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EARTH OBSERVATIONS DIVISION

SPACE AND LIFE SCIENCES DIRECTORATE

PROCUREMENT SPECIFICATION  
COLOR GRAPHIC CAMERA SYSTEM

Job Order 76-682

Prepared By

Lockheed Engineering and Management Services Company, Inc.

Houston, Texas

Contract NAS 9-15800

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## **1. SCOPE**

### **1.1 General**

**This specification establishes the performance and design requirements for the Color Graphic Camera System.**

**The Color Graphic Camera System is a functional part of the Earth Observations Department Laboratory System (EODLS) and initially shall be interfaced to the General Electric I-100 Image Analysis Station.**

### **1.2 Purpose**

**The Color Graphics Camera System shall convert the output of a raster scan computer color terminal into permanent, high resolution photographic prints and transparencies. Images usually displayed will be remotely sensed Landsat imagery scenes.**

## **2. APPLICABLE DOCUMENTS**

### **2.1 General**

**The following documents, of the latest issue in effect, constitute a part of this specification to the extent specification herein. Where conflicting requirements exist, the requirements of this specification shall govern.**

**Specifications - None**

**Publications - None**

### **3. REQUIREMENTS**

#### **3.1 General**

The Color Graphics Camera System shall consist of "off-the-shelf" equipment or modified "off-the-shelf" equipment for the permanent recording of enhanced images displayed on a raster scan computer color terminal and shall meet the requirements therein.

#### **3.2 Basic Requirements**

##### **3.2.1 Operation Modes**

The Color Graphics Camera System shall consist of eight selectable operational modes.

Mode 1 - Full red, green, blue (RGB) composite photographic color

Mode 2 - Red only

Mode 3 - Green only

Mode 4 - Blue only

Mode 5 - Blue and Green

Mode 6 - Red and Blue

Mode 7 - Green and Blue

Mode 8 - Black and White photograph

##### **3.2.2 Film Media**

The Color Graphics Camera System shall have the capability of producing 8"x10" hardcopy photographs and transparencies that require minimal processing. Desirable, but not mandatory is the use of Polaroid Type 808 Polacolor 2 8"x10" color prints, conventional 8"x10" black and white, or 8"x10" color transparencies.

##### **3.2.3 Video Monitor**

The video monitor shall consist of a 1400 line nominal resolution on a flat-face CRT. Linearity or pixel position error shall be 0.5% or less. The image degradation caused by raster lines, resulting in poor color saturation and the inability to resolve line detail, may be improved by the introduction of additional interlace into interlaced images. The use of the spot wobble blending method is not desirable and is not acceptable. With proper interlacing, a very high degree of color saturation, improved visual resolution of small detail, and the smoothing of jagged edges without degradation of focus shall be present.

### 3.2.4 Formats

Seven 8" x 10" formats shall be available and shall be commanded by a simple switch. The formats shall consist of a single image, two images, four images, six images, 9 images, 16 images, and 25 images. Multiple images are to be generated by these formats and are tabulated below.

<u>No. of Images</u>	<u>Array</u>	<u>Size</u>
1	1x1	8x10
2	1x2	5x6.7
4	2x2	3.75x5
6	2x3	3x4
9	3x3	2.5x3.5
16	4x4	1.9x2.5
25	5x2	35mm slide

### 3.2.5 Alignment and Calibration Controls

Provisions shall be available to the adjustment and/or alignment of SYNC, ASPECT RATIO AND EDGE BLANKING, INTENSITY, CONTRAST, EXPOSURE, AND SMOOTHING SELECTION to enable maintenance personnel to adjust for peak performances and to compensate for aging of components within the Color Graphics Camera System. When applicable, there shall be individual adjustment controls for each of the primary colors - red, green, blue.

### 3.2.6 Image Reversal

A simple means, such as a switch, shall provide the capability of image reversal of the video image for both black and white, and color.

### 3.2.7 Input Video Signal

The Color Graphics Camera System shall accept RS-170, 75Ω, 0.7V nominal, 1V composite from a raster scan computer color terminal to reproduce the desired color scene.

### 3.2.8 Remote Control

Control of the operation of the camera shall be accessible on the front panel or face of the system and by the interfacing of a remotely controlled switch. The remote switch may be rack mounted or foot operated.

### **3.3 Electrical Characteristics**

#### **3.3.1 Primary Power**

The Color Graphics Camera System shall operate as specified with primary power of 115 VAC, single phase, plus or minus 10 percent at 60 HZ, plus or minus 5 percent. All cooling devices (including blowers and fans) shall be contained within the basic unit.

### **3.4 Environmental Conditions**

#### **3.4.1 Temperature**

The Color Graphics Camera System shall perform as specified when operated over the ambient temperature range of plus 60 to plus 90 degrees fahrenheit (plus 15 to plus 32 degrees centigrade). The system shall not be damaged when operated for short durations over the extended ambient temperature range of plus 32 to plus 122 degree fahrenheit (zero to plus 50 degrees centigrade).

#### **3.4.2 Humidity**

The Color Graphics Camera System shall perform as specified at relative humidities from 30 to 70 percent, provided there is no condensation.



#### **4. PREPARATION FOR DELIVERY**

##### **4.1 Preservation and Packaging**

Preservation and packaging shall comply with Interstate Commerce Commission rules and regulations, and shall ensure safe arrival and ready identification at the destination.

##### **4.2 Receipt of Destination**

The subcontractor shall be responsible for assuring that equipment, upon receipt at destination, is free of damage and operative within the performance requirements of this specification.

## 5. ACCEPTANCE TEST

### 5.1 General

The manufacturer or his designated representative shall install, set up, and assist in the conduction of the acceptance test of the Color Graphic Camera System.

### 5.2 Acceptance Test Plan

The Acceptance Test Plan (ATP) shall be generated by NASA or designated contractor personnel. The ATP shall include tests to demonstrate proper operations of the Color Graphics Camera System, interface with the General Electric I-100 Image Analysis Station, and compliance with specifications outlined herein.

## 6. NOTES

### 6.1 Reference Documents

The following documents provide reference information related to the Color Graphics Camera System.

None