CHAPTER V

INDIVIDUAL TYPHOONS OF 1968

NOTE. See Appendix A for definitions or clarification of words or phrases that appear in this chapter.

TROPICAL CYCLONE 02 - 04/06/0500Z TO 04/15/1100Z
(JEAN)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 40
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 20
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1374 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 932MBS AT 110300Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2493M. AT 110300Z
3. MAXIMUM SURFACE WIND - 110 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 600 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - LOW LEVEL SURGE INTO CYCLONIC CIRCULATION FROM THE SOUTH WITH SUBSEQUENT DIVERGENCE AT 200MB LEVEL

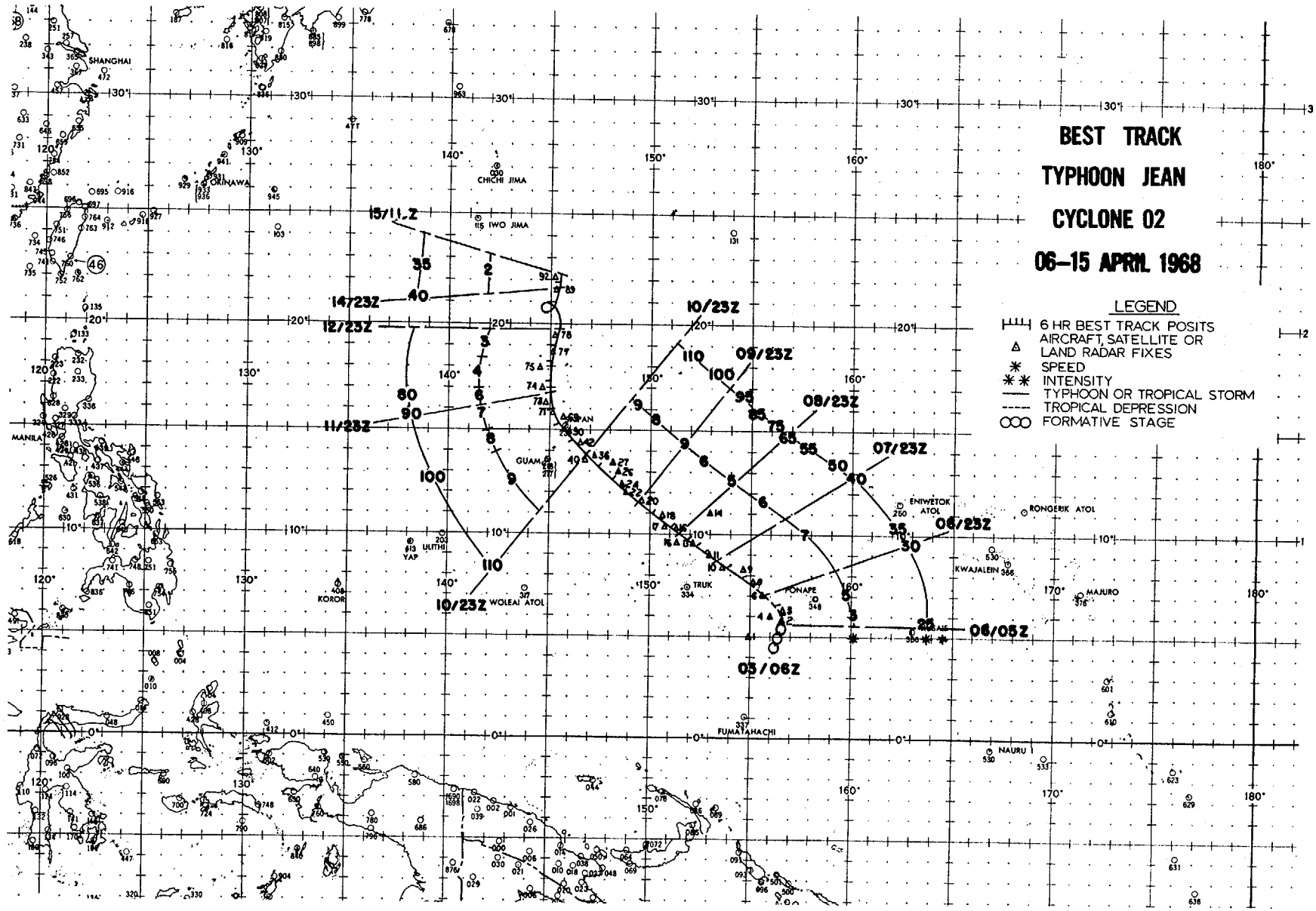
B. INITIAL SURFACE VORTEX

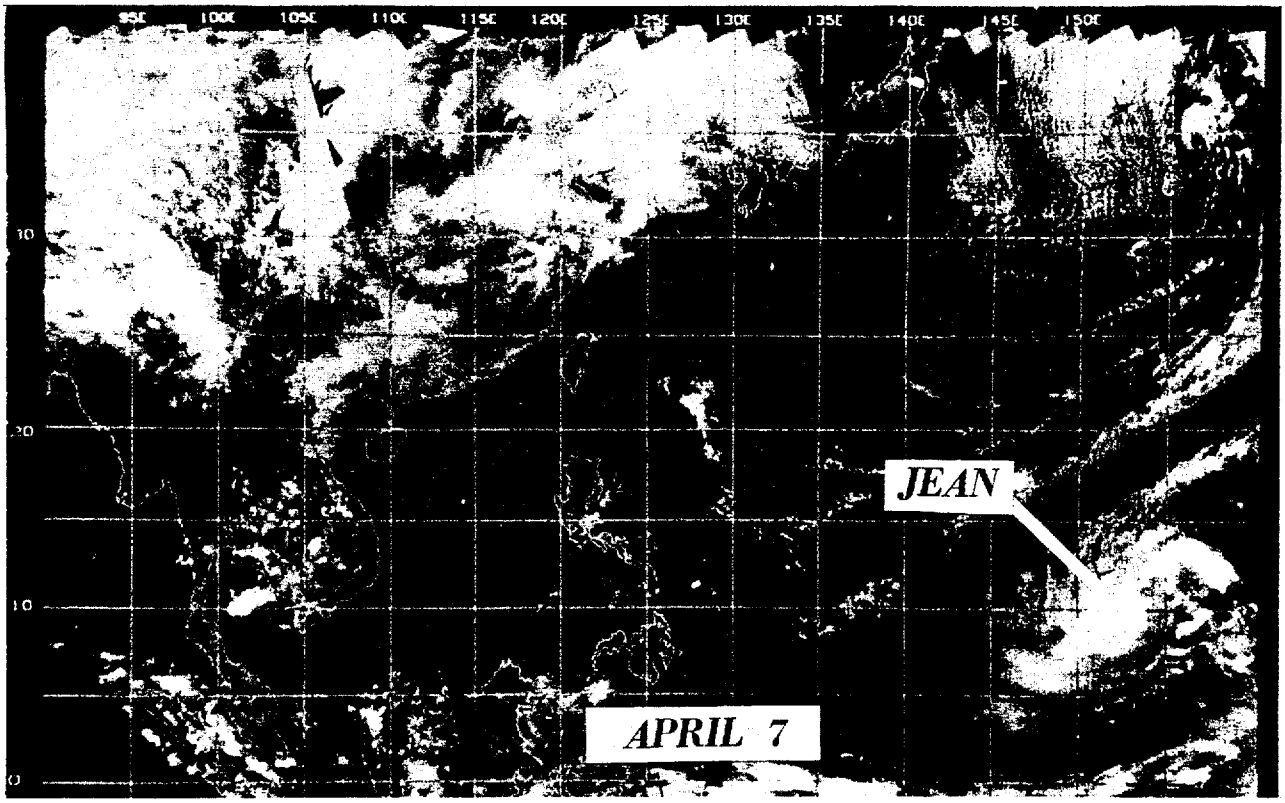
1. EMBEDDED VORTEX AT 030600Z
2. SURFACE PRESSURE LESS THAN 1005MB

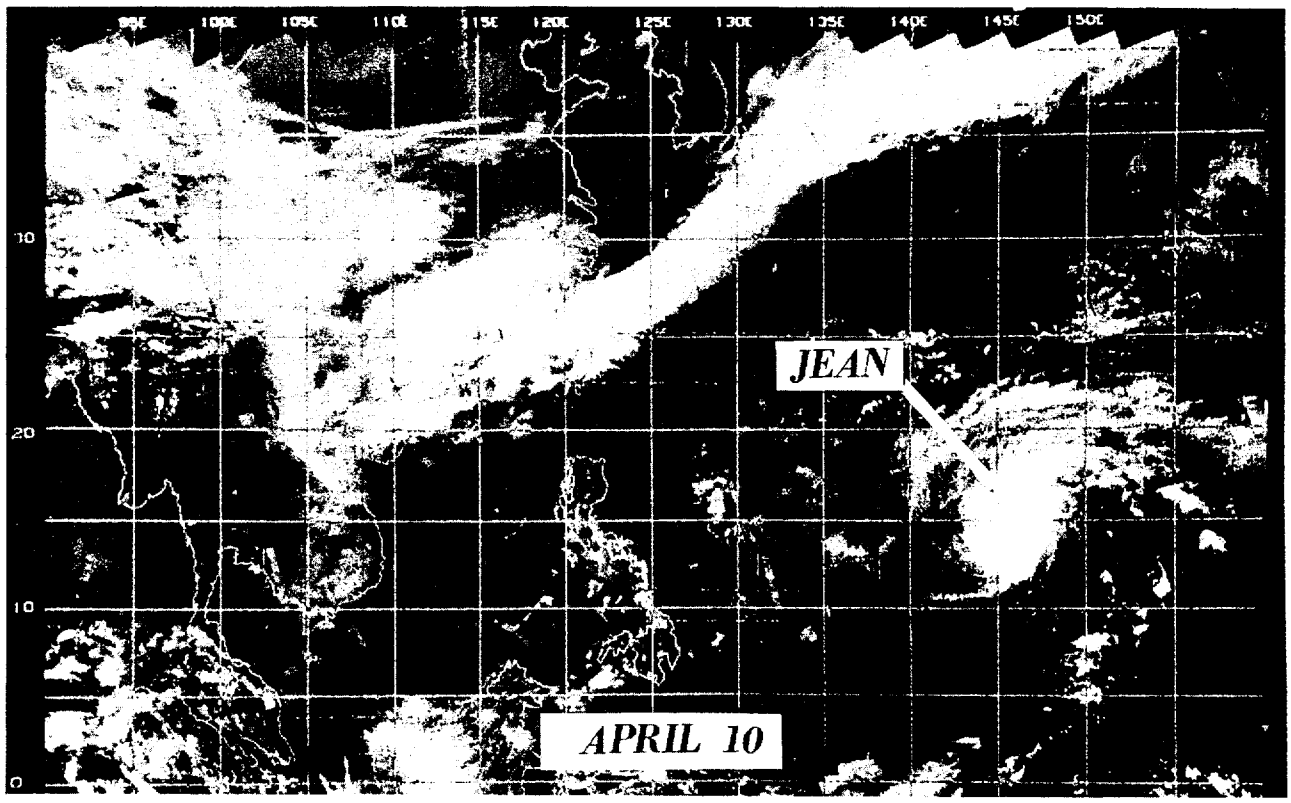
C. 200MB FLOW ABOVE SURFACE VORTEX

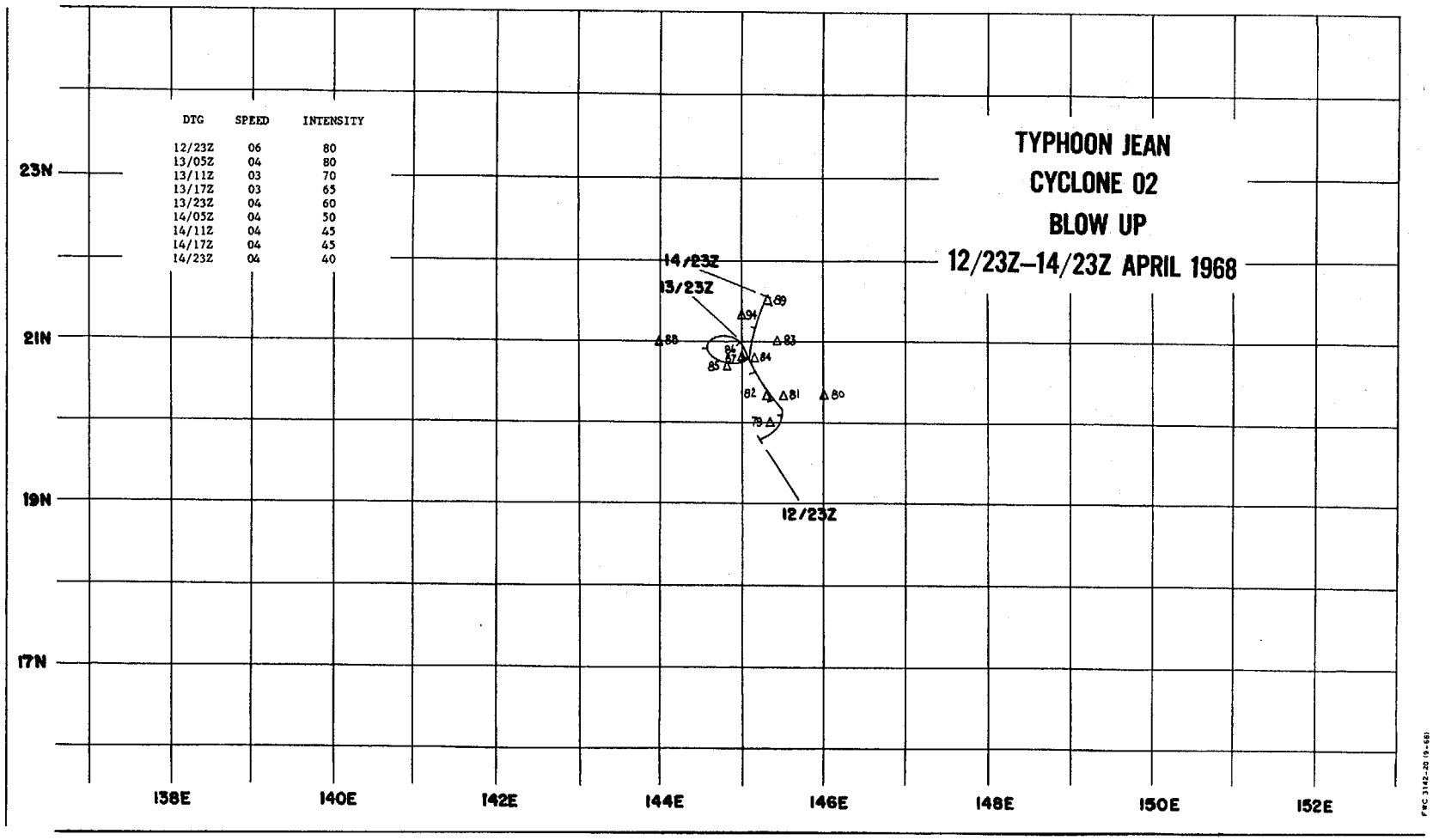
1. INITIAL - VARIABLE
2. UPON REACHING TYPHOON INTENSITY - VARIABLE

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON JEAN
CYCLONE 02
06–15 APRIL 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
15/11Z
14/23Z
12/23Z
11/23Z
10/23Z
09/23Z
08/23Z
07/23Z
06/23Z
06/05Z
05/06Z
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
MANILA
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
FUMATAHACHI
NAURU


JEAN
APRIL 7


JEAN
APRIL 10


TYPHOON JEAN
CYCLONE 02
BLOW UP
12/23Z–14/23Z APRIL 1968
DTG SPEED INTENSITY
12/23Z 06 80
13/05Z 04 80
13/11Z 03 70
13/17Z 03 65
13/23Z 04 60
14/05Z 04 50
14/11Z 04 45
14/17Z 04 45
14/23Z 04 40
14/23Z
13/23Z
12/23Z
89
94
88
83
84
86
87
85
82
81
80
79
23N
21N
19N
17N
138E
140E
142E
144E
146E
148E
150E
152E

EYE FIXES CYCLONE 02

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	050113Z	05.0N 155.0E	SLTLS	STG B	DIA --	BNDS -							
2	060144Z	06.0N 156.0E	SLTLS	STG C	DIA --	BNDS -							
3	060425Z	05.7N 156.6E	54-P-05-01	0460M	025	025	000	3063	22/23	ELIP	NW-SE	70X40	N.F.B.
4	061220Z	06.1N 156.7E	VW-P-05-01	0310M	025	022	000	---	24/--	----			F.B.
5	061440Z	06.3N 156.3E	VW-P-05-01	0340M	030	025	000	---	23/21	----			N.F.B.
6	062100Z	07.0N 155.6E	54-P-05-01	700MB	040	025	994	3042	13/10	ELIP	NE-SW	40X30	N.F.B.
7	070240Z	07.4N 155.3E	54-P-00-01	700MB	040	038	994	3039	12/11	ELIP	NE-SW	45X20	N.F.B.
8	070900Z	07.8N 155.1E	VW-P-05-10	0310M	030	028	998	---	25/22	----			F.B.
9	071440Z	08.3N 154.7E	VW-P-05-03	700MB	034	035	993	3074	13/09	ELIP	NE-SW	40X12	F.B.
10	072105Z	08.3N 153.6E	54-P-25-10	0450M	047	035	992	3011	24/23	CIRC	----	40	F.B.
11	080300Z	09.0N 153.0E	54-P-05-05	0460M	035	045	989	3011	26/23	CIRC	----	30	F.B.
12	080835Z	10.0N 152.6E	VW-P-10-05	0400M	045	050	987	3010	24/21	CIRC	----	30	F.B.
13	081043Z	11.0N 153.0E	SLTLS	STG X	DIA 04	BNDS 2							
14	081408Z	09.6N 152.1E	VW-P-10-10	700MB	040	---	991	2996	17/13	CIRC	----	30	F.B.
15	082105Z	09.7N 151.3E	54-P-10-05	700MB	078	055	975	2883	17/13	CONC		35-10	F.B.
16	090233Z	10.5N 151.5E	SLTLS	STG X	DIA 03	BNDS 4							
17	090235Z	10.2N 151.3E	54-P-10-01	700MB	070	070	967	2816	17/14	CONC		35-05	--
18	090900Z	10.3N 150.8E	VW-P-05-03	0350M	---	105	960	2770	24/21	CIRC	----	10	08
19	091402Z	10.9N 150.6E	VW-P-15-01	700MB	---	---	954	2710	17/10	CIRC	----	35	07
20	092100Z	11.6N 149.6E	54-P-02-01	700MB	070	090	950	2667	17/14	CIRC	----	40	--
21	100000Z	11.8N 149.2E	54-P-01-01	700MB	075	065	950	2637	17/08	CIRC	----	30	--
22	100200Z	12.0N 148.9E	54-P-01-01	700MB	085	120	948	2591	18/10	CIRC	----	30	--
23	100400Z	12.2N 148.8E	54-P-03-03	700MB	095	095	940	2542	20/11	CIRC	----	30	10
24	100600Z	12.3N 148.7E	54-P-03-02	700MB	112	095	935	2539	19/11	CIRC	----	30	--

EYE FIXES CYCLONE 02

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	100740Z	12.6N 148.5E	VW-R-05---	0260M	---	---	---	---	--/--	----			--
26	100840Z	13.0N 148.4E	VW-P-05-02	700MB	085	100	944	2579	24/14	CIRC	----	25	--
27	100945Z	12.8N 147.8E	LND RDR		---	---	---	---	--/--	----			--
28	101200Z	13.3N 148.1E	VW-R-05-05	700MB	---	---	---	---	--/--	CIRC	----	30	--
29	101258Z	12.9N 147.9E	LND RDR		---	---	---	---	--/--	----			--
30	101348Z	13.1N 147.7E	LND RDR		---	---	---	---	--/--	----			14
31	101441Z	13.2N 147.6E	LND RDR		---	---	---	---	--/--	----			--
32	101505Z	13.6N 147.6E	VW-P-10-02	700MB	120	---	938	2591	18/09	CIRC	----	25	--
33	101549Z	13.4N 147.5E	LND RDR		---	---	---	---	--/--	----			--
34	101653Z	13.5N 147.4E	LND RDR		---	---	---	---	--/--	----			--
35	101720Z	13.5N 147.3E	LND RDR		---	---	---	---	--/--	----			--
36	101800Z	13.8N 147.2E	VW-R-10-02	700MB	---	---	---	---	--/--	CIRC	----	25	--
37	101829Z	13.5N 147.1E	ACFT RDR		---	---	---	---	--/--	----			--
38	101905Z	13.6N 147.1E	LND RDR		---	---	---	---	--/--	----			10
39	101921Z	13.6N 147.1E	LND RDR		---	---	---	---	--/--	----			--
40	102037Z	13.7N 146.9E	LND RDR		---	---	---	---	--/--	----			--
41	102100Z	13.7N 146.9E	54-P-02-03	700MB	113	110	940	2502	21/15	ELIP	NW-SE	70X40	--
42	102330Z	14.3N 146.5E	LND RDR		---	---	---	---	--/--	----			--
43	102330Z	13.9N 146.6E	54-P-02-02	700MB	103	120	934	2515	19/12	CIRC	----	30	--
44	110000Z	14.1N 146.4E	LND RDR		---	---	---	---	--/--	----			--
45	110100Z	14.2N 146.4E	LND RDR		---	---	---	---	--/--	----			--
46	110200Z	14.3N 146.3E	LND RDR		---	---	---	---	--/--	----			--
47	110223Z	15.0N 146.5E	SLTLS	STG X	DIA 04	BNDS 4							
48	110300Z	14.4N 146.2E	54-P-01-01	700MB	112	130	932	2493	20/08	CIRC	----	30	--

EYE FIXES CYCLONE 02

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	110305Z	14.4N 146.2E	LND RDR		---	---	---	---	--/--	----			--
50	110400Z	14.5N 146.1E	LND RDR		---	---	---	---	--/--	----			--
51	110430Z	14.6N 146.1E	LND RDR		---	---	---	---	--/--	----			--
52	110500Z	14.7N 146.0E	LND RDR		---	---	---	---	--/--	----			--
53	110524Z	14.9N 146.0E	54-P-01-01	700MB	105	140	---	2472	20/14	CIRC	----	30	--
54	110530Z	14.7N 146.0E	LND RDR		---	---	---	---	--/--	----			--
55	110600Z	14.8N 146.0E	LND RDR		---	---	---	---	--/--	----			--
56	110630Z	14.9N 145.9E	LND RDR		---	---	---	---	--/--	----			--
57	110700Z	14.9N 145.9E	LND RDR		---	---	---	---	--/--	----			--
58	110732Z	15.0N 145.8E	LND RDR		---	---	---	---	--/--	----			--
59	110800Z	15.0N 145.8E	LND RDR		---	---	---	---	--/--	----			--
60	110830Z	15.1N 145.8E	LND RDR		---	---	---	---	--/--	----			--
61	110900Z	15.2N 145.8E	LND RDR		---	---	---	---	--/--	----			--
62	110900Z	15.2N 145.7E	VW-P-01-01	700MB	100	050	937	2464	20/13	CIRC	----	34	06
63	110930Z	15.2N 145.7E	LND RDR		---	---	---	---	--/--	----			--
64	111000Z	15.3N 145.7E	LND RDR		---	---	---	---	--/--	----			--
65	111000Z	15.2N 145.6E	VW-R------	700MB	---	---	---	---	--/--	----			--
66	111030Z	15.3N 145.7E	LND RDR		---	---	---	---	--/--	----			--
67	111100Z	15.4N 145.7E	LND RDR		---	---	---	---	--/--	----			--
68	111100Z	15.4N 145.4E	VW-R------	700MB	---	---	---	---	--/--	----			--
69	111130Z	15.4N 145.6E	LND RDR		---	---	---	---	--/--	----			--
70	111200Z	15.5N 145.6E	LND RDR		---	---	---	---	--/--	----			--
71	111200Z	15.6N 145.3E	VW-R------	700MB	---	---	---	---	--/--	----			--
72	111515Z	15.9N 145.1E	VW-P-02-01	700MB	080	---	950	2591	19/11	CIRC	----	35	05

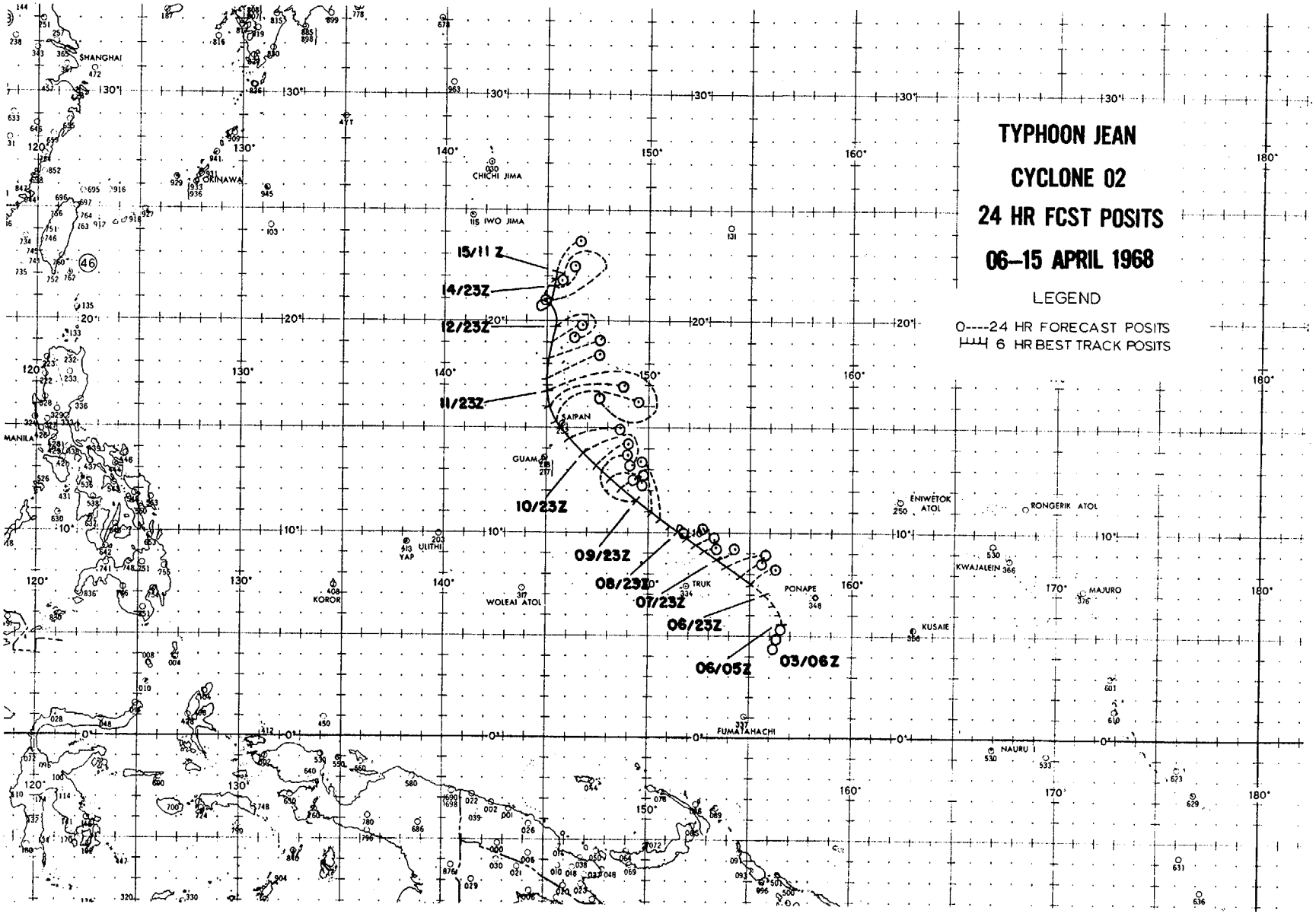
EYE FIXES CYCLONE 02

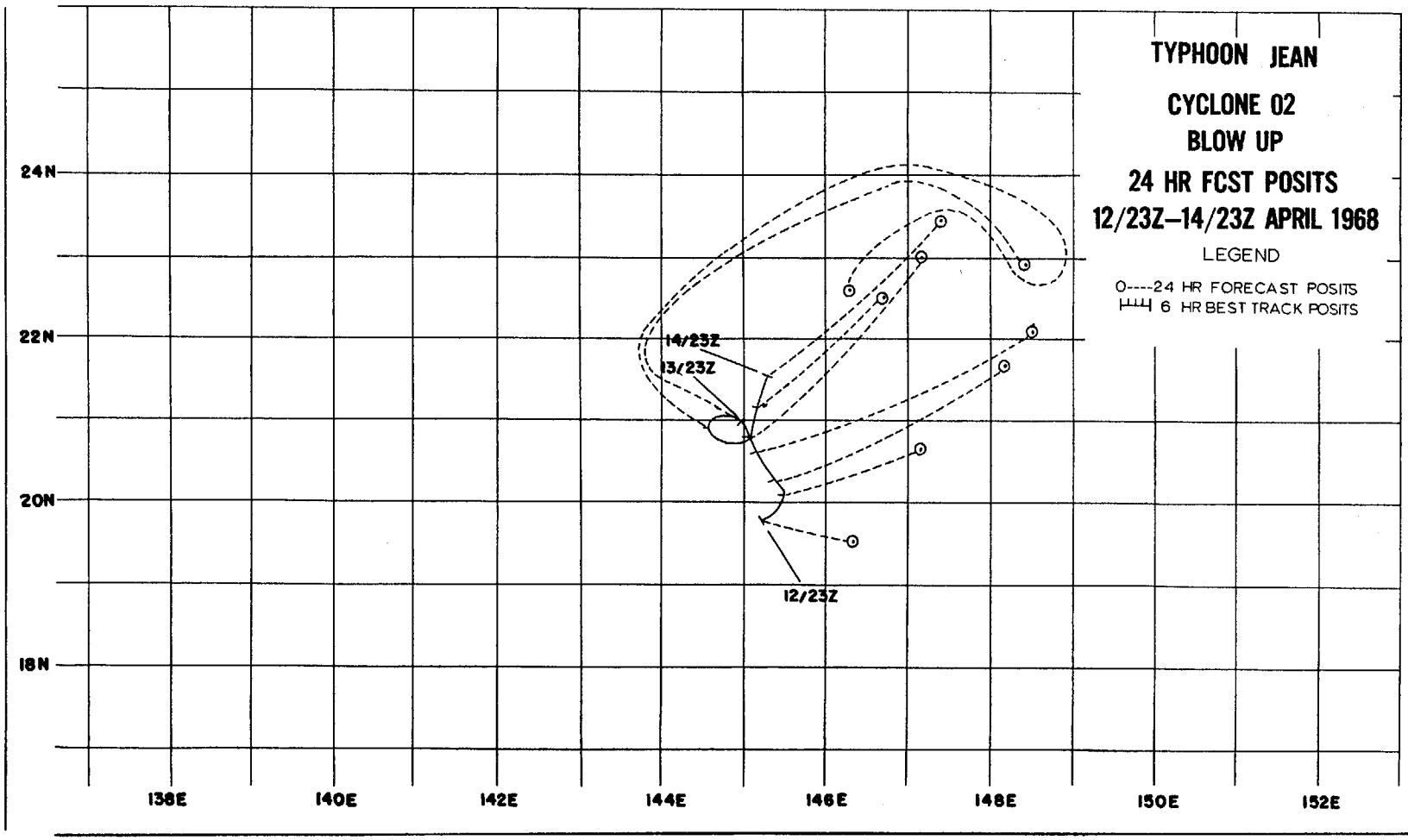
FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	112100Z	16.2N 144.9E	54-P-03-05	700MB	050	080	947	2630	15/11	CIRC	----	35	--
74	120230Z	17.0N 144.8E	54-P-03-03	700MB	085	100	952	2682	16/11	CIRC	----	30	--
75	120740Z	18.0N 144.5E	ACFT RDR	500MB	050	---	---	---	--/--	----			--
76	120830Z	17.9N 144.9E	VW-P-03-05	0350M	---	100	959	2769	24/20	ELIP	NE-SW	70X40	07
77	121402Z	18.7N 145.1E	VW-P-03-05	700MB	---	---	---	2759	17/12	ELIP	NW-SE	54X35	--
78	122105Z	19.5N 145.2E	54-P-01-03	700MB	100	070	962	2771	15/12	CIRC	----	10	--
79	130240Z	20.0N 145.3E	54-P-01-08	700MB	080	100	966	2795	18/12	CIRC	----	20	--
80	130820Z	20.3N 146.0E	VW-R----10		---	---	---	---	--/--	----			--
81	130910Z	20.3N 145.5E	VW-P-02-02	0140M	110	110	972	2950	24/21	ELIP	NW-SE	20X10	--
82	131415Z	20.3N 145.3E	VW-P-02-05	700MB	075	110	980	2941	18/14	ELIP	NW-SE	15X10	--
83	132000Z	21.0N 145.4E	54-P------	700MB	---	---	---	---	--/--	----			--
84	132104Z	20.8N 145.2E	54-P-02-03	700MB	065	060	982	2935	15/14	CIRC	----	30	--
85	140259Z	21.0N 144.0E	SLTLS	STG C	DIA -- BNDS -								
86	140301Z	20.7N 144.8E	54-P-01-05	700MB	070	040	986	2960	16/14	CIRC	----	30	--
87	140915Z	20.8N 145.0E	VW-P-02-03	0310M	020	040	993	3040	24/22	CIRC	----	32	F.B.
88	141415Z	20.8N 145.0E	VW-P-02-05	700MB	060	---	988	3072	15/12	CIRC	----	30	F.B.
89	142100Z	21.5N 145.3E	54-P-02-05	700MB	040	060	997	3066	13/11	----			N.F.B.
90	150155Z	21.5N 144.5E	SLTLS	STG C	DIA -- BNDS -								
91	150300Z	21.8N 145.3E	54-P-02-05	700MB	030	040	999	3082	13/11	----			N.F.B.
92	150830Z	22.0N 145.4E	VW-P-02-02	0310M	024	025	000	---	23/21	----			N.F.B.
93	151440Z	22.1N 145.4E	VW-P-04-10	700MB	---	---	---	3087	13/08	----			--
94	152300Z	21.3N 145.0E	54-P-05-05	0330M	025	035	003	---	22/21	----			N.F.B.

TROPICAL CYCLONE 02 -- 04/06/0500Z TO 04/15/1100Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
070500Z	07.5N	155.1E	056-0072	--------	--------
071100Z	07.9N	154.5E	060-0078	--------	--------
071700Z	08.3N	153.9E	070-0102	--------	--------
072300Z	08.7N	153.3E	064-0048	--------	--------
080500Z	09.2N	152.7E	090-0030	--------	--------
081100Z	09.4N	152.3E	078-0054	--------	--------
081700Z	09.7N	151.8E	067-0054	--------	--------
082300Z	10.0N	151.4E	090-0012	--------	--------
090500Z	10.3N	151.1E	333-0132	031-0030	--------
091100Z	10.6N	150.6E	344-0174	053-0066	--------
091700Z	11.0N	150.1E	346-0102	052-0072	--------
092300Z	11.6N	149.4E	064-0012	090-0024	--------
100500Z	12.2N	148.7E	084-0054	004-0204	072-0072
101100Z	12.8N	148.1E	104-0072	024-0258	--------
101700Z	13.3N	147.4E	096-0102	033-0174	081-0138
102300Z	13.8N	146.6E	083-0138	088-0138	--------
110500Z	14.7N	146.1E	084-0150	090-0186	053-0420
111100Z	15.3N	145.5E	077-0234	096-0204	--------
111700Z	16.0N	145.0E	075-0228	092-0258	069-0468
112300Z	16.7N	144.8E	112-0174	084-0336	--------
120500Z	17.4N	144.8E	068-0174	083-0414	079-0468
121100Z	18.2N	145.0E	071-0156	086-0456	--------
121700Z	19.0N	145.1E	061-0108	088-0492	088-0498
122300Z	19.8N	145.2E	106-0060	100-0390	--------
130500Z	20.1N	145.5E	069-0096	077-0498	085-0750
131100Z	20.3N	145.4E	062-0174	074-0510	--------
131700Z	20.6N	145.3E	063-0192	072-0498	088-0810
132300Z	21.0N	145.0E	059-0216	076-0390	--------
140500Z	20.9N	144.6E	047-0216	060-0456	--------
141100Z	20.8N	145.1E	041-0174	058-0528	--------
141700Z	21.2N	145.2E	046-0108	058-0600	074-1014
142300Z	21.6N	145.3E	042-0078	056-0558	--------
150500Z	21.9N	145.4E	116-0012	049-0492	059-0924

AVERAGE 24 HOUR ERROR - 0114 MI.
AVERAGE 48 HOUR ERROR - 0329 MI.
AVERAGE 72 HOUR ERROR - 0556 MI.


TYPHOON JEAN
CYCLONE 02
24 HR FCST POSITS
06–15 APRIL 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
15/11 Z
14/23Z
12/23Z
11/23Z
10/23Z
09/23Z
08/23Z
07/23Z
06/23Z
06/05Z
03/06Z
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
MANILA
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
FUMATAHACHI
NAURU I


TYPHOON JEAN
CYCLONE 02
BLOW UP
24 HR FCST POSITS
12/23Z–14/23Z APRIL 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
24N
22N
20N
18N
138E
140E
142E
144E
146E
148E
150E
152E
14/23Z
13/23Z
12/23Z

TROPICAL CYCLONE 03 - 05/30/2300Z TO 06/05/1100Z
(KIM)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 23
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 16
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1164 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 948MBS AT 030240Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2654M. AT 030856Z
3. MAXIMUM SURFACE WIND - 100 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 420 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - UNSTABLE EASTERLY WAVE UNDER 200MB DIVERGENCE

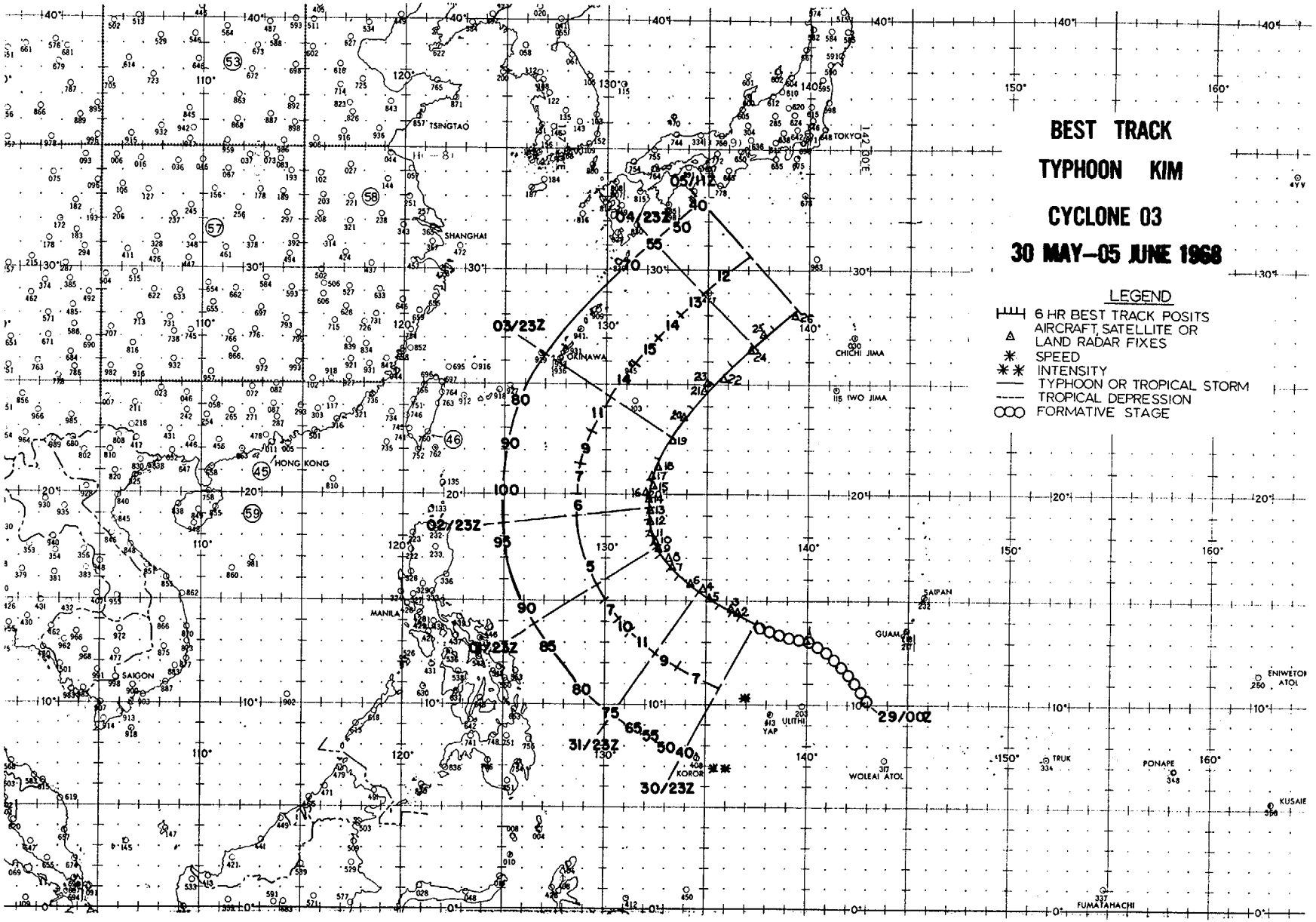
B. INITIAL SURFACE VORTEX

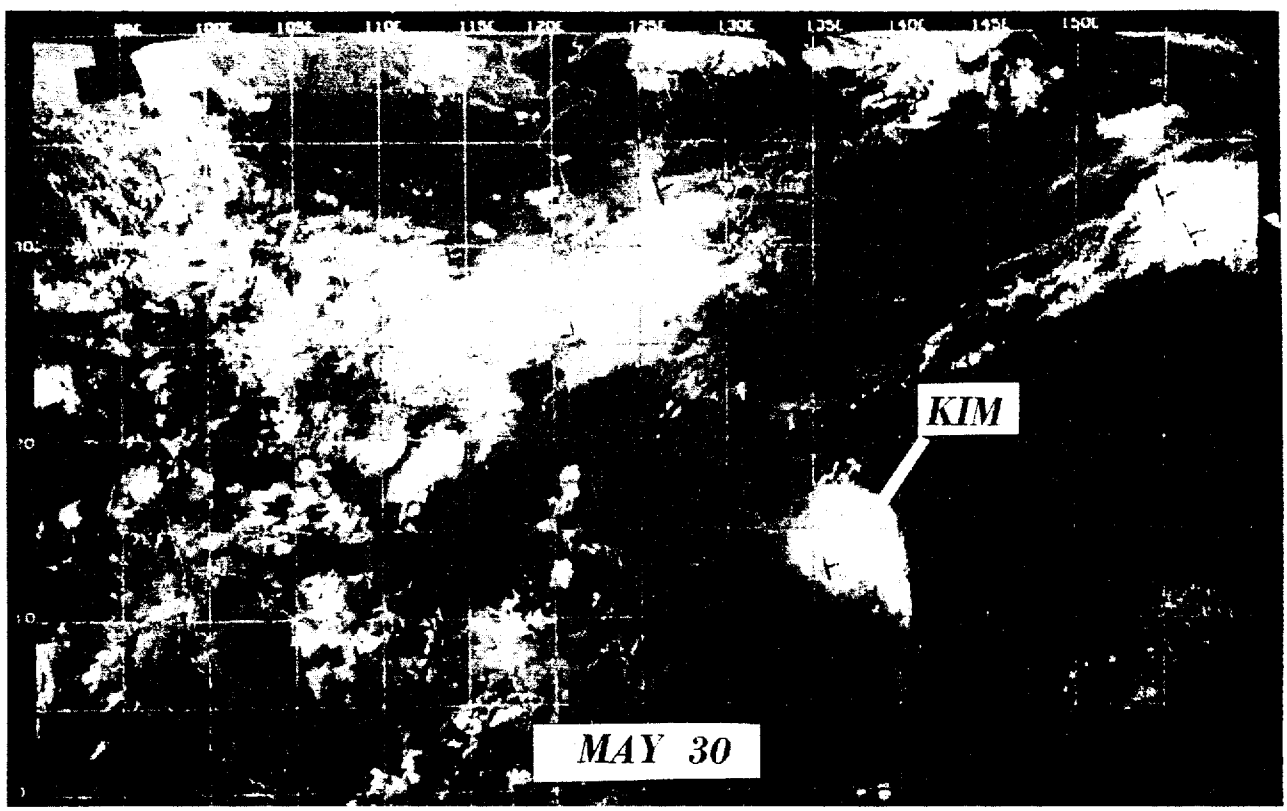
1. EMBEDDED VORTEX AT 290000Z
2. SURFACE PRESSURE LESS THAN 1009MB

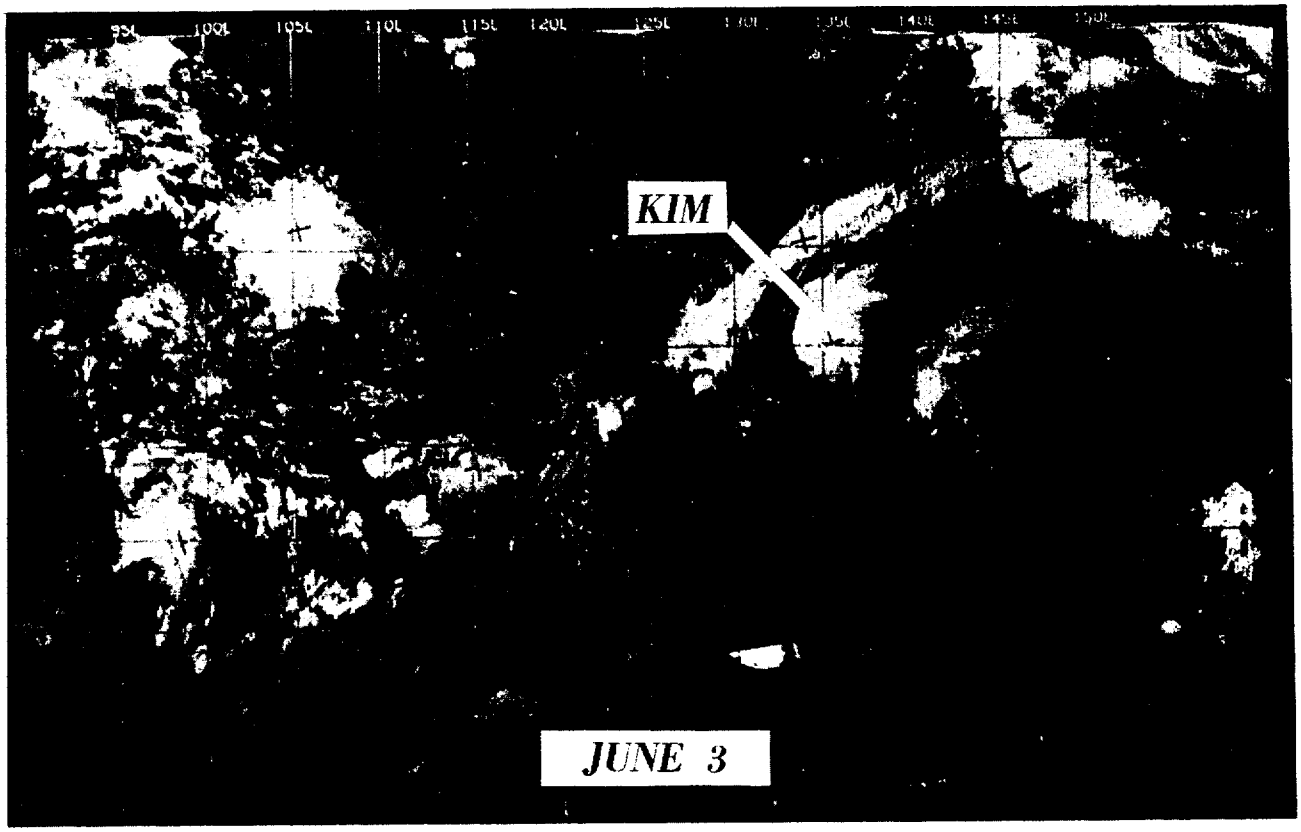
C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - SOUTHWEST
2. UPON REACHING TYPHOON INTENSITY - NORTHEAST

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON KIM
CYCLONE 03
30 MAY–05 JUNE 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIGON
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
KUSAIE
FUMATAHACHI
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
29/00Z
04/23Z
05/11Z


KIM
MAY 30


KIM
JUNE 3

EYE FIXES CYCLONE 03

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	300739Z	13.0N 140.0E	SLTLS	STG X	DIA 05	BNDS 1							
2	310743Z	14.3N 136.5E	54-P-03-01	0460M	090	070	994	---	24/22	CIRC	----	05	--
3	310916Z	14.5N 136.2E	VW-P-05-01	2890M	040	060	---	---	19/14	CIRC	----	10	--
4	312000Z	15.5N 134.9E	54-R------	3290M	045	---	---	---	--/--	----			--
5	312050Z	15.1N 135.1E	54-P-05-02	2940M	080	070	972	2862	19/16	CIRC	----	20	05
6	010221Z	15.8N 134.2E	54-P-05-02	700MB	085	080	974	2862	20/14	CIRC	----	25	--
7	010900Z	16.5N 133.2E	VW-P-02-02	0270M	065	065	981	---	27/24	CIRC	----	25	--
8	011430Z	17.0N 133.1E	VW-P-02-05	700MB	---	---	981	2947	17/11	CIRC	----	25	--
9	012101Z	17.3N 132.6E	54-P-03-01	700MB	058	070	974	2883	16/09	CIRC	----	20	--
10	020200Z	17.8N 132.4E	54-P-03-01	700MB	070	070	972	2853	17/09	CIRC	----	20	--
11	020850Z	18.1N 132.2E	VW-P-05-03	0230M	110	100	968	---	27/24	CIRC	----	20	--
12	021430Z	18.7N 132.1E	VW-R-03-10	700MB	---	---	---	---	--/--	CIRC	----	30	--
13	022100Z	19.2N 132.2E	54-P-03-03	700MB	090	100	958	2737	19/07	CIRC	----	20	--
14	030240Z	19.8N 132.1E	54-P-03-01	700MB	105	110	948	2658	18/08	CIRC	----	20	--
15	030603Z	20.0N 132.0E	SLTLS	STG X	DIA 04	BNDS 4							
16	030800Z	20.3N 132.3E	VW-R-10---	0590M	---	---	---	---	--/--	----			--
17	030856Z	20.8N 132.2E	VW-P-05-05	700MB	---	085	949	2654	19/09	CIRC	----	14	--
18	031415Z	21.1N 132.4E	VW-P-05-05	700MB	---	---	956	2711	16/09	CIRC	----	15	--
19	032050Z	22.3N 133.2E	54-P-03-05	700MB	095	075	954	2691	15/13	CIRC	----	25	--
20	040205Z	23.4N 133.8E	54-P-01-03	700MB	090	090	958	2719	15/10	CIRC	----	35	--
21	040700Z	25.0N 135.0E	SLTLS	STG X	DIA 04	BNDS 3							
22	040910Z	24.8N 134.9E	VW-P-05-05	0450M	---	100	971	---	24/23	CIRC	----	33	--
23	041510Z	25.2N 135.9E	VW-P-03-05	700MB	---	---	983	2948	18/10	CIRC	----	35	--
24	042119Z	26.5N 137.1E	54-P-03-03	700MB	033	075	982	2923	16/13	----			F.B.

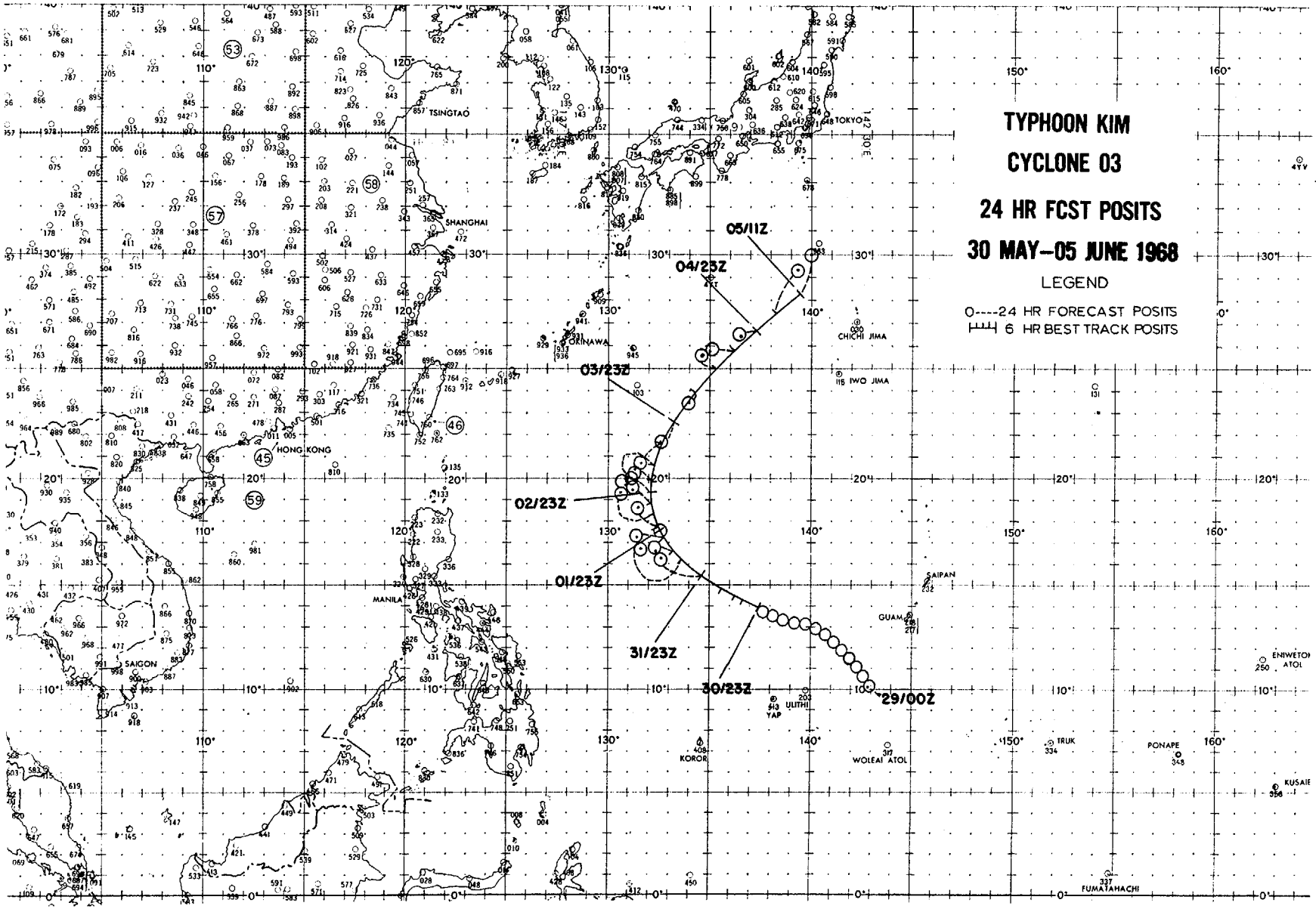
EYE FIXES CYCLONE 03

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	050230Z	27.1N 137.8E	54-P-03-10	700MB	050	070	988	3021	17/09	----			F.B.
26	050900Z	28.0N 139.3E	VW-P-05-05	027OM	---	055	996	---	22/18	----			--

TROPICAL CYCLONE 03 -- 05/30/2300Z TO 06/05/1100Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
302300Z	13.9N	137.5E	--------	--------	--------
310500Z	14.2N	136.8E	--------	--------	--------
311100Z	14.5N	136.1E	--------	--------	--------
311700Z	14.8N	135.5E	--------	--------	--------
312300Z	15.5N	134.6E	290-0120	--------	--------
010500Z	16.1N	133.7E	290-0120	--------	--------
011100Z	16.7N	133.1E	255-0042	--------	--------
011700Z	17.1N	132.7E	270-0078	--------	--------
012300Z	17.5N	132.5E	----0000	--------	--------
020500Z	17.8N	132.4E	311-0072	--------	--------
021100Z	18.4N	132.3E	299-0108	280-0126	--------
021700Z	18.9N	132.2E	296-0066	295-0138	--------
022300Z	19.4N	132.2E	279-0072	333-0048	--------
030500Z	20.0N	132.1E	296-0048	293-0102	--------
031100Z	20.8N	132.3E	232-0072	289-0138	--------
031700Z	21.6N	132.6E	231-0084	268-0138	324-0120
032300Z	22.7N	133.3E	207-0078	255-0180	--------
040500Z	24.0N	134.2E	190-0036	247-0174	256-0192
041100Z	25.0N	135.3E	324-0048	230-0306	--------
041700Z	25.8N	136.3E	270-0066	229-0324	255-0282
042300Z	26.7N	137.3E	247-0042	218-0186	--------
050500Z	27.4N	138.3E	024-0114	150-0048	247-0360
051100Z	28.2N	139.5E	013-0108	024-0192	--------

AVERAGE 24 HOUR ERROR - 0072 MI.
AVERAGE 48 HOUR ERROR - 0161 MI.
AVERAGE 72 HOUR ERROR - 0238 MI.


TYPHOON KIM
CYCLONE 03
24 HR FCST POSITS
30 MAY–05 JUNE 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
05/11Z
04/23Z
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
29/00Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIGON
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
KUSAIE
FUMATAHACHI

TROPICAL CYCLONE 06 - 06/27/2300Z TO 07/02/0500Z
(LUCY)

I. DATA
   A. STATISTICS
      1. NUMBER OF WARNINGS ISSUED - 18
      2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 10
      3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1404 MI

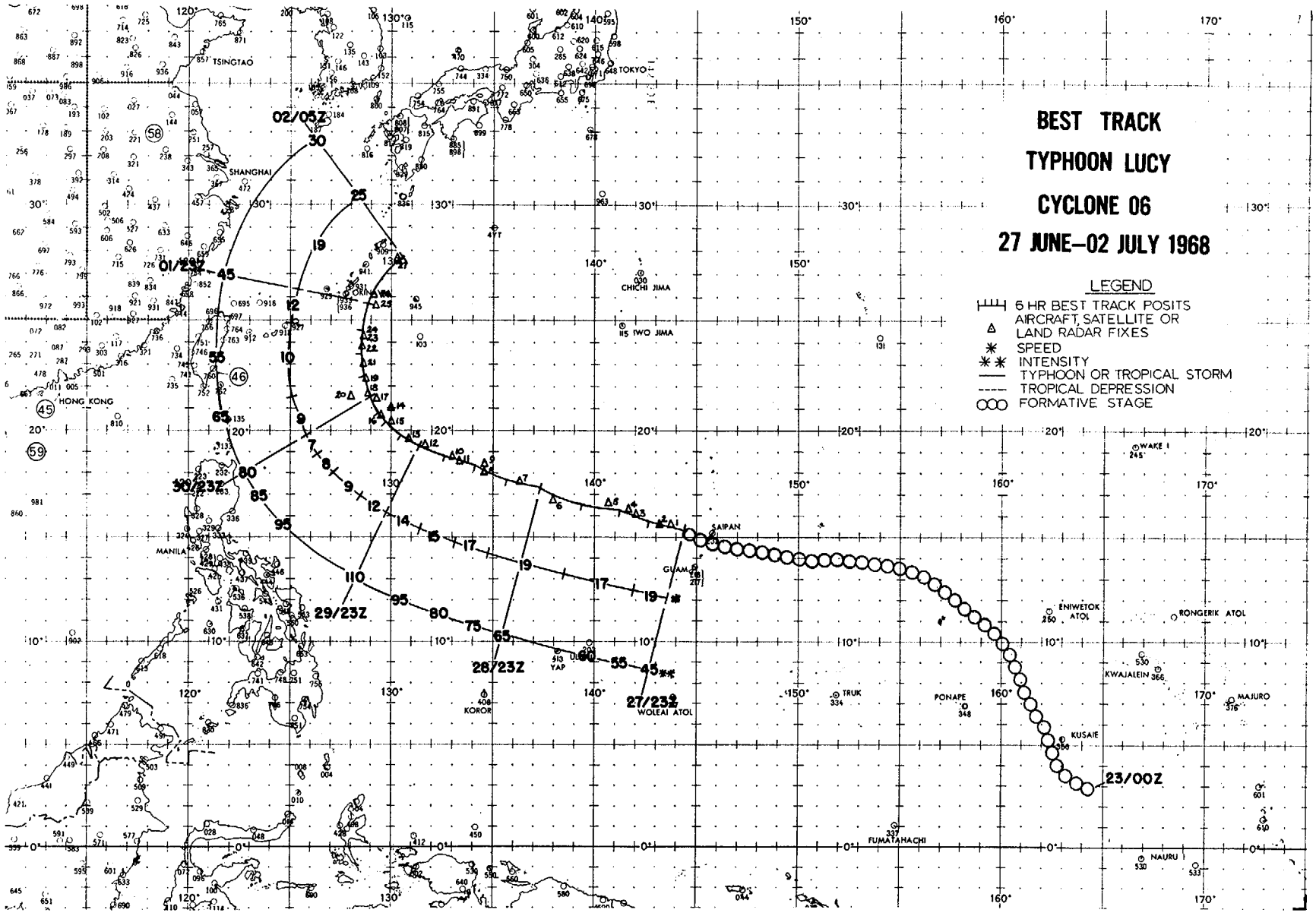
   B. CHARACTERISTICS AS A TYPHOON
      1. MINIMUM OBSERVED SLP - 935MBS AT 292113Z
      2. MINIMUM OBSERVED 700MB HEIGHT - 2536M. AT 292113Z
      3. MAXIMUM SURFACE WIND - 110 KTS (FROM BEST TRACK)
      4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

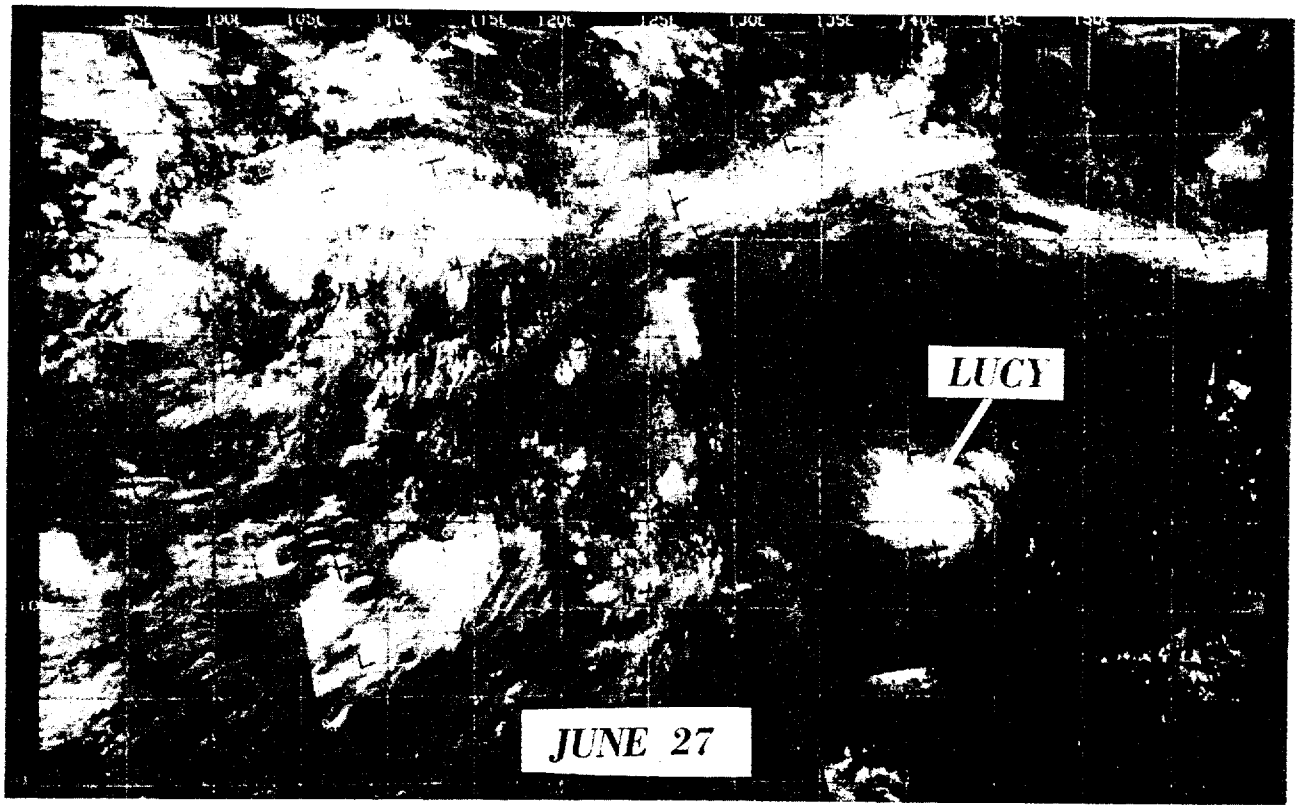
II. DEVELOPMENT
   A. INITIAL IMPETUS - FRACTURE OF A POLAR TROUGH AND AN EASTERLY WAVE

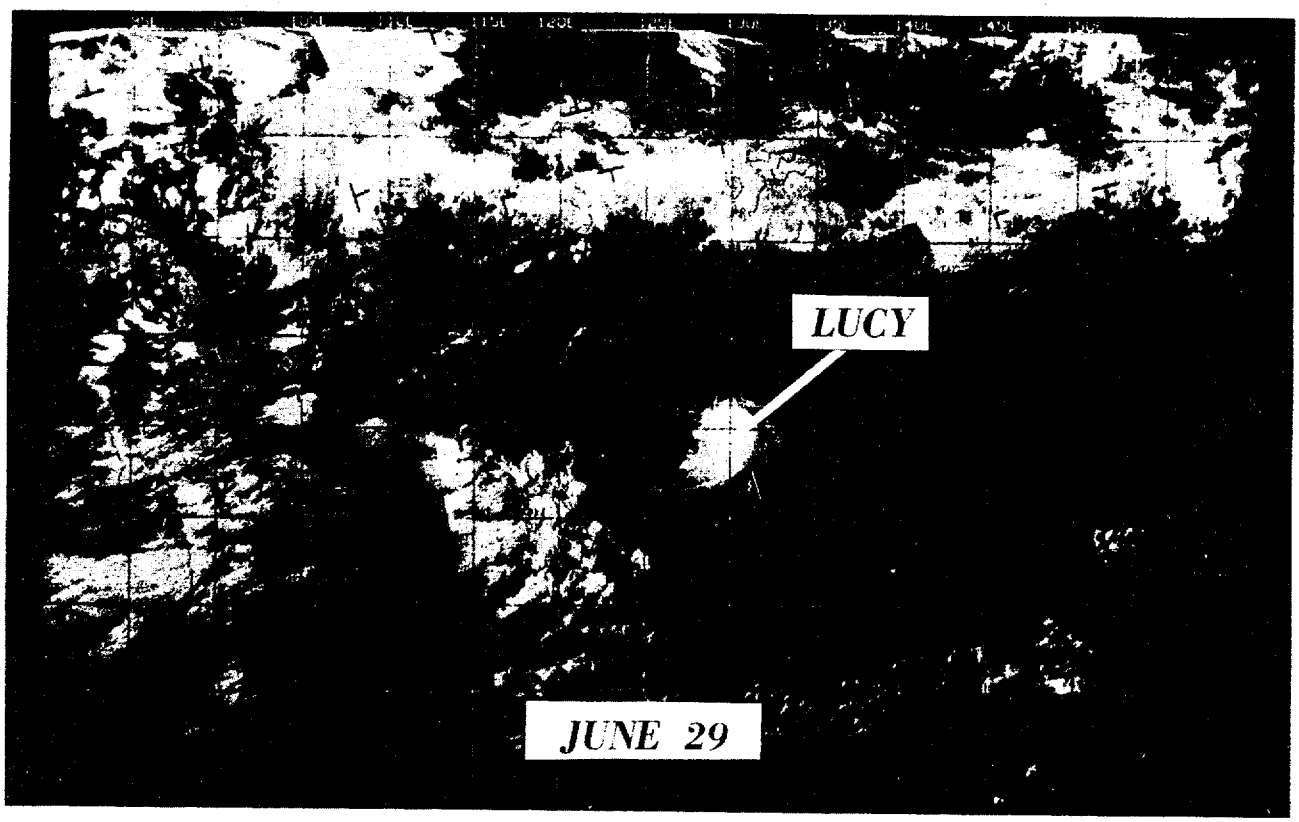
   B. INITIAL SURFACE VORTEX
      1. EMBEDDED VORTEX AT 230000Z
      2. SURFACE PRESSURE LESS THAN 1008MB

   C. 200MB FLOW ABOVE SURFACE VORTEX
      1. INITIAL - NORTHEAST
      2. UPON REACHING TYPHOON INTENSITY - SOUTHEAST

III. FINAL DISPOSITION - DISSIPATED OVER WATER


BEST TRACK
TYPHOON LUCY
CYCLONE 06
27 JUNE–02 JULY 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
SHANGHAI
TOKYO
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIPAN
GUAM
WAKE I
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
PONAPE
TRUK
YAP
KOROR
WOLEAI ATOL
FUMATAHACHI
NAURU I
02/05Z
01/23Z
30/23Z
29/23Z
28/23Z
27/23Z
23/00Z


LUCY
JUNE 27


LUCY
JUNE 29

EYE FIXES CYCLONE 06

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	280130Z	15.5N 143.8E	54-P-02-02	700MB	055	045	999	3054	11/--	CIRC	----	20	--
2	280355Z	15.5N 143.2E	54-P-02-01	700MB	050	055	993	3011	12/08	CIRC	----	15	--
3	280628Z	16.0N 142.0E	SLTLS	STG X	DIA 02	BNDS 2							
4	280830Z	16.2N 141.8E	VW-P-05-03	0290M	075	070	997	---	28/23	CIRC	----	20	--
5	281400Z	16.5N 140.7E	VW-R-10-05	700MB	---	---	---	---	--/14	CIRC	----	18	--
6	282059Z	16.8N 138.0E	54-P-03-02	700MB	047	055	987	2984	14/08	CIRC	----	10	--
7	290246Z	17.5N 136.2E	54-P-03-03	700MB	065	065	976	2874	13/10	CIRC	----	14	--
8	290705Z	18.0N 134.5E	SLTLS	STG X	DIA 03	BNDS 3							
9	290910Z	18.2N 134.6E	VW-P-05-05	700MB	---	085	976	2859	14/--	----			--
10	291345Z	18.8N 133.0E	VW-R-05---	700MB	---	---	---	---	--/--	----			--
11	291630Z	18.6N 133.3E	VW-R-05---	700MB	---	---	---	---	--/10	CIRC	----	07	--
12	292113Z	19.2N 131.7E	54-P-02-02	700MB	070	120	935	2536	21/09	CIRC	----	10	--
13	300245Z	19.6N 130.9E	54-P-02-01	700MB	085	080	947	2661	25/09	CIRC	----	15	--
14	300742Z	21.0N 130.0E	SLTLS	STG X	DIA 03	BNDS 2							
15	300910Z	20.3N 130.0E	VW-P-03-05	700MB	---	100	965	2832	18/14	CIRC	----	20	--
16	301430Z	20.7N 129.4E	VW-P-03-05	700MB	---	---	968	---	16/12	CIRC	----	14	07
17	302115Z	21.3N 129.2E	54-P-03-03	700MB	065	120	974	2862	13/12	----			F.B.
18	010006Z	21.7N 128.9E	54-P-03-03	700MB	063	065	976	2899	20/13	----			F.B.
19	010300Z	22.2N 128.8E	54-P-03-03	700MB	041	070	979	2911	19/13	----			F.B.
20	010819Z	21.5N 128.0E	SLTLS	STG X	DIA 03	BNDS 3							
21	010830Z	23.0N 128.7E	VW-P-03-01	0440M	060	045	983	---	27/25	----			N.F.B.
22	011200Z	23.9N 128.5E	VW-P-09-01	700MB	037	---	989	2913	14/13	----			N.F.B.
23	011430Z	24.1N 128.6E	VW-P-02---	700MB	047	---	---	3018	--/--	----			--
24	011507Z	24.2N 128.6E	VW-P-03-03	700MB	047	---	989	3018	17/12	----			F.B.

EYE FIXES CYCLONE 06

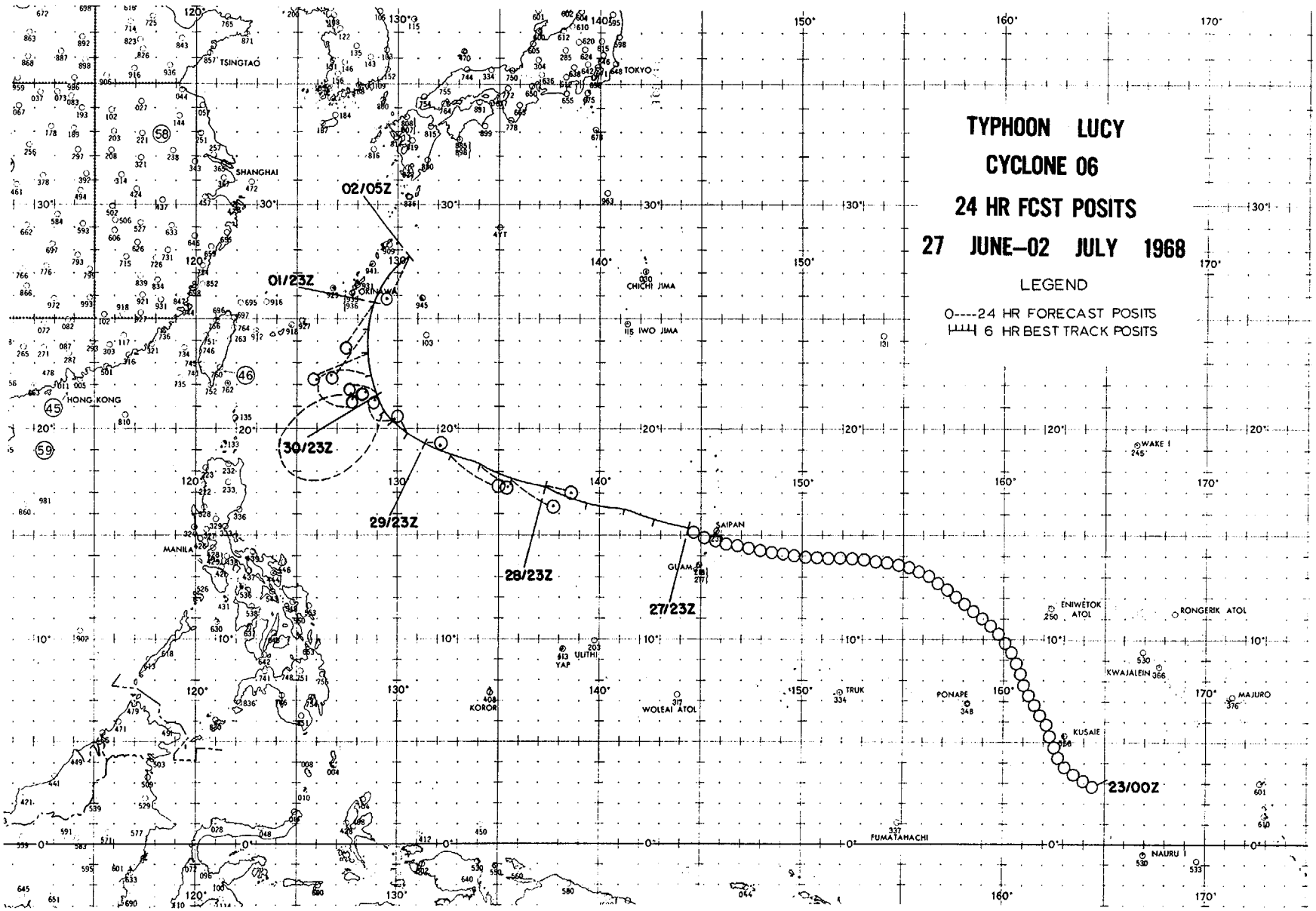
FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	012125Z	25.6N 129.2E	54-P-05-25	0430M	045	045	997	3039	--/22	----			N.F.B.
26	020000Z	26.0N 129.1E	54-P-03-10	700MB	040	035	000	3176	15/12	----			N.F.B.
27	020345Z	27.6N 130.3E	54-P-02-10	700MB	030	040	001	3060	13/08	----			N.F.B.

TROPICAL CYCLONE 06 -- 06/27/2300Z TO 07/02/0500Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
272300Z	15.1N	144.5E	--------	--------	--------
280500Z	15.8N	142.8E	--------	--------	--------
281100Z	16.2N	141.2E	--------	--------	--------
281700Z	16.5N	139.3E	--------	--------	--------
282300Z	17.1N	137.3E	094-0084	--------	--------
290500Z	17.7N	135.6E	123-0150	--------	--------
291100Z	18.3N	134.1E	119-0144	--------	--------
291700Z	18.8N	132.7E	121-0156	--------	--------
292300Z	19.3N	131.4E	108-0036	102-0168	--------
300500Z	19.9N	130.5E	308-0036	123-0228	--------
301100Z	20.3N	129.8E	318-0072	129-0174	--------
301700Z	20.8N	129.3E	314-0072	134-0186	--------
302300Z	21.5N	128.9E	270-0066	237-0018	--------
010500Z	22.5N	128.6E	213-0078	276-0108	151-0222
011100Z	23.5N	128.6E	240-0162	270-0138	--------
011700Z	24.5N	128.7E	223-0168	267-0186	177-0258
012300Z	25.8N	128.9E	208-0150	232-0234	--------

AVERAGE 24 HOUR ERROR - 0105 MI.

AVERAGE 48 HOUR ERROR - 0160 MI.
AVERAGE 72 HOUR ERROR - 0240 MI.


TYPHOON LUCY
CYCLONE 06
24 HR FCST POSITS
27 JUNE–02 JULY 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
02/05Z
01/23Z
30/23Z
29/23Z
28/23Z
27/23Z
23/00Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIPAN
GUAM
WAKE I
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
PONAPE
TRUK
WOLEAI ATOL
KOROR
YAP
UUTHI
FUMATAMACHI
NAURU I

TROPICAL CYCLONE 07 - 07/20/0500Z TO 07/30/1100Z
(MARY)

I. DATA

A. STATISTICS
1. NUMBER OF WARNINGS ISSUED - 42
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 22
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1932 MI

B. CHARACTERISTICS AS A TYPHOON
1. MINIMUM OBSERVED SLP - 924MBS AT 232100Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2441M. AT 240230Z
3. MAXIMUM SURFACE WIND - 130 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 600 MI

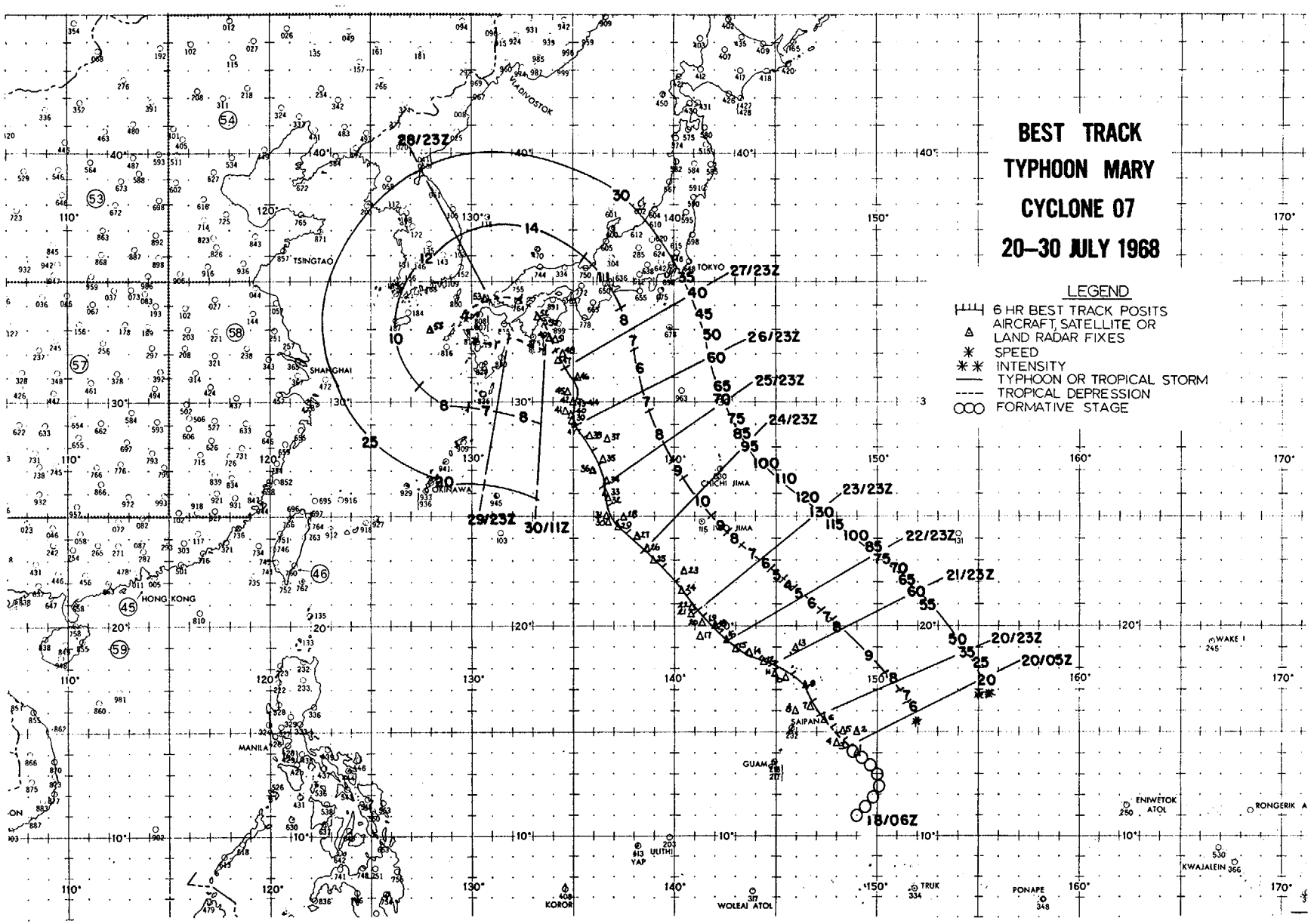
II. DEVELOPMENT

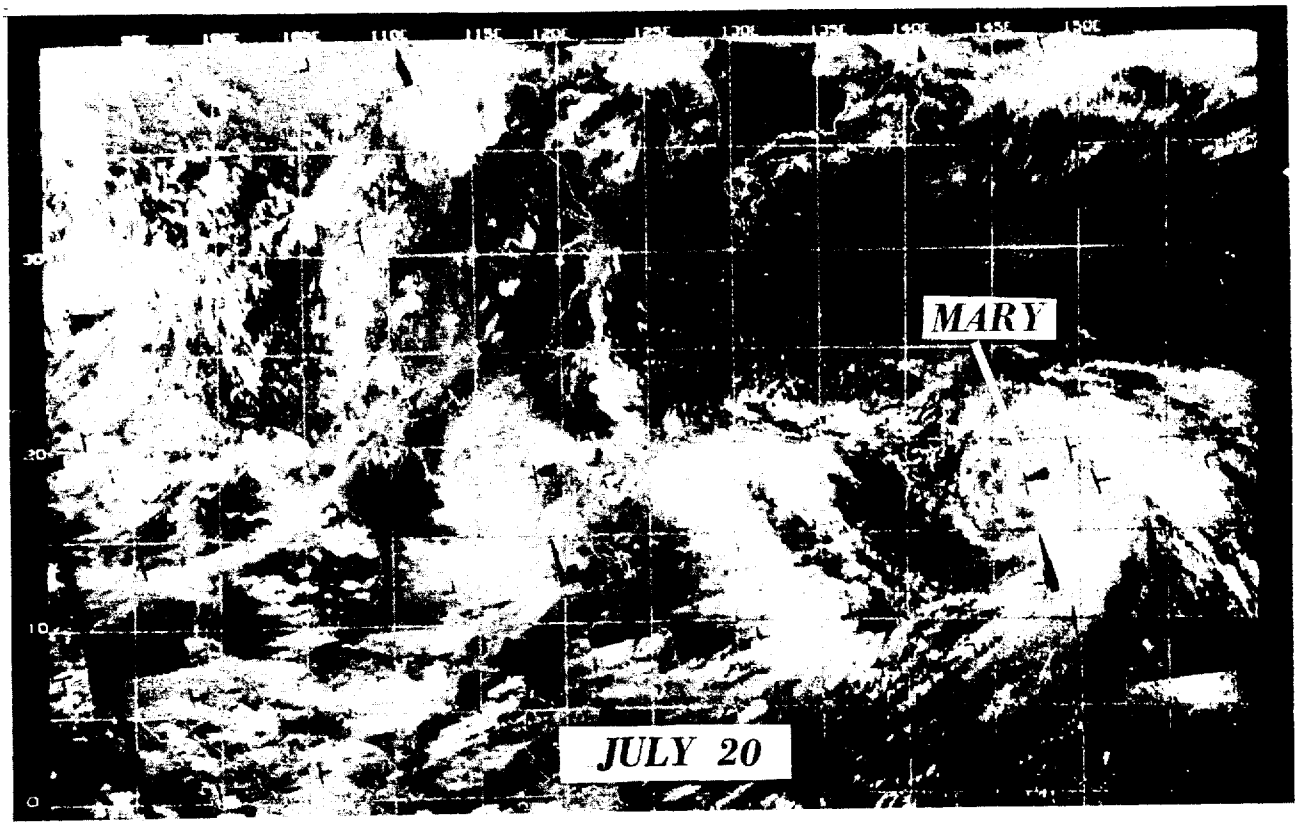
A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

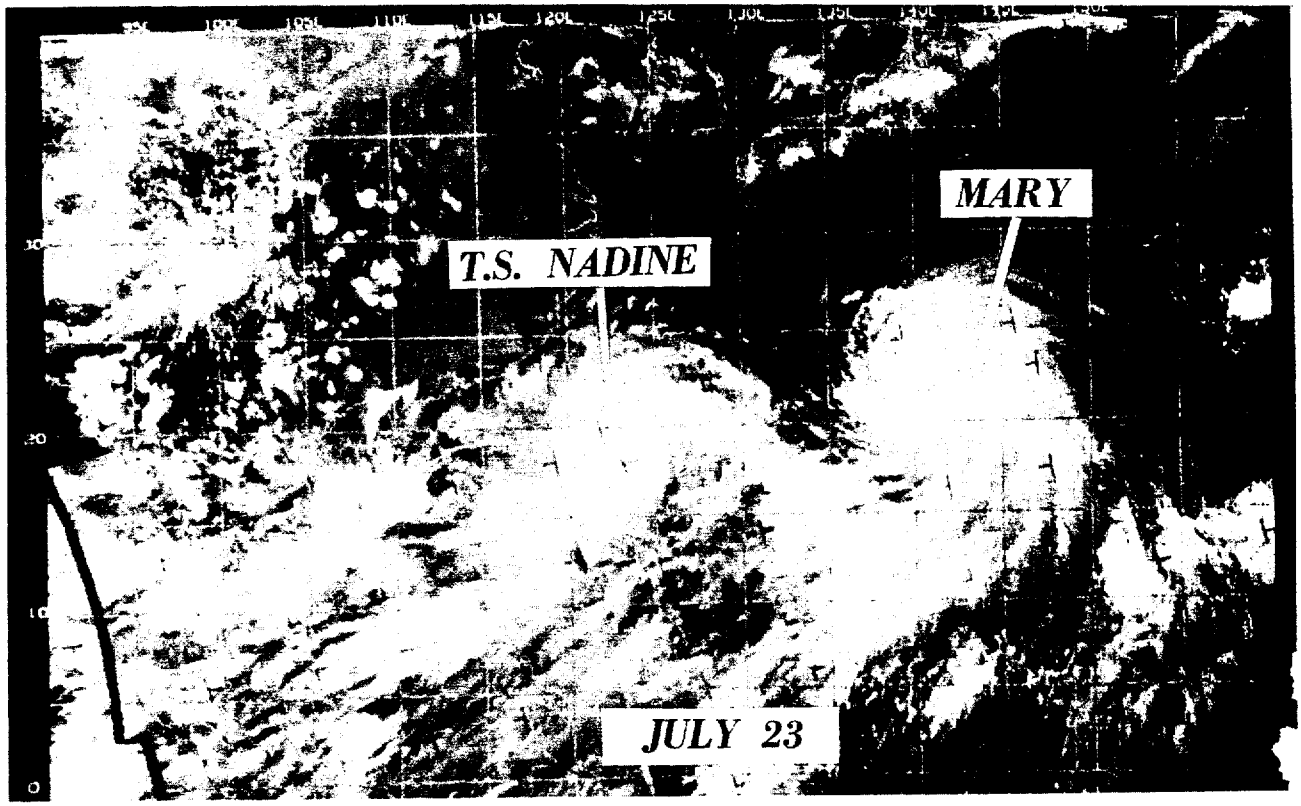
B. INITIAL SURFACE VORTEX
1. JUNCTION VORTEX AT 180600Z
2. SURFACE PRESSURE LESS THAN 1007MB

C. 200MB FLOW ABOVE SURFACE VORTEX
1. INITIAL - SOUTHEAST
2. UPON REACHING TYPHOON INTENSITY - NORTH

III. FINAL DISPOSITION - DISSIPATED OVER WATER


BEST TRACK
TYPHOON MARY
CYCLONE 07
20–30 JULY 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
28/23Z
27/23Z
26/23Z
25/23Z
24/23Z
23/23Z
22/23Z
21/23Z
20/23Z
20/05Z
18/06Z
29/23Z
30/11Z
VLADIVOSTOK
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
HONG KONG
MANILA
SAIPAN
GUAM
WAKE I
ENIWETOK ATOL
RONGERIK A
KWAJALEIN
PONAPE
TRUK
WOLEAI ATOL
KOROR
ULITHI
YAP


MARY
JULY 20


MARY
T.S. NADINE
JULY 23

EYE FIXES CYCLONE 07

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	200110Z	14.0N 149.0E	54-P------	0430M	020	020	002	---	--/--	----			N.F.B.
2	200641Z	15.0N 149.0E	SLTLS	STG X	DIA 02	BNDS 2							
3	200905Z	14.5N 148.0E	VW-P-05-05	0460M	016	020	998	3102	24/25	CIRC	----	--	F.B.
4	201230Z	14.5N 148.0E	VW-R------		---	---	---	---	--/--	----			--
5	201520Z	15.0N 148.2E	VW-P-05-15	700MB	020	---	004	3078	10/09	ELIP	NW-SE	40X28	N.F.B.
6	202130Z	15.6N 147.3E	54-P-03-10	700MB	035	025	994	3030	09/--	ELIP	N-S	40X25	F.B.
7	210255Z	16.1N 146.8E	54-P-10-05	700MB	035	050	986	2987	12/10	ELIP	N-S	30X15	--
8	210718Z	16.0N 146.0E	SLTLS	STG X	DIA 03	BNDS 2							
9	210926Z	17.2N 146.4E	VW-P-03-03	0460M	039	040	985	---	24/23	CIRC	----	18	--
10	211415Z	17.6N 145.6E	VW-R-05-15	0460M	048	---	---	---	--/--	CIRC	----	30	--
11	212105Z	17.8N 145.0E	54-P-03-03	700MB	045	050	983	2926	16/12	ELIP	N-S	40X30	--
12	220241Z	18.2N 144.4E	54-P-03-03	700MB	050	055	976	2887	16/12	CIRC	----	25	--
13	220559Z	19.0N 146.0E	SLTLS	STG X	DIA 04	BNDS -							
14	220835Z	18.8N 143.8E	VW-P-03-03	0450M	085	085	964	2842	26/33	CIRC	----	45	04
15	221440Z	18.9N 143.0E	VW-R-02-03	700MB	---	---	---	---	--/--	CIRC	----	10	06
16	222043Z	19.3N 142.6E	54-P-03-02	700MB	080	080	952	2676	20/15	CIRC	----	10	--
17	230247Z	19.5N 141.2E	54-P-03-05	700MB	060	080	951	2667	17/15	CIRC	----	15	--
18	230638Z	20.0N 142.0E	SLTLS	STG X	DIA 05	BNDS 4							
19	230847Z	20.0N 142.2E	VW-P-05-05		---	090	947	---	26/25	ELIP	NE-SW	20X14	--
20	231130Z	20.0N 125.8E	VW-P-05-10	700MB	---	---	---	3012	15/11	CIRC	----	20	F.B.
21	231430Z	20.2N 141.5E	VW-P-05-05	700MB	065	---	941	2595	18/15	CIRC	----	15	--
22	232100Z	20.7N 140.9E	54-P-01-01	700MB	100	115	924	2445	20/14	CIRC	----	20	08
23	240230Z	20.9N 140.9E	54-P-03-01	700MB	135	130	924	2441	20/14	CIRC	----	10	--
24	240715Z	22.5N 140.5E	SLTLS	STG X	DIA 07	BNDS 4							

EYE FIXES CYCLONE 07

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	240807Z	21.6N 140.4E	VW-R-01-05		---	---	---	---	--/--	CIRC	----	12	--
26	241453Z	23.0N 139.0E	VW-P-10-05	700MB	080	---	950	2560	18/14	CIRC	----	12	--
27	242112Z	23.6N 138.7E	54-P-05-05	700MB	070	040	933	2563	18/12	CONC		70-20	--
28	250230Z	24.1N 138.1E	54-P-05-05	700MB	080	055	946	2624	16/12	CIRC	----	70	--
29	250602Z	25.0N 137.5E	SLTLS	STG X	DIA 07	BNDS 4							
30	250910Z	24.7N 137.2E	VW-P-05-05	0240M	080	065	951	2738	25/24	ELIP	NW-SE	60X45	N.F.B.
31	251200Z	24.8N 136.8E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	70	F.B.
32	251515Z	24.9N 136.7E	VW-R-05-10		---	---	---	---	--/--	ELIP	NE-SW	60X50	F.B.
33	252110Z	25.8N 136.8E	54-P-04-10	700MB	065	---	951	2682	17/12	CIRC	----	30	--
34	252350Z	26.0N 136.6E	54-P-02-05	700MB	050	045	957	2704	16/11	CIRC	----	30	--
35	260210Z	26.5N 136.8E	54-P-03-10	700MB	055	040	958	2713	16/11	CIRC	----	30	--
36	260639Z	27.5N 136.5E	SLTLS	STG X	DIA 05	BNDS 3							
37	260910Z	27.0N 136.0E	VW-P-03-10	0460M	---	065	963	---	26/25	CIRC	----	10	--
38	261230Z	28.4N 136.8E	VW-P-30-15	700MB	---	---	972	2847	16/14	CIRC	----	20	--
39	261415Z	28.5N 135.9E	VW-P-30-20	700MB	---	---	966	2806	17/15	CIRC	----	30	--
40	262101Z	29.2N 135.0E	54-P-03-15	700MB	040	040	966	2810	14/14	CIRC	----	30	F.B.
41	270001Z	29.5N 134.9E	54-P-01-06	700MB	065	---	966	2816	15/13	CIRC	----	30	F.B.
42	270253Z	29.7N 134.7E	54-P-01-15	700MB	040	035	967	2835	15/13	----			F.B.
43	270716Z	30.0N 135.0E	SLTLS	STG X	DIA 04	BNDS 3							
44	270850Z	30.0N 135.0E	VW-P-05-10	0150M	035	035	971	2896	25/24	----			F.B.
45	271210Z	30.1N 135.0E	VW-P-05-10	700MB	045	---	964	2914	15/12	----			--
46	271410Z	30.4N 134.8E	VW-P-05-10	700MB	---	---	---	2911	16/15	----			--
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	065	035	969	2841	16/13	CIRC	----	10	--

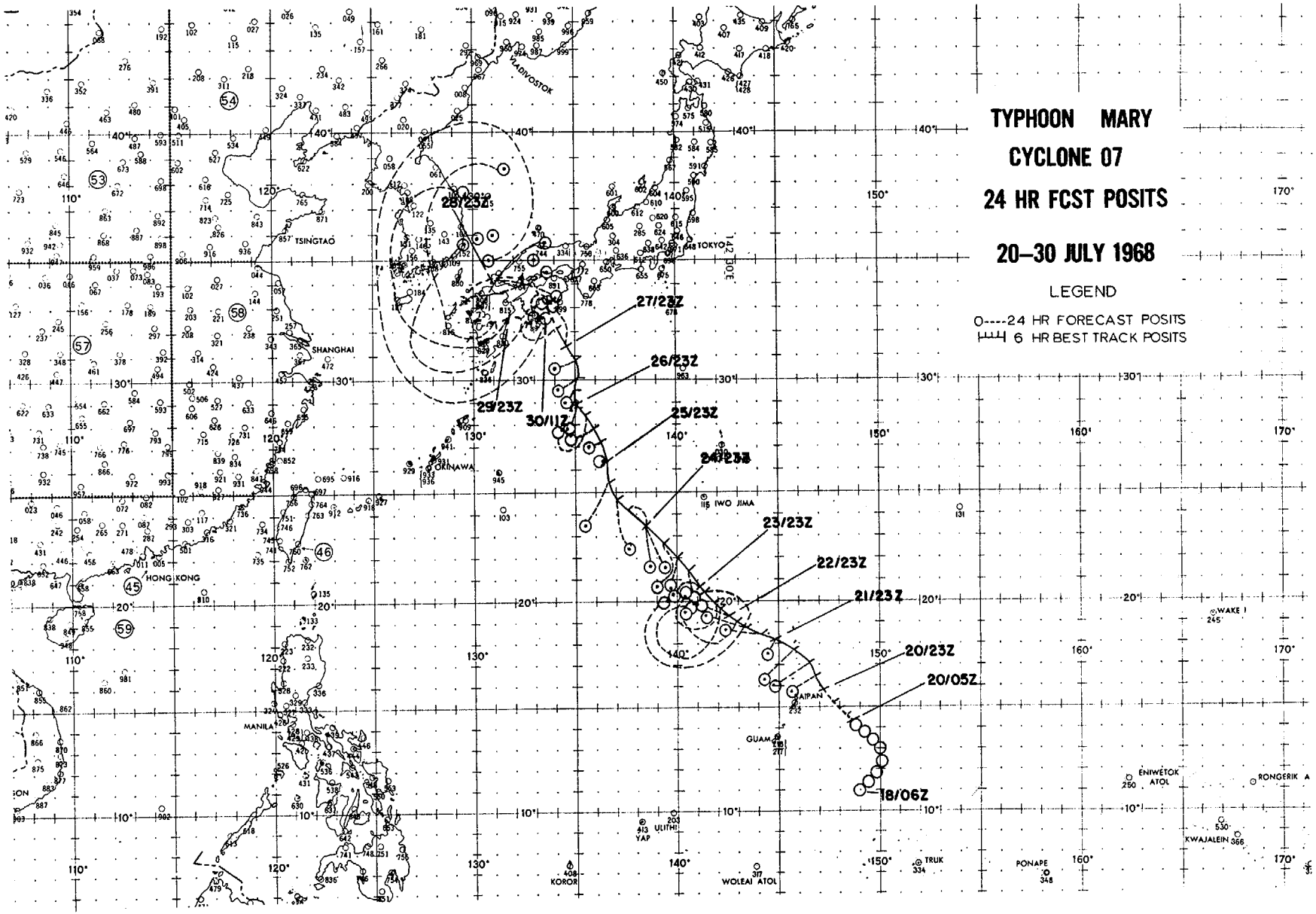
EYE FIXES CYCLONE 07

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	280753Z	32.0N 134.5E	SLTLS	STG X	DIA 04	BNDS 2							
50	280800Z	32.7N 133.9E	LND RDR		---	---	---	---	--/--	----			--
51	281000Z	33.2N 133.6E	LND RDR		---	---	---	---	--/--	----			--
52	281045Z	32.7N 134.1E	VW-P-10-10	700MB	030	---	---	2970	14/13	CIRC	----	25	--
53	281100Z	33.6N 133.2E	LND RDR		---	---	---	---	--/--	----			--
54	281800Z	35.2N 130.7E	LND RDR		---	---	---	---	--/--	----			--
55	290000Z	33.6N 129.8E	LND RDR		---	---	---	---	--/--	----			--
56	290636Z	33.0N 128.0E	SLTLS	STG X	DIA 03	BNDS 1							

TROPICAL CYCLONE 07 -- 07/20/0500Z TO 07/30/1100Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
202300Z	15.7N	147.2E	--------	--------	--------
210500Z	16.4N	146.8E	242-0072	--------	--------
211100Z	17.2N	146.2E	228-0102	--------	--------
211700Z	17.6N	145.5E	221-0108	--------	--------
212300Z	18.1N	144.8E	199-0036	--------	--------
220500Z	18.4N	144.1E	283-0102	--------	--------
221100Z	18.7N	143.5E	284-0114	--------	--------
221700Z	19.0N	143.0E	281-0150	--------	--------
222300Z	19.4N	142.6E	288-0090	263-0048	--------
230500Z	19.8N	142.3E	274-0078	275-0342	--------
231100Z	20.0N	142.0E	273-0090	273-0378	--------
231700Z	20.4N	141.4E	257-0102	275-0402	--------
232300Z	20.8N	141.1E	242-0072	270-0342	--------
240500Z	21.4N	140.6E	254-0288	261-0204	262-0594
241100Z	22.0N	140.0E	255-0294	248-0174	--------
241700Z	22.7N	139.3E	249-0312	234-0210	263-0636
242300Z	23.4N	138.4E	169-0096	198-0156	--------
250500Z	24.1N	137.6E	147-0174	240-0438	240-0312
251100Z	24.8N	137.0E	165-0144	241-0450	--------
251700Z	25.5N	136.8E	214-0138	239-0498	219-0354
252300Z	26.3N	136.5E	270-0006	177-0240	--------
260500Z	27.1N	136.1E	252-0018	177-0288	235-0708
261100Z	27.8N	135.7E	247-0042	190-0318	--------
261700Z	28.4N	135.4E	237-0060	213-0354	224-0822
262300Z	29.0N	135.1E	196-0066	262-0042	--------
270500Z	29.6N	135.0E	214-0042	244-0036	192-0444
271100Z	30.1N	135.1E	238-0054	260-0096	--------
271700Z	30.7N	135.1E	258-0054	244-0120	218-0594
272300Z	31.3N	134.7E	341-0108	223-0114	--------
280500Z	32.1N	134.2E	333-0066	236-0072	254-0060

AVERAGE 24 HOUR ERROR - 0106 MI.
AVERAGE 48 HOUR ERROR - 0241 MI.
AVERAGE 72 HOUR ERROR - 0502 MI.


TYPHOON MARY
CYCLONE 07
24 HR FCST POSITS
20–30 JULY 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
VLADIVOSTOK
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
IWO JIMA
HONG KONG
MANILA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KWAJALEIN
ENIWETOK ATOL
RONGERIK A
WAKE I
25/23Z
27/23Z
26/23Z
29/23Z
30/11Z
25/23Z
24/23Z
23/23Z
22/23Z
21/23Z
20/23Z
20/05Z
18/06Z

TROPICAL CYCLONE 13 - 08/16/2300Z TO 08/21/1700Z
(SHIRLEY)

I. DATA

A. STATISTICS
1. NUMBER OF WARNINGS ISSUED - 20
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 02
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1218 MI

B. CHARACTERISTICS AS A TYPHOON
1. MINIMUM OBSERVED SLP - 962MBS AT 182130Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2790M. AT 210320Z
3. MAXIMUM SURFACE WIND - 065 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

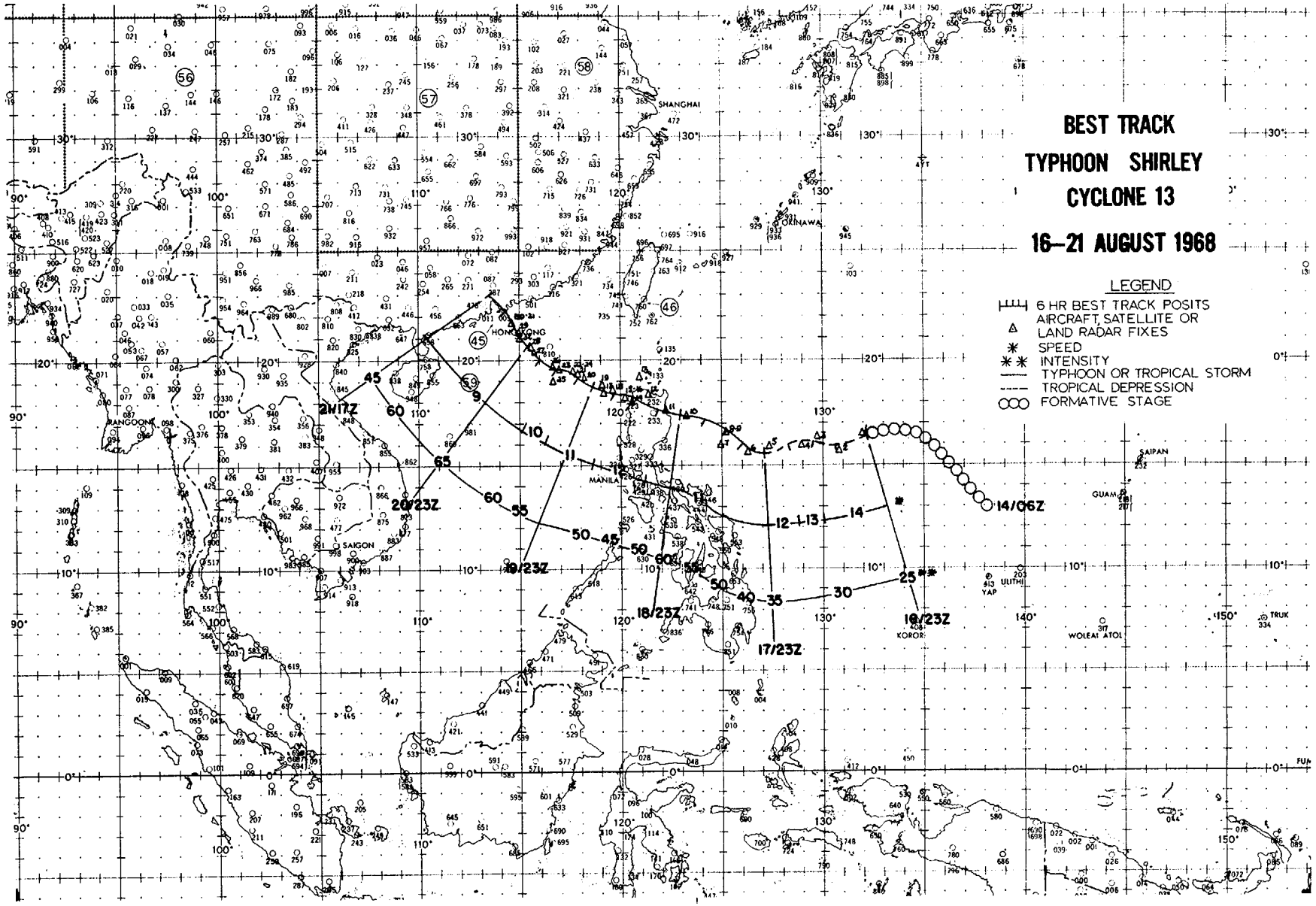
II. DEVELOPMENT

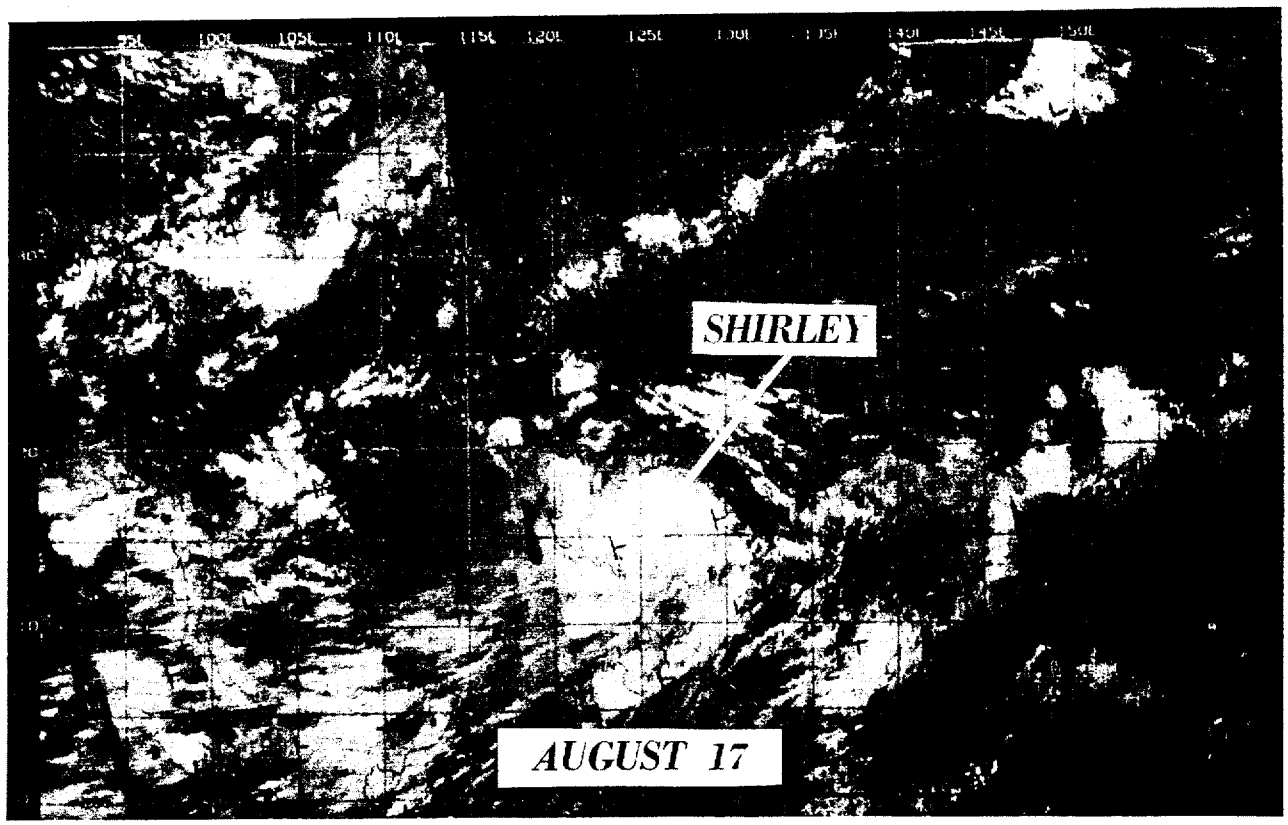
A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

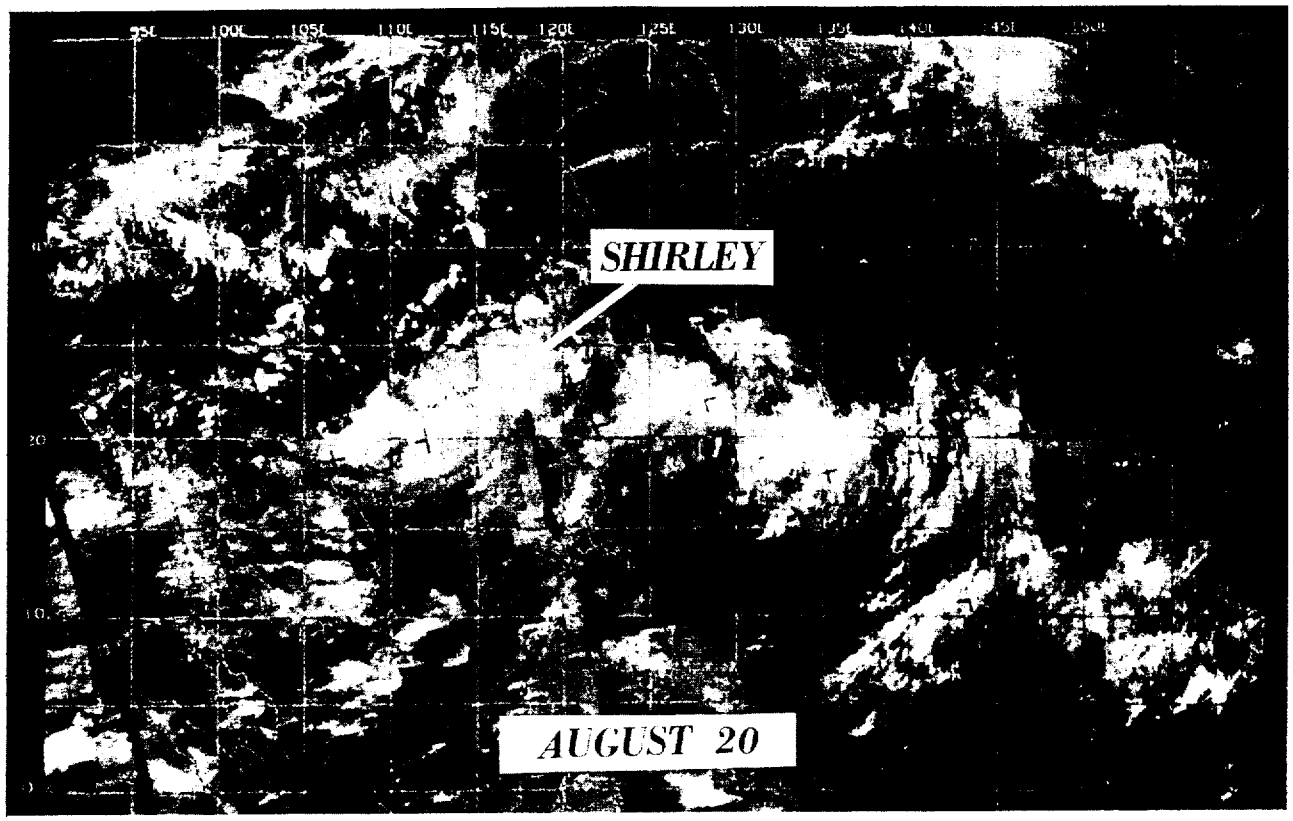
B. INITIAL SURFACE VORTEX
1. JUNCTION VORTEX AT 140600Z
2. SURFACE PRESSURE LESS THAN 1006MB

C. 200MB FLOW ABOVE SURFACE VORTEX
1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - NORTHEAST

III. FINAL DISPOSITION - DISSIPATED OVER LAND


BEST TRACK
TYPHOON SHIRLEY
CYCLONE 13
16–21 AUGUST 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
SHANGHAI
OKINAWA
HONG KONG
MANILA
SAIGON
RANGOON
SAIPAN
GUAM
ULITHI
YAP
WOLEAI ATOL
KOROR
TRUK
16/17Z
20/23Z
19/23Z
18/23Z
17/23Z
19/23Z
14/06Z


SHIRLEY
AUGUST 17


SHIRLEY
AUGUST 20

EYE FIXES CYCLONE 13

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	162345Z	16.4N 132.0E	54-P-02-05	0390M	030	030	001	---	26/25	CIRC	----	30	--
2	170303Z	15.6N 130.9E	54-P-02-10	700MB	037	030	005	3103	11/10	CIRC	----	20	--
3	170900Z	16.4N 129.8E	VW-P-10-10	0250M	025	025	997	---	27/26	----			--
4	171400Z	16.0N 129.0E	VW-P-10-10	0250M	---	025	996	---	26/28	----			--
5	172103Z	15.9N 127.3E	54-P-05-03	700MB	050	---	991	2996	14/13	----			--
6	180209Z	15.7N 126.2E	54-P-05-03	700MB	050	040	987	2987	14/13	CIRC	----	10	--
7	180725Z	16.0N 125.0E	SLTLS	STG -	DIA 03	BNDS 2							
8	181010Z	16.6N 125.3E	VW-P-03-05	0300M	---	075	979	---	28/24	CIRC	----	25	--
9	181202Z	16.7N 125.2E	VW-P-04-05	0260M	---	---	978	---	28/25	CIRC	----	30	--
10	182130Z	17.3N 123.3E	54-P-03-15	700MB	050	---	962	2795	17/09	CIRC	----	50	--
11	190247Z	17.5N 122.3E	54-P-03-10	500MB	061	050	---	---	00/02	CIRC	----	40	--
12	190800Z	18.4N 121.3E	LND RDR		---	---	---	---	--/--	----			--
13	191000Z	19.1N 121.0E	LND RDR		---	---	---	---	--/--	----			--
14	191018Z	18.0N 120.5E	54-UN-----	700MB	---	---	---	---	--/--	----			--
15	191300Z	18.1N 120.2E	LND RDR		---	---	---	---	--/--	----			--
16	191310Z	18.4N 120.2E	LND RDR		---	---	---	---	--/--	----			--
17	191550Z	18.4N 119.2E	VW-R-10---	1800M	---	---	---	---	--/--	----			--
18	191556Z	18.6N 119.6E	VW-P-02-05	700MB	---	---	968	2809	13/00	CIRC	----	40	--
19	192012Z	18.7N 119.1E	VW-P-03-03	700MB	---	---	982	2880	12/08	CIRC	----	40	--
20	200300Z	19.1N 118.2E	54-P-06-02	700MB	---	045	980	2941	16/12	ELIP	N-S	70X30	--
21	200451Z	19.2N 117.9E	54-P-06-02	700MB	---	045	977	2917	18/--	CIRC	----	30	--
22	200649Z	19.3N 117.6E	54-P-04-05	700MB	---	065	976	2887	18/--	CIRC	----	30	--
23	200839Z	19.5N 117.0E	SLTLS	STG X	DIA 04	BNDS 3							
24	200850Z	19.5N 117.5E	54-P-03-10	700MB	078	060	966	2819	18/10	CIRC	----	50	--

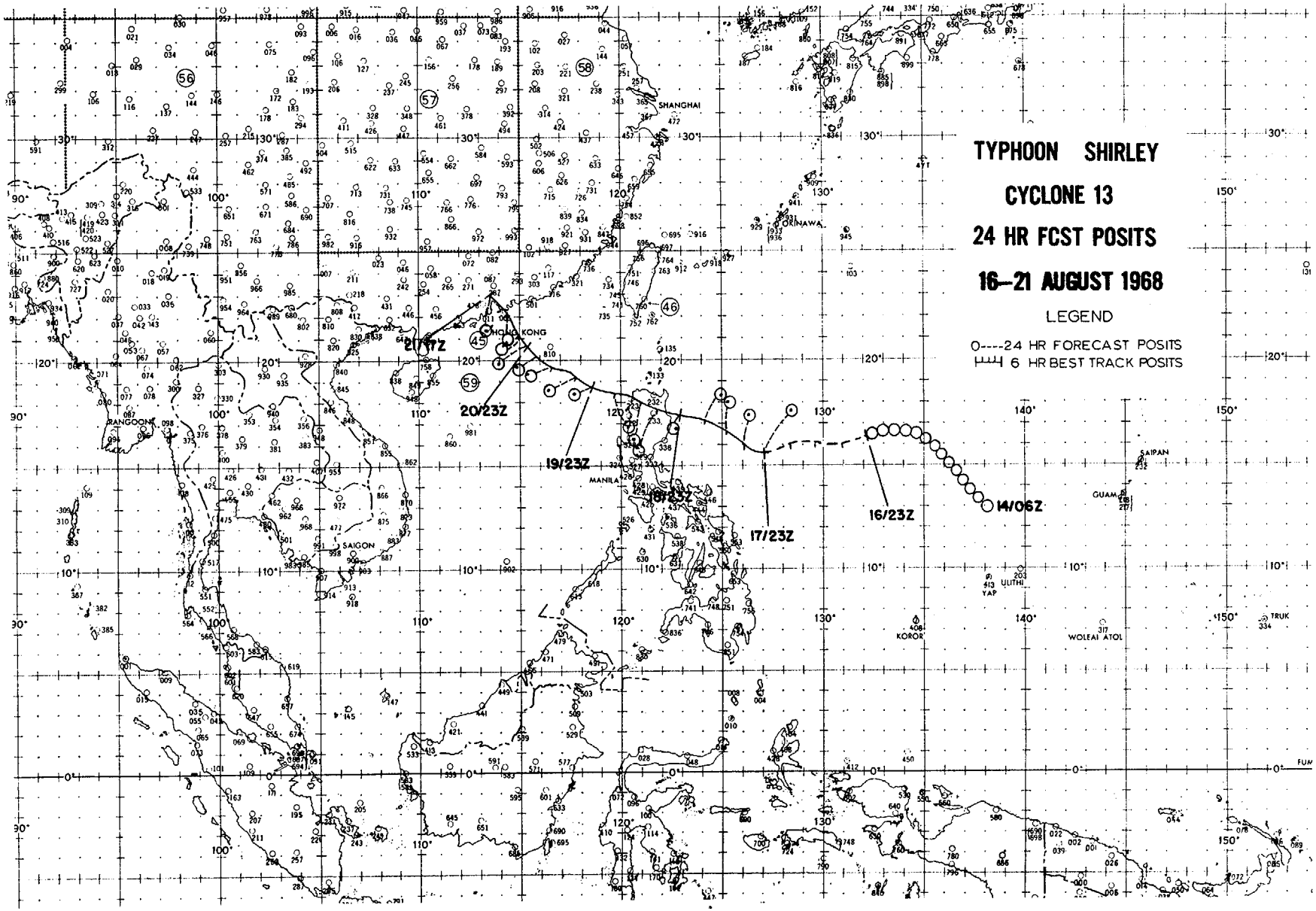
EYE FIXES CYCLONE 13

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	201345Z	19.0N 116.8E	VW-R-10---	0380M	---	---	---	---	--/--	----			--
26	201427Z	19.8N 116.7E	VW-P-01-01	0380M	---	060	972	---	27/27	CIRC	----	22	--
27	202000Z	20.4N 115.8E	VW-R----05		---	---	---	---	--/--	----			--
28	202025Z	20.5N 115.7E	VW-P-01-01	700MB	---	---	968	2841	20/18	CIRC	----	35	--
29	210320Z	21.2N 115.0E	54-P-02-02	700MB	075	075	964	2790	18/14	CIRC	----	50	--
30	210558Z	21.6N 114.7E	54-P-05-02	700MB	055	070	963	2792	18/14	CIRC	----	50	--
31	210845Z	21.9N 114.8E	54-P-02-10	700MB	070	080	964	2801	18/14	CIRC	----	50	--
32	210916Z	21.0N 115.0E	SLTLS	STG -	DIA 05	BNDS 2							

TROPICAL CYCLONE 13 -- 08/16/2300Z TO 08/21/1700Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
172300Z	15.7N	127.1E	029-0132	--------	--------
180500Z	15.9N	126.0E	008-0090	--------	--------
181100Z	16.7N	125.2E	000-0078	--------	--------
181700Z	17.1N	124.1E	037-0078	--------	--------
182300Z	17.3N	123.0E	192-0030	--------	--------
190500Z	17.7N	121.9E	207-0120	--------	--------
191100Z	18.2N	120.8E	180-0126	--------	--------
191700Z	18.4N	119.6E	158-0096	--------	--------
192300Z	18.8N	118.6E	235-0048	180-0084	--------
200500Z	19.3N	117.7E	240-0078	209-0186	--------
201100Z	19.6N	116.8E	253-0078	186-0186	--------
201700Z	20.1N	116.0E	254-0060	175-0210	--------
202300Z	20.7N	115.4E	239-0090	227-0120	--------
210500Z	21.5N	114.8E	210-0060	231-0168	219-0324
211100Z	22.2N	114.3E	180-0084	235-0198	--------
211700Z	23.0N	113.8E	197-0102	236-0216	193-0348

AVERAGE 24 HOUR ERROR - 0084 MI.
AVERAGE 48 HOUR ERROR - 0171 MI.
AVERAGE 72 HOUR ERROR - 0336 MI.


TYPHOON SHIRLEY
CYCLONE 13
24 HR FCST POSITS
16–21 AUGUST 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
21/17Z
20/23Z
19/23Z
18/23Z
17/23Z
16/23Z
14/06Z
HONG KONG
SHANGHAI
OKINAWA
RANGOON
MANILA
SAIGON
SAIPAN
GUAM
ULITHI
YAP
KOROR
WOLEAI ATOL
TRUK

TROPICAL CYCLONE 16 - 08/27/2300Z TO 09/09/1100Z
(WENDY)

I. DATA
   A. STATISTICS
      1. NUMBER OF WARNINGS ISSUED - 51
      2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 40
      3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 2820 MI

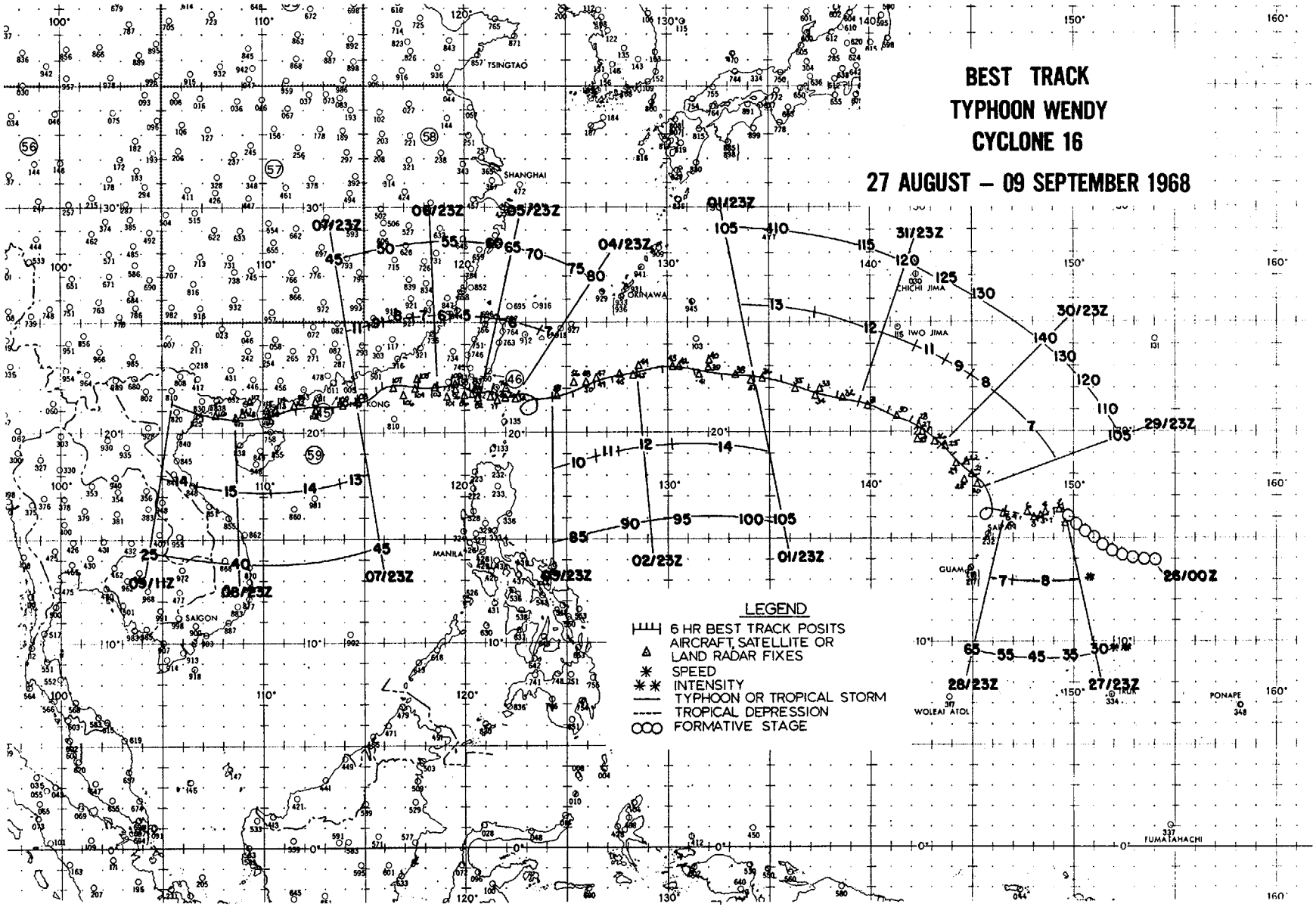
   B. CHARACTERISTICS AS A TYPHOON
      1. MINIMUM OBSERVED SLP - 917MBS AT 302100Z
      2. MINIMUM OBSERVED 700MB HEIGHT - 2356M. AT 302100Z
      3. MAXIMUM SURFACE WIND - 140 KTS (FROM BEST TRACK)
      4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 420 MI

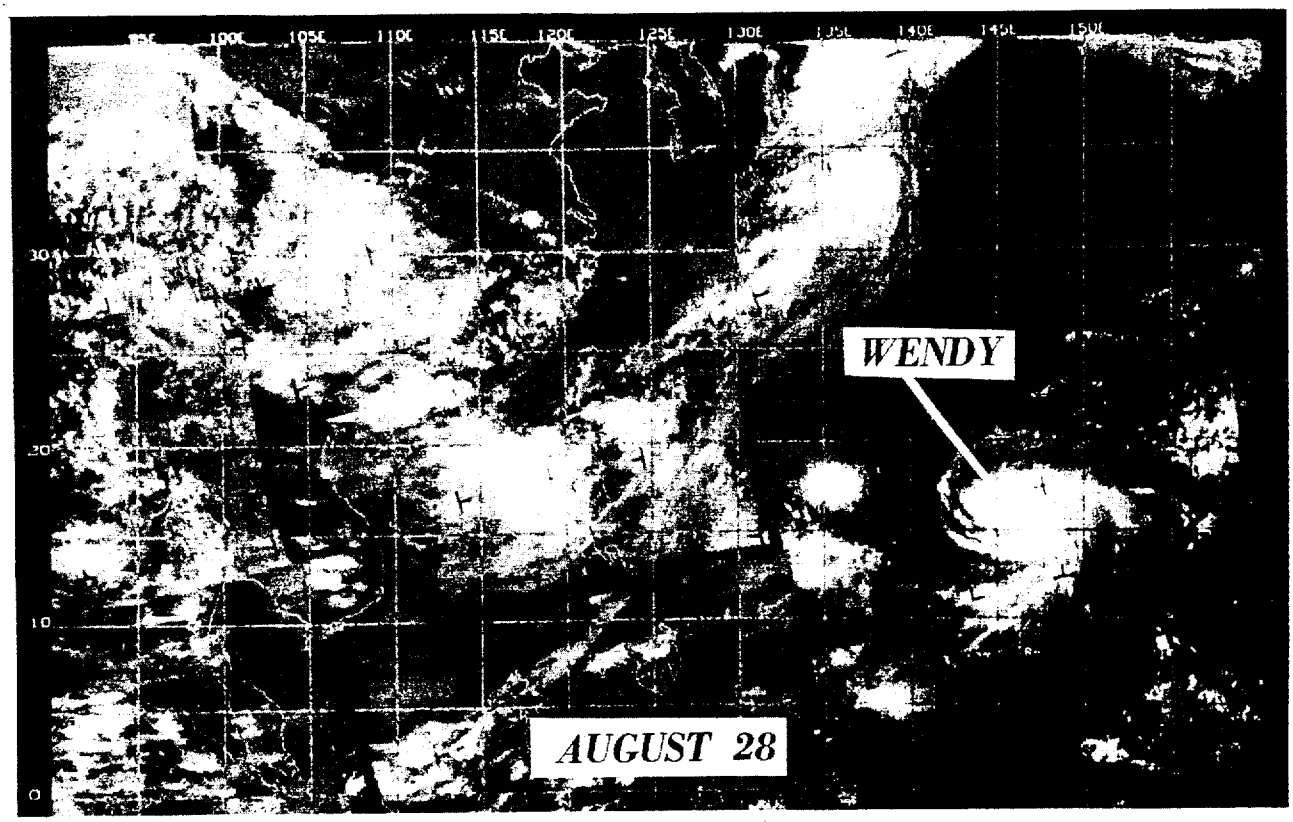
II. DEVELOPMENT
   A. INITIAL IMPETUS - FRACTURE OF A POLAR TROUGH AND AN EASTERLY WAVE

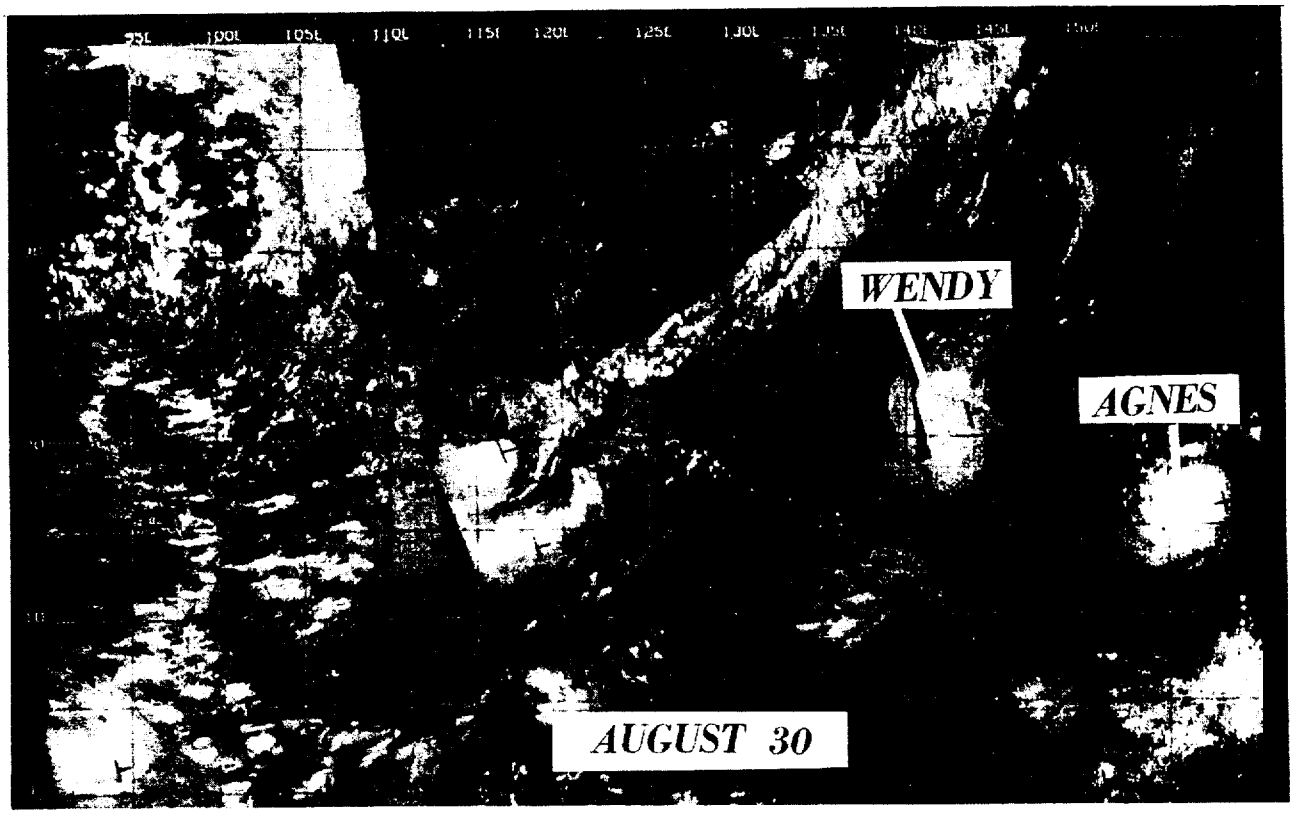
   B. INITIAL SURFACE VORTEX
      1. INDUCED VORTEX AT 260000Z
      2. SURFACE PRESSURE LESS THAN 1010MB

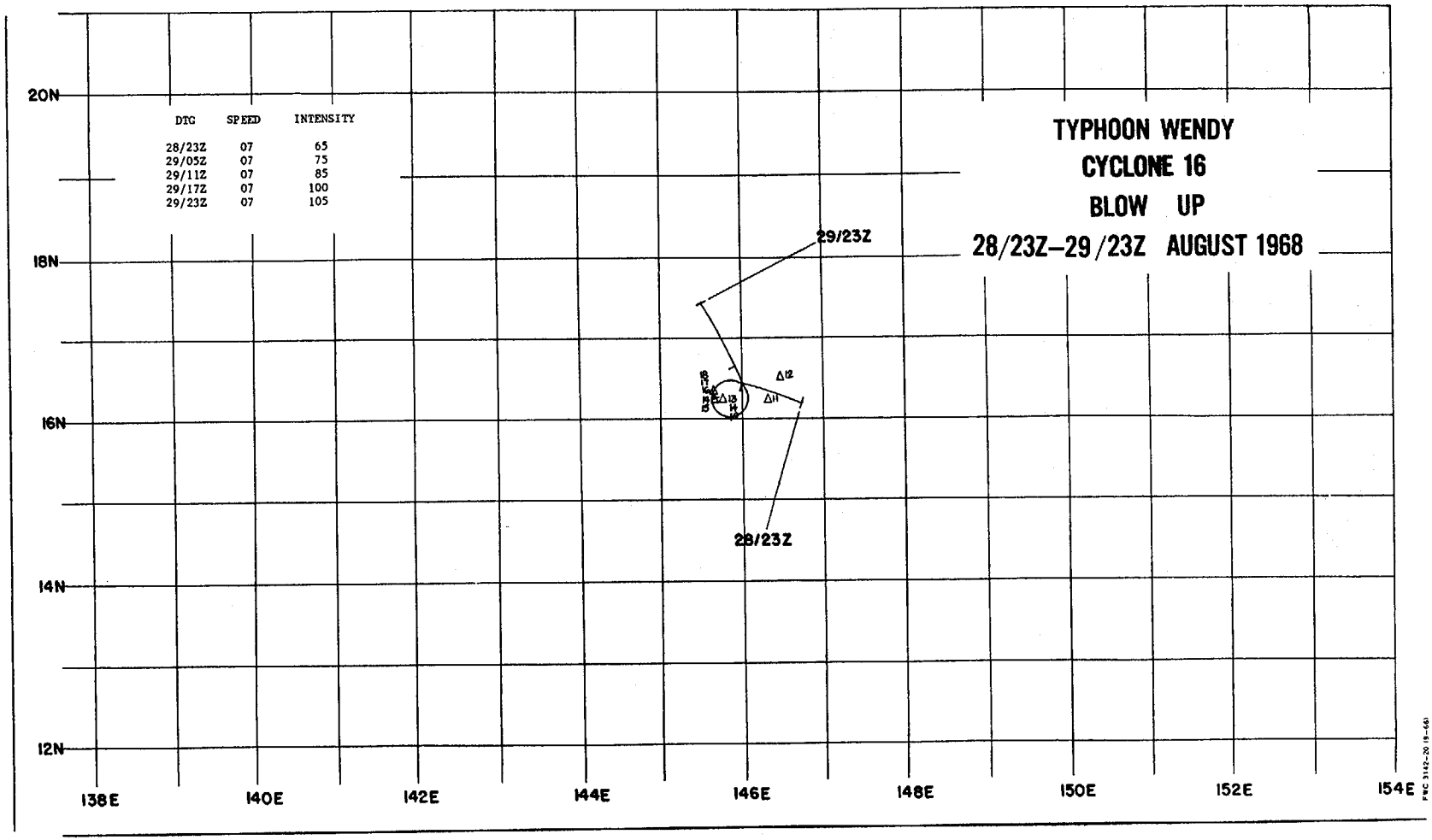
   C. 200MB FLOW ABOVE SURFACE VORTEX
      1. INITIAL - NORTH
      2. UPON REACHING TYPHOON INTENSITY - EAST

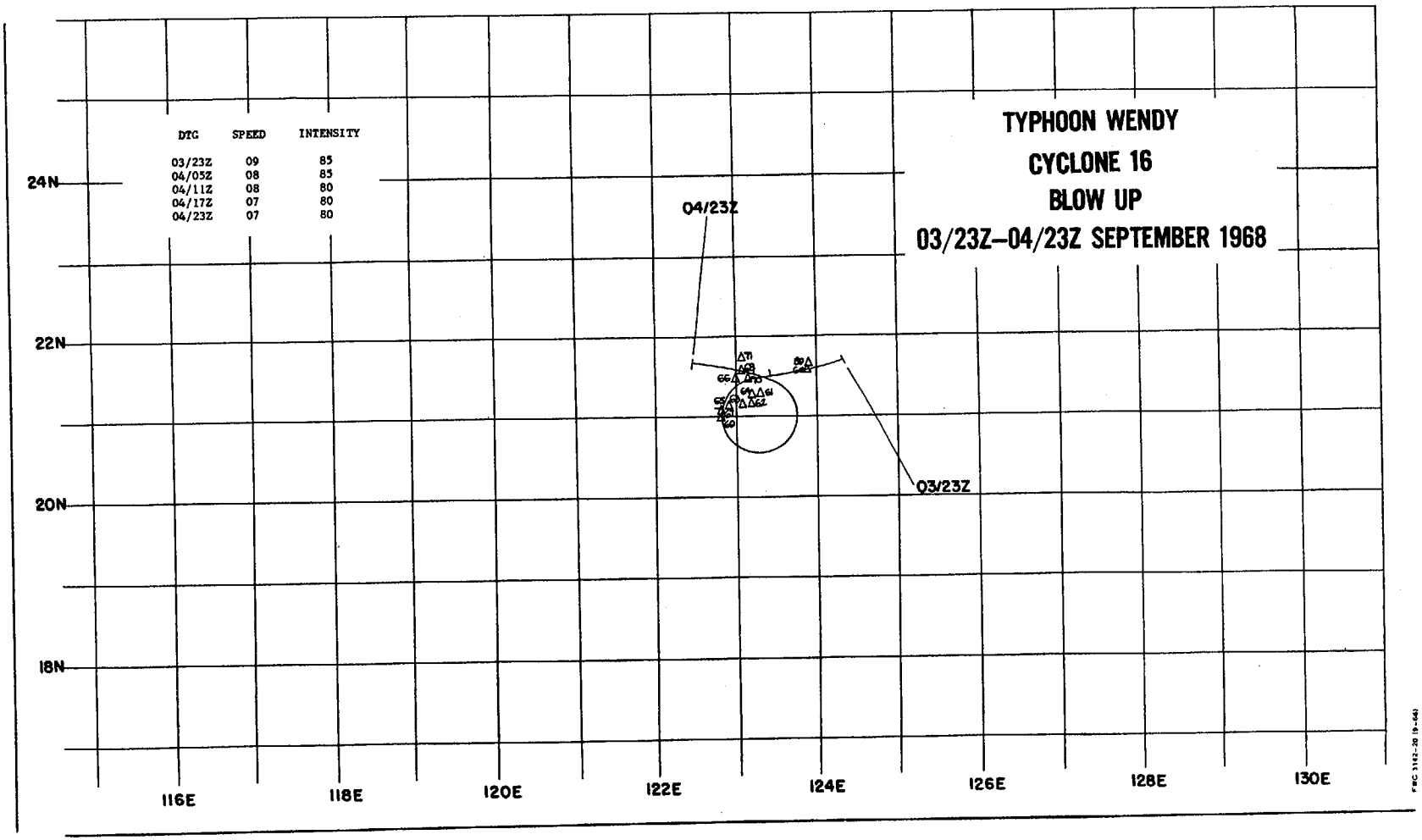
III. FINAL DISPOSITION - DISSIPATED OVER LAND


BEST TRACK
TYPHOON WENDY
CYCLONE 16
27 AUGUST – 09 SEPTEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIGON
GUAM
SAIPAN
WOLEAI ATOL
PONAPE
FUMATAHACHI
09/11Z
08/23Z
07/23Z
06/23Z
05/23Z
04/23Z
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
29/23Z
28/23Z
27/23Z
28/00Z


WENDY
AUGUST 28


WENDY
AGNES
AUGUST 30


TYPHOON WENDY
CYCLONE 16
BLOW UP
28/23Z–29/23Z AUGUST 1968
DTG SPEED INTENSITY
28/23Z 07 65
29/05Z 07 75
29/11Z 07 85
29/17Z 07 100
29/23Z 07 105
29/23Z
28/23Z
20N
18N
16N
14N
12N
138E
140E
142E
144E
146E
148E
150E
152E
154E


TYPHOON WENDY
CYCLONE 16
BLOW UP
03/23Z–04/23Z SEPTEMBER 1968
DTG SPEED INTENSITY
03/23Z 09 85
04/05Z 08 85
04/11Z 08 80
04/17Z 07 80
04/23Z 07 80
04/23Z
03/23Z
24N
22N
20N
18N
116E
118E
120E
122E
124E
126E
128E
130E

EYE FIXES CYCLONE 16

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	272100Z	15.8N 149.8E	54-P-03-02	0460M	030	030	994	---	24/23	----			--
2	280248Z	16.3N 149.3E	54-P-04-02	700MB	045	065	993	3024	12/10	----			--
3	280558Z	16.0N 148.0E	SLTLS	STG X	DIA 02	BNDS 2							
4	280745Z	16.1N 148.5E	VW-R----10		---	---	---	---	--/--	----			--
5	280822Z	16.0N 148.2E	VW-P-10-03	0450M	---	035	984	---	24/24	CIRC	----	10	--
6	281445Z	16.1N 147.7E	VW-P-01-03	700MB	---	---	978	2902	11/10	CIRC	----	15	--
7	282049Z	16.1N 146.8E	54-P-10-03	700MB	070	070	974	2819	16/06	CIRC	----	30	--
8	282145Z	16.1N 146.5E	LND RDR		---	---	---	---	--/--	----			--
9	282330Z	16.1N 146.5E	LND RDR		---	---	---	---	--/--	----			--
10	282330Z	16.1N 146.6E	LND RDR		---	---	---	---	--/--	----			--
11	290200Z	16.2N 146.3E	54-P-01-05	700MB	055	065	967	2801	15/10	CIRC	----	15	--
12	290635Z	16.5N 145.5E	SLTLS	STG X	DIA 04	BNDS 4							
13	290815Z	16.3N 145.8E	VW-R----03		---	---	---	---	--/--	----			--
14	290858Z	16.3N 145.8E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	15	--
15	291015Z	16.3N 145.7E	LND RDR		---	---	---	---	--/--	----			--
16	291250Z	16.4N 145.7E	VW-R----03		---	---	---	---	--/--	----			--
17	291305Z	16.4N 145.7E	VW-R------		---	---	---	---	--/--	----			--
18	291410Z	16.4N 145.7E	VW-P-01-02	700MB	---	---	960	2732	17/12	CIRC	----	17	--
19	292100Z	17.3N 145.8E	54-P-02-01	700MB	---	080	926	2448	20/16	CIRC	----	10	--
20	300310Z	17.6N 145.2E	54-P-05-05	700MB	115	110	926	2453	20/12	CIRC	----	15	--
21	300712Z	18.0N 145.0E	SLTLS	STG -	DIA 05	BNDS 4							
22	300803Z	18.6N 144.7E	VW-R----15		---	---	---	---	--/--	----			--
23	300840Z	17.8N 144.7E	VW-R-05-05		---	110	---	---	--/--	ELIP	N-S	20X15	06
24	301400Z	18.6N 144.2E	VW-R-03-01		---	---	---	---	--/--	CIRC	----	20	06

EYE FIXES CYCLONE 16

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	302100Z	19.2N 143.7E	54-P-03-02	700MB	085	130	917	2356	25/18	CIRC	----	20	--
26	310210Z	19.5N 143.1E	54-P-05-02	700MB	108	130	919	2384	25/15	CIRC	----	20	--
27	310555Z	20.0N 142.5E	SLTLS	STG X	DIA 04	BNDS 4							
28	310745Z	20.3N 142.3E	VW-R----05		---	---	---	---	--/--	----			--
29	310910Z	19.7N 142.3E	VW-P-01-04	700MB	---	080	927	2433	20/13	ELIP	NE-SW	23X12	--
30	311410Z	20.8N 141.2E	VW-P-05-03	700MB	---	---	934	2497	18/13	CIRC	----	12	--
31	312103Z	21.1N 139.9E	54-P-05-05	700MB	112	085	934	2539	18/12	CIRC	----	15	--
32	010300Z	21.4N 138.5E	54-P-03-05	700MB	100	110	939	2570	17/13	CIRC	----	30	--
33	010631Z	22.0N 137.5E	SLTLS	STG X	DIA 05	BNDS 4							
34	010925Z	21.7N 137.3E	VW-P-03-05	0450M	---	100	941	2601	27/24	CIRC	----	26	--
35	011410Z	22.0N 136.2E	VW-P-01-05	700MB	---	---	938	2595	20/14	CIRC	----	30	--
36	012101Z	22.4N 134.7E	54-P-03-05	700MB	105	080	939	2566	16/14	CIRC	----	30	--
37	012350Z	22.3N 134.1E	54-P-05-05	700MB	078	055	943	2588	17/14	CIRC	----	30	--
38	020234Z	22.7N 133.3E	54-P-05-05	700MB	090	080	935	2530	18/14	CIRC	----	30	--
39	020712Z	23.0N 132.0E	SLTLS	STG X	DIA 05	BNDS 4							
40	020825Z	23.1N 132.1E	VW-R----05		---	---	---	---	--/--	----			--
41	020920Z	22.8N 131.6E	VW-P-10-05	700MB	---	110	941	2571	20/--	CIRC	----	40	--
42	021205Z	23.0N 130.8E	VW-P-05-05	700MB	---	---	---	2571	20/12	ELIP	NE-SW	25X23	--
43	021403Z	23.0N 130.3E	VW-P-02-05	700MB	---	---	944	2610	18/12	CIRC	----	30	--
44	022059Z	23.0N 128.7E	54-P-05-05	700MB	070	---	945	2612	18/12	CIRC	----	40	--
45	030015Z	22.8N 128.2E	54-P-05-03	700MB	075	065	945	2621	18/12	CIRC	----	40	--
46	030200Z	22.7N 127.8E	54-P-05-05	700MB	095	060	944	2615	18/11	CIRC	----	40	15
47	030745Z	22.5N 126.5E	SLTLS	STG X	DIA 05	BNDS 4							
48	030830Z	22.3N 126.2E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 16

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	030840Z	22.4N 126.5E	VW-P-02-01	0450M	---	110	945	---	27/23	CIRC	----	65	10
50	030930Z	22.3N 126.3E	LND RDR		---	---	---	---	--/--	----			--
51	031030Z	22.2N 126.1E	LND RDR		---	---	---	---	--/--	----			--
52	031130Z	22.2N 126.0E	LND RDR		---	---	---	---	--/--	----			--
53	031210Z	22.1N 125.9E	VW-P-02-02	700MB	055	---	950	2630	18/11	CIRC	----	65	10
54	031230Z	22.2N 125.8E	LND RDR		---	---	---	---	--/--	----			--
55	031330Z	22.1N 125.7E	LND RDR		---	---	---	---	--/--	----			--
56	031430Z	22.1N 125.5E	LND RDR		---	---	---	---	--/--	----			--
57	031430Z	22.1N 125.4E	VW-P-02-05	700MB	---	---	951	2656	19/--	CIRC	----	65	10
58	032109Z	21.8N 124.4E	54-P-03-05	700MB	085	---	944	2624	18/14	CIRC	----	60	--
59	040000Z	21.7N 123.9E	LND RDR		---	---	---	---	--/--	----			--
60	040205Z	21.6N 123.9E	54-P-03-05	700MB	078	045	946	2658	18/13	CIRC	----	50	--
61	040330Z	21.3N 123.3E	LND RDR		---	---	---	---	--/--	----			--
62	040430Z	21.2N 123.2E	LND RDR		---	---	---	---	--/--	----			--
63	040530Z	21.2N 123.1E	LND RDR		---	---	---	---	--/--	----			--
64	040630Z	21.3N 123.2E	LND RDR		---	---	---	---	--/--	----			--
65	040740Z	21.2N 122.9E	LND RDR		---	---	---	---	--/--	----			--
66	040822Z	21.5N 123.0E	SLTLS	STG X	DIA 05	BNDS 3							
67	040830Z	21.1N 122.8E	LND RDR		---	---	---	---	--/--	----			--
68	040903Z	21.6N 123.1E	VW-P-05-05	0450M	---	110	950	---	26/23	ELIP	NW-SE	60X28	--
69	040930Z	21.0N 122.8E	LND RDR		---	---	---	---	--/--	----			--
70	041145Z	21.5N 123.2E	VW-P-02-05	700MB	---	---	---	2702	18/--	ELIP	NW-SE	70X25	--
71	041412Z	21.7N 123.1E	VW-R-02-05	700MB	---	---	---	2738	19/--	CIRC	----	50	--
72	041930Z	21.5N 122.5E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 16

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	042130Z	21.4N 121.7E	54-P-04-05	500MB	065	---	972	---	00/52	CIRC	----	40	--
74	050030Z	21.5N 121.7E	LND RDR		---	---	---	---	--/--	----			--
75	050130Z	21.5N 121.8E	LND RDR		---	---	---	---	--/--	----			--
76	050205Z	21.6N 122.0E	54-P-01-01	500MB	070	045	966	2804	03/00	CIRC	----	40	--
77	050530Z	21.4N 121.4E	LND RDR		---	---	---	---	--/--	----			--
78	050600Z	21.6N 121.3E	LND RDR		---	---	---	---	--/--	----			--
79	050859Z	22.0N 122.0E	SLTLS	STG X	DIA 04	BNDS 3							
80	050905Z	21.7N 121.6E	VW-R-02-10		---	---	---	---	--/--	CIRC	----	50	--
81	051000Z	21.8N 121.7E	LND RDR		---	---	---	---	--/--	----			--
82	051130Z	21.8N 121.7E	LND RDR		---	---	---	---	--/--	----			--
83	051210Z	21.9N 121.4E	VW-P-02-02	700MB	---	---	970	2854	17/13	CIRC	----	50	--
84	051400Z	22.0N 121.5E	VW-P-02-02	700MB	---	---	---	2860	19/13	CIRC	----	50	--
85	051800Z	21.8N 121.0E	LND RDR		---	---	---	---	--/--	----			--
86	052115Z	21.7N 120.7E	54-P-02-10	500MB	042	---	941	2788	04/00	----			--
87	052350Z	21.7N 120.6E	LND RDR		---	---	---	---	--/--	----			--
88	060222Z	21.8N 120.4E	54-P-02-03	500MB	060	060	972	2870	06/00	ELIP	NW-SE	12X07	--
89	060400Z	21.8N 120.2E	LND RDR		---	---	---	---	--/--	----			--
90	060653Z	22.0N 120.0E	SLTLS	STG X	DIA 03	BNDS 2							
91	060700Z	21.9N 120.2E	LND RDR		---	---	---	---	--/--	----			--
92	060800Z	21.8N 120.0E	LND RDR		---	---	---	---	--/--	----			--
93	060900Z	22.0N 120.0E	LND RDR		---	---	---	---	--/--	----			--
94	060928Z	22.0N 120.2E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	30	--
95	060950Z	21.9N 120.1E	VW-P------		---	085	980	---	--/--	----			--
96	061100Z	22.0N 119.7E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 16

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
97	061200Z	22.0N 120.0E	LND RDR		---	---	---	---	--/--	----			--
98	061215Z	22.1N 119.8E	VW-R-05-15		---	---	---	---	--/--	CIRC	----	30	--
99	061400Z	22.0N 120.0E	LND RDR		---	---	---	---	--/--	----			--
100	061400Z	22.1N 119.6E	VW-R----10		---	---	---	---	--/--	CIRC	----	30	--
101	061800Z	21.6N 119.1E	LND RDR		---	---	---	---	--/--	----			--
102	062130Z	21.9N 119.9E	54-P-01-15	500MB	055	---	950	2260	01/53	CIRC	----	30	10
103	070255Z	22.0N 118.5E	54-P-01-03	500MB	065	075	958	---	01/52	CIRC	----	30	--
104	070557Z	22.0N 117.5E	SLTLS	STG C	DIA --	BNDS -							
105	070928Z	22.3N 117.7E	VW-R-10-10		---	---	---	---	--/--	CIRC	----	30	--
106	071200Z	21.8N 117.0E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	30	10
107	071408Z	22.0N 116.5E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	30	--
108	072130Z	21.3N 114.9E	54-P-03-05	700MB	055	---	983	2929	15/12	CIRC	----	15	10
109	080240Z	21.1N 114.0E	54-R-03-10		055	025	---	---	--/--	CIRC	----	15	--
110	080652Z	21.0N 112.5E	SLTLS	STG X	DIA 02	BNDS 2							
111	080905Z	21.3N 112.5E	VW-R-02-05	0490M	010	---	---	---	--/--	CIRC	----	20	--
112	081205Z	21.1N 111.5E	VW-R-05-05	0450M	---	---	---	---	--/--	CIRC	----	14	--
113	081425Z	21.0N 110.6E	VW-R-05-05	0450M	---	---	---	---	--/--	CIRC	----	15	--
114	081500Z	21.0N 110.6E	VW-R----10		---	---	---	---	--/--	----			--
115	081630Z	21.0N 110.2E	VW-R------		---	---	---	---	--/--	----			--
116	081710Z	20.9N 110.2E	VW-R------		---	---	---	---	--/--	----			--
117	081912Z	21.3N 109.3E	SHIP RDR		---	---	---	---	--/--	----			--
118	082100Z	20.9N 109.0E	VW-R----10		---	---	---	---	--/--	CIRC	----	25	--
119	082300Z	20.8N 108.6E	VW-R----10		---	---	---	---	--/--	CIRC	----	18	--
120	090100Z	20.9N 107.8E	SHIP RDR		---	---	---	---	--/--	----			--

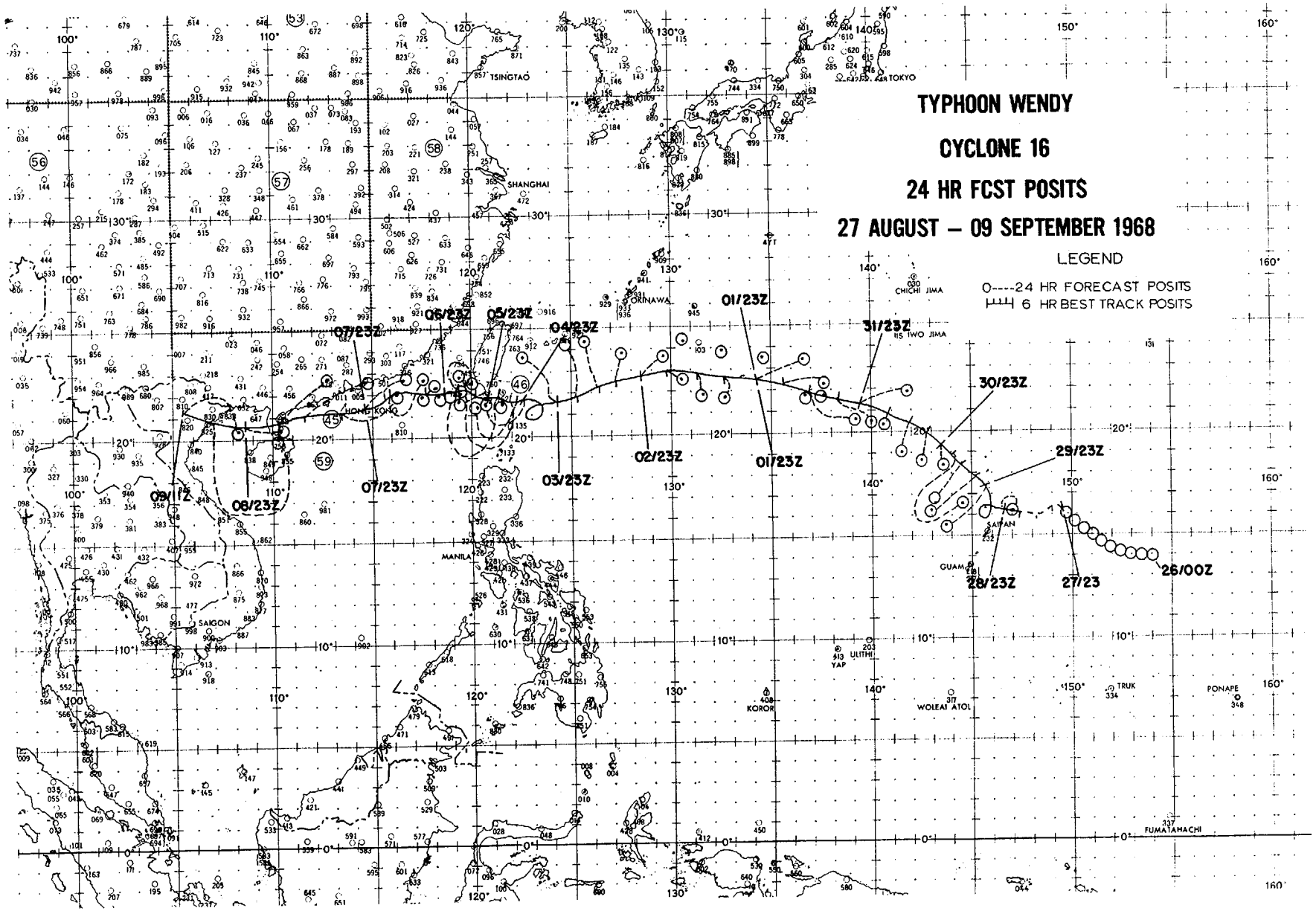
TROPICAL CYCLONE 16 -- 08/27/2300Z TO 09/09/1100Z
POSITION AND FORECAST VERIFICATION DATA

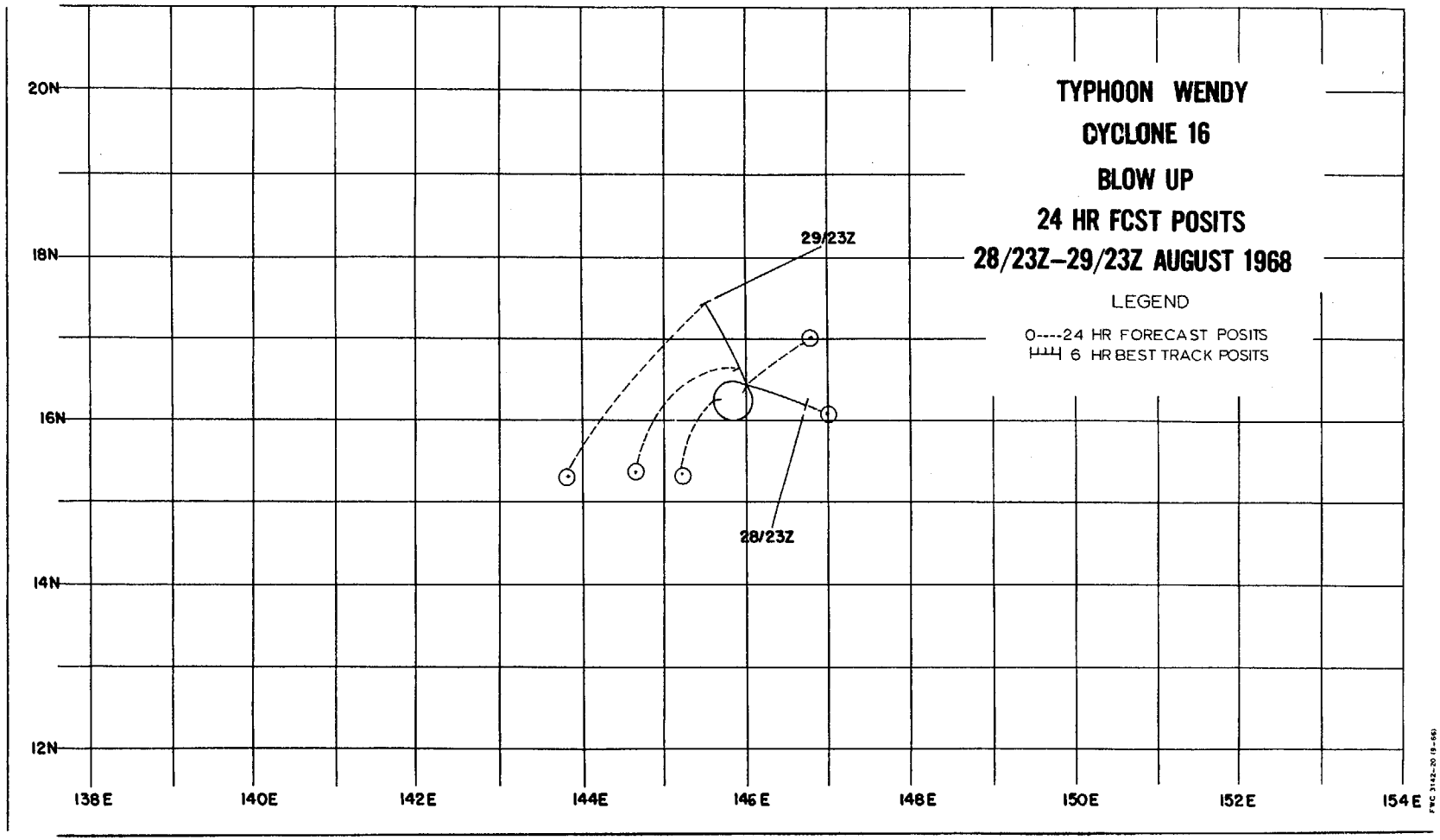
DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
280500Z	16.3N	149.0E	--------	--------	--------
281100Z	16.0N	148.2E	--------	--------	--------
281700Z	16.1N	147.4E	--------	--------	--------
282300Z	16.2N	146.7E	116-0012	--------	--------
290500Z	16.4N	146.0E	050-0054	--------	--------
291100Z	16.3N	145.6E	197-0060	--------	--------
291700Z	16.7N	145.9E	221-0108	--------	--------
292300Z	17.4N	145.5E	218-0156	232-0162	--------
300500Z	17.9N	145.0E	227-0156	222-0132	--------
301100Z	18.4N	144.5E	216-0132	220-0264	--------
301700Z	18.9N	144.0E	168-0150	218-0276	--------
302300Z	19.4N	143.5E	170-0072	216-0288	--------
310500Z	20.0N	142.8E	185-0078	228-0258	229-0318
311100Z	20.5N	141.9E	188-0090	218-0204	--------
311700Z	20.9N	140.7E	180-0042	169-0234	217-0348
312300Z	21.2N	139.4E	074-0144	136-0126	--------
010500Z	21.5N	138.2E	122-0108	134-0114	217-0198
011100Z	21.9N	136.9E	123-0150	122-0096	--------
011700Z	22.2N	135.5E	092-0126	097-0096	142-0282
012300Z	22.5N	134.2E	071-0144	070-0336	--------
020500Z	22.8N	132.7E	174-0060	096-0276	093-0222
021100Z	22.9N	131.2E	163-0060	097-0312	--------
021700Z	23.0N	129.7E	129-0042	080-0336	066-0342
022300Z	22.8N	128.4E	062-0072	066-0372	--------
030500Z	22.6N	127.2E	009-0078	104-0090	077-0486
031100Z	22.3N	126.2E	348-0114	086-0084	--------
031700Z	21.9N	125.2E	353-0150	043-0102	064-0558
032300Z	21.7N	124.3E	323-0150	035-0180	--------
040500Z	21.5N	123.4E	067-0090	008-0186	052-0144
041100Z	21.1N	122.8E	360-0066	341-0222	--------
041700Z	21.5N	123.2E	285-0084	322-0234	007-0156
042300Z	21.7N	122.4E	259-0090	315-0288	--------
050500Z	21.6N	121.8E	255-0084	344-0084	331-0198
051100Z	21.9N	121.4E	273-0102	316-0126	--------

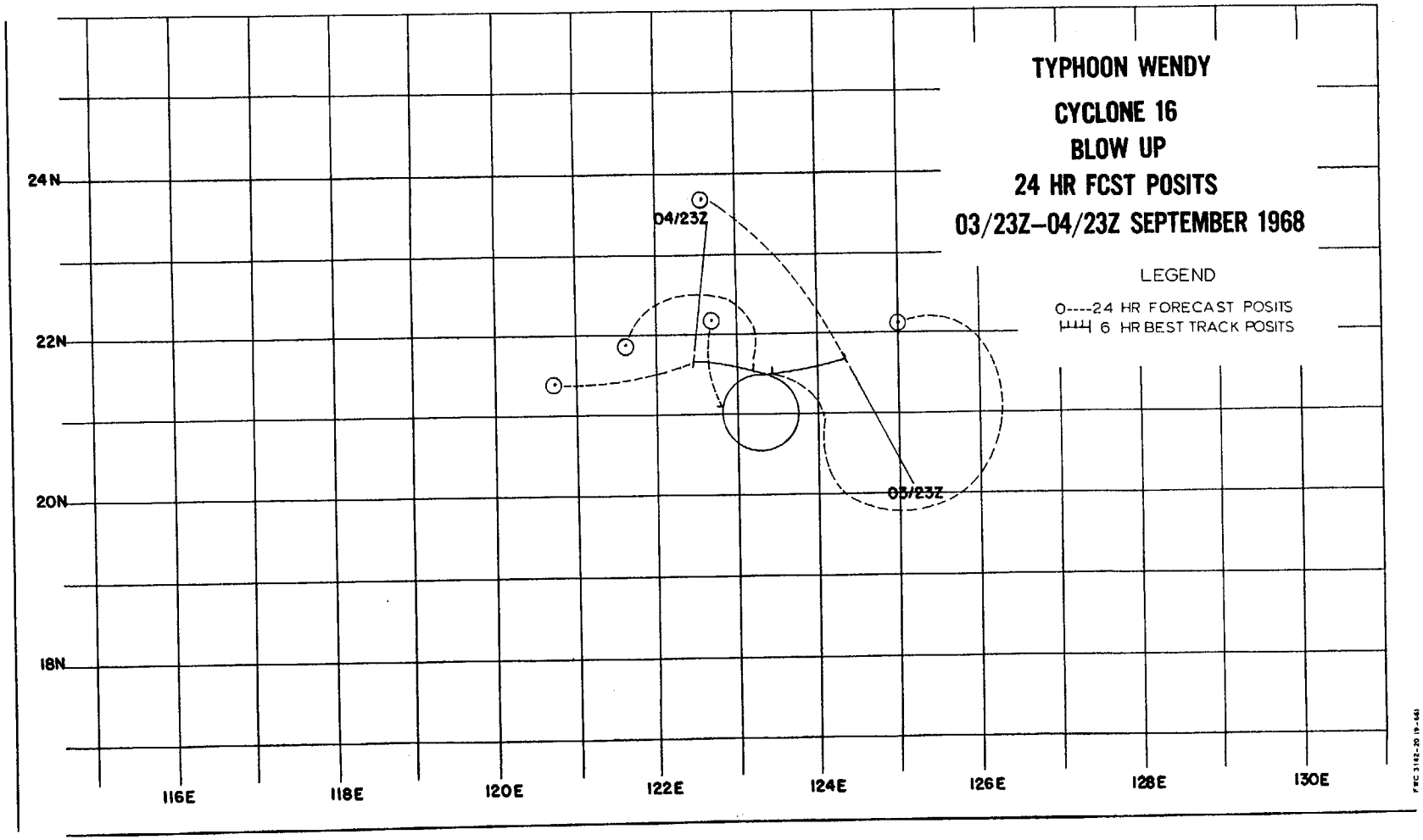
TROPICAL CYCLONE 16 -- 08/27/2300Z TO 09/09/1100Z
POSITION AND FORECAST VERIFICATION DATA (CONT)

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
051700Z	21.8N	121.3E	276-0108	282-0156	300-0270
052300Z	21.7N	120.7E	266-0072	283-0174	--------
060500Z	21.9N	120.2E	108-0072	283-0150	316-0174
061100Z	22.1N	119.7E	344-0042	300-0234	--------
061700Z	22.1N	119.2E	075-0042	287-0174	285-0222
062300Z	22.0N	118.5E	090-0018	260-0066	--------
070500Z	22.0N	117.8E	076-0024	104-0096	319-0204
071100Z	22.0N	116.9E	050-0054	015-0096	--------
071700Z	21.7N	115.8E	038-0066	062-0132	--------
072300Z	21.2N	114.6E	076-0162	041-0114	--------
080500Z	21.2N	113.3E	074-0168	052-0150	083-0234
081100Z	21.2N	111.7E	066-0180	058-0198	--------
081700Z	20.9N	110.2E	053-0186	056-0222	067-0354
082300Z	20.8N	108.6E	108-0090	080-0408	--------
090500Z	20.9N	107.0E	106-0186	081-0390	066-0372

AVERAGE 24 HOUR ERROR - 0097 MI.
AVERAGE 48 HOUR ERROR - 0196 MI.
AVERAGE 72 HOUR ERROR - 0282 MI.


TYPHOON WENDY
CYCLONE 16
24 HR FCST POSITS
27 AUGUST – 09 SEPTEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IS TWO JIMA
HONG KONG
MANILA
SAIGON
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
FUMATAHACHI
06/23Z
05/23Z
07/23Z
04/23Z
01/23Z
31/23Z
30/23Z
29/23Z
02/23Z
01/23Z
03/23Z
07/23Z
09/11Z
08/23Z
28/23Z
27/23
26/00Z


TYPHOON WENDY
CYCLONE 16
BLOW UP
24 HR FCST POSITS
28/23Z–29/23Z AUGUST 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
29/23Z
28/23Z
20N
18N
16N
14N
12N
138E
140E
142E
144E
146E
148E
150E
152E
154E


TYPHOON WENDY
CYCLONE 16
BLOW UP
24 HR FCST POSITS
03/23Z–04/23Z SEPTEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
04/23Z
03/23Z
24N
22N
20N
18N
116E
118E
120E
122E
124E
126E
128E
130E

TROPICAL CYCLONE 17 - 08/28/0500Z TO 09/09/1100Z
(AGNES)

I. DATA
   A. STATISTICS
      1. NUMBER OF WARNINGS ISSUED - 50
      2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 35
      3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 3258 MI

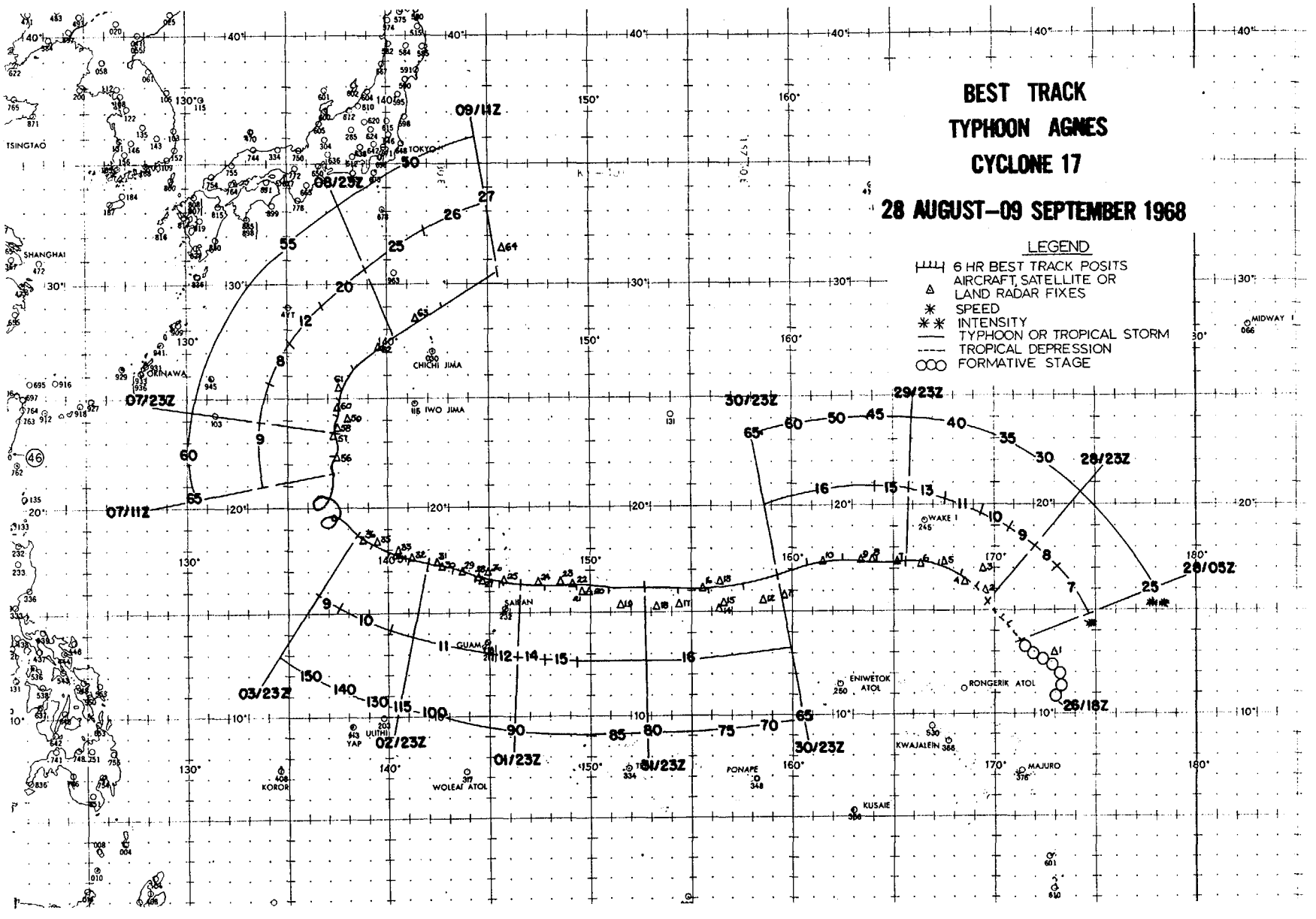
   B. CHARACTERISTICS AS A TYPHOON
      1. MINIMUM OBSERVED SLP - 904MBS AT 032050Z
      2. MINIMUM OBSERVED 700MB HEIGHT - 2240M. AT 032050Z
      3. MAXIMUM SURFACE WIND - 150 KTS (FROM BEST TRACK)
      4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 540 MI

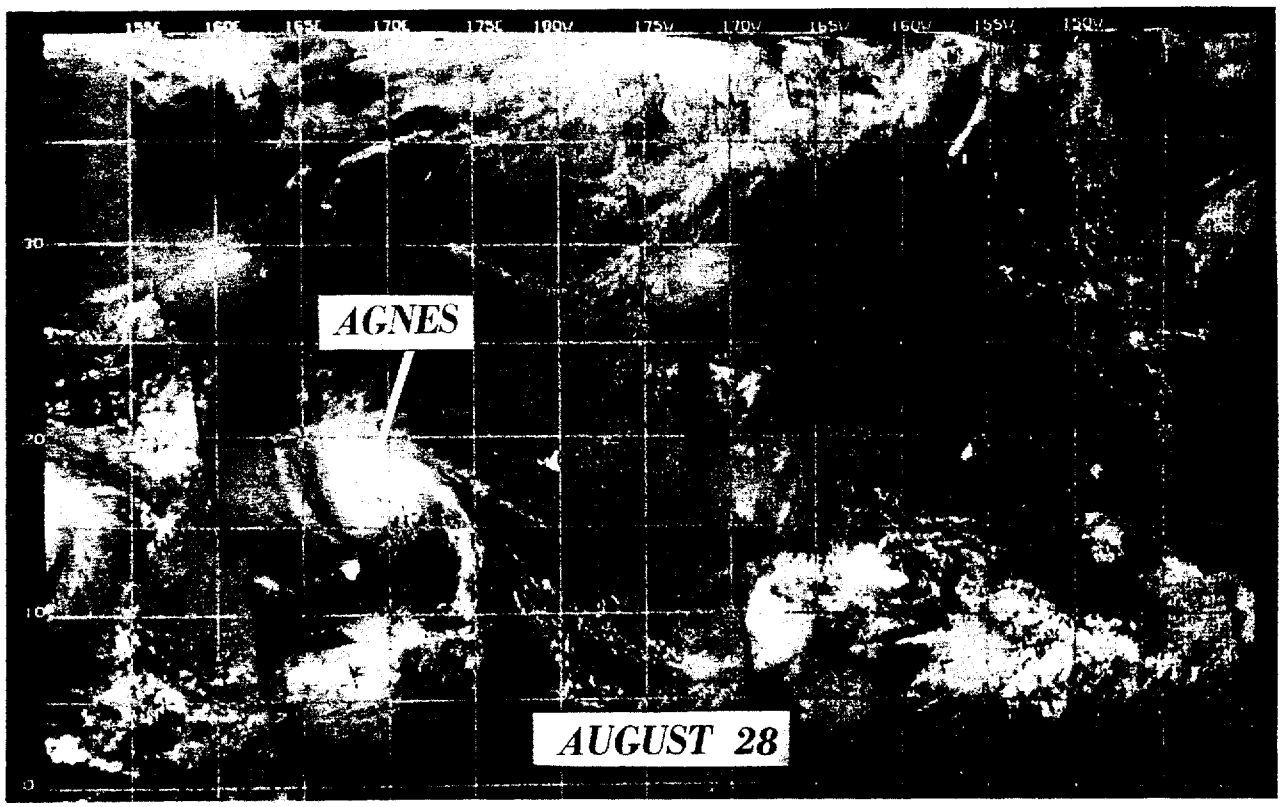
II. DEVELOPMENT
   A. INITIAL IMPETUS - FRACTURE OF A POLAR TROUGH AND AN EASTERLY WAVE

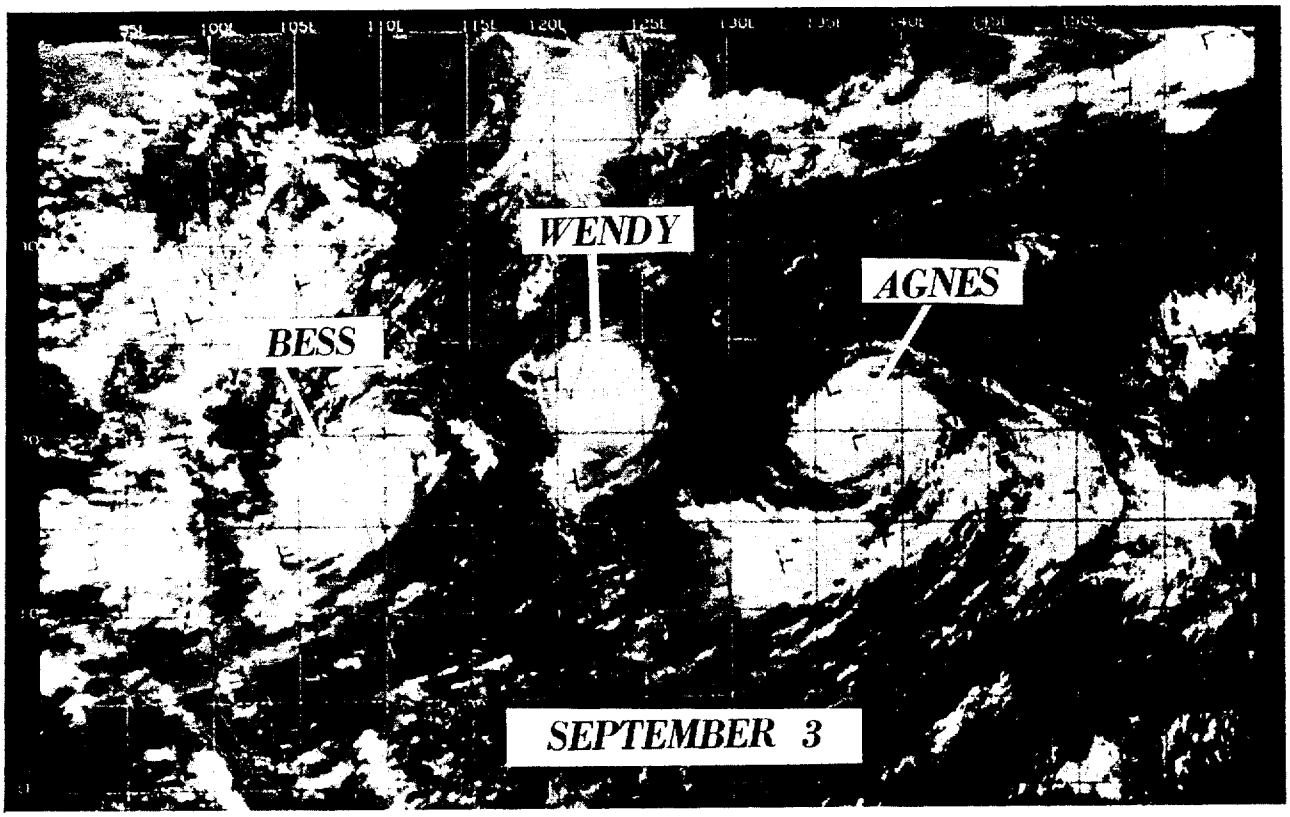
   B. INITIAL SURFACE VORTEX
      1. INDUCED VORTEX AT 261800Z
      2. SURFACE PRESSURE LESS THAN 1010MB

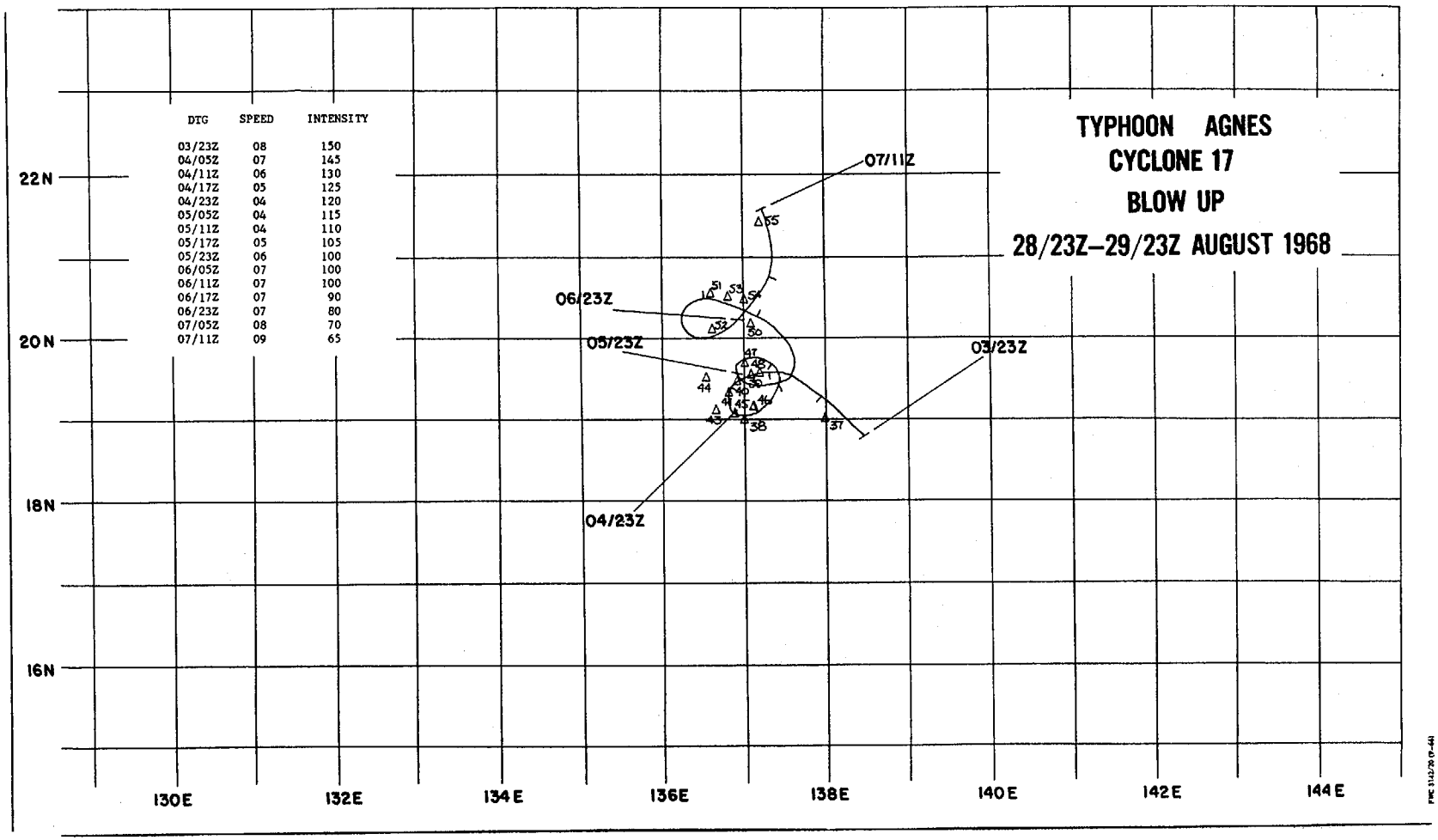
   C. 200MB FLOW ABOVE SURFACE VORTEX
      1. INITIAL - VARIABLE
      2. UPON REACHING TYPHOON INTENSITY - NORTHEAST

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON AGNES
CYCLONE 17
28 AUGUST–09 SEPTEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
09/14Z
06/23Z
07/23Z
07/11Z
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
29/23Z
28/23Z
28/05Z
26/18Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
PONAPE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
WAKE I
MIDWAY I


AGNES
AUGUST 28


WENDY
AGNES
BESS
SEPTEMBER 3



DTG	SPEED	INTENSITY
03/23Z	08	150
04/05Z	07	145
04/11Z	06	130
04/17Z	05	125
04/23Z	04	120
05/05Z	04	115
05/11Z	04	110
05/17Z	05	105
05/23Z	06	100
06/05Z	07	100
06/11Z	07	100
06/17Z	07	90
06/23Z	07	80
07/05Z	08	70
07/11Z	09	65

EYE FIXES CYCLONE 17

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	280405Z	13.0N 173.0E	SLTLS	STG C	DIA -- BNDS -								
2	290314Z	16.0N 169.6E	54-P-04-05	0440M	022	025	998	---	24/24	----			--
3	290442Z	17.0N 169.5E	SLTLS	STG X	DIA 02 BNDS 3								
4	290900Z	16.4N 168.5E	VW-P-03-02	0320M	025	---	999	---	24/23	CIRC	----	40	--
5	291415Z	17.3N 167.7E	VW-R-03-01		---	---	---	---	--/--	----			--
6	292037Z	17.1N 166.3E	54-P-03-05	0420M	060	075	995	---	26/24	----			--
7	300237Z	17.3N 165.1E	54-P-01-05	700MB	070	065	988	2981	12/10	ELIP	NW-SE	40X20	--
8	300518Z	17.5N 164.0E	SLTLS	STG X	DIA 02 BNDS 3								
9	300830Z	17.4N 163.4E	VW-P-12-05	700MB	050	040	992	2982	12/--	CIRC	----	25	--
10	301430Z	17.3N 161.6E	VW-P-10-05	700MB	---	---	987	2965	17/12	CIRC	----	25	--
11	302100Z	16.9N 159.8E	54-P-05-10	700MB	080	100	970	2856	16/09	CIRC	----	25	--
12	310200Z	16.7N 158.6E	54-P-10-05	700MB	075	100	967	2813	20/11	CIRC	----	25	--
13	310555Z	16.5N 156.5E	SLTLS	STG X	DIA 04 BNDS 3								
14	310800Z	16.1N 156.4E	VW-R-15---		---	---	---	---	--/--	----			--
15	310900Z	16.2N 156.6E	VW-R-03-10	0400M	055	065	---	---	--/--	CIRC	----	30	--
16	311200Z	16.1N 155.6E	VW-R-03-05		---	---	---	---	--/--	ELIP	NW-SE	40X35	--
17	311430Z	16.3N 154.4E	VW-R-05-10		---	---	---	---	--/--	ELIP	NW-SE	40X30	08
18	312044Z	16.1N 153.2E	54-P-05-05	700MB	165	120	949	2670	26/12	ELIP	NW-SE	40X30	10
19	010220Z	16.2N 151.5E	54-P-05-05	700MB	110	120	963	2798	24/14	ELIP	NW-SE	35X25	--
20	010631Z	16.0N 150.0E	SLTLS	STG X	DIA 05 BNDS 3								
21	010910Z	16.0N 149.7E	VW-P-05-03	700MB	100	---	963	2770	22/19	ELIP	NW-SE	35X25	15
22	011140Z	16.3N 149.1E	VW-R----03		---	---	---	---	--/--	----			--
23	011430Z	16.5N 148.6E	VW-R-03-05		---	---	---	---	--/--	ELIP	NW-SE	45X35	12
24	012100Z	16.3N 147.3E	54-P-07-05	700MB	110	070	965	2804	20/17	CIRC	----	35	--

EYE FIXES CYCLONE 17

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	020300Z	16.6N 145.8E	54-P-10-05	700MB	103	080	963	2780	18/15	CIRC	----	30	--
26	020708Z	17.0N 145.0E	SLTLS	STG X	DIA 03	BNDS 3							
27	020750Z	16.6N 144.8E	VW-R----15		---	---	---	---	--/--	----			--
28	020900Z	16.8N 144.5E	VW-R-05-05	0310M	045	050	---	---	--/--	ELIP	NW-SE	43X35	--
29	021405Z	17.0N 143.8E	VW-R-05-10	2970M	060	---	---	---	--/--	ELIP	NW-SE	40X30	--
30	022000Z	17.2N 142.8E	54-R------		---	---	---	---	--/--	----			--
31	022100Z	17.3N 142.4E	54-P-02-03	7000M	095	050	956	2728	17/10	CIRC	----	45	--
32	030247Z	17.8N 141.1E	54-P-02-03	7000M	120	110	950	2664	18/13	CONC		60-25	05
33	030745Z	18.0N 140.5E	SLTLS	STG X	DIA 03	BNDS 2							
34	030850Z	17.9N 140.4E	VW-P-03-03	700MB	120	---	940	2768	22/11	CIRC	----	22	12
35	031405Z	18.4N 139.4E	VW-P-03-03	700MB	---	---	918	2357	22/12	CIRC	----	21	06
36	032050Z	18.5N 138.9E	54-P-05-05	700MB	080	---	904	2240	26/16	CIRC	----	10	05
37	040315Z	19.0N 138.0E	54-P-05-05	700MB	170	120	906	2265	24/16	CIRC	----	15	05
38	040628Z	19.0N 137.0E	SLTLS	STG X	DIA 05	BNDS 3							
39	040900Z	19.5N 137.1E	VW-R-01-05		---	075	---	---	--/--	CONC		78-24	10
40	041200Z	19.4N 136.9E	VW-R-02-05	1330M	080	055	---	---	--/--	CONC		65-23	--
41	041430Z	19.3N 136.8E	VW-R-05-05		---	060	---	---	--/--	CONC		65-20	08
42	042053Z	19.3N 136.6E	54-P-03-05	700MB	082	---	925	2417	16/13	CIRC	----	20	05
43	050300Z	19.1N 136.6E	54-P-03-05	700MB	070	070	934	2515	16/12	CONC		45-20	--
44	050705Z	19.5N 136.5E	SLTLS	STG X	DIA 04	BNDS 3							
45	050925Z	19.1N 136.9E	VW-R-02-05	0450M	---	---	---	---	--/--	ELIP	N-S	25X15	--
46	051400Z	19.2N 137.1E	VW-P-04-02	700MB	060	---	935	2541	17/14	CIRC	----	19	F.B.
47	052040Z	19.7N 137.0E	54-P-07-05	700MB	065	---	940	2554	16/10	CIRC	----	20	--
48	060300Z	19.5N 137.2E	54-P-05-05	700MB	060	060	943	2582	15/11	CIRC	----	15	--

EYE FIXES CYCLONE 17

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	060458Z	19.5N 137.0E	SLTLS	STG X	DIA 04	BNDS 3							
50	060925Z	20.2N 137.1E	VW-R-02-10	0530M	---	---	---	---	--/--	CIRC	----	20	10
51	061420Z	20.5N 136.6E	VW-P-02-05	700MB	040	---	960	2716	13/11	----			--
52	062115Z	20.1N 136.6E	54-P-05-05	700MB	045	---	958	2704	14/12	CIRC	----	06	--
53	070320Z	20.6N 136.8E	54-P-03-03	700MB	065	060	964	2758	12/11	CIRC	----	15	--
54	070557Z	20.5N 137.0E	SLTLS	STG X	DIA 04	BNDS 2							
55	070928Z	21.4N 137.2E	VW-P-05-05	0460M	---	035	969	2848	24/24	CIRC	----	15	02
56	071400Z	22.2N 137.5E	VW-P-02-05	700MB	---	---	973	2866	15/14	CIRC	----	15	15
57	072110Z	23.2N 137.2E	54-P-05-10	700MB	017	030	---	2783	13/12	----			F.B.
58	080245Z	23.8N 137.5E	54-P-03-10	700MB	060	060	---	2862	12/10	----			--
59	080456Z	24.0N 138.0E	SLTLS	STG C	DIA --	BNDS -							
60	080920Z	24.7N 137.5E	VW-P-02-05	0400M	065	060	979	2923	24/20	----			--
61	081415Z	25.4N 137.5E	VW-P-02-06	700MB	050	---	980	2934	13/10	----			--
62	082100Z	27.1N 139.6E	54-P-05-05	700MB	045	045	976	2896	14/12	----			F.B.
63	090230Z	28.5N 141.4E	54-P-05-10	700MB	085	055	975	2871	15/14	----			F.B.
64	091148Z	31.6N 145.8E	VW-P-02-20	700MB	---	---	984	2938	13/13	----			F.B.

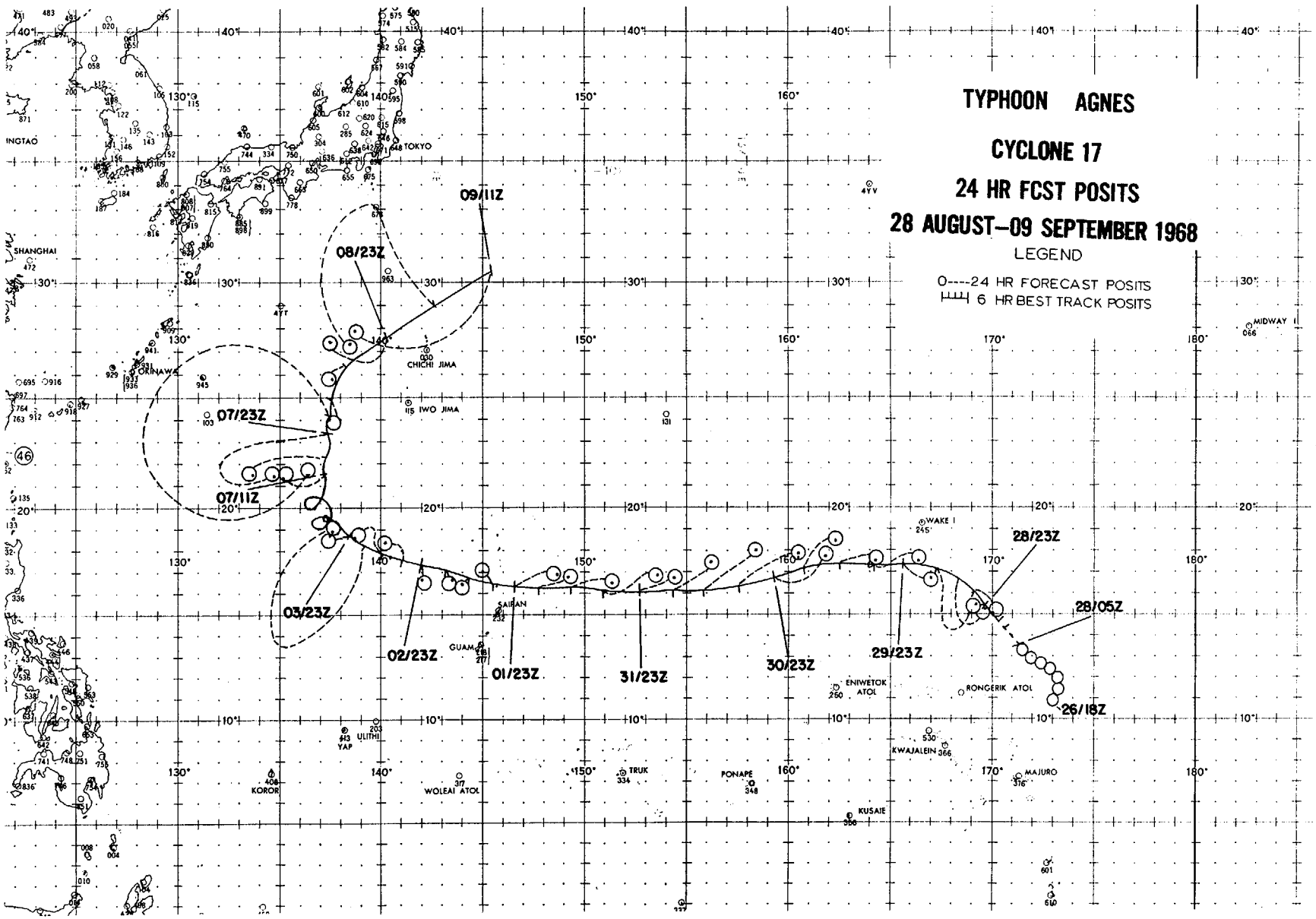
TROPICAL CYCLONE 17 -- 08/28/0500Z TO 09/09/1100Z
POSITION AND FORECAST VERIFICATION DATA

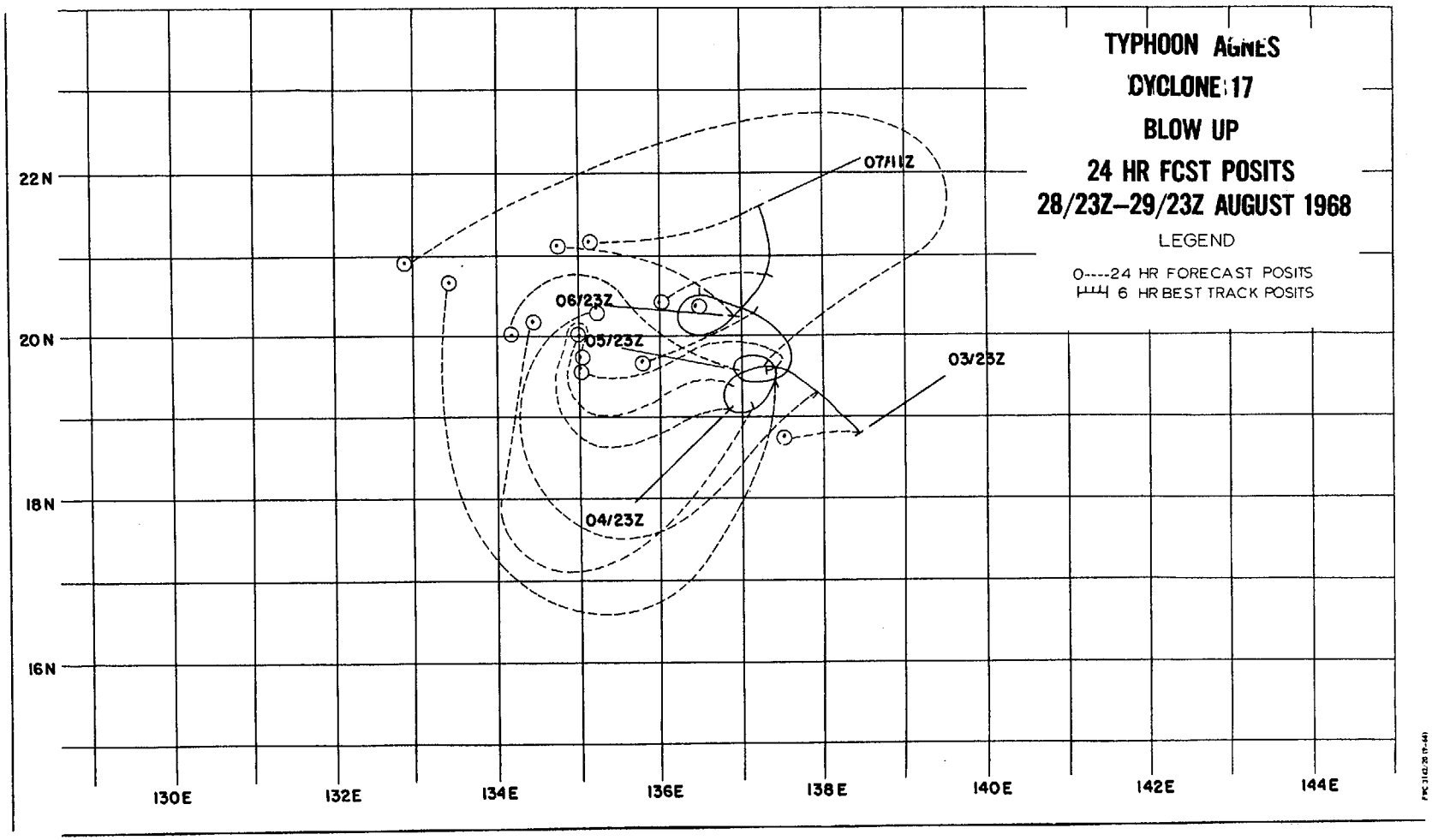
DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
291100Z	16.7N	168.3E	143-0120	--------	--------
291700Z	17.2N	167.2E	134-0156	--------	--------
292300Z	17.3N	165.7E	112-0078	--------	--------
300500Z	17.4N	164.2E	090-0120	--------	--------
301100Z	17.3N	162.5E	087-0096	--------	--------
301700Z	17.2N	160.8E	050-0108	--------	--------
302300Z	16.8N	159.2E	069-0156	--------	--------
310500Z	16.4N	157.5E	061-0180	--------	--------
311100Z	16.1N	155.9E	050-0174	--------	--------
311700Z	16.1N	154.2E	055-0132	--------	--------
312300Z	16.1N	152.6E	067-0102	071-0360	--------
010500Z	16.1N	150.9E	073-0156	070-0372	--------
011100Z	16.2N	149.2E	085-0120	067-0354	--------
011700Z	16.3N	147.8E	068-0078	068-0312	--------
012300Z	16.4N	146.5E	078-0132	078-0294	--------
020500Z	16.6N	145.4E	323-0030	086-0306	076-0516
021100Z	16.8N	144.2E	195-0024	089-0222	--------
021700Z	17.1N	143.1E	149-0030	075-0156	069-0408
022300Z	17.3N	142.0E	180-0030	083-0228	--------
030500Z	17.6N	141.0E	311-0060	000-0024	093-0420
031100Z	17.9N	140.0E	298-0084	165-0048	--------
031700Z	18.3N	139.1E	294-0084	163-0060	081-0264
032300Z	18.8N	138.4E	270-0048	180-0078	--------
040500Z	19.3N	137.9E	293-0162	284-0048	250-0048
041100Z	19.6N	137.3E	270-0126	274-0144	--------
041700Z	19.4N	136.8E	289-0108	285-0180	189-0084
042300Z	19.1N	136.8E	289-0108	282-0192	--------
050500Z	19.1N	137.2E	292-0168	294-0348	289-0246
051100Z	19.4N	137.4E	289-0234	282-0312	--------
051700Z	19.7N	137.3E	286-0252	284-0312	282-0414
052300Z	19.6N	136.9E	279-0150	282-0312	--------
060500Z	19.6N	137.6E	265-0060	282-0372	285-0528
061100Z	20.3N	137.2E	246-0084	276-0372	--------
061700Z	20.5N	136.5E	180-0012	284-0360	283-0420

TROPICAL CYCLONE 17 -- 08/28/0500Z TO 09/09/1100Z
POSITION AND FORECAST VERIFICATION DATA (CONT)

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
062300Z	20.3N	136.9E	291-0126	272-0270	--------
070500Z	20.8N	137.3E	252-0072	257-0150	272-0540
071100Z	21.6N	137.2E	259-0114	251-0192	--------
071700Z	22.4N	137.4E	255-0204	248-0168	270-0534
072300Z	23.4N	137.2E	228-0174	258-0312	--------
080500Z	24.1N	137.5E	203-0174	238-0264	234-0324
081100Z	24.9N	137.5E	187-0054	239-0306	--------
081700Z	26.2N	138.2E	237-0042	243-0498	237-0408
082300Z	27.7N	140.2E	264-0150	232-0540	--------
090500Z	29.0N	142.7E	245-0246	229-0606	241-0762
091100Z	30.8N	145.3E	244-0378	241-0564	--------

AVERAGE 24 HOUR ERROR - 0122 MI.
AVERAGE 48 HOUR ERROR - 0275 MI.
AVERAGE 72 HOUR ERROR - 0394 MI.


TYPHOON AGNES
CYCLONE 17
24 HR FCST POSITS
28 AUGUST–09 SEPTEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
09/11Z
08/23Z
07/23Z
07/11Z
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
29/23Z
28/23Z
28/05Z
26/18Z
TOKYO
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
WAKE I
MIDWAY I
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
PONAPE
TRUK
WOLEAI ATOL
KOROR
YAP
ULITHI


TYPHOON AGNES
CYCLONE 17
BLOW UP
24 HR FCST POSITS
28/23Z–29/23Z AUGUST 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
07/11Z
06/23Z
05/23Z
04/23Z
03/23Z
22N
20N
18N
16N
130E
132E
134E
136E
138E
140E
142E
144E

TROPICAL CYCLONE 19 - 08/31/0500Z TO 09/05/2300Z
(BESS)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 25
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 02
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 0744 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 965MBS AT 041514Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2816M. AT 042015Z
3. MAXIMUM SURFACE WIND - 065 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 420 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - MONSOONAL SURGE WITH SUBSEQUENT DEVELOPMENT OF 200MB DIVERGENCE

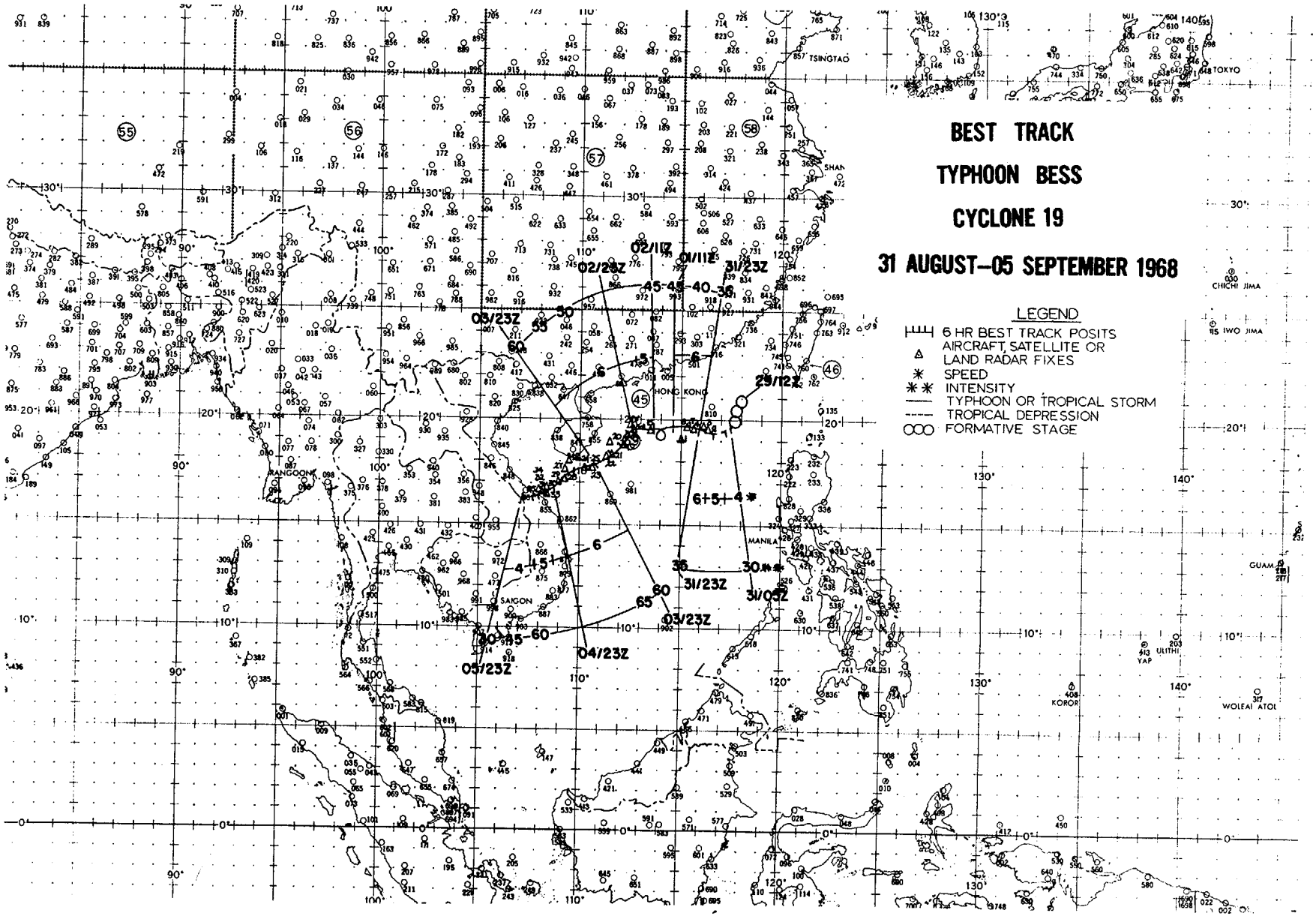
B. INITIAL SURFACE VORTEX

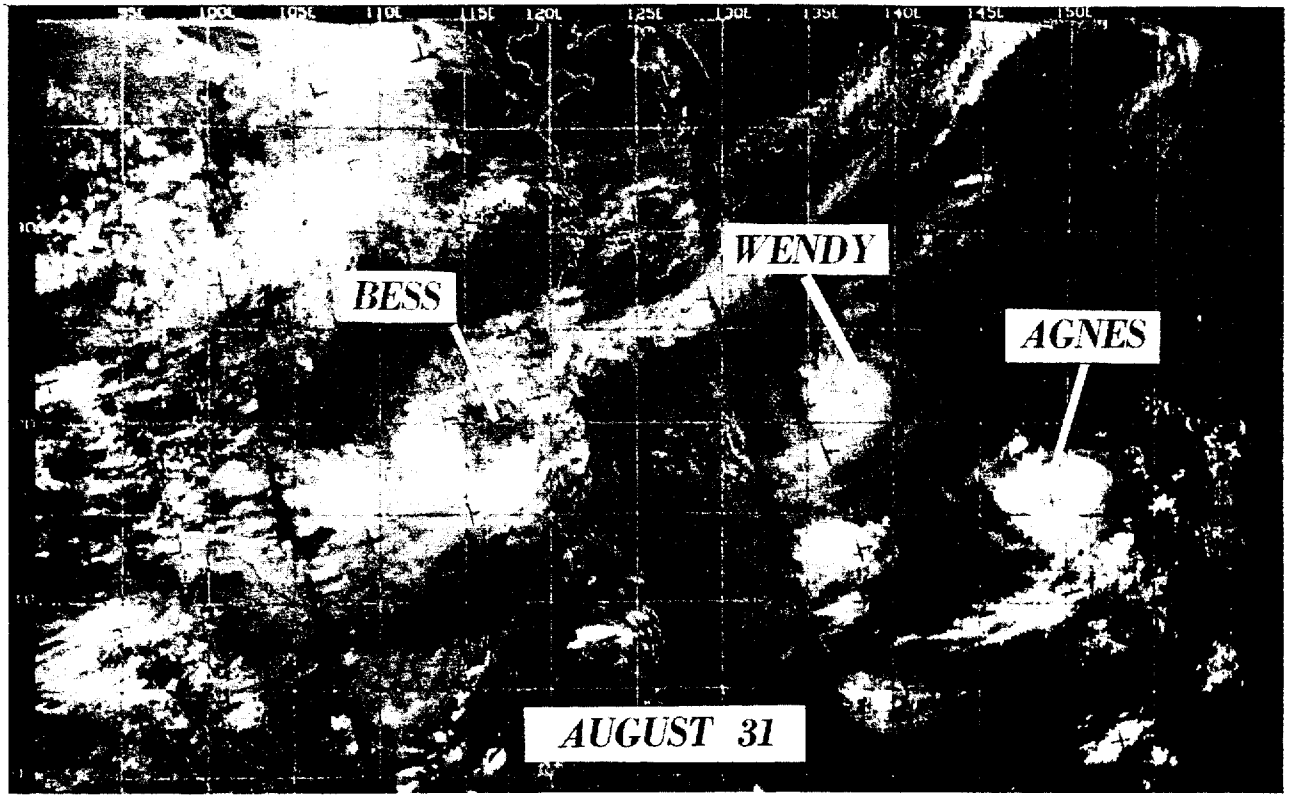
1. INDUCED VORTEX AT 291200Z
2. SURFACE PRESSURE LESS THAN 1002MB

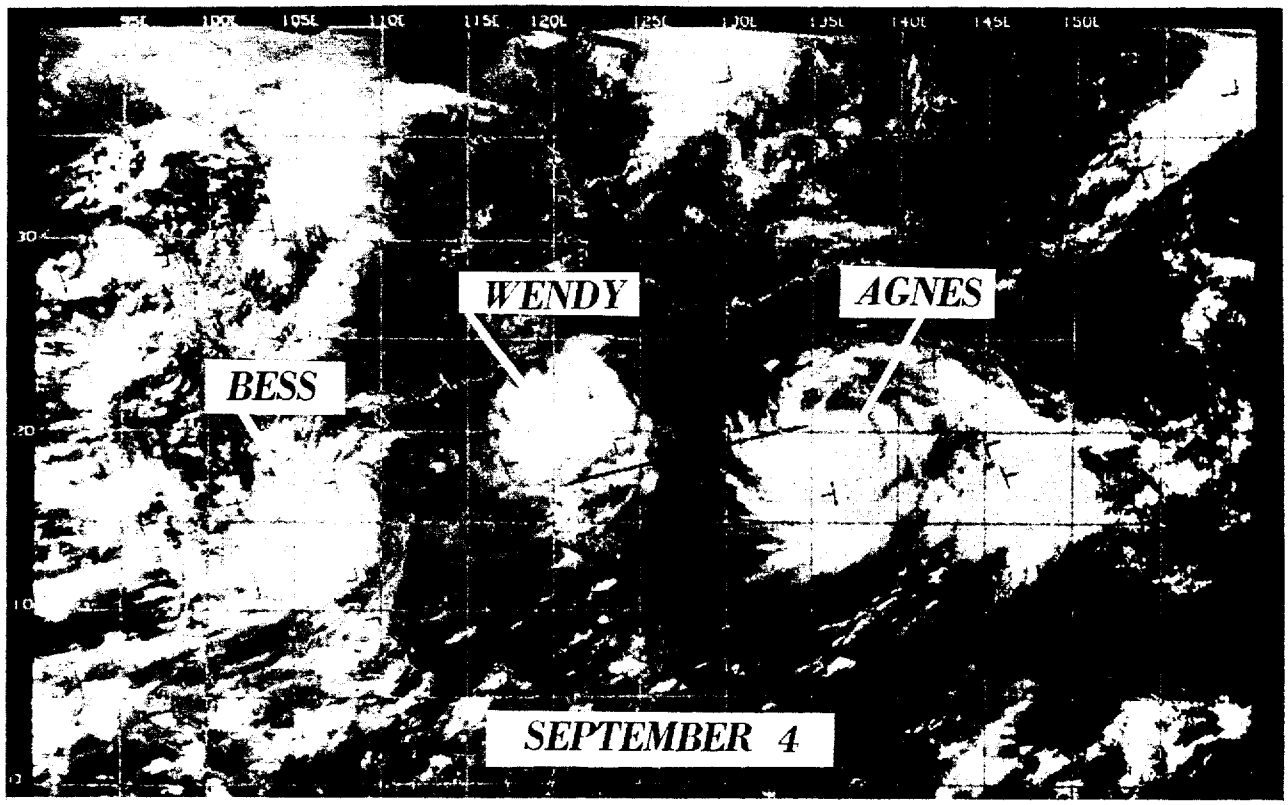
C. 200MB FLOW ABOVE SURFACE VORTEX

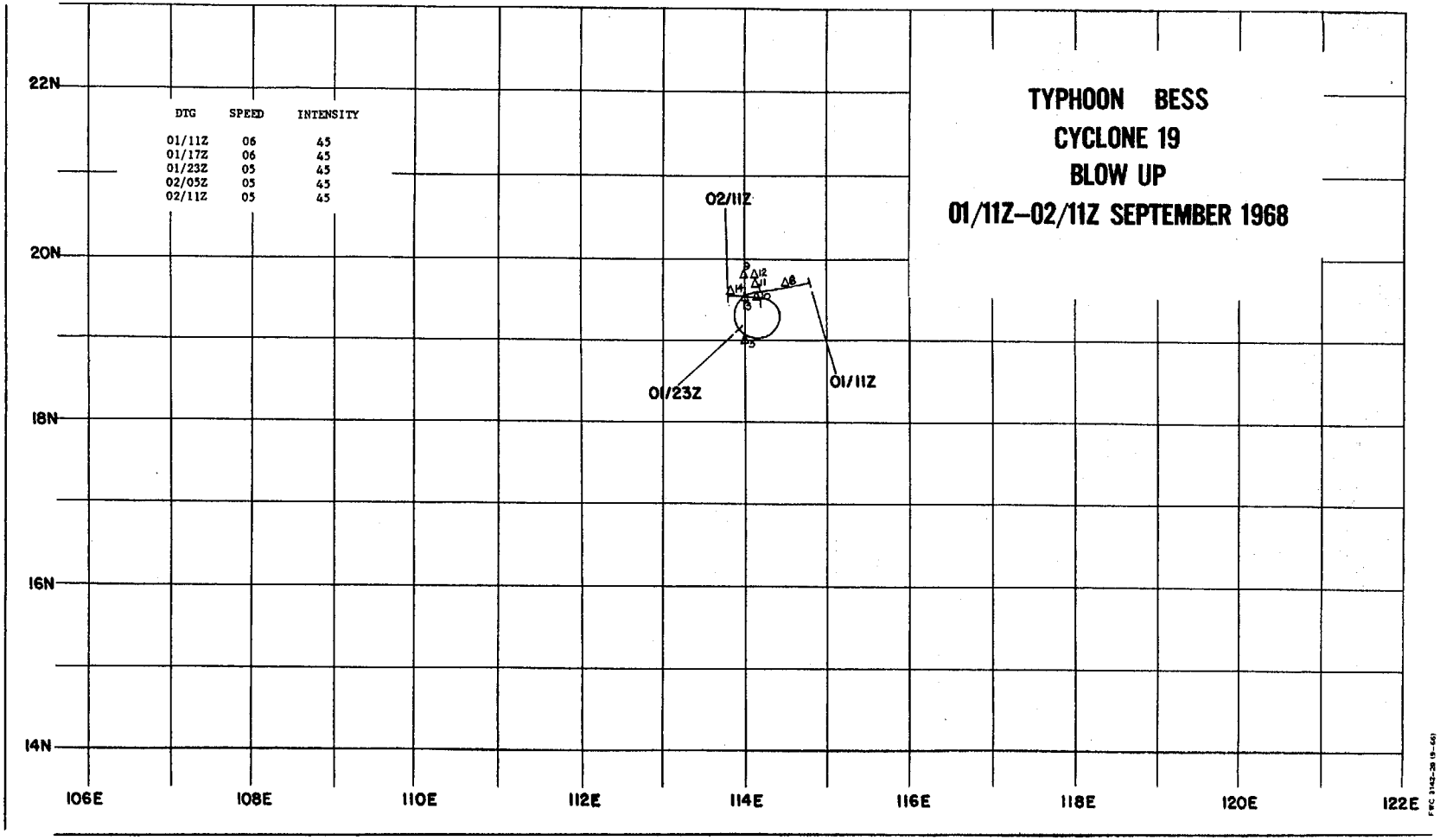
1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - NORTHEAST

III. FINAL DISPOSITION - DISSIPATED OVER LAND


BEST TRACK
TYPHOON BESS
CYCLONE 19
31 AUGUST–05 SEPTEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
TOKYO
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
GUAM
SAIGON
MANGOON
ULITHI
YAP
KOROR
WOLEAI ATOL
01/11Z
02/11Z
02/23Z
03/23Z
04/23Z
05/23Z
29/12Z
31/23Z
31/05Z


BESS
WENDY
AGNES
AUGUST 31


WENDY
AGNES
BESS
SEPTEMBER 4


TYPHOON BESS
CYCLONE 19
BLOW UP
01/11Z–02/11Z SEPTEMBER 1968
DTG SPEED INTENSITY
01/11Z 06 45
01/17Z 06 45
01/23Z 05 45
02/05Z 05 45
02/11Z 05 45
02/11Z
01/23Z
01/11Z
22N
20N
18N
16N
14N
106E
108E
110E
112E
114E
116E
118E
120E
122E

EYE FIXES CYCLONE 19

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	310751Z	19.0N 115.0E	SLTLS	STG X	DIA 03	BNDS 1							
2	311900Z	19.5N 116.3E	VW-R----10	700MB	---	---	---	---	--/--	----			--
3	312030Z	19.6N 116.2E	VW-P-20-10	0350M	---	025	992	---	26/26	----			--
4	010200Z	19.7N 115.6E	VW-P-10-10	0350M	---	030	989	3048	28/26	----			--
5	010400Z	19.0N 114.0E	SLTLS	STG X	DIA 02	BNDS 1							
6	010830Z	19.7N 115.3E	VW-R----10		---	---	---	---	--/--	----			--
7	010845Z	19.8N 115.3E	VW-P-10-05	0450M	---	035	986	---	27/25	CIRC	----	25	--
8	011425Z	19.7N 114.5E	VW-P-15-10	700MB	---	---	984	3057	22/16	ELIP	NE-SW	30X24	--
9	012025Z	19.8N 114.0E	VW-R----20		---	---	---	---	--/--	----			--
10	012104Z	19.5N 114.2E	VW-P-05-03	0420M	055	---	985	---	24/21	CIRC	----	10	--
11	020110Z	19.7N 114.2E	VW-R----03		---	---	---	---	--/--	----			--
12	020202Z	19.8N 114.2E	VW-P-03-01	700MB	---	040	988	3006	18/15	CIRC	----	10	F.B.
13	020902Z	19.5N 114.0E	SLTLS	STG X	DIA 02	BNDS 2							
14	020928Z	19.6N 113.8E	VW-P-05-05	0230M	055	050	983	2978	26/23	----			--
15	021400Z	19.5N 113.5E	VW-P-10-10	700MB	---	---	992	2960	16/14	----			F.B.
16	022015Z	19.5N 112.8E	VW-R----10		---	---	---	---	--/--	----			--
17	022100Z	19.6N 112.7E	VW-P-10-10	0450M	---	---	981	---	27/25	CIRC	----	25	--
18	030215Z	19.4N 112.4E	VW-P----10	0450M	---	050	983	3008	28/26	CIRC	----	40	--
19	030925Z	18.9N 112.1E	VW-P-03-01	700MB	---	055	980	2520	14/11	CIRC	----	10	F.B.
20	030939Z	19.0N 111.5E	SLTLS	STG X	DIA 04	BNDS 2							
21	031405Z	18.3N 111.7E	VW-P-02-01	700MB	064	---	977	2907	14/09	CIRC	----	08	--
22	032055Z	18.2N 111.4E	VW-P-05-05	700MB	050	---	980	2905	17/12	----			F.B.
23	040445Z	17.8N 110.6E	VW-R------		---	---	---	---	--/--	----			--
24	040520Z	17.8N 110.4E	VW-P-10-05	0450M	---	070	967	---	26/26	CIRC	----	30	--

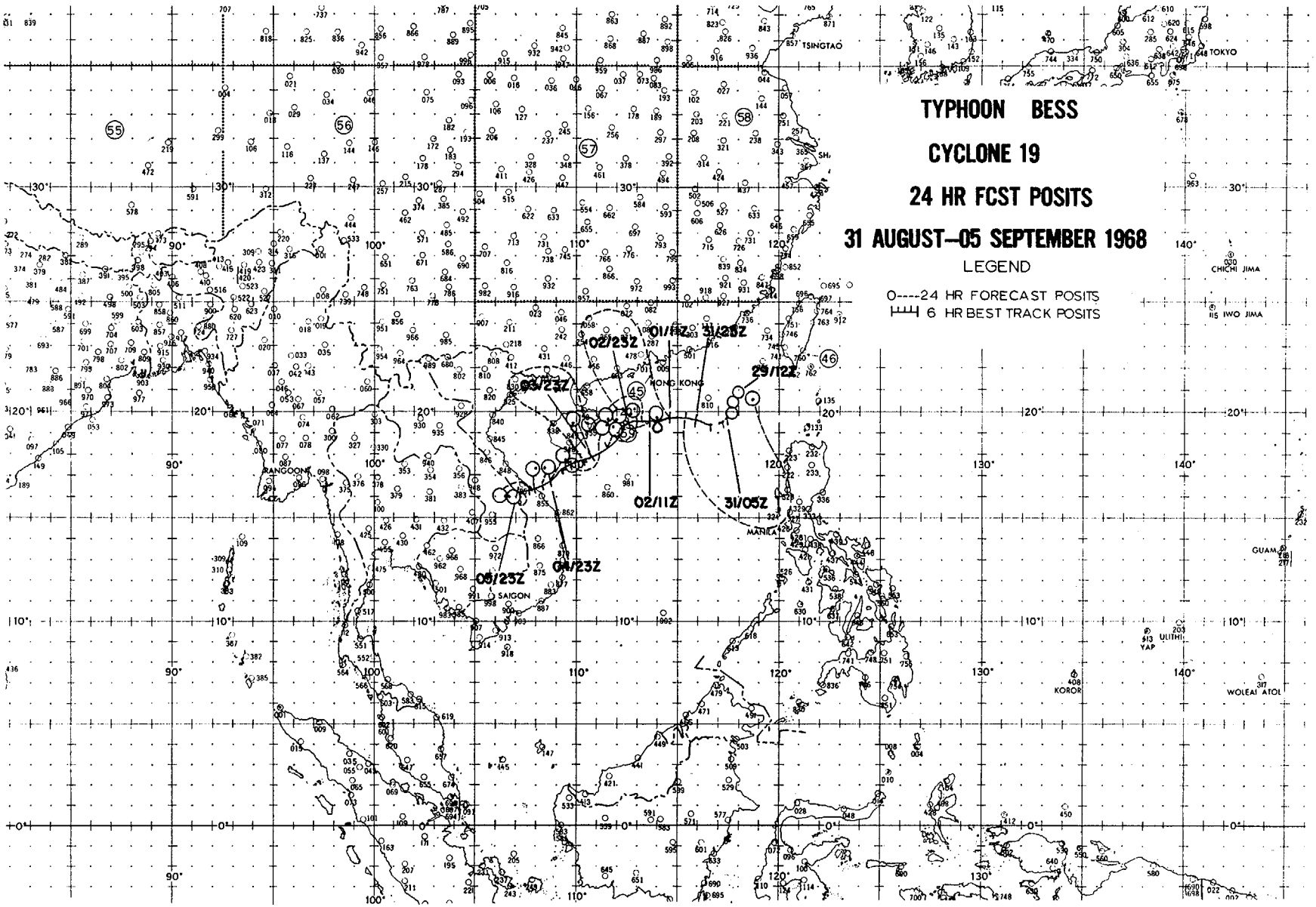
EYE FIXES CYCLONE 19

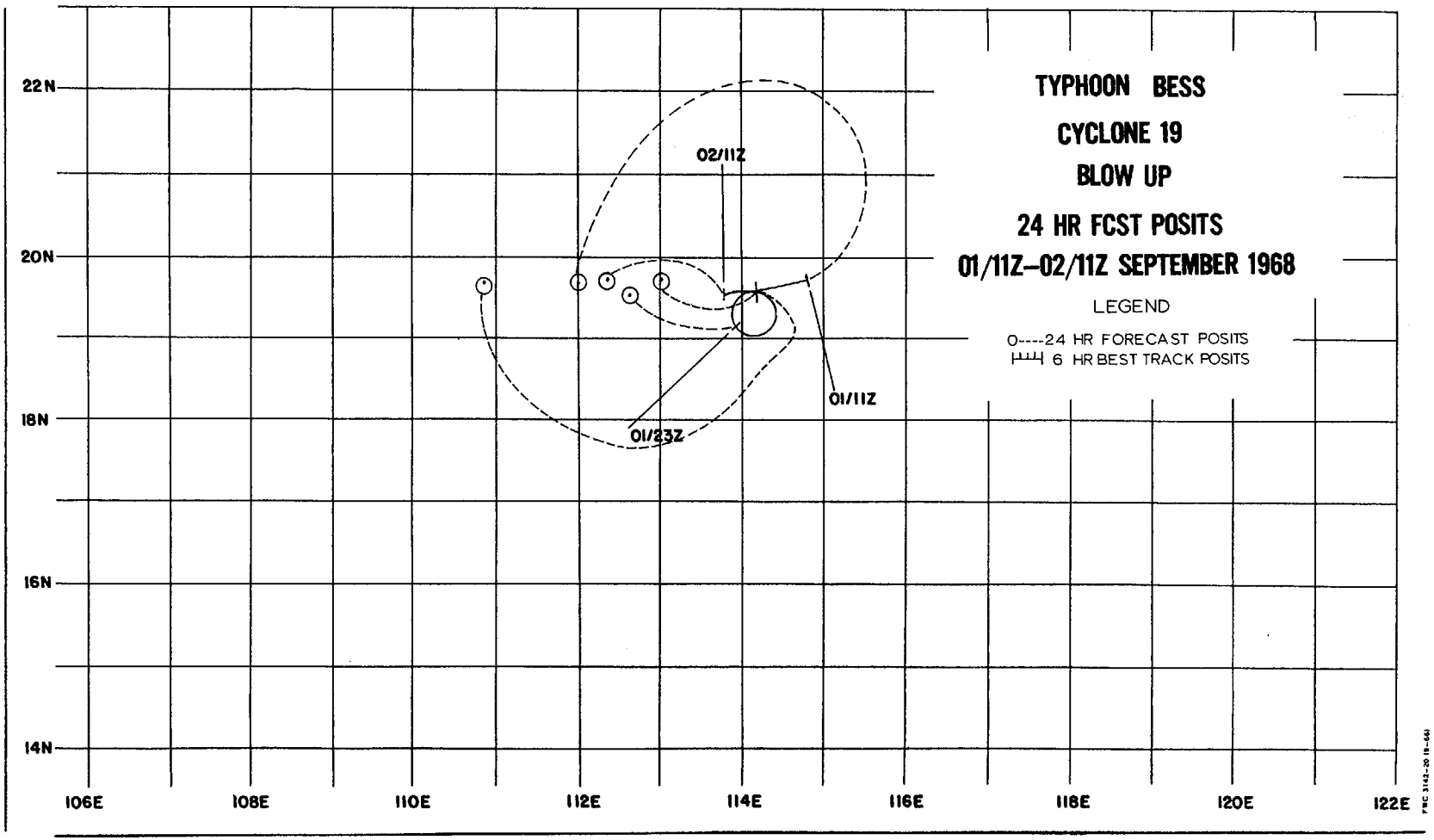
FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	040700Z	17.8N 110.4E	SHIP RDR		---	---	---	---	--/--	CIRC	----	29	--
26	040822Z	18.0N 109.5E	SLTLS	STG X	DIA V3	BNDS 3							
27	040825Z	17.8N 110.2E	VW-P-05-05	0460M	---	075	966	---	25/23	CIRC	----	35	10
28	041514Z	17.1N 109.2E	VW-P-05-01	0450M	---	075	965	---	22/21	CIRC	----	08	--
29	042015Z	17.0N 109.0E	VW-P-05-01	700MB	072	---	968	2816	16/12	CIRC	----	10	--
30	050300Z	16.8N 108.4E	VW-R-02-05		---	---	---	---	--/24	CIRC	----	30	--
31	050500Z	16.5N 108.1E	LND RDR		---	---	---	---	--/--	----			--
32	050500Z	16.5N 108.1E	VW-R----10		---	---	---	---	--/--	----			--
33	050830Z	16.6N 108.4E	VW-R-02-10	0290M	---	---	---	---	--/--	----			--
34	051125Z	16.5N 108.2E	LND RDR		---	---	---	---	--/--	----			--
35	051305Z	16.6N 108.0E	LND RDR		---	---	---	---	--/--	----			--

TROPICAL CYCLONE 19 -- 08/31/0500Z TO 09/05/2300Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG.	DIST.	48 HR. ERROR DEG.	DIST.	72 HR. ERROR DEG.	DIST.
312300Z	19.6N	116.0E	--------		--------		--------	
010500Z	19.7N	115.4E	076	0192	--------		--------	
011100Z	19.7N	114.8E	270	0156	--------		--------	
011700Z	19.6N	114.2E	271	0186	--------		--------	
012300Z	19.2N	113.9E	284	0072	--------		--------	
020500Z	19.5N	114.2E	280	0066	--------		--------	
021100Z	19.5N	113.7E	278	0078	282	0336	--------	
021700Z	19.5N	113.2E	278	0084	283	0312	--------	
022300Z	19.6N	112.6E	281	0030	280	0186	--------	
030500Z	19.2N	112.3E	073	0096	290	0132	--------	
031100Z	18.6N	112.0E	029	0084	302	0168	--------	
031700Z	18.2N	111.5E	016	0066	305	0180	303	0390
032300Z	17.9N	110.9E	329	0102	326	0138	--------	
040500Z	17.8N	110.3E	008	0096	037	0162	315	0270
041100Z	17.5N	109.7E	042	0150	020	0162	--------	
041700Z	17.2N	109.2E	039	0036	014	0126	311	0288
042300Z	16.8N	108.8E	037	0060	326	0186	--------	
050500Z	16.6N	108.4E	000	0042	005	0168	016	0228
051100Z	16.4N	107.9E	007	0054	026	0198	--------	
051700Z	16.3N	107.5E	252	0054	006	0060	353	0198

AVERAGE 24 HOUR ERROR - 0089 MI.
AVERAGE 48 HOUR ERROR - 0179 MI.
AVERAGE 72 HOUR ERROR - 0274 MI.


TYPHOON BESS
CYCLONE 19
24 HR FCST POSITS
31 AUGUST–05 SEPTEMBER 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
TSINGTAO
TOKYO
CHICHI JIMA
IWO JIMA
HONG KONG
RANGOON
SAIGON
MANILA
GUAM
ULITHI
YAP
KOROR
WOLEAI ATOL
01/12Z
31/23Z
02/23Z
03/23Z
29/12Z
02/11Z
31/05Z
04/23Z
05/23Z
55
56
57
58
45
46


TYPHOON BESS
CYCLONE 19
BLOW UP
24 HR FCST POSITS
01/11Z–02/11Z SEPTEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
02/11Z
01/11Z
01/23Z
22N
20N
18N
16N
14N
106E
108E
110E
112E
114E
116E
118E
120E
122E

TROPICAL CYCLONE 20 - 09/16/0500Z TO 09/24/2300Z
(DELLA)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 37
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 20
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1584 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 930MBS AT 212359Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2478M. AT 212359Z
3. MAXIMUM SURFACE WIND - 120 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 420 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

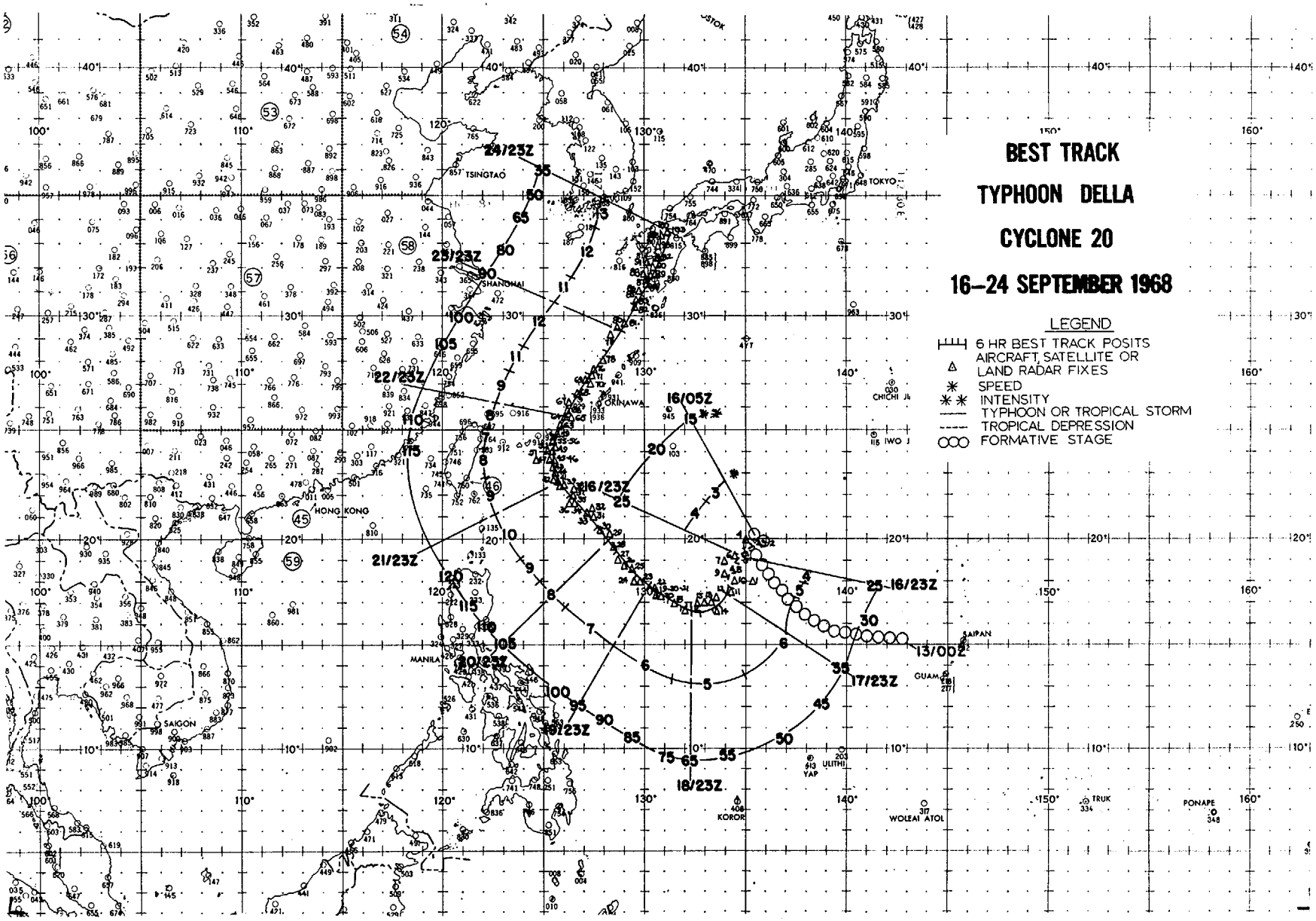
B. INITIAL SURFACE VORTEX

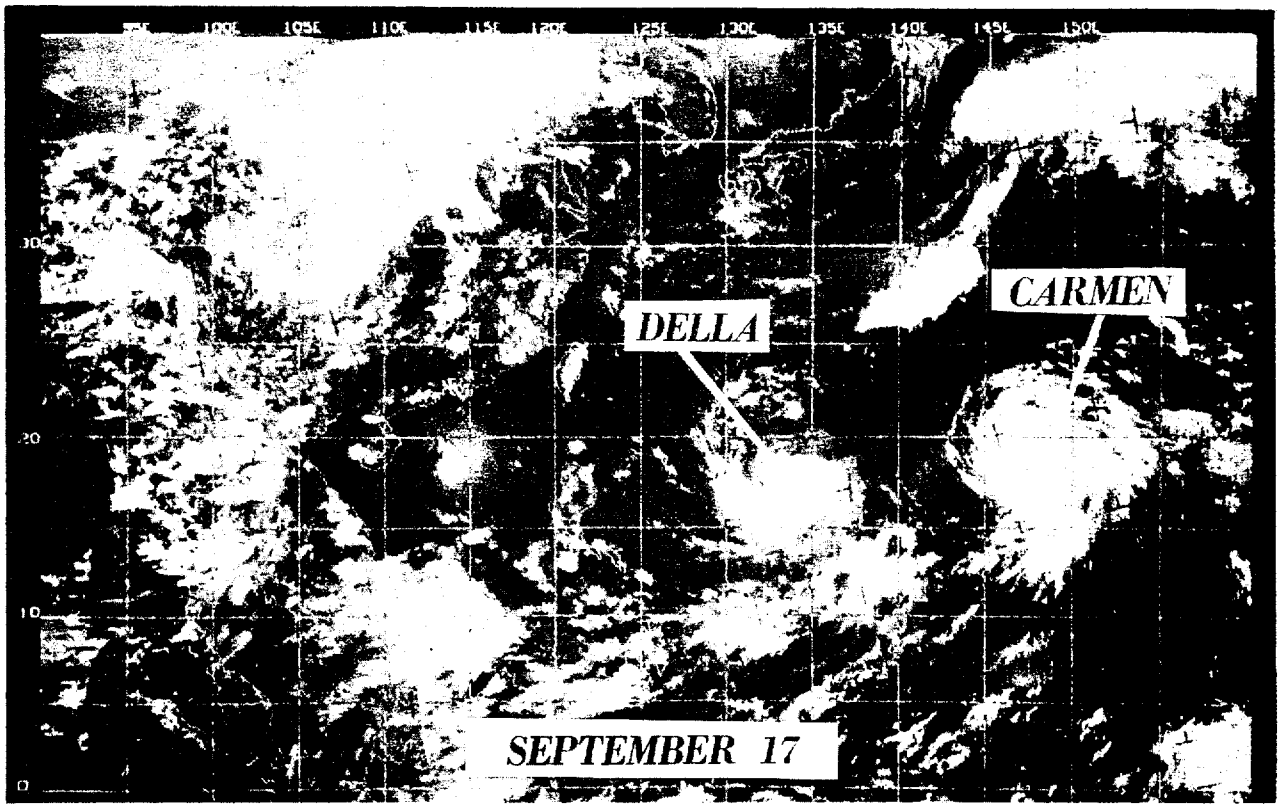
1. EMBEDDED VORTEX AT 130000Z
2. SURFACE PRESSURE LESS THAN 1009MB

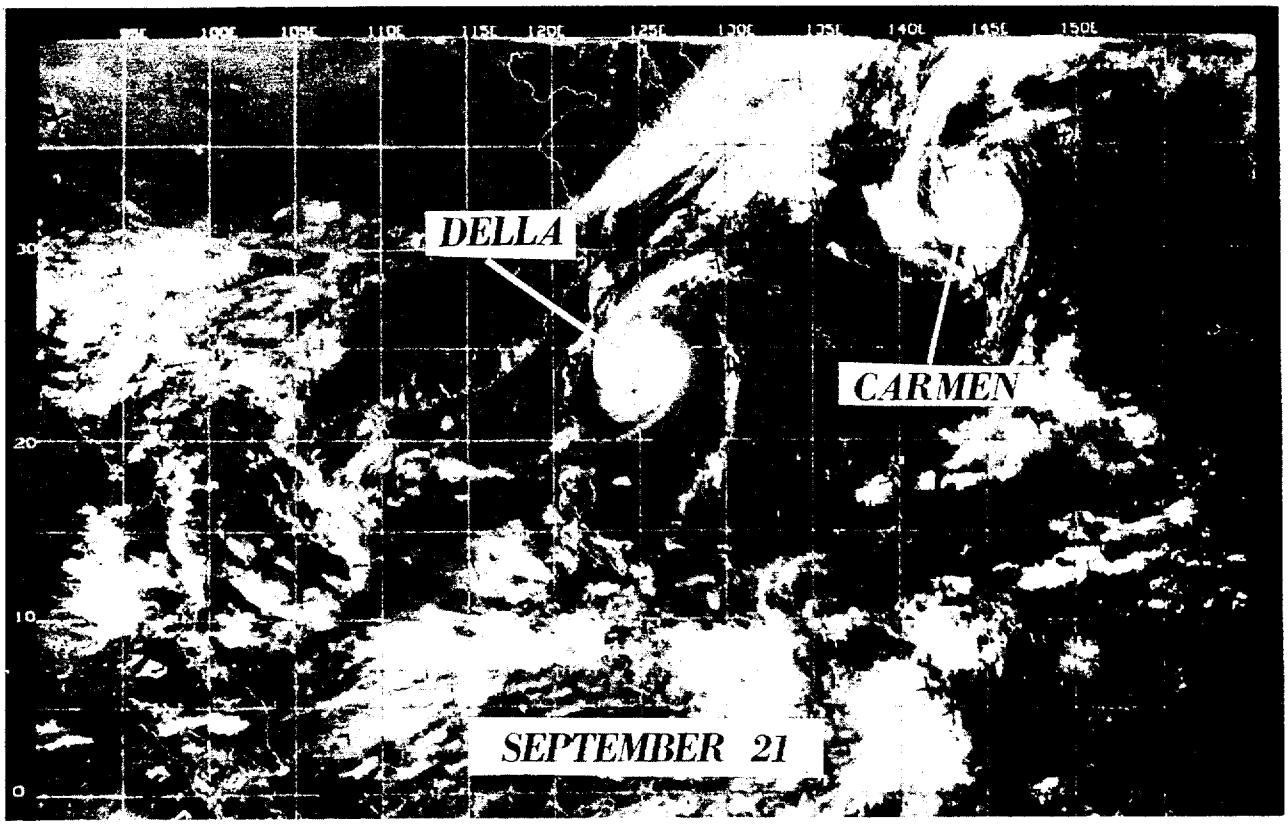
C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - NORTHEAST
2. UPON REACHING TYPHOON INTENSITY - VARIABLE

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON DELLA
CYCLONE 20
16–24 SEPTEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
SHANGHAI
OKINAWA
HONG KONG
MANILA
SAIGON
TOKYO
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
24/23Z
23/23Z
22/23Z
21/23Z
20/23Z
19/23Z
18/23Z
17/23Z
16/23Z
16/05Z
13/00Z


DELLA
CARMEN
SEPTEMBER 17


DELLA
CARMEN
SEPTEMBER 21

EYE FIXES CYCLONE 20

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	150230Z	18.0N 136.2E	54-P-03-10	0410M	040	020	005	---	23/22	CIRC	----	30	N.F.B.
2	150536Z	19.0N 134.0E	SLTLS	STG 8	DIA --	BNDS -							
3	160205Z	19.9N 135.7E	54-P-03-10	0500M	018	015	001	---	24/24	CIRC	----	40	N.F.B.
4	160436Z	20.0N 135.0E	SLTLS	STG X	DIA 02	BNDS 1							
5	162120Z	19.3N 135.0E	54-P-10-05	0350M	030	020	997	3033	23/22	CIRC	----	10	--
6	170235Z	19.1N 134.5E	54-P-03-02	700MB	040	020	997	3027	12/11	CIRC	----	10	--
7	170531Z	19.0N 134.0E	SLTLS	STG X	DIA 04	BNDS 1							
8	170900Z	18.5N 134.3E	VW-P-10-10	0290M	022	025	995	---	25/23	CIRC	----	20	F.B.
9	171400Z	18.2N 134.0E	VW-P-10-10	0290M	040	025	994	3066	25/23	CIRC	----	20	F.B.
10	172000Z	18.0N 134.5E	54-R------		---	---	---	---	--/--	----			--
11	172115Z	17.5N 134.2E	54-P-05-05	0460M	045	040	988	---	25/24	CIRC	----	12	--
12	180236Z	17.1N 133.7E	54-P-05-03	700MB	030	045	984	2941	11/10	CIRC	----	15	--
13	180626Z	17.0N 133.0E	SLTLS	STG X	DIA 03	BNDS 3							
14	180858Z	16.6N 133.7E	VW-P-08-03	0400M	080	070	979	---	21/19	CIRC	----	45	--
15	181417Z	17.0N 133.2E	VW-R-03-05		---	---	---	---	--/--	CIRC	----	40	07
16	182130Z	17.0N 132.8E	54-P-04-01	700MB	070	050	965	2798	19/12	CIRC	----	35	--
17	190325Z	16.7N 132.0E	54-P-03-02	700MB	087	060	964	2801	19/11	CIRC	----	20	--
18	190526Z	17.0N 131.5E	SLTLS	STG X	DIA 04	BNDS 4							
19	190905Z	17.2N 131.4E	VW-P-05-05	0340M	---	090	958	2817	24/23	CIRC	----	32	05
20	191220Z	17.2N 130.9E	VW-R----10		---	---	---	---	--/--	----			--
21	191404Z	17.2N 130.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	30	--
22	192125Z	17.7N 130.4E	54-P-03-05	700MB	---	060	951	2673	18/13	ELIP	NW-SE	25X20	--
23	200200Z	18.0N 129.9E	54-P-03-05	700MB	---	080	950	2673	20/10	CIRC	----	22	--
24	200621Z	18.0N 129.5E	SLTLS	STG X	DIA 03	BNDS 4							

EYE FIXES CYCLONE 20

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	200910Z	18.7N 129.4E	VW-P-05-02	700MB	092	075	943	2676	22/10	CIRC	----	22	--
26	201200Z	18.9N 129.0E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	20	--
27	201400Z	19.0N 128.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	25	--
28	202045Z	19.7N 128.5E	54-P-03-01	700MB	070	---	948	2630	17/12	CIRC	----	20	03
29	210000Z	20.1N 128.2E	54-P-03-01	700MB	095	100	945	2621	17/11	ELIP	NW-SE	30X20	--
30	210230Z	20.4N 127.9E	54-P-03-01	700MB	089	075	946	2630	16/11	ELIP	NE-SW	--X--	--
31	210521Z	21.0N 127.5E	SLTLS	STG X	DIA 05	BNDS 4							
32	210930Z	21.3N 127.4E	VW-P-20-02	700MB	100	105	947	2657	13/08	ELIP	NW-SE	25X15	--
33	211010Z	21.1N 127.2E	VW-R----07		---	---	---	---	--/--	----			--
34	211201Z	21.4N 126.8E	VW-R-07-05	700MB	---	---	---	---	--/11	ELIP	N-S	60X50	--
35	211410Z	21.6N 126.5E	VW-R----10		---	---	---	---	--/--	CIRC	----	60	--
36	211500Z	21.7N 126.2E	VW-R-02-05	700MB	060	---	---	---	--/--	ELIP	N-S	53X48	--
37	211700Z	22.0N 126.5E	LND RDR		---	---	---	---	--/--	----			--
38	211815Z	22.1N 126.5E	LND RDR		---	---	---	---	--/--	----			--
39	211910Z	22.4N 125.9E	LND RDR		---	---	---	---	--/--	----			--
40	212015Z	22.5N 126.0E	LND RDR		---	---	---	---	--/--	----			--
41	212045Z	22.6N 125.7E	54-P-01-05	700MB	118	---	931	2481	17/11	CIRC	----	45	--
42	212359Z	22.8N 125.5E	54-P-02-05	700MB	100	085	930	2478	20/12	CIRC	----	40	--
43	220300Z	23.0N 125.5E	LND RDR		---	---	---	---	--/--	----			--
44	220300Z	23.2N 125.3E	54-P-02-05	700MB	100	100	931	2481	20/11	CIRC	----	40	--
45	220515Z	23.5N 125.5E	LND RDR		---	---	---	---	--/--	----			--
46	220616Z	23.5N 125.0E	SLTLS	STG X	DIA 05	BNDS 4							
47	220630Z	23.7N 125.3E	LND RDR		---	---	---	---	--/--	----			--
48	220700Z	23.6N 125.4E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 20

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	220715Z	24.0N 125.3E	LND RDR		---	---	---	---	--/--	----			--
50	220730Z	23.7N 124.8E	LND RDR		---	---	---	---	--/--	----			--
51	220800Z	23.8N 125.4E	LND RDR		---	---	---	---	--/--	----			--
52	220900Z	23.9N 125.4E	LND RDR		---	---	---	---	--/--	----			--
53	220900Z	24.0N 125.3E	VW-R-02-05	700MB	060	055	---	---	--/--	ELIP	NE-SW	45X38	05
54	221000Z	24.0N 125.3E	LND RDR		---	---	---	---	--/--	----			--
55	221010Z	24.2N 125.5E	VW-R----05		---	---	---	---	--/--	----			--
56	221200Z	24.2N 125.5E	VW-R-02-05	700MB	105	---	---	---	--/--	CIRC	----	45	12
57	221300Z	24.3N 125.4E	LND RDR		---	---	---	---	--/--	----			--
58	221400Z	24.3N 125.4E	LND RDR		---	---	---	---	--/--	----			--
59	221400Z	24.4N 125.4E	VW-R-02-05	700MB	---	---	---	---	--/--	CIRC	----	50	--
60	221500Z	24.4N 125.5E	LND RDR		---	---	---	---	--/--	----			--
61	221600Z	24.7N 125.5E	LND RDR		---	---	---	---	--/--	----			--
62	221750Z	24.8N 125.7E	LND RDR		---	---	---	---	--/--	----			--
63	222100Z	25.3N 125.9E	54-P-05-05	500MB	080	---	937	2547	05/58	CIRC	----	40	--
64	230000Z	25.7N 126.0E	54-P-03-03	500MB	050	100	943	2590	05/58	CIRC	----	45	--
65	230025Z	25.7N 126.3E	LND RDR		---	---	---	---	--/--	----			--
66	230100Z	25.8N 126.2E	LND RDR		---	---	---	---	--/--	----			--
67	230300Z	26.1N 126.2E	54-P-03-05	500MB	085	100	940	---	05/58	CIRC	----	40	15
68	230520Z	26.5N 126.5E	SLTLS	STG X	DIA 05	BNDS 4							
69	230900Z	27.2N 127.1E	LND RDR		---	---	---	---	--/--	----			--
70	230900Z	27.0N 127.2E	LND RDR		---	---	---	---	--/--	----			--
71	230930Z	27.2N 127.3E	LND RDR		---	---	---	---	--/--	----			--
72	230930Z	27.0N 127.4E	VW-R-02-10		---	---	---	---	--/--	CIRC	----	42	--

EYE FIXES CYCLONE 20

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	231000Z	27.2N 127.3E	LND RDR		---	---	---	---	--/--	----			--
74	231005Z	27.1N 127.5E	VW-R-01-05		---	---	---	---	--/--	CIRC	----	38	--
75	231100Z	27.4N 127.4E	LND RDR		---	---	---	---	--/--	----			--
76	231215Z	27.6N 127.5E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	35	--
77	231500Z	27.9N 127.9E	LND RDR		---	---	---	---	--/--	----			--
78	231500Z	28.0N 128.1E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	38	--
79	232130Z	29.2N 128.3E	54-P-05-05	700MB	080	---	950	2649	20/--	CIRC	----	40	--
80	240000Z	29.5N 128.8E	54-P-05-05	700MB	090	080	955	2688	17/11	CIRC	----	80	--
81	240230Z	29.7N 129.0E	54-P-05-05	700MB	085	---	957	2688	16/08	CIRC	----	80	10
82	240600Z	30.4N 129.5E	LND RDR		---	---	---	---	--/--	----			--
83	240600Z	30.6N 129.5E	LND RDR		---	---	---	---	--/--	----			--
84	240611Z	30.5N 129.5E	SLTLS	STG X	DIA 04	BNDS 3							
85	240900Z	30.8N 129.8E	LND RDR		---	---	---	---	--/--	----			--
86	240900Z	31.0N 129.9E	LND RDR		---	---	---	---	--/--	----			--
87	241135Z	31.2N 130.2E	VW-R-01-03	7000M	---	---	---	---	--/11	CIRC	----	25	N.F.B.
88	241300Z	31.8N 130.0E	LND RDR		---	---	---	---	--/--	----			--
89	241300Z	31.7N 130.3E	LND RDR		---	---	---	---	--/--	----			--
90	241400Z	32.0N 130.4E	LND RDR		---	---	---	---	--/--	----			--
91	241400Z	32.2N 130.2E	LND RDR		---	---	---	---	--/--	----			--
92	241440Z	32.4N 130.7E	LND RDR		---	---	---	---	--/--	----			--
93	241500Z	32.2N 130.6E	LND RDR		---	---	---	---	--/--	----			--
94	241500Z	32.2N 130.0E	LND RDR		---	---	---	---	--/--	----			--
95	241600Z	32.6N 130.9E	LND RDR		---	---	---	---	--/--	----			--
96	241700Z	32.5N 130.9E	LND RDR		---	---	---	---	--/--	----			--

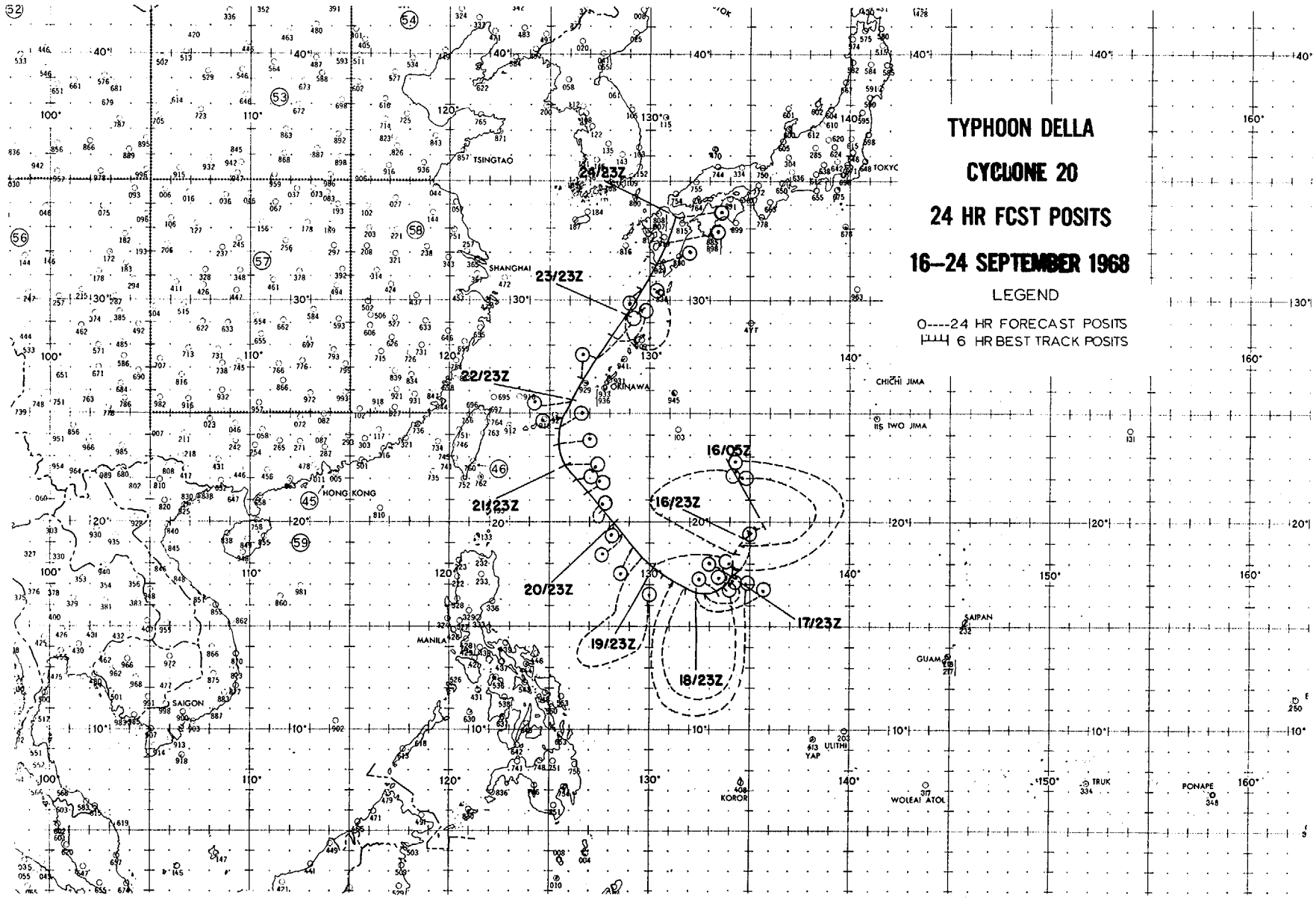
EYE FIXES CYCLONE 20

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY		FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
97	241810Z	32.6N 131.0E	LND	RDR		---	---	---	---	--/--	----			--
98	242000Z	32.9N 130.5E	LND	RDR		---	---	---	---	--/--	----			--
99	242000Z	33.0N 130.6E	LND	RDR		---	---	---	---	--/--	----			--
100	242100Z	33.3N 130.9E	LND	RDR		---	---	---	---	--/--	----			--
101	242100Z	33.2N 130.5E	LND	RDR		---	---	---	---	--/--	----			--
102	242200Z	33.4N 130.2E	LND	RDR		---	---	---	---	--/--	----			--
103	242200Z	33.5N 131.1E	LND	RDR		---	---	---	---	--/--	----			--

TROPICAL CYCLONE 20 -- 09/16/0500Z TO 09/24/2300Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM LAT.	POSITION LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
172300Z	17.3N	134.1E	020-0138	--------	--------
180500Z	16.9N	133.7E	331-0072	--------	--------
181100Z	16.7N	133.3E	299-0048	--------	--------
181700Z	16.5N	132.8E	064-0078	--------	--------
182300Z	16.6N	132.3E	087-0198	--------	--------
190500Z	16.8N	131.8E	085-0126	--------	--------
191100Z	17.1N	131.2E	091-0204	--------	--------
191700Z	17.4N	130.7E	094-0156	--------	--------
192300Z	17.8N	130.2E	087-0216	094-0438	--------
200500Z	18.3N	129.6E	170-0108	094-0360	--------
201100Z	18.8N	129.1E	198-0078	093-0444	--------
201700Z	19.3N	128.6E	226-0072	102-0420	--------
202300Z	19.9N	128.1E	180-0036	090-0474	--------
210500Z	20.6N	127.6E	019-0018	168-0234	098-0582
211100Z	21.3N	126.9E	034-0042	190-0174	--------
211700Z	22.0N	126.2E	061-0060	206-0198	099-0714
212300Z	22.7N	125.6E	102-0084	165-0072	--------
220500Z	23.5N	125.3E	076-0090	052-0114	167-0396
221100Z	24.2N	125.4E	057-0084	050-0108	--------
221700Z	24.8N	125.6E	270-0048	046-0114	213-0396
222300Z	25.6N	126.0E	267-0096	131-0072	--------
230500Z	26.4N	126.6E	005-0072	042-0144	044-0294
231100Z	27.3N	127.3E	042-0156	042-0204	--------
231700Z	28.4N	128.1E	051-0090	278-0084	052-0072
232300Z	29.4N	128.7E	058-0096	248-0108	--------
240500Z	30.3N	129.4E	217-0030	049-0378	057-0306
241100Z	31.3N	130.2E	065-0096	057-0588	--------
241700Z	32.4N	130.6E	078-0132	062-0522	090-0060
242300Z	33.6N	131.2E	088-0120	068-0438	--------

AVERAGE 24 HOUR ERROR - 0098 MI.
AVERAGE 48 HOUR ERROR - 0270 MI.
AVERAGE 72 HOUR ERROR - 0352 MI.


TYPHOON DELLA
CYCLONE 20
24 HR FCST POSITS
16–24 SEPTEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
24/23Z
23/23Z
22/23Z
21/23Z
20/23Z
19/23Z
18/23Z
17/23Z
16/23Z
16/05Z
TSINGTAO
SHANGHAI
OKINAWA
HONG KONG
MANILA
SAIGON
TOKYO
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE

TROPICAL CYCLONE 21 - 09/16/0500Z TO 09/23/0500Z
(CARMEN)

I. DATA

A. STATISTICS
1. NUMBER OF WARNINGS ISSUED - 30
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 17
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1380 MI

B. CHARACTERISTICS AS A TYPHOON
1. MINIMUM OBSERVED SLP - 935MBS AT 190300Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2530M. AT 190300Z
3. MAXIMUM SURFACE WIND - 110 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

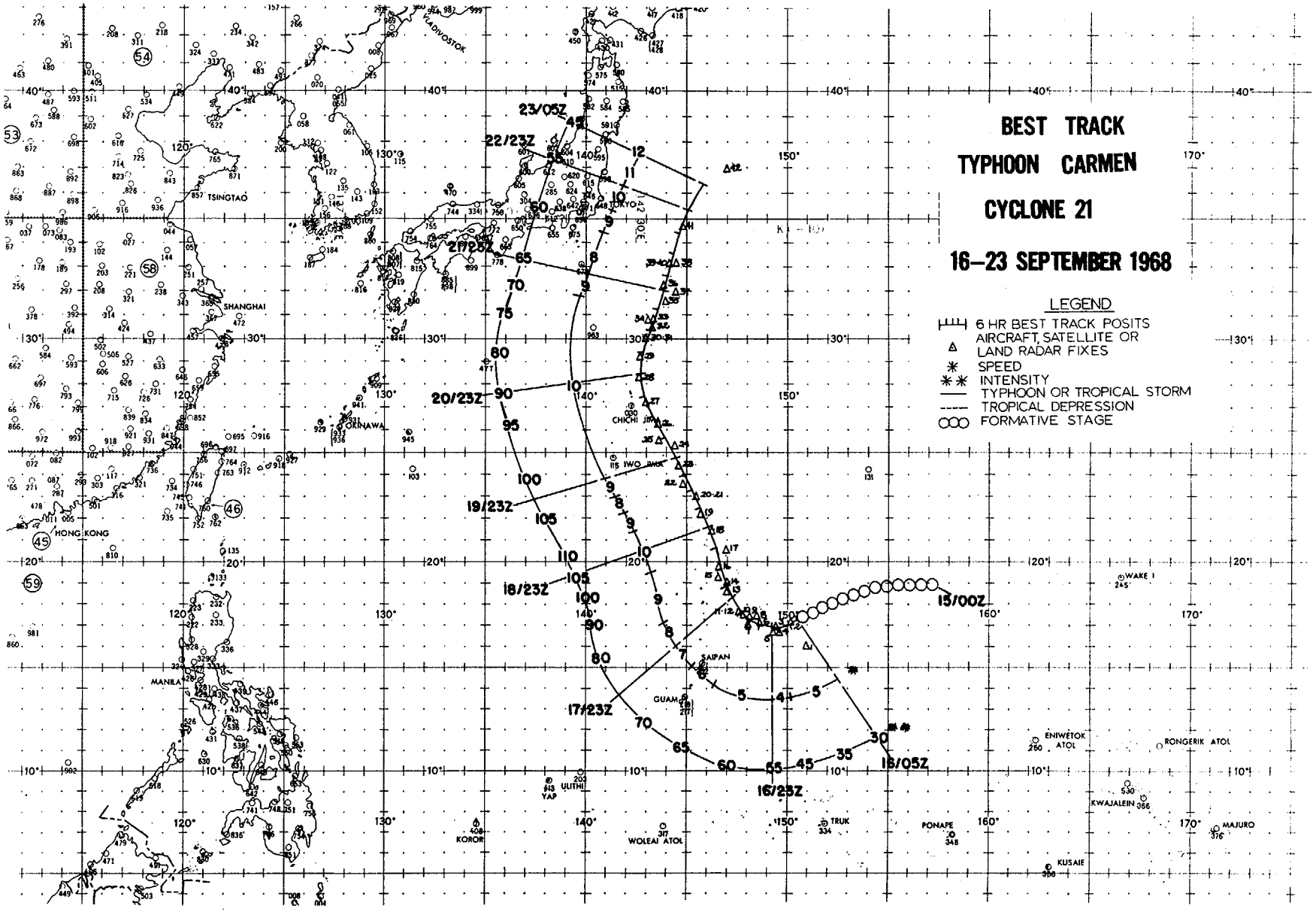
II. DEVELOPMENT

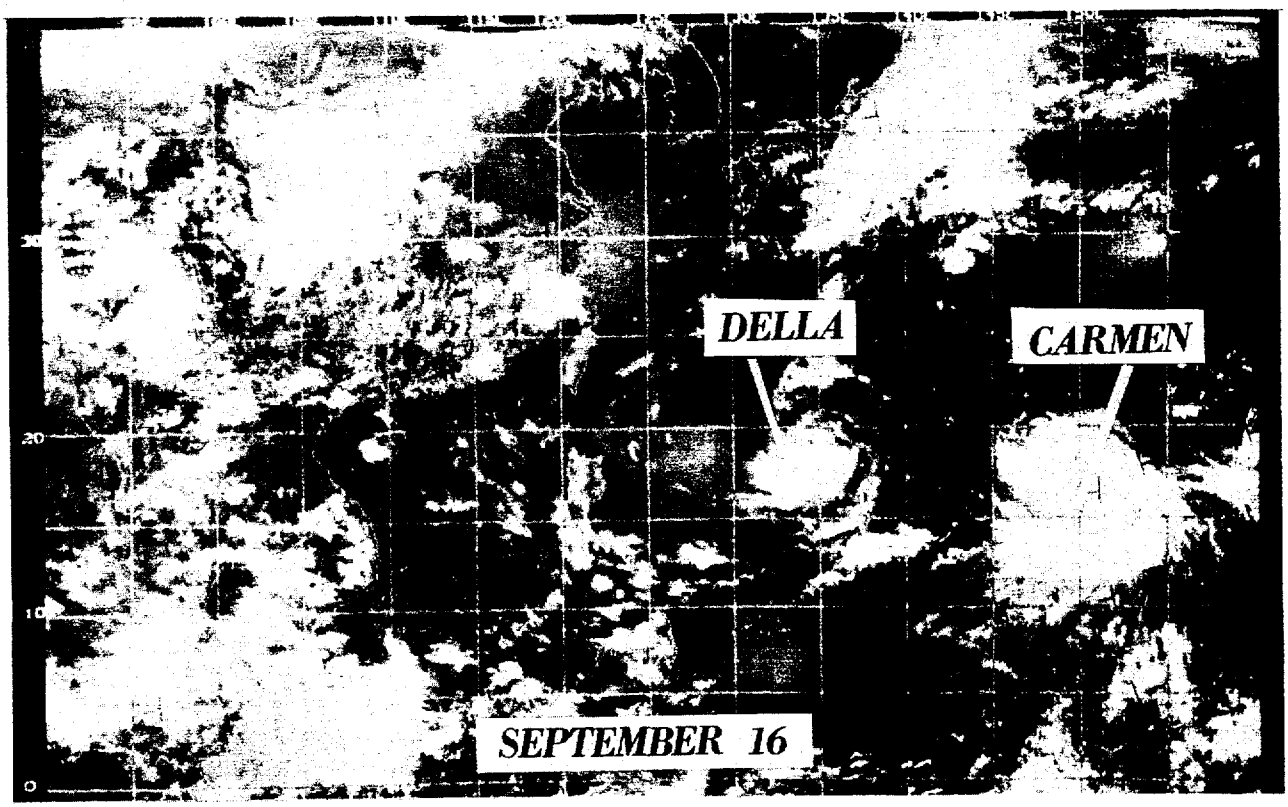
A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

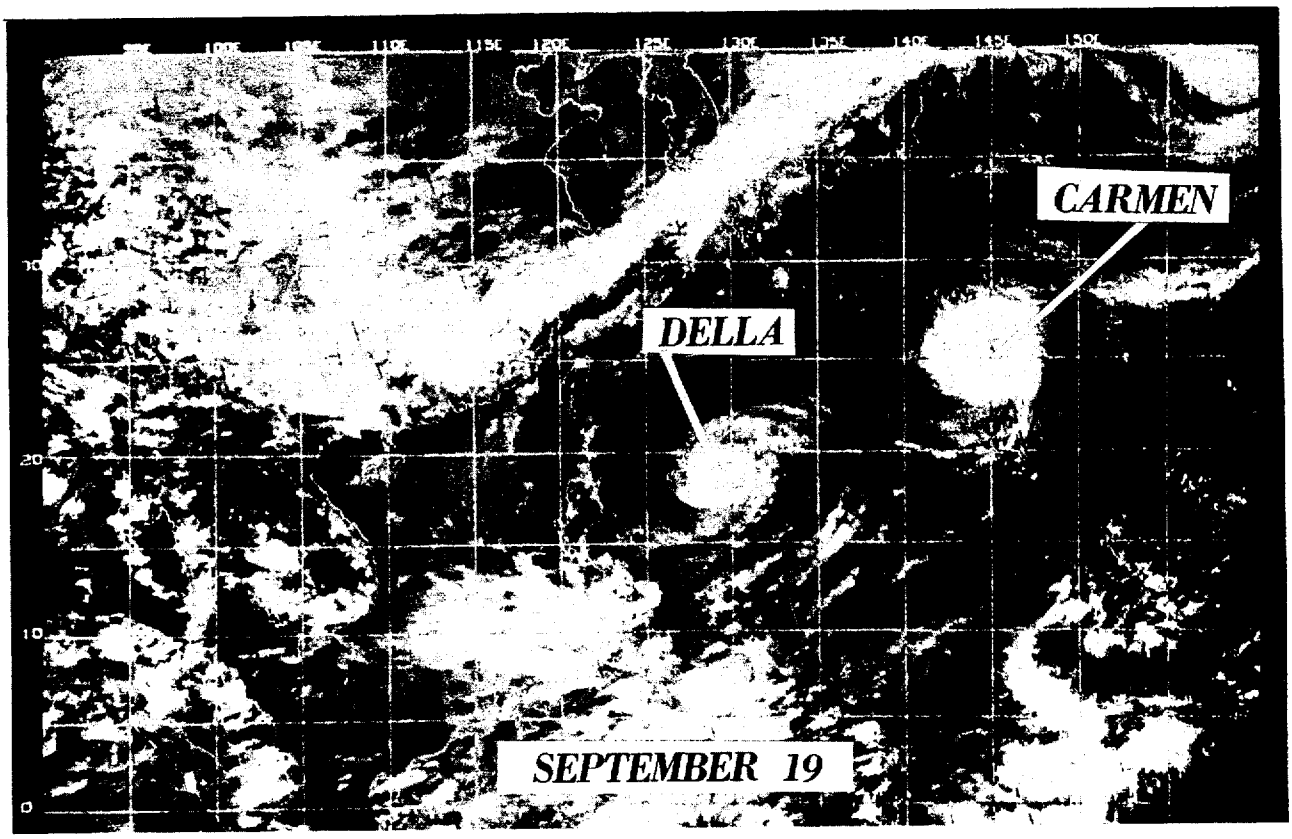
B. INITIAL SURFACE VORTEX
1. JUNCTION VORTEX AT 150000Z
2. SURFACE PRESSURE LESS THAN 1010MB

C. 200MB FLOW ABOVE SURFACE VORTEX
1. INITIAL - NORTHEAST
2. UPON REACHING TYPHOON INTENSITY - ANTICYCLONIC

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON CARMEN
CYCLONE 21
16–23 SEPTEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
VLADIVOSTOK
TSINGTAO
SHANGHAI
HONG KONG
MANILA
TOKYO
CHICHI JIMA
IWO JIMA
OKINAWA
SAIPAN
GUAM
ULITHI
YAP
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
WAKE I
23/05Z
22/23Z
21/23Z
20/23Z
19/23Z
18/23Z
17/23Z
16/23Z
16/05Z
15/00Z


DELLA
CARMEN
SEPTEMBER 16
20
10
0


CARMEN
DELLA
SEPTEMBER 19
20
10
0

EYE FIXES CYCLONE 21

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	160436Z	16.0N 151.0E	SLTLS	STG -	DIA --	BNDS -							
2	160835Z	17.1N 150.1E	VW-P-05-05	0300M	047	045	991	---	24/22	CIRC	----	40	--
3	161230Z	17.0N 149.5E	VW-R----15		---	---	---	---	--/--	----			--
4	161435Z	16.8N 149.7E	VW-P-05-15	0330M	040	---	990	3005	24/22	CIRC	----	50	--
5	162100Z	16.9N 149.3E	54-P-02-03	0460M	050	040	985	---	26/20	----			--
6	170300Z	17.1N 148.6E	54-P-10-05	700MB	055	040	981	2899	15/10	----			--
7	170531Z	17.0N 148.0E	SLTLS	STG X	DIA 04	BNDS 4							
8	170720Z	17.2N 148.5E	VW-R----10		---	---	---	---	--/--	----			--
9	170820Z	17.4N 148.1E	VW-P-03-01		---	050	---	---	24/22	CIRC	----	35	--
10	171200Z	17.4N 147.8E	VW-R-03-05		---	---	---	---	--/--	CIRC	----	30	--
11	171405Z	17.5N 147.8E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	30	--
12	172100Z	17.9N 147.4E	54-P-05-01	700MB	063	070	950	2664	20/11	CIRC	----	20	--
13	180300Z	18.6N 147.0E	54-P-05-05	700MB	080	080	944	2539	23/12	CIRC	----	18	05
14	180431Z	19.0N 147.0E	SLTLS	STG X	DIA 05	BNDS 3							
15	180837Z	19.2N 146.7E	VW-P-03-05	700MB	090	090	956	2412	16/10	CIRC	----	12	--
16	181210Z	19.8N 146.6E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	12	08
17	181410Z	20.5N 147.0E	VW-R-02-05		---	---	---	---	--/--	----			--
18	182120Z	21.4N 146.2E	54-P-05-05	700MB	065	080	950	2560	17/14	CIRC	----	20	--
19	190300Z	22.1N 145.8E	54-P-05-05	700MB	090	085	935	2530	17/13	CIRC	----	20	--
20	190526Z	23.0N 145.5E	SLTLS	STG X	DIA 06	BNDS 4							
21	190915Z	23.0N 145.4E	VW-P-05-03	0450M	---	100	939	2632	26/22	CIRC	----	35	05
22	191410Z	23.6N 144.9E	VW-R-10-10	3300M	050	---	---	---	--/--	CIRC	----	30	08
23	192100Z	24.4N 144.7E	54-P-03-05	700MB	080	085	936	2536	19/14	CIRC	----	30	--
24	200230Z	25.3N 144.3E	54-P-03-10	700MB	090	085	939	2554	18/12	CIRC	----	40	--

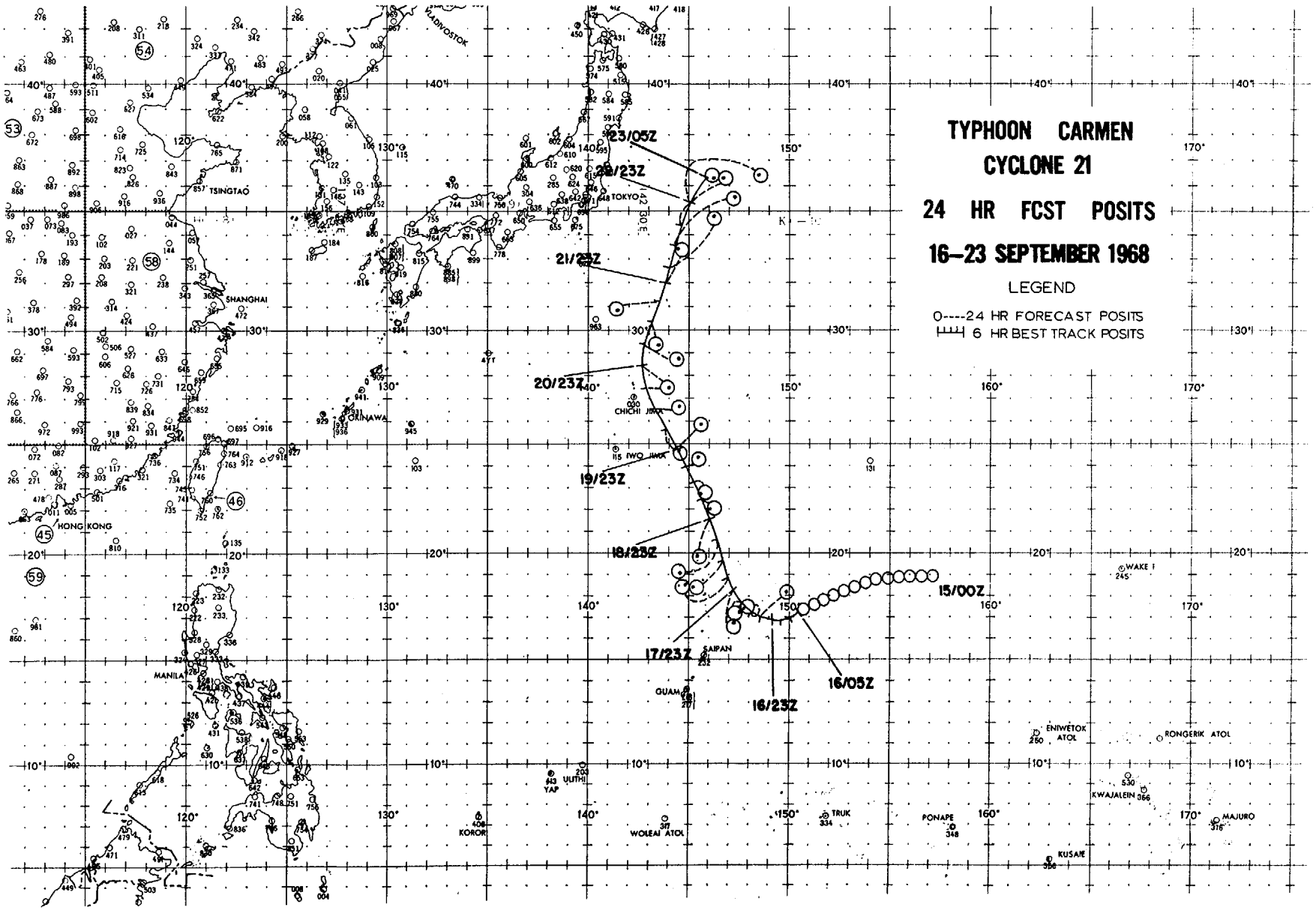
EYE FIXES CYCLONE 21

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	200426Z	25.5N 143.5E	SLTLS	STG X	DIA 05	BNDS 4							
26	200910Z	26.2N 143.7E	VW-P-05-03	700MB	100	---	942	2628	17/13	CONC		70-20	10
27	201405Z	27.1N 143.0E	VW-R-03-03		---	---	---	---	--/--	CONC		65-25	10
28	202115Z	28.3N 142.7E	54-P-03-03	700MB	080	055	958	2722	16/--	CONC		70-30	--
29	210200Z	29.2N 142.8E	54-P-03-03	700MB	070	065	953	2685	16/12	CIRC	----	30	--
30	210521Z	30.0N 143.0E	SLTLS	STG X	DIA 04	BNDS 3							
31	210800Z	30.0N 143.0E	VW-R----15		---	---	---	---	--/--	----			--
32	210910Z	30.5N 143.2E	VW-P-05-05	0280M	052	065	957	2816	24/23	CONC		70-30	--
33	211222Z	30.7N 143.4E	ACFT RDR		---	---	---	---	--/--	----			--
34	211405Z	30.8N 143.2E	VW-P-10-10	700MB	---	---	964	2792	16/13	CIRC	----	50	--
35	212107Z	31.7N 144.0E	54-P-05-05	700MB	062	050	959	2729	16/14	CIRC	----	40	--
36	220240Z	32.2N 143.9E	54-P-05-10	700MB	075	060	963	2762	16/14	----			--
37	220426Z	32.0N 144.5E	SLTLS	STG X	DIA 04	BNDS 2							
38	220905Z	33.1N 144.5E	VW-R----10		---	---	---	---	--/--	----			--
39	220925Z	33.2N 144.2E	VW-P-03-06	0450M	---	055	974	---	24/22	CIRC	----	50	--
40	221420Z	33.1N 144.3E	VW-R-04-08		---	---	---	---	--/--	CIRC	----	50	F.B.
41	222100Z	34.8N 144.9E	54-P-05-05	700MB	062	025	972	2871	13/12	CIRC	----	50	--
42	230520Z	37.0N 147.0E	SLTLS	STG X	DIA 04	BNDS 2							

TROPICAL CYCLONE 21 -- 09/16/0500Z TO 09/23/0500Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
161100Z	17.0N	150.0E	--------	--------	--------
161700Z	16.9N	149.6E	--------	--------	--------
162300Z	16.9N	149.2E	--------	--------	--------
170500Z	17.0N	148.6E	048-0096	--------	--------
171100Z	17.2N	148.2E	288-0018	--------	--------
171700Z	17.6N	147.6E	180-0030	--------	--------
172300Z	18.2N	147.2E	180-0084	--------	--------
180500Z	18.9N	146.9E	258-0108	--------	--------
181100Z	19.8N	146.7E	226-0114	215-0180	--------
181700Z	20.7N	146.5E	226-0144	208-0228	--------
182300Z	21.7N	146.1E	199-0108	191-0288	--------
190500Z	22.5N	145.7E	158-0030	245-0264	--------
191100Z	23.2N	145.3E	153-0024	231-0264	--------
191700Z	23.9N	144.9E	037-0030	231-0276	211-0366
192300Z	24.7N	144.4E	040-0090	216-0102	--------
200500Z	25.6N	143.9E	150-0060	112-0078	239-0330
201100Z	26.5N	143.4E	085-0060	093-0102	--------
201700Z	27.4N	142.9E	090-0054	064-0102	227-0372
202300Z	28.4N	142.7E	132-0084	069-0180	--------
210500Z	29.4N	142.9E	111-0096	160-0192	116-0144
211100Z	30.4N	143.2E	175-0072	104-0120	--------
211700Z	31.2N	143.5E	261-0108	098-0114	069-0240
212300Z	32.0N	143.8E	023-0078	119-0120	--------
220500Z	32.7N	144.1E	039-0162	091-0174	178-0294
221100Z	33.5N	144.3E	051-0186	167-0084	--------
221700Z	34.3N	144.7E	044-0156	234-0030	107-0258
222300Z	35.2N	145.2E	068-0174	062-0318	--------
230500Z	36.3N	145.9E	244-0012	074-0234	092-0438

AVERAGE 24 HOUR ERROR - 0087 MI.
AVERAGE 48 HOUR ERROR - 0172 MI.
AVERAGE 72 HOUR ERROR - 0305 MI.


TYPHOON CARMEN
CYCLONE 21
24 HR FCST POSITS
16–23 SEPTEMBER 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
23/05Z
22/23Z
21/23Z
20/23Z
19/23Z
18/23Z
17/23Z
16/23Z
16/05Z
15/00Z
VLADIVOSTOK
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIPAN
GUAM
WAKE I
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
PONAPE
TRUK
WOLEAI ATOL
KOROR
ULITHI
YAP

TROPICAL CYCLONE 22 - 09/24/0500Z TO 10/01/1100Z
(ELAINE)

I. DATA

A. STATISTICS
1. NUMBER OF WARNINGS ISSUED - 32
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 19
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1326 MI

B. CHARACTERISTICS AS A TYPHOON
1. MINIMUM OBSERVED SLP - 908MBS AT 270300Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2234M. AT 270820Z
3. MAXIMUM SURFACE WIND - 150 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 540 MI

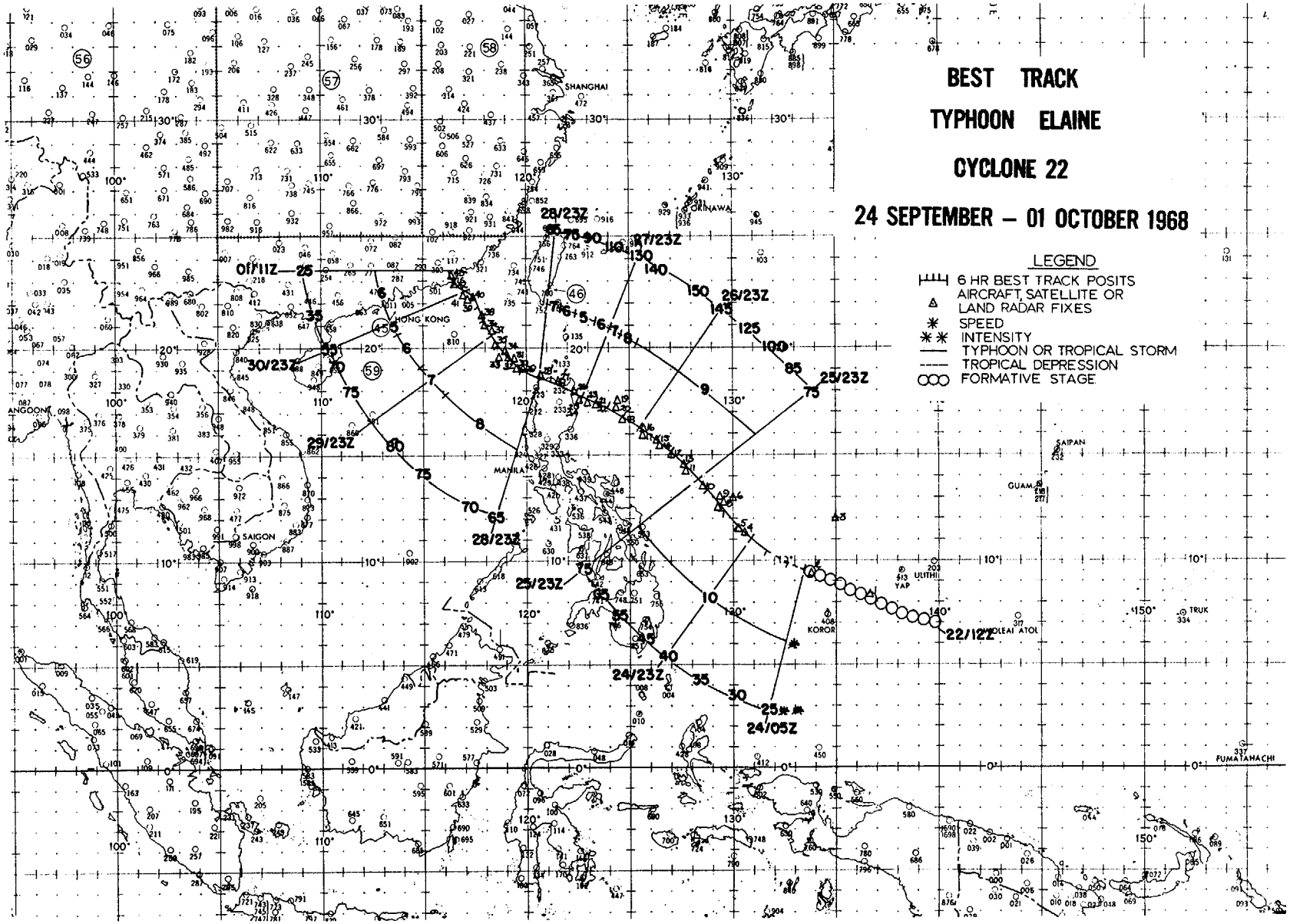
II. DEVELOPMENT

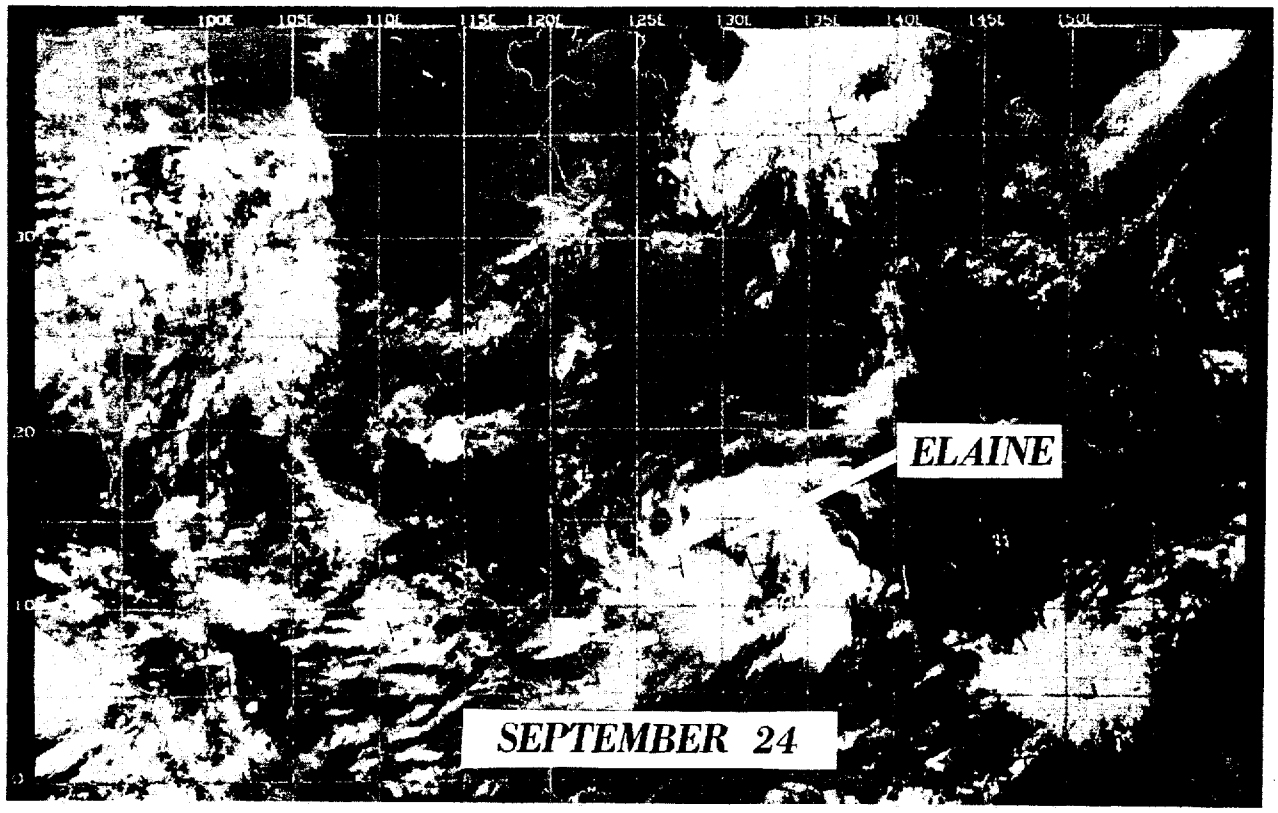
A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

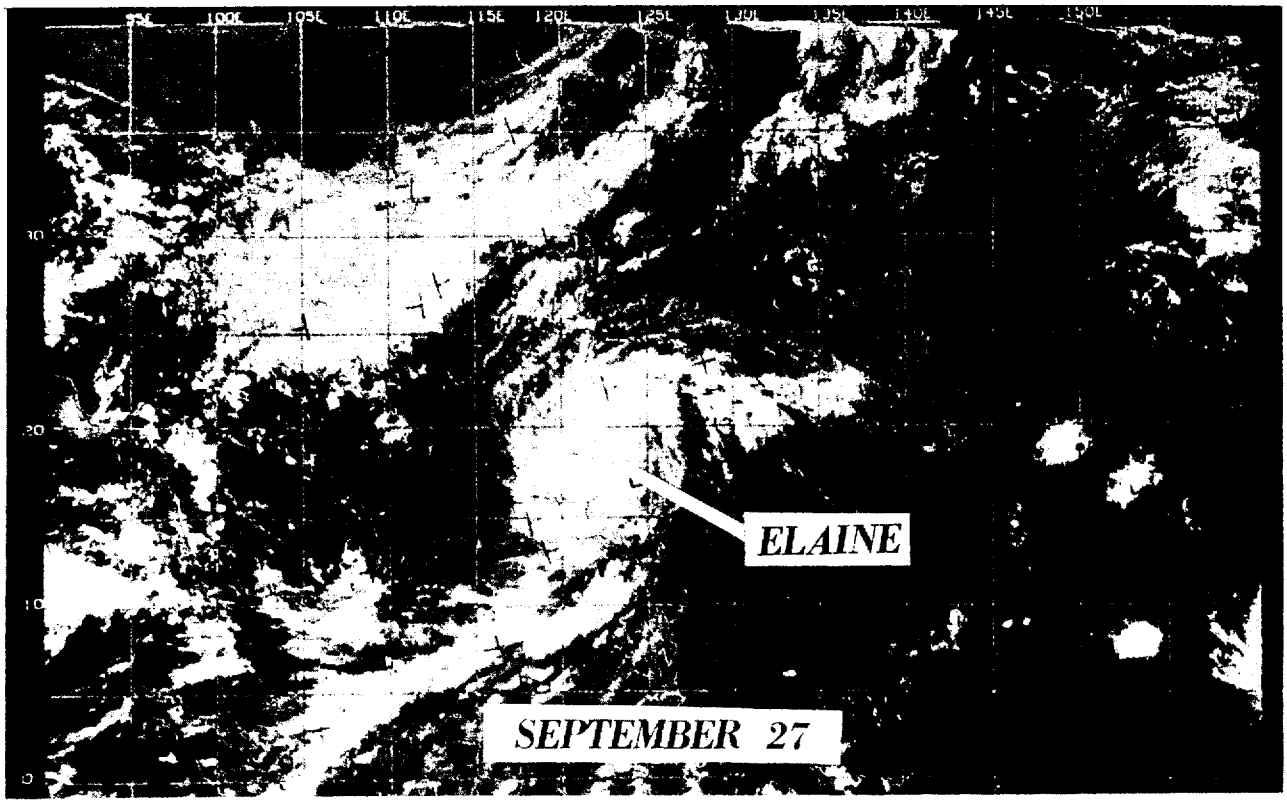
B. INITIAL SURFACE VORTEX
1. JUNCTION VORTEX AT 221200Z
2. SURFACE PRESSURE LESS THAN 1008MB

C. 200MB FLOW ABOVE SURFACE VORTEX
1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - ANTICYCLONIC

III. FINAL DISPOSITION - DISSIPATED OVER LAND


BEST TRACK
TYPHOON ELAINE
CYCLONE 22
24 SEPTEMBER – 01 OCTOBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
SHANGHAI
OKINAWA
HONG KONG
MANILA
SAIGON
ANGOON
SAIPAN
GUAM
YAP
ULITHI
KOROR
TRUK
FUMATAHACHI
01/11Z
30/23Z
29/23Z
28/23Z
27/23Z
26/23Z
25/23Z
24/23Z
24/05Z
22/12Z


ELAINE
SEPTEMBER 24


ELAINE
SEPTEMBER 27

EYE FIXES CYCLONE 22

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	230555Z	08.4N 136.8E	VW-P-10-10	0450M	---	025	004	---	25/26	CIRC	----	45	--
2	240230Z	09.3N 133.9E	54-P-03-20	0500M	013	020	003	---	25/--	CIRC	----	60	--
3	240607Z	12.0N 135.0E	SLTLS	STG B	DIA --	BNDS -							
4	242100Z	11.3N 130.5E	54-P-05-05	700MB	043	---	981	2908	15/12	----			--
5	250230Z	11.5N 130.3E	54-P-10-05	700MB	057	050	976	2899	17/11	CIRC	----	09	--
6	250511Z	13.0N 130.0E	SLTLS	STG B	DIA --	BNDS -							
7	251115Z	12.6N 129.2E	VW-R----15		---	---	---	---	--/--	----			--
8	251200Z	12.8N 129.5E	VW-P-15-05	0270M	040	035	986	---	24/23	CIRC	----	12	--
9	251400Z	13.0N 129.3E	VW-P-10-05	0460M	050	045	987	---	24/23	----			--
10	252032Z	13.5N 128.6E	VW-P-03-03	0400M	---	045	984	---	24/22	CIRC	----	20	--
11	260300Z	14.2N 127.8E	54-P-03-03	700MB	050	060	961	2755	17/12	CIRC	----	10	10
12	260602Z	15.0N 127.0E	SLTLS	STG X	DIA 02	BNDS 2							
13	260815Z	14.7N 127.7E	54-P-03-01	700MB	075	080	955	2694	17/12	CIRC	----	10	--
14	261325Z	15.5N 126.4E	VW-R----10		---	---	---	---	--/--	----			--
15	261400Z	15.6N 126.4E	VW-R-02-03	2130M	038	---	---	---	--/--	CIRC	----	03	05
16	261830Z	16.2N 125.8E	VW-R----05		---	---	---	---	--/--	CIRC	----	03	--
17	262100Z	16.0N 125.7E	VW-R-03-02		---	---	---	---	--/--	CONC		15-05	--
18	270300Z	16.8N 124.7E	54-P-05-02	700MB	075	100	908	2271	26/20	CIRC	----	05	03
19	270657Z	17.5N 124.5E	SLTLS	STG X	DIA 04	BNDS 2							
20	270820Z	17.2N 124.4E	54-P-03-02	700MB	065	100	---	2234	20/14	CIRC	----	05	03
21	271620Z	17.2N 123.3E	VW-R----15		---	---	---	---	--/--	----			--
22	271645Z	17.2N 123.2E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	07	--
23	272000Z	17.4N 123.0E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	08	--
24	280300Z	17.6N 122.6E	54-P-00-01	500MB	065	100	930	---	08/02	CIRC	----	03	03

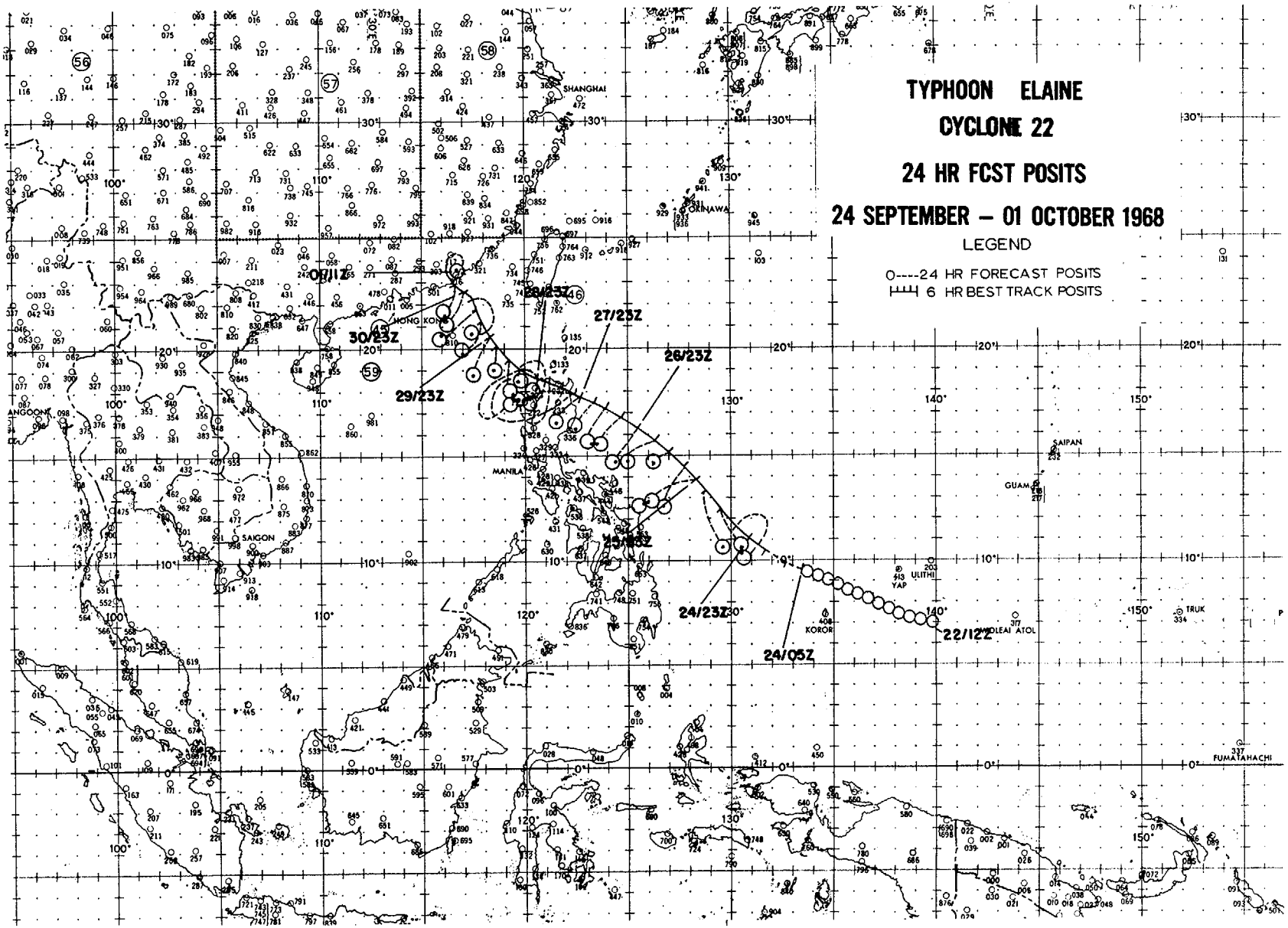
EYE FIXES CYCLONE 22

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	280601Z	17.5N 122.5E	SLTLS	STG X	DIA 04	BNDS 2							
26	280850Z	18.0N 122.2E	54-P-03-03	500MB	060	---	---	---	06/00	CIRC	----	05	--
27	281500Z	18.5N 121.5E	VW-R-10-15		---	---	---	---	--/--	CIRC	----	15	--
28	282000Z	18.9N 120.7E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	13	--
29	290300Z	19.0N 119.9E	54-P-03-01	700MB	040	050	982	2838	14/12	CIRC	----	20	05
30	290656Z	19.0N 119.5E	SLTLS	STG X	DIA 05	BNDS 3							
31	290800Z	19.4N 119.4E	54-P------	700MB	---	---	---	---	--/--	----			--
32	290900Z	19.5N 119.2E	54-P-03-01	700MB	072	055	969	2829	15/11	CIRC	----	30	--
33	291600Z	19.7N 118.7E	VW-R----20		---	---	---	---	--/--	----			--
34	291645Z	19.9N 119.0E	VW-R-10-10	0320M	---	---	---	---	--/--	CIRC	----	30	--
35	292030Z	20.1N 118.5E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	40	--
36	300557Z	21.0N 118.0E	SLTLS	STG X	DIA 05	BNDS 3							
37	300610Z	20.9N 118.2E	54-P-03-05	700MB	080	065	983	2929	15/09	----			--
38	300924Z	21.6N 117.9E	54-P-10-05	700MB	082	080	978	2917	17/14	----			--
39	301459Z	22.1N 117.7E	VW-R-05-15	1890M	---	---	---	---	--/--	ELIP	NE-SW	70X35	--
40	301800Z	22.2N 117.3E	VW-R-05-15		---	---	---	---	--/--	----			--
41	302015Z	22.2N 117.0E	VW-R-05-15		---	---	---	---	--/--	----			--
42	010300Z	22.9N 116.6E	54-R-05-05	700MB	045	035	---	---	--/12	CIRC	----	10	03
43	010600Z	23.2N 116.4E	54-R-10-20	700MB	050	060	---	---	--/12	----			--
44	010652Z	23.0N 116.5E	SLTLS	STG X	DIA 03	BNDS 3							
45	010900Z	23.4N 116.2E	54-R-15-25	3000M	055	050	---	---	--/--	----			--
46	020552Z	23.0N 116.5E	SLTLS	STG X	DIA 03	BNDS 2							

TROPICAL CYCLONE 22 -- 09/24/0500Z TO 10/01/1100Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
241700Z	10.5N	131.7E	--------	--------	--------
242300Z	11.0N	130.9E	--------	--------	--------
250500Z	11.7N	130.1E	171-0084	--------	--------
251100Z	12.5N	129.4E	153-0132	--------	--------
251700Z	13.3N	128.8E	163-0168	--------	--------
252300Z	13.9N	128.2E	245-0138	--------	--------
260500Z	14.5N	127.6E	203-0108	--------	--------
261100Z	15.1N	126.9E	237-0042	--------	--------
261700Z	15.8N	126.3E	231-0090	--------	--------
262300Z	16.3N	125.5E	214-0108	240-0246	--------
270500Z	16.8N	124.7E	221-0102	196-0198	--------
271100Z	17.1N	124.0E	201-0102	224-0186	--------
271700Z	17.3N	123.3E	214-0084	230-0234	--------
272300Z	17.6N	122.7E	226-0090	230-0228	--------
280500Z	17.8N	122.3E	273-0108	236-0168	208-0222
281100Z	18.1N	121.8E	278-0120	234-0168	--------
281700Z	18.3N	121.2E	246-0084	224-0204	243-0378
282300Z	18.6N	120.5E	222-0072	234-0192	--------
290500Z	19.0N	119.8E	171-0078	243-0216	242-0186
291100Z	19.5N	119.2E	172-0096	237-0294	--------
291700Z	20.1N	118.7E	191-0066	221-0300	220-0276
292300Z	20.7N	118.3E	203-0120	217-0312	--------
300500Z	21.2N	118.0E	213-0096	193-0252	232-0420
301100Z	21.8N	117.7E	234-0108	196-0252	--------
301700Z	22.2N	117.4E	180-0090	212-0252	228-0540
302300Z	22.5N	117.0E	212-0090	221-0258	--------
010500Z	22.9N	116.5E	191-0096	206-0174	202-0420

AVERAGE 24 HOUR ERROR - 0098 MI.
AVERAGE 48 HOUR ERROR - 0229 MI.
AVERAGE 72 HOUR ERROR - 0348 MI.


TYPHOON ELAINE
CYCLONE 22
24 HR FCST POSITS
24 SEPTEMBER – 01 OCTOBER 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
SHANGHAI
OKINAWA
HONG KONG
MANILA
SAIGON
RANGOON
SAIPAN
GUAM
ULITHI
YAP
KOROR
TRUK
FUMATAHACHI
07/12Z
28/23Z
27/23Z
26/23Z
30/23Z
29/23Z
25/23Z
24/23Z
24/05Z
22/12Z

TROPICAL CYCLONE 23 - 10/02/0500Z TO 10/09/1700Z
(FAYE)

I. DATA

A. STATISTICS
1. NUMBER OF WARNINGS ISSUED - 31
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 21
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1500 MI

B. CHARACTERISTICS AS A TYPHOON
1. MINIMUM OBSERVED SLP - 911MBS AT 050200Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2298M. AT 050200Z
3. MAXIMUM SURFACE WIND - 145 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 600 MI

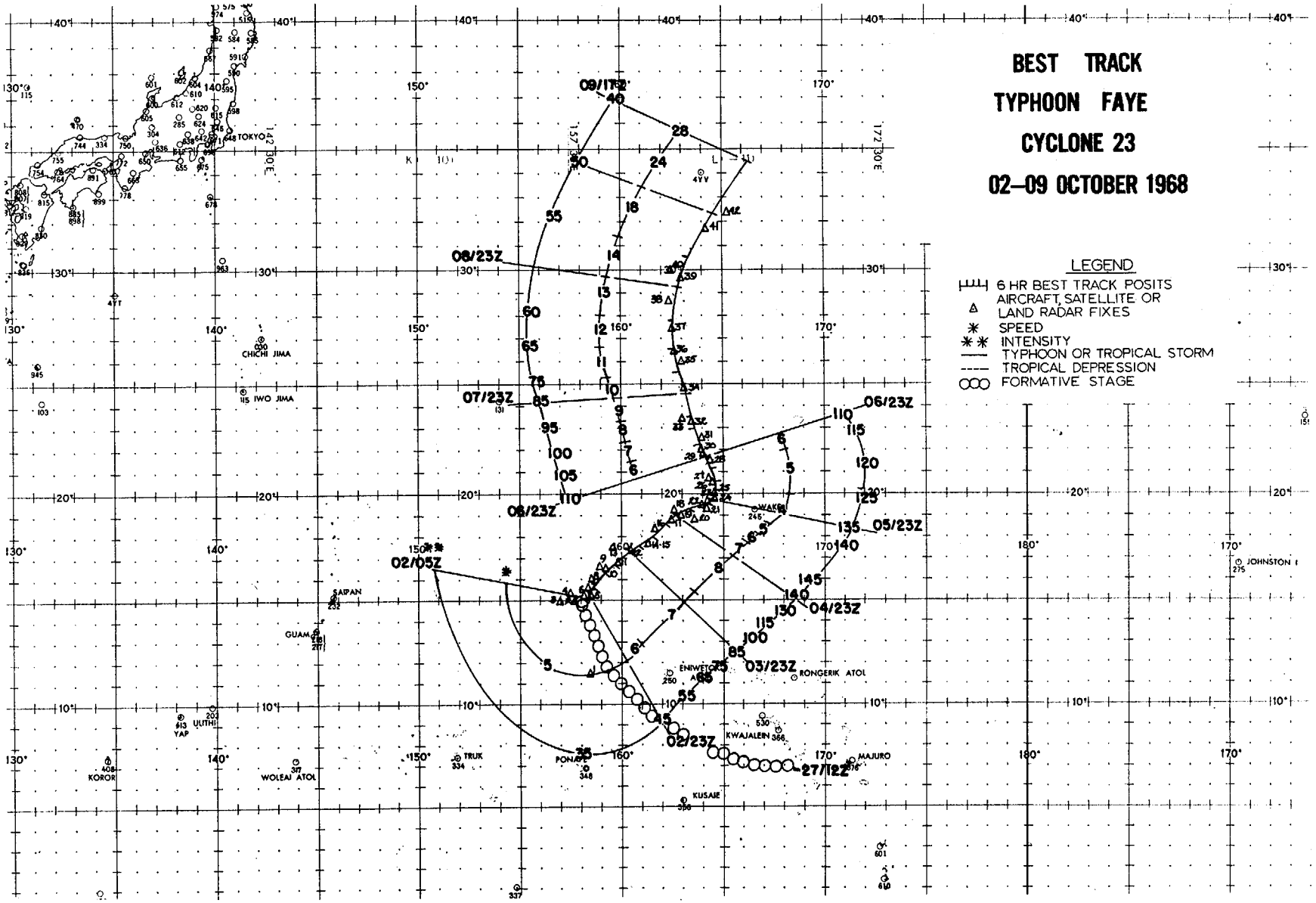
II. DEVELOPMENT

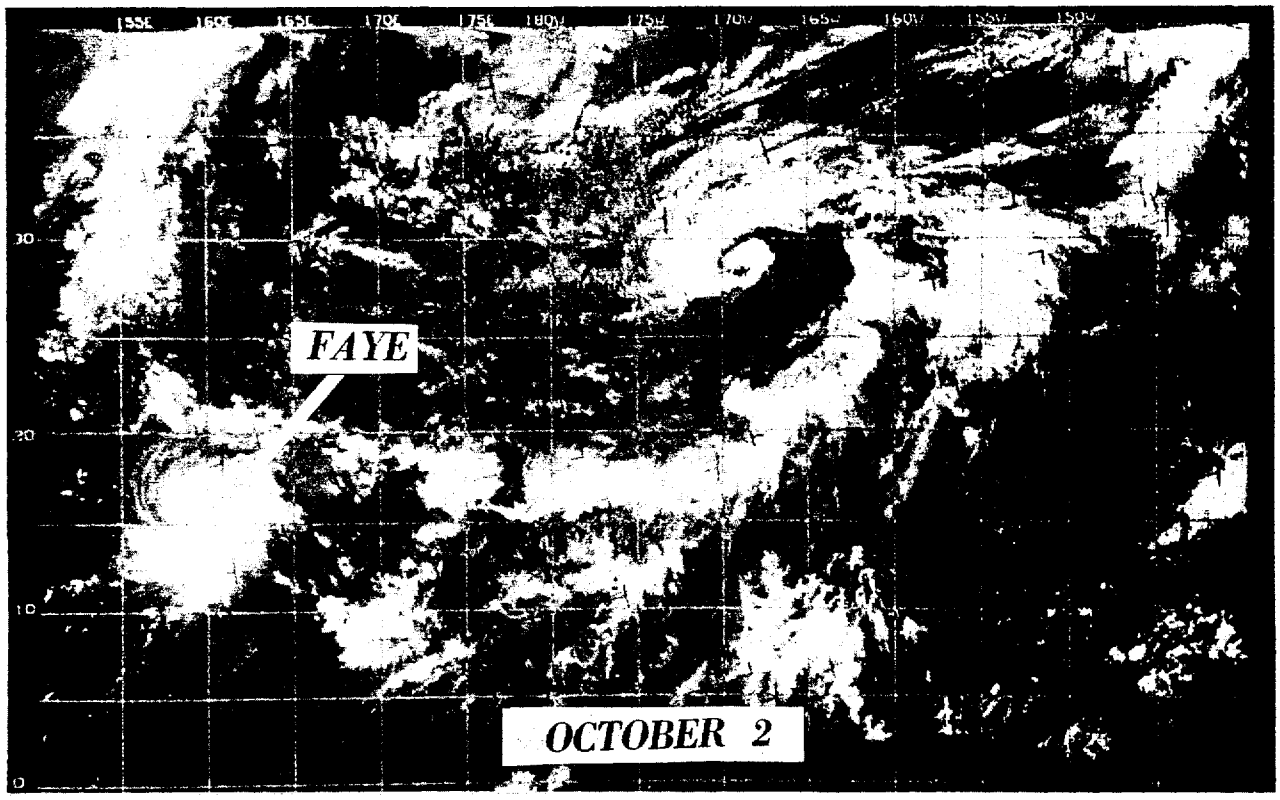
A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

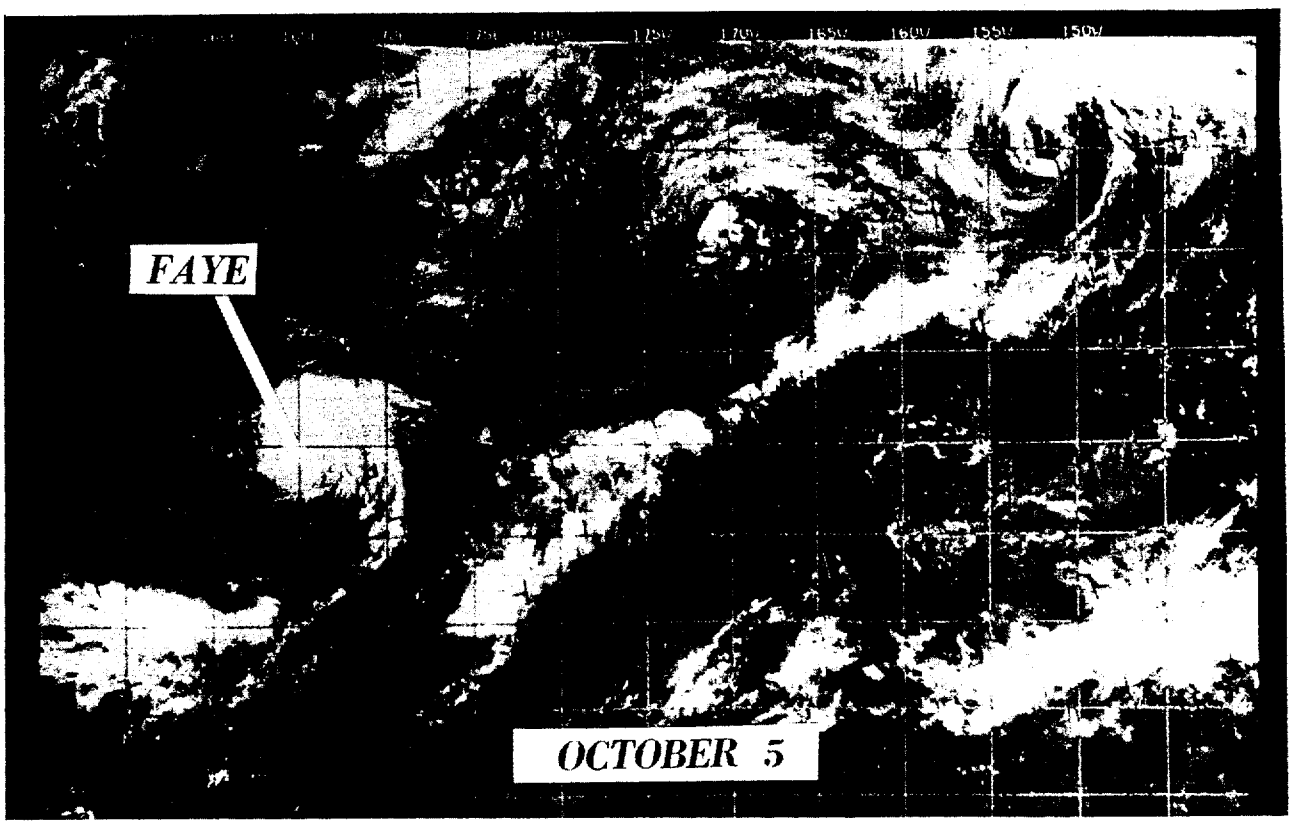
B. INITIAL SURFACE VORTEX
1. JUNCTION VORTEX AT 271200Z
2. SURFACE PRESSURE LESS THAN 1007MB

C. 200MB FLOW ABOVE SURFACE VORTEX
1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - NORTHWEST

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON FAYE
CYCLONE 23
02–09 OCTOBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
09/17Z
08/23Z
07/23Z
06/23Z
05/23Z
04/23Z
03/23Z
02/23Z
02/05Z
27/12Z
TOKYO
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
KWAJALEIN
MAJURO
RONGERIK ATOL
ENIWETOK
WAKE
JOHNSTON I


FAYE
OCTOBER 2


FAYE
OCTOBER 5

EYE FIXES CYCLONE 23

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	010301Z	11.5N 158.5E	SLTLS	STG C	DIA --	BNDS -							
2	020350Z	15.0N 157.8E	54-P-10-03	0470M	035	035	996	---	28/25	CIRC	----	03	F.B.
3	020352Z	15.0N 157.0E	SLTLS	STG B	DIA --	BNDS -							
4	021006Z	15.2N 157.5E	VW-P-05-01	0410M	---	030	000	---	27/24	CIRC	----	03	F.B.
5	021450Z	15.2N 158.4E	VW-P-10-01	0510M	---	035	998	3087	27/24	CIRC	----	03	F.B.
6	022130Z	15.2N 158.1E	54-P-06-02	700MB	050	055	982	2951	17/--	CIRC	----	20	--
7	030230Z	15.5N 158.3E	54-P-06-02	700MB	041	070	976	2883	18/12	CIRC	----	20	--
8	030447Z	16.0N 158.5E	SLTLS	STG X	DIA 03	BNDS 2							
9	030850Z	15.8N 159.0E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	14	--
10	031400Z	16.5N 159.1E	VW-R-05-02		---	---	---	---	--/--	CIRC	----	14	--
11	032125Z	16.9N 159.9E	54-P-12-02	700MB	050	075	952	2688	17/12	CIRC	----	14	--
12	040215Z	17.3N 160.4E	54-P-05-01	700MB	085	080	933	2530	21/13	CIRC	----	15	--
13	040351Z	17.5N 160.5E	SLTLS	STG X	DIA 03	BNDS 3							
14	040820Z	17.8N 161.4E	VW-R----15		---	---	---	---	--/--	----			--
15	040925Z	17.8N 161.4E	VW-P-10-03	700MB	070	---	944	2542	18/11	CIRC	----	10	07
16	041400Z	18.3N 161.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	10	--
17	042100Z	18.9N 162.4E	54-P-10-01	700MB	065	090	919	2368	16/11	CIRC	----	07	--
18	050200Z	19.2N 162.7E	54-P-10-01	700MB	130	100	911	2298	17/11	CIRC	----	08	--
19	050215Z	19.0N 163.0E	SLTLS	STG X	DIA 04	BNDS 3							
20	050925Z	18.9N 163.8E	VW-R-10-05		---	---	---	---	--/--	CIRC	----	30	05
21	051200Z	19.2N 164.1E	VW-R------		---	---	---	---	--/--	----			--
22	051400Z	19.5N 164.0E	VW-R-08-05		---	---	---	---	--/--	CIRC	----	30	--
23	052055Z	19.6N 164.2E	54-P-03-05	700MB	125	130	923	2411	16/10	CIRC	----	20	--
24	060300Z	19.9N 164.5E	54-P-01-03	700MB	152	120	918	2351	16/11	CIRC	----	15	04

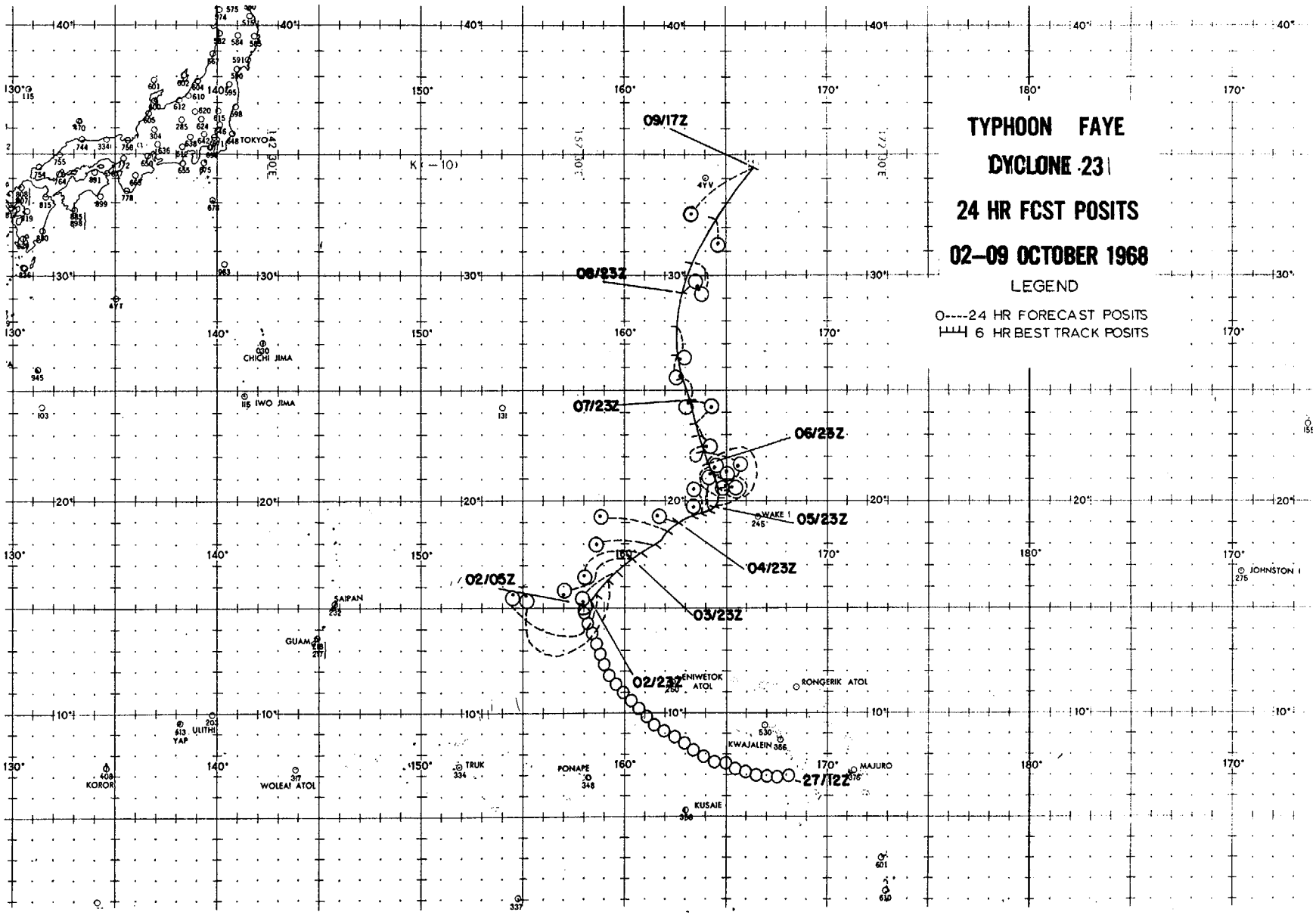
EYE FIXES CYCLONE 23

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	060346Z	20.0N 164.5E	SLTLS	STG X	DIA 03	BNDS 4							
26	060929Z	20.5N 164.3E	VW-P-05-03	700MB	100	---	940	2560	21/11	CIRC	----	20	--
27	061302Z	20.6N 164.3E	VW-R-03-10		---	---	---	---	--/--	CIRC	----	25	10
28	062130Z	21.5N 164.4E	54-P-10-05	700MB	080	080	945	2530	18/11	CIRC	----	20	--
29	070140Z	21.9N 164.0E	54-P-10-05	700MB	085	090	938	2570	21/12	----			--
30	070246Z	22.0N 164.0E	SLTLS	STG X	DIA 04	BNDS 3							
31	070900Z	22.7N 164.0E	VW-P-05-05	0270M	090	085	949	---	27/22	----			--
32	071400Z	23.2N 163.4E	VW-R-05-10		---	---	---	---	--/--	----			--
33	072100Z	24.4N 163.2E	54-P-05-04	700MB	050	045	956	2716	17/12	CIRC	----	20	--
34	080300Z	24.9N 163.1E	54-P-15-05	700MB	075	050	959	2734	17/12	----			F.B.
35	080340Z	26.0N 163.0E	SLTLS	STG X	DIA 04	BNDS 3							
36	080825Z	26.4N 162.7E	VW-P-04-05	700MB	030	---	974	2833	16/12	----			F.B.
37	081450Z	27.4N 162.4E	VW-P-05-05	700MB	065	---	974	2843	16/12	CIRC	----	35	F.B.
38	082110Z	28.8N 162.3E	54-P-10-05	700MB	055	045	965	2798	16/--	----			--
39	090200Z	29.8N 163.0E	54-P-15-10	700MB	070	---	966	2804	16/12	----			--
40	090245Z	30.0N 162.5E	SLTLS	STG C	DIA --	BNDS -							
41	090915Z	31.8N 164.2E	VW-P-10-05	0240M	065	050	966	2824	24/20	----			--
42	091300Z	33.3N 165.2E	VW-P-10-10	700MB	065	---	---	2798	13/11	----			--
43	100336Z	41.0N 168.0E	SLTLS	STG C	DIA --	BNDS -							

TROPICAL CYCLONE 23 -- 10/02/0500Z TO 10/09/1700Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
021700Z	14.8N	158.1E	--------	--------	--------
022300Z	15.2N	158.3E	--------	--------	--------
030500Z	15.7N	158.6E	271-0234	--------	--------
031100Z	16.3N	159.1E	262-0228	--------	--------
031700Z	16.7N	159.6E	224-0126	--------	--------
032300Z	17.1N	160.2E	245-0198	--------	--------
040500Z	17.5N	160.8E	249-0162	--------	--------
041100Z	18.0N	161.5E	270-0150	--------	--------
041700Z	18.6N	162.1E	281-0180	--------	--------
042300Z	19.0N	162.6E	285-0042	255-0444	--------
050500Z	19.2N	163.3E	010-0036	270-0348	--------
051100Z	19.4N	163.8E	344-0066	285-0354	--------
051700Z	19.5N	164.1E	004-0096	296-0330	--------
052300Z	19.7N	164.4E	019-0090	324-0150	--------
060500Z	20.1N	164.5E	360-0084	009-0084	283-0486
061100Z	20.6N	164.5E	090-0036	356-0102	--------
061700Z	21.1N	164.4E	055-0048	013-0132	305-0378
062300Z	21.7N	164.1E	141-0072	049-0144	--------
070500Z	22.3N	163.9E	115-0096	042-0072	056-0072
071100Z	23.0N	163.7E	158-0030	115-0108	--------
071700Z	23.7N	163.4E	157-0078	095-0132	042-0156
072300Z	24.6N	163.1E	116-0066	137-0192	--------
080500Z	25.5N	162.8E	169-0066	124-0198	101-0090
081100Z	26.7N	162.5E	170-0072	149-0150	--------
081700Z	27.9N	162.3E	165-0096	156-0222	125-0258
082300Z	29.2N	162.6E	070-0048	150-0192	--------
090500Z	30.6N	163.4E	167-0078	188-0228	153-0330
091100Z	32.3N	164.5E	168-0060	197-0270	--------
091700Z	34.7N	166.1E	229-0186	202-0384	190-0504

AVERAGE 24 HOUR ERROR - 0100 MI.
AVERAGE 48 HOUR ERROR - 0211 MI.
AVERAGE 72 HOUR ERROR - 0284 MI.


TYPHOON FAYE
DYCLONE 23
24 HR FCST POSITS
02–09 OCTOBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
09/17Z
08/23Z
07/23Z
06/23Z
05/23Z
04/23Z
03/23Z
02/05Z
02/23Z
27/12Z
TOKYO
CHICHI JIMA
IWO JIMA
WAKE I
JOHNSTON
SAIPAN
GUAM
ENIWETOK ATOL
RONGERIK ATOL
ULITHI
YAP
KOROR
WOLEAI ATOL
TRUK
PONAPE
KWAJALEIN
MAJURO
KUSAIE

TROPICAL CYCLONE 24 - 10/14/2300Z TO 10/23/2300Z
(GLORIA)

I. DATA
   A. STATISTICS
      1. NUMBER OF WARNINGS ISSUED - 37
      2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 13
      3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1236 MI

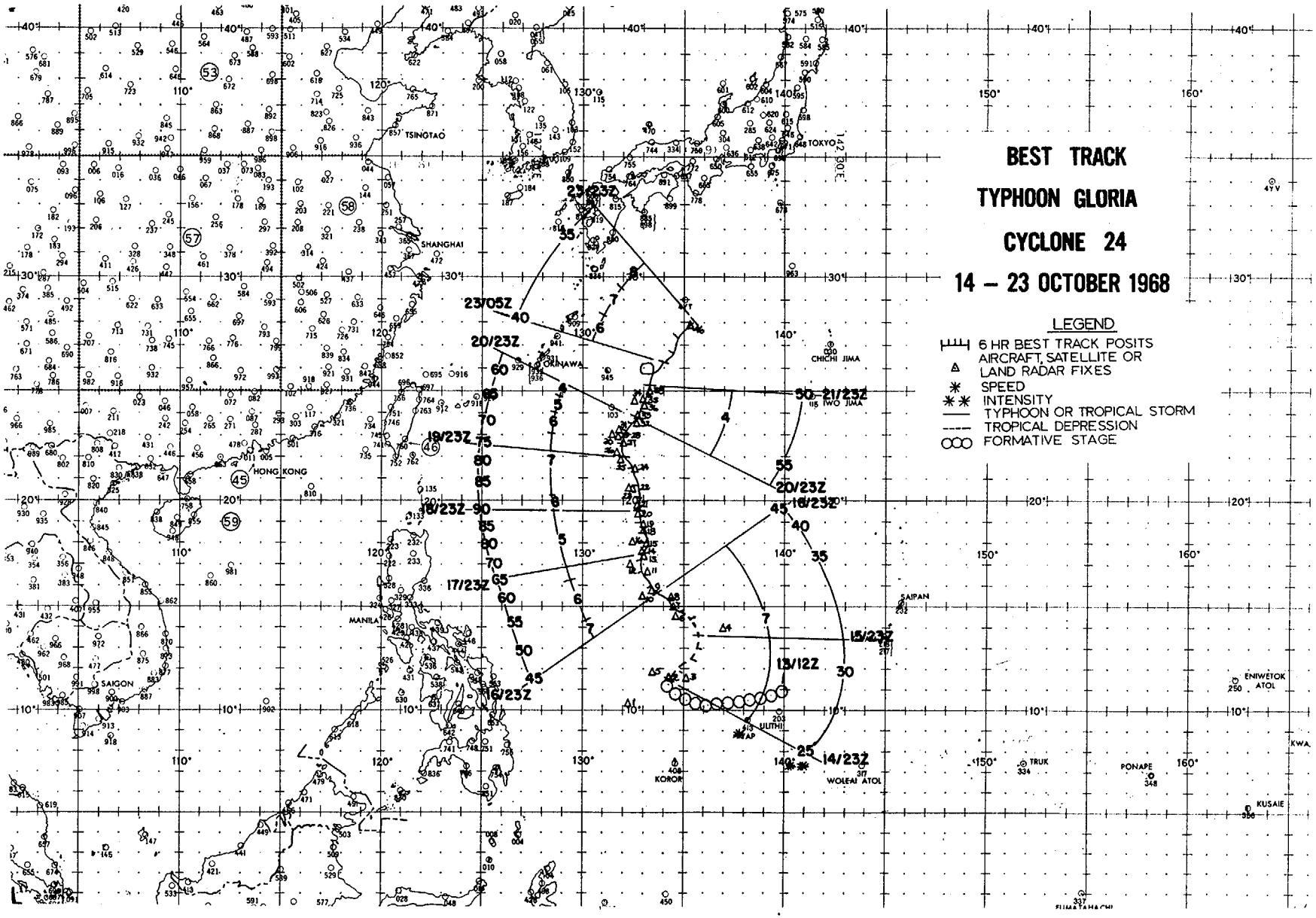
   B. CHARACTERISTICS AS A TYPHOON
      1. MINIMUM OBSERVED SLP - 942MBS AT 190300Z
      2. MINIMUM OBSERVED 700MB HEIGHT - 2716M. AT 190300Z
      3. MAXIMUM SURFACE WIND - 090 KTS (FROM BEST TRACK)
      4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 540 MI

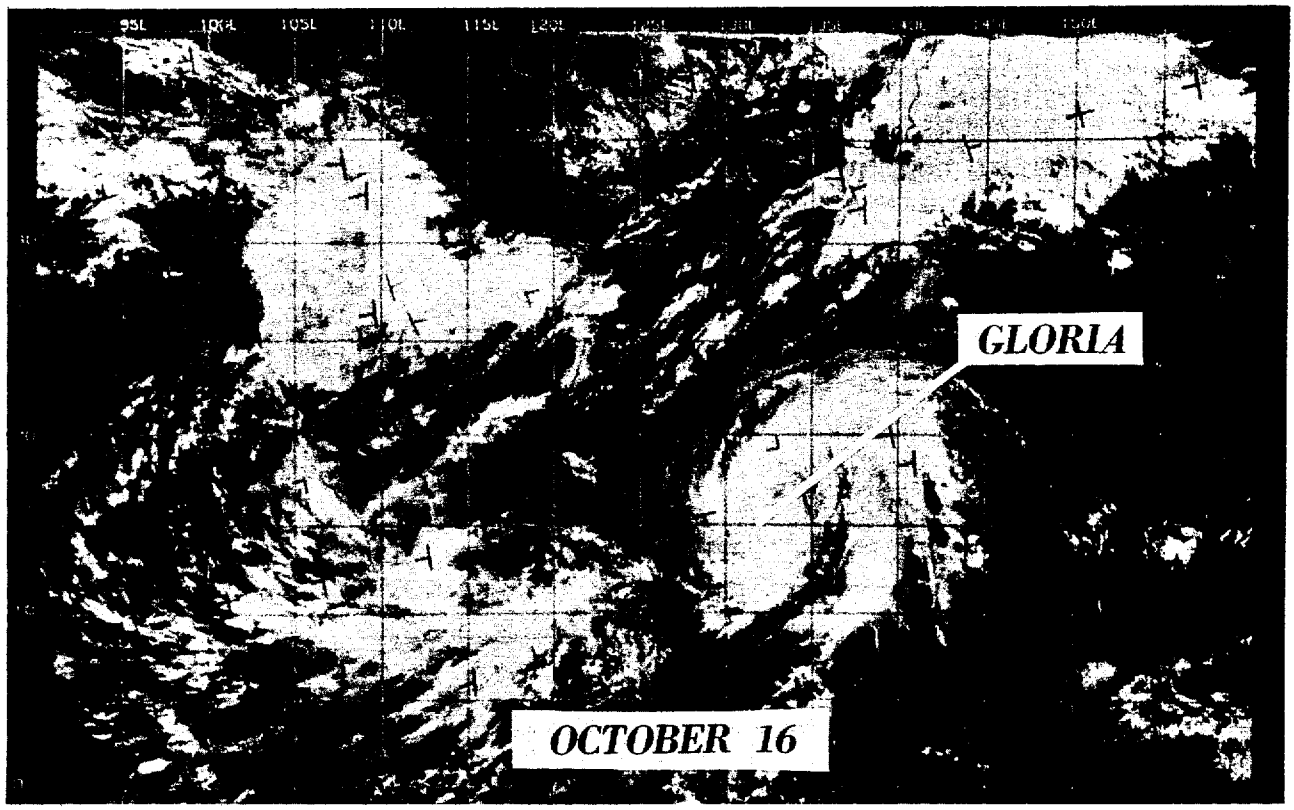
II. DEVELOPMENT
   A. INITIAL IMPETUS - FRACTURE OF A POLAR TROUGH AND AN EASTERLY WAVE

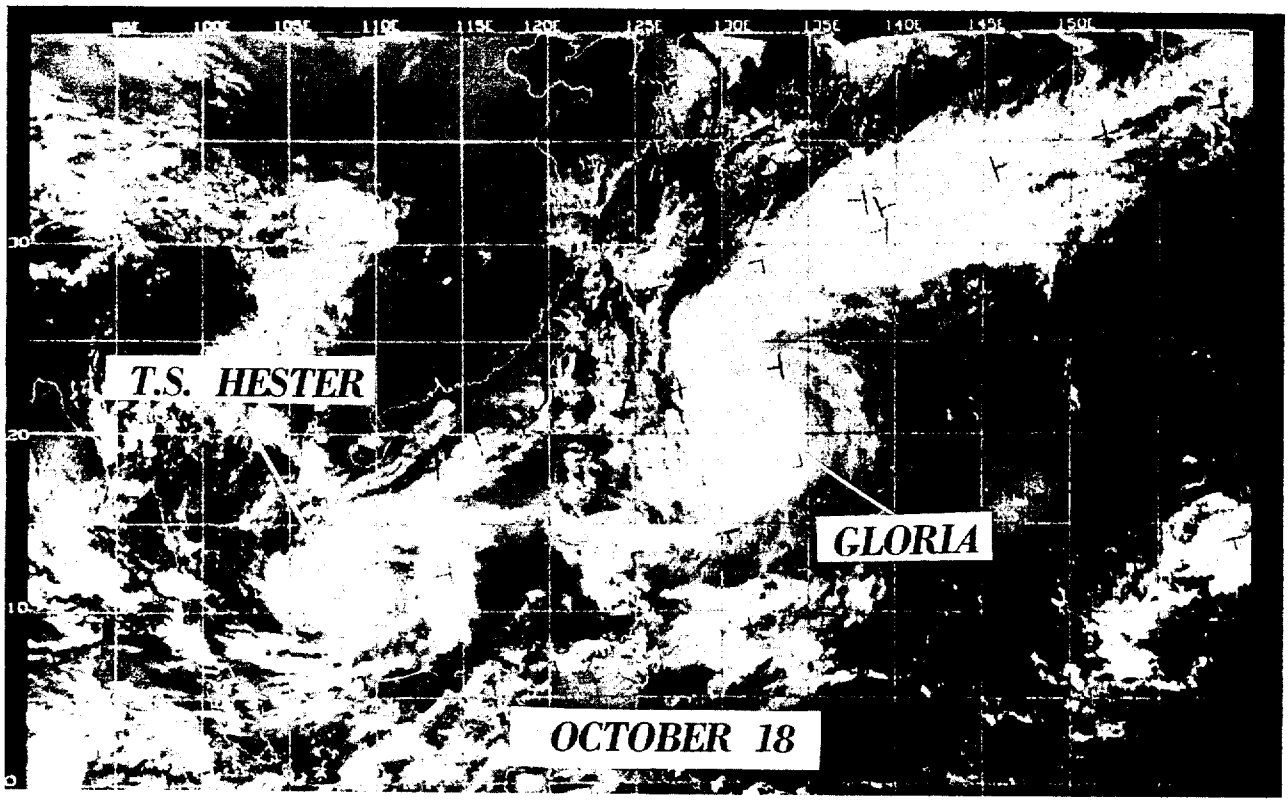
   B. INITIAL SURFACE VORTEX
      1. EMBEDDED VORTEX AT 131200Z
      2. SURFACE PRESSURE LESS THAN 1006MB

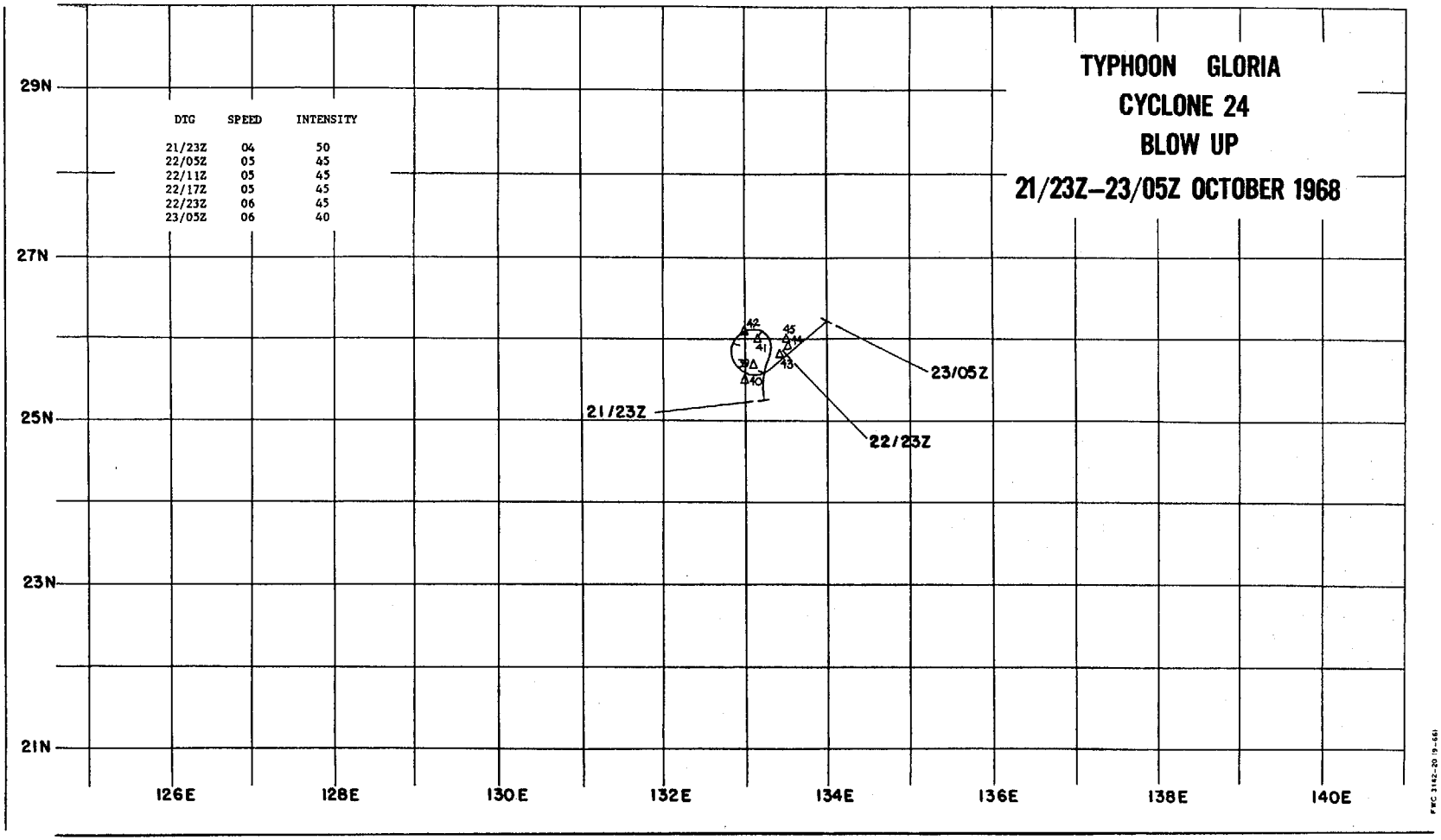
   C. 200MB FLOW ABOVE SURFACE VORTEX
      1. INITIAL - NORTHEAST
      2. UPON REACHING TYPHOON INTENSITY - ANTICYCLONIC

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON GLORIA
CYCLONE 24
14 – 23 OCTOBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
SHANGHAI
TOKYO
ORINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIGON
SAIPAN
ULITHI
WOLEAI ATOL
KOROR
TRUK
PONAPE
ENIWETOK ATOL
KUSAIE
23/23Z
23/05Z
20/23Z
19/23Z
18/23Z
17/23Z
16/23Z
21/23Z
20/23Z
18/23Z
15/23Z
13/12Z
14/23Z


GLORIA
OCTOBER 16


T.S. HESTER
GLORIA
OCTOBER 18


TYPHOON GLORIA
CYCLONE 24
BLOW UP
21/23Z–23/05Z OCTOBER 1968
DTG SPEED INTENSITY
21/23Z 04 50
22/05Z 05 45
22/11Z 05 45
22/17Z 05 45
22/23Z 06 45
23/05Z 06 40
29N
27N
25N
23N
21N
126E
128E
130E
132E
134E
136E
138E
140E
21/23Z
22/23Z
23/05Z

EYE FIXES CYCLONE 24

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	140230Z	10.3N 137.2E	54-P-03-20	0380M	020	020	004	---	23/22	CIRC	----	40	N.F.B.
2	150100Z	11.7N 134.2E	54-P-03-10	0400M	027	025	001	---	26/26	----			N.F.B.
3	150300Z	11.6N 135.1E	54-P-03-10	700MB	027	025	001	3027	12/12	----			N.F.B.
4	150611Z	14.0N 137.0E	SLTLS	STG D	DIA -- BNDS -								
5	150915Z	11.9N 133.4E	VW-P-----		---	---	000	---	--/--	----			N.F.B.
6	160500Z	14.6N 134.8E	54-P-03-15	0310M	030	030	992	3011	26/--	----			N.F.B.
7	160511Z	15.0N 134.5E	SLTLS	STG D	DIA -- BNDS -								
8	162345Z	15.5N 134.4E	54-P-03-05	700MB	065	070	986	2978	13/10	----			--
9	170300Z	15.8N 133.3E	54-P-03-01	700MB	065	070	980	2893	14/12	CIRC	----	10	--
10	170606Z	15.5N 133.0E	SLTLS	STG D	DIA -- BNDS -								
11	170845Z	16.8N 133.1E	VW-R-05-15	0320M	---	---	---	---	--/--	CIRC	----	45	F.B.
12	171405Z	17.0N 132.3E	VW-R----15		---	---	---	---	--/--	----			--
13	171510Z	17.3N 133.0E	VW-P-01-05	700MB	---	---	974	2865	16/13	CIRC	----	20	08
14	172200Z	17.5N 133.0E	54-P-05-04	700MB	055	035	965	2798	16/--	CIRC	----	35	--
15	180355Z	17.9N 133.1E	54-P-05-05	700MB	070	070	---	2758	18/10	CIRC	----	37	--
16	180510Z	18.0N 132.5E	SLTLS	STG X	DIA 04 BNDS 4								
17	180815Z	18.5N 133.0E	VW-R-05-10	0380M	---	050	---	---	--/--	CIRC	----	80	F.B.
18	181230Z	18.6N 133.0E	VW-P-05-05	700MB	050	---	---	2808	18/10	ELIP	NW-SE	85X50	F.B.
19	181400Z	18.9N 133.0E	VW-R-05-10		---	---	---	---	--/--	ELIP	N-S	85X65	--
20	182200Z	19.3N 132.8E	54-P-03-15	700MB	080	040	960	2734	17/--	ELIP	N-S	80X70	--
21	190300Z	19.8N 132.8E	54-P-03-10	700MB	085	065	942	2716	18/13	CIRC	----	80	--
22	190605Z	20.5N 132.5E	SLTLS	STG X	DIA 05 BNDS 3								
23	190930Z	20.5N 132.7E	VW-P-10-10	700MB	085	---	961	2754	17/11	CIRC	----	80	--
24	191430Z	21.4N 132.6E	VW-R-05-15		---	---	---	---	--/--	CIRC	----	75	--

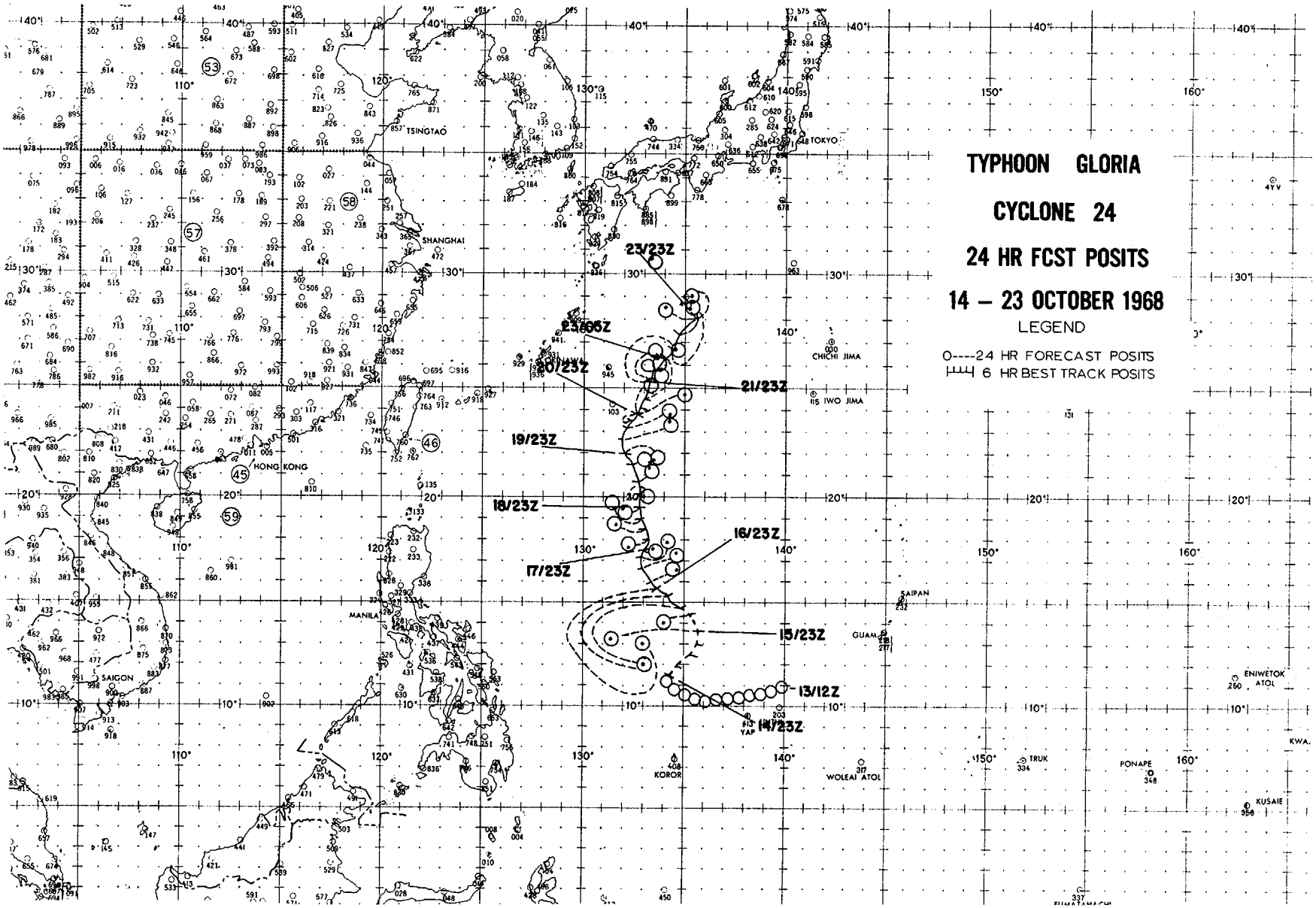
EYE FIXES CYCLONE 24

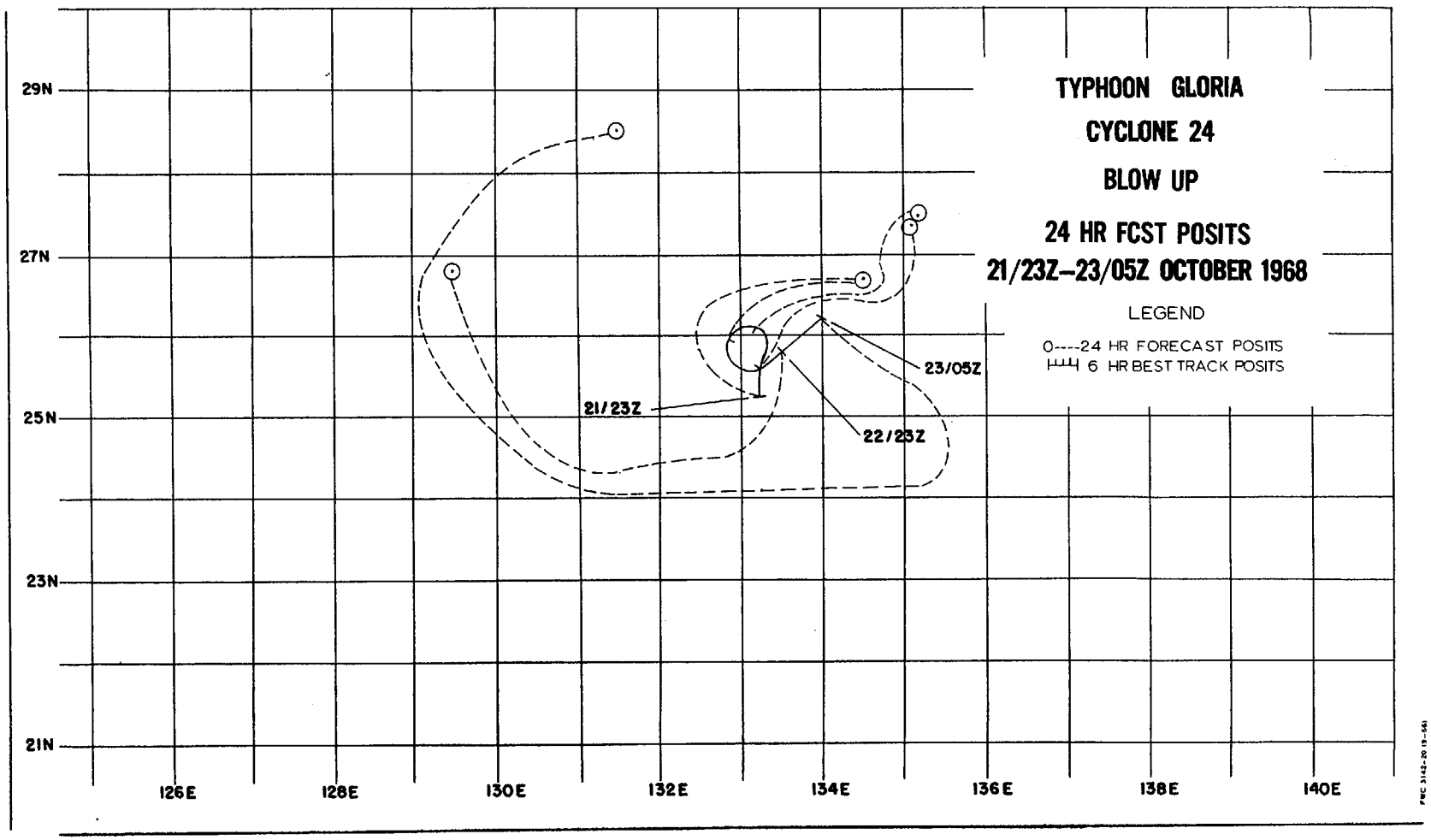
FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	192200Z	21.9N 131.9E	54-P-07-05	700MB	075	---	964	2752	15/11	CIRC	----	50	--
26	200000Z	22.2N 131.9E	54-P-07-05	700MB	070	070	963	2755	16/11	CIRC	----	50	--
27	200305Z	22.5N 132.0E	54-P-07-03	700MB	080	065	965	2774	15/11	CIRC	----	50	--
28	200505Z	23.0N 131.5E	SLTLS	STG X	DIA 05	BNDS 3							
29	200900Z	23.0N 131.8E	VW-P-05-05	700MB	075	---	960	2806	19/14	ELIP	N-S	55X45	--
30	201215Z	23.1N 131.8E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	50	--
31	201425Z	23.1N 132.2E	VW-P-05-05	700MB	060	---	960	2791	18/12	CIRC	----	40	--
32	202200Z	23.7N 132.6E	54-P-03-05	700MB	100	040	966	2822	18/12	----			--
33	210200Z	23.9N 132.6E	54-P-03-10	700MB	055	040	964	2792	19/14	----			--
34	210600Z	24.5N 132.5E	SLTLS	STG C	DIA --	BNDS -							
35	210925Z	24.6N 133.0E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	60	--
36	211225Z	24.4N 133.0E	VW-P-02-05	700MB	050	---	---	2880	18/11	CIRC	----	40	--
37	211418Z	24.5N 133.0E	VW-P-02-05	700MB	---	---	---	2877	20/16	CIRC	----	40	--
38	212200Z	25.0N 133.2E	54-P-03-10	700MB	056	050	968	2829	18/13	----			N.F.B.
39	220330Z	25.7N 133.1E	54-P-03-10	700MB	065	065	968	2835	16/12	----			--
40	220500Z	25.5N 133.0E	SLTLS	STG C	DIA --	BNDS -							
41	220855Z	26.0N 133.2E	VW-P-10-05	700MB	050	045	980	2872	16/16	----			--
42	221401Z	26.1N 133.0E	VW-P-05-15	700MB	---	---	984	2934	17/14	----			--
43	222220Z	25.8N 133.4E	54-P-05-15	700MB	030	020	977	2883	12/10	----			N.F.B.
44	230310Z	25.9N 133.6E	54-P-05-05	700MB	030	035	988	2923	14/10	----			N.F.B.
45	230555Z	26.0N 133.5E	SLTLS	STG C	DIA --	BNDS -							
46	232215Z	27.9N 135.3E	54-P-05-10	700MB	022	035	986	3015	11/09	----			N.F.B.

TROPICAL CYCLONE 24 -- 10/14/2300Z TO 10/23/2300Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM LAT.	POSITION LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
161100Z	14.8N	134.8E	--------	--------	--------
161700Z	15.3N	134.2E	--------	--------	--------
162300Z	15.6N	133.6E	191-0156	--------	--------
170500Z	16.0N	133.2E	069-0096	--------	--------
171100Z	16.6N	132.9E	074-0102	--------	--------
171700Z	17.1N	132.9E	054-0078	--------	--------
172300Z	17.5N	133.0E	090-0018	--------	--------
180500Z	18.0N	133.1E	244-0048	--------	--------
181100Z	18.5N	133.0E	282-0078	--------	--------
181700Z	19.0N	132.9E	291-0078	--------	--------
182300Z	19.5N	132.8E	255-0042	108-0018	--------
190500Z	20.1N	132.8E	116-0012	244-0090	--------
191100Z	20.8N	132.6E	060-0030	306-0108	--------
191700Z	21.4N	132.4E	082-0042	263-0096	--------
192300Z	22.0N	132.0E	098-0078	207-0048	--------
200500Z	22.6N	131.9E	072-0132	079-0120	212-0090
201100Z	23.1N	132.0E	072-0132	072-0150	--------
201700Z	23.5N	132.2E	063-0168	068-0174	336-0042
202300Z	23.8N	132.5E	038-0096	064-0186	--------
210500Z	24.1N	132.8E	031-0114	056-0384	061-0240
211100Z	24.5N	133.0E	012-0114	059-0384	--------
211700Z	24.8N	133.1E	012-0090	059-0438	062-0312
212300Z	25.2N	133.2E	037-0108	051-0366	--------
220500Z	25.6N	133.2E	046-0144	044-0372	065-0738
221100Z	26.1N	133.2E	053-0126	045-0306	--------
221700Z	25.9N	132.9E	061-0096	045-0324	066-0852
222300Z	25.8N	133.5E	042-0078	050-0366	--------
230500Z	26.2N	134.0E	024-0150	051-0378	--------
231100Z	26.7N	134.4E	019-0108	052-0354	--------
231700Z	27.3N	134.8E	011-0102	050-0192	--------
232300Z	28.0N	135.4E	218-0162	058-0156	--------

AVERAGE 24 HOUR ERROR - 0095 MI.
AVERAGE 48 HOUR ERROR - 0238 MI.
AVERAGE 72 HOUR ERROR - 0379 MI.


TYPHOON GLORIA
CYCLONE 24
24 HR FCST POSITS
14 – 23 OCTOBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
23/23Z
23/06Z
20/23Z
21/23Z
19/23Z
18/23Z
17/23Z
16/23Z
15/23Z
13/12Z
14/23Z
TSINGTAO
SHANGHAI
TOKYO
HONG KONG
MANILA
SAIGON
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
KUSAIE
KWA.


TYPHOON GLORIA
CYCLONE 24
BLOW UP
24 HR FCST POSITS
21/23Z–23/05Z OCTOBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
29N
27N
25N
23N
21N
126E
128E
130E
132E
134E
136E
138E
140E
21/23Z
22/23Z
23/05Z

TROPICAL CYCLONE 26 - 10/20/1100Z TO 10/24/2300Z
(IRMA)

I. DATA

A. STATISTICS
1. NUMBER OF WARNINGS ISSUED - 19
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 04
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1764 MI

B. CHARACTERISTICS AS A TYPHOON
1. MINIMUM OBSERVED SLP - 946MBS AT 232200Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2700M. AT 232200Z
3. MAXIMUM SURFACE WIND - 080 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

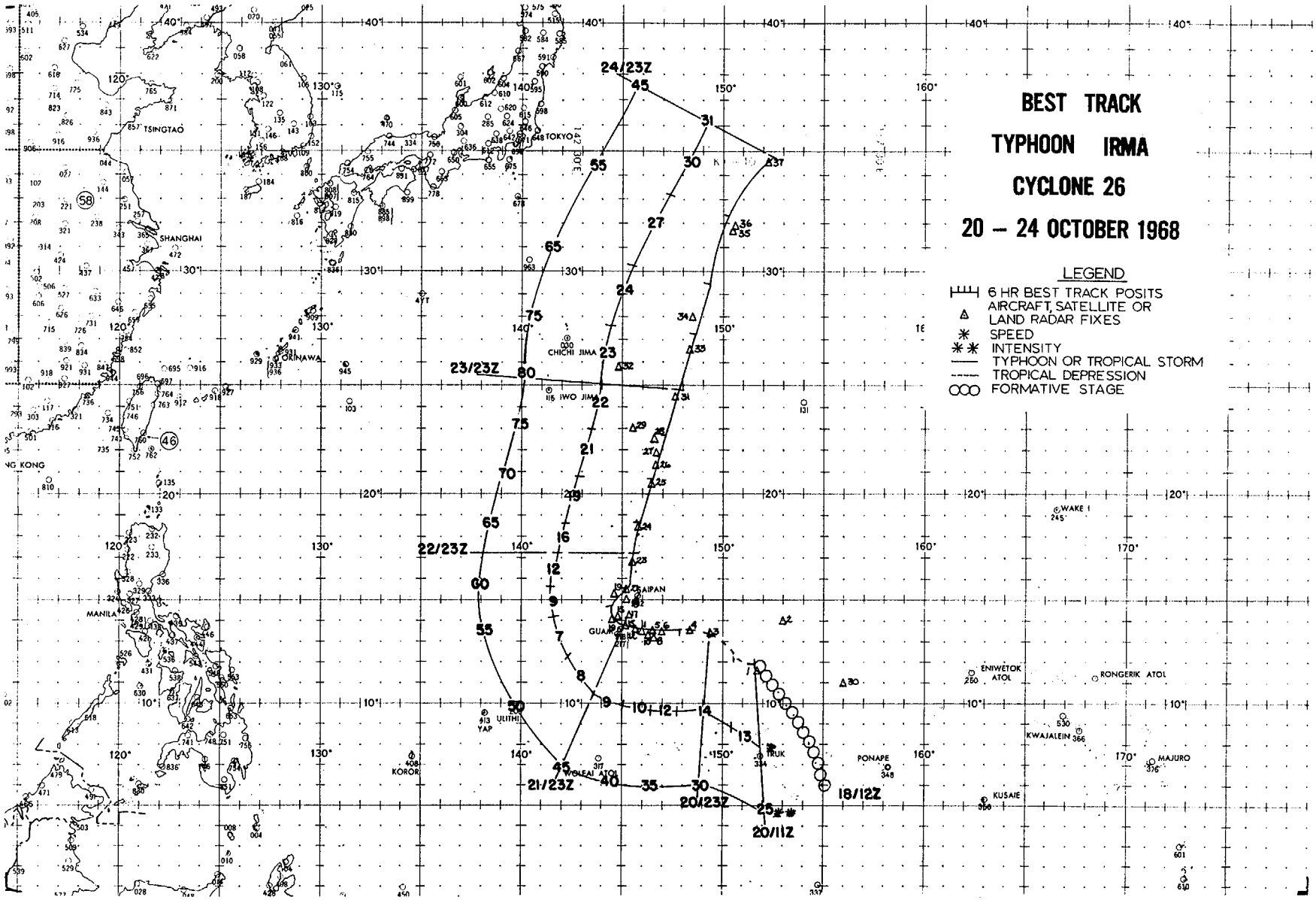
II. DEVELOPMENT

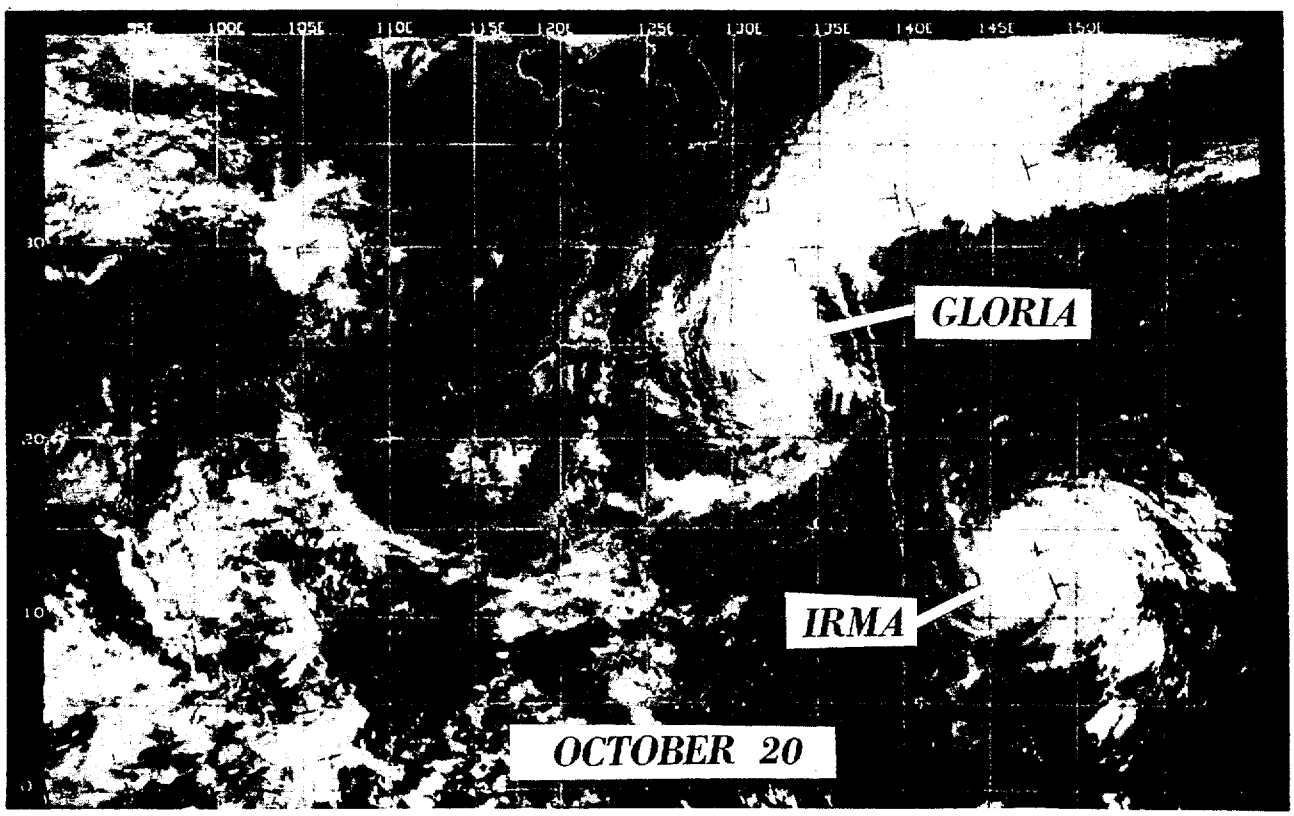
A. INITIAL IMPETUS - FRACTURE OF A POLAR TROUGH AND AN EASTERLY WAVE

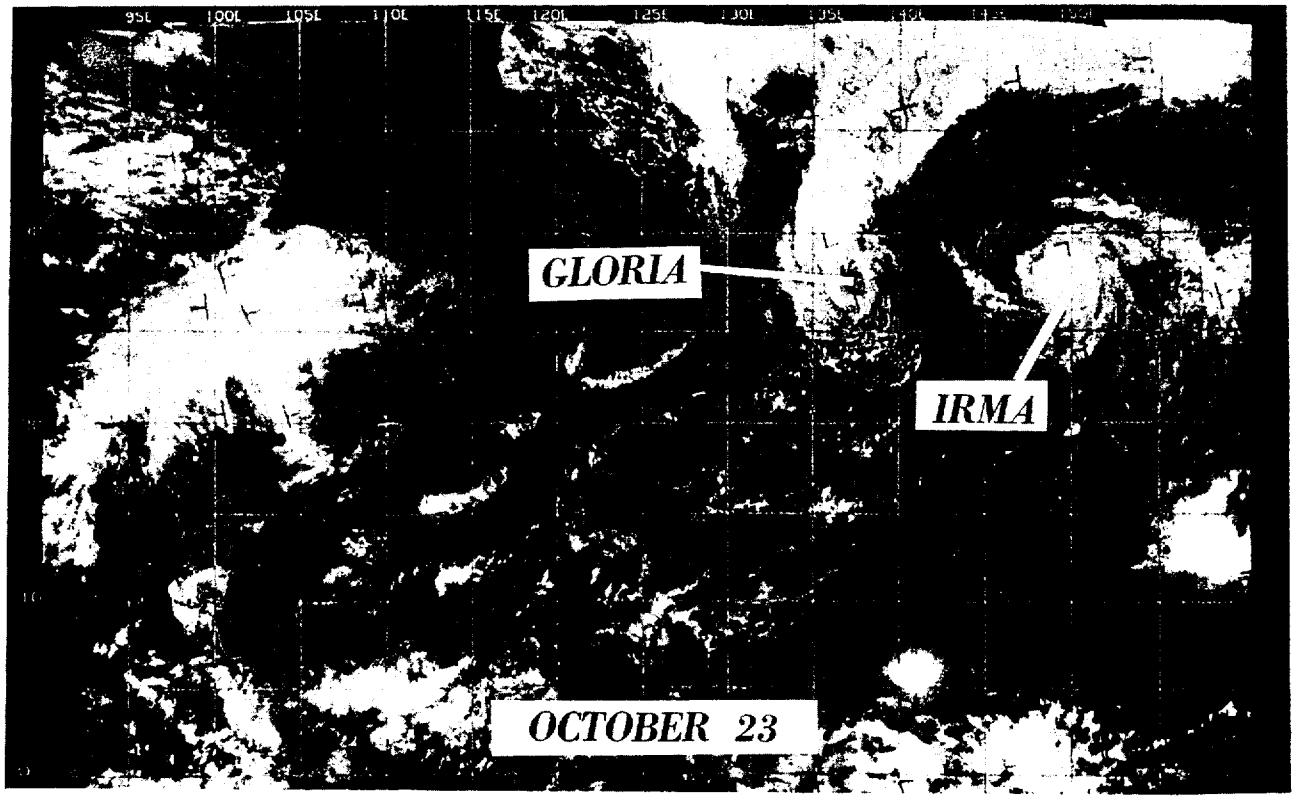
B. INITIAL SURFACE VORTEX
1. JUNCTION VORTEX AT 181200Z
2. SURFACE PRESSURE LESS THAN 1008MB

C. 200MB FLOW ABOVE SURFACE VORTEX
1. INITIAL - NORTHEAST
2. UPON REACHING TYPHOON INTENSITY - SOUTHWEST

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON IRMA
CYCLONE 26
20 – 24 OCTOBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
24/23Z
23/23Z
22/23Z
21/23Z
20/23Z
20/11Z
18/12Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
MANILA
YAP
ULITHI
WOLEAI ATOL
KOROR
TRUK
PONAPE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
WAKE I


GLORIA
IRMA
OCTOBER 20


GLORIA
IRMA
OCTOBER 23

EYE FIXES CYCLONE 26

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	190406Z	11.0N 156.0E	SLTLS	STG -	DIA 02	BNDS -							
2	200501Z	14.0N 153.0E	SLTLS	STG B	DIA --	BNDS -							
3	200815Z	11.6N 151.8E	54-P-05-05	0310M	025	015	004	---	27/27	----			N.F.B.
4	202215Z	13.3N 149.3E	54-P-10-25	0340M	025	025	998	---	24/22	----			F.B.
5	210300Z	13.6N 148.2E	54-P-05-20	0400M	020	030	996	---	24/23	----			F.B.
6	210401Z	13.5N 147.0E	SLTLS	STG X	DIA 03	BNDS 1							
7	210930Z	13.5N 146.5E	VW-P-15-10	0350M	020	022	999	---	25/26	CIRC	----	13	--
8	212030Z	14.1N 145.2E	LND RDR		---	---	---	---	--/--	ELIP	NE-SW	--X--	--
9	211030Z	13.3N 146.5E	LND RDR		---	---	---	---	--/--	----			--
10	211130Z	13.3N 146.3E	LND RDR		---	---	---	---	--/--	----			--
11	211200Z	13.3N 146.3E	LND RDR		---	---	---	---	--/--	----			--
12	211500Z	13.5N 146.0E	LND RDR		---	---	---	---	--/--	----			--
13	211600Z	13.7N 145.6E	LND RDR		---	---	---	---	--/--	----			--
14	212130Z	14.1N 144.9E	LND RDR		---	---	---	---	--/--	----			--
15	212230Z	13.9N 144.8E	LND RDR		---	---	---	---	--/--	----			--
16	212300Z	13.9N 145.2E	54-P-01-05	700MB	040	035	992	3015	14/12	----			F.B.
17	220030Z	14.1N 145.1E	LND RDR		---	---	---	---	--/--	----			--
18	220300Z	14.0N 144.5E	54-P-01-03	700MB	035	040	985	2949	12/10	CIRC	----	30	--
19	220456Z	14.0N 145.0E	SLTLS	STG X	DIA 03	BNDS 3							
20	221030Z	15.0N 145.2E	LND RDR		---	---	---	---	--/--	----			--
21	221230Z	15.3N 144.7E	LND RDR		---	---	---	---	--/--	----			--
22	221430Z	15.3N 144.9E	LND RDR		---	---	---	---	--/--	----			--
23	221557Z	15.4N 145.2E	54-P-01-04	700MB	055	---	977	2877	15/10	CIRC	----	27	05
24	221830Z	15.9N 144.9E	LND RDR		---	---	---	---	--/--	----			--

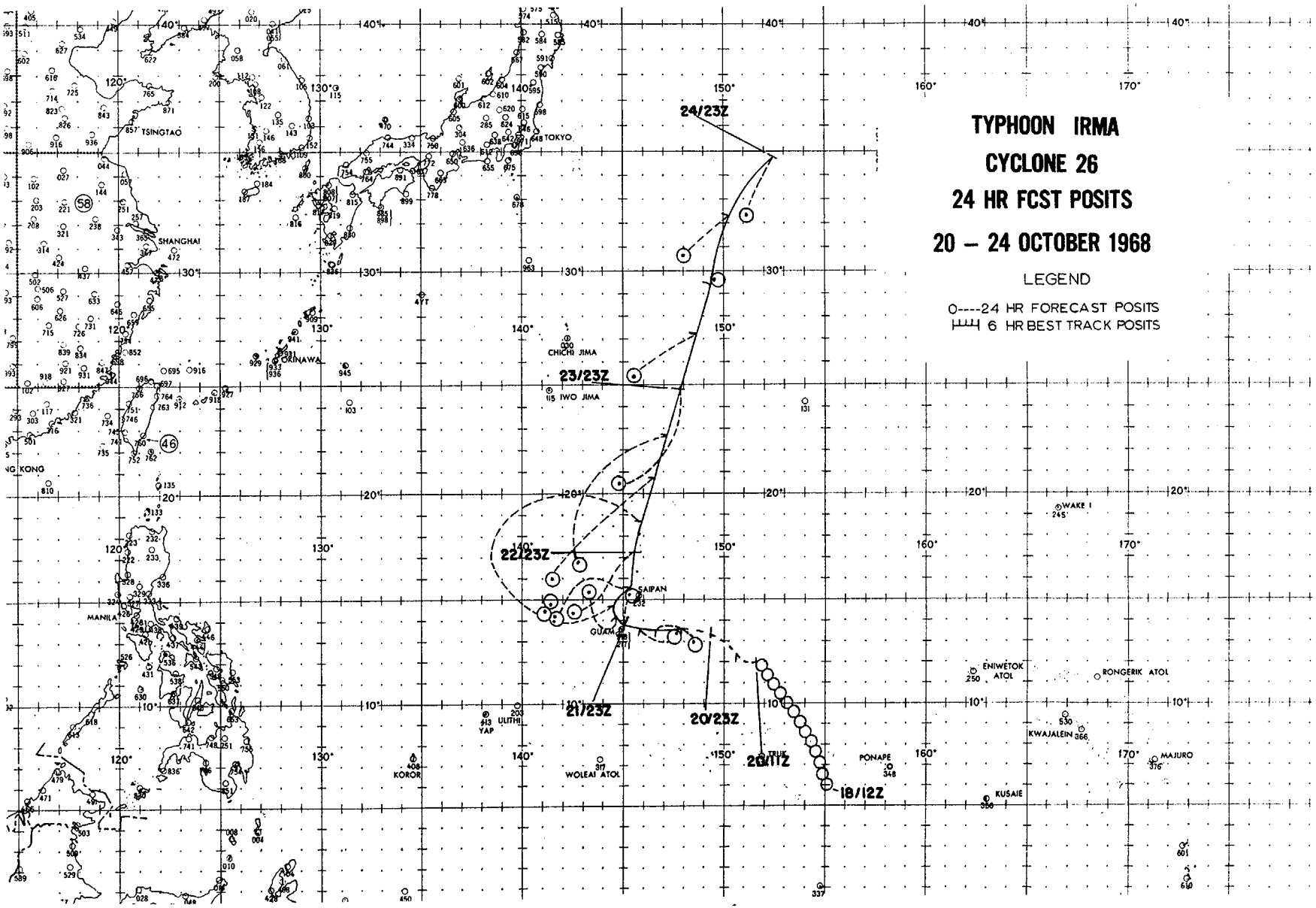
EYE FIXES CYCLONE 26

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	222230Z	16.9N 145.4E	54-P-05-05	700MB	060	050	975	2883	16/13	CIRC	----	30	05
26	230400Z	18.0N 145.5E	SLTLS	STG X	DIA 03	BNDS 3							
27	230400Z	18.4N 145.9E	54-P-02-02	700MB	070	080	968	2844	18/12	CIRC	----	30	--
28	230900Z	20.4N 146.4E	VW-R-03-03	0500M	055	050	---	---	--/--	CIRC	----	50	14
29	231155Z	21.2N 146.7E	VW-R-01-02		---	---	---	---	--/--	CIRC	----	40	15
30	231435Z	21.9N 146.8E	VW-R-03-03		---	---	---	---	--/--	CIRC	----	30	15
31	231522Z	22.5N 146.6E	VW-P-01-02	700MB	---	---	962	2774	19/11	CIRC	----	30	20
32	232200Z	24.6N 147.6E	54-P-05-05	700MB	080	080	946	2700	20/12	CIRC	----	30	--
33	240300Z	26.6N 148.4E	54-P-05-05	700MB	110	100	960	2783	21/12	CIRC	----	30	--
34	240451Z	28.0N 148.5E	SLTLS	STG X	DIA 03	BNDS 4							
35	241510Z	31.9N 150.8E	VW-R----20		---	---	---	---	--/--	----			--
36	241555Z	31.8N 150.7E	VW-P-15-02	1240M	---	070	968	2954	24/21	CIRC	----	60	F.B.
37	242220Z	34.5N 152.3E	54-P-05-10	700MB	062	065	975	2890	17/12	----			--

TROPICAL CYCLONE 26 -- 10/20/1100Z TO 10/24/2300Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
211100Z	13.6N	146.7E	110-0102	--------	--------
211700Z	13.7N	145.8E	103-0102	--------	--------
212300Z	13.8N	145.0E	009-0078	--------	--------
220500Z	14.2N	144.5E	309-0090	--------	--------
221100Z	14.8N	144.7E	255-0198	--------	--------
221700Z	15.7N	145.3E	245-0222	--------	--------
222300Z	17.1N	145.5E	224-0240	--------	--------
230500Z	18.8N	145.9E	227-0378	--------	--------
231100Z	20.7N	146.5E	226-0396	--------	--------
231700Z	22.8N	147.1E	214-0426	--------	--------
232300Z	24.9N	147.8E	211-0306	214-0750	--------
240500Z	27.1N	148.6E	237-0192	218-0918	--------
241100Z	29.5N	149.3E	034-0018	217-0900	--------
241700Z	32.2N	150.3E	232-0144	212-0984	--------
242300Z	34.8N	152.5E	204-0162	215-0852	--------

AVERAGE 24 HOUR ERROR - 0203 MI.
AVERAGE 48 HOUR ERROR - 0880 MI.
AVERAGE 72 HOUR ERROR - ---- MI.


TYPHOON IRMA
CYCLONE 26
24 HR FCST POSITS
20 – 24 OCTOBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
24/23Z
23/23Z
22/23Z
21/23Z
20/23Z
20/11Z
18/12Z
TSINGTAO
TOKYO
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
MANILA
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
WAKE I

TROPICAL CYCLONE 27 - 10/24/0500Z TO 11/02/0500Z
(JUDY)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 37
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 22
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1950 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 928MBS AT 282200Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2454M. AT 282200Z
3. MAXIMUM SURFACE WIND - 120 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - 200MB ANTICYCLONE OVER THE SURFACE CYCLONE

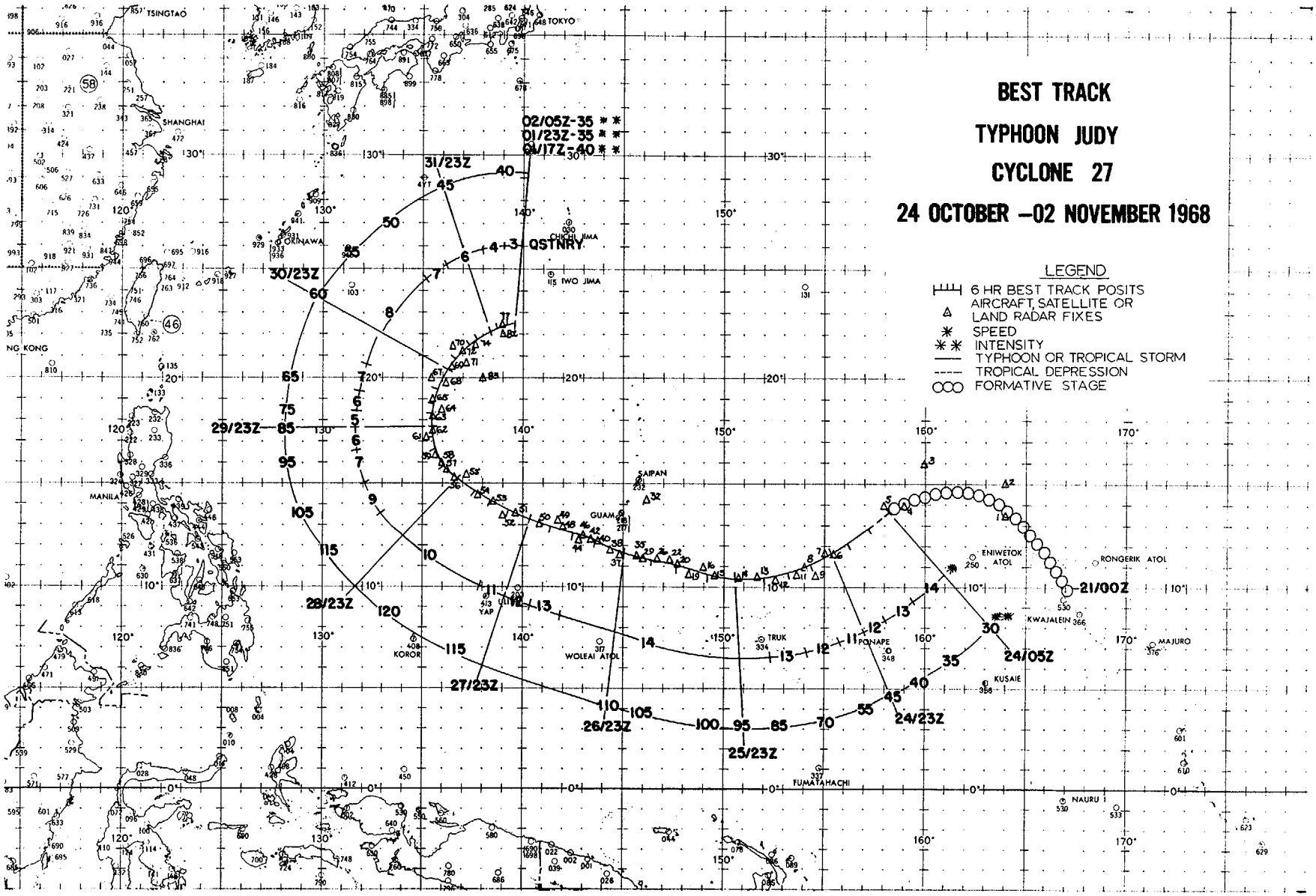
B. INITIAL SURFACE VORTEX

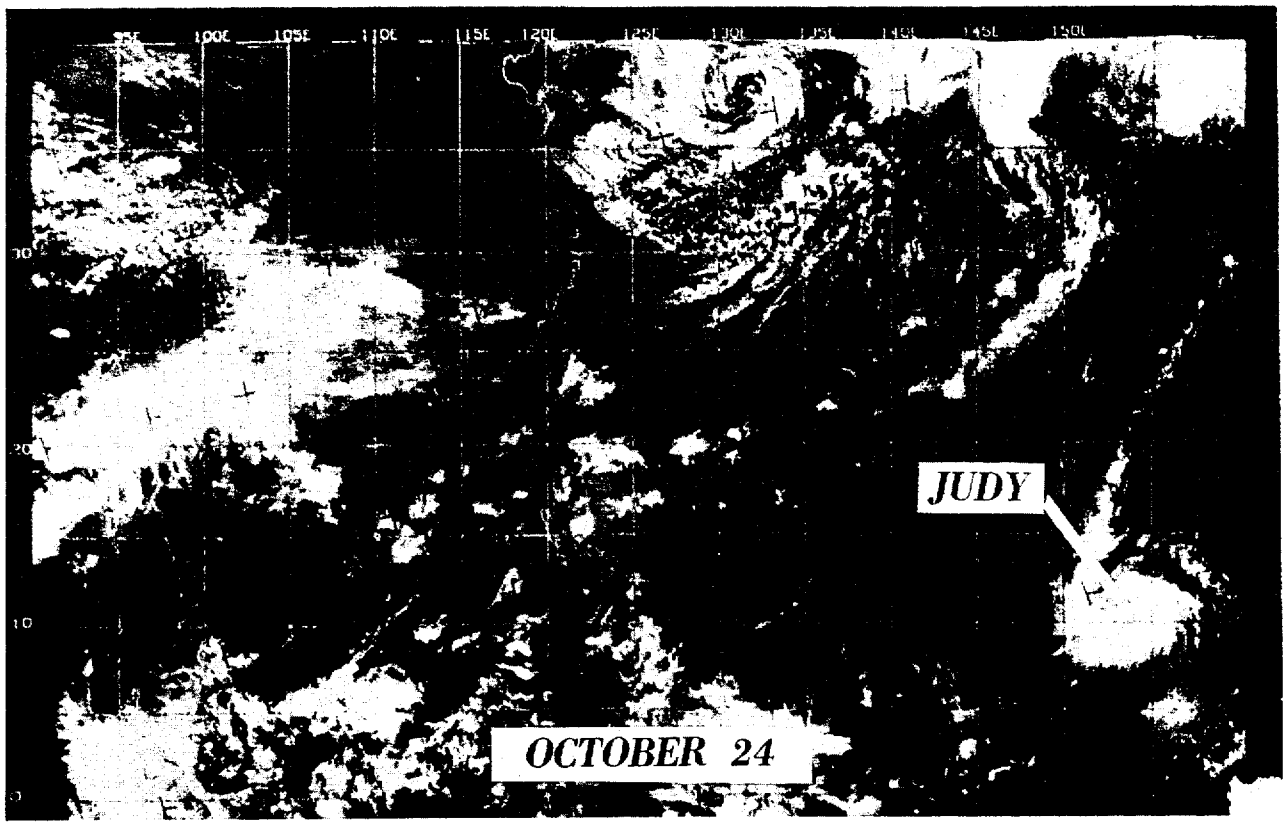
1. JUNCTION VORTEX AT 210000Z
2. SURFACE PRESSURE LESS THAN 1009MB

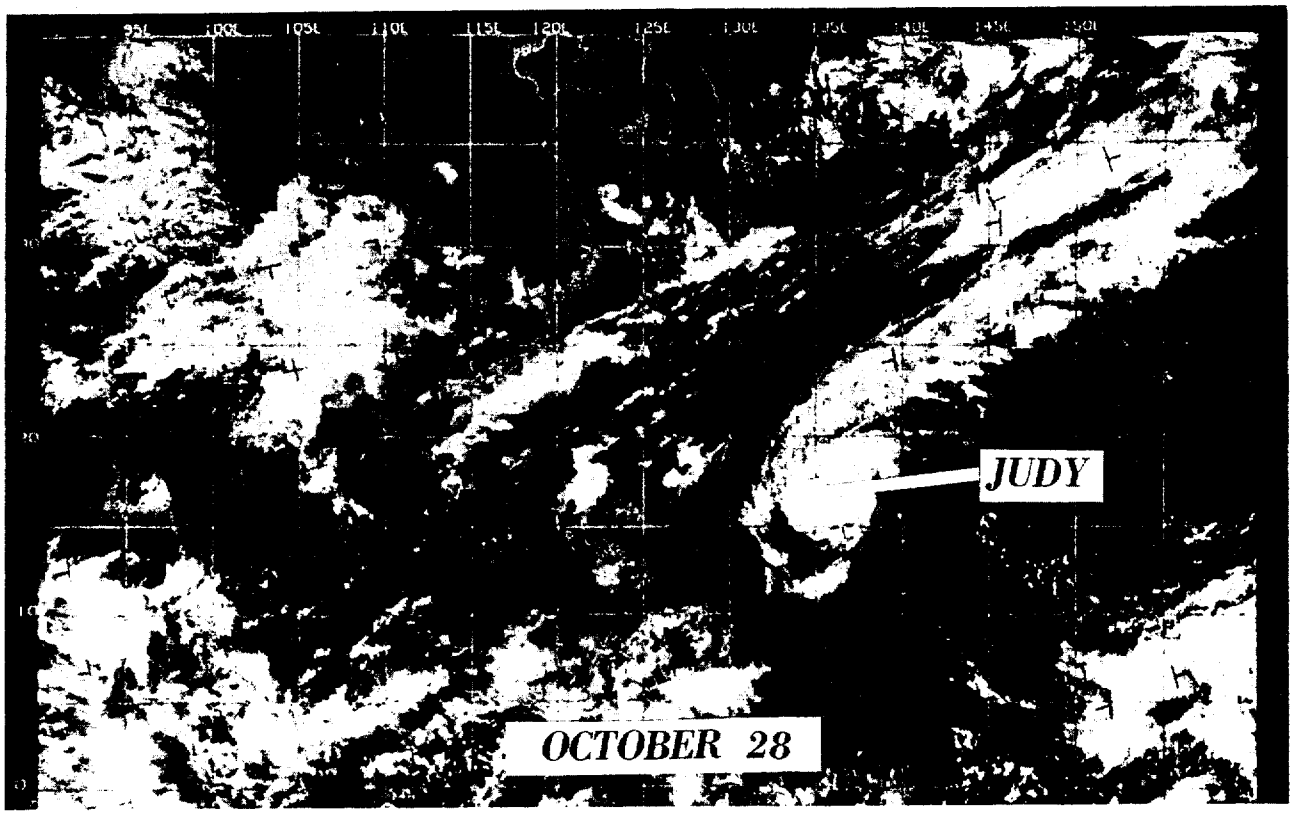
C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - NORTHWEST
2. UPON REACHING TYPHOON INTENSITY - NORTHEAST

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON JUDY
CYCLONE 27
24 OCTOBER –02 NOVEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
TSINGTAO
TOKYO
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIPAN
GUAM
YAP
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
KUSAIE
MAJURO
FUMATAHACHI
NAURU I
02/05Z-35 * *
01/23Z-35 * *
00/17Z-40 * *
31/23Z
30/23Z
29/23Z
28/23Z
27/23Z
26/23Z
25/23Z
24/23Z
24/05Z
21/00Z
QSTNRY


JUDY
OCTOBER 24


JUDY
OCTOBER 28

EYE FIXES CYCLONE 27

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	210401Z	13.5N 164.0E	SLTLS	STG B	DIA --	BNDS -							
2	220305Z	15.0N 164.0E	SLTLS	STG B	DIA --	BNDS -							
3	230400Z	16.0N 160.0E	SLTLS	STG X	DIA 03	BNDS 1							
4	240340Z	14.0N 159.0E	VW-P-08-05	0300M	034	030	003	3097	24/22	CIRC	----	40	--
5	240451Z	14.0N 158.0E	SLTLS	STG X	DIA 02	BNDS 1							
6	241630Z	11.6N 155.4E	VW-P-02-03	0410M	---	050	987	3030	24/21	CIRC	----	20	--
7	242230Z	11.6N 155.1E	54-P-10-05	700MB	072	080	978	2914	24/18	CIRC	----	30	--
8	250350Z	11.0N 154.0E	SLTLS	STG X	DIA 03	BNDS 3							
9	250400Z	10.7N 154.6E	54-P-10-05	700MB	075	080	969	2856	19/11	ELIP	N-S	30X20	12
10	250800Z	10.6N 154.5E	VW-R----20		---	---	---	---	--/--	----			--
11	250900Z	10.6N 153.7E	VW-P-15-05	0270M	110	100	966	---	26/22	CIRC	----	34	--
12	251407Z	10.3N 152.6E	VW-R----10		---	---	---	---	--/--	----			--
13	251516Z	10.5N 151.8E	VW-R-05-10		---	---	---	---	--/--	ELIP	NW-SE	30X20	--
14	252155Z	10.4N 150.8E	54-P-05-05	700MB	100	085	951	2707	18/10	CIRC	----	40	--
15	260300Z	10.6N 149.5E	54-P-05-03	700MB	070	100	944	2609	22/12	CIRC	----	20	--
16	260446Z	11.0N 149.0E	SLTLS	STG X	DIA 03	BNDS 3							
17	260500Z	10.8N 149.2E	54-P-05-03,	700MB	090	100	942	2588	21/13	CIRC	----	20	07
18	260710Z	11.1N 149.1E	VW-R----15		---	---	---	---	--/--	----			--
19	260852Z	10.8N 148.2E	VW-R-10-10		---	---	---	---	--/--	ELIP	NW-SE	27X20	--
20	261040Z	11.1N 147.9E	VW-R------		---	---	---	---	--/--	----			--
21	261130Z	11.1N 147.5E	VW-R-10-10		080	---	---	---	--/--	CIRC	----	20	20
22	261215Z	11.2N 147.3E	LND RDR		---	---	---	---	--/--	----			--
23	261335Z	11.1N 147.7E	LND RDR		---	---	---	---	--/--	----			--
24	261340Z	11.2N 147.1E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 27

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	261345Z	11.2N 147.2E	VW-R----10		---	---	---	---	--/--	----			--
26	261420Z	11.2N 146.9E	LND RDR		---	---	---	---	--/--	----			--
27	261450Z	11.2N 147.0E	VW-R-03-05		---	---	---	---	--/--	CIRC	----	25	10
28	261515Z	11.2N 146.8E	LND RDR		---	---	---	---	--/--	----			--
29	261535Z	11.2N 146.0E	LND RDR		---	---	---	---	--/--	----			--
30	261630Z	11.3N 146.6E	LND RDR		---	---	---	---	--/--	----			--
31	261755Z	11.3N 146.2E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	20	--
32	261830Z	14.1N 146.1E	LND RDR		---	---	---	---	--/--	----			--
33	261915Z	11.5N 145.9E	LND RDR		---	---	---	---	--/--	----			--
34	261930Z	11.5N 145.9E	LND RDR		---	---	---	---	--/--	----			--
35	262045Z	11.5N 145.6E	LND RDR		---	---	---	---	--/--	----			--
36	262100Z	11.6N 145.7E	54-P-01-03	700MB	110	100	941	2582	20/20	CIRC	----	15	05
37	270000Z	11.8N 144.9E	54-P-01-04	700MB	130	100	943	2570	16/10	CIRC	----	20	--
38	270220Z	11.9N 144.3E	54-P-03-05	700MB	085	130	935	2518	18/10	CIRC	----	20	--
39	270230Z	11.9N 144.4E	LND RDR		---	---	---	---	--/--	----			--
40	270500Z	12.1N 143.9E	54-P-03-05	700MB	120	130	937	2521	16/10	CIRC	----	15	--
41	270540Z	12.0N 144.0E	SLTLS	STG X	DIA 04	BNDS 4							
42	270700Z	12.2N 143.4E	LND RDR		---	---	---	---	--/--	----			--
43	270800Z	12.2N 143.2E	LND RDR		---	---	---	---	--/--	----			--
44	270900Z	12.3N 143.1E	LND RDR		---	---	---	---	--/--	----			--
45	270900Z	12.4N 142.9E	VW-R-05-03		---	---	---	---	--/--	CIRC	----	25	07
46	271000Z	12.4N 143.0E	LND RDR		---	---	---	---	--/--	----			--
47	271030Z	12.4N 142.7E	LND RDR		---	---	---	---	--/--	----			--
48	271351Z	13.0N 142.0E	VW-R----15		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 27

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	271415Z	13.1N 141.9E	VW-R-02-05		---	---	---	---	--/--	ELIP	NW-SE	32X26	10
50	272045Z	13.0N 140.9E	54-P-05-05	700MB	085	110	939	2562	16/10	CIRC	----	20	10
51	280300Z	13.7N 139.7E	54-P-03-03	700MB	100	100	933	2506	18/11	CIRC	----	25	10
52	280445Z	13.5N 139.0E	SLTLS	STG X	DIA 05	BNDS 4							
53	280955Z	14.1N 138.6E	VW-R-10-05		---	---	---	---	--/--	CIRC	----	35	08
54	281405Z	14.5N 137.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	35	08
55	281950Z	15.5N 137.2E	ACFT RDR		---	---	---	---	--/--	CIRC	----	40	--
56	282200Z	15.3N 136.7E	54-P-03-02	700MB	---	110	928	2454	20/08	CIRC	----	30	10
57	290340Z	15.9N 136.2E	54-P-03-02	700MB	---	115	931	2490	18/09	ELIP	NW-SE	30X25	--
58	290540Z	16.0N 136.0E	SLTLS	STG X	DIA 05	BNDS 4							
59	290850Z	16.3N 135.7E	VW-R----10		---	---	---	---	--/--	----			--
60	290920Z	16.5N 135.7E	VW-R-05-05	043OM	---	---	---	---	--/--	CIRC	----	20	12
61	291548Z	17.1N 135.2E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	27	--
62	292100Z	17.6N 135.5E	54-P-05-05	700MB	140	090	950	2640	16/12	ELIP	NW-SE	25X15	08
63	300300Z	18.1N 135.5E	54-P-02-05	700MB	065	085	951	2661	18/10	CIRC	----	20	--
64	300440Z	18.5N 136.0E	SLTLS	STG X	DIA 05	BNDS 4							
65	300925Z	19.0N 135.5E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	30	F.B.
66	300955Z	19.0N 135.6E	VW-P-05-05	700MB	---	---	968	2772	23/19	CIRC	----	30	--
67	301400Z	20.0N 135.4E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	35	--
68	302100Z	19.9N 136.2E	54-P-03-05	700MB	085	075	968	2874	24/12	----			--
69	310300Z	20.8N 136.5E	54-P-05-05	700MB	070	065	975	2890	20/12	CIRC	----	30	05
70	310537Z	21.5N 136.5E	SLTLS	STG X	DIA 03	BNDS 3							
71	310755Z	20.8N 137.2E	VW-R----25		---	---	---	---	--/--	----			--
72	310840Z	21.2N 137.0E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	40	10

EYE FIXES CYCLONE 27

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	311125Z	21.3N 137.3E	VW-P-05-10	700MB	---	---	980	2966	19/10	CIRC	----	40	--
74	311405Z	21.7N 137.6E	VW-R-05-10	2900M	060	---	---	---	--/--	CIRC	----	38	10
75	312100Z	21.6N 138.0E	54-P-05-05	700MB	060	040	976	2893	20/14	----			--
76	010200Z	21.9N 138.1E	54-P-05-05	700MB	040	055	980	2929	20/14	CIRC	----	30	--
77	010435Z	22.5N 139.0E	SLTLS	STG D	DIA -- BNDS -								
78	010830Z	22.4N 139.1E	VW-R-05-05		---	030	---	---	--/--	CIRC	----	12	--
79	011405Z	22.2N 139.4E	VW-P-05-05	0310M	---	025	988	---	27/25	CIRC	----	15	--
80	012200Z	22.4N 139.6E	54-P-03-05	700MB	030	035	990	3015	16/14	----			--
81	020300Z	22.1N 139.5E	54-P-03-05	700MB	020	035	994	3051	16/14	----			--
82	020530Z	22.0N 139.0E	SLTLS	STG C	DIA -- BNDS -								
83	030430Z	20.0N 138.0E	SLTLS	STG C	DIA -- BNDS -								

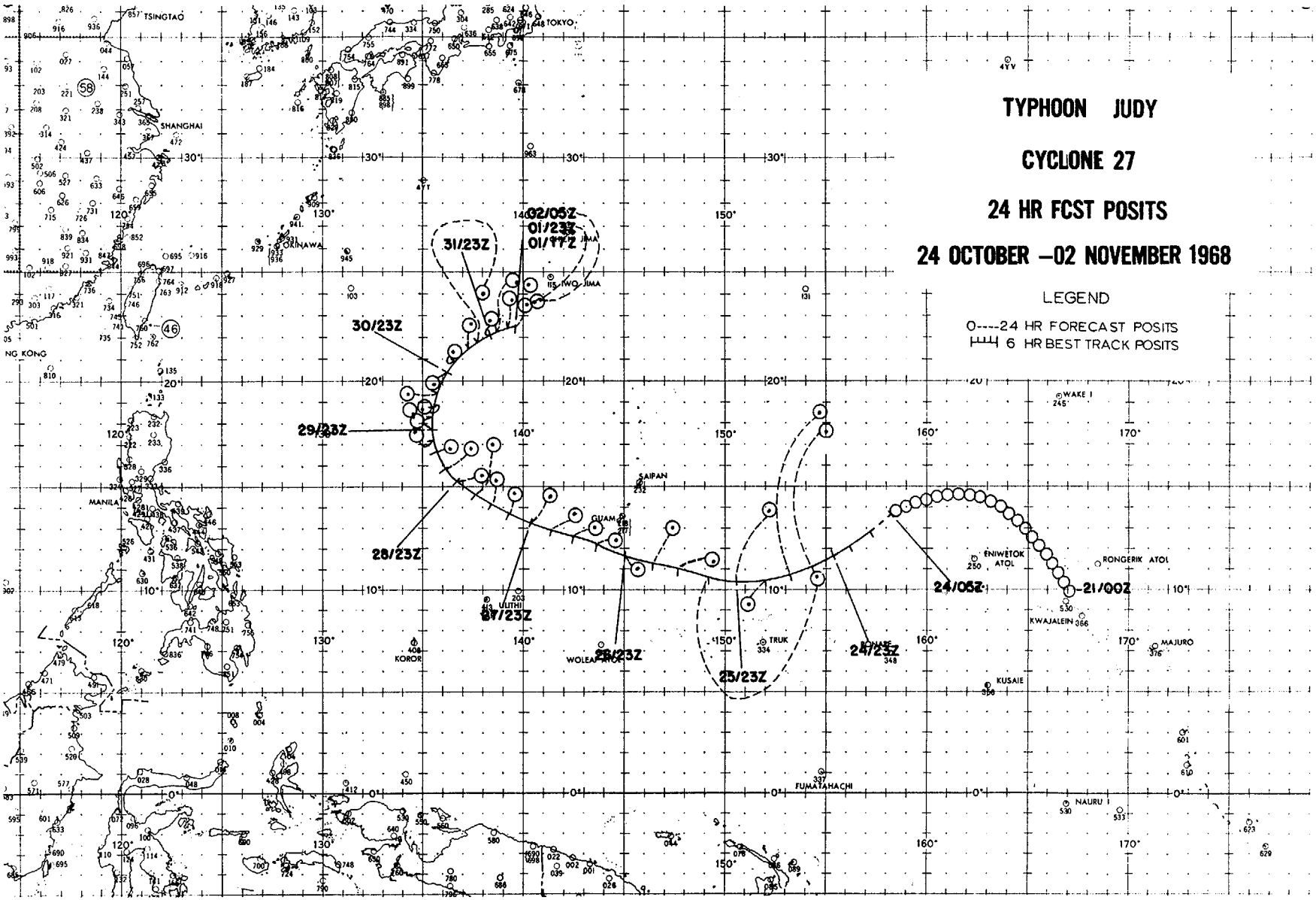
TROPICAL CYCLONE 27 -- 10/24/0500Z TO 11/02/0500Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
241100Z	12.9N	157.1E	--------	--------	--------
241700Z	12.1N	156.1E	--------	--------	--------
242300Z	11.5N	155.3E	--------	--------	--------
250500Z	10.9N	154.4E	005-0396	--------	--------
251100Z	10.5N	153.2E	011-0486	--------	--------
251700Z	10.3N	152.0E	214-0084	--------	--------
252300Z	10.4N	150.5E	024-0228	--------	--------
260500Z	10.7N	149.2E	090-0318	--------	--------
261100Z	11.0N	147.8E	083-0096	--------	--------
261700Z	11.3N	146.4E	026-0108	--------	--------
262300Z	11.7N	145.0E	134-0054	039-0516	--------
270500Z	12.2N	143.7E	084-0054	091-0540	--------
271100Z	12.6N	142.5E	067-0054	072-0270	--------
271700Z	13.0N	141.3E	057-0084	051-0324	--------
272300Z	13.4N	140.3E	040-0084	104-0138	--------
280500Z	13.8N	139.3E	013-0054	064-0132	092-0708
281100Z	14.2N	138.5E	013-0054	053-0132	--------
281700Z	14.6N	137.5E	021-0150	047-0156	056-0540
282300Z	15.2N	136.7E	076-0072	047-0156	--------
290500Z	15.9N	136.0E	053-0096	051-0132	069-0192
291100Z	16.6N	135.6E	064-0036	064-0102	--------
291700Z	17.2N	135.5E	303-0042	033-0198	036-0174
292300Z	17.8N	135.4E	303-0042	094-0084	--------
300500Z	18.2N	135.5E	278-0042	049-0132	056-0114
301100Z	18.8N	135.6E	259-0030	021-0048	--------
301700Z	19.5N	135.8E	263-0090	304-0090	025-0216
302300Z	20.3N	136.2E	232-0036	284-0096	--------
310500Z	20.9N	136.7E	345-0024	260-0126	038-0186
311100Z	21.4N	137.3E	000-0084	251-0126	--------
311700Z	21.7N	137.8E	005-0138	269-0210	323-0180
312300Z	22.0N	138.4E	360-0048	291-0096	--------
010500Z	22.2N	138.8E	022-0144	018-0198	299-0180
011100Z	22.3N	139.2E	008-0096	027-0300	--------
011700Z	22.3N	139.5E	016-0126	028-0360	300-0246

TROPICAL CYCLONE 27 -- 10/24/0500Z TO 11/02/0500Z
POSITION AND FORECAST VERIFICATION DATA (CONT)

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG.	DIST.	48 HR. ERROR DEG.	DIST.	72 HR. ERROR DEG.	DIST.
012300Z	22.3N	139.5E	022	0078	030	0264	--------	
020500Z	22.3N	139.5E	029	0102	041	0498	040	0540

AVERAGE 24 HOUR ERROR - 0110 MI.
AVERAGE 48 HOUR ERROR - 0208 MI.
AVERAGE 72 HOUR ERROR - 0297 MI.


TYPHOON JUDY
CYCLONE 27
24 HR FCST POSITS
24 OCTOBER –02 NOVEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
TSINGTAO
TOKYO
SHANGHAI
ORINAWA
IWO JIMA
HONG KONG
MANILA
SAIPAN
GUAM
ULITHI
KOROR
WOLEAI
TRUK
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
FUMATAHACHI
NAURU I
WAKE I
31/23Z
30/23Z
29/23Z
28/23Z
27/23Z
26/23Z
25/23Z
24/23Z
24/05Z
21/00Z
02/05Z
01/23Z
01/11Z

TROPICAL CYCLONE 28 - 10/26/0500Z TO 11/04/1700Z
(KIT)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 26
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 08
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1716 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 959MBS AT 032100Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2743M. AT 032100Z
3. MAXIMUM SURFACE WIND - 070 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - LOW LEVEL SURGE INTO CYCLONIC CIRCULATION FROM THE SOUTH WITH SUBSEQUENT DIVERGENCE AT 200MB LEVEL

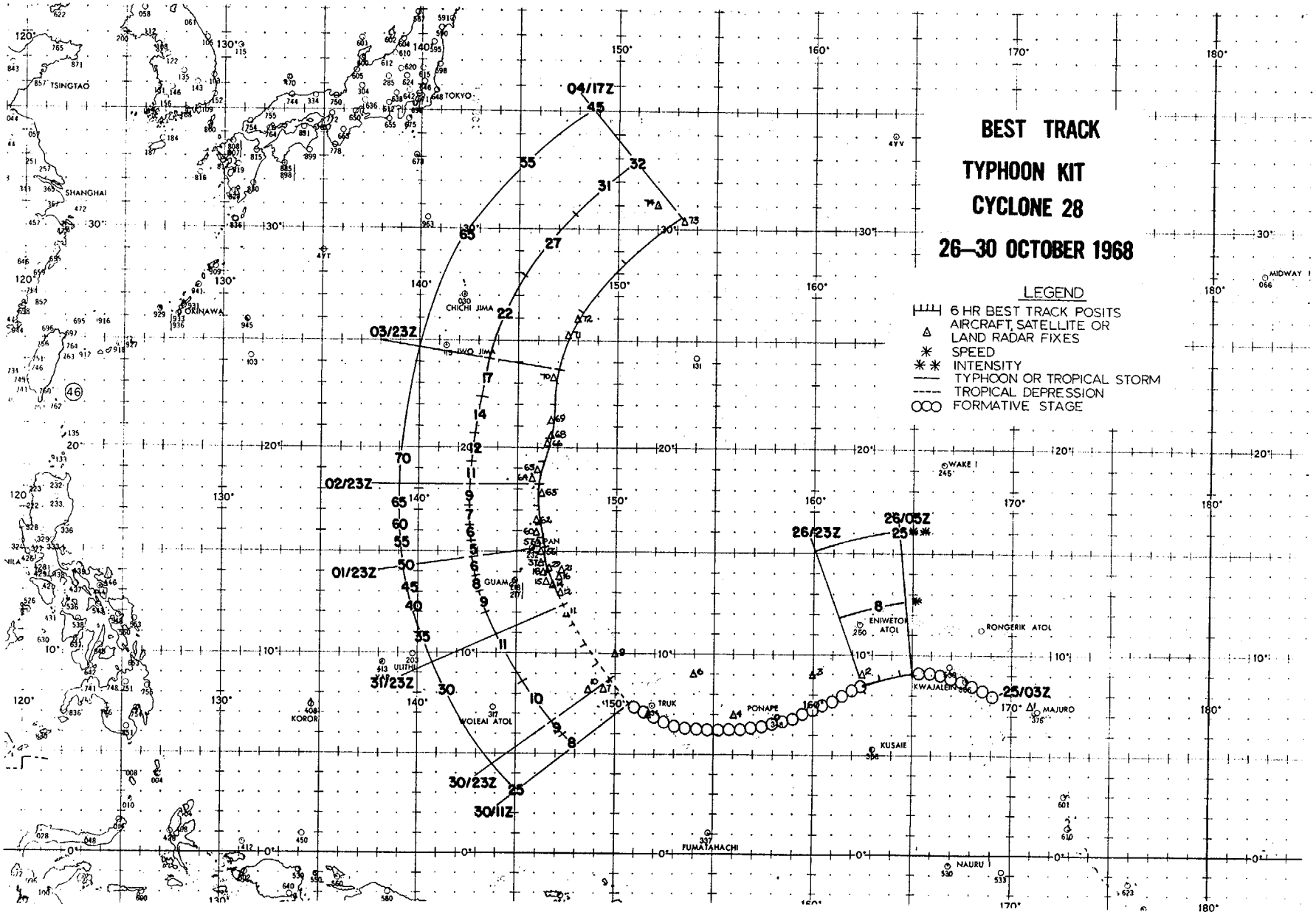
B. INITIAL SURFACE VORTEX

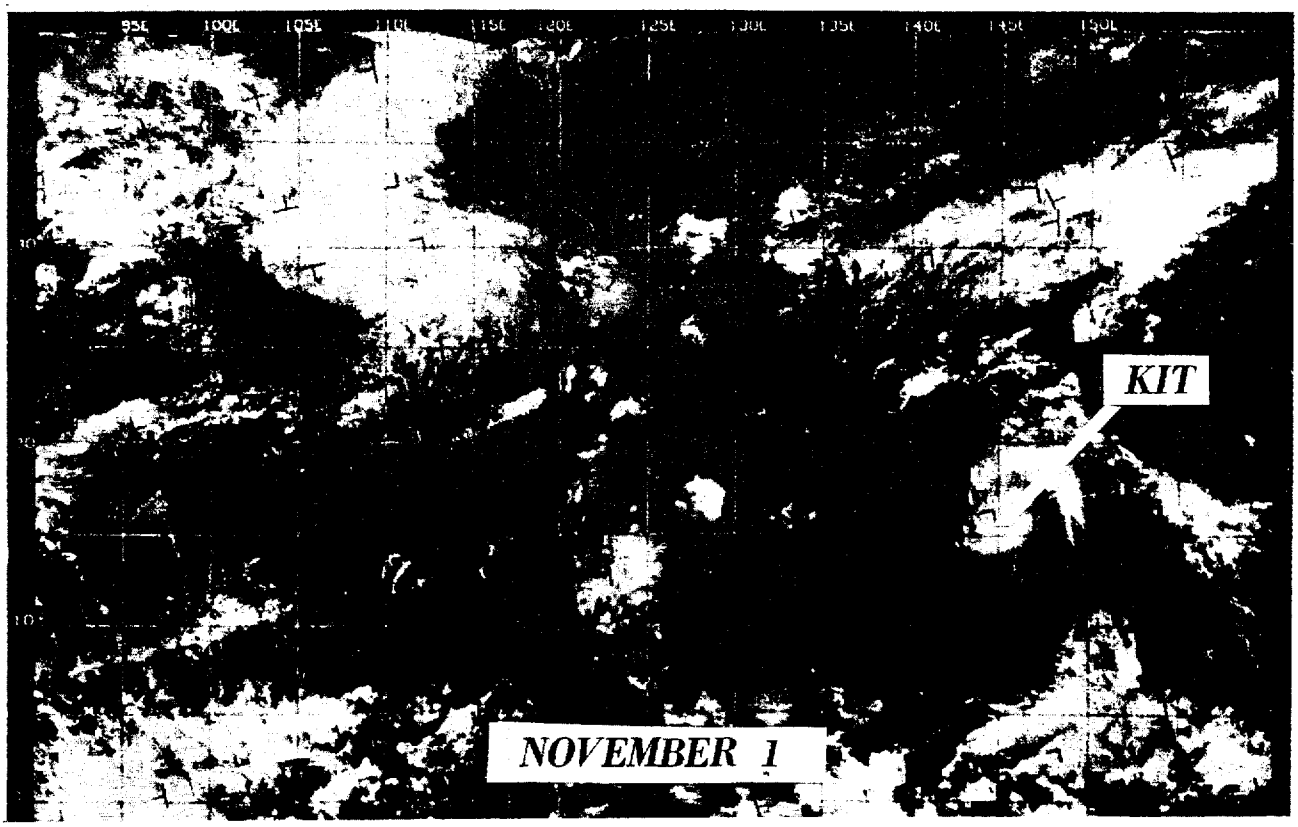
1. JUNCTION VORTEX AT 250300Z
2. SURFACE PRESSURE LESS THAN 1008MB

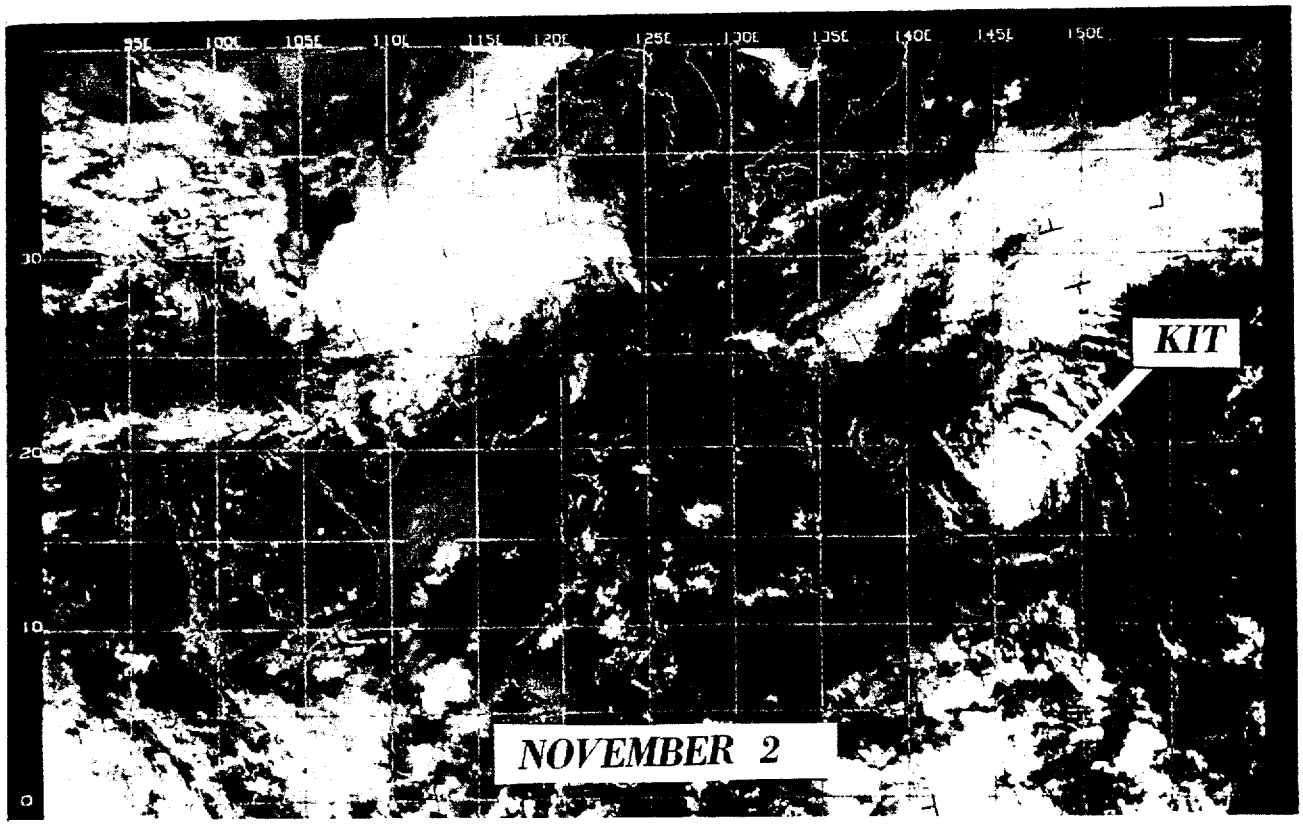
C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - NORTHWEST
2. UPON REACHING TYPHOON INTENSITY - SOUTHWEST

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON KIT
CYCLONE 28
26–30 OCTOBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
04/17Z
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
30/11Z
26/23Z
26/05Z
25/03Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
WAKE I
MIDWAY I
NAURU
FUMATAHACHI


KIT
NOVEMBER 1


KIT
NOVEMBER 2

EYE FIXES CYCLONE 28

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	250350Z	07.5N 171.0E	SLTLS	STG B	DIA --	BNDS -							
2	260251Z	09.0N 162.5E	SLTLS	STG C	DIA --	BNDS -							
3	270345Z	09.0N 160.0E	SLTLS	STG A	DIA --	BNDS -							
4	290343Z	07.0N 156.0E	SLTLS	STG B	DIA --	BNDS -							
5	300135Z	07.0N 151.7E	54-P-05-10	0400M	025	020	002	---	25/24	----			--
6	300436Z	09.0N 154.0E	SLTLS	STG B	DIA --	BNDS -							
7	310142Z	08.1N 149.2E	54-P-03-10	0380M	022	025	004	---	24/24	CIRC	----	40	--
8	310300Z	08.1N 149.1E	54-P-03-10	0370M	020	025	004	---	25/24	----			--
9	310533Z	10.0N 150.0E	SLTLS	STG C	DIA --	BNDS -							
10	310930Z	08.1N 147.6E	VW-P-05-10	0450M	---	020	005	---	25/23	----			--
11	312320Z	12.3N 147.5E	54-P-03-10	0450M	060	060	992	---	26/24	CIRC	----	20	--
12	010315Z	13.0N 147.1E	54-P-03-01	700MB	040	040	988	3027	12/08	CIRC	----	20	--
13	010432Z	13.0N 147.5E	SLTLS	STG C	DIA --	BNDS -							
14	010530Z	13.4N 146.9E	LND RDR		---	---	---	---	--/--	----			--
15	010550Z	13.6N 146.5E	VW-R-02-02	0490M	028	025	---	---	--/--	CIRC	----	15	08
16	010900Z	13.8N 146.7E	LND RDR		---	---	---	---	--/--	----			--
17	010900Z	13.9N 147.1E	VW-R-03-15	0450M	---	---	---	---	--/--	----			F.B.
18	010930Z	14.0N 147.2E	VW-R------		---	---	---	---	--/--	----			--
19	010945Z	13.8N 146.7E	LND RDR		---	---	---	---	--/--	----			--
20	010945Z	13.9N 146.7E	LND RDR		---	---	---	---	--/--	----			--
21	011000Z	13.9N 146.7E	LND RDR		---	---	---	---	--/--	----			--
22	011000Z	13.9N 147.2E	LND RDR		---	---	---	---	--/--	----			--
23	011000Z	14.1N 147.2E	VW-R------		---	---	---	---	--/--	----			--
24	011030Z	14.2N 147.2E	VW-R------		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 28

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	011100Z	14.3N 147.1E	VW-R------		---	---	---	---	--/--	----			--
26	011100Z	14.0N 146.7E	LND RDR		---	---	---	---	--/--	----			--
27	011130Z	14.2N 146.5E	LND RDR		---	---	---	---	--/--	----			--
28	011140Z	14.2N 147.0E	VW-P-02-05	700MB	---	---	---	3078	10/10	----			F.B.
29	011200Z	14.2N 146.5E	LND RDR		---	---	---	---	--/--	----			--
30	011230Z	14.3N 146.3E	LND RDR		---	---	---	---	--/--	----			--
31	011230Z	14.5N 146.8E	VW-R-02-03		---	---	---	---	--/--	CIRC	----	13	F.B.
32	011245Z	14.3N 146.7E	VW-R------		---	---	---	---	--/--	----			--
33	011300Z	14.3N 146.2E	LND RDR		---	---	---	---	--/--	----			--
34	011330Z	14.4N 146.4E	VW-R------		---	---	---	---	--/--	----			--
35	011330Z	14.3N 146.1E	LND RDR		---	---	---	---	--/--	----			--
36	011330Z	14.3N 146.2E	LND RDR		---	---	---	---	--/--	----			--
37	011400Z	14.2N 146.1E	LND RDR		---	---	---	---	--/--	----			--
38	011400Z	14.5N 146.2E	VW-R------		---	---	---	---	--/--	----			--
39	011430Z	14.2N 146.1E	LND RDR		---	---	---	---	--/--	----			--
40	011430Z	14.5N 146.2E	VW-R------		---	---	---	---	--/--	----			--
41	011430Z	14.3N 146.1E	LND RDR		---	---	---	---	--/--	----			--
42	011455Z	14.4N 146.3E	VW-P-02-03	700MB	---	---	985	3051	12/08	----			F.B.
43	011500Z	14.3N 146.1E	LND RDR		---	---	---	---	--/--	----			--
44	011530Z	14.4N 146.2E	VW-R------		---	---	---	---	--/--	----			--
45	011530Z	14.3N 146.1E	LND RDR		---	---	---	---	--/--	----			--
46	011600Z	14.5N 146.1E	LND RDR		---	---	---	---	--/--	----			--
47	011600Z	14.5N 146.2E	VW-R------		---	---	---	---	--/--	----			--
48	011630Z	13.4N 146.2E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 28

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	011730Z	14.5N 146.0E	VW-R------		---	---	---	---	--/--	----			--
50	011800Z	14.7N 146.0E	LND RDR		---	---	---	---	--/--	----			--
51	011807Z	14.8N 146.3E	VW-P-05-05	700MB	---	---	---	3020	13/12	CIRC	----	15	05
52	011900Z	14.7N 145.7E	LND RDR		---	---	---	---	--/--	----			--
53	011930Z	14.8N 146.0E	LND RDR		---	---	---	---	--/--	----			--
54	011950Z	14.8N 146.1E	LND RDR		---	---	---	---	--/--	----			--
55	012030Z	13.9N 146.1E	LND RDR		---	---	---	---	--/--	----			--
56	012115Z	15.0N 146.2E	54-P-03-01	700MB	045	040	984	2935	14/12	CIRC	----	18	--
57	020155Z	15.5N 146.0E	LND RDR		---	---	---	---	--/--	----			--
58	020300Z	15.4N 146.2E	54-P-02-05	700MB	045	035	980	2905	16/13	----			--
59	020425Z	15.4N 145.9E	LND RDR		---	---	---	---	--/--	----			--
60	020530Z	16.0N 146.0E	SLTLS	STG X	DIA 02	BNDS 2							
61	020830Z	16.0N 146.1E	VW-R-02-03		---	---	---	---	--/--	CONC		56-17	04
62	021415Z	16.7N 146.0E	VW-R-02-03		---	---	---	---	--/--	CIRC	----	22	--
63	022110Z	17.9N 146.1E	54-P-02-03	700MB	065	070	975	2871	16/11	CIRC	----	20	--
64	030200Z	18.6N 145.8E	54-P-02-03	700MB	065	050	967	2807	15/11	CIRC	----	20	--
65	030430Z	19.0N 146.0E	SLTLS	STG X	DIA 02	BNDS 3							
66	030854Z	20.1N 146.6E	VW-R-01-03		---	---	---	---	--/--	CIRC	----	17	12
67	031030Z	20.3N 146.8E	VW-R------		---	---	---	---	--/--	----			--
68	031130Z	20.6N 146.8E	VW-R------		---	---	---	---	--/--	----			--
69	031417Z	21.2N 146.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	15	07
70	032100Z	23.2N 146.9E	54-P-05-02	700MB	085	100	959	2743	20/12	CIRC	----	15	--
71	040210Z	25.1N 147.5E	54-P-05-05	700MB	090	100	960	2780	20/13	CIRC	----	15	--
72	040525Z	26.0N 148.0E	SLTLS	STG X	DIA 02	BNDS 3							

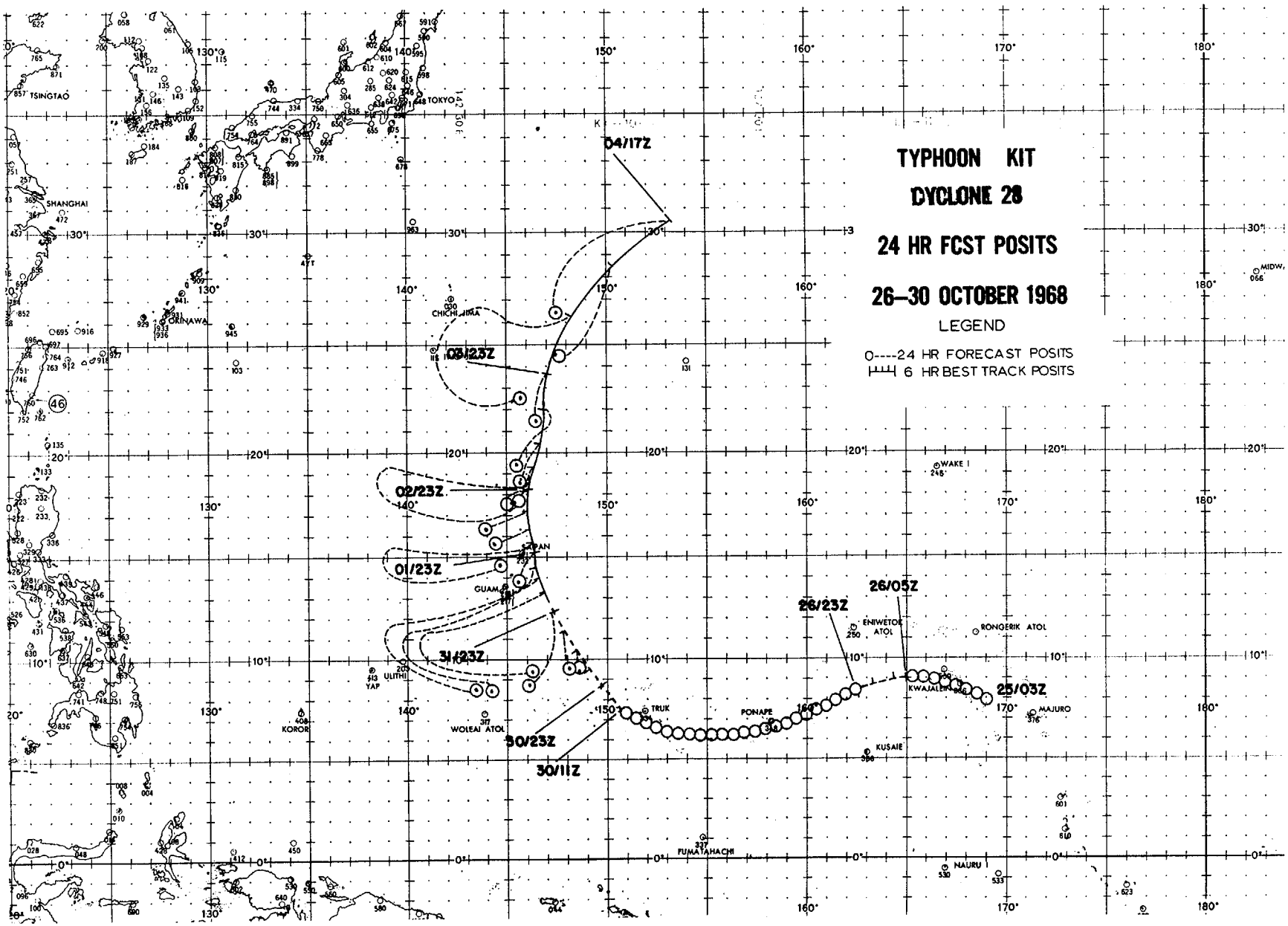
EYE FIXES CYCLONE 28

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	041710Z	30.3N 153.3E	VW-P-02-03	700MB	---	050	976	2909	17/12	ELIP	NE-SW	25X15	F.B.
74	050429Z	31.0N 152.0E	SLTLS	STG C	DIA --	BNDS -							

TROPICAL CYCLONE 28 -- 10/26/0500Z TO 11/04/1700Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
010500Z	13.2N	146.9E	189-0240	--------	--------
011100Z	14.0N	146.6E	203-0360	--------	--------
011700Z	14.6N	146.3E	205-0402	--------	--------
012300Z	15.1N	146.3E	207-0078	--------	--------
020500Z	15.6N	146.2E	236-0090	--------	--------
021100Z	16.2N	146.1E	252-0090	--------	--------
021700Z	17.1N	146.0E	245-0126	--------	--------
022300Z	18.1N	146.0E	231-0042	223-0288	--------
030500Z	19.2N	146.2E	206-0096	229-0198	--------
031100Z	20.4N	146.7E	206-0126	226-0264	--------
031700Z	22.0N	146.8E	208-0168	222-0324	--------
032300Z	23.8N	147.1E	193-0138	208-0288	--------
040500Z	26.2N	148.1E	210-0246	203-0420	215-0492
041100Z	28.4N	150.2E	215-0264	207-0528	--------
041700Z	30.3N	153.2E	233-0378	220-0690	223-0852

AVERAGE 24 HOUR ERROR - 0189 MI.
AVERAGE 48 HOUR ERROR - 0375 MI.
AVERAGE 72 HOUR ERROR - 0672 MI.


TYPHOON KIT
CYCLONE 28
24 HR FCST POSITS
26–30 OCTOBER 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
04/17Z
03/23Z
02/23Z
01/23Z
31/23Z
30/23Z
30/11Z
26/05Z
26/23Z
25/03Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
WAKE I
MIDW.
NAURU I
FUMATAHACHI

TROPICAL CYCLONE 29 - 11/07/2300Z TO 11/12/1100Z
(LOLA)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 19
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 10
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1386 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 938MBS AT 100300Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2547M. AT 100300Z
3. MAXIMUM SURFACE WIND - 105 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 300 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - 200MB ANTICYCLONE OVER THE SURFACE CYCLONE

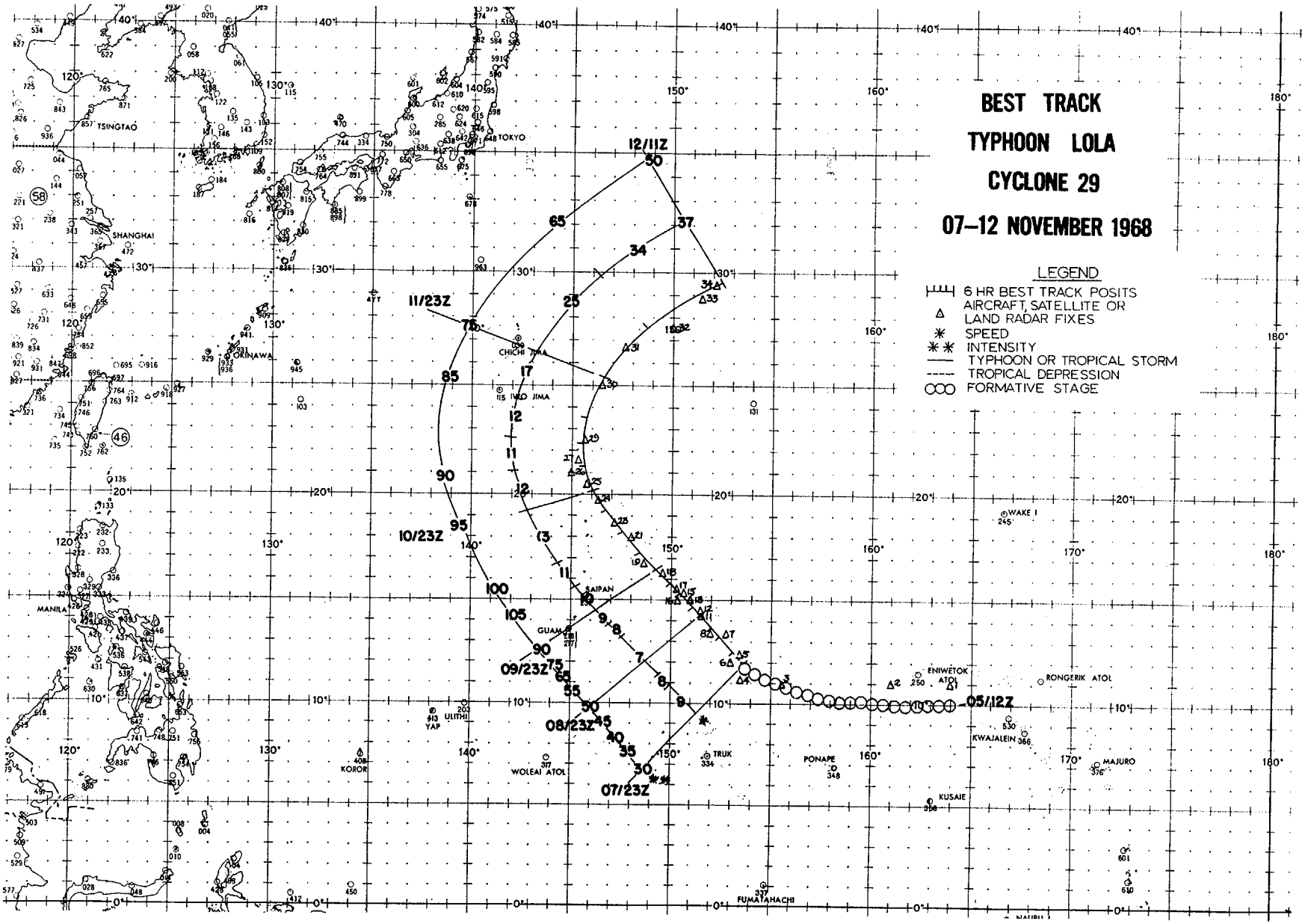
B. INITIAL SURFACE VORTEX

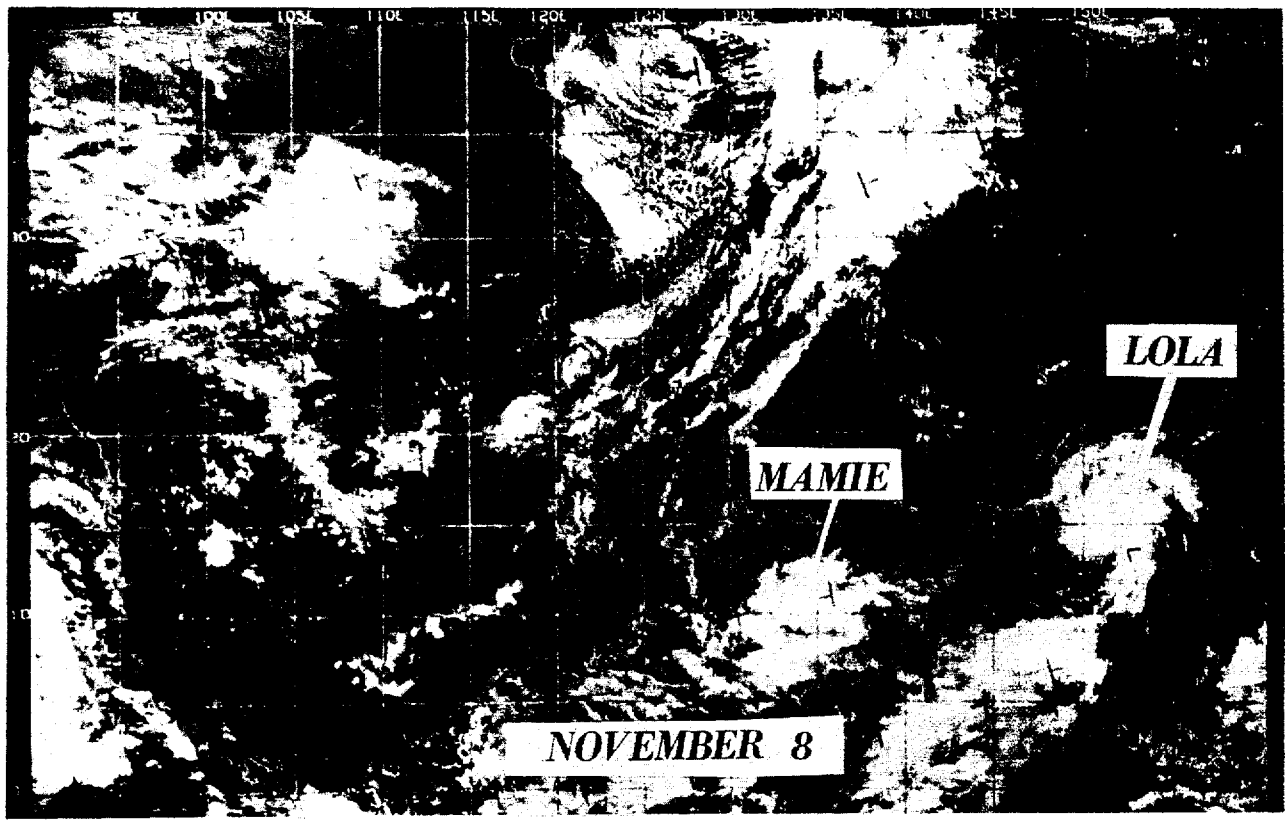
1. JUNCTION VORTEX AT 051200Z
2. SURFACE PRESSURE LESS THAN 1008MB

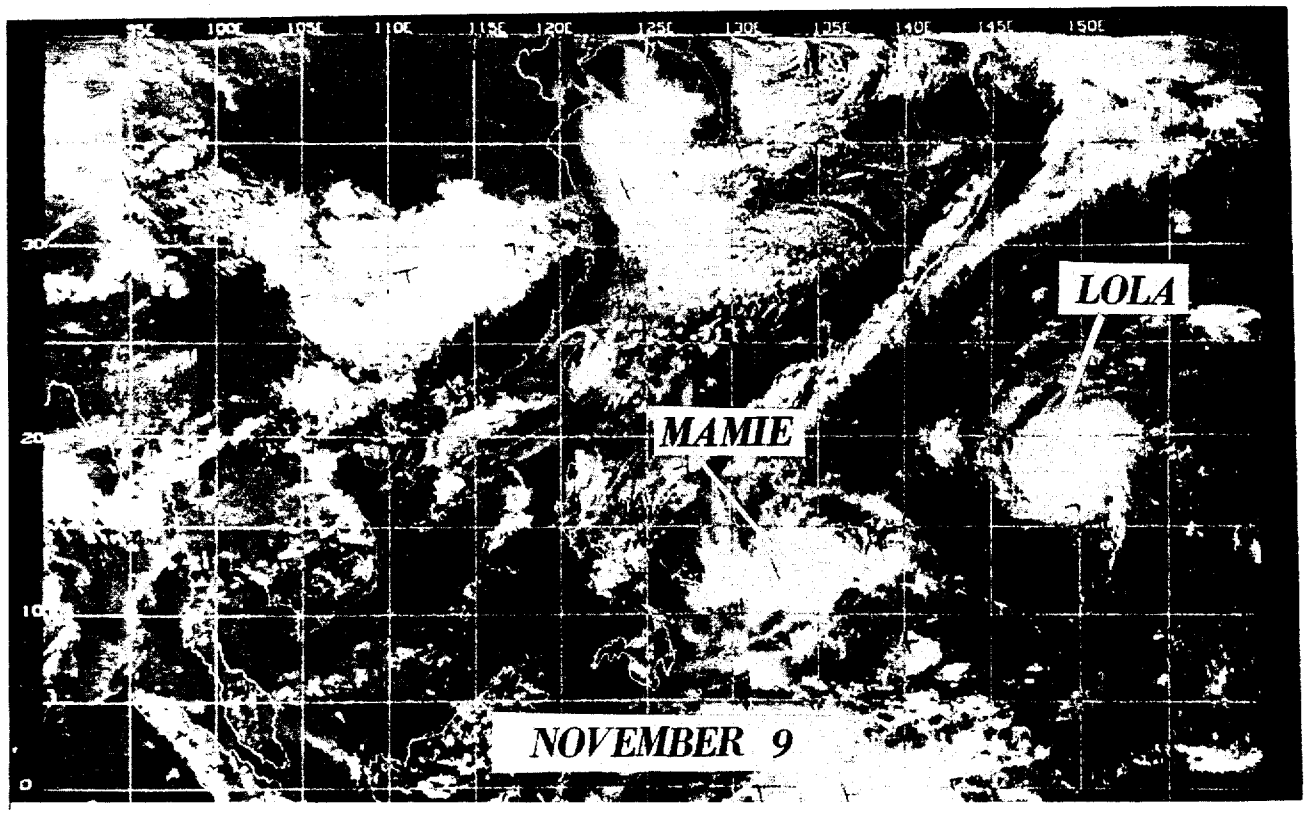
C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - ANTICYCLONIC

III. FINAL DISPOSITION - BECAME EXTRATROPICAL


BEST TRACK
TYPHOON LOLA
CYCLONE 29
07–12 NOVEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
12/11Z
11/23Z
10/23Z
09/23Z
08/23Z
07/23Z
05/12Z
TSINGTAO
TOKYO
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
MANILA
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
FUMATAHACHI
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
WAKE I


LOLA
MAMIE
NOVEMBER 8


LOLA
MAMIE
NOVEMBER 9

EYE FIXES CYCLONE 29

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	050420Z	11.0N 164.0E	SLTLS	STG B	DIA -- BNDS -								
2	060320Z	11.0N 161.0E	SLTLS	STG B	DIA -- BNDS -								
3	070415Z	11.0N 155.5E	SLTLS	STG X	DIA 02 BNDS 1								
4	080105Z	12.1N 153.4E	54-P-07-01	0400M	048	050	998	3094	24/22	CIRC	----	10	F.B.
5	080300Z	12.3N 153.4E	54-P-10-01	0450M	025	045	997	3057	24/23	CIRC	----	10	07
6	080510Z	12.0N 153.0E	SLTLS	STG C	DIA -- BNDS -								
7	080920Z	13.3N 152.9E	VW-R-15-05	0500M	---	---	---	---	--/--	CIRC	----	12	--
8	081030Z	13.3N 152.0E	VW-R------		---	---	---	---	--/--	----			--
9	081200Z	13.3N 152.4E	VW-R-10-05	0450M	---	030	---	---	--/--	CIRC	----	30	--
10	081406Z	13.4N 152.2E	VW-R-10-05	0450M	---	---	---	---	--/--	CIRC	----	30	15
11	082100Z	14.2N 151.7E	54-P-10-01	700MB	035	045	981	2917	18/11	CIRC	----	10	--
12	090300Z	14.5N 151.5E	54-P-10-01	700MB	070	065	968	2822	18/11	CIRC	----	15	--
13	090410Z	15.0N 151.0E	SLTLS	STG X	DIA 03 BNDS 3								
14	090740Z	15.0N 151.0E	ACFT RDR		---	---	---	---	--/--	----			--
15	090920Z	15.2N 150.6E	VW-R-40-05		---	---	---	---	--/--	CIRC	----	10	16
16	091400Z	15.0N 150.2E	VW-R----01		---	---	---	---	--/--	----			--
17	091450Z	15.8N 150.2E	VW-R-03-05		---	---	---	---	--/--	CIRC	----	10	20
18	092100Z	16.2N 149.7E	54-P-03-03	700MB	080	085	951	2673	20/13	CIRC	----	12	--
19	100300Z	16.9N 148.8E	54-P-10-10	700MB	075	080	938	2547	19/12	CIRC	----	15	--
20	100505Z	17.0N 148.5E	SLTLS	STG X	DIA 04 BNDS 3								
21	100823Z	18.0N 148.0E	VW-R----15		---	---	---	---	--/--	----			--
22	100845Z	17.9N 148.1E	VW-R-10-03		---	---	---	---	--/--	CIRC	----	12	--
23	101403Z	18.8N 147.1E	VW-R-03-05		---	---	---	---	--/--	CIRC	----	15	--
24	102100Z	19.9N 146.3E	54-P-03-02	700MB	088	100	948	2655	24/18	CIRC	----	08	--

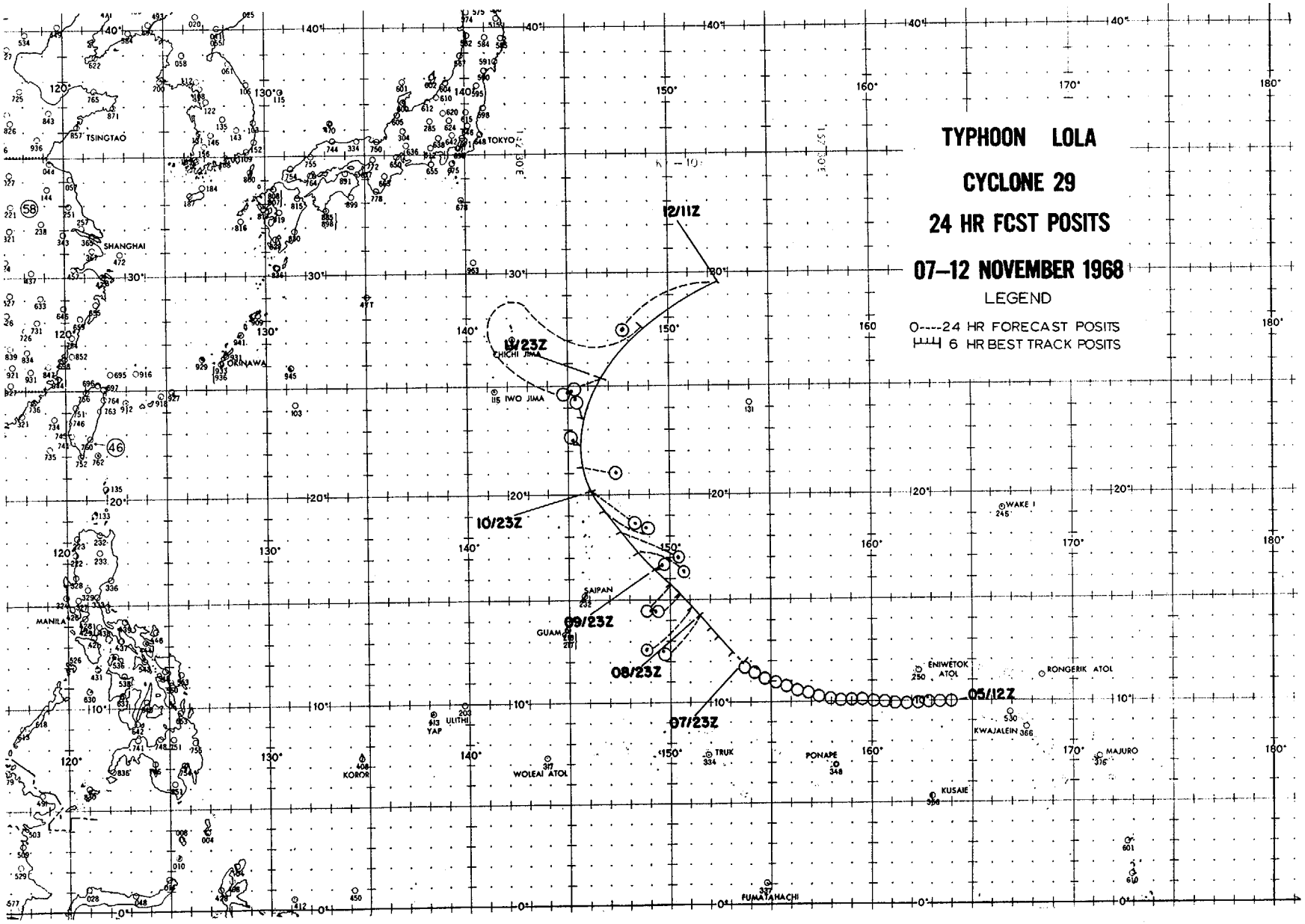
EYE FIXES CYCLONE 29

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	110300Z	20.7N 145.7E	54-P-10-02	700MB	080	090	950	2661	20/14	CIRC	----	08	--
26	110409Z	21.0N 145.0E	SLTLS	STG X	DIA 03	BNDS 3							
27	110750Z	21.8N 145.2E	VW-R----15		---	---	---	---	--/--	----			--
28	110835Z	21.8N 145.4E	VW-R-05-05		---	035	---	---	--/--	CONC		38-15	--
29	111405Z	22.5N 145.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	28	15
30	112110Z	25.0N 146.5E	54-P-04-03	700MB	115	100	951	2676	19/10	ELIP	NE-SW	40X30	12
31	120245Z	26.8N 147.6E	54-P-07-05	700MB	110	115	955	2728	20/10	ELIP	NW-SE	40X30	10
32	120505Z	27.5N 150.0E	SLTLS	STG X	DIA 04	BNDS 2							
33	120900Z	28.9N 151.4E	VW-R-01-05		---	---	---	---	--/--	ELIP	NW-SE	50X20	--
34	121040Z	29.4N 152.1E	VW-P-01-02	700MB	---	---	---	2960	23/12	ELIP	NW-SE	45X20	--

TROPICAL CYCLONE 29 -- 11/07/2300Z TO 11/12/1100Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
080500Z	12.6N	153.0E	--------	--------	--------
081100Z	13.2N	152.5E	--------	--------	--------
081700Z	13.7N	152.0E	--------	--------	--------
082300Z	14.3N	151.6E	226-0150	--------	--------
090500Z	14.8N	151.1E	224-0180	--------	--------
091100Z	15.3N	150.5E	234-0078	--------	--------
091700Z	15.9N	150.0E	210-0096	--------	--------
092300Z	16.5N	149.3E	090-0018	--------	--------
100500Z	17.2N	148.6E	113-0132	220-0330	--------
101100Z	18.2N	147.8E	116-0156	208-0222	--------
101700Z	19.2N	146.8E	112-0120	190-0258	--------
102300Z	20.1N	146.0E	121-0144	120-0198	--------
110500Z	21.2N	145.5E	097-0090	122-0342	210-0540
111100Z	22.2N	145.5E	303-0018	128-0342	--------
111700Z	23.5N	145.8E	336-0054	140-0240	199-0528
112300Z	25.3N	146.6E	249-0078	165-0264	--------
120500Z	27.6N	148.7E	230-0258	199-0150	164-0402
121100Z	29.5N	152.3E	242-0264	246-0276	--------

AVERAGE 24 HOUR ERROR - 0122 MI.
AVERAGE 48 HOUR ERROR - 0262 MI.
AVERAGE 72 HOUR ERROR - 0490 MI.


TYPHOON LOLA
CYCLONE 29
24 HR FCST POSITS
07–12 NOVEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
12/11Z
13/23Z
10/23Z
09/23Z
08/23Z
07/23Z
05/12Z
TSINGTAO
SHANGHAI
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
MANILA
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
KUSAIE
WAKE I
FUMATANACHI

TROPICAL CYCLONE 30 - 11/09/0500Z TO 11/23/2300Z
(MAMIE)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 52
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 09
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 2154 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 972MBS AT 180815Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2866M. AT 210845Z
3. MAXIMUM SURFACE WIND - 065 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 300 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - LOW LEVEL SURGE INTO CYCLONIC CIRCULATION FROM THE SOUTH WITH SUBSEQUENT DIVERGENCE AT 200MB LEVEL

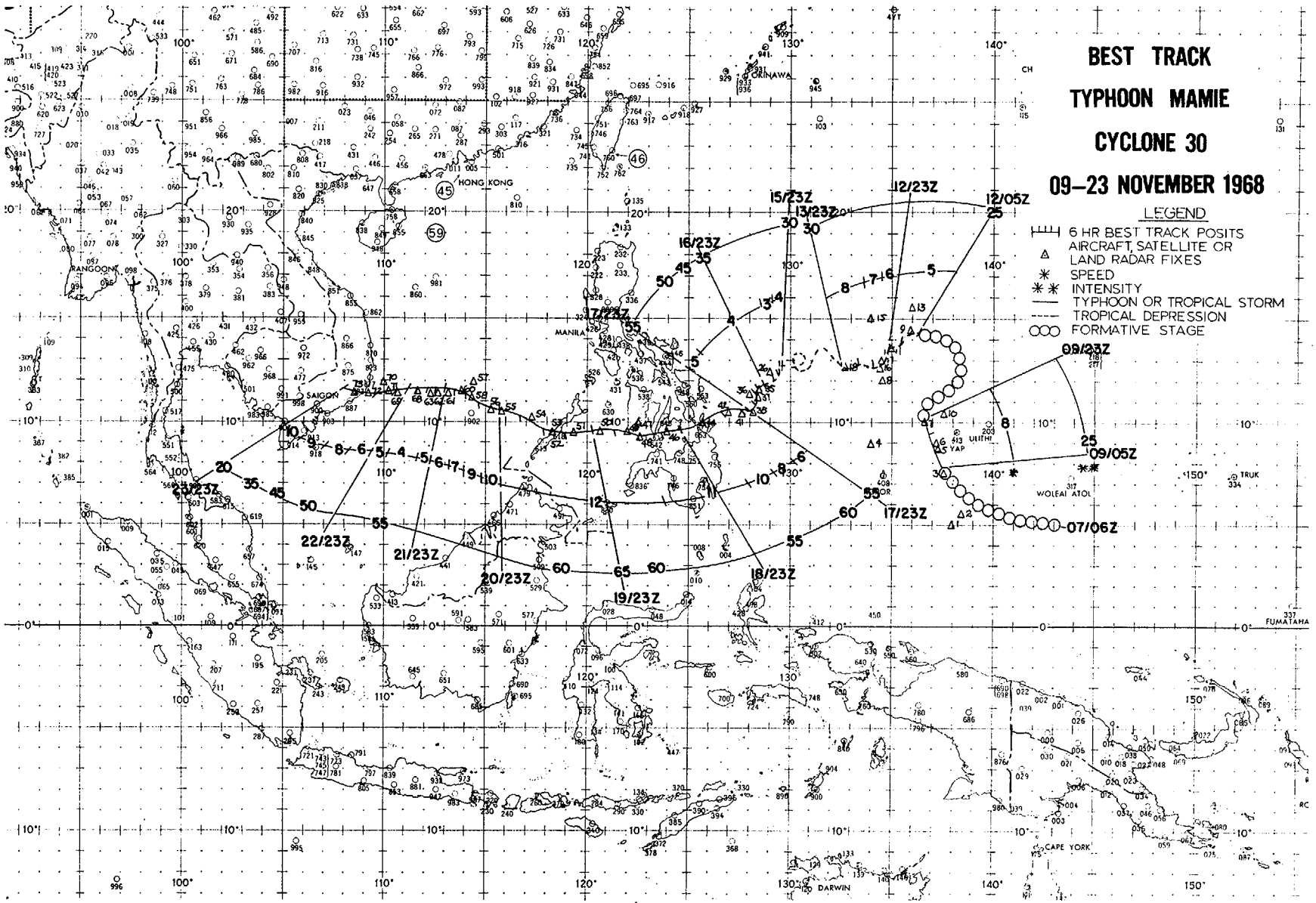
B. INITIAL SURFACE VORTEX

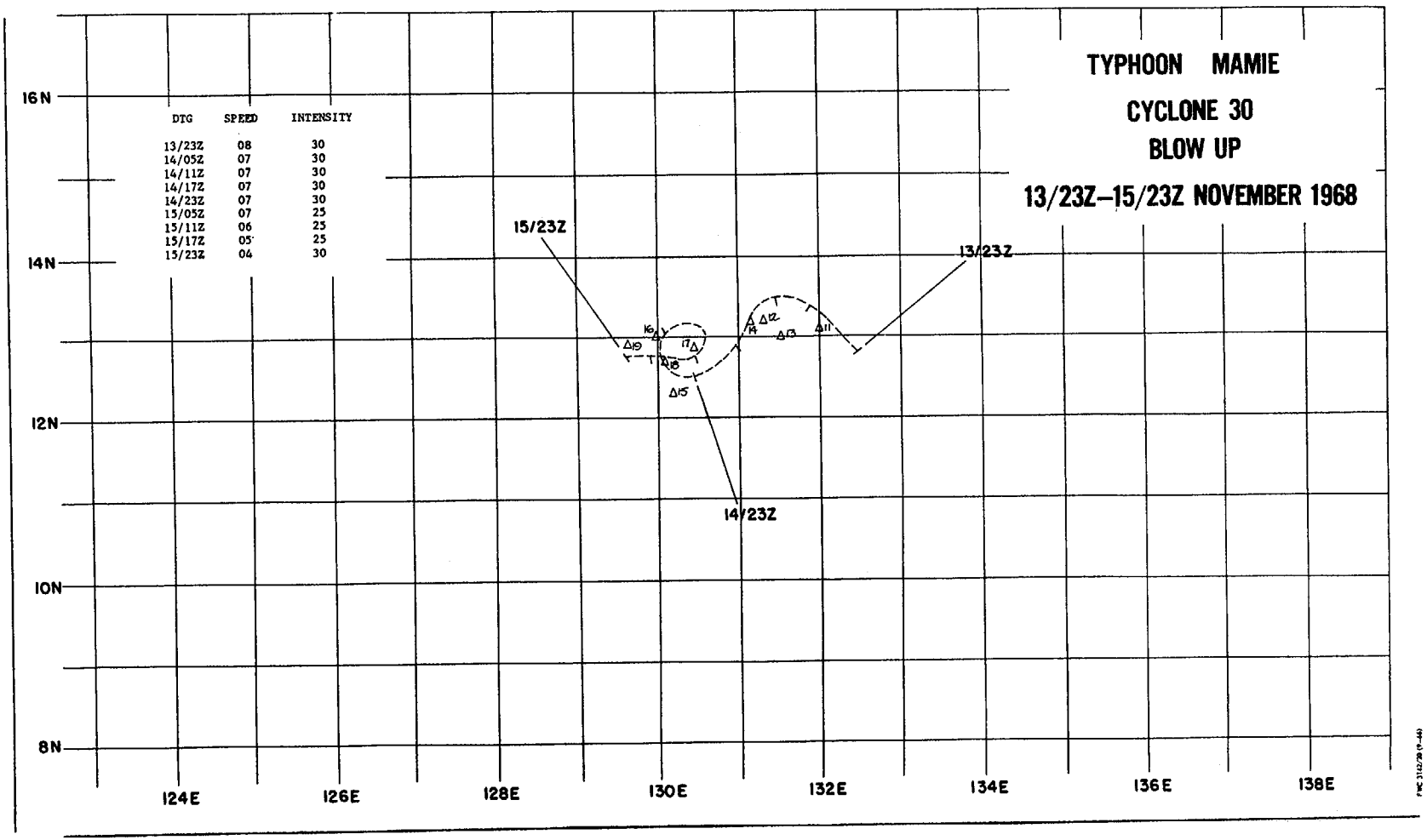
1. JUNCTION VORTEX AT 070600Z
2. SURFACE PRESSURE LESS THAN 1006MB

C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - SOUTHEAST

III. FINAL DISPOSITION - DISSIPATED OVER LAND


BEST TRACK
TYPHOON MAMIE
CYCLONE 30
09–23 NOVEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
HONG KONG
MANILA
SAIGON
RANGOON
OKINAWA
ULITHI
YAP
WOLEAI ATOL
TRUK
FUMATAMA
CAPE YORK
DARWIN
07/06Z
09/05Z
09/23Z
12/05Z
12/23Z
13/23Z
15/23Z
16/23Z
17/23Z
18/23Z
19/23Z
20/23Z
21/23Z
22/23Z
23/23Z


TYPHOON MAMIE
CYCLONE 30
BLOW UP
13/23Z–15/23Z NOVEMBER 1968
DTG SPEED INTENSITY
13/23Z 08 30
14/05Z 07 30
14/11Z 07 30
14/17Z 07 30
14/23Z 07 30
15/05Z 07 25
15/11Z 06 25
15/17Z 05 25
15/23Z 04 30
15/23Z
13/23Z
14/23Z
16N
14N
12N
10N
8N
124E
126E
128E
130E
132E
134E
136E
138E

EYE FIXES CYCLONE 30

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	060515Z	05.0N 138.0E	SLTLS	STG A	DIA --	BNDS -							
2	080510Z	05.5N 138.5E	SLTLS	STG C	DIA --	BNDS -							
3	090240Z	07.6N 137.5E	54-P-03-10	0470M	025	025	003	---	26/26	----			--
4	090605Z	09.0N 134.0E	SLTLS	STG C	DIA --	BNDS -							
5	091240Z	08.9N 137.2E	VW-P-10-10	0360M	---	025	006	---	24/23	----			--
6	091440Z	09.0N 137.1E	VW-P-05-10	0450M	---	025	006	---	24/22	----			--
7	092225Z	10.0N 136.7E	54-P-05-15	0480M	018	015	003	---	25/24	----			--
8	100505Z	12.0N 134.5E	SLTLS	STG A	DIA --	BNDS -							
9	101240Z	14.5N 136.0E	ACFT RDR		---	---	---	---	--/--	----			--
10	110108Z	11.4N 137.6E	54-P-02-20		025	025	002	---	27/26	----			--
11	110600Z	13.5N 135.0E	SLTLS	STG A	DIA --	BNDS -							
12	120005Z	14.2N 136.7E	VW-P-02-10	0330M	---	030	001	---	21/19	CIRC	----	10	--
13	120505Z	15.5N 136.0E	SLTLS	STG C	DIA --	BNDS -							
14	130130Z	13.3N 134.6E	54-P-02-15	700MB	036	040	006	3139	12/--	----			N.F.B.
15	130555Z	15.0N 134.0E	SLTLS	STG C	DIA --	BNDS -							
16	130820Z	12.7N 134.5E	VW-P-03-10	0310M	025	025	001	---	27/24	----			--
17	131410Z	13.0N 134.4E	VW-P-03-10	700MB	---	---	002	3150	17/13	CIRC	----	20	F.B.
18	132205Z	12.8N 132.8E	54-P-03-02	700MB	040	035	994	3063	16/11	----			F.B.
19	140245Z	13.1N 132.0E	54-P-03-03	700MB	040	045	997	3085	14/11	----			--
20	140650Z	13.5N 130.5E	SLTLS	STG X	DIA 03	BNDS 2							
21	140900Z	13.2N 131.3E	VW-R----05		---	---	---	---	--/--	----			--
22	140928Z	13.0N 131.5E	VW-P-02-05	0450M	---	025	996	---	26/24	CIRC	----	40	--
23	141405Z	13.2N 131.2E	VW-P-02-10	0450M	---	---	998	---	24/--	----			F.B.
24	142145Z	12.3N 130.2E	54-P-05-10	700MB	030	025	996	3072	13/12	----			F.B.

EYE FIXES CYCLONE 30

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	150230Z	13.0N 130.0E	54-P-10-03	700MB	035	035	000	3100	13/12	----			--
26	150530Z	12.5N 129.0E	SLTLS	STG X	DIA 03	BNDS 1							
27	150900Z	12.8N 130.4E	VW-P-10-03	0450M	---	022	000	---	25/24	----			--
28	151405Z	12.7N 130.1E	VW-P-03-03	700MB	---	---	001	3170	11/12	CIRC	----	20	--
29	152220Z	12.9N 129.7E	54-P-03-03	700MB	015	035	---	3082	11/10	----			N.F.B.
30	160245Z	12.6N 129.8E	54-P-07-02	700MB	035	035	979	2923	12/11	CIRC	----	15	N.F.B.
31	160646Z	13.0N 129.0E	SLTLS	STG X	DIA 03	BNDS 1							
32	160810Z	12.2N 130.1E	54-P-05-03	700MB	035	035	992	3039	15/12	CIRC	----	25	--
33	161530Z	12.1N 129.3E	VW-P-05-05		---	030	992	---	25/21	----			F.B.
34	162000Z	12.2N 129.3E	VW-P-07-05	0360M	---	030	994	---	26/23	ELIP	NW-SE	99X80	--
35	170230Z	11.8N 128.5E	54-P-05-04	700MB	045	070	983	2978	18/11	----			--
36	170545Z	11.5N 128.0E	SLTLS	STG X	DIA 03	BNDS 2							
37	170834Z	11.2N 128.4E	54-P-05-04	700MB	040	055	985	2951	15/10	ELIP	N-S	20X10	--
38	171600Z	10.7N 128.1E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	50	--
39	171730Z	10.8N 128.3E	VW-P-----05		---	---	---	---	--/--	----			--
40	172005Z	10.6N 128.3E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	40	--
41	180246Z	10.4N 127.6E	54-P-08-03	700MB	074	055	976	2899	18/12	CIRC	----	30	--
42	180640Z	10.5N 127.0E	SLTLS	STG X	DIA 02	BNDS 2							
43	180815Z	10.8N 127.0E	54-P-05-02	700MB	075	080	972	2874	20/12	CIRC	----	30	10
44	181528Z	10.0N 125.8E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	24	--
45	182002Z	10.0N 125.4E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	24	--
46	190300Z	09.6N 124.0E	54-P-03-03	500MB	050	065	---	---	52/58	CIRC	----	15	--
47	190540Z	10.0N 122.5E	SLTLS	STG X	DIA 03	BNDS 2							
48	190820Z	09.2N 122.7E	54-P-05-10	500MB	060	050	---	---	56/56	CIRC	----	05	--

EYE FIXES CYCLONE 30

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	191508Z	09.6N 122.0E	VW-R-01-10		---	---	---	---	--/--	CIRC	----	40	--
50	192100Z	09.7N 120.6E	VW-R-02-10		---	---	---	---	--/--	CIRC	----	35	--
51	200300Z	09.6N 119.4E	54-P-02-07	500MB	050	070	972	---	06/05	CIRC	----	10	--
52	200635Z	09.0N 118.0E	SLTLS	STG X	DIA 04	BNDS 2							
53	200830Z	09.6N 118.2E	54-P-02-10	500MB	050	050	---	---	55/54	----			--
54	201510Z	10.1N 117.2E	VW-R-01-05	1410M	038	---	---	---	--/--	CIRC	----	40	--
55	202020Z	10.6N 115.9E	VW-R-01-05	700MB	---	---	---	---	--/--	CIRC	----	40	--
56	210215Z	10.7N 115.2E	54-P-03-05	700MB	080	085	976	2880	16/10	CIRC	----	30	--
57	210731Z	12.0N 114.5E	SLTLS	STG X	DIA 05	BNDS 3							
58	210845Z	11.1N 114.4E	54-P-03-03	700MB	080	110	974	2866	16/08	CIRC	----	15	--
59	211330Z	11.2N 114.3E	VW-R----10		---	---	---	---	--/--	----			--
60	211500Z	11.6N 113.9E	VW-R-01-10		---	---	---	---	--/--	CIRC	----	30	--
61	212000Z	11.5N 113.2E	VW-R-01-10		---	---	---	---	--/--	CIRC	----	30	--
62	220310Z	11.4N 112.7E	VW-R-05-03		---	---	---	---	--/--	CIRC	----	12	09
63	220545Z	11.4N 112.2E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	12	09
64	220630Z	11.0N 112.0E	SLTLS	STG X	DIA 04	BNDS 3							
65	220808Z	11.4N 112.1E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	12	--
66	221420Z	11.4N 112.1E	VW-R----10		---	---	---	---	--/--	----			--
67	221500Z	11.4N 112.0E	VW-R-02-10		---	---	---	---	--/--	CIRC	----	30	--
68	222000Z	11.5N 111.7E	VW-R-01-15		---	---	---	---	--/--	CIRC	----	30	--
69	230315Z	11.4N 110.8E	VW-R-05-05		---	045	---	---	--/--	CIRC	----	30	--
70	230725Z	12.0N 110.0E	SLTLS	STG X	DIA 04	BNDS 4							
71	230800Z	11.6N 110.3E	VW-R-05-05		---	035	---	---	--/--	CIRC	----	30	10
72	231450Z	11.4N 109.2E	VW-R-02-02		---	---	---	---	--/--	CIRC	----	22	09

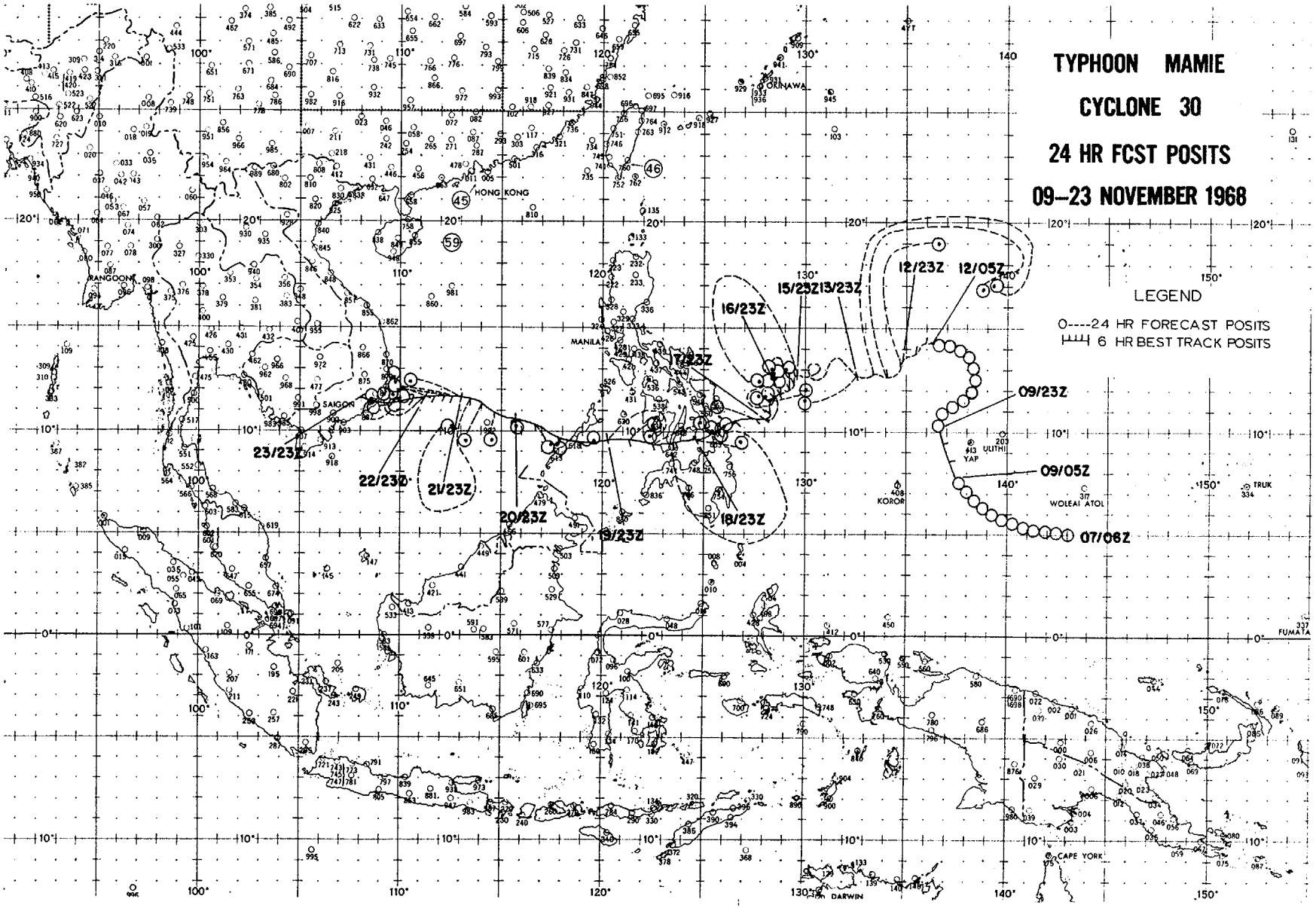
EYE FIXES CYCLONE 30

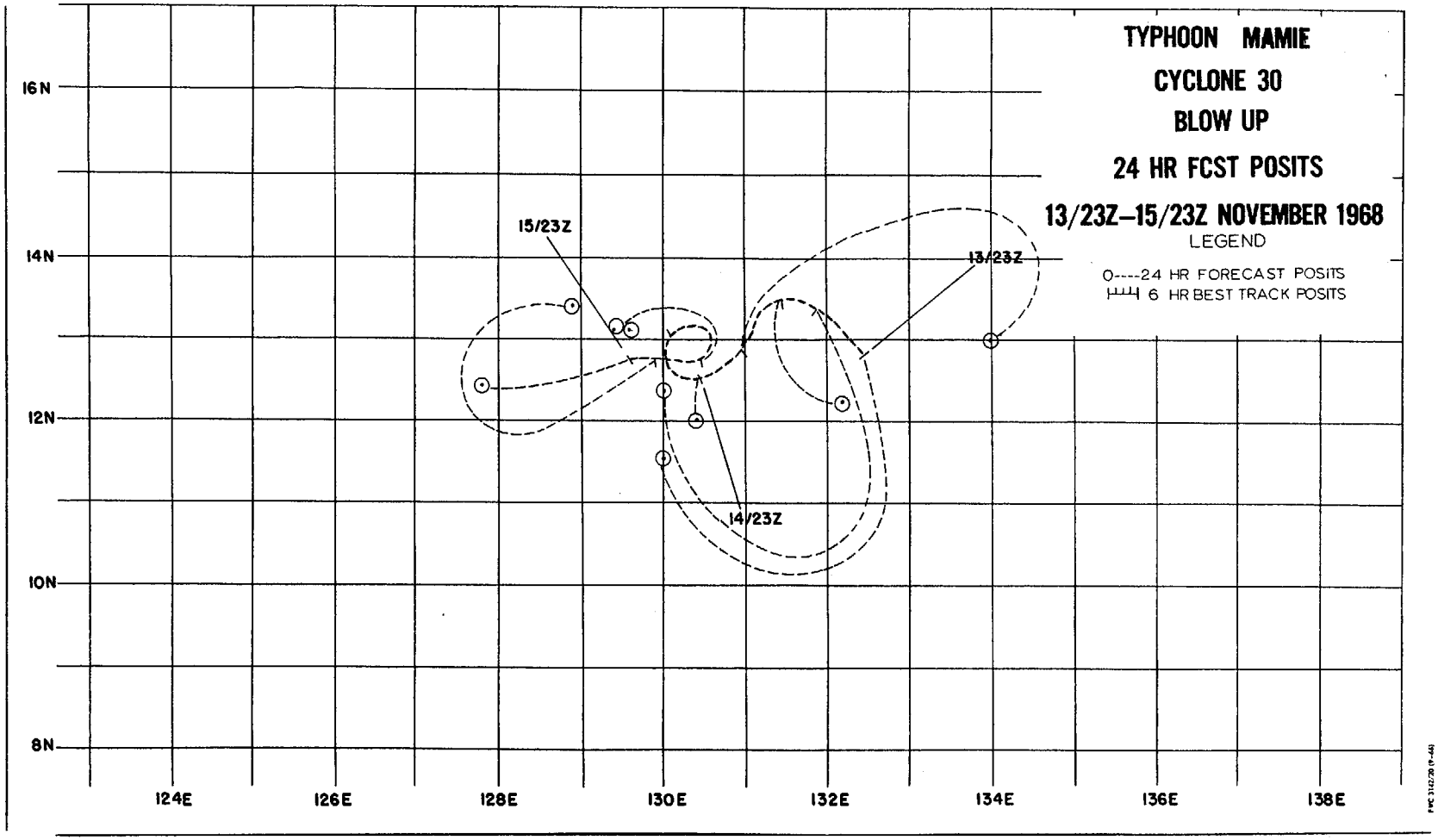
FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	232000Z	11.5N 108.4E	VW-R-02-03		---	---	---	---	--/--	CIRC	----	25	--

TROPICAL CYCLONE 30 -- 11/09/0500Z TO 11/23/2300Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
162300Z	11.9N	128.7E	344-0042	--------	--------
170500Z	11.7N	128.4E	000-0066	--------	--------
171100Z	11.2N	128.3E	064-0102	--------	--------
171700Z	10.8N	128.3E	338-0060	--------	--------
172300Z	10.5N	128.0E	000-0078	--------	--------
180500Z	10.7N	127.4E	284-0096	--------	--------
181100Z	10.5N	126.5E	234-0030	--------	--------
181700Z	10.0N	125.6E	270-0006	--------	--------
182300Z	09.8N	124.5E	097-0138	--------	--------
190500Z	09.4N	123.5E	074-0120	327-0096	--------
191100Z	09.4N	122.3E	069-0156	050-0054	--------
191700Z	09.7N	121.3E	071-0066	072-0054	--------
192300Z	09.7N	120.1E	085-0120	097-0282	--------
200500Z	09.5N	118.9E	090-0036	086-0252	015-0072
201100Z	09.8N	117.8E	180-0018	084-0300	--------
201700Z	10.3N	116.7E	134-0066	094-0144	102-0084
202300Z	10.7N	115.7E	170-0036	104-0192	--------
210500Z	11.0N	114.8E	185-0078	154-0096	101-0354
211100Z	11.3N	114.0E	203-0108	193-0108	--------
211700Z	11.4N	113.5E	215-0090	187-0108	116-0156
212300Z	11.5N	113.0E	288-0150	226-0090	--------
220500Z	11.5N	112.6E	285-0156	232-0174	206-0126
221100Z	11.5N	112.1E	280-0132	241-0216	--------
221700Z	11.6N	111.7E	296-0120	256-0162	234-0210
222300Z	11.6N	111.2E	278-0114	284-0288	--------
230500Z	11.5N	110.6E	281-0030	280-0282	251-0294
231100Z	11.4N	109.8E	265-0060	278-0240	--------
231700Z	11.4N	108.8E	090-0054	286-0186	288-0168

AVERAGE 24 HOUR ERROR - 0083 MI.
AVERAGE 48 HOUR ERROR - 0174 MI.
AVERAGE 72 HOUR ERROR - 0183 MI.


TYPHOON MAMIE
CYCLONE 30
24 HR FCST POSITS
09–23 NOVEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
09/23Z
09/05Z
07/06Z
12/23Z
12/05Z
13/23Z
15/23Z
16/23Z
17/23Z
18/23Z
19/23Z
20/23Z
21/23Z
22/23Z
23/23Z
HONG KONG
MANILA
SAIGON
RANGOON
OKINAWA
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
FUMATA
CAPE YORK
DARWIN


TYPHOON MAMIE
CYCLONE 30
BLOW UP
24 HR FCST POSITS
13/23Z–15/23Z NOVEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
15/23Z
13/23Z
14/23Z
16N
14N
12N
10N
8N
124E
126E
128E
130E
132E
134E
136E
138E

TROPICAL CYCLONE 31 - 11/18/1100Z TO 11/27/2300Z
(NINA)

I. DATA
   A. STATISTICS
      1. NUMBER OF WARNINGS ISSUED - 39
      2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 13
      3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 2316 MI

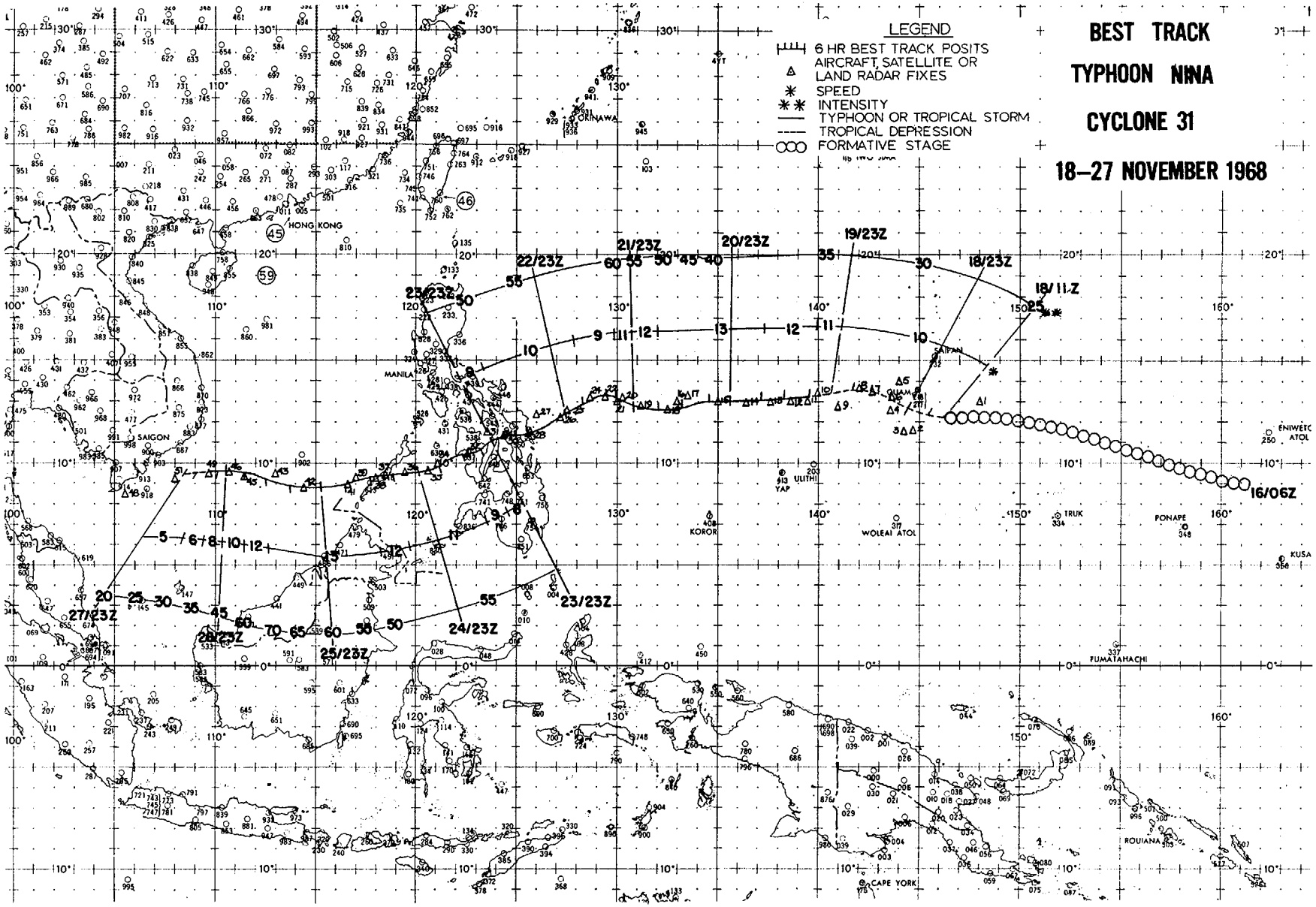
   B. CHARACTERISTICS AS A TYPHOON
      1. MINIMUM OBSERVED SLP - 959MBS AT 260820Z
      2. MINIMUM OBSERVED 700MB HEIGHT - 2755M. AT 260820Z
      3. MAXIMUM SURFACE WIND - 070 KTS (FROM BEST TRACK)
      4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 360 MI

II. DEVELOPMENT
   A. INITIAL IMPETUS - FRACTURE OF A POLAR TROUGH AND AN EASTERLY WAVE

   B. INITIAL SURFACE VORTEX
      1. JUNCTION VORTEX AT 160600Z
      2. SURFACE PRESSURE LESS THAN 1006MB

   C. 200MB FLOW ABOVE SURFACE VORTEX
      1. INITIAL - SOUTH
      2. UPON REACHING TYPHOON INTENSITY - SOUTHEAST

III. FINAL DISPOSITION - DISSIPATED OVER WATER


BEST TRACK
TYPHOON NINA
CYCLONE 31
18–27 NOVEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
HONG KONG
MANILA
SAIGON
ORINAWA
SAIPAN
GUAM
ULITHI
YAP
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETOK ATOL
KUSA
FUMATAHACHI
ROUIANA
CAPE YORK
16/06Z
18/11Z
18/23Z
19/23Z
20/23Z
21/23Z
22/23Z
23/23Z
24/23Z
25/23Z
26/23Z
27/23Z

EYE FIXES CYCLONE 31

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	180445Z	13.0N 148.0E	SLTLS	STG X	DIA 05	BNDS 2							
2	182130Z	11.6N 144.8E	VW-P-05-10	0450M	020	015	004	---	25/24	----			N.F.B.
3	190200Z	11.5N 144.3E	VW-P-03-10	0450M	---	020	003	---	26/25	----			N.F.B.
4	190345Z	12.6N 143.7E	LND RDR		---	---	---	---	--/--	----			--
5	190540Z	14.0N 144.0E	SLTLS	STG X	DIA 05	BNDS 2							
6	190550Z	13.1N 143.7E	LND RDR		---	---	---	---	--/--	----			--
7	190930Z	13.6N 142.8E	54-P-03-08	700MB	028	---	995	3054	10/--	----			N.F.B.
8	191400Z	13.8N 142.0E	54-P-03-02	700MB	040	---	000	3054	12/11	CIRC	----	10	07
9	192130Z	12.9N 141.0E	54-P-03-15	700MB	030	030	001	3060	11/10	----			F.B.
10	200300Z	13.5N 140.0E	54-P-03-10	700MB	050	035	994	3030	15/12	----			F.B.
11	200439Z	13.0N 139.5E	SLTLS	STG C	DIA --	BNDS -							
12	200843Z	13.0N 138.8E	VW-P-05-03		---	025	993	3080	26/26	CIRC	----	10	F.B.
13	201538Z	13.0N 137.6E	VW-P-03-03	700MB	---	---	990	3071	15/13	CIRC	----	10	F.B.
14	202100Z	13.0N 136.3E	54-P-03-05	700MB	040	040	992	3027	15/11	CIRC	----	40	F.B.
15	210300Z	13.0N 135.0E	54-P-05-03	700MB	060	060	984	2972	18/10	CIRC	----	40	F.B.
16	210535Z	13.0N 133.0E	SLTLS	STG X	DIA 05	BNDS 3							
17	210912Z	13.1N 133.4E	VW-R-03-10		---	---	---	---	--/--	----			F.B.
18	211400Z	12.6N 132.5E	VW-P-05-05	700MB	---	---	985	2944	17/10	----			F.B.
19	212230Z	12.9N 131.1E	54-P-03-10	700MB	048	065	972	2856	14/09	CIRC	----	20	F.B.
20	220245Z	13.1N 130.2E	54-P-05-05	700MB	050	060	969	2826	16/10	CIRC	----	25	--
21	220630Z	13.0N 130.0E	SLTLS	STG X	DIA 04	BNDS 3							
22	220927Z	13.3N 129.4E	VW-R----15		---	---	---	---	--/--	----			--
23	220950Z	13.2N 129.4E	VW-P-05-05	700MB	---	---	970	---	14/08	ELIP	NW-SE	30X20	--
24	221401Z	13.1N 128.7E	VW-R-03-10		---	---	---	---	--/--	CIRC	----	30	--

EYE FIXES CYCLONE 31

FIX NO.	TIME	POSIT	UNIT-METHOD-ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	222100Z	12.6N 127.5E	54-P-03-10	700MB	055	---	973	2862	14/08	CIRC	----	50	--
26	230225Z	12.1N 127.1E	54-P-10-05	700MB	075	065	975	2859	14/10	CIRC	----	40	07
27	230530Z	12.5N 126.0E	SLTLS	STG X	DIA 05	BNDS 4							
28	230930Z	11.7N 125.8E	VW-R-05-10		---	---	---	---	--/--	ELIP	N-S	39X30	--
29	231401Z	11.3N 125.3E	VW-R-05-10		---	---	---	---	--/--	CIRC	----	27	--
30	232056Z	11.3N 124.3E	54-P-05-04	500MB	068	---	---	---	00/54	ELIP	NW-SE	30X25	15
31	240300Z	10.6N 123.5E	54-P-05-10	500MB	060	---	---	---	03/52	CIRC	----	30	--
32	240625Z	10.5N 122.5E	SLTLS	STG X	DIA 05	BNDS 3							
33	240840Z	10.5N 122.6E	54-P-03-03	500MB	050	---	---	---	02/52	CIRC	----	30	--
34	241700Z	10.0N 121.1E	VW-R-02-05	700MB	---	---	---	---	--/--	CIRC	----	40	--
35	242100Z	09.8N 120.5E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	20	--
36	250300Z	09.7N 119.5E	54-P-05-02	700MB	080	060	977	2914	17/--	CIRC	----	30	10
37	250720Z	09.5N 118.5E	SLTLS	STG X	DIA 04	BNDS 2							
38	250900Z	09.2N 118.0E	54-P-05-03	500MB	090	---	---	---	51/54	ELIP	NW-SE	20X15	17
39	251530Z	09.2N 117.0E	VW-R----10		---	---	---	---	--/--	----			--
40	251615Z	09.0N 116.7E	VW-P-03-05	700MB	---	---	976	2965	18/10	CIRC	----	30	--
41	251930Z	09.0N 116.0E	VW-R-03-10		---	---	---	---	--/--	CIRC	----	25	15
42	260300Z	08.9N 114.4E	54-P-05-05	700MB	085	090	970	2816	20/12	CIRC	----	25	--
43	260620Z	09.5N 113.0E	SLTLS	STG X	DIA 03	BNDS 3							
44	260820Z	09.3N 112.8E	54-P-05-05	700MB	095	120	959	2755	20/10	CIRC	----	25	F.B.
45	261530Z	09.2N 111.3E	VW-R-02-05		---	---	---	---	--/--	CIRC	----	30	N.F.B.
46	262130Z	09.7N 110.8E	VW-P-06-10	700MB	---	---	---	3047	18/10	----			N.F.B.
47	270315Z	09.6N 110.2E	54-P-05-02	700MB	070	075	990	3042	15/08	CIRC	----	10	N.F.B.
48	270714Z	08.5N 105.5E	SLTLS	STG C	DIA --	BNDS -							

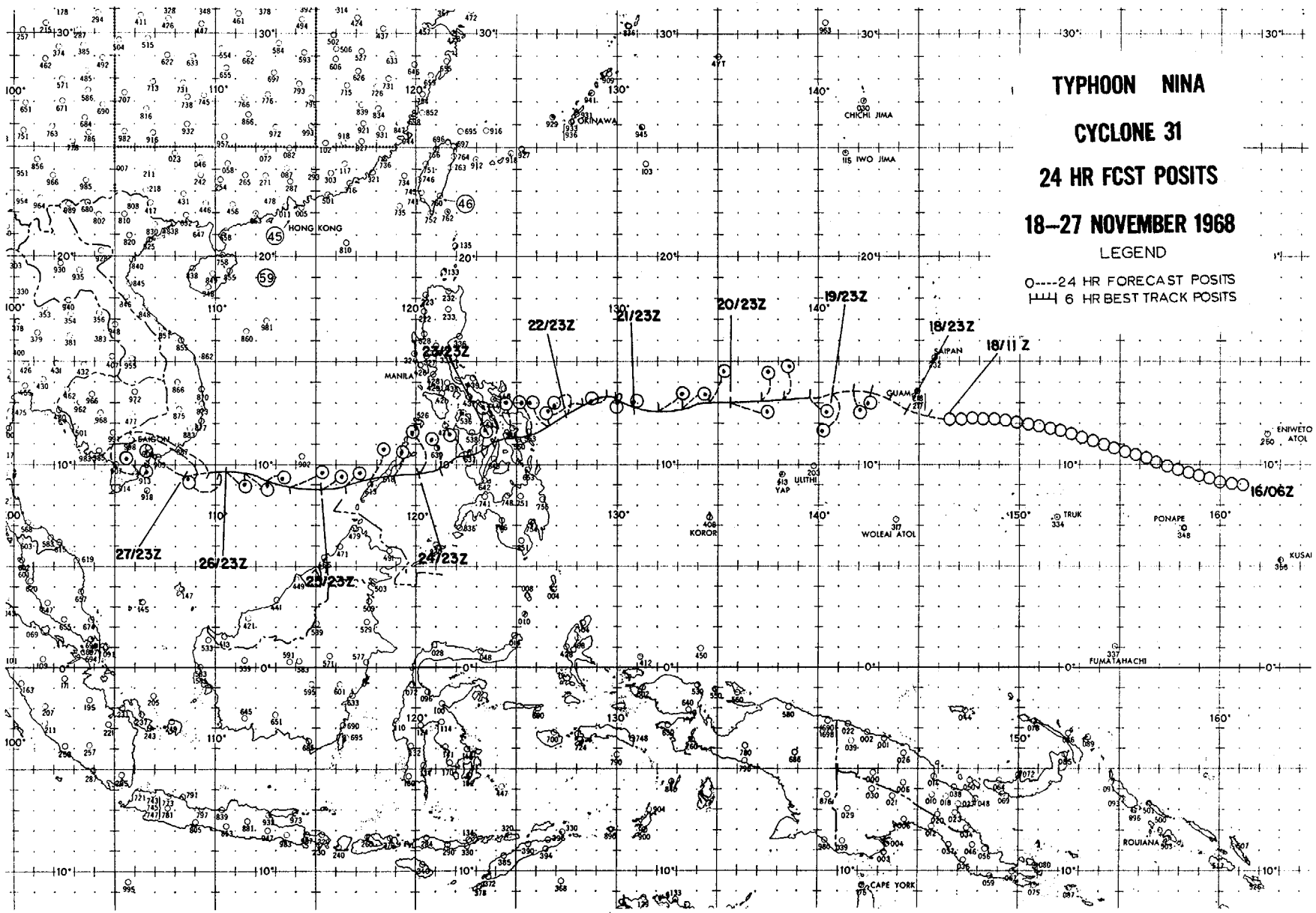
EYE FIXES CYCLONE 31

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	270900Z	09.5N 109.8E	54-P-03-02	700MB	035	035	993	3048	14/12	CIRC	----	10	N.F.B.
50	271500Z	09.4N 109.5E	VW-P-05-01	0460M	---	025	002	---	25/22	----			F.B.
51	272000Z	09.1N 108.0E	VW-P-05-02	0440M	---	030	002	3087	23/21	----			F.B.

TROPICAL CYCLONE 31 -- 11/18/1100Z TO 11/27/2300Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
200500Z	13.2N	139.6E	130-0054	--------	--------
201100Z	13.1N	138.3E	007-0108	--------	--------
201700Z	13.0N	137.1E	008-0090	--------	--------
202300Z	13.0N	135.8E	104-0090	--------	--------
210500Z	13.0N	134.5E	022-0096	--------	--------
211100Z	12.8N	133.2E	066-0072	--------	--------
211700Z	12.6N	132.0E	060-0066	--------	--------
212300Z	12.9N	130.9E	000-0006	--------	--------
220500Z	13.1N	130.0E	180-0006	018-0096	--------
221100Z	13.2N	129.6E	264-0108	087-0090	--------
221700Z	12.9N	128.3E	264-0102	085-0060	--------
222300Z	12.4N	127.4E	321-0036	320-0042	--------
230500Z	11.8N	126.5E	333-0078	326-0084	354-0174
231100Z	11.5N	125.6E	348-0090	308-0144	--------
231700Z	11.4N	124.7E	356-0096	300-0150	046-0114
232300Z	11.0N	123.9E	342-0114	337-0120	--------
240500Z	10.6N	123.2E	010-0072	329-0162	326-0168
241100Z	10.4N	122.2E	340-0066	340-0162	--------
241700Z	09.9N	121.1E	355-0072	004-0186	316-0228
242300Z	09.7N	120.1E	356-0108	358-0192	--------
250500Z	09.5N	118.9E	011-0066	029-0150	341-0222
251100Z	09.2N	117.8E	014-0102	360-0138	--------
251700Z	09.0N	116.5E	036-0048	006-0132	020-0252
252300Z	08.9N	115.2E	067-0054	011-0156	--------
260500Z	08.9N	113.9E	057-0084	035-0168	042-0222
261100Z	09.2N	112.6E	090-0030	044-0162	--------
261700Z	09.5N	111.5E	099-0174	082-0084	034-0126
262300Z	09.6N	110.6E	140-0042	094-0084	--------
270500Z	09.5N	110.1E	256-0072	058-0096	054-0162

AVERAGE 24 HOUR ERROR - 0075 MI.
AVERAGE 48 HOUR ERROR - 0126 MI.
AVERAGE 72 HOUR ERROR - 0185 MI.


TYPHOON NINA
CYCLONE 31
24 HR FCST POSITS
18–27 NOVEMBER 1968
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
18/11Z
18/23Z
19/23Z
20/23Z
21/23Z
22/23Z
23/23Z
24/23Z
25/23Z
26/23Z
27/23Z
16/06Z
HONG KONG
MANILA
SAIGON
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
ULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
ENIWETO ATOL
KUSAI
FUMATAHACHI
ROUIANA
CAPE YORK

TROPICAL CYCLONE 32 - 11/21/2300Z TO 11/29/1700Z
(ORA)

I. DATA

A. STATISTICS

1. NUMBER OF WARNINGS ISSUED - 33
2. NUMBER OF WARNINGS WITH TYPHOON INTENSITY - 23
3. TOTAL DISTANCE TRAVELED DURING TROPICAL WARNING PERIOD - 1884 MI

B. CHARACTERISTICS AS A TYPHOON

1. MINIMUM OBSERVED SLP - 931MBS AT 250300Z
2. MINIMUM OBSERVED 700MB HEIGHT - 2481M. AT 250300Z
3. MAXIMUM SURFACE WIND - 120 KTS (FROM BEST TRACK)
4. MAXIMUM RADIUS OF SURFACE CIRCULATION - 420 MI

II. DEVELOPMENT

A. INITIAL IMPETUS - DEVELOPMENT OF DIVERGENCE AT 200MB LEVEL OVER SURFACE CYCLONIC CIRCULATION

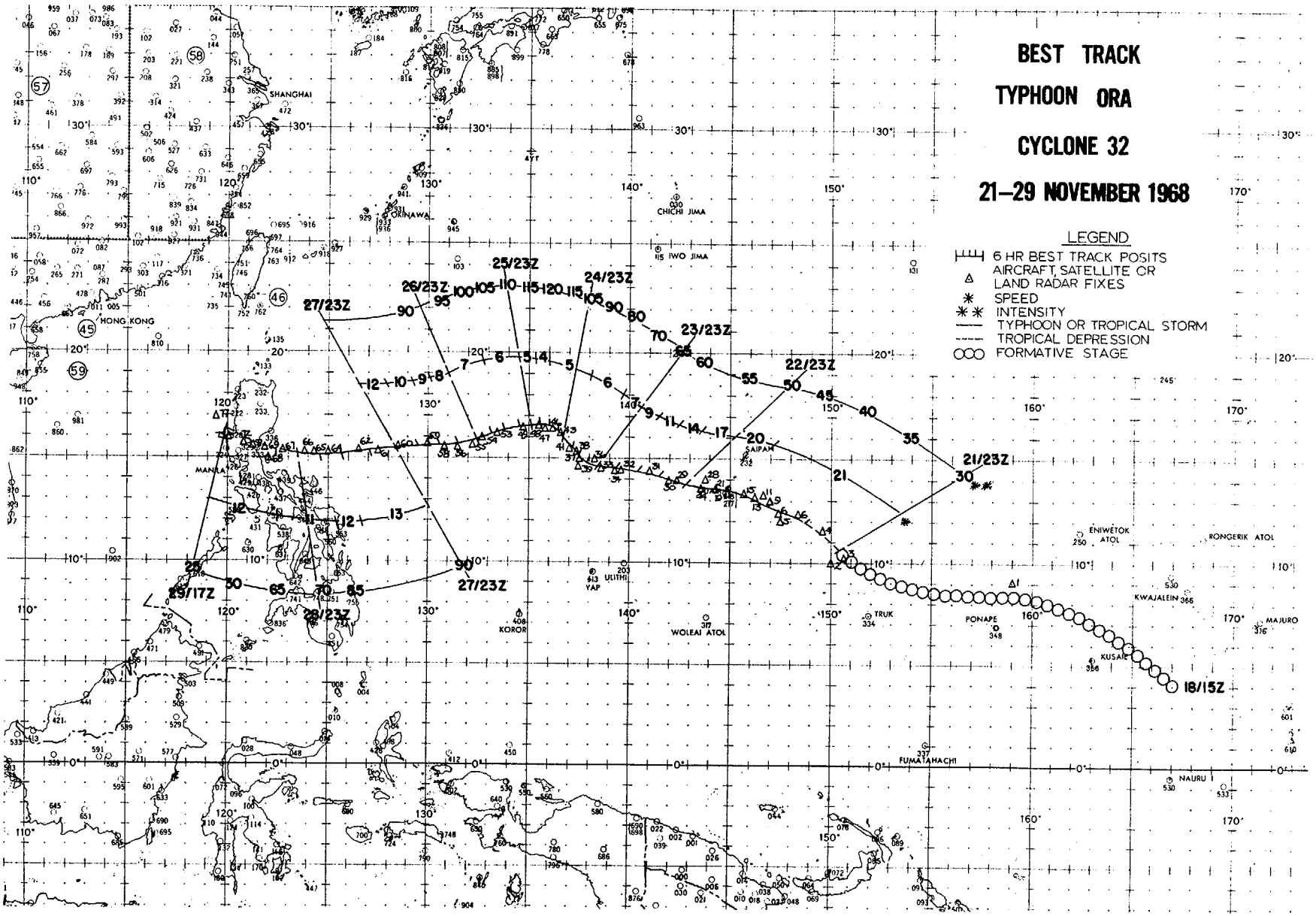
B. INITIAL SURFACE VORTEX

1. JUNCTION VORTEX AT 181800Z
2. SURFACE PRESSURE LESS THAN 1006MB

C. 200MB FLOW ABOVE SURFACE VORTEX

1. INITIAL - EAST
2. UPON REACHING TYPHOON INTENSITY - ANTICYCLONIC

III. FINAL DISPOSITION - DISSIPATED OVER WATER


BEST TRACK
TYPHOON ORA
CYCLONE 32
21–29 NOVEMBER 1968
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
SHANGHAI
OKINAWA
CHICHI JIMA
IWO JIMA
HONG KONG
MANILA
SAIPAN
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
PONAPE
TRUK
KUSAIE
YAP
ULITHI
KOROR
WOLEAI ATOL
FUMATAMACHI
NAURU
18/15Z
21/23Z
22/23Z
23/23Z
24/23Z
25/23Z
26/23Z
27/23Z
28/23Z
29/17Z

EYE FIXES CYCLONE 32

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
1	200439Z	09.0N 159.0E	SLTLS	STG B	DIA --	BNDS -							
2	210535Z	10.0N 150.0E	SLTLS	STG A	DIA --	BNDS -							
3	212100Z	10.2N 150.7E	54-P-07-10	700MB	065	055	001	3063	11/10	CIRC	----	30	05
4	220320Z	11.5N 149.6E	54-P-05-10	700MB	045	035	995	3066	12/10	----			--
5	220435Z	12.0N 147.5E	SLTLS	STG X	DIA 05	BNDS 2							
6	220715Z	12.3N 148.3E	VW-R------		---	---	---	---	--/--	----			--
7	220815Z	12.4N 148.1E	VW-P-05-10	0450M	---	035	995	---	25/24	CIRC	----	12	--
8	220915Z	12.4N 147.4E	VW-R------		---	---	---	---	--/--	----			--
9	221015Z	13.0N 147.0E	VW-R----10		---	---	---	---	--/--	----			--
10	221045Z	13.0N 146.9E	LND RDR		---	---	---	---	--/--	----			--
11	221115Z	13.2N 146.6E	VW-R----10		---	---	---	---	--/--	----			--
12	221210Z	13.2N 146.3E	VW-P-05-05	700MB	---	---	996	3050	14/11	CIRC	----	05	--
13	221220Z	13.1N 146.2E	LND RDR		---	---	---	---	--/--	----			--
14	221320Z	13.3N 146.2E	LND RDR		---	---	---	---	--/--	----			--
15	221415Z	13.4N 145.7E	LND RDR		---	---	---	---	--/--	----			--
16	221438Z	13.4N 145.6E	LND RDR		---	---	---	---	--/--	CIRC	----	30	--
17	221515Z	13.5N 145.3E	LND RDR		---	---	---	---	--/--	----			--
18	221525Z	13.3N 145.2E	VW-R-03-02		---	---	---	---	--/--	CIRC	----	08	--
19	221630Z	13.4N 144.9E	VW-R------		---	---	---	---	--/--	----			--
20	221730Z	13.5N 144.6E	VW-R------		---	---	---	---	--/--	----			--
21	221825Z	13.6N 144.3E	LND RDR		---	---	---	---	--/--	----			--
22	221850Z	13.6N 144.1E	LND RDR		---	---	---	---	--/--	----			--
23	221930Z	13.6N 144.0E	LND RDR		---	---	---	---	--/--	----			--
24	222000Z	13.7N 143.7E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 32

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TD	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
25	222030Z	13.7N 143.7E	LND RDR		---	---	---	---	--/--	----			--
26	222105Z	13.8N 143.6E	LND RDR		---	---	---	---	--/--	----			--
27	222205Z	13.8N 143.3E	LND RDR		---	---	---	---	--/--	----			N.F.B.
28	230040Z	14.0N 143.9E	LND RDR		---	---	---	---	--/--	----			--
29	230100Z	14.0N 142.4E	54-P-02-02	700MB	078	070	978	2917	18/12	CIRC	----	20	10
30	230300Z	14.0N 142.0E	54-P-02-02	700MB	070	070	975	2905	20/12	CIRC	----	20	10
31	230530Z	14.5N 141.0E	SLTLS	STG X	DIA 04	BNDS 4							
32	230910Z	14.3N 140.8E	VW-P-05-05	700MB	---	---	977	2882	16/08	CIRC	----	15	--
33	231400Z	14.5N 139.7E	VW-P-05-05	700MB	055	---	964	2829	20/10	CIRC	----	15	--
34	231705Z	14.4N 139.3E	VW-R-05-05		---	---	---	---	--/--	CIRC	----	15	--
35	232100Z	14.6N 138.7E	54-P-03-03	700MB	085	055	962	2746	20/12	CIRC	----	20	--
36	240255Z	15.0N 138.1E	54-P-03-01	700MB	095	080	940	2585	22/12	CIRC	----	10	--
37	240625Z	15.0N 137.5E	SLTLS	STG X	DIA 04	BNDS 3							
38	241030Z	15.2N 137.4E	VW-R----05		---	---	---	---	--/--	----			--
39	241055Z	14.8N 137.5E	VW-R-05-02		---	---	---	---	--/--	CONC		35-06	12
40	241430Z	15.3N 137.2E	VW-R-01-02		---	035	---	---	--/--	CONC		35-11	07
41	242100Z	15.5N 137.0E	54-P-05-03	700MB	090	---	943	2634	20/10	CONC		30-10	10
42	242106Z	15.7N 137.0E	ACFT RDR	8000M	---	---	---	---	--/--	----			--
43	250300Z	16.2N 136.6E	54-P-03-03	700MB	100	100	931	2481	21/12	CIRC	----	30	10
44	250525Z	16.5N 136.5E	SLTLS	STG X	DIA 04	BNDS 4							
45	250800Z	16.3N 136.7E	VW-R----10	0460M	---	---	---	---	--/--	----			--
46	250845Z	16.5N 136.1E	VW-R-01-02	0460M	---	---	---	---	--/--	ELIP	NW-SE	14X09	--
47	251400Z	16.5N 135.9E	VW-R-02-01	700MB	---	---	---	---	--/--	CIRC	----	14	04
48	252115Z	16.6N 135.4E	54-P-03-05	700MB	105	085	937	2554	17/10	CIRC	----	30	10

EYE FIXES CYCLONE 32

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
49	260300Z	16.5N 134.9E	54-P-03-03	700MB	100	085	940	2585	18/10	CIRC	----	40	10
50	260620Z	17.0N 134.5E	SLTLS	STG X	DIA 05	BNDS 4							
51	260830Z	16.2N 134.3E	VW-R----15		---	---	---	---	--/--	----			--
52	260900Z	16.2N 134.2E	VW-R-10-10		---	---	---	---	--/--	----			--
53	261421Z	16.1N 133.3E	VW-P-10-05	700MB	---	---	968	2804	20/10	CIRC	----	40	--
54	262100Z	16.0N 132.7E	54-P-04-10	700MB	080	090	954	2694	18/10	CIRC	----	40	05
55	270230Z	15.8N 132.1E	54-P-02-05	700MB	080	100	961	2743	16/10	CIRC	----	30	05
56	270524Z	15.5N 131.5E	SLTLS	STG X	DIA 04	BNDS 3							
57	270750Z	15.8N 113.2E	ACFT RDR		---	---	---	---	--/--	----			--
58	270900Z	15.5N 130.9E	VW-R-02-02		---	---	---	---	--/--	CIRC	----	30	--
59	271400Z	15.9N 130.0E	VW-R-02-02		---	---	---	---	--/--	CIRC	----	12	--
60	272230Z	15.6N 128.5E	54-P-03-10	500MB	065	---	966	2812	--/56	ELIP	NW-SE	40X15	--
61	280245Z	15.4N 127.4E	54-P-03-10	700MB	060	060	957	2704	16/12	CIRC	----	25	--
62	280614Z	15.5N 126.5E	SLTLS	STG X	DIA 04	BNDS 4							
63	280815Z	15.2N 126.4E	54-P-03-05	700MB	080	090	949	2624	17/11	CIRC	----	20	--
64	281504Z	15.3N 125.0E	VW-R-05-03	0420M	---	---	---	---	--/--	CIRC	----	20	--
65	281805Z	15.2N 124.2E	VW-R------	0420M	---	---	---	---	--/--	----			--
66	282027Z	15.2N 123.9E	VW-R-03-02	0440M	---	---	---	---	--/--	CIRC	----	10	--
67	290300Z	15.3N 122.8E	54-P-05-03	500MB	080	---	955	2707	04/52	CIRC	----	20	10
68	290709Z	15.0N 122.0E	SLTLS	STG X	DIA 03	BNDS 3							
69	290815Z	15.6N 121.9E	54-P-03-05	500MB	070	095	---	2701	16/--	CIRC	----	15	05
70	291000Z	15.7N 121.6E	LND RDR		---	---	---	---	--/--	----			--
71	291120Z	15.8N 121.2E	LND RDR		---	---	---	---	--/--	----			--
72	291210Z	15.9N 120.9E	LND RDR		---	---	---	---	--/--	----			--

EYE FIXES CYCLONE 32

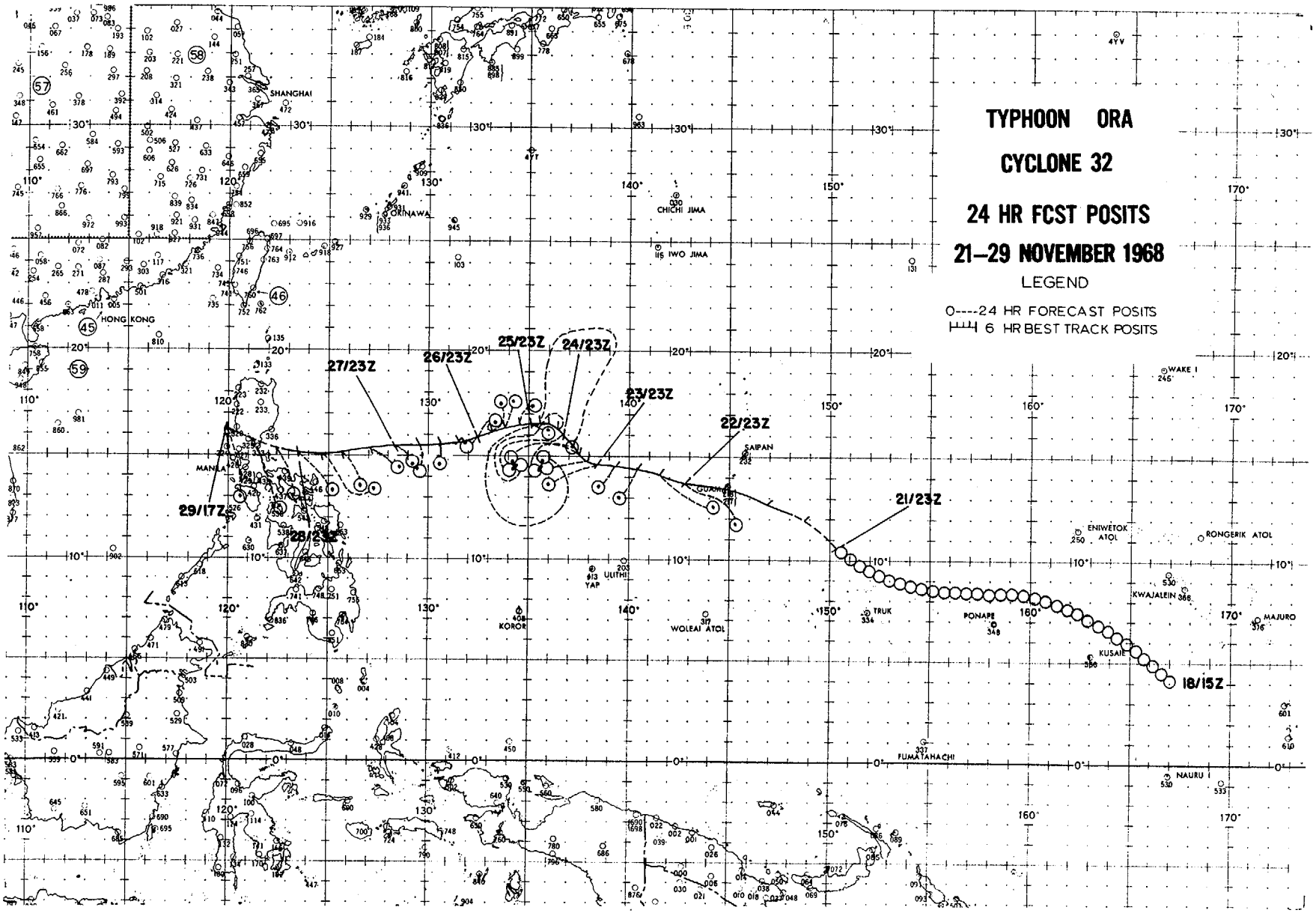
FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TT/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKNS WALL CLOUD
73	291240Z	15.8N 121.0E	LND RDR		---	---	---	---	--/--	----			--
74	291500Z	16.0N 120.6E	VW-R-03-02		---	---	---	---	--/--	CIRC	----	10	--
75	291630Z	16.0N 120.0E	LND RDR		---	---	---	---	--/--	----			--
76	291745Z	16.4N 120.0E	VW-R------		---	---	---	---	--/--	----			--
77	292055Z	17.0N 119.4E	VW-P-02-15	700MB	---	---	009	3130	09/08	----			--

TROPICAL CYCLONE 32 -- 11/21/2300Z TO 11/29/1700Z
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG.	24 HR. ERROR DEG. DIST.	48 HR. ERROR DEG. DIST.	72 HR. ERROR DEG. DIST.
220500Z	12.0N	148.8E	--------	--------	--------
221100Z	12.9N	146.8E	--------	--------	--------
221700Z	13.4N	144.8E	--------	--------	--------
222300Z	13.8N	142.9E	131-0180	--------	--------
230500Z	14.1N	141.5E	122-0174	--------	--------
231100Z	14.3N	140.3E	209-0084	--------	--------
231700Z	14.5N	139.3E	215-0072	--------	--------
232300Z	14.6N	138.5E	252-0150	--------	--------
240500Z	14.8N	137.9E	262-0120	146-0138	--------
241100Z	15.1N	137.4E	247-0102	232-0198	--------
241700Z	15.5N	137.1E	251-0162	232-0192	--------
242300Z	15.9N	136.8E	238-0168	247-0348	--------
250500Z	16.3N	136.4E	235-0150	245-0288	207-0210
251100Z	16.5N	136.0E	184-0102	243-0282	--------
251700Z	16.5N	135.6E	128-0102	246-0330	237-0354
252300Z	16.5N	135.1E	116-0048	242-0318	--------
260500Z	16.4N	134.5E	030-0060	242-0282	246-0378
261100Z	16.2N	133.9E	009-0084	218-0126	--------
261700Z	16.1N	133.1E	025-0084	149-0102	248-0414
262300Z	15.9N	132.4E	042-0060	088-0120	--------
270500Z	15.7N	131.6E	090-0012	041-0156	245-0348
271100Z	15.7N	130.7E	186-0066	035-0138	--------
271700Z	15.7N	129.5E	180-0084	052-0162	141-0114
272300Z	15.5N	128.3E	131-0072	067-0150	--------
280500Z	15.2N	127.0E	113-0102	111-0078	061-0252
281100Z	15.1N	125.7E	147-0096	174-0132	--------
281700Z	15.1N	124.6E	107-0156	175-0156	068-0300
282300Z	15.2N	123.5E	144-0150	137-0174	--------
290500Z	15.4N	122.4E	165-0144	134-0210	152-0150

AVERAGE 24 HOUR ERROR - 0107 MI.
AVERAGE 48 HOUR ERROR - 0194 MI.
AVERAGE 72 HOUR ERROR - 0280 MI.

[redacted]


TYPHOON ORA
CYCLONE 32
24 HR FCST POSITS
21–29 NOVEMBER 1968
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
29/17Z
28/23Z
27/23Z
26/23Z
25/23Z
24/23Z
23/23Z
22/23Z
21/23Z
18/15Z
SHANGHAI
HONG KONG
MANILA
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
YAP
UULITHI
KOROR
WOLEAI ATOL
TRUK
PONAPE
KUSAIE
KWAJALEIN
ENIWETOK ATOL
RONGERIK ATOL
MAJURO
NAURU I
WAKE I
FUMATAHACHI