A. TYPHOON NANCY 19 FEB 2300Z-27 FEB 1100Z*

1. STATISTICS

   a. Number of Warnings Issued - 31

   b. Number of Warnings with Typhoon Intensity - 19

   c. Distance Traveled During Warning Period - 2,148 MI

2. CHARACTERISTICS AS A TYPHOON

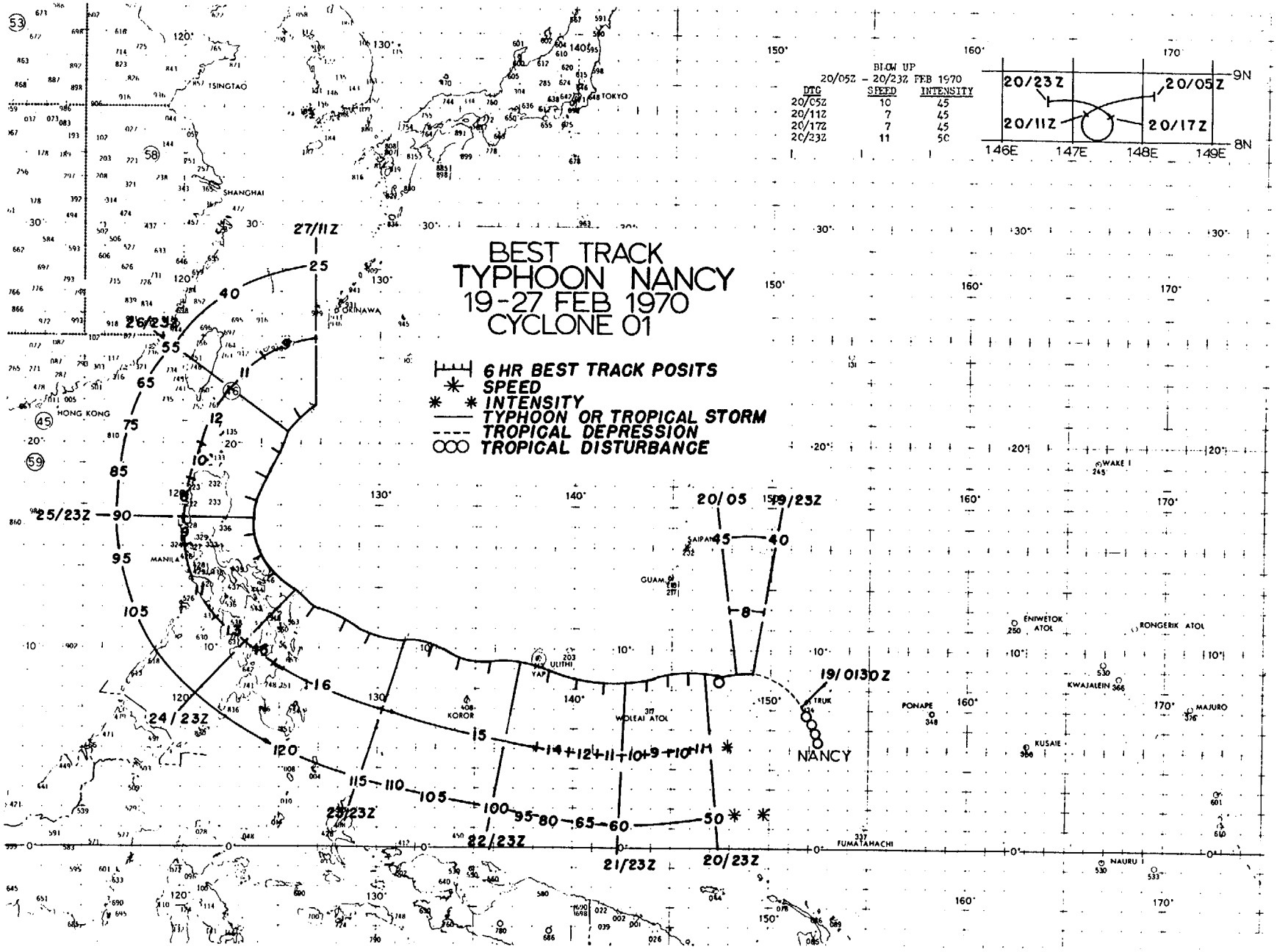
   a. Minimum Observed SLP - 949 MBS at 24/0900Z

   b. Minimum Observed 700 MB Height - 2606 M at 24/2100Z

   c. Maximum Surface Wind - 120 KTS (From Best Track)

   d. Maximum Radius of Surface Circulation - 400 MI

*Time of First and Last Warning Issued (Followed throughout Chapter 5.)


BEST TRACK
TYPHOON NANCY
19-27 FEB 1970
CYCLONE 01
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
BLOW UP
20/05Z - 20/23Z FEB 1970
DTG SPEED INTENSITY
20/05Z 10 45
20/11Z 7 45
20/17Z 7 45
20/23Z 11 50
20/23Z
20/05Z
20/11Z
20/17Z
146E
147E
148E
149E
9N
8N
NANCY
19/0130Z
20/05
19/23Z
20/23Z
21/23Z
22/23Z
23/23Z
24/23Z
25/23Z
26/23Z
27/11Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
HONG KONG
MANILA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
WAKE I
NAURU I
FUMATAMACHI

3. TYPHOON NANCY NARRATIVE

On the 18th of February a mass of increased convective activity showing signs of organization was noted south of the Central Carolines by the ESSA-8 Satellite. A recon aircraft was dispatched to the area the following day finding a weak circulation with a 1004 mb central pressure and thus the birth of Nancy was detected just south of Truk Island.

For several days prior to the 18th, satellite pictures had shown active ITCZ cloudiness in the region between the Central Carolines and the equator. During this period a front advanced into the tropics, producing a tightening pressure gradient across the Caroline chain and increasing the horizontal shear. It is believed that this increase provided the impetus for development of a weak perturbation located in the intertropical trough. This situation is similar to events described by Fett (1968) for generation of Typhoon Marie in 1966.

The developing Nancy drifted northwestward and reached tropical storm intensity early on the 20th. Swinging on a westerly track at 10 to 12 knots, it passed through the Caroline chain as it reacted to an east-west oriented ridge line to its north. Typhoon intensity was reached mid-day of the 22nd (Figure 5-1), about 100 miles northwest of Woleai Atoll, as Nancy moved from beneath a weak 200 mb trough which had been an inhibiting feature to outflow aloft from the storm.

Development of typhoon strength is unusual for a tropical storm during February. For the past 25 year period of record only one other storm (Irma, 1953) achieved this mark.

The eye of Nancy passed 35 miles south of Yap early the following morning with the island experiencing winds of 60 knots gusting to 69 knots and a barometer reading of 988.4 mb. Fortunately, the wall cloud region did not cross over Yap, as the storm at that time had reached 95 knots in intensity. A reconnaissance aircraft shortly afterward reported a circular eye 25 miles in diameter and a central pressure of 958 mb.

Damage on Yap was estimated to be $160,000 with no personal casualties. Major damage was caused by heavy sea action and rains resulting in erosion of roads and causeways and damage to crops and homes.

Upon movement into the Philippine Sea at a rate of 15 to 16 knots, the typhoon approached the southwestern periphery of the subtropical ridge and began to slowly change to a more northwesterly course on the 24th some 330 miles east of Leyte.

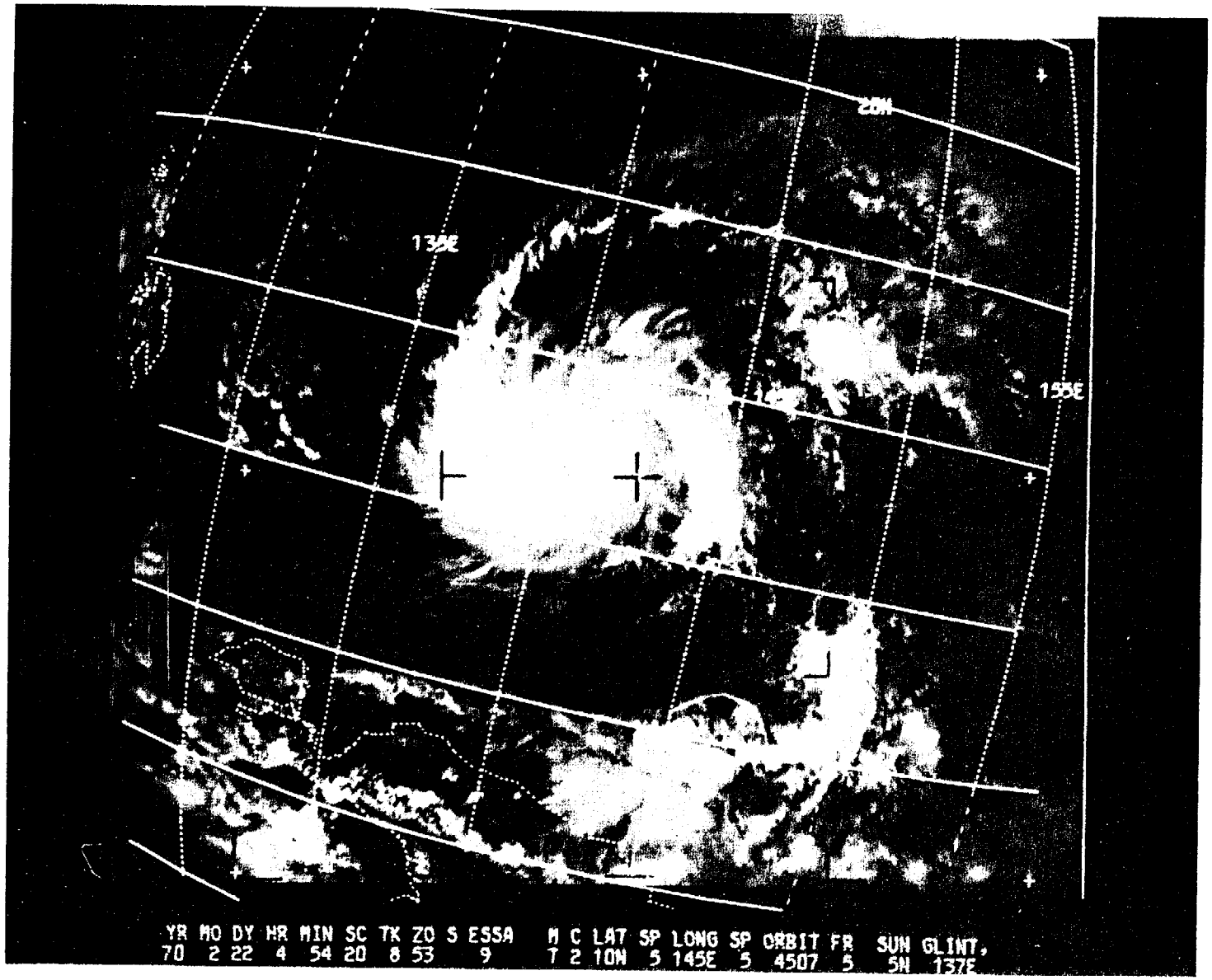


FIGURE 5-1 ESSA 9 VIEW OF NANCY TAKEN ON 22 FEBRUARY SHORTLY AFTER REACHING TYPHOON INTENSITY.

Nancy was near her peak intensity at 120 knots (Figure 5-2) when the American ship Antinous bound from Manila to Guam was caught in her eye shortly before midnight on the 24th about 90 miles east of Samar. The ship's log referred to monstrous confused seas with winds well over 100 knots and wave swell heights over 40 feet. Three large butane tanks on the main deck broke loose and carried away a large portion of the bulwark. A minimum pressure of 953 mb was recorded while in the eye. The barograph track of the Antinous is reproduced in Figure 5-3.

As the typhoon commenced to recurve, her track brought the edge of the eye over Catanduanes Island on the afternoon of the 25th. The U. S. Coast Guard loran station on the island recorded a maximum wind of 120 knots before the wind indicating equipment jammed. A duplicate of the Antinous' minimum pressure of 953 mb was logged by the station's barometer while in the eye.

Paralleling the Luzon coast some 100 miles offshore, Nancy began to slowly weaken as she approached the westerlies. Turning on a northeast course she decreased to tropical storm strength on the 26th. Becoming extratropical she was absorbed into a frontal zone late on the 27th some 240 miles southeast of Okinawa.

Property damage on the Philippine islands of Catanduanes and Samar was estimated near a million dollars (U.S.) with about 5,000 families rendered homeless.

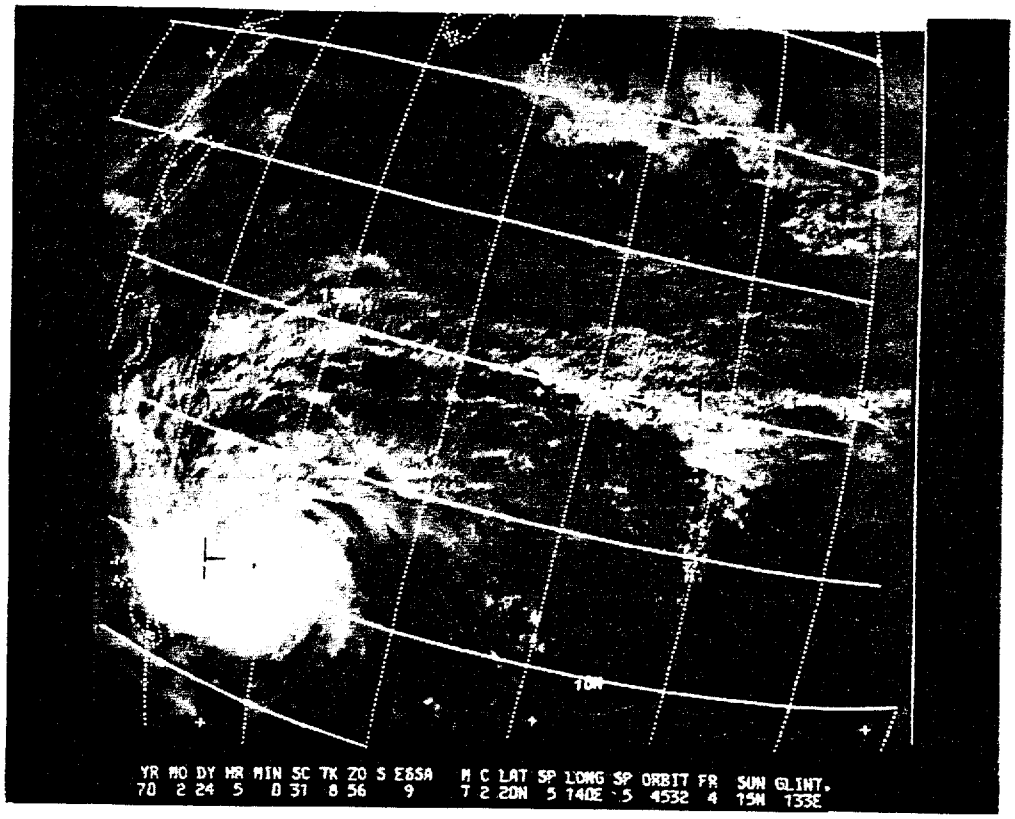


FIGURE 5-2 ESSA 9 PHOTO OF NANCY TAKEN ON 24 FEBRUARY NEAR ITS PEAK STRENGTH 120 KTS

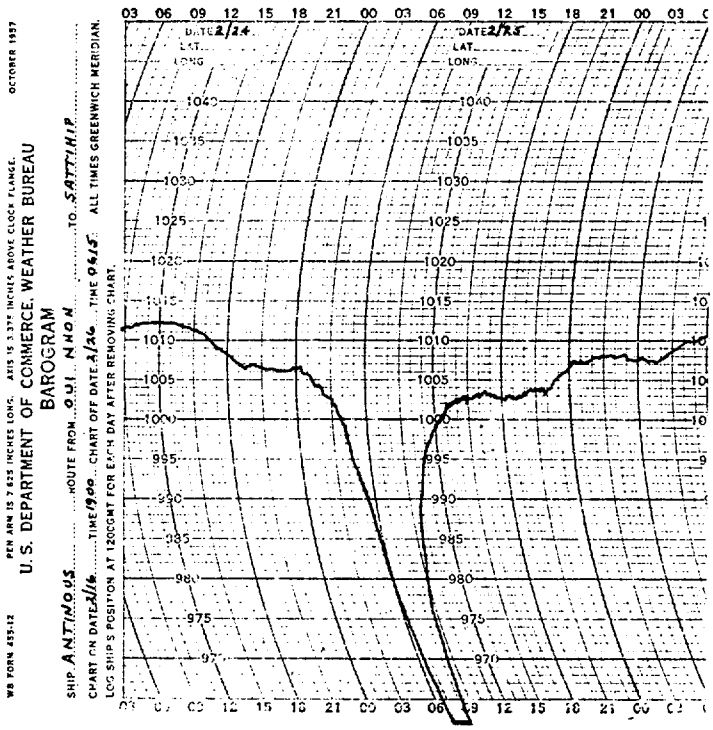


FIGURE 5-3 REPRODUCTION OF BAROGRAPH TRACE FROM THE SS ANTINOUS DURING ENCOUNTER WITH TYPHOON NANCY. TRACE WOULD HAVE BEEN LOWER BUT NEEDLE RESTING ON BASE. SHIP'S BAROMETER REACHED 28.06 IN. (953 MB) WHILE IN NANCY'S EYE.

TYPHOON NANCY

EYE FIXES CYCLONE 01

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	CHARACTER WALL CLOUD
1	190354Z	09.5N 152.0E	SLTLS	STG B	DIA --	CAT -							----------
2	192300Z	08.6N 149.1E	54-P-02---	700MB	060	055	986	3011	18/--	----			APRNT W/C FORMG
3	200300Z	08.7N 148.6E	54-P-03---	700MB	065	065	986	2996	16/12	----			PARTIAL W/C N SEMICIR
4	200452Z	09.0N 147.5E	SLTLS	STG C	DIA --	CAT -							----------
5	200900Z	08.6N 147.5E	VW-P-03---	0290M	035	035	990	---	26/25	----			NEG W/C
6	201500Z	08.3N 147.4E	VW-P-03---	700MB	050	045	987	3048	26/26	----			W/C SE QUAD-12NM THK
7	202045Z	08.6N 147.1E	54-P-05---	700MB	050	045	992	3027	13/12	----			W/C SW-W-10NM THK
8	210230Z	08.5N 146.0E	54-P-05---	700MB	040	050	989	3005	12/11	----			W/C DISIPTG
9	210356Z	08.0N 145.0E	SLTLS	STG C	DIA --	CAT -							----------
10	210851Z	08.6N 145.1E	VW-P-05---	0290M	---	050	984	---	28/23	----			NEG W/C
11	211445Z	08.4N 144.3E	VW-P-05---	700MB	040	---	---	3008	16/13	----			----------
12	212100Z	08.1N 143.1E	54-P-05---	700MB	047	030	980	2938	16/12	----			10NM THK, BRKN ALQUADS
13	220330Z	08.1N 141.8E	54-P-03---	700MB	046	060	978	2890	15/12	----			10NM THK
14	220454Z	08.5N 141.0E	SLTLS	STG X	DIA 02	CAT 2							----------
15	220830Z	08.2N 140.5E	VW-P-05---	4500M	---	110	972	---	25/24	CIRC	----	44	----------
16	221200Z	08.6N 139.9E	VW-Q-04---	4600M	040	---	---	---	--/--	CIRC	----	42	----------
17	221514Z	08.7N 139.0E	VW-P-05---	2590M	---	125	967	---	27/26	ELIP	NE-SW	40X--	W/C ALQUADS, 10NM THK
18	222045Z	09.1N 137.7E	54-P-05---	700MB	065	---	958	2752	23/12	CIRC	----	25	10NM THK
19	230225Z	09.2N 136.1E	54-P-08---	700MB	085	100	963	2786	22/12	CIRC	----	40	OPEN NE
20	230553Z	09.5N 135.5E	SLTLS	STG X	DIA 03	CAT 4							----------
21	230851Z	09.2N 135.1E	VW-P-05---	2440M	---	120	959	---	26/24	ELIP	N-S	40X--	10NM THK, OPEN N
22	231205Z	09.3N 134.6E	VW-Q-15---		---	---	---	---	--/--	CIRC	----	40	----------
23	231647Z	10.2N 132.7E	VW-P-10---	2380M	---	130	955	---	28/24	ELIP	NW-SE	40X--	50NM THK-NW
24	232100Z	10.1N 131.8E	54-P-10---	700MB	098	---	950	2670	22/11	ELIP	NE-SW	38X30	----------
25	240230Z	10.4N 130.1E	54-P-10---	700MB	100	120	953	2707	22/13	CIRC	----	40	----------
26	240501Z	10.5N 129.5E	SLTLS	STG X	DIA 03	CAT 4							----------
27	240900Z	11.2N 128.6E	VW-P-03---	700MB	---	130	949	2758	26/22	CIRC	----	25	CLSD, 23NM THK
28	241430Z	11.7N 127.0E	VW-P-02---	700MB	---	---	953	2664	19/13	CIRC	----	22	22NM THK
29	242100Z	12.5N 126.2E	54-P-02---	700MB	---	---	---	2606	18/12	CIRC	----	23	7NM THK, OPEN E
30	250300Z	13.5N 125.2E	54-P-10---	500MB	090	---	952	---	05/-7	CIRC	----	30	----------
31	250528Z	13.7N 124.5E	VW-P-03---	700MB	---	---	---	2752	16/14	ELIP	N-S	36X--	CLSD, 15NM THK
32	250559Z	14.0N 124.5E	SLTLS	STG X	DIA 03	CAT 4							----------
33	250925Z	14.3N 124.1E	VW-P-03---	700MB	---	---	953	2682	18/13	CIRC	----	40	14NM THK
34	251445Z	15.0N 123.9E	VW-P-02---	700MB	102	---	970	2679	20/14	CIRC	----	36	12NM THK
35	252100Z	15.8N 123.7E	54-P-02---	500MB	---	---	---	2682	04/52	CIRC	----	62	8NM THK, OPEN SE
36	260215Z	16.8N 123.8E	54-P-05---	700MB	---	080	---	2713	18/12	CIRC	----	20	8NM THK
37	260503Z	17.0N 123.5E	SLTLS	STG X	DIA 03	CAT 4							----------
38	260915Z	18.1N 124.0E	VW-P------		---	---	---	---	--/--	CIRC	----	36	OPEN SW-WSW
39	261407Z	19.0N 124.6E	VW-P-05---		---	---	---	---	--/--	CIRC	----	18	WK W/C
40	262100Z	20.3N 125.1E	54-P-10---	700MB	035	---	992	3015	--/--	----			NEG W/C
41	270000Z	20.5N 125.3E	54-P-02---	700MB	045	---	992	3042	--/--	----			NEG W/C
42	270210Z	20.6N 125.2E	54-P-02---	700MB	038	---	000	3045	--/--	----			----------
43	270912Z	21.5N 126.3E	VW-P-10---	0260M	---	025	001	---	26/23	----			----------

TYPHOON NANCY

TROPICAL CYCLONE 01 -- 2/19/2300Z TO 2/27/1100Z
POSITION AND FORECAST VERIFICATION DATA

WARN NO.	DTG	WARNING POSIT LAT	WARNING POSIT LONG	BEST TRACK LAT	BEST TRACK LONG	24 HR FCST LAT	24 HR FCST LONG	24 HR ERROR DEG DIST	48 HR FCST LAT	48 HR FCST LONG	48 HR ERROR DEG DIST	72 HR FCST LAT	72 HR FCST LONG	72 HR ERROR DEG DIST
01	19/2300Z	8.6N	149.1E	8.6N	149.1E	10.3N	146.2E	346-0102	11.9N	143.3E	008-0228	13.5N	140.3E	035-0312
02	20/0500Z	8.8N	148.4E	8.7N	148.2E	10.6N	145.4E	354-0120	12.3N	142.4E	012-0246	-----	------	--------
03	20/1100Z	8.9N	147.3E	8.4N	147.2E	9.8N	143.8E	325-0090	10.7N	140.4E	005-0138	11.6N	137.0E	051-0204
04	20/1700Z	8.4N	147.2E	8.4N	147.6E	8.7N	144.5E	057-0042	8.8N	141.8E	090-0180	-----	------	--------
05	20/2300Z	8.6N	146.8E	8.6N	146.7E	8.8N	144.8E	071-0126	8.9N	142.8E	093-0330	9.0N	140.8E	097-0564
06	21/0500Z	8.5N	145.7E	8.6N	145.7E	8.5N	142.3E	067-0042	8.5N	139.0E	102-0192	-----	------	--------
07	21/1100Z	8.6N	144.8E	8.5N	144.8E	8.6N	141.0E	076-0048	8.6N	137.0E	106-0168	8.6N	133.0E	119-0324
08	21/1700Z	8.5N	144.0E	8.3N	143.8E	8.5N	140.2E	102-0084	8.5N	136.2E	115-0216	-----	------	--------
09	21/2300Z	8.1N	142.7E	8.1N	142.7E	7.4N	137.5E	173-0108	7.1N	132.3E	162-0192	7.6N	128.0E	158-0336
10	22/0500Z	8.0N	141.5E	8.2N	141.5E	7.3N	136.4E	162-0114	7.1N	131.2E	156-0228	-----	------	--------
11	22/1100Z	8.1N	140.0E	8.4N	140.1E	8.1N	134.1E	180-0078	8.1N	128.4E	176-0192	8.8N	123.7E	184-0342
12	22/1700Z	8.8N	138.5E	8.8N	138.7E	9.0N	133.1E	169-0066	9.0N	127.4E	170-0174	-----	------	--------
13	22/2300Z	9.2N	137.1E	9.2N	137.2E	11.0N	131.3E	008-0048	12.7N	125.9E	134-0006	15.3N	121.8E	244-0120
14	23/0500Z	9.5N	135.4E	9.2N	135.7E	10.9N	129.4E	341-0018	12.6N	124.2E	202-0060	-----	------	--------
15	23/1100Z	9.3N	134.6E	9.4N	134.2E	9.8N	129.8E	134-0126	11.1N	125.5E	159-0216	13.1N	122.0E	202-0336
16	23/1700Z	10.2N	132.4E	10.1N	132.8E	11.7N	127.1E	134-0012	14.2N	122.7E	220-0090	-----	------	--------
17	23/2300Z	10.3N	131.3E	10.2N	131.2E	11.5N	126.4E	158-0078	13.7N	122.6E	202-0156	16.8N	120.0E	234-0360
18	24/0500Z	10.6N	129.5E	10.6N	129.6E	12.2N	123.9E	207-0090	15.3N	120.1E	242-0234	-----	------	--------
19	24/1100Z	11.2N	128.1E	11.3N	128.2E	13.4N	122.9E	226-0090	17.0N	120.1E	252-0246	21.0N	120.5E	--------
20	24/1700Z	11.9N	126.5E	11.9N	126.8E	14.5N	121.7E	246-0126	18.4N	119.9E	258-0282	-----	------	--------
21	24/2300Z	12.6N	125.7E	12.8N	125.8E	15.5N	121.8E	249-0114	19.4N	120.8E	057-0252	23.8N	123.8E	--------
22	25/0500Z	13.7N	124.7E	13.6N	124.7E	17.7N	122.2E	288-0090	21.4N	122.9E	276-0162	-----	------	--------
23	25/1100Z	14.5N	123.9E	14.5N	124.1E	18.4N	122.4E	273-0102	22.0N	124.8E	--------	25.2N	130.2E	--------
24	25/1700Z	15.3N	123.5E	15.4N	123.8E	19.1N	122.7E	262-0114	22.9N	126.0E	--------	-----	------	--------
25	25/2300Z	16.1N	123.4E	16.2N	123.7E	19.3N	123.0E	242-0132	23.0N	126.0E	--------	-----	------	--------
26	26/0500Z	17.2N	123.7E	17.2N	123.8E	20.9N	124.5E	261-0072	24.2N	129.3E	--------	-----	------	--------
27	26/1100Z	18.4N	123.9E	18.3N	124.2E	22.9N	127.1E	--------	26.5N	133.8E	--------	-----	------	--------
28	26/1700Z	19.6N	124.7E	19.4N	124.8E	22.9N	128.9E	--------	26.3N	135.5E	--------	-----	------	--------
29	26/2300Z	20.6N	125.4E	20.4N	125.2E	23.9N	129.9E	--------	26.7N	137.2E	--------	-----	------	--------
30	27/0500Z	20.8N	125.4E	21.1N	125.8E	-----	------	--------	-----	------	--------	-----	------	--------
31	27/1100Z	21.7N	126.5E	-----	------	-----	------	--------	-----	------	--------	-----	------	--------

AVERAGE 24 HOUR ERROR - 0085 MI. 95.8
AVERAGE 48 HOUR ERROR - 0190 MI.
AVERAGE 72 HOUR ERROR - 0322 MI.