

TYPHOON NANCY (05W)

For the first five months of 1986, the western North Pacific averaged less than one tropical cyclone per month. Nancy was the fifth tropical cyclone in the western North Pacific, but the first of the what is generally considered the summer typhoon season. After Typhoon Nancy, the summer season was in full swing.

The Significant Tropical Weather Advisory (ABPW PGTW) on 170600Z June mentioned an area of broad, disorganized convection which was developing 120 nm (222 km) southeast of Pohnpei. This area moved rapidly westward for the next two days, then slowed and began to consolidate. By 191200Z, an established cirrus outflow pattern, restricted to the northwest by an upper-level cold low 540 nm (1000 km) northwest of Guam, was detected on satellite imagery. Initial Dvorak intensity analysis of the cloud pattern estimated surface winds of less than 25 kt (13 m/sec). At 210330Z, a Tropical Cyclone Formation Alert (TCFA) was issued for the area. Within hours the convective curvature improved and the 211600Z

Dvorak intensity estimate indicated winds of 30 kt (15 m/sec). Based on these data, the first warning for Tropical Depression 05W was issued at 211800Z.

Aircraft reconnaissance into Tropical Depression 05W at 220001Z reported maximum surface winds of 60 kt (31 m/sec) displaced 21 nm (39 km) east-southeast of the center of the system. Aircraft reconnaissance also observed a developing eyewall that was open on the west through north quadrants. As a result, the 220000Z warning upgraded Tropical Depression 05W to Tropical Storm Nancy. Less than 24-hours after the upgrading to tropical storm intensity, Nancy was upgraded to typhoon intensity. In retrospect, analyses of aircraft reconnaissance data and intensity trends indicate that tropical storm intensity was most probably attained at 211500Z, not 220000Z.

Throughout this period of development, Nancy (Figure 3-05-1) moved toward the northwest under the steering influence of the subtropical ridge to the north. Nearing the subtropical ridge axis on 23

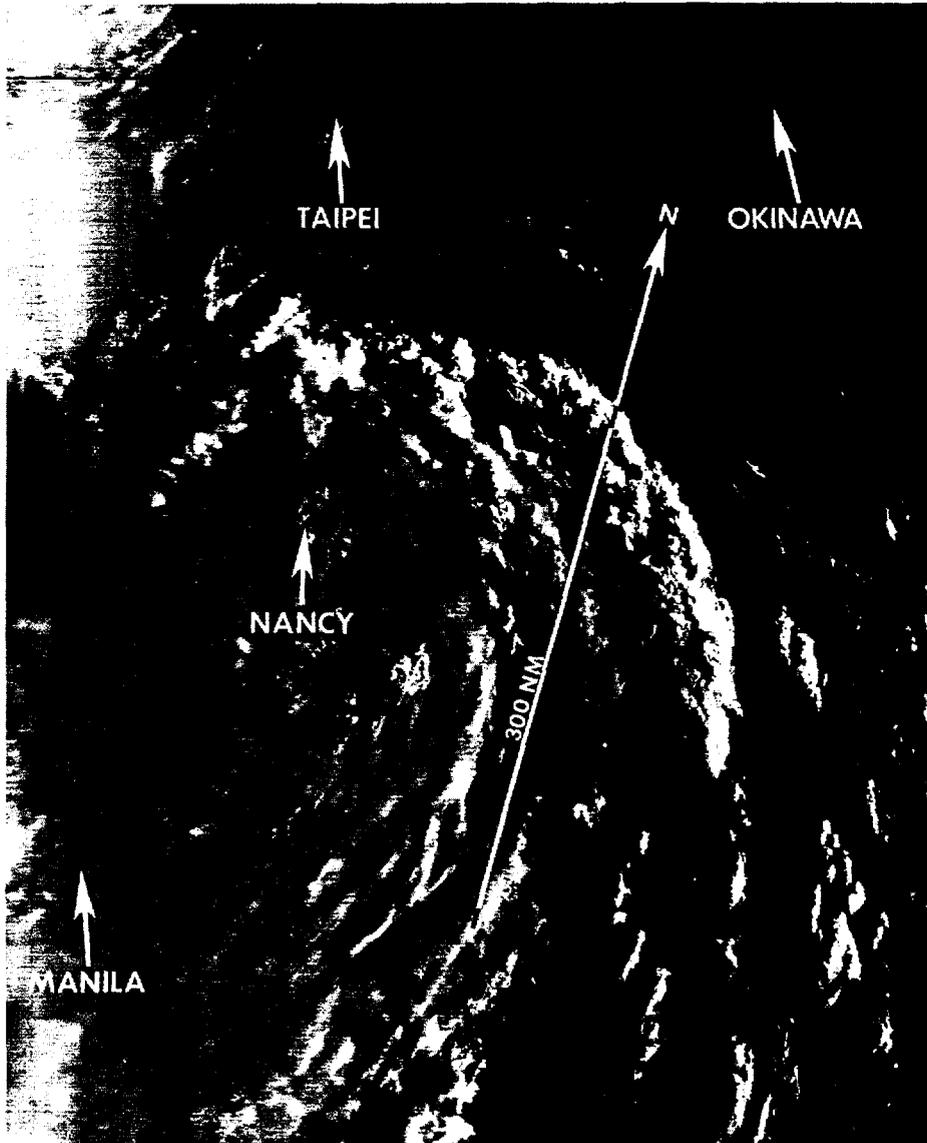


Figure 3-05-1. Typhoon Nancy approaching the island of Taiwan. The mountainous spine of the island is visible to the north of the tropical cyclone (222115Z June DMSP visual imagery).

June, the tropical cyclone assumed a more northerly course. For the next 24-hours aircraft reconnaissance data was unavailable due to the close proximity of land and airspace restrictions. Radar (Figure 3-05-2) and satellite (Figure 3-05-3) reports were particularly valuable during this time. These two figures, which were taken within one half hour of each other, provide strikingly different remotely sensed presentations of the eye. The radar detects the encircling rainbands, that are embedded in the clouds, and satellite sees the cold top of the central dense overcast as concentric patterns of gray shade. Just prior to making contact with the island

of Taiwan, Nancy's intensity peaked at 80 kt (41 m/sec). The maximum surface wind reported from Taiwan was 63 kt (32 m/sec).

Continuing to move northward across the East China Sea, Nancy began interacting with a trough in the polar westerlies. The shape of the tropical cyclone became elongated as the low-level circulation center separated from the upper-level and the central convection decreased. At that time, Typhoon Nancy was downgraded to a tropical storm.

Later, aircraft reconnaissance at 242141Z was unable to locate a low-level circulation center due to airspace restrictions; however the peripheral data



Figure 3-05-2. The eye of Typhoon Nancy as seen by radar from Hualien, Taiwan (WMO 46699) at 231400Z June (Photograph courtesy of Central Weather Bureau, Taipei, Taiwan).

proved most valuable and indicated the low-level center was displaced at least 60 nm (111 km) northwest of the 241800Z warning position. This warning position had been extrapolated from the previous warning. Unfortunately, the 241200Z warning was based on a low confidence nighttime position from infrared satellite imagery that was suspect, since Nancy was undergoing extratropical transition. The amended 241800Z warning, which followed immediately and was based on aircraft reconnaissance data, correctly forecast Nancy's movement through the Korea Straits instead of over the island of Kyushu, Japan. By that time increased vertical wind shear

and entrained cooler, drier air had taken their toll on the tropical cyclone. Nancy continued to move rapidly northeastward through the Korea Strait and maintained the strongest low-level winds in the southeast semicircle. Southern Korea received torrential rains, which inundated 22,477 acres (9100 hectares) of farmland. Twelve people were reported dead or missing, as a result of the flooding.

Satellite analysis early on 25 June indicated extratropical transition had occurred in the Sea of Japan. The system was finalled on the 250600Z warning as the residual low pressure area swept eastward across northern Honshu 12-hours later.



*Figure 3-05-3. Specially enhanced infrared image of Typhoon Nancy's eye. The gray shading, which is used in conjunction with the Dvorak enhanced infrared technique, can provide an estimate of the intensity of the tropical cyclone (231428Z June DMSP infrared imagery).*