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CPRC

CANADIAN POLICE RESEARCH CENTRE



CCRP

CENTRE CANADIEN DE RECHERCHES POLICIERES

TM-I7-93

Police Shield Video Camera System

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Canadian Police Research Centre

TECHNICAL MEMORANDUM

Submitted by
Canadian Police Research Centre

December, 1993

NOTE: Further information
about this report can be
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SUMMARY

Identification personnel of law enforcement agencies are occasionally called on to make video recordings of demonstrations, civil disturbances etc. If such recordings can be made at a distance, the camera operator does not face the danger of being hit by a thrown object. When such recording must be made close up, however, the camera operator requires protection.

This project saw the design and develop a protective shield with a harness that will support both the shield and a video camera. This entire system rests comfortably on the shoulders of the camera operator. It provides a protective zone from the head to the waist of the user.

initial evaluations from six police units that were provided with the prototype products were favorable. The product is now available commercially.

RÉSUMÉ

Les services d'identité judiciaire des forces de l'ordre doivent, à l'occasion, enregistrer sur video des manifestations, des troubles publics, etc. Lorsque ces enregistrements peuvent être effectués depuis une bonne distance, l'opérateur de prise de vues ne court pas le risque de recevoir un projectile lancé de la foule. Mais il est parfois nécessaire de filmer les incidents de plus près et, dans ces circonstances, l'opérateur est plus exposé et on doit lui assurer une protection adéquate.

Ce projet portait sur la conception et la mise au point d'un bouclier de protection muni d'un harnais pouvant supporter à la fois le bouclier et la camera video. Tout le dispositif devait reposer confortablement sur les épaules de l'opérateur et assurer une protection adéquate de la taille à la tête.

Les premières évaluations du bouclier par six unités des forces de police qui ont fait l'essai du prototype ont été favorables. Ce produit a été commercialisé depuis.

POLICE SHIELD VIDEO CAMERA SYSTEM

Operational Requirement:

Identification personnel of law enforcement agencies are occasionally called on to make video recordings of demonstrations, civil disturbances etc. If such recordings can be made at a distance, the camera operator does not face the danger of being hit by a thrown object. When such recording must be made close up, however, the camera operator requires protection. As the camera operator's attention is generally focused on the filming of events, he/she cannot watch for objects flying in his/her direction.

Project Objective:

The objective of this project is to design and develop a protective shield with a harness that will support both the shield and a video camera. This entire system must rest comfortably on the shoulders of the camera operator. The shield will provide a protective zone from the head to the waist of the user.

Detail:

This project arose as a result of a proposal to the CPRC from Sgt. Ray Fawcett of the RCMP Forensic Identification Services, Vancouver, B.C. He had developed an early prototype where the camera was affixed with brackets to a hand held police shield. The entire weight of the shield and camera was supported by the arms of the operator. The arms would also absorb the full energy from any object that strikes the shield. Although this early version did not have all the desired features, it did prove the value of such a system.

This initial prototype was redesigned by Mr. George Walker, National Research Council of Canada, Ottawa, Ontario. The camera mount was improved by adding two padded supports that would permit the full weight of the system to rest evenly on the shoulders of the user. Another padded support was added to the lower portion of the shield. This adjustable support serves a dual function: (1) it positions the shield so that it remains perpendicular to the ground and (2) it rests against the pelvis of the user in order to provide another point of contact for the body to absorb the force of any object that strikes the shield (the shoulders are the other two points of contact). This harness design would now permit the system to rest comfortably and securely on the shoulders of the user. Consequently, with this "hands-free" design, the user can use his/her hands for adjusting the camera or for other purposes. A flat shield with a tilted upper portion was chosen over the previous used curved shield. The camera is also in a fixed orientation with respect to the mounted shield. Consequently, the camera operator does not have to constantly monitor the video recording. This minimizes the

hazard of having the camera eyepiece pushed into the operator's eye if the shield is struck by a heavy force.

A quick release mechanism was also incorporated that allows the user to remove the camera, discard the shield and move to a safe area. It was presumed that in such an emergency situation the security of the camera and the operator would be of paramount importance.

The initial NRC prototype was examined by several identification specialists in Ottawa. Based on their suggestions, several small design changes were approved. This technology was then transferred to ETM Industries of Renfrew, Ontario. Their production engineers subsequently incorporated several changes that made the system more amenable to commercial production. They chose 0.190" lexan sheeting for the shield material. High strength, low weight alloys were chosen for the shoulder and pelvis supports. The supports are made so that the camera can be mounted on either the left or right side of the system. The project review team decided to **not** place a hole in the shield in front of the camera lens as early trials showed that the camera can focus through any minor scratches in the shield. This design feature would thus offer protection to the camera lens.

Six pre-production systems were built for evaluation by Canadian police agencies. One of each of these six pre-production units was provided to the following agencies for them to conduct an operational evaluation.

- Forensic Identification Services, Metro Toronto P.D., Toronto, ON
- Montreal Urban Community Police, Montreal, PQ
- RCMP, Vancouver Sub-Division Identification Services, Vancouver, B.C.
- RCMP, "A" Division Identification Section, Ottawa, ON
- RCMP, "J" Division Identification Services, Fredericton, N.B.
- Ontario Provincial Police, Field Co-Ordination Branch, Orillia, ON

Conclusion/Recommendations:

To date the feedback from these evaluation sites has been consistently positive. They have found that the system is very comfortable to wear in spite of the increased weight (over a plain camera). The system can be used with several cameras other than the Panasonic AG-190 (the camera that was used as a model while the system was being designed). The system can be used by persons of widely different statures because the position of the shoulder and waist supports can be easily adjusted vertically and laterally.

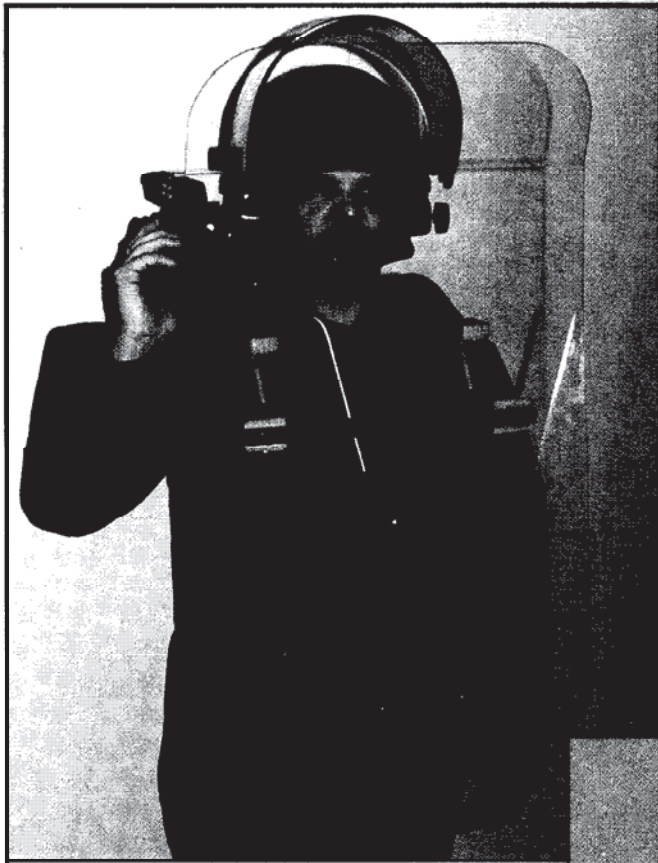
One of the evaluating departments expressed reservations on whether such video records of an incident should be taken so close to the "action". If telephoto lenses and raised platforms are used, the recording can be done from a distance and the operator

is not exposed to danger from flying objects. This would also allow recordings that give a far broader perspective. However, in order to obtain the required clarity and resolution of images, expensive professional grade video cameras (e.g. Panasonic 5000) and telephoto lenses would have to be employed. Another evaluator expressed a contrary view. It was his opinion that such recordings must be taken up close (in spite of the possible danger to the operator) in order to obtain accurate recordings of the distances between rioters and police and also details such as facial expressions (that would provide an indication of the stresses/emotions the individuals are going through). Audio recording would also be possible if the video recording is made close to the "action". The same department suggested, as an alternative, using miniature cameras that could be mounted in the helmets of the riot troop members. Such an option, although technically possible, would be very costly.

A copy of the product brochure issued by ETM Industries is attached to this report. For further information regarding technical specifications or commercial availability, please contact:

ETM Industries Inc.
P.O. Box 610, 266 Hall Ave. E.
Renfrew, Ontario K7V 2E4
phone: 613-432-6136
fax: 613-432-9547

PERSONAL PROTECTIVE VIDEO SHIELD



- Hands Free Video Taping
- Light Weight Protection
- Quick Disconnect Camera Mount
- Total Assembly/Disassembly in 1 minute
- Designed for Law Enforcement and Security Organizations
- Video mount accepts most standard size video cameras (camera not included)



PROTECTIVE VIDEO SHIELD

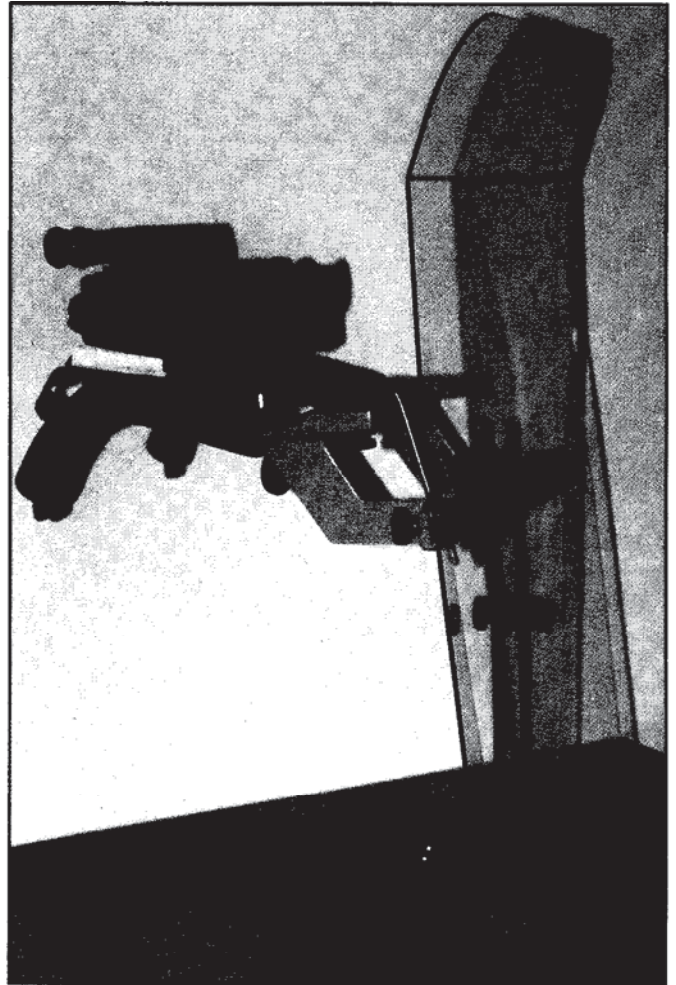
A light weight shield with built in Quick-Release Video Camera mount for Law Enforcement, Security and Media Organizations.

The primary function of this gear is to allow video taping of a situation at close range while offering the camera operator protection by the Lexan Shield, while still maintaining hands free operation of the video camera. The light alloy shoulder harness is adjustable and padded for user comfort.

The camera is released from the "Camera Mount" by a spring loaded lever.

The entire "Camera Mount" can be removed from the shield by removal of one fastener. This allows the shield to be used on its own for frontal protection.

The entire unit can be "Knocked Down" for storage in 1 minute.



SPECIFICATIONS

Shield Size - 36" high x 20" wide
(914 mm high x 508 wide)

Shield Material - General Electric "Lexan" - clear

Unit Weight - 12 lbs. (5.45 kg.) (without camera)

Shoulder Harness - Light Alloy, padded, fully adjustable width.

DISTRIBUTED BY



Manufactured by:

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P.O. Box 610,266 Hall Ave. E.,
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