

c.323

Flight Maps and Charts

All Flights

**Mission Operations Directorate
Operations Division**

**Generic, Rev B
August 28, 1991**

NOTE
This Revision is for use on
STS-48
and subsequent flights

NASA

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



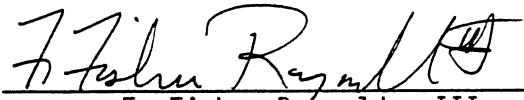
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FLIGHT MAPS AND CHARTS

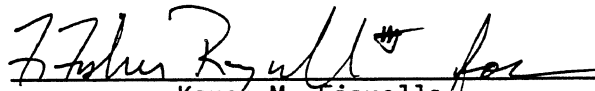
GENERIC, REVISION B
August 28, 1991

PREPARED BY:

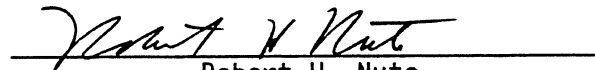


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NOTES

1. The Maps and Charts document contains four major items which are all flown separately. The four items are:
 - (a) Mercator and polar projection star charts (section 1)
 - (b) Mercator projection Earth Map with Earth observation areas and orbit overlay (section 2)
 - (c) Landing Site Charts
 - (d) World Atlas (section 5)
2. The page numbers assigned to sections 1, 2, and 5 are for the convenience of the users of this document and do not appear on the items when in flight configuration.
3. The Landing Site Charts are organized as follows:
 - Section 3 - Summary and Chart Legend
 - Landing Sites - Alphabetized by software designator
4. The originals for all maps/charts presented in this document are prepared by the Defense Mapping Agency Aerospace Center, St. Louis, Missouri.

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FLIGHT MAPS AND CHARTS

LIST OF EFFECTIVE PAGES

GENERIC 08/24/88
REV B 08/28/91

Sign Off.....*	ALL/GEN B	BEN-A.....	EDITION 1-6/89
ii.....*	ALL/GEN B	BEN-B.....	BLANK
iii.....*	ALL/GEN B	BYD-1.....	ALL/GEN B
iv.....*	ALL/GEN B	BYD-2.....	ED. 2-12/88
v.....*	ALL/GEN B	BYD-3.....	ED. 3-4/90
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viii.....*	ALL/GEN B	BYD-B.....	BLANK
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x.....	ALL/GEN B	BYD-D.....	BLANK
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1-4.....*	ALL/GEN B	CEF-2.....Δ	ED. 3-12/88
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2-4.....*	ALL/GEN B	DDN-2.....	ED. 3-12/88
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3-ii.....	ALL/GEN B	DDN-4.....	BLANK
3-iii.....	ED. 3-12/88	DDN-A.....	EDITION 1-6/89
3-iv.....	ALL/GEN B	DDN-B.....	BLANK
AM-1.....Δ	ALL/GEN B	DDN-C.....	EDITION 1-6/89
AM-2.....Δ	ED. 1-9/89	DDN-D.....	BLANK
AM-3.....Δ	ED. 1-9/89	DOV-1.....Δ	ALL/GEN B
AM-4.....Δ	BLANK	DOV-2.....Δ	ED. 1-3/89
AML-1.....	ALL/GEN B	DOV-3.....Δ	ED. 1-8/89
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AML-3.....	ED. 3-12/88	DOV-5.....Δ	ED. 2-12/90
AML-4.....	BLANK	DOV-6.....Δ	BLANK
AML-A.....	EDITION 1-6/89	DOV-A.....Δ	EDITION 1-6/89
AML-B.....	BLANK	DOV-B.....Δ	BLANK
AML-C.....	EDITION 1-6/89	DOV-C.....Δ	EDITION 1-6/89
AML-D.....	BLANK	DOV-D.....Δ	BLANK
ARL-1.....Δ	ALL/GEN B	DYS-1.....	ALL/GEN B
ARL-2.....Δ	ED. 1-9/89	DYS-2.....	ED. 2-12/88
ARL-3.....Δ	ED. 1-9/89	DYS-3.....	ED. 2-12/88
ARL-4.....Δ	BLANK	DYS-4.....	BLANK
BDA-1.....	ALL/GEN B	EDW-1.....	ALL/GEN B
BDA-2.....	ED. 1-3/89	EDW-2.....	BLANK
BDA-3.....	ED. 1-3/89	EDW-3.....	ALL/GEN B
BDA-4.....	BLANK	EDW-4.....	ED. 4-8/89
BDA-A.....	EDITION 1-6/89	EDW-5.....	ED. 4-8/89
BDA-B.....	BLANK	EDW-6.....	BLANK
BDA-C.....	EDITION 1-6/89	EDW-7.....	ED. 5-4/90
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BEN-2.....	ED. 2-12/88	EDW-10.....	BLANK
BEN-3.....	ED. 3-4/90	EDW-11.....	ED. 5-4/90
BEN-4.....	BLANK	EDW-12.....	BLANK

(*) - Not Flown

(Δ) - Hi Inclination Only

EDW-13.....	ED.1-1/91	JDG-3.....	ED. 4-12/88
EDW-14.....	BLANK	JDG-4.....	BLANK
EIP-1.....	ALL/GEN B	JDG-A.....	EDITION 1-6/89
EIP-2.....	ED. 2-8/87	JDG-B.....	BLANK
EIP-3.....	ED. 3-12/88	JDG-C.....	EDITION 1-6/89
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ESN-1.....Δ	ALL/GEN B	KBO-1.....Δ	ALL/GEN B
ESN-2.....Δ	ED. 1-9/89	KBO-2.....Δ	ED. 3-12/88
ESN-3.....Δ	ED. 1-9/89	KBO-3.....Δ	ED. 3-12/88
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FFO-1.....Δ	ALL/GEN B	KIN-1.....	ALL/GEN B
FFO-2.....Δ	ED. 3-12/88	KIN-2.....	ED. 3-12/88
FFO-3.....Δ	ED. 3-12/88	KIN-3.....	ED. 3-12/88
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FMH-1.....Δ	ALL/GEN B	KKI-1.....	ALL/GEN B
FMH-2.....Δ	ED. 1-3/89	KKI-2.....	ED. 2-12/88
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FMH-4.....Δ	BLANK	KKI-4.....	BLANK
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FMH-B.....Δ	BLANK	KSC-2.....	ED. 3-12/88
FMH-C.....Δ	EDITION 1-6/89	KSC-3.....	ED. 3-12/88
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GDV-3.....	ED. 4-4/90	KSC-C.....	EDITION 1-6/89
GDV-4.....	BLANK	KSC-D.....	BLANK
GDV-A.....	EDITION 1-6/89	LAJ-1.....Δ	ALL/GEN B
GDV-B.....	BLANK	LAJ-2.....Δ	ED. 1-12/90
GUA-1.....	ALL/GEN B	LAJ-3.....Δ	ED. 1-12/90
GUA-2.....	ED. 3-12/88	LAJ-4.....Δ	BLANK
GUA-3.....	ED. 4-8/89	LNK-1.....Δ	ALL/GEN B
GUA-4.....	BLANK	LNK-2.....Δ	ED. 3-12/88
GUS-1.....Δ	ALL/GEN B	LNK-3.....Δ	ED. 3-12/88
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GUS-3.....Δ	ED. 3-12/88	MRN-1.....	ALL/GEN B
GUS-4.....Δ	BLANK	MRN-2.....	ED. 3-12/88
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HAO-B.....	BLANK	MRN-D.....	BLANK
HDS-1.....	ALL/GEN B	MUO-1.....Δ	ALL/GEN B
HDS-2.....	ED. 3-12/88	MUO-2.....Δ	ED. 3-12/88
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HDS-4.....	BLANK	MUO-4.....Δ	BLANK
HNL-1.....	ALL/GEN B	MWH-1.....Δ	ALL/GEN B
HNL-2.....	ED. 3-12/88	MWH-2.....Δ	ED. 3-12/88
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JDG-2.....	ED. 3-12/88	MYR-B.....Δ	BLANK

MYR-C.....Δ EDITION 1-6/89
 MYR-D.....Δ BLANK
 NKT-1.....Δ ALL/GEN B
 NKT-2.....Δ ED. 1-3/89
 NKT-3.....Δ ED. 1-3/89
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 NKT-B.....Δ BLANK
 NKT-C.....Δ EDITION 1-6/89
 NKT-D.....Δ BLANK
 NOR-1..... ALL/GEN B
 NOR-2..... ED. 3-12/88
 NOR-3..... ED. 4-12/90
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 NOR-5..... ED. 4-12/90
 NOR-6..... BLANK
 NTU-1.....Δ ALL/GEN B
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 NTU-B.....Δ BLANK
 NTU-C.....Δ EDITION 1-6/89
 NTU-D.....Δ BLANK
 NTU-E.....Δ EDITION 1-6/89
 NTU-F.....Δ BLANK
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 ORL-3..... ED. 3-12/88
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 PBG-2.....Δ ED. 3-12/88
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 ROB-A..... EDITION 1-6/89
 ROB-B..... BLANK

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 TMS-2.....Δ ED. 1-8/89
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 ZZA-C.....Δ EDITION 1-6/89
 ZZA-D.....Δ BLANK
 ZZA-E.....Δ EDITION 1-6/89
 ZZA-F.....Δ BLANK
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 4-2..... ALL/GEN B
 4-3..... ALL/GEN B
 4-4..... ALL/GEN B
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 4-6..... ALL/GEN B
 4-7..... ALL/GEN B
 4-8..... ALL/GEN B
 4-9.....+ ALL/GEN B
 4-10.....+ ALL/GEN B
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 5-17.....* ALL/GEN B
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 5-19.....* ALL/GEN B
 5-20.....* ALL/GEN B
 5-21.....* ALL/GEN B

(Δ) - Hi Inclination Only
 (+) - Flt Book Only
 (*) - Not Flown

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5-24.....* ALL/GEN B
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5-26.....* ALL/GEN B
5-27.....* ALL/GEN B
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5-48.....* ALL/GEN B
5-49.....* ALL/GEN B
5-50.....* ALL/GEN B

(+) Landing Site Data
Chart from Entry C/L

(*) - Not Flown
(+) - Flt Book Only

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 Amilcar Cabral International, Republic of Cape Verde..... AML-1
 Arlanda, Sweden.....Δ ARL-1
 Bermuda NAS, Bermuda..... BDA-1
 Ben Guerir, Morocco..... BEN-1
 Banjul (Yundum International) Gambia..... BYD-1
 Westover Air Force Base, Massachusetts.....Δ CEF-1
 Darwin International, Australia..... DDN-1
 Dover AFB, Delaware.....Δ DOV-1
 Dyess Air Force Base, Texas..... DYS-1
 Edwards Air Force Base, California..... EDW-1
 Mataveru, Easter Island (Chile)..... EIP-1
 Esenboga, Turkey.....Δ ESN-1
 Fairford, England.....Δ FFA-1
 Wright-Patterson Air Force Base, Ohio.....Δ FFO-1
 Otis ANGB, Massachusetts.....Δ FMH-1
 Las Palmas De Gran Canaria (Spain)..... GDV-1
 Andersen Air Force Base, Guam..... GUA-1
 Grissom Air Force Base, Indiana.....Δ GUS-1
 HAO, Tuamotu Islands, French Polynesia..... HAO-1
 Hoedspruit Air Force Station, South Africa..... HDS-1
 Hickam Air Force Base, Hawaii..... HNL-1
 Diego Garcia Naval Air Facility, Indian Ocean..... JDG-1
 Koln/Bonn, West Germany.....Δ KBO-1
 Kinshasa/N Djili International, Zaire..... KIN-1
 King Khalid, Saudi Arabia..... KKI-1
 Kennedy Space Center, Florida..... KSC-1
 Lajes Air Base, Azores.....Δ LAJ-1
 Lincoln Municipal, Nebraska.....Δ LNK-1
 Moron Air Base, Spain..... MRN-1
 Mountain Home Air Force Base, Idaho.....Δ MUO-1
 Grant County, Washington.....Δ MWH-1
 Myrtle Beach AFB, S. Carolina.....Δ MYR-1
 Cherry Point MCAS, N. Carolina.....Δ NKT-1
 White Sands Space Harbor, New Mexico..... NOR-1
 Oceana NAS, Virginia.....Δ NTU-1
 Orlando International, Florida..... ORL-1
 Plattsburgh Air Force Base, New York.....Δ PBG-1
 Pease AFB, New Hampshire.....Δ PSM-1
 Ellsworth Air Force Base, South Dakota.....Δ RCA-1
 Roberts Field, Liberia..... ROB-1
 Souda, Crete (Greece).....Δ SUD-1
 Tamanrasset, Algeria.....Δ TMS-1
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FIGURES

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STAR CHARTS

- 1.1 The flight version of the star charts is fabricated with the polar projections (page 1-4) on the back of the rectangular projection (page 1-3). The flight charts are produced with white overprint on a black background. A photograph of star charts in flight configuration is provided on page 1-2.
- 1.2 The rectangular chart is a Mean of 1950 (M50) mercator projection with coverage extending from the equator to 65° north and 70° south declination. The polar projections each cover the entire hemisphere. Both right ascension and declination are expressed in degrees. The charts depict 1466 stars, ranging in magnitude from -1 to +4. The first fifty nav stars are circled, named, and numbered, and the second fifty nav stars are circled and numbered. The ecliptic plane is indicated on the charts, as are the Milky Way and the large and small Magellanic clouds.
- 1.3 The baseline rectangular star chart is annotated for each specific flight by the addition of the Sun and planets (Venus, Mars, Jupiter and Saturn) in their launch date positions. Moon symbols which include phases are also added for each day of the mission.

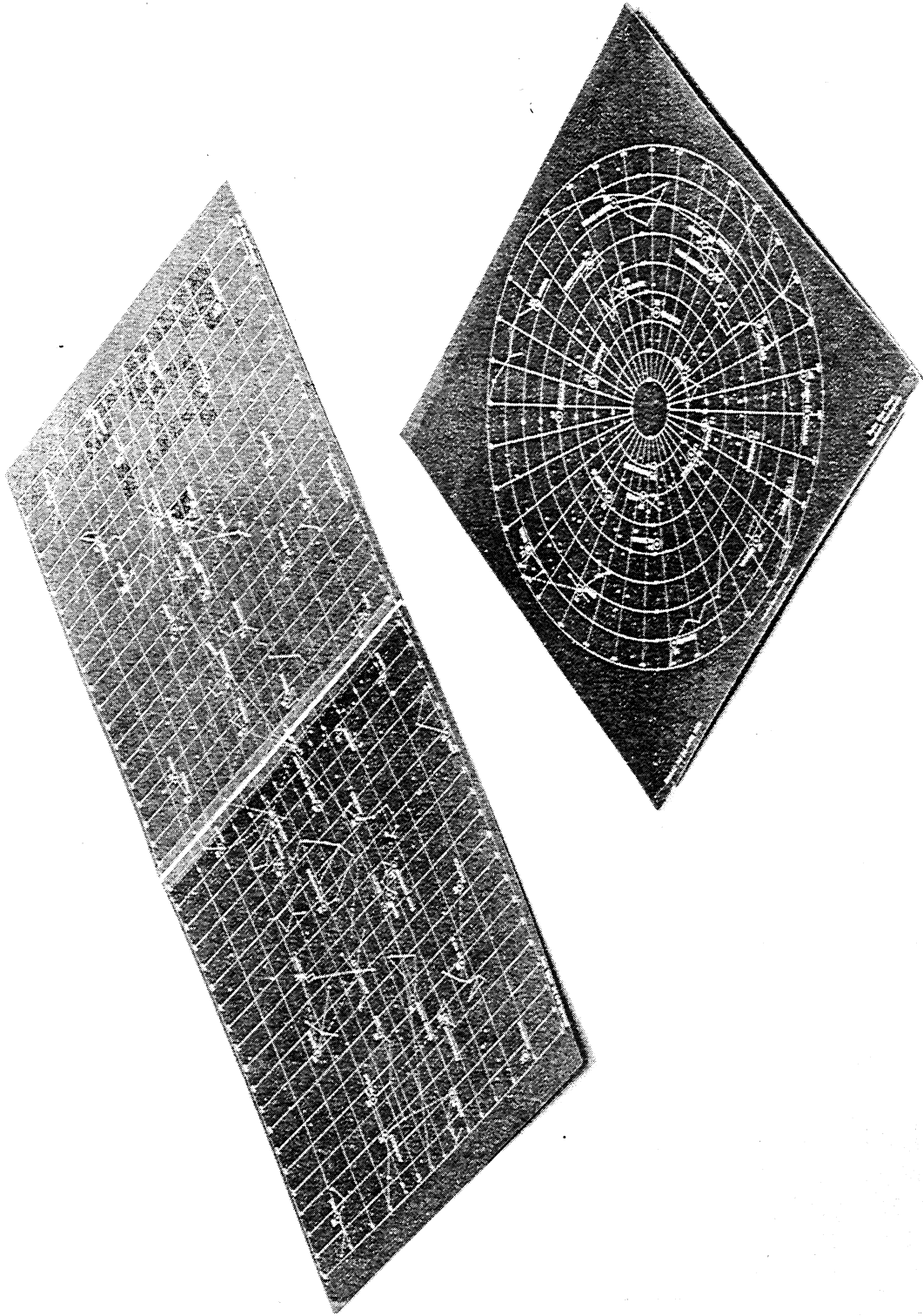
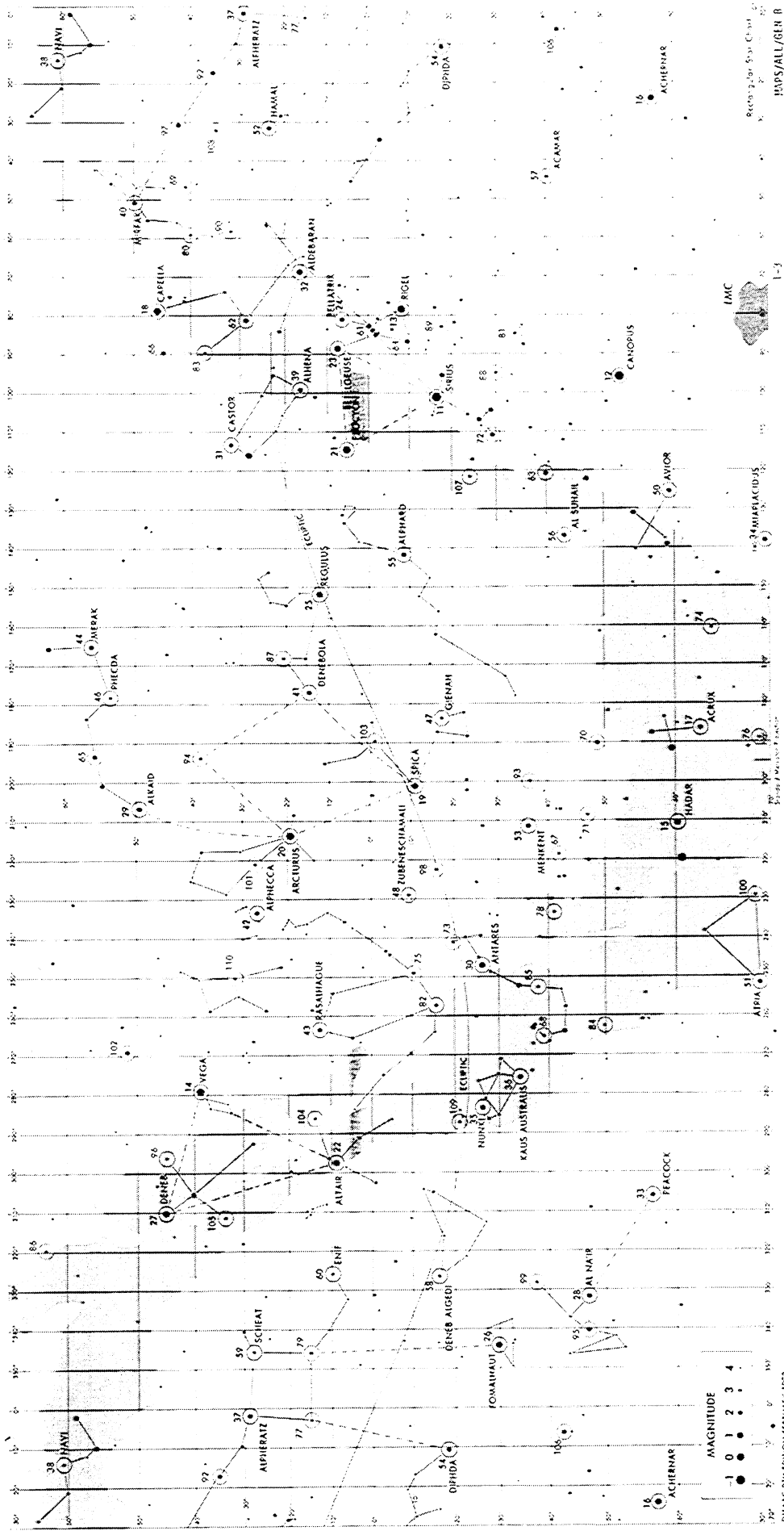


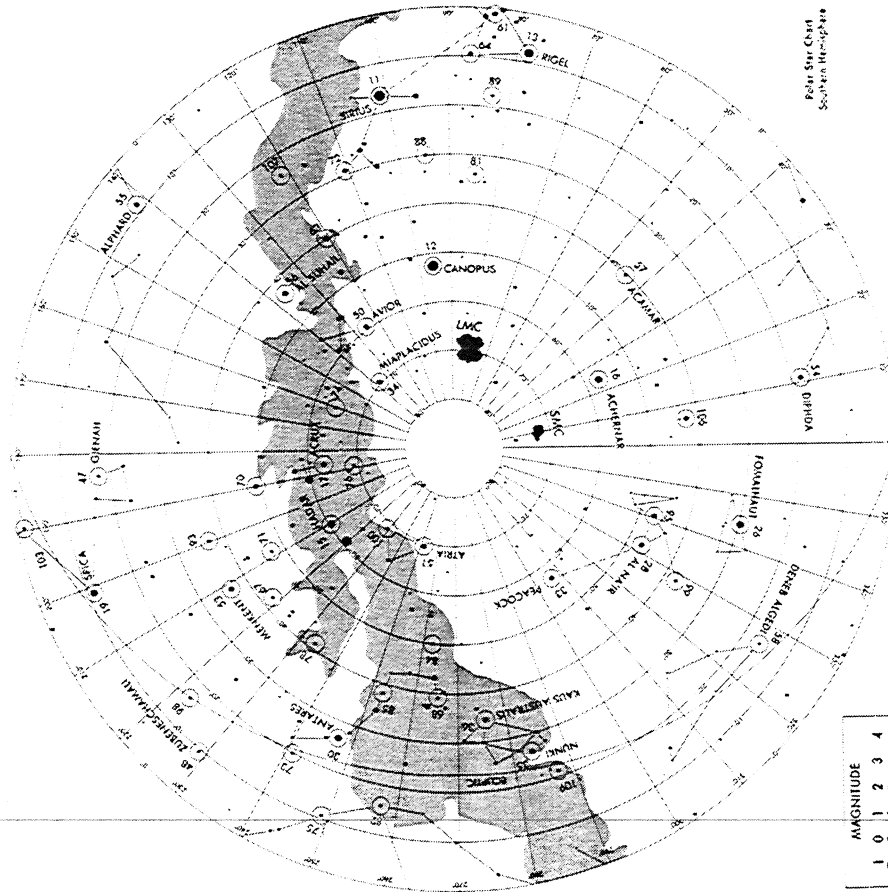
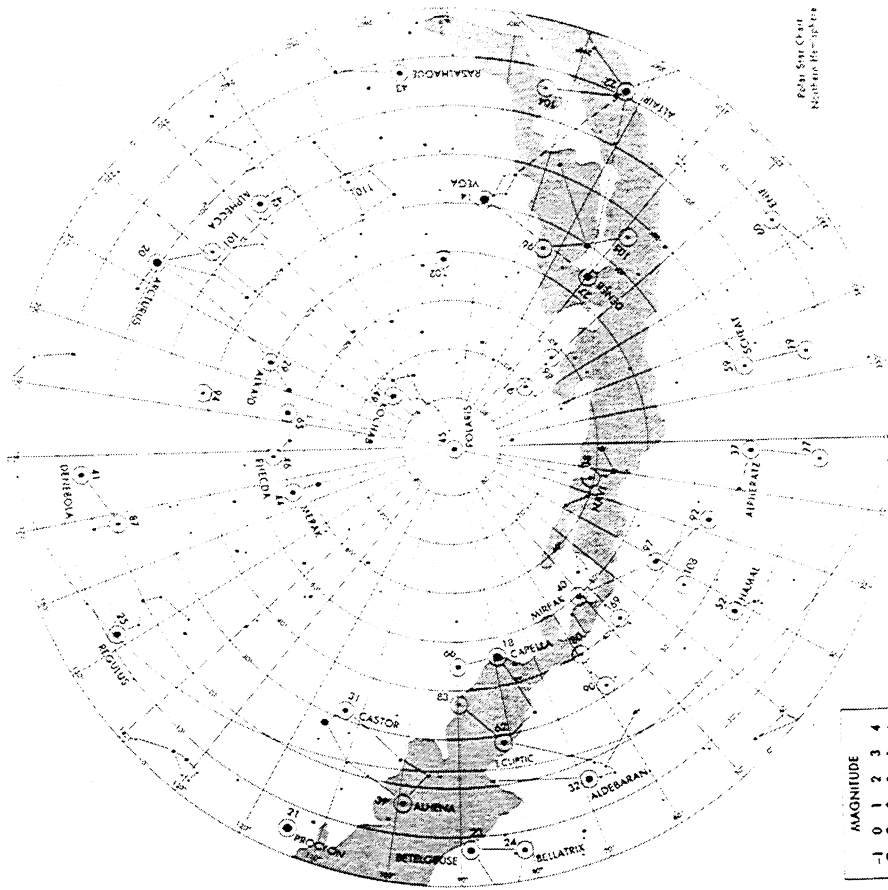
Figure 1-1.- Flight Configuration Star Charts



MAGNITUDE
 -1 0 1 2 3 4

DAAC 911 FEB 1958 FEBRUARY 1958

1-3
 HNS/ALL/GER B



ORBIT MAP

- 2.1 The flight version of the orbit map is at a scale of 1:52 million and is produced in color. The flight map is mounted in a frame which carries a groundtrack overlay. The map shown in this document (page 2-3) is a reduced copy. A photograph of an orbit map with overlay (flight configuration) is provided on page 2-2.
- 2.2 The overlay depicts the groundtrack for three consecutive orbits and can be set to any desired ascending node. The overlay has time ticks at one-minute intervals along the groundtrack, with elapsed time callouts every 10 minutes. The elapsed time is measured from the initial ascending node. The overlay carries a map update block for recording the MET and longitude of the node for any given orbit.
- 2.3 The flight orbit map shows the station coverage of the STDN sites and TDRSS for the primary orbital altitude of each mission. Also shown are 750-nm radius crossrange circles for the shuttle landing sites and the South Atlantic Anomaly at the primary orbital altitude of each mission.
- 2.4 The baseline orbit map is annotated for a specific flight by the addition of photo targets, visual observation sites, or other areas of scientific or technical interest. When applicable, these subjects are documented as tabular listings and are included with the flight crew's World Atlas.

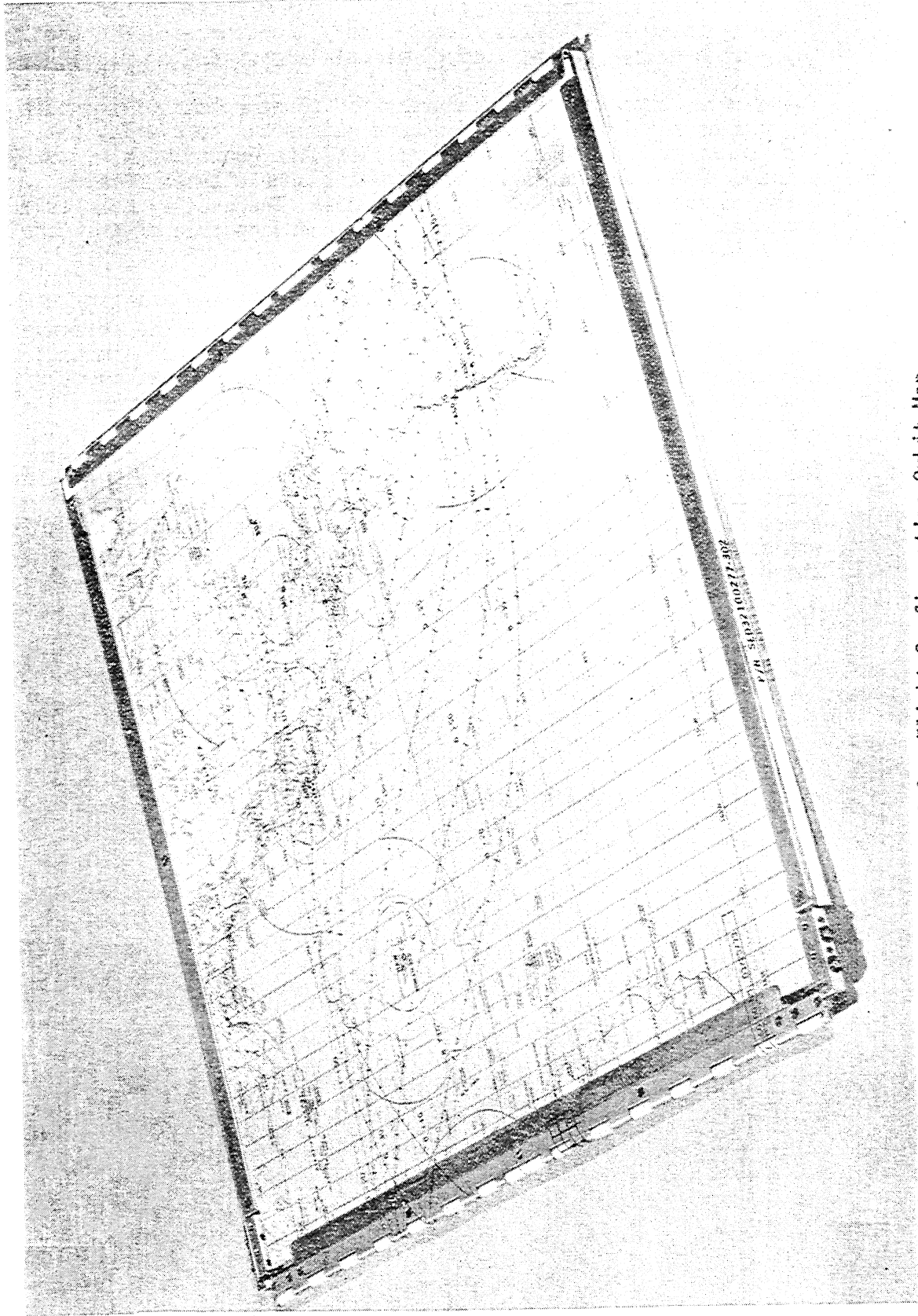
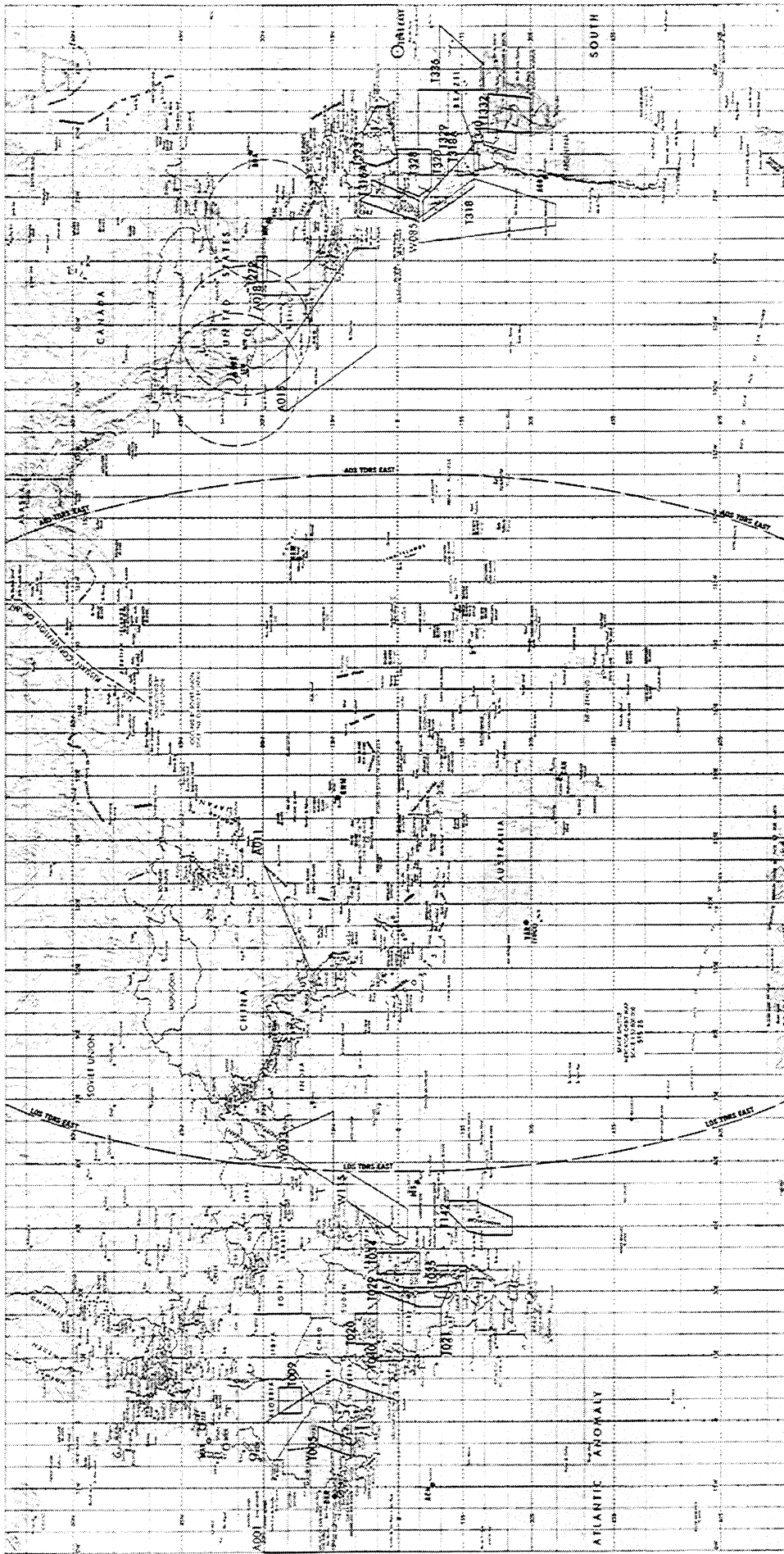


Figure 2-1.- Flight Configuration Orbit Map



**SPACE SHUTTLE
MERCATOR ORBIT MAP**

MAP SCALE AND DATA SOURCES

Map Scale: 1:100,000,000
 Data Sources: Satellite Orbits and Data Network (SADN), National Aeronautics and Space Administration (NASA), Defense Mapping Agency (DMA), and other sources.

MAP PROJECTION

Mercator Projection
 Scale: 1:100,000,000 at the Equator

MAP INFORMATION

Map Date: 1978-06
 Control Authority: Defense Mapping Agency
 Copyright: © 1978 by Defense Mapping Agency
 Distribution: Limited Distribution

NOTE: The information on this map is not to be used for navigation purposes. It is intended for informational purposes only. The map is not to be used for navigation purposes.

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LANDING SITE CHARTS SUMMARY

- 3.1 The Landing Site Charts provide topographical information pertaining to the designated Shuttle Landing sites. The flight version of the charts is produced in color at the same scale and size as shown in this document.

There are two types of charts for each site:

- Area Chart - scale = 1:2 million
- Runway Chart - scale = 1:62,500

One set charts is provided for each landing site. A site data sheet is provided with each chart set.

- 3.2 The information presented on each chart is as follows:

Data Sheet

- Site elevation
- Table* identifier
- Runway length, width, and overruns
- Channel number and identifier for the PRI and SEC TACAN selections
- Cochannel interference for each TACAN. The values listed indicate the orbiter approach directions and altitudes above which there may be TACAN interference. This is due to other TACAN Stations in the vicinity with the same channel as those used by the orbiter
- MLS channel numbers for the appropriate runways
- Runways equipped with PAPI lighting
- Runways equipped with BALL BAR lighting
- UHF availability

Area Chart

- Range circles at 100-nm intervals with intermediate ticks at 50-nm intervals. Range is 'yardstick' distance to center of site
- Magnetic heading lines at 30°-intervals with intermediate ticks at 10°-intervals
- Area TACAN stations that are carried in the tables in the onboard software
Note: No TACAN symbol is used if the station is located at the airfield
- All runways in the area that are at least 10,000-feet long
- Airfield coordinates to the nearest minute

Runway Chart

- Aim points
- Runway dimensions

* List of landing sites and TACAN data carried in software for use in contingency deorbits and landing.

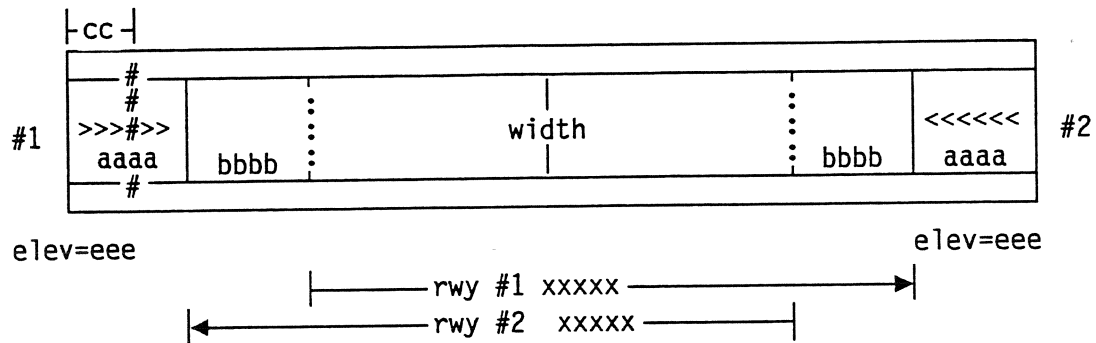
- 3.3 To supplement the charts, oblique photographs are provided where available.

These photos approximate the view when leaving the HAC on the steep glide slope.

3.4 Section 4 contains a set of procedures to instruct the crew on the proper actions to take following a landing at an emergency airfield.

A list of phone numbers is also included in the flight books only.

3.5 The runway information is presented as follows



Where

#1, #2 = runway numbers
 aaaa = length of overruns
 bbbb = length of shuttle artificially displaced threshold
 (if required)

NOTE
 aaaa+bbbb = 1000 ft at each end of rwy

cc = distance of barrier from end of usable surface (overrun)
 (if required)
 eee = elevation of runway at each end
 xxxx = length of each runway

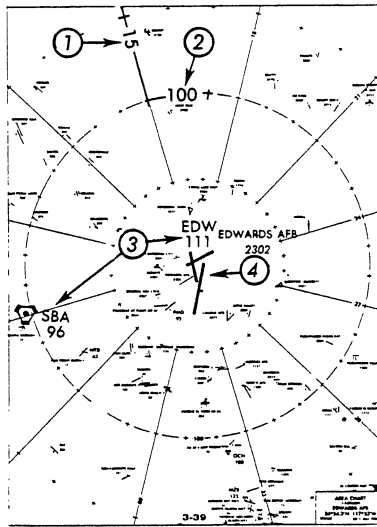
NOTE
 Length measured from shuttle threshold (actual or displaced) to end of rwy (with overrun to spare)

= shuttle barrier | >>>>> | = existing overrun/underrun
 #
 #
 :
 : = shuttle displaced threshold
 :

OVERPRINT DATA LEGEND

LANDING SITE CHARTS

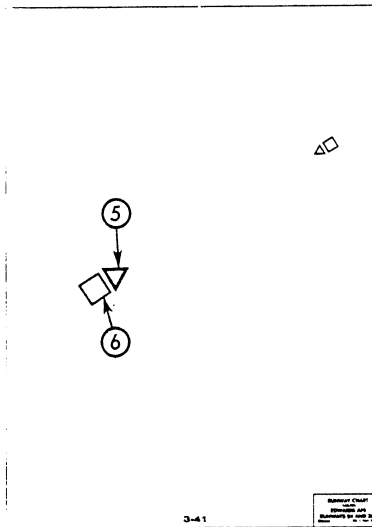
AREA CHART
Scale 1:2,000,000



- ① Magnetic Heading to Land Site
- ② Distance to Landing Site (nautical miles)
- ③ NAVAIDS
(Location symbols are omitted when the antenna is located at the landing site)

④ Airfields

RUNWAY CHART
Scale 1:62,500



⑤ Highwind Aim Point

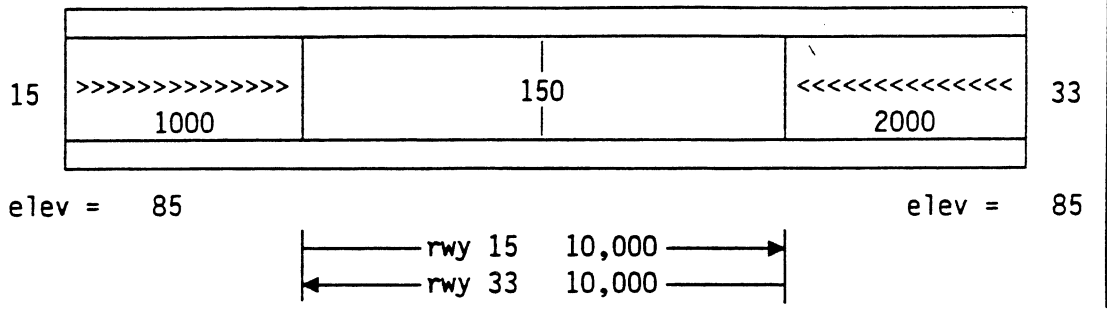
⑥ Nominal Aim Point

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Amberley, Australia

Table Identifier

AM



TACAN: AM-94x (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

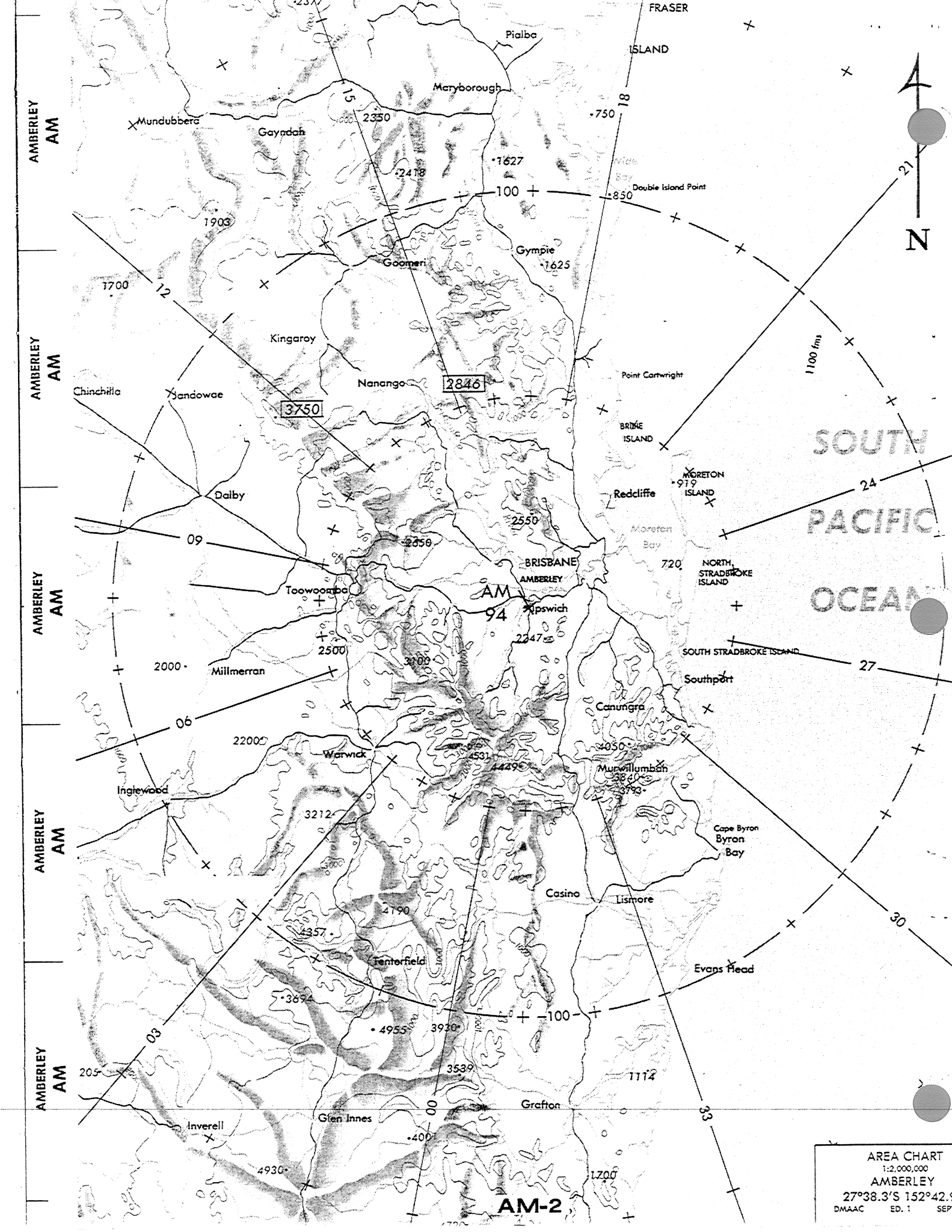
AMBERLEY
AM

AMBERLEY
AM

AMBERLEY
AM

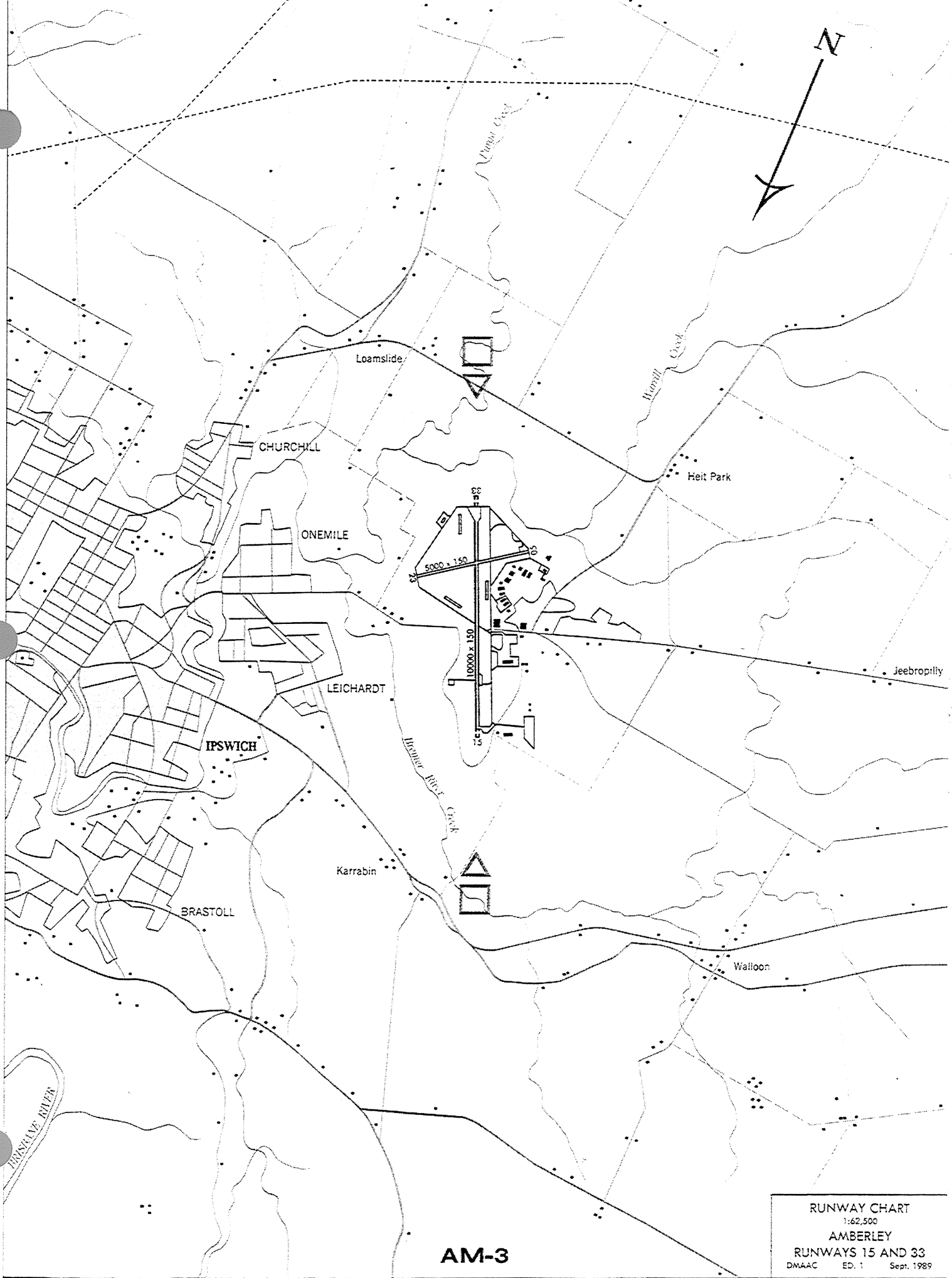
AMBERLEY
AM

AMBERLEY
AM



SOUTH
PACIFIC
OCEAN

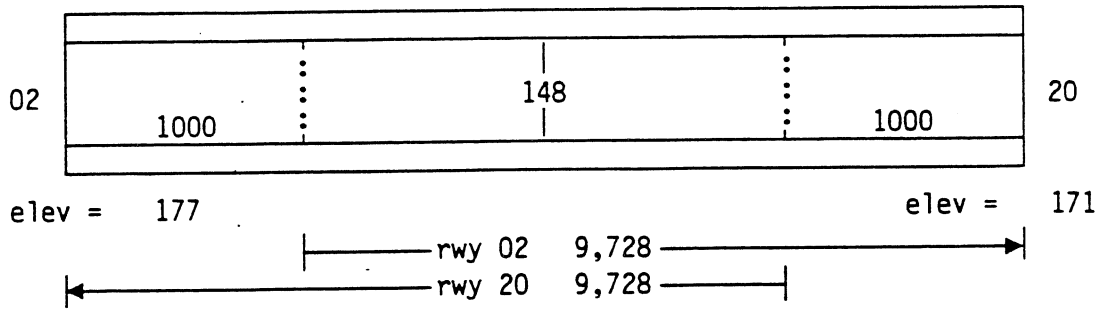
AREA CHART
1:2,000,000
AMBERLEY
27°38.3'S 152°42.9
DMAAC ED. : SEPT



AM-3

RUNWAY CHART
 1:62,500
AMBERLEY
RUNWAYS 15 AND 33
 DMAAC ED. 1 Sept. 1989

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TACAN: CVS-100x (Pri-DME)
 I/F above: N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: none

WARNING

- Expect poor visibility and crosswinds from the east
- Rwy 02 is preferred, but the terrain on approach is more than 30 ft lower than the rwy

NOTE

- Language is Portuguese
- The total pavement width is 240 ft

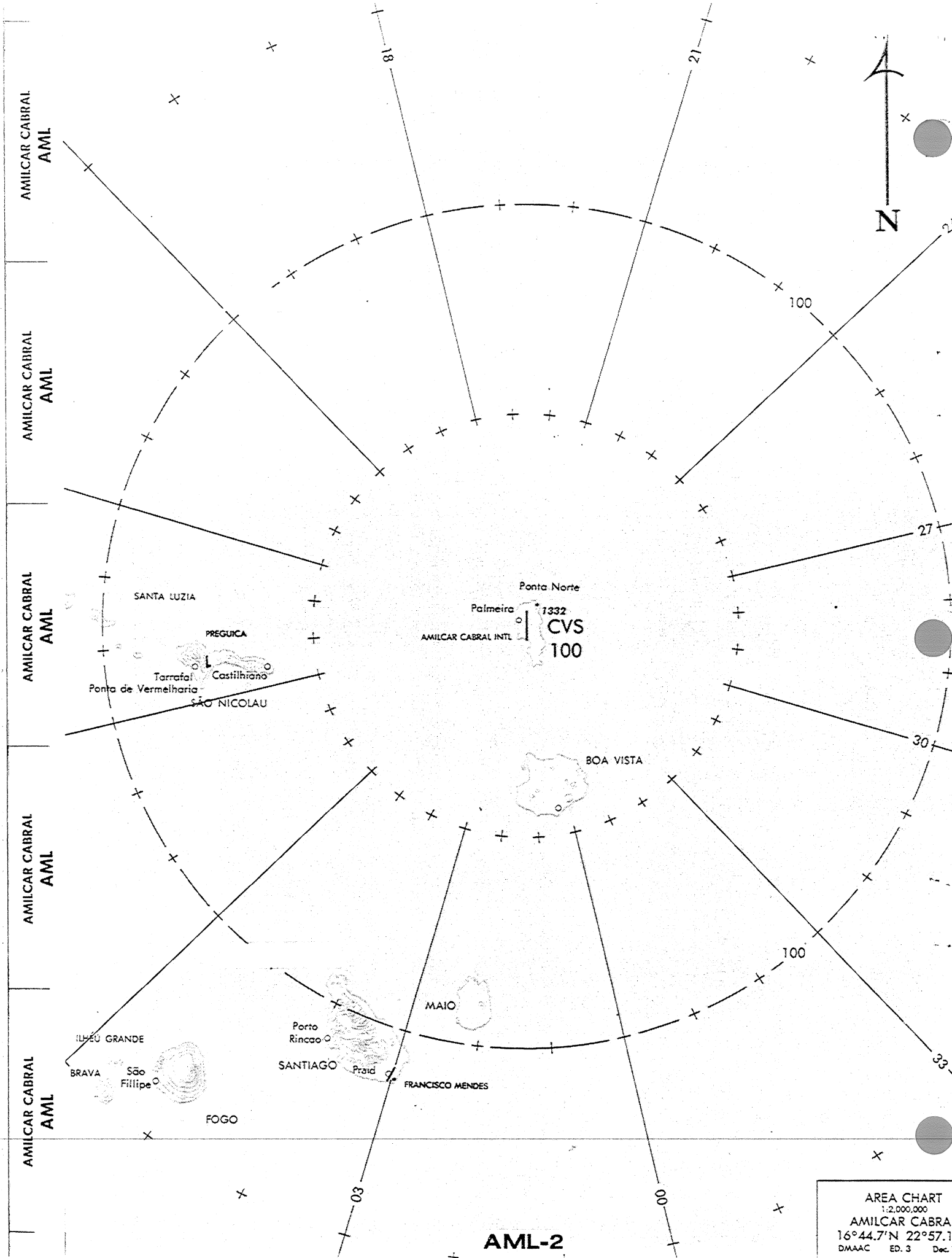
AMILCAR CABRAL
AML

AMILCAR CABRAL
AML

AMILCAR CABRAL
AML

AMILCAR CABRAL
AML

AMILCAR CABRAL
AML



AMILCAR CABRAL
AML

AMILCAR CABRAL
AML

AMILCAR CABRAL
AML

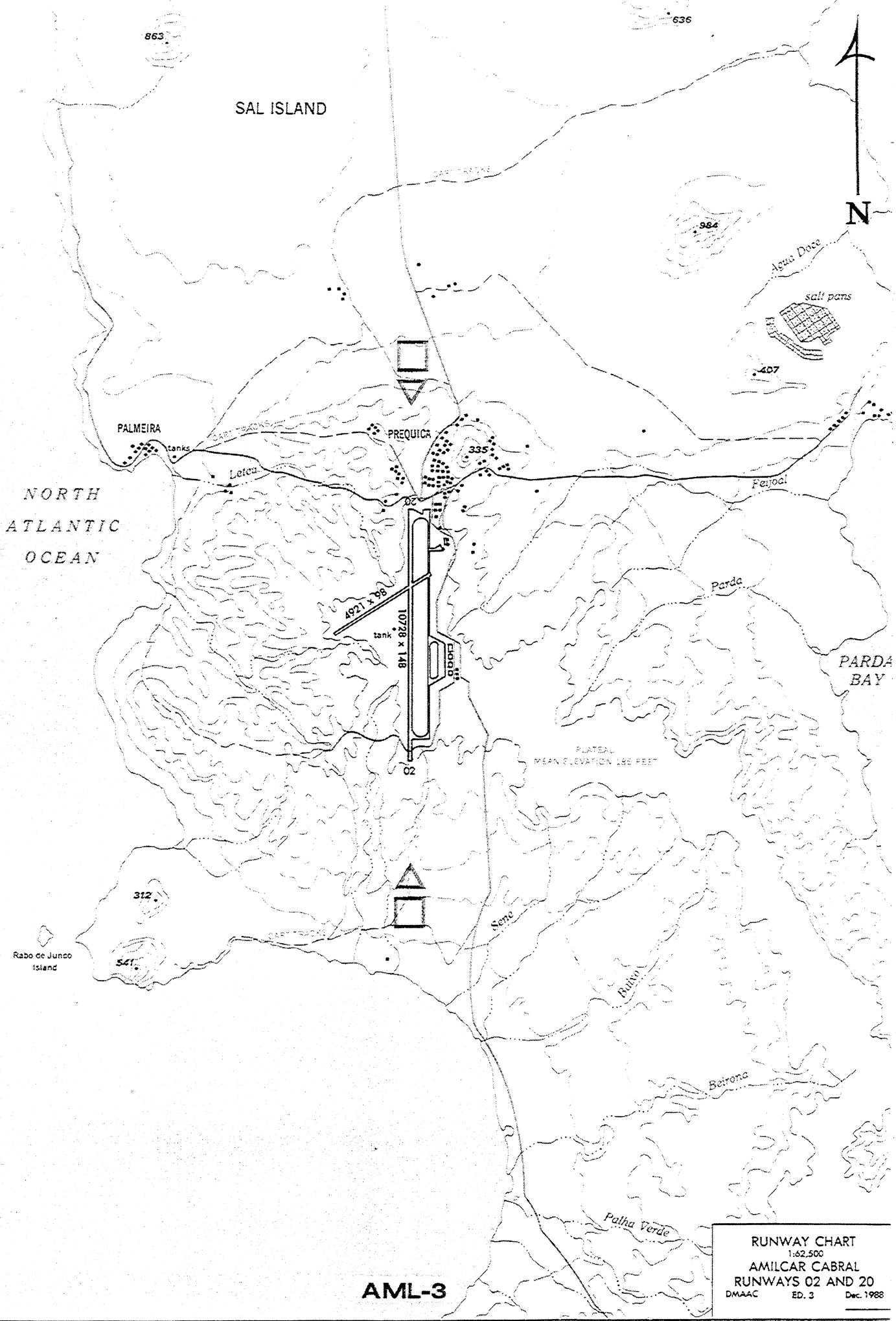
AMILCAR CABRAL
AML

AMILCAR CABRAL
AML



AML-2

AREA CHART
1:2,000,000
AMILCAR CABRAL
16°44.7'N 22°57.1'W
DMAAC ED. 3 Dec. 19



SAL ISLAND

NORTH
ATLANTIC
OCEAN

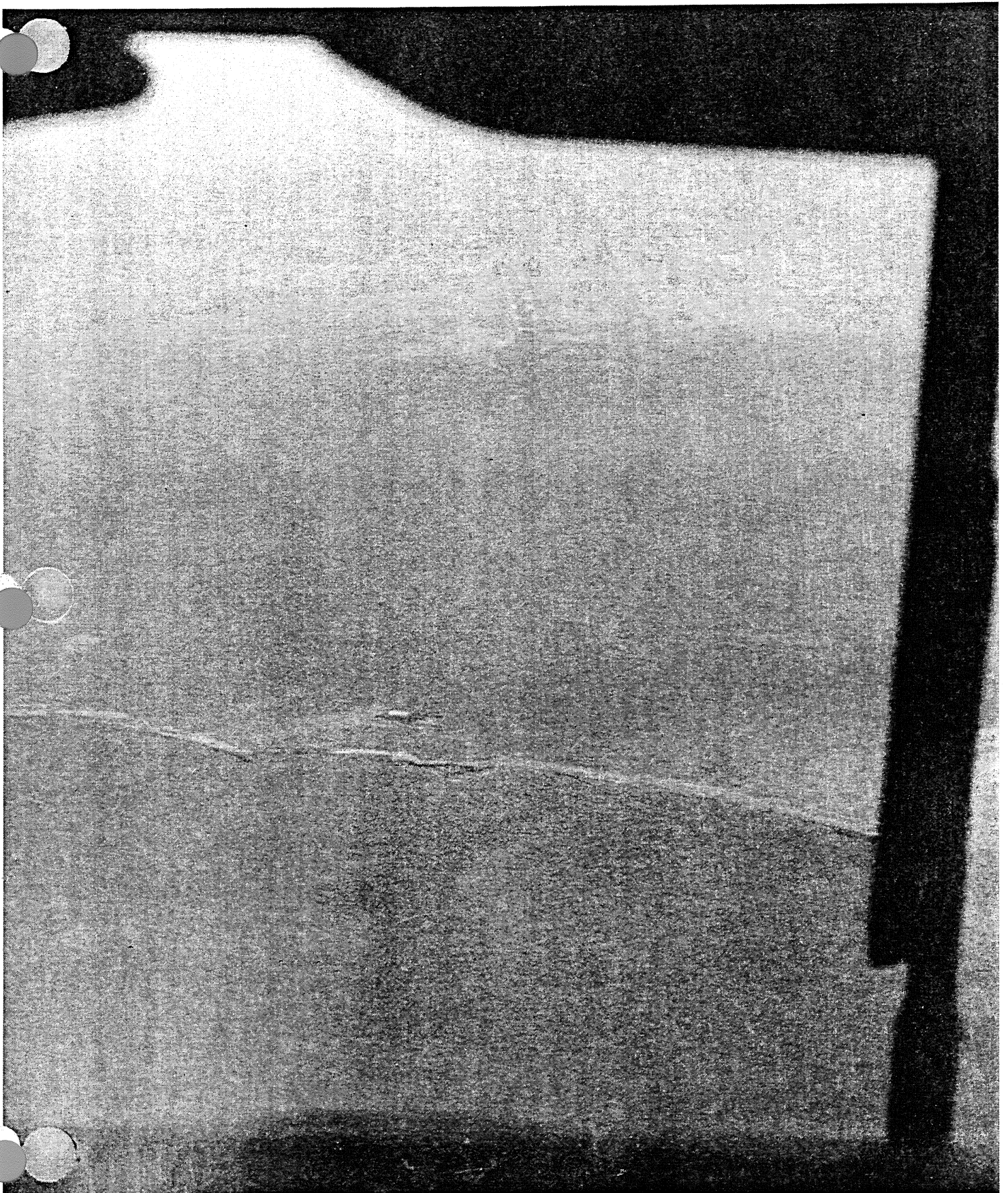
N

PARDA
BAY

AML-3

RUNWAY CHART
1:62,500
AMILCAR CABRAL
RUNWAYS 02 AND 20
DMAAC ED. 3 Dec. 1988

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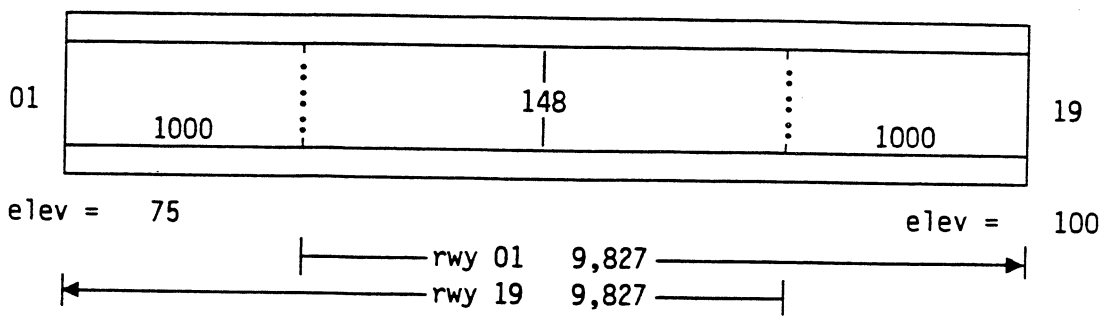
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Arlanda, Sweden

Table Identifier

ARL



TACAN: ARL-107x (Pri-DME)
I/F above: N:clear E:clear
S:150k W:145k

MLS: none
PAPI: none
Ball Bar: none
UHF: none

ARLANDA
ARL

ARLANDA
ARL

ARLANDA
ARL

ARLANDA
ARL

ARLANDA
ARL

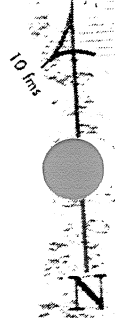
ARLANDA
ARL

ARLANDA
ARL

ARLANDA
ARL

ARLANDA
ARL

ARLANDA
ARL



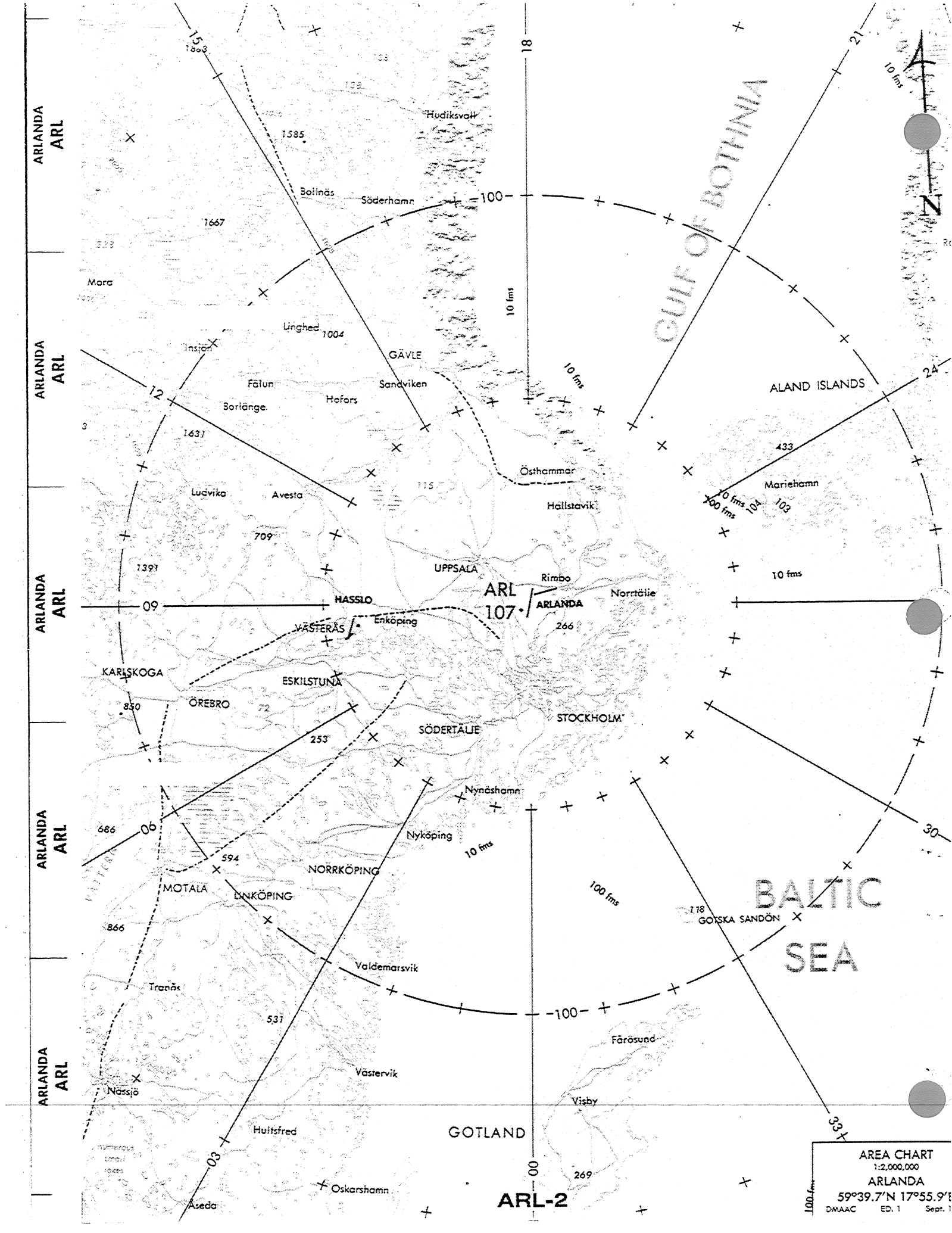
GULF OF BOTHNIA

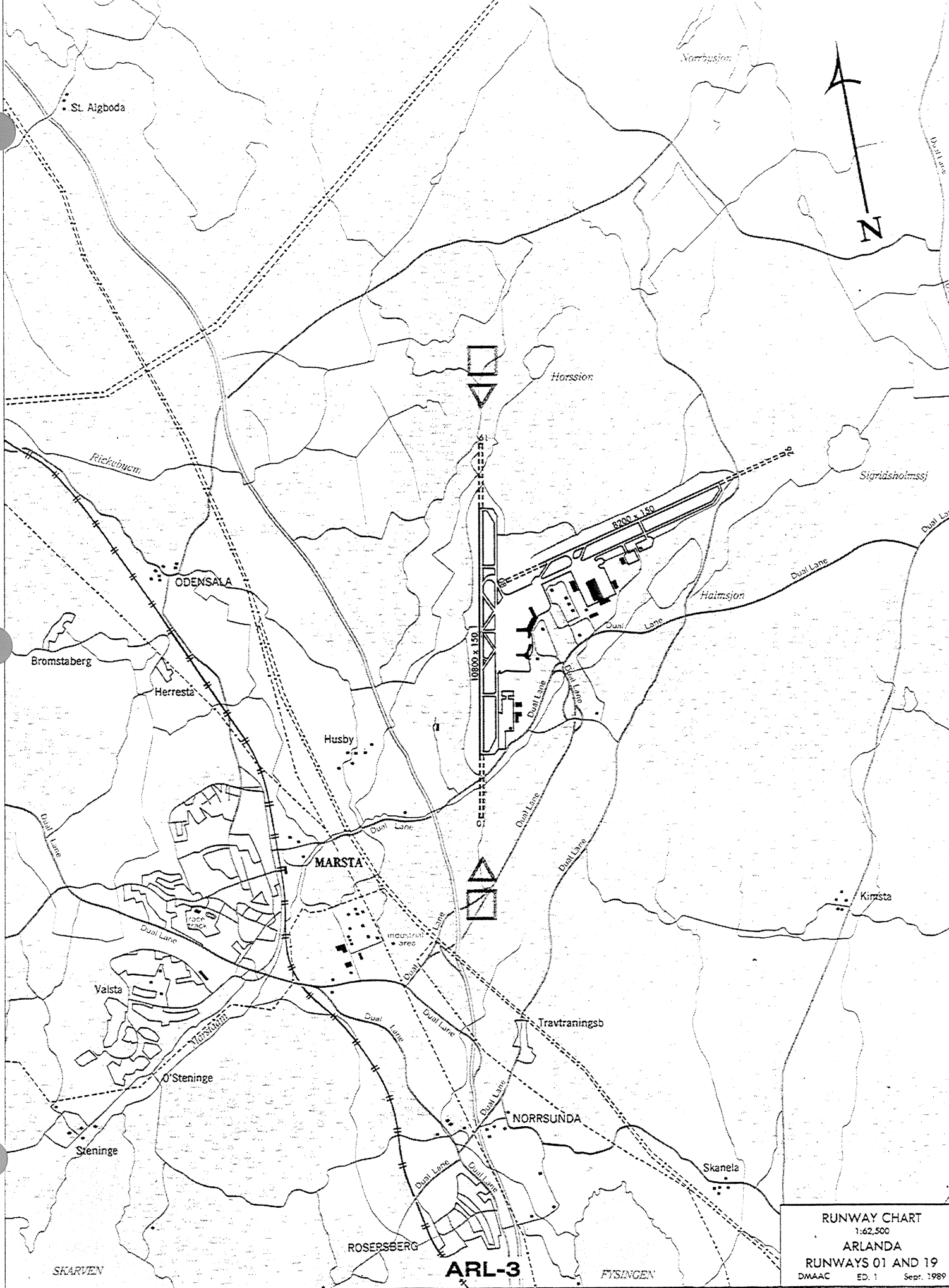
ALAND ISLANDS

BALTIC
SEA

ARL-2

AREA CHART
 1:2,000,000
 ARLANDA
 59°39.7'N 17°55.9'E
 DMAAC ED. 1 Sept. 1





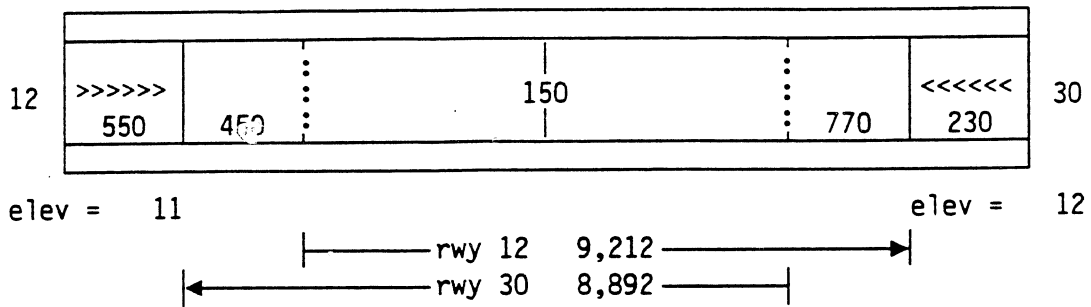
RUNWAY CHART
 1:62,500
ARLANDA
RUNWAYS 01 AND 19
 DMAAC ED. 1 Sept. 1989

SKARVEN

ARL-3

FYSINGEN

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TACAN: BDA-86x (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

BERMUDA BDA

BERMUDA BDA

BERMUDA BDA

BERMUDA BDA

BERMUDA BDA

BERMUDA
BDA

BERMUDA
BDA

BERMUDA
BDA

BERMUDA
BDA

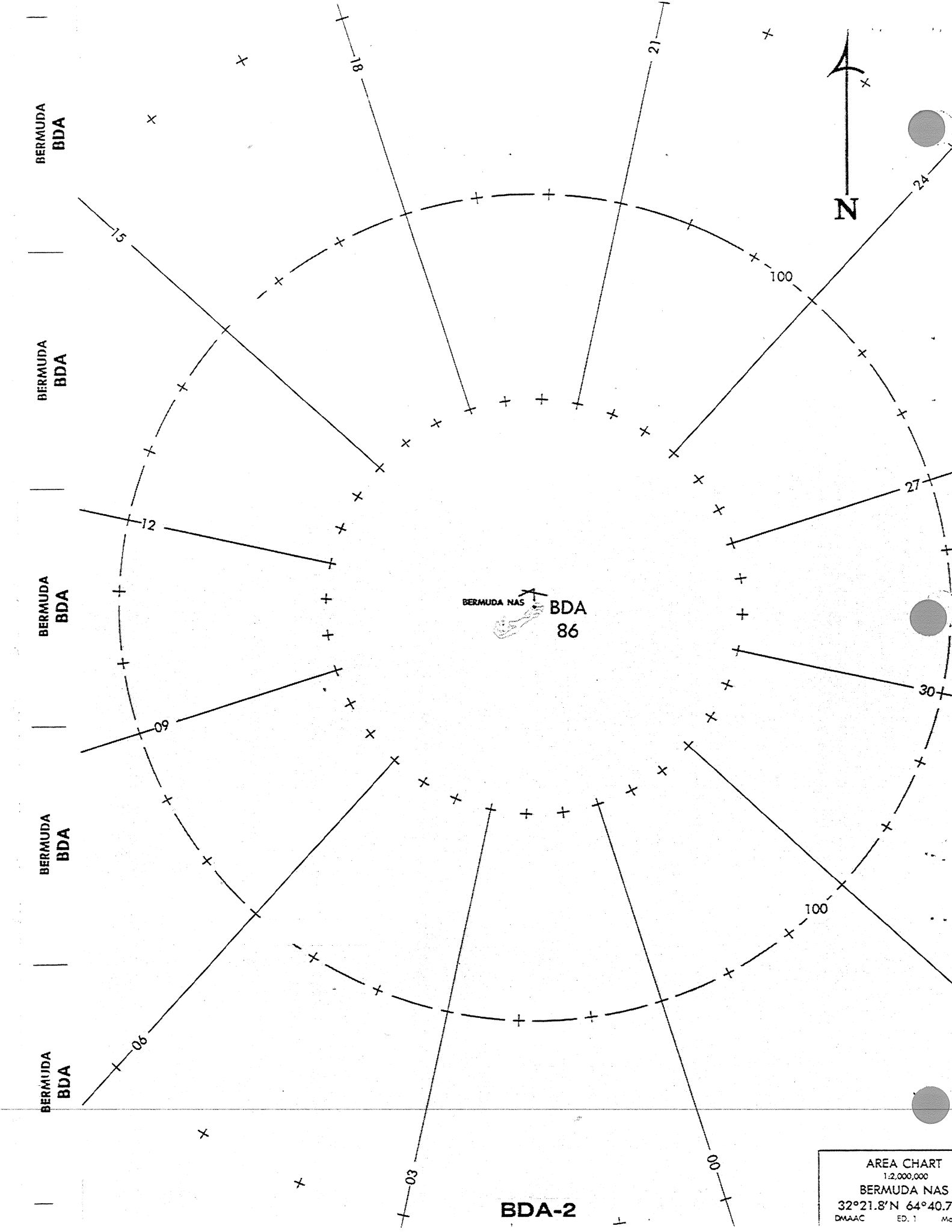
BERMUDA
BDA



BERMUDA NAS
BDA
86

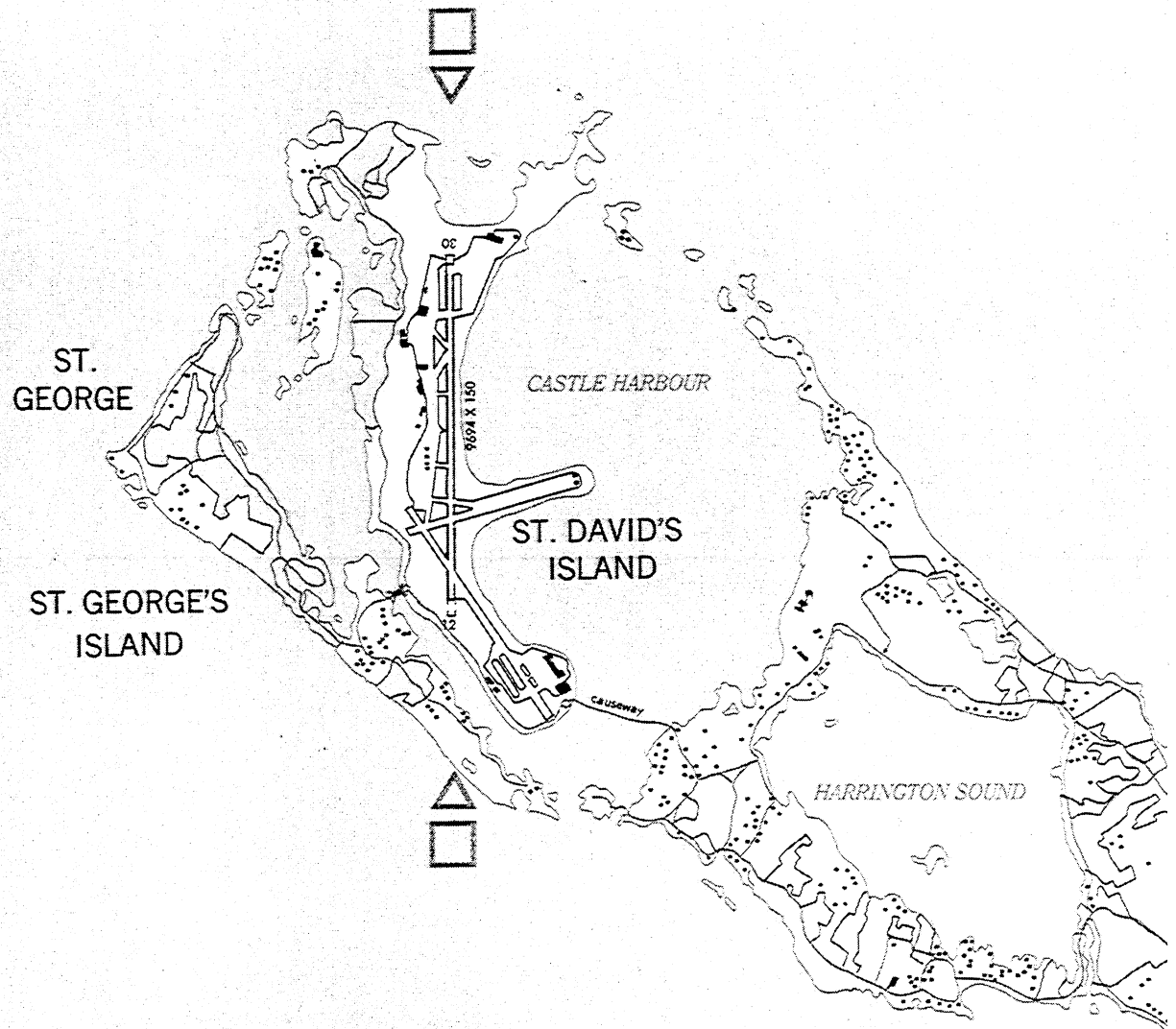
BDA-2

AREA CHART
1:2,000,000
BERMUDA NAS
32°21.8'N 64°40.7'W
DMAAC ED. 1 Mo.





NORTH
ATLANTIC
OCEAN



BDA-3

RUNWAY CHART
1:62,500
BERMUDA NAS
RUNWAY 12 and 30
DMAAC ED. 1 Mar, 1989

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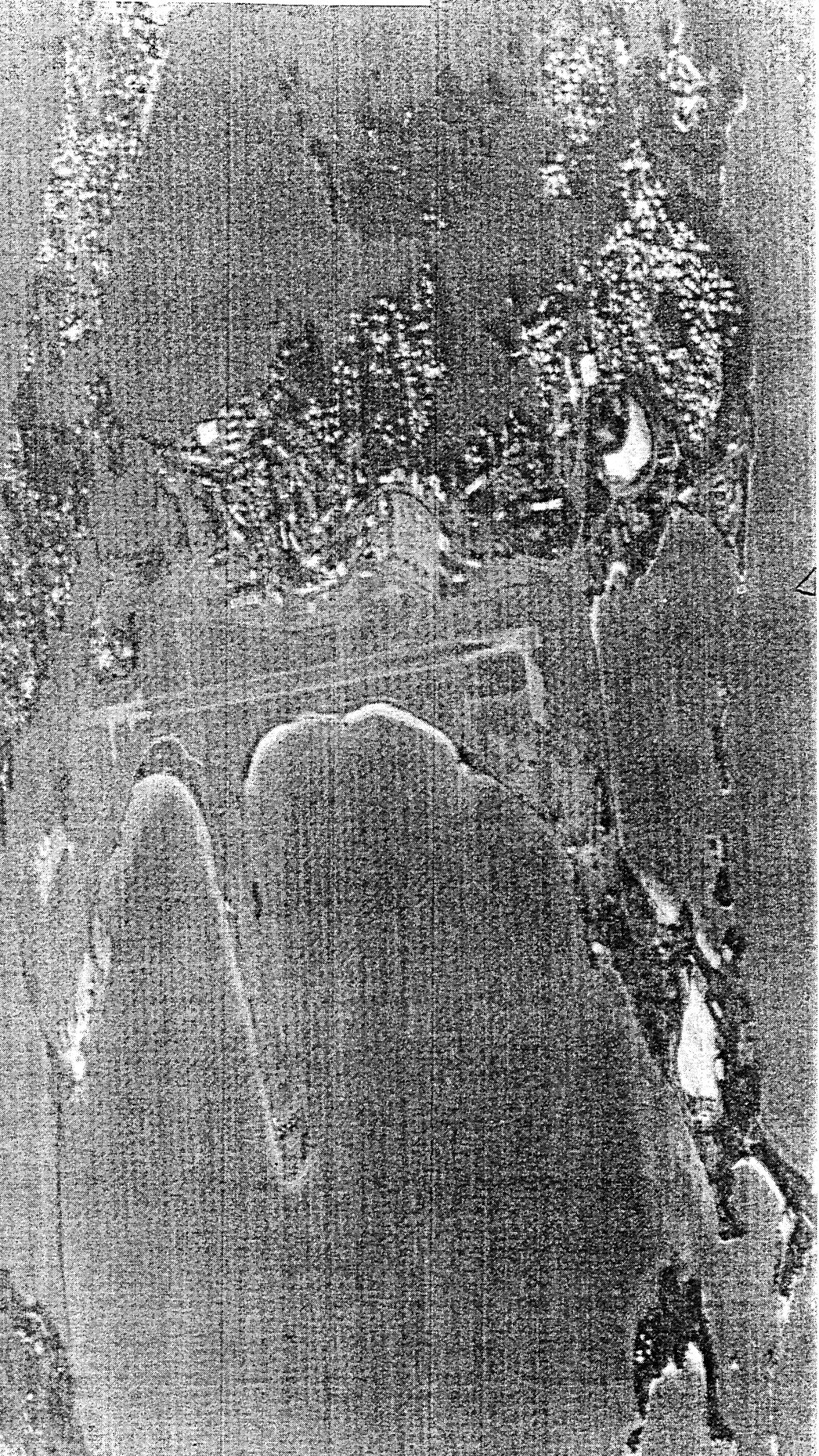
BDA 12 BERMUDA



BDA-A

EDITION 1-6/89

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BDA-C

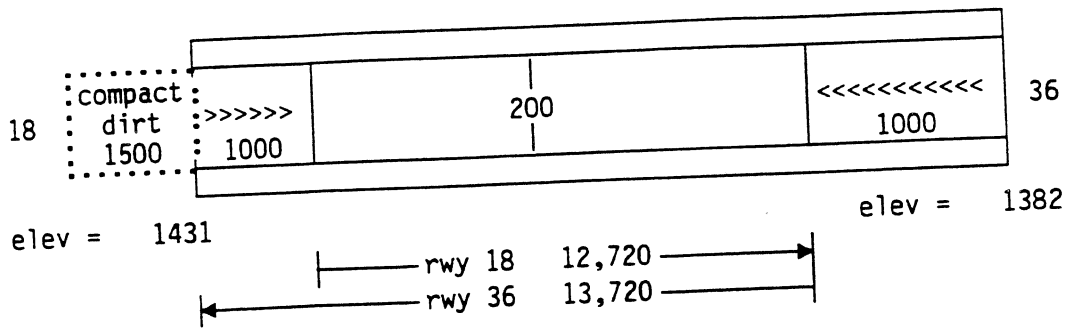
EDITION 1-6/89

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Ben Guerir, Morocco

Table Identifier

BEN



TACAN: BEN-118x (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

CBA-116x (Sec-DME)
 N:clear E:clear
 S:clear W:clear

MLS: (36-Sr) ch 6
 PAPI: 18, 36
 Ball Bar: 18, 36
 UHF: yes (when NASA convoy is present)

BEN GUERIR
BEN

BEN GUERIR
BEN

BEN GUERIR
BEN

BEN GUERIR
BEN

BEN GUERIR
BEN

MAPS/ALL/GEN B

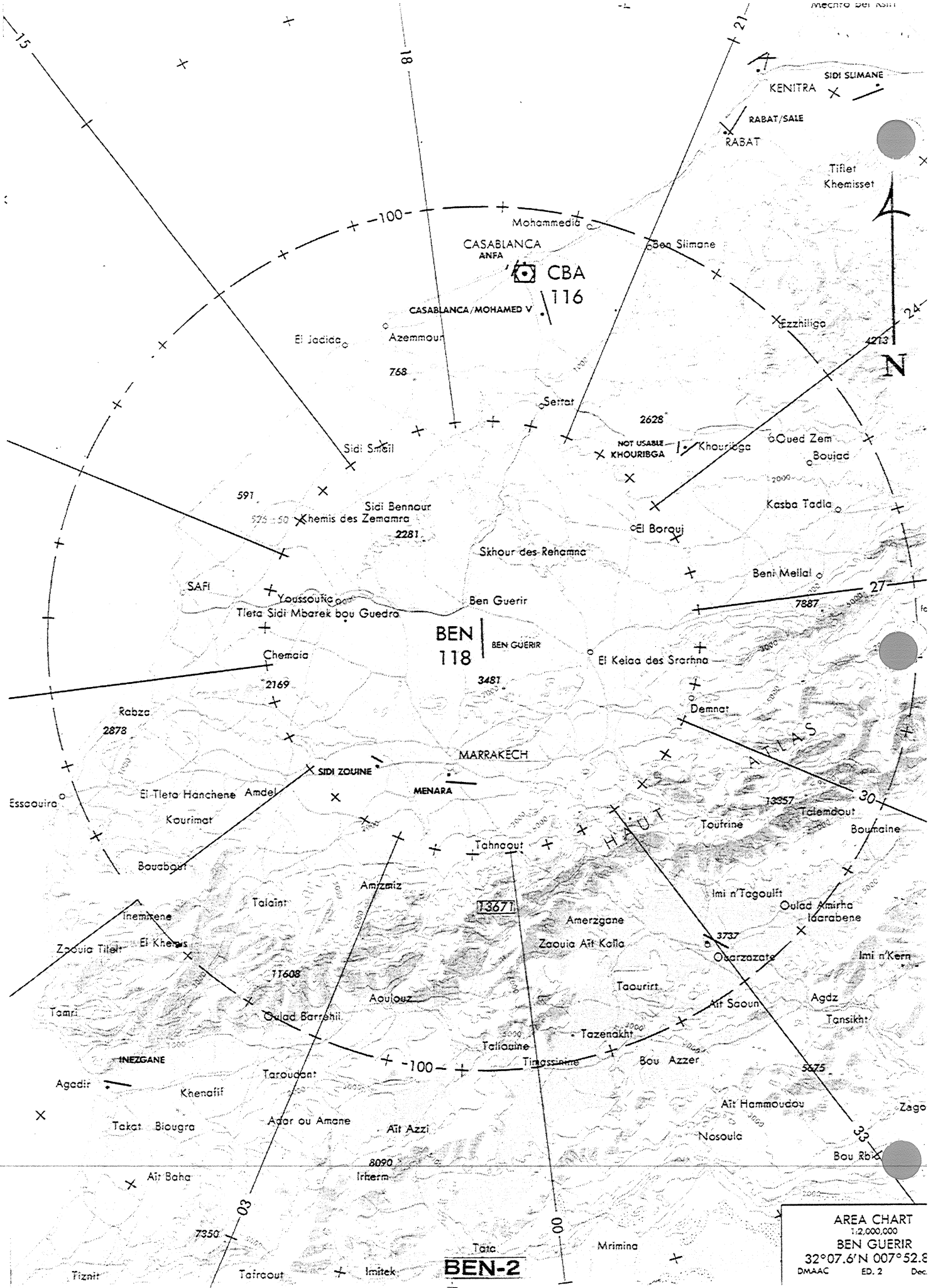
BEN GUERIR
BEN

BEN GUERIR
BEN

BEN GUERIR
BEN

BEN GUERIR
BEN

BEN GUERIR
BEN



AREA CHART
 1:2,000,000
 BEN GUERIR
 32°07.6'N 007°52.8
 DMAAC ED. 2 Dec.

BEN-2

N



Nzala-Moussa

El Messaoui

El Gourich

Arta

El Brhoula

irrigated field

irrigated field

irrigated field

irrigated field

irrigated field

irrigated field

irrigated field

12,720 X 200

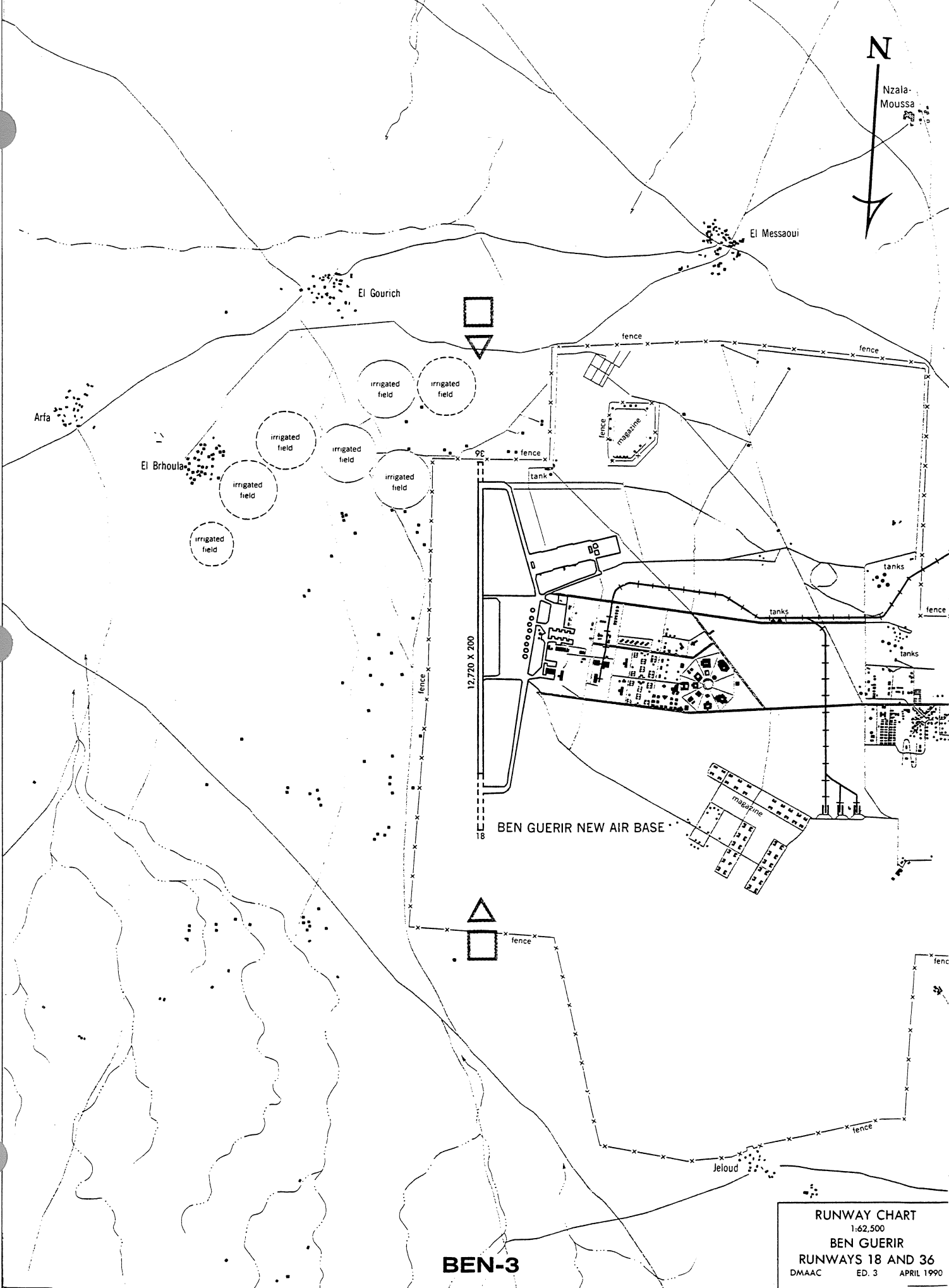
BEN GUERIR NEW AIR BASE

magazine

Jeloud

BEN-3

RUNWAY CHART
 1:62,500
BEN GUERIR
RUNWAYS 18 AND 36
 DMAAC ED. 3 APRIL 1990



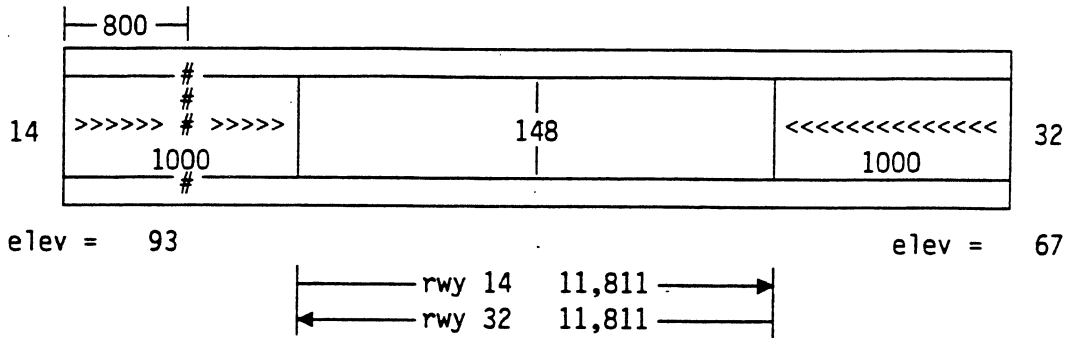
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REN 50 REN GULNIK

REN-A

EDITION 1-6'89

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TACAN: BYD-121y (Pri) BJ-76x (Sec-DME)
 I/F above: N:clear E:clear N:clear E:clear
 S:clear W:clear S:clear W:clear

MLS: (32-2 Jr's) ch 6
 PAPI: 32
 Ball Bar: 32
 UHF: none (UHF available when NASA convoy is present)

WARNING

- 40-ft palm trees 3200 ft from rwy 32

NOTE
 - No MLS data available during rollout

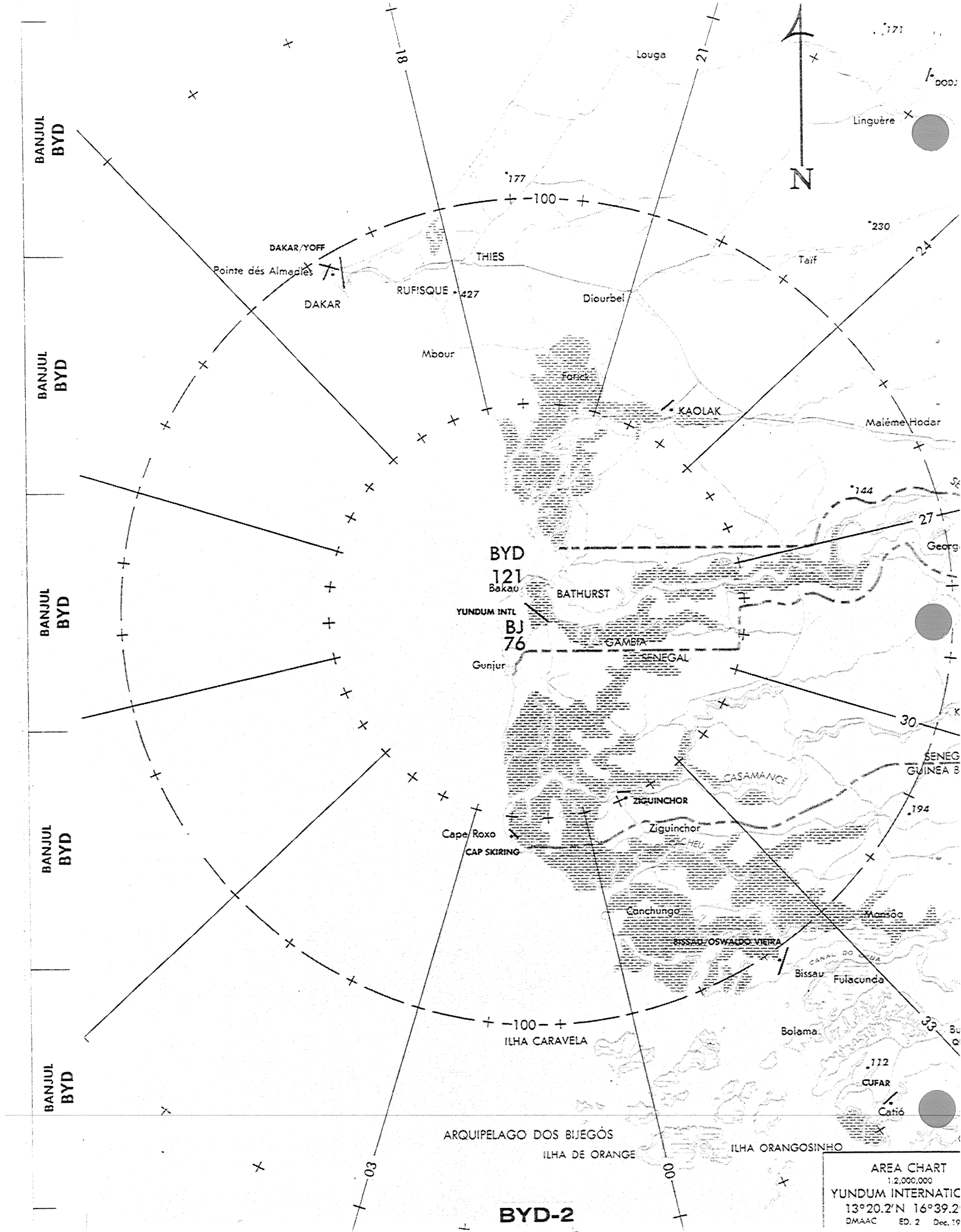
BANJUL
BYD

BANJUL
BYD

BANJUL
BYD

BANJUL
BYD

BANJUL
BYD



BANJUL
BYD

BANJUL
BYD

BANJUL
BYD

BANJUL
BYD

BANJUL
BYD

BYD
121
Bakau

YUNDUM INTL
BJ
76
Gunjur

AREA CHART
1:2,000,000
YUNDUM INTERNATIC
13°20.2'N 16°39.2'
DMAAC ED. 2 Dec. 79

BYD-2

RIVER
GAMBIA

MANDIANI BOLON

mangrove

BRIKAMA

WATER
TOWER

mangrove

YMAKUMBA YA

mangrove

11,811 x 148

BUSUMBALA

NEW YUNDUM

JAMBUR

LAMIN

B. BANHUBDING

approximate alignment

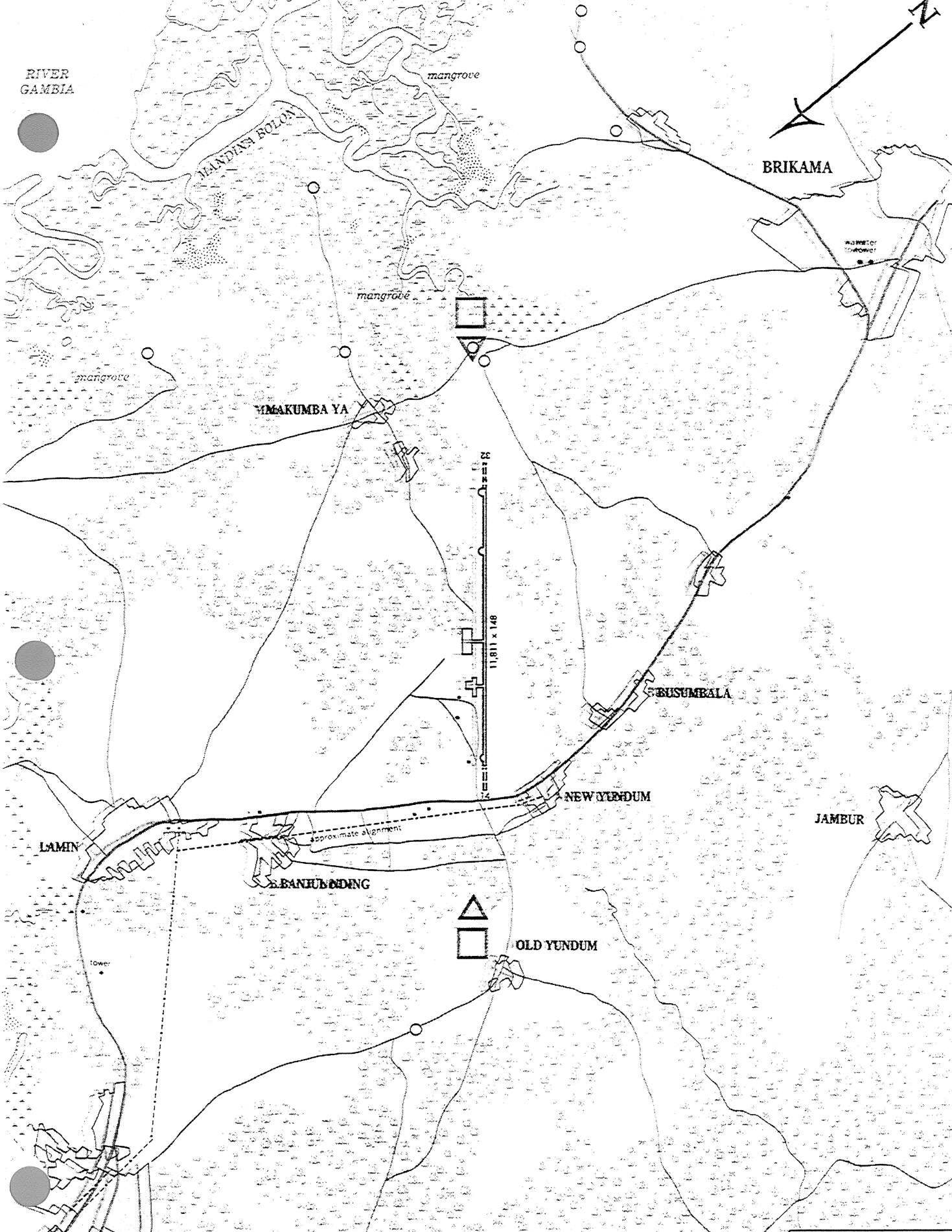
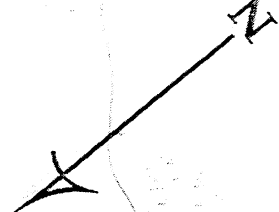
OLD YUNDUM

tower

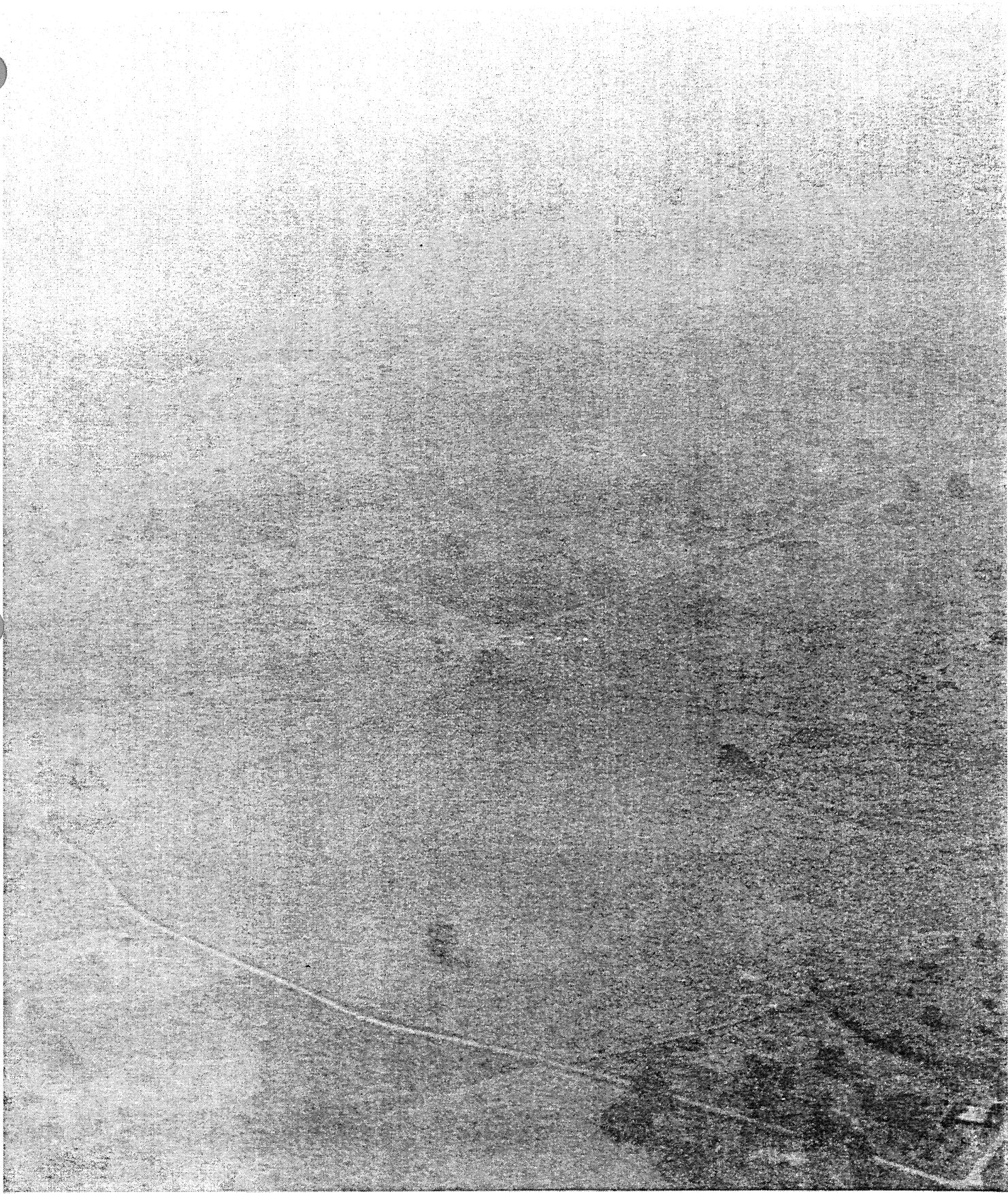
JESWANG

BYD-3

RUNWAY CHART
1:62,500
YUNDUM INTL
RUNWAYS 14 AND 32
DMAAC ED. 3 April 1990



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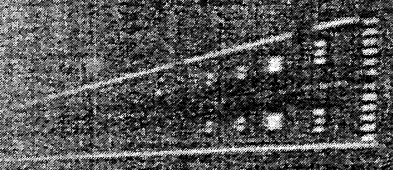


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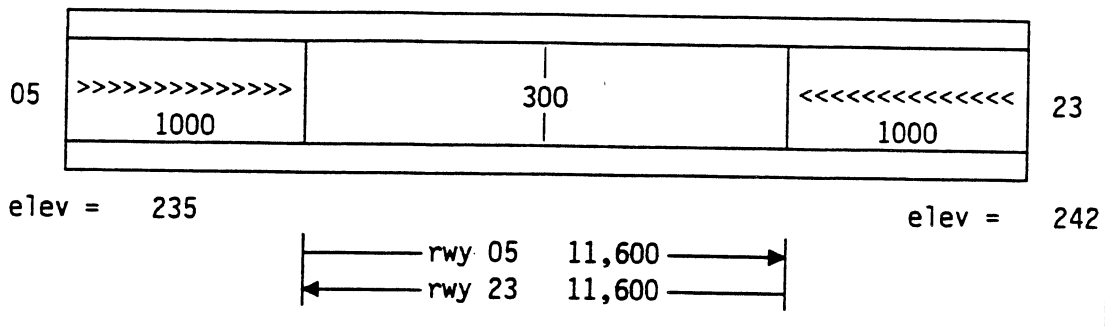
11 MI.



BYD-E

EDITION 1-6/89

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TACAN: CEF-87x (Pri)
 I/F above: N:<<80k E:<<80k
 S:<<80k W:<<80k

NZW-61x (Sec)
 N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

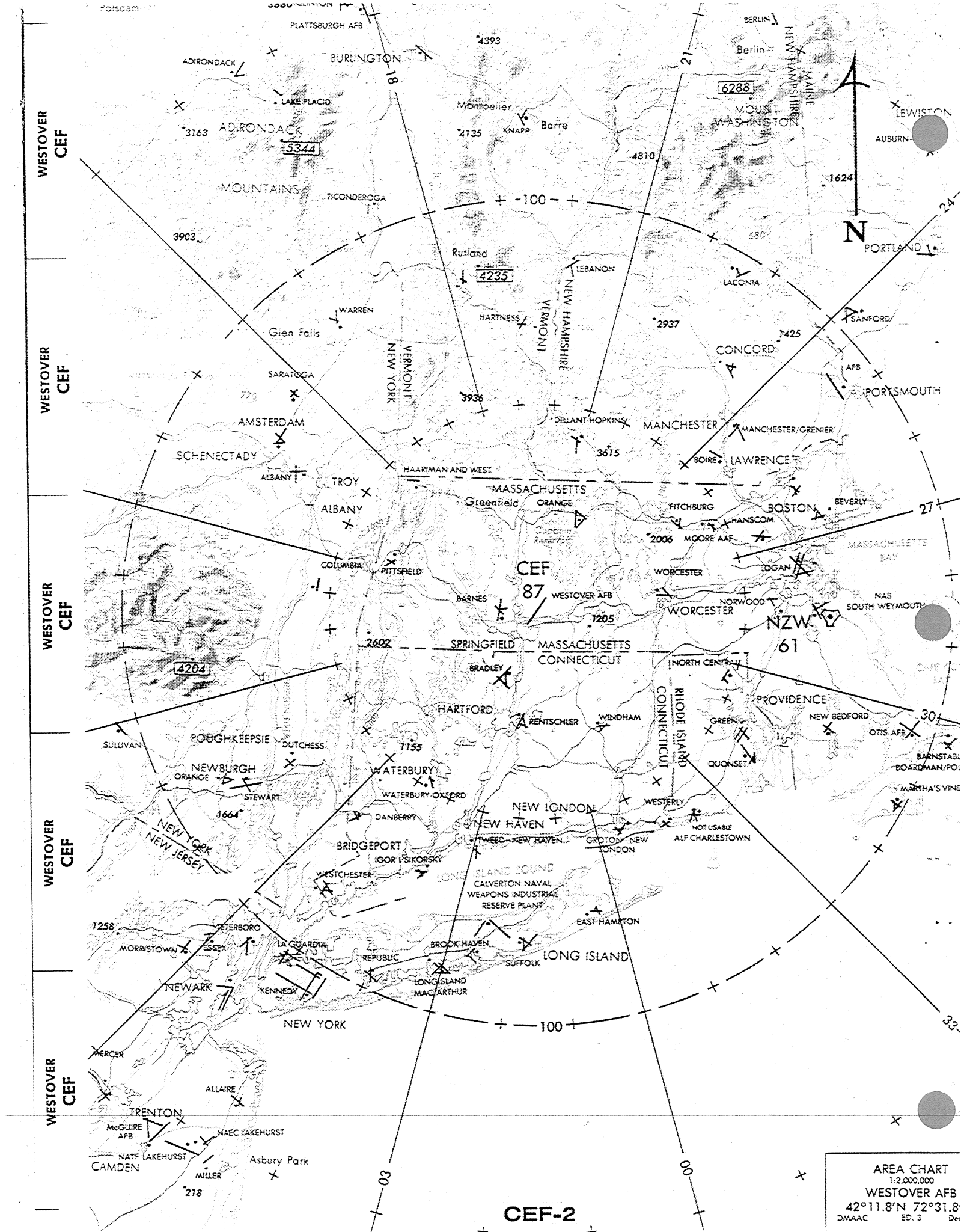
WESTOVER
CEF

WESTOVER
CEF

WESTOVER
CEF

WESTOVER
CEF

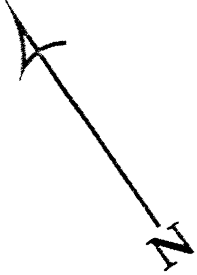
WESTOVER
CEF



WESTOVER CEF
WESTOVER CEF
WESTOVER CEF
WESTOVER CEF
WESTOVER CEF
WESTOVER CEF

AREA CHART
1:2,000,000
WESTOVER AFB
42°11.8'N 72°31.8'
DMAAC ED. 3

CEF-2



RUNWAY CHART
 1:62,500
WESTOVER AFB
RUNWAY 05 AND 23
 DMAAC ED. 3 Dec. 1966

CEF-3

CHICOPEE

SPRINGFIELD

SIXTEEN ACRES

PINE POINT

INDIAN ORCHARD

CADY'S CORNERS

SCOTT CORNERS

LUDLOW

SOUTH HADLEY

SOUTH HADLEY FALLS

Chicopee Reservoir

Mountain Lake

Lake Lorraine

Lone Pond

Furber Pond

radio towers (6)

gravel pit

gravel pits

golf course

150A smokestack

race track

Nase Hill Reservoir

Stony Brook

Upper Pond

dam

CONNECTICUT CANAL

(247) tower

drive-in theater

4 Lanes Divided

4 Lane Divided

gravel pits

gravel pit

(200) tower

(210) tower

Chicopee River

dam

transfer park

transfer park

Washington Pine

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

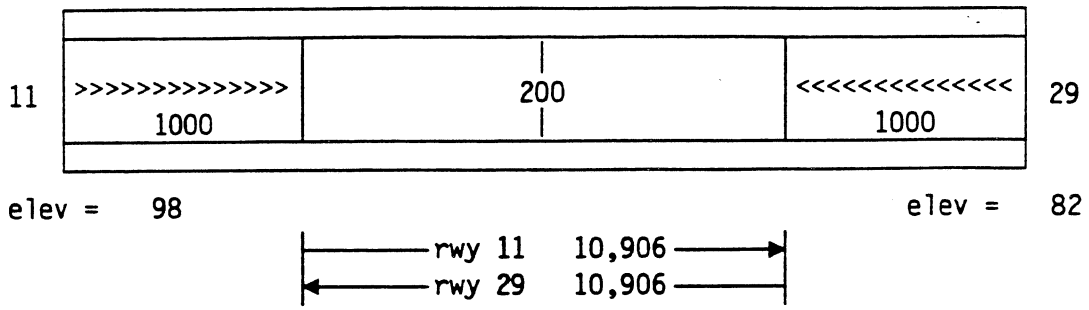
INDIAN HILL

INDIAN HILL

INDIAN HILL

INDIAN HILL

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TACAN: DN-84x (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

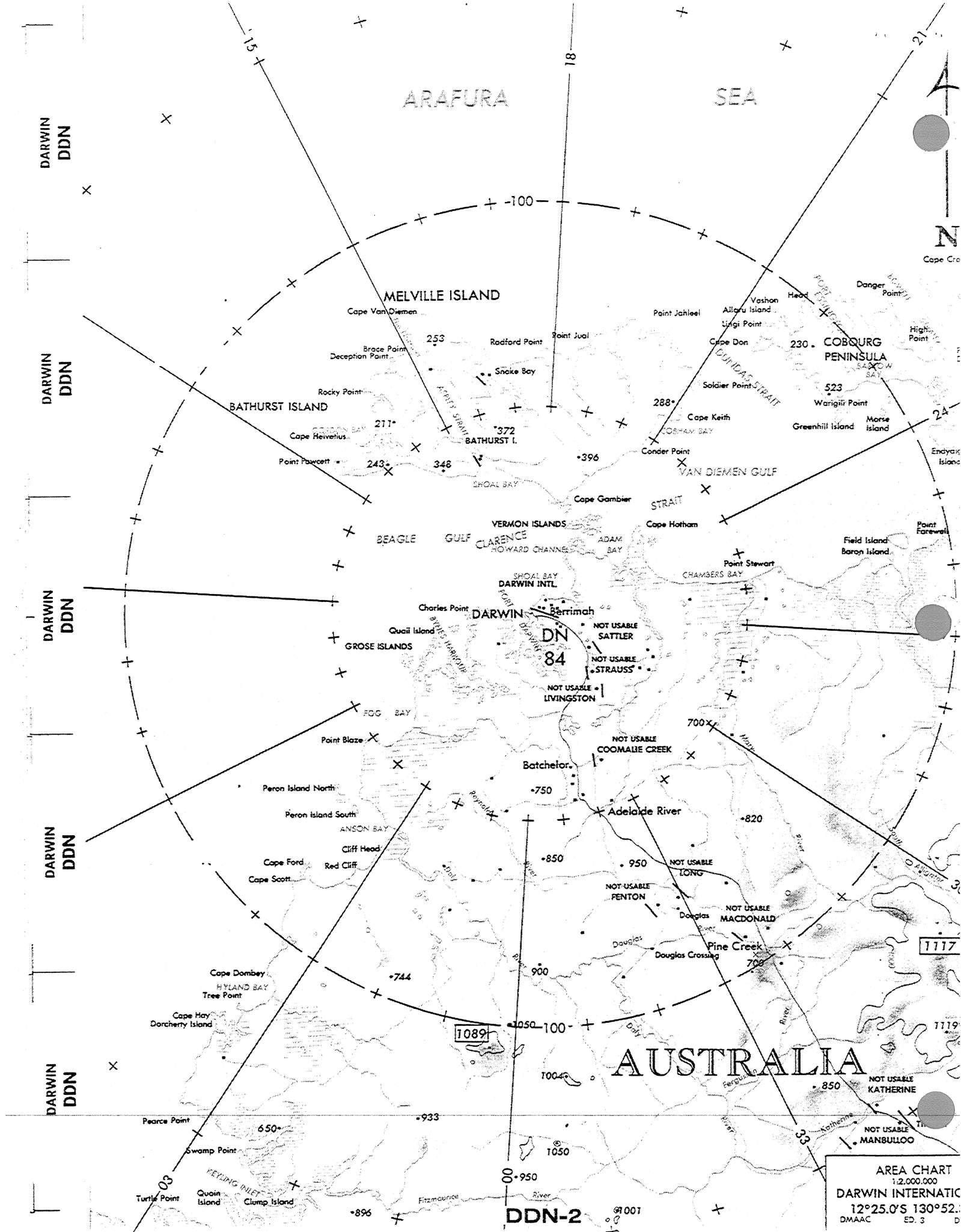
DARWIN
DDN

DARWIN
DDN

DARWIN
DDN

DARWIN
DDN

DARWIN
DDN



DARWIN
DDN

DARWIN
DDN

DARWIN
DDN

DARWIN
DDN

DARWIN
DDN

N

Cape Cro

24

Point Forewell

1117

1119

1117

1119

NOT USABLE
KATHERINE

NOT USABLE
MANBULLOO

ARAFURA

SEA

MELVILLE ISLAND

BATHURST ISLAND

COBOURG PENINSULA

DARWIN

AUSTRALIA

DDN-2

AREA CHART
1:2,000,000
DARWIN INTERNATIONAL
12°25.0'S 130°52.0'E
DMAAC ED. 3

1089

1117

1119

1117

1119

DDN-2

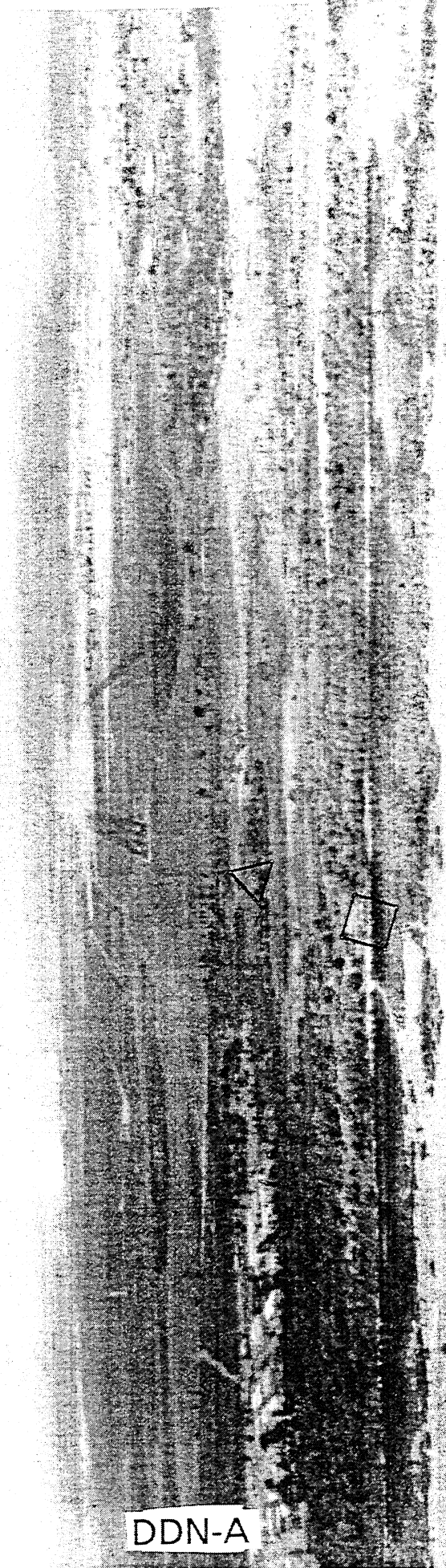
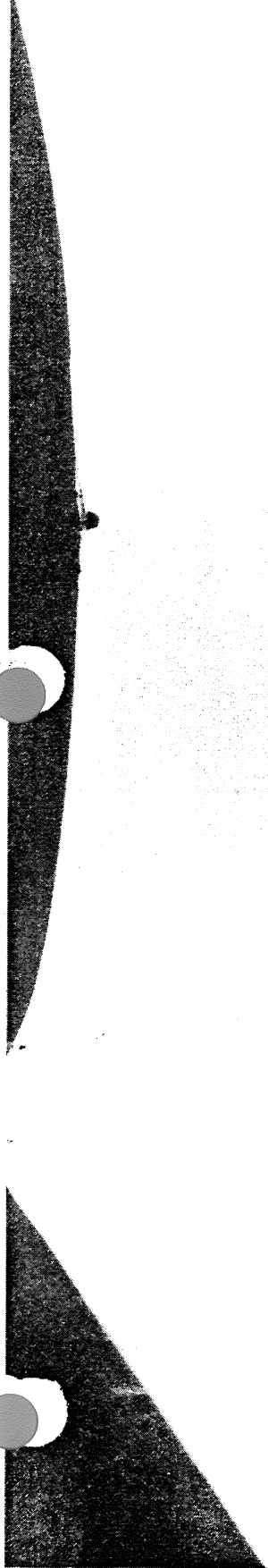
AREA CHART
1:2,000,000
DARWIN INTERNATIONAL
12°25.0'S 130°52.0'E
DMAAC ED. 3



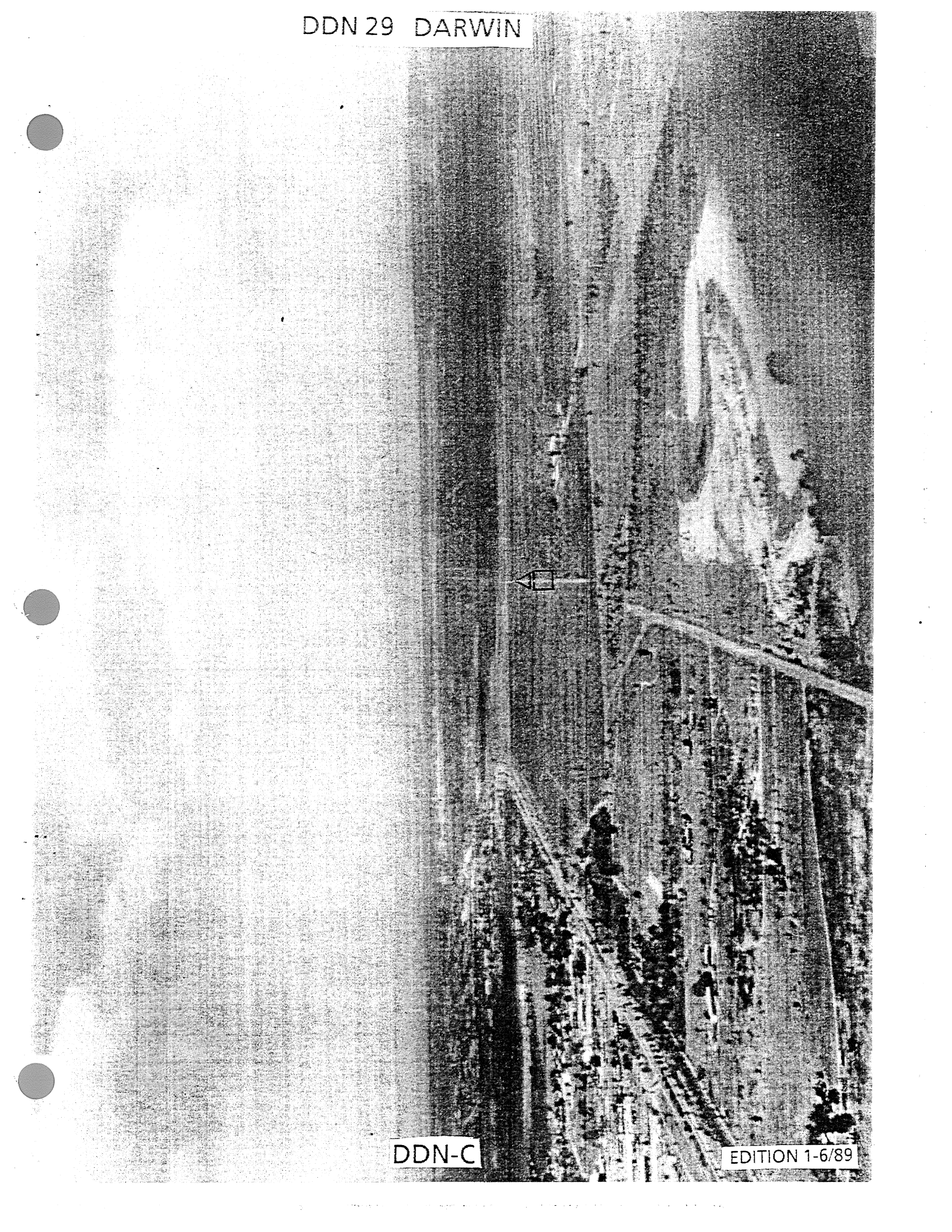
DDN-3

RUNWAY CHART
 1:62,500
DARWIN INTERNATIONAL
RUNWAYS 11 and 29
 DMAAC ED. 3 Dec. 1988

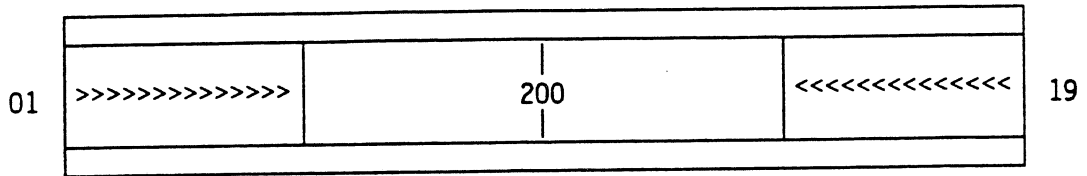
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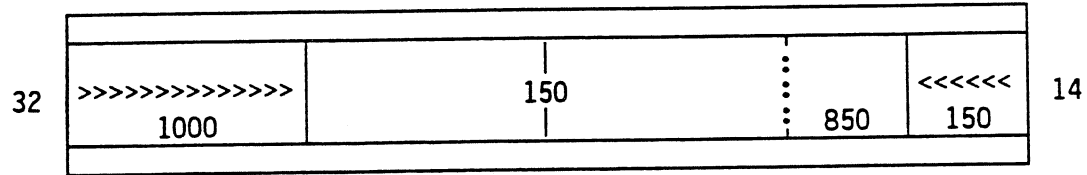
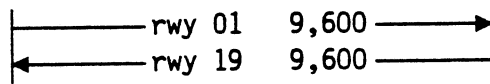
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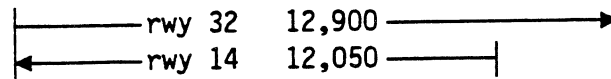
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elev = 25 elev = 22



elev = 27 elev = 30



TACAN: DOV-37x (Pri)
I/F above: N: 80k E: 90k
S:100k W:<80k

SIE-95x (Sec)
N:100k E:105k
S:160k W:105k

MLS: none
PAPI: none
Ball Bar: none
UHF: yes (guard only)

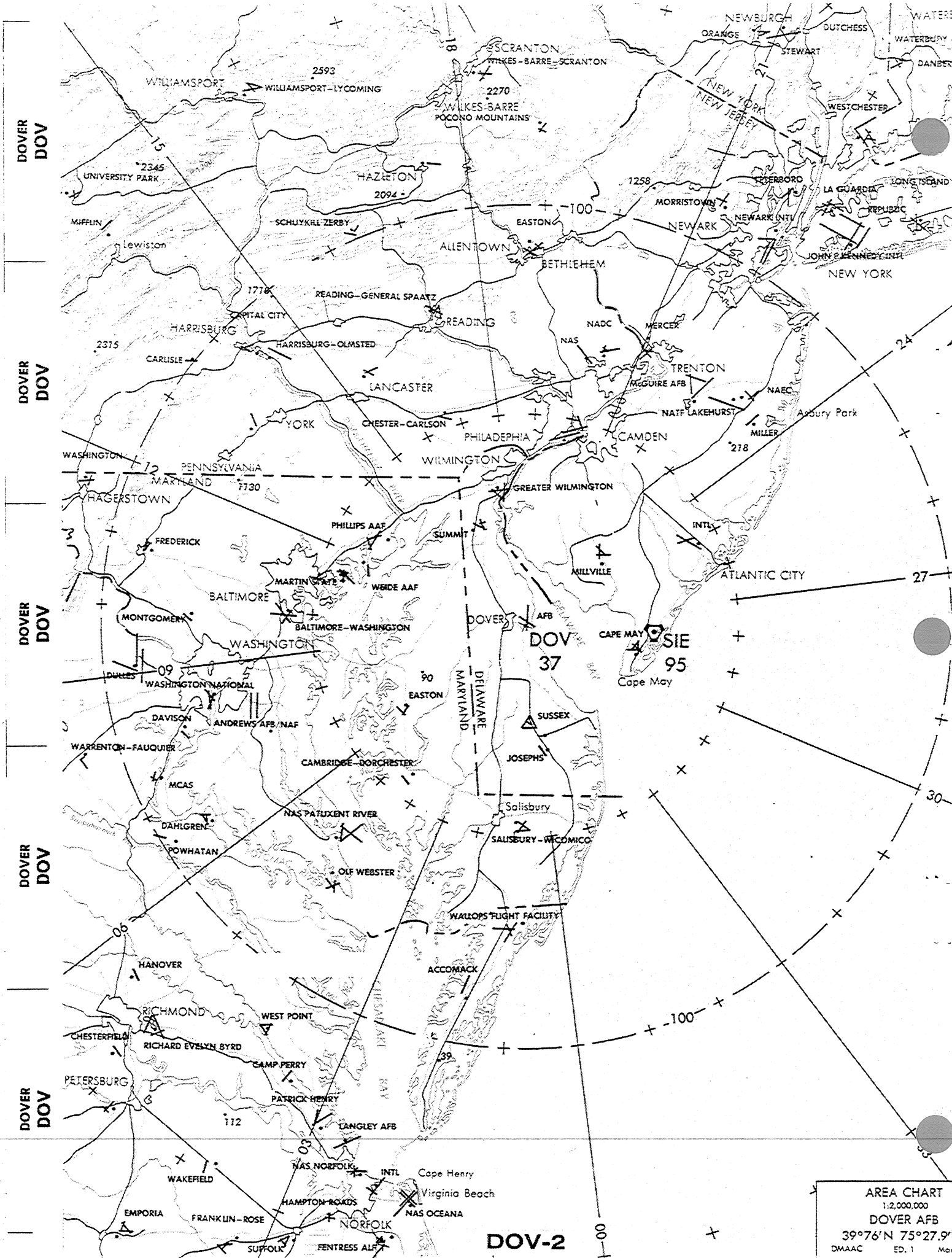
DOV
DOV

DOV
DOV

DOV
DOV

DOV
DOV

DOV
DOV



DOVER
DOV

DOVER
DOV

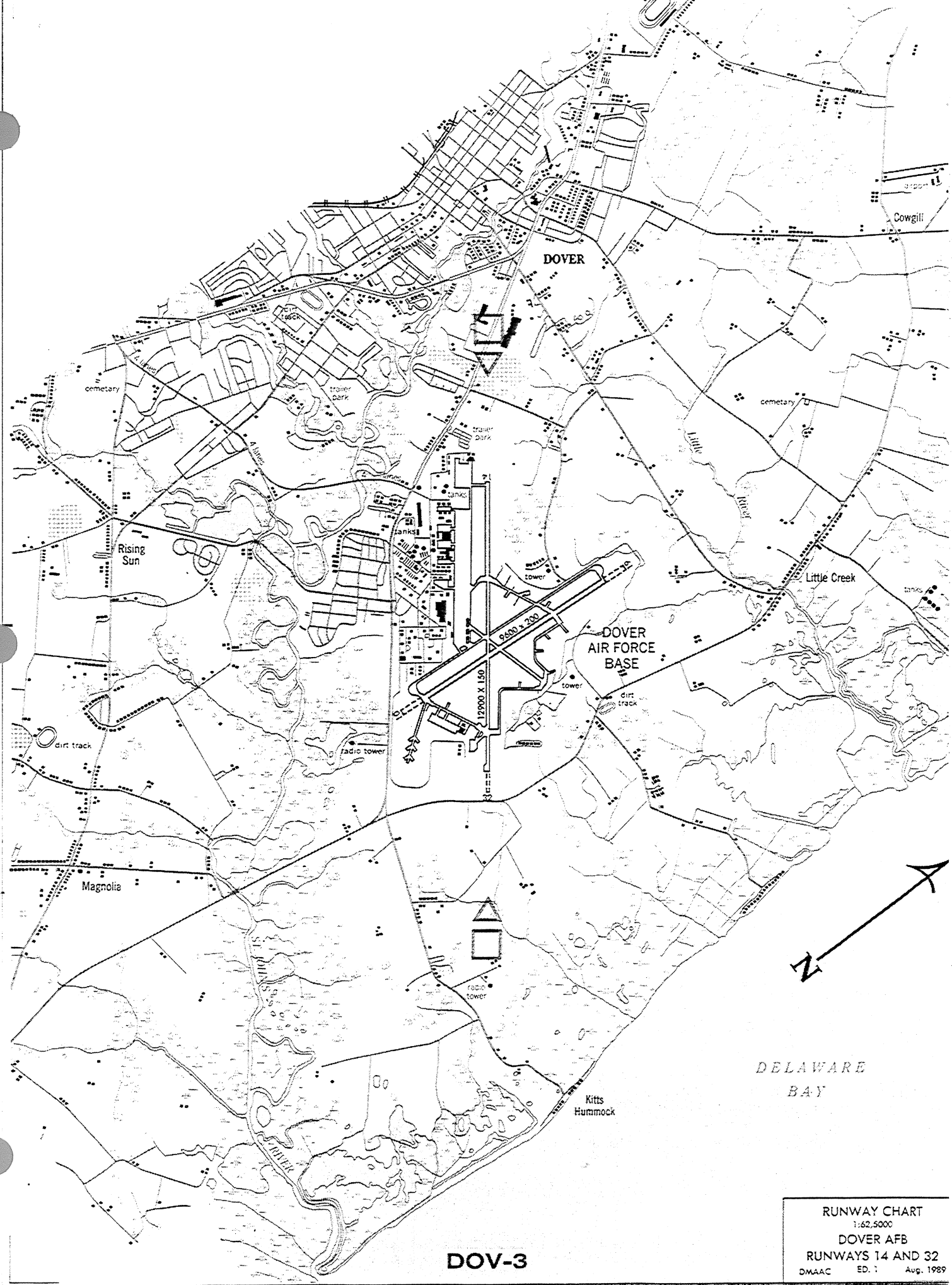
DOVER
DOV

DOVER
DOV

DOVER
DOV

DOV-2

AREA CHART
1:2,000,000
DOVER AFB
39°76'N 75°27.9'W
DMAAC ED. 1 Mar.



DOVER

Cowgill

cemetery

trailer park

cemetery

Rising Sun

Little Creek

DOVER AIR FORCE BASE

19900 X 150

8600 X 200

Magnolia

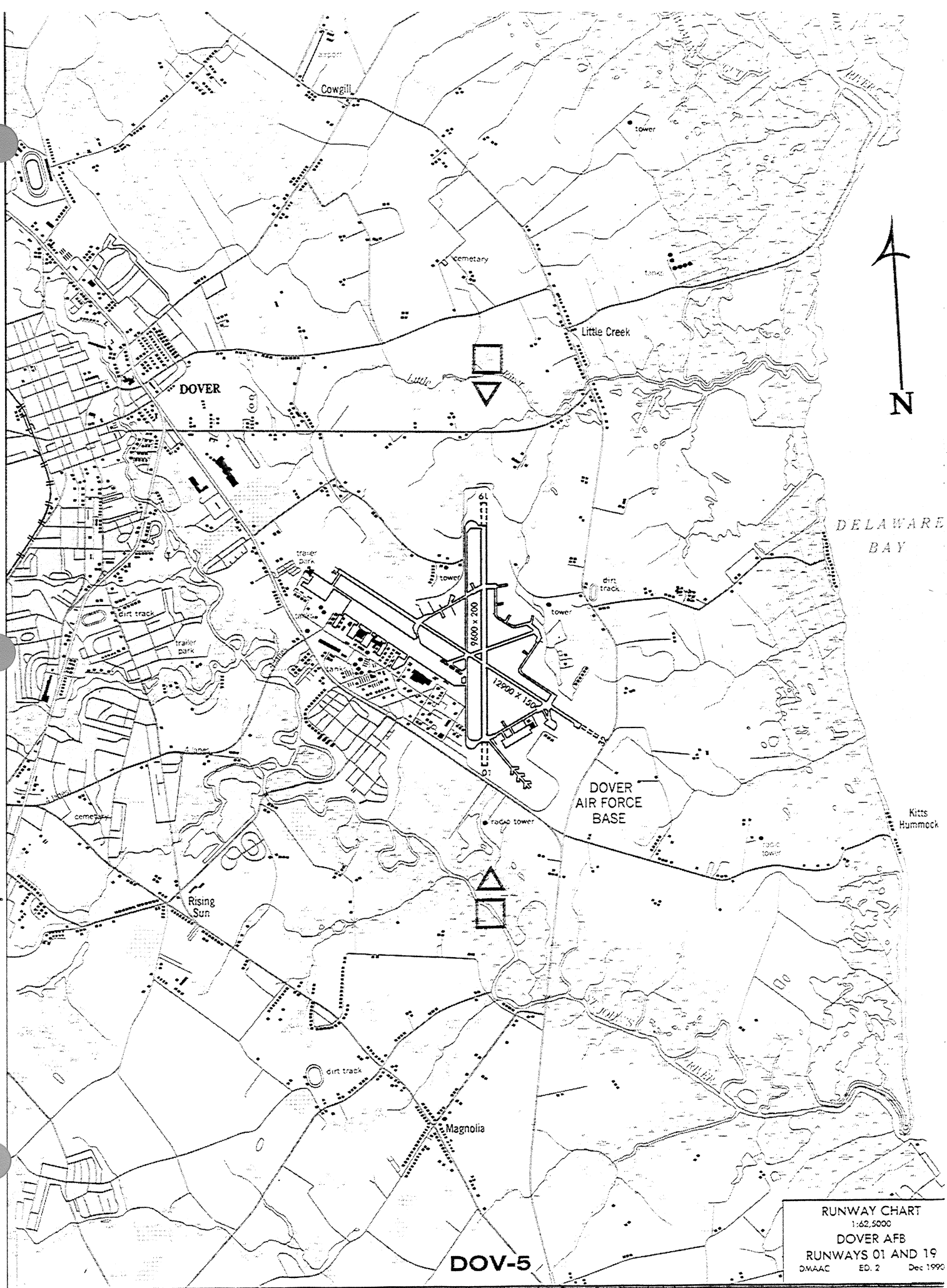
Kitts Hummock

DELAWARE BAY

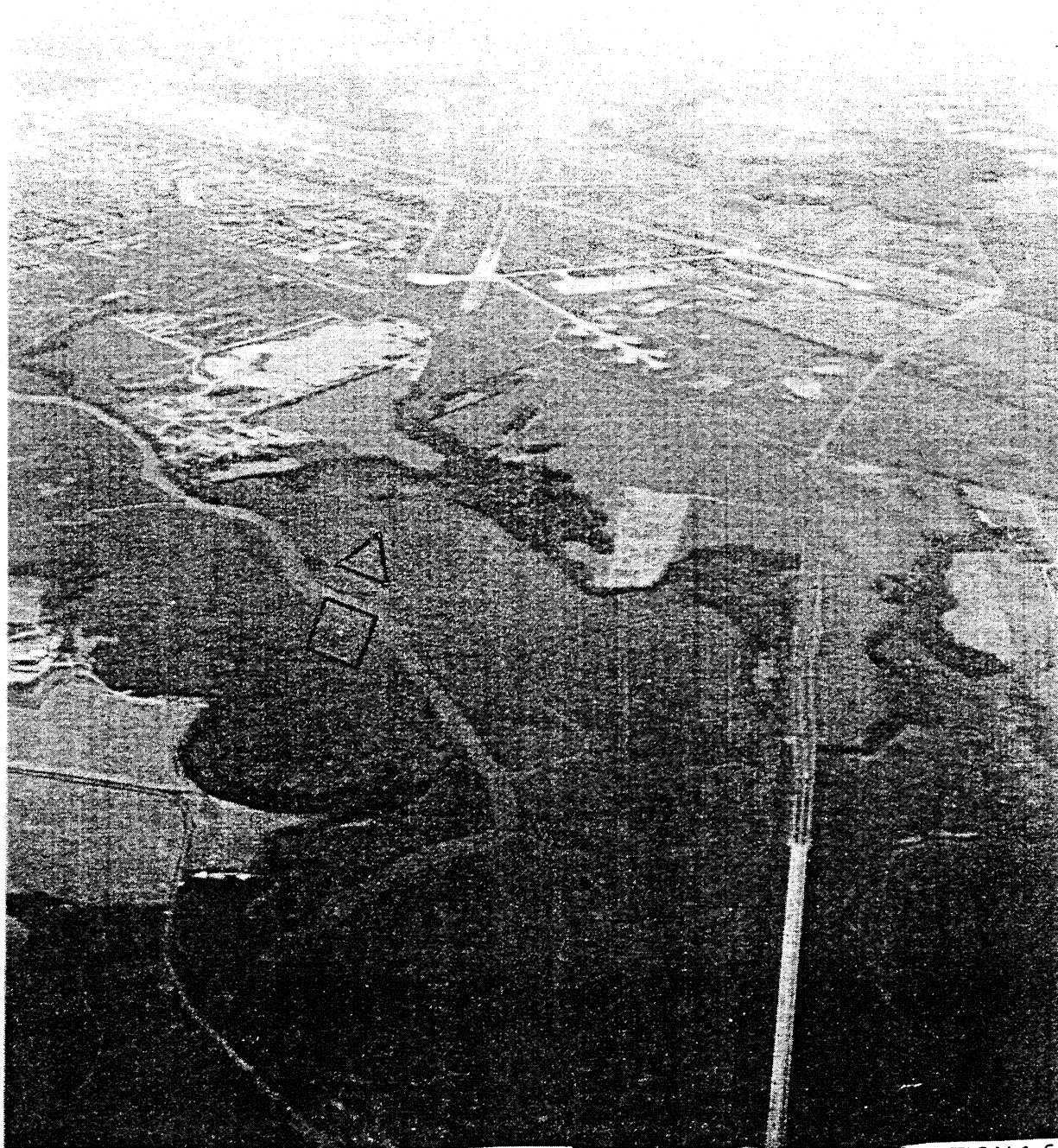
DOV-3

RUNWAY CHART
 1:62,5000
 DOVER AFB
 RUNWAYS 14 AND 32
 DMAAC ED. 1 Aug. 1989

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DOV-A

EDITION 1-6/89

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DOV-C

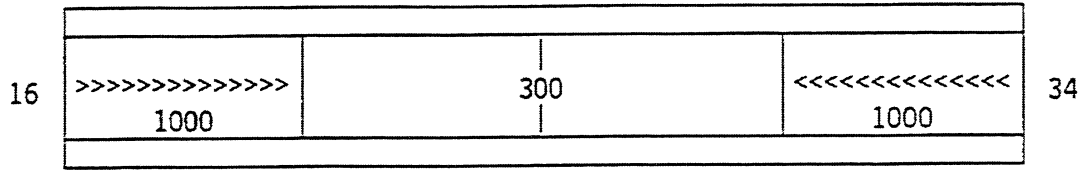
EDITION 1-6/89

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Dyess AFB, Texas

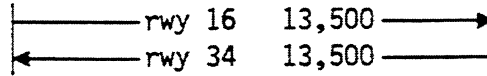
Table Identifier

DYS



elev = 1787

elev = 1787



TACAN: ABI-84x (Pri)
 I/F above: N: 90k E:110k
 S:120k W:100k

MQP-124x (Sec)
 N:100k E:110k
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

DYESS
DYS

DYESS
DYS

DYESS
DYS

DYESS
DYS

DYESS
DYS

MAPS/ALL/GEN B

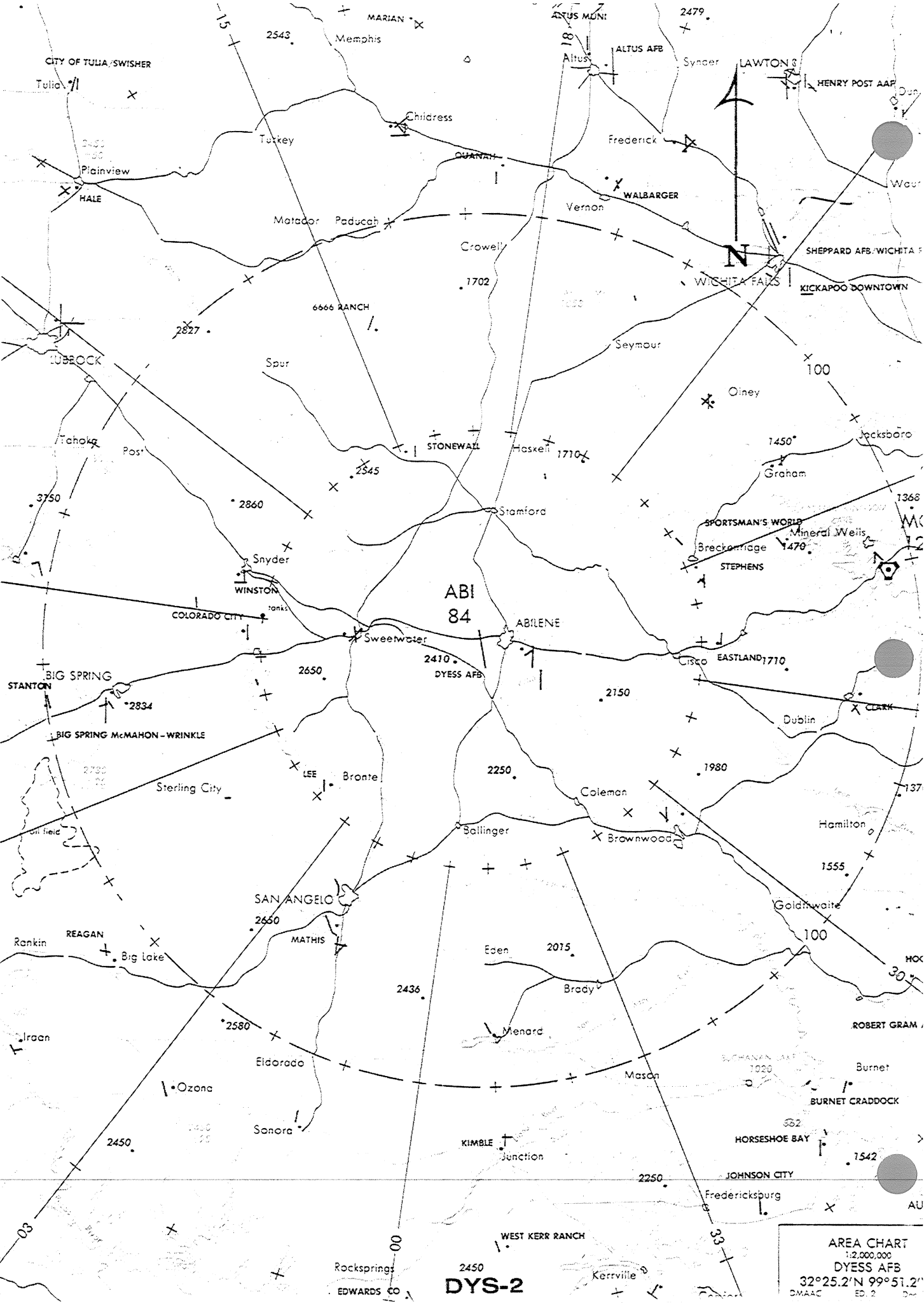
DYESS
DYS

DYESS
DYS

DYESS
DYS

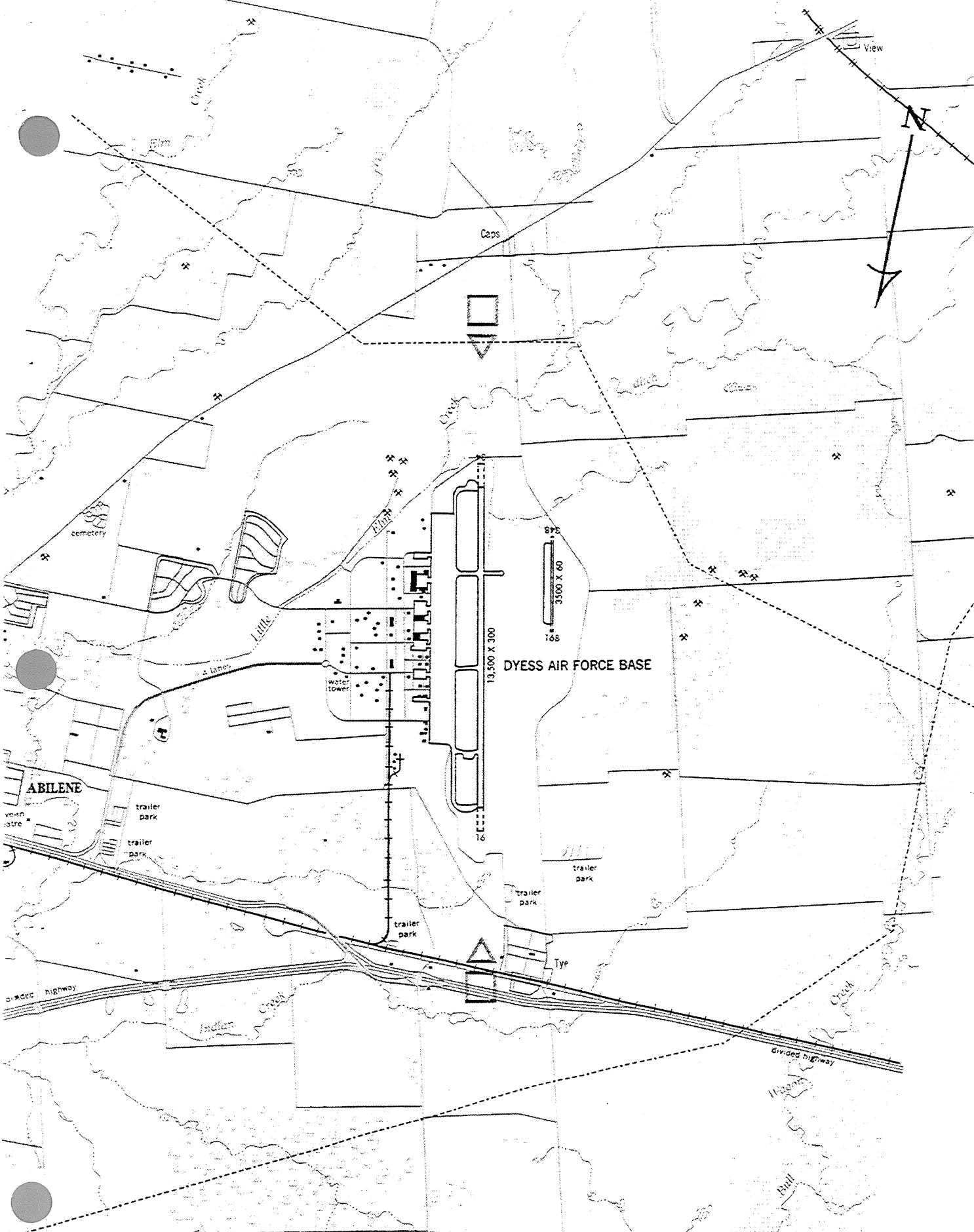
DYESS
DYS

DYESS
DYS



AREA CHART
 1:2,000,000
 DYESS AFB
 32°25.2'N 99°51.2'
 DMAAC ED. 2

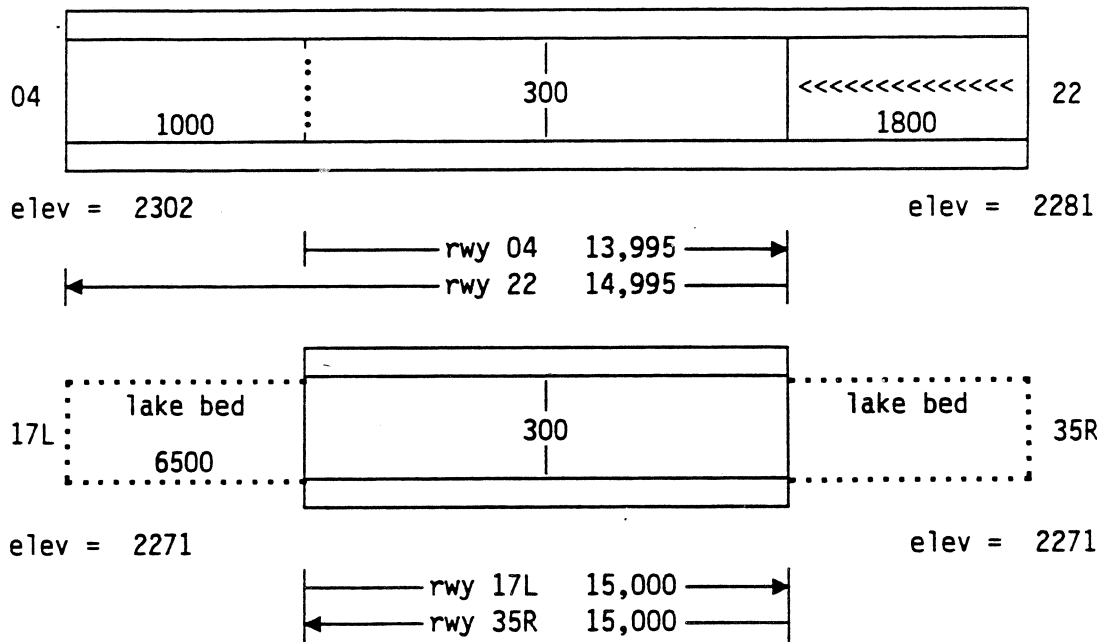
DYS-2



DYS-3

RUNWAY CHART
 1:62,500
 DYESS AFB, TEXAS
 RUNWAYS 16 AND 34
 DMAAC ED. 2 Dec. 1988

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TACAN: EDW-111x (Pri) PMD-92x (Sec)
 I/F above: N:140k E:130k N:<80k E:<80k
 S:clear W:clear S:140k W: 80k

MLS: (22-Sr) ch 8; (17L-Jr) ch 6
 PAPI: 22, all others*
 Ball Bar: 22, all others*
 UHF: yes

NOTE

- All rwys have painted aim points at 6500 ft and 7500 ft except rwy 05L which has 6500-ft aim point only
- Rwys 05L, 23L, 33, and 35R are not in onboard s/w but can be uplinked in OPS 3

*PAPI and Ball Bar lights can be moved with 24-hours notice and will be configured to meet mission requirements

EDWARDS
EDW

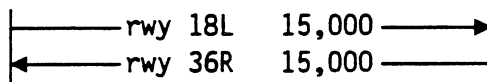
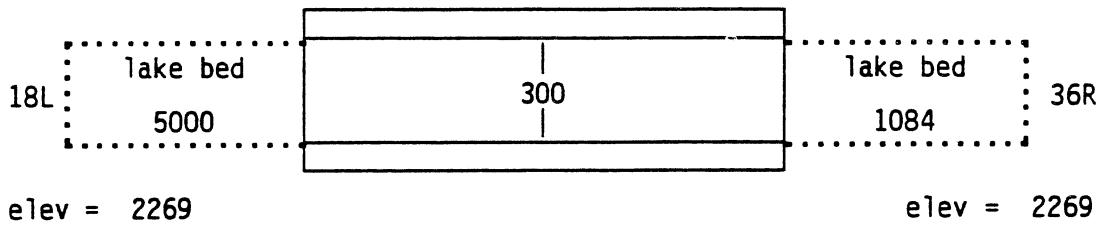
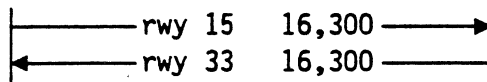
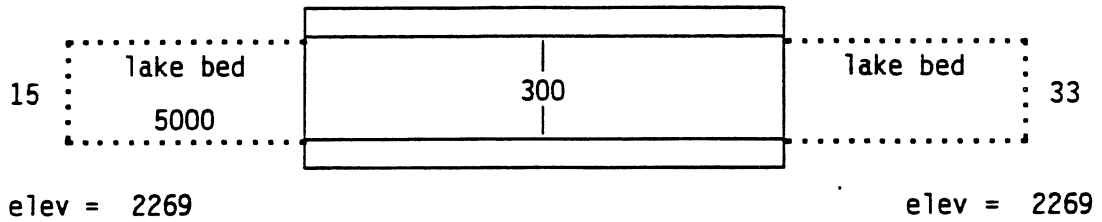
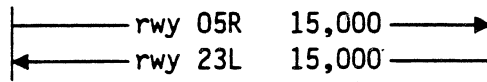
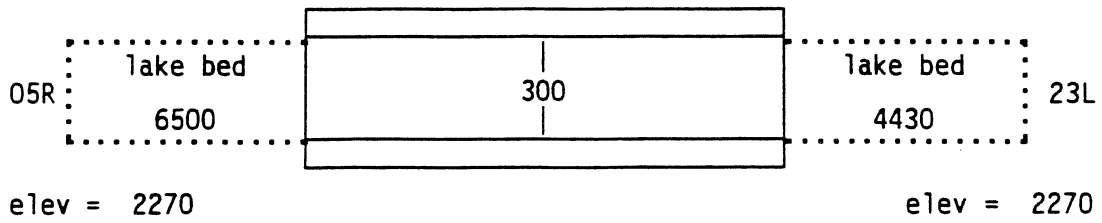
EDWARDS
EDW

EDWARDS
EDW

EDWARDS
EDW

EDWARDS
EDW

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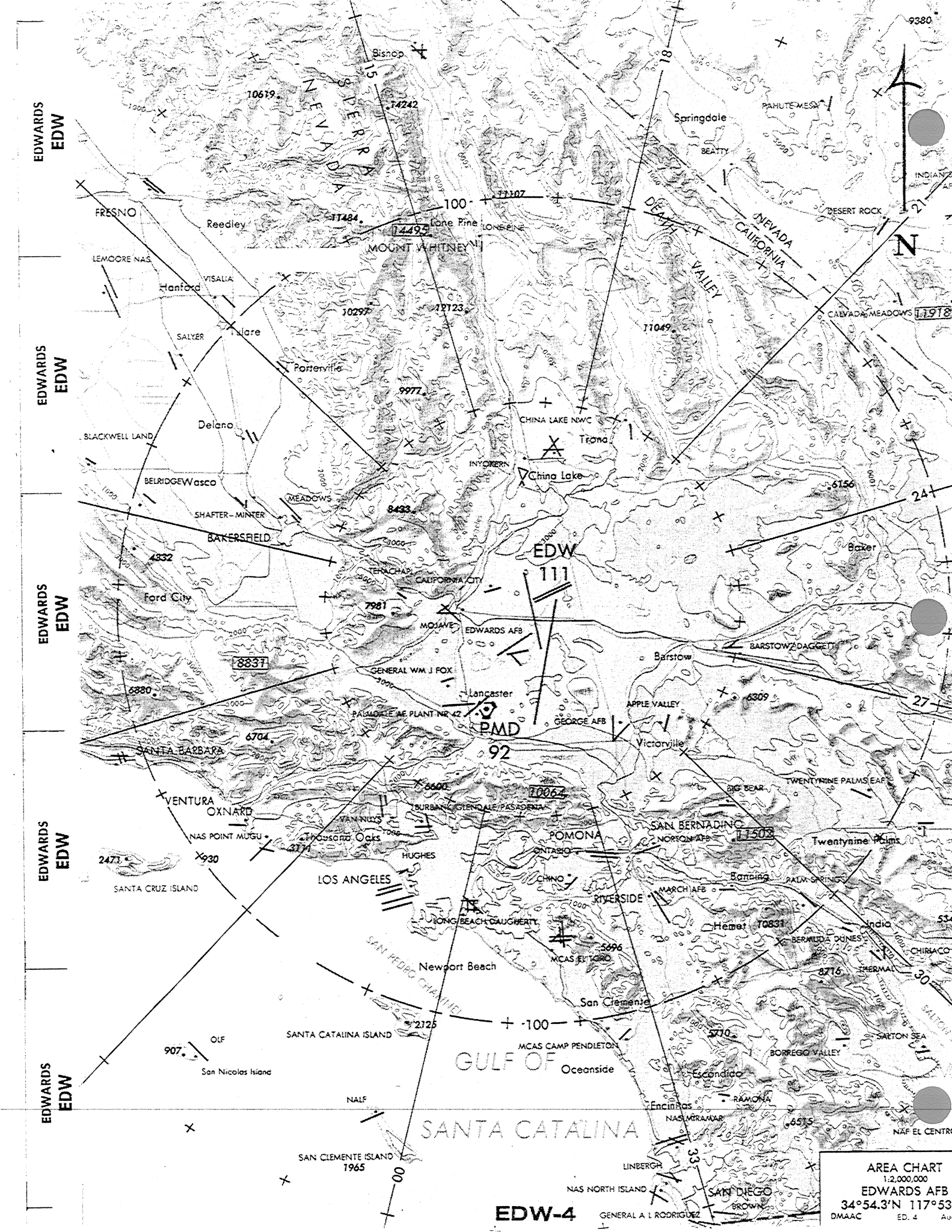
EDWARDS
EDW

EDWARDS
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EDWARDS
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EDWARDS
EDW

EDWARDS
EDW

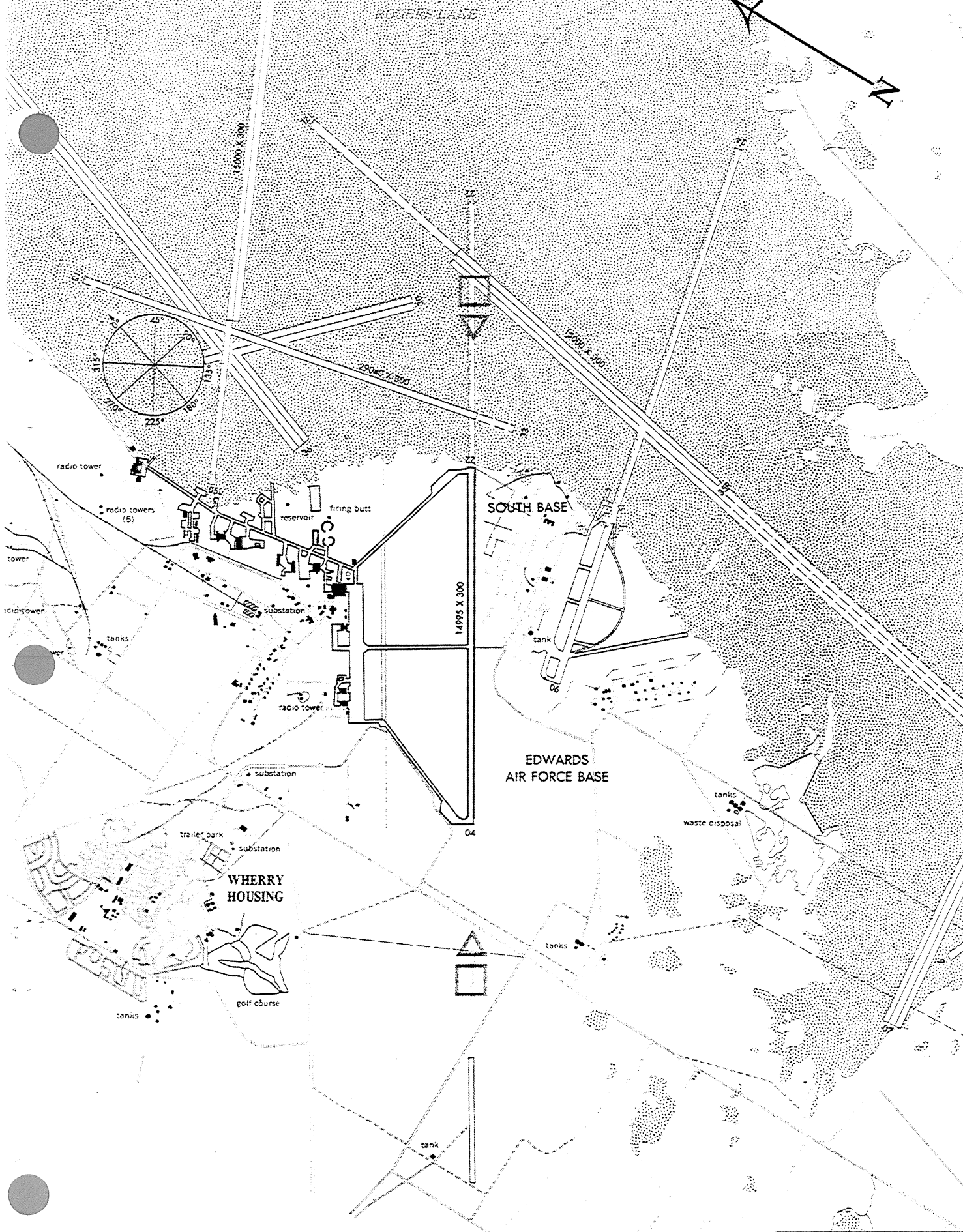


EDWARDS EDW
EDWARDS EDW
EDWARDS EDW
EDWARDS EDW
EDWARDS EDW

AREA CHART
1:2,000,000
EDWARDS AFB
34°54.3'N 117°53'
DMAAC ED. 4 Aug

EDW-4

GENERAL A. I. RODRIGUEZ



ROCKERS LANE

SOUTH BASE

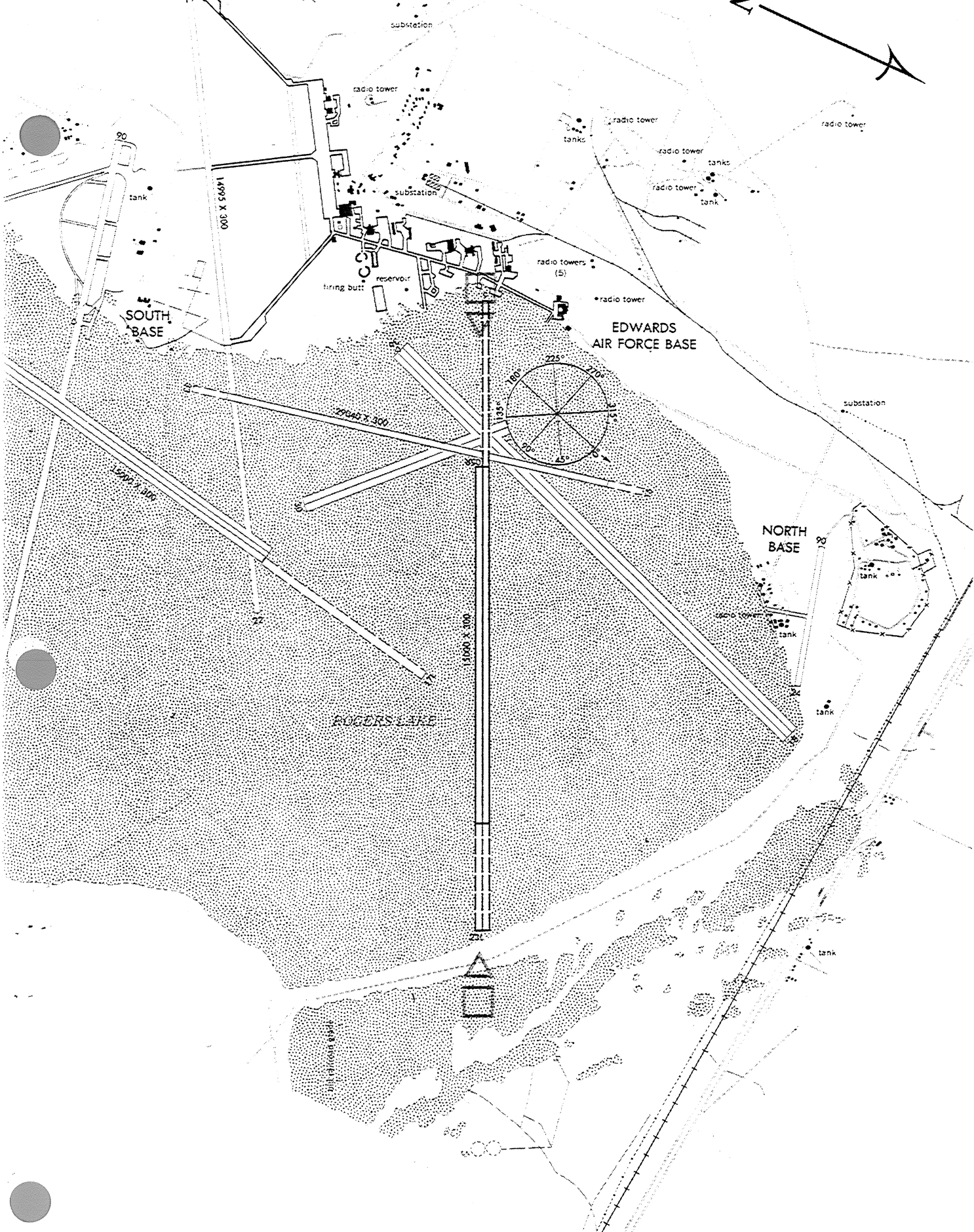
EDWARDS AIR FORCE BASE

WHERRY HOUSING

EDW-5

RUNWAY CHART
 1:62,500
EDWARDS AFB
RUNWAYS 04 AND 22
 DMAAC ED. 4 Aug. 1989

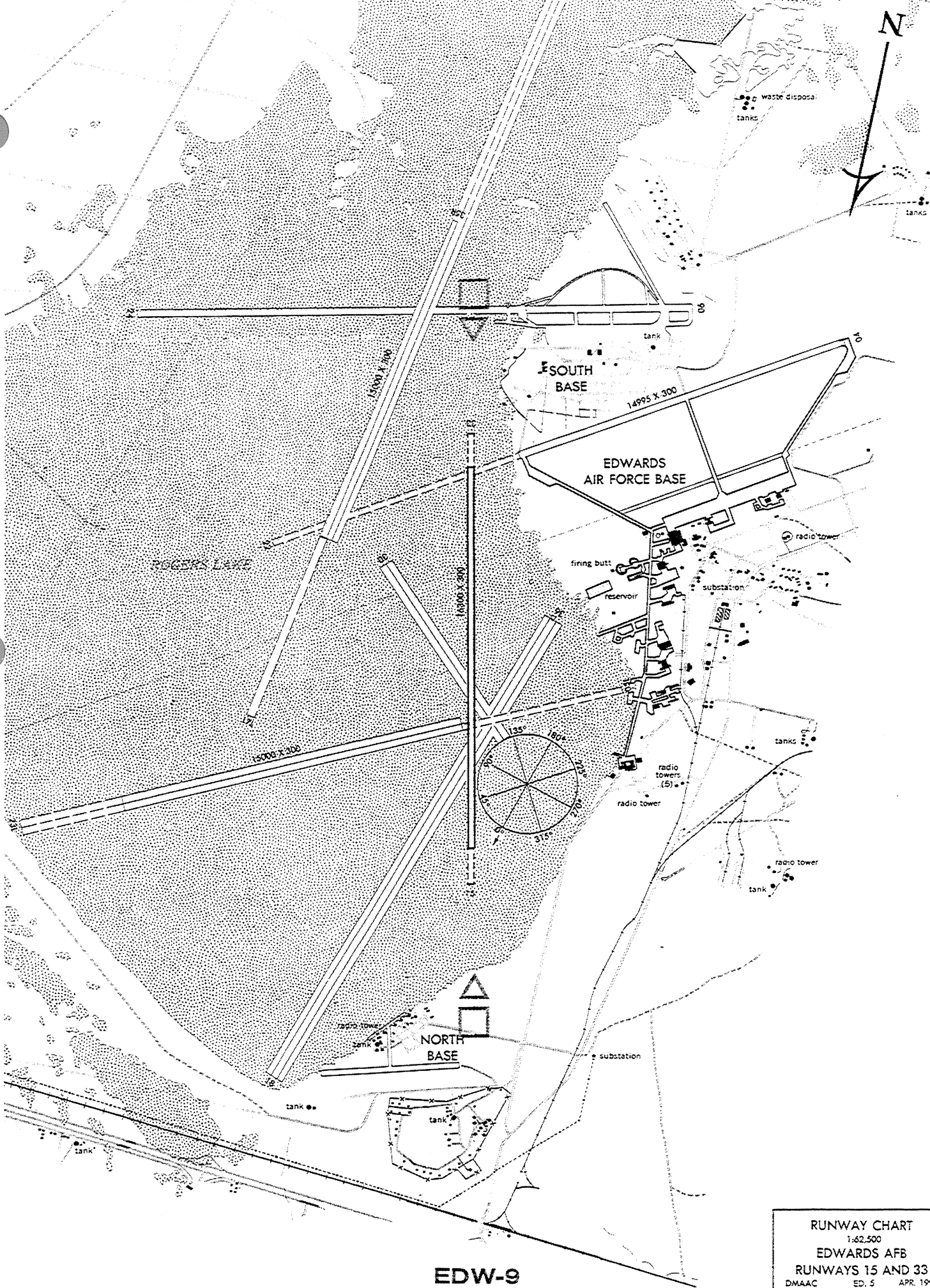
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EDW-7

RUNWAY CHART
 1:62,500
 EDWARDS AFB
 RUNWAYS 05R AND 23L
 DMAAC ED. 5 APR. 1990

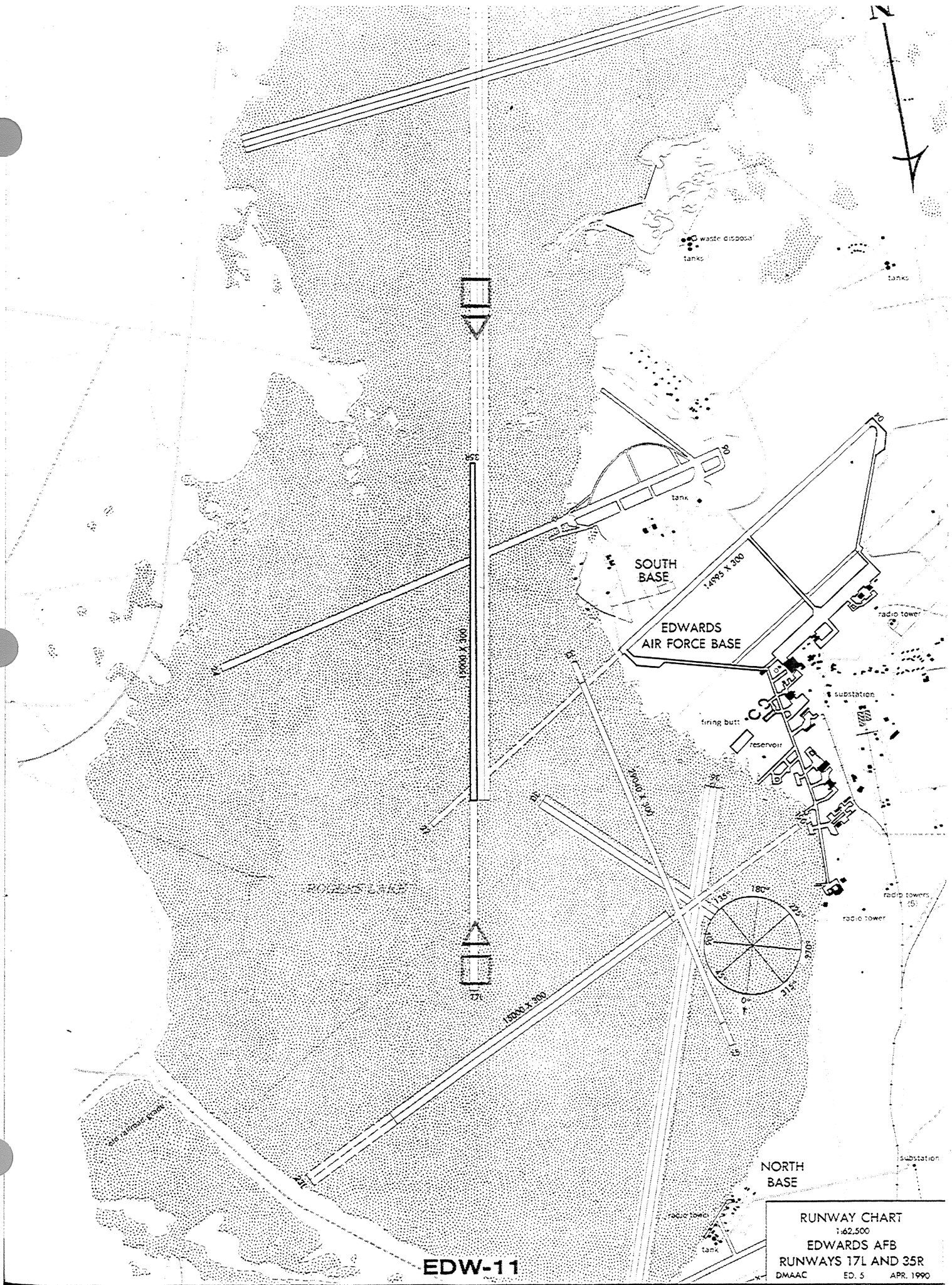
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EDW-9

RUNWAY CHART
 1:62,500
 EDWARDS AFB
 RUNWAYS 15 AND 33
 DMAAC ED. 5 APR. 1990

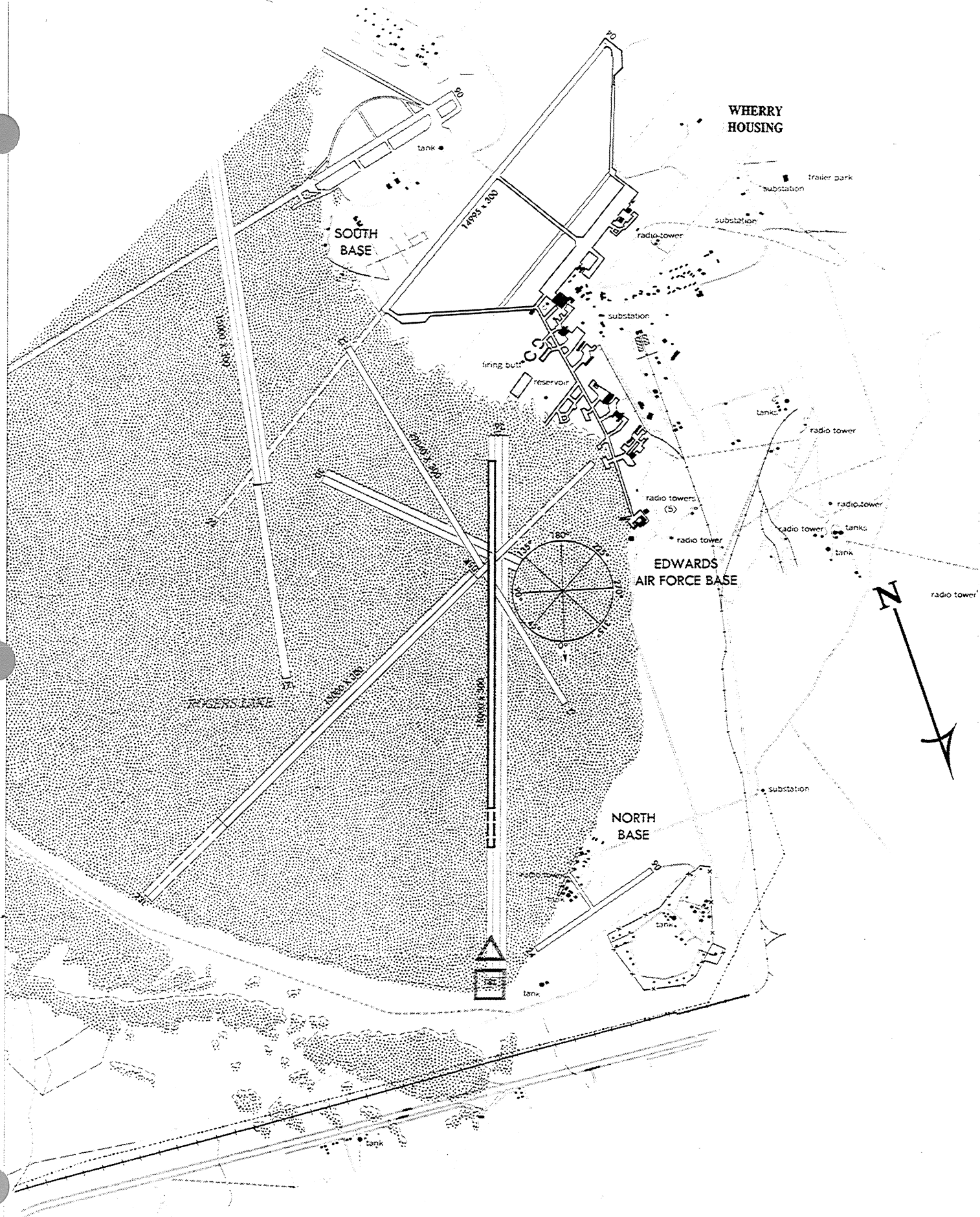
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EDW-11

RUNWAY CHART
 1:62,500
EDWARDS AFB
RUNWAYS 17L AND 35R
 DMAAC ED. 5 APR. 1990

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EDW-13

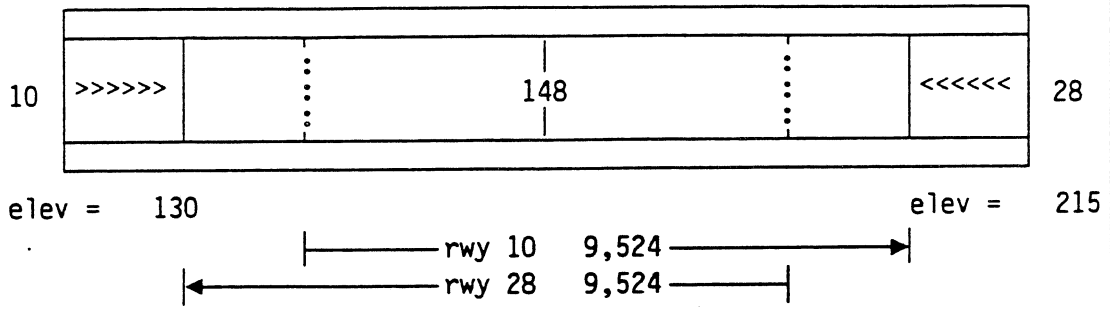
RUNWAY CHART
 1:62,500
EDWARDS AFB
RUNWAY 18L
 DHAAC ED. 1 Jan. 1991

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Mataverí, Easter Isle (Chile)

Table Identifier

EIP



TACAN: IPA-118x (Pri)
I/F above: N:clear E:clear
S:clear W:clear

MLS: none
PAPI: none
Ball Bar: none
UHF: none

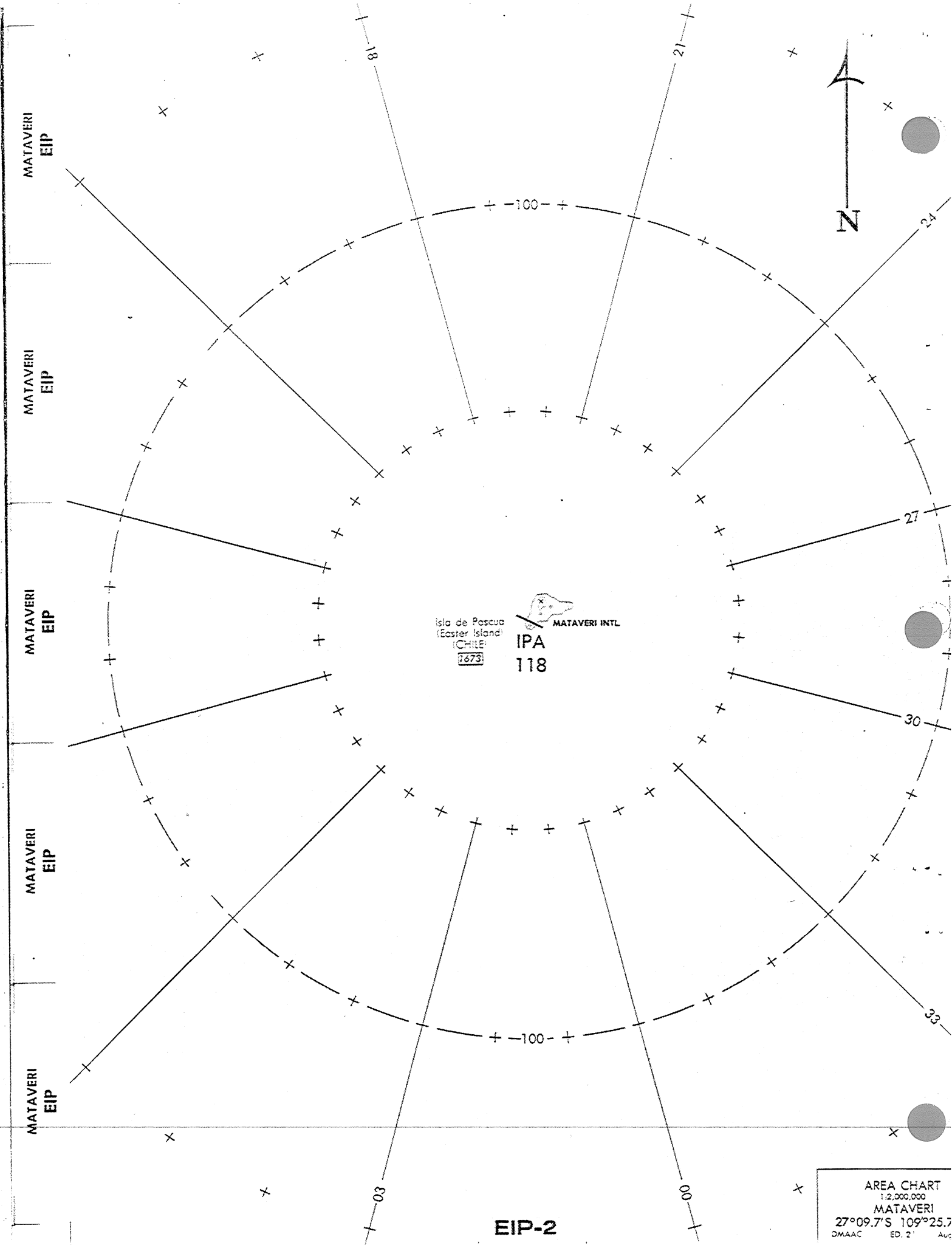
MATAVERI
EIP

MATAVERI
EIP

MATAVERI
EIP

MATAVERI
EIP

MATAVERI
EIP



MATAVERI
EIP

MATAVERI
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MATAVERI
EIP

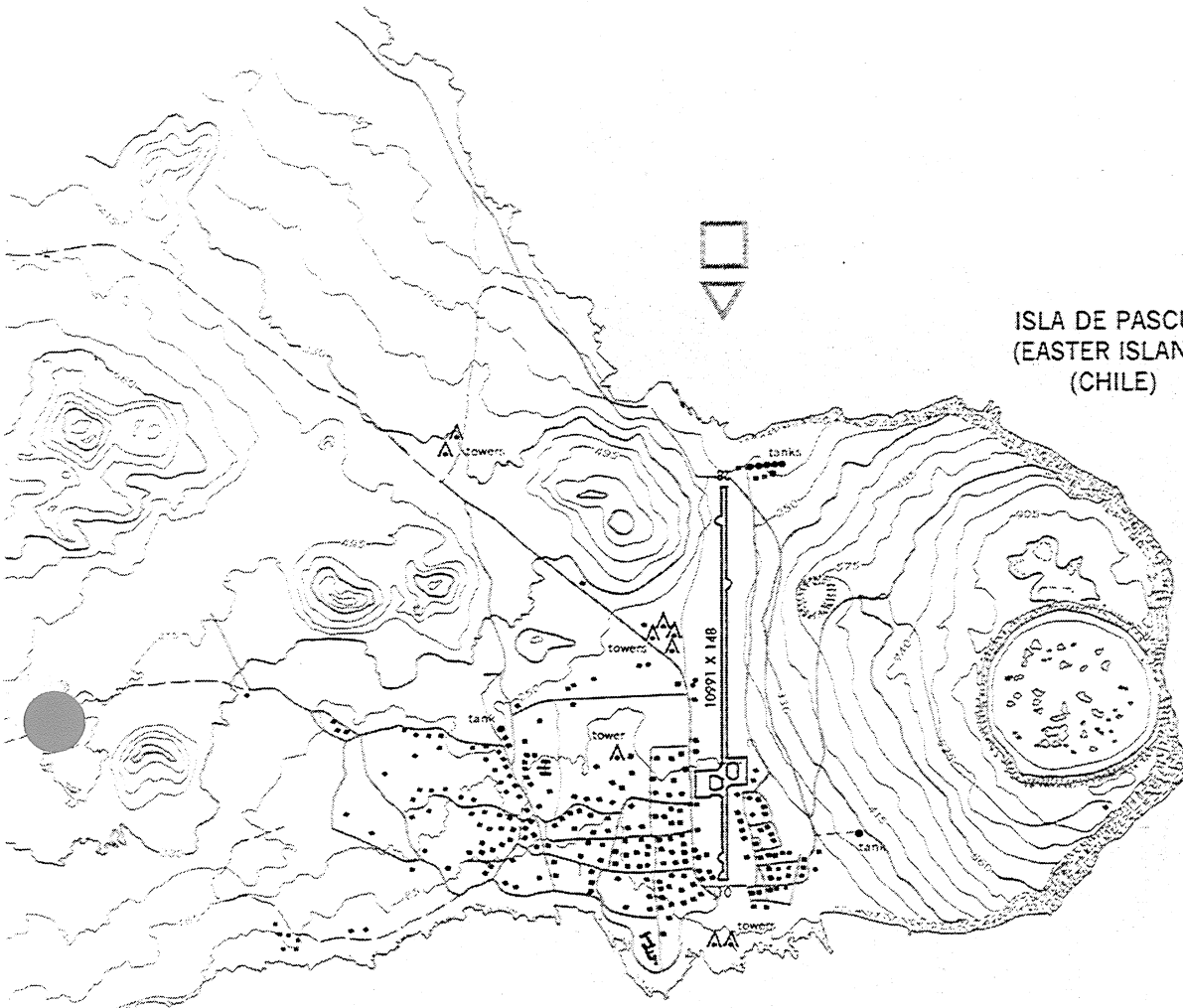
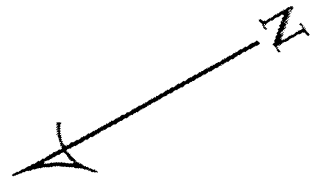
Isla de Pascua
(Easter Island)
(CHILE)
1673

MATAVERI INTL
IPA
118



EIP-2

AREA CHART
1:2,000,000
MATAVERI
27°09.7'S 109°25.7'
DMAAC ED. 2nd AUG



ISLA DE PASCUA
(EASTER ISLAND)
(CHILE)

SOUTH
PACIFIC
OCEAN

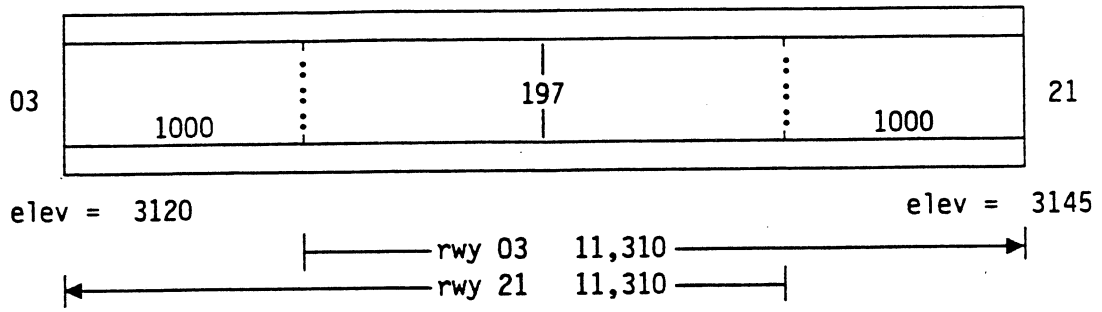
EIP-3

RUNWAY CHART
1:62,500
MATAVERI
RUNWAYS 10 AND 28
DMAAC ED. 3 Dec. 1986

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Esenboga, Turkey

Table Identifier **ESN**



TACAN: BUK-90x (Pri-DME)
I/F above: N:90k* E:80K
 S:clear W:80k

MLS: none
PAPI: none
Ball Bar: none
UHF: yes (guard only)

* BUK-90 (DME) should be clear approx. 10° east of north

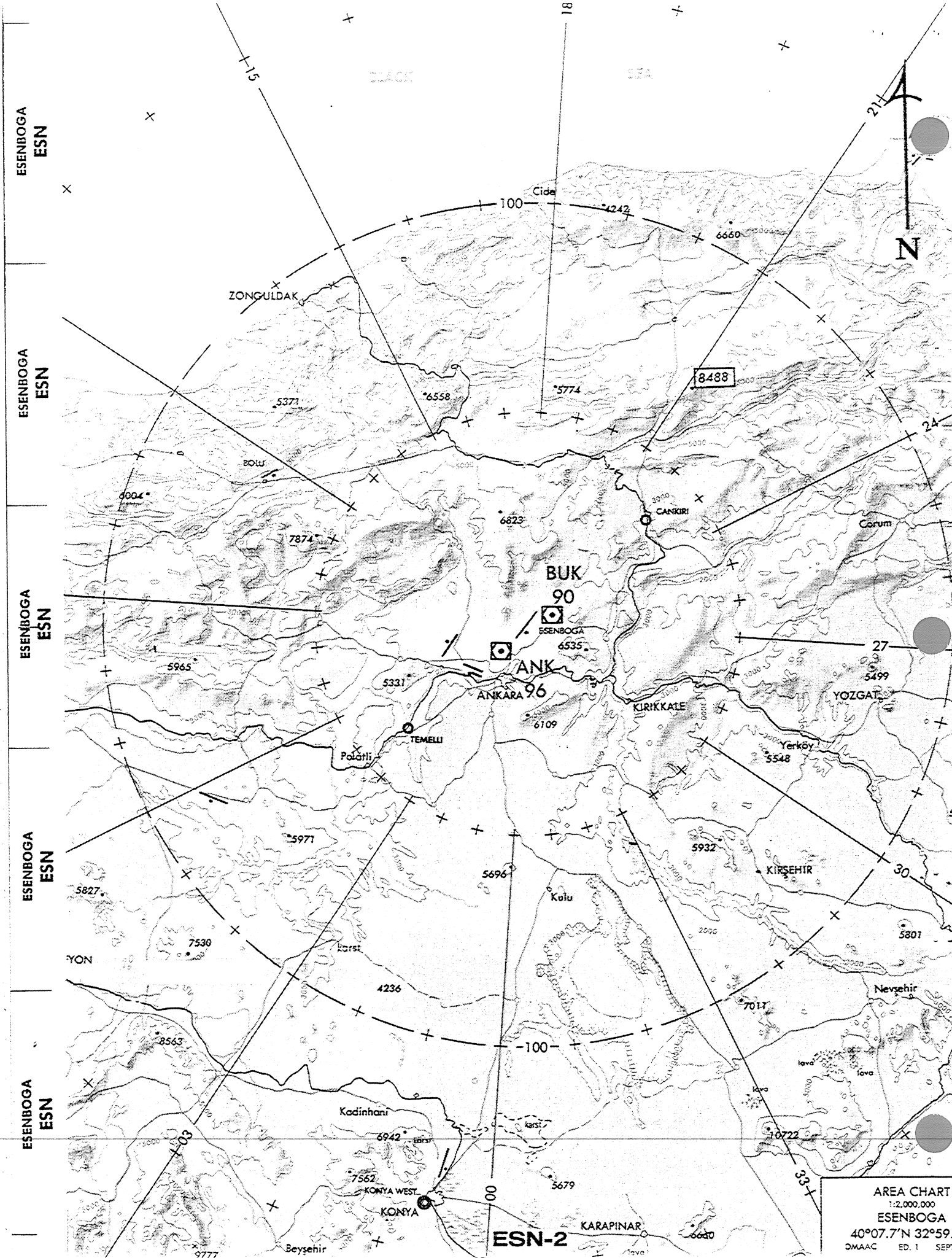
ESENBOGA
ESN

ESENBOGA
ESN

ESENBOGA
ESN

ESENBOGA
ESN

ESENBOGA
ESN



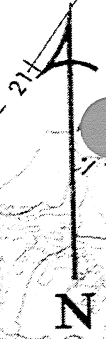
ESENBAGA
ESN

ESENBAGA
ESN

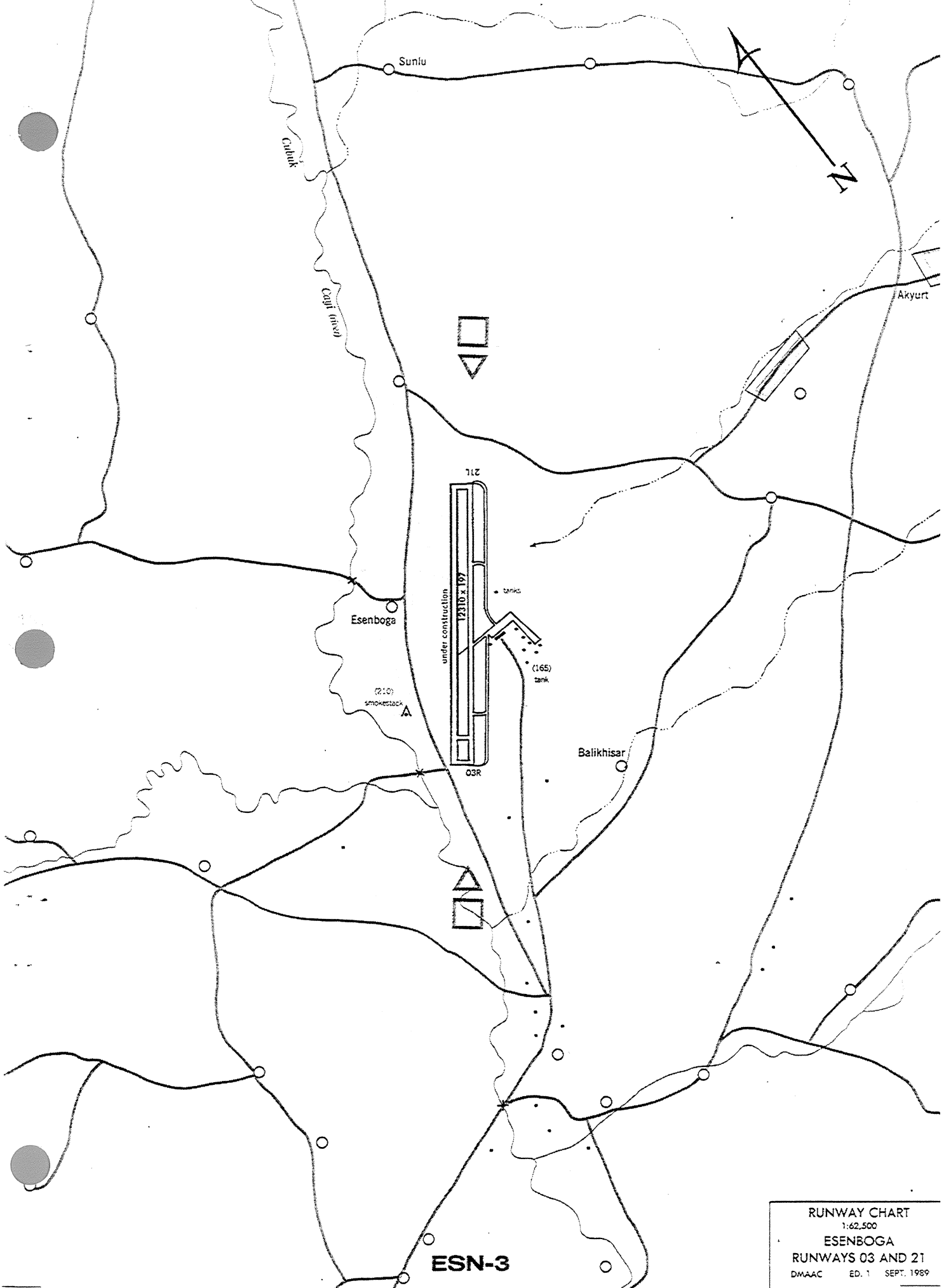
ESENBAGA
ESN

ESENBAGA
ESN

ESENBAGA
ESN



AREA CHART
1:2,000,000
ESENBAGA
40°07.7'N 32°59.7'
DMAAC ED. 1 SEPT.



ESN-3

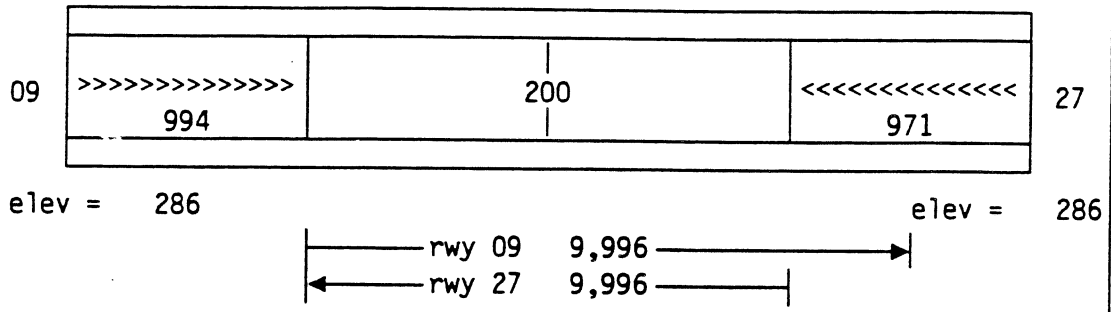
RUNWAY CHART
 1:62,500
ESENBOGA
RUNWAYS 03 AND 21
 DMAAC ED. 1 SEPT. 1989

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Fairford, England

Table Identifier

FFA



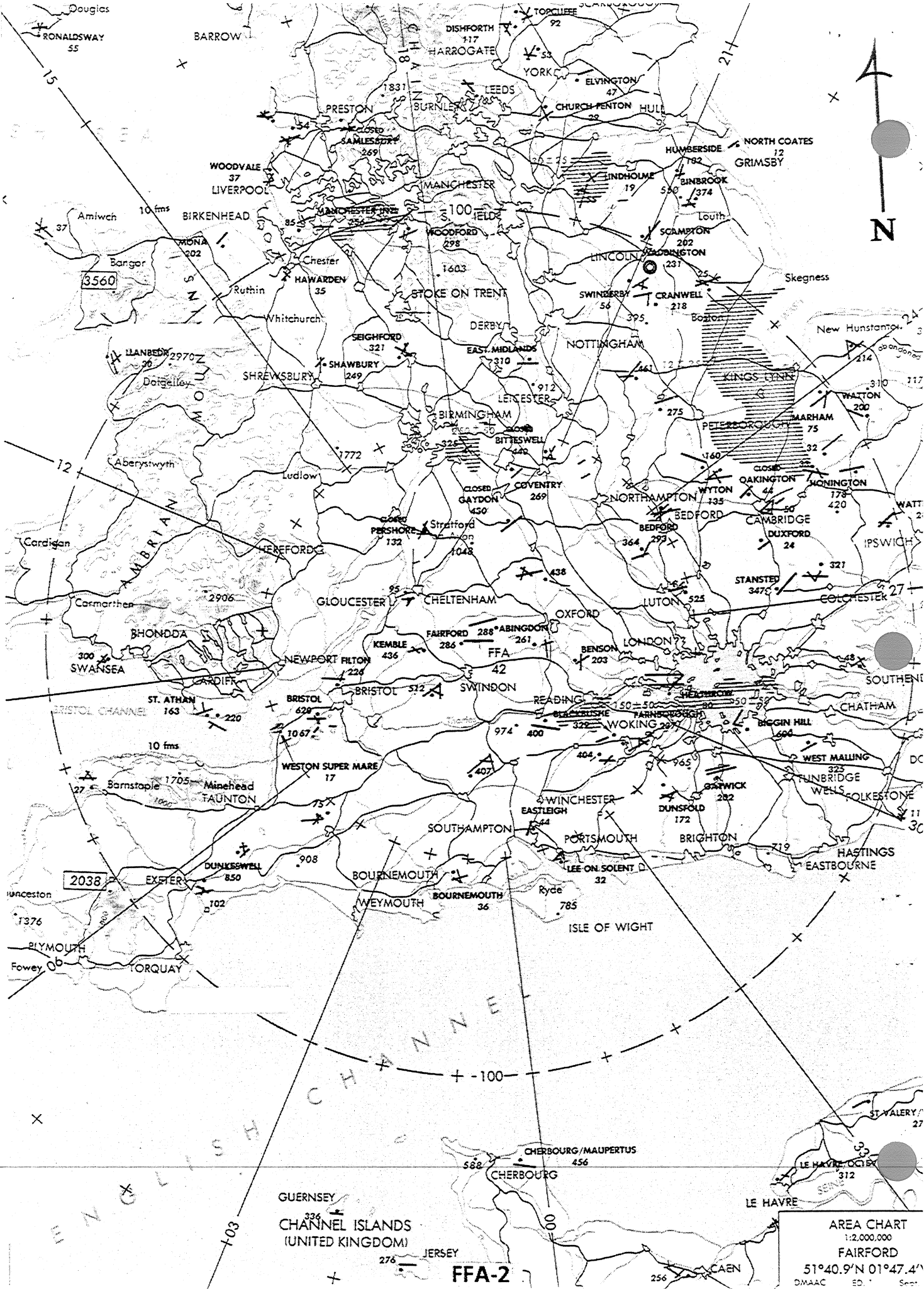
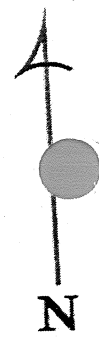
TACAN: BZN-56x (Pri)
 I/F above: N:<80k E:<80k
 S:<80k W:clear*

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

*Cochannel I/F to the west occurs below 80K ft but the orbiter should lock onto BZN-56 due to proximity

FAIRFORD FFA
 FAIRFORD FFA
 FAIRFORD FFA
 FAIRFORD FFA
 FAIRFORD FFA

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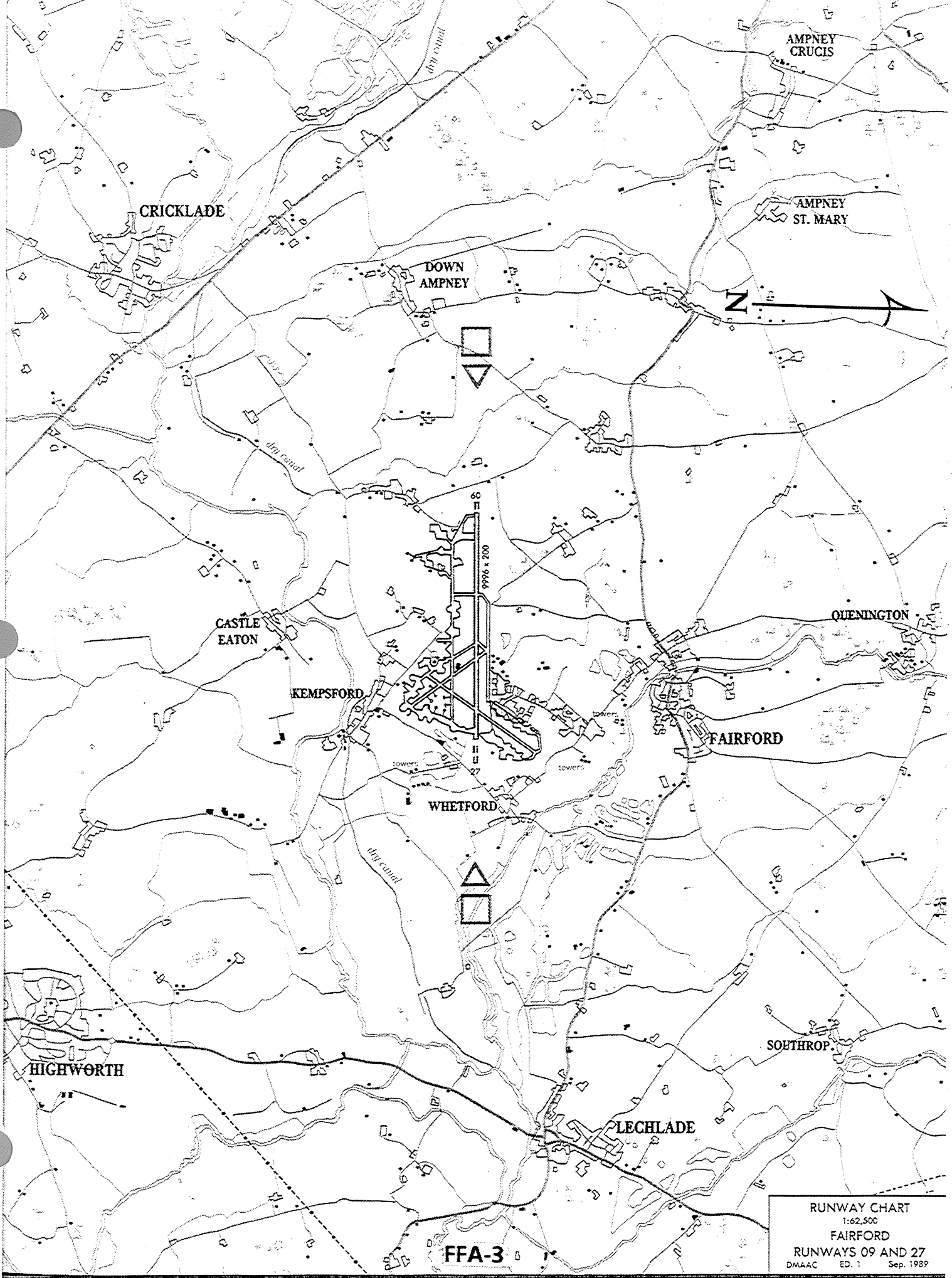


3560

2038

FFA-2

AREA CHART
1:2,000,000
FAIRFORD
51°40.9'N 01°47.4'W
DMAAC ED. 1988

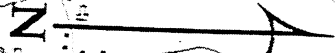


CRICKLADE

AMPNEY
CRUCIS

AMPNEY
ST. MARY

DOWN
AMPNEY



CASTLE
EATON

QUENINGTON

KEMPSFORD

FAIRFORD

WHETFORD

SOUTHROP

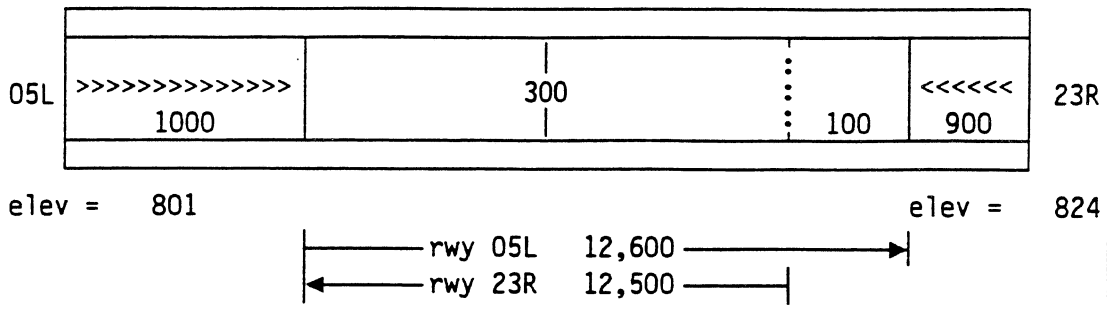
HIGHWORTH

LECHLADE

FFA-3

RUNWAY CHART
1:62,500
FAIRFORD
RUNWAYS 09 AND 27
DMAAC ED. 1 Sep. 1989

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TACAN: FFO-99x (Pri) XSF-65x (Sec)
 I/F above: N:<<80k E:<<80k N:clear E:clear
 S:<<80k W:<<80k S:clear W:clear

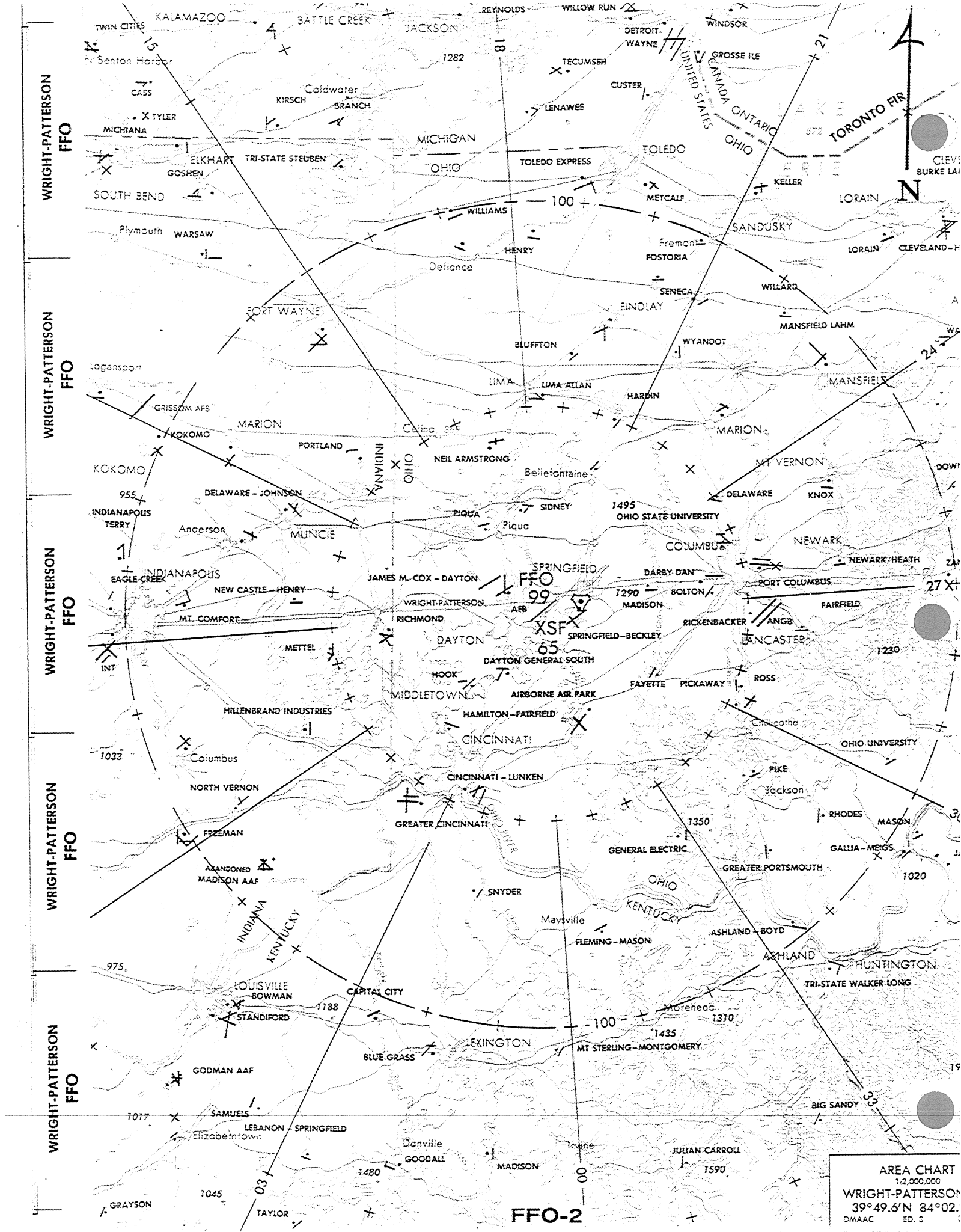
MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

WRIGHT-PATTERSON
FFO

WRIGHT-PATTERSON
FFO

WRIGHT-PATTERSON
FFO

WRIGHT-PATTERSON
FFO



WRIGHT-PATTERSON
FFO

WRIGHT-PATTERSON
FFO

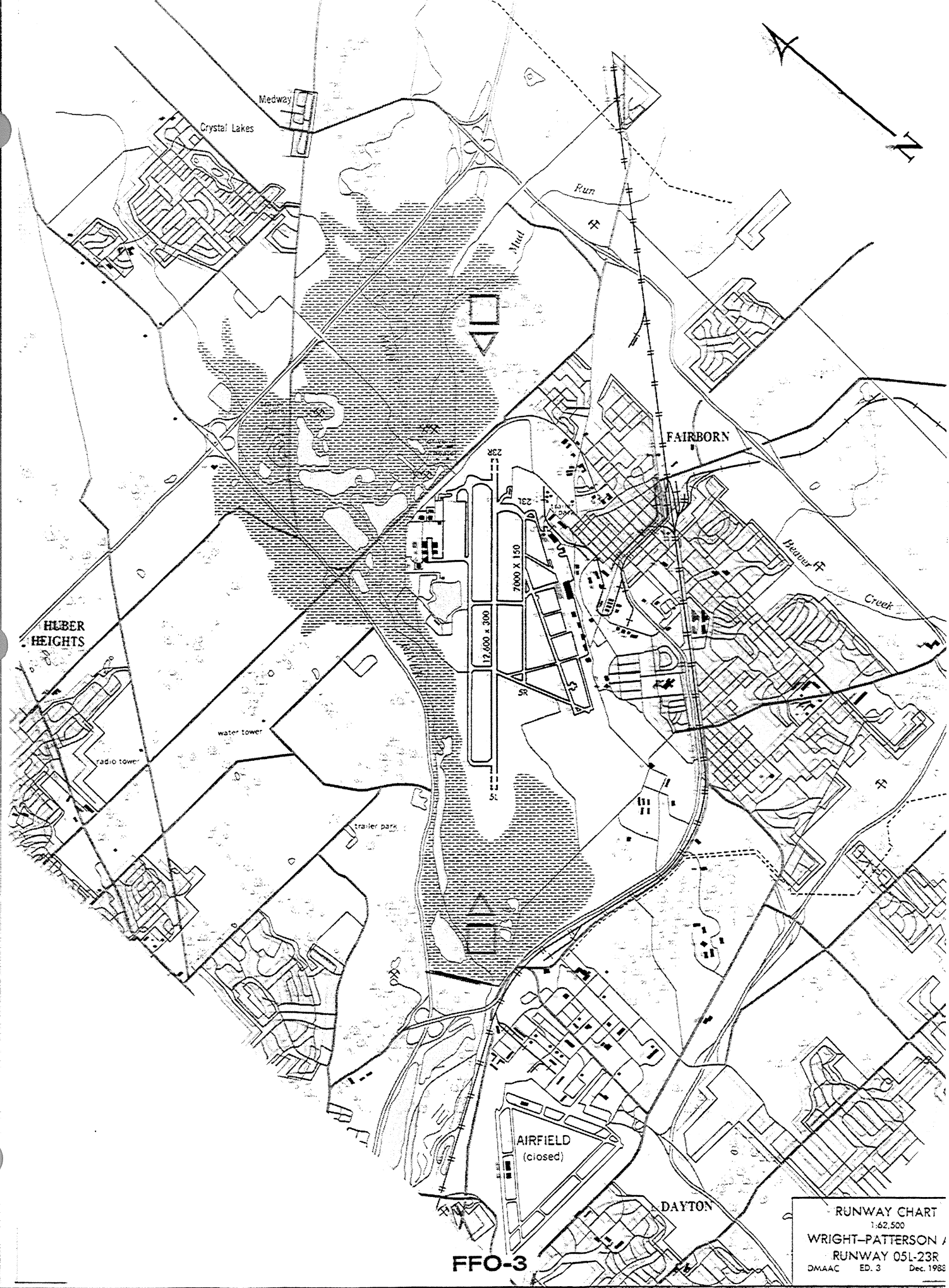
WRIGHT-PATTERSON
FFO

WRIGHT-PATTERSON
FFO

WRIGHT-PATTERSON
FFO

FFO-2

AREA CHART
1:2,000,000
WRIGHT-PATTERSON
39°49.6'N 84°02.0'W
DMAAC ED. 3



HUBER HEIGHTS

Crystal Lakes

Medway

Run

Mud

FAIRBORN

Pepper Creek

radio tower

water tower

trailer park

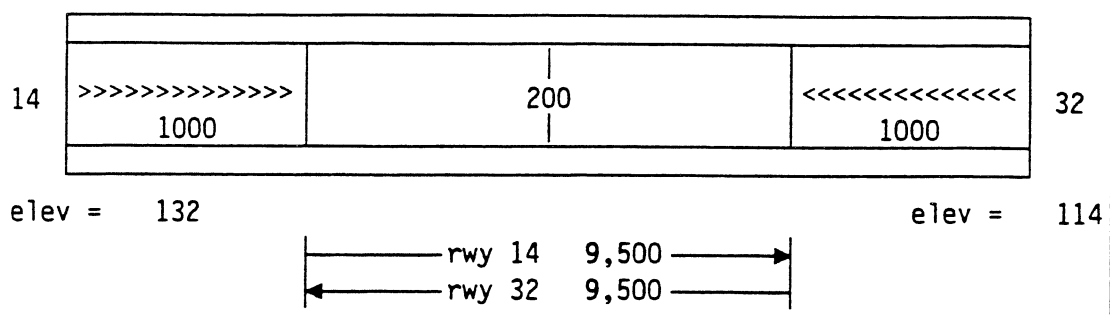
AIRFIELD
(closed)

DAYTON

FFO-3

RUNWAY CHART
1:62,500
WRIGHT-PATTERSON /
RUNWAY 05L-23R
DMAAC ED. 3 Dec. 1988

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TACAN: FMH-105x (Pri)
 I/F above: N:<80k E:<80k
 S:<80k W:<80k

HYA-94x (Sec)
 N:120k E:clear
 S:clear W: 80k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

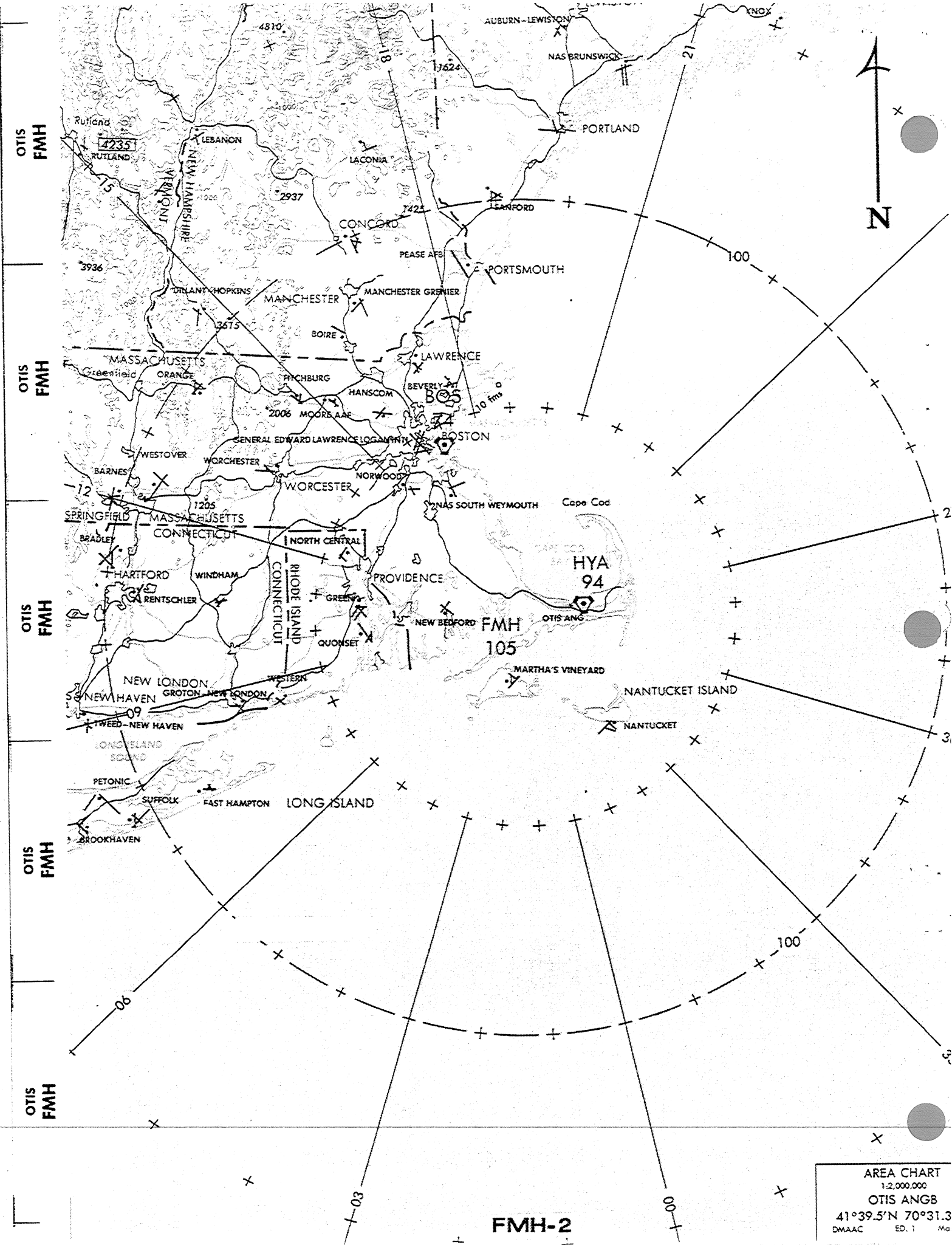
OTIS FMH

OTIS FMH

OTIS FMH

OTIS FMH

OTIS FMH



OTIS
FMH

OTIS
FMH

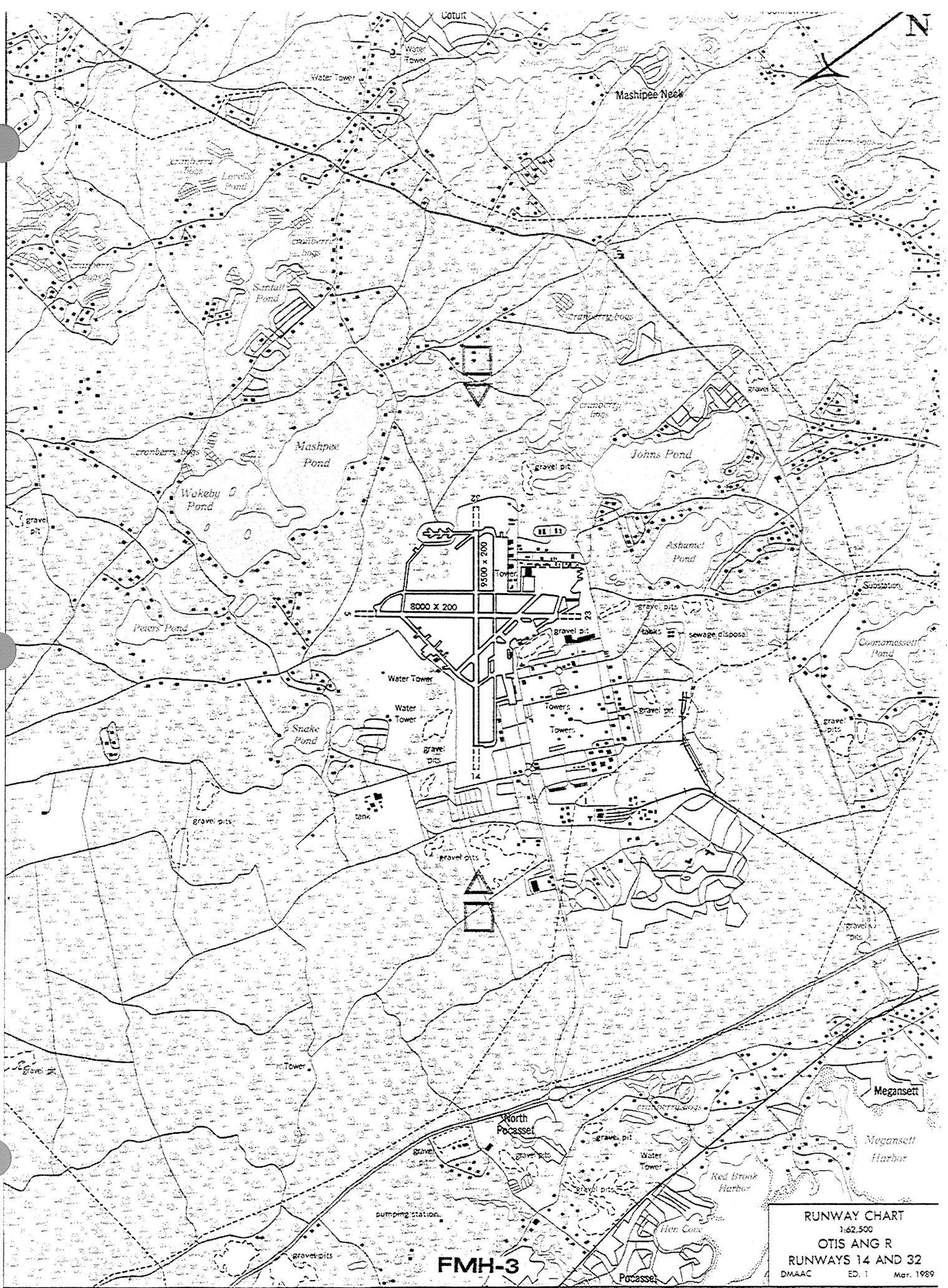
OTIS
FMH

OTIS
FMH

OTIS
FMH

FMH-2

AREA CHART
1:2,000,000
OTIS ANGB
41°39.5'N 70°31.3
DMAAC ED. 1 Mo

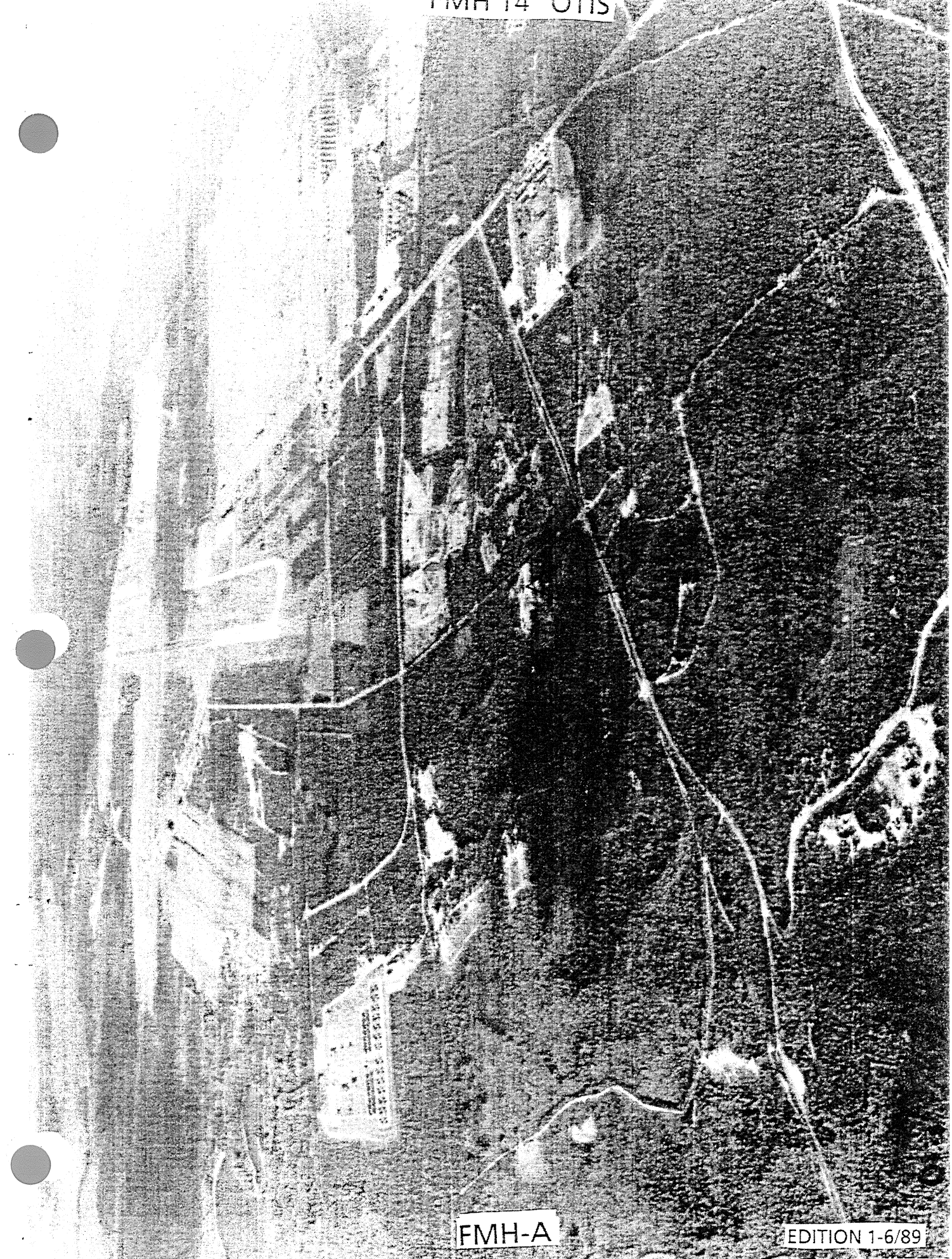


FMH-3

RUNWAY CHART
 1:62,500
OTIS ANG R
RUNWAYS 14 AND 32
 DMAAC ED. 1 Mar. 1989

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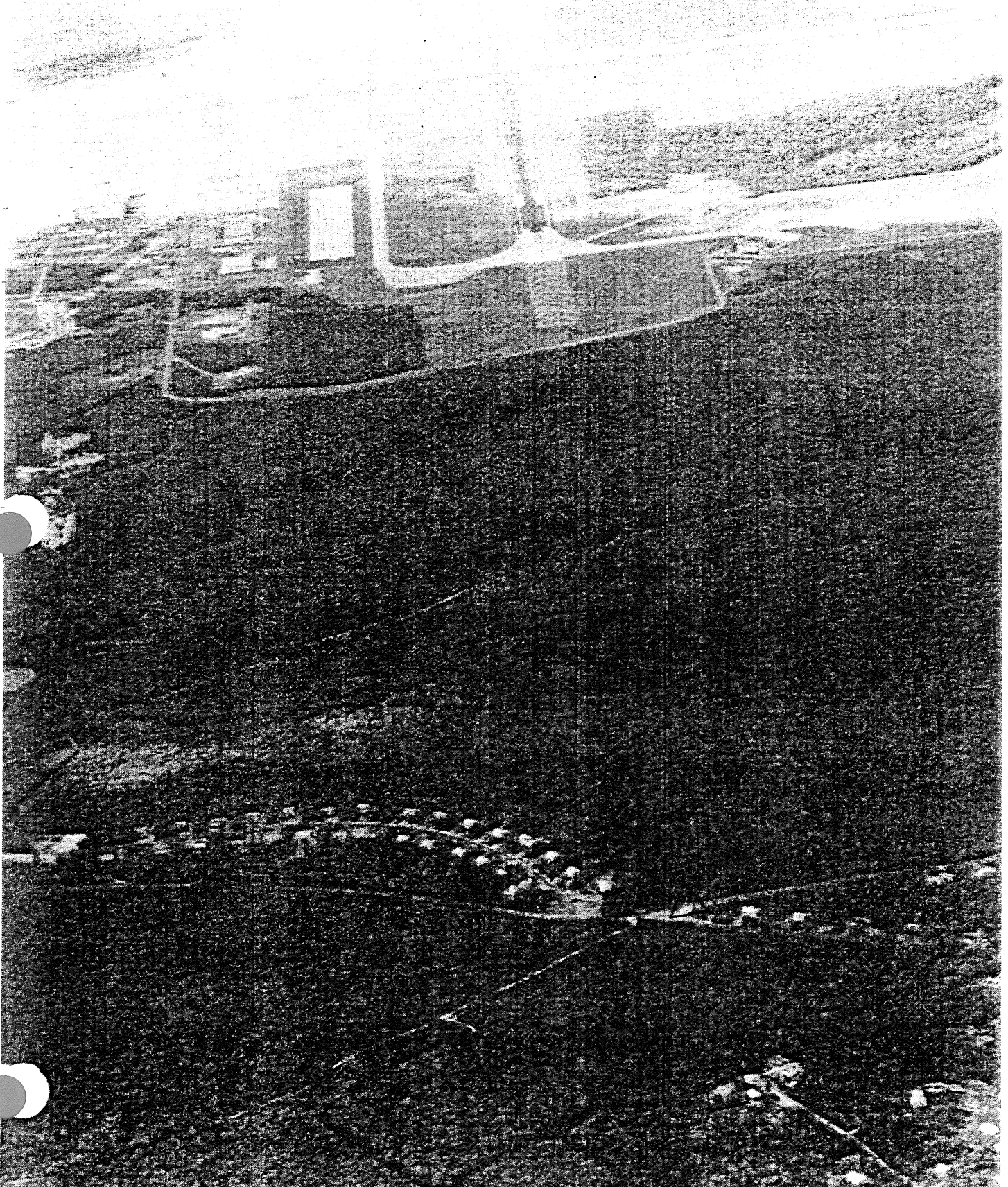
FMH 14 0115



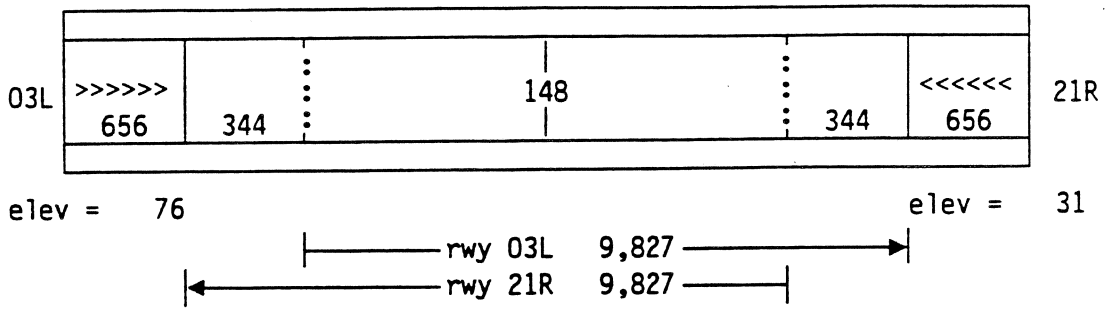
FMH-A

EDITION 1-6/89

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TACAN: TGN-103x (Pri) GDV-76x (Sec-DME)
 I/F above: N:clear E:clear N:clear E:clear
 S:clear W:clear S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

WARNING

- Expect headwinds gusting 20 to 30 knots. Expect a wind shear at 5000 ft where the wind changes from northwesterly to 030
- The terrain off the end of runways 03 L/R is hazardous

NOTE
 - Both runways are suitable. Plan on 03R because it has runway remaining markers and less traffic. Both runways have 25-ft shoulders

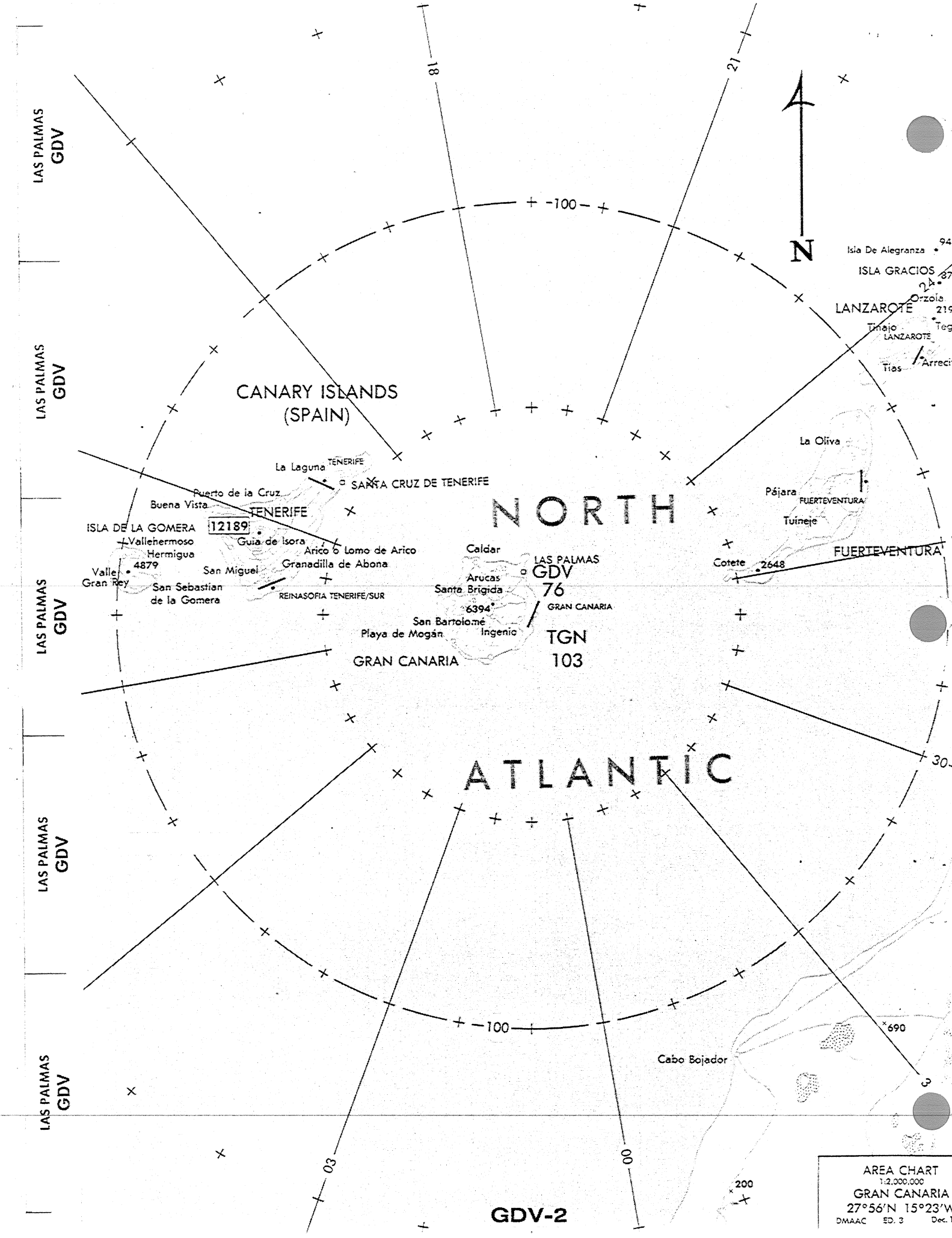
LAS PALMAS
GDV

LAS PALMAS
GDV

LAS PALMAS
GDV

LAS PALMAS
GDV

LAS PALMAS
GDV



LAS PALMAS
GDV

LAS PALMAS
GDV

LAS PALMAS
GDV

LAS PALMAS
GDV

LAS PALMAS
GDV

CANARY ISLANDS
(SPAIN)

NORTH

ATLANTIC



Isia De Alegranza 948
ISLA GRACIOSA 87
Orzola 219
Tegu
LANZAROTE
Tias / Arrecife

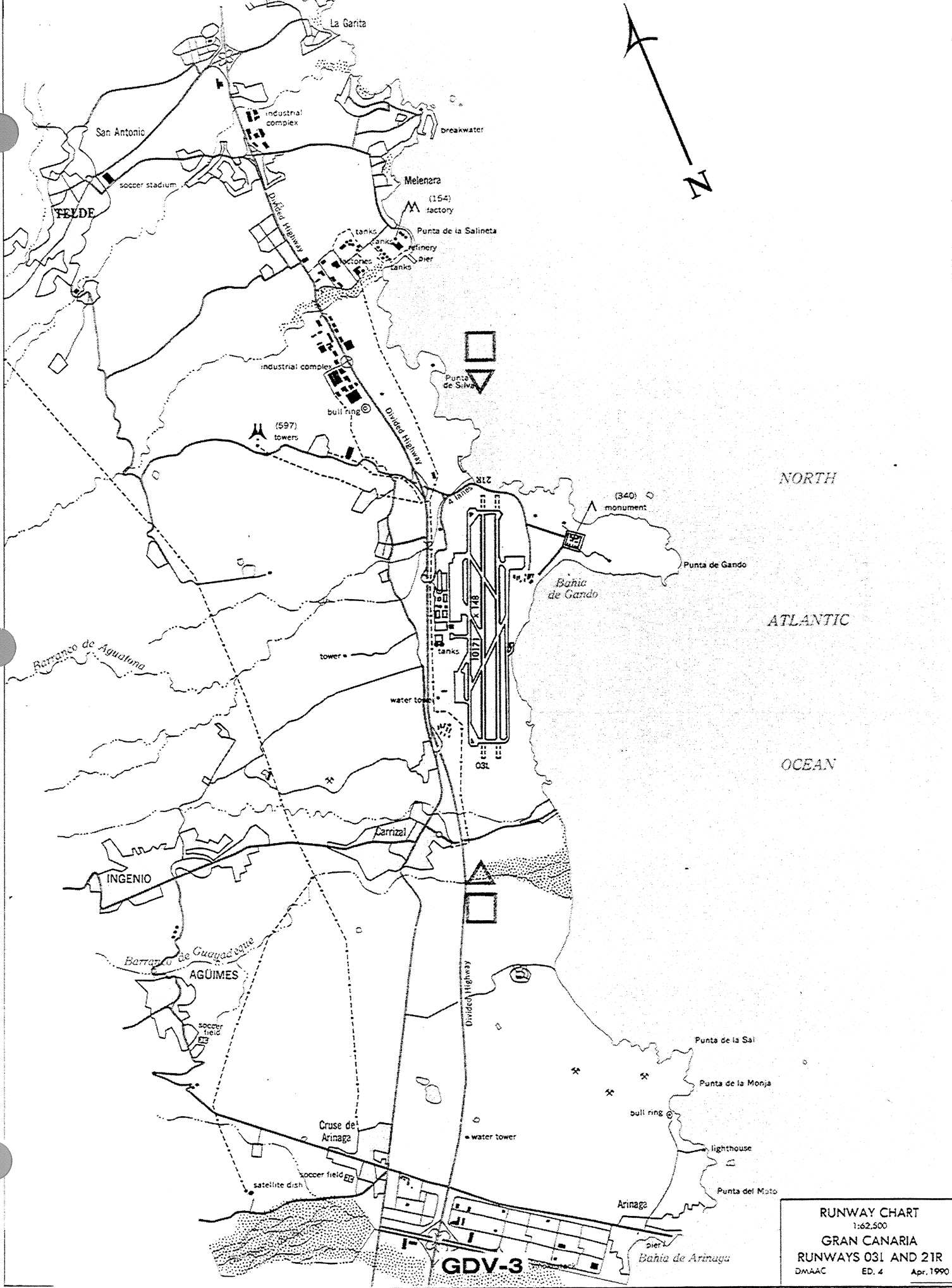
La Oliva
Pájara FUERTEVENTURA
Tuineje
Cotete 2648
FUERTEVENTURA

La Laguna TENERIFE
Puerto de la Cruz
Buena Vista
TENERIFE
ISLA DE LA GOMERA
Vallehermoso
Hermigua
Valle Gran Rey 4879
San Sebastian de la Gomera
Guia de Isora
Arico o Lomo de Arico
Granadilla de Abona
REINASOFIA TENERIFE/SUR
Caldar
Arucas
Santa Brigida 6394
Gran Canaria
Playa de Mogán
San Bartolomé Ingenio
LAS PALMAS GDV 76
TGN 103

Cabo Bojador

AREA CHART
1:2,000,000
GRAN CANARIA
27°56'N 15°23'W
DMAAC ED. 3 Dec. 11

GDV-2



NORTH
ATLANTIC
OCEAN

RUNWAY CHART
1:62,500
GRAN CANARIA
RUNWAYS 03L AND 21R
DMAAC ED. 4 Apr. 1990

GDV-3

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GDV 03L LAS PALMAS

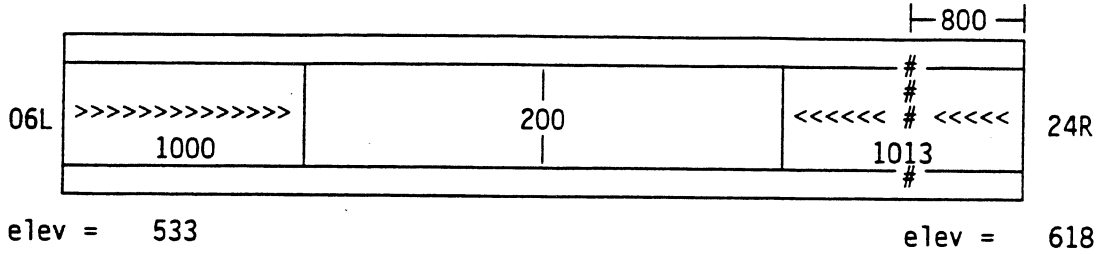


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Andersen AFB, Guam

Table Identifier

GUA



TACAN: UAM-54x (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

UNZ-100x (Sec)
 N:clear E:clear
 S:clear W:clear

MLS: (06L-Jr) ch 6
 PAPI: 06L (6500-ft point only)
 Ball Bar: 06L
 UHF: yes (guard only)

ANDERSEN
GUA

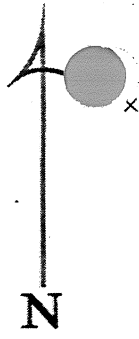
ANDERSEN
GUA

ANDERSEN
GUA

ANDERSEN
GUA

ANDERSEN
GUA

Fareillon de Mecinica
269



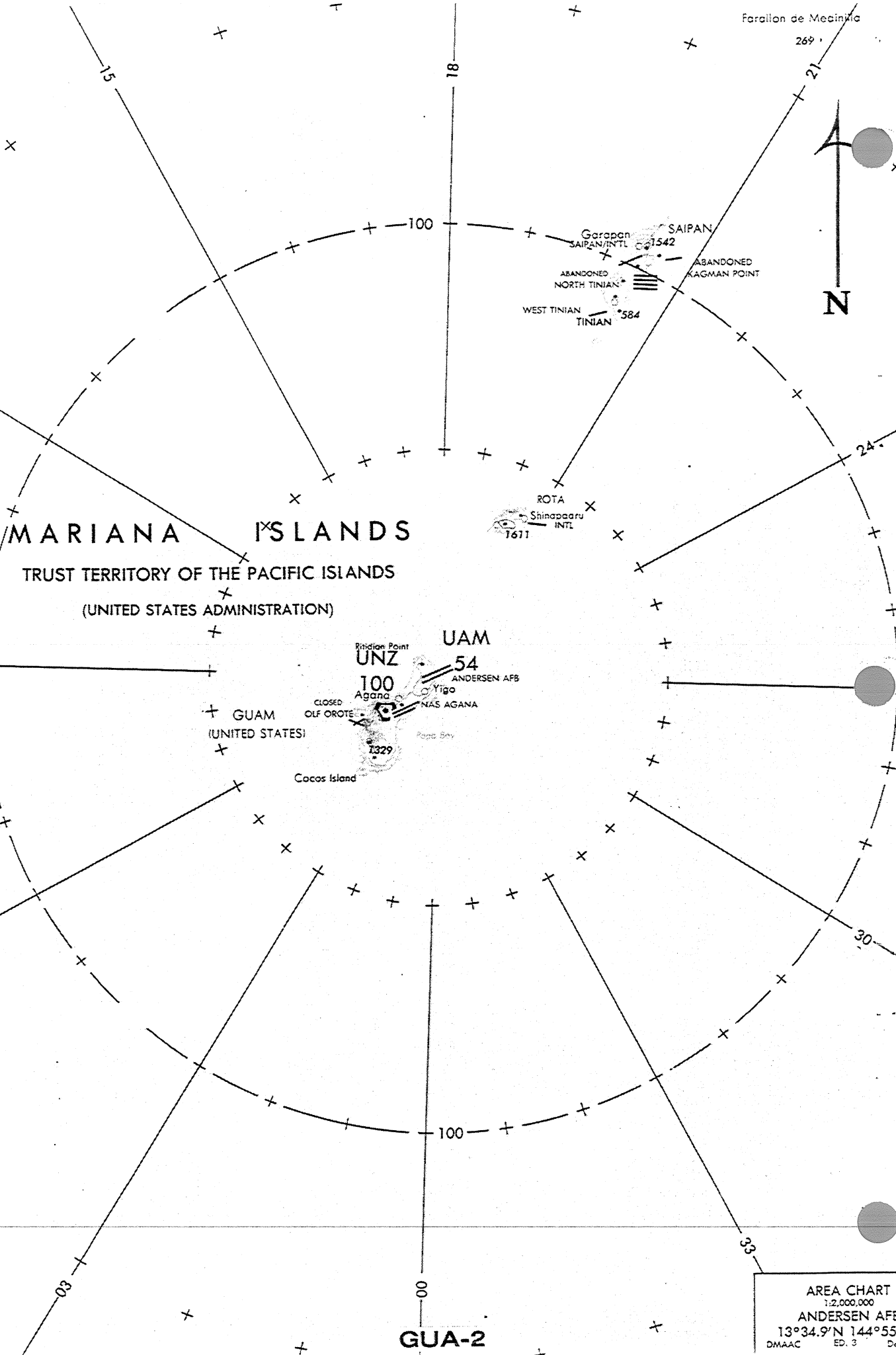
ANDERSEN
GUA

ANDERSEN
GUA

ANDERSEN
GUA

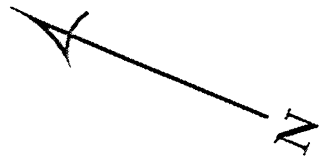
ANDERSEN
GUA

ANDERSEN
GUA



AREA CHART
1:2,000,000
ANDERSEN AFB
13°34.9'N 144°55.6'
DMAAC ED. 3 Dec.

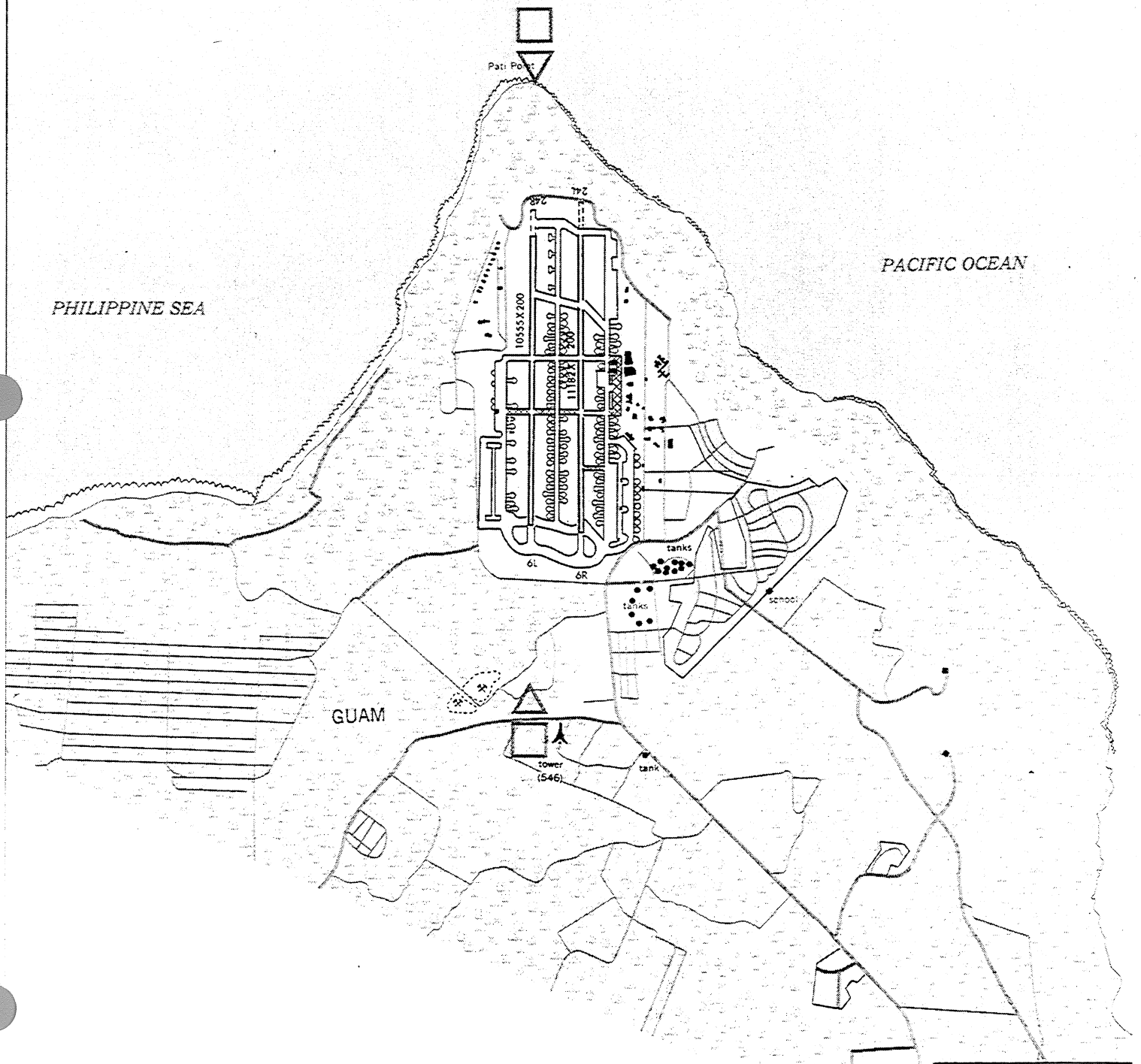
GUA-2



Pati Point

PHILIPPINE SEA

PACIFIC OCEAN



GUAM

tower
(546)

tank

tanks

tanks

school

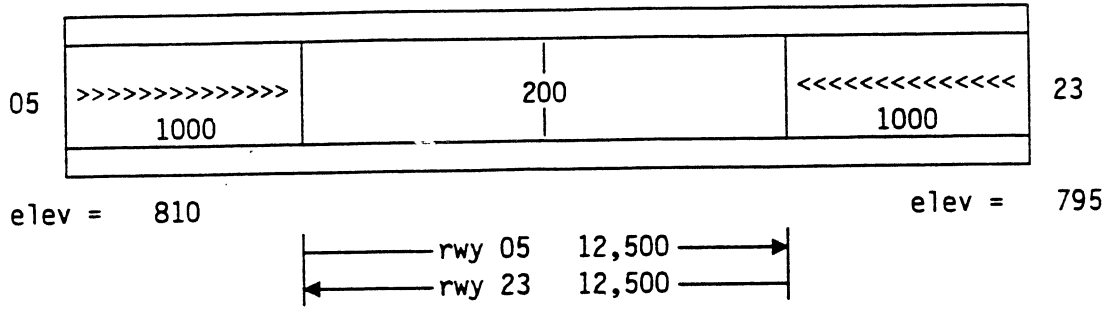
GUA-3

RUNWAY CHART
1:62,500
ANDERSEN AFB
RUNWAYS 6L AND 24R
DMAAC ED. 4 Aug. 1985

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Grissom AFB, Indiana

Table Identifier **GUS**



TACAN: GUS-112x (Pri)
 I/F above: N:<<80k E:<<80k
 S:<<80k W:<<80k

XSF-65x (Sec)
 N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

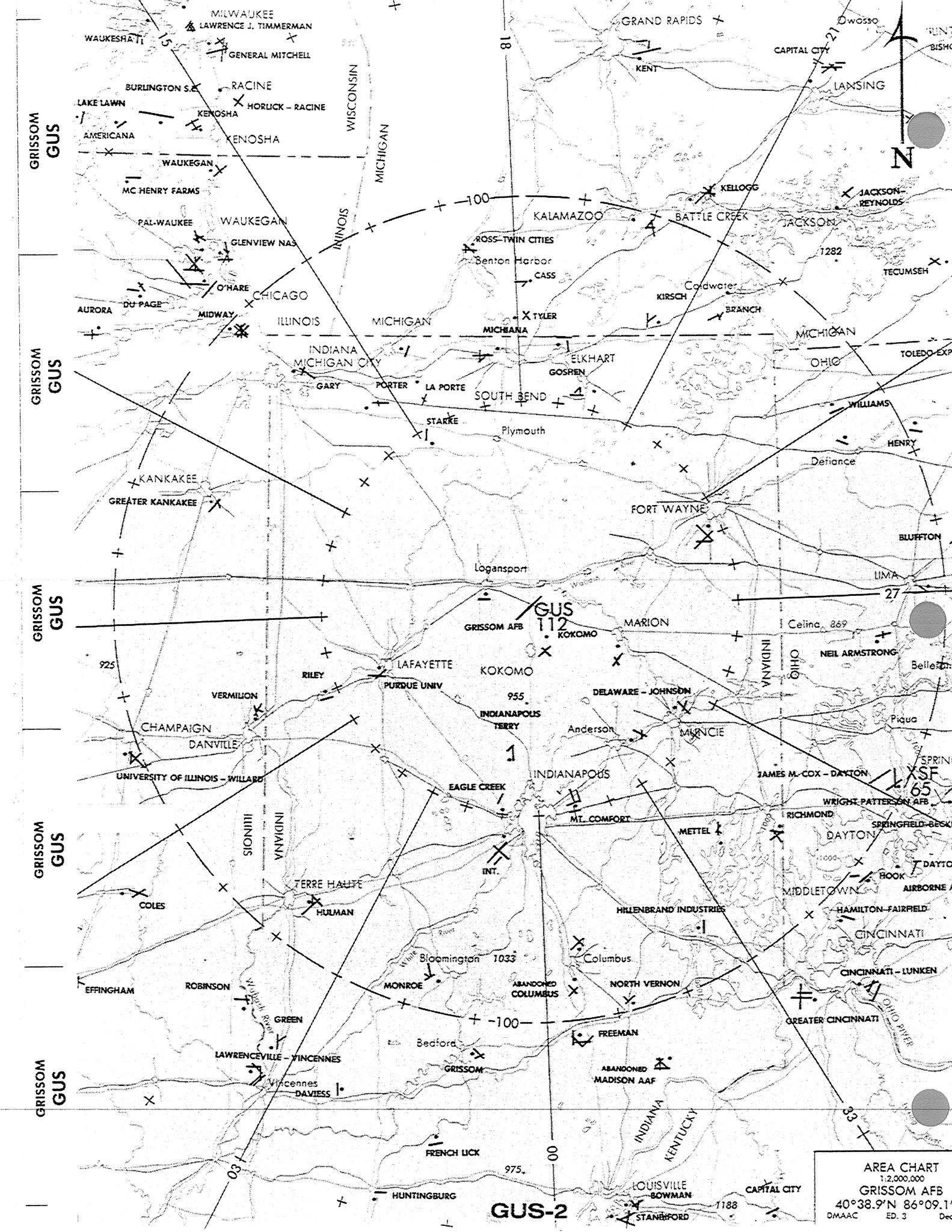
GRISSOM
GUS

GRISSOM
GUS

GRISSOM
GUS

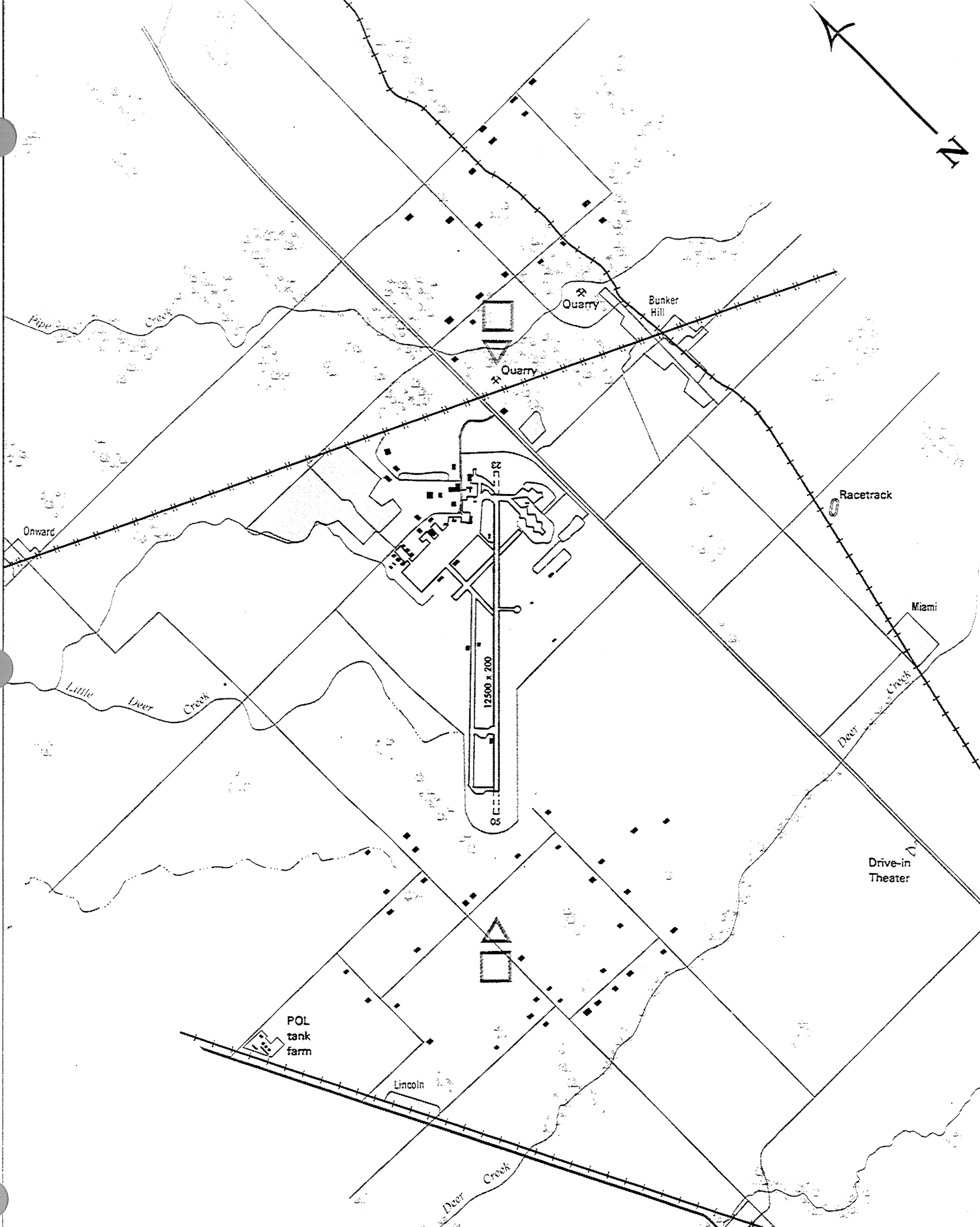
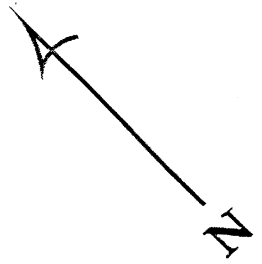
GRISSOM
GUS

GRISSOM
GUS



AREA CHART
 1:2,000,000
 GRISSOM AFB
 40°38.9'N 86°09.1'W
 DMAAC ED. 3 Dec.

GUS-2



GUS-3

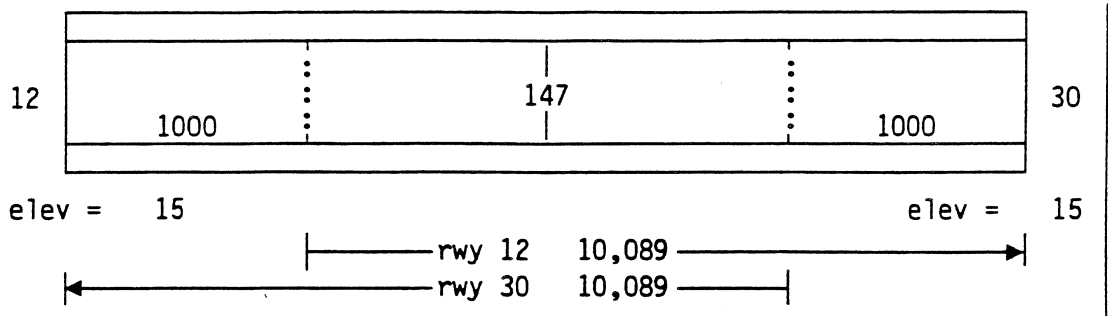
RUNWAY CHART
 1:62,500
GRISSEM AFB
RUNWAYS 05 AND 23
 DMAAC ED. 3 Dec. 1988

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Hao, Tuamotu Isle, Fr Pol

Table Identifier

HAO



TACAN: HA-80x (Pri)
I/F above: N:clear E:clear
S:clear W:clear

MLS: none
PAPI: none
Ball Bar: none
UHF: none

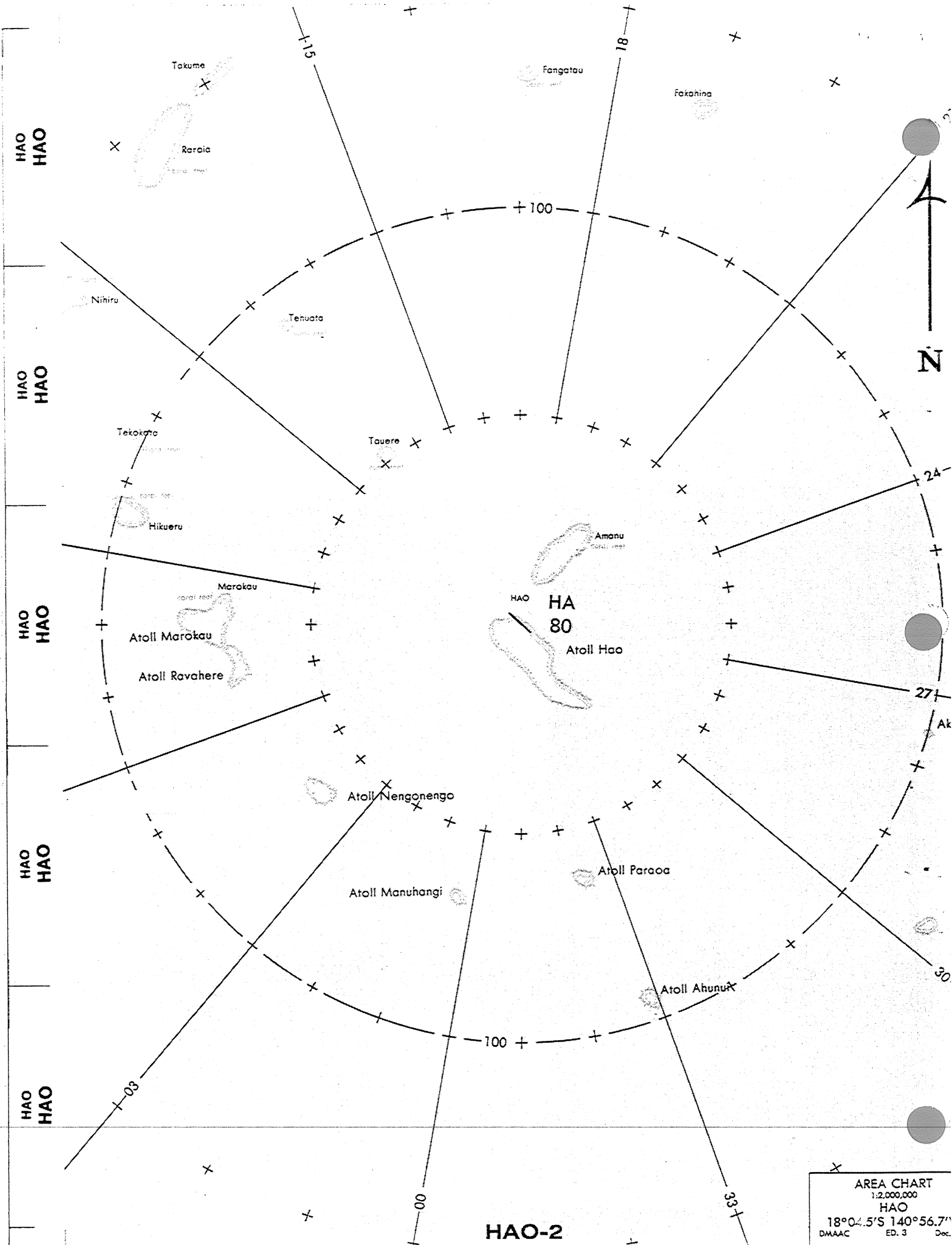
HAO
HAO

HAO
HAO

HAO
HAO

HAO
HAO

HAO
HAO



HAO
HAO
HAO

HAO
HAO
HAO

HAO
HAO
HAO

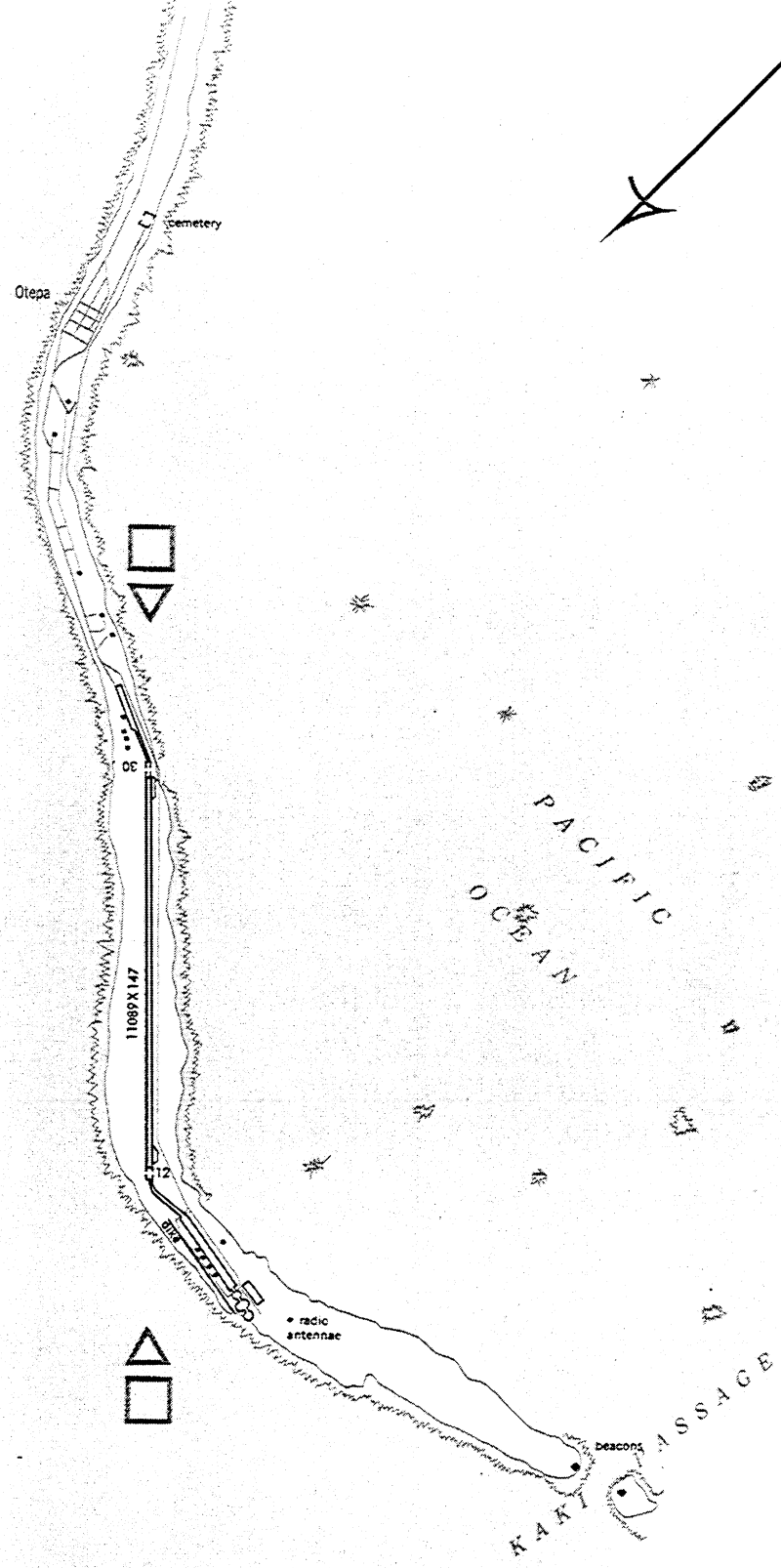
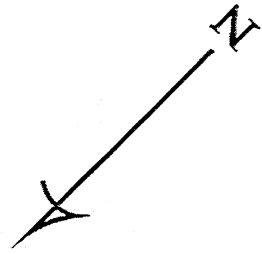
HAO
HAO
HAO

HAO
HAO
HAO



HAO-2

AREA CHART
1:2,000,000
HAO
18°04.5'S 140°56.7'
DMAAC ED. 3 Doc.

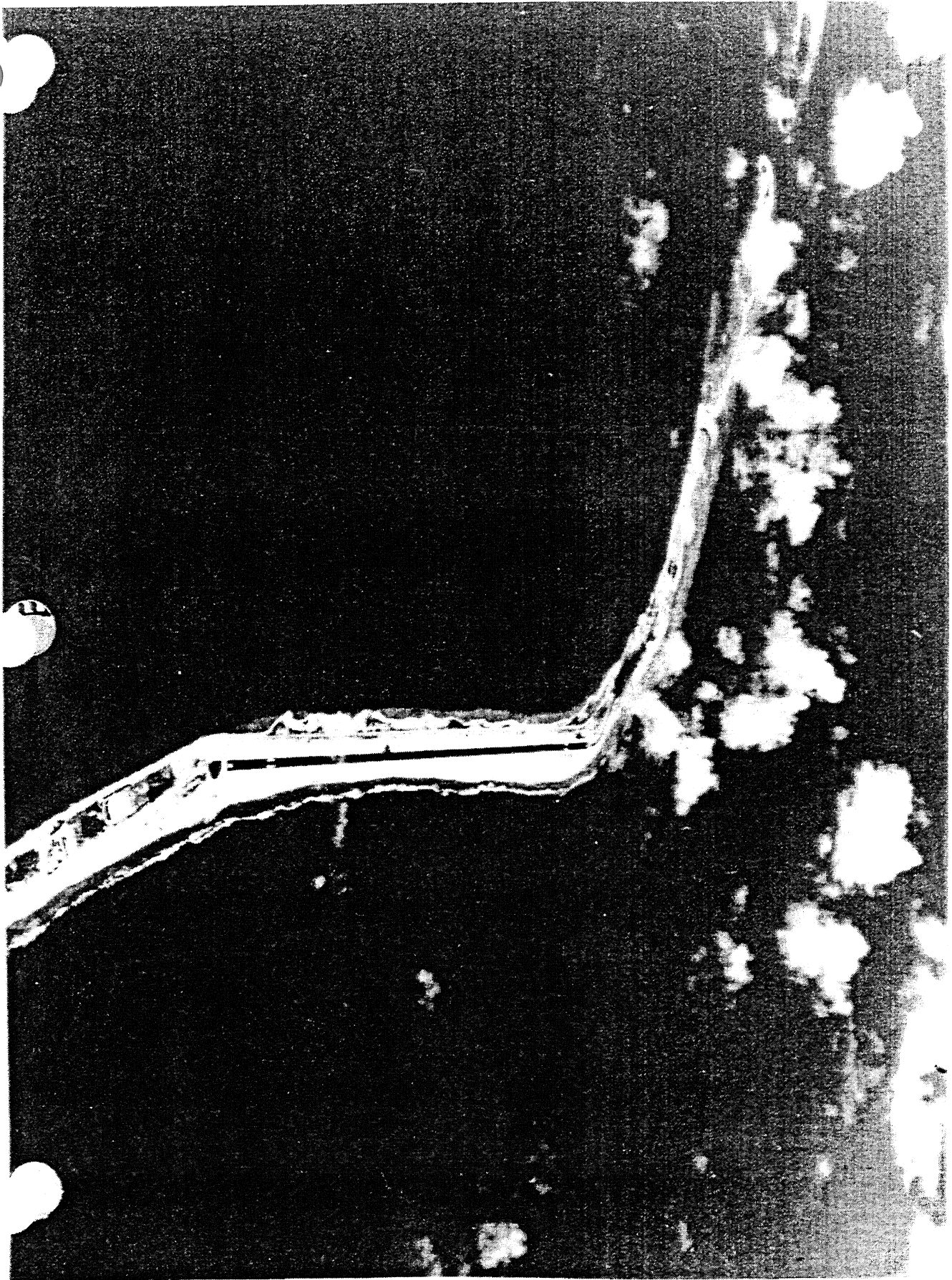


HAO-3

RUNWAY CHART
1:62,500
HAO
RUNWAY 12 AND 30
DMAAC ED. 3 Dec. 1998

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HAO



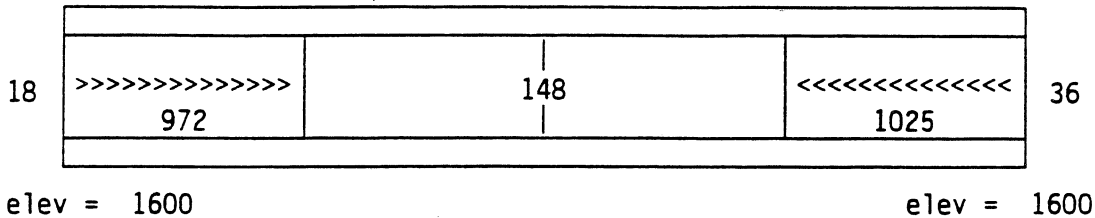
HAO-A

EDITION 1-6/89

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Hoedspruit AFS, S. Africa

Table Identifier **HDS**



TACAN: HS-73x (Pri)
I/F above: N:clear E:clear
S:clear W:clear

MLS: none
PAPI: none
Ball Bar: none
UHF: none

HOEDSPRUIT
HDS

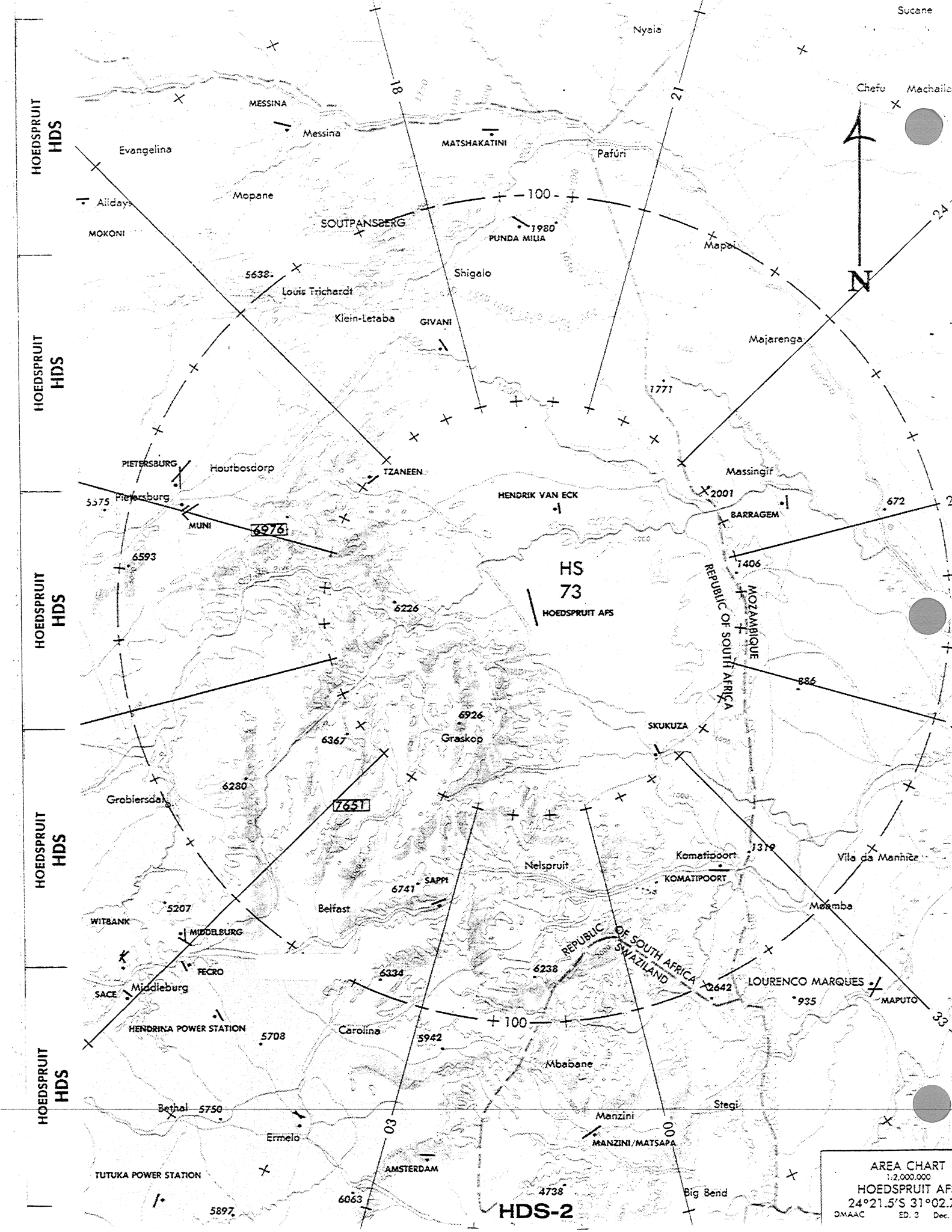
HOEDSPRUIT
HDS

HOEDSPRUIT
HDS

HOEDSPRUIT
HDS

HOEDSPRUIT
HDS

MAPS/ALL/GEN B



HOEDSPRUIT
HDS

HOEDSPRUIT
HDS

HOEDSPRUIT
HDS

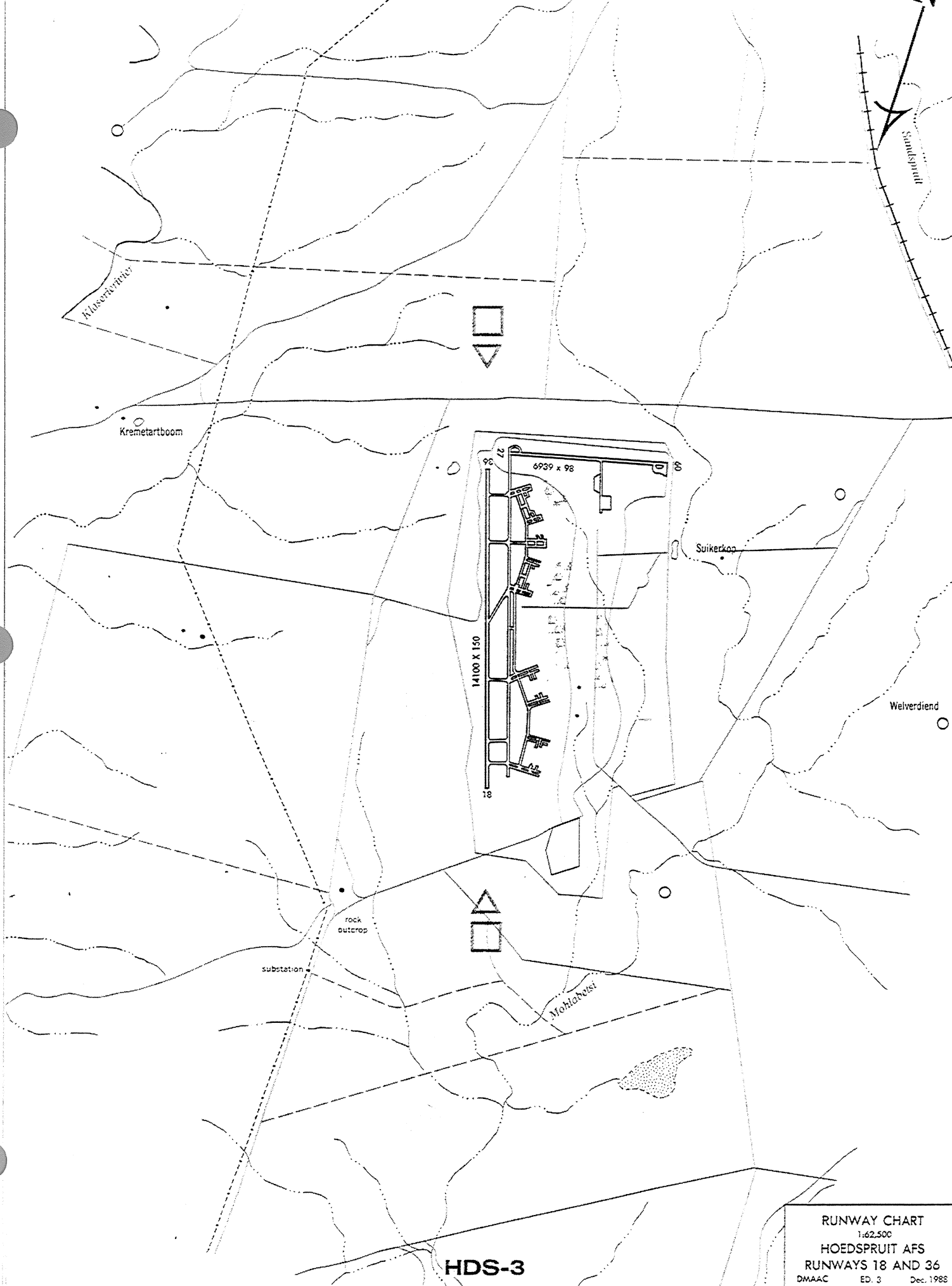
HOEDSPRUIT
HDS

HOEDSPRUIT
HDS

HS
73
HOEDSPRUIT AFS

AREA CHART
1:2,000,000
HOEDSPRUIT AFS
24°21.5'S 31°02.7
DMAAC ED. 3 Dec. 1

HDS-2



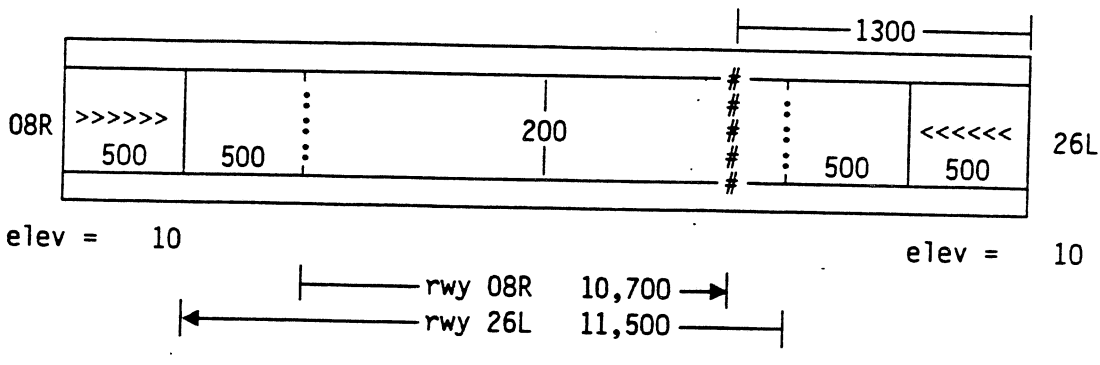
HDS-3

RUNWAY CHART
 1:62,500
 HOEDSPRUIT AFS
 RUNWAYS 18 AND 36
 DMAAC ED. 3 Dec. 1988

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Hickam AFB, Hawaii

Table Identifier **HNL**



TACAN: HNL-95x (Pri) CKH-86x (Sec)
 I/F above: N:clear E:clear N:clear E:clear
 S:clear W:clear S:clear W:clear

MLS: (08R-Jr) ch 6
 PAPI: none
 Ball Bar: 08R
 UHF: yes (guard only)

NOTE
 - Flashing strobe lights on a barge 6500 ft from the threshold of rwy 08R

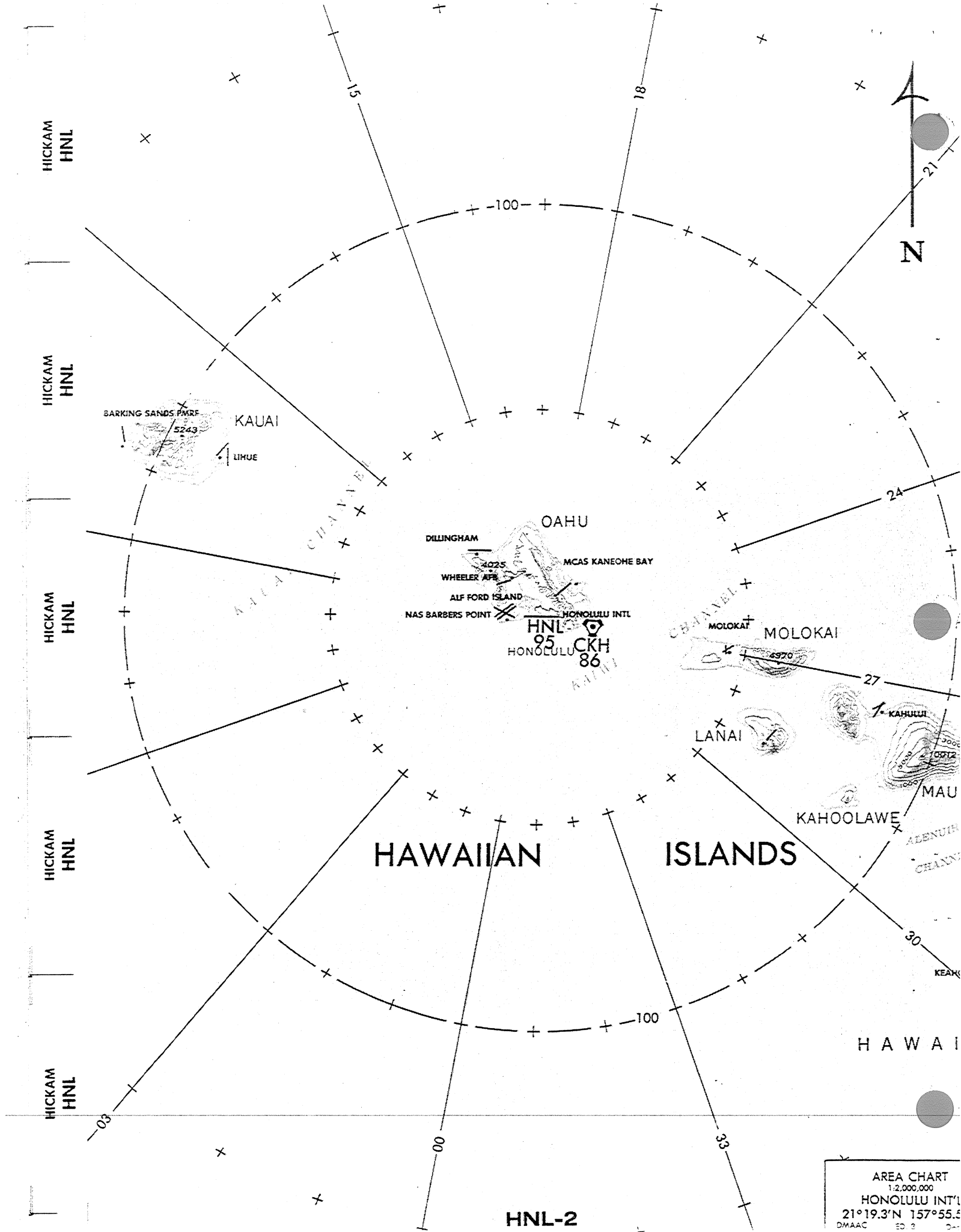
HICKAM
HNL

HICKAM
HNL

HICKAM
HNL

HICKAM
HNL

HICKAM
HNL



HICKAM
HNL

HICKAM
HNL

HICKAM
HNL

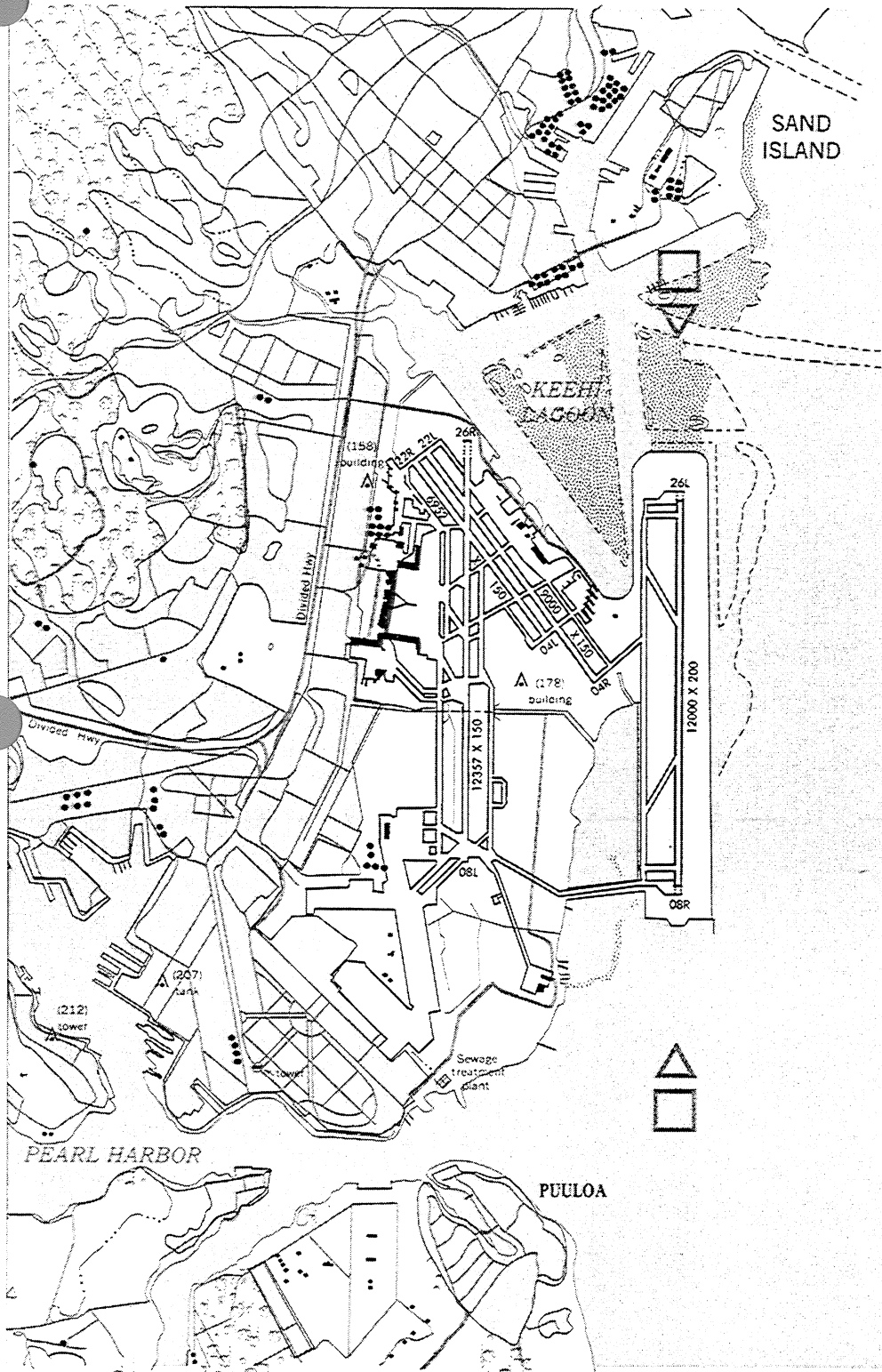
HICKAM
HNL

HICKAM
HNL

HAWAIIAN ISLANDS

HNL-2

AREA CHART
1:2,000,000
HONOLULU INT'L
21°19.3'N 157°55.5'
DMAAC ED 3



PACIFIC

OCEAN

PEARL HARBOR

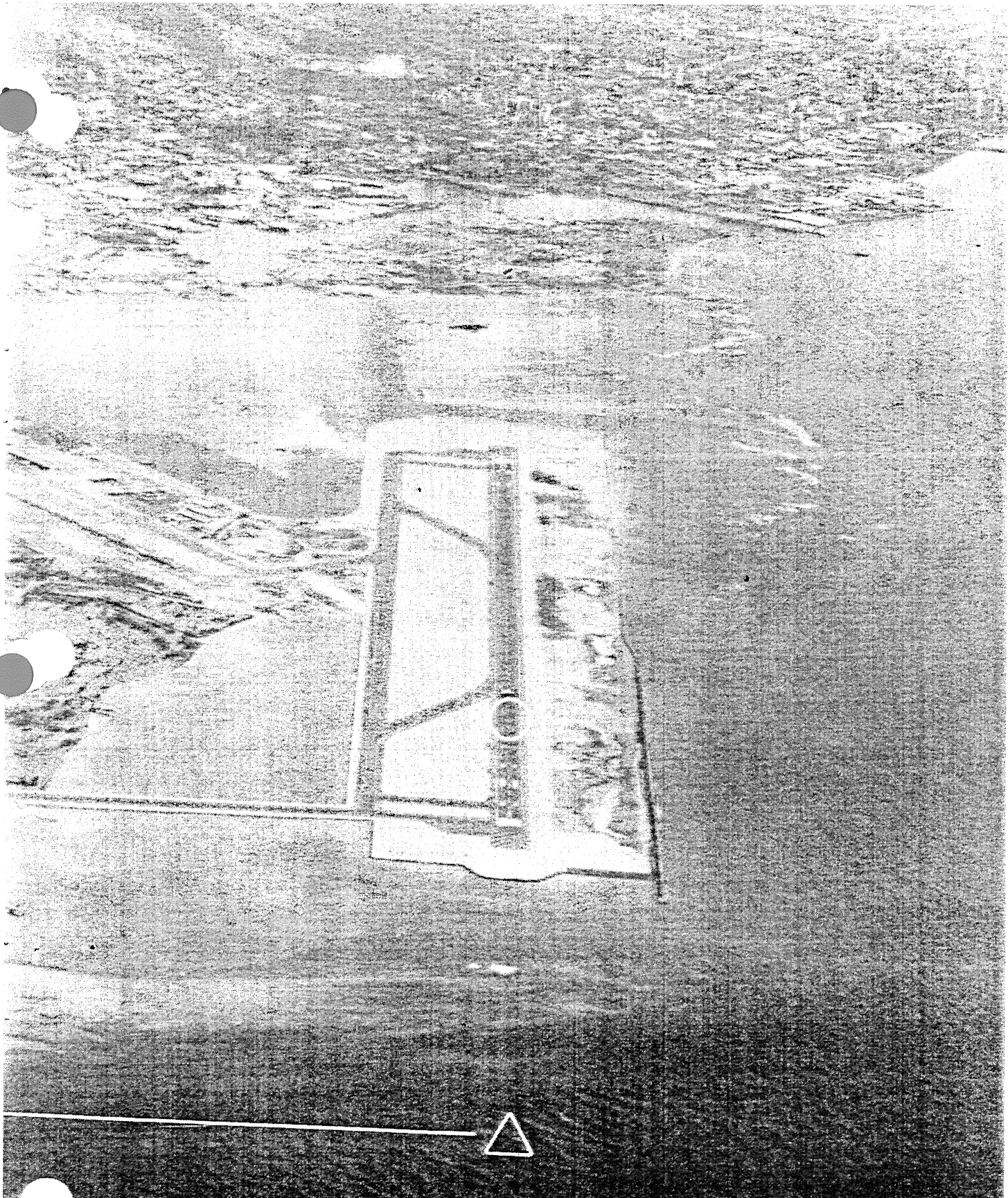
PULOA

SAND ISLAND

HNL-3

RUNWAY CHART
1:62,500
HONOLULU INT'L
RUNWAYS 08R AND 26L
DMAAC ED. 3 Dec. 1988

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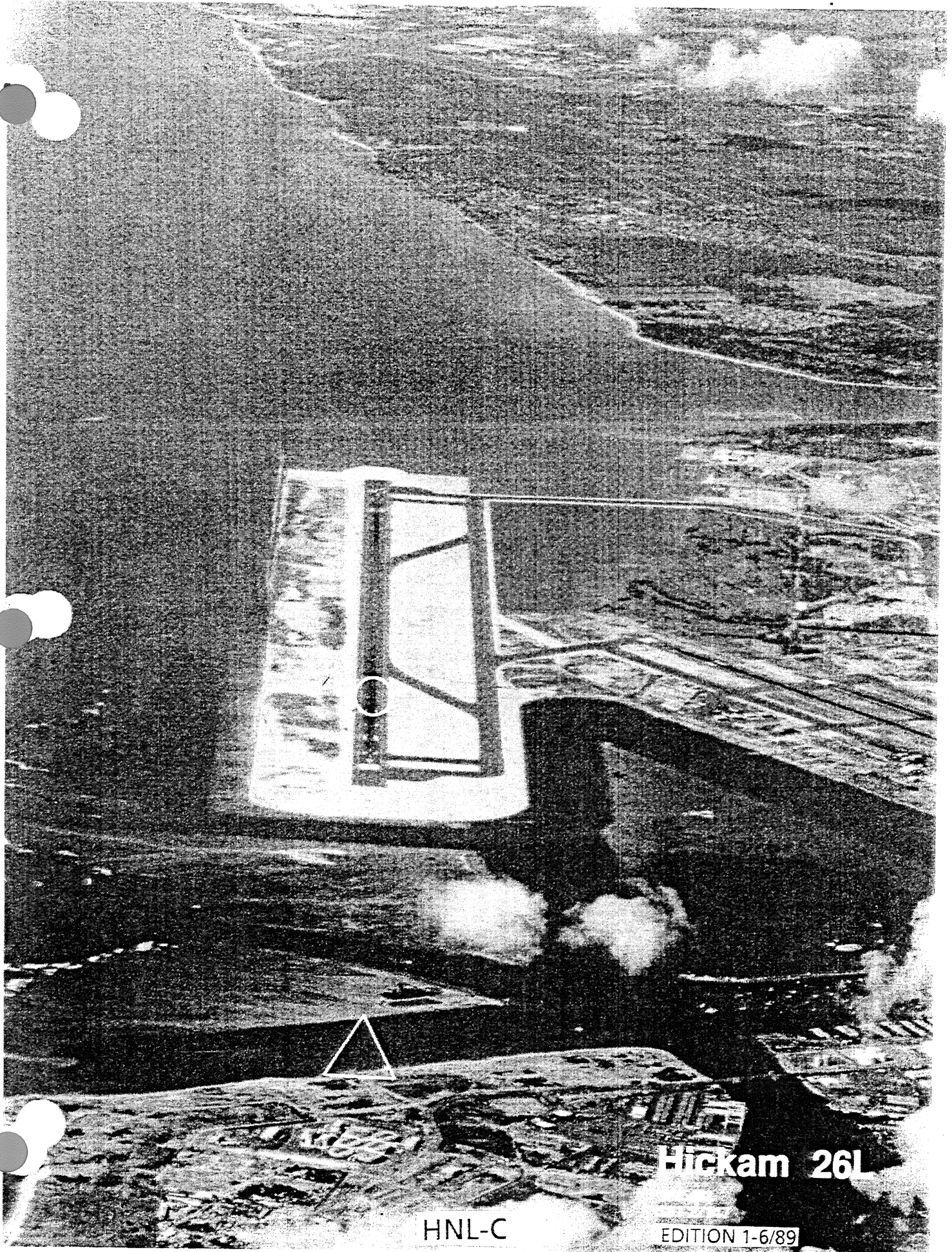
HNL-A

Hickam 08R

1/15/82
S81-27144

EDITION 1-6/89

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Hickam 26L

HNL-C

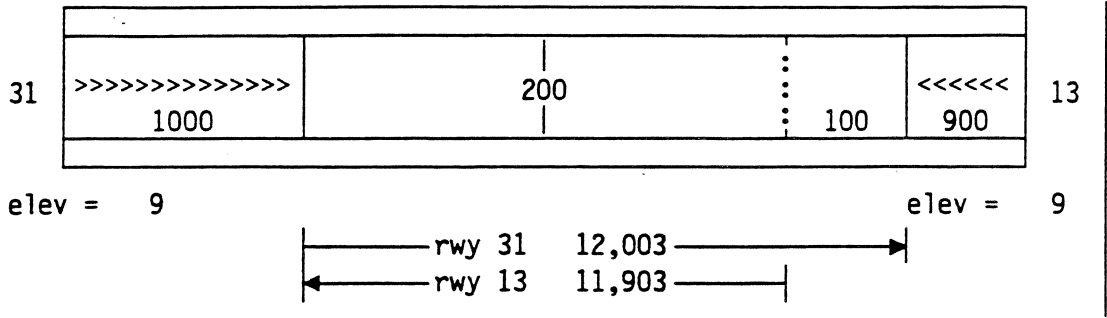
EDITION 1-6/89

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Diego Garcia NAF, Indian Ocean

Table Identifier

JDG



TACAN: NKW-57x (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

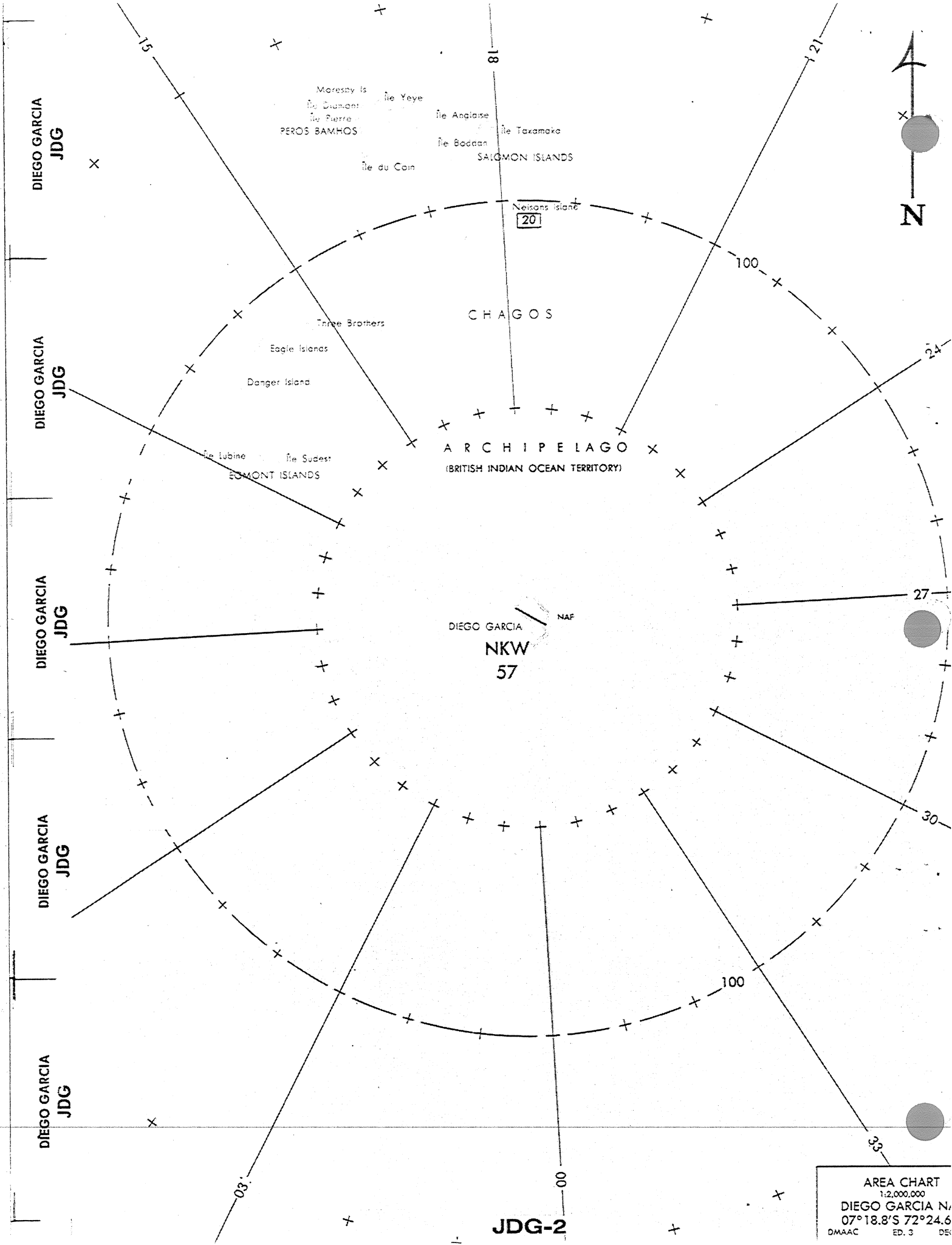
DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

DIEGO GARCIA
JDG



DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

DIEGO GARCIA
JDG

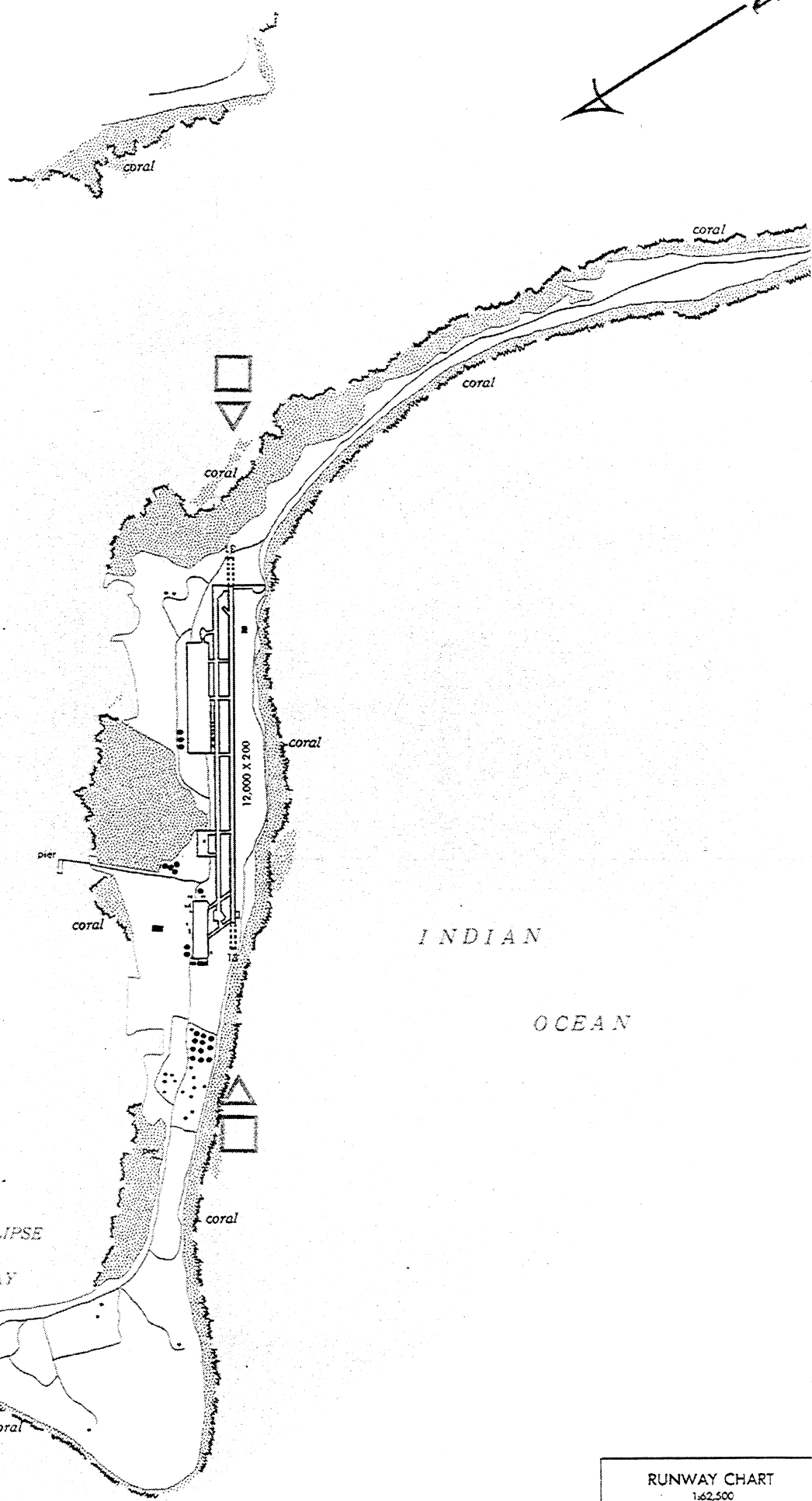
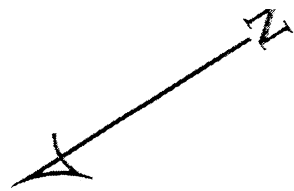
Moresby Is
Ile Yeye
Ile Anglaise
Ile Taxamaka
Ile Badaan
Ile du Coin
PEROS BAMHOS
SALOMON ISLANDS

Neison's Island
20
CHAGOS
Three Brothers
Eagle Islands
Danger Island
Ile Lubine
Ile Sudest
EDMONT ISLANDS
ARCHIPELAGO
(BRITISH INDIAN OCEAN TERRITORY)

DIEGO GARCIA
NAW
NKW
57

JDG-2

AREA CHART
1:2,000,000
DIEGO GARCIA N/
07°18.8'S 72°24.6
DMAAC ED. 3 DEJ

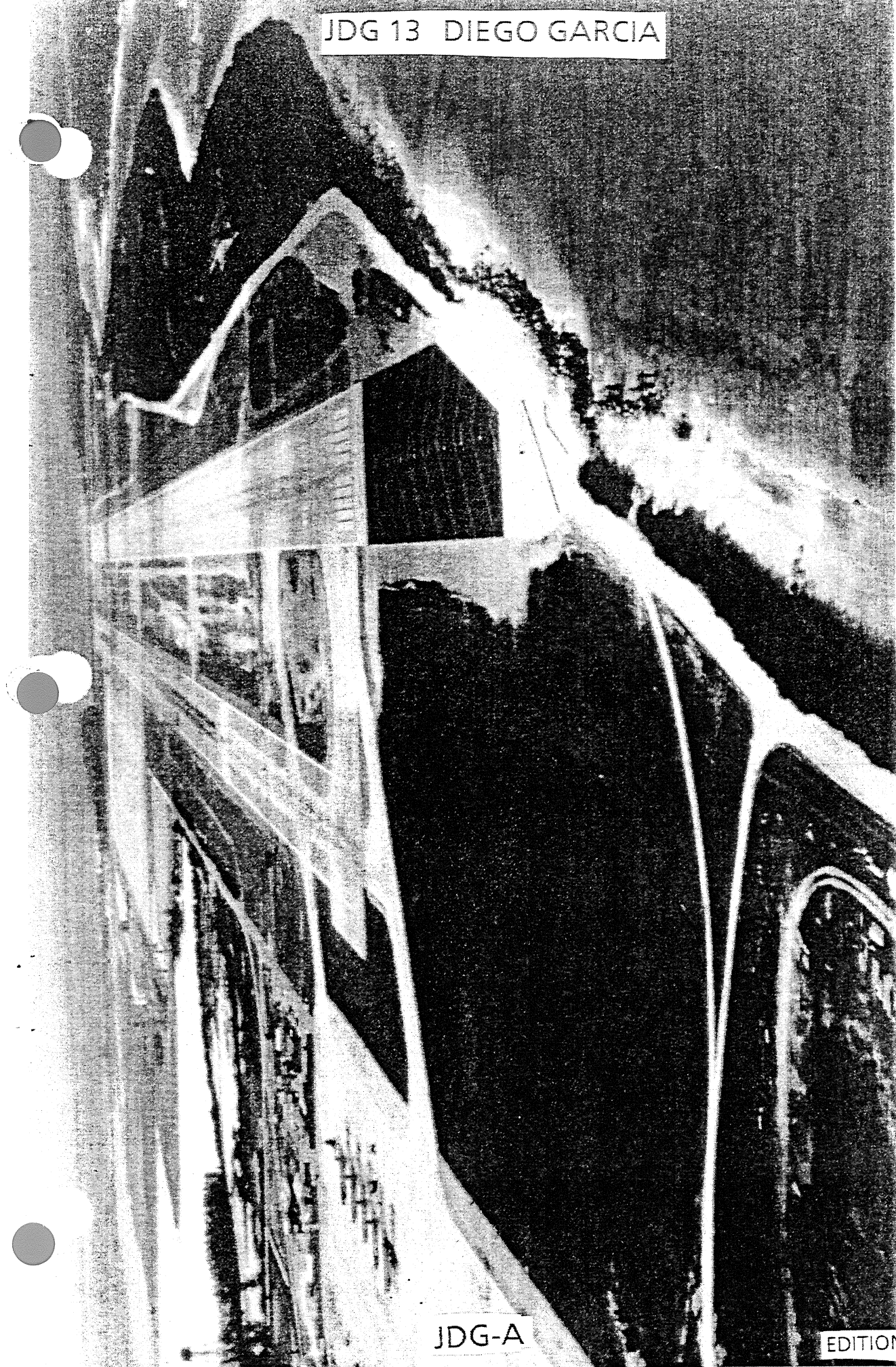


JDG-3

RUNWAY CHART
1:62,500
DIEGO GARCIA NAF
RUNWAYS 13 AND 31
DMAAC ED. 4 Dec. 1988

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JDG 13 DIEGO GARCIA



JDG-A

EDITION 1-6/89

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JDG 31 DIEGO GARCIA

JDG-C

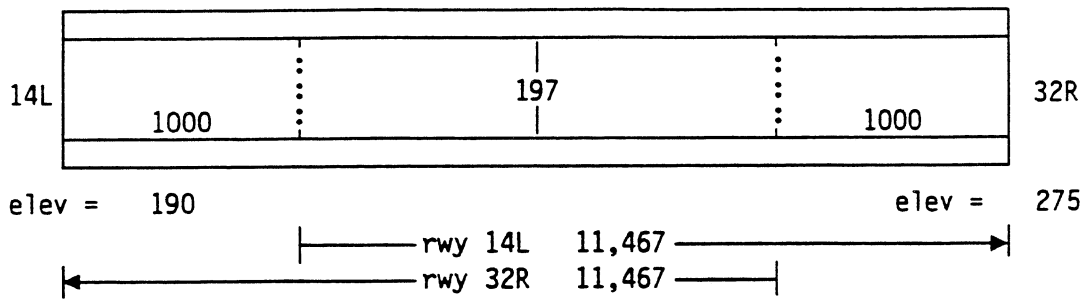
EDITION 1-6/89

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KoIn/Bonn, West Germany

Table Identifier

KBO



TACAN: NOR-109x (Pri)
 I/F above: N:clear E:80k
 S:<80k W:80k

KBO-58y (Sec)
 N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

KOLN/BONN
KBO

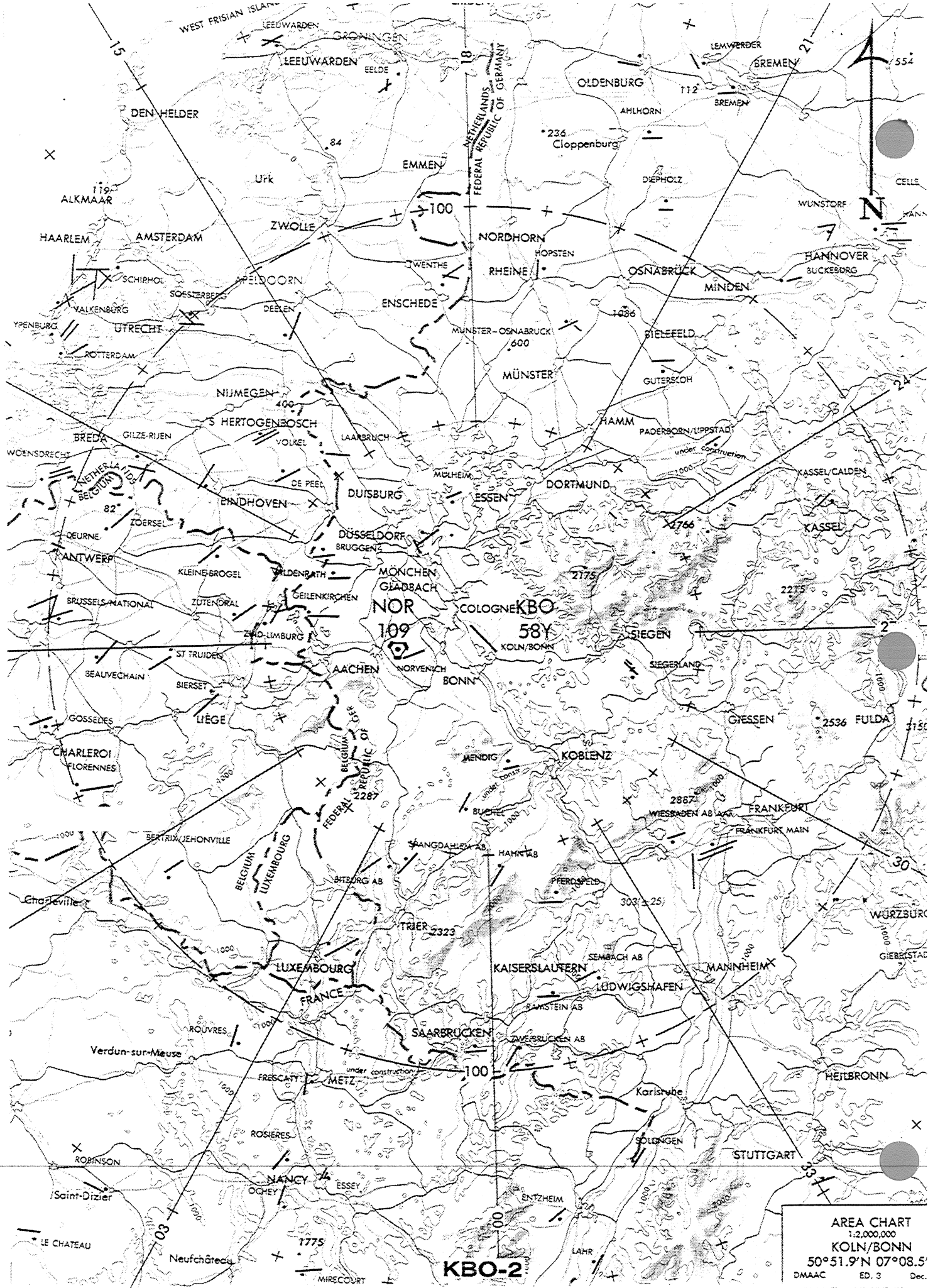
KOLN/BONN
KBO

KOLN/BONN
KBO

KOLN/BONN
KBO

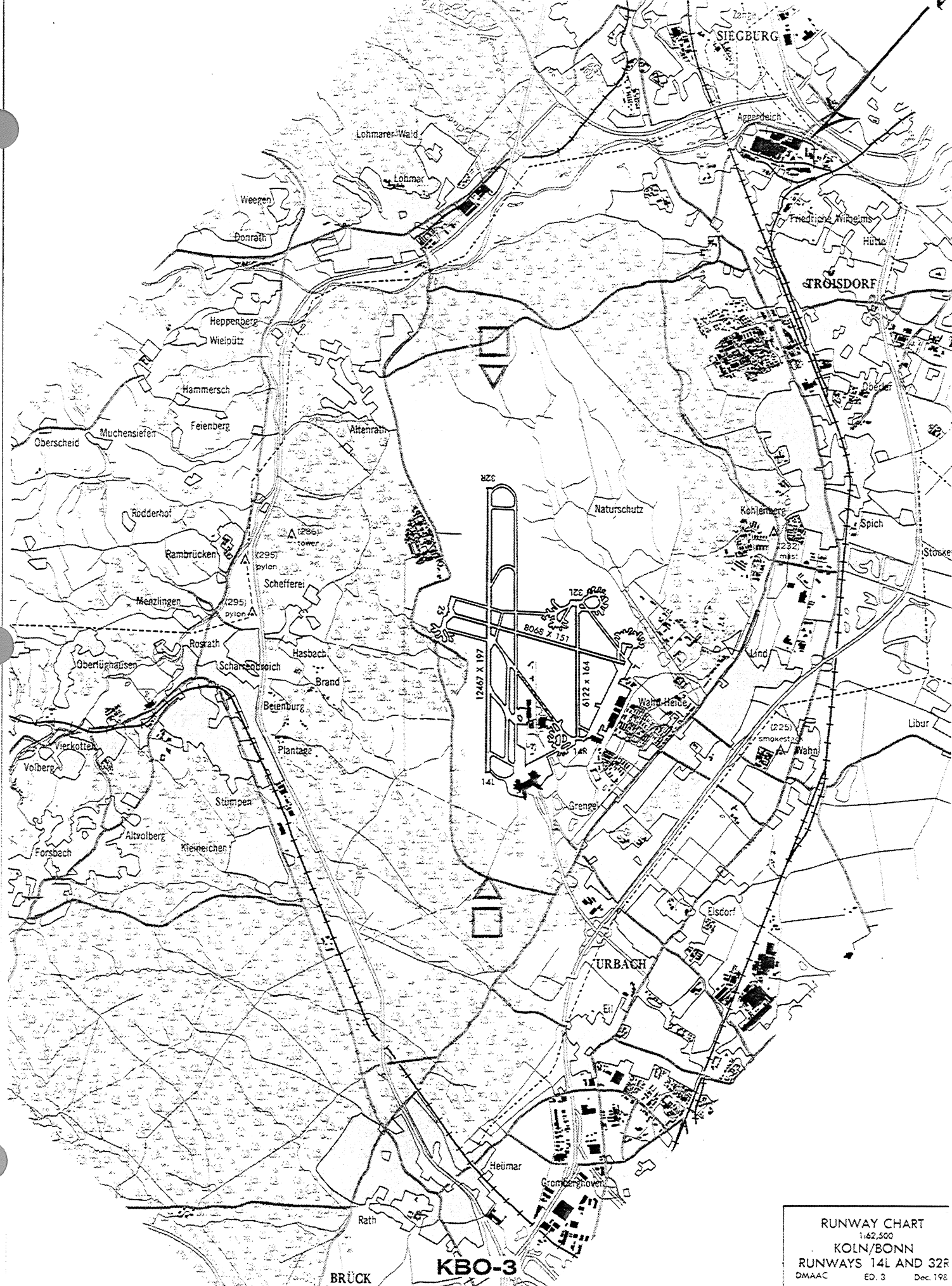
KOLN/BONN
KBO

KOIN/BONN
KBO



AREA CHART
1:2,000,000
KOIN/BONN
50°51.9'N 07°08.5'
DMAAC ED. 3 Dec.

KBO-2



RUNWAY CHART
 1:62,500
 KÖLN/BONN
 RUNWAYS 14L AND 32R
 DMAAC ED. 3 Dec. 198

KBO-3

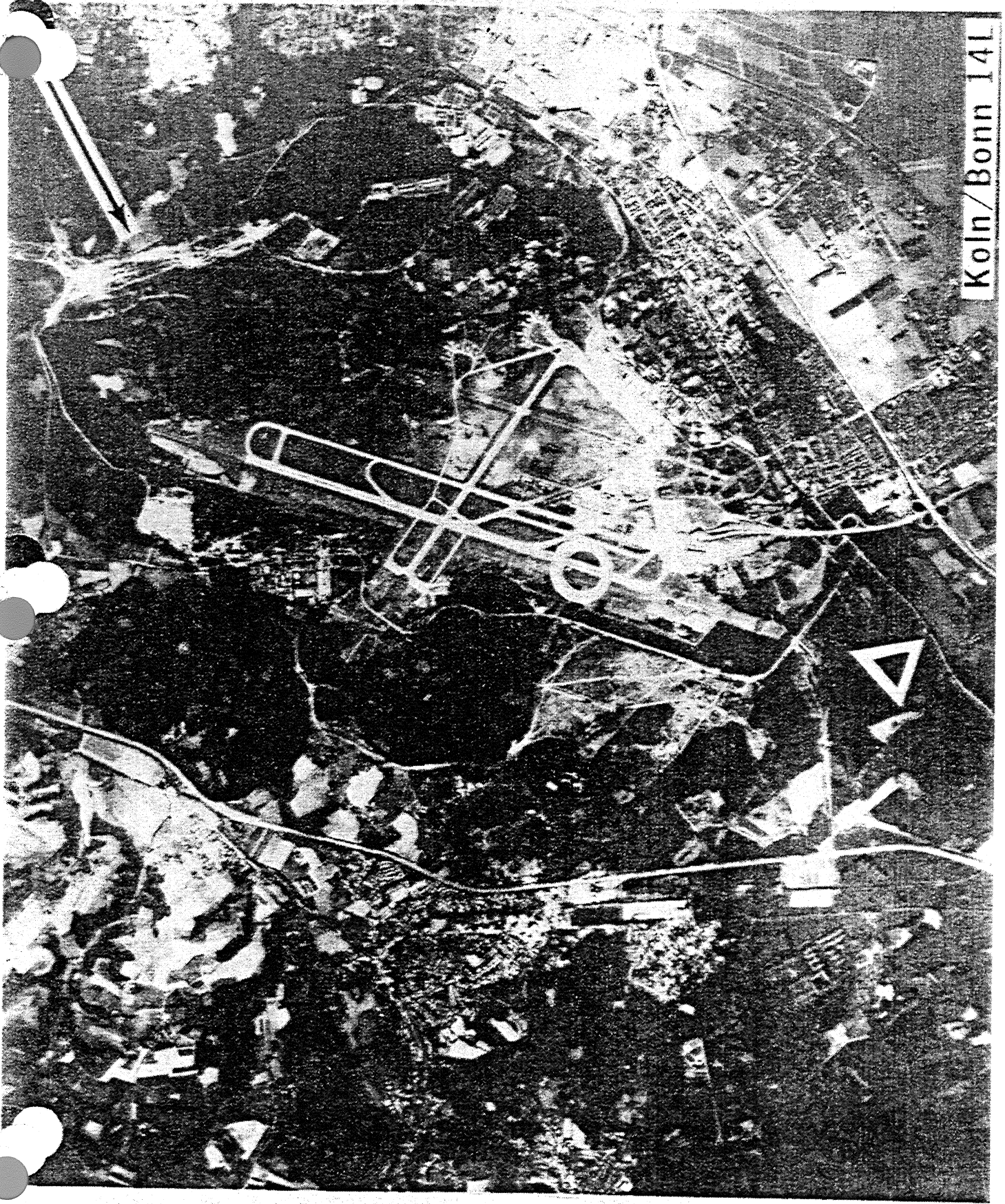
BRÜCK

URBACH

TROISDORF

SIEGBURG

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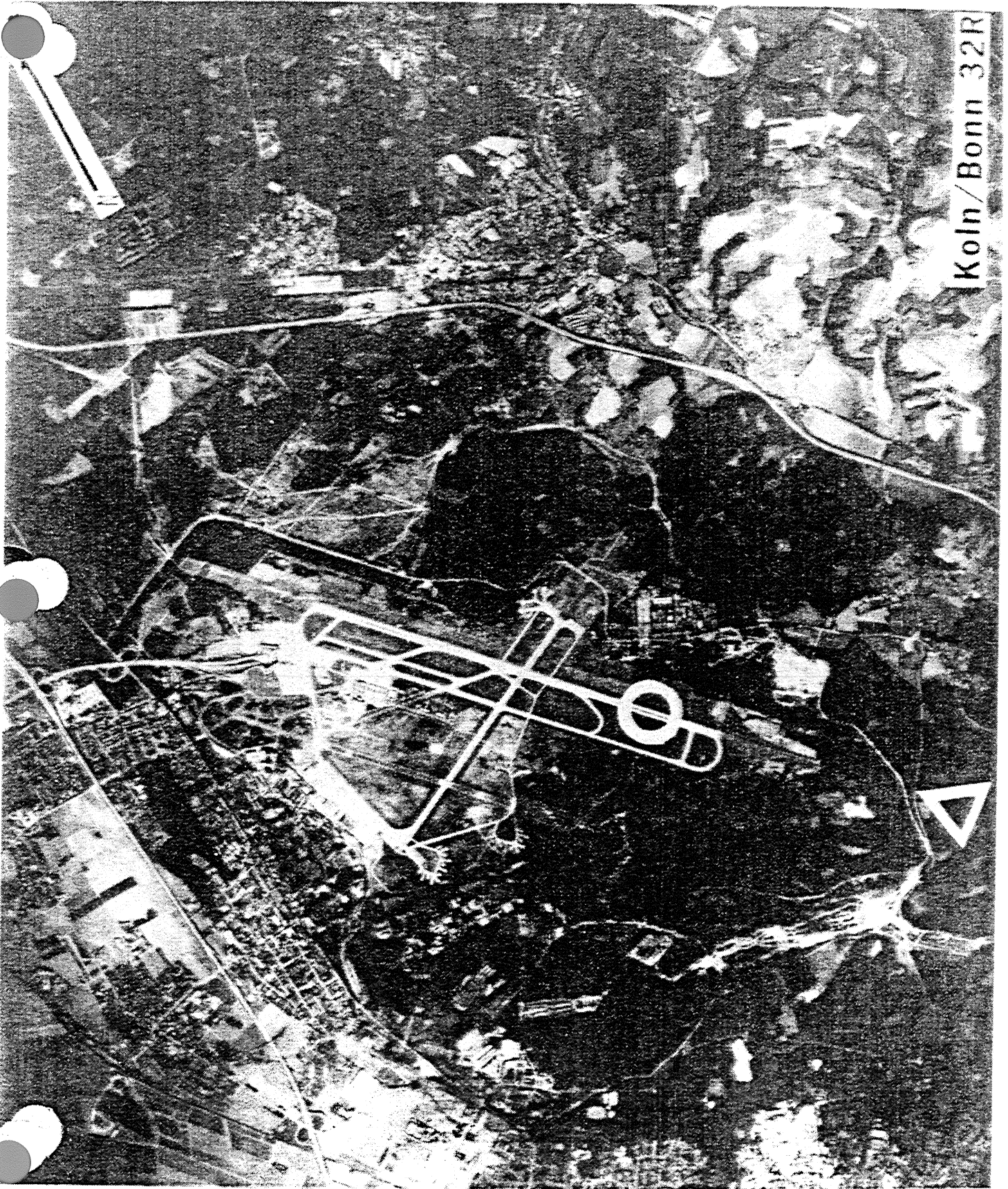


Koln/Bonn 141

KBO-A

EDITION 1-6/89

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Kohn/Bonn 32R

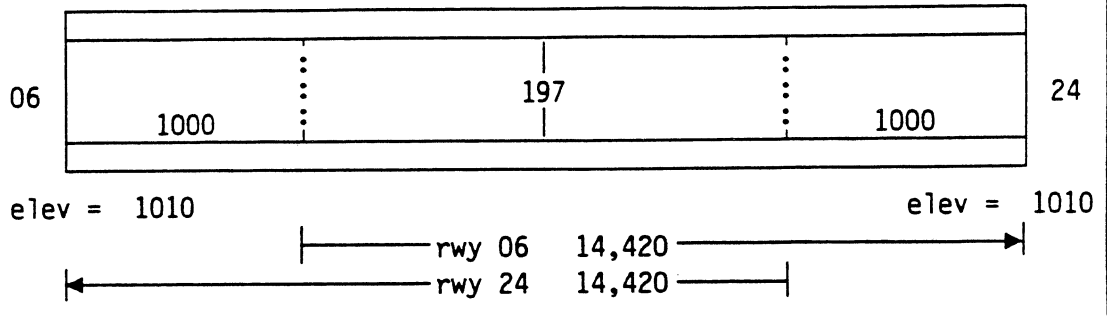
KBO-C

EDITION 1-6/89

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Kinshasa/N Djili Intl, Zaire

Table Identifier **KIN**



TACAN:	BZ-78x (Pri-DME)	KSA-97x (Sec-DME)
I/F above:	N:clear E:clear	N:clear E:clear
	S:clear W:clear	S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: none

WARNING

- DME (Ch 97) is unreliable. Plan to use Brazzaville DME (Ch 78)
- Although there is a displaced threshold marked 4500 ft down rwy 06, the entire length is suitable for orbiter landings
- Expect thundershowers in the area from October through May. During June through September, expect visibility to be 3 n. mi. or less below 10,000 ft due to smoke and haze

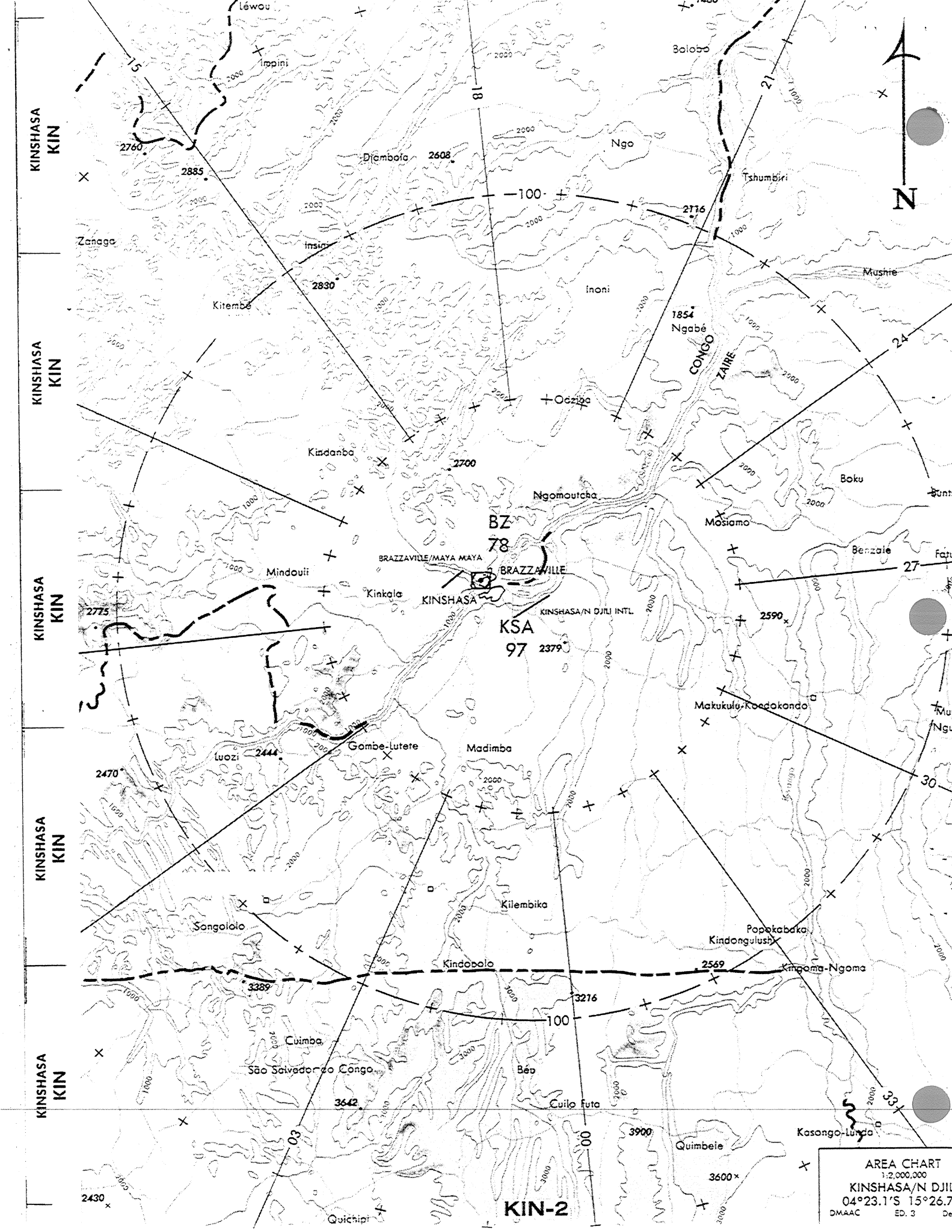
KINSHASA
KIN

KINSHASA
KIN

KINSHASA
KIN

KINSHASA
KIN

KINSHASA
KIN



KINSHASA
KIN

KINSHASA
KIN

KINSHASA
KIN

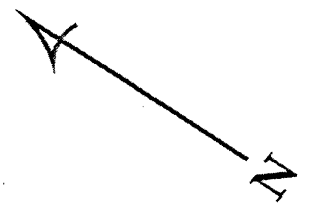
KINSHASA
KIN

KINSHASA
KIN

KIN-2

AREA CHART
1:2,000,000
KINSHASA/N DJILI
04°23.1'S 15°26.7'
DMAAC ED. 3 Dec

CONGO



Bidwa

Mucia Mucia

Konde

15420 X 197

Mikondo

Kingansana

Mangu

Kikimi

N DJILI

KIN-3

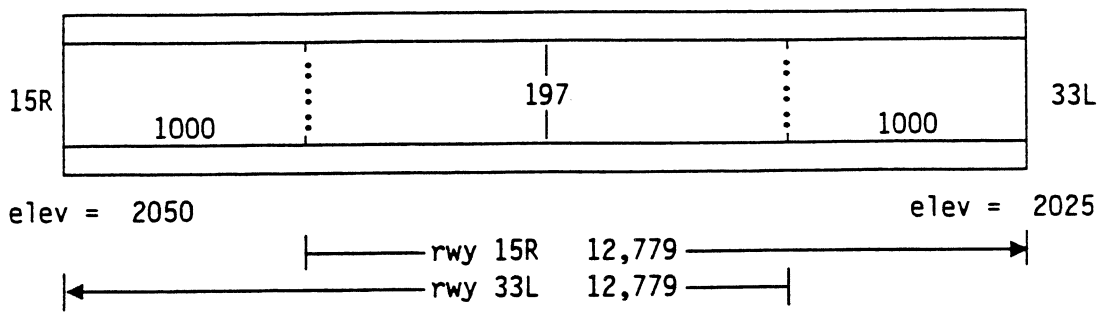
RUNWAY CHART
 1:62,500
 KINSHASA/N DJILI
 RUNWAYS 06 AND 24
 DMAAC ED. 3 Dec. 1988

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King Khalid, Saudi Arabia

Table Identifier

KKI



TACAN: RIY-92x (Pri)
I/F above: N:clear E:clear
S:clear W:clear

KIA-80x (Sec)
N:120k E:120k
S: 95k W: 95k

MLS: none
PAPI: none
Ball Bar: none
UHF: yes (guard only)

KING KHALID
KKI

KING KHALID
KKI

KING KHALID
KKI

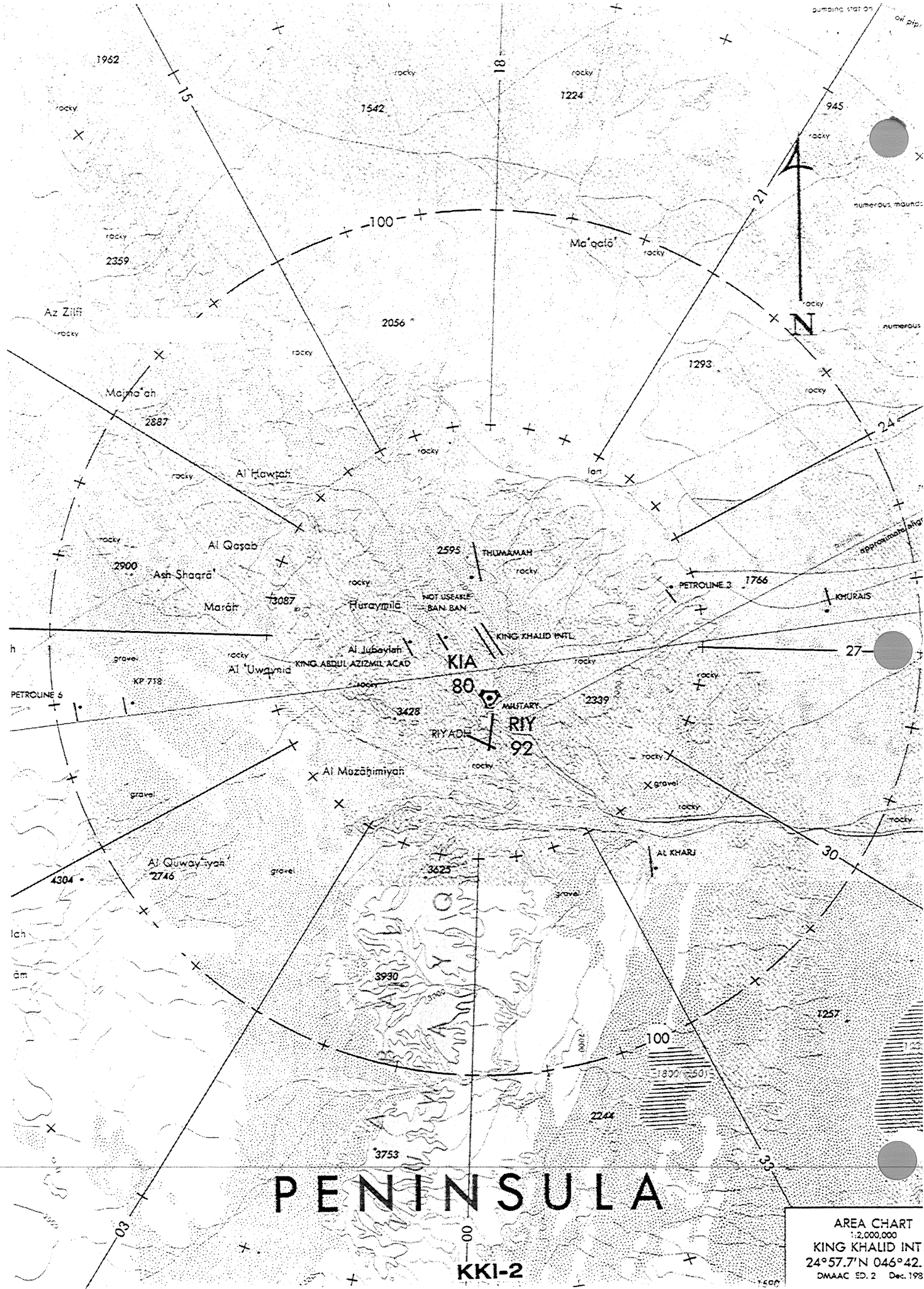
KING KHALID
KKI

KING KHALID
KKI

MAPS/ALL/GEN B

KKI-1

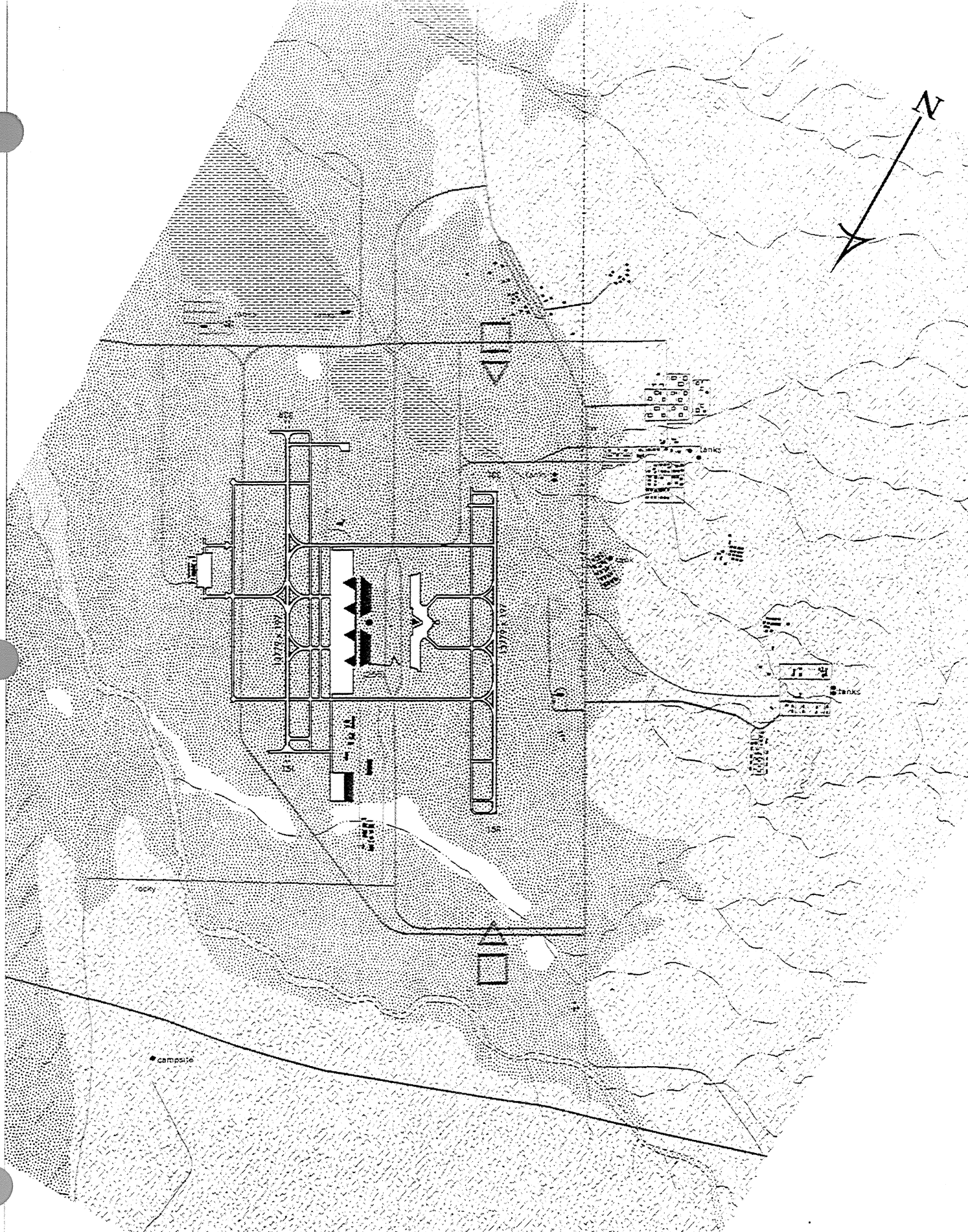
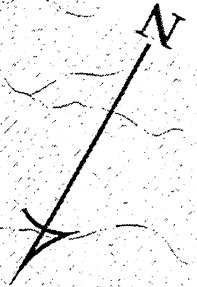
KING KHALID KKI
KING KHALID KKI
KING KHALID KKI
KING KHALID KKI
KING KHALID KKI



PENINSULA

KKI-2

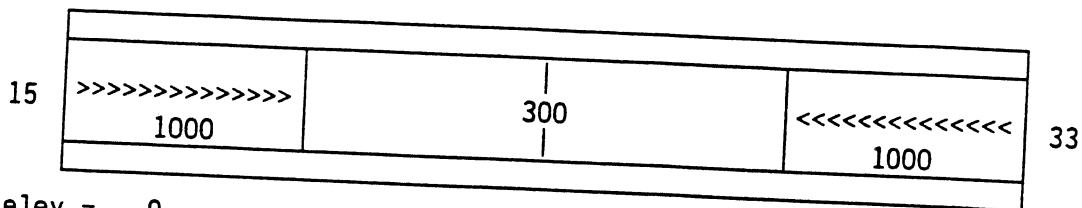
AREA CHART
1:2,000,000
KING KHALID INT
24°57.7'N 046°42'
DMAAC ED. 2 Dec. 198



KKI-3

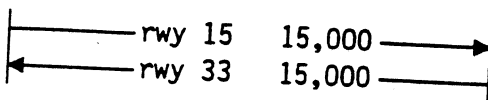
RUNWAY CHART
1:62,500
KING KHALID INTL
RUNWAYS 15R AND 33L
DMAAC ED. 2 Dec. 1988

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elev = 9

elev = 9



TACAN: TTS-59y (Pri)
 I/F above: N:clear E:clear
 S:clear W:clear

COF-97x (Sec)
 N:135k E:clear
 S:clear W:150k

RTLS I/F: N:clear E:clear
 S:clear W:clear

N:160k E:clear
 S:clear W:clear

MLS: (15-Sr) ch 8; (33-Sr) ch 6

PAPI: 15,33

Ball Bar: 15,33

UHF: yes

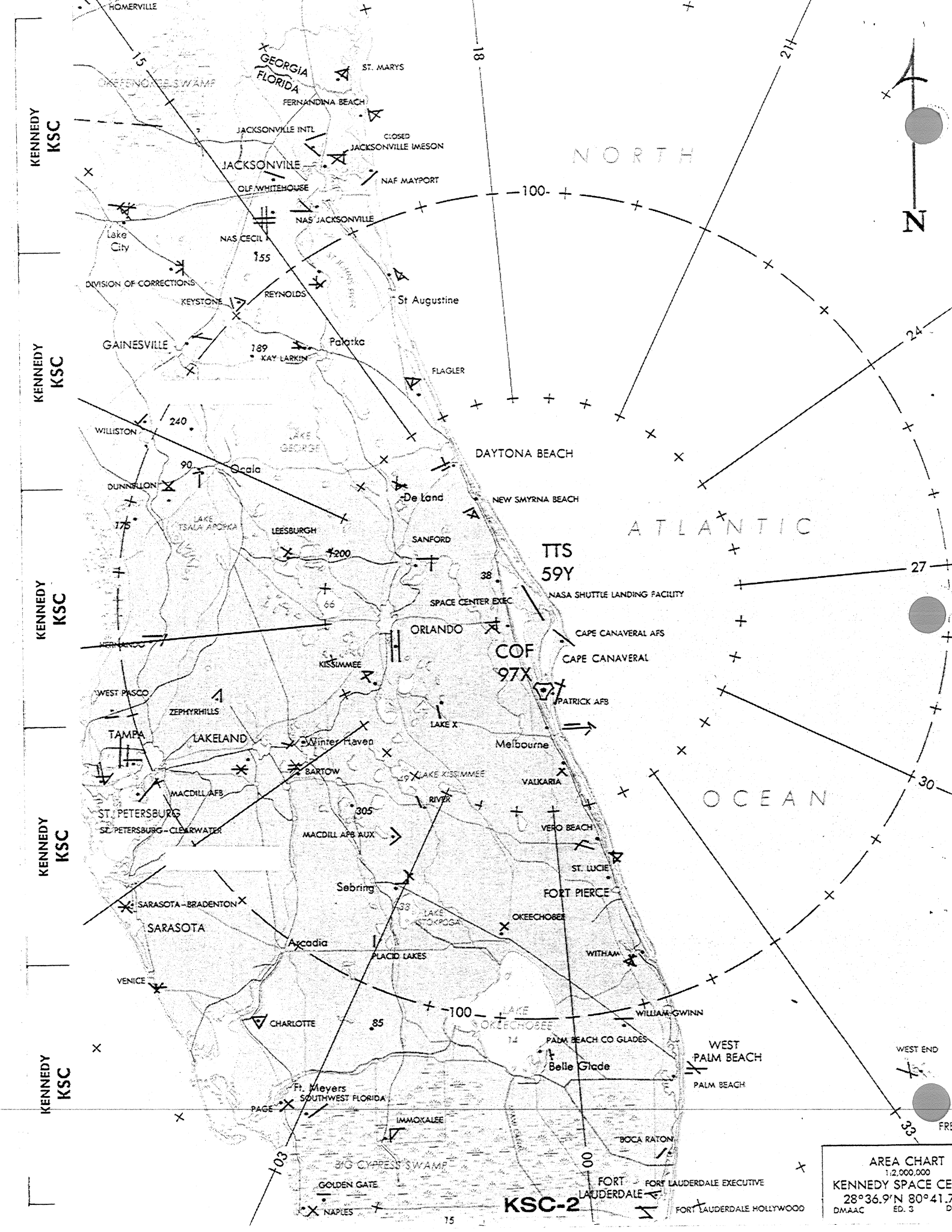
KENNEDY
KSC

KENNEDY
KSC

KENNEDY
KSC

KENNEDY
KSC

KENNEDY
KSC



KENNEDY KSC

KENNEDY KSC

KENNEDY KSC

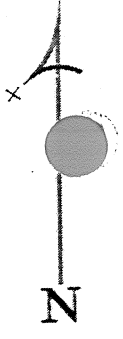
KENNEDY KSC

KENNEDY KSC

KENNEDY KSC

KENNEDY KSC

NORTH



ATLANTIC

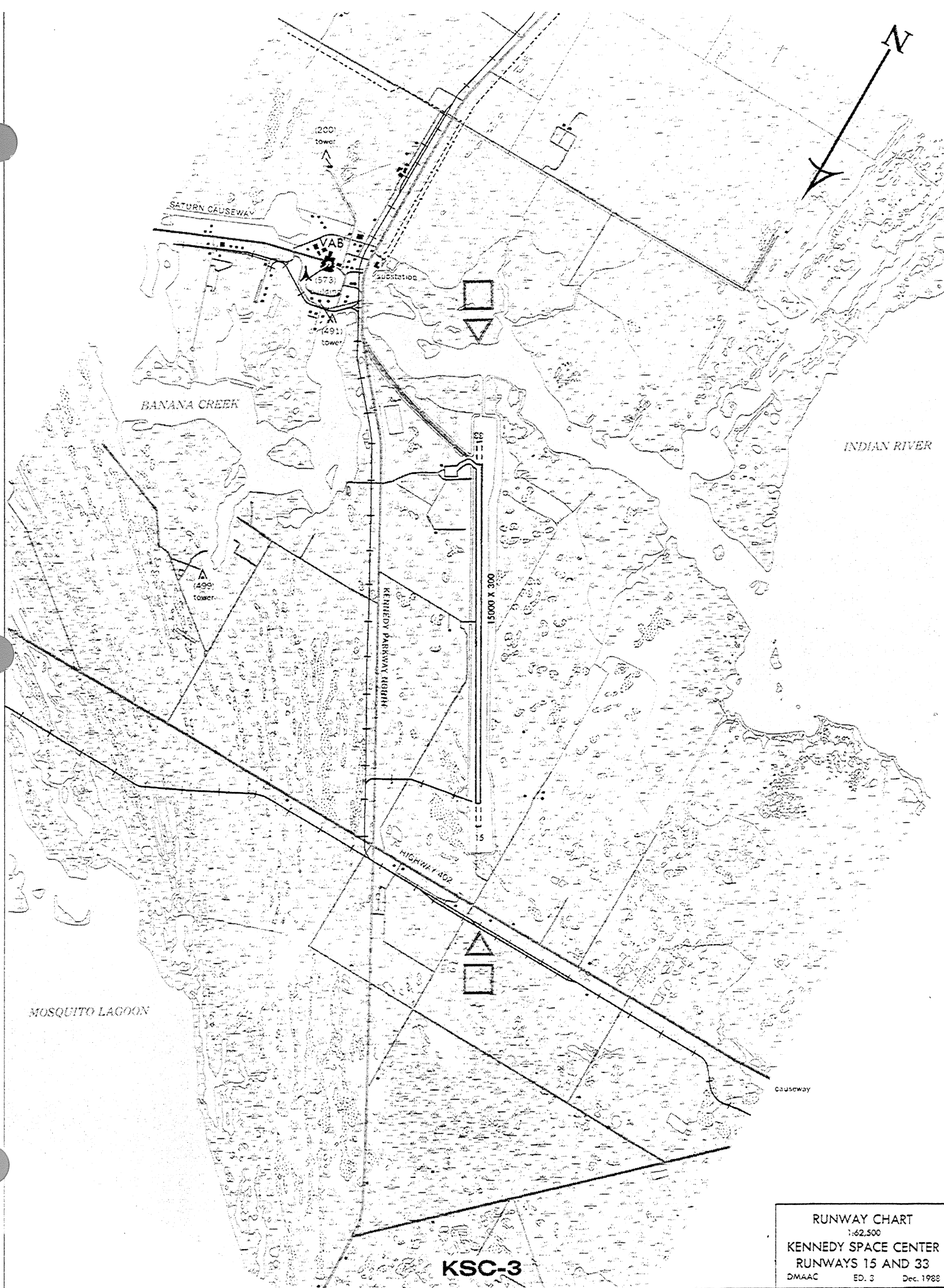
OCEAN

KSC-2

AREA CHART
 1:2,000,000
 KENNEDY SPACE CENTER
 28°36.9'N 80°41.7'
 DMAAC ED. 3

WEST END
 FRE

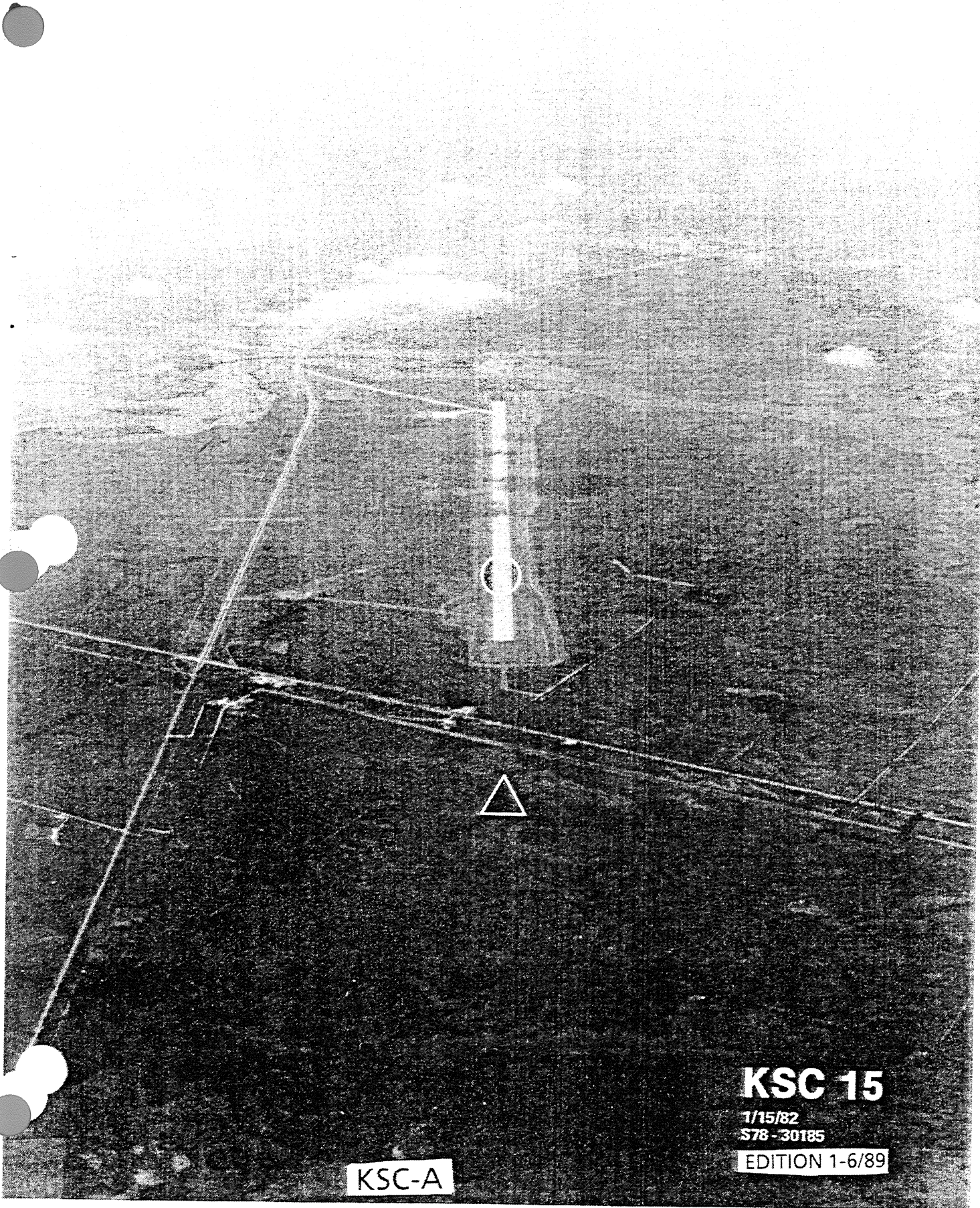
FORT LAUDERDALE EXECUTIVE
 FORT LAUDERDALE HOLLYWOOD
 BOCA RATON
 WEST PALM BEACH
 PALM BEACH
 Belle Glade
 PALM BEACH CO GLADES
 WILLIAM GWINN
 WITHAM
 OKEECHOBEE
 FORT PIERCE
 ST. LUCIE
 VERO BEACH
 VALKARIA
 Melbourne
 Lake X
 Kissimmee
 Winter Haven
 Bartow
 MACDILL AFB AUX
 Sebring
 Arcadia
 PLACID LAKES
 CHARLOTTE
 Venice
 SARASOTA
 SARASOTA-BRADENTON
 ST. PETERSBURG
 ST. PETERSBURG-CLEARWATER
 MACDILL AFB
 TAMPA
 ZEPHYRHILLS
 WEST PASCO
 DUNNELLON
 90
 175
 155
 189
 KAY LARKIN
 Palatka
 FLAGLER
 St Augustine
 REYNOLDS
 KEYSTONE
 DIVISION OF CORRECTIONS
 Lake City
 OLF WHITEHOUSE
 NAF MAYPORT
 CLOSED JACKSONVILLE IMESON
 JACKSONVILLE INTL
 JACKSONVILLE
 FERNANDINA BEACH
 ST. MARYS
 GEORGIA FLORIDA
 HOMERVILLE
 15
 18
 214
 100
 24
 27
 30
 33
 103
 85
 100
 74
 80
 15



RUNWAY CHART
 1:62,500
 KENNEDY SPACE CENTER
 RUNWAYS 15 AND 33
 DMAAC ED. 3 Dec. 1966

KSC-3

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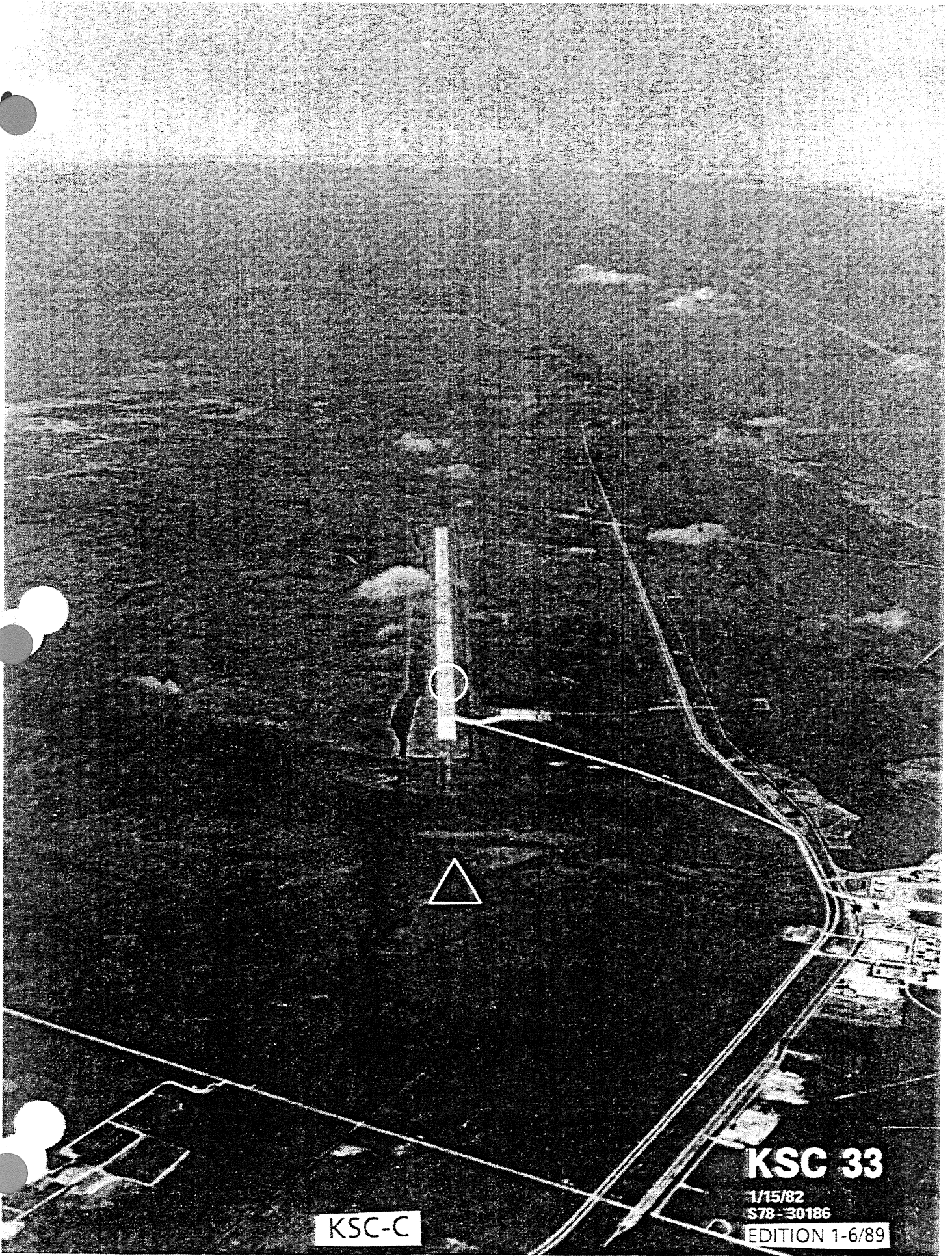
KSC-A

KSC 15

1/15/82
S78 - 30185

EDITION 1-6/89

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KSC-C

KSC 33

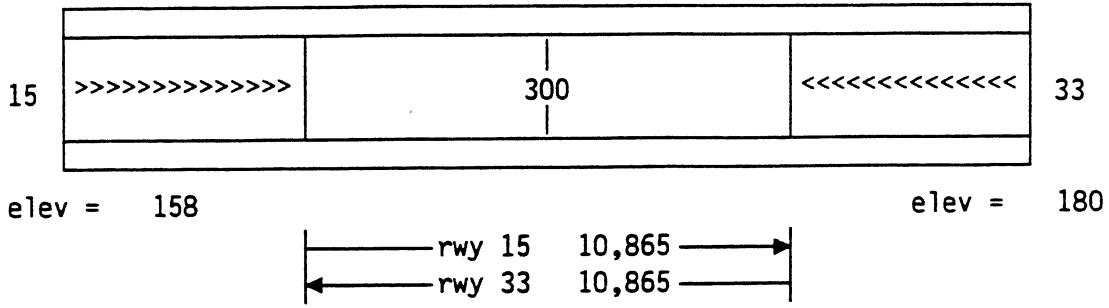
1/15/82
S78-30186

EDITION 1-6/89

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Lajes Air Base, Azores

Table Identifier **LAJ**



TACAN: LAJ-45x (Pri)
I/F above: N:clear E:clear
S:clear W:clear

TRM-109x (Sec)
N:clear E:clear
S:clear W:clear

MLS: none
PAPI: none
Ball Bar: none
UHF: yes

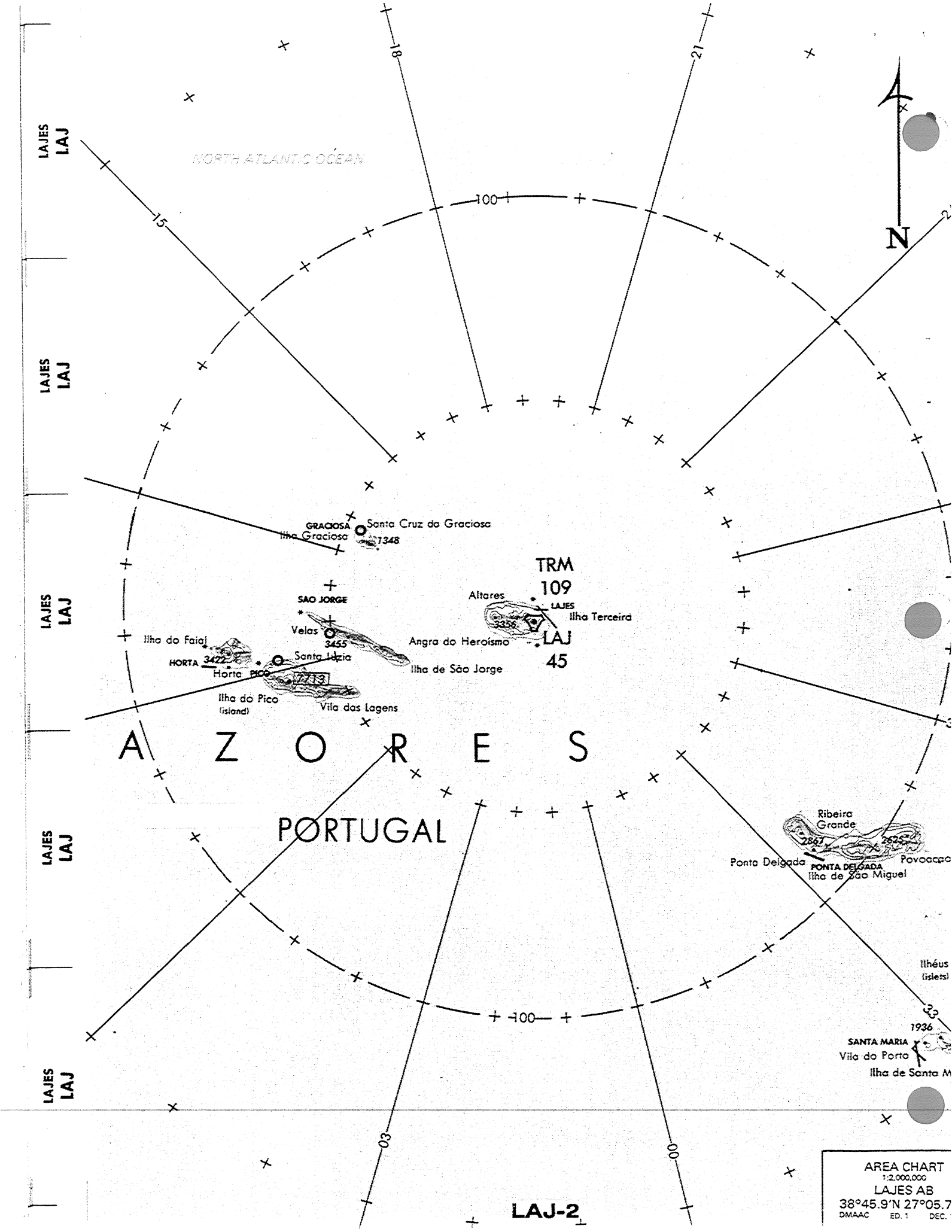
LAJES
LAJ

LAJES
LAJ

LAJES
LAJ

LAJES
LAJ

LAJES
LAJ



NORTH ATLANTIC OCEAN



GRACIOSA Santa Cruz da Graciosa
Ilha Graciosa 1348

TRM 109

Altare, Ilha Terceira

SAO JORGE

Velas 3455

Angra do Heroísmo

LAJ 45

Ilha do Faial

HORTA 3422, Horta PICO 17719

Ilha do Pico (island)

Vila das Lagens

Ilha de São Jorge

A Z O R E S

PORTUGAL

Ribeira Grande, Ponta Delgada, Povoação, Ilha de São Miguel

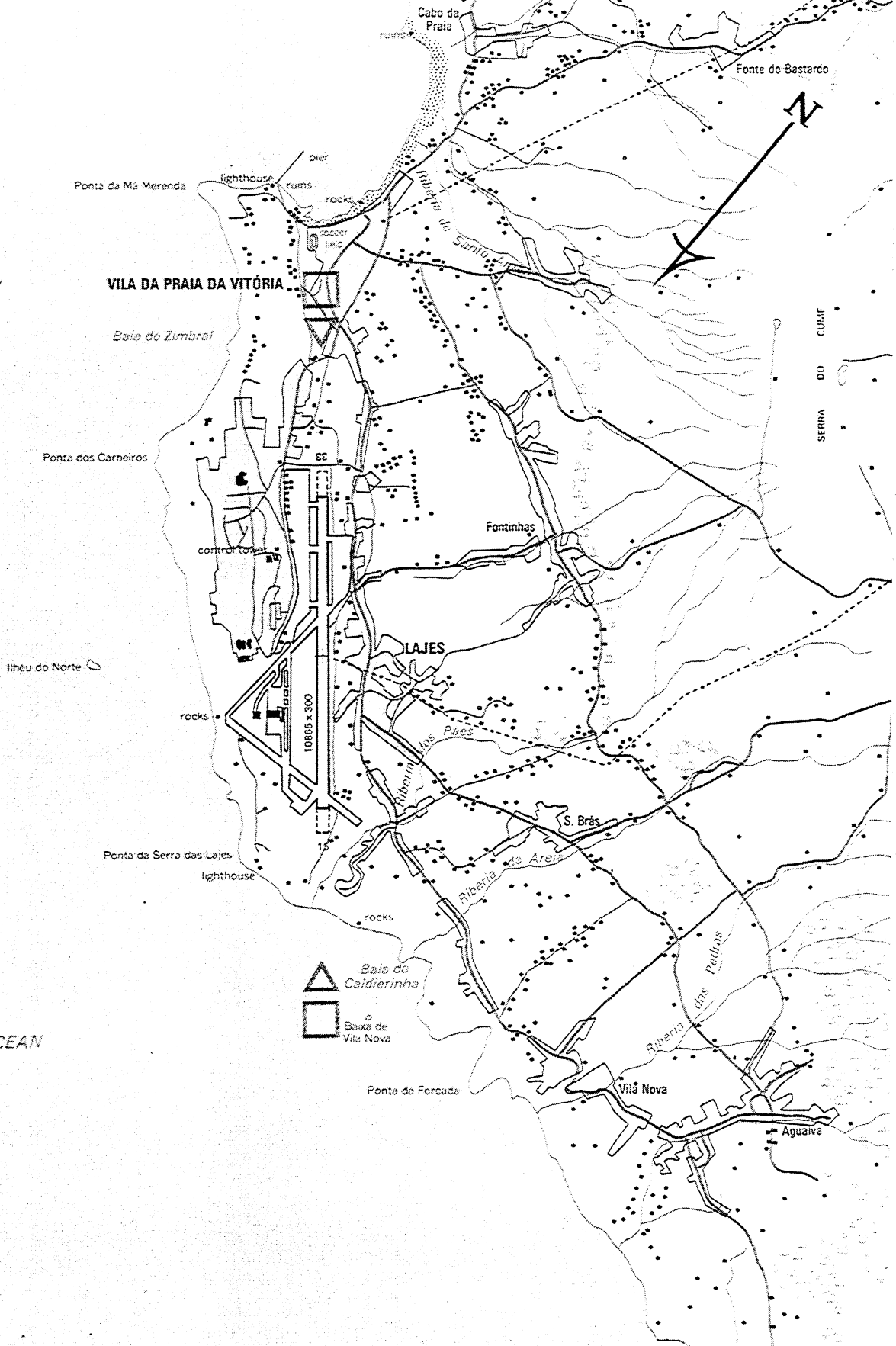
Ilhéus (islets)

1936 SANTA MARIA Vila do Porto Ilha de Santa M

LAJ-2

AREA CHART
1:2,000,000
LAJES AB
38°45.9'N 27°05.7'
DMAAC ED. 1 DEC.

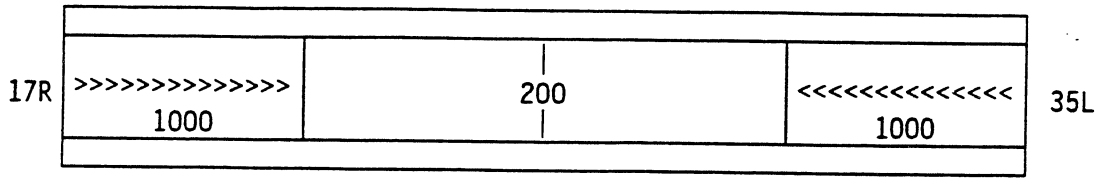
NORTH ATLANTIC OCEAN



LAJ-3

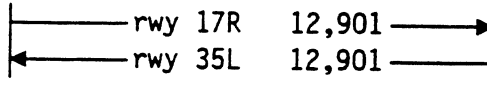
RUNWAY CHART
 1:62,500
 LAJES AB
 RUNWAYS 15 AND 33
 DMAAC ED 1 DEC 1980

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elev = 1193

elev = 1172



TACAN: LNK-108x (Pri)
 I/F above: N:130k E:120k
 S:120k W:120k

OFF-54x (Sec)
 N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

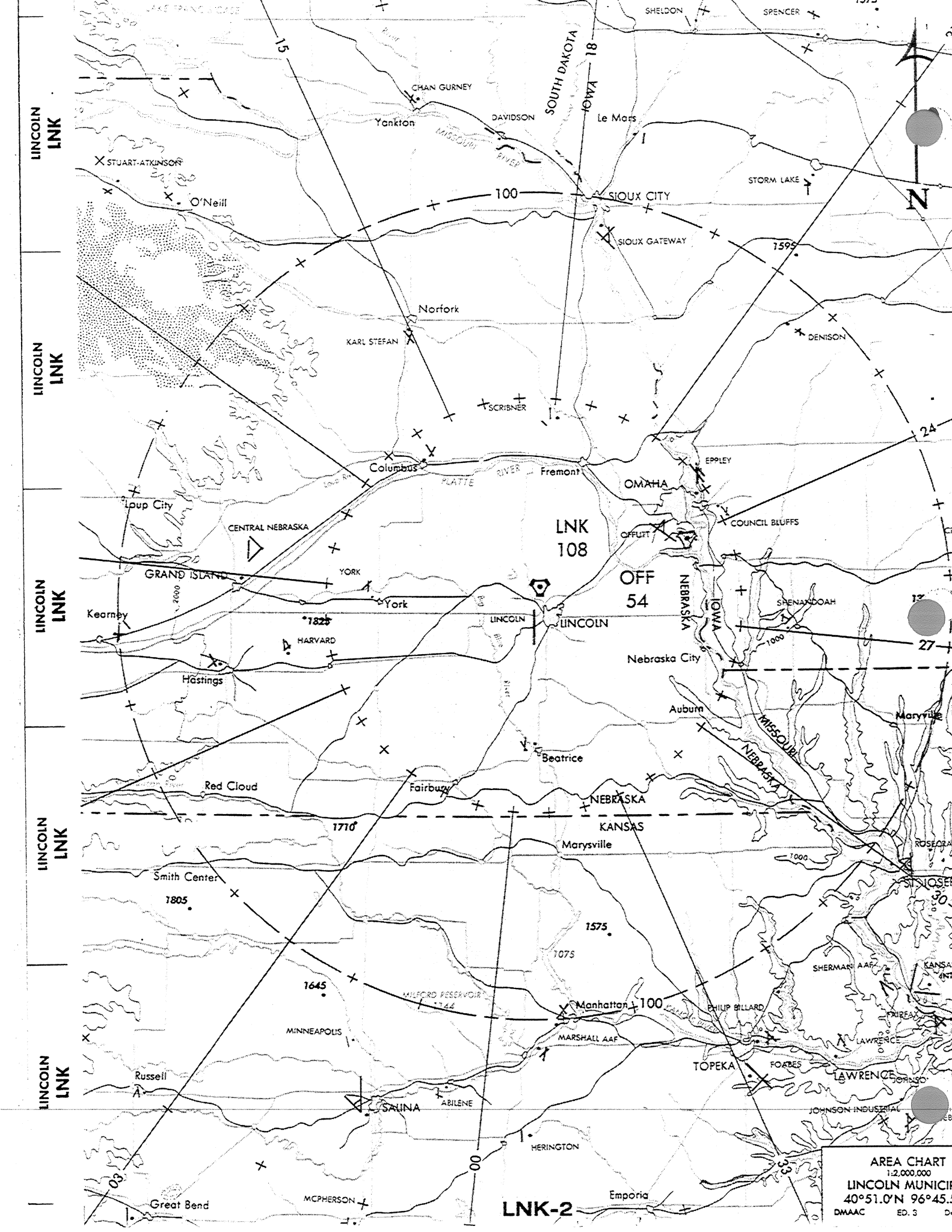
LINCOLN
LNK

LINCOLN
LNK

LINCOLN
LNK

LINCOLN
LNK

LINCOLN
LNK



LINCOLN LNK

LINCOLN LNK

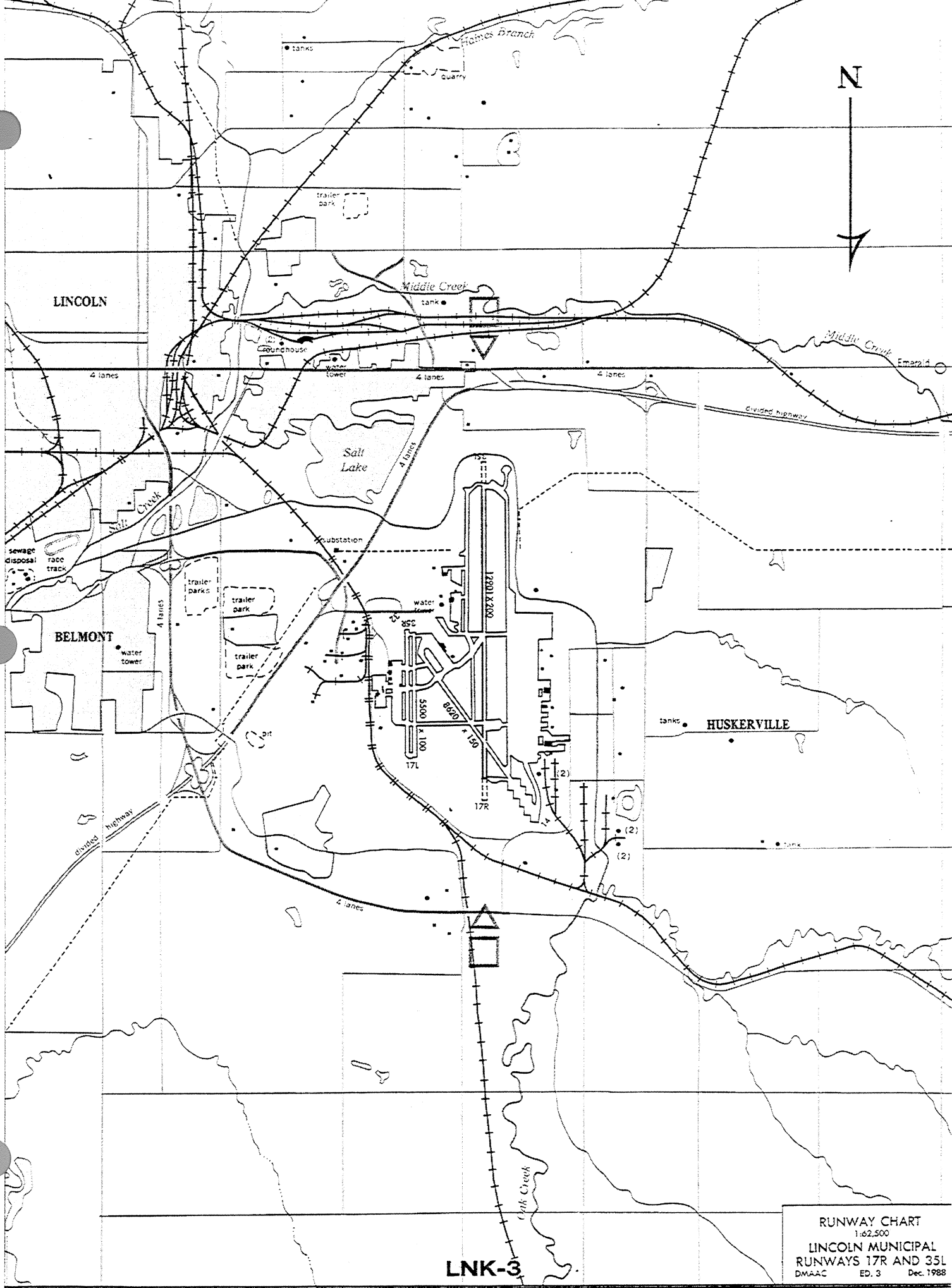
LINCOLN LNK

LINCOLN LNK

LINCOLN LNK

LNK-2

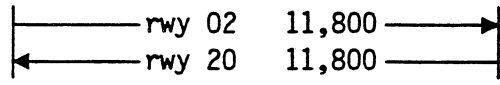
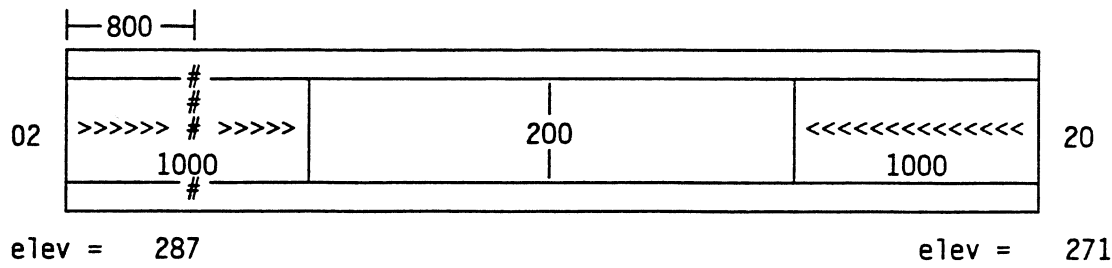
AREA CHART
 1:2,000,000
 LINCOLN MUNICIP
 40°51.0'N 96°45.5
 DMAAC ED. 3



LNK-3

RUNWAY CHART
 1:62,500
LINCOLN MUNICIPAL
RUNWAYS 17R AND 35L
 DMAAC ED. 3 Dec. 1988

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TACAN: MRN-100x (Pri) AOG-23x (Sec)
 I/F above: N:120k E:130k N:clear E:clear
 S:clear W:clear S:clear W:clear

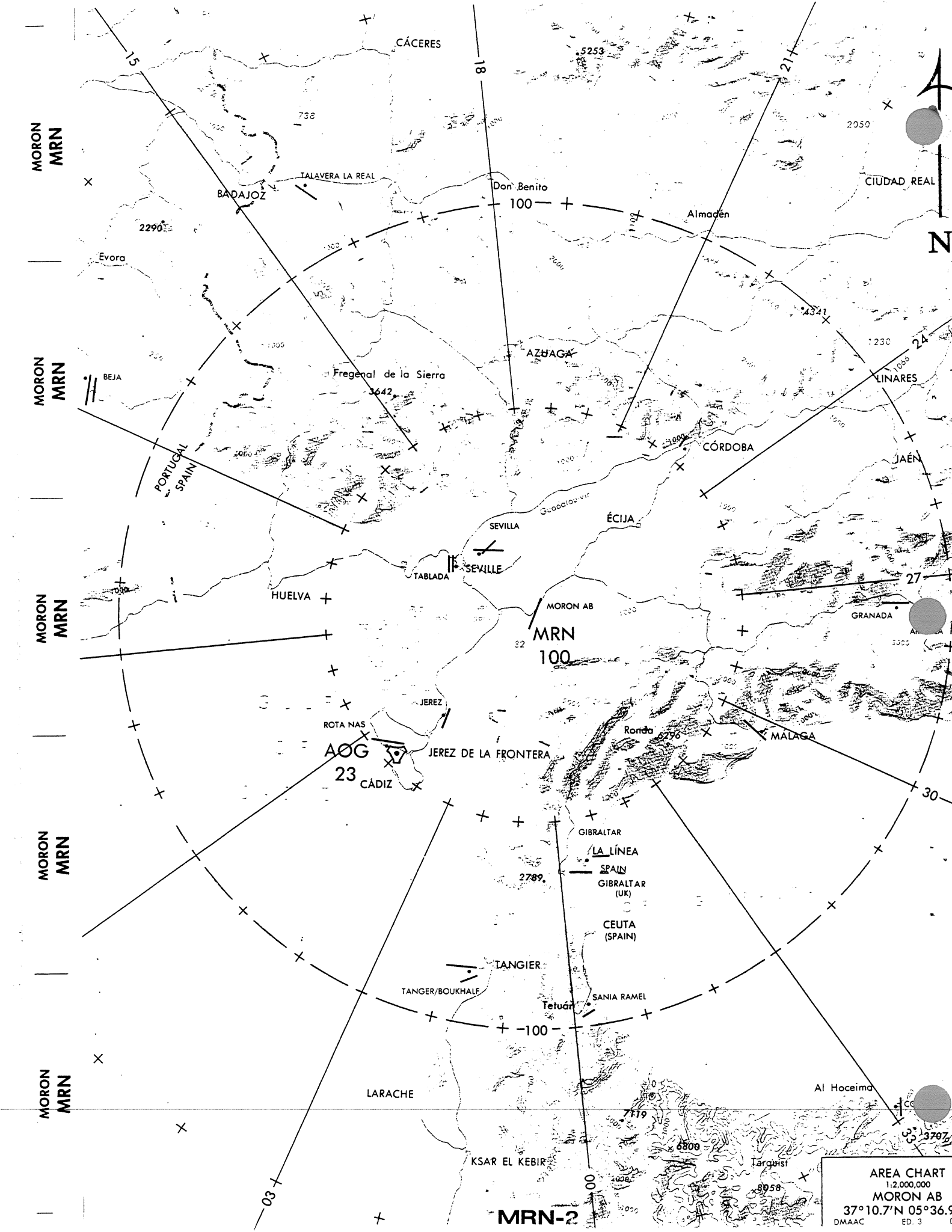
MLS: (20-Sr) ch 6
 PAPI: 20
 Ball Bar: 20
 UHF: yes (guard only after L/O)

CAUTION

- The terrain on approach from either direction is 10 to 20 ft lower than the rwy
- Trees on the approach are not tall but can result in ground rush

NOTE
 - The center 150 ft of the 200-ft wide rwy is resurfaced. The 50-ft shoulders give the visual perception of a 300-ft wide rwy

MORON MRN
 MORON MRN
 MORON MRN
 MORON MRN



MORON
MRN

MORON
MRN

MORON
MRN

MORON
MRN

MORON
MRN



AREA CHART
1:2,000,000
MORON AB
37°10.7'N 05°36.9
DMAAC ED. 3 D

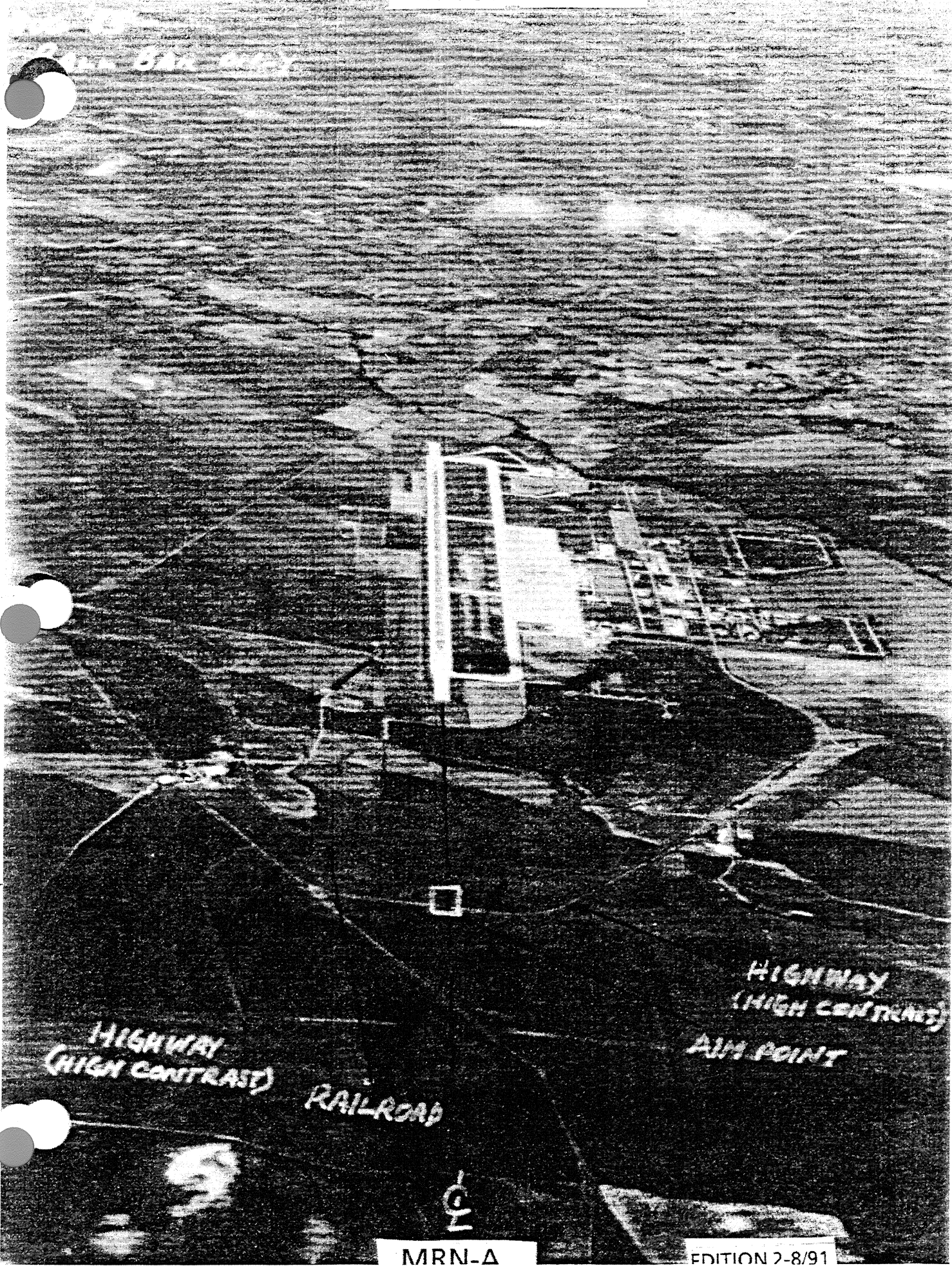
MRN-2



MRN-3

RUNWAY CHART
1:62,500
MORON AB
RUNWAYS 02 AND 20
DMAAC ED. 3 Dec. 1988

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HIGHWAY
(HIGH CONTRAST)

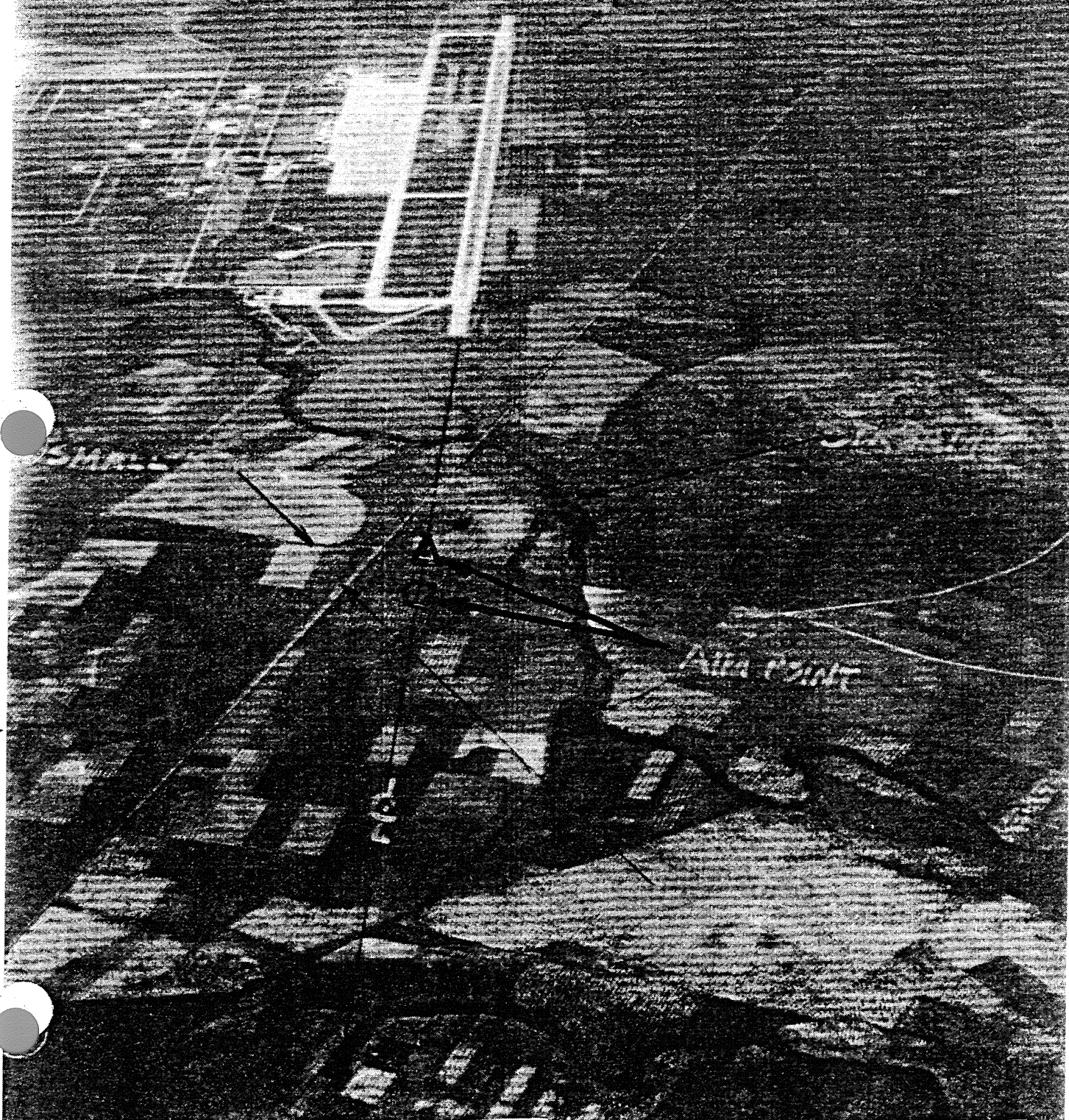
RAILROAD

HIGHWAY
(HIGH CONTRAST)
AIR POINT

Ⓢ

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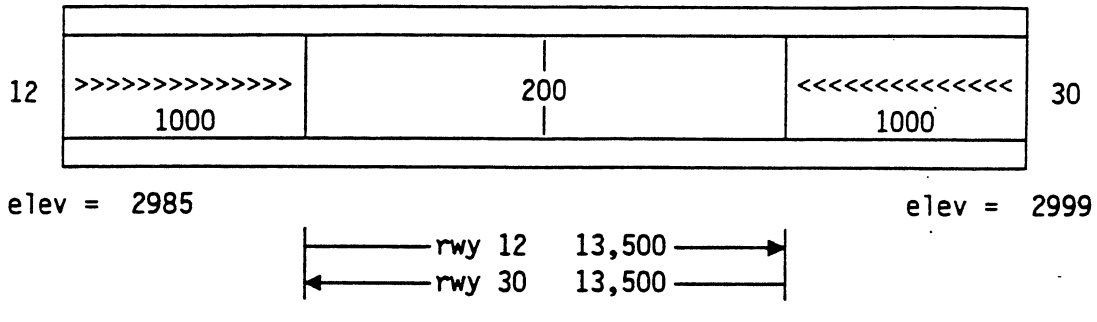
MRN 20 MORON



MRN-C

EDITION 2-8/91

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TACAN: MUO-87x (Pri)
 I/F above: N:80k E:clear
 S:90k W:80k

BOI-80x (Sec)
 N:clear E:140k
 S:90k W:100k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

MOUNTAIN HOME MUO

MOUNTAIN HOME MUO

MOUNTAIN HOME MUO

MOUNTAIN HOME MUO

MOUNTAIN HOME MUO

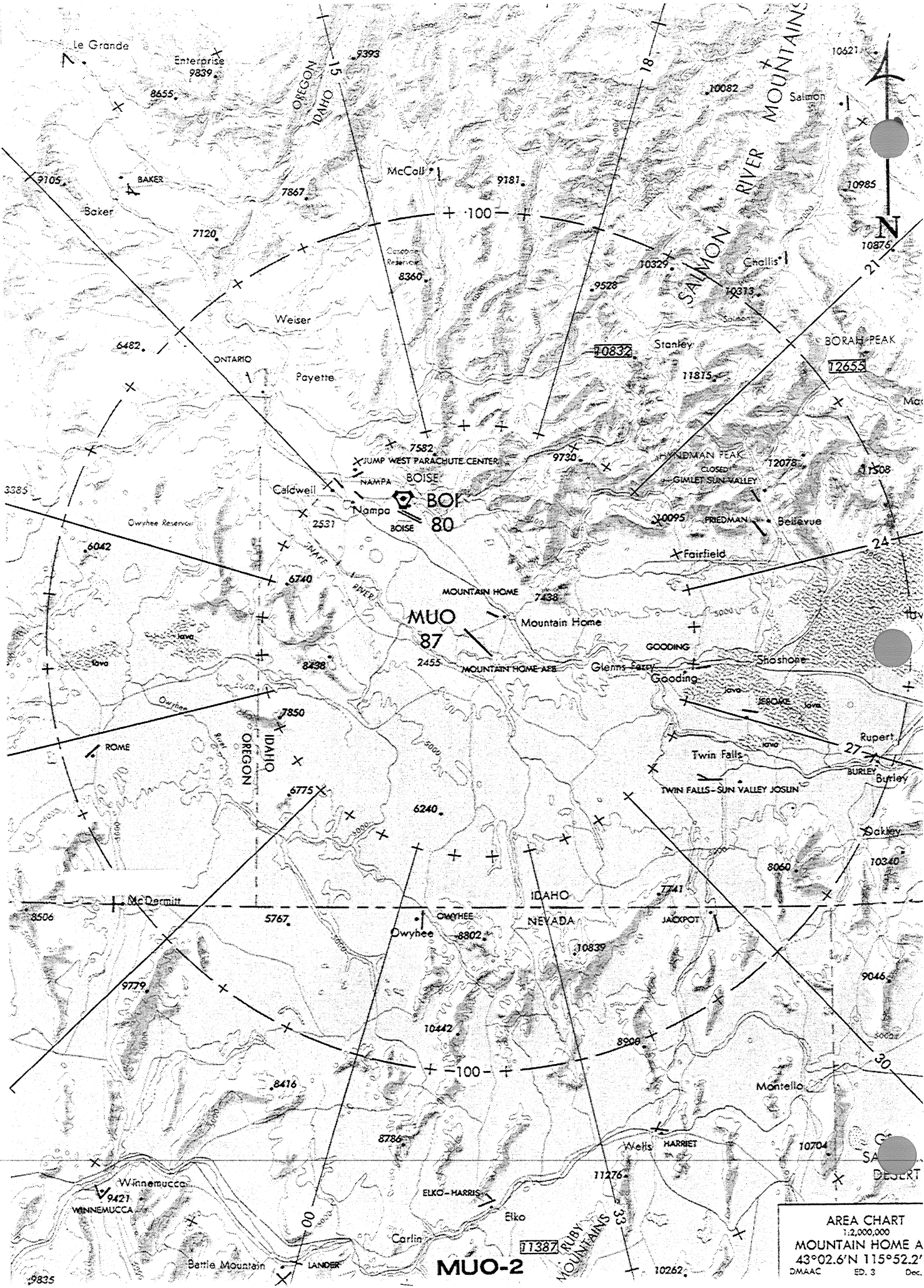
MOUNTAIN HOME
MUO

MOUNTAIN HOME
MUO

MOUNTAIN HOME
MUO

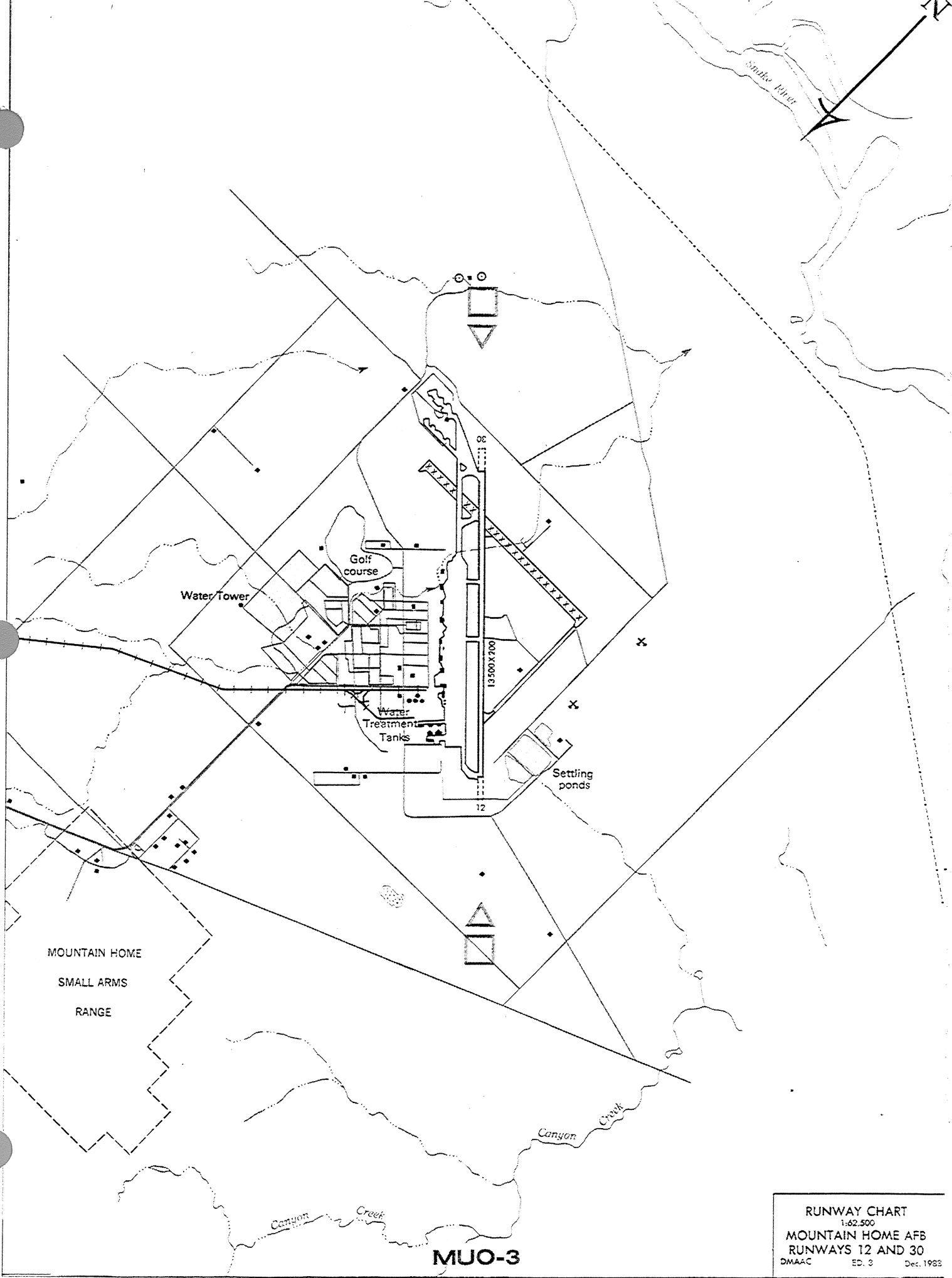
MOUNTAIN HOME
MUO

MOUNTAIN HOME
MUO



AREA CHART
 1:2,000,000
 MOUNTAIN HOME A
 43°02.6'N 115°52.2'
 DMAAC ED. 3 Dec.

MUO-2



MOUNTAIN HOME
SMALL ARMS
RANGE

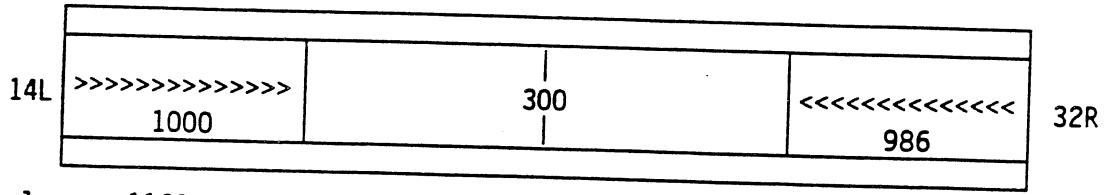
MUO-3

RUNWAY CHART
1:62,500
MOUNTAIN HOME AFB
RUNWAYS 12 AND 30
DMAAC ED. 3 Dec. 1983

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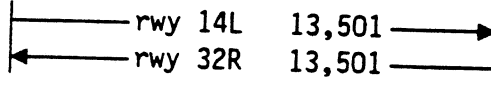
Grant County, Washington

Table Identifier **MWH**



elev = 1163

elev = 1157



TACAN: EPH-73x (Pri)
 I/F above: N:clear E:90k
 S:90k W:clear

MWH-97x (Sec-DME)
 N:clear E:clear
 S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

GRANT COUNTY
MWH

GRANT COUNTY
MWH

GRANT COUNTY
MWH

GRANT COUNTY
MWH

GRANT COUNTY
MWH

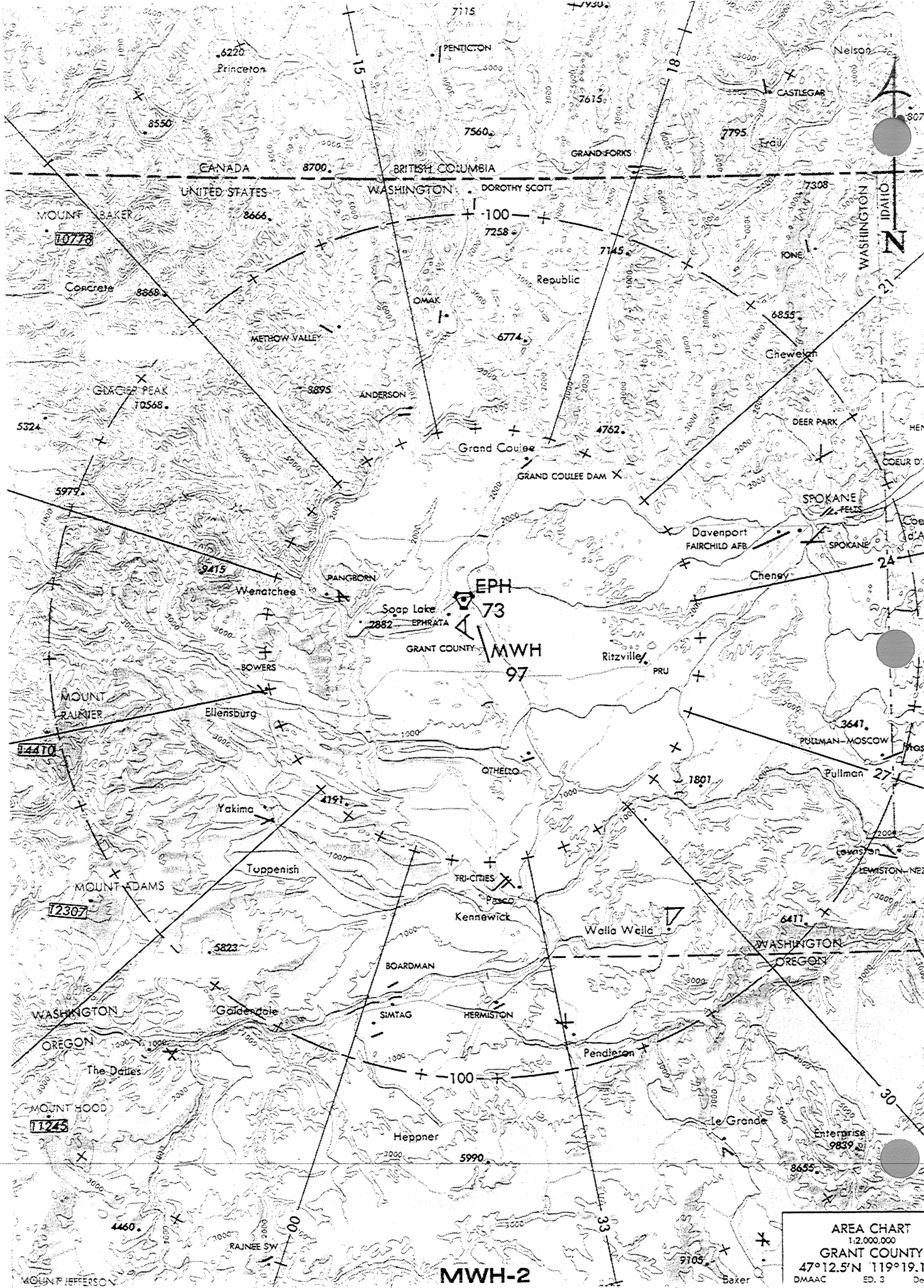
GRANT COUNTY
MWH

GRANT COUNTY
MWH

GRANT COUNTY
MWH

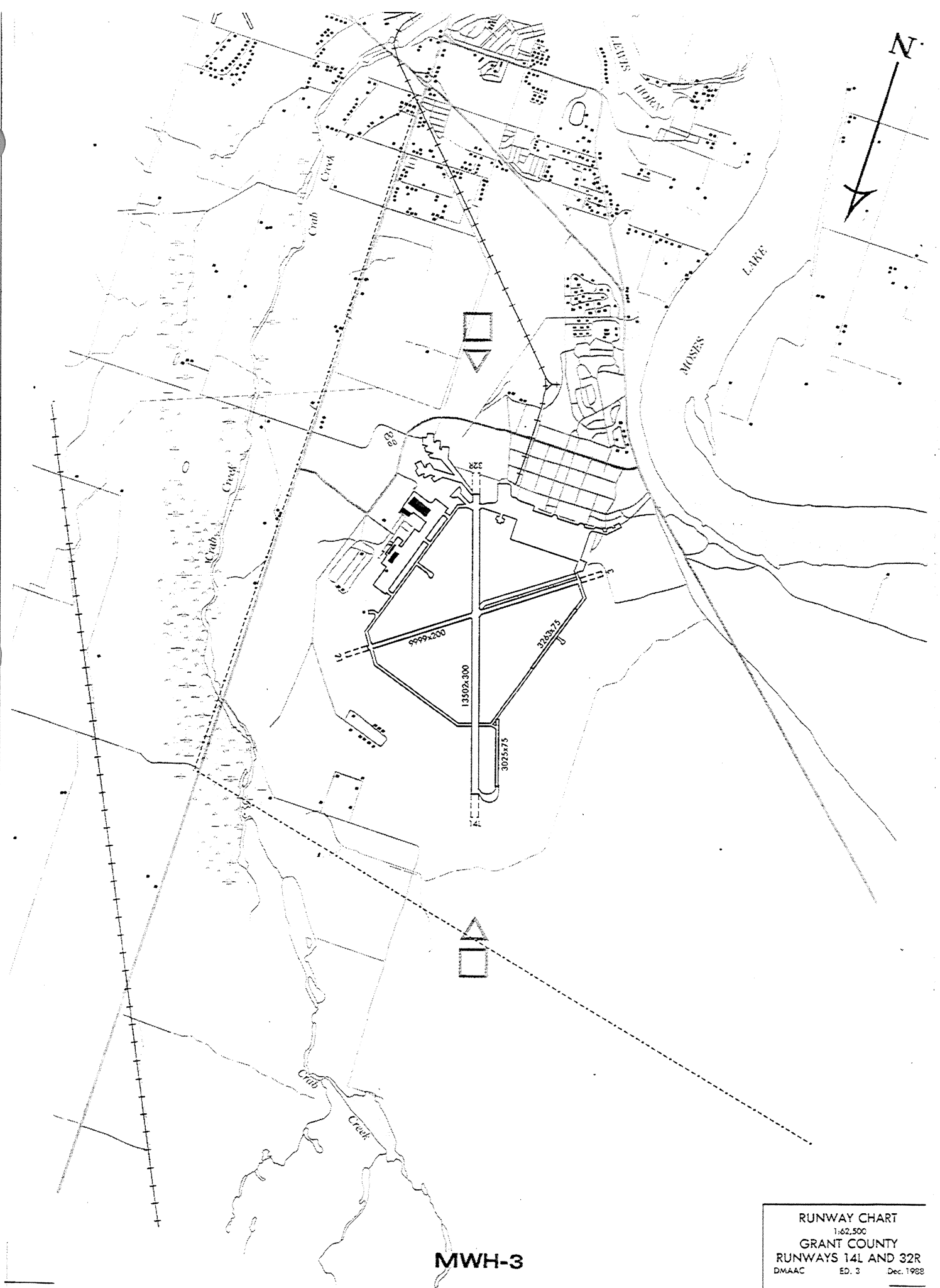
GRANT COUNTY
MWH

GRANT COUNTY
MWH



MWH-2

AREA CHART
 1:2,000,000
 GRANT COUNTY
 47°12.5'N 119°19.1'
 DMAAC ED. 3 De



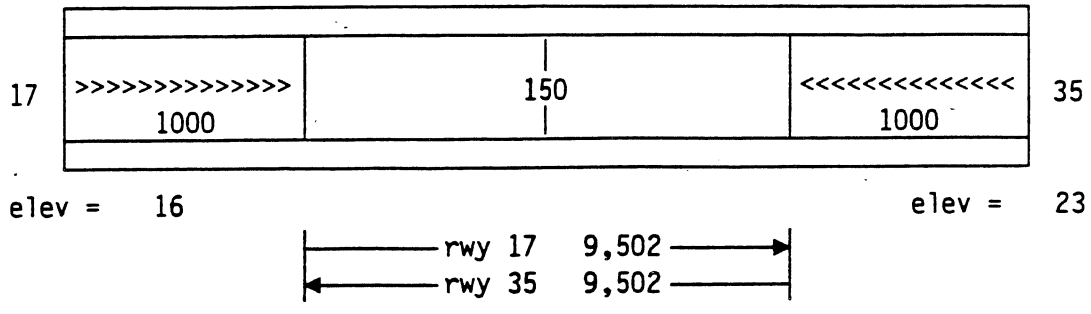
MWH-3

RUNWAY CHART
 1:62,500
 GRANT COUNTY
 RUNWAYS 14L AND 32R
 DMAAC ED. 3 Dec. 1988

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Myrtle Beach AFB, S. Carolina

Table Identifier **MYR**



TACAN: MYR-39x (Pri)
 I/F above: N:<80k E:<80k
 S:<80k W:<80k

FLO-99x (Sec)
 N:80k E: 90k
 S:90k W:100k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

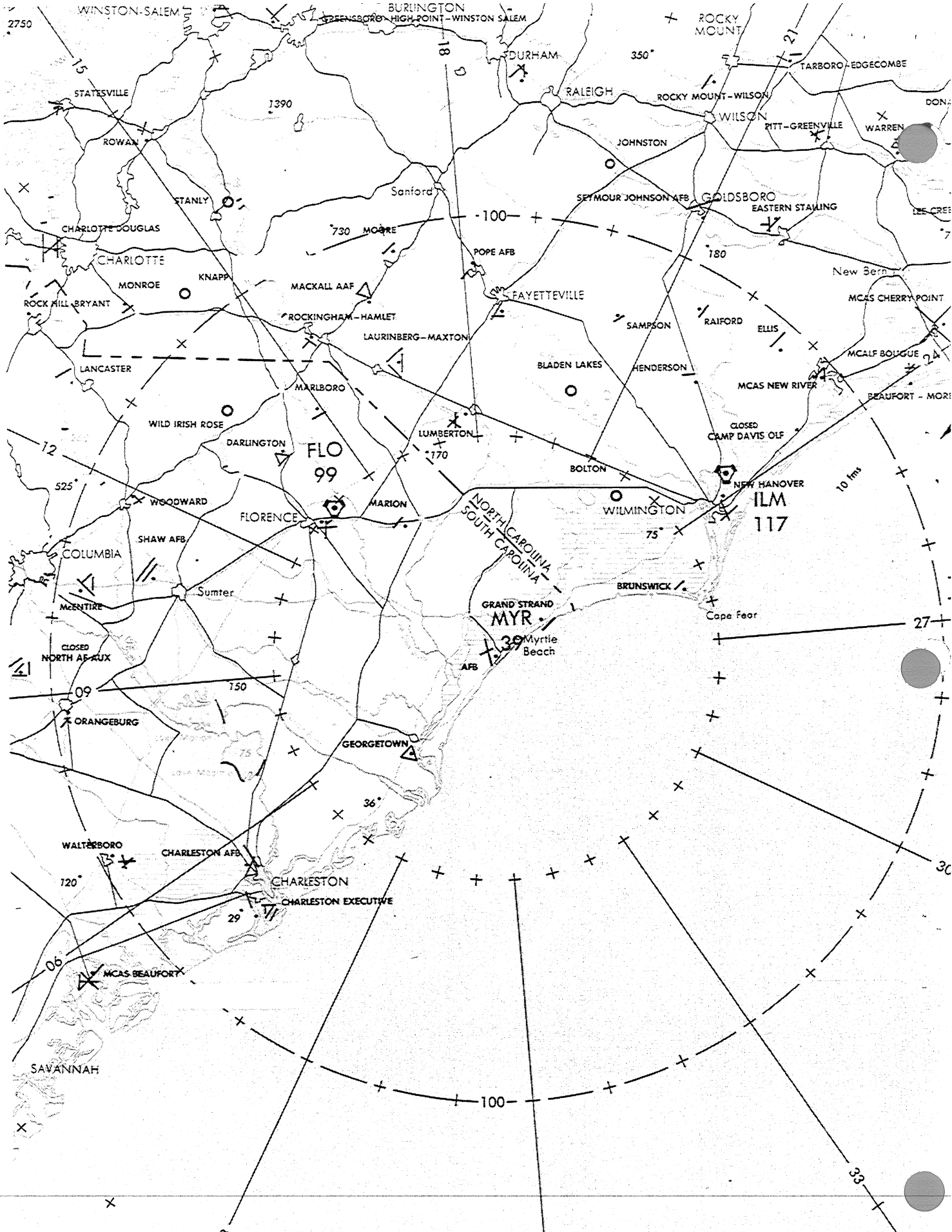
MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR

MYRTLE BEACH
MYR



MYR-2

AREA CHART
 1:2,000,000
 MYRTLE BEACH AFI
 33°40.8'N 78°55.7'
 DMAAC ED. 1 Mar

ATLANTIC OCEAN

N

MYRTLE BEACH

9502 x 150

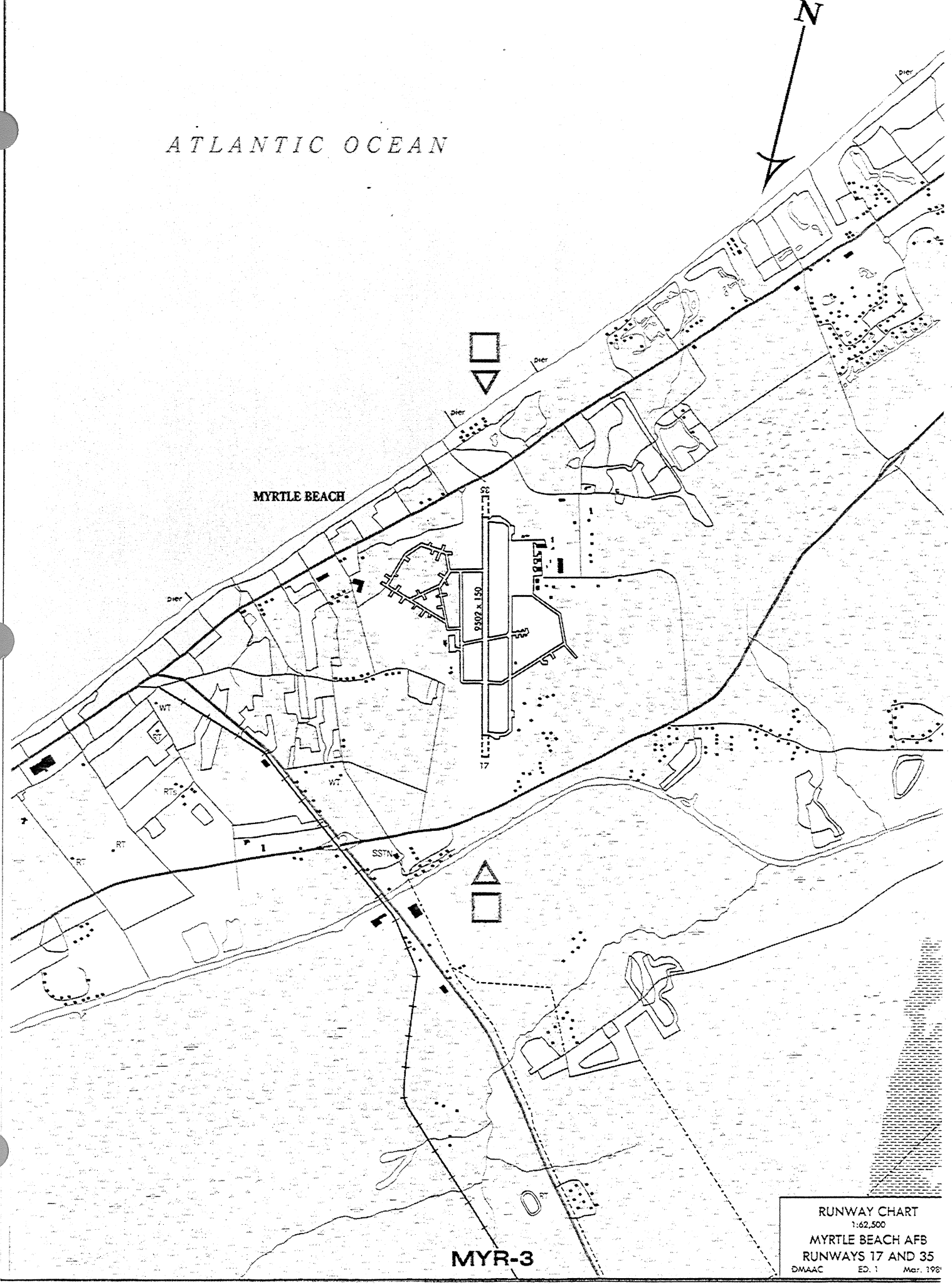
17

MYR-3

RUNWAY CHART
1:62,500

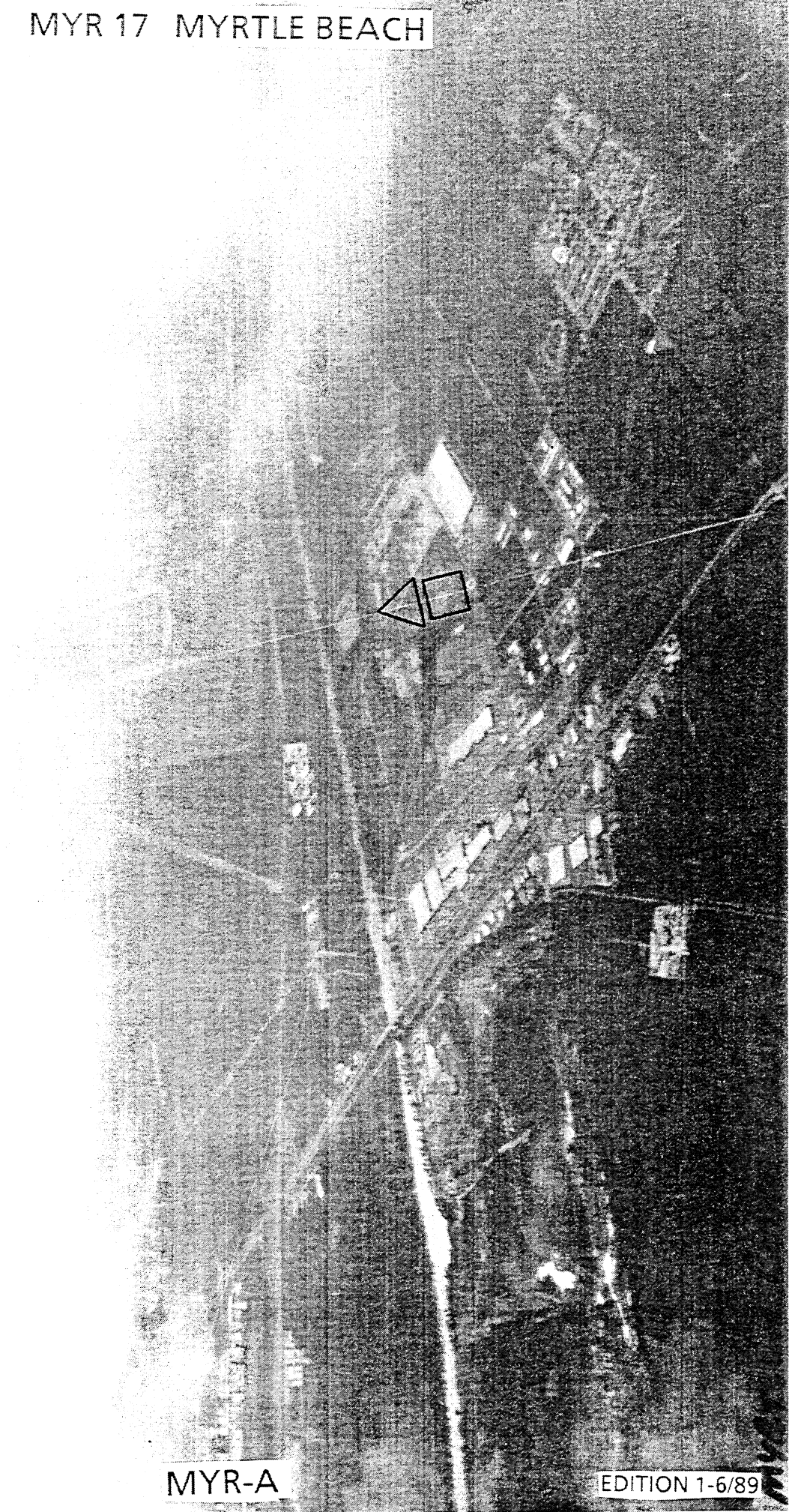
MYRTLE BEACH AFB
RUNWAYS 17 AND 35

DMAAC ED. 1 Mar. 1968



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MYR 17 MYRTLE BEACH

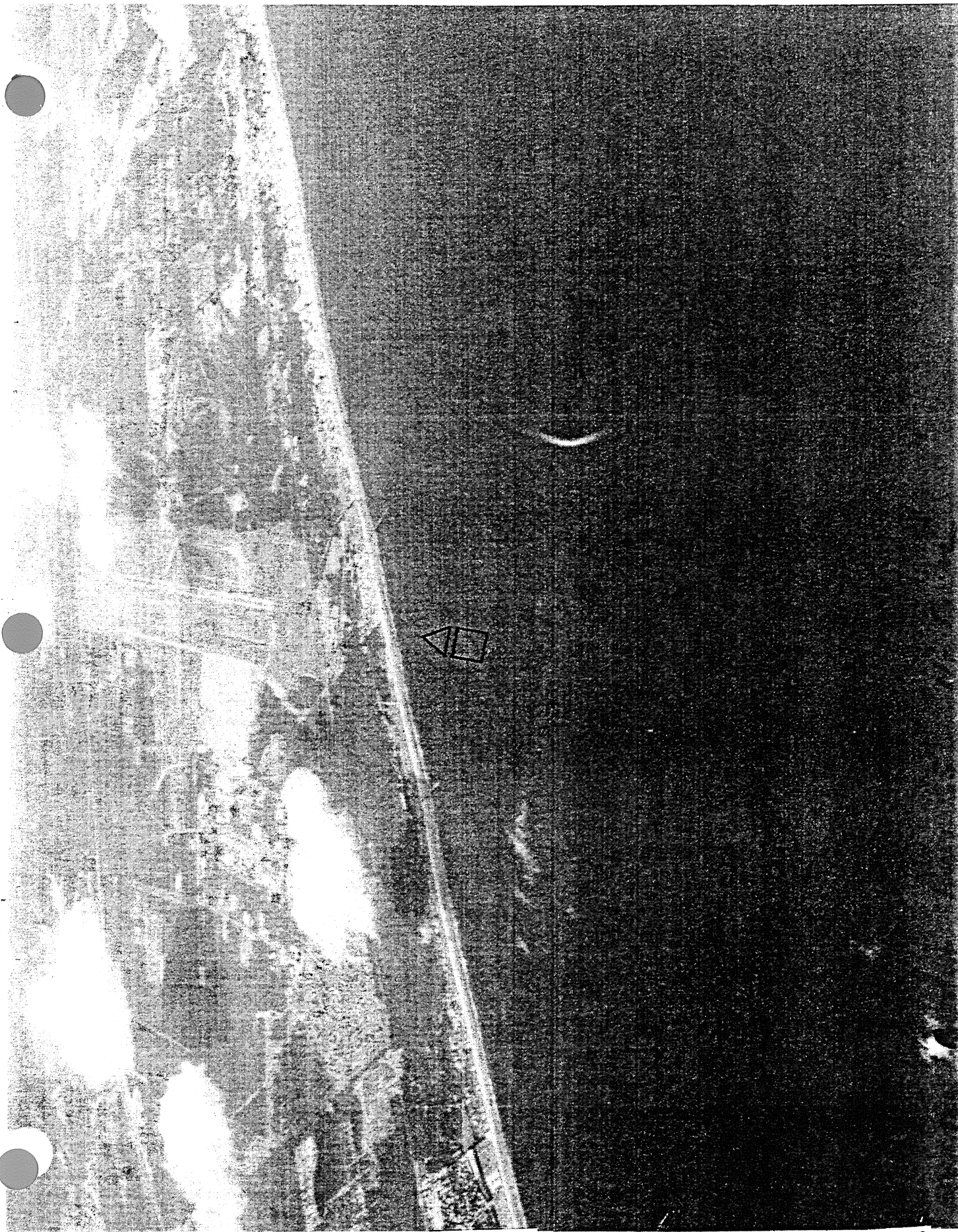


MYR-A

EDITION 1-6/89

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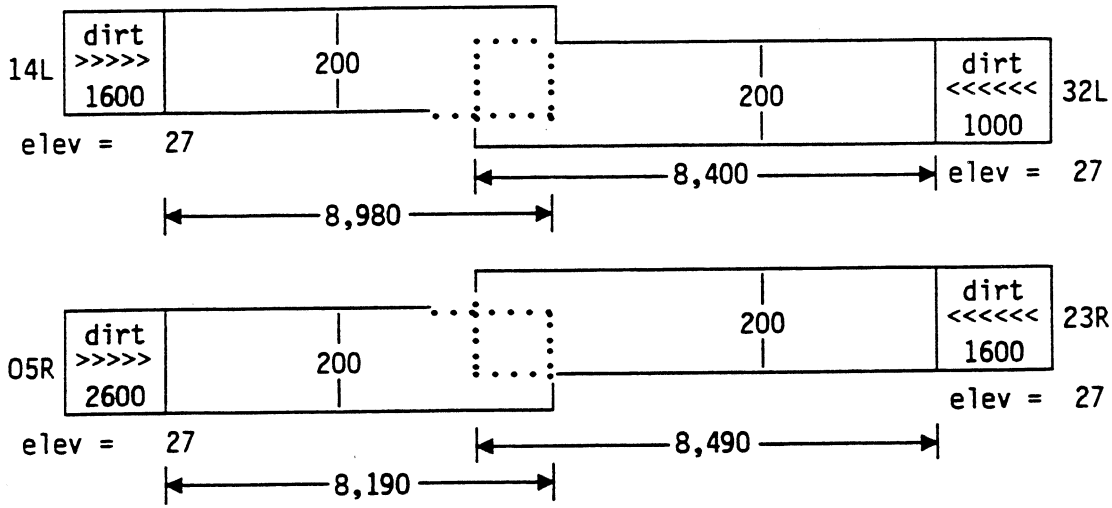
MYR 35 MYRTLE BEACH



MYR-C

EDITION 1-6/89

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TACAN: NKT-75x (Pri) NJM-67x (Sec)
 I/F above: N:125k E:<80k N:clear E:clear
 S:<80k W:100k S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

CHERRY POINT
NKT

CHERRY POINT
NKT

CHERRY POINT
NKT

CHERRY POINT
NKT

CHERRY POINT
NKT

CROTAN
NATIONAL
FOREST



lookout tower

HANCOCK CREEK
238

Dike

8988 x 200

8409 x 200

8080 x 200

8669 x 200

water tower

NEUSE RIVER

SLOCUM CREEK

NKT-3

RUNWAY CHART
1:62,500
CHERRY POINT MCAS
RUNWAY 14L AND 32L
DMAAC ED. 1 Mar. 1989

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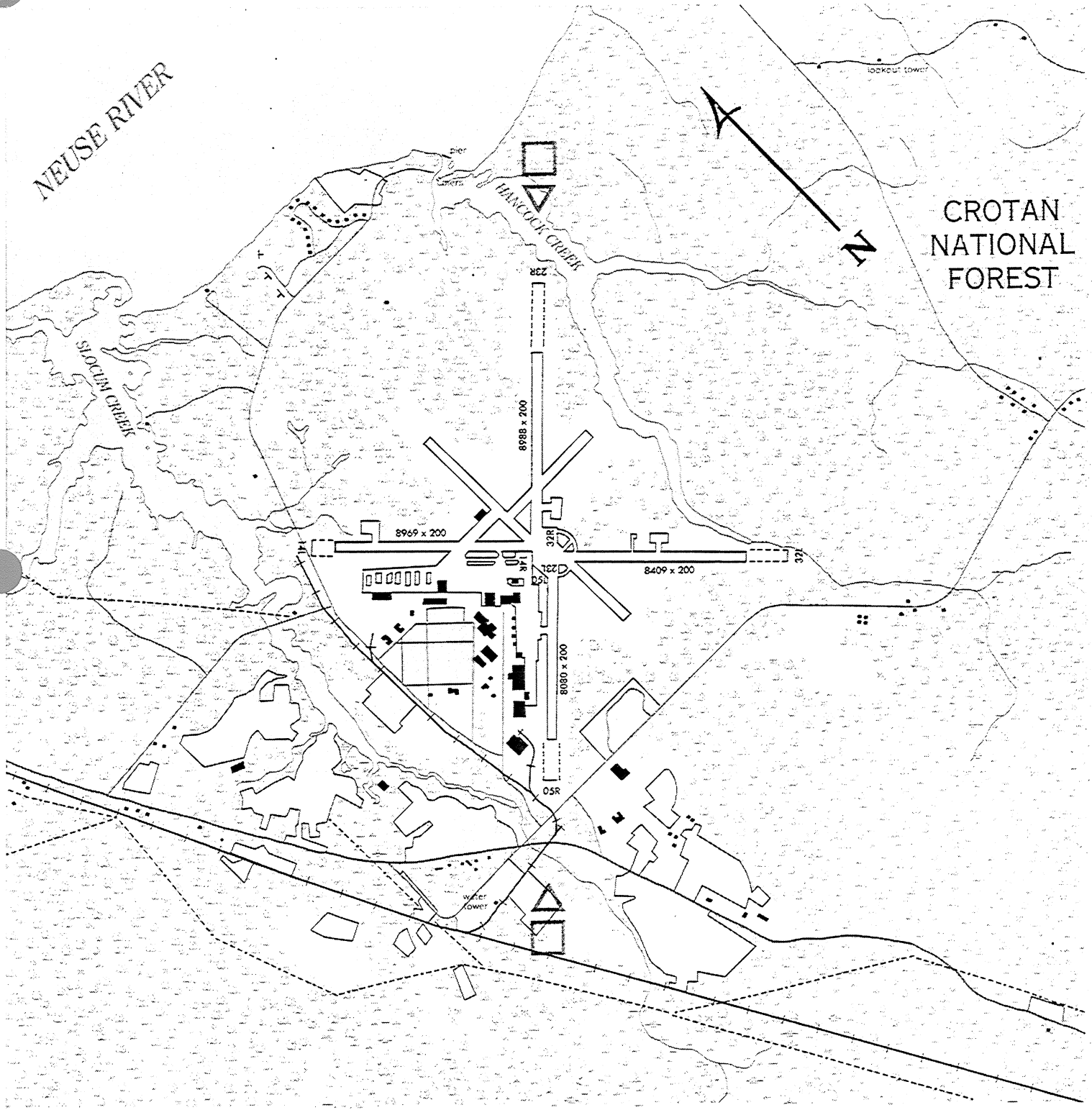
NEUSE RIVER

SILCOUM CREEK

HANCOCK CREEK

CROTAN NATIONAL FOREST

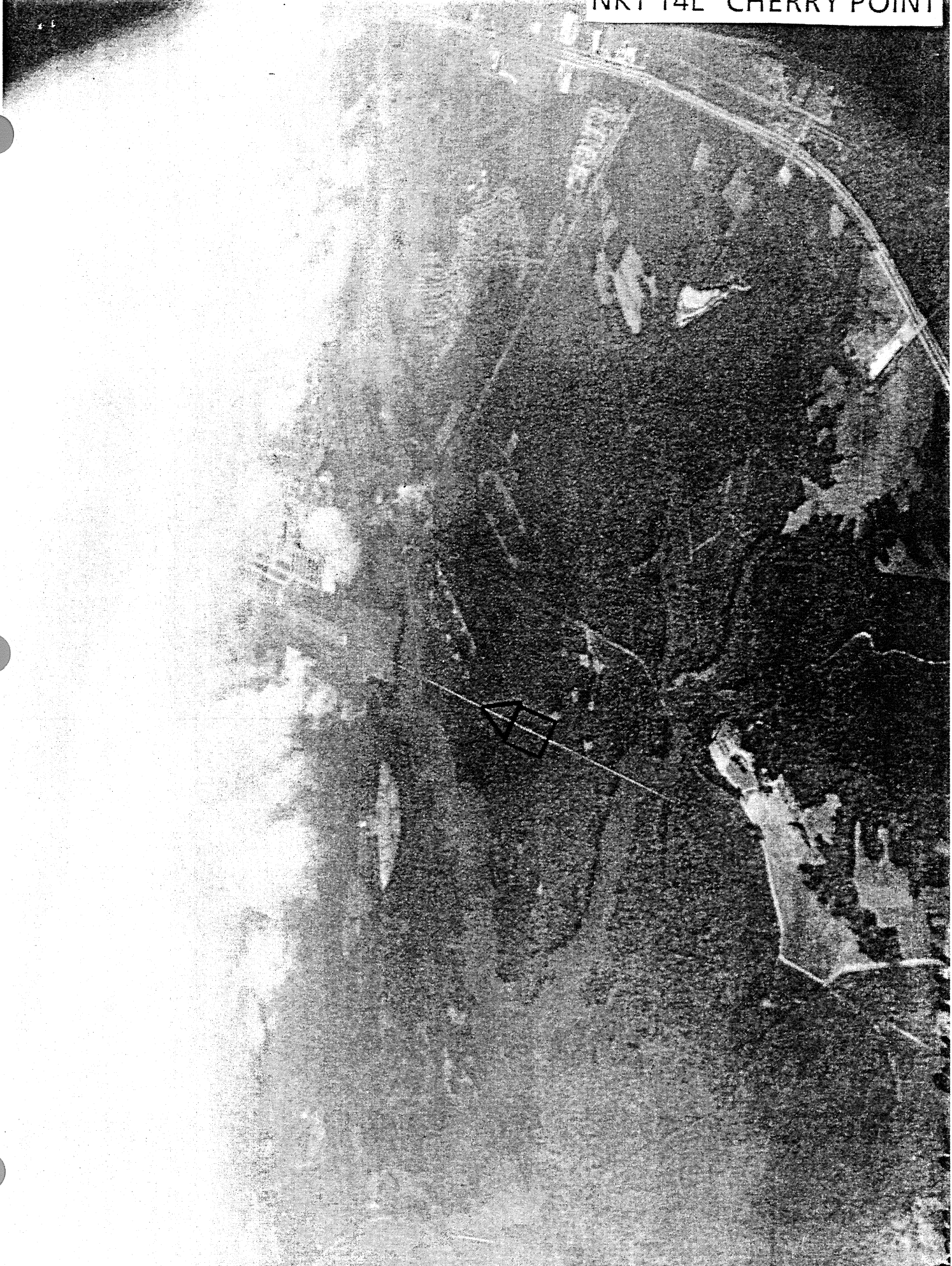
N



NKT-5

RUNWAY CHART
 1:62,500
 CHERRY POINT MCAS
 RUNWAY 05R AND 23R
 DMAAC ED. 1 Jan. 1991

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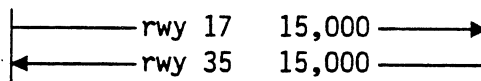
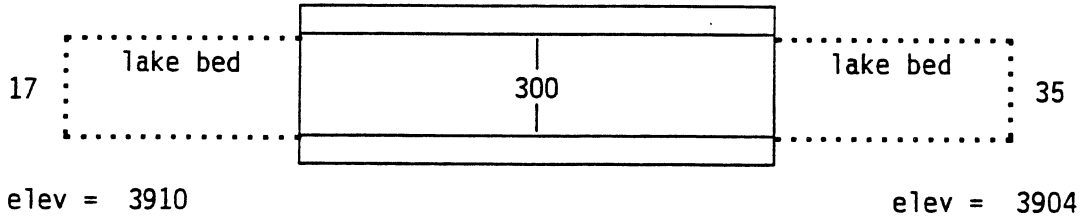
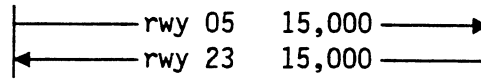
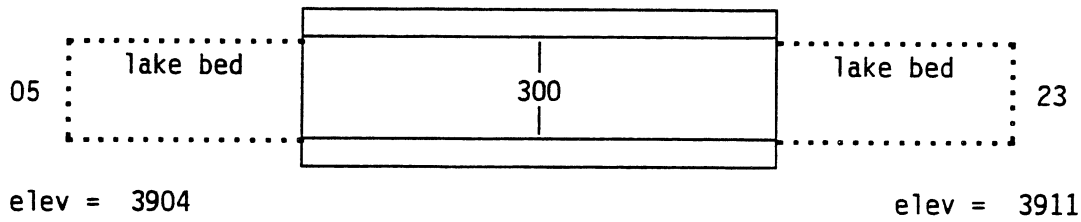
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White Sands Space Harbor, NM

Table Identifier **NOR**



TACAN: SNG-69x (Pri)+
 I/F above: N:clear E:clear
 S:clear W:clear

HMN-92x (Sec)
 N:140k E:130k
 S:clear W:120k

MLS: (17-Jr) ch 6
 PAPI: 17,23,35*
 Ball Bar: 17,23,35
 UHF: yes

* 7500-ft aim point only

NOTE

- TAL training rwy 02/20 located in northwest quadrant between rwys 05 and 17

+SNG-121y will be in the software. SNG-69x must be uplinked for NOR landing

WHITE SANDS
 NOR

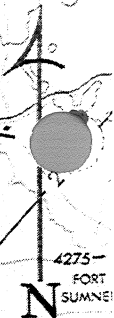
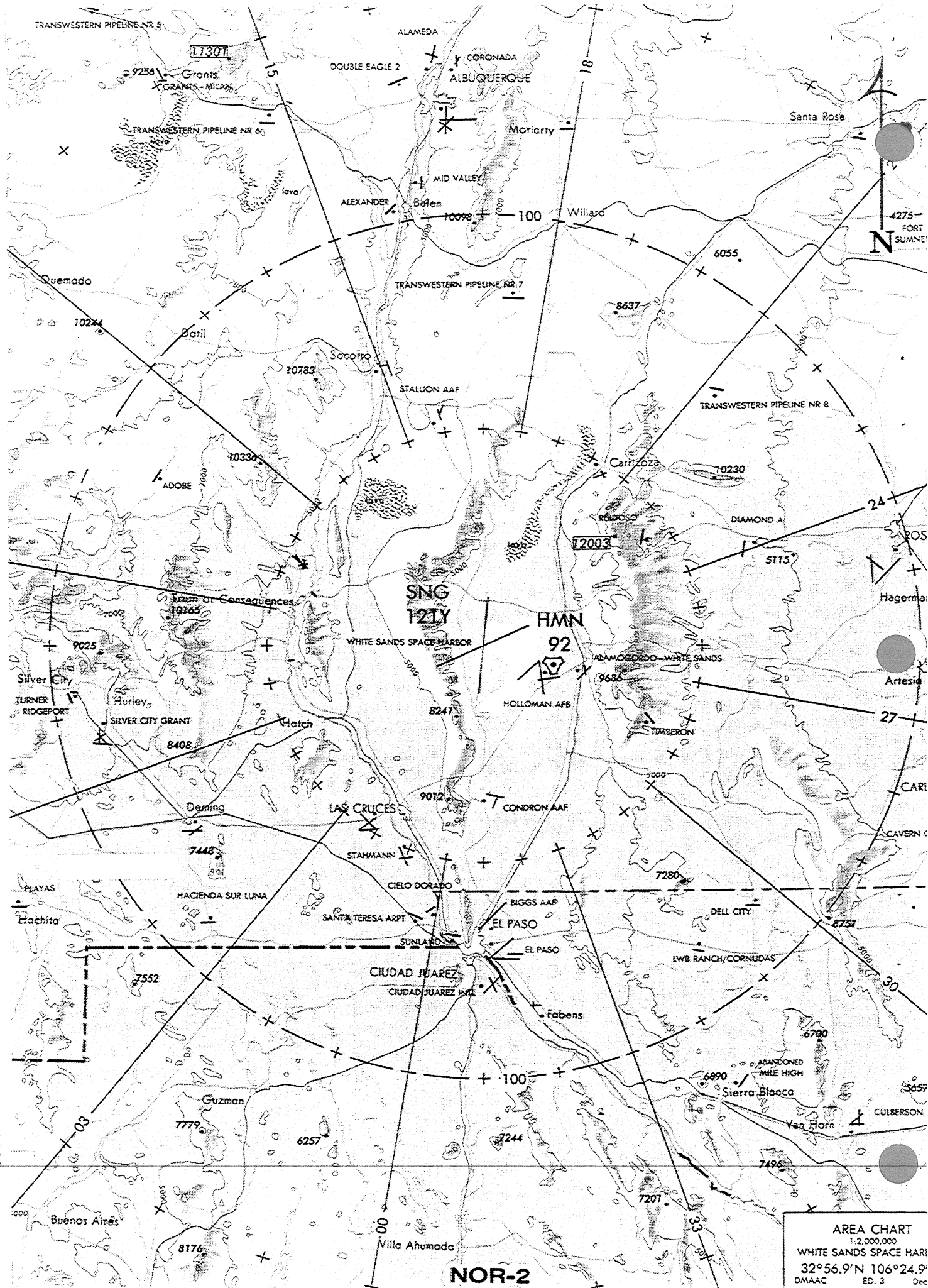
WHITE SANDS
 NOR

WHITE SANDS
 NOR

WHITE SANDS
 NOR

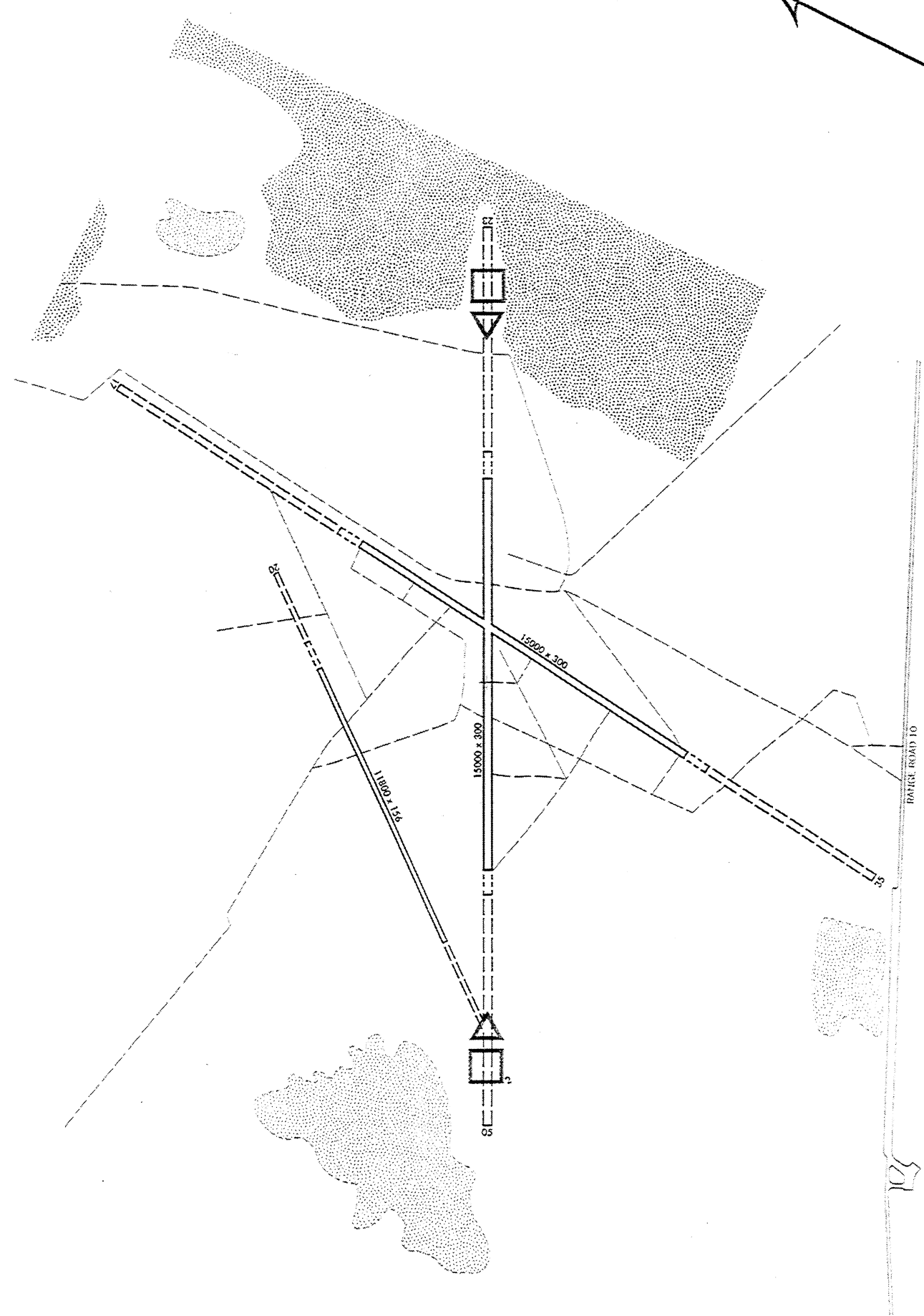
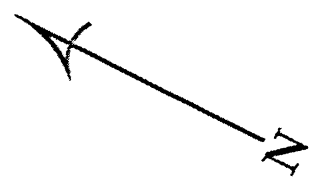
WHITE SANDS
 NOR

WHITE SANDS NOR
WHITE SANDS NOR
WHITE SANDS NOR
WHITE SANDS NOR
WHITE SANDS NOR
WHITE SANDS NOR



AREA CHART
1:2,000,000
WHITE SANDS SPACE HARBOR
32°56.9'N 106°24.9'
DMAAC ED. 3 Dec

NOR-2

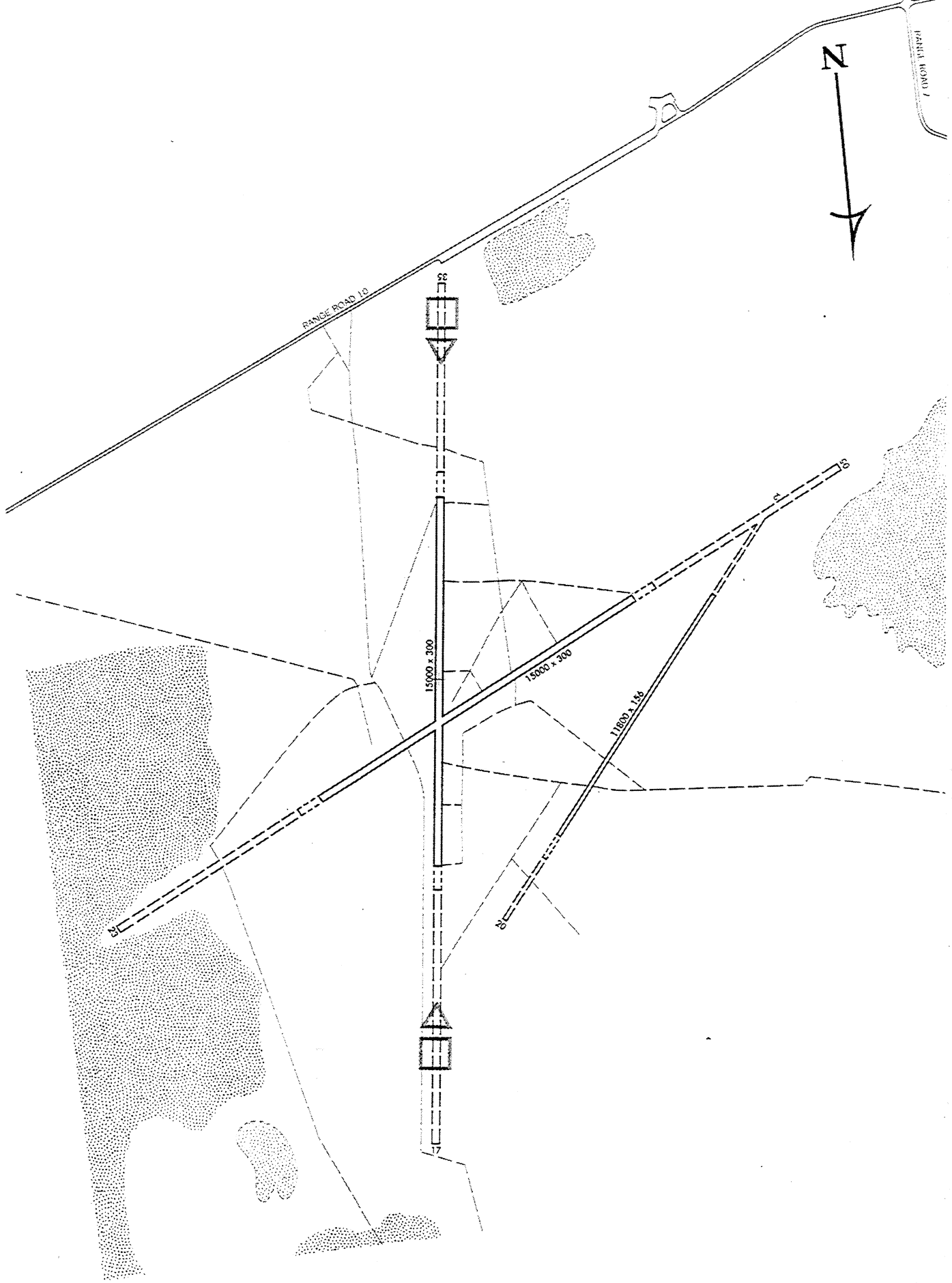


NOR-3

RUNWAY CHART
1:62,500
WHITE SANDS SPACE HARBOR
RUNWAYS 05 AND 23
DMAAC ED. 4 Dec. 1990

RANGE ROAD 7

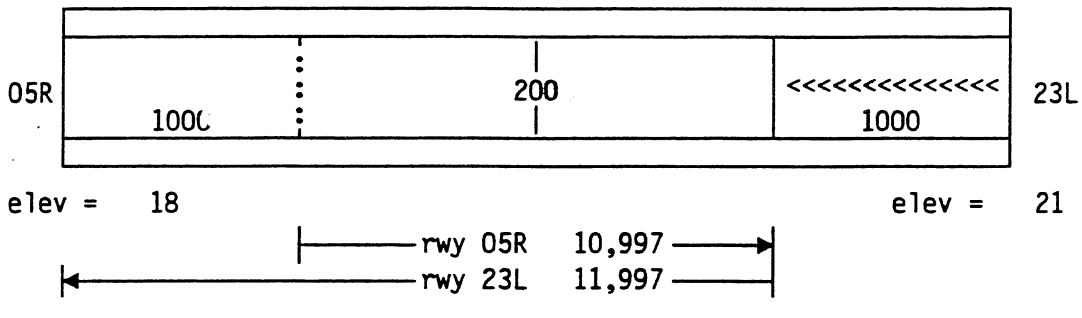
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NOR-5

RUNWAY CHART
 1:62,500
 WHITE SANDS SPACE HARBOR
 RUNWAYS 17 AND 35
 DMAAC ED. 4 Dec. 1990

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TACAN: NTU-113x (Pri) NGU-48x (Sec)
 I/F above: N:115k E:90k N:clear E:clear
 S:<80k W:80k S:clear W:clear

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

OCEANA
NTU

OCEANA
NTU

OCEANA
NTU

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OCEANA
NTU

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NTU 05R OCEANA view 1

Oceana Rwy 5 R

NTU-A

EDITION 1-6/89

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NTU 05R OCEANA view 2



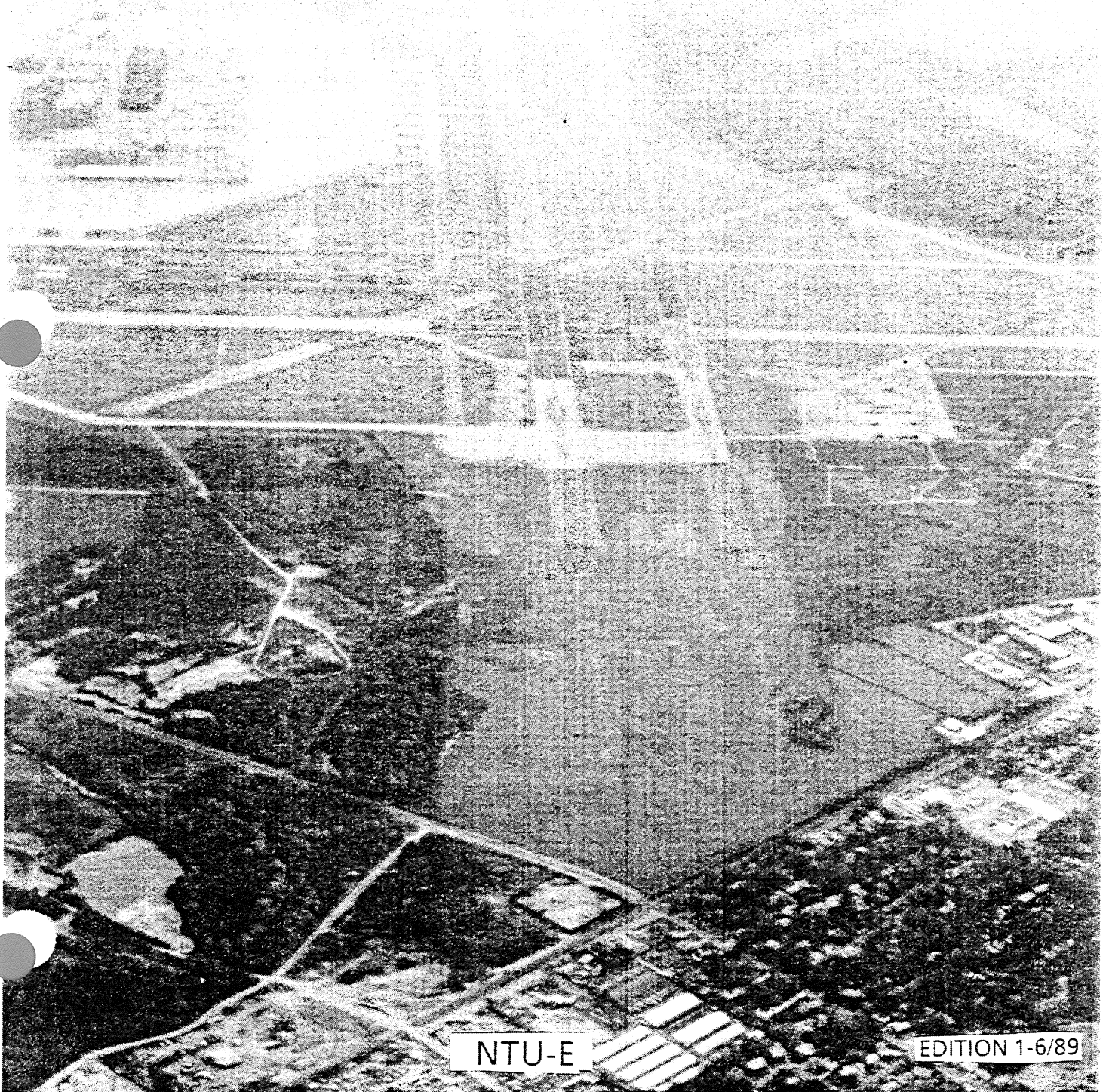
NTU-C

EDITION 1-6/89

Oceana Bay SR

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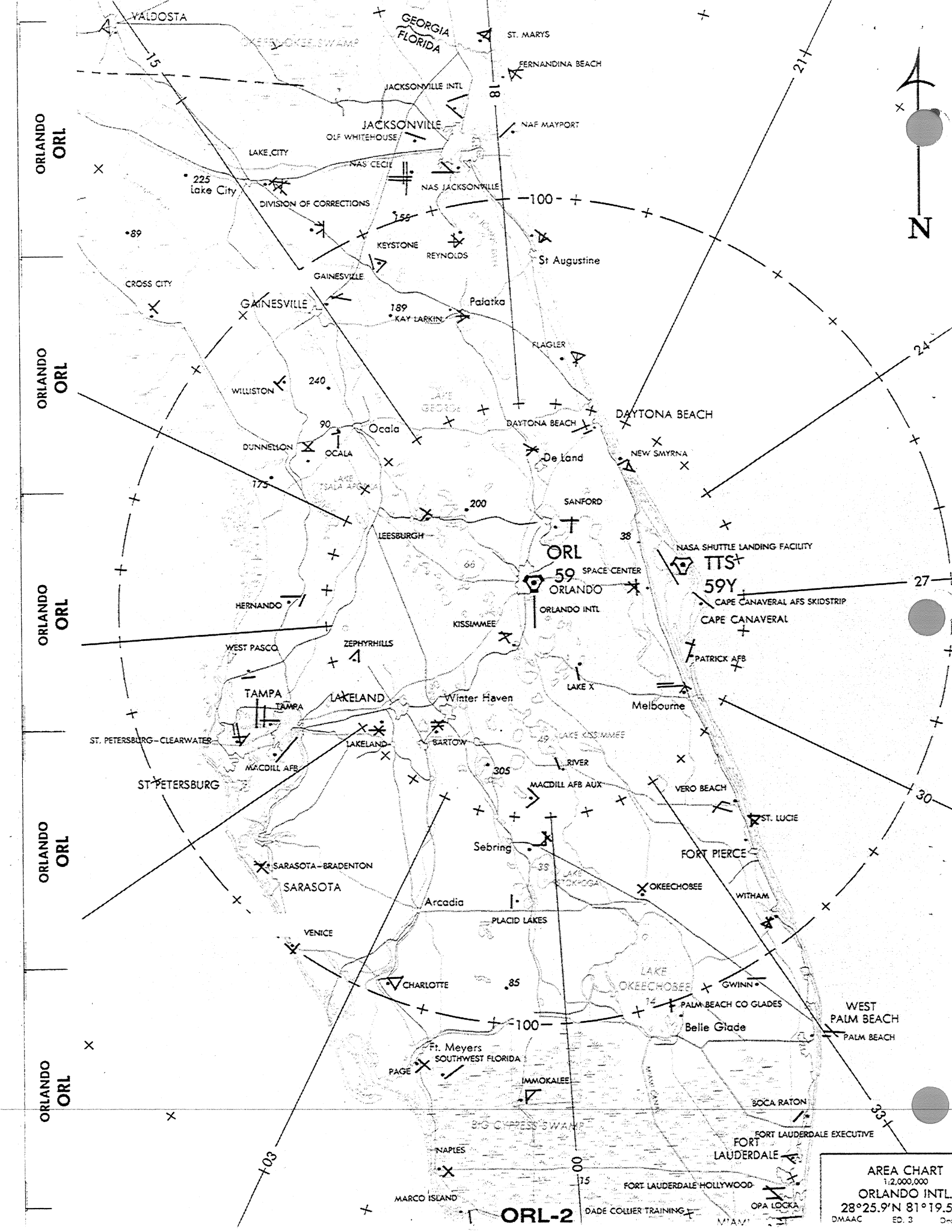
NTU 23L OCEANA



NTU-E

EDITION 1-6/89

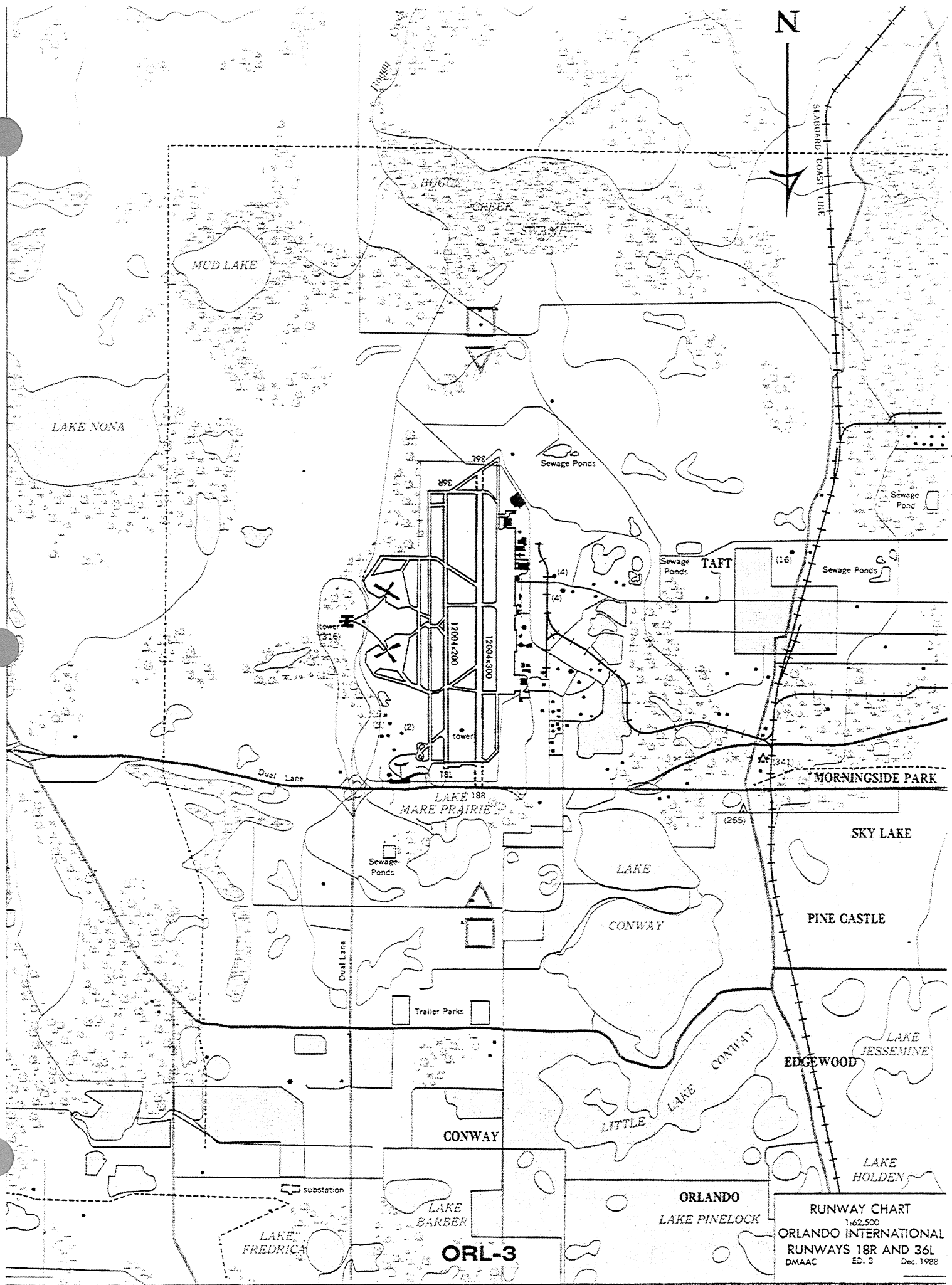
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ORLANDO ORL
ORLANDO ORL
ORLANDO ORL
ORLANDO ORL
ORLANDO ORL
ORLANDO ORL

AREA CHART
1:2,000,000
ORLANDO INTL
28°25.9'N 81°19.5'
DMAAC ED. 3

ORL-2



STANDARD COAST LINE

MUD LAKE

LAKE NONA

ROCKY CREEK

BIGGS CREEK

Sewage Ponds

12004400
12004200

Sewage Ponds

TAFT

(16)

Sewage Ponds

tower (1516)

tower (2)

Dual Lane

MORNINGSIDE PARK

LAKE 18R
MARE PRAIRIE

(265)

SKY LAKE

Sewage Ponds

LAKE

CONWAY

PINE CASTLE

Dual Lane

Trailer Parks

EDGEWOOD

LAKE
JESSEMINA

CONWAY

LITTLE
LAKE
CONWAY

LAKE
HOLDEN

substation

LAKE
FREDRICA

LAKE
BARBEK

ORL-3

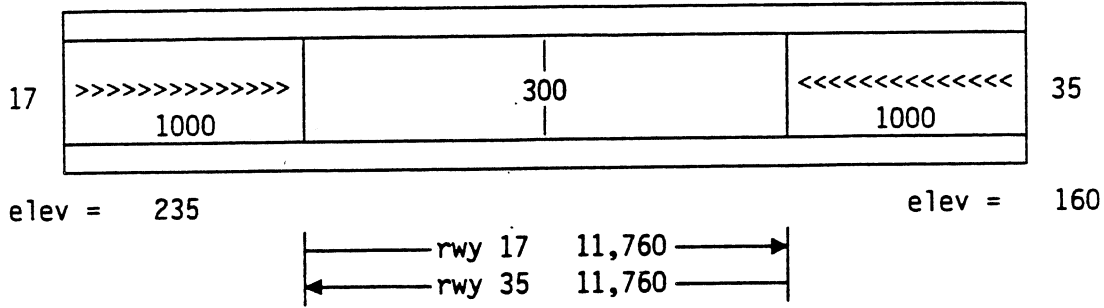
ORLANDO
LAKE PINELOCK

RUNWAY CHART
1:62,500
ORLANDO INTERNATIONAL
RUNWAYS 18R AND 36L
DMAAC ED. 3 Dec. 1993

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Plattsburgh AFB, New York

Table Identifier **PBG**



TACAN: VAL-80x (Pri)
 I/F above: N:<<80k E:<<80k
 S:<<80k W:<<80k

PLB-116x (Sec)
 N:clear E:clear
 S:100k W:100k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

PLATTSBURGH
PBG

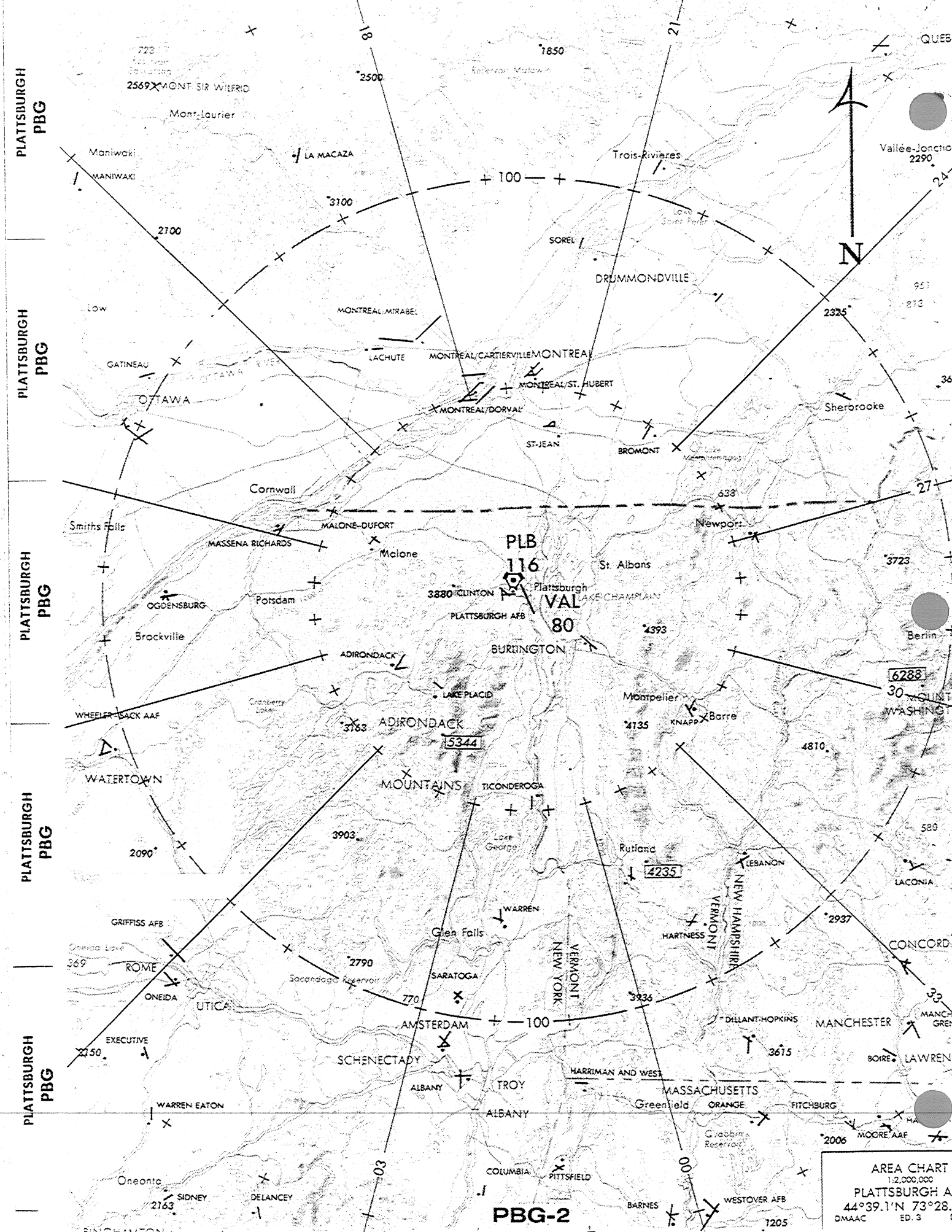
PLATTSBURGH
PBG

PLATTSBURGH
PBG

PLATTSBURGH
PBG

PLATTSBURGH
PBG

MAPS/ALL/GEN B



PLATTSBURGH PBG
 PLATTSBURGH PBG
 PLATTSBURGH PBG
 PLATTSBURGH PBG
 PLATTSBURGH PBG



AREA CHART
 1:2,000,000
 PLATTSBURGH AFB
 44°39.1'N 73°28.1'
 DMAAC ED. 3 Dc

PBG-2

PLB
 116
 VAL
 80

6288

3880

5344

4235

2937

770

3936

2006

729

7850

2500

21

2569 MONT SIR WILFRID

Mont Laurier

Maniwaki

MANIWAKI

2100

3700

LA MACAZA

Low

GATINEAU

OTTAWA

MONTREAL MIRABEL

LACHUTE

MONTREAL CARTIERVILLE MONTREAL

MONTREAL ST. HUBERT

MONTREAL DORVAL

ST-JEAN

BROMONT

Cornwall

SMITHS FALLS

WHEELER DACK AAF

WATERTOWN

2090

OGDENSBURG

Potsdam

Brockville

ADIRONDACK

ADIRONDACK

ADIRONDACK MOUNTAINS

3903

TIKONDEROGA

LAKE PLACID

WATERGEO

WARREN

Glen Falls

SARATOGA

AMSTERDAM

SCHENECTADY

ALBANY

TROY

ALBANY

WARREN EATON

Oneonta

2163

SIDNEY

DELANCEY

BINGHAMTON

18

100

21

2325

27

3723

362

638

3723

3723

3723

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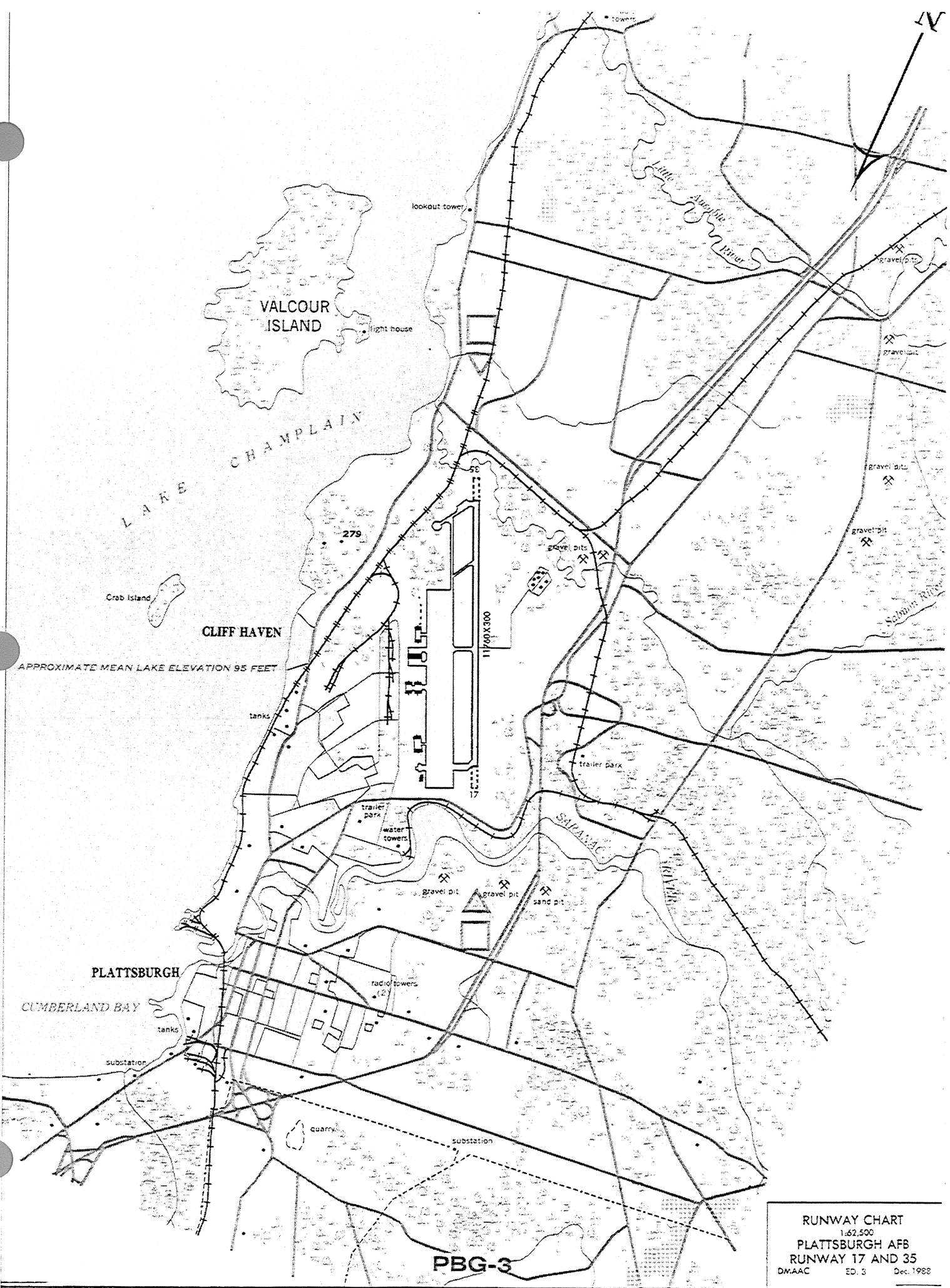
3723

3723

3723

3723

3723



APPROXIMATE MEAN LAKE ELEVATION 95 FEET

PBG-3

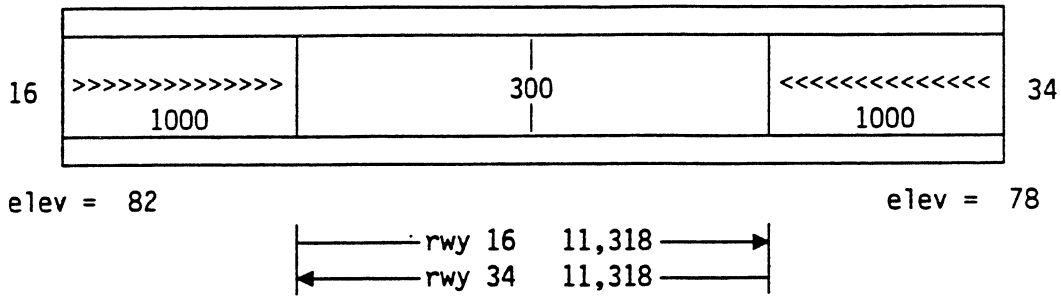
RUNWAY CHART
 1:62,500
PLATTSBURGH AFB
RUNWAY 17 AND 35
 DWAAC ED. 3 Dec. 1988

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Pease AFB, New Hampshire

Table Identifier

PSM



TACAN: PSM-112x (Pri)
 I/F above: N:<<80k E:<<80k
 S:<<80k W:<<80k

ENE-118x (Sec)
 N:clear E:clear
 S:120k W:95k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

PEASE
PSM

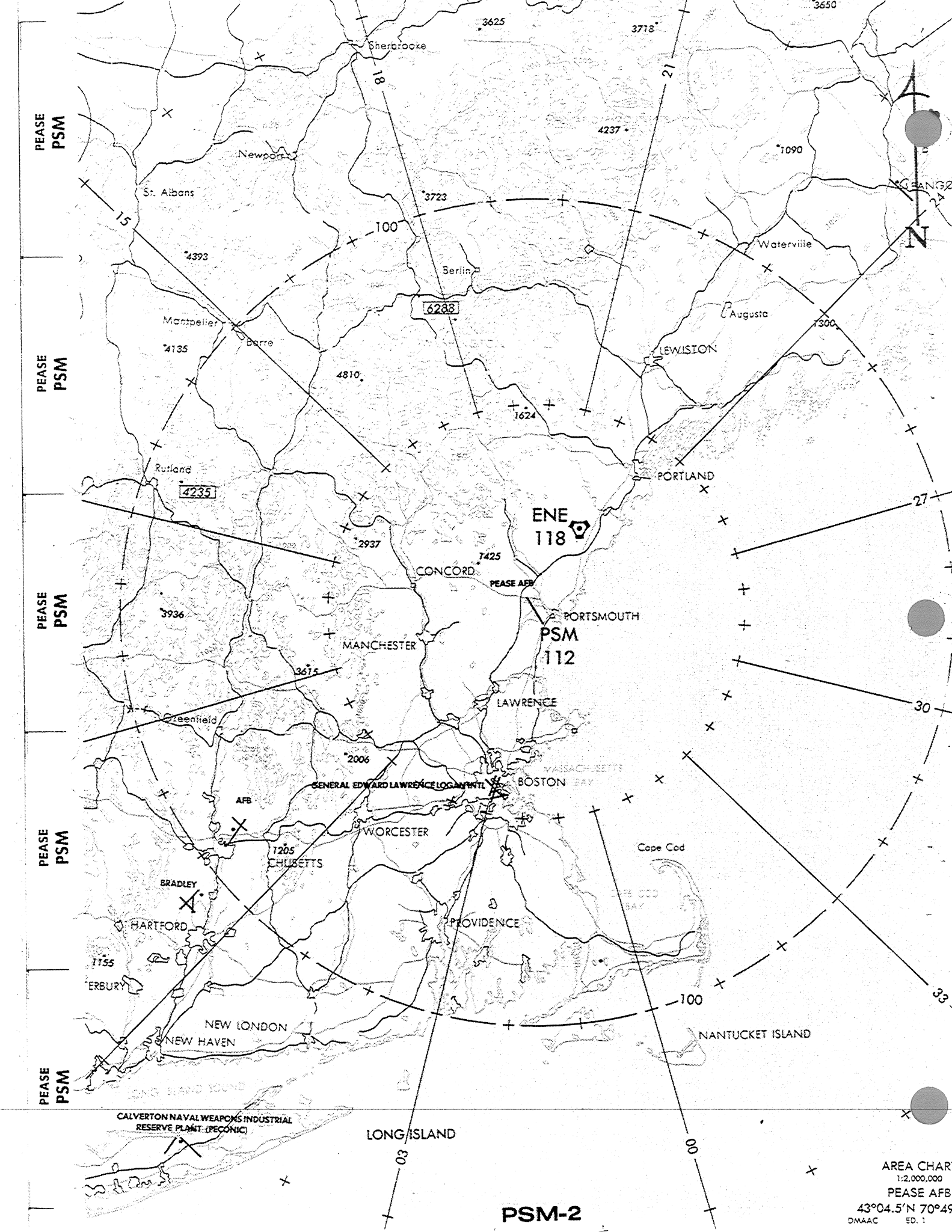
PEASE
PSM

PEASE
PSM

PEASE
PSM

PEASE
PSM

MAPS/ALL/GEN B



PEASE
PSM

PEASE
PSM

PEASE
PSM

PEASE
PSM

PEASE
PSM

AREA CHART
1:2,000,000
PEASE AFB
43°04.5'N 70°49'
DMAAC ED. 1 5

PSM-2

ENE
118

PSM
112

CALVERTON NAVAL WEAPONS INDUSTRIAL
RESERVE PLANT (PECONIC)

LONG ISLAND

NANTUCKET ISLAND

Cape Cod

MASSACHUSETTS
BOSTON BAY

GENERAL EDWARD LAWRENCE LOGAN INTL
AFB

WORCESTER

PROVIDENCE

HARTFORD

BRADLEY

CHILMARK

1205

MANCHESTER

LAWRENCE

PORTSMOUTH

CONCORD

PEASE AFB

PORTLAND

LEWISTON

Augusta

Waterville

Berlin

Montpelier

Barre

Rutland

4235

4393

St. Albans

Newport

Sherbrooke

3625

3718

3650

4237

1090

3723

100

4810

1624

1300

2937

1425

3936

3675

2006

1155

WATERBURY

NEW LONDON

NEW HAVEN

100

00

03

33

30

27

21

15

18

LONG ISLAND

WATERBURY

PORTLAND

NEW HAVEN

NEW LONDON

WATERBURY

PORTLAND

NEW HAVEN

NEW LONDON

WATERBURY

PORTLAND

NEW HAVEN

NEW LONDON

WATERBURY

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NEW HAVEN

NEW LONDON

WATERBURY

PORTLAND

NEW HAVEN

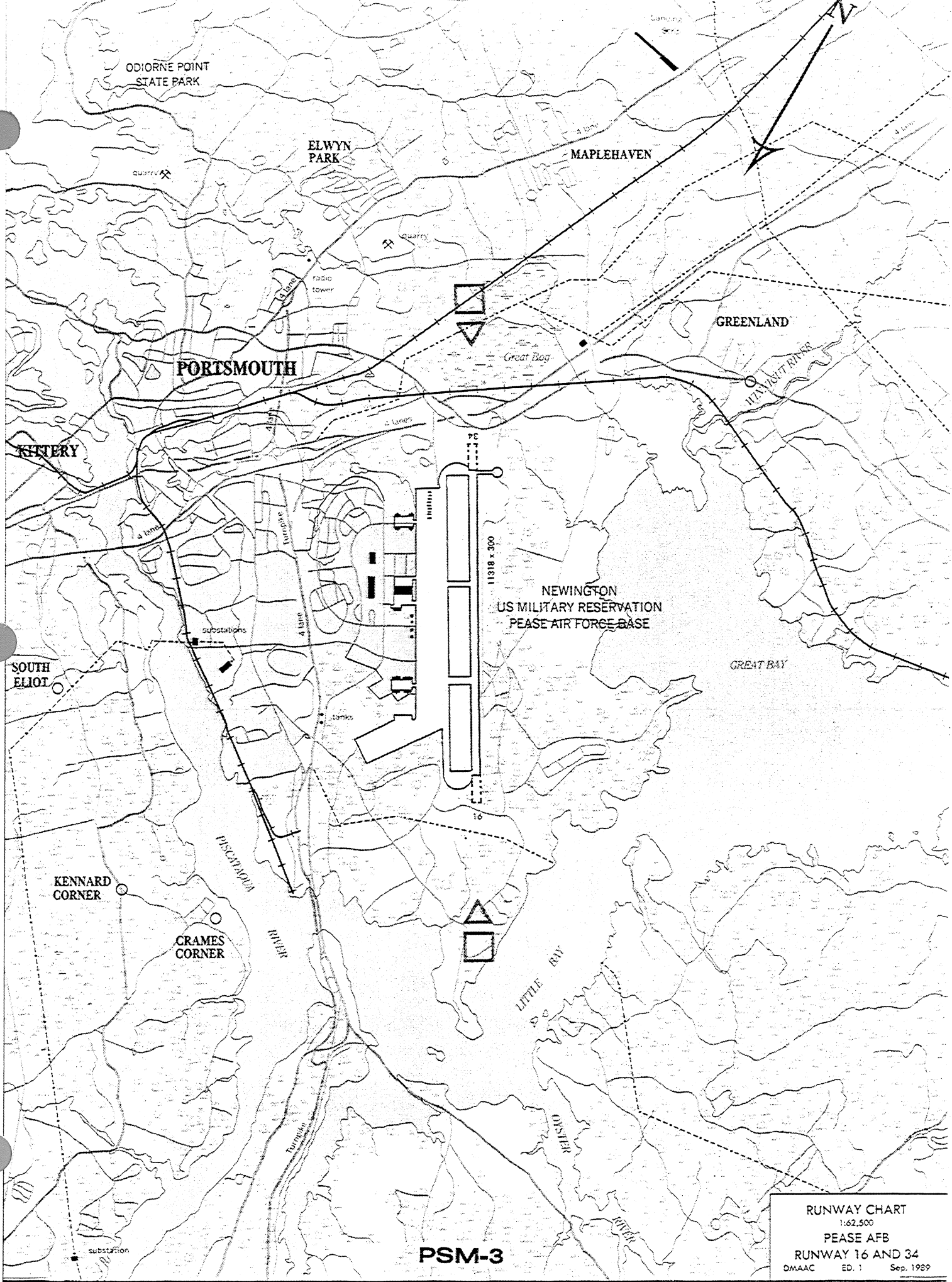
NEW LONDON

WATERBURY

PORTLAND

NEW HAVEN

NEW LONDON



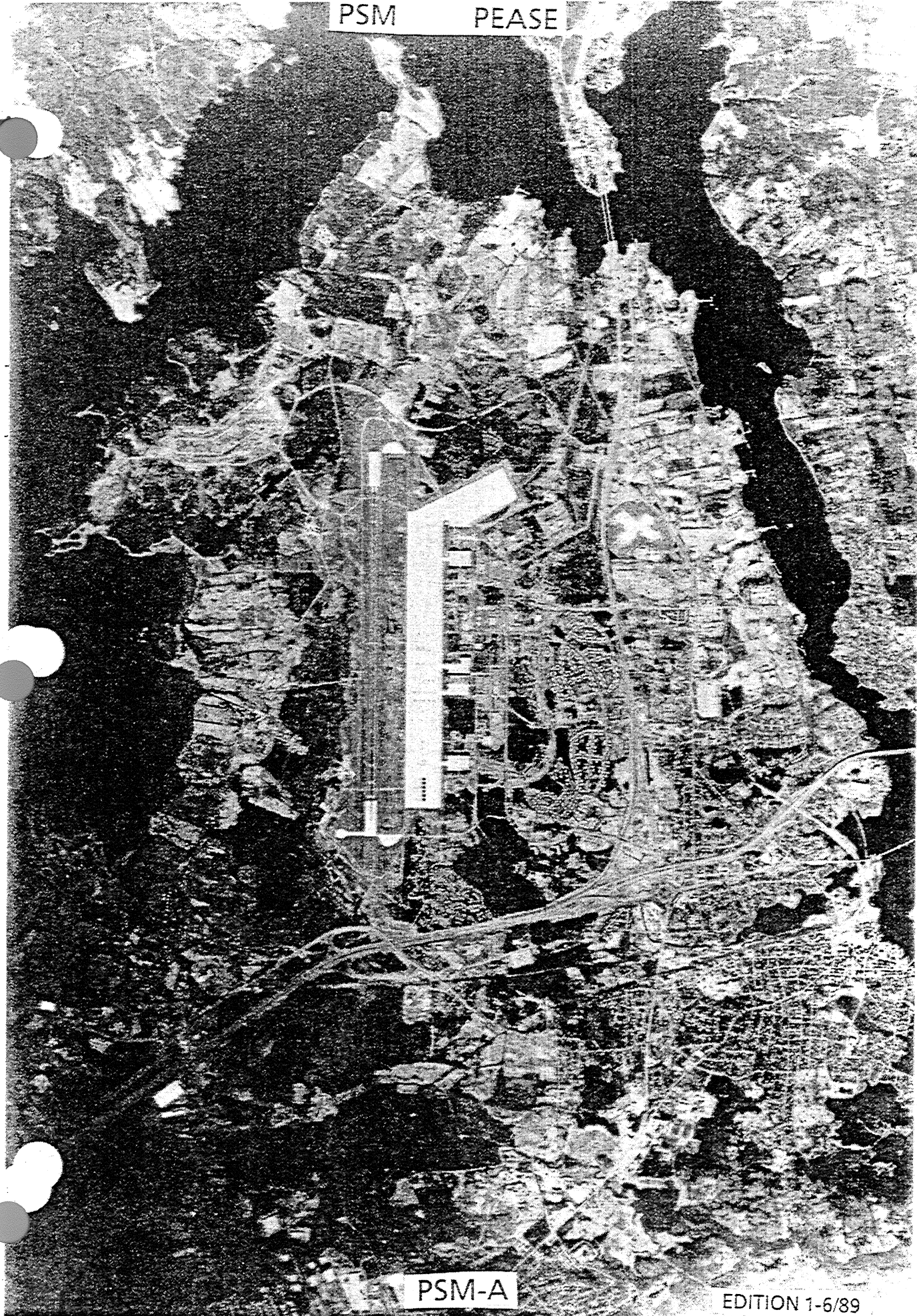
PSM-3

RUNWAY CHART
 1:62,500
 PEASE AFB
 RUNWAY 16 AND 34
 DMAAC ED. 1 Sep. 1989

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PSM

PEASE

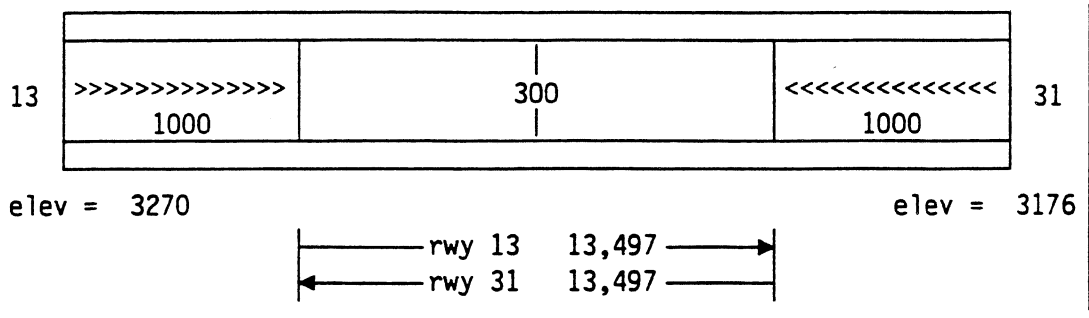


PSM-A

EDITION 1-6/89

Pease AFB, Portsmouth, NH

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TACAN: RCA-25x (Pri) RAP-70x (Sec)
 I/F above: N:<<80k E:<<80k N:140k E:100k
 S:<<80k W:<<80k S: 90k W:110k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: yes (guard only)

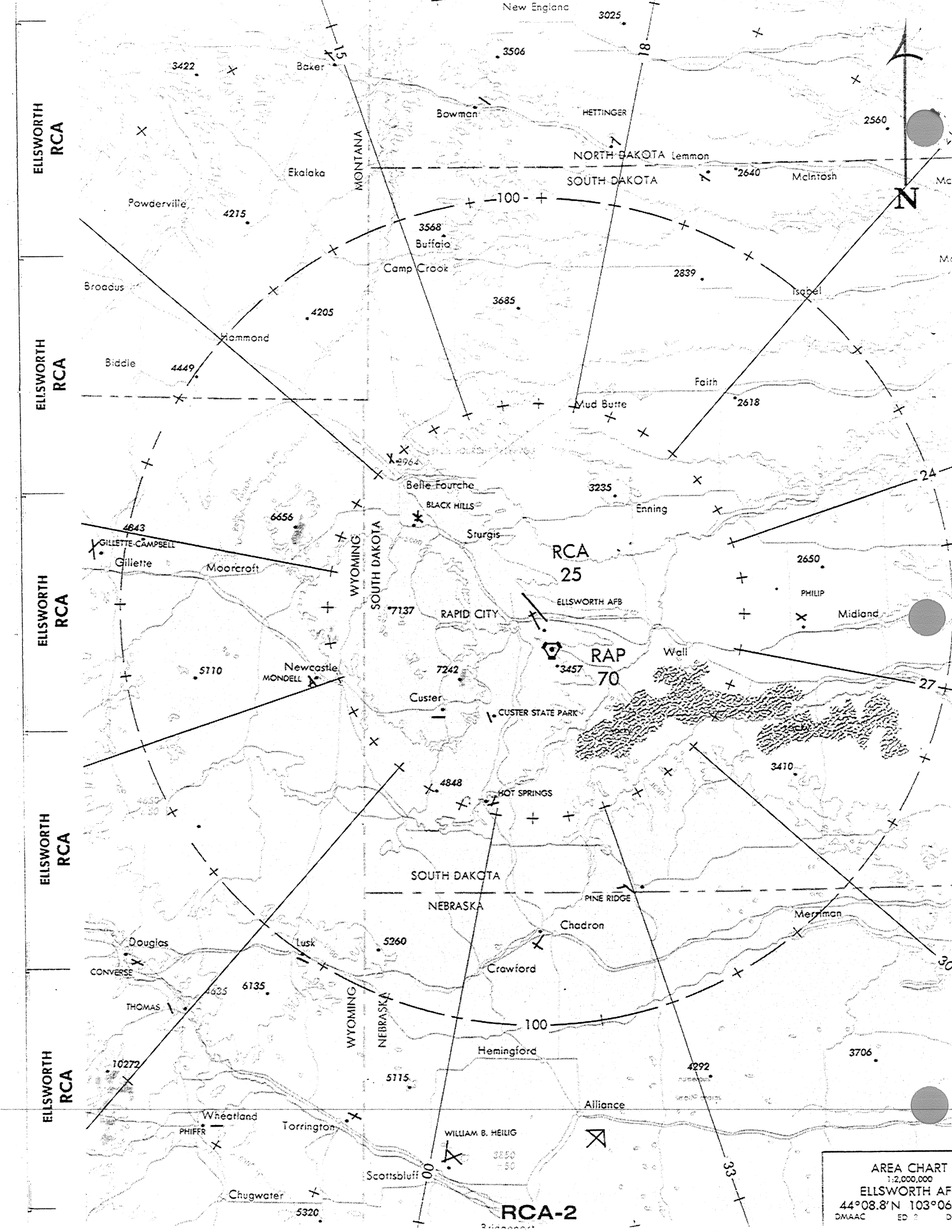
ELLSWORTH
RCA

ELLSWORTH
RCA

ELLSWORTH
RCA

ELLSWORTH
RCA

ELLSWORTH
RCA

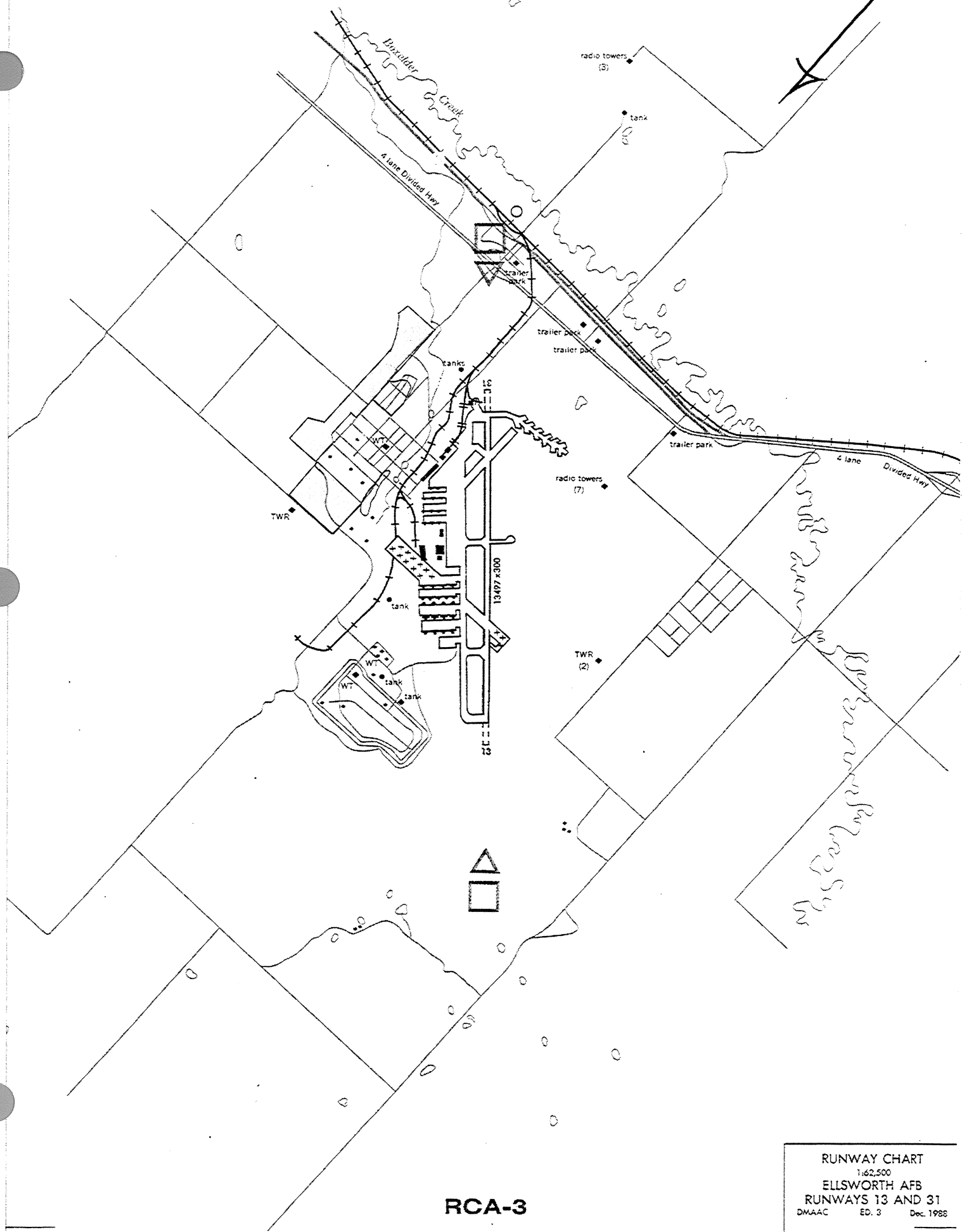
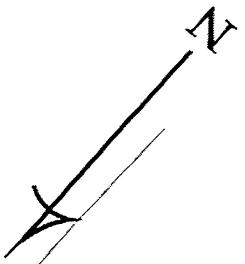


ELLSWORTH RCA
 ELLSWORTH RCA
 ELLSWORTH RCA
 ELLSWORTH RCA
 ELLSWORTH RCA
 ELLSWORTH RCA

RCA
 25
 ELLSWORTH AFB
 RAP
 70

RCA-2

AREA CHART
 1:2,000,000
 ELLSWORTH AFB
 44°08.8'N 103°06.
 DMAAC ED 2 De

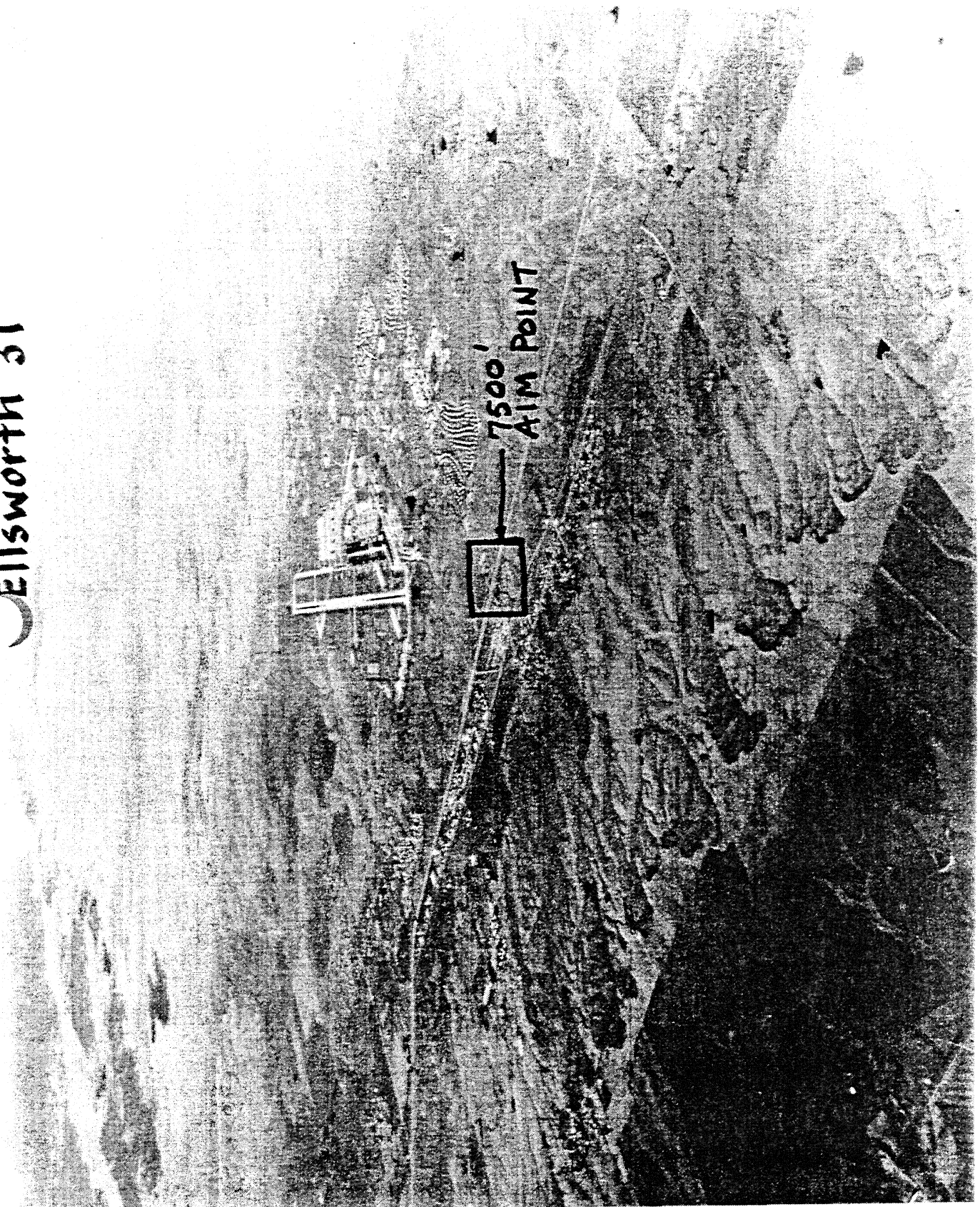


RCA-3

RUNWAY CHART	
1:62,500	
ELLSWORTH AFB	
RUNWAYS 13 AND 31	
DMAAC	ED. 3 Dec. 1988

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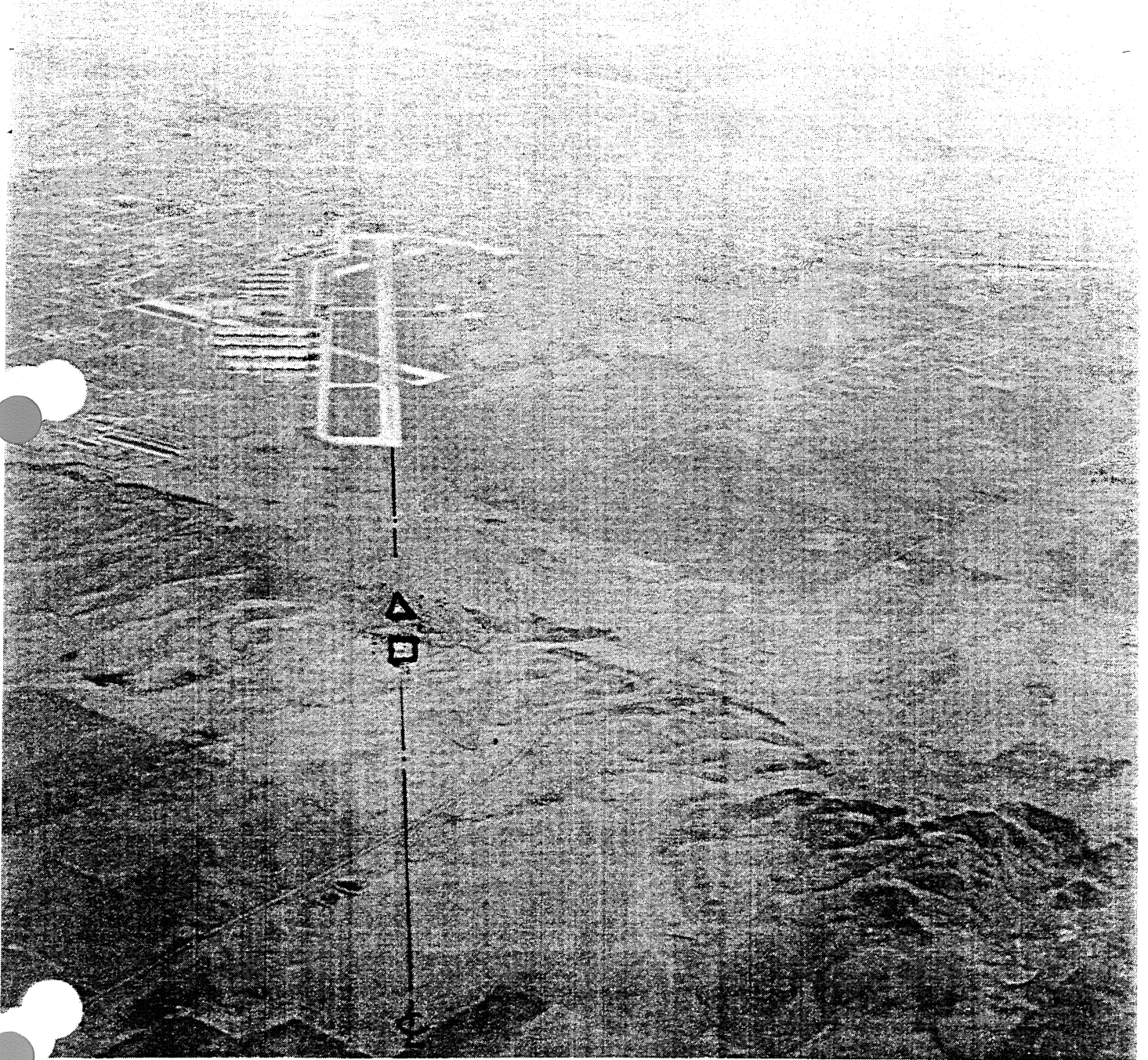
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RCA 13 ELLSWORTH

ELLSWORTH 13



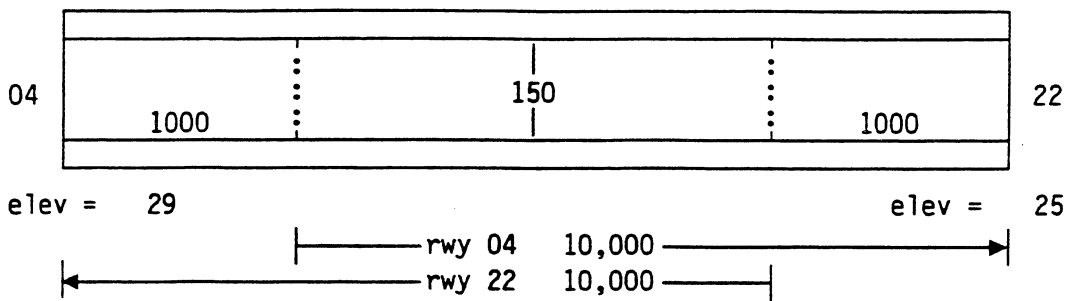
RCA-C

EDITION 1-6/89

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Roberts Field, Liberia

Table Identifier **ROB**



TACAN: ROB-85x (Pri-DME)
I/F above: N:clear E:clear
S:clear W:clear

MLS: none
PAPI: none
Ball Bar: none
UHF: none

WARNING

- Do NOT use rwy 22
- No overruns
- Expect thunderstorms, low clouds, and low visibility May through November. Expect scattered low clouds other times
- Braking action is poor

NOTE

- 25-ft shoulders
- Airport officials may not be aware of your purpose
- Official language is English

MAPS/ALL/GEN B

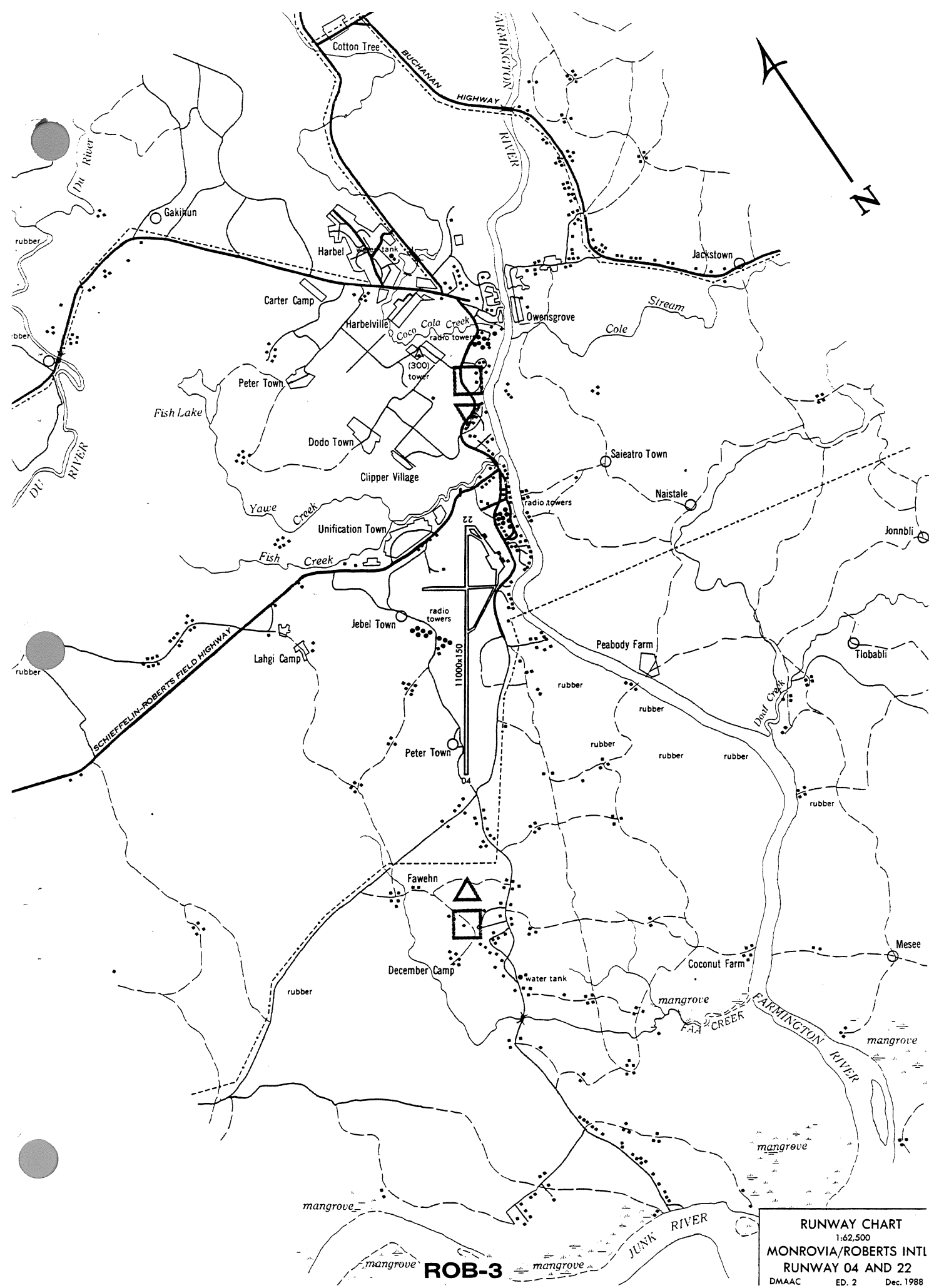
ROBERTS
ROB

ROBERTS
ROB

ROBERTS
ROB

ROBERTS
ROB

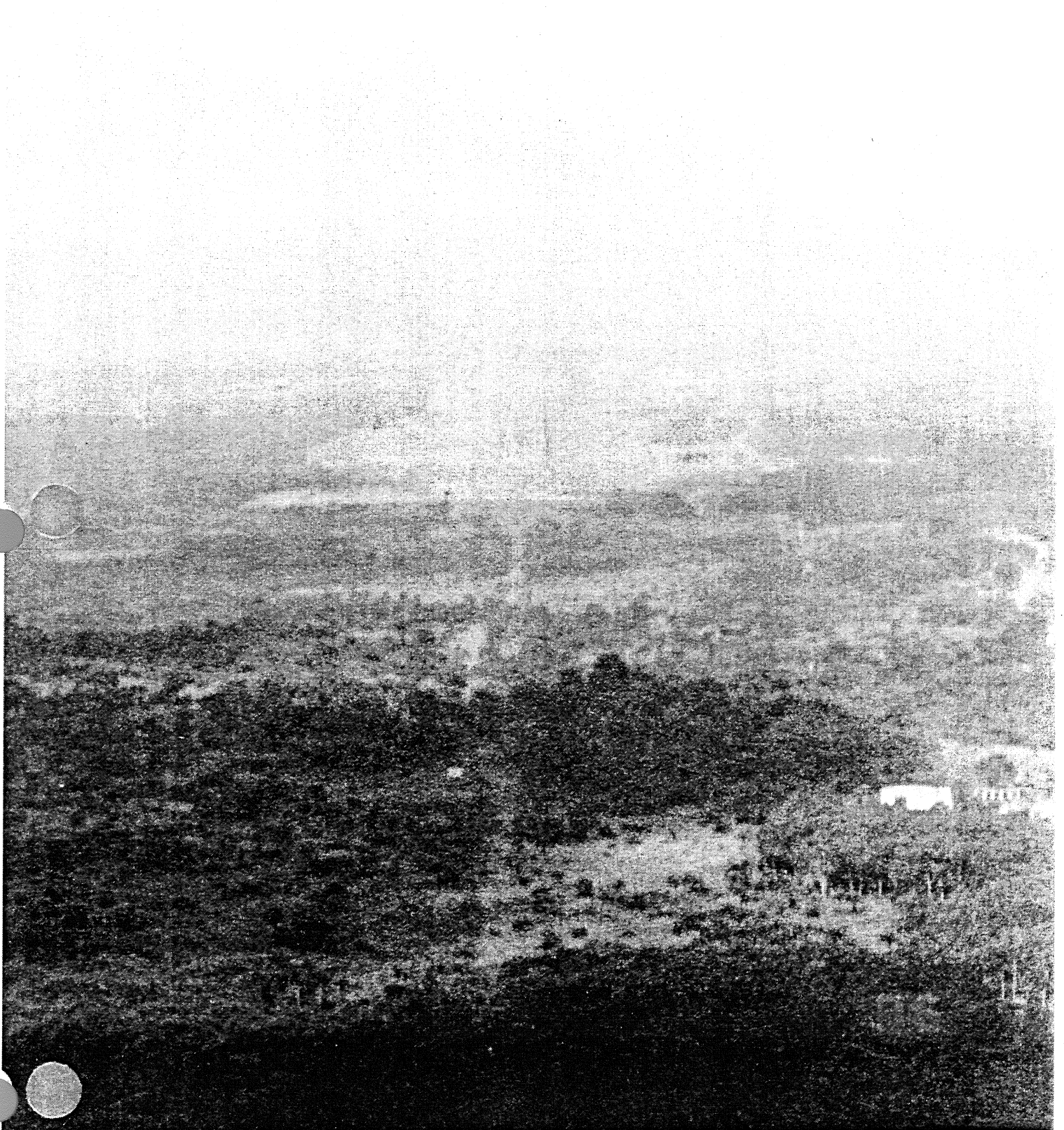
ROBERTS
ROB



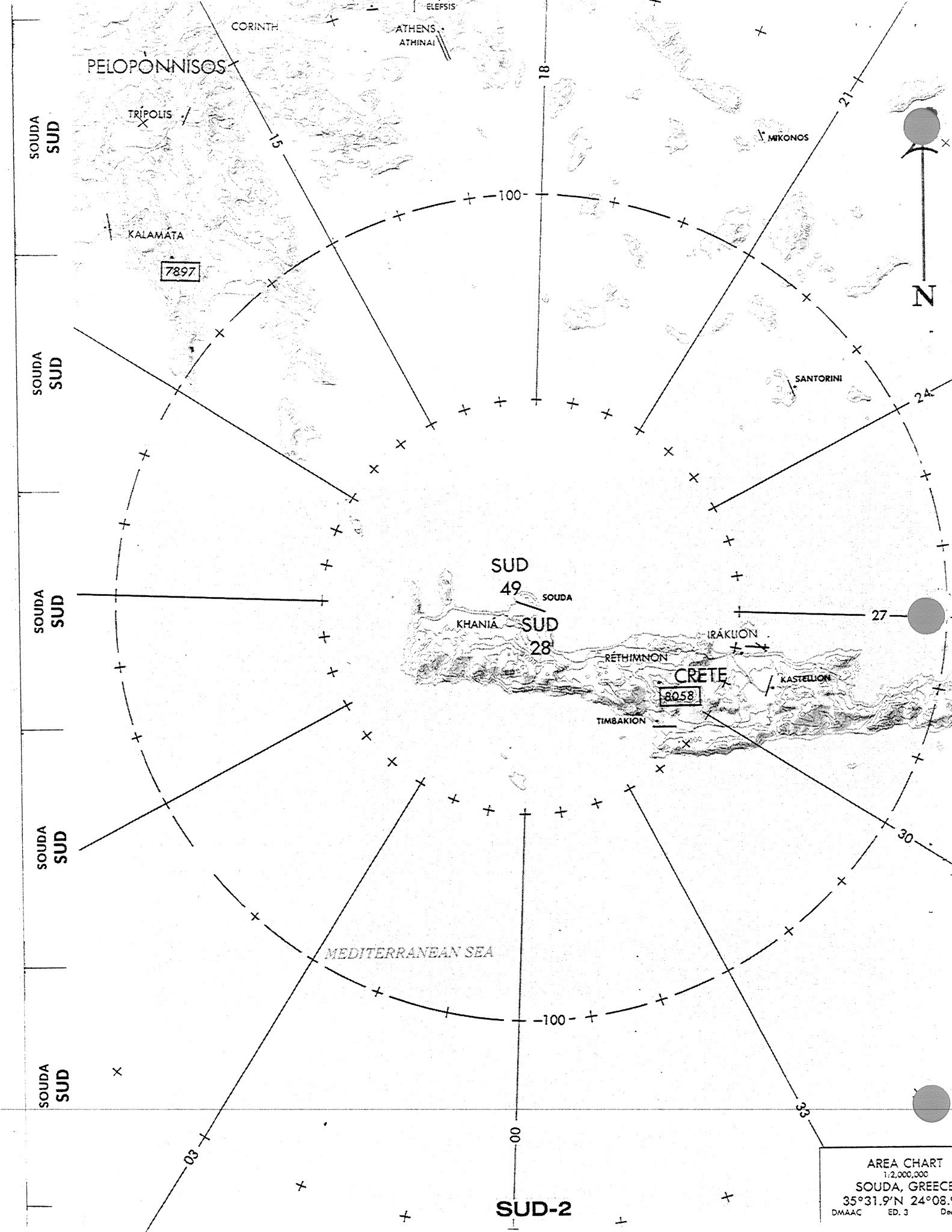
ROB-3

RUNWAY CHART
 1:62,500
MONROVIA/ROBERTS INTL
RUNWAY 04 AND 22
 DMAAC ED. 2 Dec. 1988

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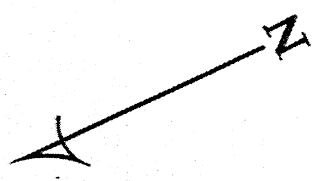
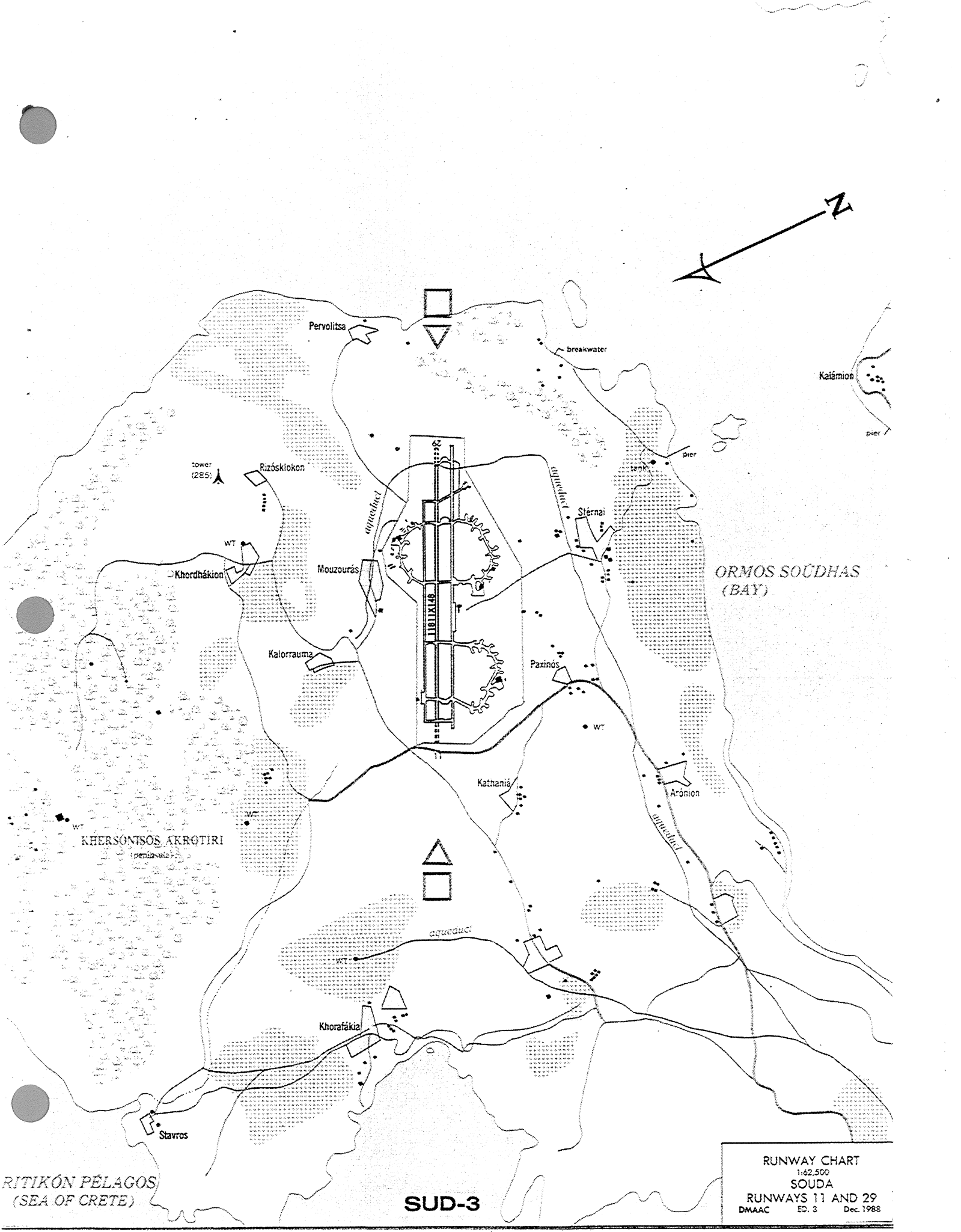


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AREA CHART
 1:2,000,000
 SOUDA, GREECE
 35°31.9'N 24°08.9'
 DMAAC ED. 3 Dec.

SUD-2



RITIKÓN PELAGOS
(SEA OF CRETE)

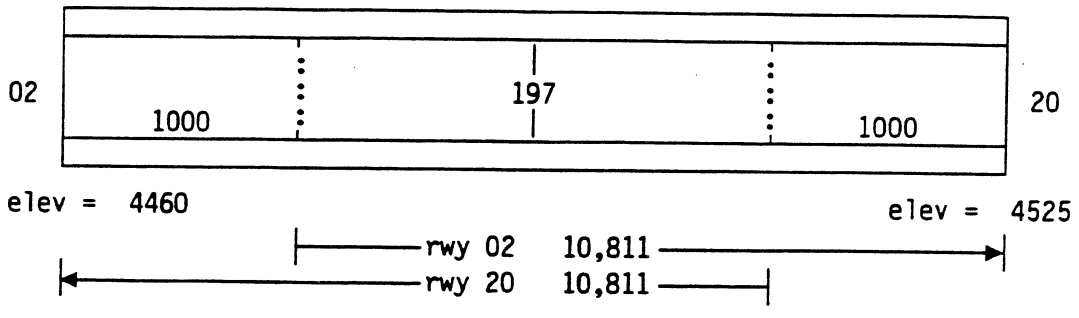
SUD-3

RUNWAY CHART
1:62,500
SOUDA
RUNWAYS 11 AND 29
DMAAC ED. 3 Dec. 1988

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Tamanrasset, Algeria

Table Identifier **TMS**



TACAN: TMS-72x (Pri-DME)
I/F above: N:clear E:clear
S:140k W:clear

MLS: none
PAPI: none
Ball Bar: none
UHF: none

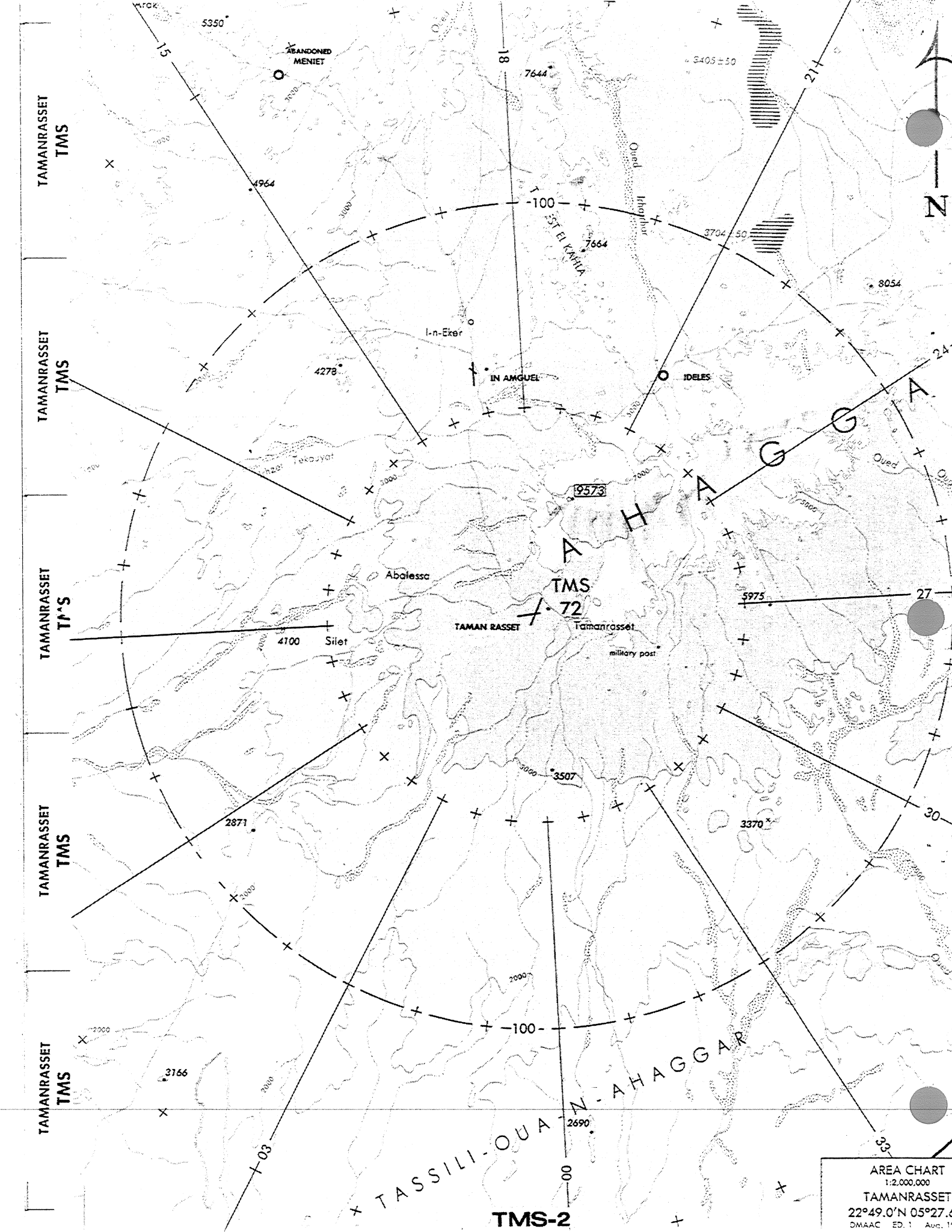
TAMANRASSET
TMS

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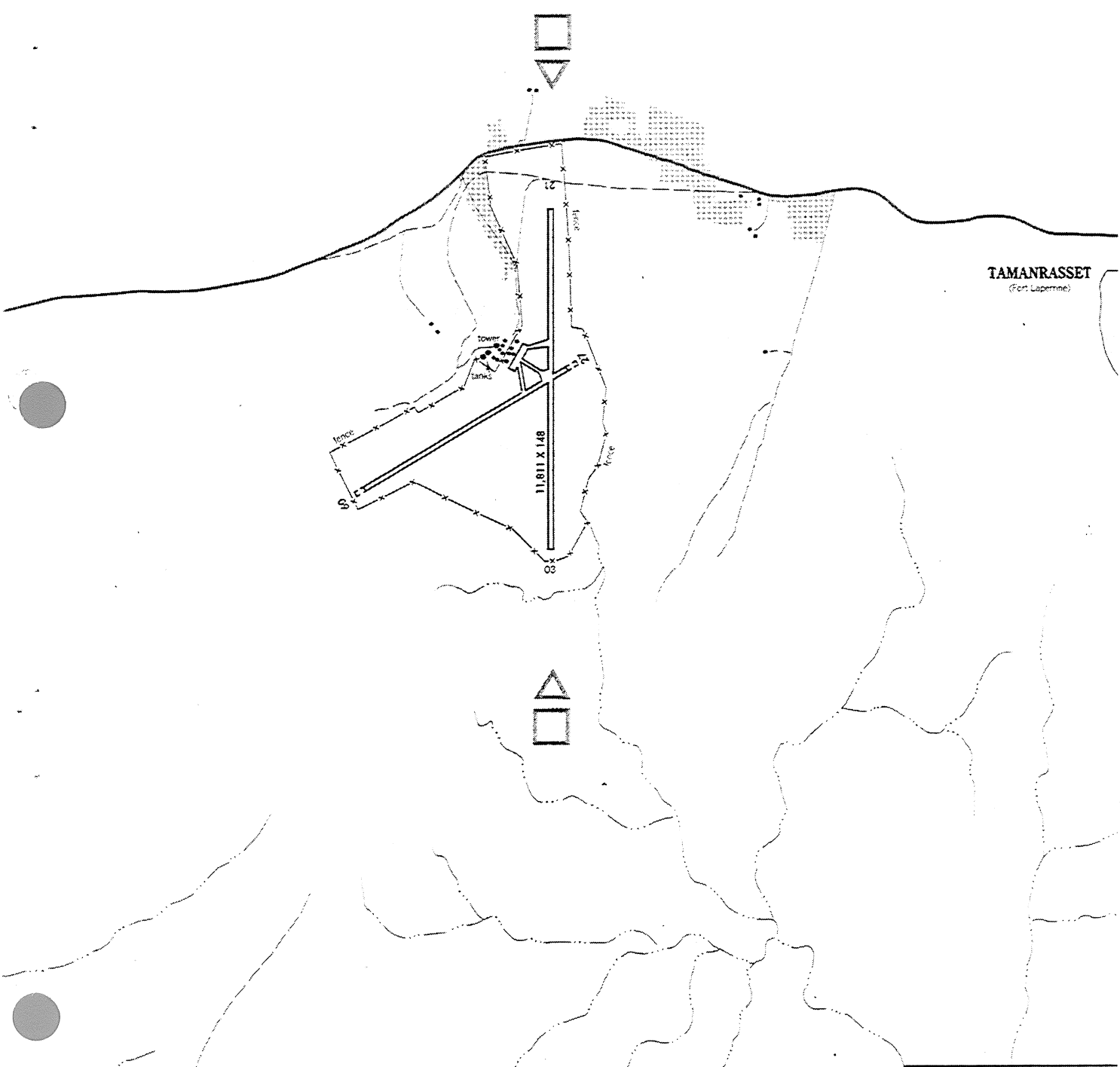
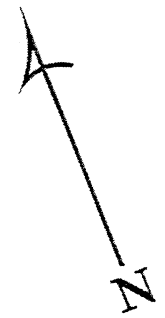
TAMANRASSET
TMS

TAMANRASSET
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TAMANRASSET
TMS

TMS-2

AREA CHART
1:2,000,000
TAMANRASSET
22°49.0'N 05°27.6'
DMAAC ED. 1 Aug. 19



TAMANRASSET
(Fort Lapierre)

11,811 X 148

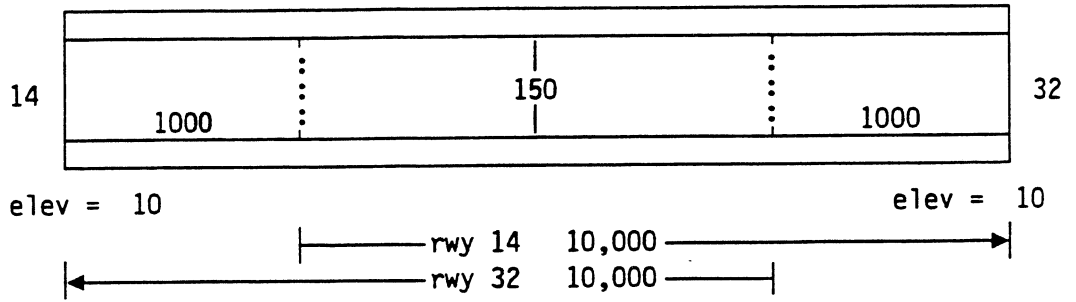
RUNWAY CHART
1:62,500
TAMANRASSET
RUNWAYS 03 AND 21
DWAAC ED. 1 Aug. 1989

TMS-3

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Nassau Intl, Bahamas

Table Identifier **ZQA**



TACAN: ZQA-74x (Pri-DME)
 I/F above: N:100k E:clear
 S:clear W:100k

MLS: none
 PAPI: none
 Ball Bar: none
 UHF: none

WARNING

- No overruns

NOTE

- 25-ft shoulders
- Plan on rwy 14

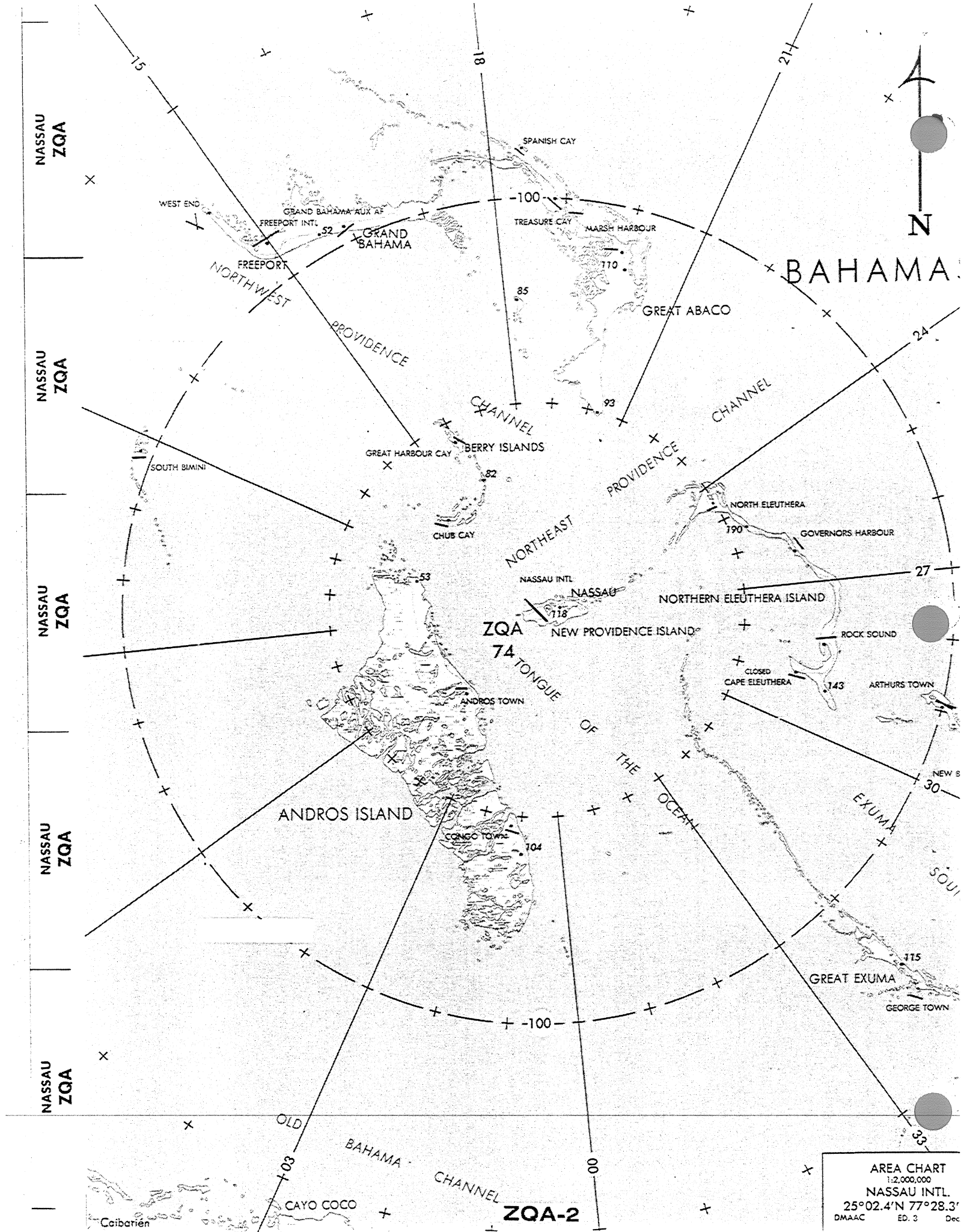
NASSAU
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ZQA

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ZQA

NASSAU
ZQA



AREA CHART
 1:2,000,000
 NASSAU INTL.
 25°02.4'N 77°28.3'
 DMAAC ED. 3 Dec

NASSAU
ZQA

NASSAU
ZQA

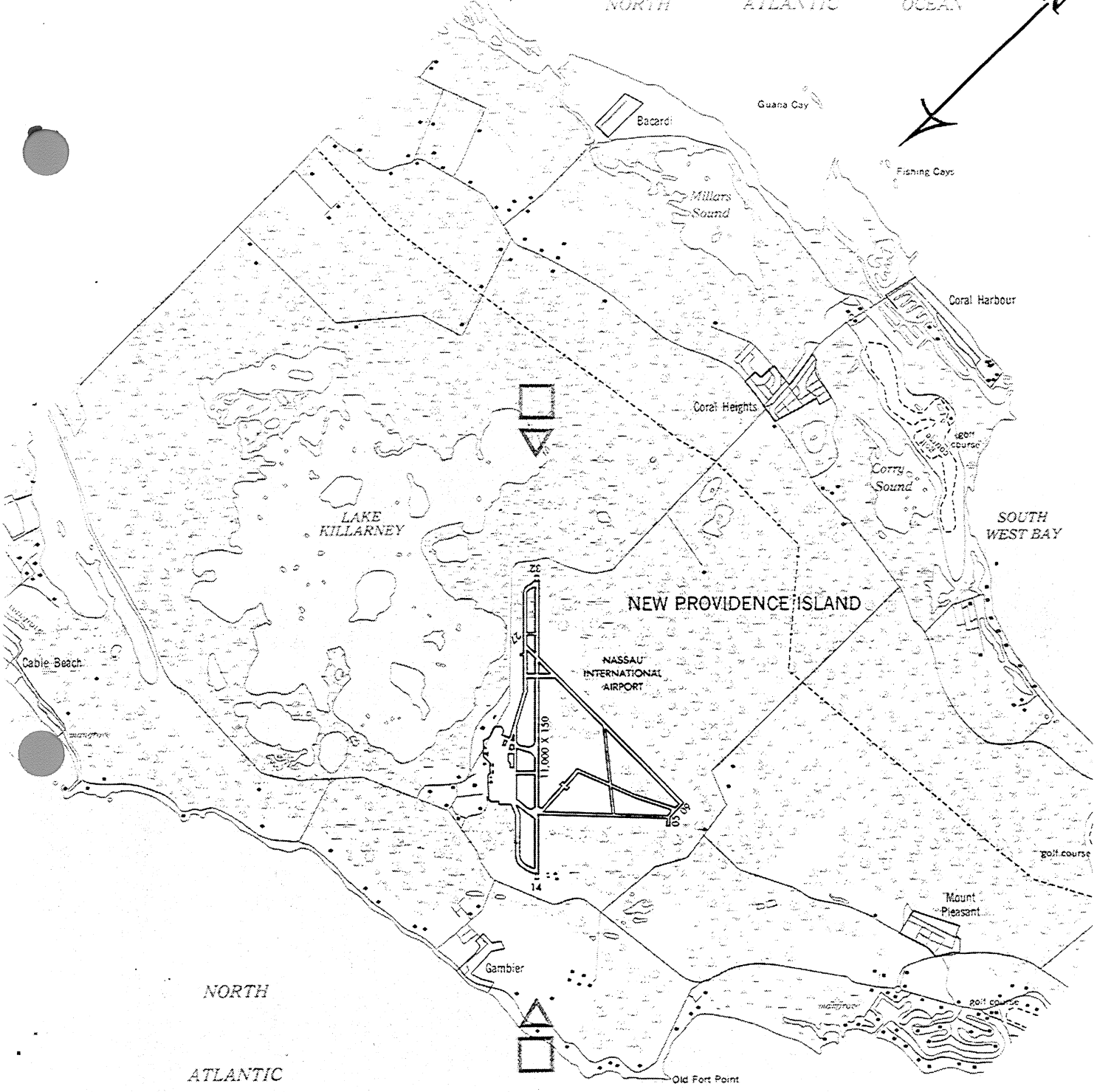
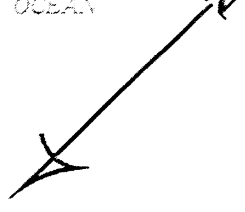
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ZQA

ZQA-2

NORTH ATLANTIC OCEAN



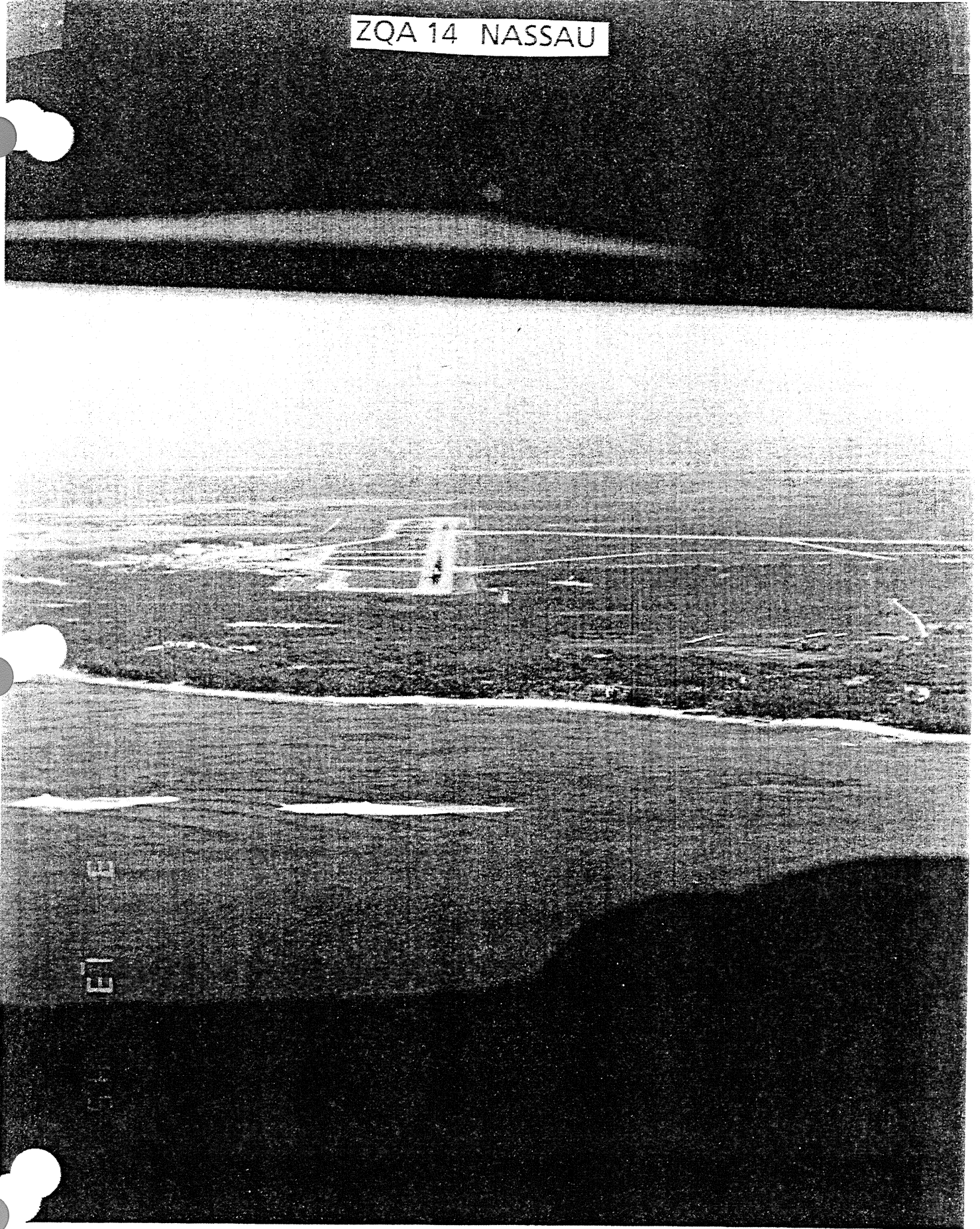
NORTH
ATLANTIC
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RUNWAY CHART		
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NASSAU INTERNATIONAL		
RUNWAYS 14 AND 32		
DMAAC	ED. 3	Dec. 1988

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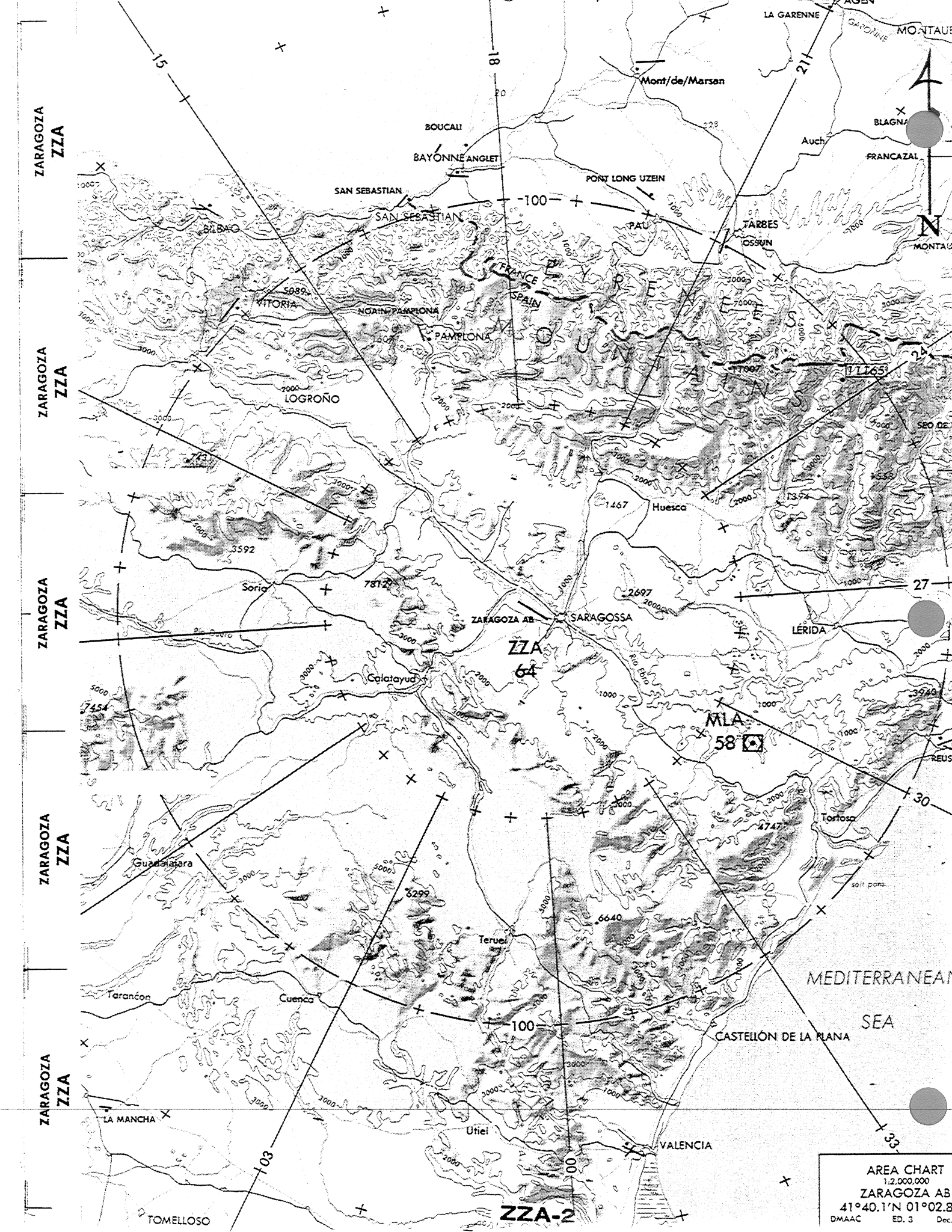
ZQA 14 NASSAU



ZQA-A

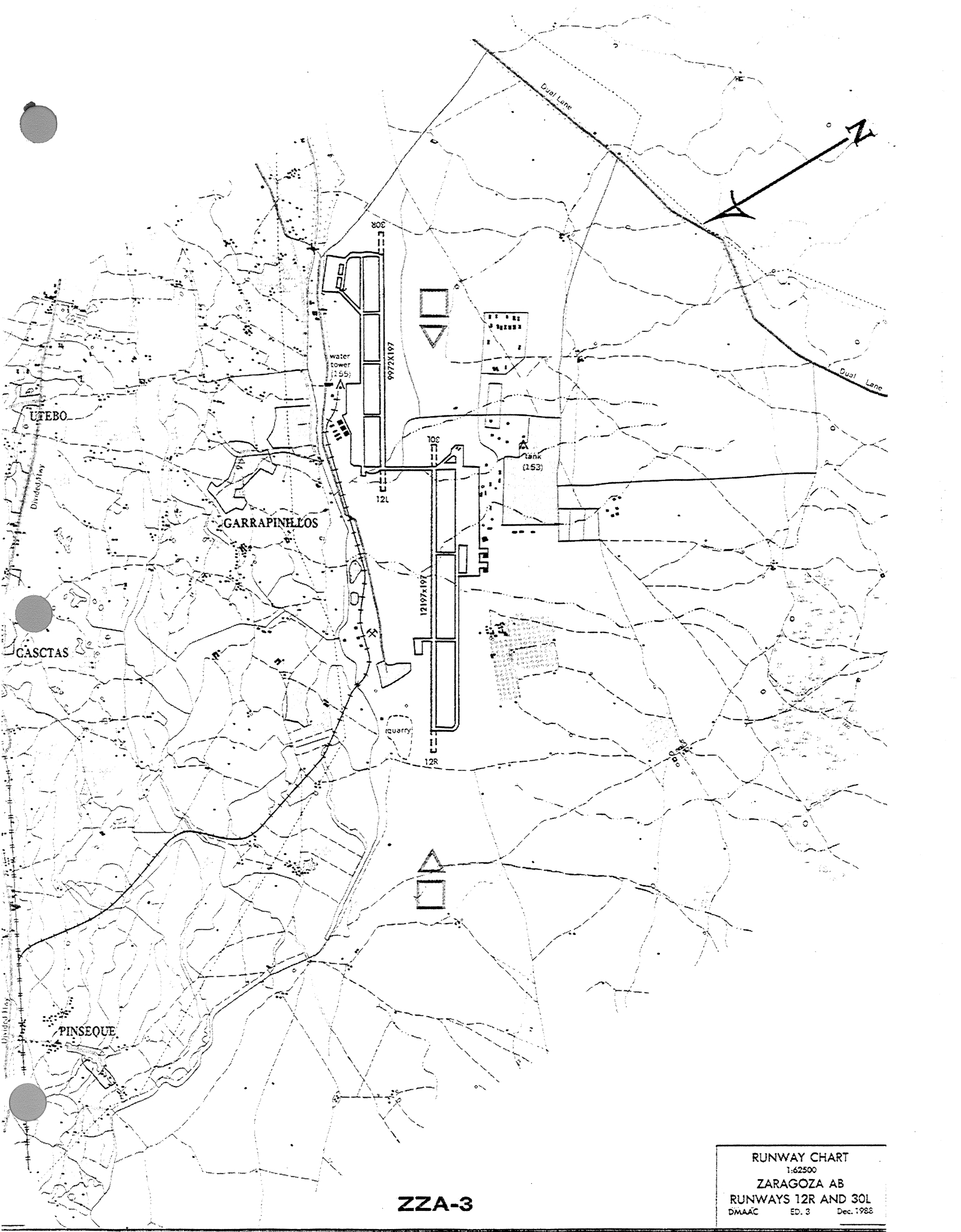
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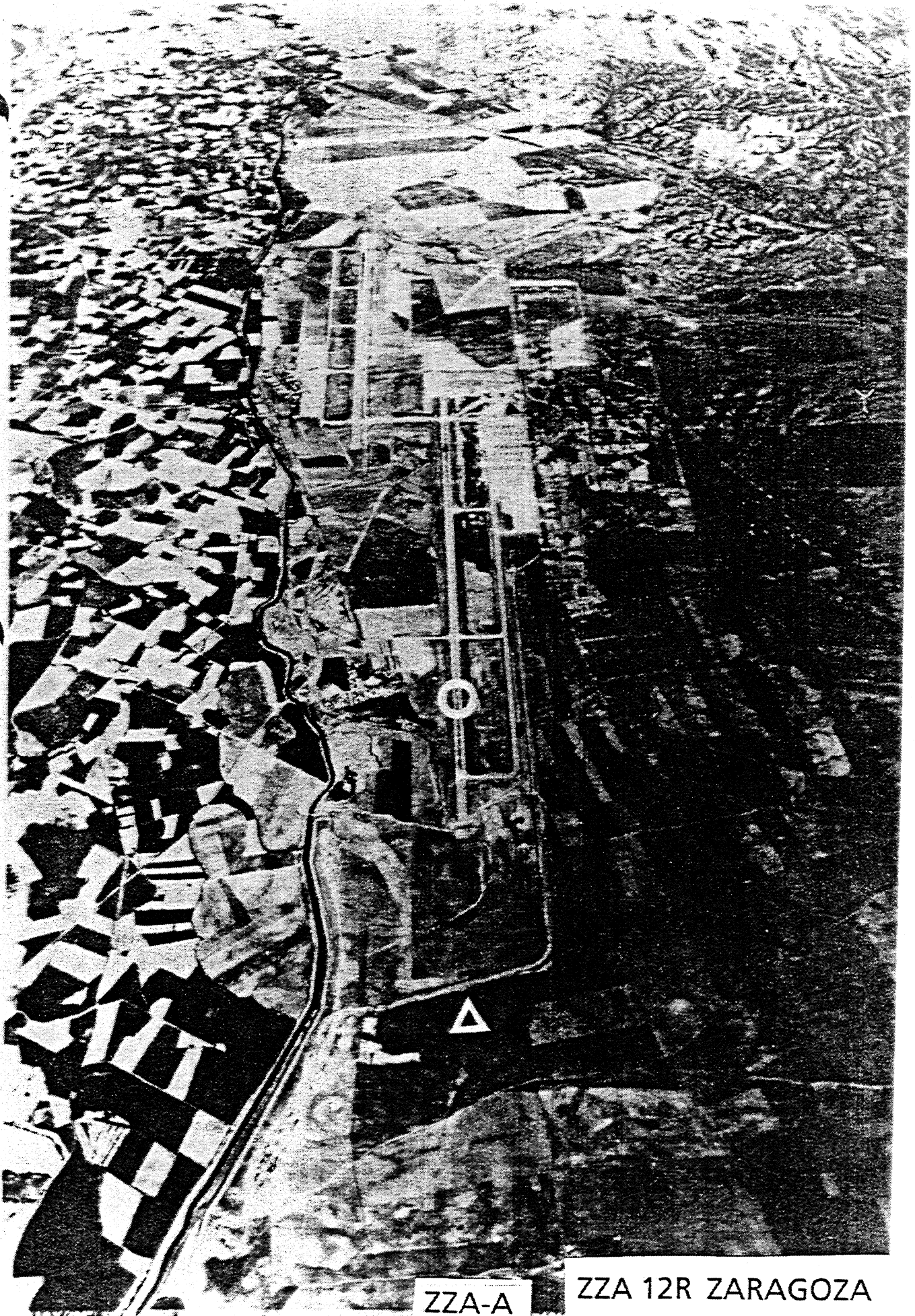
AREA CHART
1:2,000,000
ZARAGOZA AB
41°40.1'N 01°02.8'
DMAAC ED. 3 Dec.



ZZA-3

RUNWAY CHART
 1:62500
ZARAGOZA AB
RUNWAYS 12R AND 30L
 DMAAC ED. 3 Dec. 1988

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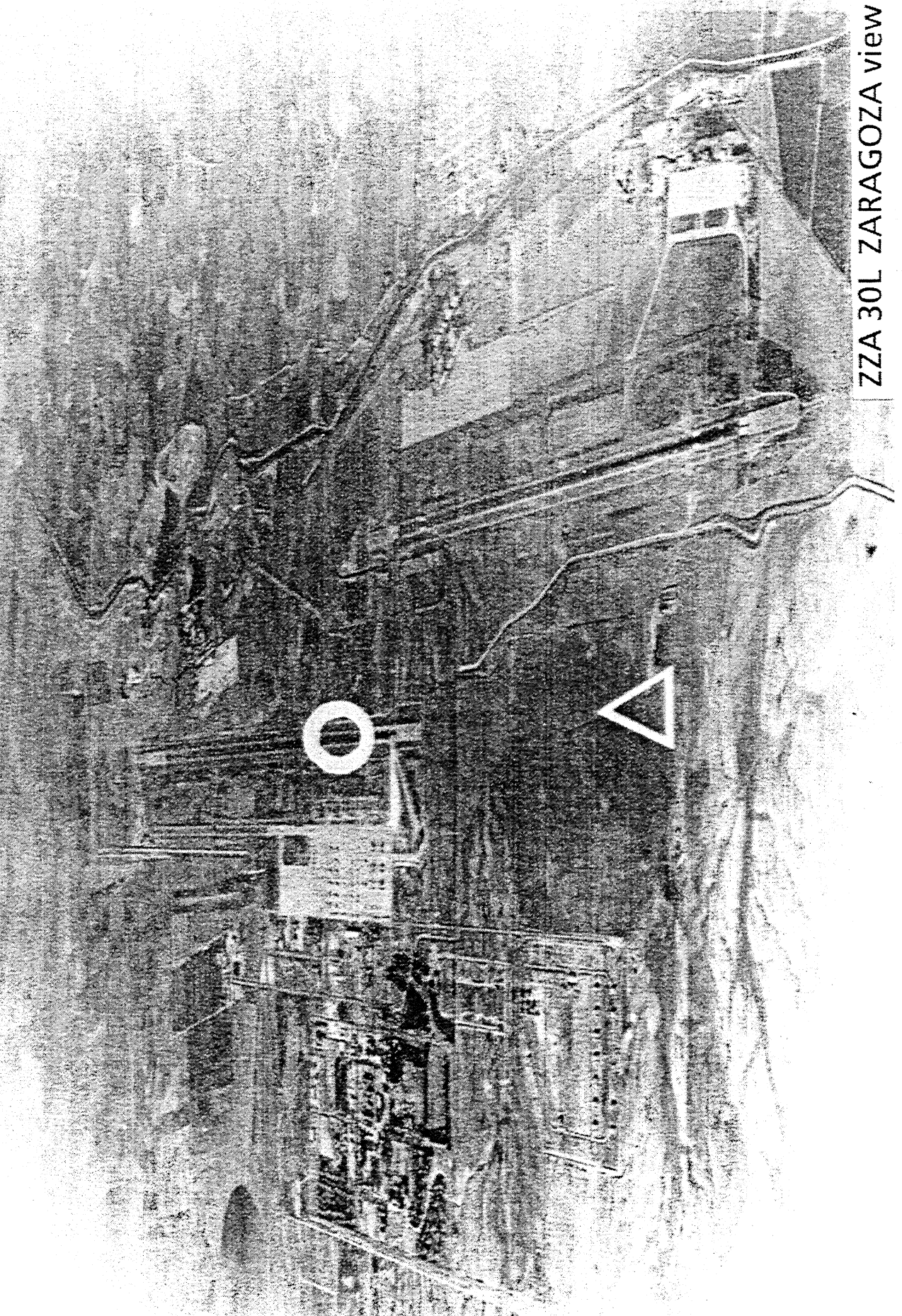


ZZA-A

ZZA 12R ZARAGOZA

EDITION 1-6/89

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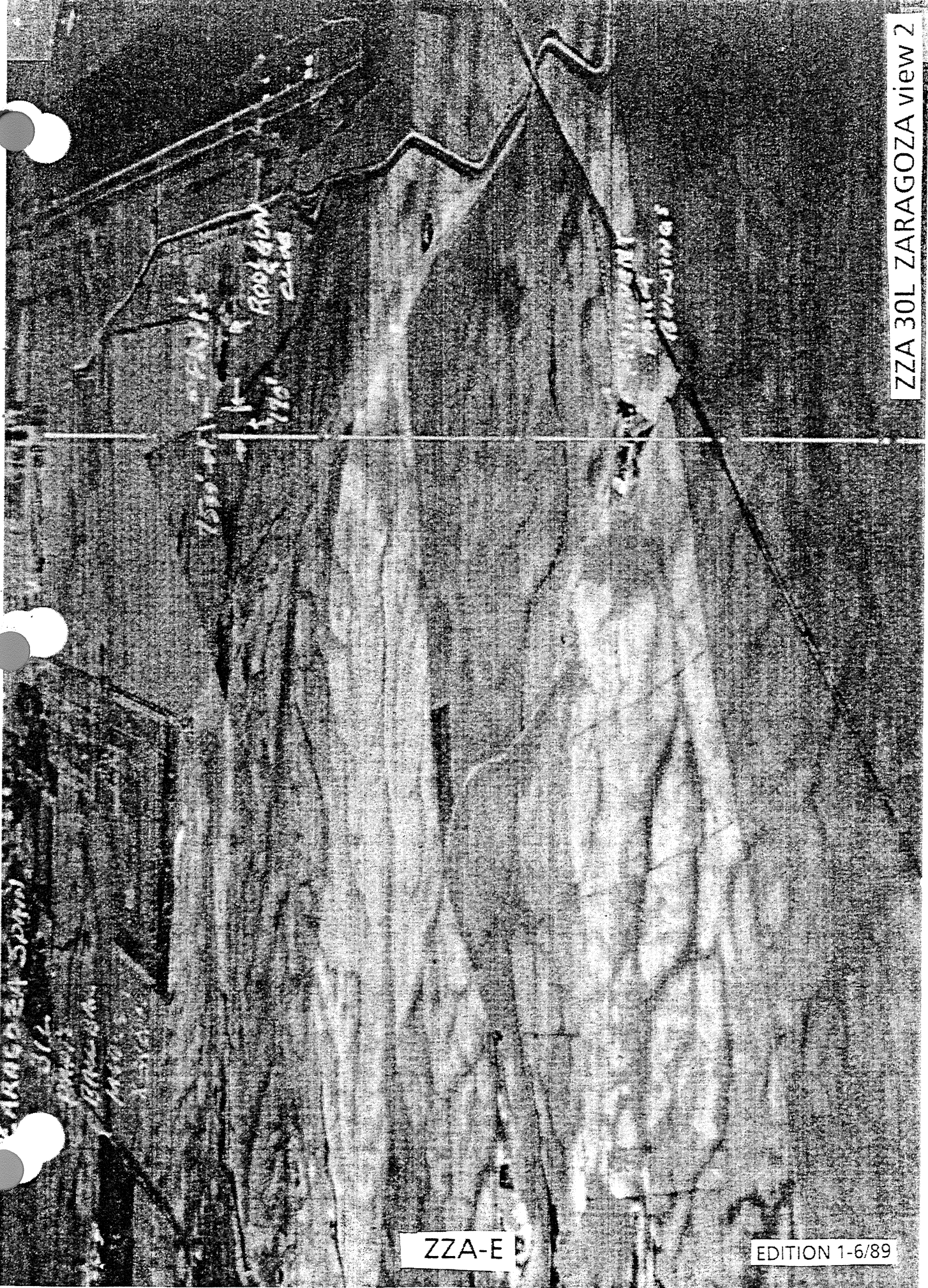


ZZA 30L ZARAGOZA view 1

ZZA-C

EDITION 1-6/89

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ZZA 30L ZARAGOZA view 2

ZARAGOZA SPIND
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5700

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5700
Roodden
CLUB

CANYON
SUBSIDING

ZZA-E

EDITION 1-6/89

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POST LANDING PROCEDURES
FOR EMERGENCY AIRFIELD
LANDING

POST ELS
PROCEDURES

POST ELS
PROCEDURES

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1. OVERSEAS AUGMENTED LANDING SITES

Augmented refers to the fact that landing aides and NASA personnel are in place. This includes the prime and back-up TAL sites.

- a. Evacuate to a distance of 1250 feet.
- b. The Commander will turn over responsibility of the orbiter to the senior NASA representative on hand.
- c. One hour after landing, a teleconferenced debriefing will be held to report the condition of the orbiter and record a press statement. The flight crew will then speak with their families.
- d. The flight crew will not meet with media representatives.
- e. The flight crew will brief the local NASA representatives on the orbiter status.
- f. The DOD will be responsible for the treatment and transportation of injured flight crewmembers. Uninjured flight crewmembers may be evacuated by DOD to the nearest U.S. military base (Rota, Spain). The local FCOD representative may go with the flight crew.
- g. The NASA personnel should aid the flight crew in retrieving early return items, to be transported with the flight crew.
- h. The flight crew will brief the Rapid Response Team and Mishap Investigation Team via telecon.
- i. The flight crew will return to JSC on the JSC KC-135 aircraft.
- k. For further information, see the Nonaugmented, Non-U.S. Military Bases guidelines.

2. U.S. MILITARY BASES

These guidelines only represent the deltas to the instructions for Non-U.S. Military Bases, Nonaugmented landing sites. Please refer to them for full instructions.

- a. Evacuate the orbiter and turn it over to the senior military official who will be responsible for the orbiter until the arrival of the Rapid Response Team. The Commander will designate a crewmember to assist the DOD senior official in the safing and safeguarding of the orbiter.
- b. The flight crew will be escorted to the Command Post to contact the MCC. They will make a recorded press statement and speak to their families through the DOD Support Operations Center.
- c. The flight crew will be escorted to appropriate facilities to await the arrival of the Rapid Response Team. Meals should be available.
- d. The U.S. military will assume responsibility for treatment of injured flight crewmembers.
- e. The flight crew will not meet with media representatives.
- f. DOD has made previous arrangements to contact, train, and provide orbiter documentation to the emergency and rescue forces. They therefore have a preliminary knowledge of orbiter hazards and precautions.
- g. The JSC KC-135 aircraft will be dispatched to pick up the flight crew. Estimated arrival time is 14 hours.

3. NON-U.S. MILITARY BASES - NONAUGMENTED

- a. Evacuate to a distance of 1250 feet. Beware of toxic fumes and burning tires. Notify the tower that only fire fighting and medical personnel should approach the orbiter.
- b. The Commander will retain responsibility for the flight crew and Orbiter until either (1) the DOD evacuation team arrives to evacuate the flight crew, or (2) the Rapid Response Team arrives.
- c. A DOD Medivac aircraft with a medical team will be dispatched to the landing site as soon as possible.
- d. The Commander or his representative will meet with the local air field officials and give them the prepared on-board orbiter emergency guidelines (4. U.S. Embassy - pg 4-7). He will briefly advise them on vehicle hazards and safety requirements and inform them that towing should not be attempted. The State Department will inform the local officials that the U.S. Government will reimburse all reasonable expenses.
- e. The Commander will have the local officials contact the nearest U.S. Embassy so that a representative can immediately come to the landing site.
- f. The Commander will arrange with the local officials to have 24-hour security provided for the flight crew and orbiter. If a U.S. Embassy is nearby, these security forces would include at least one U.S. citizen each. The controlled access area should be a 2000-foot radius around the orbiter. The Commander will designate a crewmember to remain with the orbiter until a U.S. citizen with a secret clearance arrives.
- g. The Commander should designate a crewmember to maintain a log. He should note the local landing time, and log any pertinent observations of the orbiter and the sequence of events leading up to the landing.
- h. The flight crew will establish communications with the MCC as soon as possible. The MCC will record a press statement made by the flight crew, and release it from JSC. The flight crew will not meet with media representatives.
- i. The Commander will contact the MCC CAPCOM.
- j. After initial contact with the MCC, the flight crewmembers will each be allowed to speak to family members on a NASA established communication line.
- k. If there is a local U.S. Embassy, the flight crew may be escorted there to await transportation to the nearest U.S. military base.

- l. The Rapid Response Team will arrive in approximately 24 hours. The personnel will include, but are not limited to:

- KSC Ground Operations Manager
- KSC Convoy Commander
- KSC Tow Team
- KSC Logistics Team
- JSC FCOD representative
- Mishap Investigation Team
- Payload representative
- DDMS representative

- m. The JSC KC-135 will be deployed to pick up the flight crew at their evacuation location. Estimated time of arrival is landing plus 14 hours. Flight crewmembers' passports will be carried by the FCOD representative on board. Personnel on the KC-135 will include, but are not limited to:

- JSC FCOD Director, or his representative(s)
- Flight Surgeon
- PAO representative
- Security representative

- n. The MCC may advise the Commander that the flight crew can approach the orbiter. This may include authorization to close the side hatch. The flight crew may then enter the orbiter and retrieve clean clothes or any other needed articles. The flight crew should also retrieve the "Return to Houston" items at this time.
- o. The flight crew will brief the Rapid Response Team and Mishap Investigation Team personnel via telecon as required, from both the accident site and evacuation site.
- p. The flight crew shall brief a FCOD or Rapid Response Team representative on locations of early return items to be removed from the orbiter for return to JSC, if they are unable to retrieve them prior to evacuation.
- q. If a DOD mission, security requires that a U.S. citizen with a secret clearance remain with the orbiter at all times, and to have the side hatch closed as soon as possible.

4. U.S. EMBASSY

- a. If medical attention is required for the flight crew, please have a U.S. citizen stay in contact with injured crewmember(s). Arrangements will be made with DOD to evacuate both injured and uninjured personnel to the nearest U.S. military base.
- b. The flight crew will be retrieved by the Johnson Space Center KC-135 aircraft from their evacuation location.
- c. Due to the nature of hazards present, you should not approach the orbiter within 1250 feet. Stay upwind and avoid the forward and aft sections. Approaches can only be safely made from the 10, 2, 4, or 8 o'clock positions, whichever direction is most upwind. The vehicle is considered hazardous for 24 hours. All smoking is prohibited.
- d. Contact NASA, Kennedy Space Center, Mission Control Center, Landing and Recovery Director for questions concerning the orbiter.
- e. Contact NASA, Johnson Space Center, Mission Control Center, CAPCOM for questions concerning flight crew.
- f. Provide U.S. citizen(s) with a secret clearance for 24-hour security of the orbiter and flight crew.
- g. Provide interpreters.
- h. Provide escorts, transportation, lodging and meals as necessary for the flight crew until they are evacuated.
- i. The Rapid Response Team will arrive in approximately 24 hours. Personnel will include NASA management, orbiter tow team, Mishap Investigation Team, DOD and flight crew representatives.
- j. The flight crew will not meet with media representatives. The flight crews' statement will be released from Johnson Space Center.
- k. Please contract a photographer to take photos of the orbiter, any debris, and anything else that appears out of the ordinary (e.g. fire, smoke, fumes).
- l. If any damage to the orbiter, please have debris left in its place with documentary photographs and location descriptions taken. Debris could be contaminated with hazardous substances. Handle with protective clothing and avoid debris having a fishy-ammonia, pungent-sweetish, or ammonia-like smell. Seek immediate medical attention for irritation to the nose, throat, or eyes, or coughing and difficult breathing.
- m. Please record, with time indices, any pertinent observations.

- n. Please arrange to have witness contacted. Obtain their names, addresses and telephone numbers.
- o. Discourage towing of the orbiter until the RRT arrives. It cannot be towed/moved without special equipment. Contact Kennedy Space Center for further information if the airfield officials insist.
- p. The U.S. Government will repay any reasonable expenses incurred.
- q. The flight crew Commander is responsible for the orbiter and flight crew. It will be necessary for him to stay in contact with the Mission Control Center in Houston, Texas. Please assist him in any way possible.
- r. Requests for public information should be referred to the National Aeronautics and Space Administration.

PHONE NUMBERS

MCC CAPCOM	(713) 483-5678 or 5649
MCC Flight Director	(713) 483-5669
MCC Surgeon	(713) 483-5662
Director, FCOD	(713) 483-3916
Aircraft Operations	(713) 483-7256
KSC Crew Quarters	(407) 867-2005
KSC Landing Recovery Director	(407) 867-5731
KSC NASA Test Director	(407) 867-6831
DOD Support Operations Center	(407) 867-9161

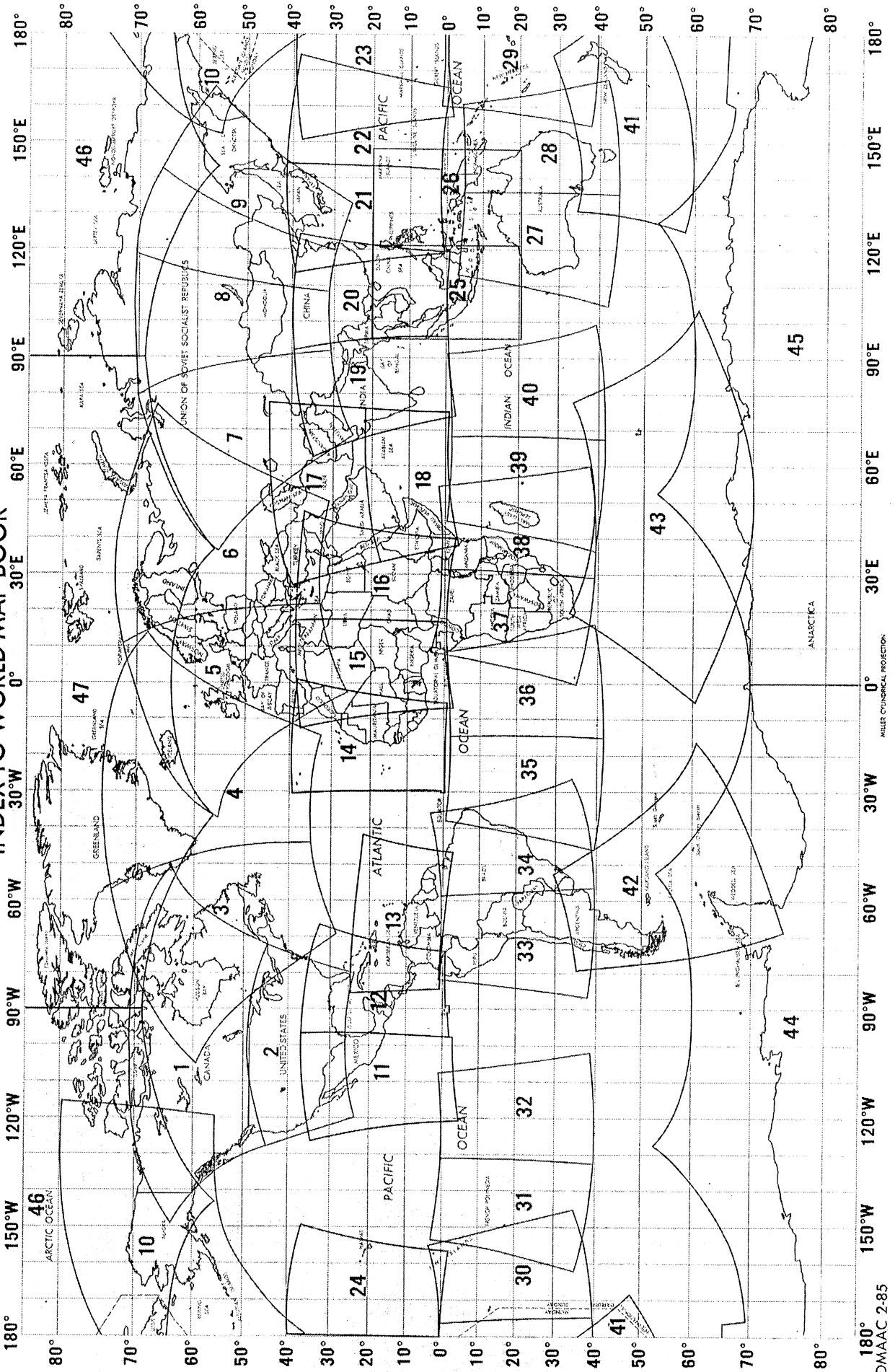
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WORLD ATLAS

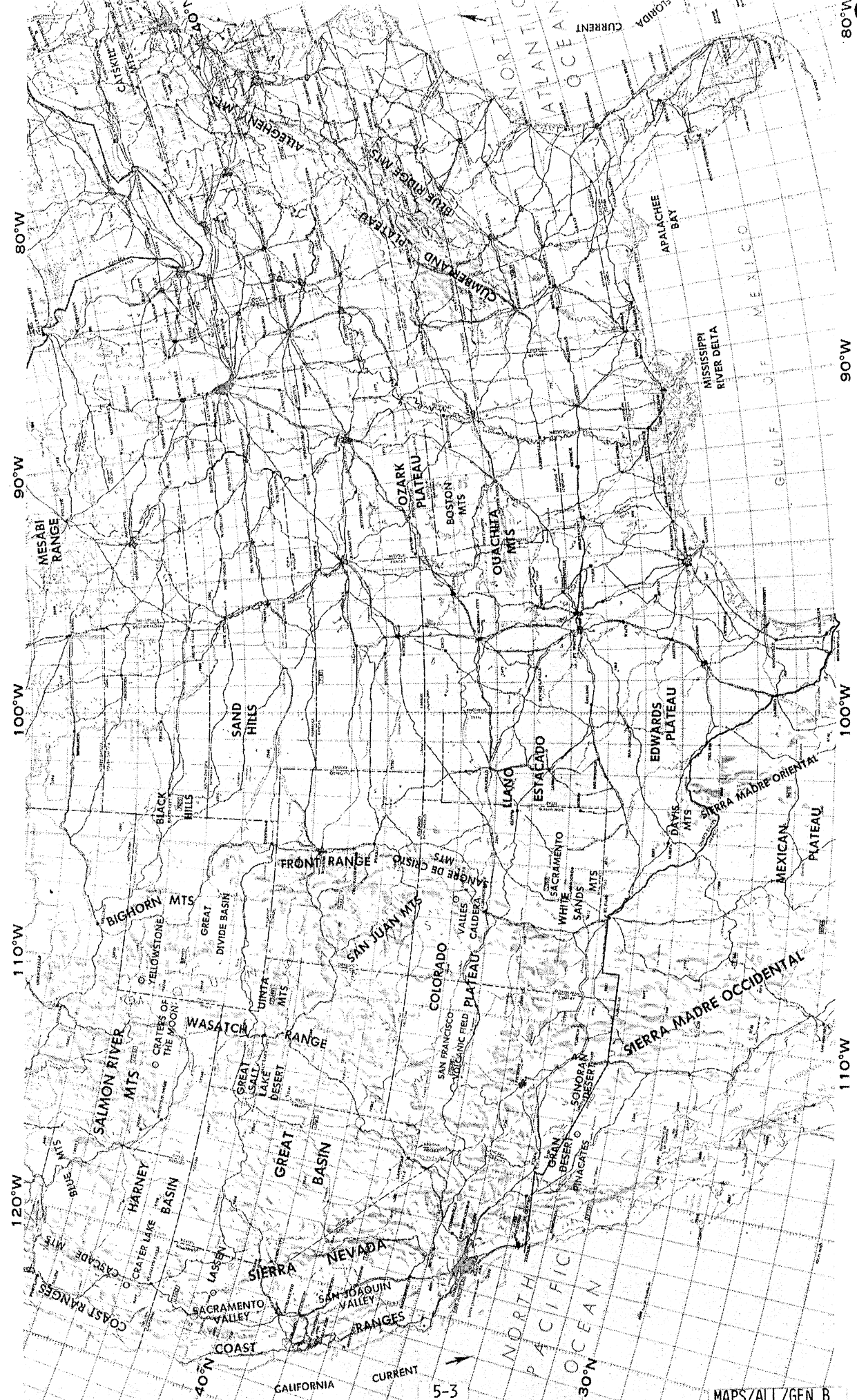
- 5.1 The flight version of the World Atlas provides worldwide coverage at a scale of 1:10 million and is produced in color. The maps shown in this document are 60 percent flight size.

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INDEX TO WORLD MAP BOOK







80°W

90°W

100°W

110°W

80°W

90°W

100°W

110°W

120°W

40°N

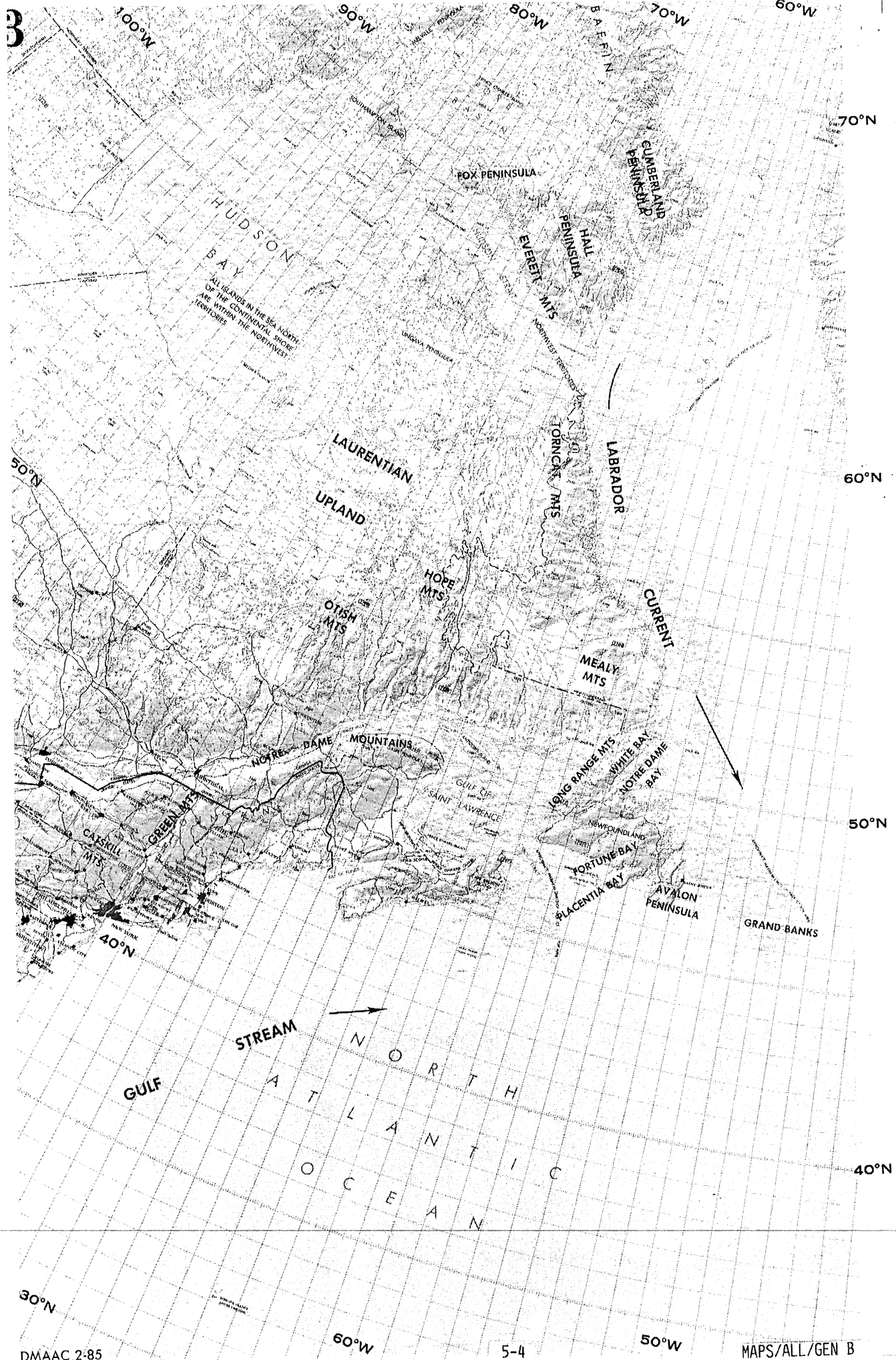
30°N

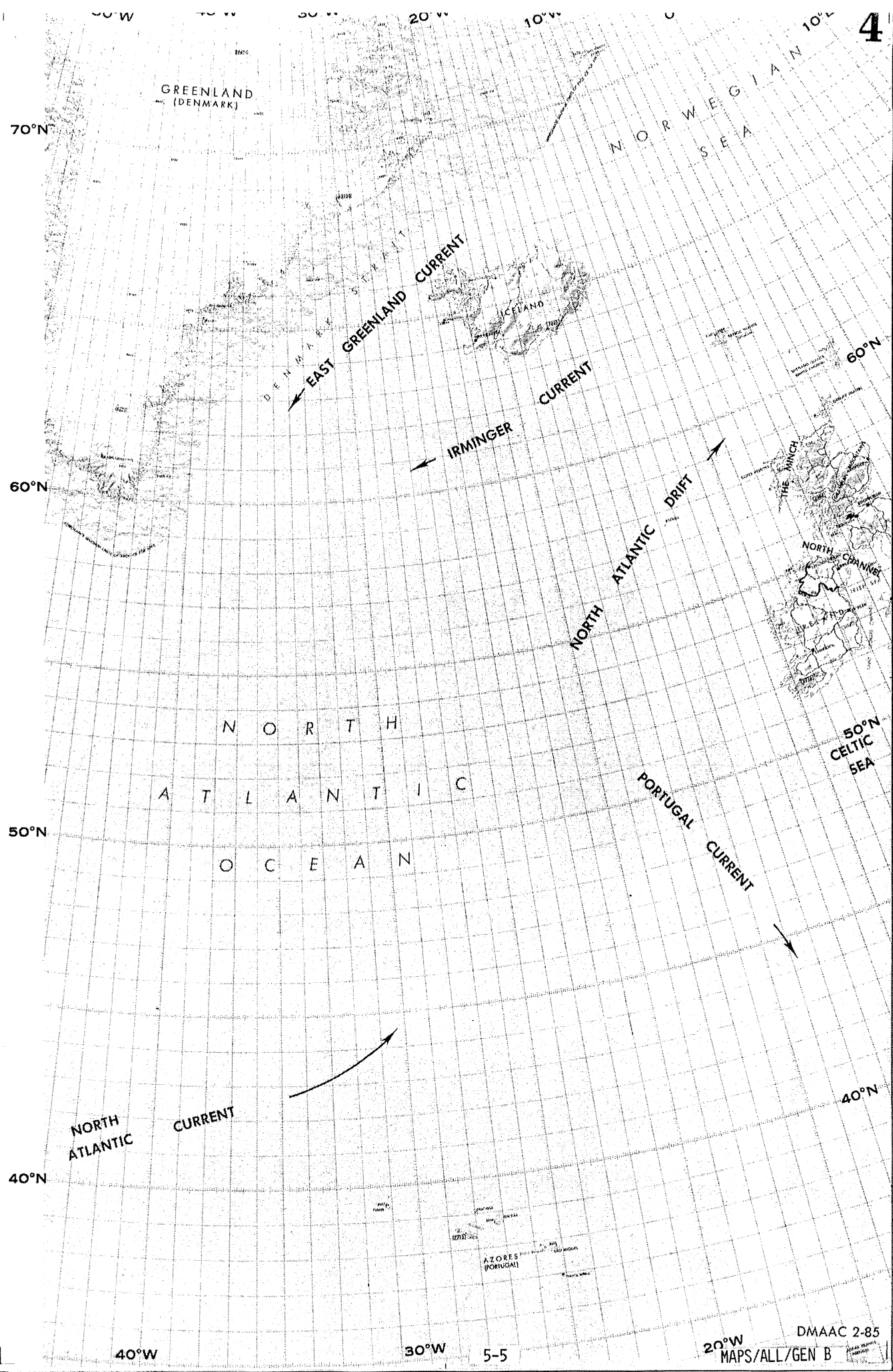
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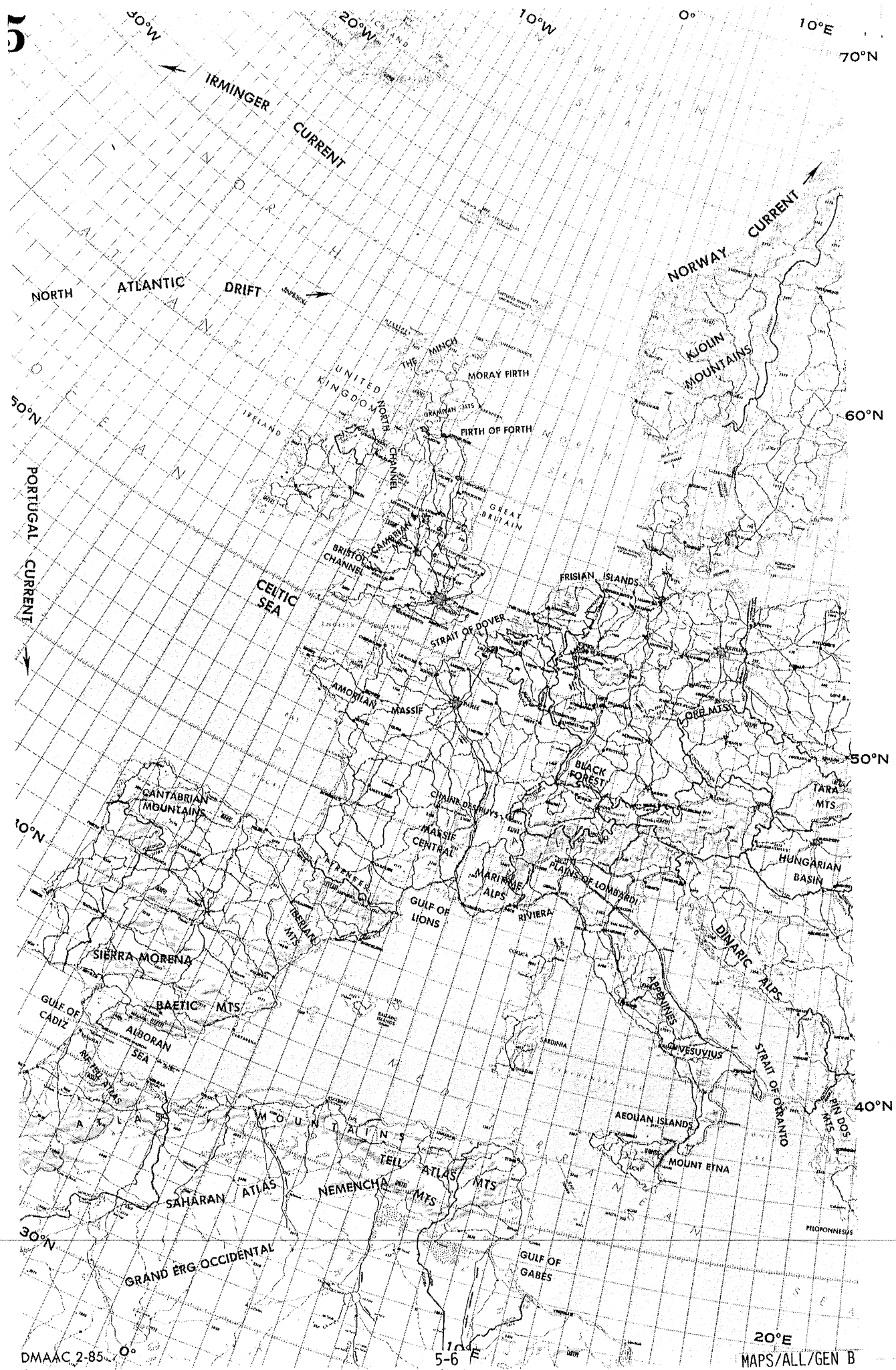
DMAAC 2-85

5-3

MAPS/ALL/GEN B







70°N

20°E

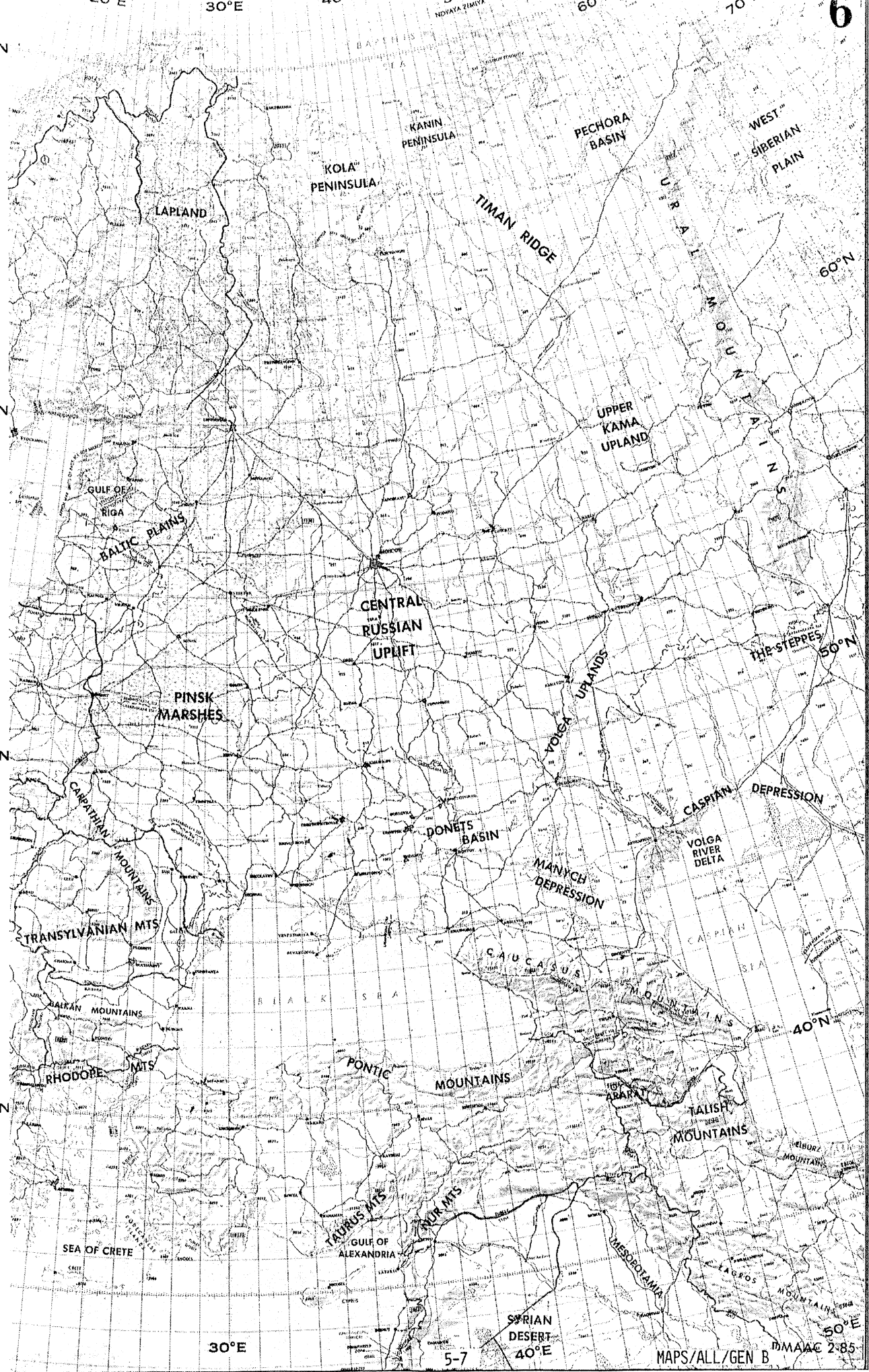
30°E

40°E

NOVAYA ZEMEL'YA

60°E

70°E



60°N

50°N

40°N

60°N

50°N

40°N

50°N

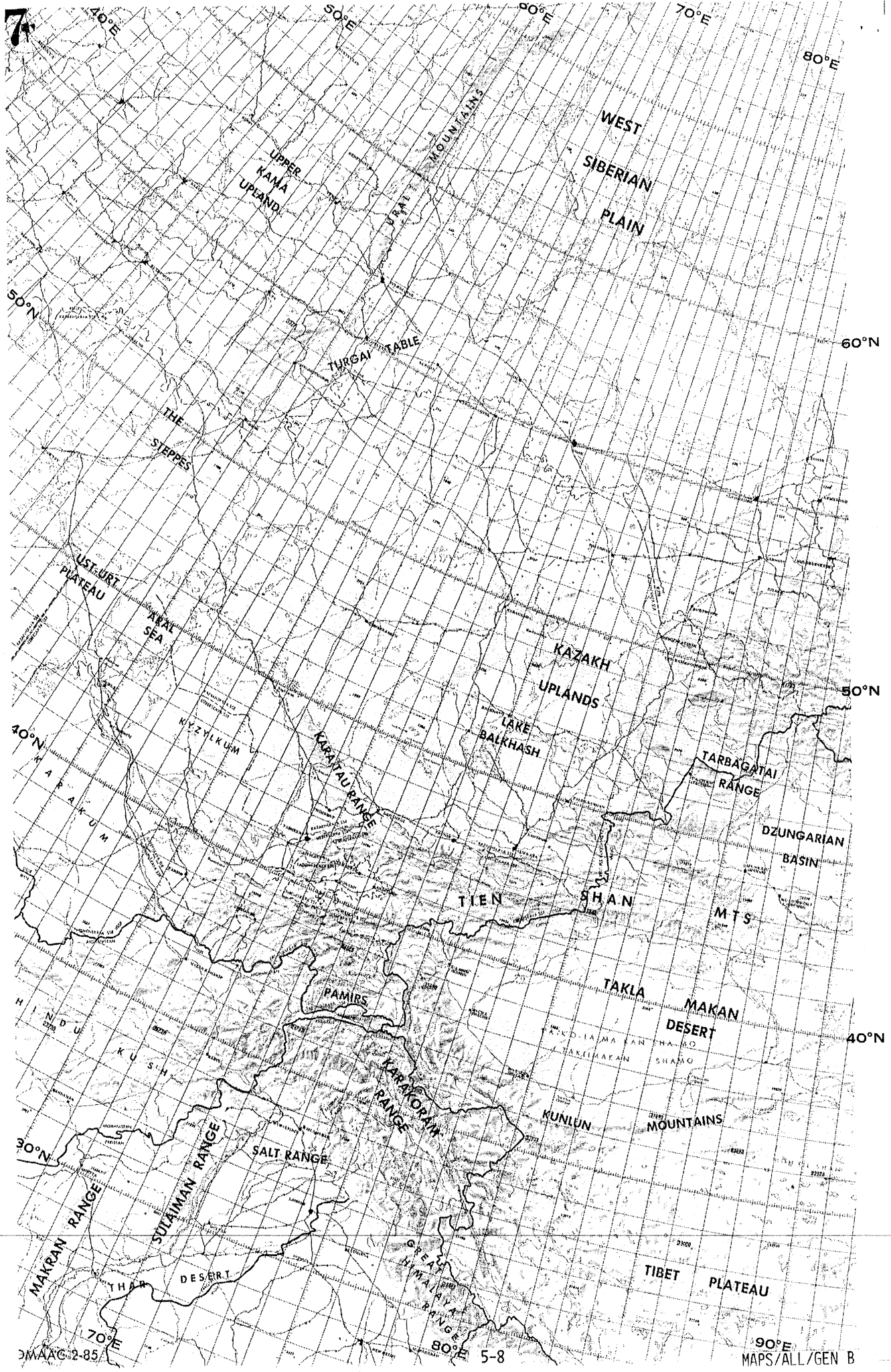
30°E

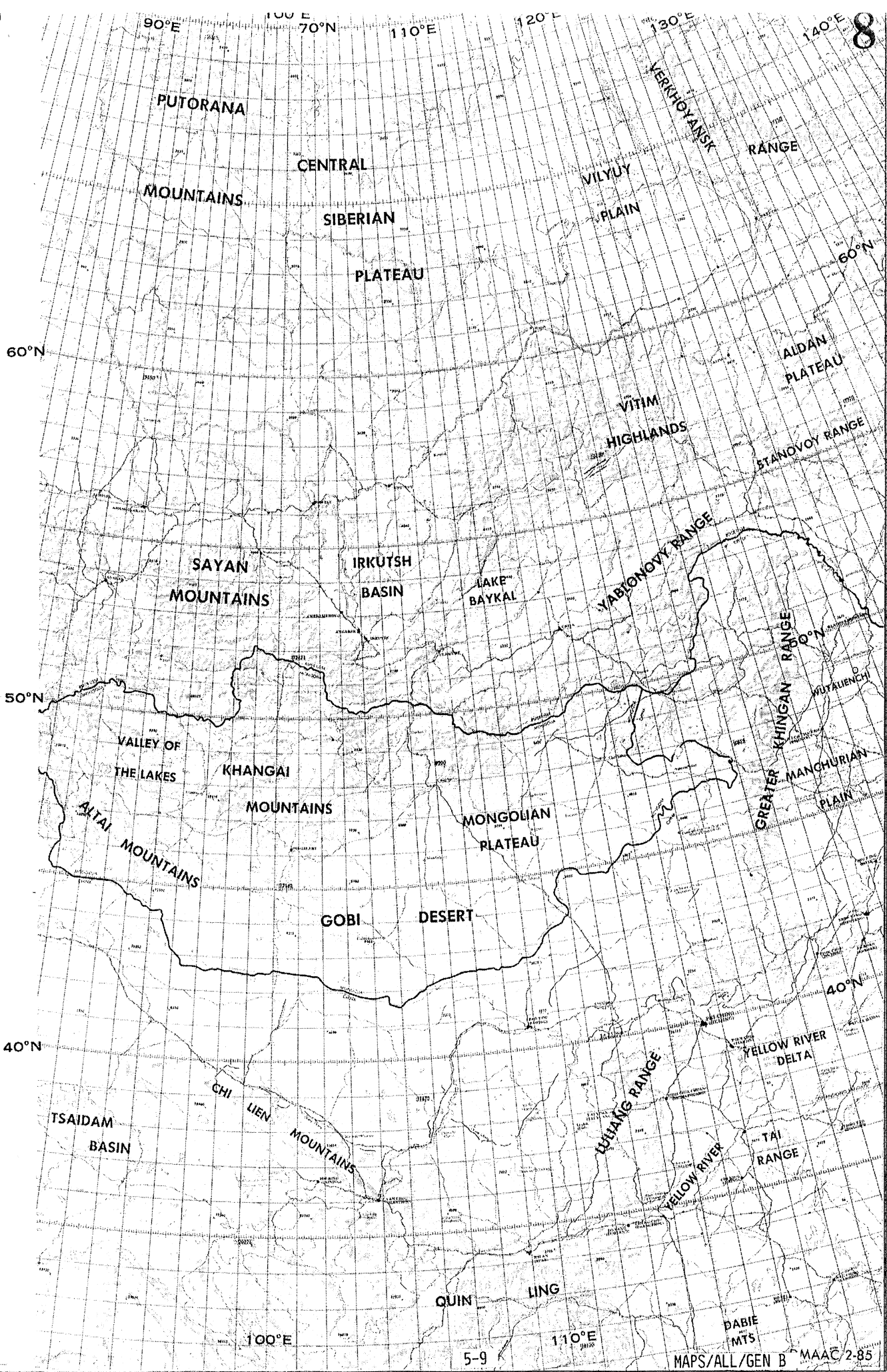
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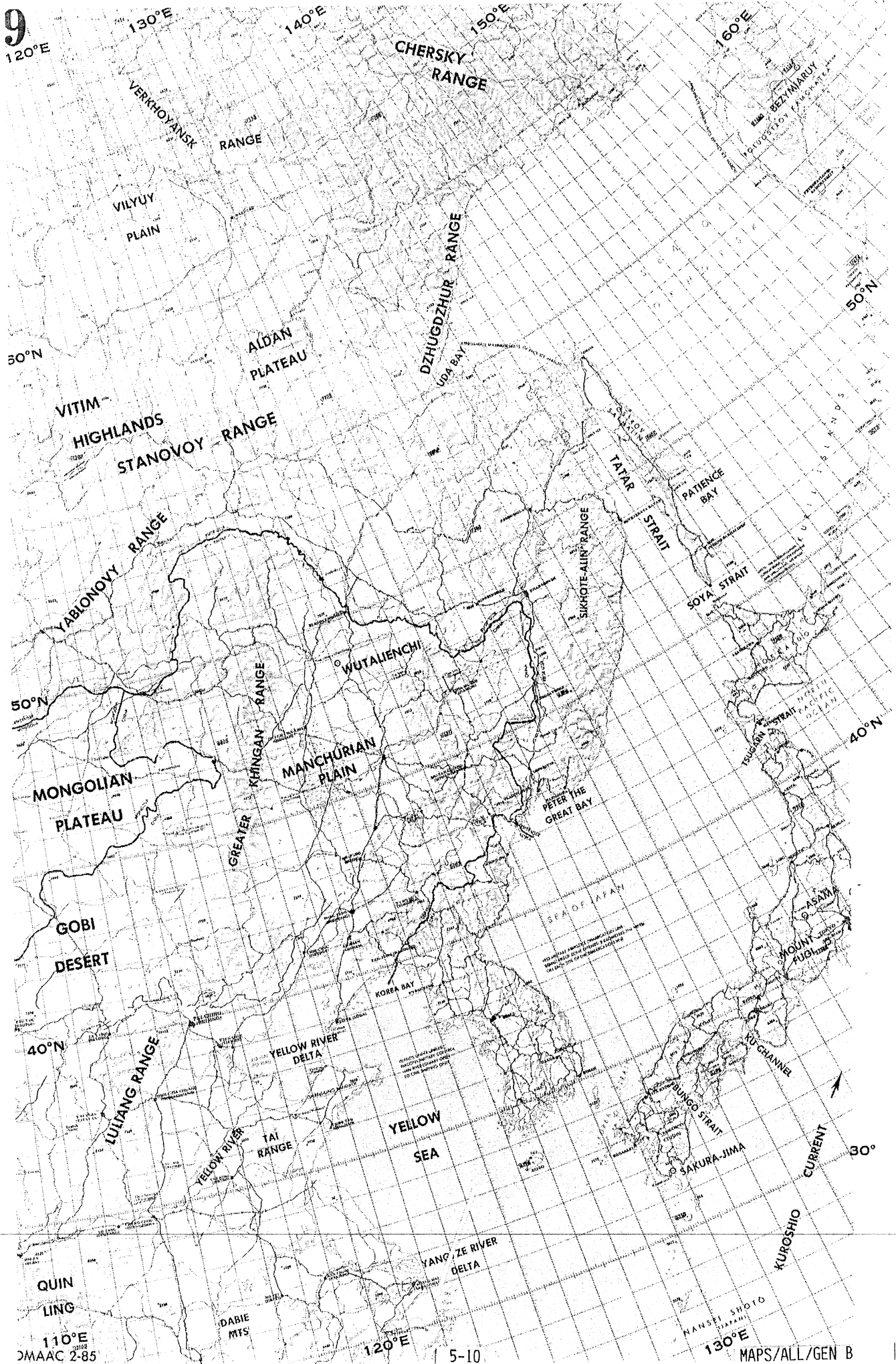
40°E

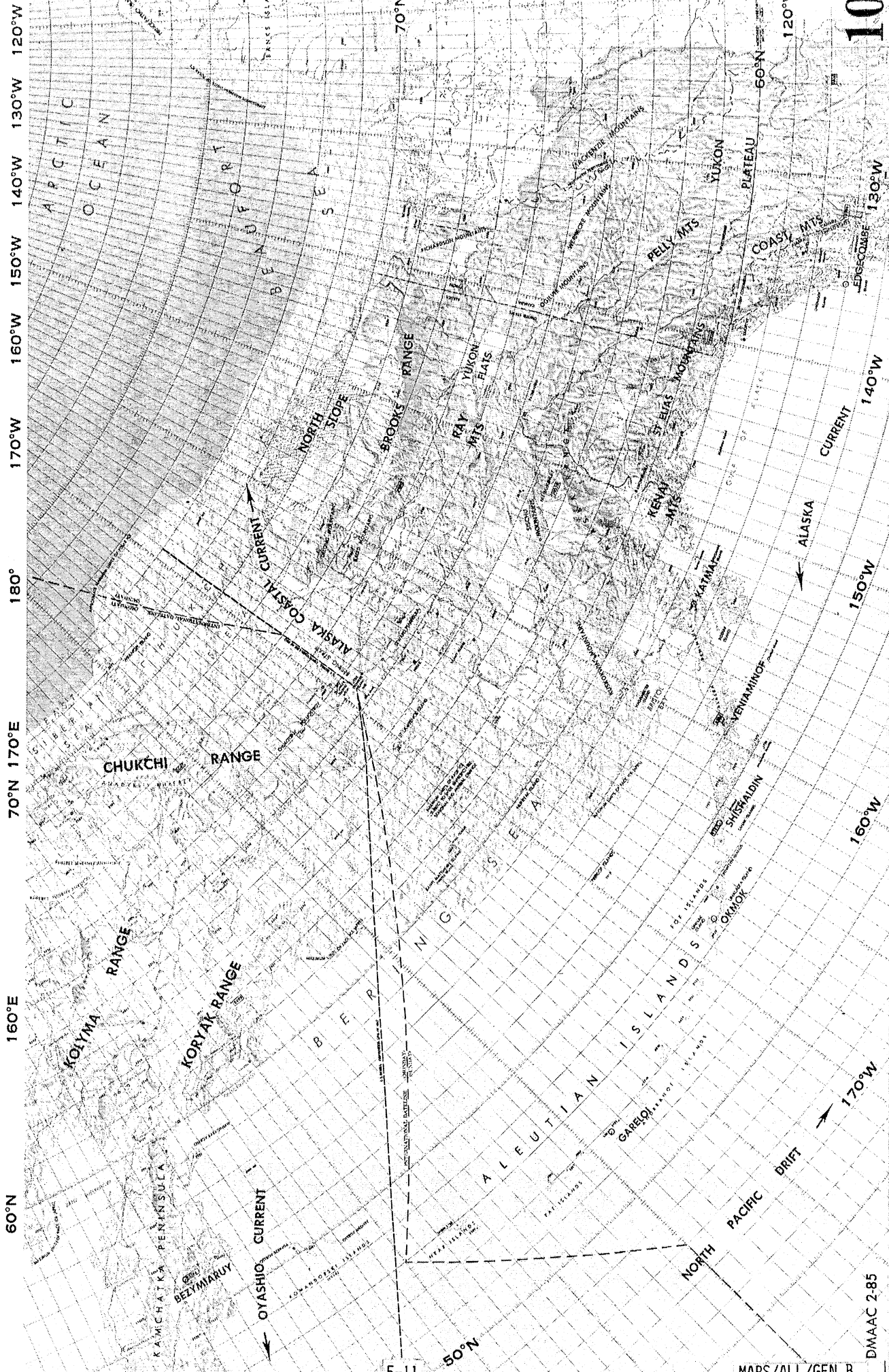
MAPS/ALL/GEN B

DDMAAC 2-85



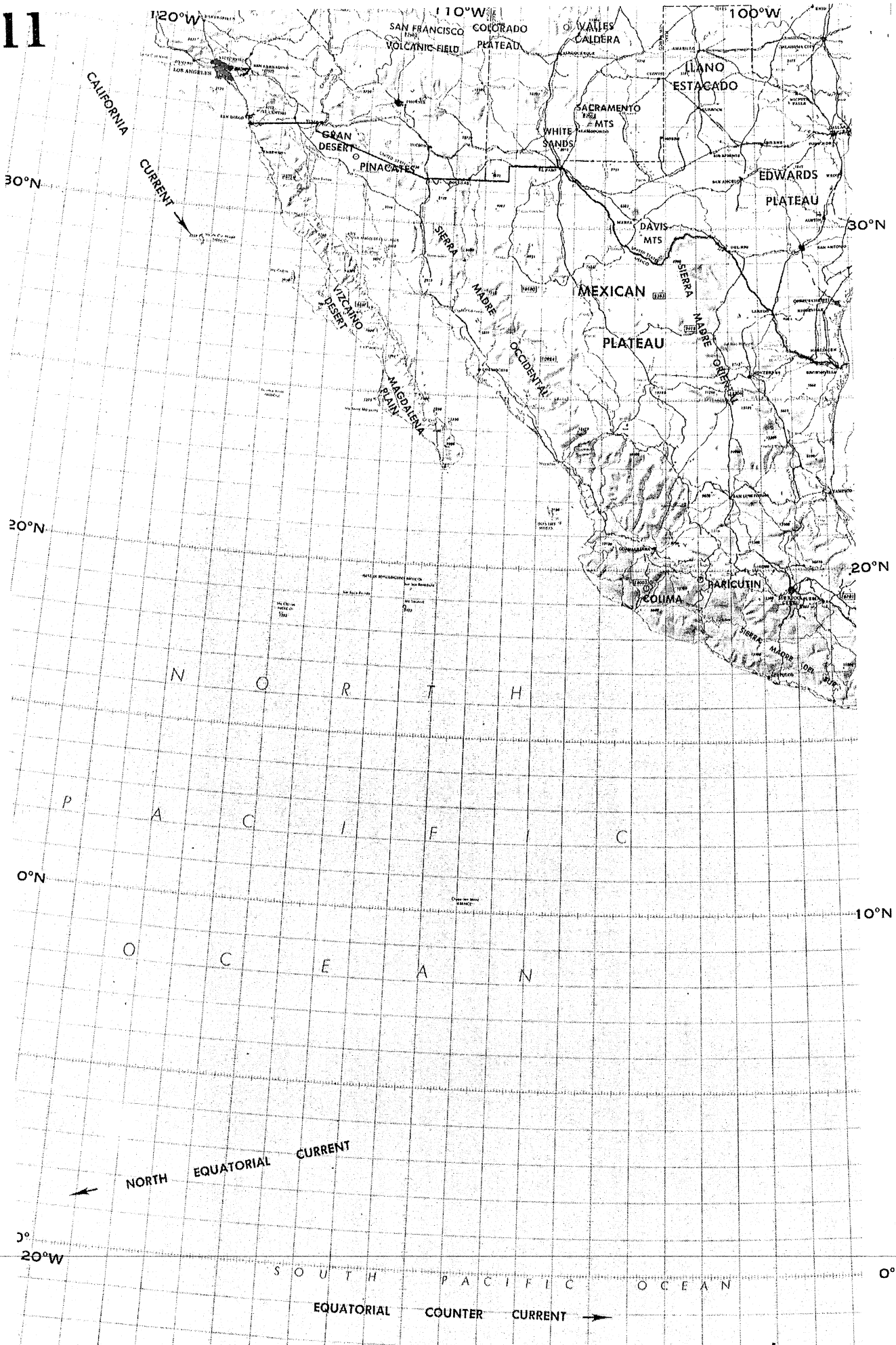


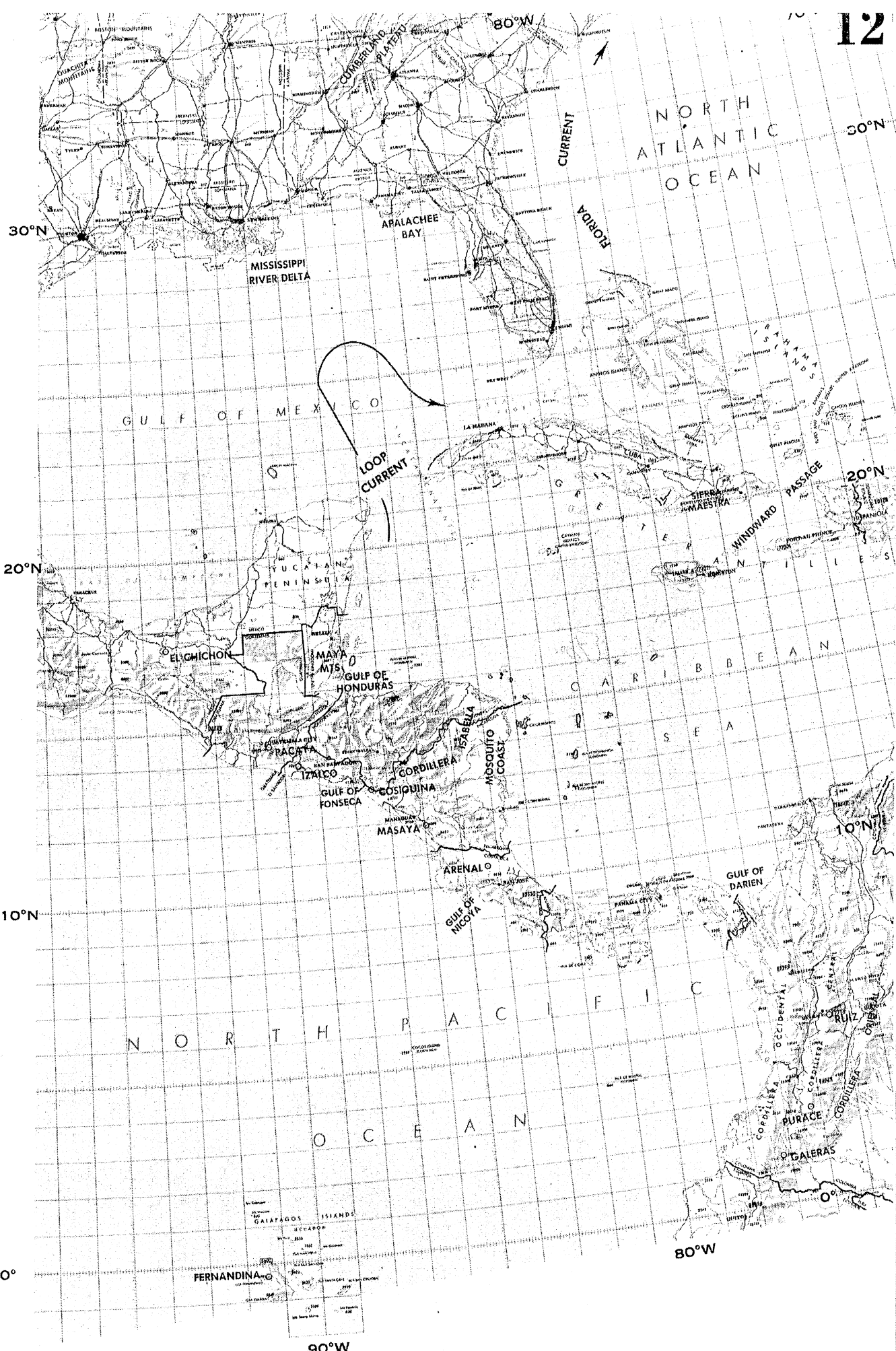




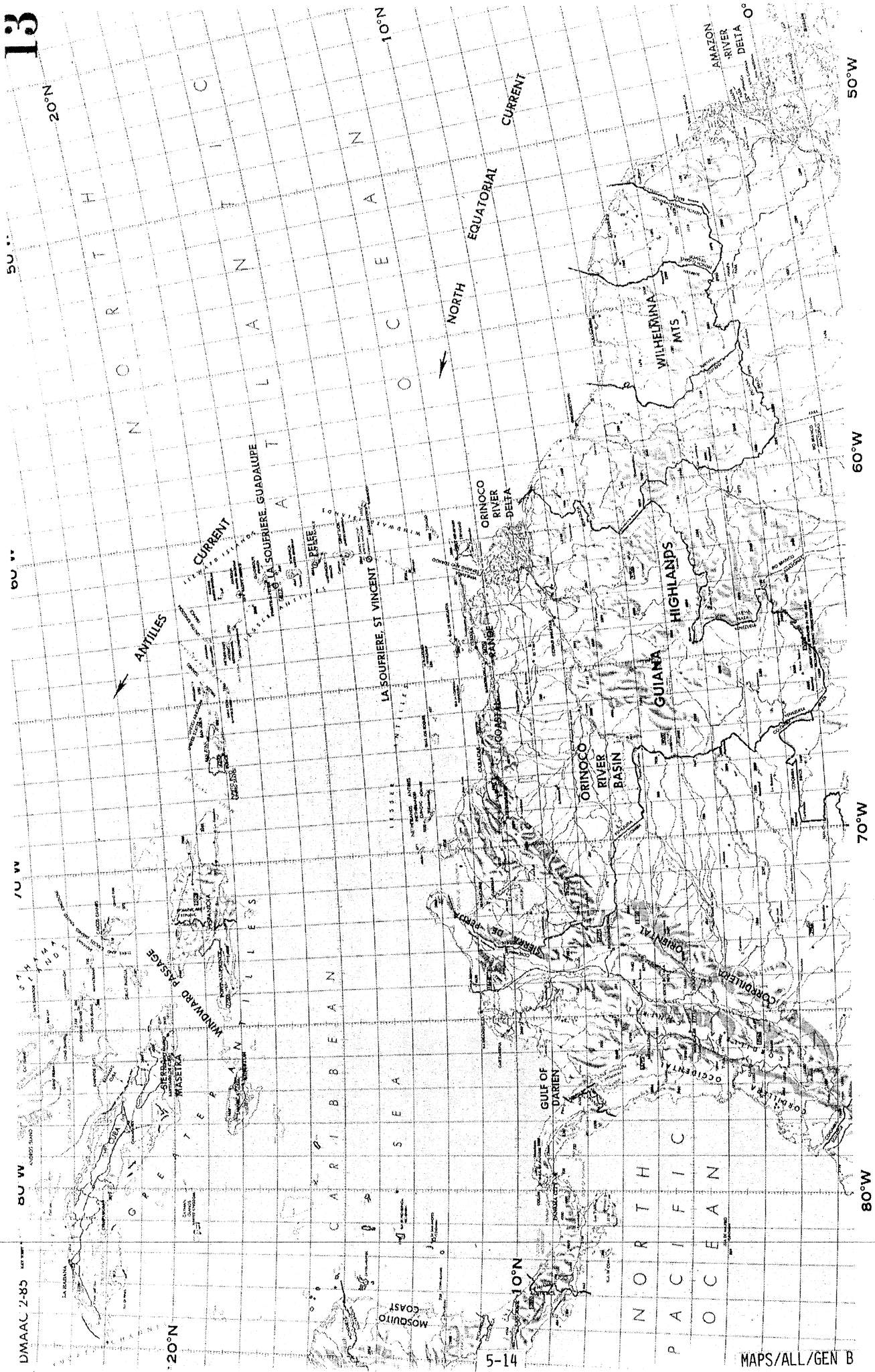
60°N 160°E 170°E 180° 170°W 160°W 150°W 140°W 130°W 120°W

70°N 60°N 50°N





13



DMAAC 2-R5

80°W

70°W

60°W

50°W

40°W

30°W

20°W

10°N

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10°S

20°S

30°S

40°S

50°S

60°S

70°S

80°S

90°S

100°S

110°S

120°S

130°S

140°S

150°S

160°S

170°S

180°S

190°S

200°S

210°S

220°S

230°S

240°S

250°S

260°S

270°S

280°S

290°S

300°S

310°S

320°S

330°S

340°S

350°S

360°S

370°S

380°S

390°S

400°S

410°S

420°S

430°S

440°S

450°S

460°S

470°S

480°S

490°S

500°S

510°S

520°S

530°S

540°S

550°S

560°S

570°S

580°S

590°S

600°S

610°S

620°S

630°S

640°S

650°S

660°S

670°S

680°S

690°S

700°S

710°S

720°S

730°S

740°S

750°S

760°S

770°S

780°S

790°S

800°S

810°S

820°S

830°S

840°S

850°S

860°S

870°S

880°S

890°S

900°S

910°S

920°S

930°S

940°S

950°S

960°S

970°S

980°S

990°S

1000°S

1010°S

1020°S

1030°S

1040°S

1050°S

1060°S

1070°S

1080°S

1090°S

1100°S

1110°S

1120°S

1130°S

1140°S

1150°S

1160°S

1170°S

1180°S

1190°S

1200°S

1210°S

1220°S

1230°S

1240°S

1250°S

1260°S

1270°S

1280°S

1290°S

1300°S

1310°S

1320°S

1330°S

1340°S

1350°S

1360°S

1370°S

1380°S

1390°S

1400°S

1410°S

1420°S

1430°S

1440°S

1450°S

1460°S

1470°S

1480°S

1490°S

1500°S

1510°S

1520°S

1530°S

1540°S

1550°S

1560°S

1570°S

1580°S

1590°S

1600°S

1610°S

1620°S

1630°S

1640°S

1650°S

1660°S

1670°S

1680°S

1690°S

1700°S

1710°S

1720°S

1730°S

1740°S

1750°S

1760°S

1770°S

1780°S

1790°S

1800°S

1810°S

1820°S

1830°S

1840°S

1850°S

1860°S

1870°S

1880°S

1890°S

1900°S

1910°S

1920°S

1930°S

1940°S

1950°S

1960°S

1970°S

1980°S

1990°S

2000°S

2010°S

2020°S

2030°S

2040°S

2050°S

2060°S

2070°S

2080°S

2090°S

2100°S

2110°S

2120°S

2130°S

2140°S

2150°S

2160°S

2170°S

2180°S

2190°S

2200°S

2210°S

2220°S

2230°S

2240°S

2250°S

2260°S

2270°S

2280°S

2290°S

2300°S

2310°S

2320°S

2330°S

2340°S

2350°S

2360°S

2370°S

2380°S

2390°S

2400°S

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2420°S

2430°S

2440°S

2450°S

2460°S

2470°S

2480°S

2490°S

2500°S

2510°S

2520°S

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2550°S

2560°S

2570°S

2580°S

2590°S

2600°S

2610°S

2620°S

2630°S

2640°S

2650°S

2660°S

2670°S

2680°S

2690°S

2700°S

2710°S

2720°S

2730°S

2740°S

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2780°S

2790°S

2800°S

2810°S

2820°S

2830°S

2840°S

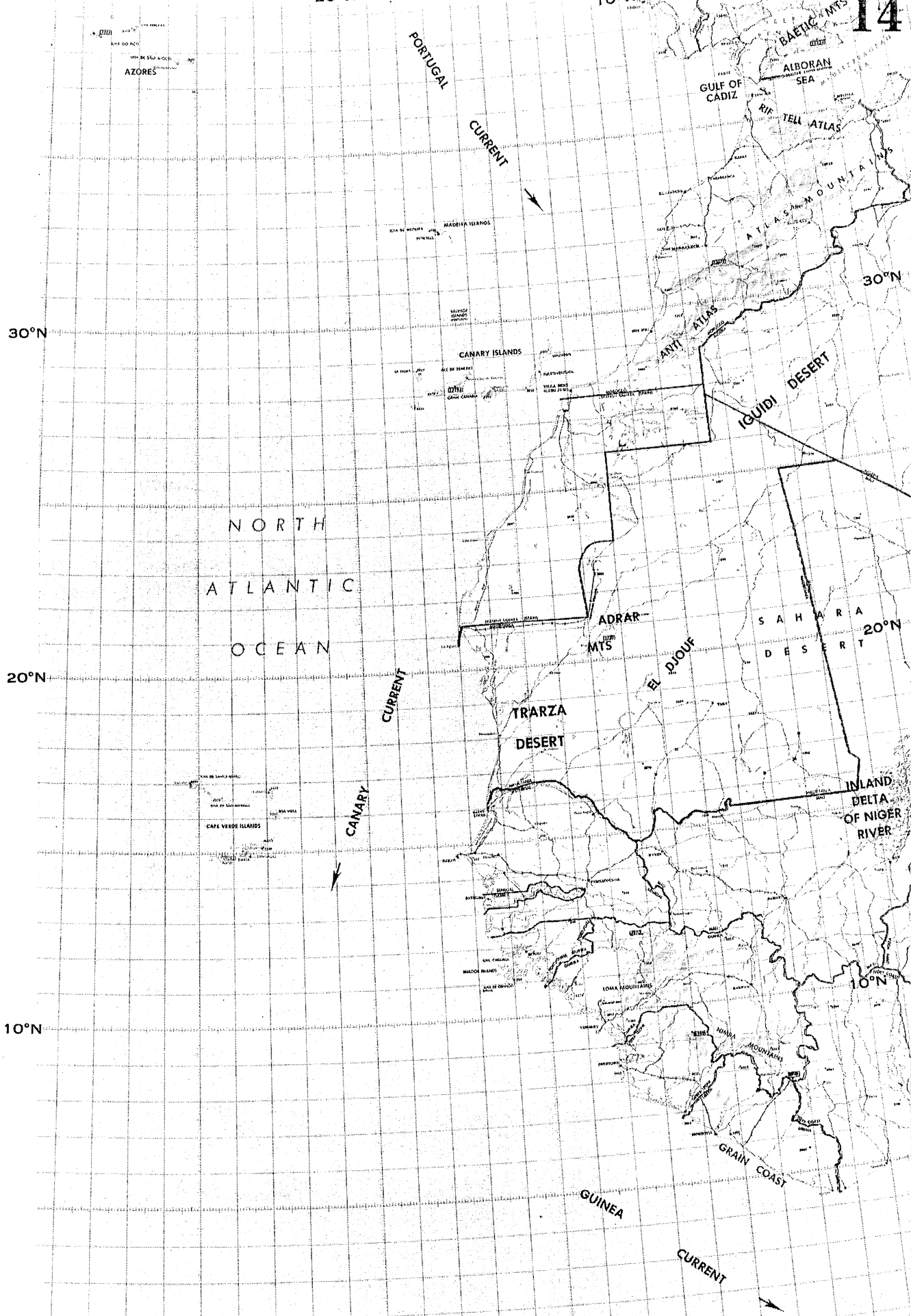
2850°S

2860°S

2870°S

2880°S

2890°S



NORTH
ATLANTIC
OCEAN

PORTUGAL
CURRENT

CANARY
CURRENT

GUINEA
CURRENT

30°N

20°N

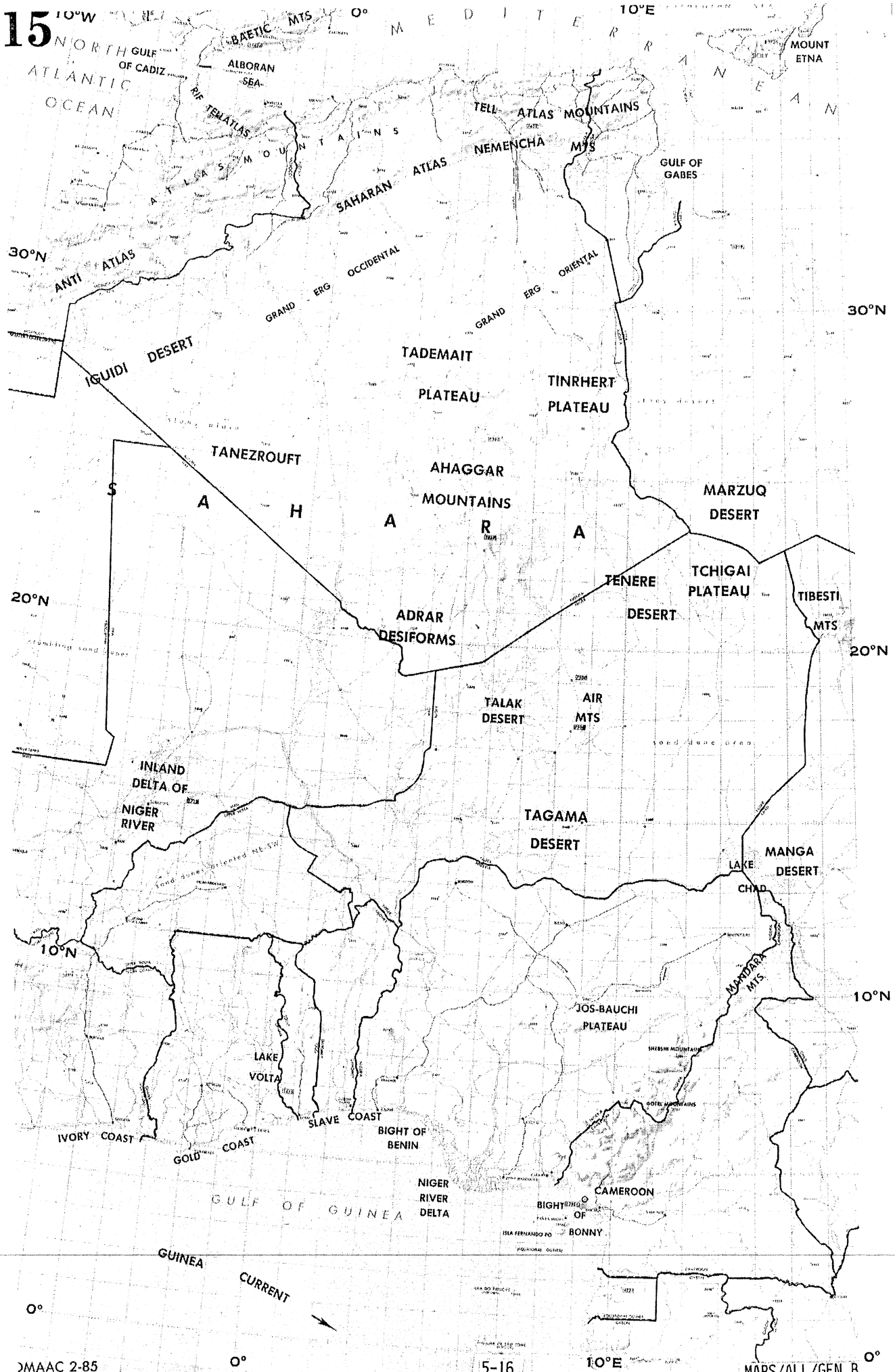
10°N

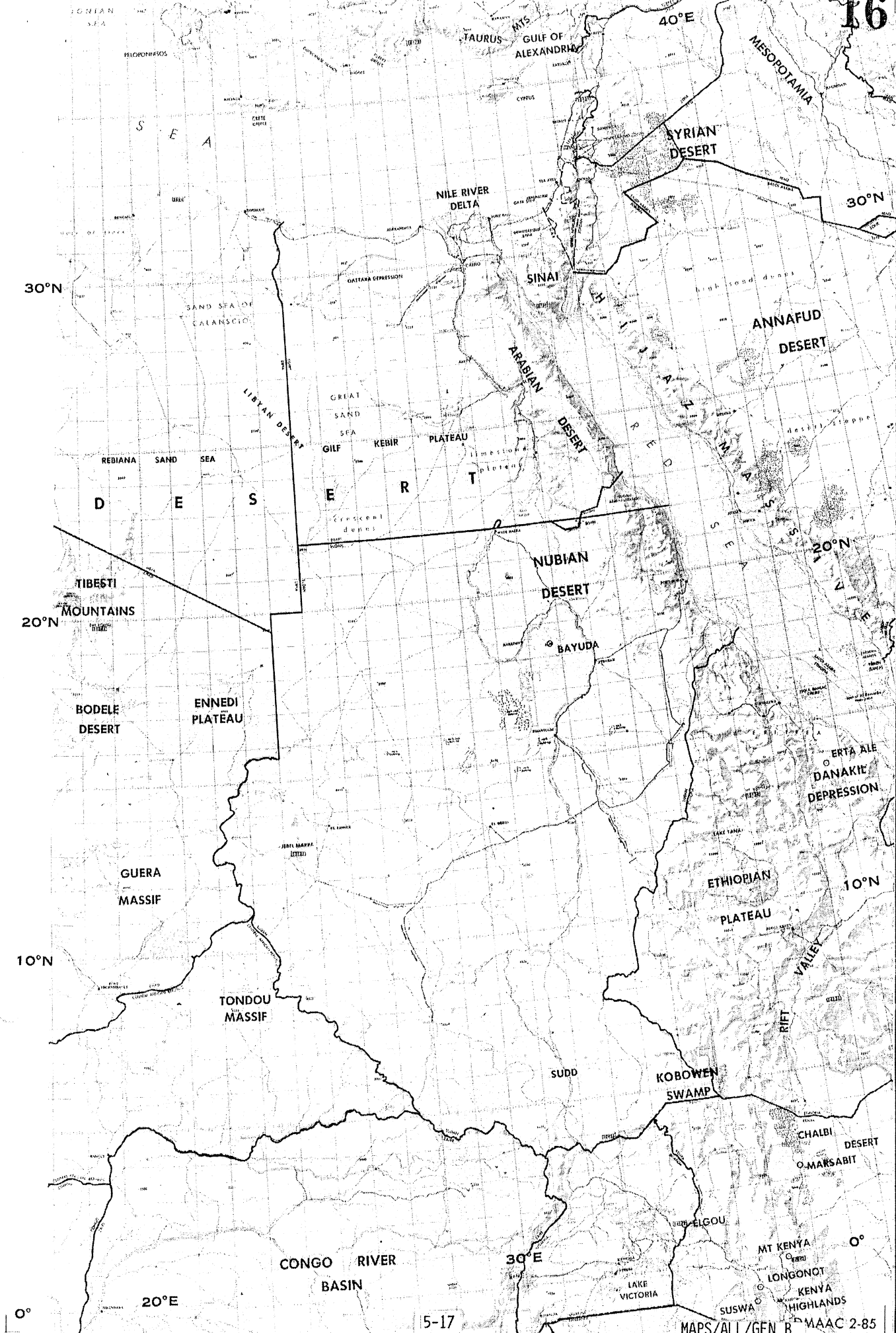
30°N

20°N

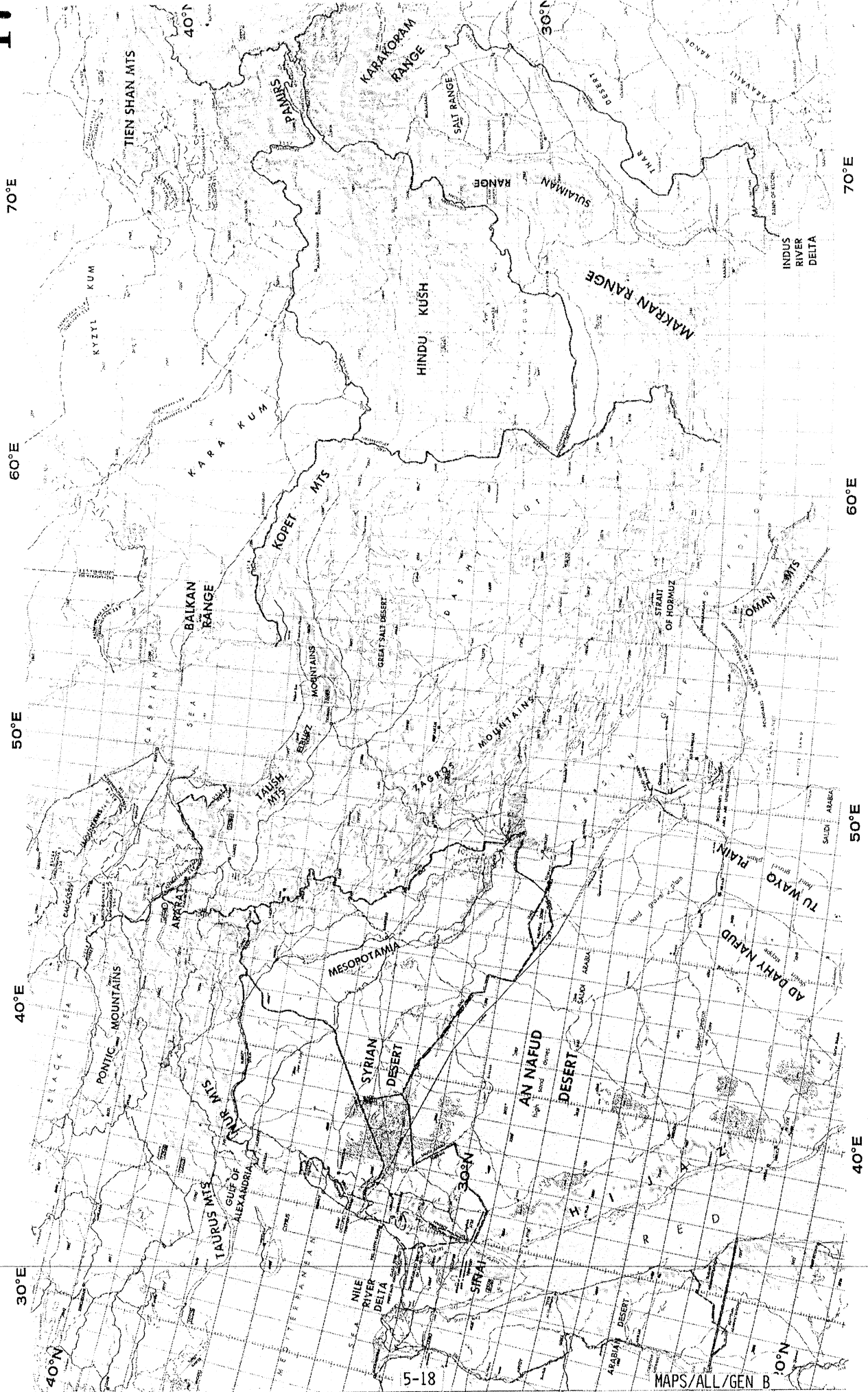
10°N

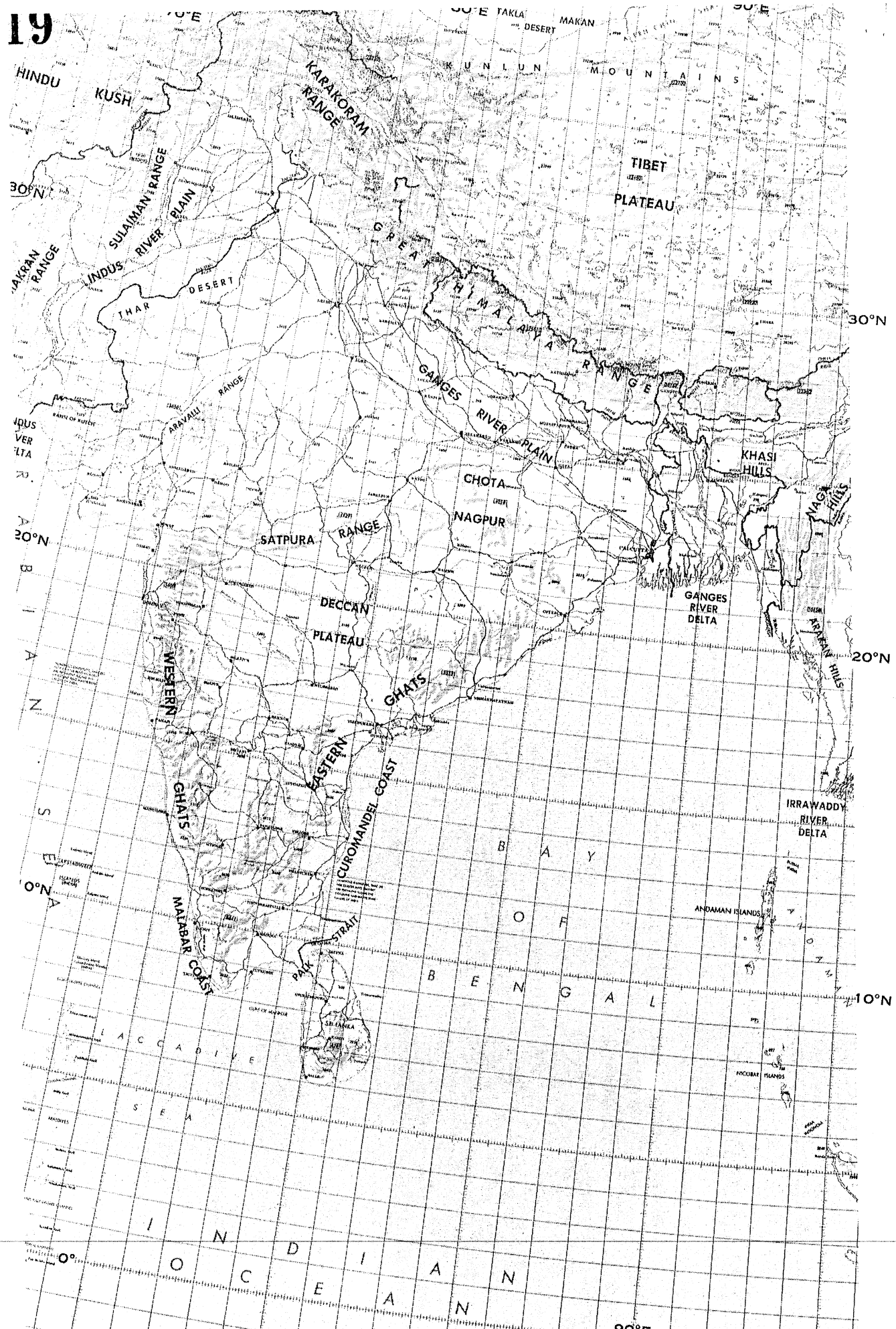
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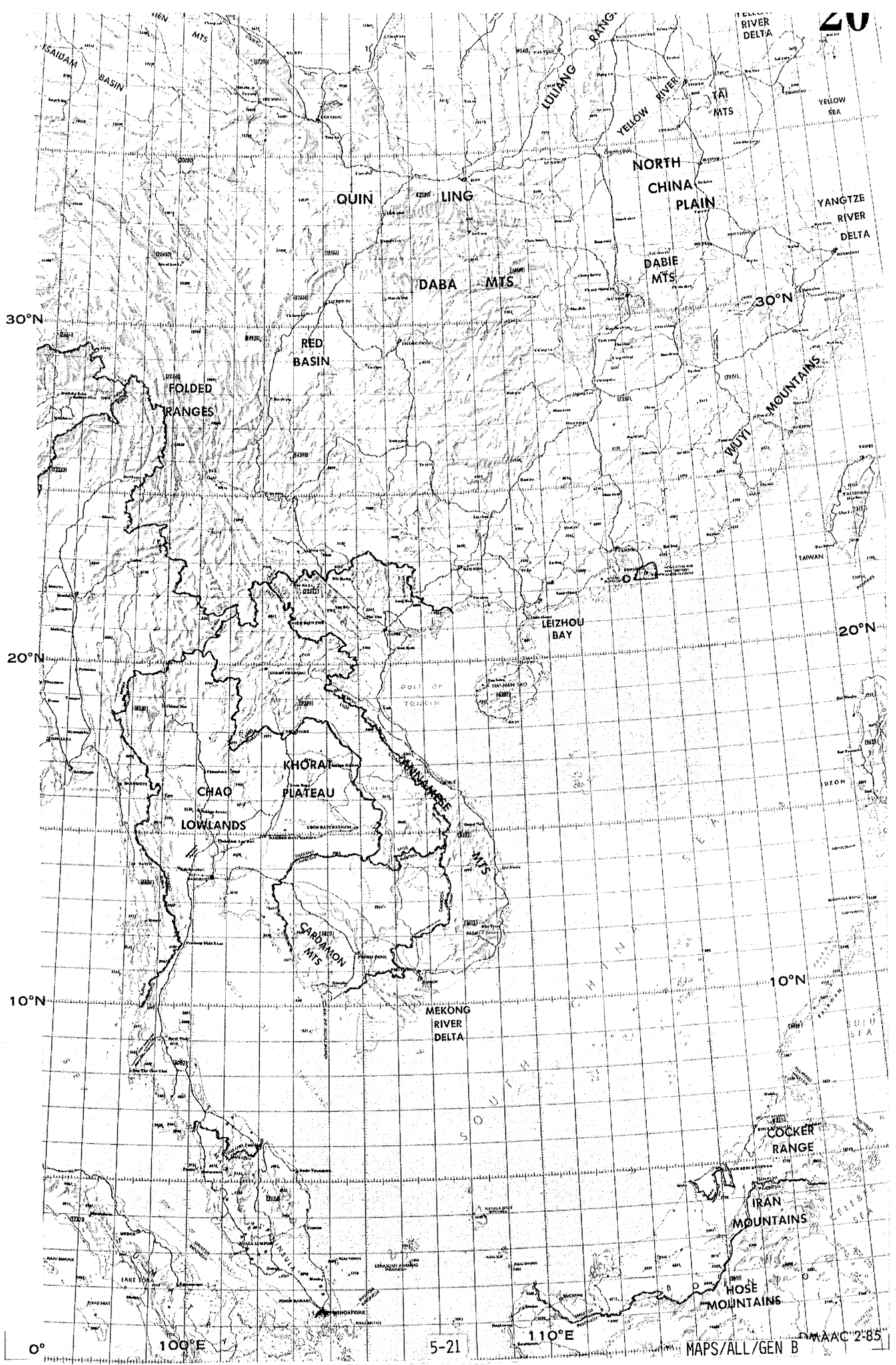




UNIVERSITY MICROFILMS







20

30°N

20°N

10°N

0°

30°N

20°N

10°N

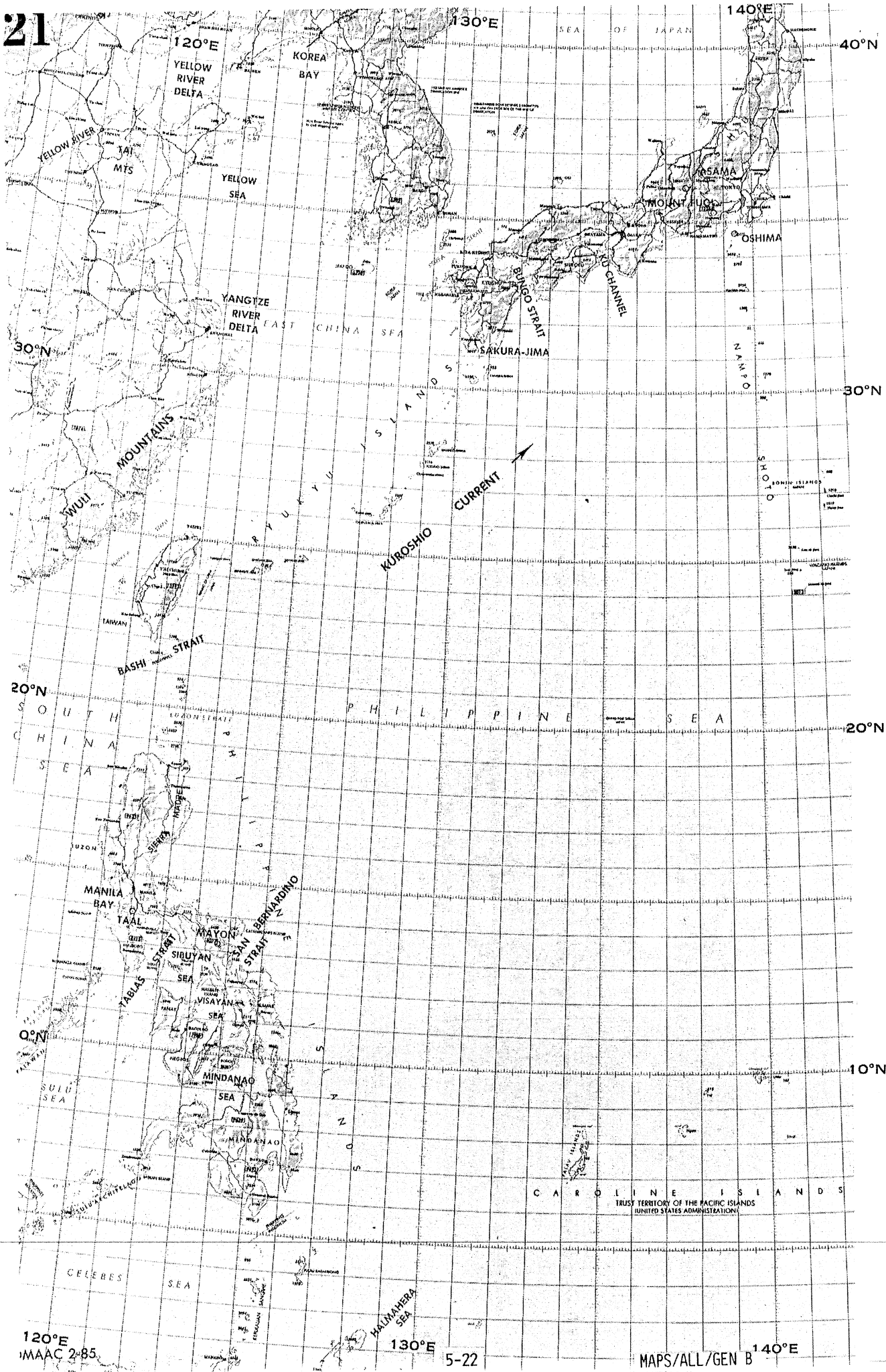
100°E

110°E

5-21

MAPS/ALL/GEN B

MAAC 2'85



40°N

30°N

30°N

20°N

20°N

10°N

10°N

NORTH
PACIFIC
OCEAN

MARSHALL ISLANDS
TRUST TERRITORY OF THE PACIFIC
ISLANDS

MARSHALL ISLANDS
TRUST TERRITORY OF THE PACIFIC
ISLANDS

CAROLINE ISLANDS
TRUST TERRITORY OF THE PACIFIC ISLANDS
(UNITED STATES ADMINISTRATION)

NORTH EQUATORIAL COUNTER CURRENT

5-23

160°E MAPS/ALL/GEN B MAAC 2-85 0°

30°N

30°N

NORTH PACIFIC OCEAN

20°N

20°N

KUZOSHIO

EXTENSION

10°N

10°N

MARSHALL ISLANDS
TRUST TERRITORY OF THE PACIFIC ISLANDS
UNITED STATES ADMINISTRATION

CAROLINE ISLANDS
TRUST TERRITORY OF THE PACIFIC ISLANDS
UNITED STATES ADMINISTRATION

GIREEK ISLANDS
UNINCORPORATED

0°

160°E

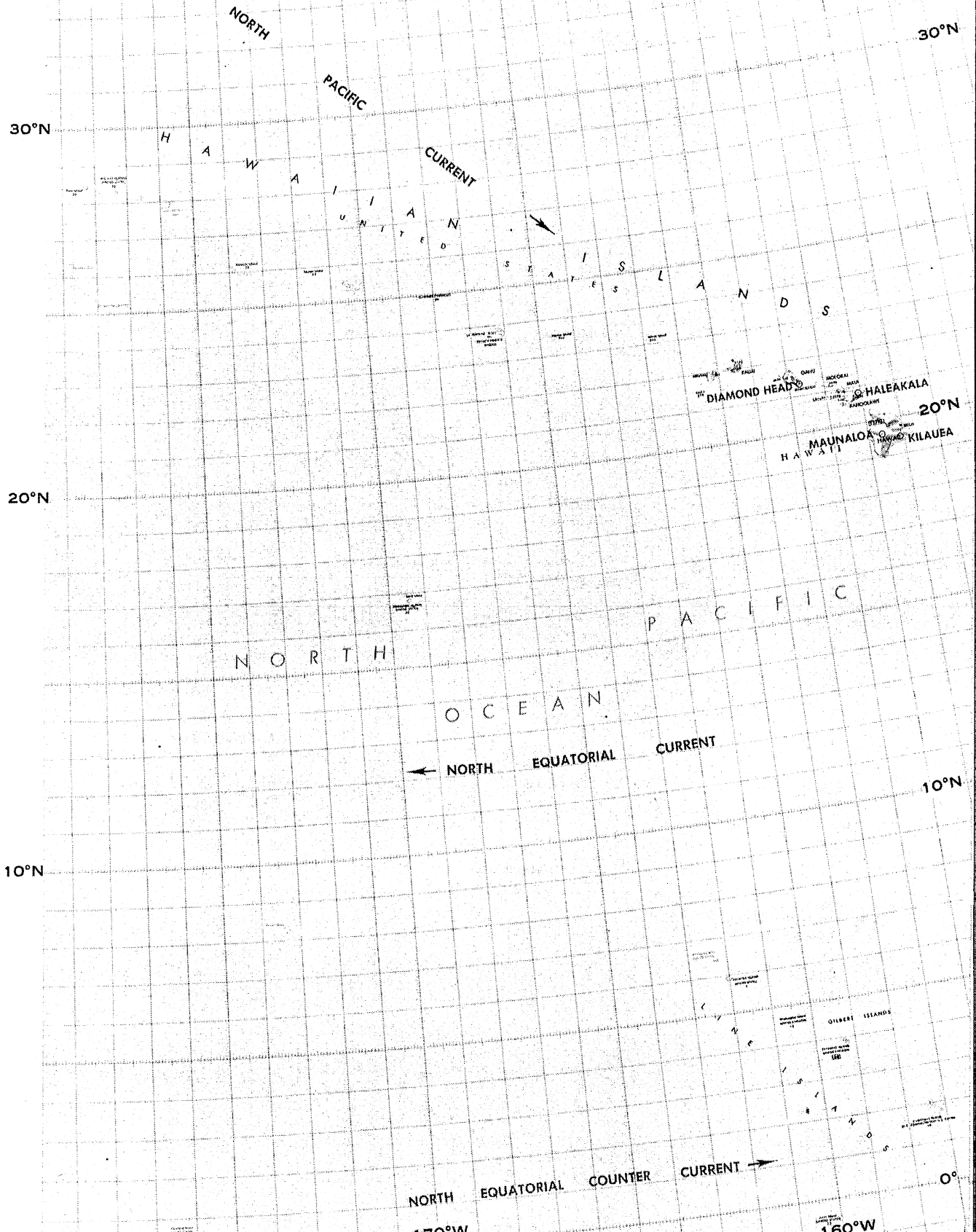
170°E

180°

170°W

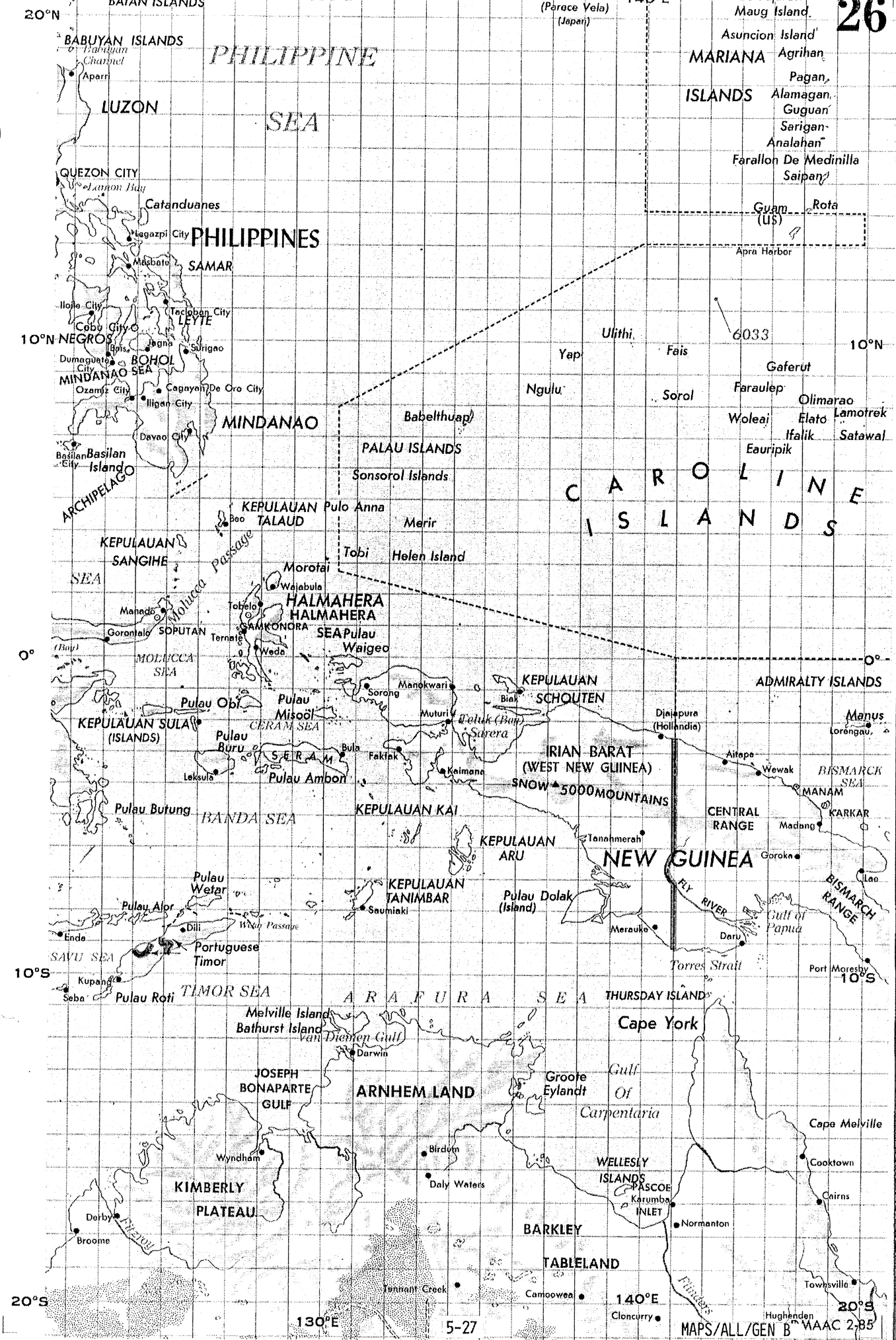
160°W

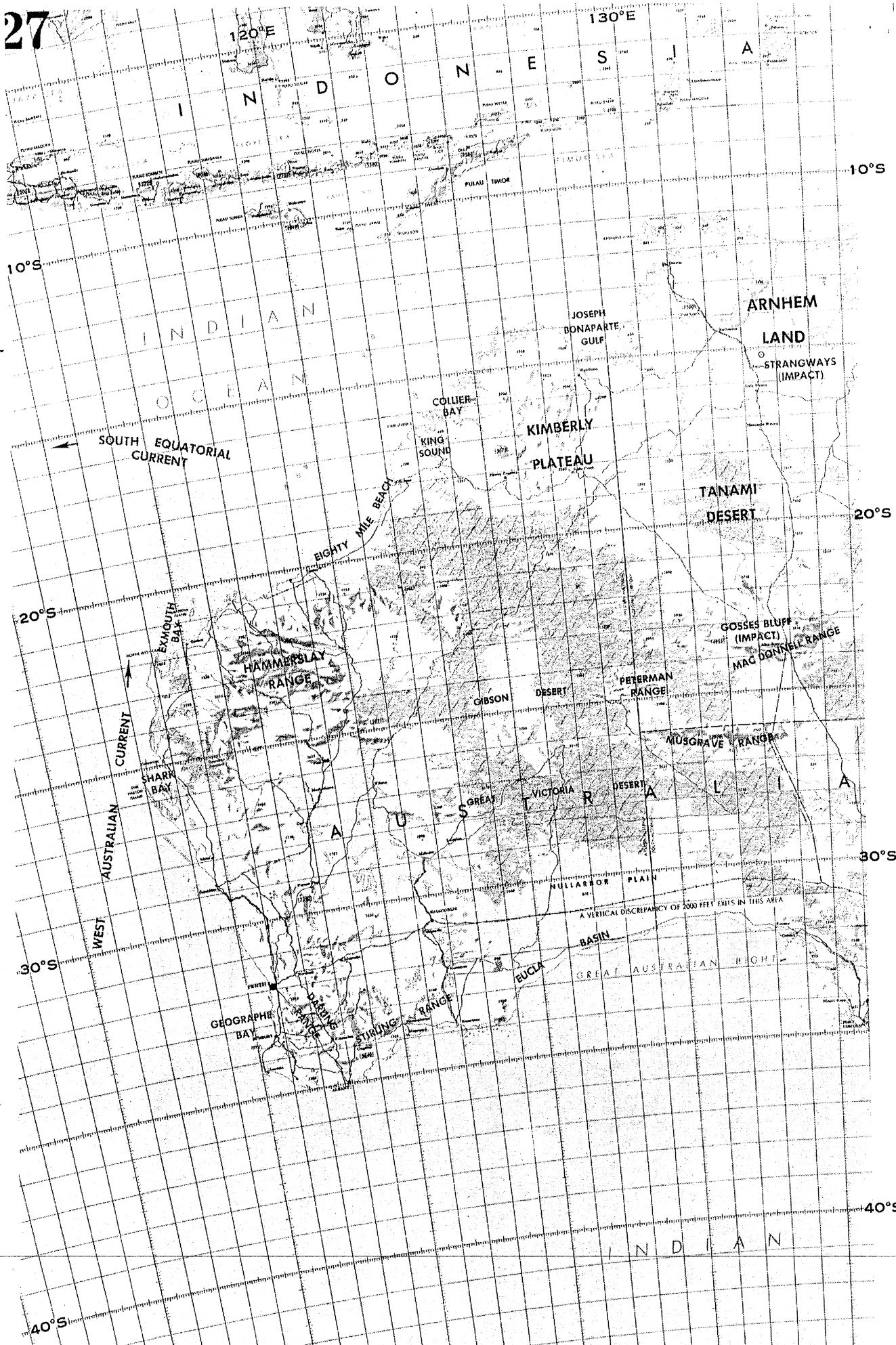
24
150°W

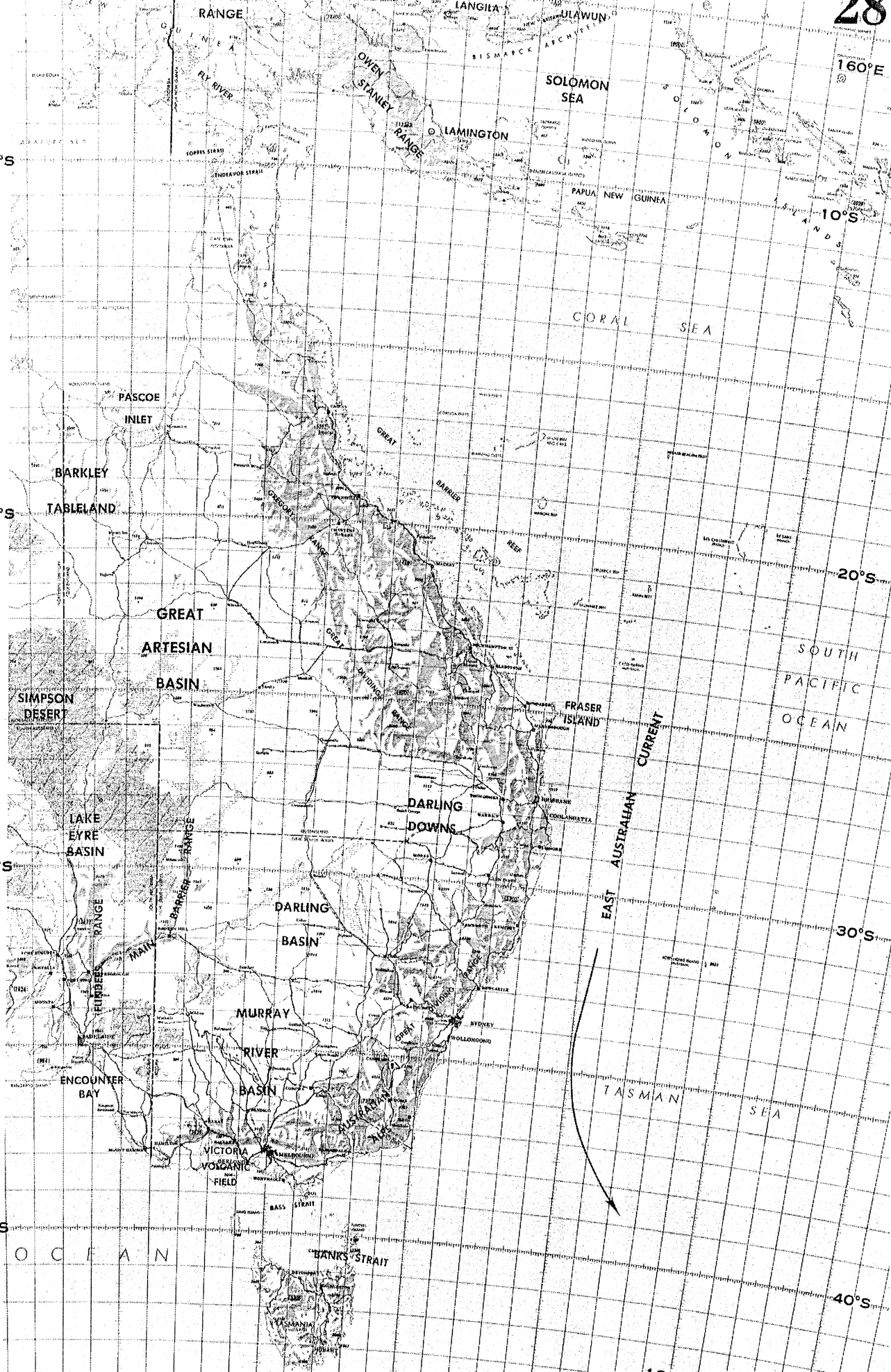


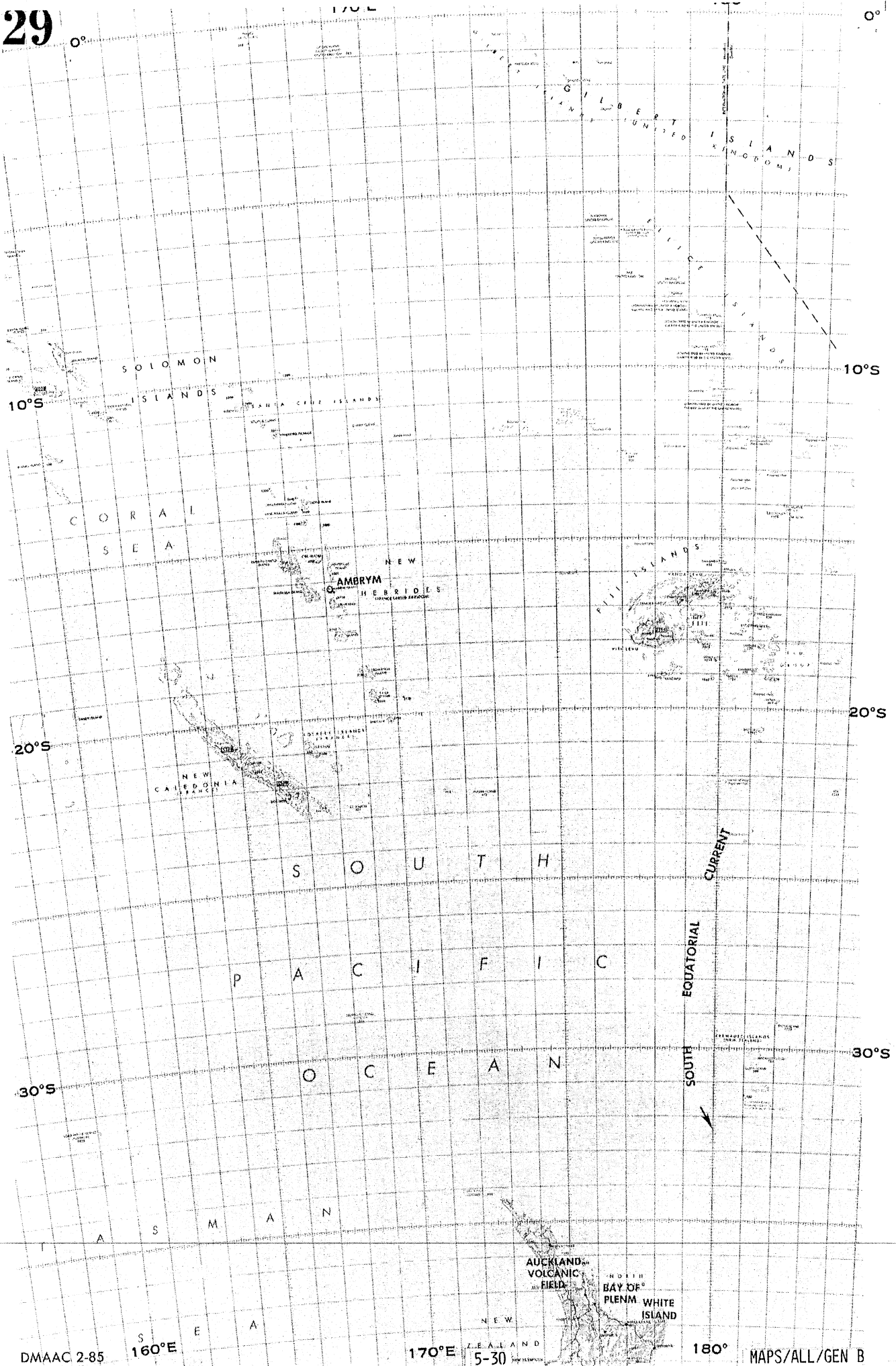
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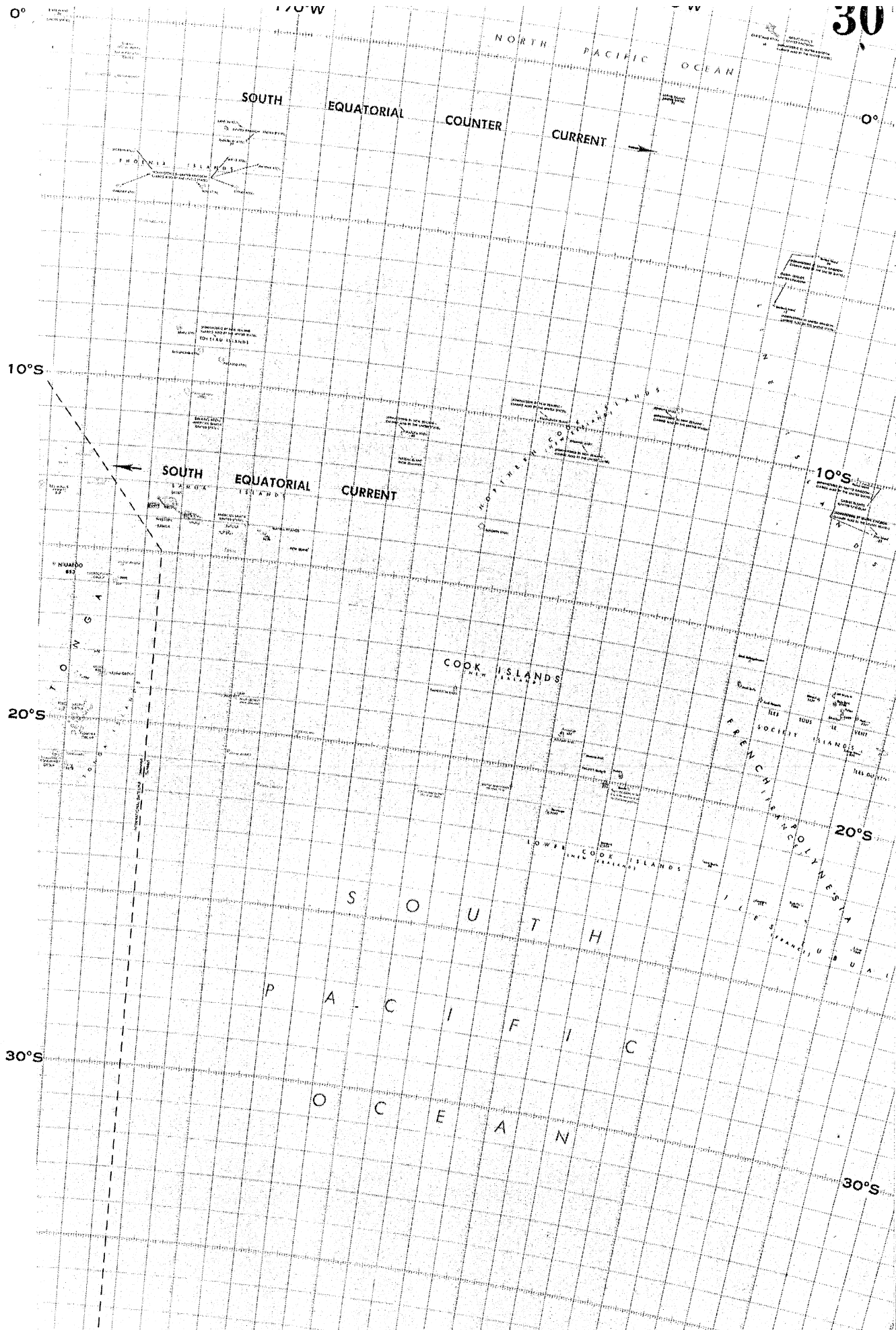
MAPS/ALL/GEN B MAAC 2-85











31

150°W

140°W

0°

SOUTH EQUATORIAL COUNTER CURRENT



NOTE: CONTINUED ON THE NEXT PAGE
ALL INFORMATION IS UNCLASSIFIED
DATE 11/11/01 BY 60322 UCBAW/STP

MARQUESAS ISLANDS

10°S

0°S

SOUTH EQUATORIAL CURRENT
FRENCH



20°S

LOWER COOR ISLANDS

FRANCAIS ISLANDS

ACADON ISLANDS

20°S

20°S

FRANCAIS ISLANDS

PAPELAGO

0°S

SOUTH PACIFIC OCEAN

30°S

160°W

MAAC 2-85

150°W

5-32

140°W

MAPS/AI I /GFN R

130°W

120°W

110°W

32

10°S

10°S

S O U T H

P A C I F I C

20°S

O C E A N

20°S

30°S

30°S

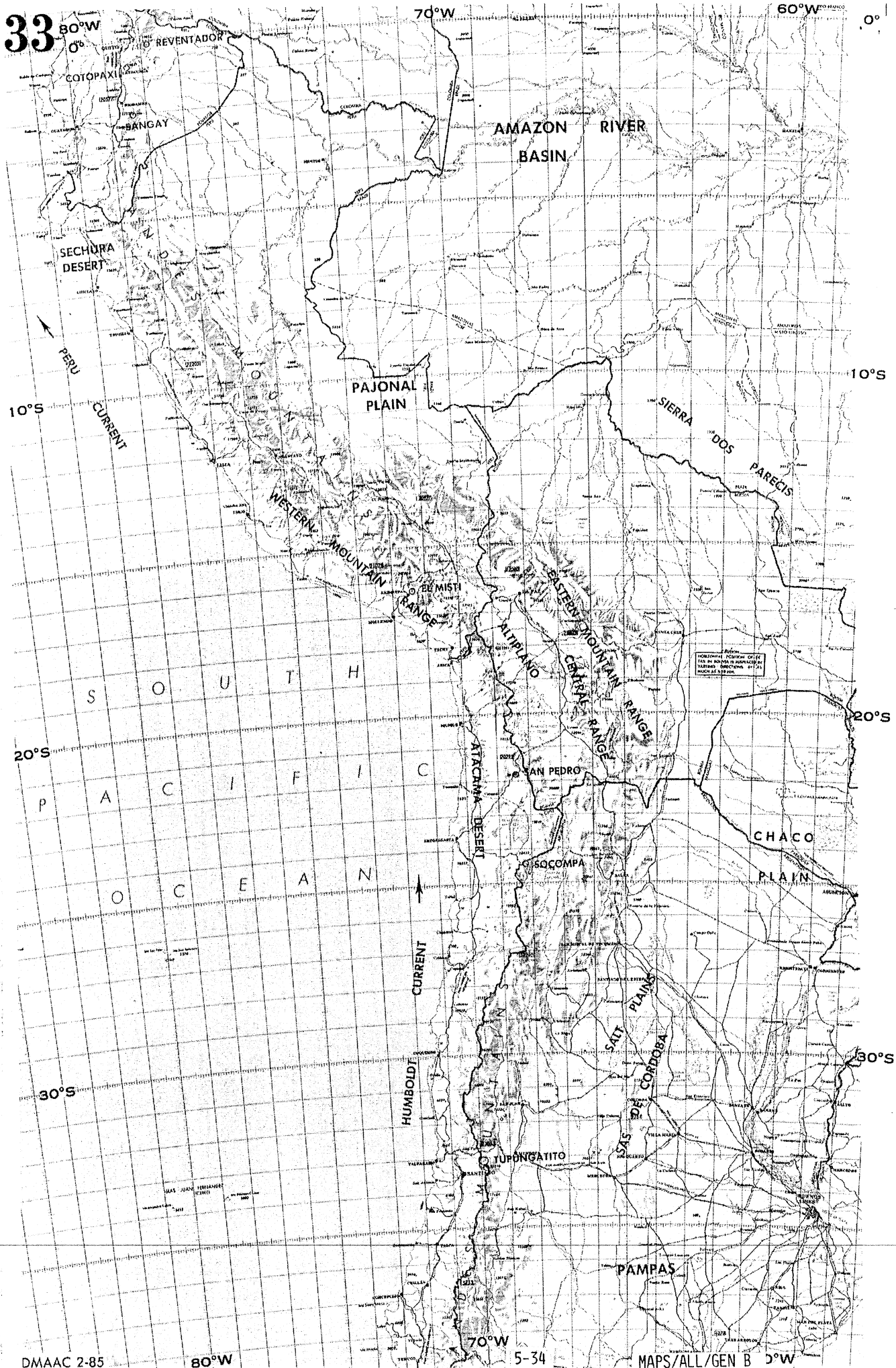
130°W

120°W

5-33

110° MAPS/ALL/GEN B AAAC 2-85

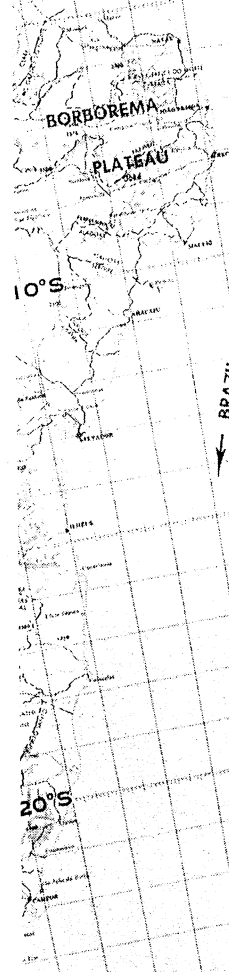
33





5-35 40°W

30°W DMAAC 2-85
MAPS/ALL/GEN B



BRAZIL CURRENT

BORBOREMA PLATEAU

A T L A N T I C O C E A N I C S O U T H

10°S

20°S

30°S

30°S

40°S

0°

10°S

← SOUTH EQUATORIAL CURRENT

10°S

20°S

S O U T H
A T L A N T I C
O C E A N

20°S

30°S

30°S

40°S

10°W

0°

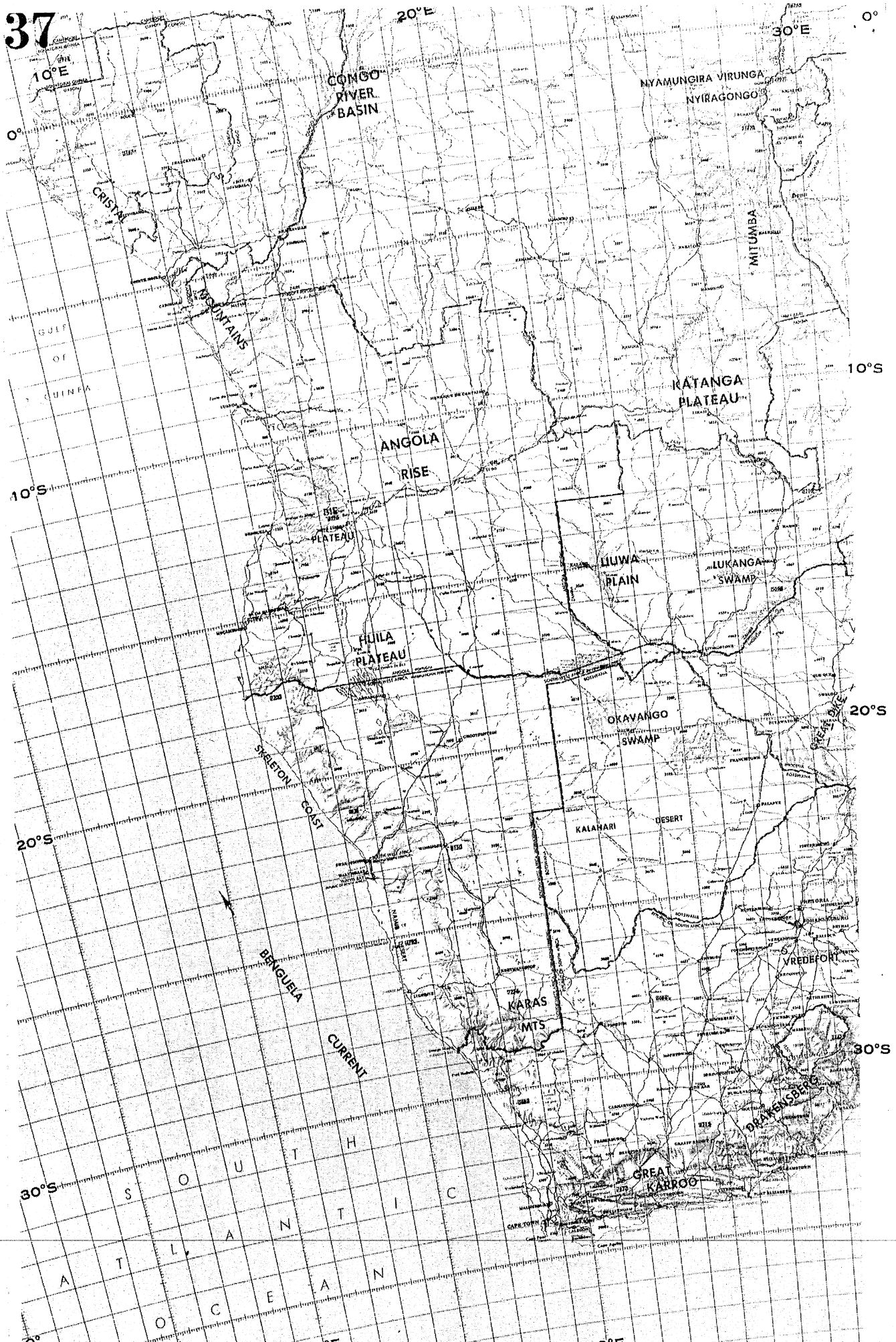
5-37

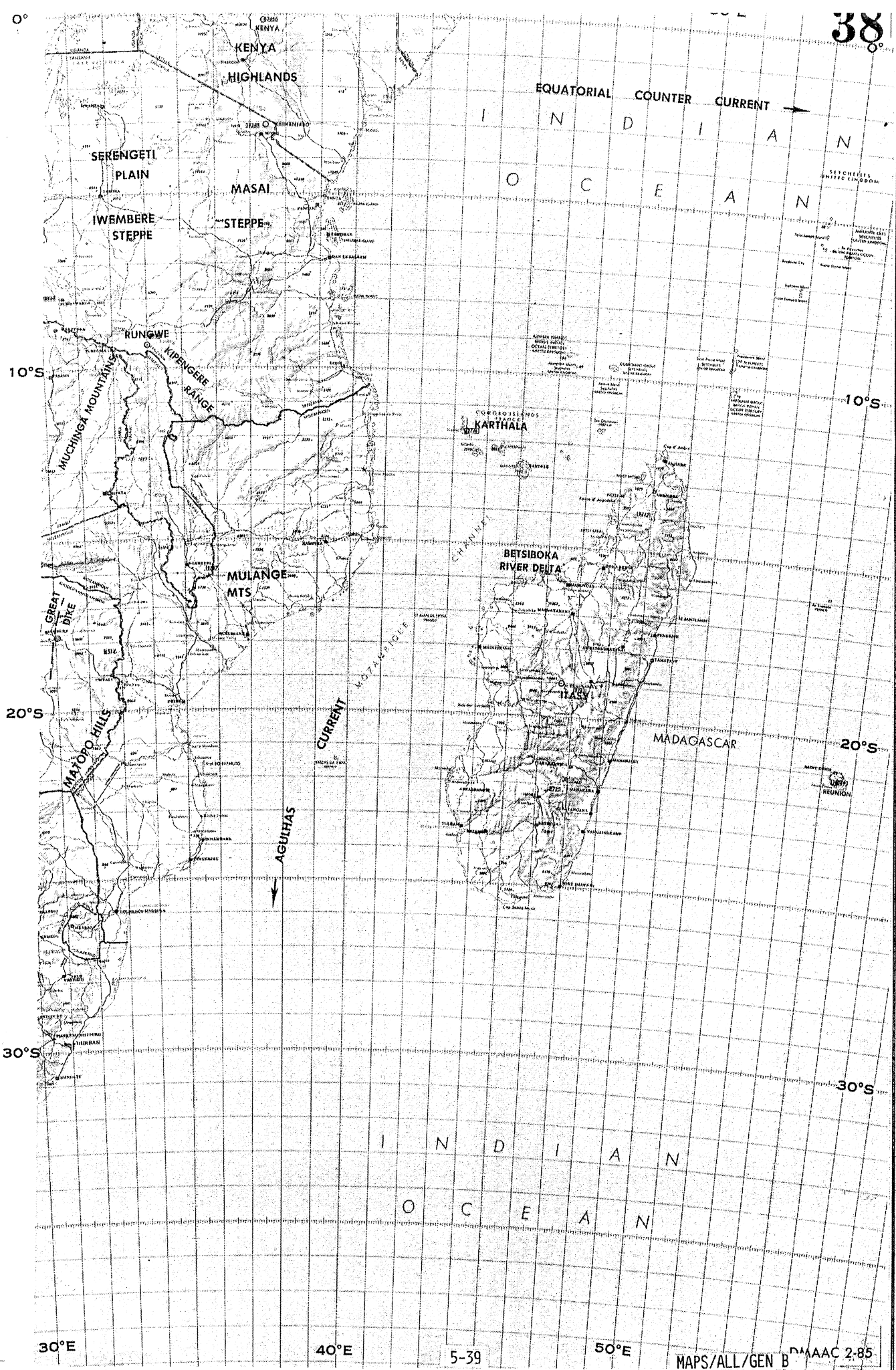
10°E

MAPS/ALL/GEN B

DMAAC 2:85

37





10°S

10°S

COMORO ISLANDS

AGULHAS

BETSIBOKA RIVER DELTA

MADAGASCAR

SOUTH EQUATORIAL CURRENT

20°S

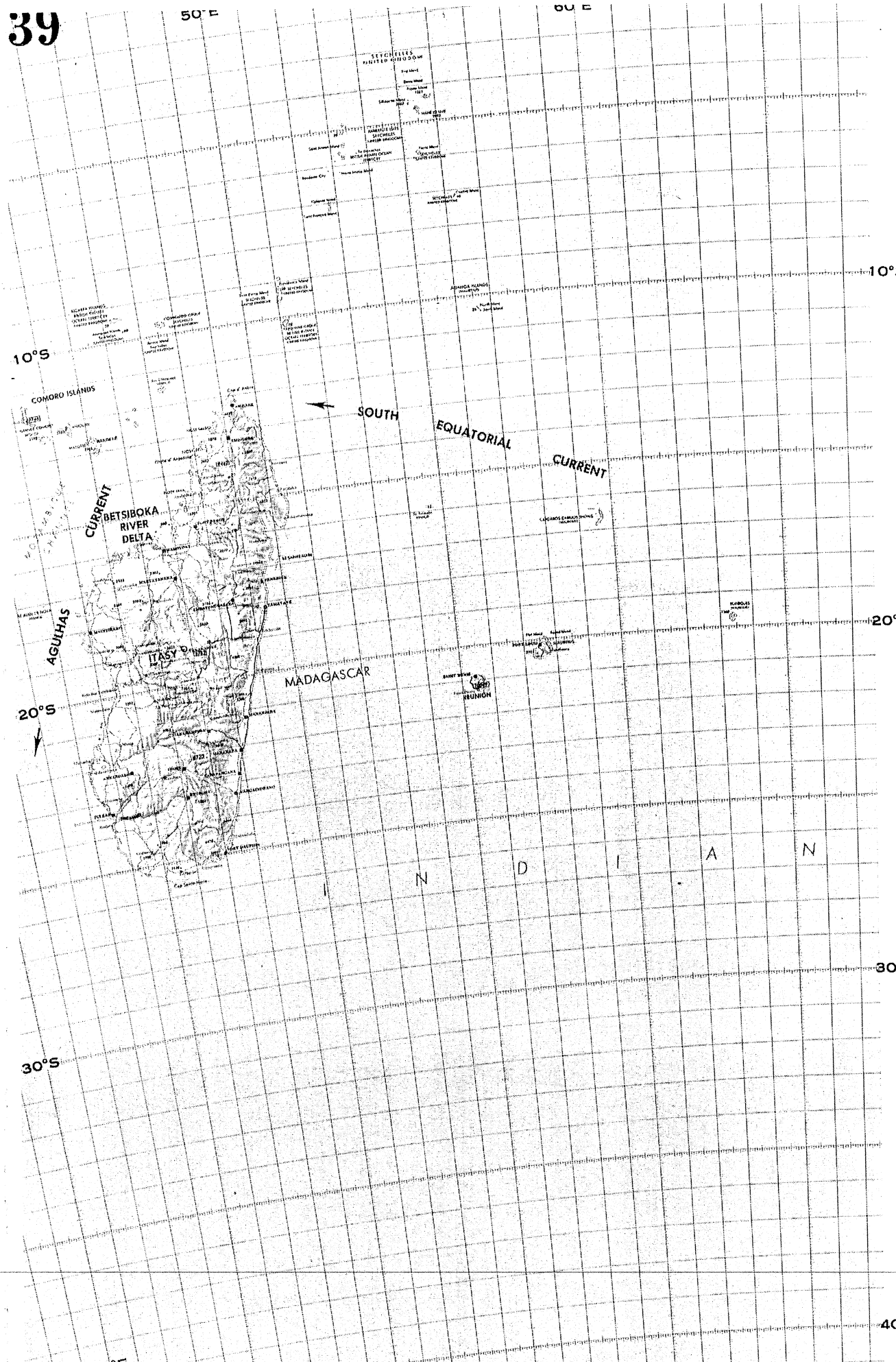
20°S

INDIAN

30°S

30°S

40°S



CHAGOS
AFCHITELAGO
D

EQUATORIAL COUNTER CURRENT

10°S

10°S

20°S

SOUTH EQUATORIAL CURRENT

20°S

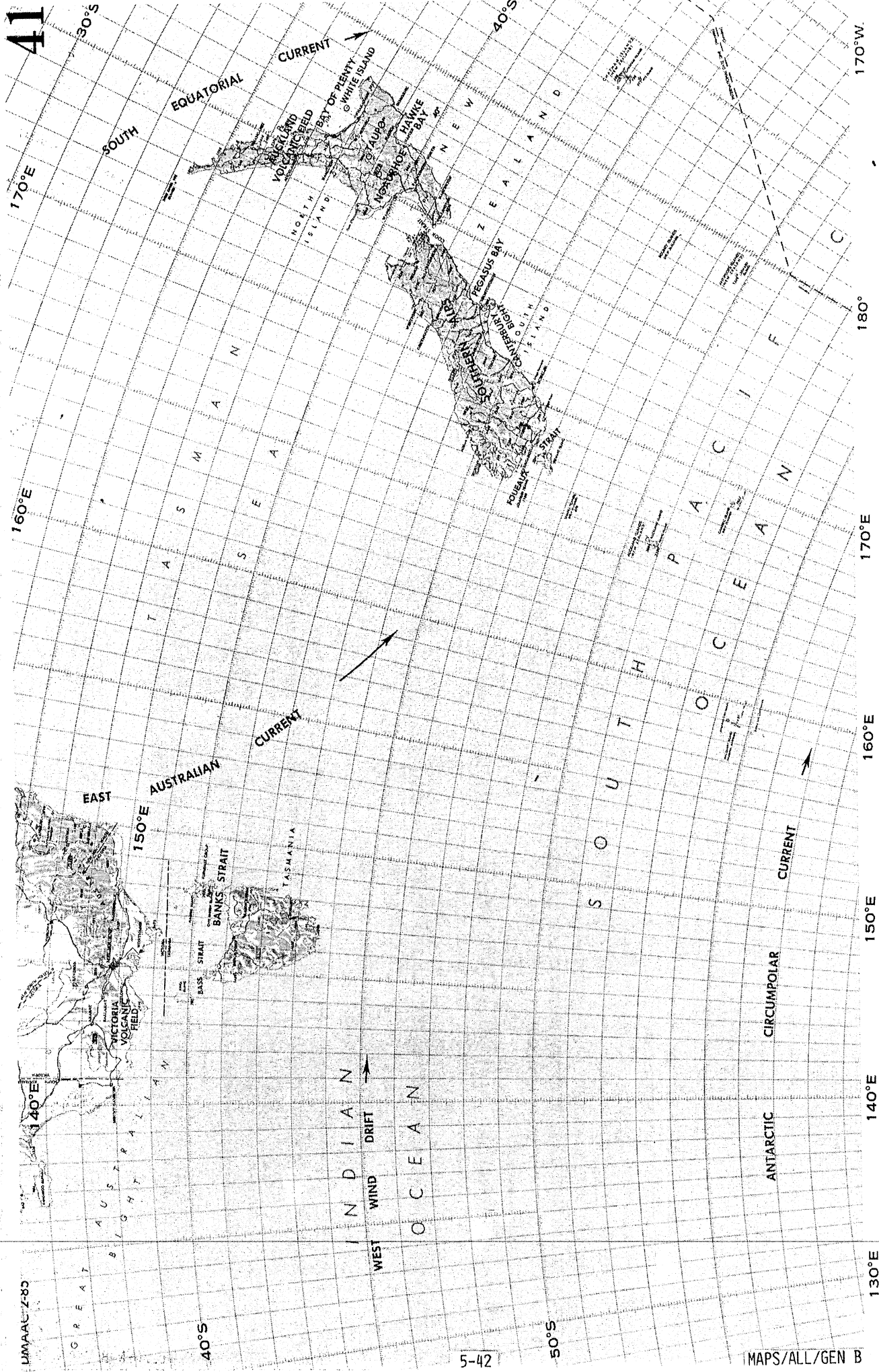
O C E A N

30°S

30°S

40°S

WEST WIND DRIFT



LMAAC 2-83

GREAT AUSTRALIAN BIGHT

40°S

WEST WIND DRIFT

OCEAN

5-42

50°S

MAPS/ALL/GEN B

160°E

170°E

EAST AUSTRALIAN CURRENT

150°E

TASMANIAN CURRENT

EQUATORIAL CURRENT

SOUTH

40°S

140°E

150°E

160°E

170°E

180°

170°W

30°S

BASS STRAIT

BANKS STRAIT

TASMANIA

CURRENT

CURRENT

NORTH ISLAND

WESTLAND

COAST

BAY OF PLENTY

WHITE ISLAND

NEW ZEALAND

OF AUARO

NORTH ISLAND

HAWKE BAY

FOULBAY

SOUTHERN ISLAND

CHURCHILL STRAIT

PELAGUS BAY

NEW ZEALAND

SOUTH ISLAND

ANTARCTIC

CIRCUMPOLAR

CURRENT

150°E

140°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

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170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

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170°W

30°S

40°S

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ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

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170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

170°E

180°

170°W

30°S

40°S

50°S

ANTARCTIC

CIRCUMPOLAR

CURRENT

130°E

140°E

150°E

160°E

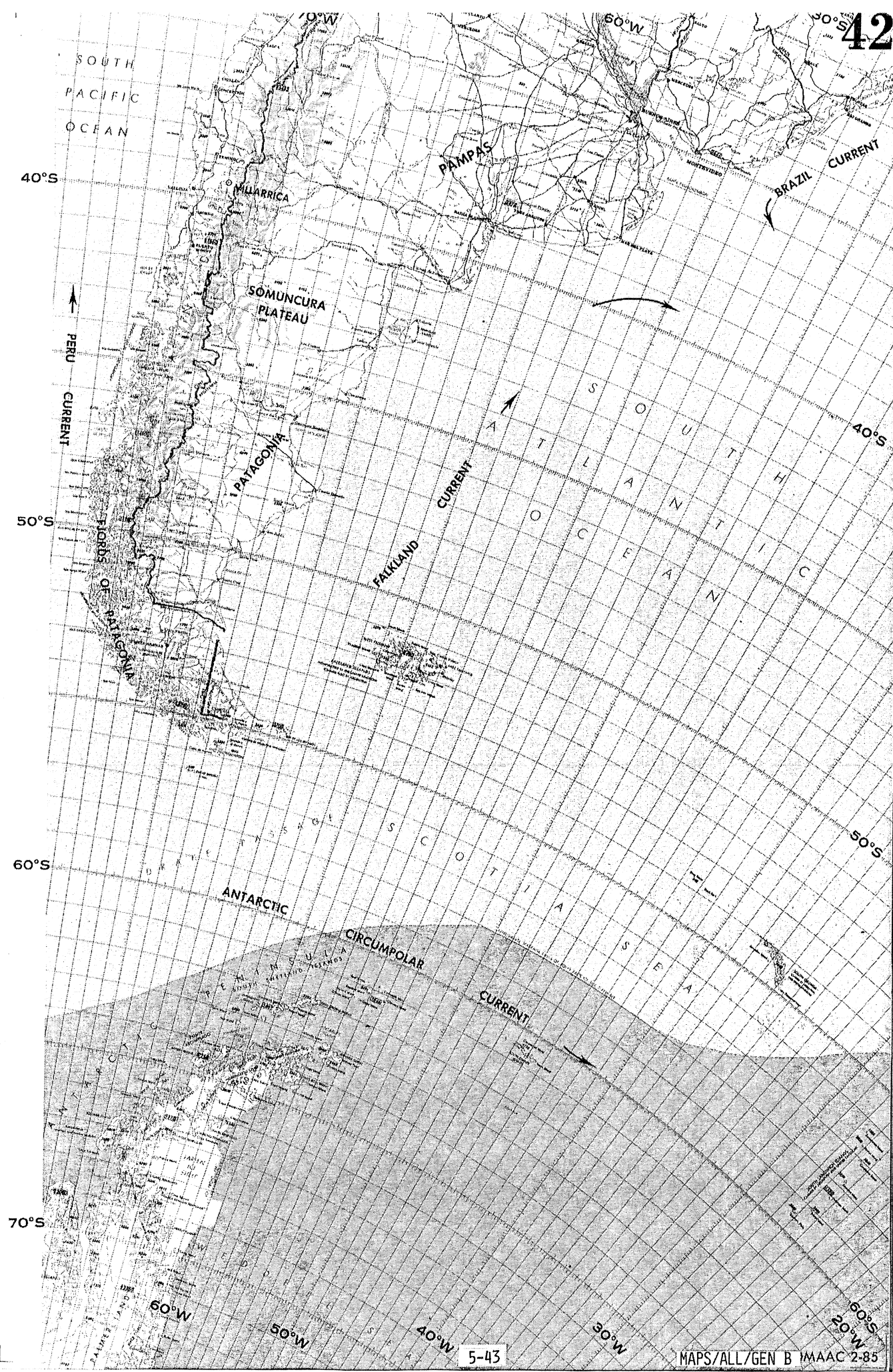
170°E

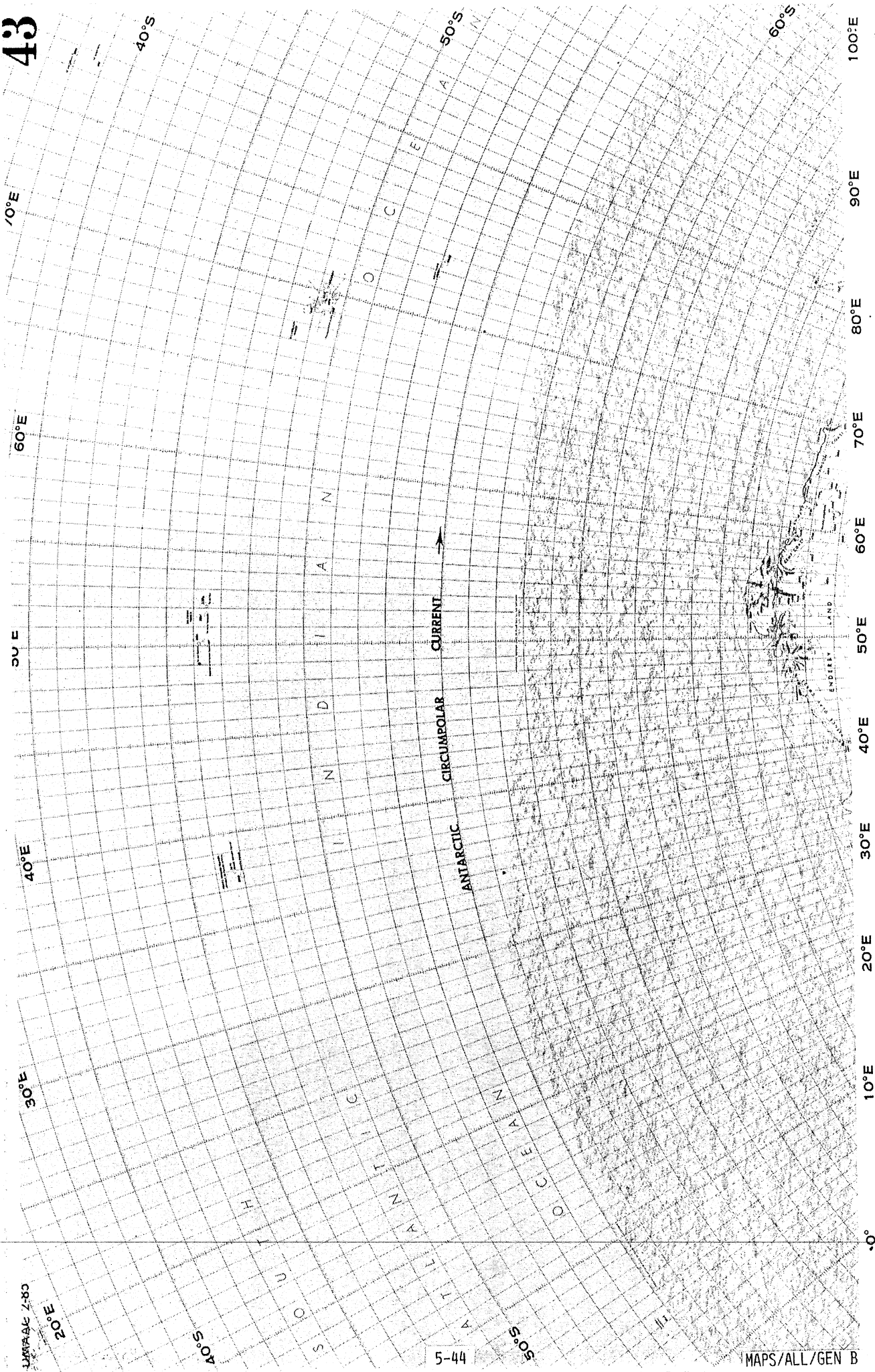
180°

170°W

30°S

40°S





JANUARY 1983

50°E

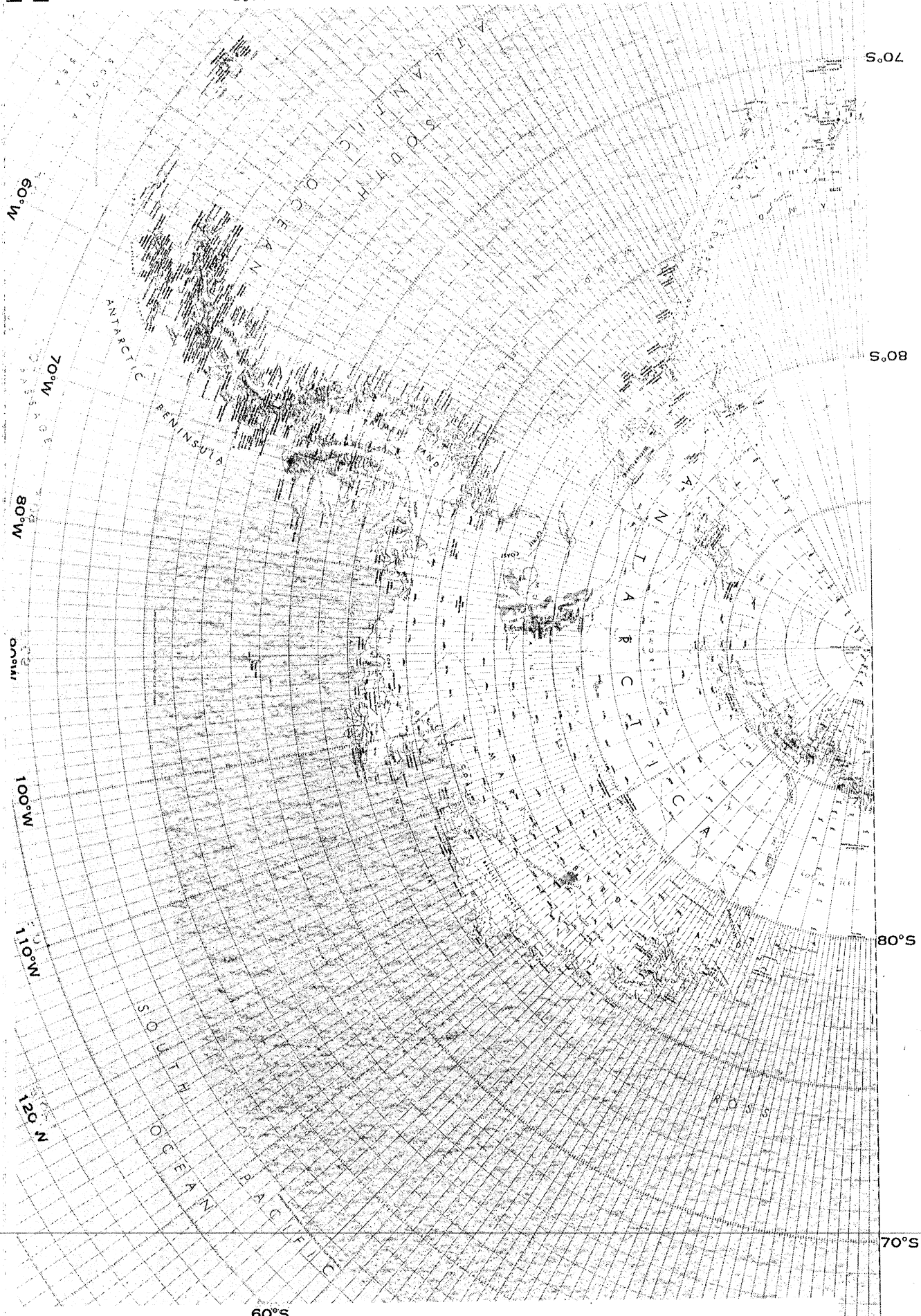
40°S

5-44

50°S

MAPS/ALL/GEN B

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S.07

S.08

80°S

70°S

M.09

70°W

80°W

90°W

100°W

110°W

120°W

60°S

S.02

S.08

80°S

70°S

60°S

90°E

70°E

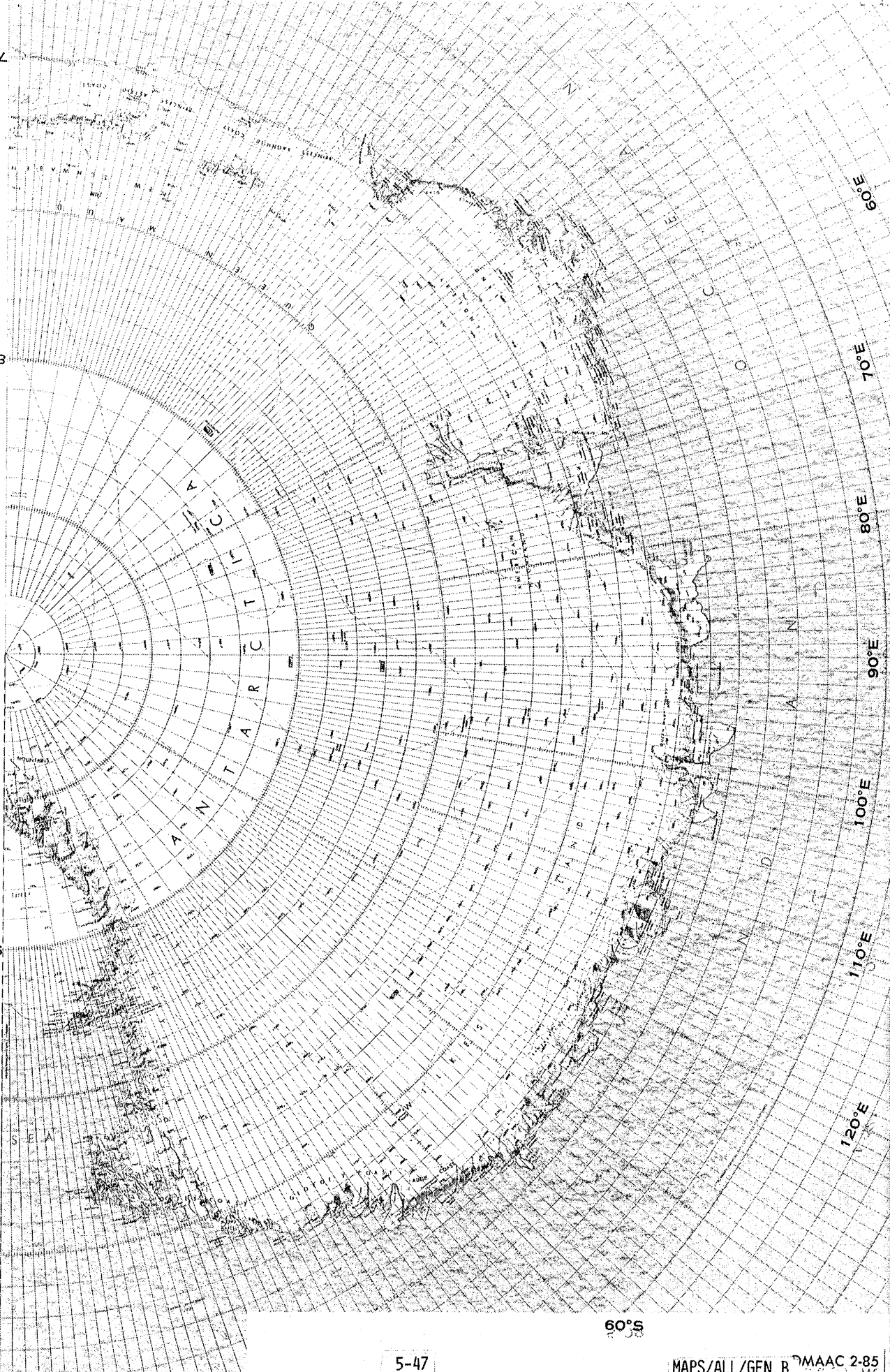
80°E

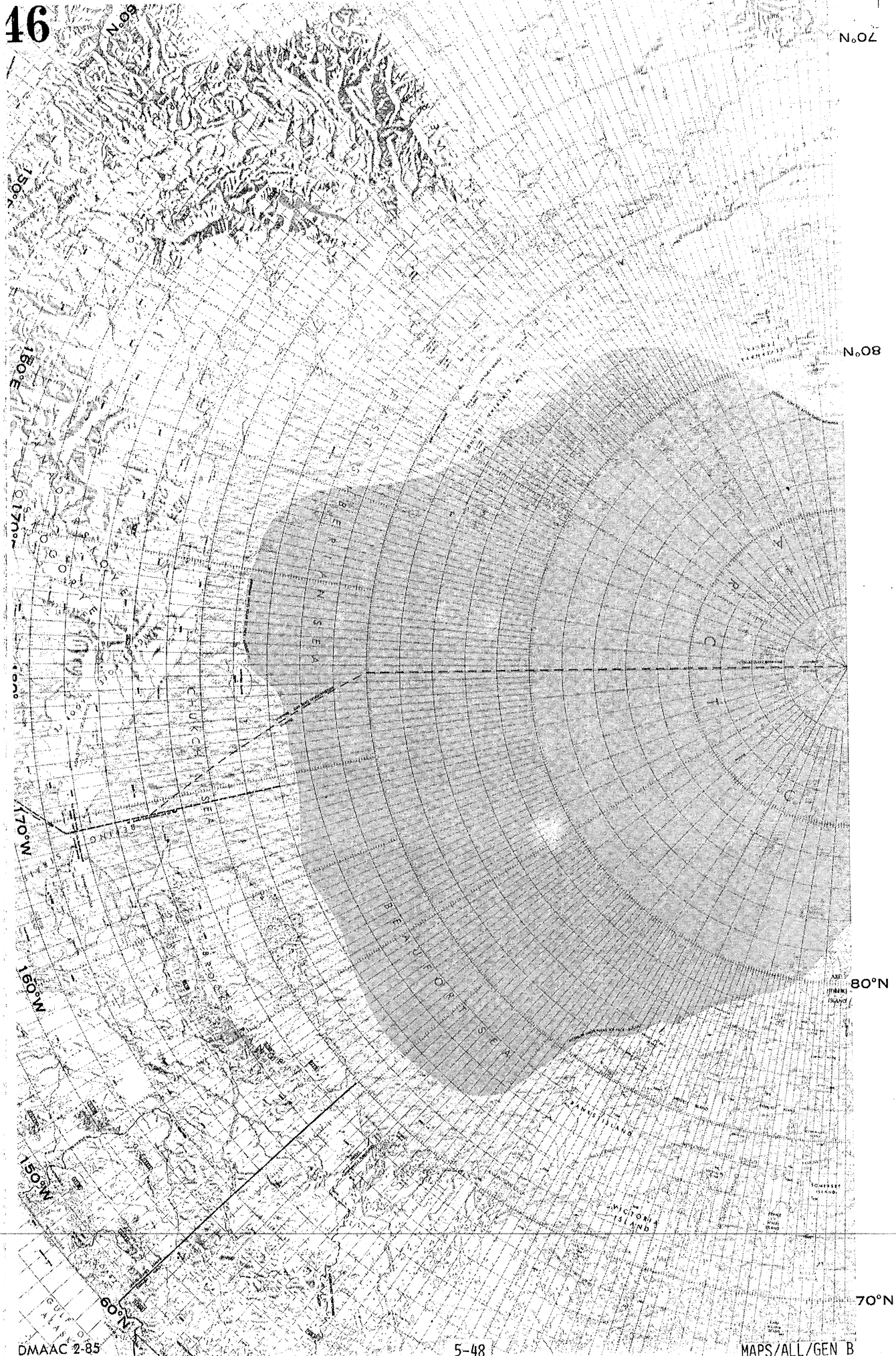
90°E

100°E

110°E

120°E





e

No.08

80°N

70°N

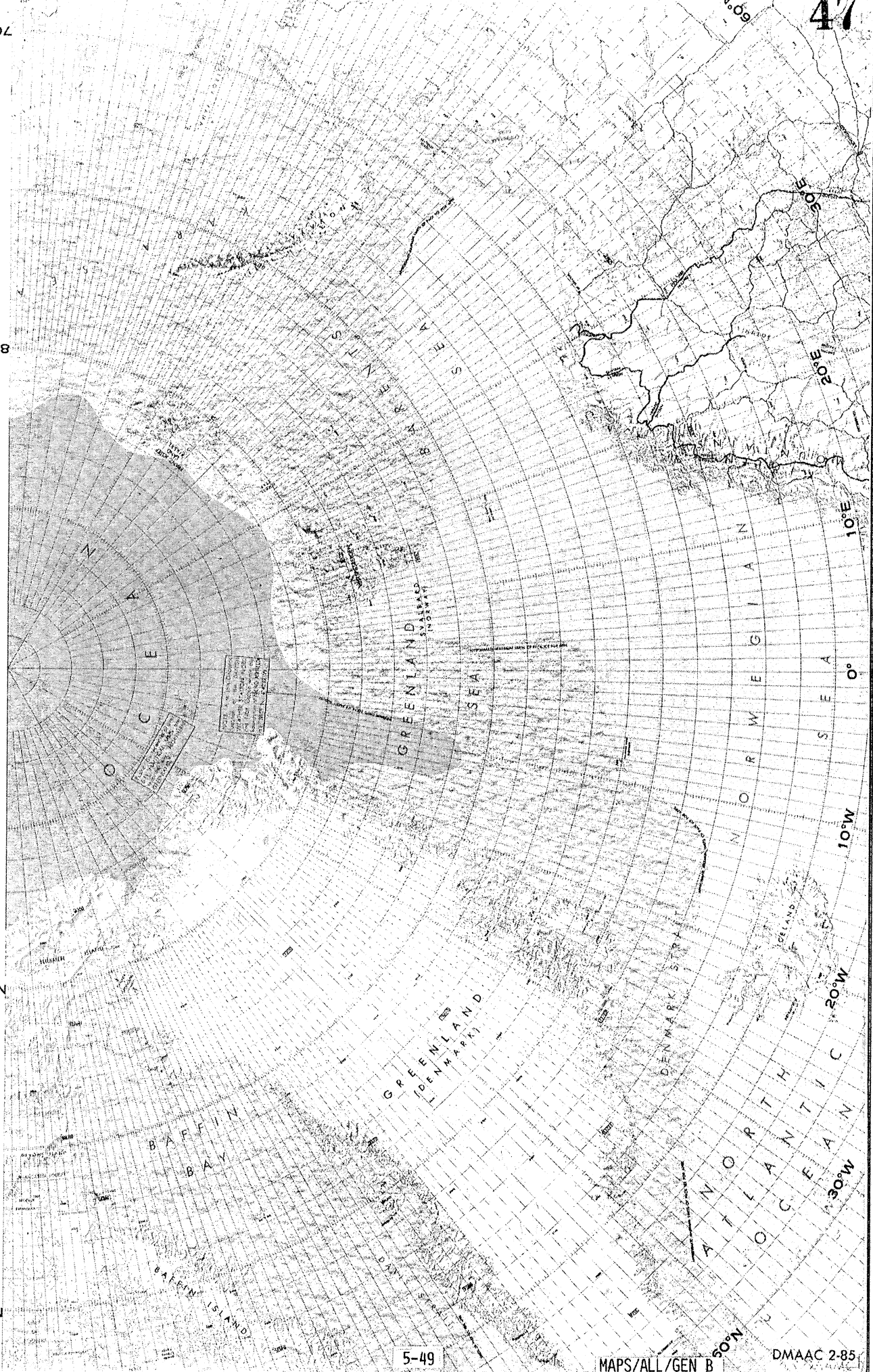
No.04

No.08

80°N

70°N

47



5-49

MAPS/ALL/GEN B

DMAAC 2-85

EXHIBIT B



MAJOR WORLD CURRENTS