

(D) Fiducial Mark Measurements

The measured distance between each pair of fiducial marks etched on the focal planeplates was found to be as follows:

<u>Camera</u>	<u>Measured Distance</u>
F3-1A	227.00 mm = 8.931"
F3-2	230.75 " = 9.085
F3-4	227.55 " = 8.959
F3-8	230.00 " = 9.035
F3-9	227.05 " = 8.939
F3-10	226.40 " = 8.913
F3-12	227.20 " = 8.945

No measurements were taken of the fiducial marks on the two focal plane plates which were replaced on Cameras F3-10 and F3-12 respectively.

The sizes of the rectangle, as defined by the corner fiducial marks, was measured for the focal plane plate on F3-13. The lengths of the sides thus determined, 231.8 mm and 177.8 mm, were found to be the same for the corresponding sides.

1946. Calibration

LENS Ross

CAMERA Fairchild F-3 Type
R. C. A. F.

N.R.C. - P.M. 950

Date 3 Aug. 1946

8" lens
7x9 format

(I) Fairchild type F3.

New focal plane plates supplied by the R.C.A.F. were installed on these cameras. A cross to locate the principal point was etched on each of the new plates and on seven of them fiducial marks were also etched. On the eighth plate, which was installed on camera F3-13, corner fiducial marks had already been etched on by Instruments Limited. The results of the calibration of these cameras were as follows:

(A) Principal Distances

Camera	Lens No.	"Calibrated" Principal Distance
F3-1A	R.X.126715	210.85 mm. = 8.301"
F3-2	R.X.126718	211.00 " = 8.307"
F3-4 (body F3-3)	R.X.126721	211.20 " = 8.315"
F3-8	R.X.123427	209.40 " = 8.244"
F3-9	R.X.123430	209.80 " = 8.260"
F3-10 (body F3-5)	R.X.123428	(1) 209.35 " = 8.242"
		(2) 209.45 " = 8.246"
F3-12	R.X.126714	210.65 " = 8.293"
F3-13	R.X.126722	211.20 " = 8.315"

Filter

(B) True position of the Principal Point with reference to the Cross.

Camera	Short Dimension	Long Dimension
F3-1A	Coincident	0.1 mm away from level vials
F3-2	0.1 mm towards level vials	0.1 mm away from level vials.
F3-4	0.1 mm away from level vials	Coincident.
F3-8	Coincident	0.1 mm away from level vials.
F3-9	0.1 mm away from level vials	Coincident.
F3-10	(1) Coincident	Coincident.
	(2) Coincident	0.1 mm away from level vials.
F3-12	Coincident	Coincident
F3-13	Coincident	Coincident

Level vials adjusted

Camera F3-10 was calibrated on 1 March and again on the 22 May when the focal plane plate which was found to be scratched, was replaced by a new plate. The results of the determination of the principal distance and of the position of the principal point cross as determined in March and in May are given in the above tables as (1) and (2) respectively. Camera F3-12 was calibrated on 28 February and was returned on 14 May with a broken focal plane plate. A new plate was installed after which the camera was re-calibrated. The calibration was again checked on 3 July. The alteration to the principal distance and to the position of the principal point cross, as determined on 28 February, was found to be negligible for both the May and July tests. Camera F3-13 was found to be slightly out of focus when received on 19 June, and was subsequently re-focussed by the Optics Section of this Division.

(C) Shutter Speeds

Camera	Total Speeds			Effective Speeds		
F3-1A	1/55	1/100	1/150	1/60	1/115	1/180
F3-2	1/45	1/90	1/125	1/50	1/100	1/145
F3-4	1/45	1/100	1/140	1/50	1/115	1/165
F3-8	1/55	1/110	1/135	1/60	1/125	1/165
F3-9	1/55	1/90	1/140	1/60	1/100	1/175
F3-10	1/60	1/115	1/160	1/65	1/130	1/190
F3-12	(1) 1/50	1/115	1/135	1/55	1/130	1/165
	(2) 1/50	1/105	1/150	1/50	1/120	1/180
F3-13	1/50	1/105	1/130	1/50	1/120	1/160

The shutters on most of the F3 cameras, including F3-1A, F3-8, F3-9, F3-10, F3-12 and F3-13 were found to be defective and were repaired by R.C.A.F. personnel. The shutter speeds on F3-12 were determined first in February, and later in May, when the camera was returned with the broken focal plane plate. The shutter was altered in May by the R.C.A.F. so as to give a higher top speed. The results of the shutter speed tests for February and May are shown in the above table as (1) and (2) respectively.