CHAPTER III

SUMMARY OF TROPICAL CYCLONES OF 1961

A. GENERAL

SIXTY NINE (69) TROPICAL DISTURBANCES WERE ANALYZED AND INVESTIGATED AS POTENTIAL CYCLONES DURING THE CALENDAR YEAR 1961 IN THE NORTH PACIFIC OCEAN AREA W OF 180 DEGREES. OF THIS NUMBER, 11 HAD WARNINGS ISSUED AS TROPICAL DEPRESSIONS, AN ADDITIONAL 11 REACHED TROPICAL STORM WARNING STAGE, AND ANOTHER 20 ACHIEVED TYPHOON WARNING STATUS. WARNINGS WERE ISSUED ON 42 TROPICAL CYCLONES.

THE FOLLOWING DATA IS PROVIDED CONCERNING THE 1961 SEASON AND THE TWO PREVIOUS YEARS FOR COMPARISON PURPOSES:

		1959	1960	1961
TOTAL CYCLONES		65	56	69
A.	SUSPECT AREAS	32	26	27
B.	TROPICAL DEPRESSIONS	7	3	11
C.	TROPICAL STORMS	9	8	11
D.	TYPHOONS	17	19	20
E.	TOTAL NUMBER OF WARNINGS	583	776	737
F.	CALENDAR DAYS OF WARNINGS	137	157	165

THE 11 TROPICAL STORMS WERE RITA, SUSAN, VIOLA, WINNIE, DORIS, FLOSSIE, GRACE, MARIE, RUBY, WILDA, AND ANITA.

THE 20 TYPHOONS IN ORDER OF OCCURRENCE WERE TESS, ALICE, BETTY, CORA, ELSIE, HELEN, IDA, JUNE, KATHY, LORNA, NANCY, OLGA, PAMELA, SALLY, TILDA, VIOLET, BILLIE, CLARA, DOT, AND ELLEN. FOR COMPARISON PURPOSES, THE CHART ON THE FOLLOWING PAGE PROVIDES INFORMATION CONCERNING ANNUAL TOTALS AND THE MONTHLY FREQUENCY FOR 1952 THROUGH 1961.

THE SEASONAL DISTRIBUTION OF TYPHOONS CONFORMS TO CLIMATOLOGY FAIRLY WELL, EXCEPT THAT THE TOTAL FOR THE YEAR EXCEEDED THE AVERAGE BY ABOUT TWO. THE AVERAGE TYPHOON FOR 1961 HAD A LIFE OF 5 DAYS, 17 HOURS AND TRAVELED 1497 MI AT AN AVERAGE SPEED OF 11 KTS FROM FIRST TO LAST WARNING. THE 1960 TYPHOONS TRAVELED AT ABOUT THE SAME SPEED, LASTED TWO DAYS LONGER AND TRAVELED AN AVERAGE DISTANCE OF 1930 MI. NANCY, A SEPTEMBER TYPHOON, HOLDS THE 1961 RECORDS FOR LONGEST LIFE, 9 DAYS, 18 HOURS; DISTANCE, 4266 MI; AVERAGE SPEED, 18.2 KTS; FASTEST, 55 KTS BETWEEN 161200Z AND 170000Z; AND MOST INTENSE, 185 KTS BETWEEN 111200Z AND 120600Z.

B. AREAS OF FORMATION AND DEVELOPMENT

A CHART IS PROVIDED SHOWING THE POINTS OF ORIGIN OF ALL TYPHOONS, 1952 THROUGH 1961. THE DATA IS BASED ON ANNUAL REPORTS FOR EACH YEAR, AND OTHER DATA SOURCES MAY VARY SLIGHTLY. AN ADDITIONAL CHART, DESCRIBING POINTS OF FIRST TYPHOON INTENSITY FOR THE SAME PERIOD IS INCLUDED. EACH TRIANGLE IS NUMBERED TO INDICATE A TYPHOON AS FOLLOWS:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOT
1952						3	1	3	3	5	3	3	21
1953		1			1	1	1	5	2	4	1	1	17
1954					1		1	4	4	2	3		15
1955	1		1	1		1	5	3	3	2	1	1	19
1956			1	1			2	4	5	1	3	1	18
1957	1			1	1	1	1	2	5	3	3		18
1958	1				1	2	5	3	3	3	1	1	20
1959				1			1	5	3	3	2	2	17
1960				1		2	2	8		4	1	1	19
1961			1		2	1	3	3	5	3	1	1	20
AVE.	.3	.1	.3	.5	.6	1.1	2.2	4.0	3.1	3.0	1.9	1.1	18.4

0161 WOULD BE THE FIRST TYPHOON OF 1961, 1352 IS THE THIRTEENTH TYPHOON OF 1952, ETC.

THE CYCLONES INTENSIFIED TO TYPHOON STRENGTH IN THE SOUTH CHINA SEA, ALICE, CORA, AND OLGA, ONE OF WHICH, CORA, ORIGINATED THERE. THE REMAINING CIRCULATIONS DEVELOPED AND INTENSIFIED S OF 25N. AS USUAL, MANY OF THE CYCLONES COMMENCED INTENSIFYING NEAR GUAM (7 WITHIN 500 MI) BUT CREATED HAVOC IN OTHER PARTS OF THE WORLD. THE TWO THAT WERE A POTENTIAL HAZARD TO GUAM WERE NANCY AND VIOLET, THE TWO MOST INTENSE CYCLONES OF THE SEASON. TYPHOON CLARA BECAME A TYPHOON NEAR WAKE ISLAND AND CAN BE CONSIDERED THE ONLY CYCLONE TO DEVELOP IN AN UNUSUAL POSITION FOR THE SEASON.

C. SIZE AND INTENSITY

TYPHOONS VARIED IN SIZE FROM THE SMALL SUCH AS CORA, OLGA, KATHY AND IDA TO THE GIANT, BILLIE. THERE WERE NO "MIDGET" TYPHOONS DETECTED DURING THE YEAR, BUT SEVERAL WERE SMALL ENOUGH TO HAVE ESCAPED DETECTION HAD THEY NOT DRIFTED INTO SHIPPING OR AIR LANES. KATHY WAS DIFFICULT TO FIND ON THE SYNOPTIC CHART, AND POSED SOME PROBLEMS TO RECONNAISSANCE AIRCRAFT SEARCHING FOR IT. TYPHOON BILLIE WAS SO LARGE THAT IT CREATED SEVERE WEATHER CONDITIONS FROM GUAM TO JAPAN, TAIWAN, THE PHILIPPINES AND BACK TO GUAM VIA THE EQUATOR. THE EYE WAS 120 BY 180 MI, AND THE OUTER RADIUS OF 30 KT WINDS WAS ABOUT 750 MI. THE CIRCULATION WAS SIMILAR TO THAT OF CARMEN OF 1960 IN BEHAVIOR AND APPEARANCE. ALTHOUGH CLASSIFIED AS A TYPHOON BECAUSE OF THE SURFACE WIND SPEED, IT IS DOUBTFUL THAT IT WOULD QUALIFY THERMODYNAMICALLY FOR IT LACKED THE CLASSICAL WALL CLOUD AND OTHER FEATURES COMMONLY ASSOCIATED WITH TYPHOONS. TYPHOONS VIOLET AND NANCY HAD MINIMUM SEA LEVEL PRESSURES OF 882 MB REPORTED BY AIRCRAFT RECONNAISSANCE. DROPSONDE EQUIPMENT PROVIDED THIS INFORMATION IN EACH CASE. THE MAXIMUM SURFACE WIND SPEED FROM THE BEST TRACK FOR NANCY WAS 185 KTS AND ONLY 5 KTS LESS FOR VIOLET. TYPHOON OLGA HAD THE SHORTEST LIFE, 2 DAYS 6 HOURS, AND TRAVELED ABOUT 325 MI.

D. MOVEMENT

THE SEASONAL TRACKS FOR 1961 AND 1950 COMPARE FAVORABLY IN MANY RESPECTS, EXCEPT THAT THERE WERE ONLY 13 TYPHOONS IN 1950.

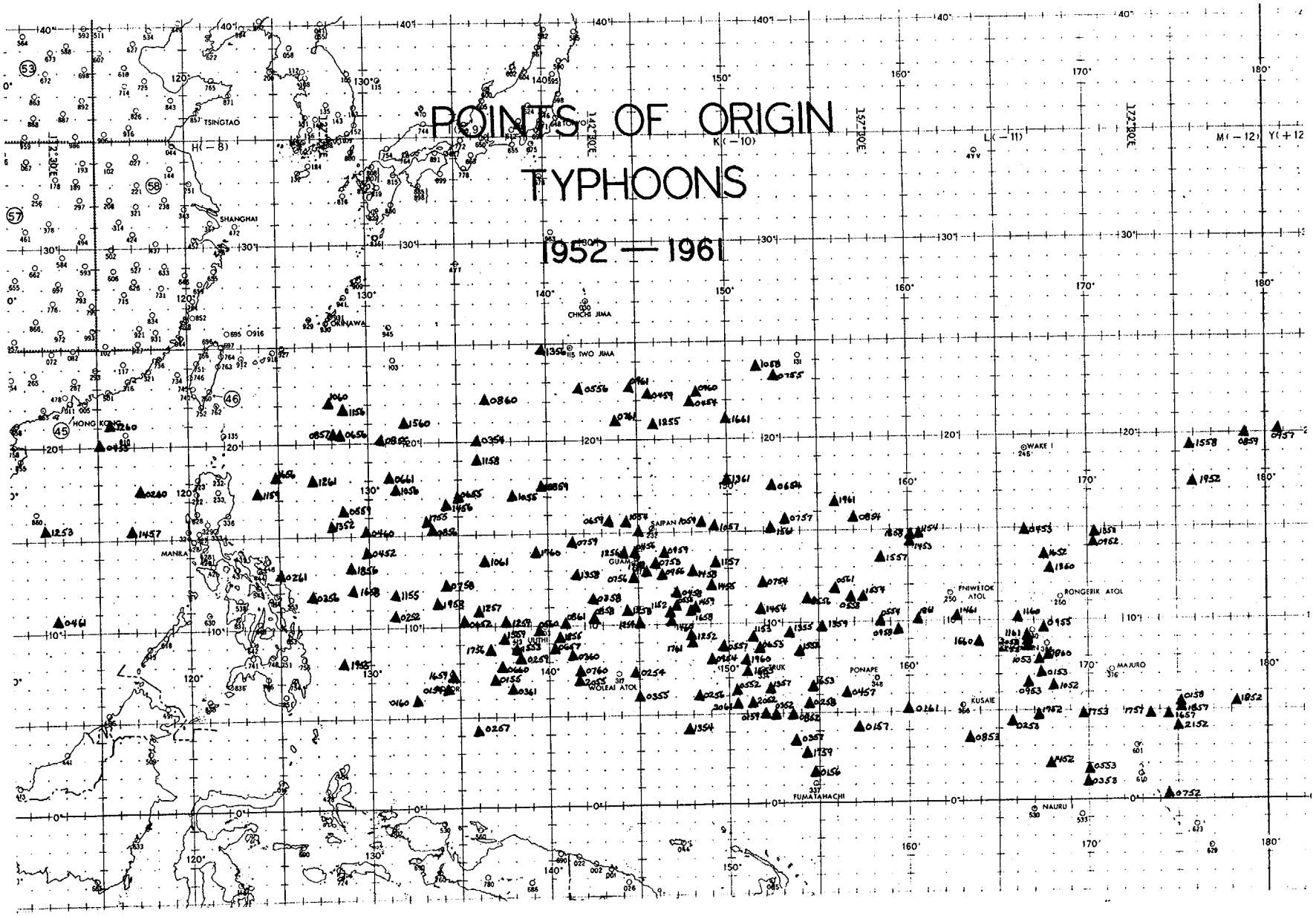
THE 1961 COMPOSITE TYPHOON TRACK CHART REVEALS THAT 9 TYPHOONS DID NOT RECURVE, 3 LOOPED, AND THE TRACKS OF 2 OF THESE, CLARA AND VIOLET, CAN BE CONSIDERED UNUSUAL. CLARA LOOPED IN A CLOCKWISE MANNER, AND VIOLET MOVED SW FOR 300 MI BEFORE TURNING TO THE NW TO COMMENCE BEHAVING IN A RESPECTABLE MANNER. THE FAILURE OF A LARGE NUMBER OF TYPHOONS TO RECURVE SUGGESTS THAT SOME PARTICULAR CIRCULATION FEATURE EXISTED OR CONTINUALLY RECURRED. IN SEVERAL CASES THE ANTICYCLONE AROUND WHICH THE TYPHOON WAS APPARENTLY TRAVELING EXTENDED OVER THE ASIATIC MAINLAND, CAUSING THE TYPHOON TO STRIKE LAND BEFORE RECURVATURE COULD TAKE PLACE. AN ANTICYCLONE MOVED WESTWARD DURING THE LIFE OF

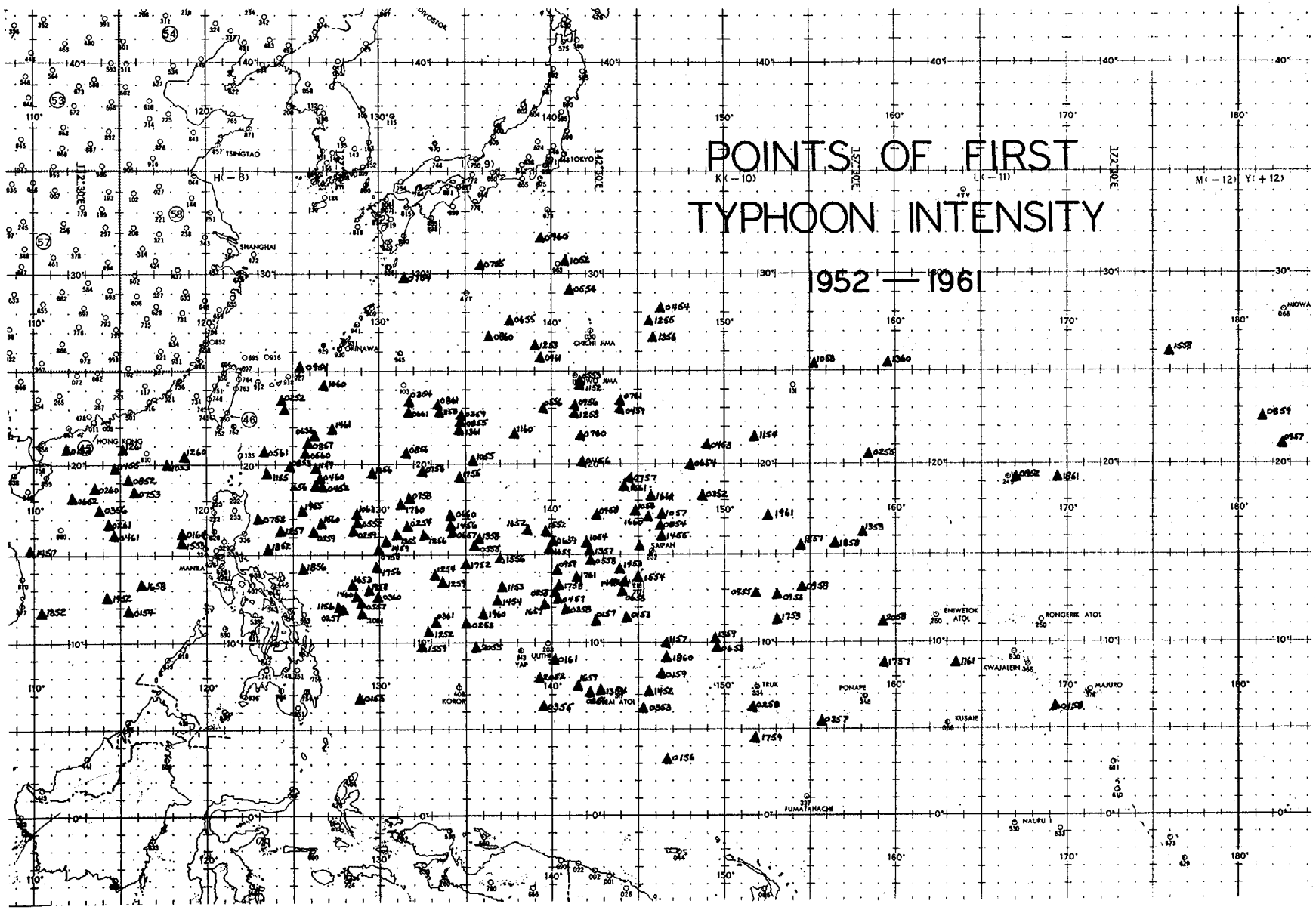
KATHY AND IDA CAUSING A CONTINUED WESTWARD MOVEMENT UNTIL THE TYPHOONS STRUCK LAND. IDA AND HELEN, KNOWN AS THE "TWINS" DEVELOPED A FUJI-WHARA EFFECT, AND IDA EVENTUALLY MOVED ACROSS THE NORTHERN PERIPHERY OF THE CIRCULATION OF HELEN.

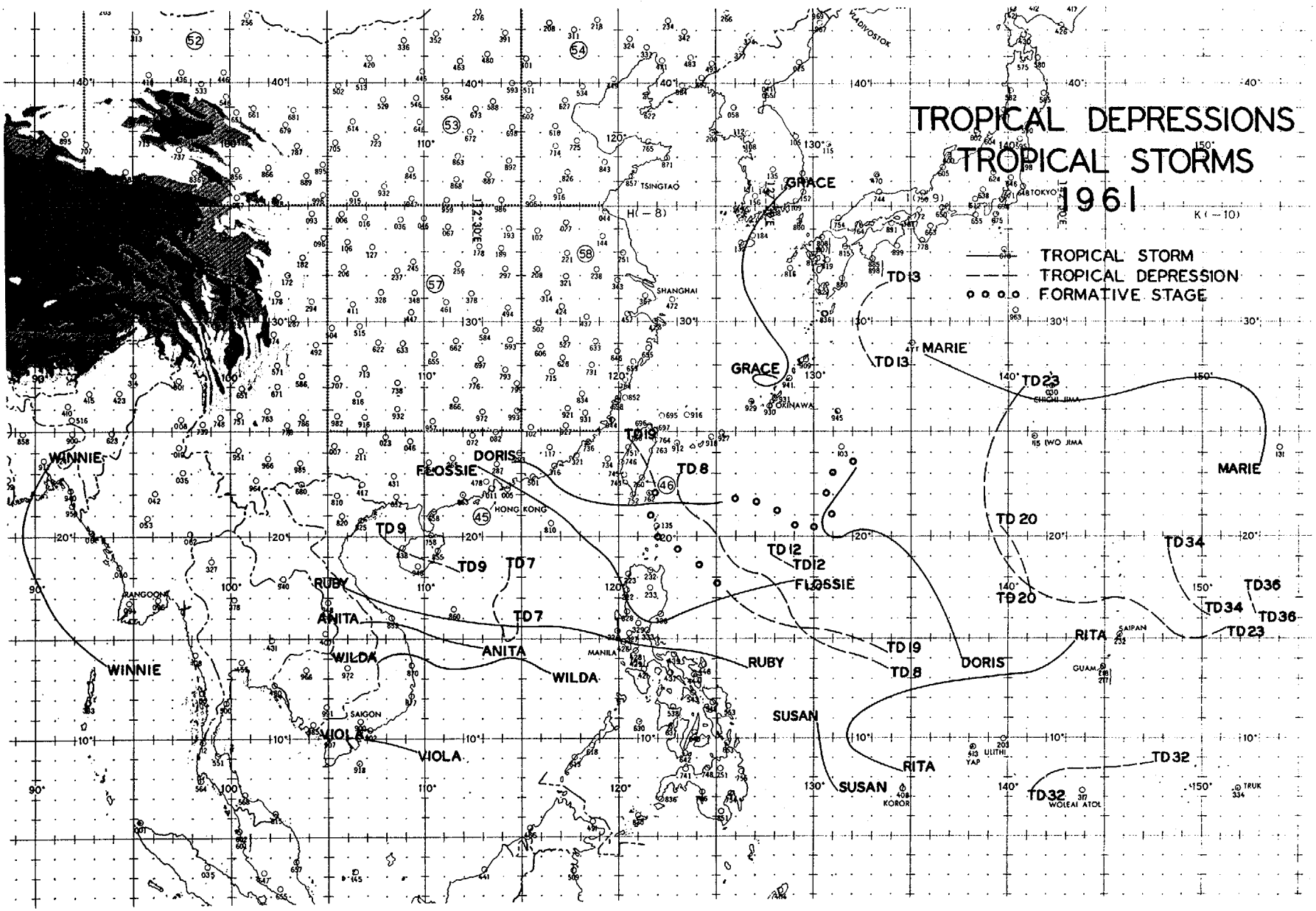
NO FULL FLEDGED TYPHOONS TRAVELED ACROSS THE PHILIPPINES DURING THE 1961 SEASON. SIX TYPHOONS CROSSED OR STRUCK LAND ON TAIWAN, AND ONLY 5 TYPHOONS TRAVELED OVER JAPANESE MAINLAND, IF HELEN IS CONSIDERED.

POINTS OF ORIGIN TYPHOONS

1952 — 1961




POINTS OF FIRST
TYPHOON INTENSITY
1952 — 1961
VLADIVOSTOK
TSINGTAO
TOKYO
SHANGHAI
OKINAWA
CHICHI JIMA
HONG KONG
MANILA
SAIPAN
YAP
KOROR
TRUK
PONAPE
KUSAIE
EKIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
NAURU
FUMATAHACHI
MIDWAY
H(−8)
I(−9)
K(−10)
L(−11)
M(−12)
Y(+12)
122°30'E
127°30'E
132°30'E
142°30'E


TROPICAL DEPRESSIONS
TROPICAL STORMS
1961
TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
WINNIE
FLOSSIE
DORIS
TD 9
TD 7
RUBY
ANITA
WILDA
VIOLA
TD 19
TD 8
GRACE
TD 13
MARIE
TD 23
TD 20
TD 12
TD 34
TD 36
RITA
SUSAN
TD 32
TSINGTAO
SHANGHAI
OKINAWA
HONG KONG
MANILA
RANGOON
SAIGON
VLADIVOSTOK
TOKYO
IWO JIMA
SAIPAN
GUAM
ULITHI
YAP
KOROR
WOLEAI ATOL
TRUK

TROPICAL DEPRESSIONS 1961
POSITION DATA

TROPICAL DEPRESSION SEVEN
25 MAY-28 MAY

DTG	LAT	LONG	DTG	LAT	LONG
250000Z	15.8N	114.8E	270000Z	16.0N	113.8E
250600Z	15.6N	114.9E	270600Z	16.3N	113.7E
251200Z	15.2N	114.8E	271200Z	16.5N	113.5E
251800Z	15.1N	114.7E	271800Z	16.9N	113.7E
260000Z	14.9N	114.4E	280000Z	17.3N	113.9E
260600Z	15.2N	114.2E	280600Z	17.7N	114.3E
261200Z	15.4N	114.0E	281200Z	18.4N	114.2E
261800Z	15.6N	113.9E			

TROPICAL DEPRESSION EIGHT
02 JUN-06 JUN

DTG	LAT	LONG	DTG	LAT	LONG
020600Z	13.5N	133.8E	040600Z	18.6N	125.8E
021200Z	14.2N	132.4E	041200Z	19.6N	125.3E
021800Z	14.5N	130.9E	041800Z	20.5N	124.9E
030000Z	15.4N	129.4E	050000Z	20.8N	124.3E
030600Z	16.5N	128.8E	050600Z	21.0N	123.5E
031200Z	17.5N	128.3E	051200Z	21.6N	123.2E
031800Z	18.0N	127.9E	051800Z	22.3N	123.0E
040000Z	18.2N	126.9E	060000Z	23.0N	123.0E

TROPICAL DEPRESSION NINE
06 JUN-07 JUN

DTG	LAT	LONG	DTG	LAT	LONG
061200Z	18.3N	111.8E	070000Z	19.3N	108.7E
061800Z	18.9N	110.3E	070600Z	20.0N	107.9E

TROPICAL DEPRESSION ONE TWO
24 JUN

DTG	LAT	LONG	DTG	LAT	LONG
240000Z	19.0N	127.9E	241200Z	18.8N	128.6E
240600Z	18.9N	128.3E	241800Z	18.7N	128.9E

TROPICAL DEPRESSION ONE THREE
26 JUN-27 JUN

DTG	LAT	LONG	DTG	LAT	LONG
260000Z	28.0N	133.2E	270000Z	30.5N	132.3E
260600Z	28.5N	132.6E	270600Z	31.0N	132.7E
261200Z	29.1N	132.2E	271200Z	31.4N	133.2E
261800Z	29.8N	132.2E	271800Z	31.7N	133.8E

TROPICAL DEPRESSION ONE NINE
07 AUG-11 AUG

DTG	LAT	LONG	DTG	LAT	LONG
071800Z	14.3N	133.8E	090600Z	17.1N	125.8E
080000Z	14.9N	132.6E	090600Z TO 101200Z NO WARNINGS		
080600Z	15.3N	131.3E	ISSUED		
081200Z	15.4N	129.8E	101200Z	22.6N	121.9E
081800Z	15.7N	128.4E	101800Z	24.6N	120.5E
090000Z	16.3N	127.1E	110000Z-110600Z DISSIPATED		

TROPICAL DEPRESSION TWO ZERO
14 AUG-16 AUG

DTG	LAT	LONG	DTG	LAT	LONG
140600Z	17.6N	141.1E	150600Z	19.7N	140.3E
141200Z	18.2N	140.8E	151200Z	20.1N	140.0E
141800Z	18.8N	140.7E	151800Z	20.4N	139.7E
150000Z	19.2N	140.5E	160000Z-160600Z DISSIPATED		

TROPICAL DEPRESSION TWO THREE
24 AUG-29 AUG

DTG	LAT	LONG	DTG	LAT	LONG
241200Z	15.5N	151.2E	270000Z	18.3N	140.1E
241800Z	15.2N	150.6E	270600Z	19.6N	139.3E
250000Z	14.9N	149.9E	271200Z	21.0N	138.9E
250600Z	14.8N	149.2E	271800Z	22.5N	138.8E
251200Z	15.7N	148.2E	280000Z	24.0N	138.9E
251800Z	16.8N	147.0E	280600Z	25.2N	139.3E
260000Z	17.0N	145.6E	281200Z	25.9N	139.8E
260600Z	16.7N	144.1E	281800Z	26.6N	140.2E
261200Z	16.9N	142.7E	290000Z	27.0N	140.9E
261800Z	17.4N	141.3E	290600Z	DISSIPATED	

TROPICAL DEPRESSION THREE TWO
20 OCT-23 OCT

DTG	LAT	LONG	DTG	LAT	LONG
200600Z	08.8N	147.5E	211800Z	08.4N	142.9E
201200Z	08.7N	146.8E	220000Z	08.3N	142.4E
201800Z	08.5N	145.9E	220600Z	08.1N	141.9E
210000Z	08.5N	145.2E	221200Z	07.8N	141.5E
210600Z	08.6N	144.4E	221800Z	07.6N	141.3E
211200Z	08.5N	143.6E	230000Z-230600Z DISSIPATED		

TROPICAL DEPRESSION THREE FOUR
31 OCT-01 NOV

DTG	LAT	LONG	DTG	LAT	LONG
310600Z	16.2N	150.4E	010000Z	18.5N	148.4E
311200Z	16.8N	149.7E	010600Z	19.3N	148.2E
311800Z	17.6N	148.9E			

TROPICAL DEPRESSION THREE SIX
06 NOV

DTG	LAT	LONG	DTG	LAT	LONG
060600Z	16.3N	152.8E	061200Z	17.1N	152.4E

TROPICAL STORMS 1961
POSITION DATA

TROPICAL STORM RITA
14 JAN-20 JAN

DTG	LAT	LONG	DTG	LAT	LONG
141200Z	08.3N	134.7E	171200Z	12.3N	134.6E
141800Z	08.8N	133.4E	171800Z	12.6N	135.3E
150000Z	09.1N	132.5E	180000Z	12.8N	136.1E
150600Z	09.3N	132.2E	180600Z	12.9N	137.0E
151200Z	09.5N	132.0E	181200Z	13.0N	137.9E
151800Z	09.9N	131.8E	181800Z	13.1N	138.8E
160000Z	10.1N	131.8E	190000Z	13.1N	139.7E
160600Z	10.5N	131.9E	190600Z	13.2N	140.5E
161200Z	10.9N	132.2E	191200Z	13.4N	141.4E
161800Z	11.3N	132.7E	191800Z	13.8N	142.1E
170000Z	11.7N	133.3E	200000Z	14.3N	142.9E
170600Z	12.1N	133.9E	200600Z	14.9N	143.4E

TROPICAL STORM SUSAN
27 FEB-01 MAR

DTG	LAT	LONG	DTG	LAT	LONG
270600Z	07.3N	131.2E	281200Z	09.0N	130.3E
271200Z	07.6N	131.0E	281800Z	09.5N	130.3E
271800Z	07.9N	130.8E	010000Z	09.8N	130.2E
280000Z	08.3N	130.6E	010600Z	10.2N	130.2E
280600Z	08.7N	130.5E	011200Z	10.6N	130.1E

TROPICAL STORM VIOLA
09 APR-10 APR

DTG	LAT	LONG	DTG	LAT	LONG
091800Z	09.3N	109.6E	100600Z	09.9N	107.5E
100000Z	09.7N	108.3E	101200Z	09.9N	106.8E

TROPICAL STORM WINNIE
06 MAY-09 MAY

DTG	LAT	LONG	DTG	LAT	LONG
061800Z	13.8N	93.7E	080600Z	18.0N	90.0E
070000Z	14.1N	93.1E	081200Z	19.1N	89.5E
070600Z	14.5N	92.3E	081800Z	20.3N	89.4E
071200Z	15.1N	91.7E	090000Z	21.5N	89.5E
071800Z	16.0N	91.1E	090600Z	22.5N	90.0E
080000Z	16.9N	90.5E	091200Z	23.5N	90.8E

TROPICAL STORM DORIS
23 JUN-02 JUL

DTG	LAT	LONG	DTG	LAT	LONG
230600Z	14.0N	137.6E	261200Z	23.1N	132.1E
231200Z	15.2N	137.2E	261200Z TO 300000Z NO WARNINGS		
231800Z	16.4N	136.6E	ISSUED		
240000Z	17.6N	136.0E	300000Z	21.7N	125.1E
240600Z	18.6N	135.2E	300600Z	21.6N	124.4E
241200Z	19.5N	134.4E	301200Z	21.7N	123.5E
241800Z	20.1N	133.4E	301800Z	21.6N	122.3E
250000Z	20.2N	132.2E	010000Z	21.4N	120.8E
250600Z	20.0N	131.3E	010600Z	21.9N	118.0E
251200Z	20.0N	130.6E	011200Z	22.3N	117.3E
251800Z	20.4N	130.3E	011800Z	22.6N	116.7E
260000Z	21.3N	130.7E	020000Z	23.2N	116.0E
260600Z	22.3N	131.5E	020600Z	23.5N	114.6E

TROPICAL STORM FLOSSIE
16 JUL-19 JUL

DTG	LAT	LONG	DTG	LAT	LONG
160000Z	17.9N	129.0E	180000Z	18.2N	120.0E
160600Z	17.6N	127.8E	180600Z	19.0N	119.4E
161200Z	17.3N	126.4E	181200Z	19.5N	118.5E
161800Z	16.8N	125.1E	181800Z	20.3N	117.6E
170000Z	16.4N	123.9E	190000Z	21.1N	116.8E
170600Z	16.0N	122.8E	190600Z	21.8N	115.5E
171200Z	15.8N	121.5E	191200Z	22.5N	114.2E
171800Z	16.6N	120.5E	191800Z	23.4N	112.9E

TROPICAL STORM GRACE
21 JUL-25 JUL

DTG	LAT	LONG	DTG	LAT	LONG
210000Z	27.3N	127.9E	230600Z	28.6N	128.3E
210600Z	27.4N	127.6E	231200Z	29.0N	128.1E
211200Z	27.6N	127.2E	231800Z	29.6N	127.8E
211800Z	27.5N	126.7E	240000Z	30.2N	127.4E
220000Z	27.2N	126.9E	240600Z	30.8N	126.9E
220600Z	27.1N	127.6E	241200Z	31.8N	126.5E
221200Z	27.2N	128.2E	241800Z	32.9N	126.3E
221800Z	27.6N	128.5E	250000Z	34.2N	126.9E
230000Z	28.1N	128.5E	250600Z	35.8N	128.6E

TROPICAL STORM MARIE
29 AUG-03 SEP

DTG	LAT	LONG	DTG	LAT	LONG
291800Z	23.8N	153.0E	010600Z	26.5N	144.6E
300000Z	24.9N	153.2E	011200Z	26.4N	143.8E
300600Z	26.1N	153.1E	011800Z	26.3N	142.8E
301200Z	26.9N	152.4E	020000Z	26.4N	142.1E
301800Z	27.3N	151.1E	020600Z	26.5N	141.3E
310000Z	27.3N	149.5E	021200Z	26.8N	140.1E
310600Z	27.2N	148.3E	021800Z	27.2N	138.6E
311200Z	27.1N	147.3E	030000Z	27.7N	137.2E
311800Z	26.9N	146.4E	030600Z	28.4N	135.8E
010000Z	26.8N	145.5E			

TROPICAL STORM RUBY
21 SEP-24 SEP

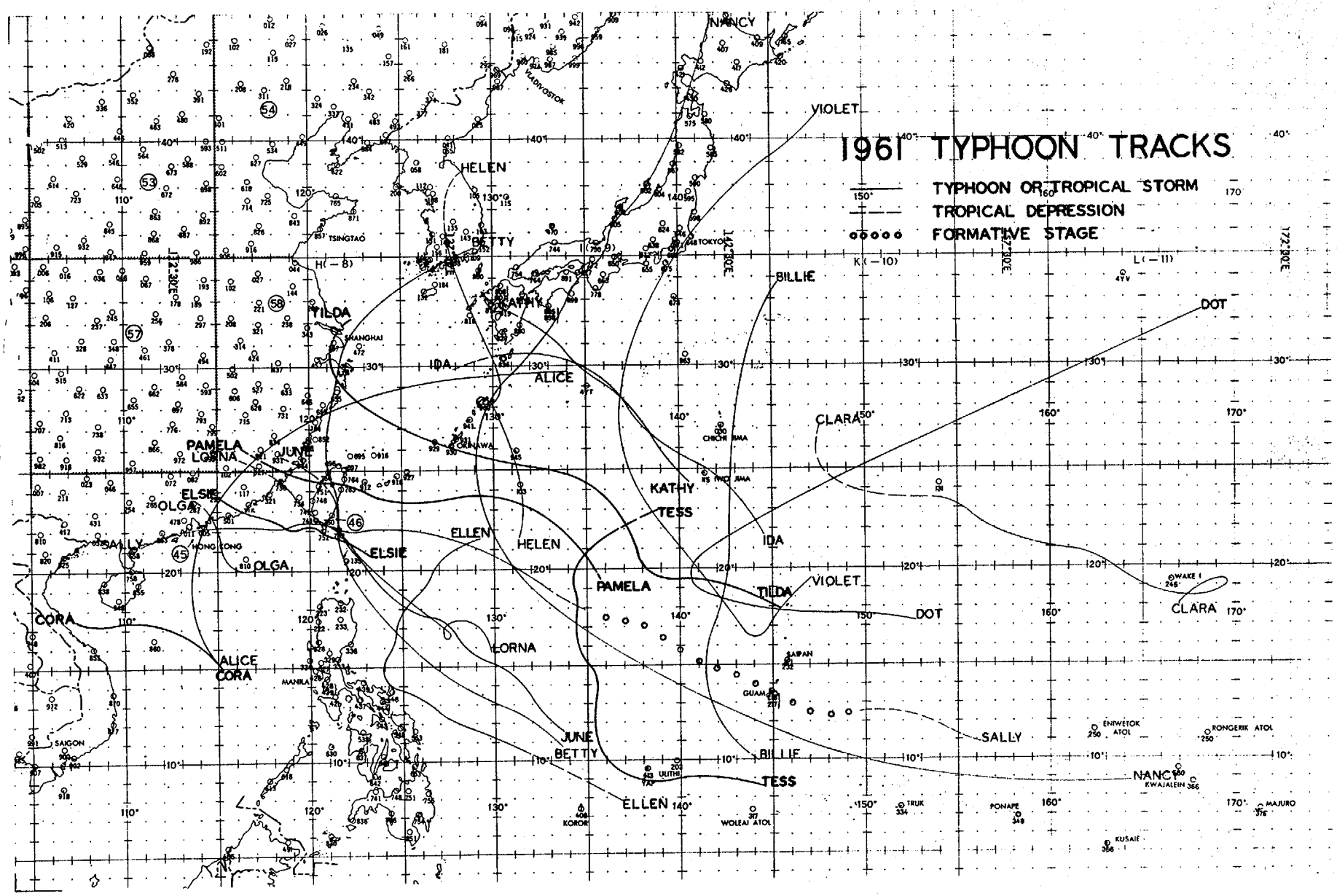
DTG	LAT	LONG	DTG	LAT	LONG
210600Z	13.6N	126.7E	230000Z	15.5N	114.3E
211200Z	14.0N	125.2E	230600Z	15.6N	112.9E
211800Z	14.3N	123.7E	231200Z	15.8N	111.4E
220000Z	14.5N	122.2E	231800Z	16.2N	109.8E
220600Z	15.0N	119.6E	240000Z	16.5N	108.6E
221200Z	15.5N	117.6E	240600Z	16.9N	107.3E
221800Z	15.5N	115.8E	241200Z	17.4N	106.0E

TROPICAL STORM WILDA
11 OCT-13 OCT

DTG	LAT	LONG	DTG	LAT	LONG
110600Z	13.2N	116.4E	121200Z	13.5N	111.5E
111200Z	13.4N	115.9E	121800Z	13.8N	110.2E
111800Z	13.8N	115.4E	130000Z	14.3N	109.1E
120000Z	14.0N	114.4E	130600Z	13.9N	107.6E
120600Z	13.5N	112.8E			

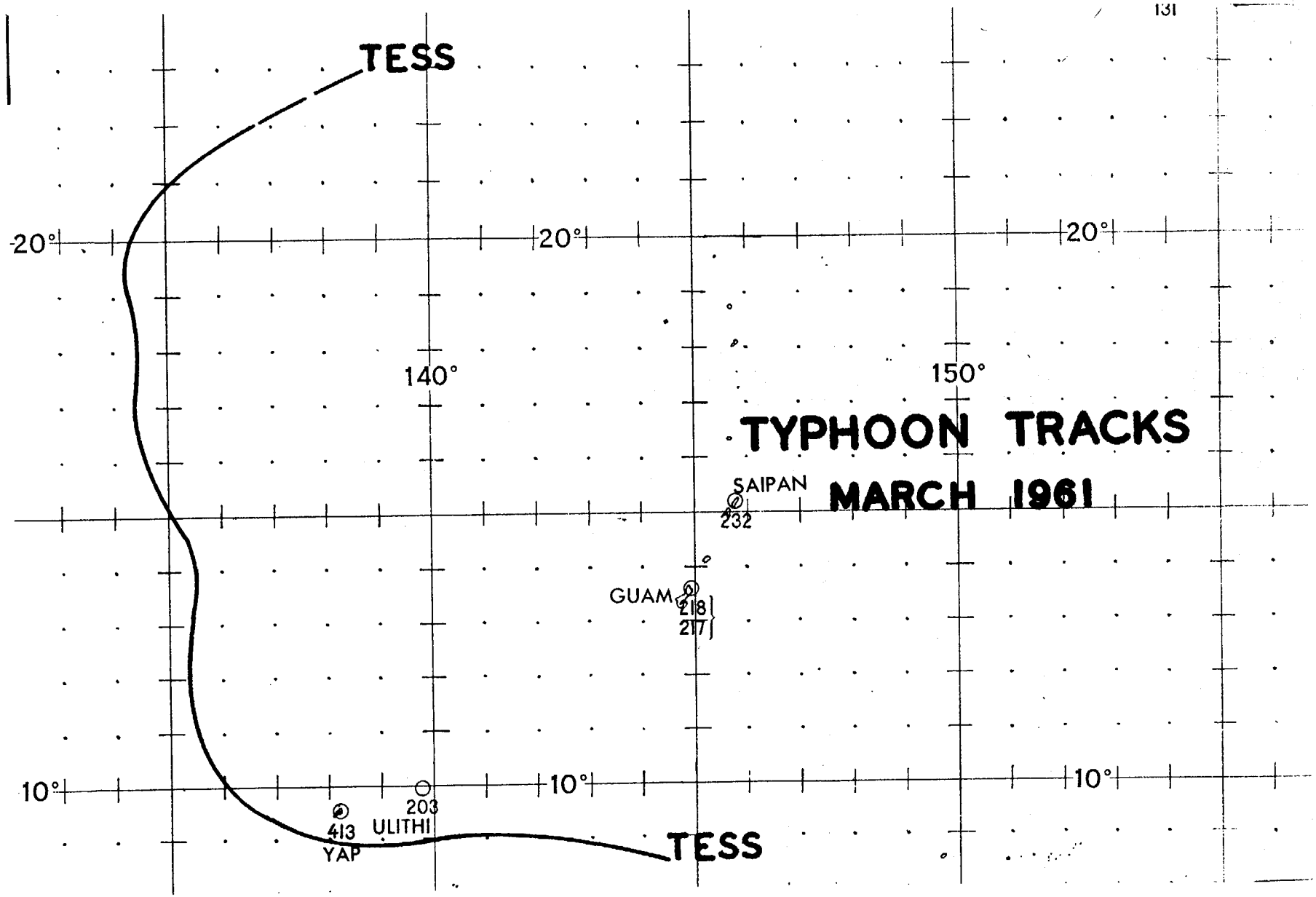
TROPICAL STORM ANITA
19 OCT-20 OCT

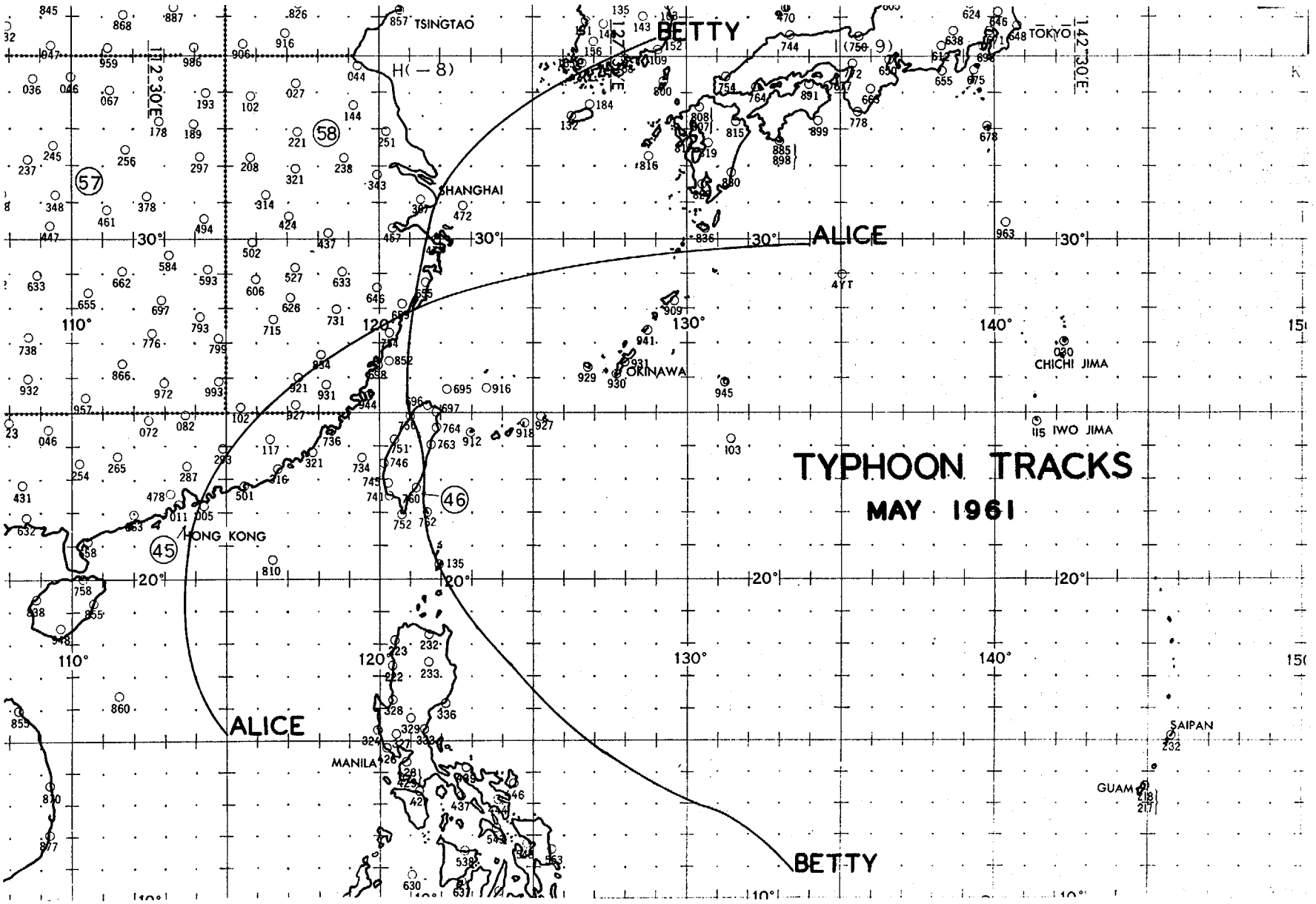
DTG	LAT	LONG	DTG	LAT	LONG
190000Z	14.5N	113.0E	191800Z	15.7N	108.3E
190600Z	14.8N	111.2E	200000Z	15.8N	106.7E
191200Z	15.3N	109.5E			

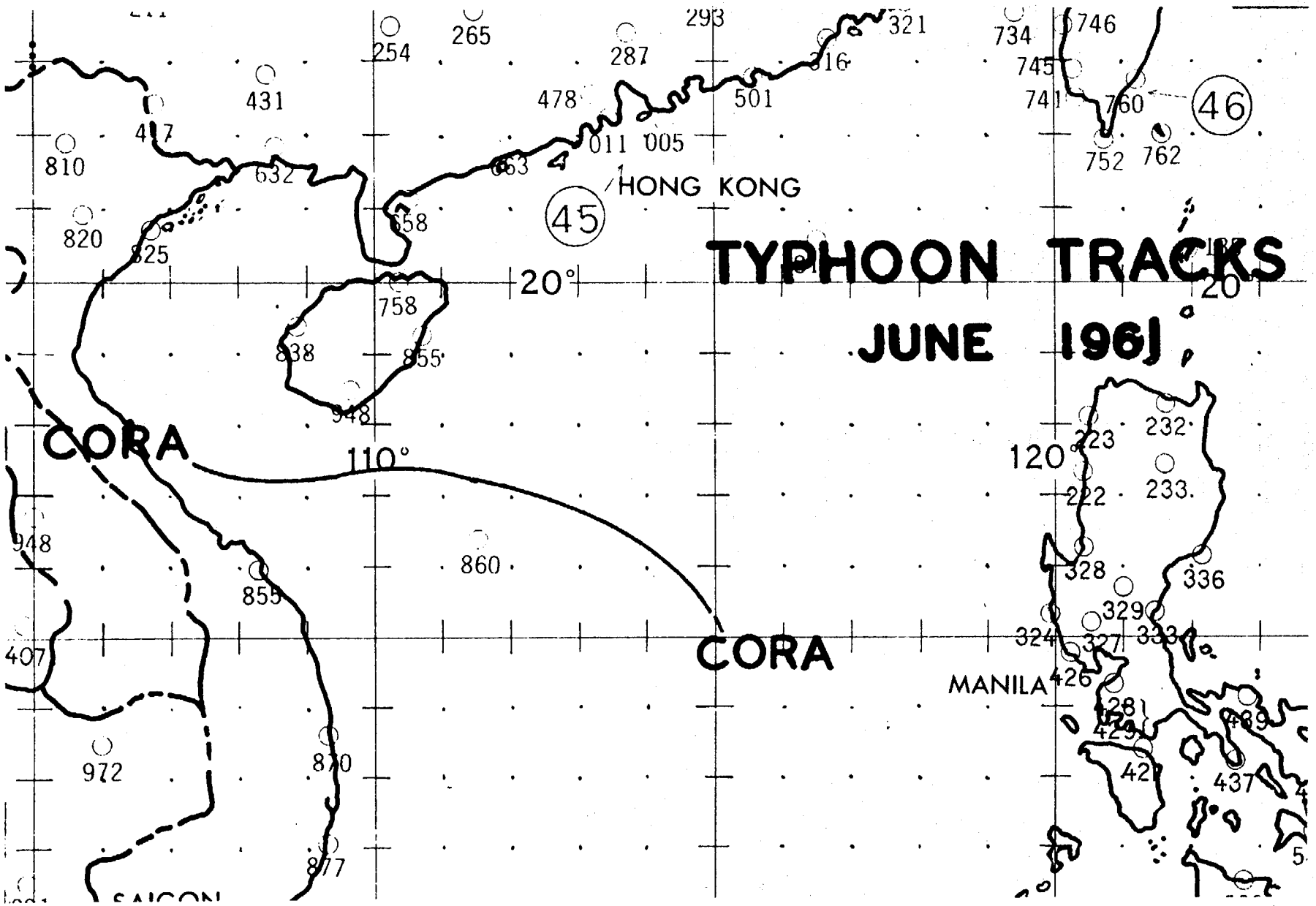

1961 TYPHOON TRACKS
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
NANCY
VIOLET
HELEN
BETTY
TSINGTAO
TOKYO
BILLIE
DOT
TILDA
SHANGHAI
IDA
ALICE
CLARA
PAMELA
LORNA
JUNE
ELSIE
OLGA
SALLY
HONG KONG
KATHY
TESS
ELLEN
CORA
MANILA
SAIGON
GUAM
JAPAN
WAKE I
UULITHI
WOLEAI ATOL
KOROR
TRUK
PONAPE
KUSAIE
ENIWETOK ATOL
RONGERIK ATOL
KWAJALEIN
MAJURO
CHICHI JIMA
IWO JIMA
OKINAWA
VLADIVOSTOK

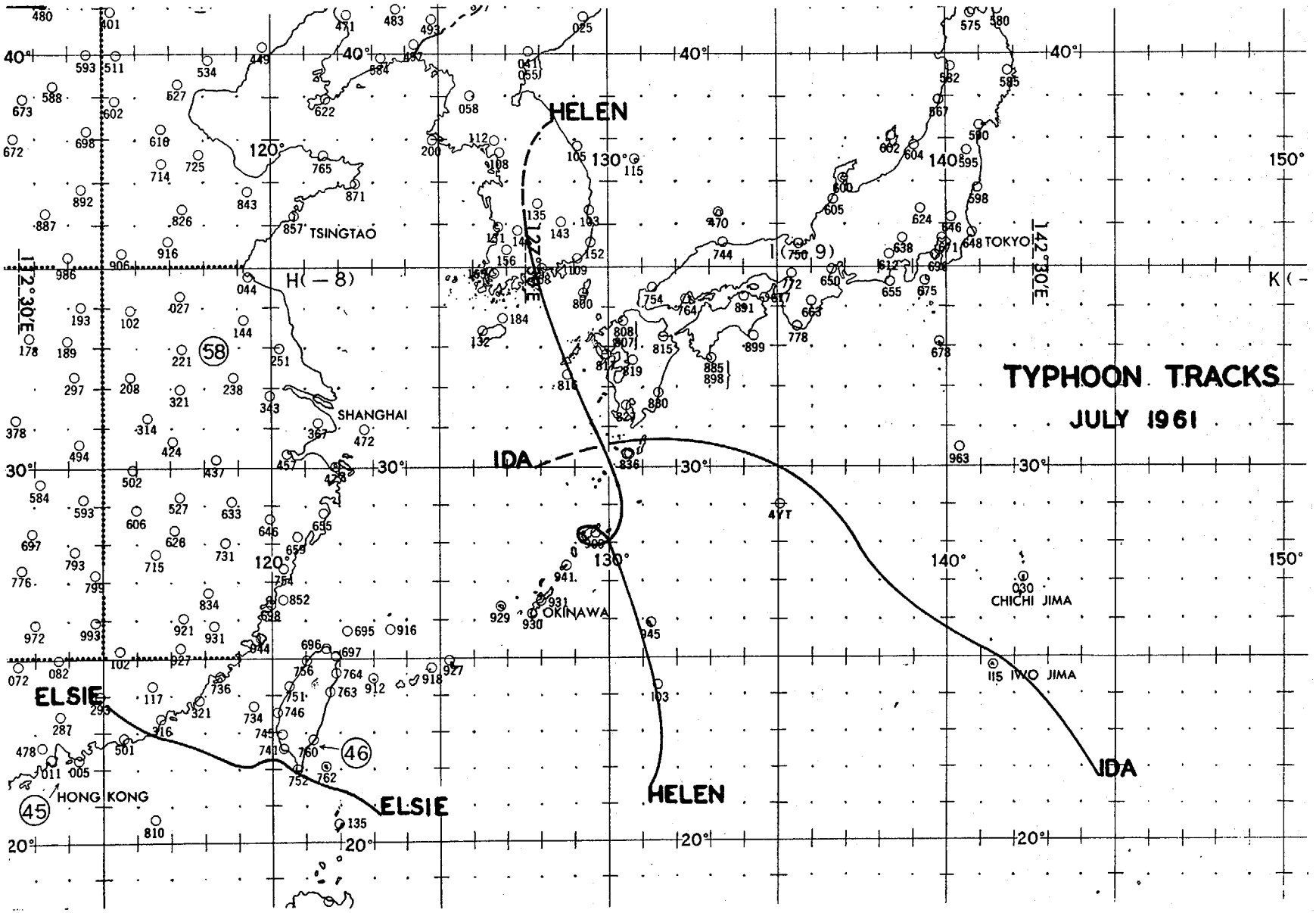
1961 TYPHOON TRACKS

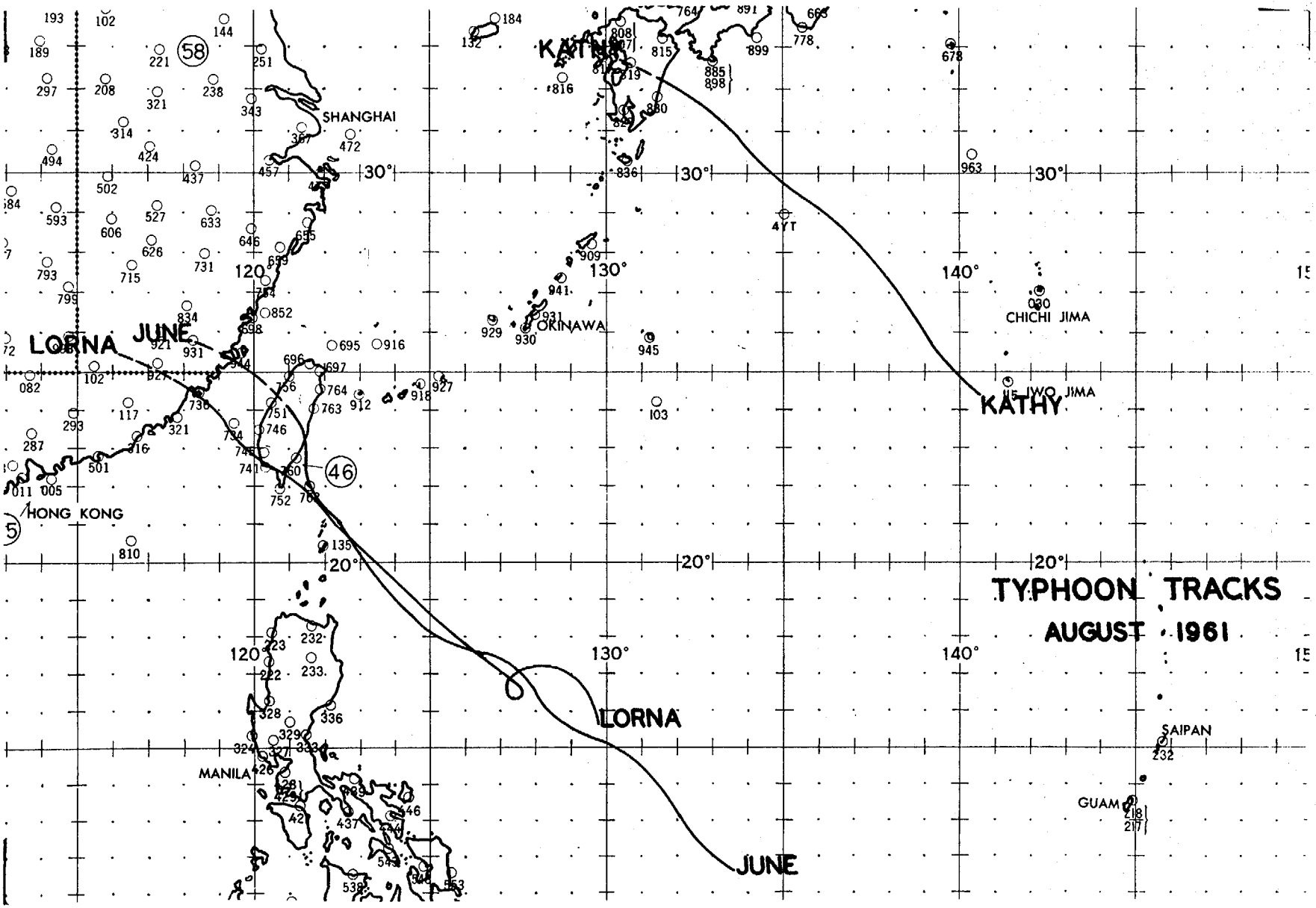
TYPHOON TESS	24 MAR - 31 MAR
TYPHOON ALICE	17 MAY - 21 MAY
TYPHOON BETTY	22 MAY - 28 MAY
TYPHOON CORA	22 JUN - 25 JUN
TYPHOON ELSIE	12 JUL - 15 JUL
TYPHOON HELEN	27 JUL - 03 AUG
TYPHOON IDA	28 JUL - 31 JUL
TYPHOON JUNE	01 AUG - 08 AUG
TYPHOON KATHY	15 AUG - 18 AUG
TYPHOON LORNA	20 AUG - 26 AUG
TYPHOON NANCY	07 SEP - 17 SEP
TYPHOON OLGA	08 SEP - 10 SEP
TYPHOON PAMELA	08 SEP - 12 SEP
TYPHOON SALLY	21 SEP - 29 SEP
TYPHOON TILDA	27 SEP - 05 OCT
TYPHOON VIOLET	04 OCT - 10 OCT
TYPHOON BILLIE	23 OCT - 28 OCT
TYPHOON CLARA	26 OCT - 01 NOV
TYPHOON DOT	09 NOV - 15 NOV
TYPHOON ELLEN	05 DEC - 13 DEC

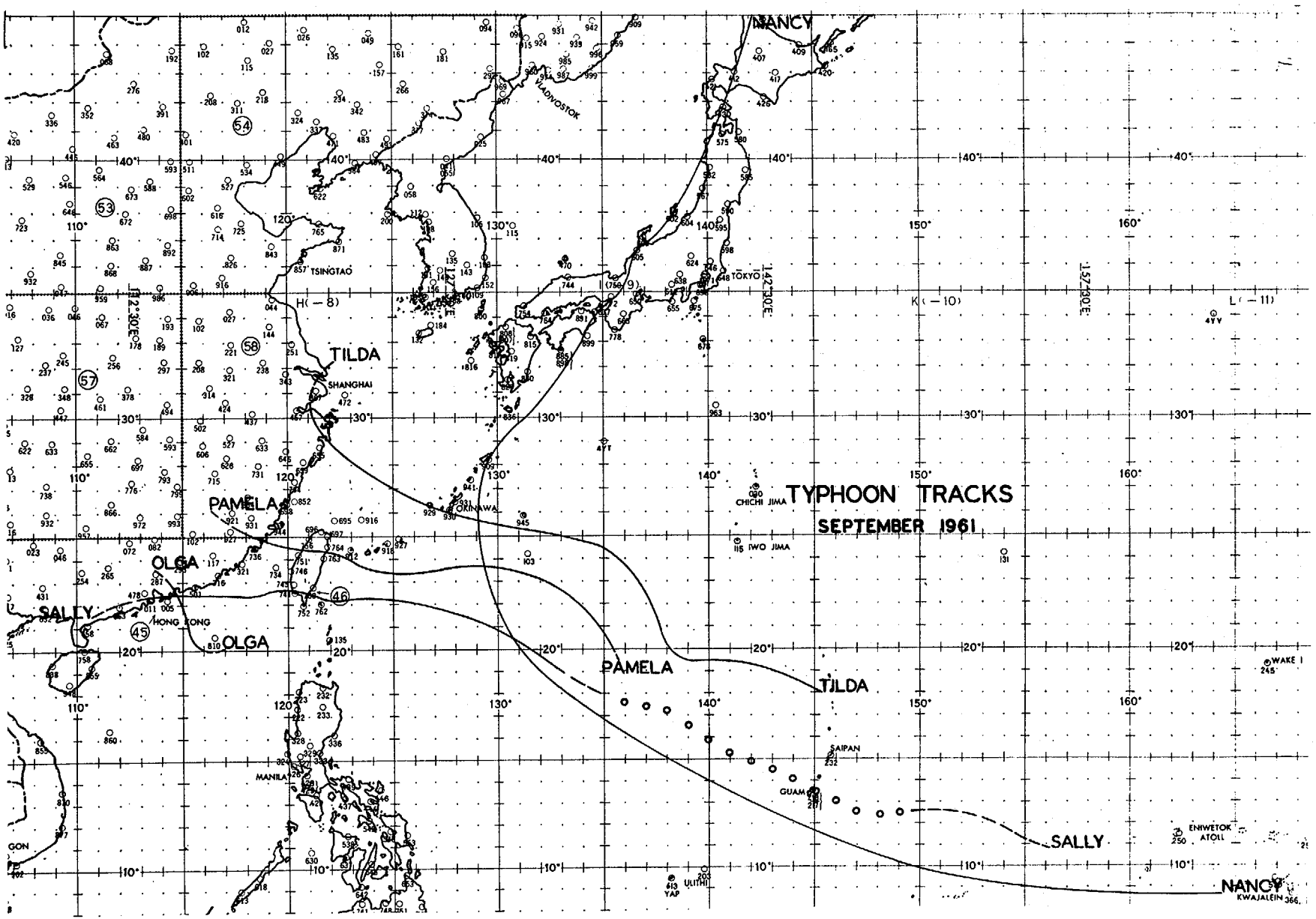

TESS
20°
20°
20°
140°
150°
TYPHOON TRACKS
MARCH 1961
SAIPAN
232
GUAM
218
217
10°
10°
10°
203
413
ULITHI
YAP
TESS

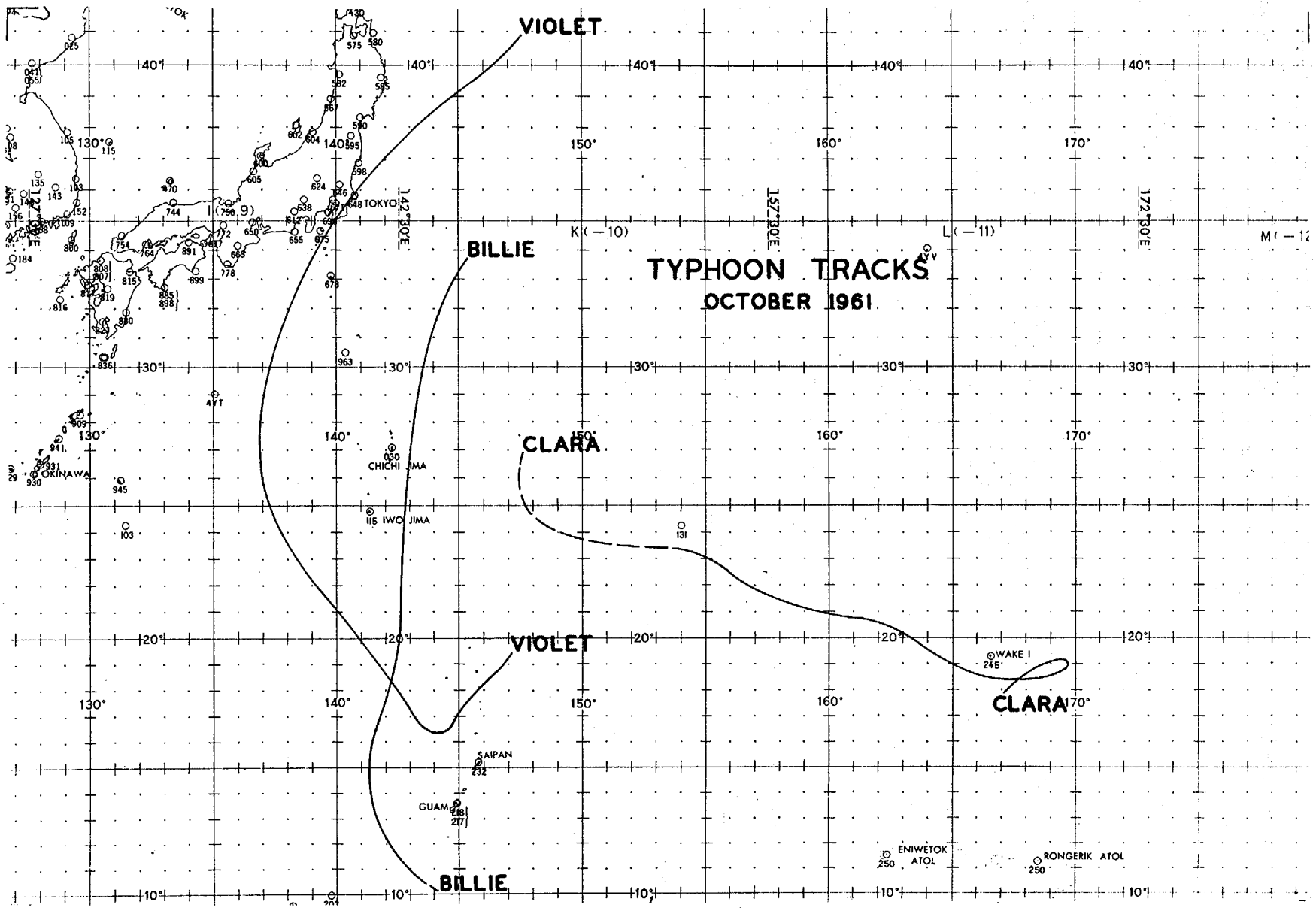

TYPHOON TRACKS
MAY 1961
BETTY
ALICE
ALICE
BETTY
TSINGTAO
SHANGHAI
HONG KONG
MANILA
OKINAWA
TOKYO
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
H(-8)
(750 9)
57
58
46
45
110°
120°
130°
140°
150
30°
20°
10°
112°30'E
127°E
142°30'E

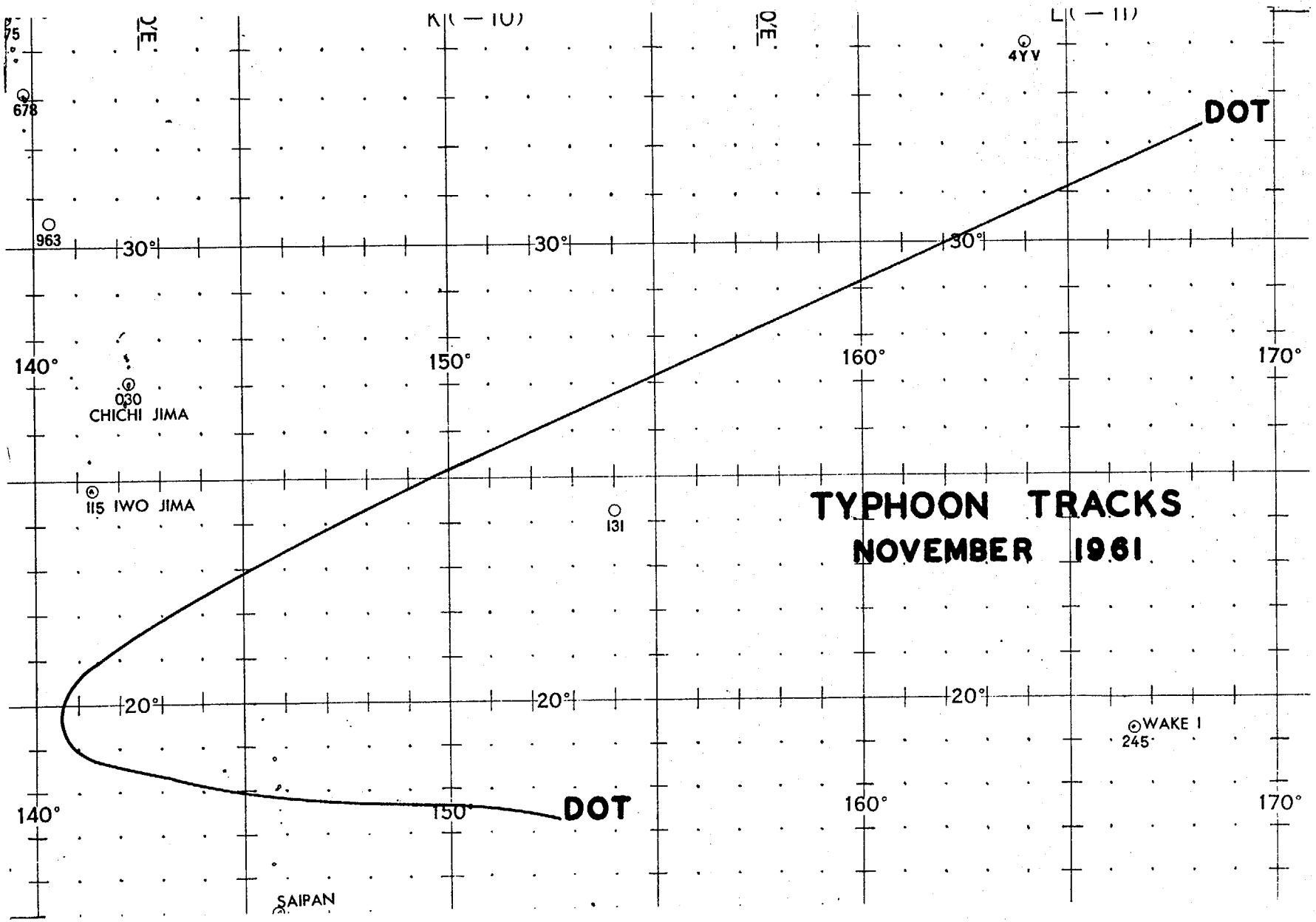

TYPHOON TRACKS
JUNE 1961
CORA
CORA
HONG KONG
MANILA
SAIGON
45
46
20°
110°
120°
20

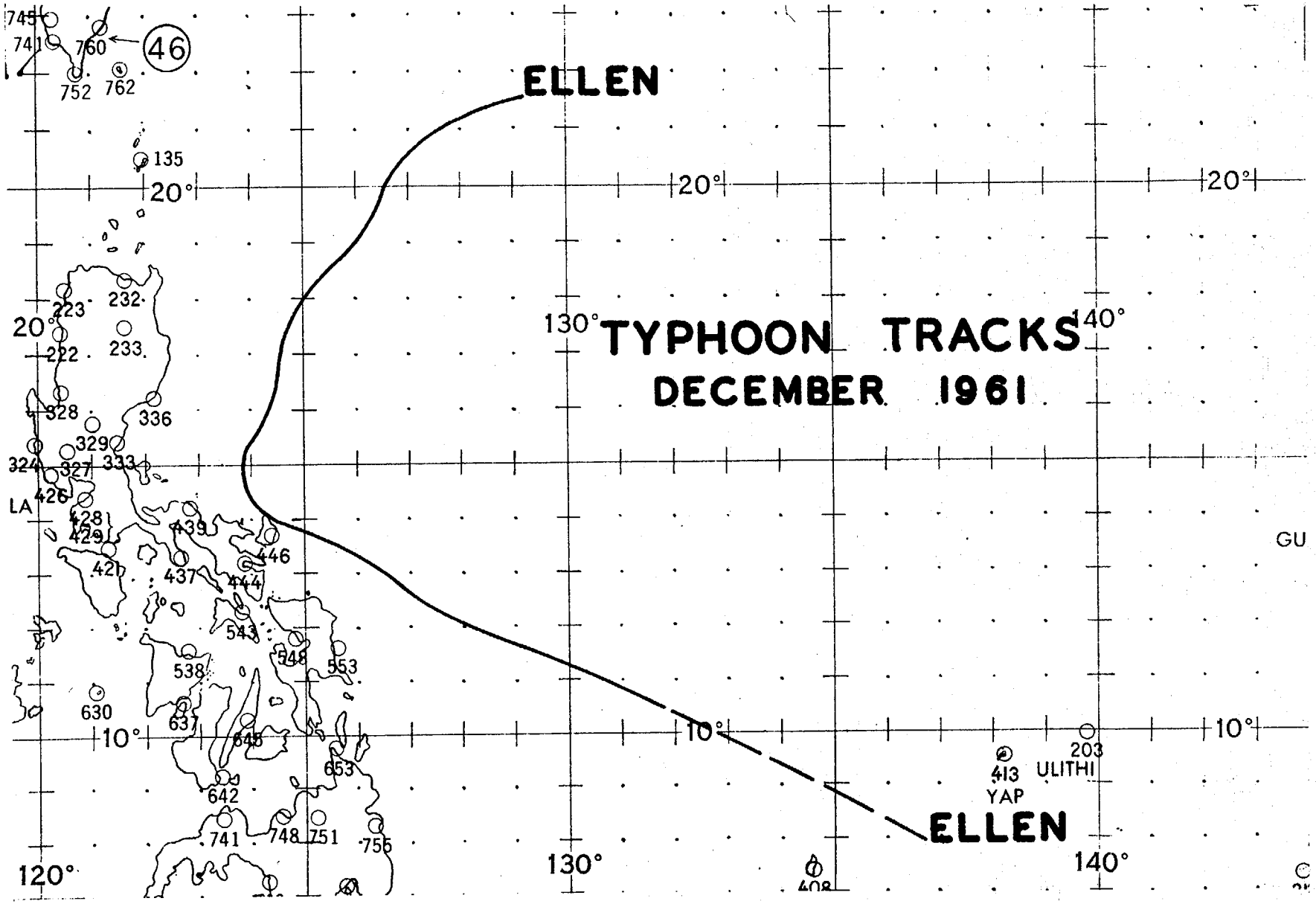

TYPHOON TRACKS
JULY 1961
HELEN
IDA
ELSIE
TSINGTAO
SHANGHAI
HONG KONG
OKINAWA
TOKYO
CHICHI JIMA
IWO JIMA
H(−8)
I(9)
K(−
58
46
45
112°30'E
127°30'E
142°30'E
120°
130°
140°
150°
40°
30°
20°


TYPHOON TRACKS
AUGUST 1961
LORNA
JUNE
KATHY
SHANGHAI
HONG KONG
MANILA
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
30°
20°
120
130°
140°


TYPHOON TRACKS
SEPTEMBER 1961
NANCY
VLADIVOSTOK
TSINGTAO
TOKYO
TILDA
SHANGHAI
PAMELA
OKINAWA
OLGA
SALLY
HONG KONG
MANILA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
WAKE I
ENIWETOK ATOLL
KWAJALEIN
ULITHI
YAP
H(−8)
K(−10)
L(−11)
142°30'E
157°30'E
112°30'E


TYPHOON TRACKS
OCTOBER 1961
VIOLET
BILLIE
CLARA
VIOLET
BILLIE
CLARA
TOKYO
OKINAWA
CHICHI JIMA
IWO JIMA
SAIPAN
GUAM
WAKE I
ENIWETOK ATOL
RONGERIK ATOL
142°30'E
157°30'E
172°30'E
K (−10)
L (−11)
M (−12
40°
30°
20°
10°
130°
140°
150°
160°
170°


TYPHOON TRACKS
NOVEMBER 1961
DOT
DOT
30°
30°
30°
20°
20°
20°
140°
150°
160°
170°
140°
150°
160°
170°
678
963
030
CHICHI JIMA
115 IWO JIMA
131
4YV
WAKE I
245
SAIPAN


TYPHOON TRACKS
DECEMBER 1961
ELLEN
ELLEN
46
745
741
760
752
762
135
223
232
222
233
328
336
329
324
327
333
426
LA
428
429
439
446
421
437
444
543
548
553
538
630
637
645
653
642
741
748
751
755
YAP
413
ULITHI
203
GU
20°
10°
120°
130°
140°

TROPICAL CYCLONES OF 1961

CYCLONE	*PERIOD
01. Tropical Storm RITA	12 Jan - 20 Jan
02. Investigation	19 Jan - 20 Jan
03. Investigation	01 Feb - 02 Feb
04. Tropical Storm SUSAN	27 Feb - 01 Mar
05. Typhoon TESS	22 Mar - 31 Mar
06. Tropical Storm VIOLA	09 Apr - 10 Apr
07. Investigation	04 May - 05 May
08. Investigation	05 May - 06 May
09. Tropical Storm WINNIE	06 May - 09 May
10. Typhoon ALICE	16 May - 21 May
11. Typhoon BETTY	21 May - 28 May
12. Tropical Depression 7	25 May - 28 May
13. Investigation	30 May - 31 May
14. Tropical Depression 8	31 May - 06 Jun
15. Investigation	03 Jun - 05 Jun
16. Tropical Depression 9	06 Jun - 07 Jun
17. Investigation	17 Jun - 18 Jun
18. Investigation	19 Jun - 22 Jun
19. Tropical Storm DORIS	20 Jun - 02 Jul
20. Typhoon CORA	22 Jun - 25 Jun
21. Tropical Depression 12	24 Jun - 25 Jun
22. Tropical Depression 13	25 Jun - 27 Jun
23. Investigation	26 Jun - 29 Jun
24. Investigation	02 Jul - 06 Jul
25. Investigation	04 Jul - 08 Jul
26. Typhoon ELSIE	07 Jul - 15 Jul
27. Investigation	11 Jul - 12 Jul
28. Tropical Storm FLOSSIE	13 Jul - 19 Jul
29. Investigation	18 Jul - 22 Jul
30. Tropical Storm GRACE	20 Jul - 25 Jul
31. Typhoon HELEN	26 Jul - 03 Aug
32. Typhoon IDA	28 Jul - 31 Jul
33. Typhoon JUNE	31 Jul - 08 Aug
34. Tropical Depression 19	01 Aug - 11 Aug
35. Investigation	10 Aug - 11 Aug
36. Investigation	11 Aug - 13 Aug
37. Investigation	12 Aug - 16 Aug
38. Tropical Depression 20	14 Aug - 16 Aug
39. Typhoon KATHY	15 Aug - 18 Aug
40. Investigation	16 Aug - 17 Aug

TROPICAL CYCLONES OF 1961 (CONT'D)

CYCLONE	*PERIOD
41. INVESTIGATION	18 AUG - 20 AUG
42. TYPHOON LORNA	19 AUG - 26 AUG
43. INVESTIGATION	20 AUG - 22 AUG
44. INVESTIGATION	23 AUG - 24 AUG
45. TROPICAL DEPRESSION 23	24 AUG - 29 AUG
46. INVESTIGATION	27 AUG - 29 AUG
47. INVESTIGATION	27 AUG - 28 AUG
48. INVESTIGATION	28 AUG - 29 AUG
49. TROPICAL STORM MARIE	29 AUG - 03 SEP
50. TYPHOON PAMELA	02 SEP - 12 SEP
51. TYPHOON OLGA	03 SEP - 10 SEP
52. TYPHOON NANCY	07 SEP - 17 SEP
53. TROPICAL STORM RUBY	17 SEP - 24 SEP
54. TYPHOON SALLY	20 SEP - 29 SEP
55. TYPHOON TILDA	27 SEP - 05 OCT
56. TYPHOON VIOLET	03 OCT - 10 OCT
57. INVESTIGATION	09 OCT - 10 OCT
58. TROPICAL STORM WILDA	10 OCT - 13 OCT
59. INVESTIGATION	12 OCT - 13 OCT
60. TROPICAL STORM ANITA	19 OCT - 20 OCT
61. TROPICAL DEPRESSION 32	19 OCT - 23 OCT
62. TYPHOON BILLIE	22 OCT - 28 OCT
63. TYPHOON CLARA	26 OCT - 01 NOV
64. TROPICAL DEPRESSION 34	30 OCT - 01 NOV
65. TROPICAL DEPRESSION 36	04 NOV - 06 NOV
66. TYPHOON DOT	08 NOV - 15 NOV
67. INVESTIGATION	15 NOV - 16 NOV
68. INVESTIGATION	24 NOV - 25 NOV
69. TYPHOON ELLEN	04 DEC - 13 DEC

* THE PERIOD SHOWN COVERS THE PERIOD FROM THE DATE THE CYCLONE WAS FIRST ASSIGNED A CYCLONE NUMBER, UNTIL THE FINAL WARNING WAS ISSUED, OR IF NO WARNINGS WERE ISSUED, THE DATE THE CYCLONE DISSIPATED.

1961 TYPHOON DATA SUMMARY

TYPHOON	FROM RECON: MAX OBSVD SFC WND	FROM RECON: MIN SLP (MBS)	FROM RECON: MIN 700MB HGT	FROM RECON: MAX 700MB TEMP(C)	FROM WARNINGS: MAX RADIUS 100KT WND	FROM WARNINGS: MAX RADIUS 50KT WND	FROM WARNINGS: MAX RADIUS 30KT WND
TESS	125	937	8420	21	40	125	250
ALICE	65	985	9730	14	---	100	200
BETTY	100	946	8610	21	30		
CORA	80	987	9800	15	---	125	250
ELSIE	100	974	9420	16	---	175	250
HELEN	100	971	9370	19	---	100	200
IDA	95	990	9560	18	---	150	250
JUNE	110	961	9120	17	---	150	200
KATHY	110	980	9890	20	---	25	150
LORNA	150	947	8880	22	50	175	450
NANCY	200	882	6801	21	100	250	450
OLGA	---	---	----	--	---	75	200
PAMELA	170	914	7440	18	50	125	250
SALLY	60	983	----	--	---	100	300
TILDA	120	917	7980	19	50	150	400
VIOLET	190	882	7130	29	60	175	350
BILLIE	65	961	9290	17	---	250	750
CLARA	75	984	10290	--	---	75	150
DOT	150	922	7960	21	50	100	300
ELLEN	175	945	8520	23	30	100	1000

1961 TYPHOON FORECAST ERRORS
(IN MI)

TYPHOON	24 HR FORECASTS NO. OF CASES	24 HR FORECASTS MEAN ERROR	48 HR FORECASTS NO. OF CASES	48 HR FORECASTS MEAN ERROR
TESS	26	117	22	297
ALICE	14	159	10	378
BETTY	22	142	18	229
CORA	5	113	1	278
ELSIE	8	84	4	173
HELEN	27	119	23	214
IDA	11	250	7	397
JUNE	26	74	22	138
KATHY	8	180	4	164
LORNA	18	120	14	196
NANCY	34	133	30	228
OLGA	5	155	1	353
PAMELA	11	120	7	315
SALLY	11	211	7	574
TILDA	27	137	23	312
VIOLET	24	146	20	312
BILLIE	16	144	12	340
CLARA	20	178	16	361
DOT	24	138	20	304
ELLEN	23	105	19	235

AVERAGE ERROR-24 HR FORECASTS (360 CASES) 136
AVERAGE ERROR-48 HR FORECASTS (280 CASES) 274