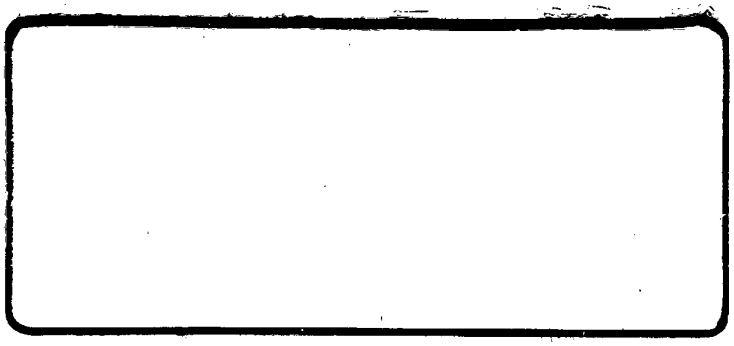
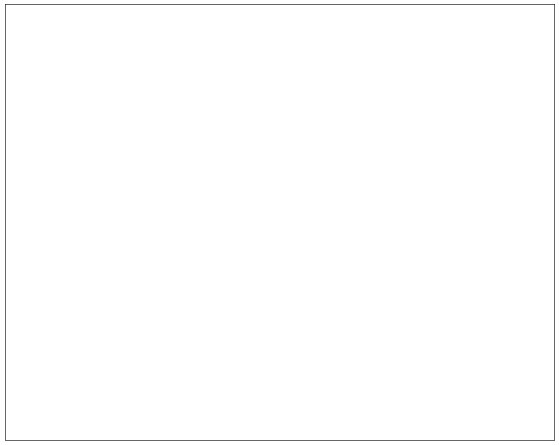




STAT

STATUS REPORT

for Period

1 November through 30 November 1968

Submitted under Contract to

U. S. Government

[redacted] STAT

File No. 11038

[redacted] STAT

This document is presented as the Monthly Status Report under Contract to the U. S. Government, [redacted] STAT
The report period represented herein covers the period of 1 November through 30 November 1968.

[redacted] STAT

[redacted] STAT

INDEX

APPENDICES

PROGRAM STATUS

Summary as of November 30, 1968

Scheduled percentage of program completed - 39.4%
Actual percentage completed this date - 38.0%

Several milestones of major importance were accomplished during this report period:

1. The optical bridge center, left and right sections were aligned and pinned, and alignment fixtures were fabricated to allow the Optical Subcontractor to exactly duplicate [redacted] set-up for precise optical installation and adjustment. The bridges and fixtures were then dismantled and crated for shipment to France. STAT

2. All electronic chassis for Task 11 and 12 have been received and inspected. Rack assemblies are scheduled to begin during the next report period.

3. Work has been started on the service and training manuals.

Details of this progress are covered under individual task headings.

Task 01 Statements of Work, Specifications, Report Preparation

Scheduled percentage of completion 37%

Actual percentage of completion 37%

Task requirements are being met as scheduled. To date all the required reports and specifications have been written and published according to the basic Program Plan.

[redacted] Specification No. 19 was written to cover the revisions necessary for the electronic cabinets. This specification is included as Appendix I. STAT

Task 02 Scheduling and Planning

Scheduled percentage of completion	37%
Actual percentage of completion	37%

New schedules based on the Optical Subcontractor's latest production plan have been prepared and distributed.

Overall performance to schedule has been good, with the exception of minor problems which are discussed within certain tasks.

Task 03 Test and Inspection Procedures

Scheduled percentage of completion	24%
Actual percentage of completion	23%

No work has been performed on this task during the current reporting period.

Procedures for system check-out are scheduled to be written and approved during the early part of 1969.

Task 04 Management, Administration and Supervision

Scheduled percentage of completion	37%
Actual percentage of completion	37%

During this report period, Program Management has met with the Image Analysis System Subcontractor and with the customer.

The results of these meetings are discussed under Tasks 5 and 24.

Task 05 Meetings

Scheduled percentage of completion 37%

Actual percentage of completion 37%

During the week of November 17, [redacted] Program Manager, and [redacted] Technical Director, visited the customer's facility where meetings were held with various customer representatives in connection with the interfacing of the Stereocomparator with the customer's production operations. Detailed customer operations, using the various pieces of customer owned measuring equipment, were reviewed from the point of view of setting up the Stereocomparator operating procedures.

STAT

STAT

Task 06 Facilities Requirements

Scheduled percentage of completion	60%
Actual percentage this date	50%

The installation of the air conditioning ductwork and subsequent completion of the "Clean Room" facility will be delayed from two to four weeks due to delays in shipment of equipment.

This task is currently being re-scheduled to provide more detailed information, and when completed, the schedule will be published.

No delay in the overall program effort is anticipated, however, although several minor schedule changes may be required.

Task 07 Main Frame and Structural Elements

Scheduled percentage of completion 98%

Actual percentage this date 93%

This task is virtually complete.

No additional work was scheduled during the month of November.

Task 08 Skin

Scheduled percentage of completion	30%
Actual percentage this date	30%

The aluminum skin covering for the Stereocomparator has been fabricated and installed to the point where the balance of the skin will be assembled at the final machine assembly.

Task 09 Granite and Ways Assembly for Stages

Scheduled percentage of completion	88%
Actual percentage this date	77%

The remaining granite sections for this task will be inspected by [redacted] personnel at the vendor's site the first week of December. After inspection and approval, these sections will be delivered to the [redacted] facilities. STAT STAT

The holes and brass plugs necessary for mounting of the subassemblies will be drilled and tapped by the [redacted] Shop during the month of December. STAT

Task 10 Air Bearings

Scheduled percentage of completion	50%
Actual percentage this date	50%

As reported previously, the air bearings used to support and guide the two stages are ready for installation.

Installation will begin immediately upon receipt of the remaining granite sections.

Task 11 Stage Drives

Scheduled percentage of completion	54%
Actual percentage this date	44%

As reported previously, the stage drive assemblies have been completed and are ready for installation on the stages.

No work was scheduled on this task for the month of November.

Task 12 Film Drive and Transport System

Scheduled percentage of completion	50%
Actual completion this date	50%

Final servo alignment of the film drive and transport system was done during the month of November.

The film drive and transport system is now complete and ready for installation into the Stereocomparator.

Task 13 Film Platen and Film Clamping

Scheduled percentage of completion 30%

Actual percentage this date 27%

The glass platen to be used on this assembly has been ordered from the optical subcontractor. Delivery of the glass will coincide with the schedule for assembly of the Stereocomparator.

Bench testing of the mechanical components is proceeding according to schedule.

Task 14 Film Cooling

Scheduled percentage of completion	22%
Actual percentage this date	19%

A customer representative and the customer's site preparation consultant visited [redacted] during this report period to discuss general problems of site preparation and environmental control details. STAT

It was decided during the meetings that the control of temperature and humidity of the film cooling air would be from low heat capacity elements mounted on the Stereocomparator in the film cooling air stream. The requirements of the customer provided air condition system are being modified to include this feature.

The question of ambient air humidity tolerances, from the point of view of film dimensional stability, was discussed and the customer representative agreed to obtain data on the change of film dimensions with respect to temperature and humidity for the particular films that would be used.

Further information on this subject is covered under Task 38, Environmental Control.

Tasks 16, 17 and 18 — Optical System - Viewing Optics, Viewing Illumination, Reticle Projector and Illumination

Scheduled percentage of completion	20%
Actual percentage this date	22%

A monitoring trip is planned for the first week of December to [redacted] various plants. This trip is being planned in conjunction with customer's optical design consultant. STAT

Task 20 General Platen Illumination

Scheduled percentage of completion	55%
Actual percentage this date	41%

Both the electronic and mechanical portions for this assembly have been completed.

The system will be tested as a unit during the next report period.

Task 21 Optical Bridge and Supports

Scheduled percentage of completion	90%
Actual percentage this date	90%

The optical bridge, center, right and left sections, has been dismounted and crated for shipment to the optical sub-contractor for installation of the optics system.

Task 22 Interferometer Assembly

Scheduled percentage of completion	52%
Actual percentage this date	40%

The mechanical portions of the interferometer assembly have been assembled. Work is still in process in the [redacted] Shop connecting the electronic circuitry to the mechanical components. STAT

Upon receipt of the balance of the granite sections, this sub-assembly will be mounted in place.

Task 23 Optics Drive Assembly

Scheduled percentage of completion 33%

Actual percentage this date 38%

The remaining P.C. boards for the optics drive assembly were received during this report period. These have been tested by the [redacted] Shop and approved. STAT

It appears that this assembly will easily meet the specified accuracy goals.

Task 24 Image Analysis System

Scheduled percentage of completion 27%

Actual percentage this date 25%

A monitoring trip was made to [redacted] the STAT subcontractor supplying the image analysis system, during the month of November.

A trip report covering the discussions held is included as Appendix II.

[redacted] status report for the period ending October 31, STAT 1968 is included as Appendix III.

Task 26 Digitizing Logic Subassembly

Scheduled percentage of completion	60%
Actual percentage this date	78%

The digitizing logic subassembly is now complete. The electronic chassis have been checked out and are ready to be assembled into the system.

Task 27 Metric Readout

Scheduled percentage of completion 69%

Actual percentage this date 80%

The metric readout system is now complete.

No work was scheduled on this task during the month of November.

Task 28 Output Logic and Interfaces

Scheduled percentage of completion	60%
Actual percentage this date	65%

The stage position and mode logic chassis have been bench-tested and approved.

The output lines to the customer's computer and card punch are now under test.

It is anticipated that this task will be ready for overall assembly during the next report period.

Task 29 Cabling

Scheduled percentage of completion	62%
Actual percentage this date	71%

The percent progress of the cabling required to interconnect the various electrical and electronic elements being assembled in the [redacted] Shop is as follows: STAT

Cabinet #1 (Stage drives, film drive and transport system)	99%
Cabinet #2 (Optics drive, interface with Image Analysis System)	86%
Cabinet #3 (Metric Readout, output logic and interfaces)	79%
Electrical arrangement (floor inter-connection of all cables)	41%
Control Console	82%
Display Panel	10%
Optical Bridge	30%
Stage Assembly	67%

Task 30 Control Console and Chair

Scheduled percentage of completion	62%
Actual percentage of completion	50%

As reported, the mechanical portion of the control console has been completed.

The electronic assembly required for the control console is being built by an outside vendor. The vendor is experiencing some delay in obtaining power supplies for this assembly; however, delivery is scheduled for the month of December.

Task 32 Computer

Scheduled percentage of completion 94%

Actual percentage this date 95%

This task is virtually complete.

No work was scheduled during the month of November.

Task 33 Electronic Racks and Control Cabinets

Scheduled percentage of completion	60%
Percentage completed this date	70%

The electronic racks have been delivered to an outside shop for finishing and installation of doors. These racks are scheduled to be returned to [redacted] during the next report period. STAT

Task 34 Utilities, Vacuum and Air Systems

Scheduled percentage of completion	35%
Actual percentage this date	27%

The utilities cabinet has been received and is now in the process of being finished by an outside shop.

The electronic chassis required to operate the utilities has been temporarily delayed due to the necessity for rework on the front panel. Delivery has been re-scheduled for the first week of December.

Task 35 Vibration Absorption and Leveling

Scheduled percentage of completion 90%

Actual percentage this date 85%

Acceptance testing of the vibration absorption and leveling system was done by [redacted] personnel during the month of November. STAT

A representative from [redacted] the company supplying this system, is scheduled to visit the [redacted] facilities during the month of December to perform the final check-out of the system. STAT STAT

Task 36 Overall Assembly

Scheduled percentage of completion 19%

Actual percentage this date 7%

No work was scheduled on this task for the month of November.

Task 37 Radio Frequency Noise Suppression

Scheduled percentage of completion 0%

Actual percentage this date 0%

No work was scheduled on this task for the month of November.

Task 38 Environmental Control

Scheduled percentage of completion 45%

Actual percentage this date 45%

A meeting was held at the customer's facility with the customer representatives, the customer's site preparation consultant, and [redacted] personnel. STAT

The customer presented data showing that the film to be used on the Stereocomparator was more sensitive, by a factor of two or more, to dimensional changes from 1% relative humidity change than from 1° F. temperature change.

Due to this circumstance, the customer is revising the environmental control system for the site to provide for 1% relative humidity control. The system will be arranged for control of the film cooling air, as well as for the general Clean Room environment.

Task 39 Reliability Analysis

Scheduled percentage of completion	0%
Actual percentage this date	0%

No work was scheduled on this task for the month of November.

Task 40 Installation

Scheduled percentage of completion 2%

Actual percentage this date 6%

The problem of designing the customer provided cable trays was reviewed during the visit of the [redacted] personnel to the customer's facilities. STAT

It was necessary that the cable trays be arranged so that the many cables to be furnished by [redacted] can be readily installed in the cable trays with a minimum amount of dismantling of the cable tray assemblies. Originally the customer had thought there was a possibility of obtaining commercially available cable trays with this particular characteristic. As it turned out, special trays will have to be installed, and the customer will be making this installation as shown on [redacted] Drawing E8235 A. STAT

A list of material has been prepared which represents the items that [redacted] will be importing into the U.S. from France (Appendix IV). STAT Certain items are primarily associated with, or part of, the optical assemblies which are of French manufacturer. The balance of the items on the list are of American manufacture, exported to France for the purpose of testing and operating the optical system at the French optical vendor's plant. It is expected that this list will be revised from time to time.

Task 42 Breadboards and Test Devices

Scheduled percentage of completion 20%

Actual percentage this date 12%

Bench tests are being performed on the film platen (see Task 13).

Bench testing of the output logic (see Task 28) was completed in November.

Task 43 Computer Programming and Services

Scheduled percentage of completion 28%

Actual percentage this date 30%

[redacted] personnel are continuing to STAT develop and prepare the programming data for the Stereocomparator, utilizing the computer installed at the [redacted] facilities. STAT

A status report on their activities for the month of November is included as Appendix V.

Task 44 Preacceptance Test in Fabridation Plant

Scheduled percentage of completion 0%

Actual percentage this date 0%

No work was scheduled on this task for the month of November.

Task 45 Acceptance Test in Fabrication Plant

Scheduled percentage of completion 0%

Actual percentage this date 0%

No work was scheduled on this task for the month of November.

Task 46 Acceptance Test after Installation

Scheduled percentage of completion 0%

Actual percentage this date 0%

No work was scheduled on this task for the month of November.

Task 47 Instruction Manual and Drawing Submittal

Scheduled percentage of completion	7%
Actual percentage this date	6%

Various internal meetings have been held with [redacted] STAT personnel responsible for the preparation of the instruction manuals to be submitted to the customer upon completion of the Stereocomparator.

Preliminary drafts have been written on the logic chassis and stage drives. Block diagrams for the manual have been started.

Outlines covering the Operator's Manual, Operator Training Manual, and Service Manual are included as Appendix VI.

Task 48 Spare Parts List

Scheduled percentage of completion	0%
Actual percentage this date	4%

Responsibility for the preparation of the Spare Parts Manual has been assigned. Weekly progress meetings have been scheduled for the purpose of disseminating information to the persons responsible.

An outline covering the Spare Parts Manual is included as Appendix VI.

Task 49 Operator Training

Scheduled percentage of completion	0%
Actual percentage this date	0%

An outline covering the Operating Training Manual is included as Appendix V. This manual will be used for the actual operator training at the customer's facility.

[ ] Specification No. 19

Rev.				
Date				

Date November 7, 1968

ELECTRONIC CABINET REVISION

Statement of Work

1. Scope

The vendor will modify 3 electronic cabinets, [ ] No. E6711, and 1 utilities cabinet, [ ] No. E7889, as prescribed in this specification. STAT STAT

2. Management and Control

The vendor will perform the work listed in this specification, conforming to standards set by [ ] and instructions from the [ ] engineer. STAT STAT

[ ] will supply the vendor with some prints and sketches, but much of the work will be performed according to verbal instructions by the [ ] engineer. STAT STAT

[ ] expects to work closely with the vendor during the performance of this work to insure that there will be no lack of understanding of the overall requirements. STAT

3. Vendor Furnished Materials

The vendor will supply all sheet metal, structural elements, paint and hardware required for satisfactory completion of

the work, except as specified herein to be supplied by [redacted] STAT

4. [redacted] Furnished Materials STAT

[redacted] will supply the vendor with the following materials:

a. 3 Electronic cabinets fabricated per [redacted] No. E6711. STAT

b. 1 Utilities cabinet fabricated per [redacted] No. E7889. STAT

c. 8 Sets of hardware and materials for glass doors for above cabinets.

d. 8 Plugmold strips.

e. 16 Rear mounting rails.

f. 4 Sets of parts for heat shields.

5. Work to be Performed by Vendor

a. Install structural members in 4 cabinets to permit lifting these cabinets from above, using 4-point suspension. Load requirement is 1500 lb. with a safety factor of 4 times this load. This assembly is to be designed by the vendor and approved by the [redacted] engineer. STAT

b. Remove plates from plenum chambers and replace with sheet metal fabricated per sketches provided by the [redacted] engineer. The vendor will fabricate these sheet metal assemblies to the satisfaction of [redacted] STAT STAT

c. Make cabinets reasonably airtight by gasketing doors and blanking louvers. Door gaskets will be adhesive polyurethane strips, and additional hardware will be installed where required to insure the integrity of these gaskets. Plates over louvers will be installed with chrome or cadmium-plated fittings.

d. Make up angle brackets for supporting rear of each chassis. These will be fabricated and painted by the vendor for later installation by STAT

e. Provide surface treatment of all door components to conform to trim strip around front of cabinets. Clear anodize all surfaces of these parts. Assemble these parts including glass supplied by STAT Install doors using predrilled cabinet holes. Make adjustments as required for accurate fit. Install door latches as part of final assembly.

f. Remove logo strip from front of each cabinet and plug holes for repainting of this section.

g. Fabricate an angle iron base for the cabinet feet to rest on.

h. Assemble and install 4 heat shields in cabinet #1.

i. Install plug molds and rear cabinet rails.

j. Paint front shadowbox using black satin enamel.

k. Except where otherwise noted, paint all assemblies and structural material light grey per STAT Spec. No. 14.

6. Deliverable Items

a. 4 cabinets modified as noted herein.

b. 56 sets of rear mounting brackets for electronic chassis.

c. 4 cabinet base supports.

TRIP REPORT

Company contacted: STAT

Contacted by:

Date contacted: November 18, 1968

Persons contacted: STAT

Job Number: 342

Task Number: 24 - Image Analysis System

[ ] stated that their project was in the planning stages, and no STAT
significant amount of technical work had been performed to date.

Most of the material had been ordered, but very little had been received.

The [ ] organization chart related to the project was presented as STAT
follows:

STAT

The interface with the [redacted] equipment was discussed as follows: STAT

1. [redacted] is to furnish a 3/16" thick panel in [redacted] specified gray. STAT STAT

2. [redacted] is changing the aperature of the image dissector tube from .016" diameter to .024" diameter. This is to improve the signal output of the tube at low light levels.

3. [redacted] will provide mechanical supports within the [redacted] cabinet STAT STAT to hold the [redacted] chassis securely during shipping by [redacted] STAT

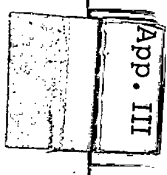
4. [redacted] cannot provide a control for limiting the current to the STAT image dissector tubes based on instantaneous peak light levels. Instead, the [redacted] system will limit the average current to the tubes STAT based on the average light level.

5. [redacted] learned that [redacted] planned to provide an electronic chassis STAT STAT with open top and bottom (no covers) to facilitate cooling by air circulation. Unfortunately, [redacted] was not aware that the adjacent STAT [redacted] chassis came within 1/4" of the [redacted] chassis and thus there STAT STAT was no possibility of adequate air circulation.

[redacted] was informed that they would have to provide a means STAT of forced air circulation to cool their chassis. This they agreed to do.

6. [redacted] requested certain dimensional information regarding the STAT STAT installation of their chassis and image dissector tube mounts. This information was provided in [redacted] Telex No. 129 dated Nov. 27, 1968 STAT STAT

7. [redacted] delivered their November Progress Report to [redacted] and STAT STAT provided a pert schedule showing a final delivery date of May 15, 1969.



Declassified in Part - Sanitized Copy Approved for Release 2012/08/17 : CIA-RDP79B00873A001500010010-7

PROGRESS REPORT FOR PERIOD ENDING OCTOBER 31, 1968

[redacted] STAT

1.0 Recap

A precursory system study contract [redacted] concluded STAT with drawings and specifications for an Image Analysis System.

Continuing development effort on similar systems at [redacted] since STAT the completion of the study contract, have suggested circuit and layout improvements which can be applied to the [redacted] system. STAT

2.0 Progress During Report Period

Work began with an assessment of the drawings and specifications developed under contract [redacted] Program plans were made for the STAT systematic modification and updating of circuitry and layouts. These modifications are intended to improve operation, to provide better accessibility and maintainability, to improve reliability, and to standardize component usage.

Preliminary engineering efforts consist of vendor contacts, the evaluation of related components, minor breadboard checks on circuit changes, and the revision of drawings from which layout changes could be started. Of the related components checked, the Fairchild μA741 operational amplifier was seen to be a desirable substitute for the μA709 which is used in the system. The μA741 does not require external compensating components and has a simpler offset adjustment than the μA709. The time base generator and the sum and difference circuits were modified to reflect updated information and the absorption of the μA741 module into the circuitry. The ensuing reduction of components make the

layouts simpler. The use of an integrated shield assembly and handle has been eliminated in favor of a simpler extractor. The intended use of a universal card holder will permit the insertion of a card shield at any location should the contingency arise.

At the recommendation of [redacted] the image dissector aperture was increased to .024 inch (round) in view of the low anticipated light levels. The manufacturer of the F4011 (S20-24R) was contacted for technical, and price and delivery information. A purchase request was made at the earliest date (October 17) after learning of the long delivery time. STAT

The simulator design is under consideration. Pertinent vendor inputs and trade-off information are being collected.

A significant amount of time during this period was expended in planning and establishing relevant procedures. The technical progress in the absence of definitive end points as a gauge would approximate 10%.

3.0 Expected Activity in November

Layout work will continue with the revisions to the modulator, raster delay, dynode regulator and channel selector logic sub-assemblies. Layouts in progress will be ready for checking and sign off. Material procurement can begin against the completed layouts.

App. IV

November 4, 1968
Revised 12-2-68

The following material is to be shipped from [redacted] STAT

1 E6498 Optical Bridge Center Casting

1 E6516-2 Optical Bridge Right Casting

1 E6516-1 Optical Bridge Left Casting

1 Air Conditioner - Weight:; 325 Lb.
48 inch height
30 inch depth
36 inch length

2 Globe Motors, 43A140
4 " " 43A146
1 " " 43A147
2 " " 43A148
8 " " 43A149
6 " " 43A1288
2 " " 43A1289
4 " " 43A1290
2 " " 136A100

2 PMI Motors, PM488

2 Cannon Connectors, MS3102A-18-12S
2 " " " 20-11S
2 " " " 22-14S
2 " " " 22-30S
3 " " " 24-28S
8 " " " 28-16S
4 " " CA3102A-36-2011-66S
10 " " Miscellaneous

128 Microswitch, 1SM1, with JS246 Lever
4 " " " JS5 "

6 Pots, CIC, Quad. Special
6 " " Single "
4 " " 3 Section, Special
4 " " Single

4 Servo-Tech Tachometer Generators, SA-740-A7

2 Lamps, Osram, XBO, 450 W
2 " " " 100 W-1

2 Rotary Solenoids, Ledex Type 2E 28 V

2 Christie Power Supplies, Model BXM - 450 R 1
4 Christie Lamp Starters, IGA-7
2 PEK Power Supplies, M401 Modified
1 EMR Servo Analyzer, Model 1410
1 Digital Voltmeter, Fairchild Model 7050
2 Autobrite Assemblies, D6620
1 Test Panel

Miscellaneous Optical Targets, Test Films and Plates

1 Electronic Rack, E6225 - Items 1 through 65

1	Electronics Cabinet	Drawing E6711
4	12v Servo Amp Assy.	E4580
2	Optics Limit Relay Assy.	E6260
14	Module Assy., 12V servo ampl.	D4575
2	12v Servo Crossconnect Panel	E6600
2	Analog Control Unit	E6100
2	Relay Cont. Unit	E6610
1	Autobrite Pwr. Sup. Assy.	E6570
2	Illumination Zoom Amp.	E7900
1	Brightness and Shutter Control	E6840
2	24v Servo Crossconnect Panel	E7910
2	24v Servo Amp. Assy.	E4500
2	Pot Power Supply	E6550
1	Connector Panel - Left	D6210
1	Connector Panel - Right	D6535
22	Cable Assy. No. 6	D6311
18	Cable Assy. No. 24	D6343
2	Cable Assy. No. 101	D6778
2	Cable Assy. No. 152	D7914
2	Cable Assy. No. 169	D7934
2	Cable Assy. No. 126	D6846
2	Cable Assy. No. 175	D6465
2	Cable Assy. No. 153	D7915
2	Cable Assy. No. 108	D6808
2	Cable Assy. No. 177	D7943
2	Cable Assy. No. 109	D6809
2	Cable Assy. No. 170	D7936
2	Cable Assy. No. 123	D6843
2	Cable Assy. No. 151	D7913
2	Cable Assy. No. 112	D6812
6	Cable Assy. No. 16	D6333
4	Cable Assy. No. 149	D7911
2	Cable Assy. No. 150	D7912
2	Cable Assy. No. 141	D7902
2	Cable Assy. No. 142	D7903
4	Cable Assy. No. 173	D7939
1	Cable Assy. No. 193	D8217
1	Cable Assy. No. 144	D7905
2	Cable Assy. No. 148	D7909
2	Cable Assy. No. 146	D7907
2	Cable Assy. No. 156	D7918

1 Electronic Rack, E6225 - Items 1 through 65 (CONTINUED)

2	Cable Assy. No. 147	Drawing D7908
1	Cable Assy. No. 145	D7906
2	Cable Assy. No. 154	D7916
2	Cable Assy. No. 119	D6819
2	Cable Assy. No. 143	D7904
1	Cable Assy. No. 135	D6855
2	Cable Assy. No. 120	D6820
2	Cable Assy. No. 132	D6852
1	Cable Assy. No. 155	D7917
2	Cable Assy. No. 162	D7924
1	Cable Assy. No. 163	D7925
2	Cable Assy. No. 157	D7919
1	Cable Assy. No. 158	D7920
2	Cable Assy. No. 5	D6309
2	Cable Assy. No. 179	D7945
2	Cable Assy. No. 159	D7921
1	Cable Assy. No. 178	D7944
2	Cable Assy. No. 191	D8213
2	Cable Assy. No. 181	D7949
2	Cable Assy. No. 129	D6849
2	Cable Assy. No. 194	D8218
1	Cable Assy. No. 64	D5856
1	Cable Assy. No. 192	D8216
20	AC Harness	D6780

Electrical Arrangement, E6445

6	Cables, Item 20	Drawing D6091
2	Cables, 51	D7938
2	Cables 35	D6803
2	Cables 36	D6847
2	Cables 37	D6850
2	Cables 38	D6806
2	Cables 39	D6811
2	Cables 40	D6844
2	Cables 41	D6814
2	Cables 50	D7923
2	Cables 19	D7923
2	Cables 11	D7931
2	Cables 56	D6728
1	Cable 44	D6841
2	Cables 12	D7928
2	Cables 14	D7932
2	Cables 21	D6719
2	Cables 25	D6430
2	Cables 28	D6725
2	Cables 30	D6715
1	Cable 43	D6853
2	Cables 44	D6841
2	Cables 45	D6817
1	Cable 46	D7942
2	Cables 47	D7948
2	Cables 57	D8247

1 Optical Bridge Panel, Drawing C6555

1 Optical Bridge Panel, Drawing C6605

Electrical Assembly, Optical Bridge, E7870, Items 1 thru 14

2	Cable Assy. #140	Drawing D7901
2	Cable Assy. #134	D6854
2	Cable Assy. #128	D6848
2	Cable Assy. #107	D6207
2	Cable Assy. #125	D6845
2	Cable Assy. #185	D7963
2	Cable Assy. #104	D6804
2	Cable Assy. #113	D6813
2	Cable Assy. #131	D6851
2	Cable Assy. #99	D6776
2	Cable Assy. #118	D6818
2	Cable Assy. #122	D6842
2	Cable Assy. #110	D6810
1	Cable Assy. #174	D7941

1 Optical Bridge Harness, Left

1 Optical Bridge Harness, Right

1 Optical Bridge Alignment Fixture (L), SK 781

1 Optical Bridge Alignment Fixture (R), SK 782

1 Optical Center Alignment Fixture (L), SK 783

1 Optical Center Alignment Fixture (R), SK 784

Small Hardware for above:

2 Ring bolts, #25, 1/2-13 thread
5 Ring bolts, #23, 3/8-16 thread
4 Allen Head Cap Screws 3/8-16 x 1-1/2

2 Reticle Optical Systems *

2 Main Illumination and Zoom Condenser Systems *

4 Glass Platens*

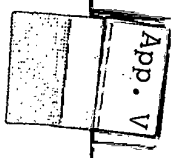
2 Main Zoom Assy.*

2 Main Anam. Assy. *

2 Main Image Rot. Assy.*

1 Optical Block with Eyepieces*

*Manufactured in France. Unmarked items manufactured in U.S.A.



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STAT

MONTHLY PROGRESS REPORT

November, 1968

This technical report is for the reporting period from November 1 to November 30, 1968. It is prepared according to STAT Specification number DB-1001 (as modified). STAT

1. The main emphasis in the work completed this month has been toward the completion of a "Calibration System." This system is composed of those subprograms in the final system which would permit the exercise of the electronic enterface and the servos which will control the two stages and the optical elements.

   Several subprograms, including EXEC 1, EXEC 2, RECALL, TRK, etc., have been completed, and intergrated into a working system. Because of the absence of the operator control console in the electronic system which will initially use the "Calibration System" programming system, it was necessary to modify some of the subprograms used.

   The indicated modifications are rather simple and the modified code is shown along with the original code as comments in the program listings. The program debugging and subsequent acceptance of this system will parallel very closely the working and acceptability of the portions of the final system which incorporate these subprograms.

   A complete description of the "Calibration System" including a detailed listing of the programs included will be available for use in the acceptance testing.

The subprograms of the final system which have been coded this month are:

a. EXEC 1
b. EXEC 2
c. RECALL
d. RDST
e. RDOP
f. MSGIN
g. MSGOUT
h. TICX
i. TICT
j. LSTC
k. XMR 1
l. GTP
m. YMR
n. FIXR
o. CVF

The subprograms which have been debugged are those which are used in the "Calibration System" and include:

a. EXEC 1
b. EXEC 2
c. RECALL
d. RDST
e. RDOP
f. MSGIN
g. MSGOUT
o. CVF

It is presently planned to do the initial debugging of all Fortran coded subprograms on a CDC (Control Data Corporation) 3600 available at the Palo Alto Data Center of CDC. Since that system uses tabulating cards as input and the DDP 516 uses paper tape, a program has been written for the CDC 160-A computer to convert the tabulating card images to ASR-35 ASCII format paper tape. Fortran programs which are completely debugged on the CDC 3600 will then be converted to paper tape and final debugging will be accomplished on the DDR-516. The percentage of the total work completed is about 30%.

2. Next month final inplementation of the "Calibration System" will be coordinated with the completion of the necessary hardware. The documentation of the Calibration System will also be completed. Emphasis will then be switched to the non-real time procedure of the subprogram TMAT. An attempt will be made to solve the technical problems stated below, and a detailed flow chart of the TMAT procedure will be generated. Coding of this procedure should begin and be completed in the early part of the following month.

   Coding and debugging of the subprograms associated with the non-real time portion of the system will begin.

   The documentation of the final system will be started and should then follow the creation and implementation of all portions of the final system.

3. Preliminary study of the specifications of the non-real time procedure has uncovered some fundamental inadequacies of the system in handling

the "no camera data" case. A procedure to cover this case has been generated by [redacted] but has not been detailed for computer program coding. The procedure in its present form may not be completely adequate for the solution of the problem and therefore more work may be necessary to solve all aspects of this case. STAT

4. There exist no pending, unresolved contractual problems.

5. There have been no oral agreements or understandings reached during this reporting period.

6. Presently we anticipate some changes to the original specification to result from the analysis of the "no camera data" case. These changes will be completely documented and approval will be sought prior to implementation.

   There are other minor changes which we feel should be implemented. These recommendations will also be completely documented and agreement will be sought prior to implementation.

7. No other unresolved matters are known to exist.

App. VI

OPERATOR'S MANUAL

I. General short description.

- A. Purpose.
- B. Auto.
- C. Semi-auto.
- D. Manual.

II. Controls.

- A. General descriptions of controls located on:
  - 1. Control console.
  - 2. Electronic and utilities racks.
  - 3. Machine.
- B. Figures showing locations and names of controls.

III. Start-up procedure.

- A. System turn-on and start-up operating sequence.
- B. Film loading/Review of film controls.
- C. Preliminary optical adjustments.

IV. Operation.

- A. Enter mode - Purpose and description of required parameters.
  - 1. Setting reference points.
  - 2. Setting fiducial points.

3. Entering data on a teletype.

a. Using recall buttons.

b. Sample entries.

4. Manual measurement - (Enter mode).

a. Transfer of measurement to external computer.

b. General description of parameters and review of controls associated with these parameters.

c. Table showing operational conditions with active control functions.

5. Readout data on IBM 526.

B. Automatic mode.

1. General description of correlator and computer DDP-516.

a. Automatic mode without correlation.

1) Chart showing flow of commands.

b. Automatic mode with correlation.

1) Reorient procedure.

2) Optics adjustments.

3) Tracking mode concept.

V. Specific considerations.

A. How to obtain stereo in any mode.

B. Optics independent.

OM

C. Discussion on various interlocks.

1. Lamp ignites automatically (Electr. interlock).

2. Stage interlock. (Left, right, both).

3. Alarm - (Pressure, utilities, ext. comp.)

VI. Conclusion

A. Care of system from the operator's standpoint.

OM

OPERATOR TRAINING MANUAL

SERVICE MANUAL

I. Title and table of contents of manual.

II. Overall system theory of operation.

- A. Block diagram and pictures.
- B. Detailed narrative.

III. System test and checkout.

- A. Operational tests and verification.
  - 1. Step-by-step operating procedure.
  - 2. Normal results for properly operating machine.
  - 3. Cross-index to subsystem maintenance section if normal operation results not obtained.

IV. Routine maintenance.

- A. Optical system (lenses).
- B. Mechanical components (including utilities).
- C. Electronic equipment.

V. System calibration procedures.

- A. Stage drives.
  - 1. Mechanical
  - 2. Electronic.

B. Optics drive.

1. Electronic.

2. Mechanical - optical.

C. Film drives.

1. Mechanical.

2. Electronic.

D. Utilities system

E. Image analysis system.

F. Computer and interface.

G. Output components.

1. Computer link.

2. Card punch.

VI. Subsystems and components.

A. Introduction and organization (Indicates that for each component or subsystem there will be:

1. Theory of operation.

2. Bench tests.

3. Service data and procedures.)

B. Electrical subsystems and components.

1. Measuring system.

a. Interferometer.

b. Digitizing logic.

c. Metric readout logic.

d. Laser control unit.

SM

2. Digital computer.

   a. [redacted] program debug and test. STAT

3. Image analysis system.

   a. [redacted] manual. STAT

4. Stage drive system.

   a. Motors.

   b. Servo amplifiers.

   c. 23-bit D/A converter.

   d. Limit relay system.

   e. Stage test panel.

5. Film drive system.

   a. Motors.

   b. Servo amplifiers.

   c. Film control unit.

   d. Film limit relay system.

6. Optics drive system and Illumination control system.

   a. Servo amplifiers.

   b. Optics limit relay system.

   c. Analog control unit.

   d. A/D - D/A converter.

   e. Potentiometer power supply.

   f. Servo crossconnects.

   g. Relay control unit.

   h. Autobright power supply.

   i. Auto bright control unit.

   j. Auto bright control heads (photomultiplier assembly).

SM

7. Digital logic and output system.
   a. Stage position and mode logic.
   b. Stage drive logic.
   c. Internal computer interface.
   d. Output control interface.
   e. Logic power supply.
   f. Punch control.
   g. Crossconnect.
8. Control console and display panel.
   a. Pushbuttons.
   b. Joystick.
   c. Track balls.
   d. Optics control.
   e. Metric display.
   f. Film slew controls.
9. General platen illumination.
   a. Platen illumination power supply.
10. Utilities control system.
   a. Main circuit breaker system.
   b. Control panel.
      1) Interlock system.
   c. Arc lamp power supplies.
      1) Main.
      2) Reticle.
      3) Starters.

SM

d. Lamp hour meter panel.

e. Utilities connector panel.

1) Film clamp control.

2) Film liftoff control.

3) Film cooling control.

C. Mechanical subsystems and components.

1. Stages.

a. Air bearing adjustment.

b. Precautions.

c. Mechanical alignment.

2. Stage drives.

a. Mechanical alignment.

b. Servicing and cleaning.

3. Film platen and vacuum clamping.

a. Cleaning.

b. Adjustment.

4. Film cooling.

5. Optical system (including [redacted] manual). STAT

a. Cleaning.

b. Alignment.

c. Subsystem removal procedure and precautions.

6. [redacted] isolation system. STAT

a. [redacted] manual. STAT

7. Utilities system.

a. Air systems.

b. Vacuum systems.

SM

App. VII

SPARE PARTS MANUAL

1. Drawing Tree
2. Recommended Spares
    a) With MTBF where applicable
    b) Referenced to next assembly
3. Highly recommended long delivery parts
    a) French P.C. motors
    b) ?
4. Commercial Manuals
    a) Indexed
5. As-built Drawings and Parts List Submitted

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