[redacted]

Copy No. [redacted]

cy

D/OSP ____

DD/OSP ____

EO/OSP ____

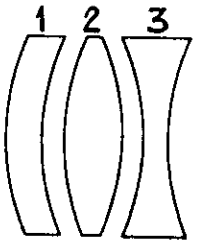
7.6 C

OPTICS

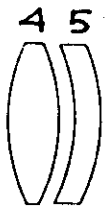
FIRST GENERATION OPTICAL DESIGN

24 INCH FOCAL LENGTH
f/3.5
6° FIELD

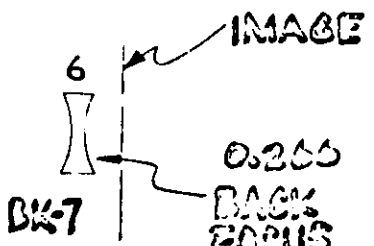
GLASS WEIGHT ≈ 15 POUNDS
SPECTRAL RANGE 0.5461-0.6900



SK-19 SK-19 SF-2



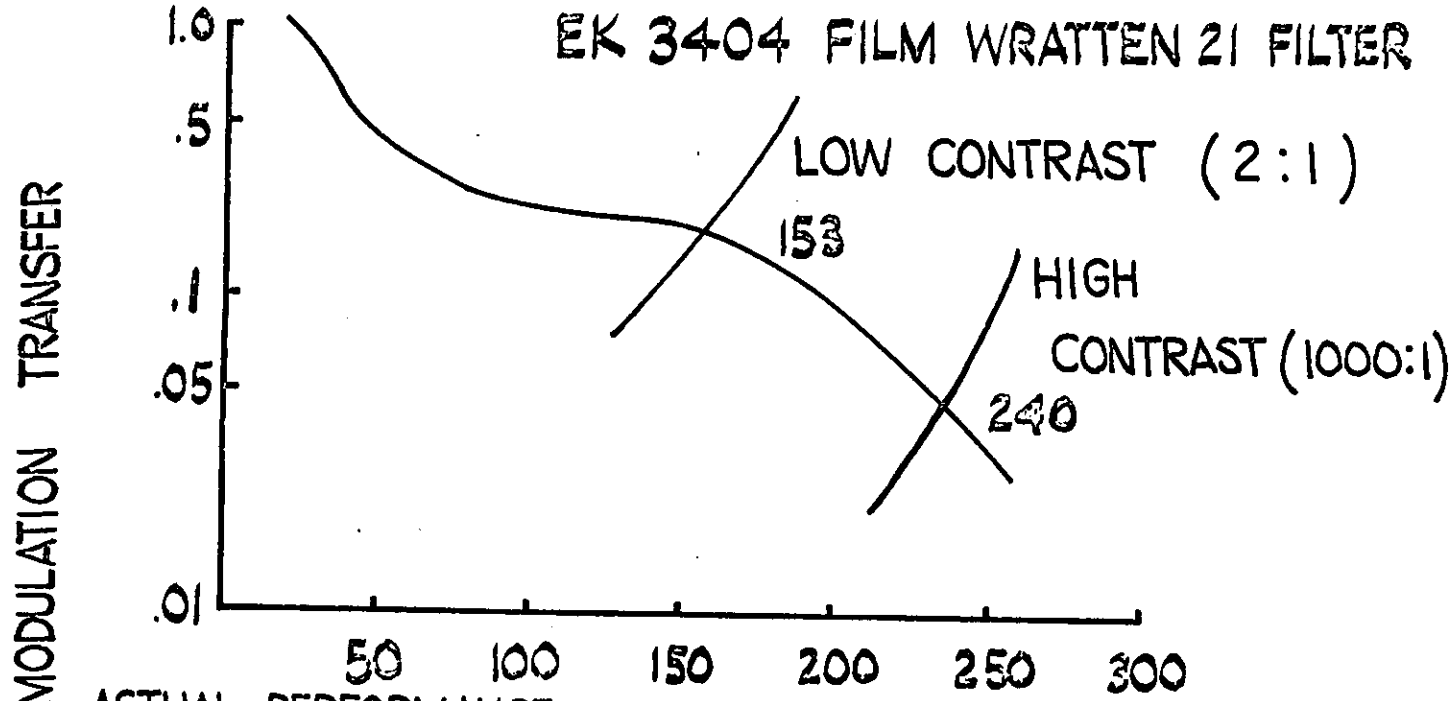
SK-19 SF-12



- ELEMENTS 1 AND 3 RELATIVELY THIN
- ELEMENT 3 SMALL DIAMETER
- R.Q. QUALITY GLASS
- 1ST 12 LENSES (INCLUDES QUAL UNIT)

[redacted]

FIRST GENERATION M.T.F.



ACTUAL PERFORMANCE

DISTORTION ≈ 5 MICRONS

RESOLUTION 140 ℓ/mm LOW CONTRAST MEASURED ON MANN BENCH WITH EK 3404 FILM

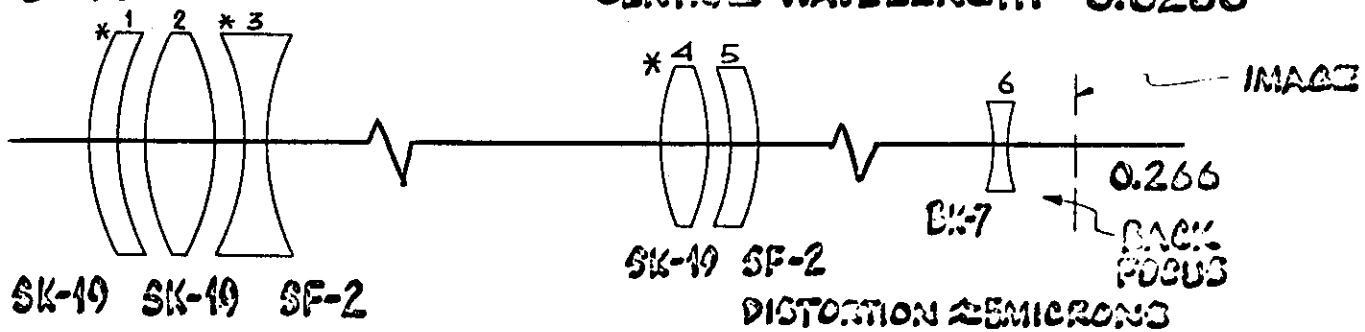
[redacted]

SECOND GENERATION OPTICAL DESIGN

DESIGN NO. 65-020-03-DB

24 INCH FOCAL LENGTH
f/3.5
6° FIELD

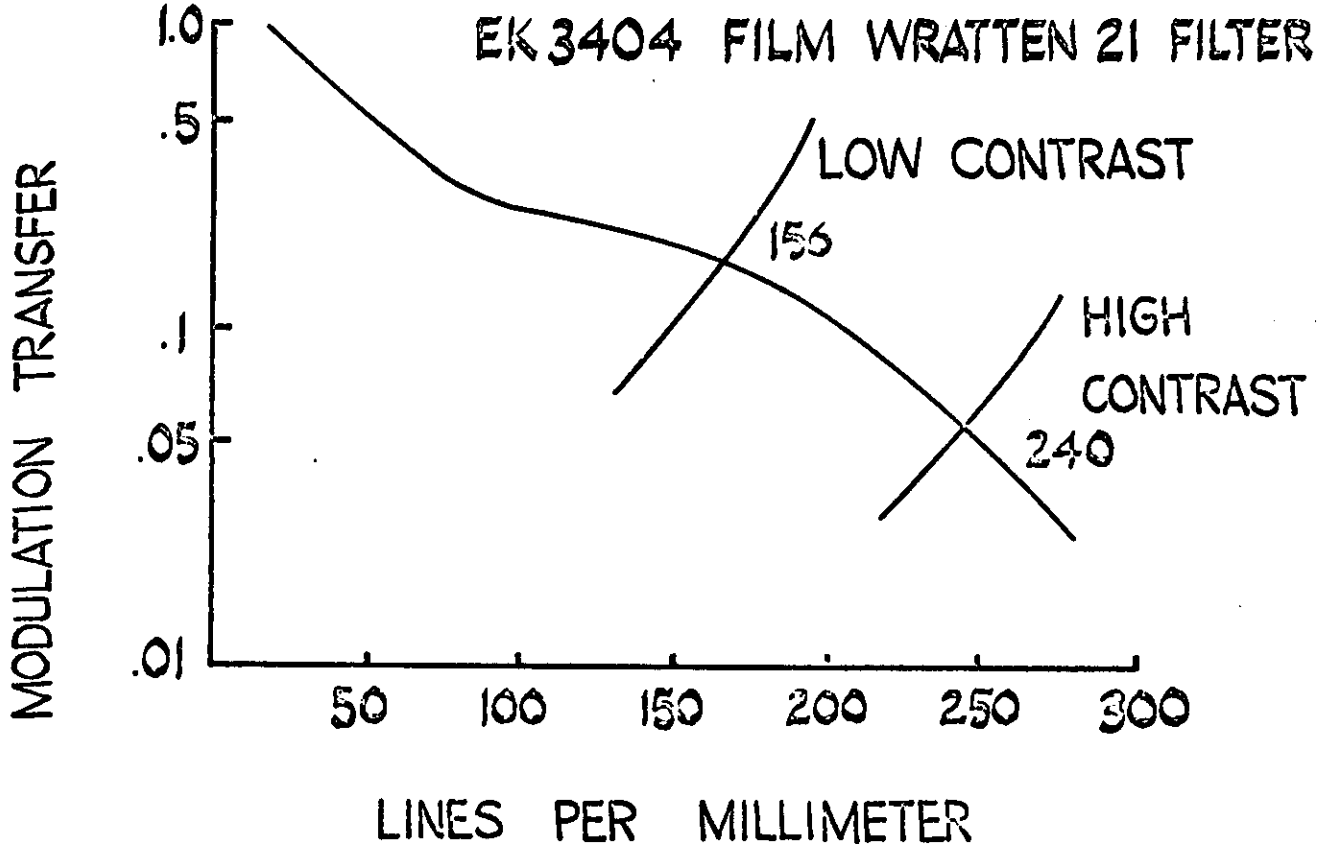
GLASS WEIGHT ≈ 17 POUNDS
SPECTRAL RANGE 0.5461 – 0.6900
CENTRAL WAVELENGTH – 0.6200



DISTORTION ≈ 5 MICRONS

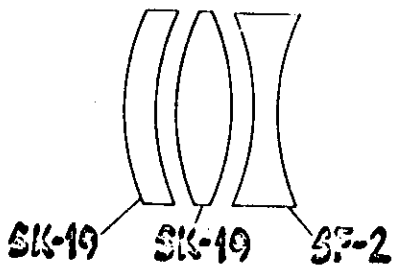
- FIRST THREE ELEMENTS SAME DIAMETER
- ASTRONOMICAL OBJECTIVE QUALITY GLASS
- SF-2 REPLACES SF-12 IN ELEMENT 5
- * INDICATES THICKENED ELEMENTS
- 21 LENSES (TOTAL 33 LENSES)

SECOND GENERATION M.T.F.

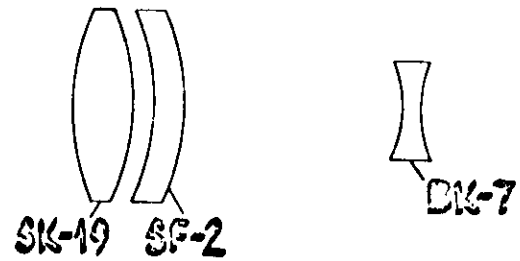


THIRD GENERATION OPTICAL DESIGN

24 INCH FOCAL LENGTH
f/3.5
6° FIELD



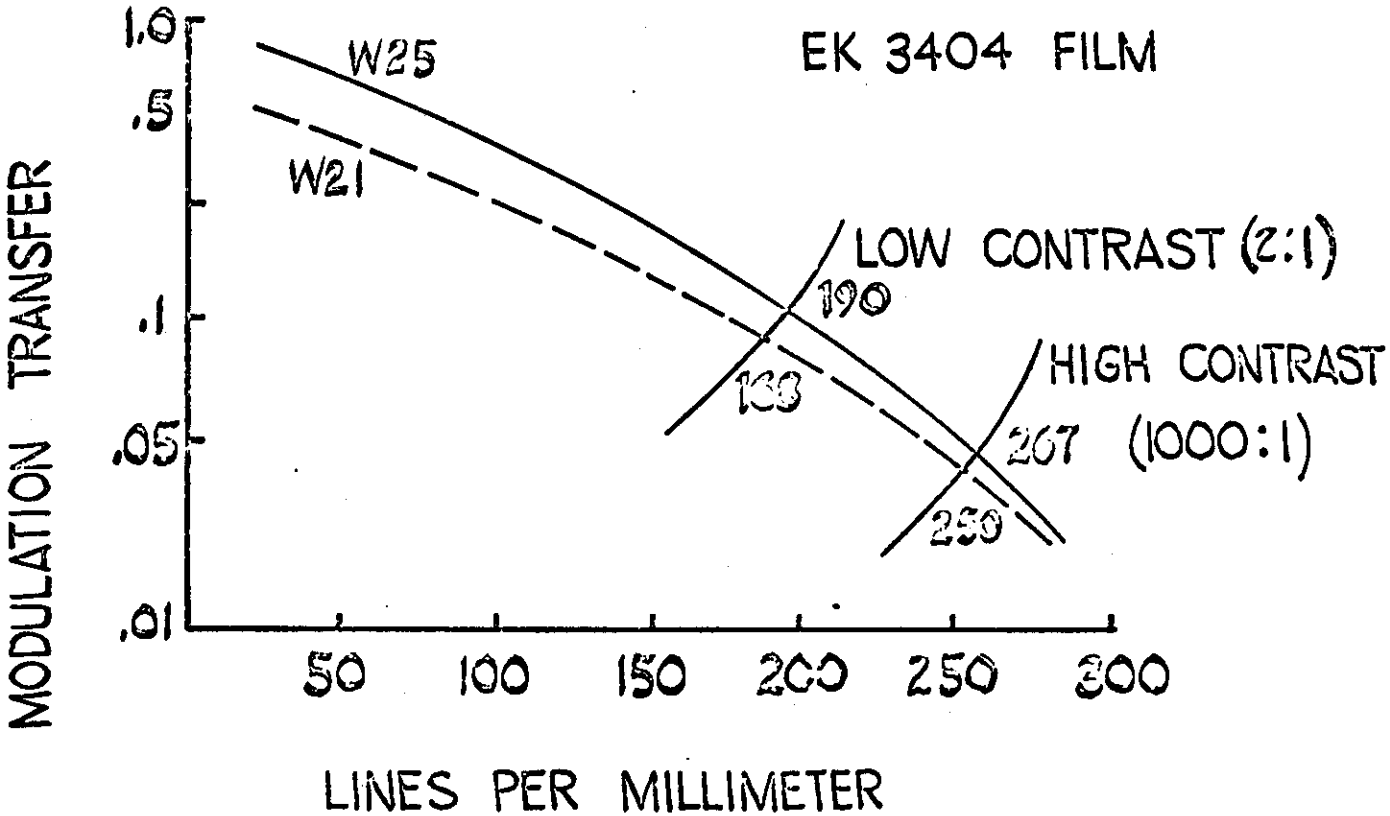
GLASS WEIGHT ≈ 17
SPECTRAL RANGE 0.6000 - 0.7100
CENTRAL WAVE LENGTH - 0.6500



DISTORTION ≈ 5 MICRONS

- SAME GLASS TYPES AND QUALITY AS SECOND GENERATION DESIGN
- SAME ELEMENT THICKNESS
- SLIGHTLY DIFFERENT RADII, AIRSPACES
- CENTRAL WAVELENGTH RAISED TO 0.6500, TO MATCH WRATTEN 25 FILTER RESPONSE

THIRD GENERATION M.T.F.



[redacted]

.Second generation lenses have produced 156 l/mm low contrast on the Mann bench and 140 l/mm low contrast in dynamic operation using gelatin filters, 3404 film, and flight (.134) slits.

.It seems a reasonable goal with incorporation of glass or quartz filters and SO 230 film, that the loss from static to dynamic resolution be cut to 10 l/mm.

.The first third generation lens produced 185 l/mm low contrast (static). With sufficient effort it would appear that the 190 l/mm goal set for this lens can be achieved.

[redacted]

[redacted]

The following is a comparison of J-3 resolution values as presently projected and as believed a reasonable design goal for the CORONA Program.

Present	80NM	3404	2nd Generation Cell		W/21
	Along Track		Across Track		
	0°	30°	0°	30°	
Ground Resolution Ft.	6.3	7.2	6.1	12.9	
Design Goal	80NM	SO 230	3rd Generation Cell		W/25
	Along Track		Across Track		
	0°	30°	0°	30°	
Ground Resolution Ft.	5.3	6.0	5.2	12.2	

[redacted]

It is proposed that the major follow-up efforts for J-3 improvement be directed in the optical area. An over order of complete lens cells and scan heads is suggested in order to permit sufficient time for selective placement of lenses into J-3 camera systems, and rework if design goals are not being met by the lens cells. Specification values should be renegotiated with ITEK to provide for a minimum acceptance criteria from optics of 185 1/mm. A new Government acceptance criteria for system dynamic resolution performance is also needed. The Resident Office suggests levels of 160 1/mm low contrast on the forward instrument (3rd generation cell) and 130 1/mm on the AFT instrument (2nd generation cell) beginning with system CR-8. By comparison the acceptance criteria for J-1 was 90 1/mm and the current J-3 requirements specification value is 110 1/mm.