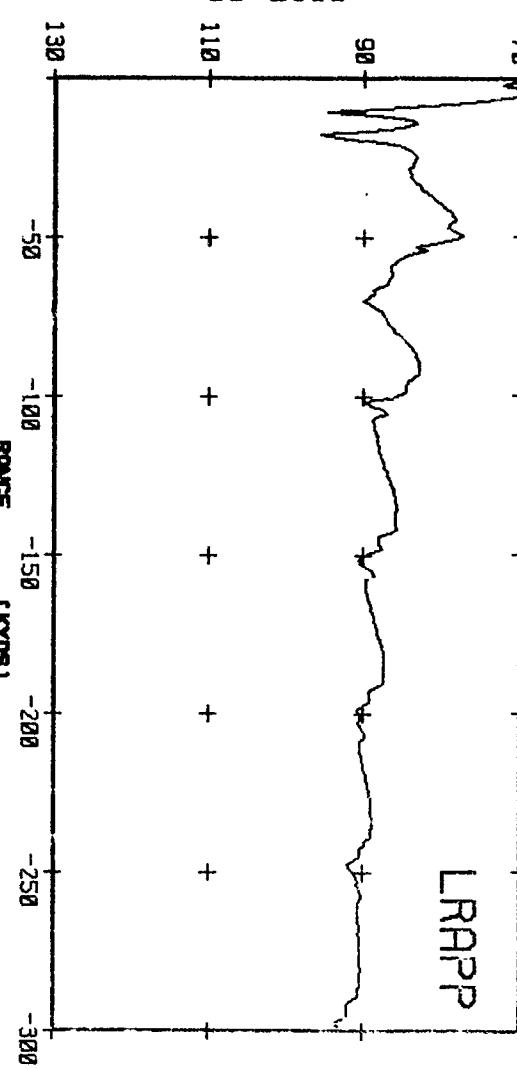
1450 M.S. 1500 1550

TOTAL -17.7 DB

ARRIVAL ANGLE



DB LOSS



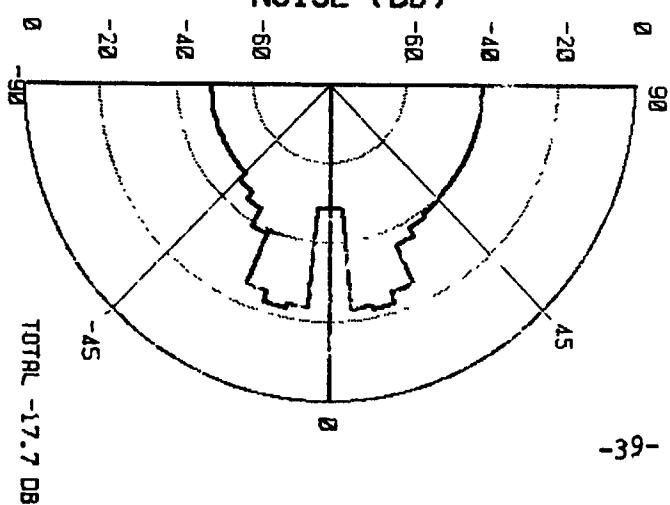
ARER 2 SUMMER

S 268 R 1500 F 58

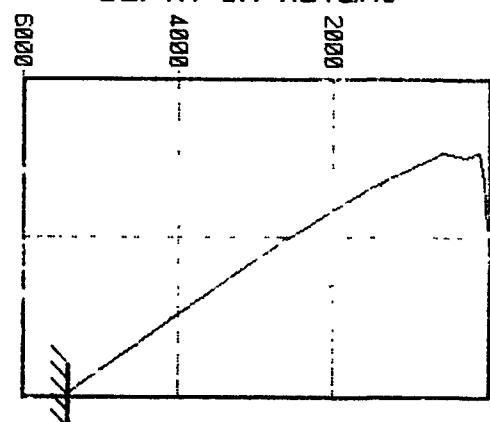
LRAAPP

1450 M/S 1520 1550

NOISE (DB)



DEPTH IN METERS



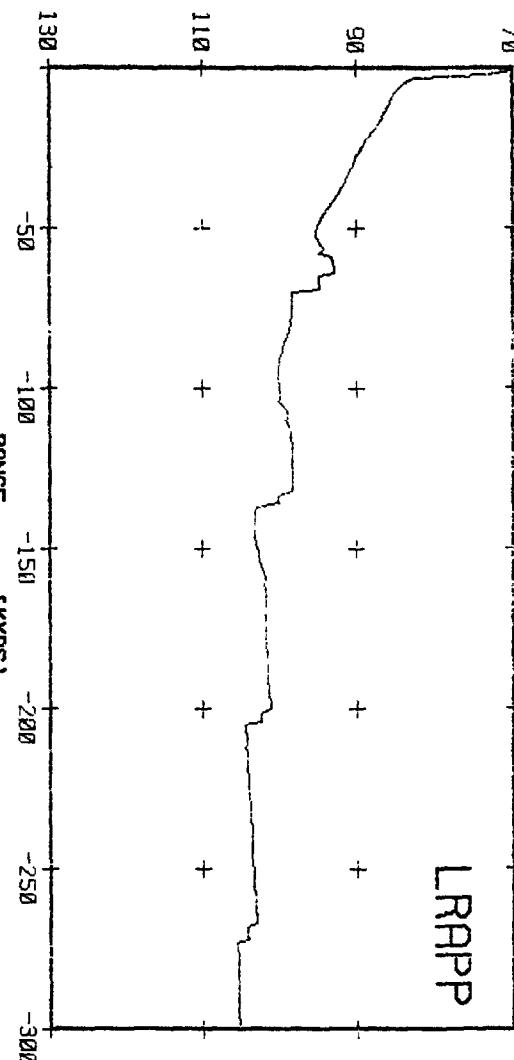
AREA 2 SUMMER

S 20 R 1968 F 50

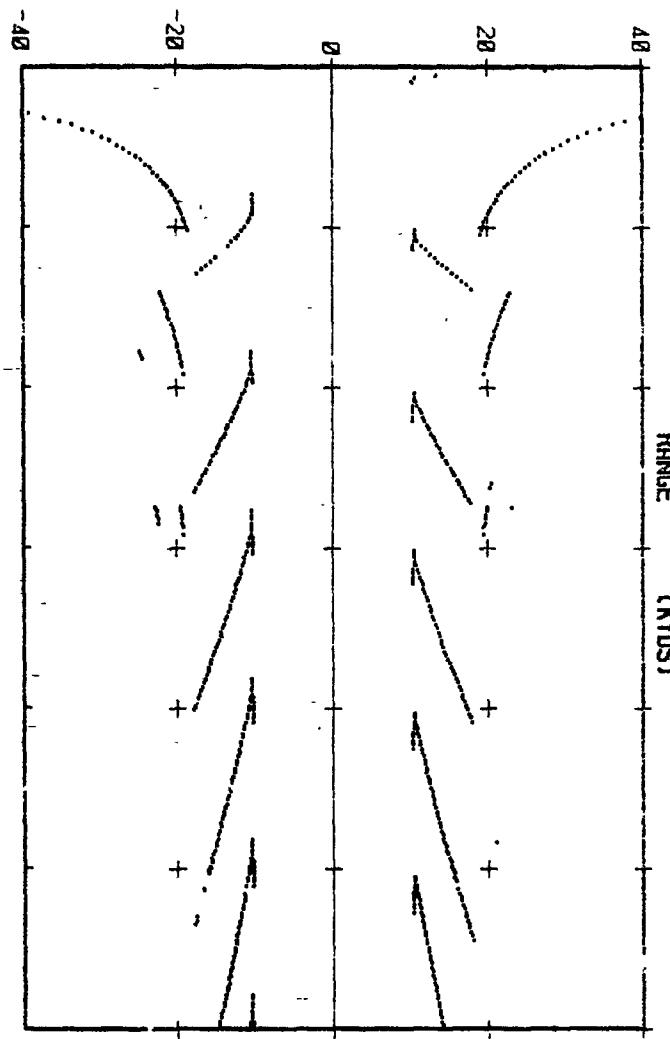
1450 M/S 1500 1550

L RAPP

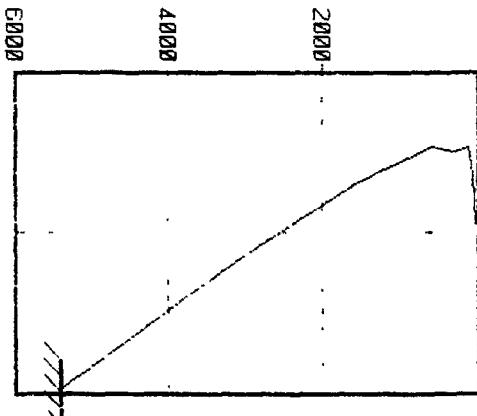
DB LOSS



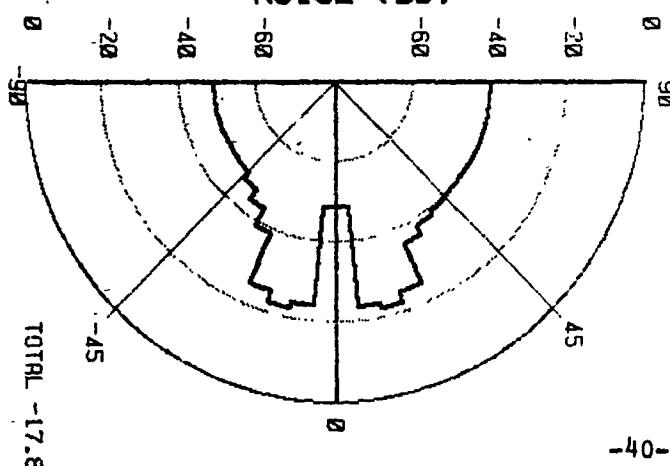
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -17.8 DB

70

ARER 2 SUMMER

S 50 R 1968 F 50

1450 M/S 1500 1550

LRAPP

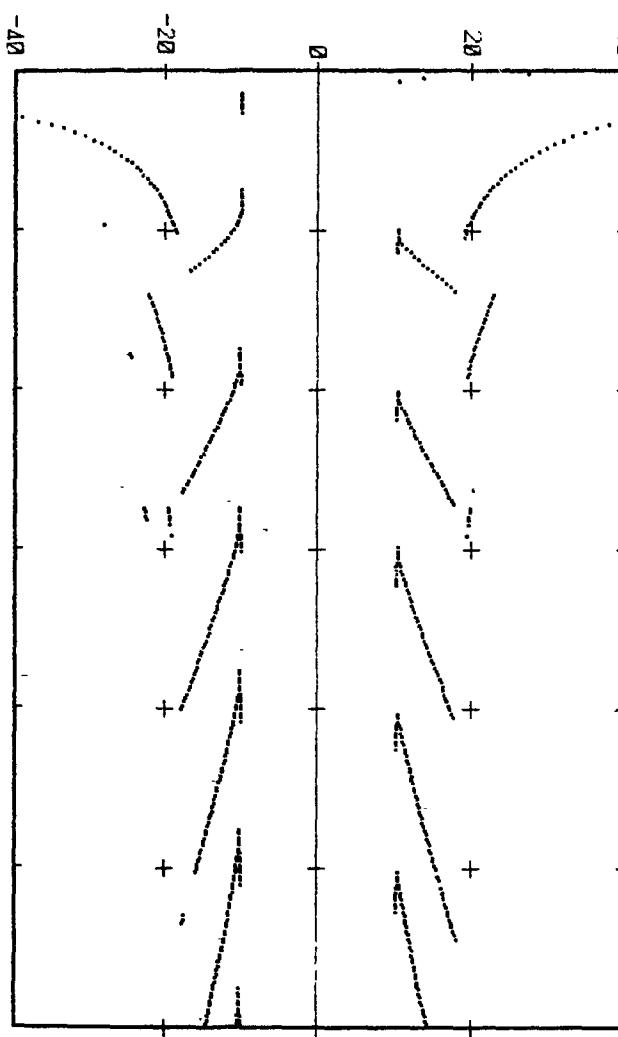
DB LOSS

+ + + + + + + +

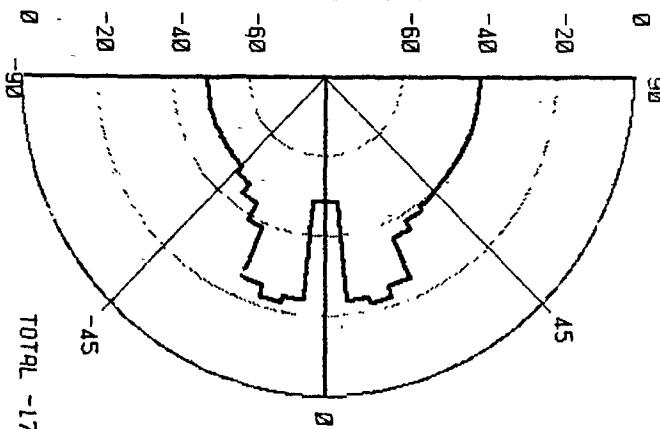
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-100
-120
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-180
-200
-220
-240
-260
-280
-3000
2000
4000
6000

DEPTH IN METERS

ARRIVAL ANGLE

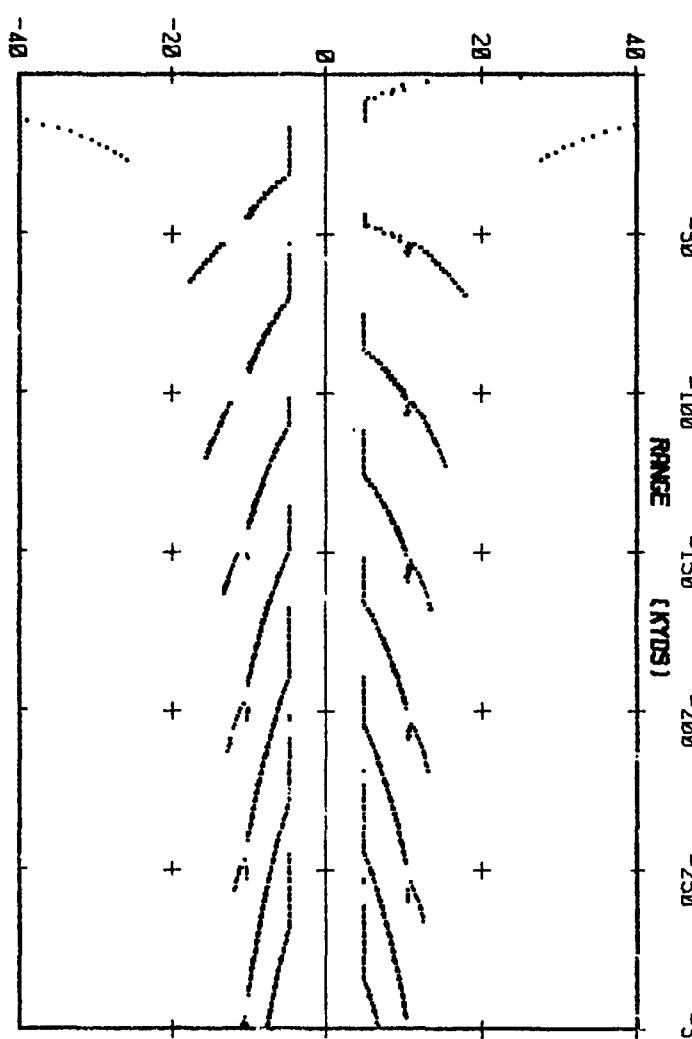


NOISE (DB)

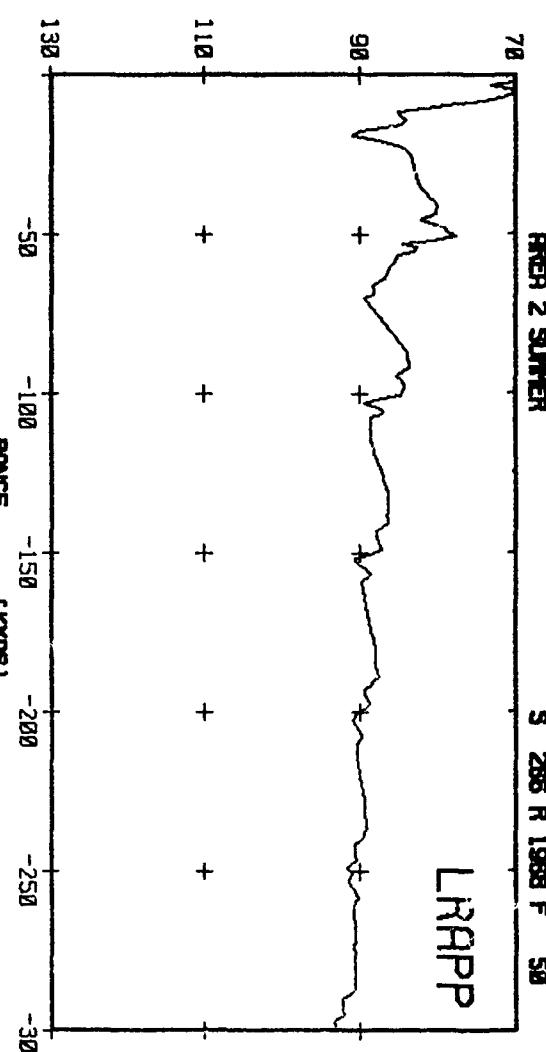


TOTAL -17.8 DB

ARRIVAL ANGLE



DB LOSS



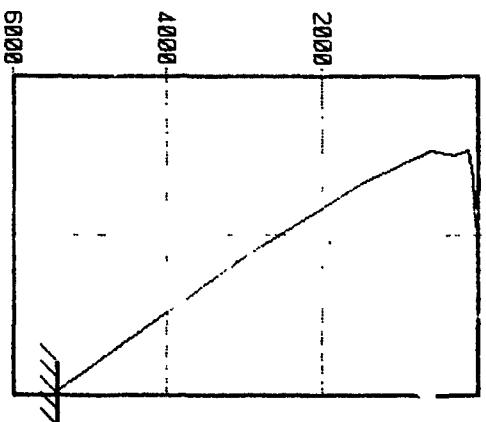
AREA 2 SUMMER

S 266 R 1968 F 59

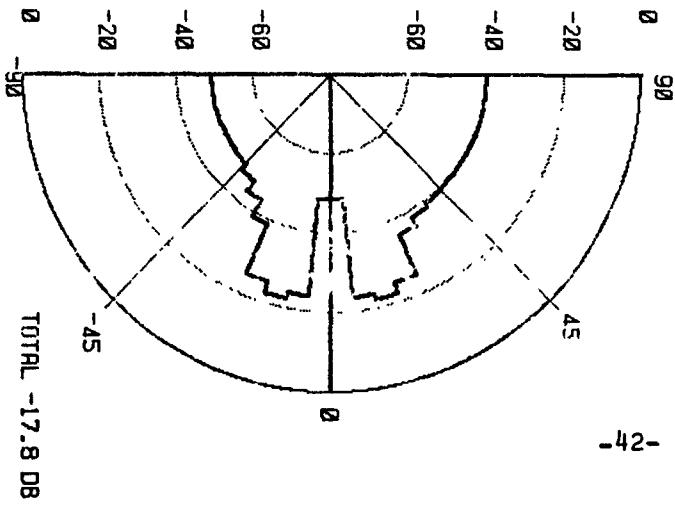
1450 M/S 1500 1550

LRAAPP

DEPTH IN METERS



NOISE (DB)



70

ARER 2 SUMMER

S 20 R 7874 F 50

1450 M/S 1500 1550

LRAPP

DB LOSS

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10
0

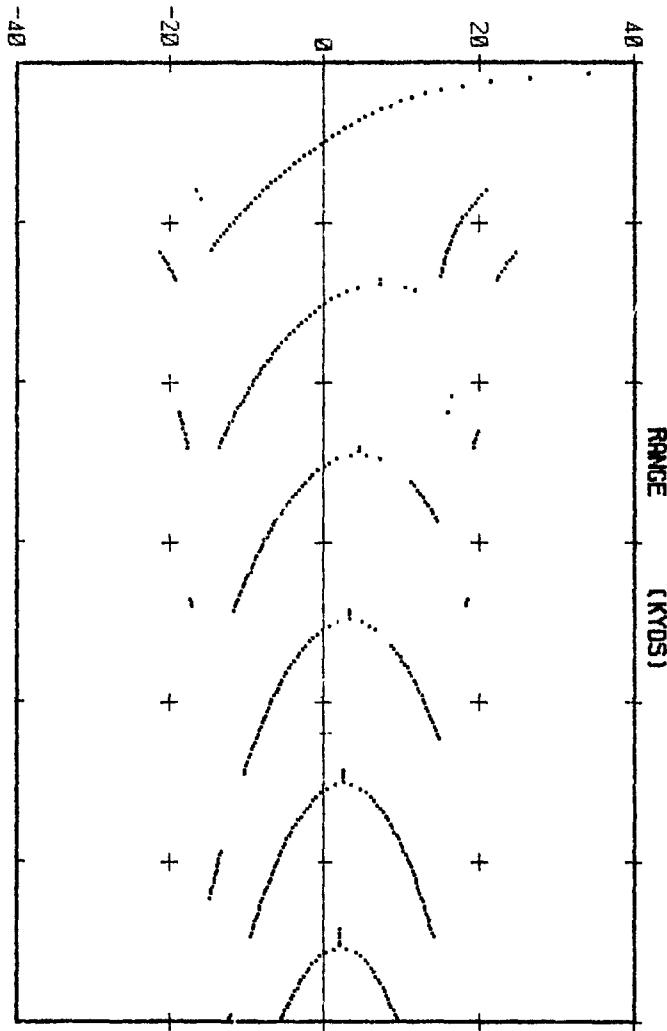
-200 -150 -100 -50 0 50 100 150 200 250 300

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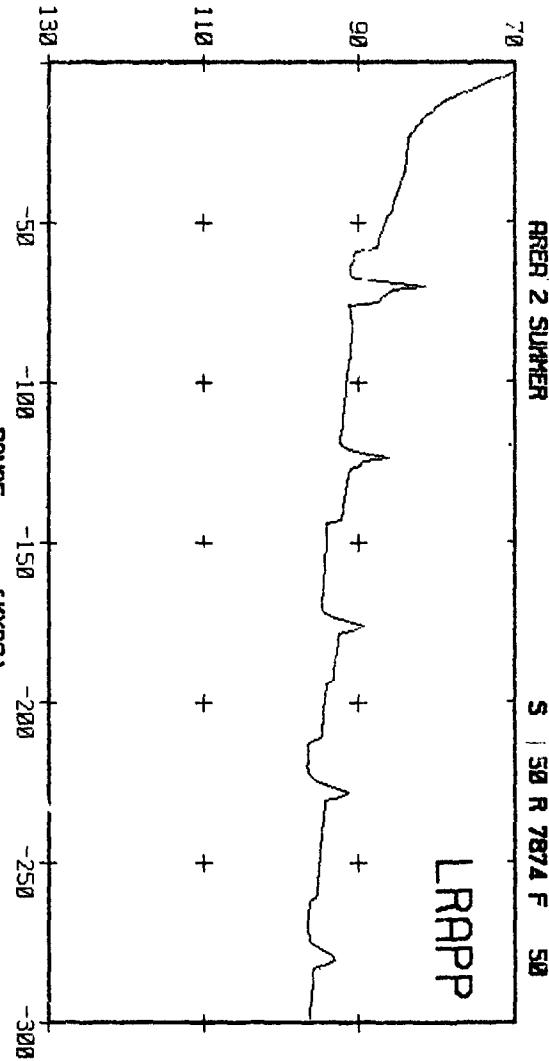
DEPTH IN METERS

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ARRIVAL ANGLE



DB LOSS



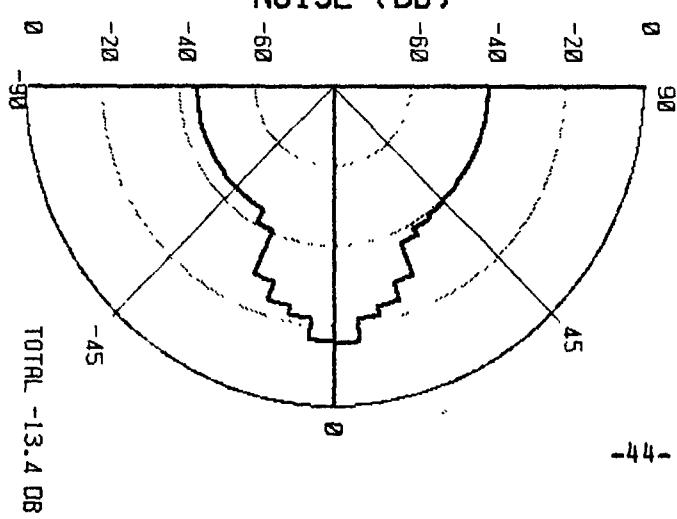
ARR 2 SUMMER

S | 50 R 7874 F 50

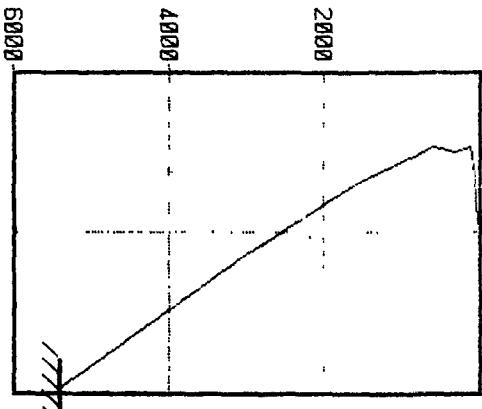
LRAPP

1450 M/S 1500 1550

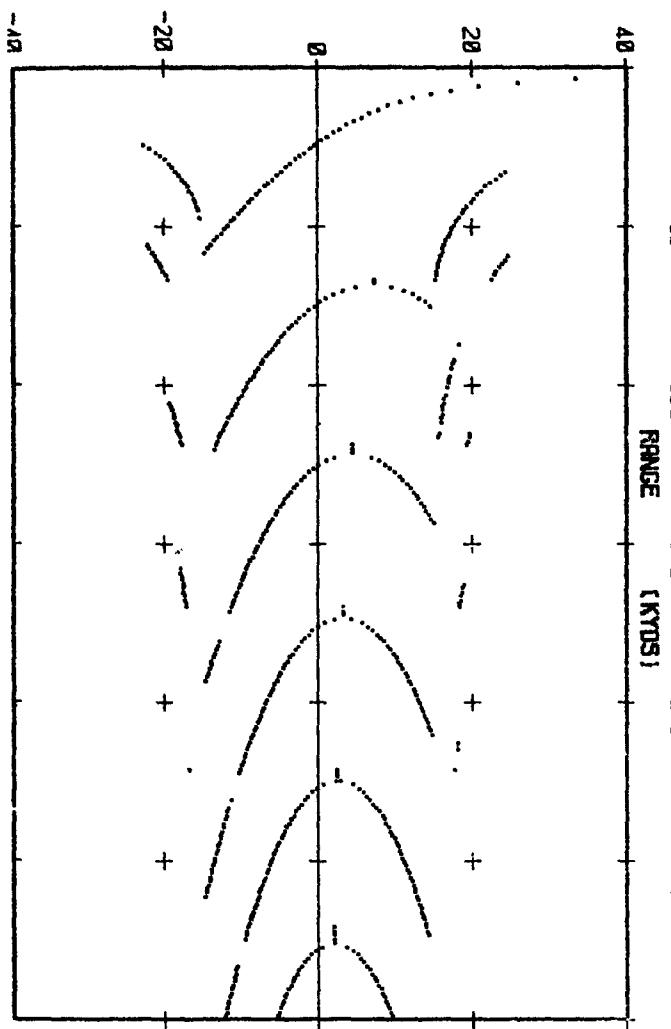
NOISE (DB)



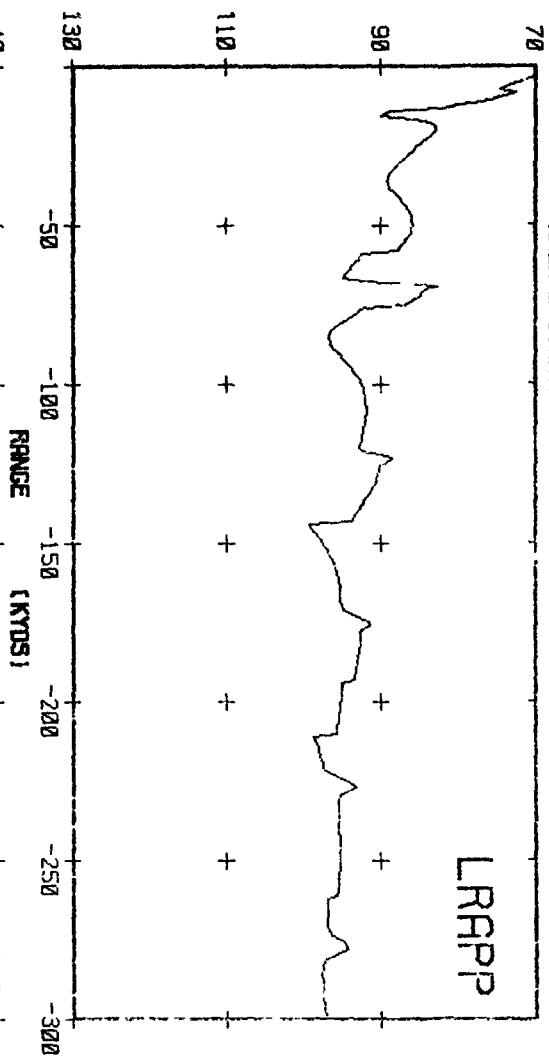
DEPTH IN METERS



ARRIVAL ANGLE



DB LOSS



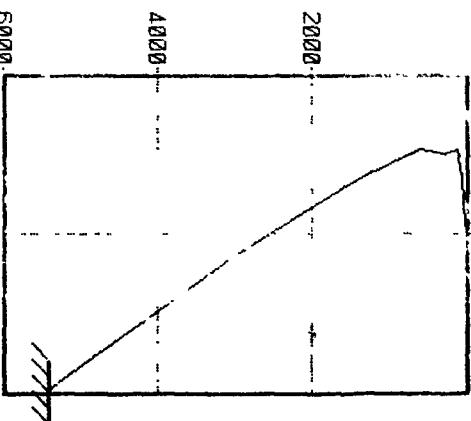
ARR 2 SUMMER

S 266 R 7874 F 50

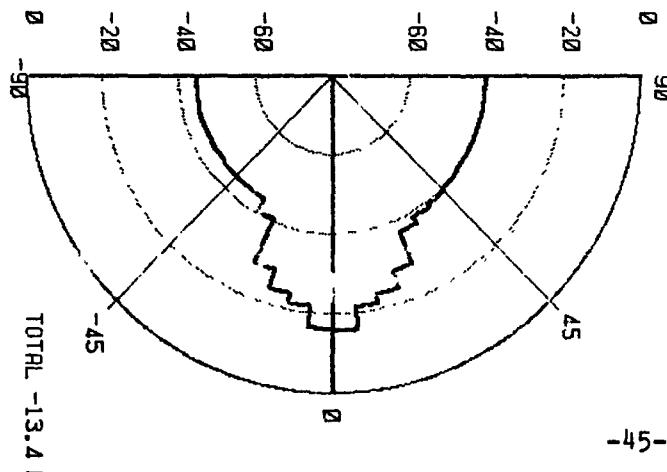
LRAPP

1450 M/S 1530 1550

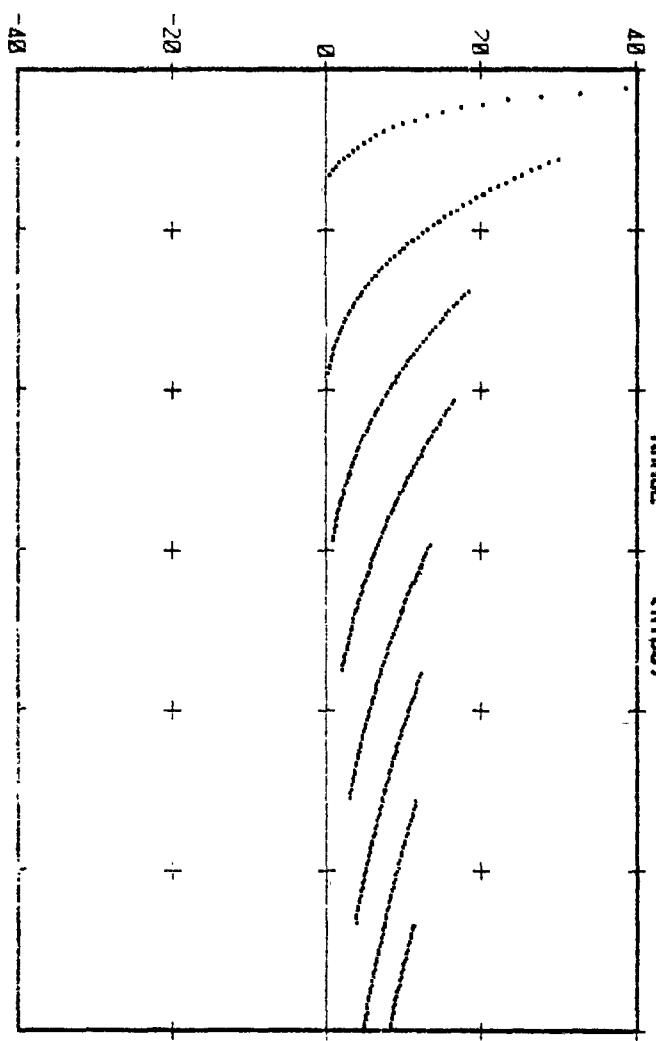
DEPTH IN METERS



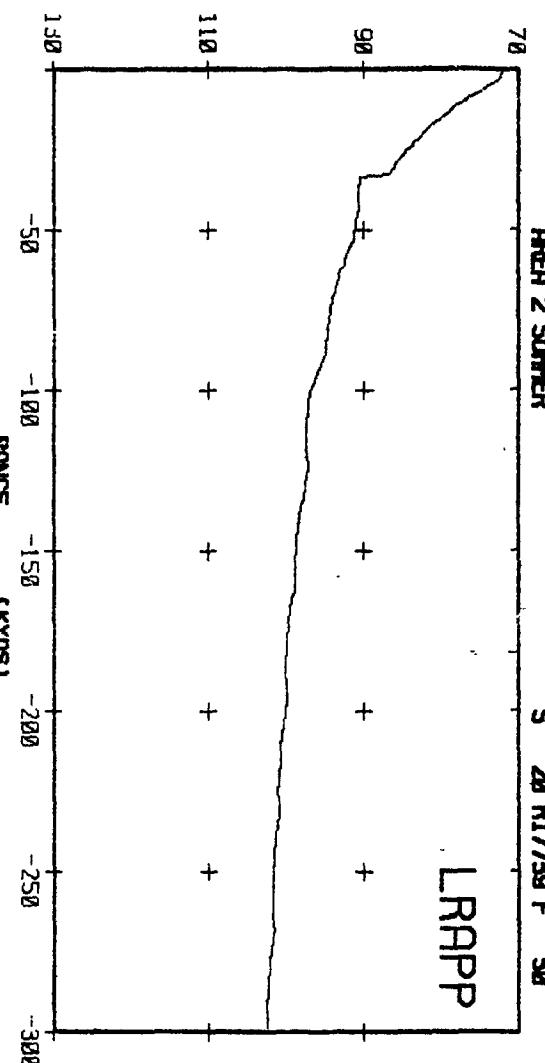
NOISE (DB)



ARRIVAL ANGLE

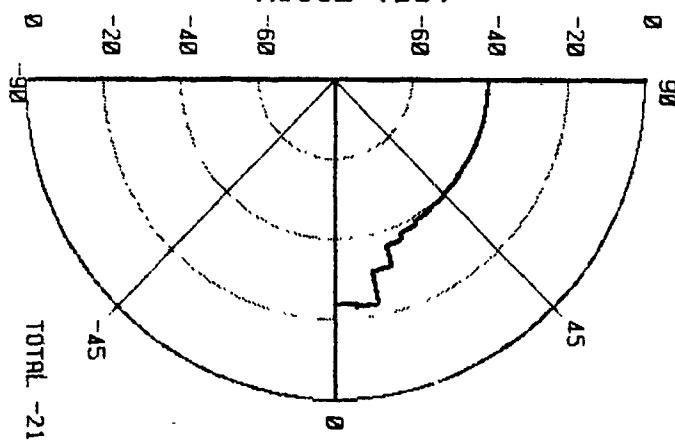


DB LOSS

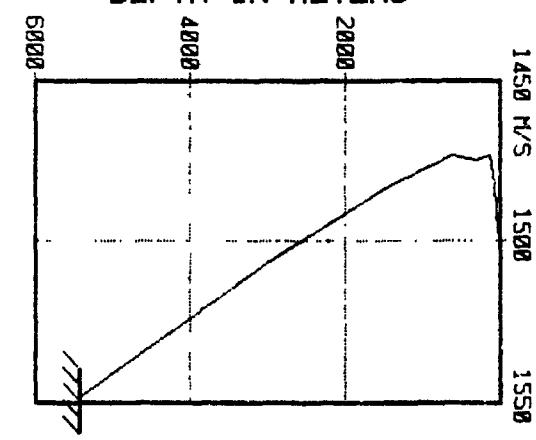


AREA 2 SUMMER
S 20 R17758 F 52
L RAPP

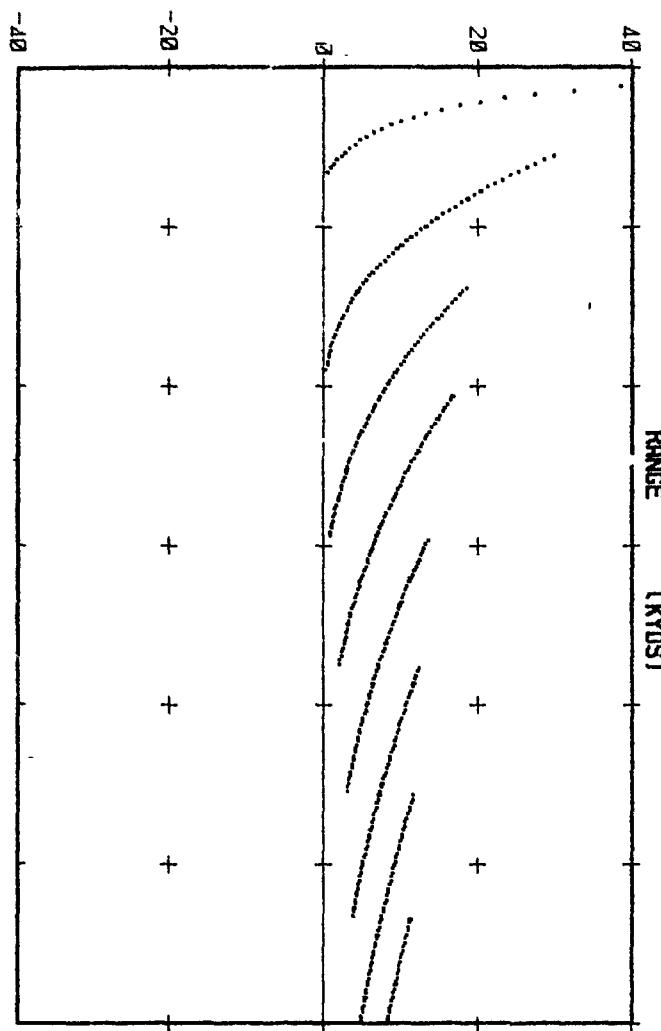
NOISE (DB)



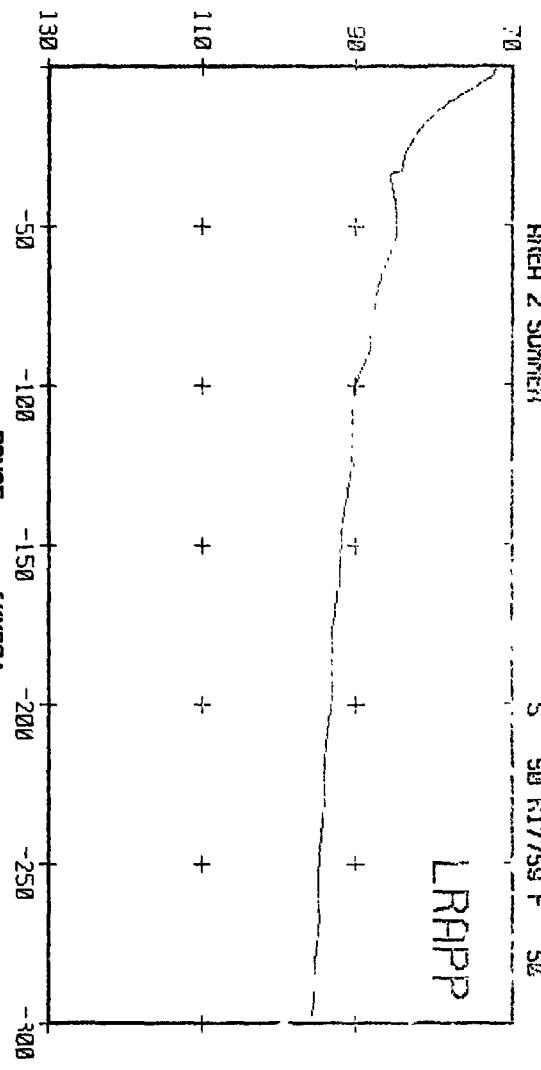
DEPTH IN METERS



ARRIVAL ANGLE



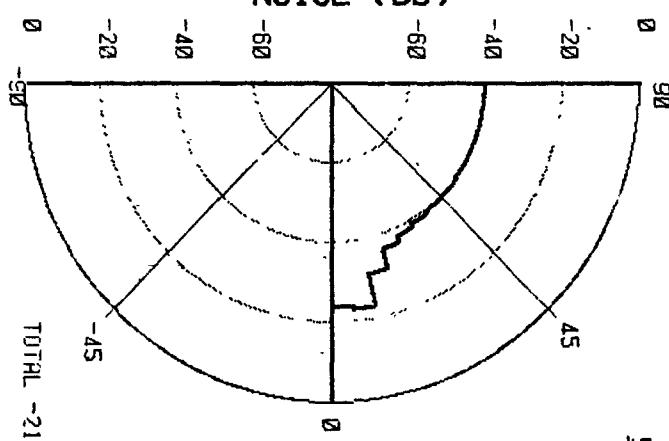
DB LOSS



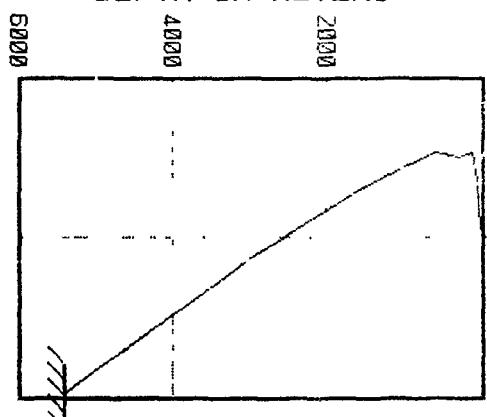
LRAPP

1453 ft/s 1500 J550

NOISE (DB)



DEPTH IN METERS



5 50 R17759 F SL

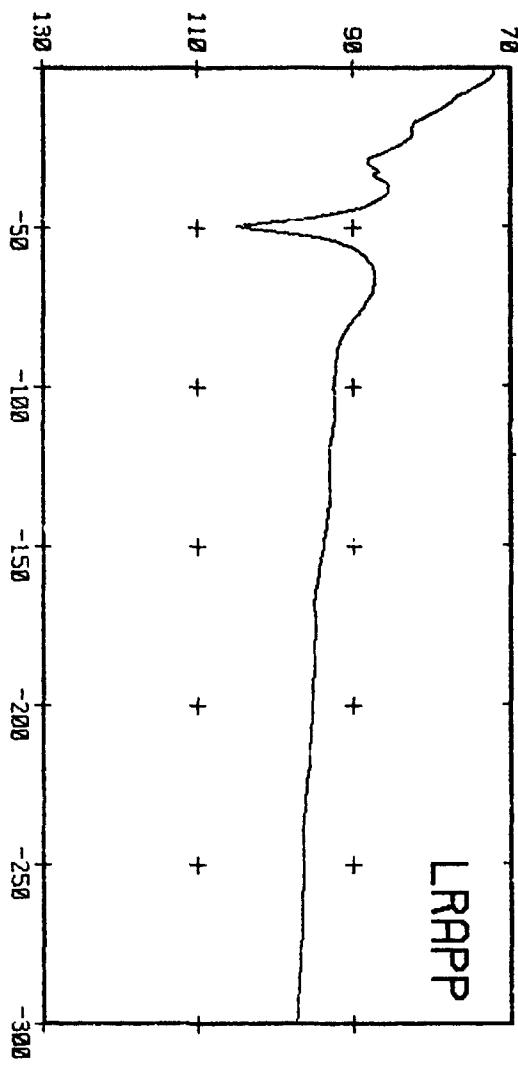
PINGER 2 SUMMER

S 268 R17759 F 59

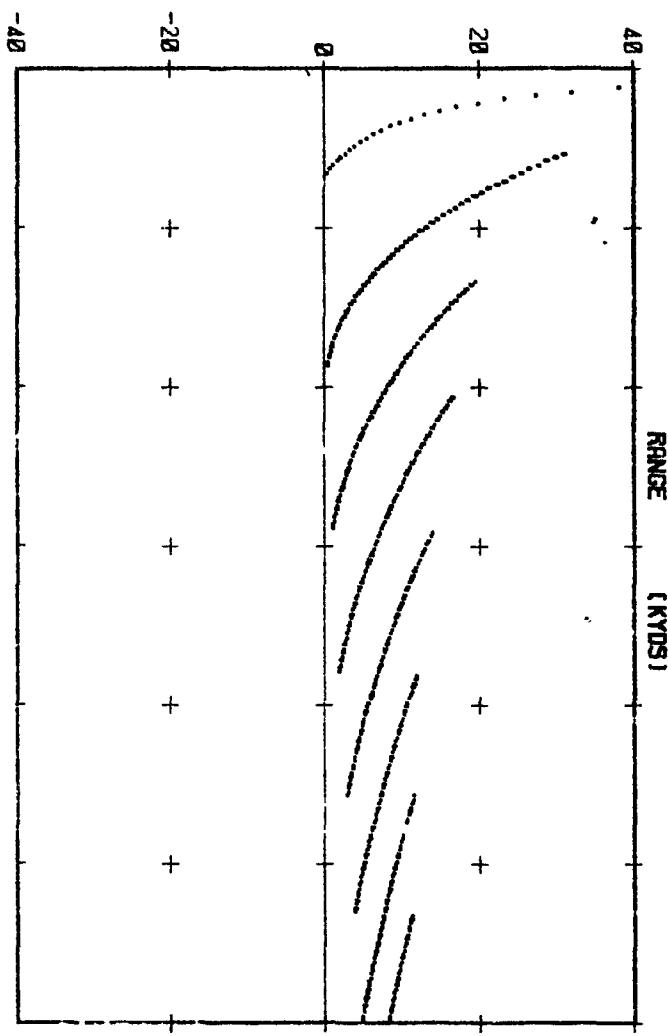
1450 M/S 1510 1550

LRAAPP

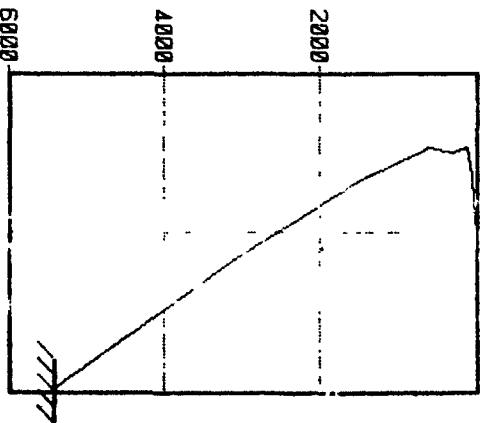
DB LOSS



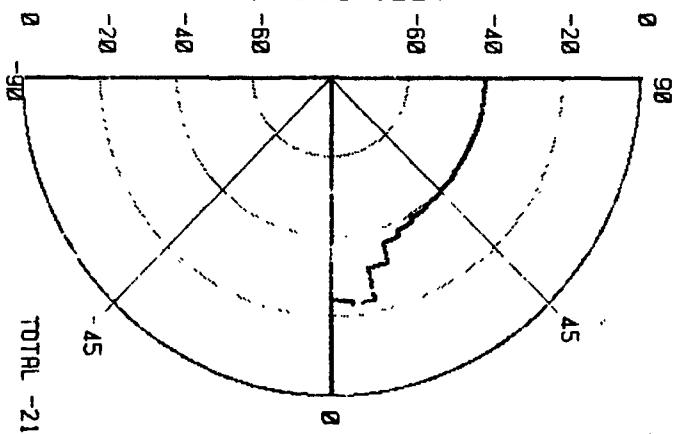
ARRIVAL ANGLE



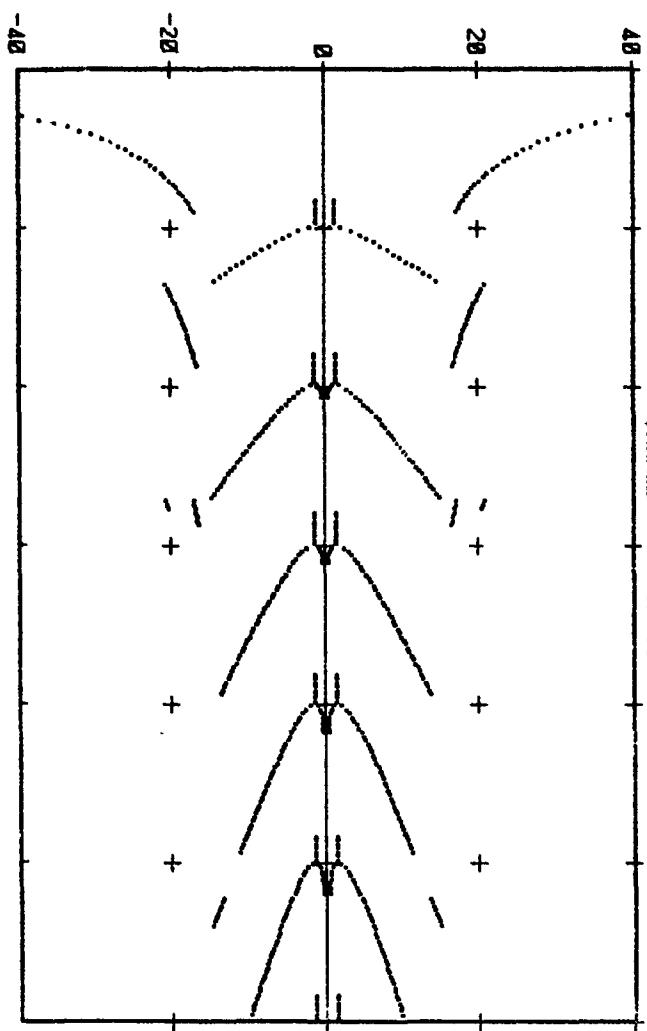
DEPTH IN METERS



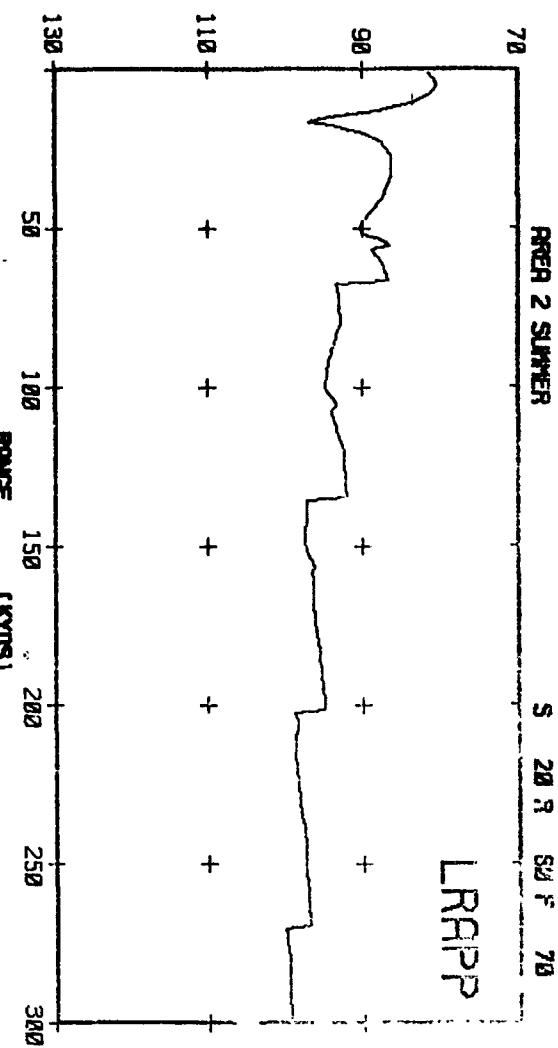
NOISE (DB)



ARRIVAL ANGLE



DB LOSS

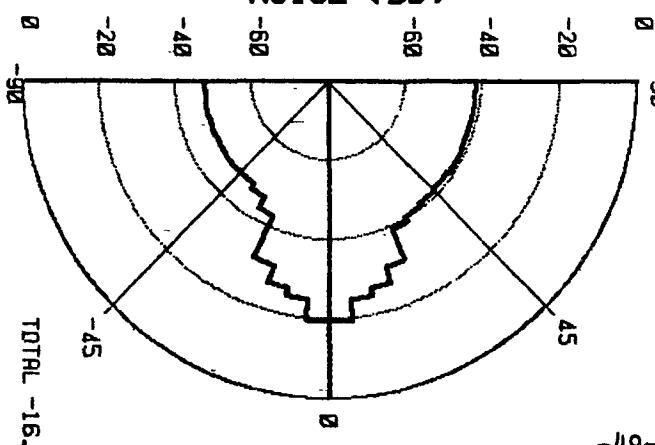


RERA 2 SUMMER
S 20 R S4 F 70

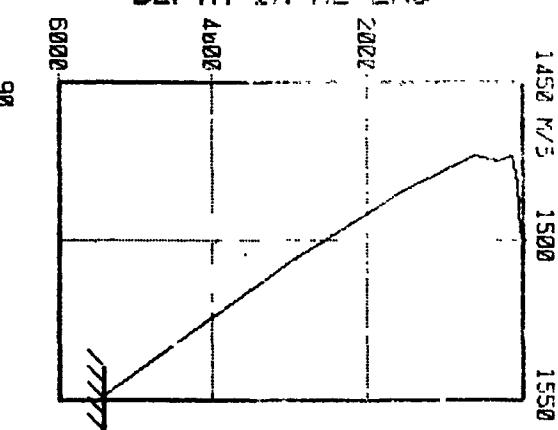
LRAPP

1450 M/S 1500 1550

NOISE (DB)

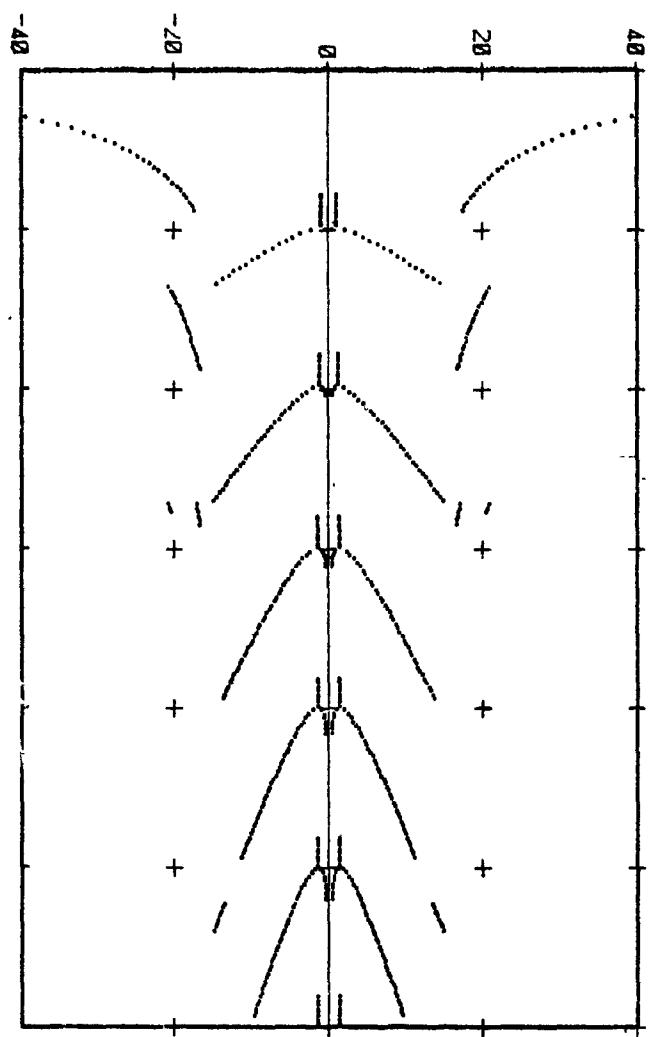


DEPTH IN METERS

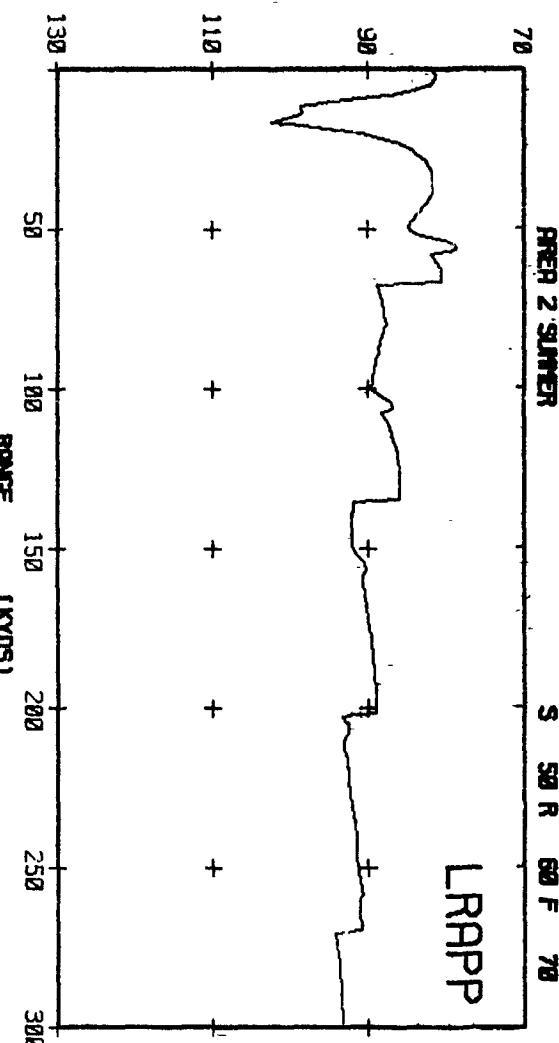


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ARRIVAL ANGLE



DB LOSS



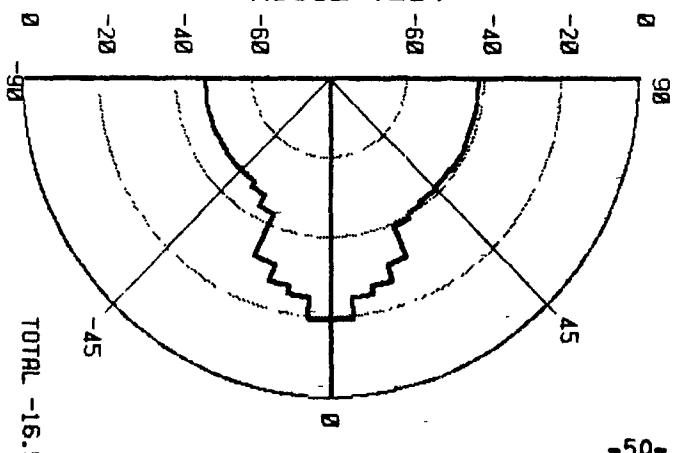
RER 2 SUMMER

S 50 R 60 F 70

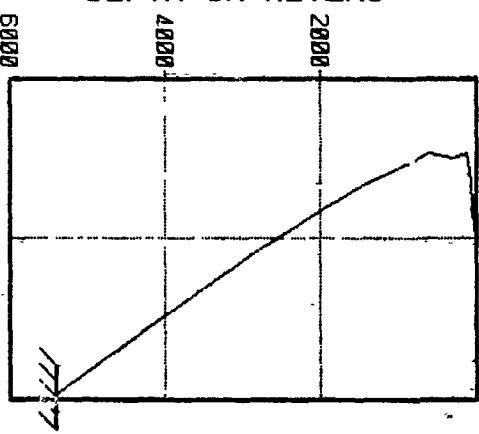
LRAFP

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



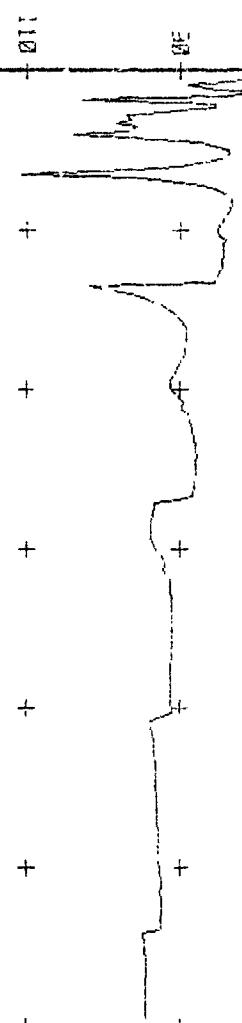
AREA 2 SUMMER

S 266 R 03 F 70

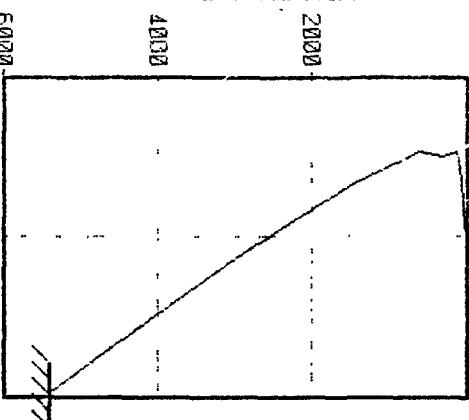
1450 M/S 1500 1550

LRAPP

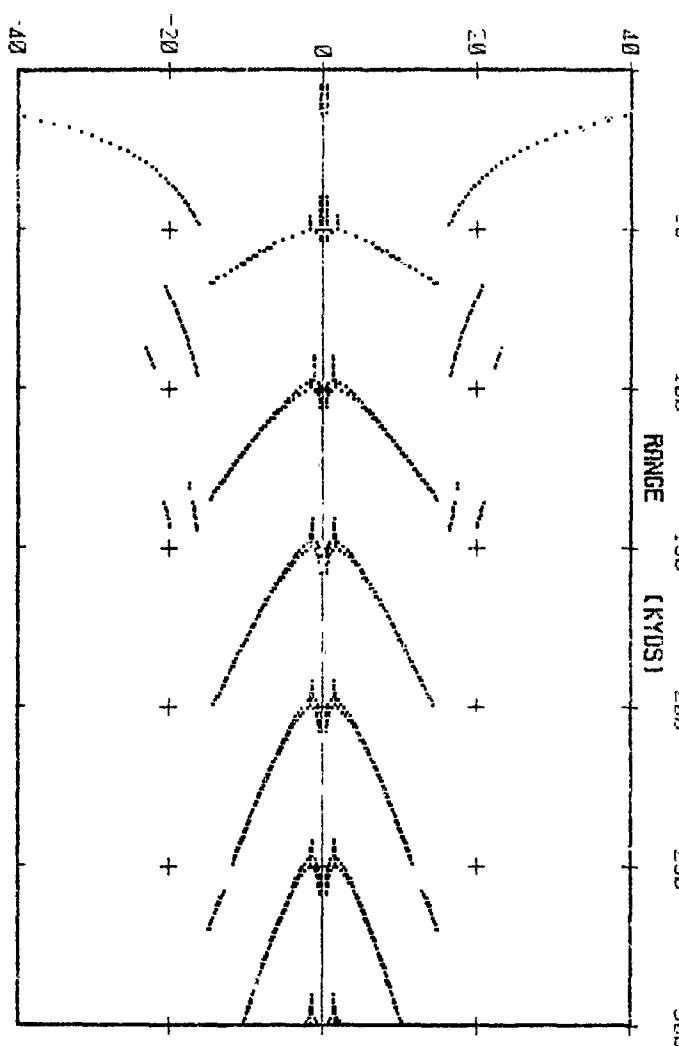
DB LOSS



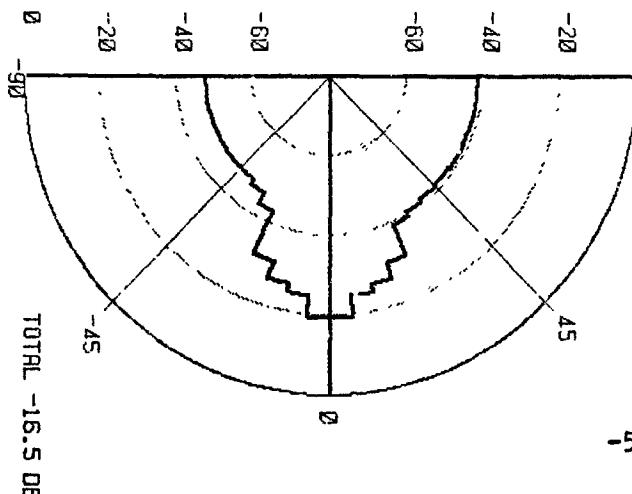
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



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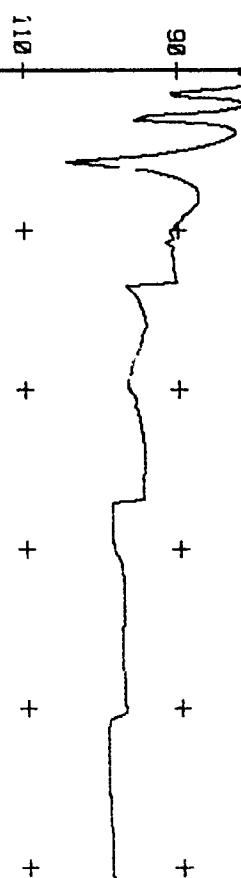
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permit fully legible reproduction

70
ARR 2 SUMMER S 28 R 168 F 70

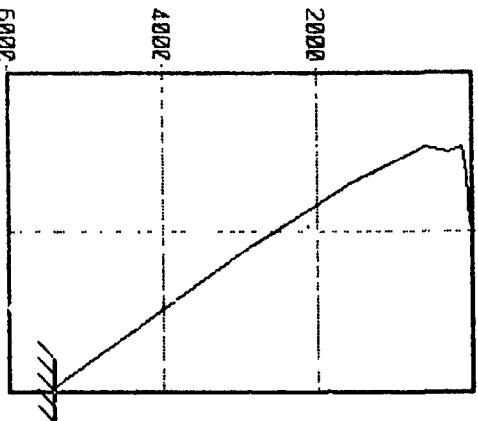
1450 M/S 1500 1550

L RAPP

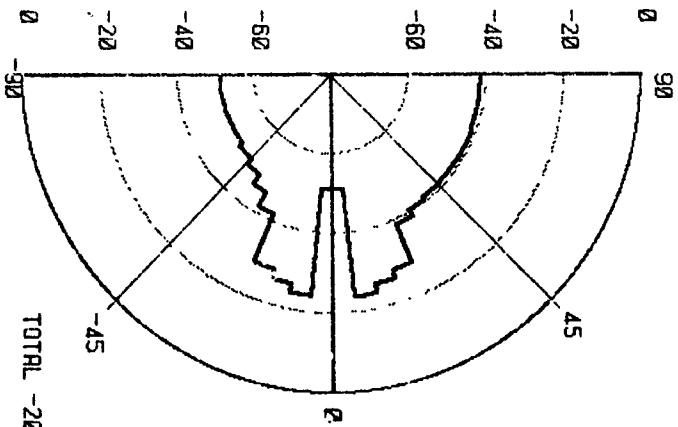
DB LOSS



DEPTH IN METERS



NOISE (DB)



TOTAL -20.1 DB

70

AREA 2 SUMMER

S 50 R 165 F 70

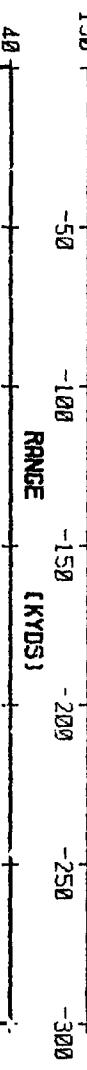
1450 M/S

1500

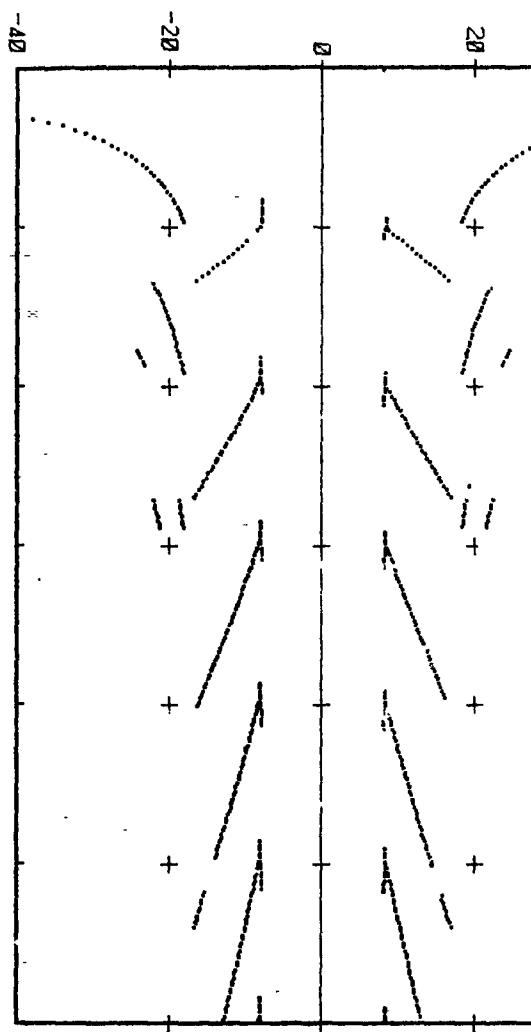
1550

LRAPP

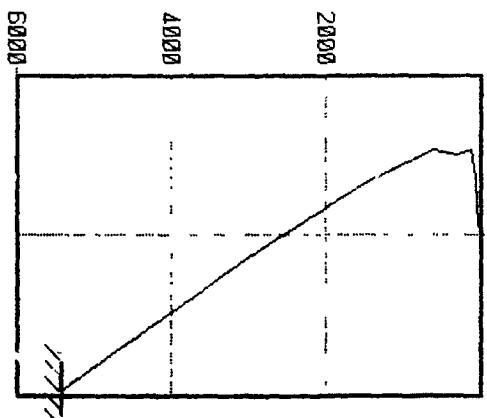
DB LOSS



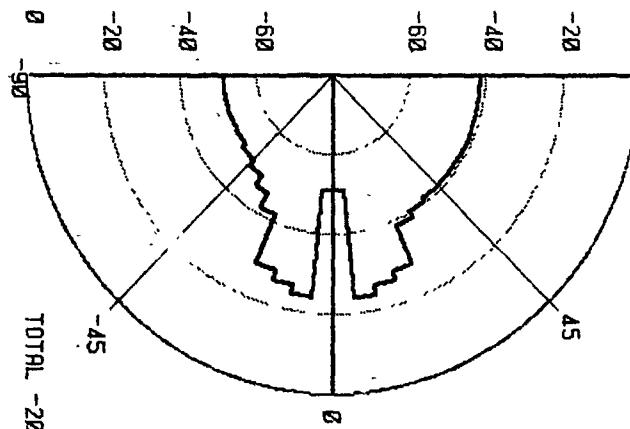
ARRIVAL ANGLE



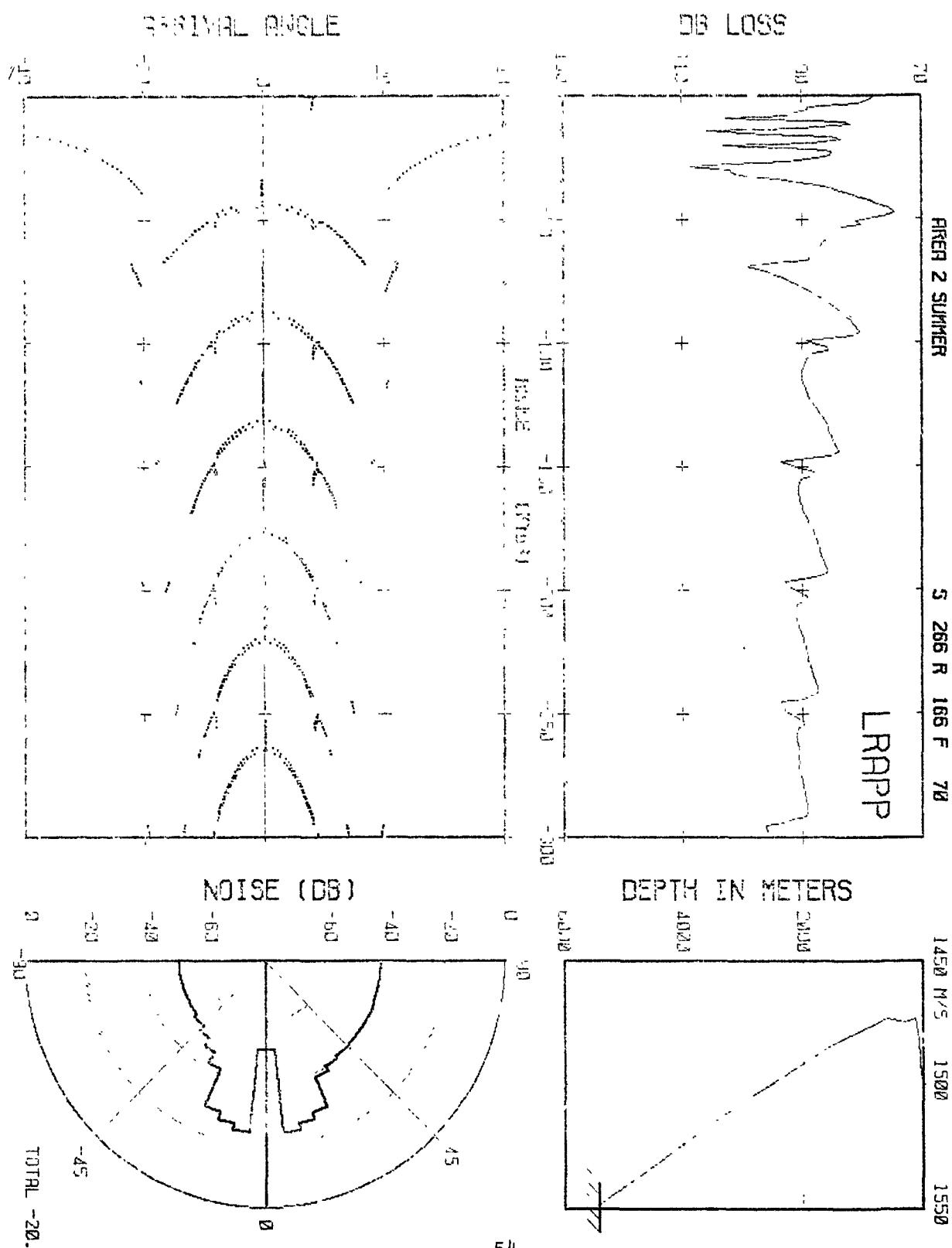
DEPTH IN METERS



NOISE (DB)



TOTAL -20.1 DB



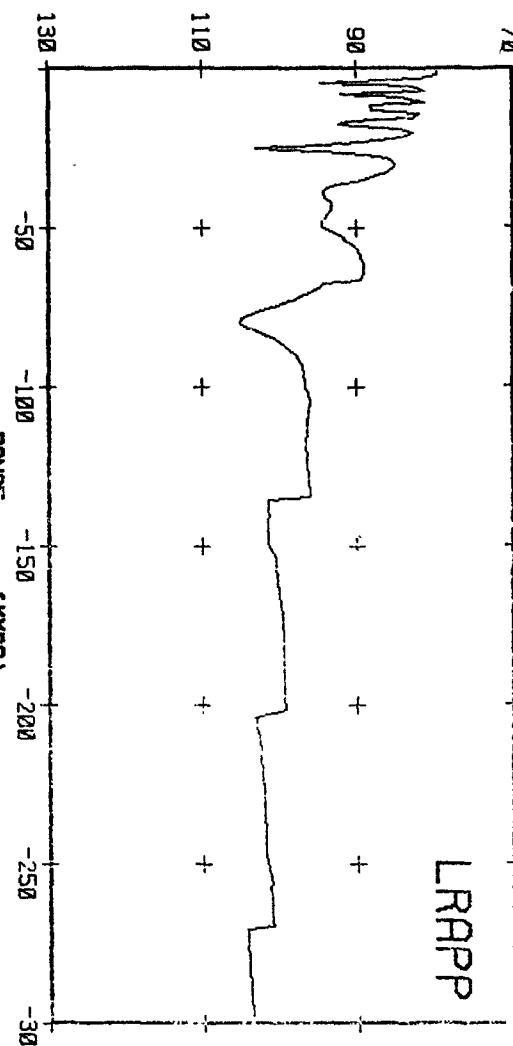
74

AREA 2 SUMMER

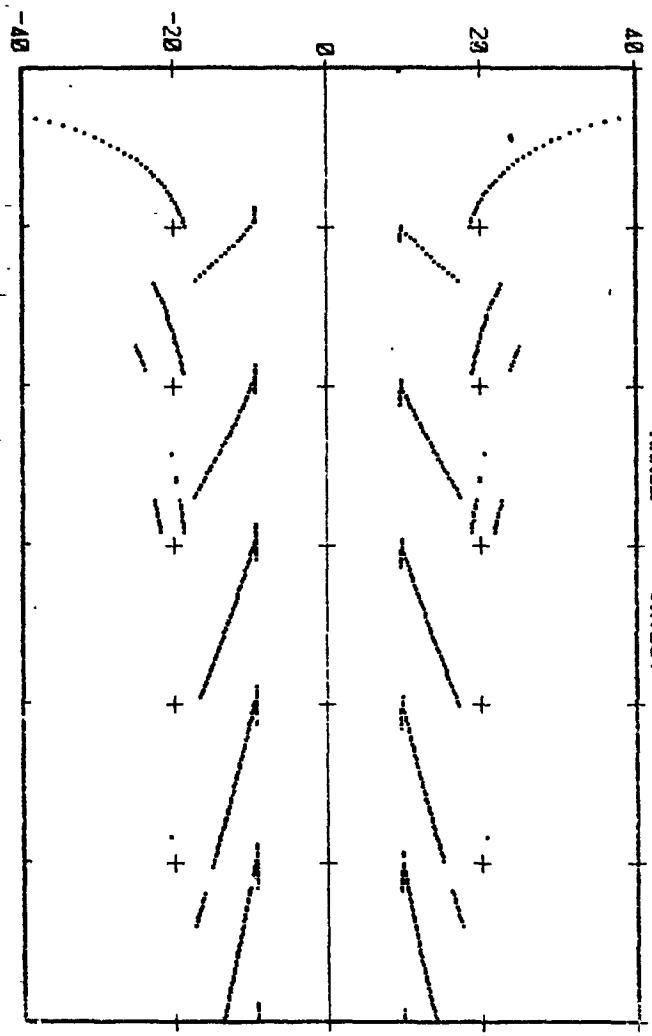
S 20 R 360 F 70

LRAPP

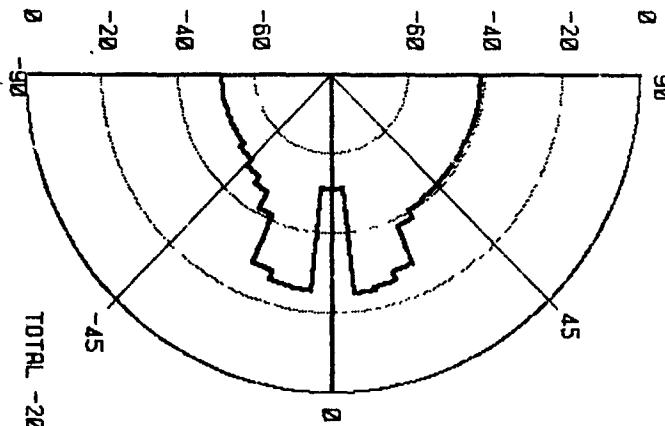
DB LOSS



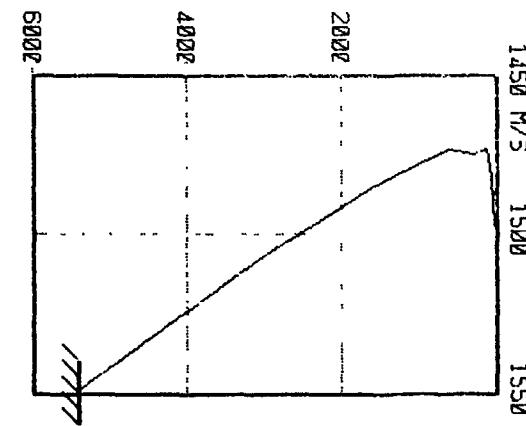
ARRIVAL ANGLE



NOISE (DB)

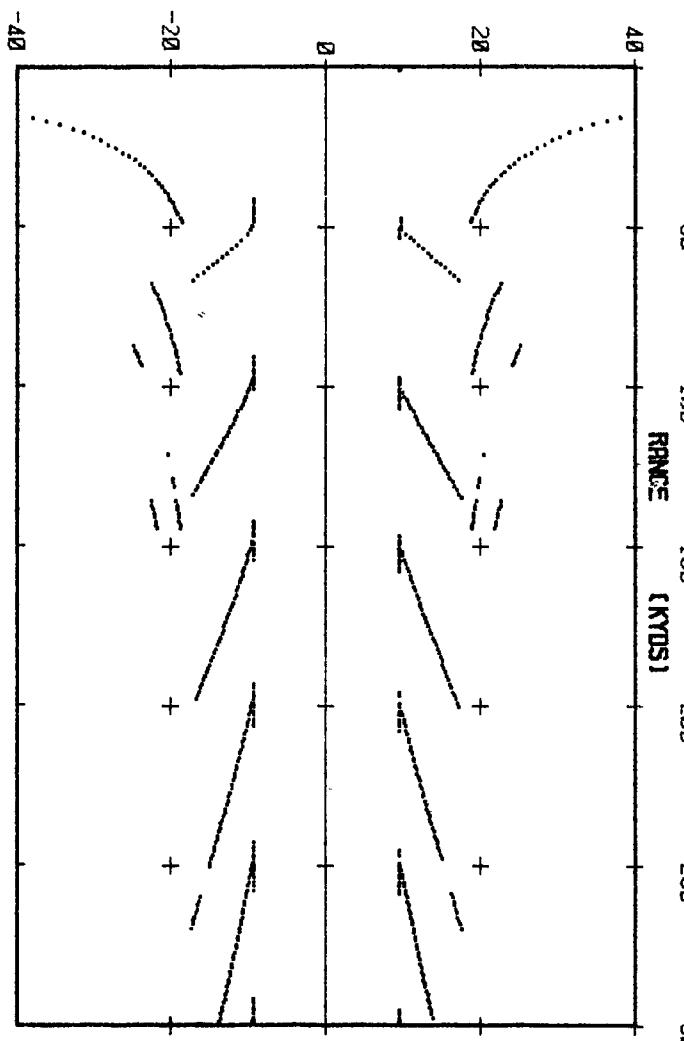


DEPTH IN METERS

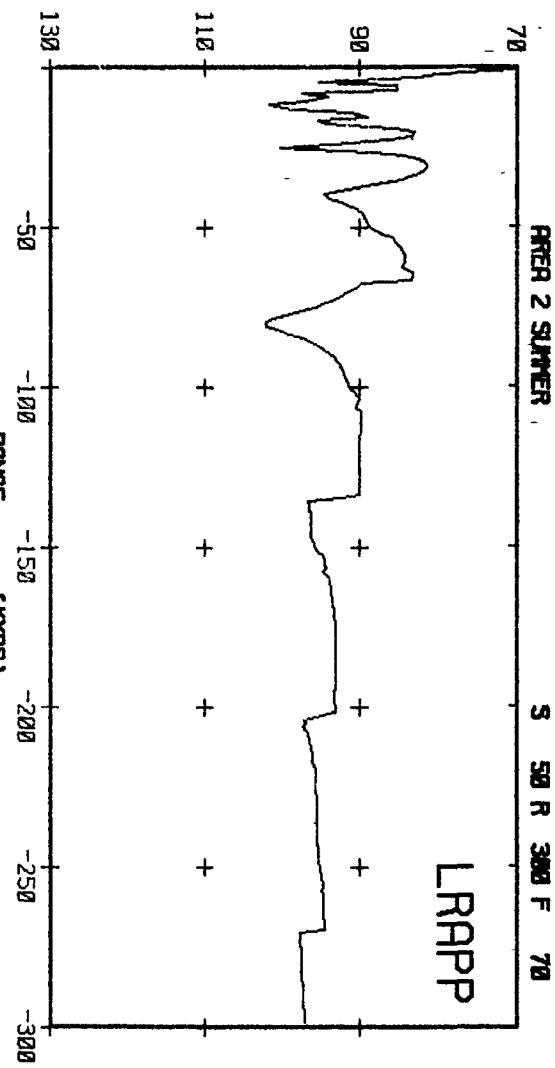


TOTAL -20.3 DB

ARRIVAL ANGLE



DB LOSS

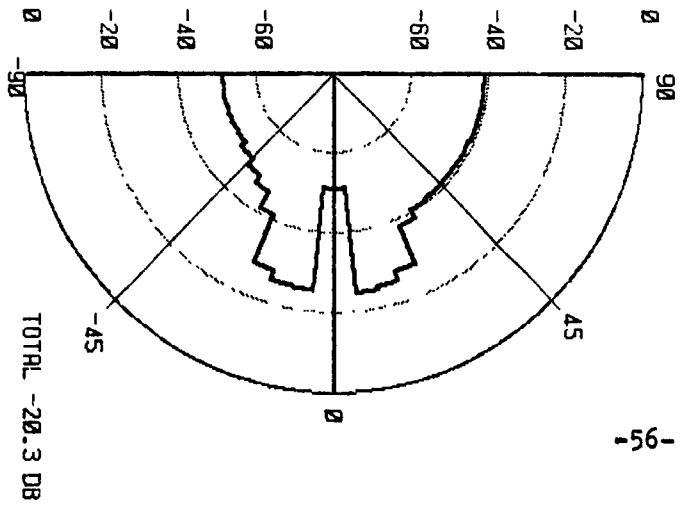


ARR 2 SUMMER

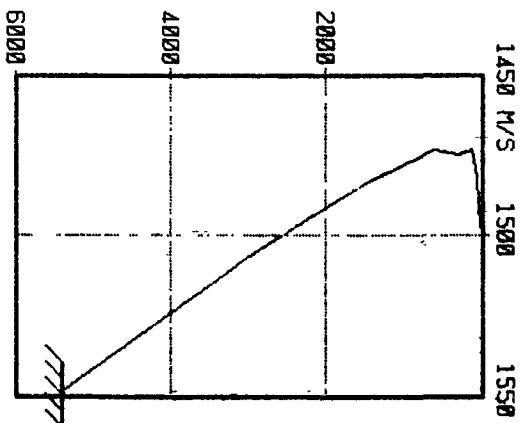
S 50 R 360 F 70

LRAFP

NOISE (DB)



DEPTH IN METERS

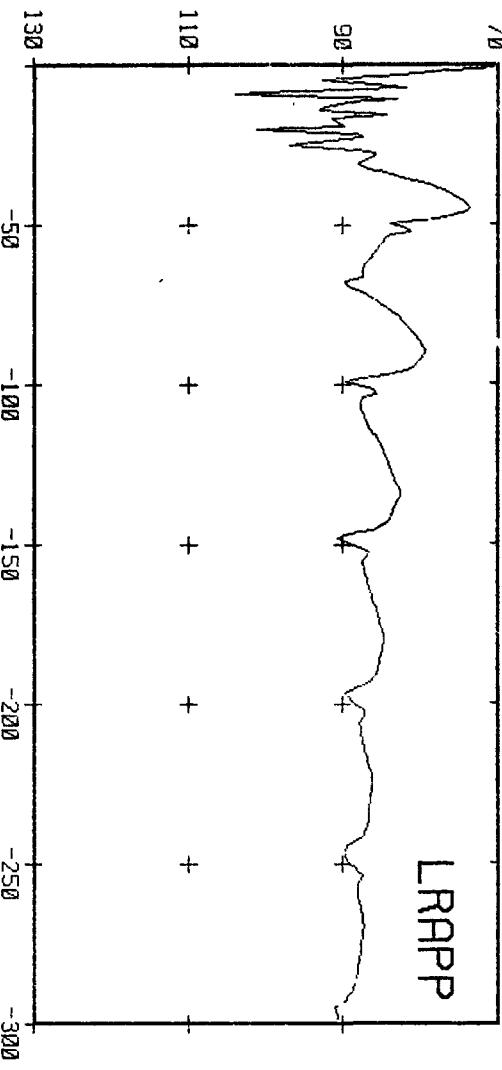


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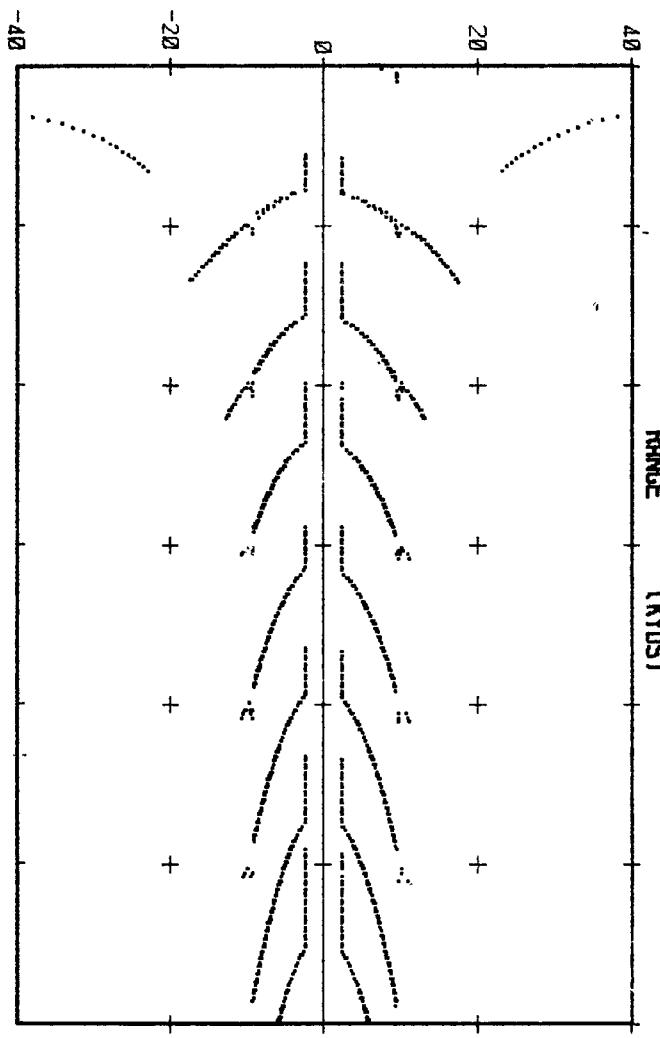
AREA 2 SUMMER
S 266 R 300 F 70

1450 M/S 1500 1550

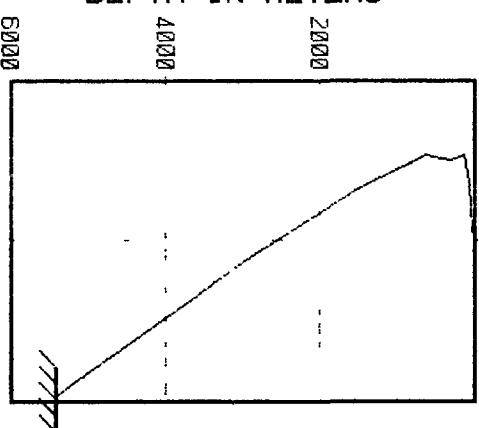
DB LOSS



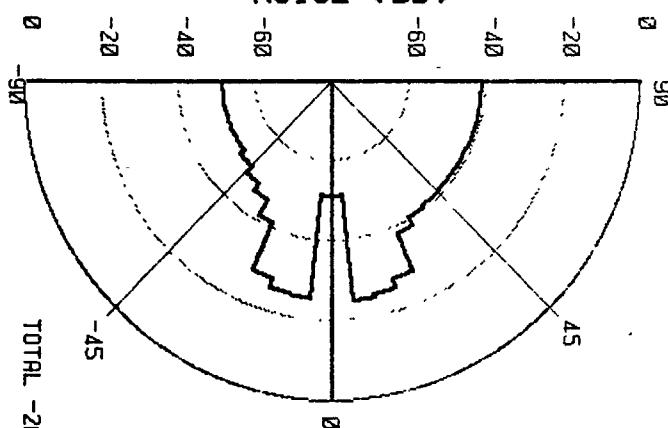
ARRIVAL ANGLE



DEPTH IN METERS

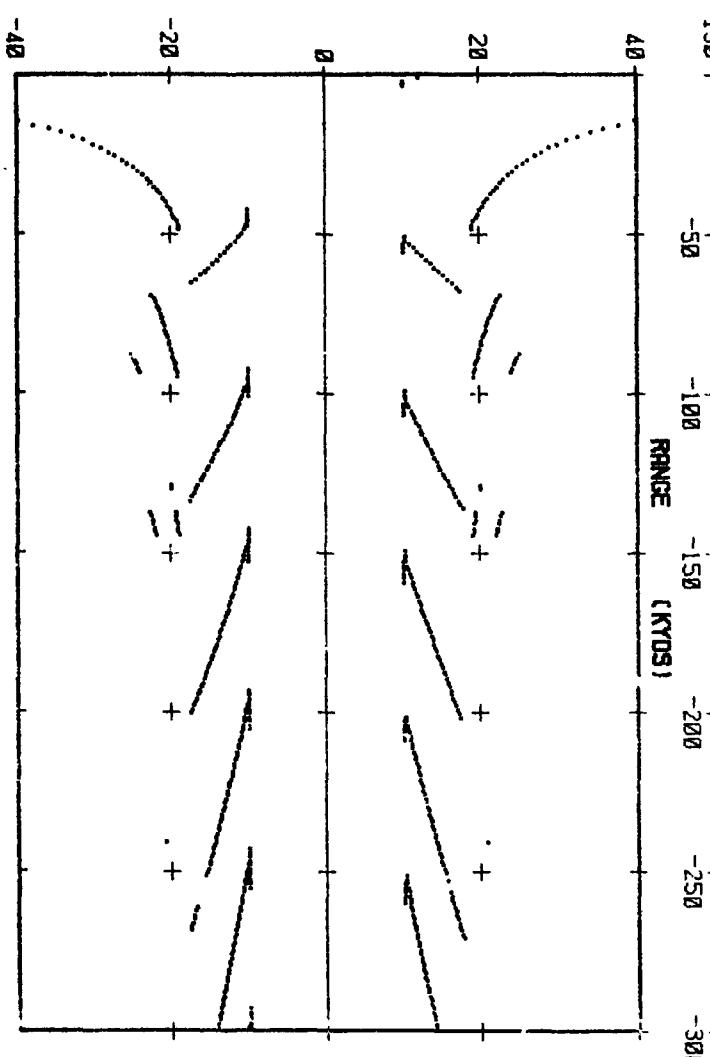


NOISE (DB)

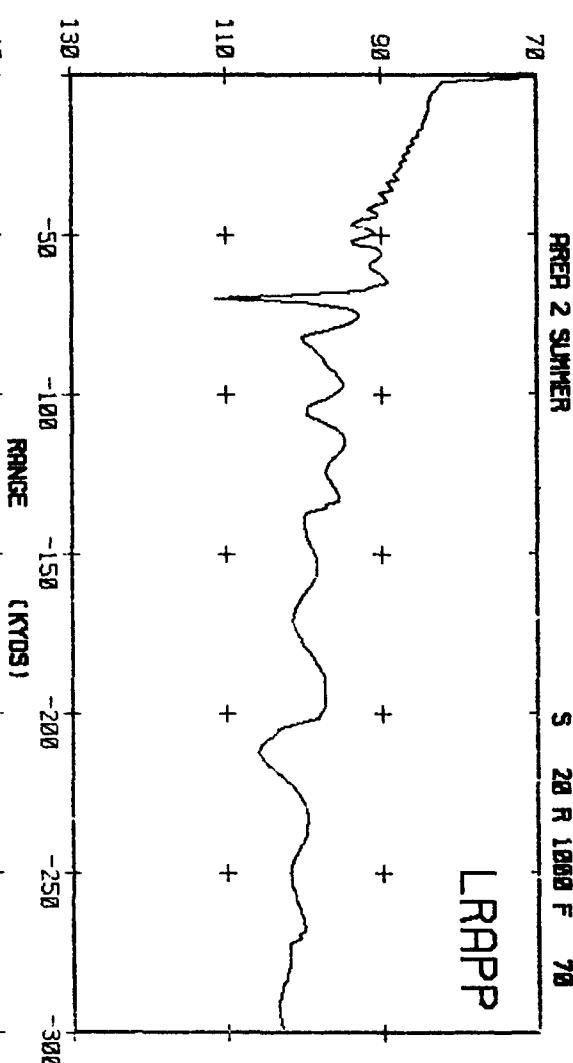


TOTAL -20.3 DB

ARRIVAL ANGLE



DB LOSS



LRAPP

AREA 2 SUMMER

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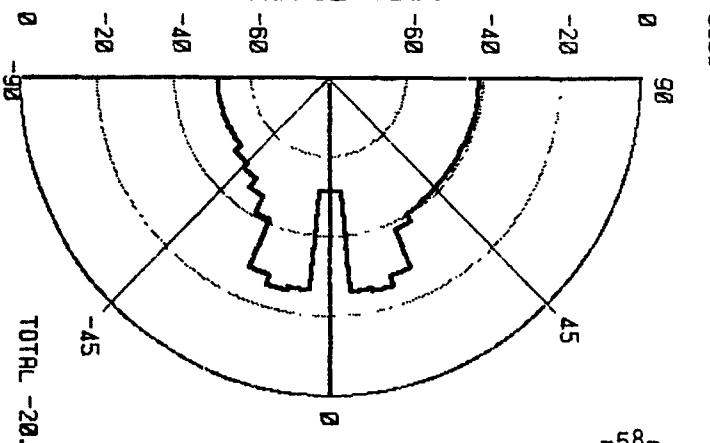
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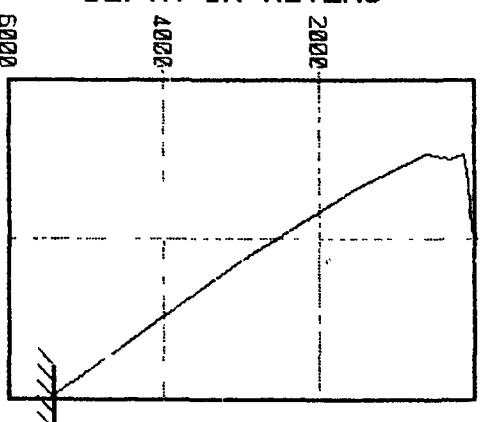
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1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



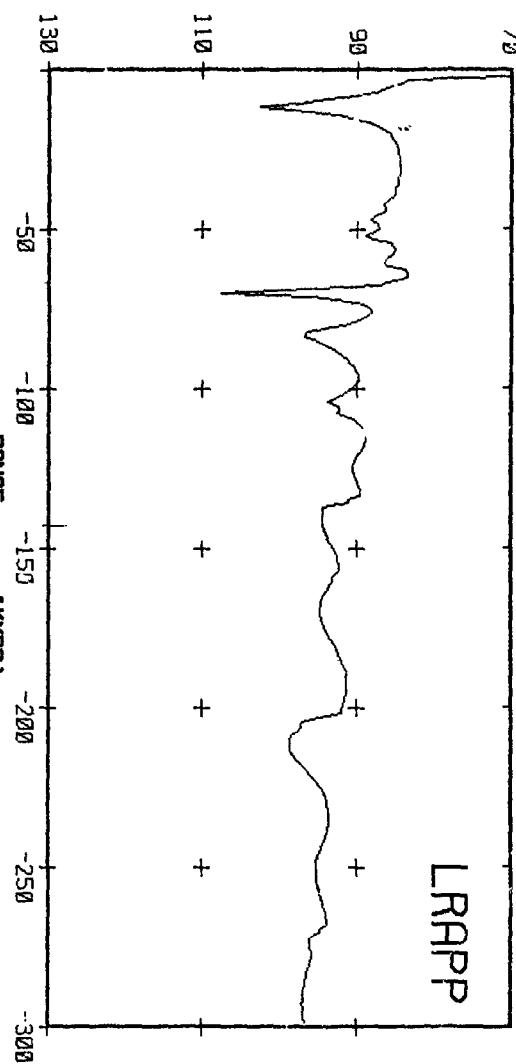
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AREA 2 SUMMER

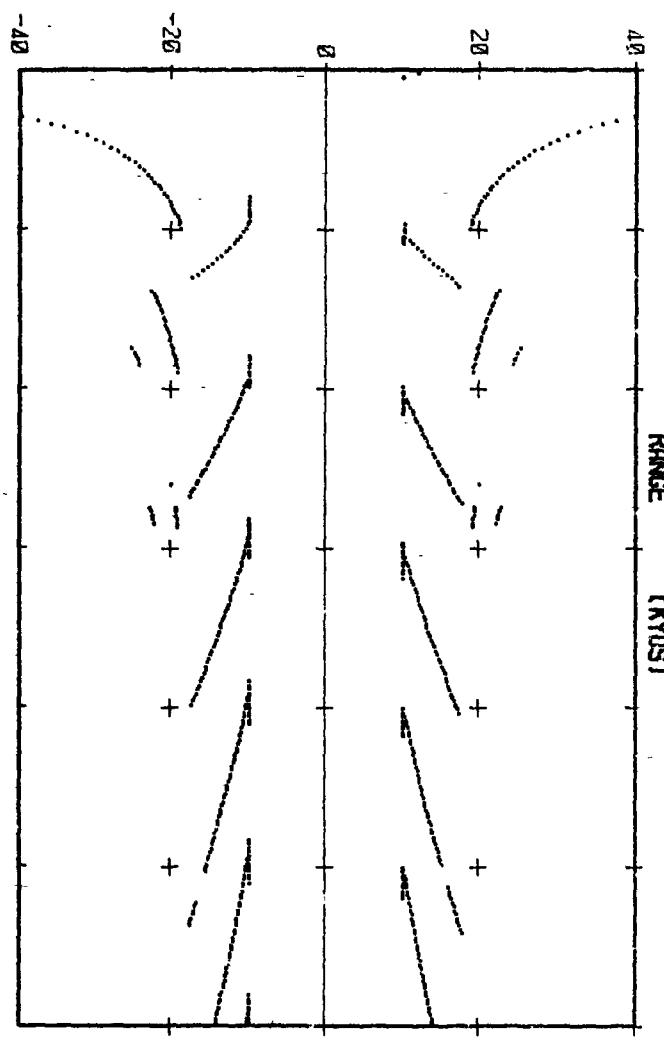
S 50 R 1300 F 70

1450 M/S 1500 1550

DB LOSS

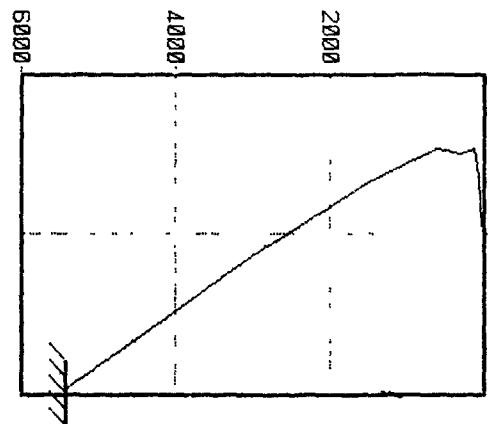


ARRIVAL ANGLE

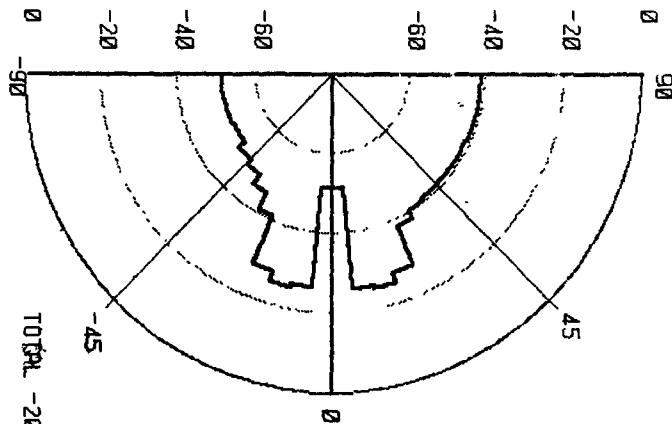


LRAPP

DEPTH IN METERS



NOISE (DB)



70

AREA 2 SUMMER

S 266 R 1000 F 70

1450 M/S 1500 1550

LRAPP

DB LOSS

110

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4000

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2000

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NOISE (DB)

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DEPTH IN METERS

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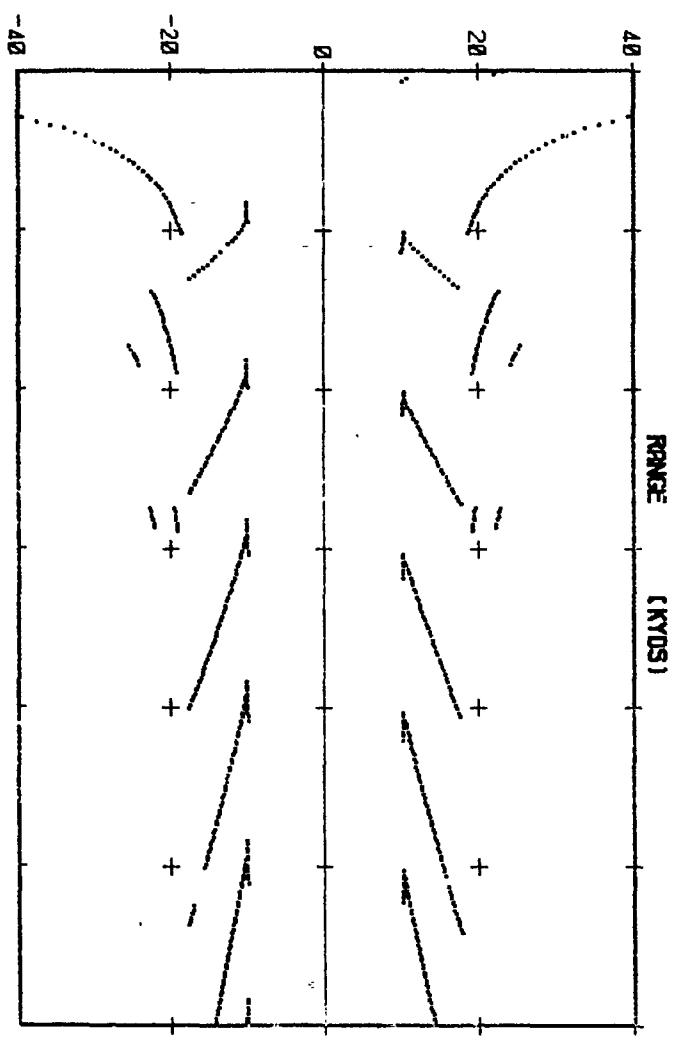
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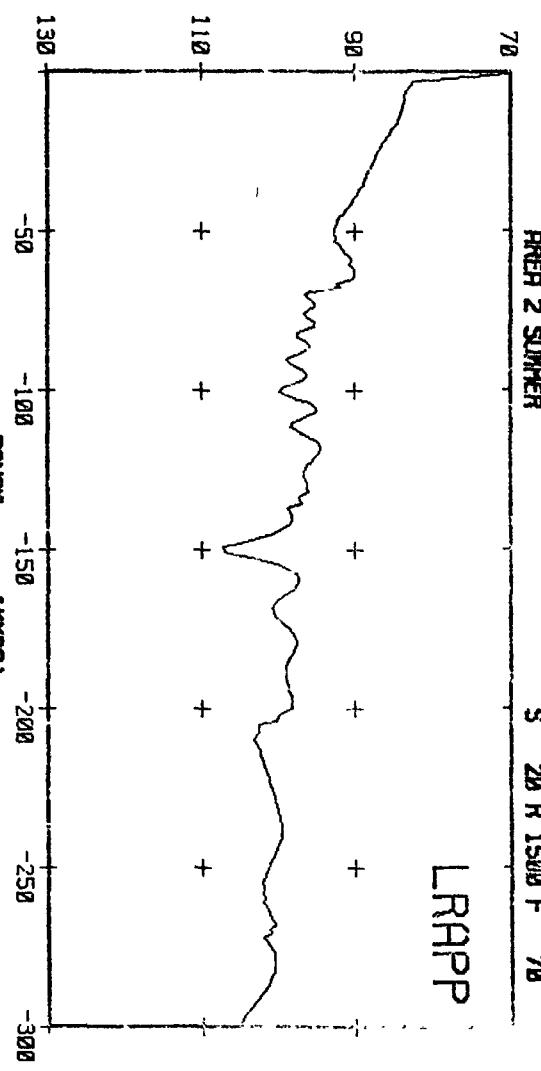
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ARRIVAL ANGLE

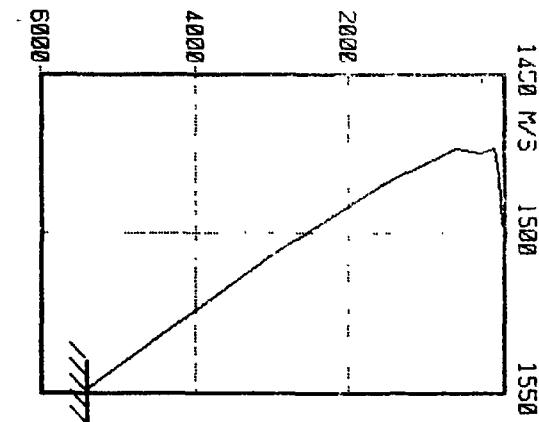


DB LOSS

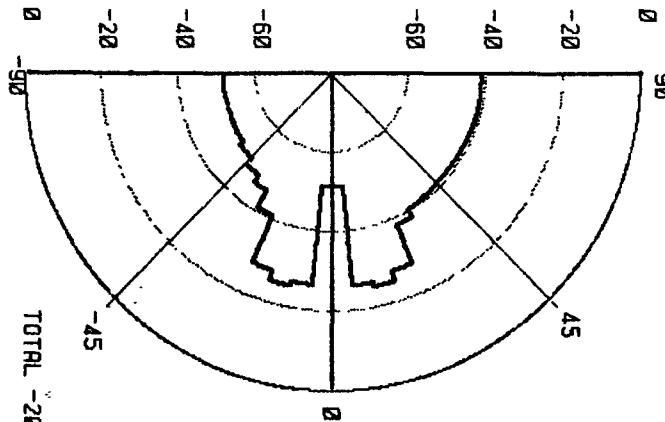


LRAAPP

DEPTH IN METERS



NOISE (DB)



TOTAL -20.5 DB

70

AREA 2 SUMMER

S 50 R 1500 F 70

1450 M/S 1500 1550

LRAPP

DB LOSS

110

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130

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ARRIVAL ANGLE

-20

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130

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110

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NOISE (DB)

-60

-60

-20

-20

0

0

2000

2000

DEPTH IN METERS

40000

40000

80000

80000

120000

120000

160000

160000

200000

200000

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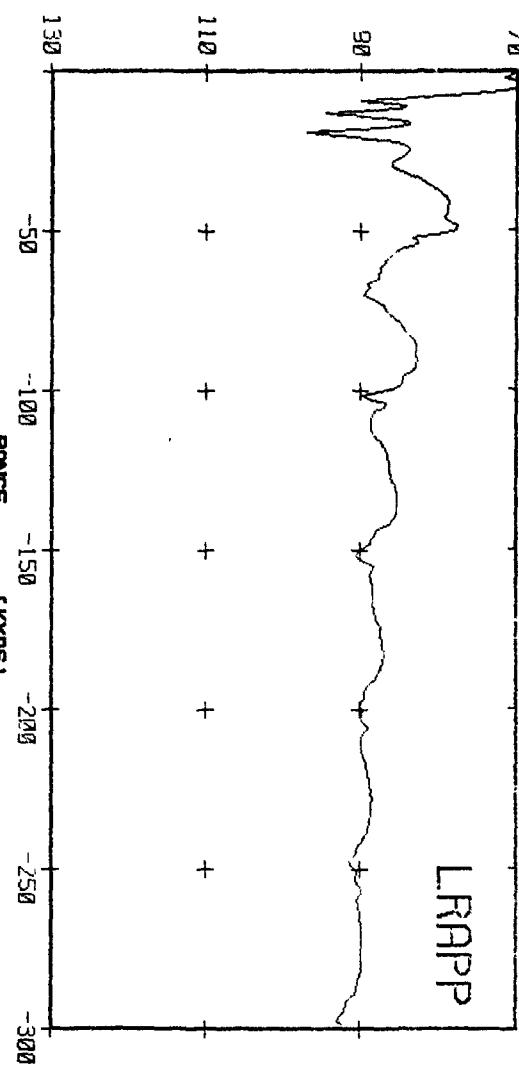
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AREA 2 SUMMER

S 266 R 156 F 70

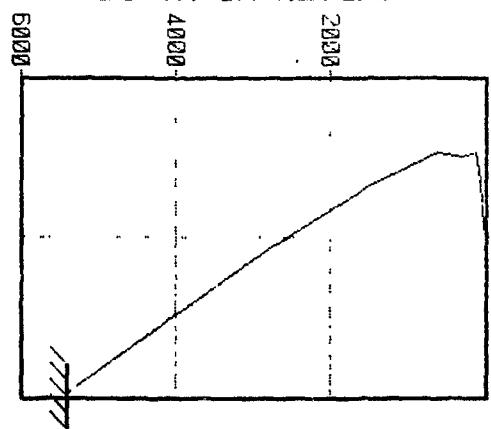
1450 M/S 1500 1550

DB LOSS

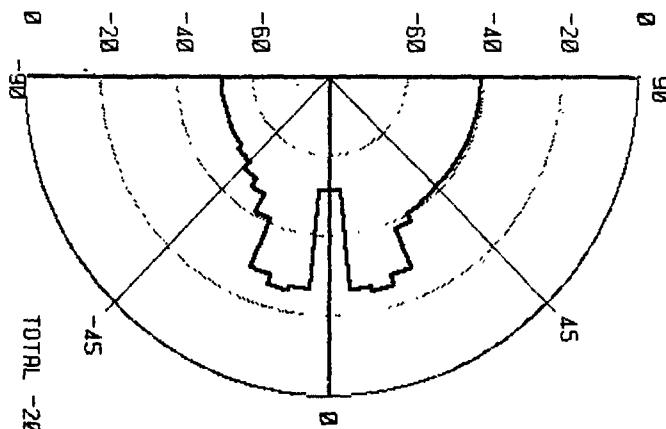


LRAFP

DEPTH IN METERS



NOISE (DB)



TOTAL -20.5 DB

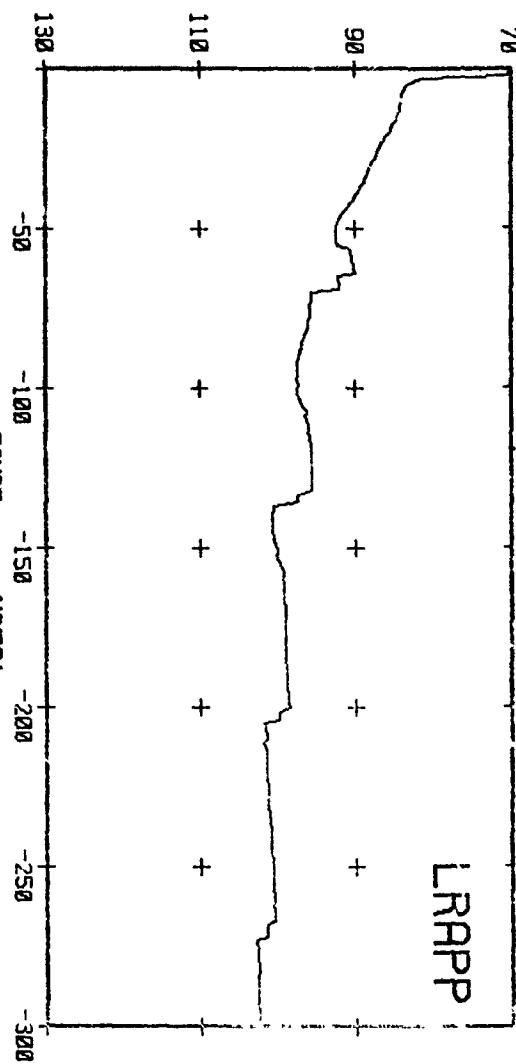
ARR 2 SUMMER

S 20 R 1968 F 78

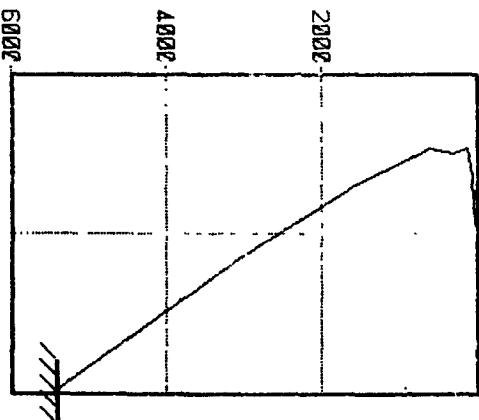
1450 M/S 1500 1550

LRAPP

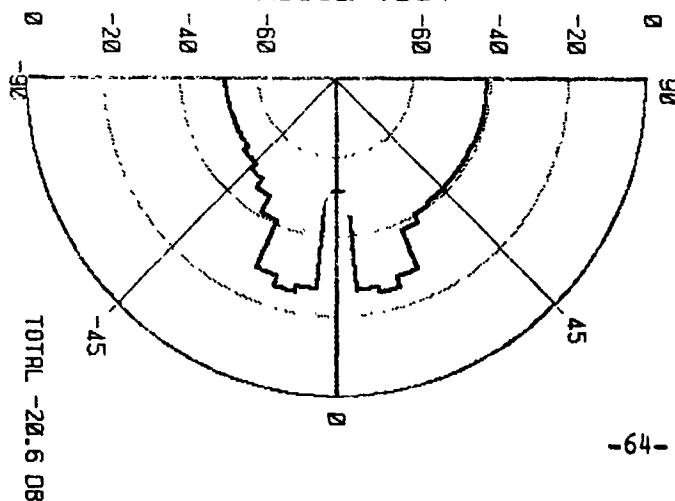
DB LOSS



DEPTH IN METERS



NOISE (DB)



-64-

-40

-20

0

20

40

0

-20

-40

-60

0

-20

-40

-60

TOTAL -20.6 DB

0

-20

-40

-60

70

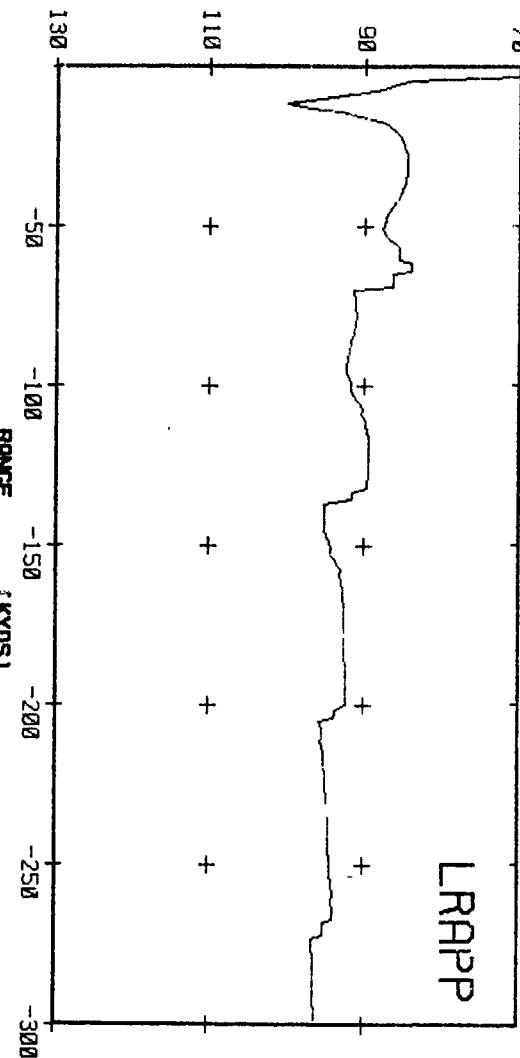
AREA 2 SUMMER

S 50 R 1968 F 70

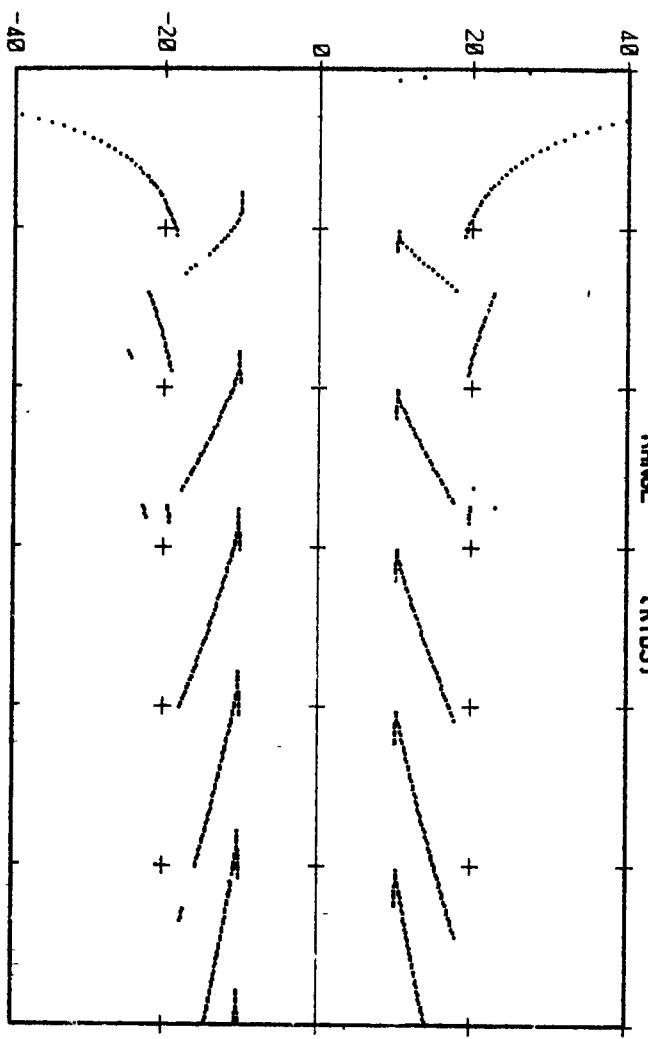
1150 M/S 1500 1150

LRAPP

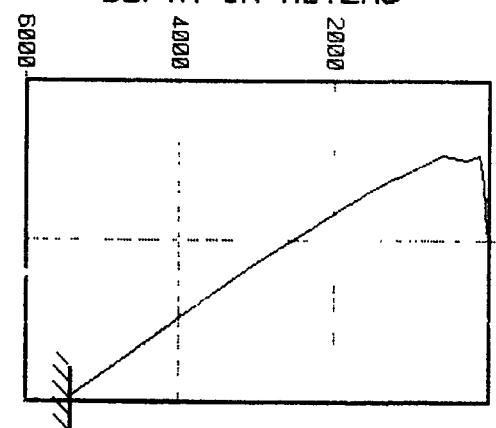
DB LOSS



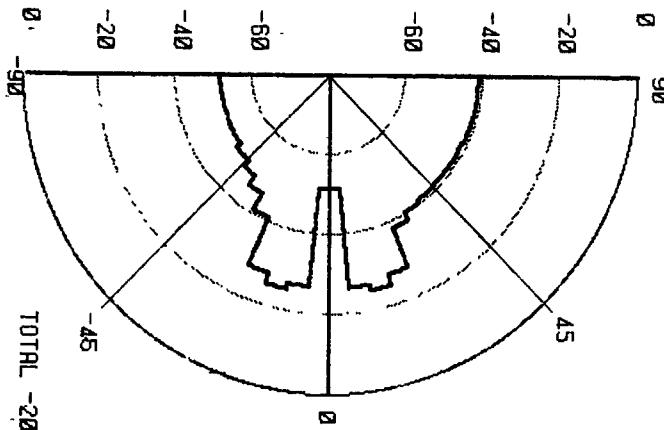
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)

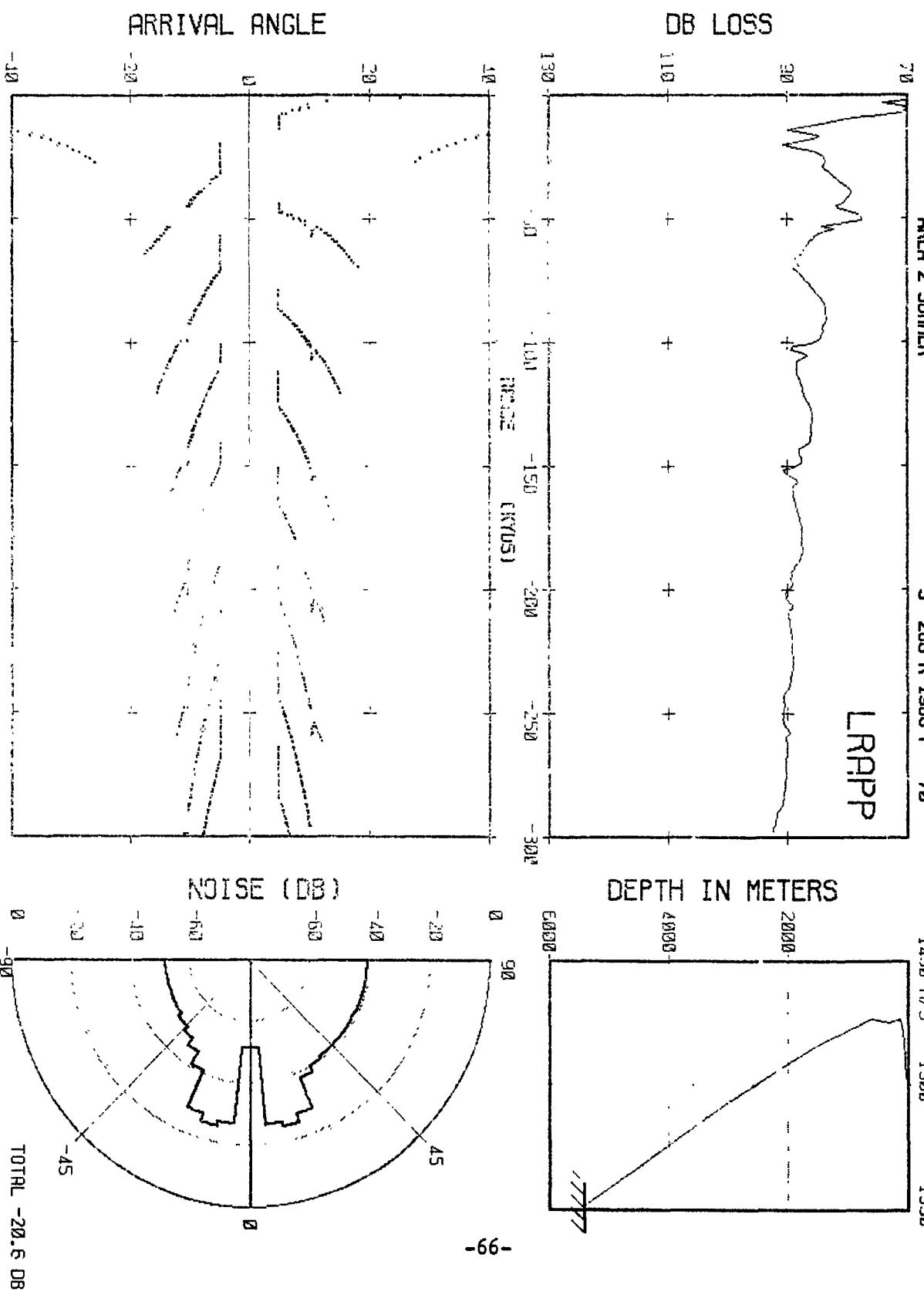


TOTAL -20.6 DB

ARER 2 SUMMER

S 266 R 1968 F 70

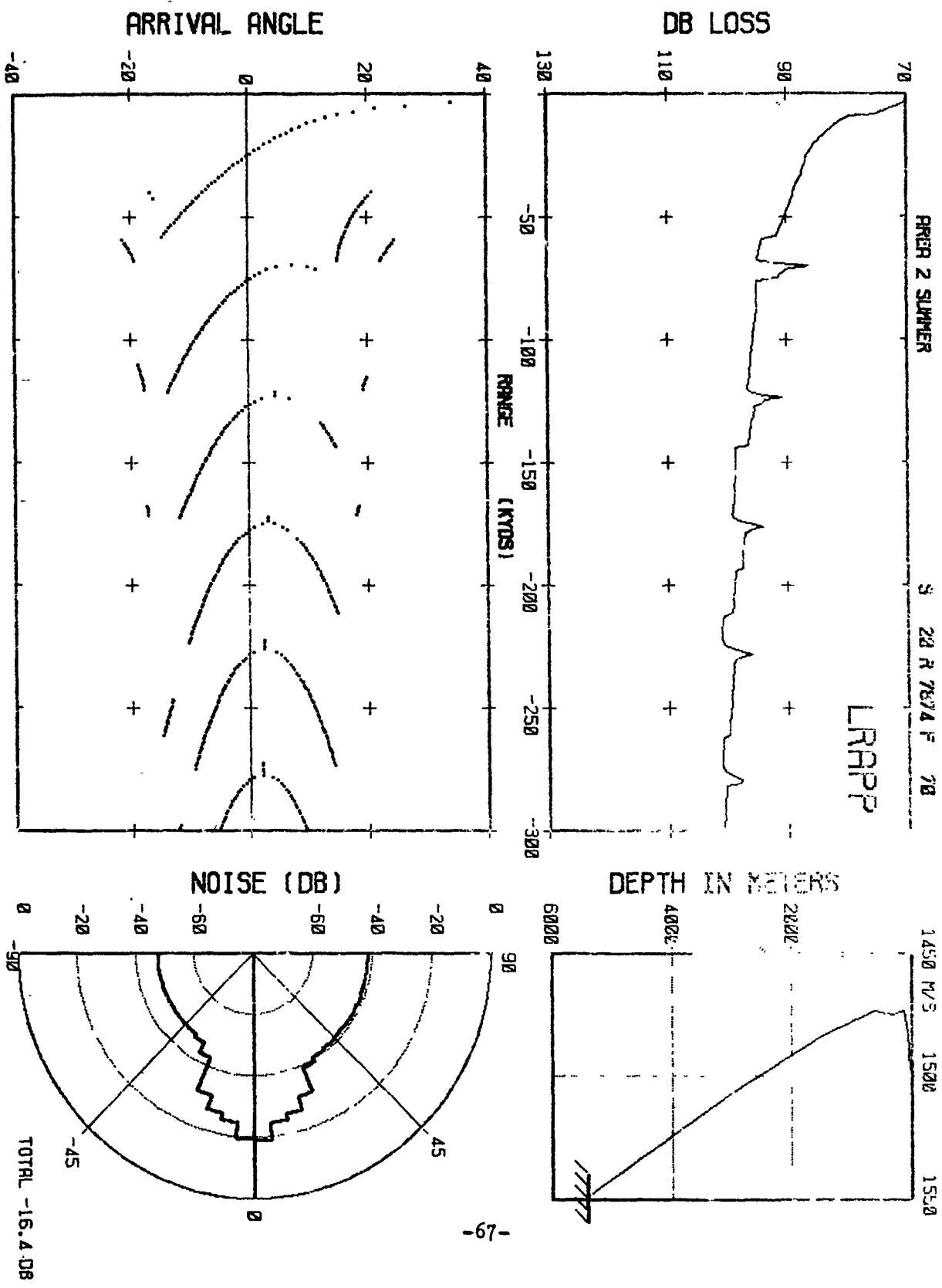
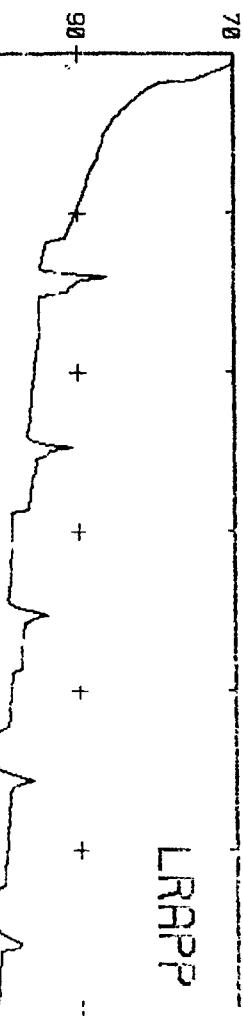
1450 M/S 1500 1550



AREA 2 SUMMER

S 22 R 7&4 F 78

1450 M/S 1500 1550

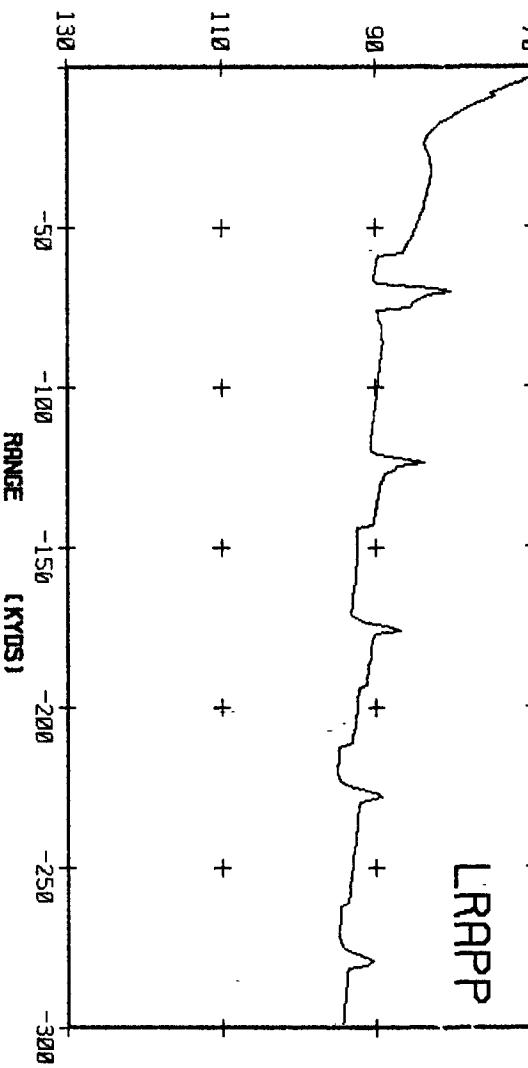


AREA 2 SUMMER

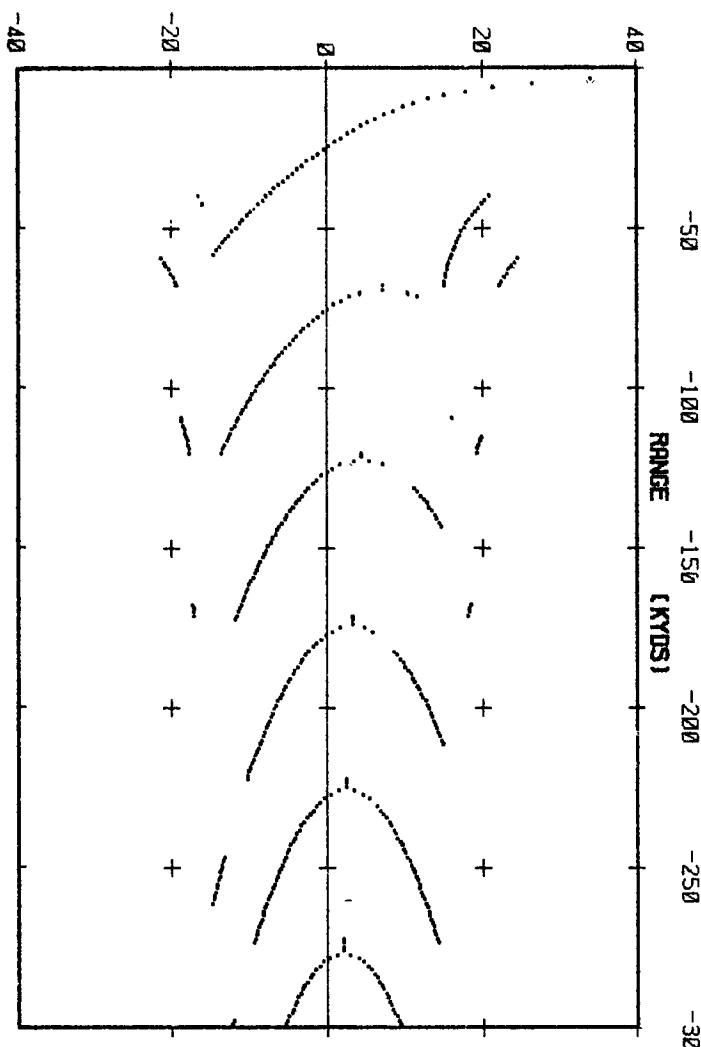
S 50 R 7874 F 70

1450 m/s 1500 1550

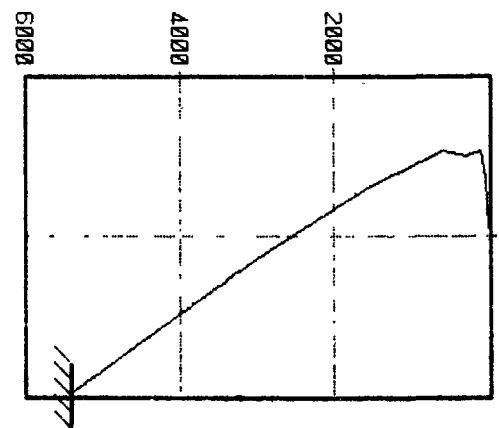
DB LOSS



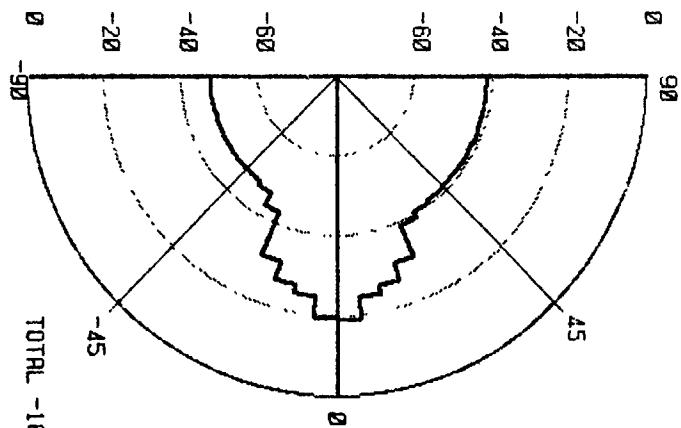
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



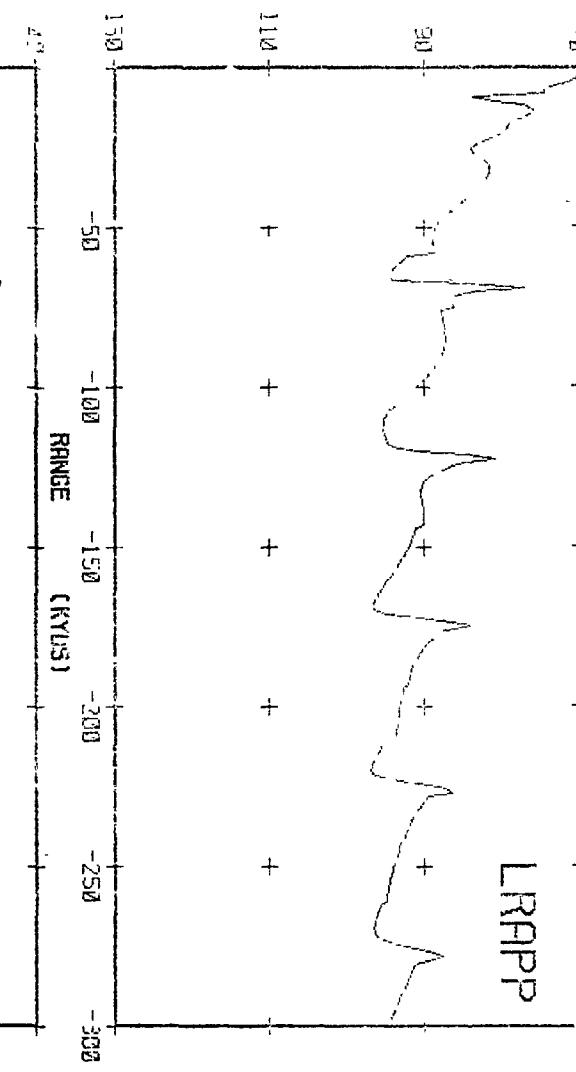
TOTAL -16.4 dB

AREA 2 SUMMER

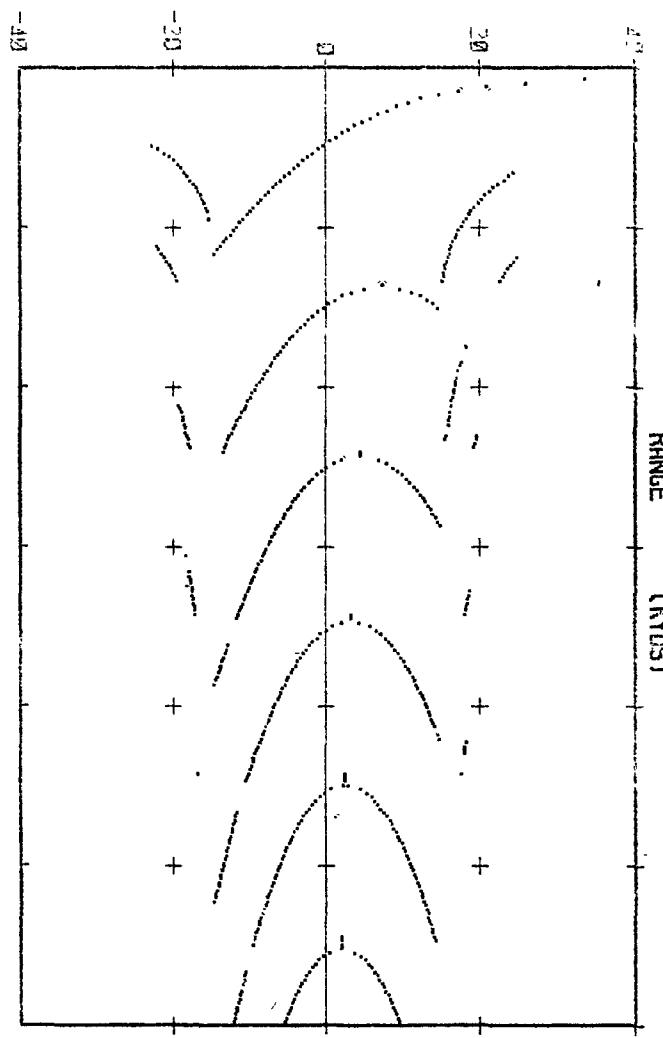
S 265 R 73/4 F 70

LRAFP

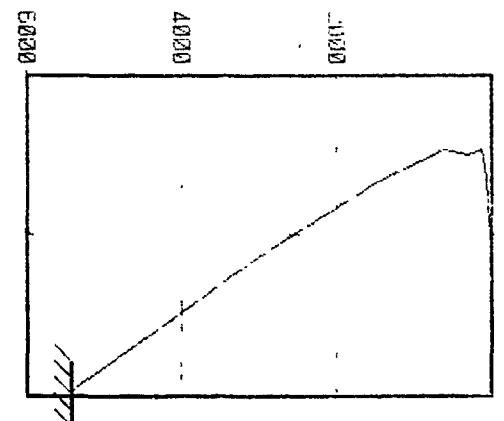
DB LOSS



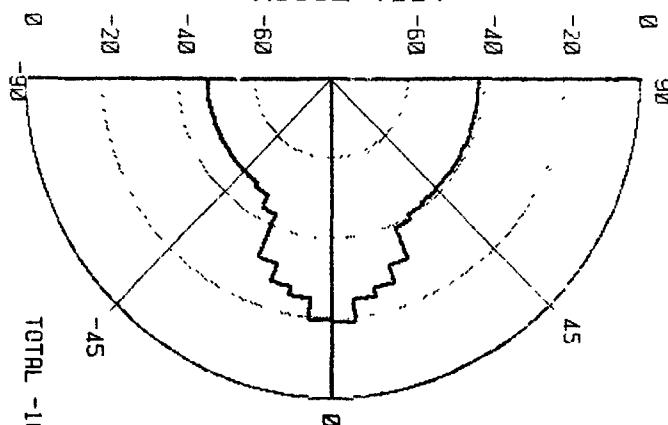
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)

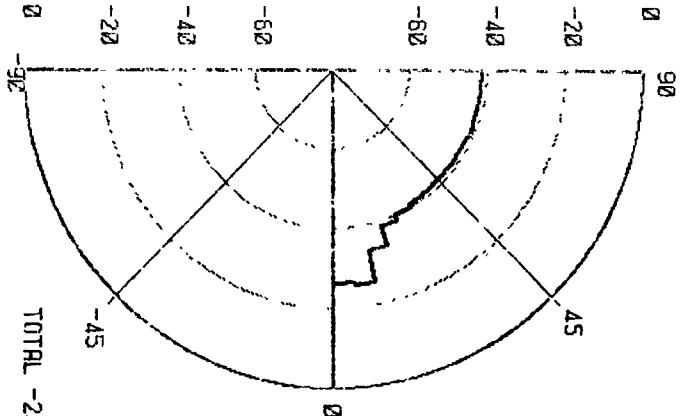
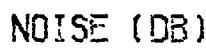
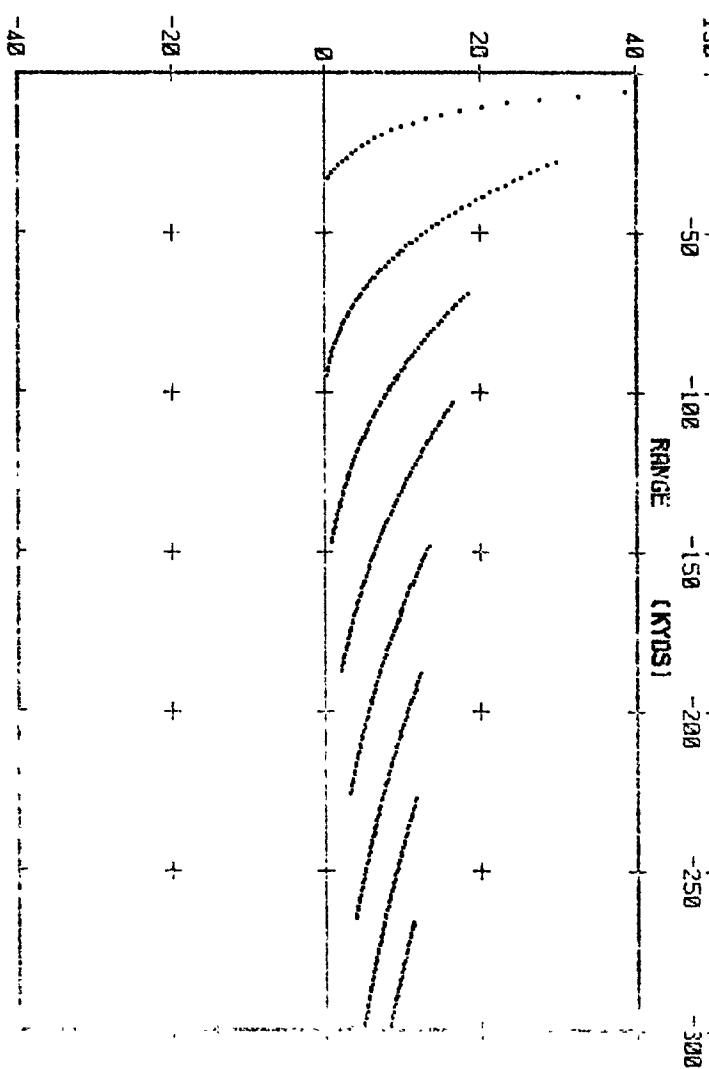
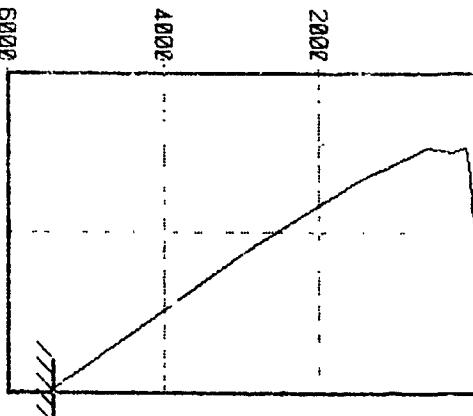
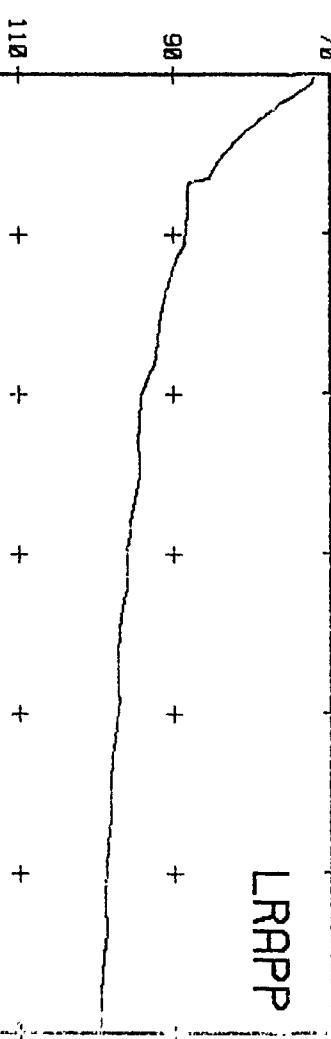


TOTAL -16.4 DB

AKER 2 SUMMER

5 28 R17759 F 78

1450 M/S 1500 1550

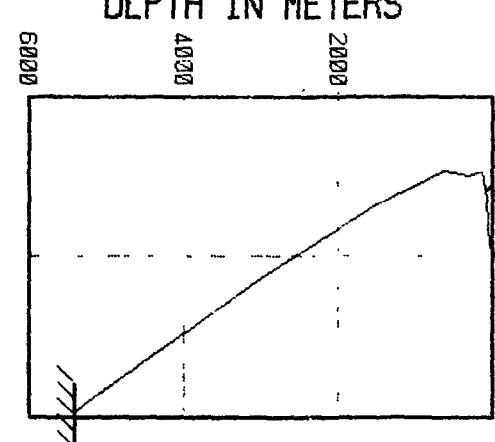
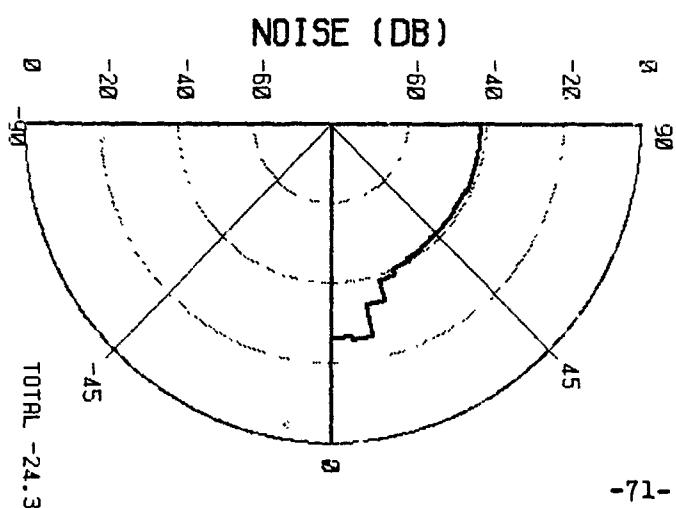
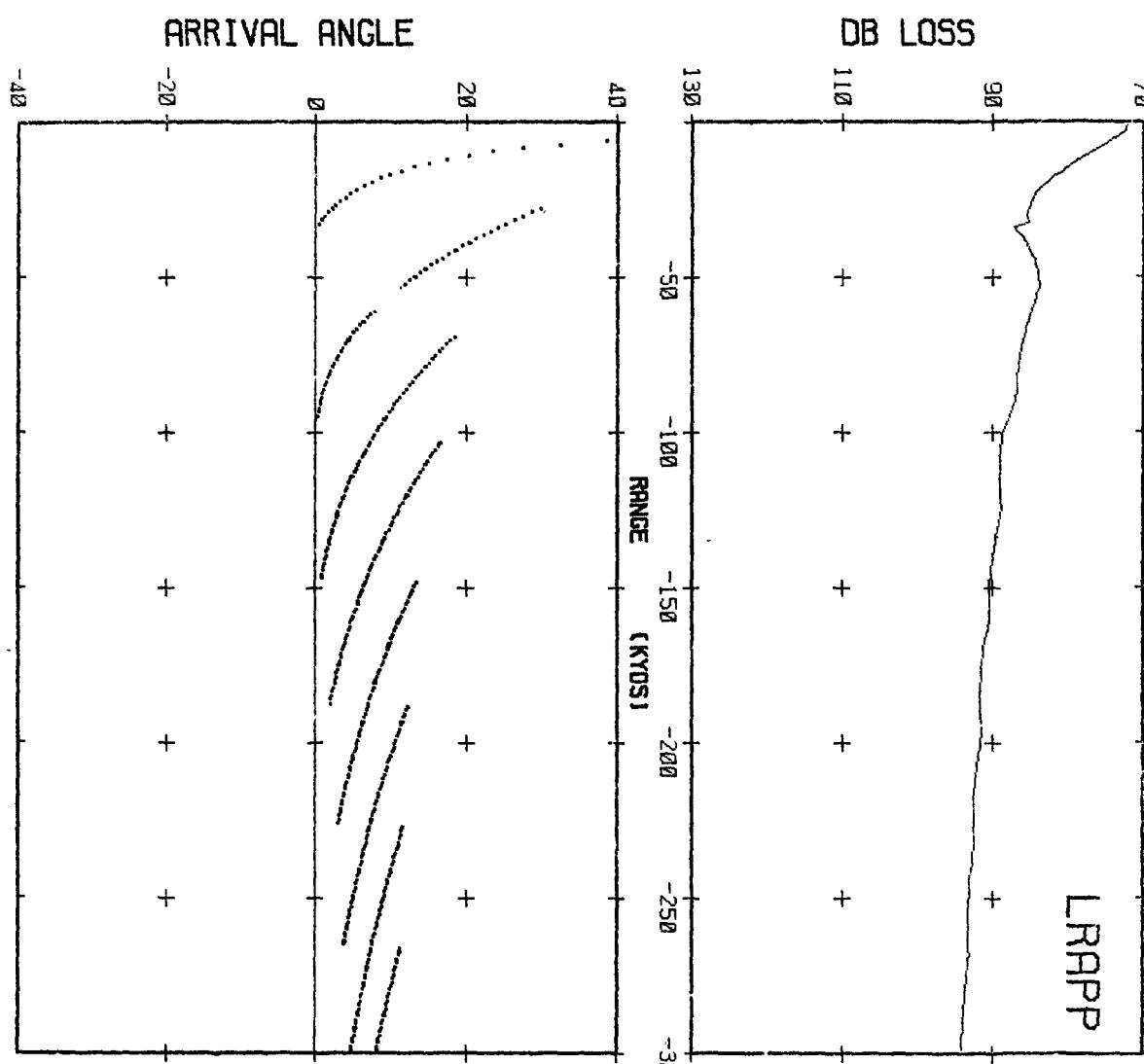


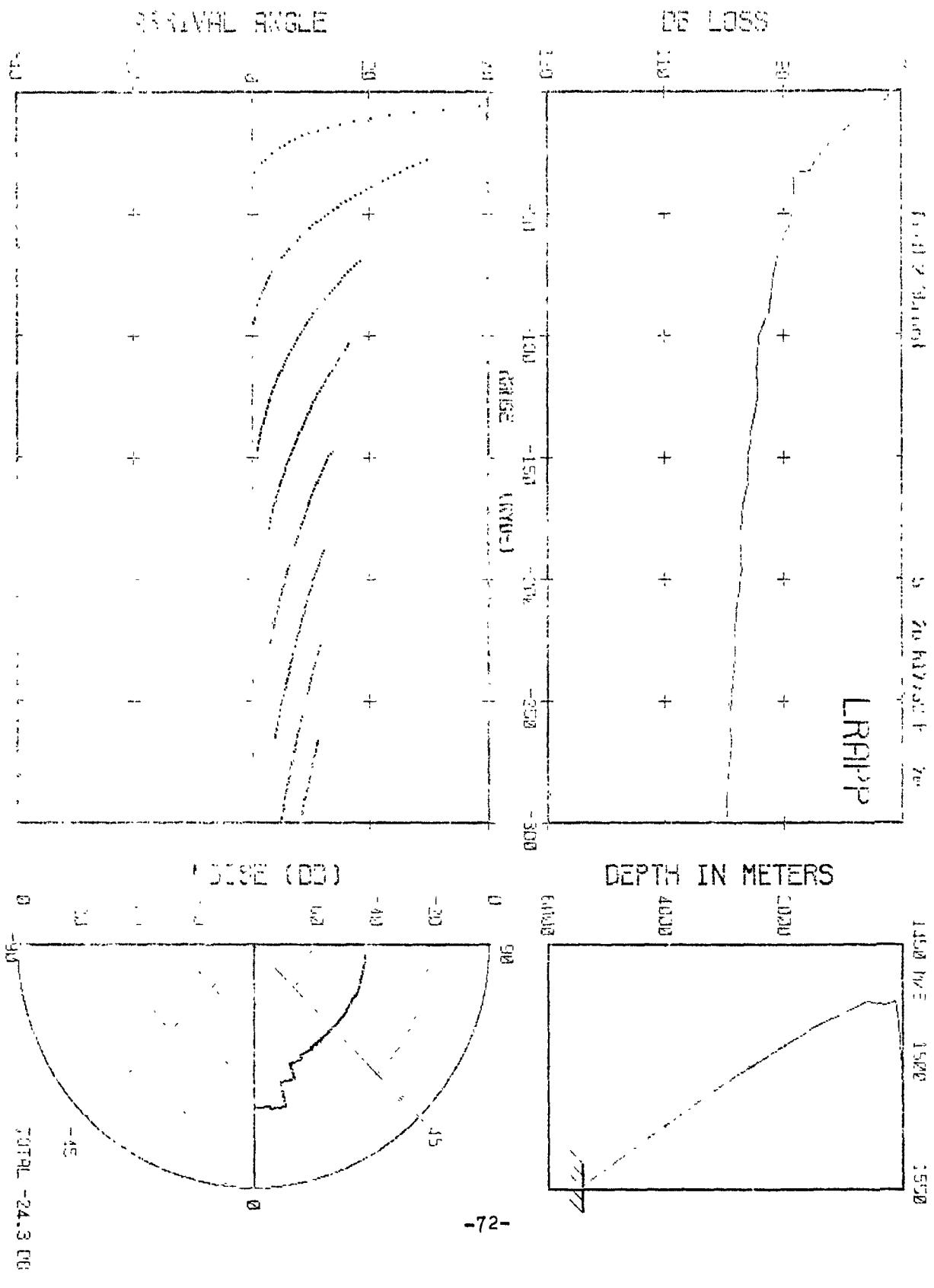
2

HKEH 2 SUMMER

S 5

1450 M/S 1500 1550





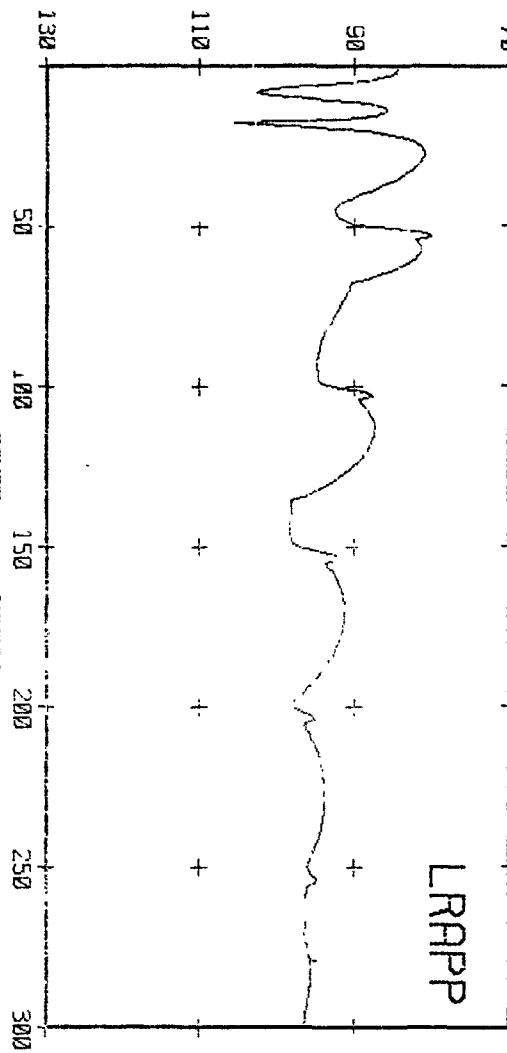
70

ARCTIC 2 SUMMER

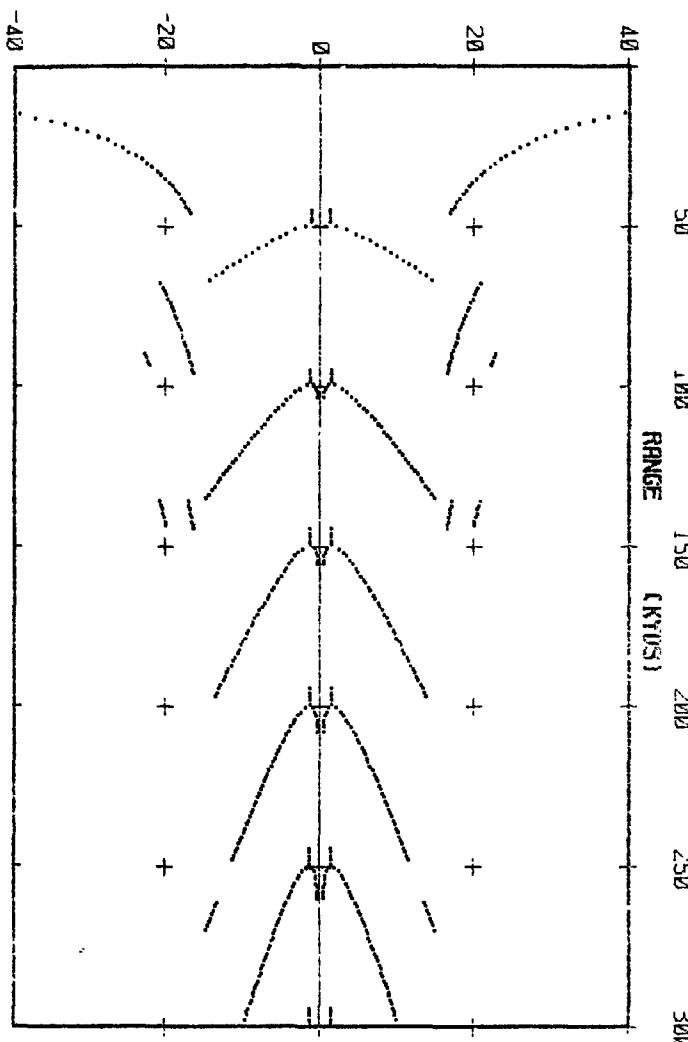
S 20 R 60 F 15A

LRAPP

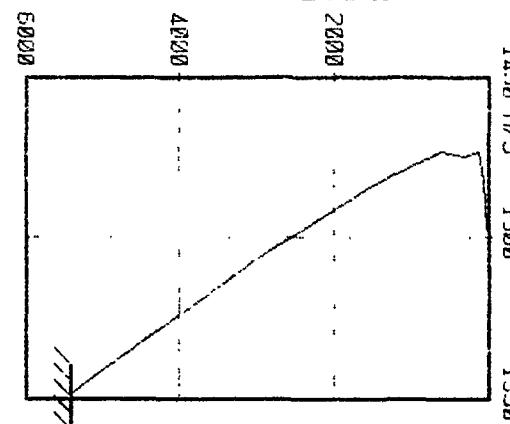
DB LOSS



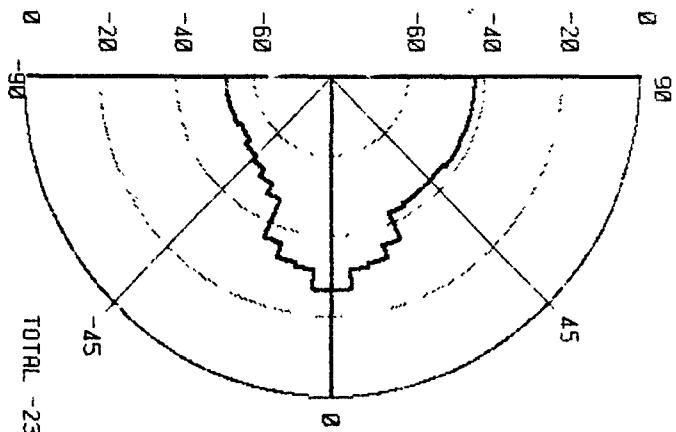
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



70

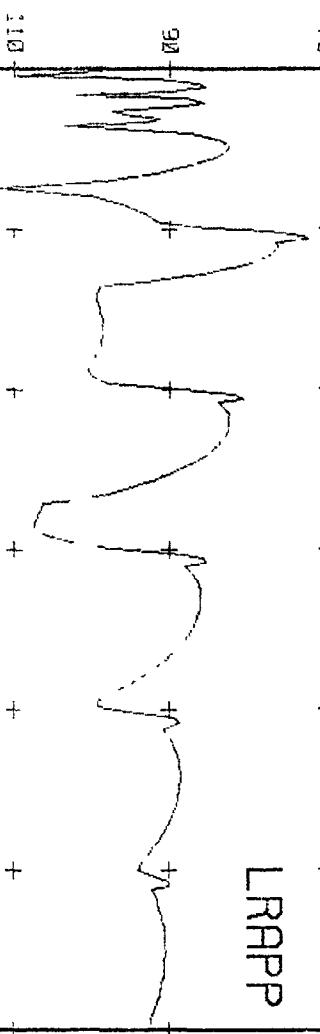
AREA 2 SUMMER

S 50 R 60 F 150

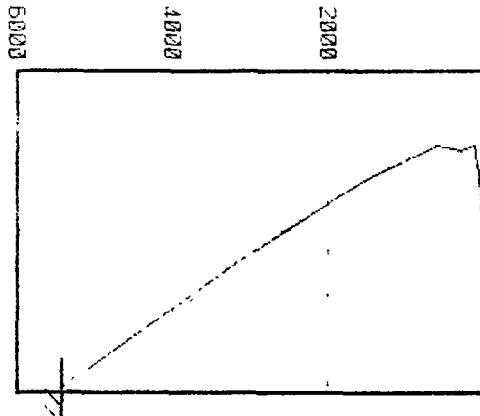
1450 1475 1500 1550

LRAPP

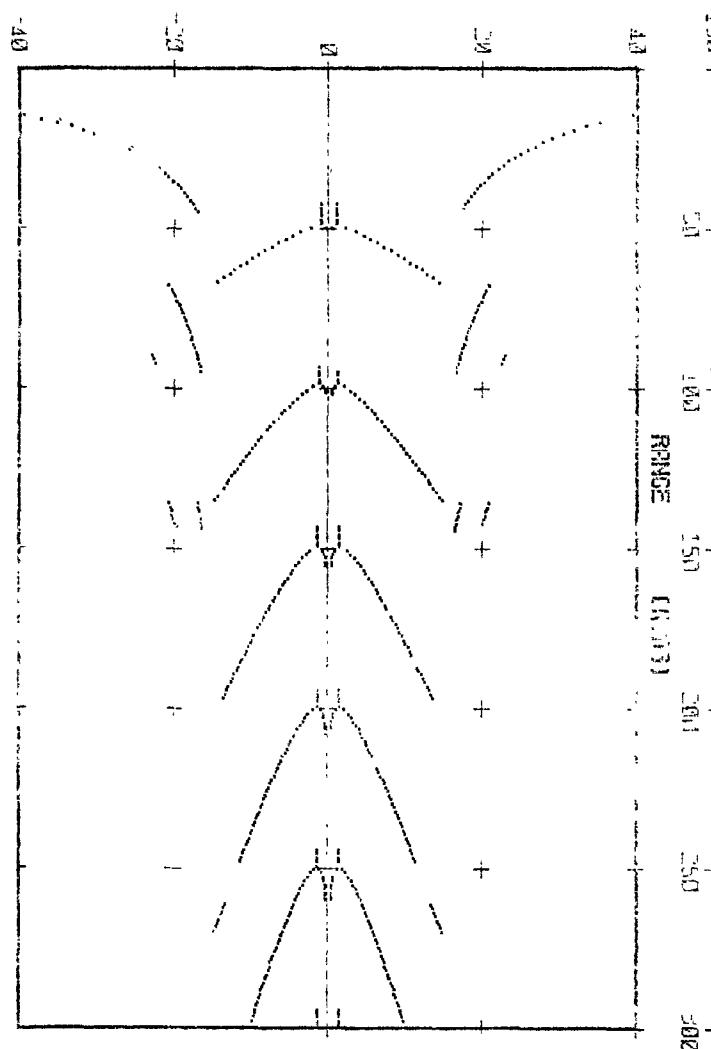
DB LOSS



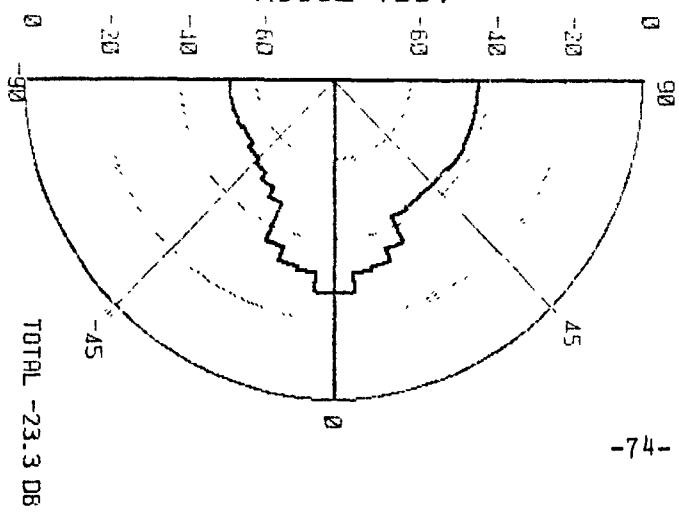
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



AREA 2 SUMMER

S 286 R 60 F 150

LRAAPP

DB LOSS

1450 M/S 1500 1550

DEPTH IN METERS

2000 4000 6000

130 100 150 200 250 300

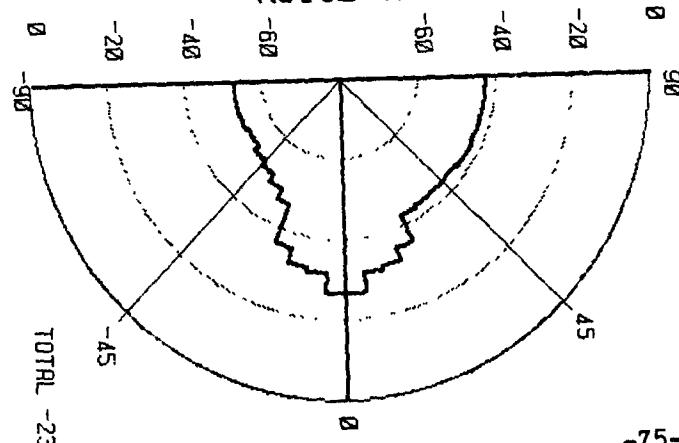
RANGE

0 -20 -40 -60 -80

90

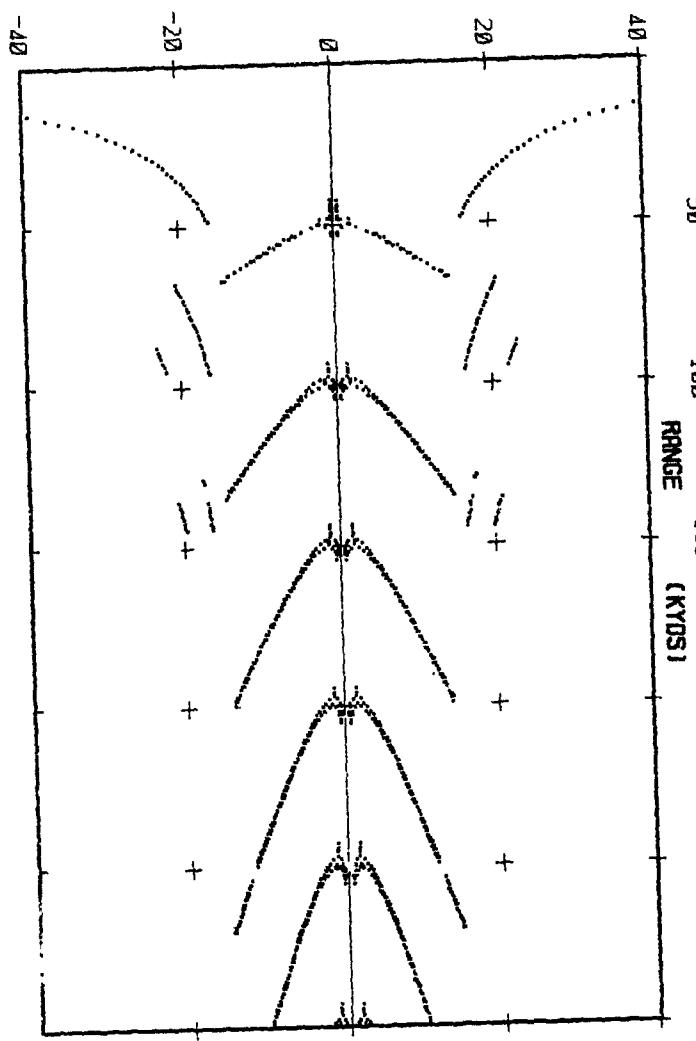
-75-

NOISE (DB)



TOTAL -23.3 DB

ARRIVAL ANGLE



70

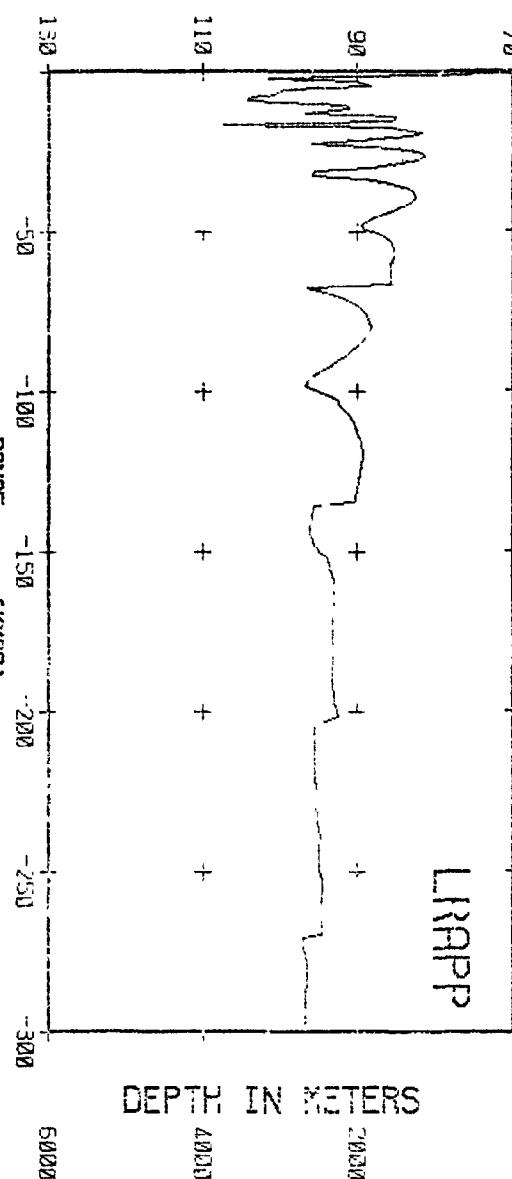
AREA 2 SUMMER

S 20 R 105 F 150

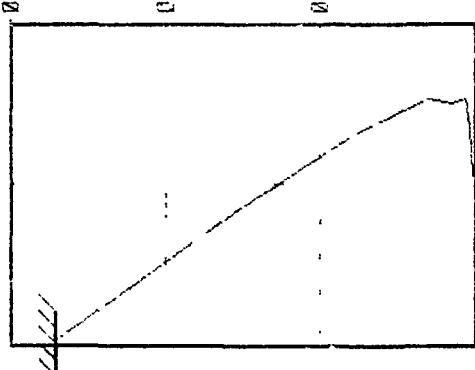
1450 M/S 1530 1550

LRAFP

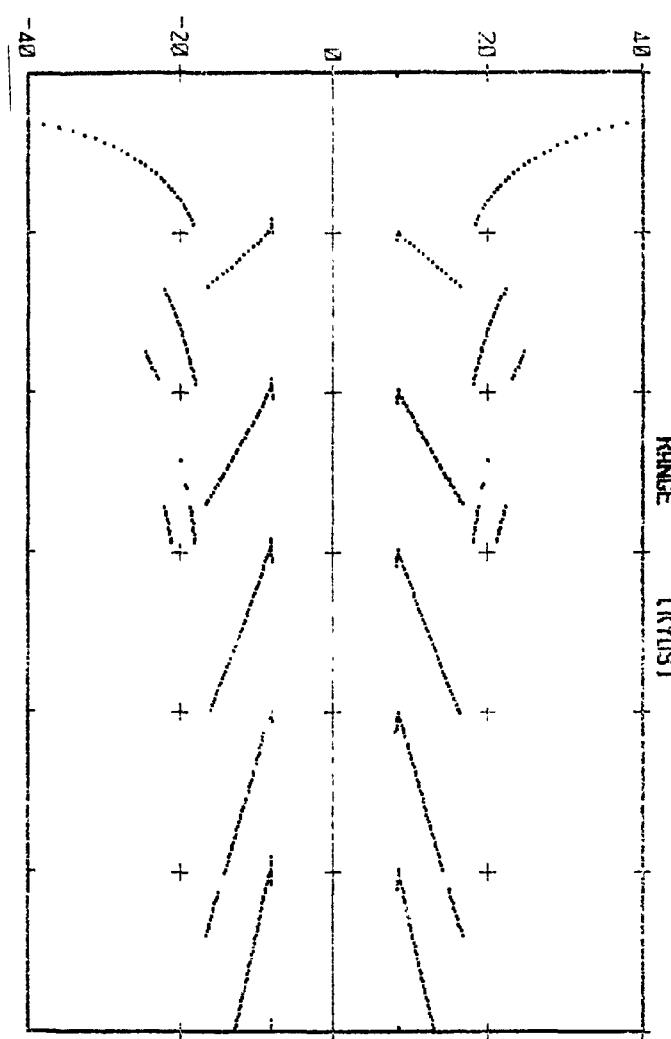
DB LOSS



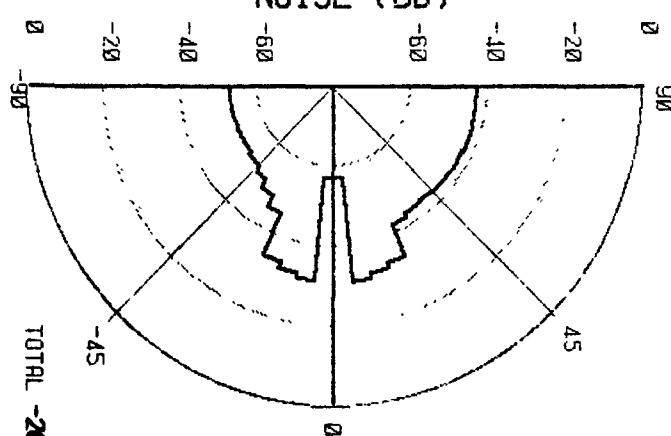
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



TOTAL -26.2 DB

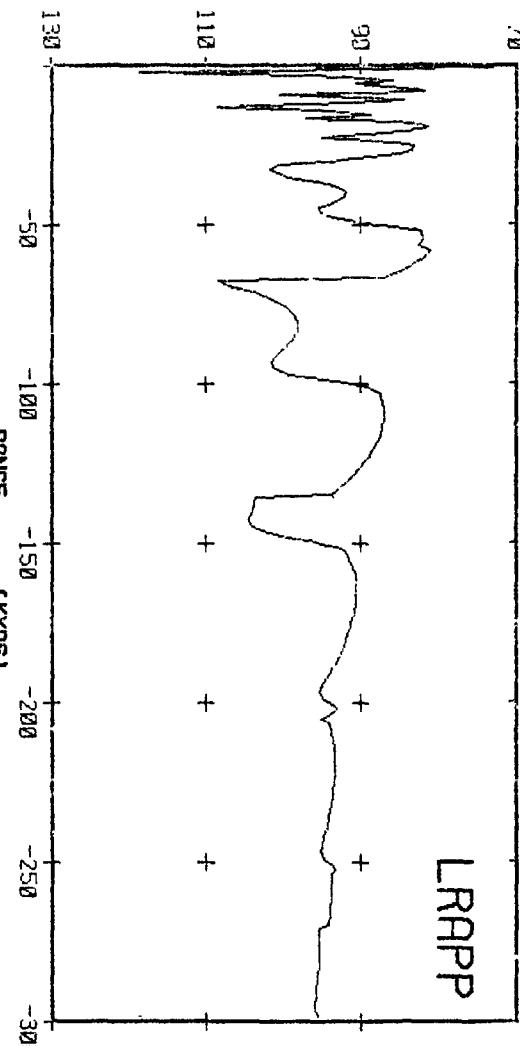
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AREA 2 SUMMER

S 50 R 166 F 150

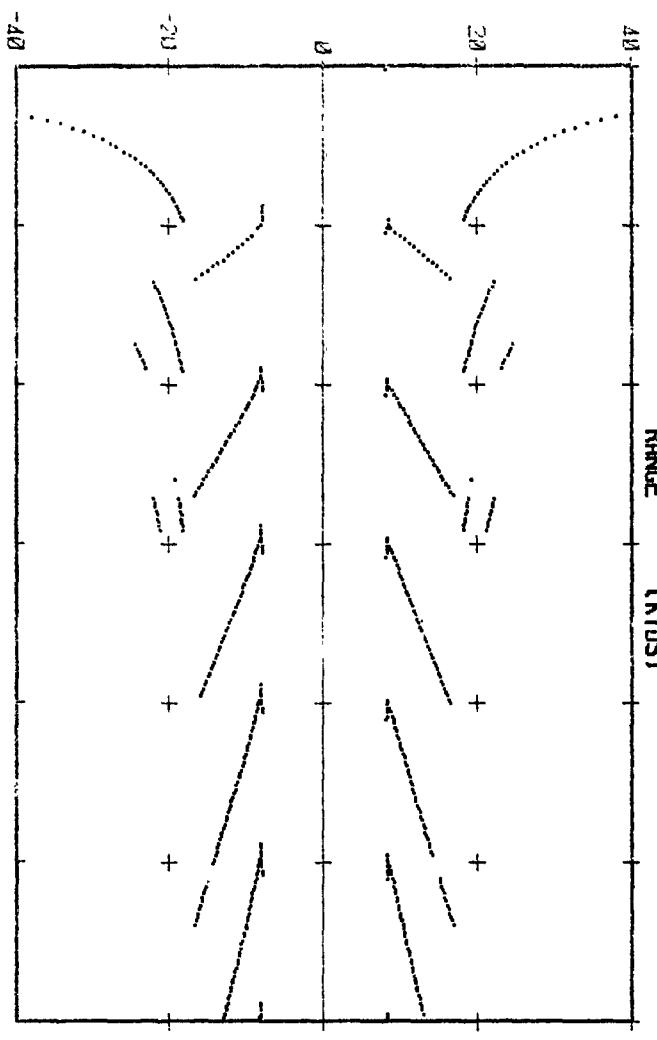
1450 M/S 1500 1550

DB LOSS

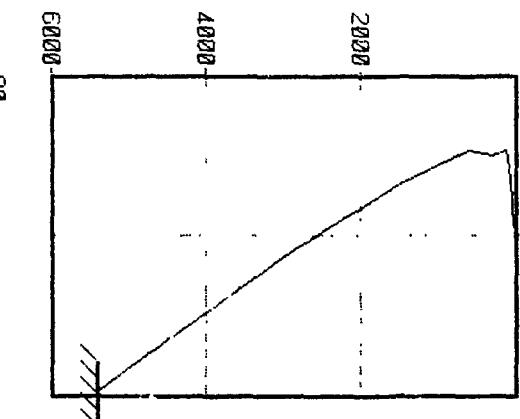


LRAPP

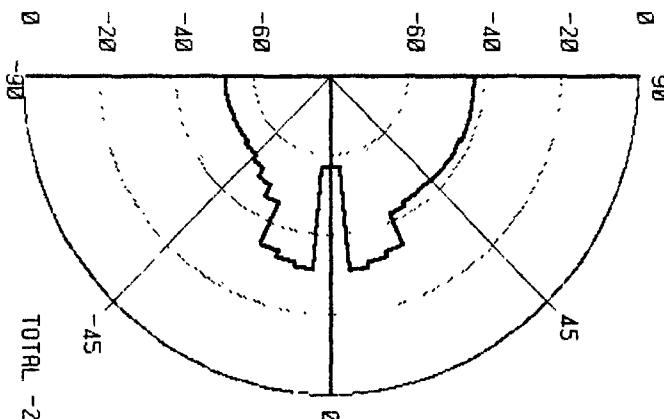
ARRIVAL ANGLE



DEPTH IN METERS



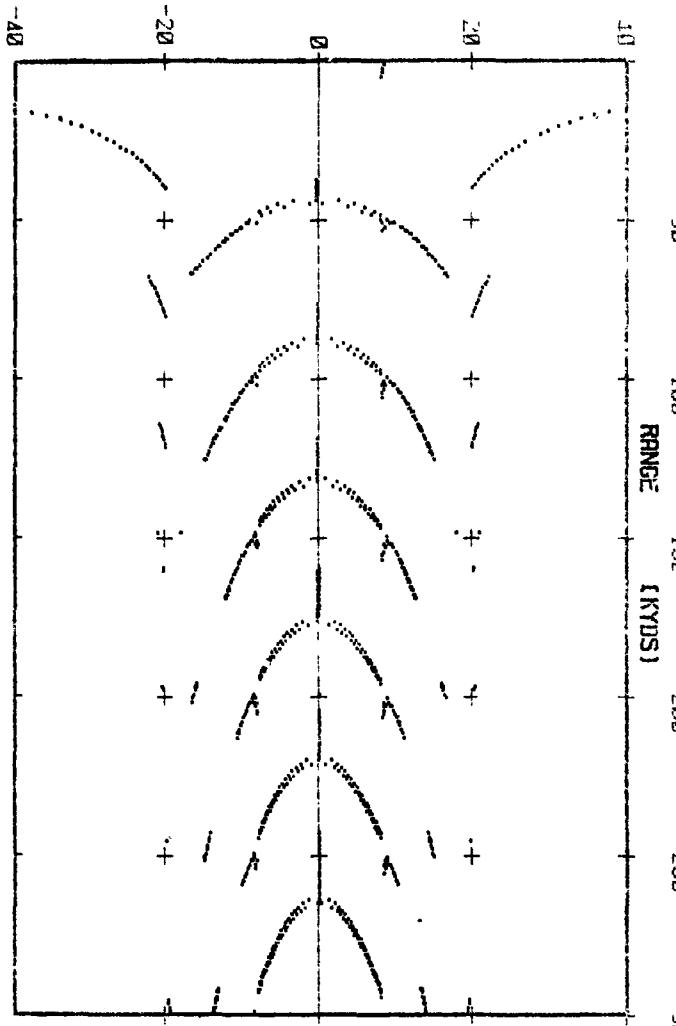
NOISE (DB)



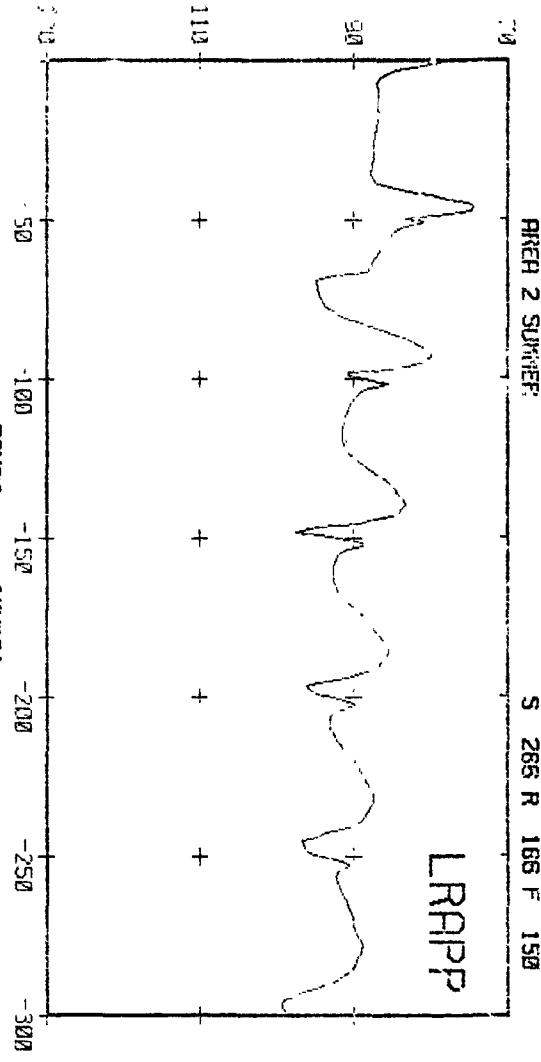
-77-

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permit fully legible reproduction

ARRIVAL ANGLE



DB LOSS



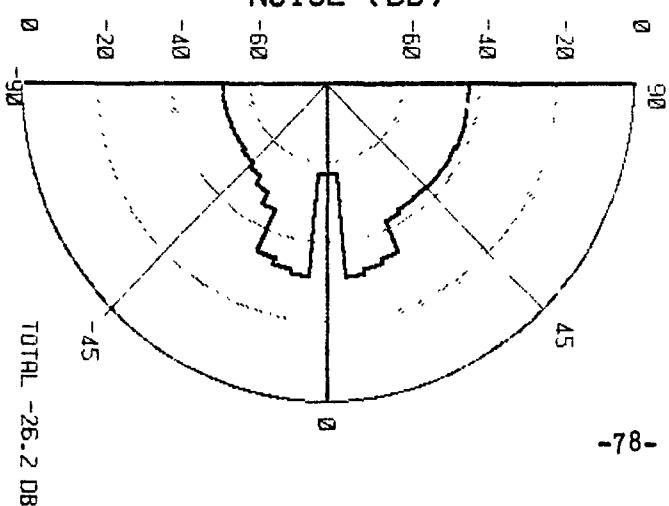
AREA 2 SUMMER

S 265 R 166 F 150

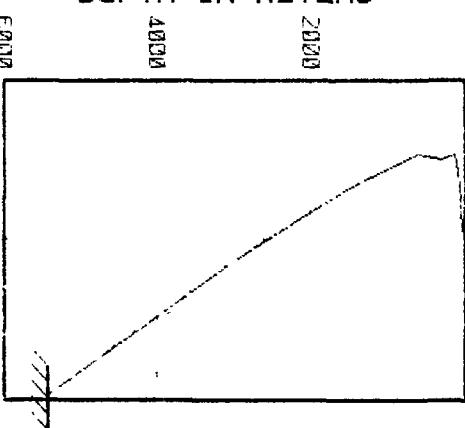
1450 M/S 1500 1550

LRAFP

NOISE (DB)



DEPTH IN METERS



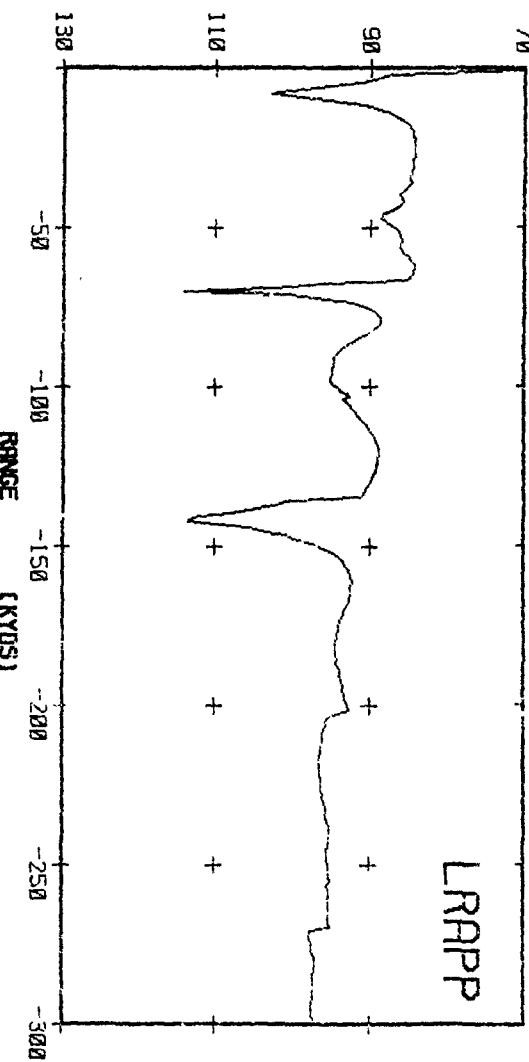
AREA 2 SUMMER

S 20 R 300 F 150

1450 M/S 1500 1550

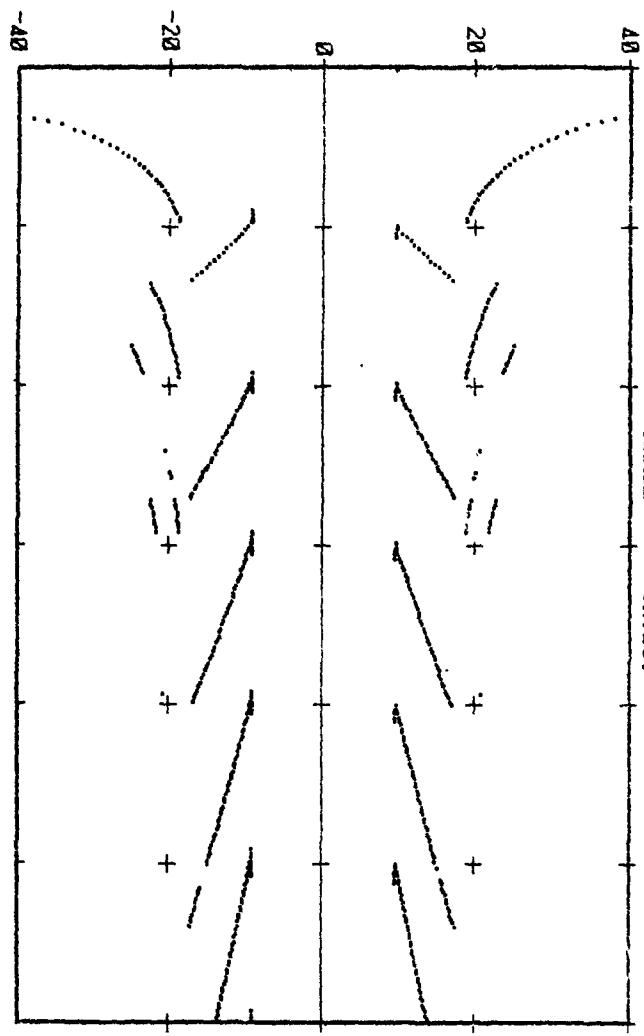
LRAAPP

DB LOSS

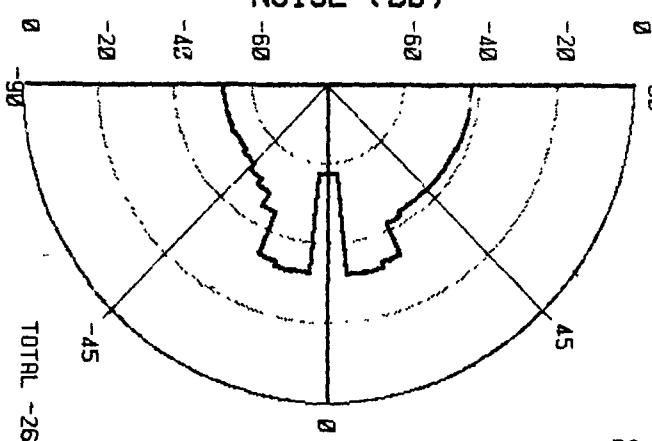


DEPTH IN METERS

ARRIVAL ANGLE



NOISE (DB)



TOTAL -26.4 DB

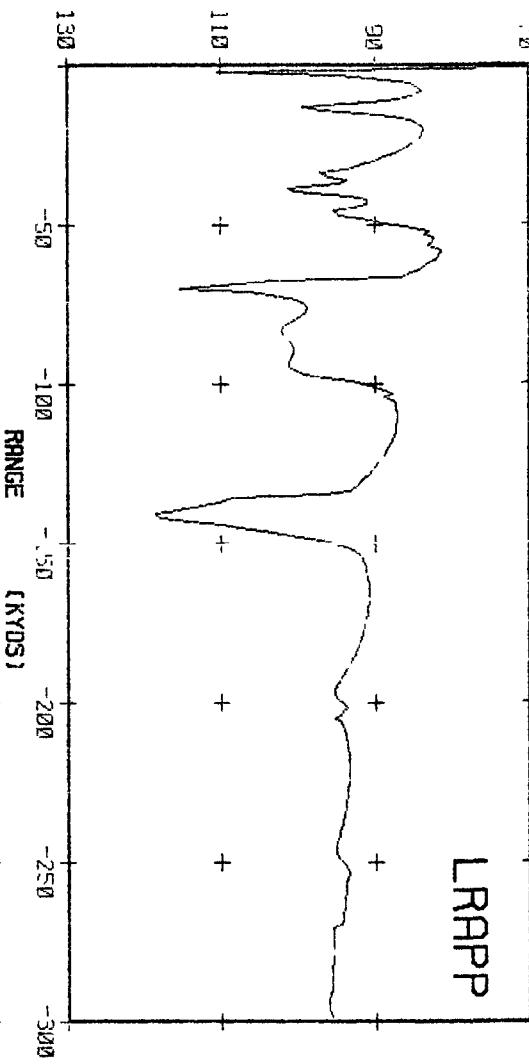
ARRER 2 SUMMER

S 50 R 300 F 150

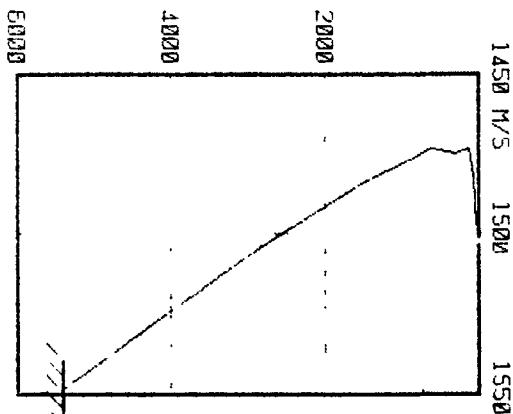
1450 M/S 1500 1550

LRAAPP

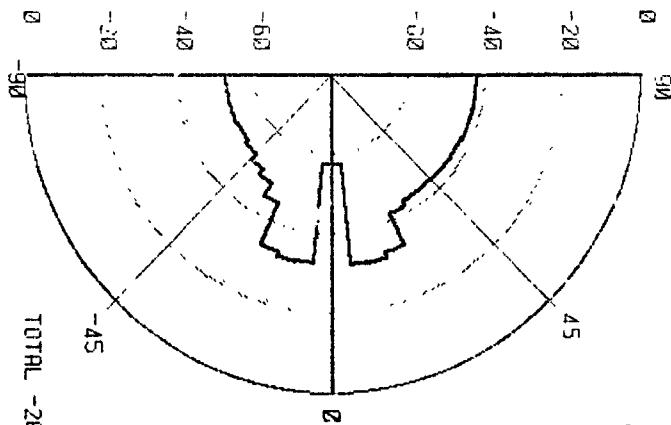
DB LOSS



DEPTH IN METERS

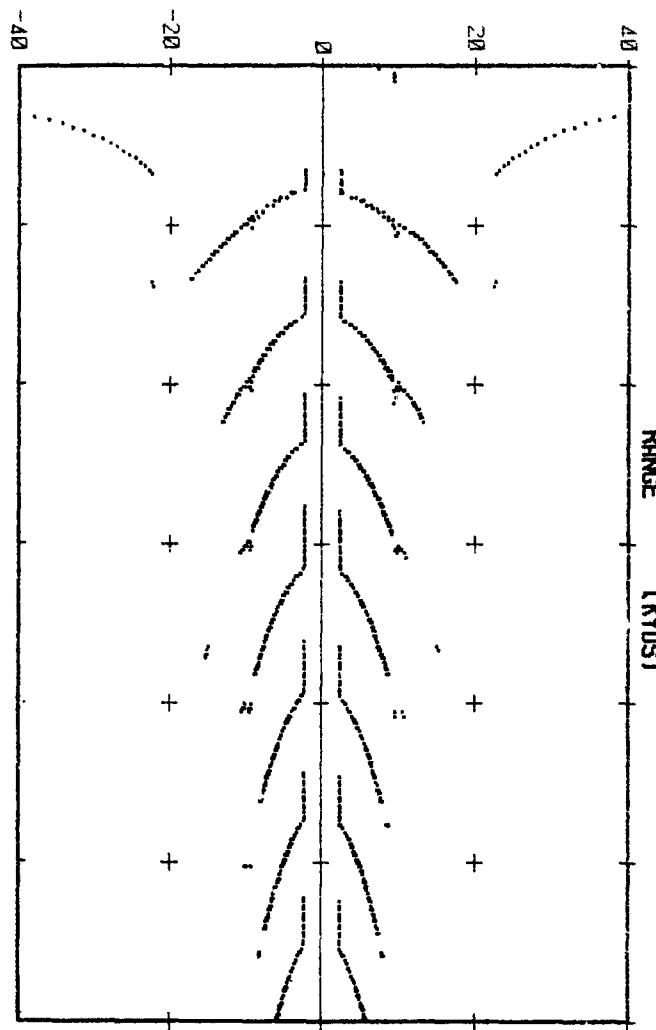


NOISE (DB)

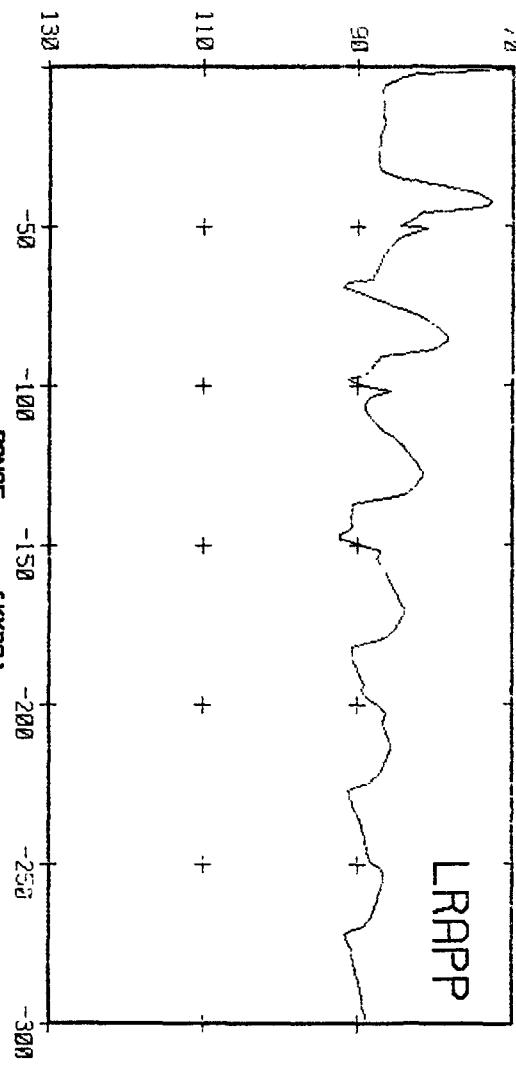


TOTAL -26.4 dB

ARRIVAL ANGLE



DB LOSS



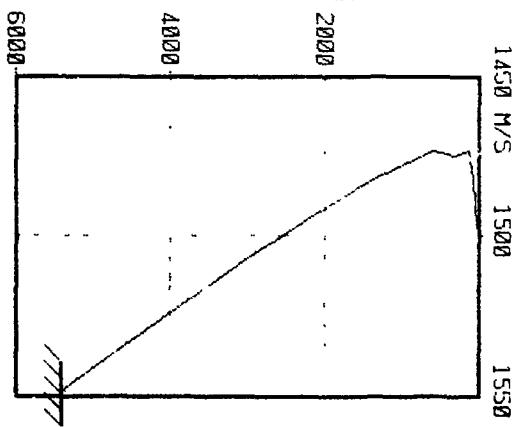
72

ARRER 2 SUMMER

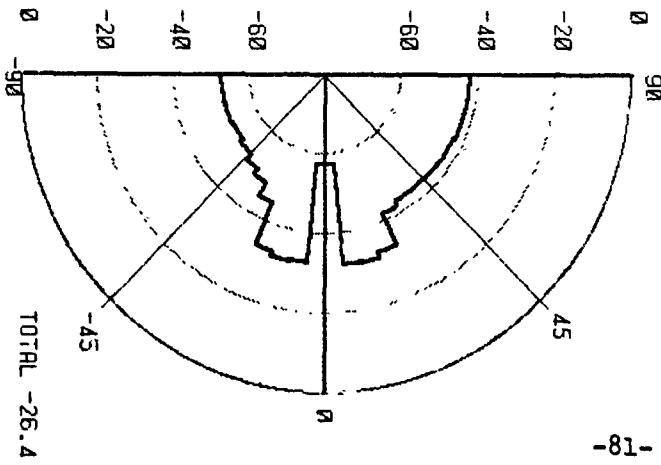
S 266 R 300 F 150

L RAPP

DEPTH IN METERS



NOISE (DB)



TOTAL -26.4 DB

-81-

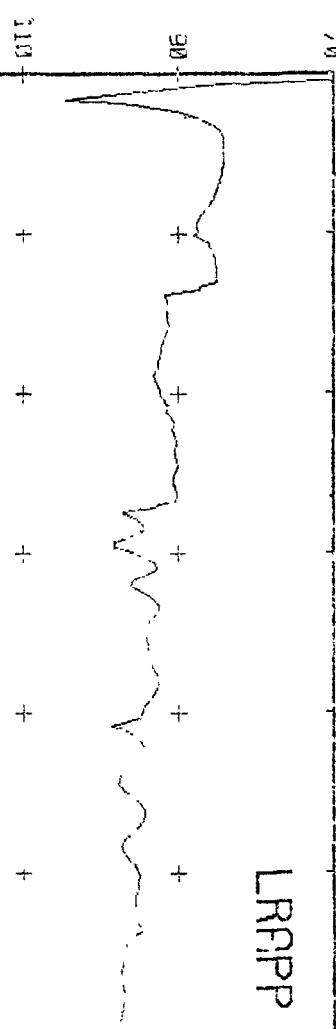
AKER 2 SUMMER

S 20 R 1642 F 150

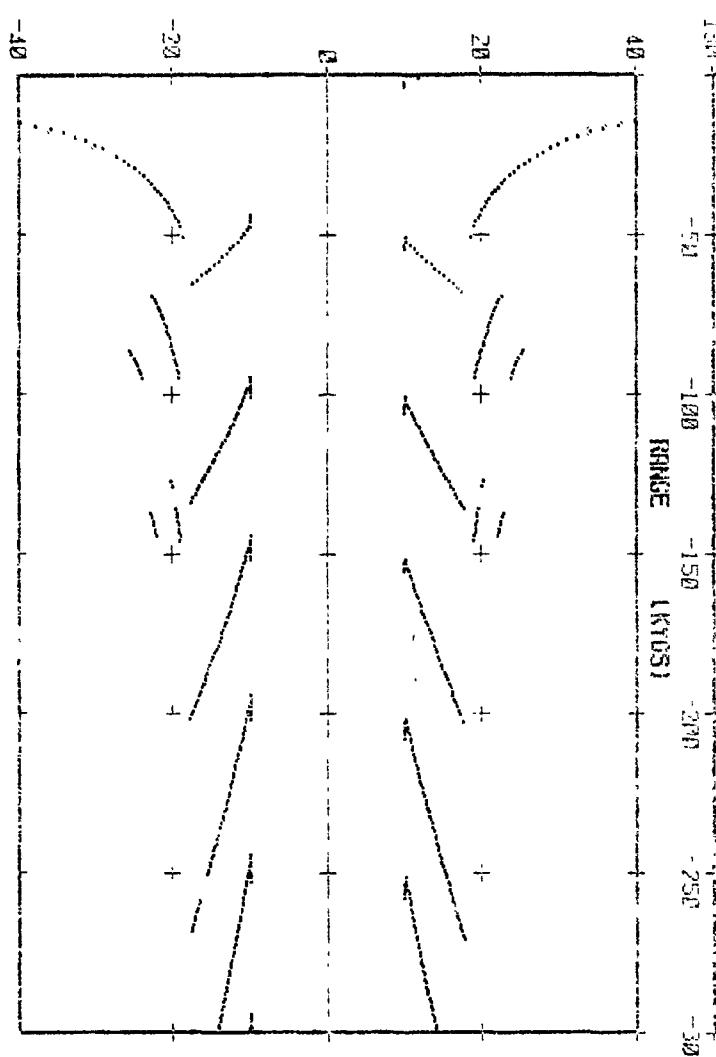
1450 M/S 1500 1550

LRAPP

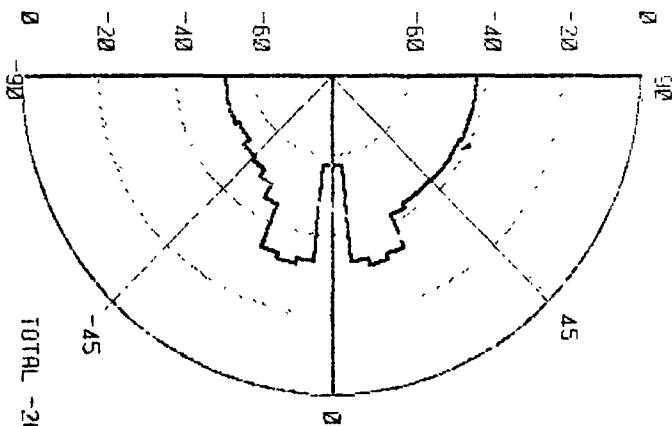
DB LOSS



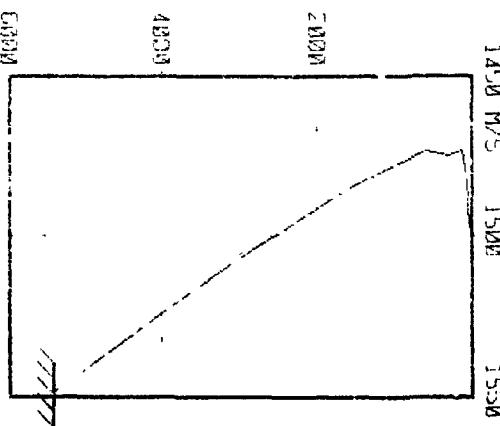
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



B
TOTAL -26.5 DB

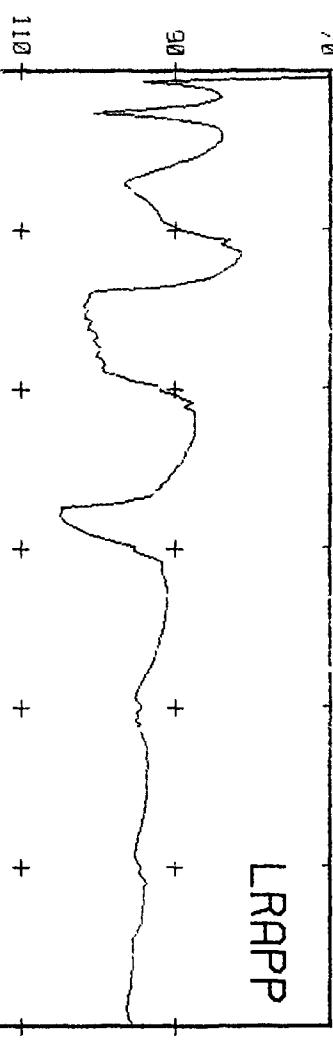
70

AREA 2 SUMMER

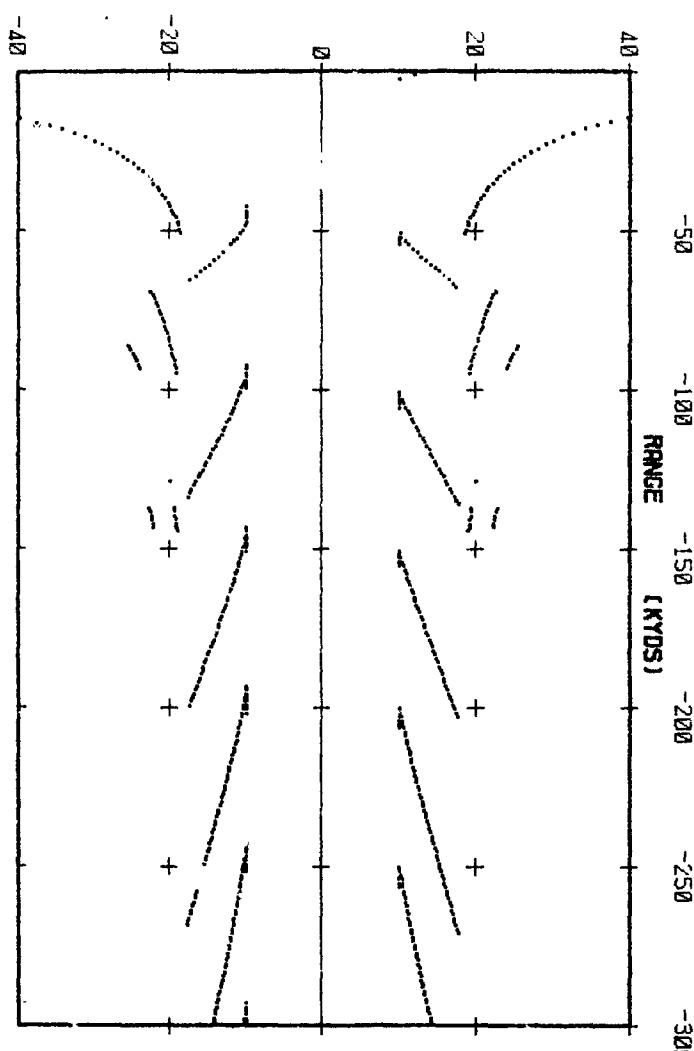
S 59 R 1000 F 15B

1450 M/S 1500 1550

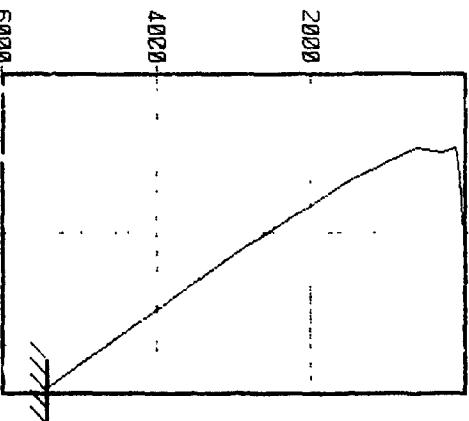
DB LOSS



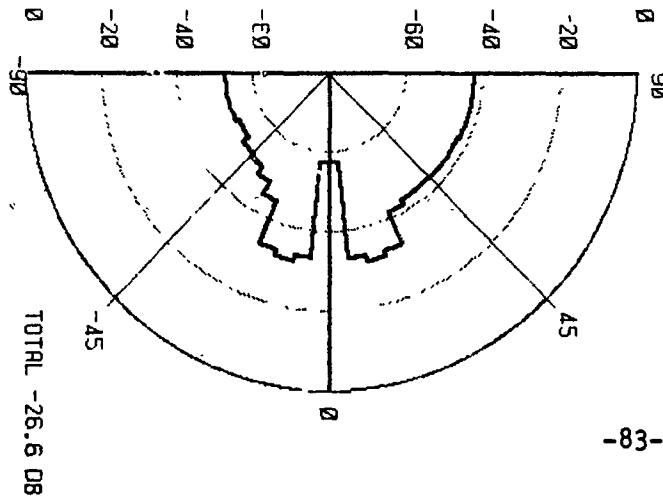
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



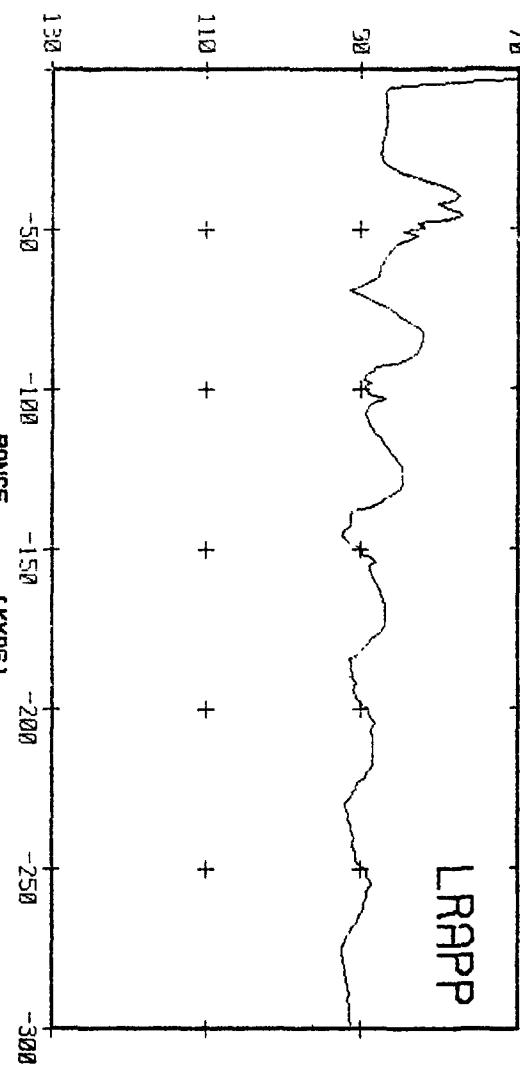
FIGER 2 SUMMER

S 266 R 1800 F 150

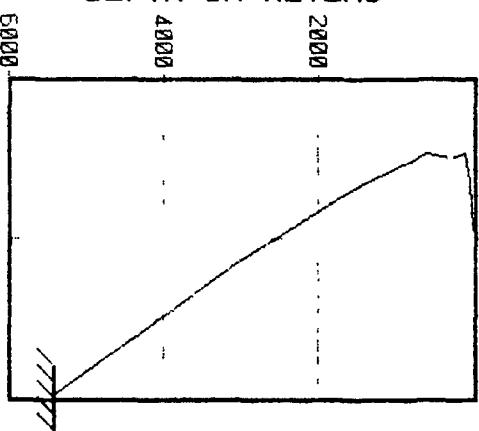
1450 M/S 1500 1550

LRAPP

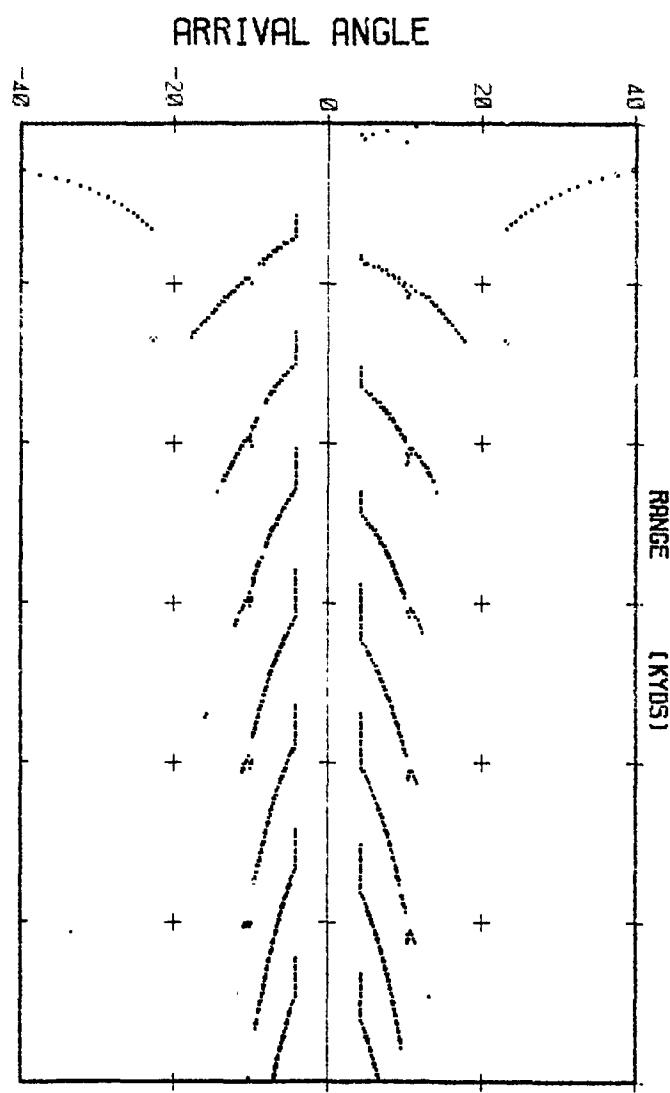
DB LOSS



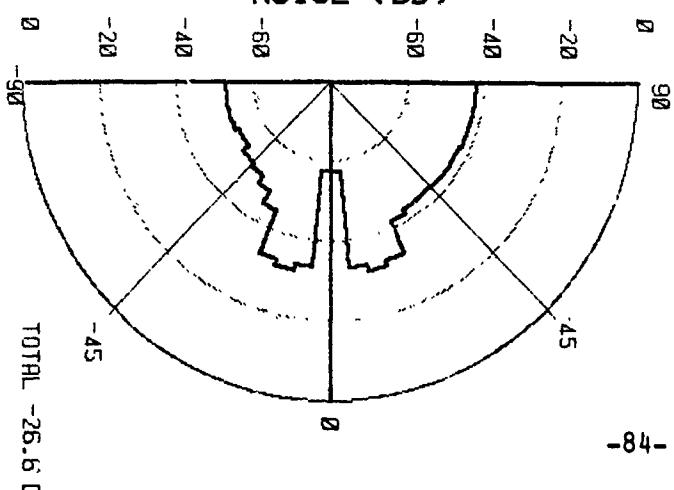
DEPTH IN METERS



NOISE (DB)



ARRIVAL ANGLE



-84-

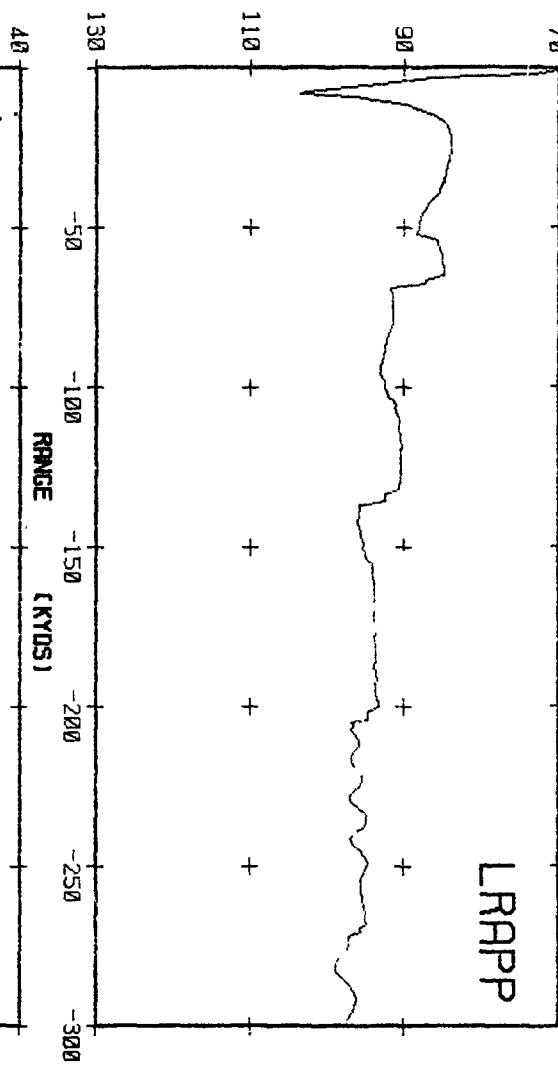
PIER 2 SUMMER

S 20 R 1500 F 150

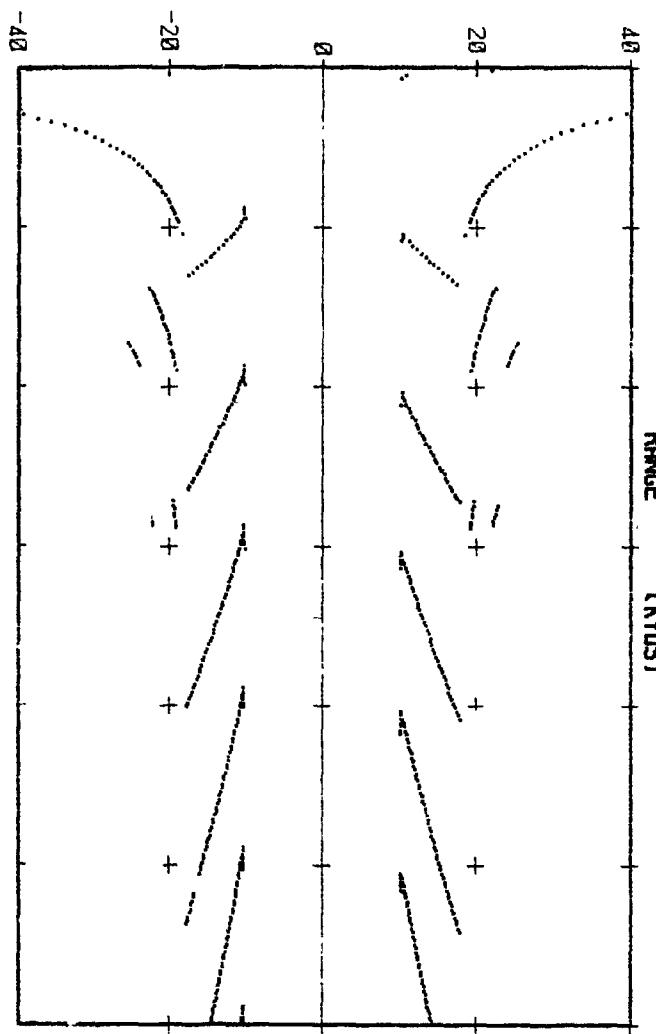
1450 M/S 1500 1550

LRAPP

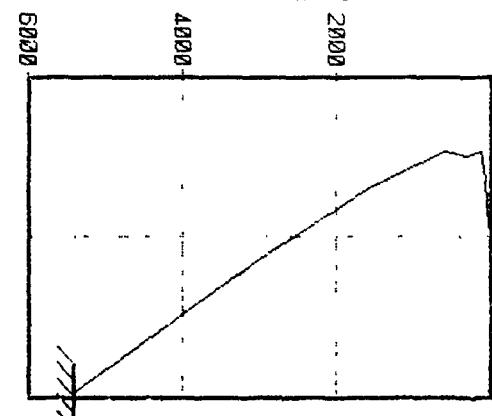
DB LOSS



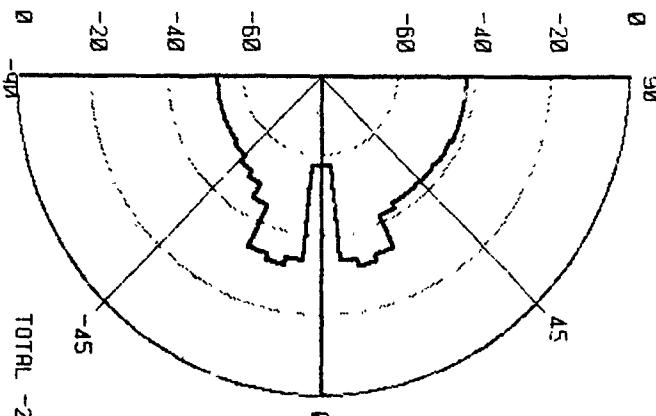
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



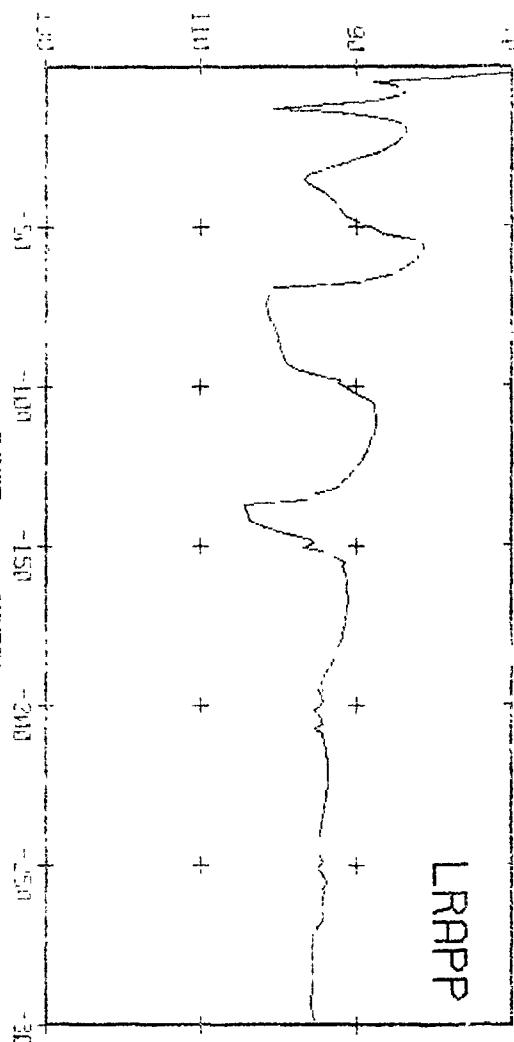
FRESH 2 SUMMER

S 50 R 1500 F 150

1450 M/S 1500 1550

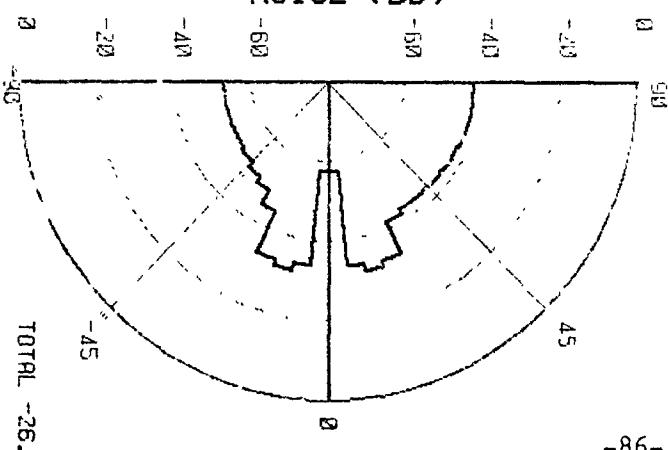
LRAPP

DB LOSS



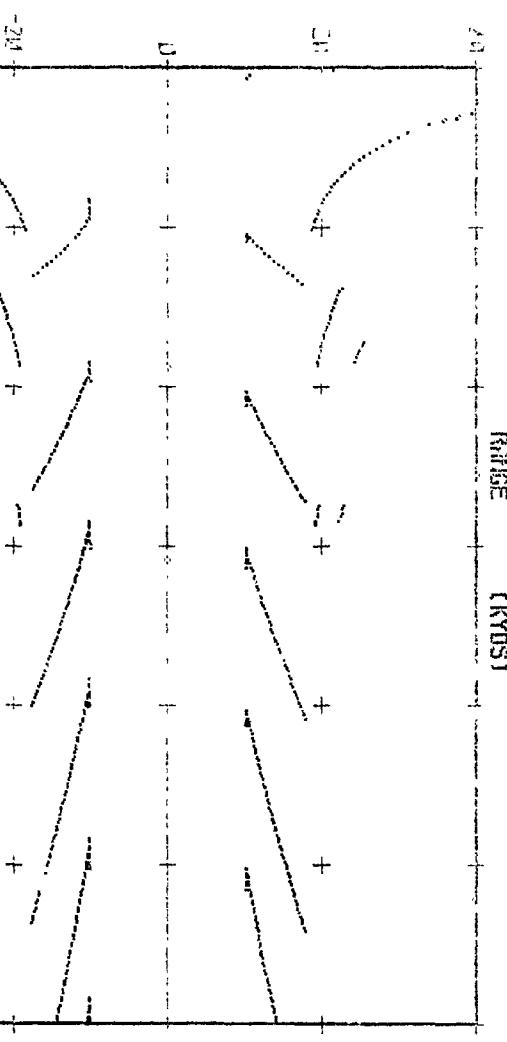
DEPTH IN METERS

NOISE (DB)



-86-

ARRIVAL ANGLE

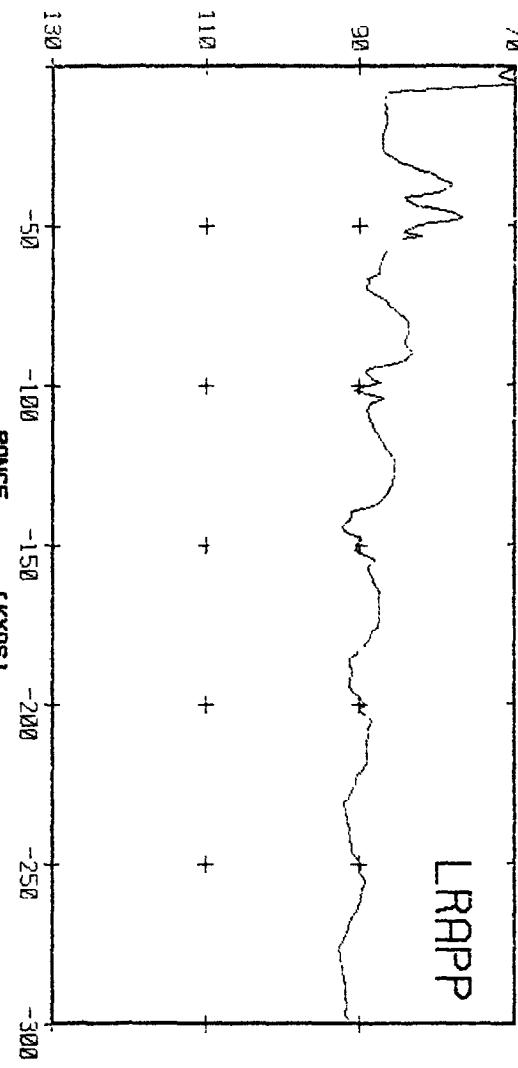


70 AREA 2 SUMMER S 26° 5' N 150° F 150

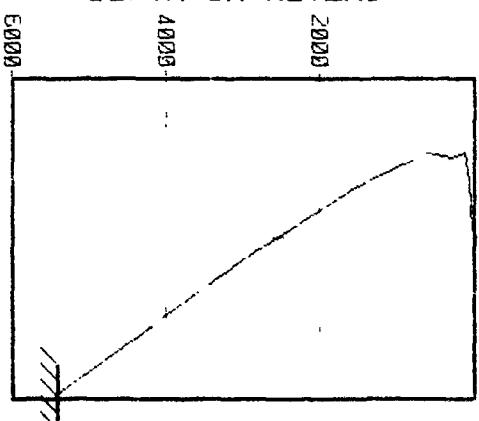
1450 M/S 1500 1550

L RAPP

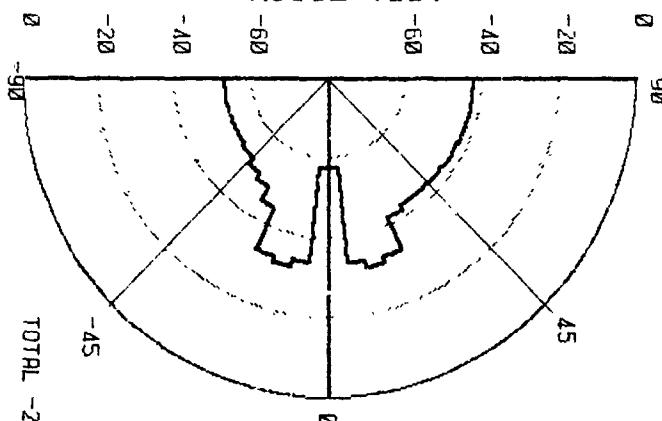
DB LOSS



DEPTH IN METERS



NOISE (DB)



TOTAL -26.6 DB

70

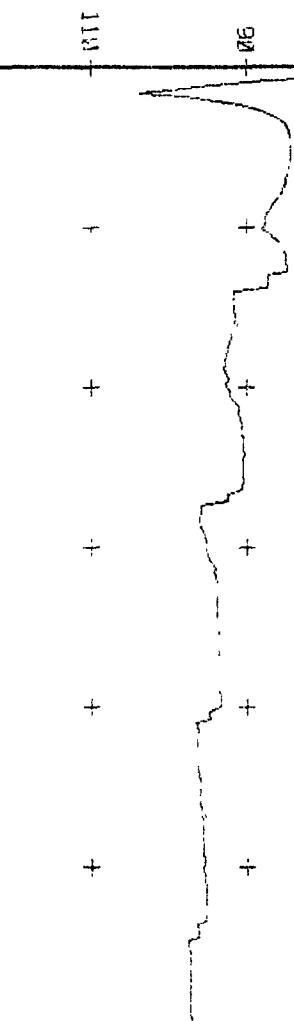
AREA 2 SUMMER

S 20 R 1968 F 150

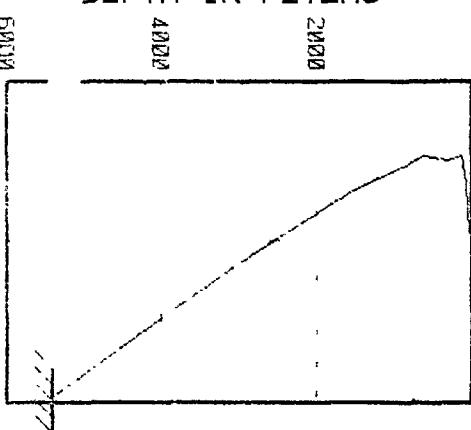
1450 M/S 1500 1550

LRAPP

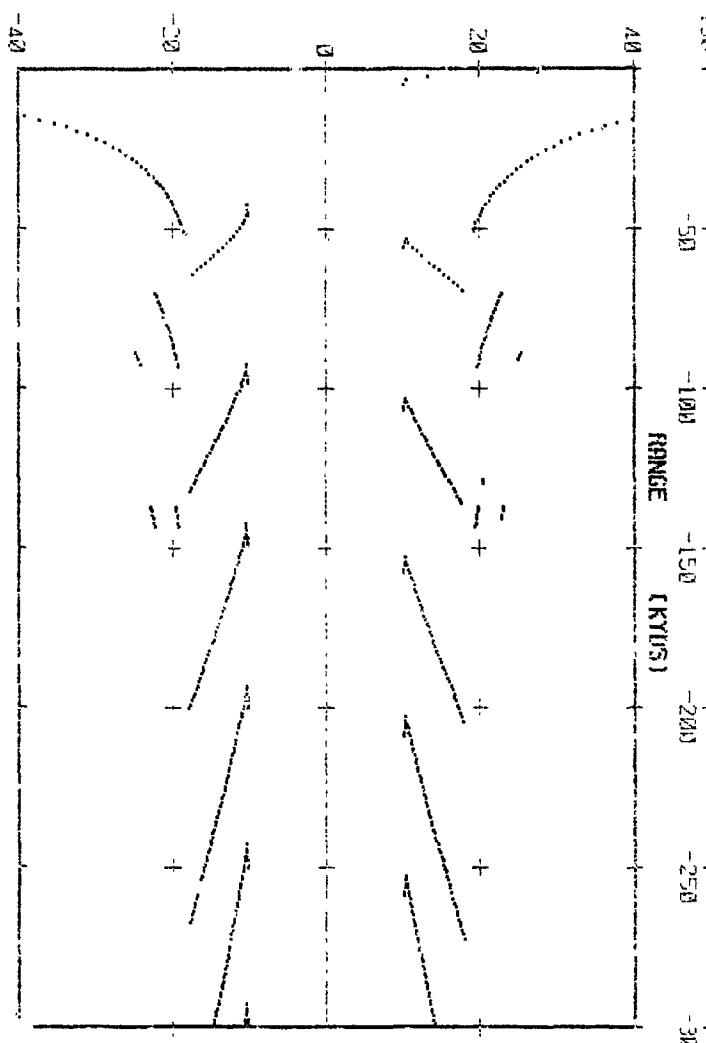
DB LOSS



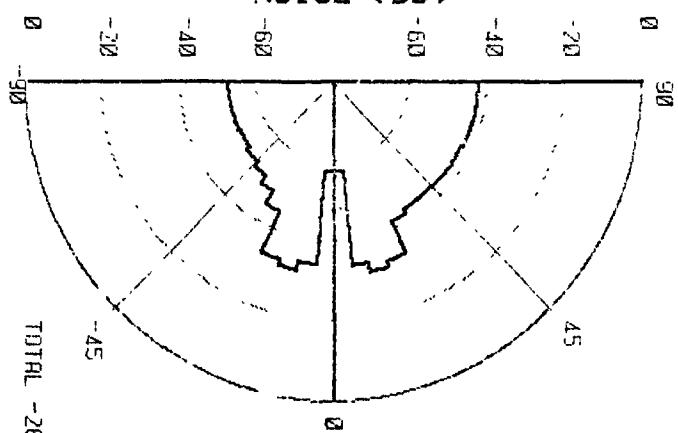
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)

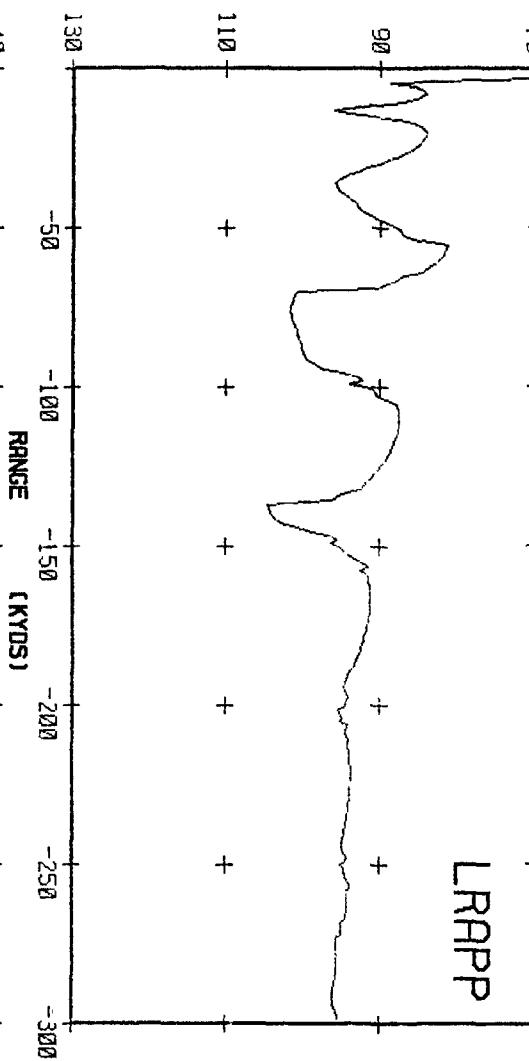


AREA 2 SUMMER

5 59 R 1968 F 158

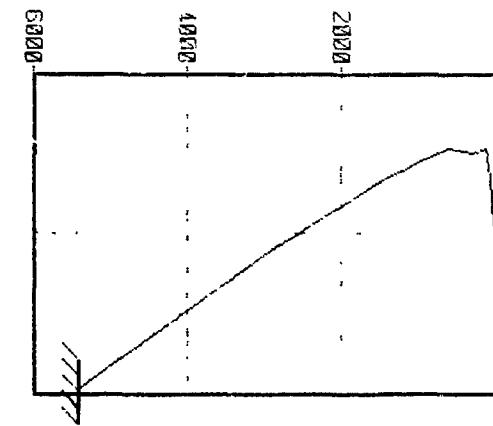
1450 M/S 1500 1550

DB LOSS

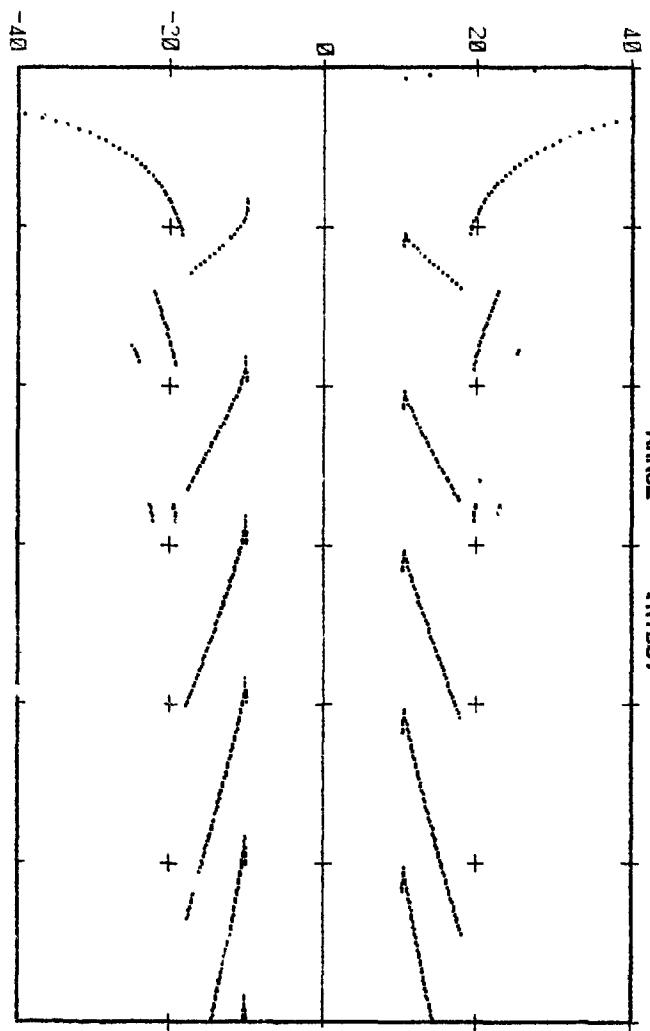


LRAPP

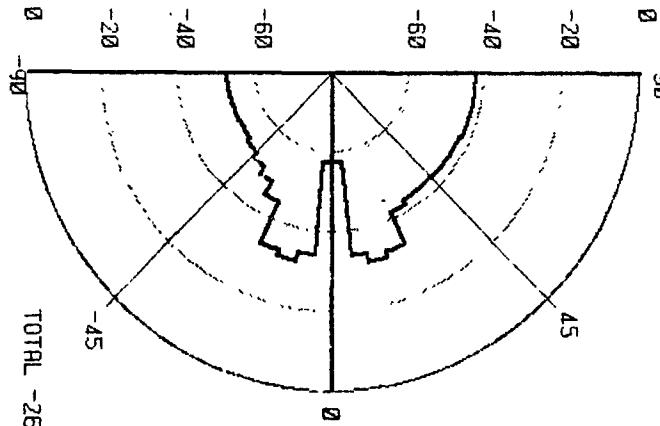
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



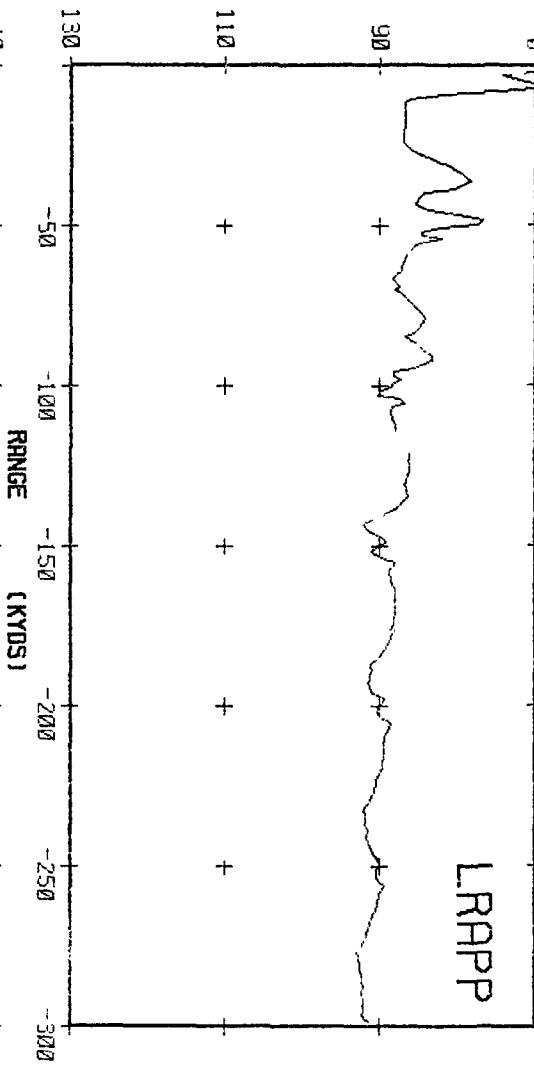
AREA 2 SUMMER

S 266 R 1960 F 150

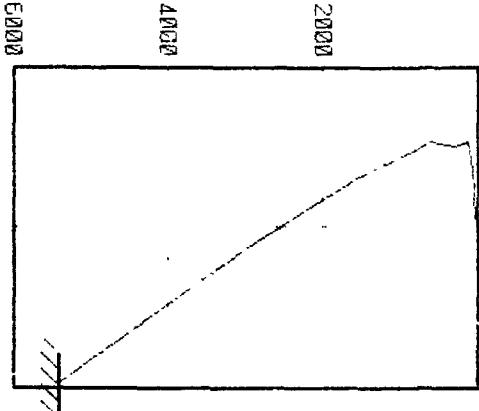
1450 M/S 1500 1550

LRAPP

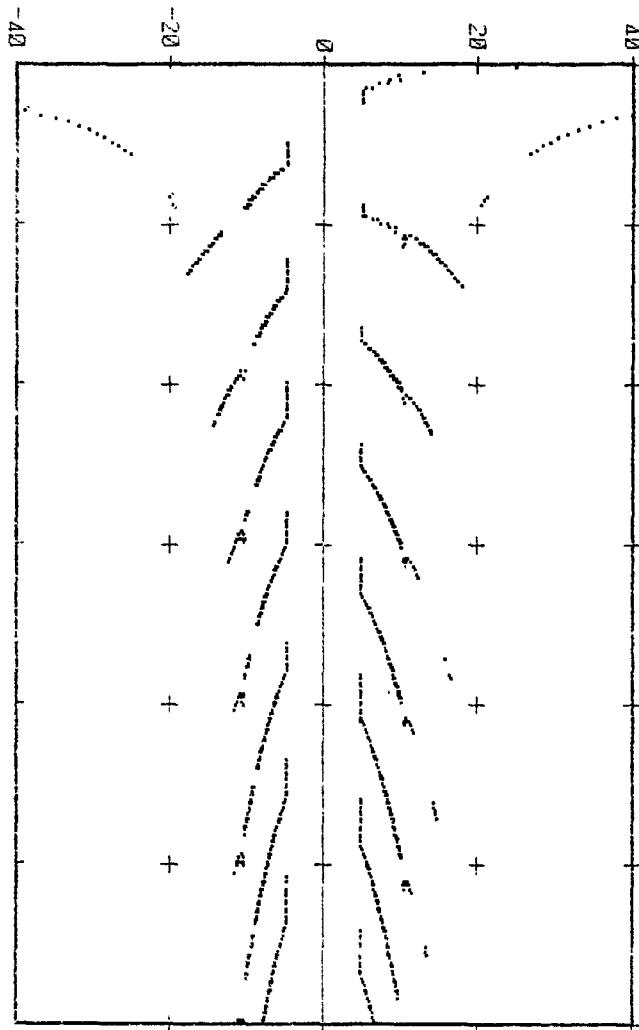
DB LOSS



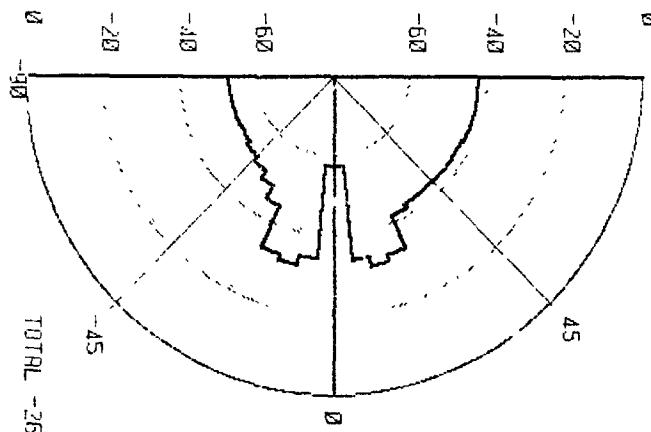
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



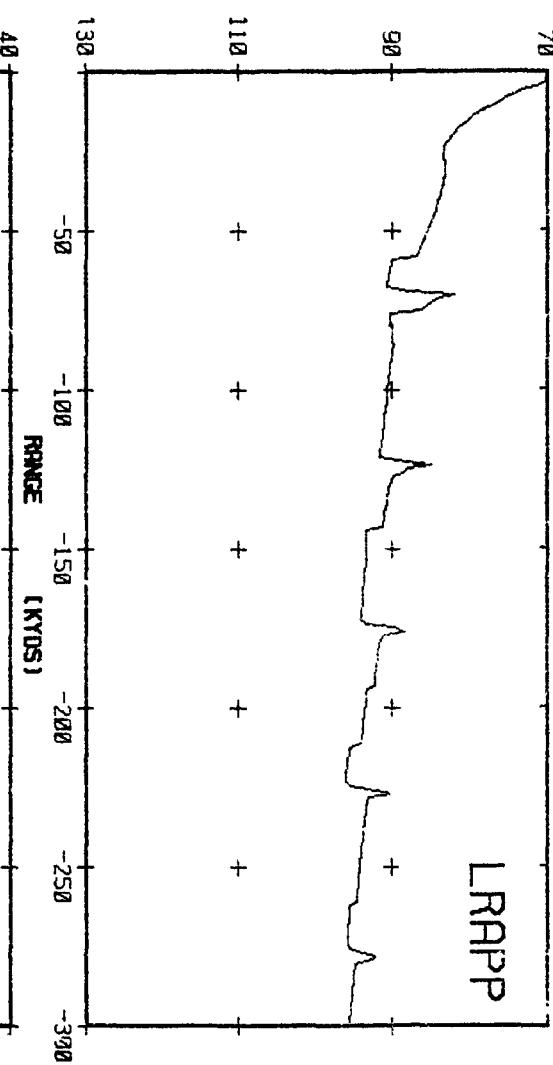
70

AREA 2 SUMMER

S 20 R 7874 F 150

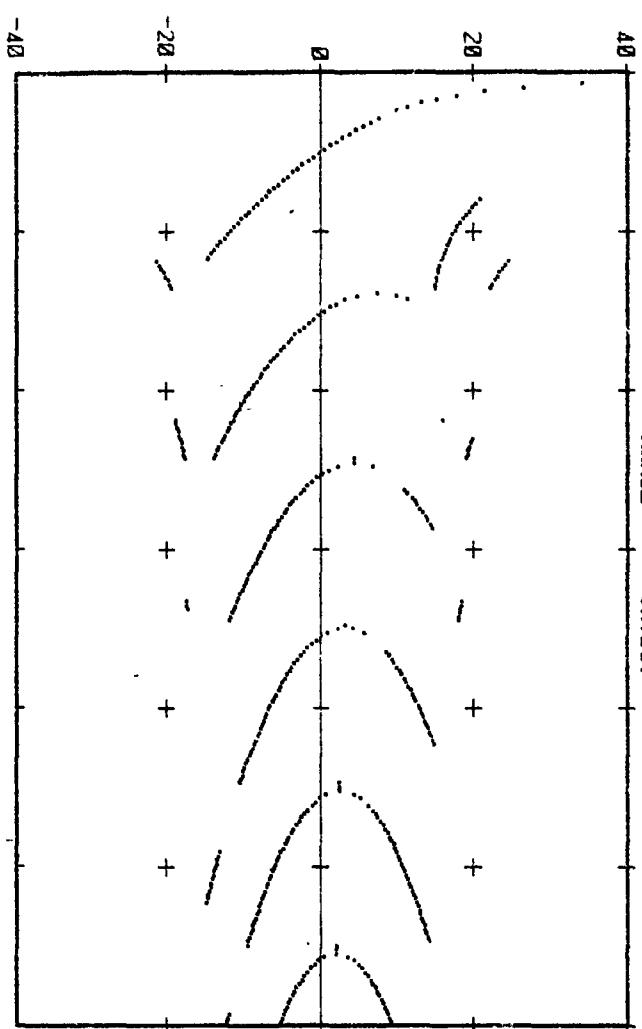
1450 M/S 1500 1550

DB LOSS

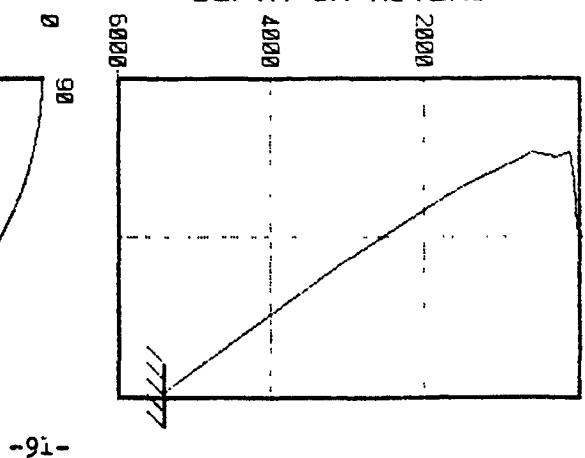


LRAPP

ARRIVAL ANGLE

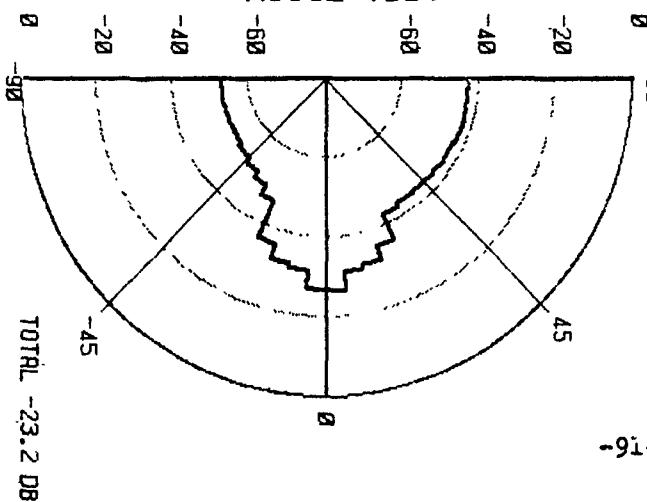


DEPTH IN METERS



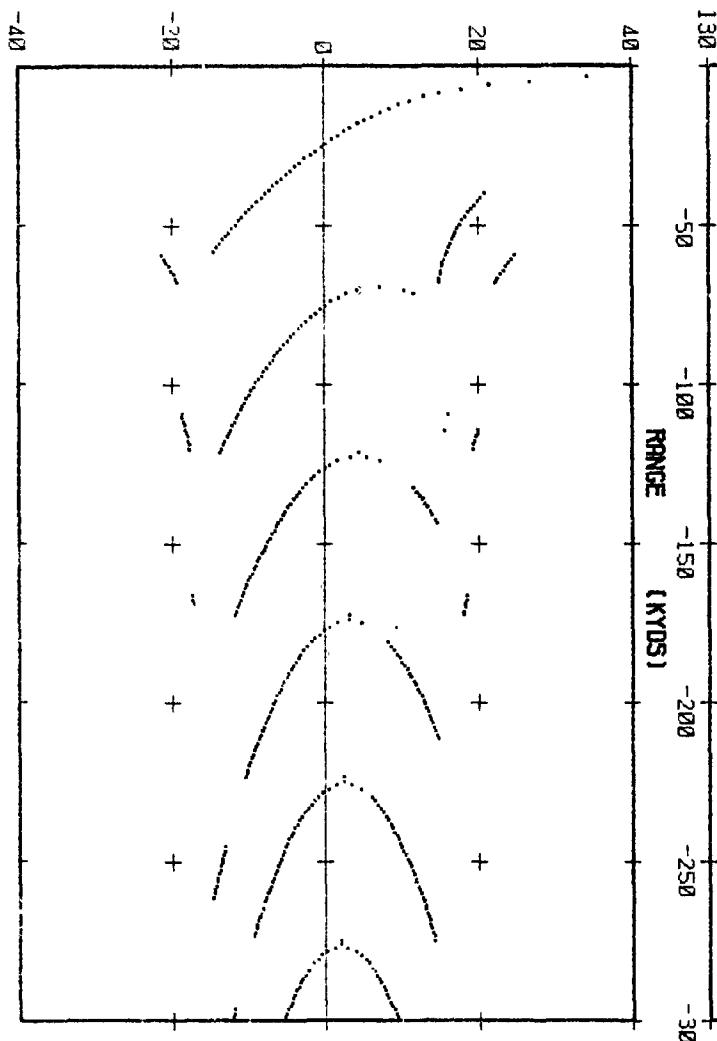
-16-

NOISE (DB)

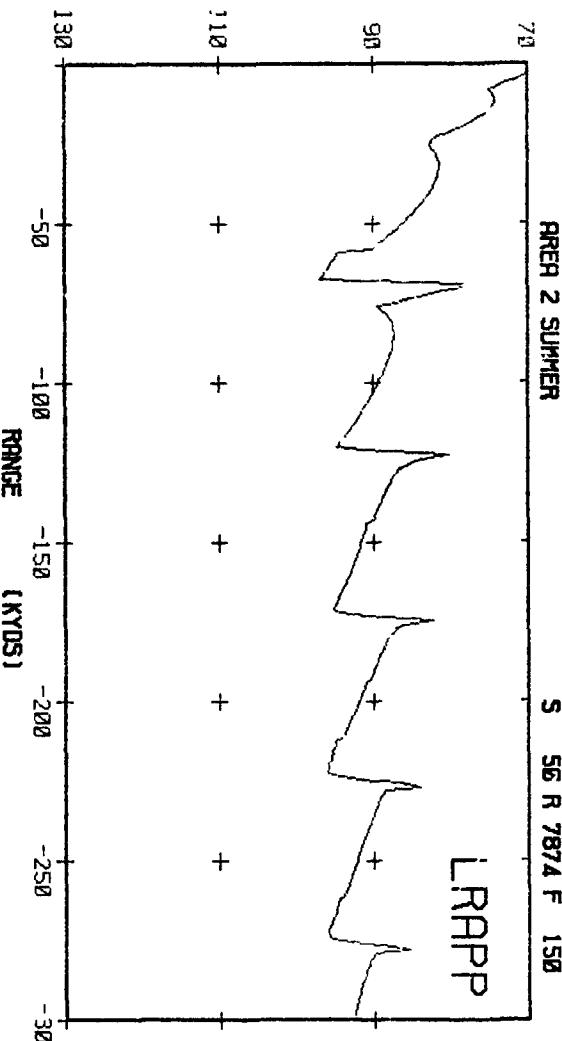


TOTAL -23.2 DB

ARRIVAL ANGLE



DB LOSS



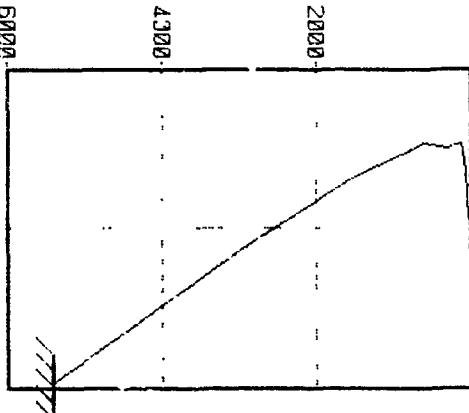
ARER 2 SUMMER

S 56 R 7874 F 150

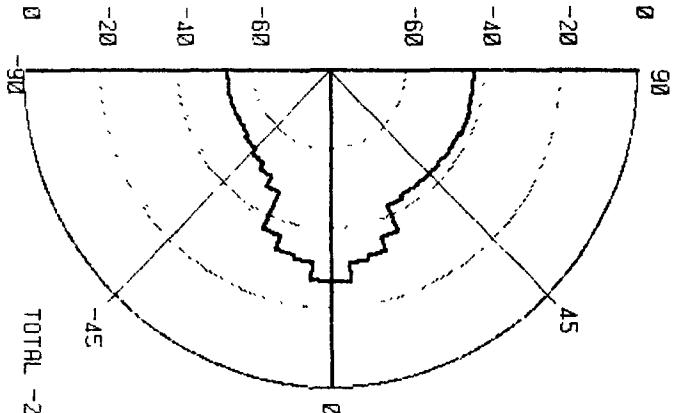
L RAPP

1450 M/S 1500 1550

DEPTH IN METERS



NOISE (DB)



70

PFR 2 SUMMER

S 268 R 7874 F 159

1450 M/S 1500 1550

DB LOSS

90

+

+

+

+

+

+

+

+

+

+

+

+

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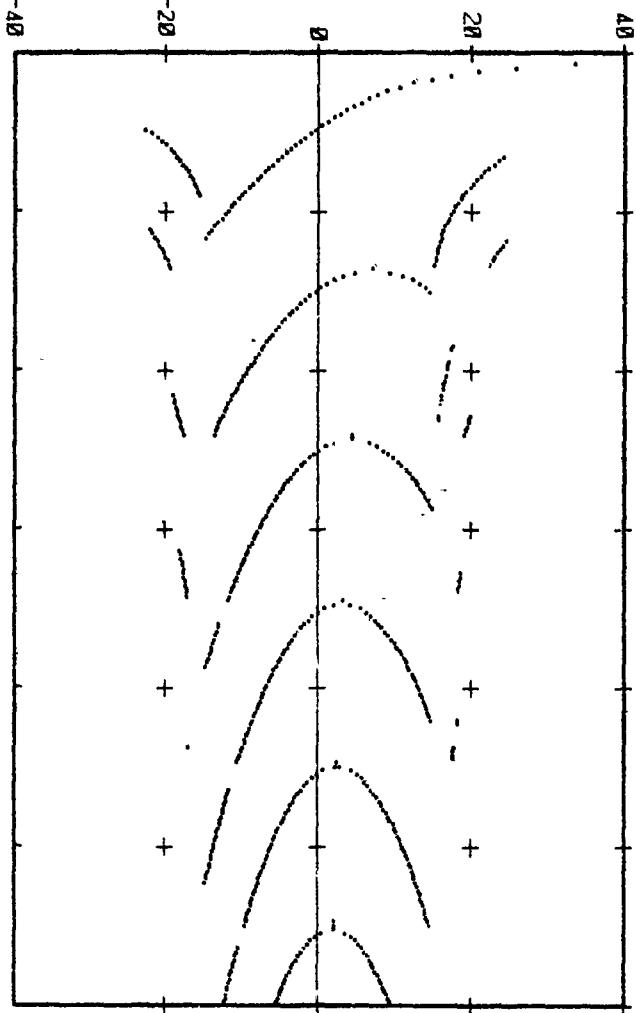
+

+

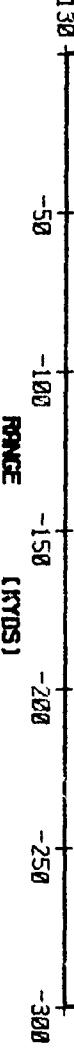
+

ARRIVAL ANGLE

-40



130



DEPTH IN METERS

4000

2000

0

6000

90

0

-20

-40

-60

-80

-100

-120

-140

-160

-180

-200

-220

-240

-260

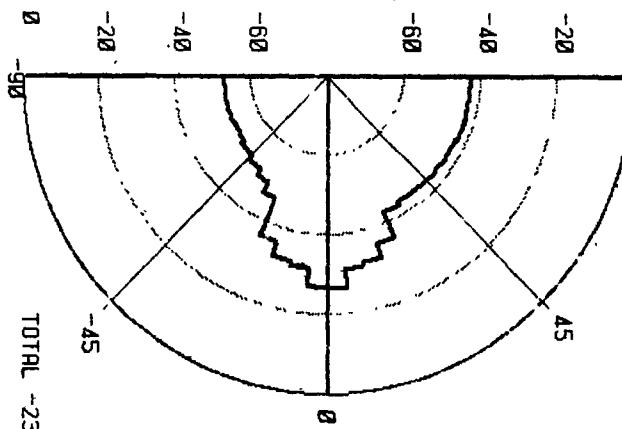
-280

-300

-320

-

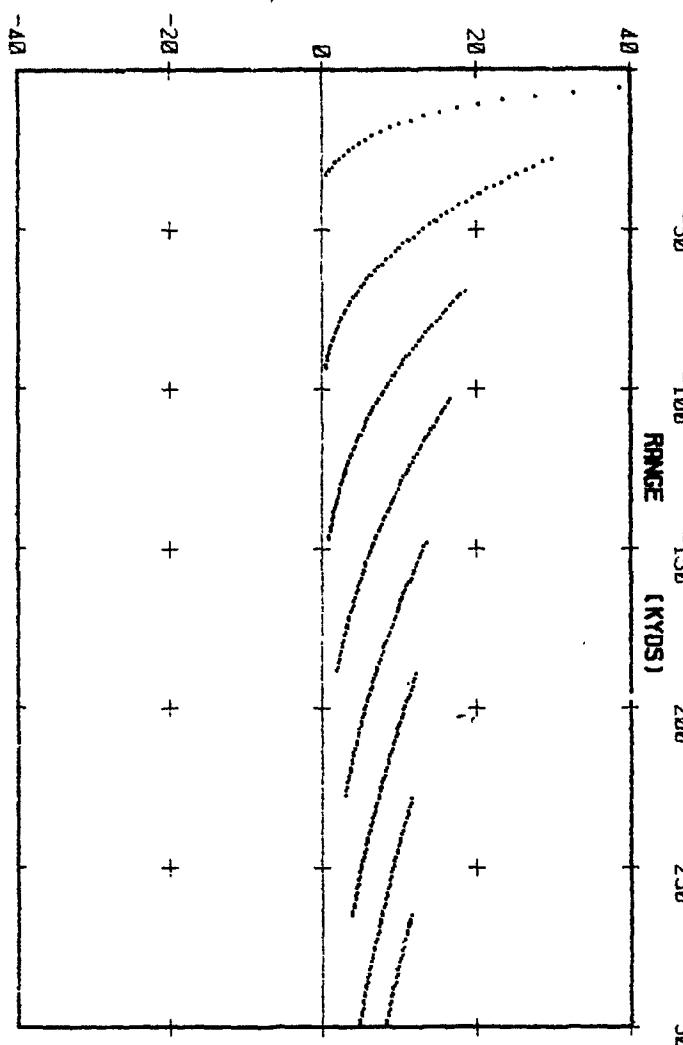
NOISE (DB)



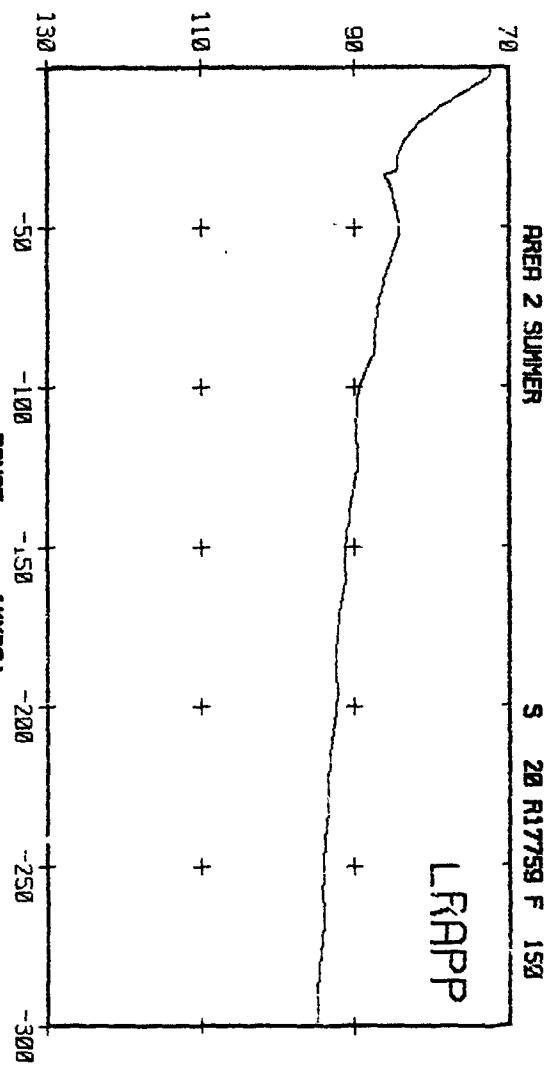
TOTAL -23.2 DB

-93-

ARRIVAL ANGLE

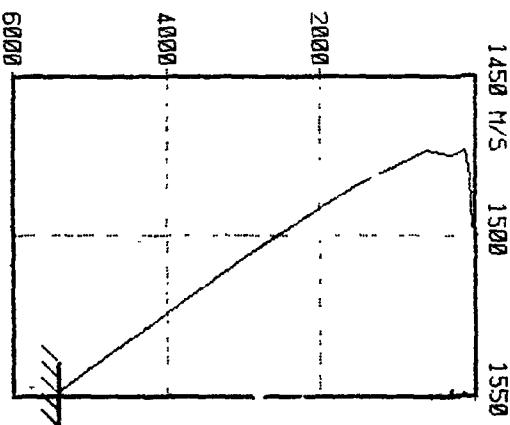


DB LOSS



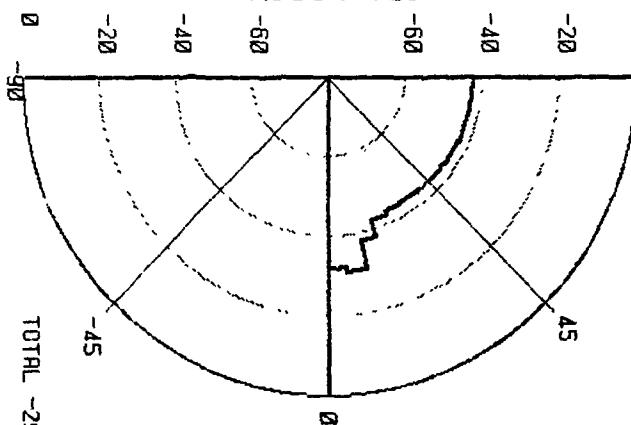
LFRAPP

DEPTH IN METERS

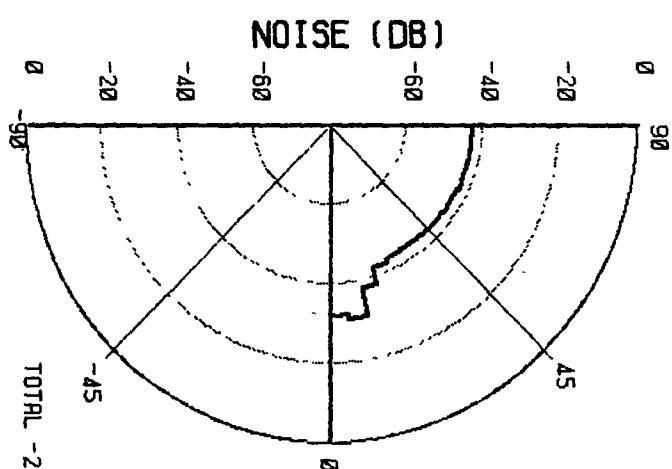
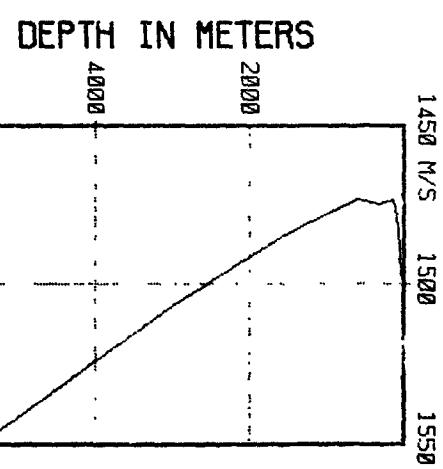
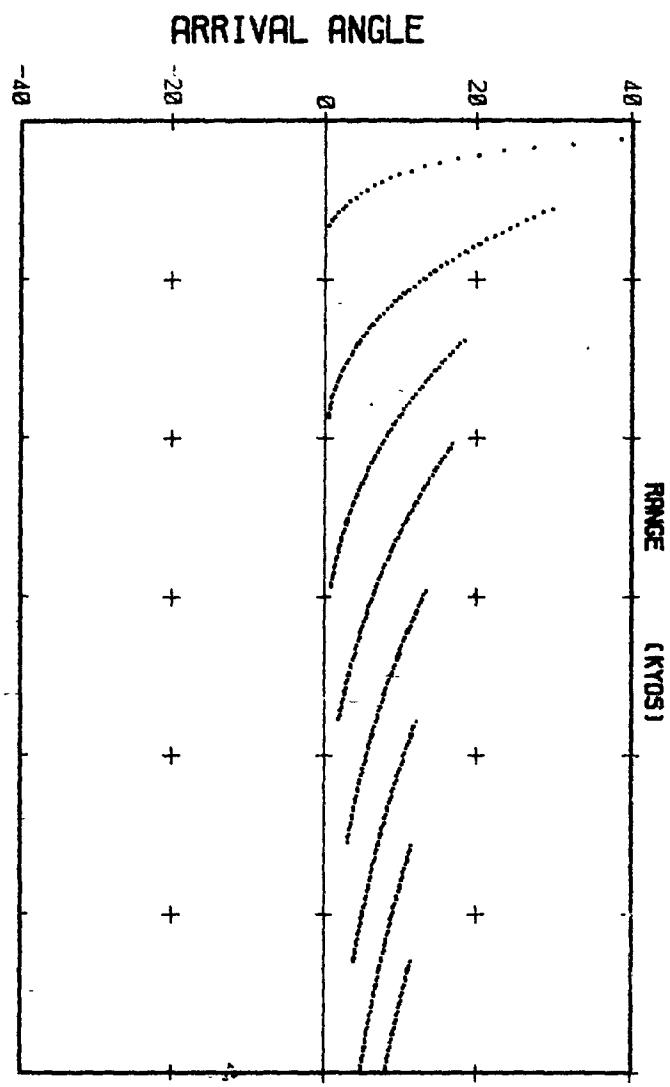
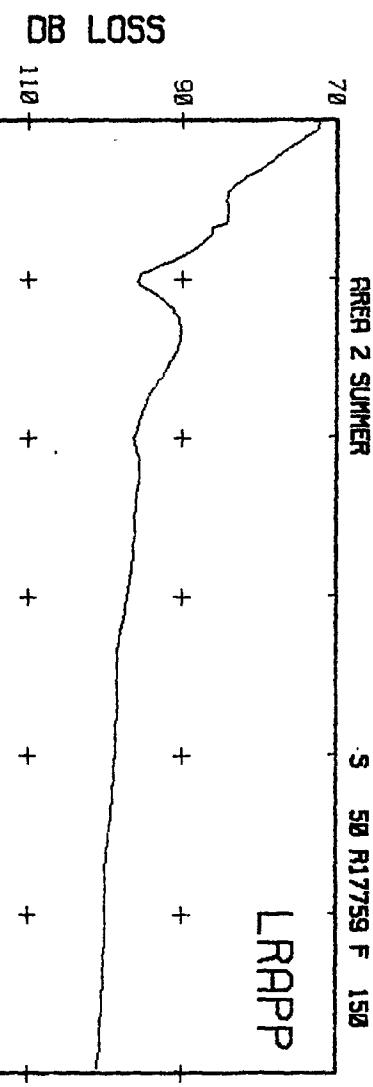


1450 m/s 1500 1550

NOISE (DB)



TOTAL -29.3 DB

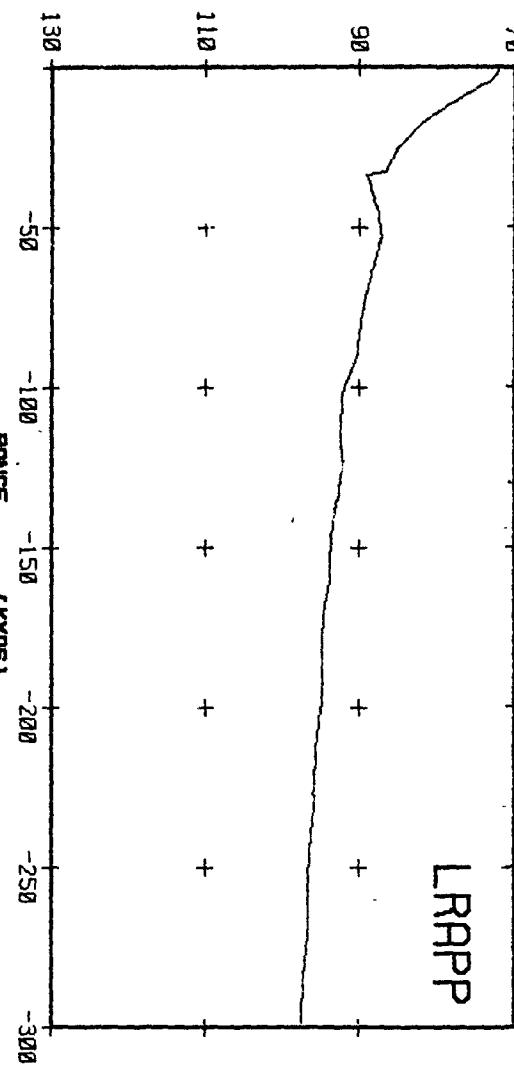


AREA 2 SUMMER

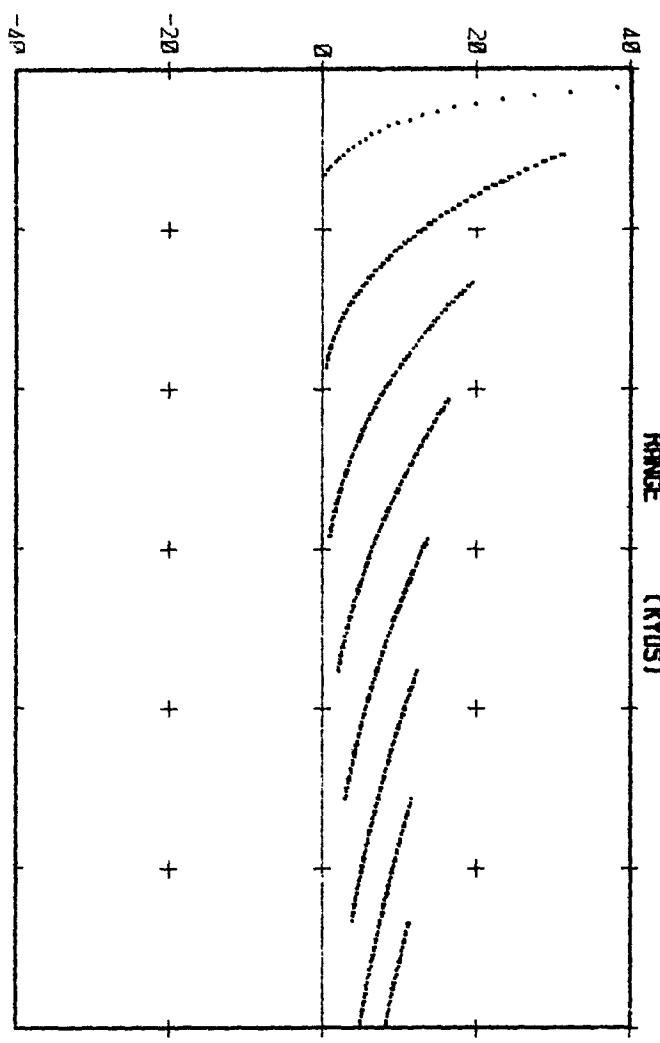
S 268 R17759 F 150

1450 M/S 1500 1550

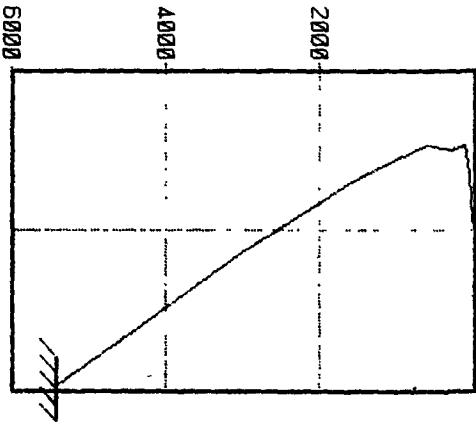
DB LOSS



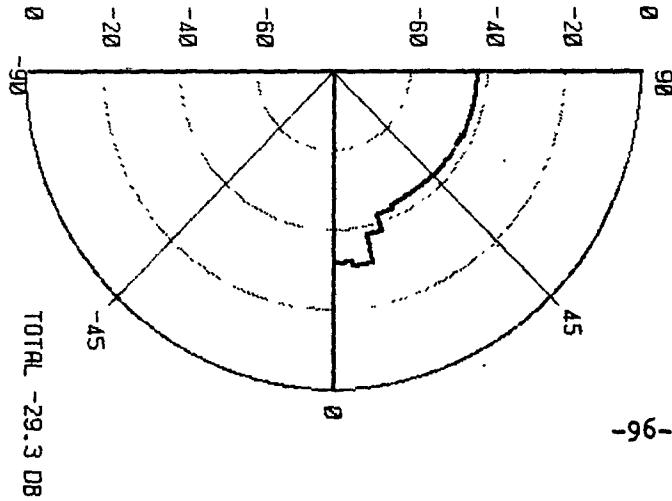
ARRIVAL ANGLE



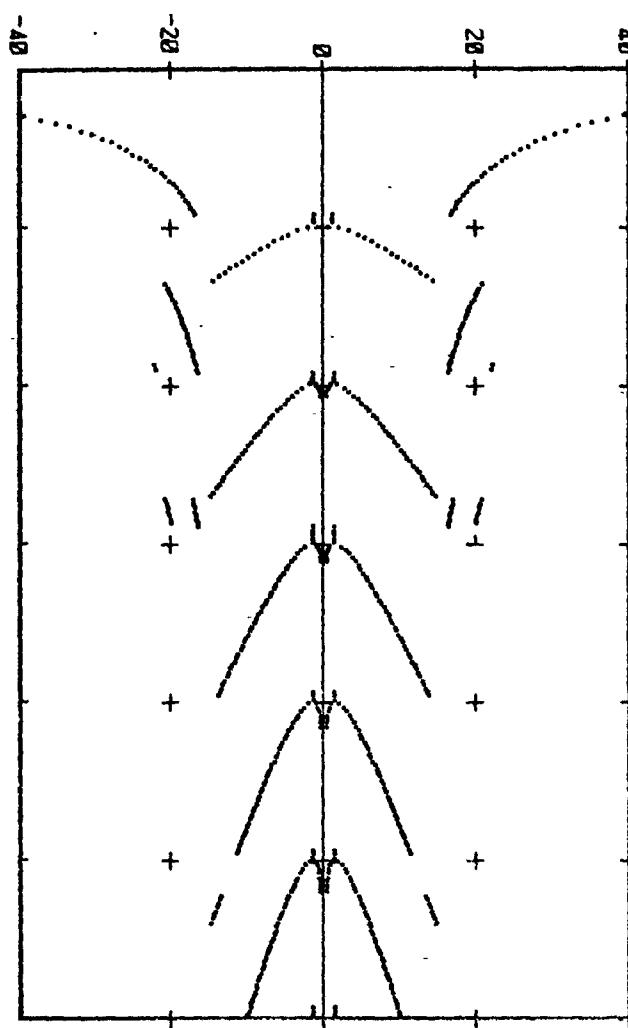
DEPTH IN METERS



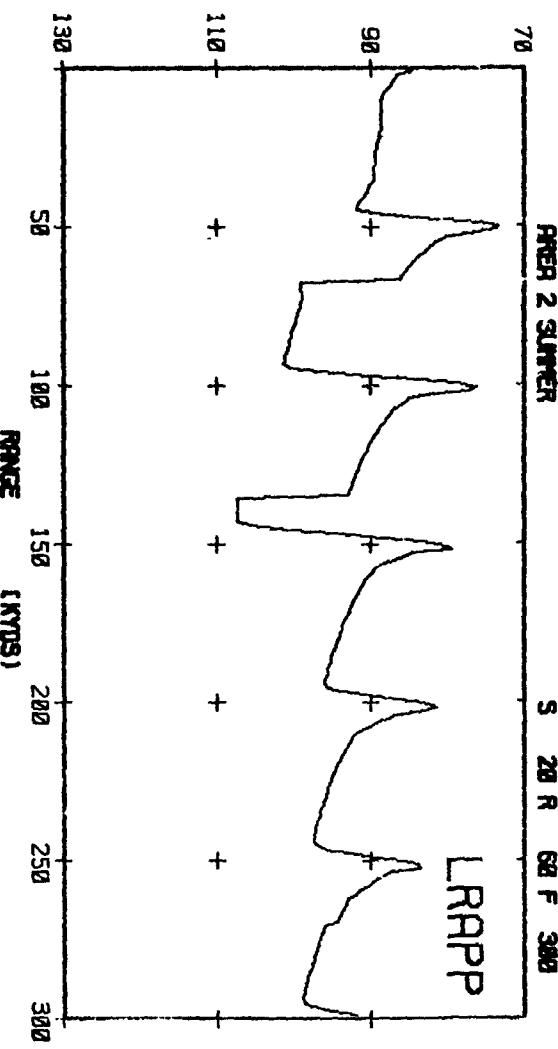
NOISE (DB)



ARRIVAL ANGLE



DB LOSS



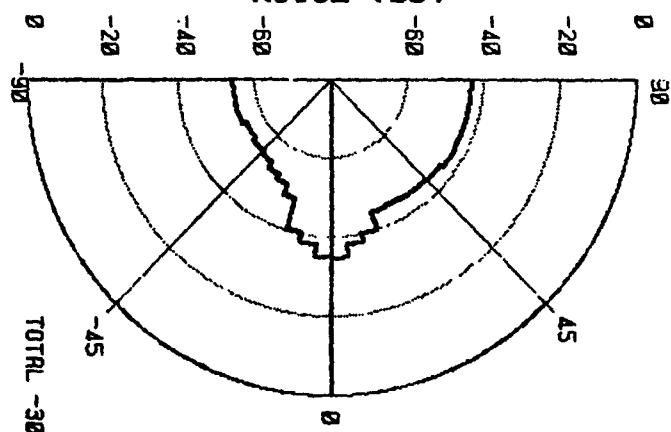
RIVER 2 SINISTER

S 28 R 62 F 382

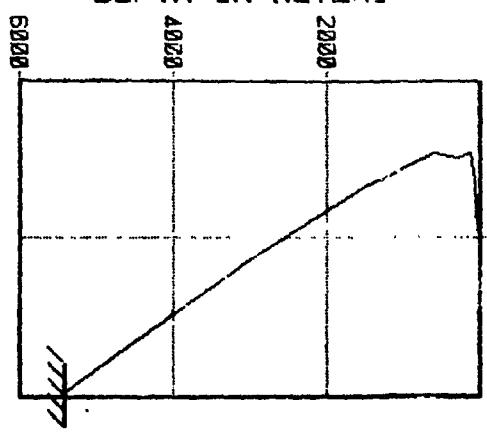
LRAPP

1450 M/S 1500 1550

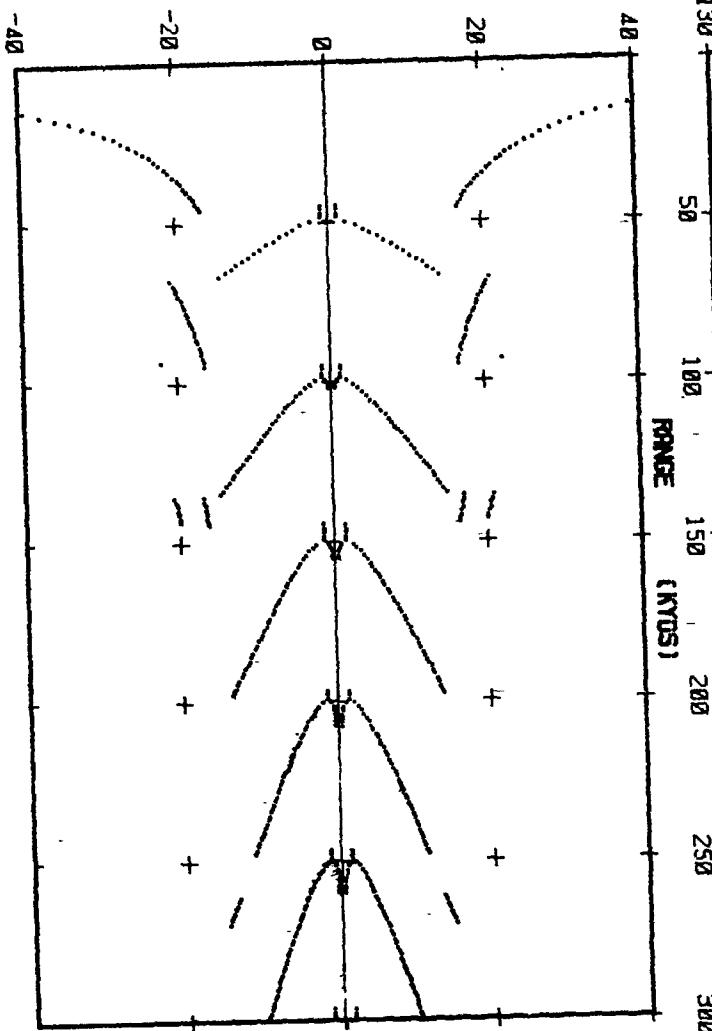
NOISE (DB)



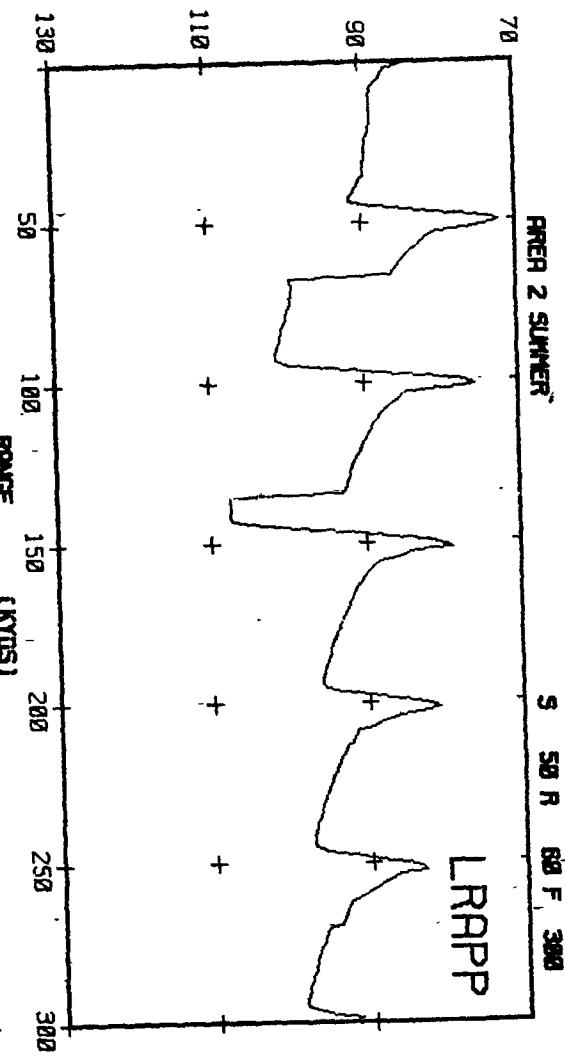
DEPTH IN METERS



ARRIVAL ANGLE



DB LOSS

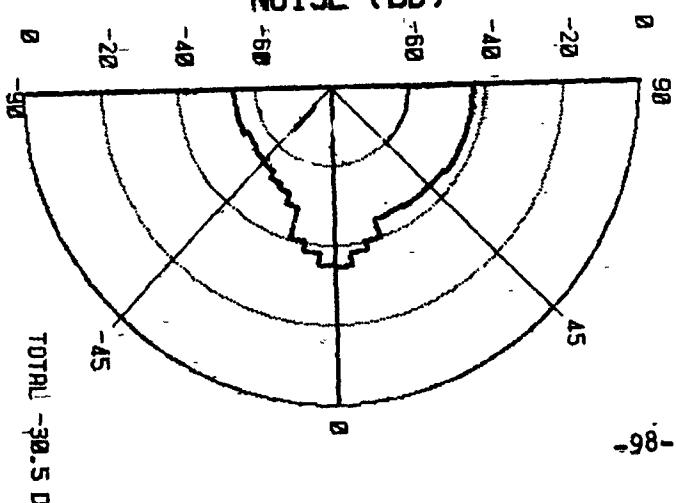


ARR 2 SUMMER

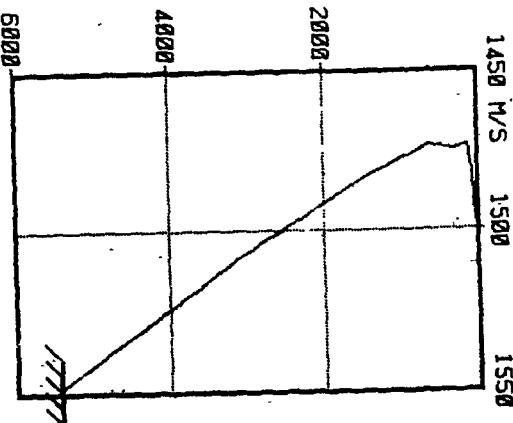
S 58 R 69 F 388

LRAPP

NOISE (DB)



DEPTH IN METERS



TOTAL -30.5 DB

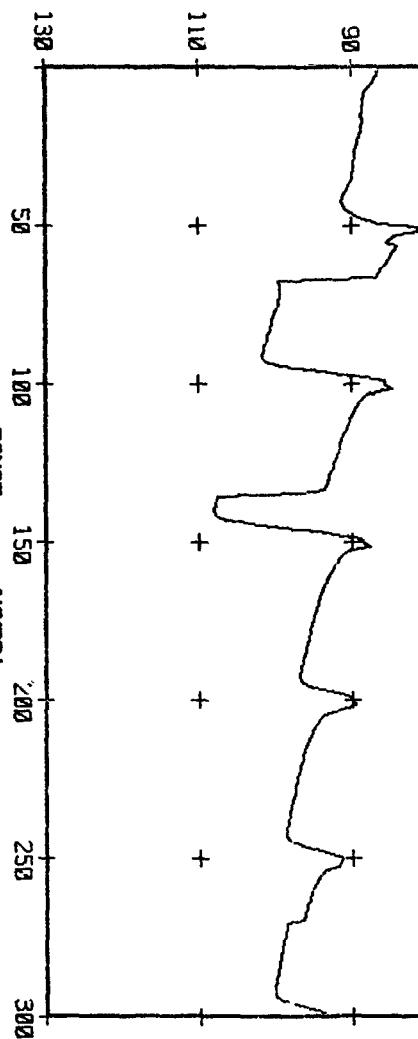
70

RER 2 SUMMER

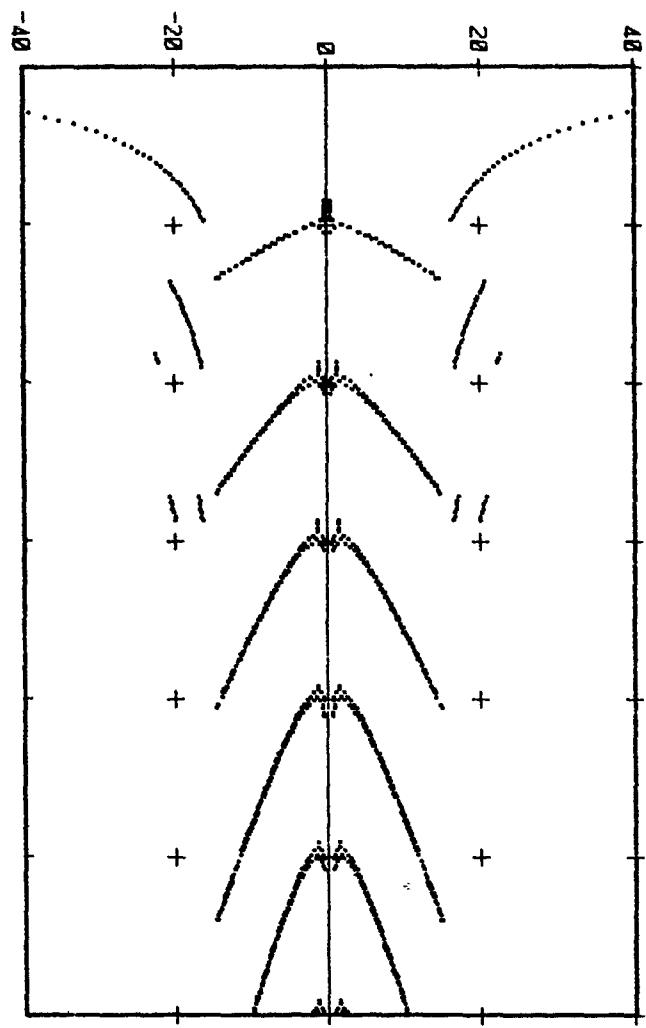
S 266 R 68 F 360

1450 M/S 1500 1550

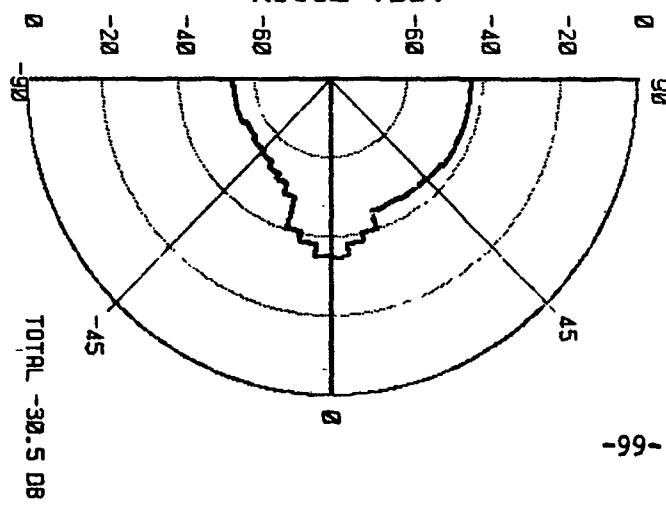
DB LOSS



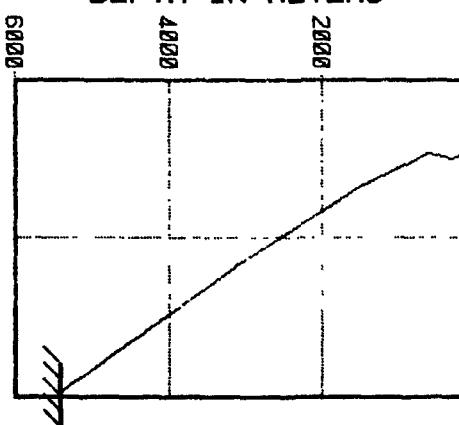
ARRIVAL ANGLE



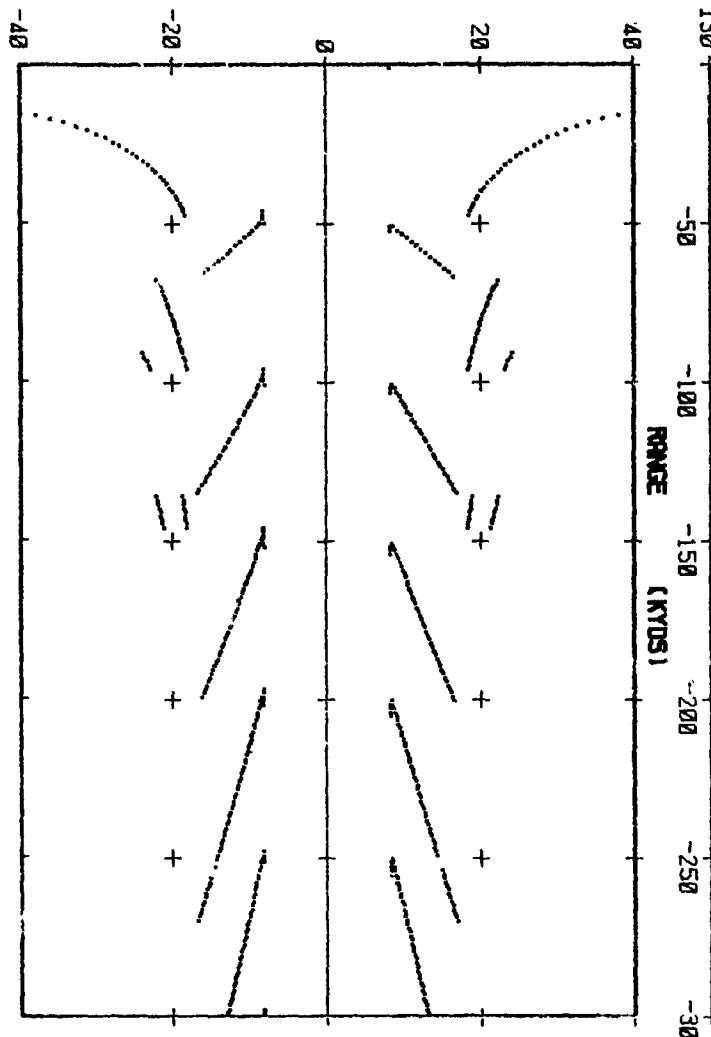
NOISE (DB)



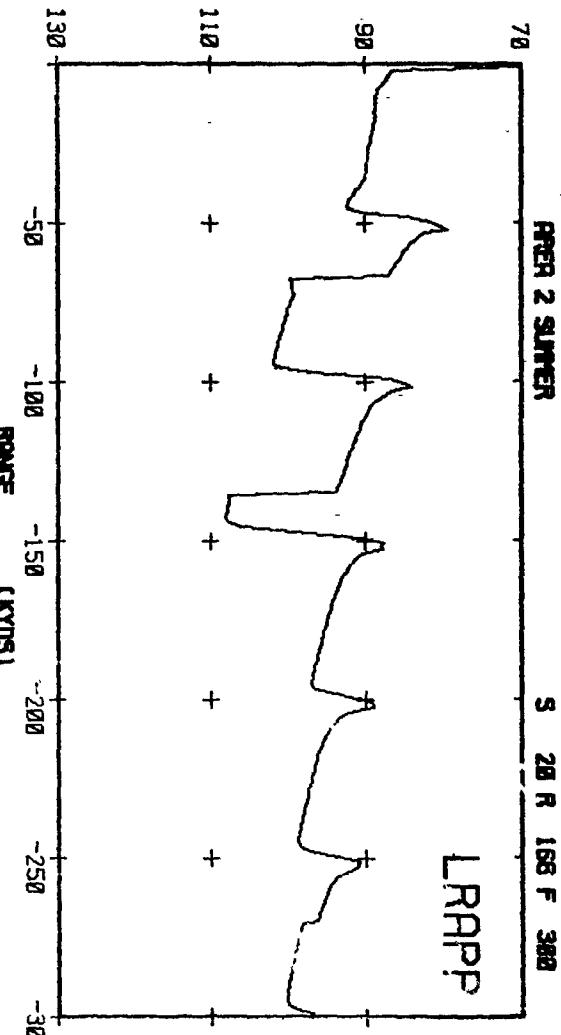
DEPTH IN METERS



ARRIVAL ANGLE



DB LOSS



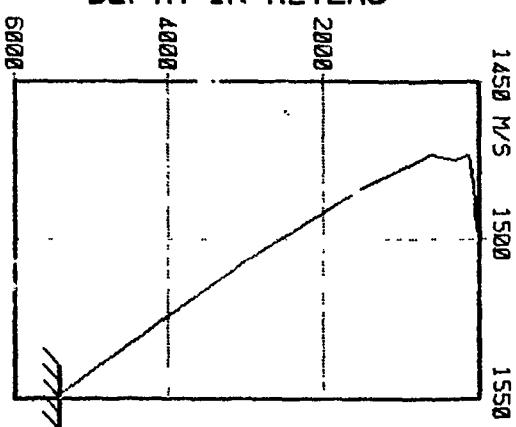
ARR 2 SUMMER

S 20 R 168 F 368

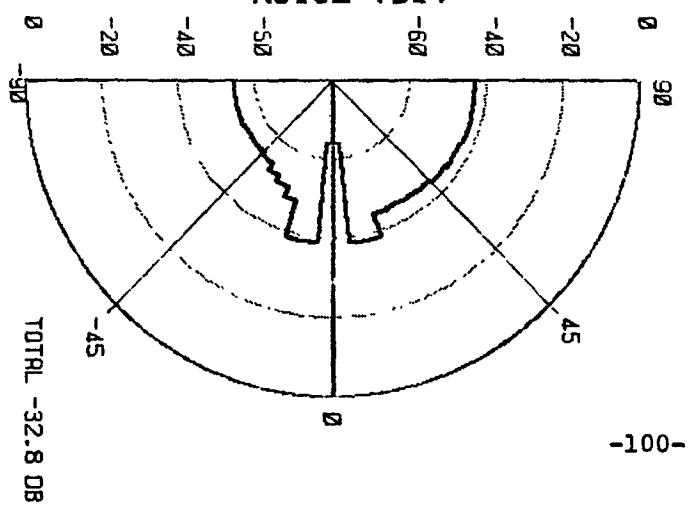
L RAPP

1450 M/S 1500 1550

DEPTH IN METERS



NOISE (DB)



TOTAL -32.8 DB

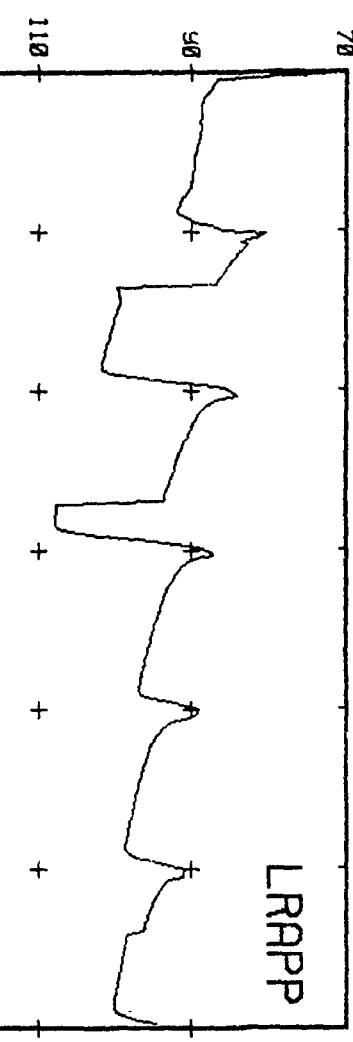
-100-

AREA 2 SUMMER

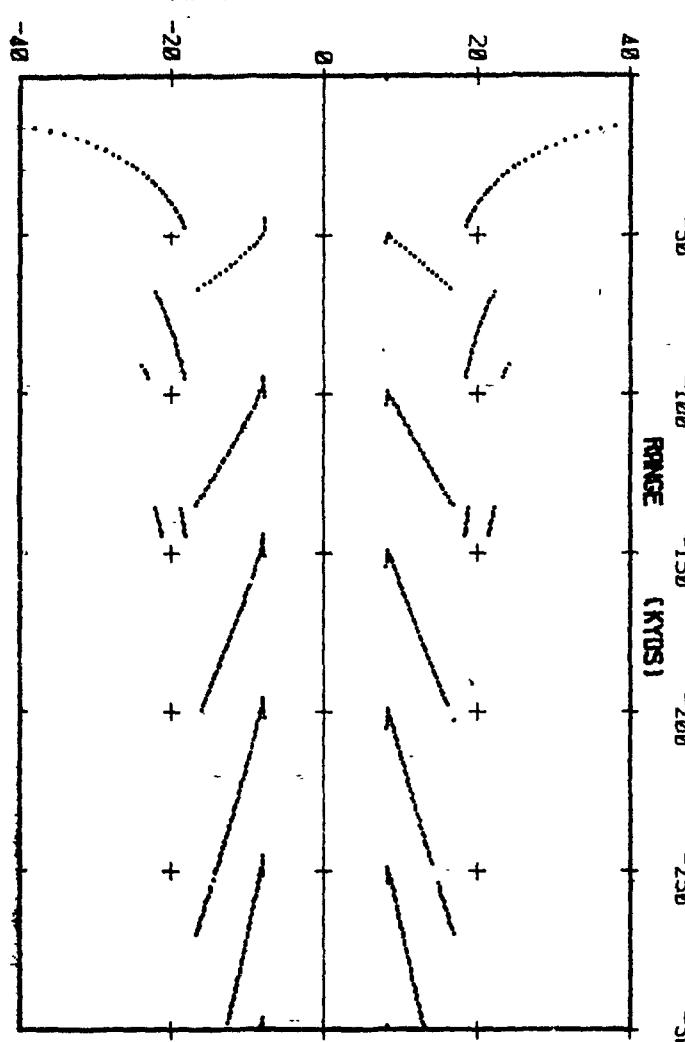
S 50 R 166 F 300

1450 M/S 1500 1550

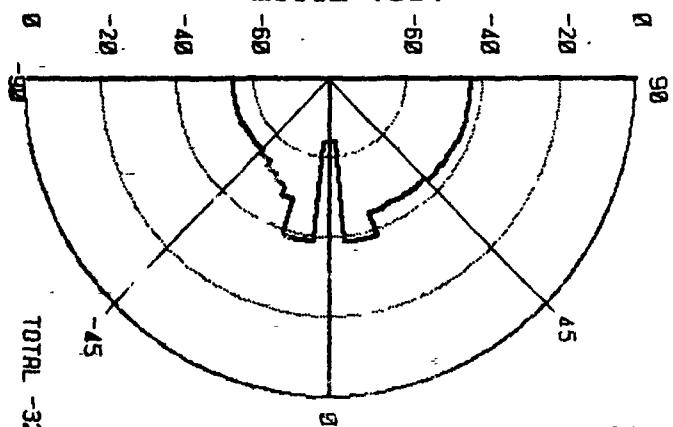
DB LOSS



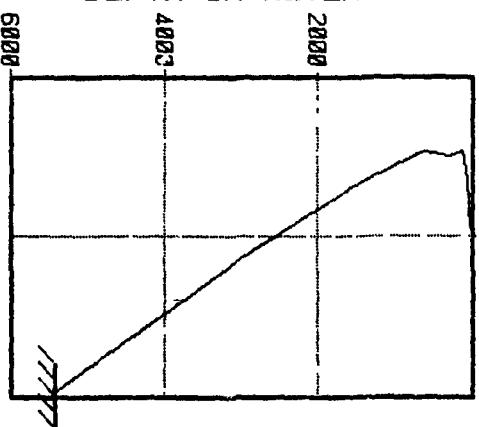
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



TOTAL -32.8 DB

70

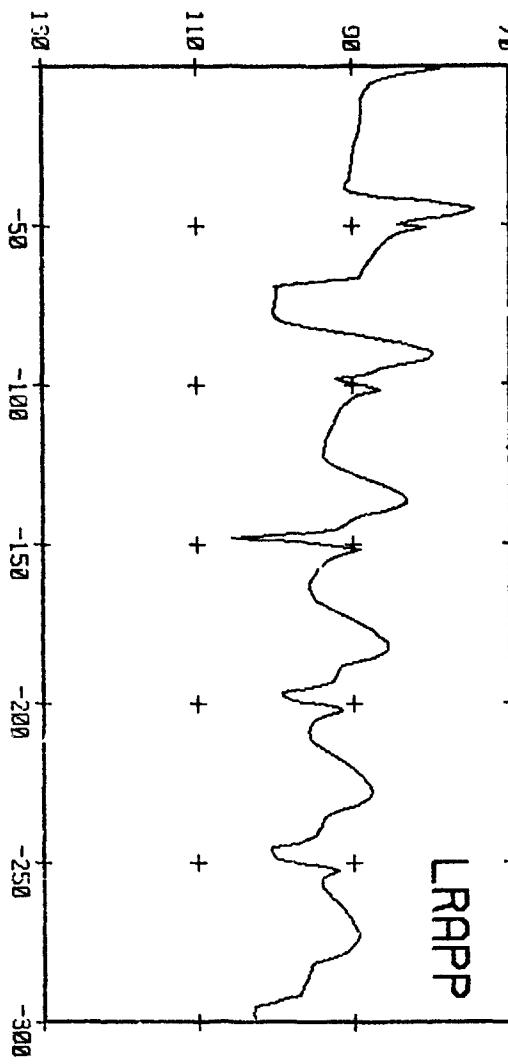
AREA 2 SUMMER

S 266 R 166 F 300

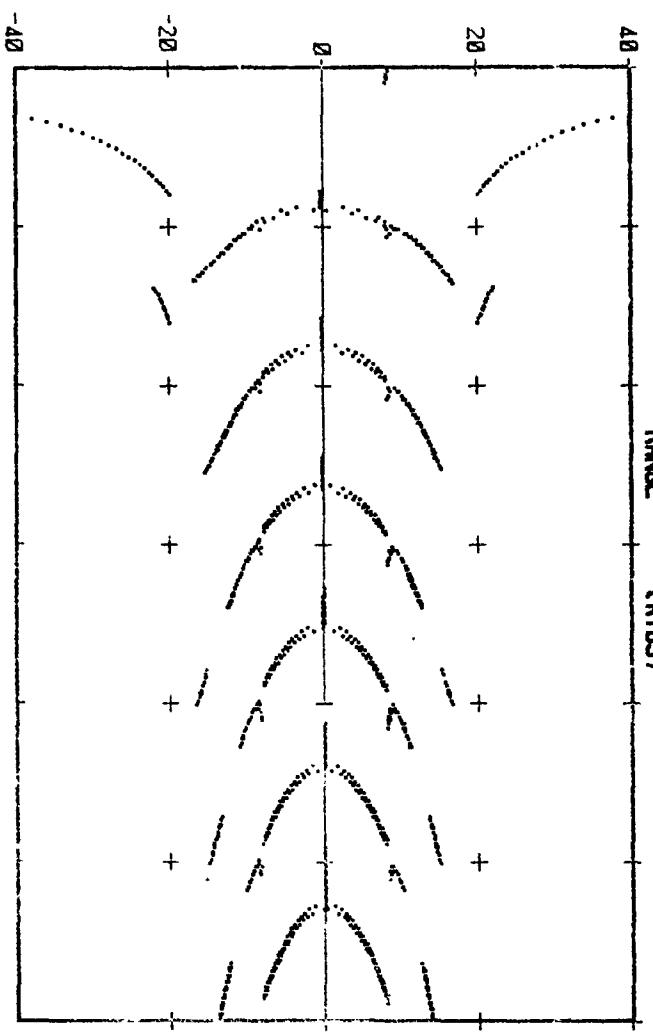
1450 M/S 1520 1550

LRAPP

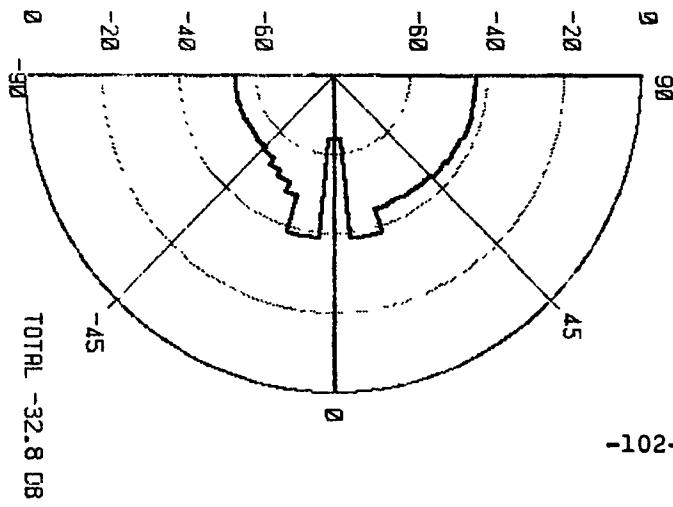
DB LOSS



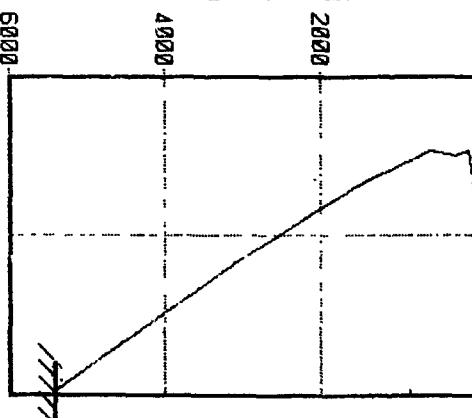
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



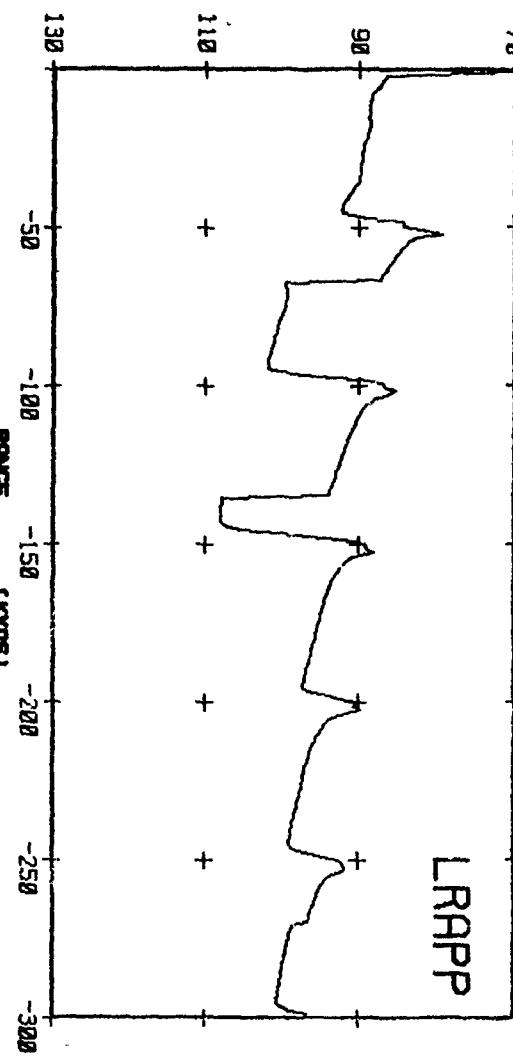
AREA 2 SUMMER

S 28 R 360 F 300

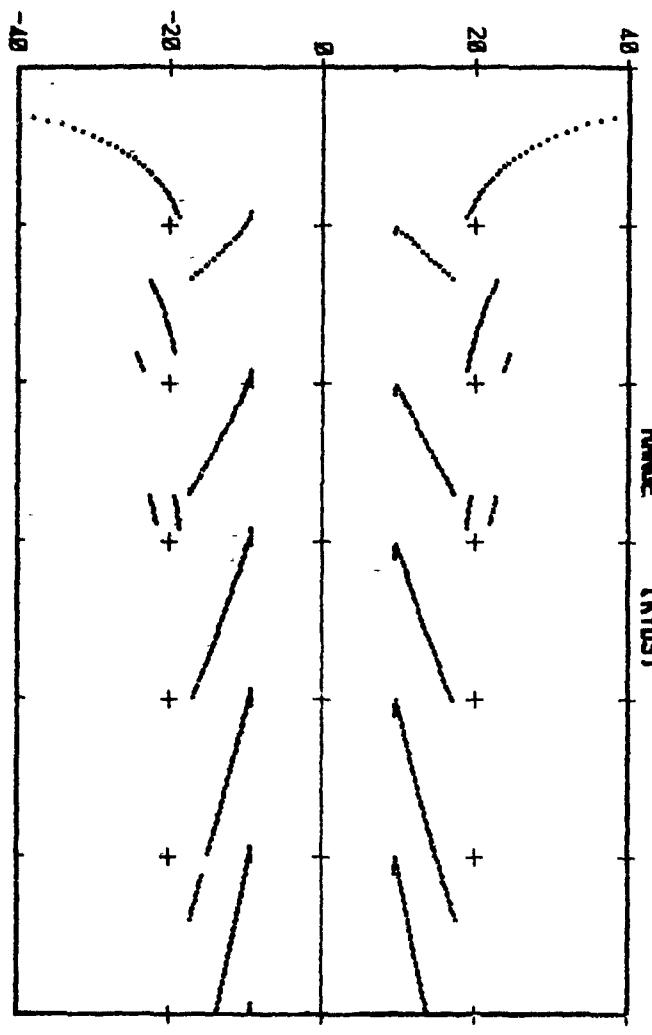
1450 M/S 1500 1550

LRAPP

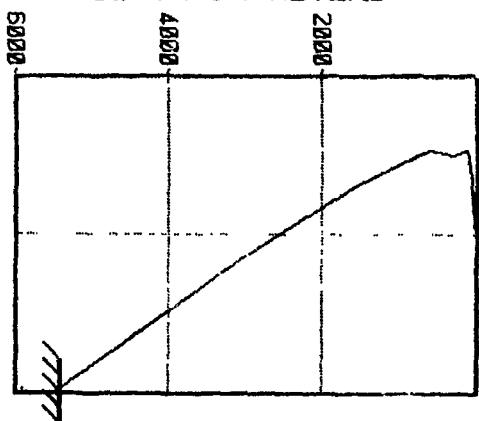
DB LOSS



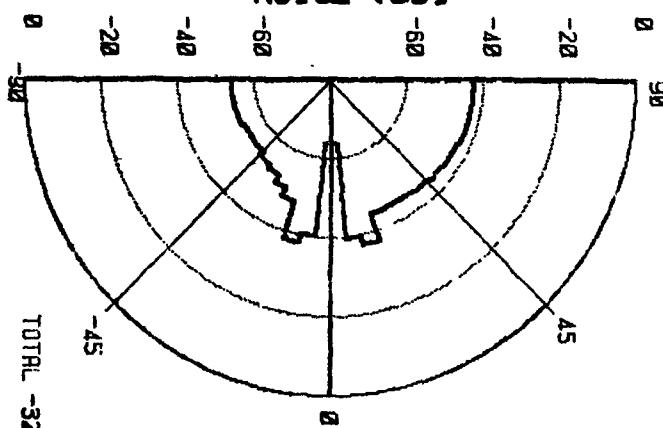
ARRIVAL ANGLE



DEPTH IN METERS

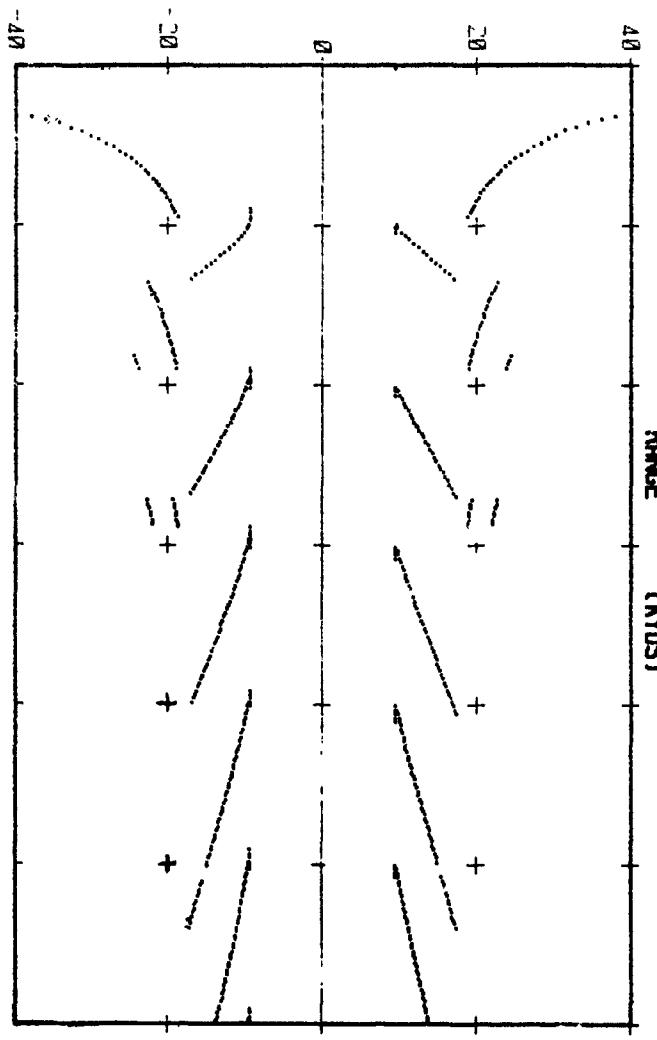


NOISE (DB)

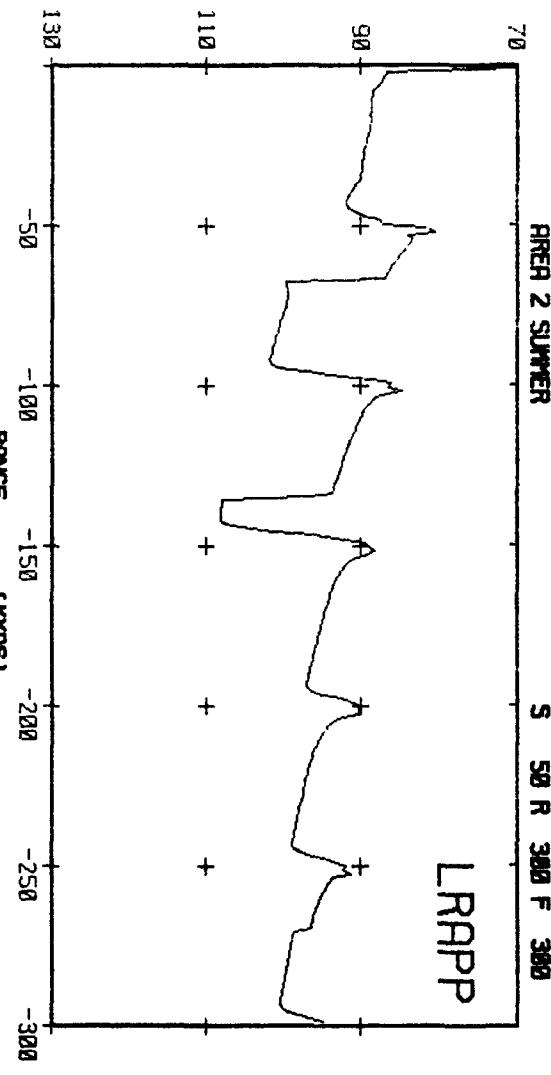


TOTAL -32.8 DB

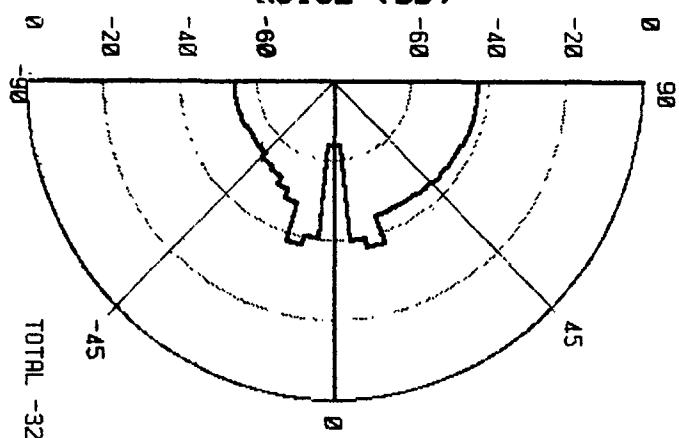
ARRIVAL ANGLE



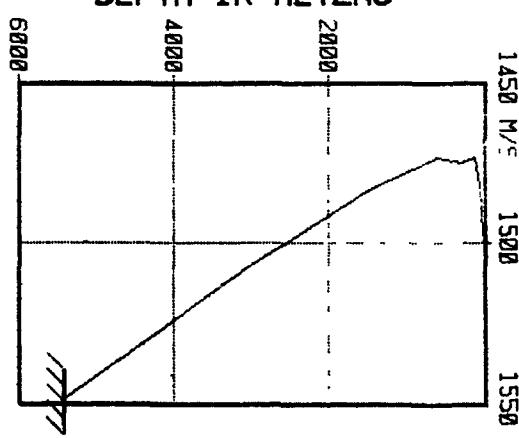
DB LOSS



NOISE (DB)



DEPTH IN METERS



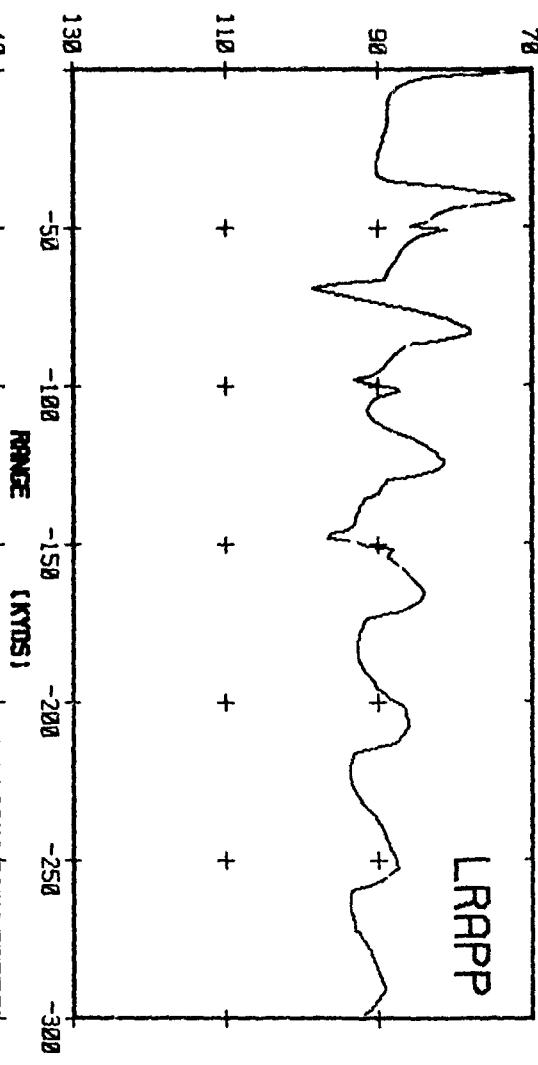
RER 2 SUMMER

S 266 R 308 F 300

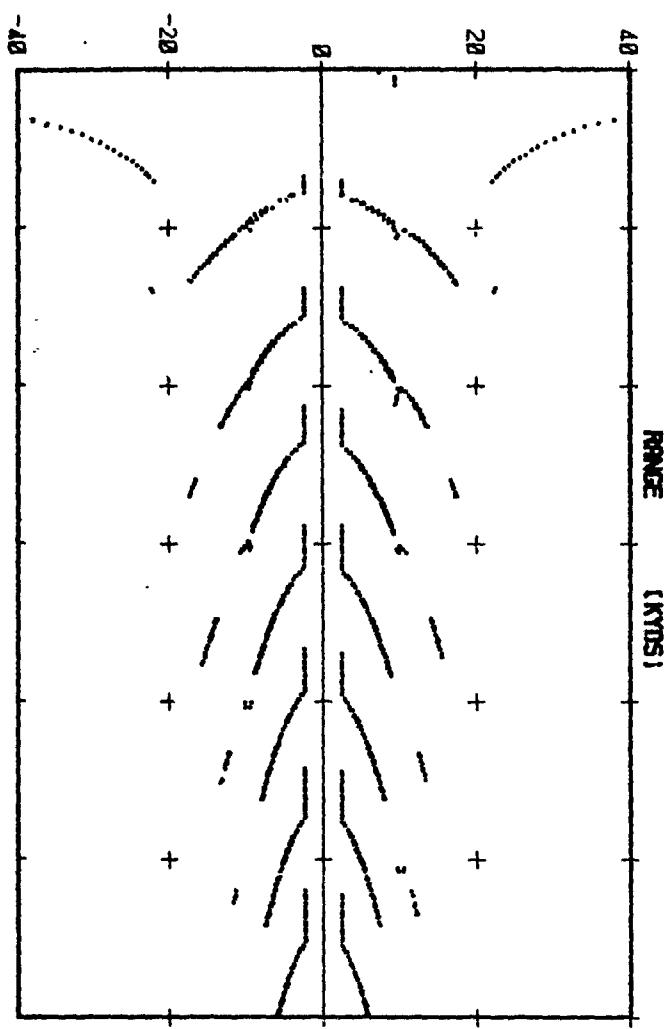
1450 M/S 1500 1550

LRAPP

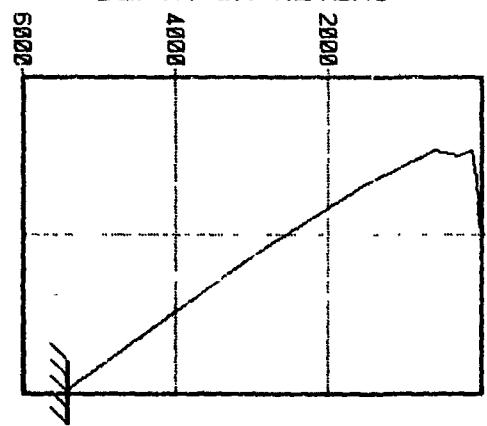
DB LOSS



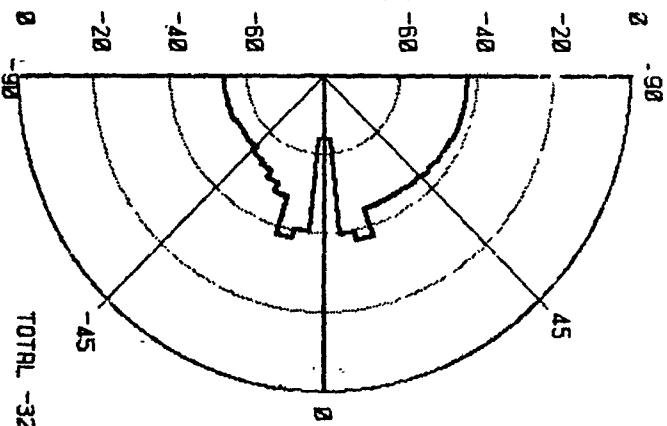
ARRIVAL ANGLE



DEPTH IN METERS

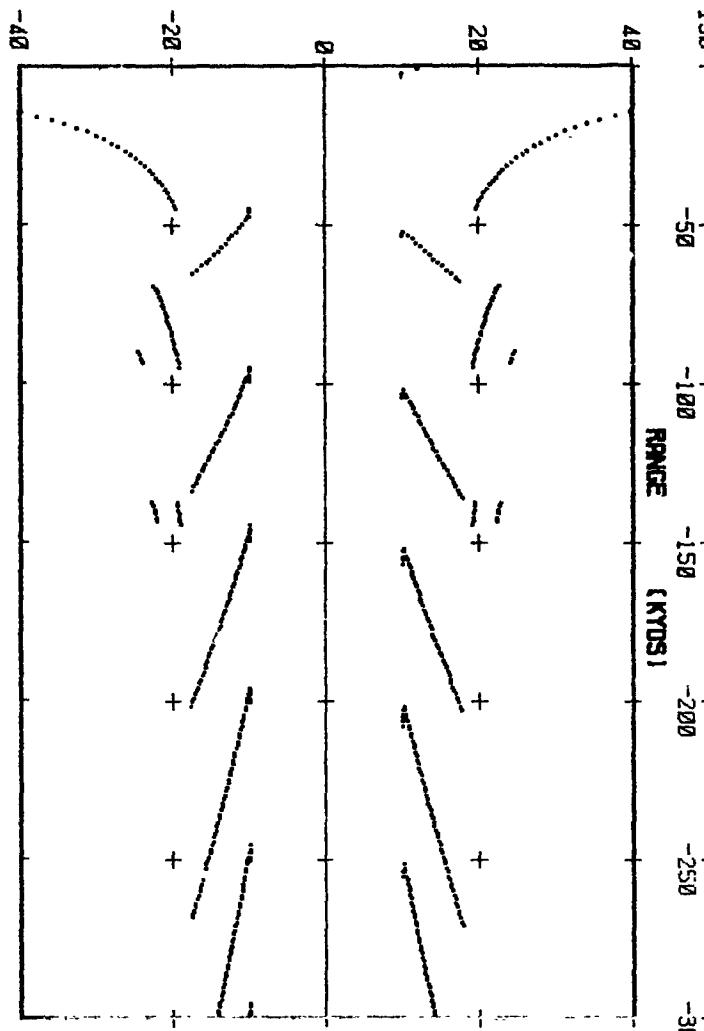


NOISE (DB)

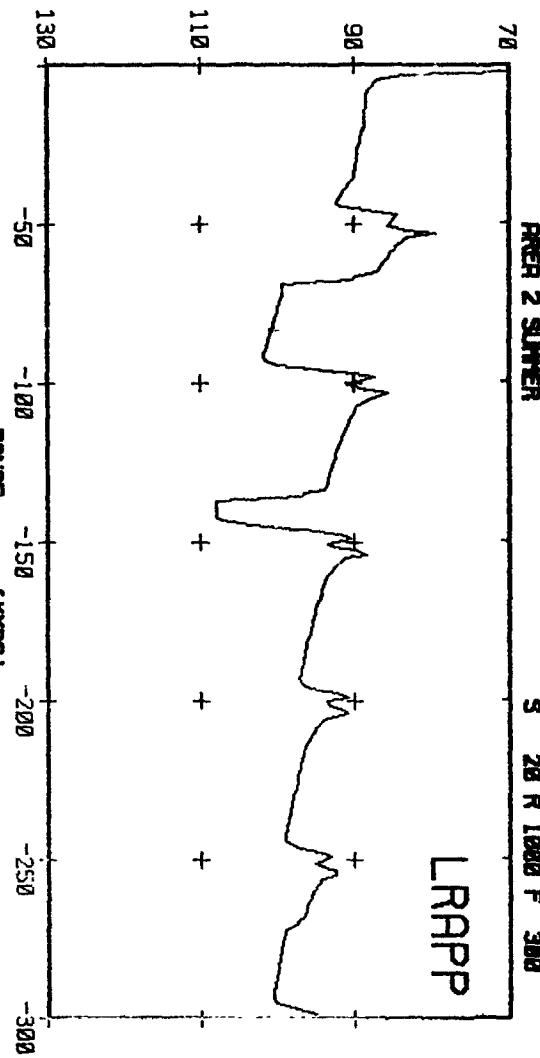


TOTAL -32.8 DB

ARRIVAL ANGLE



DB LOSS

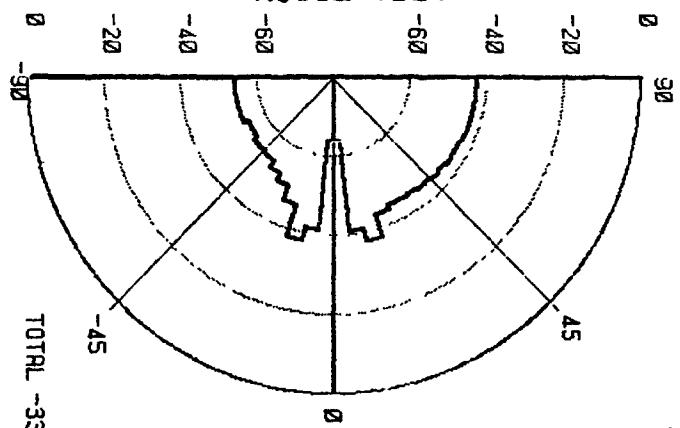


RIVER 2 SUMMER

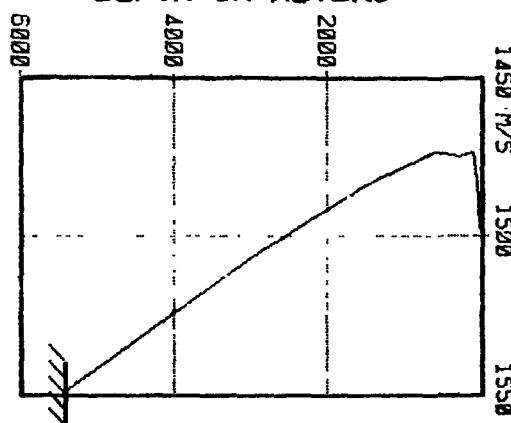
S 28 R 1800 F 300

LRAPP

NOISE (DB)



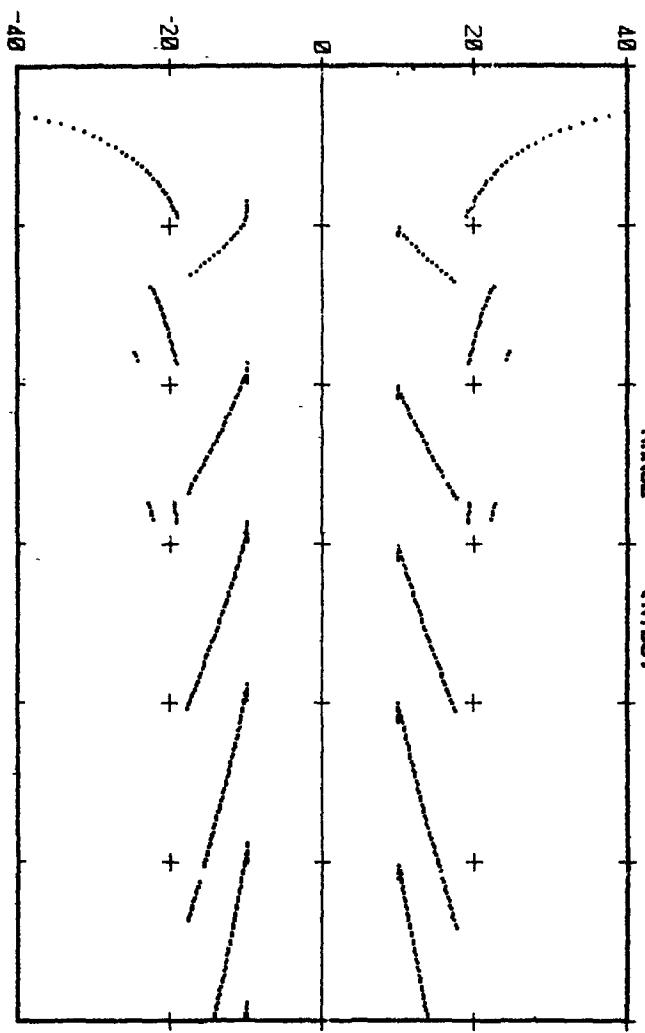
DEPTH IN METERS



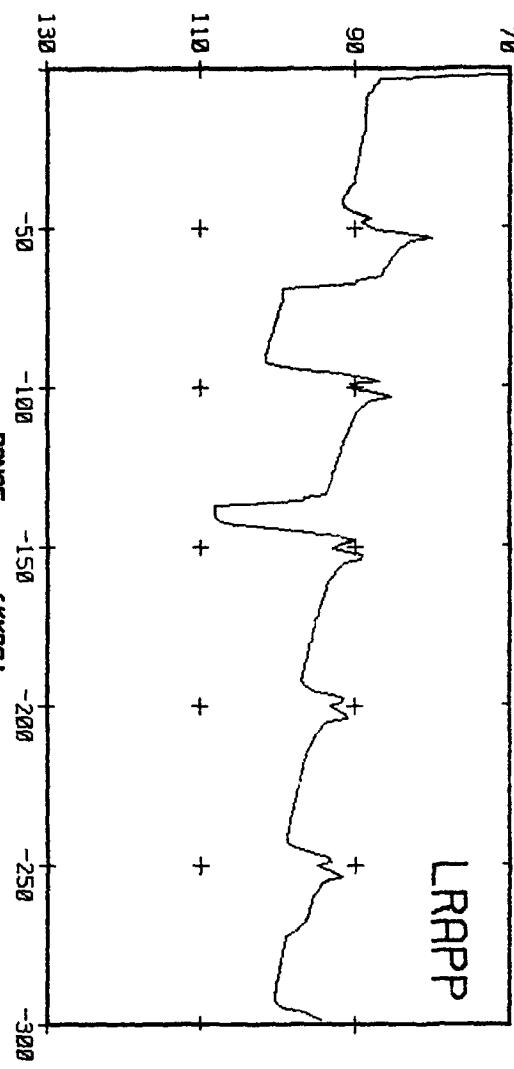
1450 M/S 1500 1550

TOTAL -33.0 DB

ARRIVAL ANGLE



DB LOSS



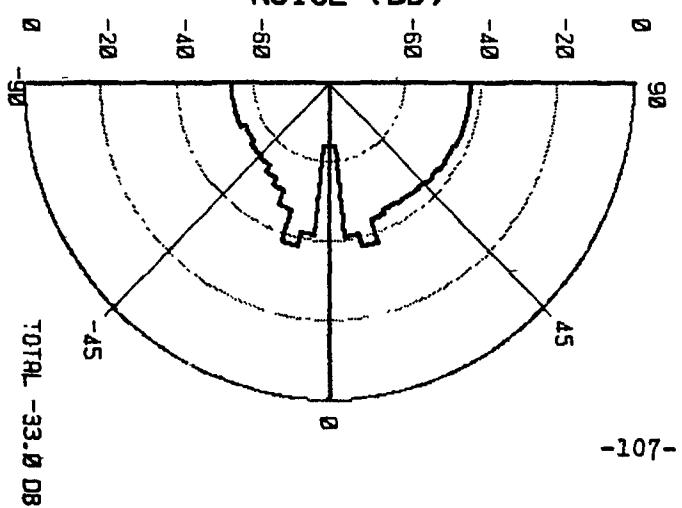
RER 2 SUMMER

S 50 R 1000 F 300

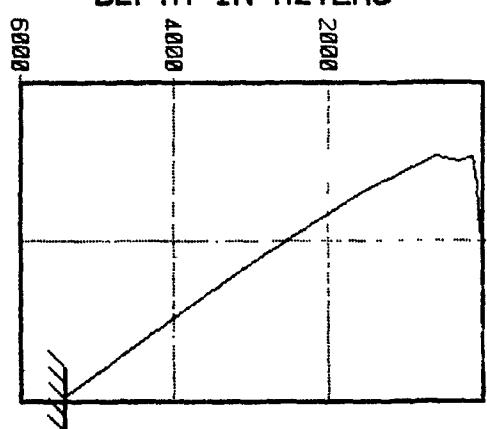
LRAPP

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NOISE (DB)

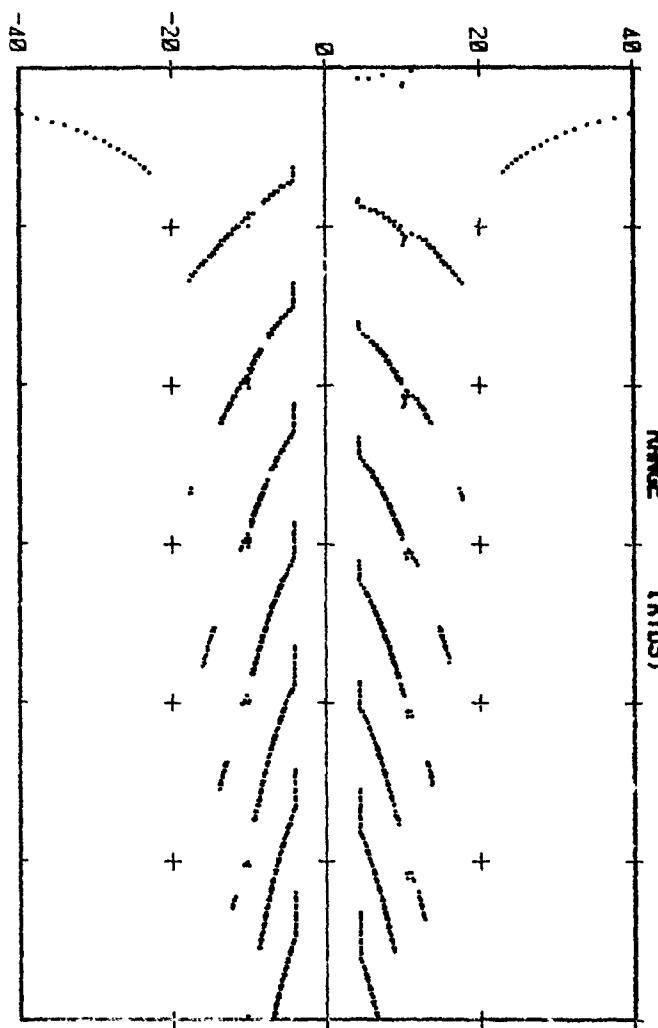


DEPTH IN METERS

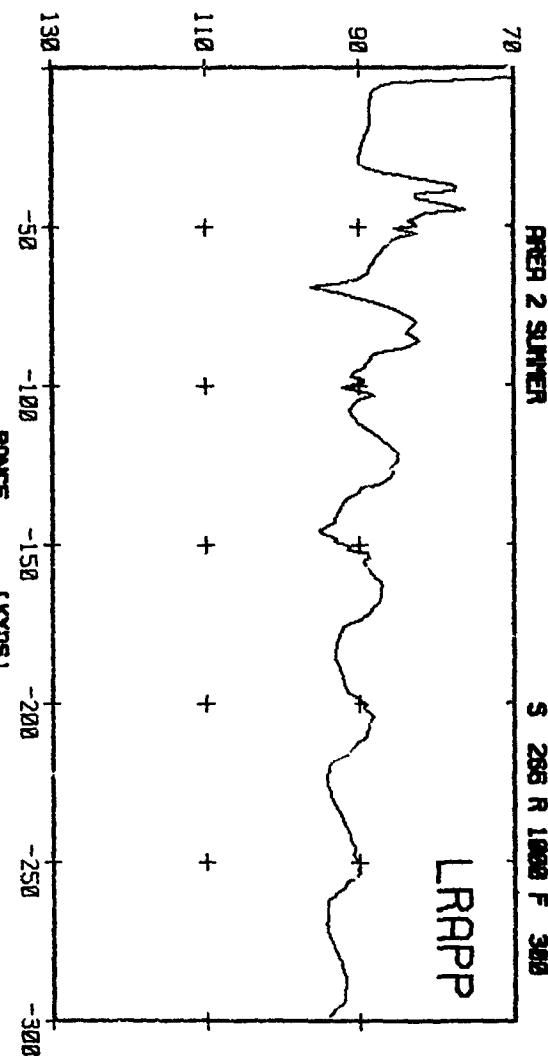


TOTAL -33.0 DB

ARRIVAL ANGLE



DB LOSS



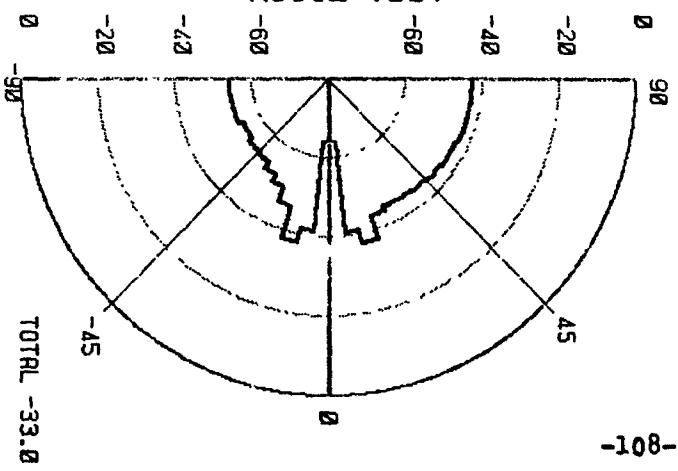
AREA 2 SUMMER

S 265 R 1888 F 388

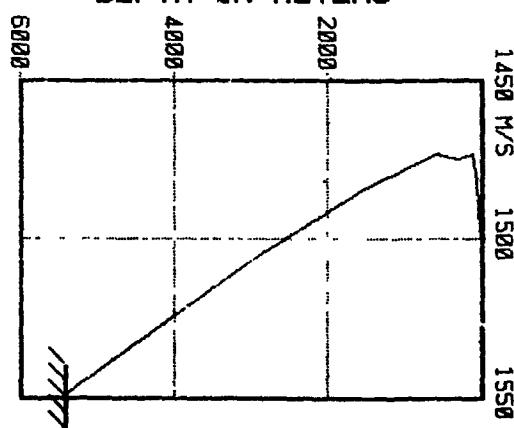
LRAFP

1450 M/S 1500 1550

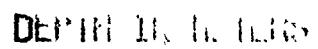
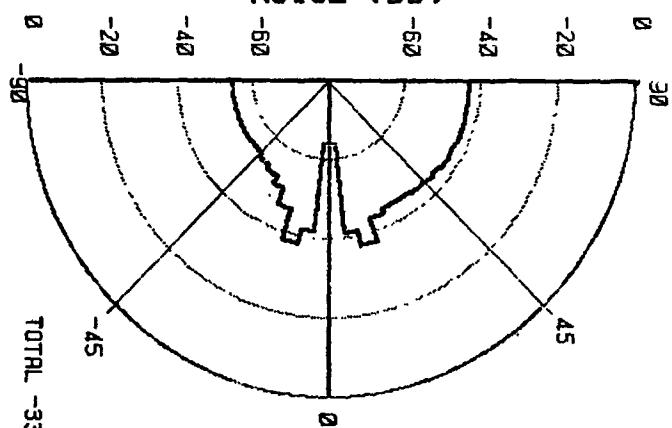
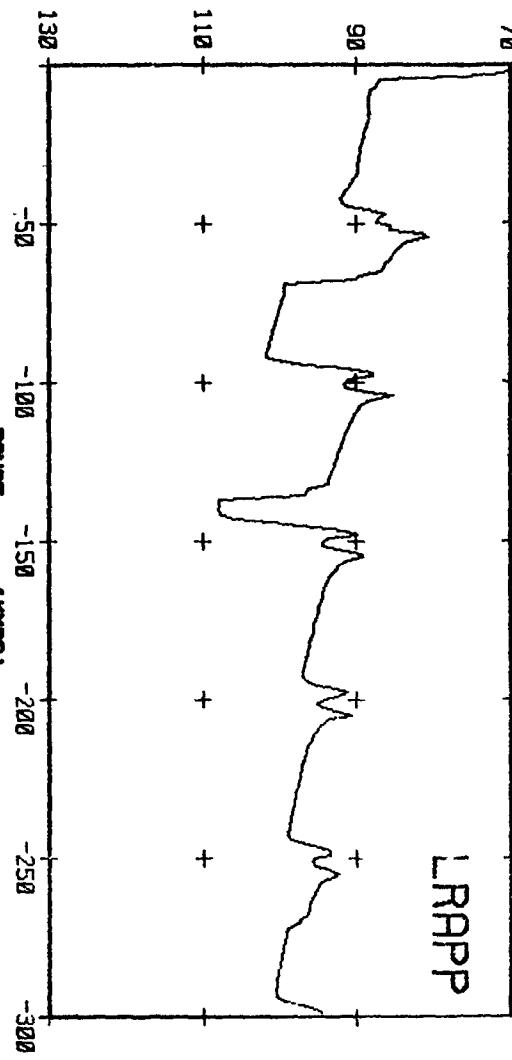
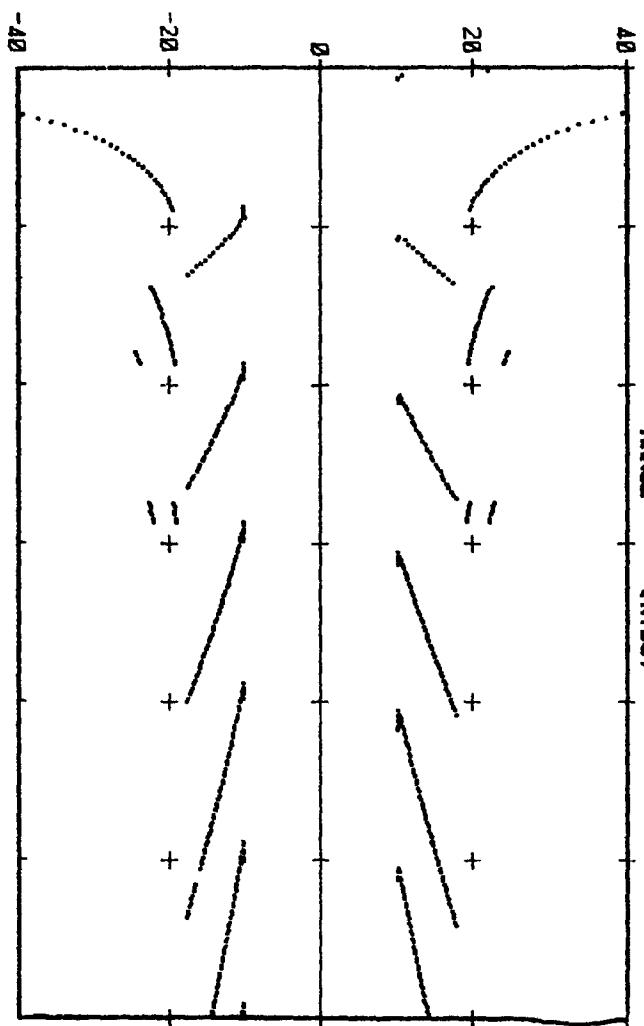
NOISE (DB)



DEPTH IN METERS



TOTAL -33.0 DB



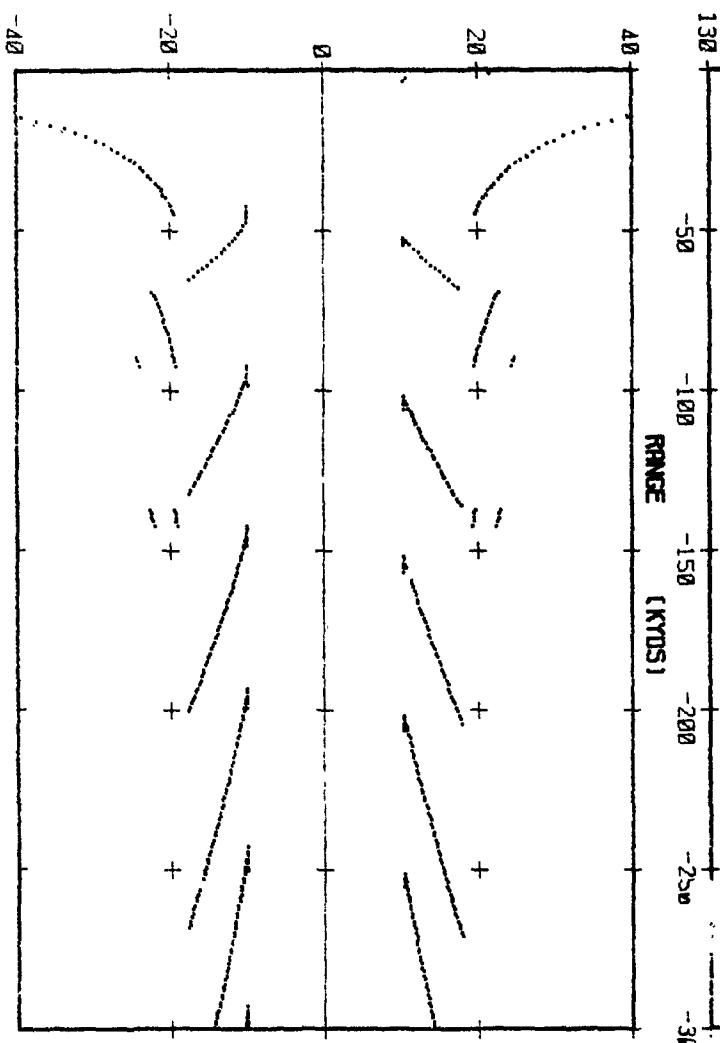
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PETER SUMNER

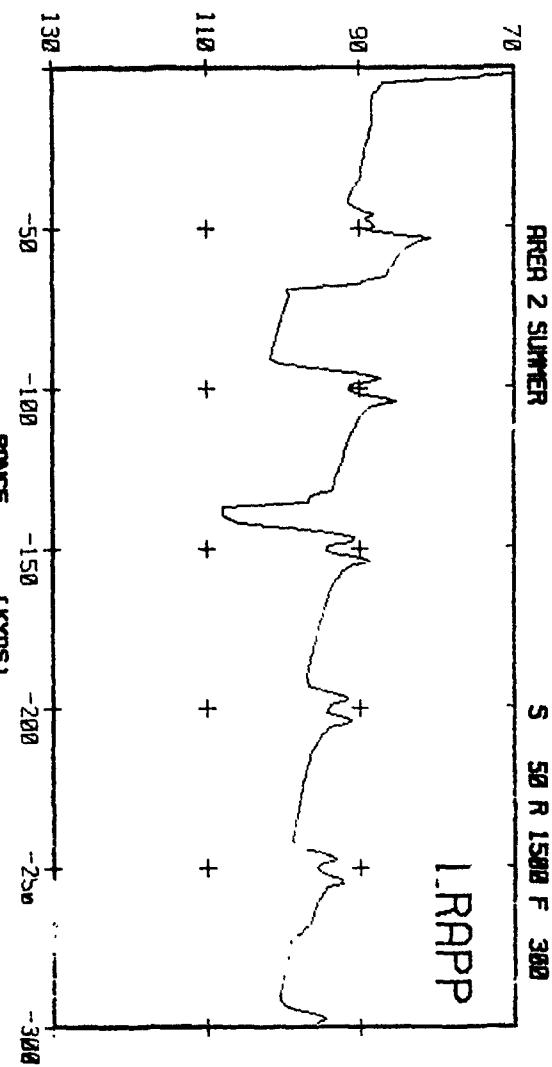
5 28 R 1501 F 302

1458 1520 1550

ARRIVAL ANGLE



DB LOSS

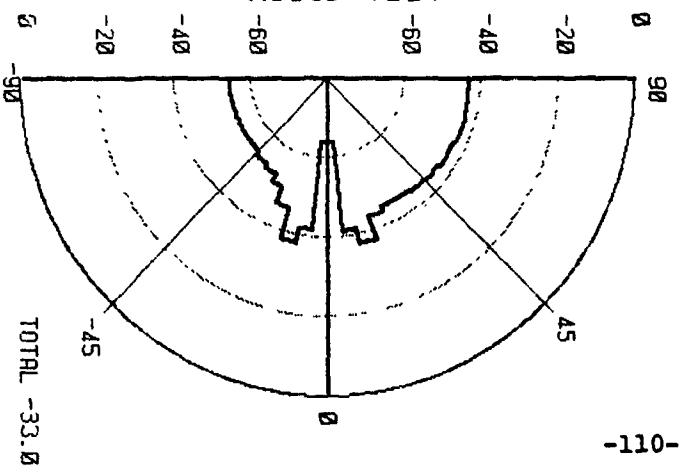


L.RAPP

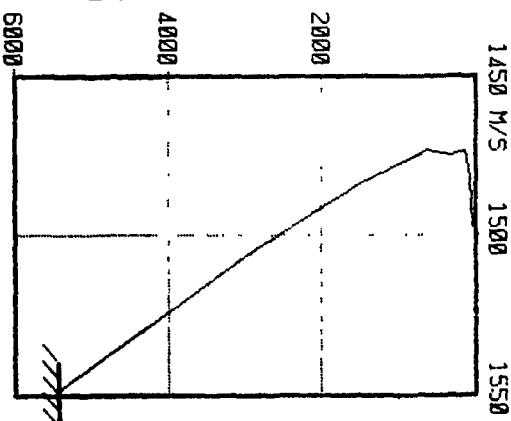
AREA 2 SUMMER

S 50 R 1500 F 300

NOISE (DB)



DEPTH IN METERS



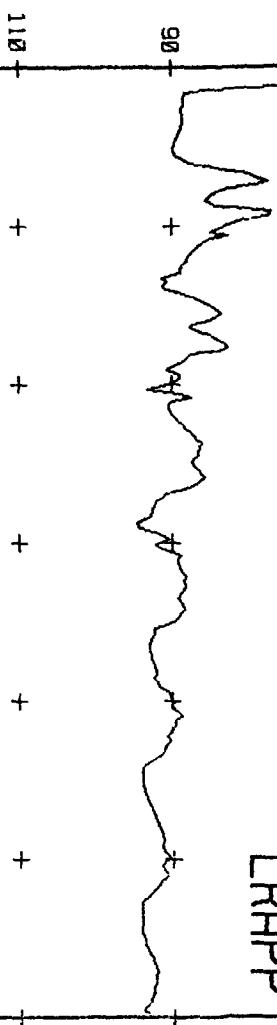
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AREA 2 SUMMER

S 268 R 1500 F 388

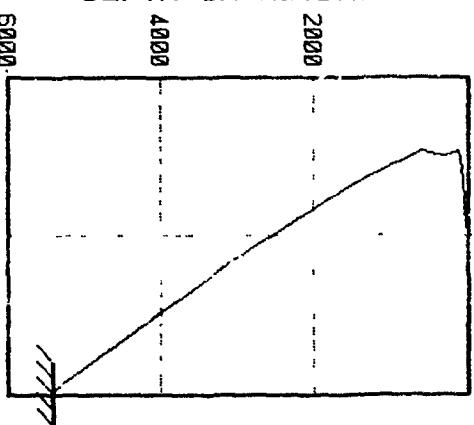
1450 M/S 1500 1550

DB LOSS

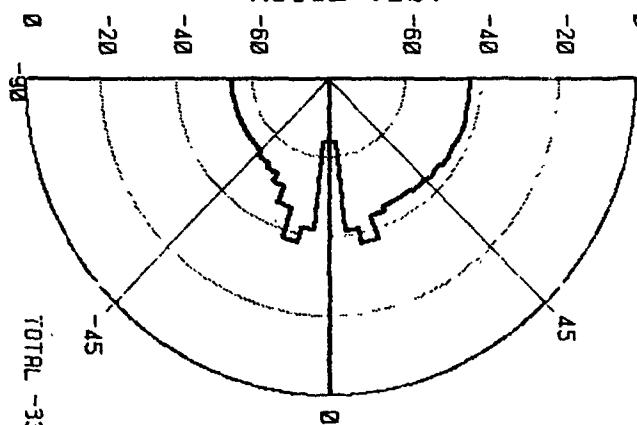


LRAPP

DEPTH IN METERS

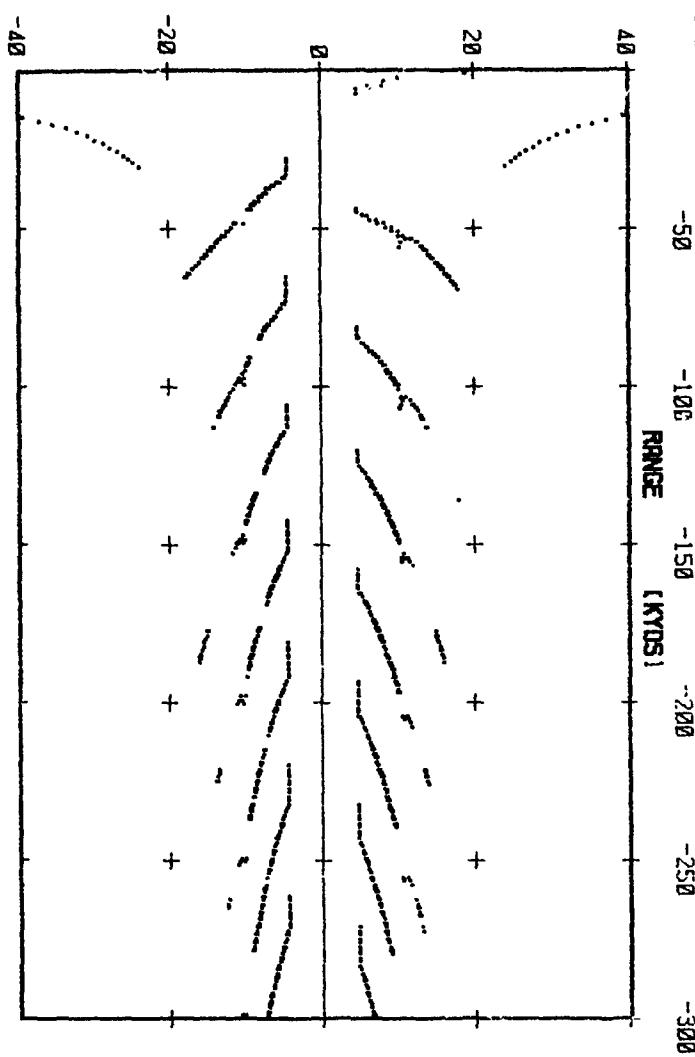


NOISE (DB)

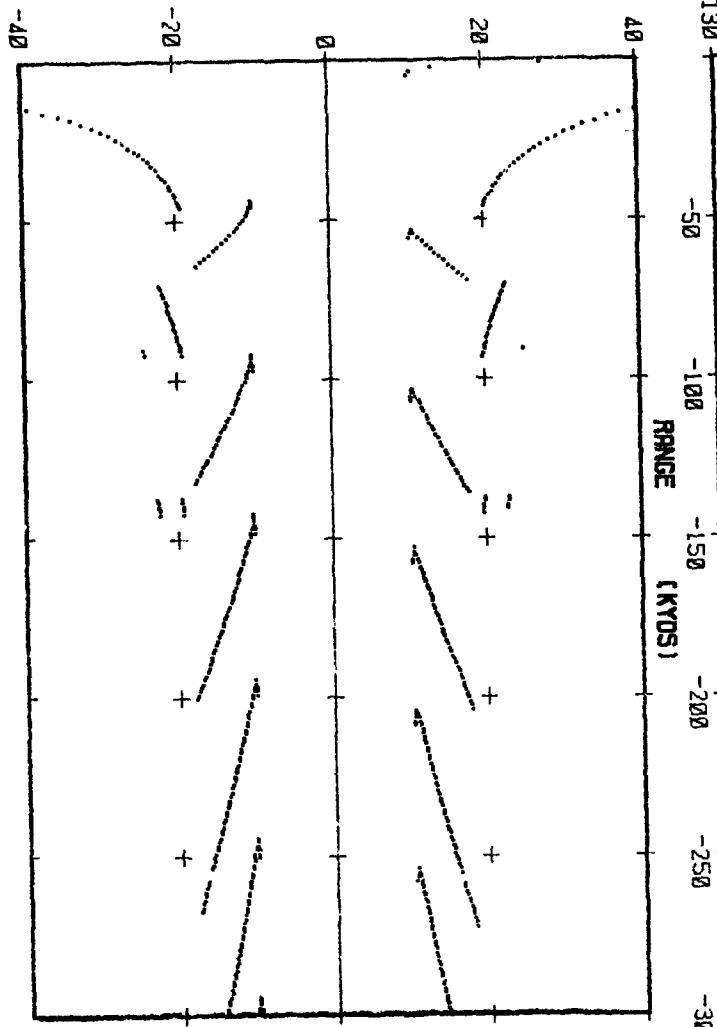


-111-

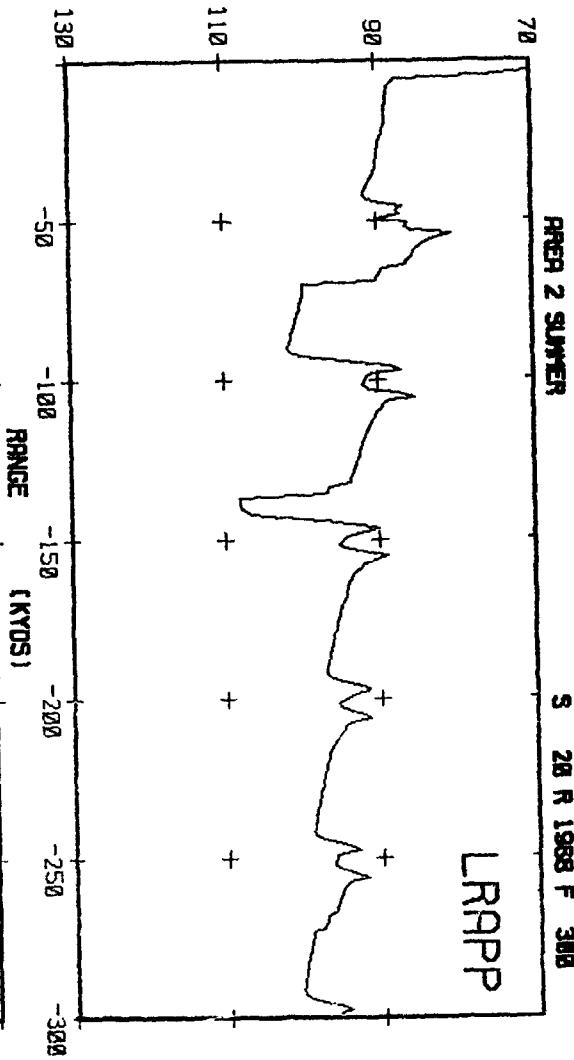
ARRIVAL ANGLE



ARRIVAL ANGLE



DB LOSS



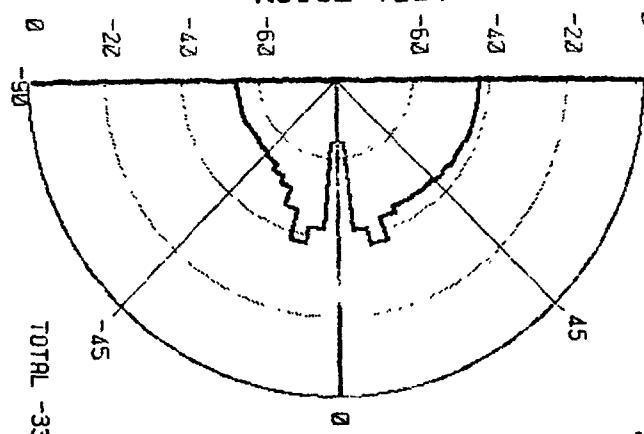
L RAPP

AREA 2 SUMMER

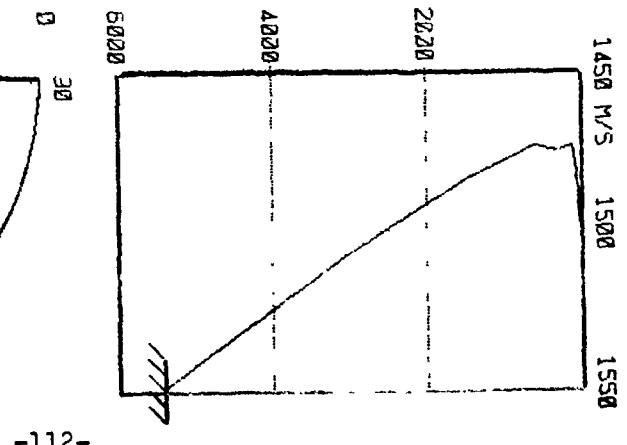
S 28 R 1988 F 300

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



TOTAL -33.1 DB

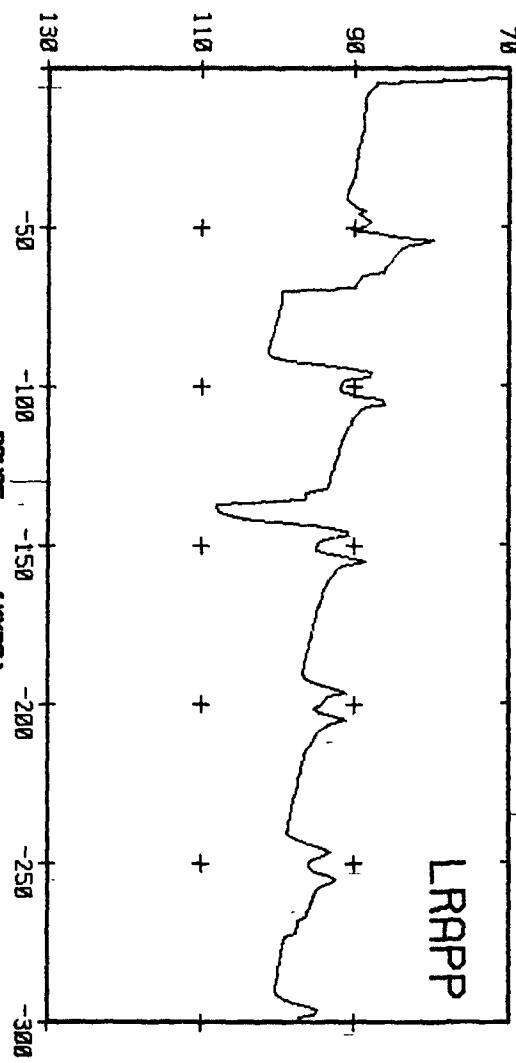
78

RIVER 2 SUMMER

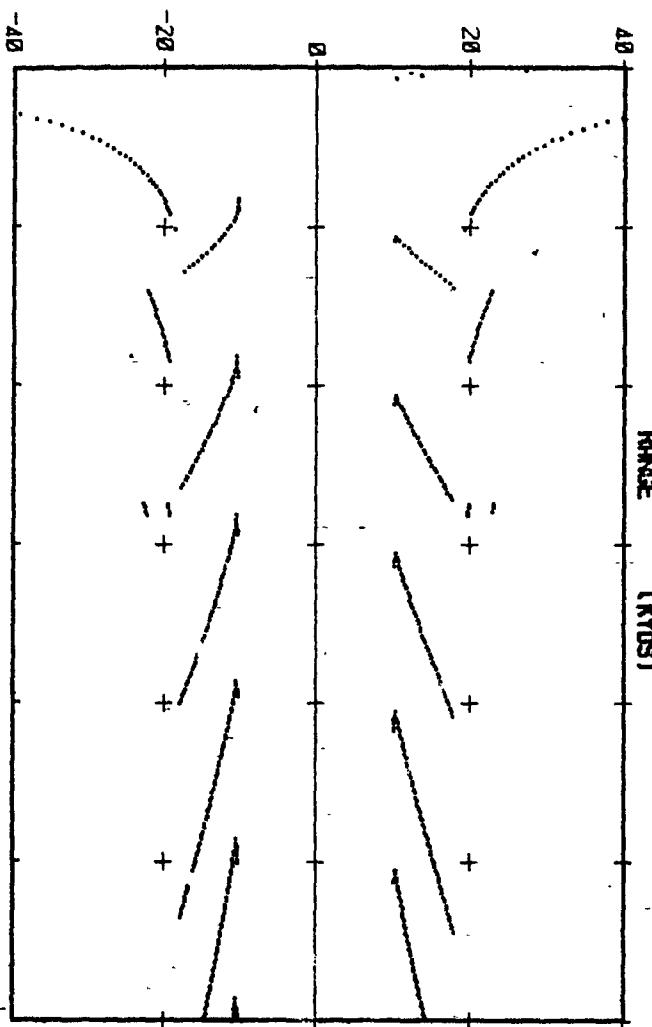
S 53 R 1968 F 350

1450 M/S 1500 1550

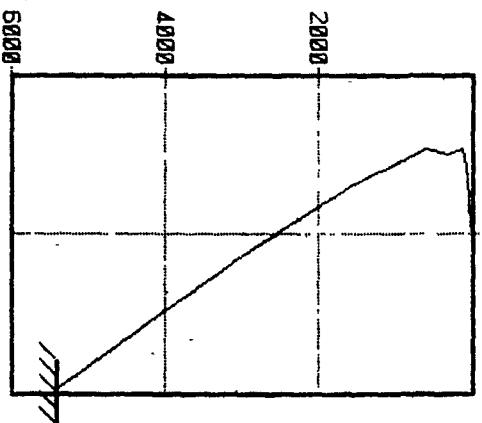
DB LOSS



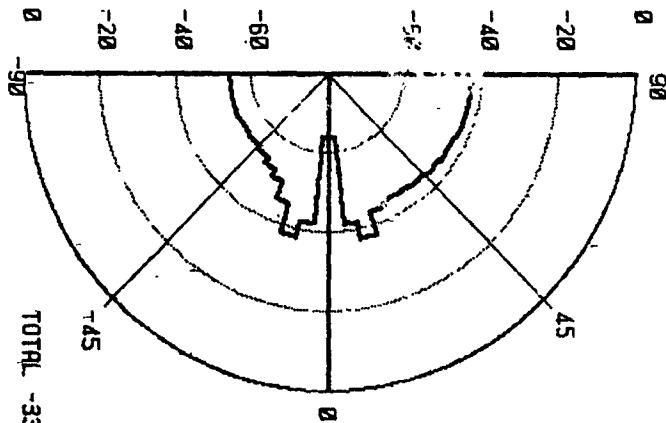
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)

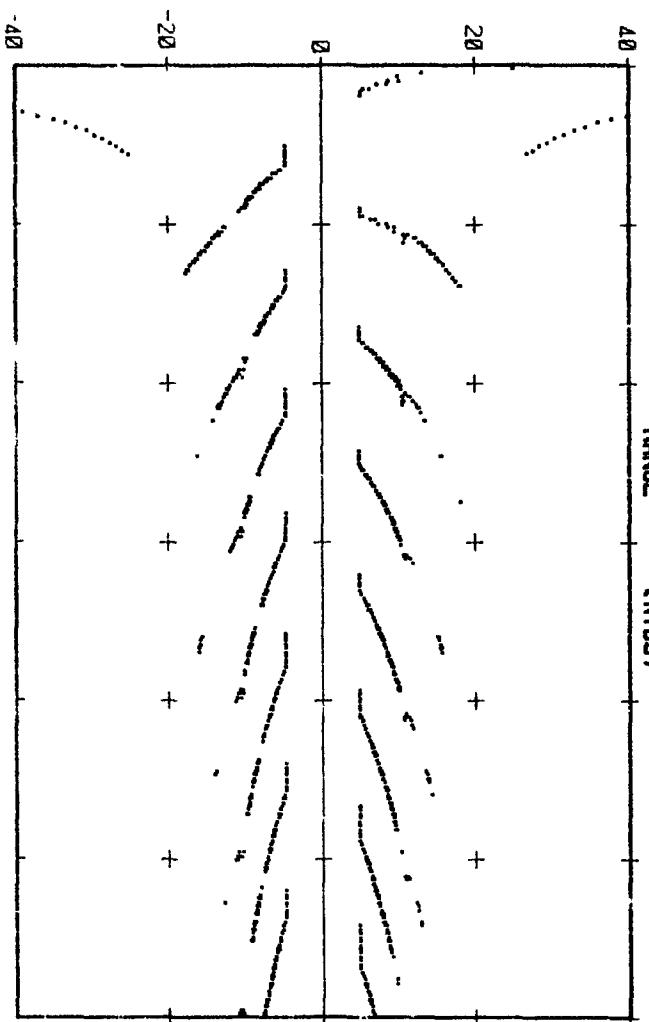


TOTAL -33.1 DB

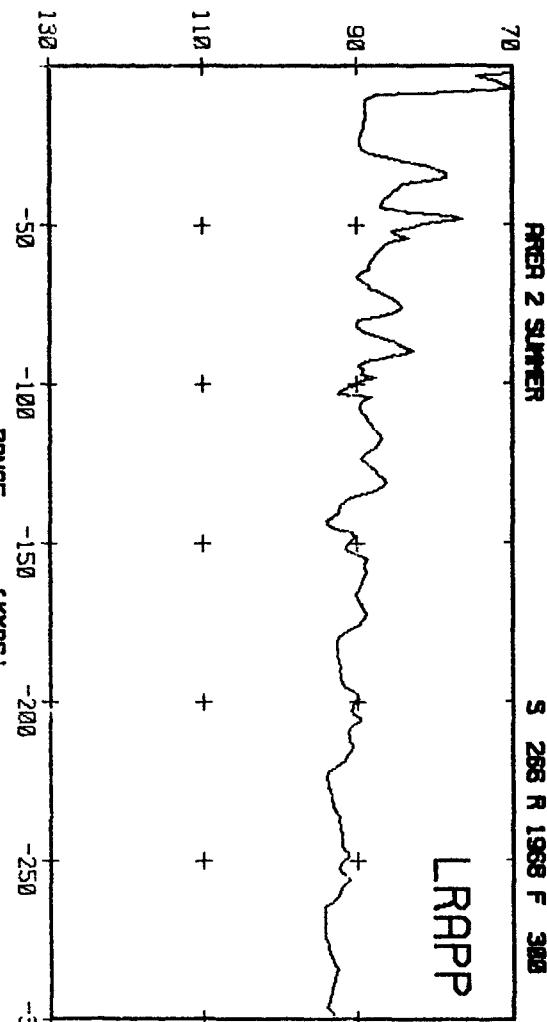
-113-

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permit fully legible reproduction

ARRIVAL ANGLE



DB LOSS

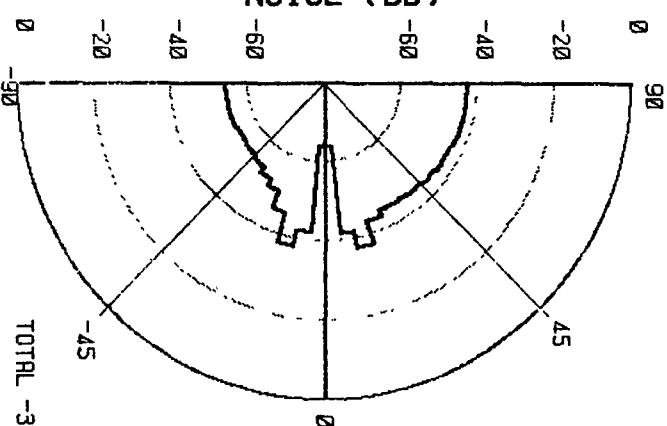


L RAPP

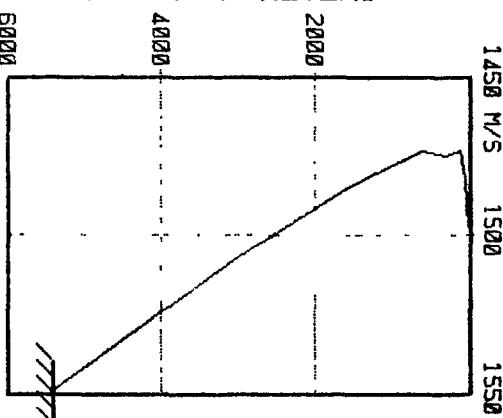
S 265 R 1988 F 388

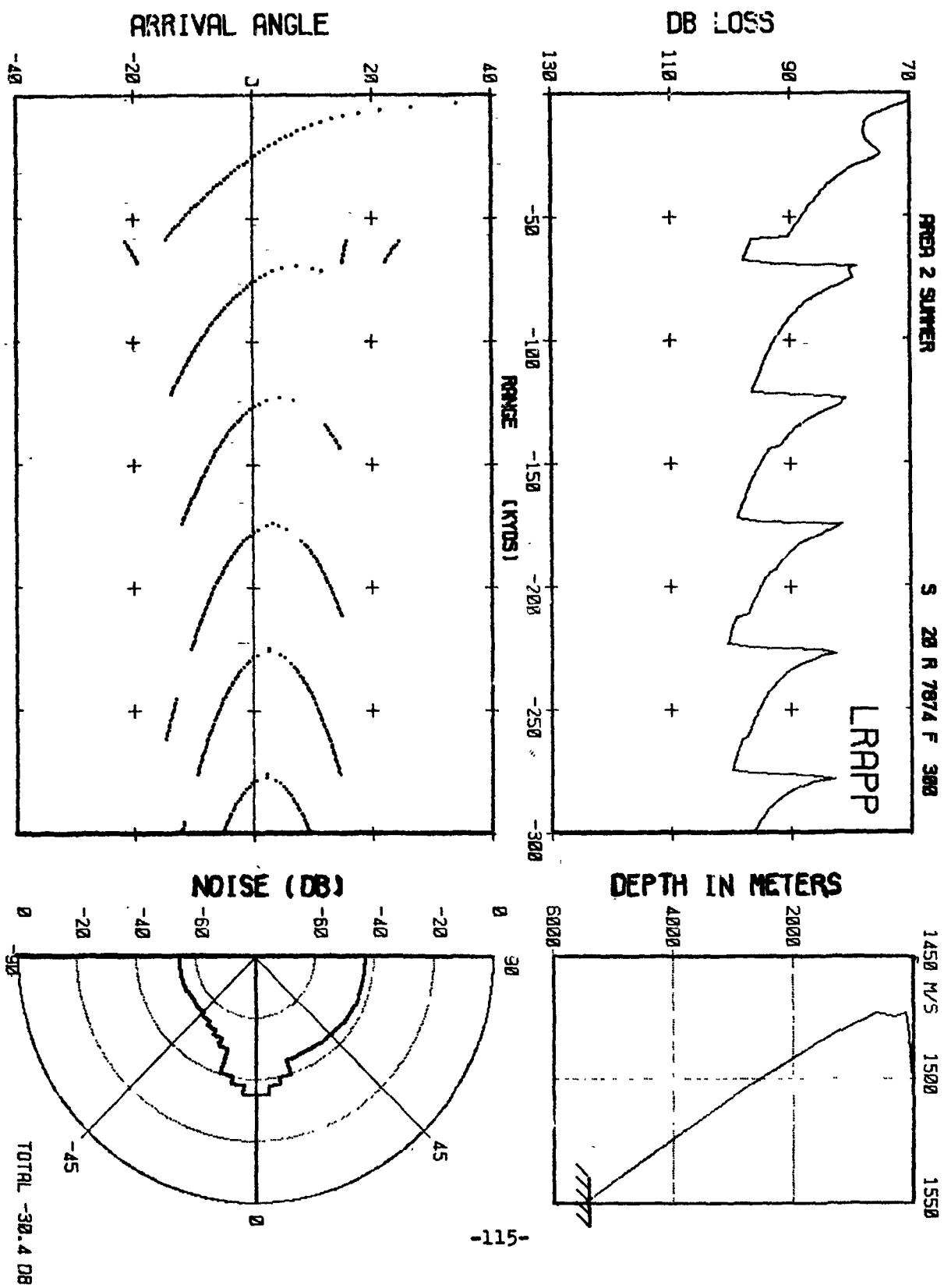
1450 M/S 1500 1550

NOISE (DB)

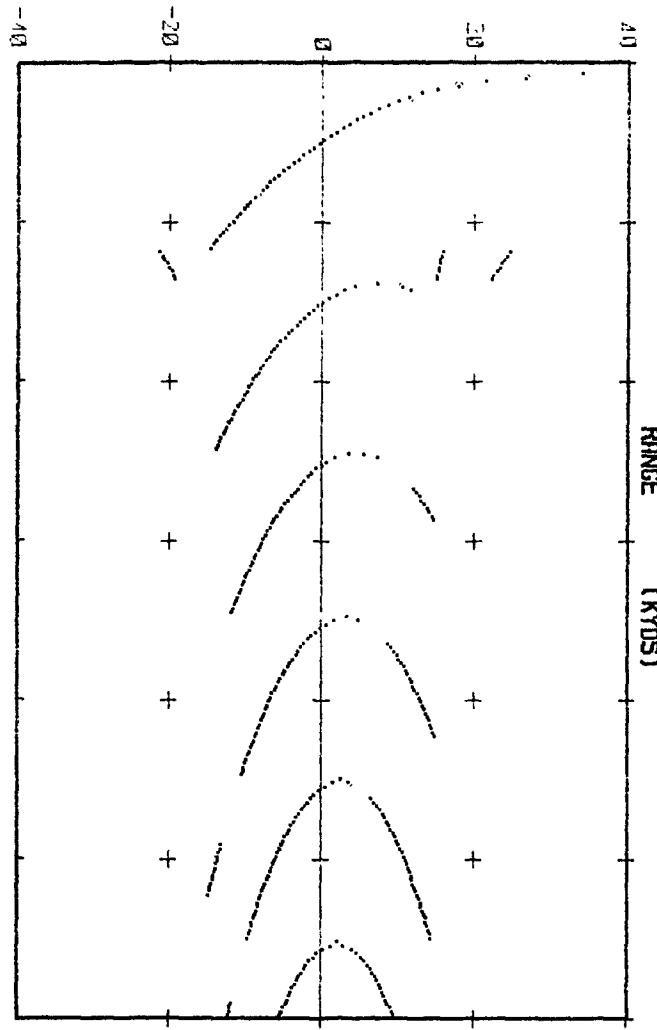


DEPTH IN METERS

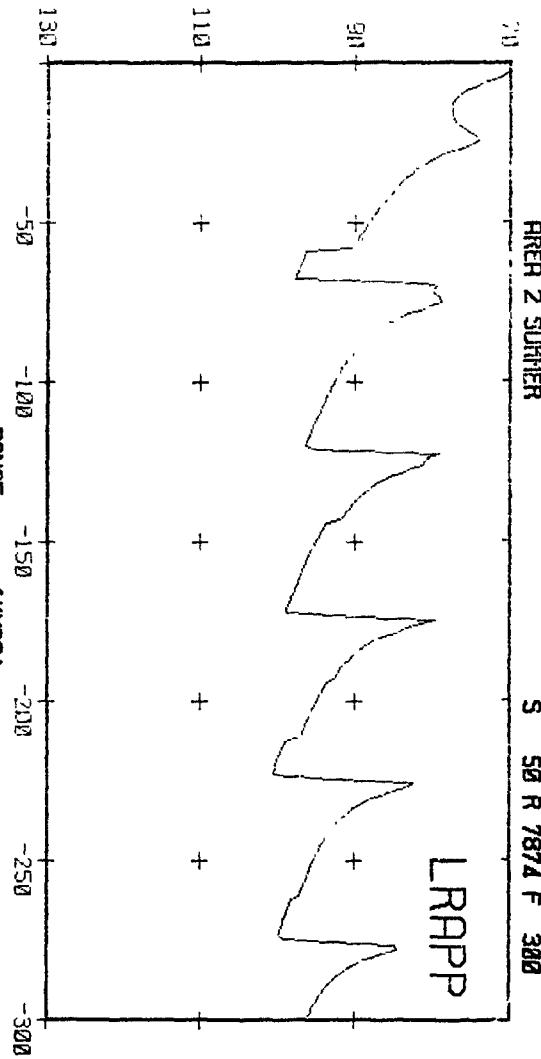




ARRIVAL ANGLE



DB LOSS



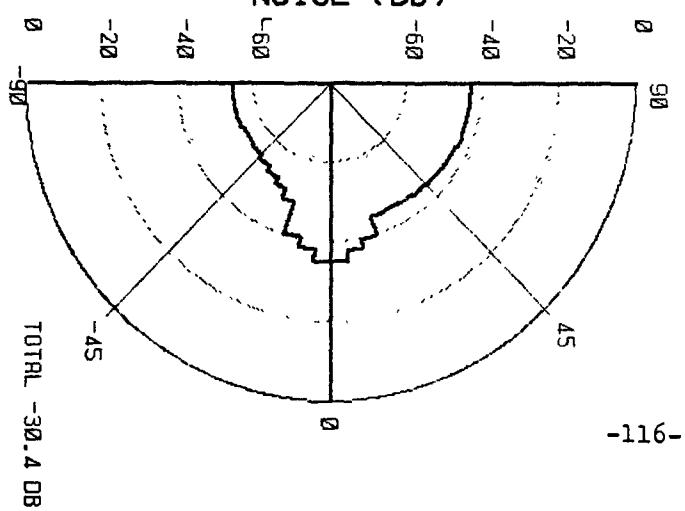
ARER 2 SUMMER

S 50 R 7874 F 300

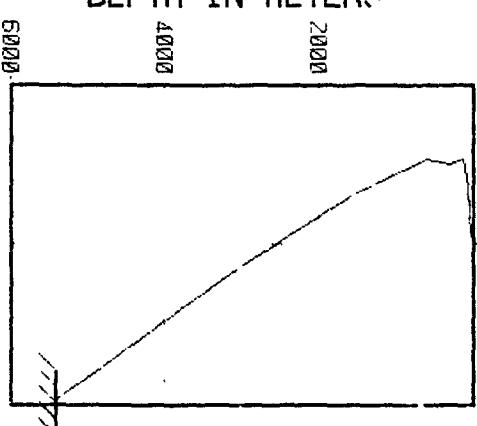
LRAAPP

1450 M/S 1520 1550

NOISE (DB)



DEPTH IN METERS



TOTAL -30.4 DB

-116-

RIVER 2 SUMMER

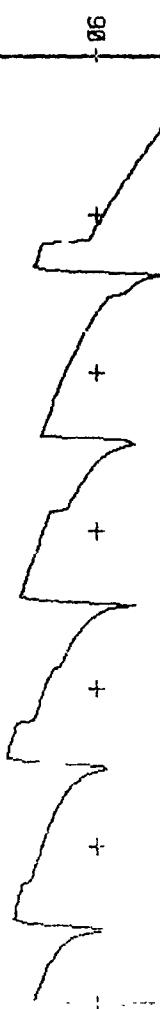
S 266 R 7874 F 388

1450 M/S 1520 1550

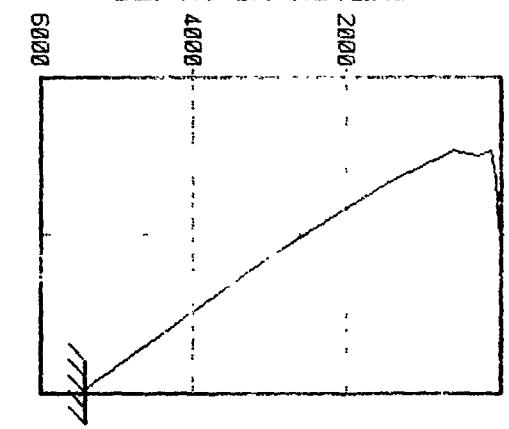
LFRQPP

DB LOSS

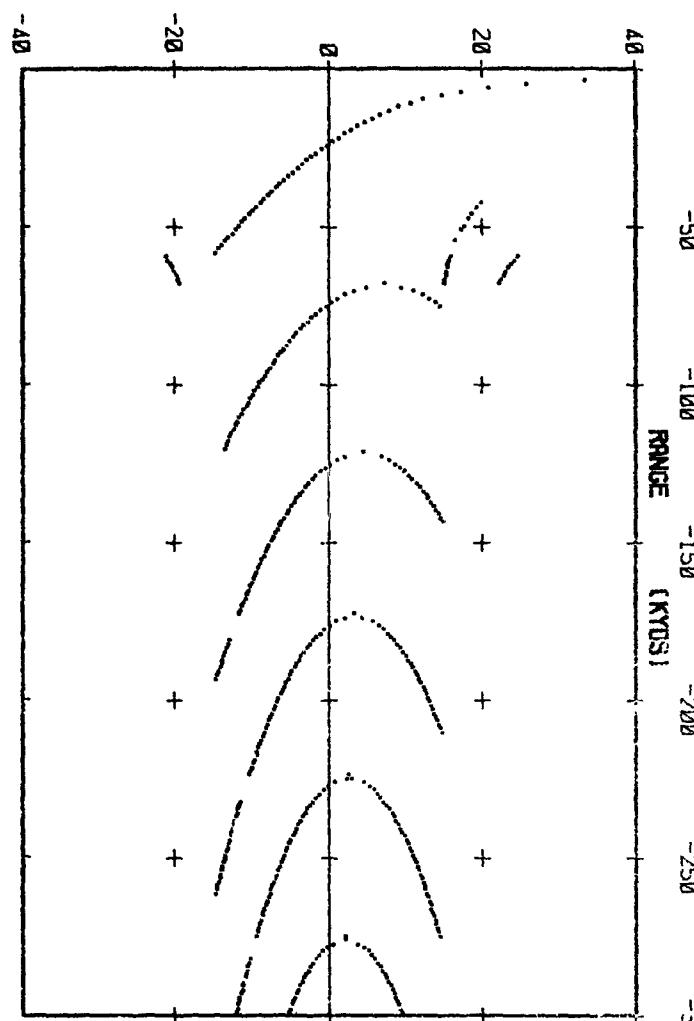
110 + + + + + + + + + +



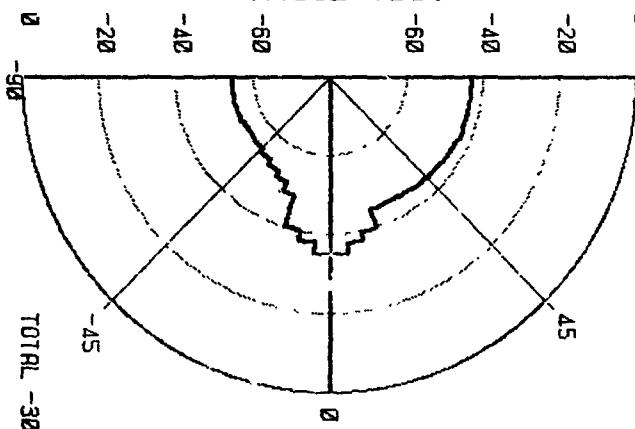
DEPTH IN METERS



ARRIVAL ANGLE

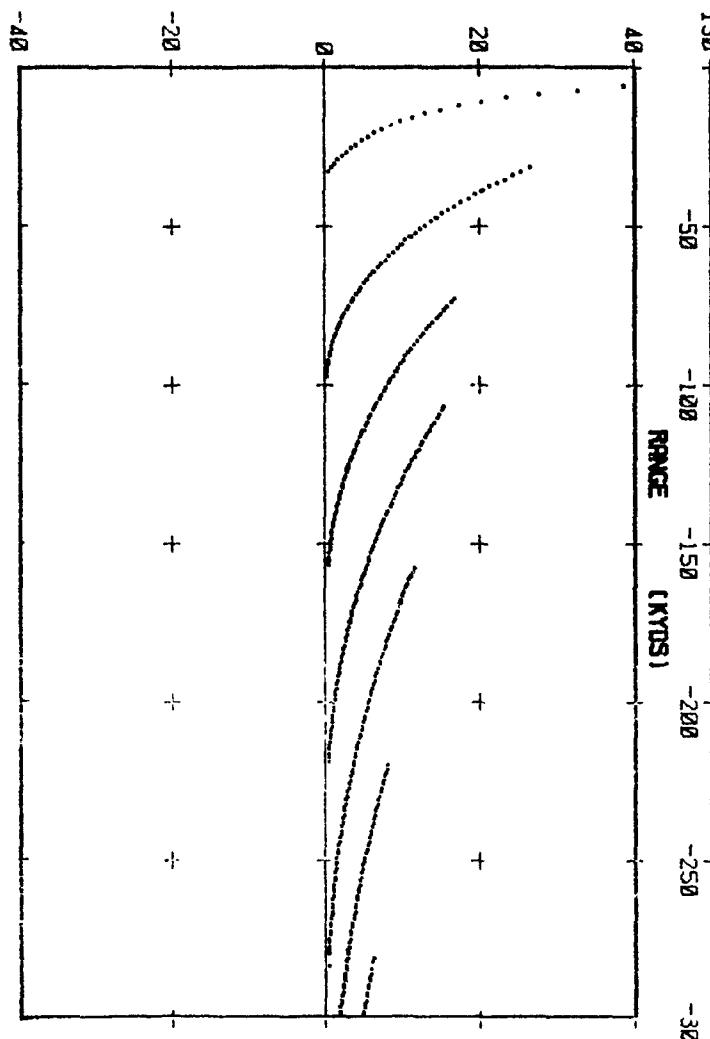


NOISE (DB)

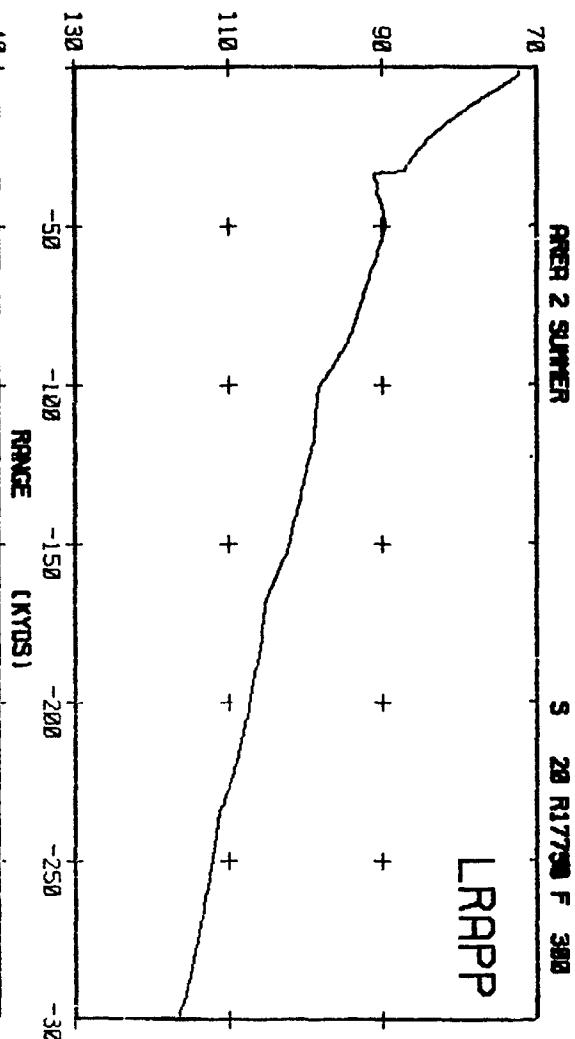


TOTAL -30.4 DB

ARRIVAL ANGLE



DB LOSS



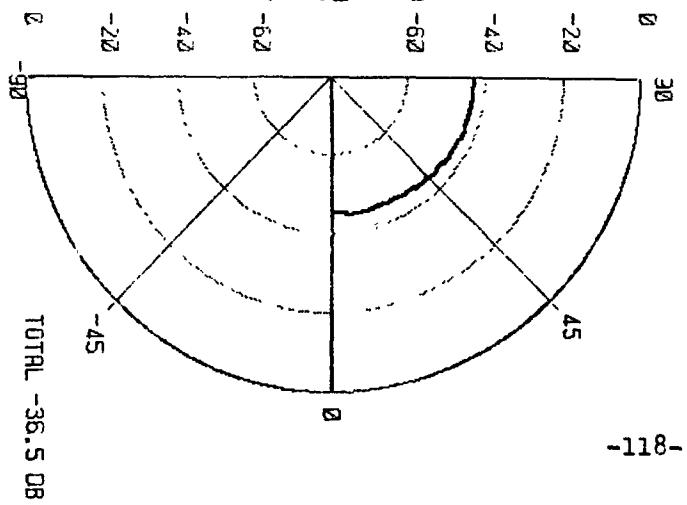
AREA 2 SUMMER

S 28 R1775 F 388

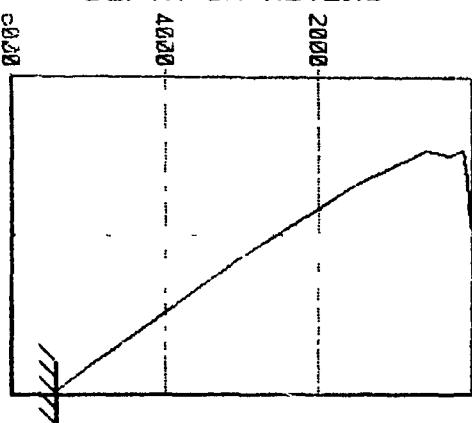
LRAPP

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS

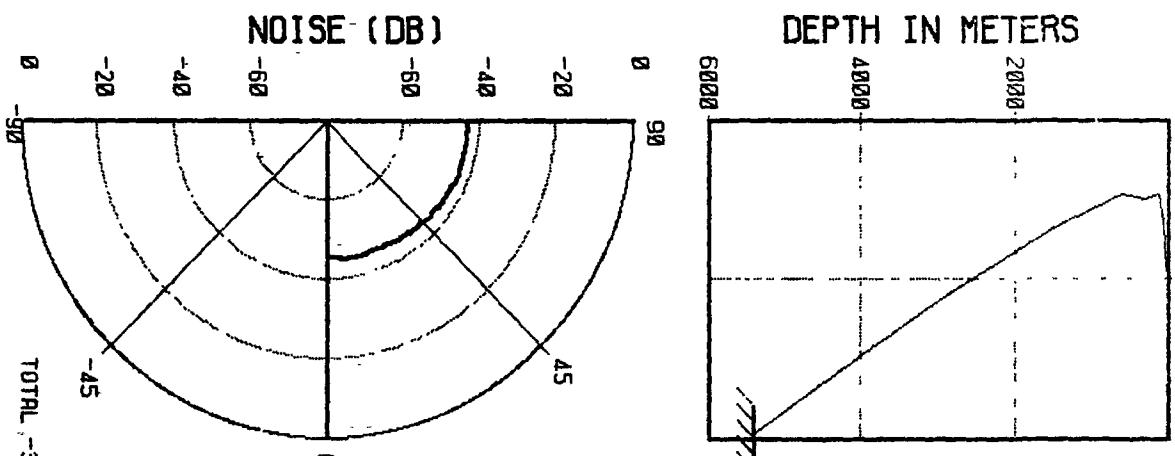
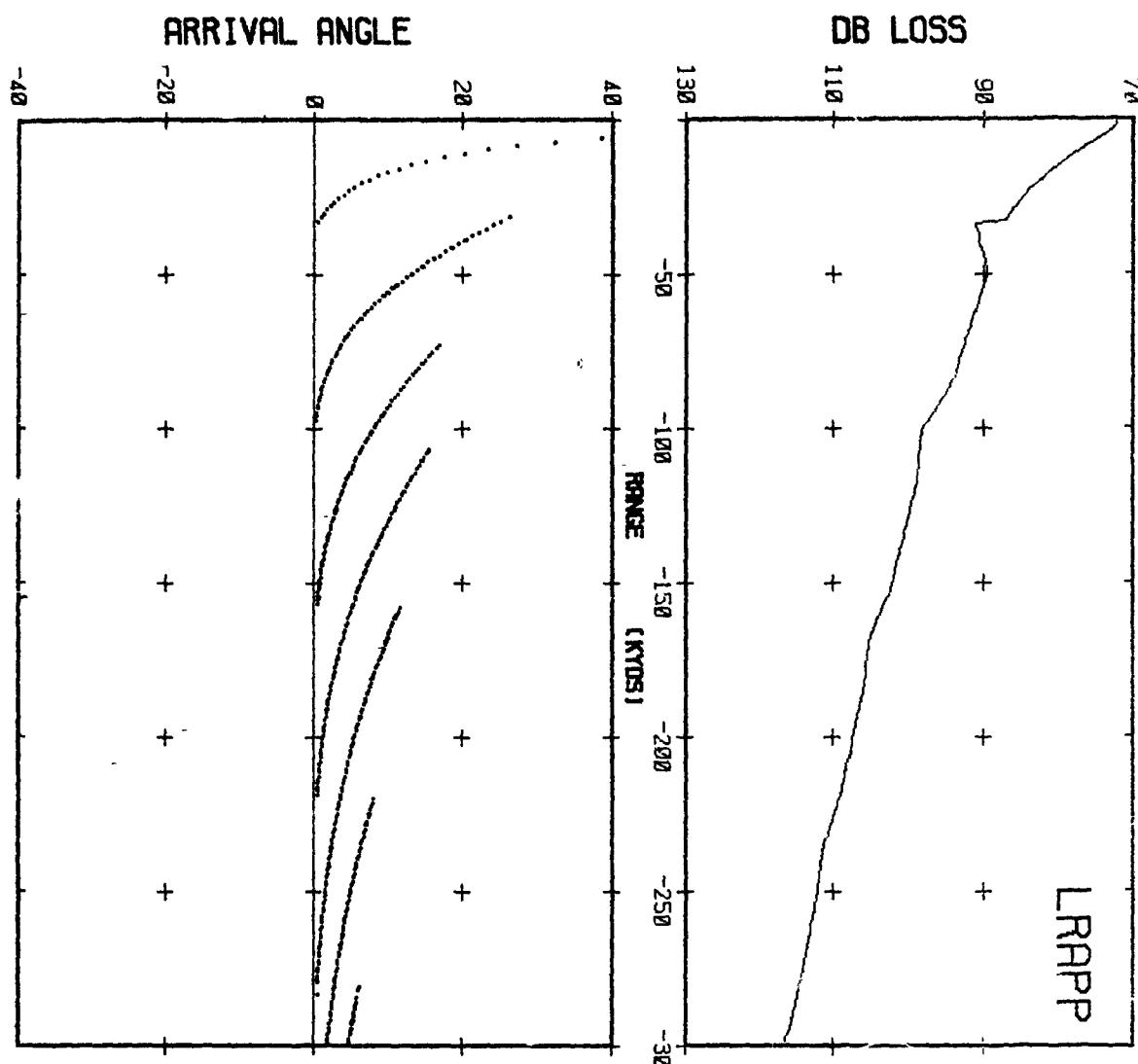


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HKEH 2 SUMMER

5 50 R1759 F 300

1450 1455 1500 1550



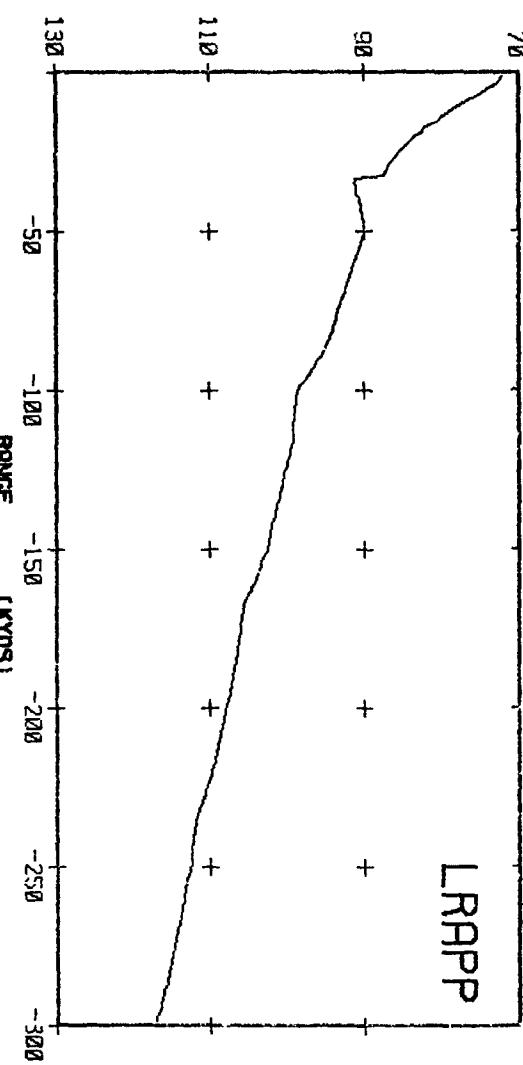
ARR 2 SUMMER

S 266 R17759 F 300

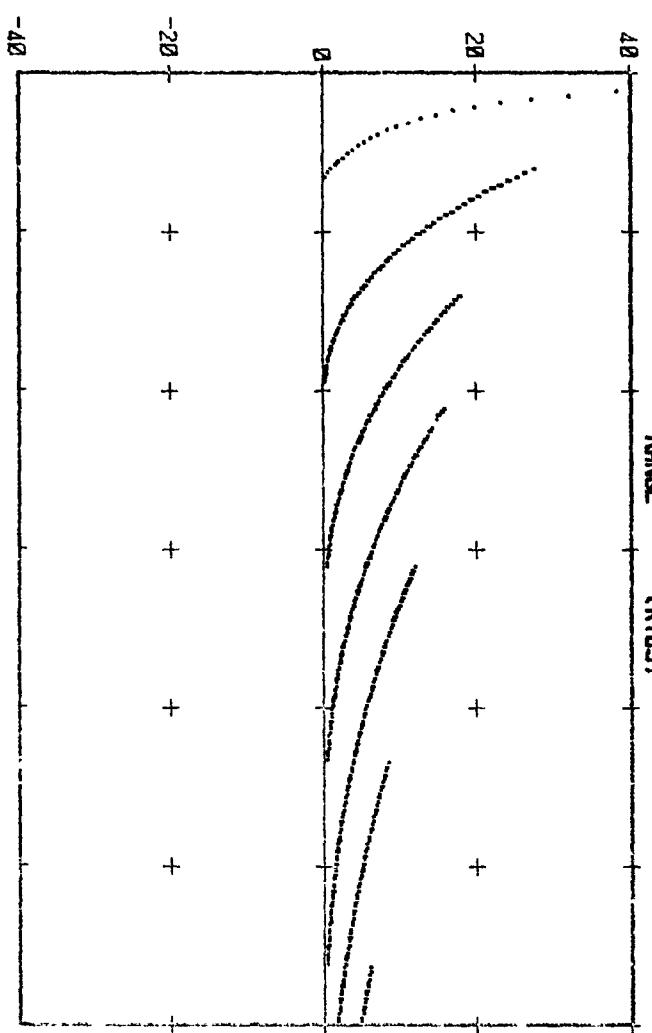
1450 M/S 1500 1550

LRAPP

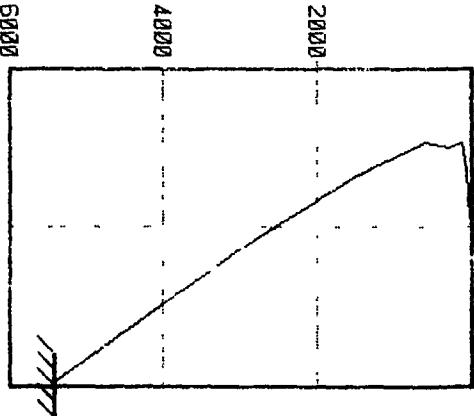
DB LOSS



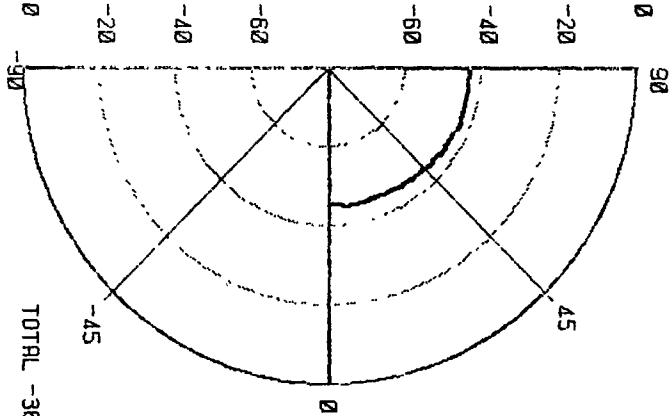
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



AREA 2 SUMMER

1450 145 1500 1550

LRRP?

DB LOSS

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DEPTH IN METERS

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-5600

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-5700

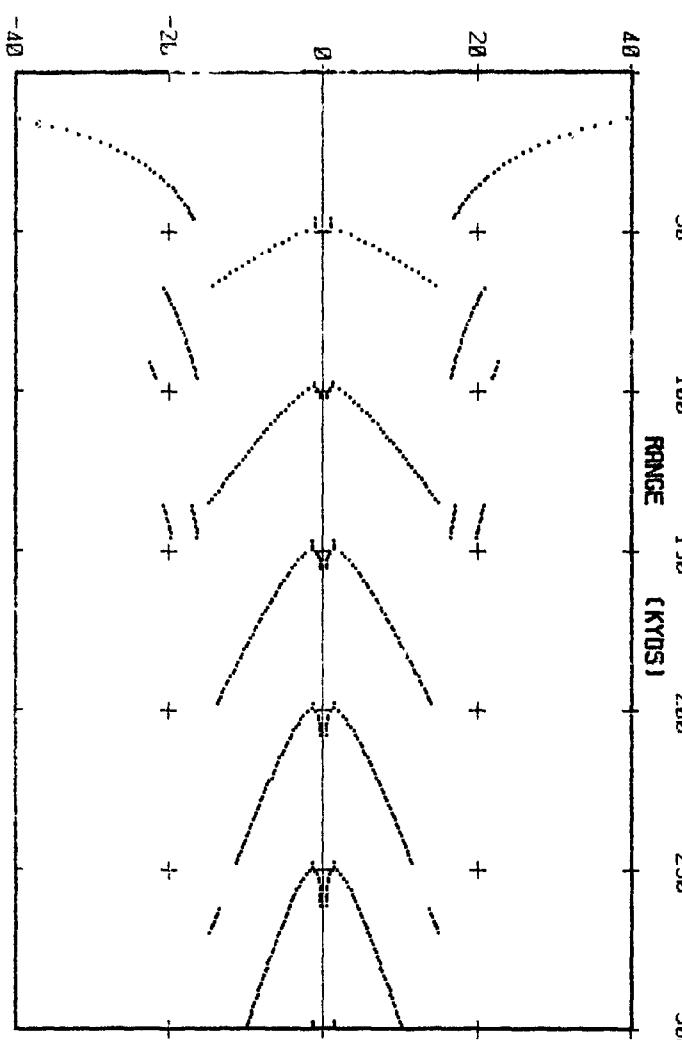
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-5740

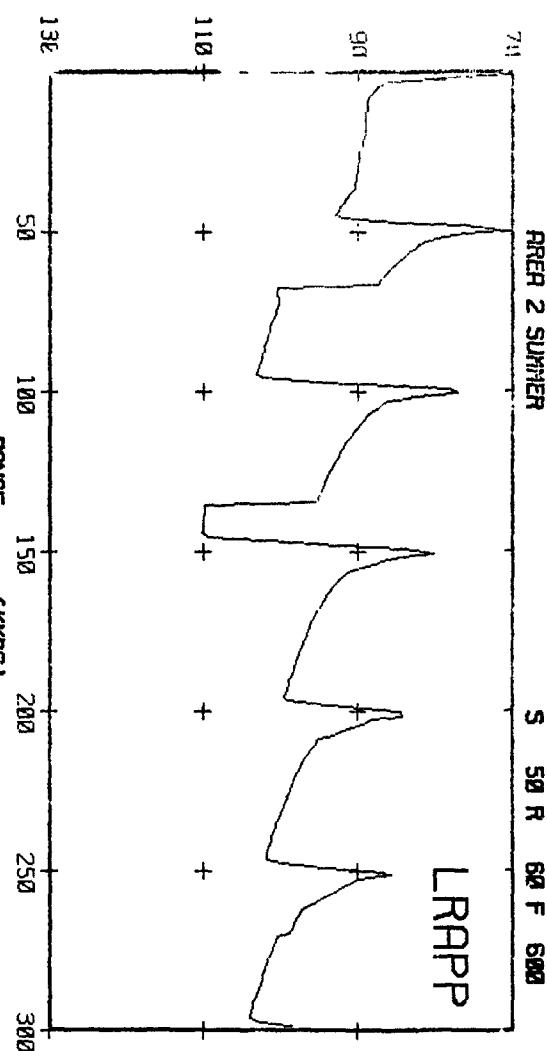
-5760

-5780

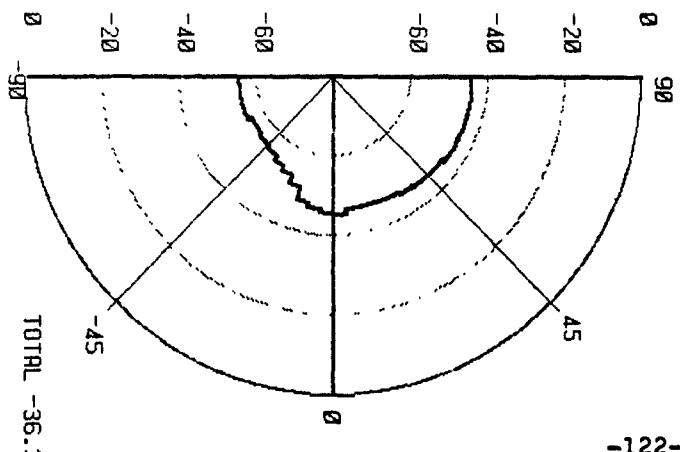
ARRIVAL ANGLE



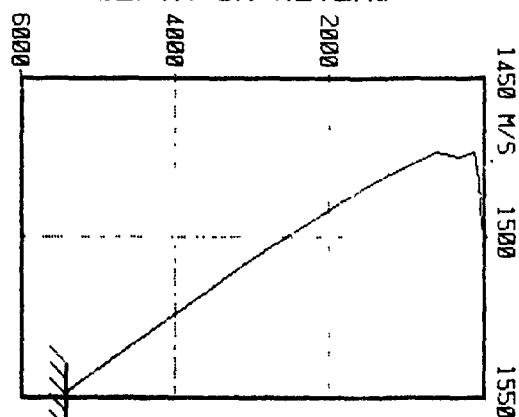
DB LOSS



NOISE (DB)



DEPTH IN METERS



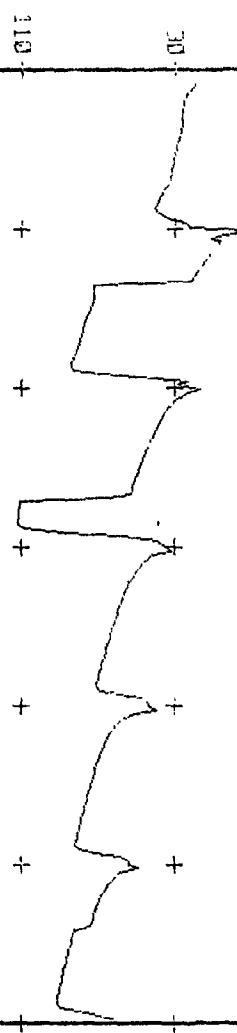
ARR 2 SUMMER

S 265 R 60 F 680

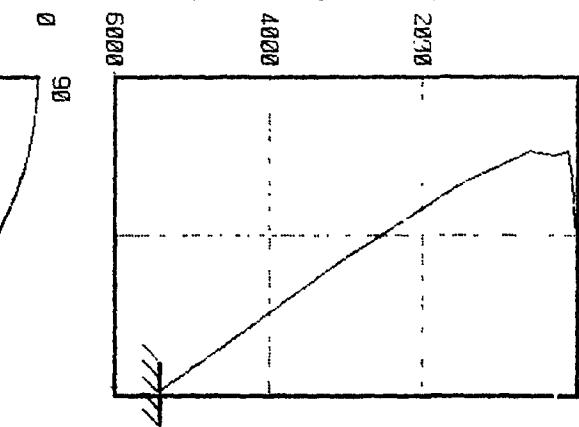
1450 M/S 1500 1550

DB LOSS

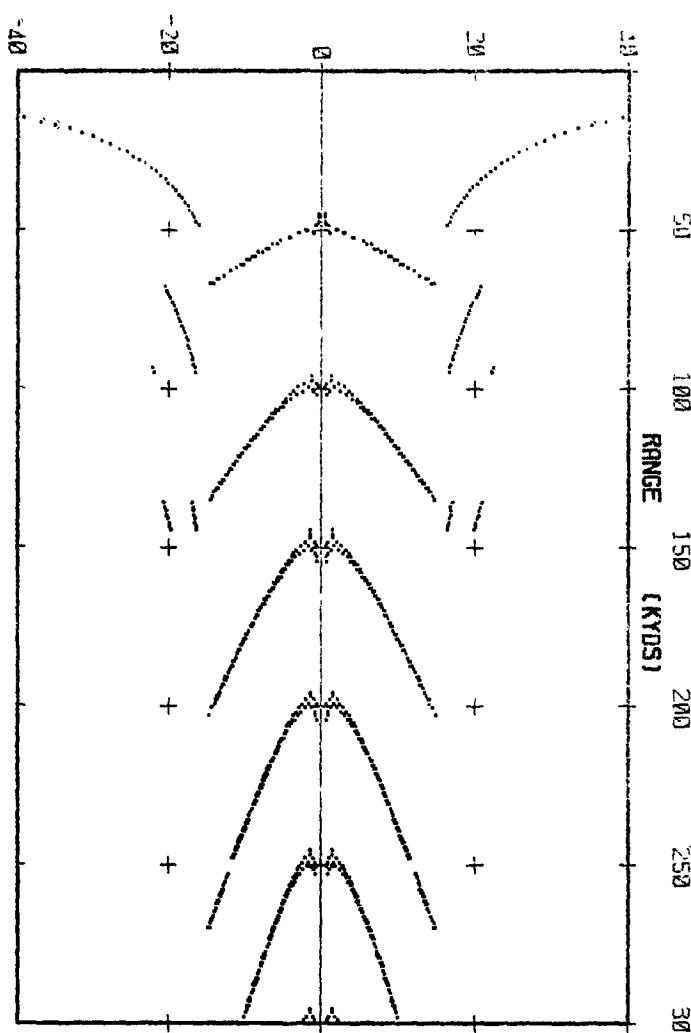
LRNPP



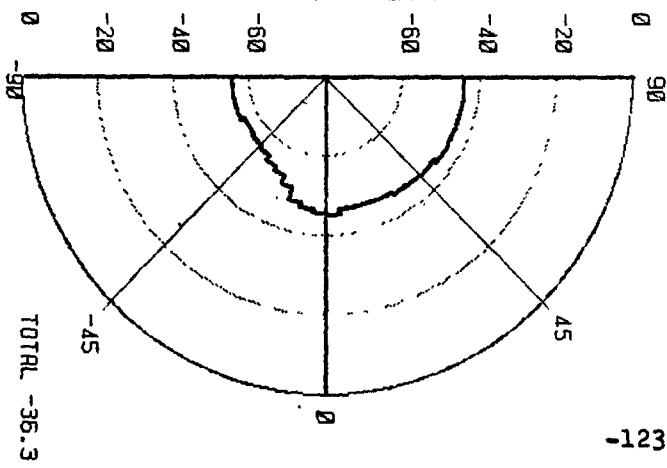
DEPTH IN METERS



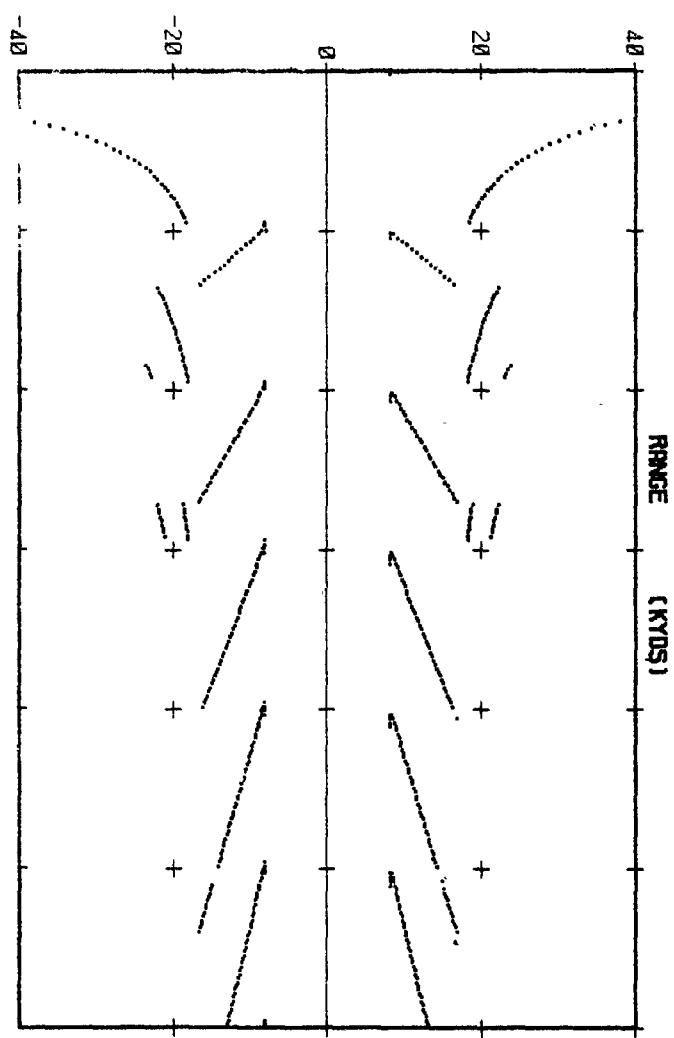
ARRIVAL ANGLE



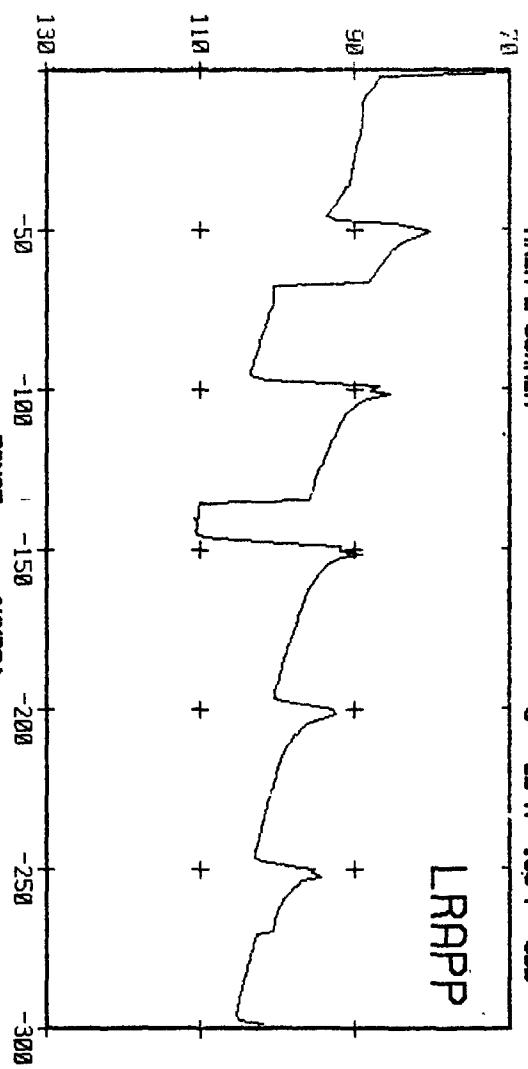
NOISE (DB)



ARRIVAL ANGLE



DB LOSS



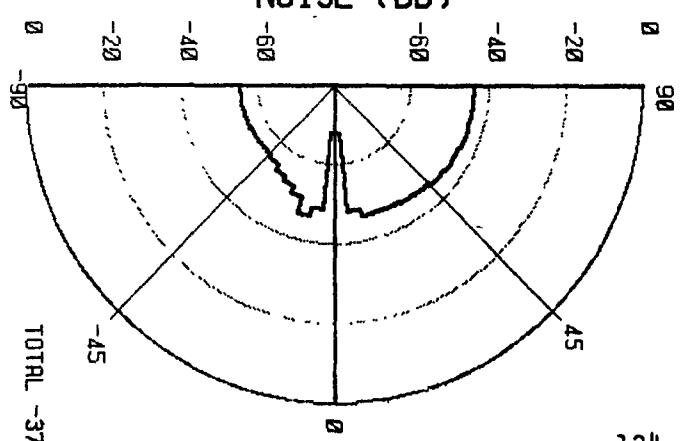
RIVER 2 SUMMER

S 20 R 165 F 600

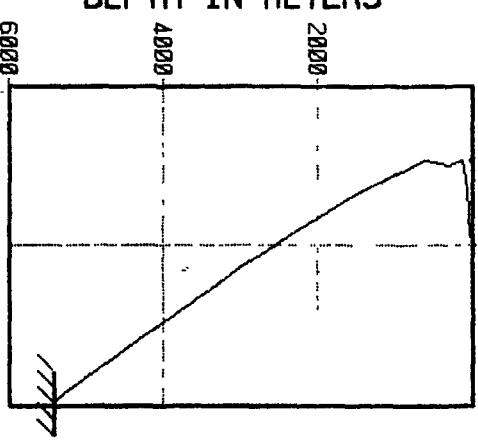
LRAFP

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



-124-

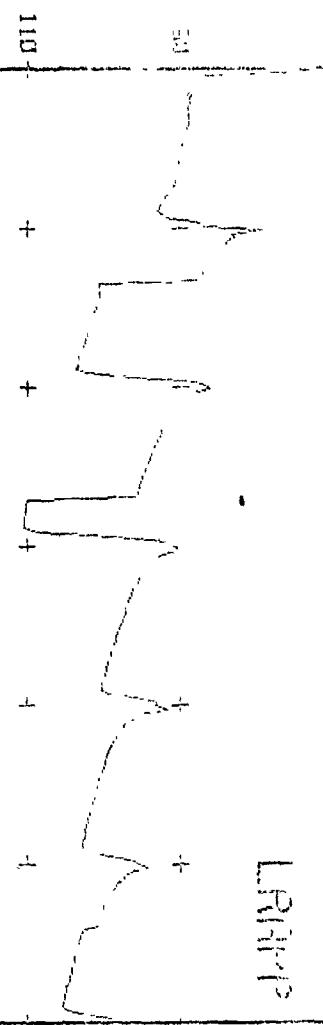
TOTAL -37.1 DB

700 800 900 1000 1100 1200 1300 1400 1500 1600 1700

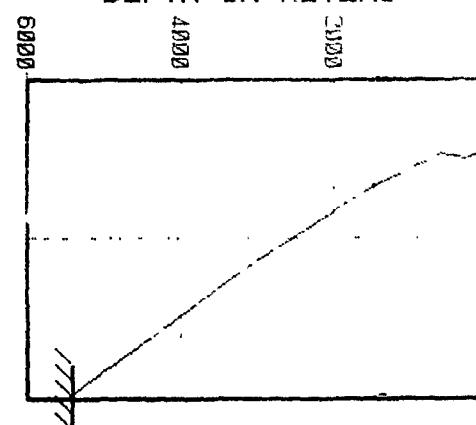
1450 M/S 1500 1550

LPIWIP

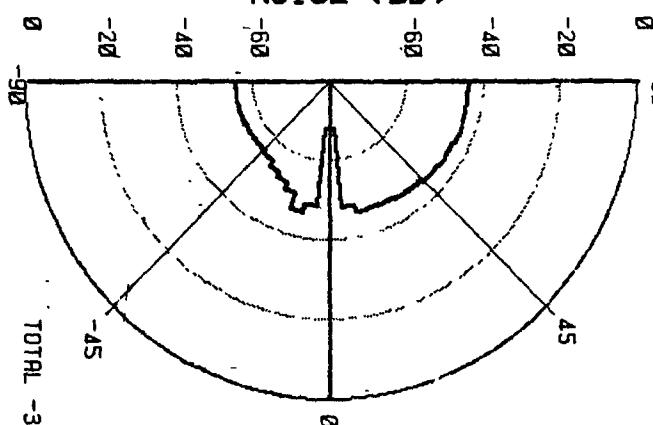
DB LOSS



DEPTH IN METERS

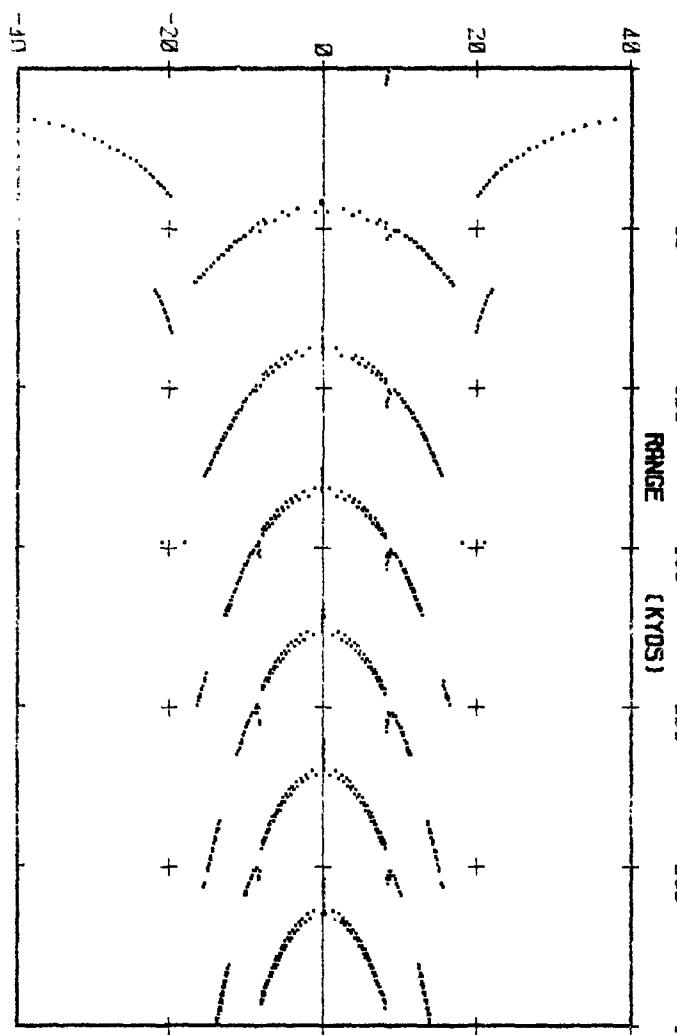


NOISE (DB)

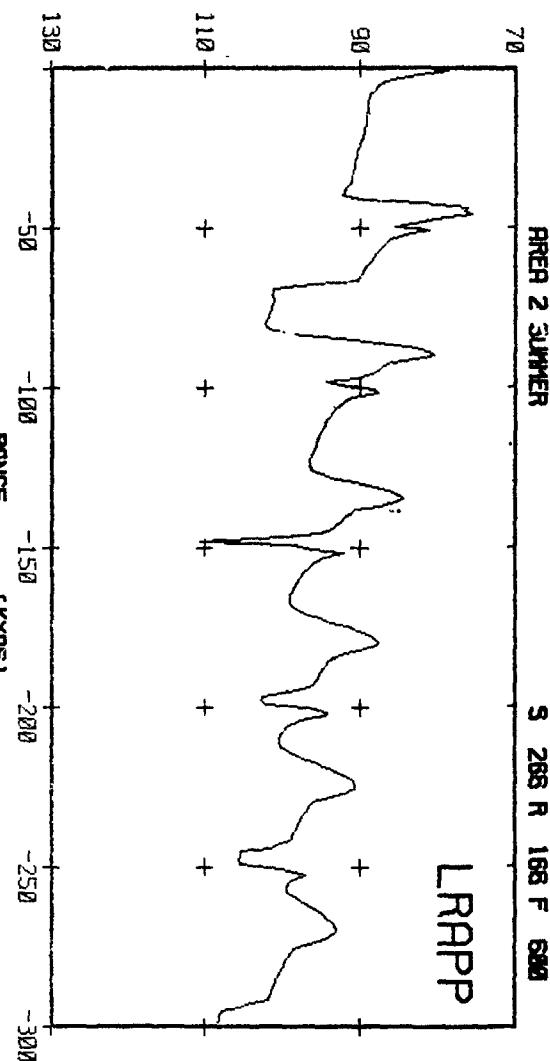


TOTAL -37.1 DB

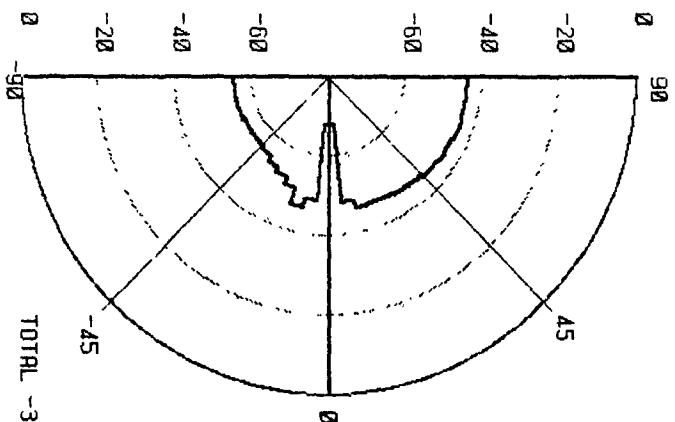
ARRIVAL ANGLE



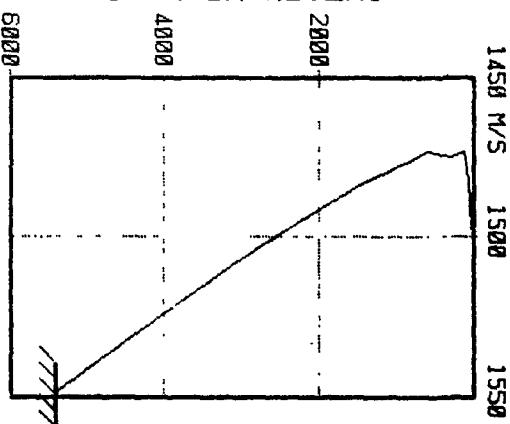
DB LOSS



NOISE (DB)



DEPTH IN METERS

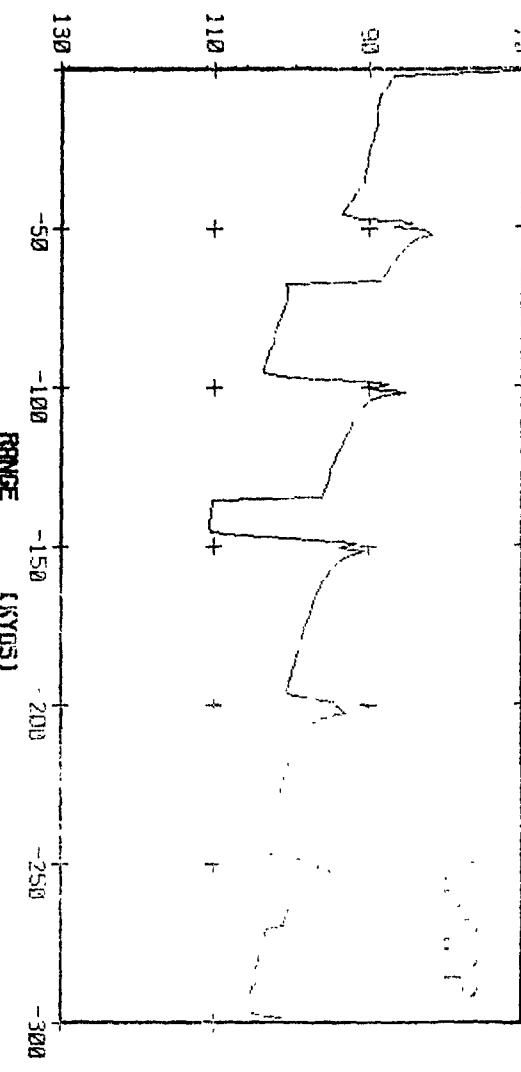


PAPER 2 SUMMER

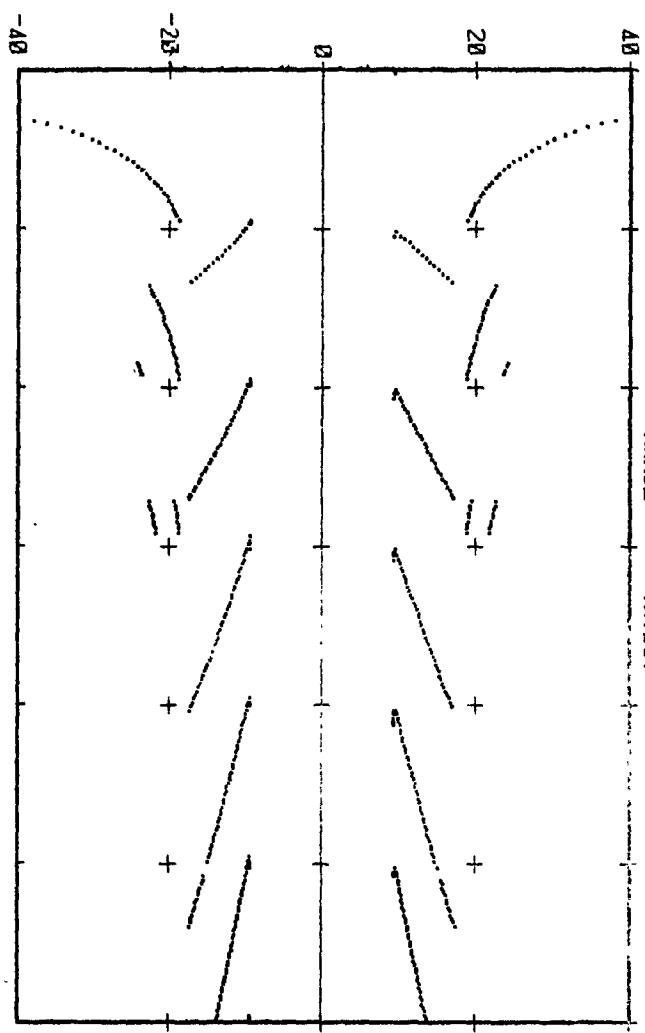
S. 1. 2. 3. 4. 5. 6.

1450 N/S 1500 1550

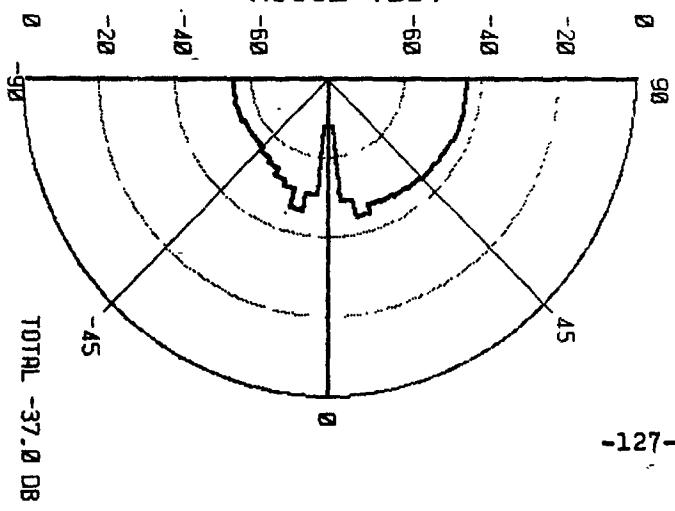
DB LOSS



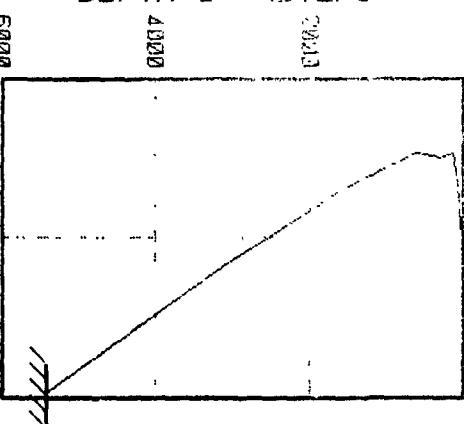
ARRIVAL ANGLE



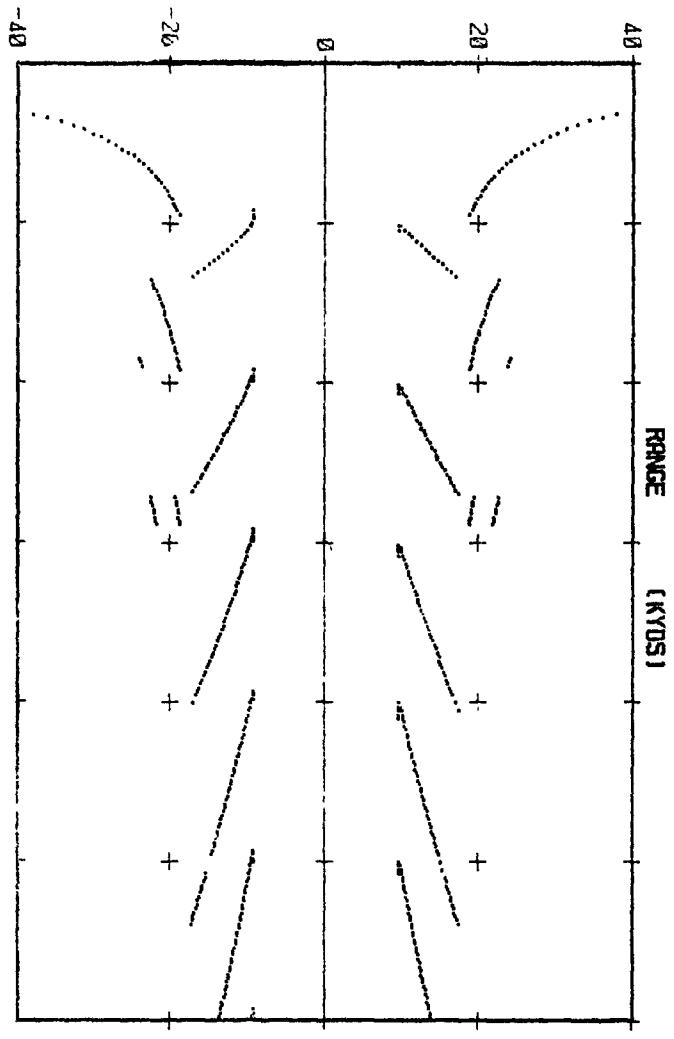
NOISE (DB)



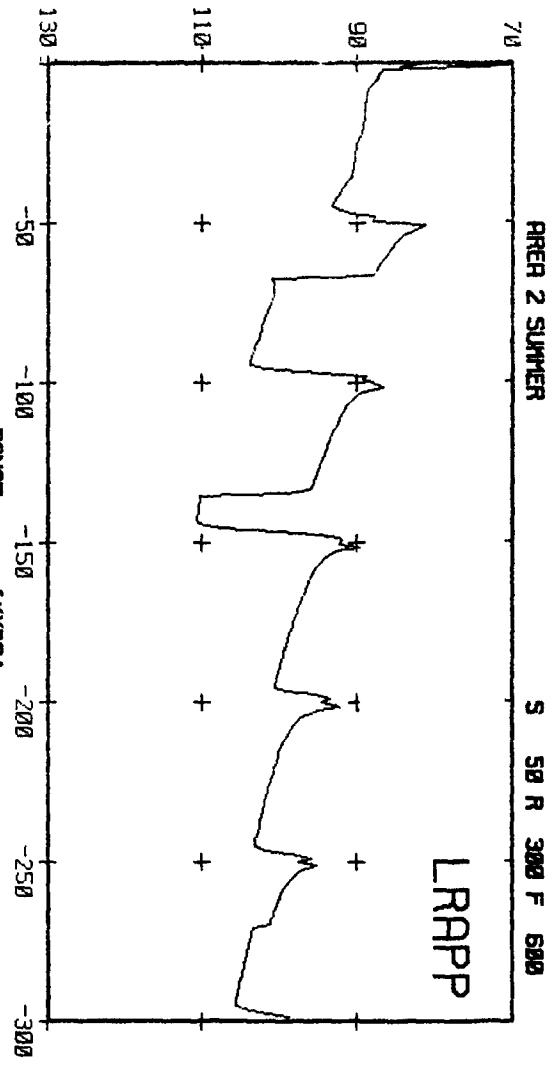
DEPTH (M)



ARRIVAL ANGLE



DB LOSS



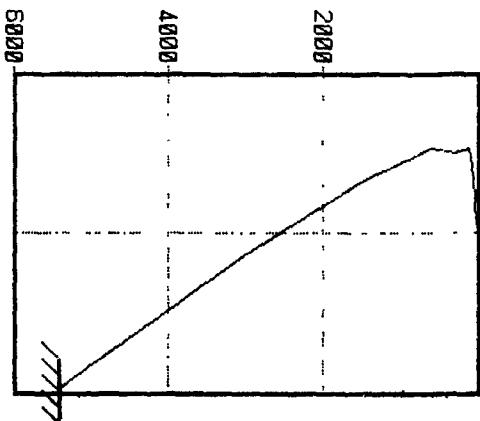
L RAPP

AREA 2 SUMMER

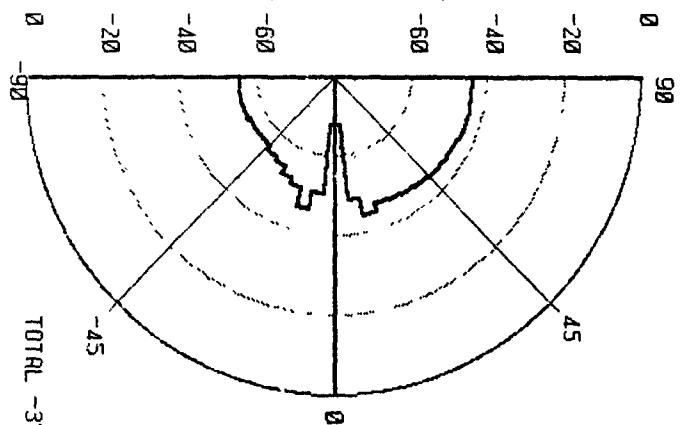
S 50 R 300 F 600

1450 M/S 1500 1550

DEPTH IN METERS



NOISE (DB)



TOTAL - 37.0 DB

Flight 2 Summer

S 263 R SDF L2

1450 H/S 1500 1550

LRFPP

BB LOSS

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120

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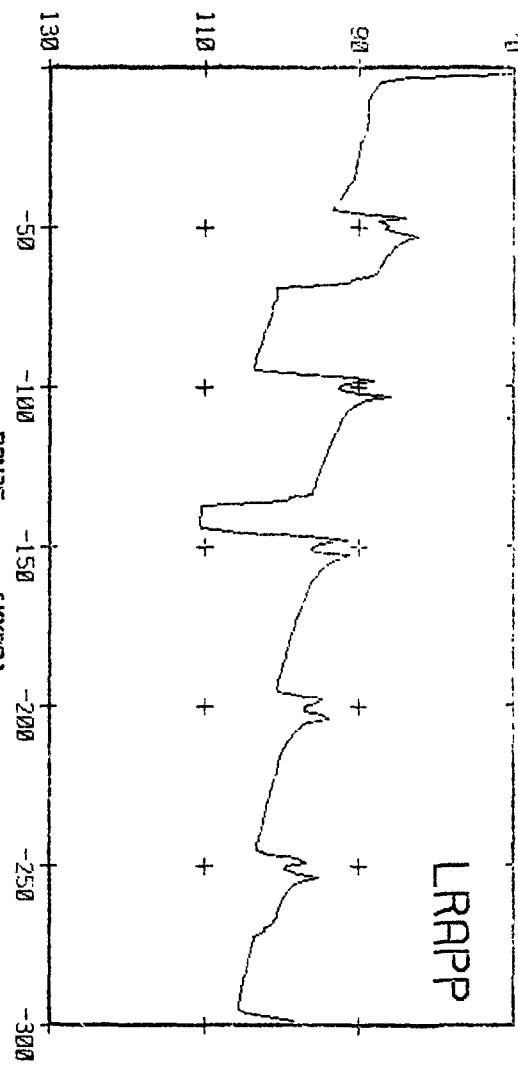
984

987

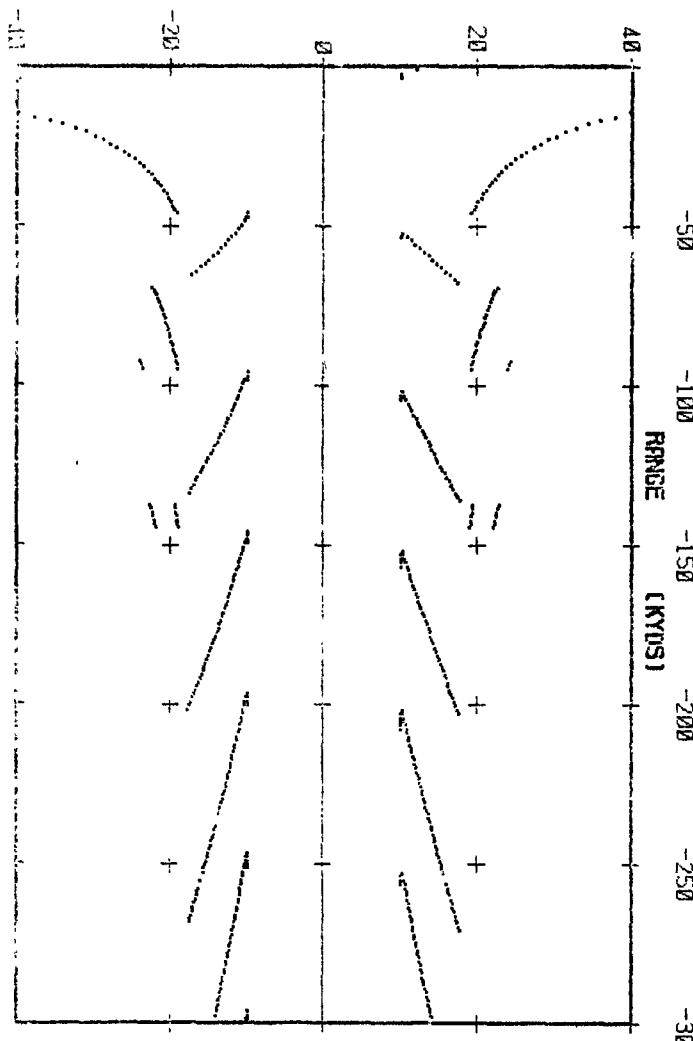
1450 M/S 1500 1550
FACH 2 METER 3 29 R 1113 F 364

LRAFP

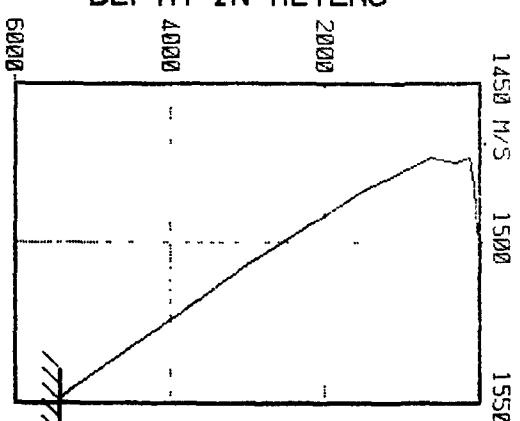
DB LOSS



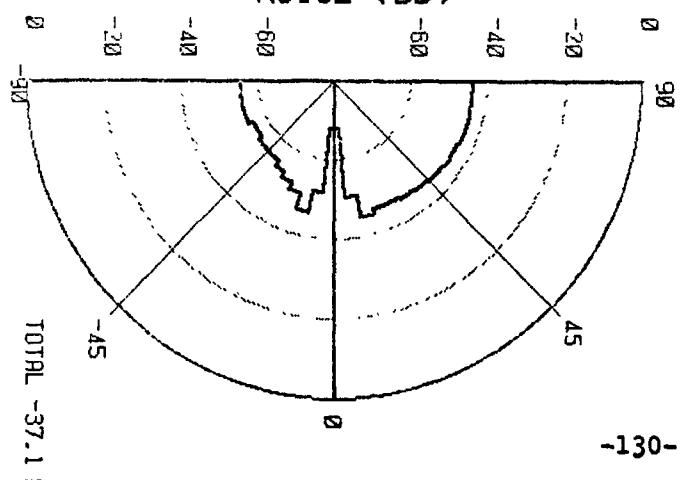
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -37.1 DB

PIER 2 SUMMER

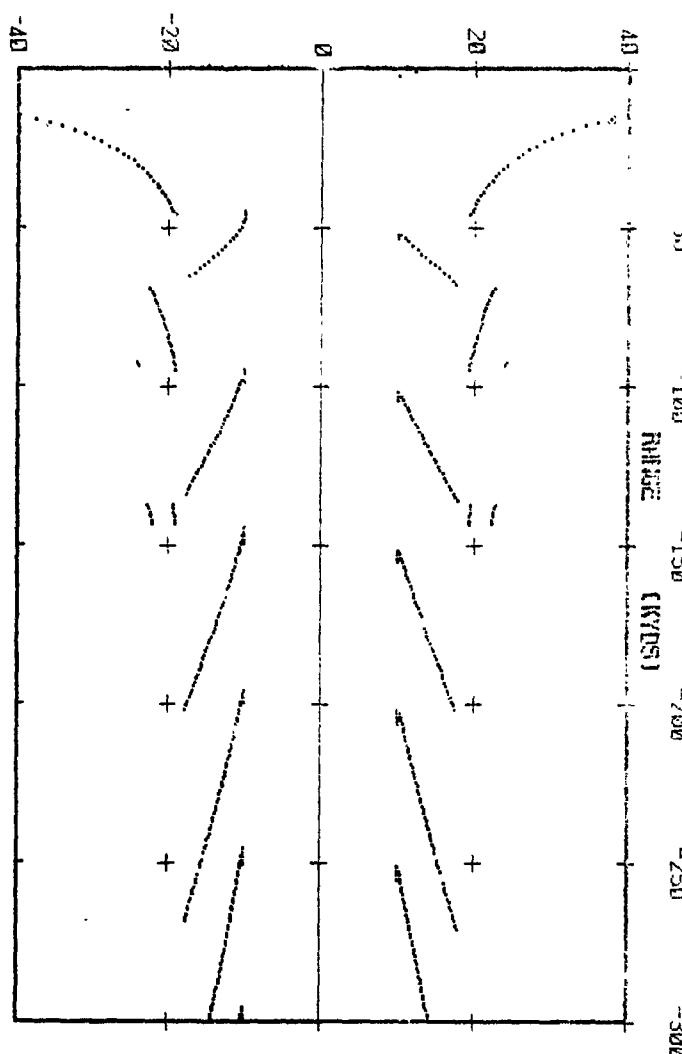
S 5E R 15N 3 F 623

1450 M/S 1500 1550

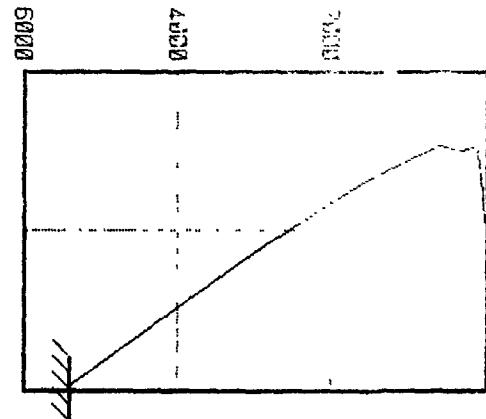
DB LOSS



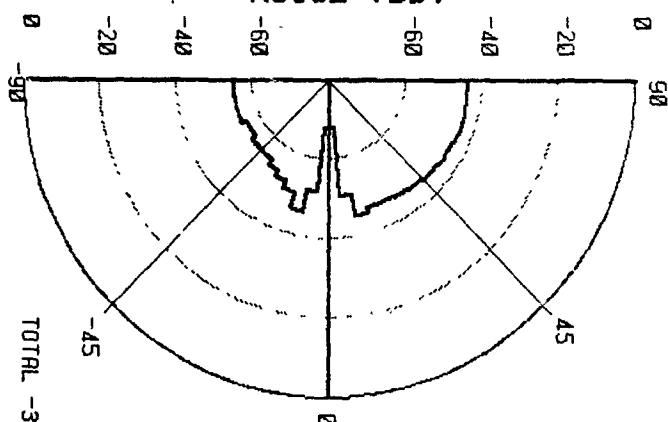
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



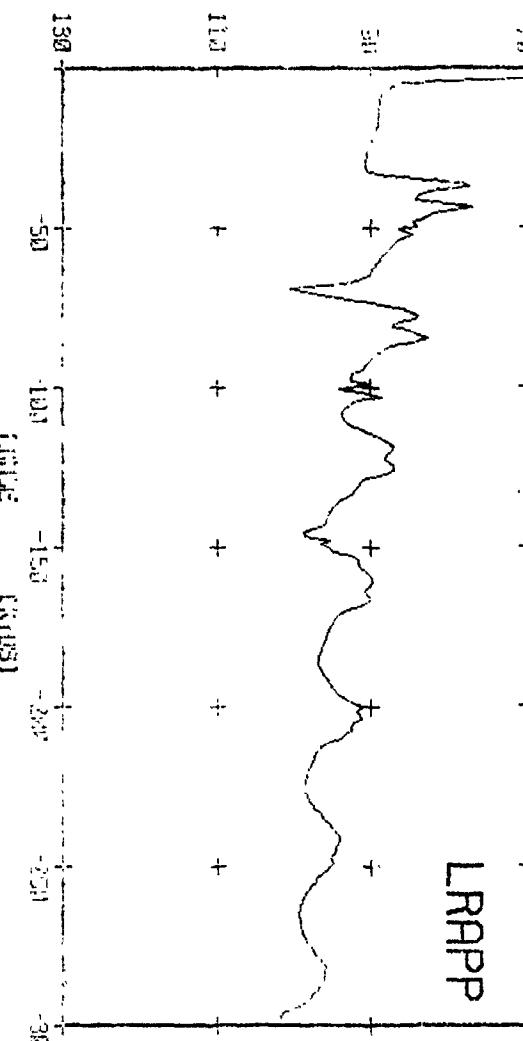
PREP 2 SUMMER

S 266 R 1886 F 680

1450 M/S 1500 1550

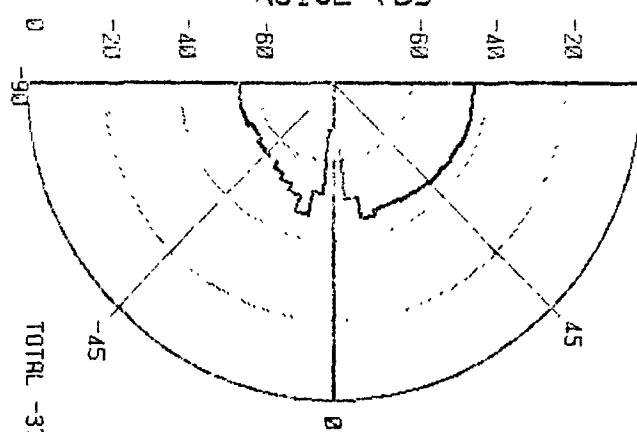
DB LOSS

LRAPP



DEPTH IN METERS

NOISE (dB)



TOTAL -37.1 dB

-132-

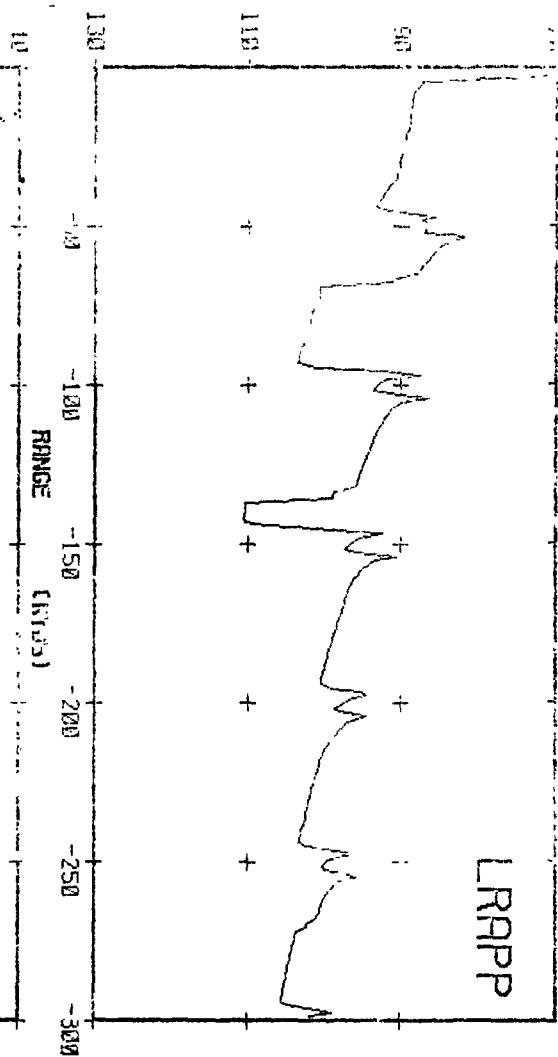
RIVER 2 SUMMER

S 20 R 1502 F 600

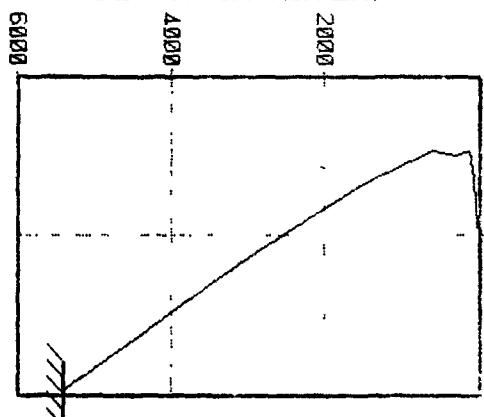
1450 M/S 1500 15°

L RAPP

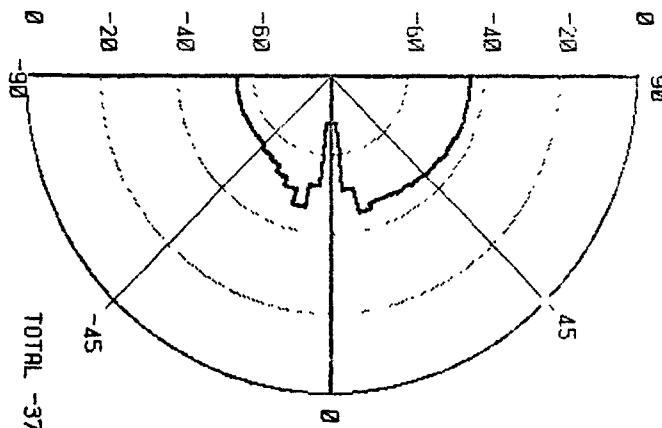
DB LOSS



DEPTH IN METERS



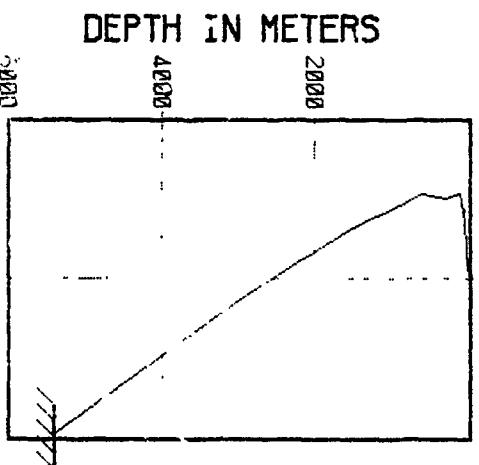
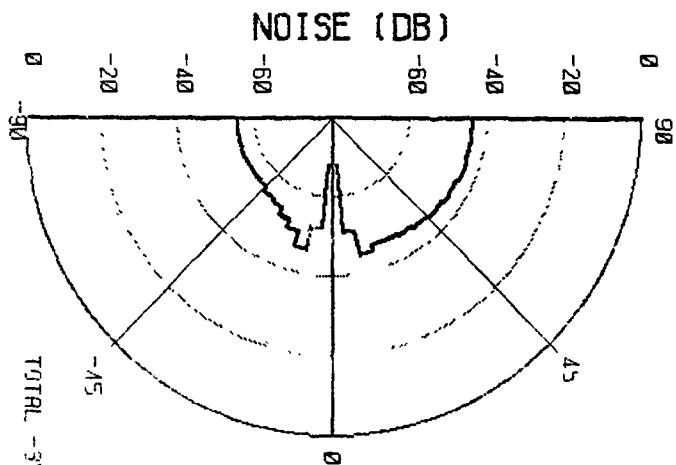
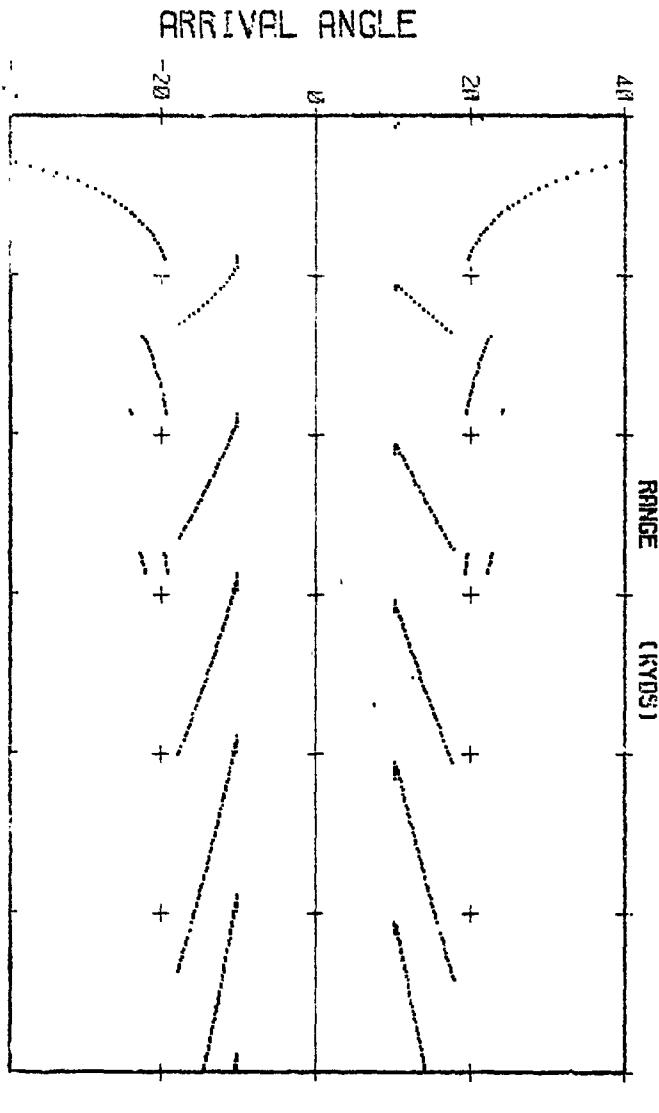
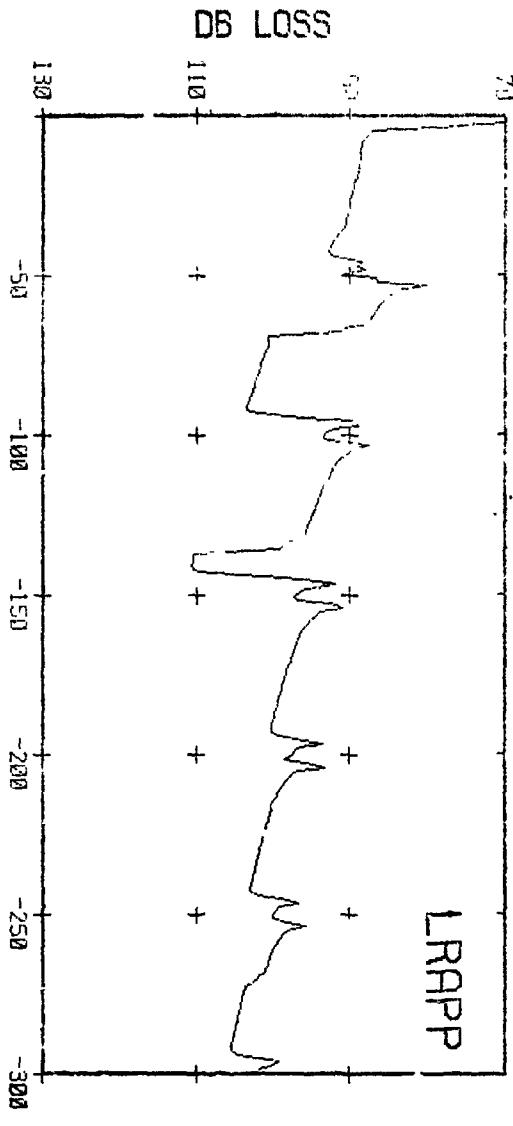
NOISE (DB)



TOTAL -37.1 DB

7.3 RIVER 2 SUMMER S 50 R 1500 F 600 1450 M/S 1500 1550

LRAPP



TOTAL - 37.1 DB

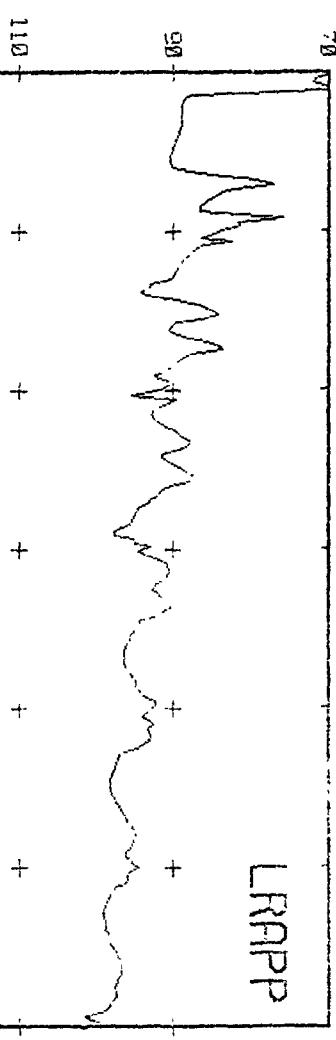
AREA 2 SUMMER

S 268 F 1560 F 55°W

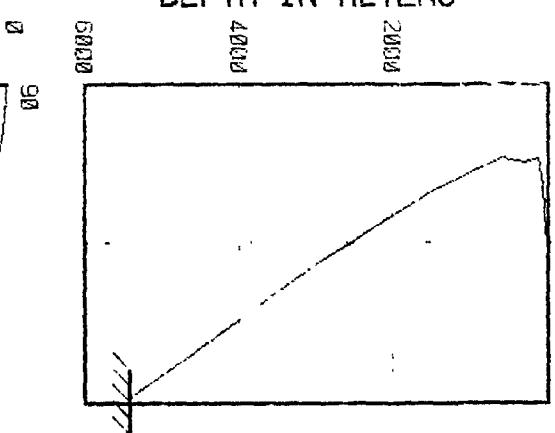
1450 M/S 1500 1550

DB LOSS

LRAFP

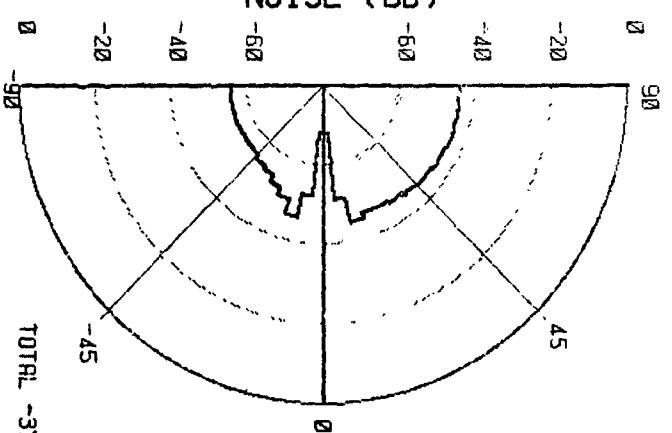
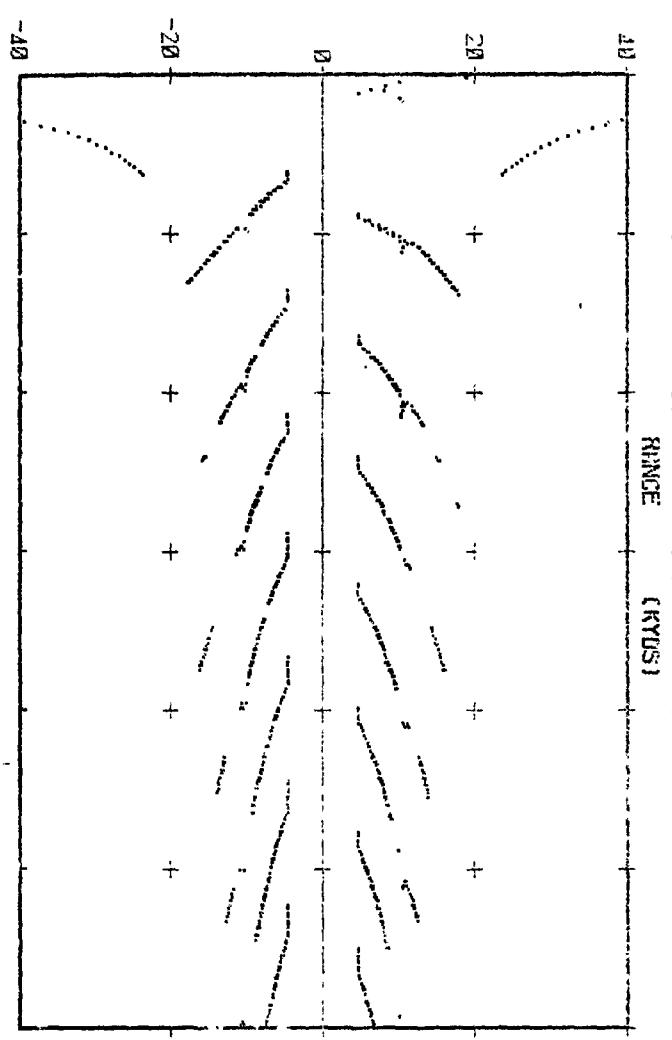


DEPTH IN METERS



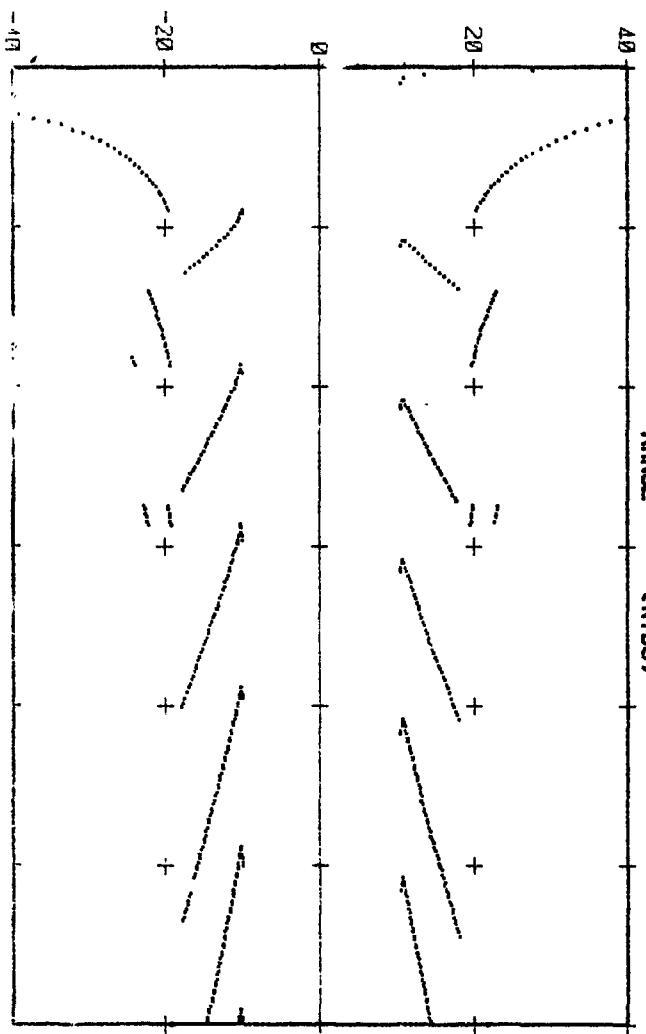
NOISE (DB)

ARRIVAL ANGLE

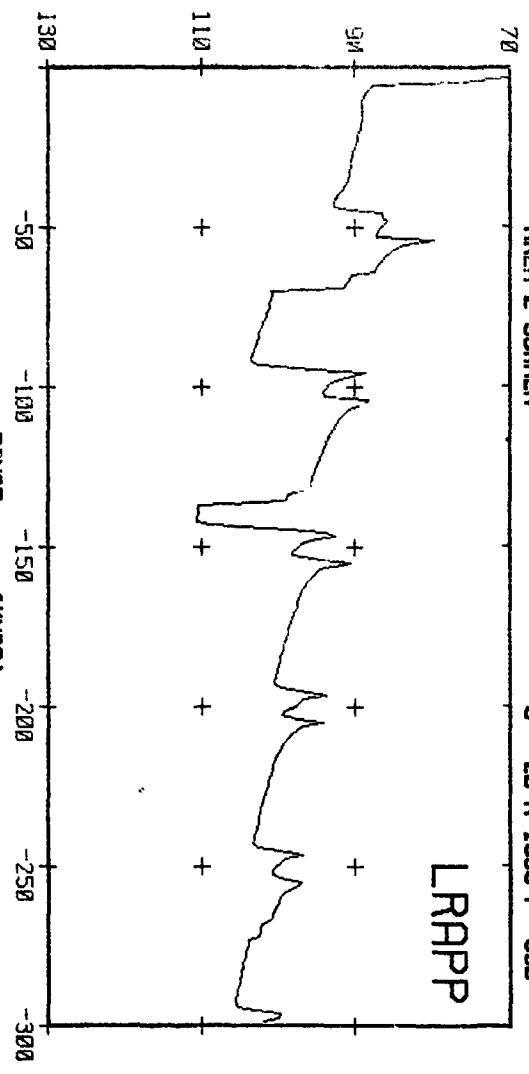


TOTAL -37.1 DB

ARRIVAL ANGLE



DB LOSS

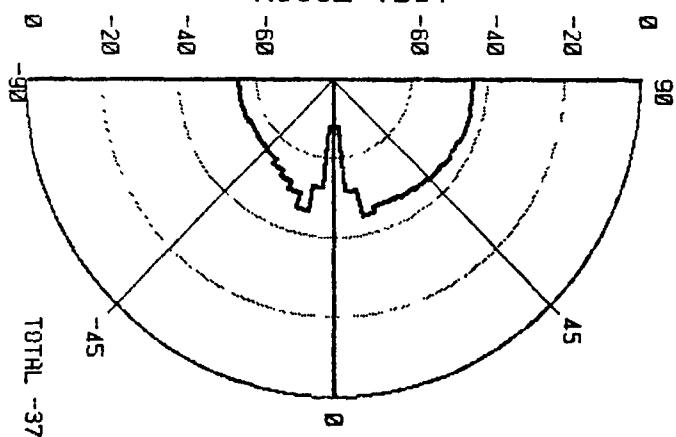


AREA 2 SUMMER

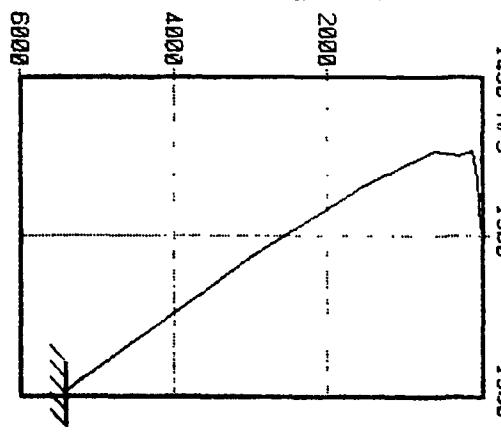
S 20 R 1968 F 600

LRAAPP

NOISE (DB)



DEPTH IN METERS



1450 M/S 1500 1550

TOTAL -37.2 DB

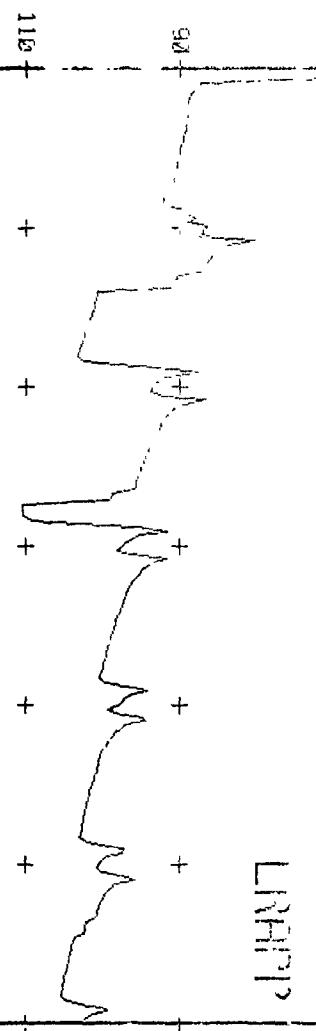
NICH Z SHIPPER

S 33° 19' 63" E 82° 3

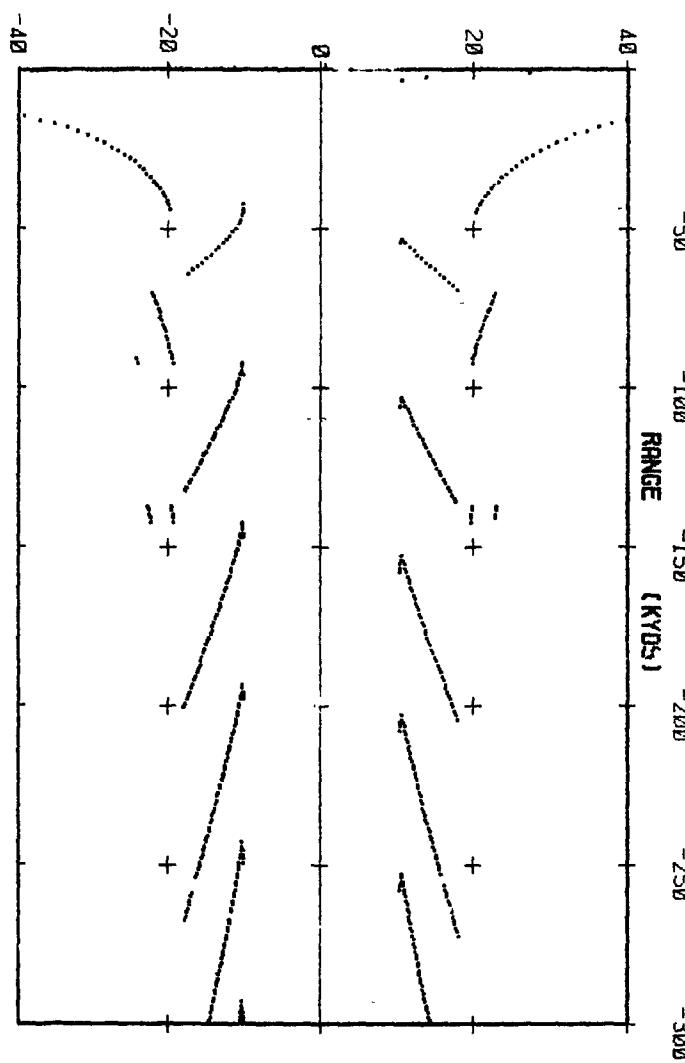
1450 M/S 1500 1550

LHM?

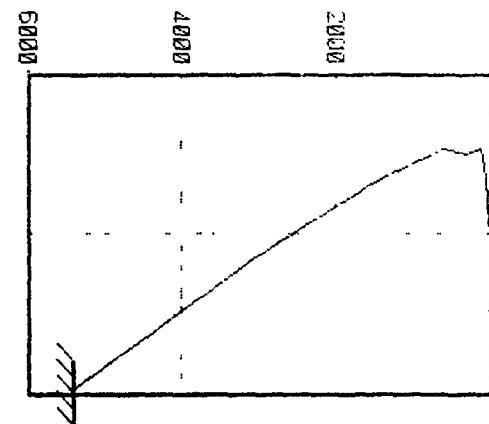
DB LOSS



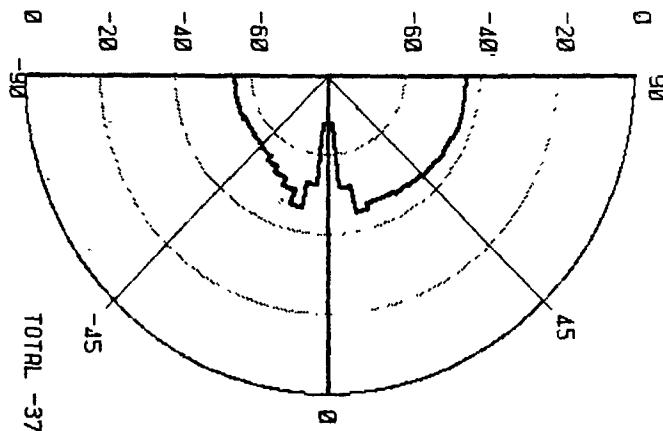
ARRIVAL ANGLE



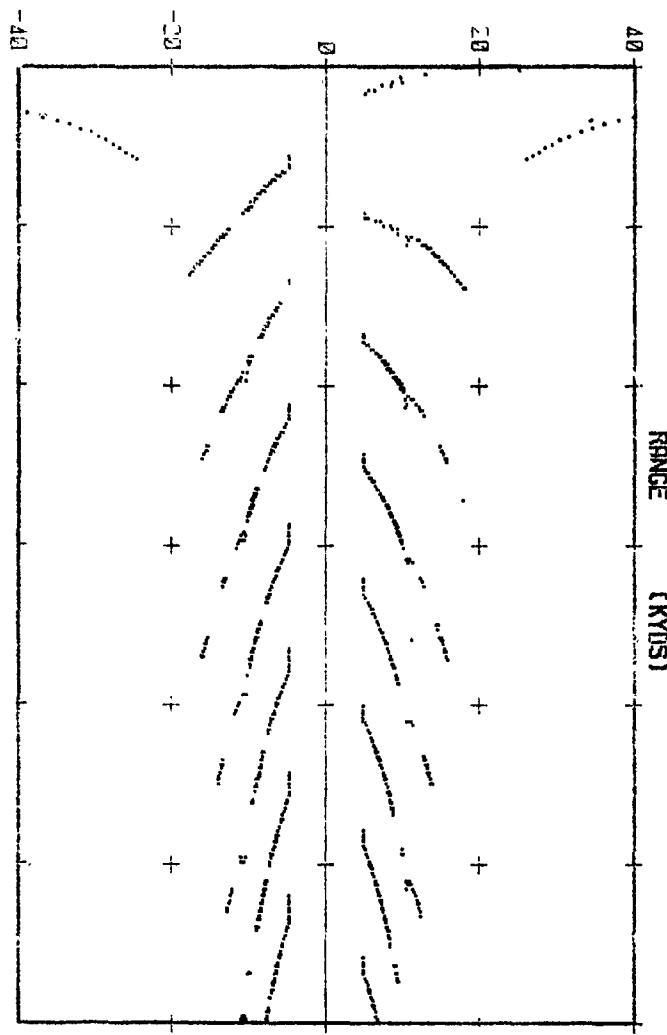
DEPTH IN METERS



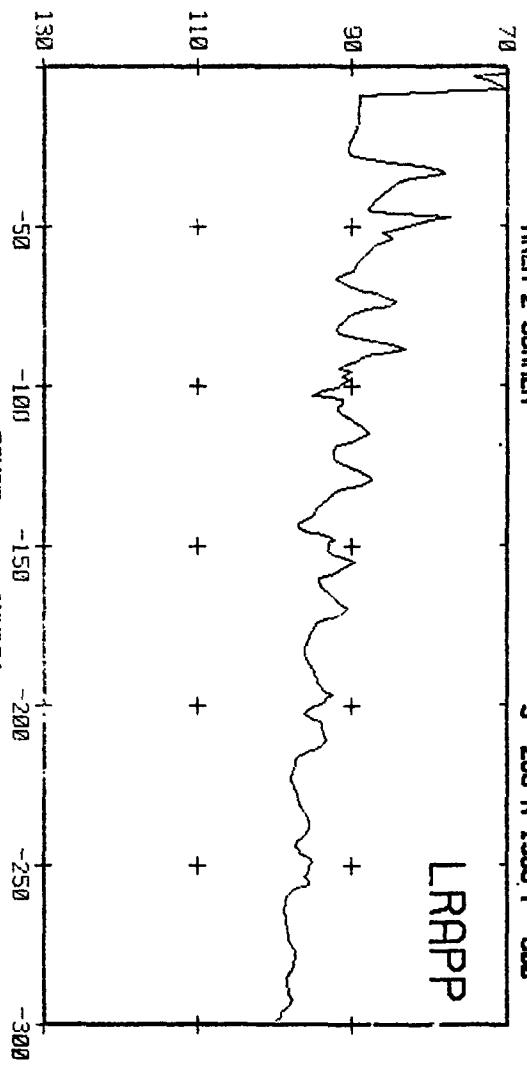
NOISE (DB)



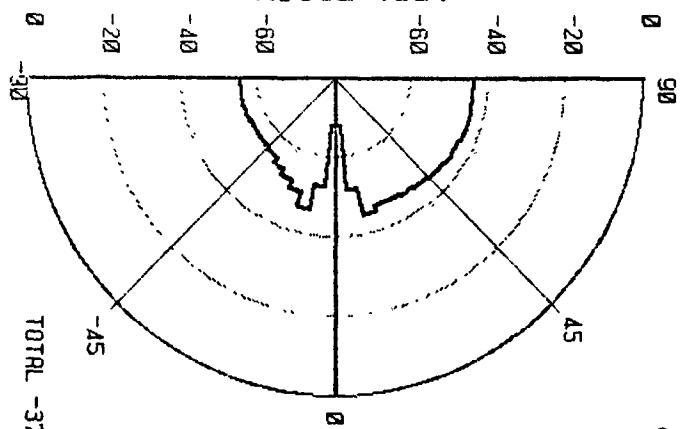
ARRIVAL ANGLE



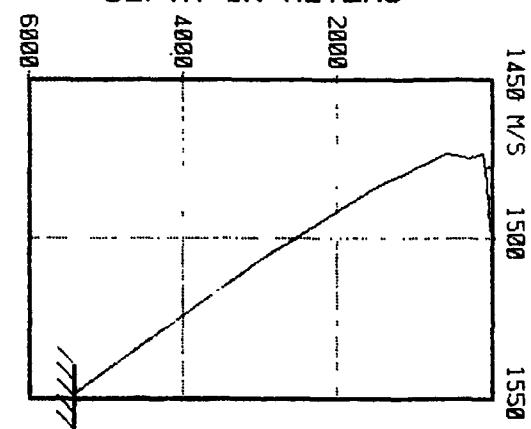
DB LOSS



NOISE (DB)



DEPTH IN METERS



AREA 2 SUMMER

S 21° R 7374 F E 15

1450 M/S 1500 1550

LFBP

DB LOSS

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ARRIVAL ANGLE

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DEPTH IN METERS

20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0

-139-

NOISE (DB)

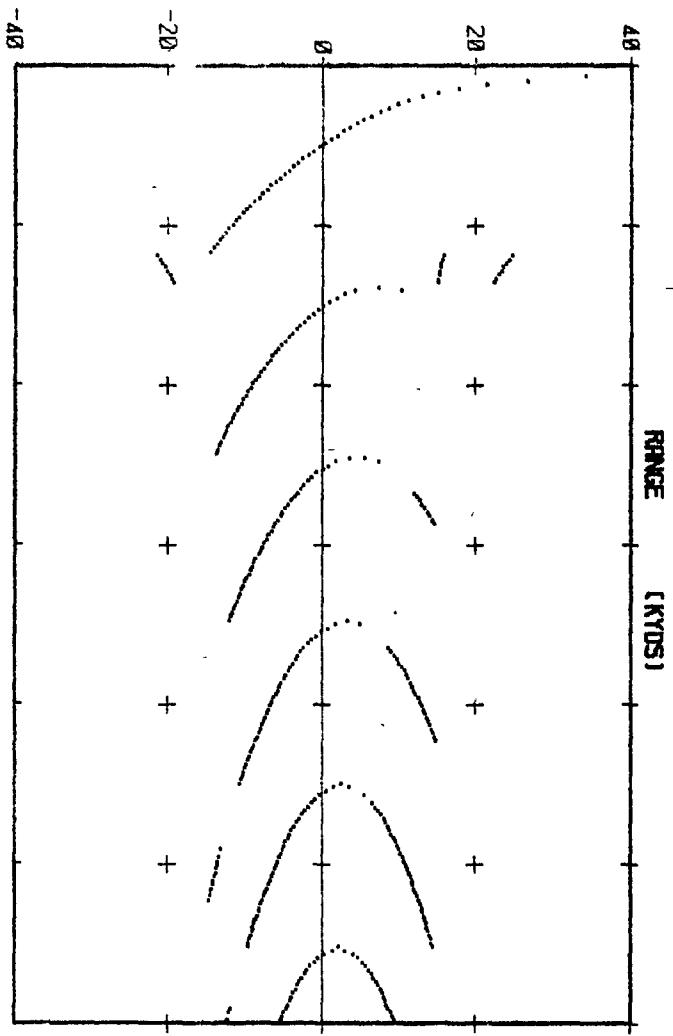
-90
-80
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-20
-10
0

0
45
90

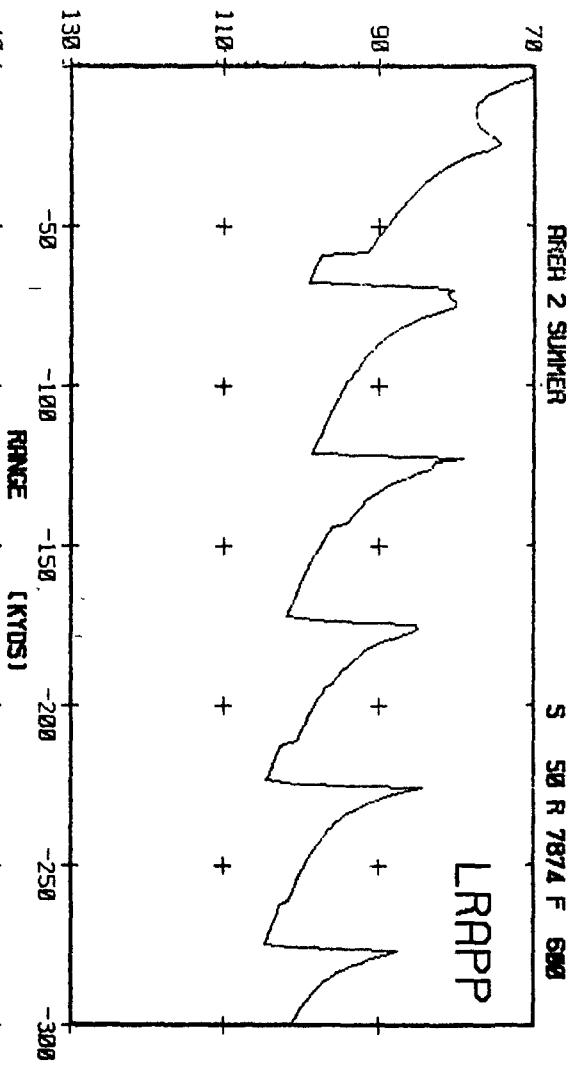
0
-15
-30
-45
-60
-75
-90

TOTHL +36.2, DB

ARRIVAL ANGLE



DB LOSS



AREA 2 SUMMER

S

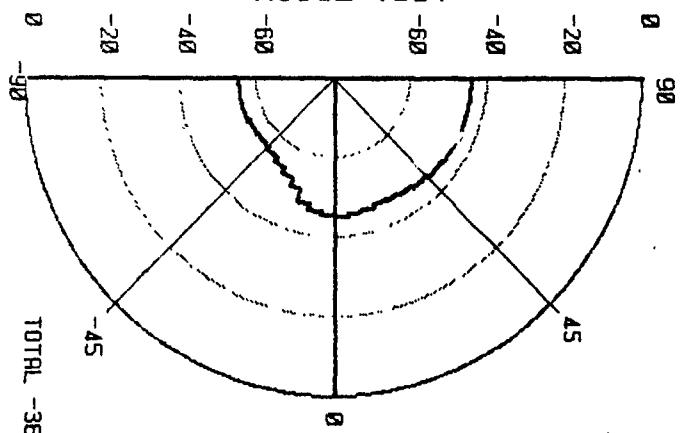
LRAPP

1450 M/S

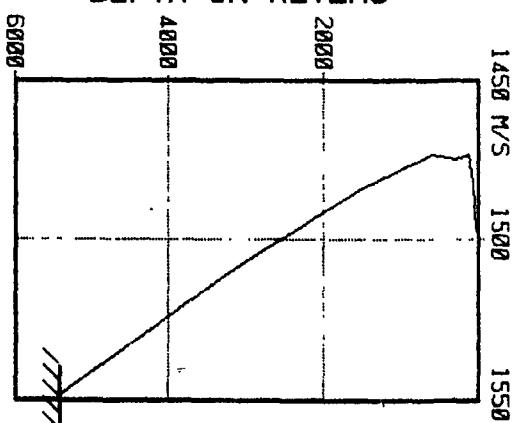
1500

1550

NOISE (DB)



DEPTH IN METERS



PINGER 2 SUMMER

S 266 R 7874 F 660

1450 M/S 1500 1550

LRAPP

DB LOSS

112 +

90 +

70 +

50 +

30 +

10 +

-10 +

-30 +

-50 +

-70 +

-90 +

-110 +

-130 +

-150 +

-170 +

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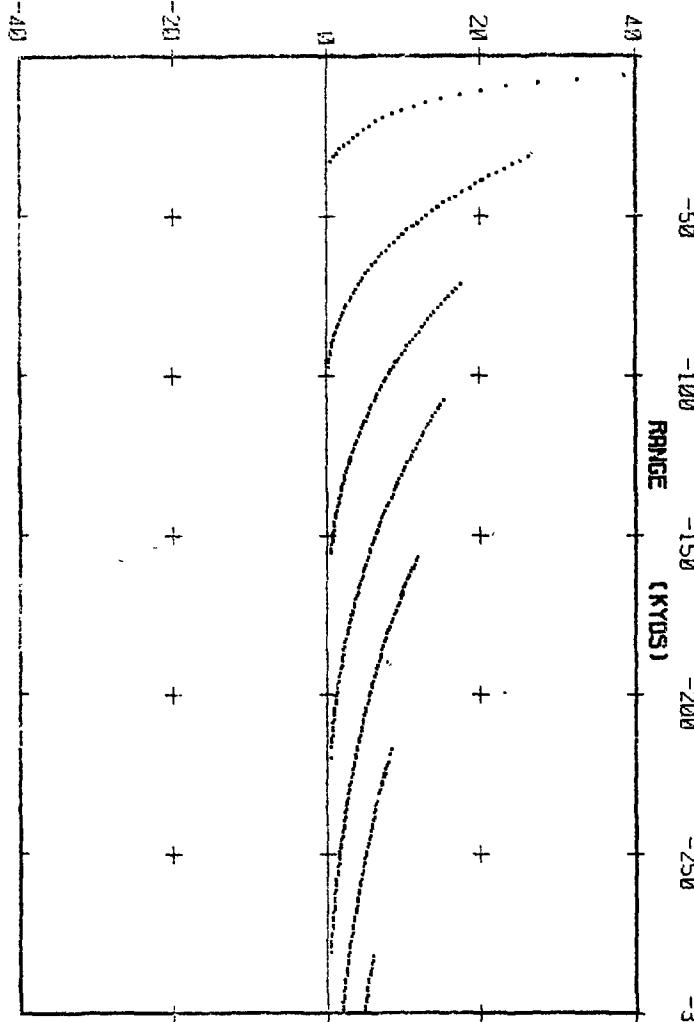
-5370 +

-5390 +

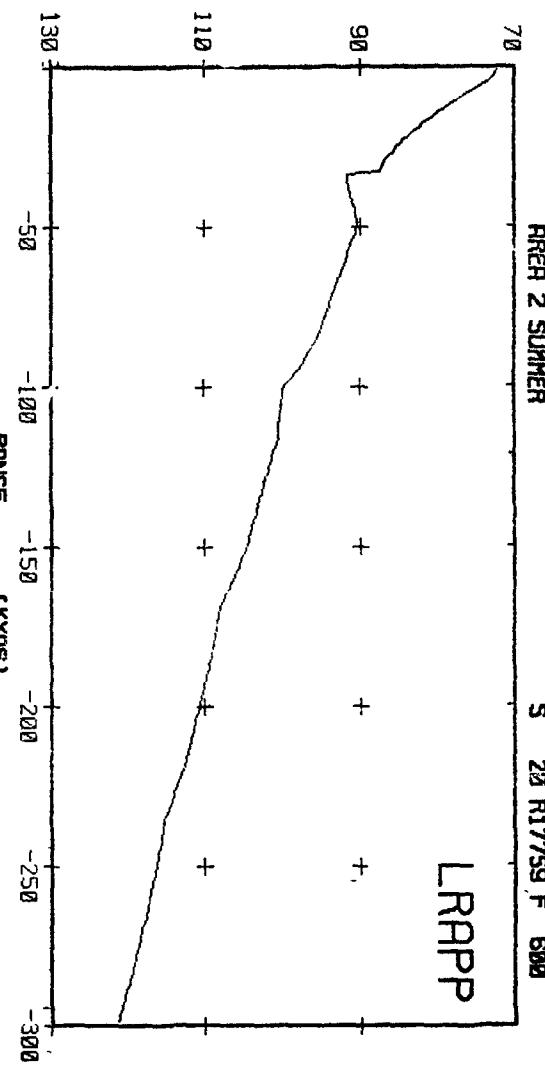
-5410 +

-5430 +

ARRIVAL ANGLE



DB LOSS



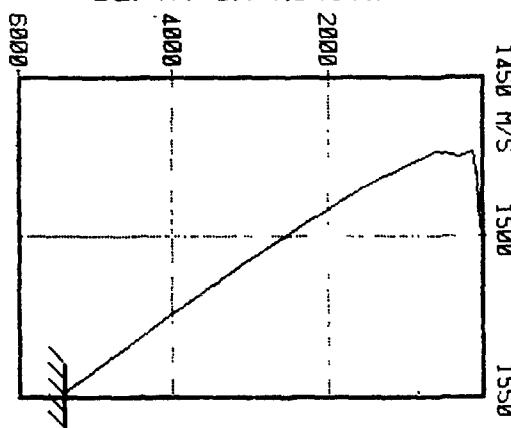
LRAAPP

AREA 2 SUMMER

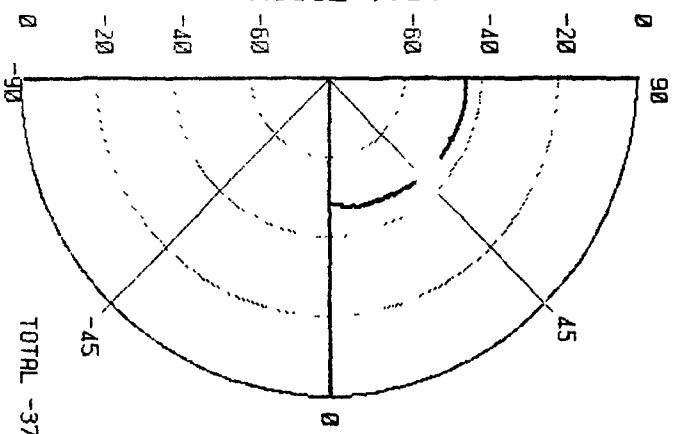
S 23 R17759 F 600

1450 M/S 1500 1550

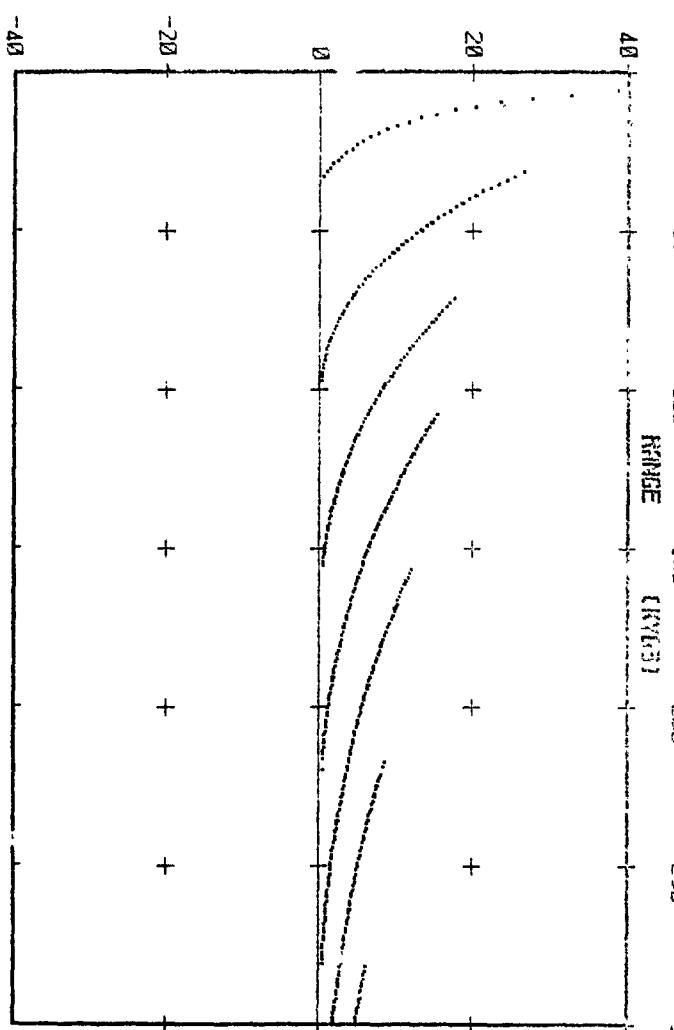
DEPTH IN METERS



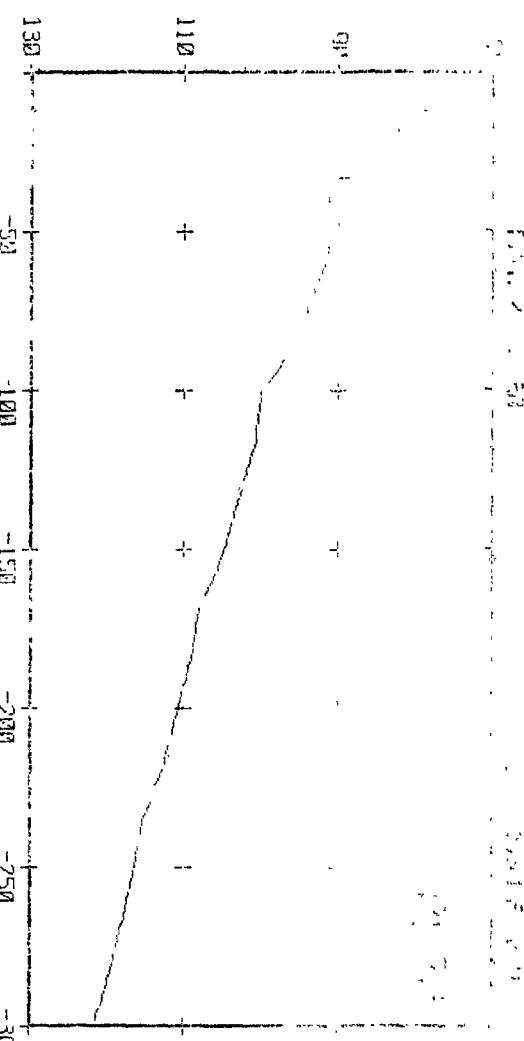
NOISE (DB)



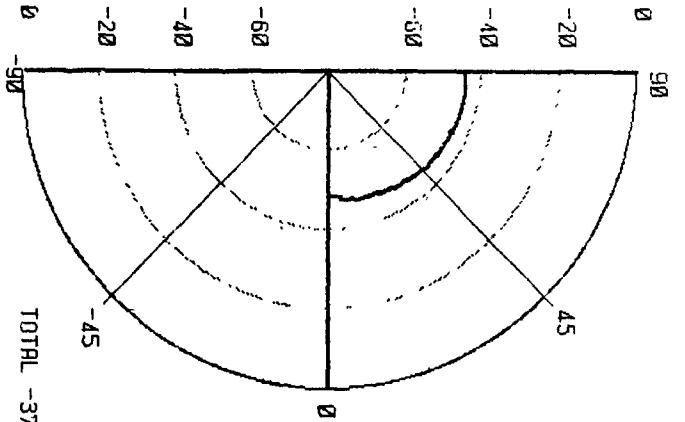
ARRIVAL ANGLE



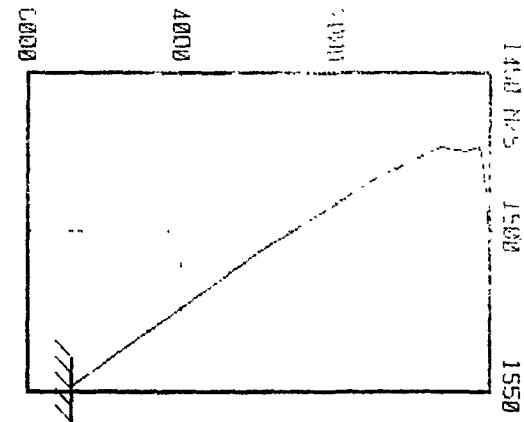
DB LOSS



NOISE (DB)



DEPTH IN METERS



TOTAL -37.9 DB

70

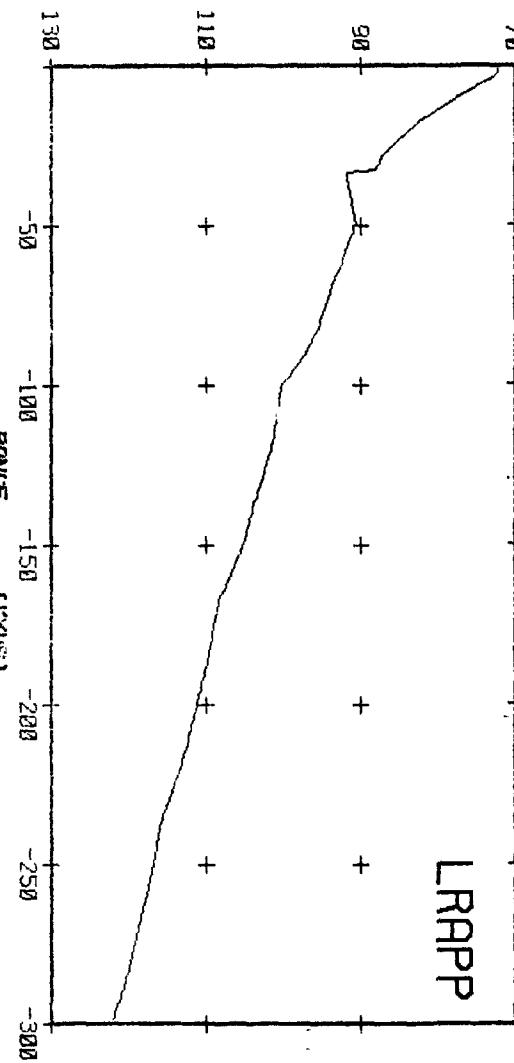
AREA 2 SUMMER

S 268 R17759 F 600

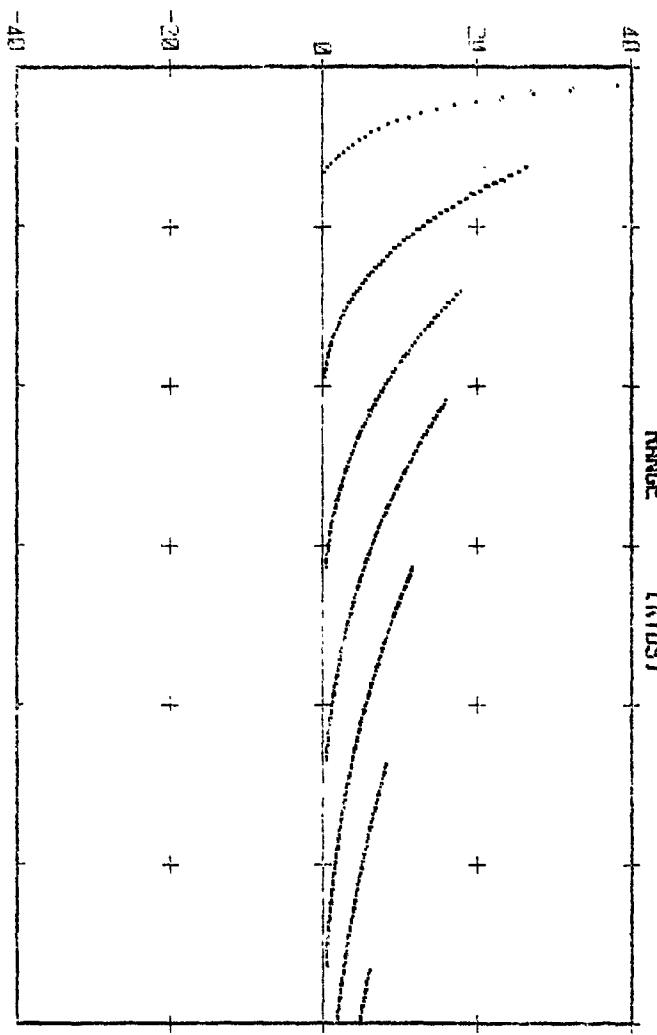
1450 M/S 1500 1550

LRAPP

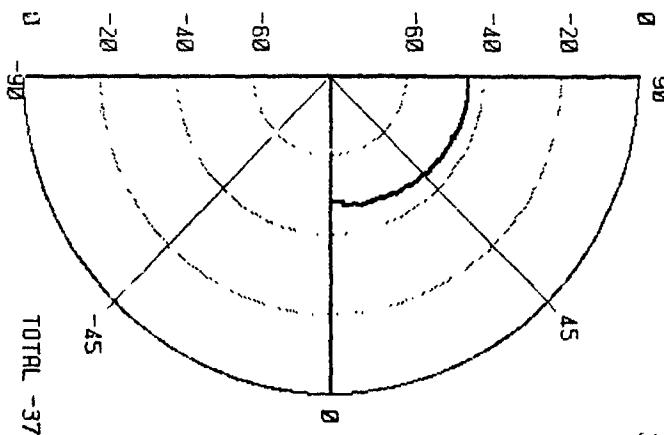
DB LOSS



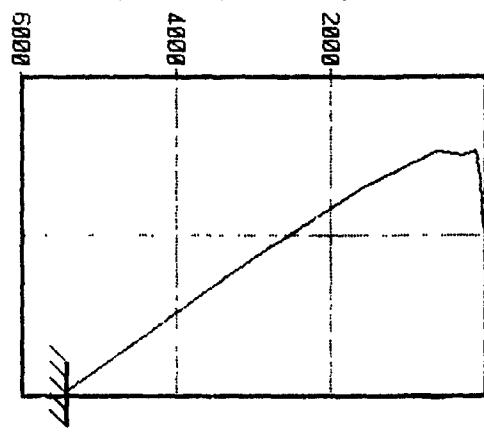
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS

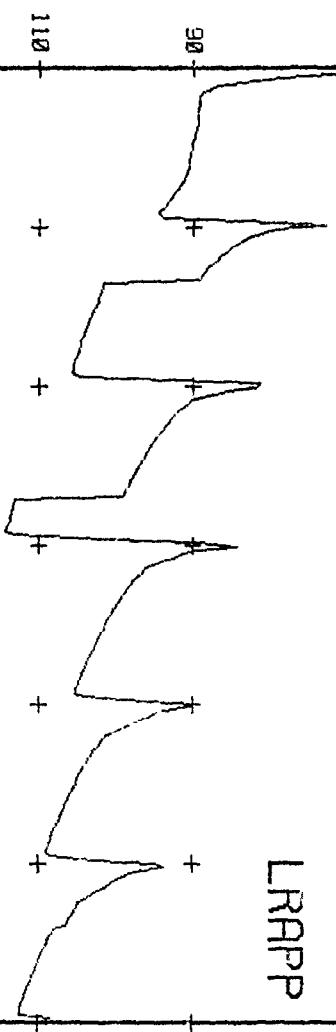


AREA 2 SUMMER

S 20R 60F 900

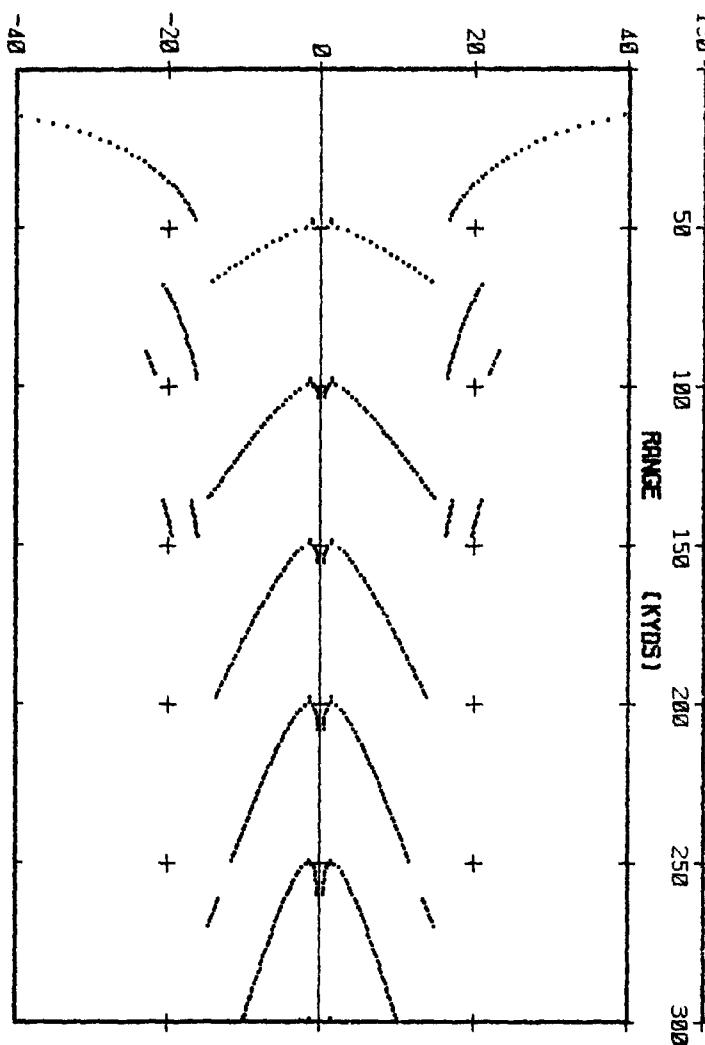
1450 M/S 1500 1550

DB LOSS

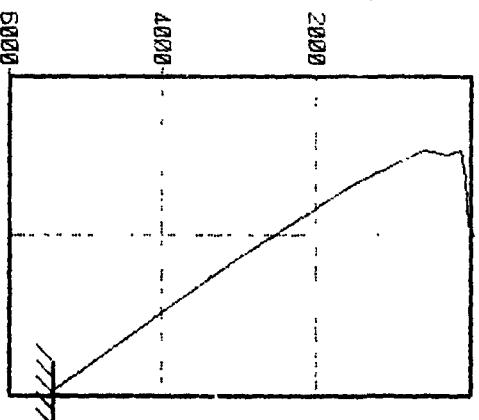


L RAPP

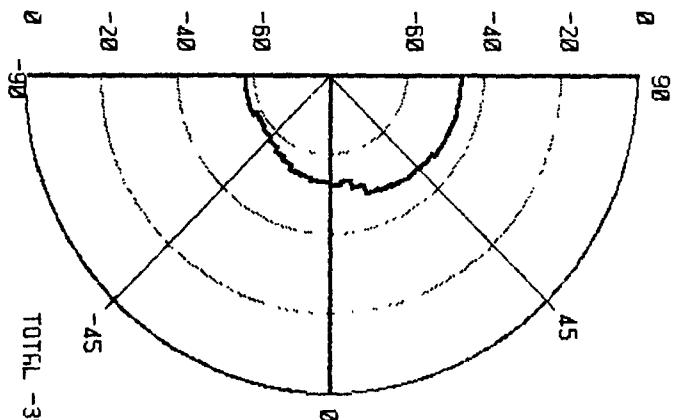
ARRIVAL ANGLE



DEPTH IN METERS

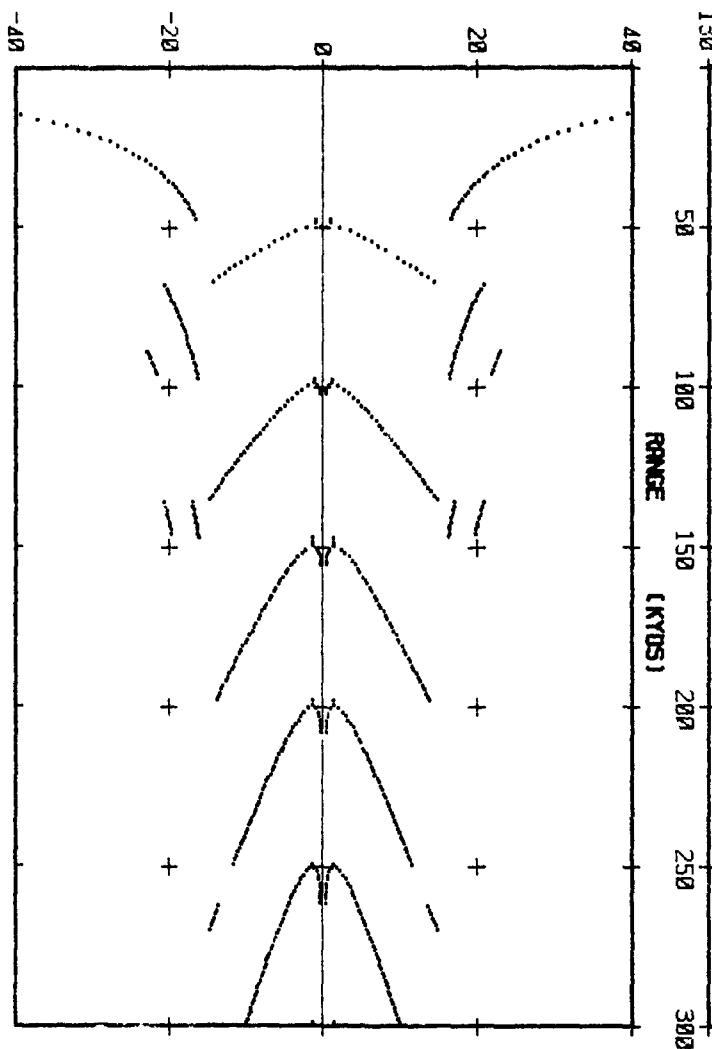


NOISE (DB)

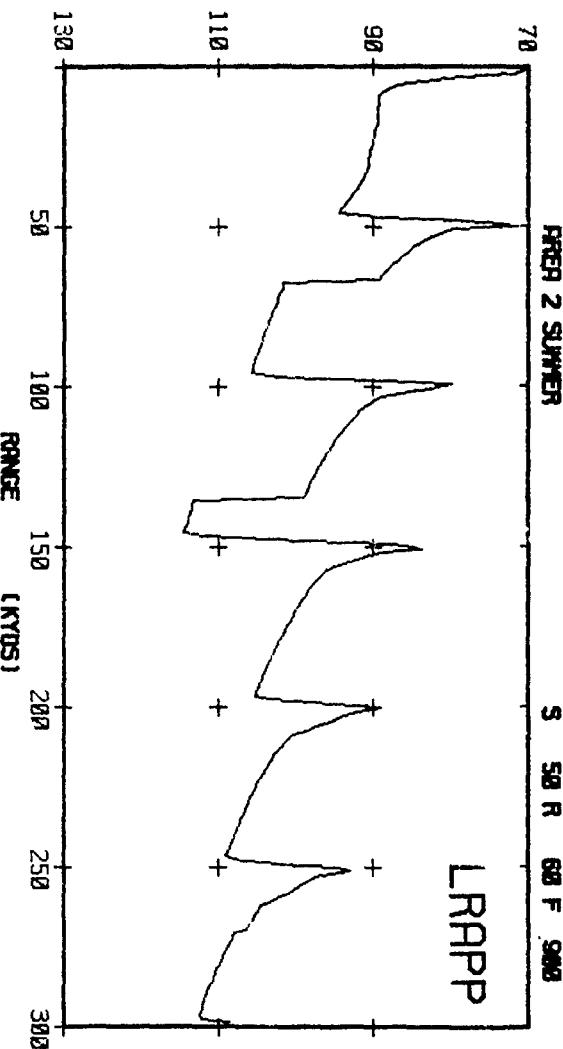


TOTAL -39.4 DB

ARRIVAL ANGLE



DB LOSS



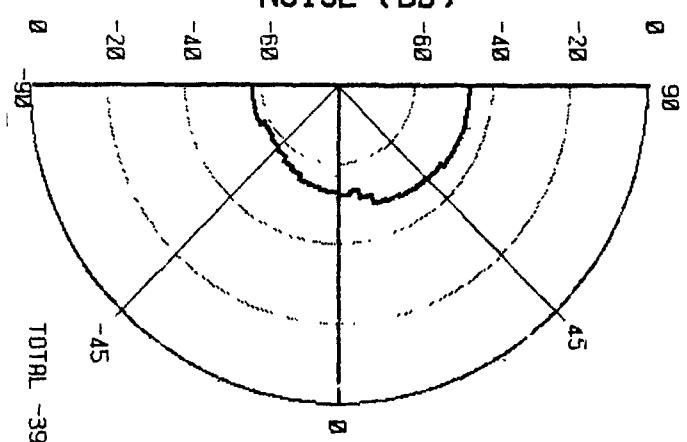
PRED 2 SUMMER

S 50 R 60 F 900

LRAPP

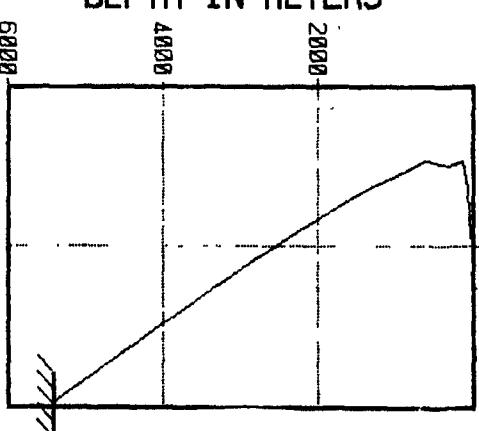
1450 M/S 1500 1550

NOISE (DB)



TOTAL -39.4 DB

DEPTH IN METERS



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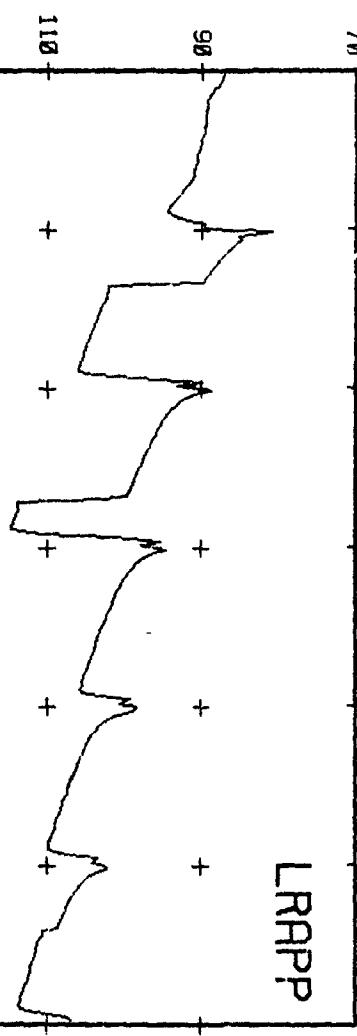
AREA 2 SUMMER

S 266 R 69 F 900

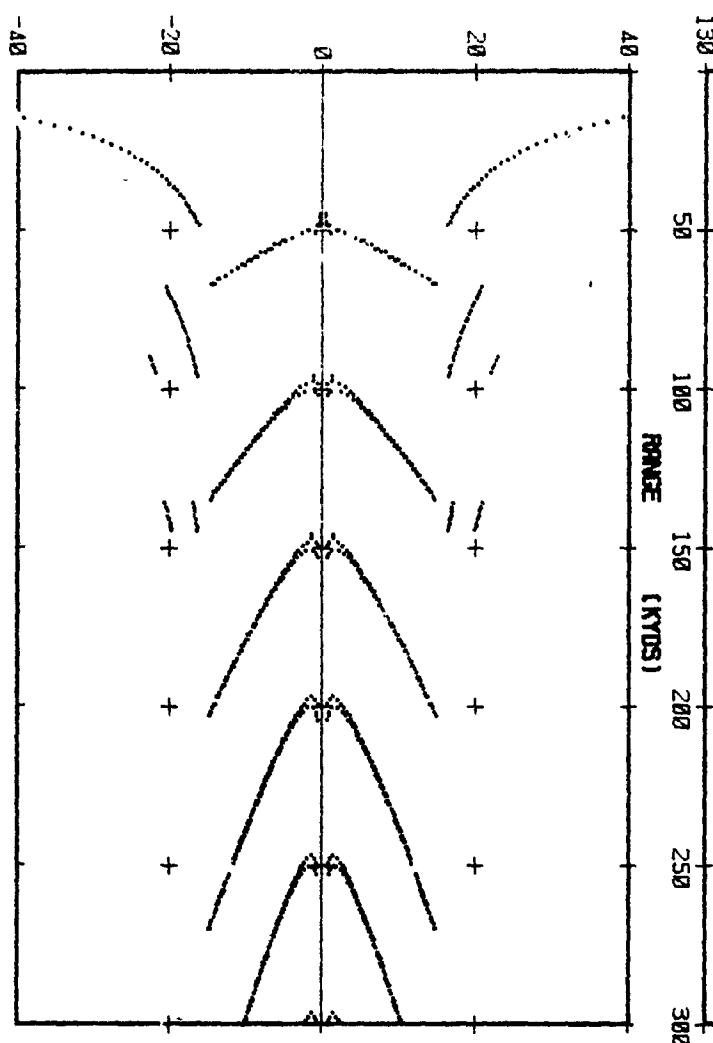
1450 M/S 1500 1550

LRAPP

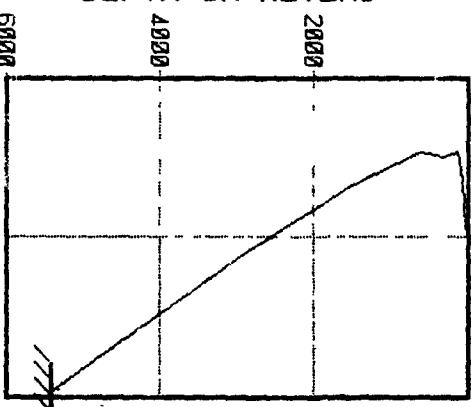
DB LOSS



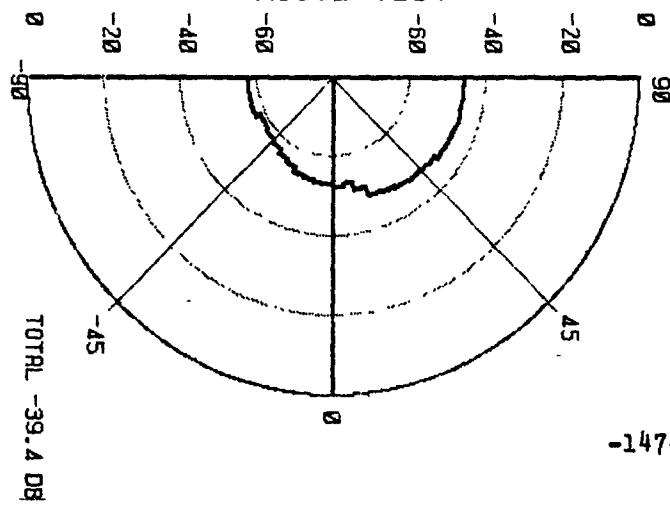
ARRIVAL ANGLE



DEPTH IN METERS



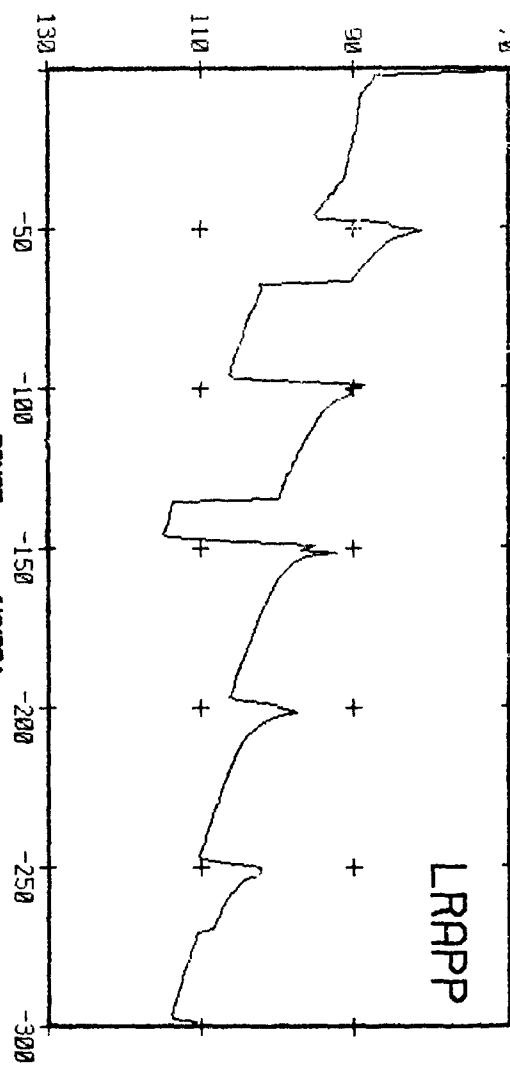
NOISE (DB)



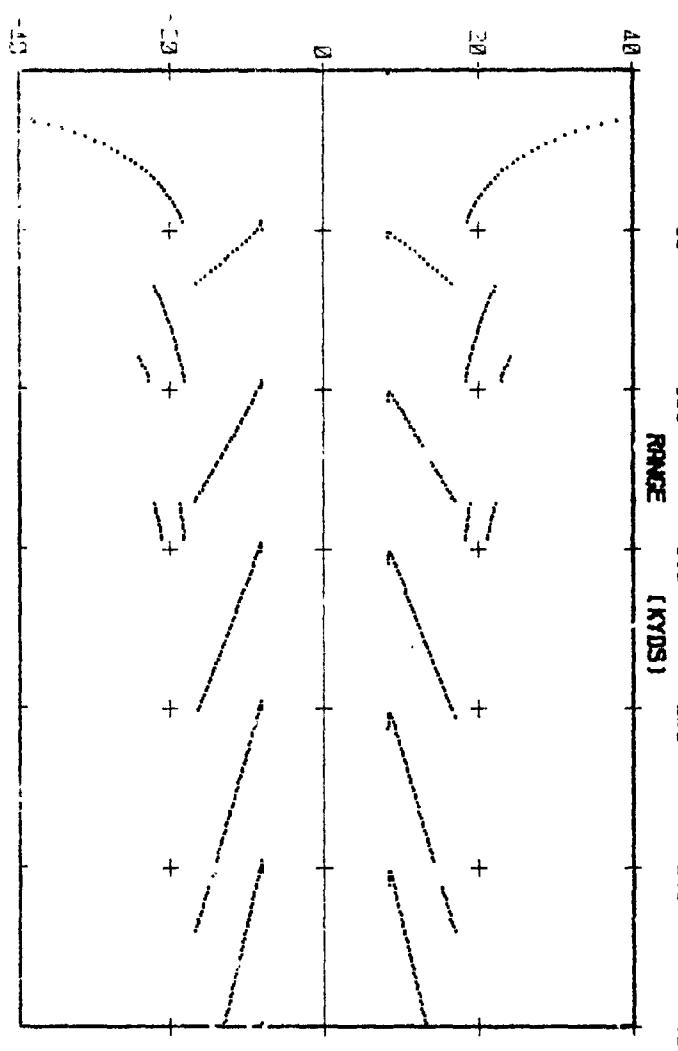
78
PAGER 2 SUMMER
S 20 R 168 F 900
1450 M/S 1500 1550

LRAPP

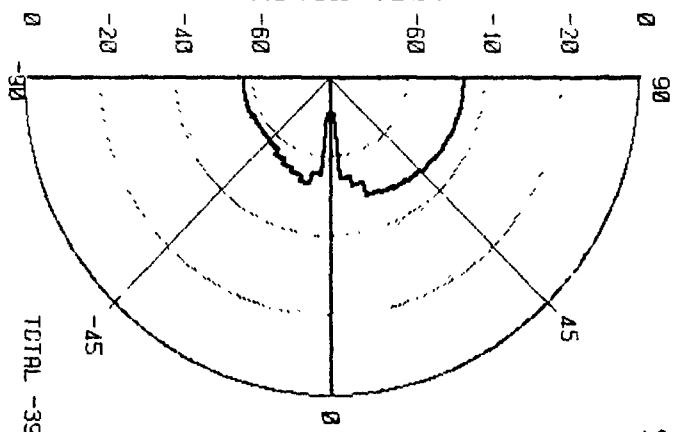
DB LOSS



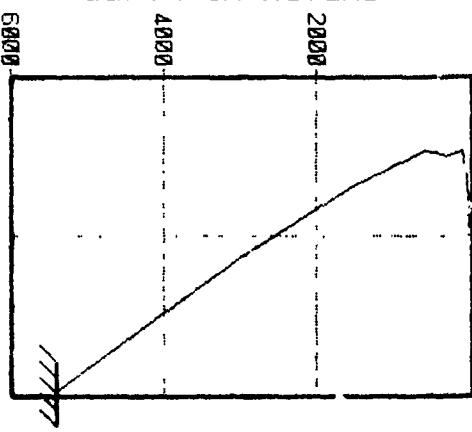
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



70
HHR 2 SUMMER S 50 R 165 F 360

1450 M/S 1500 1550

LRAPP

DB LOSS

132 110 90

RANGE

(KYDS)

2000 4000 DEPTH IN METERS

6000 4000

2000 4000

6000 4000

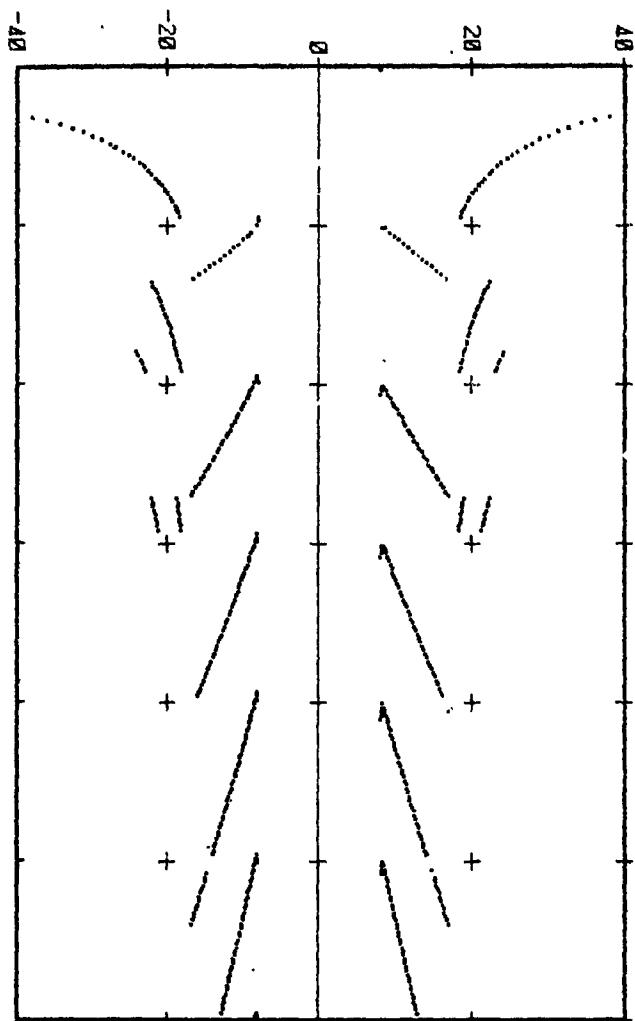
2000 4000

6000 4000

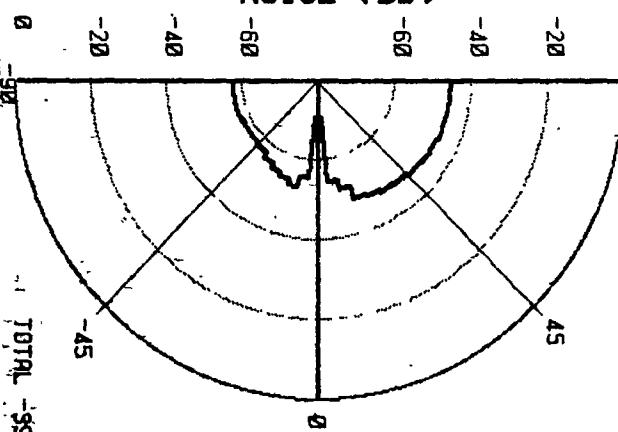
2000 4000

6000 4000

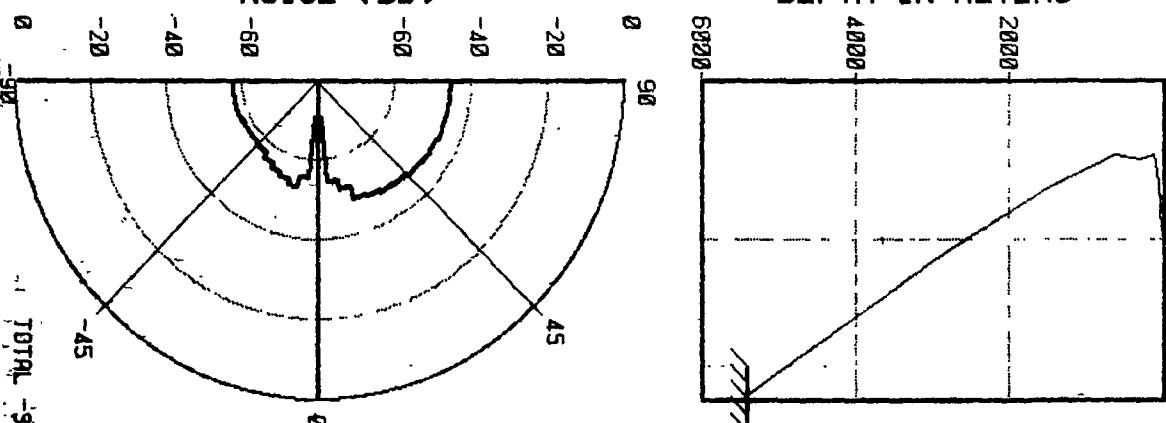
ARRIVAL ANGLE



NOISE (DB)



-149-



TOTAL 39.8 DB

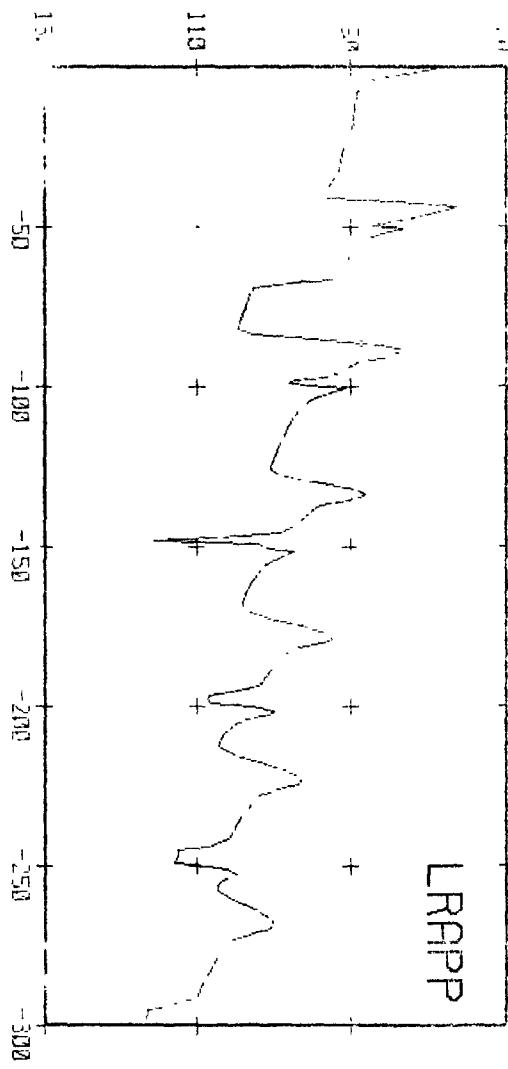
ARR 2 SUMMER

S 266 R 166 F 900

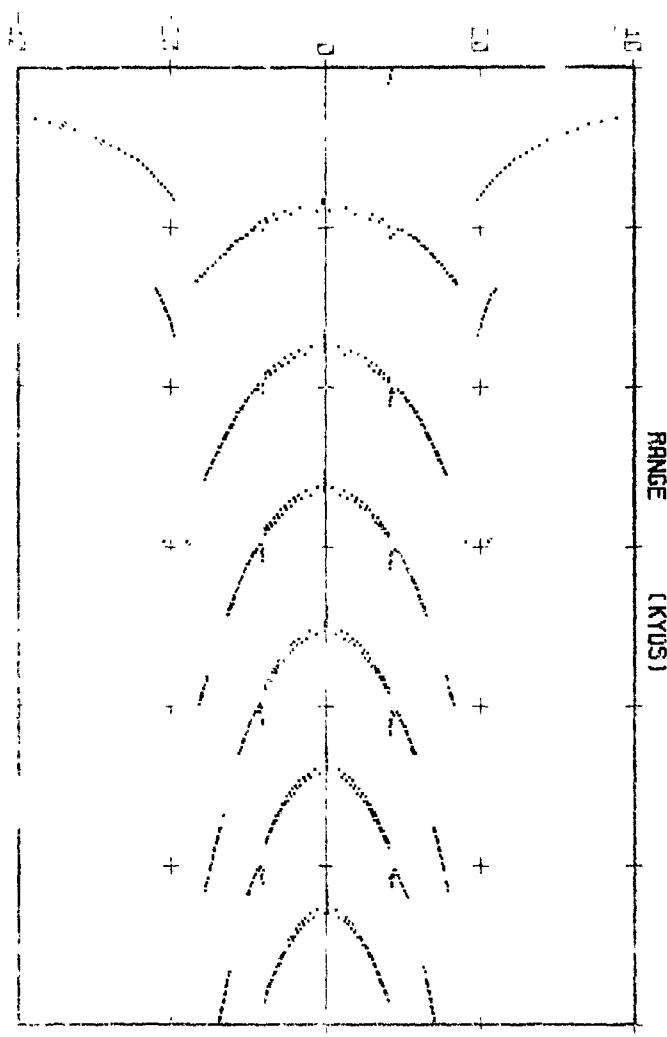
1153 115 150P 1550

LRAPP

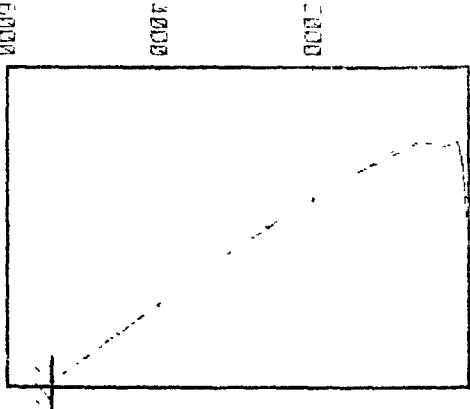
DB LOSS



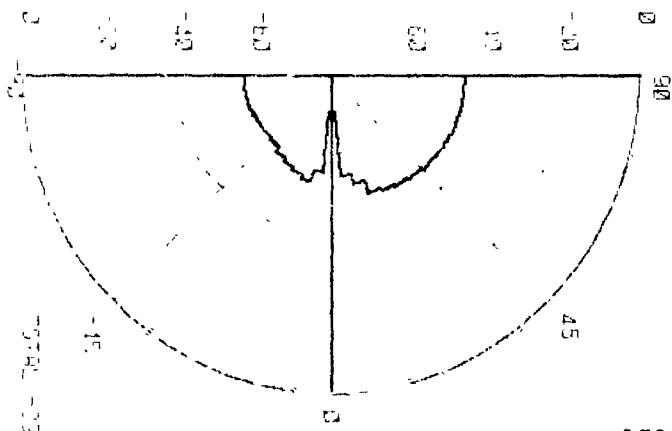
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



74

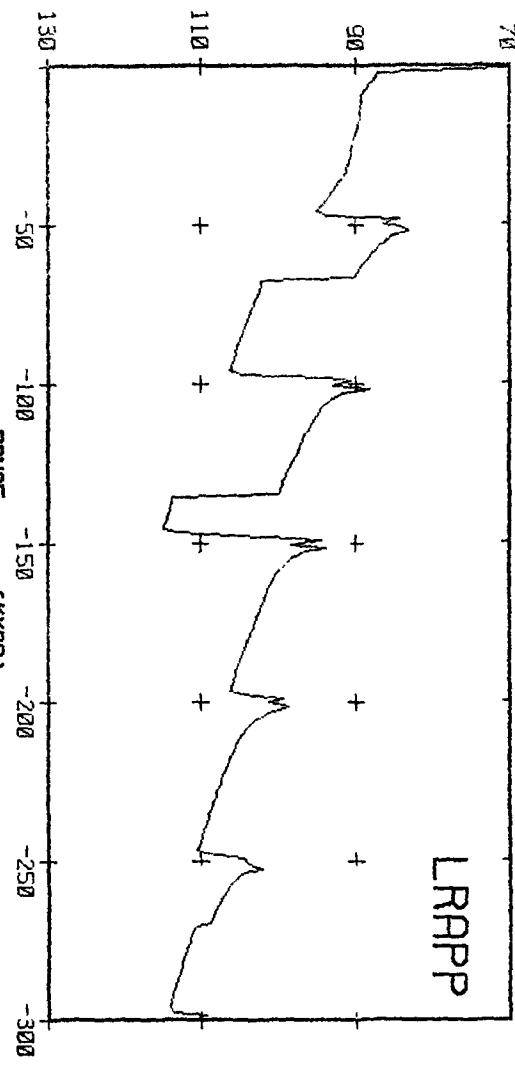
AREA 2 SUMMER

S 20 R 300 F 900

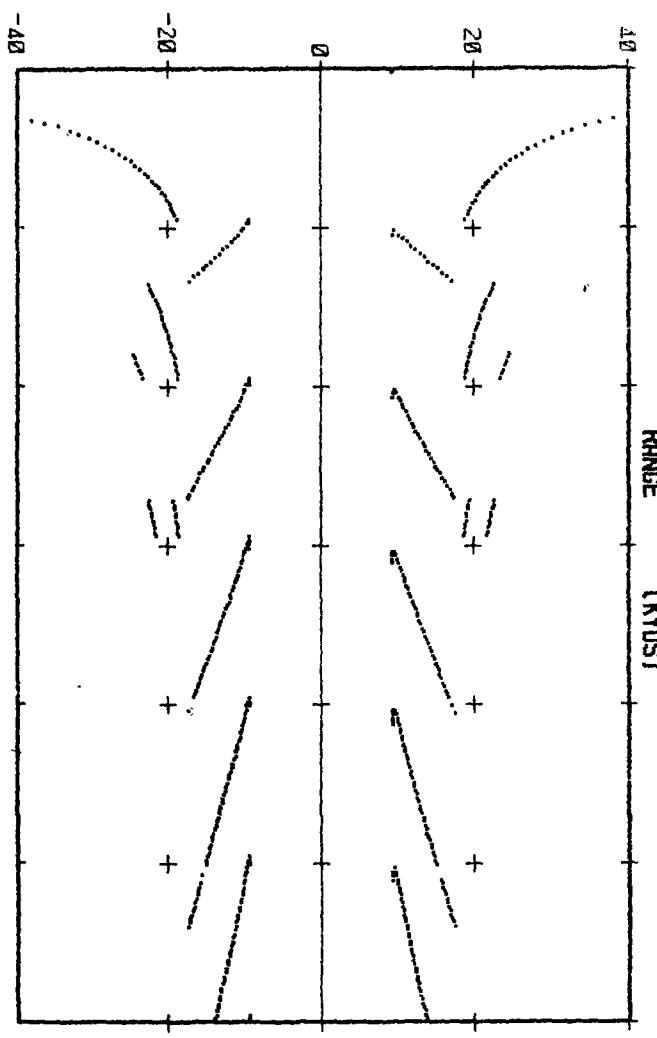
1450 M/S 1500 1550

LRAPP

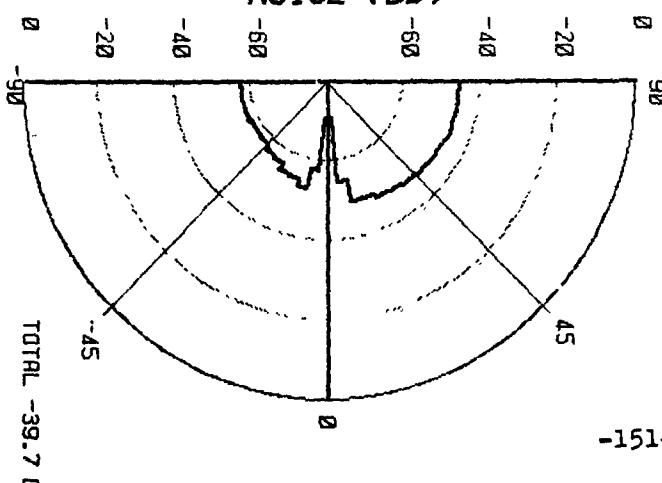
DB LOSS



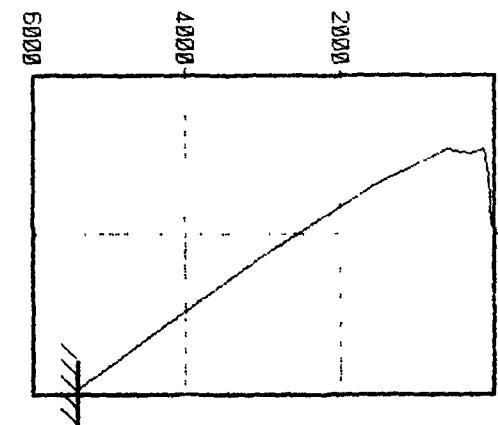
ARRIVAL ANGLE



NOISE (DB)

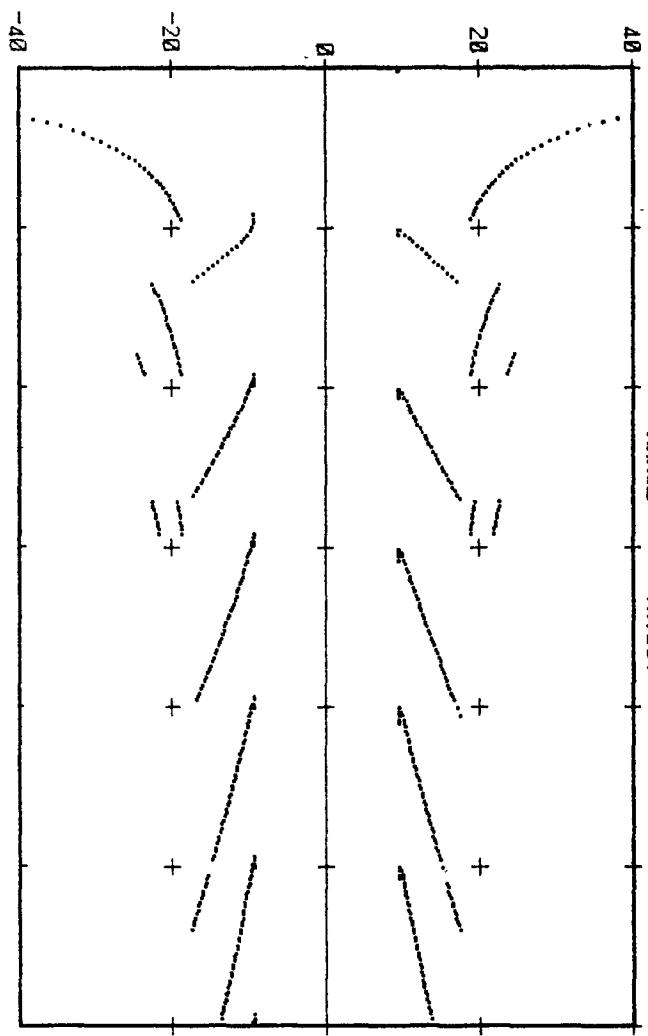


DEPTH IN METERS

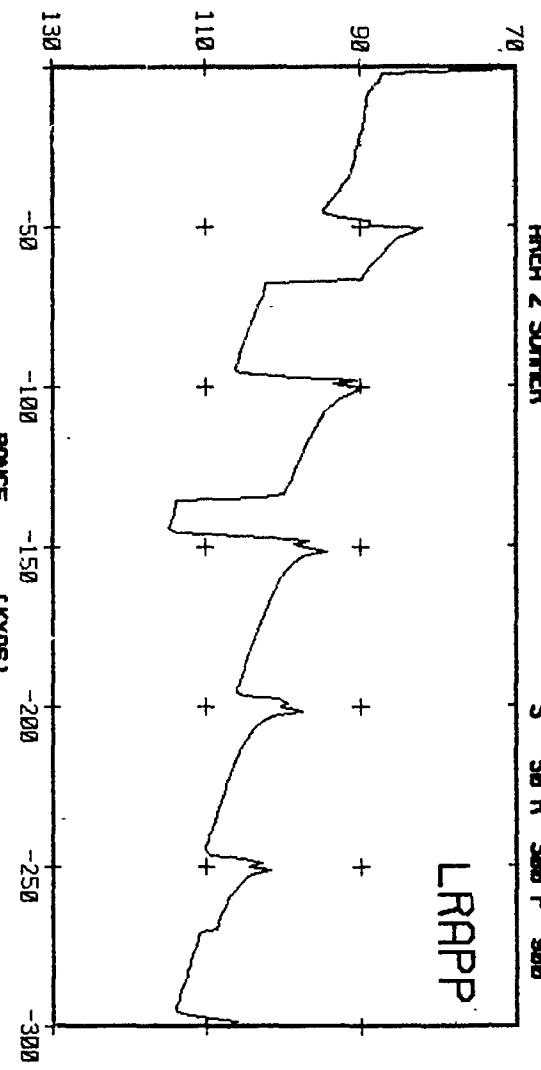


TOTAL -39.7 DB

ARRIVAL ANGLE



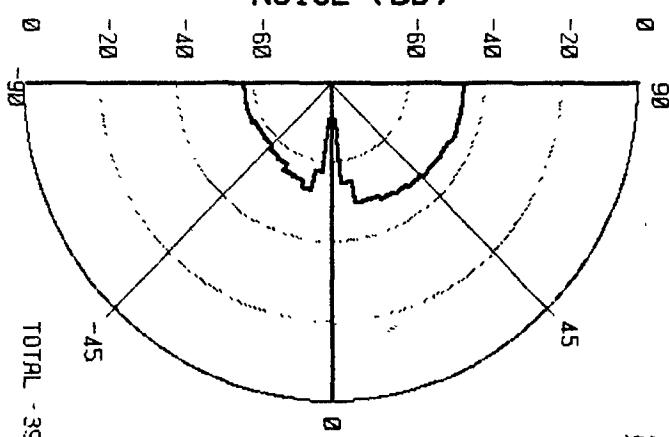
DB LOSS



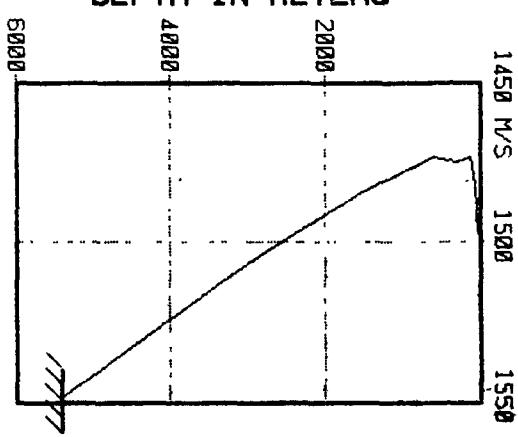
AREA 2 SUMMER S 50 R 300 F 900

LRAPP

NOISE (DB)



DEPTH IN METERS



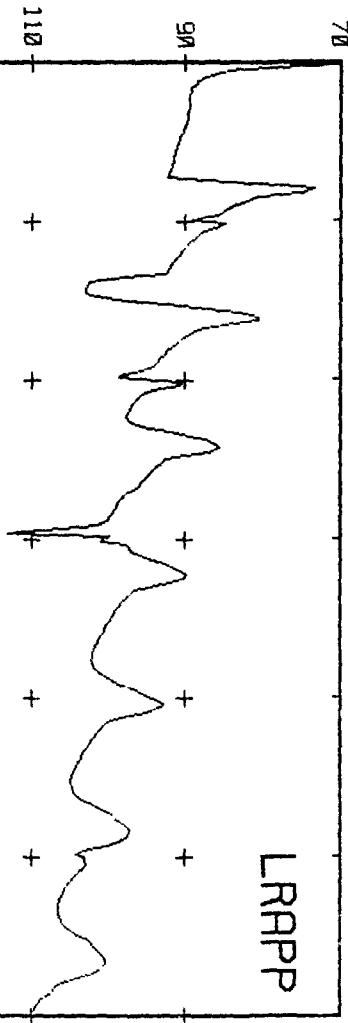
1450 M/S 1500 1550

ARR 2 SUMMER

S 266 R 300 F 900

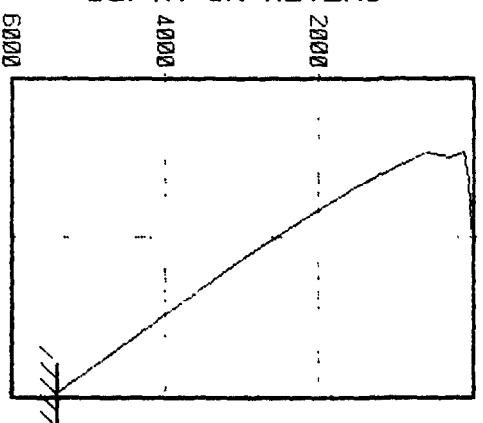
1450 M/S 1500 1550

DB LOSS

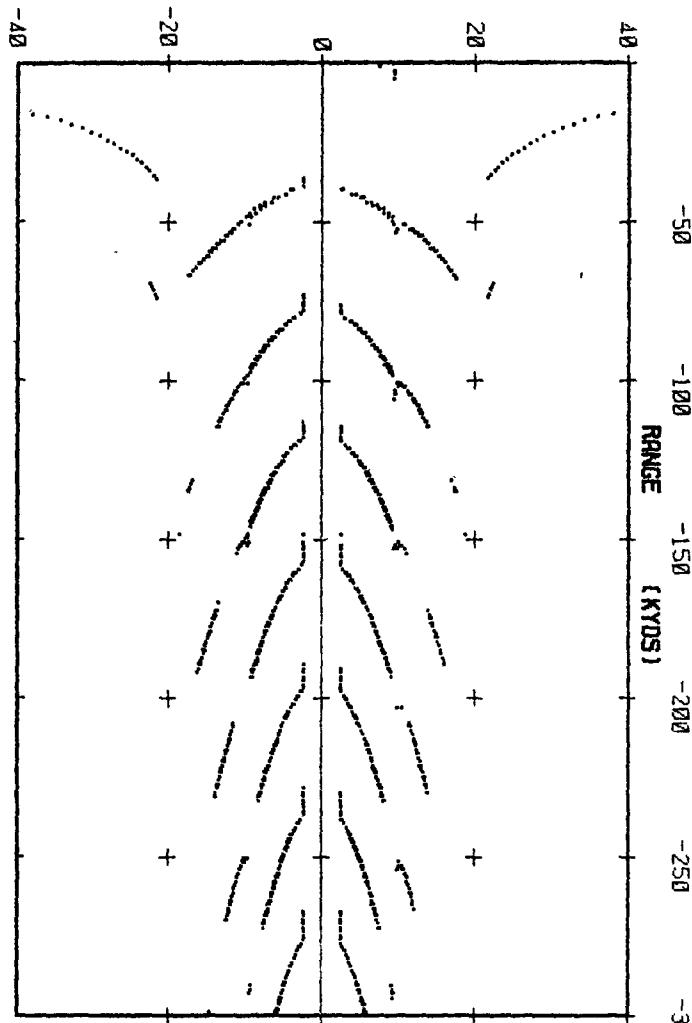


LRAPP

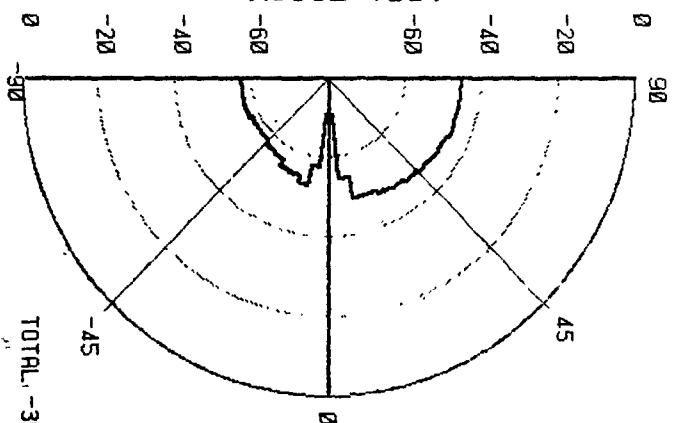
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



TOTAL -39.7 DB

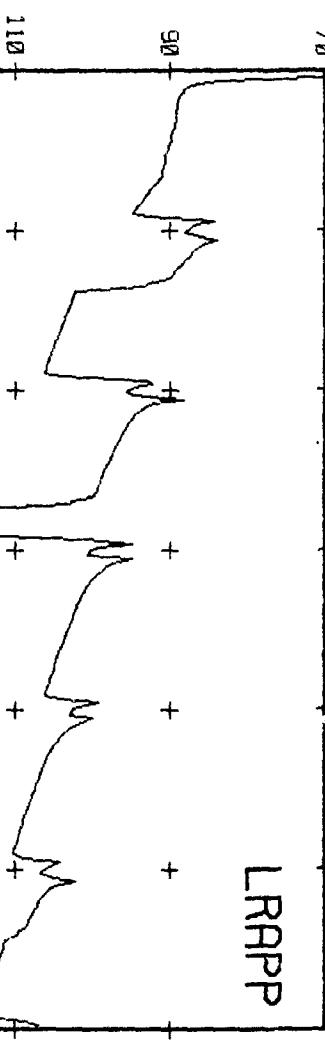
AREA 2 SUMMER

S 28 R 1000 F 900

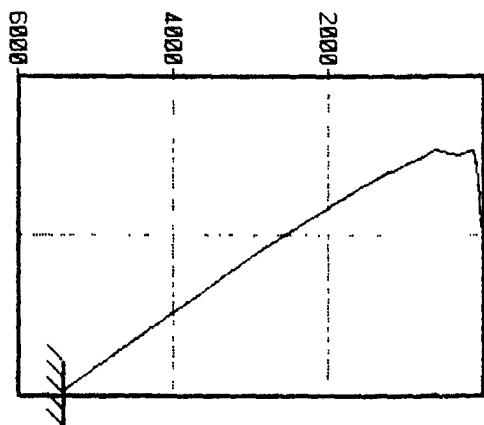
1450 M/S 1500 1550

LRAPP

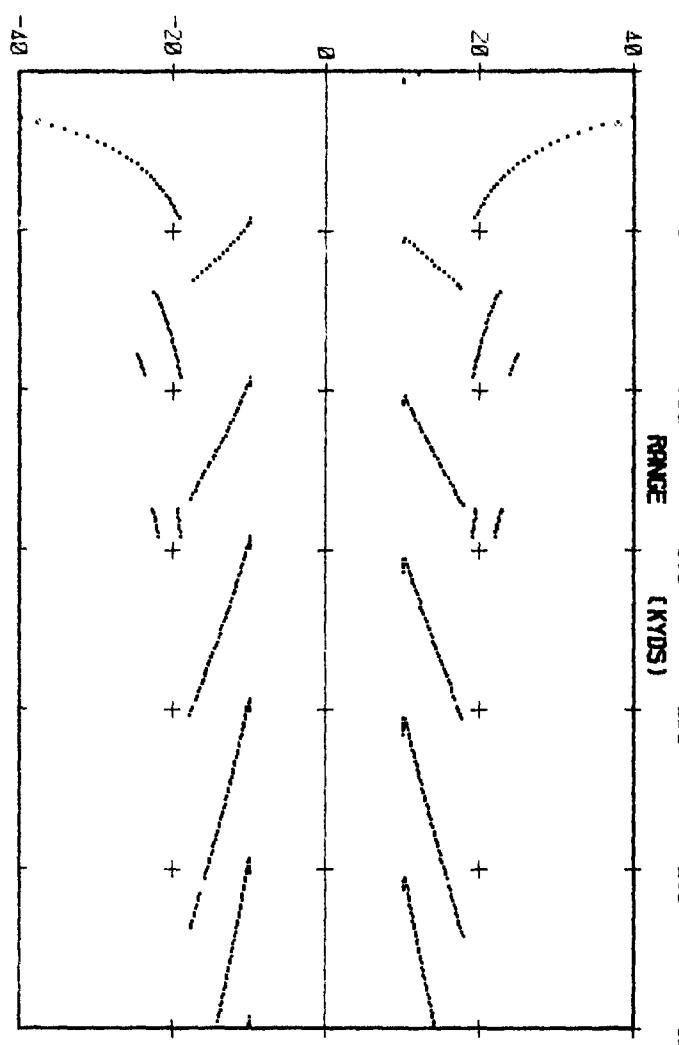
DB LOSS



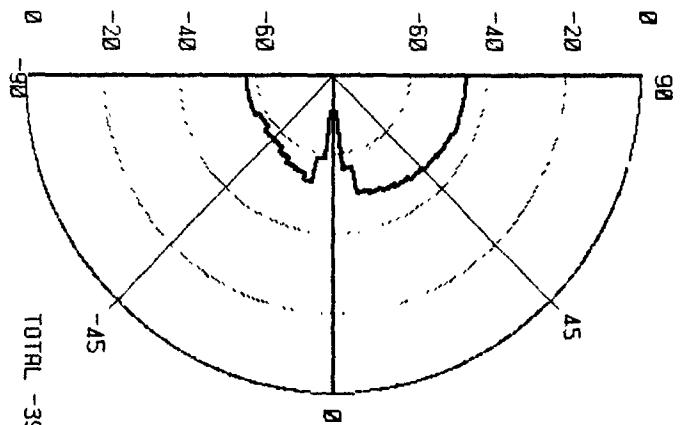
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



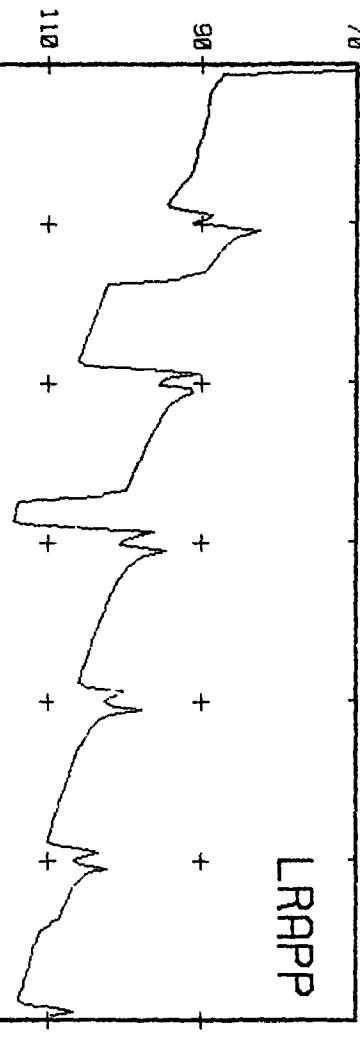
TOTAL -39.7 DB

REF 2 SUMMER

S 50 R 1000 F 900

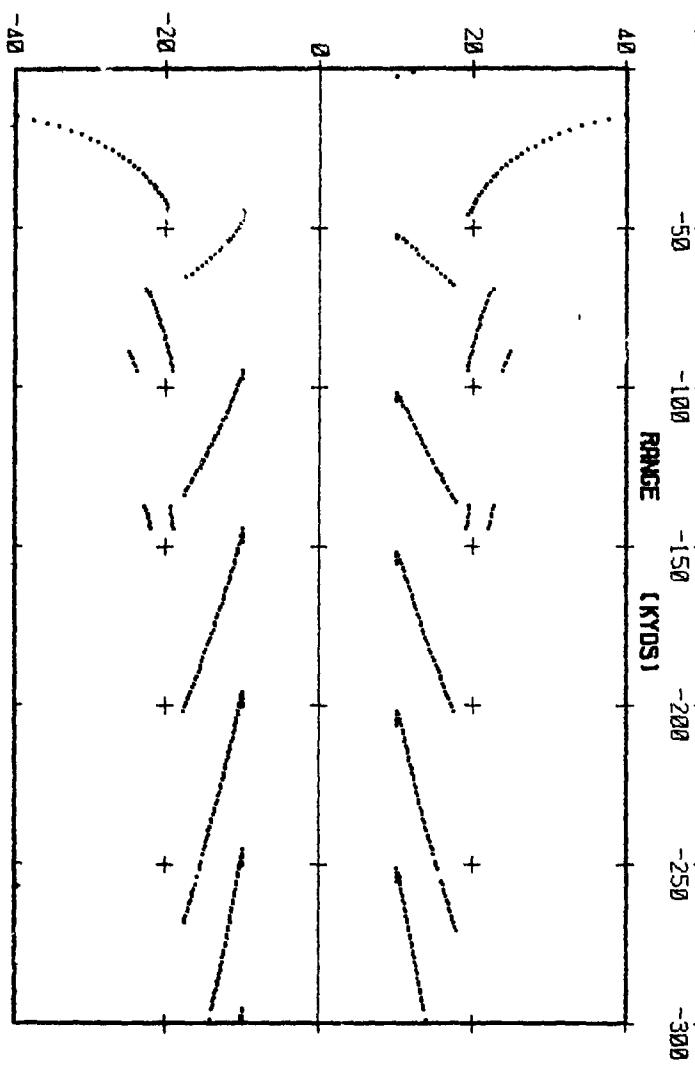
1450 M/S 1500 1550

DB LOSS

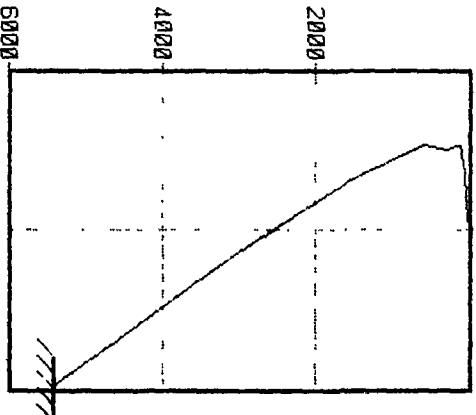


L RAPP

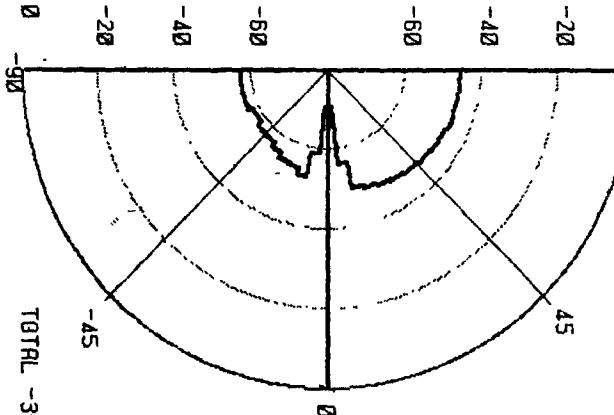
ARRIVAL ANGLE



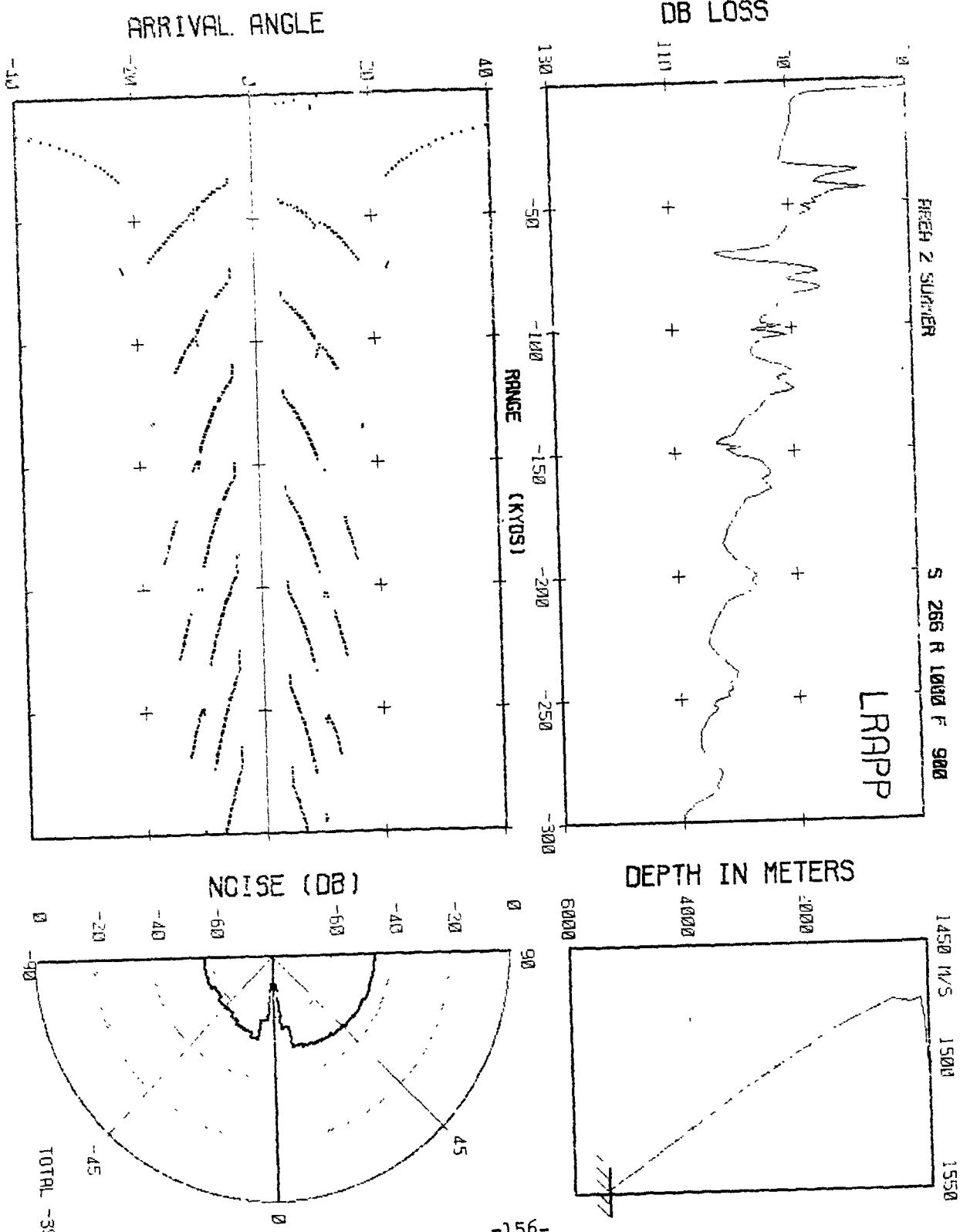
DEPTH IN METERS



NOISE (DB)



TOTAL -39.7 DB



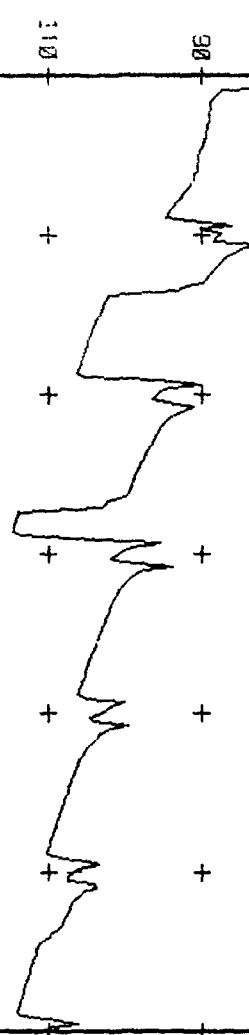
70

AREA 2 SUMMER

S 20 R 1500 F 900

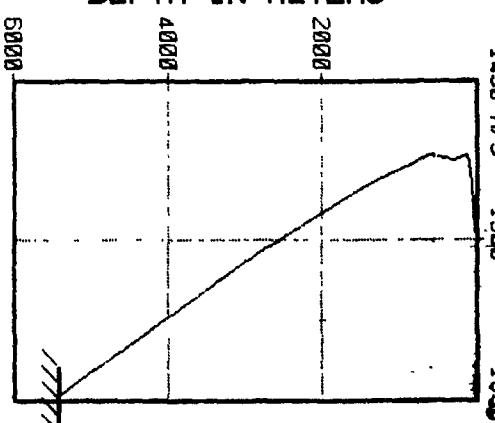
1450 M/S 1500 1550

DB LOSS

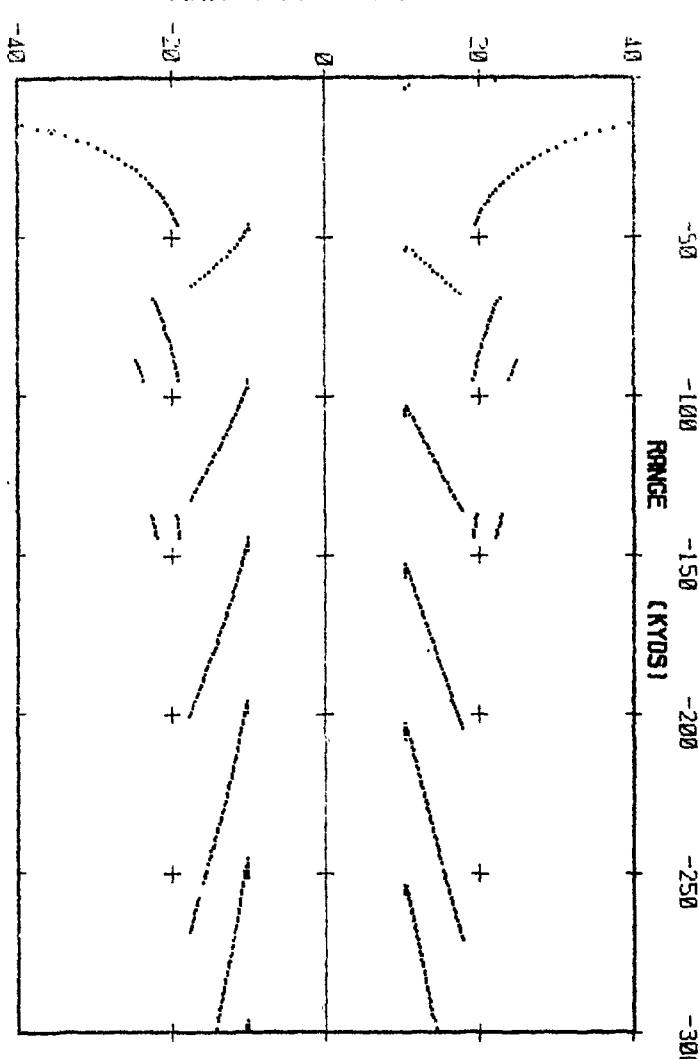


LRAPP

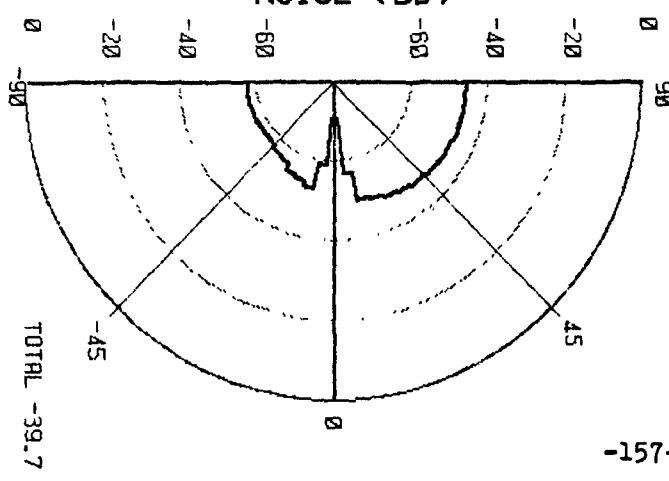
DEPTH IN METERS



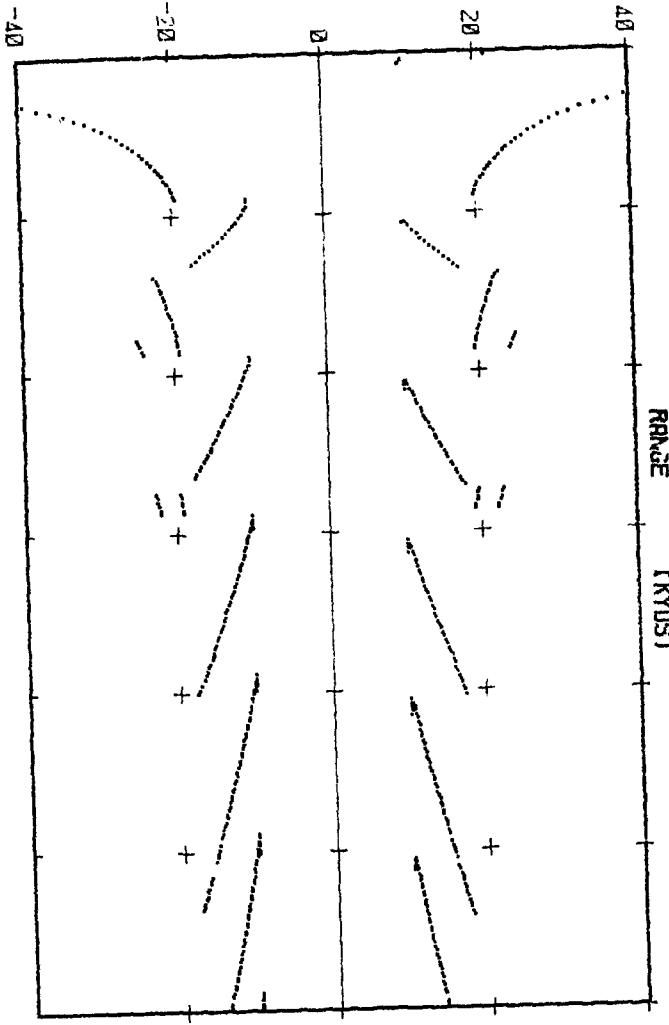
ARRIVAL ANGLE



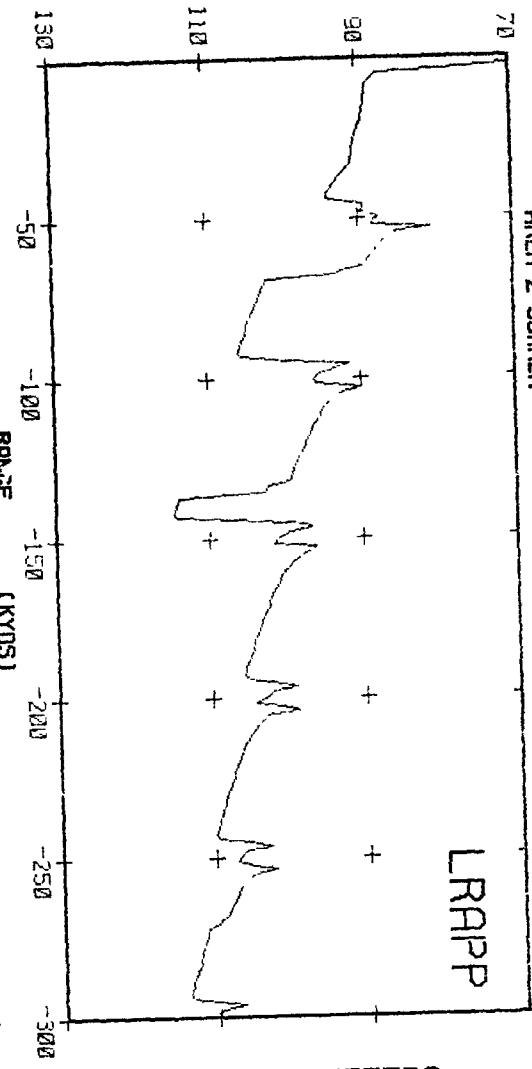
NOISE (DB)



ARRIVAL ANGLE

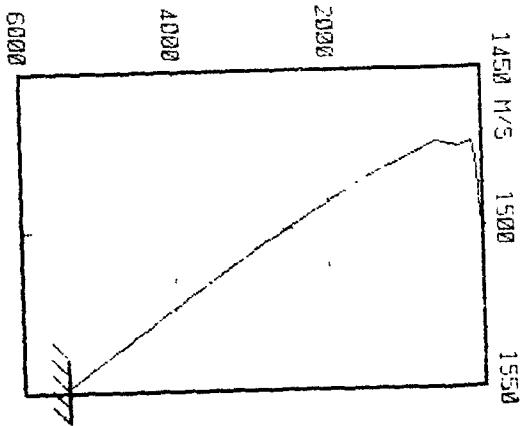


DB LOSS

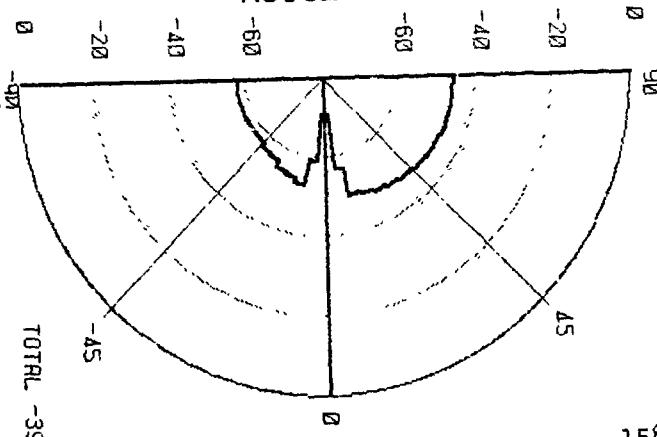


L RAPP

DEPTH IN METERS



NOISE (DB)



RIVER 2 SUMMER

S 266 R 1500 F 900

1450 M/S 1500 1550

LRAAPP

DB LOSS

110

130

150

170

190

210

230

250

270

290

310

330

350

370

390

410

430

450

470

490

510

530

550

570

590

610

630

650

670

690

710

730

750

770

790

810

830

850

870

890

910

930

950

970

990

1010

1030

1050

1070

1090

1110

1130

1150

1170

1190

1210

1230

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1870

1890

1910

1930

1950

1970

1990

2010

2030

2050

2070

2090

2110

2130

2150

2170

2190

2210

2230

2250

2270

2290

2310

2330

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4970

4990

5010

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5150

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5250

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5310

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5670

5690

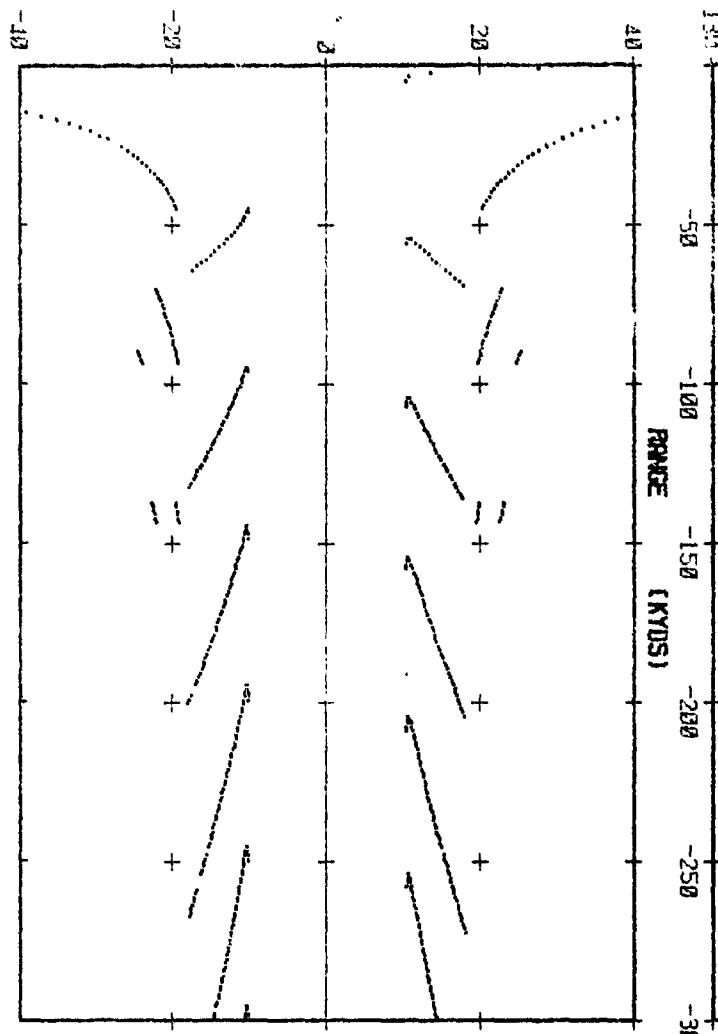
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5730

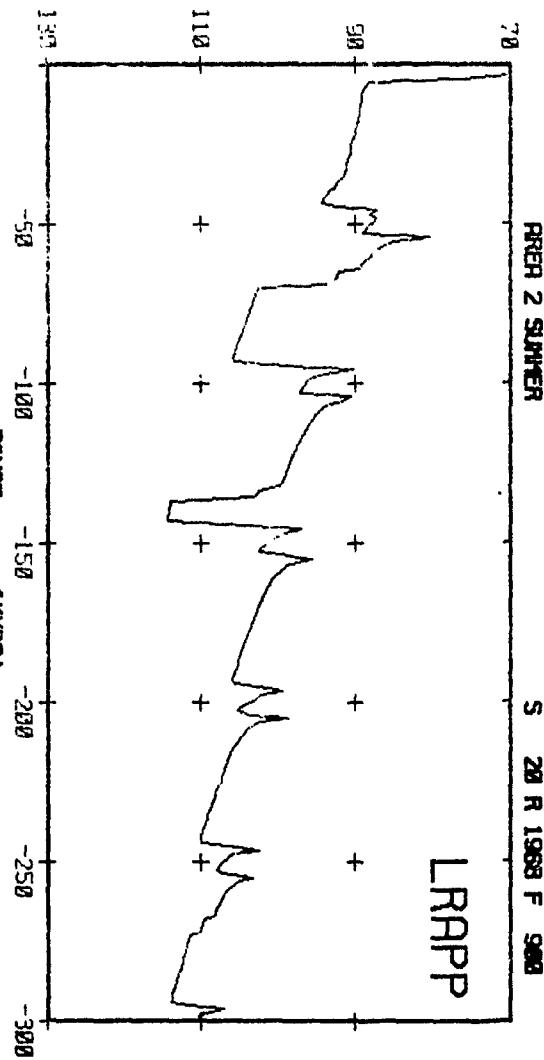
5750

5770

ARRIVAL ANGLE



DB LOSS

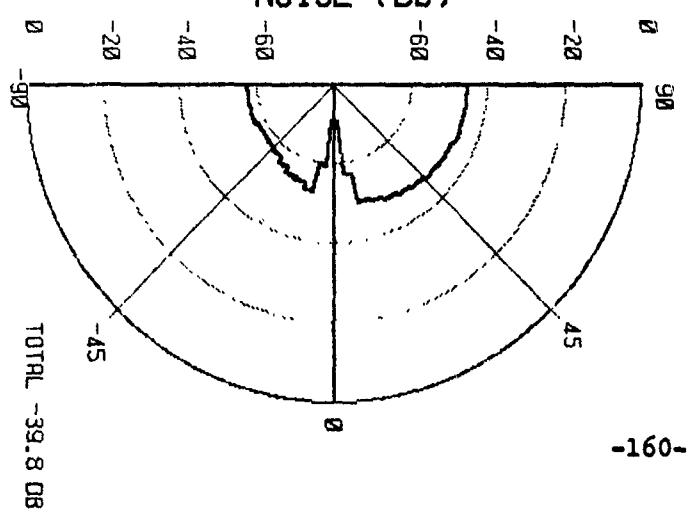


AREA 2 SUMMER

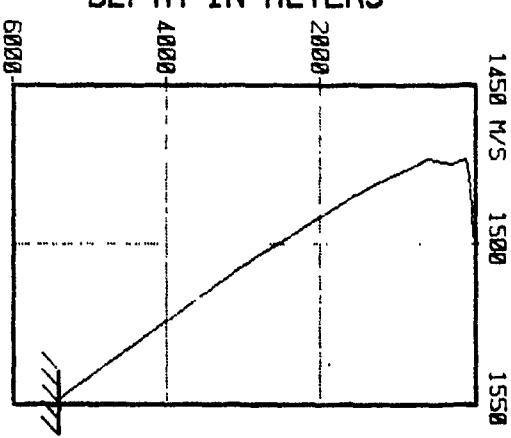
S 28 R 1988 F 960

LRAPP

NOISE (DB)



DEPTH IN METERS



-160-

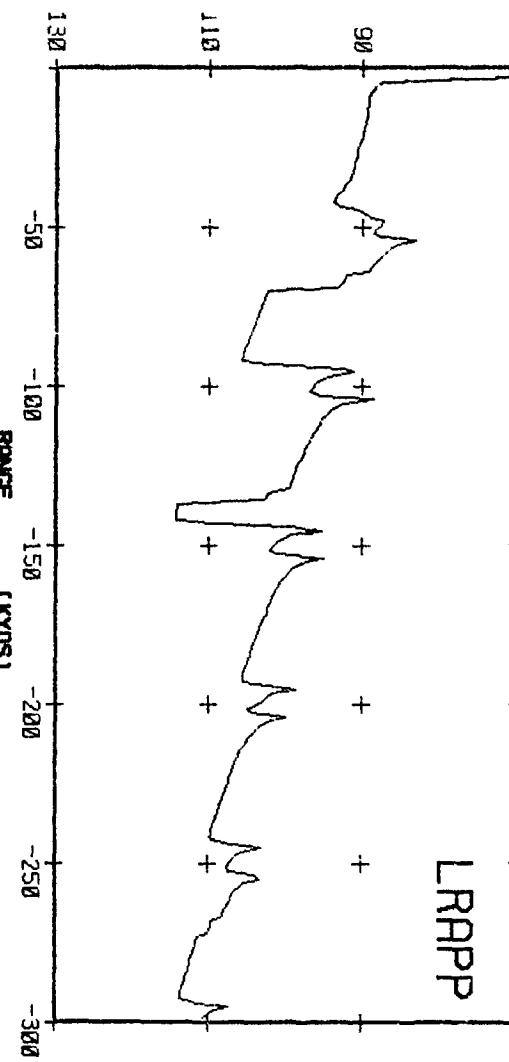
70

AREA 2 SUMMER

S 52 R 1968 F 900

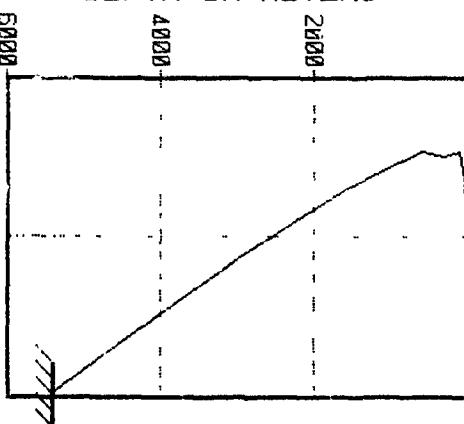
1450 M/S 1500 1550

DB LOSS

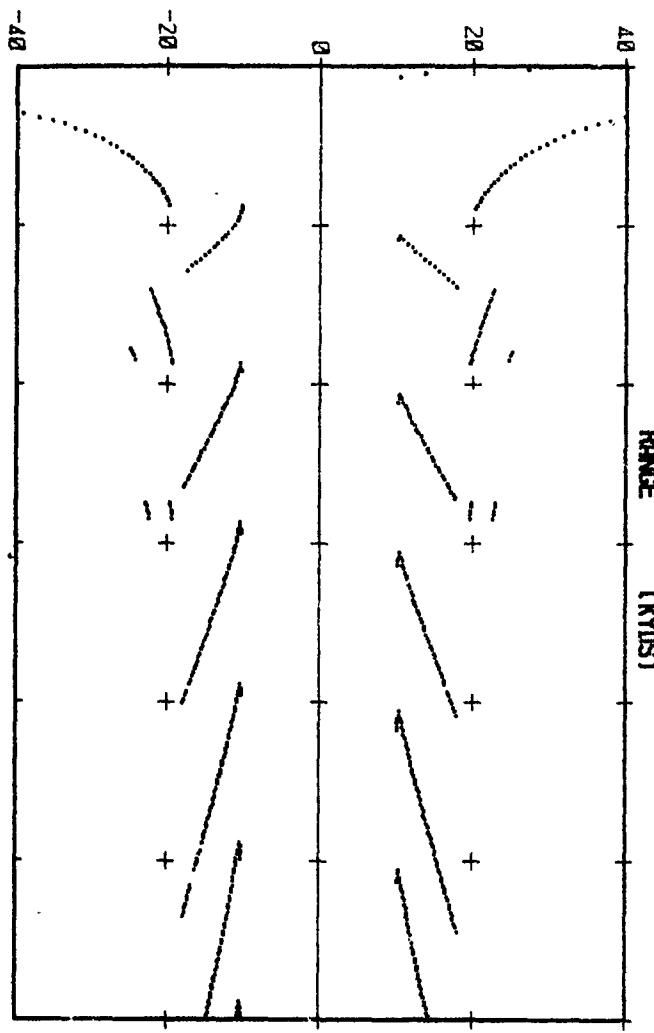


LRAPP

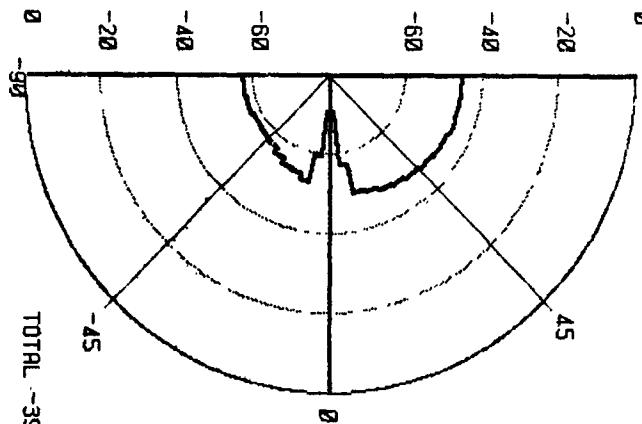
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



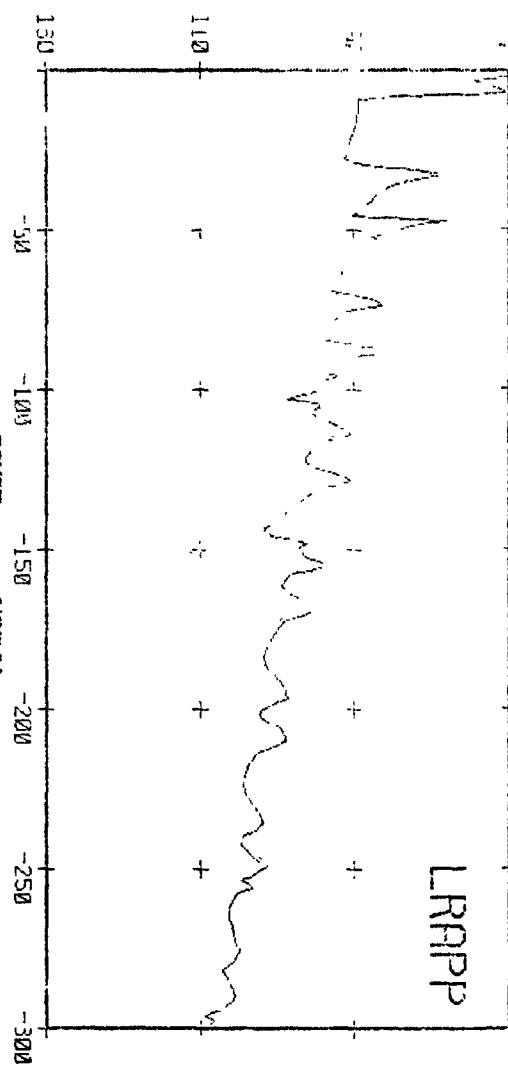
RRER 2 SUMMER

S 266 R 1968 F 918

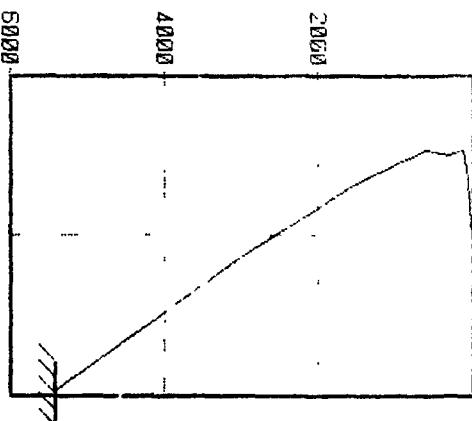
1450 M/S 1500 1550

LRRPP

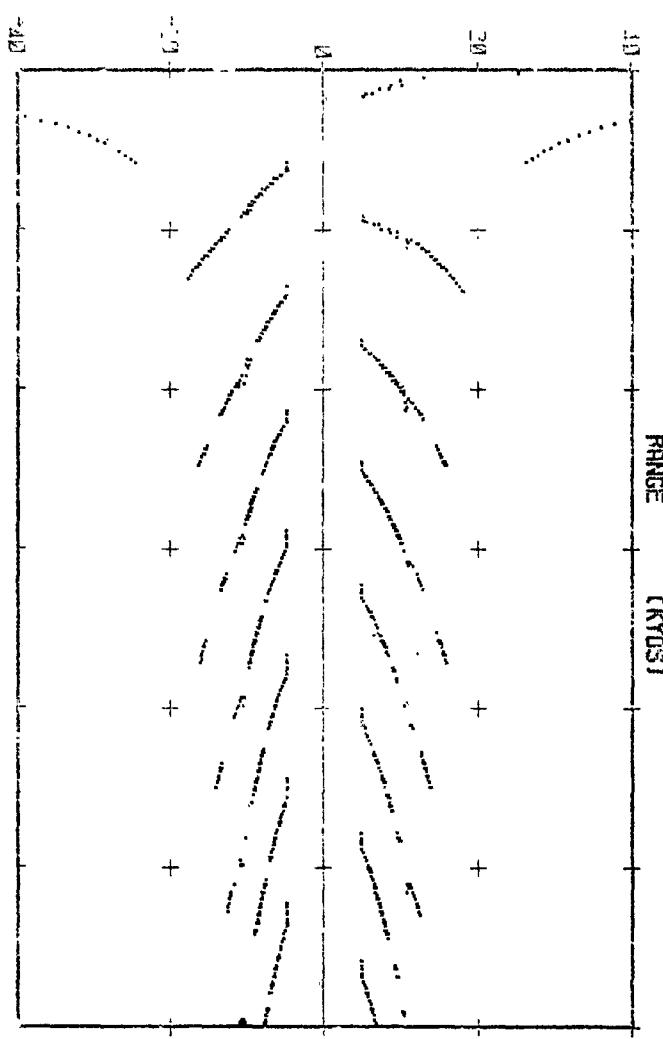
DB LOSS



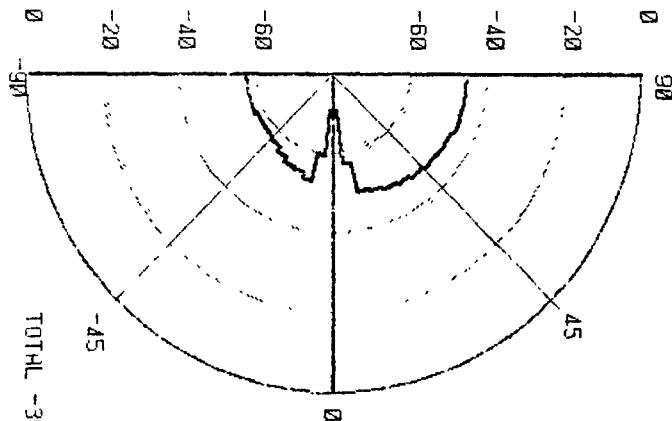
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



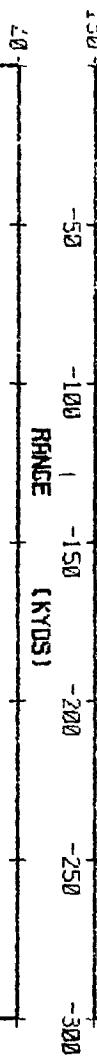
TOTAL -39.8 DB

AREA 2 SUMMER S 20 R 7874 F 900

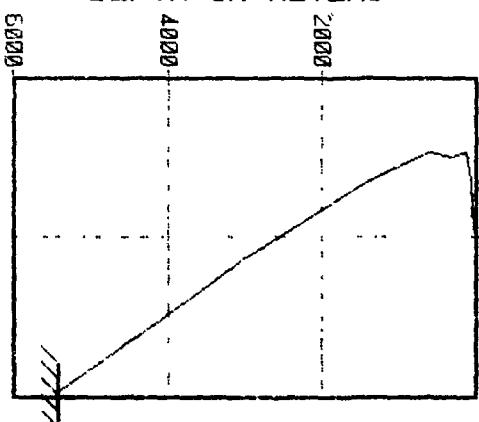
1450 M/S 1500 1550

LRAFP

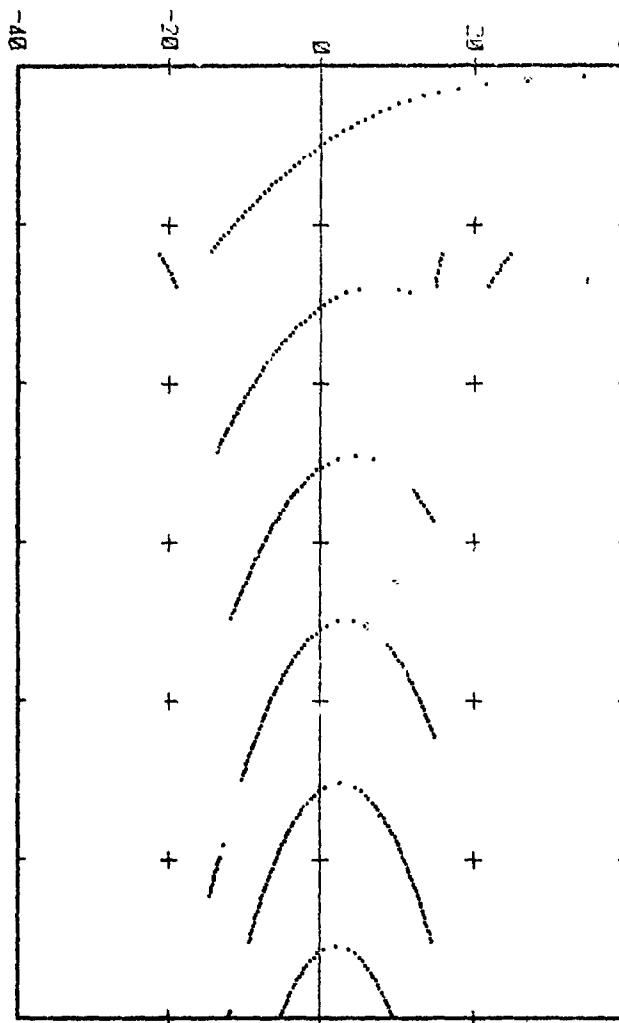
DB LOSS



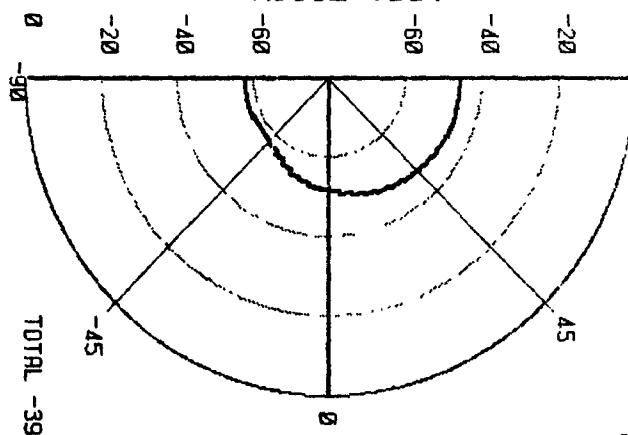
DEPTH IN METERS



ARRIVAL ANGLE

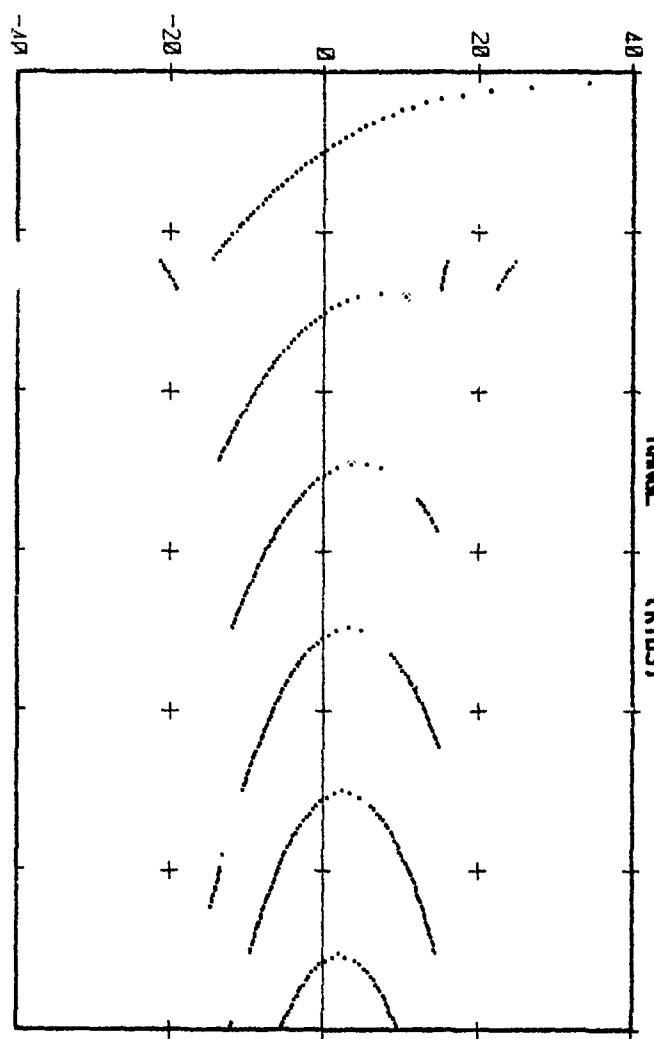


NOISE (DB)

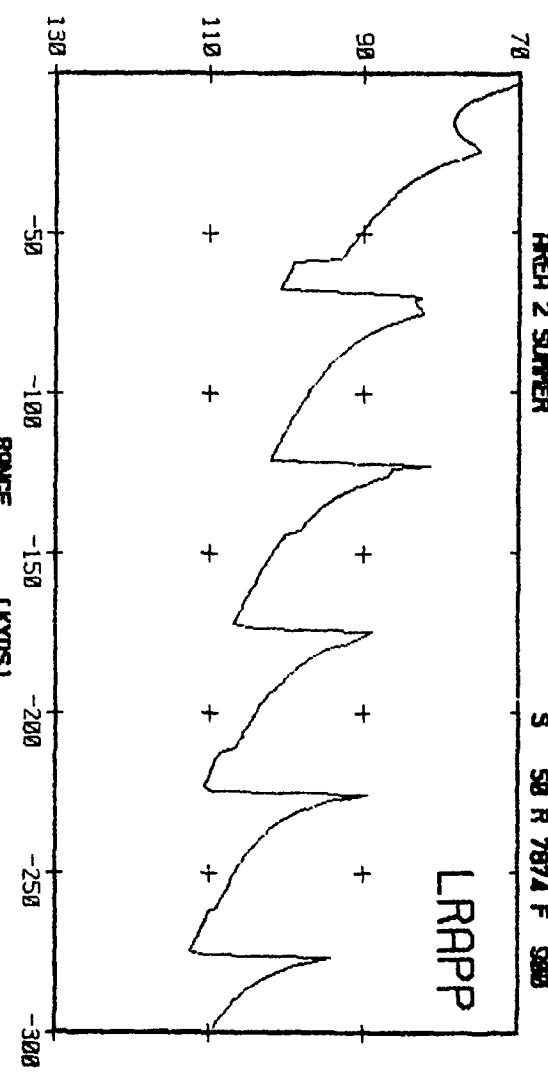


TOTAL -39.3 DB

ARRIVAL ANGLE



DB LOSS



78

PRER 2 SUMMER

S

L RAPP

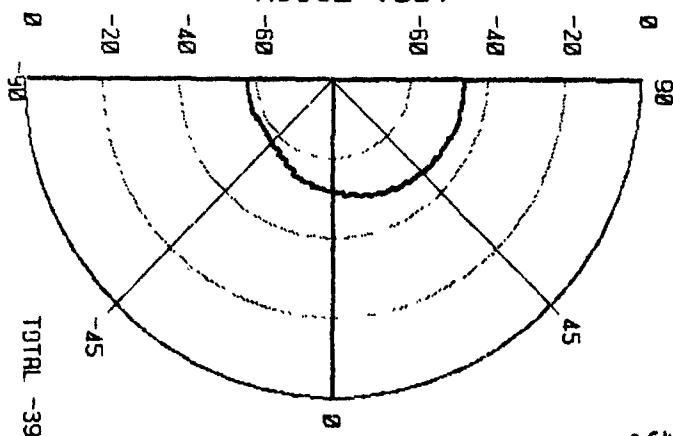
1450

M/S

1500

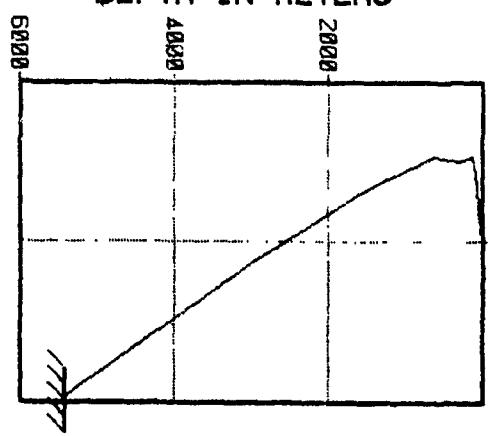
1550

NOISE (DB)



TOTAL -39.3 DB

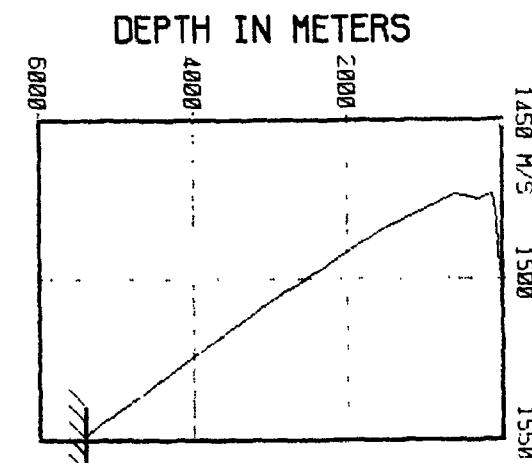
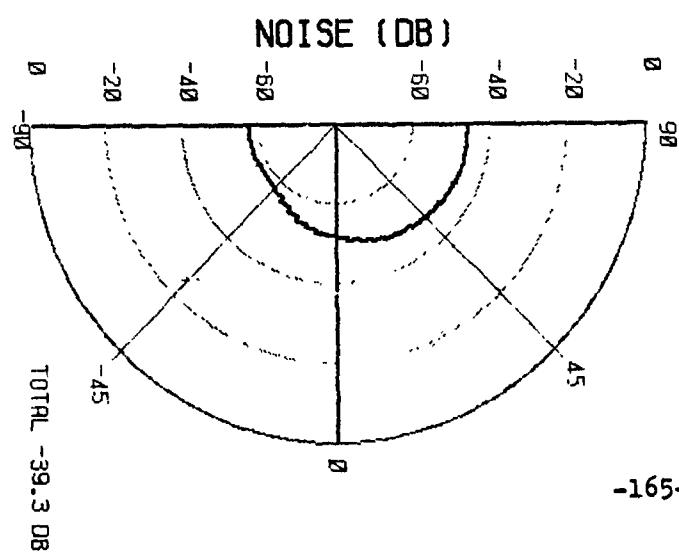
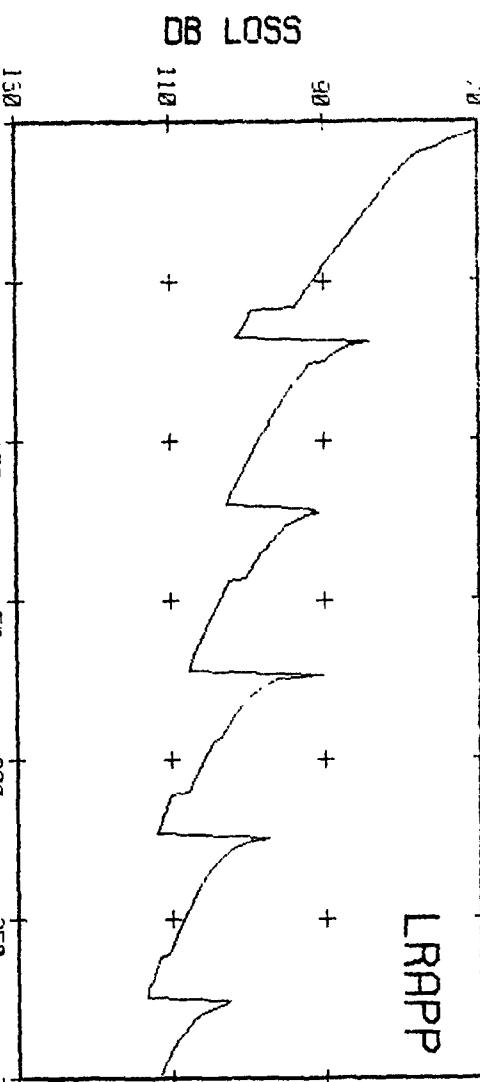
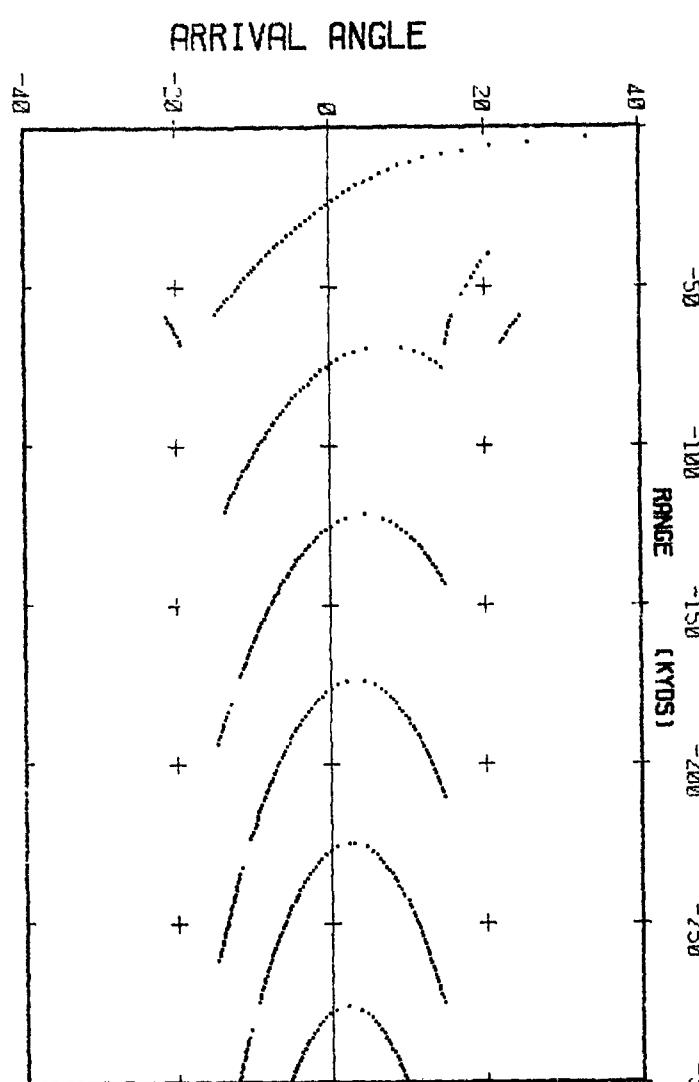
DEPTH IN METERS



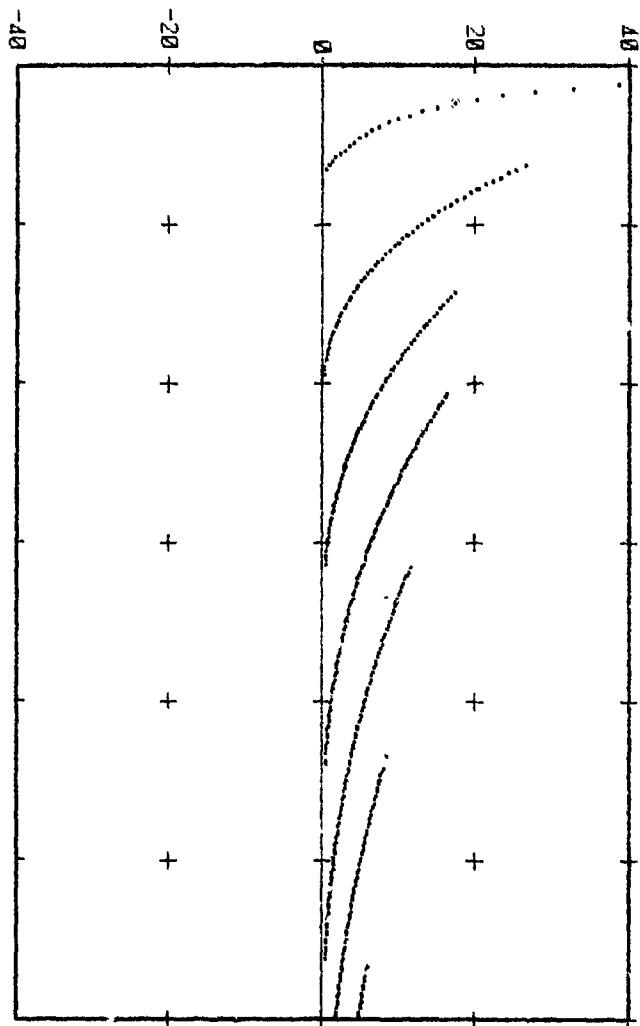
AFTER 2 SUMMER

S 265 R 7874 F 380

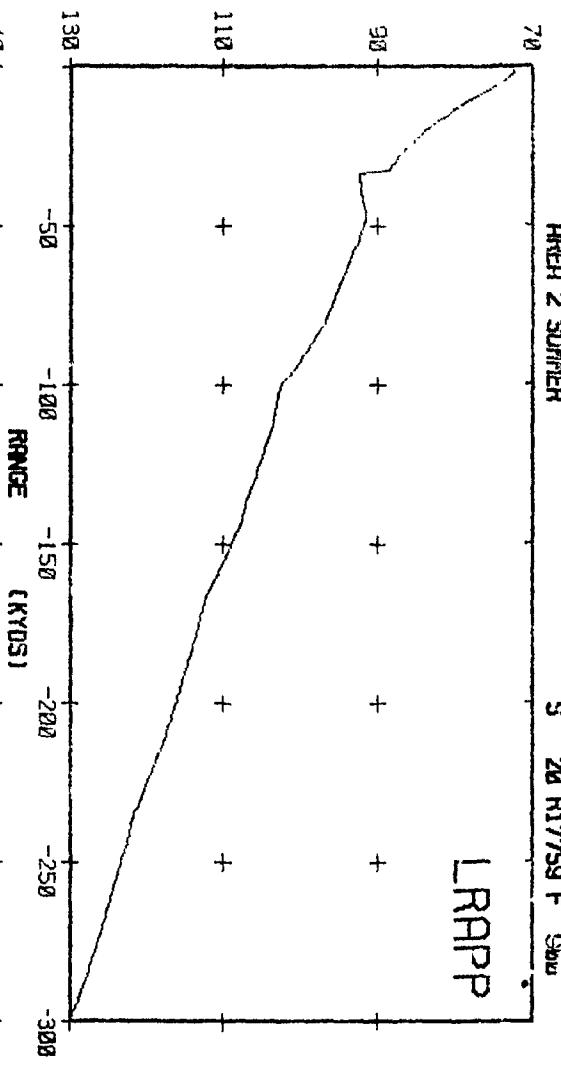
1450 M/S 1500 1550



ARRIVAL ANGLE

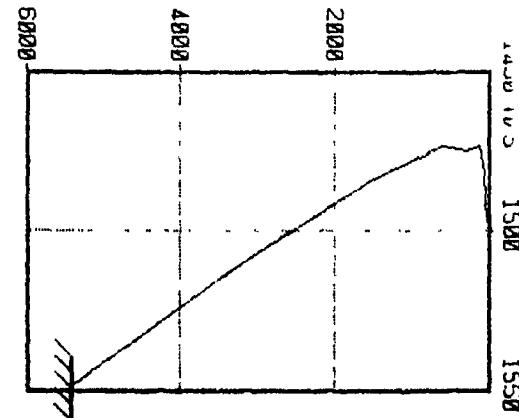


DB LOSS

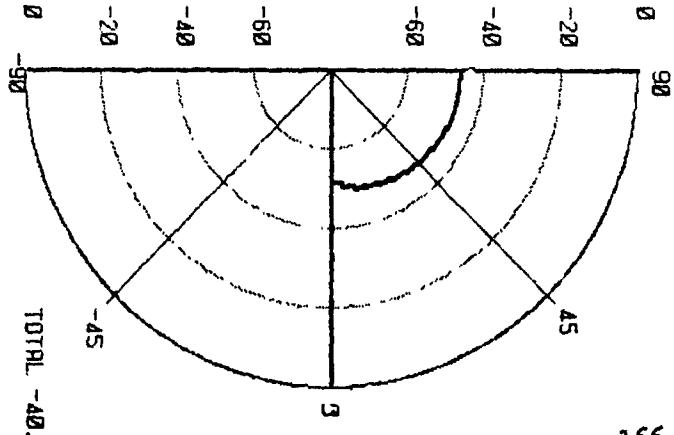


L RAPP

DEPTH IN METERS



NOISE (DB)



TOTAL -40.2 DB

AREA 2 SUMMER

S 50 R17759 F 900

1450 M/S 1500 1550

LRAPP

DB LOSS

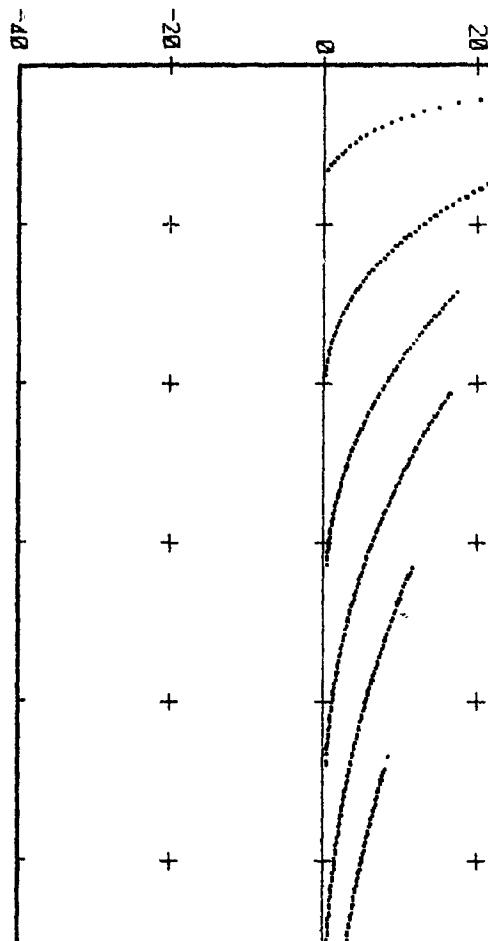
90
110
+
+
+
+
+
+
+
+
+
+

130
-50
-100
-150
-200
-250
-300

RANGE (KMS)

ARRIVAL ANGLE

-40

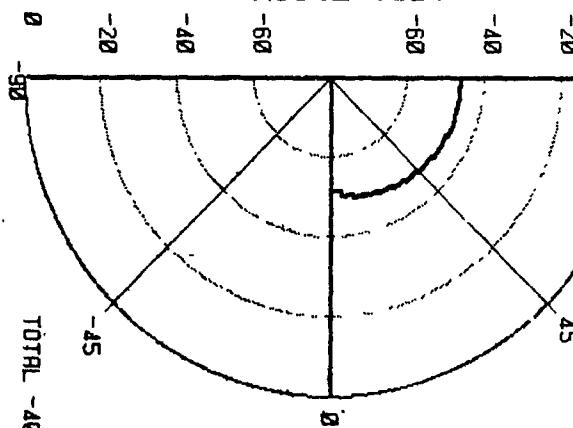


DEPTH IN METERS

6000
4000
2000
0

0
90
-90

NOISE (DB)



-167-

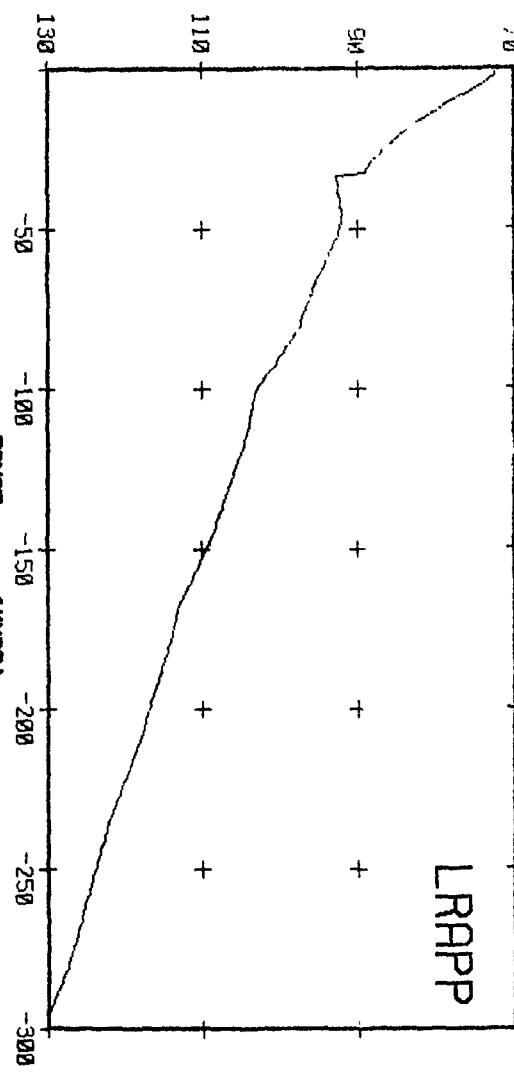
AFER 2 SUMMER

S 266 R17759 F 900

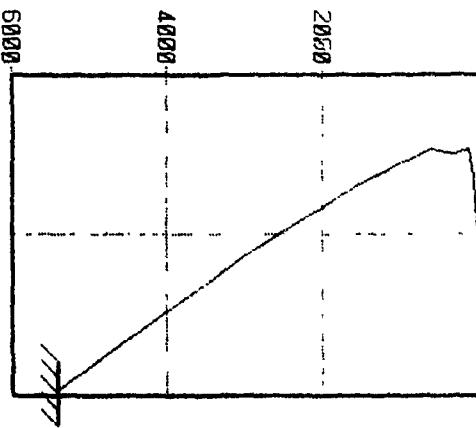
1450 M/S 1500 1550

LRAPP

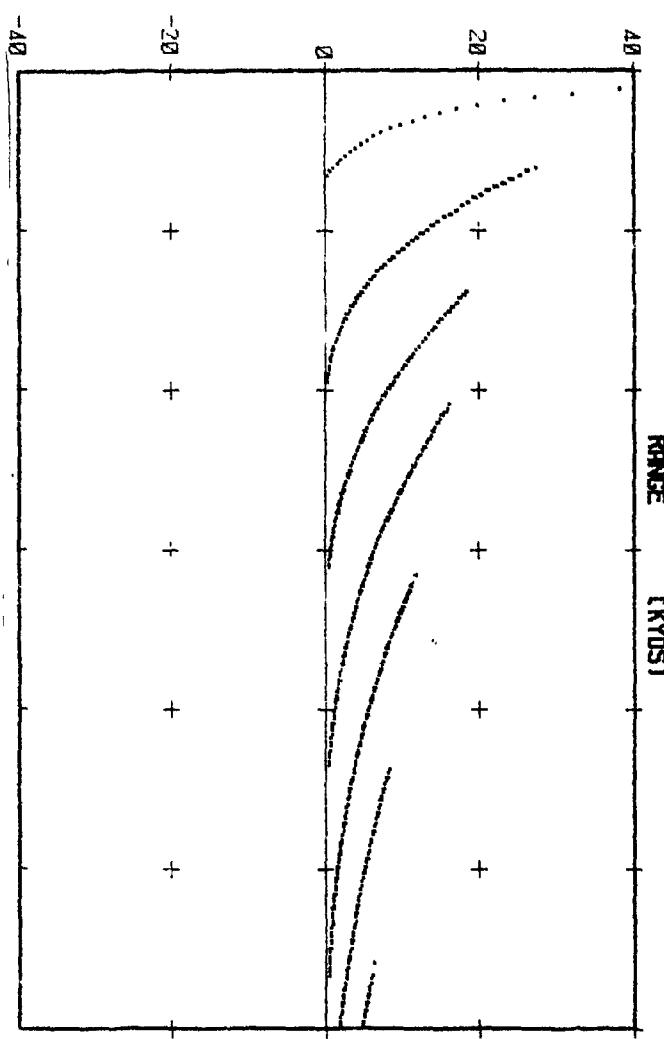
DB LOSS



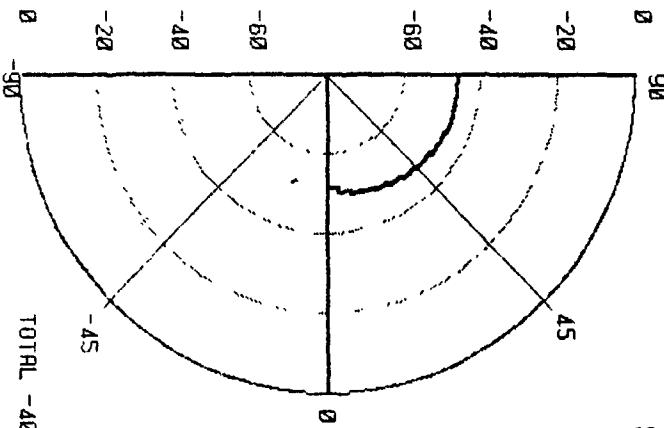
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)

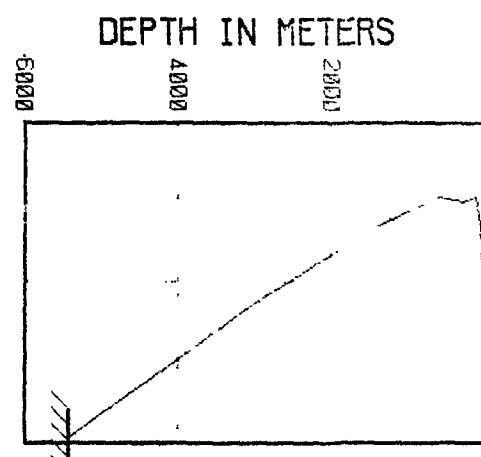
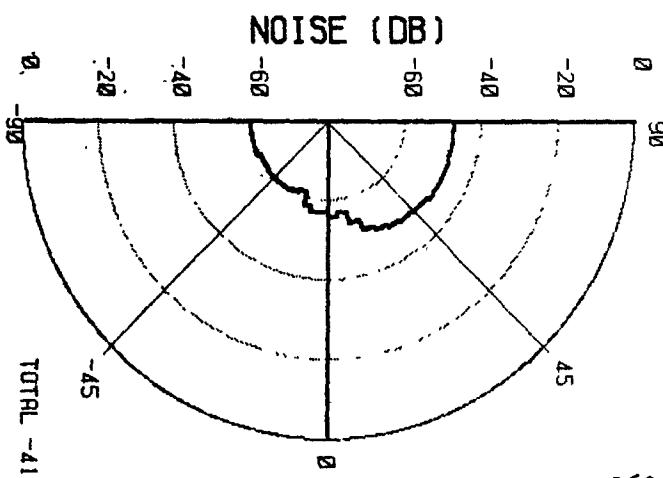
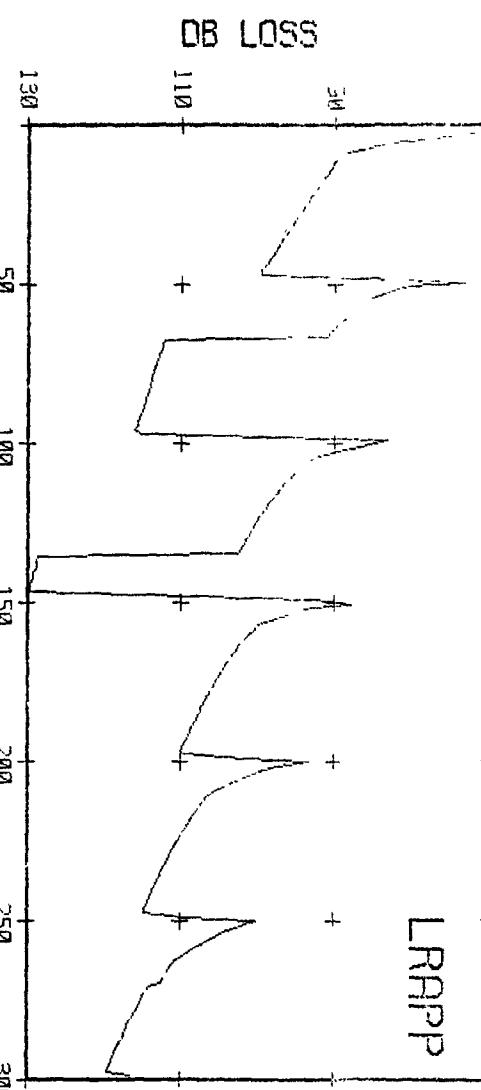
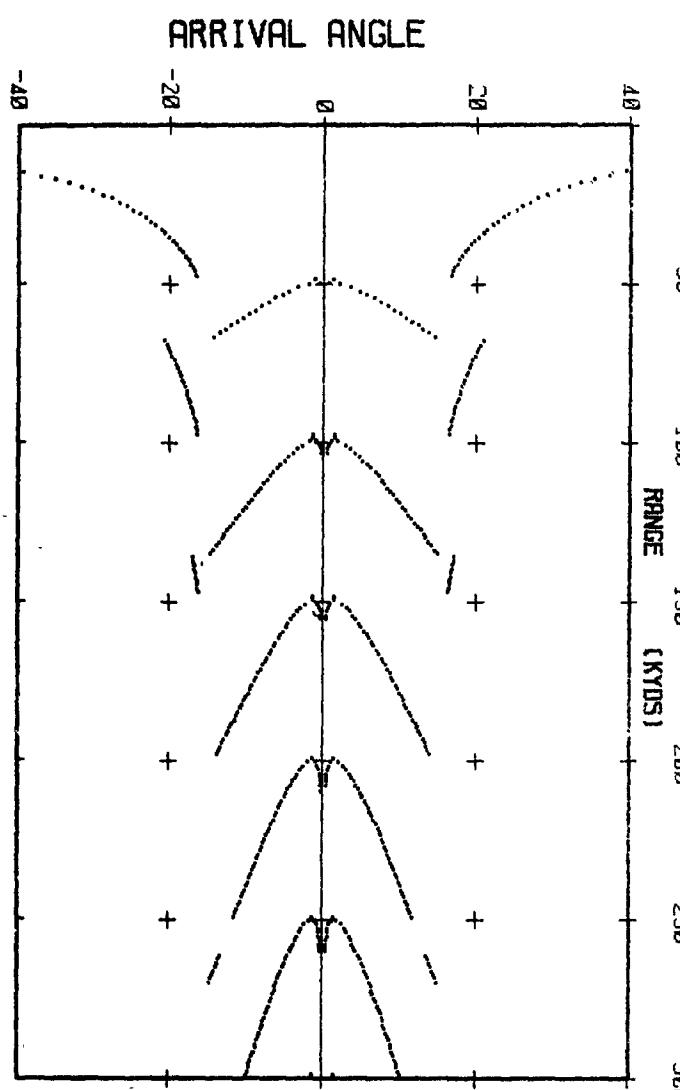


TOTAL -40.2 DB

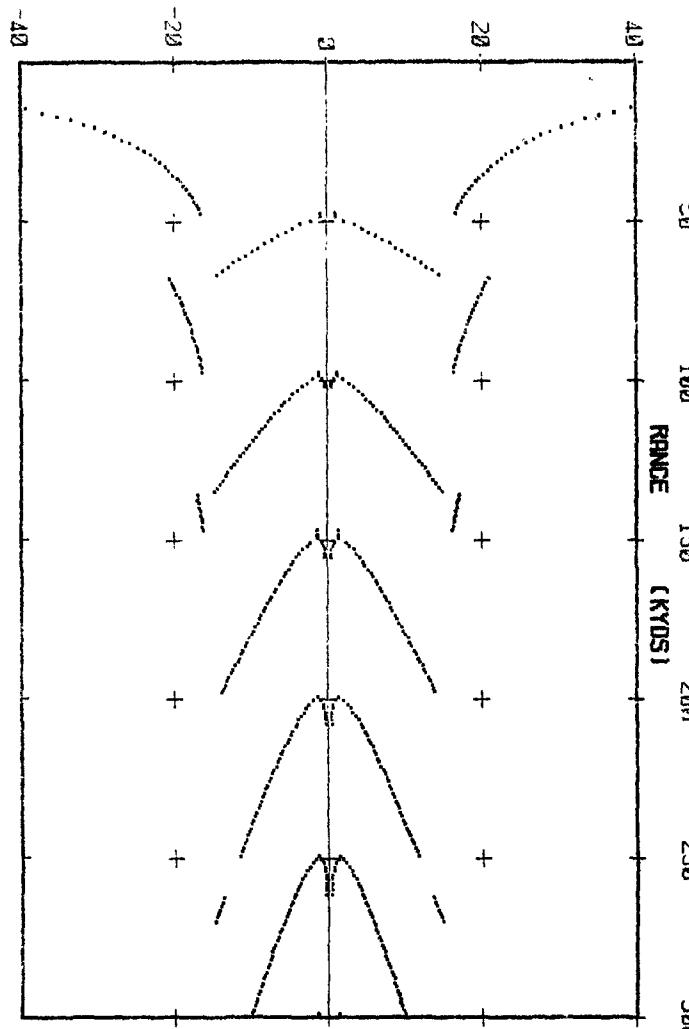
RIVER 2 SUMMER

S 25 R 60 F 1234

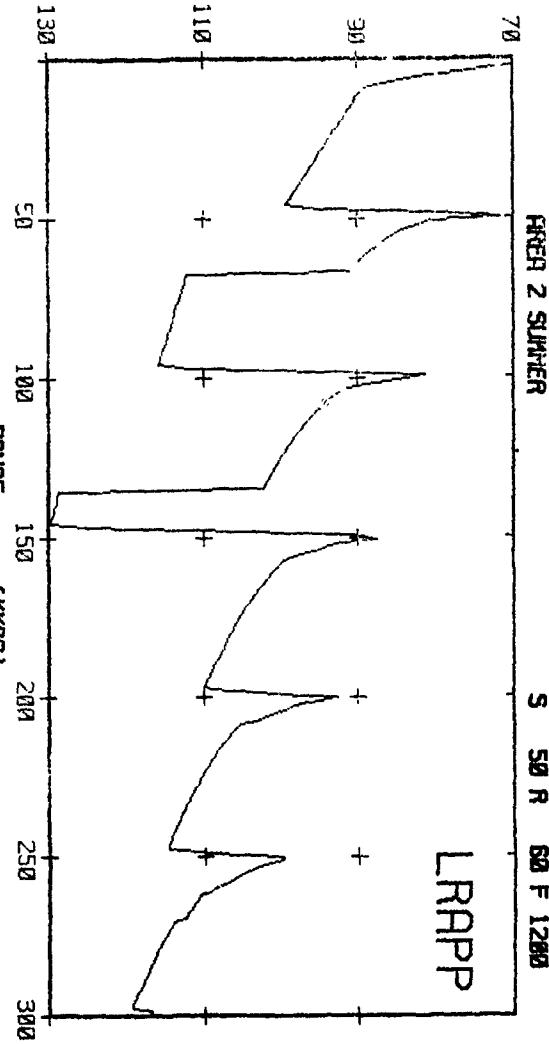
1450 M/S 1500 1556



ARRIVAL ANGLE



DB LOSS



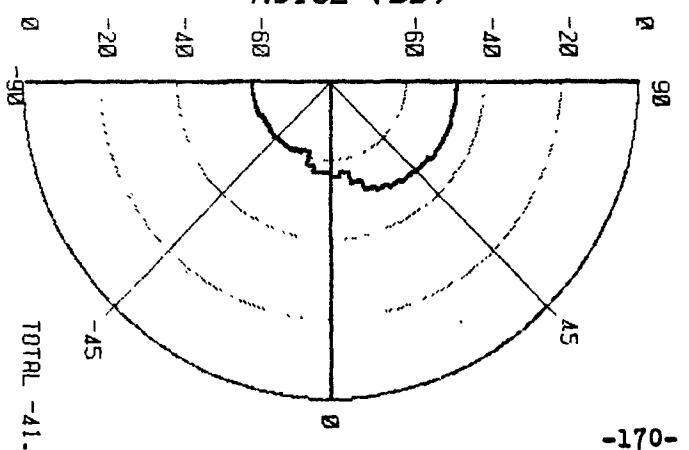
FREQ 2 SUMMER

S 50 R 60 F 1200

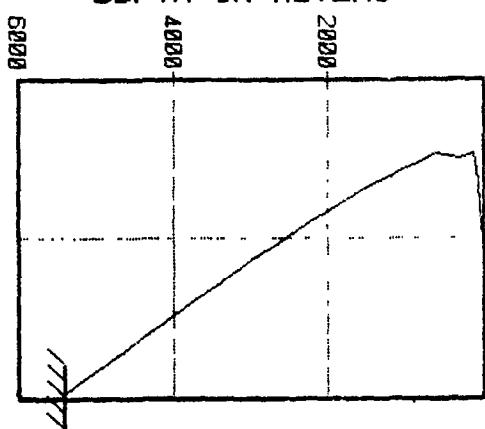
LRAAPP

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



TOTAL -41.4 DB

70

AIRER 2 SUMMER

S 266 R 60 F 1200

1450 M/S 1500 1550

LRAPP

DB LOSS

130
110
90
70
50
30
10
0

RANGE (KMS)

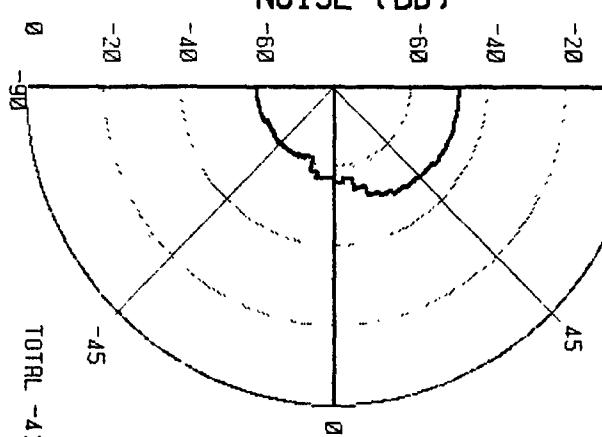
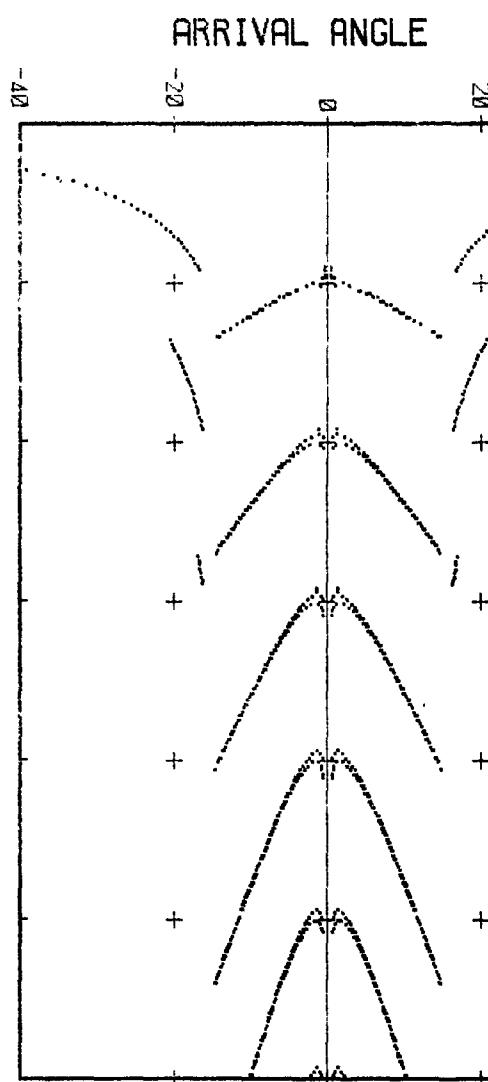
0
4000
2000

DEPTH IN METERS

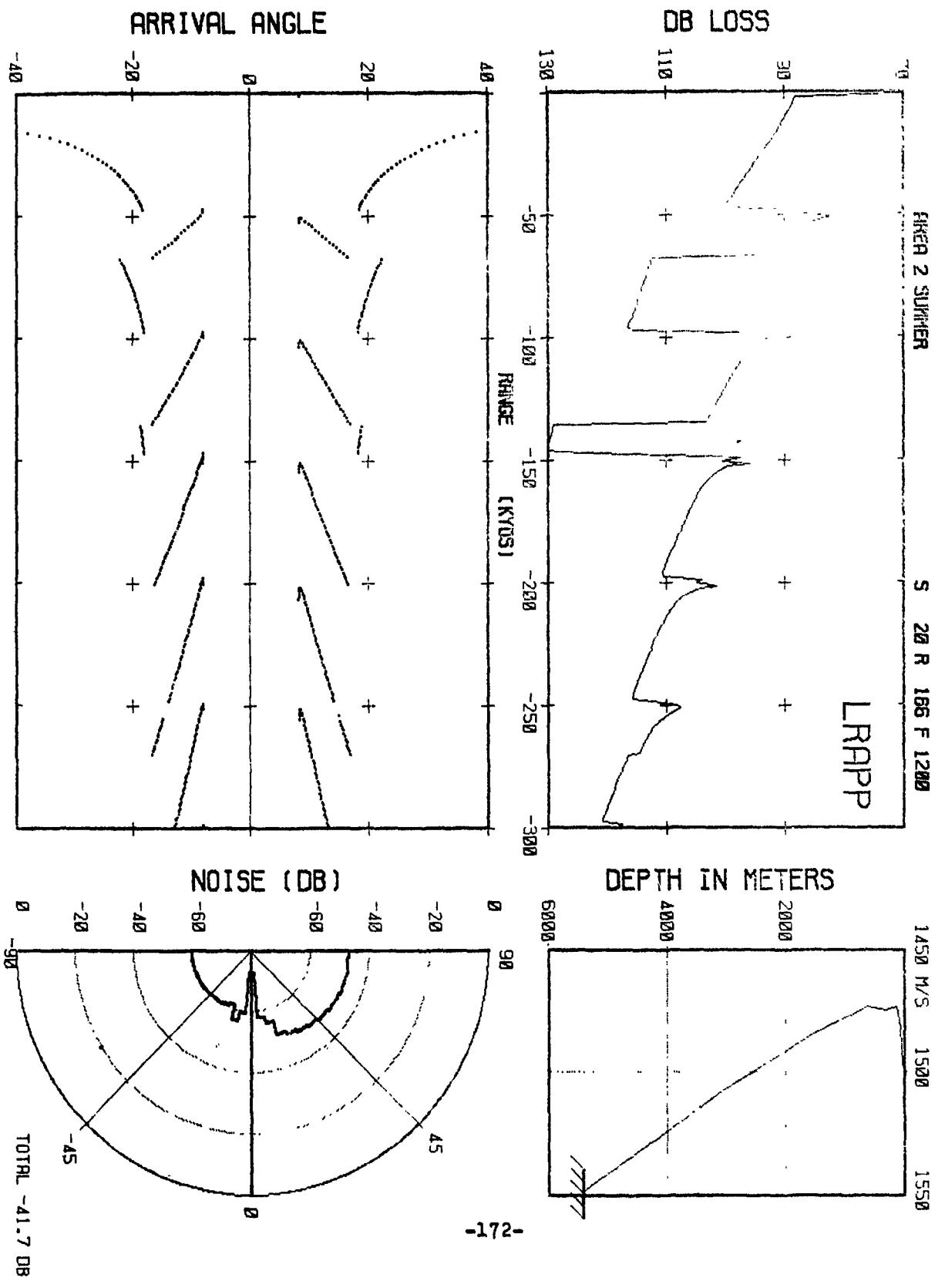
6000
4000
2000
0

NOISE (DB)

0
-20
-40
-60
-80



-171-

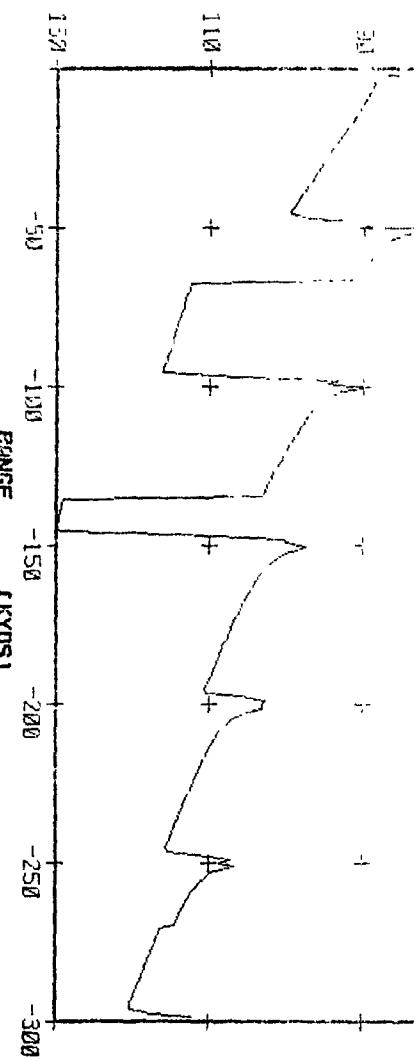


RECD 2 SURFER S 50 R 166 F 125d

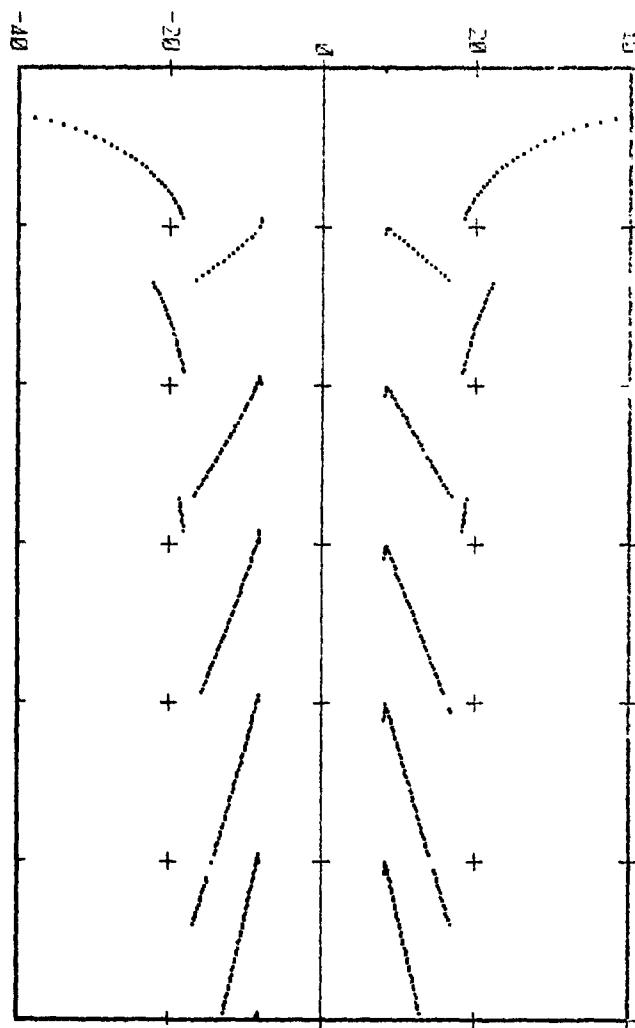
1150 1405 1500 1550

LRFPP

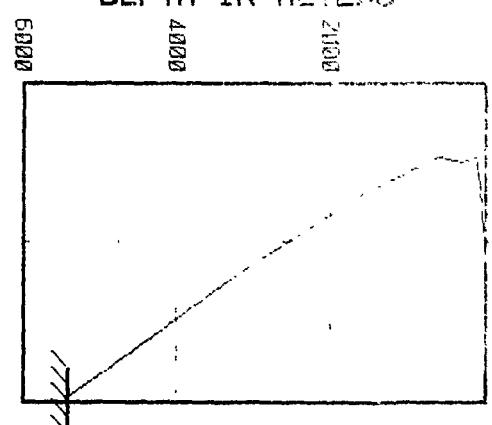
DB LOSS



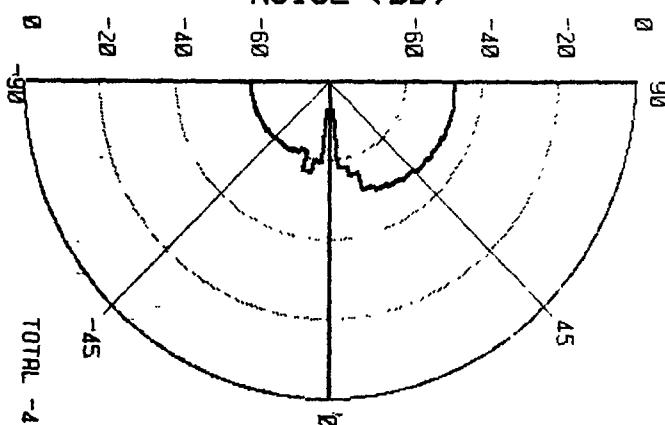
ARRIVAL ANGLE



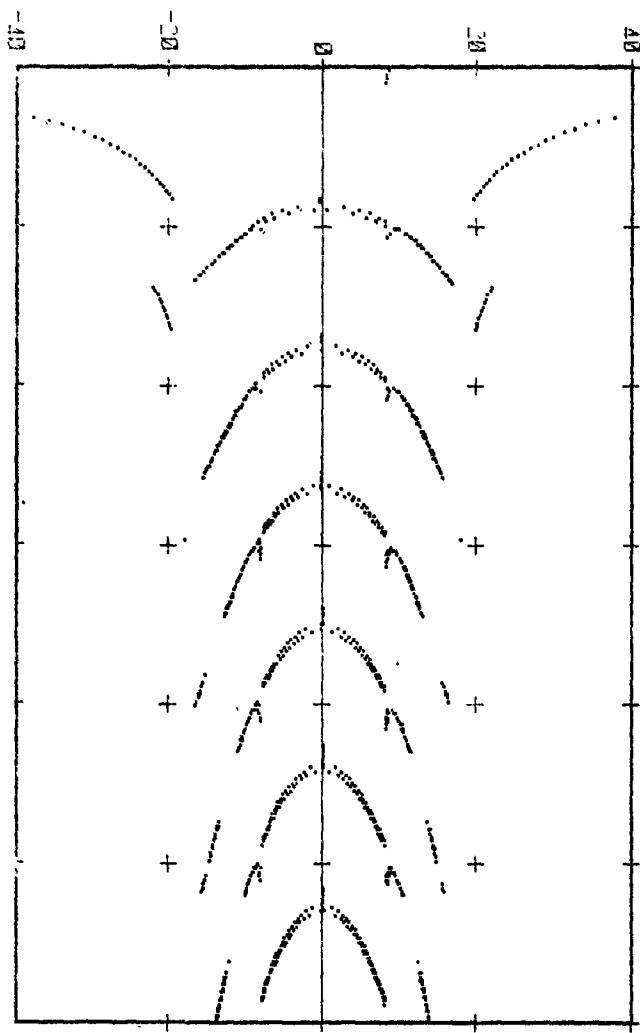
DEPTH IN METERS



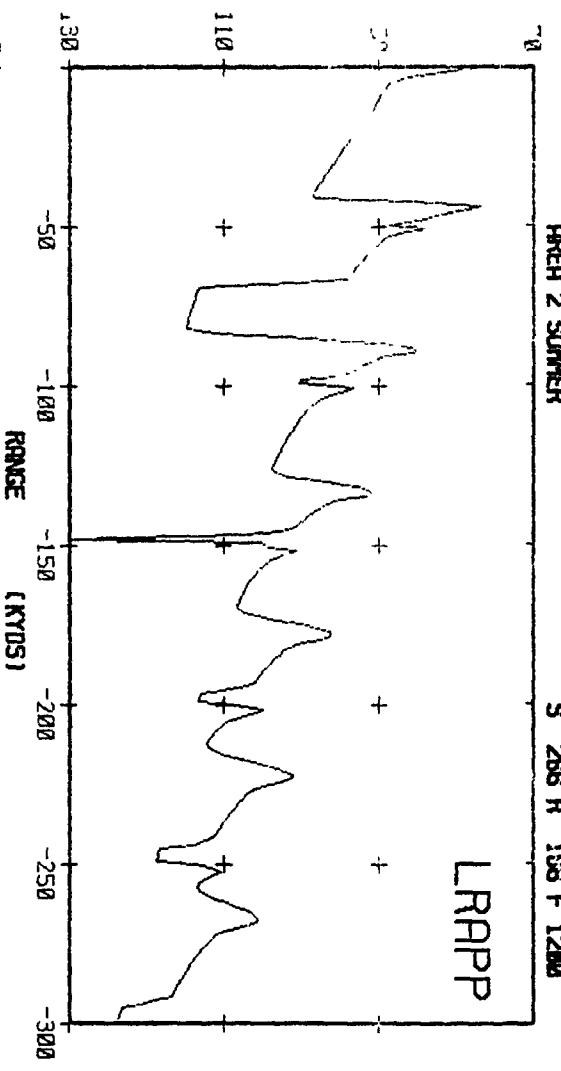
NOISE (DB)



ARRIVAL ANGLE



DB LOSS



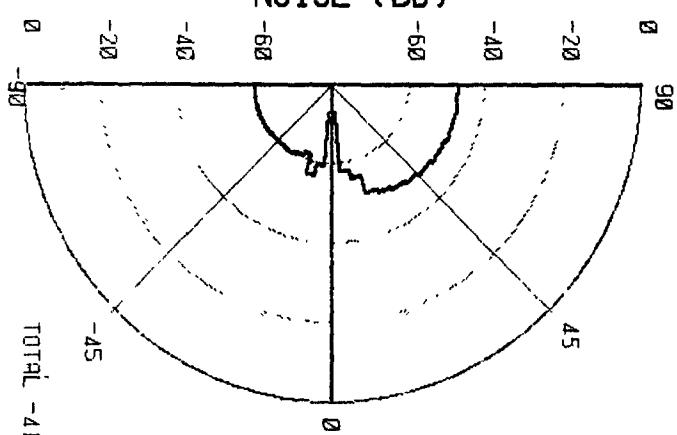
AREA 2 SUMMER

S 266 R 155 F 1200

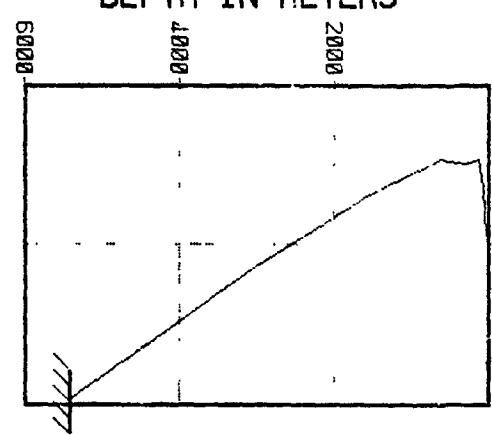
L RAPP

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



1

FILTER 2 SUMMER

S 2C R 5000' DEPT

145° 150° 155° 160°

2

LINER

2000

1500 1400 1300

DB LOSS

130
110
90
70
50
30
10

5000
4000

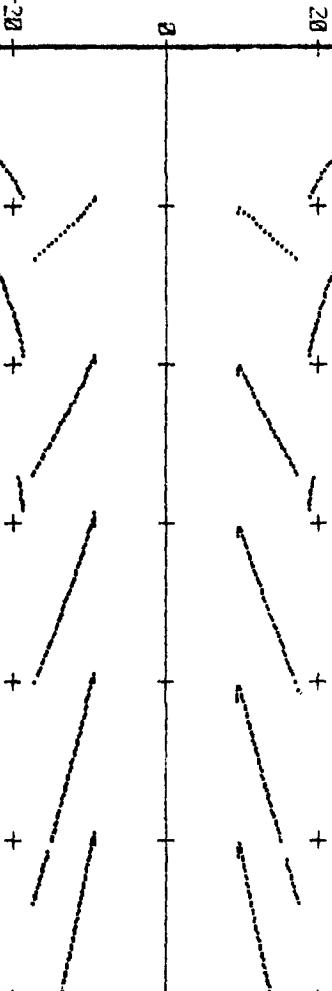
1500 1400 1300

DEPTH IN METERS

5000
4000

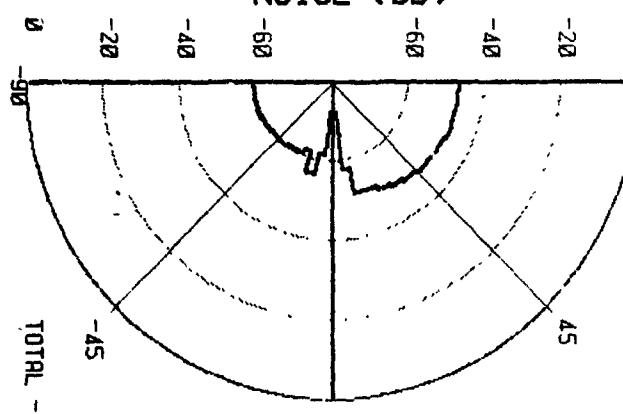
1500 1400 1300

ARRIVAL ANGLE



3

NOISE (DB)



4

TOTAL -41.5 DB

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71

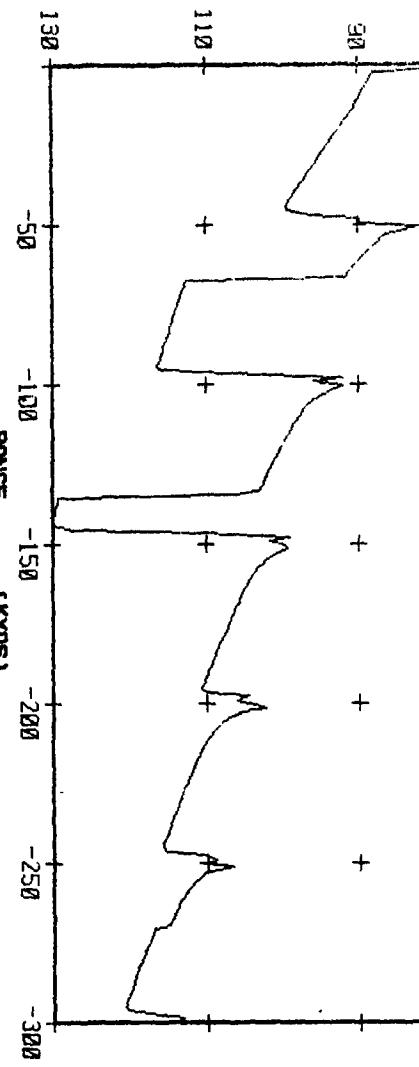
AFTER 2 SUMMER

S 50 R 300 F 1200

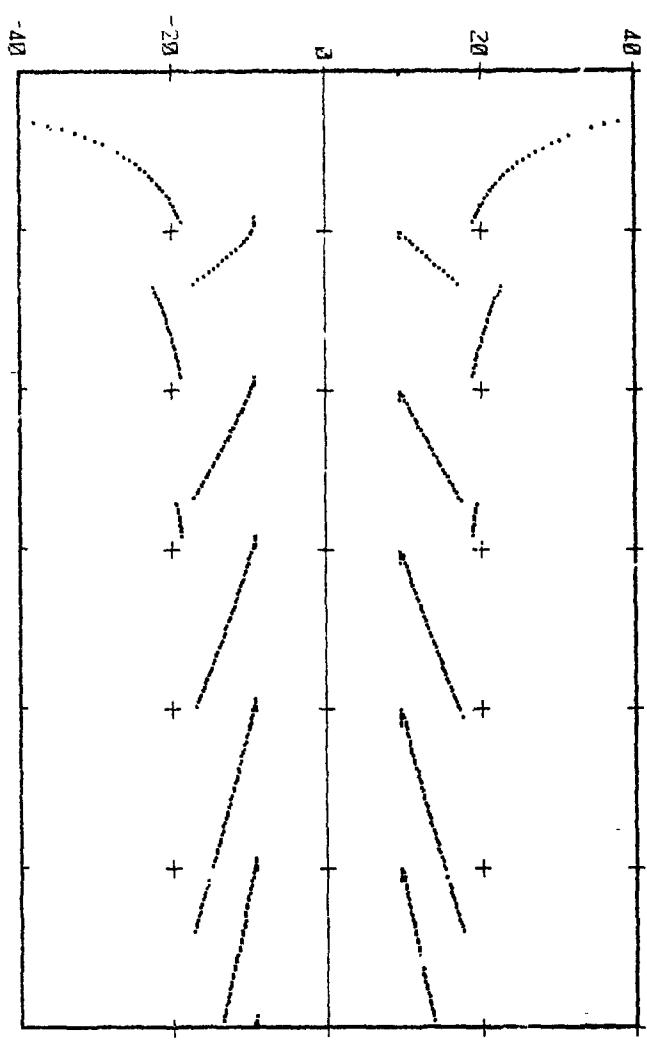
1450 1/5 1500 1556

LKHPP

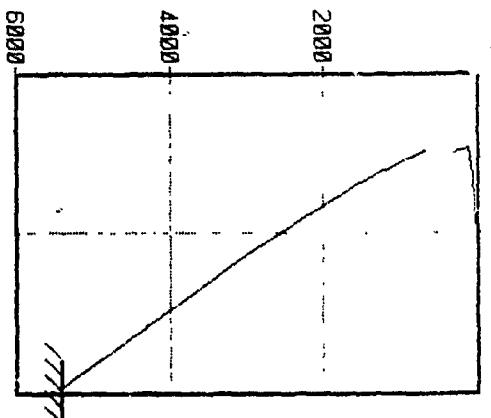
DB LOSS



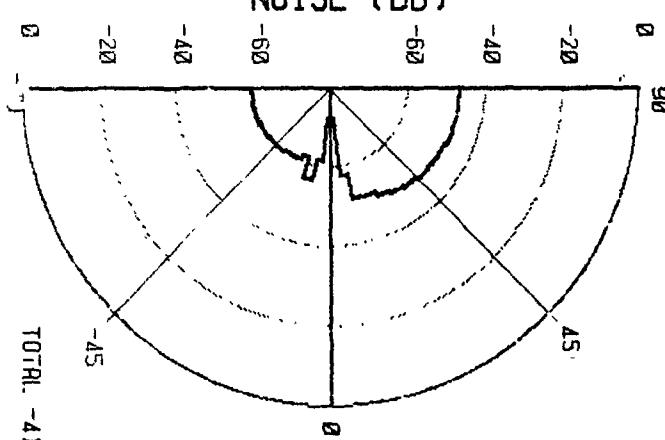
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



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TOTAL -41.5 DB

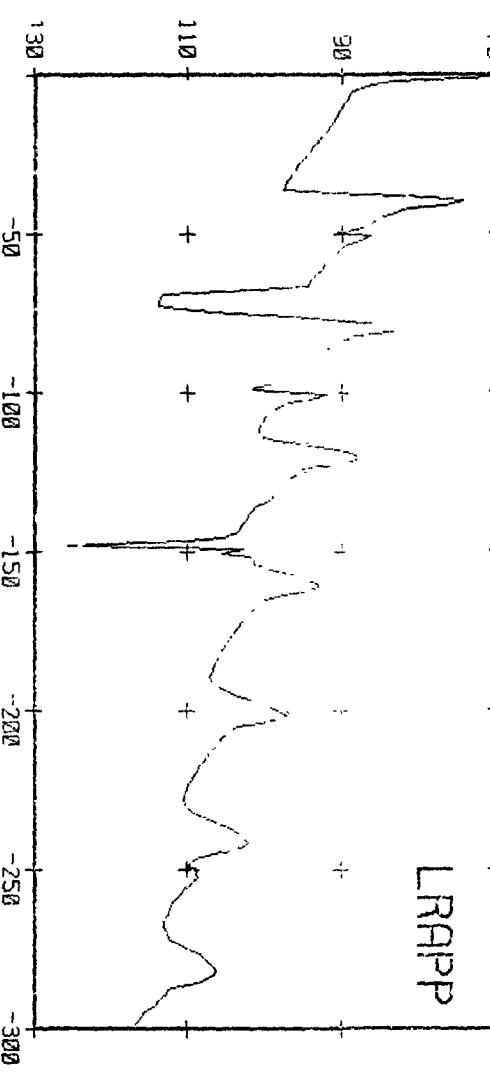
ARR 2 SUMMER

S 266 R 362 F 1280

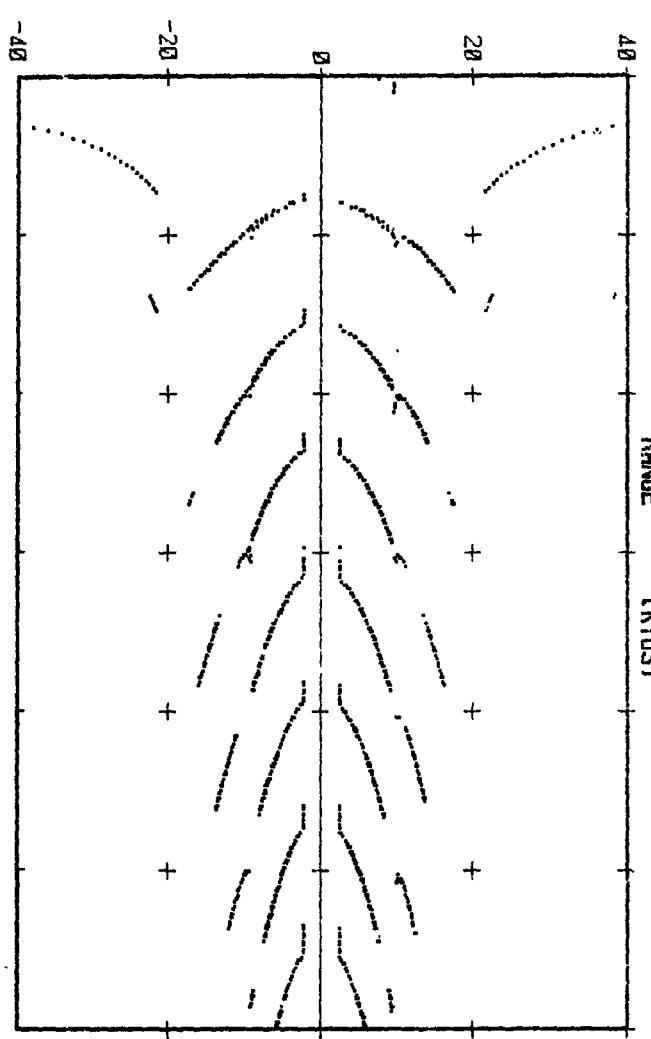
1450 M/S 1500 1550

LRAPP

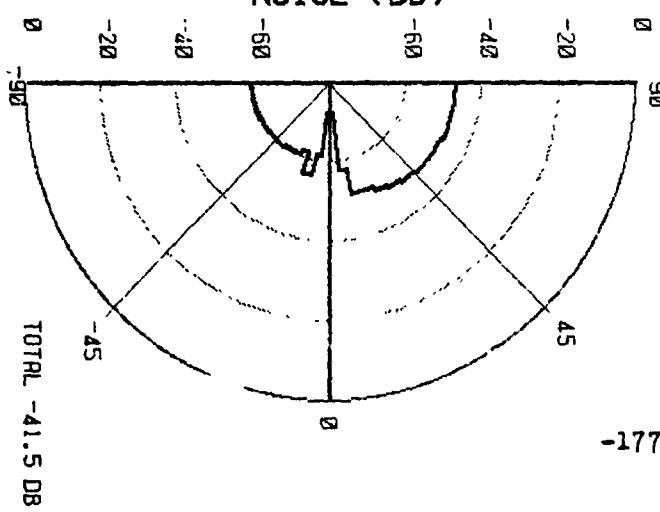
DB LOSS



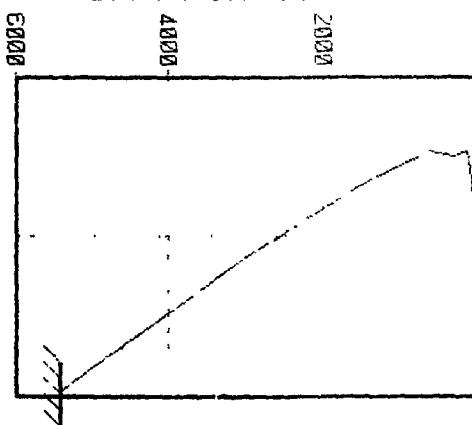
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



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TOTAL -41.5 DB

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permit fully legible reproduction

AREA 2 SUMMER

S 20 R 1000 F 1260

1450 M/S 1500 1550

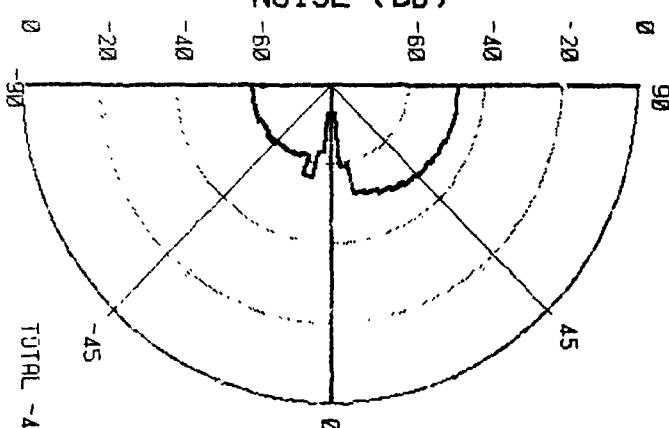


DB LOSS

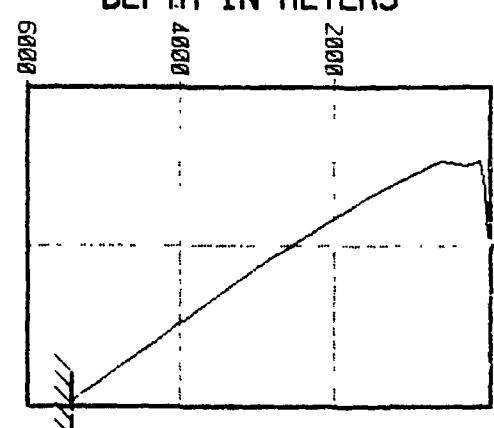


ARRIVAL ANGLE

NOISE (DB)



DEPTH IN METERS



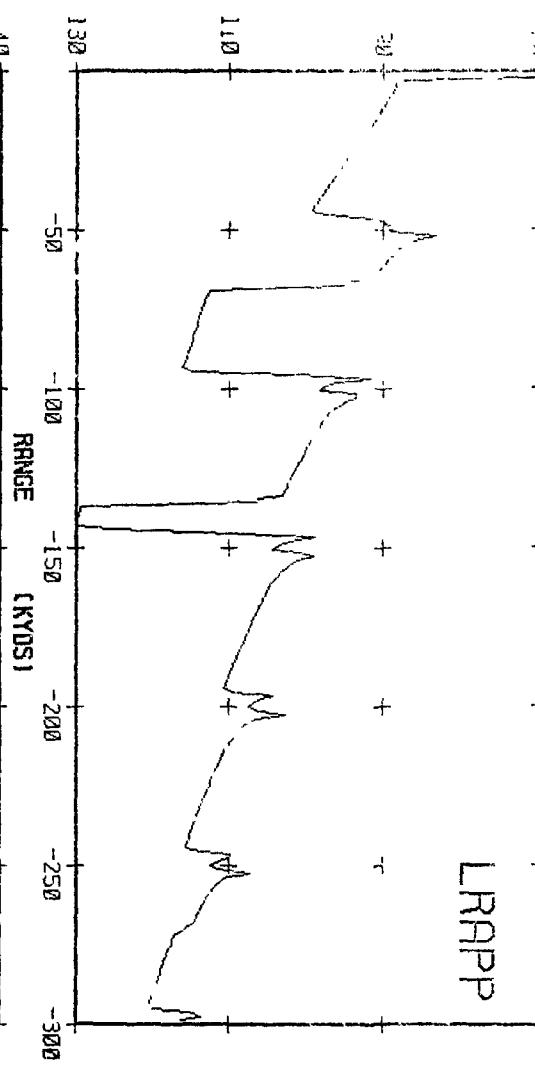
AREA 2 SUMMER

S 50 R 100 F 1200

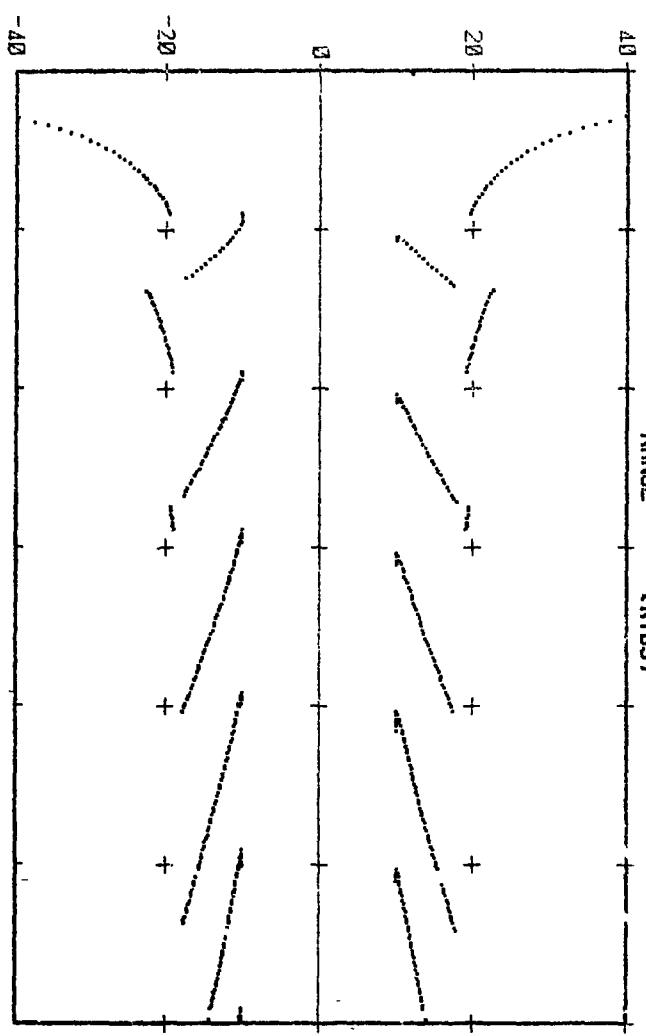
1450 1450 1500 1550

LRAPP

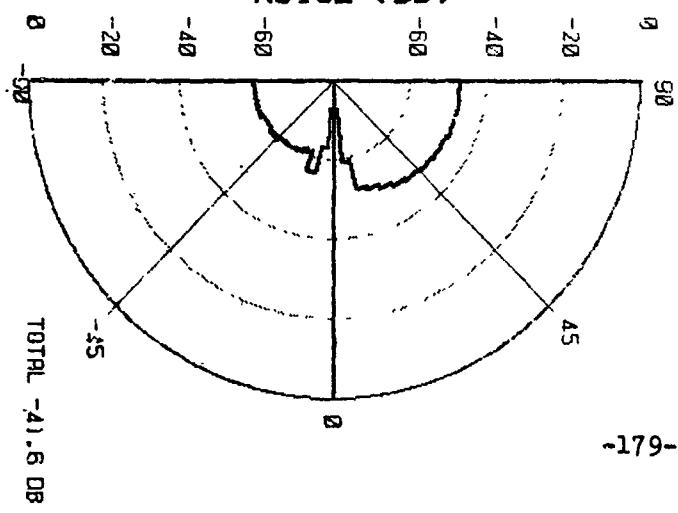
DB LOSS



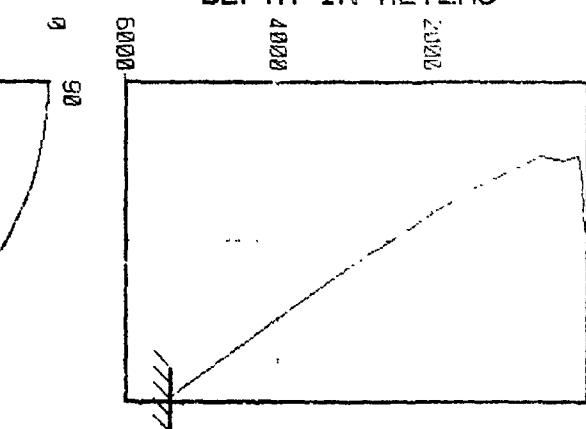
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



RIVER 2 SUMMER S 266 R 1000 F 1200

1450 M/S 1500 1550

LRAPP

DB LOSS

110

130

230

40
-50
-100
-150
-200
-250
-300

RANGE (KILOMETERS)

ARRIVAL ANGLE

-40

-20

0

20

40

60

80

100

120

140

160

180

200

220

240

260

280

300

320

340

360

380

400

420

440

460

480

500

520

540

560

580

600

620

640

660

680

700

720

740

760

780

800

820

840

860

880

900

920

940

960

980

1000

1020

1040

1060

1080

1100

1120

1140

1160

1180

1200

DEPTH IN METERS

2000

4000

6000

0

90

180

270

360

450

540

630

720

810

900

990

1080

1170

1260

1350

1440

1530

1620

1710

1800

1890

1980

2070

2160

2250

2340

2430

2520

2610

2700

2790

2880

2970

3060

3150

3240

3330

3420

3510

3600

3690

3780

3870

3960

4050

4140

4230

4320

4410

4500

4590

4680

4770

4860

4950

5040

5130

5220

5310

5400

5490

5580

5670

5760

5850

5940

6030

6120

6210

6300

6390

6480

6570

6660

6750

6840

6930

7020

7110

7200

7290

7380

7470

7560

7650

7740

7830

7920

8010

8100

8190

8280

8370

8460

8550

8640

8730

8820

8910

9000

9090

9180

9270

9360

9450

9540

9630

9720

9810

9900

9990

10080

10170

10260

10350

10440

10530

10620

10710

10800

10890

10980

11070

11160

11250

11340

11430

11520

11610

11700

11790

11880

11970

12060

12150

12240

12330

12420

12510

12600

12690

12780

12870

12960

13050

13140

13230

13320

13410

13500

13590

13680

13770

13860

13950

14040

14130

14220

14310

14400

14490

14580

14670

14760

14850

14940

15030

15120

15210

15300

15390

15480

15570

15660

15750

15840

15930

16020

16110

16200

16290

16380

16470

16560

FREQ 2 SUMMER

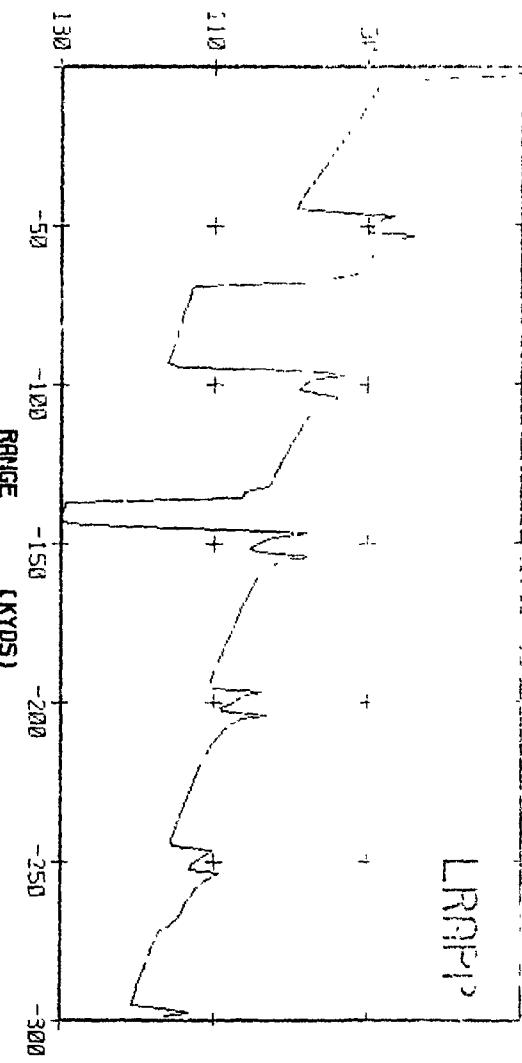
S 23 R 1500 F 1.20

1450 11.5 1532 1572

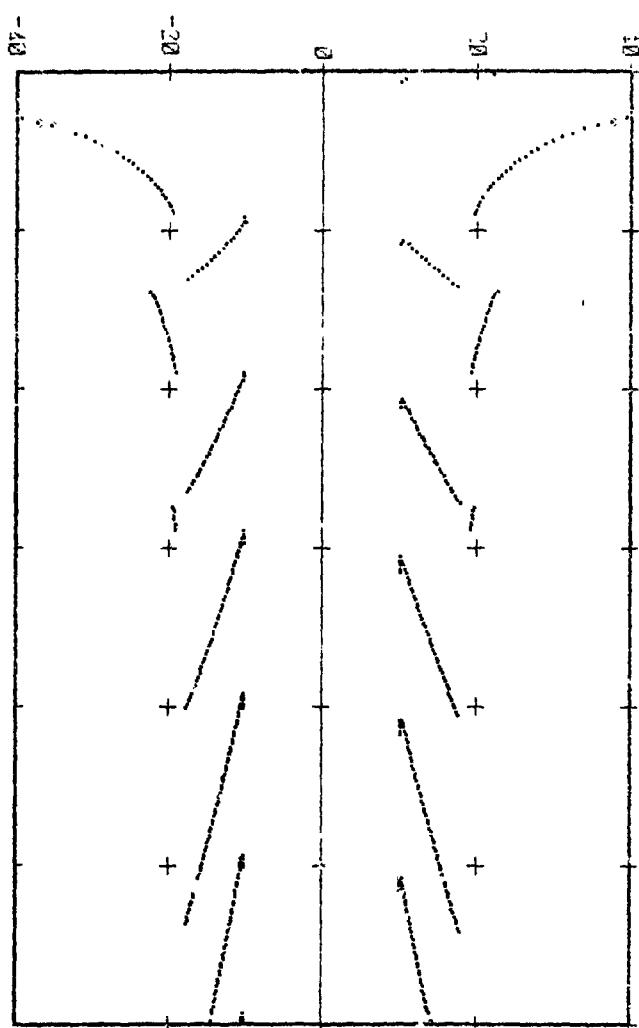
LROP

DB LOSS

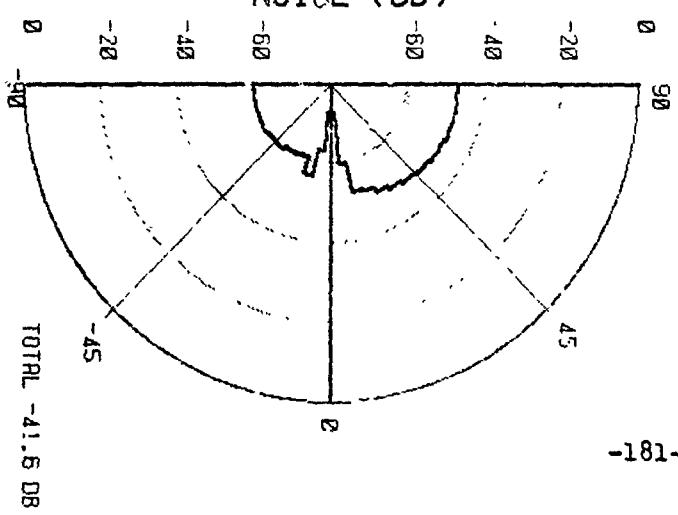
DEPTH IN METERS



ARRIVAL ANGLE

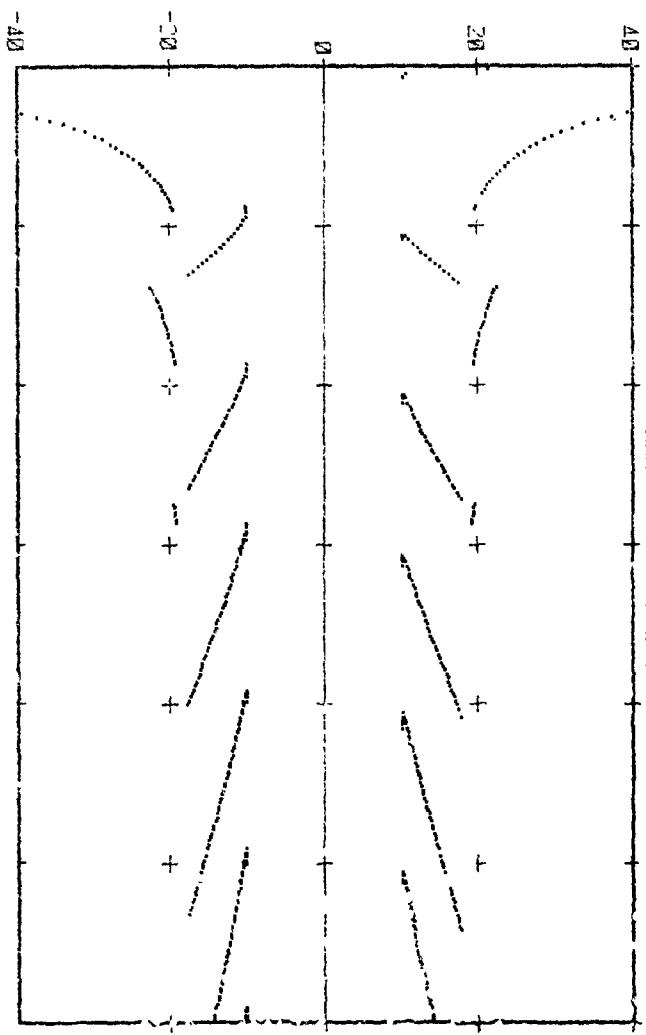


NOISE (DB)

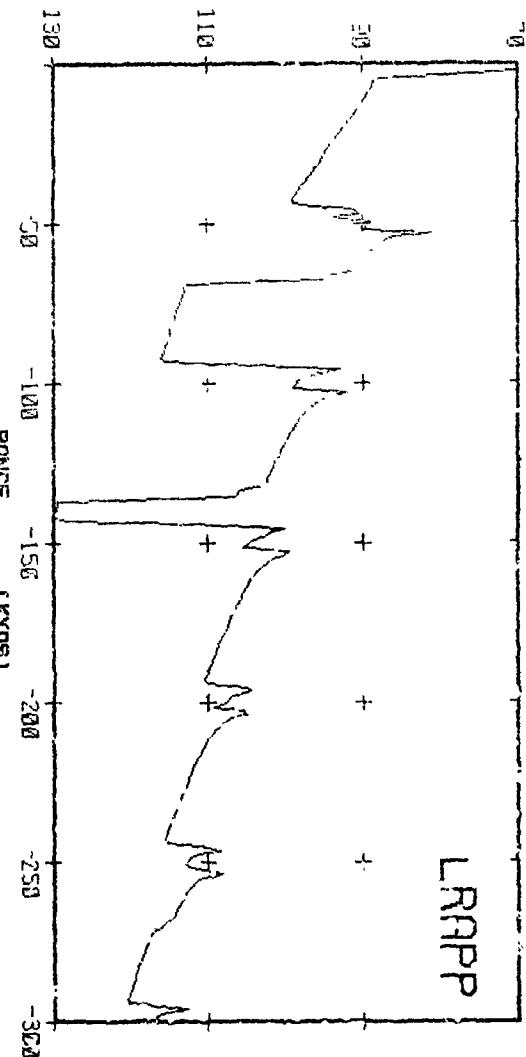


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ARRIVAL ANGLE



DB LOSS

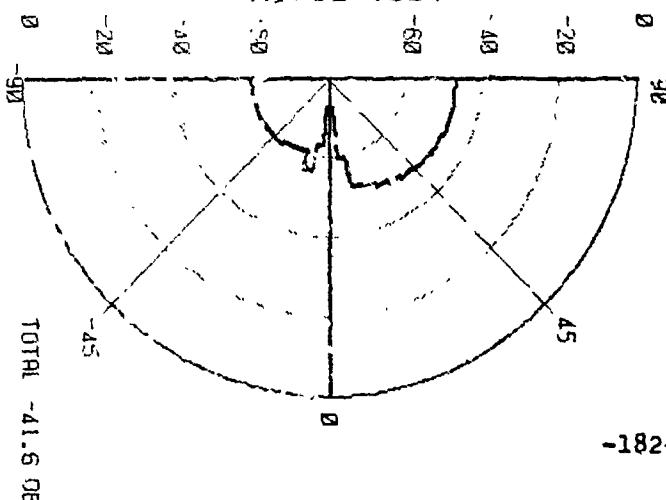


AREA 2 SUMMER

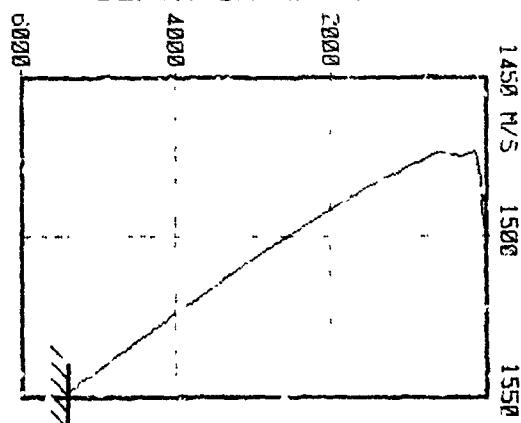
S 30 R 1300 F 1263

L RAPP

NOISE (DB)



DEPTH IN METERS



TOTAL -41.6 DB

FIGURE 2 INNER

S 26S R 1503 F 1200

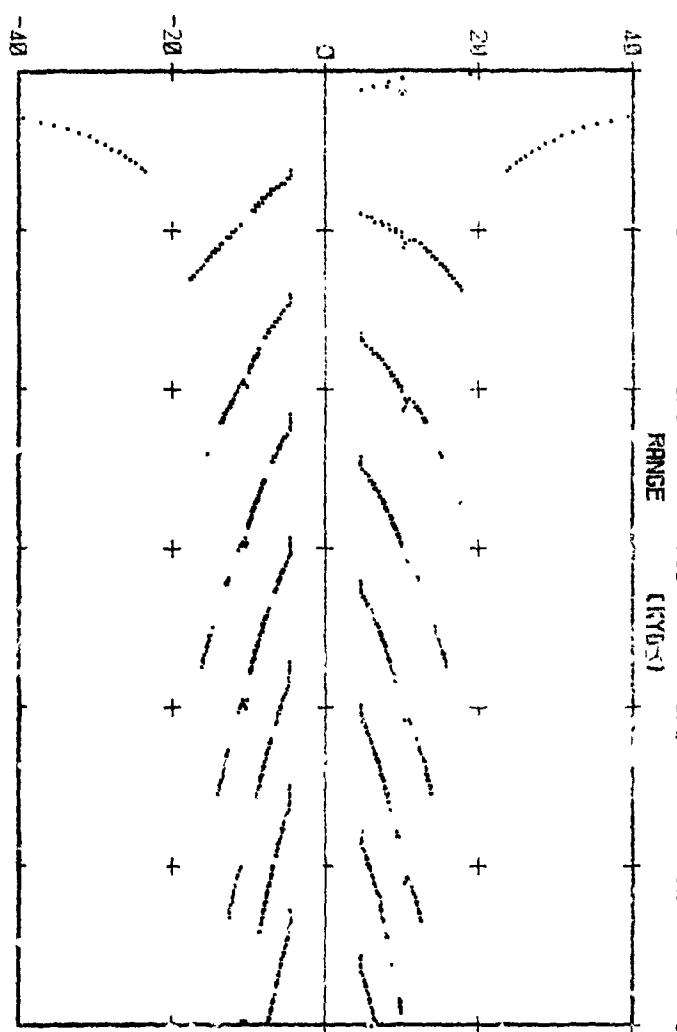
145° H/S 1500 1530

LRFPP

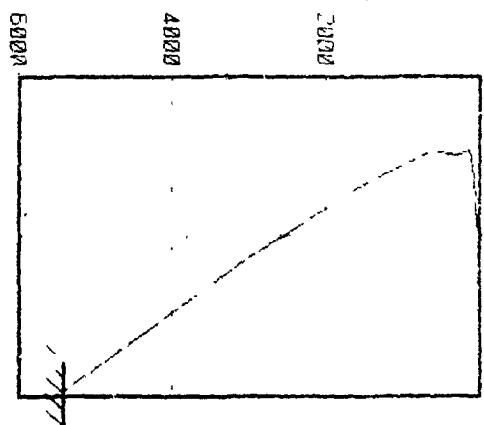
DB LOSS



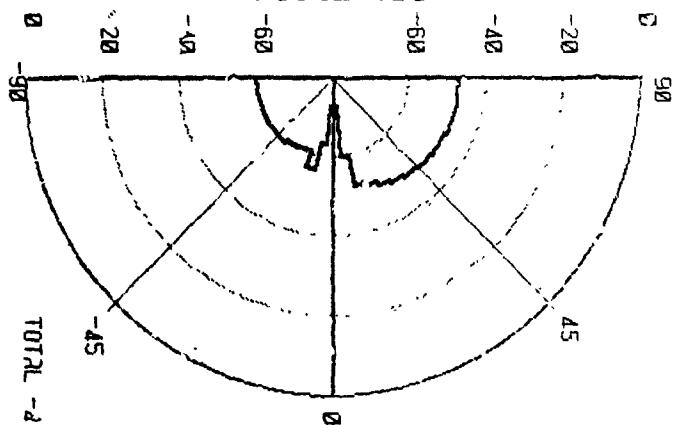
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -41.6 dB

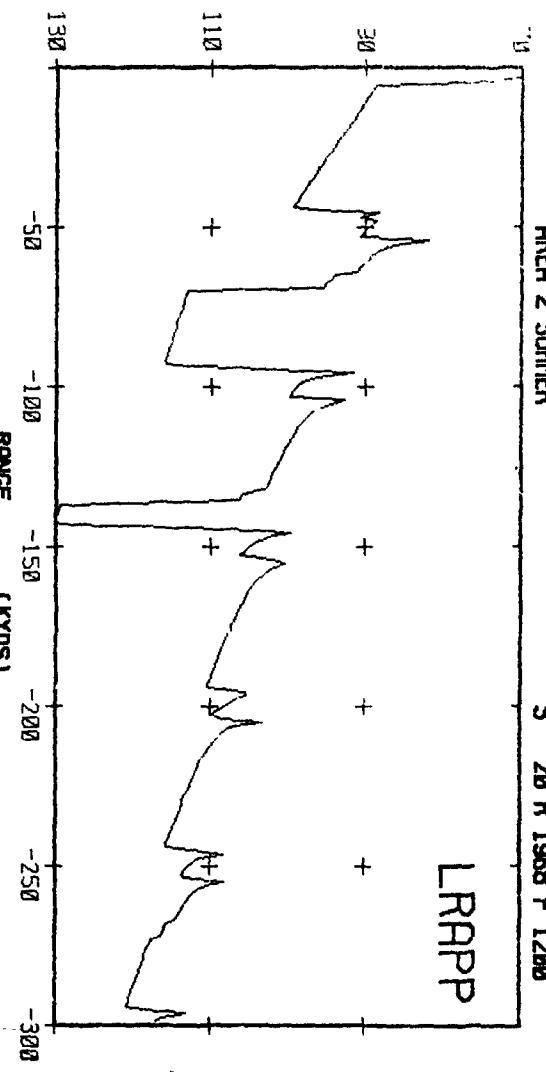
13

ARRER 2 SUMMER

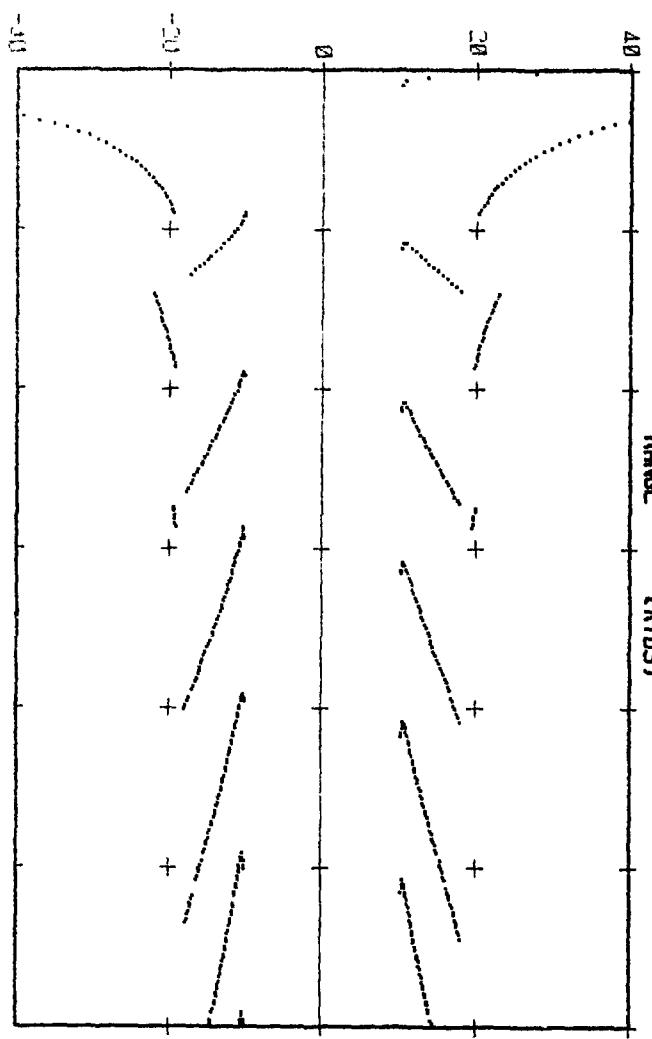
S 20 R 1968 F 1200

LRAPP

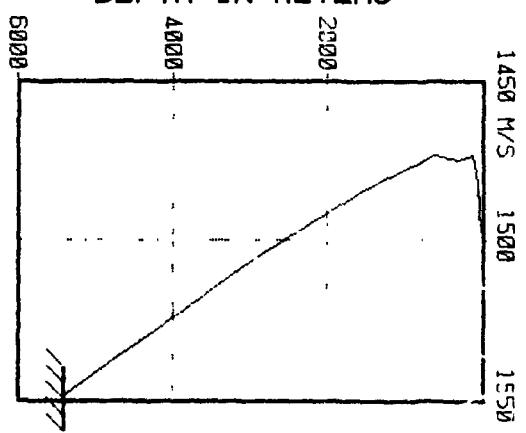
DB LOSS



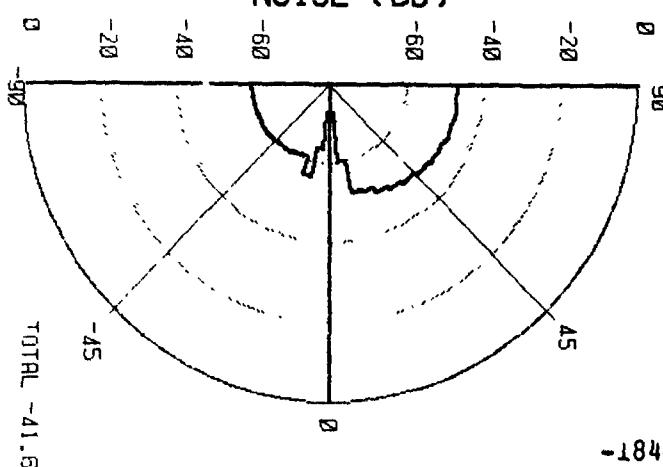
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)

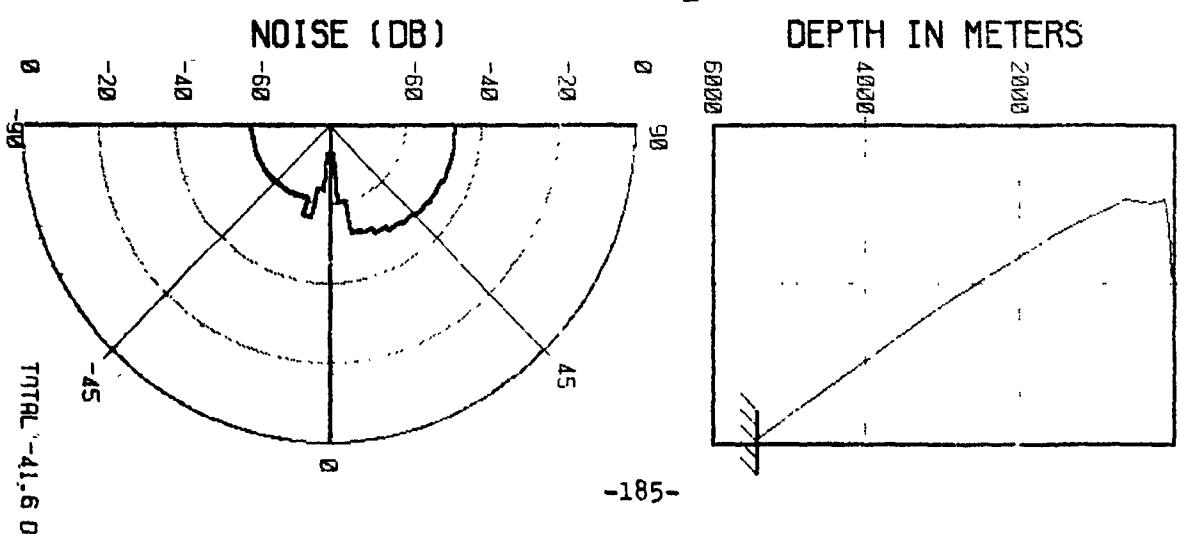
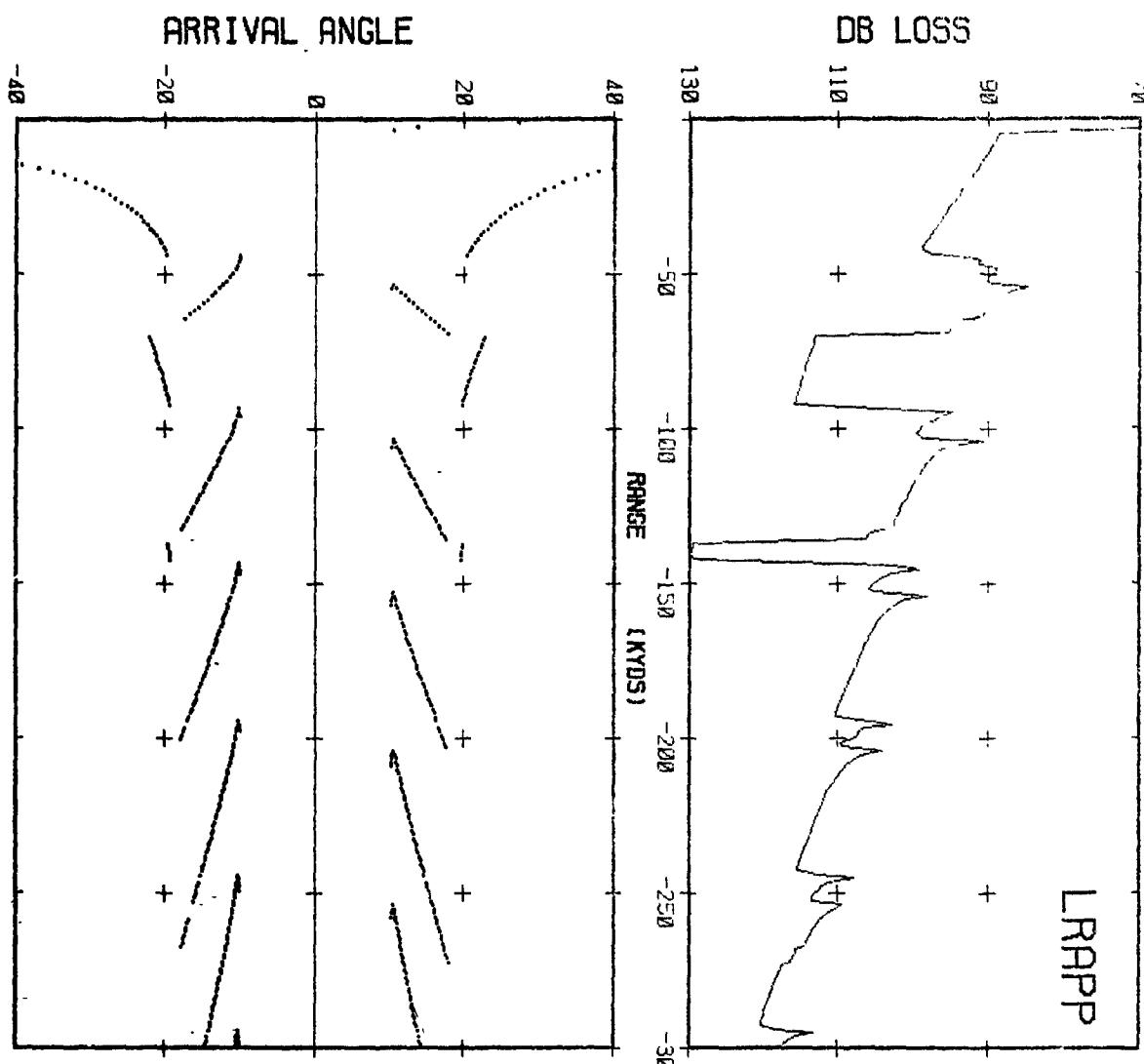


-184-

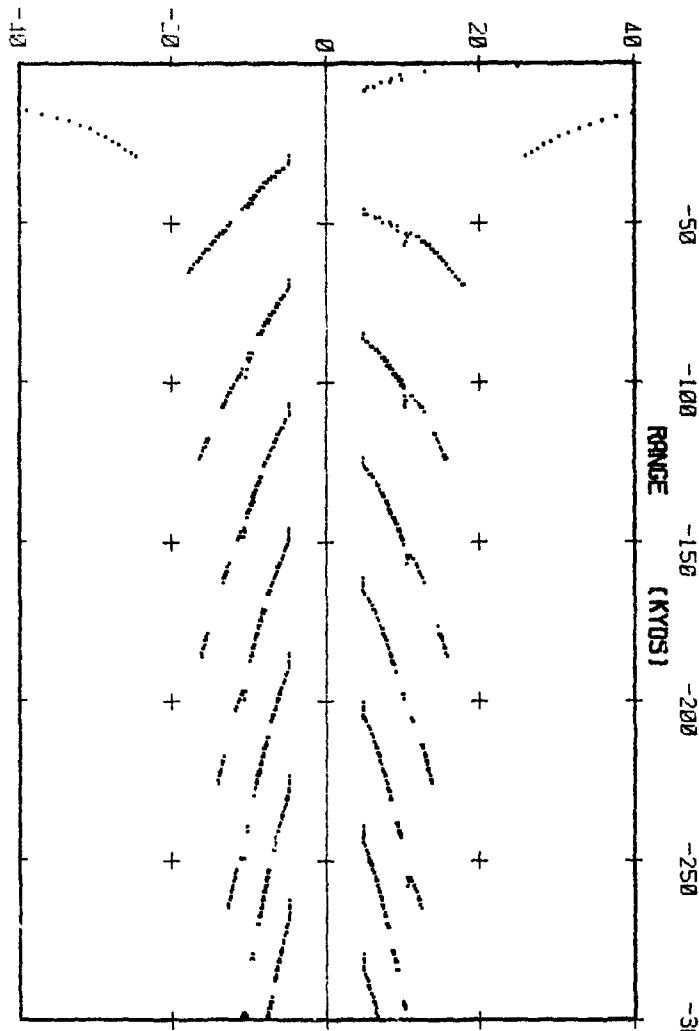
AREA 2 SUMMER

S 50 R 1968 F 1209

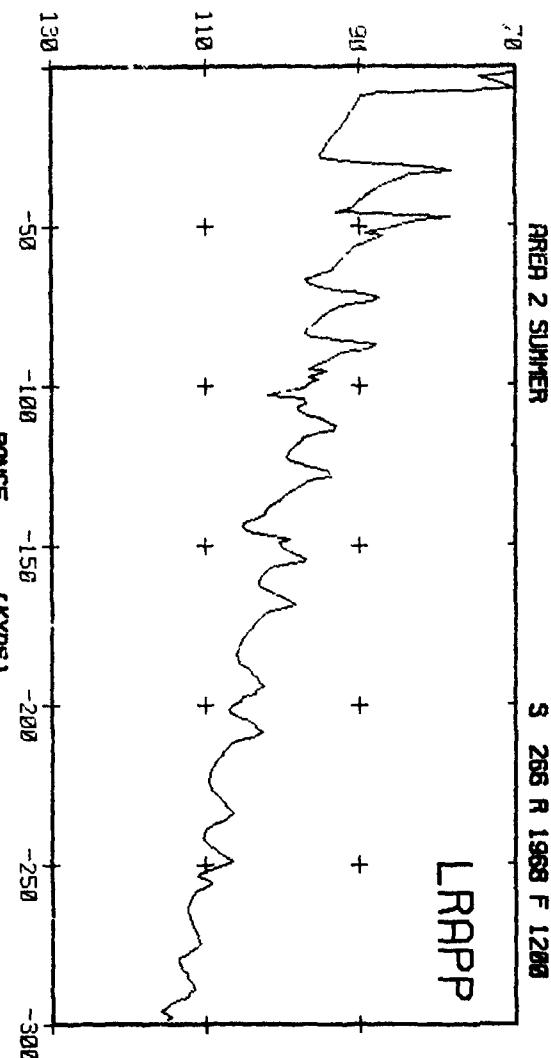
1450 M/S 1500 1550



ARRIVAL ANGLE



DB LOSS



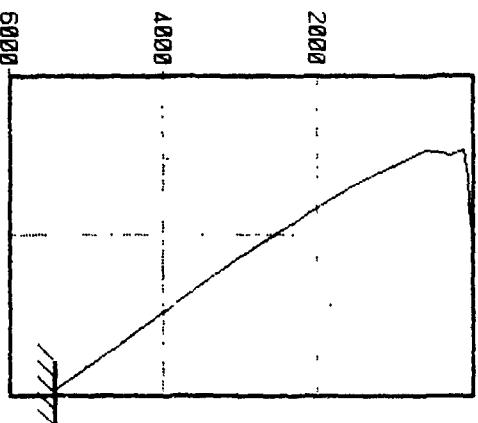
L RAPP

AREA 2 SUMMER

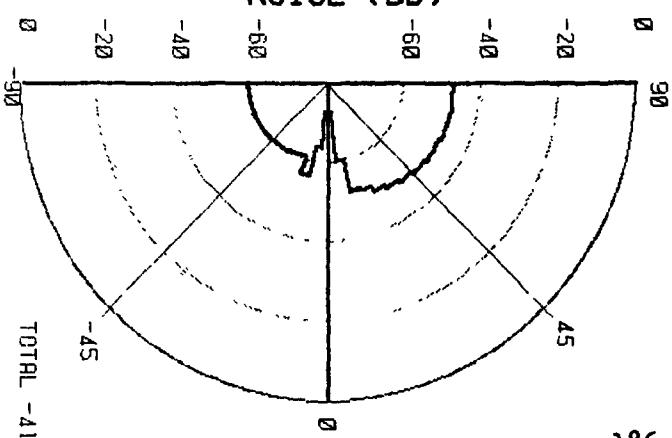
S 266 R 1968 F 1200

1450 M/S 1500 1550

DEPTH IN METERS



NOISE (DB)



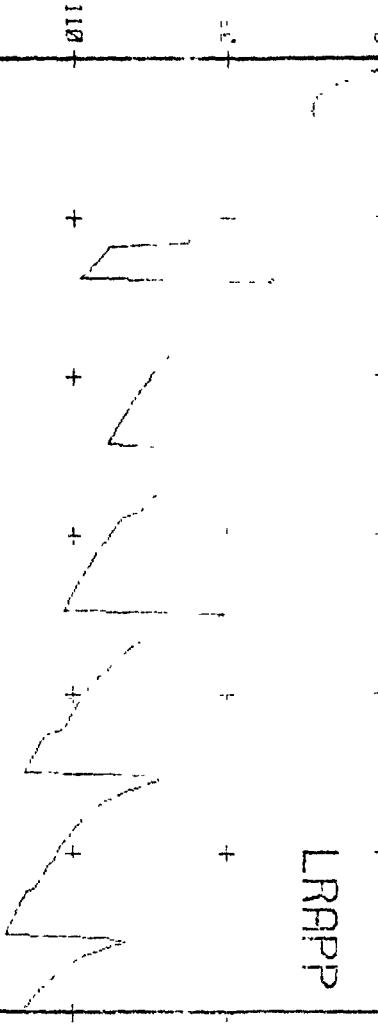
TOTAL -41.5 DB

PAPER 2 SUMMER

S 20 R 7874 F 1200

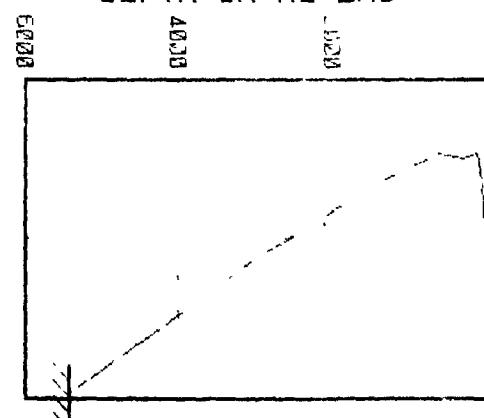
1450 M/S 1500 1550

DB LOSS

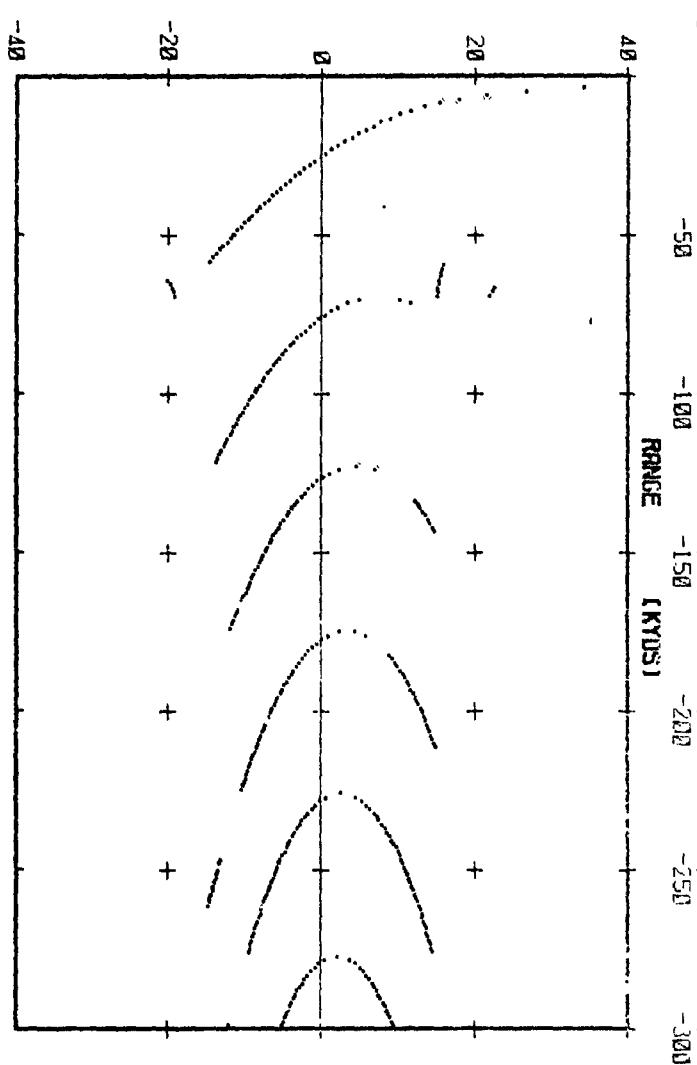


LRAPP

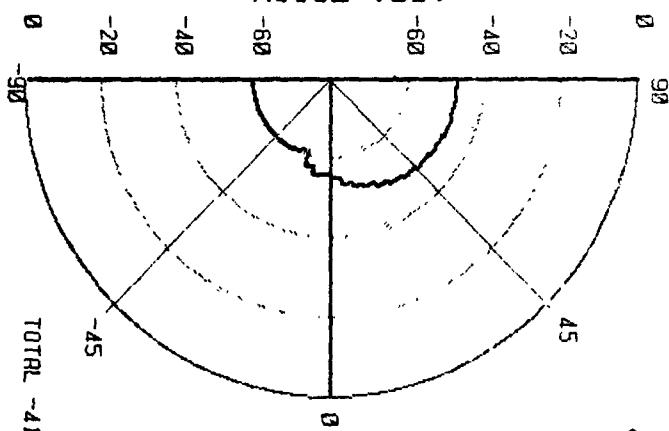
DEPTH IN METERS



ARRIVAL ANGLE

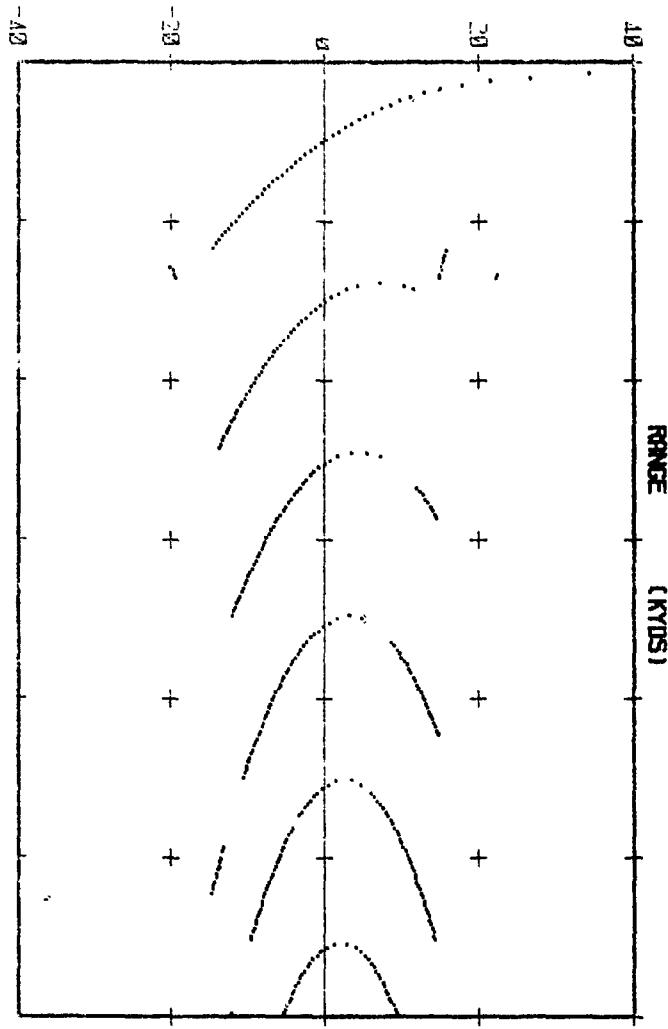


NOISE (DB)

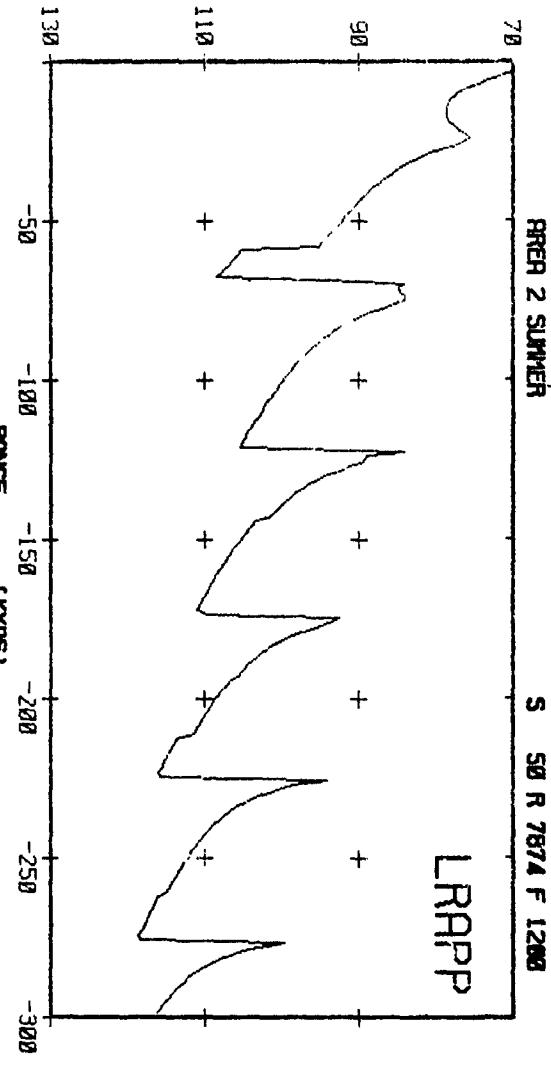


TOTAL -41.4 DB

ARRIVAL ANGLE



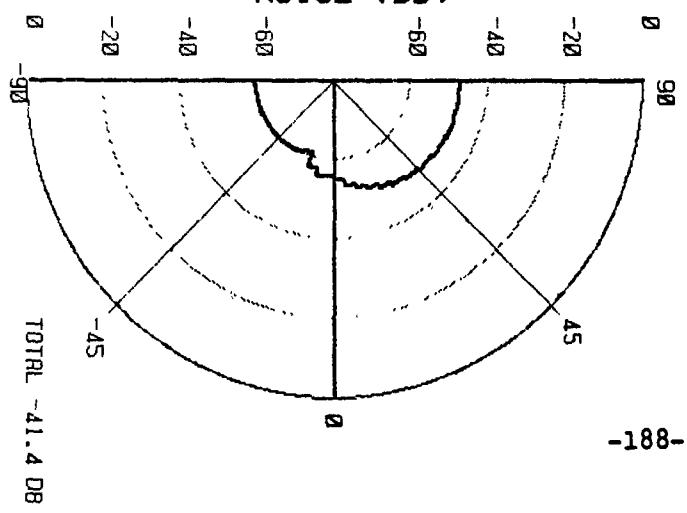
DB LOSS



RER 2 SUMMER S 50 R 7674 F 1268

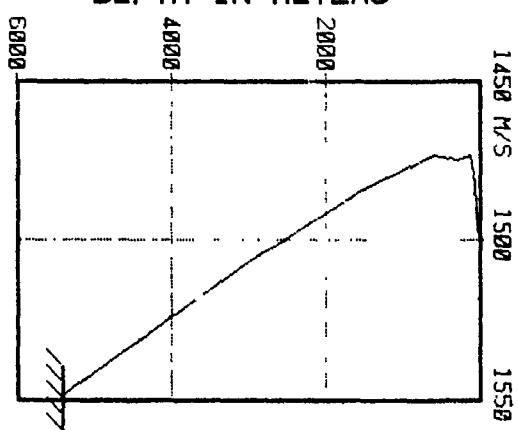
LRAPP

NOISE (DB)



TOTAL -41.4 DB

DEPTH IN METERS



1450 M/S 1500 1550

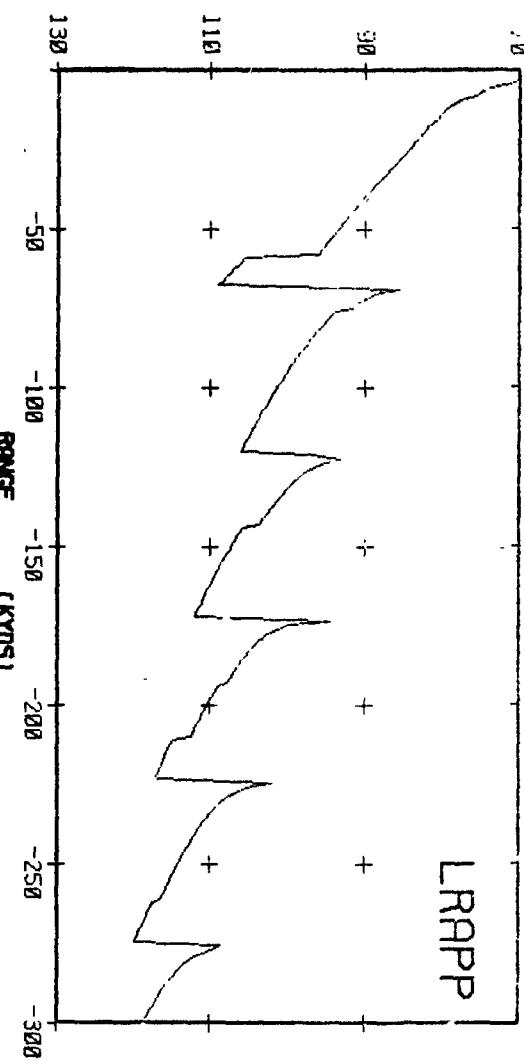
-188-

PAREA 2 SUMMER

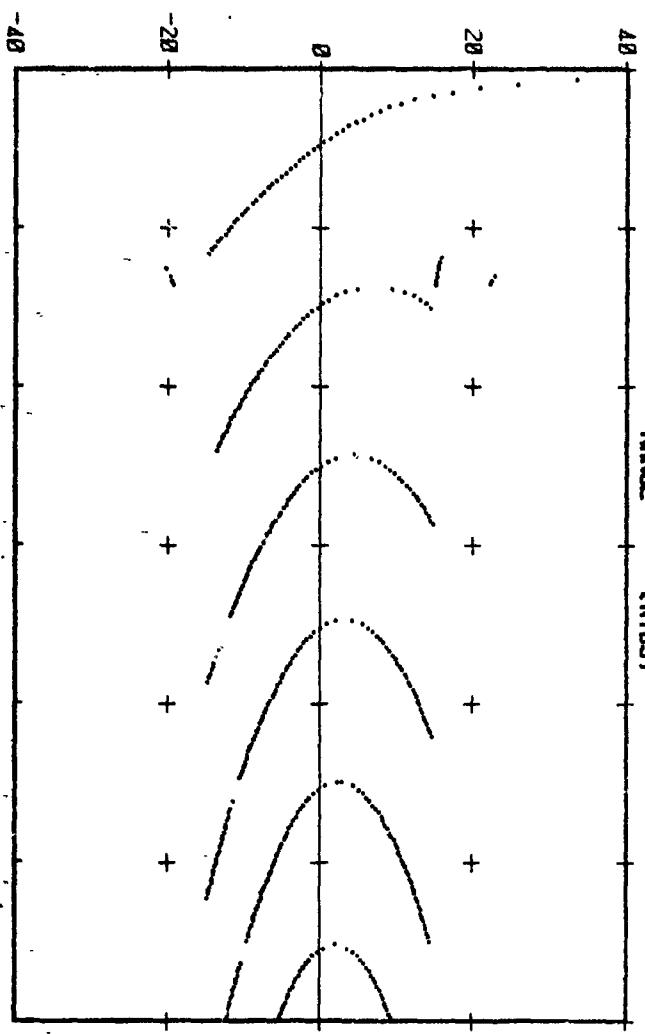
S 266 R 7874 F 1200

1450 M/S 1500 1550

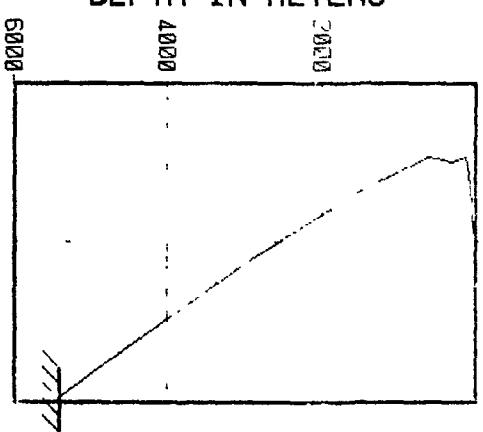
DB LOSS



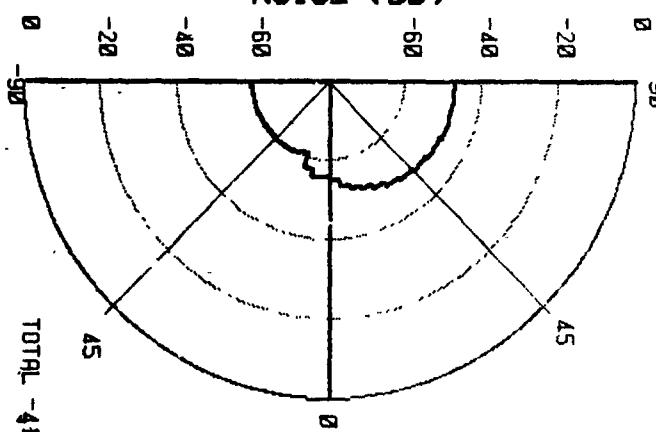
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -41.4 DB

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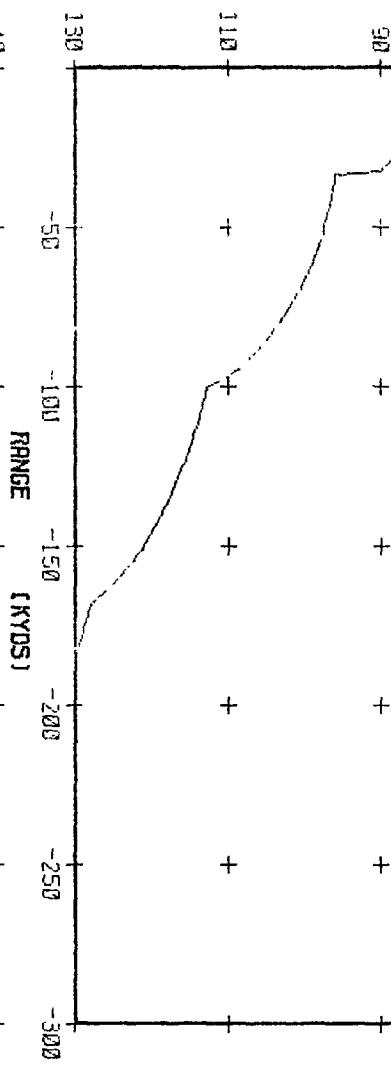
AREA 2 SUMMER

S 28 R17759 F 1200

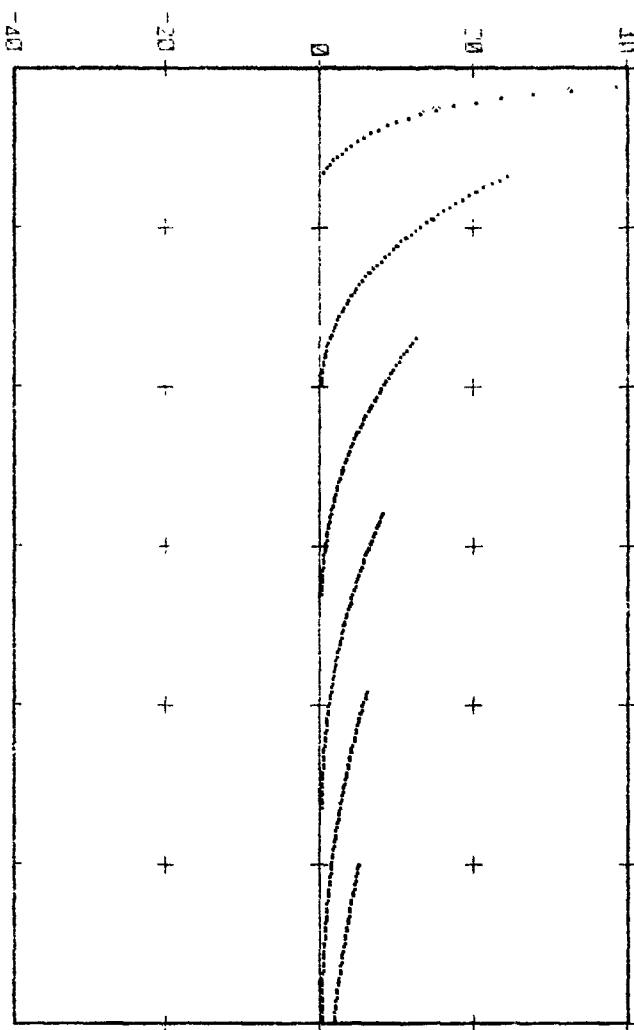
1450 M/S 1500 1550

LRAPP

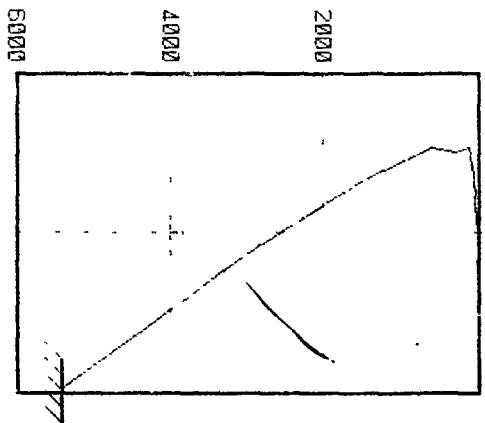
DB LOSS



ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)

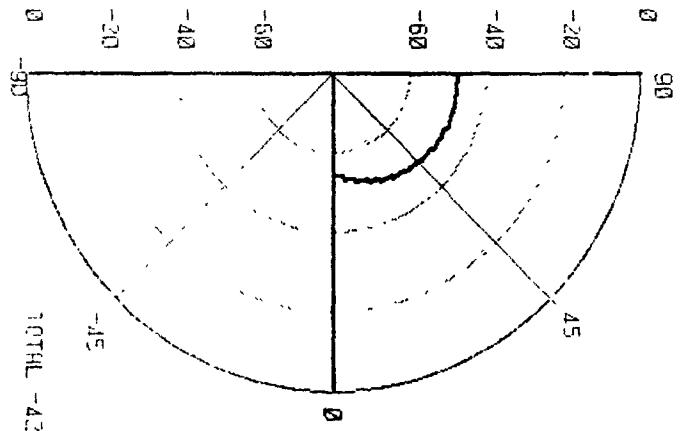


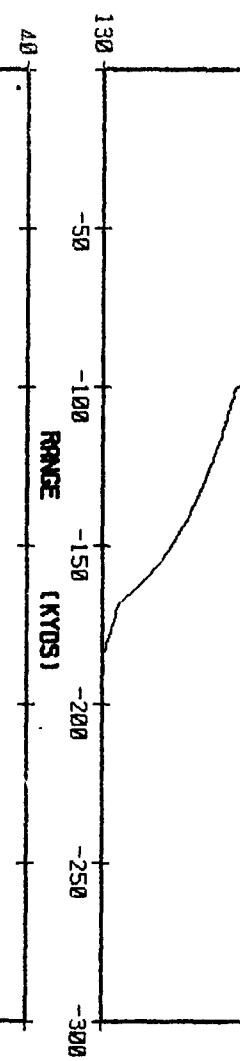
FIGURE 2 SUBMER

S 50 R17759 F 122d

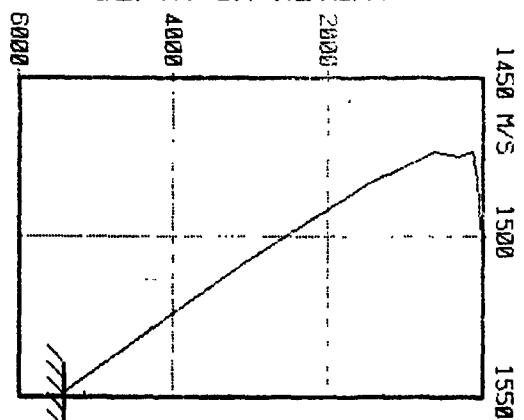
1450 M/S 1500 1550

LRAPP

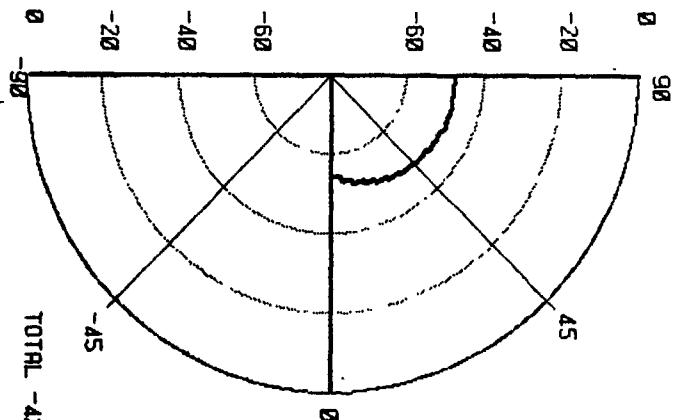
DB LOSS



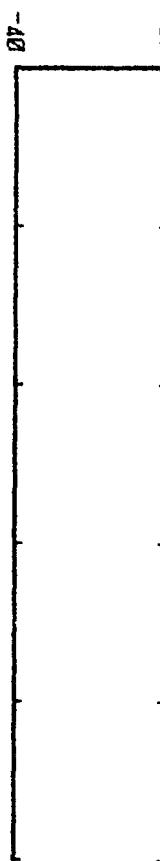
DEPTH IN METERS



NOISE (DB)



ARRIVAL ANGLE



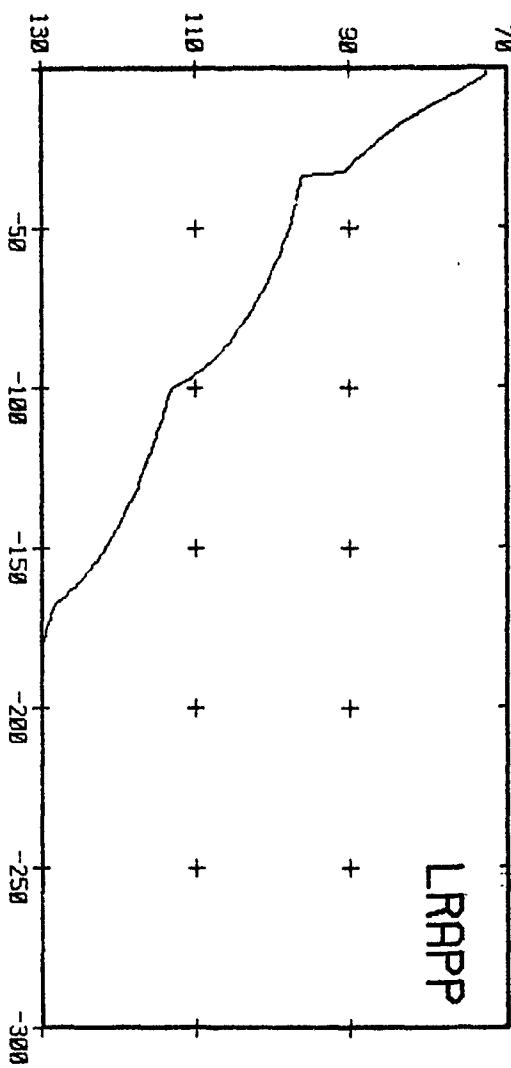
AREA 2 SUMMER

S 266 R17759 F 1200

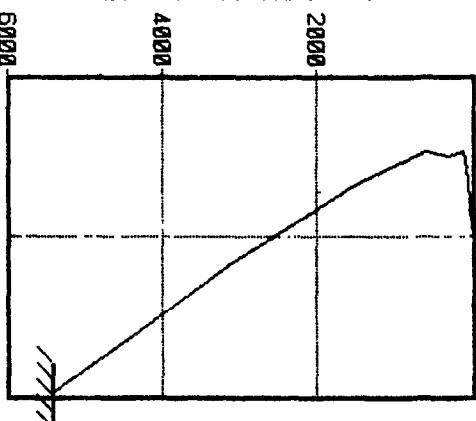
1450 M/S 1500 1550

LRAFP

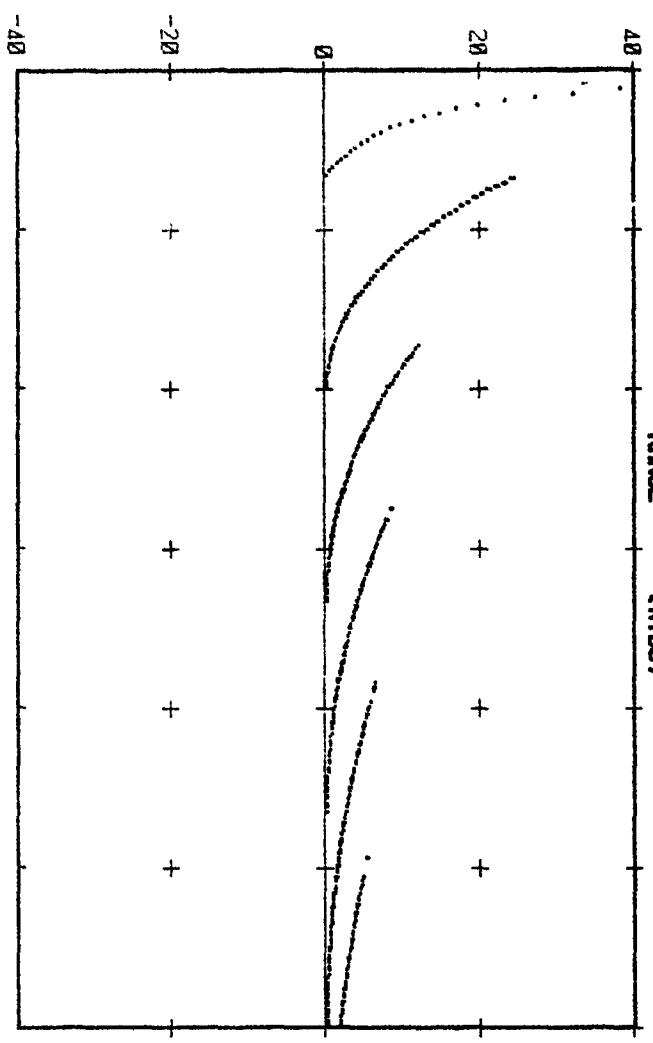
DB LOSS



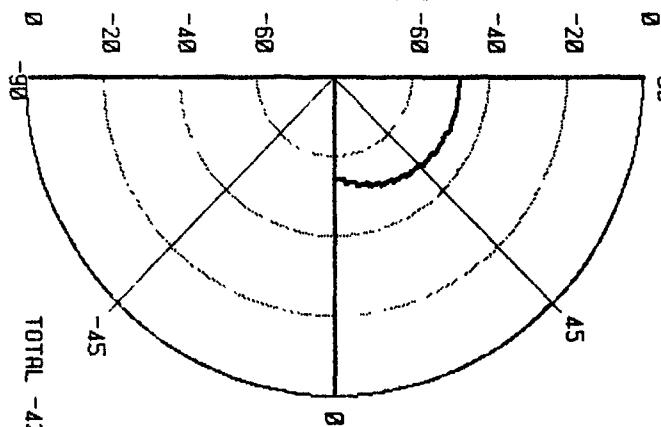
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



TOTAL -42.0 DB

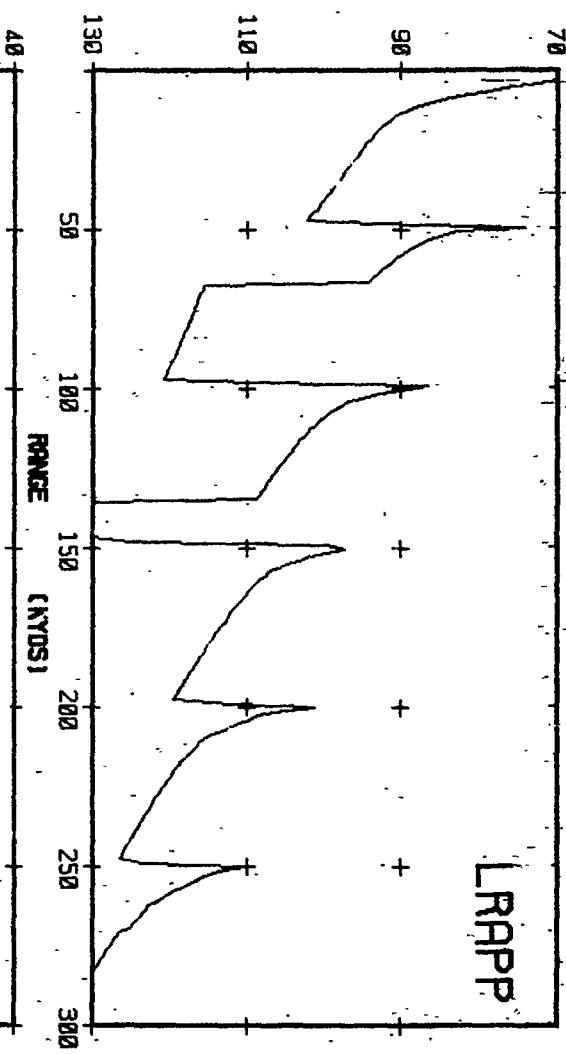
AREA 2 SUMMER

5 20 R 00/F 2000

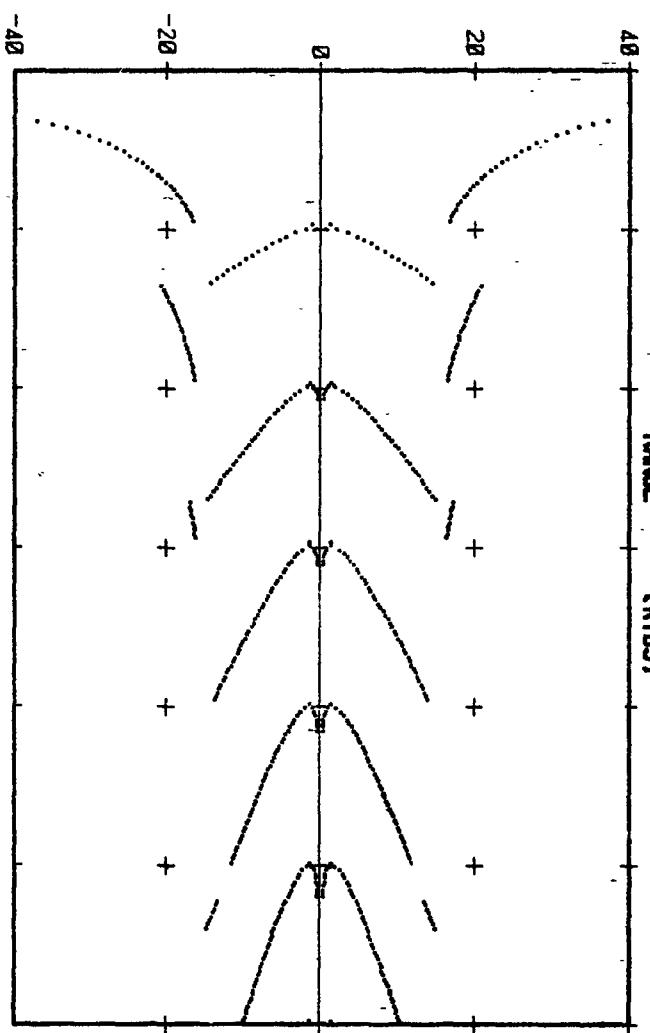
1450 MWS 1500 1650

LRRAPP

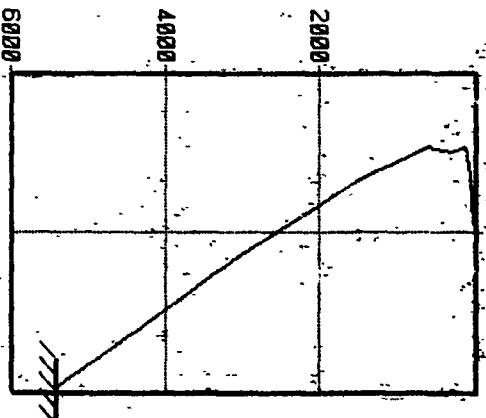
DB LOSS



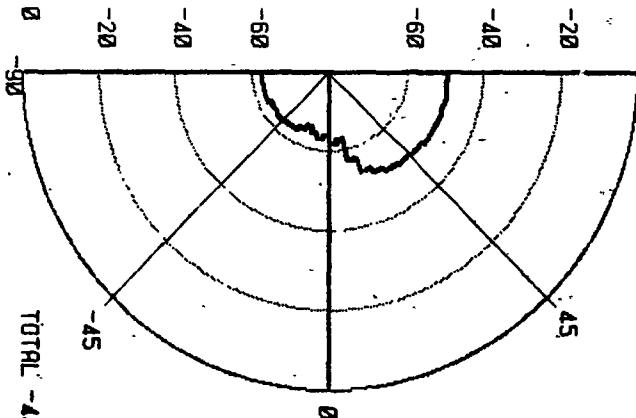
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -44.0 DB

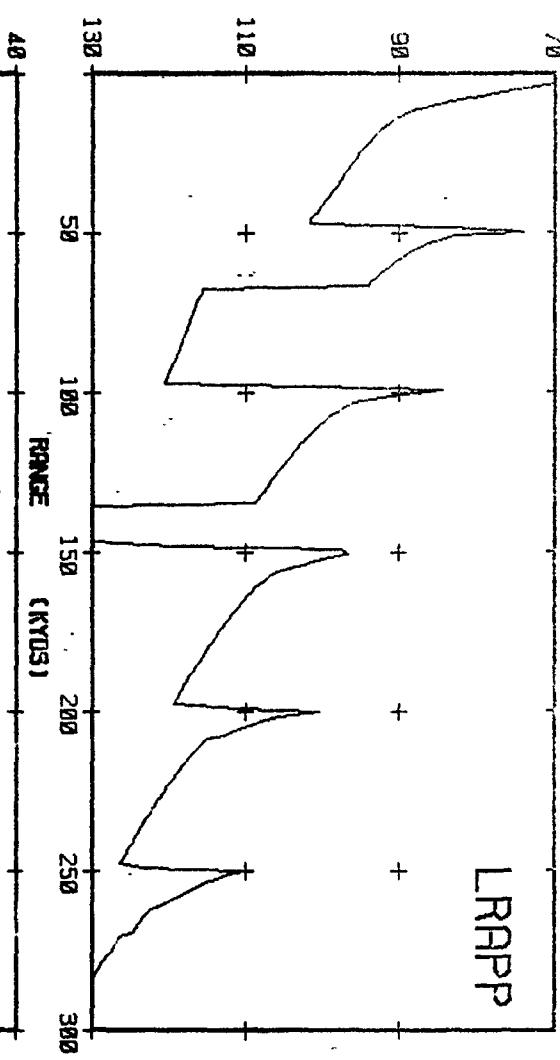
PAPER 2 SUMMER

S 50 R 60 F 2000

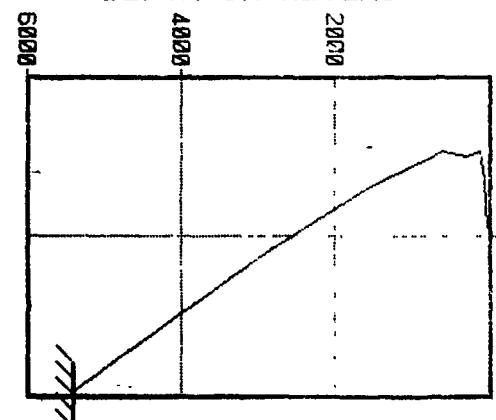
1450 M/S 1500 1550

LRAPP

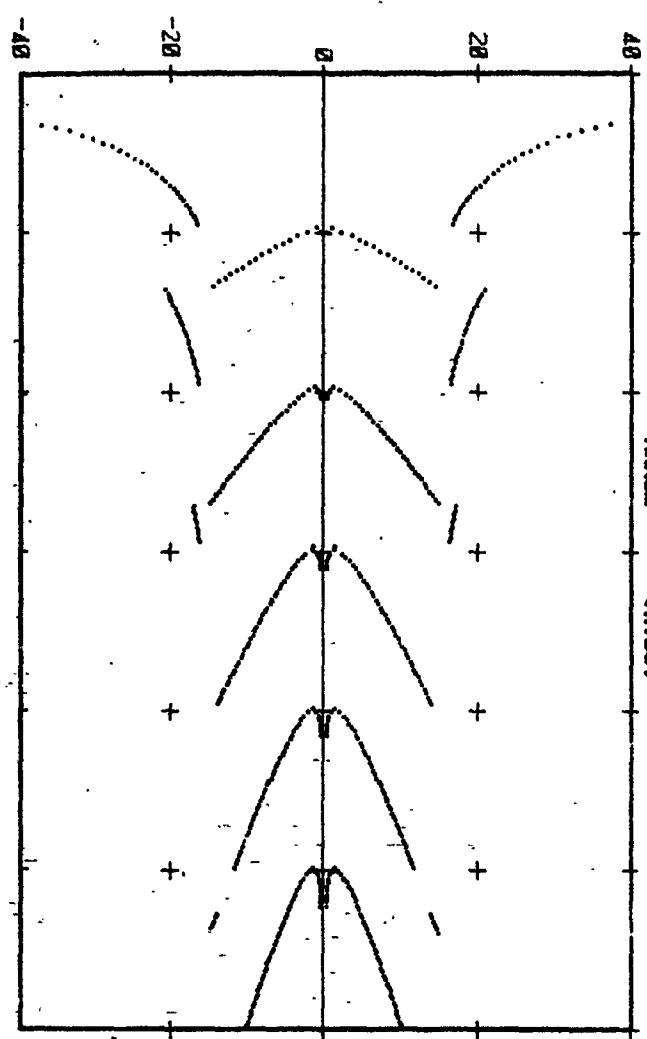
DB LOSS



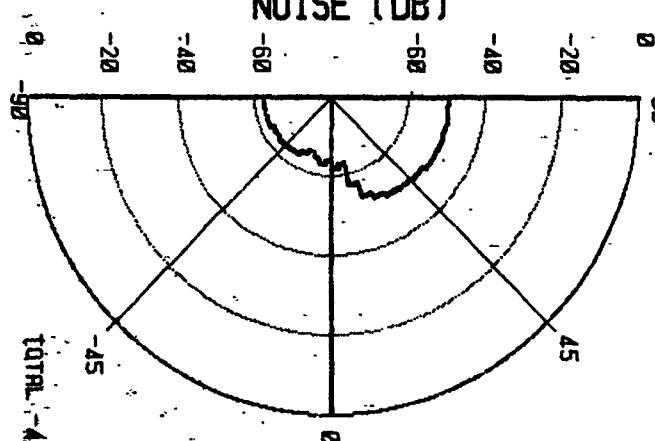
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



TOTAL -45.0 DB

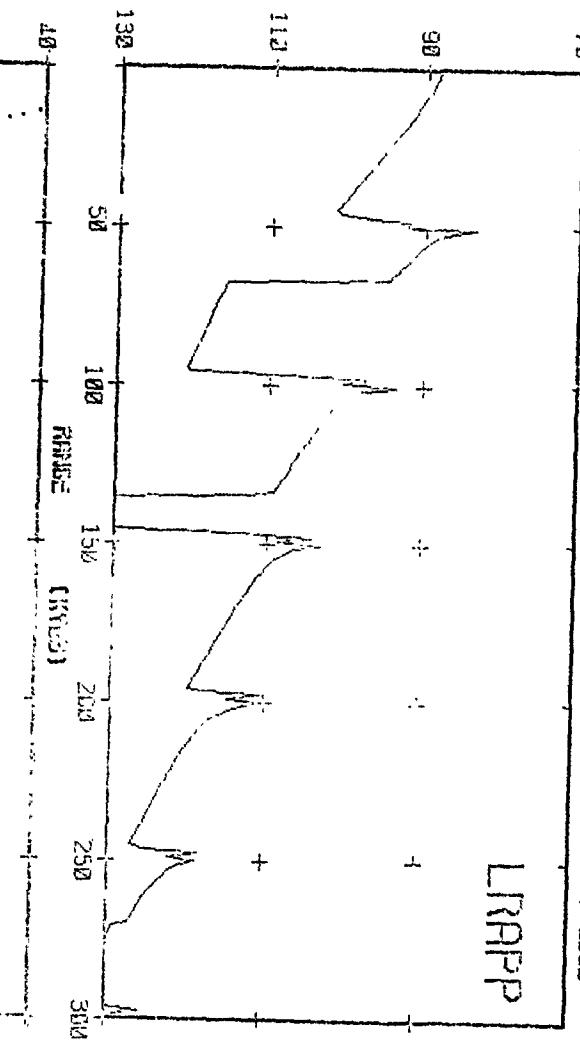
70

Fig. 2 Shallow

S 2E3 R 63 F 2000

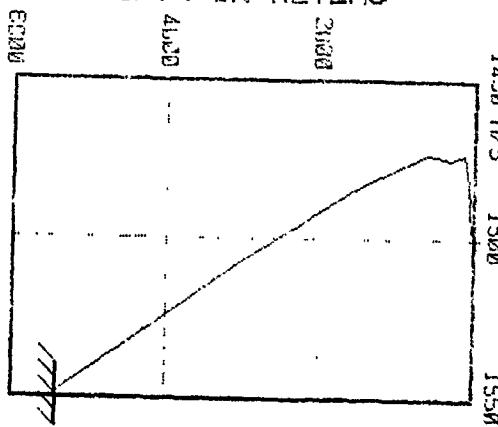
1450 M/S 1500 1550

DB LOSS

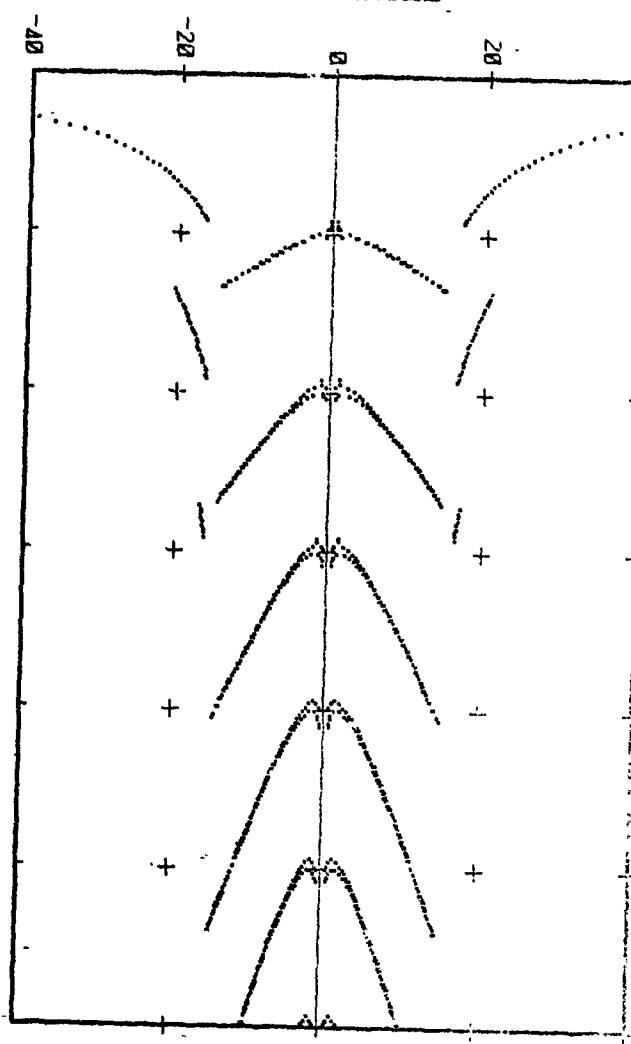


LRAPP

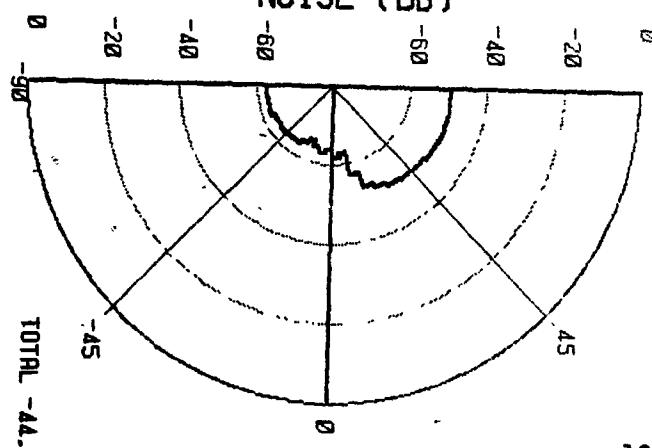
DEPTH IN METERS



ARRIVAL ANGLE

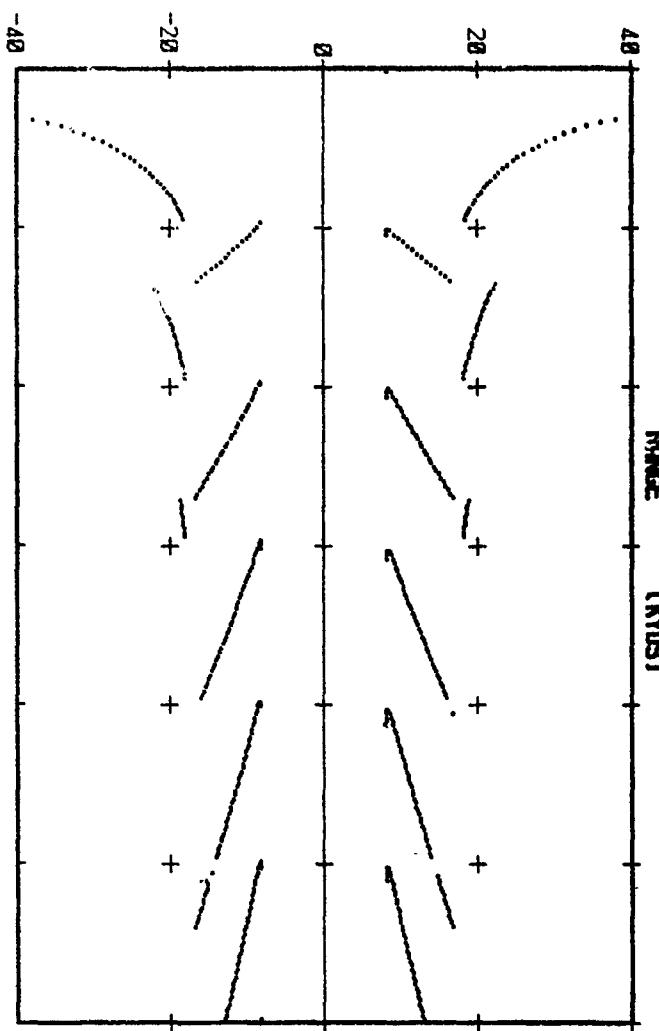


NOISE (DB)

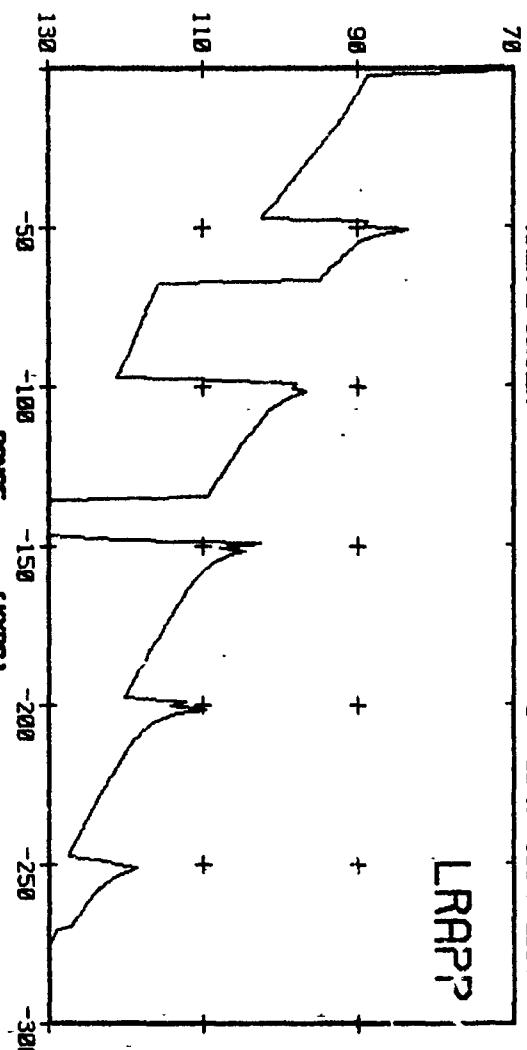


TOTAL -44.0 DB

ARRIVAL ANGLE



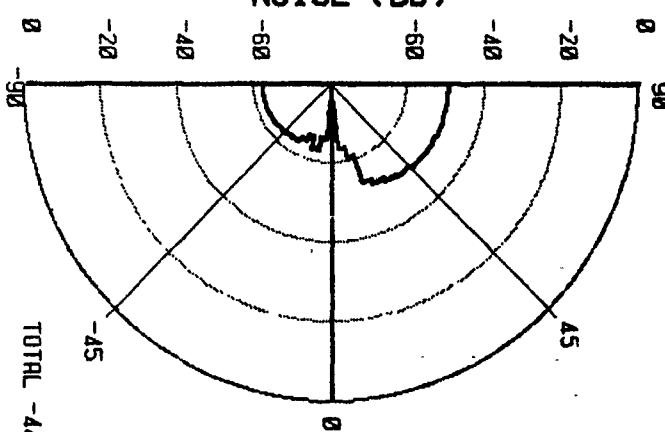
DB LOSS



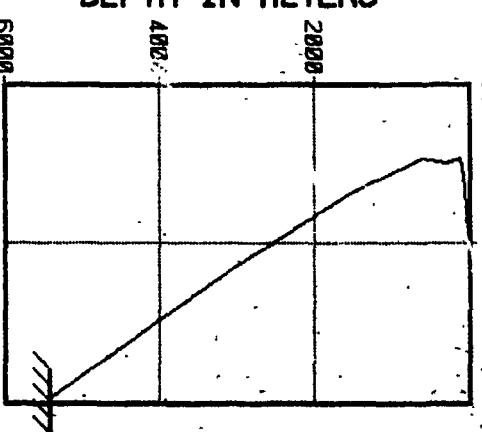
AREA 2 SUMMER
S 28 R 166 F 2000

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



TOTAL -44.2 DB

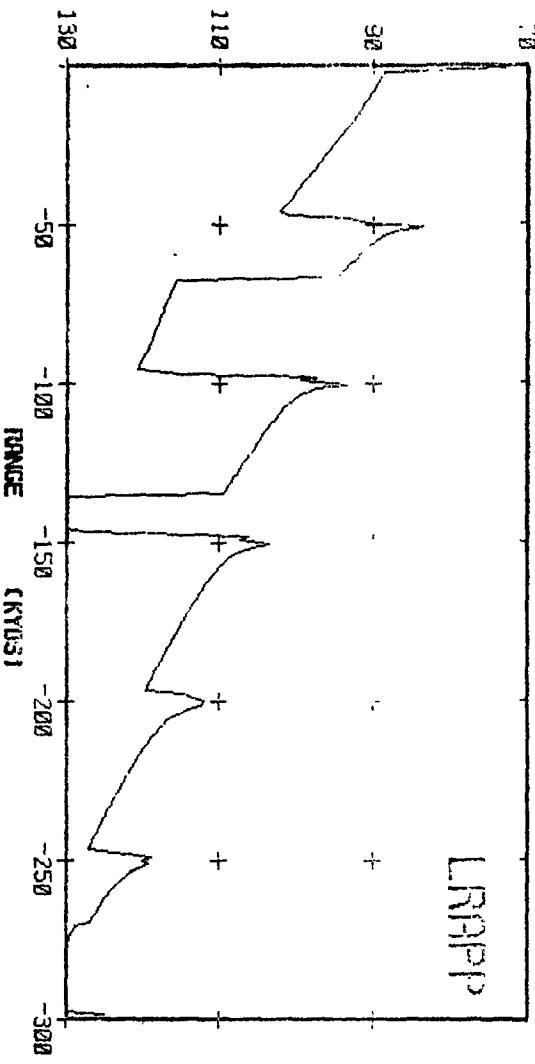
AREA 2 SUMMER

3 53 R 168 F 22.3

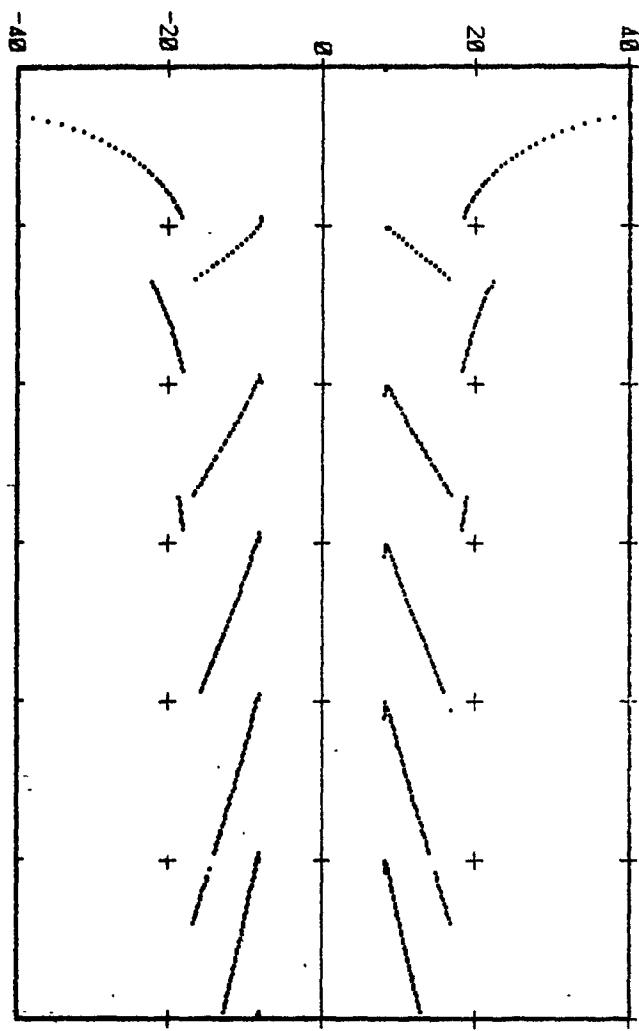
1450 M/S 1500 1550

LRRP

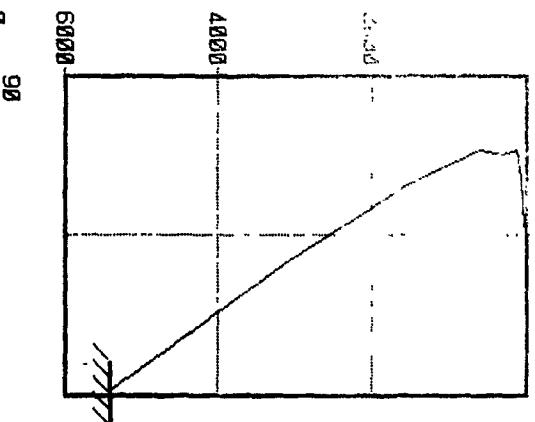
DB LOSS



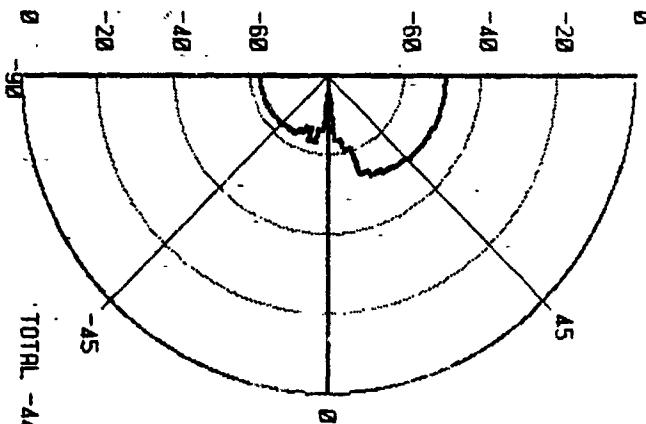
ARRIVAL ANGLE



DEPTH IN METERS

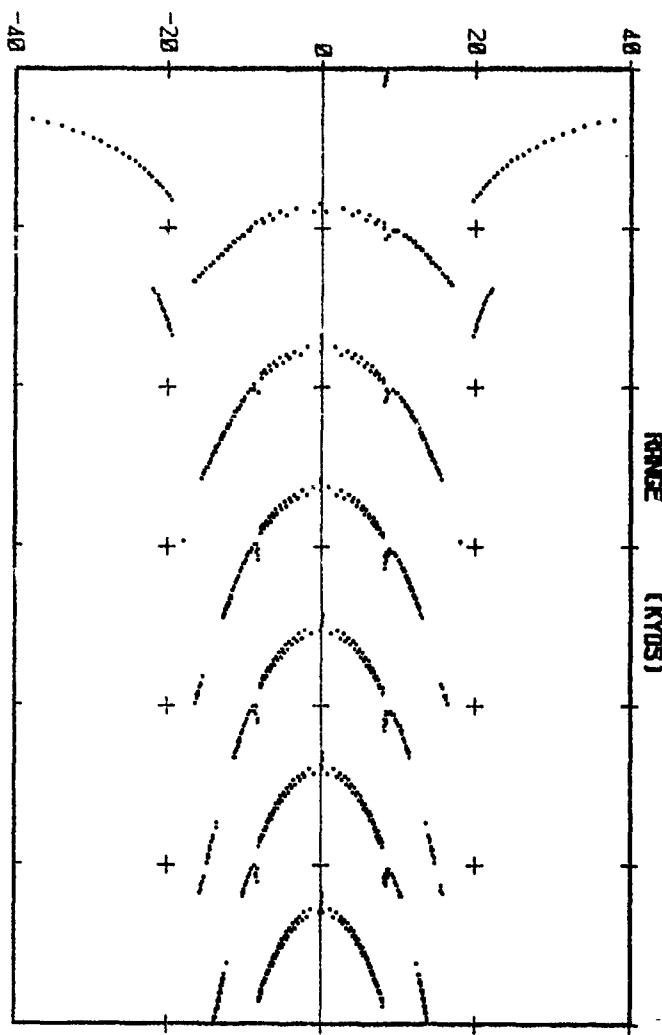


NOISE (DB)

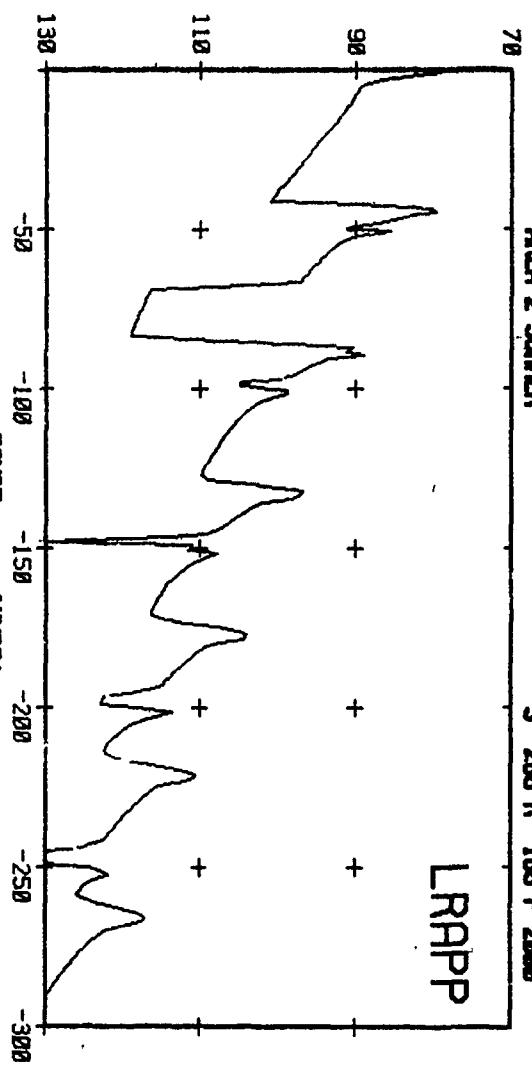


TOTAL -44.2 DB

ARRIVAL ANGLE



DB LOSS



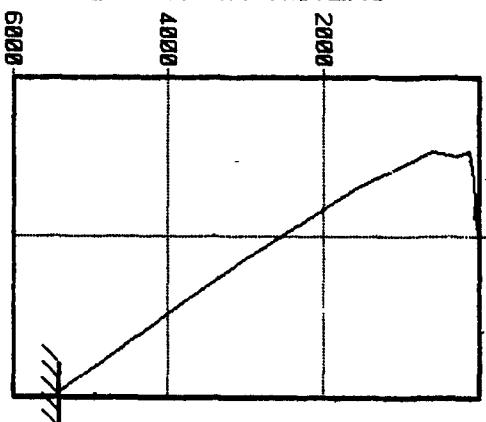
ARER 2 SUMMER

S 263 R 165 F 2000

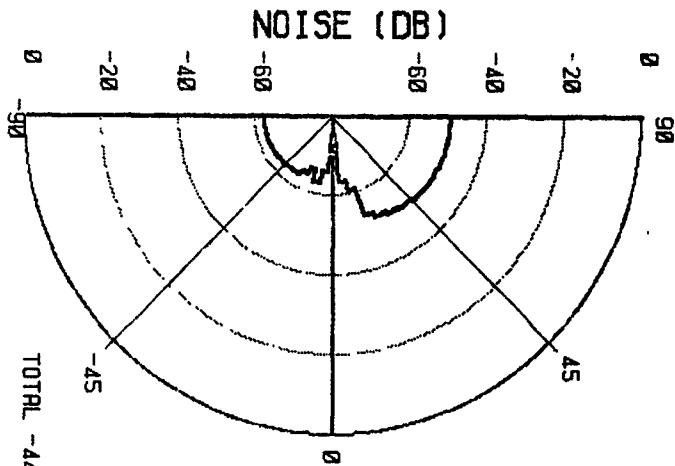
LRAAPP

1450 M/S 1500 1550

DEPTH IN METERS



NOISE (DB)

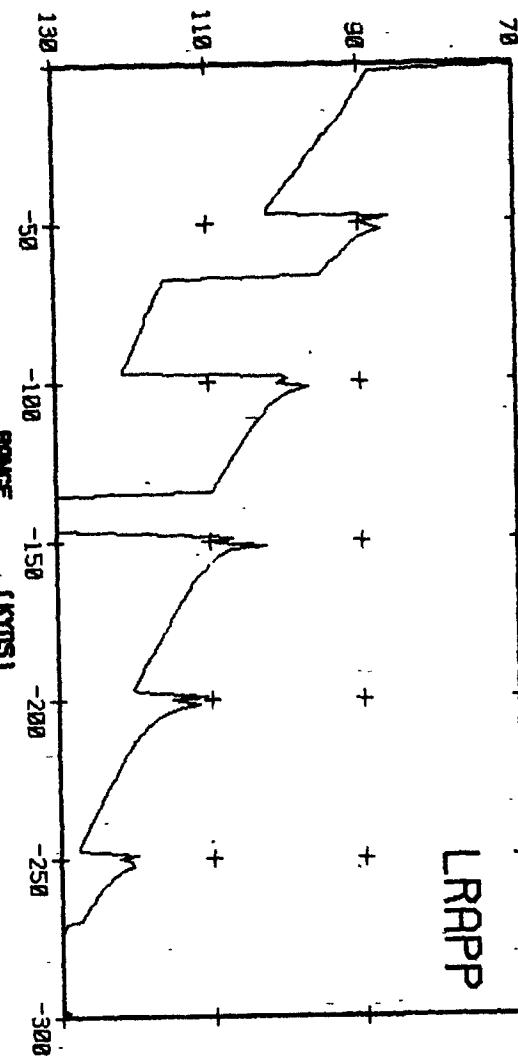


TOTAL -44.2 DB

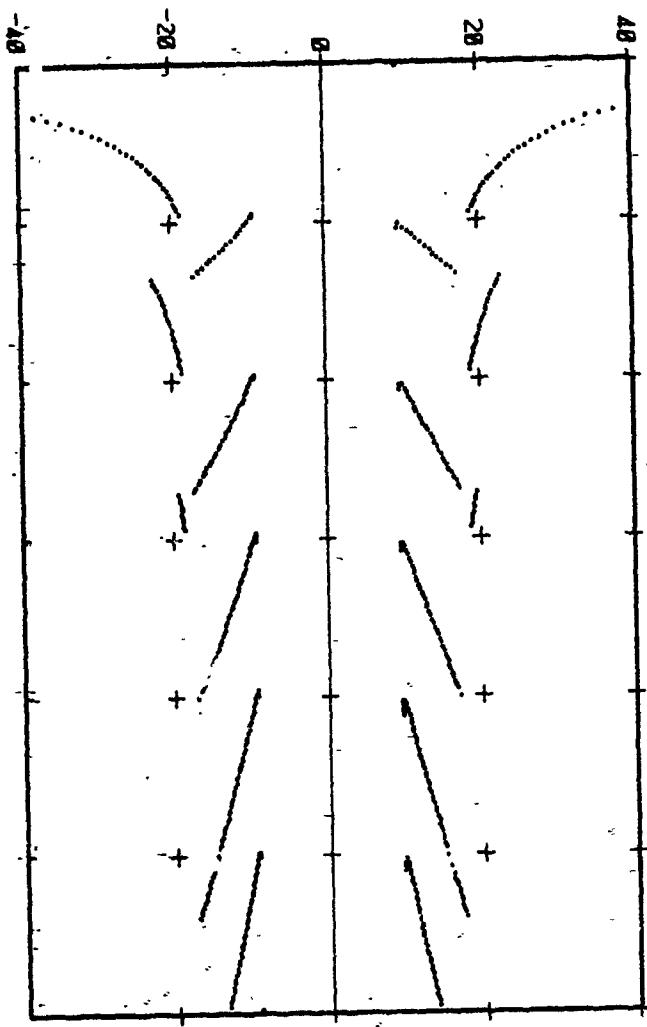
PINGER 2 SUMMER S 20 R 300 F 2000

LRRAPP

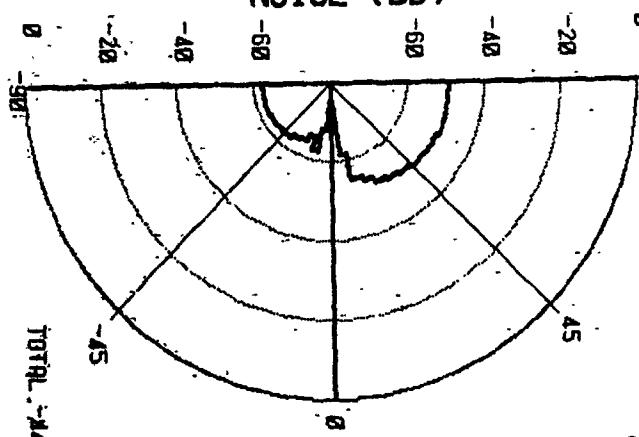
DB LOSS



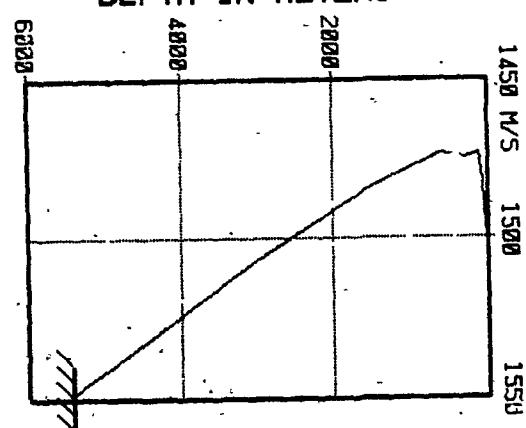
ARRIVAL ANGLE

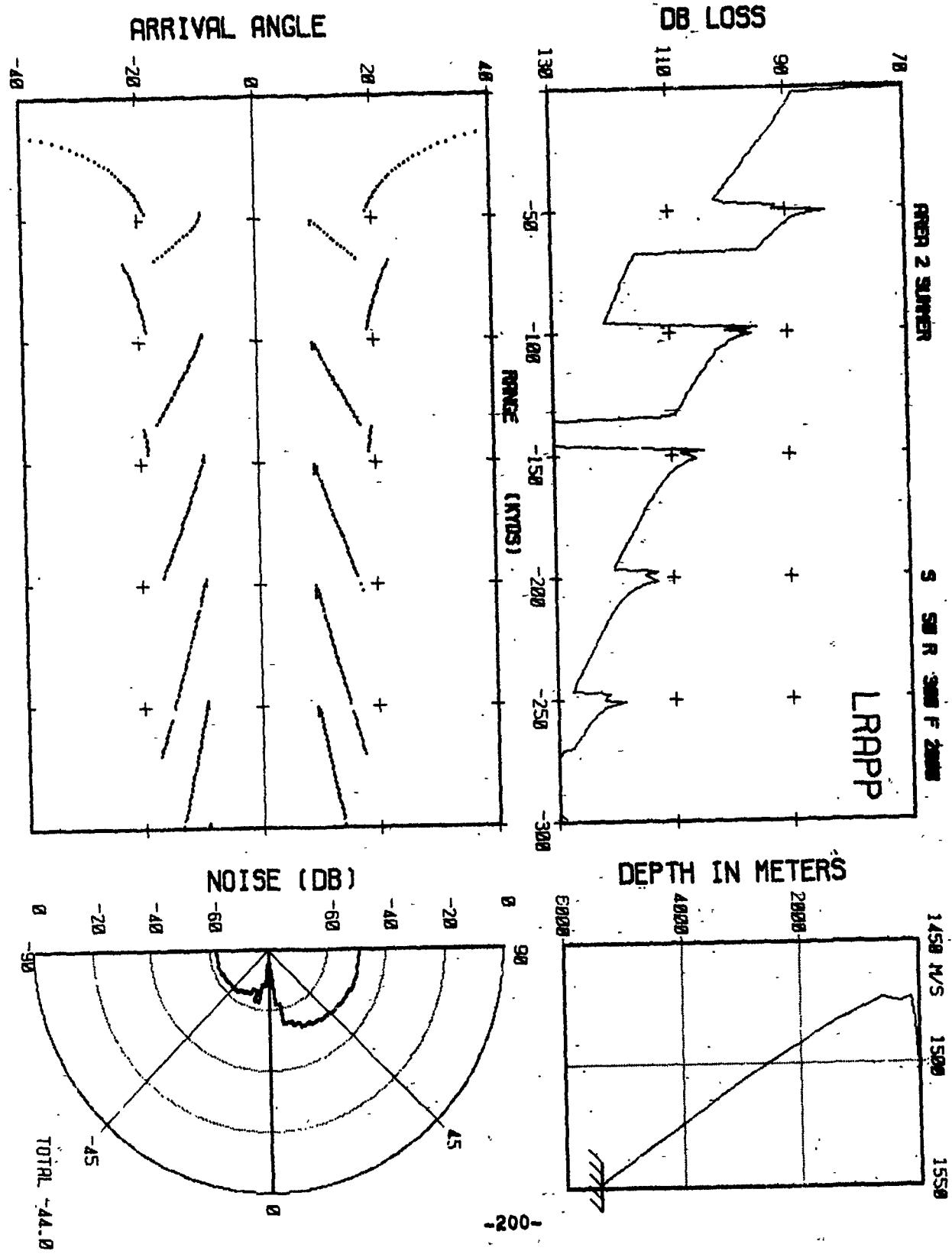


NOISE (DB)



DEPTH IN METERS





70

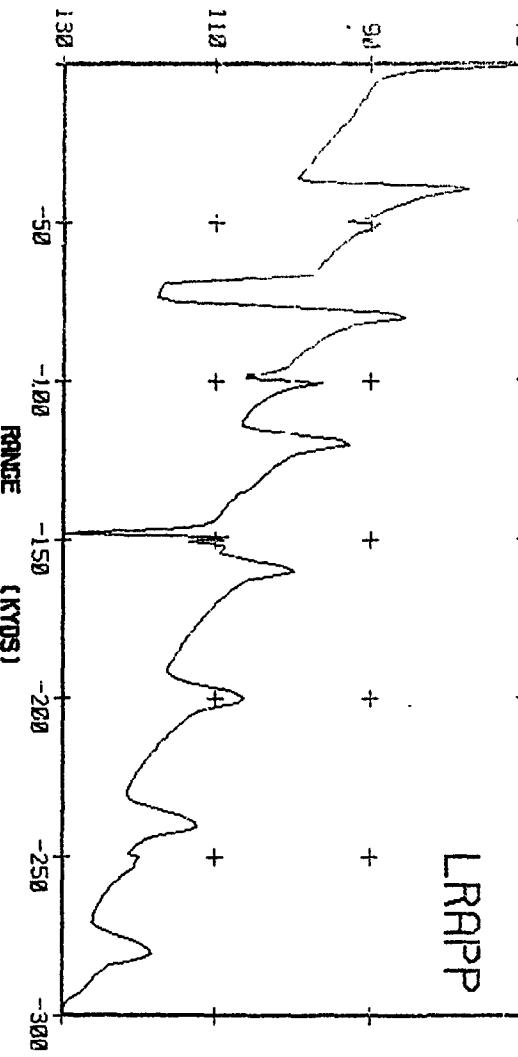
FIRE 2 SUMMER

S 203 R 346 F 2633

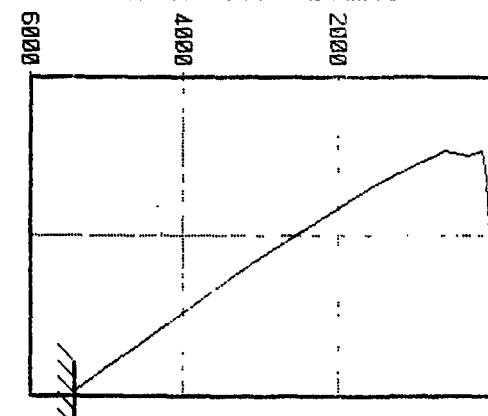
LRAPP

1450 M/S 1500 1550

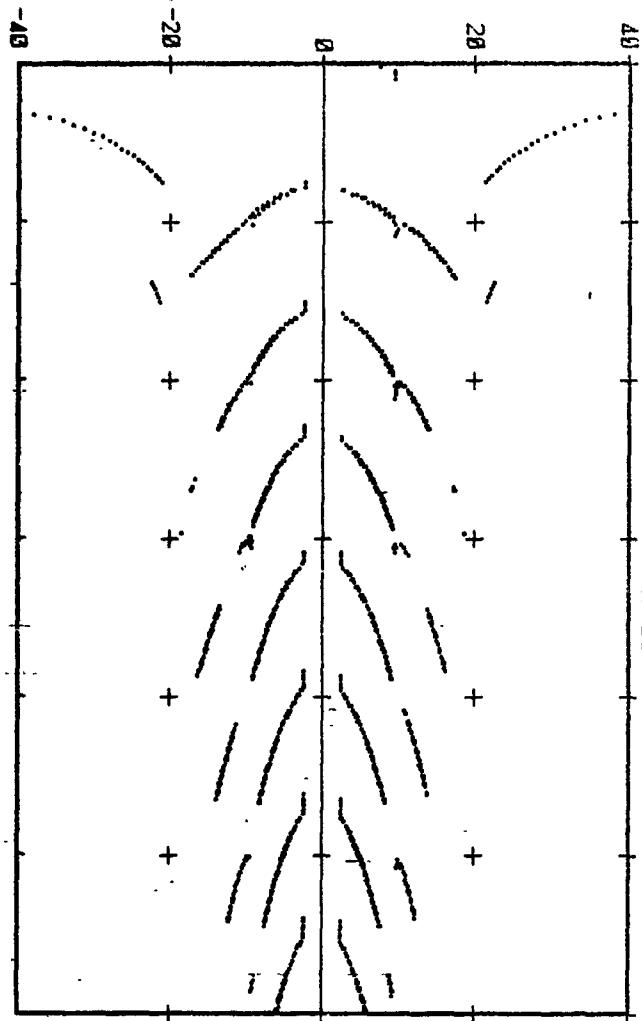
DB LOSS



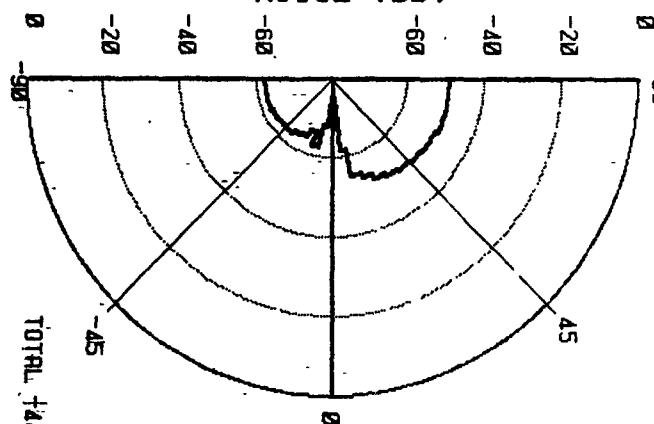
DEPTH IN METERS



ARRIVAL ANGLE

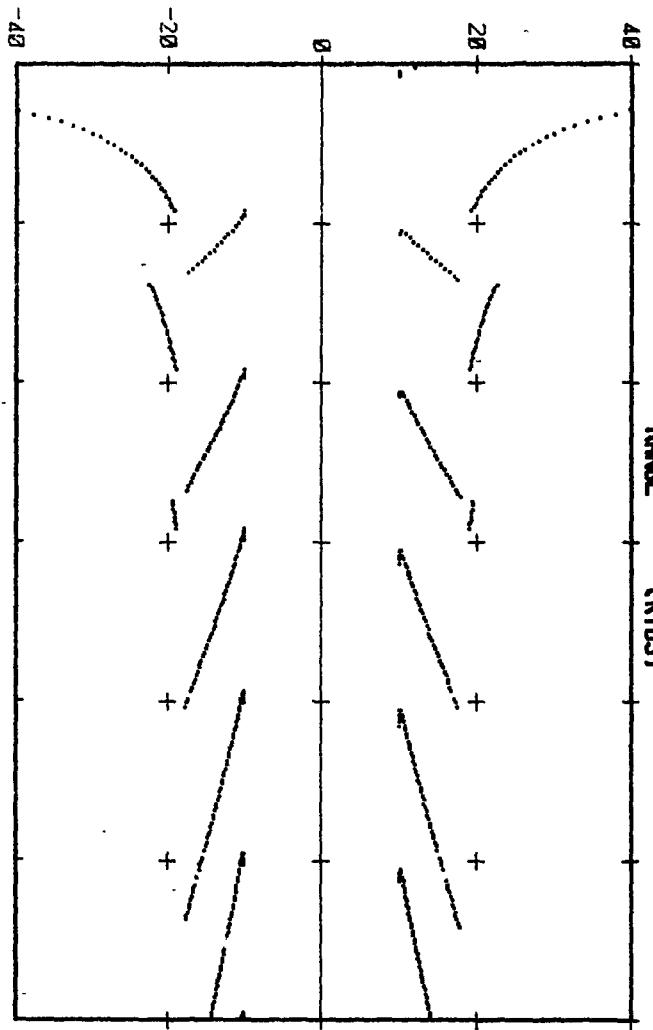


NOISE (DB)

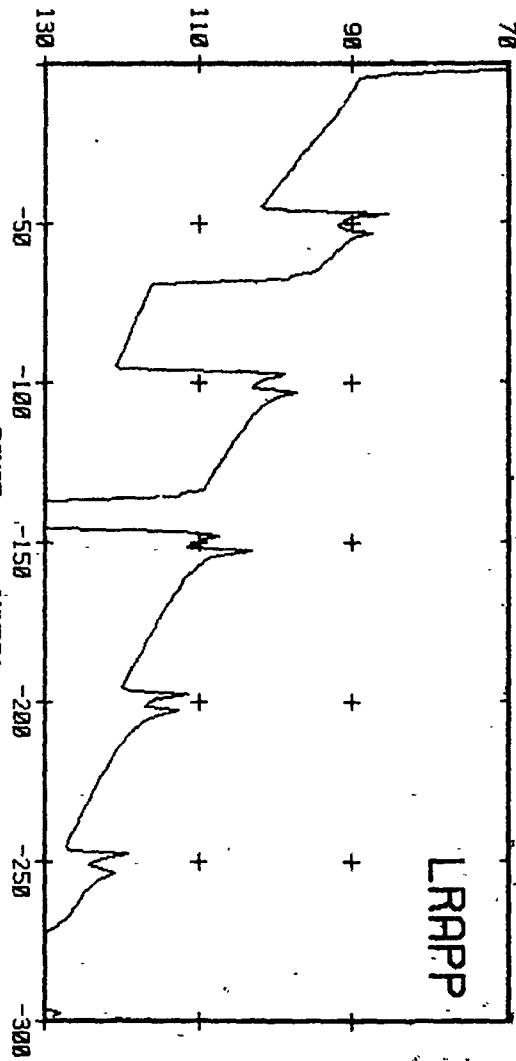


TOTAL +44.0 DB

ARRIVAL ANGLE



DB LOSS



70

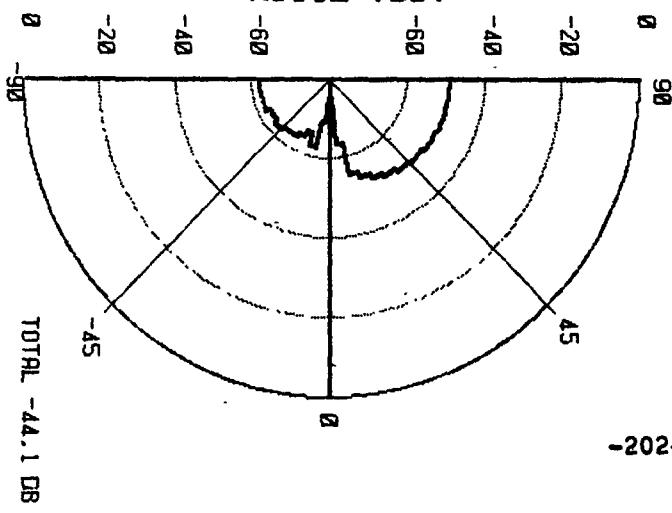
FRI 2 SUMMER

S 23 R 1000 F 2000

L RAPP

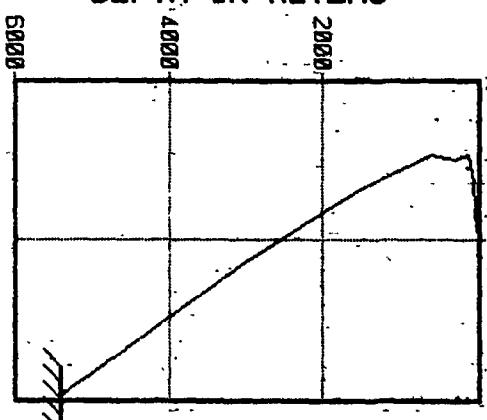
1450 M/S
1500
1550

NOISE (DB)



TOTAL -44.1 DB

DEPTH IN METERS



70

ARR 2 SUMMER

S 50 R 1000 F 2000

1450 M/S 1500 1550

LRAPP

DB LOSS

130
110
90
70-50
-100
-150
-200
-250
-300

RANGE (KYDS)

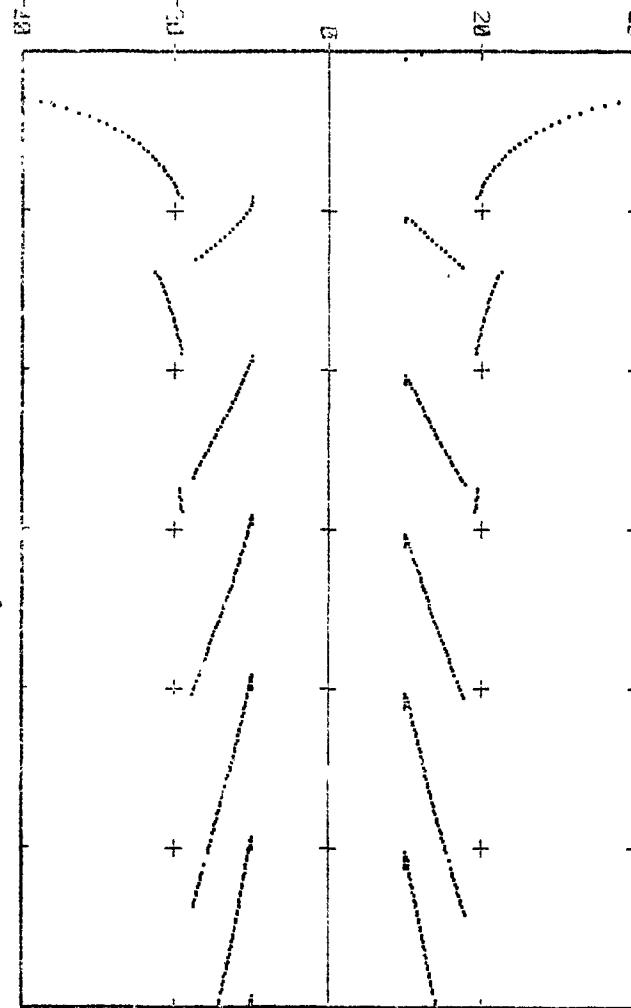
0
90

DEPTH IN METERS

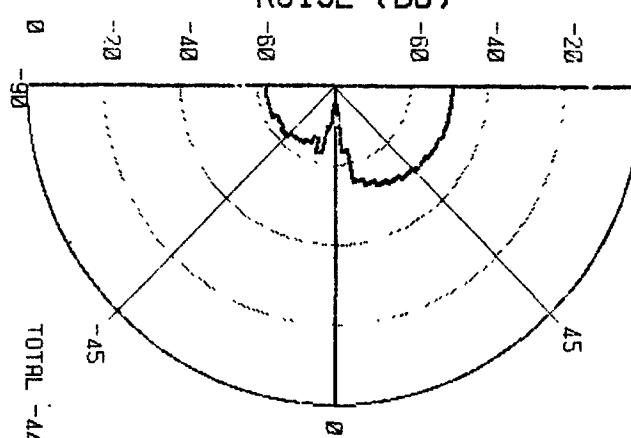
0
2000
4000
6000

-203-

ARRIVAL ANGLE



NOISE (DB)



TOTAL -44.1 DB

AREA 2 SUMMER

S 266 R 1000 F 2000

1450 M/S 1500 1550

LRAPP

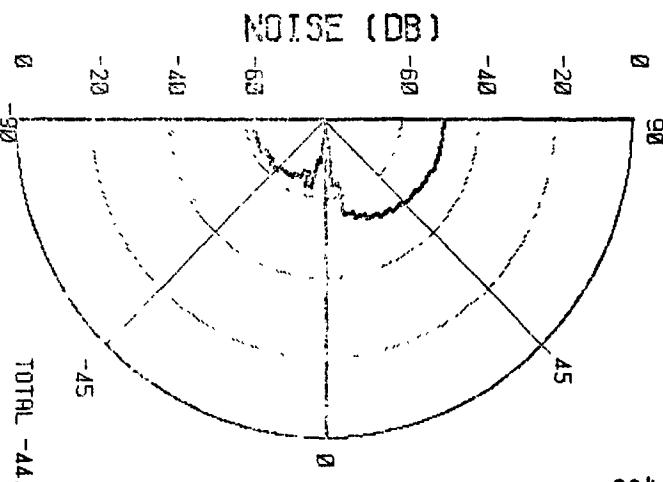
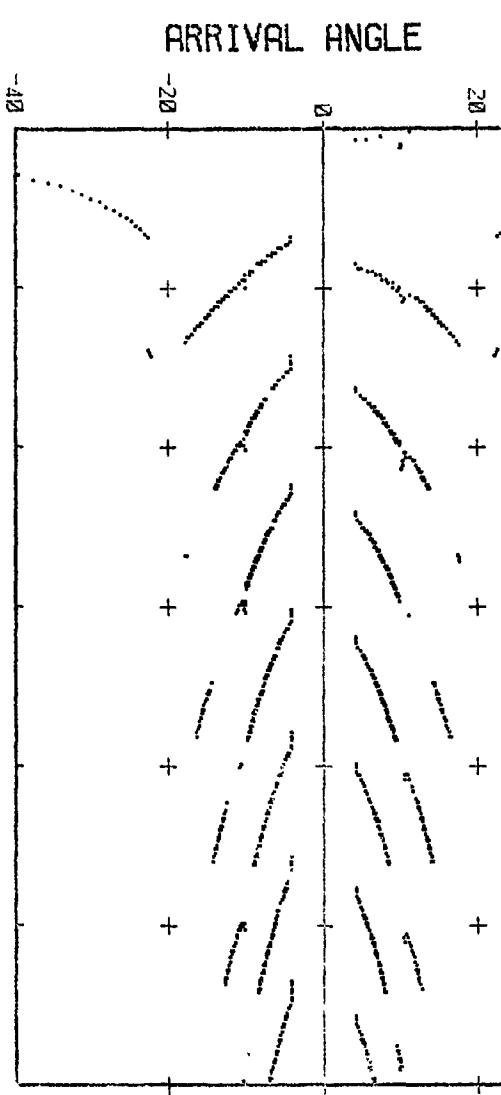
DB LOSS

130
110
90
70

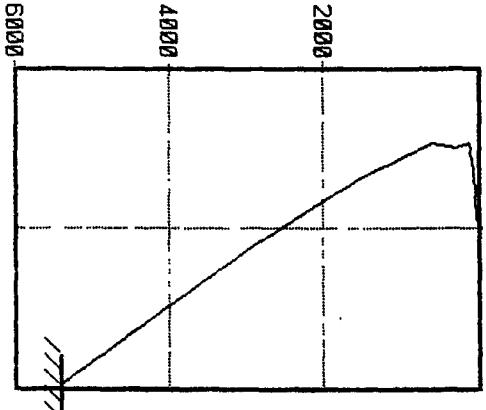
-50
-100
-150
-200
-250
-300

0
4000
2000

DEPTH IN METERS



TOTAL -44.1 DB



70

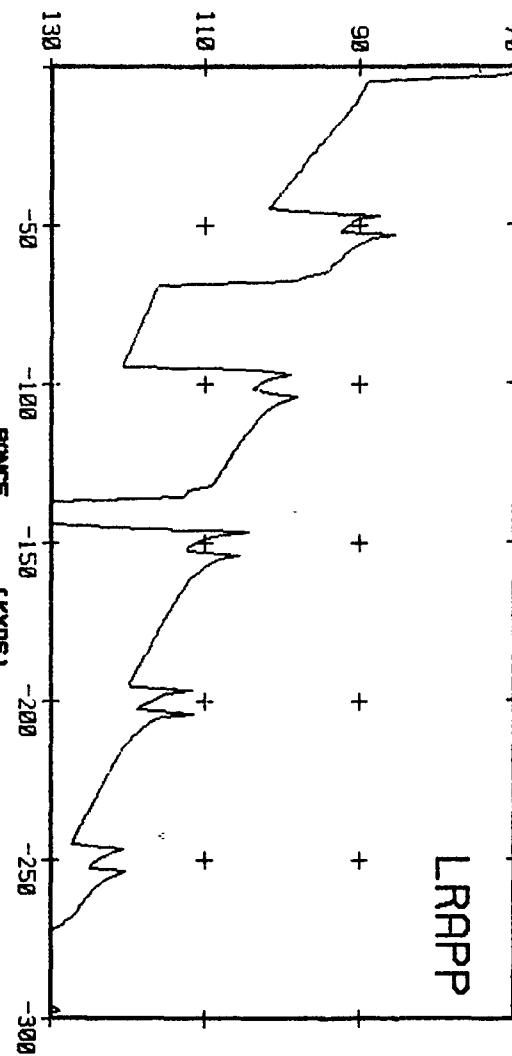
RRR 2 SUMMER

S 20 R 1500 F 2000

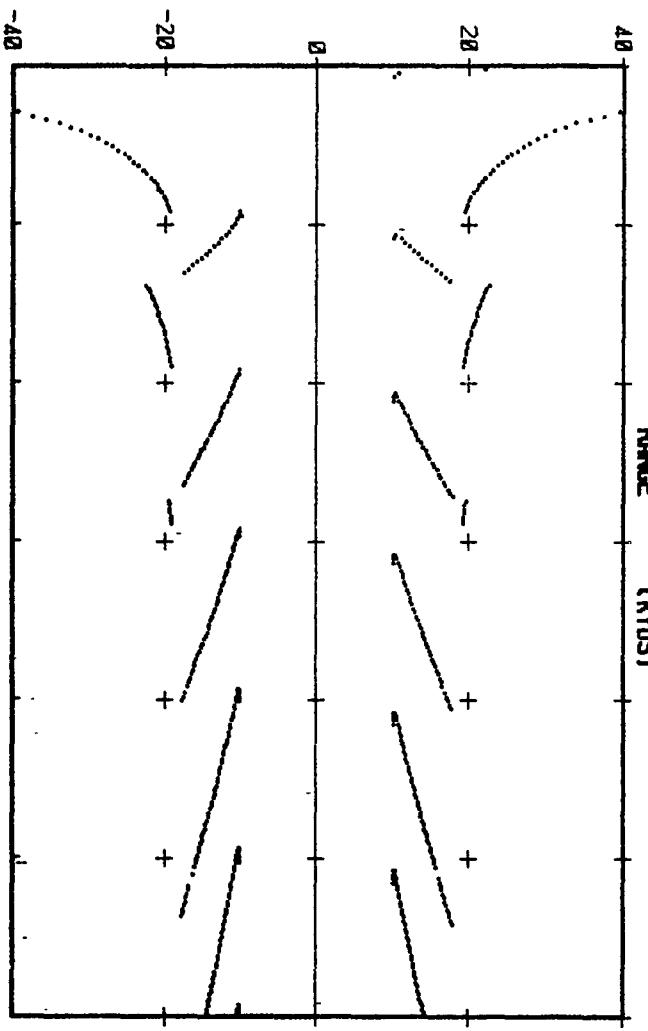
1450 M/S 1500 1550

LRAAPP

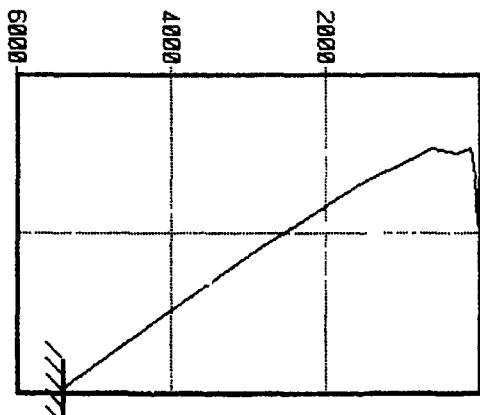
DB LOSS



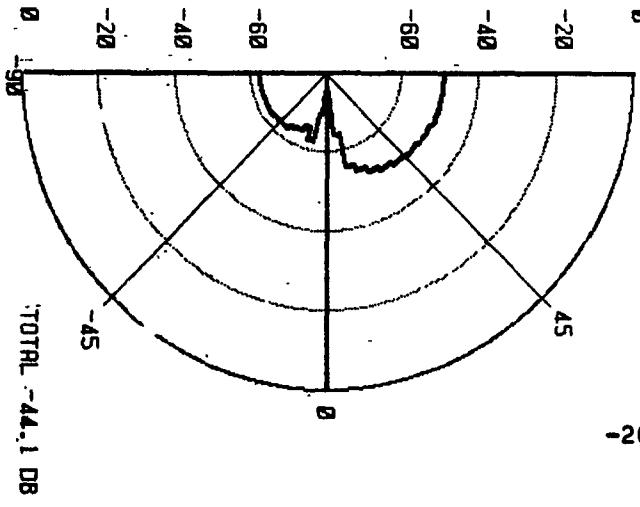
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



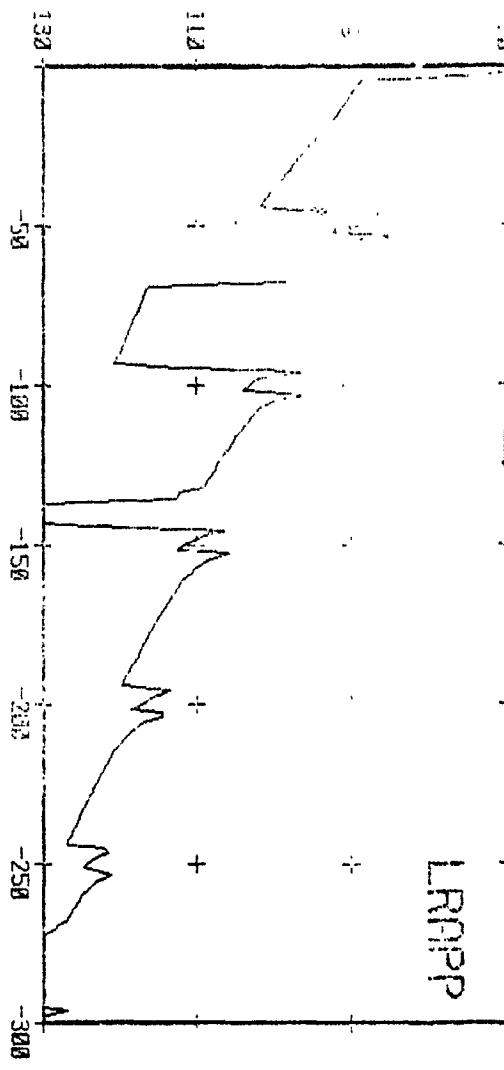
PIN 2 SHOWER

S 59 R 1500 F 2630

1450 m/s 1500 1550

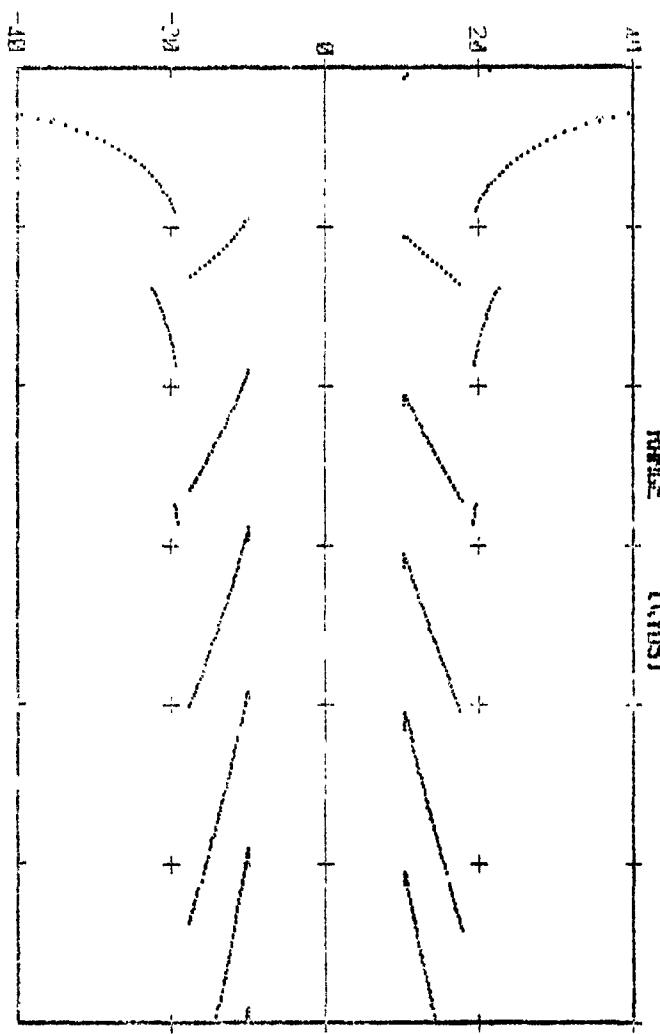
LRGPP

% LOSS

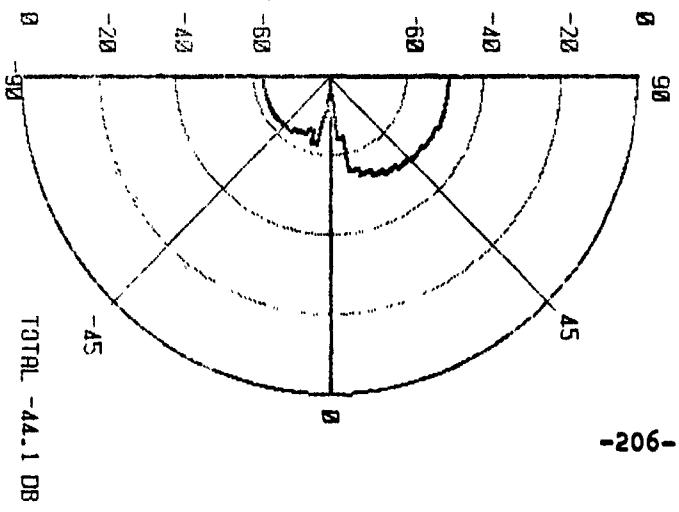


DEPTH IN METERS

ARRIVAL ANGLE



NOISE (DB)



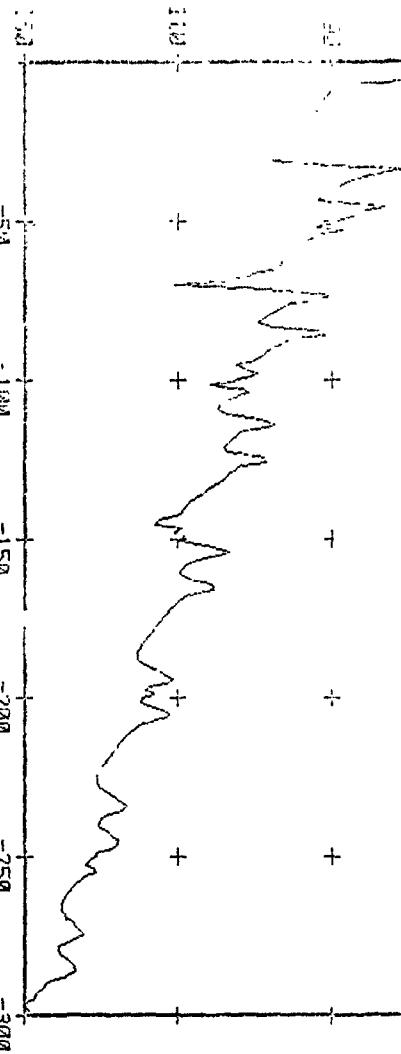
7.2 ECHO 2 SURFER

S 243 R 1563 F 2233

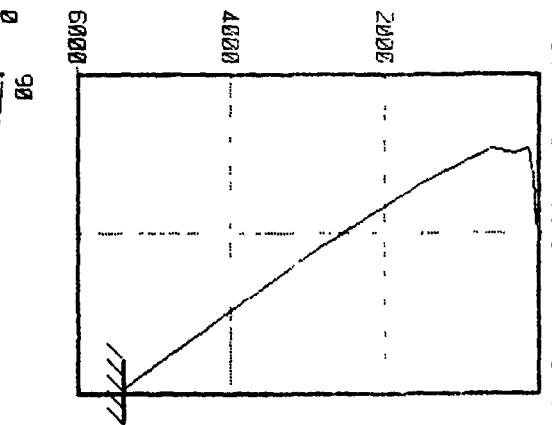
1450 M/S 1500 1550

LRAPP

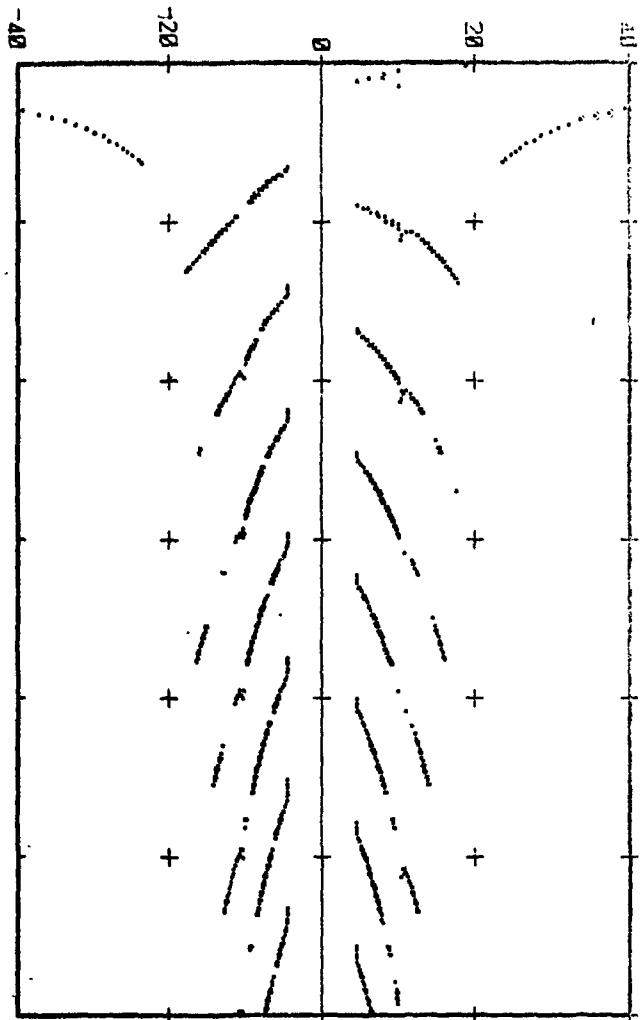
DB LU



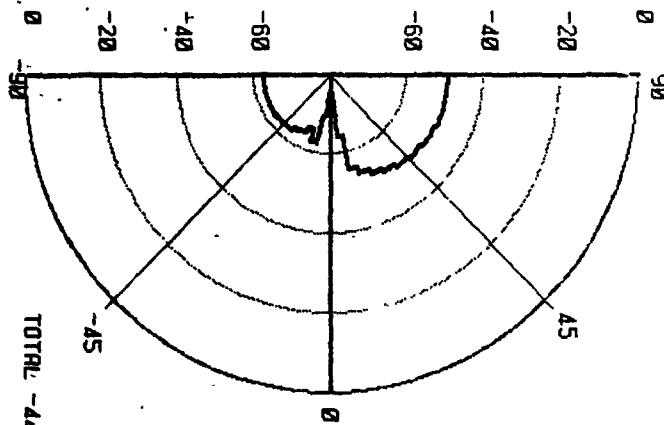
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)



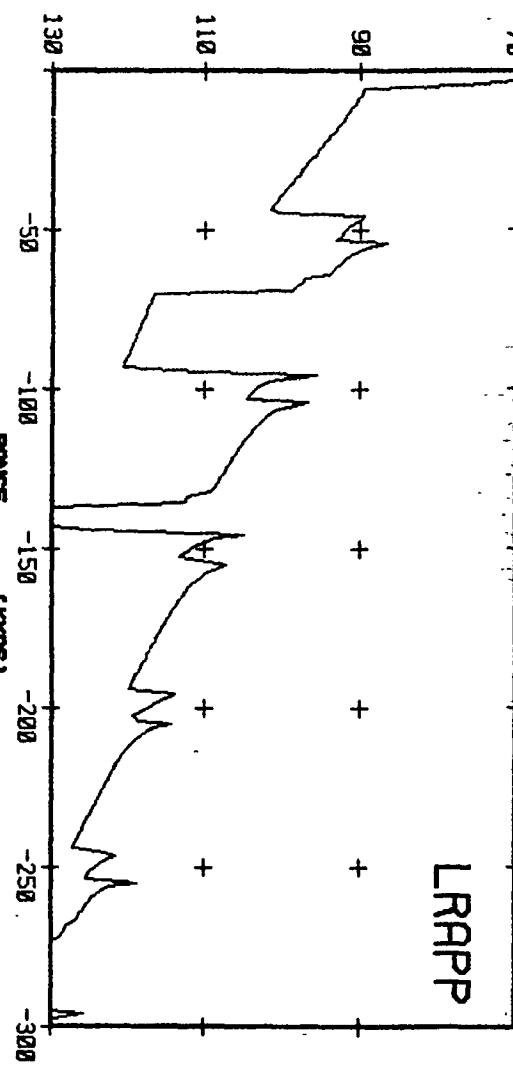
TOTAL -44.1 DB

AREA 2 SUMMER

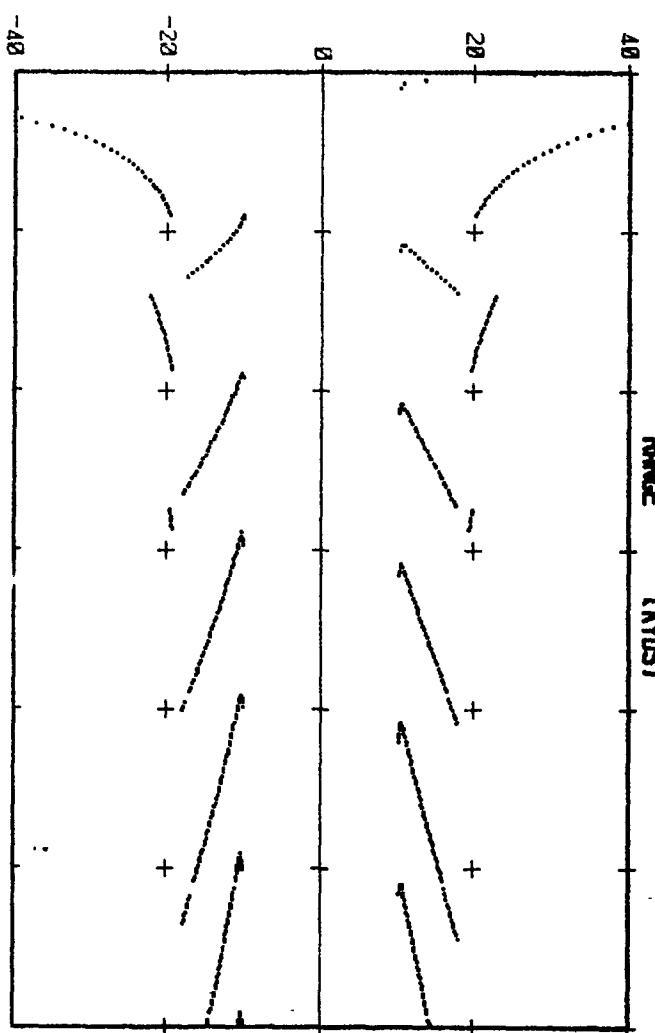
S 20 R 1988 F 2000

L RAPP

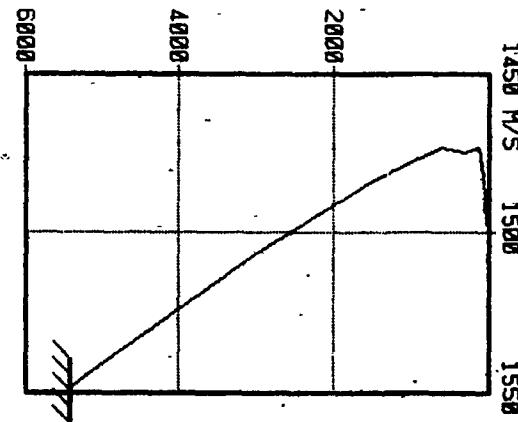
DB LOSS



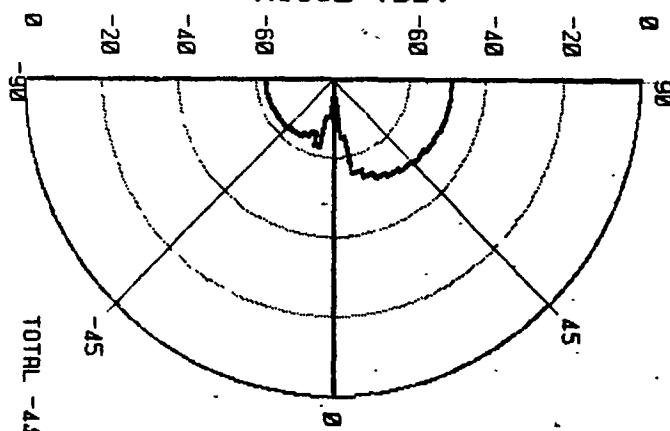
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



70

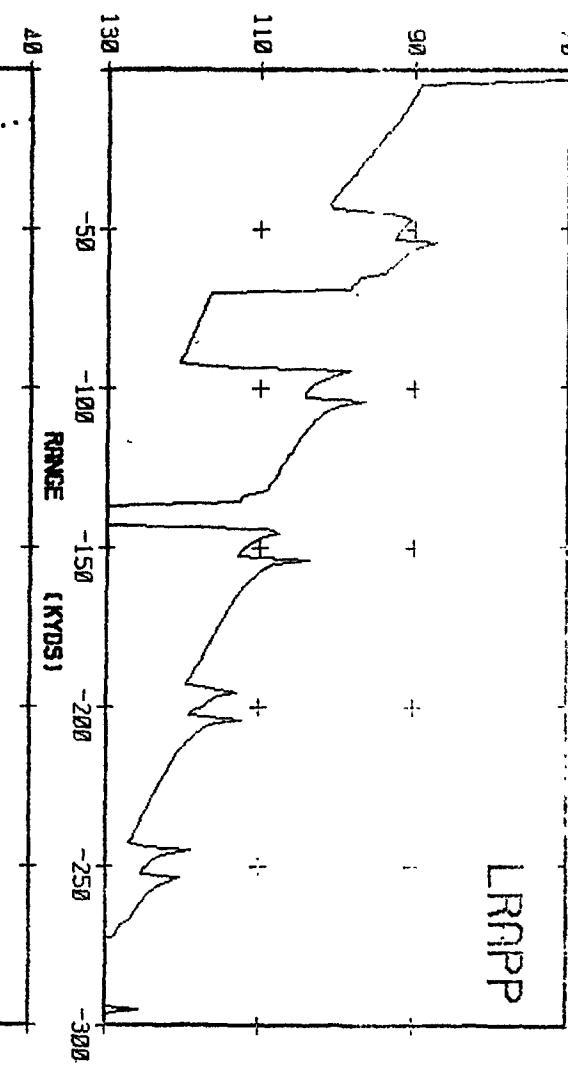
PAPER 2 SURFER

S 55 R 1568 F 2000

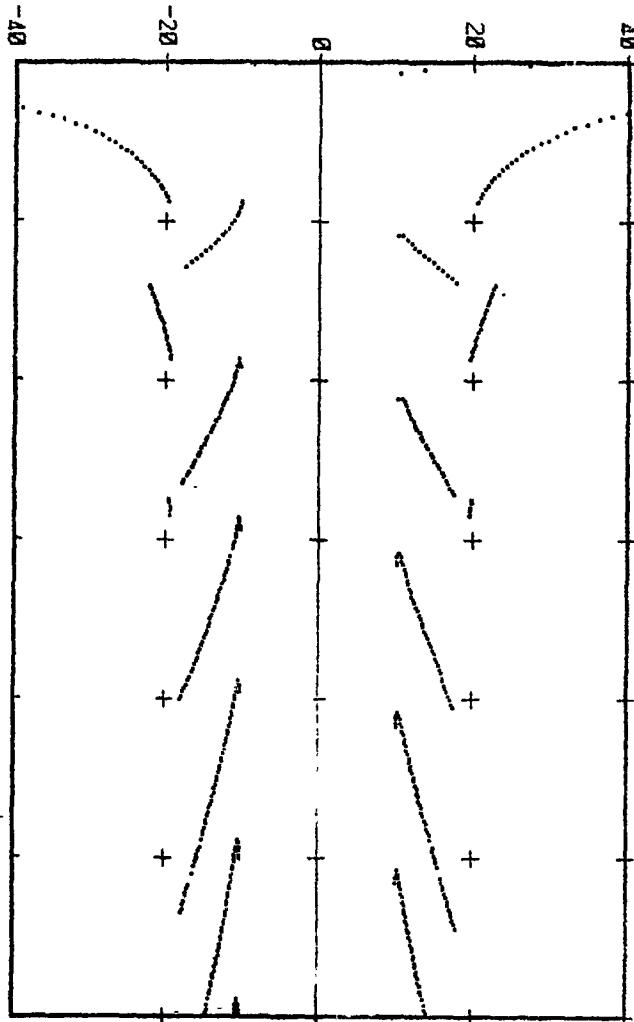
LRAPP

1450 M/S 1500 1550

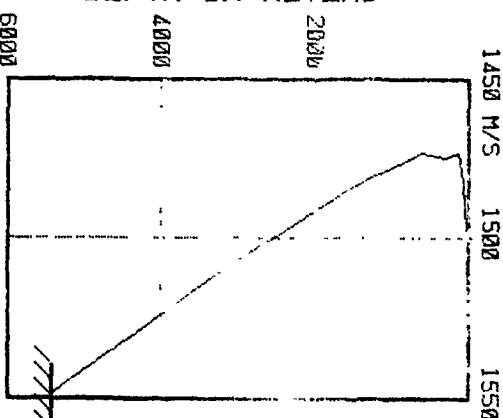
DB LOSS



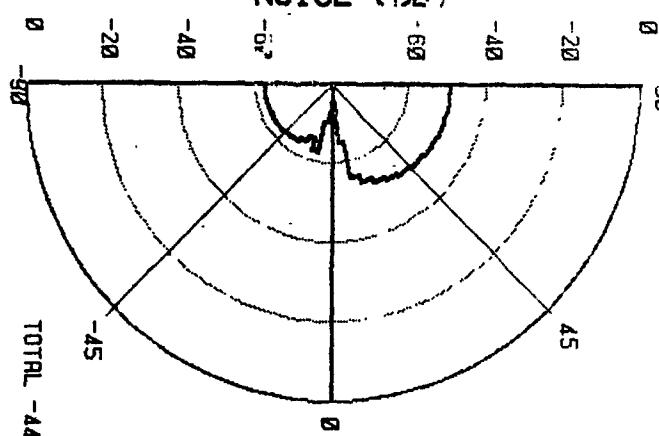
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



70

AFTER 2 SUMMER

S 266 R 1968 F 2000

1450 M/S

1500

1550

LRAPP

DB LOSS

94

110

134

150

170

190

210

230

250

270

290

310

330

350

370

390

410

430

450

470

490

510

530

550

570

590

610

630

650

670

690

710

730

750

770

790

810

830

850

870

890

910

930

950

970

990

1010

1030

1050

1070

1090

1110

1130

1150

1170

1190

1210

1230

1250

1270

1290

1310

1330

1350

1370

1390

1410

1430

1450

1470

1490

1510

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1610

1630

1650

1670

1690

1710

1730

1750

1770

1790

1810

1830

1850

1870

1890

1910

1930

1950

1970

1990

2010

2030

2050

2070

2090

2110

2130

2150

2170

2190

2210

2230

2250

2270

2290

2310

2330

2350

2370

2390

2410

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2910

2930

2950

2970

2990

3010

3030

3050

3070

3090

3110

3130

3150

3170

3190

3210

3230

3250

3270

3290

3310

3330

3350

3370

3390

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3770

3790

3810

3830

3850

3870

3890

3910

3930

3950

3970

3990

4010

4030

4050

4070

4090

4110

4130

4150

4170

4190

4210

4230

4250

4270

4290

4310

4330

4350

4370

4390

4410

4430

4450

4470

4490

4510

4530

4550

4570

4590

4610

4630

4650

4670

4690

4710

4730

4750

4770

4790

4810

4830

4850

4870

4890

4910

4930

4950

4970

4990

5010

5030

5050

5070

5090

5110

5130

5150

5170

5190

5210

5230

5250

5270

5290

5310

5330

5350

5370

5390

5410

5430

5450

5470

5490

5510

5530

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6010

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6470

6490

6510

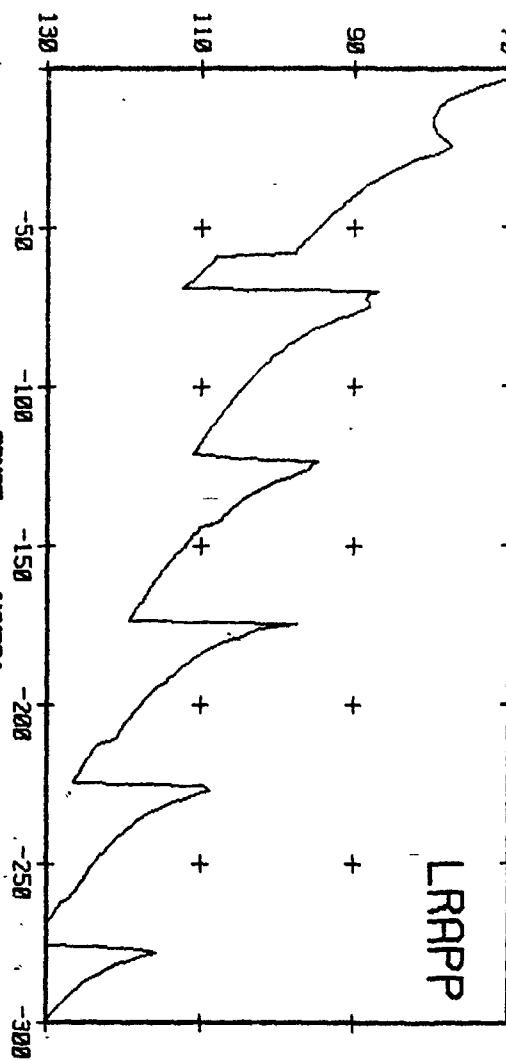
79

AREA 2 SUMMER

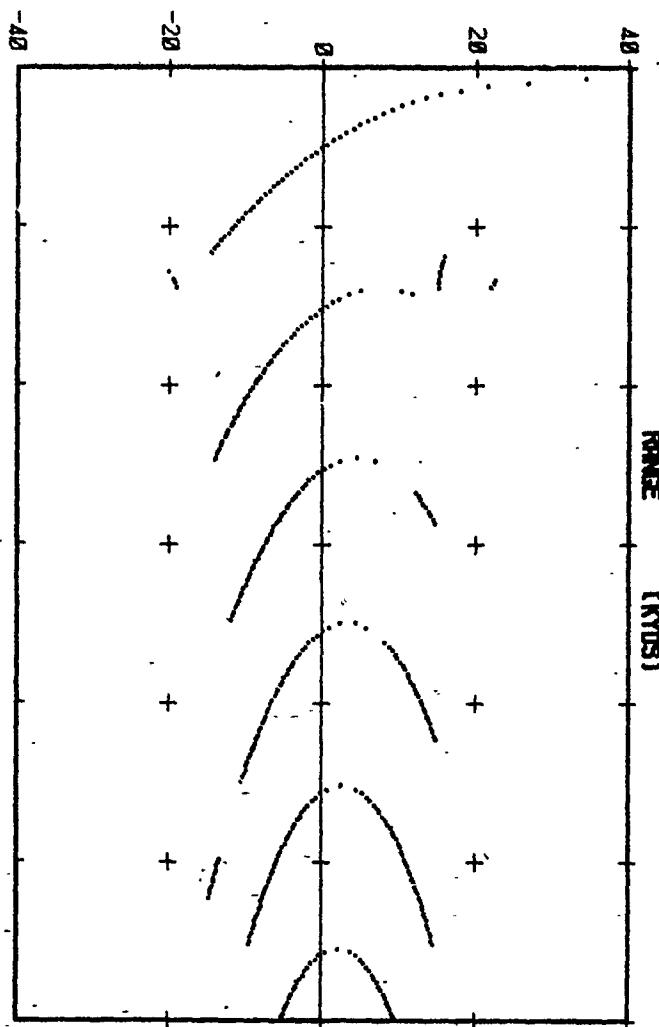
S 28 R 7874 F 2000

1450 M/S 1500 1550

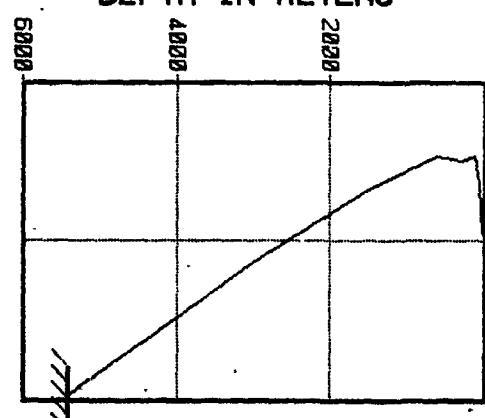
DB LOSS



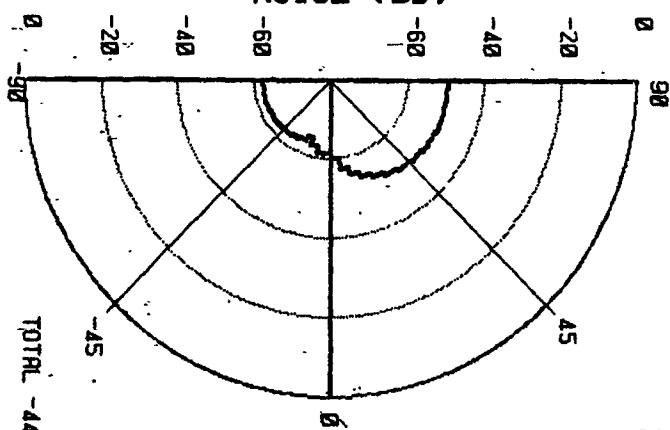
ARRIVAL ANGLE



DEPTH IN METERS

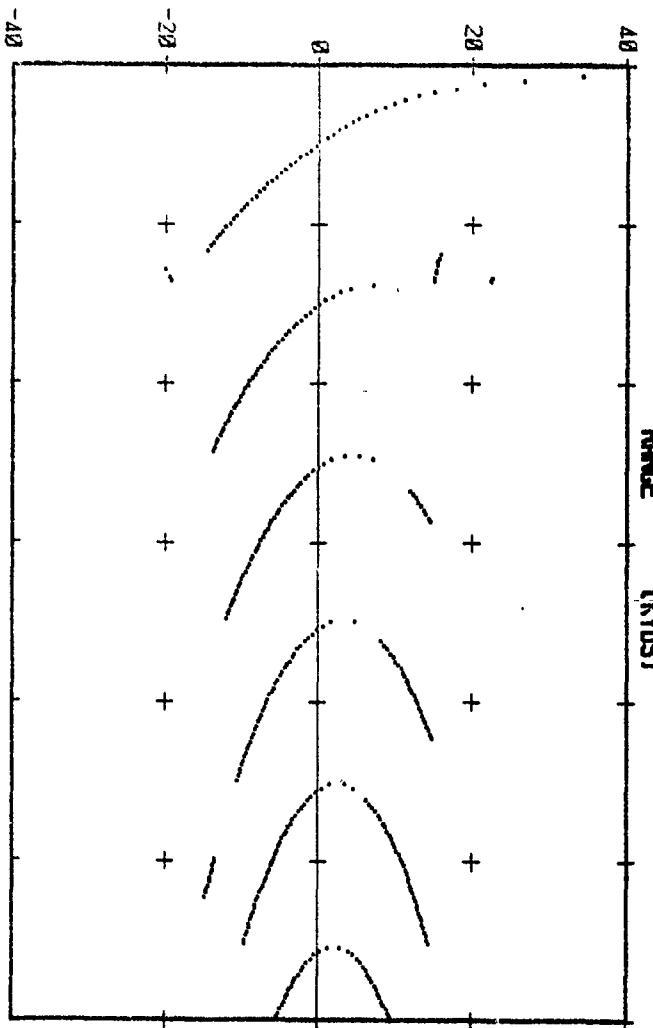


NOISE (DB)

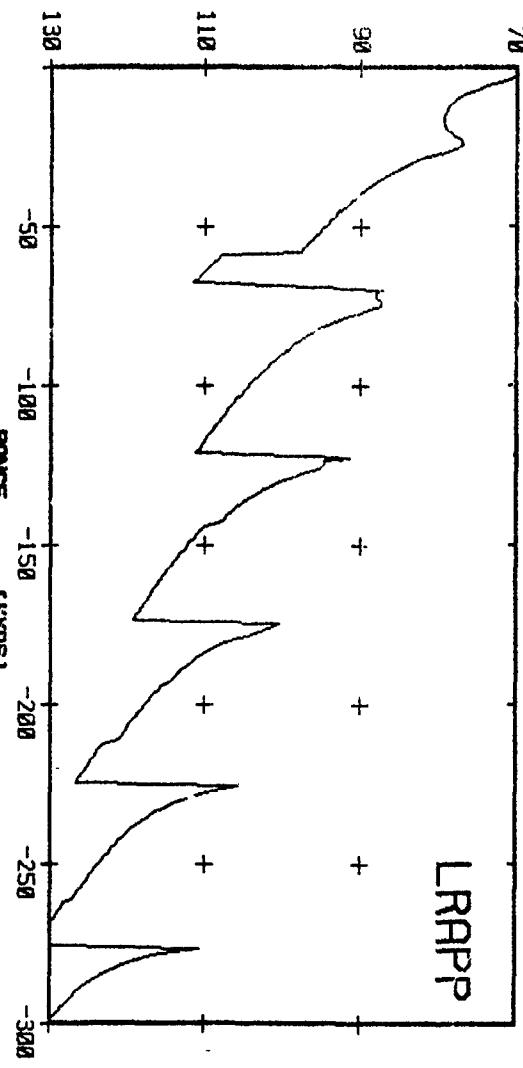


TOTAL -44.2|08

ARRIVAL ANGLE



DB LOSS

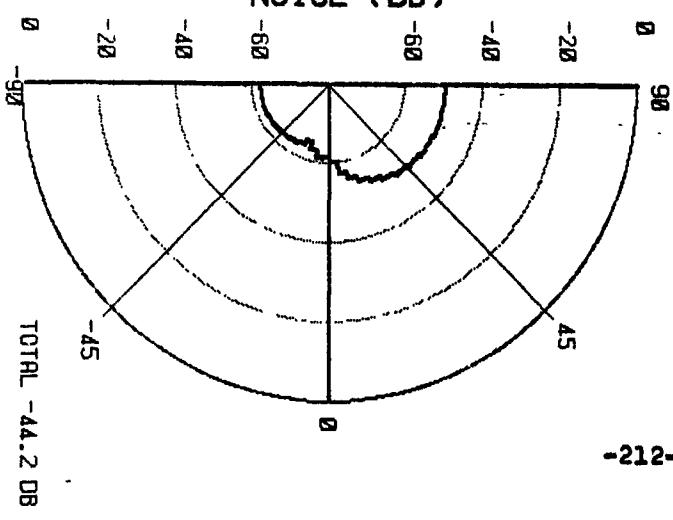


RER 2 SUMMER S 59 R 7824 F 2000

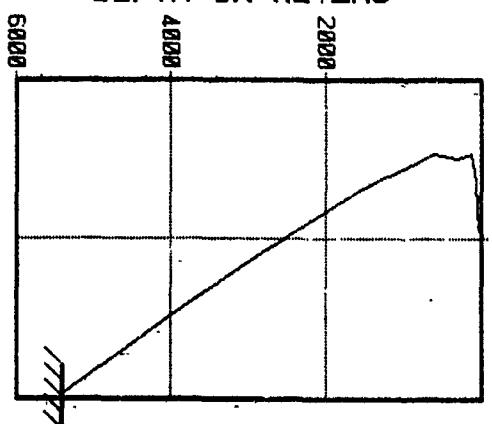
LRAPP

1450 M/S 1500 1550

NOISE (DB)



DEPTH IN METERS



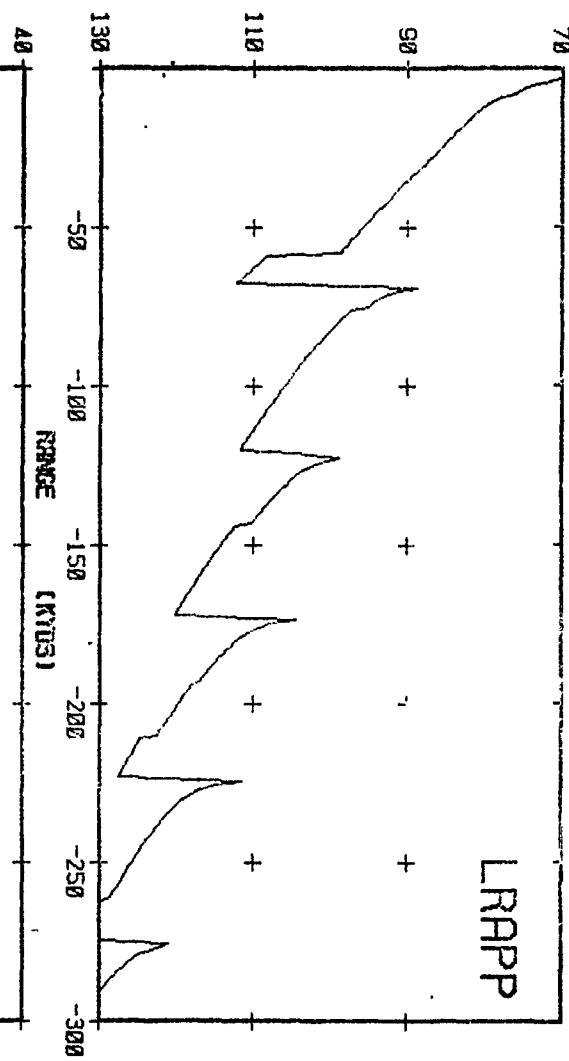
HIGH 2 SWINGER

S 223 R 75/4 F 2233

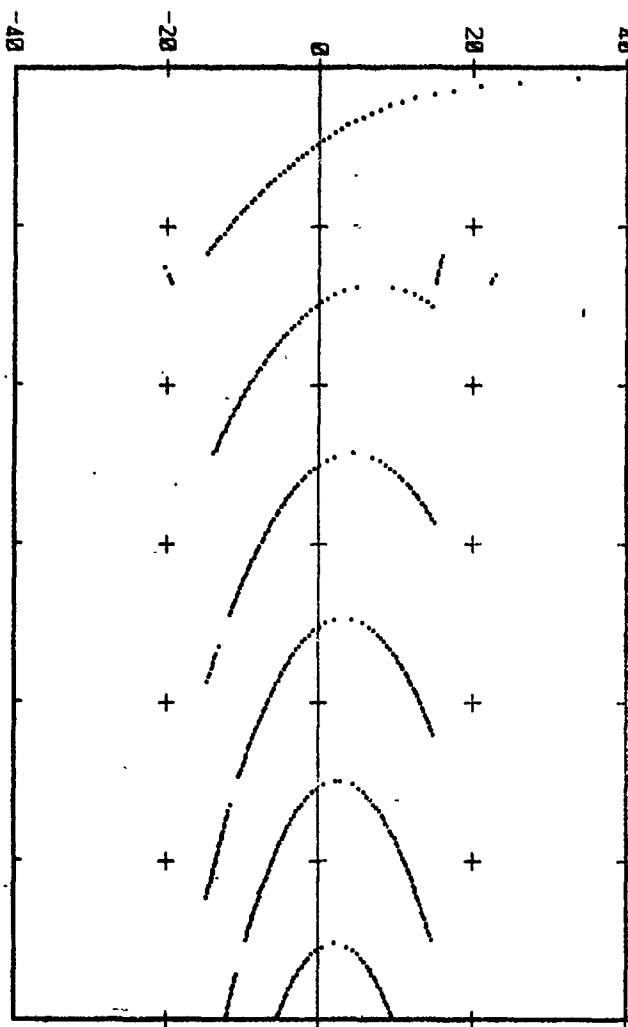
1450 m/s 1500 1550

LRAPP

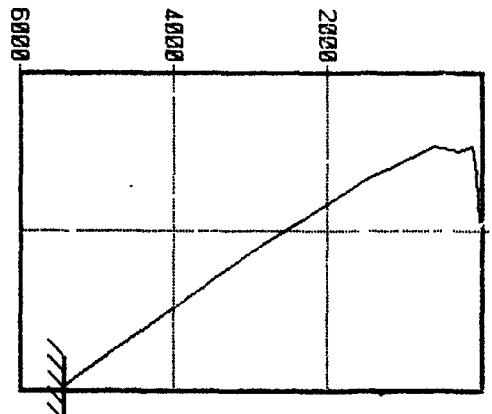
DB LOSS



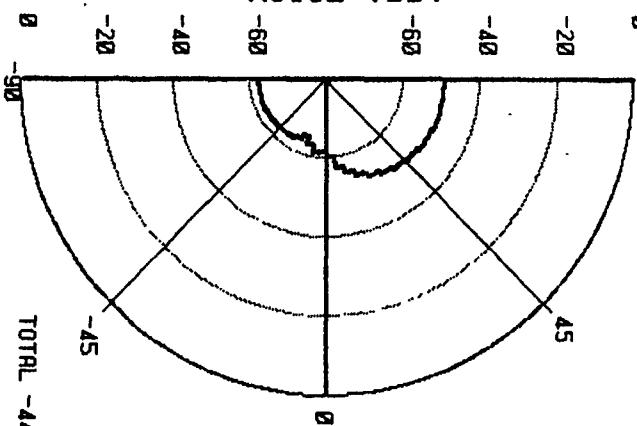
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



78

AREA 2 SUMMER

S

28 JULY 1968 F-2000

1450

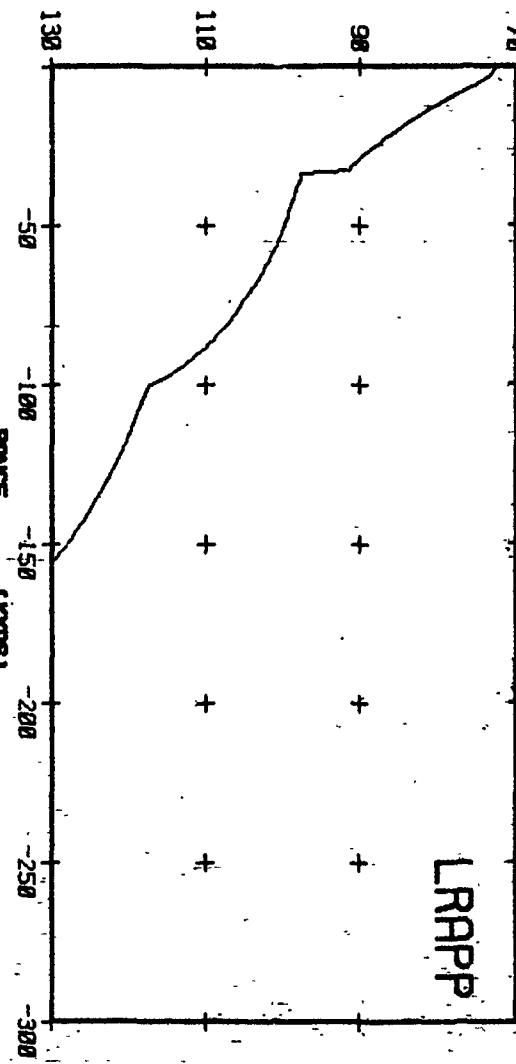
VS.

1500

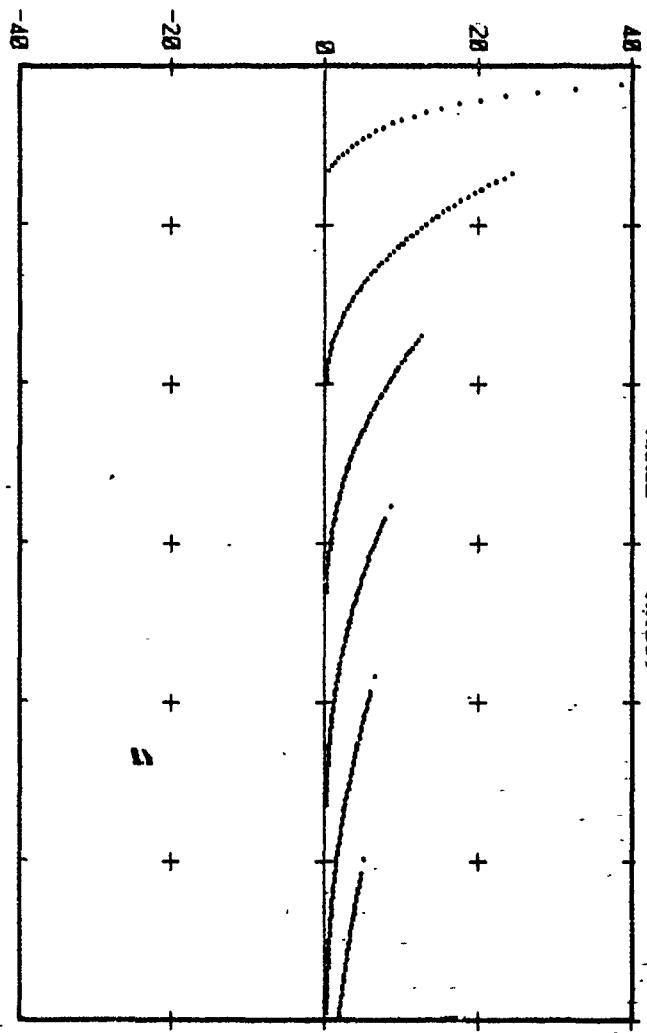
1534

1534

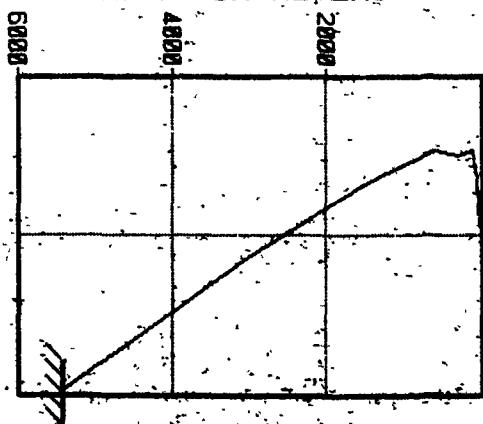
DB LOSS



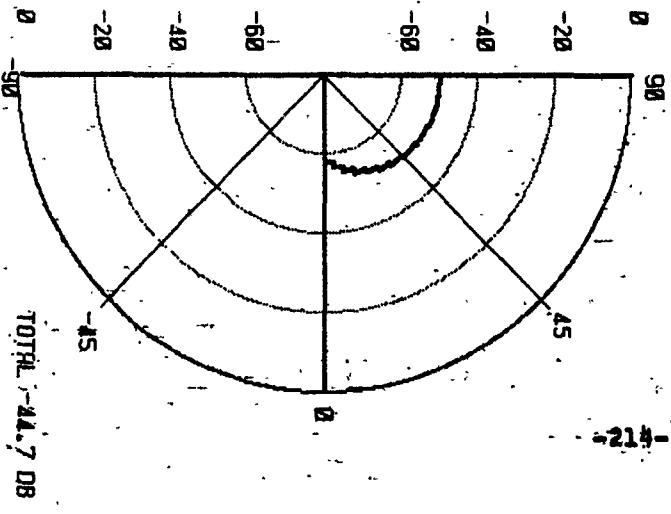
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



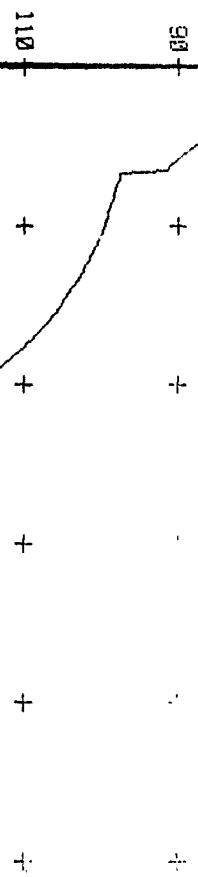
AREA 2 SURVEY

ELEVATION = 2155

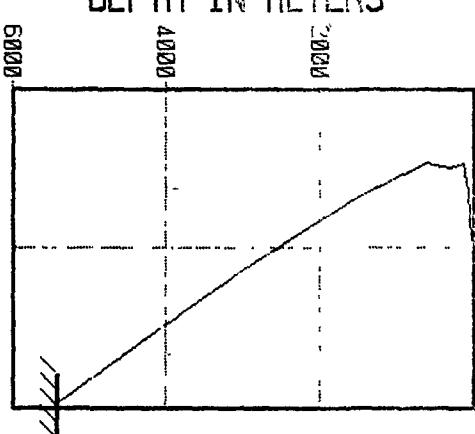
1450 M/S 1500 1550

LROP

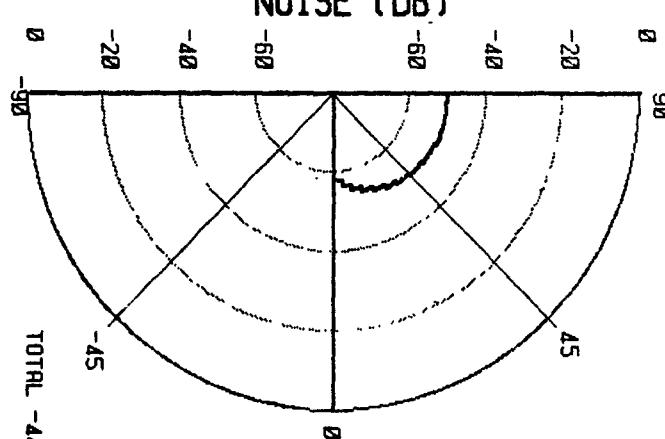
DB LOSS



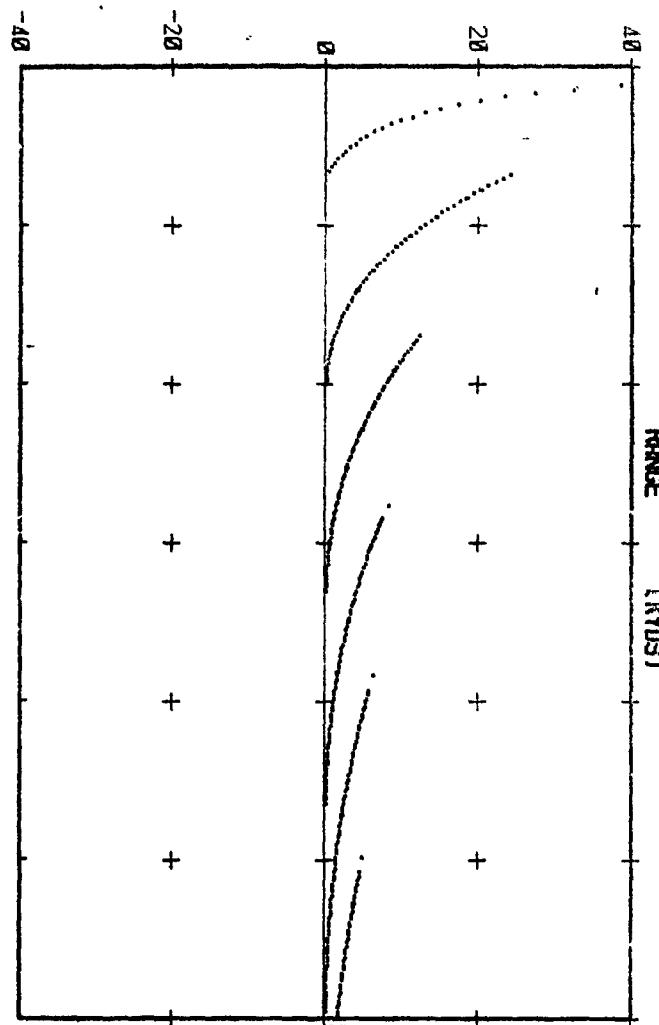
DEPTH IN METERS



NOISE (DB)



ARRIVAL ANGLE

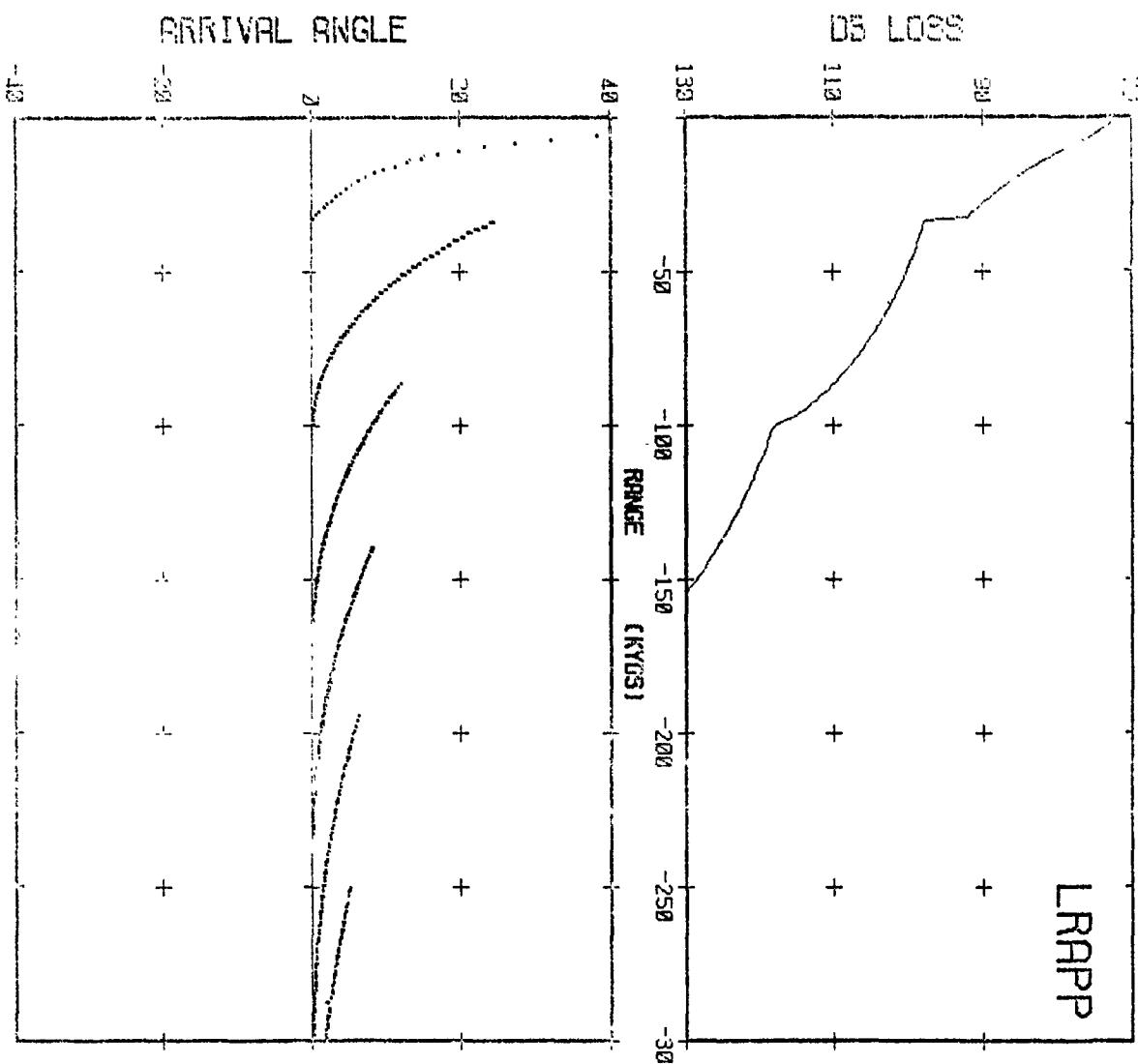


TEST 2 NUMBER

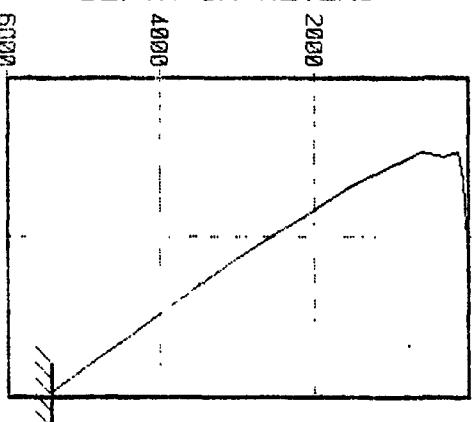
3 288 R17753 F 2430

1450 M/S 1500 1550

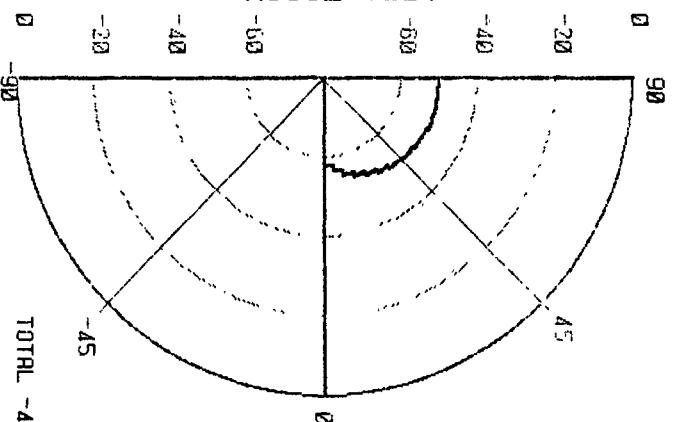
LRAFP



DEPTH IN METERS



NOISE (DB)



1

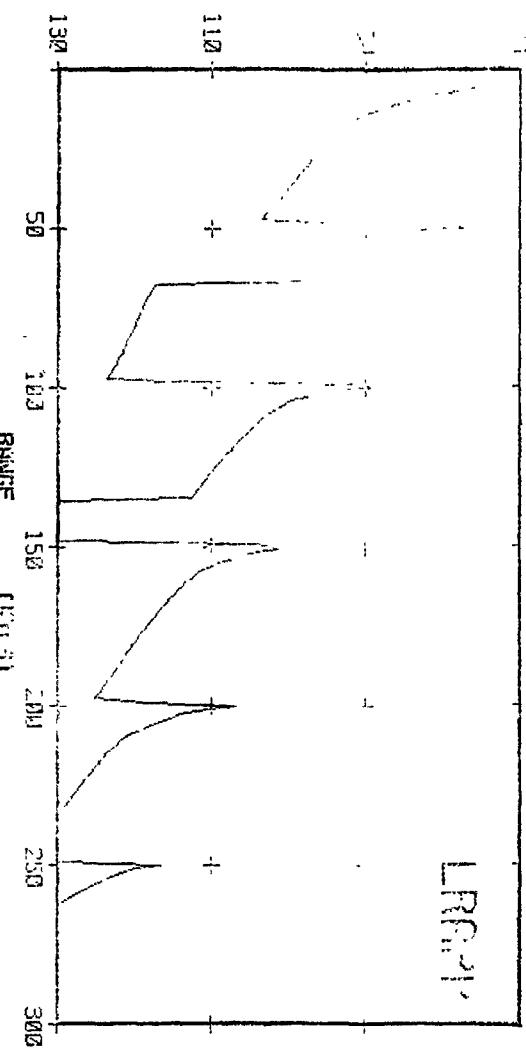
LRC 2000

S 29 R 62 F 2.5dB

170 165 155

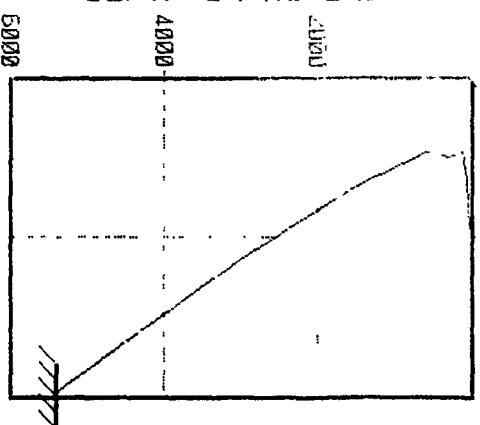
1550

DB LOSS

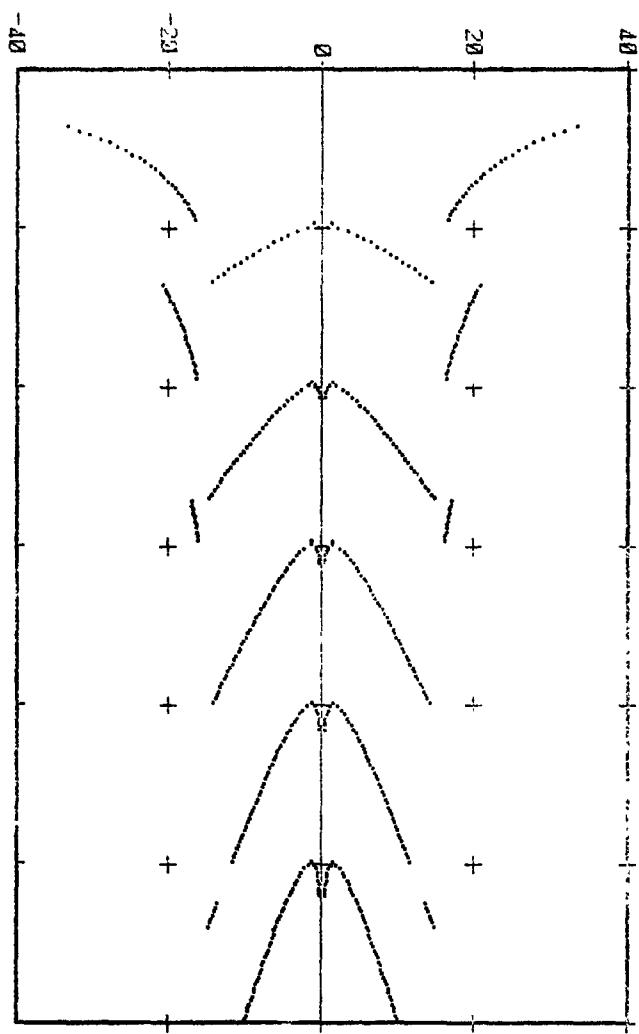


LRC 2000

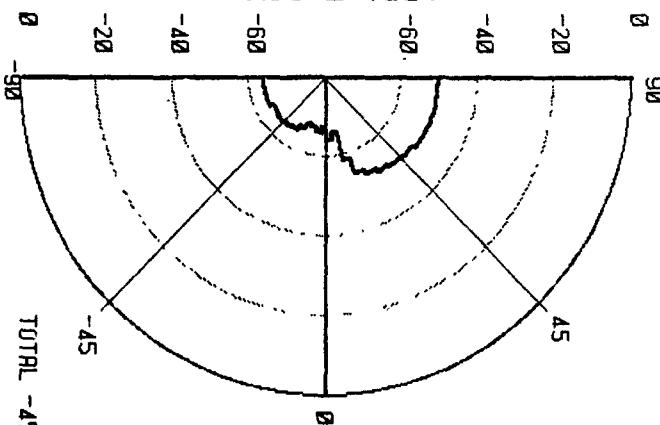
DEPTH IN METERS



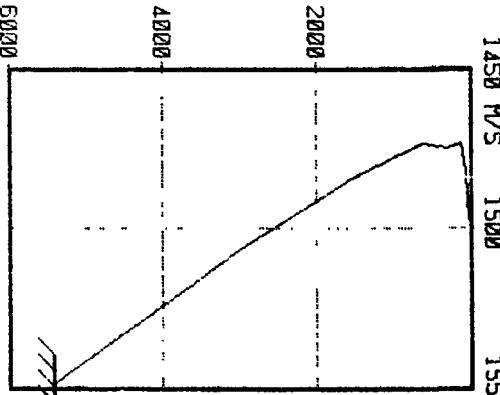
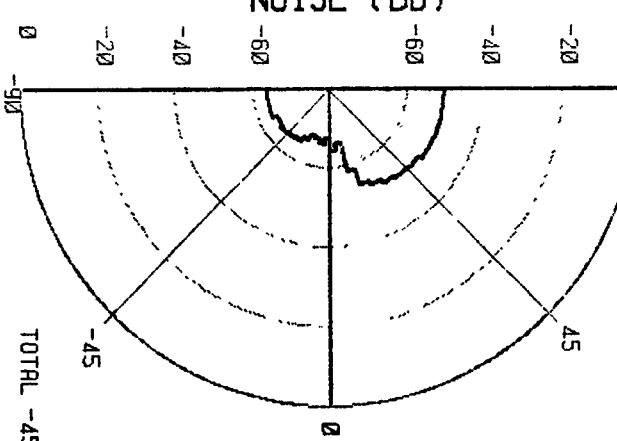
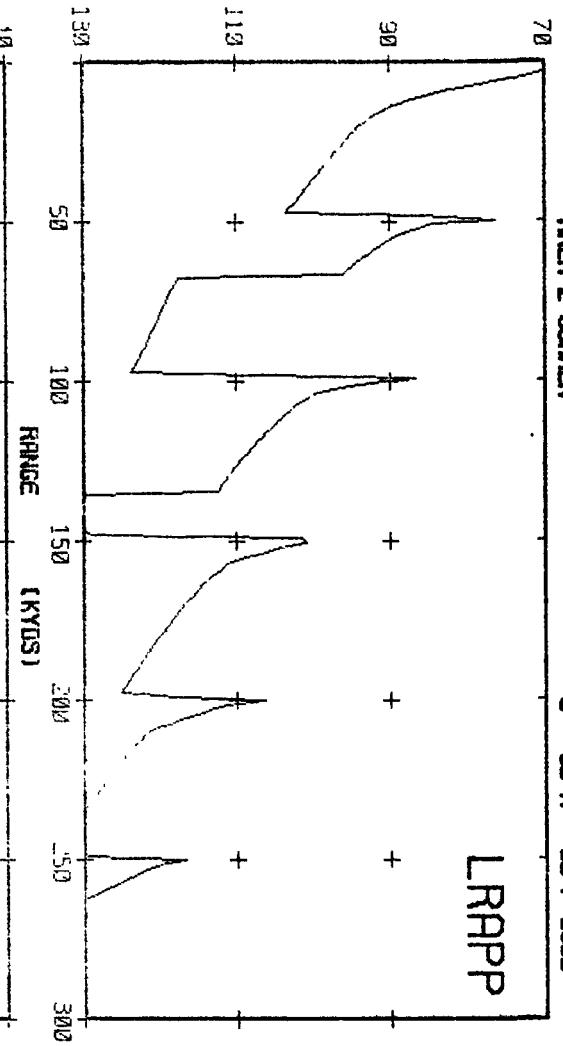
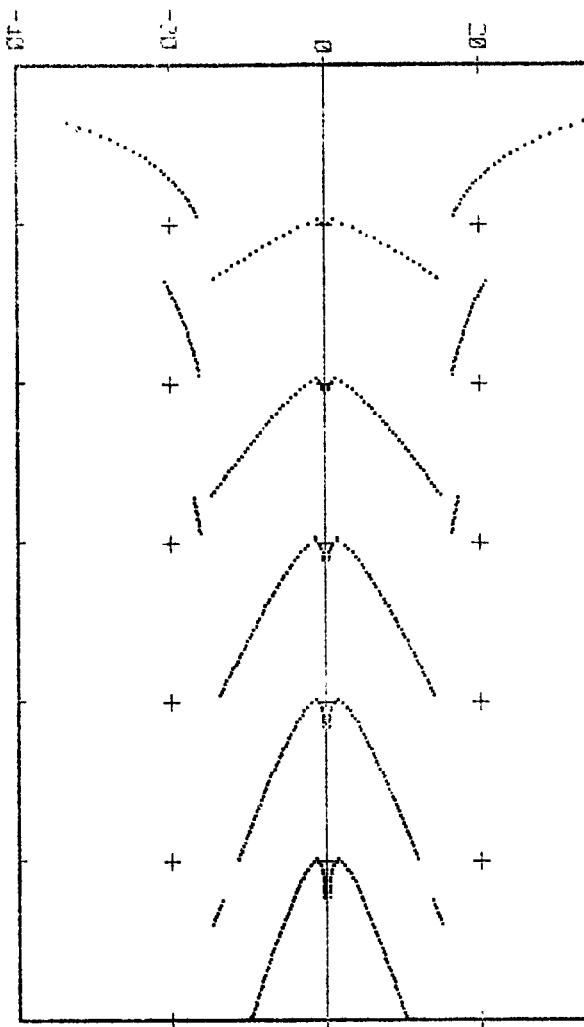
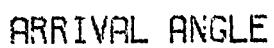
ARRIVAL ANGLE



NOISE (DB)



TOTAL -45.1 DB



-218-

70

AFTER 2 SUMMER

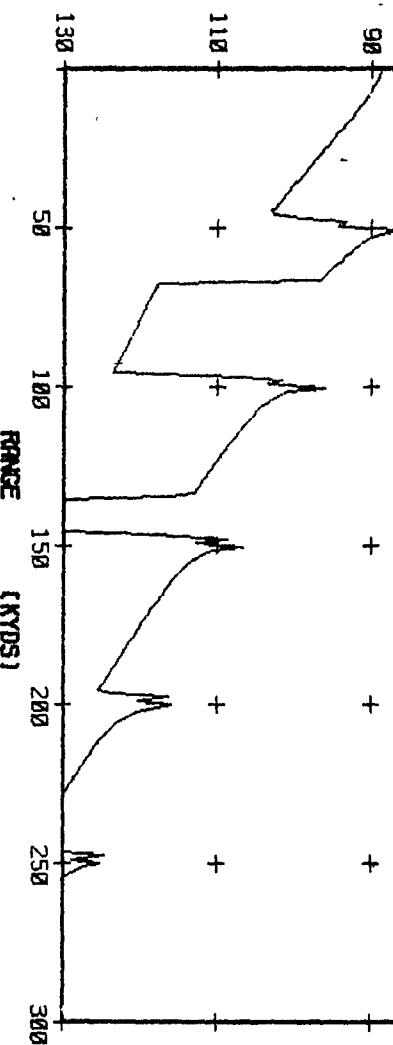
S 268 R 69 F 2500

1450 M/S

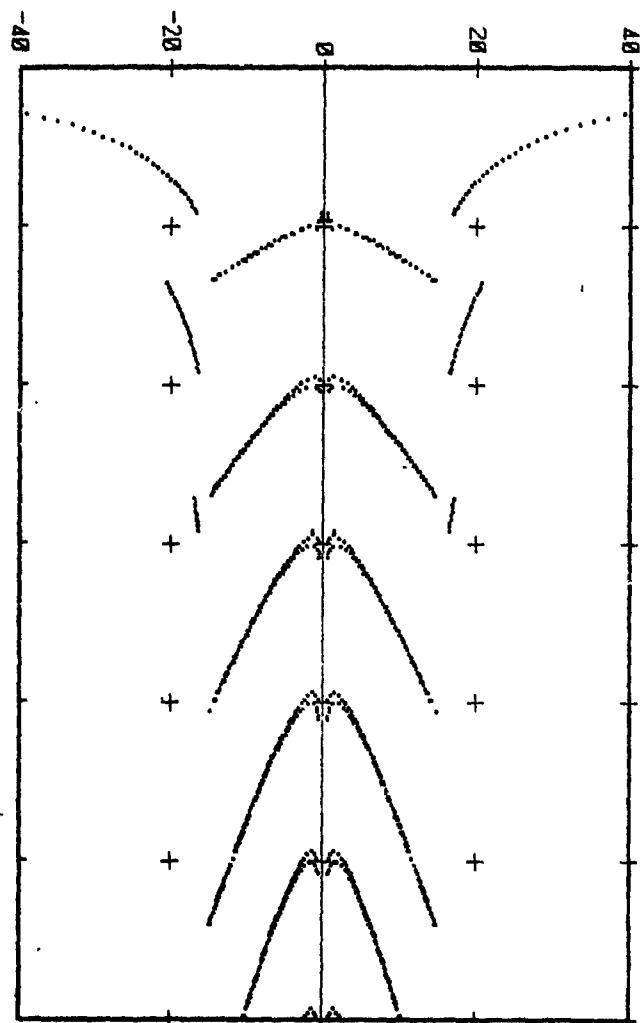
1500

1550

DB LOSS

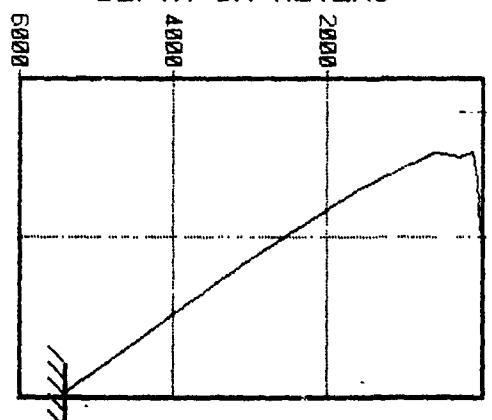


ARRIVAL ANGLE

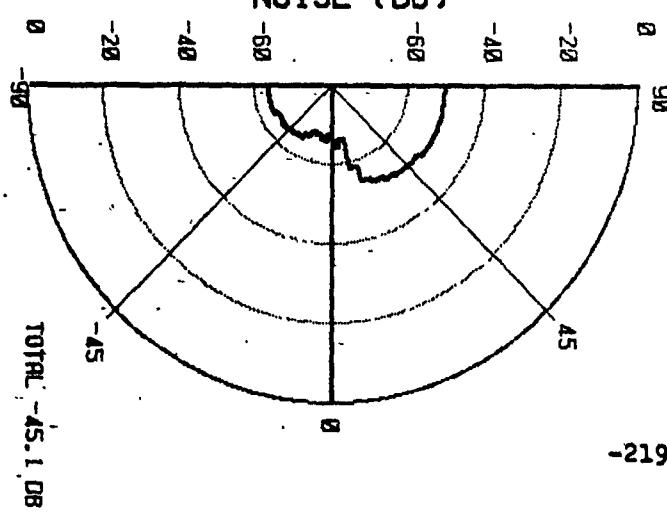


LRAPP

DEPTH IN METERS



NOISE (DB)



.70

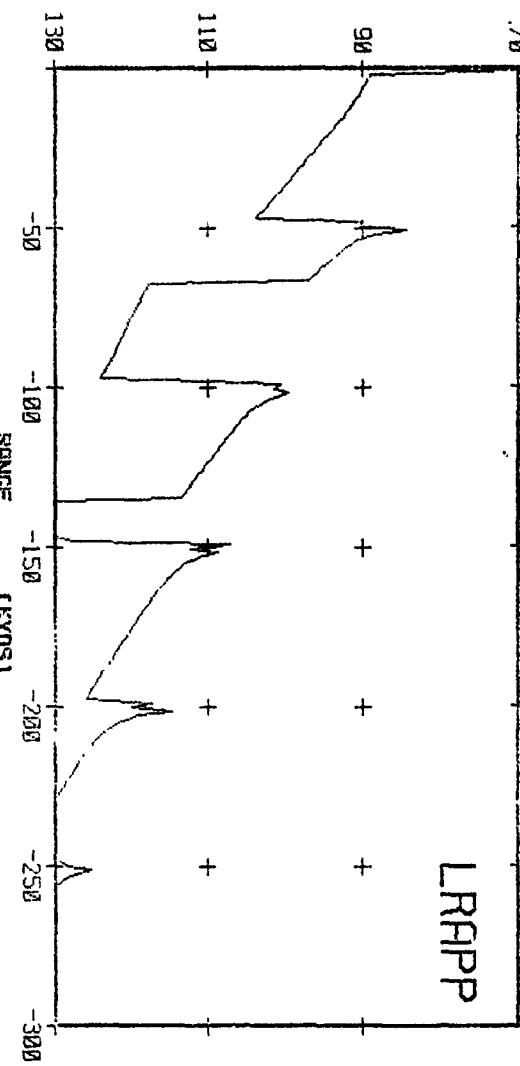
AREA 2 SUMMER

S 20 R 166 F 2500

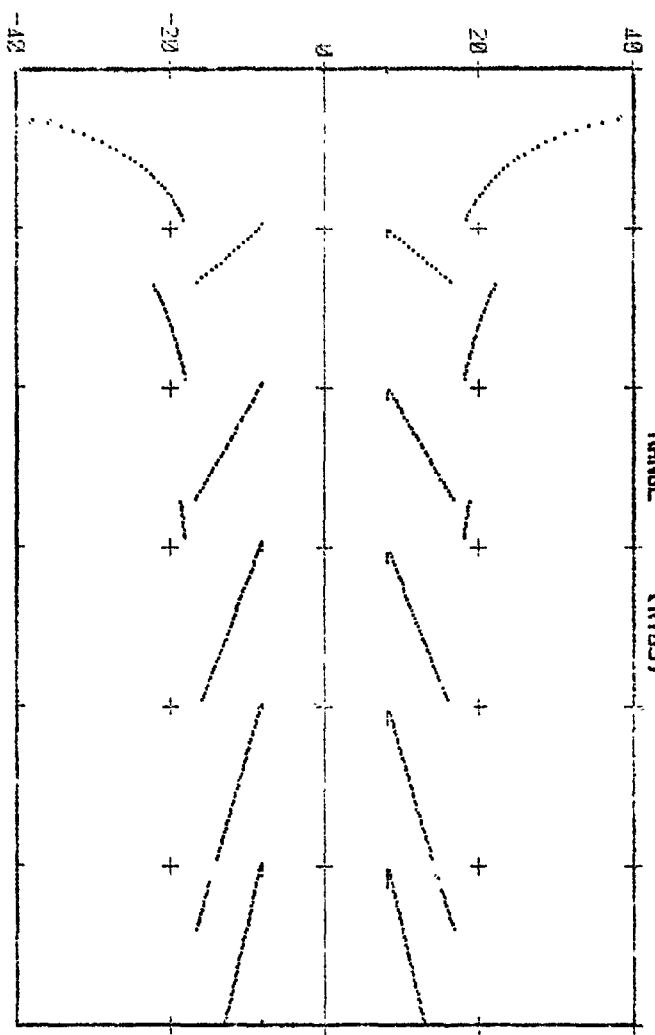
1450 M/S 1500 1550

LRFPP

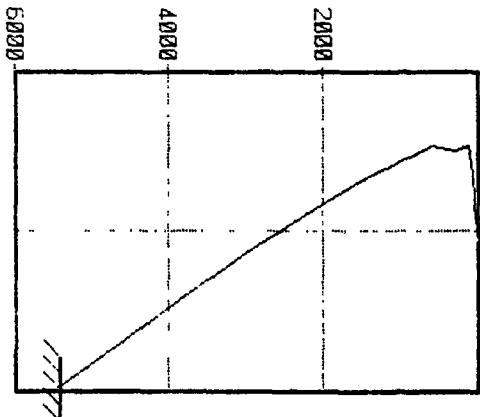
DB LOSS



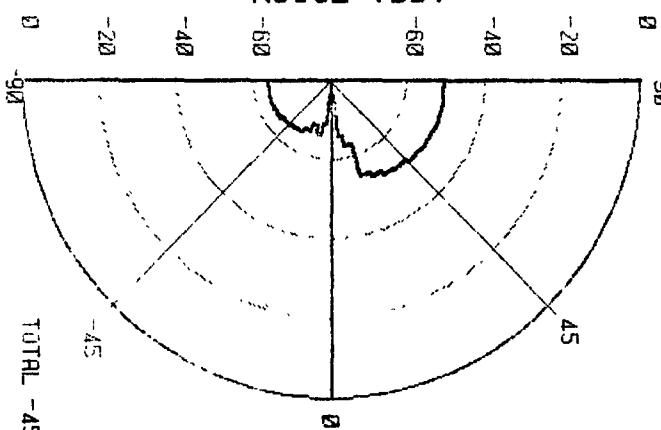
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -45.3 DB

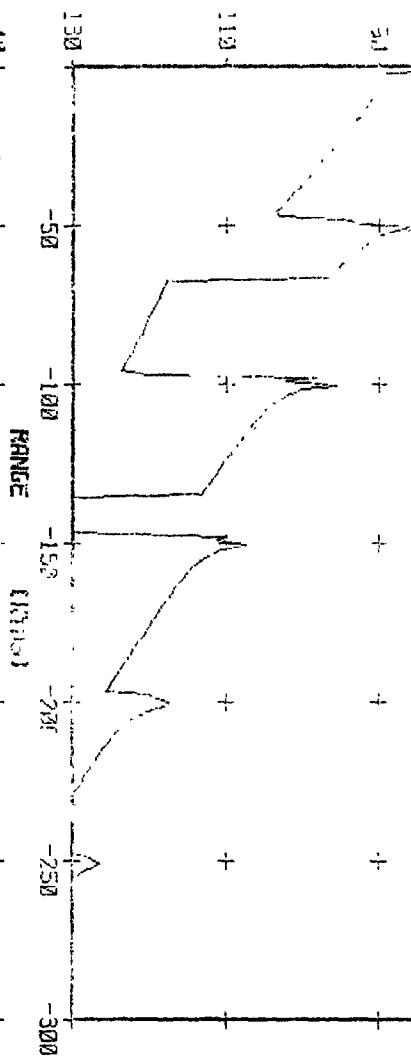
Fig. 2 Slusher

S 59 R 165 F 2590

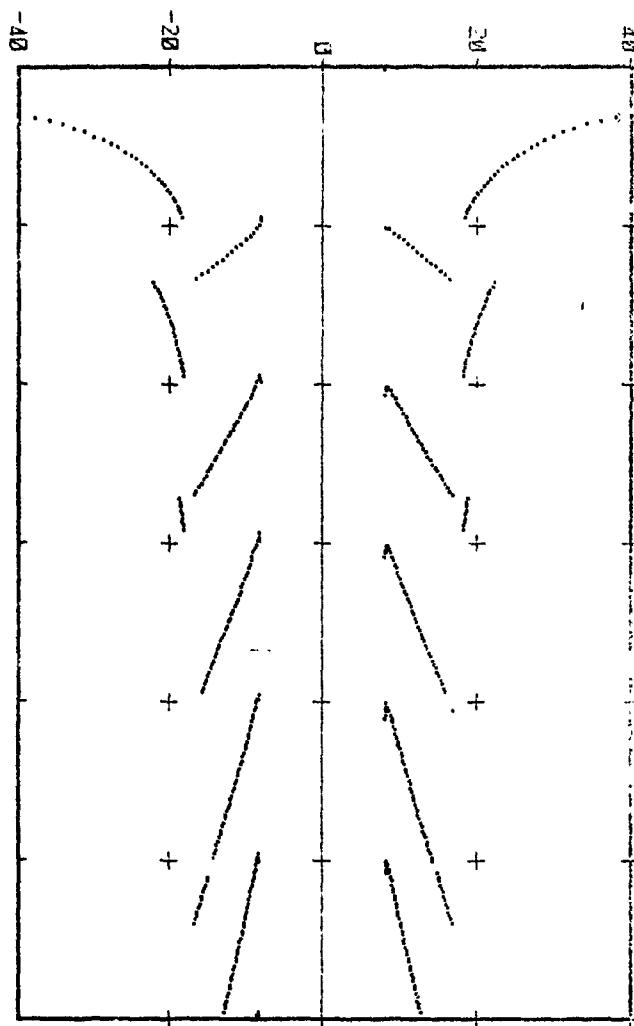
1450 M/S 1500 1550

LRAPP

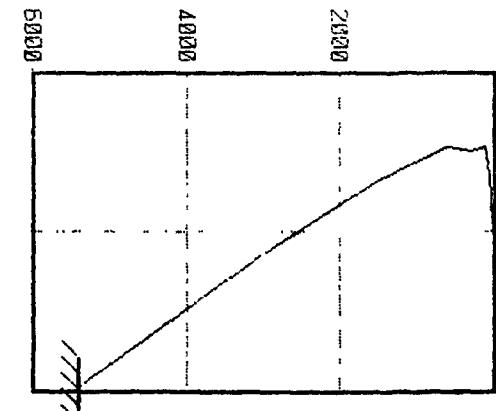
DB LOSS



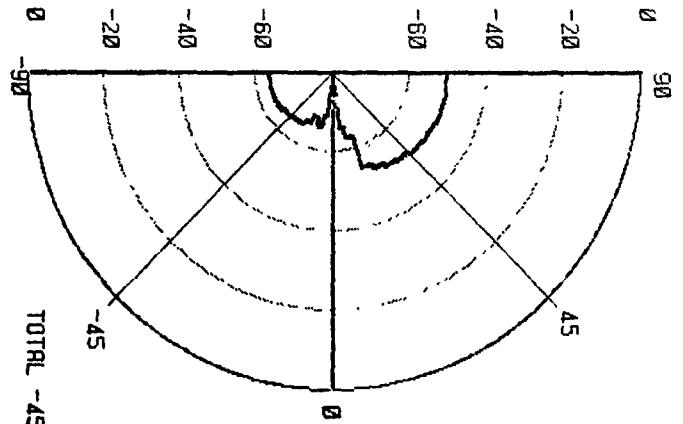
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -45.3 DB

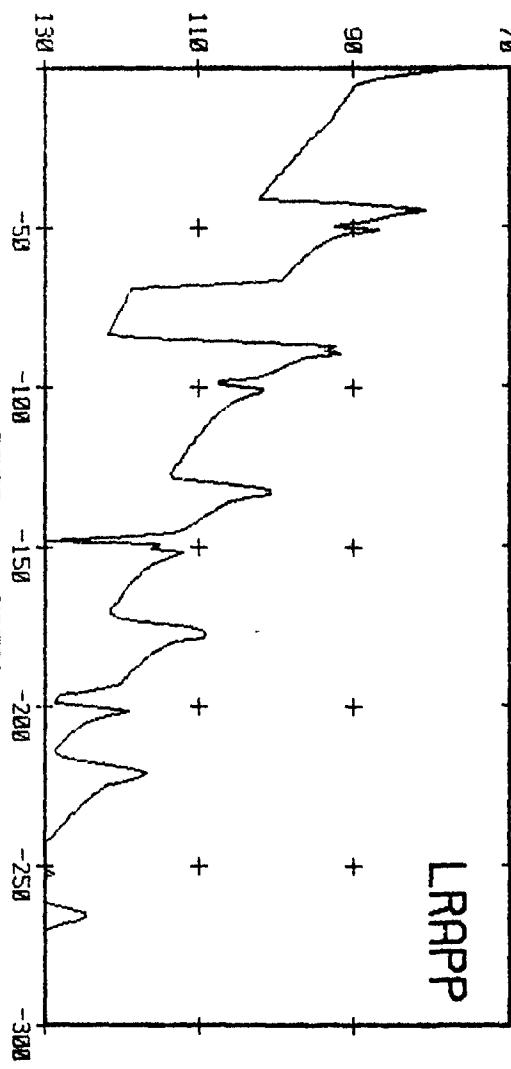
RIVER 2 SUMMER

S 265 R 168 F 2500

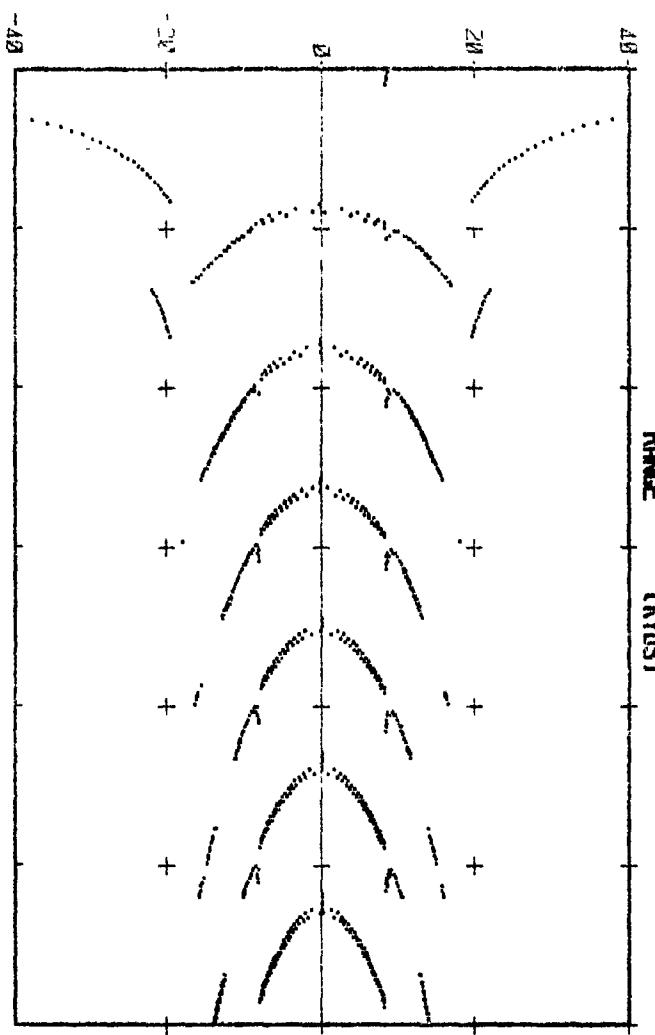
1450 M/S 1500 1550

L RAPP

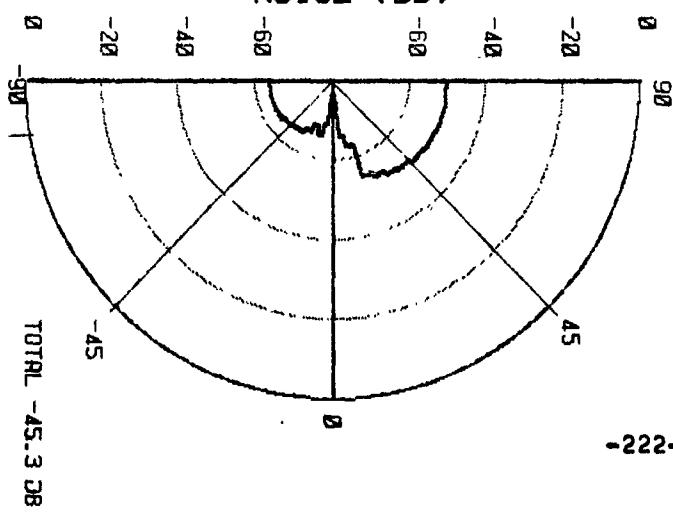
DB LOSS



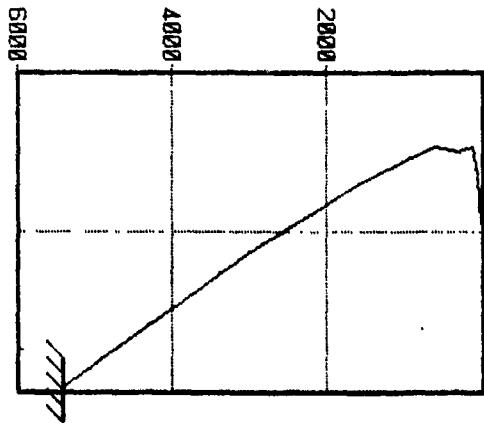
ARRIVAL ANGLE



NOISE (DB)



DEPTH IN METERS



78

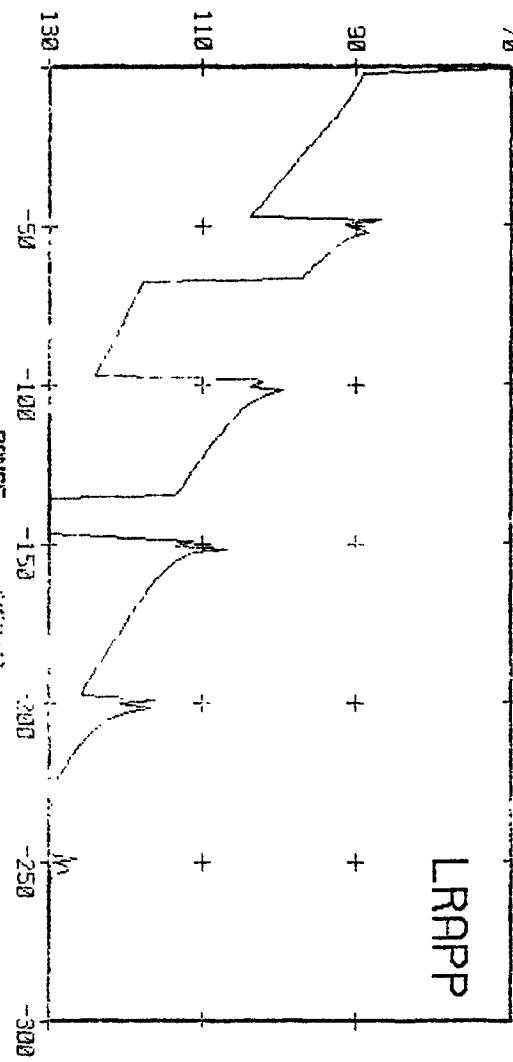
AREA 2 SUMMER

S 25 R 34 F 2500

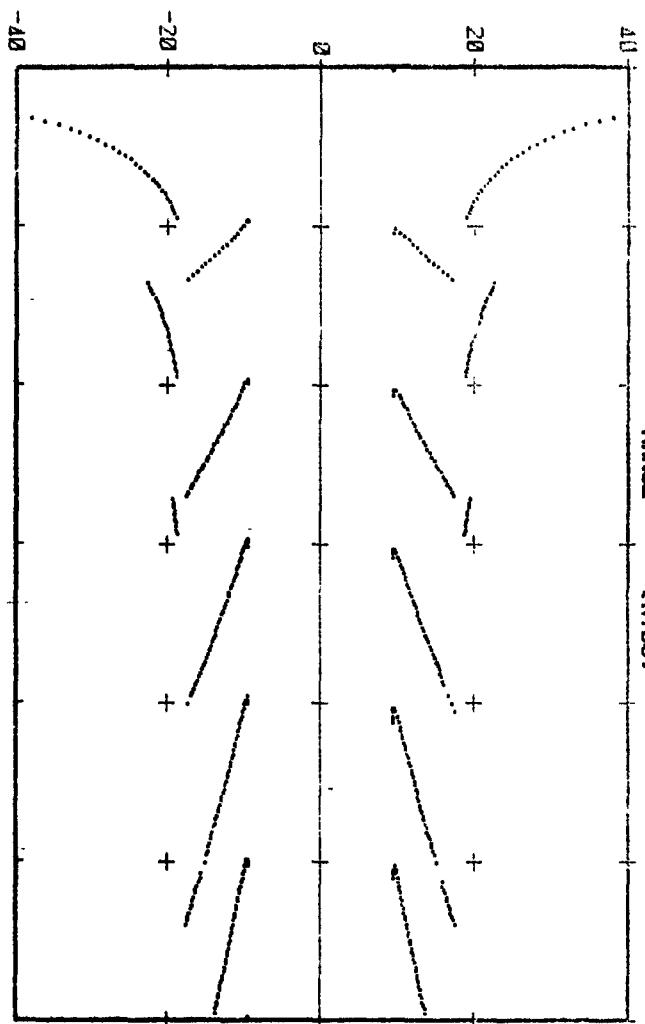
1450 M/S 1500 1550

LRAPP

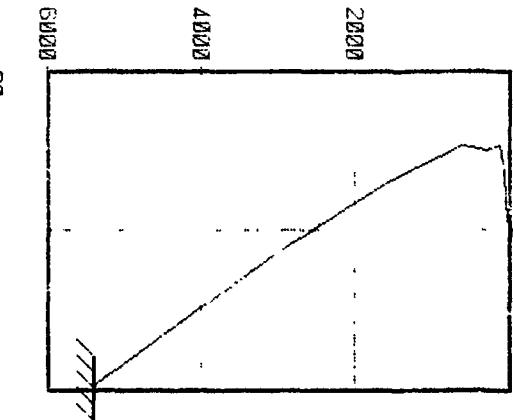
DB LOSS



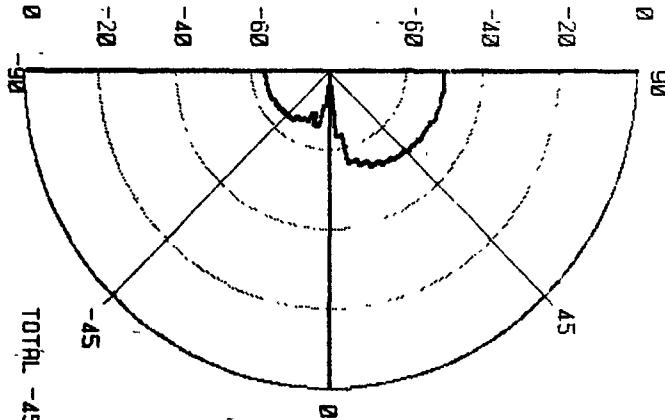
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -45.1 dB

70

FIRE 2 SUMMER

S

LRAPP

1450 M/S

1500

1550

DB LOSS

110

120

130

140

150

160

170

180

190

200

210

220

230

240

250

260

270

280

290

300

310

320

330

340

350

360

370

380

390

400

410

420

430

440

450

460

470

480

490

500

510

520

530

540

550

560

570

580

590

600

610

620

630

640

650

660

670

680

690

700

710

720

730

740

750

760

770

780

790

800

810

820

830

840

850

860

870

880

890

900

910

920

930

940

950

960

970

980

990

1000

1010

1020

1030

1040

1050

1060

1070

1080

1090

1100

1110

1120

1130

1140

1150

1160

1170

1180

1190

1200

1210

1220

1230

1240

1250

1260

1270

1280

1290

1300

1310

1320

1330

1340

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1400

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1470

1480

1490

1500

1510

1520

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1570

1580

1590

1600

1610

1620

1630

1640

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1660

1670

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1690

1700

1710

1720

1730

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1770

1780

1790

1800

1810

1820

1830

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1870

1880

1890

1900

1910

1920

1930

1940

1950

1960

1970

1980

1990

2000

2010

2020

2030

2040

2050

2060

2070

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2090

2100

2110

2120

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2160

2170

2180

2190

2200

2210

2220

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2290

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2990

3000

3010

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3070

3080

3090

3100

3110

3120

3130

3140

3150

3160

3170

3180

3190

3200

3210

3220

3230

3240

3250

3260

3270

3280

3290

3300

3310

3320

3330

AREA 2 SUMMER S 266 R 360 F 2580

1450 M/S 1500 1550

LRAFP

DB LOSS

130
110
90
70

1000
2000
3000
4000

DEPTH IN METERS

2000

4000

6000

0
90

-20

-40

-60

-80

-100

-120

-140

-160

-180

-200

-220

-240

-260

-280

-300

-320

-340

-360

-380

-400

-420

-440

-460

-480

-500

-520

-540

-560

-580

-600

-620

-640

-660

-680

-700

-720

-740

-760

-780

-800

-820

-840

-860

-880

-900

-920

-940

-960

-980

-1000

-1020

-1040

-1060

-1080

-1100

-1120

-1140

-1160

-1180

-1200

-1220

-1240

-1260

-1280

-1300

-1320

-1340

-1360

-1380

-1400

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-1440

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-1500

-1520

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-1560

-1580

-1600

-1620

-1640

-1660

-1680

-1700

-1720

-1740

-1760

-1780

-1800

-1820

-1840

-1860

-1880

-1900

-1920

-1940

-1960

-1980

-2000

-2020

-2040

-2060

-2080

-2100

-2120

-2140

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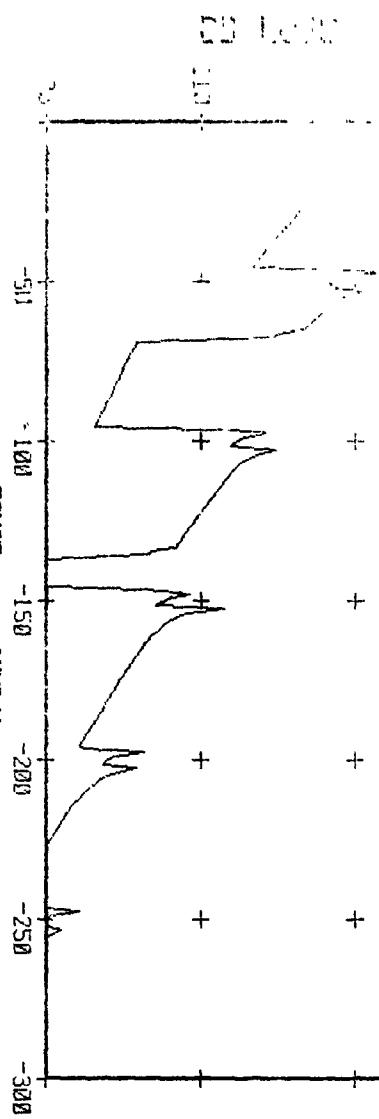
-5860

REP 2 SUMMER

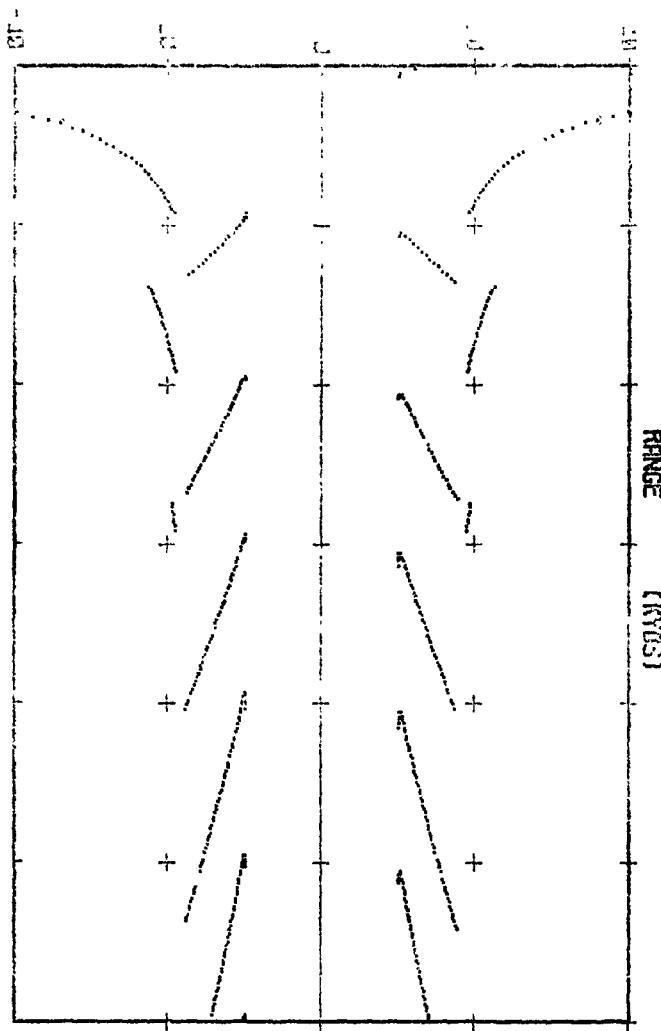
S 20 R 1888 F 2500

1450 M/S 1500 1550

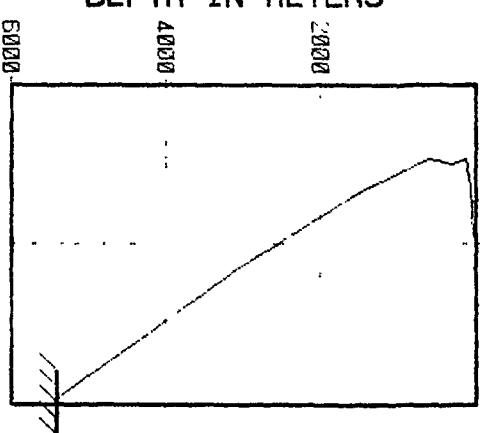
LRAFP



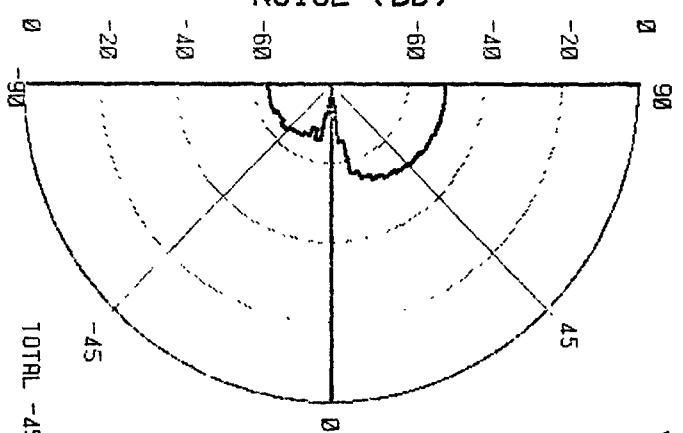
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -45.2 DB

78

AKER 2 SUMMER

S 50 R 1000 F 2500

1450 M/S 1500 1550

LRAPP

DB LOSS

90

110

130
110
90
70
50
-50
-100
-150
-200
-250
-300

RANGE (KMS)

DEPTH IN METERS

2000
4000
60000
90-20
-40
-60

-80

-100

-120

-140

-160

-180

-200

-220

-240

-260

-280

-300

-320

-340

-360

-380

-400

-420

-440

-460

-480

-500

-520

-540

-560

-580

-600

-620

-640

-660

-680

-700

-720

-740

-760

-780

-800

-820

-840

-860

-880

-900

-920

-940

-960

-980

-1000

-1020

-1040

-1060

-1080

-1100

-1120

-1140

-1160

-1180

-1200

-1220

-1240

-1260

-1280

-1300

-1320

-1340

-1360

-1380

-1400

-1420

-1440

-1460

-1480

-1500

-1520

-1540

-1560

-1580

-1600

-1620

-1640

-1660

-1680

-1700

-1720

-1740

-1760

-1780

-1800

-1820

-1840

-1860

-1880

-1900

-1920

-1940

-1960

-1980

-2000

-2020

-2040

-2060

-2080

-2100

-2120

-2140

-2160

-2180

-2200

-2220

-2240

-2260

-2280

-2300

-2320

-2340

-2360

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-2500

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-2800

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-3000

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-3900

-3920

-3940

-3960

-3980

-4000

-4020

-4040

-4060

-4080

-4100

-4120

-4140

-4160

-4180

-4200

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-4240

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-5000

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-5900

-5920

-5940

-5960

-5980

-6000

-6020

-6040

-6060

-6080

-6100

-6120

-6140

-6160

-6180

-6200

-6220

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-6340

-6360

-6380

-6400

-6420

70

FREER 2 SUMMER

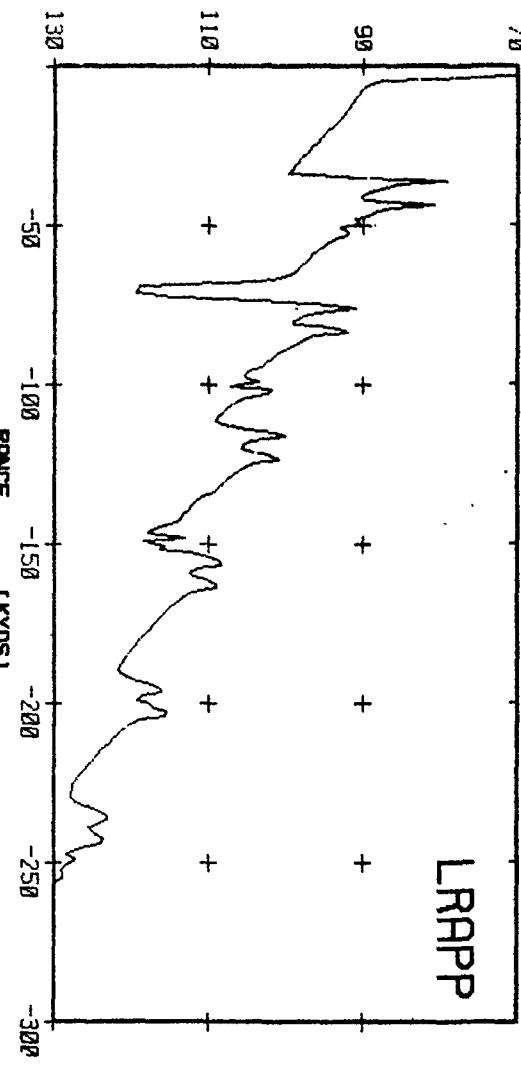
S 266 R 1004 F 2500

1450 M/S

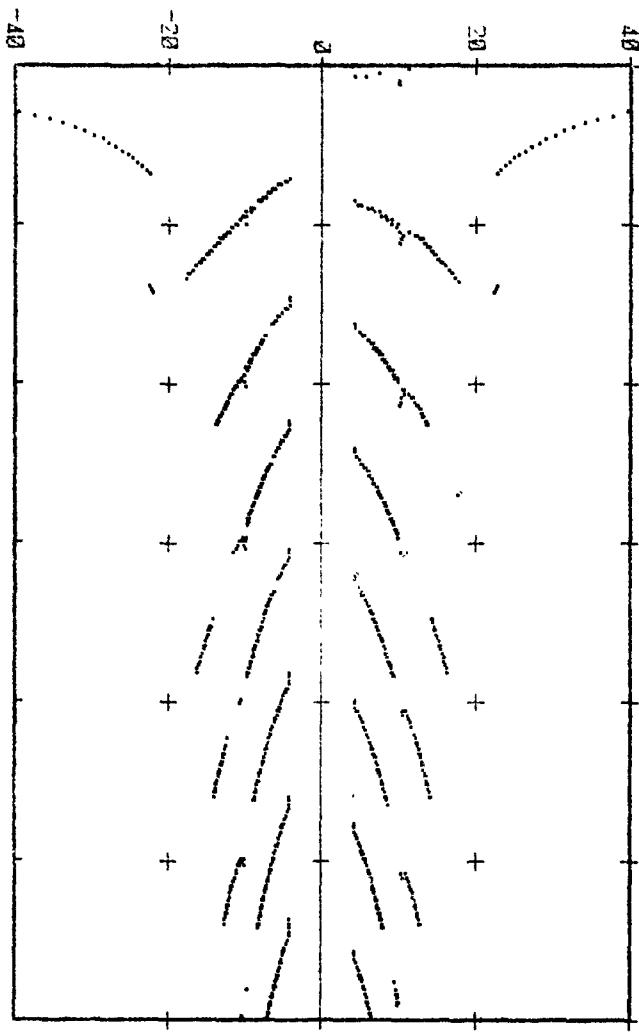
1500

1550

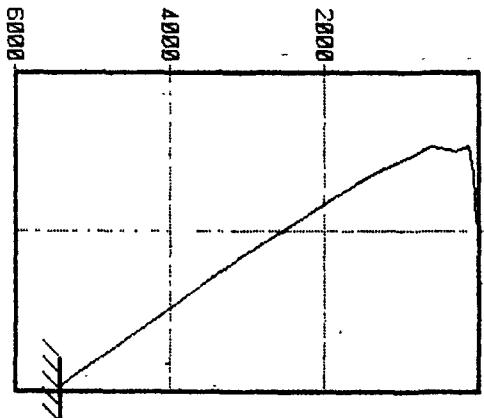
DB LOSS



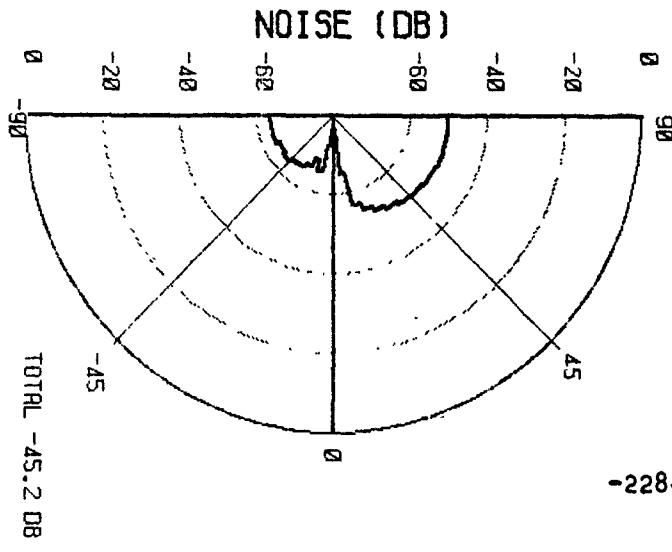
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



78

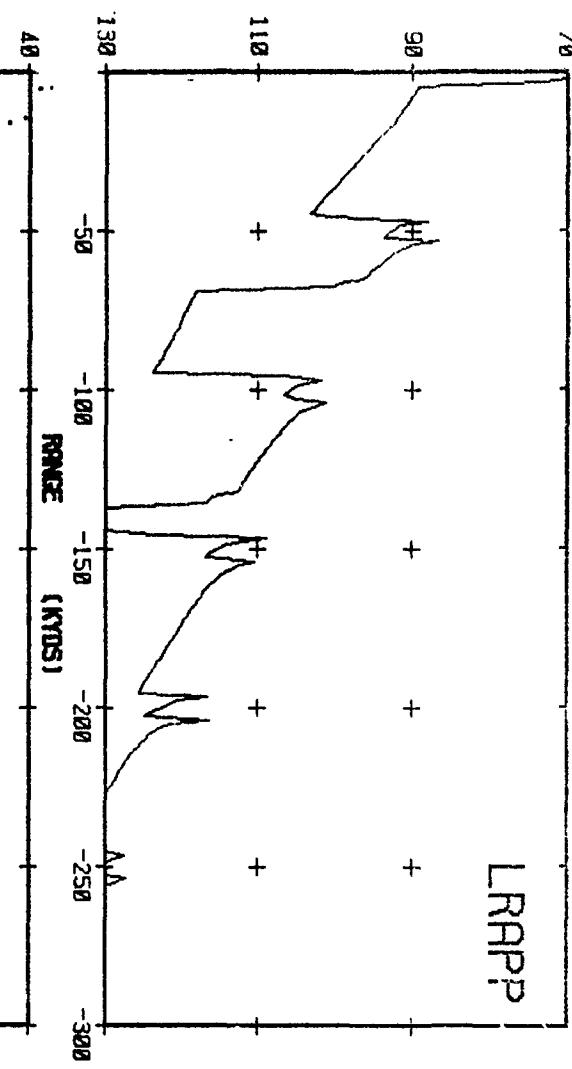
FEB 2 SUMMER

S 26 R 15LM F 2520

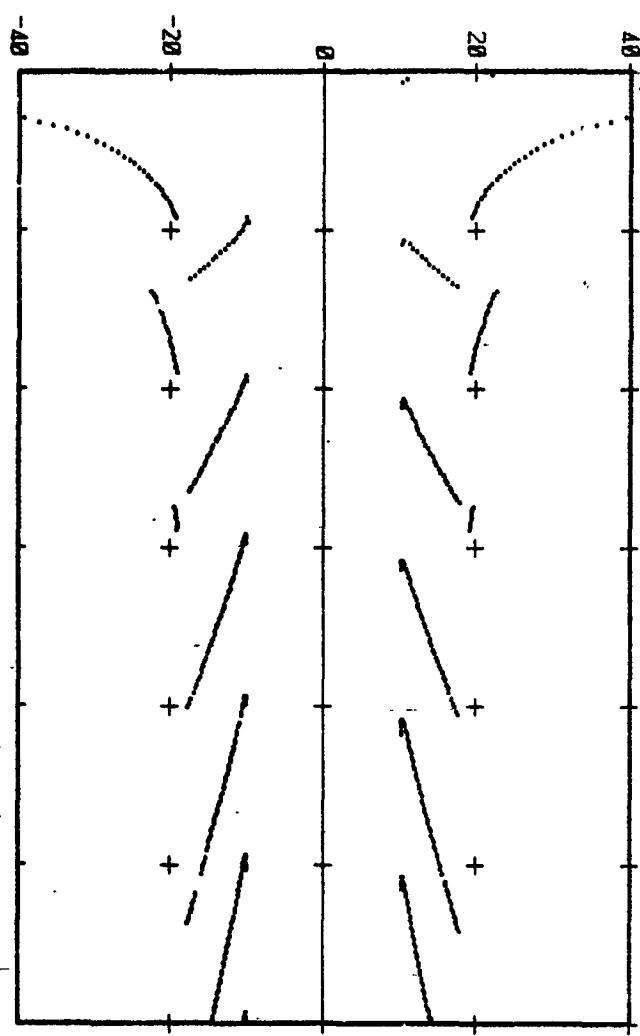
1450 M/S 1500

1550

DB LOSS

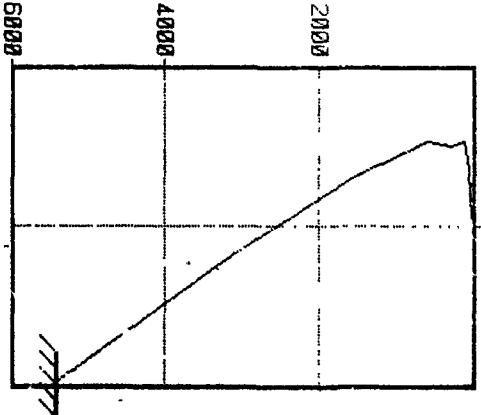


ARRIVAL ANGLE

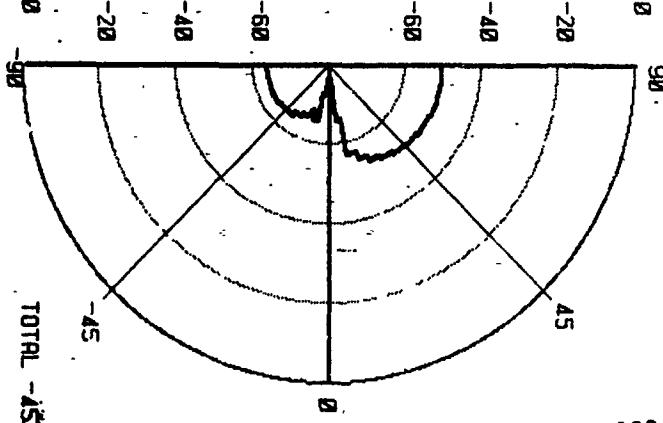


LRAPP

DEPTH IN METERS



NOISE (DB)



TOTAL -45.2 DB

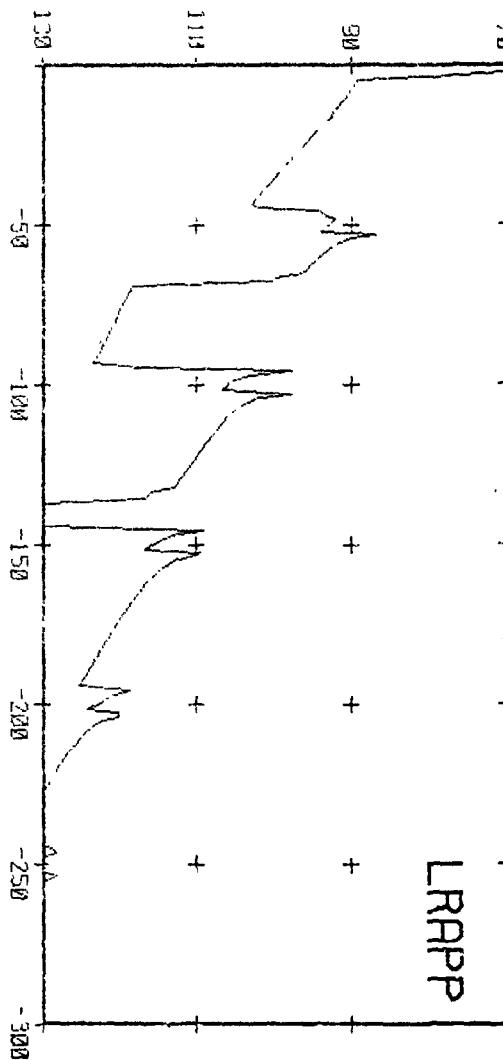
AREA 2 SUMMER

S 50 R 1500 F 2500

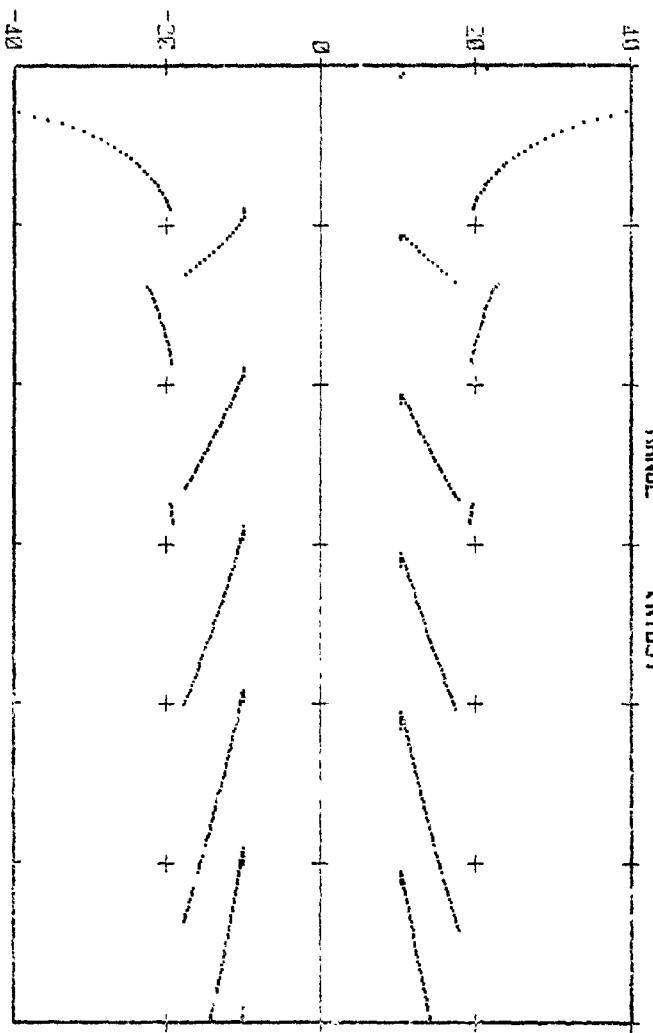
1450 M/S 1500 1550

LRAPP

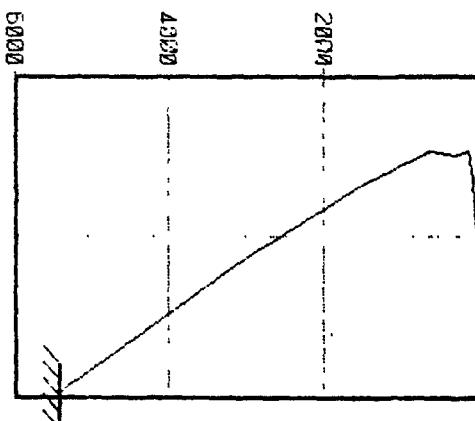
DB LOSS



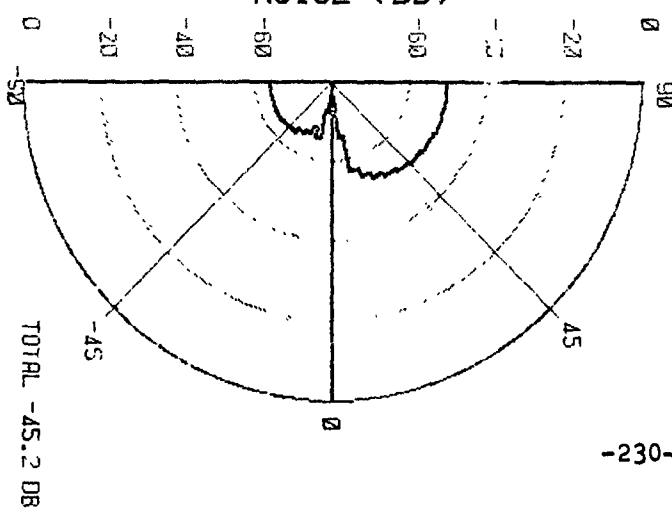
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



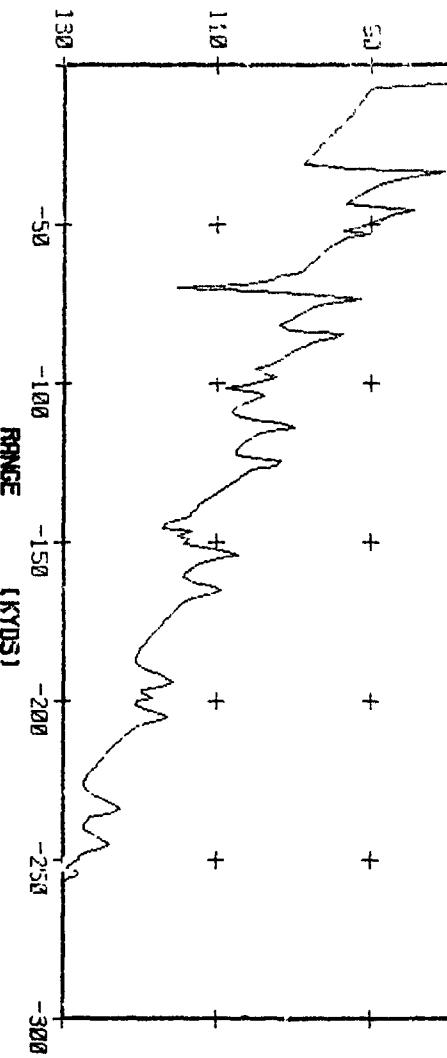
FIELD 2 SUMMER

S 286 R 15WB F 2510

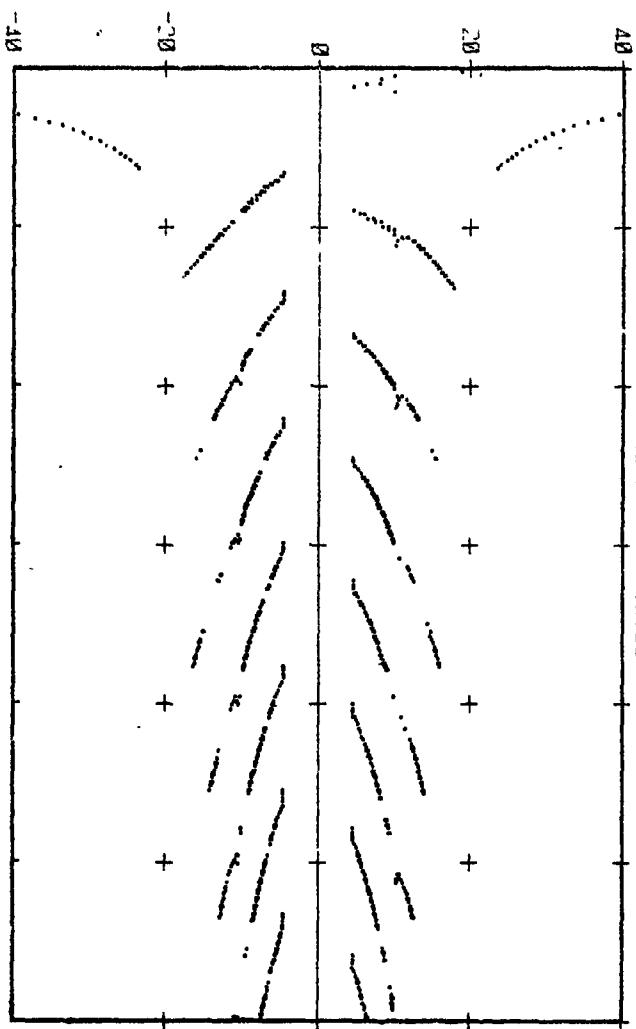
1450 M/S 1500 1550

LRAFP

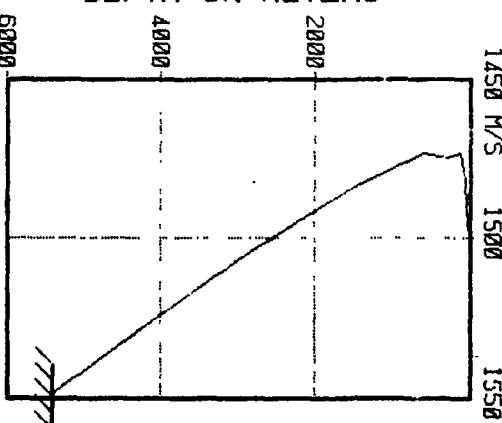
DB LOSS



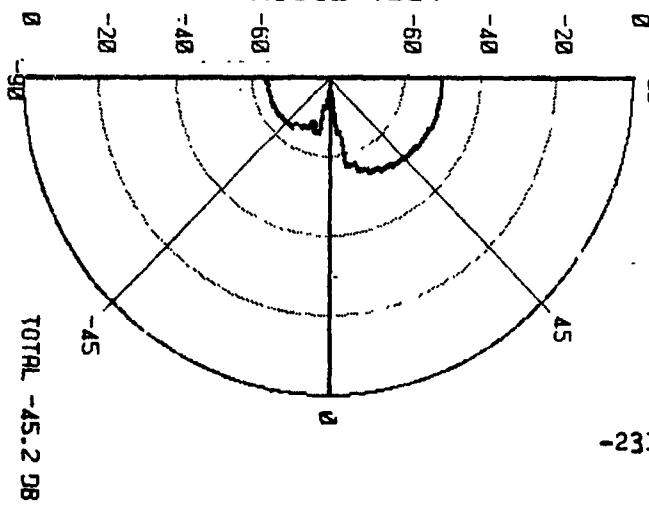
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



70

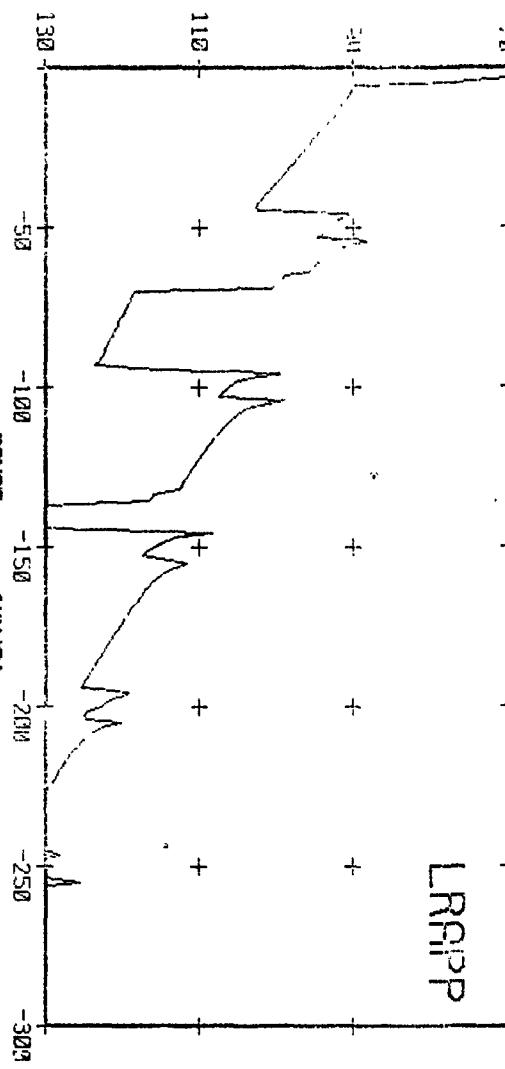
FIG. 2 SPLINTER

S 219 R 1963 F 2580

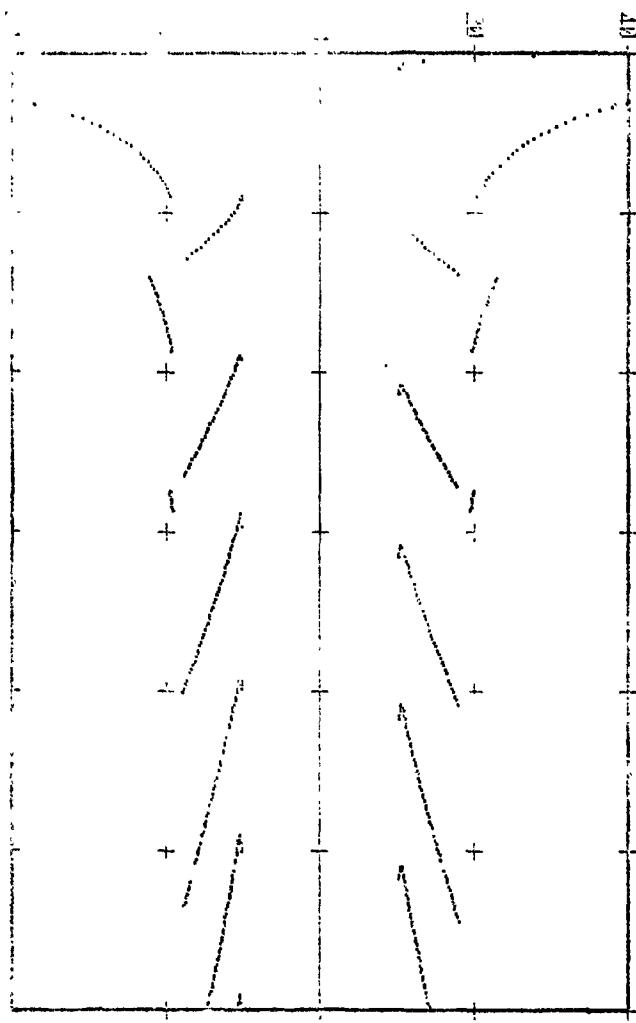
1450 M/S 1586 1550

LRAPP

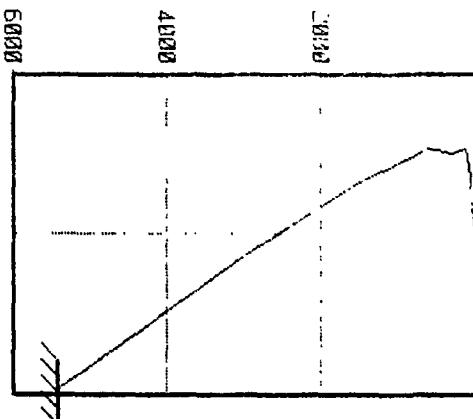
DB LOSS



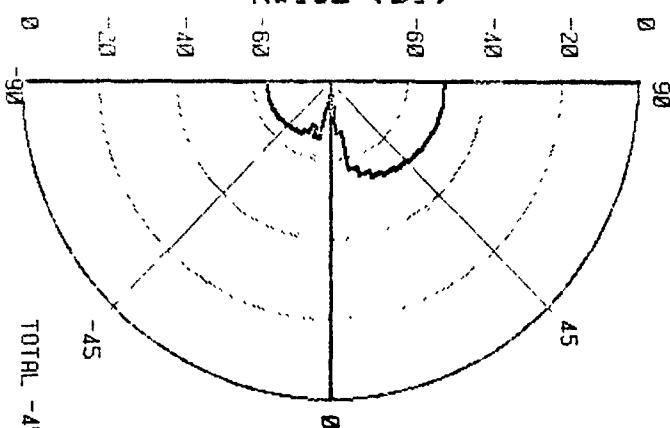
PREDICTED SINGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -45.2 dB

70

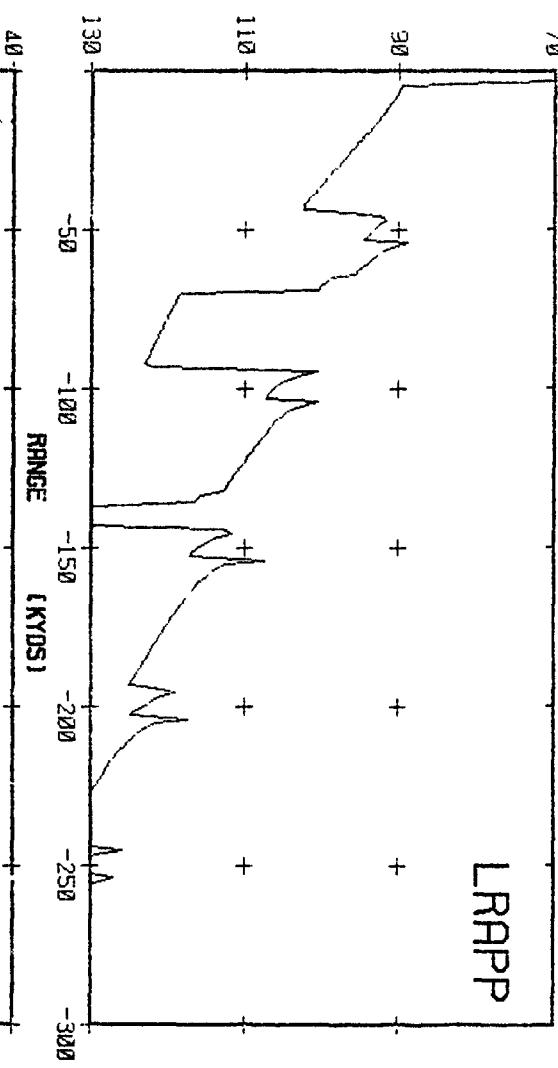
AREA 2 SUMMER

S 50 R 1968 F 2500

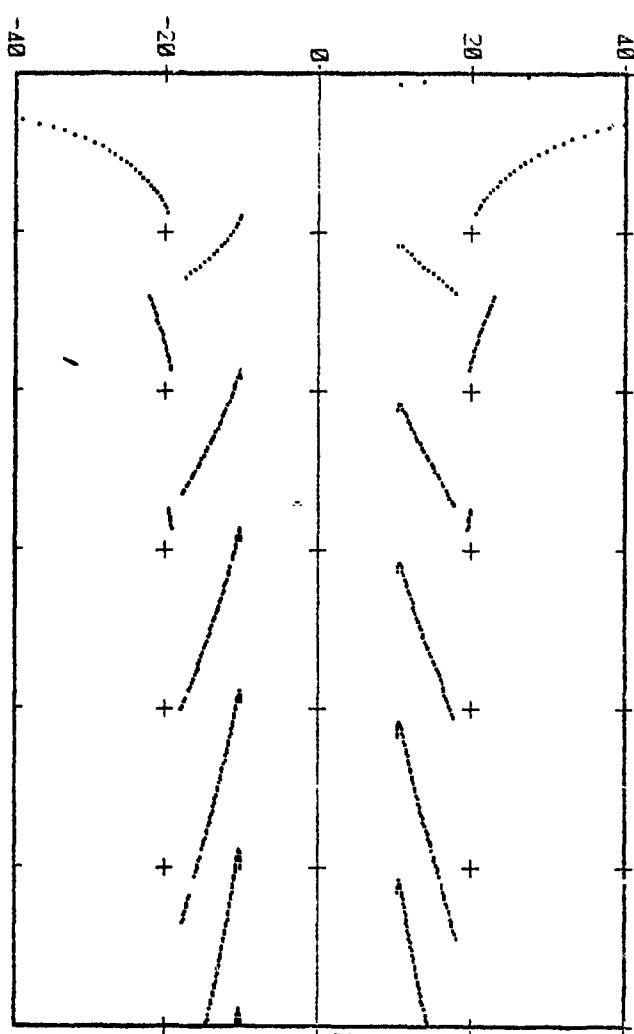
1450 M/S 1500 1550

LRAPP

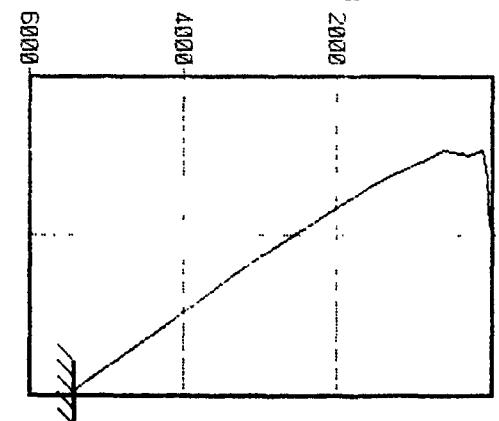
DB LOSS



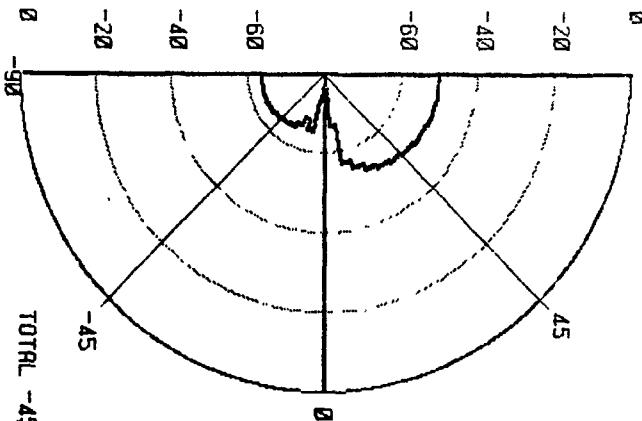
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



TOTAL -45.2 DB

AREA 2 SUMMER

S 266 R 1988 F 2530

1450 M/S 1500 1550

LRAPP

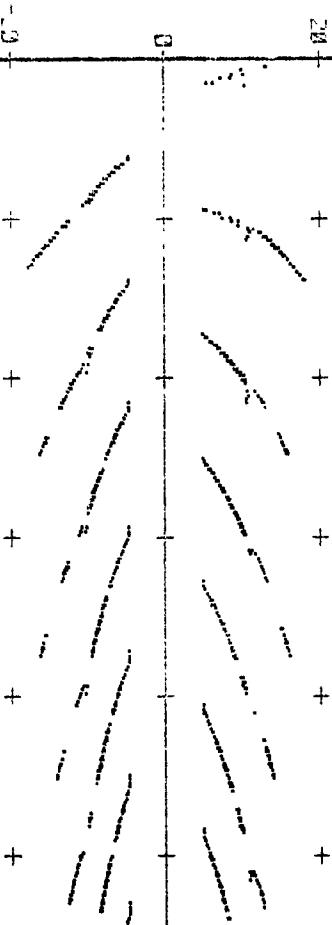
DB LOSS

90
110

130
100
-50
-100
-150
-200
-250
-300

RANGE (KMS)

ARRIVAL ANGLE



DEPTH IN METERS

2000
4000
6000

0
90

-20

-40

-60

-80

-100

-120

-140

-160

-180

-200

-220

-240

-260

-280

-300

-320

-340

-360

-380

-400

-420

-440

-460

-480

-500

-520

-540

-560

-580

-600

-620

-640

-660

-680

-700

-720

-740

-760

-780

-800

-820

-840

-860

-880

-900

-920

-940

-960

-980

-1000

-1020

-1040

-1060

-1080

-1100

-1120

-1140

-1160

-1180

-1200

-1220

-1240

-1260

-1280

-1300

-1320

-1340

-1360

-1380

-1400

-1420

-1440

-1460

-1480

-1500

-1520

-1540

-1560

-1580

-1600

-1620

-1640

-1660

-1680

-1700

-1720

-1740

-1760

-1780

-1800

-1820

-1840

-1860

-1880

-1900

-1920

-1940

-1960

-1980

-2000

-2020

-2040

-2060

-2080

-2100

-2120

-2140

-2160

-2180

-2200

-2220

-2240

-2260

-2280

-2300

-2320

-2340

-2360

-2380

-2400

-2420

-2440

-2460

-2480

-2500

-2520

-2540

-2560

-2580

-2600

-2620

-2640

-2660

-2680

-2700

-2720

-2740

-2760

-2780

-2800

-2820

-2840

-2860

-2880

-2900

-2920

-2940

-2960

-2980

-3000

-3020

-3040

-3060

-3080

-3100

-3120

-3140

-3160

-3180

-3200

-3220

-3240

-3260

-3280

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-3800

-3820

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-3860

-3880

-3900

-3920

-3940

-3960

-3980

-4000

-4020

-4040

-4060

-4080

-4100

-4120

-4140

-4160

-4180

-4200

-4220

-4240

-4260

-4280

-4300

-4320

-4340

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-4420

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-5000

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-5040

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-5100

-5120

-5140

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-5180

-5200

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-5240

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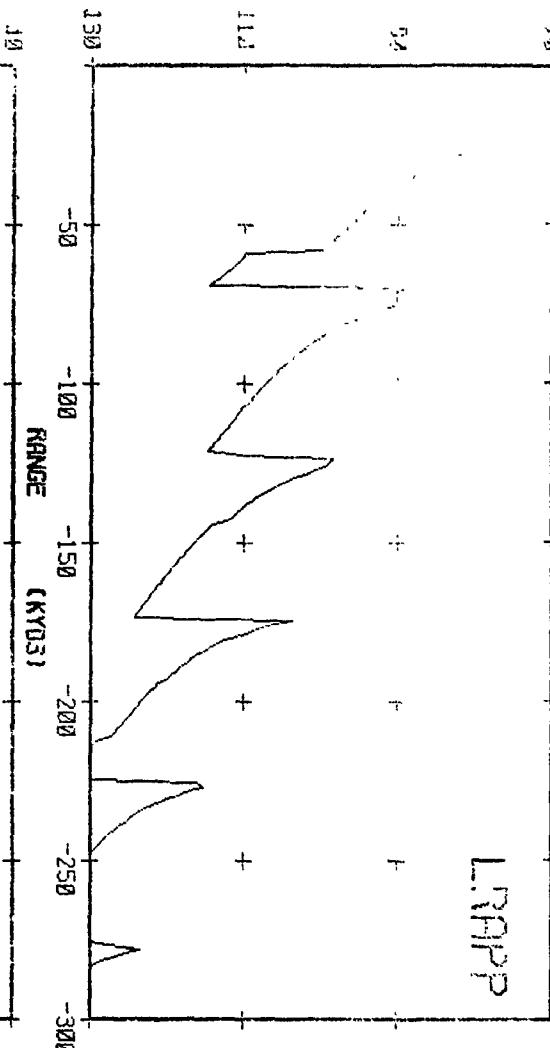
-5920

DATA 2 SLANT 28

S 20 R 784 F 2500

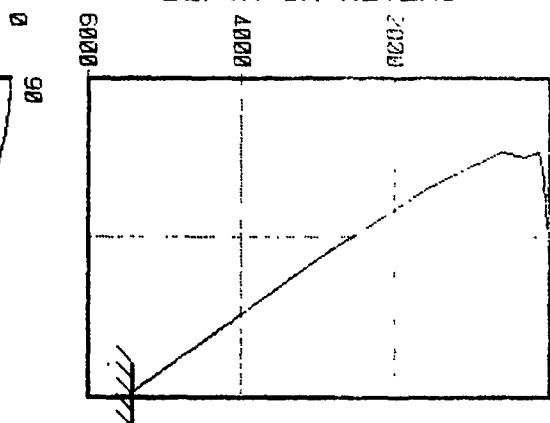
1450 M/S 1500 1550

DB LOSS

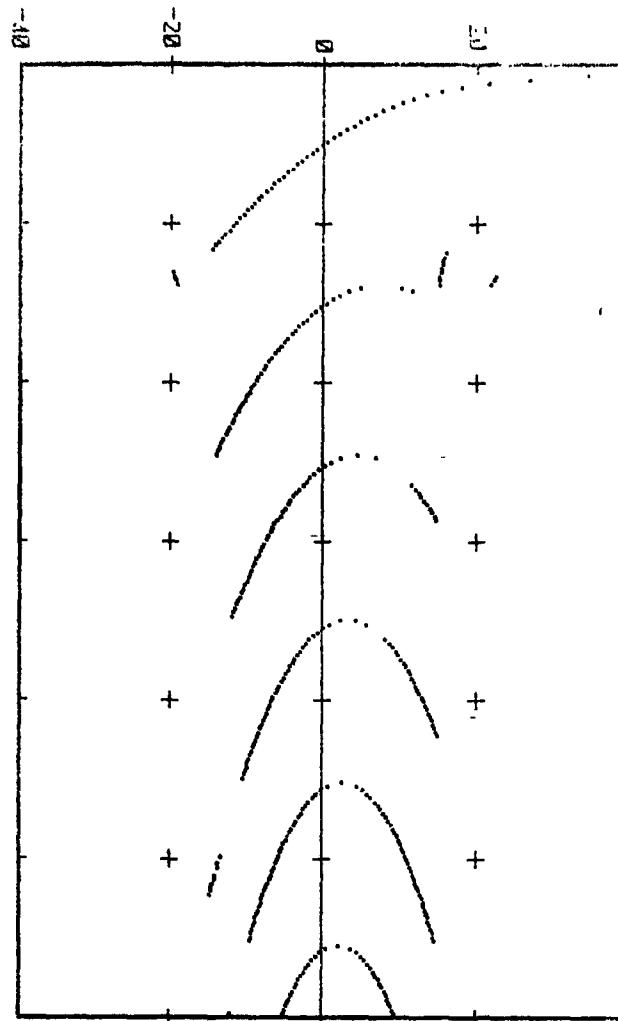


L.R.P.P

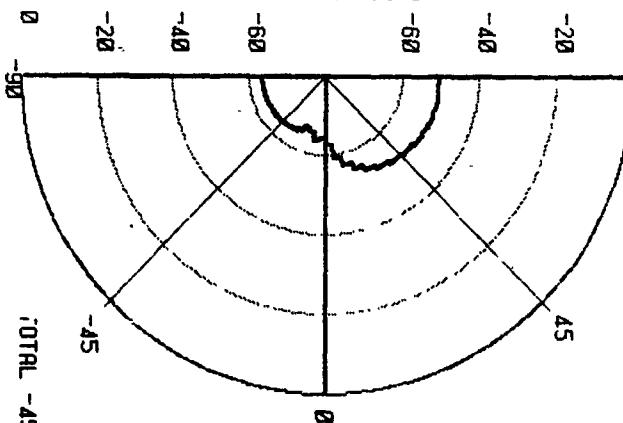
DEPTH IN METERS



ARRIVAL ANGLE



NOISE (DB)

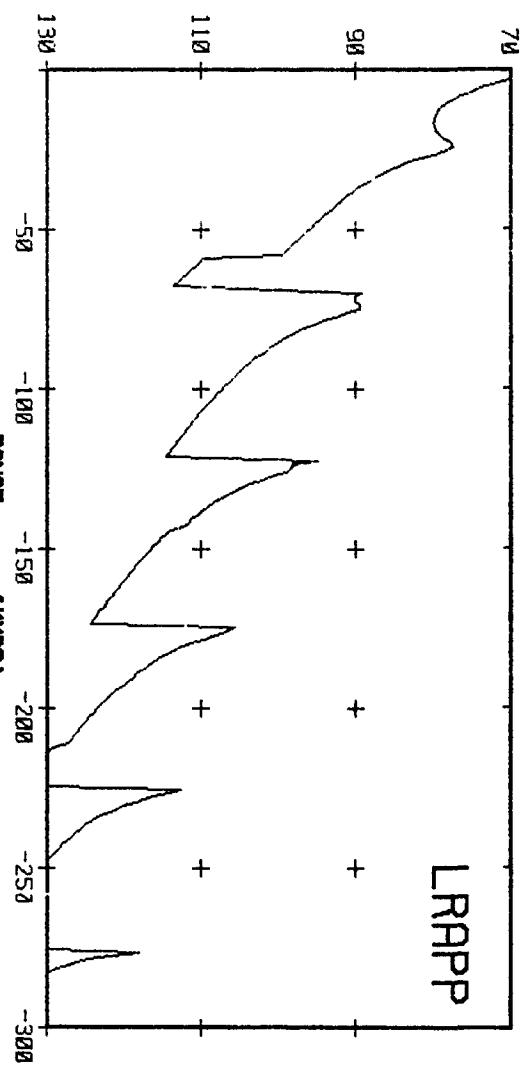


AREA 2 SUMMER

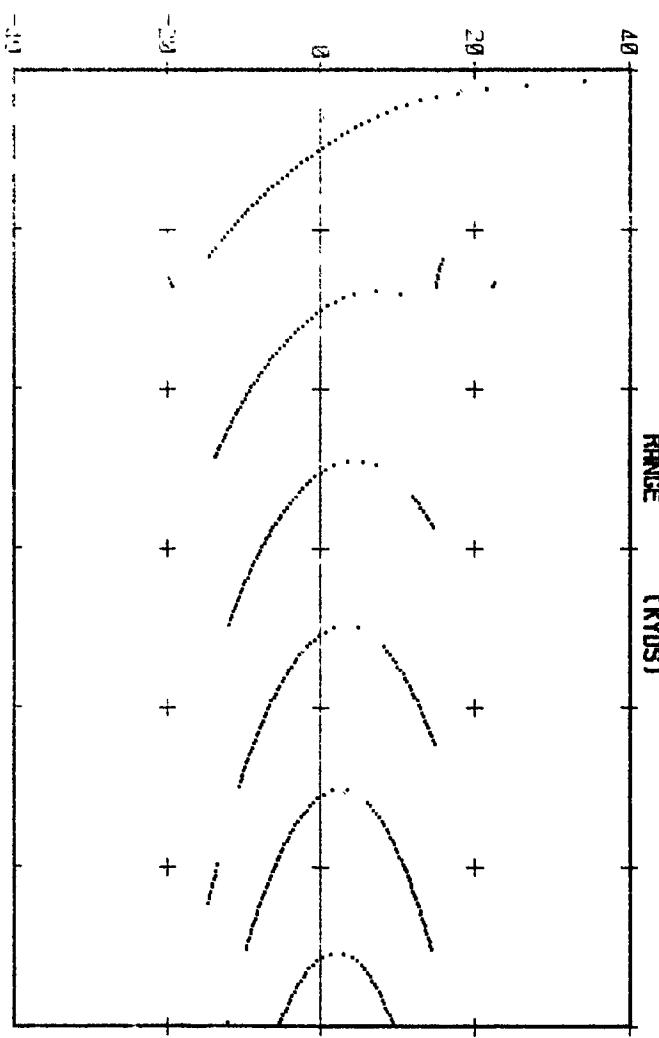
S 50 R 7874 F 2500

1450 M/S 1500 1550

DB LOSS

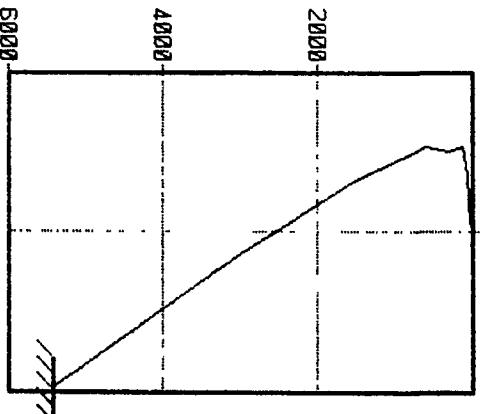


ARRIVAL ANGLE

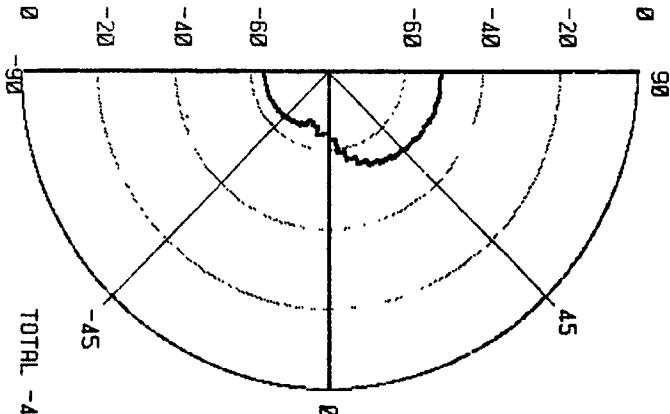


L RAPP

DEPTH IN METERS



NOISE (DB)



TOTAL -45.4 DB

70

AREA 2 SUMMER
S 266 R 7874 F 2530

5

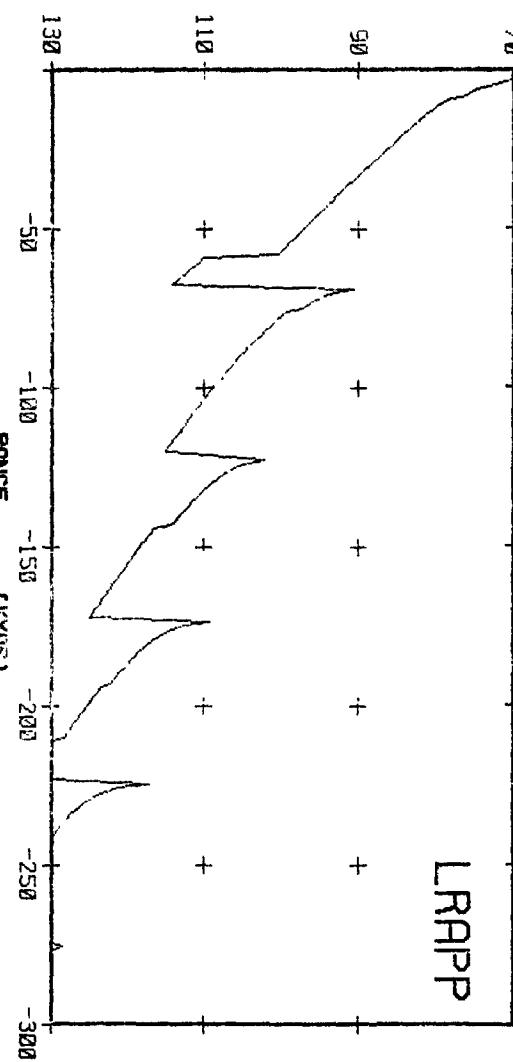
LRAAPP

1450 M/S

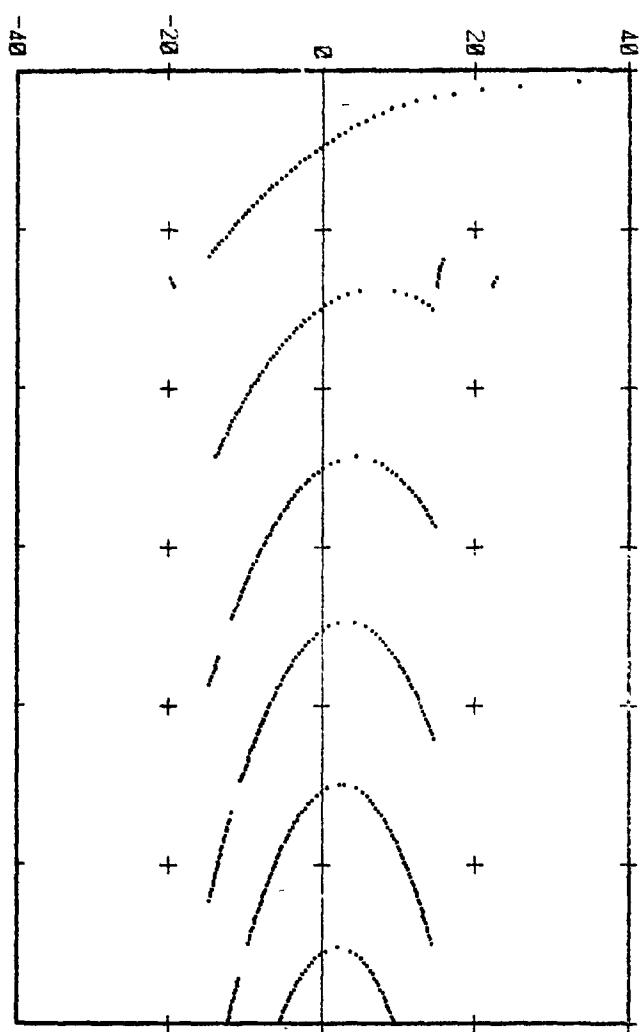
1500

1550

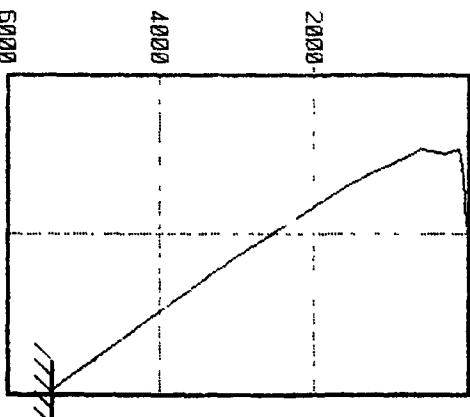
DB LOSS



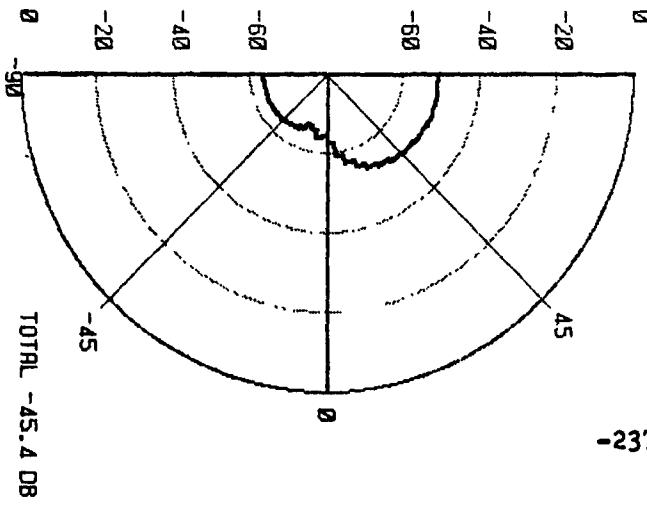
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



Range < Surface

S 2000WES F 2530

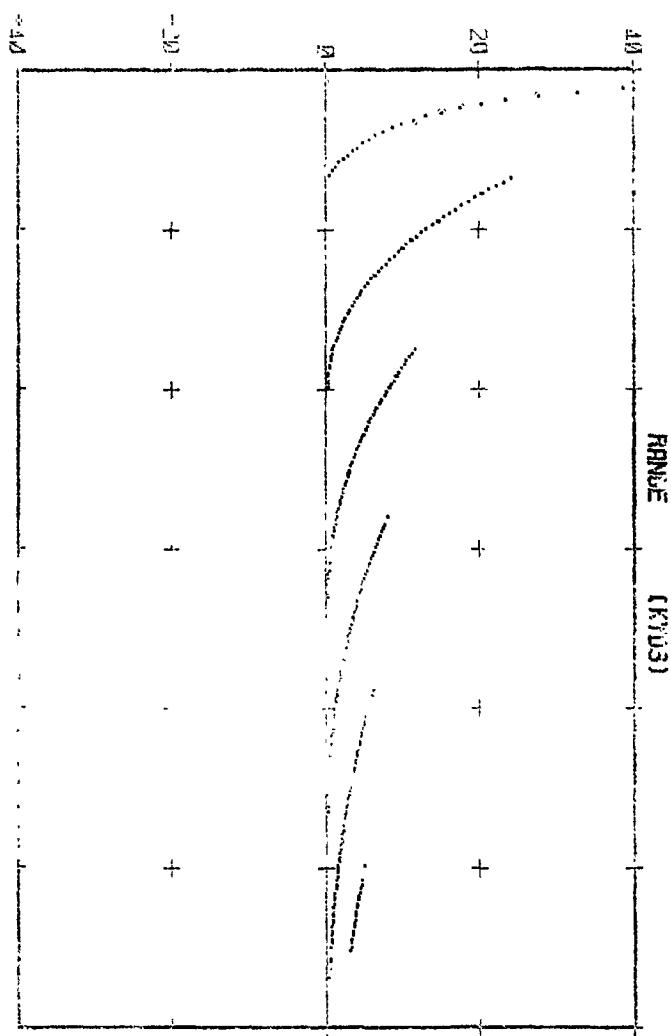
1450 ft² 1536 1550

LRAFP

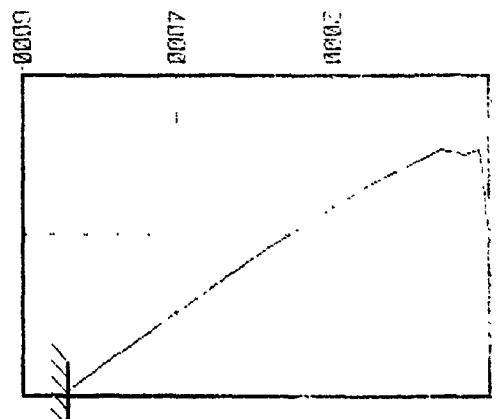
DB LOG



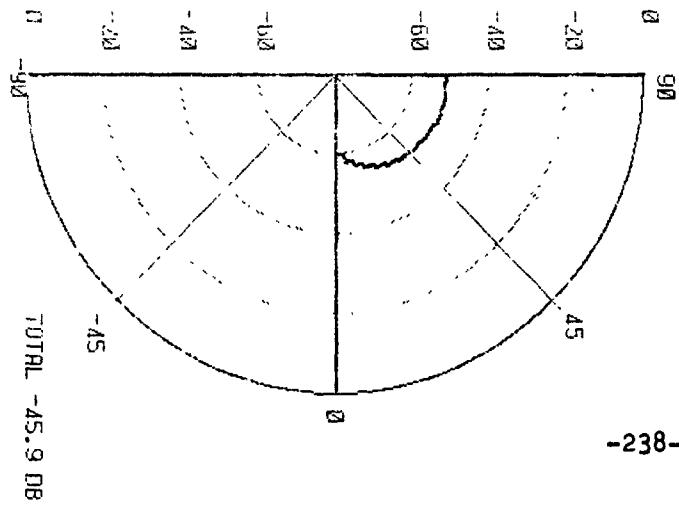
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



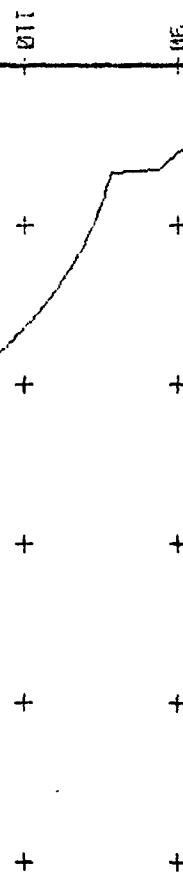
FREER 2 SUMMER

S 59 R17759 F 2500

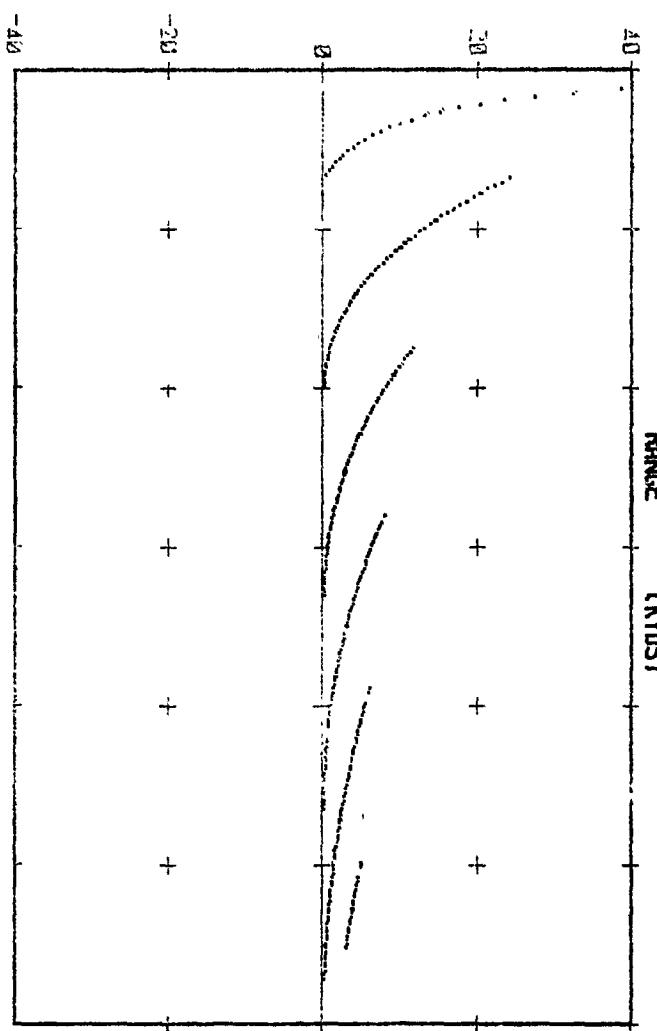
1450 M/S 1500 1550

LRRAPP

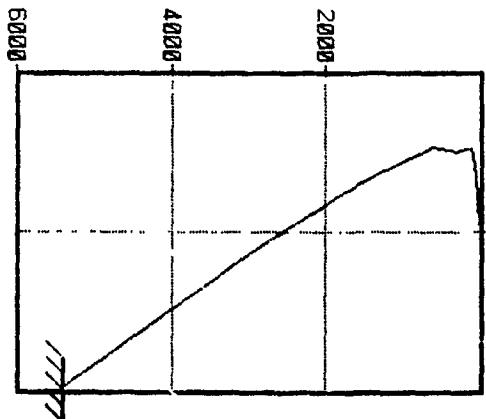
DB LOSS



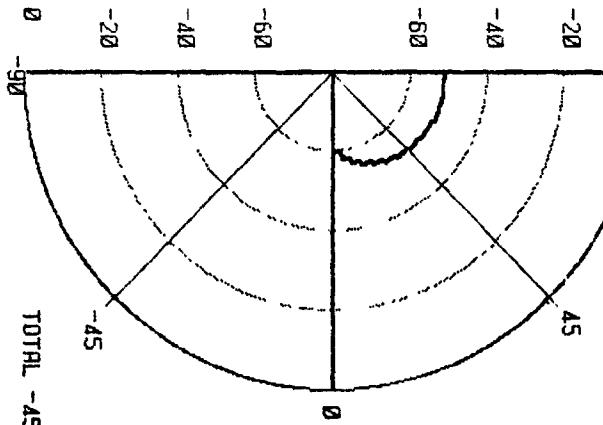
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)



70

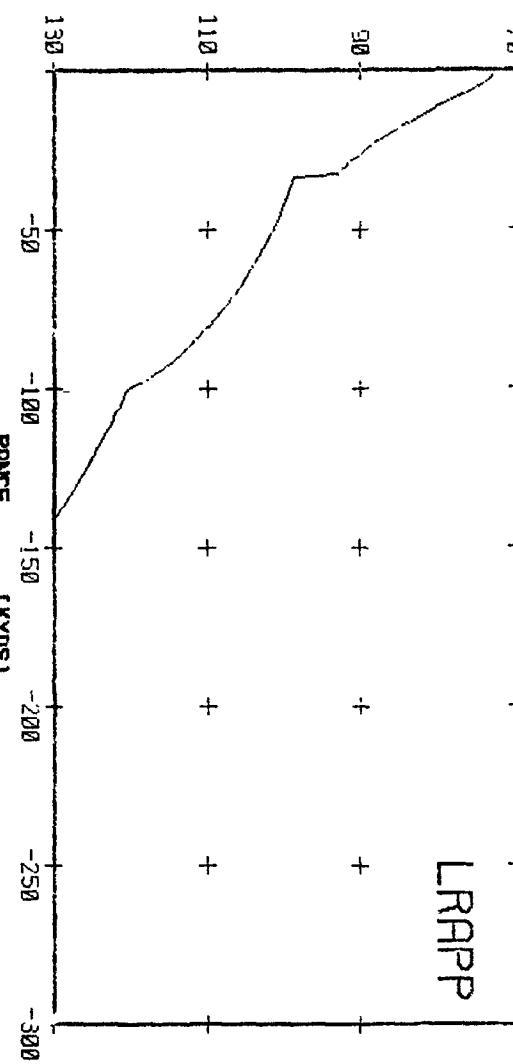
AREA 2 SUMMER

S 266 R17759 F 2580

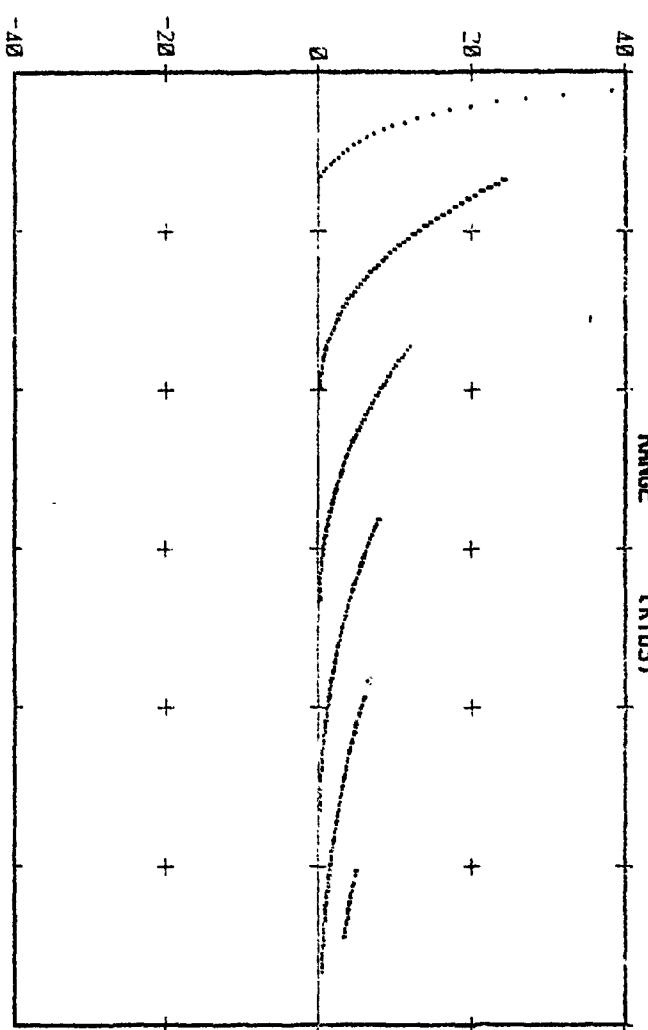
1450 M/S 1500 1550

LRAPP

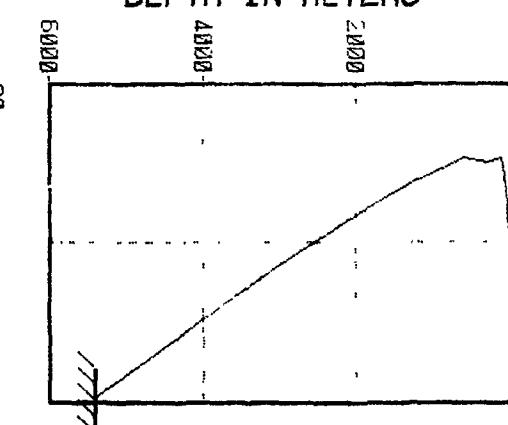
DB LOSS



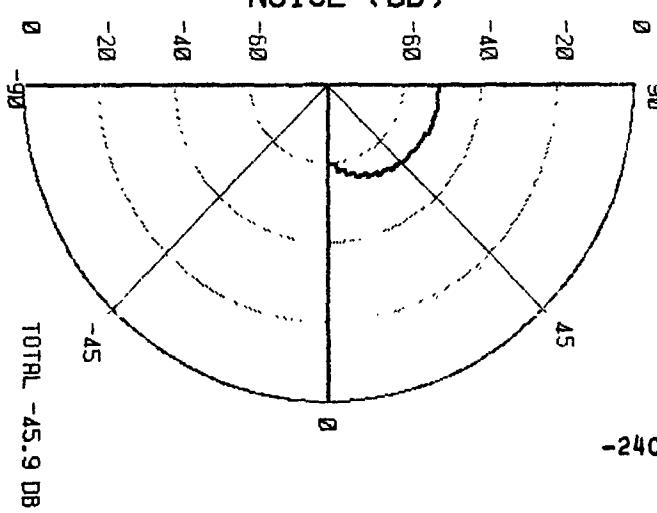
ARRIVAL ANGLE



DEPTH IN METERS



NOISE (DB)





DEPARTMENT OF THE NAVY

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MEMORANDUM FOR DISTRIBUTION LIST

Subj: DECLASSIFICATION OF LONG RANGE ACOUSTIC PROPAGATION PROJECT (LRAPP) DOCUMENTS

Ref: (a) SECNAVINST 5510.36

Encl: (1) List of DECLASSIFIED LRAPP Documents

1. In accordance with reference (a), a declassification review has been conducted on a number of classified LRAPP documents.
2. The LRAPP documents listed in enclosure (1) have been downgraded to UNCLASSIFIED and have been approved for public release. These documents should be remarked as follows:

Classification changed to UNCLASSIFIED by authority of the Chief of Naval Operations (N772) letter N772A/6U875630, 20 January 2006.

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3. Questions may be directed to the undersigned on (703) 696-4619, DSN 426-4619.

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Subj: DECLASSIFICATION OF LONG RANGE ACOUSTIC PROPAGATION PROJECT
(LRAPP) DOCUMENTS

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Declassified LRAPP Documents

Report Number	Personal Author	Title	Publication Source (Originator)	Pub. Date	Current Availability	Class.
Unavailable	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME VII. AREA 3A SUMMER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0910342	U
Unavailable	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME VIII. AREA 3B WINTER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0910343	U
Unavailable	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME IX. AREA 3B SUMMER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0910344	U
Unavailable	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME V. AREA 2 SUMMER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0911224	U
Unavailable	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME XI. AREA 4A SUMMER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0912560	U
Unavailable	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME X. AREA 4A WINTER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0916556	U
MC-011 VOL. 14	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME XIV. AREA 5 WINTER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0916557; ND	U
MC-011 VOL. 13	Unavailable	ACOUSTIC ENVIRONMENTAL SCENARIOS AND PREDICTIONS FOR ASW. VOLUME XIII. AREA 4B SUMMER PREDICTIONS FOR PASSIVE SONAR	Maury Center for Ocean Science	721001	AD0916610; ND	U
MCR008	Goodman, R. R., et al.	THE NEAT 1 EXPERIMENT (U)	Maury Center for Ocean Science	721001	NS; ND	U
Unavailable	Cherry, W. R.	LRAPP BEAMFORMER	Scripps Institution of Oceanography Marine Physical Laboratory	721015	ADA081876	U
ONR ACR-186	Gregory, J. B.	PROJECT LRAPP TEST BED- TECHNOLOGY USED IN THE DEVELOPMENT OF A DEEP-OCEAN STABLE PLATFORM (U)	Office of Naval Research	721024	AD09152370 , ND	U
MC-010	Unavailable	CHURCH GABBRO EXERCISE PLAN LRAPP (U)	Maury Center for Ocean Science	721026	ND	U
WHOI-72-87	Daubin, S. C., et al.	THE ACODAC SYSTEM	Woods Hole Oceanographic Institution	721101	AD0756628; ND	U
NRLR7516	Fleming, H. S., et al.	PROJECT NEAT 1 ENVIRONMENTAL DATA REPORT (U) (USNS J.W. GIBBS)	Naval Research Laboratory	721129	AD09152370 , NS; ND	U