



C E R T I F I E D

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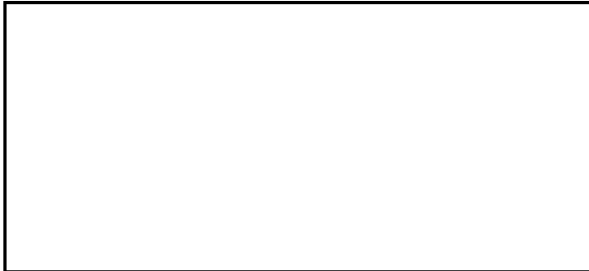
Progress Report - January 1966
Projects 552 and 552A

Gentlemen;

Enclosed are three (3) copies of 
Progress Report on Projects 552 and 552A for the period
January 1966.

STAT

Very truly yours,



Executive Vice President /

STAT

LHB/de

Enc: (3) P.R.

Declass Review by
NIMA/DOD

PROGRESS REPORT
For
VERSATILE, HIGH PRECISION STEREO
POINT TRANSFER DEVICE

Period Covered: January 1966
Dated: 23 February 1966
Job No.: #552, #552A
Document No.: OD-281

PROGRESS REPORT
For
VERSATILE, HIGH PRECISION STEREO
POINT TRANSFER DEVICE

Progress Report 552 & 552A for January 1966

January's effort concerned itself with completing laser optics redesign and alignment schemes on the Point Transfer Device.

OBJECTIVE ASSEMBLIES

Physical reworking of both objective assemblies was completed to incorporate the longer focal length relay lens and new reticle wheel location.

Beam splitters were sent out to be reworked to get 50%-50% neutral coating to replace dichroic film. A delay was seen in placing rework because many coaters offered a poor frequency response, or a fair amount absorption. As a conclusion, transmission will vary about 14% in the region of 4000 Å to 7000 Å, reflection being greater at the 7000 Å end, favoring the lasers' output slightly. Beam splitters should be returned and assembled early next reporting period.

In the process of debugging the laser reticle wheel drives, a number of failures were seen in the "Ledex" indexing mechanism caused by the reticle wheels' momentum. Reducing wheels' inertia by 2/3 was not an adequate solution for long life. After discussing this problem with Ledex a slightly different device was recommended and is now being installed. With magnetic means in place of mechanical braking of the load a longer service life

is expected. To win this advantage the control and power supply regulating circuits had to be redesigned and should be completed during the next reporting period.

The problem of accurate laser alignment has been studied and will require further development when objective assemblies are finally aligned on the system. The most promising technique seen is to have light from an accurately centered small aperture under the objective lens projected back through the laser optics and observing the star pattern that would be seen at the laser crystal. Adjustments are then made to get a symmetrical image optimized for brightness. The important point here is that all elements except laser crystal, have to be in their normal position. Since the viewing device is mechanically located as the laser crystal would be, fair assurance of final crystal alignment is made. Because laser head is hard mounted to the objective assembly main plate, head service should not disturb alignment too seriously. However, normal cleaning of crystals and lamps do not require head removal, but do have to be carefully executed. Crystal coatings are very easily damaged and exception cleanliness of crystal and lamp bodies is required.

Visual optics are in the process of being aligned and is the prerequisite of the laser optics alignment. Several tools have been designed and built to promote accurate adjustments of the laser and visual image correspondence that is essential for good laser marking at the film plane.

Completion of optical adjustments and debugging is expected at the end of next reporting period. Simultaneous work is being completed on the scanning drive alignments.

ENCODER - COUNTER SUBSYSTEM

All hardware has been made and assembled and all components required in plant. Wiring and debugging will start early next reporting period. Noise tests concluded that shielded cable selected appeared quite suitable for the long cables required in the system, permitting the DRC 15 EL44 modules to be placed at the switch assembly not at the encoders.

Work for Next Reporting Period

- 1) Complete optical, scanning and system adjustments and debugging - 552 #101.
- 2) Complete wiring, debugging encoder-counter subsystem.

Enclosure
Financial Report