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APOLLO SOYUZ TEST PROJECT
PHOTOGRAPHIC PROCESSING CONTROL PLAN

This report has been reviewed
and is approved.

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Apollo Soyuz Test Project
Photographic Processing Control Plan

INTRODUCTION

This document specifies the laboratory controls to be used within the Photographic Technology Division (PTD) for processing original space flight films exposed on the Apollo Soyuz Test Project (ASTP) mission. Specified in this document are the sensitometric exposures to be used by PTD for certifying processes, for exposing Houston Controls and for pre- and post-flight exposures on original films as well as procedures for film certification. Processing conditions used to achieve each control including processing machine operating parameters are included for reference.

FILM CERTIFICATION PROCEDURES

The characteristics of each ASTP candidate film were checked by physical inspection and by sensitometric analysis of processed samples. Simulation rolls with exposures representative of ASTP conditions were processed to meet the standards established by PTD and evaluated to verify process-exposure compatibility.

Physical Inspection

One roll of each film type randomly selected from the emulsion batch designated for ASTP use was inspected in its unprocessed condition. A visual inspection was made for dirt, scratches, coating imperfections, edge roughness and coating evenness on both the emulsion and backing side of each roll.

The inspected roll was appropriately labeled and stored intact by the Photographic Sciences Office(PSO)and will remain stored until the space flight film is processed and inspected.

Sensitometric Parameters

The sensitometric characteristics of each film type, size, and emulsion are established by processing samples which have been exposed on the PTD I-B sensitometer. The condition for sensitometric exposure of each film type is specified as follows:

- a. Color temperature and intensity of the I-B sensitometer lamp (illuminant).
- b. Exposure duration required to place the density versus log exposure values in the correct range. (time)
- c. Filtration used to simulate ASTP exposing conditions for each film. (filter)

A summary of ASTP films with sensitometric exposure specifications is included as Table 1.

Establishing Laboratory Process

A series of sensitometric exposures made on each film under consideration is processed to determine the machine and chemical operating conditions required for meeting PTD Quality Control chemical and sensitometric standards. If previous history is not available, an aim speed and acceptable color balance are achieved.

Once each standard is met, a series of five calibrated sensitometric strips of each film type and emulsion to be certified, are processed. The densitometric values of the processed strips are read, averaged, and plotted. When found acceptable by PSO, the curve is documented as the ASTP Control for certification of ASTP flight and simulation films.

As soon as the control strips are processed, chemical solutions are sampled and analyzed to maintain a record of the specific process conditions. These results are filed by PSO for reference.

Curves for each film type, emulsion and size to be used as control curves for certifying ASTP spaceflight original films are included here as Appendix A in order by PTD Code letter.

In addition to control curves, PTD accumulates a history for each film when processed under a variety of machine specifications. These results are filed by PSO for reference. PTD also conducts flight film processing simulations for each film type, some with simulated space imagery, and these results are evaluated.

Additional Testing

Additional tests are conducted by the PSO as required to meet space flight standards. These may include studies of the effects of

TABLE 1

ASTP FILMS AND SENSITOMETER EXPOSURES

| PTD CONTROL CODE | FILM | EMULSION | FILM WIDTH | PROCESSOR | CHEMISTRY | SENSITOMETER | | | EQUIVALENT ASA SPEED |
|------------------------|--------|----------|---------------|-----------|-----------|--------------|-------|-----------------------|----------------------------|
| | | | | | | ILLUM. | TIME | FILTRA. | |
| A | QX-807 | 1-32 | 16mm | RAM | ME-4 | 2850°K | 1/50 | 5500°K | 64 |
| B | SO-168 | 13-61 | 16mm | RAM | ME-4 | 2850°K | 1/100 | 5500°K | 320 |
| C | SO-242 | 4301G | 16mm | RAM | ME-4 | 2850°K | 1/5 | 5500°K | 10 |
| D | QX-806 | 101R | 16mm | RAM | ME-4 | 2850°K | 1/100 | 80D | 400 |
| E | QX-807 | 1-32 | 70mm | 1811 | EA-5 | 2850°K | 1/50 | 5500°K | 64 |
| F | SO-289 | 4-1 | 70mm | 11C-M | MX-641 | 2850°K | 4 | 5500°K + SCW + 87C | Y 1.4* |
| G | SO-242 | 43-1 | 70mm | 1811 | EA-5 | 2850°K | 1/5 | 5500°K | 10 |
| H | 2443 | 206-1 | 70mm | 1811 | EA-5 | 2850°K | 1/50 | 5500°K + W12 | 55 |
| I | 3401 | 284-4 | 70mm | 11C-M | MX-641 | 2850°K | 1/50 | 5500°K | Y 1.4* |
| J | SO-168 | 13-62 | 35mm | Houston | ME-4 | 2850°K | 1/100 | 5500°K | 160 |
| K | SO-168 | 13-62 | 35mm | Houston | ME-4 | 2850°K | 1/100 | 5500°K | 320 |
| L | QX-807 | 1-32 | 35mm | Houston | ME-4 | 2850°K | 1/50 | 5500°K | 64 |
| M | QX-806 | 1-1 | 35mm | Houston | ME-4 | 2850°K | 1/100 | 5500°K | 320 |

* These films processed to achieve an aim gamma; speed not the major control factor.

radiation, heat, cold, relative humidity, and time on the latent image as determined by measuring speed, granularity, color balance, contrast, and resolution.

ASTP film type QX807-1-32 required such an extensive test series, because the film was manufactured with an equivalent 2A filter overcoat, a task not previously carried out with that film. Results of this testing were documented in technical report JSC-09621, "Evaluation of Film Type QX-807 (S0-36E, Kodak Ektachrome MS, Estar Base, with an Equivalent Wratten 2A Overcoat)".

APPENDIX A

CONTROL CURVES AND FILM DATA
FOR ASTP FLIGHT FILMS

PTD ASTP CONTROL "A"

FILM: Kodak Ektachrome MS Recording Film QX-807
EMULSION: 1-32
BASE: Estar Thin Base (2.5 mil)
WIDTH: 16mm
EFFECTIVE SPEED: 64 Southard (ASA equivalent)

BRIEF

DESCRIPTION: Kodak Ektachrome MS Recording Film QX-807 is a near equivalent of Kodak Ektachrome MS Film Type SO-368 with a Wratten 2A (ultraviolet absorbing) filter overcoated. It is medium speed color reversal film with a high contrast (1000:1) target resolution of 80 lines per millimeter.

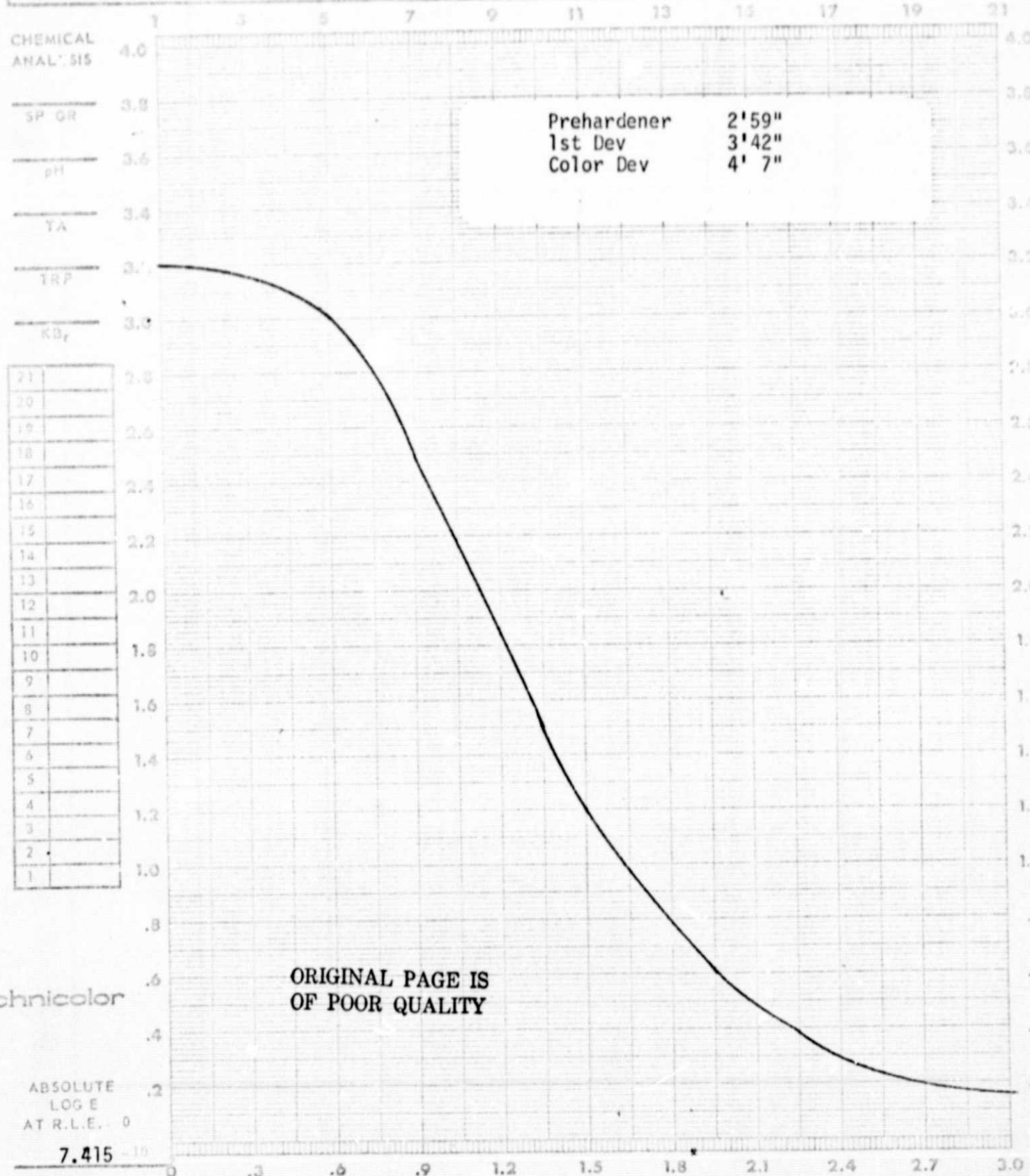
This film will be processed by PTD in the 16mm RAM processor with Kodak ME-4 chemistry.

CONTROL CURVES: Attached

DATE 24 / 75 CONTROL # A TASK ASTP Control PREPARED BY _____

FILM QX-007 EMULSION # 1-32 (16mm) MFG EK EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | | | | |
|---------------|---------------|-----------------|-------------|--------------|----------------|---------------|---------------|------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>RAM</u> | INSTRUMENT | <u>MacBeth</u> | SPEED (| <u>64</u> |) |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> | D-MAX | _____ | |
| TIME | <u>1/50</u> | SPEED | <u>80</u> | TANKS | <u>80</u> | APERTURE SIZE | <u>3</u> | GAMMA |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | TIME | _____ | FILTER | <u>Visual</u> | BASE + FOG |

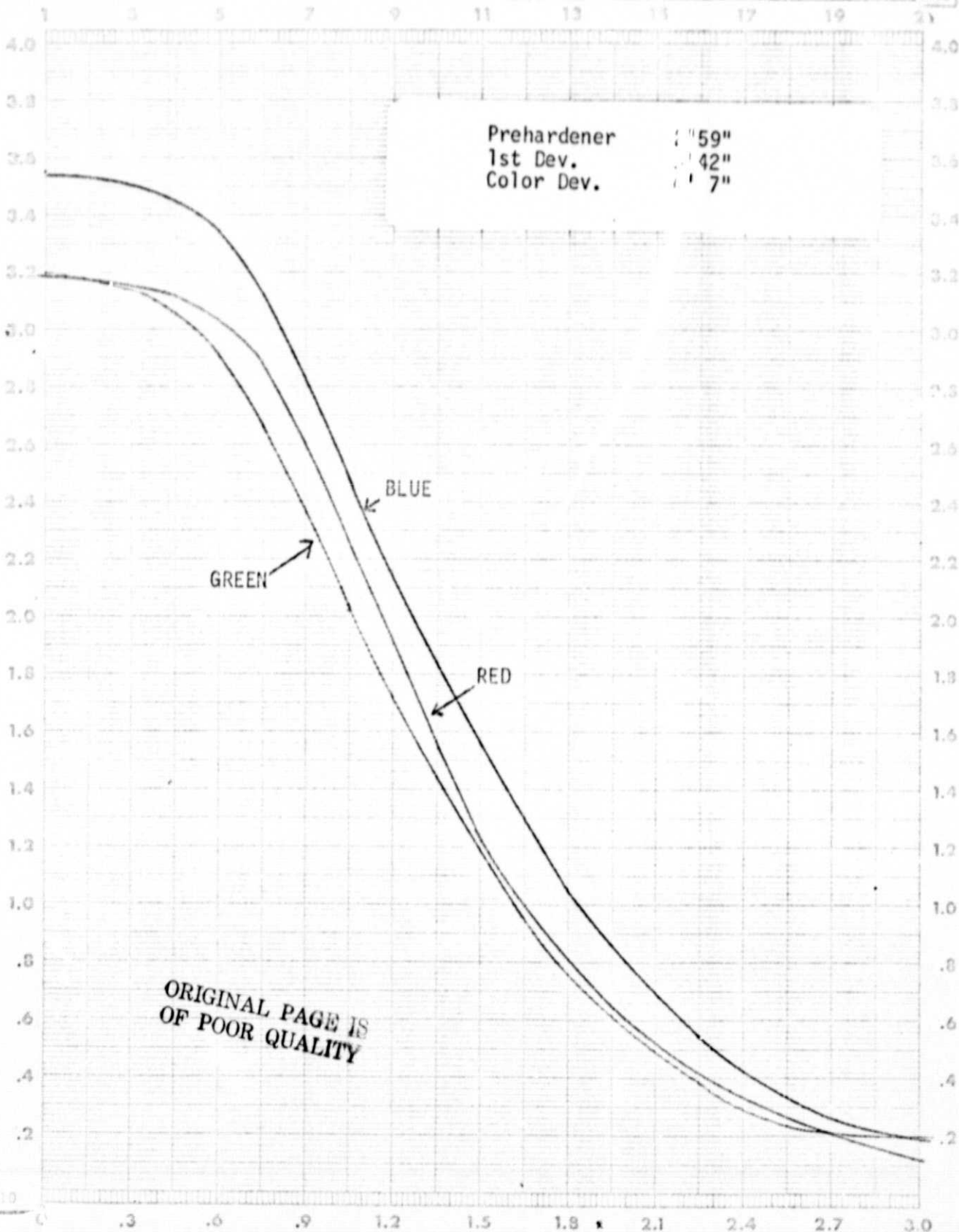


| EXPOSURE DATA | | PROCESSING DATA | | SENSITOMETER | |
|---------------|---------------|-----------------|-------------|---------------|-----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>RAM</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/500</u> | SPEED | <u>80</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | FILTER | <u>Status A</u> |

CHEMICAL ANALYSIS

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Technicolor

PTD ASTP CONTROL "B"

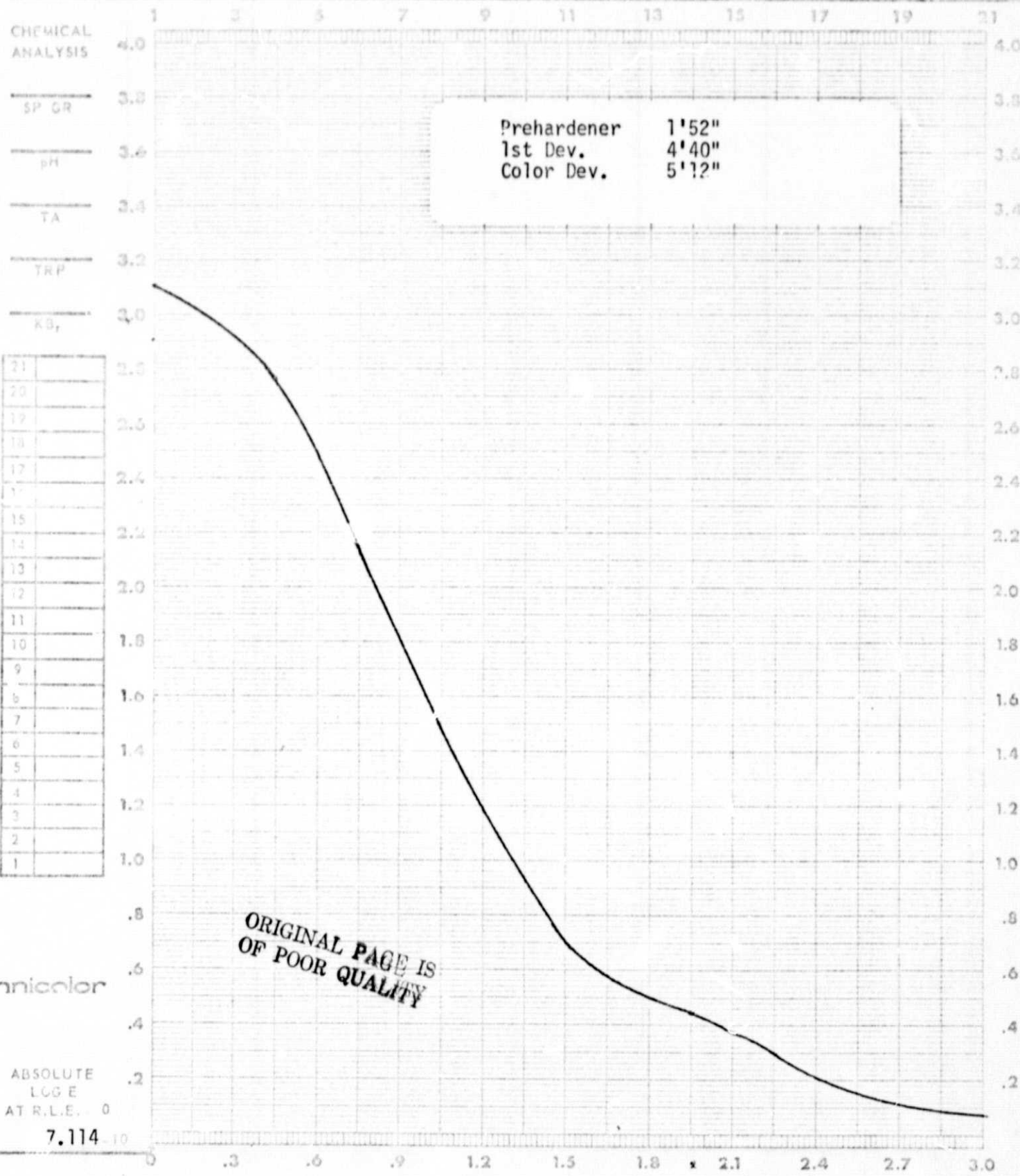
FILM: Kodak Ektachrome EF Film S0-168
EMULSION: 1361G
BASE: Estar thin base (2.5 m:1)
WIDTH: 16mm
EFFECTIVE SPEED: 320 Southard (ASA equivalent)

BRIEF DESCRIPTION: Kodak Ektachrome EF Film Type S0-168 is a high-speed color reversal film with a high contrast (1000:1) target resolution of 80 lines per millimeter.

This film will be processed by PTD in the RAM processor in ME-4 chemistry.

CONTROL CURVES: Attached.

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------|-----------------|------|---------------|---------|
| SENSITOMETER | I-B | PROCESSOR | RAM | INSTRUMENT | MacBeth |
| ILLUMINANT | 2850 | CHEMISTRY | ME-4 | TYPE | TD504 |
| TIME | 1/100 | SPEED | 64 | APERTURE SIZE | 3 |
| FILTER | 5500°K | TEMP °F | 98 | FILTER | Visual |
| | | TANKS | | | |
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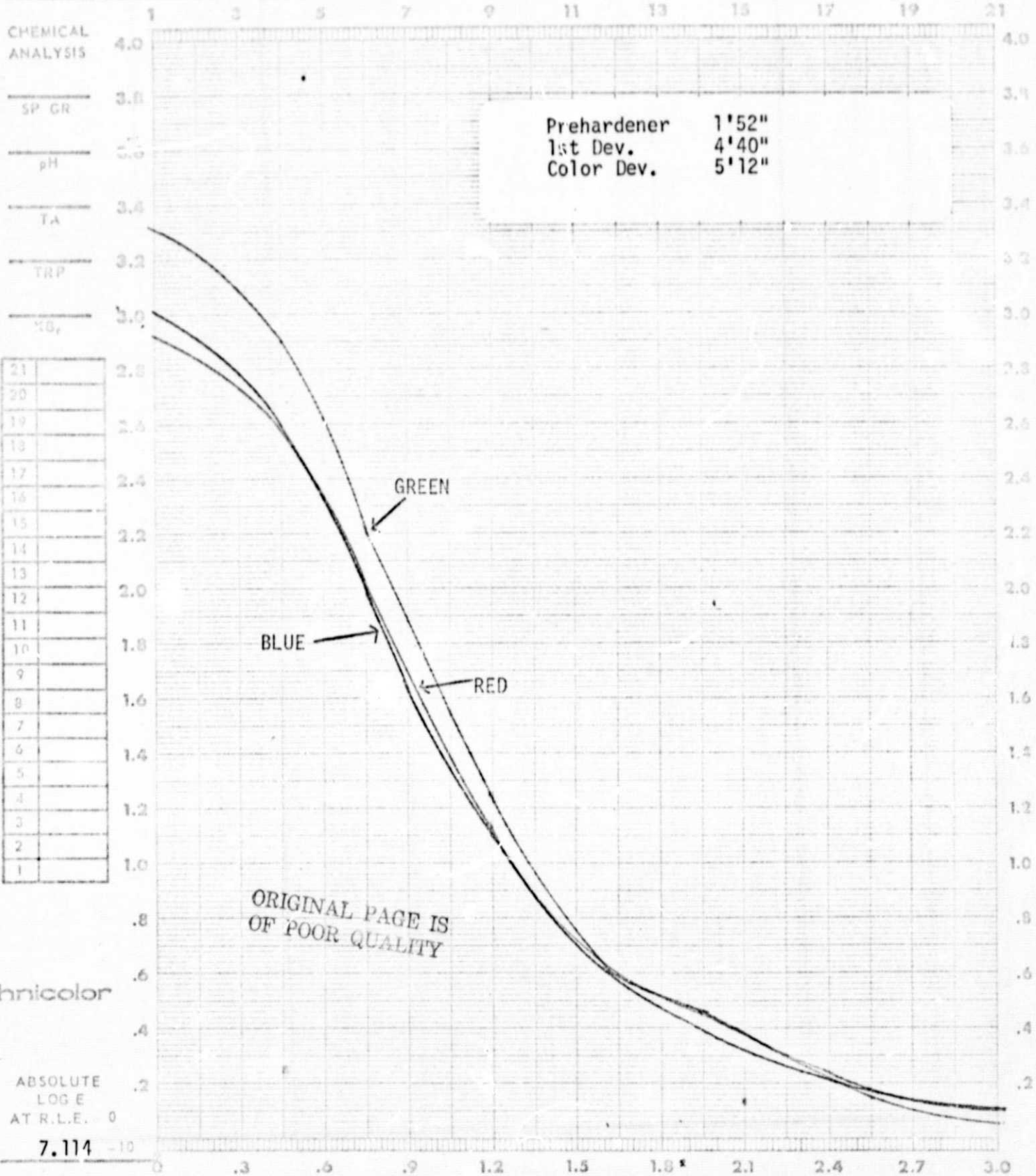


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DATE 24 Apr 75 CONTROL # B TASK ASTP Control PREPARED BY _____

FILM S0-168 EMULSION # 13-61 (16mm) MFG _____ EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------|-----------------|-------------|---------------|-----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>RAM</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/100</u> | SPEED | <u>64</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | FILTER | <u>Status A</u> |
| | | TANKS | | | |
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PTD ASTP CONTROL "C"

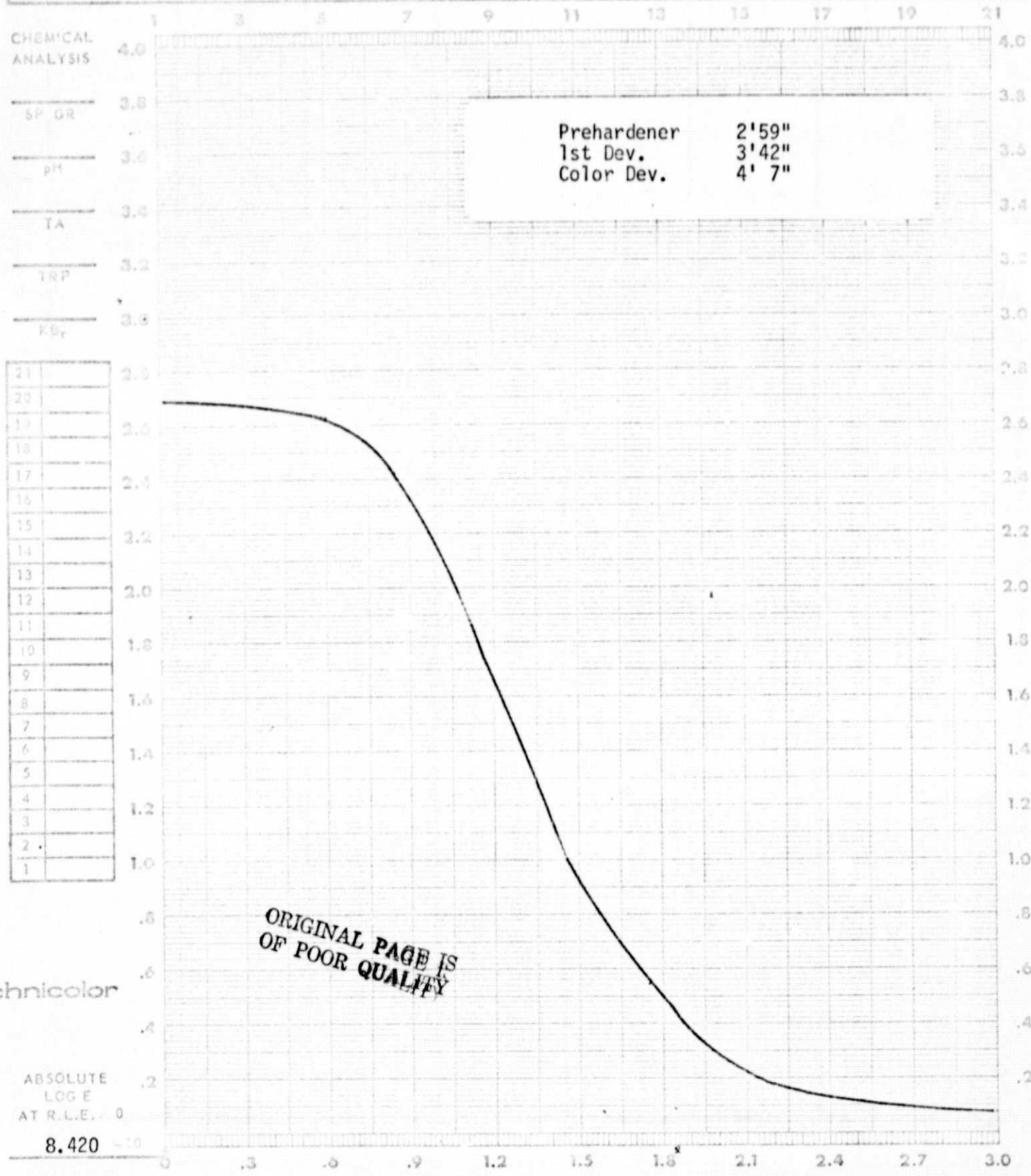
FILM: Kodak Aerial Color Film S0-242
EMULSION: 4301G
BASE: Estar thin base (2.5 mil)
WIDTH: 16mm
EFFECTIVE SPEED: 10 Southard (ASA equivalent)

BRIEF
DESCRIPTION: Kodak Aerial Color Film Type S0-242 is an extremely fine grain, low speed, high definition aerial color reversal film with an equivalent Wratten 2A (ultraviolet absorber) coating. This film has a high contrast (1000:1) target resolution of 200 lines per millimeter.

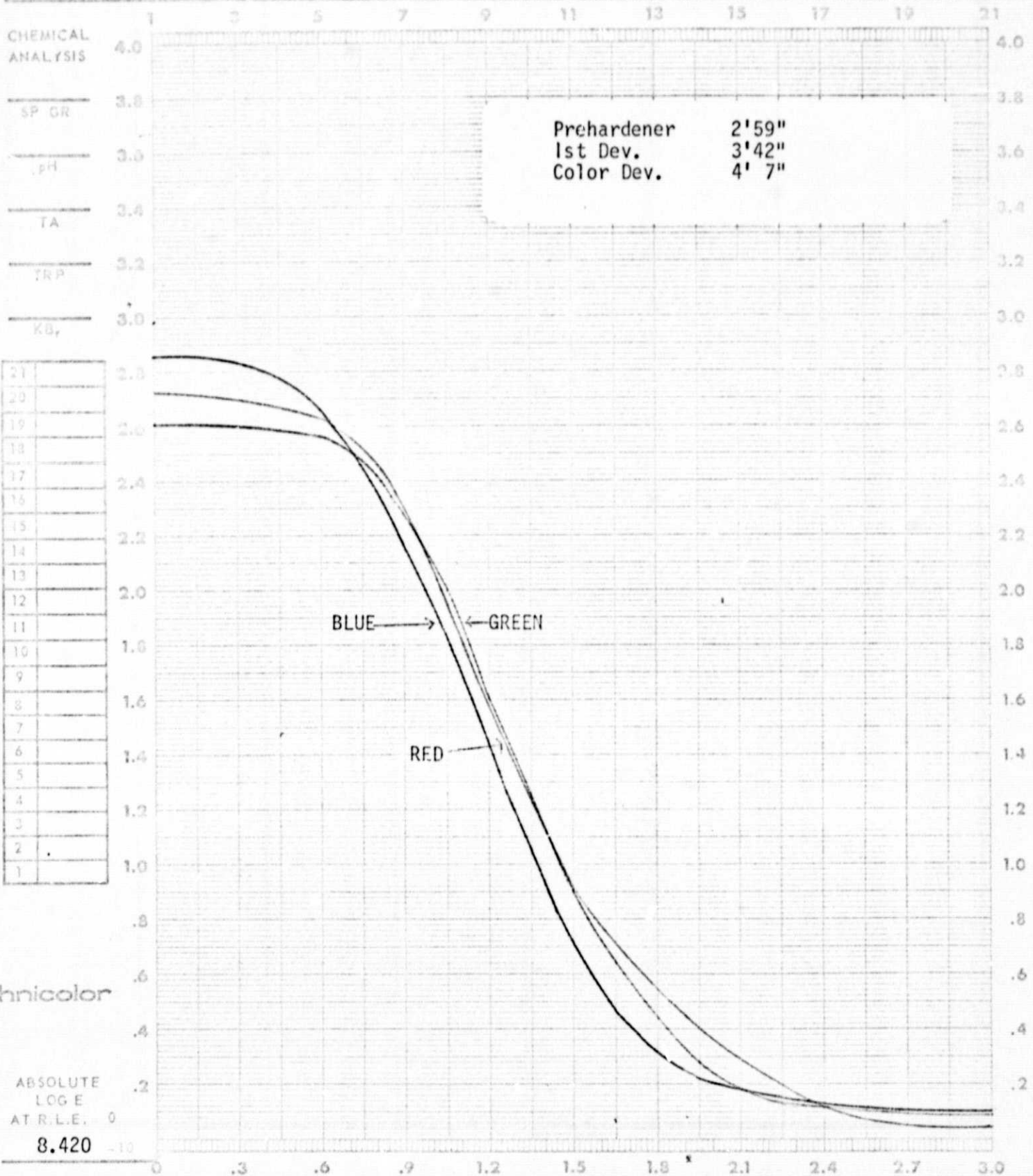
This film will be processed by PTD in the 16mm RAM processor with Kodak ME-4 chemistry.

CONTROL CURVES: Attached

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------|-----------------|-------------|---------------|----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>RAM</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/5</u> | SPEED | <u>80</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | FILTER | <u>Visual</u> |
| | | TANKS | | | |
| | | TIME | | | |
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| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------|-----------------|-------------|---------------|------------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>RAM</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/5</u> | SPEED | <u>80</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | FILTER | <u>Status A</u> |
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PTD ASTP CONTROL "D"

FILM: Kodak Ektachrome EFB Recording Film QX-806
EMULSION: 101R
BASE: Estar thin base (2.5 mil)
WIDTH: 16mm
EFFECTIVE SPEED: 400 Southard (ASA equivalent)

BRIEF

DESCRIPTION: Kodak Ektachrome EFB Recording Film QX-806 is a high speed color reversal film with an equivalent filter overcoated to color balance the emulsion for tungsten illumination. This film has a high contrast (1000:1) target resolution of 80 lines per millimeter.

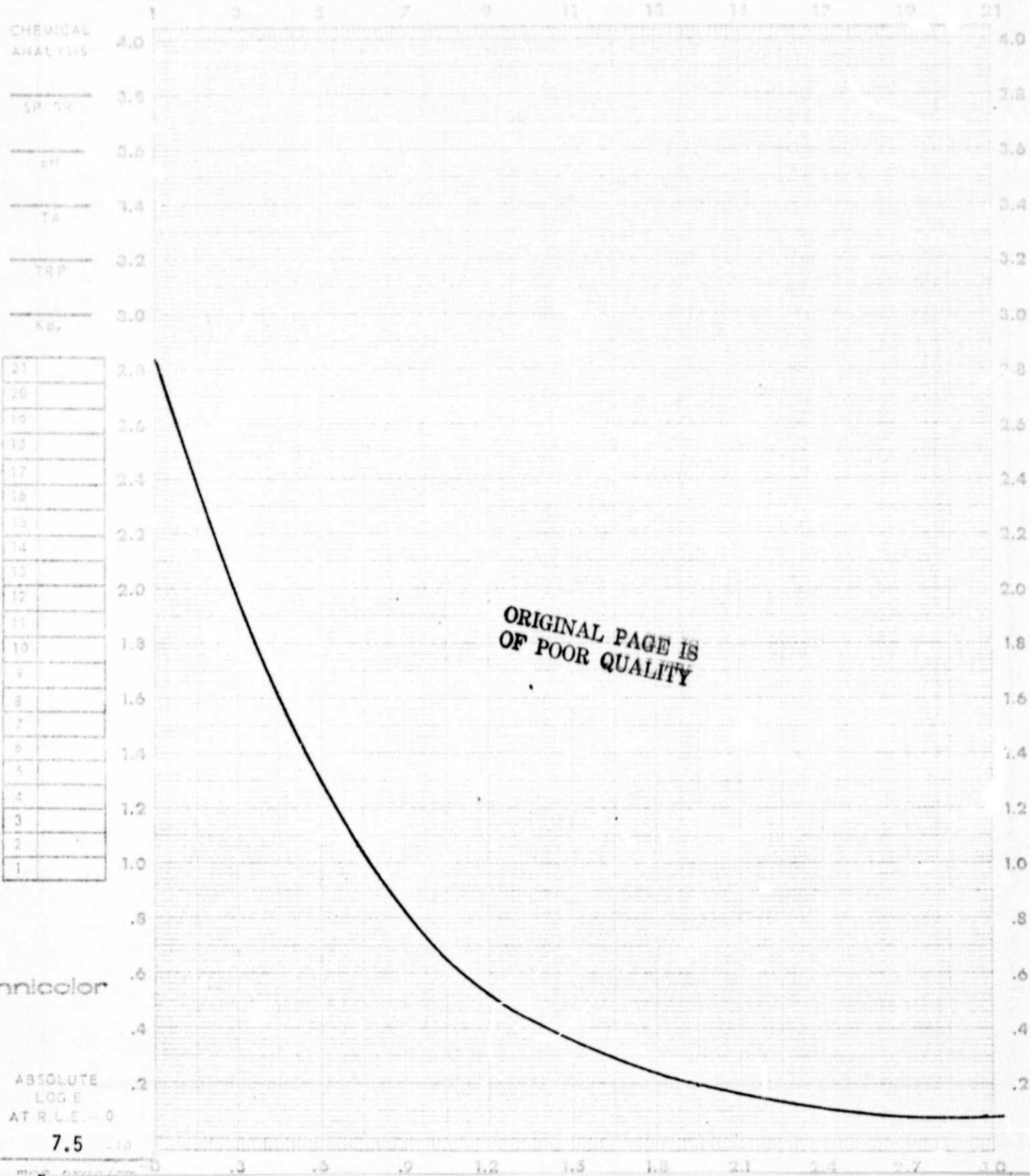
This film will be processed by PTD in the RAM processor in ME-4 chemistry.

CONTROL CURVES: Attached.

DATE 5/12/75 CONTROL # D ASTP TASK Control PREPARED BY

FILM QX 806 EMULSION # 101R MFG EXPIRATION DATE

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|-------|-----------------|------|---------------|------------|
| SENSITOMETER | I-B | PROCESSOR | RAM | INSTRUMENT | MacBeth |
| ILLUMINATION | 2850 | CHEMISTRY | ME-4 | TYPE | TD504 |
| TIME | 1/100 | SPEED | 64 | APERTURE SIZE | 3 |
| FILTER | 80D | TEMP °F | 98 | FILTER | Visual |
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| SENSITOMETER | I-B | RAM | MacBeth | 400 |
| ILLUMINATION | 2850 | ME-4 | TD504 | |
| TIME | 1/100 | 64 | 3 | |
| FILTER | 80D | 98 | Status A | |

OPTICAL ANALYSIS

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PTD ASTP CONTROL "E"

FILM: Kodak Ektachrome MS Recording Film QX-807
EMULSION: 1-32
BASE: Estar Thin Base (2.5 mil)
WIDTH: 70mm
EFFECTIVE SPEED: 64 Southard (ASA equivalent)

BRIEF

DESCRIPTION: Kodak Ektachrome MS Recording Film QX-807 is a near equivalent of Kodak Ektachrome MS Film Type SO-368 with a Wratten 2A (ultraviolet absorbing) filter overcoated. It is a medium speed color reversal film with a high contrast (1000:1) target resolution of 80 lines per millimeter.

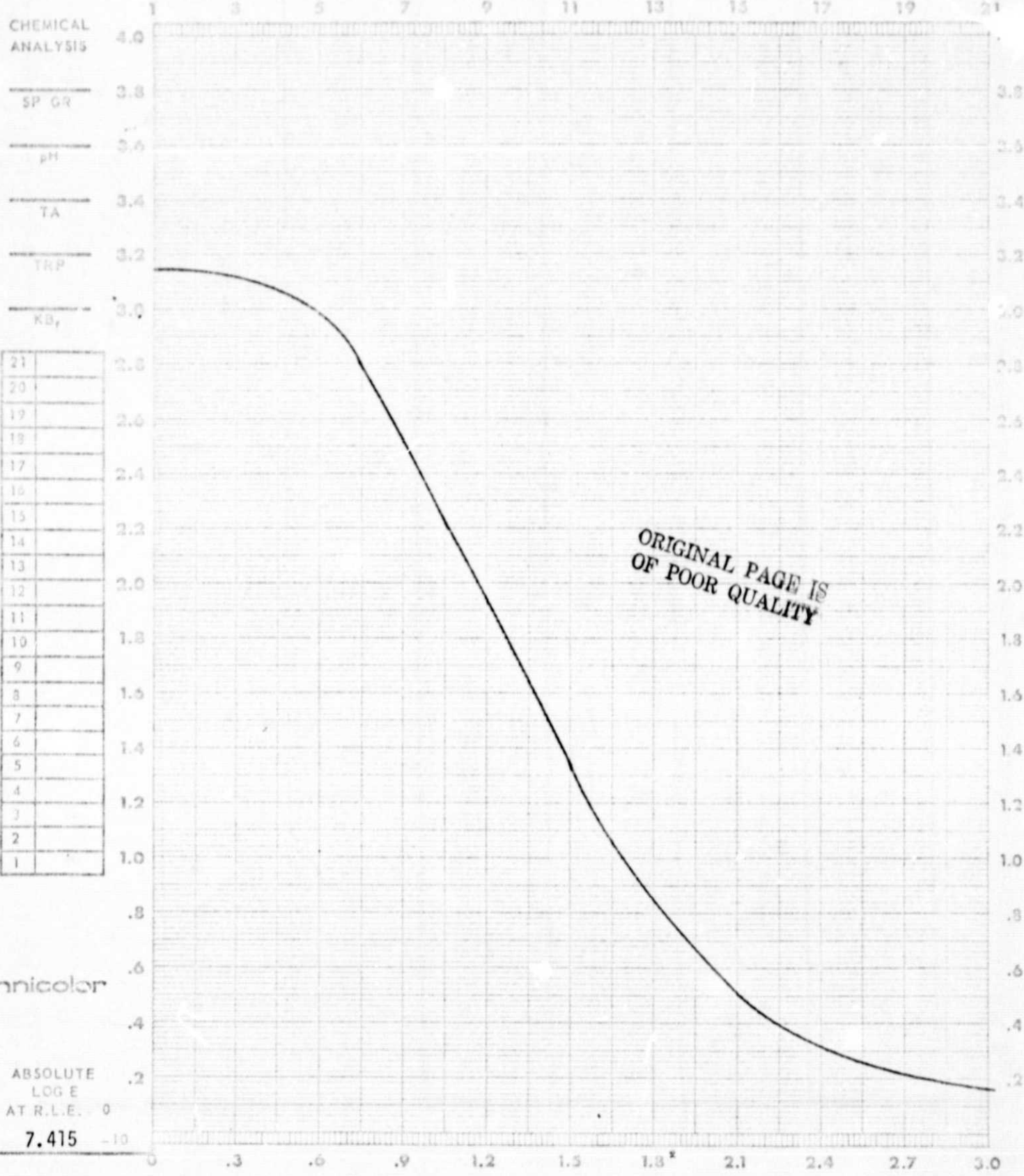
This film will be processed by PTD in the Versamat 1811 processor with Kodak EA-5 chemistry.

CONTROL CURVES: Attached.

DATE 28 Apr 75 CONTROL # E TASK ASTP Control PREPARED BY

FILM OX-807 EMULSION # 1-32 MFG EK EXPIRATION DATE

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------|-----------------|---------|---------------|---------|
| SENSITOMETER | I-B | PROCESSOR | 1811 #1 | INSTRUMENT | MacBeth |
| ILLUMINANT | 2850 | CHEMISTRY | EA-5 | TYPE | TD504 |
| TIME | 1/50 | SPEED | 8.5 | APERTURE SIZE | 3 |
| FILTER | 5500°K | TEMP °F | 115 | FILTER | Visual |
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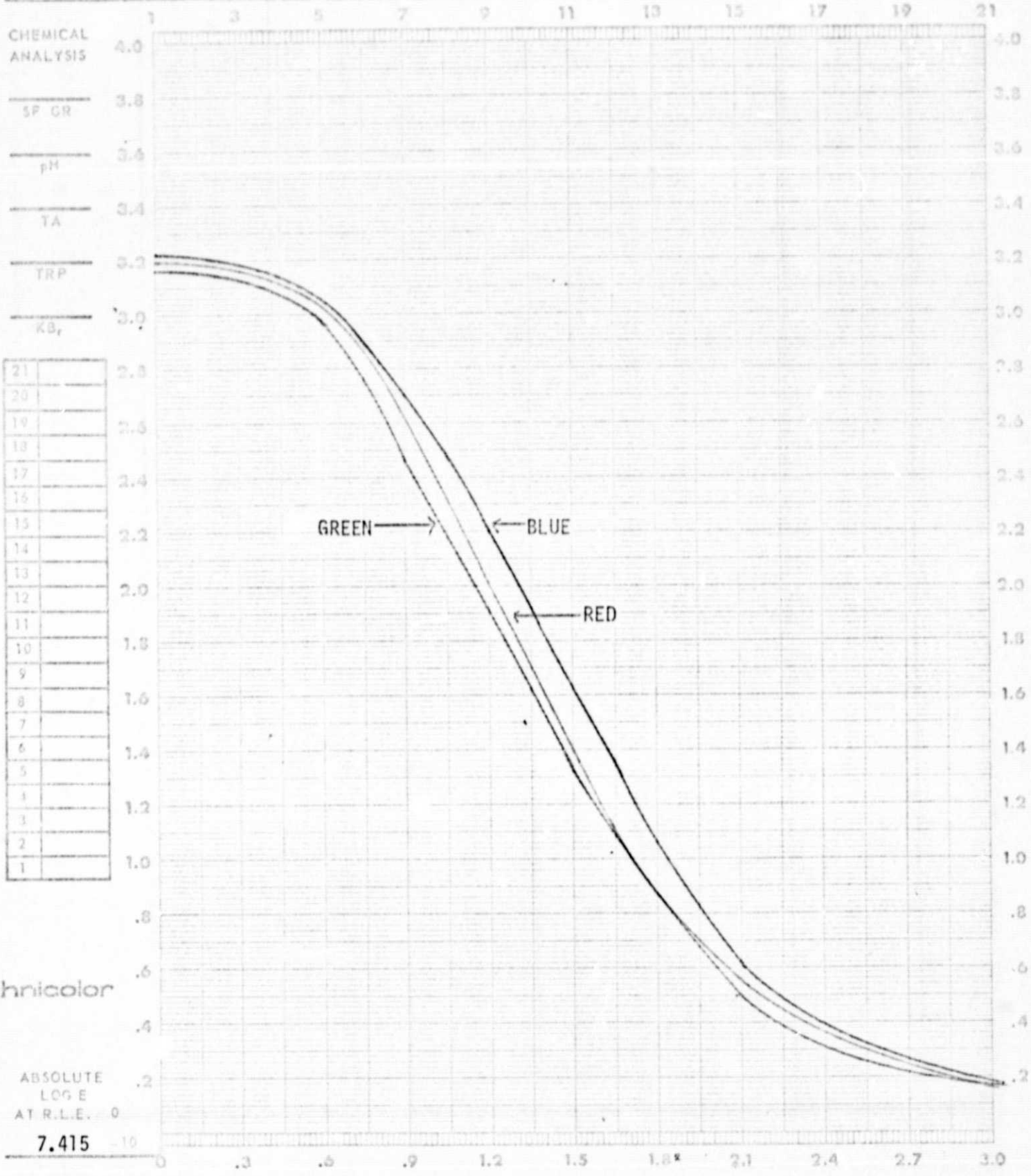
Technicolor

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DATE 28 Apr 75 CONTROL # E TASK ASTP Control PREPARED BY _____

FILM QX-807 EMULSION # 1-32 MFG EK EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------|-----------------|----------------|---------------|-----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>1811 #2</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>EA-5</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/50</u> | SPEED | <u>8.5</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>115</u> | FILTER | <u>Status A</u> |



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Technicolor

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PTD ASTP CONTROL "F"

FILM: Kodak Multi-Spectral Infrared Aerial Film S0-289
EMULSION: 4-1
BASE: Estar-AH Base (4.0 mil)
WIDTH: 70mm
GAMMA: 1.4

BRIEF
DESCRIPTION: Kodak Multi-Spectral Infrared Aerial Film S0-289
is a very fine grain black-and-white negative
film with sensitivity to the visible and near
infrared radiation. It has a high contrast
(1000:1) target resolution of 200 lines per millimeter.

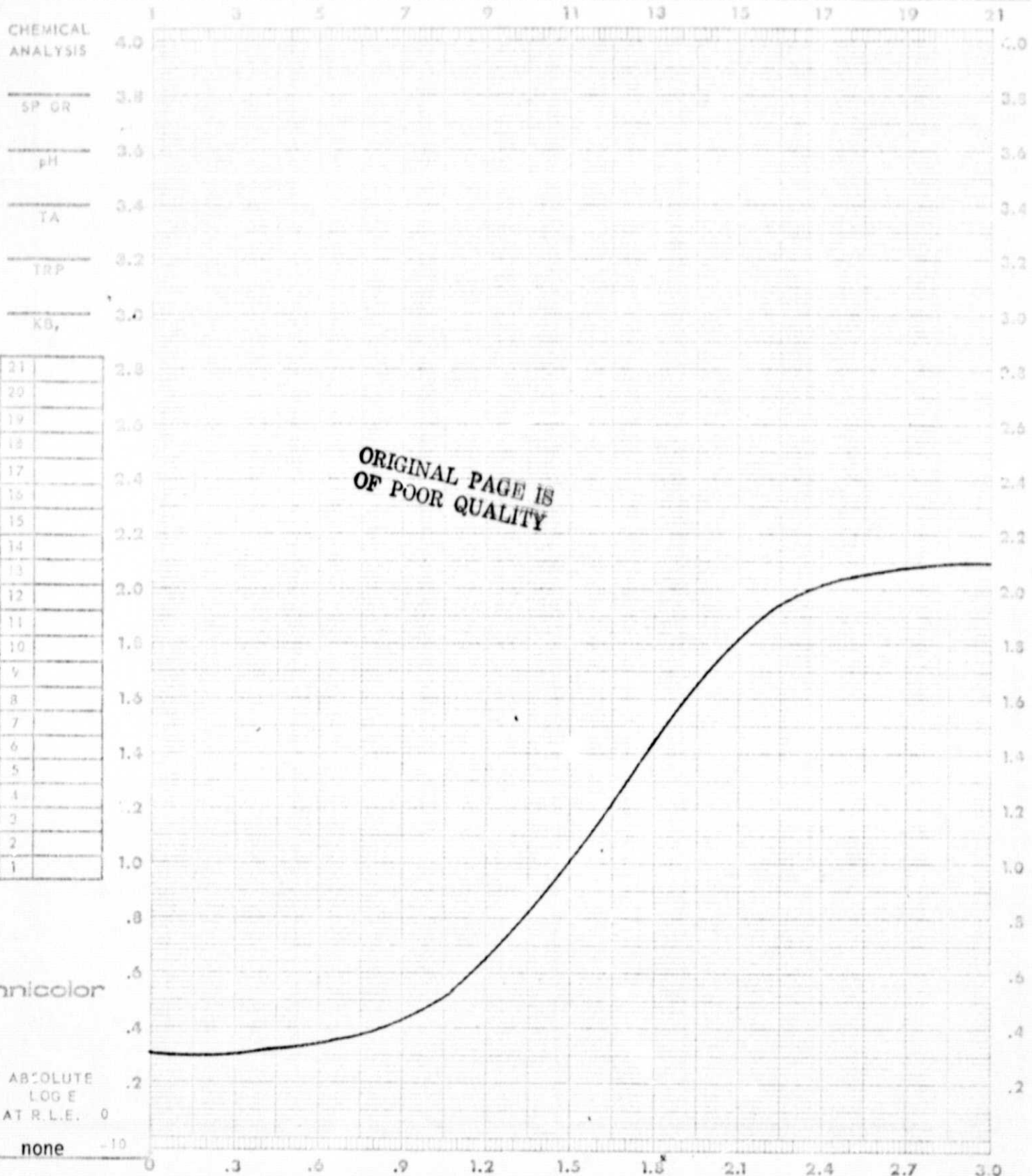
This film will be processed by PTD in the Versamat 11C-M
in Kodak MX-641 chemistry.

CONTROL CURVE: Attached

DATE 30 Apr 75 CONTROL # F TASK ASTP Control PREPARED BY _____

FILM S0-281 EMULSION # 4-1 MFG EK EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|-----------------------|-----------------|-----------------------------|---------------|------------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>1411 VHT #1</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>MX-641</u> | TYPE | <u>TD504</u> |
| TIME | <u>4</u> SEC. | SPEED | <u>2</u> TANKS <u>9</u> FPM | APERTURE SIZE | <u>3</u> MM |
| FILTER | <u>5500°K+SCM+87C</u> | TEMP °F | <u>85</u> TIME _____ | FILTER | <u>Visual</u> |
| | | | | | DATE + FOG _____ |



PTD ASTP CONTROL "G"

FILM: Kodak Aerial Color Film S0-242
EMULSION: 43-1
BASE: Estar thin base (2.5 mil)
WIDTH: 70mm
EFFECTIVE SPEED: 10 Southard (ASA equivalent)

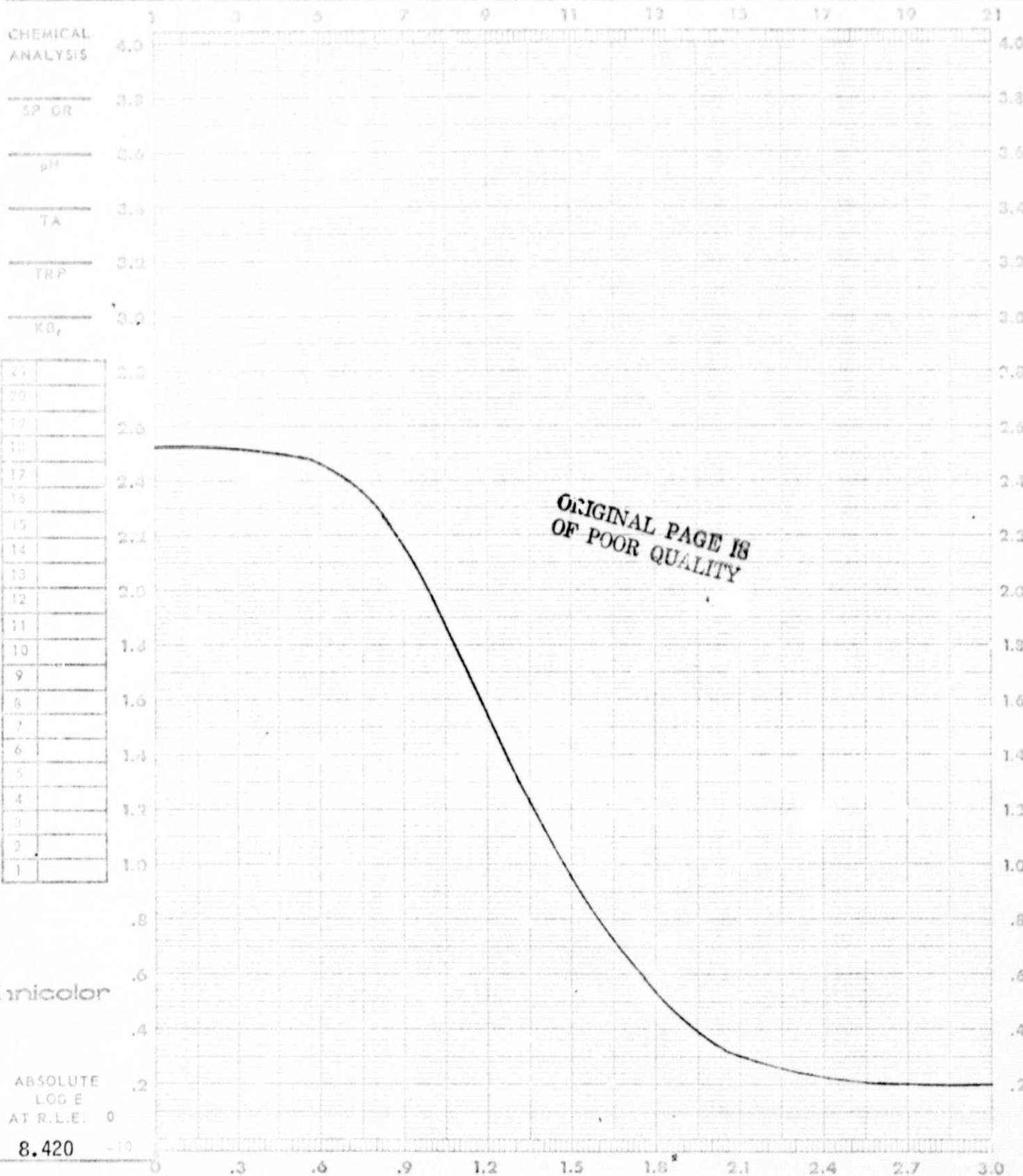
BRIEF

DESCRIPTION: Kodak Aerial Color Film Type S0-242 is an extremely fine grain, low speed, high definition aerial color reversal film with an equivalent Wratten 2A (ultra-violet absorber) coating. The film has a high contrast (1000:1) target resolution of 200 lines per millimeter.

This film will be processed by PTD in the Versamat 1811 processor with Kodak EA-5 chemistry.

CONTROL CURVES: Attached.

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------|-----------------|----------------|---------------|------------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>1811 #2</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>EA-5</u> | TD504 | SPEED () _____ |
| TIME | <u>1/5</u> | SPEED | <u>7</u> | TANKS | <u>7</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>110</u> | APERTURE SIZE | <u>3</u> |
| | | TIME | | FILTER | <u>Visual</u> |
| | | | | | D-MAX _____ |
| | | | | | GAMMA _____ |
| | | | | | BASE + FOG _____ |

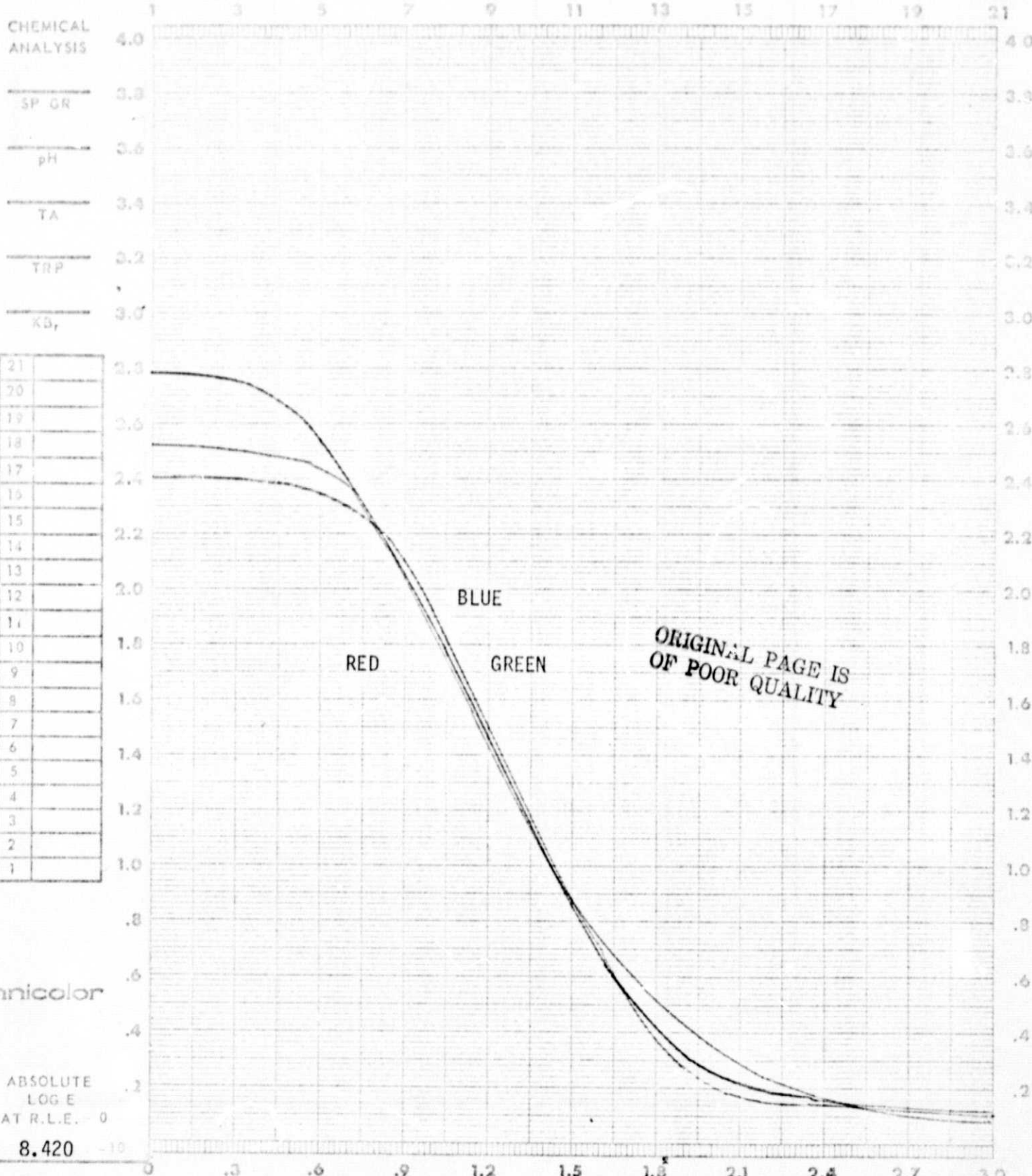


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DATE 29 Apr 75 CONTROL # G TASK ASTP Contro1 PREPARED BY

FILM S0-242 EMULSION # 43-1 (70mm) MFG EK EXPIRATION DATE

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------|-----------------|---------|---------------|----------|
| SENSITOMETER | I-B | PROCESSOR | 1811 #2 | INSTRUMENT | MacBeth |
| ILLUMINANT | 2850 | CHEMISTRY | EA-5 | TYPE | TD504 |
| TIME | 1/5 | SPEED | 7 | APERTURE SIZE | 3 |
| FILTER | 5500°K | TEMP F | 110 | FILTER | Status A |



Technicolor

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PTD ASTP CONTROL "H"

FILM: Kodak Aerochrome Infrared Film 2443
EMULSION: 206-1
BASE: Estar base (4.0 mil)
WIDTH: 70mm
EFFECTIVE SPEED: 55 Southard (ASA equivalent)

BRIEF

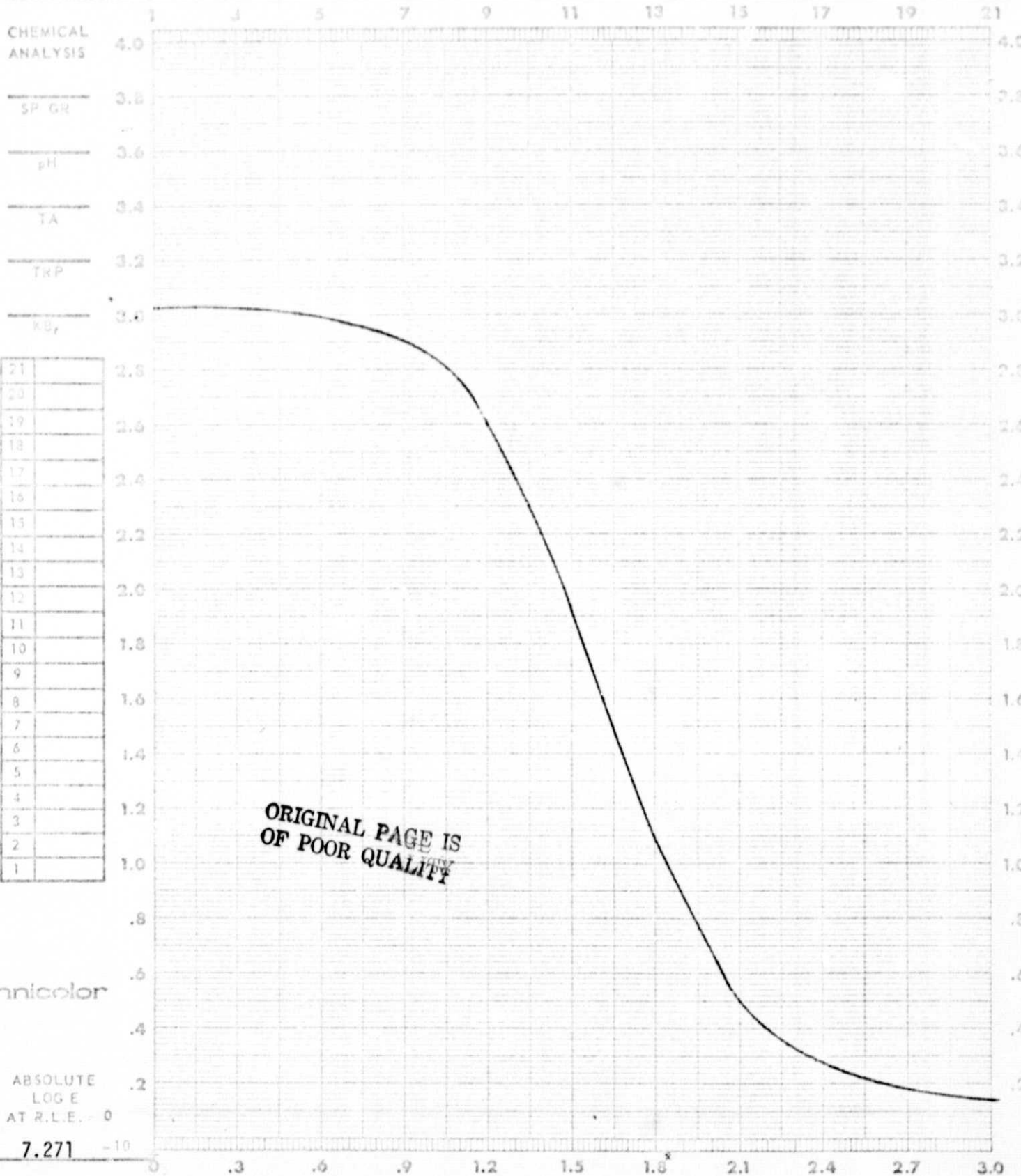
DESCRIPTION: Kodak Aerochrome Infrared Film 2443 is a medium speed, high contrast, color reversal film with sensitivity to the visible and near infrared radiation. Dye layers are false sensitized such that the dye produced does not necessarily represent the color of the subject as perceived by the human eye. This film has a high contrast (1000:1) target resolution of 63 lines per millimeter.

CONTROL CURVES: Attached.

DATE 28 Apr 75 CONTROL # H TASK ASTP Control PREPARED BY _____

FILM 2443 EMULSION # 206-1 MFG EK EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------------------|-----------------|----------------|---------------|----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>1811 #2</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>EA-5</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/50</u> | SPEED | <u>9</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500K + W12</u> | TEMP °F | <u>115</u> | FILTER | <u>Visual</u> |



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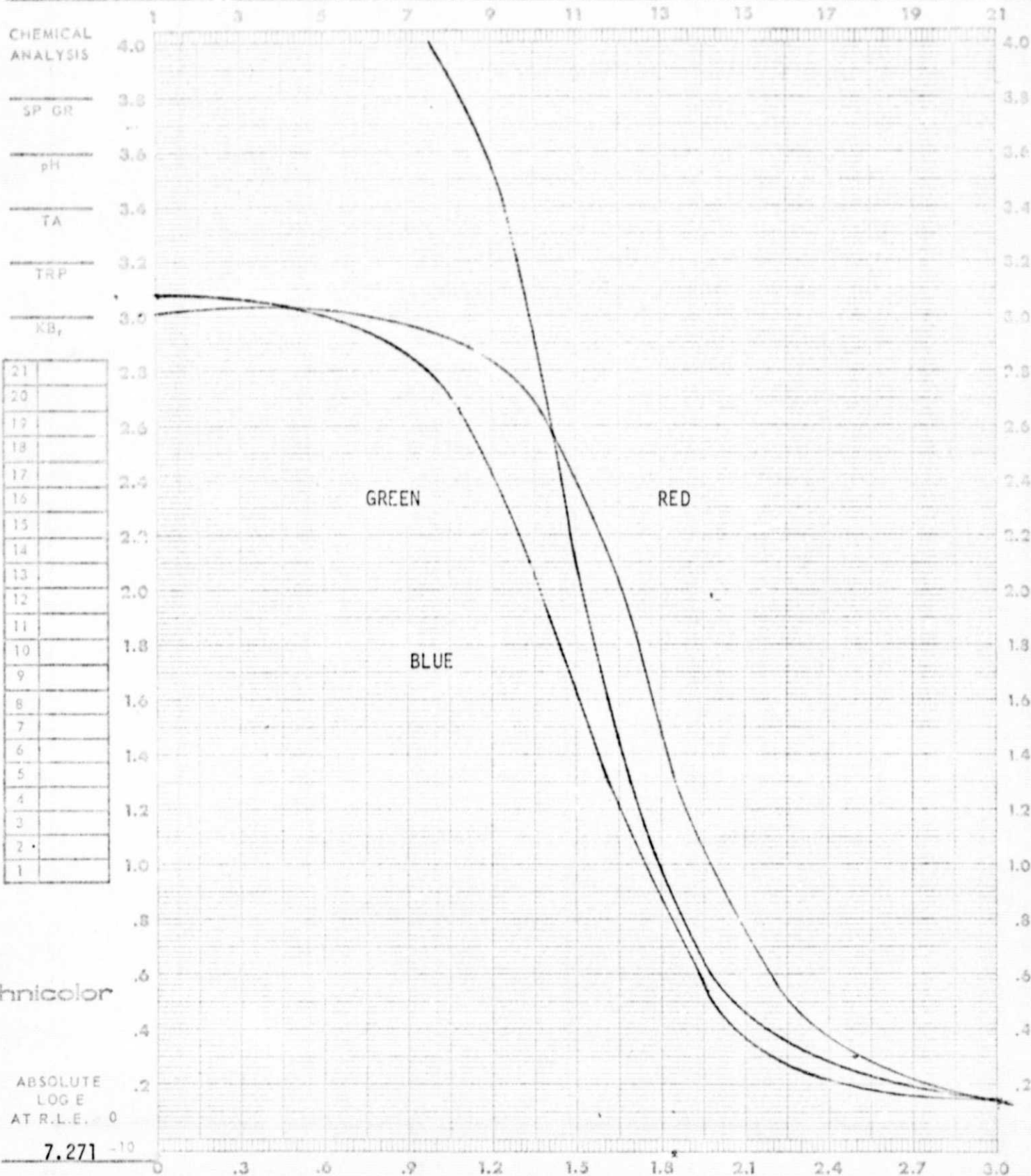
Technicolor

ABSOLUTE
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AT R.L.E. - 0
7.271 -10

DATE 28 Apr 75 CONTROL # H TASK ASTP Control PREPARED BY _____

FILM 2443 EMULSION # 206-1 MFG EK EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------------|-----------------|----------------|---------------|-----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>1811 #2</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> °K | CHEMISTRY | <u>EA-5</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/50</u> SEC. | SPEED | <u>9</u> FPM | APERTURE SIZE | <u>3</u> MM |
| FILTER | <u>5500°K + W12</u> | TEMP °F | <u>115</u> | FILTER | <u>Status A</u> |
| | | | | | SPEED () |
| | | | | | D-MAX |
| | | | | | GAMMA |
| | | | | | BASE + FCG |



PTD ASTP CONTROL "I"

FILM: Kodak Plus-X Aerial Film 3401
EMULSION: 384-4
BASE: Estar thin base (2.5 mil)
WIDTH: 70mm
GAMMA: 1.4

BRIEF

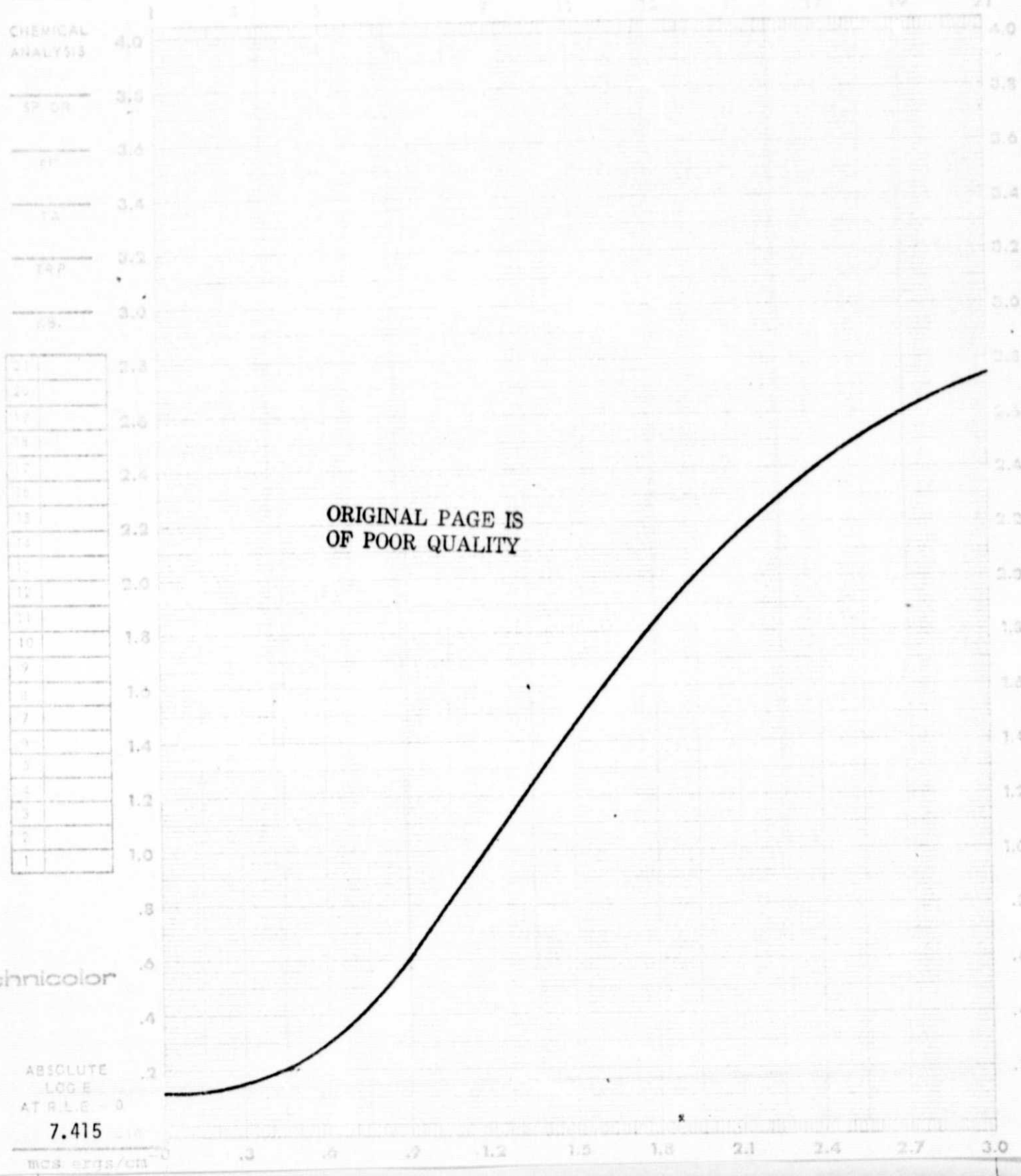
DESCRIPTION: Kodak Plus-X Aerial Film 3401 is a medium speed high contrast panchromatic negative film with extended red sensitivity. It has a high contrast (1000:1) target resolution of 160 lines per millimeter.

CONTROL CURVES: Attached.

DATE 30 Apr 75 CONTROL # I TASK ASTP Control PREPARED BY

FILM 3401 EMULSION # 384-4 MFG EK7 EXPIRATION DATE

| EXPOSURE DATA | | PROCESSING DATA | | INSTRUMENT | | GEOMETRY | |
|---------------|--------|-----------------|--------|---------------|---------|----------|--|
| SENSITOMETER | I-B | PROCESSOR | 11C-M | INSTRUMENT | MacBeth | FIELD | |
| ILLUMINANT | 2850 | CHEMISTRY | MX-641 | TYPE | TD504 | MAX | |
| TIME | 1/50 | TEMP | 1 | APERTURE SIZE | 3 | MIN | |
| FILTER | 5500°K | DEVELOPER | 85 | FILTER | Visual | FOG | |



PTD ASTP CONTROL "J"

FILM: Kodak Ektachrome EF Film S0-168
EMULSION: 13-62
BASE: Estar Thin Base (2.5 mil)
WIDTH: 35mm
EFFECTIVE SPEED: 160 Southard (ASA equivalent)

BRIEF

DESCRIPTION: Kodak Ektachrome EF Film type S0-168 is a high speed color reversal film with a high contrast (1000:1) target resolution of 80 lines per millimeter.

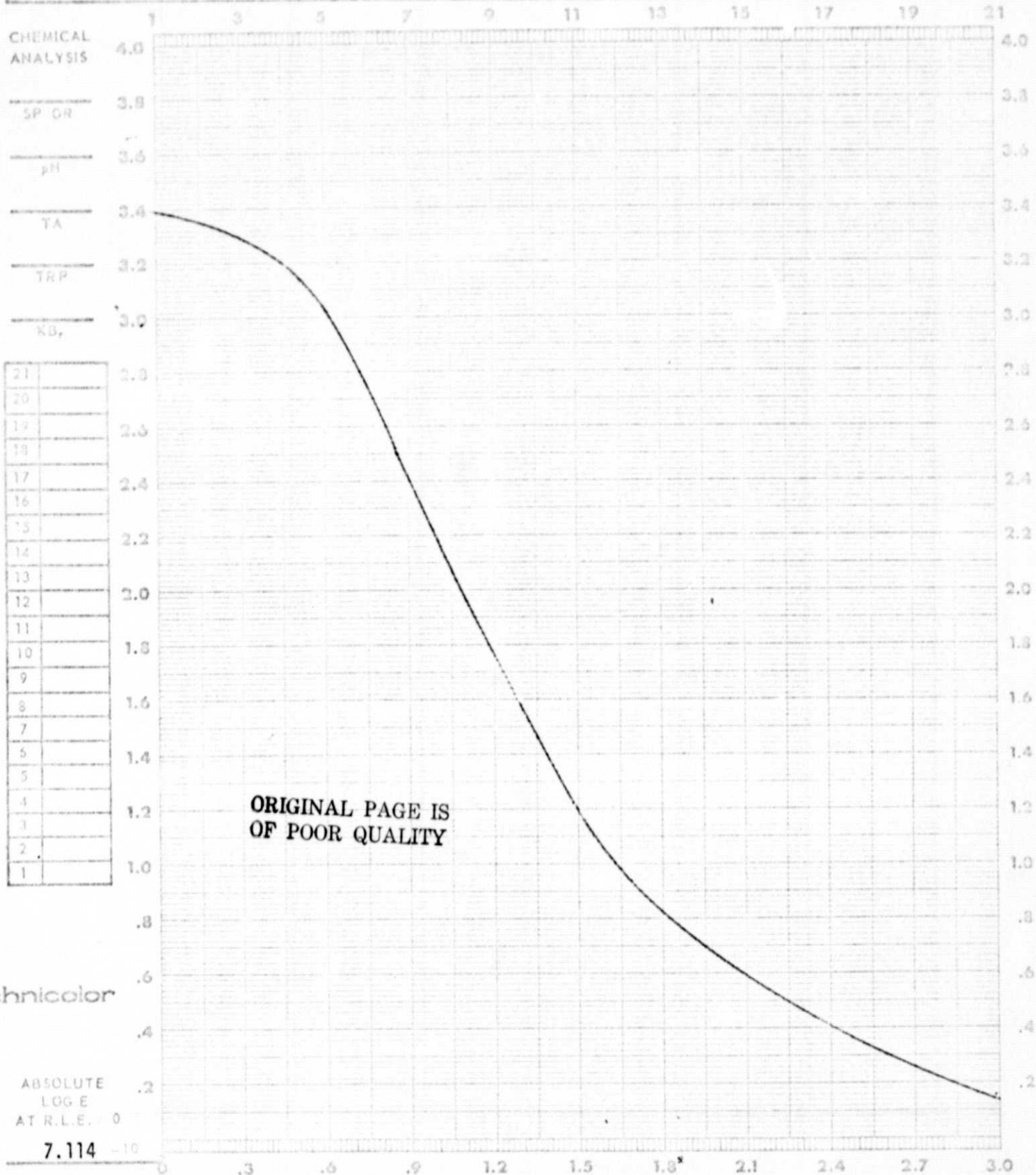
This film will be processed by PTD in the Houston processor in ME-4 chemistry.

CONTROL CURVES: Attached.

DATE 9 Apr 75 CONTROL # J TASK ASTP Control PREPARED BY _____

FILM 50-168 EMULSION # 13-62 MFG EK EXPIRATION DATE _____

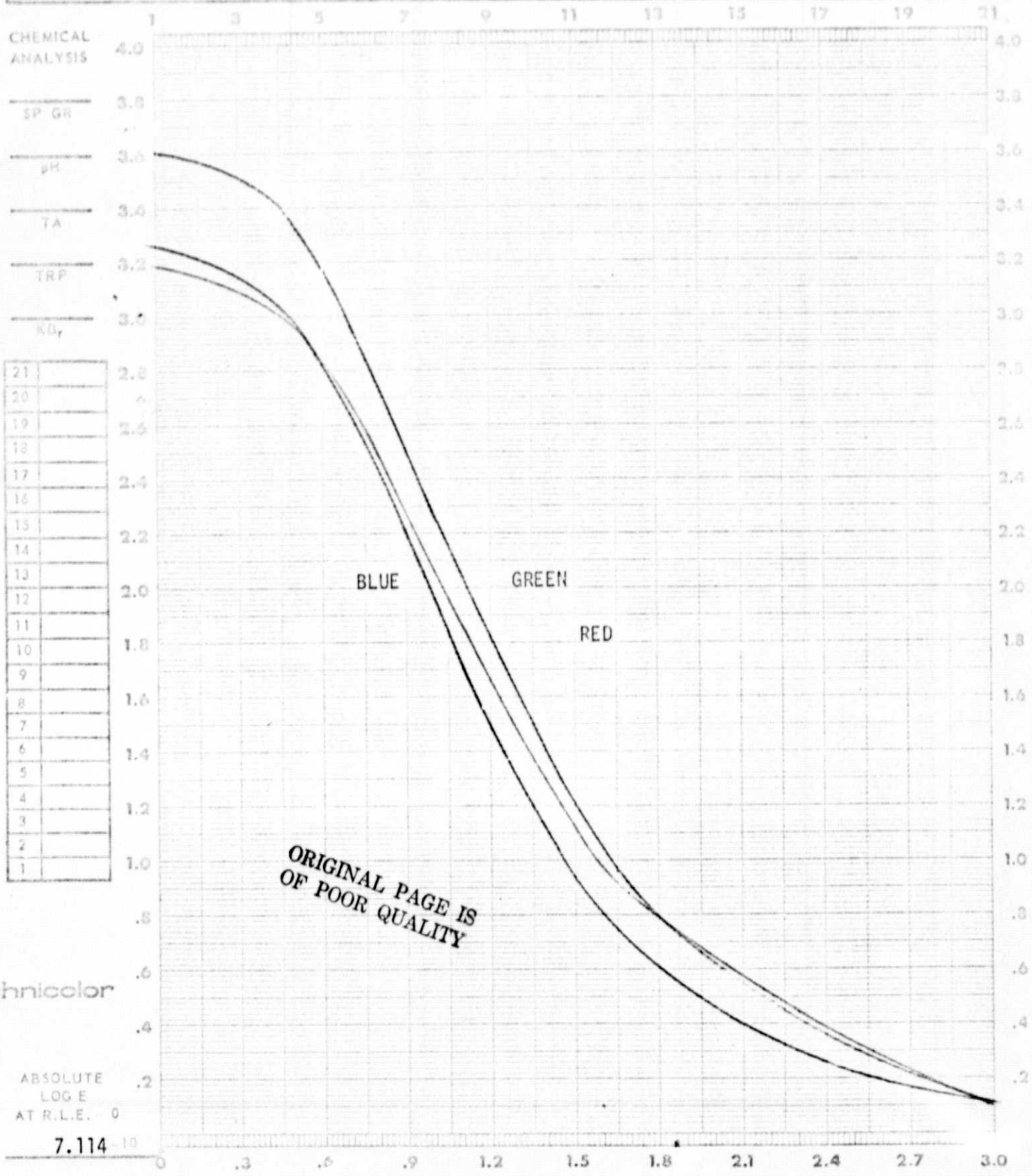
| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------------|-----------------|----------------|---------------|----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>Houston</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/100</u> | SPEED | <u>11.5</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500K</u> | TEMP °F | <u>98</u> | FILTER | <u>Visu</u> |



DATE 9 Apr 75 CONTROL # J TASK ASTP Control PREPARED BY _____

FILM 50-168 EMULSION # _____ MFG 13-62 EK EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------------------------|------|--------------------------|-------------------|---------------------------|------------------|
| SENSITOMETER <u>I-B</u> | | PROCESSOR <u>Houston</u> | | INSTRUMENT <u>MacBeth</u> | SPEED () _____ |
| ILLUMINANT <u>2850</u> | | CHEMISTRY <u>ME-4</u> | | TYPE <u>TD504</u> | D-MAX _____ |
| TIME <u>1/100</u> | SEC. | SPEED _____ | TANKS <u>11.5</u> | APERTURE SIZE <u>3</u> | GAMMA _____ |
| FILTER <u>5500^oK</u> | | TEMP °F <u>98</u> | TIME _____ | FILTER <u>Status A</u> | BASE + FOG _____ |



PTD ASTP CONTROL "K"

FILM: Kodak Ektachrome EF Film S0-168
EMULSION: 13-62
BASE: Estar thin base (2.5 mil)
WIDTH: 35mm
EFFECTIVE SPEED: 320 Southard (ASA equivalent)

BRIEF

DESCRIPTION: Kodak Ektachrome EF Film type S0-168 is a high-speed color reversal film with a high contrast (1000:1) target resolution of 80 lines per millimeter.

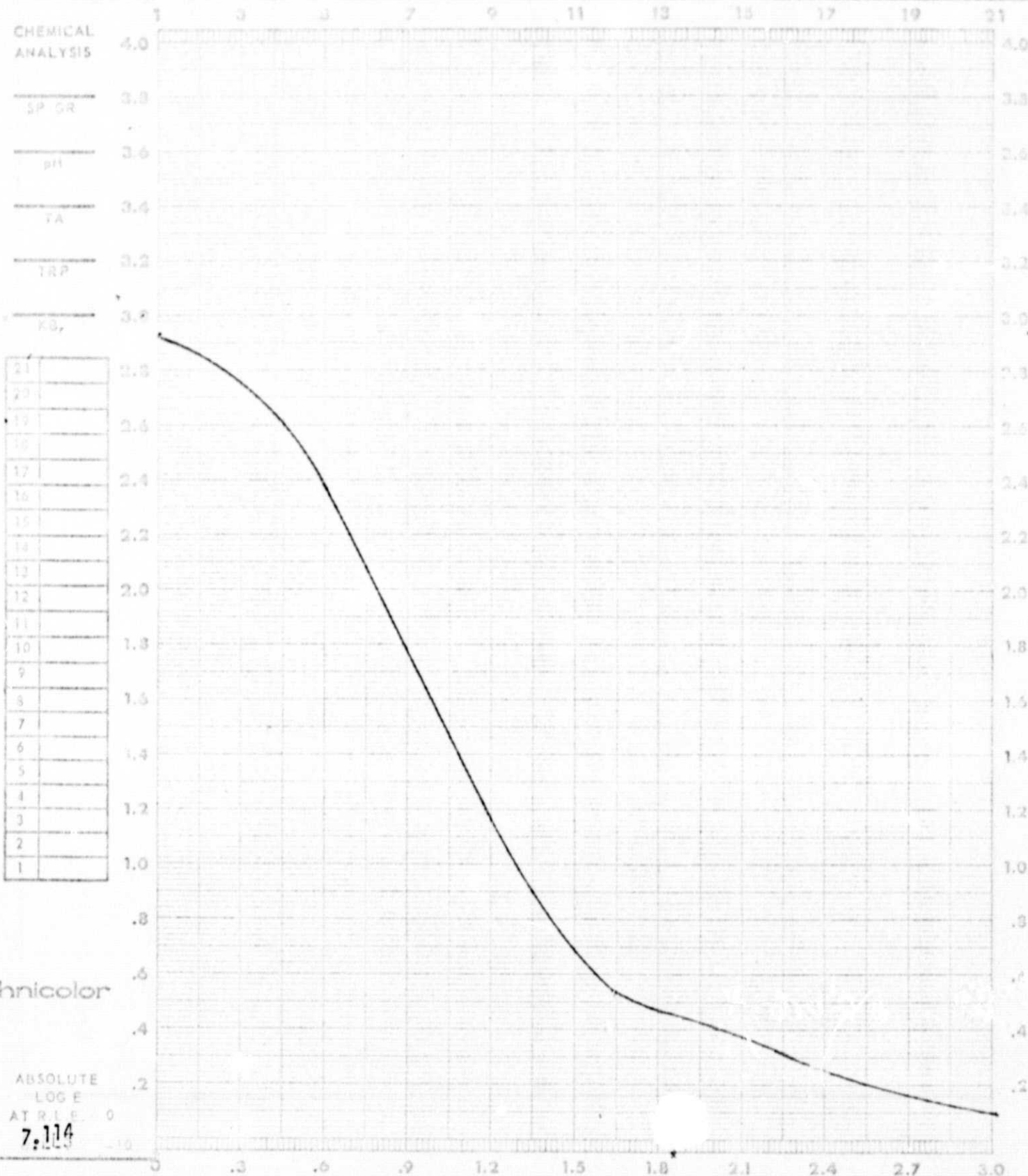
This film will be processed by PTD in the Houston processor in ME-4 chemistry.

CONTROL CURVES: Attached.

DATE April 1975 CONTROL # K TASK _____ PREPARED BY _____

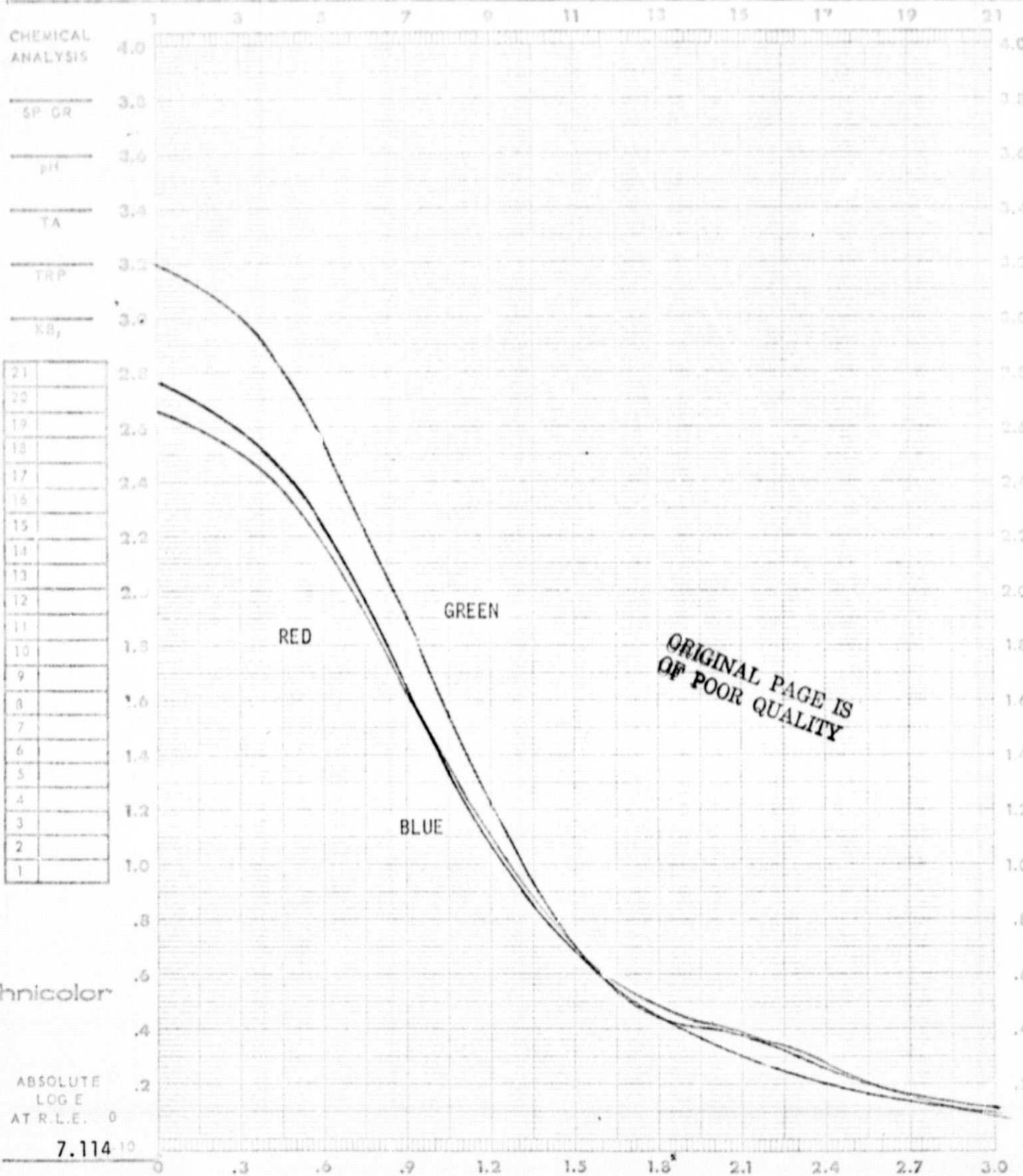
FILM S0-168 EMULSION # 13-62 MFG _____ EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|---------------|-----------------|----------------|---------------|----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>Houston</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/100</u> | SPEED | <u>A11</u> | APERTURE SIZE | <u>3</u> |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | FILTER | <u>Visual</u> |



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| 2 | |
| 1 | |

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|------------------|-----------------|----------------|---------------|----------------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>Houston</u> | INSTRUMENT | <u>MacBeth</u> |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | <u>TD504</u> |
| TIME | <u>1/100</u> SEC | SPEED | <u>A11</u> | APERTURE SIZE | <u>3</u> MM |
| FILTER | <u>5500°K</u> | TEMP °F | <u>98</u> | FILTER | _____ |
| | | TANKS | <u>13</u> | | |
| | | TIME | _____ | | |
| | | | | SPEED I | _____ |
| | | | | D-MAX | _____ |
| | | | | GAMMA | _____ |
| | | | | BASE - FOG | _____ |



PTD ASTP CONTROL "L"

FILM: Kodak Ektachrome MS Recording Film QX-807
EMULSION: 1-32
BASE: Estar Thin Base (2.5 mil)
WIDTH: 35mm
EFFECTIVE SPEED: 64 Southard (ASA equivalent)

BRIEF

DESCRIPTION: Kodak Ektachrome MS Recording Film QX-807 is a near equivalent of Kodak Ektachrome MS Film Type S0-368 with a Wratten 2A (ultraviolet absorbing) filter overcoated. It is a medium speed color reversal film with a high contrast (1000:1) target resolution of 80 lines per millimeter.

This film will be processed by PTD in the 35mm Houston processor with Kodak ME-4 chemistry.

CONTROL CURVES: Attached.

DATE 30 Apr 75

L

ASTP Control

FILM QX 807

1-32 (35mm)

EK

I-B
2850

Houston
ME-4

MacBeth
TD504

1/50

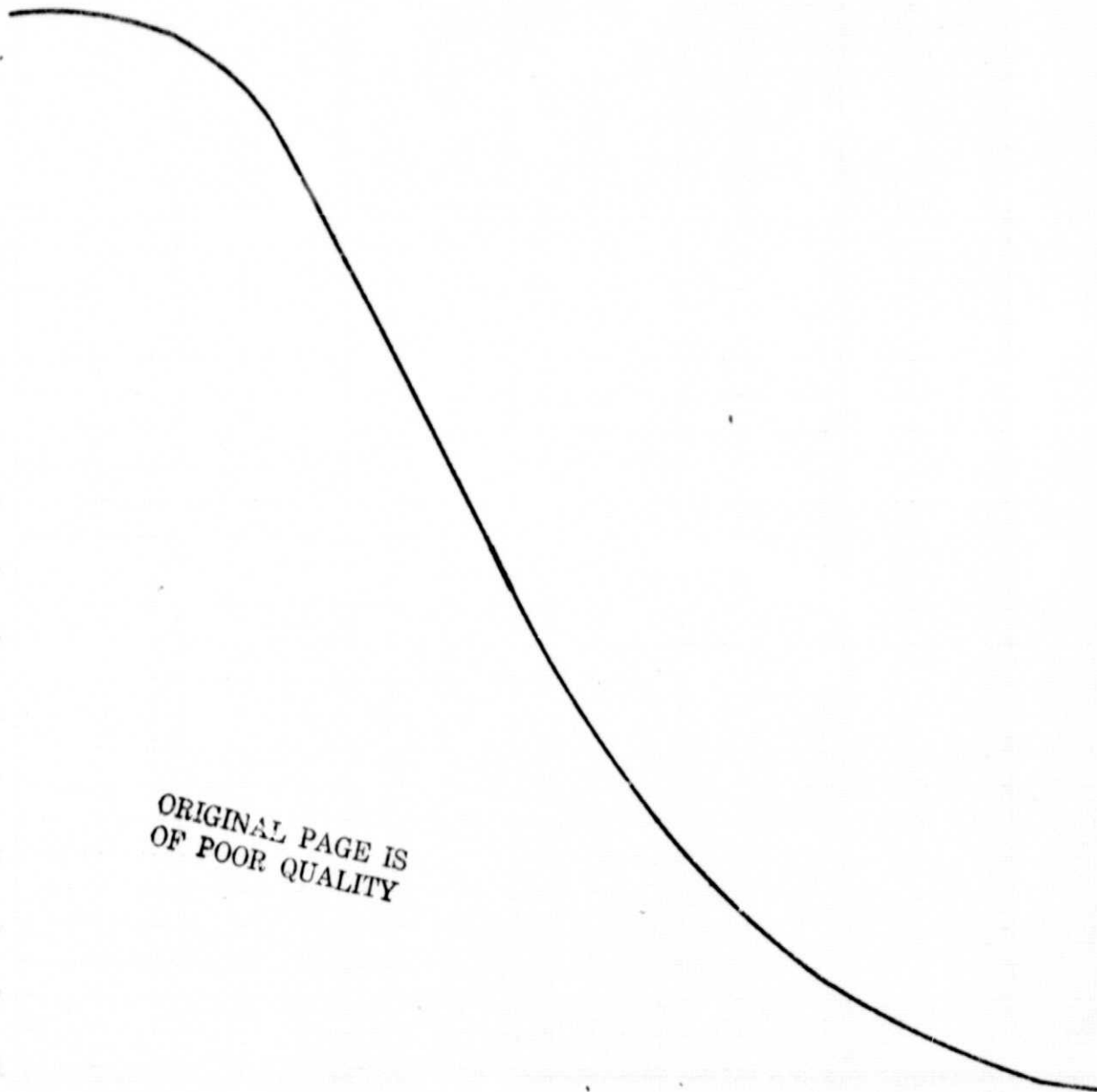
11

3

5500°K

98

Visual



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DATE 30 Apr 75

CONTROL #

L

ASTP Control

FILM QX 807

EXPOSURE

1-32 (35mm)

EK

| | | | |
|-------------|--------|---------|----------|
| EXPOSURE | I-B | Houston | MacBeth |
| WIND NUMBER | 2850 | ME-4 | TD504 |
| SHUTTER | 1/50 | 11 | 3 |
| TEMPERATURE | 5500°K | 98 | Status A |

CHEMICAL ANALYSIS



GREEN

BLUE

RED"

Technicolor

ABSOLUTE

7.415

FOR



PTD ASTP CONTROL "M"

FILM: Kodak Ektachrome EFB Recording Film QX-806
EMULSION: 1-1
BASE: Estar thin base (2.5 mil)
WIDTH: 35mm
EFFECTIVE SPEED: 320 Southard (ASA equivalent)

BRIEF

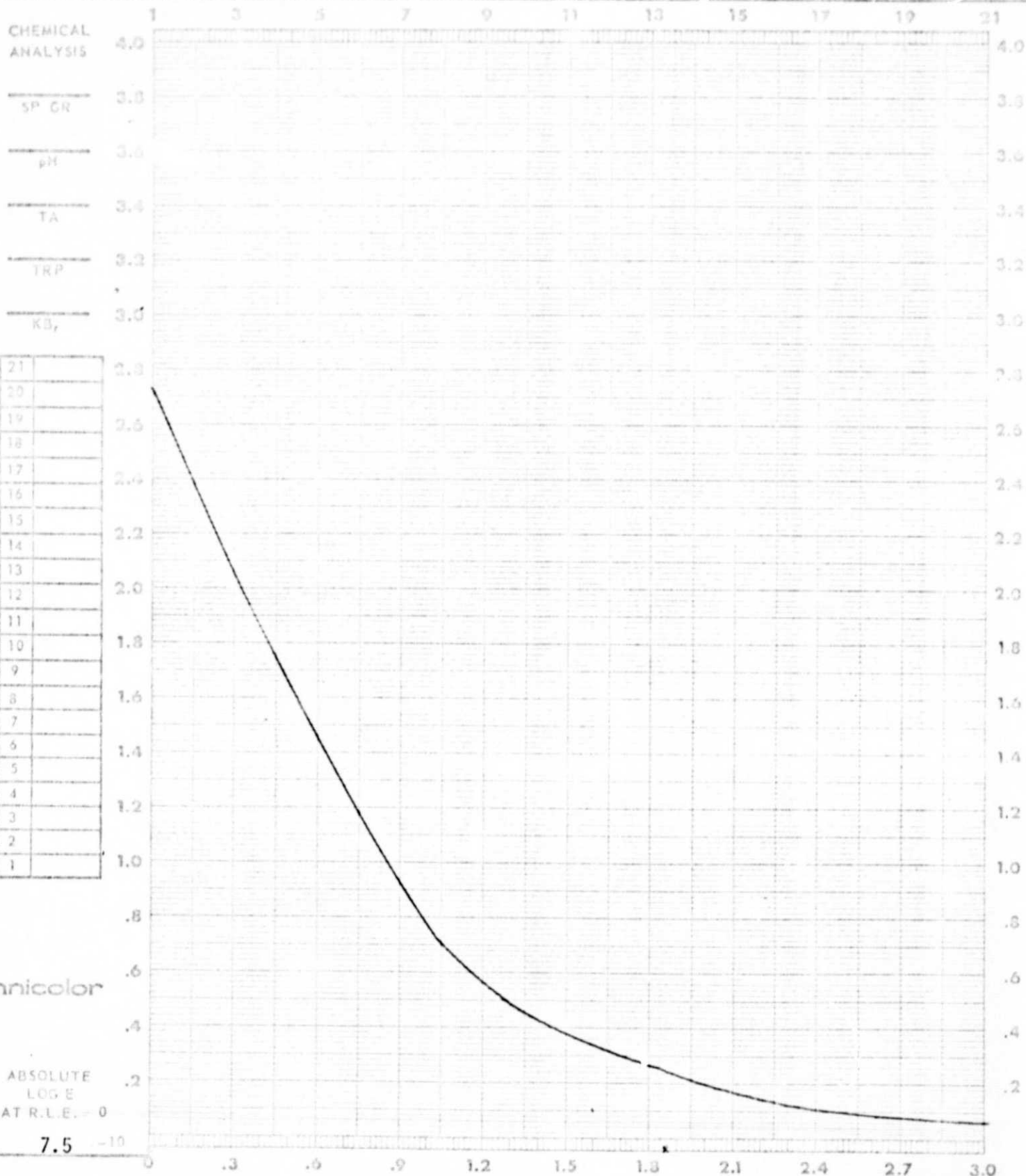
DESCRIPTION: Kodak Ektachrome EFB Recording Film QX-806 is a high-speed color reversal film with an equivalent filter overcoated to color balance the emulsion for tungsten illumination. This film has a high contrast (1000:1) target resolution of 80 lines per millimeter.

CONTROL CURVES: Attached.

DATE 31 Apr 75 CONTROL # M ASTP TASK ASTP Control PREPARED BY _____

FILM QX-806 EMULSION # 1-1 (35mm) MFG _____ EXPIRATION DATE _____

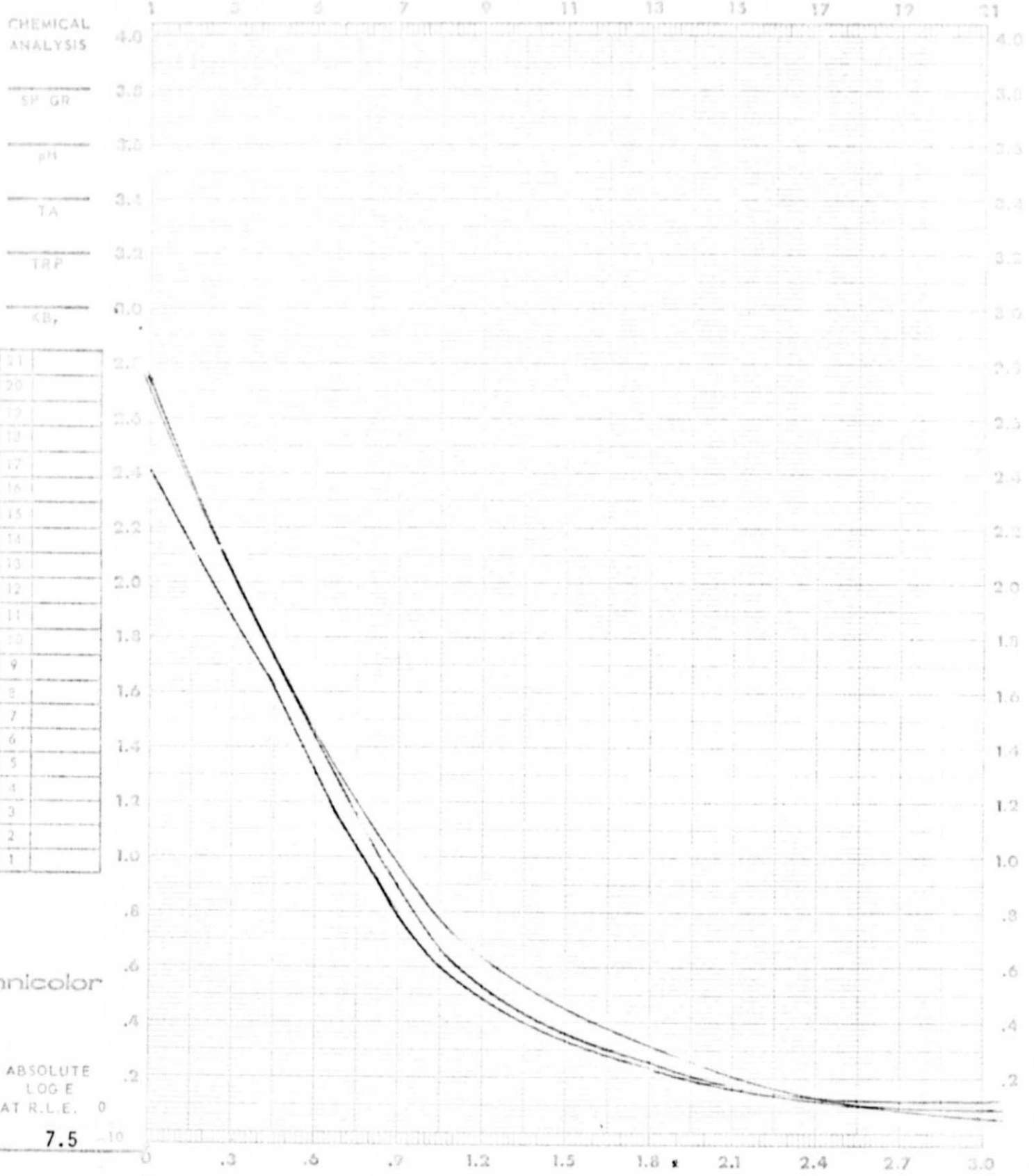
| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------------|-----------------|----------------|---------------|-------|
| SENSITOMETER | <u>I-B</u> | PROCESSOR | <u>Houston</u> | INSTRUMENT | _____ |
| ILLUMINANT | <u>2850</u> | CHEMISTRY | <u>ME-4</u> | TYPE | _____ |
| TIME | <u>1/100</u> | SPEED | <u>14</u> | APERTURE SIZE | _____ |
| FILTER | <u>80D</u> | TEMP °F | <u>98</u> | FILTER | _____ |
| | | TANKS | _____ | | |
| | | TIME | _____ | | |



DATE 31 Apr 75 CONTROL # M ASTP TASK ASTP Control PREPARED BY _____

FILM QX-806 EMULSION # 1-1 (35mm) MFG _____ EXPIRATION DATE _____

| EXPOSURE DATA | | PROCESSING DATA | | DENSITOMETRY | |
|---------------|--------------|-----------------|----------------|---------------|-------|
| SENSITOMETER | I-B | PROCESSOR | Houston | INSTRUMENT | _____ |
| ILLUMINANT | 2850 | CHEMISTRY | ME-4 | TYPE | _____ |
| TIME | 1/100 | SPEED | 14 | APERTURE SIZE | _____ |
| FILTER | 80D | TEMP °F | 98 | FILTER | _____ |



Technicolor

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