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NOAA Technical Memorandum NWS WR-200

ANNUAL DATA AND VERIFICATION TABULATION EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1986

Roger L. Cross

Kenneth B. Mielke

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ANNUAL DATA AND VERIFICATION TABULATION EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1986

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September 1987

UNITED STATES DEPARTMENT OF COMMERCE / National Oceanic and Atmospheric Administration / National Weather Service
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ANNUAL DATA AND VERIFICATION TABULATION
EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1986

I. INTRODUCTION

This is the eighth report of an annual series covering eastern North Pacific tropical cyclone activity. Data are provided by the National Weather Service Eastern Pacific Hurricane Center and the Satellite Field Service Station in San Francisco, California, and the Chief, Aerial Reconnaissance Coordination, all Hurricanes (CARCAH), Miami, Florida.

II. OBJECTIVE FORECAST TECHNIQUES

Tropical cyclone prediction models used by the Eastern Pacific Hurricane Center (EPHC) forecasters include:

1. EPHC77 (Leftwich and Neumann, 1977). A statistical-synoptic model.

2. EPHC81 (Leftwich, 1981). A statistical-dynamic model.

3. EPCLIPER84 (Neumann, 1982). A simulated-analog model based on persistence and climatology. This model was updated in 1984-85 and was first used during the 1986 season. The model development data set was updated to include all storms from 1965 to 1985.

4. EPANALOG85 (Jarrell, Mauck, and Renard, 1975). An analog model. This model also was updated for use in the 1986 season. The data set was updated to include the years 1965 to 1985 instead of the previous set 1949 to 1976. In addition, all analogs chosen must now be within 650 km, as opposed to the previous 1-1/2 degree limit. The analog date must be within 30 days of the current date, whereas previously, analogs from the entire season were used.

5. EPSANBAR (Sanders and Burpee, 1968). A filtered barotropic model.

In addition to the above models, forecasters also make use of NMC analyses and prognoses.

III. VERIFICATION

Verification statistics for the 1986 season are shown in Table 1. The forecast displacement error is the vector difference between the forecast displacement and the actual displacement computed from operational advisory positions. Tropical depressions are not verified.

IV. DATA SUMMARIES

A summary of the 1986 Eastern North Pacific tropical cyclone statistics is given in Table 2. Best track, operational positions, and position errors are given in Tables 3 to 19.

The actual track of a tropical storm consists of two scales of motion. The small scale motion is a trochoidal oscillation about a mean track. The large scale motion is the result of environmental steering forces and is quite conservative. The "best track" positions are constructed by removing the small scale motions. The operational position is real-time storm location, determined while the storm is in progress; the "best track" is based upon past operational positions and updated every 6 hours. Forecast errors are determined from the "best track" positions. The tables on the following pages only include tropical storms and hurricanes, but the storm history for each begins when the system reaches tropical depression status ($\geq$25KTS). Forecast errors are only computed once the tropical depression reaches storm status ($\geq$33 KTS), therefore, there may be a lot of zero entries in the tables at the beginning and ending of a storm.

NOAA reconnaissance aircraft flew into two of the Eastern North Pacific tropical cyclones during the 1986 season. On September 21, a NOAA aircraft conducted cloud microphysics experiments around Hurricane Newton. Again on September 30, the NOAA aircraft conducted hurricane-environment experiments and structure of hurricane rainband experiments on Hurricane Paine.

Even as satellite imagery continues to improve and is one of the more important tools used by tropical forecasters, aircraft reconnaissance and ship reports are invaluable in providing comparative observations.

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TABLE 1
1986 FORECAST ERRORS*

	FORECAST PERIOD		
	24 HR	48 HR	72 HR
EPHC FORECASTERS	187(101)/203	414(224)/160	577(312)/114
EPANALOG85	198(107)/198	422(228)/164	592(320)/121
EPHC77	189(102)/201	394(213)/168	564(305)/125
CLIPER84	196(106)/202	409(221)/168	585(316)/125
EPHC81	196(106)/92	376(203)/76	549(297)/58

*Average error in kilometers (nautical miles)/number of cases

TABLE 2
Summary of Eastern North Pacific Tropical Cyclones of 1986**
(Includes Only Those Cyclones that Reached Hurricane (HU) or Tropical Storm (TS) Strength)

NO.	NAME	CLASS	DATES	MAX WIND (KTS)
1.	AGATHA	HU	22-29 MAY	65
2.	BLAS	TS	17-19 JUN	35
3.	CELIA	HU	24-30 JUN	75
4.	DARBY	TS	3-7 JUL	35
5.	ESTELLE	HU	16-21 JUL	115
6.	FRANK	HU	24 JUL-2 AUG	75
7.	GEORGETTE	TS	2-4 AUG	35
8.	HOWARD	TS	16-18 AUG	35
9.	ISIS	TS	19-24 AUG	45
10.	JAVIER	HU	20-31 AUG	115
11.	KAY	TS	28 AUG-3 SEP	40
12.	LESTER	TS	13-16 SEP	45
13.	MADELINE	TS	15-22 SEP	60
14.	NEWTON	HU	18-23 SEP	75
15.	ORLENE	HU	21-22 SEP	65
16.	PAINE	HU	28 SEP-2 OCT	80
17.	ROSLYN	HU	15-22 OCT	125

**Damage and Death Summaries Are Unknown

AGATHA.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
52200	12.6	107.5	13.0	107.5	24.0	14.0	108.0	168.	14.7	108.5	331.	15.7	109.1	365.
52206	12.2	107.4	13.4	107.2	72.9	14.9	106.5	236.	0.0	0.0	0.	0.0	0.0	0.
52212	11.8	107.2	13.8	106.5	126.8	14.7	104.8	226.	0.0	0.0	0.	0.0	0.0	0.
52218	11.5	106.8	11.5	105.5	75.9	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52300	11.3	106.4	11.5	106.7	21.2	11.3	106.3	93.	0.0	0.0	0.	0.0	0.0	0.
52306	11.0	106.1	11.0	106.0	5.8	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52312	10.7	105.6	11.0	105.5	18.9	11.4	103.9	97.	0.0	0.0	0.	0.0	0.0	0.
52318	10.5	105.2	10.5	105.0	11.5	11.0	103.3	75.	12.8	102.7	155.	15.7	101.4	67.
52400	10.3	105.1	10.3	105.1	0.0	10.0	105.5	72.	10.2	106.0	375.	11.3	106.6	434.
52406	10.3	105.4	10.1	105.4	12.0	10.7	107.1	223.	11.7	107.6	402.	13.2	107.4	454.
52412	10.7	105.0	10.4	105.2	21.4	11.0	105.4	195.	11.7	105.8	383.	13.3	106.7	457.
52418	11.5	104.8	10.6	104.5	56.7	11.8	103.2	199.	13.7	102.7	197.	16.8	103.6	311.
52500	12.4	104.7	11.1	105.0	79.9	12.3	105.1	238.	14.0	105.8	313.	15.8	105.0	429.
52506	13.2	104.5	13.4	104.5	12.0	17.1	103.5	46.	0.0	0.0	0.	0.0	0.0	0.
52512	14.1	104.3	13.9	103.9	26.1	17.2	103.2	52.	18.0	103.3	276.	0.0	0.0	0.
52518	15.0	104.0	15.0	104.1	5.8	18.3	103.7	150.	0.0	0.0	0.	0.0	0.0	0.
52600	15.8	103.6	16.1	103.9	25.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52606	16.5	103.0	16.6	102.9	8.3	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52612	16.6	102.2	17.1	102.3	30.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52618	16.3	101.5	16.8	101.6	30.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52700	16.0	100.8	15.7	100.7	18.9	15.8	96.6	68.	0.0	0.0	0.	0.0	0.0	0.
52706	15.8	100.0	15.9	100.1	8.3	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52712	15.5	99.2	15.6	99.2	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
52718	15.3	98.4	15.4	98.4	6.0	15.3	95.7	92.	15.5	94.7	95.	15.6	93.9	0.
52800	15.0	97.7	15.2	97.6	13.3	14.7	94.8	107.	14.2	93.2	0.	13.3	91.6	0.
52806	14.7	97.3	15.0	97.0	25.0	15.0	94.6	101.	0.0	0.0	0.	0.0	0.0	0.
52812	14.4	97.0	14.7	96.5	34.1	14.4	95.1	38.	14.1	95.6	0.	14.3	96.0	0.
52818	14.1	96.8	14.3	96.9	13.3	13.6	97.7	148.	14.0	98.5	0.	14.6	97.9	0.
52900	14.0	96.4	14.0	96.5	5.8	13.4	95.6	0.	13.2	94.6	0.	13.1	93.3	0.
52906	13.9	96.0	14.0	96.0	6.0	14.1	94.4	0.	0.0	0.0	0.	0.0	0.0	0.
52912	13.9	95.5	14.0	95.6	8.3	14.2	94.5	0.	15.3	94.2	0.	0.0	0.0	0.
52918	0.0	0.0	14.0	95.2	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								131.			281.			360.
NUMBER OF CASES								20			9			7

TABLE 3

BLAS.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
61700	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61706	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61712	8.7	112.6	8.7	112.5	5.9	8.9	116.5	111.	9.3	119.9	0.	10.0	122.9	0.
61718	8.8	113.8	8.7	113.4	24.4	9.0	117.4	176.	10.0	121.3	0.	10.7	125.0	0.
61800	9.0	115.2	8.8	114.5	43.0	9.3	118.5	93.	9.8	120.7	0.	11.2	123.6	0.
61806	9.2	116.5	9.0	116.5	12.0	9.8	121.6	93.	10.2	125.6	0.	10.9	128.9	0.
61812	9.6	117.7	10.0	118.0	29.8	11.4	122.5	0.	0.0	0.0	0.	0.0	0.0	0.
61818	10.0	118.7	11.4	119.1	87.3	17.5	124.3	0.	0.0	0.0	0.	0.0	0.0	0.
61900	10.5	119.6	10.4	119.6	6.0	13.0	124.7	0.	0.0	0.0	0.	0.0	0.0	0.
61906	0.0	0.0	10.9	120.5	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61912	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
61918	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								118.			0.			0.
NUMBER OF CASES								4			0			0

TABLE 4

CELIA.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
62400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62406	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62418	10.7	97.6	10.9	97.8	16.7	10.9	101.4	61.	11.8	105.7	160.	13.1	109.6	138.
62500	10.6	98.3	11.4	98.3	48.0	11.4	100.3	76.	11.5	102.4	106.	11.9	106.0	289.
62506	10.6	99.1	10.7	98.6	29.7	10.5	101.6	21.	10.6	105.7	145.	11.2	109.7	324.
62512	10.6	99.8	10.8	99.2	36.7	11.3	101.8	31.	12.1	105.0	126.	13.4	108.6	291.
62518	10.6	100.5	10.4	100.5	12.0	10.8	103.2	44.	11.7	105.9	206.	13.1	109.7	398.
62600	10.7	101.2	10.6	101.3	8.3	11.3	104.5	53.	12.1	107.9	230.	13.1	111.3	448.
62606	10.8	101.8	10.7	101.9	8.3	11.3	104.6	112.	12.4	107.6	280.	13.4	110.7	514.
62612	11.1	102.5	10.8	101.9	38.8	11.4	103.8	206.	12.3	105.6	440.	13.2	108.2	0.
62618	11.6	103.2	11.5	103.0	12.9	13.1	106.0	138.	14.4	109.1	336.	15.3	112.3	409.
62700	12.3	104.2	12.1	104.1	13.3	13.9	107.7	134.	15.1	111.4	329.	15.6	115.0	434.
62706	13.0	105.4	13.0	105.4	0.0	15.5	110.2	72.	16.6	114.1	303.	16.7	117.5	417.
62712	13.7	106.7	13.6	106.5	12.7	15.8	111.2	132.	16.6	115.2	0.	17.2	118.6	422.
62718	14.5	107.8	14.6	107.8	6.0	16.8	112.2	167.	18.0	116.5	270.	18.5	120.0	405.
62800	15.6	108.8	15.8	108.9	13.2	19.5	112.8	64.	21.5	116.1	131.	22.7	119.7	0.
62806	16.6	109.7	16.6	109.7	0.0	19.9	113.4	102.	21.4	116.6	143.	21.8	119.4	0.
62812	17.9	110.6	17.9	110.5	5.6	21.7	113.9	0.	22.7	115.7	55.	23.4	117.2	0.
62818	19.2	111.5	19.5	111.5	18.0	23.7	114.9	117.	25.1	117.3	105.	25.4	119.4	0.
62900	20.2	112.5	20.5	112.4	18.8	24.5	115.3	119.	26.6	117.8	0.	28.1	120.6	0.
62906	20.9	113.1	21.6	113.3	43.5	25.3	116.7	160.	28.0	117.7	0.	29.3	116.5	0.
62912	21.6	113.6	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
62918	22.2	114.0	21.9	114.1	18.8	23.0	115.8	60.	0.0	0.0	0.	0.0	0.0	0.
63000	22.7	114.4	22.8	114.2	12.7	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
63006	23.2	114.9	23.2	114.9	0.0	25.5	116.0	0.	0.0	0.0	0.	0.0	0.0	0.
63012	23.6	115.4	23.6	115.5	5.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
63018	24.0	115.8	24.0	115.8	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								98.			210.			374.
NUMBER OF CASES								19			16			12

TABLE 5

DARBY.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
7 300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
7 306	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
7 312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
7 318	13.5	104.5	13.3	104.6	13.3	13.5	109.4	147.	14.5	113.3	238.	15.2	117.7	274.
7 400	14.0	105.7	13.6	105.4	29.5	14.3	109.5	128.	15.5	113.4	202.	16.7	117.4	170.
7 406	14.5	106.6	14.1	106.5	24.7	15.9	110.5	78.	17.3	114.0	106.	17.8	117.0	84.
7 412	15.1	107.5	14.7	107.7	26.6	16.4	111.7	99.	17.5	115.0	138.	18.3	118.0	55.
7 418	15.5	108.4	15.7	108.3	13.3	18.0	111.8	12.	19.9	114.8	53.	21.5	117.0	138.
7 500	16.0	109.3	16.4	109.1	26.5	18.9	112.3	12.	20.3	115.2	80.	21.4	118.4	0.
7 506	16.7	110.0	16.5	109.3	41.1	18.3	111.5	121.	19.8	113.6	196.	0.0	0.0	0.
7 512	17.4	110.8	16.7	110.0	61.5	17.6	112.1	161.	18.5	114.0	220.	19.4	116.0	0.
7 518	18.1	111.5	18.2	111.8	17.9	20.4	115.2	78.	23.1	117.8	217.	0.0	0.0	0.
7 600	18.7	112.3	18.7	112.3	0.0	22.2	114.3	204.	24.2	115.2	0.	0.0	0.0	0.
7 606	19.0	113.2	19.0	113.5	16.9	21.8	116.5	159.	23.5	118.5	0.	0.0	0.0	0.
7 612	19.1	114.2	19.6	114.0	32.0	23.0	114.5	293.	0.0	0.0	0.	0.0	0.0	0.
7 618	19.2	115.2	19.1	115.2	6.0	19.3	118.8	36.	0.0	0.0	0.	0.0	0.0	0.
7 700	19.2	116.0	19.2	116.0	0.0	19.4	119.4	0.	0.0	0.0	0.	0.0	0.0	0.
7 706	19.3	116.8	19.2	117.0	12.7	19.3	120.5	0.	0.0	0.0	0.	0.0	0.0	0.
7 712	19.4	117.6	19.2	117.8	16.4	19.4	121.3	0.	0.0	0.0	0.	0.0	0.0	0.
7 718	19.5	118.2	19.5	118.2	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								118.			161.			144.
NUMBER OF CASES								13			9			5

TABLE 6

ESTELLE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
71600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
71606	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
71612	10.3	115.0	10.0	115.5	34.3	11.0	119.2	43.	12.2	122.7	59.	13.3	126.2	111.
71618	10.3	116.3	9.8	116.1	32.2	11.0	119.4	71.	12.0	122.0	157.	13.1	124.6	284.
71700	10.4	117.4	10.2	117.8	26.2	11.0	122.2	46.	12.2	126.3	42.	13.6	130.2	71.
71706	10.7	118.5	10.3	119.3	52.5	10.9	124.1	107.	11.7	128.5	118.	12.5	132.5	98.
71712	11.0	119.6	10.6	119.8	26.7	11.4	124.2	56.	12.4	128.5	59.	13.6	132.7	100.
71718	11.3	120.6	11.5	120.5	13.3	14.4	123.3	132.	16.7	126.3	246.	18.3	128.7	475.
71800	11.6	121.6	11.6	121.7	5.8	12.7	125.9	6.	13.4	129.8	96.	13.5	133.8	270.
71806	11.9	122.7	11.9	122.6	5.8	13.0	126.5	24.	14.1	130.3	145.	15.1	134.0	365.
71812	12.2	123.7	12.2	123.7	0.0	13.3	128.0	6.	14.5	131.9	134.	15.6	135.6	0.
71818	12.5	124.7	12.6	124.6	8.3	14.3	128.1	79.	15.4	130.8	309.	17.1	133.6	0.
71900	12.8	125.8	12.7	125.8	6.0	13.7	130.1	76.	14.6	134.0	240.	15.0	138.0	0.
71906	13.0	126.9	12.9	126.9	6.0	13.8	131.2	95.	14.0	135.0	319.	13.9	139.0	0.
71912	13.4	128.1	13.3	128.1	6.0	14.1	132.8	83.	14.2	137.6	0.	14.2	142.0	0.
71918	13.7	129.7	13.9	129.4	21.1	15.5	134.5	102.	17.3	139.8	0.	19.4	143.0	0.
72000	13.9	131.3	13.8	131.4	8.3	14.3	137.7	59.	14.6	142.7	0.	15.1	147.6	0.
72006	14.2	132.9	14.1	132.8	8.3	14.6	139.0	89.	14.9	143.5	0.	15.0	147.2	0.
72012	14.6	134.6	14.4	134.2	26.1	15.0	140.1	0.	15.2	145.5	0.	16.0	150.8	0.
72018	15.0	136.3	14.8	136.1	16.7	16.0	142.2	0.	17.0	148.2	0.	18.9	152.1	0.
72100	15.2	138.2	15.2	138.1	5.8	15.6	144.6	0.	15.8	150.8	0.	16.0	156.2	0.
72106	15.4	140.3	15.4	140.3	0.0	15.9	148.1	0.	16.6	155.0	0.	17.5	159.5	0.
72112	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								67.			160.			222.
NUMBER OF CASES								16			12			8

TABLE 7

FRANK.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
72400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72406	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
72418	11.1	94.9	10.6	94.7	32.2	10.7	99.2	137.	11.0	103.6	185.	11.5	108.1	280.
72500	11.3	96.1	11.3	96.0	5.8	12.1	100.4	46.	13.1	104.5	183.	14.2	108.7	268.
72506	11.7	97.3	12.0	97.0	24.9	14.3	101.3	115.	16.8	105.3	280.	20.4	106.7	568.
72512	11.9	98.1	12.3	98.2	24.7	13.8	102.6	64.	15.7	106.2	262.	0.0	0.0	0.
72518	12.1	100.1	12.6	100.5	37.9	14.0	105.7	63.	15.3	110.3	119.	16.0	115.0	171.
72600	12.5	101.6	12.6	101.0	35.4	12.9	105.8	113.	13.5	110.1	189.	14.1	114.5	239.
72606	12.8	103.0	12.5	102.0	60.6	13.8	106.5	146.	14.9	110.1	233.	16.6	113.9	379.
72612	13.1	104.5	12.9	103.2	76.2	14.1	107.9	145.	15.2	112.1	196.	16.3	116.3	308.
72618	13.4	106.0	13.0	106.0	24.0	13.5	112.3	45.	13.9	116.8	26.	14.0	121.4	80.
72700	13.7	107.5	13.6	107.6	8.3	14.8	113.0	51.	16.0	116.4	167.	17.3	119.8	253.
72706	13.9	109.0	13.8	109.0	6.0	14.5	114.9	60.	15.4	119.2	81.	15.8	123.9	41.
72712	13.9	110.5	14.1	110.4	13.3	14.8	115.8	64.	15.7	120.7	89.	16.6	125.8	13.
72718	14.0	112.0	14.2	112.0	12.0	14.7	117.3	36.	15.3	121.9	46.	15.9	126.6	64.
72800	14.1	113.3	14.0	113.3	6.0	14.6	118.5	25.	15.8	123.0	50.	17.2	128.6	13.
72806	14.1	114.6	14.0	114.0	35.0	14.5	118.4	94.	15.1	122.1	149.	16.3	126.5	215.
72812	14.1	115.9	13.9	115.2	41.9	14.0	119.8	83.	14.5	124.5	133.	16.0	129.0	183.
72818	14.2	117.2	14.1	117.2	6.0	14.2	122.5	36.	14.2	127.4	156.	14.2	132.3	236.
72900	14.3	118.5	14.2	118.6	8.3	14.5	124.1	51.	14.9	129.1	133.	15.3	133.5	180.
72906	14.5	119.9	14.3	120.0	13.3	14.9	125.5	71.	15.5	130.6	112.	16.0	135.2	153.
72912	14.8	121.1	14.3	121.2	30.5	14.4	126.2	123.	15.2	130.8	167.	16.2	135.2	144.
72918	15.0	122.3	14.8	122.5	16.6	15.5	127.7	83.	16.1	132.8	120.	16.7	137.7	168.
73000	15.4	123.5	15.2	123.6	13.3	15.3	128.6	109.	15.4	133.2	175.	15.5	137.5	291.
73006	15.9	124.8	15.7	124.6	16.6	17.5	129.2	53.	18.1	133.1	71.	18.4	136.6	0.
73012	16.5	126.1	16.4	125.7	23.6	17.9	130.4	63.	18.5	134.4	40.	19.0	133.6	0.
73018	17.0	127.6	16.8	127.2	25.8	18.2	132.8	6.	18.9	137.0	62.	19.2	141.1	0.
73100	17.3	129.1	17.1	128.8	20.9	17.2	134.9	104.	16.9	140.5	208.	16.0	145.7	0.
73106	17.6	130.4	17.3	130.1	24.9	17.4	135.4	87.	17.4	139.8	0.	17.0	144.1	0.
73112	17.8	131.6	17.9	131.5	8.3	18.2	136.8	100.	18.8	141.5	0.	19.4	145.8	0.
73118	18.1	132.8	18.1	132.8	0.0	18.9	139.3	87.	19.3	144.7	0.	19.4	149.7	0.
8 100	18.5	134.1	18.3	133.5	36.3	18.9	137.5	116.	20.0	139.3	0.	22.0	141.0	0.
8 106	18.9	135.3	18.4	134.3	64.5	19.0	137.7	0.	19.5	140.8	0.	20.0	144.3	0.
8 112	19.3	136.6	18.6	135.1	95.4	19.1	139.0	0.	19.5	141.8	0.	19.9	144.8	0.
8 118	19.7	137.9	19.5	137.9	12.0	20.1	143.1	0.	20.6	147.7	0.	21.1	151.9	0.
8 200	20.2	139.1	20.1	139.1	6.0	21.6	142.2	0.	23.0	145.5	0.	0.0	0.0	0.
8 206	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
8 212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
8 218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								79.			140.			202.
NUMBER OF CASES								30			26			21

TABLE 8

GEORGETTE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
81300	9.0	133.3	9.0	133.2	5.9	9.1	138.0	86.	9.3	142.3	0.	10.2	146.8	0.
81306	9.0	134.7	9.0	134.5	11.9	9.0	140.0	0.	9.5	145.1	0.	9.9	150.0	0.
81312	8.9	136.5	8.6	136.2	25.3	8.6	141.7	0.	9.4	146.6	0.	9.9	151.2	0.
81318	8.9	138.1	8.2	137.3	63.4	8.0	142.8	0.	0.0	0.0	0.	0.0	0.0	0.
81400	8.7	140.0	7.8	138.6	99.1	7.4	143.2	0.	7.9	146.8	0.	8.9	149.8	0.
81406	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81418	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								86.			0.			0.
NUMBER OF CASES								1			0			0

TABLE 9

HOWARD.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
81600	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81606	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81612	17.3	104.3	16.0	104.0	79.8	17.0	108.6	166.	17.8	112.8	353.	18.3	117.6	0.
81618	17.8	105.7	17.8	105.7	0.0	19.5	110.6	72.	20.0	116.0	165.	21.0	118.5	0.
81700	18.3	107.0	18.5	107.0	12.0	21.6	112.2	13.	24.1	117.1	0.	26.3	120.5	0.
81706	18.9	108.4	18.9	108.3	5.6	18.9	108.3	383.	23.6	117.8	0.	25.0	121.7	0.
81712	19.7	109.8	19.6	109.6	12.7	22.2	114.5	75.	24.2	118.0	0.	26.6	121.2	0.
81718	20.6	111.3	20.6	111.1	11.2	24.6	117.5	124.	26.2	125.0	0.	0.0	0.0	0.
81800	21.6	112.7	21.7	112.4	17.8	26.3	116.9	0.	28.7	118.6	0.	0.0	0.0	0.
81806	22.4	114.0	22.4	114.0	0.0	25.5	120.0	0.	0.0	0.0	0.	0.0	0.0	0.
81812	23.2	115.2	23.2	115.3	5.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81818	0.0	0.0	22.7	116.6	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								139.			259.			0.
NUMBER OF CASES								6			2			0

TABLE 10

ISIS.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
81900	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81906	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81912	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
81918	15.4	114.0	15.0	115.0	61.5	15.5	119.1	51.	16.5	123.0	143.	17.4	127.1	247.
82000	15.5	115.0	15.0	115.4	37.6	15.2	118.8	121.	15.5	122.5	254.	15.9	126.7	385.
82006	15.8	116.0	15.0	116.0	48.0	15.1	118.4	219.	15.3	120.8	393.	15.7	123.1	612.
82012	16.0	117.5	15.0	117.3	61.1	15.4	120.9	180.	15.7	124.8	308.	16.4	128.9	424.
82018	16.4	118.8	16.3	118.8	6.0	17.3	123.7	83.	18.3	127.8	183.	19.2	131.2	243.
82100	16.7	120.2	16.7	120.2	0.0	18.0	125.2	61.	19.5	129.6	119.	21.0	133.3	101.
82106	17.1	121.6	17.2	121.5	8.2	18.9	126.1	21.	20.2	129.8	150.	21.3	133.8	120.
82112	17.7	122.9	17.7	122.9	0.0	19.7	128.5	69.	21.5	132.6	66.	0.0	0.0	0.
82118	18.4	124.1	18.6	124.2	13.2	21.6	129.3	37.	23.2	133.6	106.	0.0	0.0	0.
82200	19.0	125.2	19.0	125.0	11.2	21.5	128.7	84.	23.0	133.0	167.	0.0	0.0	0.
82206	19.7	126.4	19.2	126.3	30.5	20.1	130.2	143.	20.8	134.2	96.	0.0	0.0	0.
82212	20.4	127.6	20.2	127.4	16.4	21.5	131.5	86.	22.6	134.6	0.	0.0	0.0	0.
82218	21.0	128.9	21.2	128.8	13.2	23.7	132.9	152.	26.0	136.1	0.	0.0	0.0	0.
82300	21.6	130.2	21.4	130.2	12.0	23.6	135.1	156.	0.0	0.0	0.	0.0	0.0	0.
82306	22.0	131.6	22.2	131.4	16.4	24.1	135.6	193.	24.0	138.0	0.	0.0	0.0	0.
82312	22.0	133.0	22.6	132.5	45.6	23.7	136.4	0.	0.0	0.0	0.	0.0	0.0	0.
82318	21.6	134.1	21.7	134.6	28.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82400	21.1	135.1	21.0	135.1	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82406	0.0	0.0	20.9	135.9	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82412	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82418	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								110.			180.			305.
NUMBER OF CASES								15			11			7

TABLE 11

JAVIER.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
82000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82012	10.0	97.2	9.5	97.4	32.2	10.5	102.2	73.	11.6	106.8	73.	12.5	111.3	92.
82018	10.2	98.5	10.2	98.2	17.4	11.3	102.6	99.	13.0	106.7	111.	13.0	110.8	59.
82100	10.6	99.9	10.7	99.7	13.1	12.4	104.6	63.	14.3	109.9	99.	15.0	115.2	286.
82106	11.0	101.2	11.1	101.5	18.3	12.9	107.0	48.	14.4	111.6	114.	16.8	115.0	308.
82112	11.4	102.8	11.5	102.9	8.3	13.3	108.6	91.	15.1	114.1	252.	16.8	119.0	530.
82118	11.8	104.2	11.8	104.2	0.0	14.0	110.0	130.	15.6	115.0	282.	17.4	119.4	519.
82200	12.0	105.5	12.0	105.6	5.8	13.3	111.3	126.	15.0	115.8	321.	16.0	120.5	556.
82206	12.3	106.5	12.1	107.0	31.2	12.7	112.6	156.	13.2	117.2	433.	14.4	121.2	601.
82212	12.5	107.5	11.9	108.0	46.1	12.3	112.7	168.	12.8	116.6	422.	14.0	121.2	590.
82218	12.8	108.6	12.4	108.5	24.7	13.0	112.0	114.	14.0	116.0	360.	15.0	120.1	474.
82300	13.0	109.2	12.8	109.2	12.0	13.7	112.8	153.	14.7	116.5	354.	16.0	120.4	434.
82306	13.3	109.6	13.3	110.0	22.7	15.3	112.7	157.	16.8	116.0	273.	18.0	120.0	291.
82312	13.6	110.0	13.5	110.1	8.2	15.2	111.7	106.	17.5	114.8	170.	19.0	117.7	99.
82318	14.0	110.2	14.1	110.4	12.8	15.9	112.1	107.	17.7	114.7	124.	19.2	117.7	54.
82400	14.5	110.2	14.5	110.3	5.7	16.0	111.1	67.	17.2	112.4	138.	18.5	113.6	320.
82406	15.1	110.1	15.0	110.0	8.2	17.3	109.0	132.	19.7	105.6	537.	0.0	0.0	0.
82412	15.8	110.1	15.5	109.9	21.3	17.9	108.9	172.	20.6	105.8	592.	0.0	0.0	0.
82418	16.6	110.4	16.6	110.4	0.0	19.3	111.9	66.	21.5	114.7	188.	22.5	118.2	322.
82500	17.1	110.8	17.1	110.9	5.6	18.9	112.3	76.	20.0	114.4	265.	20.4	116.2	495.
82506	17.6	111.4	17.5	111.3	8.2	19.2	113.7	80.	20.7	116.1	265.	21.9	118.8	421.
82512	18.0	112.1	18.1	111.9	12.7	20.0	114.5	101.	21.5	117.0	285.	22.8	119.0	479.
82518	18.5	112.8	18.5	112.7	5.6	20.4	115.4	131.	22.0	118.3	306.	23.1	121.0	366.
82600	19.1	113.8	19.2	113.6	12.5	21.2	117.1	127.	22.9	120.8	275.	25.5	123.0	427.
82606	19.6	115.2	19.4	115.1	13.2	20.7	120.4	39.	22.1	125.9	92.	22.4	130.0	54.
82612	19.9	116.4	20.0	116.3	8.1	21.8	120.4	115.	23.5	124.0	249.	25.0	126.0	330.
82618	20.1	117.7	20.1	117.7	0.0	20.4	122.5	56.	20.7	126.8	13.	20.8	130.8	102.
82700	20.2	119.1	20.2	119.1	0.0	20.7	123.9	63.	21.3	125.7	191.	22.3	127.2	322.
82706	20.2	120.6	20.4	120.8	16.3	21.1	126.5	34.	21.8	130.6	38.	23.0	134.8	55.
82712	20.3	122.1	20.6	122.0	18.8	21.7	126.6	72.	22.9	131.1	74.	24.3	134.6	70.
82718	20.4	123.5	20.4	123.5	0.0	20.7	128.6	90.	20.9	133.6	107.	21.0	138.1	233.
82800	20.5	124.9	20.5	125.0	5.5	20.9	130.2	63.	21.3	132.7	62.	22.2	134.8	140.
82806	20.6	126.1	20.6	126.2	5.5	21.2	131.5	86.	22.1	136.2	144.	22.7	139.7	193.
82812	20.8	127.2	20.7	127.3	8.1	21.2	131.3	41.	22.2	135.0	60.	23.0	138.0	0.
82818	20.9	128.1	20.6	127.0	63.1	21.0	129.3	167.	22.2	131.6	228.	23.9	133.4	0.
82900	21.1	129.1	21.1	129.1	0.0	22.0	132.7	25.	23.1	135.9	67.	24.2	139.2	0.
82906	21.4	130.1	21.5	130.0	8.1	22.9	133.3	28.	24.1	137.3	36.	24.7	141.3	0.
82912	21.7	131.0	21.7	130.8	11.0	22.8	134.0	60.	23.9	137.0	0.	24.5	140.3	0.
82918	22.0	132.0	22.0	132.1	5.5	23.2	135.7	47.	25.0	139.0	0.	0.0	0.0	0.
83000	22.3	133.0	22.3	133.0	0.0	23.7	136.9	53.	25.0	140.0	0.	0.0	0.0	0.
83006	22.7	133.8	23.0	133.8	18.0	25.4	137.5	66.	27.5	140.3	0.	0.0	0.0	0.
83012	23.2	134.6	23.2	135.0	22.0	25.1	139.0	0.	26.7	143.0	0.	0.0	0.0	0.
83018	23.8	135.5	23.9	135.3	12.5	26.7	137.7	0.	0.0	0.0	0.	0.0	0.0	0.
83100	24.2	136.4	24.2	136.1	16.5	25.6	138.4	0.	0.0	0.0	0.	0.0	0.0	0.
83106	24.5	137.4	24.5	136.8	33.0	25.2	138.0	0.	0.0	0.0	0.	0.0	0.0	0.
83112	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
83118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								91.			211.			308.
NUMBER OF CASES								40			36			30

TABLE 12

KAY.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
82800	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82806	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82812	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
82818	18.1	112.3	18.0	113.2	51.1	18.5	115.4	82.	19.6	118.9	172.	20.9	122.2	156.
82900	18.1	112.7	18.0	115.9	181.3	18.7	120.0	303.	19.1	122.1	292.	19.8	124.0	143.
82906	18.1	113.2	18.1	116.8	203.7	18.6	119.9	285.	19.4	122.8	300.	20.2	125.7	187.
82912	18.2	113.6	17.7	115.0	84.8	18.2	118.7	211.	19.2	122.3	220.	20.0	125.8	166.
82918	18.2	114.0	18.2	114.0	0.0	18.5	116.0	17.	19.6	118.6	103.	20.9	121.0	302.
83000	18.2	114.5	18.2	114.7	11.3	18.1	116.9	25.	18.5	119.4	132.	19.4	122.0	306.
83006	18.2	115.1	18.3	114.9	12.8	18.3	117.3	21.	18.6	120.0	159.	19.2	123.0	296.
83012	18.3	115.7	18.4	115.0	40.0	18.7	116.6	109.	19.0	118.7	276.	19.3	121.5	453.
83018	18.4	116.3	18.3	116.2	8.2	18.6	118.7	94.	19.5	121.4	262.	20.6	124.0	309.
83100	18.5	117.0	18.5	117.0	0.0	18.8	119.8	108.	19.2	122.7	266.	20.3	125.6	221.
83106	18.5	117.8	18.5	117.6	11.3	18.9	120.5	131.	19.5	123.6	261.	20.3	127.1	163.
83112	18.6	118.9	18.5	118.5	23.4	18.7	121.6	111.	19.0	124.8	269.	19.4	128.0	157.
83118	18.7	120.3	19.0	120.3	18.0	19.9	125.1	70.	21.1	129.6	109.	23.0	133.7	0.
9 100	18.8	121.7	18.8	121.7	0.0	19.5	126.4	57.	20.5	130.7	77.	21.5	134.8	0.
9 106	18.9	123.0	18.7	122.8	16.5	18.4	127.4	95.	18.4	131.7	145.	18.4	136.0	0.
9 112	19.0	124.5	18.3	123.5	70.4	17.9	127.8	145.	18.1	131.1	116.	18.4	135.0	0.
9 118	19.1	126.0	19.1	126.0	0.0	19.7	131.6	132.	20.7	136.8	0.	22.2	141.4	0.
9 200	19.3	127.3	19.4	127.4	8.2	20.3	132.3	160.	21.3	136.0	0.	0.0	0.0	0.
9 206	19.4	128.1	19.8	128.2	24.7	20.9	131.4	89.	0.0	0.0	0.	0.0	0.0	0.
9 212	19.5	128.8	19.7	129.5	41.3	20.0	134.5	214.	0.0	0.0	0.	0.0	0.0	0.
9 218	19.6	129.3	19.3	129.3	18.0	19.2	131.5	0.	0.0	0.0	0.	0.0	0.0	0.
9 300	19.7	129.8	19.9	129.5	20.8	21.0	129.4	0.	0.0	0.0	0.	0.0	0.0	0.
9 306	19.8	130.3	20.2	130.0	29.4	21.9	131.1	0.	0.0	0.0	0.	0.0	0.0	0.
9 312	20.0	130.7	20.0	130.7	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
9 318	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								123.			197.			238.
NUMBER OF CASES								20			16			12

TABLE 13

LESTER.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
91300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91306	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91318	14.0	129.9	14.0	129.9	0.0	13.8	133.4	54.	13.7	136.9	192.	13.7	140.3	0.
91400	14.0	130.9	14.0	130.3	34.4	13.8	133.4	107.	13.9	136.6	190.	14.3	139.7	0.
91406	14.0	131.8	14.2	131.7	13.3	14.6	135.9	39.	14.9	139.1	186.	15.3	142.7	0.
91412	14.1	132.8	14.2	132.9	8.3	14.8	137.6	125.	15.8	141.0	168.	17.2	144.9	0.
91418	14.4	133.7	14.0	134.3	42.0	14.2	139.2	206.	14.8	143.3	0.	15.3	147.5	0.
91500	15.0	134.7	14.5	135.1	37.8	15.0	139.3	166.	15.9	143.4	0.	16.8	147.3	0.
91506	15.4	135.6	14.9	135.3	34.6	16.7	138.9	97.	18.0	141.0	0.	19.8	143.9	0.
91512	16.0	136.3	15.6	135.6	46.8	16.6	136.7	166.	17.8	138.0	0.	18.7	140.0	0.
91518	16.5	137.0	16.9	137.0	24.0	19.8	139.9	0.	21.5	143.7	0.	0.0	0.0	0.
91600	17.0	137.7	17.0	137.3	23.0	18.8	139.0	0.	20.0	141.1	0.	0.0	0.0	0.
91606	17.6	138.4	17.6	137.5	51.7	19.8	138.0	0.	21.3	137.7	0.	0.0	0.0	0.
91612	18.0	139.2	18.0	139.2	0.0	21.4	140.2	0.	23.5	140.6	0.	0.0	0.0	0.
91618	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								120.			184.			0.
NUMBER OF CASES								8			4			0

TABLE 14

MADELINE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
91500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91506	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91512	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91518	12.7	103.9	13.0	104.0	18.9	13.3	108.7	84.	13.9	112.8	139.	14.3	116.8	269.
91600	12.5	105.4	13.1	106.0	50.0	13.5	112.0	123.	14.1	118.0	119.	16.0	122.7	100.
91606	12.4	106.8	13.1	107.0	43.6	13.6	111.7	72.	14.0	116.4	93.	14.2	120.4	251.
91612	12.3	108.1	13.2	108.5	58.7	13.9	113.5	93.	15.1	117.8	123.	16.2	121.0	307.
91618	12.3	109.6	12.2	109.6	6.0	12.6	115.0	13.	13.6	119.8	95.	15.0	124.4	267.
91700	12.4	110.8	12.3	110.3	29.6	12.5	114.7	98.	13.3	119.2	242.	14.5	124.0	353.
91706	12.5	112.1	12.4	111.7	23.9	12.7	116.5	74.	13.5	121.3	209.	15.0	125.9	256.
91712	12.6	113.4	12.5	112.8	35.1	13.1	117.2	94.	14.1	121.4	276.	15.3	125.6	279.
91718	12.8	115.0	12.8	114.9	5.8	13.7	120.0	82.	14.5	124.6	258.	15.3	128.7	177.
91800	13.0	116.6	13.0	116.3	17.2	14.0	122.4	52.	15.2	128.6	83.	16.3	134.8	277.
91806	13.2	118.2	13.1	117.7	29.2	13.8	123.1	105.	14.6	128.4	134.	16.0	133.4	265.
91812	13.5	119.9	13.3	118.8	63.8	14.3	123.8	137.	15.4	128.3	141.	16.8	133.1	248.
91818	14.0	121.6	13.9	121.4	12.9	15.0	127.4	93.	15.8	133.0	183.	16.9	137.4	455.
91900	14.4	123.2	14.4	123.2	0.0	14.9	129.6	43.	14.6	132.5	255.	14.5	135.6	469.
91906	14.8	125.0	14.6	124.7	20.9	15.3	130.8	54.	15.7	134.9	341.	16.0	139.9	665.
91912	14.9	126.8	14.8	126.1	40.2	15.3	131.4	127.	16.0	136.3	425.	16.8	141.2	685.
91918	15.0	128.4	15.1	129.0	34.6	15.6	136.0	340.	16.0	141.0	669.	16.2	145.6	0.
92000	15.5	129.6	15.5	130.0	22.7	17.0	135.8	314.	18.4	140.6	639.	18.8	145.8	0.
92006	16.3	130.0	16.0	130.2	21.3	18.1	132.7	157.	19.7	134.9	328.	21.0	137.5	0.
92012	17.0	130.3	17.0	130.1	11.4	19.8	130.7	47.	21.4	131.0	86.	22.0	131.1	0.
92018	17.7	130.5	17.7	130.5	0.0	20.4	131.0	99.	23.1	131.1	0.	25.7	130.7	0.
92100	18.4	130.5	18.4	130.5	0.0	21.1	130.7	116.	23.7	130.5	0.	26.3	129.8	0.
92106	18.7	130.2	19.2	130.2	30.0	22.0	129.3	109.	23.0	130.2	0.	0.0	0.0	0.
92112	19.1	129.9	19.6	129.9	30.0	22.3	128.5	130.	24.1	128.4	0.	0.0	0.0	0.
92118	19.4	129.6	19.2	129.8	16.5	20.3	129.0	0.	21.4	128.2	0.	0.0	0.0	0.
92200	19.8	129.3	19.6	129.4	13.3	21.1	128.8	0.	23.1	128.5	0.	0.0	0.0	0.
92206	20.2	129.0	20.2	129.1	5.7	21.9	128.5	0.	0.0	0.0	0.	0.0	0.0	0.
92212	20.5	129.8	20.5	129.8	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								111.			242.			333.
NUMBER OF CASES								24			20			16

TABLE 15

NEWTON.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
91800	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91806	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
91812	12.4	94.5	13.0	94.0	45.9	14.7	98.2	95.	16.5	102.0	84.	18.1	106.3	48.
91818	12.7	95.8	12.3	95.9	24.7	13.1	101.0	67.	15.1	105.8	121.	17.3	109.6	253.
91900	12.9	97.0	12.8	96.8	12.8	14.3	101.2	71.	15.6	104.9	115.	16.5	109.0	300.
91906	13.3	98.2	13.0	97.6	38.4	14.4	101.1	102.	16.1	104.8	144.	17.4	108.3	277.
91912	13.6	99.6	13.2	98.7	56.2	14.3	102.5	120.	15.7	106.4	187.	17.1	110.4	347.
91918	14.1	101.0	14.2	100.8	12.7	15.8	105.2	67.	17.6	108.6	205.	18.7	113.5	363.
92000	14.8	102.0	14.8	102.3	16.6	17.5	107.3	120.	18.9	109.8	201.	21.2	110.8	207.
92006	15.3	102.9	15.3	102.6	16.6	17.1	103.9	137.	18.2	105.7	257.	19.5	107.5	367.
92012	15.9	103.8	16.1	103.4	25.0	18.6	105.4	75.	20.4	107.6	141.	21.9	109.4	253.
92018	16.7	104.6	16.5	104.3	20.4	18.6	106.9	115.	20.7	109.8	158.	22.3	112.2	0.
92100	17.5	105.2	17.5	105.2	0.0	20.4	108.6	92.	21.7	110.7	177.	23.7	111.6	0.
92106	18.5	105.9	18.2	106.0	18.8	20.2	108.3	112.	21.5	110.1	222.	22.1	112.0	0.
92112	19.4	106.4	18.8	106.7	39.6	21.7	109.4	74.	23.6	111.6	176.	24.7	113.5	0.
92118	20.3	106.8	20.5	106.7	13.2	24.0	107.1	128.	0.0	0.0	0.	0.0	0.0	0.
92200	21.2	107.3	21.2	107.2	5.5	24.5	108.8	49.	0.0	0.0	0.	0.0	0.0	0.
92206	22.0	107.7	22.0	107.8	5.5	25.3	109.9	6.	28.2	111.8	0.	0.0	0.0	0.
92212	22.8	108.4	22.6	108.5	13.2	25.2	110.8	73.	26.9	111.4	0.	0.0	0.0	0.
92218	23.6	109.1	23.3	109.3	21.1	27.4	111.2	0.	0.0	0.0	0.	0.0	0.0	0.
92300	24.5	109.7	24.5	109.7	0.0	28.2	111.7	0.	0.0	0.0	0.	0.0	0.0	0.
92306	25.2	109.9	25.2	109.9	0.0	28.3	111.6	0.	0.0	0.0	0.	0.0	0.0	0.
92312	26.1	109.9	26.1	109.9	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92318	26.7	109.8	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								88.			168.			268.
NUMBER OF CASES								17			13			9

TABLE 16

ORLELE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
92100	12.0	138.7	12.1	138.7	6.0	16.4	139.4	172.	18.8	140.7	0.	21.2	142.6	0.
92106	12.4	138.9	12.3	139.2	18.4	14.0	140.8	0.	16.2	141.7	0.	0.0	0.0	0.
92112	12.9	139.2	12.7	139.0	16.7	14.8	139.8	0.	16.5	140.1	0.	18.5	141.4	0.
92118	13.2	139.5	13.1	139.3	13.1	14.6	140.2	0.	16.3	141.3	0.	18.5	140.3	0.
92200	13.6	140.0	13.6	140.0	0.0	15.5	141.7	0.	17.5	143.2	0.	18.1	143.0	0.
92206	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	19.7	144.0	0.
92212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								172.			0.			0.
NUMBER OF CASES								1			0			0

TABLE 17

PAINE.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
92800	11.5	93.0	11.5	93.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92806	11.5	94.6	11.5	95.2	33.4	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92812	11.6	96.2	11.5	96.7	28.4	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92818	11.8	97.9	11.5	98.2	24.8	12.1	104.2	56.	13.0	110.7	354.	15.0	115.0	502.
92900	12.4	99.4	12.0	101.8	137.8	13.0	107.6	94.	14.6	112.0	324.	16.3	114.0	474.
92906	13.0	100.7	12.3	103.6	168.7	13.2	110.2	165.	14.7	115.2	493.	16.5	119.1	719.
92912	13.7	102.0	12.4	105.4	206.0	13.7	110.7	126.	15.0	115.5	497.	16.5	119.4	796.
92918	14.5	103.3	12.4	105.1	161.5	13.5	111.0	336.	14.7	116.3	567.	16.0	121.2	0.
93000	15.4	104.5	13.2	106.0	156.5	14.6	112.0	324.	16.3	116.9	585.	18.4	120.7	0.
93006	16.3	105.6	14.0	107.5	174.4	16.0	112.8	341.	17.4	116.8	583.	19.0	120.1	0.
93012	17.2	106.6	14.7	108.8	194.2	16.9	113.8	347.	19.0	118.3	652.	21.8	122.3	0.
93018	18.0	107.3	18.3	108.0	43.2	22.1	111.8	153.	25.3	113.3	0.	0.0	0.0	0.
10 100	18.9	108.0	18.5	108.1	24.6	20.9	110.0	119.	23.6	110.7	0.	0.0	0.0	0.
10 106	19.7	108.7	20.3	108.9	37.7	25.6	109.8	124.	0.0	0.0	0.	0.0	0.0	0.
10 112	20.5	109.1	20.6	109.1	6.0	23.8	109.6	95.	26.6	110.2	0.	0.0	0.0	0.
10 118	21.5	109.2	21.3	109.2	12.0	24.3	109.1	0.	0.0	0.0	0.	0.0	0.0	0.
10 200	22.5	109.1	22.7	109.1	12.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 206	23.7	108.9	23.7	108.9	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 212	25.1	108.6	25.1	108.6	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 218	27.2	107.3	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								190.			507.			623.
NUMBER OF CASES								12			8			4

TABLE 18

ROSLYN.....

DATE/TIME (GMT)	BEST TRACK LAT.	BEST TRACK LONG.	OPERATIONAL POSITION LAT.	OPERATIONAL POSITION LONG.	POSITION ERROR (N.MI.)	24 HOUR FORECAST LAT.	24 HOUR FORECAST LONG.	24 HOUR FORECAST ERROR (N.MI)	48 HOUR FORECAST LAT.	48 HOUR FORECAST LONG.	48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST LAT.	72 HOUR FORECAST LONG.	72 HOUR FORECAST ERROR (N.MI.)
101500	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101506	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101512	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101518	10.2	92.7	10.3	93.0	18.6	10.3	95.0	182.	10.4	97.0	431.	10.5	99.0	594.
101600	10.3	94.1	10.2	94.0	8.4	10.4	97.5	136.	11.0	101.6	241.	11.7	105.6	236.
101606	10.5	95.3	10.4	95.2	8.3	10.8	99.9	69.	12.2	104.1	159.	15.9	106.8	243.
101612	10.7	96.8	10.4	96.1	44.4	11.6	100.2	143.	13.3	104.5	204.	15.6	107.8	203.
101618	10.8	98.0	11.0	98.0	12.0	12.0	103.0	73.	13.8	107.8	101.	16.0	112.3	112.
101700	11.0	99.6	11.1	99.7	8.3	12.0	105.5	8.	13.2	110.2	48.	15.4	114.3	151.
101706	11.3	101.0	11.2	101.0	6.0	12.3	106.7	19.	13.5	110.0	8.	14.5	112.3	96.
101712	11.5	102.6	11.2	102.6	18.0	12.1	108.3	30.	13.2	112.5	109.	15.4	116.0	240.
101718	11.7	104.1	11.7	104.2	5.8	12.5	110.1	70.	13.4	116.2	292.	14.2	122.1	641.
101800	11.9	105.3	11.9	105.6	17.2	12.9	111.5	123.	14.0	116.3	277.	15.2	120.7	616.
101806	12.1	106.5	12.0	106.8	18.1	13.2	111.5	83.	14.8	116.0	228.	16.2	120.1	654.
101812	12.3	107.7	12.2	107.8	8.3	13.1	111.9	79.	14.1	115.7	264.	15.8	119.3	664.
101818	12.7	108.8	12.5	108.9	13.3	13.6	113.6	142.	15.0	118.4	425.	18.5	120.0	646.
101900	13.0	109.4	13.0	109.4	0.0	14.3	112.2	61.	15.4	114.2	300.	16.9	116.0	548.
101906	13.4	110.1	13.4	110.1	0.0	15.3	112.7	53.	16.9	115.2	386.	17.6	117.5	661.
101912	13.8	110.7	13.7	110.7	6.0	15.2	112.8	104.	16.9	114.5	397.	18.7	116.2	0.
101918	14.4	111.3	14.4	111.3	0.0	16.8	113.2	112.	18.5	114.6	363.	19.8	118.0	0.
102000	15.2	111.7	15.2	111.7	0.0	18.4	112.9	129.	22.3	112.0	217.	24.8	108.1	0.
102006	16.1	112.1	16.1	112.3	11.3	20.5	110.9	79.	0.0	0.0	0.	0.0	0.0	0.
102012	17.1	112.0	16.8	112.1	18.9	20.7	110.0	59.	0.0	0.0	0.	0.0	0.0	0.
102018	18.1	111.6	18.0	111.7	8.2	21.6	109.0	6.	0.0	0.0	0.	0.0	0.0	0.
102100	19.1	111.1	19.2	110.8	17.9	22.9	106.8	83.	0.0	0.0	0.	0.0	0.0	0.
102106	20.2	110.5	20.4	109.5	57.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102112	20.8	109.8	21.0	109.0	46.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102118	21.4	109.0	21.5	109.0	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102200	22.0	108.1	22.2	108.1	12.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102206	22.7	107.1	22.7	107.1	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102212	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
102218	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								84.			247.			420.
NUMBER OF CASES								22			18			15

TABLE 19

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