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TITLE: Body Heat Storage and Work in the Heat

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## **INTRODUCTION:**

The development of heat injury during military ground operations in hot environments is a serious risk, particularly when operations in chemical defense ensembles are required. The objective of the research is to develop a model of body heat storage from readily available field and clinical measures that can be used to predict response to work in the heat, with or without the inclusion of impermeable or semi-impermeable garments. Unique aspects of these models will be the use of a three-compartment approach, in which muscle-mass temperature will be measured in addition to skin and non-muscle core temperature values, and measurement of heat storage by direct and indirect calorimetry.

## **BODY:**

### Accomplishments

Supporting documentation from all the institutions involved in the project was collected and provided to the project sponsors.

Funding was received 12 May 2002.

Parts for the liquid-cooled garment calorimetry system were located, plans for system repair were developed, and rebuilding of the system was begun.

Parts for the air calorimeter were located at the University of Ottawa, and a space was identified to house the calorimeter.

A kickoff meeting was held at the University of Ottawa in July 2002. Plans for the construction of the air calorimeter were reviewed and refined.

It was determined in July 2002 that a suitable mechanism for continuing the funds for this project at NHRC beyond FY2002 could not be found. It was decided to restructure the project with University of Ottawa becoming the primary Performing Organization. Approval was obtained from USAMRAA to pursue this approach. NHRC returned \$890,516.30 of the original award of \$1,117,448.00 to USAMRAA, holding \$226,931.70 to cover first year costs, and anticipated supplies, equipment and travel for NHRC for the remainder of the project.

## **KEY RESEARCH ACCOMPLISHMENTS:**

- None. Assembly of the systems required for conduct of this research is not yet complete. The calorimetry systems to be used in this research are complex, and require the assembly and testing of a large number of control subsystems, each of which must function properly for precise system control and measurement acquisition.

## **REPORTABLE OUTCOMES:**

- None. Efforts on this project focused on matters related to grant administration and initial stages of equipment setup. With completion of the assembly of the calorimeter systems, descriptive reports will be produced.

## **CONCLUSIONS:**

The initial period was spent preparing supporting information for the award, gathering the parts and supplies for the construction of the two calorimetry systems, convening of a kickoff meeting for the project, and restructuring of the proposal to allow University of Ottawa to assume responsibility as the primary Performing Organization.

**REFERENCES:**

None

**APPENDICES:**

None