ANNEX
A

SUMMARY OF TROPICAL CYCLONES

IN THE

EASTERN NORTH PACIFIC OCEAN
(180 DEGREES TO NORTH AMERICAN COAST)

FOR

1967

Fleet Weather Central Alameda and Fleet Weather Central Pearl Harbor issued a record total of 474 tropical warnings on 6 hurricanes, 12 tropical storms and 2 tropical depressions in the Eastern North Pacific during 1967.

The following six year summary covering the Fleet Weather Central Alameda/Fleet Weather Central Pearl Harbor areas is presented for comparison:

SUMMARY OF EASTERN PACIFIC TROPICAL CYCLONE DATA

	1962	1963	1964	1965	1966	1967
TOTAL NUMBER OF WARNINGS*	122	80	60	244	342	474
CALENDAR DAYS OF WARNINGS*	35	26	21	73	70	119
TROPICAL DEPRESSIONS				2	6	2
TROPICAL STORMS	6	5	4	9	6	12
HURRICANES	2	4	2	1	7	6
TOTAL TROPICAL CYCLONES*	8	9	6	12	19	20

*Tropical Depression information not available 1962-1964.

Land strikes on Baja, California were recorded on Hurricane KATRINA and Tropical Storm OLIVIA. Extensive damage, flooding and loss of property resulted in KATRINA's overland passage.

An attempt was made to utilize the Fleet Numerical Weather Facility (FNWF) "Hatrack" steering program as a tool for predicting movement of tropical systems. Both the 700 and 500 mb levels were monitored, but to date results are inconclusive. In addition, a local program utilizing the FNWF "RADFO" is in the development stage. Both programs will be tested extensively during the 1968 season.

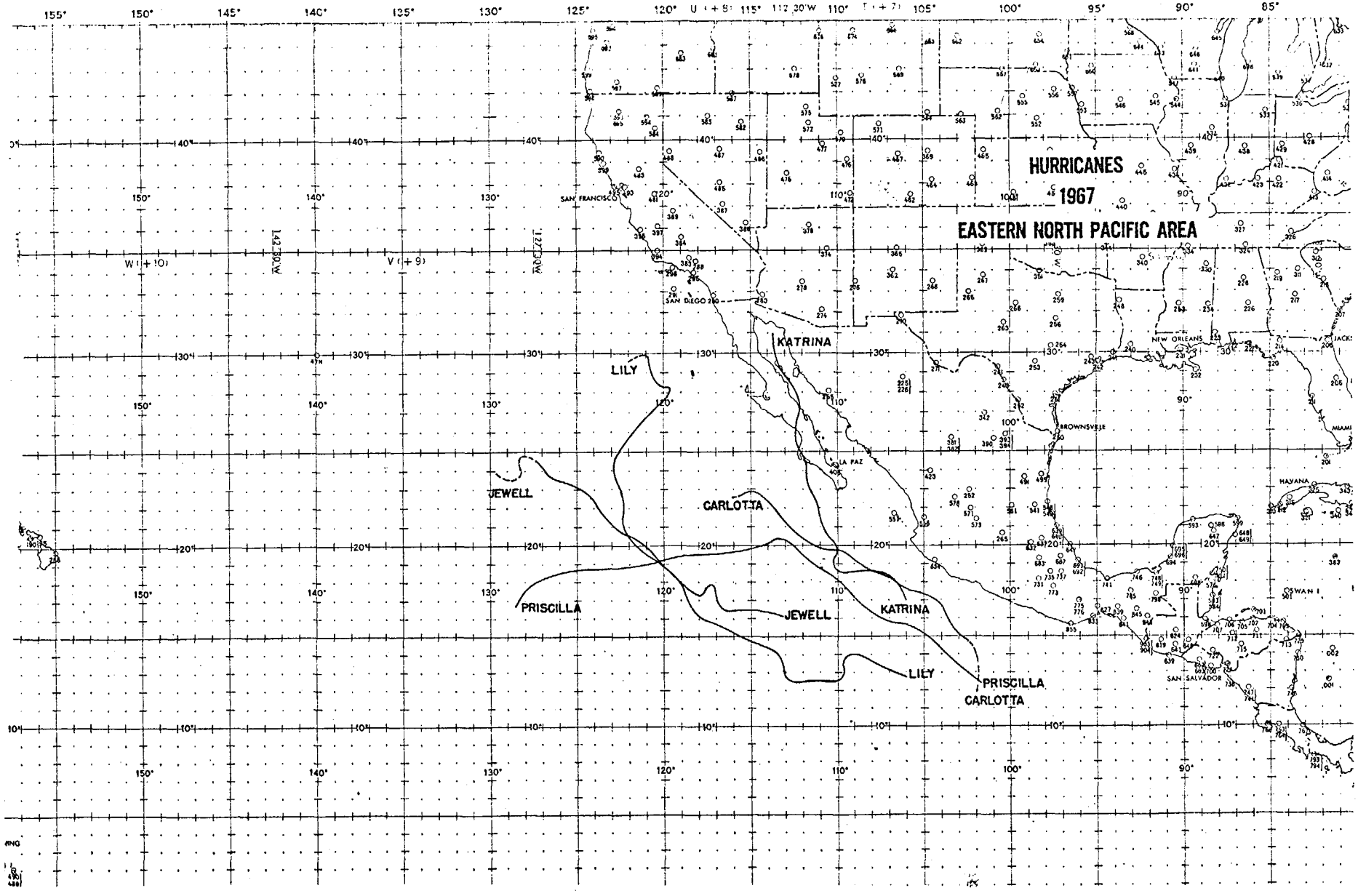
The APT system remains as the primary source of location as shown below in a satellite/recon comparison:

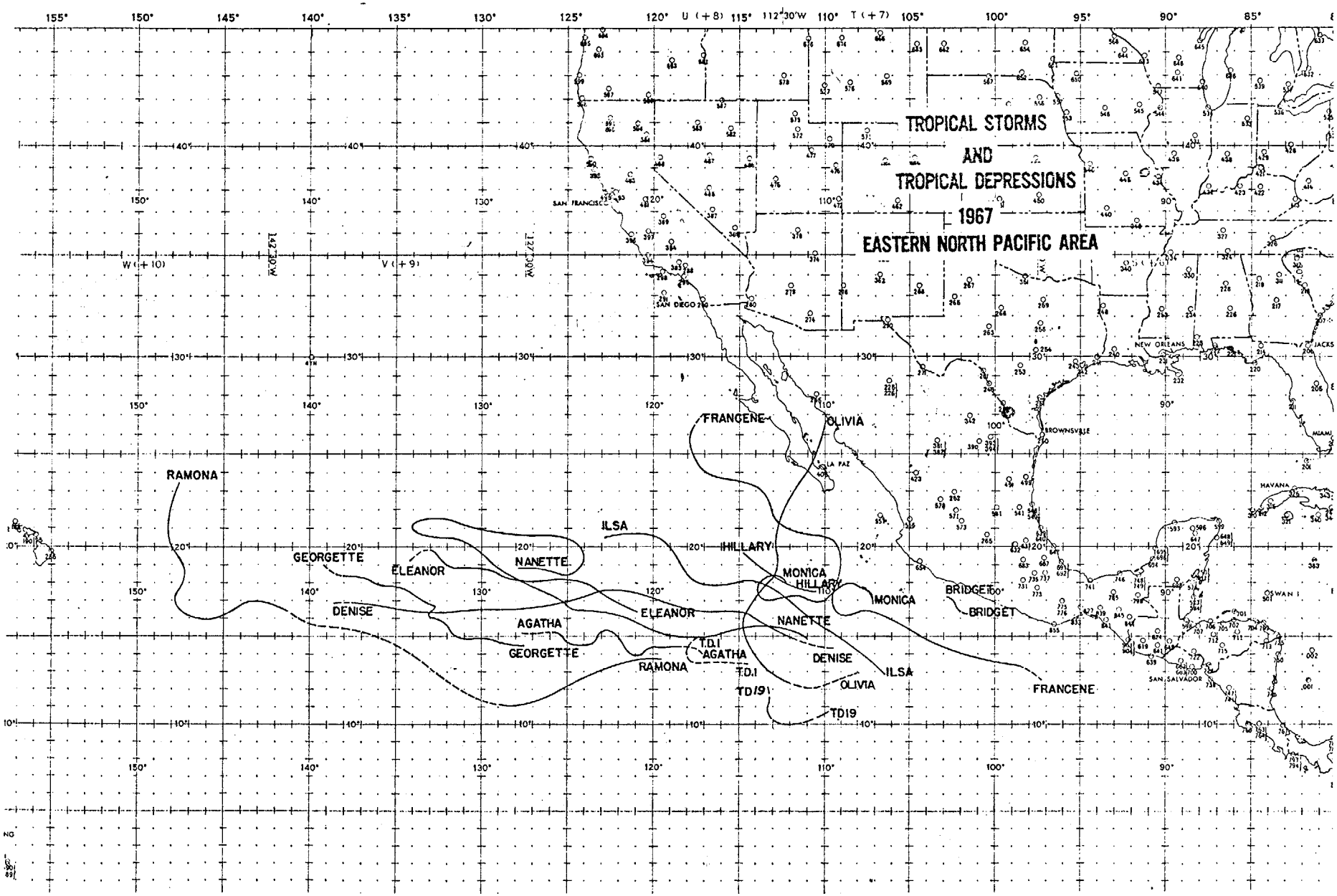
STORM	SATELLITE FIX	RECON FIX
Carlotta	9	1
Jewell	7	5
Katrina	1	2
Lily	15	3
Priscilla	7	1
Sarah	4	8

Antenna location and interference at the ESSA, San Francisco Airport site continues to be a major problem in locating and discerning tropical systems below 20 degrees north latitude. Back up data from PMR Pt. Mugu is most helpful, but descriptions of cloud patterns are verbal and analysts at Fleet Weather Central Alameda are hampered by being unable to actually see the tropical systems on APT readouts.

TROPICAL CYCLONES FOR THE 1967 SEASON

	CYCLONE	PERIOD
01.	Tropical Depression	18 MAY - 19 MAY
02.	Tropical Storm AGATHA	07 JUN - 11 JUN
03.	Tropical Storm BRIDGET	15 JUN - 16 JUN
04.	Hurricane CARLOTTA	22 JUN - 27 JUN
05.	Tropical Storm DENISE	08 JUL - 15 JUL
06.	Tropical Storm ELEANOR	13 JUL - 16 JUL
07.	Tropical Storm FRANCENE	23 JUL - 28 JUL
08.	Tropical Storm GEORGETTE	26 JUL - 30 JUL
09.	Tropical Storm HILARY	10 AUG - 11 AUG
10.	Tropical Storm ILSA	11 AUG - 16 AUG
11.	Hurricane JEWELL	17 JUL - 23 JUL
12.	Hurricane KATRINA	29 AUG - 02 SEP
13.	Hurricane LILY	04 SEP - 12 SEP
14.	Tropical Storm MONICA	13 SEP - 22 SEP
15.	Tropical Storm NANETTE	13 SEP - 23 SEP
16.	Tropical Storm OLIVIA	05 OCT - 14 OCT
17.	Hurricane PRISCILLA	14 OCT - 21 OCT
18.	Tropical Storm RAMONA	22 OCT - 03 NOV
19.	Tropical Depression	25 OCT - 29 OCT
28.	Hurricane SARAH	08 SEP - 14 SEP


HURRICANES
1967
EASTERN NORTH PACIFIC AREA
KATRINA
LILY
JEWELL
CARLOTTA
PRISCILLA
JEWELL
KATRINA
LILY
PRISCILLA
CARLOTTA
SAN FRANCISCO
SAN DIEGO
LA PAZ
NEW ORLEANS
BROWNSVILLE
HAVANA
SAN SALVADOR
SWAN I


TROPICAL STORMS
AND
TROPICAL DEPRESSIONS
1967
EASTERN NORTH PACIFIC AREA
RAMONA
GEORGETTE
ELEANOR
NANETTE
ILSA
HILLARY
MONICA
BRIDGET
DENISE
AGATHA
T.D.I
TD19
OLIVIA
FRANCENE
SAN FRANCISCO
SAN DIEGO
LA PAZ
NEW ORLEANS
BROWNSVILLE
HAVANA
SAN SALVADOR

Position data for tropical cyclones one through eight were not available at the time of publication. For amplifying information on those storms, contact Fleet Weather Central, Alameda.

TROPICAL STORM HILARY
10 AUG - 11 AUG

DTG	LAT	LONG	DTG	LAT	LONG
100000Z	17.5N	110.6W	101800Z	19.0N	114.0W
100600Z	17.7N	111.7W	110000Z	19.8N	114.8W
101200Z	18.2N	112.8W			

TROPICAL STORM ILSA
11 AUG - 16 AUG

DTG	LAT	LONG	DTG	LAT	LONG
111800Z	13.0N	106.3W	140000Z	18.0N	116.0W
120000Z	13.7N	107.4W	140600Z	18.1N	117.7W
120600Z	14.5N	108.5W	141200Z	19.1N	118.6W
121200Z	15.2N	109.5W	141800Z	20.4N	119.4W
121800Z	15.9N	110.7W	150000Z	20.8N	120.1W
130000Z	16.6N	111.6W	150600Z	21.8N	121.1W
130600Z	17.3N	112.7W	151200Z	21.7N	122.2W
131200Z	18.0N	113.8W	151800Z	20.5N	123.0W
131800Z	18.2N	115.1W			

TROPICAL STORM MONICA
13 SEP - 22 SEP

DTG	LAT	LONG	DTG	LAT	LONG
131800Z	16.6N	107.2W	180000Z	17.8N	109.3W
140000Z	16.7N	107.2W	180600Z	17.5N	109.5W
140600Z	16.8N	107.3W	181200Z	17.1N	109.9W
141200Z	16.9N	107.4W	181800Z	17.0N	110.4W
141800Z	17.0N	107.5W	190000Z	17.2N	110.9W
150000Z	17.1N	107.6W	190600Z	17.3N	111.4W
150600Z	17.2N	107.7W	191200Z	17.3N	112.3W
151200Z	17.3N	107.8W	200000Z	17.1N	113.5W
151800Z	17.4N	107.9W	200600Z	17.2N	113.8W
160000Z	17.5N	108.0W	201200Z	17.6N	113.9W
160600Z	17.5N	108.1W	201800Z	18.0N	113.9W
161200Z	17.6N	108.2W	210000Z	18.4N	113.6W
161800Z	17.7N	108.4W	210600Z	18.6N	112.9W
170000Z	17.8N	108.5W	211200Z	18.4N	112.2W
170600Z	17.8N	108.6W	211800Z	17.9N	112.1W
171200Z	17.9N	108.8W	220000Z	17.9N	112.1W
171800Z	18.0N	109.0W			

TROPICAL STORM NANETTE
13 SEP - 23 SEP

DTG	LAT	LONG	DTG	LAT	LONG
130000Z	15.0N	111.0W	181200Z	18.1N	127.8W
130600Z	15.3N	112.0W	181800Z	18.8N	128.7W
131200Z	15.6N	112.9W	190000Z	19.5N	129.7W
131800Z	15.6N	114.0W	190600Z	20.0N	130.2W
140000Z	15.4N	115.2W	191200Z	20.3N	130.8W
140600Z	15.2N	116.2W	191800Z	20.4N	131.3W
141200Z	15.1N	116.5W	200000Z	20.7N	132.0W
141800Z	15.0N	117.0W	200600Z	21.0N	134.0W
150000Z	15.0N	117.6W	201200Z	21.7N	133.0W
150600Z	15.0N	118.1W	201800Z	21.1N	130.2W
151200Z	15.2N	119.2W	210000Z	20.8N	127.9W
151800Z	15.3N	119.7W	210600Z	20.8N	127.1W
160000Z	15.6N	120.3W	211200Z	20.6N	125.2W
160600Z	15.9N	120.9W	211800Z	20.2N	124.2W
161200Z	16.1N	121.4W	220000Z	19.8N	124.0W
161800Z	16.2N	122.2W	220600Z	19.5N	124.0W
170000Z	16.5N	123.0W	221200Z	19.0N	124.2W
170600Z	16.5N	123.8W	221800Z	18.8N	124.6W
171200Z	16.6N	124.8W	230000Z	18.6N	124.9W
171800Z	17.0N	125.1W	230600Z	18.8N	125.8W
180000Z	17.4N	126.0W	231200Z	18.9N	126.8W
180600Z	17.9N	126.8W	231800Z	18.9N	127.9W

TROPICAL STORM OLIVIA
05 OCT - 14 OCT

DTG	LAT	LONG	DTG	LAT	LONG
051800Z	13.0N	108.0W	100600Z	15.5N	114.9W
060000Z	12.5N	109.5W	101200Z	15.8N	114.8W
060600Z	12.2N	110.2W	101800Z	16.4N	114.7W
061200Z	12.1N	110.9W	110000Z	16.9N	114.3W
061800Z	12.1N	111.5W	110600Z	17.5N	113.9W
070000Z	12.2N	112.0W	111200Z	18.1N	113.3W
070600Z	12.4N	112.2W	111800Z	18.6N	113.0W
071200Z	12.5N	112.5W	120000Z	19.0N	112.7W
071800Z	12.6N	112.8W	120600Z	19.7N	112.8W
080000Z	12.9N	113.0W	121200Z	20.5N	112.9W
080600Z	13.0N	113.2W	121800Z	21.2N	112.8W
081200Z	13.4N	113.9W	130000Z	21.9N	112.5W
081800Z	13.7N	114.0W	130600Z	22.6N	112.1W
090000Z	13.9N	114.0W	131200Z	23.6N	111.5W
090600Z	14.0N	114.2W	131800Z	24.5N	110.8W
091200Z	14.3N	114.3W	140000Z	25.2N	110.6W
091800Z	14.8N	114.8W	140600Z	25.8N	110.3W
100000Z	15.2N	114.8W	141200Z	26.8N	110.0W

TROPICAL STORM RAMONA
22 OCT - 03 NOV

DTG	LAT	LONG	DTG	LAT	LONG
220000Z	14.9N	119.5W	281200Z	15.6N	138.9W
220600Z	14.9N	120.4W	281800Z	15.6N	139.8W
221200Z	13.7N	121.3W	290000Z	15.9N	140.4W
221800Z	13.4N	122.2W	290600Z	16.2N	140.9W
230000Z	13.3N	122.9W	291200Z	16.4N	141.4W
230600Z	13.0N	123.5W	291800Z	16.8N	141.9W
231200Z	12.5N	124.6N	300000Z	16.9N	142.4W
231800Z	11.9N	125.7W	300600Z	16.9N	143.3W
240000Z	11.5N	126.5W	301200Z	16.8N	143.8W
240600Z	11.3N	127.0W	301800Z	16.7N	144.2W
241200Z	11.2N	127.6W	310000Z	16.4N	144.6W
241800Z	11.2N	128.3W	310600Z	16.3N	144.9W
250000Z	11.3N	129.0W	311200Z	16.1N	145.2W
250600Z	11.4N	129.8W	311800Z	16.0N	145.5W
251200Z	11.7N	130.6W	010000Z	16.0N	146.0W
251800Z	12.0N	131.3W	010600Z	16.0N	146.5W
260000Z	12.4N	132.0W	011200Z	16.1N	147.0W
260600Z	12.8N	132.4W	011800Z	16.3N	147.3W
261200Z	13.2N	133.2W	020000Z	16.5N	147.6W
261800Z	13.6N	133.6W	020600Z	17.4N	147.9W
270000Z	14.0N	134.2W	021200Z	18.5N	147.3W
270600Z	14.3N	134.8W	021800Z	19.6N	147.7W
271200Z	14.7N	135.4W	030000Z	20.3N	148.1W
271800Z	15.2N	136.8W	030600Z	21.2N	148.3W
280000Z	15.3N	137.1W	031200Z	22.4N	148.0W
280600Z	15.5N	138.0W	031800Z	23.5N	147.7W

HURRICANE "CARLOTTA" - 220600Z TO 270000Z JUNE 1967

I. DATA
   A. Statistics
      1. Number of warnings issued - 20
      2. Number of warnings with hurricane intensity - 8
      3. Total distance traveled during tropical warning period - 1030 mi

   B. Characteristics
      1. Minimum observed SLP - Unknown
      2. Minimum observed 700 mb height - UNKNOWN
      3. Maximum surface wind - 65 knots
      4. Maximum radius of surface circulation - 300 mi

II. DEVELOPMENT
   A. Initial impetus - ITCZ

   B. Initial surface vortex
      1. 220600Z
      2. Surface pressure less than 1008mb

   C. Time storm reached hurricane intensity - 240000Z

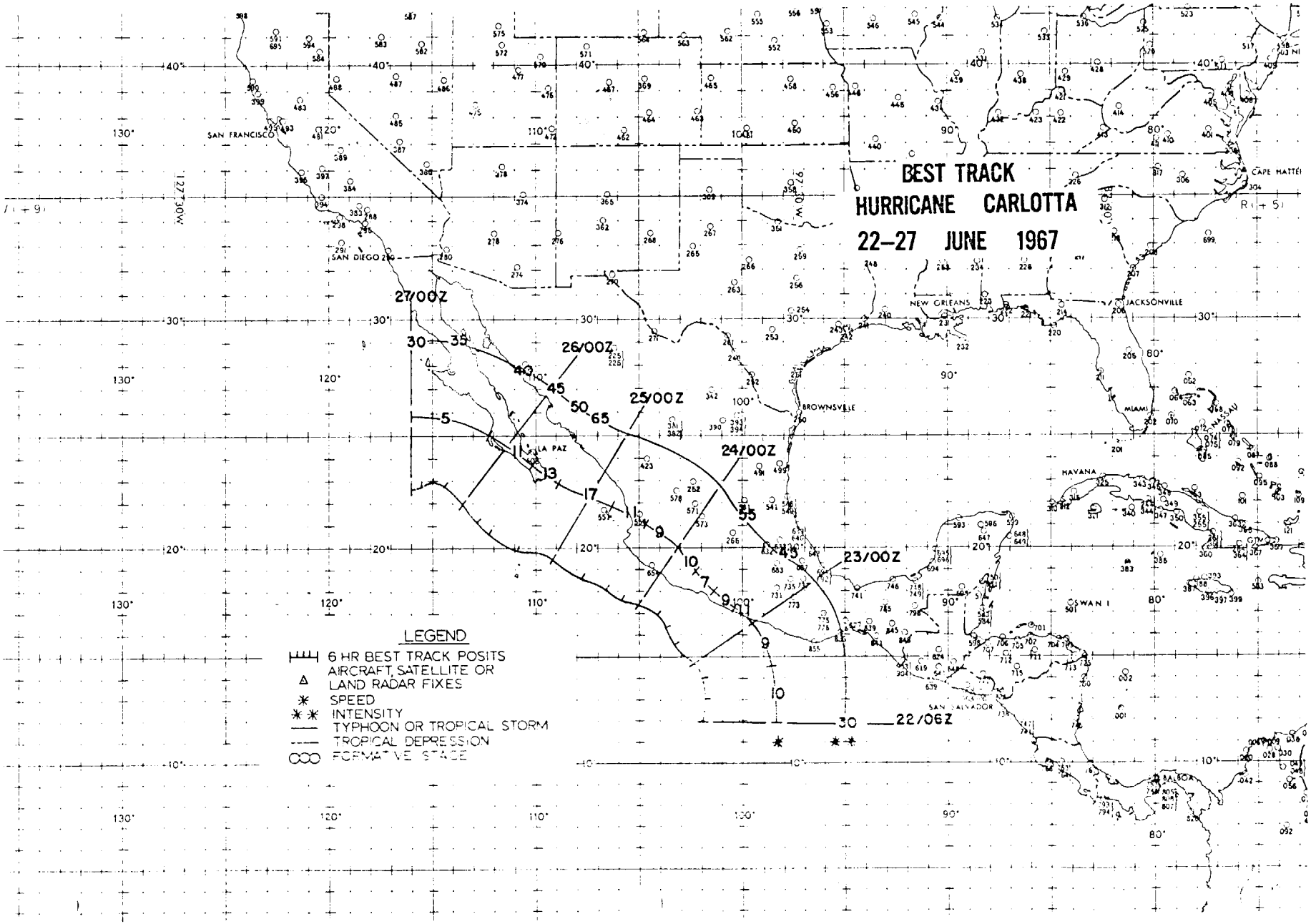
III. FINAL DISPOSITION
   A. Dissipated over water

TROPICAL STORM OLIVIA
05 OCT - 14 OCT

DTG	LAT	LONG	DTG	LAT	LONG
051800Z	13.0N	108.0W	100600Z	15.5N	114.9W
060000Z	12.5N	109.5W	101200Z	15.8N	114.8W
060600Z	12.2N	110.2W	101800Z	16.4N	114.7W
061200Z	12.1N	110.9W	110000Z	16.9N	114.3W
061800Z	12.1N	111.5W	110600Z	17.5N	113.9W
070000Z	12.2N	112.0W	111200Z	18.1N	113.3W
070600Z	12.4N	112.2W	111800Z	18.6N	113.0W
071200Z	12.5N	112.5W	120000Z	19.0N	112.7W
071800Z	12.6N	112.8W	120600Z	19.7N	112.8W
080000Z	12.9N	113.0W	121200Z	20.5N	112.9W
080600Z	13.0N	113.2W	121800Z	21.2N	112.8W
081200Z	13.4N	113.9W	130000Z	21.9N	112.5W
081800Z	13.7N	114.0W	130600Z	22.6N	112.1W
090000Z	13.9N	114.0W	131200Z	23.6N	111.5W
090600Z	14.0N	114.2W	131800Z	24.5N	110.8W
091200Z	14.3N	114.3W	140000Z	25.2N	110.6W
091800Z	14.8N	114.8W	140600Z	25.8N	110.3W
100000Z	15.2N	114.8W	141200Z	26.8N	110.0W

TROPICAL STORM RAMONA
22 OCT - 03 NOV

DTG	LAT	LONG	DTG	LAT	LONG
220000Z	14.9N	119.5W	281200Z	15.6N	138.9W
220600Z	14.9N	120.4W	281800Z	15.6N	139.8W
221200Z	13.7N	121.3W	290000Z	15.9N	140.4W
221800Z	13.4N	122.2W	290600Z	16.2N	140.9W
230000Z	13.3N	122.9W	291200Z	16.4N	141.4W
230600Z	13.0N	123.5W	291800Z	16.8N	141.9W
231200Z	12.5N	124.6N	300000Z	16.9N	142.4W
231800Z	11.9N	125.7W	300600Z	16.9N	143.3W
240000Z	11.5N	126.5W	301200Z	16.8N	143.8W
240600Z	11.3N	127.0W	301800Z	16.7N	144.2W
241200Z	11.2N	127.6W	310000Z	16.4N	144.6W
241800Z	11.2N	128.3W	310600Z	16.3N	144.9W
250000Z	11.3N	129.0W	311200Z	16.1N	145.2W
250600Z	11.4N	129.8W	311800Z	16.0N	145.5W
251200Z	11.7N	130.6W	010000Z	16.0N	146.0W
251800Z	12.0N	131.3W	010600Z	16.0N	146.5W
260000Z	12.4N	132.0W	011200Z	16.1N	147.0W
260600Z	12.8N	132.4W	011800Z	16.3N	147.3W
261200Z	13.2N	133.2W	020000Z	16.5N	147.6W
261800Z	13.6N	133.6W	020600Z	17.4N	147.9W
270000Z	14.0N	134.2W	021200Z	18.5N	147.3W
270600Z	14.3N	134.8W	021800Z	19.6N	147.7W
271200Z	14.7N	135.4W	030000Z	20.3N	148.1W
271800Z	15.2N	136.8W	030600Z	21.2N	148.3W
280000Z	15.3N	137.1W	031200Z	22.4N	148.0W
280600Z	15.5N	138.0W	031800Z	23.5N	147.7W

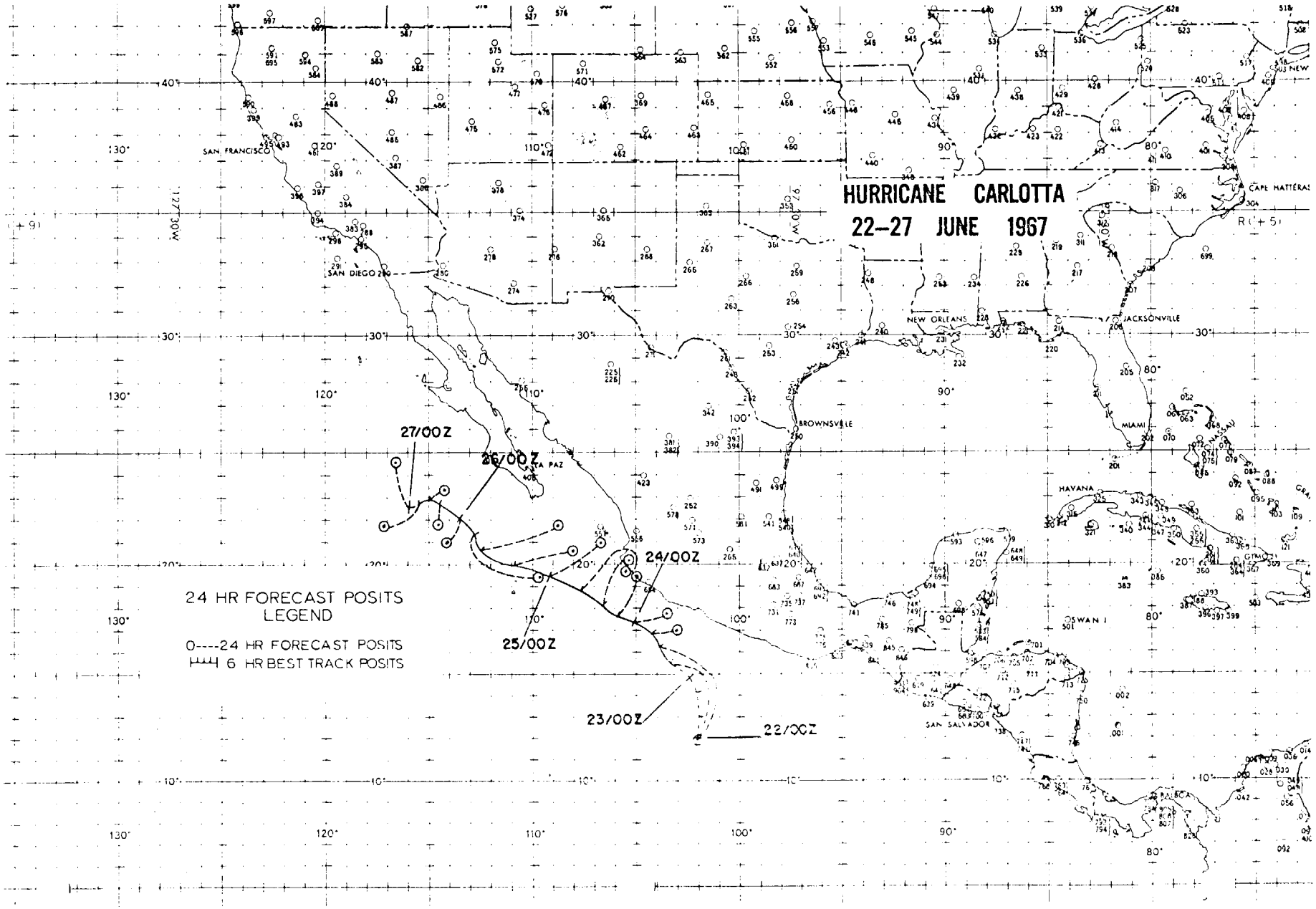

BEST TRACK
HURRICANE CARLOTTA
22–27 JUNE 1967
SAN FRANCISCO
SAN DIEGO
LA PAZ
BROWNSVILLE
NEW ORLEANS
JACKSONVILLE
CAPE HATTERAS
MIAMI
NASSAU
HAVANA
SWAN I
SAN SALVADOR
BALBOA
27/00Z
26/00Z
25/00Z
24/00Z
23/00Z
22/06Z
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE

AN-9

HURRICANE "CARLOTTA" 22 JUL-27 JUN 1967
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG	24 HOUR ERROR DEG. DISTANCE	48 HOUR ERROR DEG. DISTANCE
220600Z	12.0N	102.0W	-------	-------
221200Z	13.0N	102.0W	-------	-------
221800Z	14.0N	102.0W	-------	-------
230000Z	14.8N	102.4W	-------	-------
230600Z	15.4N	103.4W	158-172	-------
231200Z	16.2N	103.8W	157-276	-------
231800Z	16.8N	104.2W	081-077	-------
240000Z	17.3N	105.1W	074-102	-------
240600Z	17.5N	105.9W	024-202	-------
241200Z	18.1N	106.7W	038-210	-------
241800Z	18.5N	107.8W	065-242	-------
250000Z	19.5N	109.2W	058-168	-------
250600Z	19.9N	110.9W	078-175	-------
251200Z	20.5N	112.5W	070-210	-------
251800Z	21.2N	112.8W	116-235	078-462
260000Z	22.1N	113.6W	226-072	063-361
260600Z	22.7N	114.5W	192-054	077-384
261200Z	23.0N	115.0W	080-105	063-322
261800Z	22.6N	115.5W	243-108	092-270
270000Z	22.8N	116.0W	338-113	-------

AVERAGE 24 HOUR ERROR 110 mi
AVERAGE 48 HOUR ERROR 158 mi


HURRICANE CARLOTTA
22–27 JUNE 1967
24 HR FORECAST POSITS
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
27/00Z
26/00Z
25/00Z
24/00Z
23/00Z
22/00Z
SAN FRANCISCO
SAN DIEGO
LA PAZ
BROWNSVILLE
NEW ORLEANS
JACKSONVILLE
MIAMI
HAVANA
SAN SALVADOR
CAPE HATTERAS

HURRICANE "JEWELL" - 171800Z TO 230600Z JUL

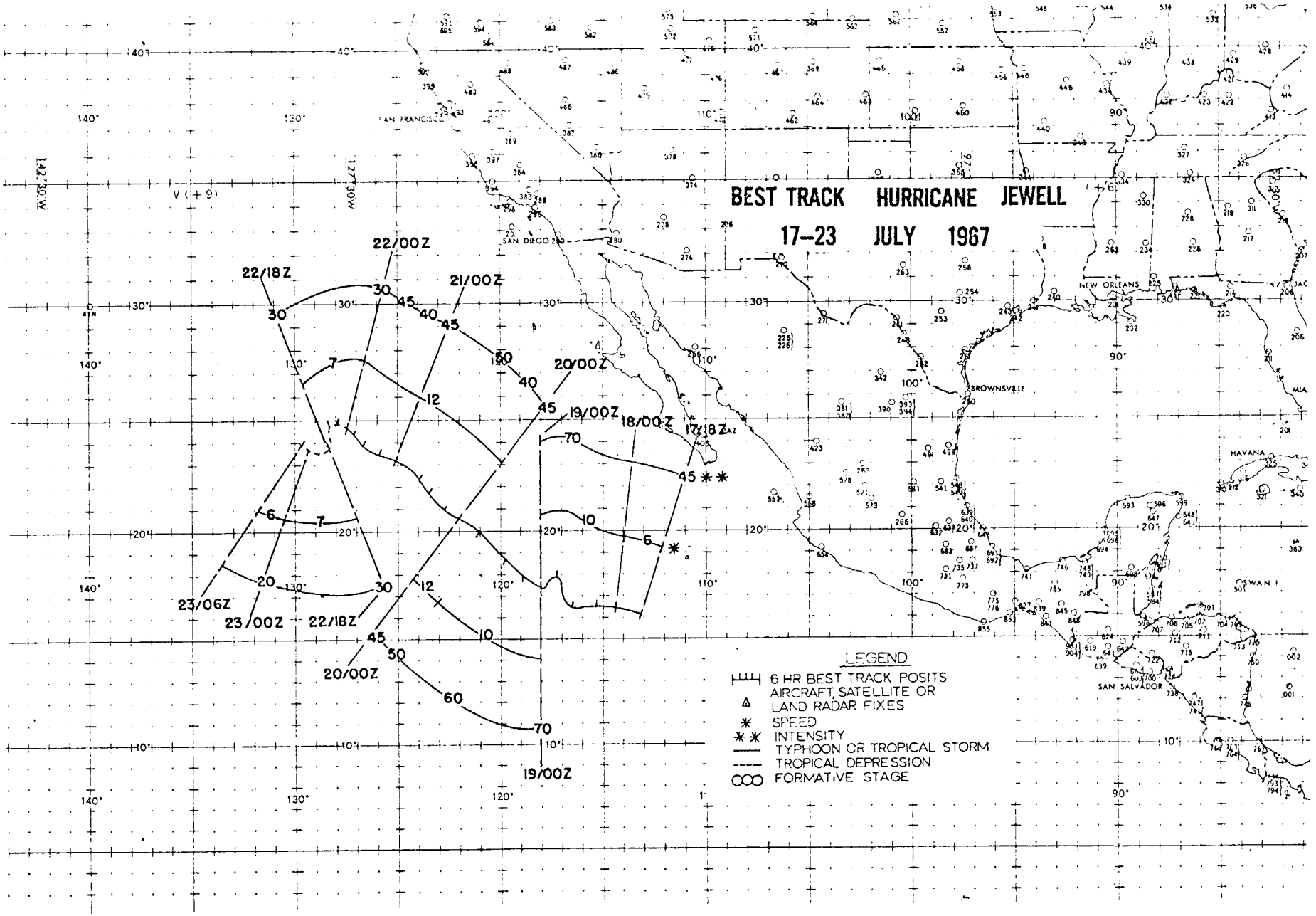
I. DATA
   A. Statistics
      1. Number of warnings issued - 24
      2. Number of warnings of hurricane intensity - 4
      3. Total distance traveled during tropical warning period - 1250 mi

II. DEVELOPMENT
   A. Initial impetus - ITCZ

   B. Initial surface vortex
      1. Time - 171800Z

   C. Time storm reached hurricane intensity
      1. 182230Z

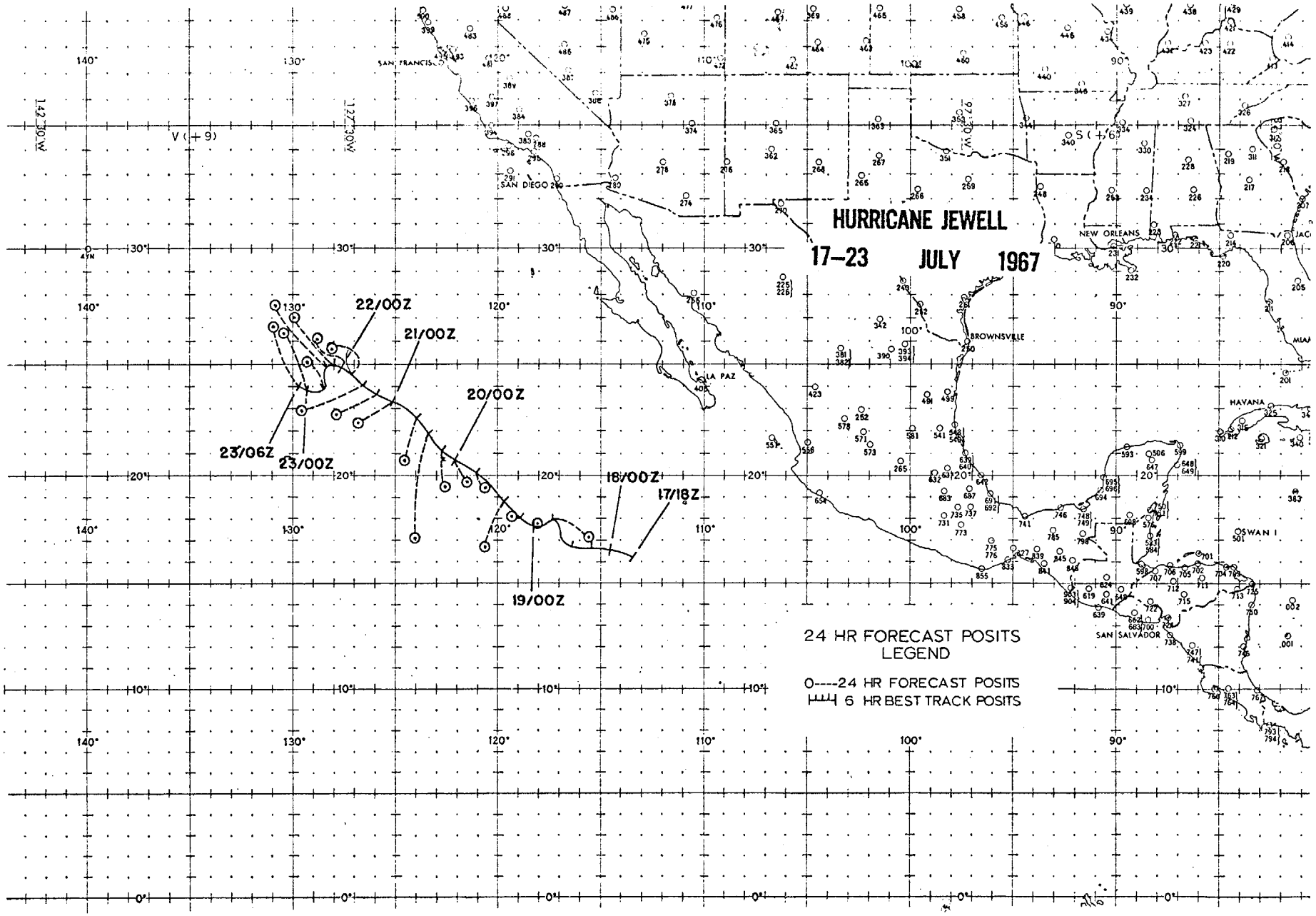
III. FINAL DISPOSITION
   A. Dissipated at sea


BEST TRACK HURRICANE JEWELL
17–23 JULY 1967
22/00Z
22/18Z
21/00Z
20/00Z
19/00Z
18/00Z
17/18Z
23/06Z
23/00Z
22/18Z
20/00Z
19/00Z
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
SAN FRANCISCO
SAN DIEGO
NEW ORLEANS
BROWNSVILLE
HAVANA
SAN SALVADOR

HURRICANE JEWELL 17 JUL-23 JUL 1967
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG	24 HOUR ERROR DEG. DISTANCE	48 HOUR ERROR DEG. DISTANCE
171800Z	16.2N	113.3W	-------	-------
180000Z	16.3N	114.5W	-------	-------
180600Z	16.6N	115.4W	-------	-------
181200Z	16.5N	116.5W	-------	-------
181800Z	17.9N	117.1W	118-120	-------
190000Z	17.6N	117.9W	270- 10	-------
190600Z	18.1N	118.7W	260- 25	-------
191200Z	17.0N	119.8W	200-140	-------
191800Z	20.0N	121.0W	140- 50	125-240
200000Z	20.3N	122.1W	140- 60	165- 80
200600Z	20.7N	123.3W	165-100	185-100
201200Z	21.1N	124.4W	185-290	190-340
201800Z	22.5N	124.0W	195-120	190-145
210000Z	23.2N	125.0W	240-120	185-180
210600Z	23.9N	126.0W	240-130	190-200
211200Z	24.6N	127.0W	250-180	190-420
211800Z	23.8N	126.7W	310-100	245-255
220000Z	25.0N	127.7W	310-115	-------
220600Z	25.3N	128.3W	310-200	-------
221200Z	25.6N	128.9W	320-220	-------
221800Z	23.3N	128.1W	330-100	-------
230000Z	23.6N	128.7W	340-165	-------
230600Z	23.7N	129.3W	330-190	-------

AVERAGE 24 HOUR ERROR 128 MI
AVERAGE 48 HOUR ERROR 217 MI


HURRICANE JEWELL
17–23 JULY 1967
22/00Z
21/00Z
20/00Z
23/06Z
23/00Z
18/00Z
17/18Z
19/00Z
24 HR FORECAST POSITS
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
SAN FRANCISCO
SAN DIEGO
LA PAZ
BROWNSVILLE
NEW ORLEANS
HAVANA
SAN SALVADOR
SWAN I
V (+9)
S (+6)

HURRICANE "KATRINA" - 291800Z AUGUST TO 020500Z SEPTEMBER 1967

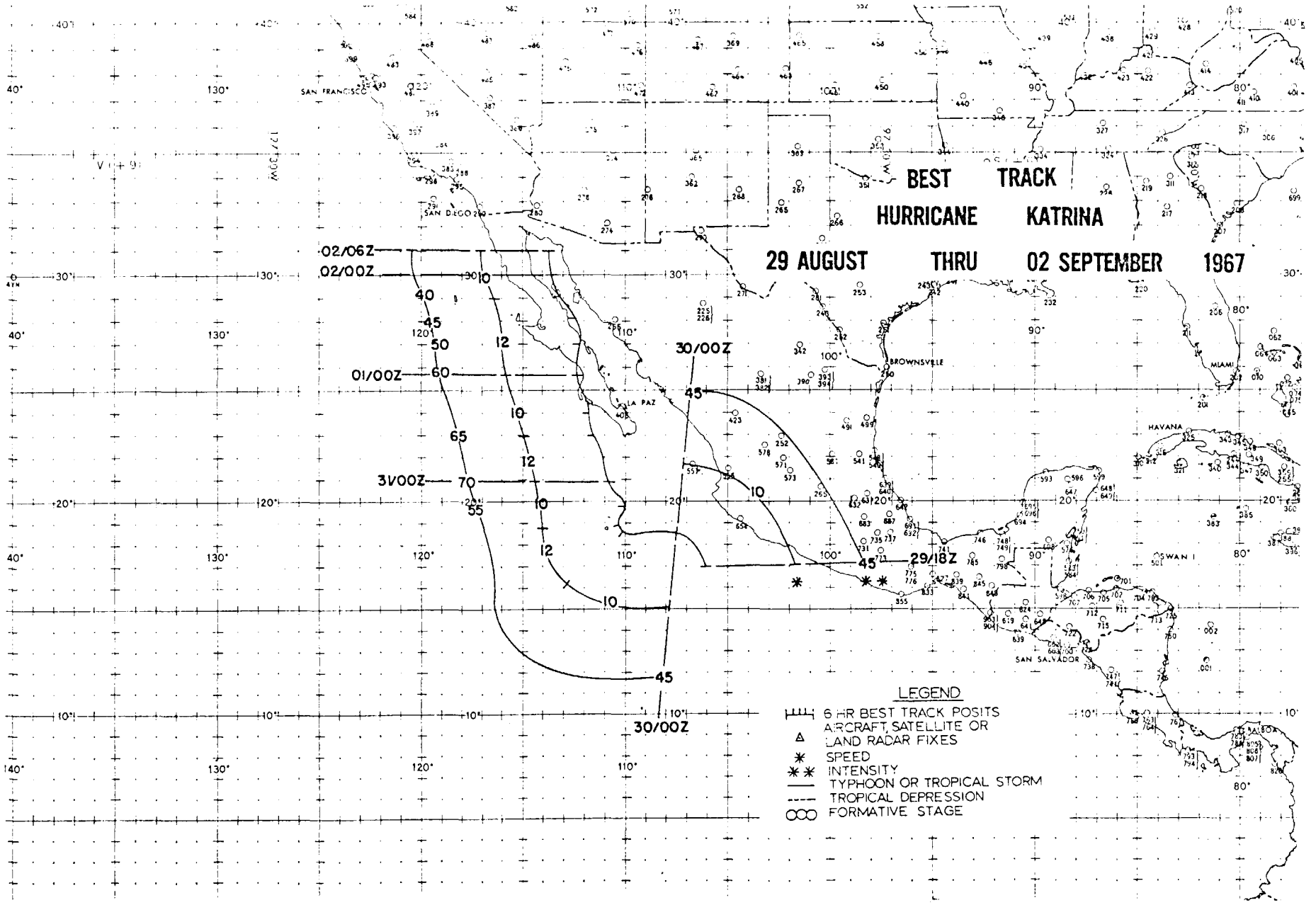
I. DATA
   A. Statistics
      1. Number of warnings issued - 15
      2. Number of warnings with hurricane intensity - 4
      3. Total distance traveled during tropical warning period - 1128 mi

II. DEVELOPMENT
   A. Initial impetus - ITCZ

   B. Initial surface vortex
      1. Time - 291800Z Aug

   C. Time storm reached hurricane intensity - 310000Z Aug

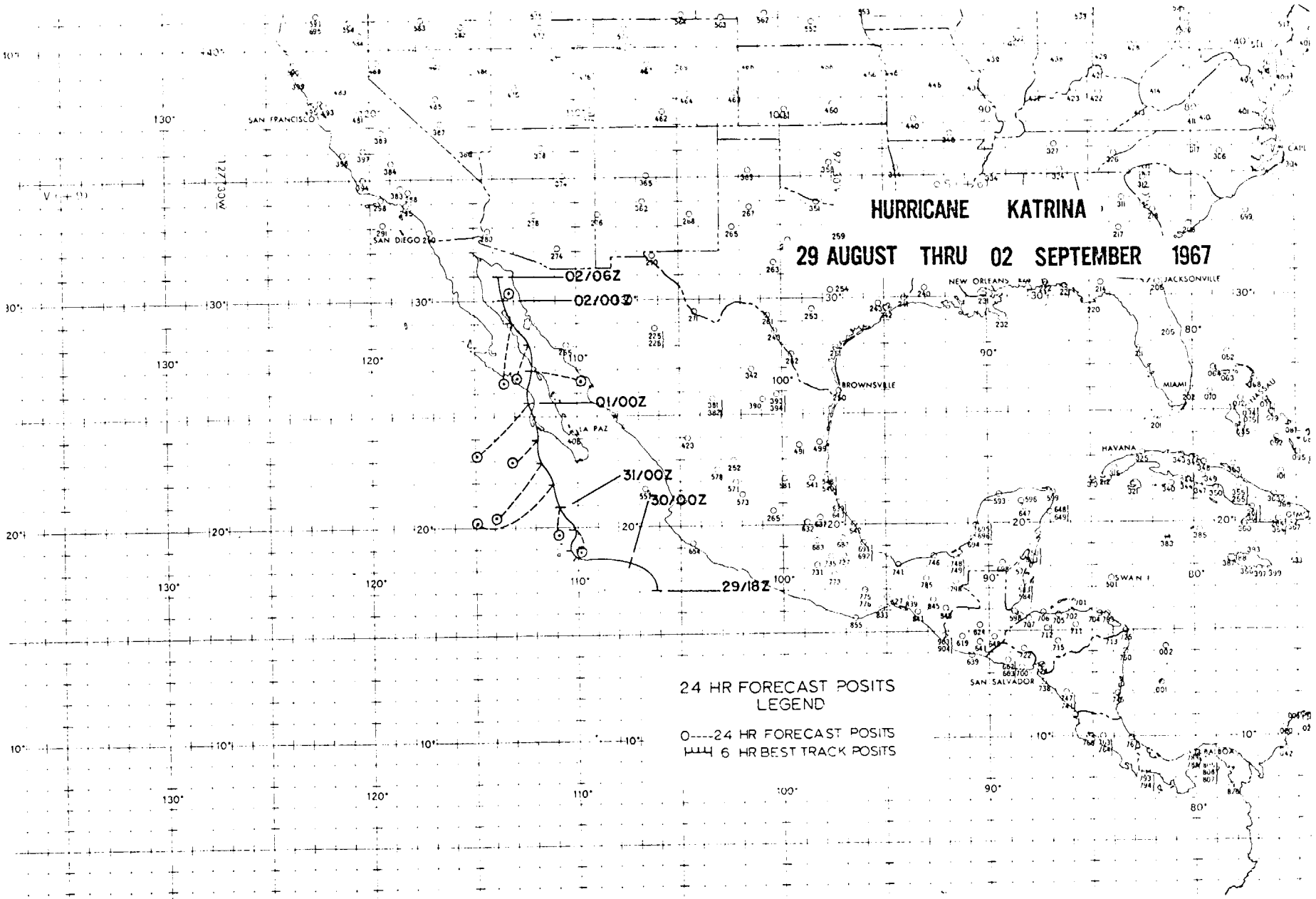
III. FINAL DISPOSITION
   A. Dissipated over land


BEST TRACK
HURRICANE KATRINA
29 AUGUST THRU 02 SEPTEMBER 1967
02/06Z
02/00Z
01/00Z
31/00Z
30/00Z
29/18Z
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
SAN FRANCISCO
SAN DIEGO
LA PAZ
BROWNSVILLE
HAVANA
MIAMI
SAN SALVADOR

HURRICANE "KATRINA" 29 AUG-02 SEP
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG	24 HOUR ERROR DEG.	DISTANCE	48 HOUR ERROR DEG.	DISTANCE
291800Z	17.0N	106.0W	-------		-------	
300000Z	18.5N	107.2W	-------		-------	
300600Z	18.6N	110.2W	-------		-------	
301200Z	18.8N	110.3W	-------		-------	
301800Z	20.0N	110.0W	180-	85	-------	
310000Z	20.8N	110.9W	180-	60	-------	
310600Z	22.0N	111.1W	245-	255	-------	
311200Z	23.0N	111.7W	220-	215	-------	
311800Z	23.9N	111.8W	240-	110	210-	270
010000Z	25.5N	112.4W	230-	210	205-	290
010600Z	27.0N	112.3W	100-	150	235-	550
011200Z	28.2N	112.3W	205-	100	220-	510
011800Z	29.0N	113.3W	180-	145	210-	530
020000Z	30.0N	113.5W	045-	10	215-	610
020600Z	31.0N	113.6W	-------		-------	

AVERAGE 24 HOUR ERROR 134 MI
AVERAGE 48 HOUR ERROR 460 MI


HURRICANE KATRINA
29 AUGUST THRU 02 SEPTEMBER 1967
02/06Z
02/00Z
01/00Z
31/00Z
30/00Z
29/18Z
SAN FRANCISCO
SAN DIEGO
LA PAZ
BROWNSVILLE
NEW ORLEANS
JACKSONVILLE
MIAMI
HAVANA
SAN SALVADOR
24 HR FORECAST POSITS
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS

HURRICANE "LILY" - 040000Z TO 120600Z SEP

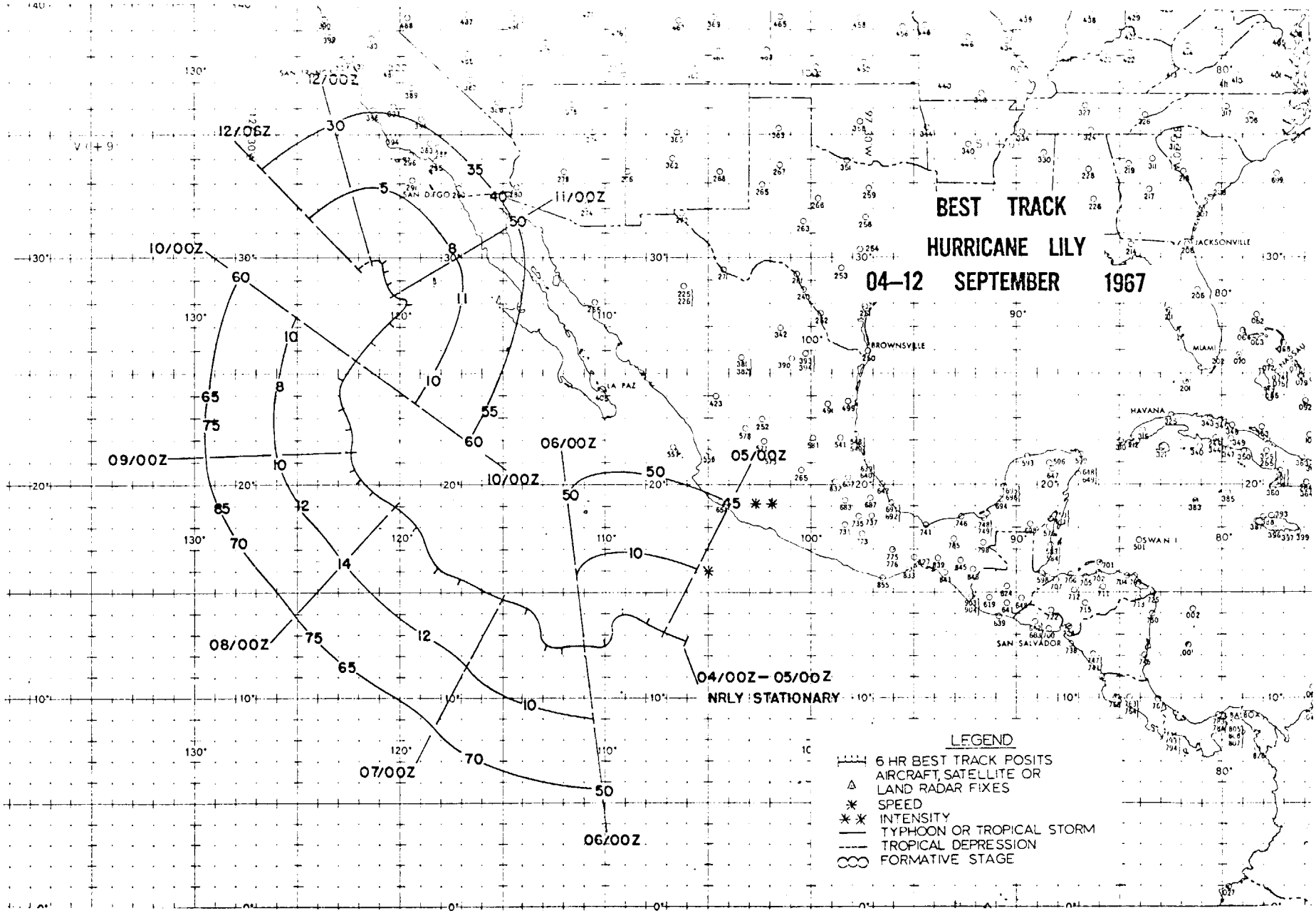
I. DATA
   A. Statistics
      1. Number of warnings issued - 34
      2. Number of warnings with hurricane intensity - 13
      3. Total distance traveled during tropical warning period - 2249 mi

II. DEVELOPMENT
   A. Initial impetus - ITCZ

   B. Initial surface vortex - 040000Z SEP

   C. Time storm reached hurricane intensity - 061800Z SEP

III. FINAL DISPOSITION
   A. Dissipated at sea

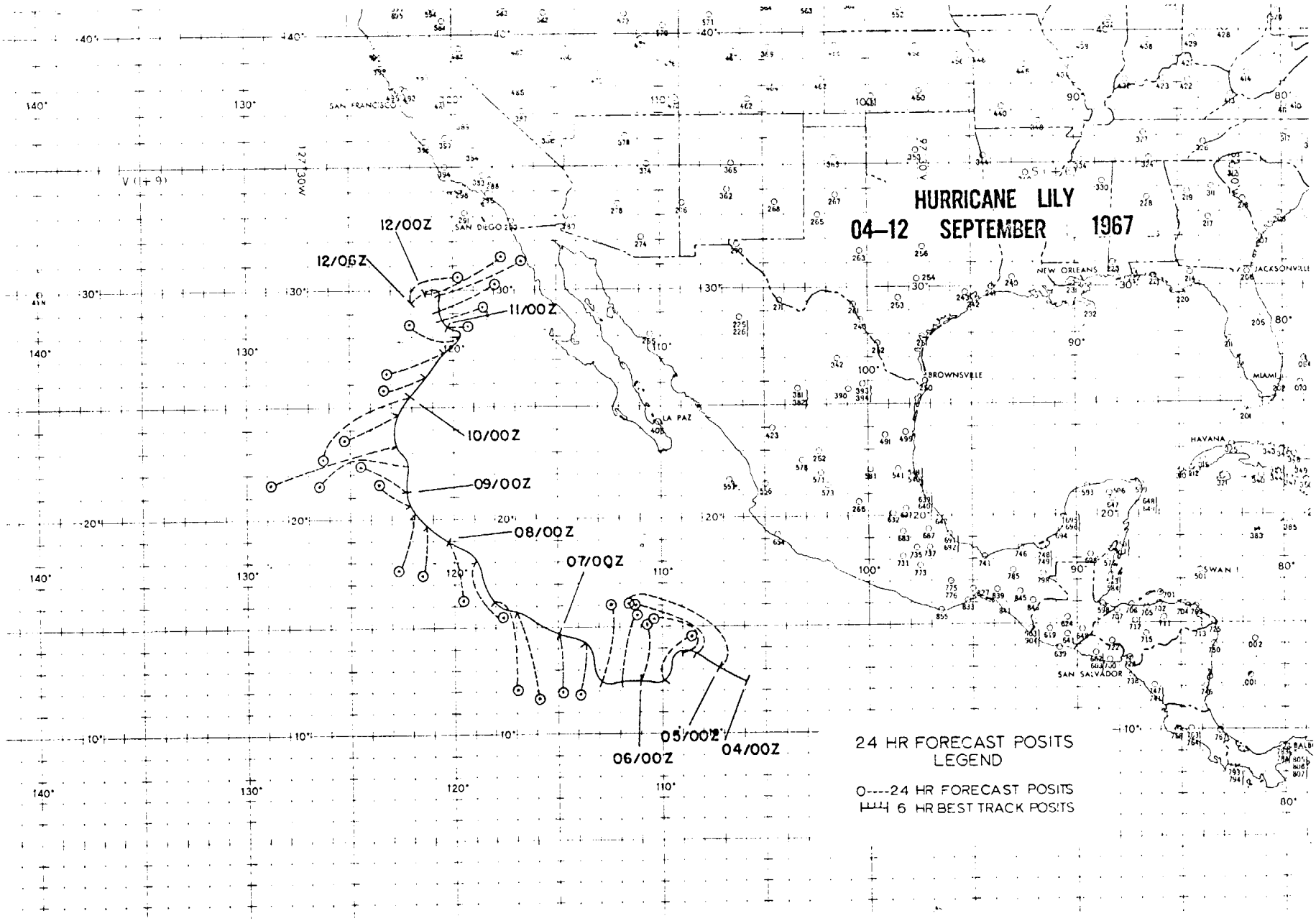

BEST TRACK
HURRICANE LILY
04–12 SEPTEMBER 1967
12/00Z
12/06Z
11/00Z
10/00Z
09/00Z
08/00Z
07/00Z
06/00Z
05/00Z
04/00Z – 05/00Z
NRLY STATIONARY
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
SAN DIEGO
LA PAZ
BROWNSVILLE
JACKSONVILLE
MIAMI
HAVANA
SAN SALVADOR

AN-21

HURRICANE "LILY" 04 - 12 SEP 1967
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG	24 HOUR ERROR DEG. DISTANCE	48 HOUR ERROR DEG. DISTANCE
040000Z	12.8N	106.0W	-------	-------
040600Z	13.4N	107.2W	-------	-------
041200Z	13.9N	108.1W	-------	-------
041800Z	12.6N	105.1W	-------	-------
050000Z	13.2N	107.1W	300-240	-------
050600Z	13.6N	108.0W	305-260	-------
051200Z	14.0N	109.0W	310-195	-------
051800Z	12.5N	110.0W	035-155	-------
060000Z	12.5N	111.0W	010-160	-------
060600Z	12.3N	112.0W	010-200	-------
061200Z	12.2N	113.0W	010-235	-------
061800Z	14.2N	113.7W	185-155	-------
070000Z	14.5N	115.0W	180-155	020-180
070600Z	15.7N	117.0W	165-260	050-175
071200Z	16.1N	118.1W	165-260	050-180
071800Z	18.0N	119.0W	150-175	170-420
080000Z	19.0N	120.3W	165-175	170-480
080600Z	19.7N	121.3W	190-140	170-530
081200Z	20.2N	122.6W	180-150	170-485
081800Z	20.6N	121.8W	300-120	175-220
090000Z	21.2N	122.5W	300-150	195-390
090600Z	22.7N	122.3W	250-250	225-320
091200Z	23.5N	122.6W	255-400	225-365
091800Z	24.8N	122.8W	245-165	250-380
100000Z	25.5N	122.0W	235-315	255-460
100600Z	26.3N	121.3W	255-130	250-740
101200Z	27.1N	120.7W	255-150	245-800
101800Z	28.0N	119.5W	285-165	250-650
110000Z	28.3N	120.3W	075- 55	240-670
110600Z	28.7N	120.5W	070-175	270-175
111200Z	29.2N	120.5W	070-160	280- 90
111800Z	29.8N	120.5W	070-245	025-125
120000Z	29.9N	121.3W	060-180	070-285
120600Z	29.5N	122.0W	070-145	065-380

AVERAGE 24 HOUR ERROR - 188 MI
AVERAGE 48 HOUR ERROR - 386 MI


HURRICANE LILY
04–12 SEPTEMBER 1967
12/00Z
12/06Z
11/00Z
10/00Z
09/00Z
08/00Z
07/00Z
06/00Z
05/00Z
04/00Z
SAN FRANCISCO
SAN DIEGO
LA PAZ
NEW ORLEANS
JACKSONVILLE
BROWNSVILLE
MIAMI
HAVANA
SWAN I
SAN SALVADOR
24 HR FORECAST POSITS
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS

HURRICANE "PRISCILLA" - 140000Z TO 210600Z October 1967

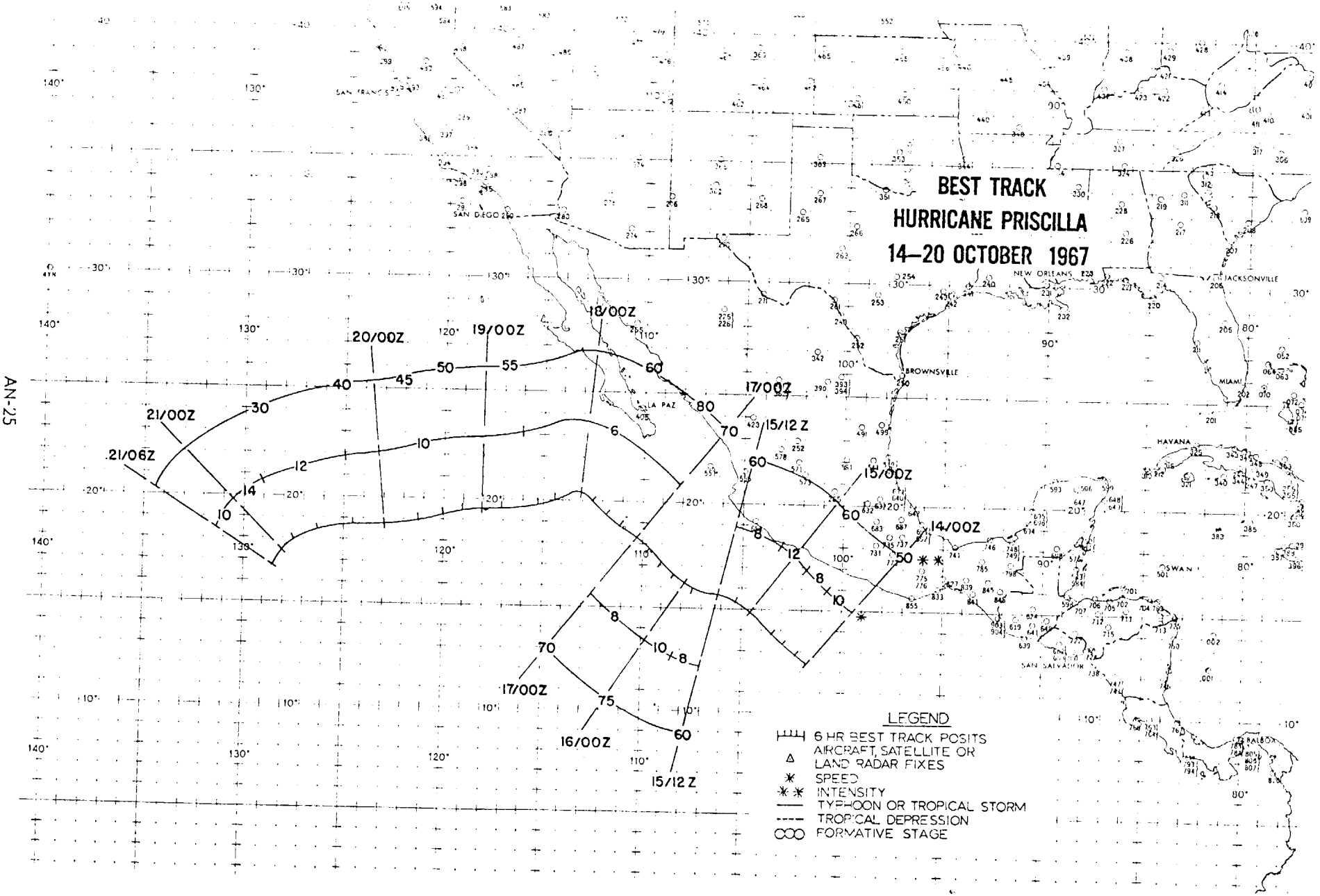
I. DATA
   A. Statistics
      1. Number of warnings issued - 31
      2. Number of warnings of hurricane intensity - 7
      3. Total distance traveled during tropical warning period - 1750 nm

II. DEVELOPMENT
   A. Initial impetus - ITCZ

   B. Initial surface vortex - 140000Z

   C. Time storm reached hurricane intensity - 160000Z

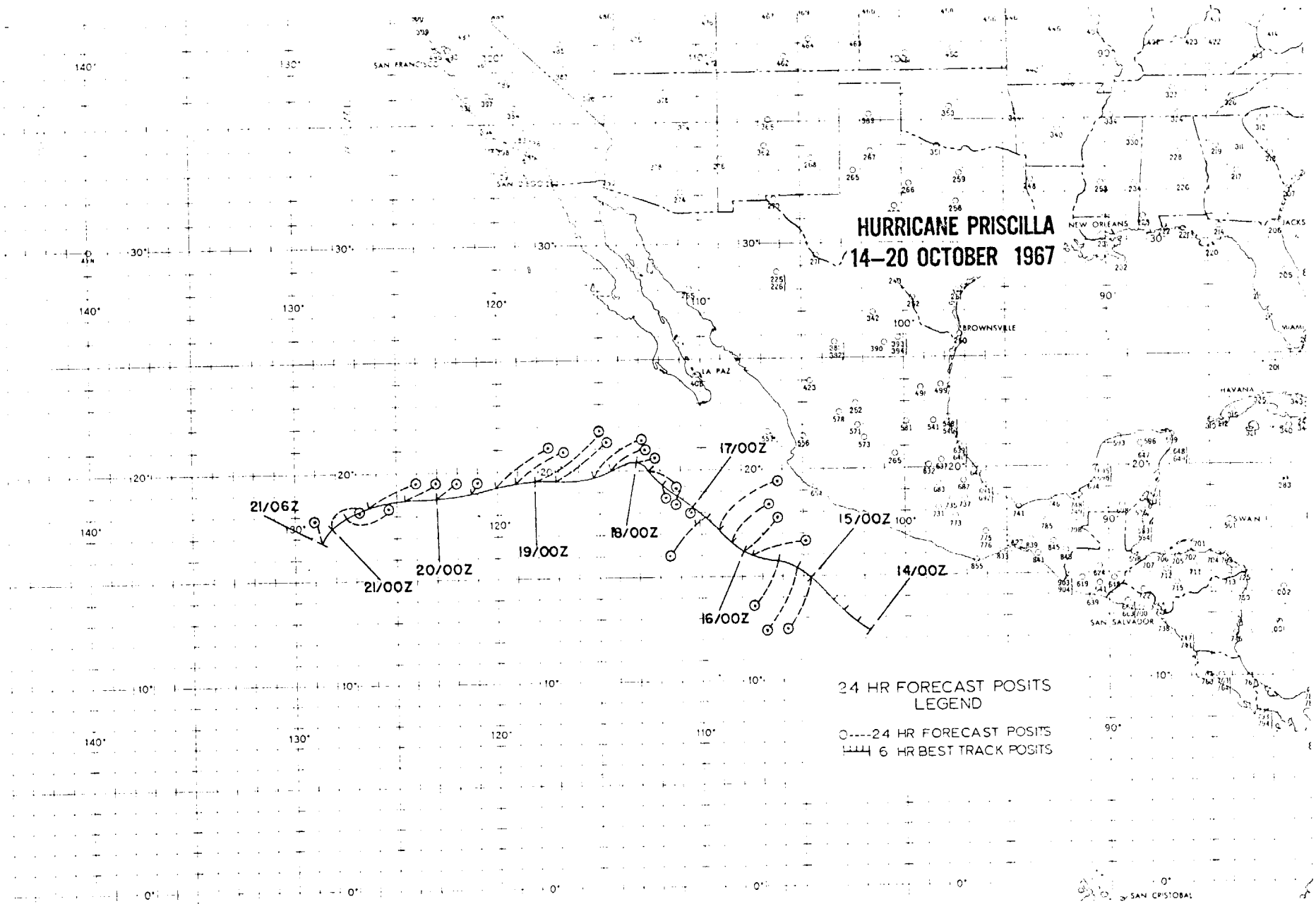
III. FINAL DISPOSITION
   A. Dissipated over water


BEST TRACK
HURRICANE PRISCILLA
14–20 OCTOBER 1967
18/00Z
19/00Z
20/00Z
21/00Z
21/06Z
17/00Z
15/12Z
15/00Z
14/00Z
16/00Z
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE

HURRICANE "PRISCILLA" 14 Oct-21 Oct 1967
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION LAT.	LONG	24 HOUR ERROR DEG. DISTANCE	48 HOUR ERROR DEG. DISTANCE
140000Z	12.5N	101.7W	-------	-------
140600Z	12.5N	102.7W	-------	-------
141200Z	12.5N	103.7W	-------	-------
141800Z	13.9N	103.4W	-------	-------
150000Z	15.0N	104.5W	200-150	245-330
150600Z	15.5N	105.0W	200-180	260-300
151200Z	16.5N	105.3W	210-150	265-270
151800Z	16.0N	107.5W	080-150	020-230
160000Z	16.4N	107.7W	050-120	360-370
160600Z	16.7N	108.3W	045-140	015-410
161200Z	17.1N	109.0W	050-215	030-355
161800Z	17.5N	109.0W	225-160	250-350
170000Z	18.3N	110.3W	185- 30	295-180
170600Z	19.0N	111.0W	195- 40	295-180
171200Z	19.5N	111.4W	170- 50	290-175
171800Z	20.0N	112.5W	120-140	055- 65
180000Z	20.5N	113.0W	075- 55	010-140
180600Z	20.0N	114.5W	060-110	005-160
181200Z	20.1N	115.1W	050-170	010-210
181800Z	19.5N	117.0W	055-170	005-120
190000Z	19.5N	118.0W	050-215	020-190
190600Z	19.5N	119.0W	055-150	355-120
191200Z	19.5N	120.0W	055-180	010-130
191800Z	19.0N	121.2W	030- 30	280-210
200000Z	18.8N	123.0W	050- 70	285-175
200600Z	18.7N	124.3W	065-100	285-150
201200Z	18.6N	126.2W	065-130	290-110
201800Z	18.5N	128.0W	080-120	260-110
210000Z	17.0N	127.5W	065- 80	270-160
210600Z	16.8N	128.5W	335- 65	275-290

AVERAGE 24 HOUR ERROR 122 NM
AVERAGE 48 HOUR ERROR 210 NM


HURRICANE PRISCILLA
14–20 OCTOBER 1967
21/06Z
21/00Z
20/00Z
19/00Z
18/00Z
17/00Z
16/00Z
15/00Z
14/00Z
24 HR FORECAST POSITS
LEGEND
0----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
SAN FRANCISCO
LA PAZ
BROWNSVILLE
NEW ORLEANS
HAVANA
SAN SALVADOR
SAN CRISTOBAL

AN-27

HURRICANE SARAH - 081800Z to 140000Z September 1967

I. DATA

A. STATISTICS

1. Number of warnings issued in FWC Pearl Harbor's area: 22

2. Number of warnings with hurricane intensity: 4

3. Total distance traveled in FWC Pearl Harbor area: 1925 nautical miles. (as T.S. 1645 nm; as hurricane 280 nm)

B. CHARACTERISTICS AS A HURRICANE

1. Minimum observed slp and 700 mb height: All reconnaissance flights were high level at 300 mb.

2. Maximum surface wind in FWC Pearl Harbor area: 65 knots

3. Maximum radius of surface circulation: 500 nautical miles

II. DEVELOPMENT

A. INITIAL IMPETUS: ITCZ

B. INITIAL SURFACE VORTEX

1. 071800Z

2. Surface pressure less than 1007 mb.

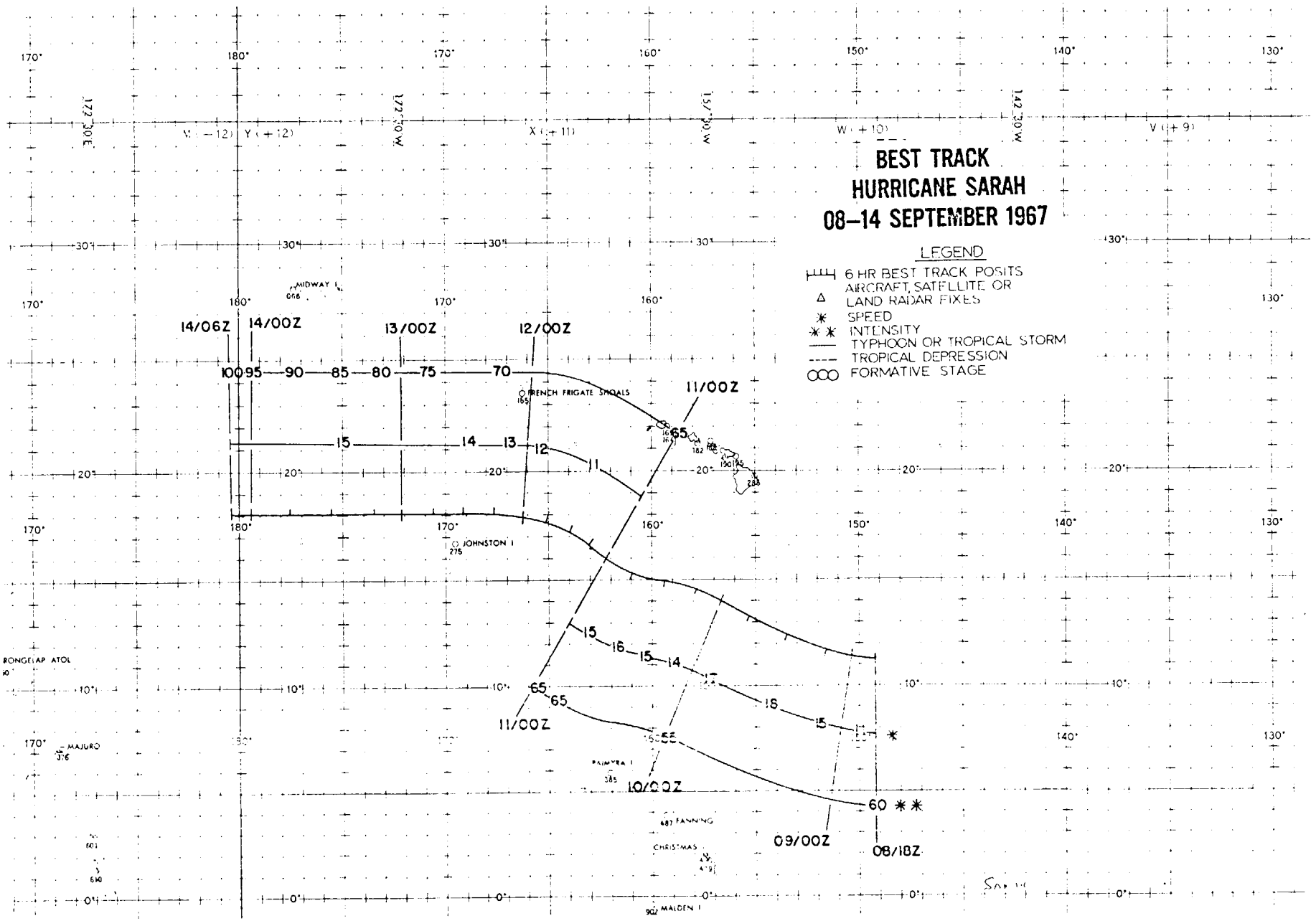
3. Time storm reached hurricane intensity: 101800Z

C. 200 MB FLOW ABOVE SURFACE VORTEX

1. Initial: South to southeasterly as surface low progressed to west northwest under ridge aloft.

2. Upon reaching hurricane intensity: Southerly for next 60 hours gradually becoming variable as SARAH was temporarily downgraded to tropical storm intensity. Surface vortex was gradually caught up in northeast flow at 200 mb and recurved to the west while slowly intensifying.

III. FINAL DISPOSITION: SARAH crossed the date-line into FWC Guam's area of responsibility as a tropical storm with slow intensification continuing.

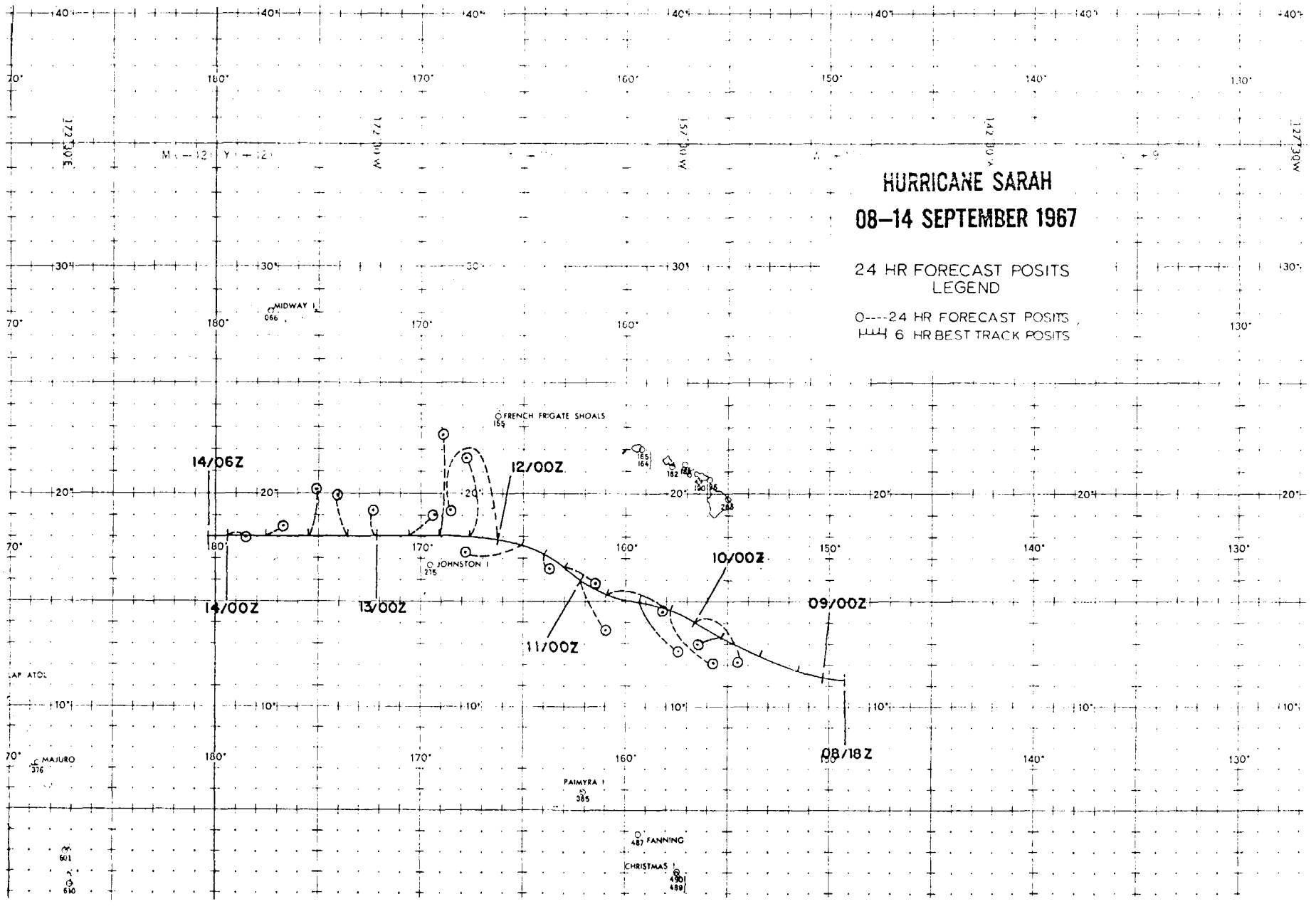

BEST TRACK
HURRICANE SARAH
08–14 SEPTEMBER 1967
LEGEND
6 HR BEST TRACK POSITS
AIRCRAFT, SATELLITE OR LAND RADAR FIXES
SPEED
INTENSITY
TYPHOON OR TROPICAL STORM
TROPICAL DEPRESSION
FORMATIVE STAGE
14/06Z
14/00Z
13/00Z
12/00Z
11/00Z
10/00Z
09/00Z
08/18Z
MIDWAY I.
FRENCH FRIGATE SHOALS
JOHNSTON I.
RONGELAP ATOL
MAJURO
PALMYRA I.
FANNING
CHRISTMAS
MALDEN I.

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
1	100400Z	14.3N 157.2E	AF-R-P05	9640M	---	---	---	---	--/--	CIRC	----	20	--
2	110059Z	16.0N 162.4E	AF-R-P--	9640M	060	---	---	---	--/--	CIRC	----	10	--
3	110220Z	16.7N 162.8E	AF-R-P05	9640M	060	---	---	---	--/--	CIRC	----	--	--
4	112314Z	17.7N 166.1E	AF-R-P05	9410M	---	---	---	---	--/--	CIRC	----	15	--
5	121715Z	18.0N 170.5E	AF-R-P03	9030M	---	---	---	---	--/--	CIRC	----	20	--
6	121930Z	18.2N 171.0E	AF-R-P03	9100M	---	---	---	---	--/--	CIRC	----	25	--
7	130432Z	18.0N 173.2E	AF-R-L03	9990M	---	---	---	---	--/--	CIRC	----	10	--
8	131822Z	18.3N 177.9E	AF-R-L10	9100M	---	---	---	---	--/--	CIRC	----	20	--

HURRICANE SARAH 8 SEPT-14 SEPT 1967
FORECAST VERIFICATION DATA
(Distance From Best Track in Nautical Miles)

DTG	ERROR AT WRNG TIME (n.m.)	FORECAST ERROR 12HR	24HR	48HR	72HR
081800Z	0				
090000Z	18				
090600Z	36	99			
091200Z	6	94			
091800Z	72	144	78		
100000Z	30	112	192		
100600Z	33	83	210		
101200Z	24	83	175		
101800Z	6	88	193	218	
110000Z	15	54	155	330	
110600Z	39	96	113	365	
111200Z	72	69	40	295	
111800Z	6	105	172	250	405
120000Z	18	165	155	259	413
120600Z	8	47	210	150	436
121200Z	30	36	278	69	348
121800Z	0	66	110	270	334
130000Z	6	98	69	246	320
130600Z	0	18	132	472	312
131200Z	6	0	132	525	192
131800Z	72	6	18	274	370
140000Z	72	0	6	193	432
Average Error:	25.8	73.1	135.5	279.7	356.2


HURRICANE SARAH
08–14 SEPTEMBER 1967
24 HR FORECAST POSITS
LEGEND
O----24 HR FORECAST POSITS
6 HR BEST TRACK POSITS
14/06Z
12/00Z
10/00Z
14/00Z
13/00Z
11/00Z
09/00Z
08/18Z
MIDWAY I.
FRENCH FRIGATE SHOALS
JOHNSTON I.
PALMYRA I.
FANNING
CHRISTMAS I.
MAJURO