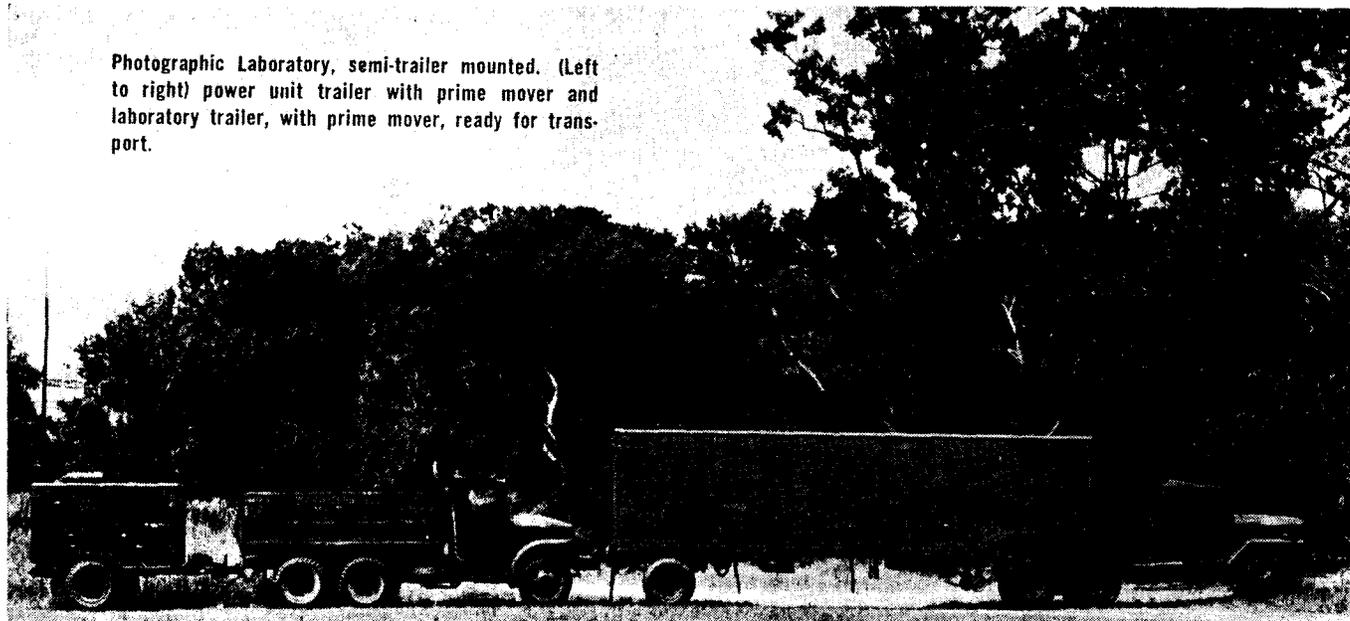


Photographic Laboratory, semi-trailer mounted. (Left to right) power unit trailer with prime mover and laboratory trailer, with prime mover, ready for transport.



army's mobile photographic processing laboratory

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IN THIS RAPIDLY advancing age of space, with its ultra-modern missiles and other materiel of war that add tremendously to an army's striking power, a tactical army commander must be fully informed at all times as to what is going on in the areas in which he is interested.

Photography, of course, offers one of the best means by which he can be kept informed and in fact it probably would be safe to say that over 90% of his intelligence is furnished this way.

In a document entitled "Tactical Aerial Photography for Army Intelligence Purposes," prepared by OCAFF for distribution to battalions and detachments of the Regular Army, the giant role of Tactical Photography in the air-ground concept of military operations was delineated. It assigned the responsibility for providing adequate photo intelligence for troop units, to the field army commander. Photo Interpretation Specialists at all levels were made available and held responsible for developing information from aerial photos to assist in developing the intelligence picture. The field army commander could now obtain basic, daily front line, and special photo cover, by the use of tactical air reconnaissance units and army aviation. The Joint Air Photo Center (JAPC), an organization of the Field Army, Tactical Air Force and Naval elements, was created to provide facilities for production, in-

terpretation and packaging of aerial photos. The Air Reconnaissance Support Battalion, an Army component of JAPC, was assigned to identify, reproduce, package and distribute aerial photos taken for field army by an Air Force reconnaissance unit. The capability required of this organization is the identification, packaging and distribution of 25,000 aerial photos in 8 hours, a tremendous quantity indeed.

To do this quickly and efficiently, calls for an output closely akin to that of a large commercial laboratory operating on a mass production basis at a fixed place in some large city with every convenience required for the operation.

To meet this requirement the Signal Corps initiated the development of a mobile high capacity processing laboratory with provisions for support facilities and photographic equipment suitable for the mass production of photographic prints from Air Force supplied aerial photographic films. The result of this development is the Photographic Laboratory, Semi-Trailer Mounted ES-22 (), the first model of which has been completed and has undergone several field tests.

General Description

The Photographic Laboratory, Semi-Trailer Mounted ES-22() is a complete self-contained unit designed to provide photographic processing facilities for Field Army Head-

quarters. It will print, process and chop roll paper prints from previously developed 9 $\frac{1}{2}$ " wide roll film. It is transportable by air, train or boat and possesses both day and night and all-weather capabilities in tropic, desert or arctic climates. It can be placed in full operation readily and rapidly with a minimum of personnel of average skill and is capable of producing 8,000 9x18" prints from 9 $\frac{1}{2}$ " wide aerial roll film in an 8-hour day. The Laboratory consists of the 10-ton Semi-Trailer, Van V/79()/G and a 1 $\frac{1}{2}$ ton trailer on which is mounted a 30 KW diesel power generator which furnishes the power for the unit. Separate suitable prime movers are used to haul the power trailer and the Semi-Trailer Van V/79()/G.

The Van V/79()/G is divided into three compartments separated by light-tight doors. The forward compartment (utility room) is used for storage of heaters, air conditioners, water storage, etc. The center compartment has the necessary equipment for viewing of negatives and cutting and sorting the finished prints. The rear compartment contains the necessary equipment for the printing and processing of prints. The water supply system consists of a 50-gallon hot water tank and one 30-gallon cold water storage tank with the necessary tubing, valves and pumps to circulate the water through the system. Fresh water may be

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Photographic Laboratory

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pumped into the laboratory through a 50-foot length of hose from a suitable stream or other source. A feature of the laboratory is that it is designed to use a minimum amount of water by applying stabilization processing, a process which is a development of the U. S. Army Signal Corps.

Major components of the van include a paper processing machine EH-26; a continuous contact printer USAF Type C-1B; a semi-automatic paper chopper USAF Type FM-6; a plotting table USAF Type A-7; three 1½ ton cap. air conditioners and gasoline space and water heaters.

The processing machine is designed to process, rapidly and continuously, 9¾" wide water-resistant paper, in rolls up to 1,000 feet, at speeds ranging from 5 to 35 feet per minute. The operating speed is determined by the requirements of the processing chemistry involved.

This machine was designed to utilize the Signal Corps stabilization process. Essentially, the equipment comprises a conventional tank-type immersion processor, a replenisher for mixing and controlling the replenishment of solutions and an automatic print chopper.

The processor consists of four processing tanks equipped with a paper transport system, electrically heated drying drum, and pumps for circulating solutions. The replenisher is comprised of four 50-gallon tanks, four mixer assemblies, a pump for the handling of solutions, and three thermostatic heaters for the controlled heating of solutions.

The automatic print chopper, EH-26 automatically transports and chops a 1000-foot roll of paper at the rate of 50 prints per minute. Fiduciary marks printed on the white margin of the roll paper cause a current change in two photoelectric cells which control the chopper knife blade and actuate a brake which momentarily stops the paper for each chop.

The USAF Type C-1B contact printer provides a very rapid means (up to 60ft/min) for obtaining positive contact prints on either roll film or roll paper from 70mm to 9½-inch roll films. The mechanism of operation consists of rolling film and paper together, at the same speed and in contact, past an aperture or slit from which a controllable amount of light is emitted. Quality control is achieved through the use of Varigam paper and filters and by manually controlled dodging.

"Dodging," or the shading of one

portion of the negative more than another, thereby controlling the exposure to get the maximum out of the negative, is accomplished by three dodger controls. An aperture control regulates the over-all intensity of the light at the printing aperture so that any negative may be given less or greater light at the desire of the operator. This is a high speed type control that can be rapidly changed for minimum to maximum or to any point in between. Push-pull controls enable the operator to go from aperture opening 2 to 32 in a fraction of a second.

The printer will print 390 feet of aerial negatives and holds a 500-foot spool of positive paper.

The USAF Type D-1A contact printer provides a rapid means (22ft/min.) for obtaining positive contact prints on 9¾-inch wide Varigam, water-resistant roll paper from 9½-inch roll film. Any number of copies of any print may be obtained with this printer.

Film and paper are transported over a glass platen covering many small incandescent bulbs which are the source of the printing light. At the moment that a print is made, film and paper transport stops, an air inflated rubber cushion descends and presses film and paper in close contact against the light source while exposure is made. Quality control is achieved by the use of Varigam filters, and manually controlled dodging.

The cassettes of this printer will hold a 500-foot roll of film and a 1000-foot roll of paper.

In a semi-automatic fashion, the USAF Type FM-6 semi-automatic print chopper cuts a 9½" or 10" by 1,000-foot roll of paper into sizes ranging from 5" to 18½" in length.

The USAF Type A-7 film plotting table is a portable device designed for viewing aerial roll film negatives or transparencies 5 to 9¾ inches in width, which may be passed from one spool to the other over a lighted ground glass. The device consists of a lamp housing with fluorescent lamps, spool brackets, film rollers, cover, and ground glass.

The equipment described here has been subjected to extensive laboratory tests. These tests have revealed that insofar as over-all design is concerned, the equipment system represents the best that is available in conformity with the state of the art, and provides the Army with a photographic laboratory of advanced design, geared to today's demands of modern war.

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Systems management competence in design, fabrication, structural construction, installation, operation, training, and maintenance of:



1. Space surveillance systems



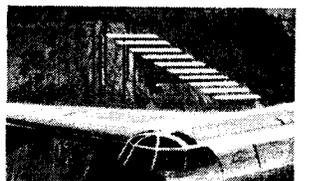
2. Transportable communications systems



3. Instrumentation, control, and switching systems



4. Telecommunications systems



5. Integrated land, sea, and air communications systems



6. Data systems



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