

Interoperability and Integration of Dismounted Soldier System Weapon Systems



Major Bruce Gilchrist
on behalf of
Mr. Mark Richter
Chairman
SCI-178 RTG-043
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Overview

- NATO Research and Technology Organization: formed in 1998; ensures the Alliance has at its disposal the best scientific knowledge and technical capability that member nations are prepared to make commonly available. R&T must be responsive to changing requirements and conditions, long term capability requirements, and new science and technology advancements. See www.rta.nato.int for more info.
- Land Capability Group-1 Weapons and Sensor Sub Group desired to initiate a R&D effort to answer critical weapons subsystem problems for current interoperability issues and long term soldier system interfaces and development issues.
- 10 Countries from LCG-1 teamed together: Canada, Germany, Italy, The Netherlands, Norway, Romania, Slovakia, Spain, Sweden, and United States (Army and Marine Corps). Submitted a proposal to the NATO RTO Panel which was approved.
- Exploratory Team developed Terms of Reference, Technical Activity Plan, and Plan of Work during 2005. A Task Group was initiated in January 2006 with a completion timeline slated for December 2008.
- The Task Group requested an additional year based on completion of STANAG 4694 NATO Accessory Rail and desire to pursue powered rail technologies and complete a comprehensive human factors plan of work.

Objectives

- Recommendation for NATO standard Weapons System Interface STANAG. Complete-STANAG 4694 NATO Accessory Rail
- Define and Outline Human Systems Integration principles and concepts for future Soldier Weapons Systems. In progress
- Investigate the Power Requirements for future weapon systems and methods of providing or generating power. In Progress.

Organization

- The Task Group is led by the chairman, two sub group chairman, and the Heads of Delegation of the 10 countries.
- Two sub groups
 - Human Factors Team: Lead by Major Linda Bossi from Canada.
 - Power Team: Lead by Torbjörn Eld from Sweden.
- Both teams have to work together because of overlap in various areas.
- Completion of tasks: NLT December 2009

Tasks Currently Underway to Achieve Goals

1. Weight/Balance Studies
2. HF Requirements Specification
3. Tactical User Requirements (Survey & Priorities)
4. Weapon Info Display Characterization
5. Sighting System Characteristics
6. Standardization of Control Devices
7. Modularity vs Integration Analysis
8. Weapon/ Future Helmet Integration and Compatibility (butt/novel sight design)
9. NATO Workshop
10. Compendium of HF References
11. Final HF Sub-Group Report

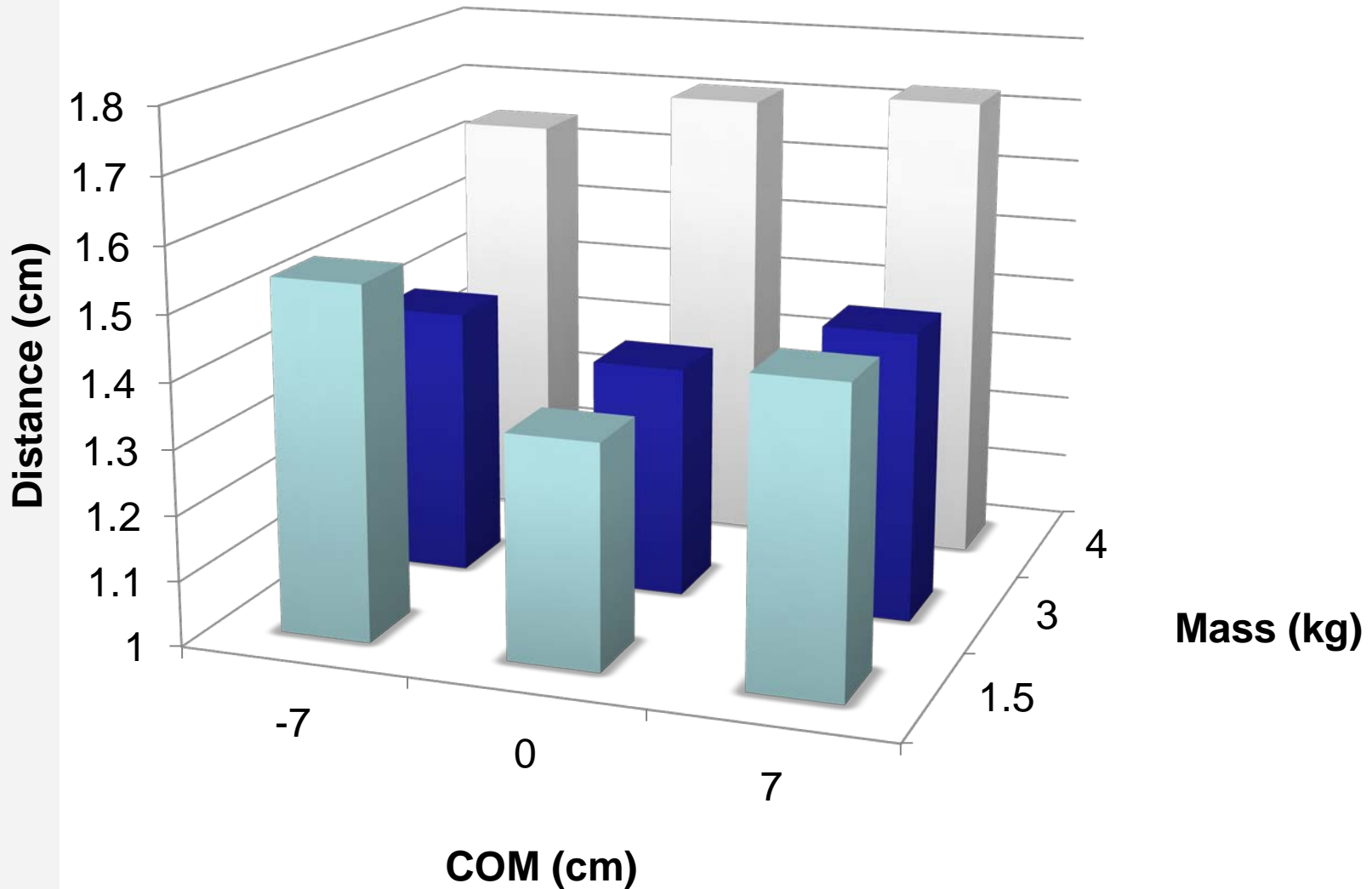


Purpose

- Investigate the effects of rifle weight and center of mass on rifle handling performance using a weapon mounted accelerometer.



Rifle Tracking During Fine Aiming



Butt-stock Integration



Test rig redesigned to accommodate lateral positioning 2cm closer to the face for offset sights

Control Placement Study

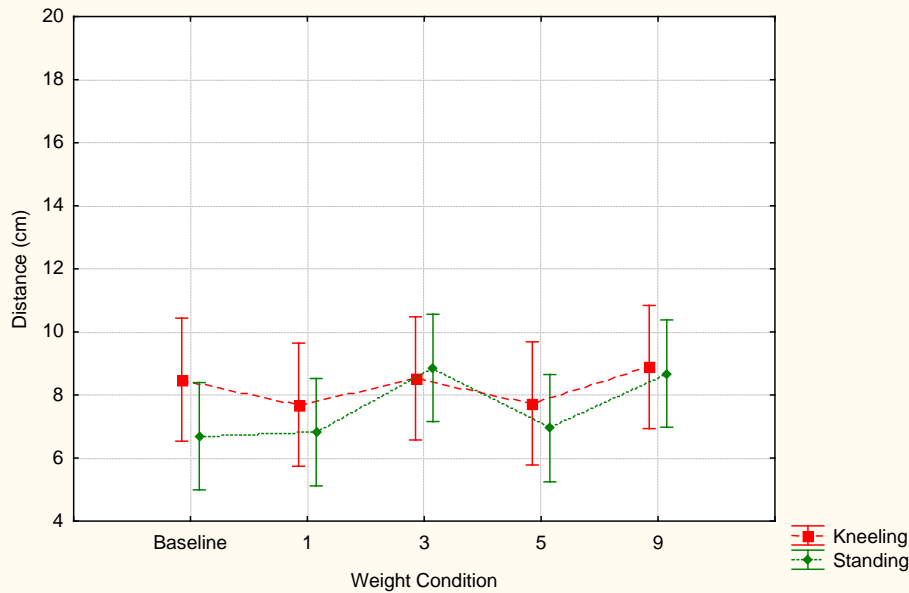
- Three firing posture conditions



Foregrip Location

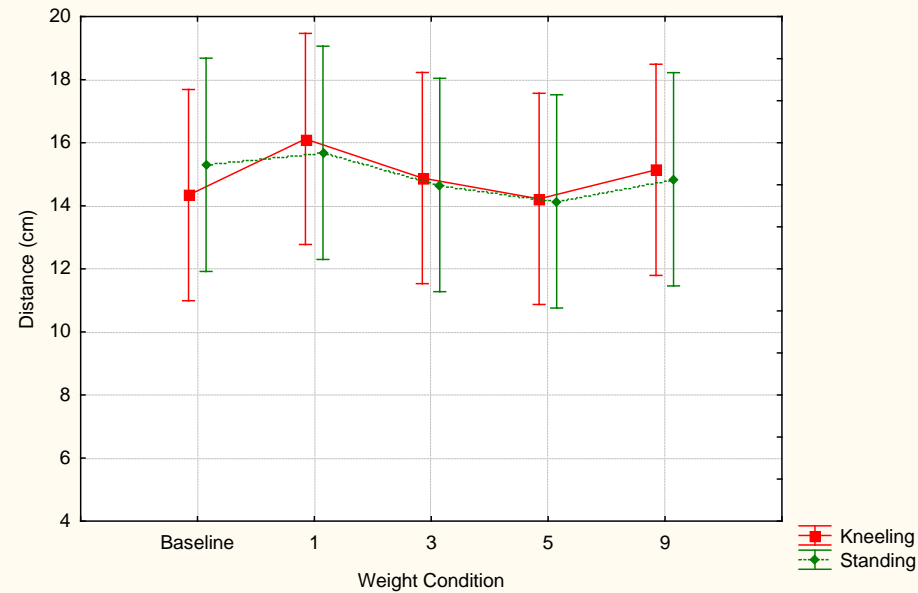


Distance to Post Midline
Forepost Condition
Vertical bars denote 0.95 confidence intervals



Canadian Data

Distance to Post Midline
Forepost Condition
Vertical bars denote 0.95 confidence intervals



Swedish Data

Fore Grip Thumb Sweep Study

- Study to determine the left and right sweep of the supporting hand's thumb movement for control placement and accessibility.



Powered Rail Tasks for 2009

- 1 - Finalizing the Power document
- 2 - Set up a Power rail matrix
- 3 - Set up a Power Transfer Matrix
- 4 - Work out a suggested test procedure for powered rails
- 5 - Final Report

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Points of Contact

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