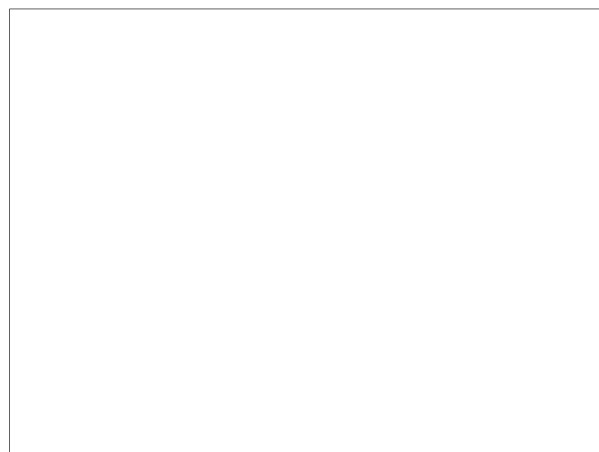
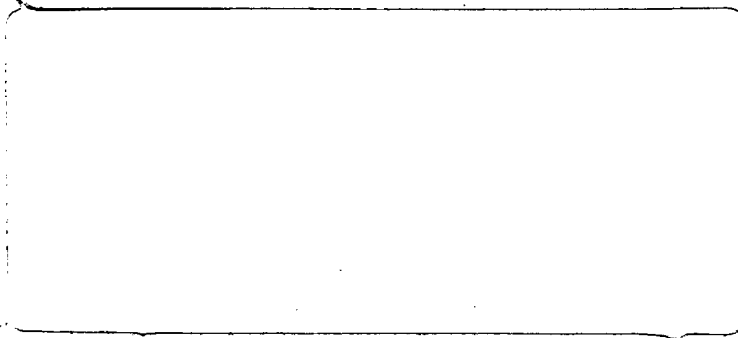


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STATUS REPORT

for Period

1 Sept. through 30 Sept. 1968

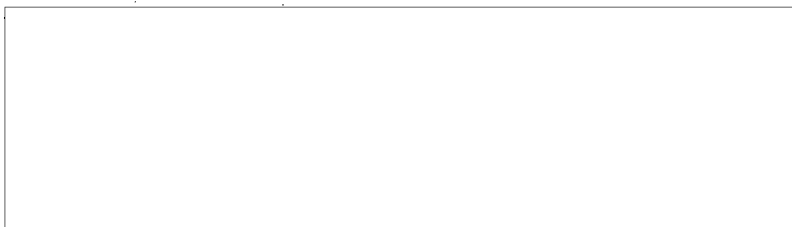
Submitted under Contract to

U. S. Government



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This document is presented as the Monthly  
Status Report under contract to the U. S.  
Government,

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The report period represented herein covers the  
period of 1 September through 30 September 1968.

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APPENDICES

Progress Report,  
September 1968

Appendix I

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## PROGRAM STATUS

Summary as of September 30, 1968

Scheduled percentage of program completed - 28.5%

Actual percentage completed this date - 28.0%

Overall program progress, with the exception of several minor adjustments, has been proceeding according to plan. Several vendors have reported that they anticipate some delay in their delivery schedules which necessitated our making some revision to detailed plan. These revisions, however, are of a work-around nature which do not affect the total program.

As the individual task reports show, inspection and checkout of electronic chassis is proceeding normally, and in-plant production is on schedule.

We anticipate no major problems in the immediate future.





Task 02            Scheduling and Planning

Scheduled percentage of completion            27%

Actual percentage of completion            27%

Detailed schedules for machine assembly, mounting the optical bridge and for shipment of the bridge to the [ ] sub-contractor have been implemented. These schedules incorporate the latest information from vendors and suppliers, and are designed to meet the [ ] subcontractor's requirement that the optical bridge be available in December or before.

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Schedules for the test programs are currently being detailed and will be issued in November.

Task 03            Test and Inspection Procedures

Scheduled percentage of completion            20%

Actual percentage of completion                17%

Test procedures are being written as required for inspection and test of completed subassemblies/assemblies. Many of these procedures will be incorporated into the overall test procedure which is scheduled to be written during the early part of 1969.

Task 04            Management, Administration and Supervision

Scheduled percentage of completion            27%

Actual percentage of completion                27%

During this report period, [redacted] visited with sponsor personnel at the installation site to review and resolve technical situations relative to computer programming and associated problems. In addition, [redacted] attended a meeting at the installation site to resolve various questions pertaining to layout and installation, and to coordinate future interface work. This meeting resulted in mutual agreement on the solution to these questions, and our plans for installation will be formulated on this agreement.

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Other management effort during this report period has been routine, with no major problems other than those reported in the individual tasks.

Task 05            Meetings

Scheduled percentage of completion            27%

Actual percentage of completion                27%

There were no formal meetings scheduled for this report period. However, [redacted] Program Manager, and [redacted] Technical Director, met with customer representatives to discuss several items of interest which were disclosed in the facilities design of the installation site.

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This meeting and the results of same are discussed under Task 04 - Management, Administration and Supervision.

Task 06            Facilities Requirements

Scheduled percentage of completion            50%

Actual percentage of completion                45%

During this report period, the machine pad has been poured and the layout of air conditioning equipment on this pad has been prepared and approved.

Purchase orders have been placed and satisfactory delivery dates obtained for all required Clean Room equipment.

Detailed schedules for Clean Room start-up have also been prepared and approved.

Task 07 Main Frame and Structural Elements

Scheduled percentage of completion 98%

Actual percentage of completion 93%

As reported last month, the main frame which is the basis for the Stereocomparator has been installed in the Clean Room.

Subassemblies, as they are completed, will be mounted to this structure.

Additional work on this task will include the removal of the optical bridge support for transfer to the optics subcontractor for installation of the optics. Upon return of the assembly to  additional work will be required to remount the bridge to the main frame.

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Task 08

Skin

Scheduled percentage of completion      20%

Actual percentage this date                      18%

The aluminum skin which will form the protective covering for the various subassemblies of the Stereocomparator is being fabricated by the  shop.

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During the month of September, portions of the skin which will house the utilities and electronics on the rear of the machine were fabricated.

Fabrication of the skin is scheduled to coincide with the completion of the various subassemblies.



Task 09 Granite and Ways Assembly for Stages

Scheduled percentage of completion 78%

Actual percentage this date 72%

The right hand granite base, one of the twelve granite sections required by this task, was received and installed during the month of September. The holes and brass plugs necessary for the mounting of subassemblies onto the granite were drilled and tapped by the  shop.

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Because of production difficulties, it was necessary for the vendor to reschedule the left hand granite base for the week of October 4, with remaining sections to be delivered the week of October 21.

Task 10            Air Bearings

Scheduled percentage of completion            50%

Actual percentage this date                    50%

The first portion of this task, fabrication of the air bearings used to support and guide the two stages, was completed in June.

Assembly and installation of the air bearings which constitutes the second half of this task is scheduled to coincide with the mounting of the stages to the granite bases. We anticipate this work to begin during the next month.

Task 11      Stage Drives

Scheduled percentage of completion      51%

Actual percentage this date                      44%

A portion of the mechanical components of the stage drives has been assembled. The work done so far includes assembling the "Y" axis stage drive to the castings and the assembly of the "X" axis stage drive to the drive motor support.

A total of 12 servo and control chassis are required for this task. These consist of:

- 4 - servo amplifiers
- 4 - 23-Bit D/A converters
- 2 - stage test chassis used
- 2 - stage limit relay interlock chassis (safety devices to control stages)

All of these chassis have been received from the vendor with the exception of one stage test chassis which is scheduled for delivery the first week in October.

Approximately 50% of the chassis received have been bench tested in the  shop.

The  shop is in the process of fabricating and assembling inter-connecting plugs on the chassis. Completion of this work is expected to be within two weeks.

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Task 12            Film Drive and Transport System

Scheduled percentage of completion            50%

Actual completion this date                    42%

The film drive assemblies which were fabricated in June have now been released from storage and assembled with the platen frame.

Breadboard test services have been set up, connecting the film drive to a substitute electronic control system for checkout.

A field engineering trip was made to the vendor who is supplying the various electronic chassis required for the film drive assembly. Although all of the chassis have been essentially completed,  was not able to accept them for delivery because of minor corrections which were necessary. Another field engineering trip is planned for the first week in October, and it is expected that the chassis can be released for delivery at that time.

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As soon as these are received, bench tests will be set up for chassis checkout performance.

**Task 13            Film Platen and Film Clamping**

Scheduled percentage of completion	27%
Actual percentage this date	12%

The film platen and clamp were released from storage for trial assembly. The substitute glass platen which was ordered for use in the trial assembly has been received and installed.

The vacuum clamp has been installed to the platen and checkout of this subassembly will begin this month.

Task 14      Film Cooling

Scheduled percentage of completion      18%

Actual percentage this date      16%

During the recent meeting with the customer, discussions were held on the air supply and refrigeration for the film cooling system.

As soon as the requirements for this system are resolved,  will incorporate these specifications into the film cooling system.

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Tasks 16, 17,  
and 18 Viewing Optics, Viewing Illumination

Reticle Projector and Illumination

Scheduled percentage of completion 16%

Actual percentage this date 14%

The [ ] monitoring trip to [ ] optical sub-  
contractor performing the above tasks, was postponed until the  
month of October. It was felt that inasmuch as [ ] had  
just returned to work the first of September following their annual  
one-month shutdown, it would be more effective to check their  
progress after they had resumed operation for a month or more.

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One of the major points which [ ] plans to discuss  
with [ ] is the interface of the optical system with the other  
subassemblies of the Stereocomparator. A list of details concerning  
this interface was prepared and sent to [ ] for discussion with  
[ ] personnel in October.

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Task 20            General Platen Illumination

Scheduled percentage of completion            45%

Actual percentage this date                      41%

As reported previously, the platen illumination system has been fabricated, parts inspected, and is in storage awaiting final assembly.

The electrical chassis required for this system has been completed by the [ ] shop with the exception of the installation of two RFI-proof, high voltage connectors. Delivery of these connectors is expected within the next month at which time the [ ] shop will complete this assembly.

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Task 21      Optical Bridge and Supports

Scheduled percentage of completion      78%

Actual percentage this date      69%

The optical bridge, consisting of the center bridge, right and left hand bridges, and optical supports (castings) has been received. The  shop is now in the process of painting the castings per government specifications before mounting on the granite bases.

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The actual mounting of the optical bridge in position is scheduled to begin the first week of October.

Task 22 Interferometer Assembly

Scheduled percentage of completion 39%

Actual percentage this date 32%

As reported last month, the mechanical components for the interferometer assembly, consisting of the lasers, mirrors and beamsplitters, have been received. These components have been assembled in the  shop.

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The electronic circuitry required for this assembly has also been received and stored.

The assembly of the mechanical components to the electronic circuitry will begin in the  shop in October.

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Task 23            Optics Drive Assembly

Scheduled percentage of completion            28%

Actual percentage this date                    26%

The optics drive control system consists of 18 servo and control chassis assemblies used to control the optics portion of the Stereocomparator. Two servo amplifiers have been received from the vendor.

Since the optics drive mechanical assembly is an integral part of the complete optics system, the assembly of the drives will coincide with the delivery of the optics system.

In order to perform operational checks on the various control system components, a breadboard simulation of each control loop will be constructed from stock gears and mountings. All of the special motor-tachometer assemblies have been received and tested, and most of the special feedback and control potentiometers have been received. It is expected that the simulation effort will allow preliminary servo loop stabilization. This work will be completed in the early months of 1969.



Task 26      Digitizing Logic Subassembly

Scheduled percentage of completion      46%

Actual percentage this date      48%

The electronic chassis required for the digitizing logic subassembly are being bench tested and are nearly ready for assembly into the system.

Task 27            Metric Readout

Scheduled percentage of completion            50%

Actual percentage this date                    55%

All of the components required for the metric readout have been received.

The plugs required to interconnect the electronic chassis for this system with other chassis in the control console have been installed.

Bench tests of the chassis are being performed.

Task 28            Output Logic and Interfaces

Scheduled percentage of completion            27%

Actual percentage this date                    45%

Work is in progress in the [ ] shop on checking out the various electronic chassis required by this task. The installation of the interconnecting plugs is also being accomplished by the [ ] shop.

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The remaining chassis required for the interface of the output logic with other systems are in the process of being fabricated by an outside vendor. Delivery date scheduled for these chassis is scheduled for the first week of November 1968.

## Task 29            Cabling

Scheduled percentage of completion            32%

Actual percentage this date                      37%

The percent progress of the cabling required to interconnect the various electrical and electronic elements being assembled in the  shop is as follows:

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Cabinet #1    78%

(Stage drives, film drive and transport system)

Cabinet #2    17%

(Optics drive, interface with Image Analysis System)

Cabinet #3    60%

(Metric readout, output logic and interfaces) .

Electrical arrangement (floor interconnection of all cables)                      19%

Control Console                                      23%

Display Panel    10%

Optical Bridge    5%

Stage Assembly    11%



Task 30            Control Console and Chair

Scheduled percentage of completion            48%

Actual percentage of completion                46%

The control console base and the two control panels have been fabricated and assembled with the mechanical components. Completion of the mechanical portion of this assembly has been delayed due to the delay in the delivery of the switch assembly (keyboard) and meters in the display panel. The vendor has promised delivery of these components the first week of October.

The electronic chassis constituting the power supply for the console is still scheduled for completion on November 1, 1968.

Task 32            Computer

Scheduled percentage of completion            78%

Actual percentage this date                      95%

The DDP 516 computer has been received from

[redacted] and has been installed in the Clean Room.

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Representatives from [redacted] spent one week at the [redacted] facilities

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installing the computer and explaining various facets of the machine's

operations to [redacted] personnel.

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The computer has been mounted on a temporary rack and is being used by [redacted] personnel in the development and preparation of the computer program.

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Task 33            Electronic Racks and Control Cabinets

Scheduled percentage of completion            38%

Actual percentage this date                    25%

The electronic cabinets to house the electronic assemblies and cables have been re-scheduled for delivery the middle of October.

For the purpose of storage, temporary electronic racks have been installed in the Clean Room and the various electronic assemblies will be mounted in these racks pending the delivery of the cabinets ordered for this task.

Task 34            Utilities, Vacuum and Air Systems

Scheduled percentage of completion            25%

Actual percentage this date                      27%

Fabrication of the utilities, vacuum and air systems has been delayed due to the re-scheduling of the utilities cabinet by the vendor.

The electrical components required to operate the utilities are in the process of fabrication by an outside vendor. During a recent field engineering trip made to monitor the vendor's progress, it was learned that 90% of the components necessary for the electrical control chassis have been received, with delivery of the completed chassis scheduled for November 1, 1968.

The  shop is building the lamp operating hours meter panel which will show elapsed operating time for each of the main illumination and reticle arc lamps in the machine.

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Task 35                      Vibration Absorption and Leveling

Scheduled percentage of completion                      60%

Actual percentage this date                                      60%

The vibration absorption and leveling equipment has been installed in the Clean Room awaiting the mounting of the right and left granite bases.

The checkout of the vibration absorption and leveling system by  has been re-scheduled for the month of October.

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Task 36            Overall Assembly

Scheduled percentage of completion            02%

Actual percentage this date                    02%

Overall assembly of the Stereocomparator has begun with the mounting of the right hand granite base to the main frame.

**Task 37                      Radio Frequency Noise Suppression**

Scheduled percentage of completion                      0%

Actual percentage this date                                      0%

No work was performed on this task during  
September 1968.

Task 38            Environmental Control

Scheduled percentage of completion	38%
Actual Percentage this date	39%

The environmental control system at the customer's facility was discussed with the customer during meetings held this month. A copy of a preliminary Engineering Report of New Clean Room Facility was given to  personnel for their use.

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The conditions incorporated in  Clean Room will be duplicated at the customer's facility.

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**Task 39            Reliability Analysis**

Scheduled percentage of completion            0%

Actual percentage this date                      0%

No work was performed on this task during the  
month of September 1968.

Task 40            Installation

Scheduled percentage of completion            0%

Actual percentage this date                    0%

No work was performed on this task during the  
month of September.

Task 42            Breadboards and Test Devices

Scheduled percentage of completion            5%

Actual percentage this date                    9%

Breadboard test services are being performed on  
the film drive and transport system. See Task #12.

Task 43            Computer Programming and Services

Scheduled percentage of completion            20%

Actual percentage this date                    21%

The subcontract covering the computer programming for the Stereocomparator has been signed by [redacted] and returned to [redacted]

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During the month of September, [redacted] personnel has been utilizing the computer installed in the Clean Room to develop and prepare their programming data.

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[redacted] progress report for September 1968 is included as Appendix I.

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Task 44            Preacceptance Test in Fabrication Plant

Scheduled percentage of completion        0%

Actual percentage this date                0%

No work was performed on this task during the  
month of September.

Task 45 . . . . . Acceptance Test in Fabrication Plant .

Scheduled percentage of completion . . . . . 0%

Actual percentage this date . . . . . 0%

No work was performed on this task during  
the month of September 1968.

Task 46

Acceptance Test after Installation

Scheduled percentage of completion 0%

Actual percentage this date 0%

No work was performed on this task during  
the month of September 1968.

Task 47            Instruction Manual and Drawing Submittal

Scheduled percentage of completion            0%

Actual percentage this date                    0%

During the month of September,  initiated plans for the writing and production of the Instruction Manual for the Stereocomparator.

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Drawings for various subassemblies have been revised to "as built" status for inclusion in the Instruction Manual.



Task 48

Spare Parts List

Scheduled percentage of completion 0%

Actual percentage this date 0%

No work has been performed on this task  
during the month of September 1968.

Task 49            Operator Training

Scheduled percentage of completion            0%

Actual percentage this date                      0%

Plans are in process at this time for the  
compilation of information to be used in the Operator Training  
Manual.

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September 19, 1968  
PR-68-1070-2

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Attention:

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Gentlemen:

Enclosed is a monthly progress report for the period September 1 -  
September 30, 1968, for the computer programming for the Stereoscan.

Very truly yours,

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WRC/jfd

## MONTHLY PROGRESS REPORT

September, 1968

This technical report is for the reporting period from September 1 to September 30, 1968 according to [redacted] Specification number DB-1001 (as modified).

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1. This month the following activities have taken place on the project: the examination of the "REORIENT" procedure, familiarization with the DDP 516 computer, the creation of detailed flow charts for one of the executive programs, and the coding of one of the Fortran subprograms. Approximately 15% of the work has been completed.
2. Next month detailed flow charts for the remaining subprograms will be generated and all Fortran subprograms will be coded. Modifications to the released computer software will be undertaken to facilitate program development. The analysis of the "NO CAMERA DATA" case will be completed.
3. At this time there exist no pending, unresolved technical problems.
4. There are no pending, unresolved contractual problems.
5. It was orally agreed that a new filter would be designed to handle the probable cross-talk from the output of the correlator. A preliminary model has been designed by [redacted] and will be integrated this month.
6. No changes or agreements have been made requiring approval of the contracting officer.
7. No other unresolved matters are known to exist.

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