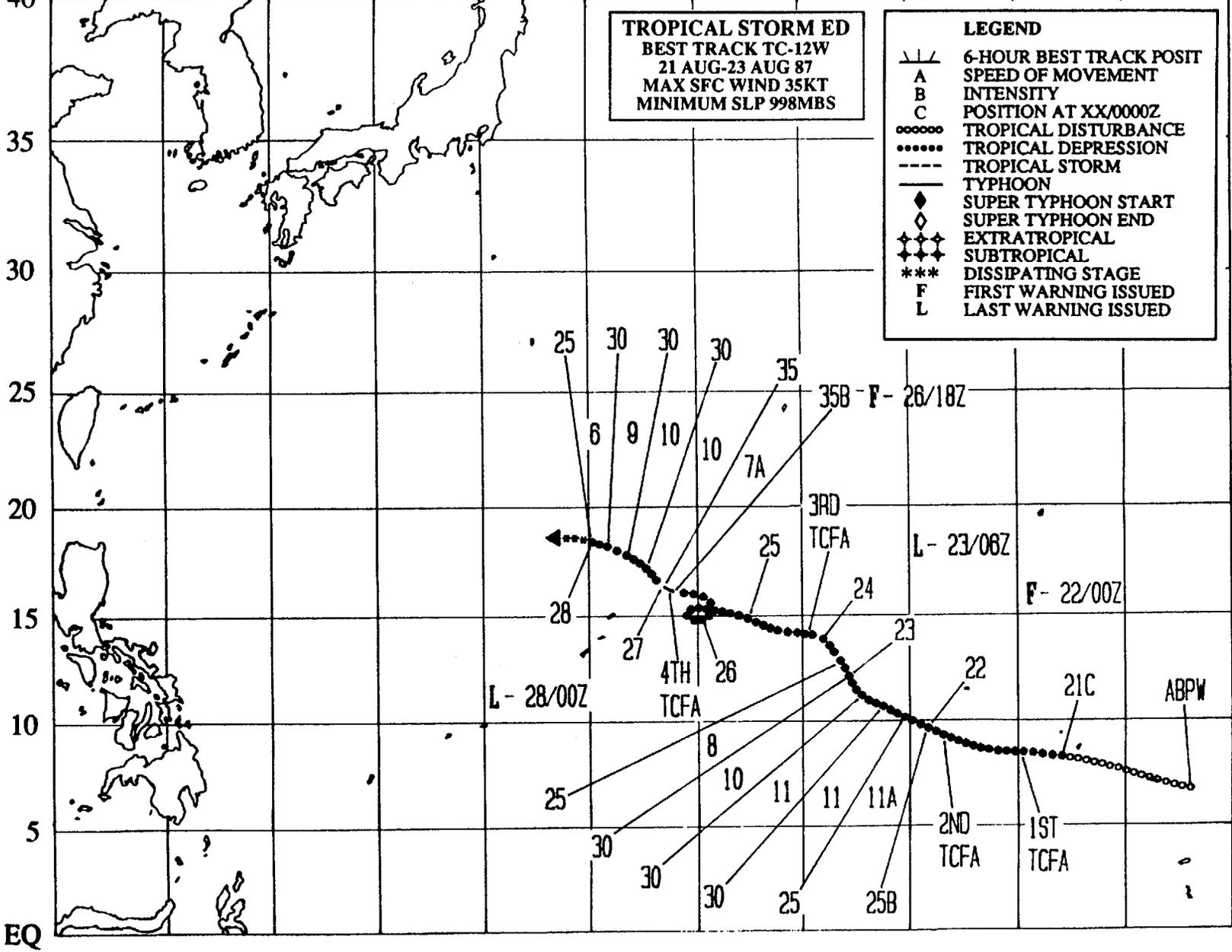


E 120 125 130 135 140 145 150 155 160 165 170 175 E  
 N 40

**TROPICAL STORM ED**  
**BEST TRACK TC-12W**  
**21 AUG-23 AUG 87**  
**MAX SFC WIND 35KT**  
**MINIMUM SLP 998MBS**

LEGEND	
—/—/—	6-HOUR BEST TRACK POSIT
A	SPEED OF MOVEMENT
B	INTENSITY
C	POSITION AT XX/0000Z
○○○○○	TROPICAL DISTURBANCE
●●●●●	TROPICAL DEPRESSION
-----	TROPICAL STORM
————	TYPHOON
◆	SUPER TYPHOON START
◇	SUPER TYPHOON END
◆◆◆◆	EXTRATROPICAL
◆◆◆◆	SUBTROPICAL
***	DISSIPATING STAGE
F	FIRST WARNING ISSUED
L	LAST WARNING ISSUED



## TROPICAL STORM ED (12W)

Tropical Storm Ed (12W) was the third of four significant tropical cyclones that occurred during the month of August. Ed was a difficult system for JTWC to locate and forecast because of its fluctuations in intensity, speed and track direction, and its poorly defined cloud signature.

Ed formed during the third week of August in the western North Pacific monsoon trough about 90 nm (167 km) east of the island of Majuro in the Marshalls. It was first detected as an area of persistent convection with a

coincident weak low-level cyclonic circulation. This suspect area appeared on the Significant Tropical Weather Advisory (ABPW PGTW) at 200600Z. For the next 24-hours, the disturbance moved rapidly at a speed of 17 to 23 kt (32 to 43 km/hr) toward the west-northwest. Improved upper-level outflow and increased central convection prompted the first Tropical Cyclone Formation Alert (TCFA) at 210600Z.

At 212130Z, a second TCFA was issued to supersede the first TCFA, since the disturbance was moving out of the original alert

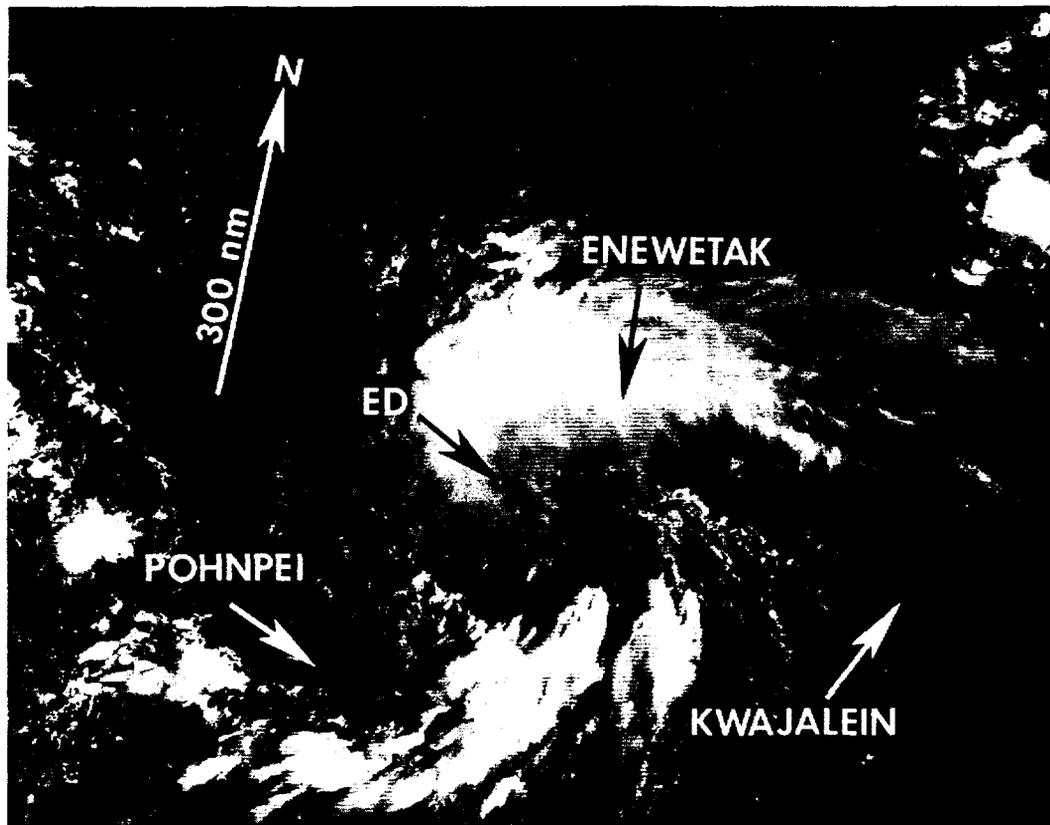


Figure 3-12-1. Formative stage of Tropical Storm Ed (212253Z August DMSP visual imagery).

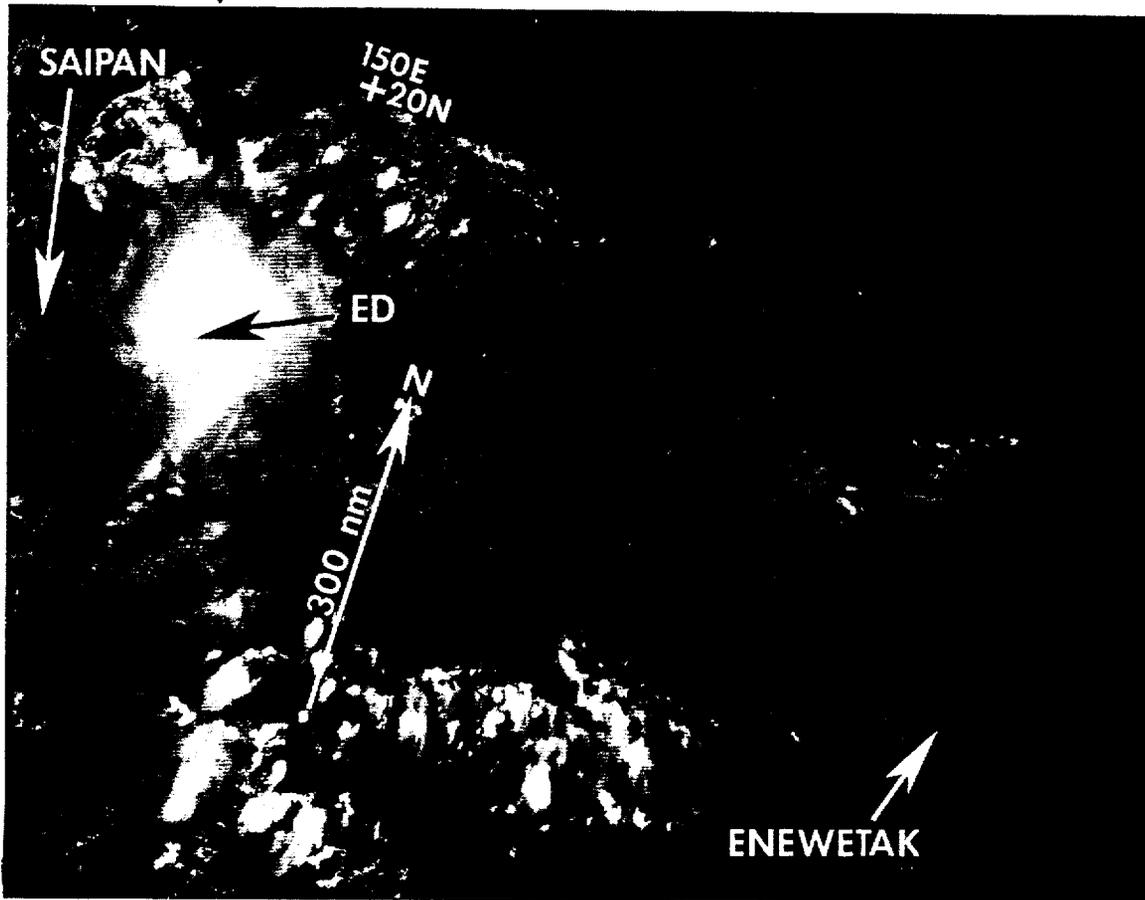


Figure 3-12-2. The regenerated Tropical Depression 12W shortly before it was upgraded once more to Tropical Storm Ed (262252Z August DMSP visual imagery).

area. The disturbance continued on a west-northwestward track at slightly lower speeds of 14 to 17 kt (26 to 32 km/hr).

Visual satellite imagery (Figure 3-12-1) showed tighter curvature of the convective cloud lines and increased cirrus outflow to the north. Also, drifting buoys in the area indicated surface wind speeds of 25 to 30 kt (13 to 15 m/sec). As a result, at 220000Z the second TCFA was upgraded to Tropical Depression 12W. Unexpectedly, thirty-hours later Tropical Depression 12W showed significantly decreased convection and system organization on satellite imagery. Consequently, a final warning was issued. The tropical disturbance was then placed on the ABPW PGTW and monitored for signs of future regeneration.

Ed did maintain its low-level identity even as Typhoon Dinah (11W), which was further to the west, was increasing the vertical shear aloft over it. Finally, a ragged central dense overcast persisted and the system's upper-level outflow redeveloped. The third TCFA followed at 240800Z. However, by 250600Z, the TCFA was cancelled when the upper-level outflow from Super Typhoon Dinah (11W), located to the west, increased its shearing effect on Ed which caused the convection to significantly decrease.

At 262030Z, a fourth TCFA was issued when cloudiness associated with the disturbance flared-up again. Satellite intensity analysis (Dvorak, 1984) estimated the intensity of the system at 35 kt (18 m/sec). This TCFA was

almost immediately upgraded as Tropical Depression 12W, with a valid time of 261800Z, based on the receipt of a new satellite picture, which indicated that the disturbance had been developing more rapidly than previously expected (see Figure 3-12-2).

The regenerated Tropical Depression 12W was further upgraded to tropical storm intensity at 270000Z. This upgrade was based on the Dvorak satellite intensity analysis at 261800Z, that indicated 35 kt (18 m/sec) sustained surface winds. In addition, at

270600Z, Tropical Storm Ed's position was relocated on the warning due to the formation of a 60 nm (111 km) diameter central dense overcast from a central cold cover. As a result, Ed's center location was moved 45 nm (83 km) farther north. Later, at 271200Z, Tropical Storm Ed (12W) was relocated a second time when satellite fixes revealed that the system had moved 75 nm (139 km) further north than previously forecast. When the central convection was finally stripped away from the low-level circulation, the last warning was issued at 280000Z (see Figure 3-12-3).

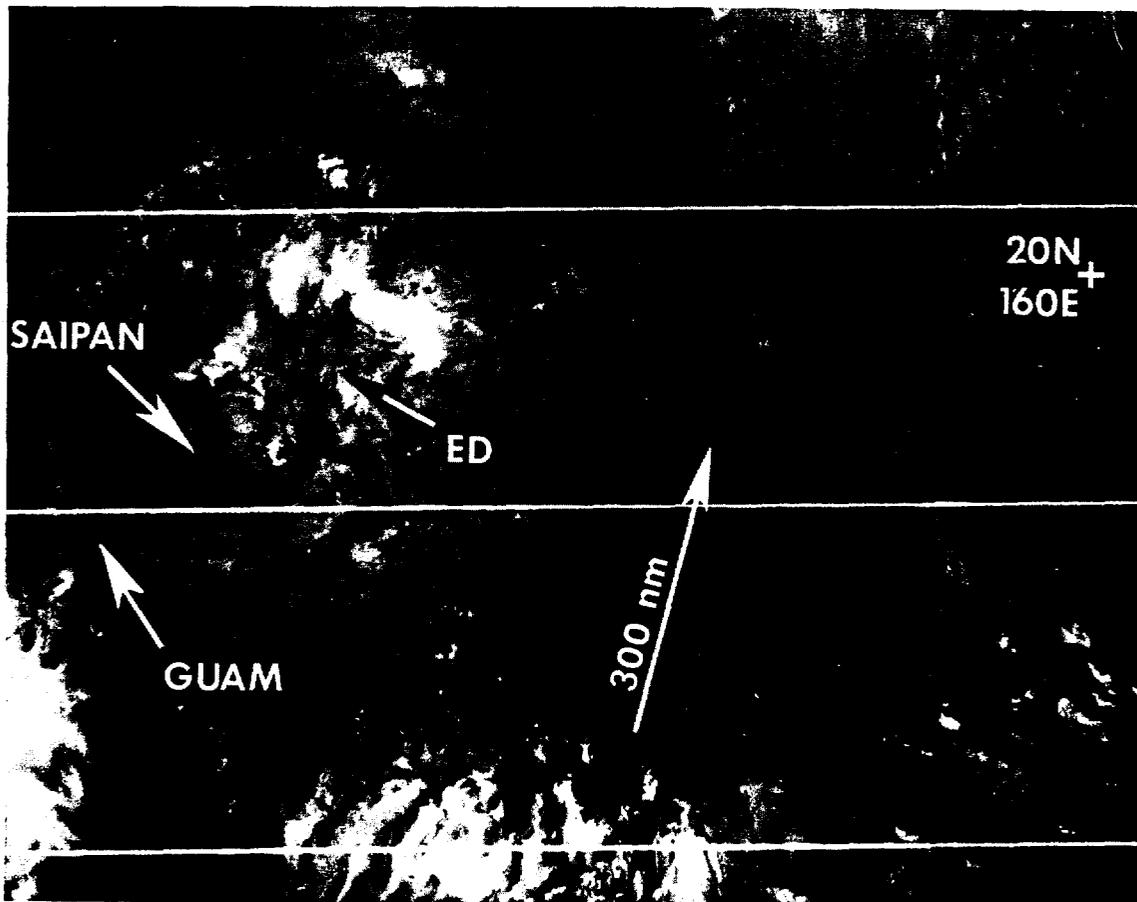


Figure 3-12-3. Tropical Storm Ed (12W) after the system had shed its central dense overcast (270445Z August NOAA visual imagery).