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STAT

MEMORANDUM FOR:

[redacted]

Reference subject project, have completed document review - with attached pertinent comments

V.R. -

STAT

[redacted]

16 Mar 66
(DATE)

FORM NO. 101 REPLACES FORM 10-101
1 AUG 54 WHICH MAY BE USED. (47)

Declass Review by
NIMA/DOD

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Review of Acceptance and Final Reports, Project 997012

ACCEPTANCE REPORT

Serial No. 2:

COMMENT: I question their statement that resolution tests on 26 Oct 65 ~~[illegible]~~ ~~[illegible]~~ are included as attachment #2. Subject attachments are dated 14 Oct 65 and do not appear to meet resolution requirements: 80 l/mm at nadir, 50 l/mm elsewhere. In other words, the referenced test results appear to be missing.

FINAL REPORT

Comment: 1. Most of mathematics involved is beyond my capability to check, especially within a reasonable time period. Much of the operational and calibration procedures are also foreign to me. However, in general the

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company appears to have very thoroughly described all aspects of this development.

2. One minor question ~~remains~~ occurs to me, and only because it also arose during the "learning" process on the the nearly identical NRTSC instrument from the follow-on contract. None of the NRTSC personnel obtained a description during the personal and verbal contacts with [redacted] as to the method of translating camera roll data into the proper setting of the rectifier roll mechanism. I expected to find it in this final report, but have been unable to do so.

STAT

STAT

V-R-

[redacted]

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
ARMY MAP SERVICE
WASHINGTON, D. C. 20315

IN REPLY REFER TO
AMS12201

1 February 1966

Director
National Photographic Interpretation
Center
STAT [redacted]
Washington, D. C.

Dear Sir:

Transmitted herewith for your information is Acceptance Report for the Gamma I Rectifier, Serial No. 1 and 2.

Sincerely yours

[redacted]

Chief, Department of Applied
Cartography

1 Incl
Acceptance Report

TCS-38C-36/66

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Copy 1 of 3

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ACCEPTANCE REPORT

[redacted] GAMMA I

RECTIFIER

12 January 1966

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SERIAL NO. 1

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

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GAMMA I, SERIAL NO. 1, ACCEPTANCE REPORT

GENERAL

This report covers the requirements, procedures and results of both the preliminary acceptance and final acceptance test performed on the [redacted] Gamma I Rectifier, Serial No. 1. Preliminary acceptance tests were performed at the manufacturer's plant, [redacted], during the period 24 March through 27 March 1965 and 5 May thru 6 May 1965. Final acceptance tests were performed at the Army Map Service during the period 28 May through 7 Sep 65.

25X1

1

Personnel participating in the calibration and testing were:

25X1

[redacted]

PRELIMINARY ACCEPTANCE TEST

1. The requirement for a preliminary acceptance test to be performed at the manufacturer's plant was introduced into the procurement contract to provide a means for a cursory examination of the equipment prior to its shipment. These tests performed under this preliminary examination were designed and limited to those tests which would provide reasonable assurance that the equipment would not further require the facilities of the manufacturer's plant in order to meet the requirements of the final acceptance test. It was not the intent of the preliminary test to make final acceptance on the contract or to make final acceptance on any part of the performance specifications.

2. There are three basic areas of tests to be applied to the Gamma I Rectifier to assure its performance within the specifications. These are (1) Mechanical operation of the equipment, (2) Resolving power of the optical mechanical systems and, (3) Accuracy of the rectification systems.

During the preliminary acceptance tests within the manufacturer's facility it was possible to examine only the mechanical operations and the resolution capabilities of the equipment. The contractor did not have mensuration equipment within the facility to allow even a cursory review of the restitution accuracy of the rectifier.

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DOD DIR 5200.10 DOES NOT APPLY

[redacted]

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25X1 3. Results of the preliminary acceptance test conducted in [redacted] 25
[redacted] during the period 24 through 27 March 1965 did not indicate that the rectifier would perform within the resolution specifications. The test indicated that the optical system appeared to be satisfactory however, the results were unbalanced about the center of the easel and met specifications only on one side. This indicated a faulty focusing cam correction or lack of calibration of the focusing cam. On the basis of these tests it
25X1 was mutually agreed by the AMS and [redacted] representatives that the instrument should not be shipped to the Army Map Service at that time. Resolution results obtained during the test are included with this report as attachment 2. (The key to convert the group and step reading shown on attachments 2 thru 4 into resolution in lines per millimeter is included as attachment 1.)

25X1 4. Results of the second preliminary acceptance test conducted in [redacted] during the period 5 thru 6 May 1965 indicated that the equipment would meet specifications although marginal. However, considering the adverse photo processing methods for the test and with the knowledge that the instrument would be disassembled and re-calibrated at the Army Map Service it was the decision of the evaluation team to approve shipment of the equipment. Resolution results obtained during this test are included with this report as attachment 3.

FINAL ACCEPTANCE TEST

1. Specifications. Performance specifications of the contract are as follows:

Format Size - Full format (not segmented) on $9\frac{1}{2}$ film. Easel will accommodate full format with $\pm$ 5 degrees roll.

Optimum Output Scale - 1.875 magnification at center of format.

Auxiliary Data to be recorded - The data block contained on the input format shall be printed to the same scale as the format image. The exact location and dimensions of this data block will be provided by the contracting agency.

Earth Curvature - Shall be compensated for by an adjustable radius easel with range sufficient to permit the easel radius to change continuously from 47 feet to 126 feet. The adjustments shall be calibrated for convenient setting.

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Focus Cam - A three dimensional fine focus lens cam shall be provided which will adjust the lens to provide the required lens conjugated for optimum focus thru the full sweep range and compensate for the change in projection distance resulting from the adjustable easel. The cam shall cover the full range of earth curvature variables.

Primary Pitch Range - +10 degrees to +20 degrees.

Total Pitch Range - -5 degrees to +20 degrees. The equipment will have the physical capability of accommodating this total pitch range, but the resolution requirements (80 to 50 lines/mm) and accuracy requirements (0.010 inch) will apply only within the primary pitch range ($+10^{o}$ to $+20^{o}$).

Roll - Easel length and input format will be based on $\pm$ 5 degrees roll to produce the full print, however, fiducial offset will accomodate $\pm$ 10 degrees.

Resolution - The instrument will resolve a minimum of 80 lines per millimeter across the width of the format at center and no less than 50 lines per millimeter at any point on the format. These values are referred to the negative scale and printed on duplicating film (5427). The resolving capability shall apply for any setting of the easel tilt from $+10^{o}$ to $+ 20^{o}$ combined with any setting of the easel curvature. The design goal is to maintain this resolution over the total physical tilt range from $- 5^{o}$ to $+ 20^{o}$ and through all easel curvature settings.

Accuracy - The accuracy of the output shall be 0.010 inches and shall approach a design goal of 0.005 inches with no error greater than 0.010 inches. The accuracy of the printer shall be tested with a constructed grid to duplicate taking case pitched panoramic distortions as well as earth curvature displacements. The projection of the grid thru the rectifier with the proper setting shall be measured and compared with the true rectified positions.

Film Support (Input Format) - Rollers or other suitable means shall be provided to support the input film in its proper plane at the exposure point thru the entire sweep.

Light Source - The light source and condensing system shall be designed to provide proper illumination at the input negative to allow exposure times to be in the optimum range (10-60 seconds) when printing from negatives with density ranges varying from .8 - 1.4. The lamp head shall be provided with convenient adjustments to allow the operator to align the lamp filament in its proper relationship to the condensing lens systems. A method or means (possibly in the form of a small screen which would snap onto the bottom of the condensing lens) shall be provided to assist the operator in this alignment.

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Orientation of Input Film - A means of aligning the negative fiducial coincident with that of the rectifier optical axis shall be provided. A positive calibrated means shall be provided for displacing this reference mark by $\pm 10^{\circ}$ from the rectifier optical axis.

Variable Magnification - The equipment shall be designed to provide a means for displacing the easel from its optimum focus position by a measured amount sufficient to alter the output scale by $\pm$ 1%. This displacement may be either in the plus or minus direction from the optimum focus position; however, the resolution specified under "Resolution" shall apply only at the optimum focus position.

Negative Transport - Manual. The film transport system (i.e., rollers, platen, etc.) will be designed to prevent damage (i.e., scratches, abrasions, etc.) to the 70mm input film.

Copy Transport - Automatic. The film transport system will be designed to prevent damage to the $9\frac{1}{2}$ output film.

Exposure Control - An automatic means shall be provided for varying the illumination during a sweep to compensate for the changing projection distance.

Slide Rule Computer - A means shall be provided to assist the operator in determining displacements, angles and other required instrument settings.

2. Accuracy Test. This portion of the test was designed to check compliance of the instrument with the accuracy portion of the specification. The accuracy requirements as established in the specifications call for the rectified position of any point not to deviate from its true computed position by more than .01 inch. The test as performed was adequate for establishing compliance with the specifications but was not rigorous enough to establish absolute accuracy.

Input Grid - The input grid was computed from ground to photo so that after rectification, at a 1 to 1 scale, the output grid would become rectangular with each of the grid intersections constructing a 1 inch x $\frac{1}{2}$ inch rectangle. The grid computations were made from the ground to the film using the following parameters: camera pitch 15°, camera roll 0°, focal length 24 inches, flight height 1,000,000 feet, scan $\frac{1}{2}$ angle 35°, format approximately 70 millimeters by 28 inches. With this input data, XY coordinates for approximately 200 intersections were computed and plotted by the Gerber Plotter on a stable base material (scribe coat). Using the machine plotted positions, the grid was scribed by hand, connecting each of the intersections.

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In order to eliminate the errors in plotting and scribing, the input grid was calibrated using the [redacted] comparator. The grids were measured in two pieces and tied together with 26 points which were common to both halves. The transformed coordinates for the full input grid were then computed and transformed into one common system. 25X1

The input grid was pitched and distorted due to earth curvature; thus there were no straight lines on the grid. Because all lines on the grid were curved, the grid was trimmed to insure that the principal point of the grid fell on the principal axis of the rectifier. Output grid coordinates were computed using the calibrated values of the input grid. These positions were used as final computed positions for the output grid and were used to compute the errors between the computed output and the measured output grid.

Output Grid - The output grid was approximately 72 inches long and was measured in five (5) sections and tied together mathematically using a transformation program which rotates, translates and scales each section to a common system with the adjacent section. The output grid was approximately 1.95x larger than the input grid. Because of this enlargement, the line width of the grid intersections was such that repeatability of readings was restricted to approximately 20 microns.

Error Computations - The final transformed coordinates of both the input and the output grid were compared by scaling the output back to the scale of the input grid and rotating and translating the two sets of coordinates to a common system. The coordinates were also compared by using another transformation which removed any errors due to tilt in the output.

Conclusions - The specifications require that the errors in the output, when referred to the true computed position, shall not be greater than .01 inches and shall approach a design goal of .005 inches. Although a few points exceeded the maximum error of .01 inches (250 microns) it is felt that a more rigorous test would eliminate the error remaining in these few points. Based on the results of this accuracy test it is concluded that the instrument met the accuracy specification requirements. Due to the voluminous materials required to document the accuracy test, they have been omitted from this report. Details concerning the test are available at AMS.

3. Resolution Test. This portion of the test was designed to check compliance of the instrument with the resolution portion of the specifications. Tests were conducted at four easel tilt positions, 0°, 10°, 15°, and 20°, with easel curvature settings at minimum, nominal and maximum for each. A specially constructed composite of standard U. S.

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Air Force high contrast resolution targets with a resolution capability of 229 lines per millimeter was used in making the resolution check test exposures. The targets were arranged with three rows of sixteen targets along the length of the input format. Manufacturer's suggested exposure time and slit width were used in making the test exposures. Resolution results obtained during the final acceptance test exceeded specification requirements for all areas tested. Results of the tests are included with this report as attachments 4a, 4b and 4c.

4. Mechanical Tests. Sufficient mechanical tests were conducted to assure compliance of the instrument with the performance specifications. The instrument was found to meet all specification requirements; however, the mechanical tests were not documented and therefore, are not included in this report.

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TOP SECRET

GROUP

STEP	0	1	2	3	4	5	6	7
1	1.00	2.00	4.00	8.00	16.00	32.00	64.00	128.00
2	1.12	2.24	4.48	8.96	17.92	35.85	71.68	143.36
3	1.26	2.52	5.04	10.08	20.16	40.32	80.64	161.28
4	1.42	2.84	5.68	11.36	22.72	45.44	90.88	181.76
5	1.59	3.18	6.36	12.72	25.44	50.88	101.76	203.52
6	1.79	3.58	7.16	14.32	28.64	57.28	114.56	229.12

25X1

TCS-380137/66

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Attachment 1

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TOP SEC

Gamma I
Serial No.
Date

	Primary Tilt Angle						
α	0°	+5°	-5°	+10°	+15°	+20°	Remarks
+40°							
+35°	6-1 5-2 5-5			5-2 4-6 5-1	6-3 6-4 6-5	6-2 6-3 6-4	Patterns Very Streaky on +10°. (Vibration)
+20°	6-1 5-6 5-3			5-4 5-2 4-6	6-4 6-4 6-5	6-5 6-4 6-4	
0	5-6 6-4 6-2 6-5 6-3 6-5			5-6 6-5 5-6 6-5 5-6 6-6	6-3 6-5 6-4 6-5 6-4 6-5	6-4 6-6 6-6 6-6 6-5 7-1	
-20°	6-5 6-5 6-6			6-1 6-3 6-2	6-3 6-4 6-5	5-4 5-6 6-2	
-35°	6-3 6-3 6-3			5-2 5-4 5-3	5-4 5-5 5-5	4-4 4-4 4-4	+20° Very Blurred
-40°							25X1

25X1

Representative _____ Date _____

Customer Representative _____ 2/25/65

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TOP SEC

TCS-380

Attachment 2a

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H Nomo

Gamma I
Serial No. 1
Date 3/6/5

	Primary Tilt Angle						
α	0°	+5°	-5°	+10°	+15°	+20°	Remarks
+40°							
+35°	6-3 6-5 6-5			5-6 6-2 6-1	5-6 6-1 6-3	4-5 5-1 4-6	+20° Very Blurred
+20°	6-4 6-4 6-5			6-1 6-3 6-3	6-3 6-4 6-5	5-5 6-1 6-2	
0	5-5 6-4 5-6 6-6 6-3 6-6			6-2 6-5 6-3 6-6 6-5 7-1	6-6 6-5 6-6 6-6 6-6 6-6	6-6 6-6 6-6 6-6 6-6 7-1	
-20°	6-6 6-5 6-6			6-6 6-6 6-6	6-5 6-5 6-6	6-4 6-5 6-6	
-35°	6-3 6-4 6-4			6-4 6-4 6-4	6-1 6-2 6-2	6-1 6-2 6-3	
-40°							25X1

25X1

[redacted] epresentative

Customer Representative [redacted]

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TCS-38019

Attachment 2b

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H max

Gamma I
Serial No.
Date 23/65

∝	Primary Tilt Angle 0°	+5°	-5°	+10°	+15°	+20°	Remarks
+40°							
+35°	5-4 5-3 5-2			5-2 5-1 4-6	6-1 6-1 6-3	6-2 6-1 6-1	+10° very streaky 0° very Blurred
+20°	6-5 6-5 6-6			6-5 6-6 6-5	6-3 6-5 6-4	6-4 6-5 6-5	
0	6-1 6-5 6-1 6-6 6-2 7-1			6-1 7-1 6-2 7-1 6-2 7-1	6-4 6-5 6-5 6-6 6-4 6-5	6-5 6-5 6-6 6-5 6-6 6-5	
-20°	6-4 6-5 6-5			6-1 6-2 6-4	6-4 6-4 6-5	5-5 6-1 6-3	
-35°	5-6 6-1 6-1			5-1 5-4 5-3	5-2 5-1 5-[illegible]	4-4 4-5 4-5	
-40°							25X1

Representative

Customer Representative

25X1

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TCS-3801

Attachment 2c

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MAIN

RESOLUTION VALUES

Gamma I
Serial No. 1
Date 3/1/75

	Primary Tilt Angle						
∝	0°	+5°	-5°	+10	+15	+20	Remarks
+40°							
+35°				6-3 6-2 6-2	5-5 5-6 5-6	5-6 6-2 6-2	
+20°				6-2 6-1 5-6	6-2 6-2 6-2	6-4 6-5 6-6	
0				5-6 6-4 6-1 6-4 6-3 6-3	6-1 6-3 6-2 6-4 6-2 6-4	6-3 6-4 6-4 6-5 6-5 6-6	
-20°				6-4 6-4 6-4	6-3 6-4 6-4	5-5 6-2 6-4	
-35°				5-6 6-1 6-1	5-5 6-2 6-3	4-5 5-1 5-2	
-40°							25X1

Representative

Customer Representative

25X1

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TCS-380

Attachment 2d

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Gamma I
Serial No. 1
Date 3/3/65

Nom

Primary Tilt Angle							
α	0°	+5°	-5°	+10	+15	+20	Remarks
+40°							
+35°				5-2 5-3 5-4	5-1 5-4 5-6	4-1 4-1 4-2	
+20°				5-5 5-6 6-1	6-1 6-2 6-2	4-6 5-2 5-5	
0				6-2 6-4 6-5 6-4 6-6 6-5	6-4 6-5 6-5 6-5 6-5 6-6	6-4 6-4 6-6 6-5 6-6 6-5	
-20°				6-5 6-4 6-3	6-4 6-5 6-5	6-5 6-5 6-6	
-35°				5-6 5-1 4-6	6-1 6-3 6-4	6-1 6-3 6-4	
-40°							Patterns Very Streaky at +10° 25X1

Representative

Date 25X1

Customer Representative

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TCS-3801

Attachment 2e

H MAX

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RESOLUTION VALUES TOP S

Gamma I
Serial No. 1
Date 23/65

∝	Primary Tilt Angle 0°	+5°	-5	+10	+15	+20	Remarks
+40							
+35				5-1 4-4 a 4-4	5-6 6-2 6-3	6-1 6-1 6-2	Slightly over-Exposed
+20°				6-3 6-4 6-5	4-6 5-1 5-3	6-1 6-1 6-2	Very Blurred +15°
0				5-6 6-4 6-1 6-5 6-3 6-6	4-2 4-5 4-2 5-1 4-2 4-4	6-2 6-3 6-3 6-3 6-3 6-3	
-20				6-3 6-5 6-5	5-4 5-6 6-1	6-1 6-2 6-4	
-35°				5-2 5-4 5-5	5-1 5-3 5-3	5-1 5-2 5-1	Very Blurry +20°
-40°							25X1

[redacted] epresentative
Customer Representative

Date

25X1

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TOP S

TCS-3001

Attachment 2f

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Min Test 1

RESOLUTION VALUES

Camera 1
Serial No. 6
Date 3/23/65

Primary Tilt Angle							
∝	0°	+5°	-5°	+10°	+15	+20	Remarks
+40°							
+35°				6-3 6-3 6-3	6-4 6-4 6-3	6-3 6-2 6-1	15° Horizontal only vertical 5-6 10° under exp.
+20°				6-1 6-2 6-2	6-3 6-2 6-3	6-6 6-6 6-5	10° under exp.
0				6-4 6-4 6-3 6-5 6-3 6-4	6-3 6-4 6-2 6-4 6-1 6-4	6-5 6-6 6-5 7-1 6-4 6-6	10° vertical only horizontal 6-1 10° under exp.
-20°				6-4 6-4 6-3	6-4 6-4 6-3	6-4 6-2 6-1	
-35°				6-4 6-2 6-2	6-2 6-2 5-6	5-6 6-1 5-5	20° Horizontal only vertical 5-1 10° Horizontal only vertical 6-1
-40°							25X1

25X1

[redacted] Representative

Customer Representative

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TCS-300

Attachment 2g

Nom Test 1

RESOLUTION VALUES TOP S

Serial No. 6
Date 3/23/65

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	Primary Tilt Angle						
α	0°	+5°	-5°	+10	+15	+20	Remarks
+40°							
+35°				5-5 5-6 5-5	5-6 5-6 5-3	4-5 4-5 4-2	10° Horizontal only vertical 5-3 20° blurry or vibration
+20°				6-1 5-6 5-6	6-3 6-3 6-2	5-5 5-3 5-2	20° underexp & blurry
0				6-4 6-5 6-4 6-4 6-2 6-4	6-4 6-6 6-4 6-5 6-4 6-5	6-5 6-5 6-4 6-4 6-3 6-4	20° underexp.
-20°				6-2 6-3 6-4	6-5 6-5 6-5	6-5 6-5 6-4	
-35°				5-4 5-5 6-2	6-4 6-4 6-3	6-4 6-3 6-2	10° vibration, blurry
-40°							25X1 25X1

Representative

Customer Representati

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TCS-38

Attachment 2h

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Max Test

Gamma I
Serial No. 1
Date 3/[illegible]/65

∝	Primary Tilt Angle 0°	+5°	-5°	+10°	+15	+20	Remarks
+40°							
+35°				5-6 5-6 5-6	6-3 6-3 6-3	6-3 6-2 6-2	10° vibration 20° "
+20°				6-5 6-4 6-4	5-4 5-4 5-3	6-3 6-2 6-2	
0				6-5 6-5 6-4 6-5 6-3 6-4	5-4 5-4 5-4 5-4 5-2 5-3	6-3 6-3 6-3 6-3 6-2 6-3	10° vertical only horizontal 6-6 15° vibration
-20°				6-5 6-5 6-4	6-1 5-6 5-5	6-4 6-3 6-1	15° vibration
-35°				6-1 5-6 5-6	5-5 6-1 5-6	6-1 6-1 5-6	10° vibration, underexp. 20° " & blurry 20° Horizontal only vertical 5-2
-40°							25X1

Representative

Customer Representative

Date

25X1

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ICS-38

Attachment 21

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Min Test 2

RESOLUTION VALUES

Gamma I
Serial No. 12
Date 3/3/65

α	Primary Tilt Angle 0°	+5°	-5°	+10°	+15	+20	Remarks
+40°							
+35°	6-3 5-6 6-4			6-1 6-1 6-2	6-4 6-4 6-3	6-5 6-4 6-3	0° VIBRATION 10° " 15° "
+20°	5-2 5-4 5-6			5-6 6-1 6-1	6-4 6-4 6-4	6-2 6-3 6-4	0° " 10° " 20° "
0	6-3 6-4 6-2 6-3 6-1 6-3			6-1 6-5 6-5 6-6 6-3 6-5	6-5 6-4 6-5 6-5 6-5 6-5	6-4 6-6 6-4 6-5 6-4 6-6	-0° at 10° ± VERTICAL ONLY HORIZONTAL 5-6 -0° at 15° ± VERTICAL ONLY HORIZONTAL 6-2
-20°	6-5 6-5 6-4			6-3 6-3 6-2	6-4 6-4 6-3	6-2 6-1 5-6	
-35°	6-3 6-3 6-3			6-1 6-1 6-1	6-1 5-6 5-5	5-5 5-3 5-3	35° at ± 10° HORIZONTAL VERTICAL 5-4 35° at ± 20° HORIZONTAL V: 4-6
-40°							25X1

25X1

Representative

Customer Representative

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

TCS-386

Attachment 2j

Non

Test 2

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RESOLUTION VALUES TOP SECRET

Gamma I
Serial No. 12
Date 3/[illegible]/65

α	Primary Tilt Angle 0°	+5	-5	+10	+15	+20	Remarks
+40°							
+35°	6-4 6-4 6-4			6-2 6-2 6-1	6-3 6-3 6-1	5-5 5-6 5-5	15° underexposed 20° horizontal only vertical 5-1
+20°	6-5 6-5 6-4			6-3 6-2 6-1	6-5 6-4 6-3	6-2 6-2 6-1	15° underexp.
0	6-5 6-5 6-5 6-5 6-1 6-4			6-5 6-6 6-5 6-6 6-3 6-5	6-5 6-5 6-5 6-4 6-4 6-5	6-5 6-5 6-5 6-6 6-5 6-6	0° vertical only horizontal 6-1
-20°	6-5 6-5 6-5			6-5 6-5 6-6	6-5 6-4 6-4	6-5 6-5 6-4	
-35°	6-4 6-4 6-3			6-5 6-4 6-5	6-4 6-3 6-3	6-3 6-3 6-3	15° underexp.
-40°							25X1

25X1

Representative

Customer Representati

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

TOP SECRET

Attachment 2k

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Gamma 1
Serial No. 12
Date 3/25/65

MAX Test 3

RESOLUTION VALUES

α	Primary Tilt Angle 0°	+5°	-5°	+10°	+15	+20	Remarks
+40°							
+35°	5-4 5-6 6-5			5-3 5-3 5-4	6-3 6-4 6-3	5-6 6-1 6-2	10° blurry, vibration 15° vibration 20° " 0° "
+20°	6-5 6-6 6-5			6-5 6-4 6-4	6-5 6-5 6-4	6-5 6-4 6-4	15° underexposed 20° "
0	6-5 6-5 6-4 6-5 6-1 6-6			6-5 6-5 6-5 6-6 6-4 6-6	6-4 6-6 6-4 6-6 6-4 6-5	6-5 6-5 6-5 6-5 6-5 6-5	0° vertical only, hor. 6-1 20° underexposed
-20°	6-5 6-5 6-5			6-4 6-3 6-1	6-5 6-5 6-4	6-3 6-1 5-6	10° underexposed 20° "
-35°	6-5 6-4 6-5			5-6 5-6 5-6	5-6 5-6 5-3	5-6 5-4 5-4	0° horizontal only, 6-1 vert. 10° " " " , 5-2 " 20° underexposed
-40°							

25X1

Representative _____ Date 25X1

Customer Representative _____ Date _____

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

TCS-38013

Attachment 2L

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

RESOLUTION VALUES

GAMMA I
SERIAL NO. 1

	t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No. 1	R-L T=10°	6-3			6-1				6-6	6-4				6-3			6-3	
		6-3			6-2				6-2	6-3				6-4			6-4	
	MAX	6-4			6-1				7-1	6-3				6-4			6-4	
No. 2	L-R T=10°	6-3			6-1				6-6	6-4				6-4			6-4	
		6-3			6-1				6-6	6-3				6-4			6-4	
	MAX	6-3			5-6				6-6	6-4				6-4			6-4	
No. 3	R-L T=15°	6-4			6-3				6-5	6-5				6-2			6-3	
		6-4			6-2				7-1	6-3				6-3			6-4	
	MAX	6-5			6-4				6-6	6-3				6-4			6-4	
No. 4	L-R T=15°	6-4			6-3				6-6	6-6				6-4			6-3	
		6-4			6-1				6-6	6-6				6-3			6-4	
	MAX	6-4			6-3				7-1	6-6				6-4			6-4	
No. 5	R-L T=20°	6-2			6-6				6-4	6-5				6-1			5-6	
		6-3			6-3				6-4	6-6				6-2			6-1	some phase overlapped
	MAX	6-4			6-3				6-5	6-6				6-3			6-2	

25X1

Date: 5 May 65

Date: 5 May 65

Attachment 3a

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

TCS-58015766

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

RESOLUTION VALUES

GAMMA I

SERIAL NO 1

	$\dot{C}^{\circ}$ PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No. 6	L-R	5-5			6-5				6-4	6-3				6-1			5-6	
	T=20°	6-1			6-3				6-5	6-4				6-2			6-2	some places underexposed
	MAX	6-2			6-1				6-6	6-5				6-3			6-3	
No. 7	R-L	6-3			6-3				6-3	6-1				6-5			6-4	
	T=20°	6-1			6-3				6-5	6-3				6-6			6-4	
	NOM	6-1			6-2				6-4	6-4				6-5			6-5	
No 8.	L-R	6-2			6-6				6-4	6-3				6-5			6-4	-35 streaky & overexposed
	T=10°	6-1			6-5				6-5	6-4				6-4			6-4	+35 " "
	NOM	6-1			6-4				6-5	6-4				6-5			6-4	
No. 9	R-L	6-3			6-6				6-6	6-3				6-5			6-2	
	T=15°	6-3			6-4				6-6	6-5				6-5			6-3	
	NOM	6-3			6-5				7-1	6-3				6-5			6-4	
No. 10	L-R	6-3			6-5				6-5	6-4				6-5			6-3	
	T=15°	6-3			6-4				6-6	6-4				6-5			6-4	25X1
	NOM	6-3			6-5				6-6	6-4				6-5			6-4	

Date: 5 May 65

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Attachment 3b

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

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H

RESOLUTION VALUES TOP SECRET

GAMMA I
SERIAL NO. 1

	t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
0. 11	R-L T=20°	6-3			6-4				6-4	6-4				6-3			5-5	
		6-4			6-4				6-4	6-4				6-4			6-1	
	NOM	6-4			6-4				6-5	6-5				6-5			6-3	
10. 12	L-R T=20°	6-2			6-4				6-4	6-4				6-4			5-6	
		6-4			6-4				6-5	6-6				6-5			6-1	
	NOM	6-4			6-4				6-6	6-6				6-5			6-3	
4. 13	R-L T=10°	6-3			6-3				6-4	6-3				6-5			6-1	
		6-3			6-2				6-5	6-4				6-4			6-1	
	MIN	6-4			6-1				6-5	6-5				6-4			5-3	
0. 14	R-L T=10°	6-4			6-6				6-5	6-4				6-5			6-2	
		6-4			6-4				6-6	6-5				6-5			5-6	
	MIN	6-5			6-3				6-6	6-5				6-4			5-2	
0. 15	R-L T=15°	6-1			6-4				6-5	6-5				6-6			6-5	
		6-1			6-5				6-6	6-5				6-6			6-4	25X1
	MIN	6-1			6-5				7-1	6-5				6-5			6-4	

Date: 5 May 65

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Attachment 3c

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

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RESOLUTION VALUES TOP SECRET

GAMMA I
SERIAL NO. 1

	t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
	L-R	6-3			6-5				6-4	6-4				6-5			6-3	
10 16	T=15°	6-4			6-4				6-5	6-4				6-5			6-3	
	MIN	6-4			6-3				6-6	6-4				6-4			6-3	
	R-L	5-5			6-6				6-4	6-4				6-5			6-2	
10 17	T=20°	6-2			6-5				6-4	6-4				6-5			6-4	
	MIN	6-3			6-5				6-5	6-5				6-4			6-4	
	L-R	5-5			6-6				6-5	6-4				6-5			6-2	
10 18	T=20°	6-1			6-6				6-5	6-4				6-5			6-4	
	MIN	6-3			6-5				6-6	6-5				6-5			6-4	
																		25X1

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Attachment 3d

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RESOLUTION VALUES

GAMMA I

SERIAL NO. 1

	t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No. 19	R.-L. T=0°	6-5			6-6				6-2	5-6				6-5			5-4	
		6-5			6-4				6-3	6-1				6-3			5-6	
	MIN	6-4			6-4				6-2	6-1				6-4			5-6	
No. 20	L-R T=0°	6-4			6-5				6-2	5-6				6-4			5-6	
		6-5			6-5				6-2	6-2				6-3			6-1	
	MIN	6-4			6-4				6-3	6-2				6-4			5-6	
No. 21	R-L T=0°	6-3			6-5				6-1	5-6				6-6			6-3	
		6-4			6-5				6-2	6-2				6-5			6-3	underexposed
	NOM	6-4			6-6				6-3	6-2				6-5			6-3	
No. 22	L-R T=0°	6-4			6-5				6-1	5-6				6-5			6-2	
		6-4			6-4				6-2	6-1				6-5			6-1	underexposed
	NOM	6-4			6-4				6-2	6-1				6-4			6-1	
No. 23	R-L T=0°	6-4			6-2				6-2	5-6				6-4			6-4	
		6-4			6-2				6-2	6-1				6-4			6-4	underexposed
	MAX	6-4			6-1				6-2	6-2				6-4			6-4	

Date: 5 May 65

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25X1

Attachment 3e

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RESOLUTION VALUES TOP SECRET

GAMMA I
SERIAL NO. 1

	t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No 24	L-R	6-4			6-4				6-2	5-5				6-4			6-4	
	T=0°	6-5			6-2				6-3	5-6				6-4			6-3	
	MAX	6-4			6-2				6-3	6-1				6-4			6-3	
No 13 Repeat	R-L	6-3			6-5				6-3	6-1				6-6			6-1	
	T=10°	6-4			6-5				6-3	6-2				6-5			6-1	
	MIN	6-4			6-4				6-4	6-2				6-5			5-4	
No 14 Repeat	L-R	6-3			6-5				6-4	6-2				6-5			6-1	
	T=10°	6-4			6-5				6-4	6-2				6-5			5-6	overexposed
	MIN.	6-4			6-5				6-3	6-2				6-4			5-4	
																		25X1

Date: 5 May 65

Date: 5 May 65

Attachment 3f

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TOP SECRET

GAMMA I

SERIAL NO. 1

RESOLUTION VALUES

21 June 1965 - Processing

2° PRIMARY	SCAN ANGLE																REMARKS
	-35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	
0° Min. #1	6-4	5-6	5-6	6-2	6-4	6-5	6-4	6-5	6-4	6-4	6-3	6-5	6-5	6-1	6-1	5-6	All processing done Thru [redacted] Cont. Processor
	6-4	5-6	5-6	6-1	6-2	6-5	6-4	6-6	6-4	6-4	6-3	6-5	6-5	5-6	5-6	5-6	
	6-4	5-6	5-5	5-6	6-2	6-5	6-5	6-6	6-5	6-5	6-4	6-5	6-4	5-5	5-5	5-6	
10° Min. #2	6-3	6-2	6-5	6-3	6-5	6-5	6-5	6-4	6-3	6-2	6-2	6-2	6-3	6-4	6-4	6-5	
	6-3	6-1	6-4	6-3	6-4	6-6	6-4	6-4	6-3	6-3	6-3	6-2	6-4	6-5	6-6	6-5	
	6-4	5-6	6-2	6-2	6-3	6-6	6-4	6-4	6-3	6-3	6-4	6-4	6-4	6-4	6-6	6-5	
15° Min. #5	6-3	6-5	6-5	6-3	6-3	6-5	6-3	6-4	6-4	6-3	6-3	6-4	6-2	6-4	6-4	6-4	
	6-3	6-6	6-6	6-2	6-4	6-5	6-4	6-4	6-4	6-3	6-3	6-4	6-3	6-5	6-5	6-4	
	6-4	6-4	6-6	6-2	6-4	6-5	6-4	6-4	6-5	6-3	6-3	6-5	6-4	6-5	6-5	6-5	
20° Min. #6	5-6	6-3	6-3	6-4	6-3	6-4	6-2	6-4	6-3	6-2	6-1	6-2	6-2	6-4	6-2	6-1	
	5-6	6-3	6-4	6-4	6-3	6-4	6-2	6-4	6-4	6-2	6-1	6-2	6-3	6-4	6-2	6-3	
	6-1	6-4	6-5	6-4	6-4	6-4	6-3	6-4	6-3	6-2	6-2	6-3	6-4	6-4	6-4	6-3	

25X1

25X1

Date: _____

Date: 20 June

Attachment 4a

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H. No. 4

RESOLUTION VALUES

TOP SECRET

GAMMA I

SERIAL NO. 2

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
0°	6-1	6-4	6-2	6-6	6-3	6-6	6-6	7-1	6-5	6-3	6-4	6-6	6-6	6-5	6-5	6-4	
Nom.	6-1	6-5	6-2	6-4	6-3	7-1	6-6	6-6	7-1	6-3	6-5	6-6	6-6	6-6	6-2	6-4	
#7	6-1	6-5	6-1	6-3	6-2	6-6	7-1	7-1	7-1	6-4	6-6	6-5	6-5	6-4	6-2	6-3	
10°	6-2	6-4	6-4	6-4	6-4	6-4	6-4	6-5	6-4	6-2	6-2	6-4	6-5	6-3	6-4	6-3	
Nom.	6-3	6-5	6-3	6-4	6-4	6-5	6-4	6-5	6-4	6-2	6-3	6-4	6-5	6-4	6-5	6-4	
#8	6-1	6-5	6-2	6-3	6-4	6-5	6-4	6-6	6-4	6-3	6-3	6-5	6-6	6-4	6-5	6-4	
15°	6-3	6-2	6-3	6-4	6-2	6-2	6-4	6-4	6-3	6-2	6-2	6-4	6-4	6-3	6-3	6-2	
Nom.	6-3	6-3	6-3	6-5	6-3	6-2	6-4	6-4	6-4	6-2	6-2	6-4	6-4	6-4	6-5	6-4	
#9	6-3	6-3	6-3	6-6	6-3	6-2	6-4	6-4	6-4	6-2	6-3	6-4	6-5	6-4	6-5	6-4	
20°	6-1	6-1	6-3	6-3	6-5	6-4	6-4	6-4	6-3	6-2	6-1	6-2	6-1	5-6	5-6	5-5	
Nom.	6-2	6-1	6-3	6-4	6-5	6-4	6-5	6-5	6-4	6-2	6-2	6-2	6-2	6-1	6-2	6-1	
#10	6-3	6-2	6-3	6-5	6-5	6-4	6-4	6-5	6-4	6-2	6-2	6-3	6-4	6-2	6-3	6-2	

25X1

Date: _____

Date: 20 June

Attachment 4b

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

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H. Max

RESOLUTION VALUES

GAMMA I
SERIAL NO. 1

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
0°	6-4	6-2	6-2	6-1	6-3	6-4	6-5	7-1	6-5	6-3	6-4	6-3	6-4	6-4	6-3	6-4	
	6-4	6-1	6-2	6-1	6-2	6-3	6-5	7-1	6-5	6-3	6-4	6-4	6-4	6-3	6-2	6-4	
Max. # 11	6-5	5-6	6-2	6-1	6-2	6-2	6-4	6-6	6-5	6-4	6-5	6-4	6-5	6-3	6-1	6-4	
10°	6-4	6-4	6-3	6-2	6-1	6-3	7-1	6-6	6-5	6-2	6-2	6-1	6-2	6-5	6-5	6-3	
	6-4	6-4	6-2	6-2	6-1	6-2	6-6	6-5	6-5	6-3	6-3	6-2	6-2	6-6	6-6	6-4	
Max. # 12	6-4	6-2	6-1	5-6	5-6	6-2	7-1	6-5	6-5	6-3	6-3	6-2	6-3	6-6	6-6	6-4	
15°	6-3	6-4	6-5	6-2	6-6	6-2	6-4	6-4	6-4	6-3	6-2	6-1	6-2	6-4	6-3	6-2	
	6-3	6-5	6-6	6-2	6-5	6-3	6-5	6-4	6-5	6-4	6-2	6-2	6-3	6-5	6-4	6-3	
Max. # 13	6-4	6-6	6-5	6-2	6-4	6-3	6-5	6-4	6-5	6-3	6-3	6-2	6-4	6-5	6-5	6-3	
20°	6-1	6-3	6-4	6-3	6-4	6-3	6-4	6-3	6-4	6-3	6-1	6-1	6-1	6-2	6-1	6-1	
	6-1	6-3	6-4	6-3	6-3	6-3	6-4	6-3	6-4	6-3	6-1	6-1	6-2	6-4	6-2	6-1	
Max. # 14	6-2	6-4	6-4	6-3	6-3	6-3	6-4	6-3	6-5	6-4	6-2	6-2	6-3	6-4	6-4	6-2	

25X1

Date: _____

Date: 20 June 1

Attachment 4c

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

SERIAL NO. 2

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

GAMMA I, SERIAL NO. 2, ACCEPTANCE REPORT

GENERAL

This report is supplemented by the Gamma I, Serial No. 1, Acceptance Report in that the requirements and procedures followed in the acceptance of Serial No. 2 were identical to those described in Serial No. 1 and therefore, that documentation has been omitted from this report. Preliminary acceptance tests were performed at the manufacturer's plant, [redacted] during the period 14 June through 15 June 1965. Final acceptance tests were performed at the Army Map Service during the period 26 June through 2 November 1965.

25X1

PRELIMINARY ACCEPTANCE TEST

Results of the preliminary acceptance test conducted in [redacted], indicated that the equipment would meet specifications after final installation and calibration. Although no single resolution test provided results meeting specifications, satisfactory resolution could be obtained at every easel position by minor adjustments between test exposures. It was the decision of the evaluating team and [redacted] representatives that final calibration would eliminate the problems and that the equipment should be disassembled and shipped to Army Map Service. Resolution results obtained during this test are included with this report as attachment 1.

25X1 25X1 25X1

FINAL ACCEPTANCE TEST

1. Resolution Test. The results of the first test conducted after final installation and calibration of the equipment indicated that the lens focusing cam could not be adjusted to allow the equipment to meet specifications. A new wafer type focusing cam was constructed by [redacted] and installed in the equipment on 18 September 1965. The calibration was completed and the final resolution tests were conducted on 26 October 1965. Resolution results obtained during this test were evaluated and found to exceed the requirement of the specifications. Results of the final resolution check are included with this report as attachment 2.

25X1

2. Accuracy Test. Procedures and materials established in the acceptance test of instrument number 1 were also employed in the test of instrument number 2. Results of the accuracy test show that all two hundred points used in the check had residual displacement less than the .01 inches (250 microns) allowed by the specifications. Based on these

TCS-380137/66

EXCLUDED FROM AUTOMATIC DOWNGRADING
DOD DIR 5200.10 DOES NOT APPLY

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results it is concluded that the instrument met the accuracy specification requirements. Due to the voluminous materials required to document the accuracy test, they have been omitted from this report. Details concerning the test are available at AMS.

3. Mechanical Tests. Sufficient mechanical tests were conducted to assure compliance of the instrument with the performance specifications. The instrument was found to meet all specification requirements; however, the mechanical tests were not documented and therefore, are not included in this report.

EXCLUDED FROM AUTOMATIC REGRADING
DOD DIR 5200.10 DOES NOT APPLY

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H MIN

RESOLUTION VALUES TOP SECRET

GAMMA I
SERIAL 2

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
#1	6-4	6-6	6-6	6-1	6-5	6-6	6-6	6-6	6-4	6-5	6-3	6-5	6-3	6-2	5-6	5-1	Reserve for underexposed TV. Par. Card
H MIN	6-4	6-6	6-4	5-6	6-4	6-6	6-6	6-6	6-5	6-5	6-3	6-6	6-3	6-1	5-4	5-2	
t = 0°	6-3	6-5	6-4	6-1	6-5	6-6	6-6	6-6	6-5	6-4	6-4	6-5	6-3	6-1	5-4	5-3	
#2	6-4	6-4	6-6	6-6	6-5	6-5	6-6	6-4	6-4	6-5	6-5	6-5	6-4	6-3	6-2	6-1	
H MIN	6-4	6-4	6-6	6-3	6-5	6-6	6-5	6-4	6-4	6-5	6-5	6-5	6-4	6-3	6-2	6-1	
t = 10°	6-4	6-5	6-5	6-4	6-6	6-6	6-5	6-3	6-2	6-6	6-5	6-5	6-4	6-3	6-2	6-1	
#3	6-3	6-3	6-5	6-5	6-6	6-5	6-5	6-5	6-3	6-4	6-4	6-2	6-3	5-6	5-6	5-6	
H MIN	6-3	6-3	6-6	6-5	6-6	6-5	6-5	6-4	6-3	6-4	6-4	6-3	6-3	5-6	6-1	6-1	
t = 15°	6-3	6-3	6-6	6-5	6-6	6-5	6-4	6-3	5-6	6-4	6-4	6-2	6-2	6-1	6-1	6-1	
#4	6-1	6-1	6-4	6-5	6-5	6-5	6-5	6-5	6-3	6-4	6-4	6-2	6-1	5-5	5-5	5-5	
H MIN	6-1	6-1	6-4	6-6	6-5	6-5	6-4	6-5	6-3	6-4	6-4	6-2	5-6	5-5	5-5	5-5	
t = 20°	6-1	6-1	6-4	6-5	6-5	6-4	6-4	6-3	6-1	6-3	6-3	6-1	5-6	5-5	5-6	5-6	

25X1

Date: 14 June 1965

Date: 14 June 1965

Run #1

TOP SECRET

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Attachment 1a

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

H NORM

RESOLUTION VALUES

GAMMA

SERIAL NO. 2

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
#5	6-3	6-5	6-5	6-6	6-6	6-6	6-6	6-5	6-5	6-4	6-3	6-2	6-4	6-1	6-2	5-3	underexposed on end (Pos.)
H NORM	6-3	6-5	6-5	6-6	6-6	6-6	6-5	6-5	6-5	6-4	6-2	6-1	6-3	5-6	6-2	5-3	
t=0°	6-2	6-4	6-5	6-6	6-6	6-6	6-5	6-4	6-5	6-4	6-2	6-3	6-3	5-6	6-2	5-4	
#7	6-4	6-4	6-2	6-6	6-6	6-6	6-6	6-6	6-4	6-6	6-5	6-5	6-2	6-3	6-3	6-2	underexposed on Pos. end
H NORM	6-4	6-3	6-2	6-6	6-6	6-6	6-6	6-5	6-5	6-5	6-4	6-5	6-2	6-3	6-T	6-3	
t=15°	6-4	6-3	6-2	6-6	6-5	6-6	6-6	6-5	6-2	6-6	6-5	6-6	6-2	6-3	6-2	6-3	
#6	6-4	6-4	6-1	6-5	6-[illegible]	6-6	6-6	6-4	6-3	6-6	6-3	6-5	6-2	6-4	6-2	6-1	underexposed on Pos. end
H NORM	6-3	6-4	6-4	6-6	6-[illegible]	6-5	6-5	6-4	6-3	6-6	6-4	6-5	6-2	6-4	6-3	6-2	
t=10°	6-4	6-4	6-4	6-6	6-6	6-6	6-5	6-4	6-2	6-6	6-3	6-5	6-3	6-4	6-3	6-2	
#8	6-2	6-3	6-1	6-5	6-5	6-6	6-2	6-4	6-6	6-4	6-2	6-4	5-6	6-1	5-5	5-4	underexposed on Pos. end
H NORM	6-2	6-3	6-1	6-5	6-6	6-6	6-4	6-3	6-4	6-5	6-3	6-4	5-6	6-2	5-5	5-4	
t=20°	6-2	6-2	6-1	6-5	6-5	6-6	6-4	6-3	6-4	6-5	6-4	6-5	5-6	6-1	5-6	5-5	

25X1

Date: 14 June 1965

Date: 4 June 65

Run #1

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Attachment 1b

H

RESOLUTION VALUES TOP SECRET

GAMMA I

SERIAL NO. 2

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
#9	5-3	6-5	6-5	6-5	6-5	6-4	6-5	6-4	6-4	6-5	6-3	5-5	5-6	5-2	5-4	5-4	
H MAX	5-3	6-4	6-5	6-5	6-6	6-4	6-5	6-5	6-3	6-5	6-5	5-4	5-5	5-1	5-4	5-4	
t = 0°	5-3	6-5	6-5	6-6	6-4	6-4	6-4	6-4	6-4	6-5	6-3	5-6	5-5	5-1	5-4	5-4	
#10	5-3	6-4	6-6	6-5	6-6	6-3	6-2	6-3	6-5	6-5	6-3	6-2	6-2	6-3	6-2	6-1	
H MAX	5-4	6-4	6-6	6-6	6-6	6-4	6-4	6-3	6-4	6-5	6-5	6-3	6-2	6-3	6-2	6-2	
t = 10°	5-4	6-4	6-5	6-6	6-6	6-5	6-5	6-3	6-1	6-6	6-5	6-3	6-3	6-3	6-2	6-3	
#11	6-3	6-3	6-3	6-4	6-4	6-5	6-5	6-5	6-2	6-4	6-4	6-4					
H MAX	6-3	6-3	6-3	6-5	6-4	6-6	6-5	6-5	6-2	6-4	6-5	6-4	6-3	6-3	6-2	6-1	
t = 7.5°	6-3	6-2	6-3	6-5	6-4	6-6	6-5	6-4	5-6	6-3	6-5	6-5	6-4	6-4	6-3	6-2	
#12	6-3	6-3	6-3	6-5	6-5	5-5	5-2	6-3	6-4	6-4	6-2	6-2	6-4	6-3	6-2	5-6	
H MAX	6-3	6-2	6-4	6-5	6-5	6-3	5-5	6-5	6-5	6-4	6-3	6-2	6-4	6-3	6-2	6-1	
t = 20°	6-3	6-2	6-4	6-5	6-5	6-6	6-3	6-5	6-5	6-5	6-3	6-3	6-4	6-3	6-3	6-1	

Underexposed on Box ends

25X1

Date:

Date:

Run #1

TOP SECRET

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Attachment 1c

H Min

RESOLUTION VALUES

GAMMA I
SERIAL No 2

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No 1	6-4	6-4	6-2	6-2	6-4	6-5	6-5	6-4	6-3	6-4	6-4	6-5	6-5	6-4	6-2	5-5	
H Min	6-2	6-5	6-1	6-3	6-4	6-5	6-5	6-4	6-3	6-5	6-5	6-4	6-5	6-4	5-6	5-4	
t = 0°	6-3	6-4	5-4	6-1	6-3	6-5	6-5	6-4	6-4	6-4	6-4	6-5	6-6	6-3	6-1	5-4	
No 2	6-3	6-3	6-3	6-4	6-5	6-5	6-3	5-6	5-6	6-2	6-4	6-4	6-1	6-3	6-3	6-3	
H Min	6-4	6-3	6-3	6-3	6-6	6-5	6-2	5-6	5-5	6-2	6-3	6-4	6-1	6-4	6-3	6-4	
t = 10°	6-4	6-4	6-4	6-4	6-6	6-6	6-3	5-6	5-4	6-1	6-3	6-4	6-2	6-4	6-4	6-3	
No 3	6-3	6-2	6-4	6-5	6-6	6-6	6-4	6-5	6-3	6-5	6-4	6-4	6-2	6-2	6-3	6-3	
H Min	6-3	6-2	6-3	6-6	6-5	6-5	6-5	6-4	6-1	6-5	6-5	6-3	6-3	6-3	6-3	6-3	
T = 15°	6-3	6-3	6-2	6-6	6-4	6-6	6-5	6-4	5-6	6-4	6-4	6-3	6-1	6-2	6-3	6-3	
No 4	5-6	6-1	6-2	6-5	6-4	6-5	6-5	6-5	6-3	6-3	6-3	6-3	5-5	5-6	5-6	5-6	
H Min	6-1	6-1	6-3	6-5	6-5	6-5	6-5	6-4	6-2	6-3	6-2	6-3	5-6	6-1	6-1	5-6	
T = 20°	5-6	6-1	6-3	6-5	6-5	6-5	6-5	6-2	5-6	6-2	6-1	6-2	5-5	6-1	6-1	6-1	
	underexposed	underexposed bad															

25X1

Date: 15 June 65

Date: 15 June 65

Attachment 1d

Run #2

TOP SE

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H Max

RESOLUTION VALUES TOP

SERIAL NO: 2

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No. 9	6.4	6.4	6.1	6.4	6.5	6.5	6.4	6.3	5.6	6.5	6.5	6.2	6.2	6.3	6.3	6.3	
H MAX.	6.3	6.3	6.2	6.5	6.5	6.5	6.4	6.3	5.6	6.5	6.5	6.2	6.1	6.2	6.3	6.3	
T = 0°	6.3	6.3	6.3	6.5	6.5	6.5	6.4	6.3	6.1	6.5	6.5	6.2	6.3	6.1	6.3	6.2	
No 10																	
T = 10°																	
No 11																	
T = 15°																	
No 12																	
T = 20°																	

25X1

Date: 15 [illegible]

Date: 15 June 65

Run #2

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Attachment 1f

NAYM

RESOLUTION VALUES TOP

GAMMA I
SERIAL N[illegible] 2

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

t° PRIMARY	SCAN ANGLE -35.25	-30.55	+25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.95	+30.55	+35.25	REMARKS
No 5	5-6	5-5	6-5	6-2	6-2	6-4	6-6	6-6	6-5	6-6	6-2	6-2	6-1	5-6	6-4	6-3	
H MIN	5-6	5-6	6-5	6-2	6-3	6-3	6-5	6-5	6-6	6-6	6-2	6-2	6-2	6-1	6-5	6-3	
T = 0°	5-6	6-2	6-6	6-2	6-5	6-5	6-6	6-4	6-6	6-6	6-3	6-2	6-3	6-1	6-4	6-2	
No 6 T = 10°																	
No 7 T = 15°																	
No 8 T = 20°																	

25X1

Date: [illegible]

Date: 15 June 65

Run #2

Attachment 1e

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

H MIN

RESOLUTION VALUES

GAMMA I
SERIAL No. 2

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
No. 1	6-3	6-1	5-3	5-6	6-3	6-5	6-5	6-3	6-1	6-5	6-4	6-2	6-4	6-4	6-2	5-4	
H min	6-2	6-1	5-2	5-6	6-3	6-5	6-5	6-4	6-2	6-5	6-4	6-3	6-5	6-3	6-2	5-3	
t=0°	6-1	6-1	5-2	5-4	6-3	6-5	6-5	6-4	6-3	6-5	6-4	6-3	6-4	6-4	6-2	5-3	
No. 2	6-3	6-4	6-2	6-1	6-4	6-2	6-3	6-4	6-3	6-4	6-4	6-4	6-4	6-3	6-3	6-2	
H min	6-4	6-4	6-2	6-1	6-4	6-3	6-4	6-4	6-2	6-4	6-4	6-4	6-4	6-3	6-3	6-2	
t=10°	6-3	6-4	5-6	6-1	6-4	6-3	6-4	6-4	6-1	6-4	6-3	6-4	6-4	6-2	6-3	6-2	
No. 4	6-2	6-2	6-4	6-5	6-4	6-4	6-3	6-4	6-2	6-2	6-4	6-3	6-4	5-6	5-6	5-6	
H min	6-2	6-2	6-3	6-4	6-4	6-4	6-3	6-4	6-1	6-2	6-3	6-2	6-1	5-6	5-6	6-1	
t=20°	6-2	6-3	6-5	6-4	6-4	6-5	6-4	6-4	6-1	6-1	6-3	6-1	5-6	6-4	5-6	6-2	
No. 3	6-3	6-4	6-4	6-2	6-4	6-4	6-4	6-5	6-4	6-2	6-4	6-3	6-2	6-2	6-3	6-3	
H min	6-3	6-4	6-3	6-2	6-4	6-4	6-4	6-4	6-3	6-2	6-3	6-2	6-2	6-2	6-3	6-3	
t=18°	6-3	6-4	6-4	6-2	6-4	6-4	6-4	6-3	6-1	6-2	6-4	6-2	6-1	6-2	6-3	6-4	

25X1

Date: 15 June 196

Date: 15 June 196

Attachment 1g

Pam #3

Approved For Release 2002/08/06 : CIA-RDP78B04747A003200010023-8

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Hmax

RESOLUTION VALUES

GAMMA I

SERIAL NO. 2

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
#1 t=15 3mm slit	62/63	61/64	62/64	61/64	64/64	61/63	61/64	63/64	61/64	62/64	61/63	62/64	62/64	61/63	62/63	62/62	F-Stop 1 below Normal
	62/64	62/63	61/63	62/64	62/63	61/63	61/63	62/63	61/64	62/63	61/63	63/64	63/64	61/63	63/64	62/63	
	62/63	62/64	62/64	62/64	63/63	61/63	56/61	62/63	61/63	62/63	62/64	62/64	64/64	63/63	62/64	62/63	Range 90-60
#2 t=10	63/63	54/62	63/64	64/64	62/64	64/63	62/62	63/64	61/63	63/64	63/63	63/63	62/63	61/56	63/63	63/62	
	63/63	61/61	62/63	62/64	61/63	62/63	61/62	62/63	61/63	63/64	63/63	64/64	63/63	61/56	63/63	63/61	Range 90-58
	63/63	63/63	63/64	63/64	61/63	63/63	61/62	61/62	61/63	62/63	62/62	63/64	63/64	62/62	62/64	63/62	
#3 t=20°	62/63	61/64	63/64	62/64	62/64	56/64	63/64	56/64	56/62	55/63	63/64	62/64	63/64	63/63	61/62	62/62	
	62/63	56/63	62/63	62/64	62/63	56/63	64/64	61/63	62/63	55/63	64/63	62/64	63/63	63/64	61/63	62/62	Range 90-64
	62/64	61/63	63/64	62/64	62/64	56/63	64/63	61/64	62/63	56/64	63/63	62/64	64/64	64/64	61/63	62/62	

25X1

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Attachment 2a

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NORM

RESOLUTION VALUES II

GAMMA I
SERIAL NO. 2

t° PRIMARY	SCAN ANGLE -35.25	-32.65	-25.65	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.65	+30.55	+35.25	REMARKS
#4	53/56	63/64	54/52	55/63	56/64	62/64	63/64	62/64	61/64	63/63	61/64	63/64	62/64	62/63	61/61	63/61	
t = 10°	53/56	63/63	61/56	56/63	61/63	62/63	62/63	62/63	61/63	61/61	61/64	63/64	62/63	62/63	62/61	63/63	Range 90 - 40
3 mm. Slit	54/56	64/64	61/62	56/63	61/64	62/63	62/62	62/64	56/62	56/56	56/63	63/63	62/64	63/64	62/61	63/63	
#5	62/62	64/64	63/64	62/64	61/64	62/64	63/64	62/63	61/64	63/64	62/64	64/63	62/64	63/63	63/63	62/63	
t = 15°	62/62	62/62	62/63	62/63	56/63	62/63	62/63	62/63	62/63	62/63	63/64	64/64	62/63	63/63	63/63	62/62	Range 90 - 69
	62/62	64/64	64/64	62/64	61/64	62/64	63/64	63/63	61/62	61/62	61/63	64/64	62/63	63/64	63/63	63/62	
#6	63/62	61/64	61/64	56/64	53/56	61/64	61/64	54/63	62/64	61/64	61/64	63/64	62/64	63/64	62/63	56/61	
t = 20°	63/62	61/63	61/63	62/63	56/61	62/64	61/63	55/63	63/64	61/64	62/64	62/64	62/64	63/63	63/63	55/62	Range - 90 - 48
	64/63	61/63	62/63	64/64	56/63	62/64	61/64	55/64	64/63	61/63	61/63	63/64	62/63	64/64	63/63	56/62	

25X1

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Min

RESOLUTION VALUES

GAMMA I
SERIAL NO. 2

t° PRIMARY	SCAN ANGLE -35.25	-30.55	-25.85	-21.15	-16.45	-11.75	-7.05	-2.35	+2.35	+7.05	+11.75	+16.45	+21.15	+25.85	+30.55	+35.25	REMARKS
#7 t=10°	56/61	63/64	61/64	61/63	61/63	61/64	63/64	63/63	55/64	63/64	64/64	63/63	61/61	54/55	53/55	53/55	
	55/56	63/62	62/63	61/63	61/63	61/64	62/64	63/62	55/64	63/63	64/64	64/64	61/56	54/55	53/55	51/53	
	61/61	63/64	62/63	61/64	61/64	62/64	63/64	62/62	55/61	62/63	64/64	63/64	62/61	61/54	54/55	53/54	Range — 90 - 43
#8 t=15°	54/61	61/64	62/63	62/63	55/64	63/64	56/64	61/64	61/64	63/64	61/63	55/63	63/62	62/62	62/62	62/61	
	55/61	61/63	62/63	62/63	56/63	62/63	56/63	61/64	62/64	63/64	62/64	56/64	63/62	62/61	62/61	61/56	85 - 54
	54/61	61/64	63/64	62/64	56/63	63/63	61/64	62/63	62/63	63/63	62/64	56/64	63/63	63/63	63/62	61/61	
#9 t=20°	63/63	62/62	64/64	63/64	62/64	62/64	55/64	55/64	61/64	62/64	61/64	61/64	64/64	63/63	64/64	62/62	
	63/63	61/62	62/63	62/63	62/63	62/63	56/63	61/63	63/64	63/64	61/64	62/64	63/64	63/63	64/63	63/63	90 - 70
	63/63	61/63	63/64	63/64	62/63	63/64	61/64	62/64	63/63	63/63	61/64	62/64	63/64	63/64	64/64	62/62	
#10 Left To Right t=10° Repeat																	
#11 Right To Left t=10° Repeat																	

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