

## M. TYPHOON DELLA (170900Z-310000Z AUGUST 1960)

The first indication of Typhoon DELLA was a weak cyclonic circulation, between Kwajalein and Eniwetok, on the 120000Z surface chart. The circulation had moved quite close to Eniwetok by 140600Z, and by 170600Z it appeared to be embedded in the strong trough SE of T.S. BESS. A brief description of the general features of the 161200Z surface chart is contained in the narrative of Typhoon BESS.

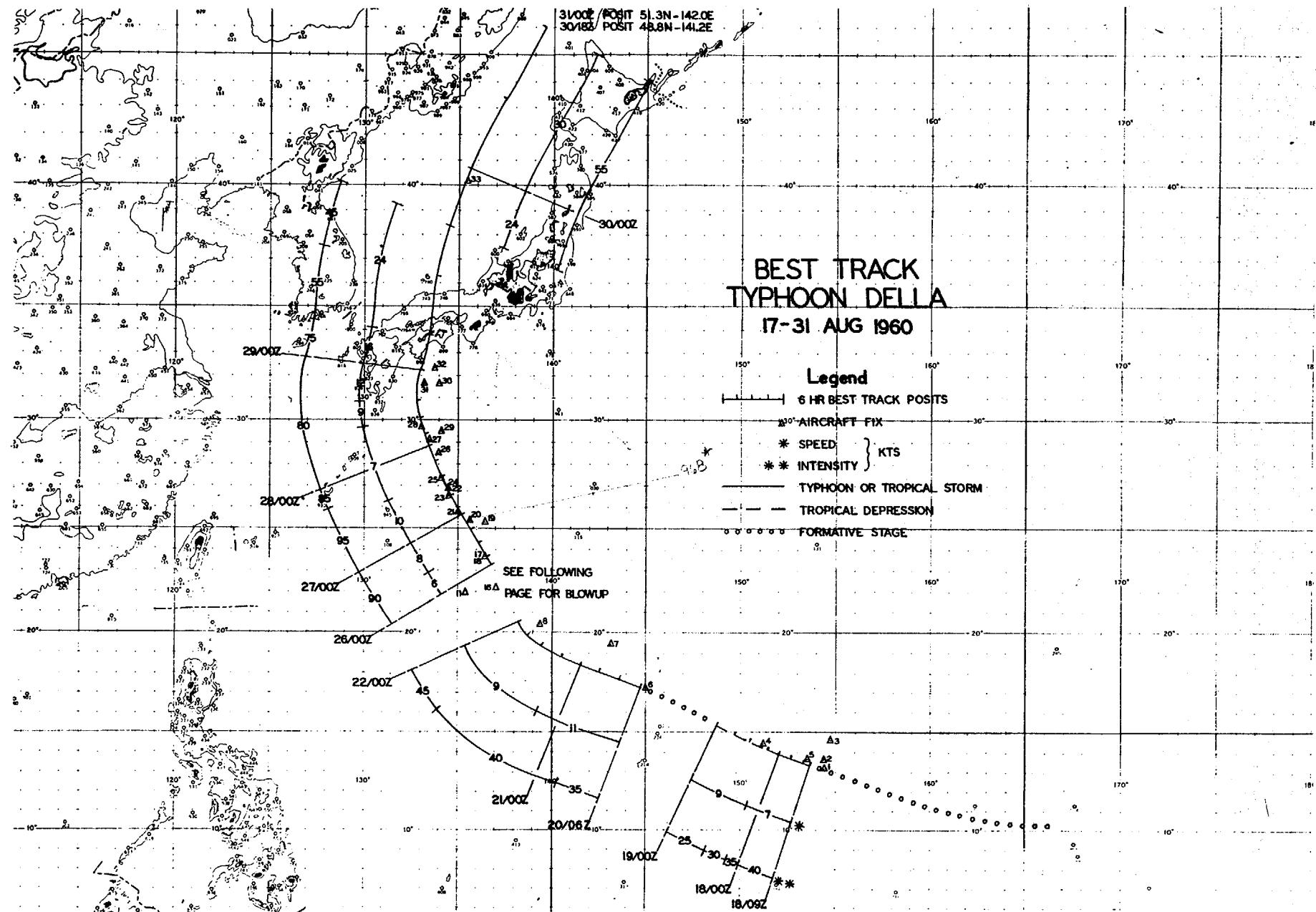
The initial warning (as a tropical storm) was issued at 170900Z, and it appeared that DELLA would intensify to full typhoon strength. However, subsequent reconnaissance, on 18 August, indicated that DELLA was no longer a closed circulation, and a final warning was issued at 190000Z. An investigation by an aircraft of VW-1 on 20 August disclosed that DELLA had regenerated, and the issuance of warnings, as a tropical storm, was resumed at 200600Z. DELLA moved on a track to the WNW at 11 kts, becoming a typhoon at 221200Z. Shortly after reaching typhoon intensity, DELLA, moving in a counterclockwise direction, followed a path which gradually described an ellipse. The ellipse was centered near 22N 137E, and the major axis was oriented ENE. DELLA moved along the 175 mi circumference of the ellipse at an initial speed of 6 kts, slowly decelerating to 2 kts. After completing the ellipse, DELLA moved to the NNW and then to the N, gradually accelerating to 16 kts at 290500Z, when it reached the Japanese island of Shikoku. At that time, the maximum winds had decreased from 95 to 75 kts, and passage over the island of Honshu further reduced the maximum wind speed to 45 kts. Miho (743), a city on the N coast of Honshu, was less than 20 mi W of DELLA's position between 291000Z and 291100Z, and reported maximum sustained winds of only 18 kts with gusts to 27 kts. DELLA accelerated to 30 kts after entering the Sea of Japan where the maximum winds, associated with the storm, reached only 55 kts. The final warning was issued at 310000Z, at which time DELLA was in the Gulf of Tatary, just E of Sakhalin Island.

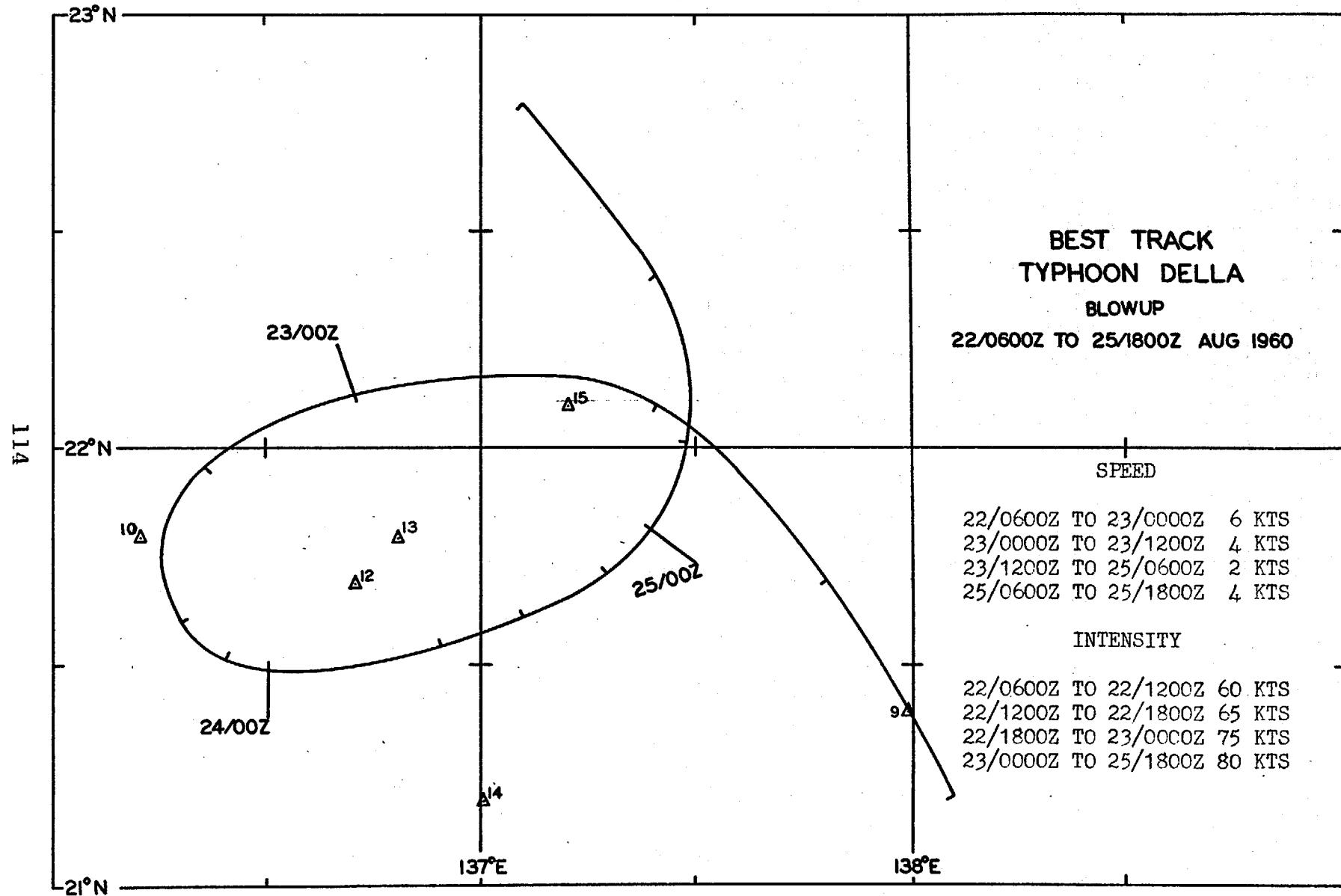
DELLA traveled 3150 mi during the 13 days and 15 hours (first to last warning) that warnings were issued. The average speed of this system was 10 kts or 233 mi a day; the minimum speed was 2 kts while moving along the elliptical track, and the maximum speed was 30 kts during the last day of warnings. During the life of DELLA, warnings were also issued on Typhoons BESS, CARMEN, ELAINE, FAYE, and T.S. GLORIA.

Two unusual features marked DELLA as different: The elliptical track, roughly half way between Guam and Okinawa,

on 22, 23 and 24 August, and a double eye reported at 280914Z, the position of which was 29.7N 133.0E. The inner eye was oval shaped, 10 by 3 mi, and was oriented such that the longer axis was NE. The outer eye was 50 mi in diameter.

113





RECONNAISSANCE AIRCRAFT FIXES - TYPHOON DELLA

FIX NO.	TIME	LAT.	LONG.	UNIT METHOD & ACCY	MIN	MAX	MIN	MAX	700MB	EYE CHARACTERISTICS	
					SLP MBS	SFC WND	700MB HGT	700MB WND	TT/Td (°C)		
1	170430Z	13.2N	154.3E	VW1-P-10	--	45	---	---	---	30 KT SFC WND 40 MI RAD.	
2	172200Z	13.6N	154.4E	56-P-10	--	40	---	---	---	EYE ILL-DEFINED	
3	180300Z	14.7N	154.8E	USAF----	--	--	---	---	---	-----	
4	180728Z	14.3N	151.1E	VW1-P-10	--	35	---	---	---	CIRC DIA 42 MI	
5	180830Z	13.7N	153.6E	56-P-05	1012	--	10210 <sup>1003</sup>	30	09/09	UNDEFINED 25 MI DIA	
6	200440Z	17.2N	145.0E	VW1-P-10	--	38	---	---	---	CIRC DIA 35 MI	
7	202100Z	19.4N	143.1E	56-P----	--	--	---	---	---	INDEF CLOSED CIR	
SIT	8	212200Z	20.3N	139.3E	56-P-10	1000	40	10080 <sup>998</sup>	40	13/10	DEFINED ONLY BY SPIRAL SC
	9	220820Z	21.4N	138.0E	56-P-05	994	60	9920 <sup>993</sup>	50	14/09	ILL-DEFINED
	10	230920Z	21.8N	136.2E	56-P-05	972	75	9530 <sup>999</sup>	60	17/14	CIRC DIA 15 MI WALL CLD NE-NW
	11	232348Z	22.0N	135.3E	315-P-04	--	85	9680 <sup>984</sup>	80	15/-	CIRC DIA 40 MI
	12	240315Z	21.7N	136.7E	56-P-05	962	55	9460 <sup>976</sup>	55	15/-	EYE NOT DEFINED
	13	240830Z	21.8N	136.8E	56-P-05	966	75	9430 <sup>975</sup>	78	16/10	ELLIP NE/SSW 30X45
	14	242320Z	21.2N	137.0E	315-P-10	--	70	9260 <sup>969</sup>	55	---	WALL CLD N QUAD ONLY
	15	250745Z	22.1N	137.2E	56-P-25	969	65	9360 <sup>973</sup>	--	---	ELLIP NW/SE 40X20
	16	252140Z	23.1N	137.0E	56-P-05	966	75	9360 <sup>973</sup>	80	14/12	IRREGULAR 30 MI DIA
	17	260300Z	23.7N	136.4E	56-P-10	970	100	9330	--	14/12	ELLIP N/S 50X30
	18	260800Z	23.7N	136.3E	56-P-03	918	85	9320	75	15/11	EYE FILLED WITH CLDS

RECONNAISSANCE AIRCRAFT FIXES - TYPHOON DELLA (CONT'D)

FIX NO.	TIME	LAT.	LONG.	UNIT METHOD & ACCY	MIN	MAX	MIN	MAX	700MB	TT/Td (°C)	EYE CHARACTERISTICS
					SLP MBS	SFC WND	700MB HGT	700MB WND			
19	261600Z	25.2N	136.3E	VW1-R-05	- -	- -	- -	- -	- -	- -	19X4 ORIENTED 325° OPEN SE
20	262135Z	25.4N	135.7E	56-P-10	976	60	9210	- -	- -	13/13	EYE VERY DIFFUSED
21	270230Z	25.8N	135.0E	56-P-15	980	85	9210	78	14/12	EYE 75% FILLED WITH CLDS	
22	270800Z	26.9N	134.6E	56-P-05	970	95	9290	70	14/09	EYE NOT WELL DEFINED	
23	270630Z	26.6N	134.8E	VW1---01	- -	- -	- -	- -	- -	- -	CIRC DIA 20 MI
24	270830Z	27.0N	134.7E	VW1---01	- -	- -	- -	- -	- -	- -	- - - - -
25	271425Z	27.3N	134.1E	VW1-R-05	- -	- -	- -	- -	- -	- -	CIRC DIA 50 MI
26	272330Z	28.4N	134.0E	56-P-06	970	80	9240	70	16/16	16/16	CIRC DIA 40 MI OPEN N
II 16	27	280330Z	29.1N	133.3E	56-P-15	968	80	9290	80	15/14	NO WALL CLDS ON RADAR
	28	280914Z	29.7N	133.0E	56-P-05	970	75	9250	80	16/15	EYE DOUBLE & ELLIP
	29	281315Z	29.5N	134.1E	VW1-R-20	- -	- -	- -	- -	- -	CIRC DIA 58 MI
	30	282315Z	31.7N	134.0E	56-P-05	974	75	9580	85	17/17	ELLIP 10X25 MI
	31	282355Z	31.8N	133.1E	56-P-02	971	75	9170	80	16/16	CIRC DIA 12 MI
	32	290325Z	32.4N	133.8E	56-P-01	- -	90	9240	65	17/17	CIRC DIA 10 MI
	33	292230Z	40.1N	135.3E	315-P-02	- -	50	9530	- -	18/-	EYE NOT DEFINED

TYPHOON DELLA 17-31 AUGUST 1960  
POSITION AND FORECAST VERIFICATION DATA

DTG	STORM POSITION		24 HR. ERROR DEG. DISTANCE	48 HR. ERROR DEG. DISTANCE
	LAT.	LONG.		
170900Z	13.4N	153.8E	-----	-----
171200Z	13.5N	153.4E	-----	-----
171800Z	13.7N	152.7E	-----	-----
180000Z	14.0N	152.1E	-----	-----
180600Z	14.2N	151.3E	249-57	-----
181200Z	14.6N	150.5E	242-67	-----
181800Z	14.9N	149.7E	234-72	-----
190000Z	15.3N	148.9E	108-335	-----
190000Z TO 200600Z NO WARNINGS ISSUED				
200600Z	17.3N	144.8E	-----	-----
201200Z	17.7N	143.7E	-----	-----
201800Z	18.1N	142.6E	-----	-----
210000Z	18.4N	141.6E	-----	-----
210600Z	18.8N	140.5E	087-150	-----
211200Z	19.3N	139.4E	087-184	-----
211800Z	19.8N	138.7E	090-211	-----
220000Z	20.6N	138.2E	034-223	-----
220600Z	21.2N	138.1E	055-187	095-195
221200Z	21.7N	137.8E	031-218	095-193
221800Z	22.1N	137.4E	030-255	097-206
230000Z	22.1N	136.7E	290-66	022-384
230600Z	22.0N	136.3E	317-108	040-293
231200Z	21.6N	136.3E	321-168	024-400
231800Z	21.5N	136.4E	332-390	019-495
240000Z	21.5N	136.7E	333-486	307-340
240600Z	21.6N	136.9E	329-572	321-405
241200Z	21.6N	137.1E	292-180	331-528
241800Z	21.7N	137.3E	282-225	344-720
250000Z	21.8N	137.4E	279-262	341-819
250600Z	22.0N	137.5E	250-49	335-914
251200Z	22.4N	137.4E	248-48	281-313
251800Z	22.8N	137.1E	203-73	271-375
260000Z	23.2N	136.9E	188-90	267-345

TYPHOON DELIA 17-31 AUGUST 1960  
POSITION AND FORECAST VERIFICATION DATA (CONT'D)

DTG	STORM POSITION		24 HR. ERROR	48 HR. ERROR
	LAT.	LONG.	DEG. DISTANCE	DEG. DISTANCE
260600Z	23.7N	136.5E	161-181	174-122
261200Z	24.2N	136.1E	154-142	168-150
261800Z	24.9N	135.6E	145-203	163-195
270000Z	25.7N	135.2E	147-254	160-247
270600Z	26.6N	134.7E	119-122	153-395
271200Z	27.5N	134.3E	132-94	153-364
271800Z	28.1N	133.9E	066-200	150-417
280000Z	28.8N	133.6E	093-83	150-458
280600Z	29.4N	133.3E	088-55	095-190
281200Z	30.1N	133.0E	043-173	087-182
281800Z	30.9N	132.8E	140-66	079-402
290000Z	32.2N	133.0E	123-82	080-211
290600Z	33.8N	133.3E	190-81	100-201
291200Z	36.2N	133.5E	-----	-----
291800Z	38.4N	134.4E	-----	-----
300000Z	40.7N	135.7E	-----	-----
300600Z	43.3N	137.5E	-----	-----
301200Z	46.0N	139.5E	-----	-----
301800Z	48.8N	141.2E	-----	-----
310000Z	51.3N	142.0E	-----	-----

AVERAGE 24 HOUR ERROR 173 MI

AVERAGE 48 HOUR ERROR 361 MI

