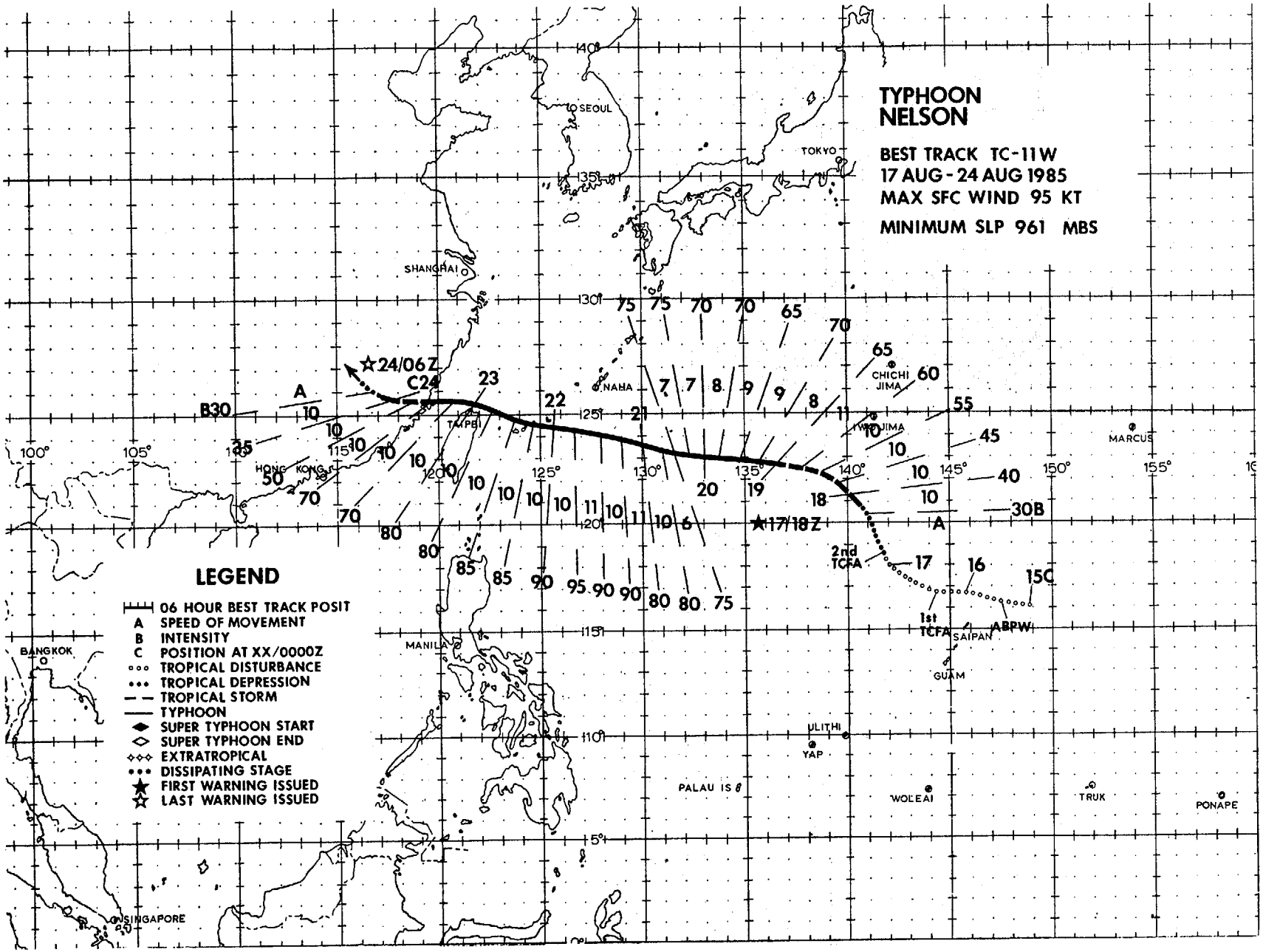
TYPHOON
NELSON
BEST TRACK TC-11W
17 AUG - 24 AUG 1985
MAX SFC WIND 95 KT
MINIMUM SLP 961 MBS
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED
24/06Z
17/18Z
1st TCFA
2nd TCFA
SEOUL
TOKYO
SHANGHAI
NAHA
TAIPEI
HONG KONG
MANILA
BANGKOK
SINGAPORE
CHICHI JIMA
IWO JIMA
MARCUS
SAIPAN
GUAM
ABPW
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE

Typhoon Nelson was the fourth of seven tropical cyclones that developed over the Northwest Pacific in August. It caused substantial damage and loss of life as it passed through the southern Ryukyu Islands, brushed by northern Taiwan and crossed into mainland China.

On 14 August Tropical Storm Lee was dissipating as it moved across North Korea and Typhoon Mamie was building near the southern Ryukyu Islands just east of Taiwan. The following day the disturbance that developed into Typhoon Nelson was first noticed as a small, but persistent, area of poorly organized convection 150 nm (278 km) east-northeast of the island of Saipan in the Marianas. The area was located in the near-equatorial trough where the convective cloudiness was enhanced by the divergent upper-level flow associated with an upper cold low in the tropical upper-tropospheric trough (TUTT). Synoptic data at 150000Z indicated that southwesterly gradient-level flow from the Philippine Sea was near the disturbance. These factors, plus the satellite imagery at 150300Z which showed a slight cyclonic curvature in the convection, prompted mention of the area on the 150600Z Significant Tropical Weather Advisory (ABPW PGTW).

During the next 24-four hours, satellite imagery revealed a marked increase in the amount of convection over the northeastern portion of the disturbance with another larger area of unorganized convection moving toward the disturbance from the west-southwest. By 160000Z, synoptic data indicated that the soutwesterly gradient flow had propagated eastward to the disturbance and an associated upper- level anticyclone had formed over the disturbance. A Tropical Cyclone Formation Alert (TCFA) followed at 160625Z.

Aircraft reconnaissance late on the sixteenth was unable to locate a surface circulation. However, the aircraft reconnaissance weather officer (ARWO) did report: a narrow low-level trough that was 200 nm (370 km) in extent and elongated northeast-southwest; three possible 1002 mb pressure centers; and maximum winds of 10-20 kt (5-10 m/s) to the north of the trough. The TCFA was reissued at 170555Z.

A dramatic increase in both the cyclonic curvature and amount of central convection occurred at 171600Z. The Dvorak intensity estimate of the system was 35 kt (18 m/s). This intensity estimate together with the continuing development of the system led to the first warning on Nelson at 171800Z. Aircraft reconnaissance at 172131Z confirmed this development, and more, when gale force surface winds were located north of a 989 mb low pressure center. Specifically, the flight revealed the 700 mb center was displaced 31 nm (57 km) to the northwest of the surface center and a band of 45 kt (23 m/s) low-level winds was located 90 nm (167 km) to the north-northwest.

Due to the uncertainty in the Fleet Numerical Oceanography Center (FNOC) mid-level wind fields in the data sparse region south of Japan, a 400 mb synoptic track mission was flown early on the 18th to better define the mid-level steering flow north of Nelson. Data from this flight confirmed that the ridge extended westward over Nelson and indicated forecasts for an "under the ridge" scenario were appropriate. This forecast scenario proved to be correct.

Further intensification occurred as Nelson assumed a more west-northwesterly track. At 190000Z, Nelson was upgraded to a typhoon after aircraft reconnaissance indicated the system had a 5 nm (9 km) diameter light/variable wind center with a 979 mb MSLP and 65 kt (33 m/s) maximum surface winds displaced 40-120 nm (74-220 km) northwest of the center. Almost three days later, at 211800Z, Nelson reached a peak intensity of 95 kt (49 m/s) with a MSLP of 961 mb (see Figure 3-11-1).

Nelson passed between the Ryukyu Islands of Yaeyama and Miyako early on 22 August and continued moving west-northwestward under the ridge. Early on 23 August (Figure 3-11-2), the typhoon skirted northern Taiwan passing within 25 nm (46 km) of Taipei(WMO 58968). The tropical cyclone quickly transited the Formosa Straits and made landfall 40 nm (74 km) southwest of Fuchou (WMO 58847) in China's Fuchien province at 241400Z.

In retrospect Nelson's passage between Yaeyama and Miyako Islands resulted in more than 1.5 million dollars in damage to banana and sugar cane crops. As Nelson skirted northern Taiwan, four people were reported killed from the associated winds and torrential rains. At landfall in China's Fuchien province, another forty-eight people perished, with an additional 329 reported injured, more than 5,000 homes destroyed, 969 fishing boats sunk and about 178,500 acres of crops lost.

After Nelson dissipated, an additional three days of heavy rains associated with the remains of the system affected many areas of eastern China. At least 147 people were killed and more than 30,000 persons were driven from their homes by flooding in Hunan province further inland. Later, Shanghai reported 50,000 homes with flood damage resulting from these heavy rains inland.

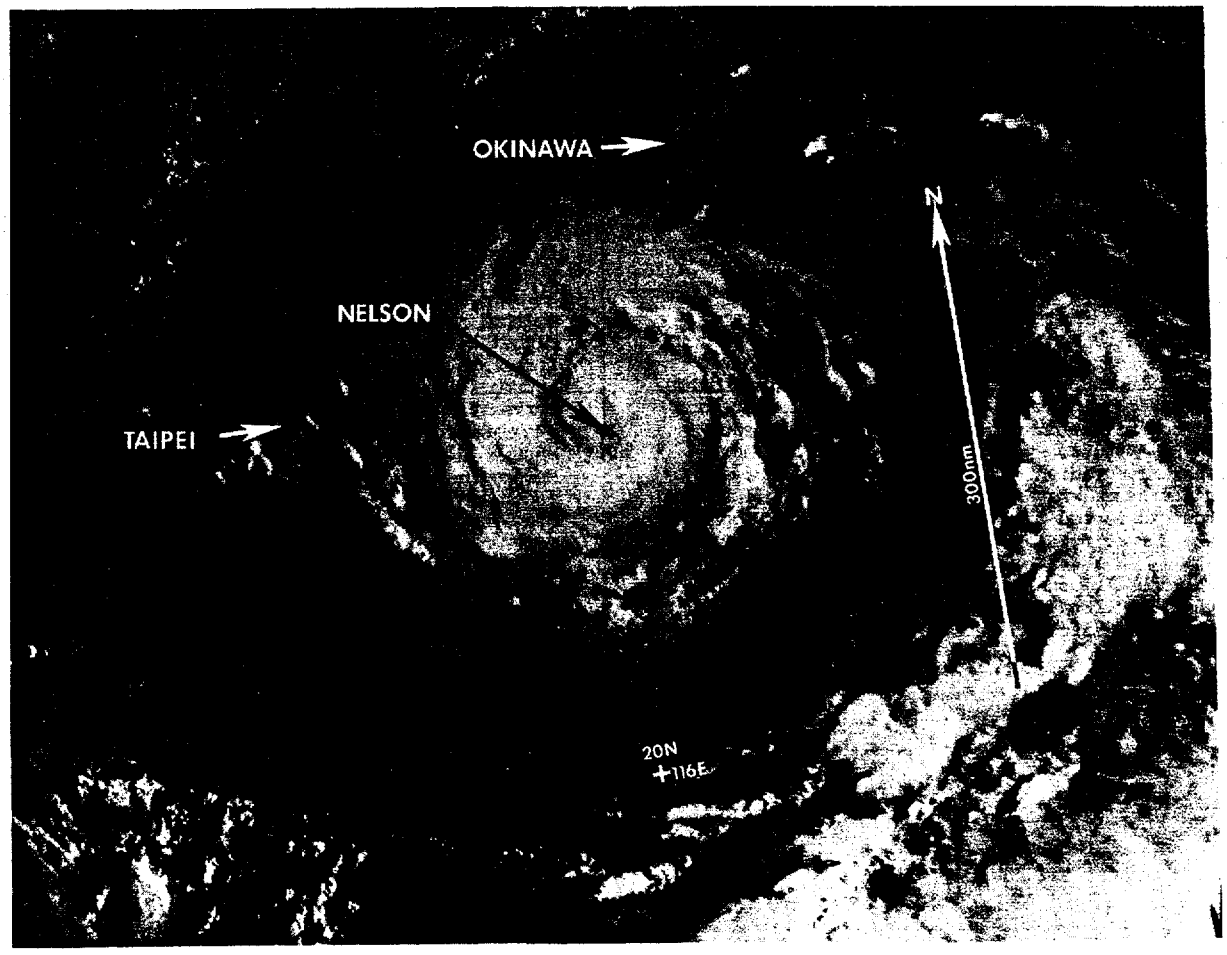

Figure 3-11-1. Typhoon Nelson near maximum intensity (212355Z August NOAA visual imagery).

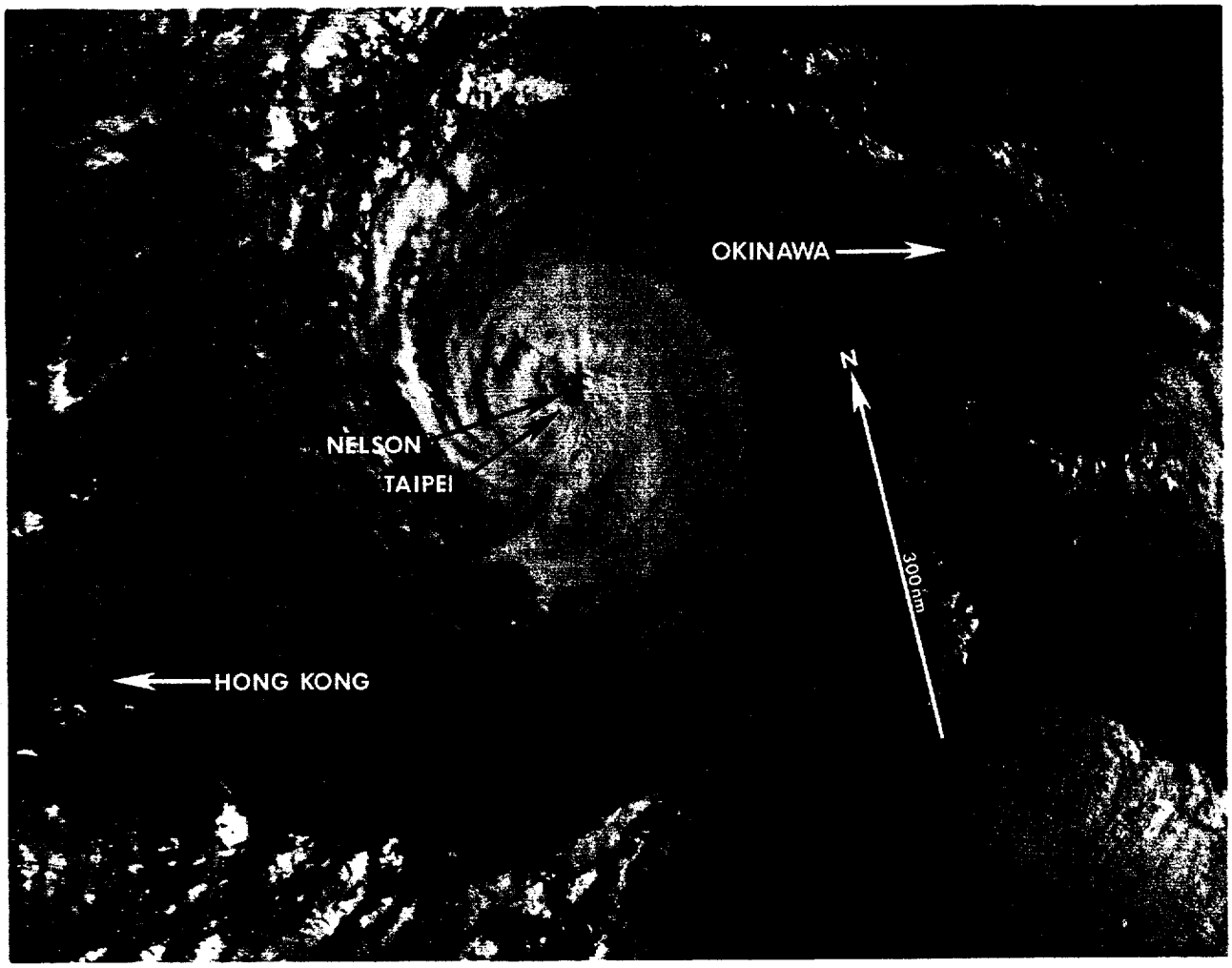

Figure 3-11-2. Nelson skirting the island of Taiwan (222334Z August NOAA visual imagery).