



NPIC/2-50-64

MEMORANDUM FOR: Assistant Deputy Director (Intelligence) for
Management

SUBJECT : Development Project Approval Request for an
Automatic Photographic Identification System

I. Identification

This objective is programmed at the [] level under Special Techniques and Development Studies in the NPIC financial plan for Fiscal Year 1964.

The proposed contract under consideration is estimated at a cost of approximately []. The project will be under Technical Development Program of the Plans and Development Staff, NPIC.

II. Objectives

This effort is directed toward the development of automatic and/or semi-automatic aids for interpretation of reconnaissance photography. The ultimate objective of these efforts is to produce a computerized electro-optical system to perform certain basic photo interpretation tasks -- thus relieving highly skilled interpreters to perform the more complex tasks. The basic tasks include:

- a. Rough classification or screening of photographs into rough categories such as urban areas, industrial areas, rural areas, desolate areas, clouds, water, etc.
- b. Automatic identification of target categories such as airfields, ports, shipyards, factories, ships, tanks, etc.

III. Background

Automation of image identification has been successfully accomplished by partial automation. Among these are:

- a. A system for identifying anomalies in microscopic images of white blood cells.
- b. Analysis of x-ray photographs to determine malignancy of intestinal ulcers.
- c. Automatic identification of radar signals for submarine detection.

Declass Review by NGA.

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The rate of acquisition of reconnaissance photography is steadily on the increase, but the rate of interpretation of this photography by human interpreters alone cannot be speeded up significantly. Therefore, some means of automation of the less complex but time consuming interpretation tasks is required.

Previous research and development in adaptive-memory computers has indicated that some form of these computers may well be capable of assuming some of the interpretation tasks.

IV. Technical Specifications

The proposed study is to refine a proven concept of [redacted] [redacted] This system uses conical transforms to pre-normalize images so that they are acceptable to an adaptive-memory computer. This computer, called COMPLEX I, is a type of PERCEPTION which is a family of computers which can learn and subsequently recognize patterns.

V. Contractor and Financial Arrangements

This contract would be placed with [redacted] [redacted] is the basis of a [redacted] (approximate) level-of-effort for one year.

Several other firms are performing research in automation of photo interpretation through sponsorship by several Defense agencies. All of these projects have been reviewed and evaluated. It appears, however, that the [redacted] concept is somewhat more feasible and more promising than the techniques being investigated by these other firms.

VI. Coordination

Staff coordination has been accomplished with other interested parties. The project has been approved by the Technical Development Committee of EPIC. The objectives were presented to the semiannual Joint Procurement Meeting at EPIC in February. The project has been discussed with Rome Air Development Center personnel who endorsed our sponsorship in development of the [redacted] technique.

VII. Security Arrangements

This contract would be issued as unclassified research but knowledge of sponsor association is limited to a minimum number of properly cleared contractor personnel, hence, [redacted] contract.

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VIII. Recommendation

It is recommended that approval be given EPIC to proceed
with contract negotiations with [REDACTED]
level-of-effort toward adapting that company's COMPLEX II computer
personalization technique to the task of semi-automatic Photo-
Interpretation.

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ARTHUR C. LINDAHL
Director
National Photographic Interpretation Center

APPROVED: _____

Paul A. Borel
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for Management

Date