Letters to the Editor

551.575(547·1)

FOG OVER NAGPUR (SONEGAON) AIRFIELD

1. The topography of Sonegaon airfield (Lat. 21° 06′ N, Long. 79° 03′ E) and neighbourhood is shown in Fig. 1. There are no prominent hills or rivers in the neighbourhood and the surrounding terrain is generally flat with a gradual rise towards the north. The city of Nagpur, the railway workshops and a few textile mills which are the sources of industrial smoke are towards the north-east of the airfield extending from a distance of about 4 to 9 miles.

2. The details of occurrence of fog during the 14 years 1946 to 1959 as collected from the Monthly Meteorological Registers, Pocket Registers and Current Weather Registers of the airfield are given in Table 1.

3. From Table 2, it will be seen that no fog occurred during as many as 7 years, while 4 occurred in 1953; 3 in 1958; 2 each in 1948, 1949, 1955 and 1956 and 1 in 1954. Further the period February to June and the month of November were free from any occurrence while 5 occurred in September, 4 in October, 3 in August, 2 in December and 1 each in January and July.

Table 3 shows the times of commencement and dissipation of fog. It is seen that on most occasions fog commenced between 0500 and 0600 IST and dissipated after 0700 IST.

From Table 4, it is seen that fog generally lasted for 2 hours or less. There were three occasions when fog lasted for more than five hours.

It is also seen that on 13 occasions the visibility was 400 metres or less, including one case of thick fog of less than 50 metres visibility.

TABLE 1

Details of occurrence of fog

Date	Time (IST) of		Lowest visibility
	Commencement	Dissipation	(m)
3 Jan 1948	0055	0405	200
26 Dec 1948	0630	0732	800
12 Oct 1949	0600	0800	100
13 Oct 1949	0500	0745	50
20 July 1953	0530	0630	900
29 Aug 1953	0830	0940	700
16 Sep 1953	0600	0730	300
7 Oct 1953	0225	0820	400
24 Sep 1954	0545	0715	400
15 Sep 1955	0545	0640	200
26 Sep 1955	0435	0900	100
11 Oct 1956	0020	0615	100
30 Dec 1956	0515	0900	100
8 Aug 1958	0645	0735	200
21 Aug 1958	0300	0515	100
27 Sep 1958	0600	0750	300

4. As a result of rapid clearing of the sky and consequent copious nocturnal radiation, the dry bulb temperature at 1730 IST of the evenings prior to occurrence generally fell rapidly with little change in the dew point temperature. Consequently the relative humidity increased from about 77 per cent at 1730 IST to about 94 per cent or more by 2330 IST and continued to increase steadily to 98 or 100 per cent at the time of commencement.

Further it was also found that fog generally did not occur when the relative humidity at 0230 IST was less than 91 per cent even when the wind and sky conditions were favourable for fog.

TABLE 2

Yearly and monthly frequencies of fog

	Number of occasions per month												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1946													
1947													
1948	1											1	2
1949										2			2
1950													
1951													
1952													
1953							1	1	1	1			4
1954									1				1
1955									2				2
1956										1		1	2
1957													
1958								2	1				3
1959													
Total		1					1	3	5	4		2	16

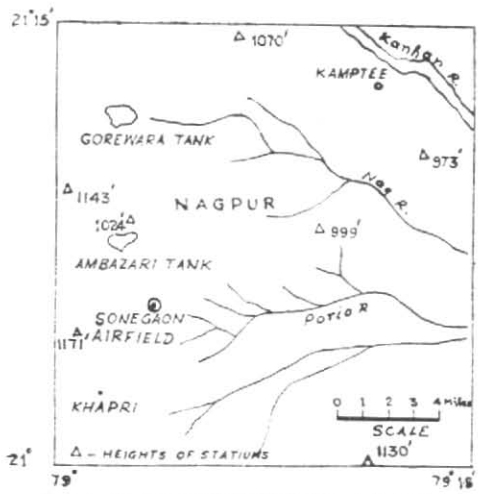

Fig. 1. Topography of Nagpur airfield and neighbourhood

TABLE 3

Times of commencement and dissipation of fog

Period (IST)	No. of occasions of	
	Commencement	Dissipation
0000—0100	2	
0100—0200		
0200—0300	2	
0300—0400		
0400—0500	1	1
0500—0600	8	1
0600—0700	2	3
After 0700	1	11
Total	16	16

TABLE 4

Duration and intensity of fog

Duration (hours)	No. of occasions when visibility (in metres) was					Total
	< 50	50—200	200—400	400—060	600—900	
< 1		2				2
1 to 2		2	3		3	8
2 to 3	1					1
3 to 4		1				1
4 to 5		1				1
> 5		2	1			3
Total	1	8	4		3	16

It was found that during the monsoon months, mainly overcast skies rapidly became lightly clouded and in winter months lightly clouded skies become cloudless before commencement of fog.

On all the occasions, the surface wind during the night preceding the occurrence of fog was generally calm or light. On many occasions, it changed from a southerly to a northerly direction after the occurrence of fog.

Upper winds during the night preceding the occurrence were generally less than 10 kt upto 1·5 km and showed a definite decrease from 0200 to 0500 IST. But on one occasion (in 1954) early morning fog occurred with upper winds of 10/15 kt upto 1·5 km at 0500 IST, being still stronger, *i.e.*, 20/25 kt at 0200 IST.

Study of T-ϕ grams showed that on 6 occasions inversion or isothermal layer upto about 900 mb existed before or during the occurrence of fog. But on 2 occasions, there was neither inversion nor isothermal layer. For the remaining occasions no data were available.

On 14 occasions, fog occurred in the wake of the passage of a low pressure system over Vidarbha or neighbouring areas with precipitation over Nagpur during the preceding day. On some occasions rain occurred till 2330 IST or even till 0230 IST after which the skies cleared creating conditions most favourable for fog. On one occasion (21 August 1958) fast moving low clouds suddenly appeared and settled down as fog. A most recent occurrence of fog on 22 March 1960 was described (Seshadri 1961) as a case of low clouds descending into fog.

5. From a scrutiny of *Indian Daily Weather Reports* for occurrence of fog over and around Nagpur, it was found that Seoni and Pendra recorded fog simultaneously with Nagpur on 3 and 2 occasions respectively. On one occasion, namely 24 September 1955, in association with a depression over northwest Uttar Pradesh and adjoining Punjab, 4 stations, namely Nagpur, Akola, Guna and Indore recorded fog. On the remaining 10 occasions Nagpur alone reported fog.

6. The results are summarised below—

(*i*) Fog over Nagpur (Sonegaon) airfield is only a rare phenomenon, (*ii*) It occurs generally during the months of August, September and October, in the wake of the passage

of low pressure systems and associated rain. (*iii*) It commences generally between 0500 and 0600 IST but on some occasions earlier between 0000 and 0300 IST. (*iv*) It dissipates on most of the occasions after 0700 IST, (*v*) It generally lasts for 2 hours or less, but on a few occasions it lasts for 5 hours also, (*vi*) On most occasions the visibility during fog reduces to 400 m or less, and (*vii*) It is a type of radiation fog though it generally occurs in monsoon or post monsoon period.

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June 21, 1960

REFERENCE

Seshadri, N. 1961 *Indian J. Met. Geophys.*, **12**, 2, p. 382.