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[redacted] 25X1

NPIC/D-15-64
3 JUN 1964

MEMORANDUM FOR: Deputy Director of Central Intelligence

VIA: Assistant Deputy Director (Intelligence)

SUBJECT: Research and Development Project Approval Request for Procurement of a Specific Format Chip Printer

REFERENCE: DDCI Memo ER 63-9121, dated 21 December 1963: Approval of Research and Development Activities

1. In compliance with paragraph 4. b. of the reference, it is requested that the procurement of a specific Format Chip Printer - [redacted] 25X1 as outlined in Annex "A" be approved.

2. Although this project was programmed originally for FY 1964, it was deferred recently because of lack of funds until 1965. It is being forwarded for approval at this time to permit handling with a minimum of delay after 1 July or, alternatively and preferably, obligation against current year funds should unforeseen surpluses develop before 30 June and be made available for NPIC R&D activities.

[redacted] 25X1

ARTHUR C. LUNDAHL
Director
National Photographic Interpretation Center

CONCURRENCE:

[redacted] 25X1

Paul A. Borel
Assistant Deputy Director (Intelligence) for Management

8 JUN 1964
Date

SUBJECT: Research and Development Project Approval Request for Procurement of a Specific Format Chip Printer

APPROVED:

25X1A [redacted]

6 JUN 1964
Date

Deputy Director of Central Intelligence

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25X1 NPIC/P&DS/DB [redacted] 30 April 1964

Research and Development
Project Approval Request

I. Identification

This project covers the design and fabrication of a Specific Format Chip Printer. The project is under the NPIC program for Reproduction and Processing Equipment. At the time of submission of the FY 64 Financial Plan a chip screening viewer and a chip storage and retrieval system were included as long lead time development items at the [redacted] level. Since then it has become apparent that the printer should be the primary step in the development of chip handling mechanisms since all else would be dependent upon the printer output insofar as size, format and content were concerned. Therefore, the Specific Format Chip Printer is submitted in place of the screening viewer and the storage retrieval system. The additional funds are available in the approved budget.

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II. Objectives

The current emphasis in both photo interpretation and photo mensuration is that of recording targets and areas of interest on photographic chips. This requirement is now being carried out in NPIC by a manual system of screening and selection, cutting and mounting stereograms for interpretation. The obvious solution is the development of a high performance printer capable of producing duplicate exposures of a specific format containing the highest possible quality, resolution and acutance. Such a development will provide the NPIC with:

a. A method of producing high quality photographic film chips of desired target areas in quantities required to meet operational needs.

b. A properly formatted film chip for use with the chip comparator, scheduled for delivery this year.

c. A system which will reduce the amount of film handling now required of the operational groups.

d. A convenient and usable formatted chip which will permit transition to an automatic or semi-automatic storage and retrieval system if and when required.

III. Background

Existing camera systems and film combinations dictate that the photo interpreter be furnished the ultimate in high quality material in order to gain the most information from his interpretation process. The current method of physically cutting the target areas out of a second generation roll of duplicate film is the only practical way of obtaining this quality. This method, although workable, obviates the use of that roll of duplicate film for any other purpose.

The mensuration aspect as now performed requires the preparation of glass plates for some equipment read-out and duplicate roll film for other equipments. Inherent in any roll film handling process is the lack of dimensional stability, which results in non-repeatable measurements and gross inaccuracies. A high performance chip printer will provide a method to overcome a large percentage of these errors. The original chip size is known and can be allowed for in calculations; the film emulsions have different characteristics, dependent upon type and thickness and can be adjusted in calculations; the filmbase likewise has known characteristics, dependent upon type and thickness and can be calculated and allowed for in the mensuration cycle. The chip comparator, now under contract, is designed to accept 4 x 5 inch chips and will have the capability to extract target location information from the binary encoded information on the chip as well as accurate mensuration relative to this information.

Roll film, while the most practical media for scanning large areas, is impractical for detailed study. Consequently, thousands of stereograms have been prepared. This vast amount of film handling, cutting and stereo preparation can be eliminated by the application of chip printing.

IV. Technical Specifications

The chip printer under consideration is a high resolution, contact printer capable of producing a specific format chip containing all the necessary data relative to the original photo frame from which it will be printed. The proposed chip size will be 100 mm by 127 mm (standard 4" x 5" cut film or 5" roll film) containing an image size of 70 mm by 95 mm with optional sizes of 90 mm by 95 mm or 112 mm by 95 mm. A survey of the operational groups was made to ascertain the type of collateral data needed to meet the mensuration and PI readout requirements. It was determined that certain factors were common to both and this information will be printed on one edge of the chip in both alpha-numeric

and machine readable characters. Applicable security classification will also be exposed on each chip. The printer is to be operable from punched paper tape or manually. Development is intended to be carried out in three phases: (1) a preliminary design effort wherein investigation into light sources, transport methods, film gates, automation, resolution and the like will be made for optimum performance; (2) a breadboard phase which is intended to demonstrate and prove the concepts of the preliminary phase; and (3) a fabrication and testing phase which shall encompass final design, assembly, testing, training and acceptance.

Input materials will be negative roll film, 70 mm through 9 $\frac{1}{2}$ inches in width with formats varying from 70 mm x 70 mm to 9$\frac{1}{2}$ inches x 50 inches and continuous strip type. Output materials will be five inch duplicate positive film of a specific format containing a contract image area, security classification and a human-machine readable code. The printer will be automated to the fullest extent applicable. Film transport, X-Y positioning, azimuth orientation, exposure control, dodging and printing all will have partial or full automation, the amount of which will be determined by the breadboard phase.

V. Contractor and Financial Arrangements

Nine companies were recommended as potential bidders on this printer. Seven were solicited, resulting in proposals being submitted by the following companies:

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25X1A Of the four submissions [redacted] is considered the most acceptable from a technical aspect. The remaining proposals were thoroughly evaluated and deemed unacceptable for reasons of ultra-sophistication, mis-interpretation of requirements, insufficient information to form conclusions and cost.

25X1A The [redacted] proposal is based upon a

25X1A fourteen month effort at a cost [redacted]

VI. Coordination

Information concerning the proposed program has been disseminated within the Agency and to other components of the intelligence community through the NPIC Technical Development Committee and the NPIC Semi-annual Joint Procurement Meeting held 28 February 1964.

The Production Services Division, NPIC, final recipient of the equipment, was afforded a briefing on the program and the opportunity to evaluate all the proposals.

The Procurement Division, Office of Logistics, has been informed of this program and is anticipating contract negotiations during May-June 1964.

VII. Security

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