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20 December 1963

MEMORANDUM FOR THE RECORD

SUBJECT: Status Report on the Photo-Measurement System Development Program

1. Purpose. In view of the recent emphasis placed on the mensuration operation of TID/TAB, an analysis was made of the present status of the proposed Real Time Photo Measurement System and its probable implementation date.

2. Background. Between January and early December 1963, almost all official photo measurements at the NPIC were done in TID/TAB on Mann Comparators, and the data reduced in TID/CB by the Univac 490 Computer using the basic Alwac III E programs simulated on the Univac 490 by a special conversion program. This month a new program was placed in operation for KH-4 photography based on a new mathematical model compiled by Mr. Donald Ockert of Photogrammetry, Incorporated. By comparison, a job requiring 15 to 20 minutes computer time and containing up to 3% error over true ground distances under the Alwac program can now be done in 1 to 1½ minutes with only 0.5% error. A similar program is almost completed for Talent material, and one for KH-7 is nearing completion.

3. Real Time Programming Schedule. Thus far, no real time programs are operational. However, a test program is now being checked out with the NRI Dual Screen Measuring Projector which should allow the NRI to be in full production on KH-4 material by the 15th of January. The operator will at this time, however, have to hand enter the various photo parameters until the Orbital Ephemeris program is completed about mid-February. It is estimated that a full operational program will be available by 1 March 1964 for multiple remote station Real Time operation. At this time, we will be capable of handlihg the basic measurement problems on KH-4, KH-7 and T from the programming and computer aspect on a real-time basis.

4. Remote Station Equipment Schedule. From the real-time equipment standpoint, two instruments are now in-house and are functionally operational. They are the Nuclear Research Instruments' Dual Screen Measuring Projector and the CALCOMP Plotter. Both of these instruments have allowed us to prove the real-time transmission techniques but will not be of direct

assistance to the photo analyst. Requests for measurements to be worked on the DSMP will still have to be forwarded to TID/TAB in the same manner presently in use.

The present delivery schedule for the remaining equipment now under contract is as follows:

a. The OMI RIC/1 Stereocomparator in February 1964.
b. The OPTOmechanisms Chip Comparator in March 1964.
c. The NRI Film Reader in April 1964.
d. The Concord Controls Plotter in May 1964.
e. The Richardson Film Reader in May 1964.

Five additional Richardson Film Readers are also on order but production is dependent upon acceptance of the prototype.

These eleven instruments, however, will permit only limited use of the computer for a Real Time Photo Measurement System. In addition, the OPTOmechanism stereo viewing Chip Comparator cannot achieve its full operational potential until a standardized chip can be produced which contains the necessary measurement information on the chip in addition to the interpretation image. Design specifications for a suitable chip printer are being prepared but no potential vendor has been selected.

The earliest that it is estimated that additional on-line equipment can be received is early 1965. The longest lead-time item required is a high quality chip printer. It is estimated that the earliest this printer can be built and put in operation is mid-1965.

5. Summary. Sufficient basic programming will be completed by Spring 1964 to permit an operational on-line system. The earliest that it is practical to produce the required remote station equipment in sufficient quantity and variety to make the Photo Measurement System functional is mid-1965.

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Assistant for Plans and Development

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