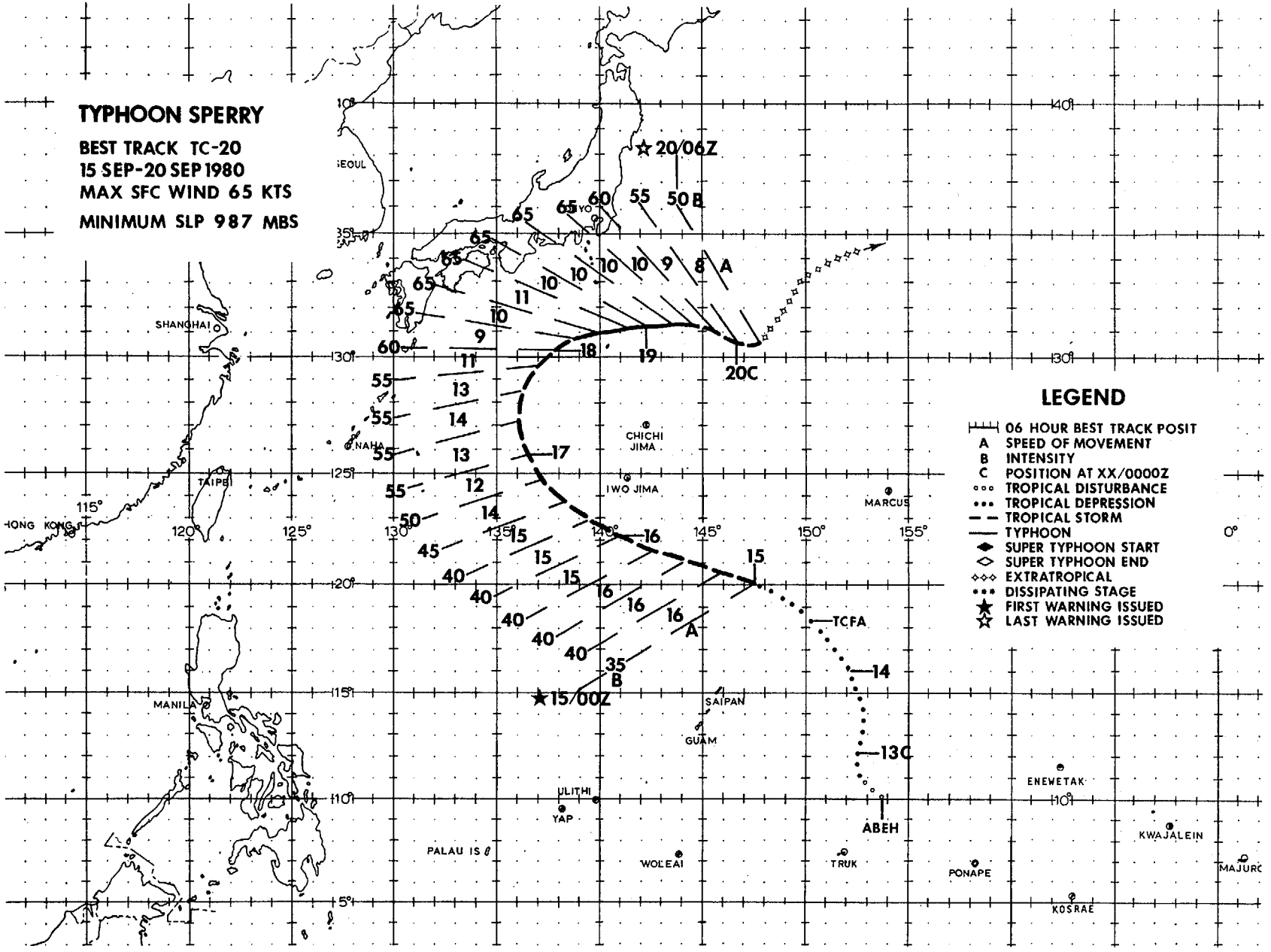
TYPHOON SPERRY
BEST TRACK TC-20
15 SEP-20 SEP 1980
MAX SFC WIND 65 KTS
MINIMUM SLP 987 MBS
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED
20/06Z
15/00Z
TCFA
20C
13C
ABEH
SHANGHAI
NAHA
TAIPEI
HONG KONG
MANILA
CHICHI JIMA
IWO JIMA
MARCUS
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE
ENEWETAK
KWAJALEIN
KOSRAE

Typhoon Sperry developed in the monsoon trough east-southeast of Guam. The disturbance was first reported in the Significant Tropical Weather Advisory (ABEH PGTW) on 12 September as an area of showers and thundershowers. Sparse synoptic data did not indicate that a surface circulation existed at that time. However, the upper-air pattern was favorable for continued development. Sperry developed slowly and was described in the ABEH PGTW on 14 September as a large surface circulation with little organized convection. A well-defined upper-level anticyclone, which provided a good outflow mechanism for continued development, existed over Sperry.

The initial warning for Tropical Depression 20 was issued at 150000Z. Post-analysis indicates that Sperry had actually attained tropical storm strength of 35 kt (18 m/sec) by that time. The 141200Z 500 mb analysis (Fig. 3-20-1) and the 72-hour numerical forecast series (see Fig. 3-20-2) suggested that a straight forecast track toward Kyushu, Japan was most likely because the forecast series built the subtropical ridge northwestward toward Japan. Thus, on the initial warning, Sperry was forecast to track along the southern periphery of the 500 mb subtropical ridge. An early recurvature track was not considered likely due to the forecast intensification of the subtropical ridge.

By 160000Z, it was evident that the subtropical ridge was not building as forecast. Southerly steering flow was evident south and east of Japan. Sperry was being steered by the mid-level southeasterly flow and was ex-

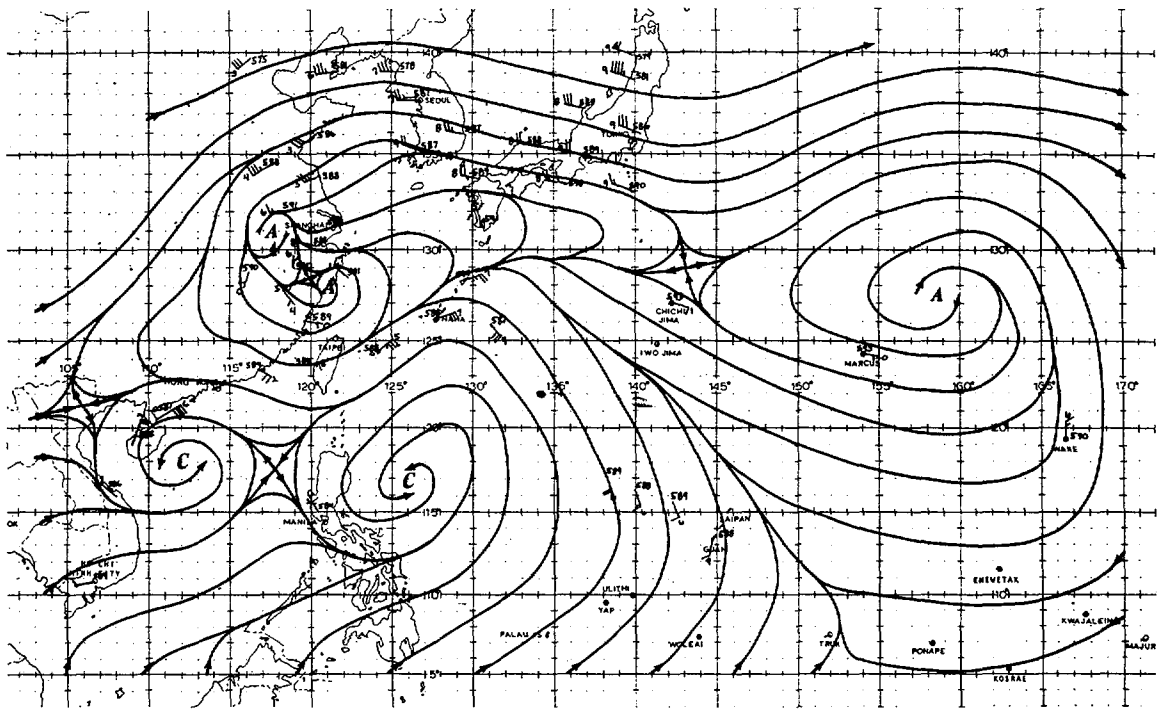

FIGURE 3-20-1. The 141200Z September 1980 500 mb streamline analysis. Wind speeds are in knots.

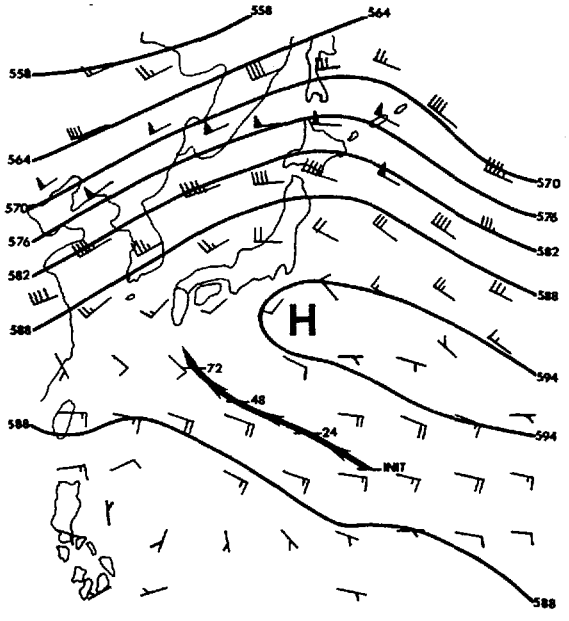

FIGURE 3-20-2. The 48 hour 500 mb numerical forecast chart based on the 141200Z September 1980 computer analysis. JTWC's 150000Z September forecast track for Sperry is also indicated, from initial position to the 72 hour forecast position.

pected to continue to follow a north-northwestward track until he moved north of the ridge axis. Then strong mid-level westerlies were expected to dominate. Therefore, a recurvature track and a weakening tendency over Japan was forecast. This change to a recurvature track was supported by the 161200Z 500 mb analysis (Fig. 3-20-3) and the 72-hour numerical forecast series (see Fig. 3-20-4). Sperry did, in fact, recurve, but significantly south of Japan as the subtropical ridge retreated to the southeast. This discussion of the forecast tracks for Sperry illustrates the difficulties that JTWC encounters both in analyzing the axis of the subtropical ridge in data sparse regions and interpreting the guidance from numerical forecasts for the same region.

As Sperry began to recurve on the 17th, the estimated maximum surface wind speeds were consistently higher than supported by the maximum wind/minimum sea-level pressure (MSLP) relationship of Atkinson and Holliday (1977). Maximum winds of 65 kt (33 m/sec) and MSLPs of 992 mb were observed by aircraft reconnaissance. A MSLP of 992 mb corresponds to a maximum wind of 45 kt (see Fig. 3-05-2). These stronger winds were probably due to an increased pressure gradient resulting from the higher environmental pressures at subtropical latitudes.

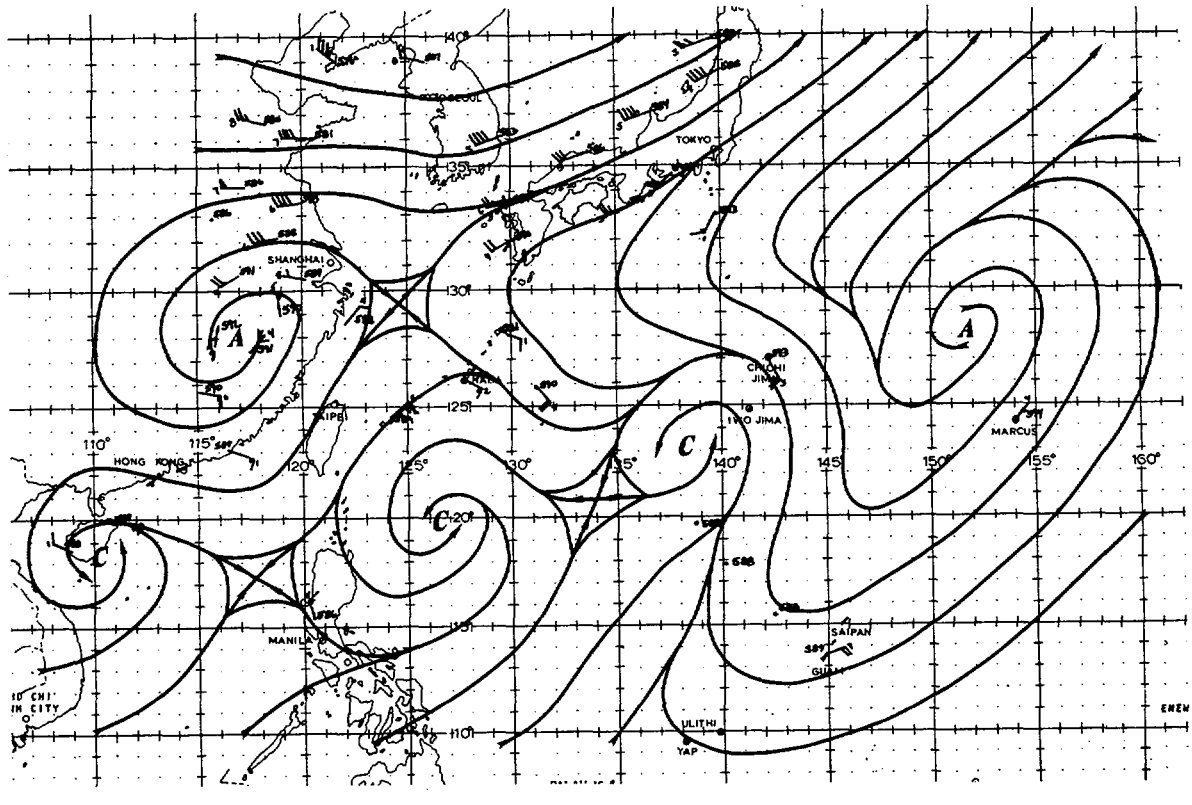

FIGURE 3-20-3. The 161200Z September 1980 500 mb streamline analysis. Wind speeds are in knots.

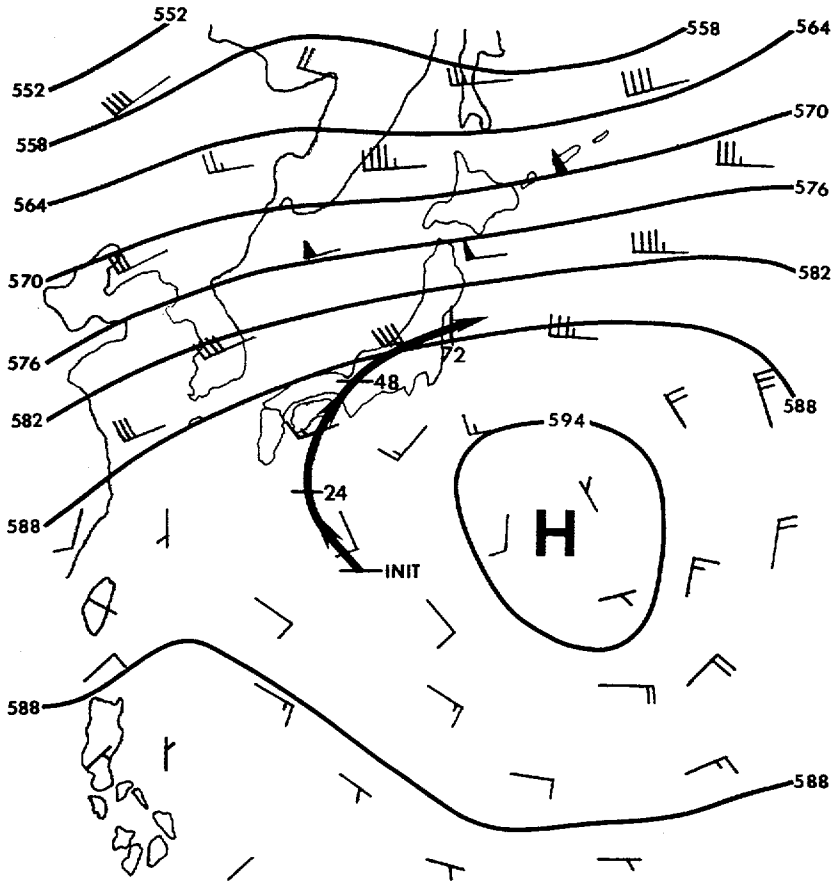

FIGURE 3-20-4. The 48 hour 500 mb numerical forecast chart based on the 161200Z September computer analysis. JTWC's 170000Z September forecast track for Sperry is also indicated, from initial position to the 72 hour forecast position.

Sperry did not begin to weaken significantly until the 19th because his eastward movement kept him over warmer water for a longer period of time and also kept him south of the strong mid- to upper-level westerlies which would have weakened him due to strong vertical wind shear.