

# CALIBRATION CERTIFICATE

Submitted By

FAIRCHILD CAMERA AND INSTRUMENT CORPORATION

SYOSSET, L. I., NEW YORK

Camera Type T-11 Camera

Camera No. 52-089

Lens and Cone No. 17-215

a) Make and Type Bausch & Lomb Metrogon

b) Nominal Focal Length 6 inch

c) Maximum Aperture f/6.3

This Certificate applies to the above subject precision camera with lens as stated herein. It was tested at maximum aperture. All measurements were made with parallel light incident on the lens. The effective wave length was 575 millimicrons.

**I. FOCAL LENGTH**

| Flange Focal Distance | Equivalent Focal Length | Calibrated Focal Length |
|-----------------------|-------------------------|-------------------------|
| MM<br>134.80          | MM<br>155.04            | MM<br>155.06            |

The probable errors of these determinations of focal length do not exceed  $\pm 0.10$  mm.

**II. DISTORTION**

Distortion Referred to the Calibrated Focal Length

| 7.5°  | 15°  | 22.5° | 30°  | 35°  | 40°  | 45°   |
|-------|------|-------|------|------|------|-------|
| -0.01 | 0.00 | 0.03  | 0.08 | 0.10 | 0.08 | -0.10 |

The values of the distortion are measured in millimeters and indicate the displacement of the image from its distortion-free position. A positive value indicates a displacement from the center of the plate. The probable error is approximately  $\pm 0.02$  mm.

**III. RESOLVING POWER**

(Aerographic Film)

|            | 0° | 7.5° | 15° | 22.5° | 30° | 35° | 40° | 45° |
|------------|----|------|-----|-------|-----|-----|-----|-----|
| Tangential | 31 | 32   | 27  | 24    | 20  | 20  | 19  | 11  |
| Radial     | 31 | 31   | 28  | 25    | 23  | 22  | 19  | 15  |

The values of the resolving power are given at specified intervals from the center of the field and are obtained by photographing suitable test charts comprised of patterns of parallel lines. The series of patterns of the test chart are imaged on the negative with lines per millimeter spaced as follows: 10, 11, 13, 14, 16, 18, 20, 22, 25, 28, 31, 36, 40, 45, 50, 57, 63, 71, 80.

The row marked "*Tangential*" gives the number of lines per millimeter in the image on the negative of the finest pattern of the test chart that is distinctly resolved into separate lines when the lines lie perpendicular to the radius drawn from the center of the field. The row marked "*Radial*" gives similar values for the pattern of test lines lying parallel to the radius.

#### IV. CALIBRATION

The lines joining opposite pairs of collimation index markers intersect at an angle of  $90^\circ \pm 1$  minute of arc, and their intersection indicates the location of the Point of Symmetry with a probable error not exceeding 0.05 mm. The departure of the principal point from the auto collimation point is \_\_\_\_\_ mm.

#### V. COLLIMATION MARKER SEPARATION

A - B ..... 238.07 mm .....

C - D ..... 234.87 mm .....

Markers A and B lie in the line of flight.

The calibration of this camera was performed at a temperature of approximately 72° Fahrenheit.

#### VI. CALIBRATED FOCAL LENGTH MARKER SEPARATION

These marker separations are set at a distance equal to the calibrated focal length  $\pm 0.05$  mm.

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*P J Norton*  
Precision Camera Calibration Laboratory

Syosset, L. I., New York

Fairchild Camera and Instrument Corp.

Syosset, L. I., New York

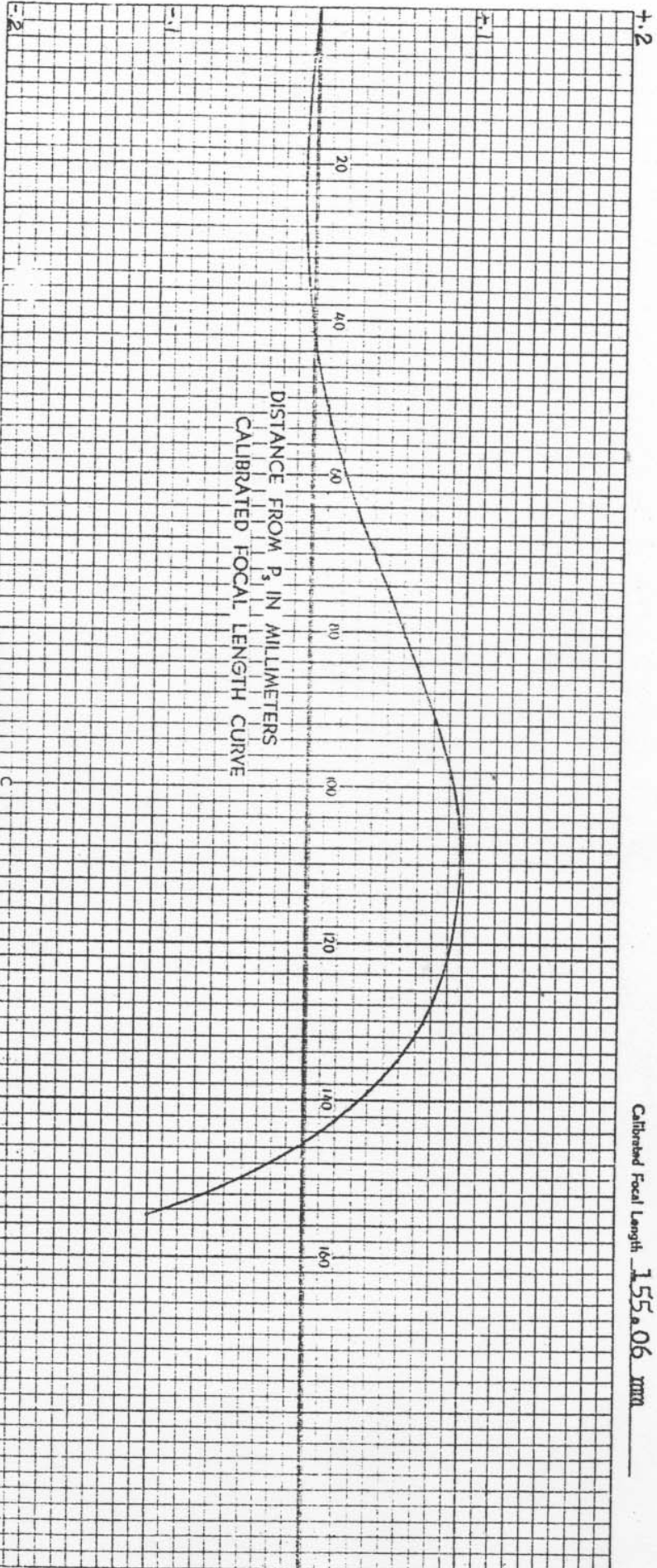
Lens XP 2184

Date 12.4.52

Camera 52-089

Calibrated Focal Length 155.06 mm

DISTORTION IN MILLIMETERS



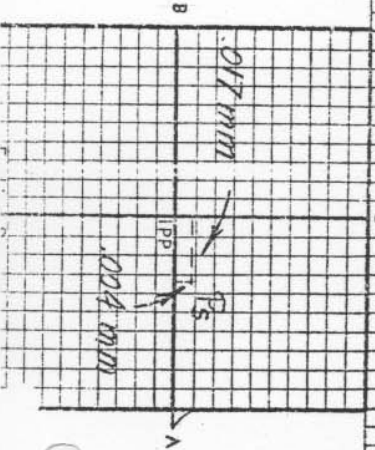
DISTANCE BETWEEN FIDUCIALS

A — B = 238.07 mm  
 C — D = 234.87 mm

$X_{P_s} = \frac{0.017}{0.004} \text{ mm}$   
 $Y_{P_s} = \frac{0.017}{0.004} \text{ mm}$

Signed *[Signature]*

Precision Camera Calibration Laboratory



RESOLUTION AEROGRAPHIC FILM

| Angle off Axis | Lines /mm. |        |
|----------------|------------|--------|
|                | Tang.      | Radial |
| 0.             | 31         | 31     |
| 7.5            | 32         | 31     |
| 15.            | 27         | 28     |
| 22.5           | 24         | 25     |
| 30.            | 20         | 23     |
| 35.            | 20         | 22     |
| 40.            | 19         | 19     |