

Declass Review, NIMA/DoD

5 December 1962

Please Reference:
A51-62-2245

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Central Intelligence Agency

[Redacted]

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Attention: [Redacted] Contracting Officer

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Subject: Contract [Redacted] Task Order No. 1

Reference(a): [Redacted]

1. Pursuant to item III of subject contract, the contractor forwards herewith three copies of Monthly Progress Report No. 24, which sets forth the progress under subject contract for the period from 4 November 1962 to 1 December 1962. The contractor advises that the Image Enhancement Instrument as required under item II of subject contract will be ready for final inspection and acceptance at the contractor's plant on 28 February 1963.
2. The informal operating manual and final report as required under item III(c) and III(d) respectively, will be shipped on or before 20 March 1963. Completion of the Image Enhancement Instrument is based upon the approach outlined in the enclosed monthly progress report and will be completed within the additional funds requested by reference (a).
3. Inasmuch as the contractor has proceeded with the design and construction of the instrument beyond the funds allocated under subject contract, it is requested that subject contract be amended at your earliest convenience to provide the additional funds requested by reference (a).
4. It is further requested that the contractor be advised of the consignee and his address in order that arrangements may be made for shipping the instrument to the proper address. In the event that further information is required, please contact

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24th MONTHLY PROGRESS REPORT

Image Enhancement Instrument

25X1A

4 November to 1 December, 1962

This report, in addition to the usual enumeration of accomplishments of the reporting period, is intended to summarize the status of the project and the recommended plan of action for the remainder of the program.

During November, the cathode ray tube output image display was incorporated in the laboratory setup and placed in operation, utilizing laboratory instrumentation and components borrowed from other projects in order to expedite its early reduction to practice. The quality of the output raster is very much improved, and, within the resolution limits imposed by the cathode ray tube, it now appears that this approach will be useful in demonstrating the performance capability of the enhancement instrument. The present arrangement utilizes a 5 CEP 11 cathode ray tube with a 0.002 inch diameter spot, with the recording accomplished by means of a Polaroid oscilloscope camera. Results are of sufficient quality to warrant the refinement of this system to further improve the resolution, raster uniformity, and gray scale rendition.

It is recommended that these refinements be accomplished, the necessary subassemblies be constructed, and the enhancement equipment currently spread about the laboratory be installed in the console and delivered. These steps are described in more detail below. This recommended approach to the completion of the program will result in delivery to the Government of an experimental image enhancement device which will serve as a valuable research tool in assessment of the various enhancement techniques which are incorporated in the instrument. In particular, this equipment will contain the

only known embodiment of area scan filtering. As an experimental tool, its most valuable use may be in the formulation of requirements and design techniques which may be used for future efforts relating to image enhancement instrumentation. The final instrument to be delivered under this project will incorporate the cathode ray tube output display, and a camera for the recording of positive prints or transparencies of the enhanced image. The cathode ray tube and associated circuitry may be attached to the console in the space formerly reserved for the projector.

The proposed program for completion of this project is divided into three parts, as described below:

Phase A - Continuation of the laboratory experimentation and circuit development work. This phase will be completed by 11 January 1963. During this phase, the gray scale rendition of the present cathode ray tube will be investigated, and the necessary compensation circuits constructed and incorporated in the system. Better deflection voltage generators will be developed to replace the current mechanically driven function generator borrowed from another project. Noise and pickup of stray signals will be reduced by incorporation of better filtering and shielding, as required. Continual testing and evaluation will be undertaken to check the designs as they are developed.

Phase B - Packaging for Delivery. Completion of this phase is estimated on 28 February 1963. During this phase, the circuits will be constructed in final form and all elements of the laboratory setup inserted in the console. This task will require some re-working of the console in order to accommodate the different approach, the usual amount of cutting and fitting, and the wiring together of the various parts of the system. It may be necessary to purchase the following items: High resolution cathode ray tube, deflection

yokes, cathode ray tube shield, deflection circuit power transistors, oscilloscope (or other) camera with Polaroid back, focus anode power supply, and miscellaneous electronic parts for the waveform generators and other portions of the system which may require modification. Because of the extensive testing required, there is always the danger of breakdown of a key element of the system, introducing additional delay and expense pursuant to its correction.

Phase C - Preparation of Documentation (Operations Manual and Final Engineering Report). Completion of this phase is estimated on 30 March 1963. Inasmuch as the documentation of the achievements on this program may be of importance equal to the equipment itself, it is recommended that the final engineering report be prepared substantially as planned, i.e. complete in every detail which may prove of value to future efforts. The operations manual, however, may be abbreviated to contain only those items necessary to the correct operation of the instrument to be delivered. A study of both documents, by whoever is to operate the instrument, should achieve the same goal as the more extensive operations manual which was originally contemplated.