

NATIONAL HURRICANE CENTER

TROPICAL CYCLONE FORECAST VERIFICATION - 1980

(copies of transparencies shown by J. Pelissier at the Interdepartmental
Hurricane Conference, Homestead Air Force Base, Florida, January 27, 1981)

LIST OF FIGURES

1. Average forecast displacement errors in nautical miles for all objective and official forecasts made on tropical storms and hurricanes in 1980.
2. Two homogeneous samples of certain forecast groups showing relative errors of the official forecasts with: a) the dynamical and statistical-dynamical models, and b) the statistical models.
3. Mean tropical cyclone forecast errors for the decade of the 1970's:
top - unadjusted errors
bottom - errors statistically adjusted to account for mean storm latitude and initial translational speed.
4. Geographical distribution of 24 hour forecast errors, 1970-1979.
5. Geographical distribution of 48 hour forecast errors, 1970-1979.
- 6.. Histogram of 48-hour forecast errors, 1970-1979.
- 7-14. Operational track of Hurricane Allen with Official and objective forecast tracks.
- 15-21. Operational track of Hurricane Jeanne with Official and objective forecast tracks.

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HOMOGENEOUS SAMPLE

ALLEN, HERMINE AND JEANNE

FORECAST TYPE	12HR	24HR	48HR	72HR
OFFICIAL	49 (19)	100 (17)	211 (12)	
NHC73	50	122	228	
SANBAR	54	123	301	
MFM	48	84	171	


OFFICIAL	48 (102)	106 (94)	245 (72)	355 (53)
NHC67	55	113	252	349
NHC72	59	132	289	377
CLIPER	54	113	236	352




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The following tables contain verification statistics for the 1980 hurricane season. The track forecast errors, expressed in nautical miles are computed in the following way. The magnitude of the vector difference (measured along a great circle) between the forecast displacement for a given time period and the actual displacement taken from the "best track" is computed for each forecast. All forecasts for which a given storm maintains at least tropical storm intensity are verified. These results are then averaged and tabulated.



The errors in the initial positioning of storms are also listed. For a given forecast, this is simply the magnitude of the great circle distance between the operational initial position and the corresponding "best track" initial position.



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TROPICAL CYCLONE FORECAST VERIFICATION - 1980
GENERAL SAMPLE - ALL STORMS- ALL FORECASTS

FORECAST TYPE	INITIAL POSITION	12HR	24HR	48HR	72HR
OFFICIAL (NO. OF CASES)	16 (209)	55 (199)	126 (188)	274 (140)	405 (109)
NHC67	17 (105)	55 (105)	113 (94)	251 (73)	346 (55)
NHC72	16 (200)	63 (200)	133 (179)	281 (142)	370 (111)
HURRAN	15 (88)	50 (88)	103 (81)	219 (74)	348 (65)
CLIPER	16 (201)	59 (201)	131 (180)	265 (143)	384 (112)
NHC73	16 (49)	51 (49)	112 (94)	230 (34)	396 (26)
SANBAR	15 (61)	61 (61)	122 (55)	284 (40)	481 (27)
MFM	11 (19)	48 (19)	84 (17)	171 (12)	(0)

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TROPICAL CYCLONE LANDFALL PREDICTION ERRORS - 1980

Following is a list of landfall prediction errors for tropical storms and hurricanes during 1980. Each error represents the distance (in nautical miles) from the predicted landfall point determined from the "Official" forecast issued 24 hours prior to landfall to the actual landfall point determined from the Best Track. Only tropical storms and hurricanes are included. In some cases the storm crossed an island when predicted to pass offshore. In such cases, the perpendicular distance from the landfall point to the forecast track is taken as the landfall prediction error.

Storm Name	Category at Landfall	Date/Time (Z) of Landfall	Landfall Forecast Error (n.mi)	Location and Remarks
Allen (I)	Hurricane	08/04/01Z	90 mi. north	South part of eyewall brushed Barbados
Allen (II)	Hurricane	08/04/06Z	90 mi. north	North part of eyewall brushed St. Lucia
Allen (III)	Hurricane	08/06/00Z	80 mi. south	North part of eyewall brushed southwest tip of Haiti
Allen (IV)	Hurricane	08/06/18Z	20 mi. south	South part of eyewall skirted Cayman Brac and Little Cayman Island
Allen (V)	Hurricane	08/10/06Z	75 mi. north	North of Brownsville, TX
Bonnie, Charley }	(no landfall)			
Danielle	Tropical Storm	09/06/00Z		Storm developed within 24 hours of landfall
Earl, Frances, and Georges }	(no landfall)			
Hermine (I)	Tropical Storm	09/22/13	25 mi. north	Northern Belize
Hermine (II)	Tropical Storm	09/24/12		Storm crossed coast of Mexico in southern Gulf of Mexico, but forecast to remain offshore
Ivan, Karl and Jeanne }	(no landfall)			

SUMMARY OF LANDFALL PREDICTION ERRORS

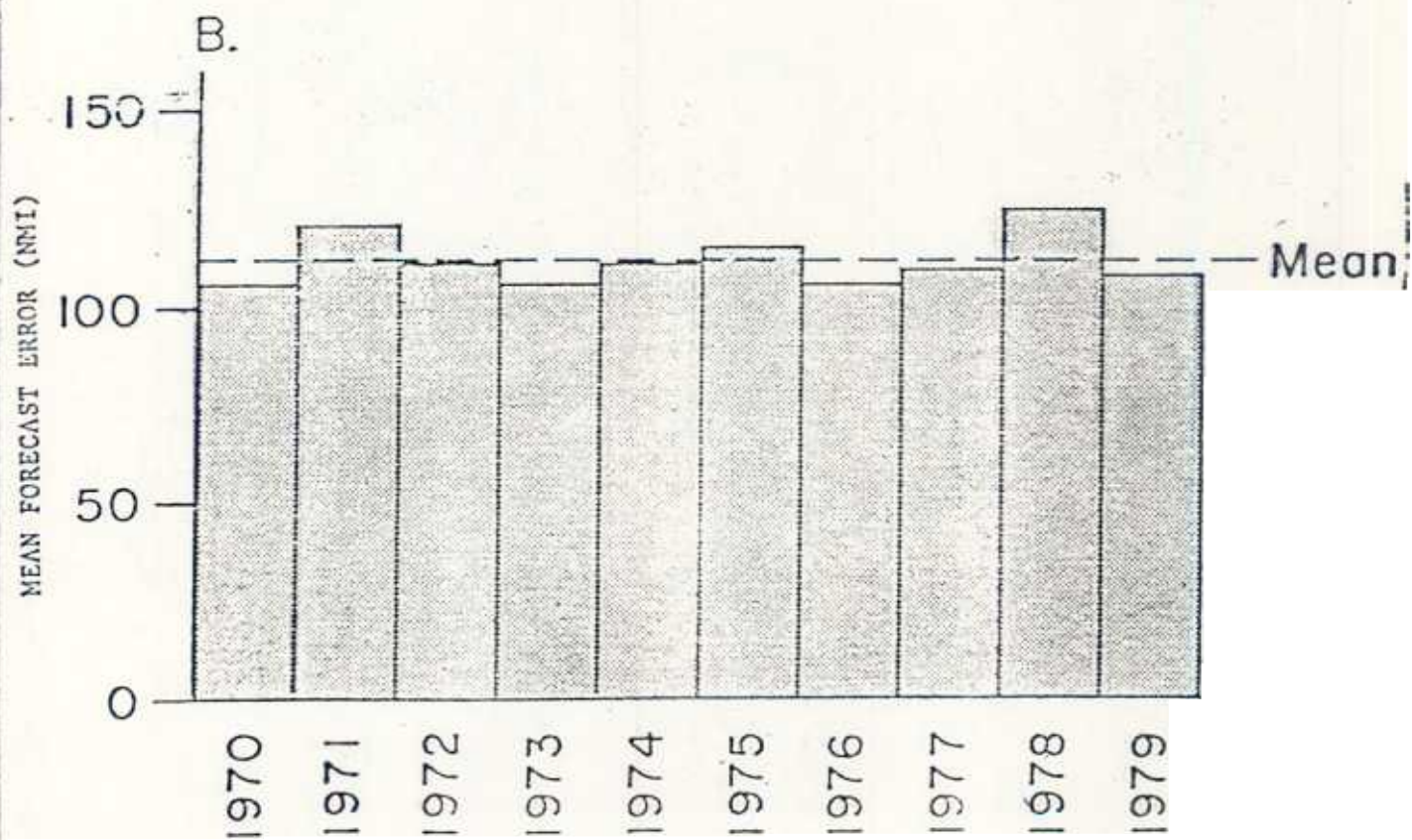
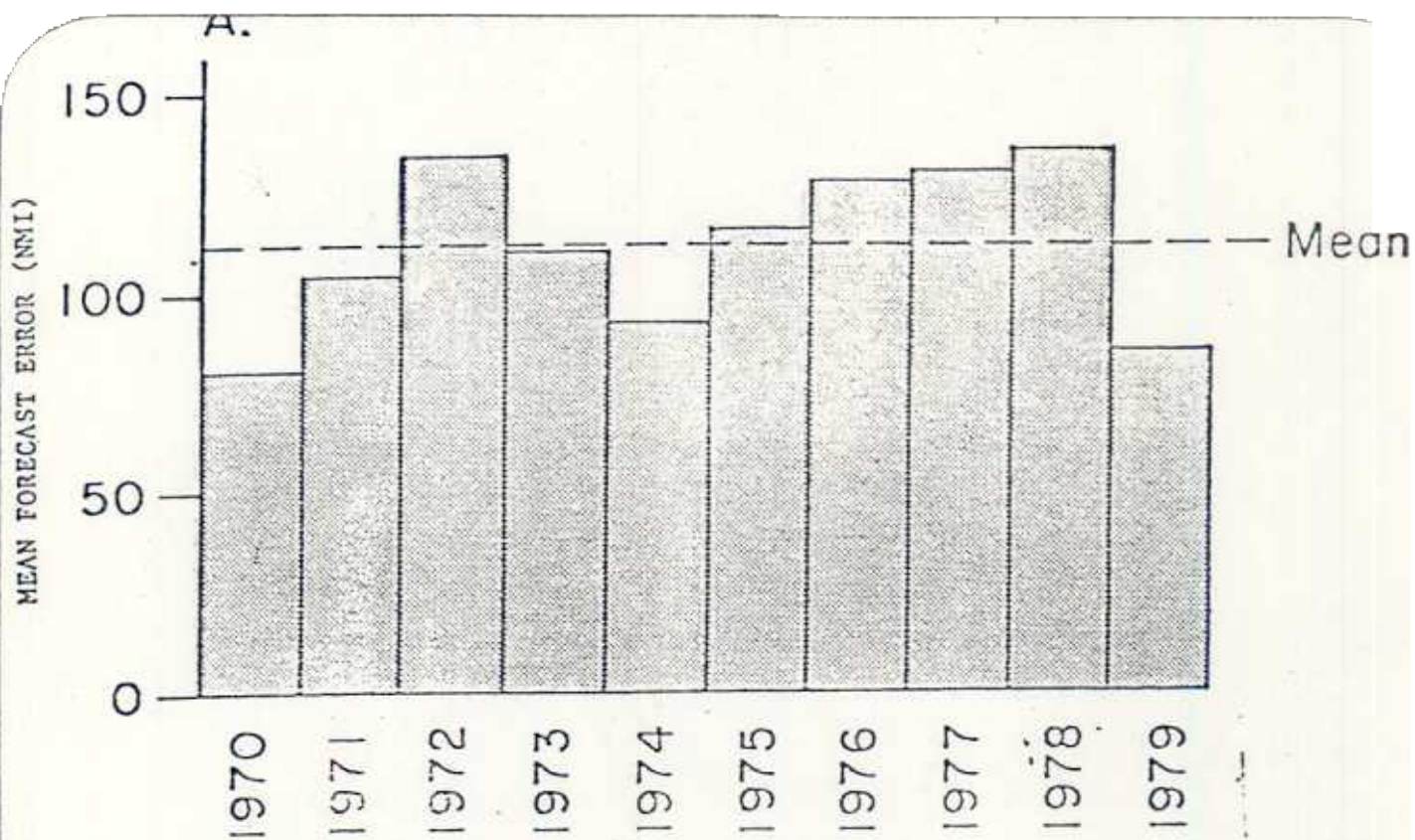
	United States Landfalls	All Landfalls
1980 Average 24-Hour Landfall Prediction Error (number of cases)	75 miles (1)	63 miles (6)
11 Year Average, 1970-1980 (number of cases)	41 miles (19)	51 miles (51)

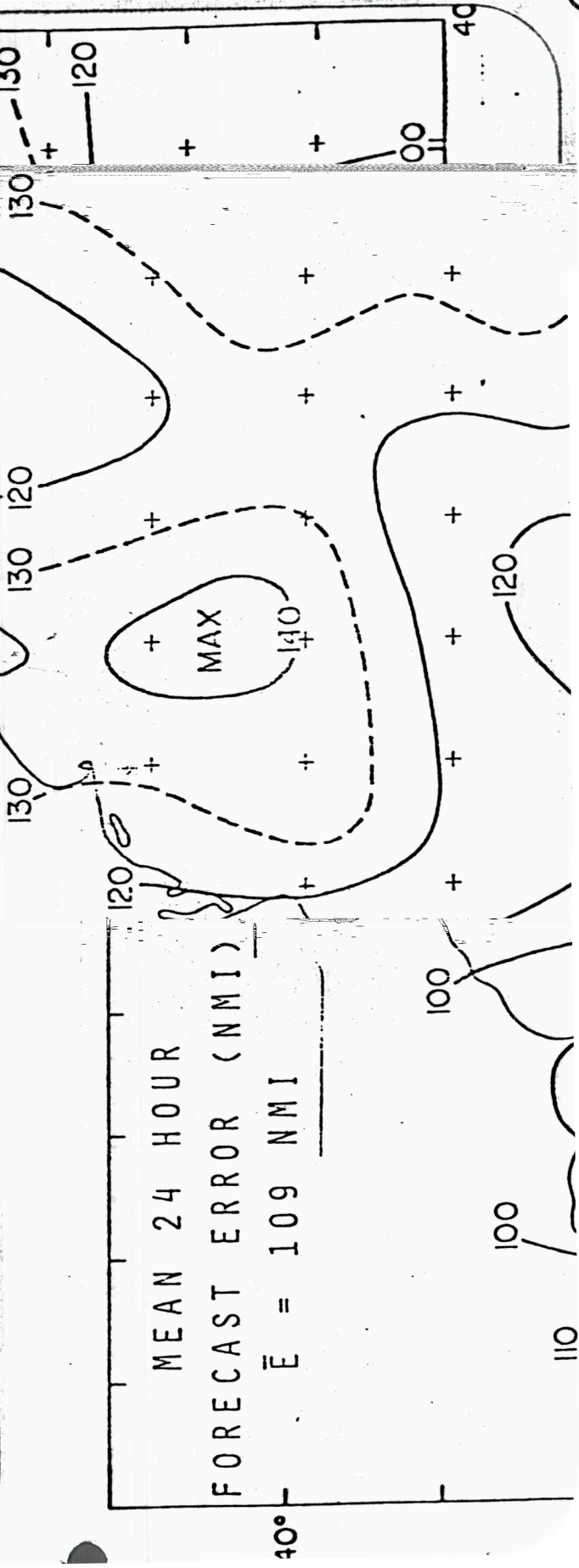
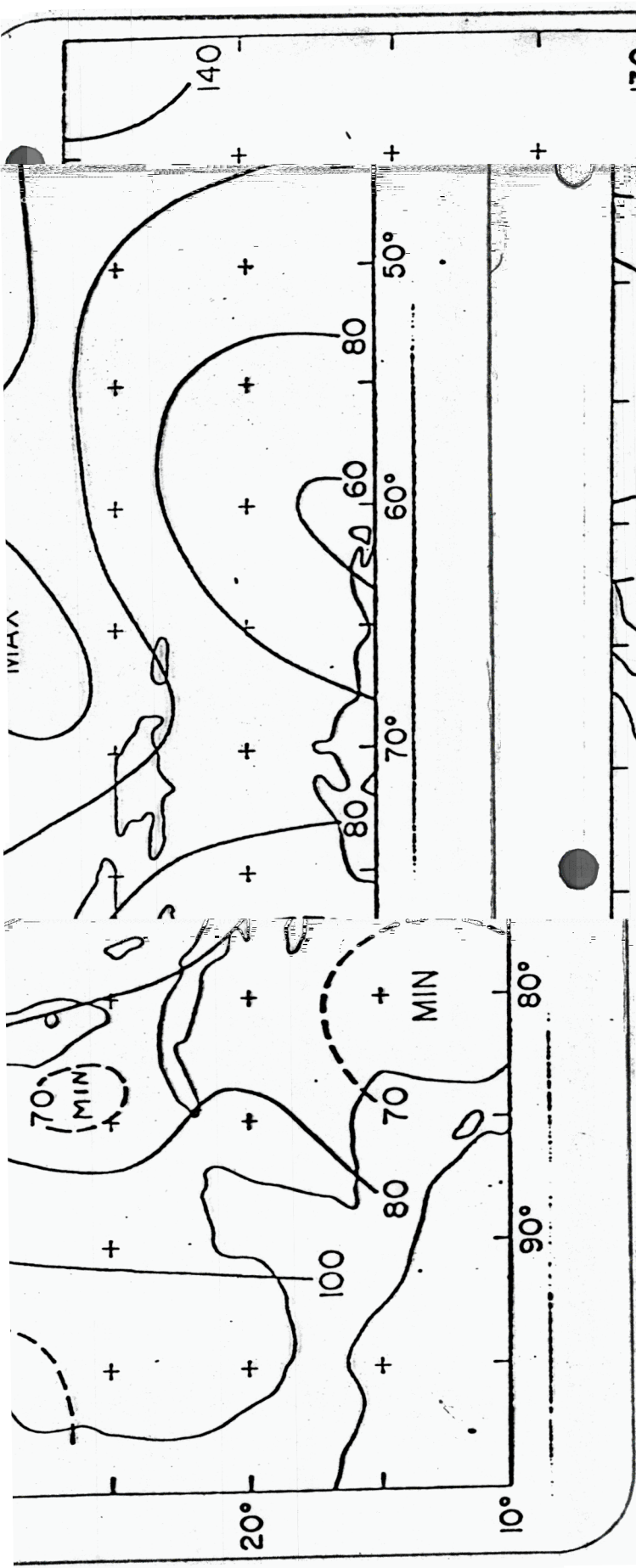
WARNING LEAD TIMES FOR TROPICAL STORMS AND HURRICANES MAKING LANDFALL IN THE UNITED STATES - 1980

Storm Name	Category at Landfall	MO/DA/HR(Z) of Landfall	Location of Landfall	Time and Type of Warnings issued for point of landfall	Warning Lead Time
Allen	Hurricane	08/10/06	N. of Brownsville, TX	08/08/16Z, Hurricane Warnings Brownsville to High Island, incl. Galveston Bay	38 hours
Bonnie	(no U.S. landfall)				
Charley	(no U.S. landfall)				
Danielle	Tropical Storm	09/06/00	near Galveston, TX	09/05/17Z, Gale Warnings Freeport, TX to Vermilion Bay, LA	7 hours
Earl, Frances, Georges, Hermine, Ivan, Jeanne, and Karl	} (no U.S. landfalls)				

Eleven year summary, 1970-1980

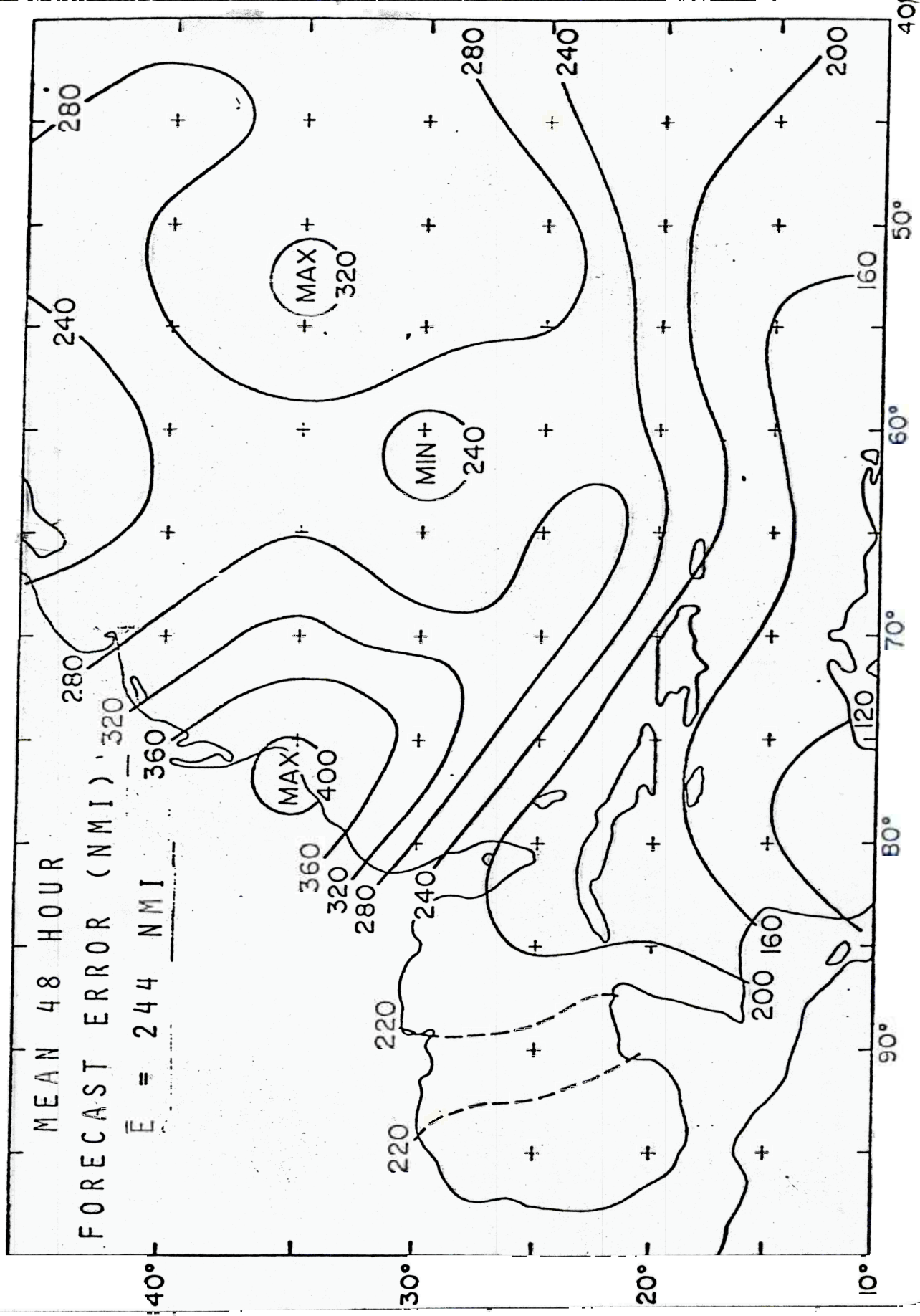
	ALL U.S. Hurricanes	All U.S. Tropical Storms and Hurricanes
Average Warning Lead Time	21 hours	19 hours
(number of cases)	(12)	(23)

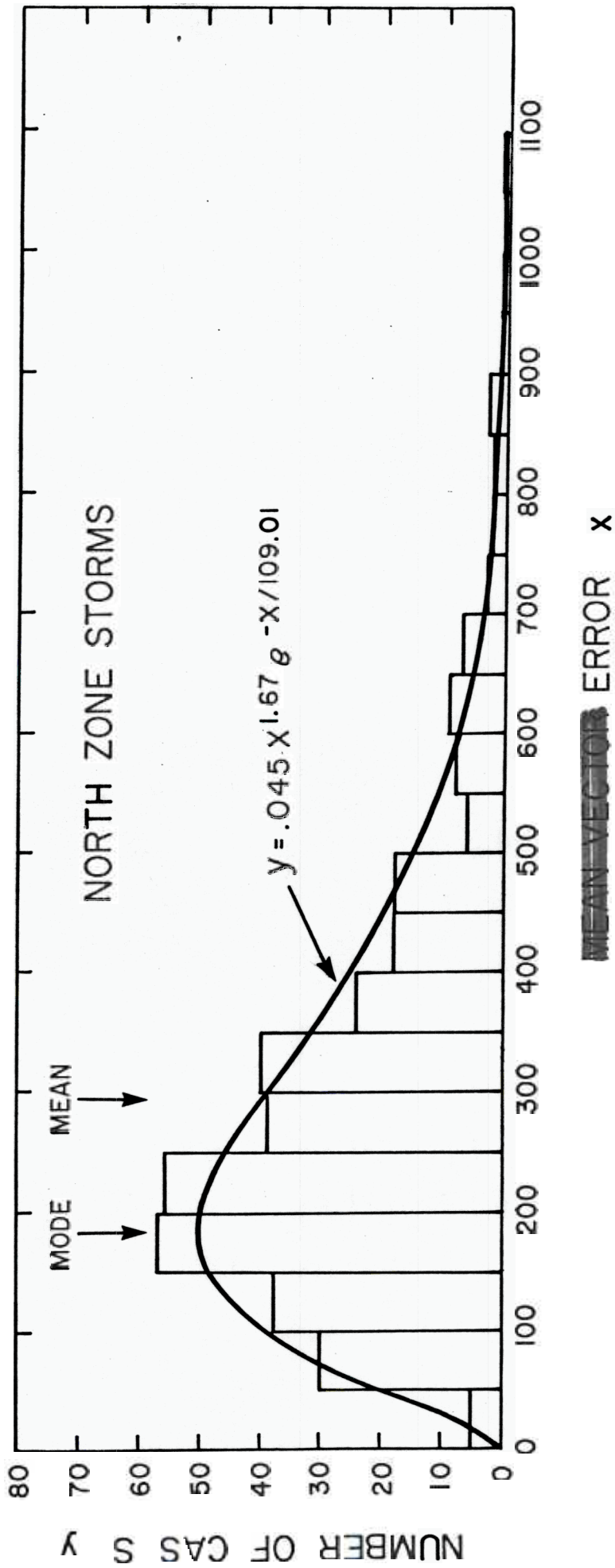


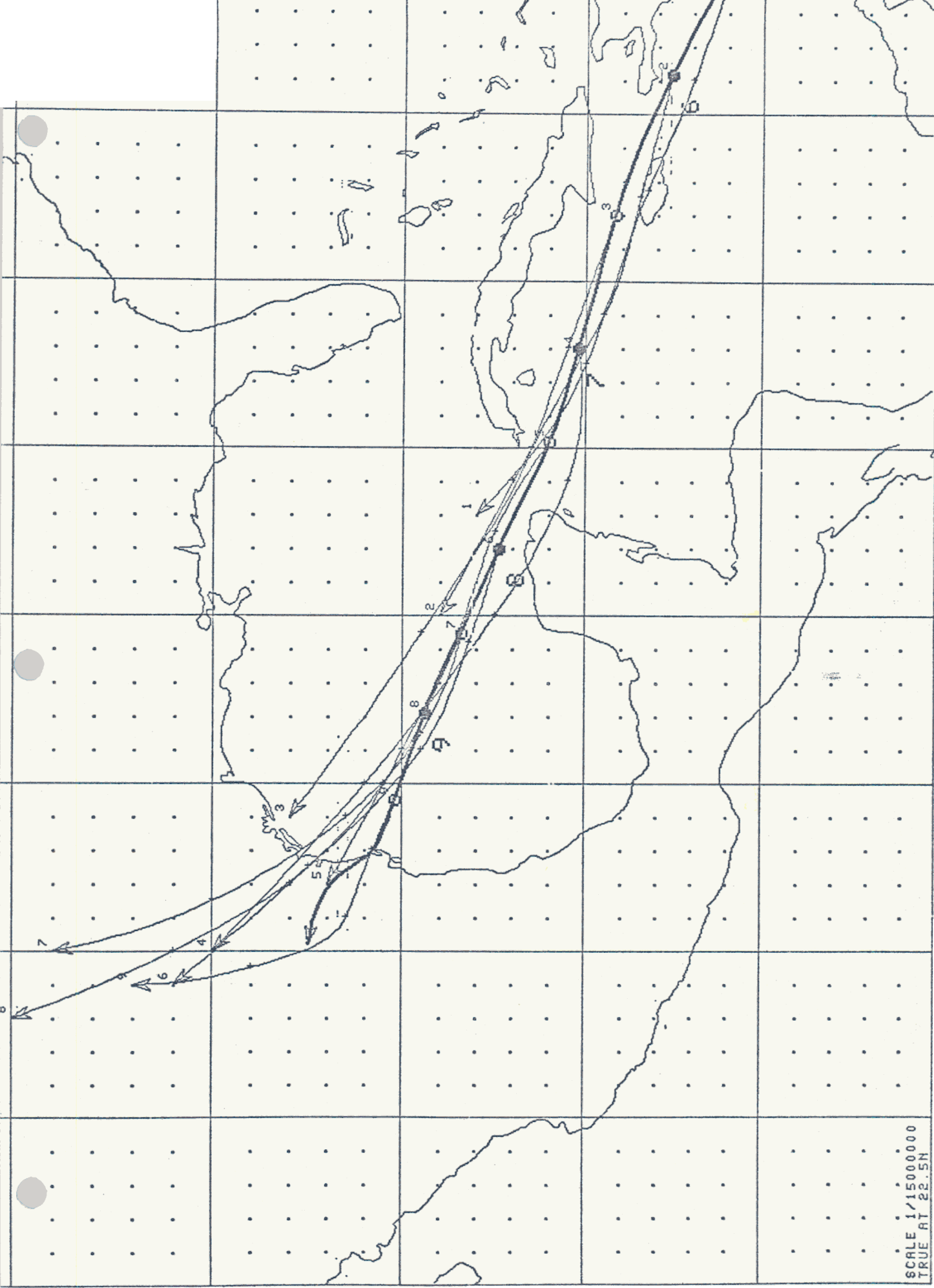


MEAN 24 HOUR
FORECAST ERROR (NMI)

$$\bar{E} = 109 \text{ NMI}$$

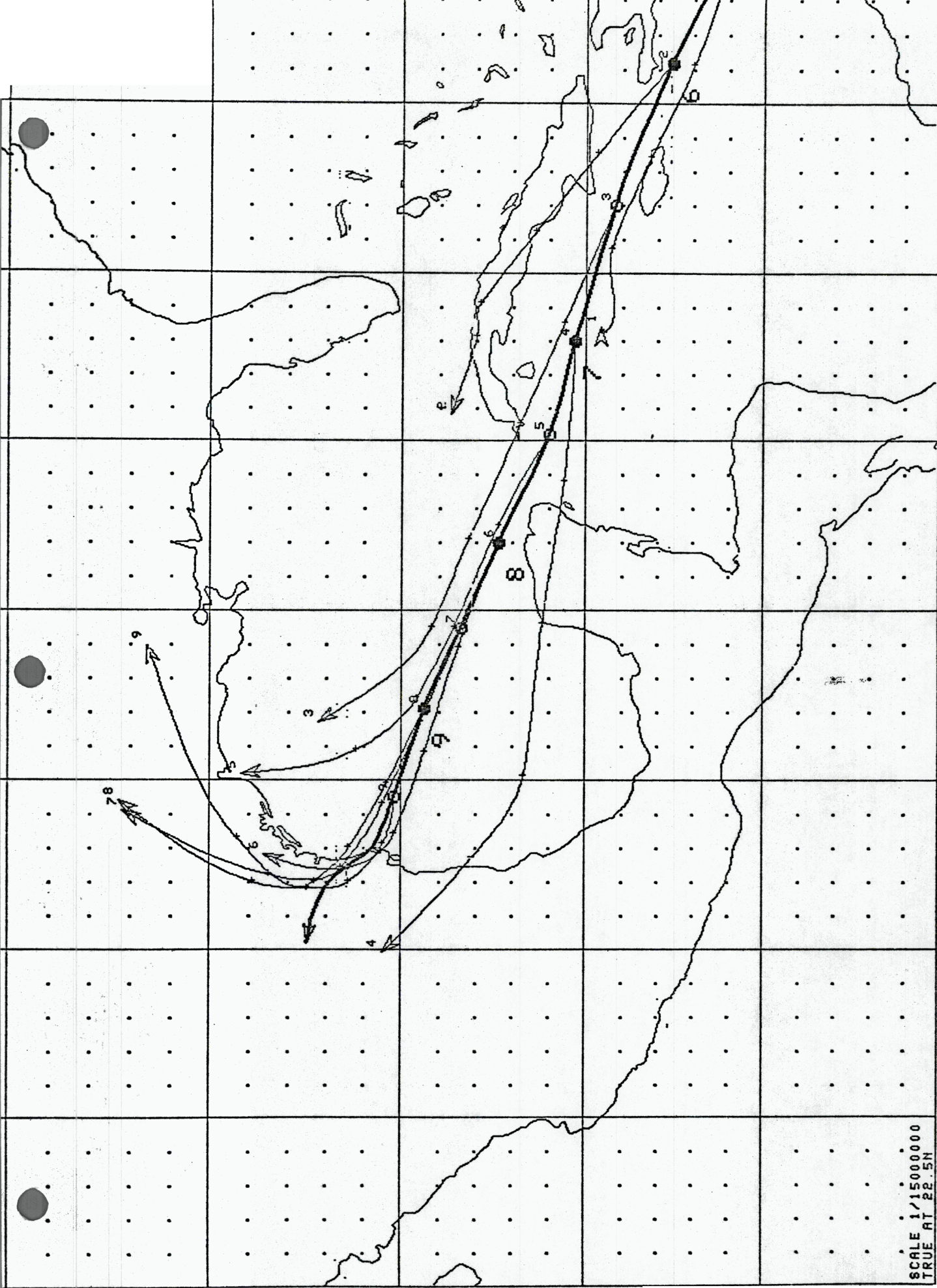






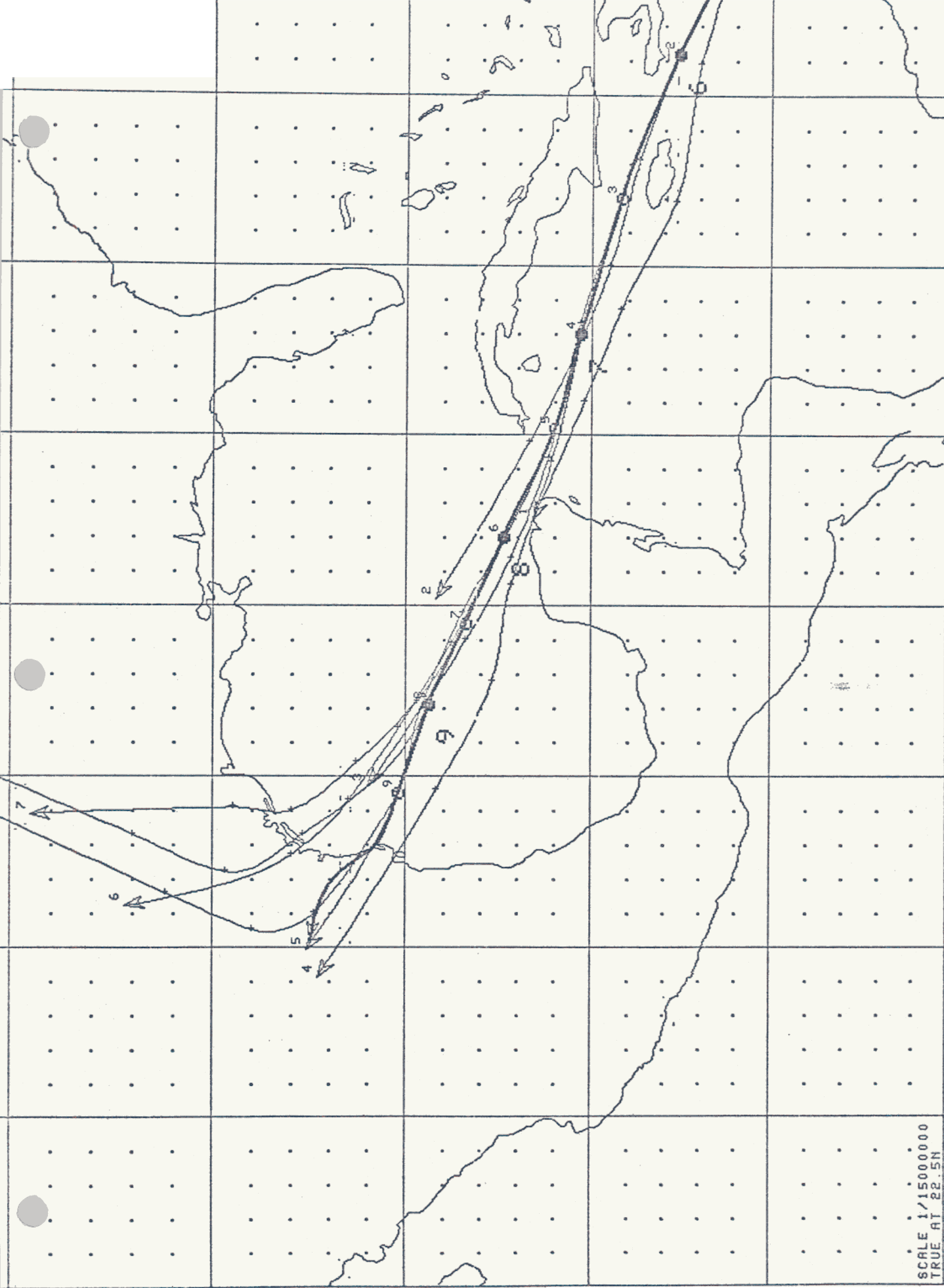
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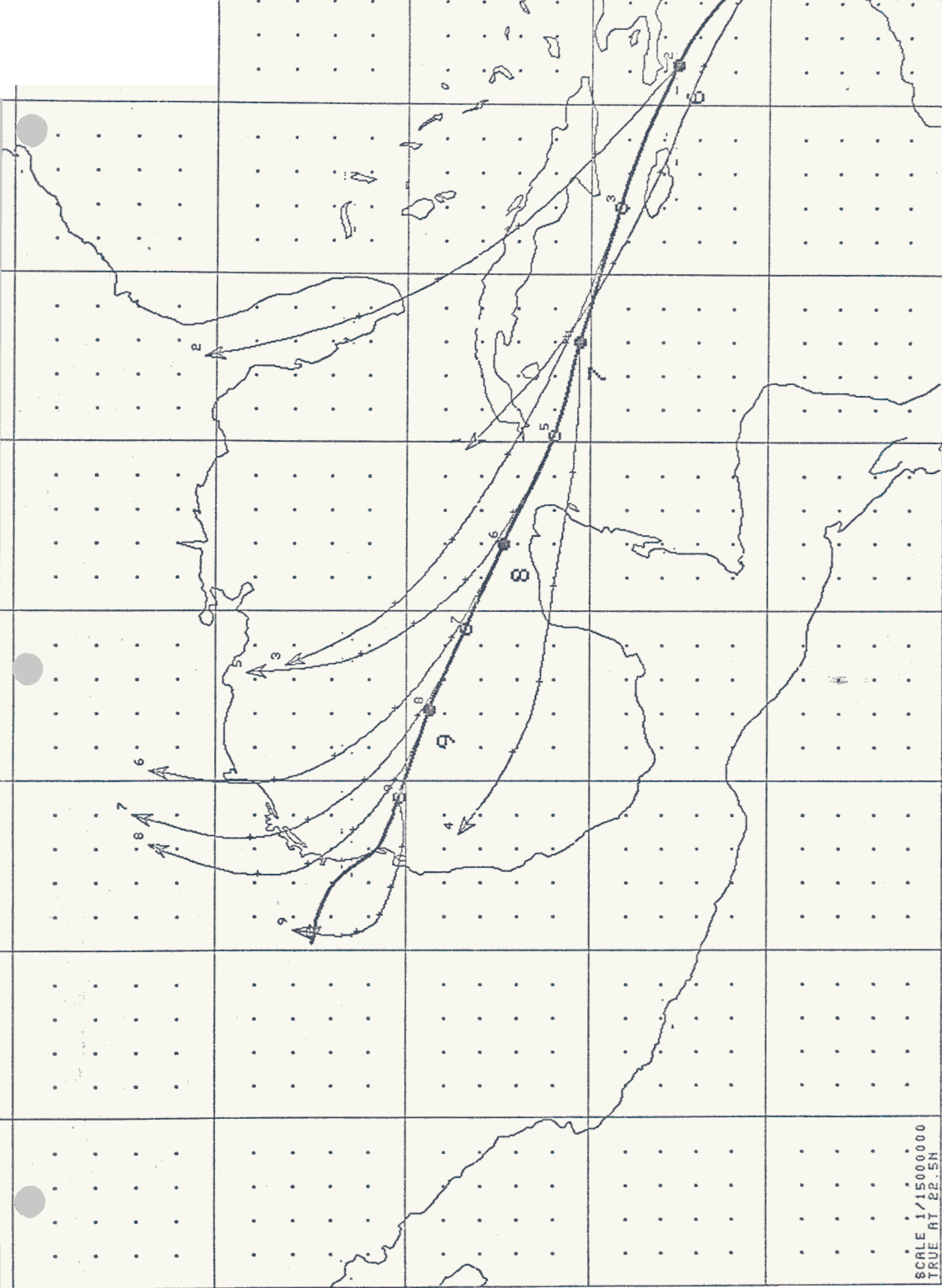
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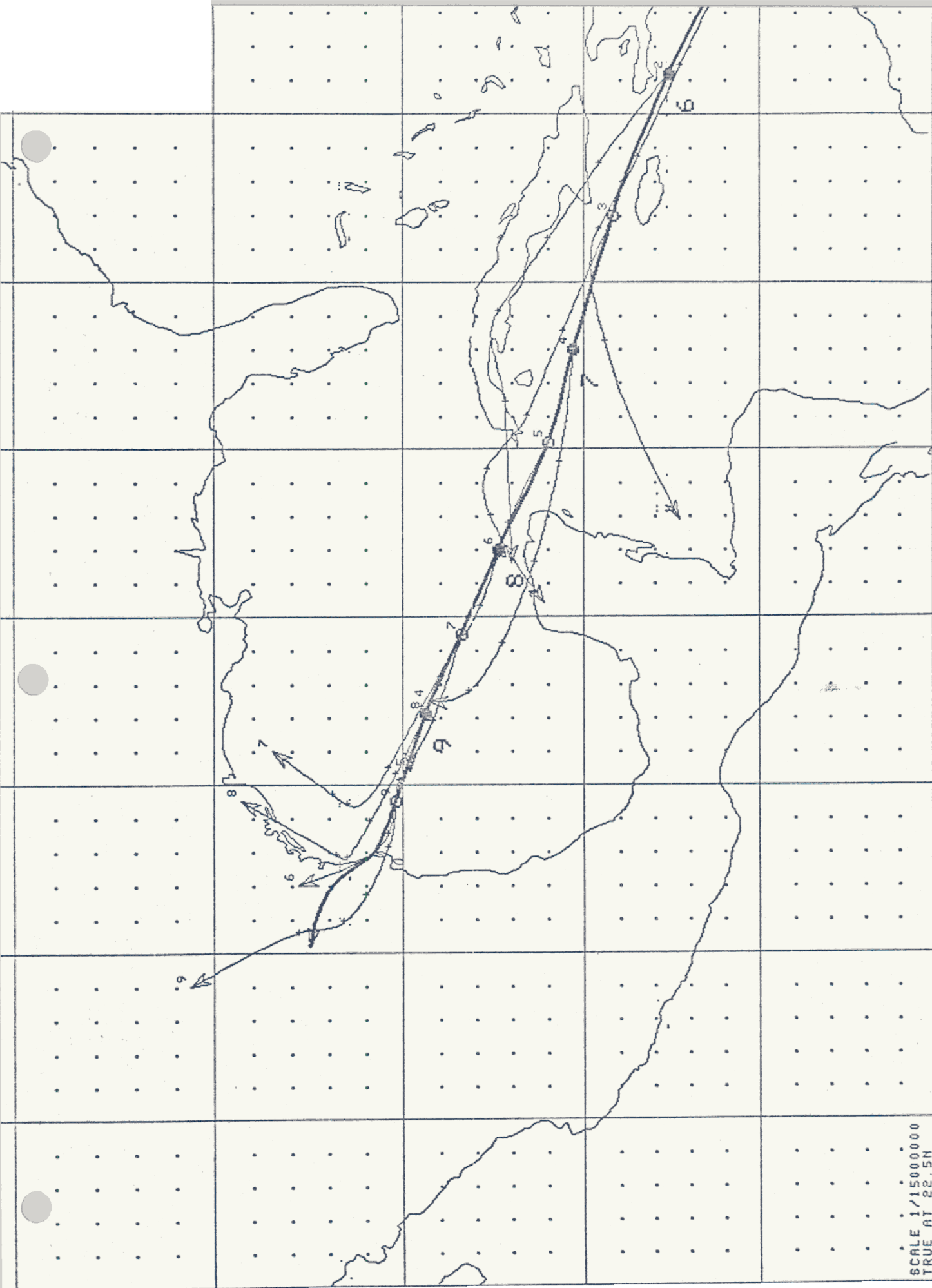
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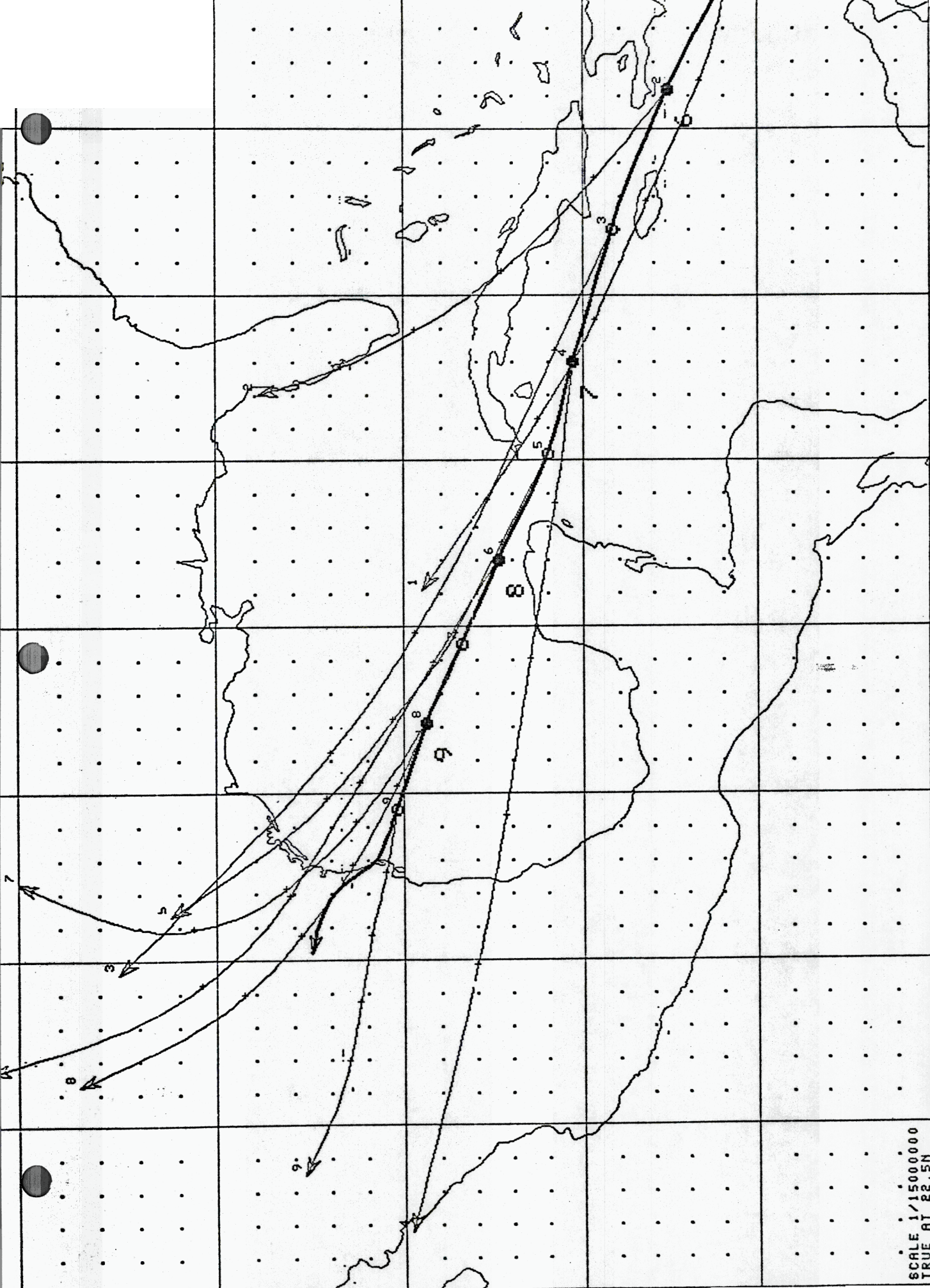
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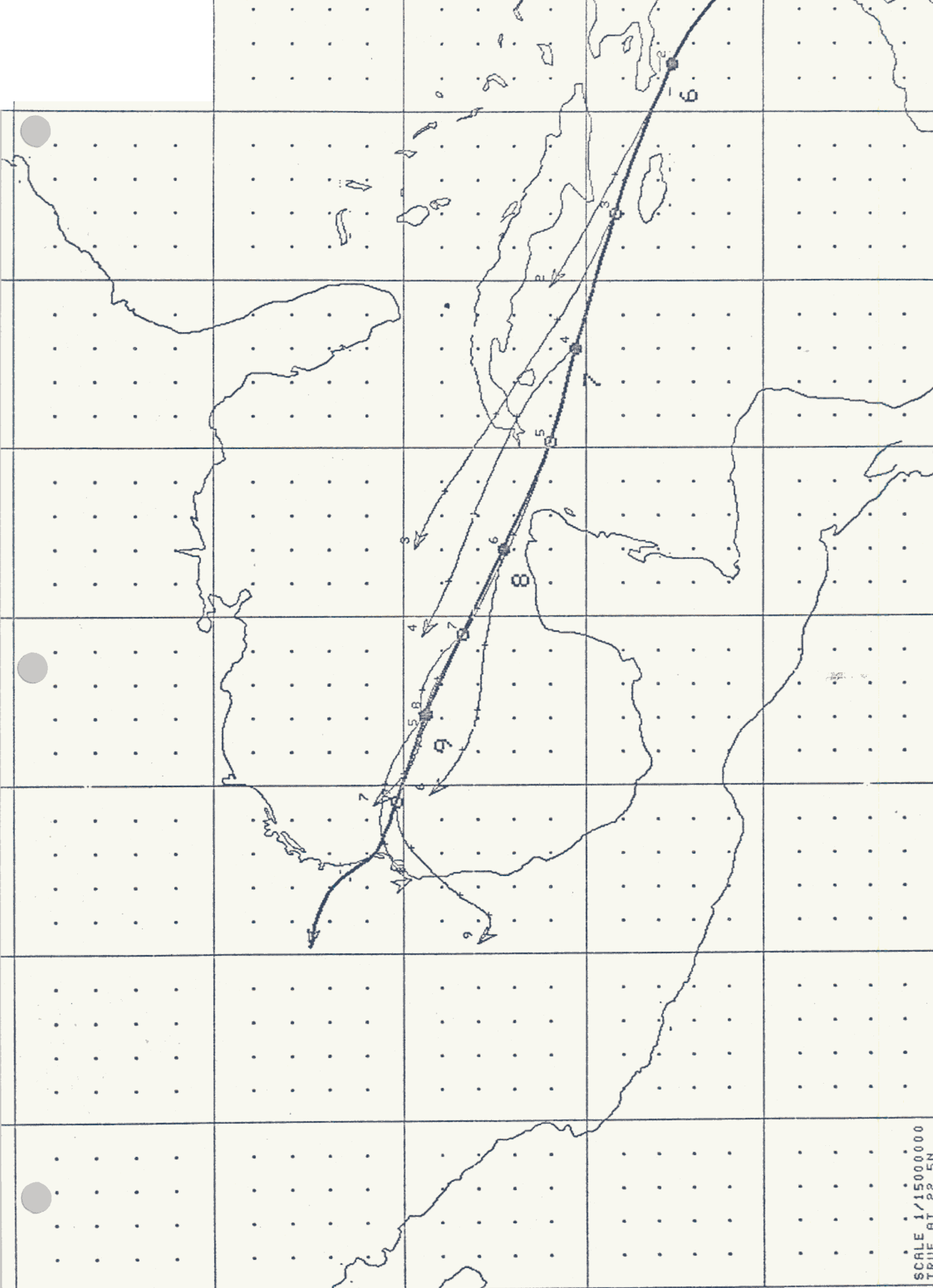
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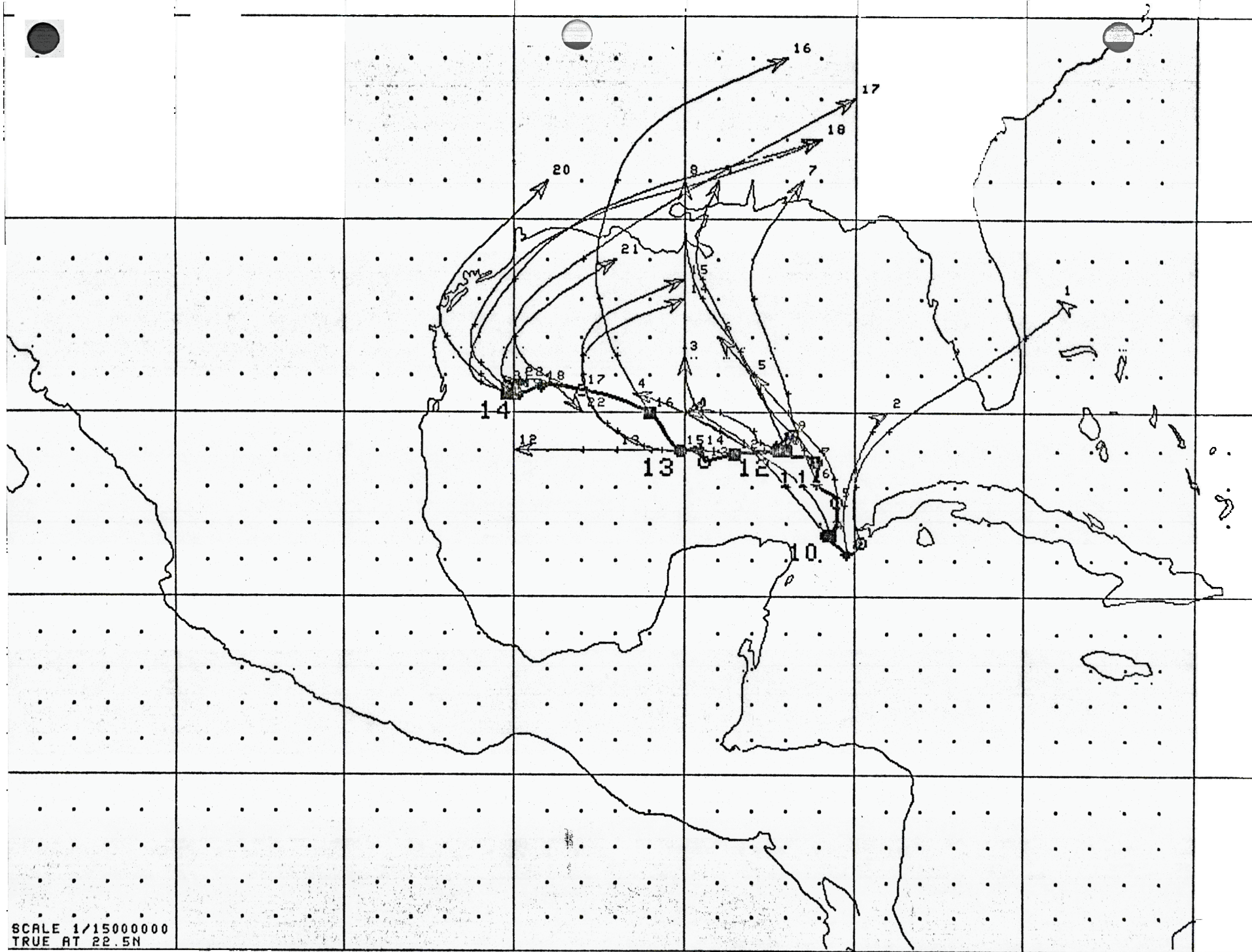
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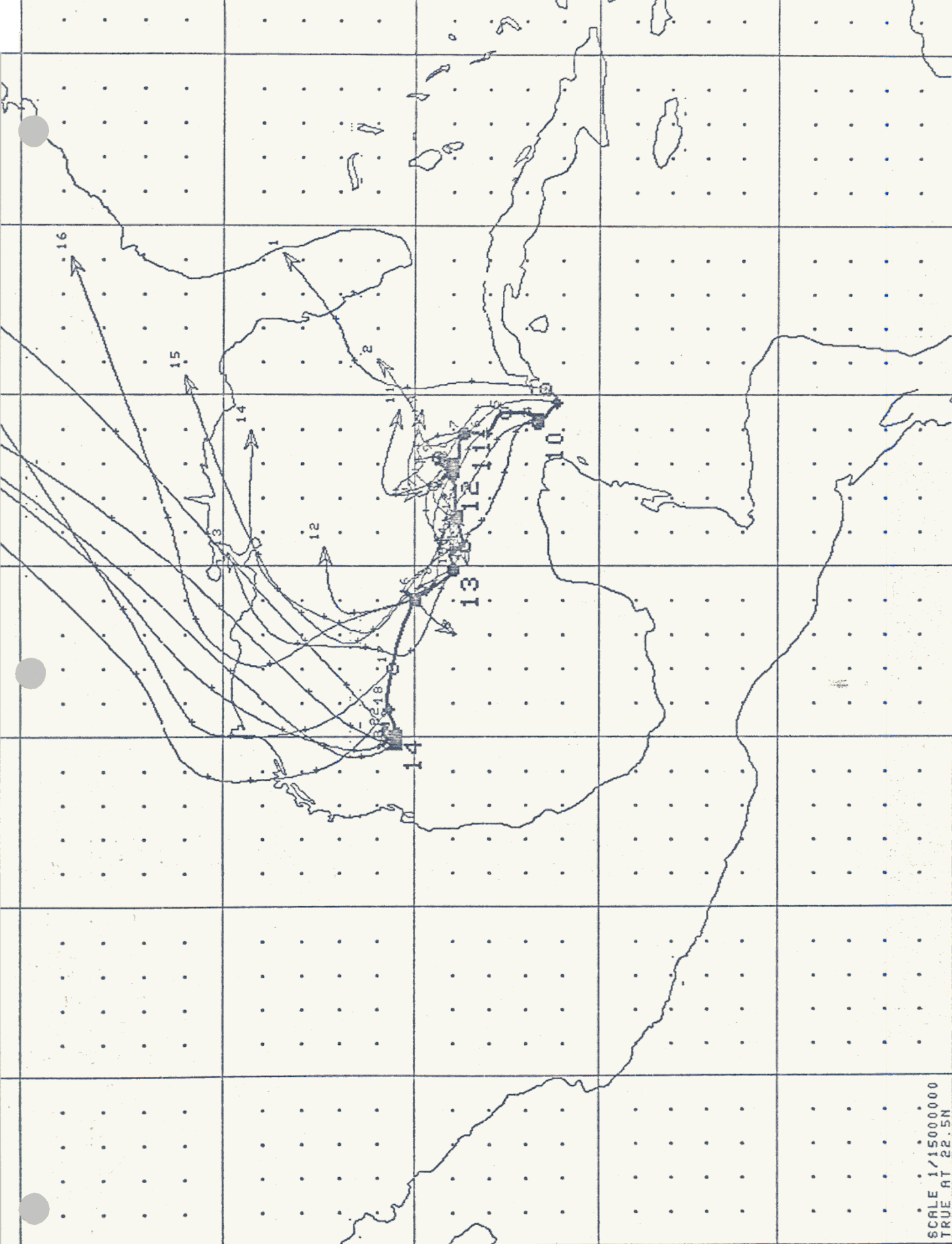
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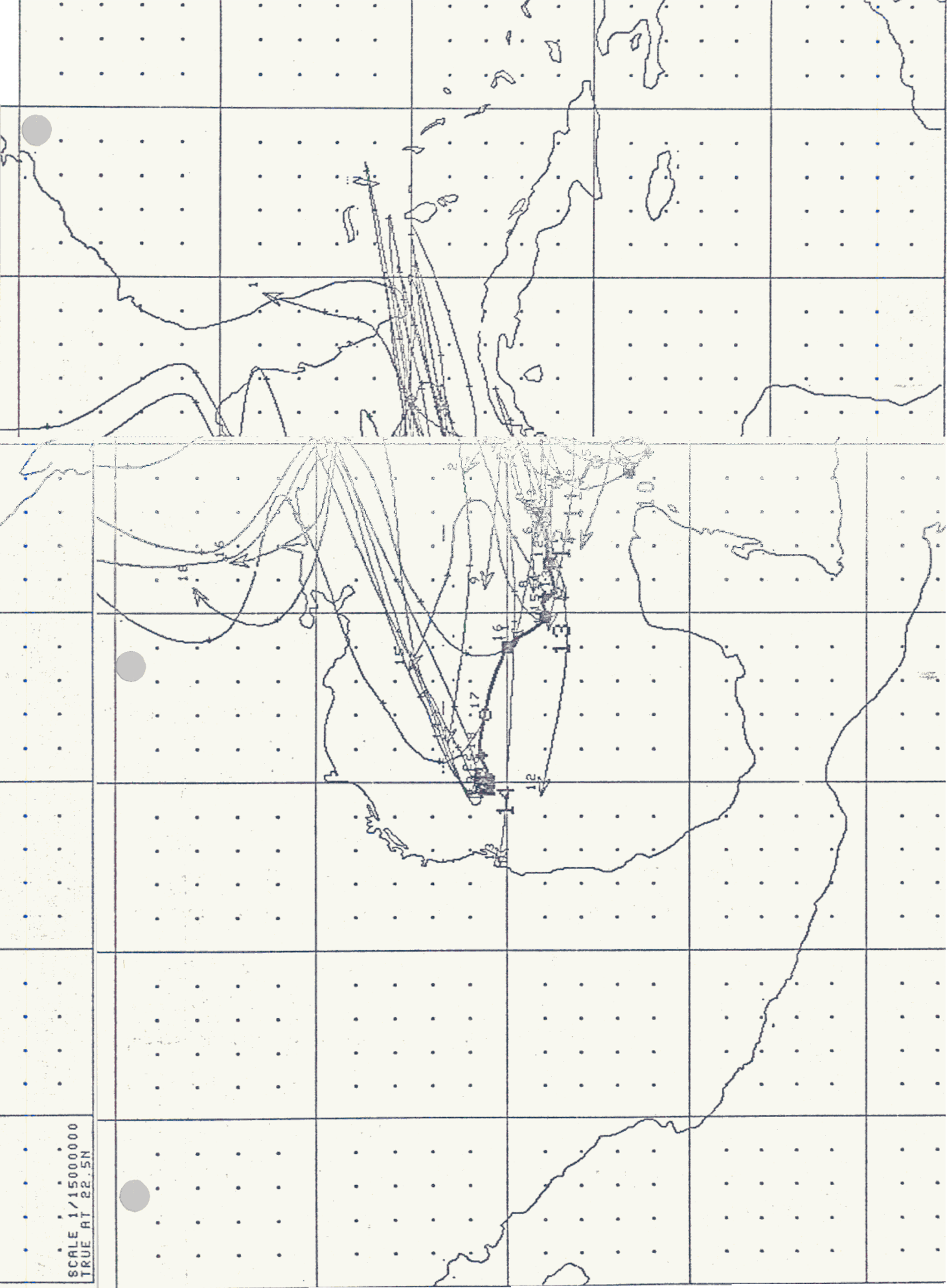
NATIONAL HURRICANE CENTER, MIAMI, FLA.
OFFICIAL FORECASTS FOR JEANNE, NOVEMBER 1980



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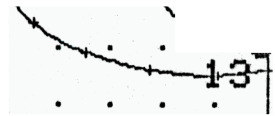
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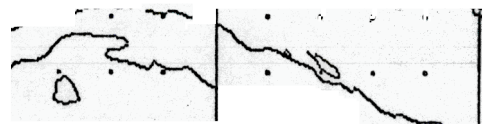
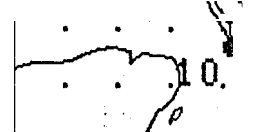
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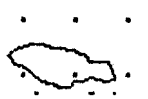
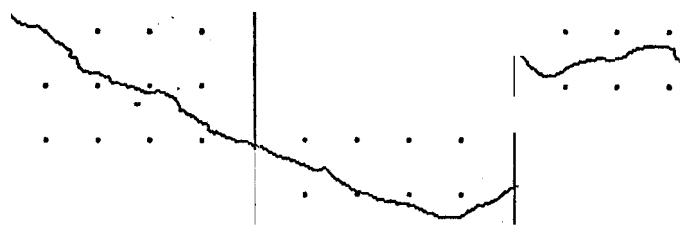
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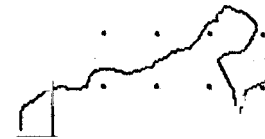


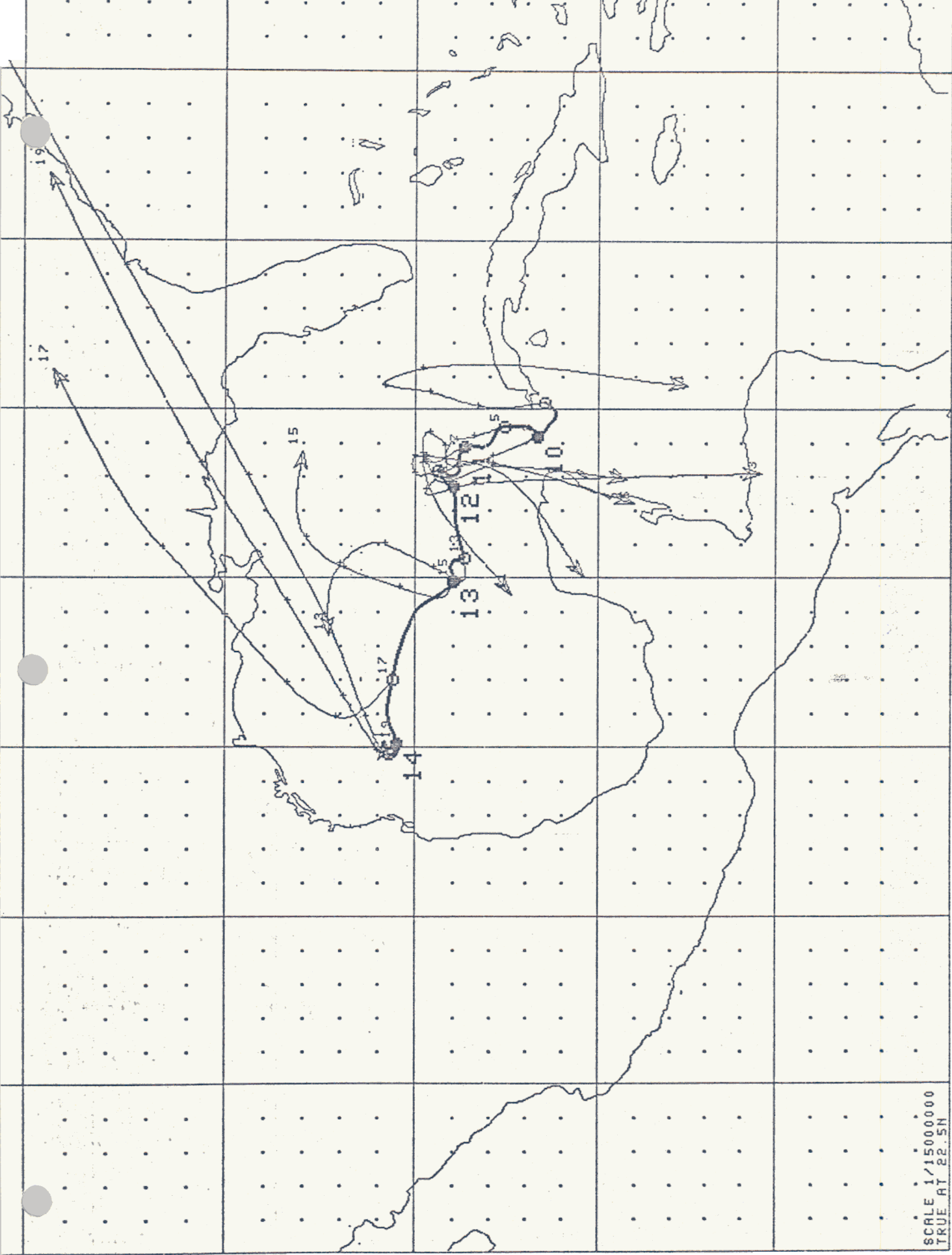
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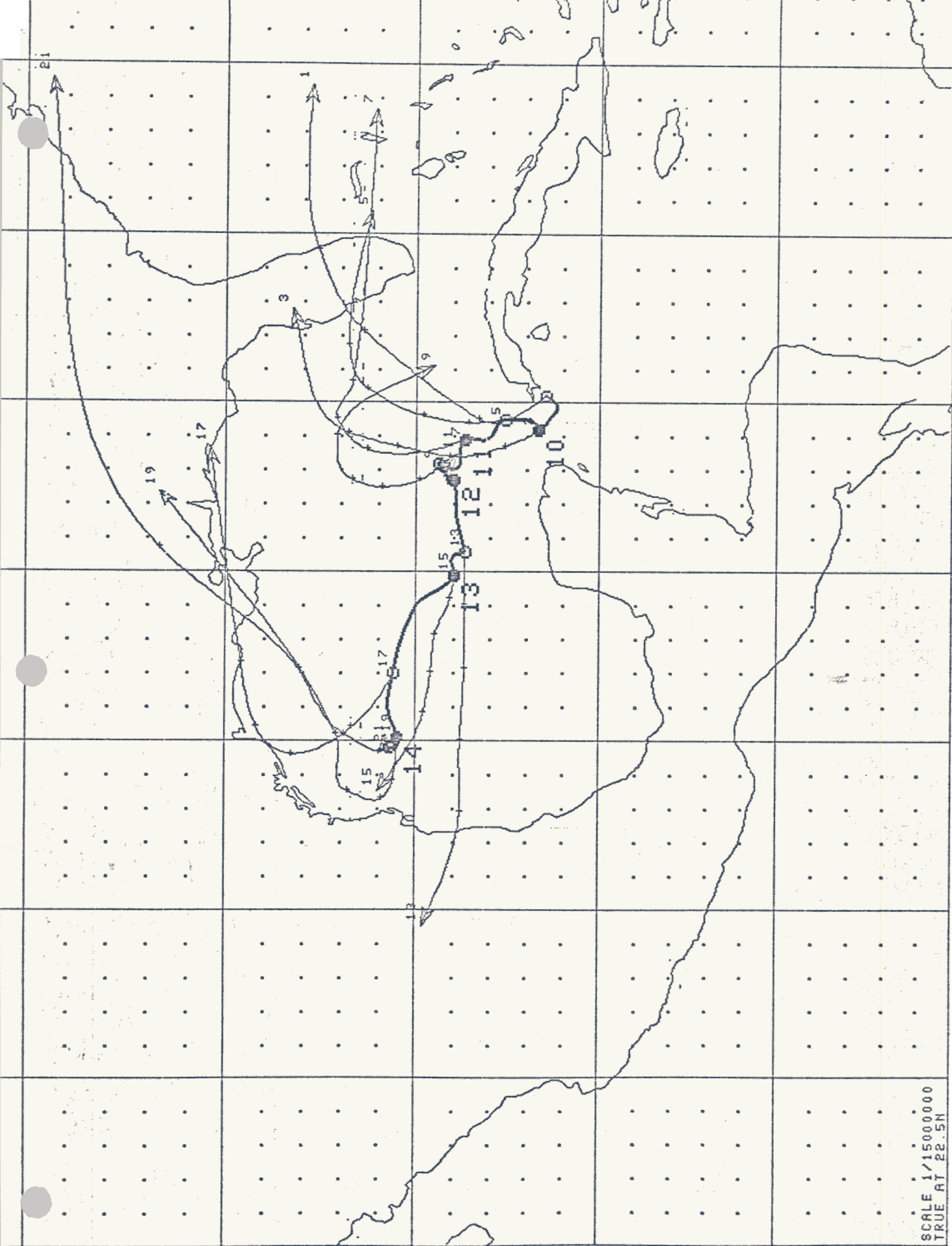
NATIONAL HURRICANE CENTER, MIAMI, FLA.
GLIPER FORECASTS FOR JEANNE, NOVEMBER 1980





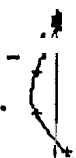
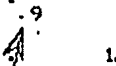
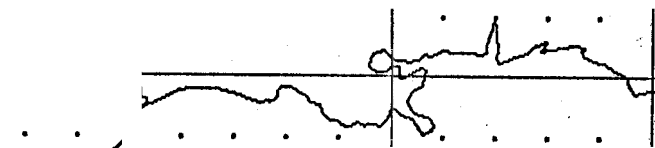
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NATIONAL HURRICANE CENTER, MIAMI, FLA
 MESSAGE FOR JAMAICA, N Y, M, R, 9



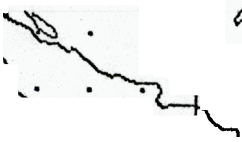
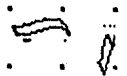
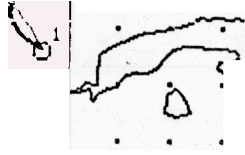
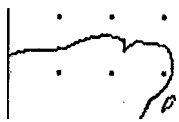
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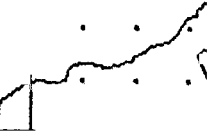


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MFM FORECASTS FOR JEANNE, NOVEMBER 1980