



NOAA Technical Memorandum NWS WR-202

**ANNUAL DATA AND VERIFICATION TABULATION
EASTERN NORTH PACIFIC TROPICAL STORMS
AND HURRICANES 1987**

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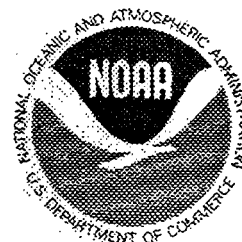
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ANNUAL DATA AND VERIFICATION TABULATION EASTERN NORTH PACIFIC TROPICAL STORMS AND HURRICANES 1987

I. INTRODUCTION

This is the ninth 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. EPSS87. A statistical-synoptic model, developed by Arthur C. Pike which replaces the older EPHC77. EPSS87 uses input data from EPCLIPER84 rather than the older EPCLPR model. The synoptic grid is oriented along the axes of bivariate normal ellipses determined by the storm displacements in the 1975-1985 developmental data, rather than poleward. This model uses tropospheric (1000-100 mb mass-weighted mean wind components, which help to specify environmental steering better than the 400 mb heights used previously. A publication concerning this model is in preparation.

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 1987 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 1987 Eastern North Pacific tropical cyclone statistics is given in Table 2. Best track, operational positions, and position errors are given in Tables 3 to 20.

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 (25 KTS). Forecast errors are only computed once the tropical depression reaches storm status (33 KTS), therefore, there may be a lot of zero entries in the tables at the beginning and ending of a storm.

Aerial reconnaissance was not required during the 1987 season since none of the cyclones posed a threat to the United States mainland or U.S. military installations.

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
1987 FORECAST ERRORS*

	FORECAST PERIOD		
	24 HR	48 HR	72 HR
EPHC FORECASTERS	158 (85)/236	267(144)/176	397(214)/122
EPANALOG85	169(91)/233	282(152)/176	386(207)/125
EPSS87	148(80)/232	252(136)/174	365(197)/121
EPCLIPER84	165(89)/236	272(147)/177	385(208)/124
EPHC81	161(87)/102	245(132)/77	385(208)/55

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

TABLE 2

SUMMARY OF EASTERN NORTH PACIFIC TROPICAL CYCLONES OF 1987 *

(Includes only those cyclones that reached hurricane (HU) or tropical storm (TS) strength)

NO.	NAME	CLASS	DATES	MAX WIND (KTS)
1.	Adrian	TS	7-9 Jun	40
2.	Beatriz	TS	3-7 Jul	45
3.	Calvin	TS	5-10 Jul	55
4.	Dora	TS	15-20 Jul	50
5.	Eugene	HU	22-26 Jul	85
6.	Fernanda	TS	24-25 Jul	45
7.	Greg	HU	28 Jul-3 Aug	70
8.	Hilary	HU	31 Jul-9 Aug	105
9.	Irwin	TS	3-9 Aug	55
10.	Jova	HU	13-20 Aug	90
11.	Knut	TS	28-30 Aug	35
12.	Lidia	HU	30 Aug-3 Sep	75
13.	Max	HU	9-16 Sep	135
14.	Norma	HU	14-20 Sep	65
15.	Otis	HU	20-26 Sep	100
16.	Pilar	TS	30 Sep-1 Oct	35
17.	Ramon	HU	5-12 Oct	120
18.	Selma	TS	27-31 Oct	35

* Damage and casualty summaries are unknown

ADRIAN.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR		48 HOUR FORECAST ERROR		72 HOUR FORECAST ERROR				
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)
6 700	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.
6 706	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.
6 712	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.
6 718	11.4	96.3	11.8	98.0	99.7	13.8	96.9	50.	15.2	96.9	0.	0.0	0.0	0.
6 800	11.8	97.5	12.5	97.4	42.4	15.3	96.4	188.	0.0	0.0	0.	0.0	0.0	0.
6 806	12.3	98.1	13.0	96.8	86.5	15.6	94.8	290.	0.0	0.0	0.	0.0	0.0	0.
6 812	12.8	98.7	13.0	97.3	82.3	14.7	96.5	162.	0.0	0.0	0.	0.0	0.0	0.
6 818	12.9	99.5	13.2	97.5	117.8	14.6	98.4	0.	15.4	99.9	0.	15.8	100.7	0.
6 900	12.2	99.8	13.1	98.7	83.7	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
6 906	12.4	98.8	13.0	99.0	37.8	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
6 912	13.5	98.6	13.5	99.0	23.3	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
6 918	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)								173.			0.			0.
NUMBER OF CASES								4			0			0

TABLE 3

BEATRIZ

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR			
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(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	12.9	115.9	12.0	116.0	54.3	12.3	118.5	102.	13.0	121.3	199.	13.9	124.0	399.	
7 318	13.1	116.6	12.8	116.3	24.9	13.5	119.0	67.	14.3	121.8	197.	15.0	125.0	393.	
7 400	13.4	117.2	13.3	117.0	12.9	14.0	119.6	72.	14.8	122.0	237.	15.6	125.0	402.	
7 406	13.8	117.8	13.5	118.1	24.8	14.0	121.4	115.	14.6	124.7	280.	15.0	128.1	0.	
7 412	14.2	118.4	14.0	118.6	16.6	14.8	121.5	95.	15.7	124.2	300.	16.4	128.0	0.	
7 418	14.6	119.0	14.6	118.8	11.4	16.2	121.6	97.	17.5	124.6	289.	18.7	128.2	0.	
7 500	15.2	119.7	15.2	119.6	5.7	17.1	122.3	112.	18.6	126.0	243.	19.9	129.8	0.	
7 506	15.8	120.5	15.7	120.5	6.0	17.5	124.3	123.	19.0	128.2	0.	20.1	132.2	0.	
7 512	16.5	121.5	16.3	121.0	30.9	18.2	125.2	149.	19.2	128.2	0.	20.0	131.9	0.	
7 518	17.5	122.5	17.5	122.6	5.7	20.2	127.5	59.	21.7	130.0	0.	0.0	0.0	0.	
7 600	18.4	124.0	18.4	123.7	17.1	20.9	128.3	88.	22.1	131.1	0.	0.0	0.0	0.	
7 606	19.2	125.5	19.2	125.5	0.0	21.5	132.0	0.	23.0	137.5	0.	0.0	0.0	0.	
7 612	19.9	126.9	19.8	127.2	18.1	20.8	133.0	0.	21.0	137.2	0.	0.0	0.0	0.	
7 618	20.3	128.5	20.7	128.4	24.7	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.	
7 700	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.	
7 706	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.	
7 712	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.	
7 718	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)								98.				249.			
NUMBER OF CASES								11				7			

TABLE 4

CALVIN.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR					
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)			
7 500	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.			
7 506	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.			
7 512	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.			
7 518	12.6	101.8	12.5	101.8	6.0	12.8	106.9	78.	13.8	112.0	73.	14.8	116.2	75.			
7 600	12.8	103.0	12.7	103.0	6.0	13.6	107.5	38.	14.9	111.7	134.	16.3	115.6	180.			
7 606	13.1	104.1	12.8	104.6	34.1	13.9	109.7	64.	14.9	114.6	53.	15.3	118.1	94.			
7 612	13.4	105.2	13.1	106.8	93.7	14.1	113.3	177.	15.4	118.8	106.	17.9	122.2	179.			
7 618	13.9	106.3	13.9	106.2	5.8	15.3	110.4	83.	16.3	114.0	221.	16.8	116.8	258.			
7 700	14.2	107.3	14.2	107.3	0.0	15.3	110.9	182.	16.7	114.4	252.	16.8	117.7	277.			
7 706	14.5	108.7	14.5	108.8	5.7	15.7	113.7	117.	16.6	117.8	146.	17.2	121.2	59.			
7 712	14.7	110.4	15.0	110.4	18.0	16.5	116.2	96.	17.4	119.7	129.	18.8	122.9	0.			
7 718	14.8	111.7	15.0	111.8	13.3	15.7	117.2	57.	17.0	121.7	67.	18.7	126.3	0.			
7 800	14.8	113.2	14.8	114.0	45.9	14.2	120.5	131.	14.6	125.2	229.	15.5	131.0	0.			
7 806	14.8	114.7	14.8	115.5	45.9	15.0	121.6	110.	15.7	126.1	238.	17.3	130.1	0.			
7 812	14.8	116.0	15.1	117.0	60.1	15.2	123.3	162.	16.0	128.7	0.	17.0	134.4	0.			
7 818	14.8	117.3	14.8	117.5	11.5	15.0	122.9	115.	15.6	127.7	0.	16.7	132.2	0.			
7 900	14.9	118.4	15.0	118.4	6.0	15.5	122.3	58.	16.2	125.9	0.	17.1	129.9	0.			
7 906	15.1	119.5	15.0	119.7	12.9	15.1	124.2	162.	15.5	128.1	0.	0.0	0.0	0.			
7 912	15.2	120.3	15.4	120.5	16.6	16.4	124.5	0.	0.0	0.0	0.	0.0	0.0	0.			
7 918	15.7	121.0	16.0	121.2	21.3	17.5	123.6	0.	0.0	0.0	0.	0.0	0.0	0.			
71000	16.3	121.6	16.2	121.6	6.0	17.5	123.3	0.	0.0	0.0	0.	0.0	0.0	0.			
71006	17.0	122.2	17.0	122.2	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.			
71012	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.			
71018	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)								109.					150.				
NUMBER OF CASES								15					11				

TABLE 5

DORA.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR				
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)		
71500	15.3	102.5	15.6	102.5	18.0	18.0	106.5	142.	19.2	110.4	134.	19.7	114.6	59.		
71506	15.5	103.8	15.9	103.8	24.0	16.8	108.6	46.	17.7	112.6	71.	17.7	117.6	232.		
71512	15.8	105.0	15.7	105.3	18.1	16.5	110.4	38.	17.2	115.0	156.	17.2	121.0	396.		
71518	16.2	106.3	16.0	106.2	13.3	16.9	110.8	24.	18.0	115.0	132.	18.2	119.5	299.		
71600	16.5	106.3	16.6	108.5	123.4	17.6	112.7	115.	19.4	116.8	176.	21.0	120.5	280.		
71606	16.8	108.5	16.9	109.4	50.8	17.9	115.3	219.	18.8	120.0	339.	20.0	125.0	559.		
71612	16.9	109.3	17.0	110.0	39.8	17.8	114.2	109.	18.7	117.9	197.	19.5	121.8	343.		
71618	17.0	110.2	17.0	110.4	11.2	17.7	114.1	85.	18.8	117.7	194.	19.0	122.0	376.		
71700	17.2	111.0	17.0	110.8	16.4	17.6	113.9	97.	18.7	117.1	165.	19.7	120.2	270.		
71706	17.5	111.8	17.0	111.6	32.0	17.3	114.7	148.	17.8	117.8	276.	18.4	120.8	0.		
71712	17.9	112.4	17.6	112.3	18.8	18.3	115.7	125.	19.4	117.9	173.	20.5	121.0	0.		
71718	18.4	113.0	18.2	112.7	20.6	18.4	115.0	144.	19.0	117.4	207.	20.0	120.0	0.		
71800	18.8	113.6	19.2	113.7	24.6	21.6	115.5	36.	23.5	117.4	65.	24.6	120.0	0.		
71806	19.2	114.0	19.7	114.1	30.5	22.1	115.9	46.	23.4	117.8	0.	24.9	119.9	0.		
71812	19.8	114.6	20.2	114.8	26.5	22.5	116.8	54.	24.3	118.9	0.	0.0	0.0	0.		
71818	20.2	115.1	20.8	115.0	36.4	22.5	116.5	16.	23.6	118.4	0.	0.0	0.0	0.		
71900	20.7	115.6	21.0	115.5	18.8	22.9	117.5	51.	24.3	119.2	0.	0.0	0.0	0.		
71906	21.2	116.0	21.7	115.2	53.9	24.8	115.1	0.	0.0	0.0	0.	0.0	0.0	0.		
71912	21.7	116.2	21.8	116.2	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.		
71918	22.3	116.4	22.3	116.3	5.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.		
72000	21.7	116.6	22.7	116.6	60.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.		
72006	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.		
72012	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.		
72018	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)								88.				176.				313.
NUMBER OF CASES								17				13				9

TABLE 6

EUGENE.....

DATE/TIME (GMT)	BEST TRACK		OFFRATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR				
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)		
72200	11.0	97.0	11.0	97.2	11.6	11.4	102.6	107.	12.2	107.8	375.	13.3	112.1	538.		
72206	11.2	98.4	11.0	98.7	21.0	11.5	104.3	197.	12.4	109.6	433.	14.0	114.2	626.		
72212	11.7	99.6	11.1	99.2	42.7	11.5	104.2	207.	13.1	108.3	306.	14.2	112.2	498.		
72218	12.3	100.7	12.0	100.8	18.9	13.5	105.4	204.	15.1	109.7	350.	16.7	112.8	476.		
72300	12.9	101.3	13.0	101.8	28.9	14.8	106.3	224.	16.5	110.4	374.	17.9	114.2	522.		
72306	13.6	101.8	13.8	101.9	13.3	15.2	105.7	156.	16.6	109.5	315.	18.0	113.5	468.		
72312	14.3	102.1	14.2	102.0	8.2	16.4	104.1	32.	18.6	107.0	107.	20.3	110.0	221.		
72318	15.1	102.4	15.1	102.3	5.6	17.8	103.7	84.	19.6	105.6	33.	21.0	108.0	0.		
72400	15.6	102.6	15.9	102.6	18.0	18.4	103.9	42.	20.0	105.6	48.	21.0	108.0	0.		
72406	15.9	103.0	15.9	103.1	5.6	17.0	105.0	88.	18.7	107.8	201.	20.2	110.9	0.		
72412	16.2	103.5	15.9	103.9	28.7	16.7	106.5	162.	18.0	109.6	297.	19.0	113.5	0.		
72418	16.7	103.8	16.4	103.8	18.0	17.5	106.0	157.	19.0	108.8	0.	20.0	112.3	0.		
72500	17.7	104.2	17.7	104.0	11.2	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.		
72506	18.5	104.6	18.3	104.3	20.6	20.5	106.2	72.	22.3	108.5	0.	23.3	111.2	0.		
72512	19.4	105.0	19.1	105.2	21.2	21.4	108.5	117.	22.5	111.4	0.	23.4	114.4	0.		
72518	20.0	105.2	20.0	105.2	0.0	22.5	106.8	0.	24.4	109.2	0.	25.5	111.0	0.		
72600	20.7	105.7	20.8	105.5	12.7	23.5	106.9	0.	25.3	109.1	0.	26.8	111.4	0.		
72606	21.4	105.9	21.7	106.2	24.6	24.1	107.9	0.	25.5	109.4	0.	27.2	111.1	0.		
72612	22.0	106.3	22.0	106.5	11.2	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.		
72618	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)								132.				258.				478.
NUMBER OF CASES								14				11				7

TABLE 7

FERNANDA

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR		
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(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	11.8	131.0	12.0	130.8	16.8	13.5	133.5	204.	15.0	135.5	0.	15.8	137.5	0.
72412	12.0	132.2	12.1	132.5	19.6	12.6	137.5	47.	13.5	142.7	0.	13.8	146.5	0.
72418	12.1	133.6	12.1	133.5	5.9	12.5	138.5	18.	13.2	143.0	0.	13.9	147.5	0.
72500	12.2	135.0	12.2	134.8	11.7	12.5	139.8	0.	13.2	144.8	0.	14.0	149.0	0.
72506	12.3	136.4	12.4	136.8	24.2	12.7	142.6	0.	13.0	149.0	0.	13.6	154.0	0.
72512	12.4	137.8	12.5	138.3	29.9	13.0	144.3	0.	13.5	148.4	0.	14.5	152.5	0.
72518	12.5	138.9	12.5	138.8	5.9	12.8	143.5	0.	13.5	147.5	0.	14.3	151.2	0.
MEAN VECTOR ERRORS (N.MI)								90.			0.			0.
NUMBER OF CASES								3			0			0

TABLE 8

GREG.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST		ERROR	48 HOUR FORECAST		ERROR	72 HOUR FORECAST		ERROR				
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)				
72800	11.8	101.0	12.2	100.2	51.9	13.1	102.6	92.	14.3	105.4	59.	15.8	109.9	102.				
72806	12.3	101.2	12.3	100.6	34.8	12.7	103.0	138.	12.4	105.6	181.	11.8	108.0	382.				
72812	12.7	101.4	12.5	101.0	25.9	13.2	103.3	105.	14.6	106.5	125.	16.2	110.0	144.				
72818	13.2	101.7	13.2	101.2	28.4	15.1	103.2	93.	16.8	105.0	219.	18.4	107.2	265.				
72900	14.0	102.2	13.8	101.2	58.0	16.0	104.0	128.	17.0	106.4	197.	18.1	108.8	241.				
72906	14.7	103.2	14.4	101.4	103.3	16.6	103.4	226.	18.0	105.8	281.	18.8	108.7	295.				
72912	14.8	104.3	14.9	103.7	34.4	15.6	107.9	31.	17.3	111.9	72.	19.0	116.0	144.				
72918	14.9	105.5	15.0	104.8	40.0	15.6	109.1	98.	16.5	113.3	178.	17.8	118.5	239.				
73000	15.0	106.6	15.1	106.0	34.5	15.6	110.1	115.	16.6	114.0	213.	17.0	118.7	276.				
73006	15.5	107.7	15.1	107.0	46.3	15.4	110.9	133.	16.1	115.1	277.	17.1	120.0	291.				
73012	16.3	108.7	16.1	108.0	40.8	19.0	111.6	48.	21.0	115.0	22.	22.0	118.0	61.				
73018	16.9	109.5	17.2	108.8	42.6	20.5	111.6	85.	23.0	113.9	177.	25.0	115.5	322.				
73100	17.5	110.4	17.5	109.8	33.5	19.2	113.8	80.	20.7	116.9	48.	21.2	120.7	41.				
73106	18.0	111.2	17.6	110.7	36.8	18.9	114.9	121.	20.0	118.0	96.	21.1	120.6	81.				
73112	18.5	111.8	18.3	111.2	35.4	19.7	114.7	78.	21.3	118.2	48.	22.5	122.4	53.				
73118	19.1	112.5	19.1	111.8	38.6	21.3	114.5	112.	23.1	117.0	191.	24.8	120.5	242.				
8 100	19.8	113.3	19.9	112.6	39.1	22.2	114.8	147.	24.0	118.8	191.	24.8	121.3	0.				
8 106	20.4	114.3	20.5	113.6	39.1	22.1	117.4	49.	23.1	121.8	84.	23.0	124.5	0.				
8 112	21.0	115.4	21.0	114.6	44.1	23.3	118.2	111.	25.0	121.5	211.	25.5	125.0	0.				
8 118	21.3	116.7	21.3	116.5	11.0	22.7	119.5	69.	24.7	122.5	185.	25.4	125.5	0.				
8 200	21.4	117.9	21.4	117.3	33.1	21.6	122.2	56.	21.8	127.1	0.	21.5	132.1	0.				
8 206	21.5	119.0	21.6	118.1	50.0	22.3	121.8	36.	23.3	125.4	0.	23.5	129.4	0.				
8 212	21.6	119.9	21.6	119.0	49.6	21.8	122.7	8.	21.8	126.2	0.	0.0	0.0	0.				
8 218	21.6	120.9	21.7	120.1	44.5	22.0	123.6	25.	22.3	127.3	0.	0.0	0.0	0.				
8 300	21.6	121.9	21.7	121.2	39.1	21.9	125.0	0.	22.2	129.0	0.	0.0	0.0	0.				
8 306	21.6	122.7	21.7	121.9	44.5	21.7	125.0	0.	0.0	0.0	0.	0.0	0.0	0.				
8 312	21.6	123.5	21.7	122.8	39.1	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.				
8 318	21.6	124.0	21.7	123.3	39.1	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.				
MEAN VECTOR ERRORS (N.MI)								91.					153.					198.
NUMBER OF CASES								24					20					16

TABLE 9

HILARY.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST			48 HOUR FORECAST			72 HOUR FORECAST			
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	
73100	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.	
73106	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.	
73112	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.	
73118	10.7	92.4	10.3	93.0	42.3	11.5	96.0	35.	13.0	99.8	42.	14.5	103.3	112.	
8 100	11.0	93.4	10.6	94.0	42.4	11.8	98.2	56.	12.9	102.3	47.	13.5	106.7	68.	
8 106	11.4	94.4	11.0	95.0	42.3	11.9	99.0	43.	13.2	103.0	41.	15.0	107.0	34.	
8 112	11.7	95.3	11.5	95.6	21.0	13.5	99.1	79.	15.8	102.7	158.	17.4	105.3	233.	
8 118	11.9	96.3	12.0	96.3	6.0	13.8	99.5	91.	15.2	103.0	141.	17.4	106.5	208.	
8 200	12.1	97.2	12.1	97.3	5.8	12.6	101.3	21.	14.0	105.4	68.	15.7	110.6	17.	
8 206	12.3	98.2	12.1	98.3	13.3	12.6	102.3	42.	13.8	106.6	75.	15.1	111.7	43.	
8 212	12.5	99.3	12.2	99.3	18.0	13.0	104.6	43.	14.8	108.5	8.	16.3	113.0	52.	
8 218	12.7	100.3	12.5	100.3	12.0	13.5	104.5	59.	14.5	109.0	45.	16.4	113.8	41.	
8 300	13.0	101.6	12.9	101.5	8.3	14.0	105.6	59.	15.5	110.3	6.	17.8	114.7	58.	
8 306	13.4	102.8	13.3	102.3	29.3	14.7	106.3	70.	16.0	110.5	50.	17.0	114.9	31.	
8 312	13.8	104.0	13.6	104.2	16.6	14.2	108.4	42.	14.9	112.6	89.	16.4	116.9	126.	
8 318	14.2	105.2	14.2	105.2	0.0	16.0	109.7	53.	18.0	114.0	104.	19.6	118.2	77.	
8 400	14.6	106.4	14.6	106.4	0.0	16.2	111.7	86.	17.9	117.0	178.	18.3	122.3	250.	
8 406	14.9	107.5	14.7	107.5	12.0	15.5	112.0	42.	16.8	116.3	96.	18.1	120.7	136.	
8 412	15.2	108.4	14.9	108.4	18.0	15.6	112.5	48.	16.7	116.3	93.	17.5	120.6	147.	
8 418	15.4	109.4	15.2	109.3	13.3	16.3	113.4	21.	17.5	117.8	101.	18.8	122.0	128.	
8 500	15.6	110.4	15.5	110.4	6.0	16.6	114.5	42.	17.6	119.1	115.	19.1	123.1	182.	
8 506	15.9	111.3	15.7	111.3	12.0	16.7	115.1	51.	18.0	119.2	98.	19.2	123.3	187.	
8 512	16.2	112.2	16.3	112.1	8.2	18.7	115.5	36.	20.0	119.0	41.	21.0	122.5	60.	
8 518	16.7	113.1	16.5	113.1	12.0	17.6	117.2	85.	18.8	121.2	98.	20.0	125.3	170.	
8 600	17.0	114.0	17.1	114.0	6.0	19.0	117.8	17.	20.8	121.0	36.	22.0	125.4	123.	
8 606	17.5	114.8	17.5	114.8	0.0	19.3	118.6	25.	21.0	122.3	67.	22.6	126.3	134.	
8 612	18.2	115.7	18.1	115.6	8.2	20.3	119.0	50.	22.0	122.2	11.	23.3	125.5	0.	
8 618	18.8	116.9	19.0	117.0	13.2	21.8	121.0	104.	22.8	124.9	137.	0.0	0.0	0.	
8 700	19.2	117.9	19.2	118.0	5.5	21.2	122.6	90.	22.4	126.8	203.	23.0	131.5	0.	
8 706	19.6	118.7	19.6	118.9	11.1	21.2	122.8	67.	22.3	126.8	161.	0.0	0.0	0.	
8 712	20.0	119.5	19.8	119.7	16.3	21.0	123.7	94.	22.2	127.6	0.	23.2	131.5	0.	
8 718	20.5	120.2	20.2	120.3	18.8	22.0	123.7	56.	23.6	127.0	0.	0.0	0.0	0.	
8 800	21.2	120.8	21.4	121.0	16.3	25.1	123.3	198.	27.5	125.2	0.	0.0	0.0	0.	
8 806	21.5	121.3	22.1	122.1	57.1	25.1	125.5	190.	0.0	0.0	0.	0.0	0.0	0.	
8 812	21.7	121.9	22.0	122.4	33.1	23.9	125.6	0.	0.0	0.0	0.	0.0	0.0	0.	
8 818	21.9	122.6	21.6	122.8	21.1	21.6	126.8	0.	0.0	0.0	0.	0.0	0.0	0.	
8 900	22.1	123.3	21.8	123.2	18.8	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.	
8 906	22.4	123.9	22.3	123.9	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.	
8 912	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.	
8 918	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)								64.				86.	114.		
NUMBER OF CASES								31				27	23		

TABLE 10

IRWIN.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST		24 HOUR FORECAST ERROR (N.MI.)	48 HOUR FORECAST		48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST		72 HOUR FORECAST ERROR (N.MI.)				
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.		LAT.	LONG.		LAT.	LONG.					
8 300	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.				
8 306	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.				
8 312	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.				
8 318	10.1	90.2	10.0	90.5	18.4	10.9	94.0	88.	12.3	98.4	193.	13.7	102.8	235.				
8 400	10.4	90.9	10.4	91.7	46.3	11.7	95.6	120.	13.5	100.0	204.	15.2	104.4	251.				
8 406	10.8	91.7	10.4	92.4	47.1	11.2	95.8	121.	13.0	100.0	165.	14.7	104.5	206.				
8 412	11.4	92.4	10.8	93.0	49.9	12.2	96.5	96.	13.8	100.4	157.	15.2	105.2	198.				
8 418	12.0	93.1	12.0	93.0	5.7	13.7	95.5	21.	15.5	98.5	37.	17.0	102.0	58.				
8 500	12.6	93.8	12.8	93.9	13.3	15.3	97.1	108.	0.0	0.0	0.	0.0	0.0	0.				
8 506	12.9	94.4	12.9	94.7	17.2	14.7	98.1	71.	17.0	101.5	49.	0.0	0.0	0.				
8 512	13.2	95.0	13.3	95.3	18.1	15.7	99.0	100.	17.5	103.0	75.	19.5	108.0	136.				
8 518	13.4	95.7	13.4	95.3	22.8	14.5	97.3	115.	16.0	100.0	181.	17.8	103.7	186.				
8 600	13.7	96.4	13.6	96.5	8.3	14.6	99.2	89.	16.0	102.7	104.	17.4	106.3	117.				
8 606	14.1	97.0	13.8	97.3	24.8	14.7	100.3	107.	16.0	103.9	130.	17.5	107.8	88.				
8 612	14.7	98.1	14.5	97.8	20.9	16.5	101.4	41.	18.0	104.5	97.	19.0	108.5	0.				
8 618	15.3	99.1	15.3	99.1	0.0	17.3	102.7	30.	19.1	106.2	58.	20.5	109.8	0.				
8 700	15.8	100.2	15.8	100.1	5.7	18.0	103.9	48.	19.9	107.5	89.	20.7	111.3	0.				
8 706	16.2	101.3	16.2	101.3	0.0	17.7	105.9	34.	19.5	110.0	88.	20.6	114.3	0.				
8 712	16.5	102.1	16.6	102.1	6.0	17.8	106.0	17.	19.2	109.7	0.	21.0	113.5	0.				
8 718	16.9	103.0	16.9	103.0	0.0	18.2	106.8	13.	19.5	110.5	0.	20.0	115.0	0.				
8 800	17.1	104.0	17.2	104.0	6.0	18.6	107.9	8.	20.1	111.9	0.	20.9	116.0	0.				
8 806	17.2	105.0	17.7	105.3	34.5	19.3	109.9	77.	20.7	114.4	0.	21.4	118.8	0.				
8 812	17.2	105.6	18.0	106.2	58.9	19.8	110.2	0.	19.8	110.2	0.	22.0	117.0	0.				
8 818	17.2	106.4	18.4	106.9	77.4	19.5	110.6	0.	20.4	114.6	0.	20.7	118.5	0.				
8 900	17.2	107.1	18.5	108.0	93.4	19.3	112.0	0.	20.8	115.7	0.	22.5	119.1	0.				
8 906	17.2	107.9	18.7	108.7	100.9	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.				
8 912	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.				
8 918	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)								69.					116.					164.
NUMBER OF CASES								19					14					9

TABLE 11

JOVA.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST			48 HOUR FORECAST			72 HOUR FORECAST		
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.	ERROR (N.MI)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)
81300	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.
81306	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.
81312	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.
81318	13.4	119.5	13.5	119.5	6.0	13.2	125.3	151.	13.6	130.0	211.	14.2	134.5	308.
81400	13.2	120.6	13.6	120.8	26.7	14.2	126.0	181.	15.2	130.5	252.	17.0	135.2	380.
81406	13.0	121.4	13.7	121.6	43.6	14.1	125.2	132.	15.1	128.9	204.	16.2	132.7	203.
81412	12.8	122.1	13.7	122.3	55.2	14.0	125.9	135.	14.9	129.5	187.	15.5	134.5	203.
81418	12.6	122.8	12.6	122.8	0.0	12.0	125.6	77.	12.6	129.0	39.	14.0	132.2	17.
81500	12.3	123.6	12.3	123.6	0.0	12.2	126.7	87.	12.3	129.8	43.	12.4	132.9	120.
81506	12.1	124.6	12.0	124.5	8.4	11.8	128.8	13.	0.0	0.0	0.	0.0	0.0	0.
81512	11.8	125.7	11.8	126.4	40.9	11.8	130.8	94.	12.0	135.0	221.	0.0	0.0	0.
81518	11.8	126.8	11.8	126.9	5.8	11.7	131.3	106.	12.0	135.6	248.	12.8	139.5	336.
81600	11.9	127.8	11.7	128.1	21.2	11.7	133.0	179.	11.9	137.9	334.	12.2	142.7	465.
81606	11.9	128.6	11.7	129.0	26.2	11.9	133.0	136.	12.0	137.3	271.	12.7	141.3	346.
81612	12.1	129.3	11.8	129.2	18.9	12.1	132.3	99.	13.0	135.5	147.	14.5	138.2	94.
81618	12.4	129.9	12.3	129.6	18.4	13.3	132.0	54.	14.6	135.1	57.	15.8	138.6	42.
81700	12.8	130.4	12.9	130.2	13.0	15.0	132.7	36.	16.5	135.5	85.	17.7	138.0	217.
81706	13.3	131.1	13.2	131.1	6.0	14.3	134.4	55.	15.2	138.0	116.	15.9	141.9	0.
81712	13.7	131.6	13.6	131.6	6.0	14.9	134.2	24.	16.5	137.3	78.	17.5	140.8	0.
81718	14.1	132.2	14.2	132.0	13.0	16.0	134.4	61.	17.7	137.5	171.	19.0	141.0	0.
81800	14.4	132.8	14.4	132.8	0.0	15.8	135.9	54.	17.2	139.5	144.	18.6	143.2	0.
81806	14.6	133.5	14.6	133.5	0.0	15.5	136.4	26.	16.4	139.7	0.	17.3	142.7	0.
81812	14.8	134.0	14.8	133.8	11.5	15.4	136.1	41.	16.7	139.2	0.	17.8	142.8	0.
81818	14.9	134.6	15.0	134.2	23.8	15.8	136.6	129.	16.7	139.6	0.	18.2	143.6	0.
81900	15.1	135.4	15.1	135.3	5.8	15.8	138.5	125.	16.9	141.7	0.	17.8	145.1	0.
81906	15.1	136.3	15.3	136.0	21.0	16.0	138.9	0.	16.9	142.4	0.	17.9	146.0	0.
81912	15.1	137.5	15.3	136.8	42.0	15.4	139.9	0.	16.3	143.6	0.	18.0	147.0	0.
81918	15.1	138.9	15.1	138.7	11.5	15.1	143.5	0.	15.3	148.0	0.	16.1	151.2	0.
82000	15.0	140.5	15.0	140.5	0.0	14.7	146.3	0.	15.1	151.7	0.	16.8	155.1	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	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.
82018	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.			165.			228.
NUMBER OF CASES								22			17			12

TABLE 12

KNUT.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR			
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(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	10.3	118.9	10.2	118.9	6.0	10.9	125.0	68.	11.7	130.1	84.	13.0	134.6	0.	
82900	10.2	120.2	10.1	120.3	8.4	9.9	125.8	35.	10.5	131.3	0.	12.5	136.4	0.	
82906	10.2	121.5	10.0	121.5	12.0	10.0	126.2	25.	11.0	131.0	0.	0.0	0.0	0.	
82912	10.2	122.8	10.2	122.7	5.9	10.7	127.4	30.	11.4	131.8	0.	12.7	135.4	0.	
82918	10.3	124.1	10.2	124.1	6.0	10.8	129.2	56.	11.7	134.1	0.	12.5	136.0	0.	
83000	10.3	125.2	10.2	125.3	8.4	10.3	130.0	0.	10.7	134.5	0.	12.8	138.7	0.	
83006	10.3	126.5	10.3	126.5	0.0	10.3	131.2	0.	10.6	136.1	0.	11.9	138.8	0.	
83012	10.3	127.7	10.3	127.7	0.0	10.6	132.3	0.	11.4	132.2	0.	11.2	141.0	0.	
83018	10.3	129.2	10.3	130.0	47.1	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.	
MEAN VECTOR ERRORS (N.MI)								43.				84.			
NUMBER OF CASES								5				1			

TABLE 13

LIDIA.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST		24 HOUR FORECAST ERROR (N.MI.)	48 HOUR FORECAST		48 HOUR FORECAST ERROR (N.MI.)	72 HOUR FORECAST		72 HOUR FORECAST ERROR (N.MI.)
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.		LAT.	LONG.		LAT.	LONG.	
82900	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.
82906	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.
82912	12.5	102.6	12.2	102.8	21.4	13.2	108.3	121.	13.9	114.0	242.	14.5	117.7	266.
82918	12.9	103.7	13.0	103.9	12.9	14.3	108.7	96.	15.3	113.1	114.	17.3	115.4	38.
83000	13.9	104.6	13.4	104.6	30.0	14.7	109.1	84.	15.5	113.8	92.	15.9	118.6	212.
83006	14.0	105.7	13.9	105.8	8.3	15.0	110.0	91.	16.2	114.3	58.	17.0	118.6	166.
83012	14.6	106.8	14.6	106.8	0.0	16.2	110.9	38.	17.0	114.6	38.	18.2	118.2	101.
83018	15.3	107.8	15.4	107.5	18.0	18.0	110.9	92.	20.0	113.6	154.	20.7	116.3	113.
83100	16.0	109.0	16.1	109.0	6.0	17.2	113.2	46.	18.3	117.5	97.	18.5	122.0	247.
83106	16.4	110.2	16.5	110.2	6.0	17.5	114.5	71.	18.0	118.3	121.	19.0	122.3	250.
83112	16.5	111.1	16.8	111.1	18.0	17.7	115.1	40.	18.3	118.4	108.	18.9	122.0	222.
83118	16.6	111.9	16.8	111.9	12.0	17.1	115.6	54.	17.9	119.0	116.	18.5	123.0	0.
9 100	16.7	112.6	16.6	112.7	8.2	16.8	115.6	85.	17.6	118.7	130.	17.4	122.6	0.
9 106	16.9	113.5	16.8	113.5	6.0	17.1	116.4	96.	17.8	119.6	140.	17.9	122.6	0.
9 112	17.4	114.3	17.6	114.4	13.3	19.2	117.6	51.	20.9	120.7	133.	21.5	123.8	0.
9 118	17.8	115.0	17.8	115.0	0.0	19.3	117.9	23.	20.8	120.8	0.	21.6	123.7	0.
9 200	18.2	115.8	18.2	115.8	0.0	19.8	118.8	58.	20.6	121.2	0.	21.5	123.5	0.
9 206	18.5	116.4	18.7	116.3	13.3	19.9	118.2	13.	20.5	120.5	0.	21.3	123.2	0.
9 212	18.8	117.2	19.1	116.7	33.5	21.0	118.8	42.	22.7	120.8	0.	0.0	0.0	0.
9 218	19.2	117.4	19.2	117.5	5.7	20.9	119.2	0.	22.5	120.7	0.	0.0	0.0	0.
9 300	19.6	117.7	19.6	117.8	5.7	21.0	119.1	0.	0.0	0.0	0.	0.0	0.0	0.
9 306	20.0	118.1	20.0	118.0	5.7	20.9	119.2	0.	0.0	0.0	0.	0.0	0.0	0.
9 312	20.4	118.4	20.4	118.4	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)								65.			120.			180.
NUMBER OF CASES								17			13			9

TABLE 14

MAX.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST		ERROR (N.MI.)	48 HOUR FORECAST		ERROR (N.MI.)	72 HOUR FORECAST		ERROR (N.MI.)
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.		LAT.	LONG.		LAT.	LONG.	
9 900	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.
9 906	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.
9 912	11.3	100.0	11.5	100.0	12.0	12.3	105.0	67.	13.7	109.9	100.	15.8	113.3	119.
9 918	11.2	101.3	11.5	101.4	18.9	12.2	106.4	60.	13.4	111.6	100.	15.5	115.0	78.
91000	11.1	102.7	11.2	102.7	6.0	11.5	108.0	42.	12.6	113.1	117.	14.5	118.0	117.
91006	11.1	104.0	11.1	104.0	0.0	11.1	109.3	63.	12.0	114.3	139.	13.5	119.4	179.
91012	11.2	105.1	11.2	105.2	5.8	11.7	110.0	43.	12.8	114.7	81.	14.8	118.8	104.
91018	11.3	106.3	11.2	106.3	6.0	11.5	110.7	75.	12.3	115.1	115.	13.4	119.3	210.
91100	11.5	107.3	11.6	107.3	6.0	12.7	111.3	31.	13.7	115.2	76.	14.8	119.3	166.
91106	11.8	108.4	11.9	108.6	13.0	12.8	112.8	46.	13.9	117.1	74.	15.0	121.3	212.
91112	12.2	109.3	12.1	109.4	8.3	13.2	113.5	48.	14.5	117.6	90.	15.8	121.0	199.
91118	12.6	110.1	12.6	110.1	0.0	14.0	113.7	71.	15.6	117.4	77.	17.5	121.0	138.
91200	13.1	111.3	13.2	111.2	8.2	15.4	115.1	67.	17.2	118.7	18.	18.7	122.4	147.
91206	13.5	112.0	13.5	112.5	28.3	14.7	117.2	33.	16.7	121.4	145.	17.8	125.3	326.
91212	13.9	113.9	13.9	113.9	0.0	15.2	118.5	75.	16.8	122.6	214.	18.1	126.3	378.
91218	14.2	115.0	14.2	114.9	5.6	15.6	118.5	70.	17.3	121.6	167.	19.2	125.3	239.
91300	14.6	116.0	14.7	116.0	6.0	15.8	120.3	137.	16.5	124.7	331.	16.8	129.1	472.
91306	15.1	116.8	15.1	116.8	0.0	17.1	120.1	70.	18.8	123.3	198.	19.7	127.2	260.
91312	15.9	117.5	16.0	117.5	6.0	19.0	120.7	69.	21.3	123.5	162.	22.6	127.2	216.
91318	16.7	118.1	16.7	118.1	0.0	20.0	120.2	38.	22.7	121.1	90.	25.3	121.3	0.
91400	17.5	118.6	17.5	118.7	5.6	20.4	121.2	61.	22.0	123.3	51.	23.4	125.6	0.
91406	18.0	119.0	17.9	119.2	12.6	20.4	121.8	85.	22.5	124.2	78.	22.9	126.6	0.
91412	18.7	119.2	18.8	119.5	17.7	21.8	120.7	25.	24.3	121.7	177.	26.3	122.2	0.
91418	19.4	119.6	19.5	119.8	12.6	22.5	120.0	119.	24.5	120.3	0.	26.0	121.8	0.
91500	19.9	120.1	20.0	120.2	8.2	22.4	121.9	58.	24.0	123.7	0.	24.4	126.0	0.
91506	20.4	120.5	20.5	120.3	12.6	22.6	121.7	95.	24.3	123.7	0.	24.4	126.0	0.
91512	20.8	121.0	21.4	120.6	42.3	24.2	121.5	178.	26.3	122.5	0.	27.3	124.0	0.
91518	21.3	121.7	21.3	121.7	0.0	22.0	125.0	0.	22.3	128.5	0.	0.0	0.0	0.
91600	21.6	122.5	21.6	122.5	0.0	22.1	125.7	0.	22.0	129.0	0.	0.0	0.0	0.
91606	21.7	123.1	21.7	123.1	0.0	21.9	126.0	0.	0.0	0.0	0.	0.0	0.0	0.
91612	21.8	123.4	21.8	123.4	0.0	0.0	0.0	0.	0.0	0.0	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)								69.			124.			209.
NUMBER OF CASES								25			21			17

TABLE 15

NORMA.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR		
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)
91400	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.
91406	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.
91412	15.4	107.4	15.2	108.0	36.0	16.3	111.4	139.	17.4	114.6	133.	18.9	117.7	248.
91418	16.2	108.2	16.2	108.3	5.6	18.2	111.1	21.	20.1	113.1	85.	21.3	115.7	145.
91500	16.8	109.0	16.8	109.0	0.0	18.9	112.3	13.	21.0	115.4	160.	23.1	118.0	295.
91506	17.4	109.7	17.8	110.2	36.6	20.9	114.2	149.	18.1	117.5	232.	25.3	119.9	449.
91512	17.8	110.3	18.6	111.1	65.3	21.2	114.8	158.	23.2	117.7	319.	24.5	119.6	380.
91518	18.2	111.0	18.4	111.4	25.2	20.0	114.6	124.	21.6	117.5	245.	23.0	121.5	456.
91600	18.4	111.6	18.7	112.2	37.6	20.7	115.3	144.	22.6	118.5	306.	24.6	121.3	476.
91606	18.7	112.0	18.8	112.8	44.6	19.8	116.0	131.	21.2	119.3	331.	22.6	122.4	549.
91612	18.9	112.4	19.1	113.1	40.5	20.0	115.5	120.	21.3	118.0	246.	22.0	120.4	453.
91618	19.0	112.9	18.7	112.9	18.0	20.4	114.0	36.	22.9	115.1	119.	24.3	117.0	238.
91700	19.3	113.2	19.2	113.3	8.1	20.7	114.7	68.	22.8	115.7	155.	0.0	0.0	0.
91706	19.7	113.3	19.5	113.7	25.0	20.6	115.2	102.	22.4	116.7	241.	0.0	0.0	0.
91712	19.9	113.4	19.7	113.4	12.0	21.0	113.4	26.	22.8	113.5	91.	24.0	114.0	111.
91718	20.2	113.5	20.2	113.4	5.5	22.2	113.5	31.	23.8	113.9	66.	25.7	115.0	0.
91800	20.5	113.5	20.5	113.5	0.0	22.1	114.1	76.	23.6	114.5	100.	25.8	115.6	0.
91806	20.9	113.5	20.8	113.4	8.1	22.5	112.5	60.	24.1	111.9	38.	26.1	110.6	0.
91812	21.4	113.3	21.4	113.6	16.4	22.8	114.0	110.	23.8	114.6	146.	0.0	0.0	0.
91818	21.9	113.2	21.7	113.4	16.2	23.5	113.1	28.	25.6	113.2	0.	27.0	113.5	0.
91900	22.5	113.0	22.7	112.9	13.2	25.5	111.5	116.	28.0	111.5	0.	30.0	112.0	0.
91906	23.2	113.0	23.5	112.5	32.8	26.5	110.5	184.	0.0	0.0	0.	0.0	0.0	0.
91912	23.5	113.0	24.0	112.5	40.6	26.8	111.0	159.	0.0	0.0	0.	0.0	0.0	0.
91918	23.8	112.8	23.8	112.7	5.5	24.8	122.1	0.	0.0	0.0	0.	0.0	0.0	0.
92000	24.0	112.7	23.9	112.7	6.0	24.0	112.7	0.	0.0	0.0	0.	0.0	0.0	0.
92006	24.1	112.4	24.1	112.6	11.0	24.4	112.4	0.	0.0	0.0	0.	0.0	0.0	0.
92012	24.2	112.0	24.3	112.0	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
92018	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)								95.			177.			345.
NUMBER OF CASES								21			17			11

TABLE 16

OTIS.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST			48 HOUR FORECAST			72 HOUR FORECAST		
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.	ERROR (N.MI)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)
92000	10.2	119.5	9.8	119.3	26.7	10.2	123.6	212.	10.9	126.5	340.	11.8	129.4	419.
92006	10.5	119.9	10.0	120.8	60.4	10.8	124.8	267.	11.7	128.3	405.	12.5	131.3	475.
92012	11.0	120.1	10.1	121.6	102.6	10.9	125.4	303.	11.8	129.1	437.	12.7	132.1	484.
92018	11.4	120.3	11.5	120.3	6.0	14.2	120.4	47.	16.3	120.3	151.	18.5	119.5	339.
92100	11.8	120.4	11.8	120.4	0.0	13.0	120.3	105.	14.5	120.2	189.	18.0	119.5	368.
92106	12.5	120.6	12.5	120.6	0.0	13.8	121.0	60.	15.5	122.0	104.	19.0	122.7	246.
92112	13.2	120.8	13.2	120.8	0.0	15.4	122.4	49.	17.6	124.7	97.	19.4	127.5	141.
92118	13.7	121.2	13.8	121.1	8.3	16.2	123.0	70.	18.1	125.0	102.	19.5	128.1	127.
92200	14.1	121.6	14.1	121.7	5.7	15.3	124.0	42.	17.0	126.7	53.	18.7	129.0	72.
92206	14.5	121.8	14.3	121.9	13.3	15.6	123.9	6.	17.3	126.2	27.	19.2	128.4	123.
92212	14.8	122.2	14.6	122.2	12.0	15.6	124.3	27.	17.1	126.7	17.	18.7	129.3	125.
92218	15.1	122.7	15.1	122.6	5.7	16.5	124.6	24.	18.1	127.0	62.	19.5	129.8	198.
92300	15.4	123.2	15.5	123.3	8.3	16.2	124.9	63.	17.5	127.4	63.	18.8	130.0	253.
92306	15.7	123.7	15.6	123.8	8.3	16.1	126.3	48.	17.4	128.3	52.	18.9	130.4	319.
92312	16.1	124.5	16.0	124.5	6.0	17.4	127.2	21.	19.1	130.0	126.	20.5	132.3	347.
92318	16.4	125.0	16.4	125.0	0.0	17.8	127.1	47.	19.5	129.5	211.	20.5	131.5	444.
92400	16.7	125.7	16.8	125.8	8.3	18.4	129.1	59.	20.0	131.4	228.	21.1	134.1	0.
92406	16.9	126.4	16.9	126.4	0.0	18.0	129.4	44.	19.5	132.1	247.	20.3	134.7	0.
92412	17.1	126.9	17.1	127.0	5.7	18.1	129.9	75.	19.3	132.7	293.	20.3	135.7	0.
92418	17.4	127.7	17.4	127.8	5.7	18.5	130.5	130.	20.0	133.2	344.	20.4	135.6	0.
92500	17.4	128.7	17.6	128.5	16.5	18.7	131.6	169.	20.0	133.7	0.	22.1	135.4	0.
92506	17.4	129.7	17.3	129.2	29.0	17.2	132.1	206.	19.5	134.8	0.	18.1	136.1	0.
92512	17.3	131.0	17.1	130.7	20.8	16.2	135.0	153.	16.2	138.2	0.	16.5	141.4	0.
92518	17.3	132.4	17.3	132.4	0.0	17.8	137.6	64.	18.7	141.0	0.	0.0	0.0	0.
92600	17.2	134.1	17.2	134.1	0.0	17.3	139.9	0.	17.7	143.0	0.	0.0	0.0	0.
92606	17.2	135.7	17.2	135.7	0.0	17.3	141.5	0.	18.1	145.3	0.	0.0	0.0	0.
92612	17.3	137.4	17.3	137.4	0.0	17.6	143.2	0.	18.5	146.5	0.	0.0	0.0	0.
92618	17.5	138.7	17.6	138.7	6.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
MEAN VECTOR ERRORS (N.MI)								95.	177.				280.	
NUMBER OF CASES								24	20				16	

TABLE 17

PILAR.....

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR	24 HOUR FORECAST ERROR			48 HOUR FORECAST ERROR			72 HOUR FORECAST ERROR		
	LAT.	LONG.	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI)	LAT.	LONG.	(N.MI.)	LAT.	LONG.	(N.MI.)
93000	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.
93006	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.
93012	20.5	110.8	20.5	110.8	0.0	22.7	112.0	67.	24.3	111.9	0.	26.0	110.4	0.
93018	21.1	111.0	21.2	111.0	6.0	23.7	111.2	0.	25.6	110.6	0.	26.8	110.2	0.
10 100	21.6	111.0	21.6	111.0	0.0	23.8	110.9	0.	0.0	0.0	0.	0.0	0.0	0.
10 106	22.4	110.9	22.3	110.8	8.2	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 112	22.9	110.8	22.9	110.8	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
10 118	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.			0.			0.
NUMBER OF CASES								1			0			0

TABLE 18

RAMON

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.MI.)	24 HOUR FORECAST			48 HOUR FORECAST			72 HOUR FORECAST		
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)	LAT.	LONG.	ERROR (N.MI.)
10 500	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.
10 506	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.
10 512	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.
10 518	12.2	104.2	13.2	105.1	79.3	14.8	110.9	229.	16.4	113.5	236.	18.0	115.8	260.
10 600	12.3	104.9	13.7	105.9	101.9	14.7	109.7	108.	15.8	112.7	129.	16.8	115.8	179.
10 606	12.5	105.8	12.8	105.5	25.0	14.0	108.3	6.	15.3	111.0	50.	17.4	112.8	168.
10 612	12.7	106.7	13.2	106.3	37.8	14.9	109.1	85.	16.8	111.6	123.	18.4	114.0	199.
10 618	12.9	107.6	13.5	107.2	42.7	14.6	110.5	31.	15.9	113.1	78.	17.1	115.0	100.
10 700	13.1	108.5	13.8	108.1	47.9	15.0	111.4	43.	16.3	114.2	102.	17.0	117.0	76.
10 706	13.4	109.2	14.0	108.4	58.3	14.9	110.6	59.	16.3	112.8	113.	17.7	115.6	116.
10 712	13.7	109.8	13.6	109.7	8.3	14.2	113.1	68.	14.9	115.8	55.	15.5	119.2	113.
10 718	14.1	110.6	14.1	110.4	11.4	15.4	113.7	63.	16.7	116.3	86.	18.4	118.7	42.
10 800	14.3	111.3	14.4	111.0	18.1	15.4	113.6	42.	16.3	115.8	29.	17.6	119.0	60.
10 806	14.6	111.8	14.7	111.6	12.8	15.8	114.0	54.	17.1	116.4	58.	18.1	119.2	97.
10 812	14.7	112.5	14.8	112.1	23.4	15.7	114.6	35.	16.8	116.8	70.	18.1	119.7	171.
10 818	14.8	113.1	14.6	113.0	13.3	14.9	115.9	43.	15.4	118.4	138.	17.3	121.0	243.
10 900	15.0	113.8	14.7	113.6	21.3	15.0	116.4	61.	15.6	118.8	180.	17.0	122.0	297.
10 906	15.1	114.4	14.9	114.1	20.8	15.2	116.3	86.	16.2	118.5	212.	17.7	121.6	259.
10 912	15.3	115.1	15.2	114.9	12.8	16.0	117.6	64.	17.4	120.0	216.	18.8	122.5	0.
10 918	15.5	115.8	15.5	115.5	16.9	16.8	118.3	57.	18.5	120.6	169.	19.5	123.5	0.
101000	16.0	116.5	16.0	116.2	16.9	18.2	119.0	25.	20.0	121.0	115.	20.3	125.0	0.
101006	16.4	117.4	16.4	117.1	16.9	18.9	120.9	118.	20.4	124.1	152.	20.4	128.0	0.
101012	17.1	118.1	17.0	118.0	8.2	19.2	121.3	161.	21.3	123.3	0.	22.2	126.2	0.
101018	17.8	118.9	17.7	118.6	18.0	20.5	121.3	74.	22.0	123.4	0.	24.0	125.0	0.
101100	18.6	119.2	18.6	118.9	16.9	23.6	119.0	159.	26.1	119.5	0.	0.0	0.0	0.
101106	19.5	119.8	19.7	119.0	46.7	25.0	118.2	276.	28.3	117.8	0.	0.0	0.0	0.
101112	20.3	120.1	20.9	119.1	64.9	25.5	118.9	0.	28.4	118.5	0.	31.0	117.8	0.
101118	21.3	120.8	21.3	120.3	28.2	25.7	120.3	0.	30.3	119.3	0.	0.0	0.0	0.
101200	21.9	121.4	21.9	121.2	11.3	24.1	122.7	0.	0.0	0.0	0.	0.0	0.0	0.
101206	22.0	122.1	22.0	122.0	5.6	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
101212	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.
101218	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)								85.			121.			159.
NUMBER OF CASES								23			19			15

TABLE 19

SELMA

DATE/TIME (GMT)	BEST TRACK		OPERATIONAL POSITION		POSITION ERROR (N.M.I.)	24 HOUR FORECAST		24 HOUR FORECAST ERROR (N.M.I.)	48 HOUR FORECAST		48 HOUR FORECAST ERROR (N.M.I.)	72 HOUR FORECAST		72 HOUR FORECAST ERROR (N.M.I.)
	LAT.	LONG.	LAT.	LONG.		LAT.	LONG.		LAT.	LONG.		LAT.	LONG.	
102700	9.5	121.2	9.5	121.3	5.0	10.8	124.5	153.	11.9	126.0	307.	12.3	127.8	475.
102706	9.9	122.4	9.9	122.4	0.0	11.0	126.5	216.	11.7	128.5	397.	13.0	131.0	550.
102712	10.7	123.6	10.5	123.5	13.3	12.3	127.7	229.	0.0	0.0	0.	0.0	0.0	0.
102718	11.7	124.4	12.5	124.5	48.3	15.5	128.0	156.	16.5	129.5	243.	0.0	0.0	0.
102800	13.3	125.0	13.3	125.0	0.0	16.7	126.9	82.	0.0	0.0	0.	0.0	0.0	0.
102806	14.4	125.3	14.4	125.3	0.0	18.7	125.6	67.	20.0	125.0	62.	0.0	0.0	0.
102812	15.4	125.6	15.4	125.4	11.5	18.6	125.8	25.	19.9	126.0	93.	0.0	0.0	0.
102818	16.4	125.8	16.5	125.5	18.2	20.0	125.5	77.	0.0	0.0	0.	0.0	0.0	0.
102900	17.0	125.9	17.0	125.5	23.0	18.8	124.5	107.	0.0	0.0	0.	0.0	0.0	0.
102906	17.6	126.0	17.6	125.4	34.5	19.7	124.5	95.	22.1	122.5	121.	0.0	0.0	0.
102912	18.3	125.9	18.2	125.9	6.0	20.2	125.6	68.	21.9	125.0	0.	0.0	0.0	0.
102918	19.1	125.9	18.8	126.0	18.9	20.5	125.8	149.	22.5	125.0	0.	0.0	0.0	0.
103000	19.9	125.8	20.0	125.9	8.3	23.3	124.8	84.	25.5	122.5	0.	0.0	0.0	0.
103006	20.7	125.4	20.7	125.8	23.0	23.7	124.9	118.	0.0	0.0	0.	0.0	0.0	0.
103012	21.5	124.6	21.3	125.3	41.9	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
103018	22.3	123.9	21.9	123.6	29.5	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
103100	23.2	123.4	23.1	123.3	8.3	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
103106	24.1	122.8	24.1	122.8	0.0	0.0	0.0	0.	0.0	0.0	0.	0.0	0.0	0.
103112	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.
103118	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.M.I)								116.			204.			512.
NUMBER OF CASES								14			6			2

TABLE 20

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