Australian Government
Bureau of Meteorology

Severe Tropical Cyclone *Dean*

28 January – 3 February 1980

Perth Tropical Cyclone Warning Centre
Bureau of Meteorology

A. Summary

A low that formed off the Top End on 27 January moved to the west southwest and developed, reaching cyclone intensity on 28 January. On 31 January *Dean* began to track to the south southeast crossing the Pilbara coast about 50 km east of Port Hedland as an intense cyclone on the morning of 1 February. This followed the crossing of Severe TC *Amy* east of Port Hedland just three weeks earlier.

Two men were lost overboard from a Taiwanese fishing boat west of Broome. Extensive damage resulted at Port Hedland, while Goldsworthy, Marble Bar and Mt Newman all suffered wind damage. Flooding between Port Hedland and Mt Newman caused damage to the roads and the railway line. Total damage and industrial losses due to *Dean* were estimated to be about $20 million.

B. Meteorological Description

Dean was the third Australian region tropical cyclone to develop between 19 and 28 January in a persistent monsoonal low pressure trough that extended from northern Australia westward across the Indian Ocean to about longitude 50°E.

A fourth-tropical cyclone (*Hyacinthe*) formed in the Mauritius Region at the western end of this very extensive trough on 23 January. The pre-cyclone cloud cluster and associated surface low formed near Bathurst Island late on 26 January and moved slowly westward. The tropical depression intensified rapidly and was estimated to have reached tropical cyclone intensity early on 28 January.

The rate of intensification slowed during the next 36 hours as *Dean* moved to the west southwest at about 20 km/h. Late on 30 January the speed of movement decreased markedly as the system turned towards the south in response to a northerly flow ahead of a mid-tropospheric trough approaching from the west. *Dean* continued to strengthen as it accelerated towards the coast and reached peak intensity at about 2100 UTC 31 January when the central pressure was estimated to be near 930 hPa with maximum sustained winds of about 200 km/h.

Dean was near peak intensity when it crossed the coast about 48 km east of Port Hedland at about 0120 UTC on 1 February. The anemograph record from Port Hedland Meteorological Office indicates that a maximum ten-minute mean wind speed of 130 km/h with gusts reaching 195 km/h occurred shortly after the cyclone made landfall. The minimum MSL (mean sea level) pressure recorded there was 963

hPa at 0200 UTC 1 February. *Dean* moved to the south-southeast at an average speed of 25 km/h for 12 hours after crossing the coast before slowing down to about half that speed and tracking towards the southeast. A feature of the storm was its slow rate of decay over land.

C. Impact

Extensive damage resulted at Port Hedland. The towns of Goldsworthy, Marble Bar and Mt Newman all suffered wind damage but not to the same extent as Port Hedland. Many of the pastoral stations up to 500 km from the coast were considerably damaged. Non-industrial insurance claims for damage were estimated to total $2.2 million.

Two men were lost overboard from a Taiwanese fishing boat (Hsin Ho Chung 101) about 330 km west of Broome early on 1 February. Wave action caused damage to solar salt manufacturing ponds near Port Hedland, with estimated losses of $12 million. A prawn fishing boat was sunk in Port Hedland harbour.

Flooding between Port Hedland and Mt Newman caused damage to the roads and the railway line. Damage estimates at Mt Newman and along the railway line were of the order of $1.6 million. Total damage and industrial losses due to *Dean* were estimated to be about $20 million.

D. Observations

Port Hedland recorded:
maximum ten-minute mean wind speed of 130 km/h;
maximum wind gust of 195 km/h; and
a minimum MSL (mean sea level) pressure of 963 hPa at 0200 UTC 1 February.

Wind speed recordings near Mt Newman indicated maximum sustained wind speeds near 110 km/h at 1900 UTC on 1 February.

Table 1. Best track summary for Tropical Cyclone *Dean* 27 January 4 March.
Note: Add 8 hours to convert to WST. Refer to best track database for complete track details.

Year	Month	Day	Hour	Latitude	Longitude	Max Wind Knots	Central Pressure hPa	Radius of Gales nm
1980	1	27	0000	10.5	129.4		1005	
1980	1	27	0600	10.8	129.2		1002	
1980	1	27	1200	11.0	129.0		1000	
1980	1	27	1800	11.2	128.8		997	
1980	1	28	0000	11.4	128.4		994	
1980	1	28	0600	11.5	127.6		992	
1980	1	28	1200	11.5	126.2		990	
1980	1	28	1800	11.7	124.6		988	
1980	1	29	0000	11.9	123.2		986	
1980	1	29	0600	12.3	121.1		984	
1980	1	29	1200	12.7	120.8		982	
1980	1	29	1800	13.1	119.9		980	
1980	1	30	0000	13.5	119.0		978	
1980	1	30	0600	14.1	118.0		975	
1980	1	30	1200	14.8	117.2		972	
1980	1	30	1500	15.2	117.0		970	
1980	1	30	1800	15.6	117.0		968	
1980	1	31	0000	15.9	117.1		964	
1980	1	31	0600	16.6	117.4		958	
1980	1	31	1200	17.7	117.9		950	
1980	1	31	1800	18.7	118.4		942	
1980	2	1	0000	19.9	118.9		930	
1980	2	1	0600	21.4	119.3		955	
1980	2	1	1200	22.5	119.5		974	
1980	2	1	1800	23.2	120.1		980	
1980	2	2	0000	23.7	120.6		985	
1980	2	2	0600	24.0	121.0		989	
1980	2	2	1200	24.2	121.4		991	
1980	2	2	1800	24.4	121.8		993	
1980	2	3	0001	24.6	122.3		995	
1980	2	3	0600	24.8	123.1		996	
1980	2	3	1200	25.0	124.3		997	
1980	2	3	1800	24.9	125.7		998	
1980	2	4	0000	24.3	126.2		999	

Figure 1. Track of Severe Tropical Cyclone *Dean*, 27 January – 4 February 1980.
All times in WST.