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# TM-03-95

## BONOWI® PROTECTIVE EQUIPMENT

By: Sgt. Ken Beiko

TECHNICAL MEMORANDUM

Submitted by  
The Canadian Police Research Centre

February, 1995

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## Executive Summary

The Canadian Police Research Centre purchased some sets of Bonowi® protective equipment consisting of upper body and arm protection, and gloves. One set was tested to destruction by an engineering firm; their report was published in 1994 as TR-09-94 which is available upon request by faxing (613) 952-0156. The remaining sets of equipment were field tested by police agencies and Correctional Services Canada. This report deals specifically with those field test results.

The consensus was that the upper body equipment provided good protection while the gloves provided excellent protection.

This equipment (Body Armour Protek, Gloves SEK III, Transport bag) was purchased through Primex Defence Products Limited, Suite 1002 - 275 Slater Street, Ottawa, Ontario, K1 P 5H9; telephone (613) 238-3970, fax (613) 238-4857.

## Resume

Le Centre canadien de recherches policières a fait l'acquisition d'ensembles de protection Bonowi® formés d'une veste pour la protection du haut du corps et des bras et de gants. Une firme d'ingenierie a procédé 8 des essais destructifs sur un des ensembles. Les resultats ont été publiés en 1994 dans le bulletin TR-09-94 et sont disponibles en faisant parvenir une demande par télécopieur au (613) 952-0156. Les services de police et le Service correction du Canada ont fait des essais pratiques avec les autres ensembles. Ce rapport porte sur les résultats de ces essais.

Les essais montrent que la veste offre une bonne protection et les gants, une excellente protection.

L'équipement (veste Protek, gants SEK III, sac de transport) a été acheté chez Primex Defence Products Limited, piece 1002, 275, rue Slater, Ottawa (Ontario) K1 P 5H9, tel. : (613) 238-3970, téléc. : (613) 238-4857.

## EQUIPMENT

Four sets of equipment were purchased from a German manufacturer through a Canadian company in Ottawa. One set each was provided to the following agencies to field test:

- ◆ Correctional Services Canada, Ottawa
- ◆ Royal Canadian Mounted Police, Edmonton
- ◆ Vancouver Police Department

The equipment consists of two pieces plus the transport bag:

- ◆ a body vest with attached upper and lower arm protection which appears to be constructed of a protective shell of black 1/8" polypropylene. Areas adjacent to the chest bone, spine and shoulders are lined with 1/2" cross linked dense closed cell foam for absorbing impact. The description term used on the order was BODY ARMOUR PROTEK NO. 2106 SIZE XL. Price was \$404.56 per set.
- ◆ leather gloves with protective aluminum plate inserts over the posterior aspects of the digits and hand. A cloth covered closed cell foam forms the liner. The description term used on the order was GLOVES SEK III NO. 2101 SIZE XL. Price was \$390.85 per pair.
- ◆ TRANSPORT BAG FOR PROTEK ARMOUR NO. 2106/2. Price was \$124.04 each.

## TESTING PROCEDURES FOR UPPER BODY ARMOUR

Essentially the testing procedures were very practical; equipment was subjected to a variety of blows and strikes that could be expected during actual situations such as prison riots and crowd control. Mock situations including close confrontations like wrestling, striking with sticks, blows from fists, and tearing and slashing (not with a knife) were used.

## RESULTS OF TESTING BODY ARMOUR

- ◆ in close confrontational situation whereby the upper body protective equipment can be grabbed, the material holding the pieces together (shoulder to arm) tore easily
- ◆ the body core part of the vest remains in place even in wrestling situations
- ◆ the upper arm panel moves out of place causing pinching
- ◆ the snap holding the arm pieces and shoulder pieces together released when the shell material was struck forcefully
- ◆ a portion of the outer shell cracked when struck forcefully by a baton
- ◆ energy absorption was good
- ◆ shock absorption was good
- ◆ distribution of impact force was good
- ◆ resistance to penetration (sharp and blunt instruments) is fair
- ◆ resistance to shattering is good
- ◆ effectiveness of equipment for intended purpose is good
- ◆ overall rated performance is good

## OTHER COMMENTS

- ◆ appearance is good
- ◆ colour is very good
- ◆ weight is very good
- ◆ manoeuvrability to put on, and take off is good
- ◆ comparability with other equipment is good
- ◆ comfort is good
- ◆ durability is good
- ◆ securing (strap/fastener/adjustment) is fair
- ◆ range of movement is fair; somewhat restrictive in side to side flexibility
- ◆ lightweight
- ◆ padding provided high degree of comfort
- ◆ when worn alone, air circulated through the vents well
- ◆ when worn with a ballistic vest underneath, was warm

- ◆ did not provide any abnormal discomfort from heat retention
- ◆ lower back is exposed
- ◆ no neck or collar bone protection provided
- ◆ design structure is fair
- ◆ protection rating is good

## RESULTS OF TESTING GLOVES

- ◆ excellent for handling riot shield
- extremely pliable
- ◆ extremely comfortable
- ◆ excellent holding capability for grasping baton for long periods of time
- ◆ one of the internal protective panels cut the leather when struck forcefully
- ◆ provides excellent protection

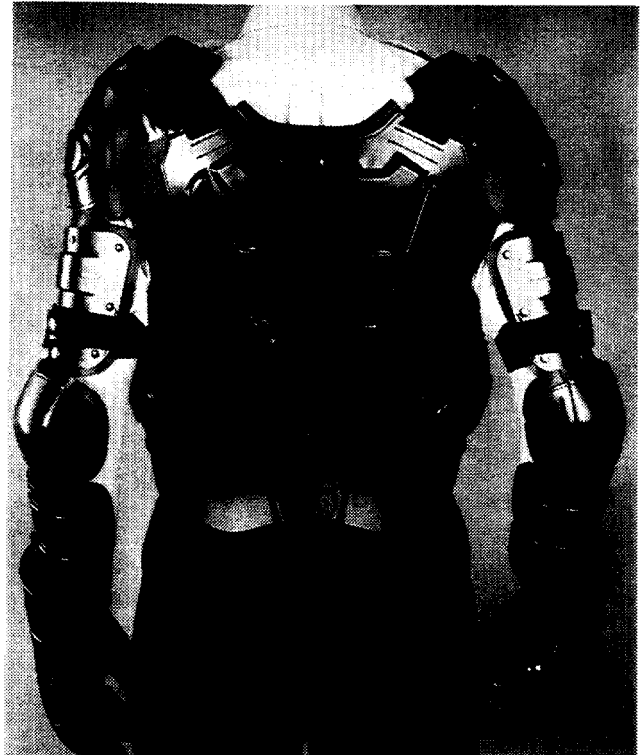
## CONCLUSIONS

The body armour provides fair to good protection. With some minor modifications such as securing the various pieces together with foam backed nylon and Velcro fasteners, the armour would be improved considerably.

The gloves provide excellent protection and gripping power. They are comfortable and can be worn for long periods of time.



front view



back view