TROPICAL DEPRESSIONS IN THE NORTH WESTERN
AUSTRALIAN REGION DURING THE 1958-1959 SEASON

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Abstract: During the 1958-1959 season there were seven depressions detected over the North Western Australian region, of which only one failed to reach cyclone intensity. The depressions are classified into three types according to the diameter of the area affected by gale force winds. The depressions are listed and catalogued. The season is briefly discussed as a whole and finally each depression is discussed in detail under the headings of development, track, rainfall, winds, seas and damage.

1. CLASSIFICATION

Following Newman, Martin and Wilkie (1956), the depressions are classified into three types according to the diameter of the area affected by gale force winds, while the centre was north of latitude 28°S as follows:

Type A: Tropical depressions with reported or estimated winds less than 34 knots.

Type B: Tropical depressions with wind speeds greater than 34 knots but with gale force winds not extending more than 100 miles from the centre.

Type C: Tropical depressions with wind speeds greater than 34 knots and with gale force winds extending more than 100 miles from the centre.
Identification List of Tropical Depressions, 1958-1959 Season

<table>
<thead>
<tr>
<th>Sequence No.</th>
<th>Type</th>
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<th>Area</th>
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<tbody>
<tr>
<td>1</td>
<td>C</td>
<td>17th-23rd November 1958</td>
<td>Cocos Is. region</td>
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<tr>
<td>2</td>
<td>C</td>
<td>30th December 1958 - 6th January 1959</td>
<td>Christmas Is. - Cocos Is. region</td>
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<tr>
<td>3</td>
<td>C</td>
<td>4th-12th January 1959</td>
<td>Timor Sea, Kimberleys, Northern Territory</td>
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<tr>
<td>4</td>
<td>A</td>
<td>8th-12th February 1959</td>
<td>Cocos Is. region</td>
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<td>5</td>
<td>C</td>
<td>5th-12th March 1959</td>
<td>East Indian Ocean</td>
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<tr>
<td>6</td>
<td>B</td>
<td>16th-24th March 1959</td>
<td>Off North West Coast</td>
</tr>
<tr>
<td>7</td>
<td>C</td>
<td>2nd-11th April 1959</td>
<td>Arafura Sea, Kimberleys, North West Coast</td>
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</tbody>
</table>

Each depression is discussed under the headings of development, track, rainfall, winds, seas and damage. Tracks are drawn for each depression (see Figs. 1 and 2) and points on the track are given in the code form PPTYGG and catalogue identification in the following code form MNTY Y Y Y Y M (QL L L L ..............), as used by Newman and Bath (1959). The code symbols have the following interpretation:

PP = Central pressure in tens and units of millibars.
YY = Date, Greenwich.
GG = Greenwich mean time.
NN = Sequence number of the depression.
T  = Type of depression (A, B or C).
Y Y = Year in tens and units.
\(Y_1Y_1\) = Greenwich date of first location.

\(Y_2Y_2\) = Greenwich date of last location.

\(M_0\) = Month of \(Y_2Y_2\) (January to October, 1 to 0; November and December, 1 and 2 with 50 added to \(Y_2Y_2\)).

QLLLL\_a\_a\_a\_o\_o = Octant of globe (International code 7); latitude and longitude in degrees, tens and units.

Catalogue Identification of Depressions - 1958-1959

01058 17731 (70999 71691 71890 72293)

02059 30061 (71308 71407 71204 71300 71397 71503 71406 71508)

03059 04121 (71323 71526 71728 71526 71628 71733 71736)

04459 08122 (71096 71497 71599 71202 71399 71397)

05059 05113 (71308 71706 71903 71901 72101 72302 73109 73519)

06859 16243 (71407 71405 71812 71515 71213 72110 72304 71900

07058 02114 (71035 71032 71130 71430 71528 71428 71529 71628

\(71625 71523 71520 71718 72016\))

2. THE 1958-1959 CYCLONE SEASON

The first depression was detected in mid-November and the last in early April. Only one of the seven detected in the season failed to reach cyclone intensity and this was 4A which originated near Cocos Island and was relatively short lived. Of the others, one originated northeast of Cocos Island, three southeast of Christmas Island, one in the Timor Sea and one in the Arafura Sea. The last two were the only ones to affect the mainland and brought heavy rain to the Kimberley divisions and the Northern Territory. One of these, 3C, was remarkable for its long term of existence, particularly as the major part of its track was over land. This depression originated in the Timor Sea, moved over the North and East Kimberleys, where it slowly retraced its path for about 150 miles and then reversed direction again and moved into the Northern Territory.
Subsequently it passed into Queensland and the Gulf of Carpentaria and finally crossed the east coast and dissipated about 2½ weeks after its birth in the Timor Sea.

Depressions 1C and 5C showed a simple recurvature from southwest to southeast. The latter was the only centre of the season to move south of latitude 25°S and in its dying stages appeared to be associated with the development of an extra-tropical depression near Albany.

Depression 2C moved first westward, then reversed direction and dissolved close to its area of origin. 3C was an eastward moving cyclone and 7C moved southwest. 6B exhibited a variable path, but its movement as a mature cyclone was generally southward.

3. CONCLUSIONS

Most of the depressions of the season were over the ocean where upper air data were sparse, certainly not sufficient to enable the drawing of upper level contours or streamlines. However, from examination of those depressions which passed near Cocos Island, there is evidence to suggest that the wind flow at 300 to 250 mb exerted a steering control over the movement of the centres. When moving into higher latitudes, the distribution and intensity of the sub-tropical pressure systems markedly influenced the subsequent movement of the centres.

When temperature soundings were available, the development of instability in the lower layers was an indication of conditions favourable to cyclone development.

In one case (6B) there was slight evidence to suggest that an area of relatively warm sea surface temperature (over 82°F) can cause the intensification of a low pressure centre moving through the area.

The value of ships' reports was greatly emphasised by examination of the log of the "Strathnaver" when it later returned to Fremantle. This ship failed to send reports even though passing very close to the eye of a cyclone - indeed close enough to observe its structure and dimensions by radar. If these reports had been available at the time, they would have been of immense value in plotting the cyclone and in the issue of more accurate warnings to other shipping in the area.
Reports of heavy swell at Christmas Island and a North West Cape, approximately 3½ days and 20 hours, respectively, prior to the eventual detection of cyclone 6B, indicated the value of coastal and island reports even some hundreds of miles from the centre, when ships' reports are lacking. Any deviations of swell from the normal, when not explicable by systems already identified, should be treated as fairly reliable evidence of a disturbance in the area.

REFERENCES


APPENDIX

Depression 10, Type C, 17th–23rd November 1958

Cocos Island Area

01058 17731 (70999 71691 71890 72293)

Development:

This depression developed in an easterly wave north northeast of Cocos Island. Preceding the identification of a closed circulation were (i) falling pressures at Cocos Island, (ii) the development of an extensive sheet of cirrostratus over the area, (iii) increasing instability in the lower levels, indicated by the disappearance of the trade-wind inversion from the Cocos Island temperature sounding at 0000 GMT on the 16th, and the development of showers at Cocos on the morning of the 17th, when the temperature sounding showed very moist air from the surface to 300 mb at the saturated adiabatic lapse rate.

With freshening winds and rising seas reported at Cocos Island during the 17th, an advisory statement indicating the existence of a tropical depression was issued at 1130 GMT on the 17th when the central pressure was estimated to be below 1000 mbs.Warnings of a cyclone were subsequently issued as the centre moved southwest and intensified to a central pressure of 994 mb or less.

With movement to the south the cyclone weakened and the last warning was issued at 0530 GMT on the 21st although the centre was identifiable until the 23rd.

Track:

The centre was first identified north northeast of Cocos Island and moved southwest as it intensified. It passed Cocos about 60 miles to the west early on the morning of the 19th. Thence the movement was more southerly and the cyclone began filling. On the 20th the centre was approximately 300 miles southwest of Cocos Island and began moving to the south southeast. The speed of the centre was fairly steady at 10 knots until passing Cocos, when it accelerated to 15 knots, but slowed again during and after recurvature. The depression finally dissolved at about latitude 22°S early on the 23rd.

Features of Track:

The track was a simple recurvature from southwest to south southeast.
Due to the sparsity of reports from the region the only guides to forecasting movement were Cocos Island surface and upper reports, whose value decreased as the centre moved away from the island. Recurvature was detected by reports from ships on the afternoon of the 21st.

Rainfall:

The only rainfall reporting station affected by the cyclone was Cocos Island which reported a total of only 1.83 inches, of which 1.66 inches fell in the first two days.

Wind:

Strong Easterly winds, with gusts to 50 knots, were recorded at Cocos Island on the 18th. On the 19th the wind backed to northeast to north and moderated. Strong east to southeast winds south to latitude 20°S were reported from ships between the 18th and the 20th, but no ships in the area reported gales.

Sea:

Rough seas were reported from Cocos Island from the 17th to the 20th, with a southeast swell accompanying east to southeast winds at first; but when the wind backed to northeast to north a confused swell was reported. The "Taranaki" and "Otaio" reported 15 to 18 feet waves, 200 to 500 miles from the centre, between the 18th and the 20th; but other ships reported moderate seas only.

Damage:

No damage was reported.

Depression 29, Type G, 30th December 1958 - 6th January 1959

Cocos Island Area

02059 30061 (71308 71407 71204 71300 71397 71503 71406 71508)

Development:

The depression was first detected in the Equatorial trough 200 miles southwest of Christmas Island, early on the 30th, with a central pressure of 1002 mb. It moved in a general westerly direction, slowly intensifying, until early on the 2nd, when rapid deepening to a central pressure of less than 960 mb was indicated by a report from the "Strathnaver".
Unfortunately the "Strathnaver" transmitted only one report, and that was incomplete being only a barometer reading. All other information was obtained from the ship's log when one of the officers of the Perth Divisional Office visited the ship at Fremantle. One of the ship's officers stated that the ship's radar clearly showed the spiral rain bands around an eye of 15 miles diameter. Intensity was maintained for about 24 hours, while the centre appeared to loop slowly close to Cocos Island. The centre then moved east southeast, weakening, and the depression finally dissolved on the 6th about 100 miles south of its area of development.

Track:

The centre moved from the area southwest of Christmas Island, at first to the southwest at about 5 knots, and then to the northwest while the speed accelerated to 15 knots. Another change of direction occurred about 100 miles southeast of Christmas Island on the afternoon of the 31st and the centre moved west southwest at 10 knots. When it reached a position 60 to 70 miles south southwest of Cocos Island on the 2nd, the centre became almost stationary and deepened rapidly. The centre appeared to loop during the next 24 hours. Examination of hourly pressures recorded in the log of the "Strathnaver" and a copy of the trace from a privately owned barograph aboard the ship, indicates that there was a short period change in the direction of movement of the centre at about 0400 GMT on the 2nd, before a final reversal of direction occurred at 2100 GMT on the 2nd. This conclusion is supported by a report from the Meteorological Officer in Charge at Cocos Island, who stated that between 0200 GMT and 2100 GMT on the 2nd "...the barograph became most unstable, moving up and down at one stage through 4 millibars". The pressure fall at the "Strathnaver" at 0920 GMT was probably due to a change in the ship's course which brought it temporarily closer to the centre. The centre then moved slowly east southeast, filling until the 5th, when slight turning to east by north with acceleration occurred. Later on the 5th there was another change of direction to the east southeast. The last identifiable position of the centre was approximately 100 miles south of the area of its origin.

Features of Track:

The track was characterised by an almost complete reversal of direction. Upper wind reports from Cocos Island showed, that the shear from west southwest in the lower layers to easterly above was located between 400 and 300 mb; but after looping, the change had lifted to between 250 and 200 mb. This seems to indicate that the steering level was located at approximately 300 to 250 mb. and that a contour ridge at that level moved northward during the 2nd when the cyclone reversed direction of movement by looping.
Rain:

The only recording station in the area was Cocos Island where 2.82 inches were recorded over 72 hours, and 2.51 inches of this fell between 0900 GMT on the 2nd and 0300 GMT on the 3rd.

Wind:

At Cocos Island Meteorological Office the strongest wind was recorded between 1100 GMT on the 2nd and 0100 GMT on the 3rd, being west 44 knots with frequent gusts to 65 knots. The "Queen Frederica" reported southwest 50 knots on the 3rd when about 150 miles northwest of the centre. The course of this ship closely followed the cyclone track after looping and at 0000 GMT on the 4th a wind of north northwest 55 knots was reported, and at 0600 GMT on the 4th a wind of south southeast 55 knots. Both reports were estimated to be within 50 miles of the centre. The "Strathnaver" reported winds of 50 to 60 knots between 0130 GMT and 0920 GMT on the 2nd from east to north northeast while close to the centre.

Sea:

Rough to high seas were experienced in the Cocos Island area. While close to the centre the "Queen Frederica" reported 13 ft. waves. At 1320 GMT on the 1st when 120 miles south of the centre the "Strathnaver" recorded a low long northwest swell at latitude 15°S. A rough sea was noted when approximately 60 miles from the centre and this increased to a very high sea with a very heavy north northeast swell when the ship's barometer reached its lowest reading of 960.5 mb. At this time the "Strathnaver" was probably close to the periphery of the eye.

Damage:

On the Cocos Island trees were blown down and roofing iron was lifted from some buildings. A new Department of Civil Aviation barge sunk at its moorings close to Direction Island where the impact of wind and waves were strongest. Some damage occurred aboard the "Strathnaver" but no details are available.
Depression 3C, Type C, 4th-12th January 1959

Timor Sea, Kimberleys and Northern Territory.

03059 04121 (71323 71526 71728 71526 71628 71733 71736)

Development:

High dew points (75°F to 80°F) and low pressures had been in evidence on the West and North Kimberley coasts for some days preceding the first detection of a centre. Scattered thunderstorms had been reported over the area. Early on the 4th, surface winds between Broome and Troughton Island confirmed the existence of a close-circulation with central pressure estimated at 998 mb, located 250 miles north of Derby. During the day, strengthening winds and falling pressures indicated the deepening and southeastward movement of the centre. By 0100 GMT on the 6th, the centre had reached the coast with a central pressure of approximately 988 mb. It then moved through the Kimberley regions maintaining intensity for the next four days, after which it moved into the Northern Territory and weakened into a rain depression.

Track:

The centre was first detected at approximately latitude 13°S, longitude 123°E. It moved southeast at 2 to 5 knots and reached the east Kimberley region on the 8th. It then retraced its path and almost reached the coast again where it remained stationary for 24 hours. Acceleration to the east southeast occurred and on the 11th it moved into the Northern Territory at a speed of 10 knots.

Features of the Track:

The centre moved to the southeast for four days, then retraced its path for 150 miles and remained stationary, or oscillated in a small area, for 24 hours before accelerating again to the east southeast. Forecasting of the movement was based almost entirely on low level winds and pressure changes, because of the lack of high level wind reports from the vicinity of the cyclone. The most noteworthy feature was the maintenance of intensity with a long inland track.

Rain:

Very heavy rain fell in the north and east Kimberleys, and the adjacent fringe of the west Kimberleys and caused flooding in many areas. The highest 24 hour total reported was 1094 points at Wyndham at 9a.m. on the 6th.
Almost entirely as a result of this cyclone the January totals for the north and east Kimberleys were 187 per cent and 305 per cent, respectively, above normal for the month. The heaviest rain fell in the western sectors of the cyclone, while in the eastern sectors the rain was comparatively very light.

Wind:

The strongest winds were in the northern sectors of the cyclone which extended out over the Timor Sea, and winds to 55 knots up to 300 miles from the centre were reported between the 4th and the 8th from Troughton Island, Kalumburu, and the "Dulverton". The latter reported "...force 9/10 from a northwest by north to west by north direction with very frequent torrential rain-squalls to force 11/12", on the morning of the 5th. In the southern sectors, which were entirely over the land, winds of 30 to 40 knots were reported within 200 miles of the centre. There was a temporary "lull" of about 15 to 18 hours on the 8th and 9th, when the centre reached its first point of reversal about 100 miles inland from Wyndham. However, by the morning of the 9th, 45 to 50 knot winds were again reported from Troughton Island and the "Delamere". At 0600 GMT on the 9th the "Delamere" reported a wind of 70 knots from the west. This was the strongest wind reported during the history of the cyclone. From the 10th to the 12th, winds of 30 to 40 knots continued on the north Kimberley coast and extended to the Northern Territory.

Sea:

Sea and swell reports from Cape Leveque and Troughton Island gave no prior indication of development in the area. On the evening of the 4th, although the wind was north 30 knots at Troughton Island, slight seas and low swell were still being reported. The first report of a rough sea from this station was at noon on the 5th when the wind reached 50 knots from the west northwest. However Troughton Island is protected from the north and northwest by reefs. On examining reports from the "Dulverton", which became available after the return of the ship to Fremantle, it is likely that rough to very rough seas were experienced over the Timor Sea from the 4th and subsequently extended to the Arafura Sea by the 11th. On the west Kimberley coast, where the strongest winds were offshore, seas were slight to moderate until the 10th when the wind veered to southwest and rough seas were reported from Cape Leveque.

Damage:

No damage was reported, but shipping, aviation and mail services were disrupted. Homesteads and towns were isolated by flooding. Fitzroy Crossing township was divided into three parts by
floodwaters and the Fitzroy River rose to a level of 38½ feet which was only 2 feet below the highest flood, recorded in 1956.

Depression 4A, Type A, 8th-12th February 1959
Cocos Island Area

04A59 08122 (71096 71497 71599 71202 71399 71397)

Development:

Slowly falling pressures at Cocos Island since the 5th and a backing of lower level winds from southeast to northeast were followed by a rapid pressure fall of nearly one millibar per hour between 1500 GMT and 1800 GMT on the 8th, accompanied by freshening surface winds with gusts to 30 knots. At this stage a circulation with central pressure estimated at 1002 mb probably existed in the equatorial trough north northwest of Cocos Island. The 0000 GMT upper wind report on the 9th indicated a northwesterly flow from 700 to 200 mb with little shear, and further development was expected. However, as the centre moved to the southeast, little change was evident until early on the 10th, when the centre moved northeast and began filling. A reversal of direction to the west southwest occurred late on the 10th and the centre finally dissolved south southwest of Cocos Island on the 12th.

Track:

The centre first developed north northwest of Cocos Island and moved south southeast at 12 knots, passing within 50 miles of the islands during the 9th. Early on the 10th a change of direction to the northeast occurred about 200 miles southwest of Cocos Island. In the next 12 hours the centre accelerated to 25 knots, until at 1200 GMT on the 10th it was approximately 300 miles east of Cocos. At this stage the estimation of position and intensity was more difficult owing to lack of ship reports. However, it is likely that another change of direction occurred about this time, as, although the pressure at Cocos Island remained fairly steady, the wind veered from south to west and later to northwest. As well as can be estimated, the centre moved west southwest to west at 10 knots until the depression was last detected about 60 miles south southwest of Cocos Island, filling rapidly.

Features of Track:

The track was characterised by two changes of direction. In the early stages of the depression the movement of the centre closely followed the flow in the 700-200 mb layer, which showed almost no
vertical shear in the Cocos Island upper wind report at 0000 GMT on the 9th. Throughout the life of the depression the only aids to forecasting movement and development were surface reports from Cocos and Christmas Islands and upper wind and temperature soundings at Cocos Island. By 0000 GMT on the 10th the winds at Cocos were west southwest almost uniformly from the surface to 250 mb, with little vertical shear closely parallel by the change of direction of movement of the centre to the northeast. However, by 1200 GMT on the 10th a south southwest to west northwest shear had developed between 7,000 and 10,000 feet. Also an easterly current was in evidence above 250 mb, which descended to 300 mb, by 0000 GMT on the 11th. Subsequently the centre moved westward until dissipation occurred near Cocos Island.

Rainfall:

The only rainfall recording station in the area was Cocos Island, which reported moderate rain only. The 18-hour total reported at 0300 GMT on the 9th was 1.27 inches, and a further 1.62 inches fell in the following 6 hours. All of this fell in eastern quadrants of the depression, while the centre was rather close to the island. Lightning and thunderstorms were reported by Cocos Island when in the south-eastern quadrant, early in the development of the depression.

Wind:

Reported wind at no time reached gale force. The strongest winds reported from Cocos Island were northeast and northwest 25 knots on the 9th. As the centre passed close to the islands, if stronger winds existed they were within 50 miles of the centre. No damage was reported.

Sea:

Moderate seas and heavy swell were reported by Cocos Island on the 9th.

Depression 5C, Type C, 5th-12th March 1959

East Indian Ocean

05059 05113 71308 71706 71903
71901 72101 72302 73109 73519

Development:

A well-defined trough, extending from Port Hedland to Christmas Island, was established from March 3rd to 5th, and sharpened with the passage of an active southern trough through the Bight area on
March 5th and with a strengthening of the ridge off the west coast of W.A. Slowly falling pressures, veering westerly winds and a choppy sea report at Christmas Island indicated a probable closed circulation at about latitude 13°S, longitude 108°E on March 5th - 6th. An advisory warning was issued at 2300Z on March 6th. The centre subsequently moved south-west and intensified, a warning being issued at 1100Z on March 7th, before recurving southeast, weakening and disappearing into a southern trough on March 10th-11th.

Track:

After three days of gradual formation 200 miles southeast of Christmas Island from March 3rd to 5th, the centre moved southwest at 5 knots on a course roughly midway between Cocos Island and the mainland. On March 7th to 8th the centre accelerated to 15 to 18 knots and by 1200Z on March 8th was located at latitude 19°S, longitude 102°E. The movement then became uncertain due to lack of shipping reports, but an aircraft at 0615Z on March 9th reported a bad weather surface area at latitude 19°S, longitude 102°E. At 1200Z on the same day a report from the ship "Fairsea" indicated intensification and southerly movement of the centre.

At this stage an intense southern trough with a westerly surface flow as far north as latitude 28°S, moved rapidly eastward. Apparently under the steering influence of northwest upper winds associated with the approaching trough, the centre, weakening considerably, moved southeast at 45 knots into this southern trough and in its dying stage was probably associated with a temporary cyclonic development near Albany on March 12th.

Features of the Track:

The cyclone followed a common path for centres originating south of Java, moving slowly southwest and intensifying before recurving southeast and weakening in sub-tropical latitudes. The cyclone appeared to have no appreciable vertical cyclonic structure and two trans-Indian flights over the centre on March 7th and 9th revealed little interruption to the regular southeast flow at 700 mb.

Wind:

The highest wind speed reported was from the ship "Avonmoor", which experienced southeast winds at 40 knots when located approximately 100 miles south of the centre on March 8th. Ships up to 300 miles from the centre in the southwest quadrant reported winds to 30 knots but observed-winds decreased rapidly further from the centre.
Seas:

Reported seas reached a maximum of 15 feet in height and, from ships within 300 miles, averaged 12 to 15 feet with 10 second periods.

Damage:

Nil reported.

Depression 6B, Type B, 16th–24th March 1959

Off North West coast

06859 16243 (71407 71405 71812 71515 71213 72110 72304 71900 71700)

Development:

During the 16th to the 18th an extensive low pressure area existed over the Timor Sea. Simultaneously a trough lay along the west and northwest coasts. A series of reports from the "Oranje", which was moving northward at longitude 108°E, shows some interesting temperature changes and may indicate the source from which the system drew its energy.

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The sea surface temperature of 86°F recorded at latitude 15.5°S was approximately 4°F above normal, but other temperatures reported over the area showed little or no positive departure from normal.

The first indications that a cyclone existed or was forming were reports from the "Carpentaria" south of the centre at 0600 GMT and 1200 GMT on the 19th. Between these two observations the pressure fell 2.8 mb while moving about 90 miles northward. At 2000 GMT the "Carpentaria" reported a pressure of 992 mb with a wind from northeast
at force 9, very high seas and a heavy north northeast swell; thus confirming the existence of a cyclone and more accurately placing the centre. It is probable that the cyclone was already in the mature phase by this time, as 2-hourly reports from the "Carpentaria" indicated a filling of the centre accompanied by a southeast movement at 45 knots between 0200 GMT on 0400 GMT on the 20th, only 6 to 8 hours after the first indication of the existence of the cyclone. The aircraft carriers HMAS Melbourne and HMS Albion were in the area at the time and an aircraft reconnaissance placed the centre at 20°35'S latitude 109°55' S longitude at 0345 GMT on the 20th. The centre then continued its west southwest movement while filling and turned to the northwest on the 22nd before finally disappearing.

Track:

The position of the centre was poorly defined until the Carpentaria's report at 2000 GMT on the 19th, there being an extensive low pressure belt in the Timor Sea off the northwest coast in which a small cyclone could have existed without detection. For the first 12 hours after being detected the centre moved southeast and later to the west southwest until the 22nd. Then a change of direction to the northwest occurred and the centre finally disappeared about 400 miles south southwest of Cocos Island on the 24th.

Wind:

The wind at the "Carpentaria" reached 45 knots from northeast and north while the ship was close to the centre, probably within 50 miles, but no other wind reports exceeded 35 knots.

Sea:

Ship reports indicate that the cyclone produced high seas only within 50 miles of the centre, where the "Carpentaria" reported very high seas with wave heights to 28 feet and a very heavy north northeast swell, between 2000 GMT and 2400 GMT on the 19th. However, by 0200 GMT on the 20th, while still within 80 miles of the centre and reporting a wind of 40 knots from the north, the wave height had dropped to 12 feet. Nine hours later, ships passing through the area which had been affected by the cyclone, reported seas that were considerably reduced. Heavy swell at Christmas Island on the 16th and at northwest Cape at 0000 GMT on the 19th, indicate the probability of the cyclone having existed for a few days prior to its eventual detection by the "Carpentaria".

Rainfall:

There were no reports of rain from land stations although the centre approached to within 250 miles of the northwest coast. However
ships reported rain up to 250 miles from the centre in southern quadrants.

Damage:

No damage was reported.

Depression 7C, Type C, 2nd-11th April 1959
Arafura Sea, Kimberleys, Northwest Coast
07058 02114 (71035 71032 71130 71430 71528
71428 71529 71628 71625 71523 71520 71718 72016)

Development:

This tropical disturbance originated on 1st April as a weak circulation 200 miles southeast of Darwin, located in the northern extremity of a marked trough extending southward through western Queensland to Victoria. Under the steering influence of southeast winds to 20,000 feet the centre moved northwest off the coast on 2nd April before recurving south southwest along the east coast of Bonaparte Gulf on 4th to 5th April. The first indication of the centre attaining full cyclonic proportion was a report from Port Keats early on 5th April, of 60 m.p.h. winds and a pressure below 994 mbs.

Track:

On 5th to 6th April the cyclone appeared to move in a complete circle near the entrance to the Cambridge Gulf before moving south into central Kimberley and weakening. However early on 7th April freshening surface easterlies on the west Kimberley coast and marked strengthening of the lower level winds at Broome indicated a probable movement of the centre along a trough axis to the west. This eventuated during the night, the centre crossing the coast north of Cockatoo Island before continuing west to about longitude 120°E, apparently without regaining its former intensity. From 9th to 11th April the centre moved southwest towards the coast. An aircraft flying into Port Hedland on 10th April reported extensive storms east of Roebourne and the appearance of a small centre seawards. The centre seems to have crossed the coast east of Onslow on 11th April and dissipated.

Features of the Track:

A predominately easterly circulation to 20,000 feet, enhanced by strong ridging south of the tropics, probably influenced the movement of the centre in a generally westerly direction. The apparent
circular movement near Wyndham is interesting because of the small circumference.

Rainfall:

General moderate to heavy rain over the northern third of the Northern Territory accompanied the development of the cyclone, cumulative falls exceeding 10 inches in many coastal and adjacent centres. Cape Done received 20 inches during the period 2nd to 7th April. Wyndham received an exceptionally high 24-hour fall of 17.32 inches on 6th April, and from 5th to 9th April 20 inches were recorded at this station. Useful falls exceeding 2 inches were received in east Kimberley, but in west Kimberley falls were generally only light. Fairly widespread light to moderate rain in the Fortescue and De Grey division was associated with the filling of the centre west of Port Hedland.

Wind:

Winds of 60 knots and 40 knots were reported on the 5th from Port Keats and Wyndham. Apart from these reports, observed winds associated with the centre were less than 25 knots.

Seas:

Rough to very rough seas were reported at Cape Don during the initial stage of the cyclone but at no other time were state-of-sea reports higher than moderate.

Damage:

No damage was reported but aircraft movements were interrupted by the flooding of the aerodrome at Wyndham.

Sferics:

Sferics were observed in the area of the cyclone during the first three days, and generally either to the north or east of the centre.
Fig 1. Track of depressions 1.C, 2.C, 5.C and 7.C.