

Research and Development
Project Approval Request

I. Identification

This program covers the development of a continuous 70mm- to 9½-inch-wide film processor of small size and medium output capacity to be used for processing duplicate positive reproductions. The processor will embody the liquid-air bearing concept in which all physical contact with the emulsion or base surfaces during the processing cycle is avoided. The system promises to provide several significant advances in the technology of photographic film processing. The internal designation for the project is "The HTA/6 Processor."

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The processor would be included in the Technical Development Program of the Plans and Development Staff, NPIC, at a total estimated cost of [REDACTED]. The item was included in the NPIC financial plan for Fiscal Year 1964 at the [REDACTED] level under the category "Reproduction and Processing Equipment." The additional funds are available within the approved budget.

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II. Objectives

This program is directed towards the development of a continuous roll-film processor designed specifically for processing of 70mm- to 9½-inch-wide duplicate-print film transparencies.

The objective of the program is to achieve advances in the state-of-the-art of film processing, which will be directed towards producing duplicate prints of the highest possible quality for use by the photo interpreter in analysis and mensuration. Further objectives are to eliminate image distortion and physical damage common to roller transport processing systems by the introduction of liquid-air bearing transport. Another objective of great importance is the drastic reduction of maintenance and downtime required by roller systems. This would be accomplished by the total elimination of racks, rollers, bearings and other moving parts that normally and periodically require major maintenance and overhaul.

III. Background

The HTA/6 wide film processor covered herein is intended to be an improved liquid-air bearing processor which would succeed the HTA/5 processor.

The HTA/5 machine was designed to accommodate all widths of roll film from 70mm to 9½-inches, and it employs a new concept of film transport in which the exposed film passes through the various chemical solutions and through the dryer over non-rotating liquid and air bearings (in lieu of revolving rollers). This system permits the film to be transported through the entire processing cycle without touching the emulsion or base side of the film.

The HTA/6 processor will conform generally to the same basic parameters set forth for the HTA/5 but modified to reflect information gained during its development and subsequent test at March Air Force Base. The HTA/6 processor will be designed and engineered with the full advantage of knowledge gained from results of that development and test program.

Significant advances in the technology have been made possible by the liquid and air bearing concept. For example: eliminating contact with film surfaces during the processing cycle will prevent possible damage to the emulsion and/or base. Also, the very small amount of torque required to drive the film will assure maximum stability of the film base and emulsion. This will virtually eliminate lineal or other image distortion common to present standard equipment and will enhance the validity of target measurements. Complexity of machine components will be greatly reduced since, in the proposed processor, many rollers, bearings, racks and other operating parts are not necessary. Maintenance will be significantly reduced as a result of fewer moving parts. In addition, development will be accelerated by increased solution agitation inherent in the system.

In this new HTA/6 development, major emphasis will be applied to reducing the power and plumbing requirements, and overall size of the unit; to increasing the operating reliability; and to improving the loading mechanism and method of splicing.

IV. Technical Specifications

The specifications are directed towards producing a small, medium-speed, wide-film processor of modular construction employing liquid-air bearing transport with no moving parts in the wet section of the processor and requiring the minimum of maintenance. The processor will be designed for producing duplicate transparencies of maximum possible quality without damage to the film emulsion or base and with the lowest possible minimum of image distortion from driving torque applied to the film during its transport.

V. Contractor and Financial Arrangements

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The contract will be placed with the [REDACTED] on the basis of their proposal at an estimated cost of [REDACTED]

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Company capabilities, ideas and interest in such a program were investigated through discussion and visits to other manufacturers of specialized film processors. Among the other companies considered for this development program were:

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[REDACTED]

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[REDACTED] was selected because they originated the liquid-air bearing concept. Further, that company has exhibited progressive originality in new processing techniques and concepts and has developed a strong engineering capability in the production of liquid-air bearing processors.

VI. Coordination

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

The Procurement Division, Office of Logistics, has been informed of this program and is expecting to undertake contract negotiation during the month of May.

VII. Security

The program is to be negotiated on an SC-1 Confidential basis. Both association with the sponsor and the equipment itself are to be classified.