

# 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](http://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

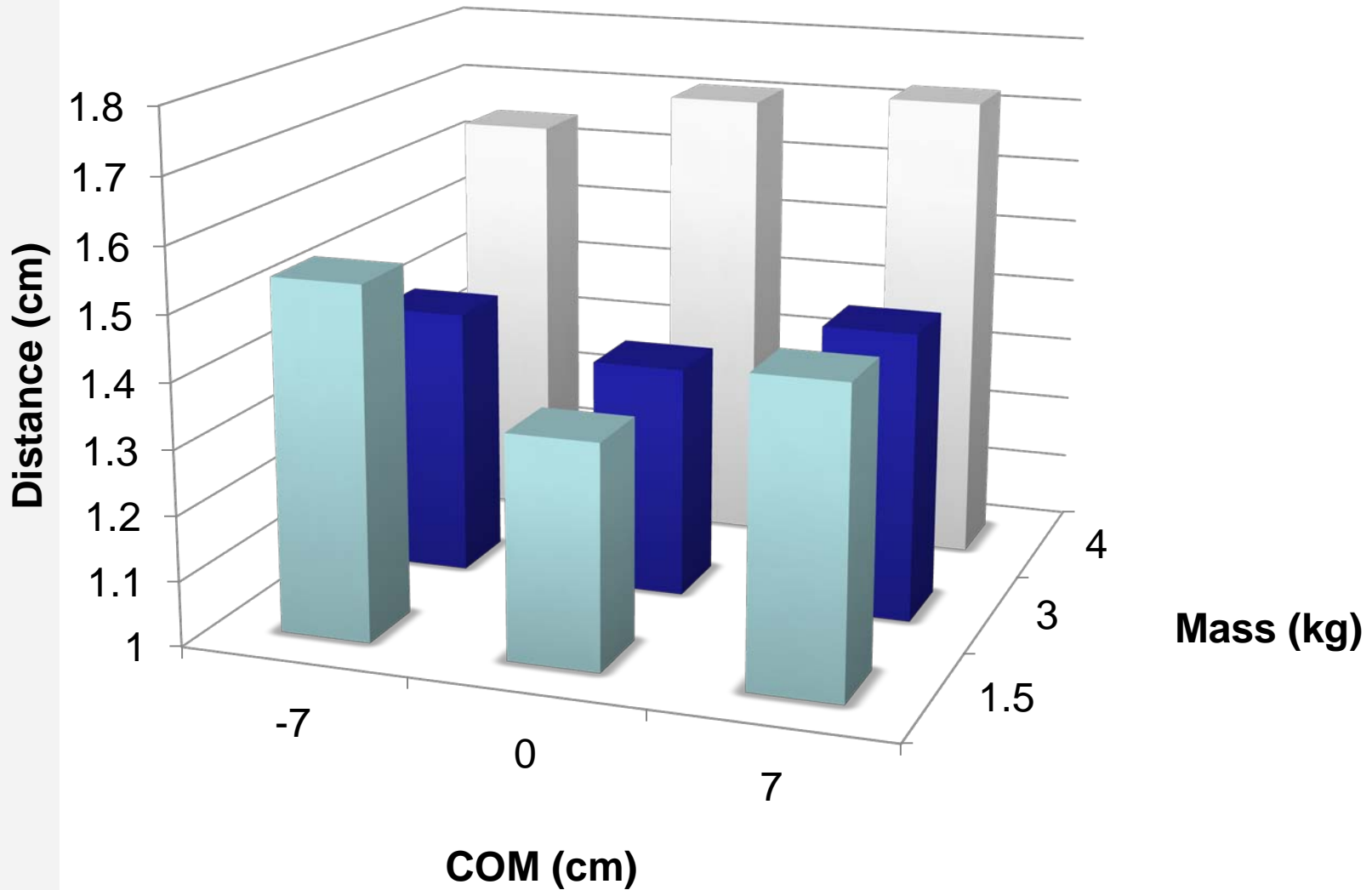


# Purpose

- 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

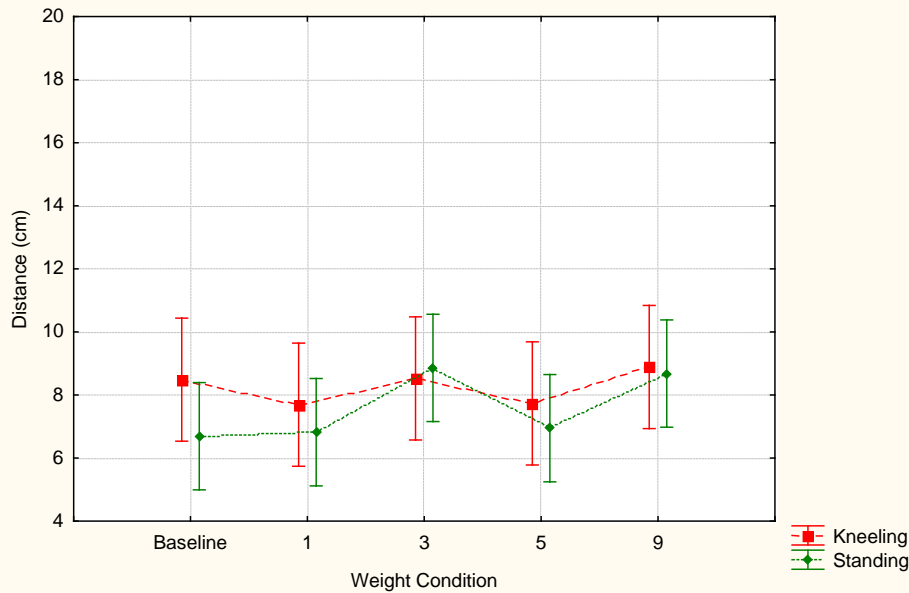
- Three firing posture conditions



# Foregrip Location

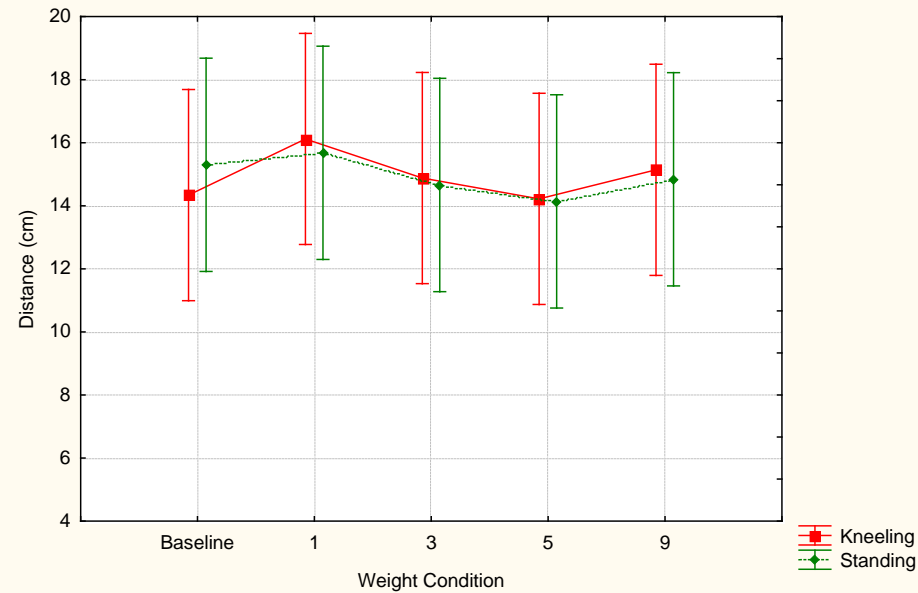


Distance to Post Midline  
Forepost Condition  
Vertical bars denote 0.95 confidence intervals



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

# SCI-178 RTG-043

## Points of Contact

- Chairman – Mr. Mark Richter
  - [Mark.richter@usmc.mil](mailto:Mark.richter@usmc.mil)
- Human Factors Chairman – Major Linda Bossi
  - [Linda.bossi@drdc-rddc.gc.ca](mailto:Linda.bossi@drdc-rddc.gc.ca)
- Power Chairman – Torbjörn Eld
  - [Torbjorn.eld@fmv.se](mailto:Torbjorn.eld@fmv.se)
- Canada- Major Bruce Gilchrist
- Germany- Karl-Heinz Rippert
- Italy- LtCol Eugeno Gallo
- The Netherlands – LtCol Franz van Weenen
- Norway- Mr. Haakon Fyske
- Slovakia- Mr. Lubomir Uherik
- Spain – Mr. Angel Perez
- Sweden- Mr. Per Arvidsson
- Romania – Major Tiberius Tomoiaga
- United States Army – Mr. Dave Ahmad
- United States Marine Corps – Mr. Mark Richter