MARINE CORPS AIR STATION NEW RIVER

Weather Service

Forecasters Handbook

Imagine a system on a rotating sphere that is 8000 miles wide, consists of different materials, different gasses that have different properties (one of the most important of which, water vapor, exists in different concentrations), heated by a nuclear reaction 98 million miles away. Then, just to make life interesting, this sphere is oriented such that, as it revolves around the nuclear reactor, it is heated differently at different locations at different times of the year. Then, someone is asked to watch the mixture of gases, a fluid only 20 mile deep, that covers an area 0f 250 million square miles, and to predict the state of that fluid at one point on the sphere two days from now. This is the problem that Weather Forecasters face every day.

Robert T. Ryan

WEATHER SERVICE SECTION MARINE CORPS AIR STATION, NEW RIVER
JACKSONVILLE, NORTH CAROLINA 28545-1002

LOCAL AREA FORECASTER'S HANDBOOK

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19 SEP 1998

FOREWORD

This Forecaster's Handbook has been written in conformance with the requirements of NAVOCEANOCOMINST 3140.2D of 9 April 1992.

Services provided and forecasting techniques used, are included for guidance to inexperienced and newly assigned Forecasters. This handbook also includes local climatology, special features, forecasting rules and aids used by MCAS New River Forecasters.

Constructive comments concerning format or contents are hereby solicited. Additional copies may be obtained upon request from the Weather Service Officer, Marine Corps Air Station, New River, North Carolina, 28545-1002.

J. M. HARTMAN
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WEATHER SERVICE DIVISION

LOCAL AREA FORECASTER'S HANDBOOK

RECORD OF CHANGES

CHANGE NUMBER	DATE OF CHANGE	DATE ENTERED	SIGNATURE OF PERSON ENTERING CHANGE

FORECASTERS HANDBOOK

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BASIC DESCRIPTION

101. INTRODUCTION AND TOPOGRAPHY. MCAS New River Weather Service Office Spaces and location of equipment, arc illustrated in Diagram 1. The Office is located on the east side of building AS-843, Airfield Operations. The building is surrounded by concrete and asphalt taxiways and parking lots. The Air Station is located 34° 42” north latitude and 77° 26” west longitude in eastern North Carolina. It is approximately 14 miles inland from the Atlantic Ocean and is bordered on the east by the Jacksonville sector of the New River. The only area of generally dry land lies in the northern sector, with the city of Jacksonville being approximately 3 miles to the north, across the New River. The southern through western approaches are primarily covered with pine trees and swamplands (see Map 1). Map 2 depicts the local flying area, which is defined as a 100 nautical mile radius, not to include over the ocean flights. The local forecast area is a 25 nautical mile radius as defined on Map 2.

102. METEORLOGICAL EQUIPMENT. Remote sights for the equipment are annotated on diagram 2. Most meteorological equipment located at the MCAS New River Weather Office comes under the cognizance of NISE EAST, Charleston, South Carolina. Meteorological equipment, maintained by Ground Electronics Weather Techs, includes the following: (See Diagram I)

ASOS - Automatic Surface Observation System

LPATS - Lighting Position and Tracking System

WSR-88D - Weather Surveillance Radar (Doppler).

ML-121 - Ceiling Light. 800 foot base line.

MIDDS - METOC Data Display System

GMQ-27 - Weather Vision (obsolete, pending disposition)

Other Meteorological equipment includes the following:

ML-448 - Aneroid Barometer. Located on the south wall of the Forecast lab at a height of 5' 1" above ground level.

ML-41 - Thermoscreen. Located Northeast of building 843.

ML-247 - Theodolite. The mount is located 183 feet Northwest of building 843

ML-217 - Four-Inch Plastic Rain Gauge. Located Northeast of building 843.

PMQ-3 - Hand Held Anemometer.

ML-3D - Marine Barograph.

ML-119 - Clinometer. (Beer bottle) For use with the ML-121.

103. COMMUNICATIONS CIRCUITS AND EQUIPMENT.

A. CMW - (Contel Meteorological Workstation) These two workstations are the main source of meteorological information. This high speed system is tied to and managed by the Air Force Automated Weather Network (AWN) at Tinker AFB, Oklahoma. Local data requirements are evaluated and updated annually as governed by this office and Air Weather Service Regulations. GTE Spacenet provides the lines, equipment and maintenance.

B. MIDDS - (METOC Data Display System) An integrated computer system composed of one server and three workstations. The MIDDS combines several systems into one to include the PCGRAFAX, GSIDS, CMW products, WSR-88D Products, NODDS/OPARS, AFDIS plus many more programs. The MIDDS is the primary source of weather information. The system is located in the Forecaster's Briefing Area.

1. The PCGRAFAX system receives National Weather Service facsimile products from a geostationary satellite that is maintained by Equatorial Communications Company.

2. The GSIDS (Geostationary Satellite Image Display System) receives selected satellite products (Visual, IR and Water Vapor) from Suitland, MD.

3. OPARS/NODDS - This program allows acquisition of products from FNMOD, Monterey, CA.

A. METRO - A pilot to forecaster radio, located in the Forecaster's Briefing Area, allows direct communication between the forecaster and the pilot white he is in flight. The METRO radio transmits and receives on 250.6 MHz's.

B. ASOS - (Automated Surface Observing System) Surface meteorological observation data are transmitted from sensors to ACU via UHF link. OID is located in the Observer's lab, while the two VDU's are located in the Forecaster's lab and the OICINCOIC office. ASOS acquires, validates, formats, archives and disseminates surface weather conditions. The ASOS is connected to the AOMC (ASOS Operations and Monitoring Center) via dial-up telephone lines.

C. WSR-88D - (Weather Surveillance Radar) The WSR-88D is located in Newport NC. The Station has a Primary User Processor (PUP) that is connected to the main unit by a dedicated telephone line. It also has the capability to dial-up other WSR-88Ds.

D. Telephone Service - This office possesses the following telephone access:

Weather Admin - 6828
OIC - 6179
NCOIC, TRNG, WX Admin - 6615
Forecast and Observation - 6322/6968
Meteorological Mobile Facilities - 6611
Prerecorded Weather Forecast - TBD
Commercial Prefix - (910) 450
DSN Prefix - 750
Fax - 6135

E. Tower Hotline - This dedicated telephone line, located in the Observer's lab, is used to disseminate and solicit weather information to and from the tower.

F. Aircraft Emergency Hotline - This dedicated telephone line, located in the Observer's lab, is used to disseminate information about aircraft emergencies.

G. Weather Vision - This system is used to provide up to date weather information down to the squadron ready rooms. This system is comprised of a computer located in the observer area, which is used to input the weather information, and TV monitors that are located in each ready room.

104. SUPPORT.

A. Commands Supported

1. MCAS New River. Support to the station includes:

- Weather observations and forecasts.
- Flight forecasting for the VIP logistics aircraft (C-12).
- Monthly Climatological, Astronomical and Tidal data.
- Special Climo studies as requested.
- Local Weather Warnings establishment and dissemination.
- Destructive Weather Warnings are set by MCB Camp Lejeune and disseminated by weather.
- Tower Visibility Classes to certify tower personnel.

- Wind Chill information and Wet Bulb Globe Temperature Index (WBOTI) for heat stress.

- Other METOC data as required.

2. CG 2nd MAW. Support to the Wing includes:

   - Flight forecasting for the tenant groups (MAO 26 and MAO 29). Aircraft include CH-46, CH-53, UH-1, and AH-l.

   - Local Weather Warnings establishment and dissemination. Destructive Weather Warnings are set by MCB Camp Lejeune and disseminated by weather.

   - Special Climatology, Astronomical, and Tidal data for operations, exercises and evaluations.

   - Deploying squadron briefings. (To include staff mission, planning).

   - Personnel and meteorological mobile facilities (MetMF) support for exercises and operations.

   - Approximately 150 weather briefings (DD-175-l) are conducted monthly.

   - OPARS.

   - HWD (Horizontal Weather Depiction).

   - Instrument Ground School (IGS) classes.

   - Upper Air Observations.

   - Electro-Optical Tactical Decision Aids (EOTDA's).

   - Mobile Oceanographic Support System (MOSS) Products. This system determines the effects of the environment on sensors, platforms and weapon systems.

   - Other METOC support as required.

3. CG Camp Lejeune. Support to Camp Lejeune includes:

   - Daily 12, 24, 48, 72 and 96-hour forecasts.

   - Sound Focus Forecasts.

- Special Climatology, Astronomical and Tidal data for operations, exercises and evaluations.

- Upper Air Observations.

- STAFF Briefings (SOCEX, CPX, CAPEX).

- Local Weather Warnings establishment and dissemination. Destructive Weather Warnings are set by MCB Camp Lejeune and disseminated by weather.

- Other support as requested.

4. Transient. Aircraft. Primary support is comprised of flight forecasting for military and government aircraft for training and contingency purposes.

5. Other. Due to the close working relations with MCAS Cherry Point, MCAS Beaufort, and MCAF Quantico, the Marine Weather Facilities on the Fast Coast provide mutual supporting services. These include transmission of observations and forecasts during equipment outages and other assistance as requested by observers, forecasters and administrative personnel.

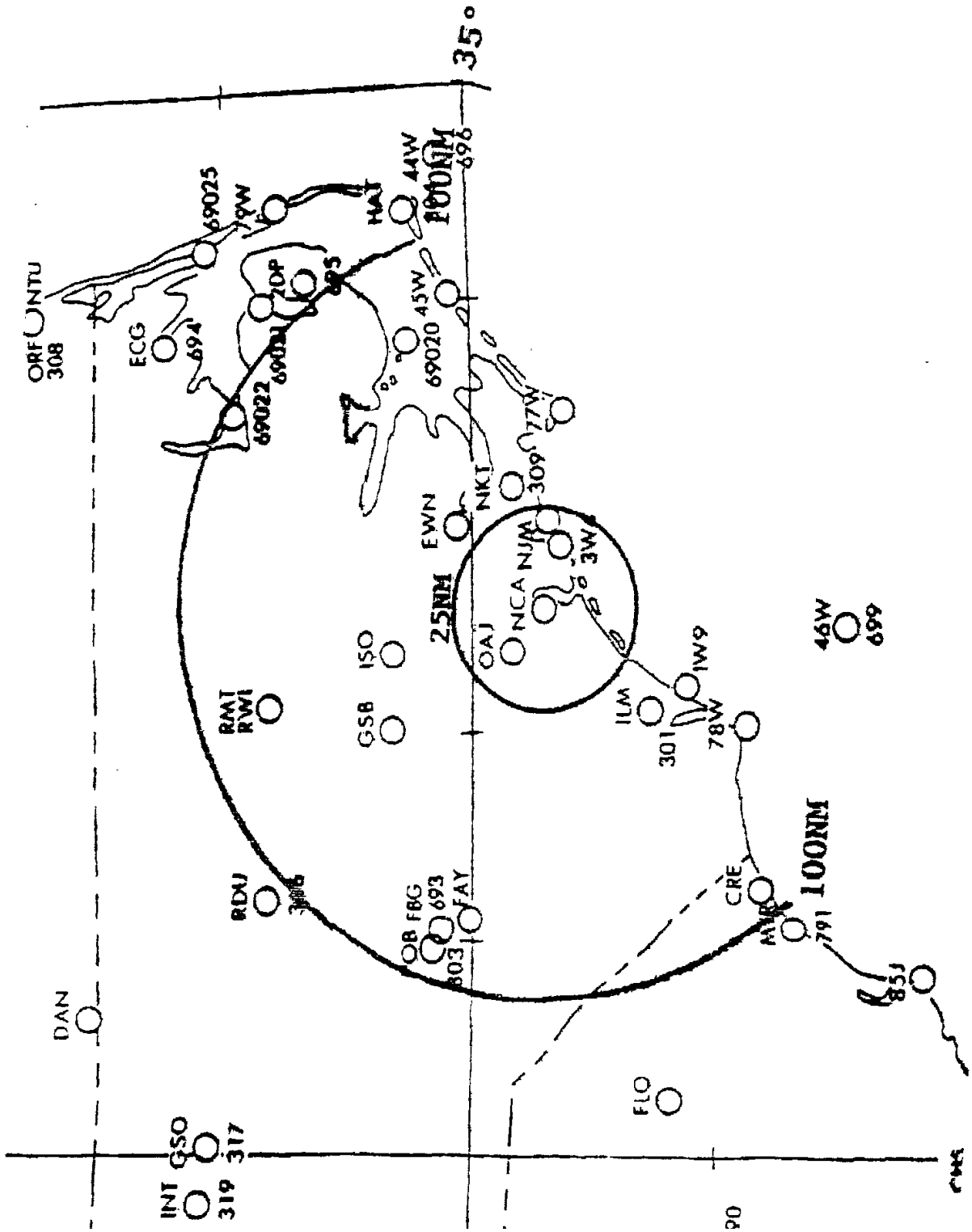
B. Other Support.

1. Operations/Exercises/Evaluations/Training. Frequently, support is requested for the various needs of the station and tenant organizations. This support could entail] squadron briefings, NATOPS classes, seasonal transition safety classes, climo studies and other possibilities. Support is provided as local assets can accommodate. All such requests are forwarded to the Weather Service Officer/NCOIC for validation.

2. Specialized forecasts and support are contained in Chapter 4.

C. Aircraft. The primary aircraft briefed by this office include CH-46, CH-53, UH-I, AH-I, and C-12's. It is imperative that the forecaster fully understand these aircraft and their specific characteristics and limitations. (See Appendix D).

D. Meteorological Mobile Facilities. (MetMF) The Weather Service mission aboard Marine Corps Air Station New River is shared through the combined efforts of station personnel and through the FAP agreement with MWSS 272. In addition to the station facilities and equipment listed, MWSS 272 holds custody of a complete 4 van complex: a Primary, Secondary, and the Integration unit. Along with this, a Mark IV Satellite van is positioned separately.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100NM
696
70P
45W
69020
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NKT
EWN
NJM
3W
NCA
25NM
OAJ
ISO
GSB
RMT
RWI
ILM
301
78W
1W9
46W
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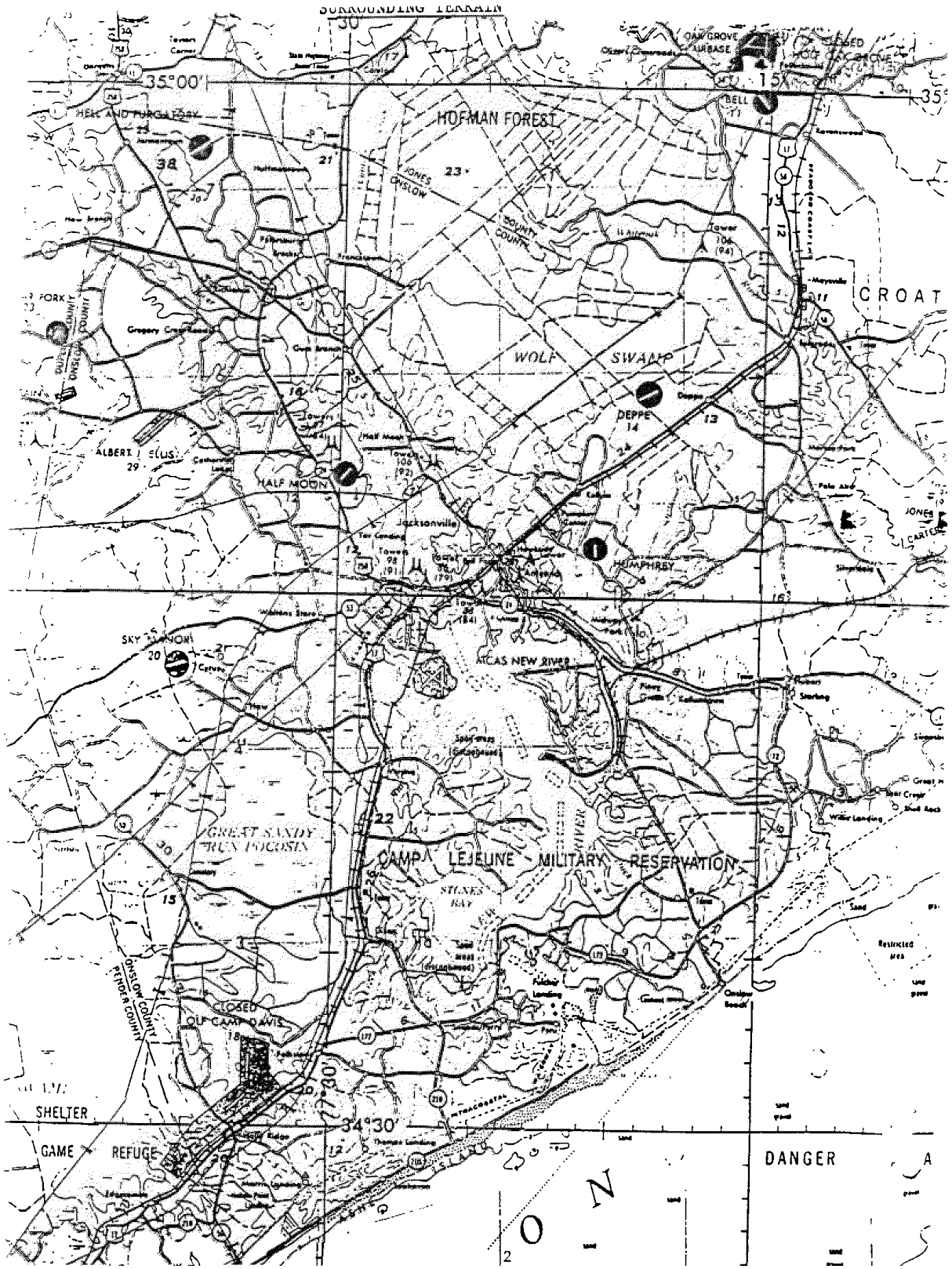
SURROUNDING TERRAIN
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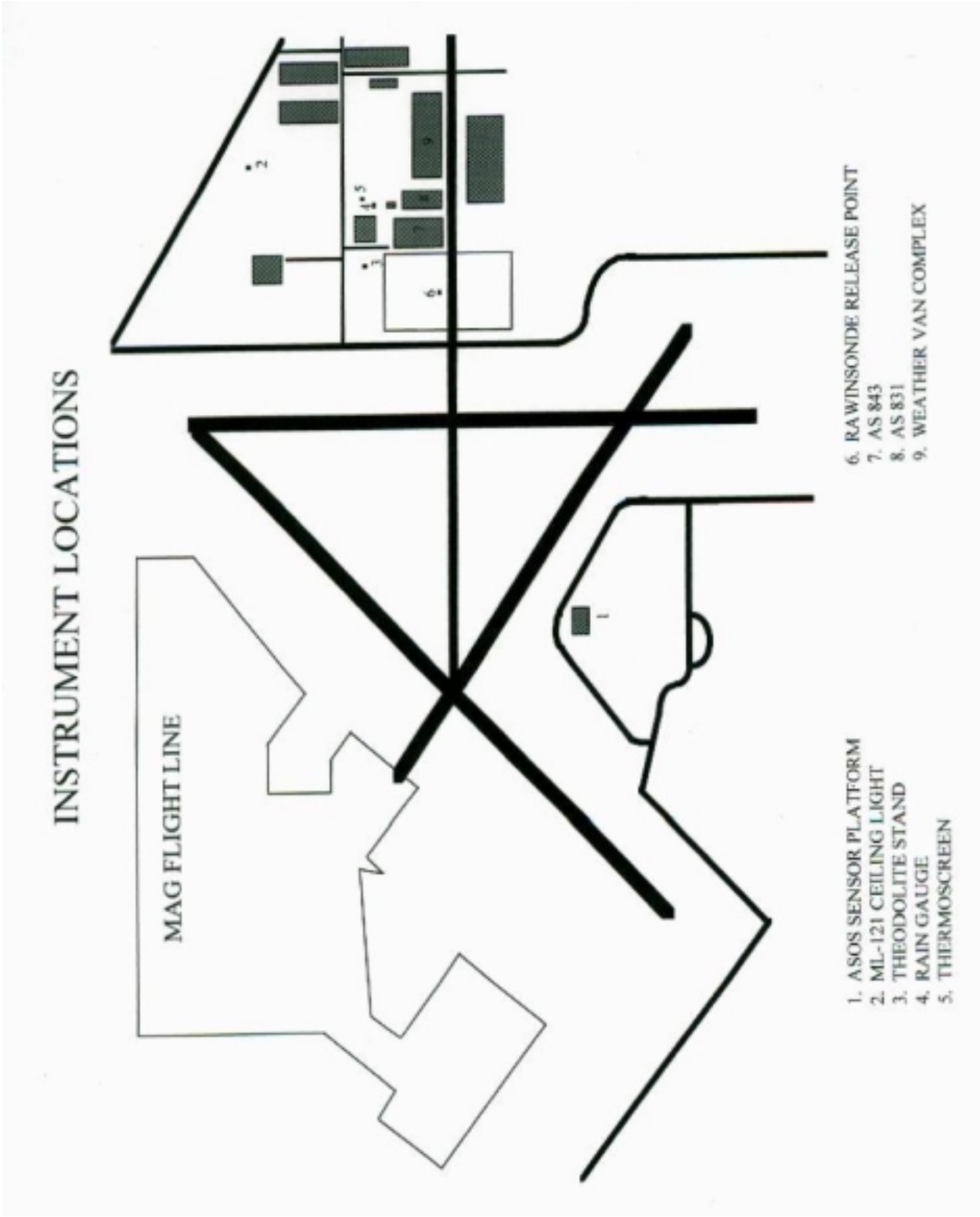
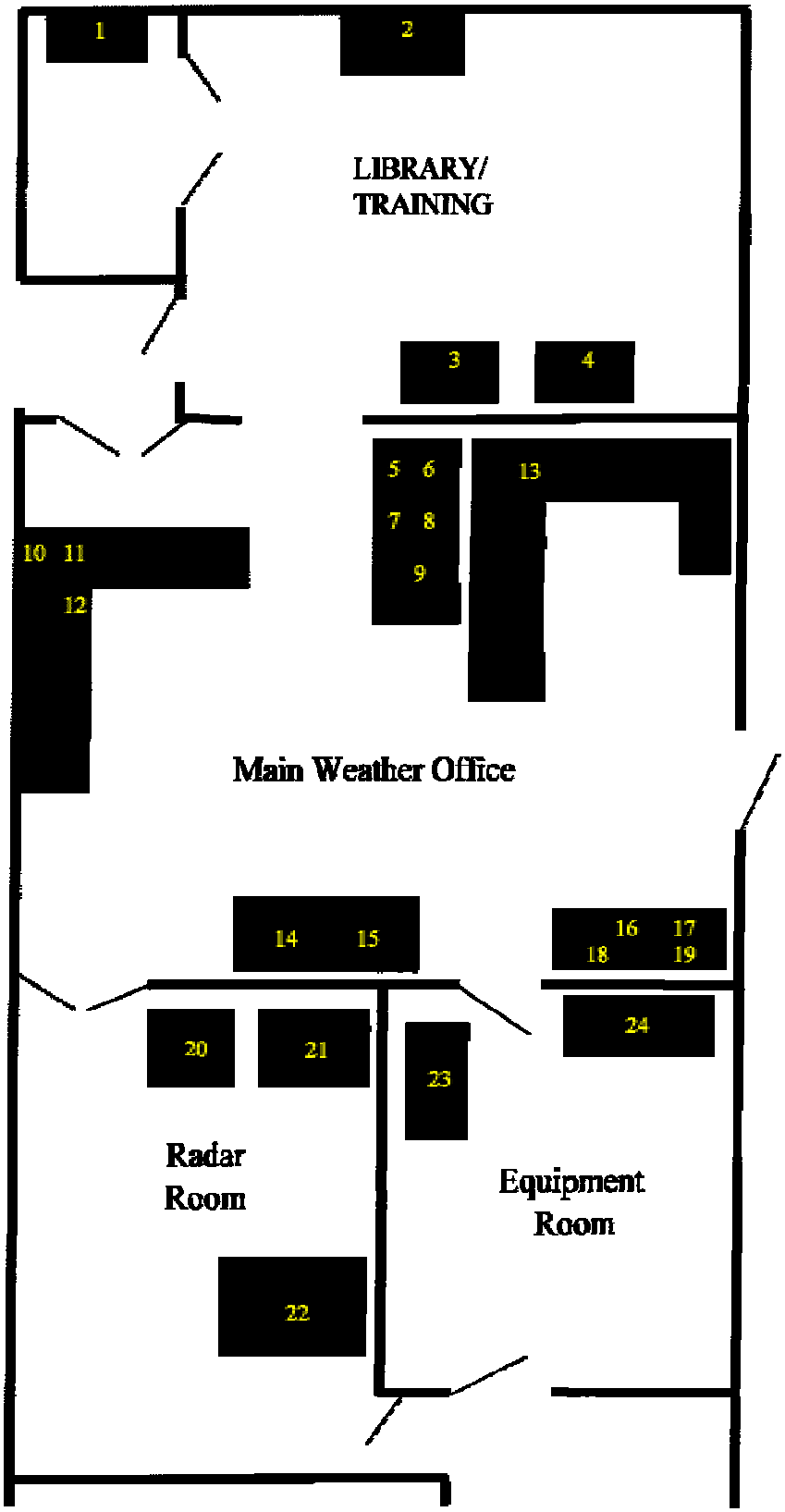
HOFMAN FOREST
JONES
ONSLOW
BOUNDY COUNTY
CROAT
WOLF SWAMP
DEPPE
HALF MOON
Jacksonville
HUMPHREY
ALBERT E (US)
SKY MANOR
NEW RIVER
GREAT SANDY RUN FOCUSIN
CAMP LEJEUNE MILITARY RESERVATION
STONES BAY
CLOSED
CAMP DAVIS
ONSLOW COUNTY
PENDER COUNTY
SHELTER
GAME REFUGE
34°30'
DANGER
ON


INSTRUMENT LOCATIONS
MAG FLIGHT LINE
1. ASOS SENSOR PLATFORM
2. ML-121 CEILING LIGHT
3. THEODOLITE STAND
4. RAIN GAUGE
5. THERMOSCREEN
6. RAWINSONDE RELEASE POINT
7. AS 843
8. AS 831
9. WEATHER VAN COMPLEX



1. UYK-83
2. CONOES
3. MIDDS WS3
4. LAN COMPUTER
5. FAX MACHINE
6. GMQ-27 MONITOR
7. METRO
8. LPATS
9. MIDDS WOT
10. ASOS MONITOR
11. MIDDS SERVER
12. FORECASTER CMW
13. MIDDS WS1
14. WSR-88D APS TERM
15. WSR-88D PUP
16. ASOS TERMINAL
17. OBS CMW
18. BAROMETER
19. MICROBAROGRAPH
20. WSR-88D UPS
21. WSR-88D SYS CON
22. WSR-88D PROCESSOR
23. ASOS PROCESSOR
24. GMQ-27 WX VISION

CLIMATE

201. INTRODUCTION. In order to be a proficient forecaster at MCAS New River, an in-depth understanding of air/sea interactions, dynamics of the atmosphere, Climatology and current trends is required.

202. LOCAL CLIMATOLOGY.

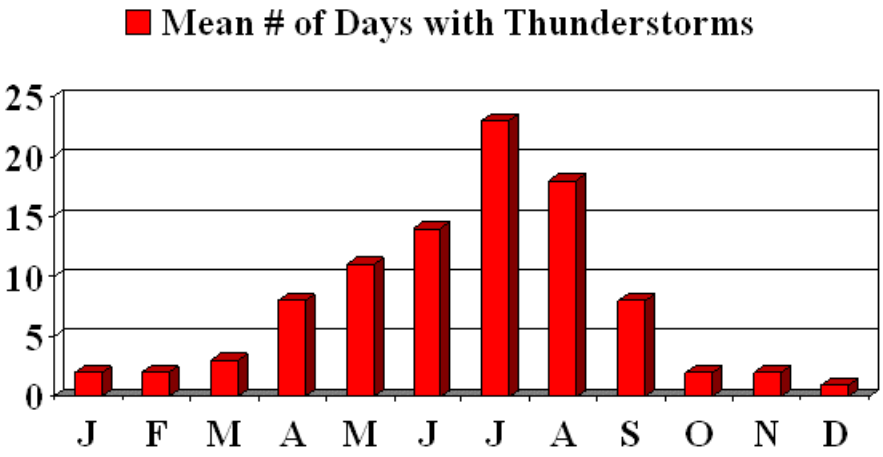
A. Temperature. New River's average seasonal temperatures are: Spring (March, April and May) 62 F; Summer (June, July and August) 79 F; Fall (September, October and November) *65* F; Winter (December, January and February) 46 F. The mean annual temperature is 63 F with a daily average maximum of 73 F and a daily average minimum of 53 F. The absolute maximum temperature for the station is 102 F occurring in July of 1993. July is normally the hottest month of the year. The mean seasonal relative humidity is: Spring 67%, Summer 74%, Fall 72% and Winter 67%. See diagram 3 on page 11 for a graphical display of the temperatures.

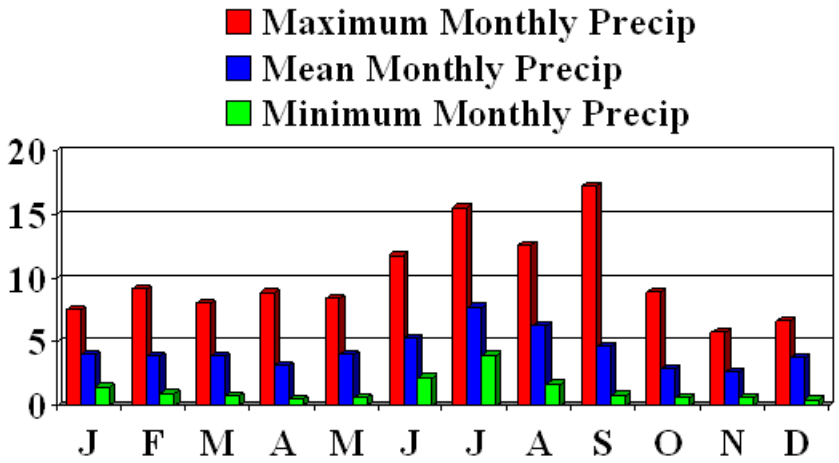
B. Precipitation. On August 19, 1981, MCAS New River recorded its maximum precipitation during a 24-hour period: 6.71 inches of rain. Historically, July is the wettest month with an average mean monthly rainfall of 7.7 inches. November is the driest month with 2.6 inches of mean monthly rainfall. The mean rainfall per year at MCAS New River is 52.4 inches. The 19.1 inch snowfall on March 2nd, 1980, established a new record for this station. The mean annual snowfall for this station is 3.0 inches. See diagram 3 on page it for a graphical display of precipitation.

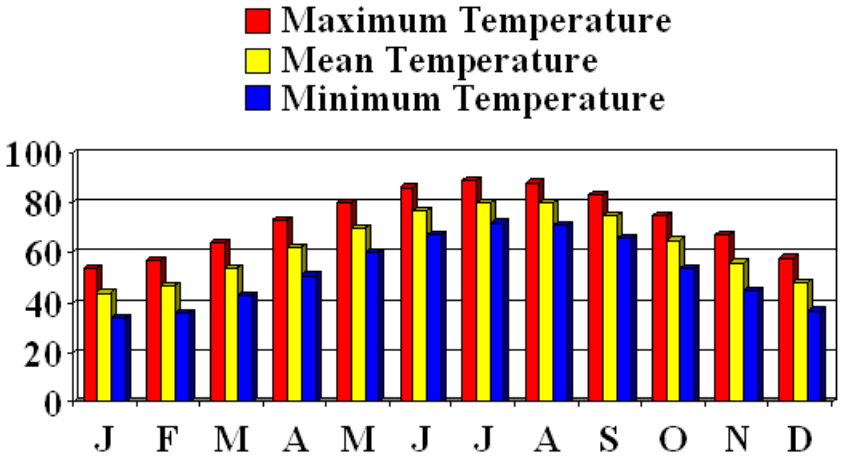
C. Winds. The prevailing surface wind direction, September through February is northerly at 6 knots. The period of April through August has a prevailing southerly wind of 7 knots. The peak wind was northwesterly at 72 knots recorded during February 1976.

D. Weather Conditions. On a monthly average, MCAS New River has 19 days with visibility less than 7 miles due to fog. Annually, VFR conditions are experienced 91.2% of the time, IFR conditions are experienced 8.8% of the time and below minimum conditions are experienced 1.1% of the time. The majority of thunderstorms occur during June, July and August with July having the most thunderstorms during the year. See diagram 3 on page 11 for a graphical representation.

E. Sea Water. The average sea water temperature covers an annual spectrum from 50 to 78 F, with an annual mean temperature of 64 F. See Appendix A for a breakdown of sea water temperatures off the North Carolina coast.


Mean # of Days with Thunderstorms
25
20
15
10
5
0
J F M A M J J A S O N D


Maximum Monthly Precip
Mean Monthly Precip
Minimum Monthly Precip
20
15
10
5
0
J F M A M J J A S O N D


Maximum Temperature
Mean Temperature
Minimum Temperature
100
80
60
40
20
0
J F M A M J J A S O N D

203. MONTHLY CLIMATOLOGICAL SYSOPSIS AND SUMMARY.

A. January.

The Icelandic Low is displaced southward and intensifies with *its* mean position located near 600 north and 370 west.

The Bermuda High is now an elongated high-pressure system covering the entire southern portion of the North Atlantic Ocean. The high-pressure center is generally over the area of the Canary Islands, with a ridge extending over the southeastern part of the United States.

The gradient flow between the southwestern section of the Icelandic Low and the Bermuda High ridge over the southeastern United States causes gusty north-northwesterly winds over this area.

The Polar Front is oriented more northeast to southwest with its mean position extending from about 47 degrees north and 30 degrees west, then southwestward near Bermuda and continuing down across central Florida, becoming more east-west into the Gulf of Mexico. Waves developing in the Gulf of Mexico area move rapidly along the front, reaching this area in 36 to 48 hours. Often these waves become a well intensified storm just off Cape Hatteras. Cold fronts passing this area often stagnate just offshore and intensify.

Fog and ground fog are common in January, generally occurring during the early morning hours with a light northeasterly flow. Fog will occur with the advance of warm fronts also, lasting from two to three days. Still, flying conditions are good with VFR conditions existing 86.3% of the time.

The greatest amount of snow generally occurs when a low develops on the Polar Front in the northern part of Texas, then moves eastward and passes offshore just to the south of the New River area.

Thunderstorms are few and far between, but may occur with frontal systems passing through.

JANUARY CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	44
Average Daily Maximum	54
Average Daily Minimum	34
Extreme Maximum 1986	86
Extreme Minimum 1984	0

VISIBILITY: Equal or Greater than

¼ Mile	99.2%
½ Mile	98.6%
1 Mile	96.9%
3 Miles	91.1%
6 Miles	78.3%

CEILING: Equal or Greater than

100 ft	99.6%
200 ft	99.0%
500 ft	95.1%
1000 ft	87.9%
3000 ft	76.5%
5000 ft	70.0%
No Ceiling	51.7%

PRECIPITATION:

Monthly Mean	4.00”
Extreme Maximum	7.53”
Extreme Minimum	1.41”
24 Hour Maximum 1984	5.90”
Mean Monthly Snowfall	0.49”
24 Hour Maximum 1965	2.40”

RELATIVE HUMIDITY:

Mean Relative Humidity		69.5%
Mean at	0100	76.2%
	0700	79.2%
	1300	57.3%
	1900	69.6%

FIELD CONDITIONS AND SKY COVER:

VFR	86.3%
IFR	13.7%
Below Minimums	1.3%
Mean Sky Cover (tenths)	5.9
Clear	26.1%
Scattered (0.1 – 0.5)	18.8%
Broken (0.6 - 0.9)	18.9%
Overcast (1.0)	36.2%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	2
Rain and/or Drizzle	13
Snow	1
Fog	18
Smoke and/or Haze	16
Obstruction to Vision	22

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	11.5%	N	7.0 Knots
Second Most Frequent	9.6%	W	6.7 Knots
Third Most Frequent	7.6%	WNW	7.2 Knots

Extreme Peak Gust NNW 56 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.9%
11-16 Knots	8.8%
07-10 Knots	24.4%
04-06 Knots	29.7%
01-03 Knots	20.6%
Calm	15.6%

B. February.

The Icelandic Low is still deep and well pronounced; its mean position is almost the same as in January.

There is relatively little change in the Bermuda ~ pressure pattern covering the southern portion of the North Atlantic Ocean. The center of the high remains around 1020 millibars, with a ridge extending over the Eastern Seaboard.

The gradient flow between the Icelandic Low and the western ridge of the Bermuda High causes gusty north-northwesterly winds to prevail over the local area.

As in January, the Polar Front is being displaced out over the Gulf of Mexico and orientated northeast-southwest along the east coast. Waves will continue to develop on the Polar Front. These systems reach the area in 36 to 48 hours. Occasionally, the Polar Front will lie east to west, entering the Atlantic Ocean in the area of Cape Hatteras. This may cause increased cloudiness in this area, but seldom any weather. When a slow moving wave develops off Cape Hatteras on the front, then showers may occur for a short period.

The amount of fog is just about the same as in January. It occurs generally before warm frontal passage and as the winds become more northeasterly.

Thunderstorms are rare, occurring mostly with frontal activity.

FEBRUARY CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	47
Average Daily Maximum	57
Average Daily Minimum	36
Extreme Maximum 1982	86
Extreme Minimum 1965	13

VISIBILITY: Equal or Greater than

¼ Mile	99.4%
½ Mile	98.9%
1 Mile	97.9%
3 Miles	94.1%
6 Miles	80.8%

CEILING: Equal or Greater than

100 ft	99.6%
200 ft	99.2%
500 ft	95.8%
1000 ft	89.9%
3000 ft	80.8%
5000 ft	73.4%
No Ceiling	55.0%

PRECIPITATION:

Monthly Mean	3.90”
Extreme Maximum	9.10”
Extreme Minimum	0.90”
24 Hour Maximum 1984	4.20”
Mean Monthly Snowfall	1.07”
24 Hour Maximum 1973	13.40”

RELATIVE HUMIDITY:

Mean Relative Humidity		66.9%
Mean at	0100	75.2%
	0700	77.9%
	1300	53.8%
	1900	66.1%

FIELD CONDITIONS AND SKY COVER:

VFR	89.0%
IFR	11.0%
Below Minimums	0.9%
Mean Sky Cover (tenths)	5.7
Clear	25.7%
Scattered (0.1 – 0.5)	22.0%
Broken (0.6 - 0.9)	18.8%
Overcast (1.0)	33.5%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	2
Rain and/or Drizzle	11
Snow	1
Fog	14
Smoke and/or Haze	13
Obstruction to Vision	18

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	11.4%	N	6.2 Knots
Second Most Frequent	7.9%	S and W	7.1/ 6.8 Knots
Third Most Frequent	6.3%	NNE and NNW	6.4/ 6.7 Knots

Extreme Peak Gust 1976 NW 72 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.9%
11-16 Knots	10.3%
07-10 Knots	24.6%
04-06 Knots	29.4%
01-03 Knots	20.7%
Calm	14.1%

C. March.

The Bermuda High shows considerable development and expands slightly northward of its February position. Consequently, the outbreaks of polar air along the coast are less frequent, with about 1/3 less Polar Fronts reaching Bermuda. The increase of moist air overriding polar air over this area is conducive to waves developing on the Polar Front lying offshore.

Intense highs and lows are common in March. When a high is centered over New Brunswick, the local area is dominated by clear skies, cool temperatures, and northeasterly winds for several days at a time. On the other hand, this area may be characterized by strong, fast-moving cold fronts, with waves still developing in the Gulf of Mexico.

The center of waves developing on the Polar Front in the Gulf of Mexico generally moves to the northeast along the coast passing out to sea near Cape Hatteras. These waves reach this area in about 36 to 48 hours. As they approach from the southwest, the rain shield will extend 300 to 500 miles ahead of the center, with strong northeasterly winds. The result of an approaching wave may cause rain to fall at this station for at least 24 to 48 hours.

Thunderstorms occasionally will occur with these waves, or the passage of a front. Thunderstorms are considered to be few in number in March, and air mass thunderstorms seldom occur. Yet, just offshore, thunderstorm activity is on the increase due to the Gulf Stream's effect on fronts moving offshore.

Any snowfall that occurs is usually associated with frontal waves that move across the southern states, approaching this area from the west-southwest, moving offshore just south or near New River.

Fog and ground fog occur often in February, usually during the early morning with a light northeasterly flow, or with a warm frontal system moving into this area.

Flying conditions are similar to February with VFR conditions existing about 88.7% of the time. Gusty northwesterly winds are often a hazard to flying in March.

MARCH CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	54
Average Daily Maximum	64
Average Daily Minimum	43
Extreme Maximum 1986	92
Extreme Minimum 1980	12

VISIBILITY: Equal or Greater than

¼ Mile	98.8%
½ Mile	98.4%
1 Mile	97.6%
3 Miles	93.1%
6 Miles	80.4%

CEILING: Equal or Greater than

100 ft	99.4%
200 ft	98.4%
500 ft	95.3%
1000 ft	89.7%
3000 ft	79.8%
5000 ft	72.1%
No Ceiling	51.1%

PRECIPITATION:

Monthly Mean	3.90”
Extreme Maximum	8.00”
Extreme Minimum	0.75”
24 Hour Maximum 1994	4.63”
Mean Monthly Snowfall	1.06”
24 Hour Maximum 1980	19.10’

RELATIVE HUMIDITY:

Mean Relative Humidity		66.3%
Mean at	0100	76.0%
	0700	80.0%
	1300	51.4%
	1900	64.7%

FIELD CONDITIONS AND SKY COVER:

VFR	88.7%
IFR	11.3%
Below Minimums	2.6%
Mean Sky Cover (tenths)	6.2
Clear	21.8%
Scattered (0.1 – 0.5)	20.8%
Broken (0.6 - 0.9)	19.1%
Overcast (1.0)	38.0%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	3
Rain and/or Drizzle	10
Snow	1
Fog	18
Smoke and/or Haze	17
Obstruction to Vision	22

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	8.8%	S	7.9 Knots
Second Most Frequent	8.3%	W	7.5 Knots
Third Most Frequent	8.1%	N	6.4 Knots

Extreme Peak Gust 1993 SW 62 Knots

Percent of Time Wind Was:

17 Knots or Greater	1.5%
11-16 Knots	10.7%
07-10 Knots	27.3%
04-06 Knots	31.1%
01-03 Knots	17.9%
Calm	11.5%

D. April.

The Bermuda High is displaced a few degrees north of its March position, as it is well on its journey northward for the summer. The Icelandic Low, in the same turn, starts to weaken and move northward.

Cold frontal passages are about the same as in March, although the outbreak of cold air from Canada grows less frequent toward the end of the month.

At least one wave will develop on the Polar Front in the Gulf of Mexico area and move northeastward along the front.

During the first part of the month, the winds are still gusty from the north-northwest, however, the frequency of winds flowing from a southerly direction is increasing. The mean humidity for April is 64.7%, the lowest for the year.

Air mass thunderstorms are on the increase, and occur almost three times as often as in March. Thunderstorms are often associated with frontal passages and intensity out over thc Gulf Stream, but on the whole, stormy weather offshore is not as great as in March, and does not last long.

Fog is still common with a light northeasterly wind. Flying conditions are outstanding with VFR conditions existing 94.8% of the time, (the highest average of the year).

APRIL CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	62
Average Daily Maximum	73
Average Daily Minimum	51
Extreme Maximum 1984	95
Extreme Minimum 1972	26

VISIBILITY: Equal or Greater than

¼ Mile	00%
½ Mile	100%
1 Mile	99.8%
3 Miles	97.8%
6 Miles	87.3%

CEILING: Equal or Greater than

100 ft	100%
200 ft	99.9%
500 ft	99.0%
1000 ft	95.8%
3000 ft	87.9%
5000 ft	80.8%
No Ceiling	59.9%

PRECIPITATION:

Monthly Mean	3.10”
Extreme Maximum	8.80”
Extreme Minimum	0.50”
24 Hour Maximum 1964	4.33”

RELATIVE HUMIDITY:

Mean Relative Humidity		64.7%
Mean at	0100	77.9%
	0700	79.1%
	1300	47.3%
	1900	62.8%

FIELD CONDITIONS AND SKY COVER:

VFR	94.8%
IFR	5.2%
Below Minimums	0.1%
Mean Sky Cover (tenths)	5.4
Clear	27.3%
Scattered (0.1 – 0.5)	22.9%
Broken (0.6 - 0.9)	22.9%
Overcast (1.0)	27.0%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	8
Rain and/or Drizzle	8
Snow	0
Fog	16
Smoke and/or Haze	18
Obstruction to Vision	22

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	12.1%	SSW	7.9 Knots
Second Most Frequent	9.4%	SSW	6.7 Knots
Third Most Frequent	8.6%	W	7.2 Knots

Extreme Peak Gust 1960 WSW 46 Knots

Percent of Time Wind Was:

17 Knots or Greater	1.5%
11-16 Knots	12.6%
07-10 Knots	29.7%
04-06 Knots	29.2%
01-03 Knots	17.0%
Calm	10.0%

E. May.

The Bermuda High continues to build northward, as the Icelandic Low weakens. Otherwise, the pressure pattern remains the same as in April.

Offshore weather is generally good as a whole, but thunderstorms and showers increase as fronts pass through, and out over the Gulf Stream.

Fronts tend to be orientated more east-west and often seem to remain stationary just to the north, with warm tropical air flowing over the station for several days. The prevailing wind direction is southerly, with the strongest gusts associated with thunderstorms. The frequency of cold frontal passage is less than in April.

Thunderstorm activity is still on the increase, occurring with frontal activity and the warm, unstable air mass. Frontal thunderstorms are caused by the wedge of cold air moving into this area and lifting the tropical air, causing convective type weather. Precipitation is greater than in April, increasing to a monthly mean of 4.00 inches. The average humidity for May is 70.7%.

Fog is also on the increase, occurring with a well defined gradient flow from the northeast after the passage of a frontal system. Fog and ground fog also occur with a very light southerly flow because of warmer air flowing from the Gulf Stream across cooler water, and inland over New River.

VFR weather is less than in April, but flying conditions are still excellent, with VFR conditions existing 93.1% of the time.

MAY CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	70
Average Daily Maximum	80
Average Daily Minimum	60
Extreme Maximum 1962	98
Extreme Minimum 1963	32

VISIBILITY: Equal or Greater than

¼ Mile	99.8%
½ Mile	99.3%
1 Mile	99.0%
3 Miles	95.9%
6 Miles	78.4%

CEILING: Equal or Greater than

100 ft	99.8%
200 ft	99.3%
500 ft	98.6%
1000 ft	95.4%
3000 ft	82.2%
5000 ft	73.7%
No Ceiling	52.4%

PRECIPITATION:

Monthly Mean	4.00”
Extreme Maximum	8.36”
Extreme Minimum	0.60”
24 Hour Maximum 1977	3.87”

RELATIVE HUMIDITY:

Mean Relative Humidity		70.7%
Mean at	0100	83.6%
	0700	82.6%
	1300	54.1%
	1900	60.0%

FIELD CONDITIONS AND SKY COVER:

VFR	93.1%
IFR	6.9%
Below Minimums	0.8%
Mean Sky Cover (tenths)	6.5
Clear	4.6%
Scattered (0.1 – 0.5)	24.6%
Broken (0.6 - 0.9)	29.8%
Overcast (1.0)	31.0%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	11
Rain and/or Drizzle	10
Snow	0
Fog	23
Smoke and/or Haze	22
Obstruction to Vision	26

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	12.8%	S	6.7 Knots
Second Most Frequent	9.1%	SSW	5.9 Knots
Third Most Frequent	8.1%	SW	5.2 Knots

Extreme Peak Gust S 51 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.2%
11-16 Knots	6.3%
07-10 Knots	27.9%
04-06 Knots	32.7%
01-03 Knots	11.0%
Calm	21.9%

F. June.

The Icelandic Low is very weak, with little to no influence on the local area.

The Bermuda High is slightly north of the May position. It is centered near 31 degrees north and almost midway between the west coast of Africa and the east coast of the United States, with the west ridge covering the eastern United States and the Mississippi Valley states.

The Bermuda High Ridge seems to build or move inland during the early morning hours and then moves eastward during the afternoons and evenings. The results of this oscillation are characterized by a pressure change of about 3 millibars along the coast, and by a decrease in the southwesterly wind as the ridge moves back eastward. With the intensification of the Bermuda High, the Polar Front seldom reaches this area.

The Polar Front is generally orientated on a more east-west position, often becoming almost stationary just south of Cape Hatteras. A band of thunderstorms generally accompanies the frontal system. Often, overcast skies of high clouds will prevail north of the Polar Front, while New River will be observing convective type clouds, associated with tropical air south of the system. If the Polar Front does pass through the area, thunderstorms and heavy rain generally occur at New River.

Air mass thunderstorms are on the increase. This is due to the increase in moist tropical air flowing around the west ridge of the Bermuda High. Thunderstorms in June usually produce heavy precipitation with strong gusty winds of short duration.

Weather offshore is almost the same as in May; however night and early morning thunderstorms occur more frequently.

June is considered the beginning of hurricane season (0] June - 30 November), however it is seldom that a hurricane reaches the New River area in the month of June.

Fog and ground fog are very common during the early morning hours in June. Most of the ground fog occurs with a light southerly flow; however if a frontal system should pass through the area with winds becoming northeasterly at 3 to 6 knots, deep fog will move over the station

VFR conditions are excellent in June, averaging 93.7% of the time.

JUNE CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	77
Average Daily Maximum	86
Average Daily Minimum	67
Extreme Maximum 1981	101
Extreme Minimum 1966	45

VISIBILITY: Equal or Greater than

¼ Mile	99.8%
½ Mile	99.6%
1 Mile	98.9%
3 Miles	96.1%
6 Miles	73.7%

CEILING: Equal or Greater than

100 ft	100%
200 ft	99.0%
500 ft	98.6%
1000 ft	96.0%
3000 ft	82.5%
5000 ft	76.2%
No Ceiling	51.7%

PRECIPITATION:

Monthly Mean	5.20”
Extreme Maximum	11.82”
Extreme Minimum	2.17”
24 Hour Maximum 1974	2.77”

RELATIVE HUMIDITY:

Mean Relative Humidity		73.7%
Mean at	0100	85.7%
	0700	84.1%
	1300	58.4%
	1900	72.2%

FIELD CONDITIONS AND SKY COVER:

VFR	93.7%
IFR	6.3%
Below Minimums	0.4%
Mean Sky Cover (tenths)	6.8
Clear	10.7%
Scattered (0.1 – 0.5)	25.7%
Broken (0.6 - 0.9)	34.4%
Overcast (1.0)	29.2%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	14
Rain and/or Drizzle	11
Snow	0
Fog	24
Smoke and/or Haze	23
Obstruction to Vision	27

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	10.9%	S	5.6 Knots
Second Most Frequent	10.5%	SSW	5.2 Knots
Third Most Frequent	8.7%	SW	5.0 Knots

Extreme Peak Gust 1982 NW 54 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.2%
11-16 Knots	3.5%
07-10 Knots	22.7%
04-06 Knots	37.0%
01-03 Knots	25.0%
Calm	11.6%

G. July.

The western ridge of the Bermuda High covers the Eastern Seaboard states most of the time during July. This circulation keeps New River under a southwesterly flow of hot, humid, tropical air. The Bermuda High has reached its northern most position.

Due to the blocking ridge, cold fronts seldom reach this station in July. When they do, they are usually orientated east-west. Generally, these fronts produce very little weather, but will occasionally enhance thunderstorm activity.

Thunderstorms that occur at this station are mostly air mass type, associated with a southern flow of tropical air. Thunderstorms are common just offshore at night, developing near midnight, and reaching their maximum intensity in the early morning hours. Most rainfall at New River is associated with thunderstorms, or with hurricanes that may move into the area. July may not have long periods of rainla1l~ but there is no doubt that more rain falls during this month than any other month of the year. As much as 5.30 inches of rain has fallen in a twenty-four hour period, caused by thunderstorms, which are more frequent in July than during any other month.

Fog and ground fog occur often in July, but the fog does not hinder flying conditions to any great extent. The percentage of IFR weather is minimal and is caused most of the time by thunderstorms. VFR conditions exist 94.7% of the time.

July, with a mean temperature of 80.0 F, is the honest month at New River. Temperatures in excess of 100 F have occurred occasionally, with a maximum of 102 F occurring in 1993.

JULY CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	80
Average Daily Maximum	89
Average Daily Minimum	72
Extreme Maximum 1993	102
Extreme Minimum 1975/88	54

VISIBILITY: Equal or Greater than

¼ Mile	99.8%
½ Mile	99.7%
1 Mile	99.2%
3 Miles	95.5%
6 Miles	68.7%

CEILING: Equal or Greater than

100 ft	100%
200 ft	99.9%
500 ft	99.5%
1000 ft	97.9%
3000 ft	85.0%
5000 ft	77.9%
No Ceiling	50.0%

PRECIPITATION:

Monthly Mean	7.70”
Extreme Maximum	15.59”
Extreme Minimum	3.92”
24 Hour Maximum 1996	6.87”

RELATIVE HUMIDITY:

Mean Relative Humidity		76.8%
Mean at	0100	87.5%
	0700	86.3%
	1300	62.4%
	1900	75.8%

FIELD CONDITIONS AND SKY COVER:

VFR	94.7%
IFR	5.3%
Below Minimums	2.2%
Mean Sky Cover (tenths)	6.8
Clear	9.4%
Scattered (0.1 – 0.5)	27.7%
Broken (0.6 - 0.9)	35.2%
Overcast (1.0)	27.7%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	23
Rain and/or Drizzle	14
Snow	0
Fog	22
Smoke and/or Haze	24
Obstruction to Vision	27

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	12.4%	SSW	6.0 Knots
Second Most Frequent	10.0%	WSW	4.7 Knots
Third Most Frequent	9.4%	WNW	4.5 Knots

Extreme Peak Gust 1996 NE 94 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.0%
11-16 Knots	1.0%
07-10 Knots	13.8%
04-06 Knots	36.4%
01-03 Knots	31.8%
Calm	17.0%

H. August.

The Bermuda High pressure system is found migrating to the south with the approach of fall and winter. The mean center is slightly south of the July position, with the west ridge extending inland over the southeastern United States. This synoptic situation keeps New River "rider the influence of warm, moist, tropical air.

The Icelandic Low is becoming more pronounced and is moving slowly southward.

August marks the month of maximum hurricane development. Usually, after the middle of the month, Hurricanes develop quite frequently just north of the Lesser Antilles. Their mean course is generally westward, passing just north of Puerto Rico in the form of small storms. They continue northwestward, following the southwest boundary of the Bermuda High, as they intensify. After leaving the Greater Antilles area, the hurricanes can be expected to reach this area within four to five days. Often these storms travel in an erratic path and deviate from the normal expected course.

Air mass thunderstorms occur quite often due to the warm moist, tropical air flowing around the western boundary of the Bermuda High. Thunderstorms, existing offshore and along the coastline, are more intense when the air flow deviates from the west, and becomes more north or northeasterly. Thunderstorms are generally less frequent than during July.

Very few frontal systems pass this area except during the latter part of the month. When they do, they are usually weak and dry with very little associated weather.

August is considered to be a hot, humid, wet month. It is common for the temperature to reach the middle 90's for several days at a time. Most precipitation for the month occurs with hurricanes or air mass thunderstorms. August holds the record for the maximum amount of precipitation for a 24-hour period, with 6.71 inches.

Fog and ground fog occur often, but the frequency of IFR conditions is considered minimal. On the other hand, VFR conditions for August are experienced 92.6% of the time.

AUGUST CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	80
Average Daily Maximum	88
Average Daily Minimum	71
Extreme Maximum 1968	101
Extreme Minimum 1982	55

VISIBILITY: Equal or Greater than

¼ Mile	99.8%
½ Mile	99.5%
1 Mile	98.9%
3 Miles	94.6%
6 Miles	66.8%

CEILING: Equal or Greater than

100 ft	100%
200 ft	99.8%
500 ft	98.6%
1000 ft	96.0%
3000 ft	80.7%
5000 ft	73.3%
No Ceiling	50.7%

PRECIPITATION:

Monthly Mean	6.20”
Extreme Maximum	12.64”
Extreme Minimum	1.69”
24 Hour Maximum 1981	6.71”

RELATIVE HUMIDITY:

Mean Relative Humidity		78.3%
Mean at	0100	88.5%
	0700	88.8%
	1300	63.5%
	1900	85.1%

FIELD CONDITIONS AND SKY COVER:

VFR	92.6%
IFR	7.4%
Below Minimums	0.4%
Mean Sky Cover (tenths)	6.6
Clear	9.4%
Scattered (0.1 – 0.5)	30.5%
Broken (0.6 - 0.9)	35.2%
Overcast (1.0)	24.9%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	18
Rain and/or Drizzle	12
Snow	0
Fog	25
Smoke and/or Haze	25
Obstruction to Vision	28

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	11.0%	SW	5.0 Knots
Second Most Frequent	9.0%	SW	4.4 Knots
Third Most Frequent	8.1%	SSW	4.1 Knots

Extreme Peak Gust N 39 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.0%
11-16 Knots	1.5%
07-10 Knots	11.6%
04-06 Knots	35.1%
01-03 Knots	20.3%
Calm	31.5%

I. September.

The mean pressure pattern indicates the Bermuda High positioned farther south than the August position. Even though the ridge from this High is often over the southeastern states for several days at a time, it is showing signs of weakening. The High may even split at times, with one center over the Azores and the other over the east coast. This means that the seasonal breakdown of the Bermuda High is occurring and Polar Fronts will occasionally slip through this area and will even pass the island of Bermuda.

These fronts are the leading edge of the Polar air mass that reaches this area from the west-central part of Canada. As they push out over the Gulf Stream, heavy thunderstorms may persist while New River may be observing clear skies and cool temperatures.

Northerly winds are prevalent and become gusty after the passage of Polar outbreaks. Generally, these outbreaks are more frequent during the latter part of the month.

For Eastern North Carolina, hum cane activity is usually at a maximum during September and may develop anywhere from the Cape Verda Islands westward into the Gulf of Mexico. The strongest wind associated with a hurricane for the month of September was 70 knots.

Fog and ground fog occur quite often in September, especially during the early morning hours. However, the percentage of IFR weather is minimal. VFR conditions exist 90.9% of the time.

September is drier and cooler than August, but it should be classified as a wet month. Most of the rainfall comes from frontal activity and hurricanes. Thunderstorm activity is by far less an occurrence than during the month of August, and is generally associated with fronts and hurricanes.

SEPTEMBER CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	75
Average Daily Maximum	83
Average Daily Minimum	66
Extreme Maximum 1973/93	97
Extreme Minimum 1981	44

VISIBILITY: Equal or Greater than

¼ Mile	99.6%
½ Mile	99.5%
1 Mile	98.6%
3 Miles	94.2%
6 Miles	68.4%

CEILING: Equal or Greater than

100 ft	99.8%
200 ft	99.5%
500 ft	98.0%
1000 ft	94.2%
3000 ft	79.2%
5000 ft	68.8%
No Ceiling	48.4%

PRECIPITATION:

Monthly Mean	4.60”
Extreme Maximum	17.24”
Extreme Minimum	0.81”
24 Hour Maximum 1996	6.57”

RELATIVE HUMIDITY:

Mean Relative Humidity		76.8%
Mean at	0100	87.1%
	0700	88.7%
	1300	61.0%
	1900	78.0%

FIELD CONDITIONS AND SKY COVER:

VFR	90.9%
IFR	9.1%
Below Minimums	1.1%
Mean Sky Cover (tenths)	6.5
Clear	11.5%
Scattered (0.1 – 0.5)	28.5%
Broken (0.6 - 0.9)	3.2%
Overcast (1.0)	26.8%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	8
Rain and/or Drizzle	9
Snow	0
Fog	24
Smoke and/or Haze	25
Obstruction to Vision	28

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	11.3%	NNE	6.0 Knots
Second Most Frequent	8.5%	NNE	5.2 Knots
Third Most Frequent	6.5%	S	5.6 Knots

Extreme Peak Gust 1996 NE 82 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.3%
11-16 Knots	2.1%
07-10 Knots	15.0%
04-06 Knots	33.5%
01-03 Knots	29.5%
Calm	19.6%

J. October.

The increased oscillation of the Polar Front over the island of Bermuda is a clear sign that the Bermuda High is still weakening. At the same time, the Icelandic Low is found to be deepening. Both the high and the low are slightly south of their September position.

Lows also begin to develop off of Cape Hatteras and move off in a northerly direction. Often these lows become almost stationary for two or three days

Occasionally, a cold high pressure system plunges down across the Great Northwest from Canada, pushing a cold front into this area. The front may reach this area as a weak frontal system, but it will generally intensify as it pushes offshore over the Gulf Stream. Often, unstable weather will develop just offshore behind the front because of the flow of cool air from the northwest over warmer water. If the flow of air is northeasterly, fog will form offshore for short periods.

The strongest winds for the month are associated with a hurricane that may move into this area.

During October, fog does occur at New River, but on the whole, the visibility is generally good with VFR conditions existing 92.0% of the time.

Snow has never been observed at this station in October. The amount of rainfall is less than during September, and is generally caused by the passage of fronts or by hurricanes that pass in proximity of MCAS New River.

OCTOBER CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	65
Average Daily Maximum	75
Average Daily Minimum	54
Extreme Maximum 1981/86	95
Extreme Minimum 1962	24

VISIBILITY: Equal or Greater than

¼ Mile	99.2%
½ Mile	98.9%
1 Mile	98.3%
3 Miles	94.8%
6 Miles	80.5%

CEILING: Equal or Greater than

100 ft	99.8%
200 ft	99.5%
500 ft	98.1%
1000 ft	94.8%
3000 ft	86.4%
5000 ft	80.1%
No Ceiling	61.9%

PRECIPITATION:

Monthly Mean	2.90”
Extreme Maximum	8.90”
Extreme Minimum	0.63”
24 Hour Maximum	3.00”

RELATIVE HUMIDITY:

Mean Relative Humidity		73.1%
Mean at	0100	83.6%
	0700	86.1%
	1300	56.8%
	1900	76.1%

FIELD CONDITIONS AND SKY COVER:

VFR	92.0%
IFR	8.0%
Below Minimums	1.2%
Mean Sky Cover (tenths)	5.0
Clear	30.3%
Scattered (0.1 – 0.5)	25.6%
Broken (0.6 - 0.9)	22.2%
Overcast (1.0)	21.9%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	2
Rain and/or Drizzle	7
Snow	0
Fog	22
Smoke and/or Haze	22
Obstruction to Vision	26

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	14.8%	NNE	6.0 Knots
Second Most Frequent	7.4%	NNE	5.7 Knots
Third Most Frequent	6.9%	NNE	6.3 Knots

Extreme Peak Gust 1982 NNE 45 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.5%
11-16 Knots	4.4%
07-10 Knots	20.2%
04-06 Knots	31.4%
01-03 Knots	22.9%
Calm	20.6%

K. November.

This is the month in which fall fades and winter begins. The cold high centered over the east-central United States tends to move further south. This movement causes the Polar Front to lie more to the south and frequently into the Gulf of Mexico.

Waves may develop in the Texas area. These lows are generally the result of an occluded front moving from the west over the Rocky Mountains. Warm, moist tropical air moving northward from the Gulf of Mexico and around the cool high over the eastern United States helps to regenerate this front. At the same time, this moist tropical air Is overrunning cooler air and a warm front will develop out of the Texas Low. The low will generally move eastward along the Gulf States and then northeastward along the Atlantic Coast reaching this area in about 24 to 36 hours. These lows deepen rapidly.

The Bermuda High continues to weaken and is now an elongated configuration spreading east-west over the southern part of the North Atlantic Ocean. The Icelandic Low has moved to its southern-most position and is still deepening.

Snow does fall in November, but only a trace has ever been recorded. The weather is generally very good, and November is classified as the driest month of the year.

Fog and ground fog generally occur during the early morning hours with a northeasterly or southerly flow. VFR conditions exist 90.6% of the time.

NOVEMBER CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	56
Average Daily Maximum	67
Average Daily Minimum	45
Extreme Maximum 1973	89
Extreme Minimum 1970	19

VISIBILITY: Equal or Greater than

¼ Mile	99.7%
½ Mile	98.5%
1 Mile	93.1%
3 Miles	87.8%
6 Miles	79.8%

CEILING: Equal or Greater than

100 ft	99.7%
200 ft	99.3%
500 ft	96.8%
1000 ft	92.6%
3000 ft	85.2%
5000 ft	78.5%
No Ceiling	59.8%

PRECIPITATION:

Monthly Mean	2.62”
Extreme Maximum	5.73”
Extreme Minimum	0.58”
24 Hour Maximum 1963	3.20”

RELATIVE HUMIDITY:

Mean Relative Humidity		71.1%
Mean at	0100	80.3%
	0700	83.0%
	1300	54.0%
	1900	73.8%

FIELD CONDITIONS AND SKY COVER:

VFR	90.6%
IFR	9.4%
Below Minimums	1.5%
Mean Sky Cover (tenths)	5.2
Clear	29.9%
Scattered (0.1 – 0.5)	23.6%
Broken (0.6 - 0.9)	20.1%
Overcast (1.0)	6.4%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	2
Rain and/or Drizzle	7
Snow	1
Fog	19
Smoke and/or Haze	17
Obstruction to Vision	23

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	11.5%	N	6.1 Knots
Second Most Frequent	7.8%	W	5.3 Knots
Third Most Frequent	7.2%	WSW	5.2 Knots

Extreme Peak Gust 1962/ 63 NNE/ SW 56 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.2%
11-16 Knots	5.5%
07-10 Knots	21.2%
04-06 Knots	29.5%
01-03 Knots	24.6%
Calm	19.0%

L. December.

The Bermuda High is at its weakest and is located in its southern-most position, with the Icelandic Low very deep and intensified. Frequently, cold air from the Arctic will spread down over the United States, often extending from Newfoundland down through Florida or Cuba. By the time the air mass reaches this area, waves develop in the Gulf of Mexico and move northeasterly along the Polar Front and up the Atlantic Coast. Often two waves will develop on the Polar Front; one in the Gulf of Mexico and one just south of Cape Hatteras.

Sometimes the Polar Front becomes almost stationary on a more east-west orientation just north of this area and enters the Atlantic just a little south of Cape Hatteras. This situation leaves New River under the influence of a warm southerly flow, often causing cloudy skies or fog.

Very little snow falls in December. The outbreaks of Arctic air cause gusty winds with a northerly component as the Polar Front pushes through this area. The Weather generally intensifies just offshore as the front proceeds eastward.

December is usually one of the drier months of the year. VFR conditions exist 88.5% of the time; however fog or ground fog will occur mostly during the early morning hours.

DECEMBER CLIMATOLOGICAL SUMMARY

TEMPERATURES:

Average Daily Mean	48
Average Daily Maximum	58
Average Daily Minimum	37
Extreme Maximum 1981/ 71	82
Extreme Minimum 1989	-05

VISIBILITY: Equal or Greater than

¼ Mile	99.3%
½ Mile	98.8%
1 Mile	97.8%
3 Miles	93.6%
6 Miles	82.0%

CEILING: Equal or Greater than

100 ft	99.6%
200 ft	99.3%
500 ft	96.2%
1000 ft	90.4%
3000 ft	80.1%
5000 ft	71.2%
No Ceiling	53.3%

PRECIPITATION:

Monthly Mean	3.70”
Extreme Maximum	6.60”
Extreme Minimum	0.40”
24 Hour Maximum 1984	3.50”
Mean Monthly Snowfall	1.00”
24 Hour Maximum 1965	8.00”

RELATIVE HUMIDITY:

Mean Relative Humidity		70.9%
Mean at	0100	78.9%
	0700	80.7%
	1300	56.5%
	1900	72.4%

FIELD CONDITIONS AND SKY COVER:

VFR	88.5%
IFR	11.5%
Below Minimums	1.2%
Mean Sky Cover (tenths)	5.7
Clear	26.1%
Scattered (0.1 – 0.5)	21.8%
Broken (0.6 - 0.9)	18.2%
Overcast (1.0)	33.9%

WEATHER CONDITIONS

Number of Days with:

Thunderstorms	1
Rain and/or Drizzle	9
Snow	1
Fog	18
Smoke and/or Haze	15
Obstruction to Vision	20

PREVAILING WIND DIRECTION AND SPEED

	Percent of Time	Direction	Speed
First Most Frequent	12.5%	N	7.0 Knots
Second Most Frequent	9.4%	W	6.3 Knots
Third Most Frequent	7.2%	W	5.8 Knots

Extreme Peak Gust 1975 W 51 Knots

Percent of Time Wind Was:

17 Knots or Greater	0.9%
11-16 Knots	8.5%
07-10 Knots	24.4%
04-06 Knots	29.4%
01-03 Knots	19.0%
Calm	17.8%

204. CYCLONE AND ANTICYCLONE TRACKS.

A. Cyclone Tracks.

1. General. There are three major cyclones that affect this station, other than the Tropical Cyclone. They are: the Texas Low, the Gulf Low and the South Atlantic Low, more commonly called the Hatteras Low. For the purposes of this discussion, the Gulf Low is divided into two different types, depending upon the season and their area of origin. They are: the Fast Gulf Type and the West Gulf Type. The South Atlantic Low will also be divided into two types: Type I and Type II.

2. The East Gulf Low. This type of cyclone develops in the northeastern part of the Gulf of Mexico, usually forming on a stationary front which is over the northern part of the Gulf This type can develop into one of the most severe winter storms encountered in this area. It usually results in outbreaks of extremely cold air, or a so called noreaster, which affects the entire eastern seaboard. As this low slowly develops in the Gulf; it drifts eastward across the northern neck of the Florida Peninsula, then northward with great acceleration, rapidly deepening as it goes. These cyclones usually move from the Florida Gulf Coast, arriving in this area within 24 to 36 hours. The track of this low is always east of the Appalachian Mountains. It is worth while to keep in mind that during December and January these lows have produced some of the worst snow storms to occur at New River, especially if they approach this station from the west southwest and pass out to sea just to the south of or over, this station. At any rate, these storms have a very extensive cloud and precipitation shield and may be accompanied by freezing rain and gusty winds. If it approaches slightly inland, a large shield of fog may also develop with it. After the low pressure system passes, clearing is gradual with extremely cold temperatures in the winter. (see Diagram 4 through 7)

3. The West Gulf Low. This cyclone generally forms during the winter months on a stationary front over the eastern Texas Coast, or over the northwest Gulf One could call this low a tropical winter occurrence. This low formation is triggered by a jet stream which flows across Southern California into Southern Arizona and New Mexico. The Low generally moves northeastward, passing to the west of the Appalachian Mountains thereby having little effect on this station. Occasionally, the systems may slip across the southern portion of the mountains, and move up the eastern side of the mountains. If this should occur, the weather will be about the same as caused by the East Gulf Type. If it moves out to sea in this area, or just south, snow and freezing rain could be quite severe. Even though this low occurs more often in the winter, it also develops during the spring and fall. (see Diagram 4 through 7)

4. The Texas Type Low. This low generally forms over the state of Texas, or the eastern part of New Mexico, during the late spring or early summer, and again in the

late fall and early winter. This type often produces conditions that are conducive to instability lines and tornadoes over the Mississippi Valley. These situations usually form as the low moves eastward or northeastward. These lows generally move up the Mississippi Valley during the summer; however, during the winter, on most occasions, it will move rapidly eastward, deepening as it moves. reaching this area on an average of 24 to 30 hours after it starts to move. It is of utmost concern for the forecasters at this station to pay attention to the methods in forecasting the movement of this system, since it moves so fast after stagnation. Most of the time, the low causes wide spread snow over the mid Atlantic states during the winter. (See Diagram 4 through 7)

5. South Atlantic Low Type I. This low generally develops on a cold frontal system which has become almost stationary due to the blocking effect of the Bermuda High. If the Bermuda High Ridge extends over the southeastern states and is well developed, the cold frontal system that is being pushed southeastward will become stationary. The front will then tend to orientate itself more east-west, extending from a low center in the southwest, curving across the southern states along the east coast into a deep low over the eastern Great Lakes. If the upper flow (10,000 and 20,000 feet) is parallel to the surface front, a secondary low will usually develop on the front near the immediate coastline of the southeastern states. This low generally develops southward in the area of Georgia or the Carolinas. It develops rapidly, and is quite similar to the East Gulf Type Low and its associated weather pattern. This system reaches its maximum frequency in January and February, but may develop any time between mid October and mid April. (see Diagram 4 through 7)

6. South Atlantic Low Type II. For reasons of simplicity, at this station we will refer to this low as the Hatteras Low, even though it may be correct to also call the Type I a Hatteras Low. One must remember that it is very difficult to distinguish between Type I and Type II.

   The Type II Low develops in the same manner as the Type I except the frontal system usually lies just to the north of New River or offshore, with the low developing in the area of Hatteras, or just off of Cape Hatteras. Movement of this low is generally to the northeast. In the winter months, this type of low may give Washington D. C. and the plains just south of there their greatest snow storms, depending on its proximity to the Atlantic Coast. At the same time, this station will be experiencing warm temperatures with scattered or partly cloudy skies of mid to high clouds. At any rate, this type of low affects this station the least of all lows that pass through this area. (see Diagram 4 through 7)

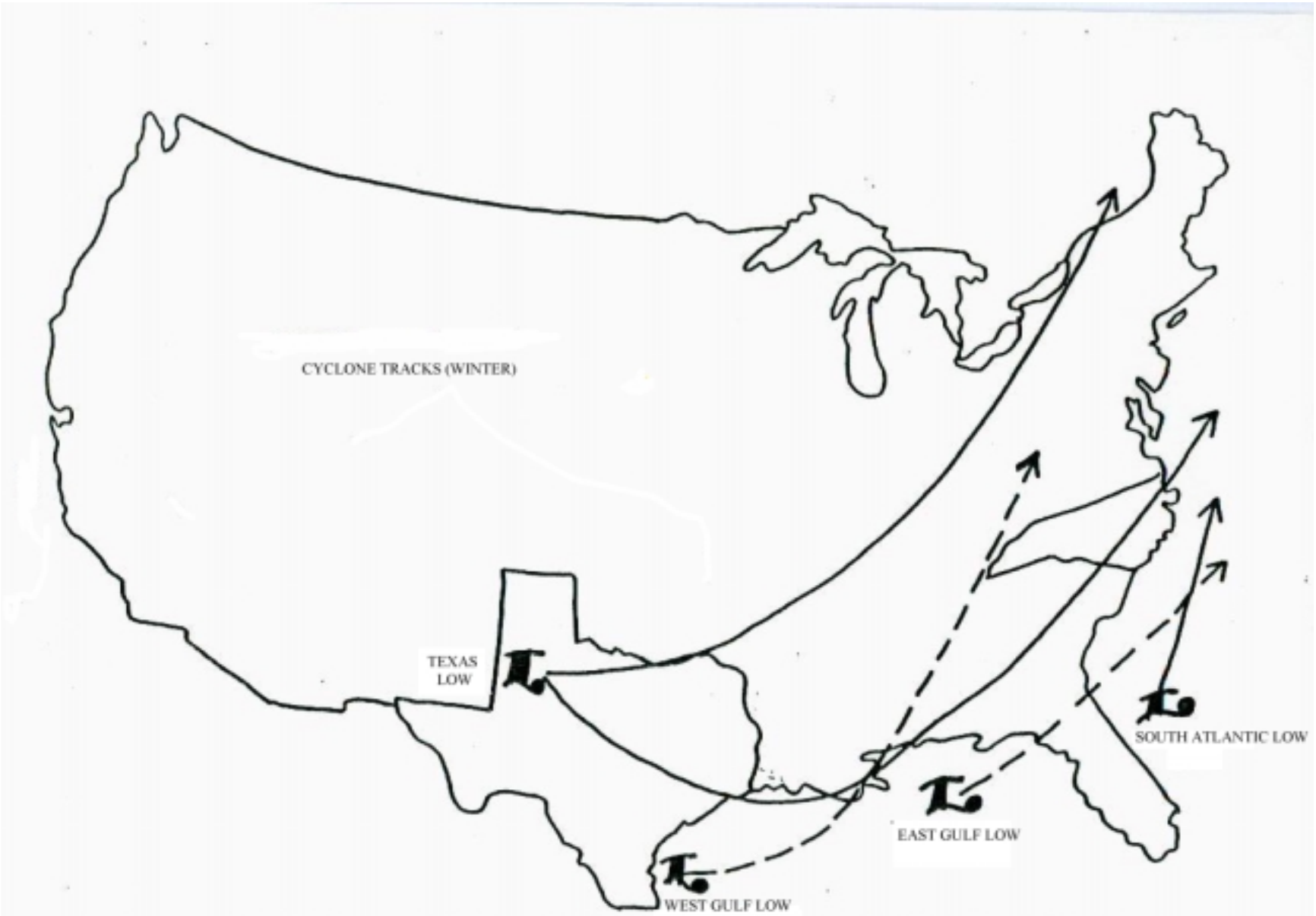


DIAGRAM 4. Average monthly tracks of the Texas Low, Gulf Lows and the South Atlantic Low, during the winter.

DIAGRAM 5. Average monthly tracks of the Texas Low, Gulf Lows, and the South Atlantic Low, during the Spring

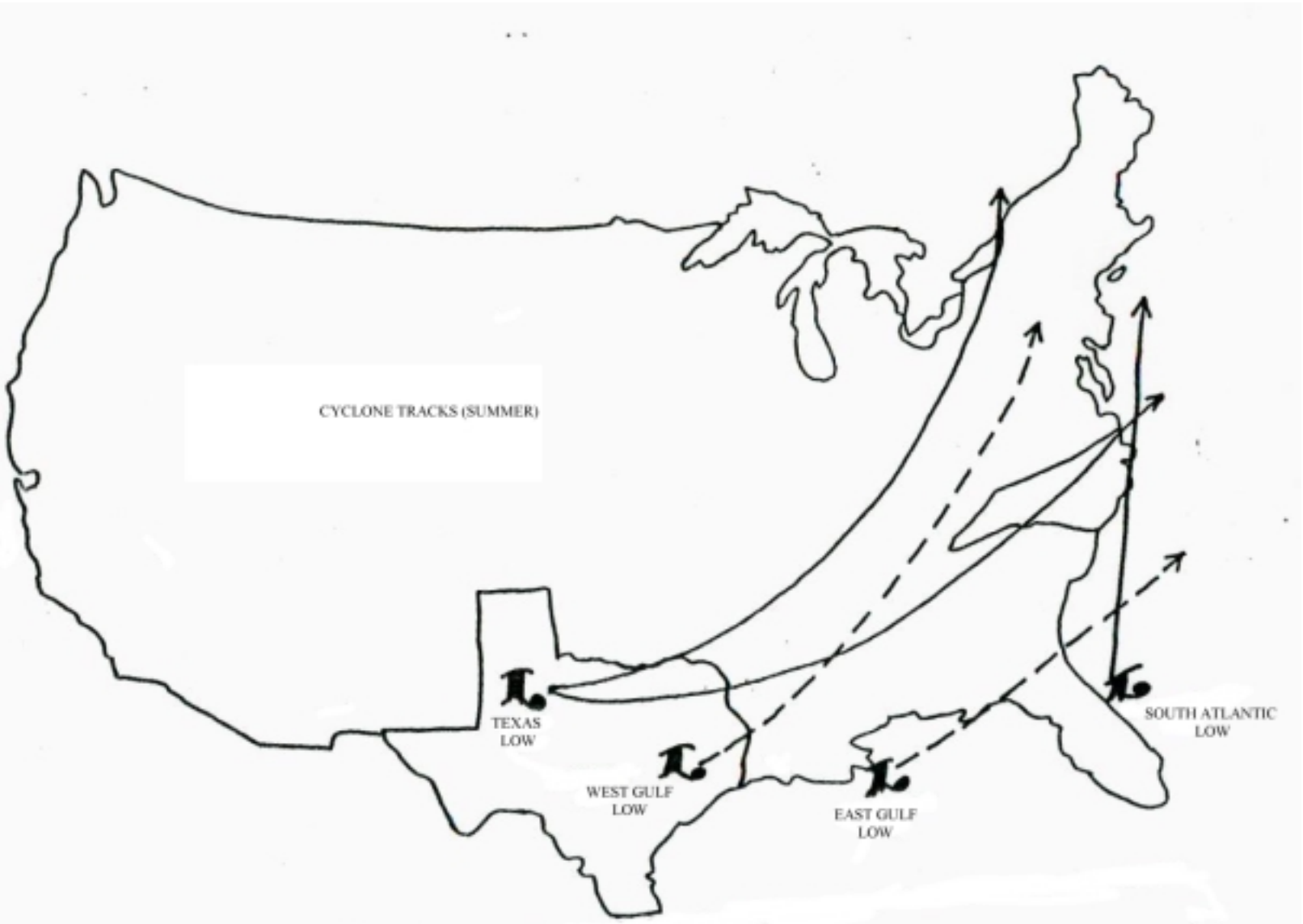


DIAGRAM 6. Average monthly tracksof the Texas Low, Gulf Lows, and the South Atlantic Low during the Summer.
(Note: the West Gulf Low usually does not develop)

DIAGRAM 7. Average monthly tracks of the Texas Low, Gulf Lows, and the South Atlantic Low for Fall.

B. Anticyclone Tracks.

1. General. It goes without saying, that the Bermuda High dominates this area almost year round; therefore, only migratory anticyclones that affect this station will be discussed. For purposes of classification and reference, these anticyclones will be broken down into three different anticyclones, which are so named as to their area of origin. They will be referred to as the Pacific Coastal High, the Alberta High, and the Hudson Bay High. The circulations mentioned above are divided into types, depending on their trajectory and the season. The Pacific Coastal High will be divided into Type I, Type II and Type III. The Alberta High will be divided into Type Ia, Type IIa, Type IIIa, and Type IVa. The Hudson Bay High will be divided into Type Ib, and Type IIb. (see Diagram 8 through 10)

2. Pacific Coastal High Type I. This anticyclone center is generally located about 30 degrees North and approximately 300 miles off the west coast, with the east ridge extending over the Rocky Mountains and into the Texas Panhandle. During the summer months, when the upper flow is fairly zonal from west to east and it is superimposed over the northern section of the ridge, weak bubbles of high pressure will break away from the major ridge and move eastward across the southern states. The high itself does not always affect this station, because by the time it reaches this area, it has undergone so much modification. On the other hand, it may push the tail end of a weak frontal system, extending from a low in the Hudson Bay area, across the Carolinas. If the high center is situated slightly north, and over the Great Western Plateau of the United States, the frontal system will reach this area orientated more east-west, and will generally lie just north of this station for several days.

3. Pacific Coastal High Type II. This elongated high will be centered about 30 degrees North and some 300 miles of % the west coast, another center over K½aja and Utah area with a ridge extending down across the southern states. This high usually stagnates for several days at a time across the southern states. The high usually reaches this area with very little weather change, except for a weak line of discontinuity between it and the Bermuda High ridge, which usually covers the southern states. It may cause a weak front to be more apparent in this area during late fall and early winter. The high may be considered as an aid, in as much as it blocks low pressure systems coming from the north.

4. Pacific Coastal High Type III. During the winter months, this high pressure cell is centered over the northern Rockies and moves southeast across the middle of the United States, so long as there is no interference with the cP air flowing from the Alberta area. This high will block any low pressure systems moving across Canada, keeping them well to the North, on the other hand, any low pressure system moving across southern California or the Gulf of Mexico will be kept to the South and steered over this area. This high is generally colder than any other Pacific High

because it moves across the snow covered Rockies with some cold air feeding down from British Columbia. This high is more common over this area during late fail and early spring.

5. Alberta High Type Ia. This high occurs most frequently in the autumn and spring. It will make its appearance on the surface chart well to the north of Alberta and over the northeast corner of Alaska. This type will push southeastward, bringing cP air into the Lake Superior area. Occasionally, it will continue its southeastward movement blocking the Pacific Coastal Highs before turning eastward. This movement causes the first cold polar outbreak of the season into the deep south and is associated with the last polar outbreak in the early spring. It is with this type, that waves will develop along the east coast, bringing considerable precipitation.

6. Alberta High Type IIa. This type will appear on the surface chart over northern British Columbia and northwest Alberta as **a** very persistent high of at least 1040MB. Its path of movement is southeast, but more eastward than Type Ia and it generally moves across the southern tip of Lake Michigan. This is strictly a winter high, often penetrating the south, pushing along a wide sweeping cold front from Quebec across the eastern states, with major outbreaks spreading completely over the United States.

7. Alberta High Type IIIa. This Type usually shows up as a crescent shaped surface high over Alaska, with one ridge extending southeastward and another merging southward from the Aleutian Chain, while a large low will persist off the British Columbia coast. Cyclones will offshoot from this low and move eastward. Behind each major low which is moving eastward, a polar outbreak from the high's eastward ridge will plunge southeastward. When the Bermuda High is well developed near the east coast, precipitation much above normal will occur along the quasi-stationary front in the Mississippi and Ohio Valley which is often pushed into the area. This type occurs more frequently in January.

8. Alberta High Type IVa. This type is a very intense surface high of about 1040 MB or more. There is very little difference between Type IVa and Type IIa, except Type IVa is centered further to the east, over North Alberta, with the outbreaks of cold air moving more southward and then curving eastward. Type IVa will tend to block all lows entering the United States along the Washington and Oregon coast. Another way in which Type IVa may differ from type 'Ia is that it may occur as early as November, or as late as May. Type IVa may also be hard to distinguish from Type Ia; it must be remembered that Type IVa is blocking West Coast Lows, and Type Ia is blocking a high over the Rockies. Type Ia tends to move more along the eastern slopes of the Rockies with much weaker pressure than Type IVa. This system is generally more pronounced in mid winter spreading cold air over more of the United States than any other Type, in this way it is much like the Siberian High which covers most of Asia in the winter.

9. Hudson Bay High Type Ib. This type of high is generally centered over the southern Hudson Bay in the winter. It seldom reaches this but has occasionally done so. It generally pushes out over the Chesapeake Bay area, steering the Gulf Low which is moving along the Eastern Seaboard. If it should push into this area, the low will move offshore, just to the south of this station.

10. Hudson Bay High Type IIb. Hudson Bay High Type IIb. During the late winter and spring, a persistent surface high, centered over the Hudson Bay, will extend southward with a separate center over the Great Lakes. This high will remain almost stationary for days, and may gradually spread into this area, keeping the Texas type low moving eastward across the southern states. It must be remembered that this high plays a major roll in the direction of movement of the Texas Low.

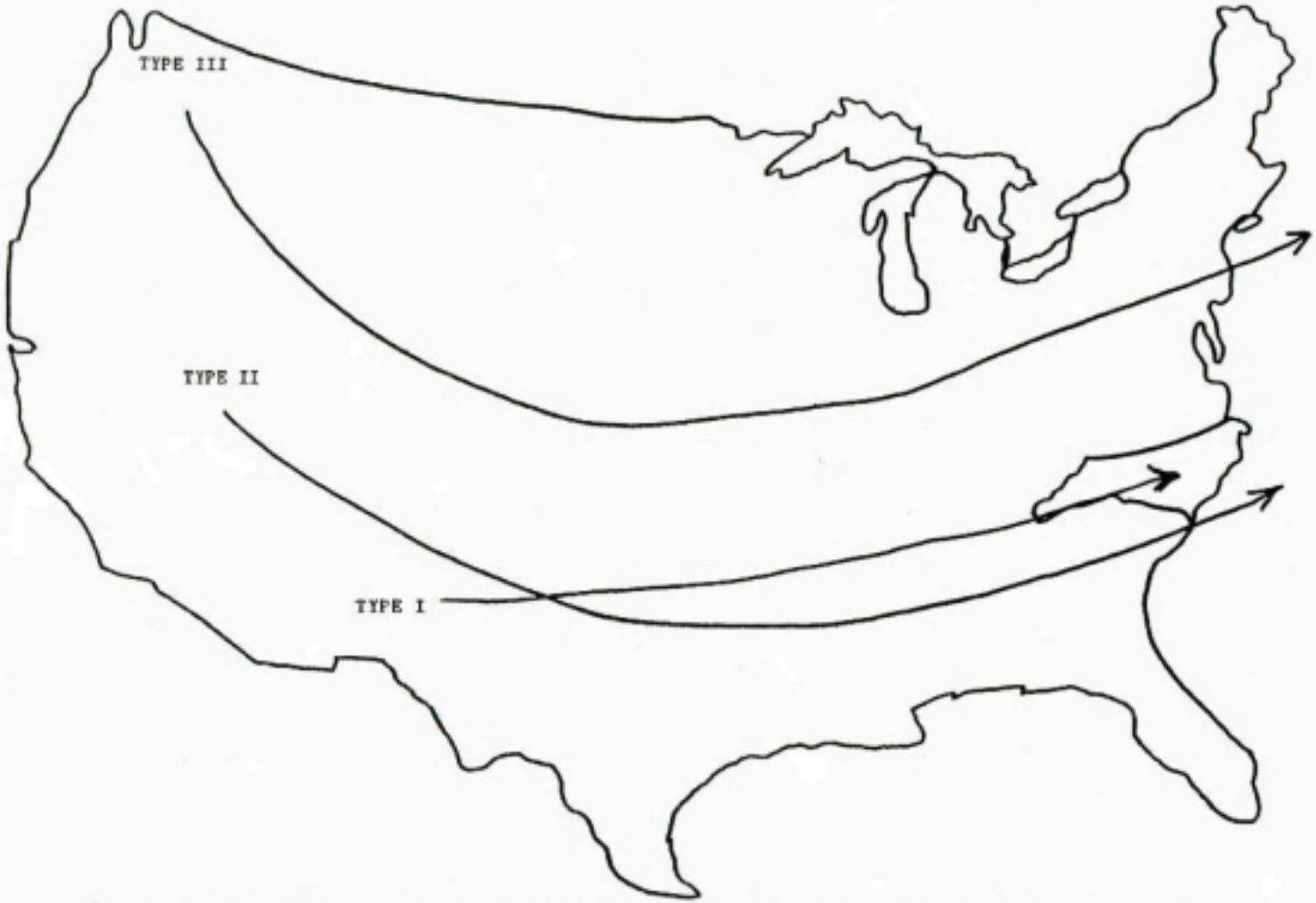


DIAGRAM 8. Tracks of Pacific Highs. Type I occurs in the Summer, Type II occurs in the late Fall and early Winter, and Type III occurs in the Winter.

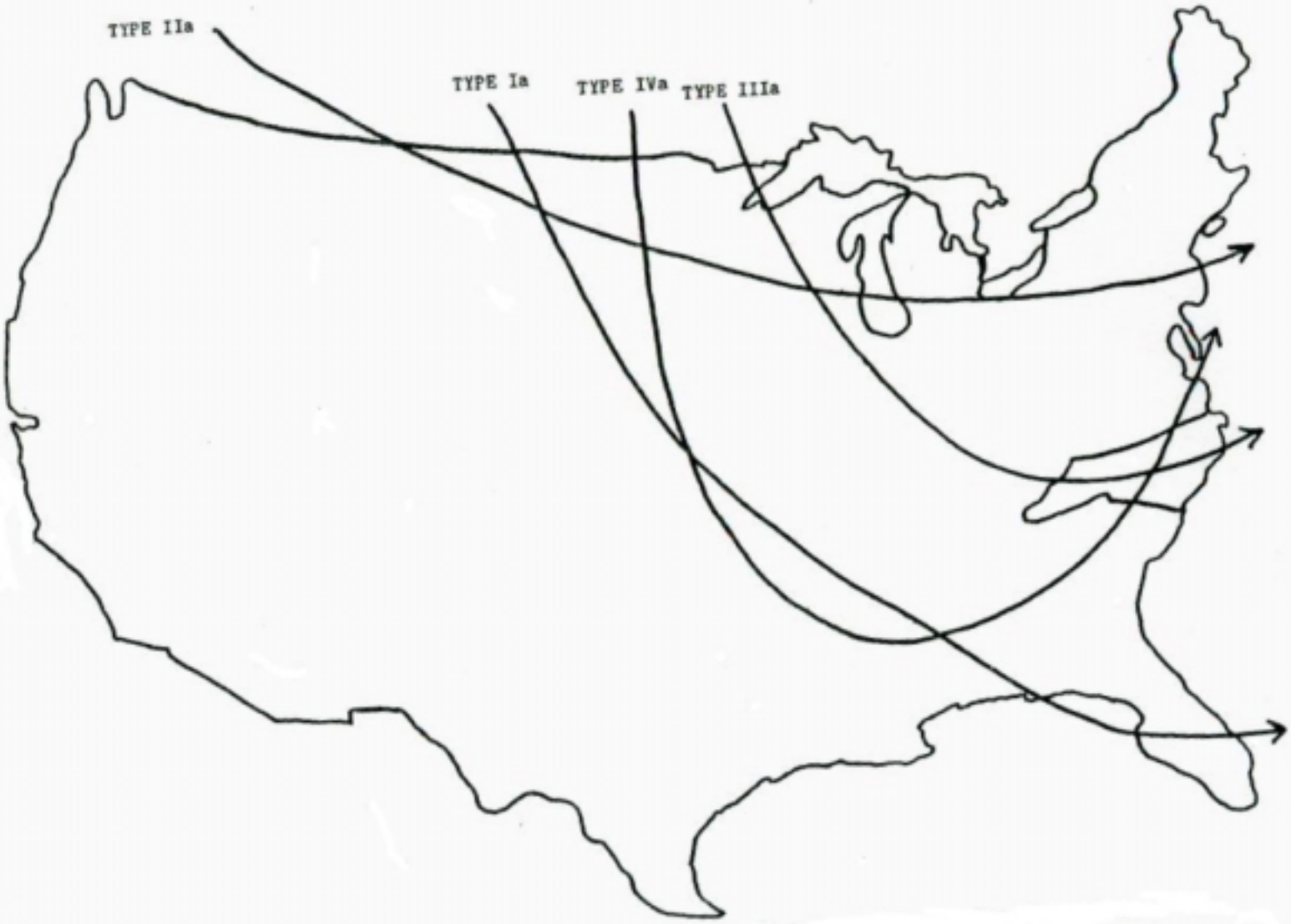


DIAGRAM 9. Tracks of the Alberta High. Type Ia occurs during the Fall and Spring, IIa occurs in the Winter, and Type IIIa is more frequent in January.

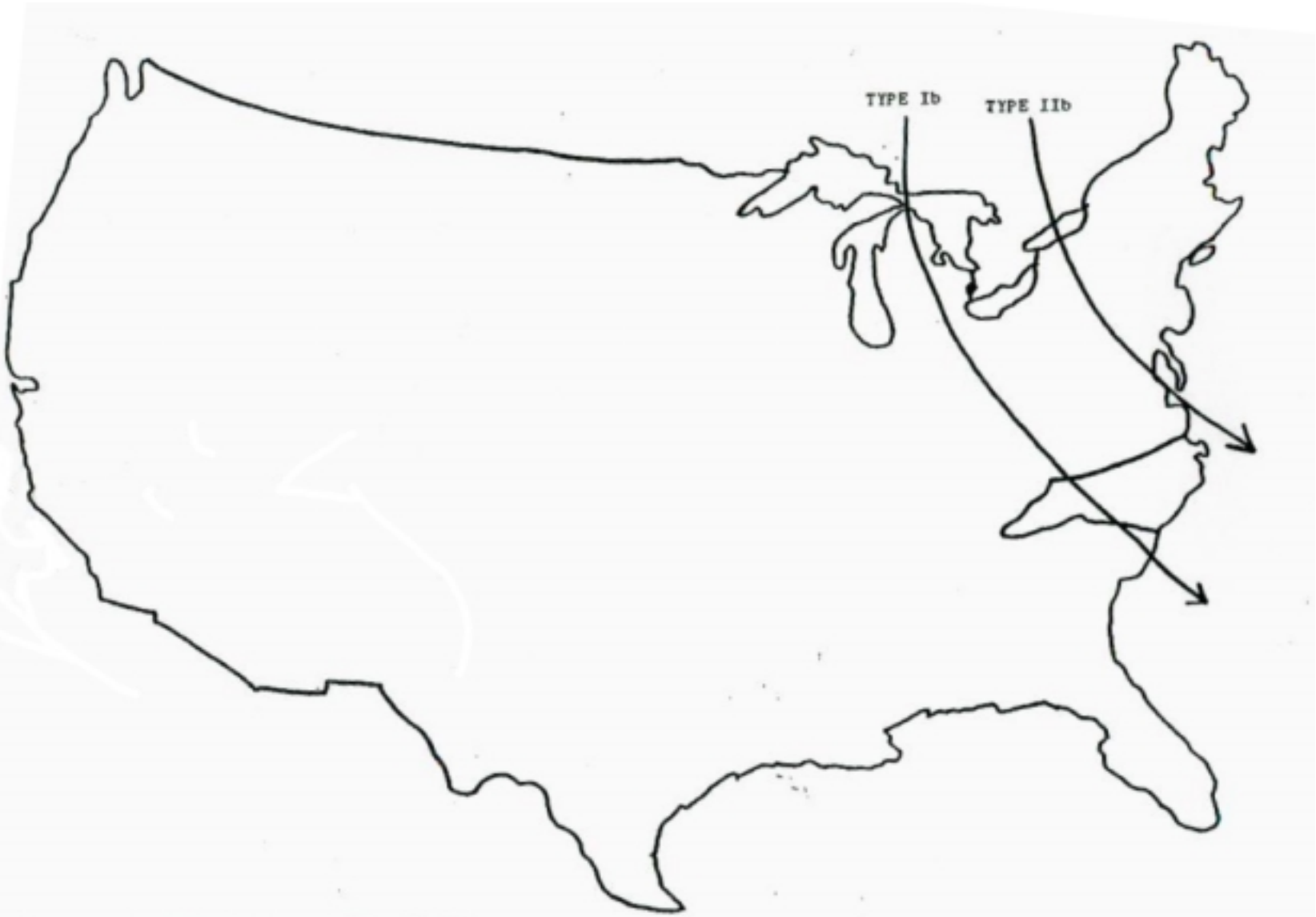


DIAGRAM 10. Hudson Bay Type Anticyclones.

C. Fronts and Tracks.

1. Winter.

   a. Cold Fronts. Normally cold fronts will approach the local area from the northwest. However, the orientation of the frontal system will mainly depend upon the track of the high pressure system behind the front. A northerly track gives generally an east - west orientated front while a southerly track will tend to orient the front on a north - south line. Rarely are heavy showers or thunderstorms associated with frontal passage. However, if the new air mass is shallow, rain may persist for three to six hours after frontal passage. Frequently, as a front passes, clearing takes place, but only lasts for a short duration as a low stratus deck invades from the northeast, generally six to twelve hours after frontal passage. This situation can be forecasted if the low level winds to 10,000 feet shift east or north after frontal passage. Then this stratus condition can be expected within six hours.

   a. Warms Fronts. The majority of the warm fronts which affect this area are the result of warm, moist tropical air moving over **a** shallow cool air mass, thus forcing **a** stationary front northward in the form of a warm front. These criteria are usually met with wave development in the East Gulf or Texas. As the front approaches this area from the south or southwest, a wide band of low ceilings and precipitation will spread over the entire Piedmont section of the state.

1. Summer. Frontal activity is at a minimum during the summer and occurs only when a major continental cool air mass moves into the east-central United States from Canada. These fronts become quasi-stationary[5] orientated east - *west* over Alabama, Georgia, and South Carolina. As the front moves south of the station, some clearing and reduced humidity occurs. Thunderstorm activity north of this front is usually nonexistent, and shower activity is greatly reduced. Modification of the air mass takes place quite rapidly however, with only two or three days of reduced shower and thunderstorm activity before the area comes under the influence of a moist, warm southerly or southwesterly flow. Squall lines or increased air mass thunderstorm activity occurs approximately 30% of the time prior to the passage of one of these fronts, usually occurring with the more active fronts which have become oriented more northeast southwest. Warm fronts are not recognizable as such since sufficient contrast between the air masses rarely exist.

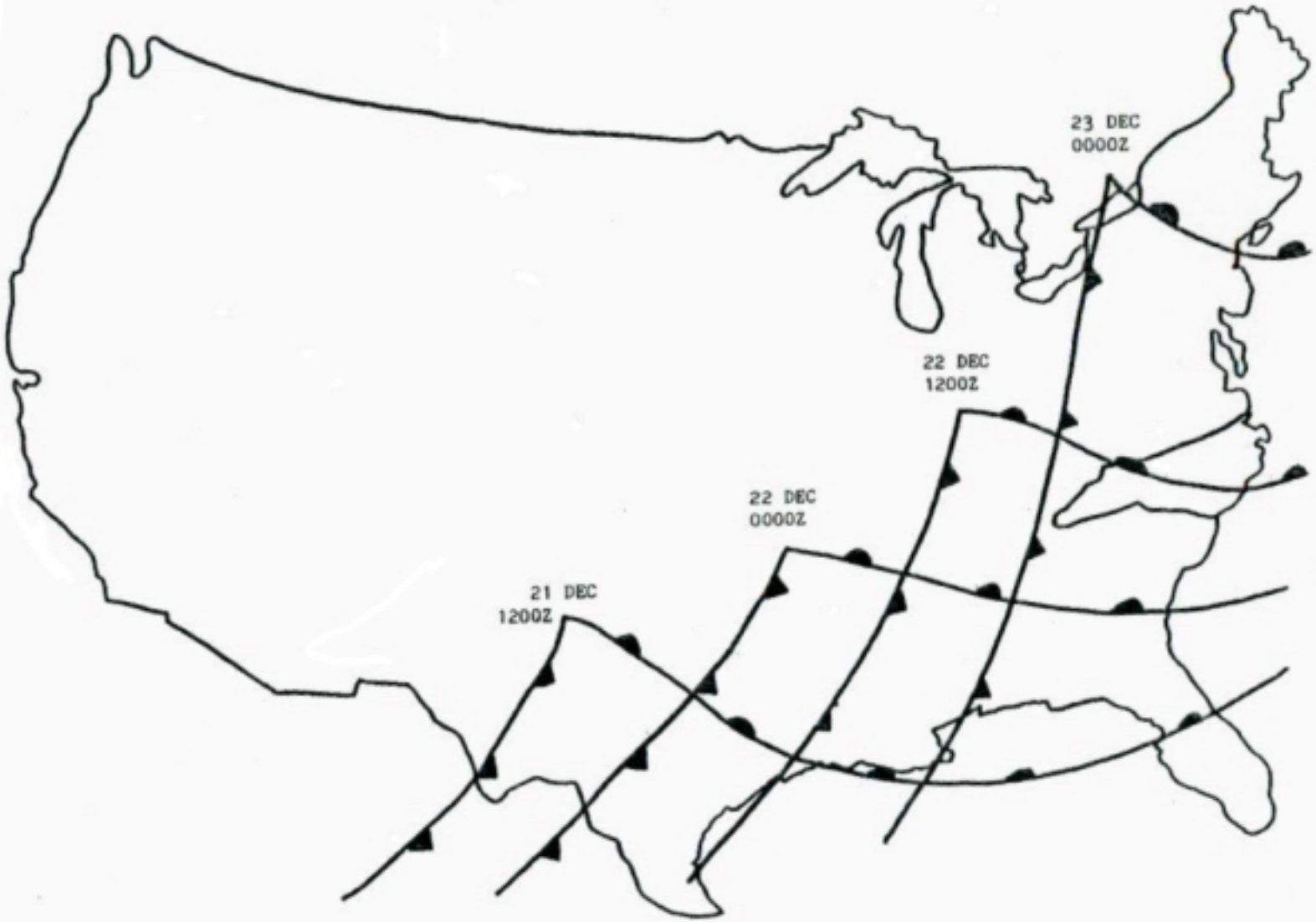


DIAGRAM 11. Texas Type Ia.

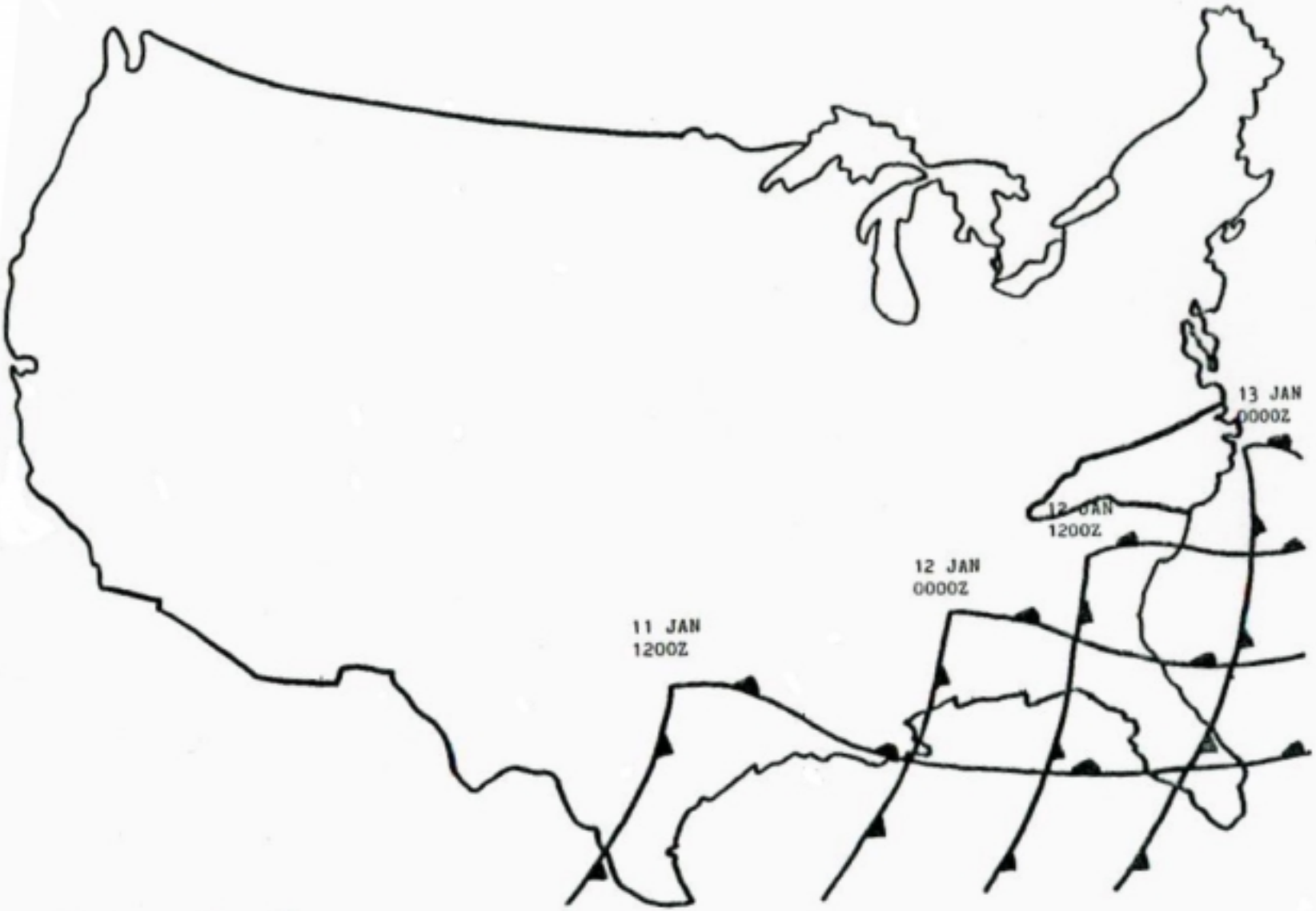


DIAGRAM 12. Texas Type Ib.

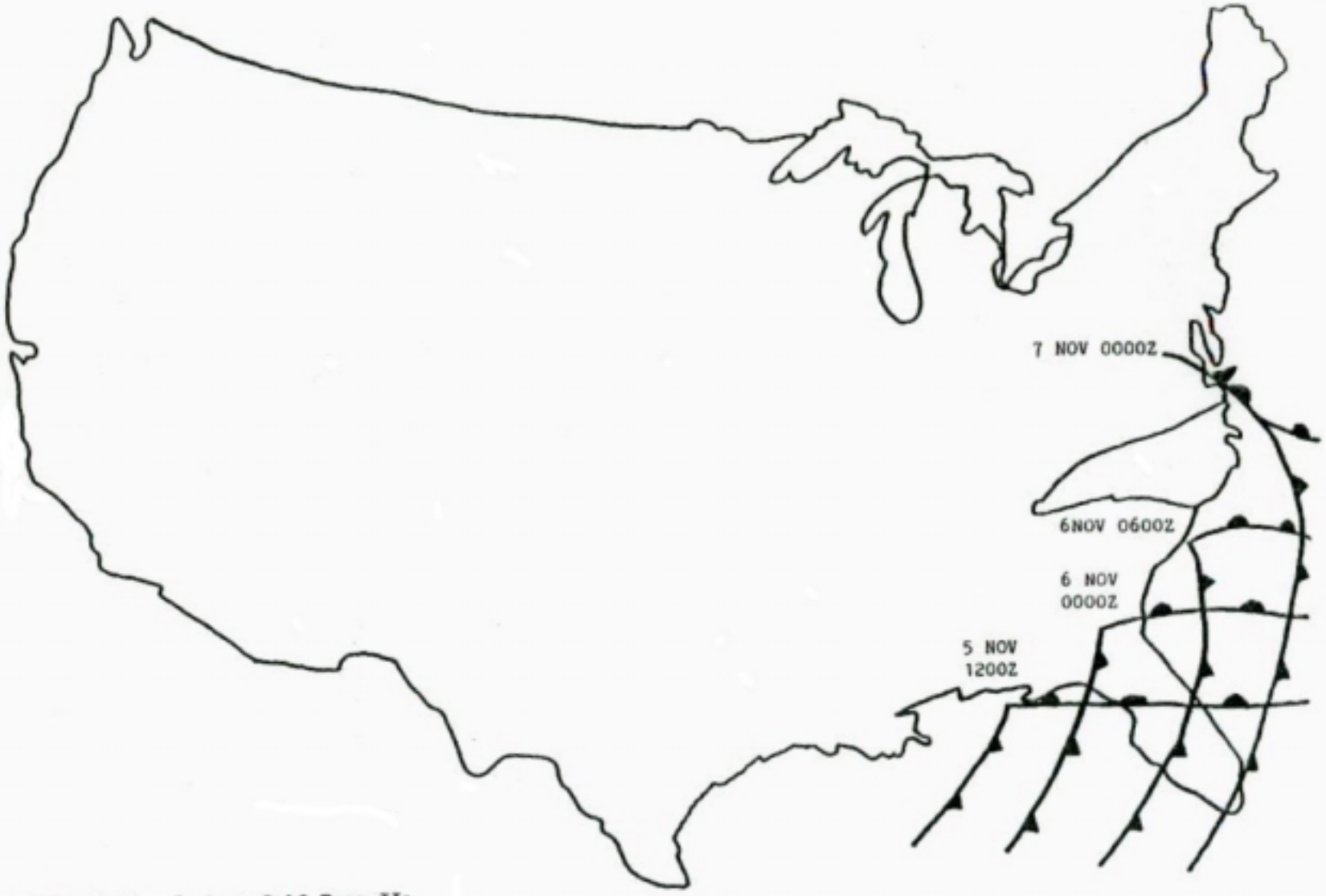


DIAGRAM 13. Eastern Gulf Type IIa

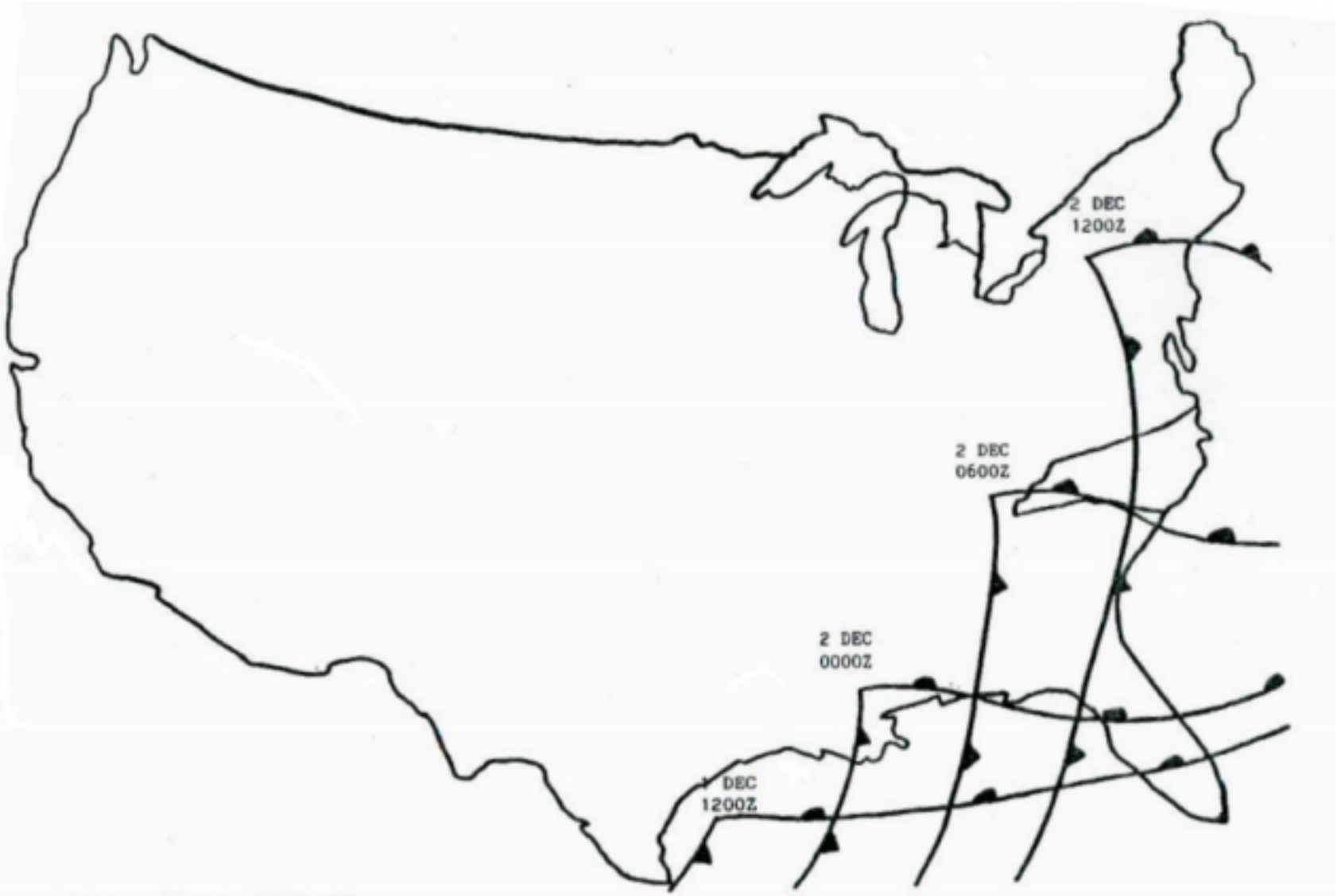


DIAGRAM 14. West Gulf Type IIb.

DIAGRAM 15. South Atlantic Type.

D. Hurricanes. In this region, hurricane season extends from June through November. About 80% of the tropical storms and hurricanes occur from August through October, with 62% of tropical storms reaching hurricane intensity. A tropical cyclone is a broad term and is defined as a non-frontal, synoptic scale cyclone, developing over tropical waters at any level and having a definitely organized circulation. This definition signifies nothing as to the intensity of the associated winds and weather or the thermal structure of the cyclone. Most major storms that affect the Carolinas move in directly from the Atlantic. Occasionally a tropical cyclone originating in the Gulf of Mexico crosses Florida and moves northward along the eastern seaboard.

1. Classifications of Tropical Cyclones.

   a. Tropical Disturbance. Surface circulation is slight with no closed isobars at the surface, but will be marked aloft.

   b. Tropical Depression. One or more closed isobars with maximum sustained winds of 33 knots. Tropical depressions are numbered.

   c. Tropical Storm. Closed surface isobars with maximum sustained winds between 34 and 63 knots. This is also the naming stage.

   d. Hurricane. Has sustained wind force of 64 knots or greater. The intensity of the hurricane is further broken down into categories. Category one: winds *65-83* Knots, storm surge nominally 4-5 feet above normal. Category two: winds 84-96 knots or storm surge nominally 6-8 feet above normal. Category three: winds 97-112 knots or storm surge nominally 9-12 feet above normal. Category four: winds 113-134 knots or storm surge nominally 13-18 feet above normal. Category five: winds greater than 134 knots or storm surge heights nominally greater than 18 feet.

2. Formation of a Tropical Cyclone. There have been many studies done to determine the exact causes for tropical storm formation. Four basic requirements have been established.

   a. A pre-existing, low level disturbance and a region of upper level divergence or outflow above the surface disturbance.

   b. Sufficiently large ocean area with sea temperatures approximately 80 F or warmer.

   c. The value of the coriolis parameter is larger than the existing value for that particular region.

   d. Weak vertical wind shear in the basic current.

3. General Characteristics and Structure. When a tropical cyclone reaches its mature stage, a Hurricane, it attains its maximum intensity. In this stage, the storm may exist for several days at nearly the same level of intensity or decrease slowly. The storm grows in size, with strong winds reaching further from the center. The average size of the cyclone is 100-600 NM in diameter, with the eye's size ranging from 10-30 NM. The Hurricane can reach heights of 15,000 to 30,000 feet or sometimes greater. Wind speeds in excess of 100 knots are common in well developed storms and can affect areas within a I DO mile diameter. The maximum winds can usually be found in the right front quadrant of the system in relation to its movement. Torrential rains spread over a large area. Amounts of 20 inches are not uncommon. Thunderstorms occur frequently in and amongst the spirally banded cloud structures, with favorable conditions for the formation of tornadoes.

4. Resultant Weather. It may be worthy to note that Hurricanes moving into this area have caused extensive wind damage and flooding along the coast, but since 1954, the eye of the hurricane has never passed over this station. The approach of a hurricane is usually characterized by the following:

   a. Heavy ocean swells, 500 to 1,000 miles ahead of the storm center.

   b. The appearance of cirrus clouds, which thicken into cirrostratus.

   c. Cirrostratus in parallel bands seem to converge toward the horizon.

   d. When the storm center reaches about 500 miles from the station, altocumulus and heavy cumulonimbus clouds will appear. Severe turbulence will be occurring aloft, with heavy rain squalls and gusty surface winds in the low levels, and at the surface. Clouds will appear to drift in all directions due to convergence and severe vertical convection. The probability of tornadoes is greatest on the leading edge of thunderstorms which are associated with hurricanes.

5. Conditions of Readiness. Air Station Order 3141.1 contains the aircraft evacuation plan, Hurricane Shelter instructions, Aircraft Hangaring plan and other pertinent information on Hurricane preparedness. Conditions of readiness are set by the Commanding Officer of MCAS New River. Hurricane Evacuation Conditions for Aircraft are set by the CG, 2DMAW.

   a. Condition V. All clear, secure from all other conditions. Resume normal operations.

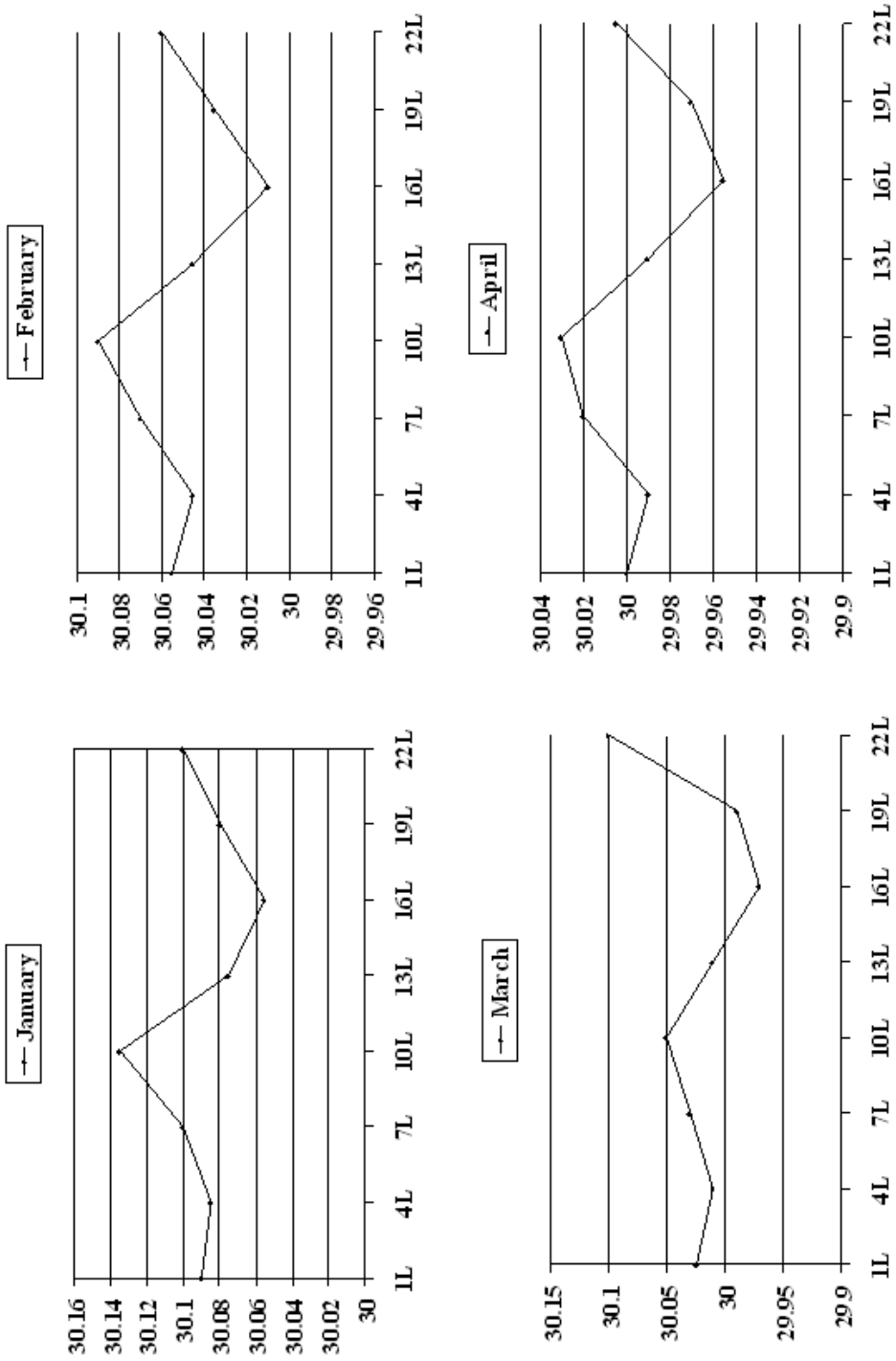
   b. Condition IV. A trend indicates a possible threat of destructive winds within 72 hours.

c. Condition III. Destructive winds are possible within 48 hours.

d. Condition II. Destructive winds are anticipated within 24 hours. Take precautions to ensure appropriate state of readiness on short notice.

e. Condition I. Destructive winds within 12 hours are anticipated. Take precautions to minimize damage.

f. Condition I Emergency. MCAS New River is experiencing damaging winds.


February
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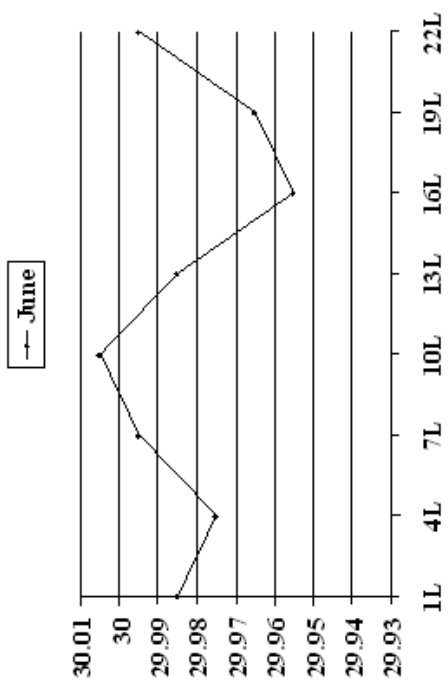
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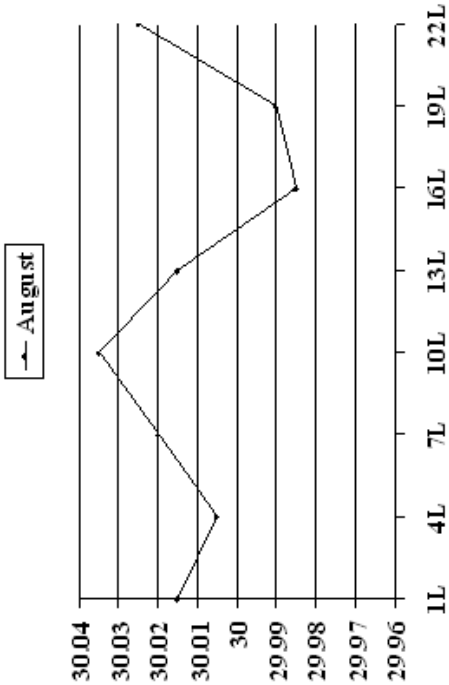
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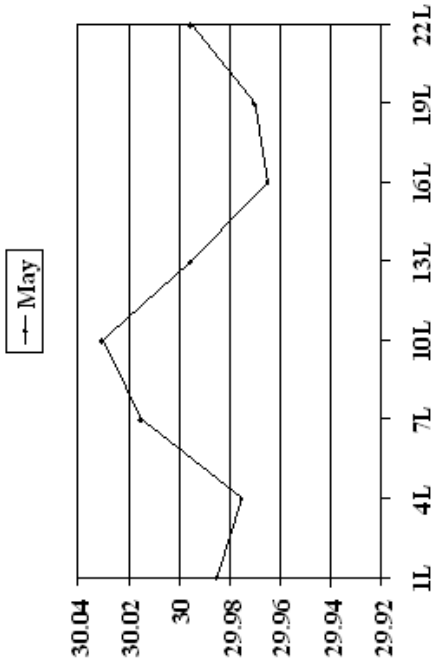
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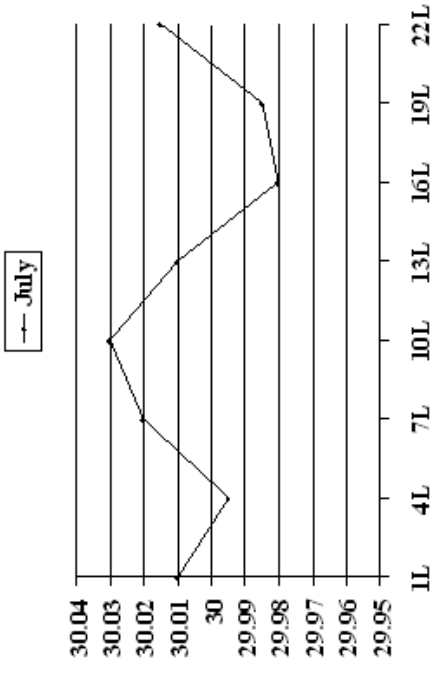
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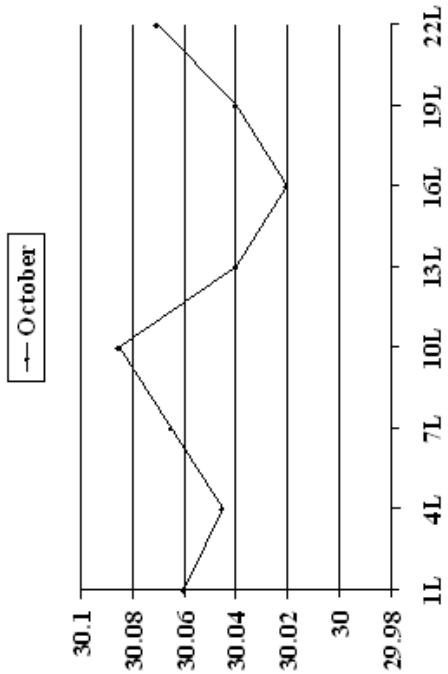
October
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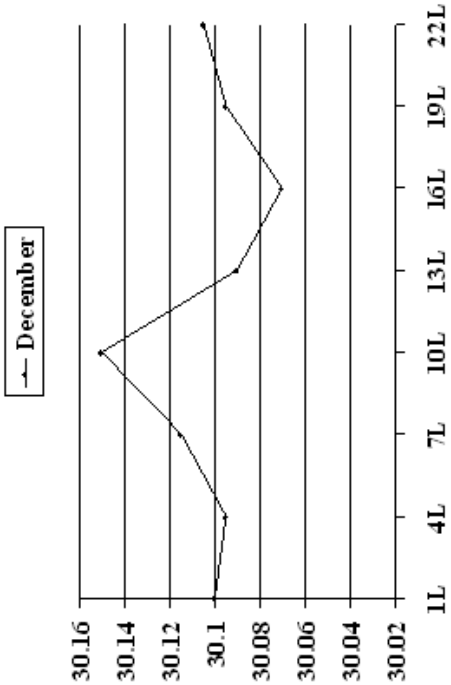
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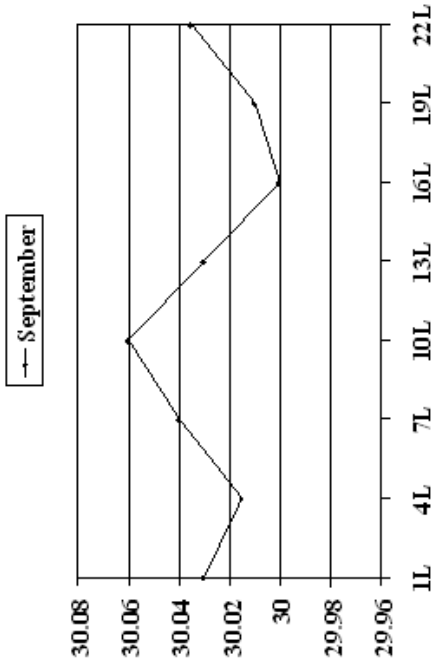
September
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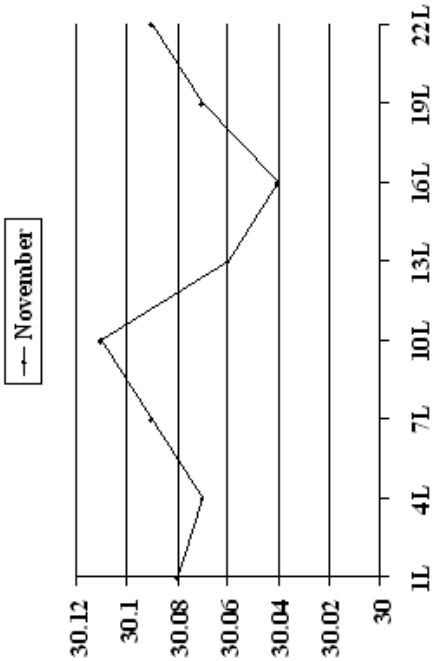
November
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19L
22L

FORECASTING

301. INTRODUCTION. It is incumbent upon the forecaster to consider ALL RULES and to use their experience and knowledge to develop their forecasts. The longer forecasters remain in the area, the more their awareness of weather at MCAS New River and surrounding area is developed. Hence, the *more* skillful they will become in forecast preparation.

302. SUBJECTIVE FORECASTING RULES.

A. The minimum temperature forecasted for night will usually be about the same as the dewpoint associated with the maximum temperature during the day, if there are no fronts expected to pass within the next 12 to 18 hours. Note: this rule is very reliable during the summer months.

B. The minimum temperature on the second night following a cold frontal passage will generally be lower than the minimum temperature on the first night. This rule usually works most of the time from late October through the first part of March at this station.

C. With light upper winds (2,000 through 10,000 feet) from the southeast through southwest, fog can be expected at any time after 2300 until sunrise. The actual time of fog formation corresponds closely to the time of high tide in New River. The forecaster must remember that the swamps to the south and the river to the east and north, are filled with brackish water. The ocean tide causes this water to rise and fall. The rise and fall of this brackish water will vary about one hour from the ocean tides along Onslow Beach. If no tide occurs between midnight and sunrise, the fog that forms is generally ground fog. In all cases, the fog will usually thicken near sunrise. Note: this rule is very reliable during the summer months.

D. When this station comes under a light NNB or NE gradient (surface and low levels) with winds of S to 10 knots, fog and/or stratus can be forecast during the night and early morning. This rule is very reliable from fall through late spring, especially after cold frontal passage.

E. Airmass thunderstorms that develop inland, moving from the southwest, seldom pass over this station. If they do, they will approach from about 240 degrees through 260 degrees; otherwise they will move to the east, passing south of the field, over the swamps, or to the northeast along Highway 17.

F. Most mature thunderstorms that actually pass over this weather station, approach from the northwest and are associated with summertime squall lines.

G. Summertime thunderstorms generally develop about 1300 and begin to break up between 1800 and 1900 LST.

H. During the summer months, use the morning SKEW-T for Greensboro, NC, Newport, NC, and Charleston SC, when forecasting airmass thunderstorms. Plot the stability index using the Showalter method. If the values are +3 to +2, convective showers should be forecast, with some widely scattered thunderstorms likely in the area. If the values are +1 to -2, increasing thunderstorms should be forecast. If the values are -3 to -5, severe thunderstorms should be forecast$_5$ with chances of tornadoes increasing. If the values are -6 and below, the forecaster should alert himself to the fact that tornado conditions are very probable.

I. During early spring through late fall, the Appalachian squall line often develops. It is generally a northeast to southwest squall line forming along the base of the mountains. It will move into this area during the afternoon, bringing thunderstorms, when the surface to 15,000 foot winds are westerly 25 to 30 knots. Another rule is that if Nashville, TN winds at 10,000 feet are westerly at 35 knots or greater, the squall line should reach New River.

J. When a weak gradient or no apparent gradient at all exists with extreme heating during the day, a southeasterly sea breeze will occur during the afternoon. After sunset, a westerly drainage effect will set in and last until early morning. If the humidity is high this motion will produce what appears to be a surface trough to about 1500 to 2000 feet along the coast. During the period just after sunrise the following day with the first heating, stratus or stratus fractus will develop to the southwest over the swamp area, with the ceiling 500 to 800 feet. As the clouds move eastward toward the station, they will gradually dissipate after about two hours.

K. Snow vs. Rain: When forecasting snow, look for the temperature on the 850 MB level to be between -2 C and -4 C, the 1,000 - 500 MB thickness to be between 5365 and *5425* and the 1,000-700 MB thickness to be between 2805 and 2865 over the station. If all parameters are met, forecast snow.

303. OBJECTIVE FORECASTING.

A. Fog.

1. Is there a low level inversion present or forecast?

2. Has fog been dominating the southeastern states the previous day?

3. Is the humidity throughout the surrounding area running high?

4. Are the winds below 850 MB less than 15 knots?

5. Is the 850 MB temperature greater than 7 F?

6. Is the surface dewpoint above 35 F?

7. Is the dominating air mass stagnating over the area?

8. If the answer to these questions are yes, the forecaster should make a study of the surface synoptic and upper air charts for the type of fog most likely to occur and the time of occurrence.

B. Advection Fog.

1. Is there a dominating air mass stagnating over this area?

2. Has fog been reported within the air mass on previous nights?

3. Are the surface and low level winds expected to prevail from over the water?

4. Are the surface and low level winds below 10 knots?

5. Is the humidity during the day running above 80%?

6. Is the humidity forecast to be 95% or greater during the night?

7. If yes is the answer to all questions, then advection fog is very likely to occur during the night as colder air is being advected over the warmer (Gulf Stream) water then over the colder land surface.

C. Radiation Fog.

1. Are surface and low level winds below 5 knots and expected to remain so?

2. Are clear skies expected to prevail throughout the night?

3. Has fog been reported upstream in the air mass and is expected to dominate at night?

4. Is there a low level inversion, and sufficient moisture expected at night?

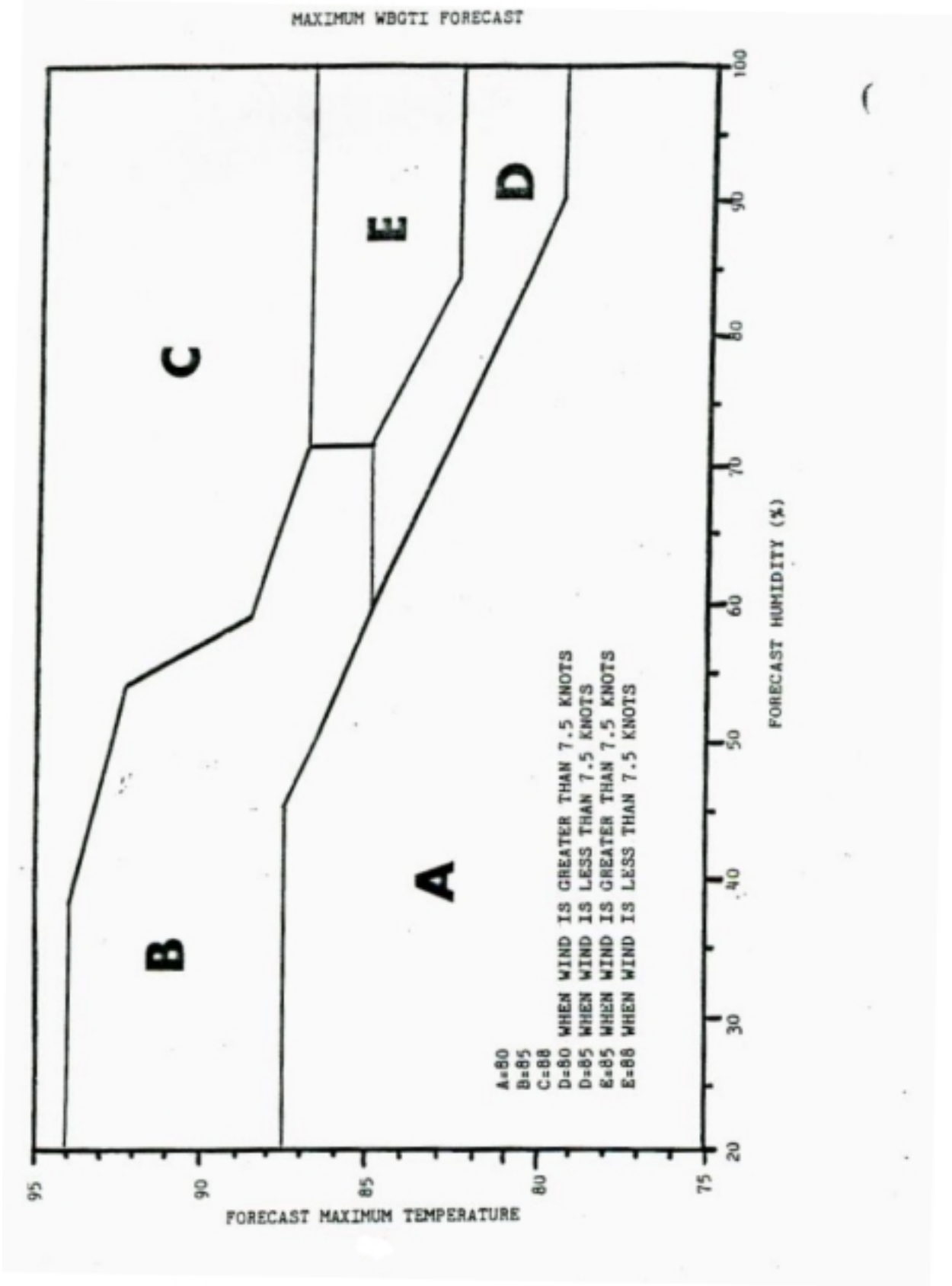
5. Is the air mass a new one over this area?

6. If the answers are yes, then radiation fog is likely to form during the night.

D. Forecasting Wet-Bulb Globe Temperature Index (WBGTI). When forecasting the WBGTI, use diagram 17. Enter the graph on the left hand side with the forecasted maximum temperature and on the right hand side with the forecasted humidity.

Where they intersect use the value of "A, B, C, D_5 or E" and refer to the ledger in the bottom left hand corner for the humidity factor.

E. Forecasting Wind Chill Factor. To forecast the chill factor use the wind chill factor chart, diagram 18. Enter the graph with the forecasted wind speed in the left hand column, then read right across to the forecasted temperature.


MAXIMUM WBGTI FORECAST
A
B
C
D
E
A=80
B=85
C=88
D=80 WHEN WIND IS GREATER THAN 7.5 KNOTS
D=85 WHEN WIND IS LESS THAN 7.5 KNOTS
E=85 WHEN WIND IS GREATER THAN 7.5 KNOTS
E=88 WHEN WIND IS LESS THAN 7.5 KNOTS
FORECAST MAXIMUM TEMPERATURE
95
90
85
80
75
FORECAST HUMIDITY (%)
20
30
40
50
60
70
80
90
100

ESTIMATED WIND SPEED (IN KNOTS)	ACTUAL THERMOMETER READINGS (DEGREES FAHREHEIT)											
	40	35	30	25	20	15	10	5	0	-5	-10	-15
	EQUIVALENT TEMPERATURE (DEGREES F)											
3-6	35	30	25	20	15	10	5	0	-5	-10	-15	-20
7-10	30	20	15	10	5	0	-10	15	-20	-25	-35	-40
11-15	25	15	10	0	-5	-10	-20	-25	-30	-40	-45	-50
16-19	20	10	5	0	-10	-15	-25	-30	-35	-45	-50	-60
20-23	15	10	0	-5	-15	-20	-30	-35	-45	-50	-60	-65
24-28	10	5	0	-10	-20	-25	-30	-40	-50	-55	-65	-70
29-32	10	5	-5	-10	-20	-30	-35	-40	-50	-60	-65	-75
33-36	10	0	-5	-15	-20	-30	-35	-45	-55	-60	-70	-75
	LITTLE DANGER					INCREASING DANGER						GREAT DANGER

304. WARNINGS AND CONDITIONS OF READINESS. Although Station Order 3141.1 theoretically covers the local plan, the following summary is provided for ready reference.

A. Destructive Weather Screen. 0l June through 30 November has been established as the Hurricane season for the Eastern coast *of* the United States and 0l December through 15 March has been established as the snow/ice storm season for coastal North Carolina. Although tornadoes and severe thunderstorms occur somewhere in the United States every month of the year, the most frequent occurrences are during April, May and June.

B. Weather Warnings. Weather Warnings are issued for hazards within the local flying area (that area within a *25* NM radius of the station). Warnings are also issued for winds in excess of 19 knots (gusts or sustained) to include LLWS and turbulence.

1. Thunderstorm/Tornado Condition II. This is issued whenever thunderstorms/ tornadoes are present or forecast to occur within the next 6 hours. Tornado Cond. II is the equivalent of the NWS's Tornado Watch.

2. Thunderstorm/Tornado Condition I. This warning is issued whenever thunderstorms/tornadoes are imminent or in progress.

3. Light to Moderate Snow Advisory. This is issued whenever the accumulation of snow is forecast to be less than 2 inches.

4. Light to Moderate Ice Advisory. This advisory is issued whenever the accumulation of ice is forecast to be less than 1/2 an inch.

5. Hard Freeze Advisory. This is issued whenever the temperature is forecast to drop below 20 F or remain below 32 F for more than 24 hours.

6. Gale/Storm/Tropical Storm/Hurricane Warning. The following listed conditions are issued by the Station Commanding Officer.

a. Condition V. Secure from condition. Threat of storm has passed. Return to normal operations.

b. Condition IV. Destructive winds are possible within 72 hours.

c. Condition III. Destructive winds are possible within 48 hours.

d. Condition II. Destructive winds are anticipated within 24 hours.

e. Condition I. Destructive winds are imminent or anticipated within 12 hours.

f. Condition I (Emergency). Destructive winds are being experienced.

7. Snow Storm/Ice Storm. The following listed conditions are issued by the Station Commanding Officer.

   a. Condition IV. Secure from Snow/Ice storm condition. Threat of storm has passed. Return to normal operations.

   b. Condition III. Heavy Snow/Ice storm is anticipated within 24 hours.

   c. Condition II. Heavy Snow/Ice storm is anticipated within 12 hours.

   d. Condition I. Heavy Snow/Ice Storm is imminent.

305. ROUTINE FORECASTS.

A. DD-175-1's and HWD's. DD-l75-l's are prepared on all IFR/VFR flights originating from MCAS New River (less VFR Station flight routes). HWD's are prepared whenever requested for flights over 200 NM. All DD-175-l's and HWD's are prepared in accordance with COMNAVMETOCCOM instructions.

B. G-2 Forecast. This forecast is prepared by 0530L, in accordance with the local SOP.

C. Prerecorded Plain Language Forecast. Forecast is prepared by 0600L and 1800L, or as changing conditions warrant.

D. TAF. TAF's are prepared in accordance with COMNAVMETOCCOM instructions. MCAS New River issues four TAF's daily. All forecasts have a valid period of 24 hours and are filed at six-hour intervals at the following times: 03Z, 09Z, l5Z and 21Z.

   1. Amendment Criteria. TAF's are amended in accordance with the criteria established in COMNAVMFTOCCOM and local instructions. It is the forecaster's responsibility to ensure that the observational watch monitors changing weather conditions and that necessary amendments are issued expediently.

   2. Verification. The Training NCO shall be responsible for reviewing all forecast products to check for content and format. Individual forecasters should compare their forecast products to surface observations so they can improve the quality of their products.

E. Sound Focus Forecasting. This forecast is prepared utilizing the SOCUS Program on GFMPL. Units requiring this information will contact the Duty Forecaster with

the pertinent information when required. The local range coordinates are filed in the Forecaster's Ready Reference binder.

SPECIALIZED FORECASTS

401. INTRODUCTION. Any number or type of special forecasts could be requested from this office The most frequent and most probable types are discussed below.

402. RADIOLOGICAL FALLOUT (RADFO). This forecast (not routinely prepared) may be required at some point in time. It is essential that the forecaster be familiar with the procedures and references. The pattern of deposit of contaminated particles varies greatly with the upper winds and is also influenced by vertical currents, clouds, and precipitation. Predictions of fallout areas depend upon many assumptions about such things as weapons yield, burst type, nature of the surface, and meteorological factors. These predictions are not precise. However, it is important that planners and commanders have at least an approximate warning of the areas of serious contamination. This information will be obtained by utilizing the MOSS and GFMPI Programs.

403 AIRCRAFT ROUTING. Several routing forecasts are available. The most requested are discussed below.

A. National Weather Service Flight Level Winds Forecasts. Flight level winds are available as required via CMW's (FXPN series).

B. Optimum Path Aircraft Routing System (OPARS). MCAS New River does possess the required equipment to provide OPARS service to pilots. The primary purpose of OPARS is to provide a flight planning service to the Naval aviation community. By using state of the art computer power to combine the latest forecast environmental data with the most fuel efficient flight profile for specific aircraft, a recommended, customized flight plan is provided. You can use the recommendations in many ways. If a known fuel load and cargo combination route/altitude profile is acceptable, then fill out the necessary DD forms, check with the duty weather forecaster, and file the flight plan and head out to the aircraft. When airborne, expected winds and fuel usage are then verified with actual conditions.

404 RADAR PROPAGATION (REFRACTIVE INDEX). This forecast (FXUS series) describes the effects that the environment will have on refraction of radar waves in the atmosphere and may be used to correct and account for abnormal refraction of weather radar and possible combat air controlling radar.

405 CHEMICAL DEFENSE. Hazards from chemical attacks are not confined to areas directly attacked. The vapor or aerosol will travel with the wind and may produce casualties among unprotected personnel downwind. Speedy identification of likely hazard areas and dissemination of area computations are necessary to prevent further casualties. The AFTOX program contains simple techniques for use by environmental forecasters in estimating the downwind hazard areas resulting from chemical attacks.

A. Chemical Downwind Message (CDM). This forecast (not routinely prepared) may be required at some point in time. It is essential that the forecaster be familiar with the procedures and references. CDM's are only valid for six (6) hours and require a coded message that can be found in the forecaster reference, or may be obtained from NBC personnel.

406 MOBILE OCEANOGRAPHIC SUPPORT SYSTEM (MOSS). MCAS New River does have the required equipment to provide MOSS products to the aviation community and other required units. The commonly used products at MCAS New River are SOCUS, COVER, LOSS, SLAP, and TIDES. The MOSS user's guide and associated hardware/software are located in the Secondary Control Point.

407 ELECTRO-OPTICAL TACTICAL DECISION AIDS (ETODA). Night Vision Goggles are used on a frequent basis at MCAS New River. It is essential that the forecaster be familiar with the procedures and references for receiving a request and processing an EOTDA. The hardware, software and user manuals are located in the Secure room. EOTDA Ops worksheets for TV, IR and Laser requests are located in the Forecaster's Ready reference and in the Secondary Control Point.

ENVIRONMENTAL EFFECTS

501. INTRODUCTION. Significant effects of natural phenomena, which may affect aircraft, facilities, operations, and training, as well as personnel$_5$ are of primary importance to thc Weather Service mission Alerting Commanders in a timely manner of the occurrence or probability of occurrence of the phenomena is paramount for the forecaster to successfully accomplish his task. Significant phenomena are discussed below.

502. THUNDERSTORMS. Thunderstorms at this station are predominately airmass type and occur more frequently during the sunnier months. Thunderstorms account for the majority of precipitation recorded at this station during the summer months. These storms generally develop around 1300L and break-up between ISOOL and 1900L. Surface winds are often gusty with hail occasionally occurring. In the winter, thunderstorms are scarce, but can occur in association with an unstable airmass and a strong cold front.

503. TORNADOES. Although tornadoes have rarely been recorded at this station, they have occurred within a few miles of New River. It is also common for pilots to report waterspouts along the coast off Onslow Beach, whenever the conditions are conducive for tornadic activity. Conditions for severe thunderstorms, tornadoes, and waterspouts are at a maximum in this area from July through September.

REFERENCES

DOD Flight Information Publications, Volumes 10 and 11, Dated 30 March 1995

International Station Meteorological Climate Summary (ISMCS) Version 2.0 June 1992

NAVAIR 50-1C-529, U.S. Navy Marine Climatic Atlas of the World, Volume III July 1956

Climate Study of the Near Coastal Zone, East Coast of the U.S., Prepared by NWSD, Ashville, N.C.

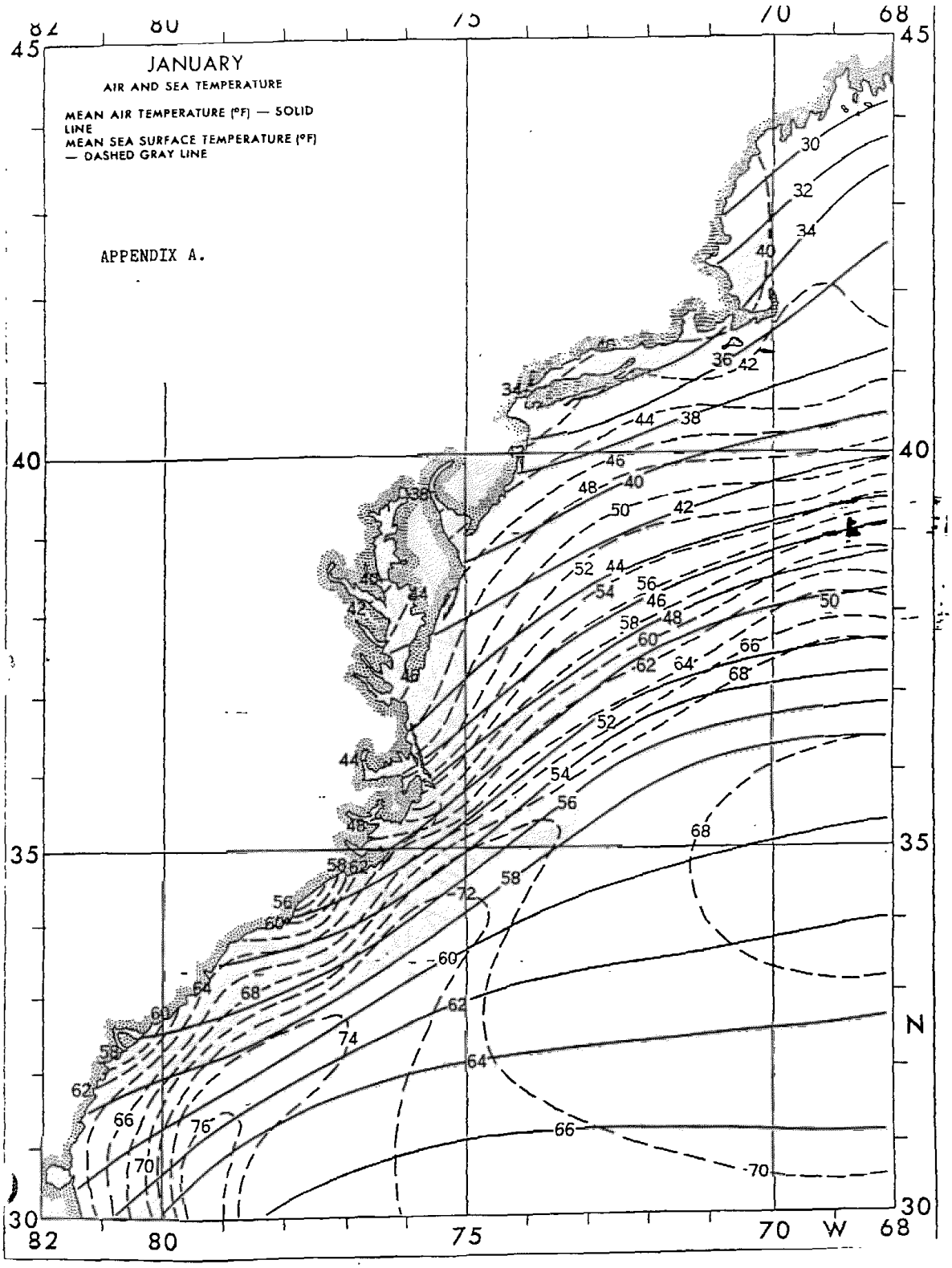
NAVEDTRA 10369 Aerographer's Mate Third Class

OPNAV INSTRUCTION 3140.24E (Warning and Conditions of Readiness Concerning Hazardous or Destructive Weather Phenomena)

WgO 3140.1L (Aircraft Hurricane Evacuation Plan)

Marine Corps Air Station Cherry Point, Local Area Forecaster's Handbook

Marine Corps Air Station New River, Local Area Forecaster's Handbook Dated 05 May 1995


JANUARY
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
APPENDIX A.
82
80
75
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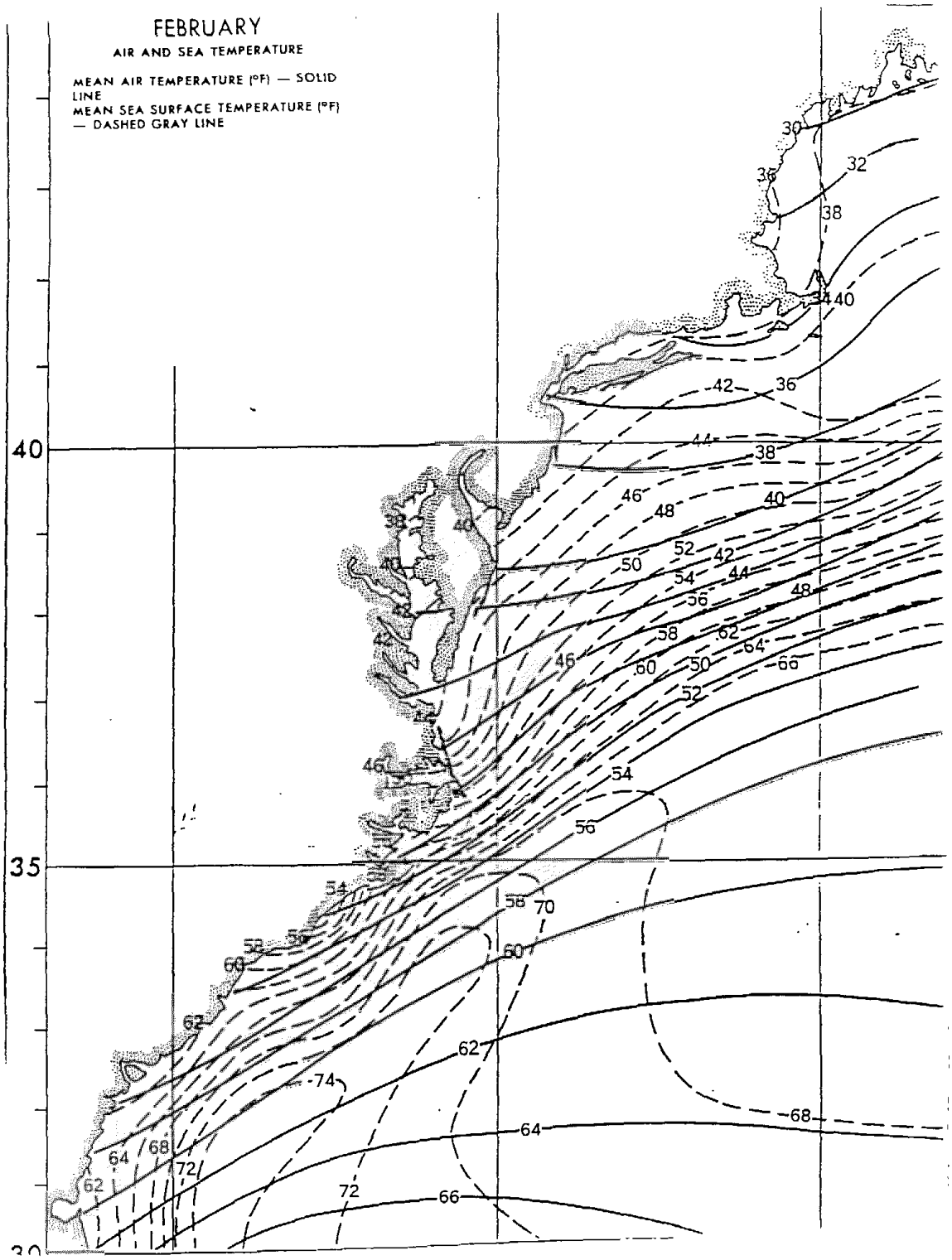
FEBRUARY
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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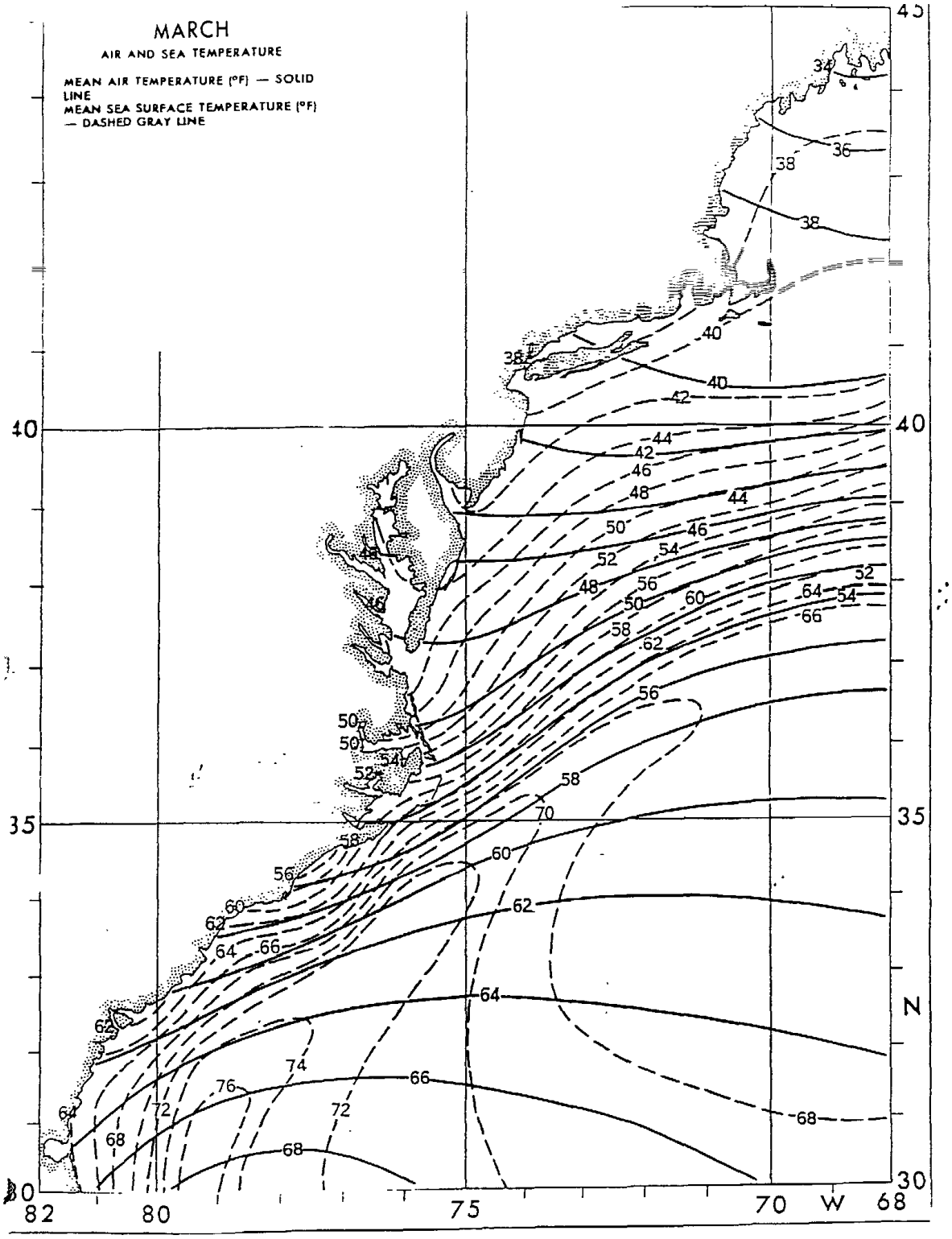
MARCH
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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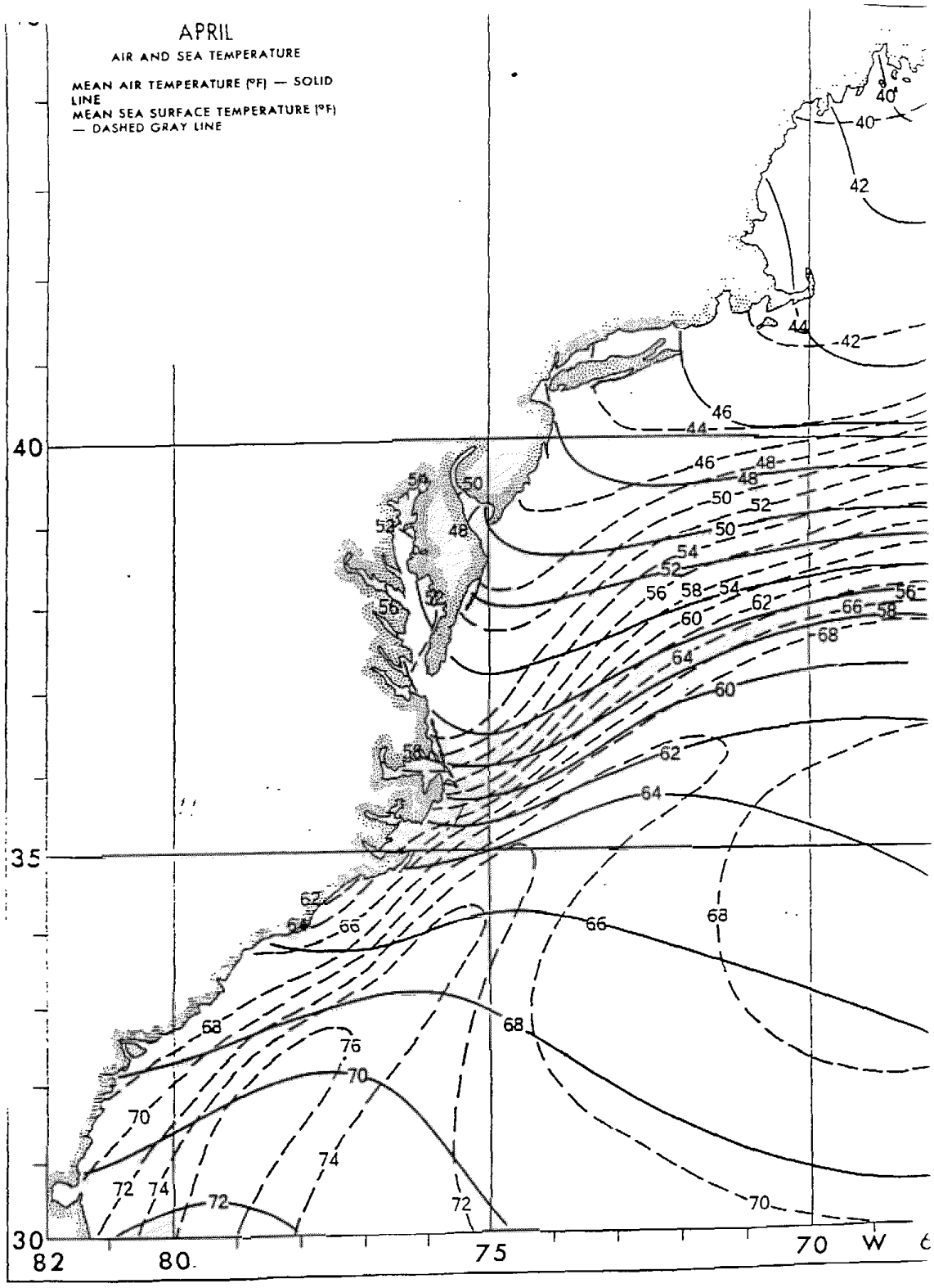
APRIL
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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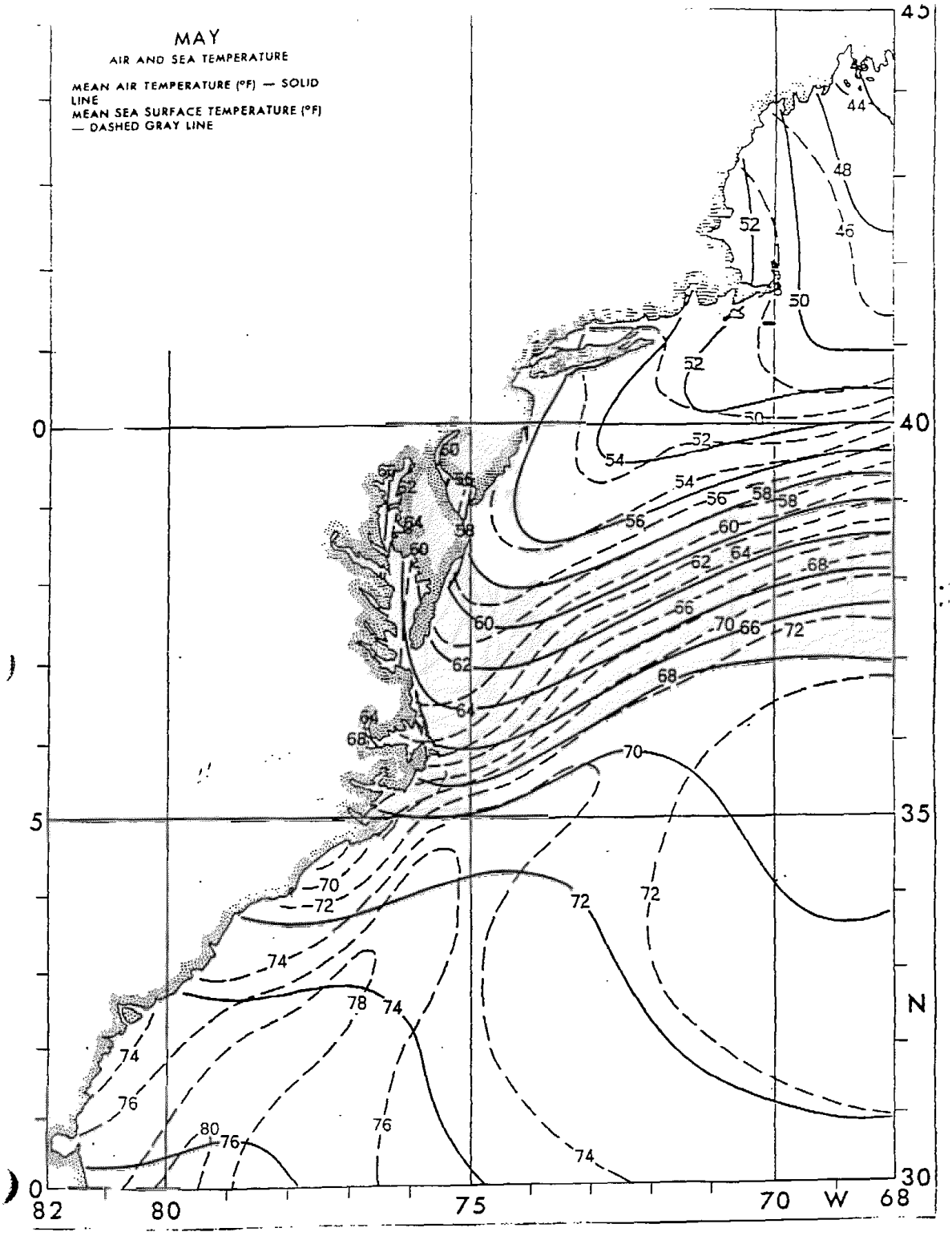
MAY
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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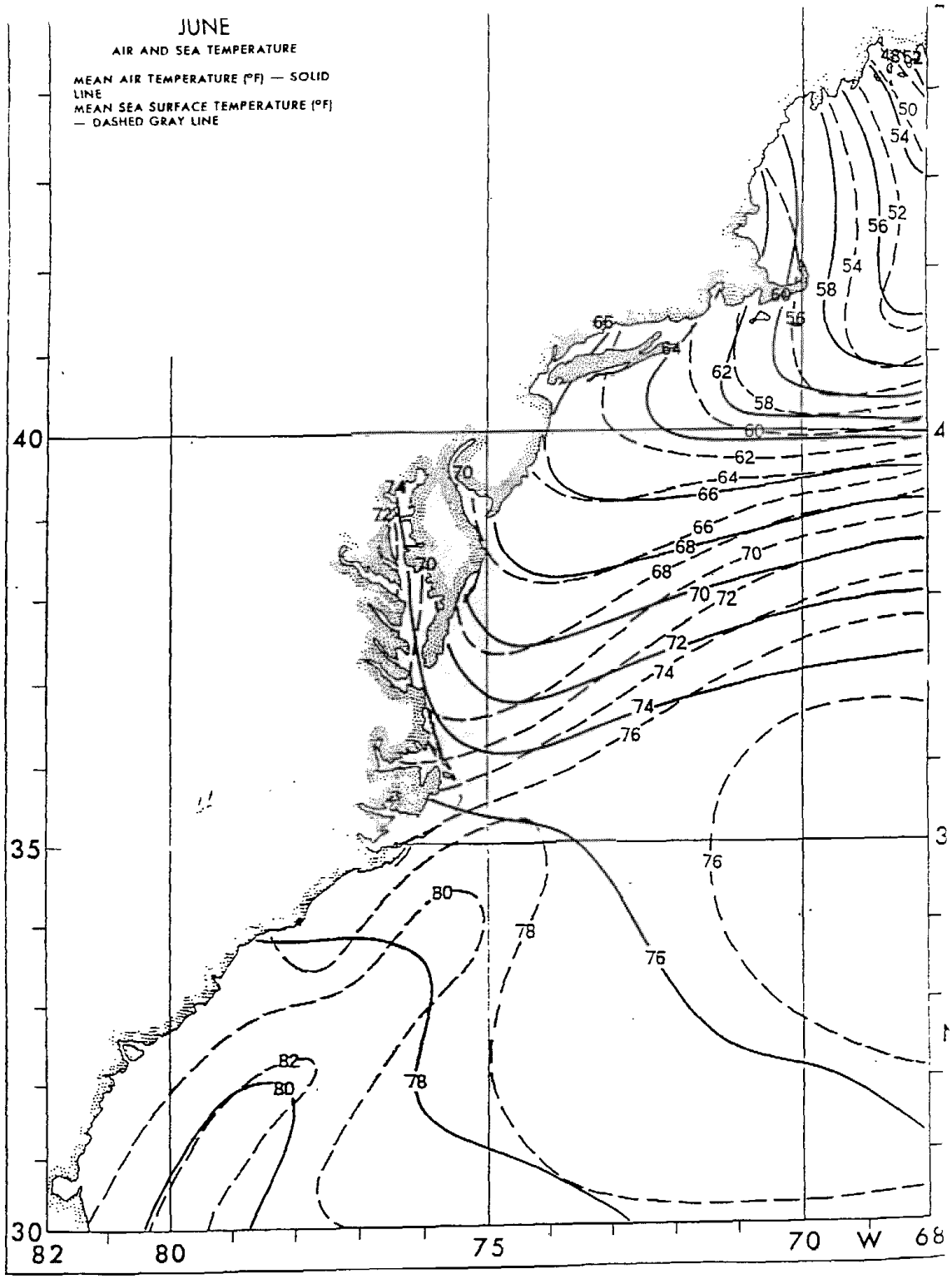
JUNE
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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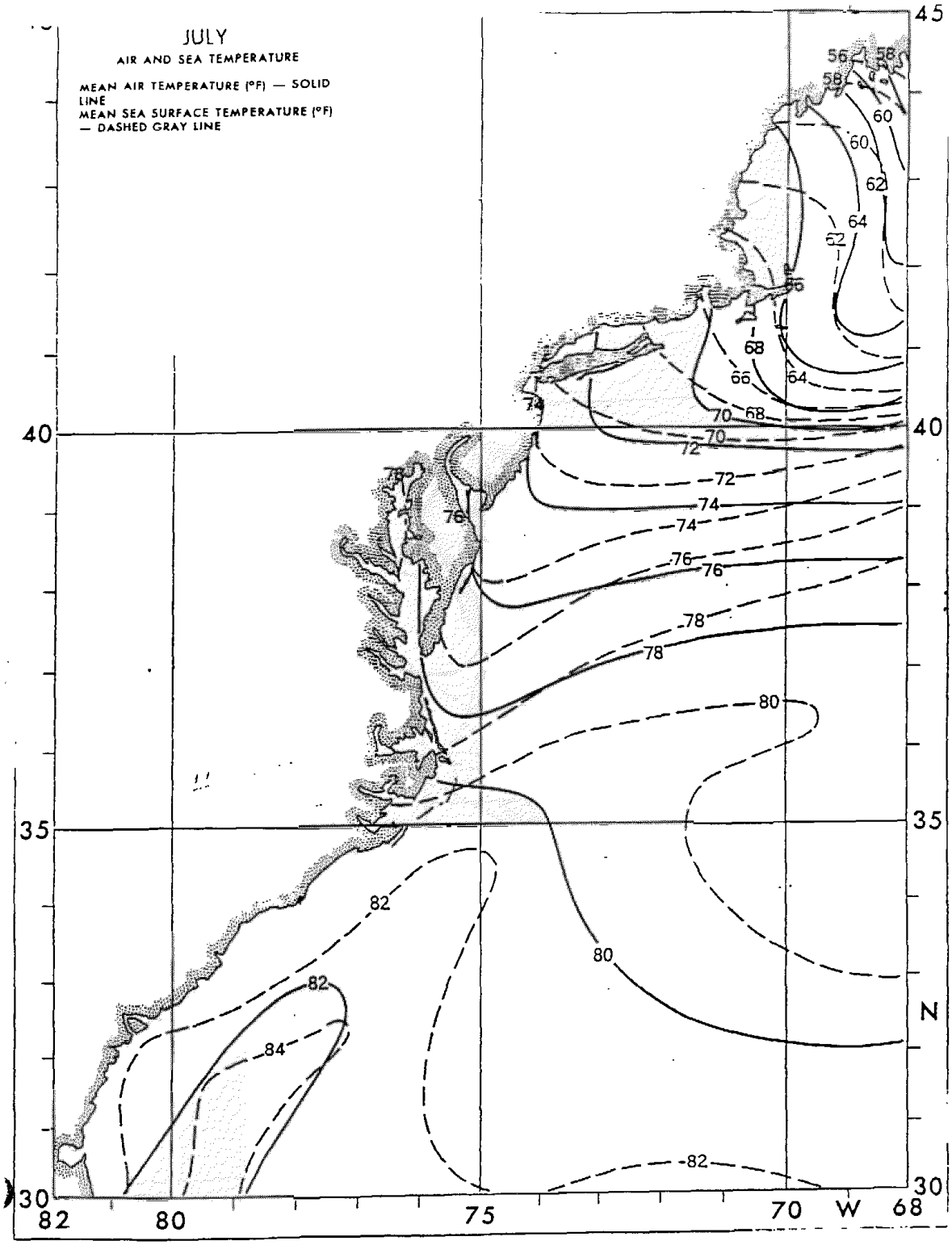
JULY
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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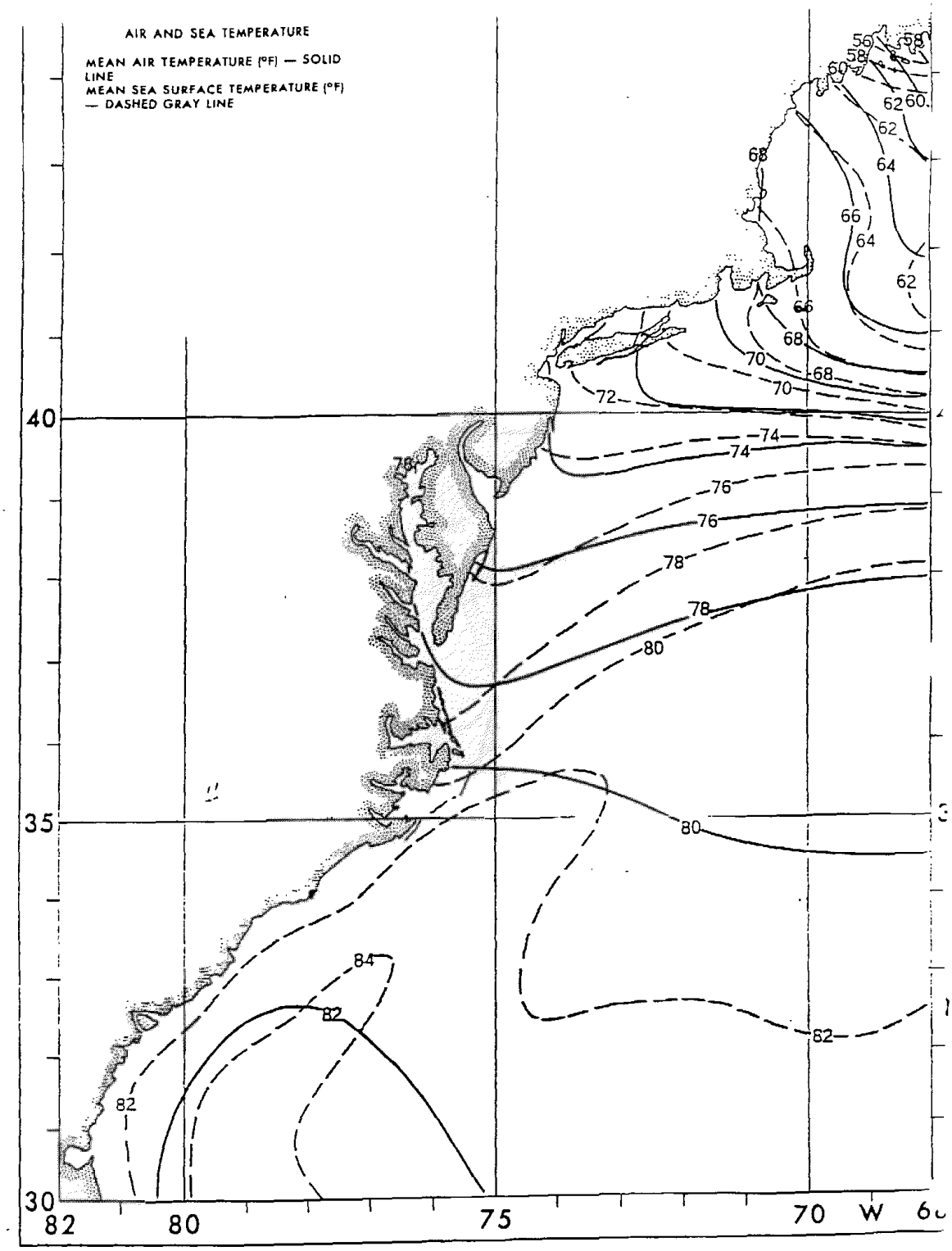
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
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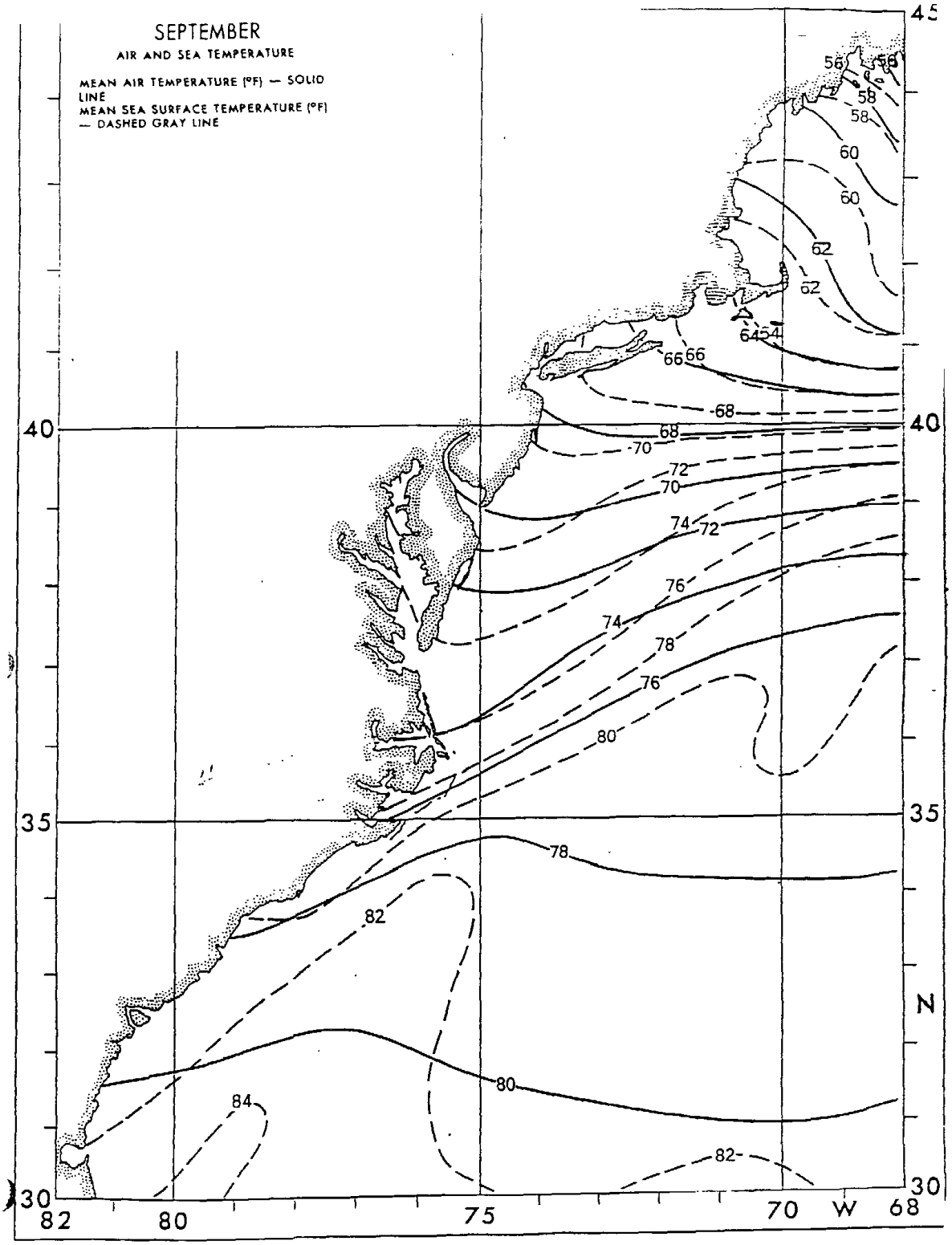
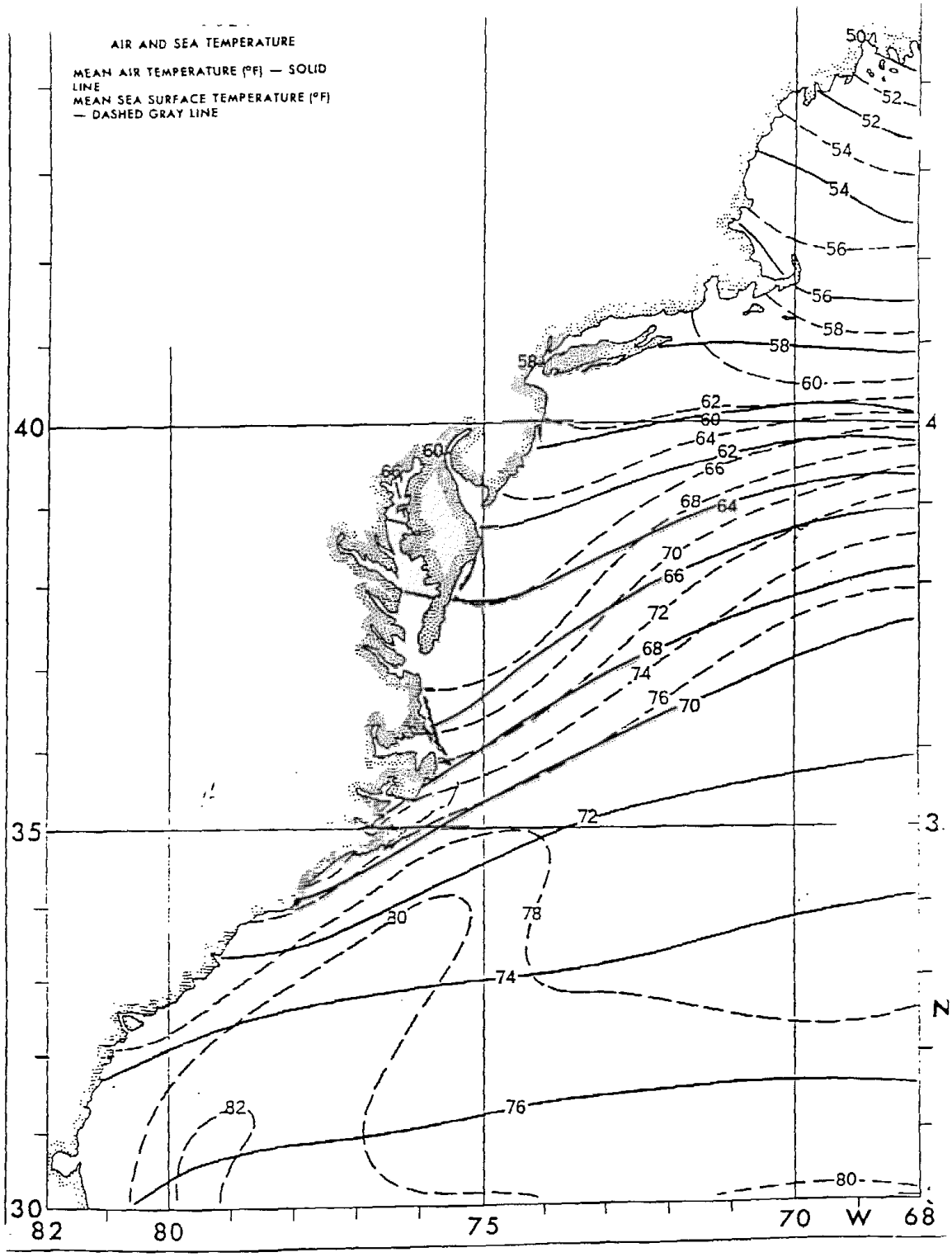
84

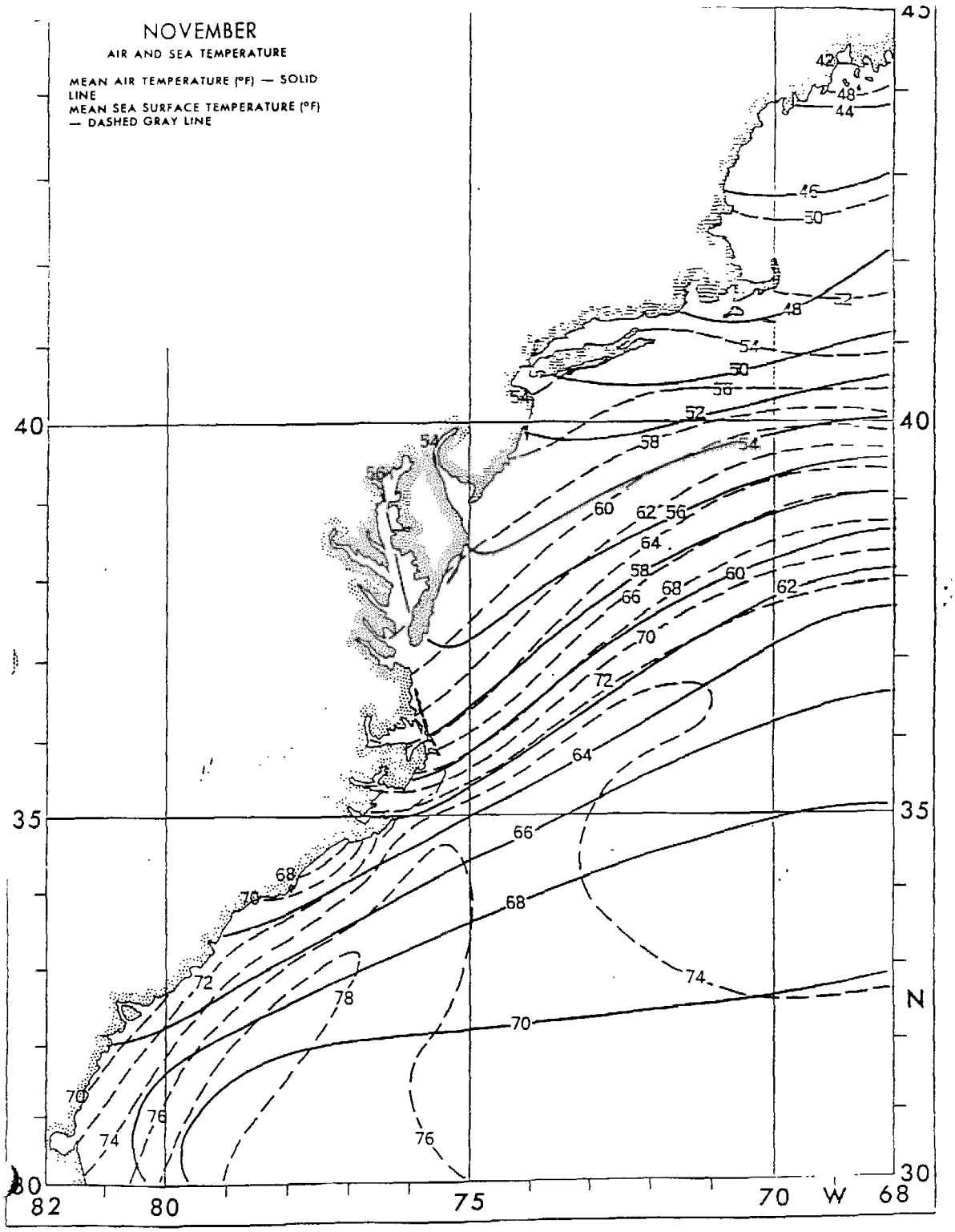
A-8


SEPTEMBER
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
45
40
35
30
82
80
75
70
W
68
N
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84

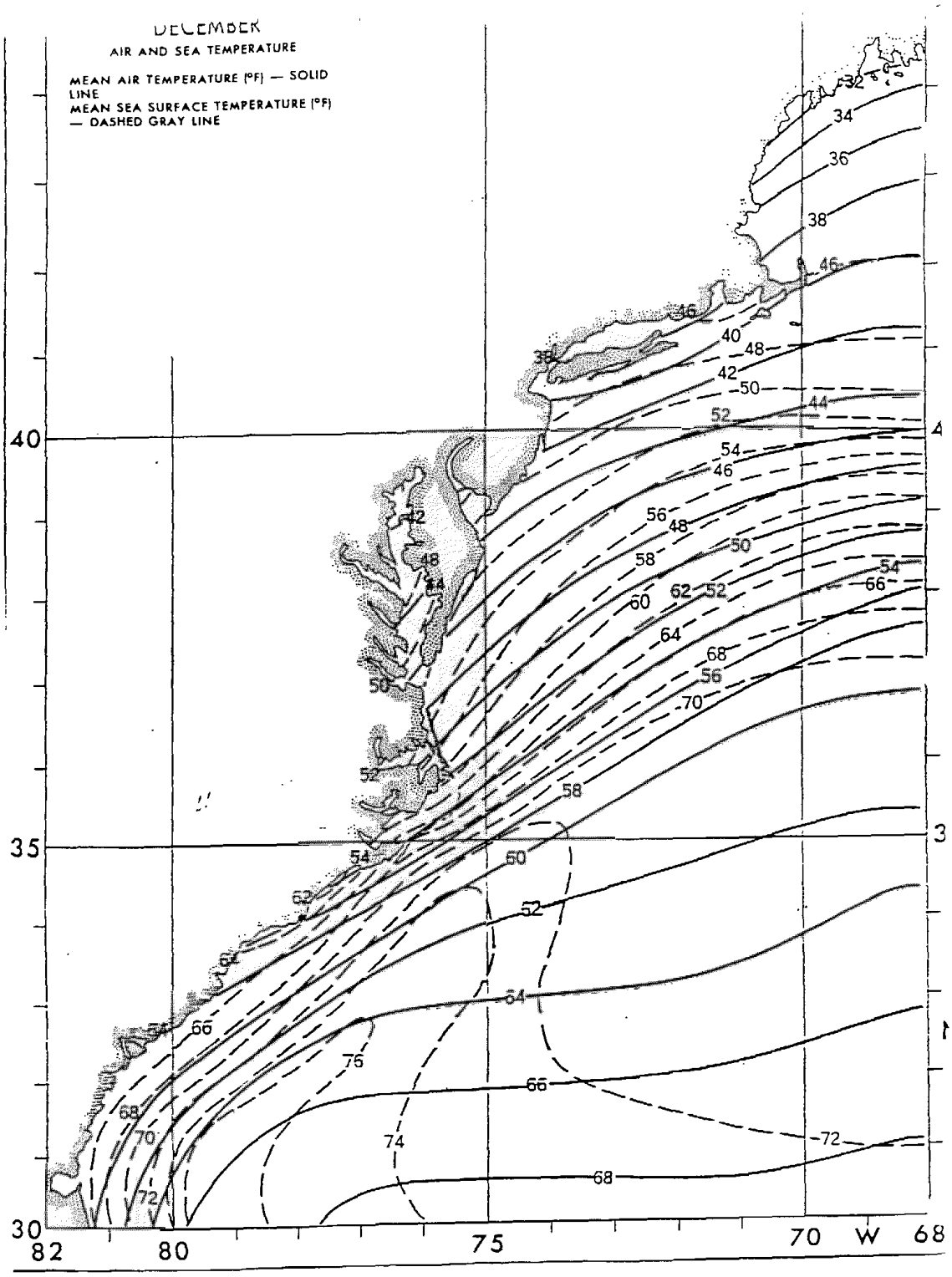
A-9


AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
40
35
30
82
80
75
70
W
68
N

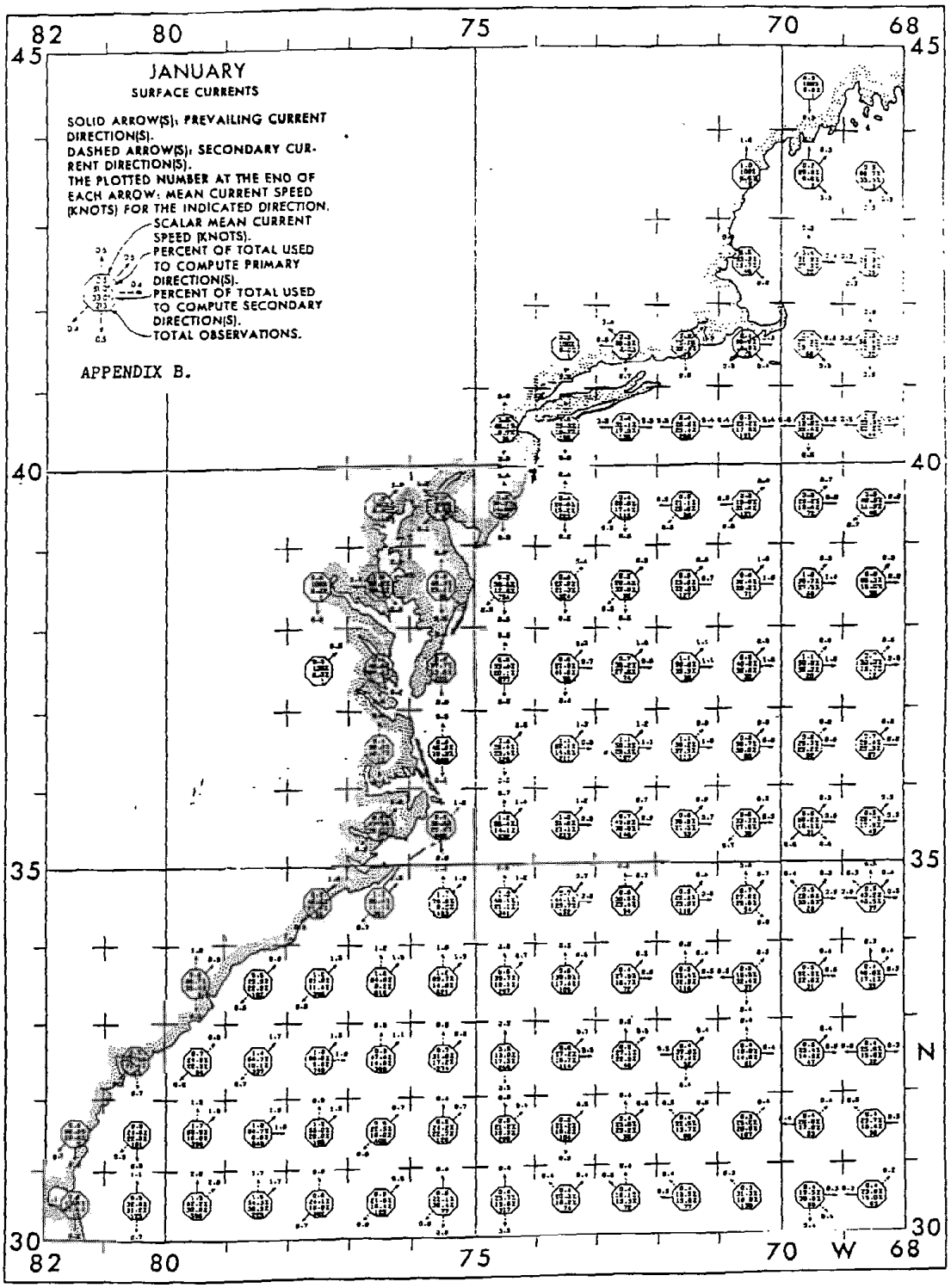
A-10


NOVEMBER
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
40
35
30
82
80
75
70
W
68
N

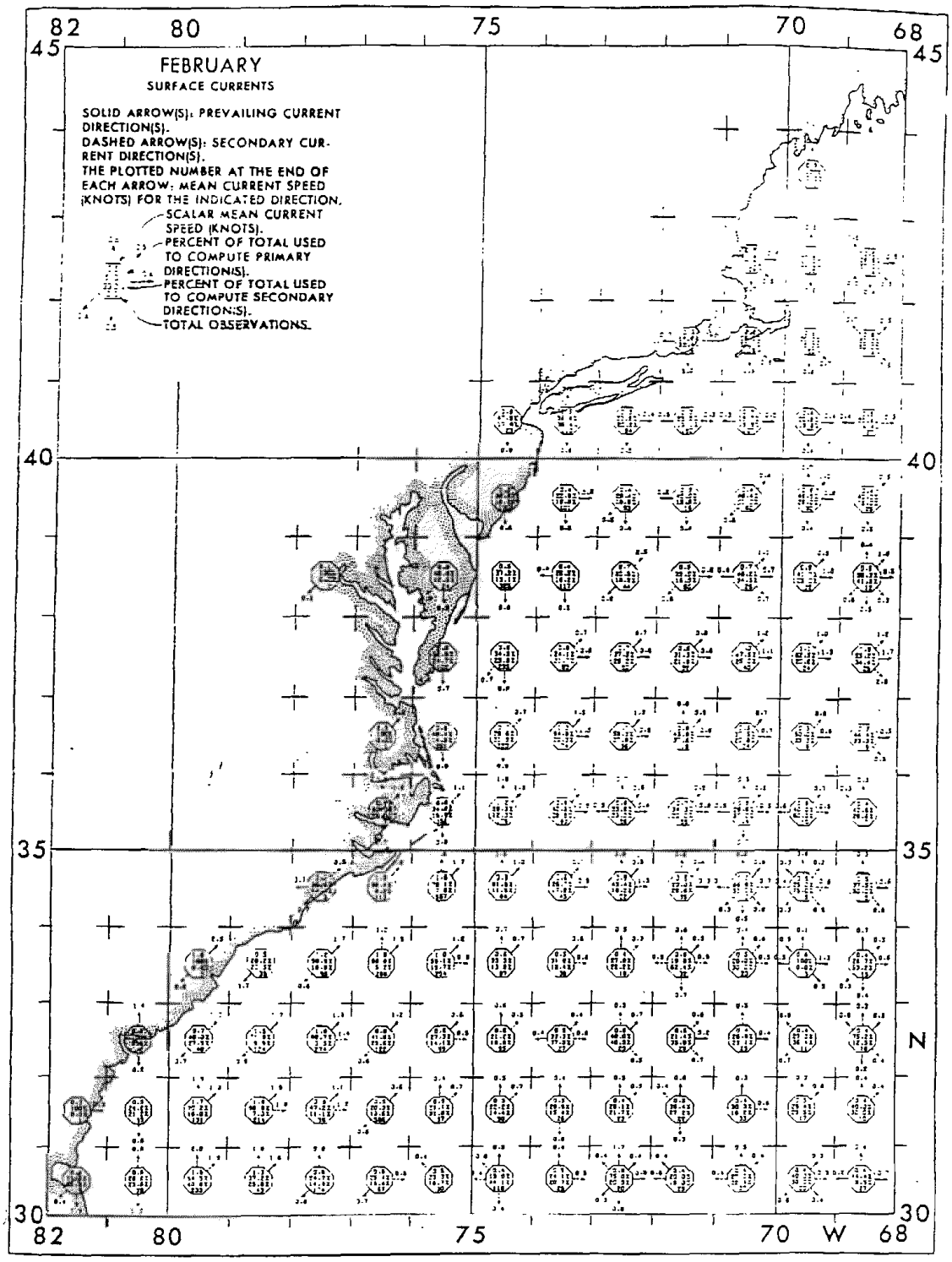
A-11


DECEMBER
AIR AND SEA TEMPERATURE
MEAN AIR TEMPERATURE (°F) — SOLID LINE
MEAN SEA SURFACE TEMPERATURE (°F) — DASHED GRAY LINE
40
35
30
82
80
75
70
W
68

A-12


JANUARY
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
APPENDIX B.
82
80
75
70
68
45
40
35
30
N
W

B-1


FEBRUARY
SURFACE CURRENTS
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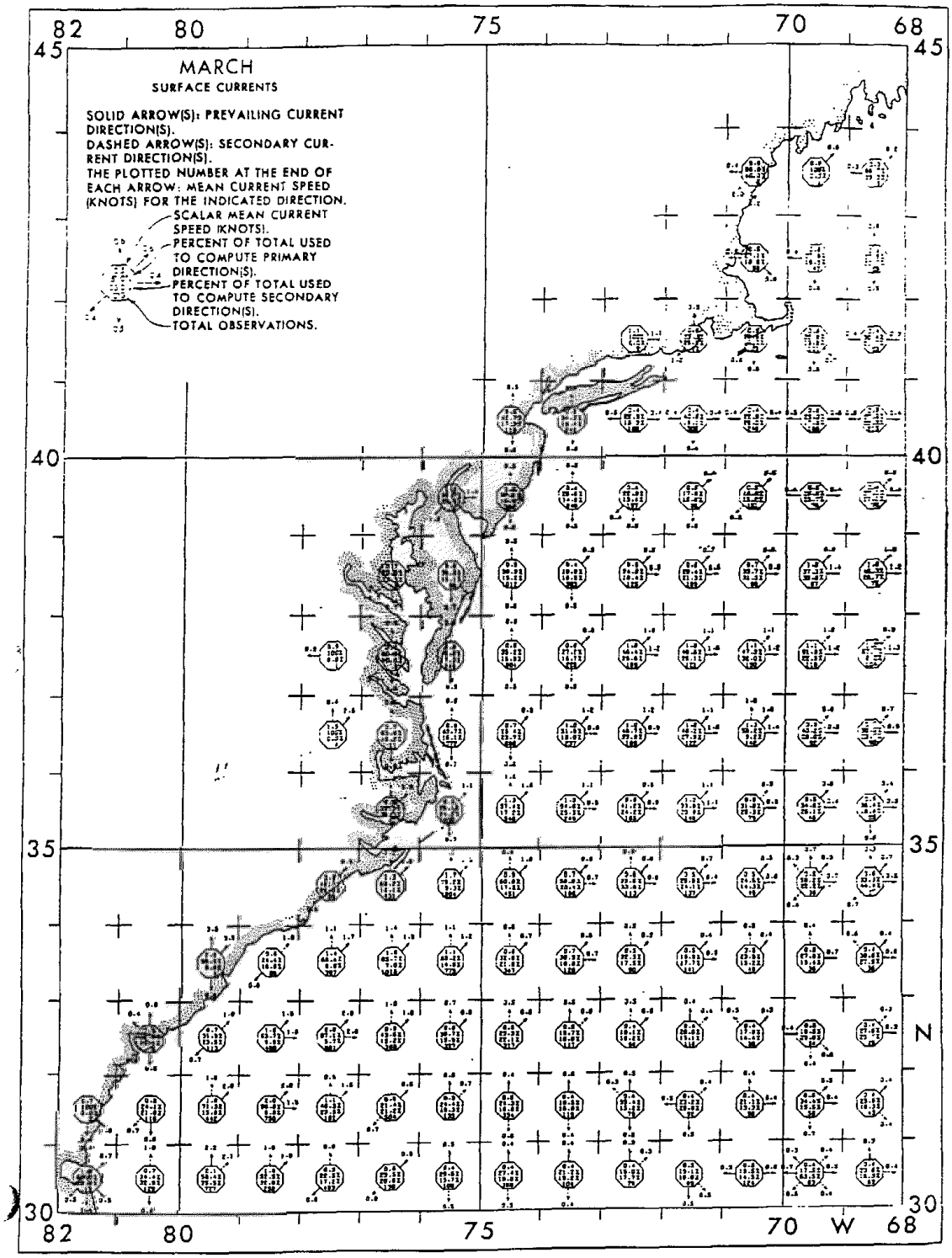
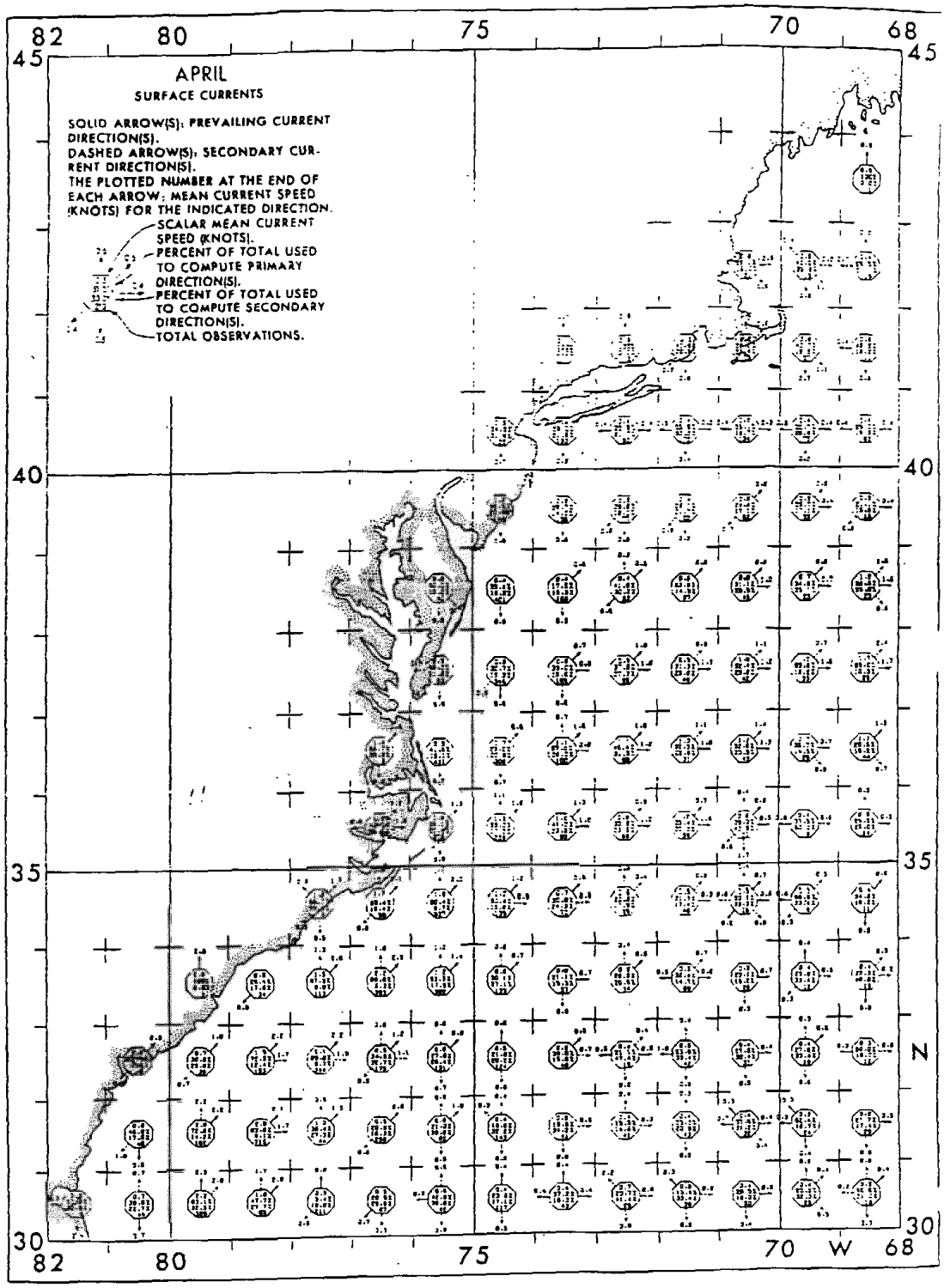
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
80
75
70
68
45
40
35
30
N
W

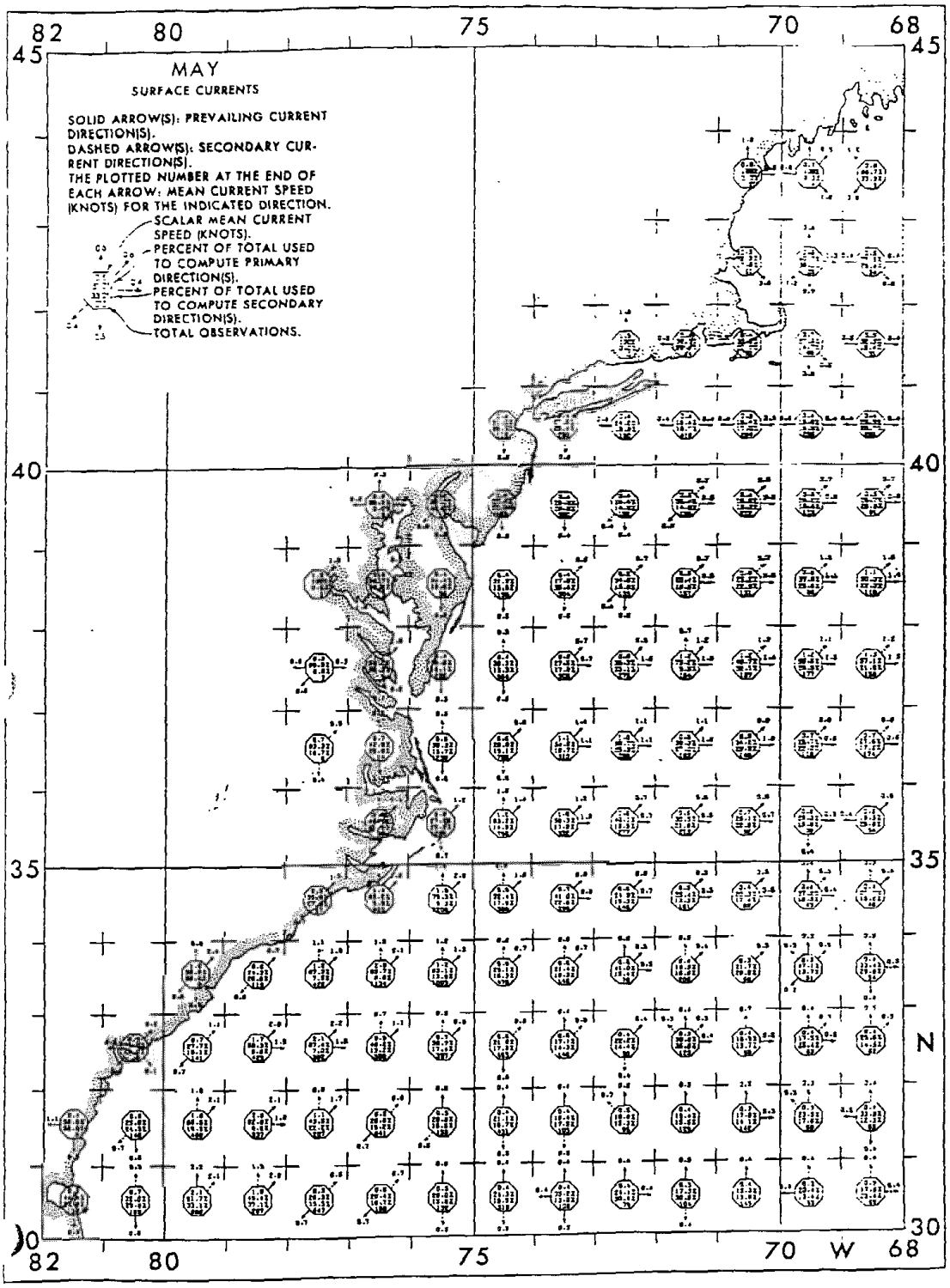
B–2


MARCH
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
80
75
70
68
45
40
35
30
N
W

B-3


APRIL
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
80
75
70
68
45
40
35
30
N
W

B-4


MAY
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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35
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N
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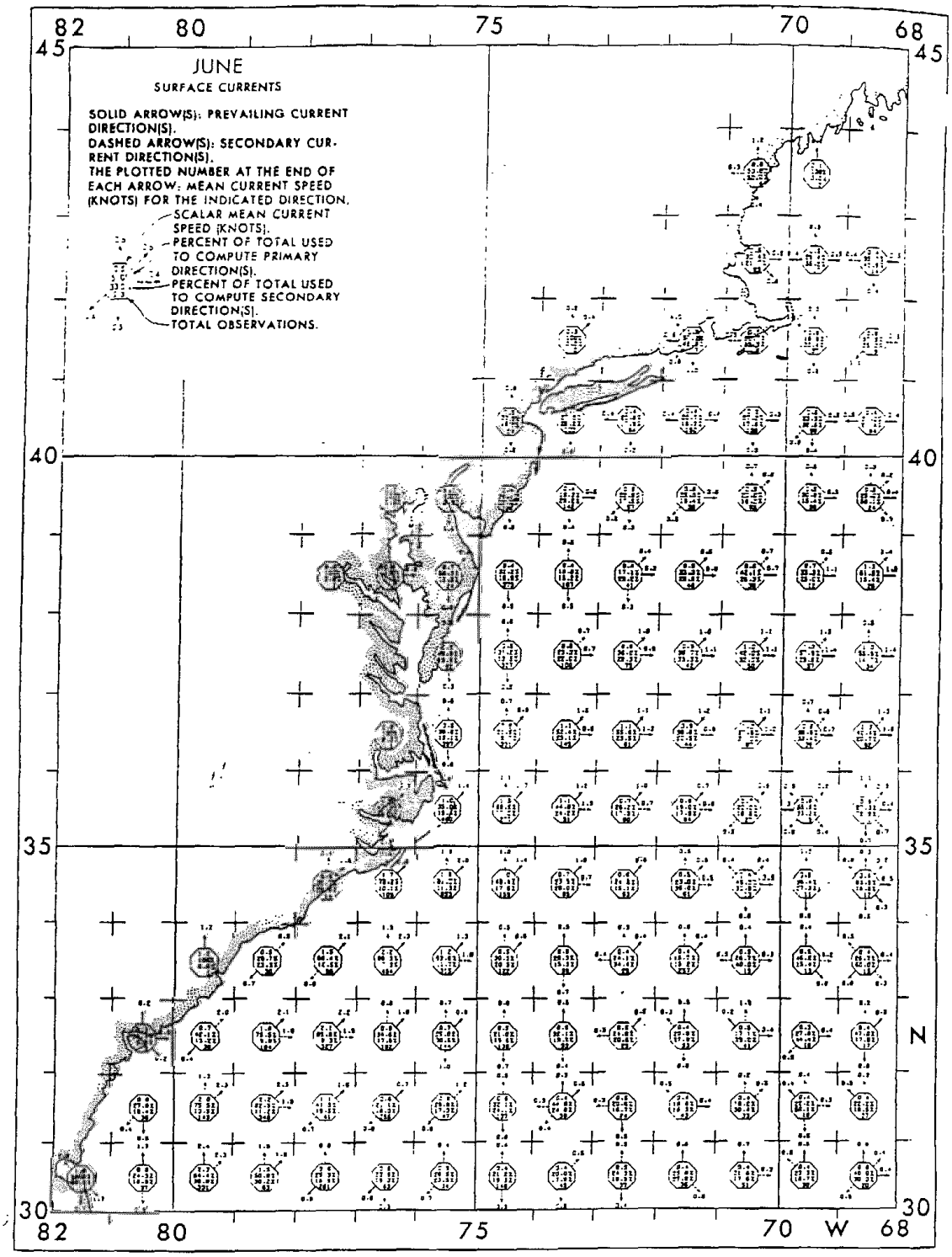
B-5


JUNE
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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N
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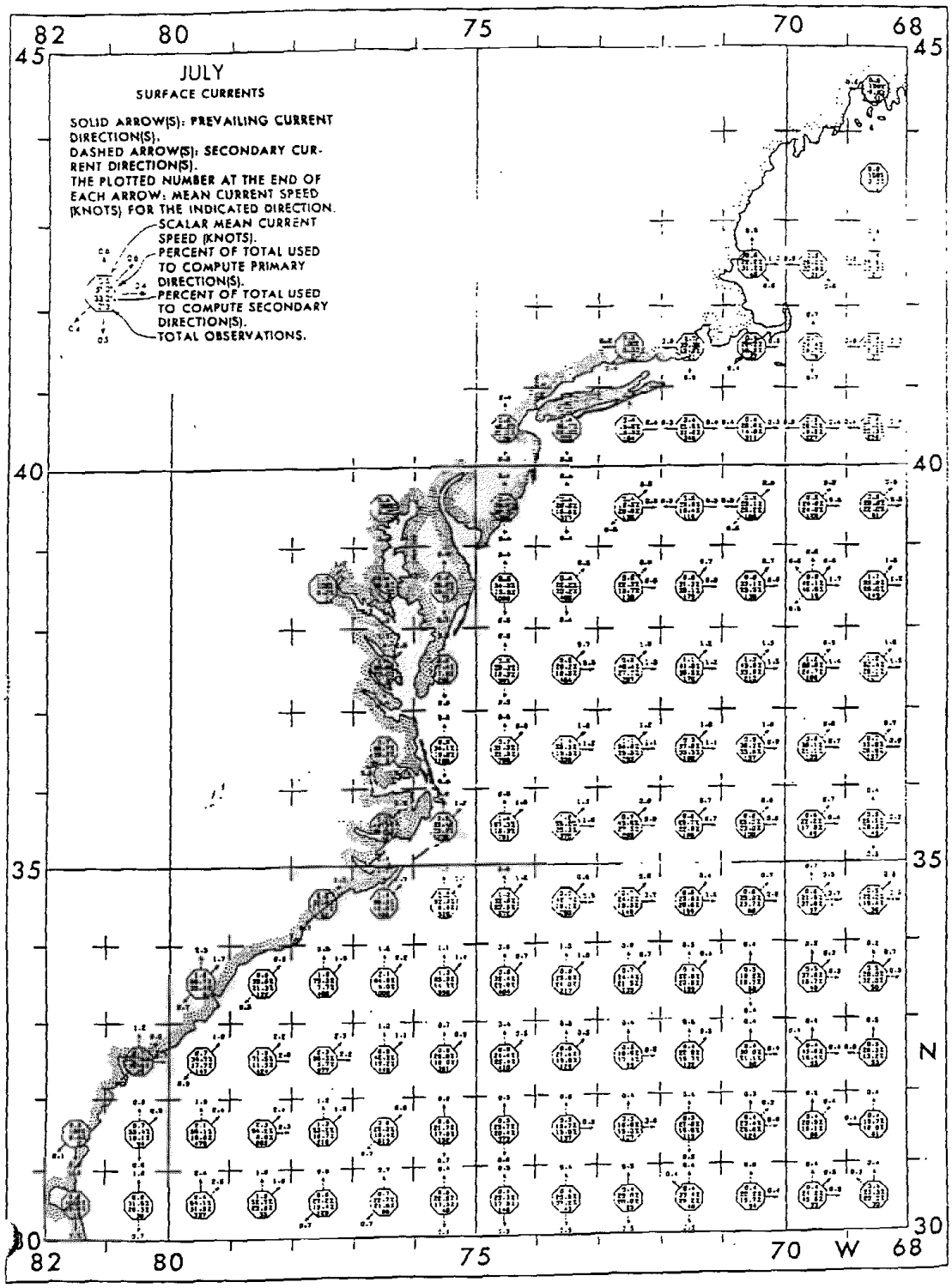
B–6


JULY
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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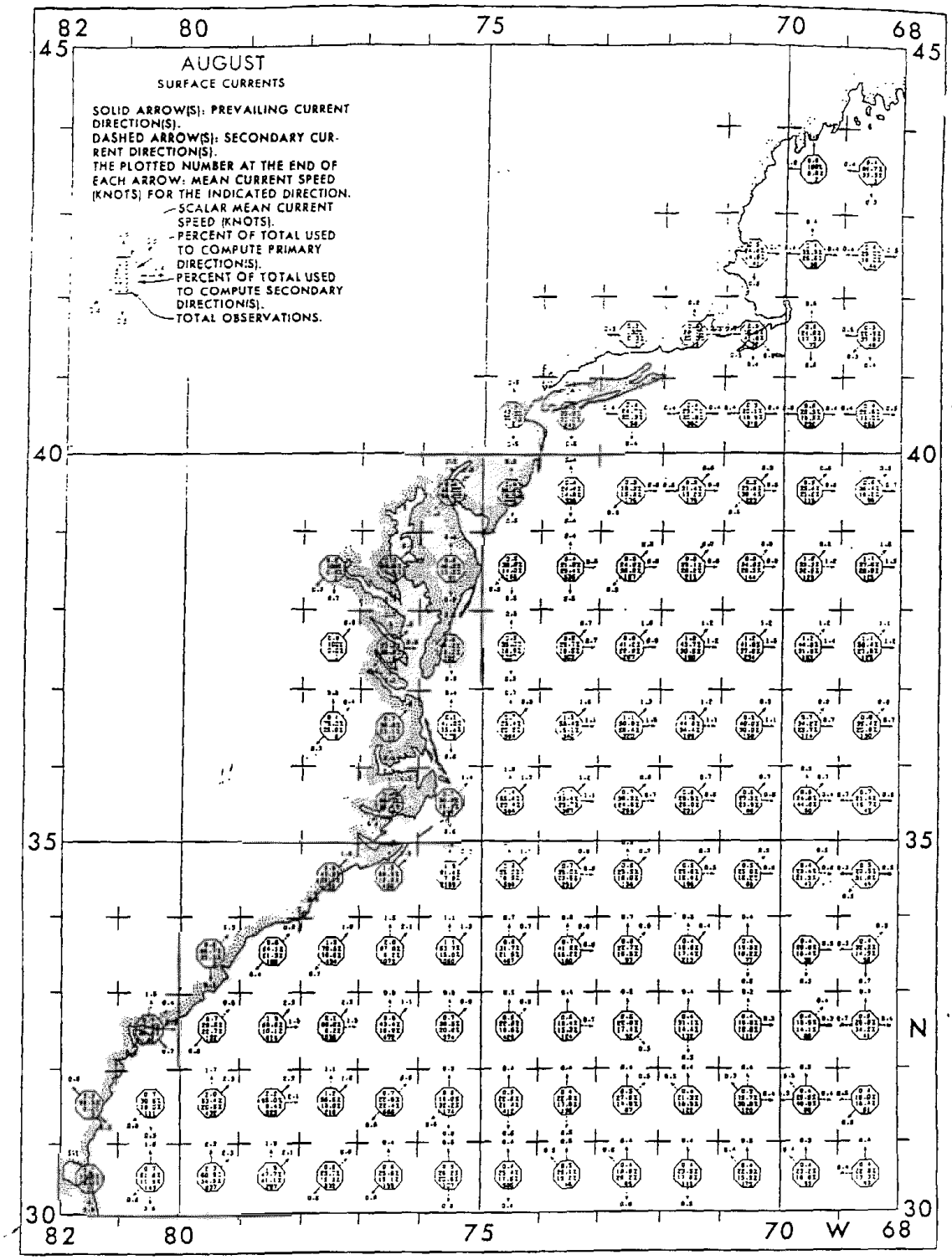
B-7


AUGUST
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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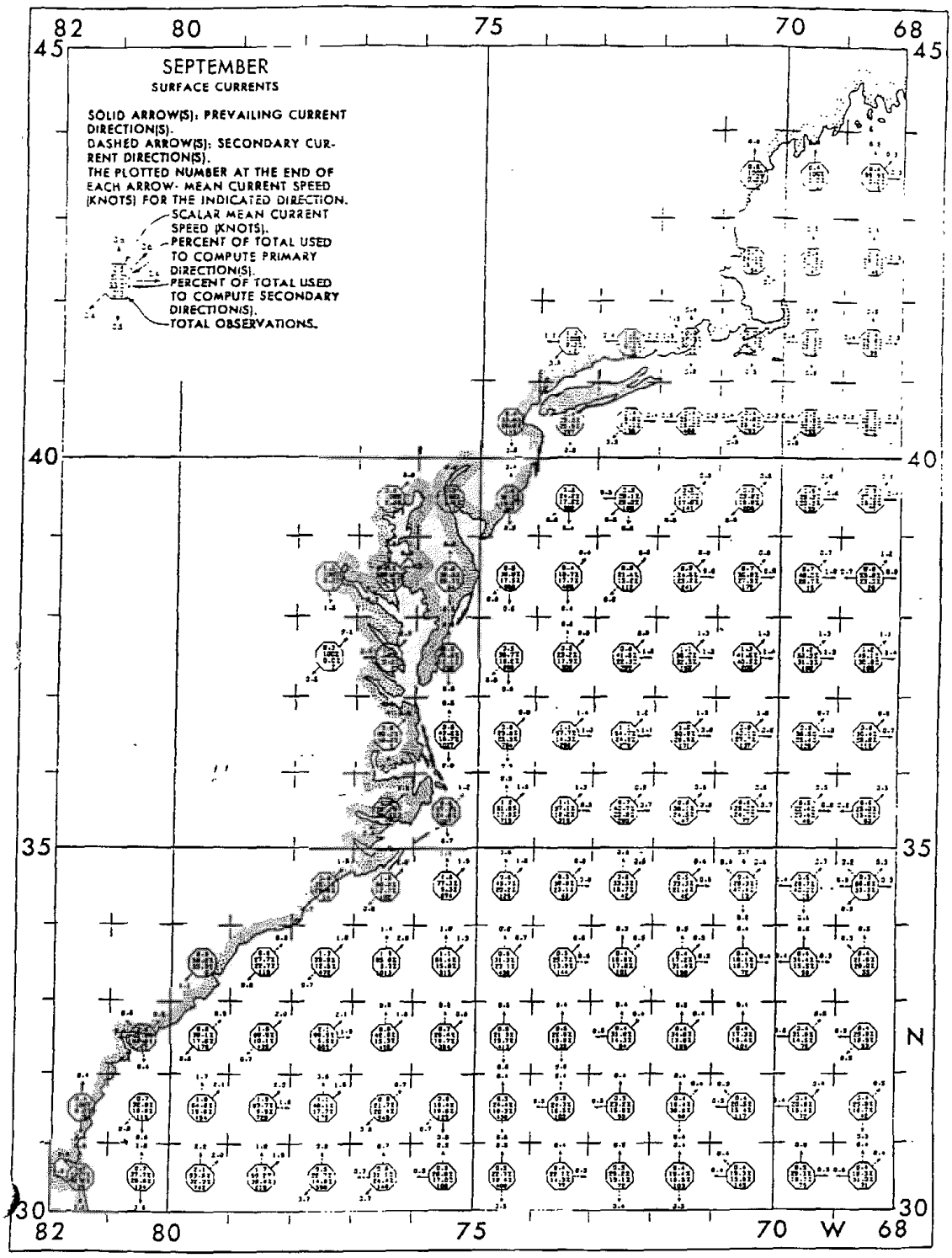
B-8


SEPTEMBER
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW- MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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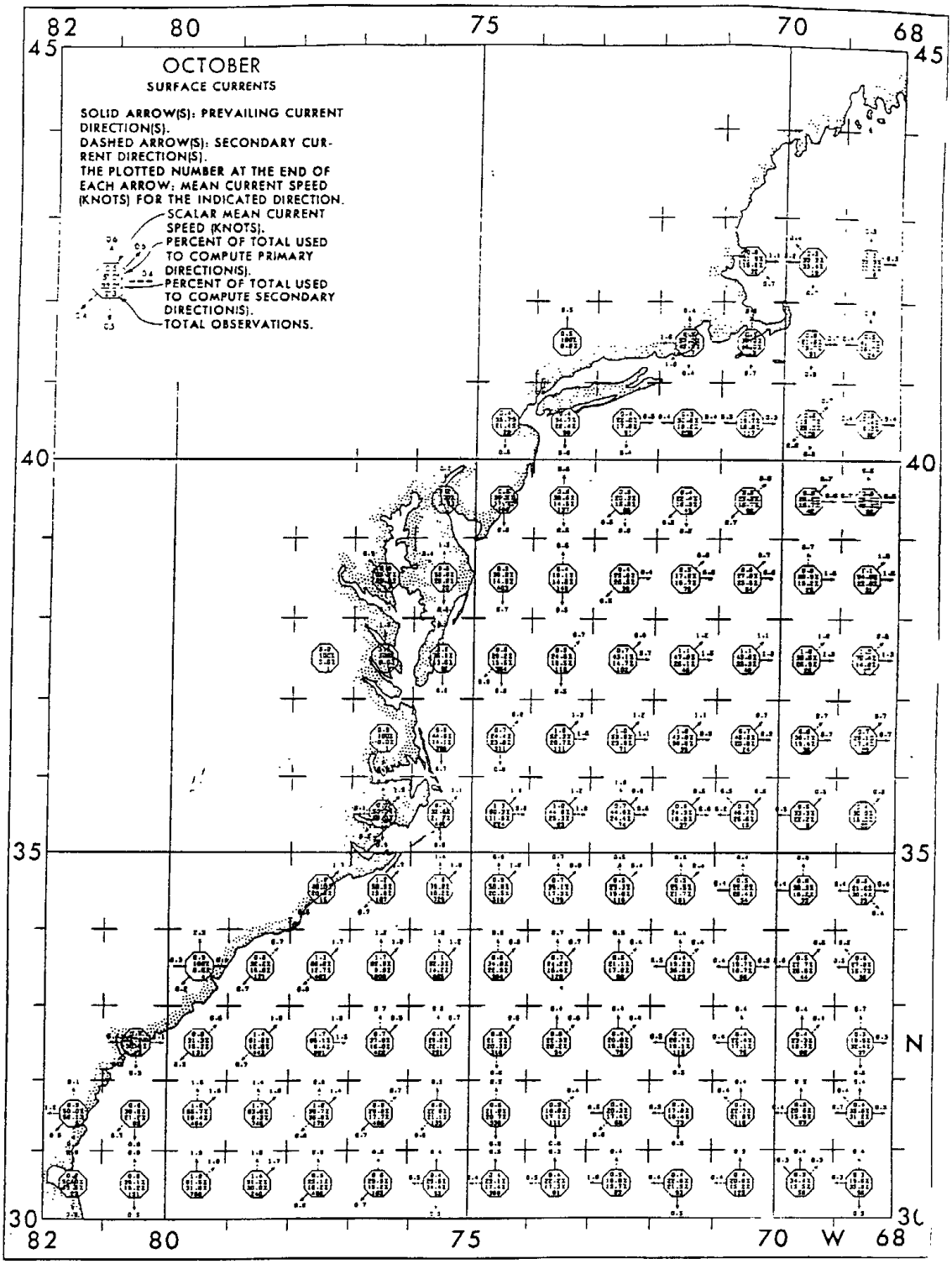
B-9


OCTOBER
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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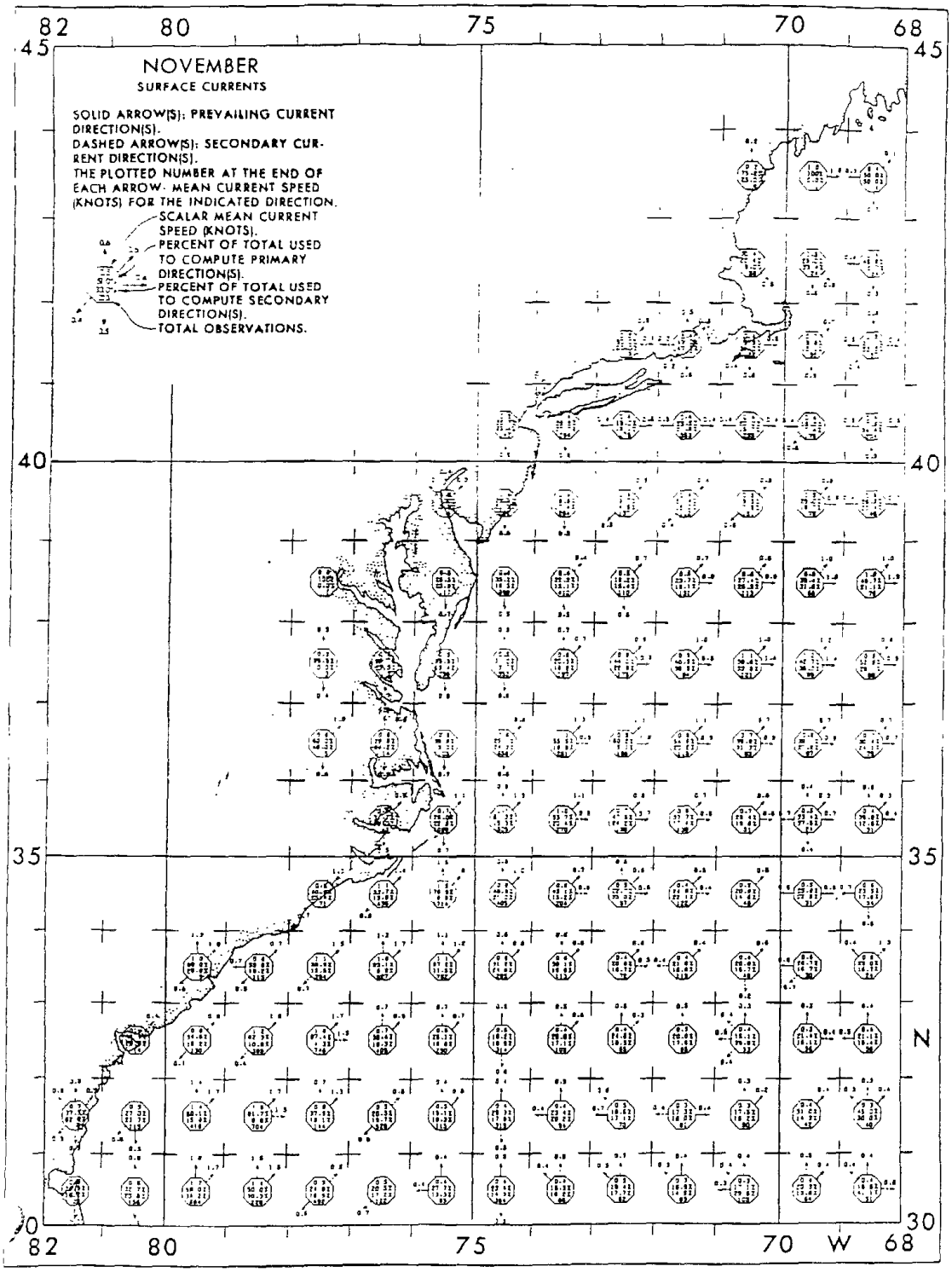
B-10


NOVEMBER
SURFACE CURRENTS
SOLID ARROW(S): PREVAILING CURRENT DIRECTION(S).
DASHED ARROW(S): SECONDARY CURRENT DIRECTION(S).
THE PLOTTED NUMBER AT THE END OF EACH ARROW: MEAN CURRENT SPEED (KNOTS) FOR THE INDICATED DIRECTION.
SCALAR MEAN CURRENT SPEED (KNOTS).
PERCENT OF TOTAL USED TO COMPUTE PRIMARY DIRECTION(S).
PERCENT OF TOTAL USED TO COMPUTE SECONDARY DIRECTION(S).
TOTAL OBSERVATIONS.
82
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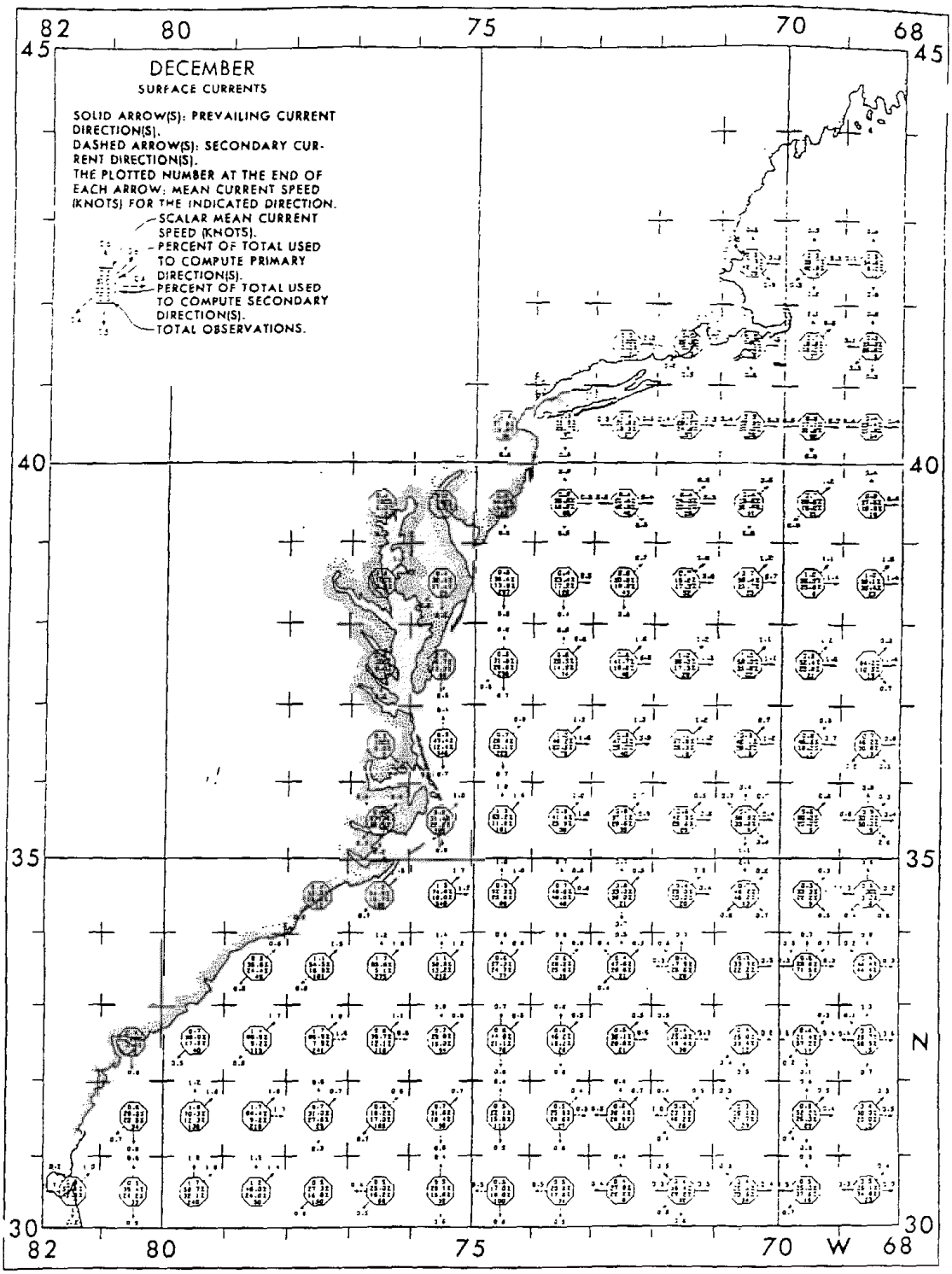
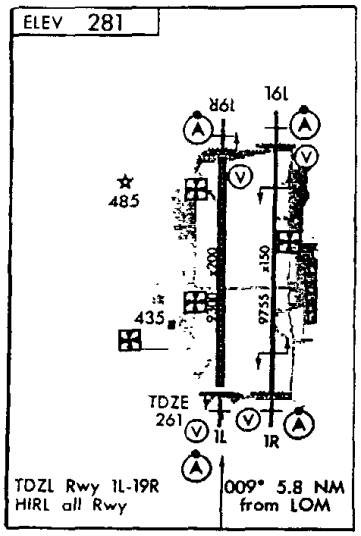


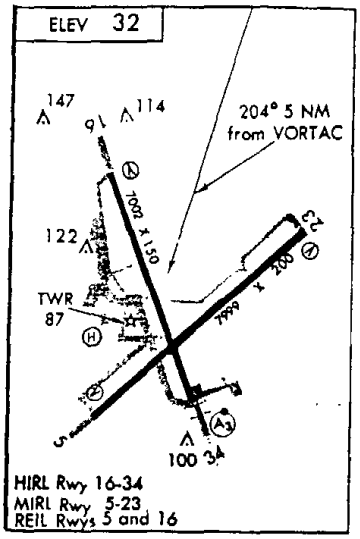
USCOMM—NOAA—ASHEVILLE, N.C. 5-78-300

B-12

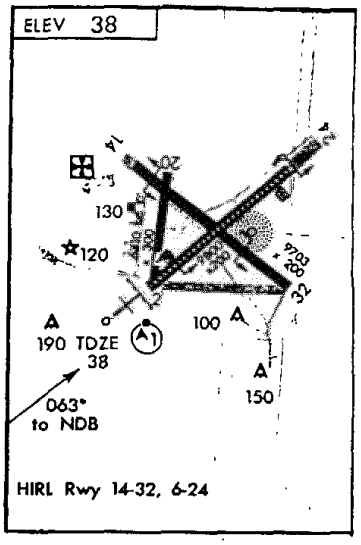
APPENDIX C.



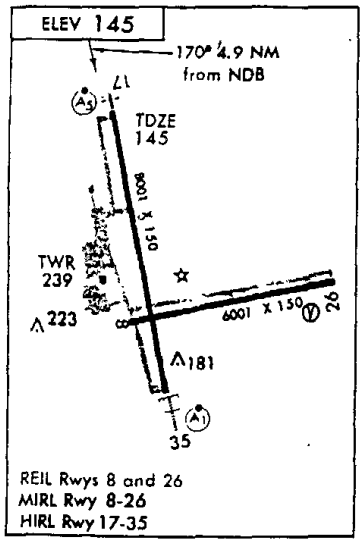
ANDREWS AFB/NAF
(ADW/NSF) CAMP SPRINGS, MD



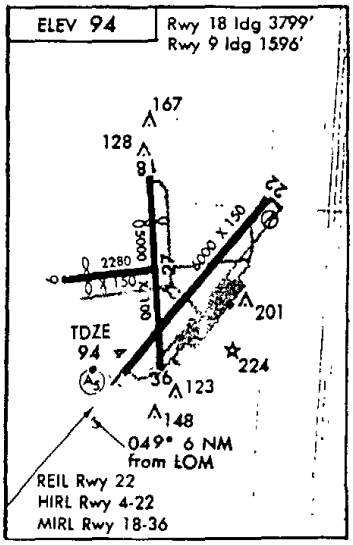
(ILM) WILMINGTON, NC



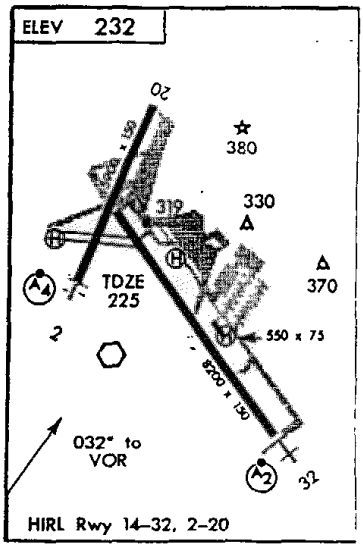
PATUXENT RIVER NAS
(NHK) PATUXENT RIVER, MD



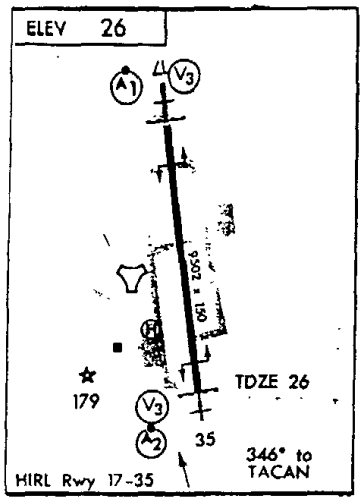
BUSH FIELD
(AGS) AUGSTA, GA



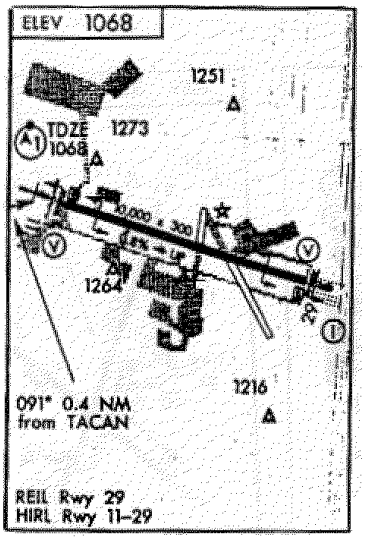
(ISO) KINSTON, NC



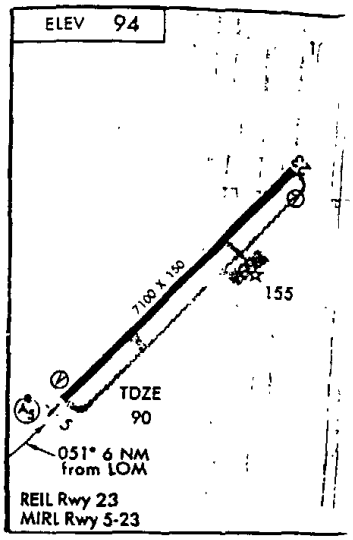
LAWSON ARMY AIR FIELD
(LSF) FT BENNING, GA



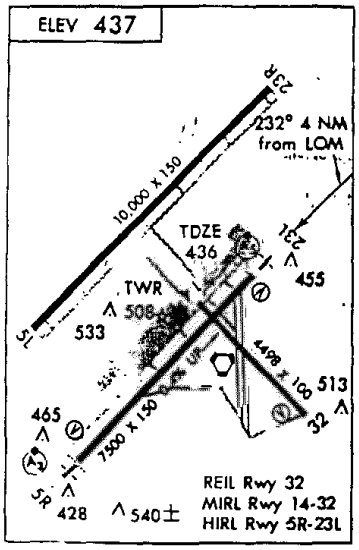
MYRTLE BEACH AFB
(MYR) MYRTLE BEACH, SC



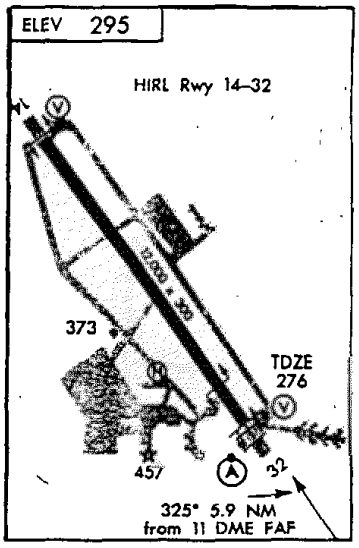
DOBBINS AFB
(MGE) MARIETTA, GA



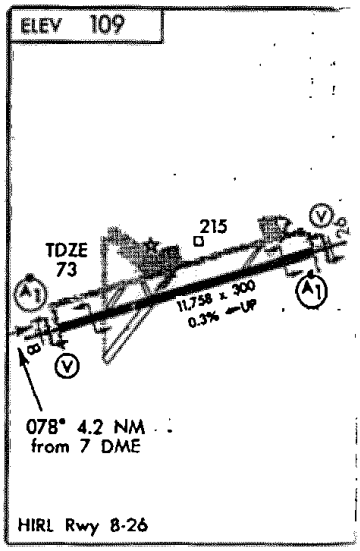
(OAJ) JACKSONVILLE, NC



(RDU) RALEIGH-DURHAM, NC

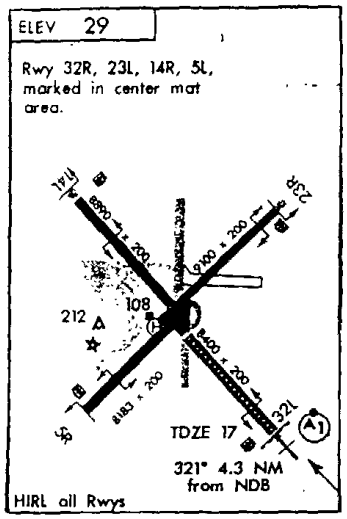


ROBINS AFB
(WRB) WARNER ROBINS, GA

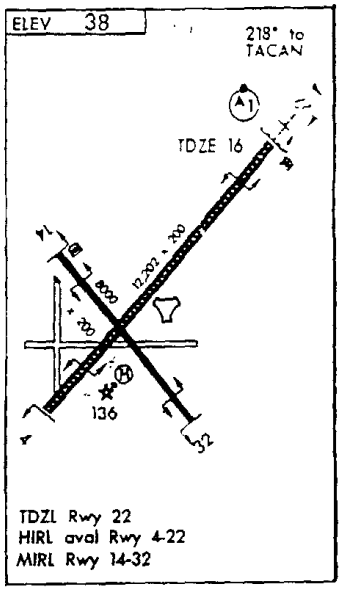


SEYMOUR JOHNSON AFB
(GSB) GOLDSBORO, NC

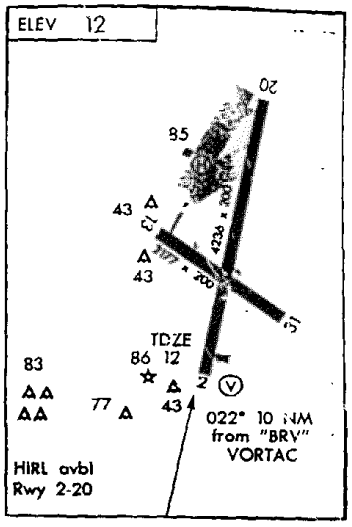
C-2



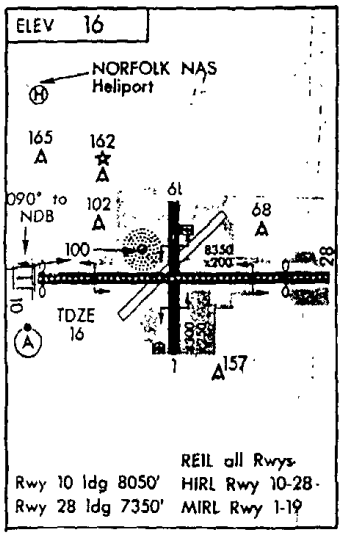
MCAS CHERRY POINT, NC (NKT)



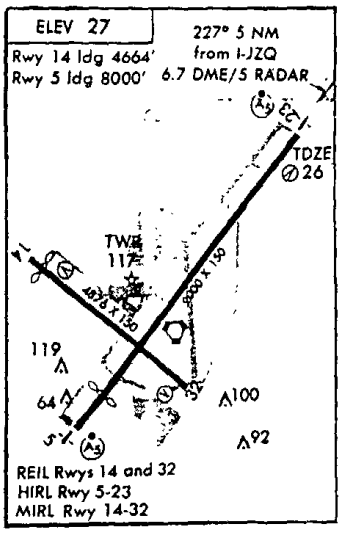
MCAS BEAUFORT, SC (NBC)



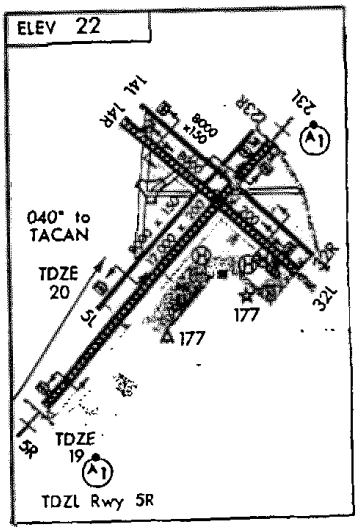
MCAF QUANTICO, VA (NYG)



NAS NORFOLK, VA (NGU)

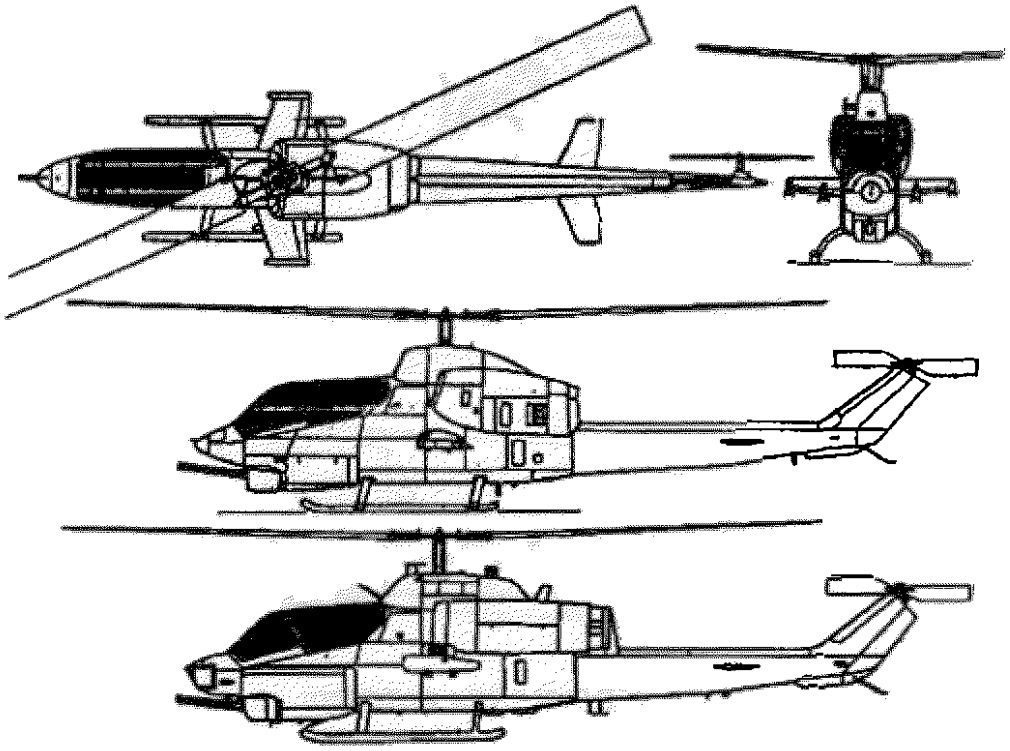


NORFOLK, VA (ORF)



NAS OCEANA, VA (NTU)

C-3

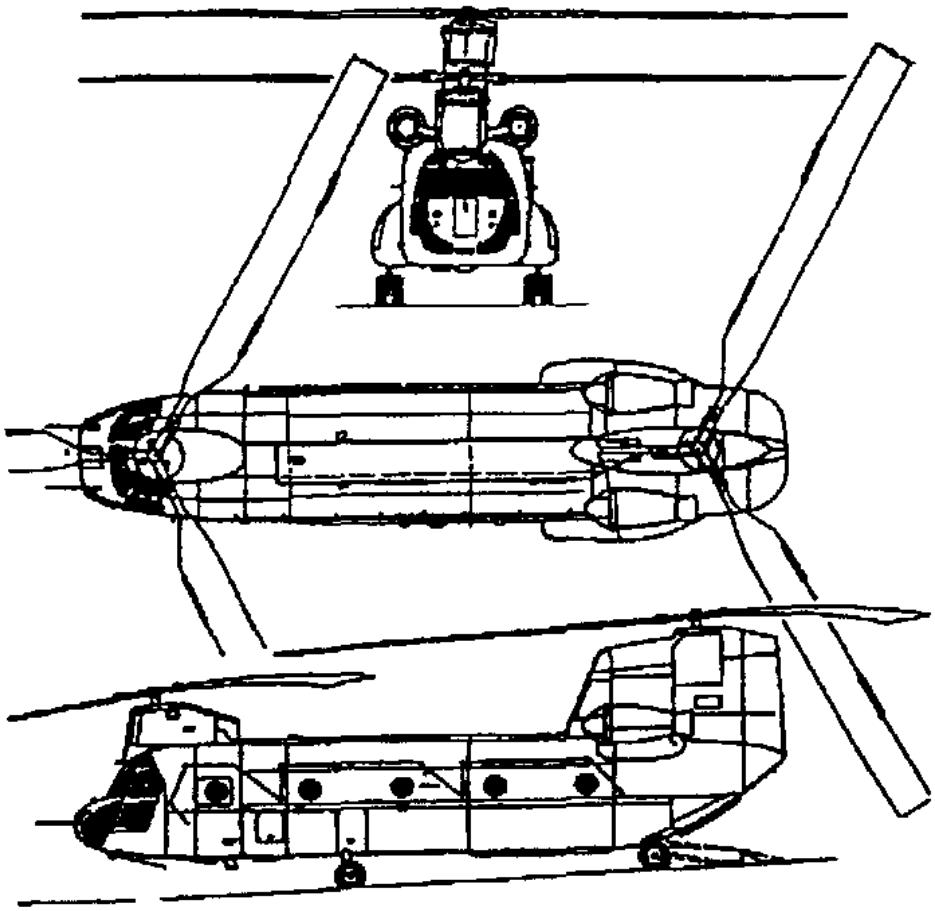


AH-1J *"COBRA"*
TOP

MISSION: To provide close-in fire support and fire support coordination in aerial and ground escort operations during the ship-to-shore movement and within an objective area. DESCRIPTION: The AH-IJ is a two-seat, twin-engine, single rotor, attack helicopter. It has a flexible chin-mounted 2Omrn nose turret and four stub wing ordnance stations capable of carrying gun and rocket pods. INVENTORY: The Marine Corps operates one active duty attack helo (HMA) squadron of AH-1J aircraft.

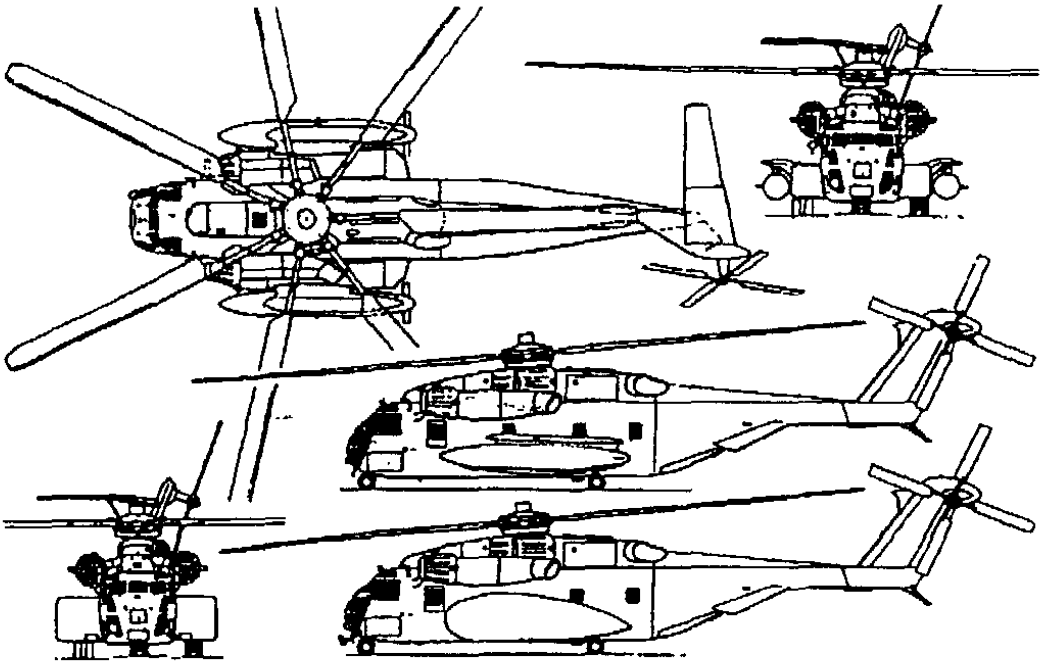
AH-IT (TOW) "*S£4 COBRA"*
BOTTOM

MISSION: To provide close-in fire support coordination in aerial and ground escort operations during the ship-to-shore movement and within an objective area. DESCRIPTION: This two-seat, twin-engine, single rotor, attack helicopter is an improved version of the AH-13 incorporating a larger engine, strengthened transmission and greater ordnance capability. The AH-IT is an attack helicopter gunship. The AH-1T, armed with the TOW missile system, has an anti-armor capability as well. INVENTORY: The Marine Corps operates two attack helo (HMA) squadrons of 24 AH-1T aircraft each.



CH-46D/E/F "*SEA KNIGHT*"

MISSION: Provide helicopter transport of supplies, equipment and personnel for the landing force during ship-to-shore movement and within the objective area. DESCRIPTION: The CH-l6D/E/F are fully instrumented, all-weather, twin-engine, tandem rotor helicopter. A rear landing ramp provides rapid loading and unloading of cargo and vehicles, while an external hook allows for cargo lift. INVENTORY: The Marine Corps operates nine medium helo (HMM) squadrons with 18 aircraft each.

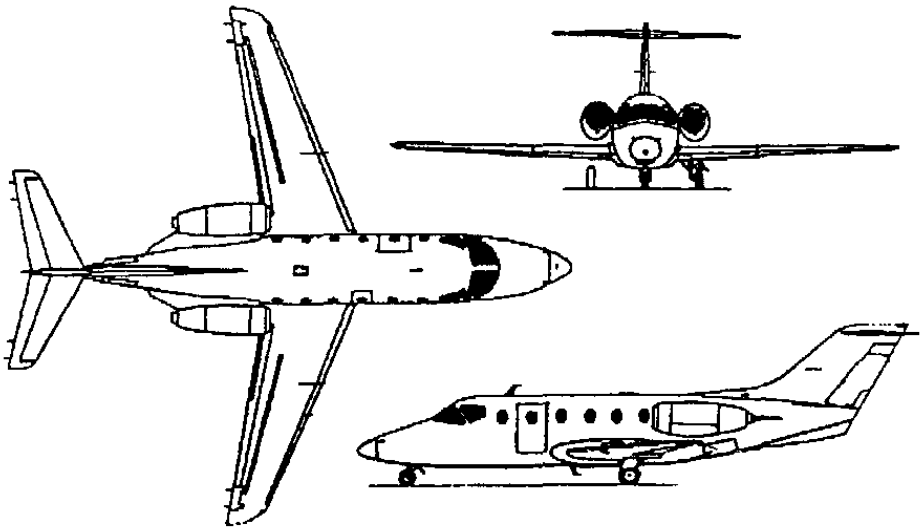


CH-53AID *"SEA STALLION"*

MISSION: Provide helicopter transport of supplies, equipment and personnel for the landing force during ship-to-shore movement and within the objective area. DESCRIPTION: The CH-53A/D are fully instrumented, all-weather, twin-engine, seven bladed, single rotor helicopter with external range extension tanks. It has a rear landing ramp for rapid loading and unloading of cargo and vehicles and an external cargo hook. Built for Naval use with floating rotor and tail and equipped with flotation gear. INVENTORY: The Marine Corps operates six heavy helo (HMH) squadrons of 21 aircraft each,

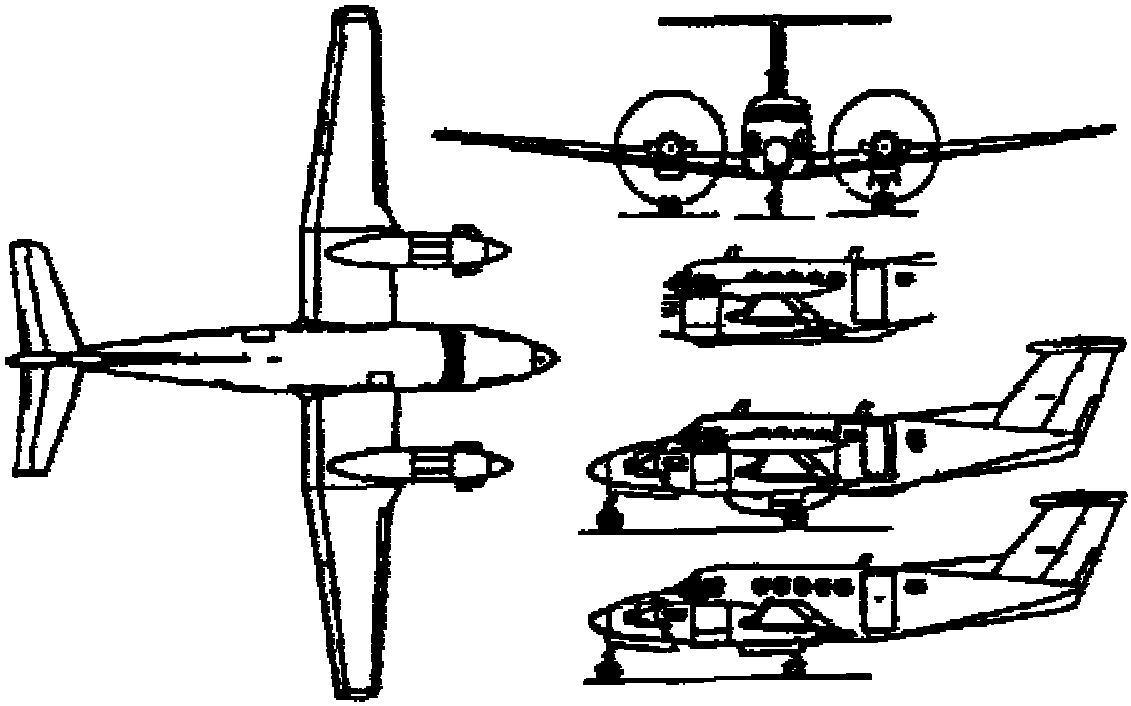
CH-53E *"SUPER STALLION"*

MISSION: Provide helicopter transport of supplies, equipment and personnel for the landing force during ship-to-shore movement and within the objective area. DESCRIPTION: The CH-53E is fully instrumented, all-weather, three-engine, seven bladed, single rotor, heavy lift helicopter. It has a rear ramp for rapid loading and unloading of cargo and vehicles and an external cargo hook. The CH-53E is capable of lifting 93% of the combat essential equipment for a Marine division and can also retrieve all Marine tactical aircraft (except the EA-6B), including another CH-53E. INVENTORY: The Marine Corps has two squadrons of 15 aircraft each, one on each coast.



T-39 "*SABER LINER*"

MISSION: To provide base and command support for the Fleet Marine Force, air stations, bases and Headquarters Marine Corps. DESCRIPTION: This aircraft provides rapid logistic support including transportation for the CMC, inspection teams, staff visits, command trips and the Amphibious Warfare Presentation Teams. INVENTORY: Three CT-39G's are based at MCAS Cherry Point, two are based at MCAS El Toro, and one is located at MCAS Iwakuni.



UC-12B *"SUPER KING AIR"*

MISSION: To provide base command and support for tenant and base units. DESCRIPTION: The UC-12B is a Super King Air model equipped for USMC use. The UC-12B uses a crew of three and carries up to eight passengers. With a quick-change interior, cargo door and high flotation landing gear, the UC-12B can provide rapid movement of vital personnel and critically needed material. The UC-12B supports the logistical, operations and administrative needs of all commands. INVENTORY: The Marine Corps has 13 UC-12B's based throughout the world.

MCAS NEW RIVER

MISSION WEATHER MATRIX

(ROTARY WING)

Weather Element	Moderate Degradation		Severe Degradation	
Surface Winds	Gusts ≥ 30Kts		Gusts ≥ 45Kts	
Precipitation Liquid / Freezing	Moderate Intensity LGT ZR/ZL		Heavy Intensity ≥MDT ZR/ZL	
Ceilings / Clouds	Day ≤500 ft	Night ≤ 3000 ft	Day ≤ 200 ft	Night ≤ 1000 ft
Visibility	Day ≤1 Mile	Night ≤ 5 Miles	Day ≤ 1/4 Mile	Night ≤ 3 Miles
Temperature °F/°C	MAX 100°F / 38°C	MIN 32°F / 0°C	MAX 125°F / 57°C	MIN -26°F /-32°C
Pressure (PA/DA)	≥ 5000 FT		≥ 6000 FT	
Icing (Intensity)	Trace		≥ Light	
Turbulence (Intensity)	LGT - MDT		MOD - EXTRM	
Thunderstorm			Any Occurrence	
Snow Depth	≥ 12 Inches		≥ 24 Inches	

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