CHAPTER IV – SUMMARY OF TROPICAL CYCLONES

1. GENERAL RESUME

Thirty named tropical cyclones, of which twenty-two attained typhoon intensity, developed over western North Pacific waters during 1972 (Table 4-1). Typhoons Olga and Ruby had their origin in the central Pacific. Elsie and Flossie retained their identity while crossing the Indo-China peninsula and regenerated into tropical cyclones of typhoon strength over the Bay of Bengal.

The 1972 typhoon frequency was higher than the yearly average of 19 since the beginning of the JTWC in 1959. During this period, only 1962, 1964, and 1971 experienced more typhoons (Table 4-2). Typhoon days numbered 121, which is 21 more than average (Table 4-3). This figure surpasses all years since 1959, indicating the several multiple-storm situations and longer track lifetimes of 1972.

Multiple-storm activity was quite pronounced in July. Four tropical cyclones, Phyllis, Rita, Susan, and Tess, signaled the greatest simultaneous outbreak in JTWC records in over a decade. The record for multiple storms was August 1960, when five appeared on synoptic charts during the same day. However, in July 1972 four named tropical cyclones co-existed for seven consecutive days, producing a longevity record (Figure 4-1). Typhoon days for July exceeded the high for any month since 1959, as a record 222 warnings were issued by the JTWC. This compares with a total of 739 warnings issued during the year (Table 4-4).

The equatorial trough was quite pronounced during the summer and fall of 1972. Low-level monsoon westerlies extended from Southeast Asia across equatorial latitudes into the central Pacific. Sadler[1] indicated this anomalous circulation pattern to be associated with large-scale ocean

TABLE 4-1. FREQUENCY OF TROPICAL STORMS (INCLUDING TYPHOONS) BY MONTHS AND YEARS

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1945	0	0	0	1	1	2	5	7	6	1	3	0	26
1946	0	0	1	0	1	2	3	2	3	1	2	0	15
1947	0	0	1	0	1	1	3	3	5	6	6	1	27
1948	1	0	0	0	2	2	2	5	5	4	3	2	26
1949	1	0	0	0	0	1	5	3	6	1	3	2	22
1950	0	0	0	0	1	2	3	2	3	3	3	1	18
1951	0	0	1	2	1	1	1	2	2	4	1	2	17
1952	0	0	0	0	0	3	3	4	5	6	3	4	28
1953	0	1	0	0	1	2	2	6	3	4	3	1	23
1954	0	0	1	0	1	0	1	6	4	3	3	0	19
1955	1	0	1	1	0	1	6	3	3	4	1	1	22
1956	0	0	1	2	0	1	2	5	5	2	3	1	22
1957	2	0	0	1	1	1	1	3	5	4	3	0	21
1958	1	0	0	0	1	3	5	3	3	3	2	1	22
1959	0	1	1	1	0	0	3	6	6	4	2	2	26
1960	0	0	0	1	1	3	3	10	3	4	1	1	27
1961	1	1	1	1	3	2	5	4	6	5	1	1	31
1962	0	1	0	1	2	0	6	7	3	5	3	2	30
1963	0	0	0	1	1	3	4	3	5	5	0	3	25
1964	0	0	0	0	2	2	7	9	7	6	6	1	40
1965	2	2	1	1	2	3	5	6	7	2	2	1	34
1966	0	0	0	1	2	1	5	8	7	3	2	1	30
1967	1	0	2	1	1	1	6	8	7	4	3	1	35
1968	0	0	0	1	1	1	3	8	3	6	4	0	27
1969	1	0	1	1	0	0	3	4	3	3	2	1	19
1970	0	1	0	0	0	2	2	6	4	5	4	0	24
1971	1	0	1	3	4	2	8	4	6	4	2	0	35
1972	1	0	0	0	1	3	6	5	4	5	2	3	30
Totals	13	7	13	20	31	45	110	142	129	107	73	33	721
Avg.	.46	.25	.46	.71	1.11	1.61	3.93	5.07	4.61	3.82	2.61	1.18	25.75

TABLE 4-2. FREQUENCY OF TROPICAL STORMS REACHING TYPHOON INTENSITY BY MONTHS AND YEARS

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1945	0	0	0	0	0	1	2	5	3	1	1	0	13
1946	0	0	1	0	1	1	3	1	3	1	2	0	13
1947	0	0	0	0	1	1	0	3	4	5	4	1	19
1948	1	0	0	0	2	0	2	2	4	1	2	1	15
1949	1	0	0	0	0	1	3	3	3	1	1	1	14
1950	0	0	0	0	1	1	1	2	1	3	2	1	12
1951	0	0	1	2	1	1	1	2	2	3	1	2	16
1952	0	0	0	0	0	3	1	3	3	4	3	2	19
1953	0	1	0	0	1	1	2	4	2	4	1	1	17
1954	0	0	0	0	1	0	1	4	4	2	3	0	15
1955	1	0	1	1	0	1	5	3	3	2	1	1	19
1956	0	0	1	1	0	0	2	4	5	1	3	1	18
1957	1	0	0	1	1	1	3	2	5	3	3	0	18
1958	1	0	0	0	1	3	4	3	3	3	1	1	20
1959	0	0	0	1	0	0	1	5	3	3	2	2	17
1960	0	0	0	1	0	2	2	8	0	4	1	1	19
1961	0	0	1	0	2	1	3	5	5	3	1	1	20
1962	0	0	0	1	2	0	5	7	2	4	3	0	24
1963	0	0	0	1	1	2	3	3	3	4	0	2	19
1964	0	0	0	0	2	2	6	3	5	3	4	1	26
1965	1	0	0	1	2	2	4	3	5	2	1	0	21
1966	0	0	0	1	2	1	3	6	4	2	0	1	20
1967	0	0	1	1	0	1	3	4	4	3	3	0	20
1968	0	0	0	1	1	1	1	4	3	5	4	0	20
1969	1	0	0	1	0	0	2	3	2	3	1	0	13
1970	0	1	0	0	0	1	0	4	2	3	1	0	12
1971	0	0	0	3	1	2	6	3	5	3	1	0	24
1972	1	0	0	0	1	1	4	4	3	4	2	2	22
Totals	8	2	6	17	24	31	71	101	92	80	52	22	505
Avg.	.29	.07	.21	.61	.86	1.11	2.54	3.61	3.29	2.86	1.86	.79	18.04

TABLE 4-3. TYPHOON DAYS 1959-1972

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL PER YEAR
1959	---	---	---	8	---	---	3	18	19	18*	10	18	94
1960	---	---	---	2	---	10	13	36*	---	23*	2*	12	98
1961	---	---	8	---	8	2	10*	15	23*	17*	6	6	95
1962	---	---	---	7	4	---	14*	37*	8	30*	19*	---	119
1963	---	---	---	4	5	15	11	23*	14*	24*	---	11	107
1964	---	---	---	---	7	5*	22*	18*	28*	14	11*	6	111
1965	2	---	---	2	5	12*	19*	23*	25*	14	6	---	108
1966	---	---	---	5	11	6	7*	16*	23*	11	4	3	86
1967	---	---	2	7	---	4	14*	10	32*	21*	21*	---	111
1968	---	---	---	6	1	7	6	8	32*	19	18*	---	97
1969	5	---	---	5	---	---	8	6	10	18	10*	---	62
1970	---	5	---	---	---	2	5	24*	16	21*	6	---	79
1971	---	---	---	4	13*	8	20*	27*	21*	11*	7	---	111
1972	2	---	---	---	1	6	39*	16	16*	21	9	11	121
TOTAL	9	5	10	50	55	77	191	277	267	262	129	67	1399
MEAN	.6	.4	.7	3.6	3.9	5.5	13.6	19.8	19.1	18.7	9.2	4.8	99.9

*Two typhoons occurring on the same day are counted as two typhoon days.

TABLE 4-4. SUMMARY OF JTWC WARNINGS 1969-1972

	1960-1971 (AVG)	1969	1970	1971	1972
TOTAL NUMBER OF WARNINGS	731	430	533	747	739
CALENDAR DAYS OF WARNING	151	108	127	163	139
NUMBER OF WARNING DAYS WITH TWO OR MORE CYCLONES	54	15	29	54	46
NUMBER OF WARNING DAYS WITH THREE OR MORE CYCLONES	12	1	0	6	13

[1]Consultant visit to JTWC in October 1972 by Prof. James C. Sadler, University of Hawaii.

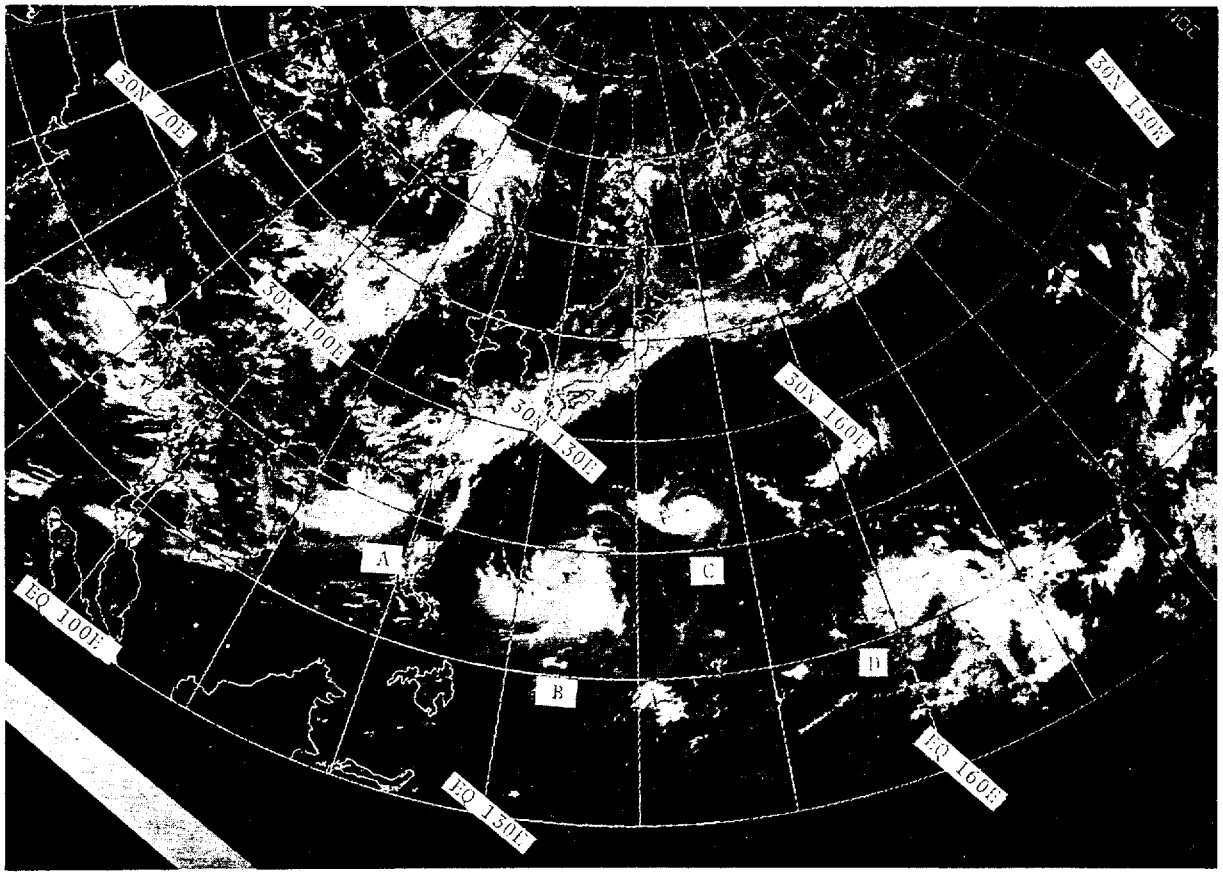


FIGURE 4-1. *ESSA-9 satellite mosaic for 13 July 1972 showing multiple tropical cyclones--Tropical Storm Susan (A), typhoons Rita (B), Phyllis (C), and Tess (D)--in the northwest Pacific Ocean.*

warming and the early beginning of a strong "El Nino."

This anomalous circulation pattern gave rise to an unusual number of tropical cyclones (nine) forming east of 160°E. Of these, Lola and Olga each developed as members of a cyclone pair with southern hemisphere tropical cyclones. The anomalous monsoonal flow also acted to prolong the typhoon season. This was evidenced by Tropical Storm Violet's presence in the Marshall Island area during mid-December.

Atypically, only one tropical cyclone (Tropical Storm Doris) developed in the trade wind easterlies, during the summer and fall, from disturbances created by upper tropospheric cyclonic cells. However, on several occasions, such cells, embedded in the semi-permanent mid-Pacific trough, enhanced the outflow from disturbances in the equatorial trough and aided their development.

Only Rita and Betty reached super typhoon intensity (130 kt). This equals 1960 and 1969 for the lowest annual frequency of super typhoons in JTWC history. The 14-year (1959-1972) average for super typhoons is six.

Rita established a new longevity record (22 days) for a tropical cyclone in the western North Pacific.[2] She dominated the synoptic circulation features of the East China and Philippine Seas for most of the period. Typhoons Phyllis, Susan, and Tess developed and dissipated during Rita's lifetime. Tess traveled over 3100 nm from the vicinity of the Marshall Islands, engaged in a Fujiwhara interaction with Rita, and dissipated over the Sea of Japan. All of this occurred while Rita maintained typhoon intensity.

Several typhoons dealt destruction to the Far East during 1972. The Republic of the Phillipines was especially hard hit as Kit, Ora, Rita, and Therese brought a combined death toll of approximately 640 to the archipelago (Table 4-5). Rita, although never crossing the coastline, had a critical impact on the economy of the country by enhancing the southwest monsoonal flow. This resulted in torrential rains of record proportions that caused widespread destruction and flooding throughout Luzon.

[2]Longest-lived (31 days) tropical cyclone on record is Hurricane Ginger, September 1971, in the North Atlantic.

Helen inflicted the heaviest damage on Japan in several years as she moved through the Ise Bay area, grounding many ships, causing numerous landslides inland, and capsizing several fishing vessels.

Much of the pertinent meteorological data and typhoon damage statistics in this chapter were based on information received from the following sources: Weather Bureau of the Republic of China; Royal Observatory of Hong Kong; Office of the High Commissioner, Trust Territory of the Pacific Islands; Casualty Returns, Liverpool Underwriters Association; Director of Meteorology, Republic of Vietnam; Japan Meteorological Agency; Weather Bureau of the Republic of the Philippines; and the Environmental Data Service, National Oceanic and Atmospheric Administration.

TABLE 4-5. LIST OF ESTIMATED CASUALTIES FOR THE 1972 SEASON

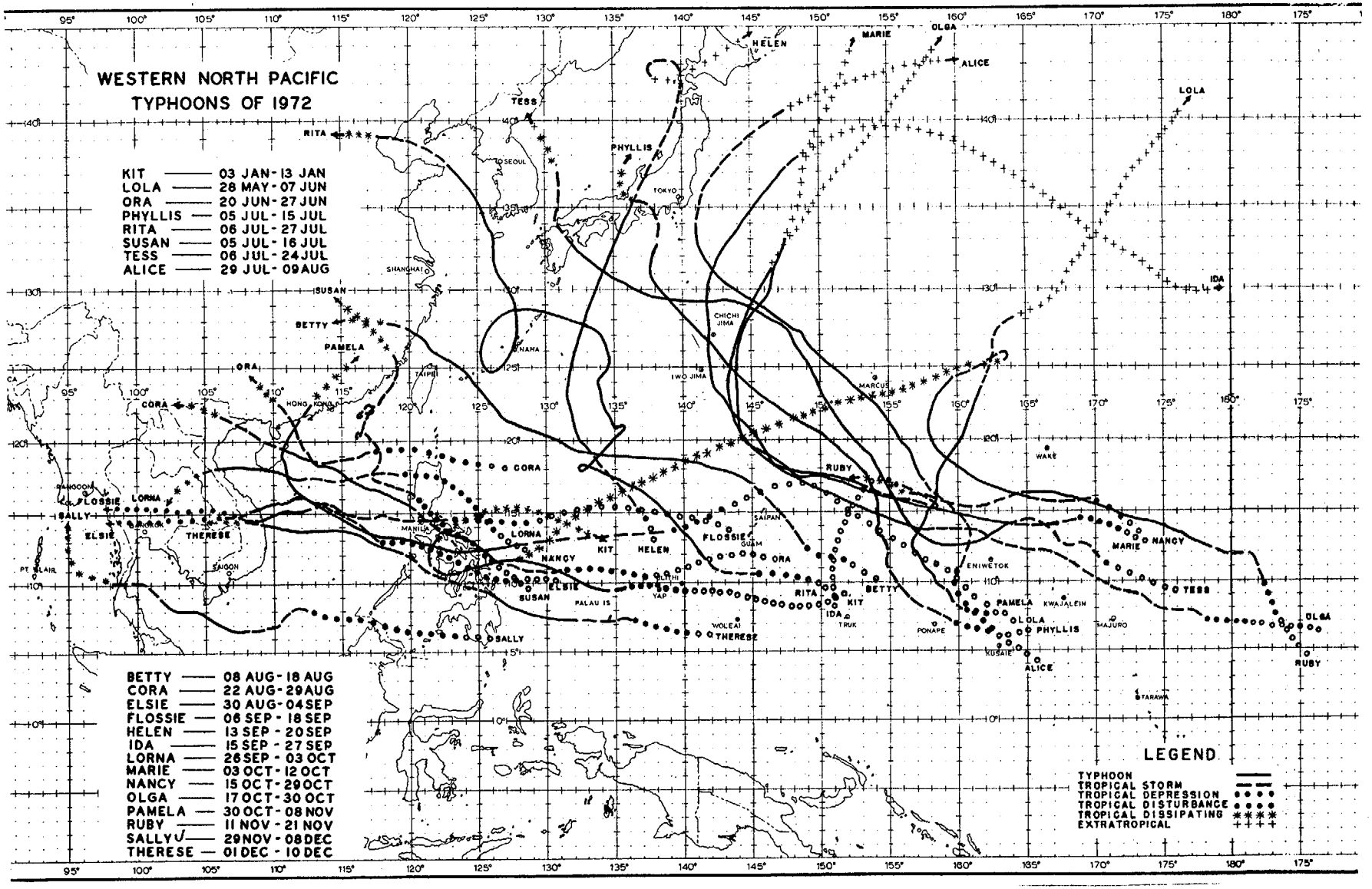
TYPHOON	DEATHS	MISSING
KIT	204	--
LOLA	---	2
ORA	134	--
PHYLLIS	3	--
RITA	229	--
SUSAN	4	--
TESS	29	20
BETTY	25	4
ELSIE	---	--
FLOSSIE	---	--
HELEN	72	2
MARIE	19	--
PAMELA	4	5
RUBY	---	--
SALLY	11	5
THERESE	90	--
	824	36

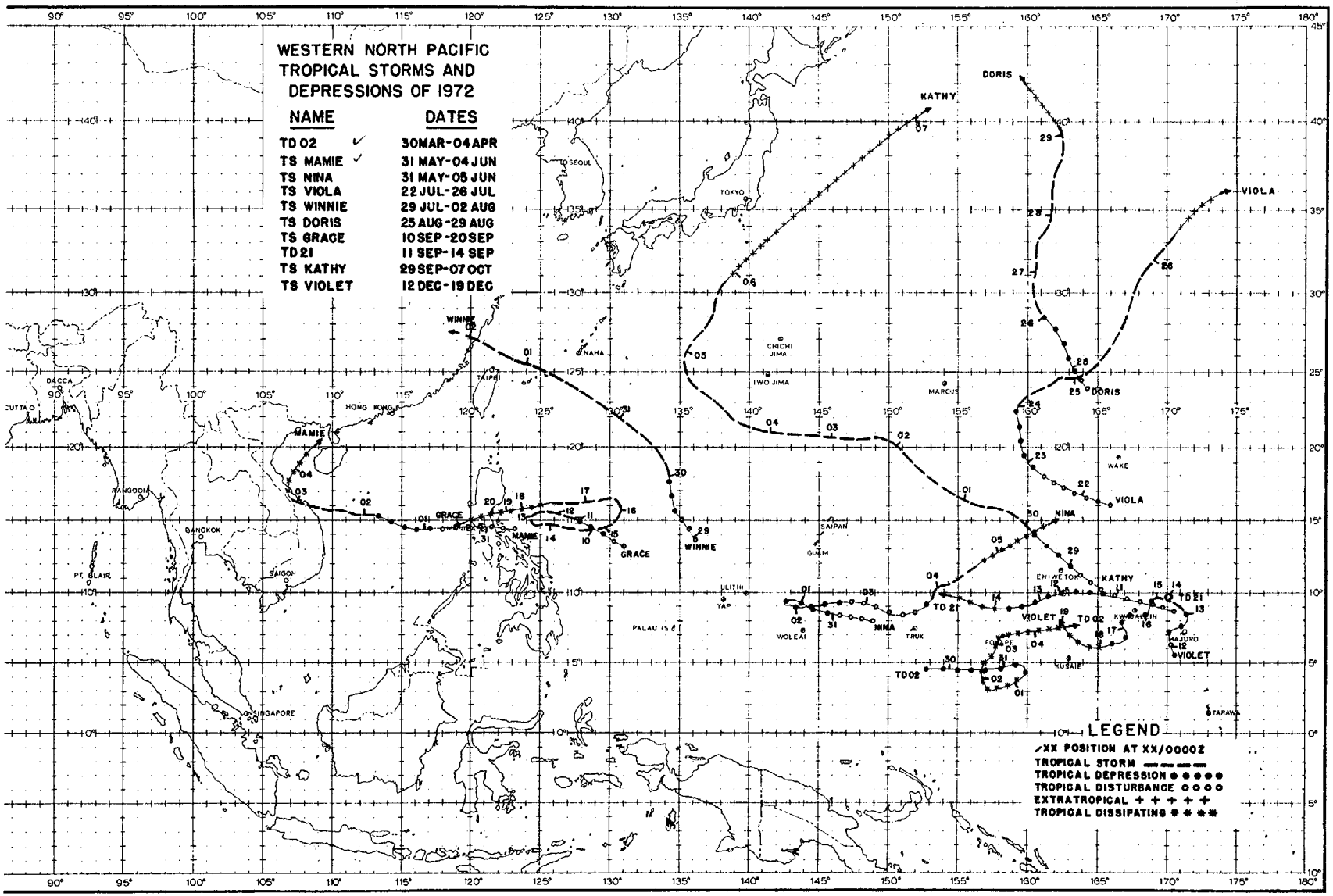
TABLE 4-6. 1972 TROPICAL CYCLONES

CYCLONE	TYPE	NAME	DATE (PRD OF WRNG)	CALENDAR DAYS OF WARNING	MAX SFC WIND	MIN OBS SLP	WARNINGS ISSUED TOTAL	WARNINGS ISSUED NO. AS TYPHOONS	DISTANCE TRAVELED
01	T	KIT	05 JAN-09 JAN	4	120	933	15	5	840
02	TD	TD 02	31 MAR-01 APR	2	30	1001	5	--	185
03	T	LOLA	30 MAY-05 JUN	7	105	956	26	13	1370
04	TS	MAMIE	02 JUN-03 JUN	2	50	989	5	--	260
05	TS	NINA	04 JUN-04 JUN	1	45	N/A	3	--	120
06	T	ORA	23 JUN-27 JUN	5	80	971	19	12	1450
07	T	PHYLLIS	06 JUL-15 JUL	10	120	944	38	22	2325
08	T	RITA	07 JUL-26 JUL	20	145	911	79	72	3330
09	T	SUSAN	07 JUL-14 JUL	8	65	980	29	4	800
10	T	TESS	08 JUL-24 JUL	17	125	940	66	44	3165
11	TS	VIOLA	24 JUL-26 JUL	3	60	980	8	--	890
12	TS	WINNIE	31 JUL-02 AUG	3	60	971	7	--	440
13	T	ALICE	01 AUG-08 AUG	8	90	964	30	20	2040
14	T	BETTY	09 AUG-17 AUG	9	135	910	35	27	2075
16	T	CORA	25 AUG-29 AUG	5	65	976	16	4	630
15	TS	DORIS	25 AUG-29 AUG	5	55	986	17	--	1045
17	T	ELSIE	31 AUG-04 SEP	5	75	974	16	12	580
18	T	FLOSSIE	10 SEP-16 SEP	7	75	975	25	7	795
19	TS	GRACE	*12 SEP-18 SEP	5	50	989	12	--	495
20	T	HELEN	13 SEP-16 SEP	4	100	957	15	13	1325
21	TD	TD 21	13 SEP-15 SEP	3	30	N/A	8	--	550
22	T	IDA	17 SEP-24 SEP	8	110	930	31	24	2315
23	TS	JUNE	(TS JUNE PICKED UP BY CENTRAL PACIFIC HURRICANE CENTER, HONOLULU)						
24	TS	KATHY	01 OCT-05 OCT	5	60	976	19	--	1560
25	T	LORNA	01 OCT-03 OCT	3	75	990	8	6	475
26	T	MARIE	05 OCT-12 OCT	8	115	936	29	24	2545
27	T	NANCY	16 OCT-21 OCT	6	105	945	22	19	1200
28	T	OLGA	22 OCT-29 OCT	8	105	939	31	24	2765
29	T	PAMELA	04 NOV-08 NOV	5	110	942	19	15	1575
30	T	RUBY	14 NOV-20 NOV	7	110	941	24	16	1555
31	T	SALLY	01 DEC-05 DEC	5	80	984	16	10	645
32	T	THERESE	01 DEC-10 DEC	10	105	944	36	20	1805
33	TS	VIOLET	11 DEC-19 DEC	9	55	995	30	--	960
		1972 TOTALS		139**			739	413	

*12/00Z - 14/06Z and 17/06Z - 18/00Z
**Overlapping days included only once in sum

DATA TAKEN FROM BEST TRACK


WESTERN NORTH PACIFIC
TYPHOONS OF 1972
KIT — 03 JAN - 13 JAN
LOLA — 28 MAY - 07 JUN
ORA — 20 JUN - 27 JUN
PHYLLIS — 05 JUL - 15 JUL
RITA — 06 JUL - 27 JUL
SUSAN — 05 JUL - 16 JUL
TESS — 06 JUL - 24 JUL
ALICE — 29 JUL - 09 AUG
BETTY — 08 AUG - 18 AUG
CORA — 22 AUG - 29 AUG
ELSIE — 30 AUG - 04 SEP
FLOSSIE — 06 SEP - 18 SEP
HELEN — 13 SEP - 20 SEP
IDA — 15 SEP - 27 SEP
LORNA — 26 SEP - 03 OCT
MARIE — 03 OCT - 12 OCT
NANCY — 15 OCT - 29 OCT
OLGA — 17 OCT - 30 OCT
PAMELA — 30 OCT - 08 NOV
RUBY — 11 NOV - 21 NOV
SALLY — 29 NOV - 08 DEC
THERESE — 01 DEC - 10 DEC
LEGEND
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
TROPICAL DISSIPATING
EXTRATROPICAL
SEOUL
TOKYO
SHANGHAI
NAHA
TAIPEI
HONG KONG
MANILA
SAIGON
RANGOON
PT. BLAIR
IWO JIMA
CHICHI JIMA
SAIPAN
GUAM
YAP
PALAU IS.
WOLEAI
TRUK
PONAPE
KUSAIE
ENIWETOK
KWAJALEIN
MAJURO
WAKE
TARAWA


WESTERN NORTH PACIFIC
TROPICAL STORMS AND
DEPRESSIONS OF 1972
NAME
DATES
TD 02
30MAR-04APR
TS MAMIE
31 MAY-04 JUN
TS NINA
31 MAY-05 JUN
TS VIOLA
22 JUL-26 JUL
TS WINNIE
29 JUL-02 AUG
TS DORIS
25 AUG-29 AUG
TS GRACE
10 SEP-20 SEP
TD 21
11 SEP-14 SEP
TS KATHY
29 SEP-07 OCT
TS VIOLET
12 DEC-19 DEC
LEGEND
XX POSITION AT XX/0000Z
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
TROPICAL DISSIPATING
DORIS
KATHY
VIOLA
NINA
WINNIE
GRACE
MAMIE
TD 02
TD 21
TOKYO
TO SEOUL
NAHA
TAIPEI
HONG KONG
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
YAP
ULITHI
WOLEAI
TRUK
PALAU IS
KUSAIE
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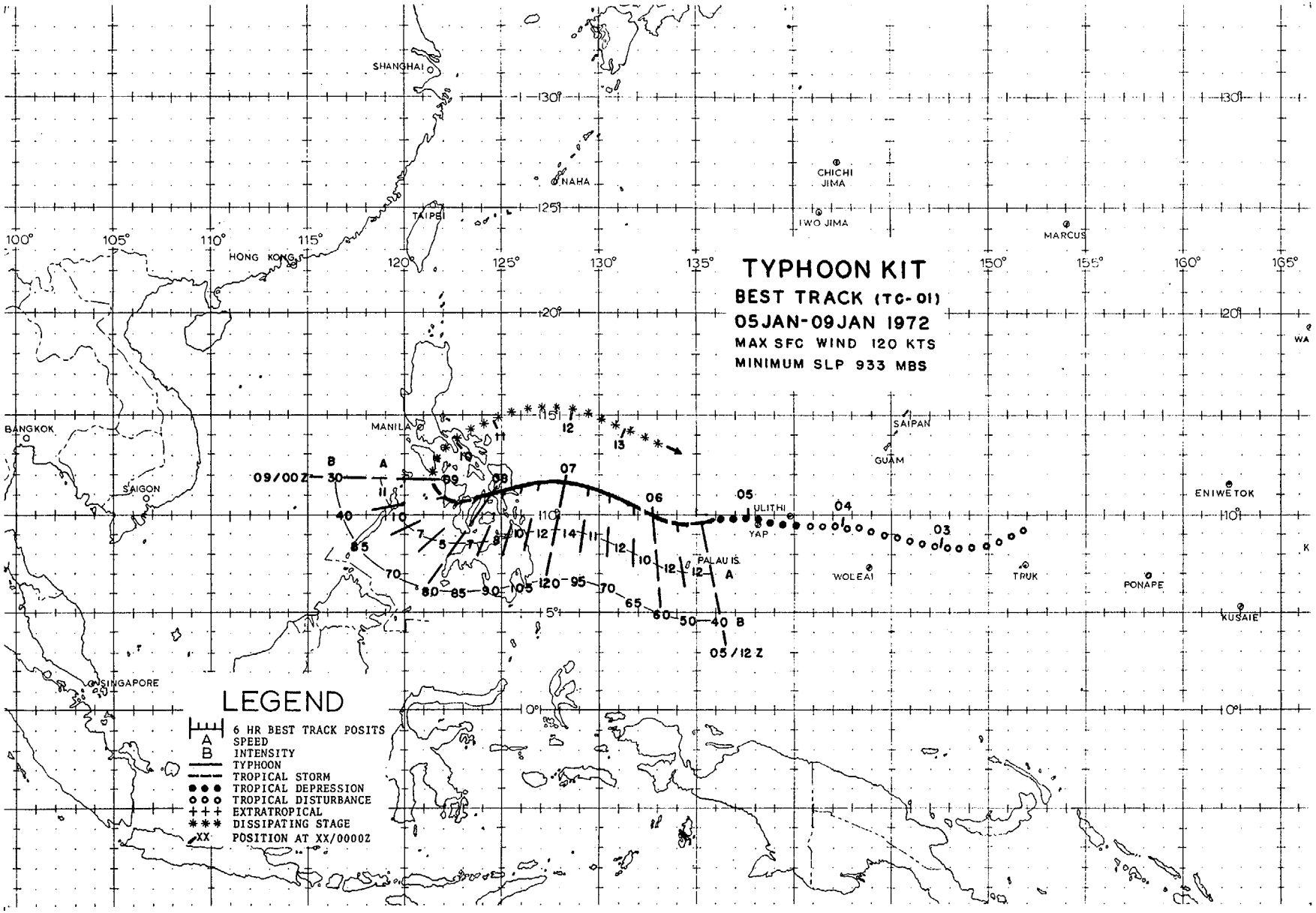
TARAWA
ENIWETOK
BANGKOK
SAIGON
PT. BLAIR
RANGOON
DACCA
SINGAPORE


TYPHOON KIT
BEST TRACK (TC-01)
05JAN-09JAN 1972
MAX SFC WIND 120 KTS
MINIMUM SLP 933 MBS
SHANGHAI
NAHA
TAIPEI
HONG KONG
CHICHI JIMA
IWO JIMA
MARCUS
BANGKOK
SAIGON
MANILA
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
PALAU IS.
TRUK
PONAPE
KUSAIE
ENIWETOK
SINGAPORE
09/00Z
05/12Z
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z

KIT

The season's first typhoon developed from a disturbance generated by an upper tropospheric low in the mid-Pacific trough in the eastern Carolines. The disturbance moved west-northwest for the next four days with a surface circulation becoming apparent on 4 January in the western Carolines. The depression passed just south of Yap and Ulithi on the evening of the 4th with Ulithi reporting 35-kt winds for a short period and surface pressure of 1001 mb.

On the 6th, reconnaissance aircraft located Tropical Storm Kit with 50-kt winds and a central pressure of 992 mb. For a 14-hour period, from the night of the 6th to mid-day on the 7th, Kit deepened 44 mb (3.1 mb/hr) to an unseasonably low 933 mb and winds of 120 kt (Figure 4-2).

January typhoons are unusual. Since 1945 only seven other tropical cyclones reached typhoon intensity, the latest being Phyllis in 1969.

As Kit moved toward the central Philippines, she turned to the west-southwest as heights began to build to the north over eastern China. Subsequent to moving over Leyte Gulf, Kit decelerated and weakened, crossing the mountainous terrain of the Visayan Island group on the 8th. Kit further weakened to tropical storm strength by the time she reached Panay Island on the morning of the 9th. As westerlies eroded the ridge over eastern China, Kit drifted north. During the next several days, Kit followed an unusual track, dissipating back over the Philippine Sea.

In her wake, Kit left a death toll at 204 persons and property damage of approximately 23 million dollars (U.S.). Torrential rains caused rampaging floodwaters which washed away bridges, devastated crops, and heavily damaged property. Newspapers indicate floodwaters of up to nine feet occurred in the towns of Abuyog and Baybay on Leyte.

Kit, being an unexpected event for January, played havoc with shipping. Early on the 7th a British vessel, HALCYON DAYS, passed through the eye, experiencing winds of force 11 and recording a minimum pressure of 964 mb. A tug, the USS SIOUX, pulling a large tow, was caught in the southern part of the eye that night. She encountered estimated winds in excess of 75 kt and recorded a minimum pressure of 952 mb.

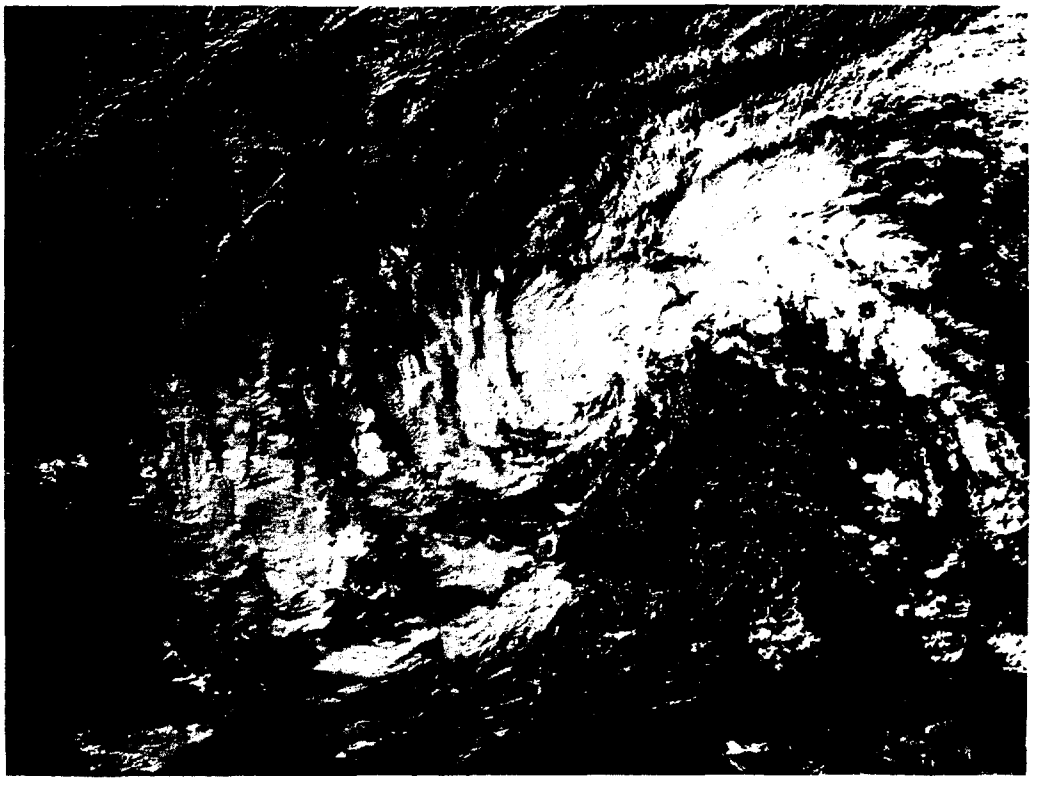
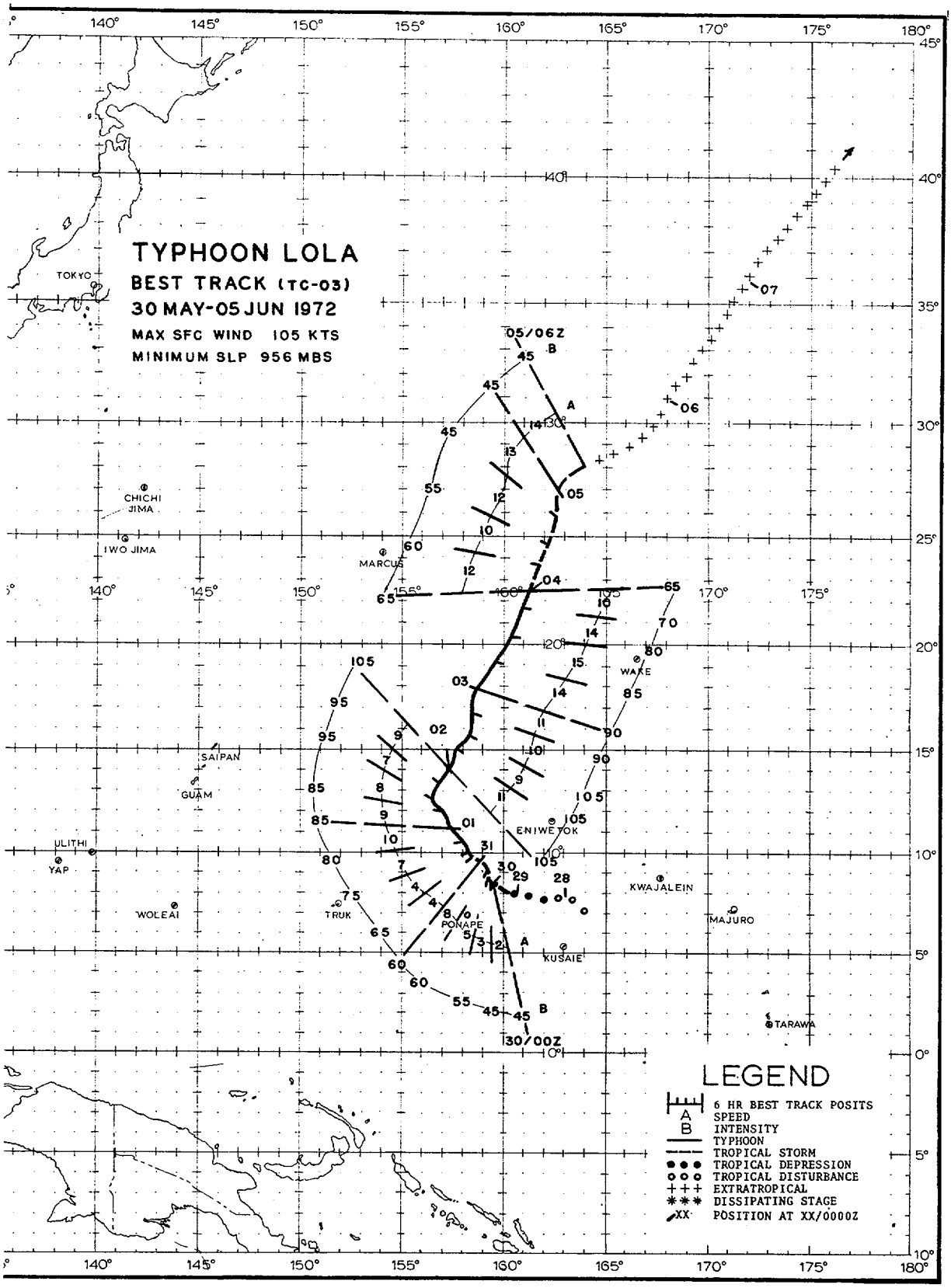


FIGURE 4-2. *Typhoon Kit near peak intensity 200 nm east of the Leyte Gulf, 6 January 1972, 2324 GMT (DAPP data).*


TYPHOON LOLA
BEST TRACK (TC-03)
30 MAY-05 JUN 1972
MAX SFC WIND 105 KTS
MINIMUM SLP 956 MBS
TOKYO
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
TRUK
PONAPE
ENIWETOK
KWAJALEIN
MAJURO
KUSAIE
TARAWA
05/06Z
30/00Z
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

Lola developed as part of a cyclone pair that formed on opposite sides of the equator near 165°E (Figure 4-3). The tendency for such development is greater during late fall and early spring when tropical cyclone activity is shifting into the oncoming summer hemisphere.

The beginning of Lola appeared in satellite pictures on the 28th. The system, destined to become Lola, drifted slowly westward through the eastern Carolines, attaining tropical storm intensity the next day, about 150 nm northeast of Ponape. Shifting to a more northerly track, Lola reached typhoon strength on the afternoon of the 31st.

During Lola's passage north of Ponape, the maximum sustained wind was 30 kt with gusts to 50 kt (30/1600 GMT). Lola's forward motion brought high winds and seas to Ponape and nearby atolls for a prolonged period, and extensive damage resulted. Two fishermen were reported missing and estimates of damage to public buildings and crops exceeded 18,000 dollars (U.S.). Wave action destroyed most of the water system creating a serious fresh water shortage. Reports from Pingelap and Mokil atolls stated that high seas had inundated inland areas destroying over 60 houses.

As Lola was developing to typhoon intensity (Figure 4-4), a block formed in the westerlies in the central North Pacific with ridging extending northeastward to the Aleutian chain. With this distortion of the subtropical ridge, a trough developed west-southwestward from a 500-mb low near Midway. By the evening of the 1st, Lola responded to this weakness and shifted to a north-northeast course at 10 kt.

Lola attained her peak intensity on the 2nd as reconnaissance aircraft reported a central pressure of 956 mb and maximum surface winds near 100 kt. The aircraft's radar detected little evidence of convective activity around the typhoon's circular, 40 nm eye. Reports from the aircraft's observer indicated that the wall cloud was comprised mainly of altostratus.

The USNS ASTERION, located 90 nm north-northwest of Lola's center (02/0000 GMT) observed 65-kt winds and a pressure of 987.8 mb.

Lola continued on a north-northeast heading for the next three days at an average speed of 14 kt, weakening to tropical storm force on the afternoon of the 4th. By the 5th Lola had swung to a more northeasterly heading and become extratropical.

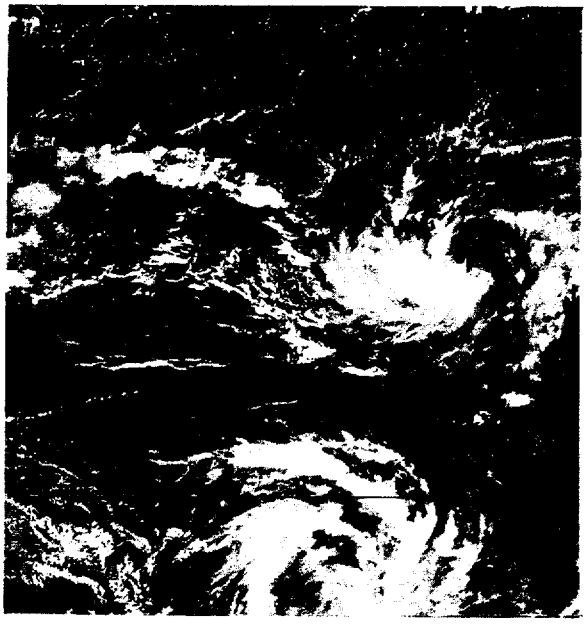
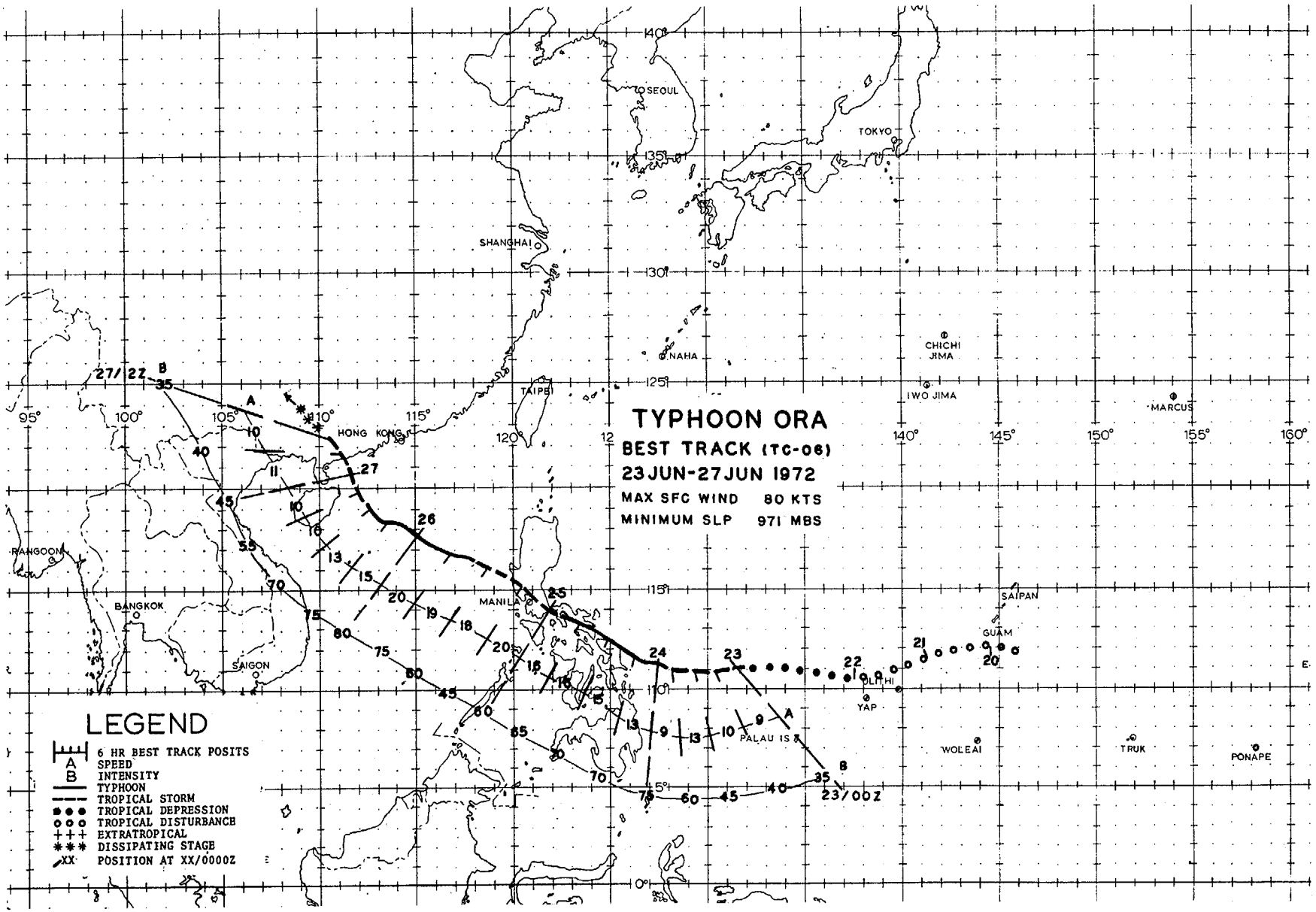


FIGURE 4-3. *The twin tropical storms of Lola (120 nm northeast of Ponape) and Ida (in the Solomon Island group), 30 May 1972, 0212 GMT (DAPP data).*

FIGURE 4-4. *Typhoon Lola 270 nm west of Eniwetok, 1 June 1972, 0143 GMT (DAPP data).*


TYPHOON ORA
BEST TRACK (TC-06)
23 JUN-27 JUN 1972
MAX SFC WIND 80 KTS
MINIMUM SLP 971 MBS
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SEOUL
TOKYO
SHANGHAI
NAHA
TAIPEI
HONG KONG
RANGOON
BANGKOK
SAIGON
MANILA
CHICHI JIMA
IWO JIMA
MARCUS
SAIPAN
GUAM
YAP
ULITHI
PALAU IS
WOLEAI
TRUK
PONAPE
27/12Z
23/00Z

The beginning stages of Ora can be traced to a closed cyclonic circulation in the equatorial trough south of Guam on 20 June. During the next four days, the system moved westward at 14-17 kt across the Philippine Sea with little development.

Reconnaissance aircraft, on the afternoon of the 23rd, observed a 40 nm calm area with a central pressure of 1006 mb, 330 nm east of Leyte Gulf. Ora was poorly organized at this time, having maximum winds of 35 kt in the northern periphery.

Ora slowed and intensified rapidly during the next 18 hours, reaching typhoon force before skirting the northern coast of Samar (Figure 4-5). She later moved ashore on the Bicol peninsula near Legaspi.

Prior to landfall, a mid-tropospheric high cell had begun to build south of the Ryukyu chain causing Ora to accelerate and veer to a more northerly track. She crossed southern Luzon at speeds of 16-20 kt on the 25th, emerging over the South China Sea that evening.

Legaspi City observed a minimum pressure of 970.7 mb in the eye of Ora and a gust of 110 kt from the south (24/1703 GMT) after passage of the center. A 24-hour total of 9.3 in. of rain was measured at Legaspi during Ora's transit. Eye passage was recorded near Clark Air Base that afternoon (25/0510 GMT). Maximum winds at Clark were estimated at 39 kt with a peak gust of 56 kt and minimum sea level pressure of 973.5 mb. As Ora passed north of Manila, the Weather Bureau Office in Quezon City measured gusts of 65 kt.

Manila was particularly hard hit by Ora as torrential rains caused waist-deep floodwaters in many parts of the city. Electrical power to most parts of the city

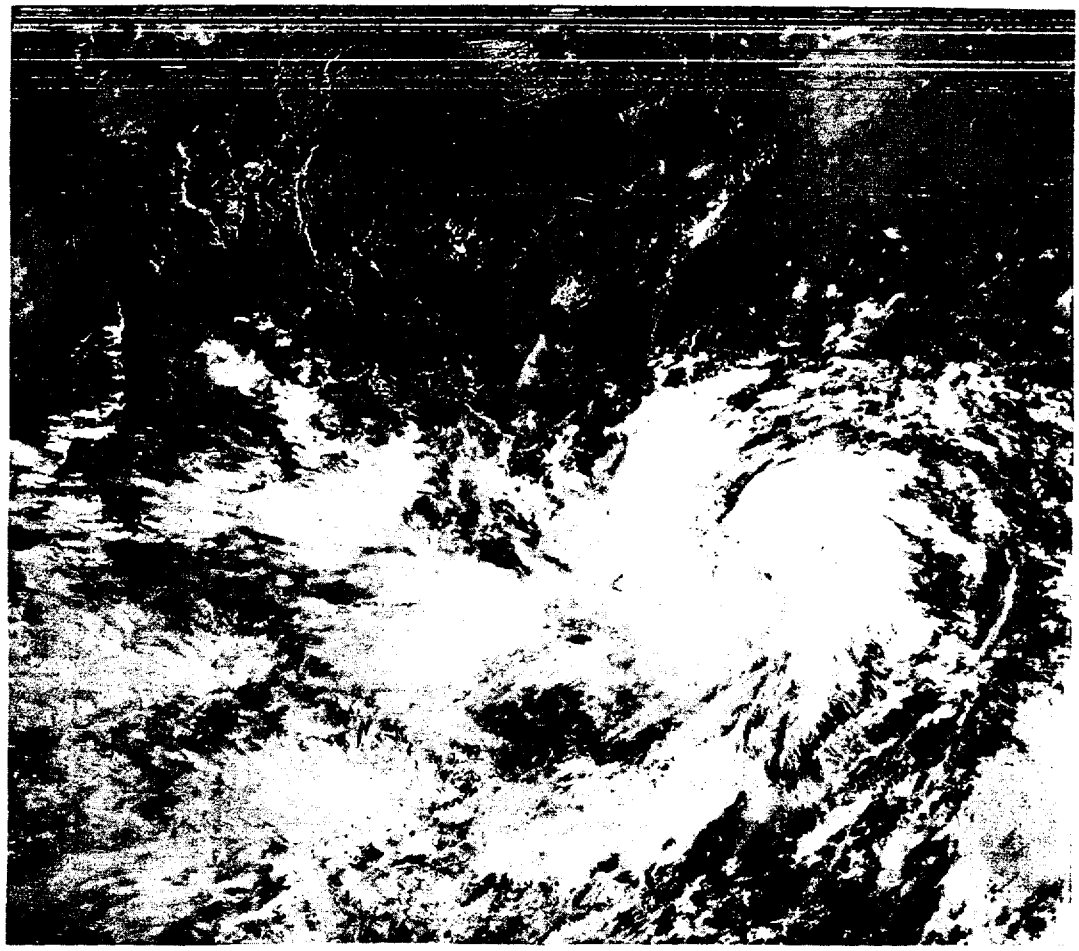


FIGURE 4-5. *Typhoon Ora 120 nm east of Samar Island, 23 June 1972, 2355 GMT (DAPP data).*

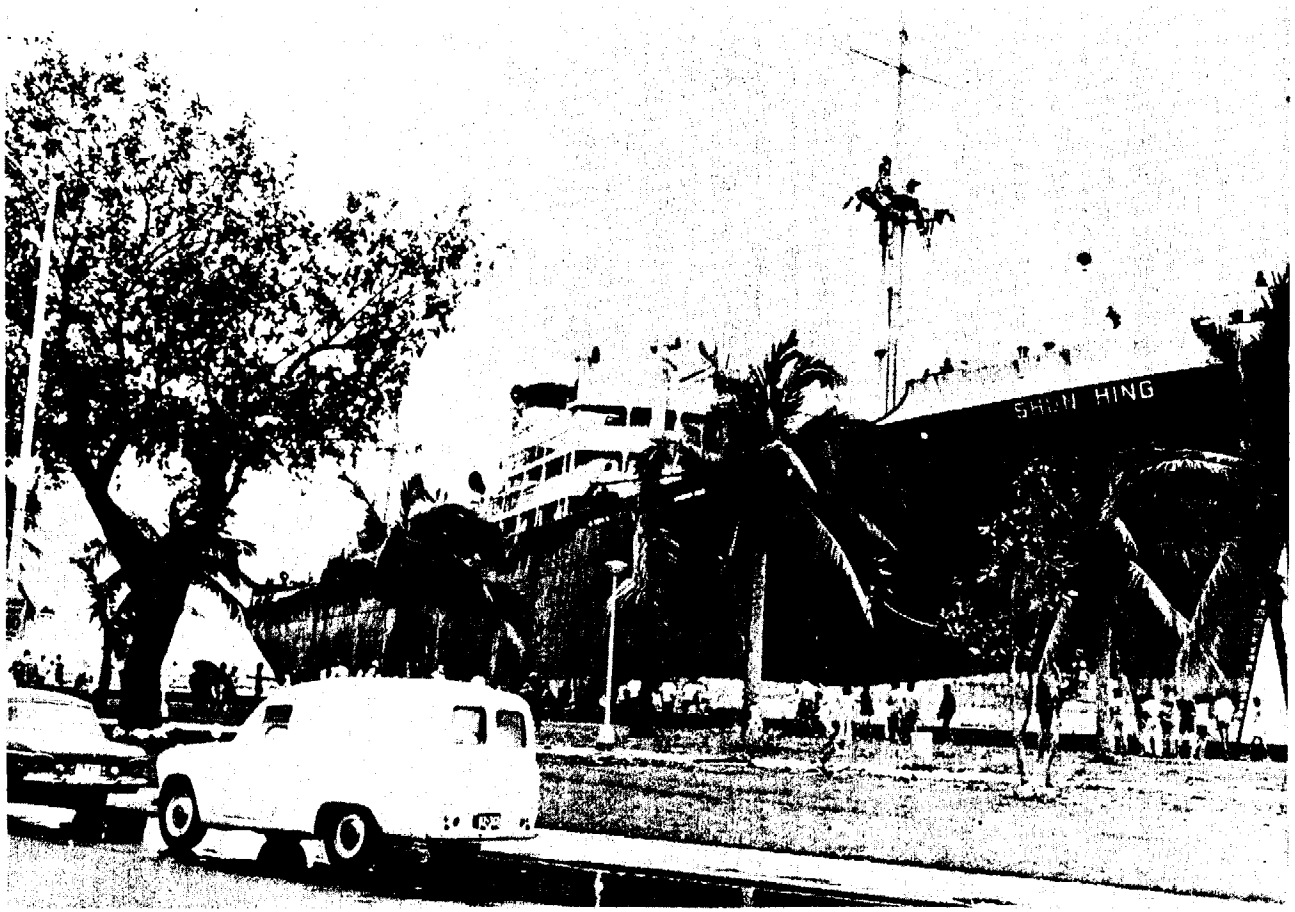


FIGURE 4-6. *Aftermath of Typhoon Ora--the Singapore ship SHUN HING run aground on Roxas Boulevard, Manila.--Courtesy of* Mariners Weather Log, *EDS, NOAA.*

was interrupted and water service was cut. Several ocean-going vessels anchored in Manila Bay were blown ashore along Roxas Boulevard. These vessels included the Singapore freighter SHUN HING, the Philippine flagship PHIL-ASIA ORANI, the ENCANTADA MANILA, and the PMI COLLEGE (Figure 4-6).

Ora left a death toll of 131 persons with an additional 385,000 people homeless. Property damage was estimated near 15 million dollars (U.S.). One maritime casualty, occurring outside the Manila area, was the capsizing of the MV VARTE, sailing from Legaspi City to Rapu-Rapu Island in the Bicol region. One passenger drowned, three were reported missing, and eight survived.

After leaving Luzon, Ora continued her northwest track at 20 kt while crossing the South China Sea. Climatologically, this is an unusually high speed for June. As Ora approached Hainan Island on the evening of the 26th, she began to slow and turn to a more northerly course.

The West German ship HAVELSTEIN BOELWERFT, located 55 miles south-southeast of the center, experienced 65-kt winds and a minimum sea level pressure of 995.8 mb (26/1200 GMT). Early on the 27th, Ora weakened to tropical storm force, and that afternoon, crossed the South China coast east of the Luichow peninsula. Ora degenerated rapidly into an area of low pressure as she moved inland.

During Ora's transit of the South China Sea, reconnaissance aircraft reported sustained winds of typhoon force in the southeast quadrant, although no wall cloud was present (Figure 4-7). This unusual feature has been noted in other years. Probably the best documentation was provided by Fett[3] (1968) concerning observations in Typhoon Billie in 1967.

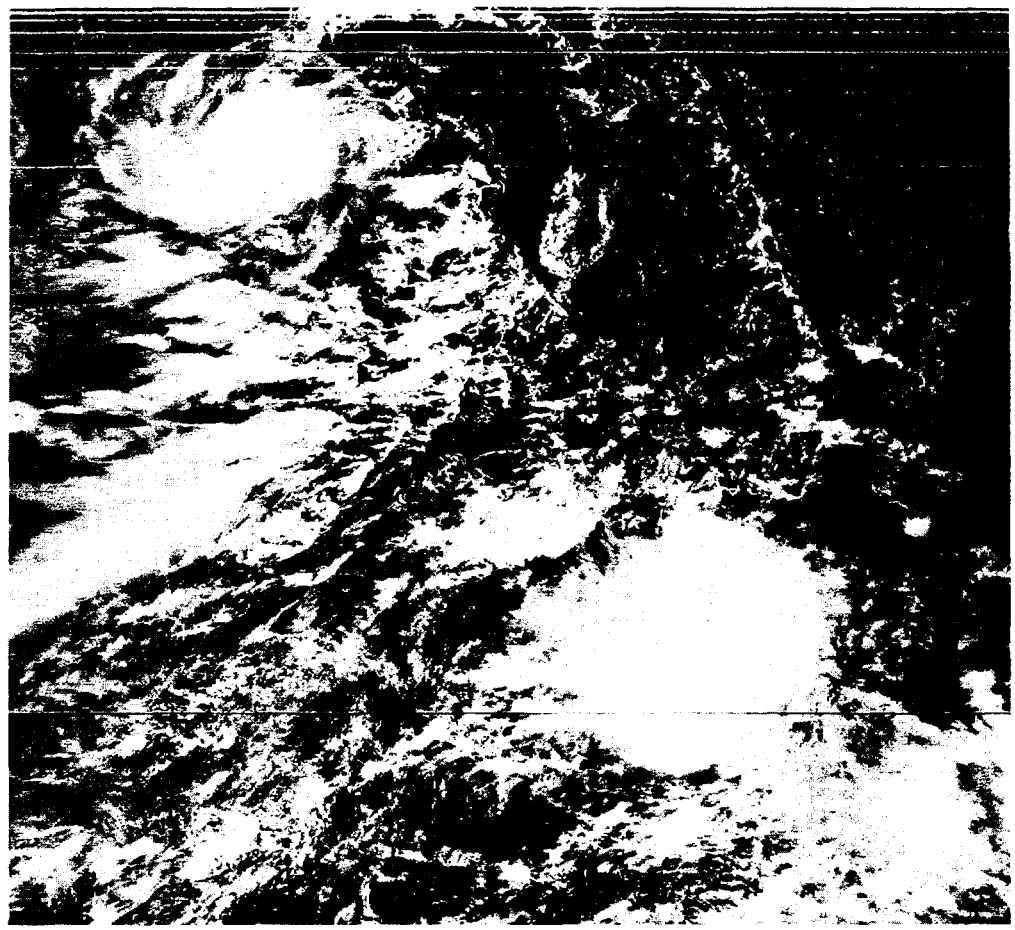
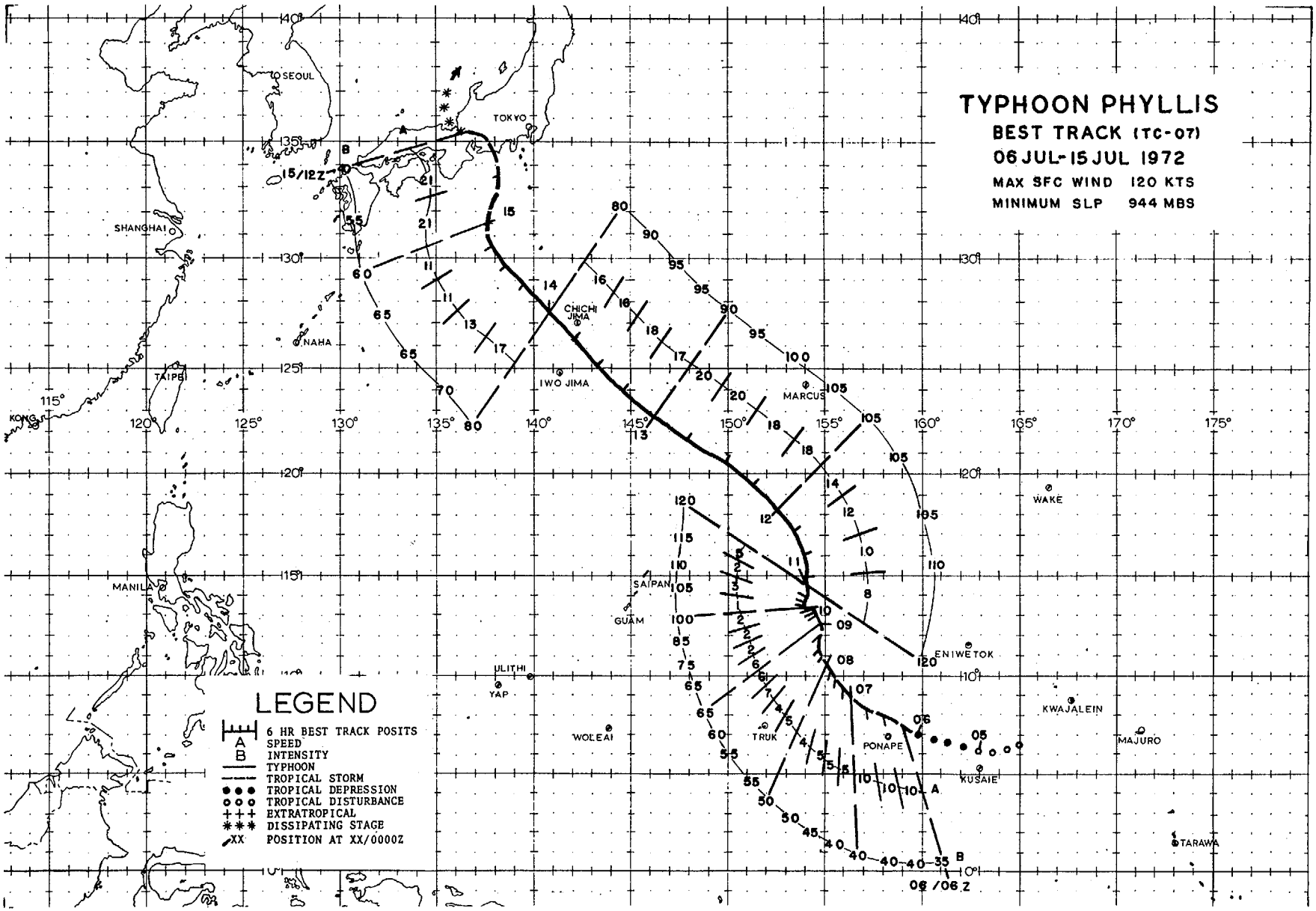


FIGURE 4-7. *Typhoon Ora in the northern South China Sea 330 nm west-northwest of Luzon. Surface center is delineated by low-level cloudiness on eastern edge of cirrus canopy, 26 June 1972, 0410 GMT (DAPP data).*

[3]Fett, R. F., "Some Unusual Aspects Concerning the Development and Structure of Typhoon Billie," Monthly Weather Review, Vol. 96, No. 9, September 1968, pp 637-648.


TYPHOON PHYLLIS
BEST TRACK (TC-07)
06 JUL-15 JUL 1972
MAX SFC WIND 120 KTS
MINIMUM SLP 944 MBS
SEOUL
TOKYO
SHANGHAI
NAHA
CHICHI JIMA
IWO JIMA
MARCUS
TAIPEI
KONG
MANILA
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
TRUK
PONAPE
KUSAIE
ENIWETOK
WAKE
KWAJALEIN
MAJURO
TARAWA
15/12Z
06/06Z
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

With her genesis in the eastern Carolines (Figure 4-8), Phyllis passed 30 nm northeast of Ponape on a northwesterly heading, strengthening to tropical storm force on 6 July. During the next 72 hours, Phyllis slowly intensified, reaching typhoon force on the 9th. She then stalled and drifted northward, 500 miles east of the Marianas (Figure 4-9), as the subtropical ridge receded to the north producing a weak steering current.

By the 11th the subtropical ridge began to rebuild, causing Phyllis to accelerate and shift to a northwesterly track. Reconnaissance aircraft reported a central pressure of 944 mb and 110-kt surface winds on the afternoon of the 11th as Phyllis reached her maximum intensity.

Located in the convergent flow between a strengthening ridge to the northeast and the circulation of Typhoon Rita to the west, Phyllis accelerated to 20 kt. She passed 40 nm southeast of Chichi Jima on the morning of the 14th with a recorded minimum sea level pressure of 994.7 mb (14/2100 GMT).

As Phyllis approached Japan, a midtropospheric low developed in a stationary trough over the Sea of Japan. Phyllis assumed a more northerly track when she was approximately 300 nm south of Tokyo late on the 14th. She struck the coastline just east of Ise Bay. A minimum pressure of 985.5 mb was recorded at Irako (15/1010 GMT). Maximum sustained winds reported during landfall were 57 kt with gusts to 71 kt at Irozaki. Phyllis then weakened and accelerated toward central Honshu where she merged with a low-pressure system, becoming extratropical late on the 15th.

Inland, Phyllis caused heavy rains in the Kanto, Chubu, and Kinki regions resulting in flooded streams and over 300 landslides. Rainfall of 14.9 in. was recorded at Oshima in the mountainous terrain of the Chubu region. Three deaths were attributed to Phyllis and over 6,600 homes and 1,600 hectares of land were flooded.

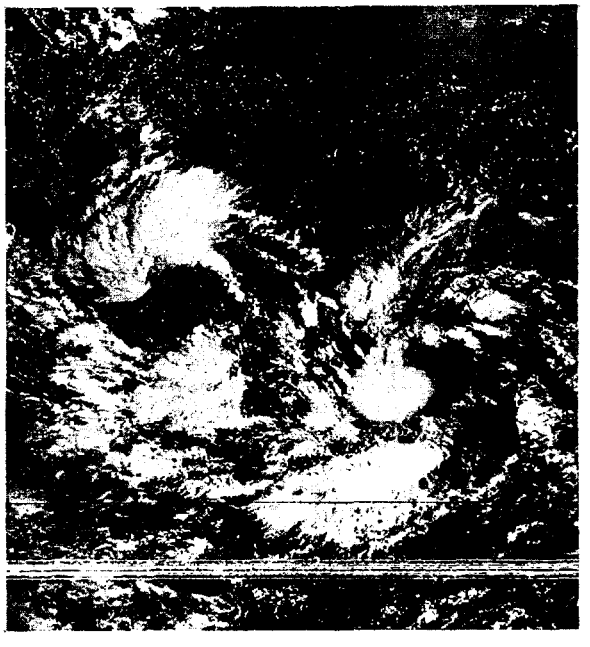
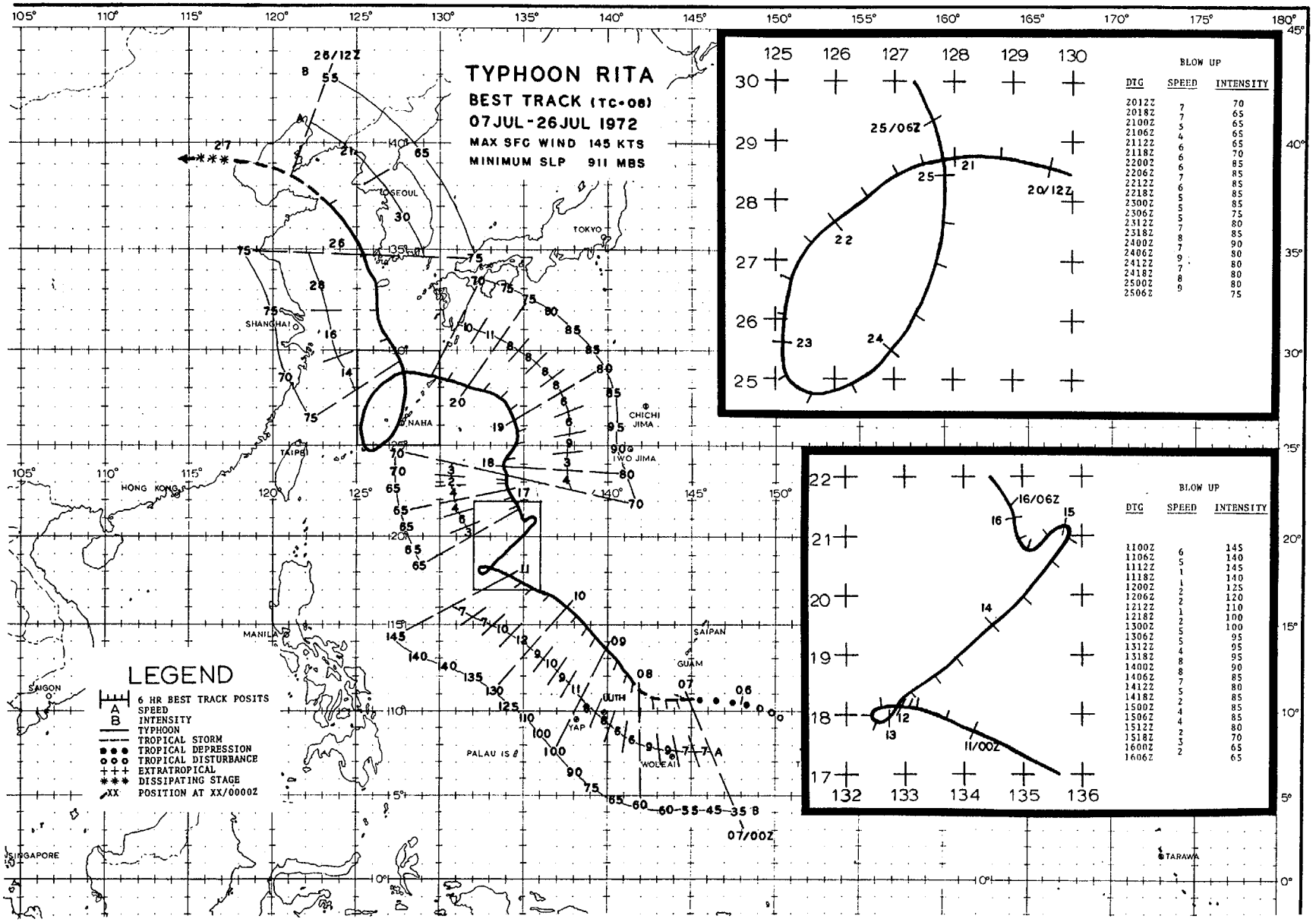


FIGURE 4-8. *Formative stages of Rita (left) south of the Marianas and Phyllis (right) in the eastern Carolines, 5 July 1972, 2149 GMT (DAPP data).*

FIGURE 4-9. *Typhoon Phyllis (right) quasi-stationary east of the Marianas and Super Typhoon Rita (left) in the Philippine Sea, 10 July 1972, 0229 GMT (DAPP data).*


TYPHOON RITA
BEST TRACK (TC-08)
07JUL-26JUL 1972
MAX SFC WIND 145 KTS
MINIMUM SLP 911 MBS
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z
BLOW UP
DTG SPEED INTENSITY
20122 7 70
20182 7 65
21002 5 65
21062 4 65
21122 6 65
21182 6 70
22002 6 85
22062 6 85
22122 7 85
22182 6 85
23002 5 85
23062 5 75
23122 7 80
23182 8 85
24002 7 90
24062 9 80
24122 7 80
24182 8 80
25002 9 80
25062 75
BLOW UP
DTG SPEED INTENSITY
11002 6 145
11062 5 140
11122 5 145
11182 1 140
12002 1 125
12062 2 120
12122 2 110
12182 2 100
13002 5 100
13062 5 95
13122 4 95
13182 8 95
14002 8 90
14062 7 85
14122 5 80
14182 2 85
15002 4 85
15062 4 85
15122 4 80
15182 2 70
16002 3 65
16062 2 65
TOKYO
SEOUL
SHANGHAI
NAHA
TAIPEI
HONG KONG
CHICHI JIMA
IWO JIMA
MANILA
SAIPAN
GUAM
YAP
PALAU IS
WOLEAI
SAIGON
SINGAPORE
TARAWA

Rita had her genesis southeast of Guam in an equatorial trough that spawned a simultaneous set of four tropical cyclones. Before Rita dissipated, she brought her influence to bear on almost every country of the Far East, with the exception of Indo-China. She persisted for 22 days, marking a record for tropical cyclone longevity in the western North Pacific. Typhoon Rita surpassed the previous record holder, Typhoon Opal (1967), for total warnings issued. In all, 79 warnings were issued on Rita.

Tracking south of Guam on 6-7 July, Rita attained typhoon strength about 120 nm northeast of Ulithi Atoll on the afternoon of the 8th. Earlier that day, an Air Force B-52 crashed into the ocean southwest of Guam, less than 150 nm in advance of Rita. Of the six-man crew, five were rescued from the typhoon's heavy seas.

During the 24-hour period (08/1000 GMT-09/1000 GMT), Rita's winds steadily strengthened and her central pressure plummeted 35 mb. Advancing northwestward on the morning of the 10th, Rita reached super typhoon force (Figure 4-10). By the 11th her central pressure had deepened to 911 mb and the maximum winds concentrated around her circular, 20-nm-diameter eye reached 145 kt.

Rita slowed and weakened as Phyllis began to accelerate northwestward. From 12-16 July Rita described an erratic track, marked with two stalls, as Phyllis swung around her circulation and struck Japan.

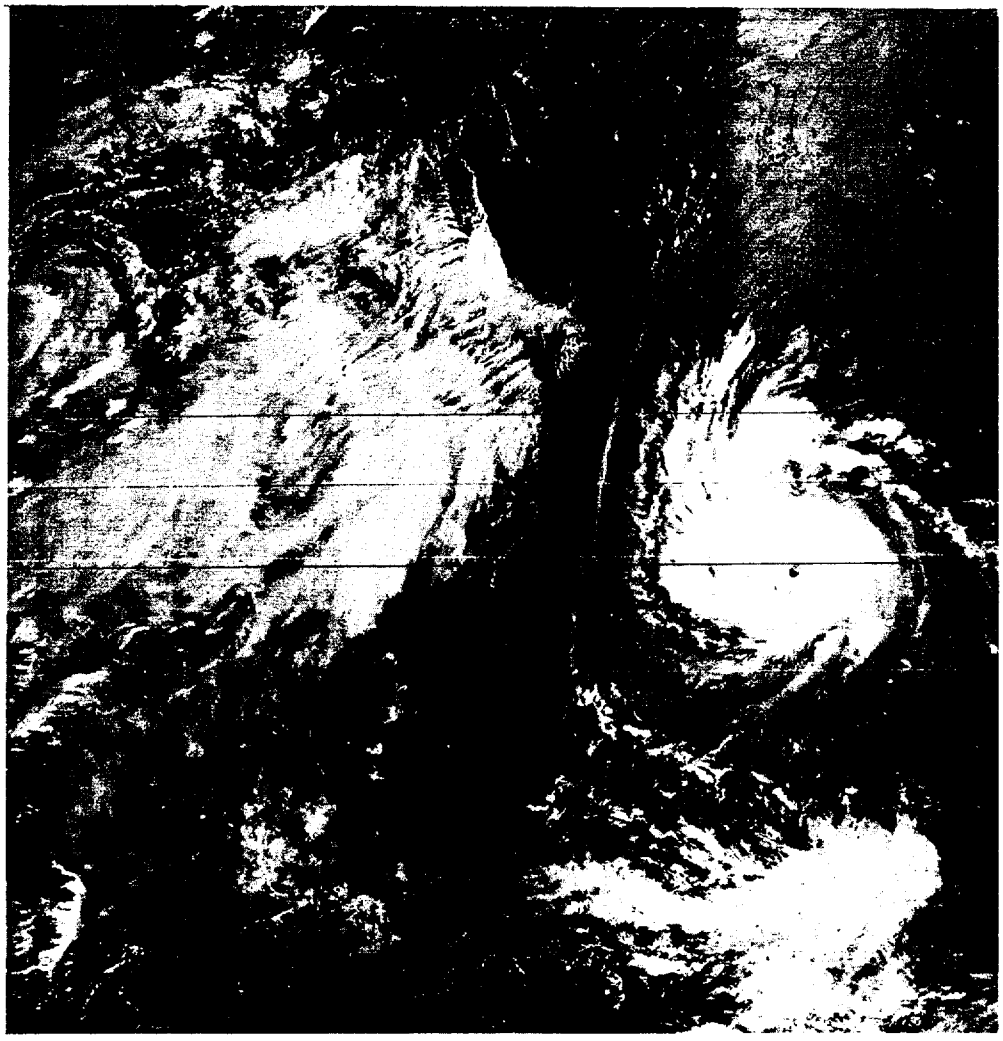


FIGURE 4-10. *Super Typhoon Rita 450 nm west of the Marianas. Cloudiness from the southeastern periphery of Tropical Storm Susan covers the northern Philippines. The vortex center of Susan, located 150 nm southeast of Hong Kong, appears on the edge of photo, 9 July 1972, 2322 GMT. (DAPP data)*

During this period Rita's circulation expanded to cover a large portion of the Philippine Sea (Figure 4-11). By the 18th gale-force winds stretched out approximately 350 nm, except in the western quadrant. The location of Rita and Tropical Storm Susan's presence in the northern South China Sea, combined to intensify the southwest monsoon flow over Luzon. This resulted in a prolonged period of torrential rains and the most disasterous flooding in the history of the area. In just one 24-hour period on 17 July, Baguio City recorded 18.86 in. of rain. Damages ran over 150 million dollars (U.S.) and flooding left an estimated death toll of 214 persons in its aftermath.

Rita began to slowly track northward late on the 16th. In response to a building high cell over the Sea of Japan, Rita made a bend to the west, skirting just north of Amami-o-Shima in the Ryukyu's on the evening of the 20th. The lowest minimum pressure recorded there was 968.9 mb (20/1100 GMT). Gaja Shima, 80 nm north of

FIGURE 4-11. *Typhoon Rita (left) centered 400 nm southwest of Iwo Jima dominates the Philippine Sea. Typhoon Tess (right) 400 nm south of Marcus Island is at peak intensity (125 kt). The remains of Phyllis are located over western Honshu, 15 July 1972, 2219 GMT. (DAPP data)*

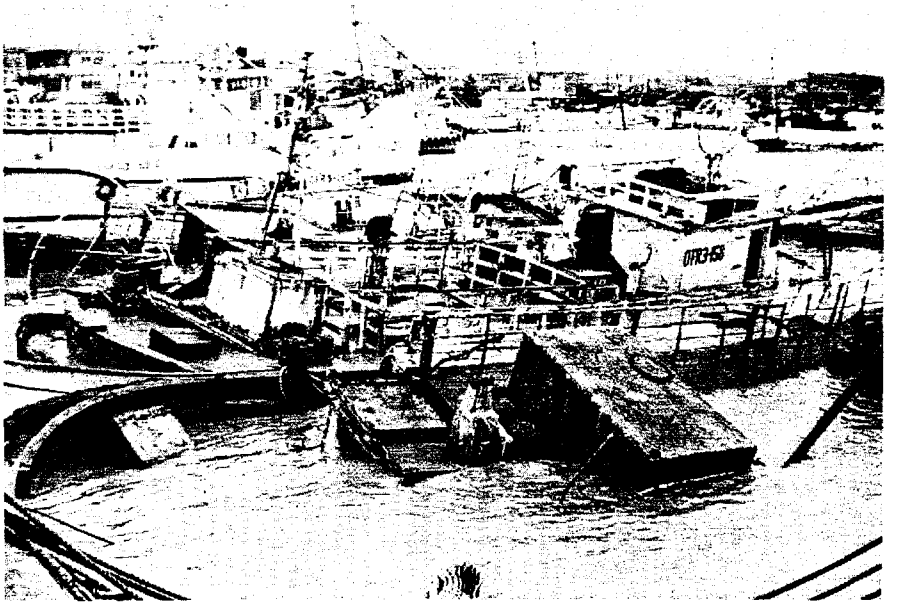


FIGURE 4-12. *Tuna boats lie swamped in Naha Port, victims of Typhoon Rita's torrential rains.--Courtesy of the Okinawa Morning Star.*

the center, reported sustained winds of 65 kt.

During her passage south of Kyushu, more than 23 in. of rain was recorded in two days on Mt. Yabitsu, Kyushu, and 9.68 in. in 24 hours on Kumamoto Prefecture.

As Rita entered the East China Sea, the prevailing mid-tropospheric flow weakened due to the presence of a low situated in central Manchuria. Rita was thus located in a col region and her forward progress slowed on the afternoon of the 21st. Typhoon Tess at that time had just passed north of the Bonin Islands and was located some 800 nm east of Rita. A Fujiwhara interaction took place, forcing Rita southwestward, describing a loop in the vicinity of the Ryukyu chain for the next three and a half days. During this loop, Rita's center passed just north of Miyako Jima and brushed the western coast of Okinawa.

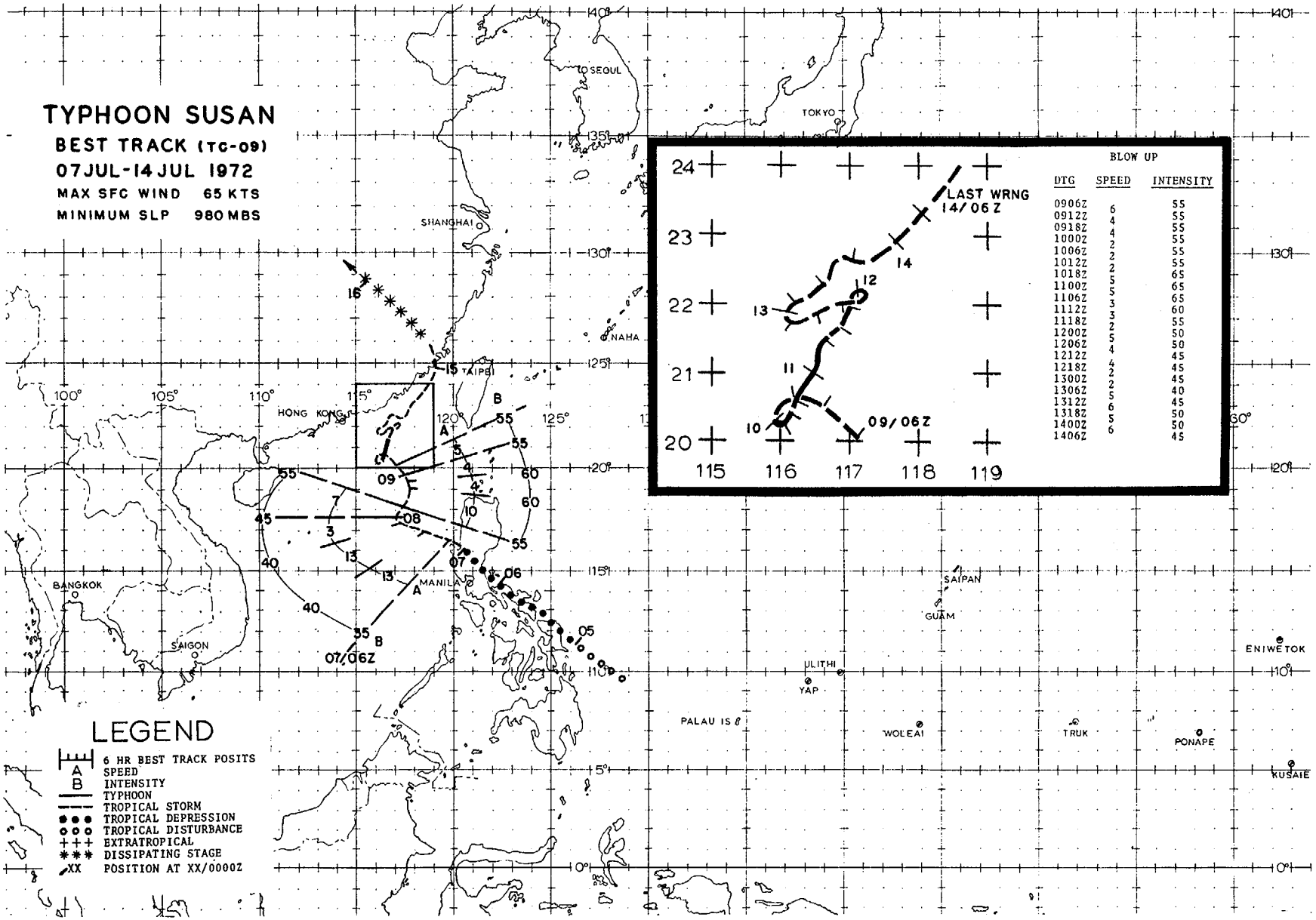
The lowest pressure registered in the islands during Rita's loop was at the Futema MCAS on Okinawa with 955.6 mb (24/0730 GMT). A maximum sustained wind of 72 kt was recorded at Okinoerabu Shima and gusts to 96 kt at Kume Shima.

Heavy rains of up to 9.6 in. in some mountain stations fell on Taiwan. Several villages were flooded, rendering over 700 persons homeless, while a train between Kaohsiung and Fangliao was derailed due to floods. Reports indicated three persons dead or missing.

Heaviest rains in the Ryukyu's occurred at Okinoerabu Shima, which recorded 31.87 in. in the five-day period it was under Rita's influence. Damage on Okinawa was primarily to farm crops. Sugar cane and pineapple crops averaged 30-35% destroyed, while the vegetable crops were also hard hit. In addition, many small boats were sunk (Figure 4-12) and several highways blocked by landslides. A total of three persons were reported killed in the Ryukyu's.

Completing the loop, Rita moved northward on the 25th. She began to accelerate as she entered a confluent zone, created by a trough over Manchuria and a building ridge over the Sea of Japan. Rita passed just west of Cheju Do on the morning of the 26th and then brushed southwestern Korea. Minimum pressure of 975.5 mb was recorded there (25/2100 GMT) with maximum sustained winds of 50 kt. Eight persons were reported killed in the southwestern tip of Korea and more than 200 buildings and 50 small boats were destroyed.

Rita accelerated to 30 kt in the Yellow Sea. She then took a more westward track, passing just south of Port Arthur on the evening of the 26th, weakening to a tropical storm. Entering the Gulf of Chihli, Rita moved ashore near Tientsin, China, and dissipated rapidly inland south of Peking on the 27th.


TYPHOON SUSAN
BEST TRACK (TC-09)
07JUL-14JUL 1972
MAX SFC WIND 65 KTS
MINIMUM SLP 980 MBS
SEOUL
TOKYO
SHANGHAI
NAHA
TAIPEI
HONG KONG
BANGKOK
SAIGON
MANILA
SAIPAN
GUAM
ENIWETOK
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE
KUSAIE
07/06Z
09/06Z
LAST WRNG
14/06Z
BLOW UP
DTG SPEED INTENSITY
0906Z 55
0912Z 6 55
0918Z 4 55
1000Z 4 55
1006Z 2 55
1012Z 2 55
1018Z 2 65
1100Z 5 65
1106Z 5 65
1112Z 3 60
1118Z 3 55
1200Z 2 50
1206Z 5 50
1212Z 4 45
1218Z 4 45
1300Z 2 45
1306Z 2 40
1312Z 5 45
1318Z 6 50
1400Z 5 50
1406Z 6 45
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

Susan led the procession of developing tropical cyclones in the equatorial trough during early July. She was detected in the synoptic data on 4 July east of southern Leyte. As a weak depression, she crossed the Philippine archipelago on a northwest track. Susan emerged west of Luzon on the afternoon of the 7th in the region of the Lingayen Gulf.

Susan intensified into a tropical storm as she moved over the South China Sea. She slowed on the 8th and began to move northward as a weak trough extended southwestward from the Sea of Japan, influencing her motion.

By the 9th, the trough filled partially and a col region formed in the general flow off the southeastern coast of China. Due to the weak steering currents, Susan moved erratically for the next four days. During this time the British ship MEMNON passed some 60 nm south of the center (10/0000 GMT) reporting 55-kt winds and 16-foot seas.

With Susan stalled in the South China Sea and Rita meandering in the central Philippine Sea, the circulations of these tropical cyclones intensified the southwest monsoon over the northern Philippines. High seas were built up over the South China Sea by the persistent, strong southwesterly flow. Inundation from high tides and large waves occurred along the western coast of Luzon. In Manila some sections of the sea wall were ripped away by wave action.

Heavy rains brought disasterous floods in many provinces of central Luzon during the several weeks that this strong flow persisted. As Rita was largely responsible for these prolonged conditions, the damage and death toll of the floods are listed in the discussion of that typhoon.

Reconnaissance aircraft revealed that Susan attained typhoon intensity for an 18-hour period on the 11th. Minimum central pressure during this time was 983 (Figure 4-13). Like Ora, Susan generated typhoon winds during a period in which she lacked a wall cloud. Satellite data at this time depicted the surface center delineated by low clouds as the cirrus overcast was sheared off to the southwest.

During the 14th, Susan began to move northward through the Taiwan Straits. She crossed the east coast of China near Hui An on the morning of the 15th and rapidly degenerated into an area of low pressure near Fooshow by evening.

The maximum rainfall recorded on Taiwan during Susan's meandering path in the South China Sea was 10.4 in. Four people were reported killed on the island due to direct or indirect causes of torrential rains. Also during this period, maximum winds of 39 kt occurred at the Hong Kong airport and 37 kt at the Royal Observatory. Since records began at the Royal Observatory, no other tropical cyclone remained within 200 miles of Hong Kong for such a long duration as Susan.

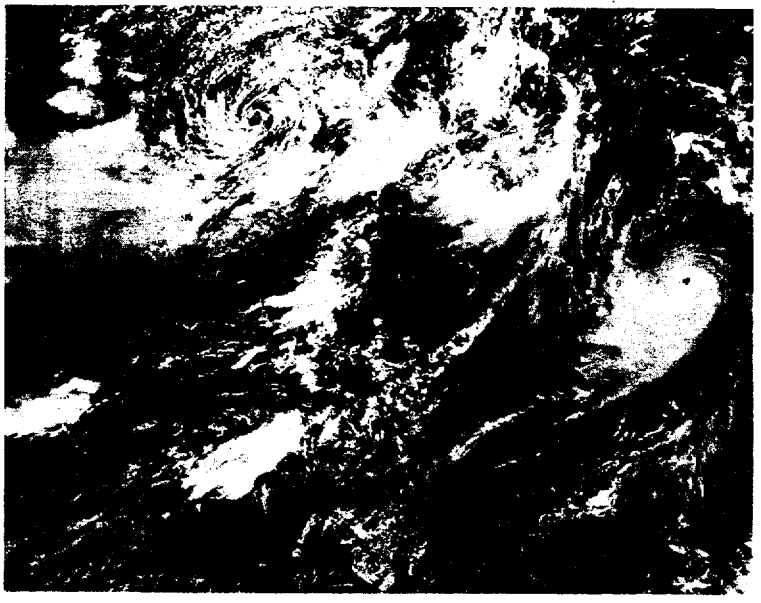
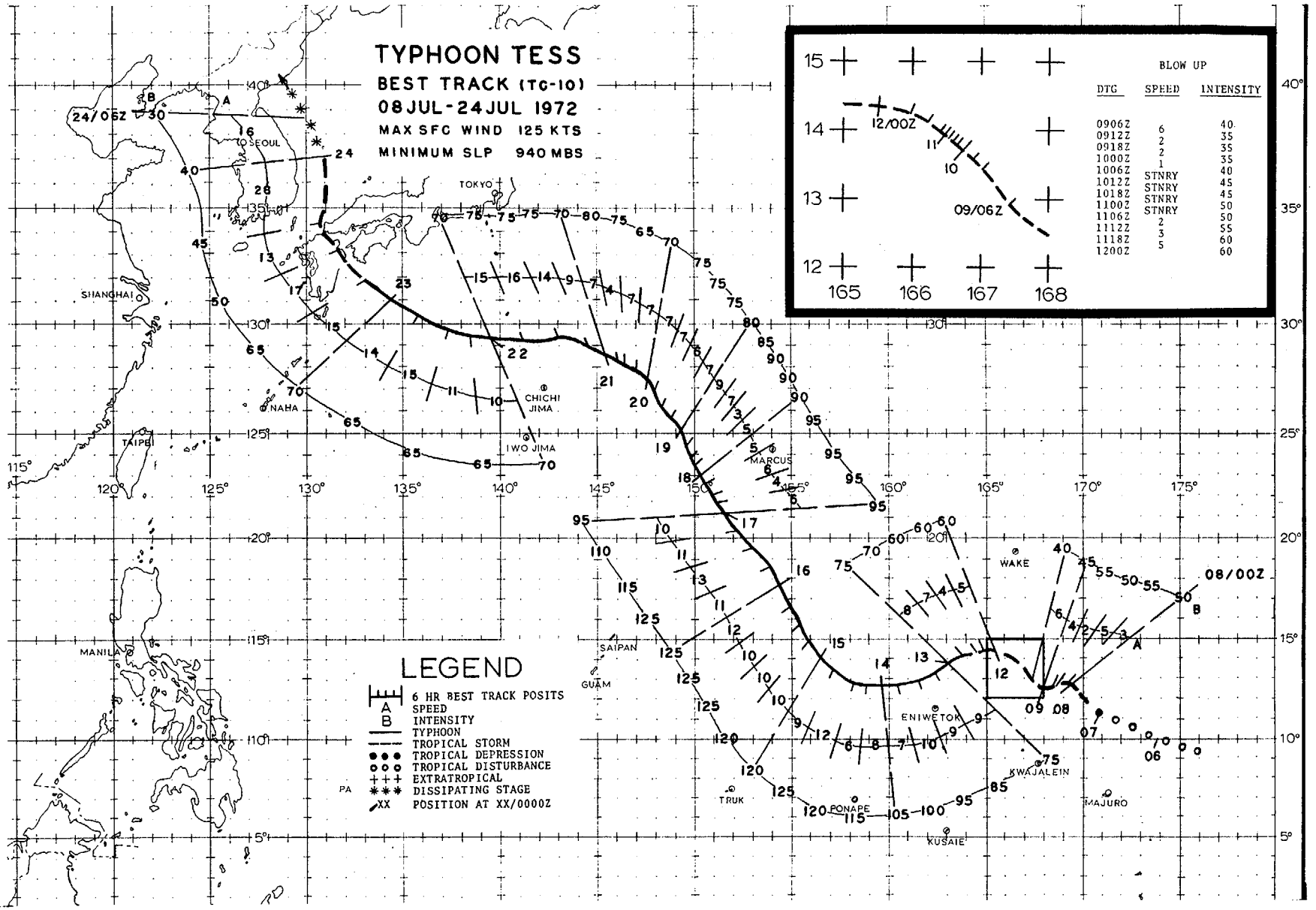


FIGURE 4-13. *Low level cloudiness spirals around the center of Susan (of minimal typhoon strength) located 150 nm southeast of Hong Kong. Typhoon Rita, in the central Philippine Sea, appears on the right edge of the photo, 11 July 1972, 0357 GMT. (DAPP data)*


TYPHOON TESS
BEST TRACK (TC-10)
08 JUL - 24 JUL 1972
MAX SFC WIND 125 KTS
MINIMUM SLP 940 MBS
BLOW UP
DTG SPEED INTENSITY
0906Z 6 40
0912Z 2 35
0918Z 2 35
1000Z 1 35
1006Z STNRY 40
1012Z STNRY 45
1018Z STNRY 45
1100Z STNRY 50
1106Z 50
1112Z 2 55
1118Z 3 60
1200Z 5 60
12/00Z
09/06Z
08/00Z
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SEOUL
TOKYO
SHANGHAI
NAHA
TAIPEI
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
MANILA
ENIWETOK
KWAJALEIN
MAJURO
TRUK
PONAPE
KUSAIE

Tess was first observed in satellite pictures on 6 July, west of the international dateline near 9°N. She was positioned at the end of a chain of developing tropical cyclones stretching to the Philippines. She was tracked by satellite for the next six days while passing north of the Marshall Islands. Intensity estimates based on satellite imagery indicated Tess probably reached tropical storm force on the 7th. Late on the 12th, reconnaissance aircraft indicated Tess had reached typhoon intensity.

Due to a building high cell north of Wake Island, Tess began to move southwest on the 13th. Steadily gaining strength (Figure 4-14), Tess described a gradual bend back to the northwest late on the 14th as she rounded the southern extension of the ridge. Her central pressure reached a minimum on the afternoon of the 15th as dropsonde measurements recorded 940 mb. Tess achieved her maximum intensity at this time with winds of 125 kt occurring near her center.

Continuing on a northwesterly course for the next five days, Tess gradually lessened in intensity as she paralleled the southwest side of a high cell 500 nm northeast of Minami Tori Shima (Marcus Island).

By the 20th, the influence of a high cell over northern Honshu caused Tess to shift to a westerly course. Now a minimal typhoon, Tess began to increase in forward speed on the 21st as she approached the Nampō Shoto, south of Japan. With the slowdown of Rita in the East China Sea, the circulation of Tess began to interact with that of Rita, about 800 nm distant (Figure 4-15).

As a Fujiwhara effect began to take place, the path of Tess was dictated by both Rita's circulation and a high cell over Honshu. These two factors caused a 14-15 kt movement and landfall on northeastern Kyushu the evening of the 23rd. Emerging into the Sea of Japan as a tropical storm, Tess moved rapidly northward and weakened to a tropical depression. She finally merged with a front south of Vladivostok late on the 24th.

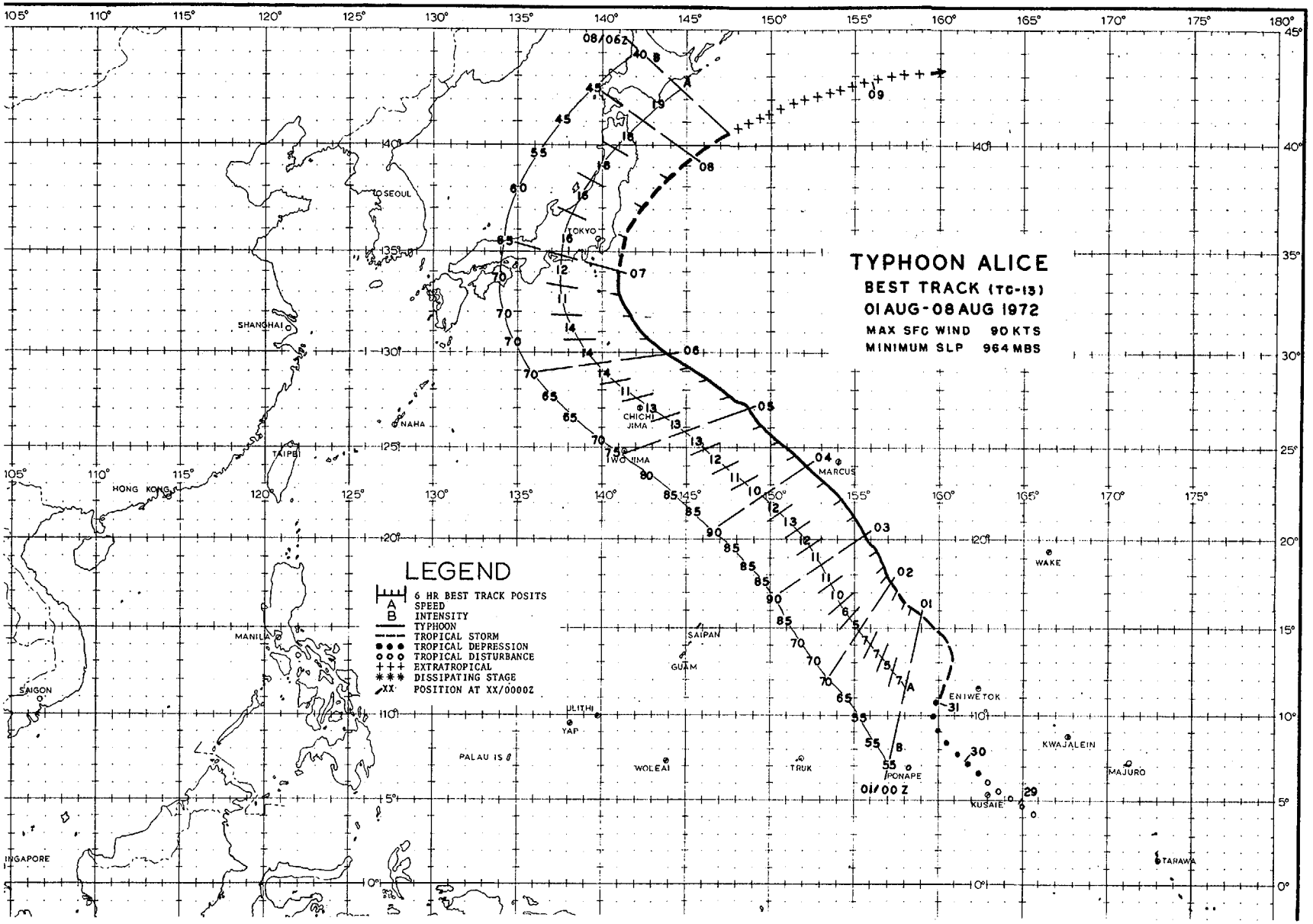
Torrential rains from Tess occurred over much of Shikoku (18.94 in. at Tsurugisan Weather Station) and the Kanto, Chubu and Kinki regions of Honshu. Resultant flooding caused inundation of over 3,500 homes and over 1,600 hectares of land. Newspaper reports indicated 29 persons killed and 20 missing in the aftermath of Tess. The majority of these were swimmers lost in the 6- to 12-foot surf which battered the central Japanese coastline prior to Tess's arrival.

The center passed over Oita, Kyushu, which registered the minimum pressure in the region of 979.4 mb. Maximum sustained winds of 72 kt and peak gust of 96 kt were recorded on Shikoku at Murotomisaki and Sukumo, respectively.

Although not a record breaker, Tess paralleled Rita in terms of longevity as she narrowly missed matching Typhoon Opal's (1967) performance. A total of 66 warnings was issued on Tess, three less than during Opal's lifetime.

FIGURE 4-14. *Typhoon Tess 90 nm north of Eniwetok, 13 July 1972, 2133 GMT. (DAPP data)*

FIGURE 4-15. *Typhoon Tess (right) 400 nm south of Tokyo is centered some 700 nm east of Typhoon Rita (left) in the East China Sea, 22 July 1972, 0259 GMT. (DAPP data)*


TYPHOON ALICE
BEST TRACK (TC-13)
01 AUG - 08 AUG 1972
MAX SFC WIND 90 KTS
MINIMUM SLP 964 MBS
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z
08/06Z
01/00Z
SEOUL
TOKYO
SHANGHAI
NAHA
TAIPEI
HONG KONG
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
MANILA
SAIGON
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE
ENIWETOK
KWAJALEIN
MAJURO
KUSAIE
TARAWA
SINGAPORE

Except for a brush with Honshu of the Japanese Islands, Alice spent her 12-day existence at sea. Forming in the equatorial trough, Alice was initially detected by satellite on 29 July.

Moving northward as a depression, Alice reached tropical storm force 125 nm west of Eniwetok. The synoptic situation depicted a general weakness in the mid-tropospheric subtropical ridge at the longitude of the storm. This was due to a trough extending southward from the Kamchatka peninsula. Alice continued her northerly movement but shifted to a more westward track by the 1st. The western edge of a high cell, northeast of Minami Tori Shima (Marcus Island), began to build north of Alice during the next five days, guiding her on a track towards Japan.

On the 4th, Alice passed 80 nm southwest of Minami Tori Shima. The Japanese meteorological station on the island registered maximum winds of 53 kt (03/2140 GMT) and peak gusts of 74 kt (03/1930 and 03/2135 GMT). Minimum pressure recorded was 990.0 mb (04/0000 GMT). A Japanese ship, NIPPON MARU, passed close to Alice's center on the 5th, observing 70-kt winds and a minimum pressure of 984.7 mb (05/0000 GMT).

With the long wave in the westerlies positioned over Manchuria, Alice began to decelerate as she approached the Boso peninsula of Honshu, Japan, (Figure 4-16) recurving once she crossed the 35th parallel. Accelerating to speeds of 19 kt, Alice passed south of Hokkaido on the 8th and acquired extratropical characteristics later that day.

The center of Alice passed 40 nm east of the Boso peninsula during the afternoon of the 7th. No winds in excess of 25 kt were reported along the coast during the passage of the weaker semicircle of Alice. A minimum pressure of 988.7 mb was measured at Choshi while rainfall amounts of 4.02 in. were totaled at Katsuura. In Iwaki, Fukushima Prefecture, some 300 houses were flooded when typhoon-generated waves caused the river in the city's Kunohama section to overflow.

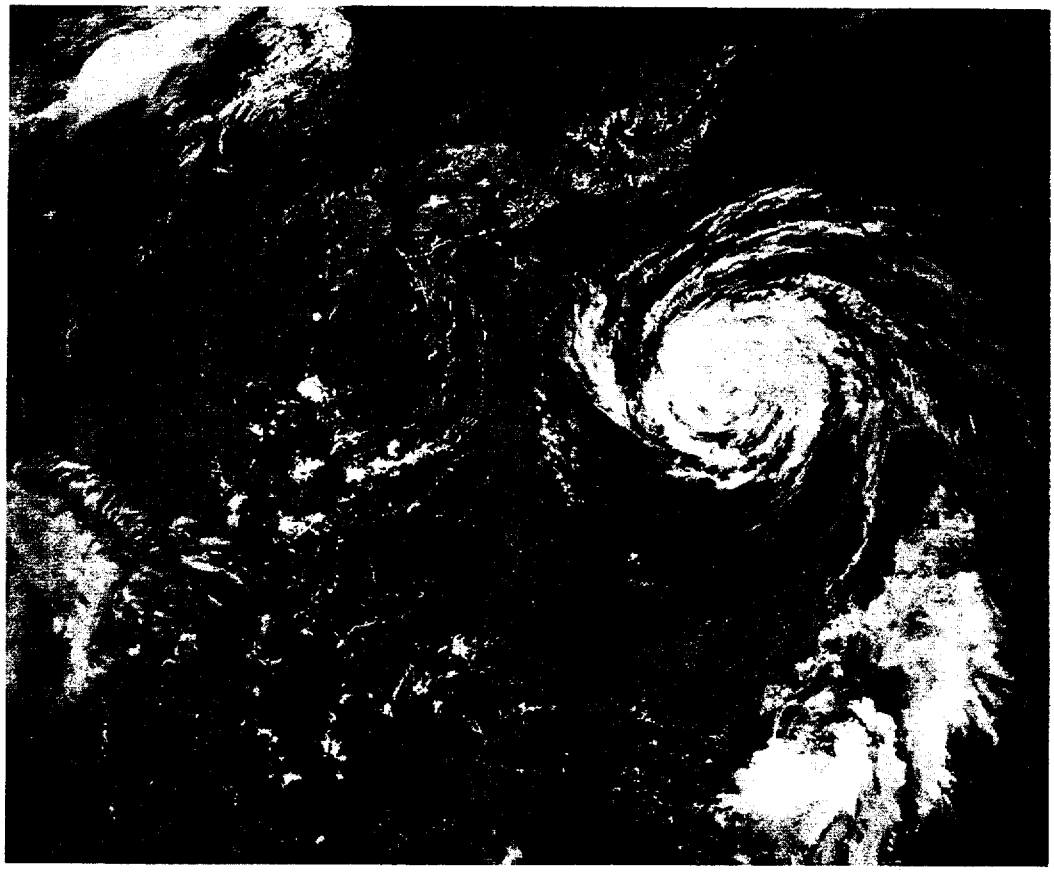
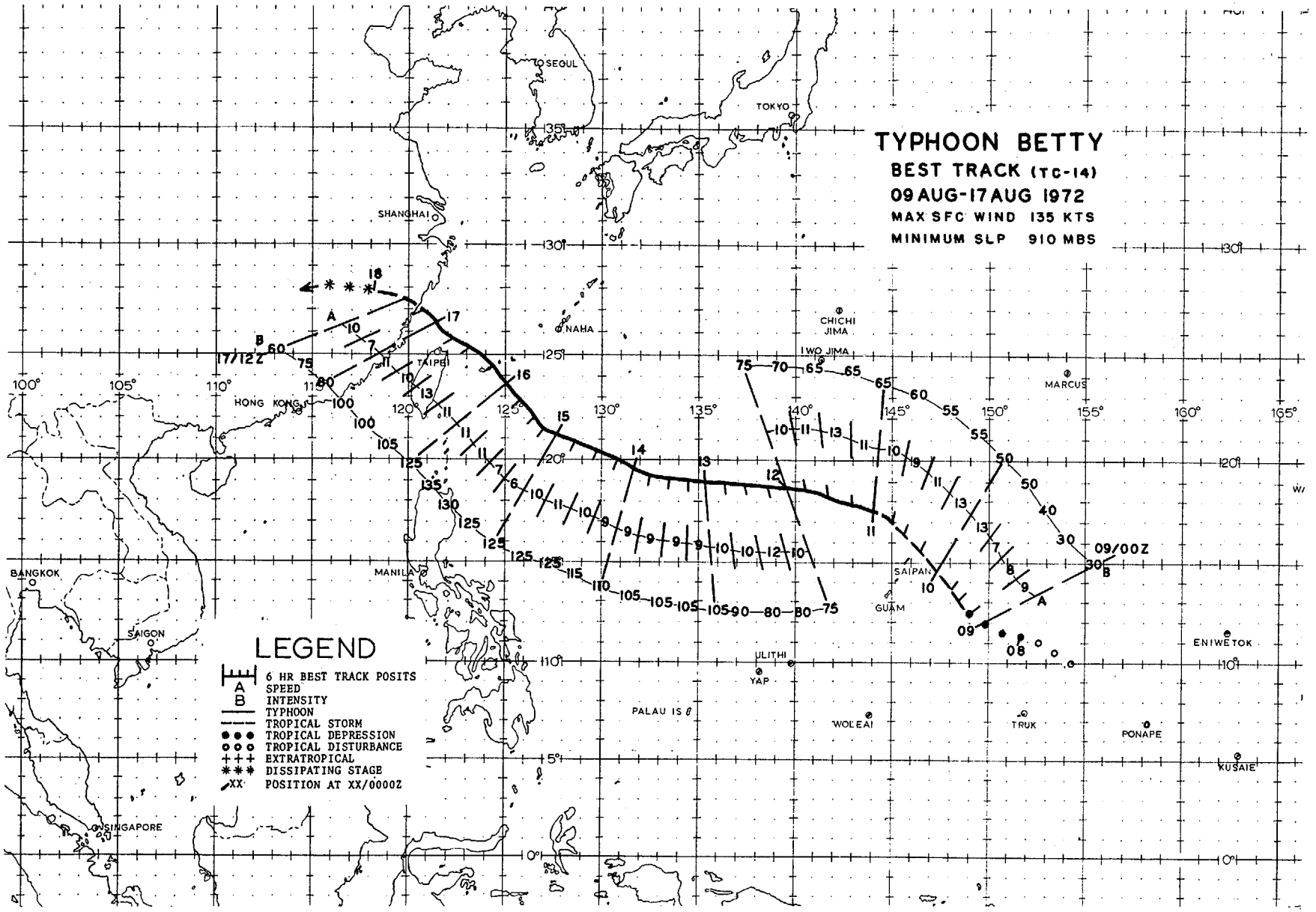


FIGURE 4-16. *Typhoon Alice 360 nm south-southeast of Tokyo, 6 August 1972, 0246 GMT. (DAPP data)*


TYPHOON BETTY
BEST TRACK (TC-14)
09 AUG-17 AUG 1972
MAX SFC WIND 135 KTS
MINIMUM SLP 910 MBS
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SEOUL
TOKYO
SHANGHAI
NAHA
CHICHI JIMA
IWO JIMA
MARCUS
TAIPEI
HONG KONG
BANGKOK
SAIGON
MANILA
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE
KUSAIE
ENIWETOK
SINGAPORE
09/00Z

Betty, destined to become the second super typhoon of the season, was first detected by satellite on 7 August north of the eastern Carolines. After reaching tropical storm intensity 200 nm southeast of Guam, Betty passed 50 nm north of Saipan. Westerly winds of 30 kt with gusts to 50 kt and some local flooding were experienced there during the afternoon and evening of the 10th.

Betty attained typhoon strength after passing through the Marianas, and shifted to a more westerly course as the subtropical ridge began to build northeast of Iwo Jima. The central sea level pressure dropped steadily during her five-day journey toward the southern Ryukyu's. A minimum pressure of 910 mb and maximum sustained winds of 135 kt were observed by reconnaissance aircraft on the 15th (Figure 4-17).

At that time, gale-force winds reached 450 nm from the center in the eastern semicircle, and 300 nm elsewhere. The extent of typhoon-force winds was also exceptional. A Japanese ship, TAKAMATSU MARU, reported 65-kt winds 200 nm southeast of the eye (16/0600 GMT).

Betty's track during 15-16 August appeared to be influenced by a col over the northern East China Sea. This weakness in the ridge to the north resulted in a more northerly track. The center thus passed through the southern Ryukyu's during the morning and afternoon of the 16th. The eye crossed the northern tip of Ishigaki Shima (16/0612 GMT) when the barograph recorded 942.5 mb. Maximum sustained winds on Miyako Shima, 60 nm from the center, were 61 kt from the south-southeast (16/1555 GMT). A maximum gust of 96 kt was recorded at Kume Jima, located 165 nm northeast of the center.

During her advance toward the southern Ryukyu's, Betty's circulation intensified the southwest monsoonal flow over Luzon bringing torrential rains. The resulting floods caused seven deaths in the northern province of Ilocos Sur. A light aircraft with four persons aboard was also reported missing.

Betty passed 40 nm north of Taiwan during 16-17 August. A minimum sea level pressure of 940.9 mb was registered at Pengchia Hsu Island (16/1745 GMT) as the eye passed overhead. Maximum sustained winds of 101 kt (16/2045 GMT) and a gust of 108 kt (16/2010 GMT) were also reported at that station.

Heavy rains (32.42 in.) were recorded at Alishan, resulting in considerable flooding in Taiwan. An estimated 300,000 people were stranded by floodwaters in Sanchung City (Figure 4-18) and the two adjacent townships of Luichow and Wuku, west of Taipei. Many highways were made impassable and rail service was interrupted by landslides in northern and central Taiwan. Eighteen storm-related deaths were reported in Taiwan while over 220 homes were totally destroyed and over 130 badly damaged.

Betty made landfall the evening of the 17th on the China coast near 27°N and lost strength rapidly as she moved inland.

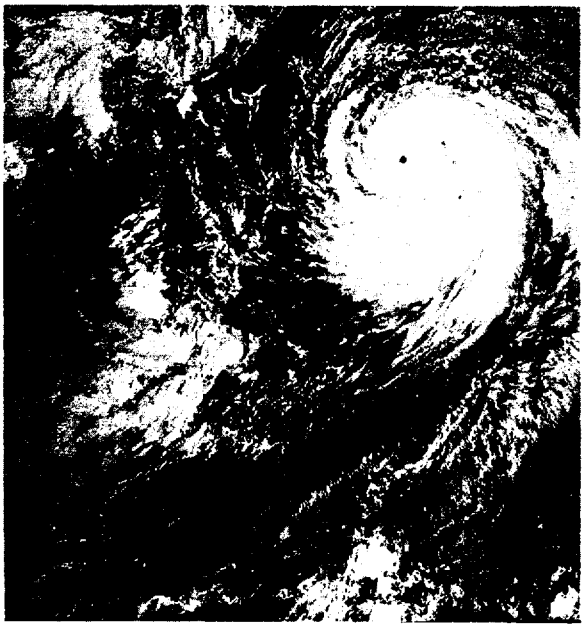
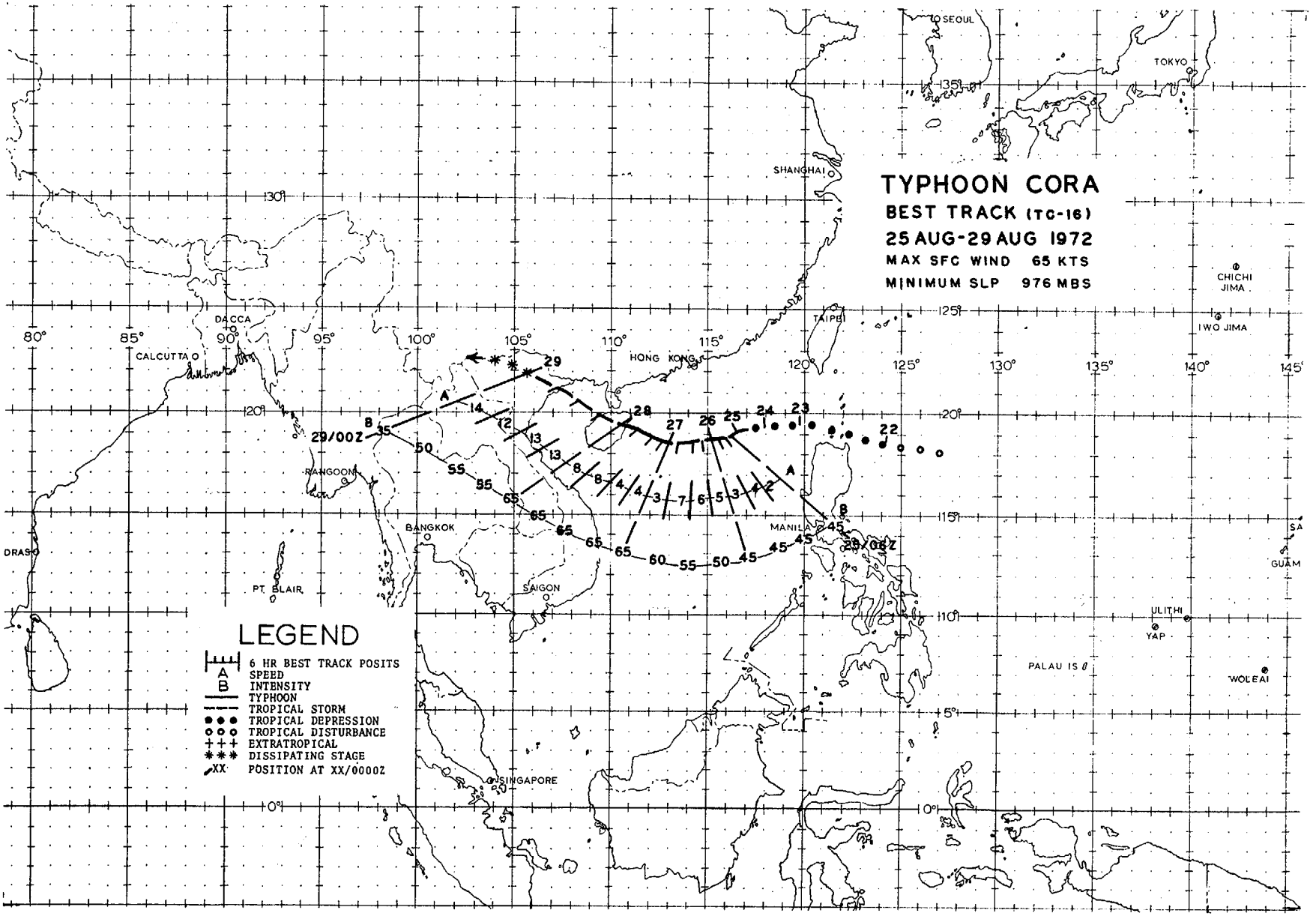


FIGURE 4-17. *Super Typhoon Betty 420 nm east-southeast of Taipei, Taiwan, 14 August 1972, 2347 GMT. (DAPP data)*

FIGURE 4-18. *The flooded Sanchung district of Taipei, Taiwan, due to torrential rains brought by Typhoon Betty.--Courtesy of China Post*

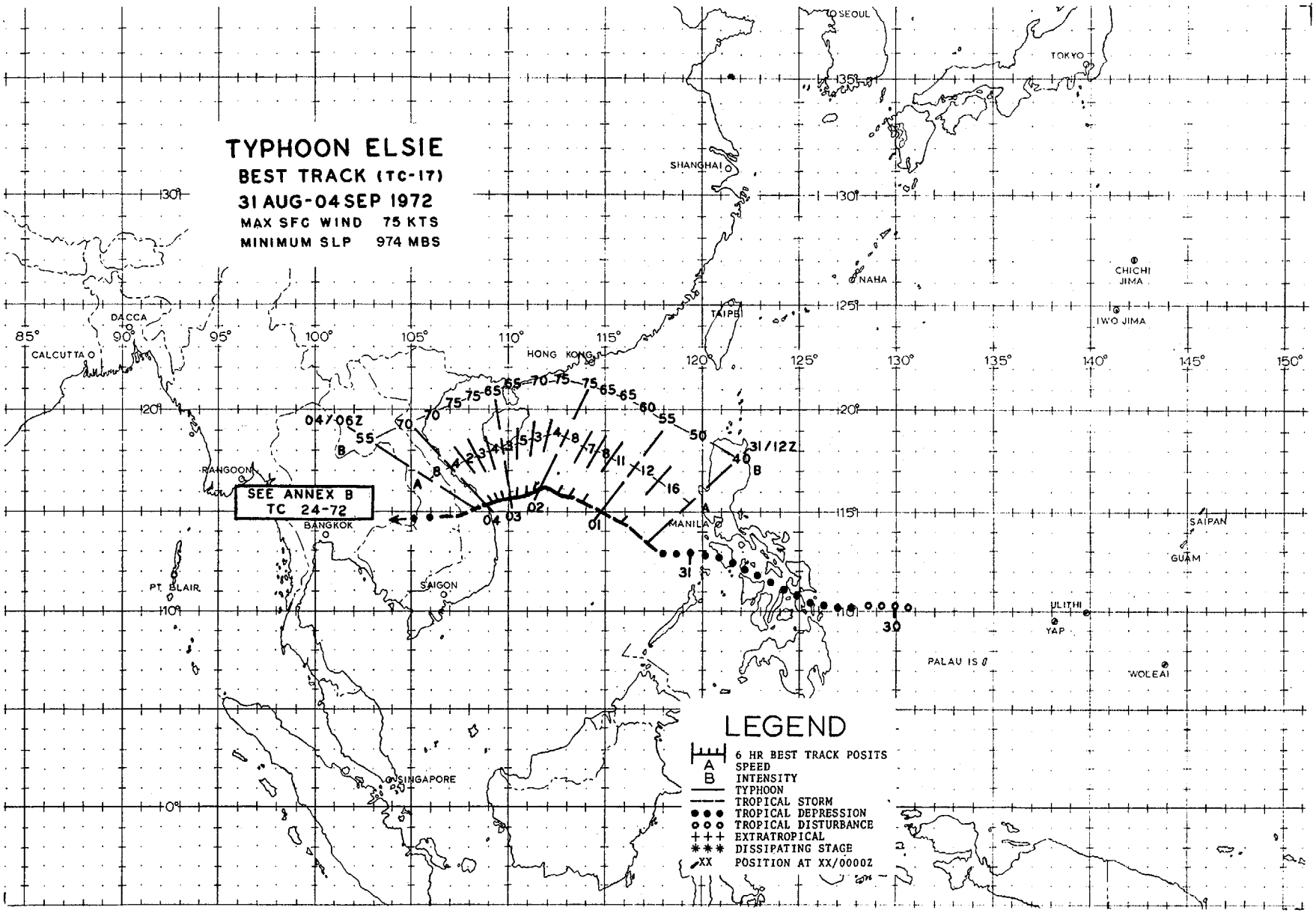

TYPHOON CORA
BEST TRACK (TC-16)
25 AUG-29 AUG 1972
MAX SFC WIND 65 KTS
MINIMUM SLP 976 MBS
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SEOUL
TOKYO
SHANGHAI
TAIPEI
HONG KONG
CHICHI JIMA
IWO JIMA
DACCA
CALCUTTA
RANGOON
BANGKOK
MANILA
SAIGON
PT BLAIR
SINGAPORE
YAP
ULITHI
PALAU IS
WOLEAI
GUAM
29/00Z
29/06Z

First signs of a disturbance east of Luzon were indicated by satellite and ship data on 21 August. The developing depression moved across the southern Luzon Straits early on the 23rd and entered the South China Sea as Tropical Storm Cora. Cora was guided on a slow westerly course by the flow from a high cell over eastern China (Figure 4-19). She developed to a minimal typhoon on the 27th, less than 24 hours from landfall.

Cora crossed Hainan Island on the 28th and transited the northern Tonkin Gulf that evening. Making landfall as a tropical storm near Haiphong, she quickly dissipated.

Cora was only the fourth tropical storm to reach typhoon intensity in August in the South China Sea since 1945. The most recent was Shirley in 1968.

FIGURE 4-19. *Tropical Storm Cora in the northern South China Sea 270 nm east of Hainan Island, 25 August 1972, 2349 GMT. (DAPP data)*

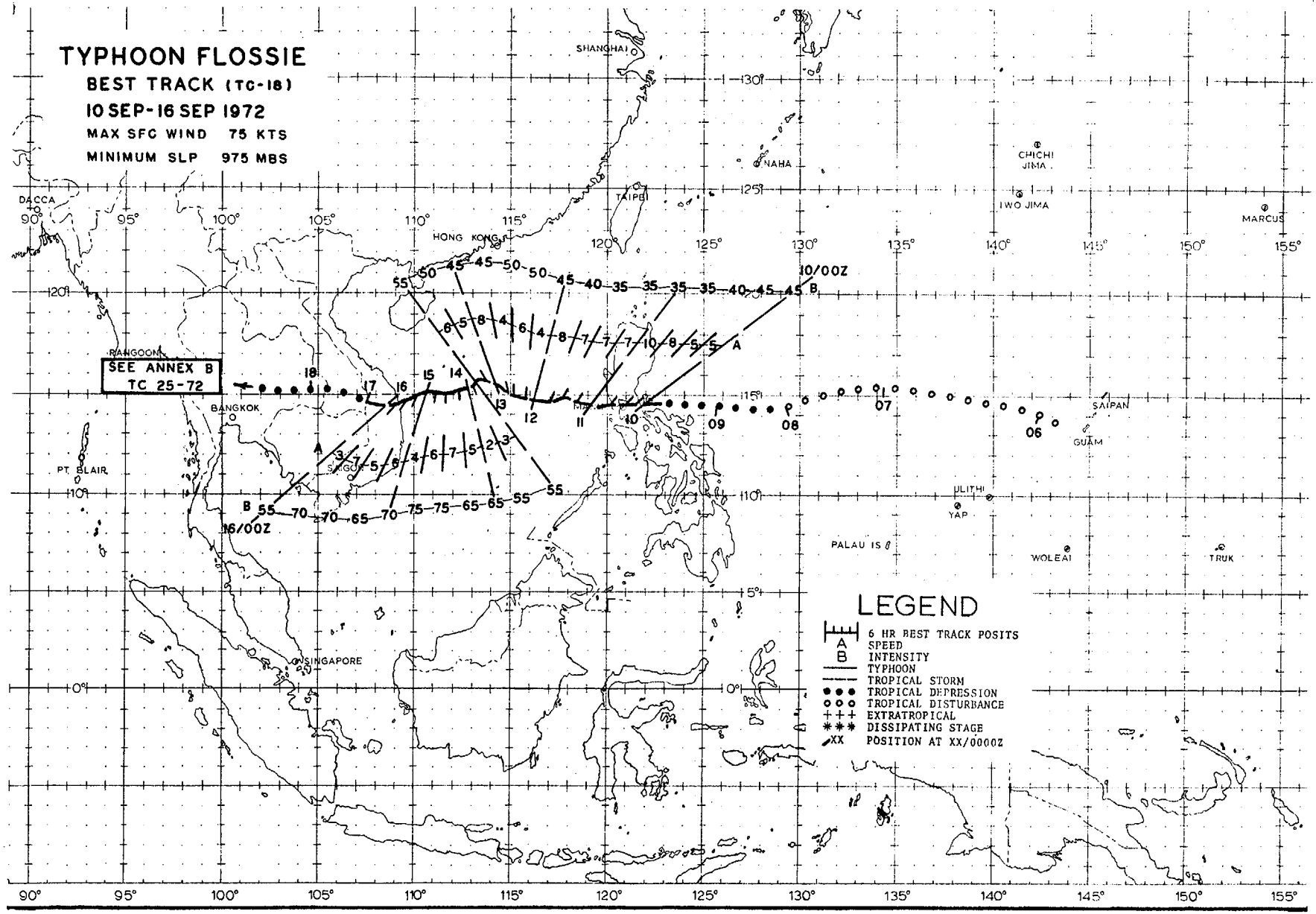

TYPHOON ELSIE
BEST TRACK (TC-17)
31 AUG-04 SEP 1972
MAX SFC WIND 75 KTS
MINIMUM SLP 974 MBS
SEE ANNEX B
TC 24-72
SEOUL
TOKYO
SHANGHAI
NAHA
CHICHI JIMA
IWO JIMA
TAIPEI
HONG KONG
DACCA
CALCUTTA
RANGOON
BANGKOK
MANILA
SAIGON
PT. BLAIR
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
SINGAPORE
04/06Z
31/12Z
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

The fourth typhoon of the month, Elsie, was first spotted by satellite as a disturbance east of Leyte Gulf on 29 August. After crossing the central Philippines as a depression, Elsie entered the South China Sea west of Mindoro on the 31st. Tropical-storm force was achieved later that day. By 1 September Elsie began to slow, apparently due to a slow-moving trough over China.

Elsie reached typhoon force near the Paracel Islands, then shifted to a southwest track as heights began to build in southern China. Moving slowly across the South China Sea toward the Vietnam coast, Elsie required two days to travel 160 nm (Figure 4-20). As her center passed Quang Ngai, a minimum sea level pressure of 991 mb was registered and peak gusts of 60 kt were reported.

Elsie weakened rapidly as she moved into Thailand but maintained her identity across the Indo-China peninsula, redeveloping to typhoon strength in the Bay of Bengal (see Annex B). Elsie was only the second tropical cyclone in September to reach severe storm intensity (>47 kt) in the Bay of Bengal since 1943. During her passage over Thailand, Elsie caused three days of heavy rains, flooding many parts of the country.

FIGURE 4-20. *Radarscope presentation (AN/SPS-30, range 150 nm) of Elsie taken aboard USS KITTY HAWK while the typhoon was centered 130 nm south of Hainan Island, 2 September 1972, 1720 GMT. Blip in eye is return from weather reconnaissance aircraft.*


TYPHOON FLOSSIE
BEST TRACK (TC-18)
10 SEP-16 SEP 1972
MAX SFC WIND 75 KTS
MINIMUM SLP 975 MBS
SEE ANNEX B
TC 25-72
10/00Z
16/00Z
SHANGHAI
NAHA
TAIPEI
HONG KONG
DACCA
RANGOON
BANGKOK
SAIGON
PT. BLAIR
SINGAPORE
CHICHI JIMA
IWO JIMA
MARCUS
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z

On 6 September, as Elsie was crossing Thailand, a weak circulation was noted on satellite pictures in the southern Marianas. The ill-defined system crossed the Philippine Sea and developed into Tropical Storm Flossie prior to landfall in the Lamon Bay region of Luzon.

A trough extending south-southwestward from the Kuril Islands weakened the subtropical ridge over southern China. The resulting weak steering flow caused Flossie to move slowly westward across the South China Sea during 11-14 September (Figure 4-21). Reaching minimal typhoon strength south of the Paracel Islands, Flossie shifted to a more southerly track. She moved ashore between Qui Nhon and Quang Ngai, South Vietnam, in the early morning of 16 September.

After weakening to a tropical depression, Flossie closely paralleled Elsie's track across Thailand, causing heavy rains on 18-19 September. Three provinces north of Bangkok were under floodwaters of up to 2-1/2 feet. Flossie, like Elsie, retained her identity across the Indo-China peninsula and regenerated to typhoon force in the Bay of Bengal (see Annex A). As Tropical Cyclone 25-72, she became the second tropical cyclone to achieve typhoon intensity in the Bay of Bengal during September. Since 1884[4], there had never been more than one tropical cyclone reaching severe storm force (>47 kt) in the Bay of Bengal during September.

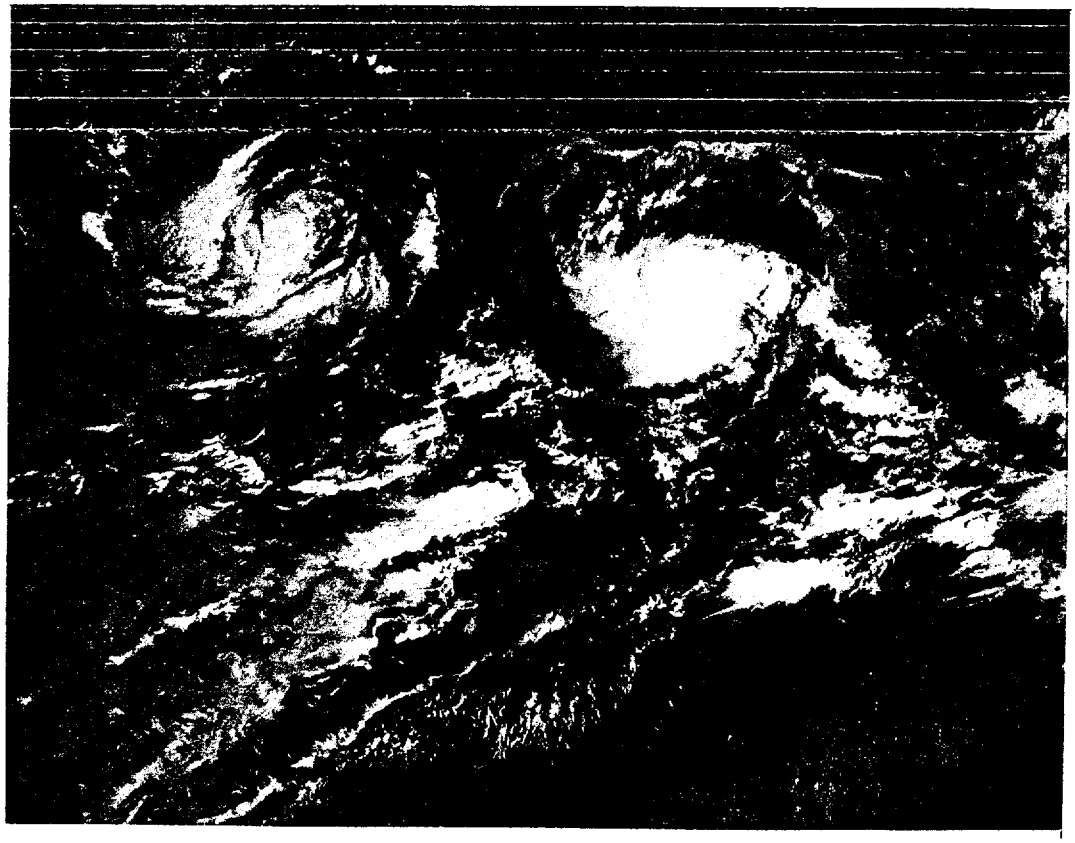
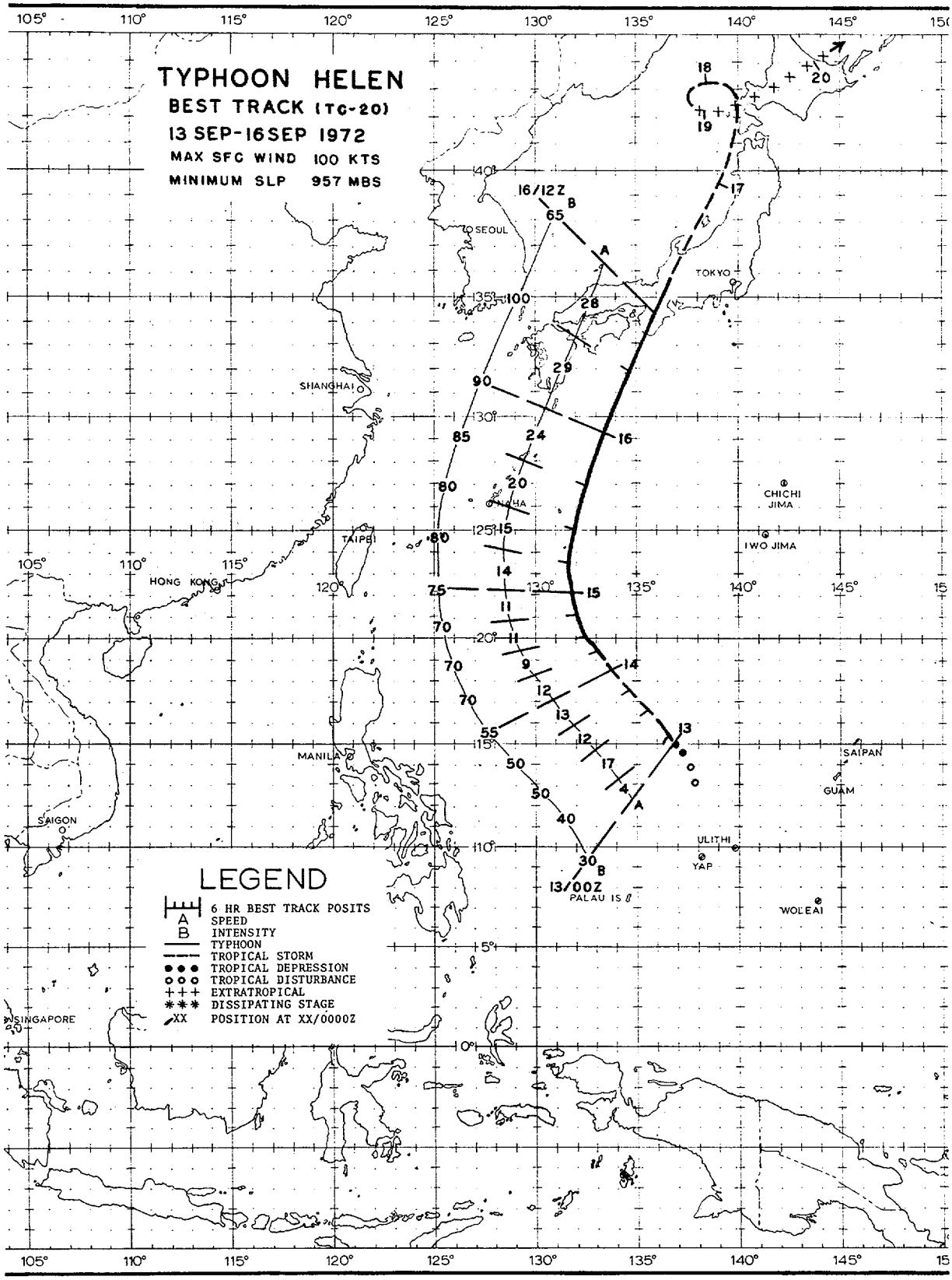


FIGURE 4-21. *Tropical Storm Flossie (left) in the South China Sea 300 nm east of Danang, Vietnam. A second tropical storm, Grace, is centered just east of Luzon, 13 September 1972, 0002 GMT. (DAPP data)*

[4]Tracks of storms and depressions in the Bay of Bengal and the Arabian Sea 1877-1960, India Meteorological Department, 1964.


TYPHOON HELEN
BEST TRACK (TC-20)
13 SEP-16SEP 1972
MAX SFC WIND 100 KTS
MINIMUM SLP 957 MBS
16/12Z
13/00Z
SEOUL
TOKYO
SHANGHAI
TAIPEI
HONG KONG
MANILA
SAIGON
SINGAPORE
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
PALAU IS
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z

While Flossie moved slowly across the South China Sea and Tropical Storm Grace stalled east of Luzon, a third circulation appeared in the equatorial trough west of Guam. This tropical cyclone would be the most destructive to strike Japan in 1972.

Reconnaissance aircraft, the afternoon of 13 September, indicated the presence of a tropical storm near 16°N and 136°E. Moderate feeder band activity was detected and flight level winds (700 mb) of 58 kt were measured in the eastern quadrant. Minimum central pressure, as determined by extrapolation from 700 mb, was 987 mb.

Taking a northwesterly course around a high cell centered between Minami Tori Shima (Marcus Island) and Chichi Jima, Helen attained typhoon intensity on the afternoon of the 14th. She then veered to a more northerly course due to a deepening trough in the East China Sea. This trough and an intense high pressure cell east of Chichi Jima combined to produce strong south-southwesterly flow south of Japan. Helen reacted by accelerating to 20 kt late on the 15th (Figure 4-22) and to 29 kt the following afternoon. Reconnaissance aircraft observed flight level winds of 100 kt in the right semicircle during this period.

Helen moved ashore near Cape Kushimoto during the evening of the 16th, crossing Honshu just west of Ise Bay. She passed between Osaka and Nagoya and moved into the Sea of Japan near Toyama 12 hours later.

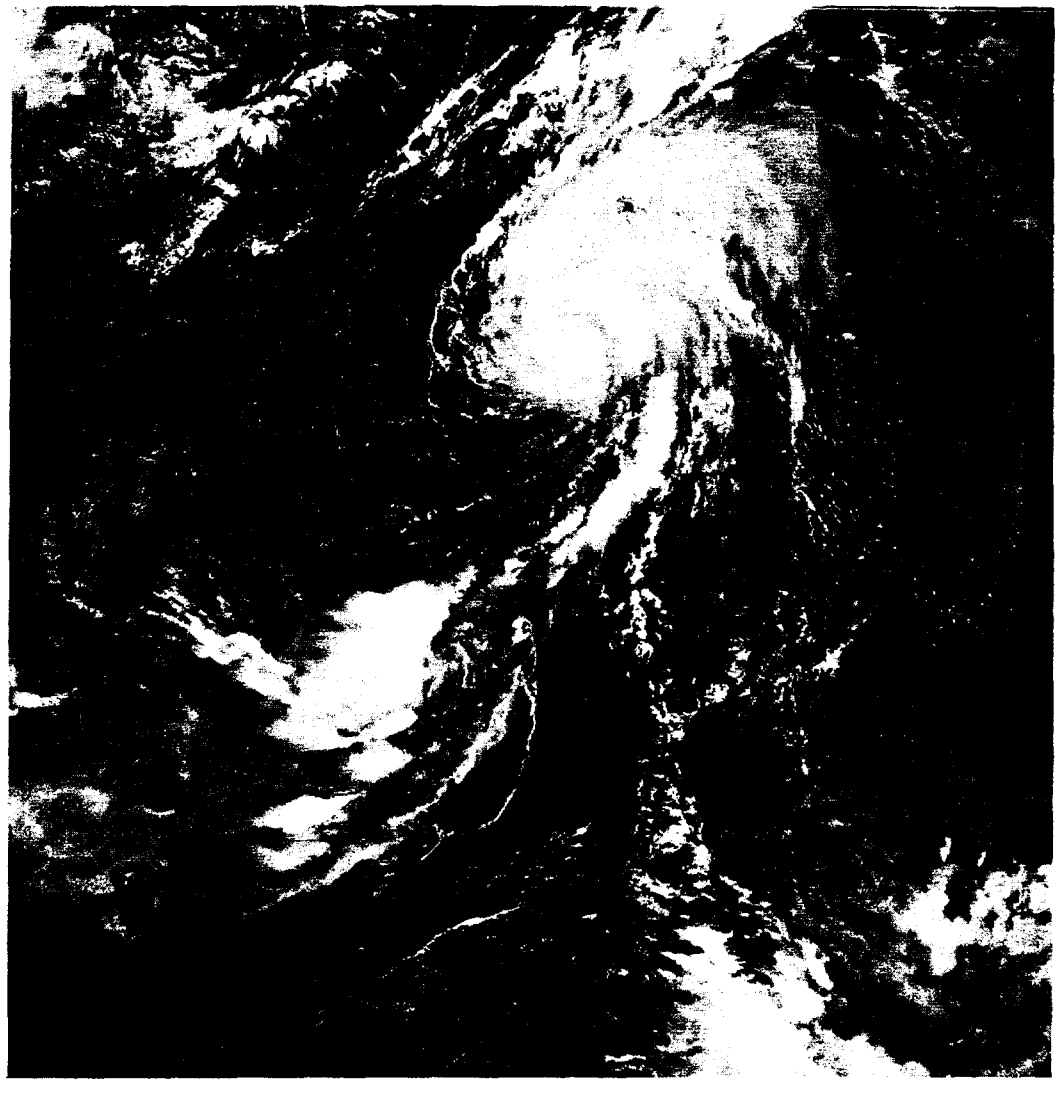


FIGURE 4-22. *Typhoon Helen 300 nm southeast of Okinawa, 15 September 1972, 0318 GMT. (DAPP data)*

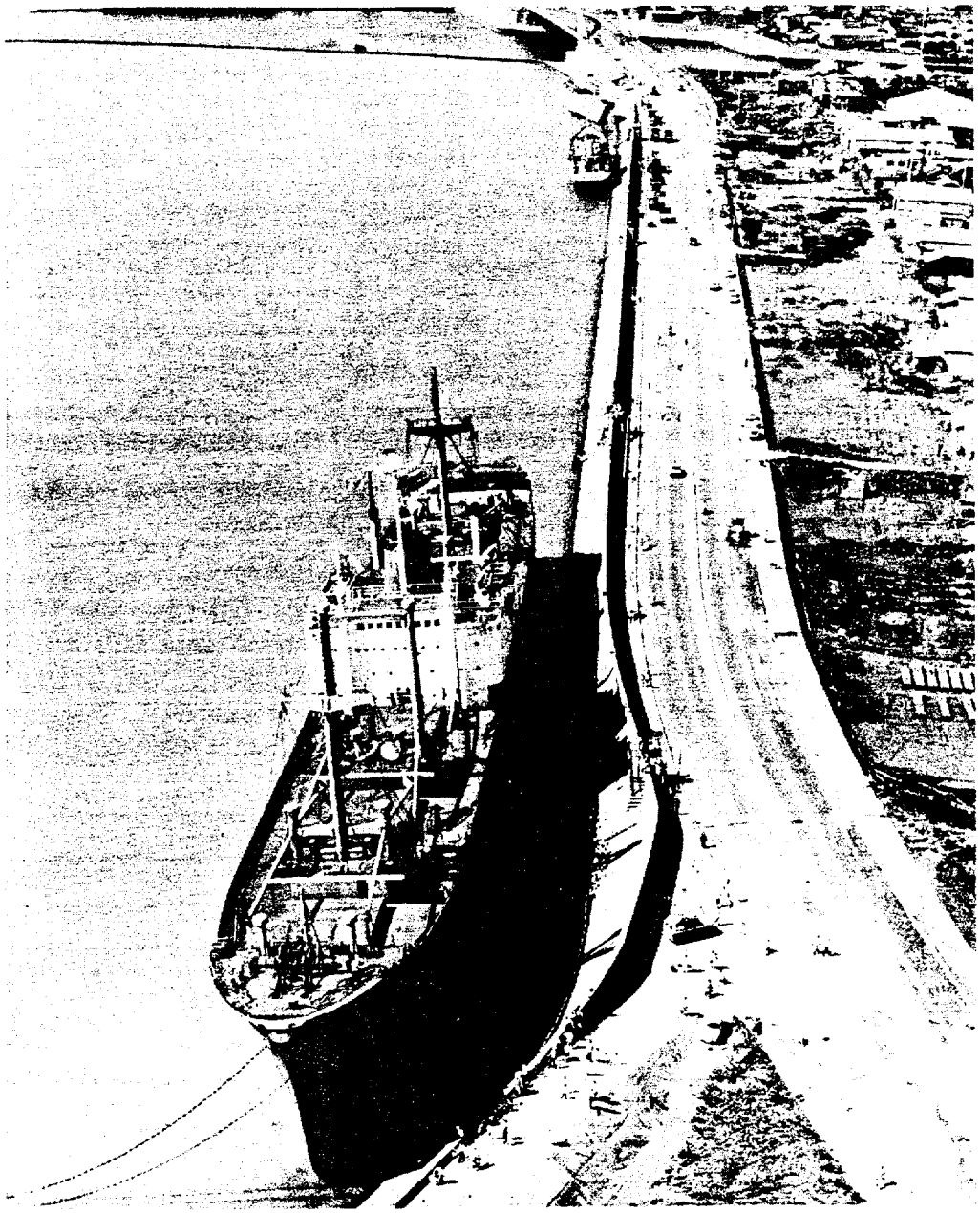


FIGURE 4-23. *The aftermath of Typhoon Helen - Kawagoe Town, Mie Prefecture, Japan. Philippine cargo ship MARIA ROSELLO (9,000 tons) blown against causeway (Meiyon National Highway). Two other ships behind cargo ship are also blown against causeway while another is overturned in the background.--Courtesy of Kyodo Tsushin*

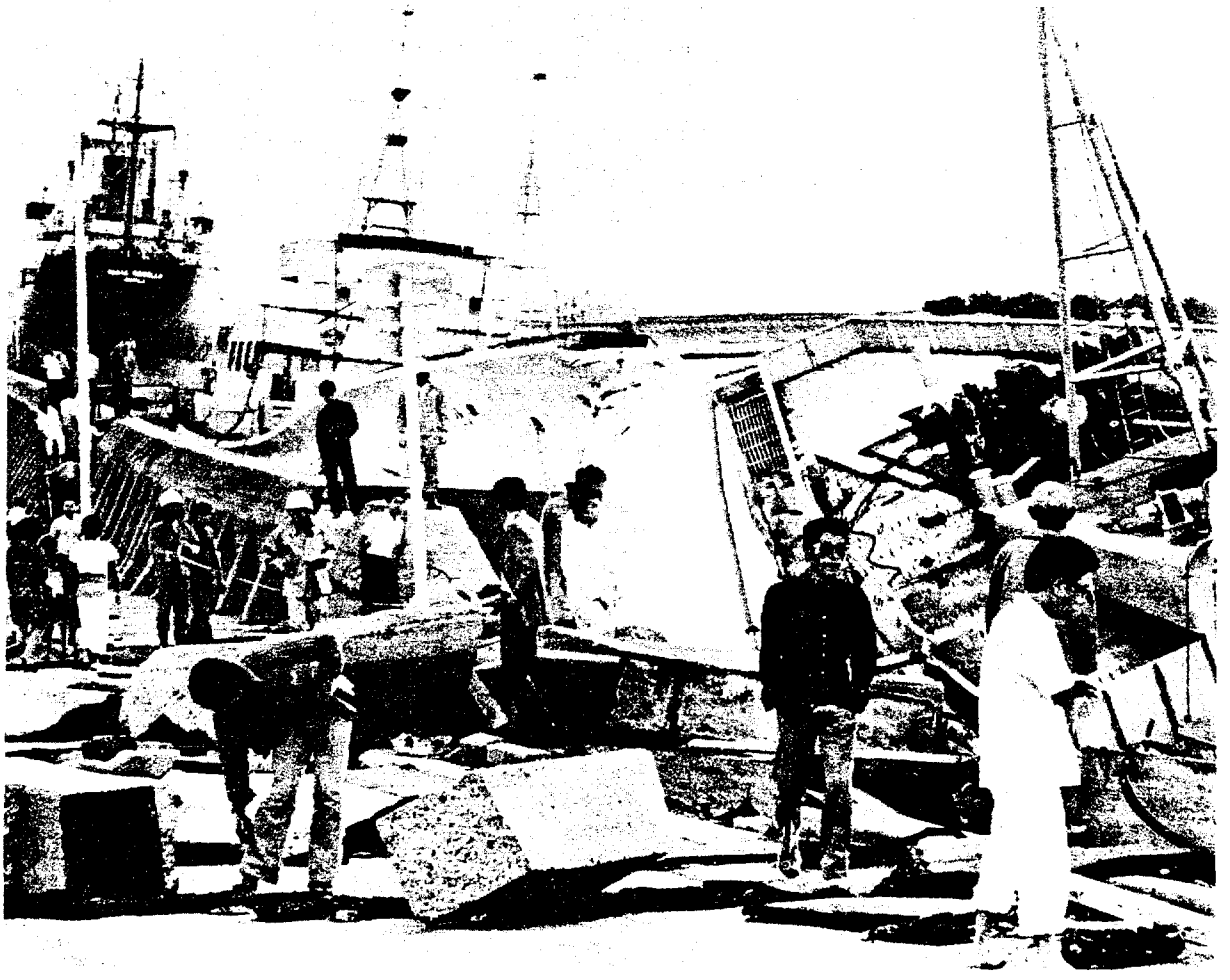


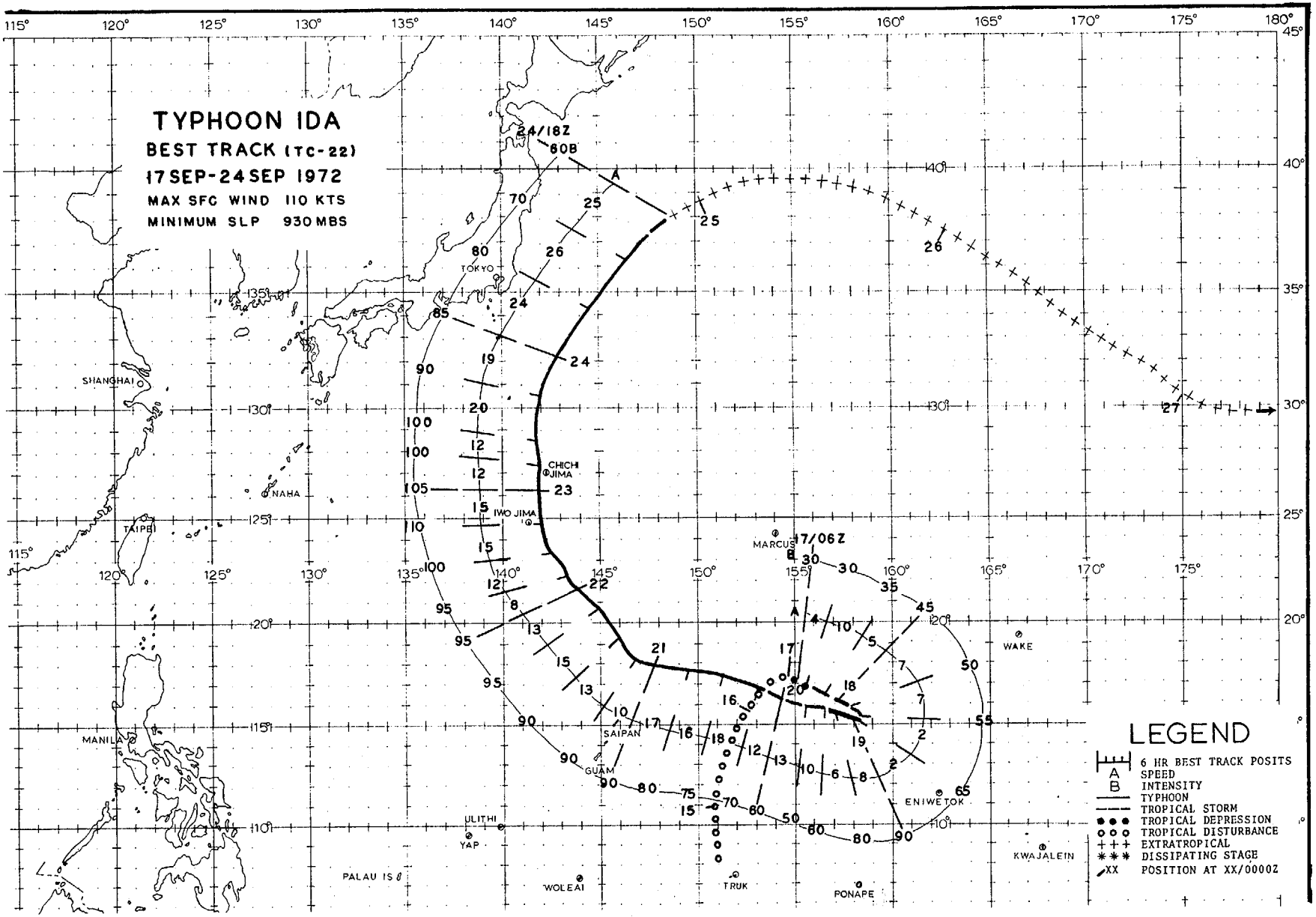
FIGURE 4-24. *Fishing vessel and cargo ship MARIA ROSELLO smashed against causeway due to Helen. Debris from wrecked causeway lies on the National Highway, Kawagoe Town, Mie Prefecture, Japan.--Courtesy of Kyodo Tsushin*

The lowest recorded pressure of 956.9 mb (16/0940 GMT) and maximum sustained winds of 70 kt (16/0900 GMT) from the north were observed at Shionomisaki, west of Helen's track. A peak gust of 98 kt (16/0850 GMT) was registered at Sumoto located near Osaka Bay, 60 nm west of the track.

Heavy rains disrupted land, sea, and air transportation in central and eastern Japan. There were 38 deaths and 158 injuries reported, most of which were attributed to landslides and flooding. Over 360 houses were destroyed or badly damaged by landslides and over 77,000 homes were inundated by floodwaters. Losses from damage to roads and river embankments were estimated near 102 million dollars (U.S.). Helen also generated a tornado near Higashi Matsuyama north of Tokyo, destroying eight homes.

Nine cargo ships ran aground in Ise Bay, including the 6,244-ton Indian ship, STATE OF TRAJAN COCHIN, and the 9,031-ton Philippine freighter, MARIA ROSELLO (Figures 4-23, 4-24). Two fishing boats were sunk near Hachijo Jima. Of a combined crew of 30, only six fishermen were rescued.

After weakening to tropical storm force in the Sea of Japan, Helen slowed near Hokkaido late on the 17th and merged with an upper level low the following day. Rains up to 31 in. fell on Hokkaido with flash floods and landslides accounting for eight dead and two missing. High tides generated by Helen, while west of Hokkaido, accounted for at least two deaths along the east coast of Korea.


TYPHOON IDA
BEST TRACK (TC-22)
17 SEP-24 SEP 1972
MAX SFC WIND 110 KTS
MINIMUM SLP 930 MBS
24/18Z
17/06Z
TOKYO
SHANGHAI
NAHA
TAIPEI
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
MANILA
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE
ENIWETOK
KWAJALEIN
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

On 14-15 September, surface and upper air reports in the eastern Carolines depicted a weak circulation in the equatorial trough north of Truk. Satellite pictures for the next few days showed this disturbance drifting northward and gaining a more organized appearance.

On the 18th, reconnaissance aircraft indicated the disturbance had become a tropical storm (Figure 4-25), midway between the Marianas and Wake.

Ida tracked to the southeast, apparently under the influence of a mid-tropospheric trough extending from the Kamchatka peninsula to the vicinity of Wake Island. As heights began to build west of the trough, Ida reversed course, moved westward and intensified. She reached typhoon intensity the afternoon of 20 September.

Approaching the northern Marianas at 16-18 kt, Ida took a more northerly track on 21 September due to the deepening of a short wave trough over Japan. Pagan Island reported northwesterly winds of 30 kt with gusts to 50 kt and a minimum sea level pressure of 988.6 mb as the center passed 60 nm to the northeast.

Ida's central pressure dropped to 932 mb prior to passing 35 nm east of Iwo Jima early on the 23rd. Iwo Jima experienced maximum sustained winds of 56 kt with gusts to 83 kt (23/1140 GMT) before equipment failure. Later that afternoon, Ida passed 25 nm west of Chichi Jima where a minimum sea level pressure of 972 mb was recorded (Figure 4-26).

By the 23rd, a strong southwesterly flow was established over Japan due to the increased pressure gradient between a low over Manchuria and a ridge north of Marcus Island. In response, Ida began to recurve and accelerated to 20 kt north of the Bonin Islands.

Moving at 24 kt east of Honshu on the 24th, Ida brought typhoon-force winds to several ships including the Norwegian ship NEGO ANNE, which experienced 80-kt winds 50 nm east of the center.

The next day Ida became an extratropical system as she merged with a frontal zone east of Hokkaido.

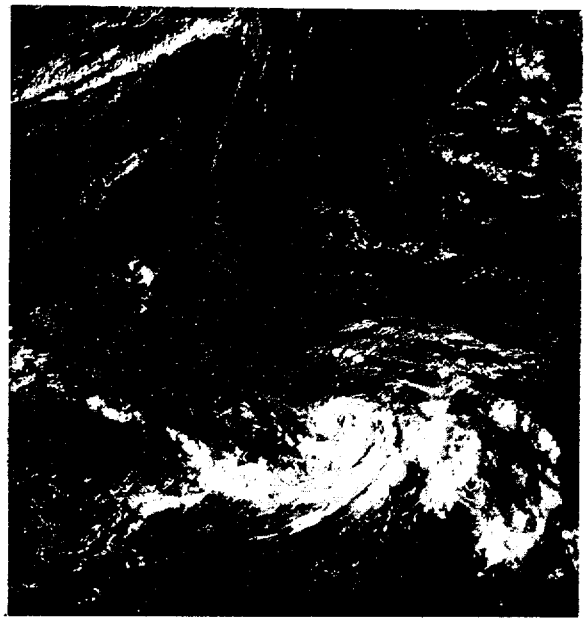


FIGURE 4-25. *Tropical Storm Ida 400 nm northwest of Eniwetok, 17 September 1972, 2145 GMT. (DAPP data)*

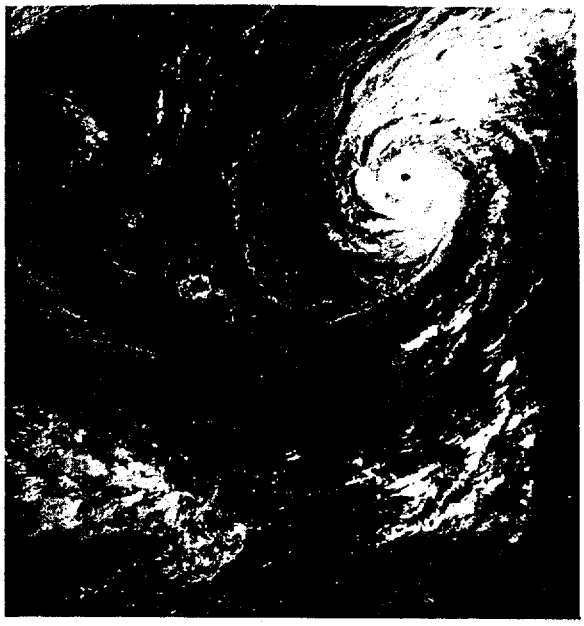
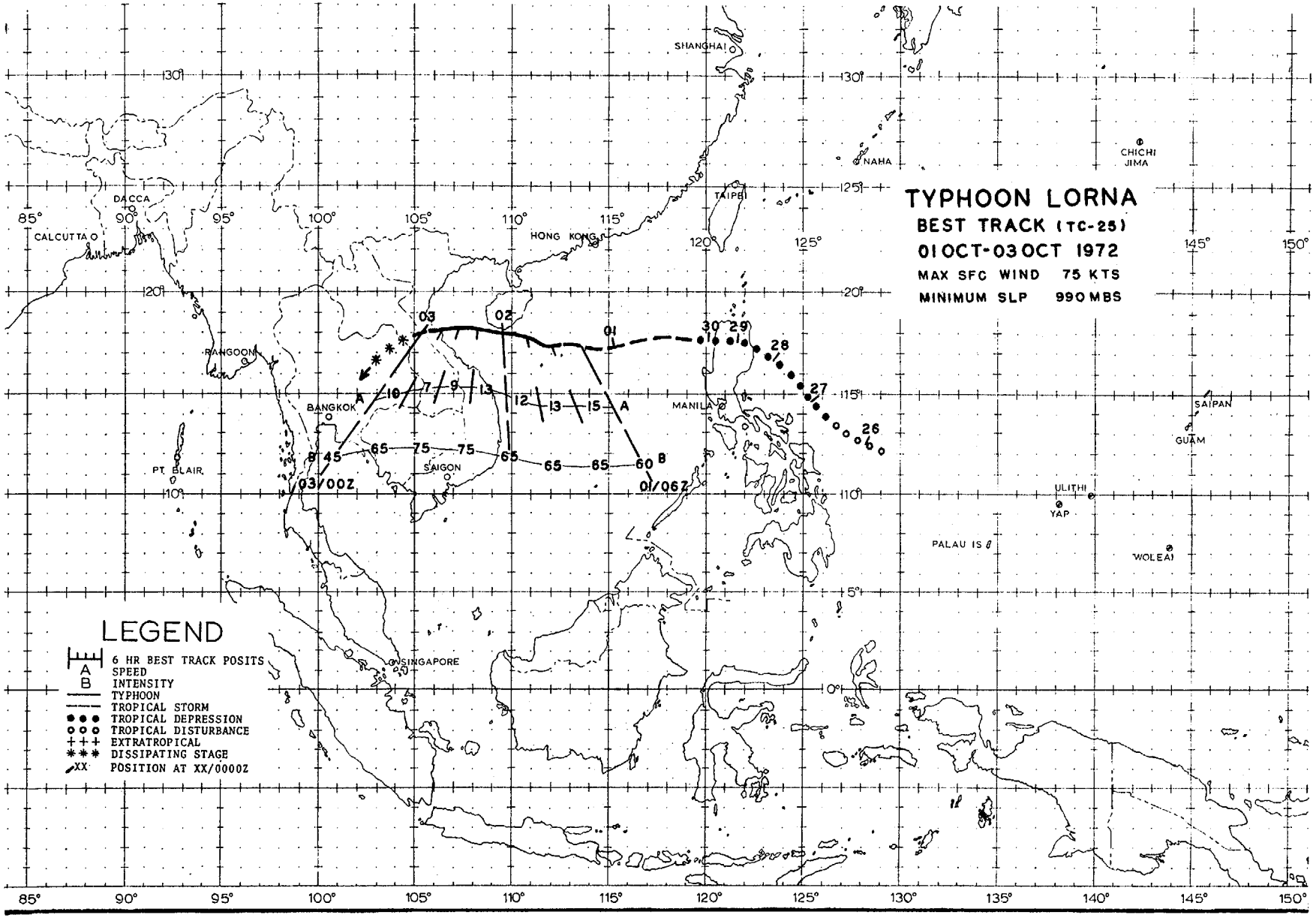


FIGURE 4-26. *Typhoon Ida 125 nm northeast of Iwo Jima, 22 September 1972, 2250 GMT. (DAPP data)*


TYPHOON LORNA
BEST TRACK (TC-25)
01 OCT-03 OCT 1972
MAX SFC WIND 75 KTS
MINIMUM SLP 990 MBS
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SHANGHAI
NAHA
CHICHI JIMA
TAIPEI
HONG KONG
DACCA
CALCUTTA
RANGOON
BANGKOK
MANILA
SAIGON
PT. BLAIR
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
SINGAPORE
03/00Z
01/06Z

Lorna, like Cora and Elsie, developed from a depression in the Philippine Sea and crossed the Philippine archipelago (Figure 4-27).

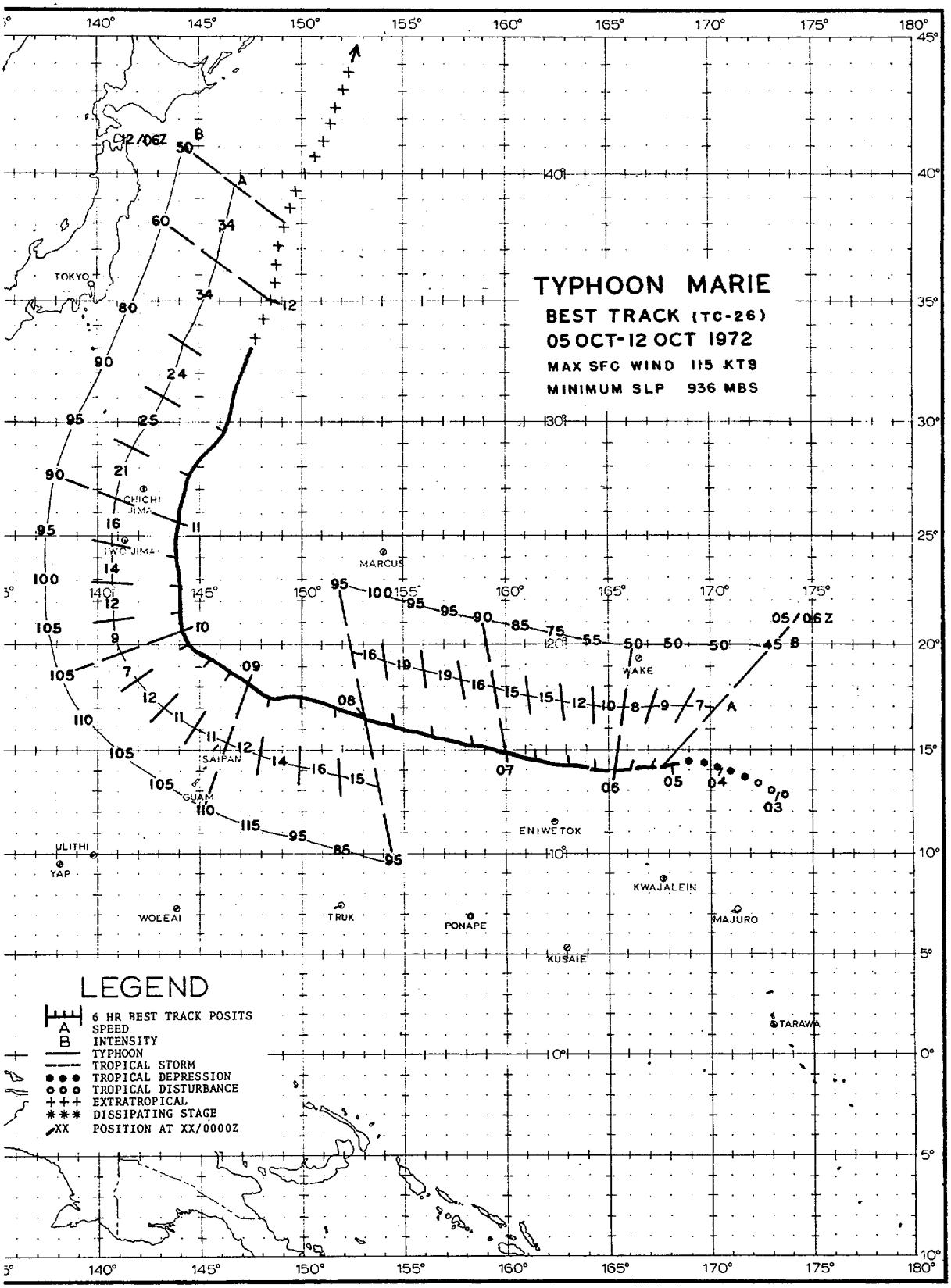
After transiting Luzon, Lorna moved across the South China Sea at 12-15 kt as ridging dominated southern China.

Satellite pictures on the 30th indicated the disturbance was rather small but of tropical storm intensity. The United Kingdom ship MARON, 70 nm north of the center, reported 45-kt winds from the southeast (01/0000 GMT). Reconnaissance aircraft found winds of 60 kt just northeast of the center a few hours later.

Lorna transited south of Hainan Island on the 2nd as her 15-nm-diameter eye was tracked closely by aircraft and ship radar. Although the radar presentations depicted Lorna as a well-developed cyclone, her circulation was quite small. Gale-force winds were limited to a radius of 75 nm from the center in the northern semicircle.

Early on the 3rd, Lorna moved ashore on the North Vietnam coast north of Dong Hoi and degenerated into a low pressure system after crossing central Laos. She dissipated in Thailand late that night.

FIGURE 4-27. *Lorna as a tropical depression east of Luzon, 27 September 1972, 0348 GMT. (DAPP data)*


TYPHOON MARIE
BEST TRACK (TC-26)
05 OCT-12 OCT 1972
MAX SFC WIND 115 KTS
MINIMUM SLP 936 MBS
TOKYO
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
YAP
ULITHI
WOLEAI
TRUK
PONAPE
ENIWETOK
KWAJALEIN
MAJURO
KUSAIE
TARAWA
05/06Z
12/06Z
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

Marie began as a broad circulation in the equatorial trough north of the Marshall Islands on 3 October (Figure 4-28) while Tropical Storm Kathy was passing north of the Marianas. On the 5th, she achieved tropical storm intensity, becoming a typhoon two days later as she passed 200 nm north of Eniwetok.

Marie's circulation was quite extensive, covering an area over 700 nm in diameter. Strong westerlies up to 20 kt were experienced in the eastern Caroline and Marshall Islands. Eniwetok, about 180 nm south of the center, recorded 40 kt sustained winds from the west with gusts to 52 kt the evening of 6 October. Squalls with gusts of up to 50 kt occurred in the Ponape district felling coconut trees, one of which killed one person on Kusaie.

Marie moved along the southern extent of the subtropical ridge centered north of Minami Tori Shima (Marcus Island) at 15-19 kt during 6-8 October. As she approached the northern Marianas, Marie began to slow. Her maximum winds reached 115 kt and central pressure dropped to 936 mb. Marie began a northwesterly track on the 9th, passing through the northern Marianas late in the day.

On Pagan, Agrihan and Alamagan islands, food crops were nearly 100% destroyed. Buildings were 80-95% destroyed; however, property damage was less severe on Agrihan due to sturdier construction.

Although 200 nm south of Marie's center, Saipan experienced gusts of 45-55 kt. High seas in the southern Marianas were responsible for capsizing at least five motorboats and caused two drownings. By the 10th reconnaissance aircraft reported 100-kt winds extended 75-100 nm east of the center (Figure 4-29).

Passing east of the Volcano Islands on the 11th, Marie accelerated to 21 kt. The Japanese ship, YAEKAWA MARU, about 170 nm east-southeast of the center, reported 60 kt (11/0000 GMT).

Marie weakened as she transited the North Pacific east of Honshu at up to 34 kt, merging with a frontal system east of Hokkaido on the 12th. Winds of up to 40 kt and gusts to 59 kt were experienced at Urakawa along the southeastern coast of Hokkaido. Sixteen of eighteen crewmembers were lost when a 77-ton Japanese fishing boat capsized off Miyagi Prefecture.

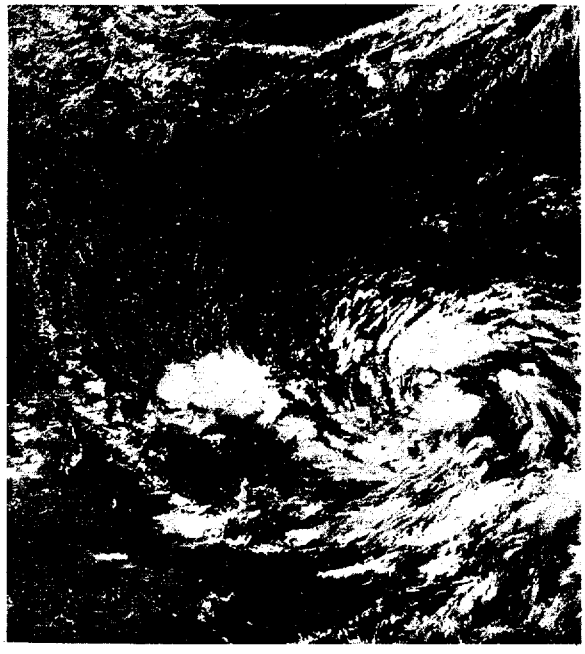
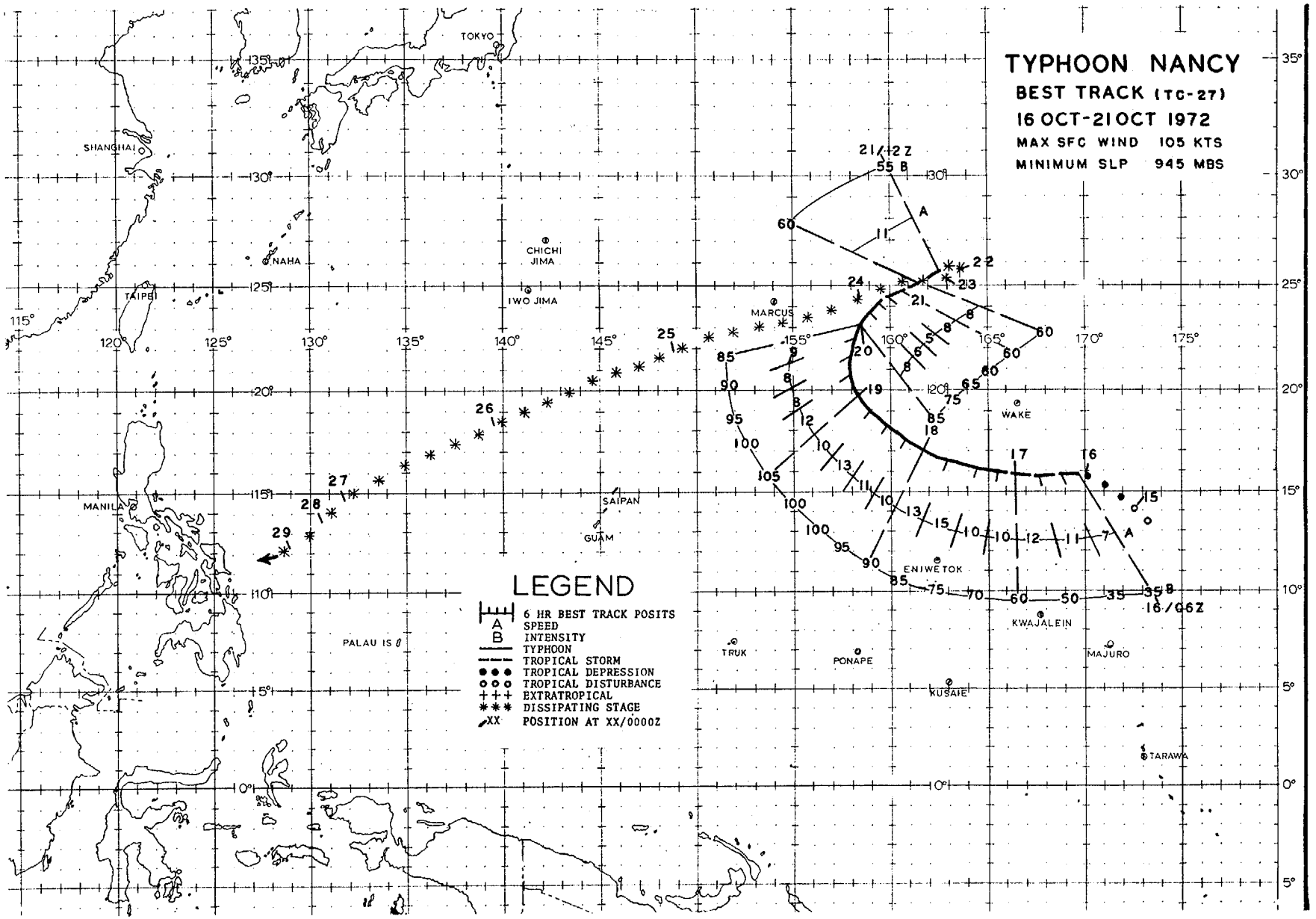


FIGURE 4-28. *Formative stages of Marie centered some 350 nm northeast of Kwajalein, 3 October, 1972, 2112 GMT. (DAPP data)*

FIGURE 4-29. *Typhoon Marie 350 nm northnorthwest of Saipan, 10 October 1972, 0221 GMT. (DAPP data)*


TYPHOON NANCY
BEST TRACK (TC-27)
16 OCT-21 OCT 1972
MAX SFC WIND 105 KTS
MINIMUM SLP 945 MBS
21/12Z
55 B
16/06Z
TOKYO
SHANGHAI
NAHA
TAIPEI
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
MANILA
PALAU IS
ENIWETOK
KWAJALEIN
MAJURO
TRUK
PONAPE
KUSAIE
TARAWA
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z

Nancy was the third tropical cyclone to develop north of the Marshalls in less than a month. Initially detected by satellite on 15 October, Nancy reached typhoon intensity 48 hours later, 200 nm south of Wake Island.

Tracking south of the subtropical ridge, Nancy took a more northerly course late on the 17th as the trough in the westerlies eroded the ridge near 155°E. On the 18th, reconnaissance aircraft reported a central pressure of 945 mb as Nancy's maximum winds of 105 kt were recorded.

Nancy began to recurve late on the 19th as she moved under upper tropospheric westerlies of 45-50 kt. Early on the 21st, strong vertical shear weakened Nancy to a tropical storm and satellite data showed much of her cirrus canopy removed. Within 48 hours she degenerated into a tropical depression.

On the 22nd, Nancy stalled as she failed to recurve toward a trough in the westerlies. An intensifying ridge behind the trough caused Nancy, now a tropical depression, to track west-southwest for the next several days. Low-level cloud features were readily identifiable on satellite pictures as she moved into the Philippine Sea where the circulation finally lost its identity.

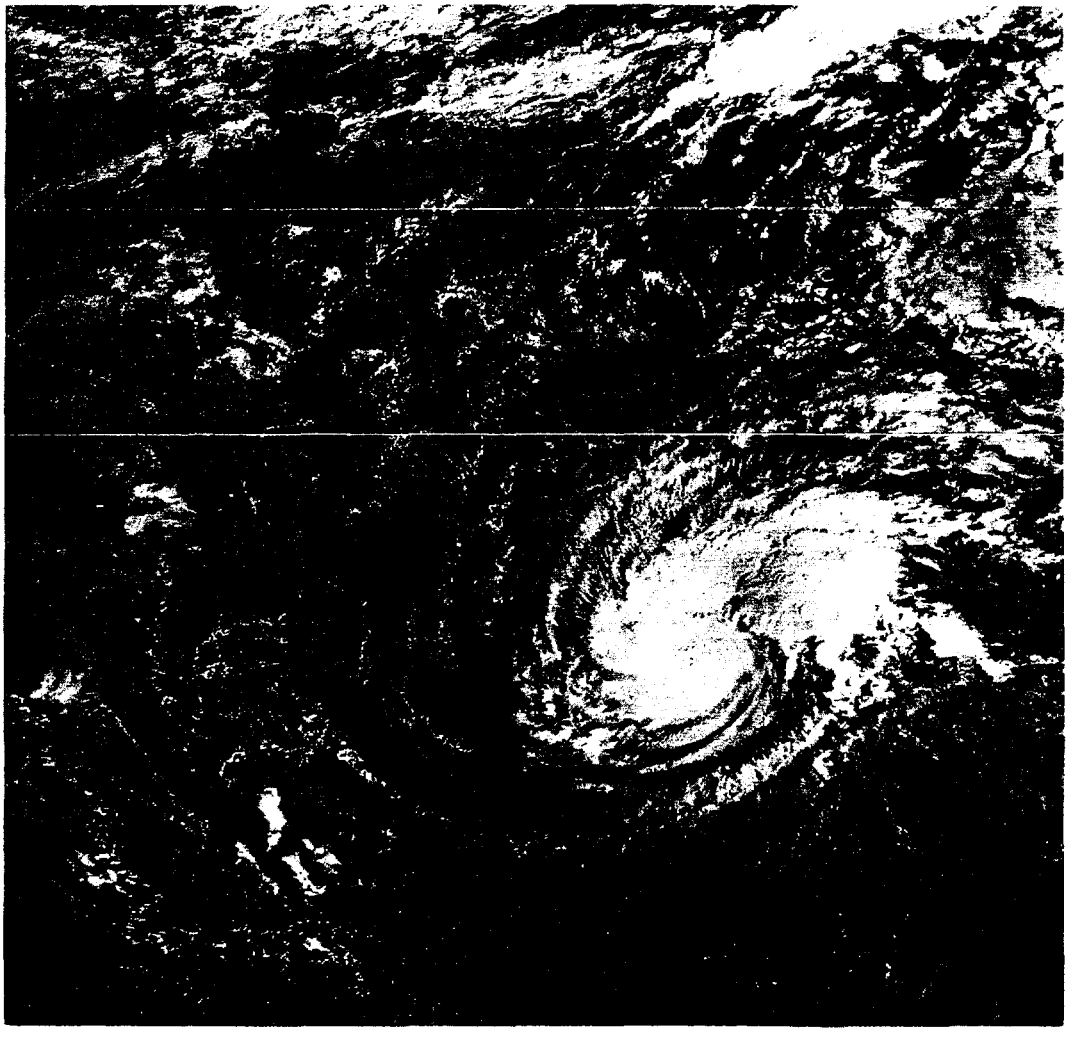
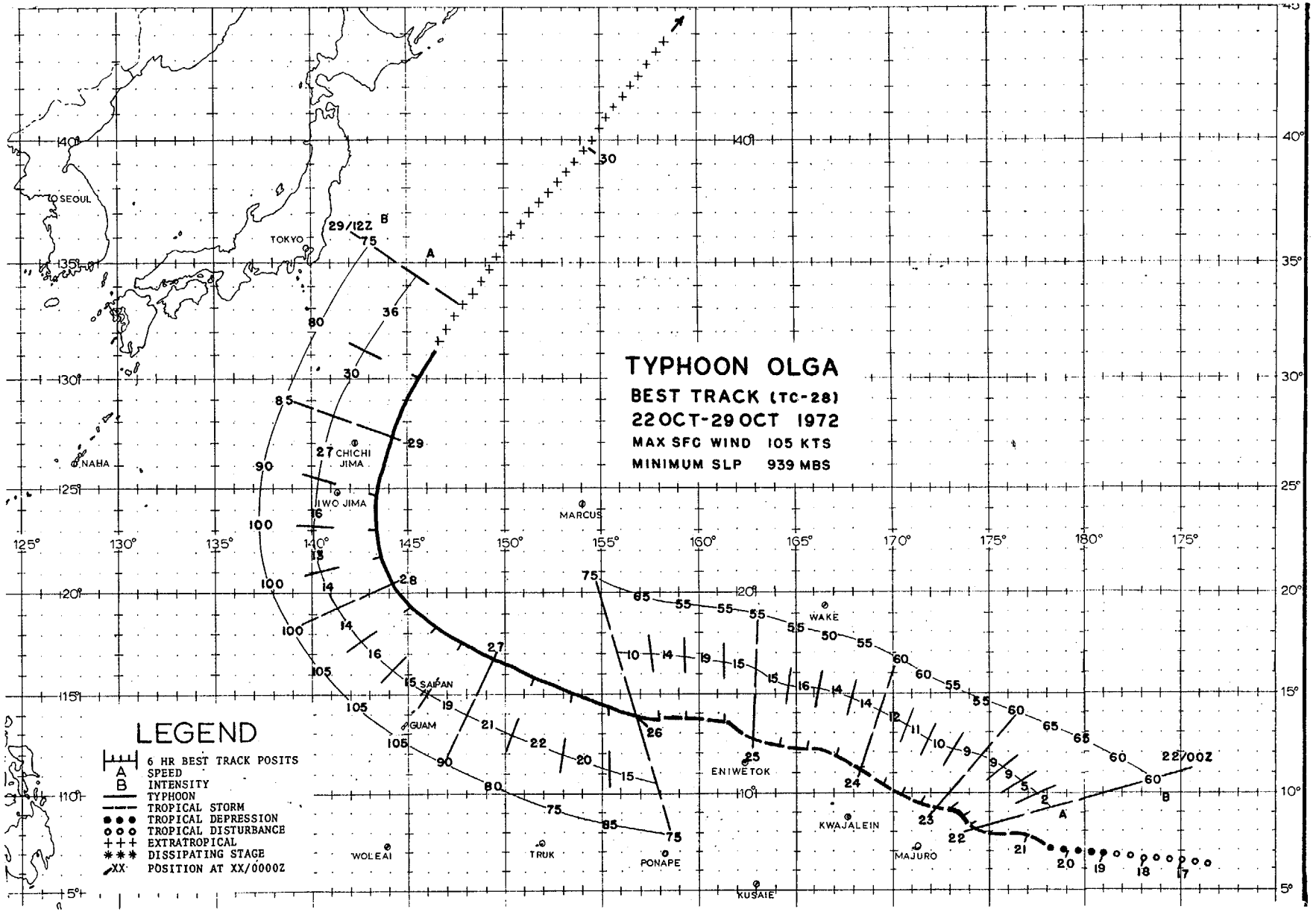


FIGURE 4-30. *Typhoon Nancy 270 nm southwest of Wake Island, 17 October 1972, 2132 GMT. (DAPP data)*


TYPHOON OLGA
BEST TRACK (TC-28)
22 OCT-29 OCT 1972
MAX SFC WIND 105 KTS
MINIMUM SLP 939 MBS
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SEOUL
TOKYO
NAHA
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
ENIWETOK
KWAJALEIN
MAJURO
WOLEAI
TRUK
PONAPE
KUSAIE
29/12Z
22/00Z

A twin cyclone system, one developing in the northern hemisphere and another in the southern hemisphere, became apparent in satellite photographs on 17 October near 175°W. The northern system, destined to be Olga, crossed the dateline on a westerly track and attained tropical storm intensity on the 21st. Bebe, in the southern hemisphere, developed to hurricane force and passed over Funafuti Atoll of the Ellice Islands during the night of the 21st.

Reconnaissance aircraft on the morning of the 22nd indicated that Olga was a strong tropical storm, 170 nm northeast of Majuro Atoll (Figure 4-31). During 23-24 October, Olga showed little change in intensity as she tracked through the northern Marshall Islands. Since the strongest winds were in the northern semicircle, the maximum sustained winds reported in the islands were only 25 kt.

Olga intensified to typhoon force early on the 26th. Continuing to gain strength, Olga accelerated to 20-22 kt late on the 26th and headed for the northern Marianas. During the night of 27-28 October, Olga became the second typhoon in three weeks to sweep through that area. The following morning her central pressure dropped to 939 mb, generating maximum winds of 105 kt (Figure 4-32).

Since Typhoon Marie had destroyed most of the agricultural crops and coconut trees in the islands a few weeks earlier, Olga's effect was less noticeable than it might normally have been.

As a trough deepened over the East China Sea on the 28th, Olga headed northward, rounding the subtropical ridge east of the Volcano Islands late that day. Gale-force winds extended a considerable distance as the United Kingdom ship CAPE YORK, 200 nm east of the center, observed winds of 50-55 kt that night and the following morning.

Accelerating to 30 kt in the strong southwesterly flow southeast of Japan, Olga tracked northeastward and merged with a front east of Honshu late on the 29th.

FIGURE 4-31. *Tropical Storm Olga 170 nm northeast of Majuro Atoll. The circulation depicted in the cloud pattern 1200 nm northwest of Olga is the remains of Nancy, 22 October 1972, 0108 GMT. (DAPP data)*

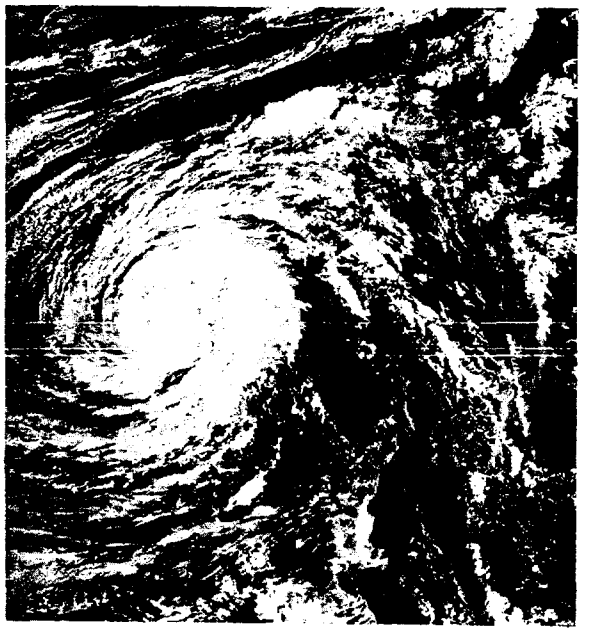
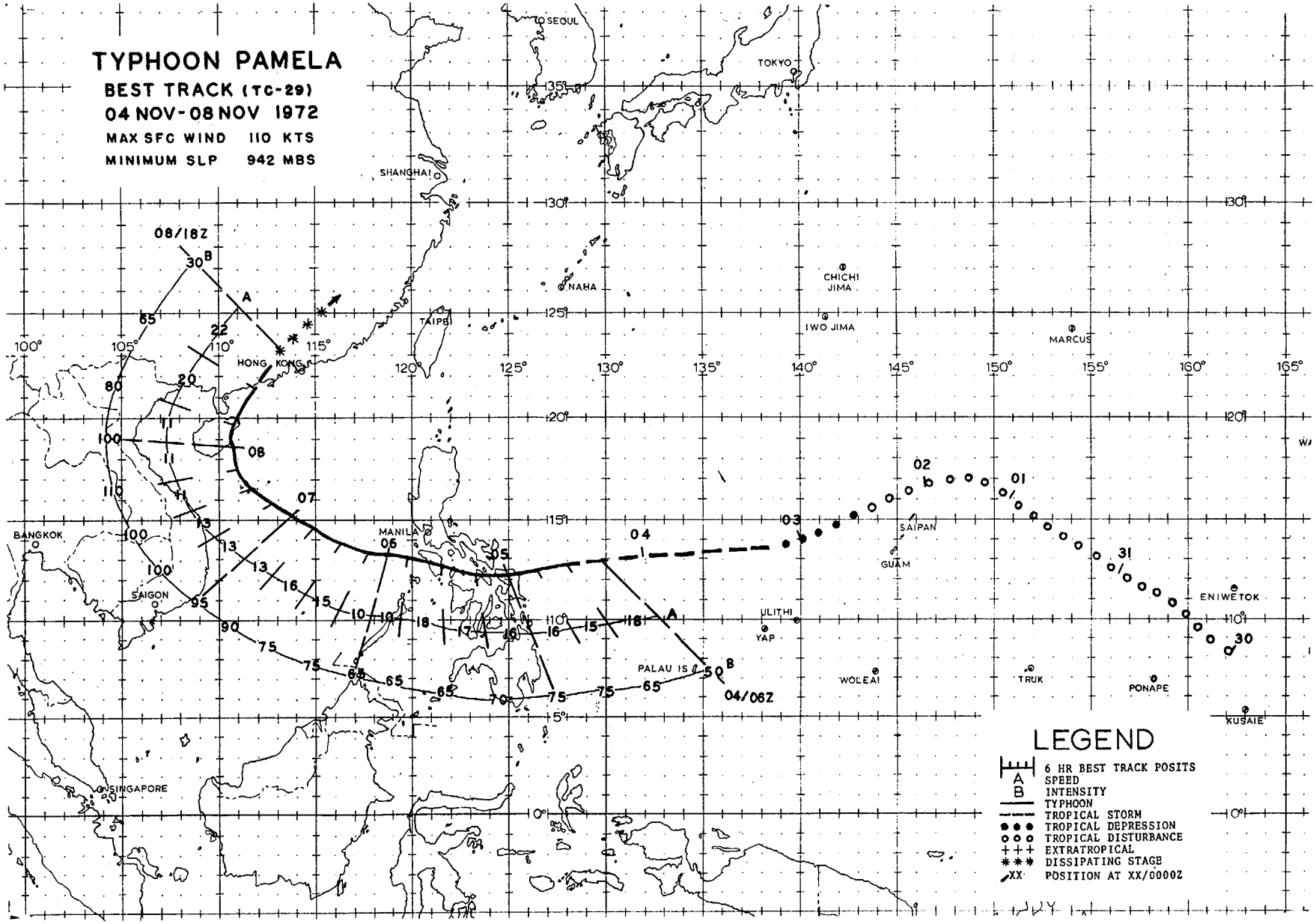


FIGURE 4-32. *Typhoon Olga 300 nm south-southeast of Iwo Jima, 27 October 1972, 2201 GMT. (DAPP data)*


TYPHOON PAMELA
BEST TRACK (TC-29)
04 NOV-08 NOV 1972
MAX SFC WIND 110 KTS
MINIMUM SLP 942 MBS
SEOUL
TOKYO
SHANGHAI
NAHA
CHICHI JIMA
IWO JIMA
MARCUS
TAIPEI
HONG KONG
BANGKOK
MANILA
SAIGON
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
PALAU IS
TRUK
PONAPE
ENIWETOK
KUSAIE
SINGAPORE
08/18Z
04/06Z
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

It was nearly a week after detection by satellite that Pamela reached typhoon intensity, just east of Samar Island, Republic of the Philippines.

The formative stage of Pamela appeared in the eastern Carolines, on 30 October, as an area of enhanced convection. The system was poorly organized for the next several days until it entered the Philippine Sea. Satellite data indicated that tropical-storm intensity was acquired on the afternoon of 3 November as Pamela passed 250 nm north of Yap.

Reconnaissance aircraft, in the afternoon of the following day, located Pamela near 15°N and 130.5°E. The storm was poorly organized with a calm area 40 nm in diameter, a central pressure of 1004 mb, and 700-mb-level winds of 48 kt in the eastern semicircle.

Pamela traversed the Philippine Sea at 15-18 kt as she moved under the influence of a strong subtropical ridge. Satellite pictures and military aircraft radar reports indicate Pamela developed to typhoon intensity prior to her landfall on Samar.

Making landfall on northern Samar the morning of the 5th, Pamela crossed the center of the Republic of the Philippines and emerged 24 hours later west of Mindoro Island. Four fatalities and estimated damage to property and crops of over 700,000 dollars (U.S.) were reported.

Upon entering the South China Sea on the 6th, Pamela's forward speed decreased to 10 kt. Her circulation began to expand as a ship 90 nm east of the center reported winds of 60 kt from the south (06/0000 GMT). Pamela headed west-northwest for the first 18 hours, then northwest on the 7th as a trough in the mid-troposphere moved across the Indo-China peninsula.

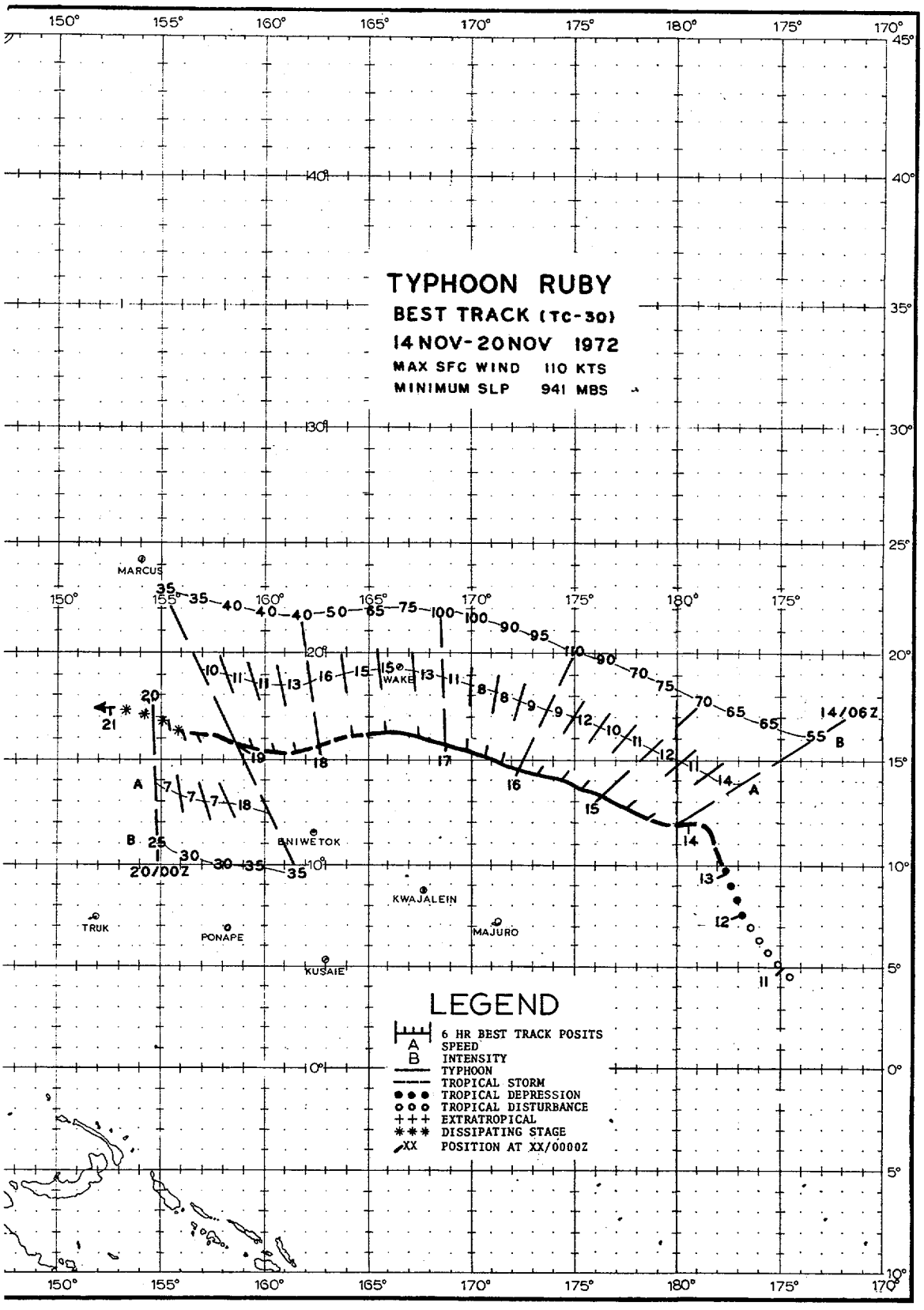
Passing near the Paracel Islands on the evening of the 7th, reconnaissance aircraft reported a central pressure of 942 mb as Pamela reached her peak intensity of 110 kt (Figure 4-33). As she approached Hainan Island in advance of the trough, Pamela began to recurve and skirted the eastern end of the island on the 8th.

Pamela crossed the South China coast in Kwangtun Province about 180 nm west-southwest of Hong Kong. She moved inland during the evening and degenerated into an area of low pressure by the 9th.

Pamela brought strong winds to Hong Kong as gusts of 60 kt were recorded at the International Airport and 59 kt at the Royal Observatory.

As Pamela approached the southern China coast during high tide, flooding occurred in many low-lying areas of Hong Kong. One person was killed and eight were injured, but only minor property damage occurred in the colony. A freighter, SS VAN MINT, ran aground on the southern shore of Lei Yue Mun.

FIGURE 4-33. *Typhoon Pamela in the South China Sea, 7 November 1972, 0300 GMT, ESSA-8 satellite.--Courtesy of Royal Observatory, Hong Kong*


TYPHOON RUBY
BEST TRACK (TC-30)
14 NOV-20 NOV 1972
MAX SFC WIND 110 KTS
MINIMUM SLP 941 MBS
MARCUS
WAKE
BNIWETOK
KWAJALEIN
MAJURO
TRUK
PONAPE
KUSAIE
20/00Z
14/06Z
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z

Ruby was the first tropical storm to form in the central Pacific and cross the international dateline since Typhoon Sarah in September 1967.

An area of enhanced convection was first evidenced in satellite pictures on 7 November south of the Hawaiian Islands near 4°N and 167°W. No organized circulation appeared until the 11th, at which time the system began to drift northward. Indication that winds had reached tropical storm strength was evidenced in satellite data by the 13th. Reconnaissance aircraft observed Ruby to have typhoon-strength winds just west of the international dateline on the 14th.

With a mid-tropospheric anticyclone located between Midway and Wake Island, Ruby moved on a west-northwesterly course at 9-12 kt for the next three days. She reached her peak intensity east of Taongi Atoll on the 16th as reconnaissance aircraft observed a central pressure of 944 mb and maximum winds of 110 kt.

Although the central pressure in Ruby had rapidly risen 20 mb to 983 mb during the morning of the 17th, reconnaissance aircraft observed 100-kt winds in a small band north of the center (Figure 4-34). This observed wind was relatively high for the standard pressure-wind relationship used at JTWC (Takahashi, 1939). By that afternoon the maximum winds had weakened considerably.

Passing south of Wake Island late on the 17th, Ruby was of minimal typhoon force as she shifted to a west-southwest heading. Like Nancy, Ruby moved beneath upper tropospheric westerlies while in the tropics and began to weaken significantly. On the 18th satellite pictures showed the cirrus canopy removed from over the center, revealing the low-level cloud structure of the storm (Figure 4-35). By late on the 19th, Ruby had been reduced to a tropical depression and finally dissipated east of the northern Marianas on the 21st.

FIGURE 4-34. *Typhoon Ruby near her maximum intensity 270 nm south-southeast of Wake, 16 November 1972, 2118 GMT. (DAPP data)*

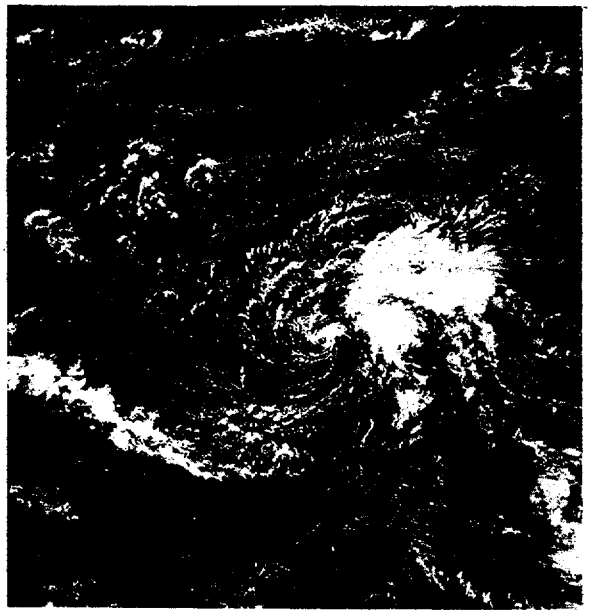
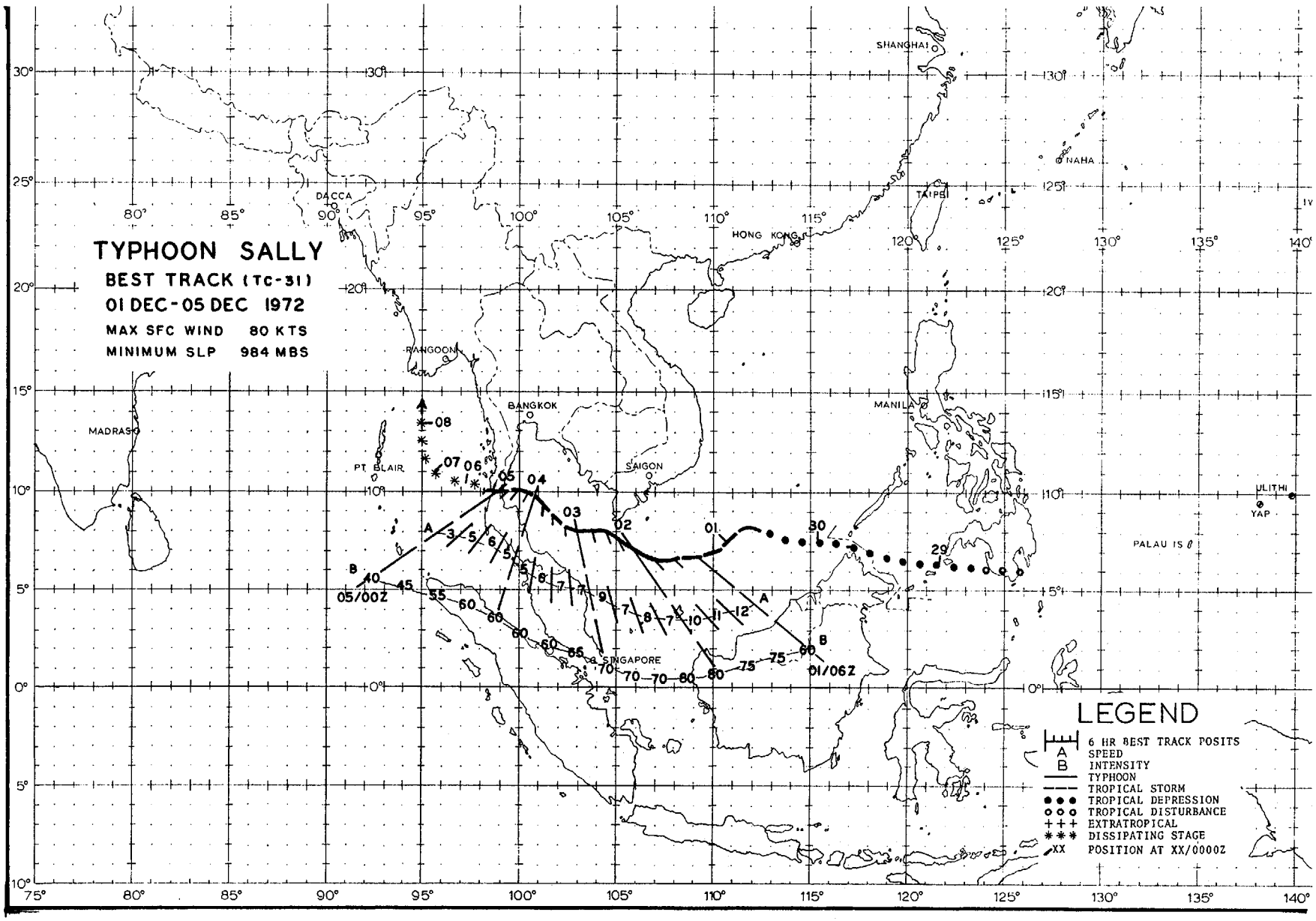


FIGURE 4-35. *Low-level clouds outline the remains of Tropical Storm Ruby 300 nm southwest of Wake, 18 November 1972, 0123 GMT. (DAPP Data)*


TYPHOON SALLY
BEST TRACK (TC-31)
01 DEC-05 DEC 1972
MAX SFC WIND 80 KTS
MINIMUM SLP 984 MBS
SHANGHAI
NAHA
TAIPEI
HONG KONG
DACCA
RANGOON
BANGKOK
MANILA
MADRAS
PT BLAIR
SAIGON
YAP
ULITHI
PALAU IS
SINGAPORE
05/00Z
01/06Z
LEGEND
6 HR BEST TRACK POSITS
SPEED
INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
POSITION AT XX/0000Z

Sally was the first tropical cyclone to develop to typhoon intensity in the month of December since Pamela in 1966. She was also the first tropical cyclone of typhoon intensity, since before 1945, to transit the Gulf of Thailand.

Sally crossed the Sulu Sea on 29 November as a depression in the equatorial trough. Satellite pictures indicated increased organization as she entered the southern portion of the South China Sea. Continuing her low-latitude track, Sally came under the influence of an anticyclone centered south of Hainan Island and was forced equatorward late on the 30th.

Reconnaissance aircraft arrived in the area on the morning of 1 December. A small circular eye of 5 nm in diameter with a partially-formed wall cloud was located. The central pressure was 989 mb and flight level (700 mb) winds were 55 kt in the northeast quadrant. The Japanese ship, TAGAMARU, passed 50 nm northeast of the center (01/1200 GMT). She observed 60-kt winds from the south and a minimum pressure of 992.5 mb.

Attaining typhoon strength, Sally tracked westward, passing the southern tip of Vietnam on the evening of the 2nd (Figure 3-36) and reaching her peak intensity of 80 kt. Sally's track across the Gulf of Thailand on 3-4 December followed the periphery of an irregularly-shaped mid-tropospheric ridge which dominated the synoptic pattern over the Indo-China peninsula.

Late on the 3rd, Sally fell below typhoon strength, continuing to weaken slowly before striking the coast of Thailand on the morning of the 5th. She moved ashore south of Chumphon and crossed the Malaya peninsula at 10°N. Moving over the Andaman Sea that evening, Sally never regained her former intensity and slowly dissipated during the next two days.

Sally brought heavy rains to Thailand, flooding Chumphon and several surrounding provinces (Figure 4-36). Agricultural crops were damaged, hundreds of houses were destroyed, and thousands of coconut trees were uprooted. Twenty trawlers on Samuni and Phangan islands off the coast from Surat Thani were sunk. In the aftermath of Sally, 11 persons were reported killed and five missing.

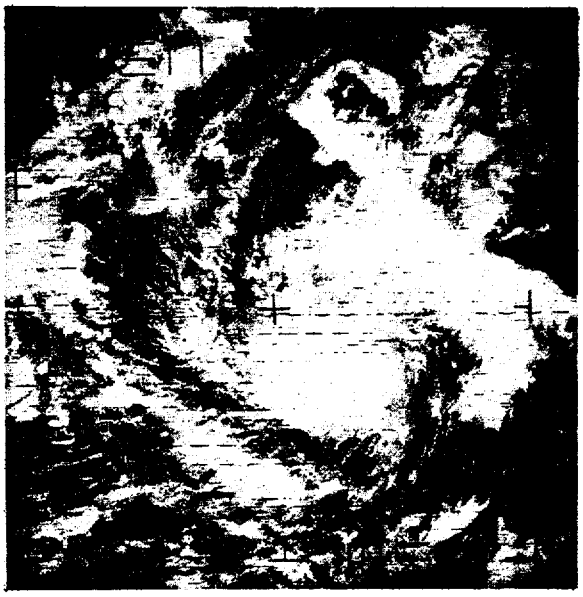
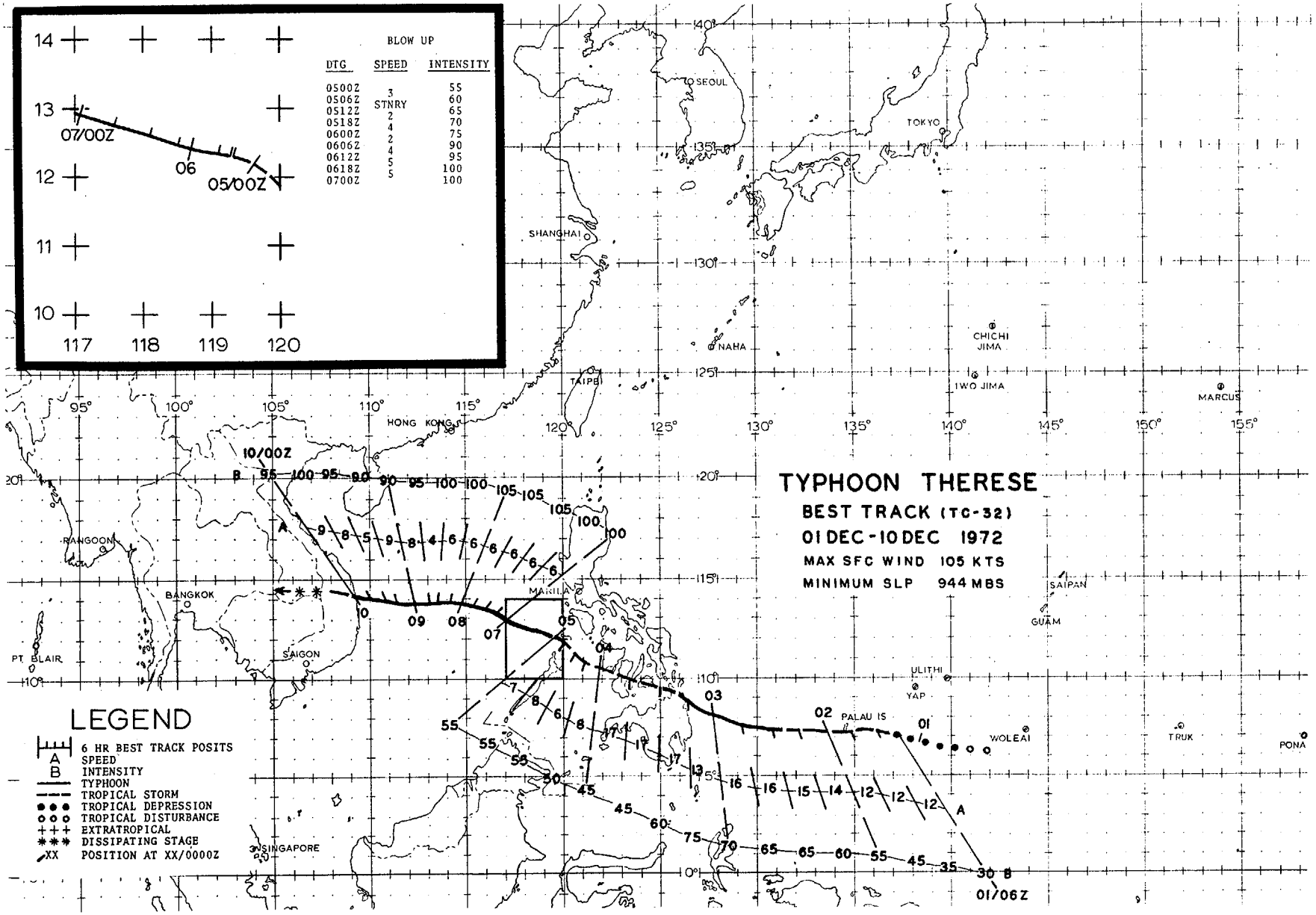


FIGURE 4-36. *Typhoon Sally off the southern coast of Vietnam, 2 December 1972, 0316 GMT, ESSA-8 satellite.--Courtesy of Royal Observatory, Hong Kong*

FIGURE 4-37. *Floodwaters in the coastal town Chumphon, Thailand, resulting from the torrential rains of Sally.--Courtesy of* Bangkok Post


BLOW UP
DTG SPEED INTENSITY
0500Z 3 55
0506Z STNRY 60
0512Z 2 65
0518Z 4 70
0600Z 2 75
0606Z 4 90
0612Z 5 95
0618Z 5 100
0700Z 100
07/00Z
06
05/00Z
14
13
12
11
10
117
118
119
120
TYPHOON THERESE
BEST TRACK (TC-32)
01 DEC - 10 DEC 1972
MAX SFC WIND 105 KTS
MINIMUM SLP 944 MBS
10/00Z
01/06Z
LEGEND
6 HR BEST TRACK POSITS
A SPEED
B INTENSITY
TYPHOON
TROPICAL STORM
TROPICAL DEPRESSION
TROPICAL DISTURBANCE
EXTRATROPICAL
DISSIPATING STAGE
XX POSITION AT XX/0000Z
SEOUL
TOKYO
SHANGHAI
NAHA
CHICHI JIMA
IWO JIMA
MARCUS
TAIPEI
HONG KONG
RANGOON
BANGKOK
MANILA
SAIPAN
GUAM
PT BLAIR
SAIGON
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONA
SINGAPORE

The season's last typhoon developed in the central Carolines from a circulation in the equatorial trough, first noted in satellite and synoptic data on 30 November. While Sally was navigating the South China Sea south of Vietnam, Therese intensified to tropical storm strength. Taking a westerly course, Therese approached the Palau Islands late on 1 December, passing near Koror the morning of the 2nd. Maximum winds observed at Koror were from the north at 43 kt (01/2013 GMT), gusting to 54 kt (01/2009 GMT). Minimum pressure was 995.8 mb (01/2030 GMT).

With the subtropical ridge located over the central Philippine Sea, Therese remained on a westerly course for the next 30 hours at 15-17 kt before making landfall on Mindanao. A few hours prior to the center moving ashore, the United Kingdom ship, DERWENTFIELD, observed 70-kt winds from the south and a minimum pressure of 999.0 mb.

Therese, weakened to tropical-storm intensity by terrain effects, crossed the southern Visayan Island Group the night of 2-3 December. She slowed to 7-8 kt over the northern Sulu Sea before passing over Vusuanga Island the morning of the 5th. The Cuyo Weather Station reported gusts of 55 kt (04/1132 GMT) as the center passed north of the island.

Considerable damage was reported in the Surigao del Sur, Misamis Oriental, and Suriago del Norte provinces of northern Mindanao. Over 4,700 homes were destroyed and 90% of the agricultural crops in these regions were damaged. Total damage estimates were placed at over a million dollars (U.S.). A death toll of 90 persons was reported in the aftermath of the storm. Hardest hit was Cagayan de Oro where 87 persons were drowned in flash flooding in the mountainous terrain.

It took Therese five days to transit the South China Sea after leaving the Republic of the Philippines. This was, in part, due to a stationary trough off the eastern China coast which had weakened the subtropical ridge north of the storm, producing only a weak westerly steering current. Therese intensified significantly during the 24-hour period she was stalled just west of Busuanga Island, transforming from a strong tropical storm to a 95-kt typhoon (Figure 4-38). Her central pressure gradually dropped for the next several days until reconnaissance aircraft reported a minimum of 954 mb on the afternoon of the 8th.

The occurrence of such a well-developed typhoon and the fact that 90-100 kt maximum sustained winds persisted near her center for such a long time (four days) is rare for the South China Sea in December.

Therese arrived ashore on the South Vietnam coast near 14°N on the morning of the 10th. Qui Nhon, 20 nm south of the center, reported gusts of 78 kt and a minimum pressure of 999.8 mb during the typhoon's passage. More than 1,000 homes were heavily damaged and the village of Cat Trang virtually destroyed. Extensive crop damage in the region was also reported.

Moving inland over the highlands region on the evening of the 10th, Therese weakened to a low pressure area and dissipated over eastern Thailand on the 11th.

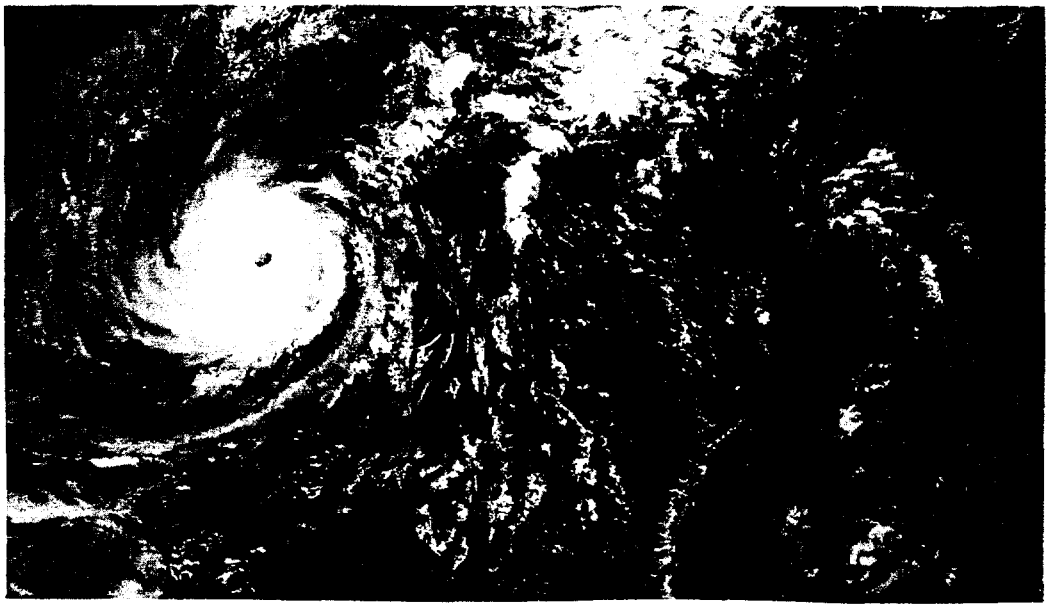


FIGURE 4-38. *Typhoon Therese in the eastern South China Sea 90 nm west of Busuanga Island, Philippines, 6 December 1972, 0350 GMT. (DAPP data)*

3. TYPHOON CENTER FIX DATA

a. DISCUSSION OF DATA:

(1) SATELLITE - These data, listed in the column labeled SAT, were derived from bulletins received from FLEWEAFAC and NESS Suitland. They were based on stored readout of ESSA-9 or NOAA-2 products. Bulletins from APT sites (identified by ICAO letters) were based on ESSA-8 imagery. The source and satellite designator appear in the remarks column. Unless otherwise noted, ESSA-9/NOAA-2 data were supplied by FLEWEAFAC Suitland. Intensity estimates, including two individual systems of classification, follow the fix category column. Detailed information on the interpretation of these data can be found in AWS Technical Report 212 (Section E) and NOAA Technical Memorandum 36.

(2) RADAR - This information is listed in the FIX CAT column and identified by platform as follows:

LRDR - Land Radar
AC R - Aircraft Radar
S RDR - Ship Radar

The latitude and longitude of land-based radars is given in the remarks column. The position of weather reconnaissance aircraft is relative to the vortex center. Position data for aircraft pilot reports (PIREPS) is not normally available. A list of land-based radars providing data in the fix printout follows:

LOCATION	STATION NO.	ICAO SIGN
15.2N 120.5E	98327	RPMK
16.1N 108.2E	48855	VVSD
24.0N 121.6E	46763	RCYU
24.3N 124.2E	47918	
24.8N 125.3E	47927	ROMY
25.0N 121.5E	46692	
25.1N 121.5E	46696	RCTP
26.2N 127.7E	47936	
26.3N 127.8E	47931	RODN
28.4N 129.5E	47909	
30.6N 131.0E	47869	
33.2N 134.2E	47899	
33.6N 130.5E	47808	RJFF
34.4N 132.4E	47765	
35.3N 136.9E	47635	RJNN
35.3N 138.7E	47639	
35.3N 139.7E	47696	RJTX
35.7N 139.8E	47662	RJTD
35.8N 139.4E	47643	RJTJ
36.4N 140.5E	47629	
37.1N 127.0E	47122	RKSO
38.1N 140.9E	47569	RJSS
38.3N 140.9E	47590	

(3) WEATHER RECONNAISSANCE AIRCRAFT - Data from reconnaissance aircraft are denoted in the FIX CAT column by the letter P (penetration). These data were normally obtained at scheduled fix times. Additional reconnaissance aircraft fixes are made during the peripheral data-gathering legs between scheduled fixes. These fixes normally provide date, time, and position data only.

The categories containing information from reconnaissance aircraft fixes are:

(a) ACCY (Accuracy)

The estimated navigation (first number) and meteorological (second number) accuracies are expressed in nautical miles.

(b) FLT LVL (Flight Level)

A constant-pressure-surface flight level (listed in millibars) is normally maintained during a tropical cyclone fix mission. Low-level missions (1500 feet) are conducted at a constant, true altitude.

(c) FLT LVL WND

Wind speed (kt) at flight level is measured by the AN/APN-82 doppler radar system aboard the WC-130 aircraft. The values entered in this category represent the maximum wind measured prior to obtaining a scheduled fix. This measurement may not represent the maximum wind because the aircraft samples only those portions of the central core region along the flight path. For this reason, the maximum wind observed may be significantly lower than the true maximum wind in the circulation (i.e., penetration through weak semicircle on first fix).

A limitation of the doppler radar system occasionally prevents the measurement of the maximum wind in intense typhoons. In areas of heavy rainfall, the radar may track energy reflected from precipitation rather than the sea surface, preventing accurate wind measurement. Also, the doppler radar mount on the WC-130 restricts wind measurements to drift angles $\leq 27°$ if wind is normal to heading of aircraft.

(d) OBS SFC WND

The maximum surface wind (kt) observed from flight level is entered in this column. The observation is an estimate based on the state of the sea (refer to 9WRWGM 105-1, Vol II, pp 2-27, -28). The sampling limitation noted in paragraph (c) also exists for this category. In addition, availability of these data is dependent on undercast conditions. The position relative to the vortex center of items (c) and (d) need not coincide.

(e) OBS MIN SLP

The minimum, observed sea level pressure is normally obtained from a dropsonde released in the vortex center. If the ocean surface is visible, the dropsonde will be released over the center of the area of calm seas; otherwise it is released at the flight level wind center. If the fix is made at 1500 feet, the sea level pressure is extrapolated from that level.

(f) MIN 700 MB HT

The minimum height of the 700 mb surface in the vortex center is recorded in decameters.

(g) FLT LVL T_i/T_o

This denotes maximum temperature measured in the center (T_i) and ambient temperature outside the center (T_o). Ambient temperature is measured just prior to entering the wall cloud. Both temperature observations are in degrees celsius and are made at a flight level of constant pressure surface (700, 500 mb).

Reconnaissance aircraft seldom penetrate on the same azimuth from one fix to another. Thus, the position of T_o normally varies from the center, both in bearing and range. The distance is directly dependent on radar definition of the storm.

(h) EYE FORM/ORIENTATION/DIA

The shape and diameter (nautical miles) of the eye are determined by radar. This is reported only if the center is 50% or more surrounded by wall cloud (see definition in Appendix). The orientation of the major axis is for elliptical cases. Abbreviations for the eye form are:

CIRC - Circular
ELIP - Elliptical
CONC - Concentric

(i) POSIT OF RADAR/REMARKS

This includes the items discussed in (1) and (2) and the remarks contained in the Detailed Vortex/Center Data Message that pertain to conditions near the center of the tropical cyclone. These remarks include character of the wall cloud and feederbands as depicted on the aircraft's radar (APN-59/X-band). Visual flight conditions such as cloudiness in the eye or center are mentioned. If an eye is not depicted on radar, the diameter of the surface or flight level wind center may be included. The storm mission number is entered to the far right of the column to indicate when fix data is received from different aircraft. Three entries of 04 would indicate three fixes obtained by an aircraft on the fourth mission conducted into a tropical cyclone. Abbreviations used in the remarks category follow:

ABBREVIATIONS

ABT	About	EVID	Evidence	PRESS	Pressure
ACFT	Aircraft	EXC	Excellent	PRELIM	Preliminary
ACTV	Activity	EXTDS	Extends	PRTL	Partial
ANAL	Analysis	FBS	Feeder Bands	PSBL	Possible
APPROX	Approximately	FIL	Filled	PSG	Passage
APPRS	Appears	FL	Flight Level	QUAD	Quadrant
APRNT	Apparent	FNTL	Frontal	RDR	Radar
BCMG	Becoming	FRMG	Forming	RETRN	Return
BGNG	Beginning	GRAD	Gradient	RMR	Remark
BLO	Below	GT	Greater Than	RPDLY	Rapidly
BLTN	Bulletin	HR	Hour	SAT	Satellite
BRKN	Broken	HVY	Heavy	SC	Stratocumulus
BRKS	Breaks	IMPVG	Improving	SEMIC	Semicircle
BRLY	Barely	IRREG	Irregular	SEV	Severe
BRT	Bright	K	Thousand	SFC	Surface
BSD	Based	KT	Knots	SHWG	Showing
CHG	Change	LCTD	Located	SML	Small
CI	Cirrus	LGT	Light	SPRL	Spiral
CIRC	Circulation	LND	Land	STG	Stage
CLD	Cloud	LRG	Large	STN	Station
CLSD	Closed	LTL	Little	STRM	Storm
CONSBL	Considerable	LTNG	Lightning	TEMPS	Temperatures
CONT	Continuous	L/V	Light and Variable	TF	Trough
CONV	Convective	MDT	Moderate	THKN	Thickness
CS	Cirrostratus	MSLP	Minimum Sea Level Pressure	TURB	Turbulence
CURV	Curviture	NEG	Negative	UKN	Unknown
DEF	Defined	NM	Nautical Miles	UNDET	Undetermined
DEVEL	Developed	NR	Near	V	Very
DEVELG	Developing	ORG	Organization	VSBL	Visible
DIA	Diameter	ORGANIZ	Organized	W/	With
DIF	Diffuse	OVC	Overcast	WC	Wall Cloud
DISORG	Disorganized	OVR	Over	WCS	Wall Clouds
DSPTG	Dissipating	PIREP	Pilot Report	WK	Weak
DTR	Determined	POSIT	Position	WKR	Weaker
ELSW	Elsewhere	PR	Poorly	WND	Wind
EST	Estimated	PRES	Presentation	YSTY	Yesterday

b. FIX DATA PRINTOUT:

TYPHOON KIT
FIX POSITIONS FOR CYCLONE NO. 1
2 JAN - 9 JAN

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN /OWMD MSL	FLT LVL T/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT DF /REMARKS NALAR
1	020418Z	10.0N 132.0E	SAT	STD B											ESSA 9
2	050110Z	10.2N 132.8E	P	- -	700MB	35	25	-	-	9 -	-	- -	-	-	
3	050519Z	10.0N 136.5E	SAT	STD L											ESSA 9
4	050941Z	9.8N 136.0E	P	- -	700MB	30	15	-	-	11 -	-	- -	-	-	
5	052310Z	10.2N 133.1E	P	2 -	700MB	52	35	992	300	16 10	-	- -	-	-	NEG WC 04
6	060355Z	10.5N 132.4E	P	3 5	700MB	48	35	986	994	12 9	-	- -	-	-	NEG WC 04
7	060618Z	11.0N 132.0E	SAT	STD A	DIA 2	CAT 2.5									ESSA 9
8	060930Z	P 10 5			700MB	52	40	985	994	11 7	CIRC		25	-	OPEN SW 05
9	061200Z	11.1N 130.7E	P	10 5	700MB	60	-	977	988	14 11	CIRC		20	-	CLSD WC 05
10	062210Z	11.4N 128.7E	P	5 2	700MB	100	100	947	963	17 13	CONC	-	5-18	-	INNER-CLSD-OUT-RMKS ALGOOS
11	062359Z	11.5N 128.5E	P	- -	700MB	102	-	-	-	20 -	-	- -	-	-	
12	070300Z	11.8N 127.6E	P	3 2	700MB	110	120	933	950	20 14	CIRC		5	-	CLSD WC 06 ESSA 9
13	070525Z	11.0N 126.0E	SAT	STD A	DIA 3	CAT 4.0									
14	071100Z	11.5N 126.2E	P	10 -	700MB	95	-	956	976	17 8	CIRC		7-30	30	INNER-CLSD-OUTER-RM 07
15	071300Z	11.4N 126.0E	P	10 -	500MB	60	-	961	-	-4 -9	ELIP	SE-NW	30X22	8	INNER WC DISPL, CLSD WL 07
16	071610Z	11.1N 125.7E	P	10 -	500MB	60	-	974	-	-7 -7	ELIP	SE-NW	20X15	-	CLSD WC 07
17	080050Z	10.6N 124.7E	P	2 15	500MB	70	-	-	-	-9 -9	-	- -	-	-	NEG HOR PRES 08
18	080400Z	10.7N 124.5E	P	2 15	500MB	70	-	-	-	-8 -8	-	- -	-	-	NEG EYE 08 ESSA 9
19	080820Z	12.0N 122.5E	SAT	STD A	DIA 5	CAT 3.5									
20	081070Z	10.9N 124.3E	P	2 15	500MB	50	-	-	-	-8 -8	-	- -	-	-	NEG EYE 08
21	080830Z	11.0N 124.4E	P	2 13	500MB	60	-	-	-	-8 -8	-	- -	-	-	NEG EYE 08
22	081625Z	10.5N 122.7E	P	7 13	500MB	40	-	-	-	-8 11	-	- -	-	-	NEG EYE 09
23	082215Z	11.5N 121.7E	P	2 8	500MB	30	-	-	-	-6 -6	-	- -	-	-	NEG EYE 09
24	090600Z	13.0N 121.0E	SAT	STD UNK											ESSA 9

TYPHOON LOLA
FIX POSITIONS FOR CYCLONE NO. 3
26 MAY - 6 JUN

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN /OWMD MSL	FLT LVL T/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT DF /REMARKS NALAR
1	260210Z	12.1N 135.7E	P	15 10	700MB	-	10	1007	-	- -	-	- -	-	-	
2	260359Z	P.0N 134.0E	SAT	STD B T2.0											ESSA 9 ESSA 8 (GUAM)
3	262245Z	7.7N 139.9E	SAT	STD											
4	290457Z	P.0N 160.0E	SAT	STD B											ESSA 9
5	300100Z	P.3N 159.5E	P	5 10	700MB	40	40	996	300	- -	-	- -	-	-	NEG EYE 02
6	300410Z	P.0N 159.7E	SAT	STD L											ESSA 9
7	301010Z	P.4N 159.3E	P	2 10	700MB	40	-	998	305	13 11	CIRC		20	-	WL WELL DEF E 03
8	301620Z	8.9N 159.4E	P	3 10	700MB	40	-	992	302	14 11	-	- -	-	-	NEG HOR PRES 03
9	302305Z	9.7N 159.0E	P	20 10	700MB	40	35	991	299	14 12	-	- -	-	-	NEG WC 04
10	310320Z	9.8N 159.4E	P	10 10	700MB	55	50	987	297	13 11	-	- -	-	-	NEG WC 04 ESSA 9
11	310659Z	9.5N 159.0E	SAT	STD C+											
12	311030Z	9.9N 158.5E	P	2 10	700MB	45	-	984	296	14 12	-	- -	-	-	NEG HOR EYE 05 WC PR DEF 05
13	311530Z	10.2N 158.3E	P	2 5	700MB	52	-	979	296	15 12	CIRC		50	-	
14	312255Z	11.1N 157.7E	P	3 15	700MB	40	45	977	295	15 -	-	- -	-	-	NEG EYE 06 ESSA 8 (GUAM)
15	312312Z	11.0N 158.0E	SAT	STD A	DIA 4	CAT 2.5									
16	010333Z	11.8N 157.2E	P	4 2	700MB	60	55	-	-	14 13	CIRC		30	-	ESSA 9
17	010601Z	11.5N 157.0E	SAT	STD A	DIA 5	CAT 3.0									
18	010958Z	12.5N 156.7E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-	
19	011100Z	12.9N 156.5E	P	40 -	700MB	75	-	980	295	16 11	CIRC	- -	40	-	CLSD WC 07
20	011232Z	12.7N 156.5E	P	- -	700MB	-	-	-	-	- -	-		-	-	
21	011500Z	13.0N 156.4E	P	15 -	700MB	77	-	982	277	17 14	CIRC		40	-	CLSD WL 07
22	012225Z	13.7N 157.0E	P	5 3	700MB	80	80	-	275	18 12	CIRC		40	-	NEG WL 08
23	020330Z	14.0N 157.5E	P	10 5	700MB	95	70	-	276	18 10	CIRC		40	-	NEG WC 08 ESSA 9
24	020501Z	15.0N 157.0E	SAT	T6.5/6.5/D0.5/24HRS											INNER CLSD-OUTER CLSD 09
25	021000Z	15.5N 158.1E	P	30 20	700MB	-	-	965	280	22 12	CONC	-	15-40	-	
26	021221Z	14.0N 158.0E	AC H									- -	-	-	
27	021600Z	16.1N 158.3E	P	15 15	700MB	-	-	950	273	23 14	CIRC		40	-	WL OPEN E PR DEF 09
28	030430Z	18.5N 159.0E	P	2 10	700MB	85	85	980	275	15 13	-	- -	-	-	NEG WL 10
29	030911Z	19.6N 159.7E	P	2 10	700MB	75	-	981	277	16 13	-	- -	-	-	NEG WL 10
30	032230Z	22.2N 160.9E	P	2 5	700MB	30	20	973	264	14 12	-	- -	-	-	NEG EYE 11
31	040000Z	23.0N 162.9E	SAT	STD A	DIA 6	CAT 2.0									ESSA 8 (HOKO)
32	040313Z	23.5N 162.4E	SAT	STD X	DIA 2	CAT 2.0									ESSA 9
33	040400Z	23.4N 161.4E	P	2 5	700MB	70	70	973	251	17 13	CIRC		50	-	WL PR DEF ESSA 9
34	050412Z	27.5N 163.7E	SAT	T3.0/3.5MINUS/W1/24HRS											ESSA 9
35	060319Z	31.0N 169.0E	SAT	T2.0/3.0/W1/24HRS											

TYPHOON ONA
FIX POSITIONS FOR CYCLONE NO. 6
23 JUN - 26 JUN

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV	ACCRY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS RADAR	
1	230420Z	10.9N 130.6E	P	5	15	700MB	35	30	1006	310	- -	-	- -	-	-		
2	230600Z	11.0N 130.0E	SAT	T2.5/2.5PLUS/D1/24HRS													
3	232000Z	10.5N 127.6E	SMOS	-												ESSA 9	
4	232212Z	11.1N 127.7E	P	5	2	700MB	70	80	985	297	15 9	CIRC		25	10	CLSD WC	02
5	240145Z	11.2N 127.2E	SAT	STG	X DIA 3 CAT 2.0											ESSA 8 (ROUN)	
6	240350Z	11.4N 126.5E	P	15	5	850MB	50	65	981	-	16 11	CIRC		15	-	WC PR DEF OPEN NE-SW	03
7	240607Z	11.8N 126.2E	P	-	-	700MB	50	65	-	-	- -	-	- -	-	-		
8	240900Z	12.3N 125.7E	P	-	-	500MB	40	70	-	-	- -4	CIRC		30	-	CLSD WC	03
9	241742Z	13.3N 123.4E	LMOM		-											15.2N 120.5E	
10	242100Z	13.8N 122.8E	LMOM		-							-	- -	-	-	15.2N 120.5E	
11	242328Z	14.1N 122.0E	P	10	5	500MB	70	-	987	-	-3	ELIP	N-S	15X12	5	CLSD WC	05
12	242330Z	14.1N 122.0E	LMOM		-							-	- -	-	-	15.2N 120.5E	
13	250115Z	14.4N 121.7E	LMOM		-							-	- -	-	-	15.2N 120.5E	
14	250236Z	12.5N 119.6E	SAT	STG	X DIA NA CAT 2.0											ESSA 8 (ROUN)	
15	250245Z	14.6N 121.4E	LMOM		-							-	- -	-	-	15.2N 120.5E	
16	250335Z	12.5N 119.7E	SAT	STG	X DIA 6 CAT 2.0											ESSA 8 (ROUN)	
17	250340Z	14.8N 121.1E	LMOM		-							-	- -	-	-	15.2N 120.5E	
18	250410Z	14.8N 120.8E	LMOM		-							-	- -	-	-	15.2N 120.5E	
19	250610Z	15.3N 120.6E	LMOM		-							-	- -	-	-	15.2N 120.5E	
20	250629Z	14.8N 119.5E	SAT	T4.0/4.5/WO/24HRS (NESS)												ESSA 9	
21	250710Z	15.4N 120.4E	LMOM		-							-	- -	-	-	15.2N 120.5E	
22	251625Z	16.4N 117.3E	P	10	10	700MB	60	-	987	298	13 11	CIRC		10	-	WC PR DEF	06
23	251640Z	17.0N 117.5E	AC R		-							-	- -	-	-		
24	252100Z	17.0N 116.0E	AC R		-							-	- -	-	-		
25	252205Z	17.7N 115.5E	P	10	10	700MB	40	85	987	297	14 12	CIRC		20	-	CLSD WC	06
26	260400Z	18.3N 114.5E	P	10	10	500MB	45	85	-	-	5 9	-	- -	-	-	NEG EYE	07
27	260730Z	18.0N 111.5E	SAT	T3.0/4.0MINUS/WO.5/24HRS												ESSA 9	
28	260730Z	18.0N 114.0E	P	10	15	500MB	50	85	-	-	3 1	-	- -	-	-	NEG EYE	07
29	261220Z	19.3N 112.5E	AC R		41							CIRC		18	-		

TYPHOON PHYLLIS
FIX POSITIONS FOR CYCLONE NO. 7
6 JUL - 16 JUL

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV	ACCRY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS RADAR	
1	062220Z	8.9N 156.3E	P	5	10	700MB	35	50	1005	311	9 9	-	- -	-	-	NEG EYE	01
2	070315Z	9.0N 156.2E	P	5	7	700MB	30	45	-	306	12 11	-	- -	-	-	NO DEF EYE	01
3	070442Z	10.0N 157.0E	SAT	T3.0/3.0/D1.5/24HRS												ESSA 9	
4	071040Z	9.4N 155.6E	P	20	20	700MB	35	-	1006	310	10 10	-	- -	-	-	NEG EYE	02
5	071818Z	9.7N 155.4E	P	25	20	700MB	35	-	999	307	15 12	-	- -	-	-	NEG WC	02
6	080023Z	10.0N 157.0E	SAT	STG	C+											ESSA8(GUAM)	
7	080346Z	10.5N 155.0E	SAT	T3.5/3.5D0.5/24HRS												ESSA 9	
8	080415Z	10.8N 155.1E	P	3	3	700MB	35	50	995	305	16 9	ELIP	SW-NE	18X10	5	WC SW	03
9	080630Z	10.8N 155.0E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
10	080955Z	11.0N 154.6E	P	5	10	700MB	45	-	984	305	15 11	CIRC		30	20	WC OPEN N	03
11	081540Z	11.4N 155.2E	P	10	10	700MB	30	-	990	301	14 10	CIRC		15	-		
12	081818Z	11.9N 155.0E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-	WC BRKN SW	04
13	082140Z	12.2N 154.8E	P	15	10	700MB	40	40	-	300	15 11	CIRC		10	-	WC E-S	04
14	090400Z	12.8N 154.5E	P	20	10	700MB	65	-	993	299	12 10	ELIP	E-W	20X 8	-	OVC AS IN EYE	05
15	090444Z	13.0N 155.5E	SAT	4.5/4 5/D1.0/24HRS												ESSA 9	
16	090514Z	12.8N 154.5E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
17	091000Z	13.2N 154.5E	P	5	2	700MB	55	40	987	298	14 11	CIRC		20	4	CLSD WC	05
18	092315Z	13.2N 154.2E	P	10	5	700MB	75	90	971	285	16 11	ELIP	E-W	25X20	-	WC OPEN SE	06
19	100056Z	13.1N 154.2E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
20	100347Z	13.4N 154.5E	SAT	T5.5/5.5/D1.0/24HRS												ESSA 9	
21	100400Z	13.2N 154.1E	P	15	10	700MB	80	130	971	278	15 11	ELIP	E-W	10X20	8	CLSD WC	06
22	101015Z	13.5N 154.0E	P	10	2	700MB	78	-	949	265	17 10	CIRC		12	4	CLSD WC	07
23	101555Z	13.7N 153.9E	P	10	2	700MB	70	-	944	260	18 11	CIRC		15	4	CLSD WC	07
24	102300Z	14.1N 154.1E	P	2	2	700MB	80	100	944	261	18 11	CIRC		15	5	CLSD WC	08
25	110350Z	14.6N 154.0E	P	5	2	700MB	85	120	950	264	21 13	ELIP	SW-NE	15X12	5	WC OPEN SE	08
26	110443Z	15.0N 154.0E	SAT	T6.0/6.0/D0.5/24HRS												ESSA 9	
27	111655Z	15.8N 153.9E	P	5	3	700MB	80	-	-	276	20 10	CIRC		25	10	WC OPEN S-SE	09
28	111530Z	14.4N 153.6E	P	10	4	700MB	80	-	970	276	14 10	-	- -	-	-	WC PR DEF	09
29	112230Z	17.7N 152.2E	P	10	10	700MB	70	100	959	279	21 10	CIRC		40	-	WC PR DEF	10
30	112335Z	14.6N 152.7E	SAT	STG	X DIA 4 CAT 4.0											ESSA 8 (RODN)	
31	120030Z	18.3N 152.2E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
32	120325Z	18.8N 152.5E	P	10	10	700MB	65	100	962	280	16 13	CIRC		40	-	WC OPEN NE-SW	10
33	120351Z	19.0N 152.0E	SAT	STG	X DIA MA CAT 3.5												
34	121350Z	21.0N 148.9E	P	10	15	700MB	50	-	966	282	19 14	CIRC		50	-	WC OPEN SE	11
35	121550Z	21.3N 148.4E	P	10	20	700MB	90	-	964	280	18 10	CIRC		50	5	WC OPEN SE	11
36	122220Z	22.4N 146.6E	P	5	5	700MB	-	80	967	280	16 12	ELIP	E-W	35X30	5	CLSD WC	13
37	130044Z	22.4N 145.7E	SAT	STG	X DIA 3 CAT 3.0											ESSA 8 (RODN)	
38	130330Z	23.3N 145.3E	P	5	5	700MB	-	80	952	268	19 12	ELIP	N-S	35X25	5	CLSD WC	13
39	130945Z	24.5N 143.6E	P	1	3	700MB	70	80	945	264	23 14	CIRC		20	5	WC OPEN W	14
40	131140Z	24.8N 143.1E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
41	131545Z	25.4N 142.3E	P	5	5	700MB	80	-	954	270	20 12	CIRC		25	5	WC OPEN W	14
42	140134Z	27.4N 141.2E	SAT	STG	C											ESSA 8 (RODN)	
43	140445Z	28.4N 139.9E	P	10	10	700MB	45	45	975	286	15 8	-	- -	-	-	NEG DEF	15
44	141030Z	29.4N 138.6E	P	10	10	700MB	05	-	980	292	15 11	-	- -	-	-	WC PR DEF OPEN S	16
45	141207Z	29.6N 138.4E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
46	141500Z	29.9N 138.3E	P	10	20	700MB	65	-	985	295	15 16	-	- -	-	-	NEG EYE	16
47	142202Z	30.9N 137.6E	P	10	10	700MB	55	-	983	295	18 14	-	- -	-	-	NEG EYE	17
48	150125Z	32.8N 138.1E	LMOM		-							-	- -	-	-		
49	150130Z	32.7N 138.2E	LMOM		-							-	- -	-	-	35.8N 139.4E	
50	150457Z	33.0N 138.0E	SAT	T4.0/5.0 MINUS/WO.5/24HRS												ESSA 9	
51	150800Z	34.6N 137.8E	LMOM		-							-	- -	-	-	35.3N 138.7E	
52	150900Z	34.9N 137.8E	LMOM		-							-	- -	-	-	35.3N 138.7E	
53	151000Z	35.1N 138.0E	LMOM		-							-	- -	-	-	35.3N 138.7E	
54	151100Z	35.0N 137.1E	LMOM		-							-	- -	-	-	35.3N 136.9E	
55	151200Z	35.0N 137.1E	LMOM		-							-	- -	-	-	35.3N 136.9E	
56	151200Z	35.0N 137.0E	LMOM		-							-	- -	-	-	35.3N 138.7E	
57	160556Z	36.5N 135.5E	SAT	T2.0/3.0 MINUS/W2.0/24HRS												ESSA 9	

TYPHOON KITA
FIX POSITIONS FOR CYCLONE NO. 8
6 JUL - 26 JUL

FIX NO.	TIME	POSIT	FIX CAT	ACCMY NAV-ME[	FLT LVL	FLT LVL WIND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	IRKN WALL CLD	POSIT OF RADAR /REMARKS	
1	0613 3Z	10.0N 147.5E	SAT	SFC												
2	0704 3Z	11.0N 144.5E	SAT	T1.5/1.5/W0.5/24HRS												
3	0706 0Z	10.5N 144.3E	P	20 6	700MB	-	40	998	-	28 25	-	- -	-	-	ESSA 9	
4	0710 0Z	10.4N 143.9E	P	10 20	700MB	-	50	994	304	12 -	-	- -	-	-	RDR INDICATES EBS FRMG	02
5	0715 15Z	10.5N 143.1E	P	15 15	700MB	50	-	991	299	14 9	-	- -	-	-	WND CNTR 40NM DIA	02
6	0800 2Z	11.0N 142.0E	SAT	SIG A DIA 3 CAT 2.0											RDR PRES POOR ESSA 8 (RDOM)	02
7	0800 23Z	11.5N 142.0E	SAT	SIG A DIA NA CAT 2.0											ESSA 8 (GUAM)	
8	0803 15Z	11.4N 141.6E	P	5 5	700MB	65	70	980	292	16 13	CIRC		30	-	WC OPEN SW	03
9	0805 4Z	11.2N 141.8E	SAT	T3.5/3.5PLUS/D2.0/24HRS											ESSA 9	
10	0810 0Z	11.9N 141.2E	P	10 10	700MB	60	80	976	288	13 11	CIRC		30	4	CLSD WC	04
11	0811 38Z	12.0N 141.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
12	0816 0Z	12.4N 140.8E	P	10 10	700MB	90	-	961	277	17 10	CIRC		18	10	CLSD WC	04
13	0822 0Z	13.0N 140.1E	P	1 5	700MB	100	130	953	266	18 17	CIRC		18	-	WC OPEN SE	05
14	0900 4Z	13.2N 139.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
15	0904 4Z	14.0N 140.0E	SAT	T4.5/4.5/D1.0/24HRS											ESSA 9	
16	0910 0Z	14.6N 138.9E	P	3 3	700MB	115	-	941	258	17 13	CIRC		22	5	CLSD WC	06
17	0912 0Z	14.8N 138.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
18	0916 0Z	15.3N 138.0E	P	3 3	700MB	120	-	-	250	23 10	CIRC		22	5	CLSD WC	06
19	0922 0Z	15.8N 137.5E	P	2 2	700MB	122	120	930	247	21 16	CIRC		25	2	CLSD WC	07
20	1005 2Z	16.5N 136.5E	SAT	T7.0/7.0PLUS/D1.0/24HRS											ESSA 9	
21	1011 0Z	17.3N 135.4E	P	1 1	700MB	102	-	-	230	23 -	CIRC		17	4	CLSD WC	08
22	1013 8Z	17.4N 135.2E	P	- -	700MB	-	-	-	-	- -	CIRC		17	-		
23	1014 5Z	17.4N 134.9E	P	1 1	700MB	120	-	-	232	22 14	CIRC		17	5	CLSD WC	08
24	1023 15Z	17.5N 134.3E	P	- -	700MB	105	85	911	231	21 18	CIRC		20	4	CLSD WC	09
25	1106 4Z	18.5N 134.0E	SAT	T7.5/7.5/D0.5/24HRS											ESSA 9	
26	1116 2Z	18.2N 133.1E	P	5 2	700MB	103	-	930	249	22 13	CIRC		20	8	CLSD WC	10
27	1201 5Z	18.1N 133.9E	SAT	SIG A DIA 4 CAT 4.0											ESSA 8 (RDOM)	
28	1205 4Z	18.1N 132.5E	SAT	SIG A DIA 2 CAT 3.0											ESSA 9	
29	1211 0Z	18.1N 132.5E	P	3 5	700MB	95	-	947	261	18 14	CIRC		35	2	EYE SHAPE CHGING RPDLY	11
30	1213 4Z	17.6N 132.3E	P	- -	700MB	-	-	-	-	- -	CIRC	- -	-	-		
31	1215 3Z	18.1N 132.5E	P	3 8	700MB	105	-	940	262	16 16	CIRC		35	-	PR DEF WC BRKN	11
32	1222 0Z	17.9N 132.5E	P	10 5	700MB	55	40	952	266	16 15	CIRC		13	-	WC OPEN NW ESSA 8 (RDOM)	12
33	1300 4Z	17.6N 132.4E	SAT	SIG C												
34	1303 3Z	18.1N 132.7E	P	2 5	700MB	65	55	953	269	16 13	CIRC		8	-	CLSD WC	12
35	1316 0Z	19.0N 134.1E	P	1 2	700MB	55	-	963	276	14 12	-	- -	-	-	NEG WC	13
36	1323 1Z	17.9N 132.5E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
37	1401 4Z	20.0N 135.1E	SAT	SIG A DIA NA CAT 3.0											ESSA 8	
38	1402 1Z	19.9N 135.0E	P	2 2	700MB	70	-	966	282	17 13	-	- -	-	-	NEG WC	14
39	1404 1Z	20.2N 135.1E	P	2 3	700MB	50	50	967	282	15 15	-	- -	-	-	NEG WC	14
40	1412 4Z	20.8N 135.7E	P	3 10	700MB	60	-	964	280	18 -	-	- -	-	-		
41	1416 0Z	20.9N 135.7E	P	3 10	700MB	70	-	962	279	19 -	-	- -	-	-	NEG WC	15
42	1422 8Z	21.1N 135.6E	P	2 3	700MB	70	50	965	280	17 15	CIRC		40	-	WND CNTR 40NM DIA	16
43	1504 3Z	20.5N 135.5E	SAT	T5.0/5.0/S0/24HRS											ESSA 9	
44	1605 5Z	22.0N 135.0E	SAT	SIG A DIA 3 CAT 2.0												
45	1610 3Z	21.7N 134.7E	P	3 20	700MB	50	-	965	280	15 -	-	- -	-	-	700MB WND CNTR 30NM DIA	17
46	1612 0Z	22.5N 134.3E	P	5 5	700MB	32	-	966	281	16 13	-	- -	-	-	OVC ABV AND BLO IN CNTR	18
47	1704 0Z	22.9N 133.8E	P	5 10	700MB	30	25	965	279	15 -	-	- -	-	-	CNTR FIL W/ SC	19
48	1704 5Z	23.0N 131.5E	SAT	T4.5/4.5PLUS/D1.5/24HRS											ESSA 9	
49	1706 0Z	22.9N 133.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
50	1709 3Z	23.1N 133.6E	P	5 5	700MB	60	40	-	278	14 15	-	- -	-	-	SFC CNTR 50NM DIA	19
51	1716 0Z	23.5N 133.9E	P	5 10	700MB	80	-	966	277	15 12	CIRC		60	15	CLSD WC	20
52	1721 1Z	23.5N 133.9E	P	5 10	700MB	80	50	962	277	14 14	CIRC		80	15	WC OPEN SW	20
53	1801 1Z	23.9N 134.0E	SAT	SIG A DIA NA CAT 3.0											ESSA 8 (RDOM)	
54	1805 5Z	24.3N 133.8E	SAT	T5.0/5.0/D0.5/24HRS											ESSA 9	
55	1815 5Z	25.2N 134.4E	P	5 5	700MB	60	-	960	274	16 14	CIRC		70	15	WC OPEN NW	21
56	1817 1Z	25.6N 134.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
57	1822 5Z	26.1N 134.5E	P	3 10	700MB	40	40	961	276	16 15	-	- -	-	-	SFC CNTR 60 50NM DIA	22
58	1900 0Z	26.1N 134.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
59	1901 5Z	26.1N 135.2E	SAT	SIG A DIA NA CAT 3.0											ESSA 8 (RDOM)	
60	1903 3Z	26.6N 134.2E	P	5 10	700MB	60	45	960	276	16 16	-	- -	-	-	SFC CNTR 60 50NM DIA	22
61	1904 5Z	26.5N 134.0E	SAT	T5.5/5.5/D0.5/24HRS											ESSA 9	
62	1910 1Z	27.3N 133.4E	P	2 8	700MB	50	36	962	276	- -	-	- -	-	-	OVC AS ABV	
63	1912 0Z	27.3N 133.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
64	1915 3Z	27.5N 132.7E	P	2 10	700MB	60	-	964	277	- -	-	- -	-	-		23
65	1922 0Z	27.9N 132.0E	P	2 10	700MB	65	-	964	278	16 14	-	- -	-	-	OVC BLO-SC IN CNTR	24
66	2000 5Z	28.0N 131.7E	SAT	SIG A DIA NA CAT 4.0											ESSA 8 (RDOM)	
67	2002 3Z	28.1N 131.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
68	2003 0Z	28.2N 131.1E	P	2 10	700MB	80	65	965	279	16 14	-	- -	-	-	WND CNTR 35NM DIA	24
69	2005 6Z	28.5N 130.5E	SAT	T4.5/5.5MINUS/W1.0/24HRS											ESSA 9	
70	2010 6Z	28.4N 129.8E	P	5 5	700MB	55	-	963	277	14 14	-	- -	-	-	LRG CNTR-SIZE UNDET	25
71																
72	2013 0Z	28.5N 129.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
73	2015 8Z	28.0N 129.0E	P	5 5	700MB	60	-	-	284	14 13	-	- -	-	-	FL CNTR V BROAD	25
74	2022 1Z	28.0N 128.4E	P	1 5	700MB	30	-	-	285	- -	-	- -	-	-	FL CNTR V BROAD	26
75	2023 4Z	28.9N 128.3E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
76	2100 3Z	28.7N 127.6E	LRDR	-							-	- -	-	-	26.3N 127.8E	
77	2102 2Z	28.7N 127.4E	LRDR	-							-	- -	-	-	26.3N 127.8E	
78	2103 3Z	28.7N 127.1E	LRDR	-							-	- -	-	-	26.3N 127.8E	
79	2104 0Z	28.6N 127.6E	LRDR	-							ELIP	E-W	99X70	-	26.3N 127.8E	
80	2104 1Z	28.8N 127.6E	P	1	700MB	60	45	972	285	- -	-	- -	-	-	FL CNTR BROAD AND DIF	26
81	2106 5Z	28.5N 127.5E	SAT	SIG A DIA 2 CAT 3.0											ESSA 9	
82	2110 0Z	28.7N 127.3E	P	5 5	700MB	35	40	967	281	13 11	-	- -	-	-		27
83	2114 5Z	28.9N 126.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
84	2115 1Z	28.2N 126.9E	P	10 5	700MB	60	-	967	280	15 14	-	- -	-	-		27
85	2119 0Z	27.9N 126.8E	LRDR	-							-	- -	-	-	26.2N 127.7E	
86	2119 5Z	27.6N 126.5E	LRDR	-							-	- -	-	-	26.3N 127.8E	
87	2200 0Z	27.9N 126.6E	LRDR	-							-	- -	-	-	26.2N 127.7E	
88	2200 4Z	27.9N 125.8E	P	5 3	700MB	65	65	-	279	17 15	CIRC		40	-	WC OPEN W	28
89	2201 0Z	27.9N 126.3E	LRDR	-							-	- -	-	-	26.2N 127.7E	
90	2203 0Z	27.9N 125.9E	LRDR	-							-	- -	-	-	26.2N 127.7E	
91	2205 8Z	27.5N 125.6E	P	5 5	700MB	65	70	-	278	17 14	CIRC		40	-	WC PR DEF	28
92	2205 8Z	27.4N 125.7E	SAT	T6.0/6.0/D0.5/24HRS											ESSA 9	
93	2206 0Z	27.3N 125.6E	LRDR	-							-	- -	-	-	24.8N 125.3E	
94	2206 5Z	27.4N 125.5E	P	2 5	700MB	-	-	960	277	15 13	-	- -	-	-	NEG WC	29
95	2207 0Z	27.2N 125.4E	LRDR	-							-	- -	-	-	26.2N 127.7E	
96	2208 0Z	27.2N 127.2E	LRDR	-							-	- -	-	-	24.8N 125.3E	
97	2208 0Z	26.9N 126.6E	LRDR	-							-	- -	-	-	26.2N 127.7E	
98	2209 0Z	27.1N 125.4E	LRDR	-							-	- -	-	-	24.8N 125.3E	
99	2212 3Z	26.4N 124.9E	LRDR	-							-	- -	-	-	26.3N 127.8E	

TYPHOON NIDA
FIX POSITIONS FOR CYCLONE NO. 8
6 JUL - 26 JUL

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV	ACCRY MET	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN /00MB HGT	FLT LVL T/TD	EYE FORM	UNIFORMITY	EYE DIA	1MKN WALL CLD	POSIT OF MAXAM	/REMARKS	
100	221330Z	26.4N 125.2E	P	5	6	700MB	60	-	959	275	17 15	-	- -	-	-		30
101	221330Z	26.3N 124.9E	LKUM		-							-	- -	-	-		
102	221400Z	26.4N 125.1E	LKUM		-							-	- -	-	-	26.3N 127.8E 24.8N 125.3E	
103	221400Z	26.5N 124.7E	LKUM		-							-	- -	-	-		
104	221430Z	26.3N 124.9E	LKUM		-							-	- -	-	-	26.2N 127.7E 26.3N 127.8E	
105	221500Z	26.3N 125.0E	LKUM		-							-	- -	-	-		
106	221500Z	26.3N 124.7E	LKUM		-							-	- -	-	-	24.8N 125.3E 26.2N 127.7E	
107	221600Z	26.2N 124.9E	LKUM		-							-	- -	-	-		
108	221600Z	25.9N 124.9E	LKUM		-							-	- -	-	-	24.8N 125.3E 26.2N 127.7E	
109	221635Z	26.0N 125.6E	LKUM		-							-	- -	-	-		
110	221642Z	26.8N 125.0E	LKUM		-							-	- -	-	-	26.3N 127.8E 26.3N 127.8E	
111	221900Z	26.1N 125.2E	LKUM		-							-	- -	-	-		
112	221900Z	26.1N 125.1E	LKUM		-							-	- -	-	-	24.8N 125.3E 26.2N 127.7E	
113	222000Z	26.0N 125.3E	LKUM		-							-	- -	-	-		
114	222000Z	26.0N 125.1E	LKUM		-							-	- -	-	-	24.8N 125.3E 26.2N 127.7E	
115	222030Z	25.9N 125.1E	P	3	10	700MB	60	-	961	277	16 14	CIRC		50	10		31
116	222115Z	26.3N 125.7E	LKUM		-							-	- -	-	-	MC OPEN SE++ 26.2N 127.7E	
117	222200Z	25.7N 125.2E	P	3	5	700MB	50	-	961	277	15 13	CIRC		50	-		31
118	222200Z	25.8N 125.0E	LKUM		-							-	- -	-	-	MC PR OFF 24.8N 125.3E	
119	222200Z	25.7N 125.0E	LKUM		-							-	- -	-	-		
120	230000Z	25.4N 125.0E	LKUM		-							-	- -	-	-	26.2N 127.7E 24.0N 121.6E	
121	230000Z	25.8N 124.9E	LKUM		-							-	- -	-	-		
122	230136Z	23.5N 125.3E	SAT	SIG	A	DIA 6	CAT 4.0									24.8N 125.3E ESSA 8 (RJTC)	
123	230200Z	25.4N 125.0E	LKUM		-							-	- -	-	-	24.8N 125.3E	
124	230200Z	25.5N 125.2E	LKUM		-							-	- -	-	-	26.2N 127.7E	
125	230300Z	25.4N 125.2E	LKUM		-							-	- -	-	-	24.8N 125.3E	
126	230300Z	25.3N 125.1E	LKUM		-							-	- -	-	-	26.2N 127.7E	
127	230400Z	25.7N 125.3E	LKUM		-							-	- -	-	-	24.0N 121.6E	
128	230400Z	25.4N 125.0E	LKUM		-							-	- -	-	-	24.8N 125.3E	
129	230400Z	24.9N 125.1E	LKUM		-							-	- -	-	-	26.2N 127.7E	
130	230430Z	25.5N 125.3E	LKUM		-							-	- -	-	-	24.0N 121.6E	
131	230500Z	25.5N 124.9E	LKUM		-							-	- -	-	-	24.0N 121.6E	
132	230530Z	25.2N 125.3E	LKUM		-							-	- -	-	-	24.8N 125.3E	
133	230550Z	25.3N 125.4E	P	3	2	700MB	55	60	-	276	17 14	-	- -	-	-	SFC CNTR 20NM DIA	32
134	230600Z	25.2N 125.1E	LKUM		-							-	- -	-	-	24.8N 125.3E	
135	230610Z	26.2N 126.7E	LKUM		-							-	- -	-	-	26.3N 127.8E	
136	230657Z	25.3N 125.0E	SAT	SIG	A	DIA 4	CAT 3.5									ESSA 9	
137	230700Z	25.1N 125.3E	LKUM		-							-	- -	-	-	24.8N 125.3E	
138	230700Z	25.1N 125.0E	LKUM		-							-	- -	-	-	26.2N 127.7E	
139	230707Z	25.1N 125.3E	P	3	2	700MB	70	60	-	276	17 13	CIRC		50	-		32
140	230715Z	25.0N 125.8E	LKUM		-							-	- -	-	-		
141	230745Z	24.8N 125.3E	LKUM		-							-	- -	-	-	26.3N 127.8E	
142	230800Z	25.0N 124.6E	LKUM		-							-	- -	-	-	24.0N 121.6E	
143	230800Z	25.0N 125.3E	LKUM		-							-	- -	-	-	24.8N 125.3E	
144	230800Z	25.0N 124.9E	LKUM		-							-	- -	-	-	26.2N 127.7E	
145	230815Z	25.2N 125.7E	LKUM		-							-	- -	-	-	26.3N 127.8E	
146	230830Z	24.8N 125.3E	LKUM		-							CIRC		90	-	26.2N 127.7E	
147	230900Z	25.0N 125.3E	LKUM		-							-	- -	-	-	24.7N 125.3E	
148	230900Z	25.0N 124.6E	LKUM		-							-	- -	-	-	24.0N 121.6E	
149	230900Z	24.8N 125.3E	LKUM		-							-	- -	-	-	26.3N 127.8E	
150	231000Z	24.9N 125.3E	LKUM		-							-	- -	-	-	24.7N 125.3E	
151	231000Z	24.8N 125.5E	LKUM		-							-	- -	-	-	26.3N 127.8E	
152	231000Z	24.8N 125.5E	LKUM		-							-	- -	-	-	26.2N 127.7E	
153	231100Z	24.8N 125.3E	LKUM		-							-	- -	-	-	24.8N 125.3E	
154	231100Z	24.8N 125.5E	LKUM		-							-	- -	-	-	26.2N 127.7E	
155	231100Z	24.8N 125.8E	LKUM		-							-	- -	-	-	26.3N 127.8E	
156	231200Z	24.8N 125.3E	LKUM		-							-	- -	-	-	24.2N 127.7E	
157	231330Z	24.9N 126.0E	LKUM		-							-	- -	-	-	26.3N 127.8E	
158	231400Z	24.7N 125.9E	LKUM		-							-	- -	-	-	24.8N 125.3E	
159	231400Z	25.0N 125.9E	LKUM		-							-	- -	-	-	26.2N 127.7E	
160	231400Z	24.8N 125.7E	LKUM		-							-	- -	-	-	26.3N 127.8E	
161	231530Z	24.8N 125.8E	LKUM		-							-	- -	-	-	26.3N 127.8E	
162	231600Z	24.8N 125.8E	LKUM		-							-	- -	-	-	26.3N 127.8E	
163	231600Z	24.2N 125.9E	LKUM		-							-	- -	-	-	24.2N 124.2E	
164	231600Z	24.7N 126.0E	LKUM		-							-	- -	-	-	24.8N 125.3E	
165	231700Z	24.8N 126.3E	LKUM		-							-	- -	-	-	26.3N 127.8E	
166	231710Z	24.6N 126.2E	LKUM		-							-	- -	-	-	26.3N 127.8E	
167	231725Z	24.5N 126.2E	LKUM		-							-	- -	-	-	26.3N 127.8E	
168	231811Z	24.9N 126.4E	LKUM		-							-	- -	-	-	26.3N 127.8E	
169	231900Z	25.0N 126.5E	LKUM		-							-	- -	-	-	24.8N 125.3E	
170	231900Z	24.9N 126.4E	LKUM		-							-	- -	-	-	26.3N 127.8E	
171	231900Z	25.0N 126.6E	LKUM		-							-	- -	-	-	26.2N 127.7E	
172	231945Z	24.8N 126.3E	LKUM		-							-	- -	-	-	26.2N 127.7E	
173	232000Z	25.0N 126.5E	LKUM		-							-	- -	-	-	24.8N 125.3E	
174	232100Z	25.2N 126.8E	LKUM		-							-	- -	-	-	24.2N 127.7E	
175	232100Z	25.3N 126.7E	LKUM		-							-	- -	-	-	26.3N 127.8E	
176	232100Z	25.1N 126.7E	LKUM		-							-	- -	-	-	24.8N 125.3E	
177	232200Z	25.3N 126.9E	LKUM		-							-	- -	-	-	26.2N 127.7E	
178	232300Z	25.5N 126.8E	P	2	10	700MB	75	60	959	273	16 16	CIRC		60	-	MC PR OFF	33
179	232300Z	25.5N 126.8E	LKUM		-							-	- -	-	-	26.2N 127.7E	
180	232300Z	25.4N 126.7E	LKUM		-							-	- -	-	-	24.8N 125.3E	
181	240000Z	25.5N 126.8E	LKUM		-							-	- -	-	-	26.2N 127.7E	
182	240000Z	25.6N 126.8E	LKUM		-							-	- -	-	-	24.8N 125.3E	
183	240100Z	25.6N 126.9E	LKUM		-							-	- -	-	-	24.8N 125.3E	
184	240100Z	25.6N 127.0E	LKUM		-							-	- -	-	-	26.2N 127.7E	
185	240110Z	25.7N 126.8E	P	5	10	700MB	65	-	-	272	16 13	CIRC		50	-	MC V PR DEF	33
186	240200Z	25.7N 127.0E	LKUM		-							-	- -	-	-	24.8N 125.3E	
187	240200Z	25.7N 127.0E	LKUM		-							-	- -	-	-	26.2N 127.7E	
188	240222Z	25.6N 126.9E	SAT	SIG	A	DIA 5	CAT 3.0									ESSA 6 (RJTC)	
189	240300Z	25.8N 127.0E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
190	240300Z	24.7N 127.1E	LKUM		-							-	- -	-	-	24.8N 125.3E	
191	240300Z	25.7N 127.1E	LKUM		-							-	- -	-	-	26.2N 127.7E	
192	240345Z	25.9N 127.1E	P	5	10	700MB	70	-	954	269	17 14	CIRC		50	-	MC PR DEF	33
193	240400Z	25.9N 127.3E	LKUM		-							-	- -	-	-	24.8N 125.3E	
194	240400Z	25.8N 127.1E	LKUM		-							-	- -	-	-	26.2N 127.7E	
195	240500Z	25.8N 127.4E	LKUM		-							-	- -	-	-	24.8N 125.3E	
196	240500Z	25.8N 127.3E	LKUM		-							-	- -	-	-	26.2N 127.7E	
197	240600Z	26.2N 127.0E	SAT	T6.0/6.0PLUS/S0/24HRS												ESSA 9	
198	240600Z	24.1N 127.4E	LKUM		-							-	- -	-	-	24.8N 125.3E	

TYPHOON RITA

FIX POSITIONS FOR CYCLONE NO: 8

6 JUL - 26 JUL

FIX NO.	TIME	POSIT	FIX CAT	ACCMY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T/TD	EYE PCHR	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR	/REMARKS	
199	2406000Z	26.1N 127.3E	LRUR	-							-	- -	-	-	26.2N 127.7E		
200	2401212Z	24.0N 127.5E	AC R	-							-	- -	-	-			
201	2401500Z	24.3N 127.3E	P	- -	700MB	65	-	-	272	13 11	CIRC		30	20	WC OPEN NE		34
202	2409000Z	24.4N 127.5E	LRUR	-							-	- -	-	-	26.2N 127.7E		
203	2410000Z	24.3N 127.6E	LRUR	-							-	- -	-	-	26.2N 127.7E		
204	2410212Z	24.3N 127.7E	P	3 3	700MB	81	45	-	268	15 13	CIRC		30	15	CLSD WC		35
205	2412000Z	24.4N 127.7E	LRUR	-							-	- -	-	-	26.2N 127.7E		
206	2412152Z	26.7N 127.6E	LRUR	-							-	- -	-	-	26.3N 127.8E		
207	2412342Z	27.0N 127.3E	P	10 5	700MB	72	-	-	270	15 14	CIRC		30	15	CLSD WC		35
208	2412452Z	27.0N 127.6E	LRUR	-							-	- -	-	-	26.3N 127.8E		
209	2413000Z	27.1N 127.9E	LRUR	-							-	- -	-	-	26.4N 129.5E		
210	2414000Z	27.1N 127.7E	LRUR	-							-	- -	-	-	26.2N 127.7E		
211	2415000Z	27.3N 127.6E	LRUR	-							-	- -	-	-	26.2N 127.7E		
212	2416000Z	27.5N 127.5E	LRUR	-							-	- -	-	-	26.4N 129.5E		
213	2416000Z	27.4N 127.6E	LRUR	-							-	- -	-	-	26.2N 127.7E		
214	2417000Z	27.6N 127.6E	LRUR	-							-	- -	-	-	26.4N 129.5E		
215	2417000Z	27.6N 127.5E	LRUR	-							-	- -	-	-	26.2N 127.7E		
216	2417140Z	27.7N 127.7E	LRUR	-							-	- -	-	-	26.3N 127.8E		
217	2418000Z	27.1N 127.9E	LRUR	-							-	- -	-	-	26.4N 129.5E		
218	2418000Z	27.7N 127.8E	LRUR	-							-	- -	-	-	26.2N 127.7E		
219	2419030Z	27.7N 127.8E	LRUR	-							-	- -	-	-	26.3N 127.8E		
220	2419000Z	27.7N 127.9E	LRUR	-							-	- -	-	-	26.4N 129.5E		
221	2419000Z	27.8N 127.8E	LRUR	-							-	- -	-	-	26.2N 127.7E		
222	2500000Z	28.3N 127.7E	LRUR	-							-	- -	-	-	26.4N 129.5E		
223	2501124	28.3N 128.0E	P	4 10	700MB	65	-	957	272	15 13	CIRC		45	-	WC OPEN NE-SW		36
224	2501242	28.9N 127.9E	SAT	SIG A	DIA 5	CAT 3.0									ESSA 8 (RJTZ)		
225	2502000Z	29.7N 127.9E	LRUR	-							-	- -	-	-	26.4N 129.5E		
226	2503352	29.9N 127.8E	P	5 10	700MB	70	-	956	271	15 12	CIRC		40	-	WC V PR DEF		36
227	2504000Z	29.1N 127.8E	LRUR	-							-	- -	-	-	26.4N 129.5E		
228	2505000Z	29.3N 127.7E	LRUR	-							-	- -	-	-	26.4N 129.5F		
229	2505072	29.5N 127.5E	SAT	T5.0/6.0/W1.0/24HRS											ESSA 9		
230	2506052	29.4N 127.6E	P	5 10	700MB	70	-	955	271	15 13	CIRC		40	-	WC V PR DEF		36
231	2507000Z	29.5N 127.9E	LRUR	-							-	- -	-	-	26.4N 129.5E		
232	2508000Z	29.6N 127.7E	LRUR	-							-	- -	-	-	26.4N 129.5E		
233	2508000Z	30.0N 127.6E	LRUR	-							-	- -	-	-	26.4N 129.5E		
234	2510000Z	30.3N 127.6E	LRUR	-							-	- -	-	-	26.4N 129.5E		
235	2510402	30.2N 127.9E	P	- -	700MB	80	45	958	273	14 12	CIRC		45	-	CLSD WC		37
236	2511000Z	30.3N 127.5E	LRUR	-							-	- -	-	-	26.4N 129.5E		
237	2512100Z	30.0N 127.2E	LRUR	-							-	- -	-	-	33.6N 130.4E		
238	2512302	30.8N 126.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
239	2513000Z	30.9N 127.2E	LRUR	-							-	- -	-	-	33.6N 130.4E		
240	2513100Z	30.7N 127.1E	LRUR	-							-	- -	-	-	33.6N 130.4E		
241	2514000Z	31.0N 127.0E	LRUR	-							-	- -	-	-	33.6N 130.4E		
242	2515000Z	31.2N 126.3E	P	5 7	700MB	45	-	965	277	14 13	CIRC		40	-	WC OPEN S		37
243	2516000Z	30.9N 126.2E	LRUR	-							-	- -	-	-	33.6N 130.4E		
244	2517072	31.0N 126.2E	LRUR	-							-	- -	-	-	33.6N 130.4E		
245	2518000Z	31.0N 126.3E	LRUR	-							-	- -	-	-	33.6N 130.4E		
246	2518102	32.3N 126.3E	LRUR	-							-	- -	-	-	33.6N 130.4E		
247	2519000Z	32.1N 126.4E	LRUR	-							-	- -	-	-	33.6N 130.4E		
248	2519452	32.0N 126.3E	LRUR	-							-	- -	-	-	37.1N 127.0E		
249	2520000Z	32.0N 126.2E	LRUR	-							-	- -	-	-	33.6N 130.4E		
250	2520052	33.2N 126.4E	LRUR	-							-	- -	-	-	33.6N 130.4E		
251	2520452	32.8N 126.3E	LRUR	-							-	- -	-	-	37.1N 127.0E		
252	2521000Z	33.1N 126.3E	LRUR	-							-	- -	-	-	37.1N 127.0E		
253	2521000Z	33.1N 126.3E	LRUR	-							-	- -	-	-	33.6N 130.4E		
254	2522000Z	33.7N 126.1E	LRUR	-							-	- -	-	-	33.6N 130.4E		
255	2522102	34.0N 124.2E	SAT	SIG A	DIA 3	CAT 3.0									ESSA 8		
256	2522152	34.5N 124.9E	SAT	SIG A	DIA MA	CAT 2.0									ESSA 8		
257	2600000Z	38.0N 122.5E	SAT	T4.5/5.0MINUS/W0.5/24HRS											ESSA 9		

TYPHOON SUSAN

FIX POSITIONS FOR CYCLONE NO: 9

5 JUL - 13 JUL

FIX NO.	TIME	POSIT	FIX CAT	ACCMY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T/TD	EYE PCHR	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR	/REMARKS	
1	0512502	16.0N 124.6E	SAT	SIG B											ESSA 9		
2	060734Z	15.0N 121.5E	SAT	T1.5/1.5/D0.5/24HRS											ESSA 9		
3	0705002	16.5N 120.5E	LRUR	-							-	- -	-	-	15.8N 120.7E		
4	070637Z	14.0N 120.5E	SAT	T2.0/2.0/ - -											ESSA 9		
5	0806212	14.5N 117.0E	SAT	SIG C+													
6	0806152	17.0N 117.5E	SAT	STG UNK											ESSA 8 (VIGU)		
7	0807362	13.0N 117.5E	SAT	T3.0/3.0/D1.0/24HRS											ESSA 9		
8	0809272	13.8N 118.4E	P	10 5	700MB	90	25	985	258	14 12	-	- -	-	-	WEU WC		03
9	0810452	14.9N 116.0E	P	- -	700MB	-	40	-	-	- -	-	- -	-	-			
10	0903052	23.0N 118.0E	SAT	SIG C+											ESSA 8 (HUDN)		
11	0906302	20.1N 117.1E	P	2 1	700MB	35	50	-	294	18 16	ELIP	SW-NE	10X 5	-	SFC CNTR 10A5 NM SW-NE		04
12	0906042	20.2N 117.4E	SAT	T3.0/3.0/S0/24HRS											ESSA 9		
13	0910002	20.5N 116.6E	P	2 2	700MB	52	70	-	296	18 16	-	- -	-	-	WEU WC		04
14	1007362	20.5N 115.5E	SAT	T3.0/3.0/S0/24HRS											ESSA 9		
15	1010102	20.1N 116.1E	P	1 8	700MB	45	90	-	-	19 -	-	- -	-	-	WEU WC		05
16	1012002	20.4N 116.0E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
17	1013202	20.3N 116.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
18	1014102	20.3N 116.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
19	1015152	20.3N 116.2E	P	1 5	700MB	30	-	-	-	20 -	-	- -	-	-	WEU WC		05
20	1102302	21.8N 117.2E	SAT	SIG C+											ESSA 8 (HUDN)		
21	1106052	22.0N 117.1E	SAT	T3.0/3.0/S0.0/24 HRS											ESSA 9		
22	1201502	22.5N 117.6E	SAT	SIG C											ESSA 8 (HUDN)		
23	1206392	22.3N 117.1E	SAT	T2.5/3.0/W0.5/24HRS											ESSA 9		
24	1302392	22.4N 116.2E	SAT	SIG B											ESSA 8 (HUDN)		

TYPHOON TESS
FIX POSITIONS FOR CYCLONE NO. 10
7 JUL - 24 JUL

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	UNKN WALL CLD	POSIT OF RADAR /REMARKS	
1	070246Z	12.5N 173.0E	SAT	STG B											ESSA 9	
2	080345Z	13.5N 169.0E	SAT	T1.5/2.0MINUS/W0.5/24HRS											ESSA 9	
3	082224Z	8.0N 170.0E	SAT	STG C											ESSA 8 (GUAM)	
4	090248Z	13.0N 168.5E	SAT	T1.5/1.5/S0/24HRS											ESSA 9	
5	100347Z	14.0N 167.0E	SAT	T2.0/2.0PLUS/D1.0/24HRS											ESSA 9	
6	110254Z	13.5N 167.0E	SAT	T3.0/3.0/D1.0/24HRS											ESSA 9	
7	120347Z	13.8N 165.5E	SAT	T4.0/4.0/D1.0/24HRS											ESSA 9	
8	121145Z	14.3N 164.6E	P	10 15	700MB	40	-	986	297	16 12	-	- -	-	-	WC FRMG SE	01
9	121510Z	14.3N 164.2E	P	10 15	700MB	52	-	980	290	16 13	CIRC		25	-	WC OPEN S AND W	01
10	122200Z	13.8N 163.4E	P	5 5	700MB	50	55	981	294	15 10	-	- -	-	-	WC PRTL FORMED	02
11	122307Z	13.8N 163.2E	P	5 5	700MB	60	70	980	293	15 13	-	- -	-	-		02
12	130341Z	13.4N 162.8E	P	5 10	700MB	-	65	977	290	15 12	-	- -	-	-		02
13	130451Z	13.2N 162.3E	SAT	T5.5/5.5PLUS/D1.0/24HRS											ESSA 9	
14	131124Z	13.1N 161.2E	P	10 10	700MB	85	-	-	288	19 15	CIRC		40	-	WC OPEN N	03
15	131600Z	12.6N 161.1E	P	15 10	700MB	85	-	-	292	19 11	CIRC		45	-	CLSD WC	03
16	140351Z	12.5N 159.0E	SAT	T6.0/6.0PLUS/D1.0/24HRS											ESSA 9	
17	141000Z	13.0N 157.7E	P	15 10	700MB	115	-	-	281	21 10	CIRC		35	-	WC OPEN N	04
18	142137Z	13.4N 156.5E	P	15 10	700MB	115	130	-	284	19 12	CIRC		35	-	WC OPEN N	04
19	150036Z	13.8N 156.5E	SAT	STG X DIA 4 CAT 4.0											ESSA 8 (HUDN)	
20	150430Z	14.7N 155.9E	P	5 5	700MB	90	130	945	262	18 10	CIRC		30	15	CLSD WC	05
21	150448Z	14.5N 156.0E	SAT	T5.0/6.0MINUS/W1.0/24HRS											ESSA 9	
22	150448Z	14.5N 156.0E	SAT	STG X DIA 2 CAT 3.5											ESSA 9	
23	150910Z	15.1N 155.7E	P	10 5	700MB	100	-	940	257	19 11	CIRC		25	-	CLSD WC	05
24	151226Z	15.8N 155.2E	AC H	-							-	- -	-	-		
25	151300Z	16.0N 155.4E	AC H	-							-	- -	-	-		
26	160400Z	18.1N 153.8E	P	4 2	700MB	110	115	940	257	20 11	CIRC		25	5	WC OPEN S	06
27	160403Z	18.0N 154.0E	SAT	T7.0/7.0MINUS/D2.0/24HRS											ESSA 9	
28	161015Z	19.3N 153.3E	P	5 3	700MB	100	-	945	262	17 14	CIRC		30	5	WC OPEN S	06
29	161653Z	20.2N 152.6E	P	3 2	700MB	75	-	949	264	16 12	CIRC		25	5	WC OPEN S SEMIC	07
30	170455Z	21.5N 151.5E	SAT	T5.0/6.0PLUS/W2.0/24HRS											ESSA 9	
31	170455Z	21.5N 151.5E	DVORAK	NO. T5												
32	171106Z	21.9N 151.1E	P	15 5	700MB	70	-	946	262	20 12	CIRC		25	10	WC OPEN SW	08
33	171501Z	22.1N 150.8E	P	10 5	700MB	75	-	949	264	18 13	CIRC		25	10	WC OPEN SW-NW	08
34	180359Z	23.5N 150.0E	SAT	T5.0/6.0PLUS/S0/24HRS											ESSA 9	
35	181019Z	23.6N 149.6E	P	10 10	700MB	75	-	-	275	20 16	-	- -	-	-	WC OPEN SE-NW	09
36	181202Z	23.8N 149.7E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
37	181522Z	24.2N 149.7E	P	10 10	700MB	100	-	-	277	19 16	-	- -	-	-	NO DEF	09
38	190015Z	24.9N 148.9E	P	10 10	700MB	87	90	967	281	17 -	-	- -	-	-		10
39	190121Z	24.9N 149.0E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
40	190326Z	25.8N 149.2E	P	10	700MB	75	85	962	278	16 -	-	- -	-	-	LTHD CLDS IN CNTR	10
41	190458Z	26.0N 149.0E	SAT	T5.0/5.0/S0/24HRS											ESSA 9	
42	191015Z	26.0N 148.3E	P	5 5	700MB	90	-	964	279	15 15	-	- -	-	-	SC UNDERCAST IN CNTR	11
43	191144Z	26.2N 148.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
44	191430Z	26.3N 147.8E	P	3 3	700MB	94	-	961	276	16 12	-	- -	-	-	SC UNDERCAST IN CNTR	11
45	200052Z	27.2N 149.4E	SAT	STG X DIA 4 CAT 4.0											ESSA 8 (HUDN)	
46	200405Z	27.5N 147.5E	SAT	T4.0/5.0/W1.0/24HRS											ESSA 9	
47	200503Z	27.8N 147.1E	P	5 5	700MB	50	50	966	279	15 13	-	- -	-	-	BRKN-OVC CI ABV IN CNTR	12
48	200635Z	27.9N 146.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
49	200908Z	27.8N 146.7E	P	5 3	700MB	70	40	967	280	15 13	-	- -	-	-	BRKN-OVC CI ABV IN CNTR	12
50	201614Z	28.2N 145.7E	P	5 3	700MB	70	-	-	281	16 14	-	- -	-	-	LRG AREA OF L/V	13
51	201815Z	28.1N 146.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
52	202048Z	28.2N 146.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
53	202105Z	28.2N 146.2E	P	10 5	700MB	65	65	966	281	17 13	-	- -	-	-	BRKN AS LTHD IN CNTR	13
54	210459Z	29.0N 144.5E	SAT	STG C											ESSA 9	
55	211000Z	29.0N 143.4E	P	2 10	700MB	80	-	965	276	16 10	-	- -	-	-	OVC CS ABV IN CNTR	14
56	212208Z	29.1N 139.6E	P	25 5	700MB	51	70	971	284	14 12	CIRC		40	-	WC OPEN SW	15
57	220330Z	29.4N 139.0E	P	3 5	700MB	70	50	-	282	14 13	-	- -	-	-		16
58	221826Z	30.3N 135.6E	P	15 5	700MB	87	-	970	284	15 -	-	- -	-	-		17
59	230000Z	31.1N 134.3E	P	3 3	700MB	45	65	970	284	15 12	-	- -	-	-	CNTR BRKN ABV OVC BLO	18
60	230130Z	31.0N 134.0E	SAT	STG X DIA 4 CAT 3.0											ESSA 8 (RJTZ)	
61	230330Z	31.6N 133.4E	P	3 5	700MB	57	50	972	284	15 13	-	- -	-	-	CNTR WIDE AND DIF	18
62	230500Z	31.9N 133.1E	LRDR	-							-	- -	-	-	33.3N 134.2E	
63	230505Z	31.8N 133.0E	SAT	STG X DIA 1 CAT 2.0											ESSA 9	
64	230600Z	31.9N 132.8E	LRDR	-							-	- -	-	-	30.6N 131.0E	
65	230600Z	32.0N 132.8E	LRDR	-							-	- -	-	-	33.3N 134.2E	
66	230700Z	31.9N 132.6E	LRDR	-							-	- -	-	-	34.3N 132.6E	
67	230700Z	32.0N 132.6E	LRDR	-							-	- -	-	-	30.6N 131.0E	
68	230700Z	32.2N 132.5E	LRDR	-							-	- -	-	-	33.3N 134.2E	
69	230800Z	32.2N 132.3E	LRDR	-							-	- -	-	-	30.6N 131.0E	
70	230800Z	32.6N 132.4E	LRDR	-							-	- -	-	-	34.3N 132.6E	
71	230900Z	32.3N 132.3E	LRDR	-							-	- -	-	-	33.3N 134.2E	
72	230900Z	32.3N 132.3E	LRDR	-							-	- -	-	-	34.3N 132.6E	
73	230900Z	32.4N 132.1E	LRDR	-							-	- -	-	-	30.6N 131.0E	
74	231000Z	32.8N 131.9E	LRDR	-							-	- -	-	-	33.3N 134.2E	
75	231000Z	32.9N 132.0E	LRDR	-							-	- -	-	-	33.4N 130.4E	
76	231100Z	32.9N 132.0E	LRDR	-							-	- -	-	-	33.3N 134.2E	
77	231100Z	33.1N 131.7E	LRDR	-							-	- -	-	-	33.4N 130.4E	
78	231110Z	32.8N 132.0E	LRDR	-							-	- -	-	-	33.4N 130.4E	
79	231200Z	33.1N 131.6E	LRDR	-							-	- -	-	-	30.6N 131.0E	
80	231200Z	33.1N 131.5E	LRDR	-							-	- -	-	-	34.3N 132.6E	
81	231200Z	33.1N 131.6E	LRDR	-							-	- -	-	-	33.4N 130.4E	
82	231211Z	33.1N 131.6E	LRDR	-							-	- -	-	-	33.4N 130.4E	
83	231813Z	34.4N 130.4E	LRDR	-							-	- -	-	-	33.4N 130.4E	
84	240222Z	39.0N 129.5E	SAT	STG C+											ESSA 8 (RJTZ)	

TYPHOON ALICE

FIX POSITIONS FOR CYCLONE NO. 13

30 JUL - 9 AUG

FIX NO.	TIME	POSIT	FIX CAT	ACCMY NAV-MET	FLT LVL	OBS WND	SFC WND	OBS MIN SLP	700MB HGT	FLT LVL T/TD	EYE FORM	ORIEN-TATION	EYE DIA	IMKN WALL CLD	POSIT OF /REMARKS RADAR	
1	300405Z	7.0N 163.0E	SAT	T2.0/2.0/D1.0/24HRS											ESSA 9	
2	310310Z	12.0N 162.5E	SAT	T3.0/3.0PLUS/D2.0/24HRS											ESSA 9	
3	010220Z	15.3N 158.9E	P	10 5	700MB	65	45	988	299	11 9	-	- -	-	-	NEG WC	01
4	010414Z	16.0N 158.0E	SAT	T3.5/3.5PLUS/D0.5/24HRS											ESSA 9	
5	011312Z	16.3N 157.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
6	011547Z	16.6N 157.9E	P	10 5	700MB	44	-	991	300	12 10	CIRC		40	20	WC OPEN NW-SSW	02
7	020508Z	17.5N 156.5E	SAT	T4.5/4.5/D1.0/24HRS											ESSA 9	
8	020535Z	17.9N 156.8E	P	2 10	700MB	55	60	978	290	14 13	CIRC		60	-	WC PR DEF	03
9	030400Z	20.8N 155.2E	P	3 2	700MB	60	70	966	282	18 14	-	- -	-	-	WC APPRS FRMG NW	04
10	030413Z	21.0N 155.0E	SAT	T5.5/5.5PLUS/D1.0/24HRS											ESSA 9	
11	030700Z	21.3N 154.8E	P	8 -	700MB	-	-	967	-	- -	-	- -	-	-		
12	030815Z	21.3N 155.0E	P	10 5	700MB	75	70	965	281	17 15	-	- -	-	-	PRIL WC	04
13	040123Z	24.2N 152.6E	SAT	STG X DIA 4 CAT 3.0											ESSA 8 (ROUN)	
14	040320Z	24.0N 151.5E	SAT	T6.5/6.5PLUS/D1.0/24HRS											ESSA 9	
15	040428Z	24.4N 151.5E	P	15 3	700MB	90	75	965	277	16 14	-	- -	-	-	NEG WC	05
16	040845Z	25.0N 151.1E	P	15 -	700MB	-	-	-	-	- -	-	- -	-	-		
17	040955Z	25.0N 150.7E	P	3 8	700MB	85	65	964	277	17 15	CIRC		50	8	CLSD WC-PR DEF	05
18	041041Z	25.0N 150.8E	SAT	STG UNK												
19	050205Z	26.0N 148.6E	SAT	STG X DIA 1 CAT 2.0												
20	050415Z	27.5N 147.6E	P	2 5	700MB	55	45	971	284	15 -	-	- -	-	-	NEG WC	06
21	050618Z	27.8N 147.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
22	050900Z	28.0N 146.7E	P	2 6	700MB	70	40	972	285	15 -	-	- -	-	-	NEG RDR PRES	06
23	051600Z	28.6N 145.7E	P	15 10	700MB	65	-	974	286	15 -	-	- -	-	-	WK FBS SE	07
24	052100Z	29.0N 144.9E	P	5 10	700MB	60	55	984	293	14 11	-	- -	-	-	NEG RDR PRES	07
25	060520Z	30.5N 143.0E	SAT	T4.5/6.0/W1.5/24HRS											ESSA 9	
26	061200Z	31.8N 142.1E	LRDR	-							-	- -	-	-	35.3N 138.7E	
27	061400Z	32.1N 141.6E	LRDR	-							-	- -	-	-	35.3N 138.7E	
28	061500Z	32.4N 141.4E	LRDR	-							-	- -	-	-	35.3N 138.7E	
29	061600Z	32.6N 141.2E	LRDR	-							-	- -	-	-	35.3N 138.7E	
30	061700Z	32.8N 141.1E	LRDR	-							-	- -	-	-	35.3N 138.7E	
31	061705Z	32.8N 140.9E	P	2 5	700MB	45	-	978	289	14 -	-	- -	-	-	NEG WC	09
32	061900Z	33.1N 140.8E	LRDR	-							-	- -	-	-	35.3N 138.7E	
33	062000Z	33.3N 141.0E	LRDR	-							-	- -	-	-	35.3N 138.7E	
34	062100Z	33.3N 140.7E	P	2 5	700MB	75	45	981	291	15 -	-	- -	-	-	RDR PRES POOR	09
35	062300Z	33.8N 141.2E	LRDR	-							-	- -	-	-		
36	062300Z	33.7N 141.0E	LRDR	-							-	- -	-	-	35.7N 139.8E	
37	062300Z	33.5N 141.1E	LRDR	-							-	- -	-	-		
38	062340Z	34.0N 140.9E	LRDR	-							-	- -	-	-		
39	070000Z	33.9N 141.2E	LRDR	-							-	- -	-	-	35.7N 139.8E	
40	070100Z	34.2N 141.0E	LRDR	-							-	- -	-	-	35.7N 139.8E	
41	070100Z	34.3N 141.0E	LRDR	-							-	- -	-	-		
42	070138Z	34.6N 141.0E	LRDR	-							-	- -	-	-		
43	070200Z	35.0N 141.3E	LRDR	-							-	- -	-	-	35.7N 139.8E	
44	070200Z	34.7N 140.9E	LRDR	-							-	- -	-	-		
45	070359Z	34.9N 140.9E	P	5 10	700MB	75	35	984	296	14 9	-	- -	-	-	NEG RDR PRES	10
46	070400Z	34.8N 141.1E	LRDR	-							-	- -	-	-		
47	070400Z	35.2N 141.2E	LRDR	-							-	- -	-	-	35.7N 139.8E	
48	070422Z	34.8N 141.0E	SAT	T4.0/4.5/W0.5/24HRS											ESSA 9	
49	070452Z	35.1N 141.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
50	070500Z	35.4N 141.3E	LRDR	-							-	- -	-	-		
51	070500Z	35.2N 141.2E	LRDR	-							-	- -	-	-	35.7N 139.8E	
52	070600Z	35.5N 141.6E	LRDR	-							-	- -	-	-	35.3N 138.7E	
53	070700Z	35.9N 141.8E	LRDR	-							-	- -	-	-	36.4N 140.5E	
54	070700Z	35.4N 141.4E	LRDR	-							-	- -	-	-	35.7N 139.8E	
55	070800Z	36.2N 141.8E	LRDR	-							-	- -	-	-	35.3N 138.7E	
56	070800Z	36.0N 141.7E	LRDR	-							-	- -	-	-	36.3N 140.9E	
57	070830Z	36.4N 141.5E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
58	070900Z	36.2N 141.8E	LRDR	-							-	- -	-	-	35.3N 138.7E	
59	070900Z	36.4N 142.0E	LRDR	-							-	- -	-	-	36.3N 140.9E	
60	070900Z	36.5N 141.9E	LRDR	-							-	- -	-	-		
61	071000Z	36.6N 141.6E	P	5 10	700MB	40	35	987	297	14 -	-	- -	-	-	- - -	10
62	071100Z	36.8N 141.7E	LRDR	-							-	- -	-	-	36.3N 140.9E	
63	071100Z	37.0N 141.9E	LRDR	-							-	- -	-	-	35.3N 138.7E	
64	071500Z	37.7N 142.9E	LRDR	-							-	- -	-	-	35.3N 138.7E	
65	080526Z	40.8N 147.1E	SAT	STG U											ESSA 9	
66	090429Z	43.0N 158.5E	SAT	T1.5/2.5/W1.0/24HRS											ESSA 9	

TYPHOON BETTY
FIX POSITIONS FOR CYCLONE NO: 14
8 AUG - 17 AUG

FIX NO.	TIME	POSIT	FIX CAT	ACCNY NAV-MET	FLT LVL	OBS LVL WND	OBS SFC WND	OBS MIN SLP	MAX 700MB WST	FLT LVL T12/T0	EYE FORM	ORIEN-TATION	EYE DIA	1MKN WALL CLD	POSIT OF /REMARKS RADAR	
1	080511Z	12.0N 154.0E	SAT	T1.0/1.0/D1.0/24HRS											ESSA 9	
2	080906Z	11.5N 150.5E	P	3 10	700MB	20	-	1006	310	10 -	ELIP	SW-NE	20X10	-	WND CNTR	01
3	082255Z	11.7N 149.8E	P	5 10	700MB	30	30	1005	311	11 9	-	- -	-	-	WC PSBLY FRMG SE QUAD	02
4	090003Z	11.8N 149.5E	P	- 10	700MB	25	30	1003	310	11 10	-	- -	-	-	WC BCMG DEF S SEMIC	02
5	090300Z	12.1N 149.5E	P	5 10	700MB	30	30	1001	310	12 10	-	- -	-	-	WC SHWG ORG S SEMIC	02
6	090420Z	12.0N 149.5E	SAT	T2.5/2.5PLUS/D1.5/24HRS											ESSA 9	
7	091230Z	13.1N 148.4E	P	3 15	700MB	25	-	998	306	12 -	-	- -	-	-	NEG RDR PRES	03
8	091605Z	13.3N 148.3E	P	3 10	700MB	40	-	993	303	15 -	-	- -	-	-	NEG RDR PRES	03
9	092130Z	14.2N 147.7E	P	5 2	700MB	40	50	993	300	14 10	-	- -	-	-	NEG WC FB E SEMIC	04
10	092322Z	14.4N 147.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
11	100349Z	15.1N 146.8E	P	2 2	700MB	55	45	985	298	17 13	ELIP	N-S	40X35	-	WC PR DEF S AND OPEN N	04
12	100519Z	15.4N 146.8E	SAT	T4.0/4.0/D2.0/25HRS											ESSA 9	
13	100930Z	16.0N 146.0E	P	2 2	700MB	75	-	986	298	16 11	CIRC		20	-	WC OPEN SW	05
14	101530Z	16.7N 144.8E	P	2 10	700MB	-	-	987	297	13 9	-	- -	-	-	EYE UNDNG	05
15	110035Z	17.7N 144.7E	SAT	STG - X DIA 4 CAT 2.0											ESSA 8 (RUDN)	
16	110422Z	17.4N 144.3E	SAT	T4.5/4.5/D0.5/23HRS											ESSA 9	
17	110945Z	17.8N 142.3E	P	5 15	700MB	57	-	986	298	13 -	-	- -	-	-	SFC CNTR 15NM DIA	06
18	111215Z	18.5N 141.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
19	111545Z	18.6N 141.1E	P	3 15	700MB	40	-	986	294	11 14	CIRC		5	7	WC OPEN SW	06
20	120405Z	18.6N 139.1E	P	2 5	700MB	75	80	961	276	16 -	-	- -	-	-		
21	120520Z	18.5N 138.5E	SAT	STG - X DIA 2 CAT 3.5											ESSA 9	
22	120615Z	18.8N 138.7E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
23	120848Z	18.8N 138.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
24	121000Z	18.7N 137.8E	P	2 5	700MB	70	50	957	272	16 12	CIRC		30	-	RDR EYE FRMG RPDLY	07
25	121600Z	18.9N 136.6E	P	3 3	700MB	100	-	954	269	19 10	CIRC		30	5	CLSD WC	08
26	121745Z	18.9N 136.3E	P	3 3	700MB	75	-	955	269	19 10	CIRC		30	5	CLSD WC	08
27	121920Z	19.0N 136.1E	P	3 3	700MB	60	-	949	266	20 -	CIRC		30	5	CLSD WC	08
28	122045Z	19.1N 135.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
29	122135Z	18.6N 135.5E	AC R	-							CIRC		40	-		
30	122205Z	18.8N 135.8E	P	5 5	700MB	105	85	948	265	21 13	CIRC		20	-	CLSD WC	09
31	130024Z	19.0N 136.0E	SAT	STG - X DIA 4 CAT 4.0											ESSA 8 (RUDN)	
32	130620Z	19.0N 134.0E	SAT	T6.0/6.0/S0/24HRS											ESSA 9	
33	130910Z	19.0N 134.1E	P	5 2	700MB	100	85	933	253	22 14	CIRC		20	5	CLSD WC	10
34	131053Z	19.2N 133.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
35	131520Z	19.1N 133.1E	P	4 2	700MB	110	-	923	243	26 13	CIRC		20	-	CLSD WC	11
36	131722Z	19.4N 132.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
37	140118Z	19.4N 132.0E	SAT	STG - X DIA 4 CAT 4.0											ESSA 8 (RUDN)	
38	140405Z	19.9N 131.9E	P	5 5	700MB	110	100	916	237	23 13	CIRC		25	4	CLSD WC	12
39	140945Z	20.2N 130.3E	P	10 5	700MB	100	100	920	235	20 13	CIRC		17	4	CLSD WC	13
40	141203Z	20.4N 130.0E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
41	141520Z	20.6N 129.4E	P	5 5	700MB	100	-	923	242	21 13	CIRC		20	5	CLSD WC	14
42	142200Z	21.2N 128.1E	P	1 2	700MB	100	120	926	244	18 15	CIRC		20	-	CLSD WC	15
43	142345Z	21.1N 127.7E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
44	150207Z	21.5N 128.1E	SAT	STG - X DIA 5 CAT 4.0											ESSA 8 (RUDN)	
45	150250Z	21.5N 127.3E	AC R	-							CIRC		19	-		
46	150415Z	21.1N 127.0E	P	3 3	700MB	97	115	920	239	17 16	CIRC		15	3	CLSD WC	16
47	150622Z	21.2N 126.9E	SAT	T7.0/7.0/D0.5/25HRS											ESSA 9	
48	150835Z	21.4N 127.0E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
49	151005Z	21.7N 126.8E	P	15 3	700MB	95	-	910	230	20 14	CIRC		12	5	CLSD WC	17
50	151147Z	21.9N 126.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
51	151200Z	21.6N 126.2E	SCF				-	-	-							
52	151300Z	21.9N 126.5E	LRDR	-							-	- -	-	-	24.8N 125.3E	
53	151400Z	22.2N 126.4E	LRDR	-							-	- -	-	-	24.3N 124.2E	
54	151410Z	22.3N 126.5E	LRDR	-							-	- -	-	-	24.8N 125.3E	
55	151500Z	22.5N 126.3E	P	10 5	700MB	100	-	915	234	18 14	CIRC		15	5	CLSD WC	17
56	151500Z	22.4N 126.2E	LRDR	-							-	- -	-	-	24.8N 125.3E	
57	151500Z	22.4N 126.2E	LRDR	-							-	- -	-	-	24.3N 124.2E	
58	151545Z	22.7N 126.3E	LRDR	-							-	- -	-	-	24.8N 125.3E	
59	151600Z	22.6N 126.0E	LRDR	-							-	- -	-	-	24.8N 125.3E	
60	151600Z	22.5N 126.1E	LRDR	-							-	- -	-	-	24.3N 124.2E	
61	151645Z	22.8N 126.1E	LRDR	-							-	- -	-	-	25.0N 121.5E	
62	151700Z	22.7N 126.0E	LRDR	-							-	- -	-	-	24.8N 125.3E	
63	151700Z	22.7N 125.9E	LRDR	-							-	- -	-	-	24.3N 124.2E	
64	151800Z	22.9N 125.8E	LRDR	-							-	- -	-	-	24.8N 125.3E	
65	151800Z	22.9N 125.8E	LRDR	-							-	- -	-	-	24.3N 124.2E	
66	151900Z	23.0N 125.7E	LRDR	-							-	- -	-	-	24.8N 125.3E	
67	151900Z	22.9N 125.7E	LRDR	-							-	- -	-	-	24.3N 124.2E	
68	152030Z	23.3N 125.5E	LRDR	-							-	- -	-	-	25.0N 121.5E	
69	152100Z	23.2N 125.4E	LRDR	-							-	- -	-	-	24.3N 124.2E	
70	152100Z	23.3N 125.4E	LRDR	-							-	- -	-	-	24.8N 125.3E	
71	152150Z	23.4N 125.4E	LRDR	-							-	- -	-	-	24.8N 125.3E	
72	152200Z	23.4N 125.2E	LRDR	-							-	- -	-	-	24.3N 124.2E	
73	152200Z	23.4N 125.3E	LRDR	-							-	- -	-	-	24.8N 125.3E	
74	152300Z	23.5N 124.3E	LRDR	-							-	- -	-	-	24.8N 125.3E	
75	152300Z	23.5N 125.1E	LRDR	-							-	- -	-	-	24.3N 124.2E	
76	152300Z	23.5N 125.1E	LRDR	-							-	- -	-	-	24.8N 125.3E	
77	160000Z	23.7N 125.0E	LRDR	-							-	- -	-	-	24.8N 125.3E	
78	160100Z	23.9N 124.9E	LRDR	-							-	- -	-	-	24.8N 125.3E	
79	160200Z	23.9N 124.9E	LRDR	-							-	- -	-	-	25.0N 121.5E	
80	160200Z	24.0N 124.7E	LRDR	-							-	- -	-	-	24.8N 125.3E	
81	160200Z	24.0N 124.8E	LRDR	-							-	- -	-	-	24.3N 124.2E	
82	160300Z	24.2N 124.6E	LRDR	-							-	- -	-	-	24.8N 125.3E	
83	160300Z	24.2N 124.7E	LRDR	-							-	- -	-	-	25.0N 121.5E	
84	160400Z	24.3N 124.4E	LRDR	-							-	- -	-	-	24.8N 125.3E	
85	160400Z	24.4N 124.5E	LRDR	-							-	- -	-	-	24.3N 124.2E	
86	160446Z	24.2N 124.2E	SAT	T6.0/7.0MINUS/W1.0/24HRS											ESSA 9	
87	160500Z	24.4N 124.5E	LRDR	-							-	- -	-	-	25.1N 121.5E	
88	160500Z	24.4N 124.3E	LRDR	-							-	- -	-	-	24.8N 125.3E	
89	160600Z	24.6N 124.3E	LRDR	-							-	- -	-	-	24.8N 125.3E	
90	160600Z	24.7N 124.2E	LRDR	-							-	- -	-	-	24.3N 124.2E	
91	160700Z	24.9N 124.1E	LRDR	-							-	- -	-	-	25.1N 121.5E	
92	160700Z	24.5N 124.1E	LRDR	-							-	- -	-	-	24.8N 125.3E	
93	160800Z	24.9N 124.0E	LRDR	-							-	- -	-	-	24.8N 125.3E	
94	160800Z	25.0N 124.0E	LRDR	-							-	- -	-	-	24.3N 124.2E	
95	160900Z	25.1N 123.8E	LRDR	-							-	- -	-	-	24.3N 124.2E	
96	160900Z	25.2N 123.8E	LRDR	-							-	- -	-	-	24.8N 125.3E	
97	161000Z	25.3N 123.7E	LRDR	-							-	- -	-	-	24.3N 124.2E	

TYPHOON BETTY
FIX POSITIONS FOR CYCLONE NO. 14
8 AUG - 17 AUG

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR /REMARKS	
98	1610002	25.2N 123.7E	LRAN	-							-	- -	-	-	24.8N 125.3E	
99	1610002	25.2N 123.5E	LRAN	-							-	- -	-	-	24.0N 121.6E	
100	1610152	25.2N 123.6E	P	5 10	700MB	65	-	937	253	16 -	ELIP	SW-NE	30X20	3	NC FM DEF	18
101	1611002	25.3N 123.3E	LRAN	-							-	- -	-	-	24.8N 125.3E	
102	1611002	24.9N 124.0E	LRAN	-							-	- -	-	-	26.2N 127.7E	
103	1611002	25.3N 123.3E	LRAN	-							-	- -	-	-	24.0N 121.6E	
104	1612002	25.5N 123.2E	LRAN	-							-	- -	-	-	24.3N 124.2E	
105	1612002	25.3N 123.2E	LRAN	-							-	- -	-	-	24.8N 125.3E	
106	1613002	25.5N 122.8E	LRAN	-							-	- -	-	-	25.1N 121.5E	
107	16130UZ	25.5N 122.9E	LRAN	-							-	- -	-	-	24.8N 125.3E	
108	16133UZ	25.5N 122.7E	LRAN	-							-	- -	-	-	25.1N 121.5E	
109	1614002	25.5N 122.6E	LRAN	-							-	- -	-	-	24.3N 124.2E	
110	1614302	25.5N 122.5E	LRAN	-							-	- -	-	-	25.1N 121.5E	
111	1615002	25.8N 122.2E	LRAN	-							-	- -	-	-	25.1N 121.5E	
112	16163UZ	25.7N 122.3E	P	5 5	700MB	60	-	937	254	17 14	CIRC		12	-	CLSD WC	19
113	1618002	25.8N 122.0E	LRAN	-							-	- -	-	-	25.1N 121.5E	
114	1620002	25.5N 121.5E	LRAN	-							-	- -	-	-	25.0N 121.5E	
115	1621002	25.8N 121.7E	LRAN	-							-	- -	-	-	25.0N 121.5E	
116	1622002	26.1N 121.5E	LRAN	-							-	- -	-	-	25.0N 121.5E	
117	1701002	26.5N 121.5E	LRAN	-							-	- -	-	-	25.0N 121.5E	
118	1702002	26.9N 121.4E	LRAN	-							-	- -	-	-	25.6N 121.5E	
119	17023UZ	26.0N 121.0E	SAT	STG X DIA 6 CAT 2.0											ESSA 8 (RJTZ)	
120	1703002	26.9N 121.0E	LRAN	-							-	- -	-	-	25.0N 121.5E	
121	17063UZ	27.3N 120.6E	LRAN	-							-	- -	-	-	25.0N 121.5E	
122	1707002	27.3N 120.3E	LRAN	-							-	- -	-	-	25.0N 121.5E	

TYPHOON CORA
FIX POSITIONS FOR CYCLONE NO. 16
23 AUG - 28 AUG

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR /REMARKS	
1	2306302	19.8N 119.0E	SAT	T2.0/2.0/D0.5/24HRS											ESSA 9	
2	2407282	19.5N 118.0E	SAT	T2.5/2.5/D0.5/24HRS											ESSA 9	
3	2506002	19.1N 116.5E	P	5 3	1500FT	40	30	991	-	27 -	-	- -	-	-	SFC CNTR CALM-15NM DIA	02
4	2506322	19.0N 116.0E	SAT	T3.0/3.0/D0.5/24HRS											ESSA 9	
5	2507402	18.0N 116.0E	AC M	-							-	- -	-	-		
6	2523202	18.8N 115.1E	P	5 5	700MB	40	35	988	299	15 12	-	- -	-	-	FB FM 80NM TO NW	03
7	2606562	18.8N 114.6E	P	5 8	700MB	35	55	984	299	19 13	-	- -	-	-	WK FB FRMG SE	04
8	2607302	18.5N 114.5E	SAT	T4.0/4.0/D1.0/24HRS											ESSA 9	
9	2609552	18.7N 114.5E	P	5 8	700MB	45	55	981	296	18 14	-	- -	-	-	CNTR BRKN-FIL W/ SC	04
10	2621002	18.8N 113.7E	LRAN	-							-	- -	-	-	22.4N 114.1E	
11	2622002	18.7N 111.3E	LRAN	-							-	- -	-	-	22.4N 114.1E	
12	2700002	18.7N 111.3E	LRAN	-							-	- -	-	-	22.4N 114.1E	
13	2700502	18.8N 113.5E	P	5 5	700MB	-	60	976	290	15 13	-	- -	-	5	NEG DEF	05
14	2703002	18.6N 113.3E	P	5 5	700MB	55	60	976	289	15 13	CIRC		20	10	WC OPEN N	05
15	2706322	18.5N 114.0E	SAT	T3.0/3.5/D1.0/24HRS											ESSA 9	
16	2712002	19.1N 111.2E	LRAN	-							-	- -	-	-	22.4N 114.1E	
17	2715002	19.2N 111.9E	LRAN	-							-	- -	-	-	22.4N 114.1E	
18	2807322	20.0N 108.5E	SAT	T4.0/4.0MINUS/D1.0/24HRS											ESSA 9	

TYPHOON ELSIE
FIX POSITIONS FOR CYCLONE NO. 17
31 AUG - 3 SEP

FIX NO.	TIME	POSIT		FIX CAT	ACCRY NAV	ACCRY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS RADAR	
1	310628Z	12.0N	117.0E	SAT	T2.0/2.0/D0.5/24HRS												ESSA 9	
2	310845Z	13.0N	117.8E	P	5	20	700MB	40	30	1002	306	10 9	-	- -	-	-	WK CIRC SFC AND FL	02
3	311030Z	13.3N	117.5E	P	7	25	700MB	45	30	-	-	9 8	-	- -	-	-	CIRC VRY BROAD AND WK	02
4	312225Z	14.7N	115.2E	P	2	2	700MB	-	45	987	294	13 10	-	- -	-	-	SFC CNTR 20NM DIA	03
5	312331Z	15.0N	113.5E	SHUR		-							-	- -	-	-		
6	010410Z	15.2N	115.1E	SAT	STG UNK												ESSA 8 (NUON)	
7	010313Z	16.1N	114.2E	P	2	8	700MB	65	65	983	295	14 8	CIRC		20	3	WL OPEN NW	04
8	010314Z	14.5N	114.2E	SAT	STG UNK												ESSA 8 (VIBU)	
9	010433Z	15.5N	113.8E	SHUR		-							-	- -	-	-		
10	010446Z	15.9N	110.3E	LHUR		-							-	- -	-	-	16.0N 108.2E	
11	010500Z	15.9N	113.7E	SHUR		-							-	- -	-	-		
12	010535Z	15.4N	114.0E	AC R									-		-	-	15.4N 114.0E	
13	010700Z	15.3N	114.4E	SHUR		-							-	- -	-	-		
14	010727Z	15.5N	113.5E	P	2	0	700MB	70	75	985	286	14 12	CIRC		12	-	OPEN N-NW	04
15	010736Z	15.5N	113.5E	SAT	T3.5/3.5/D1.5/24HRS												ESSA 9	
16	010800Z	15.5N	113.7E	SHUR		-							-	- -	-	-		
17	010900Z	15.6N	113.5E	SHUR		-							-	- -	-	-		
18	011042Z	15.7N	113.2E	P	3	2	700MB	65	65	986	298	16 9	CIRC		20	-	*ALL SE-SW	05
19	011100Z	15.8N	113.4E	SHUR		-							-	- -	-	-		
20	011151Z	15.8N	113.4E	SHUR		-							-	- -	-	-		
21	011200Z	15.7N	113.2E	SHUR		-							-	- -	-	-		
22	011232Z	15.7N	113.2E	SHUR		-							-	- -	-	-		
23	011244Z	15.8N	113.0E	P	3	5	700MB	55	-	990	299	17 10	-	- -	-	-		05
24	011400Z	15.9N	113.0E	SHUR		-							-	- -	-	-		
25	011410Z	15.9N	113.0E	SHUR		-							-	- -	-	-		
26	011615Z	15.8N	112.7E	P	5	5	700MB	45	-	-	298	13 8	CIRC		20	5	OPEN N SEMIC	06
27	011800Z	16.1N	112.7E	SHUR		-							-	- -	-	-		
28	011833Z	16.1N	112.7E	SHUR		-							-	- -	-	-		
29	011845Z	16.0N	112.0E	SHUR		-							-	- -	-	-		
30	011900Z	16.1N	112.1E	P	5	5	700MB	45	-	-	298	14 8	CIRC		20	5	OPEN N SEMIC	06
31	011908Z	16.0N	112.0E	SHUR		-							-	- -	-	-		
32	011945Z	16.1N	112.1E	SHUR		-							-	- -	-	-		
33	012001Z	16.1N	112.1E	SHUR		-							-	- -	-	-		
34	012110Z	16.3N	111.7E	P	5	5	700MB	-	-	-	298	14 10	CIRC		20	-	OPEN N SEMIC	06
35	020210Z	15.5N	111.5E	SAT	STG UNK												ESSA 8 (VIBU)	
36	020445Z	16.0N	110.3E	LHUR		-							-	- -	-	-	16.0N 108.2E	
37	020615Z	16.1N	111.2E	LHUR		-							-	- -	-	-	16.0N 108.2E	
38	020643Z	15.7N	111.0E	SAT	T4.5/4.5/D1.0/24HRS												ESSA 9	
39	020715Z	16.1N	111.3E	LHUR		-							-	- -	-	-	16.0N 108.2E	
40	020800Z	15.9N	111.3E	P	4	15	700MB	-	-	-	-	- -	CIRC		15	-	WL STG AE	
41	020930Z	15.8N	111.1E	P	4	15	700MB	-	-	996	-	- -	CIRC		15	-	NOW PRES POOR	07
42	021045Z	15.9N	110.8E	LHUR		-							-	- -	-	-	16.0N 108.2E	
43	021047Z	16.4N	110.8E	LHUR		-							-	- -	-	-	16.0N 108.2E	
44	021220Z	16.9N	110.5E	SHUR		-							-	- -	-	-		
45	021345Z	15.7N	111.0E	P	5	5	700MB	50	-	983	293	14 10	ELIP	N-S	20X15	-	WL OPEN NW AND SE	08
46	021400Z	15.7N	110.7E	SHUR		-							-	- -	-	-		
47	021426Z	15.7N	110.7E	SHUR		-							-	- -	-	-		
48	021452Z	15.7N	110.8E	AC R									-		-	-	15.7N 110.8E	
49	021545Z	15.9N	110.3E	LHUR		-							-	- -	-	-	16.0N 108.2E	
50	021610Z	15.7N	110.5E	P	5	5	700MB	60	-	-	292	14 10	ELIP	SE-NW	20X15	-	WL OPEN NE AND S	08
51	021615Z	15.8N	110.4E	LHUR		-							CIRC		20	-	16.0N 108.2E	
52	021745Z	15.5N	110.4E	LHUR		-							-	- -	-	-	16.0N 108.2E	
53	021815Z	15.7N	110.2E	P	5	5	700MB	65	-	978	289	14 11	CIRC		20	10	WL OPEN NE	08
54	021912Z	15.4N	110.5E	SHUR		-							-	- -	-	-		
55	021945Z	15.7N	110.7E	LHUR		-							CIRC		25	-	16.0N 108.2E	
56	022006Z	15.4N	110.4E	SHUR		-							-	- -	-	-		
57	022045Z	15.6N	110.4E	LHUR		-							-	- -	-	-	16.0N 108.2E	
58	022114Z	15.4N	110.4E	SHUR		-							-	- -	-	-		
59	022245Z	15.6N	110.4E	LHUR		-							CIRC		23	-	16.0N 108.2E	
60	022315Z	15.8N	110.3E	LHUR		-							CIRC		28	-	16.0N 108.2E	
61	022345Z	15.8N	110.3E	LHUR		-							CIRC		35	-	16.0N 108.2E	
62	030015Z	15.8N	110.2E	LHUR		-							CIRC		35	-	16.0N 108.2E	
63	030045Z	15.7N	110.2E	LHUR		-							CIRC		35	-	16.0N 108.2E	
64	030045Z	15.6N	110.3E	SHUR		-							-	- -	-	-		
65	030100Z	15.6N	110.3E	P	5	3	700MB	65	90	976	288	16 8	ELIP	SE-NW	30X20	3	WL OPEN NW	09
66	030130Z	15.5N	110.5E	SHUR		-							-	- -	-	-		
67	030145Z	15.7N	110.2E	LHUR		-							CIRC		35	-	16.0N 108.2E	
68	030215Z	15.6N	110.2E	SHUR		-							-	- -	-	-		
69	030245Z	15.6N	110.1E	LHUR		-							-	- -	-	-	16.0N 108.2E	
70	030400Z	15.5N	110.0E	P	5	5	700MB	65	65	978	287	15 10	ELIP	N-S	30X20	3	WL OPEN N	09
71	030445Z	15.5N	109.8E	LHUR		-							-	- -	-	-	16.0N 108.2E	
72	030600Z	15.5N	109.9E	P	5	5	700MB	55	65	974	284	15 9	ELIP	N-S	30X25	-	WL OPEN NW	09
73	030736Z	15.0N	110.0E	SAT	T4.0/4.5/W0.5/24HRS												ESSA 9	
74	030745Z	15.4N	109.3E	LHUR		-							-	- -	-	-	16.0N 108.2E	
75	030910Z	15.4N	109.6E	LHUR		-							-	- -	-	-	16.0N 108.2E	
76	031115Z	15.7N	109.5E	LHUR		-							-	- -	-	-	16.0N 108.2E	
77	031415Z	15.8N	109.6E	LHUR		-							-	- -	-	-	16.0N 108.2E	
78	031515Z	15.8N	109.6E	LHUR		-							-	- -	-	-	16.0N 108.2E	
79	031715Z	15.5N	109.4E	LHUR		-							-	- -	-	-	16.0N 108.2E	
80	031745Z	15.5N	109.4E	LHUR		-							-	- -	-	-	16.0N 108.2E	
81	031845Z	15.4N	109.4E	LHUR		-							-	- -	-	-	16.0N 108.2E	
82	032005Z	15.1N	109.3E	P	3	10	700MB	55	-	-	291	13 13	-	- -	-	-		
83	032115Z	15.2N	109.2E	P	3	10	700MB	55	-	-	291	12 10	-	- -	-	-	NEW WC	11
84	032145Z	15.9N	109.1E	LHUR		-							-	- -	-	-	16.0N 108.2E	
85	032315Z	15.4N	108.8E	LHUR		-							-	- -	-	-	16.0N 108.2E	
86	032345Z	15.3N	108.7E	LHUR		-							-	- -	-	-	16.0N 108.2E	

TYPHOON FLOSSIE
FIX POSITIONS FOR CYCLONE NO. 18
10 SEP - 16 SEP

FIX NO.	TIME	POSIT	FIX CAT	ACCMY NAV	ACCMY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MAN 700MB HGT	FLT LVL TI	FLT LVL TO	EYE FORM	ORIEN-TATION	EYE DIA	MKN WALL CLD	POSIT OF /REMARKS RADAR	
1	102105Z	14.8N 119.8E	AC H		-								-	- -	-	-		
2	102210Z	14.4N 119.9E	P	1	8	700MB	35	-	-	307	9	8	-	- -	-	-	AS OVC ABV IN CNTR	03
3	110240Z	14.8N 118.4E	P	-	-	600MB	-	-	-	-	-	-	-	- -	-	-		
4	110414Z	14.8N 118.7E	P	1	8	600MB	35	20	1004	310	7	7	-	- -	-	CALM SFC AREA EXTDS 90NM SW OF 700 CNTR		03
5	111010Z	15.1N 117.8E	P	3	10	700MB	20	25	1004	305	9	8	-	- -	-	-	LCU ALQDS-SI CLDS DUM	04
6	111530Z	14.8N 117.5E	P	2	5	700MB	30	-	-	310	10	10	-	- -	-	-	SFC CNTR 20NM DIA	05
7	112106Z	14.6N 116.3E	P	5	10	700MB	40	-	-	309	9	11	-	- -	-	5	SFC CNTR 30NM DIA	05
8	120352Z	15.0N 116.2E	P	2	5	700MB	30	30	1003	309	10	9	-	- -	-	-	SFC CNTR 8NM DIA	06
9	120922Z	14.9N 115.4E	P	2	4	700MB	35	25	999	305	11	10	-	- -	-	-	FBS S	06
10	121143Z	15.0N 115.5E	SAT T3.5/3.5/D1.0/24HRS														ESSA 9	
11	121511Z	15.0N 115.0E	P	5	5	700MB	25	-	995	303	12	10	-	- -	-	-	ROR PRES POOR	07
12	122155Z	15.4N 114.6E	P	5	3	700MB	30	-	992	300	14	13	-	- -	-	-	SFC CNTR 20NM DIA	08
13	130020Z	15.4N 114.5E	P	-	-	700MB	-	-	-	-	-	-	-	- -	-	-		
14	130204Z	15.3N 113.8E	SAT SIG X DIA NA CAT 2.0														ESSA 8 (RUDN)	
15	130400Z	15.8N 114.1E	P	5	10	700MB	35	20	991	300	13	9	-	- -	-	-	SFC CNTR 30NM DIA	09
16	130830Z	15.8N 113.5E	P	5	10	700MB	35	-	990	298	12	10	-	- -	-	-	SFC CNTR 30NM DIA	09
17	131557Z	15.5N 113.0E	P	2	2	700MB	40	-	985	295	12	13	-	- -	-	-	NO ORG ON RUK	10
18	132215Z	15.3N 112.8E	P	5	5	500MB	45	-	984	-	3	-1	CIRC		22	3	WC OPEN W-N	11
19	140300Z	15.3N 112.8E	P	3	3	700MB	66	60	982	292	16	10	CIRC		23	-	WC OPEN W-N	11
20	140625Z	15.0N 111.5E	SAT T4.5/4.5/D1.5/24HRS														ESSA 9	
21	141026Z	15.1N 112.0E	P	2	3	700MB	50	65	975	288	19	13	CIRC		20	5	WC OPEN N-E	12
22	141521Z	15.0N 111.3E	P	5	5	700MB	58	-	977	290	17	11	-	- -	-	-	SFC CNTR 30NM DIA	12
23	142152Z	15.0N 110.9E	P	1	2	700MB	65	-	976	286	15	11	CIRC		30	5	CLSD WC	13
24	142230Z	14.9N 110.7E	LRUR		-								CIRC		30	-		
25	142300Z	14.9N 110.6E	LRUR		-								CIRC		30	-		
26	142343Z	15.0N 110.8E	P	-	-	700MB	-	-	-	-	-	-	-	- -	-	-		
27	150000Z	14.9N 110.6E	LRUR		-								-	- -	-	-		
28	150131Z	14.9N 110.5E	LRUR		-								-	- -	-	-		
29	150200Z	15.0N 110.5E	LRUR		-								-	- -	-	-		
30	150615Z	15.1N 110.5E	LRUR		-								-	- -	-	-	16.1N 108.2E	
31	150945Z	15.1N 110.5E	LRUR		-								-	- -	-	-	16.1N 108.2E	
32	150310Z	15.0N 110.4E	P	1	2	700MB	75	70	978	289	15	12	CIRC		30	20	WC OPEN W	13
33	150545Z	14.9N 110.1E	LRUR		-								-	- -	-	-	16.1N 108.2E	
34	150645Z	15.1N 110.2E	LRUR		-								CIRC		40	-		
35	150645Z	14.3N 109.9E	LRUR		-								-	- -	-	-	16.1N 108.2E	
36	150753Z	16.0N 109.0E	SAT T4.0/4.5MINUS/W0.5/24HRS														ESSA 9	
37	150800Z	16.0N 110.0E	LRUR		-								CIRC		50	-		
38	150945Z	14.8N 110.0E	P	4	5	700MB	60	-	978	291	18	15	CIRC		30	-	WC OPEN E	14
39	151045Z	14.7N 109.8E	LRUR		-								-	- -	-	-	16.1N 108.2E	
40	151145Z	14.7N 109.8E	LRUR		-								-	- -	-	-	16.1N 108.2E	
41	151215Z	14.2N 109.7E	LRUR		-								CIRC		25	-	16.1N 108.2E	
42	151230Z	14.8N 109.5E	P	-	-	700MB	-	-	-	295	-	-	-	- -	-	4		
43	151245Z	14.7N 109.7E	LRUR		-								CIRC		20	-	16.1N 108.2E	
44	151345Z	14.8N 109.4E	LRUR		-								CIRC		25	-	16.1N 108.2E	
45	151500Z	14.8N 109.4E	LRUR		-								-	- -	-	-		
46	151500Z	14.8N 109.4E	P	2	5	700MB	70	-	-	295	19	-	CIRC		30	10	WC WELL DEF W-S	14
47	151545Z	14.5N 109.1E	LRUR		-								CIRC		15	-	16.1N 108.2E	
48	151615Z	14.5N 109.1E	LRUR		-								CIRC		18	-	16.1N 108.2E	
49	151645Z	14.5N 109.0E	LRUR		-								CIRC		16	-	16.1N 108.2E	
50	151715Z	14.5N 108.9E	LRUR		-								CIRC		15	-	16.1N 108.2E	
51	151745Z	14.5N 108.9E	LRUR		-								ELIP	N-S	17X10	-	16.1N 108.2E	
52	151815Z	14.5N 108.9E	LRUR		-								CIRC		15	-	16.1N 108.2E	
53	151822Z	14.4N 109.0E	LRUR		-								-	- -	-	-	16.1N 108.2E	
54	151945Z	14.5N 108.9E	LRUR		-								CIRC		15	-	16.1N 108.2E	
55	152015Z	14.5N 108.8E	LRUR		-								CIRC		15	-	16.1N 108.2E	
56	160045Z	14.5N 108.6E	LRUR		-								CIRC		18	-	16.1N 108.2E	
57	160145Z	14.5N 108.6E	LRUR		-								CIRC		17	-	16.1N 108.2E	
58	160245Z	14.5N 108.5E	LRUR		-								ELIP	N-S	23X16	-	16.1N 108.2E	

TYPHOON HELEN
FIX POSITIONS FOR CYCLONE NO. 20
13 SEP - 17 SEP

FIX NO.	TIME	POSIT	FIX CAT	ACCUY NAV	ACCUY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	1MKN WALL CLD	POSIT OF /REMARKS RADAR	
1	130300Z	15.7N 136.3E	P	5	5	700MB	50	50	-	298	16 12	CIRC		30	-	MC PR DEF	02
2	130914Z	16.5N 135.9E	P	5	5	700MB	64	65	978	291	18 13	CIRC		25	-	MC OPEN NW	02
3	140054Z	18.1N 134.0E	SAT	STG	A	DIA	MA CAT 2.0									ESSA 8 (RODN)	
4	140500Z	20.0N 133.0E	DVORAK	T	NO.1+												
5	140930Z	19.8N 132.7E	P	2	5	700MB	90	35	965	278	18 15	CIRC		40	8	MC OPEN SE-W	03
6	141102Z	20.0N 132.5E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
7	141440Z	20.4N 132.3E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
8	141515Z	20.6N 132.2E	P	2	5	700MB	90	-	963	277	18 11	CIRC		30	10	MC OPEN NE-S	03
9	150148Z	22.0N 132.4E	SAT	STG	A	DIA	2 CAT 4.0									ESSA 8 (RODN)	
10	150559Z	23.5N 131.8E	SAT	TS.5/S.5/D1.0/24HRS												ESSA 9	
11	151030Z	24.9N 131.9E	P	5	5	700MB	80	-	957	273	17 13	-	- -	-	-	MC OPEN E-W	04
12	151245Z	25.2N 131.9E	P	-	-	700MB	55	-	-	-	- -	-	- -	-	-		
13	151630Z	26.7N 132.3E	P	3	3	700MB	85	-	958	273	20 13	CIRC		40	-	CLSD MC	05
14	151700Z	26.6N 132.3E	LMDR		-							-	- -	-	-	28.4N 129.5E	
15	151800Z	26.9N 132.5E	LMDR		-							-	- -	-	-	28.4N 129.5E	
16	152200Z	28.8N 133.0E	LMDR		-							-	- -	-	-	35.9N 139.6E	
17	152320Z	28.8N 133.2E	LMDR		-							-	- -	-	-	35.9N 139.6E	
18	160000Z	29.5N 133.8E	LMDR		-							-	- -	-	-	35.9N 139.6E	
19	160100Z	29.5N 133.5E	LMDR		-							-	- -	-	-	35.9N 139.6E	
20	160200Z	30.0N 133.8E	LMDR		-							-	- -	-	-	33.3N 134.2E	
21	160200Z	29.8N 133.8E	LMDR		-							-	- -	-	-	35.9N 139.6E	
22	160300Z	30.2N 134.1E	LMDR		-							-	- -	-	-	35.9N 139.6E	
23	160300Z	30.2N 134.1E	LMDR		-							-	- -	-	-	33.3N 134.2E	
24	160400Z	30.3N 134.3E	LMDR		-							-	- -	-	-	35.9N 139.6E	
25	160400Z	30.6N 134.4E	LMDR		-							-	- -	-	-	33.3N 134.2E	
26	160449Z	31.4N 134.5E	P	2	5	700MB	-	80	959	274	14 17	-	- -	-	-	FL WND CNTR 50NM DIA	07
27	160500Z	31.1N 134.8E	LMDR		-							-	- -	-	-	33.3N 134.2E	
28	160600Z	31.5N 135.1E	LMDR		-							-	- -	-	-	33.3N 134.2E	
29	160600Z	31.6N 134.9E	LMDR		-							-	- -	-	-	35.4N 138.7E	
30	160630Z	32.1N 134.8E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-		
31	160700Z	32.4N 135.0E	P	2	5	700MB	100	-	963	273	18 11	-	- -	-	-	MDR PRES POOR	07
32	160700Z	32.4N 135.1E	LMDR		-							-	- -	-	-	33.3N 134.2E	
33	160700Z	33.0N 135.5E	LMDR		-							-	- -	-	-	35.2N 137.0E	
34	160800Z	32.8N 135.2E	P	2	5	700MB	85	65	963	274	17 -	-	- -	-	-		
35	160800Z	32.5N 135.5E	LMDR		-							-	- -	-	-	35.4N 138.7E	
36	160800Z	32.8N 135.6E	LMDR		-							-	- -	-	-	33.3N 134.2E	
37	160800Z	33.4N 135.6E	LMDR		-							-	- -	-	-	35.2N 137.0E	
38	160800Z	33.2N 135.5E	LMDR		-							-	- -	-	-	34.6N 135.7E	
39	160900Z	33.4N 135.5E	P	2	5	700MB	65	-	958	273	14 -	-	- -	-	-	FL WND CNTR 50NM DIA	07
40	160900Z	33.3N 135.7E	LMDR		-							-	- -	-	-	33.3N 134.2E	
41	160900Z	33.1N 135.6E	LMDR		-							-	- -	-	-	35.4N 138.7E	
42	160900Z	33.4N 135.6E	LMDR		-							-	- -	-	-	34.6N 135.7E	
43	161000Z	33.7N 135.7E	LMDR		-							-	- -	-	-	34.6N 135.7E	
44	161000Z	33.5N 135.5E	LMDR		-							-	- -	-	-	35.4N 138.7E	
45	161000Z	33.8N 135.8E	LMDR		-							-	- -	-	-	33.3N 134.2E	
46	161100Z	34.2N 135.9E	LMDR		-							-	- -	-	-	36.2N 136.2E	
47	161100Z	34.2N 135.9E	LMDR		-							-	- -	-	-	33.3N 134.2E	
48	161100Z	34.0N 135.5E	LMDR		-							-	- -	-	-	35.4N 138.7E	
49	161100Z	34.1N 136.0E	LMDR		-							-	- -	-	-	34.1N 136.0E	
50	161200Z	34.8N 136.4E	LMDR		-							-	- -	-	-	35.2N 137.0E	
51	161200Z	34.6N 136.0E	LMDR		-							-	- -	-	-	36.2N 136.2E	
52	161200Z	34.3N 135.6E	LMDR		-							-	- -	-	-	35.4N 138.7E	
53	161300Z	34.7N 136.2E	LMDR		-							-	- -	-	-	35.4N 138.7E	
54	161400Z	35.3N 136.6E	LMDR		-							-	- -	-	-	34.6N 135.7E	
55	161400Z	35.3N 136.6E	LMDR		-							-	- -	-	-		
56	161400Z	35.1N 136.4E	LMDR		-							-	- -	-	-	35.4N 138.7E	
57	161400Z	35.6N 136.3E	LMDR		-							-	- -	-	-	36.2N 136.2E	
58	161500Z	35.5N 136.8E	LMDR		-							-	- -	-	-	35.4N 138.7E	
59	161500Z	35.7N 136.5E	LMDR		-							-	- -	-	-	34.6N 135.7E	
60	161600Z	36.0N 137.3E	LMDR		-							-	- -	-	-	35.4N 138.7E	
61	161700Z	37.0N 138.0E	LMDR		-							-	- -	-	-	35.4N 138.7E	
62	162100Z	38.7N 138.7E	LMDR		-							-	- -	-	-	39.7N 140.1E	
63	162200Z	39.1N 139.0E	LMDR		-							-	- -	-	-	39.7N 140.1E	
64	170400Z	41.4N 140.4E	LMDR		-							-	- -	-	-	41.8N 140.7E	

TYPHOON IDA
FIX POSITIONS FOR CYCLONE NO. 22
16 SEP - 24 SEP

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV	ACCRY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS
1	160502Z	15.5N 155.5E	SAT	T2.0/2.0/D1.0/24HRS												ESSA 9
2	170358Z	17.5N 154.5E	SAT	T3.0/3.0/D1.0/24HRS												ESSA 9
3	170505Z	17.2N 155.1E	P	10	15	700MB	45	35	993	304	15 12	ELIP	SW-NE	20X10	-	WC V PR DEF 02
4	170800Z	17.0N 155.1E	P	10	15	700MB	47	40	991	300	13 13	CIRC		15	-	WC V PR DEF 02
5	171815Z	16.1N 156.7E	P	10	10	700MB	45	-	984	294	13 11	CIRC		35	5	CLSD WC 03
6	172130Z	16.5N 156.8E	P	10	10	700MB	60	55	986	297	13 12	CIRC		40	-	CLSD WC 03
7	180406Z	16.0N 157.5E	P	10	20	700MB	50	60	-	292	18 13	CIRC		20	5	WC OPEN NW-N 04
8	180614Z	15.8N 157.7E	P	-	-	700MB	65	70	-	-	- -	-	- -	-	7	
9	180905Z	15.7N 158.1E	P	5	5	700MB	68	-	977	290	19 11	ELIP	E-W	30X25	-	WC OPEN NW-NE 04
10	181750Z	15.4N 158.1E	P	10	10	700MB	80	-	969	284	19 13	CIRC		23	-	WC OPEN NW-NE 05
11	182000Z	15.3N 158.3E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-	WC OPEN N SEMIC 05
12	182120Z	15.3N 158.5E	P	10	10	700MB	80	80	969	283	18 13	CIRC		25	-	
13	190404Z	15.5N 156.8E	SAT	T5.5/5.5/D3.0/48HRS												ESSA 9
14	190430Z	15.8N 157.3E	P	15	10	700MB	-	100	968	284	18 12	ELIP	SW-NE	20X10	-	WC OPEN NW-N-E 06
15	190608Z	15.8N 157.3E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-	
16	190918Z	15.8N 156.8E	P	20	20	700MB	-	-	970	284	18 23	ELIP	SW-NE	20X10	-	WC OPEN NW-NE 06
17	200350Z	16.7N 153.3E	P	10	5	700MB	55	50	985	296	16 12	CIRC		30	-	WC OPEN SW-NW 07
18	200503Z	16.5N 153.0E	SAT	T4.5/5.5/W1.0/24HRS												ESSA 9
19	200605Z	16.8N 152.9E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-	
20	200926Z	17.0N 152.3E	P	5	5	700MB	45	-	978	288	14 13	CIRC		30	10	WC OPEN NW-NE 07
21	201512Z	17.5N 150.3E	P	2	5	700MB	60	-	972	285	16 13	CIRC		20	-	WC OPEN NW 08
22	202145Z	17.8N 148.7E	P	3	2	700MB	55	100	965	277	16 15	CIRC		17	-	OBKS IN WC 08
23	210105Z	18.0N 148.5E	SAT	STG	X	DIA	MA CAT 2.0									ESSA 8 (RODN)
24	210319Z	18.2N 147.2E	P	10	12	700MB	70	70	953	269	18 16	CIRC		15	-	CLSD WC 09
25	210409Z	18.5N 147.3E	SAT	T5.5/5.5PLUS/D1.0/24HRS												ESSA 9
26	210457Z	18.2N 146.8E	P	-	-	700MB	-	85	-	-	- -	-	- -	-	-	
27	210900Z	18.8N 146.5E	P	10	10	700MB	-	-	-	-	19 15	ELIP	SE-NW	17X10	-	CLSD WC 09
28	220000Z	21.6N 143.9E	SAT	STG	X	DIA	3 CAT 4.0									ESSA 8 (RODN)
29	220115Z	21.6N 143.7E	P	5	5	700MB	100	85	-	251	17 14	CIRC		18	5	CLSD WC 09
30	220825Z	22.3N 143.3E	AC R		-							-	- -	-	-	
31	221040Z	22.3N 143.0E	SAT	T6.0/6.0/D0.5/24HRS												ESSA 9
32	221226Z	23.4N 142.6E	P	10	10	700MB	75	-	932	251	19 12	CIRC		20	-	CLSD WC 11
33	221510Z	23.7N 142.6E	AC R		-							-	- -	-	-	
34	221547Z	23.8N 142.4E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-	
35	221949Z	24.0N 142.4E	P	5	8	700MB	65	-	933	251	17 15	CIRC		20	-	CLSD WC 11
36	230608Z	27.4N 142.0E	SAT	T6.0/6.0/S0/24HRS												ESSA 9
37	231015Z	25.0N 141.8E	P	10	5	700MB	-	-	933	250	20 14	CIRC		30	15	CLSD WC 12
38	231215Z	28.6N 141.6E	P	5	5	700MB	100	-	937	255	- -	CIRC		20	7	CLSD WC 13
39	231420Z	29.2N 141.7E	P	-	-	700MB	-	-	-	-	- -	-	- -	-	-	
40	231515Z	29.4N 141.8E	P	5	5	700MB	90	-	940	256	- -	CIRC		18	12	CLSD WC 13
41	231900Z	30.9N 142.2E	LRDM		-							-	- -	-	-	35.4N 138.7E
42	232000Z	31.3N 142.1E	LRDM		-							-	- -	-	-	35.4N 138.7E
43	232100Z	31.3N 142.3E	LRDM		-							-	- -	-	-	35.4N 138.7E
44	232130Z	31.5N 142.2E	P	5	8	700MB	76	100	942	259	16 14	CIRC		20	-	WC OPEN S SEMIC 14
45	232200Z	31.6N 142.6E	LRDM		-							-	- -	-	-	35.4N 138.7E
46	232300Z	31.9N 142.7E	LRDM		-							-	- -	-	-	35.4N 138.7E
47	240000Z	32.1N 143.0E	LRDM		-							-	- -	-	-	35.4N 138.7E
48	240030Z	32.3N 142.7E	P	5	8	700MB	86	85	949	265	17 13	CIRC		20	-	WC OPEN S 14
49	240100Z	32.5N 143.3E	LRDM		-							-	- -	-	-	35.4N 138.7E
50	240200Z	32.7N 143.3E	LRDM		-							-	- -	-	-	35.4N 138.7E
51	240300Z	33.1N 143.3E	P	5	5	700MB	88	100	-	266	17 14	CIRC		20	-	WC OPEN S SEMIC 14
52	240300Z	33.1N 143.5E	LRDM		-							-	- -	-	-	35.4N 138.7E
53	240400Z	33.5N 143.8E	LRDM		-							-	- -	-	-	35.4N 138.7E
54	240500Z	34.0N 144.0E	LRDM		-							-	- -	-	-	35.4N 138.7E
55	240600Z	34.2N 144.2E	LRDM		-							-	- -	-	-	35.4N 138.7E
56	240700Z	34.6N 144.6E	LRDM		-							-	- -	-	-	35.4N 138.7E
57	241025Z	36.1N 145.7E	P	5	5	700MB	68	-	956	272	19 -	CIRC		10	-	WC PR DEF 15
58	241230Z	36.6N 146.2E	P	5	5	700MB	30	-	961	274	16 -	CIRC		10	-	WC OPEN W 15
59	241500Z	36.9N 147.0E	P	5	5	700MB	30	-	963	276	16 -	CIRC		10	-	WC PR DEF 15

TYPHOON LORNA
FIX POSITIONS FOR CYCLONE NO: 25
27 SEP - 3 OCT

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR	/REMARKS	
1	2706082	16.0N 124.0E	SAT	T3.0/3.0/D1.5/24HRS											ESSA 9		
2	3007132	18.2N 117.5E	SAT	T3.0/3.0/D1.5/24HRS											ESSA 9		
3	0102162	17.0N 113.0E	SAT	STG UNK											ESSA 8 (VIS0)		
4	0103082	17.1N 114.3E	P	10 3	700MB	50	60	995	304	13 10	-	- -	-	-	CNTR FIL W/ CLDS AT FL		03
5	0106002	17.4N 113.6E	P	5 2	700MB	55	80	990	300	15 12	-	- -	-	-	PNIL WC S		03
6	0107402	18.1N 108.2E	SRDR	-							-	- -	-	-			
7	0114002	17.3N 111.1E	SRDR	-							-	- -	-	-			
8	0115002	17.7N 111.0E	SRDR	-							-	- -	-	-			
9	0117002	18.0N 110.8E	SRDR	-							-	- -	-	-			
10	0118002	17.9N 110.9E	SRDR	-							-	- -	-	-			
11	0118302	17.7N 110.6E	LRDR	-							-	- -	-	-			
12	0119002	17.9N 110.7E	SRDR	-							-	- -	-	-	16.0N 108.2E		
13	0119152	17.9N 110.7E	SRDR	-							-	- -	-	-			
14	0120002	17.9N 110.5E	SRDR	-							-	- -	-	-			
15	0121002	17.9N 110.3E	SRDR	-							-	- -	-	-			
16	0121002	18.0N 110.2E	SRDR	-							-	- -	-	-			
17	0122002	17.9N 110.0E	SRDR	-							-	- -	-	-			
18	0123002	18.0N 109.8E	SRDR	-							-	- -	-	-			
19	0123302	17.9N 109.7E	LRDR	-							-	- -	-	-	16.0N 108.2E		
20	0201002	18.0N 108.3E	SRDR	-							-	- -	-	-			
21	0202002	18.1N 108.9E	SRDR	-							-	- -	-	-			
22	0202102	18.3N 109.1E	AC H	-							-	- -	-	-			
23	0202512	17.7N 108.7E	SAT	STG X DIA 2 CAT 4.0													
24	0203002	18.1N 108.8E	SRDR	-							-	- -	-	-	ESSA 8 (RDDN)		
25	0203302	18.2N 108.9E	AC H	-							-	- -	-	-			
26	0204002	18.3N 108.6E	SRDR	-							-	- -	-	-			
27	0204002	18.0N 108.7E	SRDR	-							-	- -	-	-			
28	0204302	18.1N 108.4E	AC H	-							-	- -	-	-			
29	0206002	18.1N 108.3E	SRDR	-							-	- -	-	-			
30	0206152	18.2N 108.3E	SRDR	-							-	- -	-	-			
31	0206302	18.1N 108.2E	LRDR	-							-	- -	-	-	16.0N 108.2E		
32	0207002	18.1N 108.1E	SRDR	-							-	- -	-	-			
33	0207182	18.5N 107.4E	SAT	T5.0/5.0/D1.0/24HRS													
34	0208002	18.2N 108.0E	SRDR	-							-	- -	-	-	ESSA 9		
35	0208302	18.1N 107.7E	LRDR	-							-	- -	-	-	16.0N 108.2E		
36	0209002	18.2N 107.8E	SRDR	-							-	- -	-	-			
37	0209002	18.2N 107.8E	SRDR	-							-	- -	-	-			
38	0210002	18.2N 107.6E	SRDR	-							-	- -	-	-			
39	0211002	18.2N 107.5E	SRDR	-							-	- -	-	-			
40	0211002	18.2N 107.5E	SRDR	-							-	- -	-	-			
41	0211002	18.1N 107.4E	LRDR	-							-	- -	-	-	16.0N 108.2E		
42	0212002	18.4N 107.2E	SRDR	-							-	- -	-	-			
43	0213002	18.1N 107.1E	LRDR	-							-	- -	-	-	16.0N 108.2E		
44	0213002	18.2N 107.2E	SRDR	-							-	- -	-	-			
45	0214002	18.1N 106.9E	LRDR	-							-	- -	-	-	16.0N 108.2E		
46	0214002	18.2N 107.0E	SRDR	-							-	- -	-	-			
47	0215002	18.1N 106.7E	LRDR	-							-	- -	-	-	16.0N 108.2E		
48	0215002	18.2N 106.9E	SRDR	-							-	- -	-	-			
49	0216002	18.2N 106.7E	SRDR	-							-	- -	-	-			
50	0217002	18.2N 106.5E	SRDR	-							-	- -	-	-			
51	0218002	18.2N 106.3E	SRDR	-							-	- -	-	-			
52	0219002	18.1N 106.2E	SRDR	-							-	- -	-	-			
53	0221402	18.0N 105.8E	LRDR	-							-	- -	-	-	17.4N 104.7E		
54	0222402	18.0N 105.8E	LRDR	-							-	- -	-	-	17.4N 104.7E		
55	0223112	18.0N 105.7E	LRDR	-							-	- -	-	-	17.4N 104.7E		
56	0300402	17.9N 105.3E	LRDR	-							-	- -	-	-	17.4N 104.7E		
57	0301102	17.8N 105.1E	LRDR	-							-	- -	-	-	17.4N 104.7E		
58	0301402	17.8N 105.0E	LRDR	-							-	- -	-	-	17.4N 104.7E		
59	0305152	18.0N 105.3E	LRDR	-							-	- -	-	-	17.4N 102.8E		
60	0305402	17.5N 104.0E	LRDR	-							-	- -	-	-	17.4N 102.8E		

TYPHOON MARIE
FIX POSITIONS FOR CYCLONE NO: 26
4 OCT - 12 OCT

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR	/REMARKS	
1	0403222	15.0N 168.0E	SAT	T2.5/2.5PLUS/D1.0/24HRS											ESSA 9		
2	0503302	14.4N 168.3E	P	5 10	700MB	30	40	988	297	14 12	-	- -	-	-	WND CIRC WELL DEF		01
3	0504232	14.0N 167.4E	SAT	T3.5/3.5/D1.0/24HRS											ESSA 9		
4	0603252	14.5N 164.5E	SAT	T4.0/4.0/D0.5/24HRS											ESSA 9		
5	0604152	13.9N 164.7E	P	5 10	700MB	60	50	970	285	16 14	-	- -	-	-	CNTR FIL W/ CLDS		02
6	0609352	14.3N 163.7E	P	5 10	700MB	-	-	971	284	16 15	CIRC		10	-	WC OPEN E SEMIC		02
7	0704022	15.1N 159.2E	P	10 5	700MB	-	70	962	274	17 15	CIRC		10	5	WC OPEN NE-SE		03
8	0704232	15.4N 158.6E	SAT	T5.0/5.0/D1.0/24HRS											ESSA 9		
9	0709142	15.2N 157.3E	P	3 10	700MB	75	-	954	271	19 11	-	- -	-	-	OVC ABV AND BLO IN CNTR		04
10	0803152	16.7N 152.5E	P	00 00	700MB	62	70	-	266	17 16	CIRC		40	5	WC PR DEF		05
11	0804532	16.8N 152.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
12	0805202	16.5N 152.0E	SAT	T4.5/5.0/W0.5/24HRS											ESSA 9		
13	0806062	16.9N 151.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
14	0809052	17.2N 150.8E	P	5 5	700MB	50	-	-	267	16 12	CIRC		60	10	WC PR DEF		05
15	0815192	17.3N 148.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
16	0817512	17.6N 148.3E	P	10 15	700MB	-	-	946	263	19 -	-	- -	-	-	CNTR FIL W/ SC, AS ABV		06
17	0820302	17.8N 147.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
18	0821062	17.8N 147.6E	P	10 10	700MB	-	100	941	259	17 -	-	- -	-	-	WC BGNG TO FRM		06
19	0901102	18.3N 146.2E	SAT	STG X DIA 2 CAT 4.0											ESSA 8 (RDDN)		
20	0904252	18.0N 146.0E	SAT	T6.0/6.0/D1.5/24HRS											ESSA 9		
21	0905352	18.8N 146.9E	P	10 5	700MB	80	75	937	255	15 14	CIRC		10	-	WC PR DEF		07
22	0907002	18.8N 146.3E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
23	0909002	18.9N 145.9E	P	1 5	700MB	90	-	936	254	16 13	CIRC		10	-	WC PR DEF		07
24	1000102	21.0N 143.7E	SAT	STG X DIA 3 CAT 4.0											ESSA 8 (RDDN)		
25	1003102	20.9N 144.1E	P	10 5	700MB	80	50	946	260	19 14	CIRC		15	15	WC OPEN W SEMIC		08
26	1005262	21.2N 144.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
27	1005262	21.7N 144.0E	SAT	T6.5/6.5/D0.5/24HRS											ESSA 9		
28	1009212	21.9N 144.1E	P	3 5	700MB	100	60	942	258	16 14	CONC	-	10-25	-	WC PR DEF		08
29	1017482	24.0N 143.8E	P	10 10	700MB	75	-	941	259	17 14	-	- -	-	-	NEG WC		09
30	1020302	24.5N 144.0E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
31	1021142	24.7N 144.0E	P	10 10	700MB	75	60	945	262	16 15	-	- -	-	-	PNIL WC TO NE		09
32	1104052	26.8N 144.2E	P	5 5	700MB	80	70	951	266	17 13	-	- -	-	-	PNIL WC ON E SEMIC		10
33	1106082	27.6N 144.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
34	1109002	28.5N 145.5E	P	5 5	700MB	100	70	950	266	18 14	-	- -	-	-	RDR PRES POOR		11
35	1206102	37.5N 148.5E	P	10 5	700MB	40	70	965	278	16 11	-	- -	-	-	NO RDR PRES		12

TYPHOON NANCY
FIX POSITIONS FOR CYCLONE NO: 27
16 OCT - 24 OCT

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS RADAR	
1	160335Z	15.0N 170.5E	SAT	T2.0/2.0/D0.5/25HRS											ESSA 9	
2	160430Z	15.7N 169.6E	P	5 10	700MB	40	45	998	306	12 -	CIRC		3	4	WC OPEN	01
3	162130Z	15.7N 167.1E	P	2 2	700MB	50	80	993	302	12 12	CIRC		5	-	WL OPEN E-SE	02
4	170140Z	15.7N 166.6E	AC H	-												
5	170330Z	15.9N 166.1E	P	2 2	700MB	45	60	985	295	15 11	OCNC	-	15-25	-	FBS ALGOS MVY N QUAD	02
6	170434Z	16.0N 165.5E	SAT	T4.5/4.5/D2.0/24HRS											ESSA 9	
7	170925Z	16.0N 164.9E	P	4 5	700MB	40	-	975	288	14 10	CIRC		20	-	EYE FRMED BY FB	03
8	171203Z	16.1N 164.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
9	171500Z	16.3N 163.6E	P	4 5	700MB	65	-	972	282	16 -	CIRC		30	-		
10	180340Z	17.3N 161.9E	P	10 2	700MB	80	130	954	269	16 9	CIRC		15	-	EYE BCMG DIF	03
11	180357Z	17.0N 160.5E	SAI	STG X DIA 2 CAT 4.0											CLSD WC	04
12	180600Z	17.9N 160.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-	ESSA 9	
13	180900Z	17.7N 160.5E	P	10 2	700MB	90	-	945	260	17 8	CIRC		20	15	CLSD WC	04
14	190340Z	20.3N 158.2E	P	10 3	700MB	110	130	-	286	21 -	CIRC		30	-	WC WK-OPEN SE	05
15	190436Z	20.7N 158.0E	SAT	TS.5/5.5/S0/24HRS											ESSA 9	
16	190630Z	20.7N 158.0E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
17	190900Z	21.1N 157.8E	P	10 10	700MB	100	-	958	271	19 12	-	- -	-	-		
18	201834Z	24.7N 159.8E	P	15 10	700MB	55	-	-	299	19 12	-	- -	-	-	FL CNTR APPRS LINE IF	05
19	202100Z	24.4N 160.0E	P	7 5	700MB	55	85	-	301	18 15	-	- -	-	-	NEG RDR PRES	06
20	240347Z	24.0N 157.0E	SAT	STG C-											NEG RDR PRES ESSA 9	06

TYPHOON OLGA
FIX POSITIONS FOR CYCLONE NO: 28
21 OCT - 29 OCT

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS RADAR	
1	210234Z	7.5N 177.0E	SAI	STG C											ESSA 9	
2	211953Z	7.9N 174.9E	P	10 10	700MB	50	100	-	303	15 11	-	- -	-	-	CNTR FILLED WITH 7/8 AS	01
3	212339Z	8.1N 174.5E	P	10 10	700MB	55	100	-	303	16 14	-	- -	-	-	WC FRMG S SEMIC	01
4	220335Z	9.0N 172.0E	SAT	T3.0/3.0/D1.0/24HRS											ESSA 9	
5	220830Z	8.2N 174.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
6	220910Z	8.1N 174.1E	P	5 2	700MB	50	-	-	294	14 14	ELIP	N-S	8X 5	-	WC PR DEF	02
7	221620Z	8.9N 173.6E	P	5 12	700MB	40	-	993	304	12 10	-	- -	-	-	WC APPRS TO FRM SW SIDE	03
8	222250Z	9.2N 172.3E	P	5 10	700MB	45	65	-	306	16 11	-	- -	-	-	NEG RDR PRES	04
9	230245Z	9.0N 171.5E	SAI	STG C											ESSA 9	
10	230303Z	9.5N 172.0E	P	5 10	700MB	35	65	-	303	15 14	CIRC		20	-	WC OPEN N SEMIC	04
11	231415Z	10.1N 169.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
12	231550Z	10.4N 169.8E	P	1 10	700MB	37	-	994	304	17 -	-	- -	-	-		
13	240050Z	11.0N 168.2E	P	5 5	1500FT	40	30	999	-	25 -	-	- -	-	-	NEG RDR PRES	06
14	240305Z	11.4N 168.2E	P	5 5	1500FT	40	30	996	-	26 -	-	- -	-	-	NO CLD CHG AT CNTR	07
15	240343Z	10.5N 164.5E	SAT	T4.0/4.0/D1.0/24HRS											ESSA 9	
16	240925Z	12.2N 166.3E	P	3 10	700MB	50	-	993	305	14 -	-	- -	-	-	NEG RDR PRES	08
17	241545Z	11.8N 164.5E	P	10 20	700MB	30	-	995	302	15 13	-	- -	700MB CNTR ENGULFED IN TSTM SYSTEM 30NM WIDE			08
18	242223Z	12.3N 163.0E	P	1 10	1500FT	55	50	994	-	25 25	-	- -	700MB CNTR ILL DEF DUE CB COVERING ENTIRE CNTR			09
19	250441Z	12.9N 162.0E	SAT	T4.5/4.5/D0.5/24HRS											ESSA 9	
20	250530Z	13.5N 161.5E	P	10 5	700MB	45	55	987	296	15 14	-	- -	-	-	TCU NR CNTR-FRMG WC	10
21	250930Z	13.6N 159.9E	P	10 3	700MB	55	-	989	298	15 15	-	- -	-	-	NEG ORG ON RDR	10
22	251825Z	13.7N 157.9E	P	10 10	700MB	50	-	982	292	15 -	-	- -	-	-	CONSBL CONV ACTV ALWDS	11
23	252115Z	13.8N 157.5E	P	10 7	700MB	60	65	979	292	16 -	-	- -	-	-	CMG CB AT EAACI CNTR	11
24	260045Z	14.3N 156.9E	AC H	-												
25	260344Z	14.1N 156.1E	P	5 5	700MB	60	100	974	287	16 13	CIRC		20	-	WC PR DEF	12
26	260535Z	14.6N 155.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
27	260718Z	14.4N 155.3E	P	15 10	700MB	65	120	981	289	14 13	CIRC		20	-	WC PR DEF	12
28	261023Z	14.9N 154.1E	P	10 10	700MB	40	-	972	285	15 14	-	- -	-	-	WC PR DEF	13
29	261630Z	15.2N 153.6E	P	- -	700MB	51	-	-	-	- -	-	- -	-	-		
30	261532Z	15.7N 151.9E	P	5 2	700MB	40	-	967	279	17 15	CIRC		10	-	WL FRMG ALGOS	14
31	262030Z	16.1N 150.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
32	262100Z	16.1N 150.6E	P	5 7	700MB	70	65	961	277	16 12	CIRC		30	7	CLSD WC	14
33	270318Z	17.0N 148.4E	P	10 10	700MB	65	55	948	264	19 13	CIRC		15	5	WELL DEF	15
34	270545Z	17.5N 147.9E	P	- -	700MB	-	-	943	-	- -	-	- -	-	-		
35	271052Z	17.9N 146.9E	P	5 5	700MB	85	-	940	257	16 15	CIRC		10	2	CLSD WC	16
36	271220Z	18.4N 146.3E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
37	271900Z	18.9N 145.8E	P	2 2	700MB	75	-	-	283	16 16	CIRC		12	8	CLSD WC	16
38	272110Z	19.9N 144.9E	P	5 5	700MB	70	120	939	256	18 16	CIRC		15	-	CLSD WC	17
39	272300Z	20.3N 144.3E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
40	280730Z	22.1N 143.5E	P	5 5	700MB	85	60	-	262	17 13	CIRC		20	-	OPEN W SEMIC	18
41	281715Z	25.3N 143.1E	P	5 10	700MB	40	-	951	268	21 -	CIRC		40	-	WC PR DEF	19
42	282030Z	25.5N 143.6E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
43	282100Z	25.7N 143.3E	P	5 10	700MB	35	80	952	268	21 18	CIRC		40	-	WL PR DEF	19
44	290450Z	29.5N 145.9E	SAT	T4.0/5.0/W1.0/24HRS											ESSA 9	
45	290828Z	30.1N 145.9E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
46	290659Z	30.6N 145.8E	P	5 20	700MB	75	60	984	279	14 13	-	- -	-	-	NO IN CNTR-CONT MDT M	20
47	290804Z	31.2N 146.2E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
48	290900Z	31.7N 146.5E	P	3 5	700MB	50	-	989	280	14 16	-	- -	-	-	RDR PRES NIL	

TYPHOON PAMELA
FIX POSITIONS FOR CYCLONE NO. 29
30 NOV - 8 NOV

FIX NO.	TIME	POSIT	FIX CAT	ACCKY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF RADAR	/REMARKS	
1	3003472	10.5N 159.5E	SAT	T1.0/1.0/D0.5/24HRS											ESSA 9		
2	3104502	14.5N 153.5E	SAT	T2.5/2.5/D1.0/24HRS											ESSA 9		
3	0103492	18.0N 150.0E	SAT	T2.0/2.5/W0.5/24HRS											ESSA 9		
4	0404102	12.9N 130.6E	P	10 20	700MB	45	70	1004	308	13 11	-	- -	-	-	CALM SFC CNTR 40A65NM		02
5	0408492	12.5N 129.5E	SAT	T2.5/2.5/D1.0/24HRS											ESSA 9		
6	0410252	13.0N 128.0E	AC H	-							-	- -	-	-			
7	0413002	12.7N 127.7E	AC H	-							-	- -	-	-			
8	0413002	12.7N 127.8E	AC H	-							-	- -	-	-			
9	0414502	13.0N 127.0E	AC H	-							-	- -	-	-			
10	0419002	12.6N 126.6E	AC H	-							-	- -	-	-			
11	0423002	12.5N 125.0E	AC H	-							-	- -	-	-			
12	0423002	12.5N 125.0E	AC H	-							-	- -	-	-	13.0N 125.0E		
13	0501202	11.0N 124.1E	SAT	SIG UNK													
14	0502282	11.9N 124.7E	SAT	T4.0/4.0/D1.5/24HRS											ESSA 9		
15	0504302	12.3N 123.2E	P	1 20	500MB	-	-	-	-	-1 -7	-	- -	-	-	RDR PRES POOR		03
16	0506132	12.0N 123.0E	AC H	-							-	- -	-	-			
17	0506152	12.3N 122.5E	AC H	-							-	- -	-	-			
18	0509002	12.4N 122.3E	AC H	-							-	- -	-	-			
19	0509002	12.5N 122.1E	LKUR	-							-	- -	-	-			
20	0509002	12.6N 122.1E	LKUR	-							-	- -	-	-	13.6N 124.2E		
21	0510302	12.3N 122.2E	AC H	-							-	- -	-	-			
22	0511402	12.5N 122.1E	LKUR	-							-	- -	-	-	13.6N 124.2E		
23	0512002	12.0N 121.7E	LKUR	-							-	- -	-	-	13.9N 121.1E		
24	0512002	12.7N 121.4E	LKUR	-							-	- -	-	-			
25	0512152	12.7N 121.4E	AC H	-							-	- -	-	-			
26	0513002	13.0N 121.3E	LKUR	-							-	- -	-	-	13.9N 121.1E		
27	0513002	12.8N 121.6E	LKUR	-							-	- -	-	-			
28	0514002	12.8N 120.8E	LKUR	-							-	- -	-	-	13.9N 121.3E		
29	0516102	12.8N 120.4E	P	5 10	500MB	60	-	989	-	-5 -4	CIRC		12	-	WC CLSD		04
30	0516102	13.0N 119.8E	P	5 10	500MB	50	-	985	-	-8 -6	CIRC		14	-	WC CLSD		04
31	0518102	13.0N 119.8E	AC H	-							-	- -	-	-			
32	0518372	13.5N 120.0E	AC H	-							-	- -	-	-			
33	0521002	13.1N 118.6E	P	1 3	700MB	55	-	984	295	12 9	CIRC		15	5	WC OPEN N SEMIC		05
34	0522002	13.1N 118.6E	SKUR	-							-	- -	-	-			
35	0523002	13.2N 118.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
36	0523452	13.0N 118.9E	AC H	-							-	- -	-	-			
37	0600032	13.2N 118.1E	P	1 5	700MB	40	60	-	296	15 12	CIRC		20	-	WC OPEN S		05
38	0602052	13.9N 117.6E	SAT	T5.0/5.0PLUS/D0.5/24HRS											ESSA 8 (RUDN)		
39	0603002	13.4N 117.3E	P	5 5	700MB	50	65	987	295	18 11	CIRC		30	-			
40	0603002	13.0N 120.1E	SKUR	-							-	- -	-	-			
41	0603102	11.8N 119.4E	SAT	STG X DIA 9 CAT 3.0											ESSA 8 (RUDN)		
42	0604002	13.0N 120.0E	SKUR	-							-	- -	-	-			
43	0605002	13.0N 119.6E	AC H	-							-	- -	-	-			
44	0606002	13.5N 116.6E	P	5 2	700MB	65	65	980	291	17 14	CIRC		20	-	WC CLSD		06
45	0606002	13.8N 116.8E	AC H	-							-	- -	-	-			
46	0606002	13.2N 119.5E	SKUR	-							-	- -	-	-			
47	0606502	13.0N 116.2E	SAT	T4.5/4.5/D0.5/24HRS											ESSA 9		
48	0608002	13.2N 119.1E	SKUR	-							-	- -	-	-			
49	0609152	14.0N 116.2E	AC H	-							-	- -	-	-			
50	0610052	13.8N 115.8E	P	3 6	700MB	-	65	970	284	16 10	CIRC		25	-	WC CLSD		07
51	0610452	14.0N 116.0E	AC H	-							-	- -	-	-			
52	0611452	14.0N 115.4E	AC H	-							-	- -	-	-			
53	0612122	14.1N 115.7E	P	3 10	700MB	-	-	968	283	16 9	CIRC		25	-	WELL DEF RDR-ENE SEMIC		07
54	0613002	13.5N 116.6E	SKUR	-							-	- -	-	-			
55	0613002	13.5N 116.8E	SKUR	-							-	- -	-	-			
56	0614202	14.4N 115.4E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-			
57	0615152	14.4N 115.1E	P	3 10	700MB	-	-	965	280	16 13	ELIP	N-S	25X20	-	WC OPEN WSW SEMIC		07
58	0616152	14.5N 115.1E	AC H	-							-	- -	-	-			
59	0616532	14.7N 114.5E	P	10 5	700MB	88	-	964	277	18 17	CIRC		20	5	WC OPEN W		08
60	0620202	14.9N 114.4E	AC H	-							-	- -	-	-			
61	0621302	14.9N 114.0E	P	5 5	700MB	82	-	958	274	20 17	CIRC		25	10	WC OPEN W		08
62	0700202	15.0N 115.5E	AC H	-							-	- -	-	-	WC OPEN S		08
63	0700352	15.1N 113.4E	P	15 10	700MB	80	100	952	269	20 19	CIRC		30	7			
64	0701002	15.3N 113.4E	SKUR	-							-	- -	-	-			
65	0702002	15.5N 113.2E	SKUR	-							-	- -	-	-			
66	0702552	13.5N 113.5E	SAT	STG X DIA 6 CAT 3.0											ESSA 8 (VIBU)		
67	0703002	14.9N 113.2E	SAT	STG X DIA 5 CAT 4.0											ESSA 8 (RUDN)		
68	0703002	15.6N 113.0E	SKUR	-							-	- -	-	-			
69	0704002	15.7N 112.9E	SKUR	-							-	- -	-	-			
70	0704252	15.7N 112.9E	P	00 00	700MB	90	70	948	265	20 16	CIRC		23	5	WC SML, OPEN S		09
71	0704302	14.0N 113.0E	AC H	-							-	- -	-	-			
72	0705002	15.8N 112.6E	SKUR	-							-	- -	-	-			
73	0706002	15.8N 112.6E	SKUR	-							-	- -	-	-			
74	0706122	15.9N 112.6E	AC H	-							-	- -	-	-			
75	0706452	16.0N 112.5E	P	00 00	700MB	105	75	942	260	19 11	CIRC		23	5	WC CLSD		09
76	0707002	16.1N 112.3E	SKUR	-							-	- -	-	-			
77	0707492	16.0N 112.2E	SAT	T5.5/5.5/D1.0/24HRS											ESSA 9		
78	0709002	16.2N 112.1E	AC H	2 -							-	- -	-	5			
79	0709002	16.3N 112.1E	AC H	-							-	- -	-	5			
80	0709002	16.4N 111.9E	SKUR	-							-	- -	-	-			
81	0709002	16.4N 111.9E	SKUR	-							-	- -	-	-			
82	0709002	16.3N 112.1E	SKUR	-							-	- -	-	-			
83	0710002	16.5N 111.7E	SKUR	-							-	- -	-	-			
84	0711002	16.7N 111.6E	SKUR	-							-	- -	-	-			
85	0712002	16.8N 111.5E	SKUR	-							-	- -	-	-			
86	0712252	16.8N 111.6E	AC H	5 5							CIRC		20	-	15.4N 111.8E		
87	0713002	16.9N 111.3E	SKUR	-							-	- -	-	-			
88	0715302	17.1N 111.6E	AC H	5 5							CIRC		30	5	16.5N 110.8E		
89	0718002	17.5N 110.6E	AC H	5 10							CIRC		25	-	16.5N 110.8E		
90	0722302	17.5N 110.9E	AC H	1 30							-	- -	-	-	16.4N 110.4E		
91	0801302	17.5N 112.0E	SAT	SIG UNK											ESSA 8 (VIBU)		
92	0806522	20.0N 110.2E	SAT	T4.5/5.5/W1.0/24HRS											ESSA 9		

TYPHOON RUBY
FIX POSITIONS FOR CYCLONE NO. 30
11 NOV - 19 NOV

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	1MKN WALL CLD	POSIT OF MACAM /REMARKS	
1	1102022	6.0N 175.0W	SAT	T1.0/1.0/D0.5/24HRS											ESSA 9	
2	1302092	9.5N 177.0W	SAT	T1.5/2.5MINUS/W1.0/24HRS											ESSA 9	
3	1403062	12.0N 178.5W	SAT	T3.5/3.5/D2.0/24HRS											ESSA 9	
4	1404432	11.9N 179.6W	P	10 3	700MB	58	70	-	293	17 13	CIRC		30	5	SRL OPENING IN WC NW	01
5	1406412	11.9N 179.7E	P	10 5	700MB	50	60	-	294	19 15	CIRC		25	-	CLSD WC	01
6	1501112	13.5N 177.0E	SAT	T4.0/4.0/D0.5/24HRS											ESSA 9	
7	1502112	14.0N 177.0E	SAT	T4.5/4.5/D1.5/24HRS		(NESS)									ESSA 9 (NESS)	
8	1506422	13.6N 174.9E	AC M	-						-	- -	-	-			
9	1513522	14.3N 174.1E	P	20 20	700MB	80	-	-	-	- -	-	- -	-	-	NEG DEF	03
10	1516012	14.4N 173.8E	P	5 5	700MB	60	-	-	257	20 11	-	- -	-	-	CLSD WC	03
11	1523152	14.5N 172.3E	P	2 2	700MB	110	100	944	262	21 11	CIRC		20	-	CLSD WC	04
12	1601382	14.7N 171.9E	P	- -	500MB	-	-			- -	-	- -	-	-		
13	1603092	14.7N 171.5E	SAT	T5.0/5.0/D1.0/24HRS											ESSA 9	
14	1603102	14.5N 171.3E	SAT	T4.5/4.5/S0/24HRS		(NESS)									ESSA 9 (NESS)	
15	1604002	14.8N 171.7E	P	2 2	700MB	-	130	945	262	20 12	CIRC		20	15	WC OPEN SE QUAD	05
16	1606002	15.0N 171.6E	P	- 6	700MB	-	-	-	-	- -	-	- -	-	-		
17	1609002	15.3N 171.0E	P	2 5	700MB	-	-	-	270	20 12	CIRC		20	12	WC OPEN E-SE	05
18	1615572	15.5N 170.0E	P	20 10	700MB	-	-	961	277	21 18	CIRC		20	-	WC PR DEF	06
19	1621452	15.8N 169.2E	P	2 2	700MB	100	130	-	294	21 10	CIRC		30	-	WC OPEN S SEMIC	07
20	1623552	15.8N 168.8E	P	- -	700MB	-	-			- -	-	- -	-	-		
21	1703302	16.1N 168.0E	P	2 5	700MB	80	65	986	298	20 13	-	- -	-	-	WC USPIC NE-S-NW	07
22	1704082	15.8N 167.9E	SAT	T5.0/5.0/S0/24HRS											ESSA 9	
23	1704092	16.0N 168.0E	SAT	T4.0/4.5/W0.5/24HRS		(NESS)									ESSA 9 (NESS)	
24	1706502	16.1N 167.0E	P	5 10	700MB	40	-	994	303	22 20	-	- -	-	-	SFC CNTR FIL SC	08
25	1709152	16.1N 166.5E	P	10 15	700MB	55	-	-	306	19 11	-	- -	-	-	SFC CNTR FIL SC	08
26	1715322	16.2N 165.1E	P	5 10	700MB	40	-	994	304	15 11	-	- -	-	-	APPNT WC REMAINS NW	09
27	1722442	15.8N 163.3E	SAT	T3.0/4.0/W1.0/24HRS		(NESS)									ESSA 9 (NESS)	
28	1722442	15.5N 163.5E	SAT	T3.0/5.0/W2.0/24HRS												
29	1804302	15.4N 161.9E	P	3 2	700MB	25	30	1001	311	15 -	-	- -	-	-	CALM SFC CNTR 10NM DIA	10
30	1809332	15.3N 161.1E	P	5 5	700MB	20	-	1005	314	16 13	-	- -	-	-	APPNT CNTR 30NM DIA	11
31	1815032	15.4N 160.0E	P	3 1	700MB	-	-	999	309	- -	-	- -	-	-	SFC CNTR 40NM DIA	12
32	1821442	16.0N 161.0E	SAT	T3.0/3.0/W0/24HRS											NOAA 2	
33	1821442	15.8N 158.7E	SAT	T3.0/3.0/W0/24HRS		(NESS)									NOAA 2 (NESS)	
34	1903152	16.1N 157.9E	P	15 1	700MB	18	20	985	299	- -	-	- -	-	-		13
35	1907402	16.2N 156.3E	P	10 1	700MB	24	25	989	302	- -	-	- -	-	-	FIX MADE AT SFC CNTR	13

TYPHOON SALLY
FIX POSITIONS FOR CYCLONE NO. 31
1 DEC - 8 DEC

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	1MKN WALL CLD	POSIT OF MACAM /REMARKS	
1	0101002	7.0N 110.5E	SAT	T3.0/3.0/S0/24HRS		(NESS)									NOAA 2	
2	0101102	7.0N 110.5E	SAT	T3.5/3.5/S0/24HRS											NOAA 2	
3	0101502	7.1N 110.3E	P	10 5	700MB	55	65	989	301	18 10	CIRC		5	10	WC OPEN NE	04
4	0110302	6.5N 108.0E	P	5 10	700MB	70	55	984	298	16 9	CIRC		25	3	WC OPEN NW	05
5	0114302	6.8N 107.7E	P	15 10	700MB	70	-	986	299	13 -	CIRC		25	4	CLSD WC	05
6	0115002	6.8N 107.4E	P	15 10	700MB	65	-	985	297	16 10	CIRC		20	10	WC OPEN N	05
7	0201422	7.1N 106.0E	P	5 5	700MB	70	90	988	301	16 12	CIRC		25	3	OPEN N HALF	06
8	0202032	7.0N 106.3E	SAT	T4.0/4.0/D1.0/24HRS		(NESS)									NOAA 2	
9	0206032	7.0N 105.5E	SAT	T4.0/4.0/D1.0/24HRS											NOAA 2	
10	0203172	8.0N 103.8E	SAT	STG C											ESSA 8 (VIBU)	
11	0203402	7.5N 105.5E	P	10 5	700MB	55	90	990	303	16 12	CIRC		25	3	WC OPEN N SEMIC	06
12	0206152	7.2N 105.1E	P	10 5	700MB	85	75	989	303	15 10	CIRC		25	-		06
13	0211172	7.8N 105.0E	P	10 15	700MB	45	45	994	306	18 12	CIRC		15	-	WC OPEN N SEMIC	06
14	0212352	7.9N 104.8E	P	10 15	700MB	50	-	993	310	15 12	-	- -	-	-	WC W AND S VRY PR DEF	07
15	0215152	8.2N 104.4E	P	10 15	700MB	50	-	993	302	16 -	-	- -	-	-	NEG WC	07
16	0218002	7.9N 103.8E	P	10 5	700MB	70	-	987	298	14 10	CIRC		12	3	WC NW-SW	07
17	0222302	8.0N 103.5E	P	15 5	700MB	-	-	989	300	18 12	CIRC		25	-	CLSD WC	07
18	0300302	8.0N 103.0E	P	5 2	700MB	70	75	987	302	20 -	-	- -	-	-	WC OPEN E	08
19	0302582	9.0N 102.5E	SAT	T4.5/4.5/D0.5/25HRS											SFC CNTR CIRC 20NM	08
20	0303002	8.1N 102.6E	P	5 2	700MB	60	85	990	305	18 -	-	- -	-	-	NOAA 2	
21	0303142	8.0N 103.0E	SAT	STG C											SFC CNTR CIRC 20NM	08
22	0306202	8.8N 102.1E	P	15 5	700MB	55	95	989	301	15 -	-	- -	-	-	ESSA 8 (VIBU)	
23	0309302	8.8N 102.1E	P	15 10	700MB	12	50	990	303	14 -	CIRC		20	-	SFC CNTR CIRC 25NM	09
24	0312052	8.8N 101.9E	P	10 10	700MB	35	-	994	305	18 15	CIRC		20	-	SFC CNTR CIRC 25NM	09
25	0316302	9.1N 101.4E	P	2 15	700MB	35	-	-	307	15 11	-	- -	-	-	WC PR DEF	09
26	0318452	9.4N 101.4E	P	10 20	700MB	50	-	995	305	15 12	-	- -	-	-	NEG WC	10
27	0321182	9.4N 101.4E	P	10 20	700MB	40	-	992	304	16 10	-	- -	-	-	NEG WC	10
28	0400002	9.8N 101.3E	P	10 10	700MB	45	50	998	309	14 10	-	- -	-	-	NEG WC	10
29	0401372	9.0N 101.0E	SAT	T4.0/4.0/S0/24HRS		(NESS)									NEG WC	10
30	0406302	10.1N 100.5E	P	2 2	700MB	65	50	995	303	16 -	-	- -	-	-	NOAA 2	
31	0409102	9.9N 100.6E	P	2 4	700MB	35	50	996	306	17 -	-	- -	-	-	SFC CNTR 30NM DIA	11
32	0414152	9.8N 99.3E	P	2 2	700MB	45	-	-	-	15 12	-	- -	-	-	SFC CNTR 8 - NEG WC	11
33	0415052	9.8N 98.9E	P	2 2	500MB	25	-	-	-	-1 -3	-	- -	-	-	NEG WC	12
34	0417102	10.0N 98.8E	P	2 2	500MB	20	-	-	-	-2 -3	-	- -	-	-	NEG WC	12
35	0502002	9.9N 99.0E	P	1 10	700MB	40	-	-	-	12 9	-	- -	-	-	FL WND CNTR 40NM DIA	12
36	0502532	11.5N 98.5E	SAT	STG C											UVC AS IN CNTR	13
37	0503502	9.9N 98.9E	P	1 10	700MB	20	20	-	-	12 9	-	- -	-	-	NOAA 2	
38	0503582	11.5N 97.9E	SAT	STG X DIA 2 CAT 3.0											UVC AS IN CNTR	13
39	0506502	10.0N 98.6E	P	1 10	700MB	18	25	-	-	12 12	-	- -	-	-	ESSA (VIBU)	
40	0604452	10.5N 96.7E	P	5 15	700MB	30	15	1009	315	12 12	-	- -	-	-	UVC AS IN CNTR	13
41	0702442	10.5N 96.0E	SAT	T2.0/2.0/D0.5/25HRS											BRKN AS IN CNTR	14
42	0706202	10.9N 95.2E	P	5 15	700MB	20	20	-	314	8 12	-	- -	-	-	NOAA 2	
43	0801462	13.3N 95.0E	SAT	T2.5/3.0/W0.5/24HRS		(NESS)									UVC AS ABV	15
44	0801482	14.0N 95.0E	SAT	T3.0/3.0/D0.5/23HRS											NOAA 2	
															NOAA 2	

TYPHOON THERESE

FIX POSITIONS FOR CYCLONE NO: 32
30 NOV - 10 DEC

FIX NO.	TIME	POSIT	FIX CAT	ACCNY NAV-MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL T1/T0	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT DP /REMARKS REMARK	
1	300013Z	6.0N 145.0E	SAT	T2.0/2.0/D1.0/24HRS												
2	302313Z	6.5N 138.5E	SAT	T2.0/2.0/S0/24HRS											NUAA 2 NUAA 2	
3	012224Z	7.3N 134.0E	P	2 2	700MB	35	70	993	305	15 11	CIRC		20	-		
4	020008Z	7.0N 134.0E	SAT	T3.0/3.0/D1.0/24HRS			(NESS)								NUAA 2 (NESS)	
5	020009Z	7.0N 133.0E	SAT	T2.0/2.0/S0/25HRS											NUAA 2	
6	020234Z	7.3N 133.3E	P	2 2	700MB	40	75	991	305	15 13	-	- -	-	-		
7	030015Z	8.1N 127.4E	P	10 10	700MB	65	65	992	302	16 14	CIRC		40	10	WND CIRC 20NM DIA MC PR DEF	01 02
8	030103Z	9.0N 128.0E	SAT	T4.0/4.0/D2.0/25HRS											NUAA 2	
9	030105Z	7.5N 127.5E	SAT	T4.5/4.5/D1.5/24HRS			(NESS)								NUAA 2 (NESS)	
10	030210Z	8.3N 126.8E	OVORAK	1 NO.T5											ESSA 8 (RUDN)	
11	030407Z	8.0N 126.5E	P	20 30	500MB	55	-	-	-	- -	-	- -	-	-	WND CNTR 40NM DIA	02
12	040000Z	12.0N 122.0E	SAT	T4.5/4.5/S0/24HRS			(NESS)								NUAA 2 (NESS)	
13	040003Z	12.0N 121.5E	SAT	T3.5/4.0/W0.5/23HRS											NUAA 2	
14	040100Z	10.3N 122.1E	P	5 30	500MB	20	-	1006	-	6 6	-	- -	-	-	WND CNTR 20NM DIA	
15	040210Z	12.6N 119.0E	SAT	T5.0/6.0MINUS/W1.0/48HRS											ESSA 8 (RUDN)	
16	040320Z	10.4N 121.7E	P	5 10	600MB	10	35	-	-	7 7	-	- -	-	-	WND CNTR 20NM DIA	04
17	040415Z	10.3N 121.3E	P	- -	600MB	-	-	-	-	- -	-	- -	-	-		
18	040600Z	10.7N 121.1E	P	10 10	600MB	25	-	1004	-	6 5	-	- -	-	-		
19	041210Z	11.1N 120.9E	P	3 -	600MB	30	-	-	-	7 10	-	- -	-	-	WND CNTR 10NM DIA	04
20	041510Z	11.4N 120.6E	P	5 15	600MB	30	-	-	-	5 7	CIRC		30	-	NEG MC	05
21	041830Z	11.8N 120.4E	P	5 15	600MB	33	-	-	-	- -	CIRC		25	-	MC OPEN NE	05
22	042210Z	12.3N 119.6E	LKDR	-							-	- -	-	-	CLSD AND PR DEF	05
23	050010Z	12.3N 119.8E	P	5 5	700MB	60	45	997	304	14 14	CIRC		20	-	MC NW QUAD	06
24	050056Z	12.0N 119.0E	SAT	T4.5/4.5/D1.0/24HRS											NUAA 2	
25	050159Z	13.0N 119.6E	SAT	S1G A LIA 4 CAT 2.0											ESSA 8 (VIBU)	
26	050245Z	12.3N 119.5E	AC R	-							-	- -	-	-		
27	050300Z	12.3N 119.3E	P	10 3	700MB	20	35	989	299	15 15	CIRC		10	-	MC FRMG S SEMIC	06
28	050600Z	12.4N 119.3E	P	5 3	700MB	25	35	988	299	18 12	CIRC		30	-	EYE OF DEVELG MC ALGDS	06
29	050922Z	12.4N 119.3E	P	3 3	700MB	40	-	988	296	14 11	CIRC		12	6	MC OPEN N-SE	07
30	051030Z	12.5N 119.3E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
31	051210Z	12.4N 119.3E	P	3 3	700MB	65	-	986	298	14 -	GONG	-	10	15		
32	051430Z	12.4N 119.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
33	051530Z	12.4N 119.1E	P	3 3	700MB	60	-	986	296	13 11	ELIP	N-S	35X25	10-35	OUTER WC OPEN NE INNER BARELY DEF	07
34	051700Z	12.4N 119.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
35	051800Z	12.3N 119.0E	P	3 3	700MB	75	-	981	292	15 10	CIRC		30	8	CLSD MC	07
36	052130Z	12.4N 118.9E	P	3 -	700MB	80	-	-	-	15 -	-	- -	-	-	CLSD MC	08
37	060030Z	12.4N 118.7E	P	5 5	700MB	-	-	-	-	- -	CIRC		25	-	CLSD MC	08
38	060330Z	12.5N 118.5E	P	5 5	700MB	-	100	-	-	- -	CIRC		43	-	CLSD MC	08
39	060430Z	11.9N 118.8E	AC R	-							-	- -	-	-		
40	060609Z	12.6N 118.4E	P	5 5	700MB	65	100	-	-	- -	ELIP	N-S	24X20	-	CLSD MC	08
41	060910Z	12.7N 118.1E	AC R	-							-	- -	-	-		
42	061015Z	12.6N 118.3E	P	5 3	700MB	75	-	983	278	16 11	CIRC		30	5	MC OPEN SE	09
43	061200Z	12.6N 118.0E	P	5 5	700MB	50	-	-	281	16 13	CIRC		30	-	MC S SEMIC	09
44	061310Z	12.8N 118.0E	AC R	-							-	- -	-	-		
45	061625Z	12.8N 117.9E	AC R	-							-	- -	-	-		
46	061800Z	12.7N 117.6E	P	5 10	700MB	75	-	989	283	15 13	CIRC		40	-	EYID MC NW SEMIC	09
47	061810Z	12.7N 117.5E	P	5 10	700MB	75	-	989	282	15 13	CIRC		40	-	MC FRMG ALGDS	09
48	061820Z	12.7N 117.7E	AC R	-							-	- -	-	-		
49	062045Z	12.8N 117.3E	AC R	-							CIRC		40	-		
50	062140Z	12.8N 117.3E	AC R	-							-	- -	-	-		
51	062145Z	12.8N 117.2E	P	2 2	700MB	75	-	987	280	17 13	CIRC		40	-	CLSD MC	10
52	062319Z	12.9N 117.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
53	070030Z	13.9N 114.9E	AC R	-							-	- -	-	-		
54	070100Z	12.8N 117.0E	P	5 5	700MB	80	100	961	276	20 15	CIRC		40	10	CLSD MC	10
55	070122Z	13.0N 116.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
56	070230Z	13.5N 117.0E	SAT	S1G UNK											ESSA 8 (VIBU)	
57	070338Z	13.0N 117.0E	AC R	-							CIRC		30	-		
58	070350Z	13.1N 116.7E	AC R	-							CIRC		35	-		
59	070355Z	13.0N 116.7E	P	10 2	700MB	80	100	953	271	21 15	CIRC		30	10	CLSD MC	10
60	070600Z	13.1N 116.5E	P	10 5	700MB	80	100	952	269	21 15	CIRC		30	10	CLSD MC	10
61	070650Z	13.2N 116.1E	AC R	-							-	- -	-	-		
62	070920Z	13.3N 116.3E	SHUR	-							-	- -	-	-		
63	071052Z	13.3N 116.1E	P	1 3	700MB	80	-	944	262	22 11	CIRC		30	10	CLSD MC	11
64	071140Z	13.5N 116.0E	AC R	-							-	- -	-	-		
65	071200Z	13.3N 115.9E	P	1 3	700MB	-	-	944	263	22 -	CIRC		30	10	CLSD MC	11
66	071200Z	13.6N 116.0E	AC R	-							CIRC		35	-		
67	071500Z	13.5N 115.7E	SHUR	-							-	- -	-	-		
68	071625Z	13.6N 115.6E	P	3 3	700MB	95	-	955	272	20 16	CIRC		30	5	CLSD MC	12
69	071800Z	13.8N 115.3E	SHUR	-							-	- -	-	-		
70	071800Z	13.5N 115.5E	AC R	-							-	- -	-	-		
71	071850Z	13.7N 115.4E	P	10 10	700MB	100	-	957	273	20 16	CIRC		25	-	CLSD MC	12
72	072111Z	13.7N 115.2E	P	5 5	700MB	70	-	960	274	20 16	CIRC		25	5	CLSD MC	12
73	080002Z	13.9N 115.0E	P	3 3	700MB	110	65	960	275	20 19	CIRC		30	5	CLSD MC	12
74	080030Z	13.9N 114.9E	AC R	-							-	- -	-	-		
75	080146Z	14.0N 114.5E	SAT	T6.0/6.5MINUS/W0.5/24HRS											NUAA 2	
76	080230Z	14.0N 114.0E	AC R	-							-	- -	-	-		
77	080315Z	13.9N 114.3E	SAT	S1G UNK												
78	080330Z	13.9N 114.4E	P	5 5	700MB	105	100	959	274	21 14	CIRC		25	5	CLSD MC	13
79	080514Z	14.0N 114.3E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
80	080700Z	13.9N 114.2E	P	5 5	700MB	100	100	954	271	22 14	CIRC		30	5	CLSD MC	13
81	080805Z	13.9N 114.1E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
82	080930Z	13.9N 114.0E	P	5 5	700MB	100	100	960	276	21 14	CIRC		25	5	CLSD MC	13
83	080950Z	13.9N 113.9E	SHUR	-							-	- -	-	-		
84	081022Z	13.9N 113.8E	P	- -	700MB	-	-	-	-	- -	-	- -	-	-		
85	081135Z	13.9N 113.7E	P	5 5	700MB	100	-	965	279	19 14	CIRC		25	5	CLSD MC	13
86	081200Z	13.9N 113.9E	SHUR	-							-	- -	-	-		
87	081255Z	13.9N 113.6E	SHUR	-							-	- -	-	-		
88	081300Z	13.9N 113.8E	SHUR	-							-	- -	-	-		
89	081335Z	13.9N 113.6E	SHUR	-							-	- -	-	-		
90	081400Z	13.9N 113.6E	SHUR	-							-	- -	-	-		
91	081500Z	13.7N 113.4E	SHUR	-							-	- -	-	-		
92	081600Z	13.9N 113.3E	SHUR	-							-	- -	-	-		
93	081612Z	14.0N 113.2E	P	2 5	700MB	90	-	970	282	15 10	CIRC		25	8	CLSD MC	14
94	081625Z	14.0N 113.3E	AC R	-							-	- -	-	-		

TYPHOON THERESE

FIX POSITIONS FOR CYCLONE NO. 32

30 NOV - 10 DEC

FIX NO.	TIME	POSIT	FIX CAT	ACCRY NAV	ACCRY MET	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL	FLT TI/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	POSIT OF /REMARKS NACAN	
95	081821Z	13.9N 112.9E	P	2	5	700MB	70	-	-	283	13	9	CIRC	- -	25	8	CLSD WC	14
96	081914Z	13.9N 112.9E	SRDR		-								-	- -	-	-		
97	082000Z	13.8N 112.8E	SRDR		-								-	- -	-	-		
98	082100Z	13.9N 112.7E	P	2	5	700MB	80	-	971	282	13	10	CIRC		25	10	CLSD WC	14
99	082100Z	13.8N 112.6E	AC H		-								-	- -	-	-		
100	082223Z	14.0N 113.8E	AC H		-								-	- -	-	-		
101	090046Z	14.0N 112.9E	SAT	T5.5/6.0/W0.5/24HRS				(NESS)									NOAA 2 (NESS)	
102	090048Z	14.0N 111.8E	SAT	T6.0/6.0/S0/24HRS													NOAA 2	
103	090300Z	13.8N 112.1E	SAT	SIG UNK													ESSA 8 (VIBU)	
104	090500Z	14.0N 111.6E	SRDR		-								-	- -	-	-		
105	090600Z	14.0N 111.5E	SRDR		-								-	- -	-	-		
106	090652Z	14.0N 111.3E	P	1	4	700MB	80	100	962	276	18	-	CIRC		30	8	CLSD WC	15
107	090700Z	14.0N 111.4E	SRDR		-								-	- -	-	-		
108	090800Z	13.9N 111.3E	SRDR		-								-	- -	-	-		
109	090900Z	14.0N 111.3E	SRDR		-								-	- -	-	-		
110	090916Z	14.2N 111.5E	AC H		-								-	- -	-	-		
111	091000Z	13.9N 110.9E	SRDR		-								-	- -	-	-		
112	091100Z	14.0N 110.8E	SRDR		-								-	- -	-	-		
113	091200Z	13.9N 110.7E	SRDR		-								-	- -	-	-		
114	091210Z	13.9N 110.8E	P	5	5	700MB	90	-	971	284	21	15	CIRC		30	-	CLSD WC PR DEF	16
115	091300Z	14.0N 110.6E	SRDR		-								-	- -	-	-		
116	091305Z	14.0N 110.8E	AC H		-								CIRC		30	-		
117	091339Z	13.9N 110.5E	P	-	-	700MB	-	-	-	-	-	-	-	- -	-	-		
118	091400Z	14.1N 110.5E	SRDR		-								-	- -	-	-		
119	091435Z	13.9N 111.3E	SRDR		-								-	- -	-	-		
120	091500Z	14.1N 110.2E	SRDR		-								-	- -	-	-		
121	091510Z	14.0N 110.3E	P	5	5	700MB	100	-	975	287	20	15	-	- -	-	-	WC NOT DEF	16
122	091600Z	14.1N 110.1E	SRDR		-								-	- -	-	-		
123	091700Z	14.1N 109.1E	SRDR		-								-	- -	-	-		
124	091745Z	14.1N 109.9E	AC H		-								-	- -	-	-		
125	091800Z	14.1N 109.9E	P	5	5	700MB	65	-	985	288	20	15	-	- -	-	-	WC NOT DEF	16
126	091800Z	14.2N 109.8E	SRDR		-								-	- -	-	-		
127	092000Z	14.3N 109.3E	AC H		-								-	- -	-	-		
128	092000Z	14.3N 109.3E	SRDR		-								-	- -	-	-		
129	092100Z	14.2N 109.3E	SRDR		-								-	- -	-	-		
130	092200Z	14.3N 109.1E	SRDR		-								-	- -	-	-		
131	092225Z	14.1N 109.2E	P	1	5	700MB	70	-	-	292	15	10	CIRC		25	10	OPEN TO N	17
132	092300Z	14.4N 108.9E	SRDR		-								-	- -	-	-		
133	100000Z	14.2N 109.0E	SRDR		-								-	- -	-	-		
134	100143Z	14.8N 108.3E	SAT	T5.0/6.0/W1.0/24HRS													NOAA 2	