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Identification Cards and Systems That Incorporate Instant Films

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ABSTRACT: A number of firms manufacture or market cameras and allied equipment for the production of driver's licenses, building passes, and other identification cards with portraits. Systems that use instant film, other than those marketed by Polaroid Corp., are discussed with a view toward their classification and identification by document examiners. Polaroid products were discussed in a previous publication.

KEYWORDS: questioned documents, identification systems, security

The manufacture of identification card machinery and supplies is a burgeoning industry in a society that wants driver's licenses, building passes, and similar items of personal identification on demand, with a minimal amount of effort and elapsed time. A previous paper on this topic discussed only the products of Polaroid Corp. [1], but segments of the market still exist for other manufacturers and it is their products that are covered here.

Two methods for the production of identification cards are used in the majority of situations. The first involves an all-photographic system in which the finished card is a photographic print that incorporates, at a minimum, data and a portrait of the subject. The second method uses a photographic protrait affixed to a previously produced data blank or identification card. The latter is generally known as a composite card, or by competitors in the all-photo market as a "cut and paste." In both cases many other security devices may be incorporated, and either process lends itself to varying degrees of duplication and counterfeiting.

The composite method is more flexible in the requirements for machinery and supplies than the all-photo method and it may be expected that many small companies or individuals are using self-fabricated equipment or parts of different systems to produce cards.

Generally, the production process for the composite method may involve the use of a camera head, a die cutter, and possibly a laminator or bonding device. To achieve maximum use of film, most camera heads divide a Polaroid print into four equal areas, each becoming a portrait when cut. Camera heads can be programmed to take four individual portraits, two identical portraits of two individuals, or four photos of one person in some instances. The portrait may also contain a symbol or other security device that is produced by a validation panel contained within the camera head. The finished print is usually inserted into a cutter

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so that the four prints are quartered cleanly and evenly. One of the four prints is then placed onto the data blank, or into a cut-out well in the blank, and a laminate is applied.

Several options exist for customizing or adding security features to a card. A laminate may have an extremely limited temperature range that permits perfect adhesion—too much or too little heat may purposely cause distortion, clouding, or blistering of the laminate. An all-photo card may be dropped into the well of another card and then laminated. This adds the features of all-photo to a composite data blank that may contain ultraviolet-visible seals, refractive or retroreflective light-visible data, multiple layers of magnetic strips to prevent addition of spurious data, and the like. Laminates may bear imprinted or embossed seals that are independent of the data blank. Special plastic, available from the camera manufacturer or through special vendors, can be used instead of paper for the blank to assure even greater adhesion of the laminate. Finally, one may use preprinted and pre-embossed butterfly laminate packs that contain a data blank partially secured within a front and back layer of laminate. The pack is completed by the addition of the portrait and subsequent heat sealing.

At the most elementary level, anyone with a camera using instant film can take a full face, head-and-shoulders portrait, cut out the portrait area, fit it onto some type of identification card, and then retail it to a portion of the populace. In almost any area of the nation, vendors can be located who will produce identification using this process. Their product may range from "Certified Accurate Information" cards through blatantly fraudulent identification meant to be used as out-of-state driver's licenses or to obtain alcoholic beverages for minors. The sheer variety of equipment capable of producing this type of card defies categorization for identification purposes.

The need for more sophisticated identification that bears the stamp of genuineness and is economical in a large-volume operation is of greater concern; such identification would require the criminal element to gain possession of, or access to, the same machinery, data cards, and other security items available to government bodies, businesses, and other organizations. Where this was not possible, an effort would have to be made to duplicate the genuine article as closely as possible.

In addition to Polaroid Corp., several companies currently market machinery and supplies designed to produce all-photographic identification cards. Since such cards are generally used in driver's licenses, building passes, and the like, the cards and systems produced by these companies deserve a more detailed examination and may be of greater interest to an examiner affiliated with law enforcement.

All-photographic identification cards can be produced by using either instant film or conventional color or black-and-white film and paper. Instant film systems will be covered here, since they do not involve any outside legitimate contacts, such as commercial film developers and printers, to assist in arriving at a finished product; they can be operated by one individual with little technical training; and they are either portable or centralized in one area. These factors facilitate misuse of the equipment and increase the likelihood that their products will be used for illegal purposes.

Production of an all-photo card involves machinery that, at a minimum, requires that a data blank be inserted into the camera and photographed at the same time as the portrait is taken. Generally, the data card is a preprinted standard IBM (Hollerith) 80-column card with personal information typed or written in shortly before the portrait is taken. Manufacturers could standardize data locations and portrait locations when designing their systems so that one card would serve several manufacturer's identification machines.

Ancillary equipment may be used to enhance security and customize the product for the customer. For the sake of economy, different manufacturers may use laminates obtained from a common supplier. Certain requirements, such as insertion of the card into a computer's data collection system, may dictate that the cards from different manufacturers all

be of similar finished size. Again, such standardization would logically permit one company's cards to be used in the embossers or laminators produced by another.

The intermixing of die cutters and laminators lessens the possibility that one manufacturer's product can be singled out from the rest on the basis of overall size and thickness of the laminated package. Since these two factors are of little value for determining the class of machine, the only remaining features that would be of value for identification are in the print itself; it will be seen that these, too, are of little use in the classification process.

The major companies producing all-photo cards described in this review all use any one or a combination of strobes, lenses, mirrors, and internal baffles to arrive at the finished card. This system is similar to that used in the earlier Polaroid identification camera known as the ID-2.

In conventional systems light intended for the portrait area is prevented from reaching the data area by internal baffles that may resemble a snout or funnel beginning at a lens and ending at the film plane. This device, sometimes called a weldment, also prevents light intended for the data area from bleeding into the portrait area. The position of this weldment relative to the film may play either a misleading or an important role in the identification of a machine.

The weldment may rest against, or be close to, the film or validation plate and prevent light from striking the film in this narrow area. In some designs this creates a thick or else a nearly invisible thin black line around the sides of the portrait where it meets the data area. If the weldment does not rest against the film or validation plate, but is farther away from the film plane, the portrait area light overlaps the data area and creates a white line. The black or white line problem may be intentional, or a product of abuse or misadjustment. If notches are purposely cut into the weldment a random pattern of white and black is created and this may serve a security purpose.

Several companies market cameras that are produced in whole or in part by another manufacturer. For example, Optical and Electronic Research, Inc. (O&ER) of Reston, VA, is currently producing cameras that are marketed by General Binding Corp. (GBC), Western Badge, Stick-Strip, Doculam, Tiffany Associates, Caulastics, Amcard, and Identification Systems, Inc., among others. It can be assumed that other companies will be added in the future and that other marketers may be using the services of similar suppliers.

The O&ER cameras usually produce the classic "L"-shaped card (with the portrait in the upper left corner measuring approximately 32 by 32 mm [$1\frac{1}{4}$ by $1\frac{1}{4}$ in.]). They may also place the portrait top to bottom on the right side of the card (in which case it is about 30 mm wide by 44 mm high [$1\frac{3}{16}$ in. by $1\frac{3}{4}$ in.]). When the portrait covers the entire right side, the company refers to it as a "60-40" design, 60% data and 40% portrait. The company states that users have "turned the camera upside down" so that the L-portrait is in the lower right, or the data are on top and the portrait at the bottom with a 60-40 card, or vice versa.

The data card for the O&ER "L" camera is fairly compatible with the Polaroid system, thus permitting use of the card in either system. Additional features, described below, are present on some of O&ER's cameras and may also be incorporated in other manufacturers' cameras. They should be considered when examining all-photo cards.

The O&ER cameras will accept a validation panel, if ordered by a customer, which is not attached to the camera but instead is placed next to the film pack before its insertion in the camera. This would permit a validation panel normally used in one of their cameras to be used in another camera of their design, or possibly in another company's product if tolerances permit.

The O&ER cameras also have a fixed-focus portrait lens that is generally set at $f/11$ and is designed for an optimal focusing distance of around 1067 mm (42 in.). Because of the depth of field offered by the lens it is possible to move the subject slightly closer or farther away, thereby increasing or decreasing the head size in the portrait. Like other manufacturers,

O&ER will place the portrait wherever the user desires if a sufficiently large order of cameras is placed.

If a user desires a card with larger entries but less data, such as might appear on a seasonal swimming pool pass, it is only necessary to produce a data card with larger printing, and, if the recipient's signature is to appear on the finished product, to instruct him or her to write larger. Thus, the resulting card will have larger, more limited data with no alteration to the camera.

In some camera designs the internal strobes for illuminating the data area may be intentionally or unintentionally varied in their light intensity. The result of this is a lighter or darker data area that may vary from card to card and therefore has little value for identification purposes.

Design changes in a production run of some cameras could possibly result in changes in individual or class characteristics. For example, inadequate internal illumination of the data area in some cameras would result in vignetting of the edges of this area. Later corrections in design or retrofitting of improvements could eliminate this problem.

Users may desire an unusual appearance for their cards that can be achieved by the use of a "silhouette" technique, in which the color of the portrait background is matched to the color of the data card. The resulting product, if properly lighted in both areas, does not appear to have any differentiation in color or a dividing line between the data and portrait areas.

The Avant Corp. of Acton, MA, markets one of their all-photo cameras as the Duomatic. Duomatics can either be the older Model ID 16-100 or the newer model with three variations in portrait and head sizes. Older models usually place the portrait in the lower right corner, where it should measure about 38 mm high and 25 mm wide (1½ by 1 in.). The newer models produce portraits that are 25 mm wide by 32 mm high (1 by 1¼ in.) or 30 mm wide by 38 mm high (1⅓ by 1½ in.).

Avant has also marketed a "Monocard" system that uses Polaroid Type 20 (Swinger) film to produce an ID card measuring 64 mm high by 83 mm wide (2½ by 3¼ in.) with a portrait area in the lower left corner that measures 25 mm wide by 32 mm high (1 by 1¼ in.). Another Avant model, the Quad Duo, is capable of producing one print with four portraits or two all-photo cards with the portrait on the right half or, by rotation of the back, on the bottom of the card.

Laminex, Inc., of Matthews, NC, markets an all-photo camera, Model LAP-101, that produces a portrait area about 32 mm (1¼-in.) square in the upper left corner. Validation panels are also offered, to permit overlapping signatures and logos.

All of the systems listed above use various Polaroid instant films, except for the SX-70 type. Many of the companies contacted stated that since both the SX-70 and Kodak Instant films are plastic-coated, the usual laminates cannot be used. This problem, in some manufacturers' opinions, makes them undesirable for use in situations requiring the security of a laminate.

The Dek/Electro Corp. of Anaheim, CA, markets two systems for the production of instant and "nearly instant" all-photo cards. The company has been involved in noninstant all-photo cards for many years but only recently has ventured into the instant market. Dek/Electro views its market as state motor vehicle bureaus and high-volume users of identification cards.

The first of the company's systems uses a positive color packet produced to their specifications by Ciba/Geigy. The film is spooled on long rolls and exposed one section at a time. The single exposure is cut from the supply roll and developed separately in a desk-top processor. Within 5 min a finished print is available. This system is currently used in several states, with certain customized features such as location of the portrait and raised plastic data for embossing purposes.

The second Dek/Electro system, used only in Pennsylvania at this time, uses Kodak Instant film placed in an unsealed pouch. At this time, Dek/Electro is the only company manufacturing cameras designed to incorporate Kodak Instant film; none of the other manufacturers or marketers who were contacted indicated that they intended to produce similar equipment in the near future.

If the use of Kodak Instant film is suspected on an all-photo card, the examination procedure would first require removal of the card from any pouch or other material that prevents examination of the back of the print. Once the back of the print has been revealed, a characteristic black coloration should be found. This black backing is also present on the Polaroid SX-70 instant film.

In summation, research has shown that the possible mixture of different systems' components reduces the potential for identification of one company's products. The number of companies producing or marketing all-photo card machinery appears to be growing and it is possible that two new systems will be out within the next year.

Appendix

The following are primary manufacturers and retailers of identification card machinery:

Polaroid Corp., 575 Technology Square, Cambridge, MA 02139

General Binding Corp., One GBC Plaza, Northbrook, IL 60062

Optical and Electronic Research, Inc., 11501 Sunset Hills Rd., Reston, VA 22090

Avant Corp., Box 88, Concord, MA 01773

Dek/Electro, 173 Freedom Ave., Anaheim, CA 92801

Identification Systems, Inc., 4-16 High Street, Acton, MA 01720

Laminex, Inc., P.O. Box 577, Matthews, NC 28105

References

- [1] Kraemer, J. I., "The Polaroid Identification System and Its Misuse," *Journal of Forensic Sciences*, Vol. 26, No. 1, Jan. 1981, pp. 99-108.

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