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STELLAR INDEX CAMERA

CALIBRATION REPORT



Prepared by

Approved by

Date



5-29-67

Declassified and Released by the N R C

In Accordance with E. O. 12958

NOV 26 1997

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The tabulated listings of distortion start at what is indicated as the minus (-) end of each diagonal and continue through to the positive (+) end.

The values preceding the listings are, respectively:

- the standard deviations of the twelve individual grid transformations and the identification of any targets rejected from the calibration,
- the standard deviation of the measured radial distortions from the theoretical expression

$$D_R = ar_1 + br_1^3 + cr_1^5 + dr_1^7 \quad (\text{Aerogor})$$

$$D_R = ar_1 + br_1^3 \quad (\text{Canon})$$

where  $r_1 = \frac{r(\text{mm})}{100}$

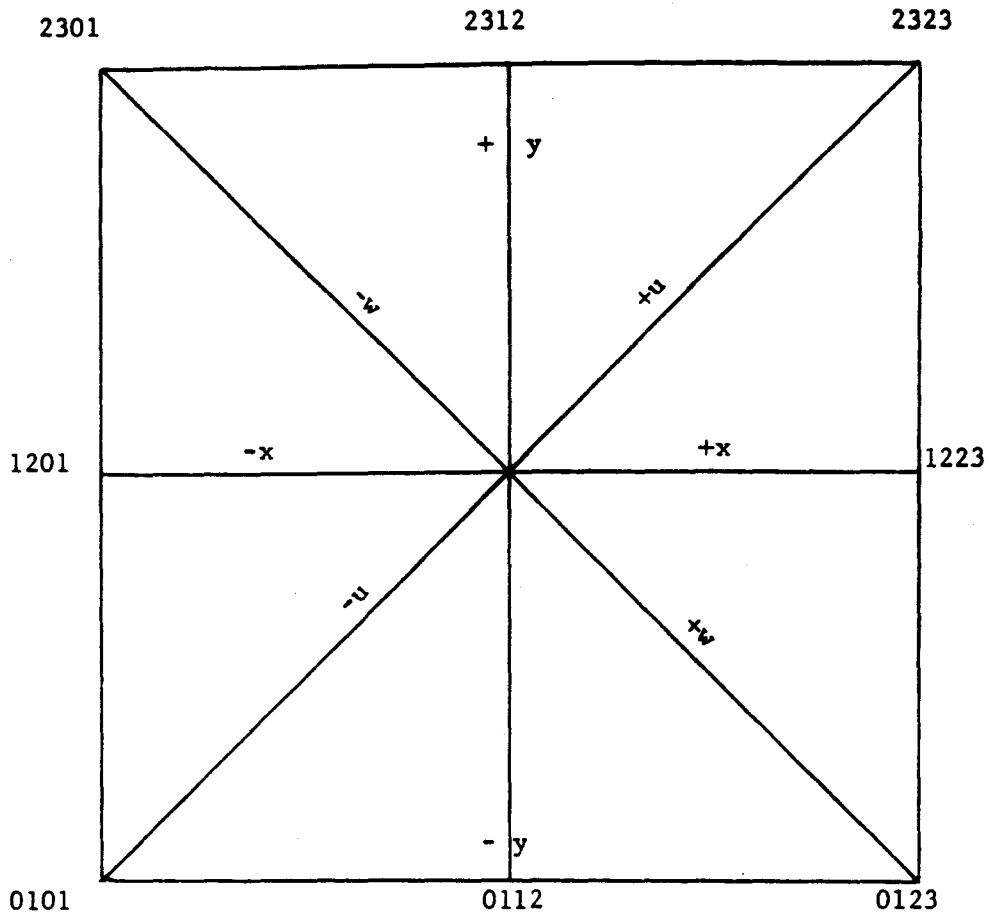
- the standard deviation of the measured tangential distortions from the theoretical expression

$$D_T = Kr_1^2 \sin(\gamma_1 - \theta)$$

- the coefficients (a, b, c, d) of the radial expression
- the calibrated focal length (C.F.L.),
- the coordinates of the point of symmetry (xs, ys) in the calibrated reseau system, and
- the coefficients (K,  $\theta$ ) of the tangential expression.

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Calibrated Diagonals



158A

8A

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.001798  
 .000000  
 .001607  
 W DIAG.  
 .001189  
 .001605  
 .001396  
 .001853  
 .001586  
 .002130  
 .001344  
 .001162  
 .001462  
 .005578  
 .001144  
 A -.003444  
 B -.042310  
 C 1.132250  
 D -2.487705  
 C.F.L. 38.6348  
 XS .0197  
 YS -.0090  
 THETA .265168  
 K -.000255

P DR DT

U DIAG.

38.9156	.2887	-.0026
35.3873	.1367	-.0011
31.8536	.0310	-.0006
28.3133	-.0260	-.0001
24.7869	-.0581	.0002
21.2362	-.0714	.0002
17.6977	-.0675	.0001
14.1666	-.0565	-.0000
10.6198	-.0418	.0005
7.0838	-.0261	.0007
3.5334	-.0126	.0011
.0268	.0000	.0000
3.5414	-.0126	-.0015
7.0920	-.0261	-.0011
10.6298	-.0404	-.0015
14.1767	-.0553	-.0005
17.7090	-.0657	-.0012
21.2483	-.0697	-.0006
24.7980	-.0593	-.0011
28.3221	-.0295	-.0008
31.8672	.0313	-.0022
35.4041	.1390	-.0013
38.9240	.2812	-.0019

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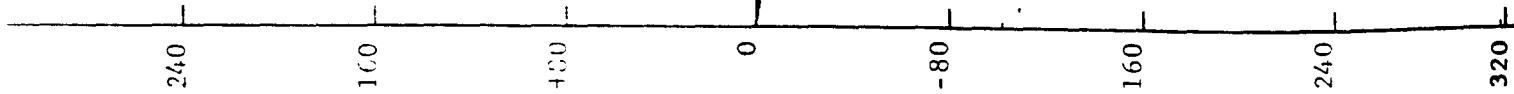
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27.4981	-.0327	.0013
25.0113	-.0529	.0007
22.5177	-.0647	.0002
20.0217	-.0675	.0007
17.5080	-.0636	.0010
15.0108	-.0574	.0009
12.5121	-.0461	.0004
9.9967	-.0357	.0002
7.4990	-.0272	-.0000
4.9938	-.0172	-.0002
2.4838	-.0079	-.0001
.0240	.0000	.0000
2.5189	-.0087	-.0005
5.0297	-.0177	-.0007
7.5349	-.0284	-.0004
10.0317	-.0390	-.0010
12.5469	-.0509	-.0008
15.0496	-.0600	-.0003
17.5462	-.0687	.0001
20.0620	-.0727	.0001
22.5587	-.0718	.0005
25.0522	-.0630	-.0001
27.5417	-.0432	-.0002

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C.I.L. = 38.6348  
X.S = .0197  
Y.S = -.0060

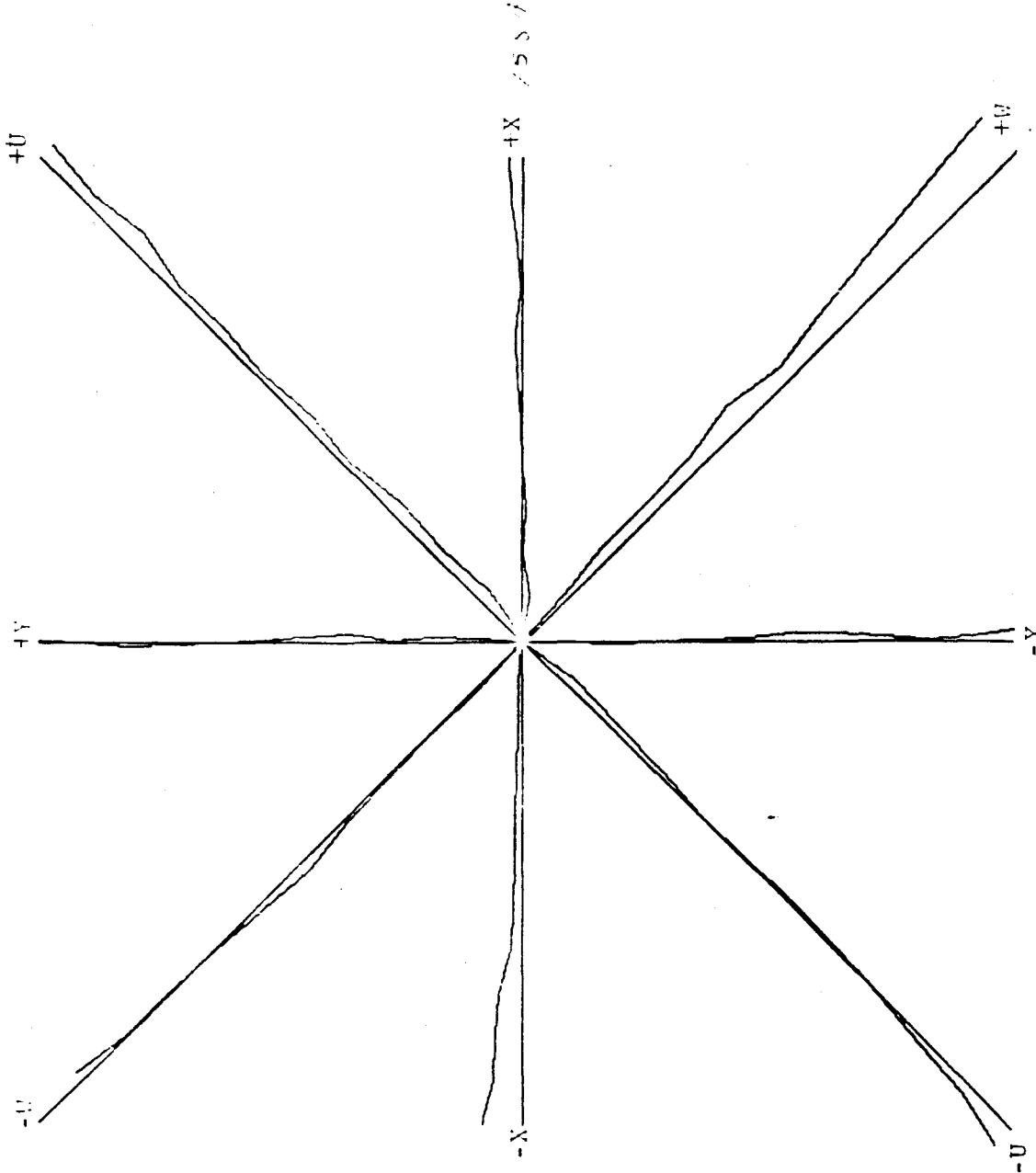
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158A MEAN RADIAL DISTORTION

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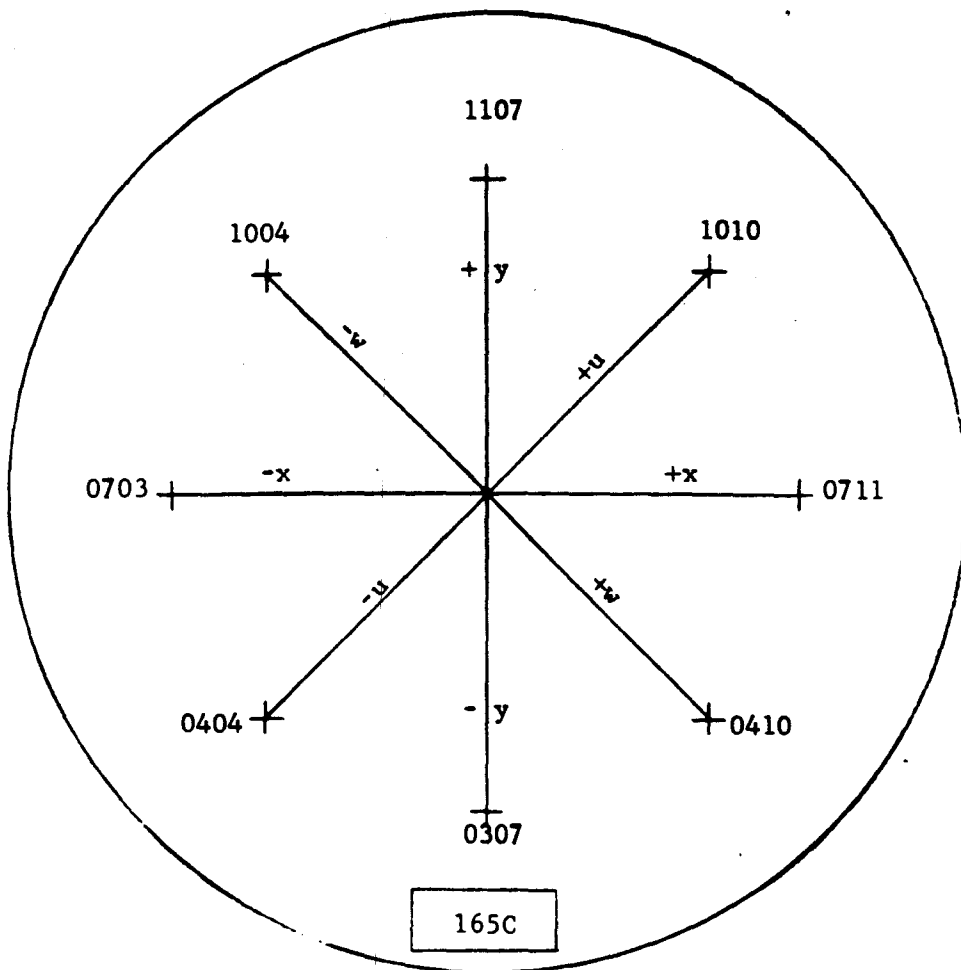
158A TANGENTIAL DISTORTION

(1 in. = 20  $\mu$ )

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Calibrated Diagonals



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165C

.000939  
 .001365  
 .001302  
 W DIAG. 1  
 W DIAG. 9  
 .000923  
 .001003  
 .001180  
 .000752  
 .000645  
 .001575  
 U DIAG. 1  
 U DIAG. 9  
 .000953  
 .000833  
 .000968  
 .000578  
 .001058  
 A -.000708  
 B .087052  
 C.F.L. 84.1965  
 XS .0099  
 YS -.1475  
 THETA -1.085833  
 K .000396

R

DR

DT

U DIAG.

10.4861	.0023	-.0023
6.9422	-.0014	-.0014
3.4012	-.0021	.0003
.1710	.0000	.0000
3.7024	-.0027	-.0005
7.2462	-.0007	-.0002
10.7923	.0024	.0020

W DIAG.

10.7067	.0027	-.0001
7.1612	-.0005	-.0001
3.6188	-.0014	.0004
.0841	.0000	.0000
3.4843	-.0030	-.0008
7.0261	-.0020	-.0006

10.5723

.0031

-.0001

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X DIAG.

9.9971	.0022	-.0000
7.4679	-.0019	-.0000
4.9803	-.0024	.0002
2.4783	-.0020	.0006
.1037	.0000	.0000
2.5681	-.0016	-.0014
5.0696	-.0028	-.0007
7.5594	-.0005	-.0007
10.0877	.0021	-.0007

Y DIAG.

9.8341	.0009	.0022
7.3069	-.0021	.0009
4.8193	-.0030	.0020
2.3178	-.0018	.0015
.2076	.0000	.0000
2.7250	-.0026	-.0006
5.2280	-.0034	-.0005
7.7189	-.0010	-.0006
10.2484	.0017	.0008

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C.P.I. = 84.1065  
xS = .0009  
yS = -.1475

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15

10

5

Distortion (%)

0

-5

10

15

r (mm)

5

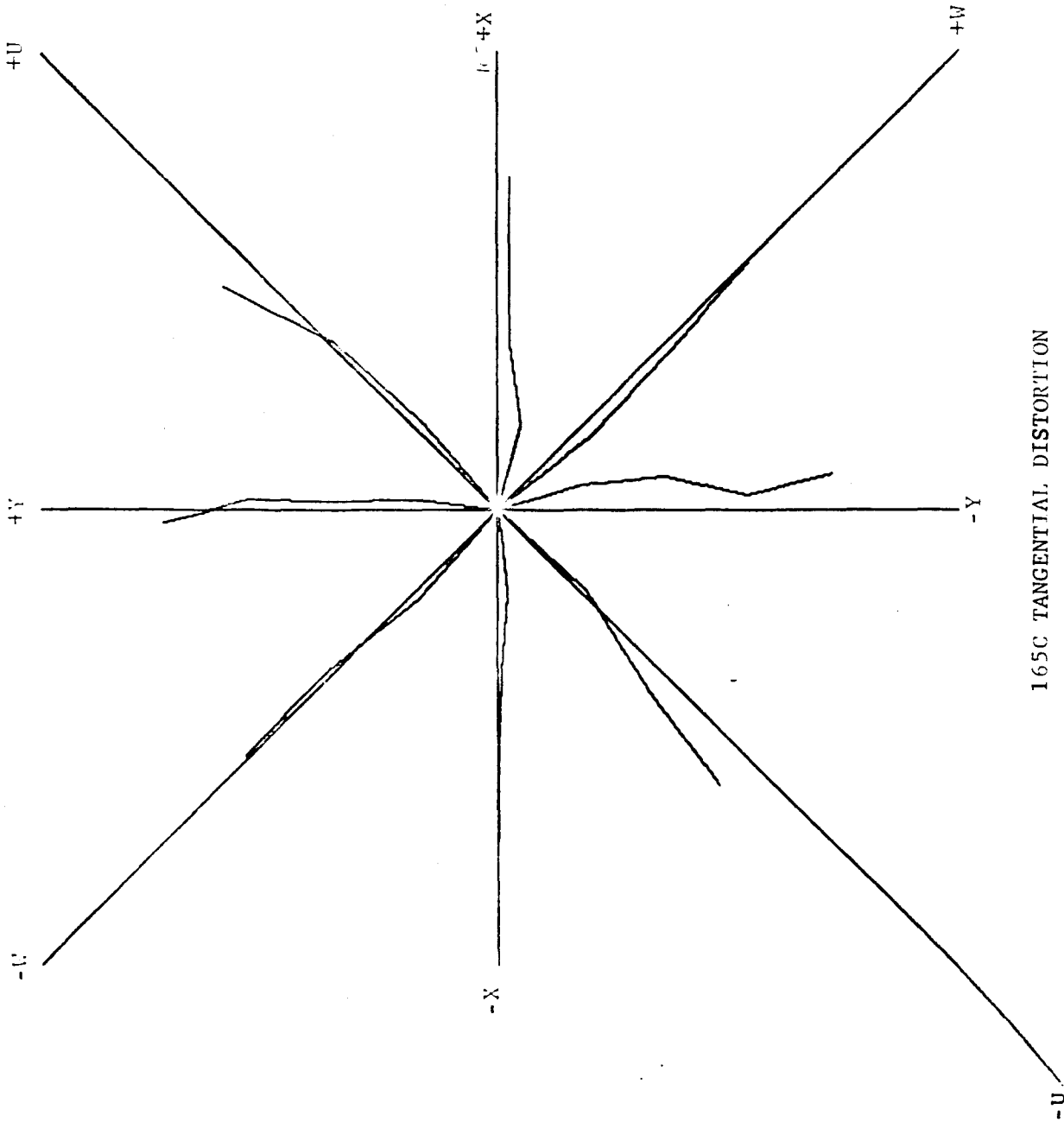
10

15

165

165C MEAN RADIAL DISTORTION

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165C TANGENTIAL DISTORTION

(1 in. = 10  $\mu$ )

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