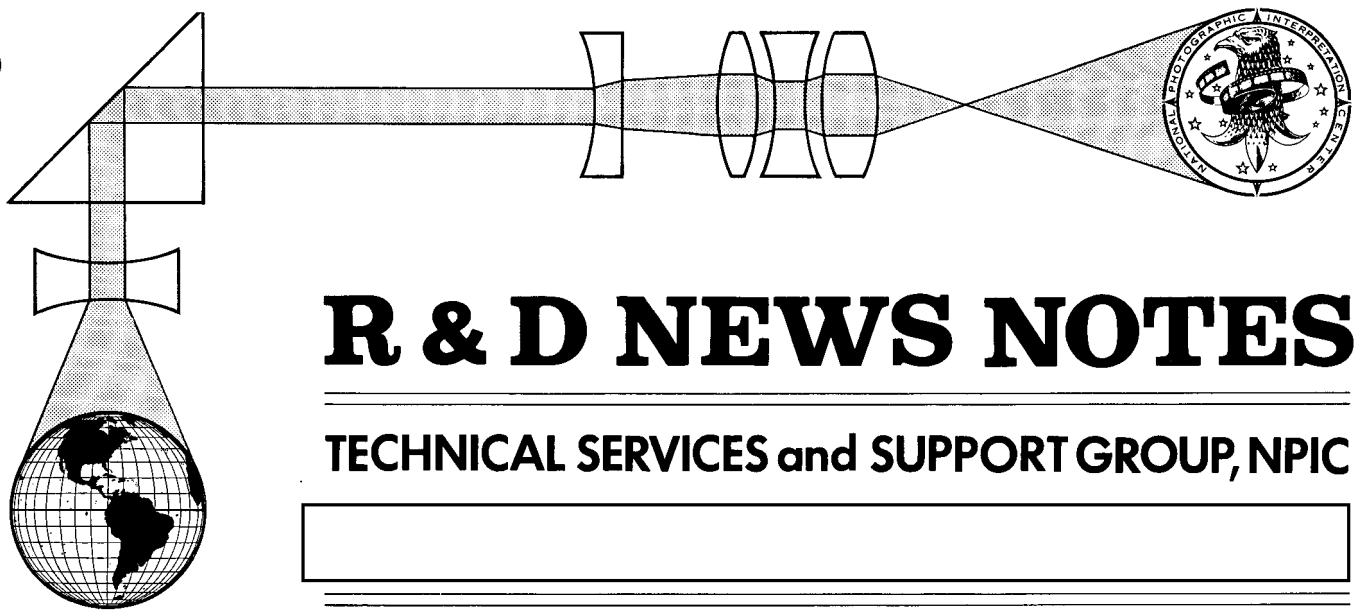


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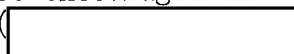
R & D NEWS NOTES

TECHNICAL SERVICES and SUPPORT GROUP, NPIC



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The following items are of general interest to those concerned with photo interpretation and related intelligence production. They are published by the Technical Services and Support Group with the objective of creating better communication between operational personnel and those engaged in R&D. Questions, comments and suggestions are encouraged and should be sent to Editor, R&D News Notes, Room 5S-453 

Imagery Without Emulsion

A chemical action that removes the emulsion from the film base is one of the techniques under consideration for disposing of old film. Security considerations require knowing whether information can still be obtained from film disposed in this manner. The Engineering Support Division Exploratory Laboratory was recently tasked by COMIREX to determine if a technically trained person could approximate the characteristics of the acquisition system or obtain classified imagery by operating on latent information contained in stripped film base. Many physical, optical, microscopic and chemical restorative techniques were investigated. Two methods demonstrated the capability for restoring the latent imagery.

One method involved intense exposure of the entire pre-stripped film to ultra-violet radiation. The purpose was to simulate in a single dose an exposure that an Original Negative might "see" if it were copied several times in a Niagara Printer. In some such cases, after the emulsion was cleanly stripped, a residual image was found in the base. This image, created by the UV exposure, was in turn rendered visible in reflected UV light.

The other method, physical development, restored significant information from incompletely stripped film base. In this instance the imagery was recovered from base which was processed by a commercial stripping firm and which was thought to be completely stripped of its emulsion and subbing layers.

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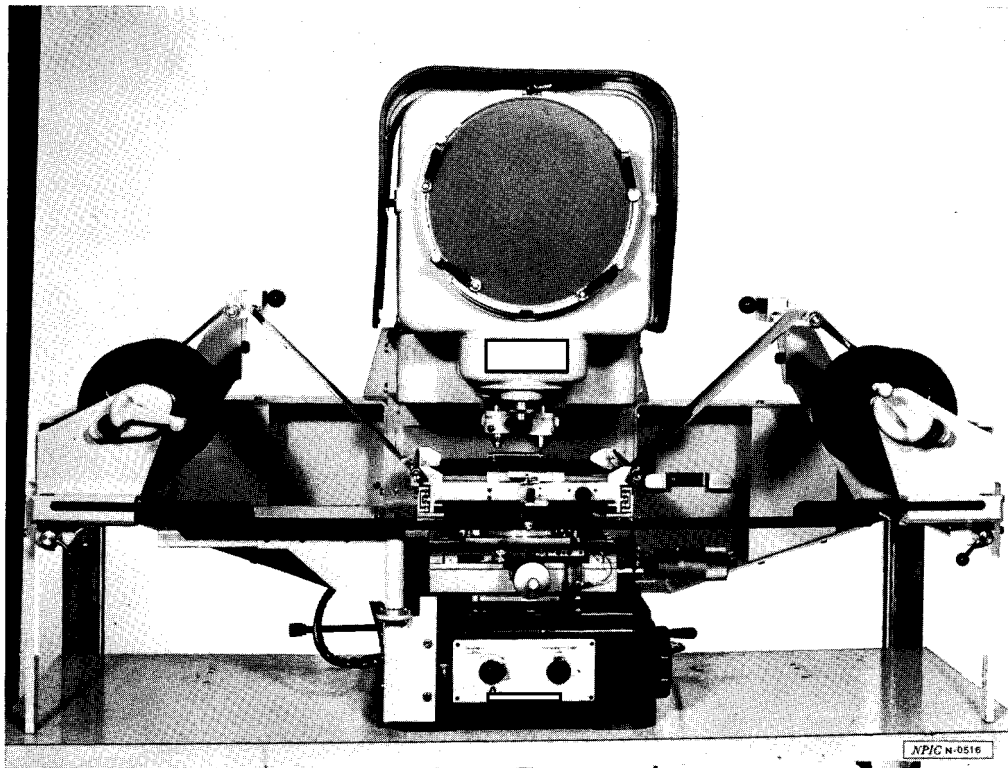
As a result of these tests it was recommended that, in the future, emulsion be stripped and that the residual base be shredded or burned to minimize or eliminate potential security problems.

The project scientist is [REDACTED]

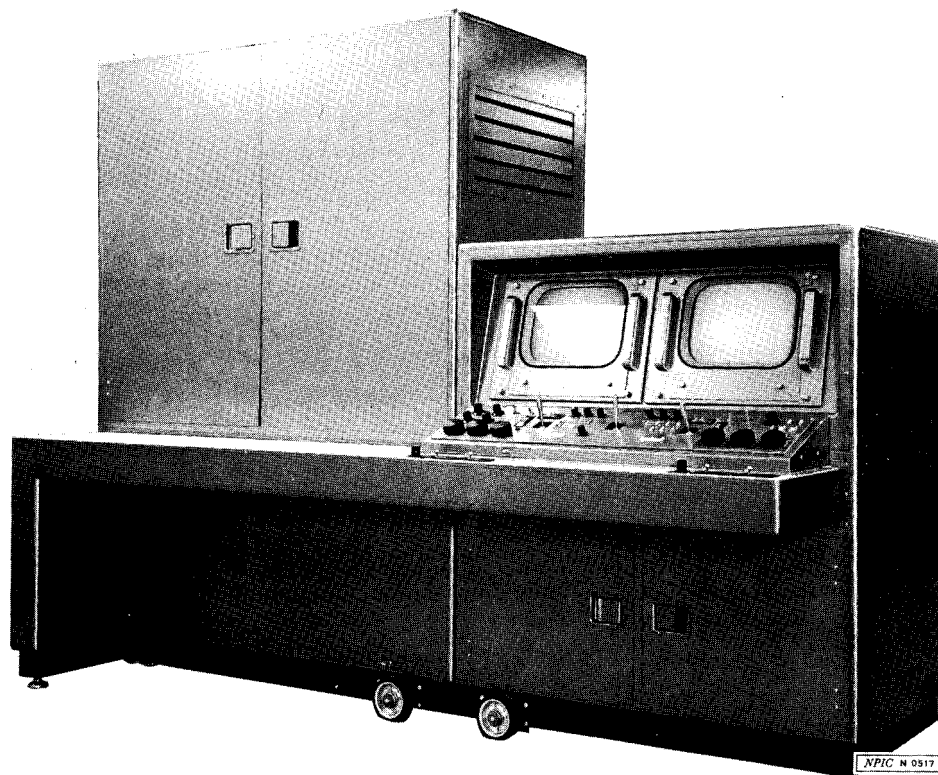
[REDACTED] This article is classified [REDACTED]

NRTSC Develops New Measuring Instrument

The Modified Rear Projection Comparator is a precise measuring instrument that has been modified for use by the photo interpreter. A variable intensity light table can be used for direct viewing of film or a 12 inch diameter screen can provide projection viewing. Six magnifications from 10X to 100X are possible. Mensuration is performed by correlating the amount of travel of the projected image to the readings of two micrometers. Measurements up to 50 mm can be made. The unit weighs 300 pounds but is small enough to be table mounted. It operates on standard 115 volt power. The Modified Rear Projection Comparator is currently undergoing test and evaluation at the Naval Reconnaissance and Technical Support Center. [REDACTED] is the point of contact at NRTSC. This article is [REDACTED]



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New Home for P.I. Change Detector

X1 [] P.I. Change Detector was evaluated at NPIC and was not found suitable for operational use. Nevertheless, it yielded considerable information on the problems of displaying images on CRT's and the reaction of the photo interpreter to images so displayed. The equipment was originally intended to compare two photographic images of the same area. The instrument has controls for side-by-side comparison, flicker detection on a single screen and change detection techniques involving the subtraction and enhancement of the two film images.

The P.I. Change Detector was recently transferred to the U.S. Army Engineer Topographic Laboratories, Geographic Sciences Division, located at Ft. Belvoir, Virginia. The instrument will be used in image correlation studies being carried out by the Division. There is a possibility that, in the future, it will be furnished to the contractor for further utilization. The Chief of the Geographic Sciences Division is []

X1 []
 X1 While this instrument was never put into operational use it has furnished information to NPIC and is continuing its useful life at its new location. []

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An Explanation of R&D

In response to questions concerning technical terminology used in this publication, this issue and future issues will contain brief descriptions of some of the terms and phraseology used in modern technical writings. The subject of this issue is an explanation of research and development (usually abbreviated as R&D).

Research is the study of some field of knowledge in order to establish facts or principles. Scientists may examine a physical science, such as photographic chemistry or a behavioral science such as psychology. Research may be divided into at least two distinct types. Basic research (sometimes called pure research) is carried out without any consideration of the applicability of the results. It is performed for the sake of gaining knowledge concerning some heretofore unknown segment of science. Applied research then takes over where basic research left off, and tries to apply the knowledge to practical applications and to gain additional knowledge in relation to these applications.

Development is the next logical step after applied research. After research has proven an application to be possible, development attempts to make it practical, both operationally and economically. Engineering principles play an important role in the design of the first model. Operation of this model may reveal some design shortcomings which have to be corrected in future models.

The R&D cycle is about an eight year period for complex systems such as supersonic aircraft. Even the development of the first aircraft by the Wright Brothers consumed an eight year span between the time of their wind tunnel experiments through their first crude flight to the time of their first contract for the construction of a "practical" airplane. Companies often devote one or two decades in the research and development of a new product. Some of the equipment developed for NPIC, while not as complex as an aircraft, is still relatively sophisticated in design, and it is little wonder that several years are sometimes required for successful completion of a project.