

Canadian Aerial Targeting Program



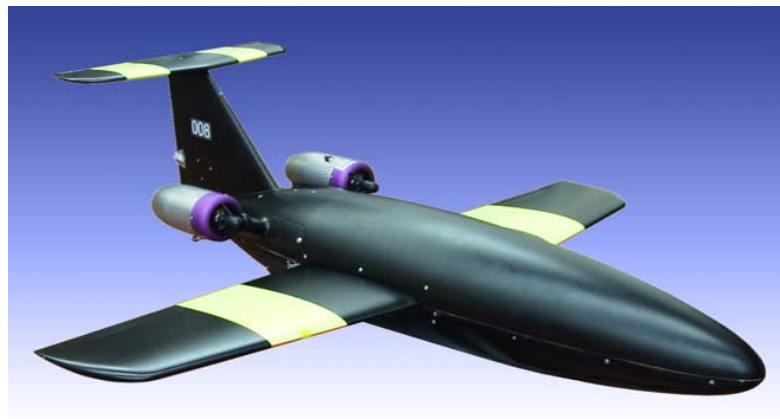
Canadian Army UAV Experience





Agenda

- Canadian Aerial Targets (Past, present, future)
- Canadian UAV projects



Historical Targets

Drones / RPVs:

- ✦ Ptarmigan 1 & 2
- ✦ Banshee
- ✦ Vindicator 1
- ✦ Vampire

Towed Targets:

- ✦ TGT-15 Banner
- ✦ TGX Light / IR
- ✦ MILKCAN

Balloons

Pop up Helicopter

TATS (RC planes)

BTT-3 Banshee

Performance:

Speed:

- Max @ 1,000 m 205 kt / 380 kph / 105 m/s
- Min: 52 kt / 97 kph / 27 m/s

Altitude:

- Max: 3,000 m / 9,840 ft
- Min: 5 m / 16.5 ft (Rdr altimeter)

Range:

- Visual control: 10 km
- Radar: 30 km
- GPS: 50 km

Endurance - 75 min (@ max speed)

Max payload (incl fuel) - 22.7 kg / 50 lbs

Launch System: Elastic Cord / rail

Recovery System: Parachute or Belly land.



Vampire

Performance:

✦ Speed:

- Max @ Sea level-530 kt / 982 kph / 272 m/s
- Min: 245 kt / 454 kph / 126 m/s

✦ Altitude:

- Max: 7,620 m / 25,000 ft
- Min: 3 m / 10 ft (Rdr altimeter)

✦ Range:

- 499 km

✦ Rdr Cross Section (RCS)- 0.01m²

✦ Endurance - 25-45 min (@ max speed)

✦ Max payload (incl fuel) - 74.8-116 kg / 165-255 lbs

✦ Launch System: Container with Rocket Boosters

✦ Recovery System: Parachute.



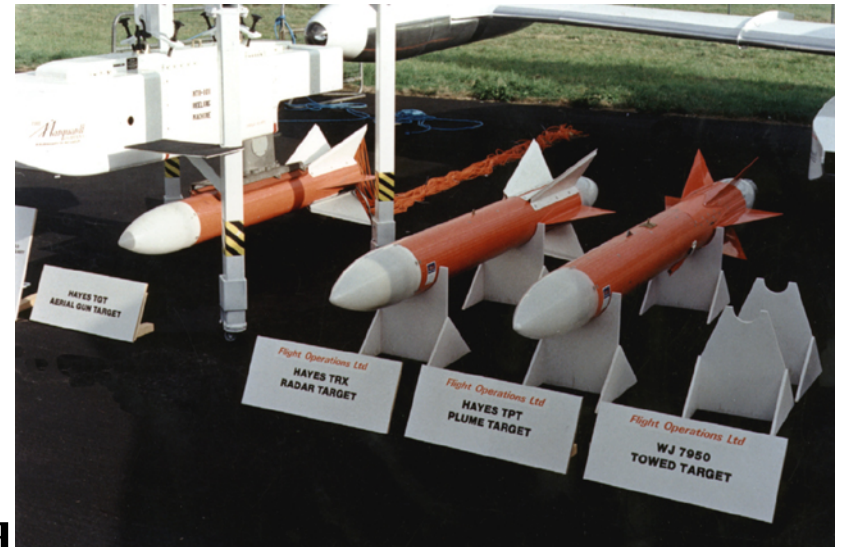
Hayes Universal Towed Target System

Various Types:

- ✦ TRX-Radar Augment
- ✦ TGX-Light Augment
- ✦ TPT-Plume / IR
- ✦ TGT- Rope Banner for Guns

Performance:

- ✦ Speed:
 - Dependent upon towing A/C and length
- ✦ Altitude:
 - Variable upon tow length
- ✦ Range:
 - Based upon towing A/C
- ✦ Turn Radius @ max speed – WIDE.



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Balloons



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Target control has changed



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Current Types of Targets

 **Drones / RPVs:**

 **Vindicator 2**

 **Non Lethal**

 **Cessna 172**

Vindicator-MDSC

Performance:

Speed:

- Max @ 1,000 m-174 kt / 322 kph / 89 m/s
- Min: 52 kt / 97 kph / 27 m/s

Altitude:

- Max: 3,000 m / 9,840 ft
- Min: 5 m / 16.5 ft (Rdr altimeter)

Range:

- Visual control: 10 km
- UTCS: 35 km (up to 140 km for naval targets)

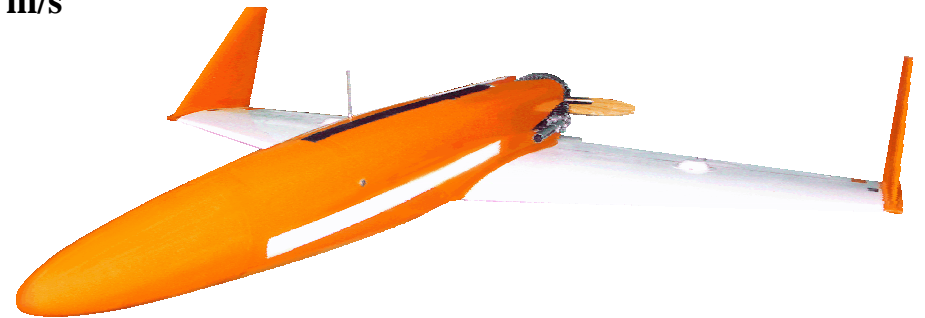
Turn Radius @ max speed - 340 m

Endurance - 90 min (@ max speed)

Max payload (incl fuel) - 25 kg / 55 lbs

Launch System: Pneumatic rail

Recovery System: Parachute or Belly land.



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Navy use of the Vindicator



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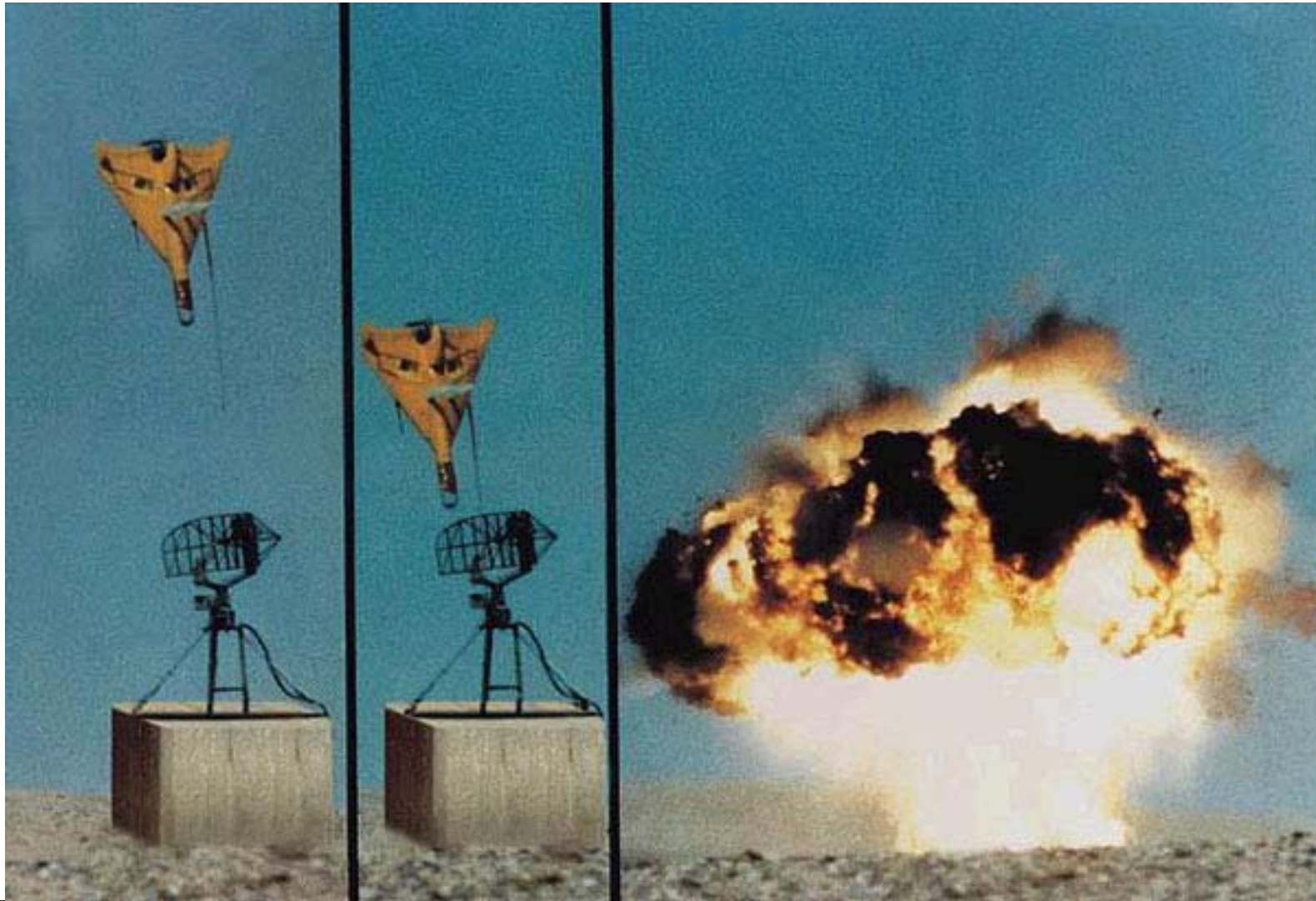




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High Diver to simulate HARPY



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UNCLASSIFIED



Vindicator
71.87 m
9.38 kts

Time: 001 01:13:17.630
Time Step: 4.000 Secs
Distance: 8798.374 m
Azim: 328.865°
Elev: 6.405°
Centered: Vindicator



UNCLASSIFIED



Canadian Aerial Targeting

- **1992-2004 4-5 live firings a year with Javelin, ADATS, 35mm GDF-005**
- **2001 last GDF-005 live fire**
- **2003 BTE in Fort Drum with Surrogate UAV**
- **January 2005 merging of the Navy/Army air targeting**
- **February 2005 first Cessna flights as a target**
- **March 2005 last Javelin live fire**
- **Aug/Sep 2005 Surrogate UAV courses conducted**
- **October 2005 BTE 05 with surrogate UAV**
- **May 2006 Army/Navy/Air Force all using one aerial target contract.**

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Diversity to air targets



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What the Navy Wants



GQM-163A EMD-5
4-22-05

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A cost effective replacement



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C-RAM



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C-RAM



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CF UAV Capability Development



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Vision

“The CF will acquire by 2010, a family of UAVs that will enhance the CF operational effectiveness and contribute to the situational awareness of Commanders at all levels.”



End State

“Fielded, fully operational capable family of UAVs to support domestic and international operations”



HALE

20000 m



MALE

14000 m



Tactical

1500 m



Small

600 m



Mini

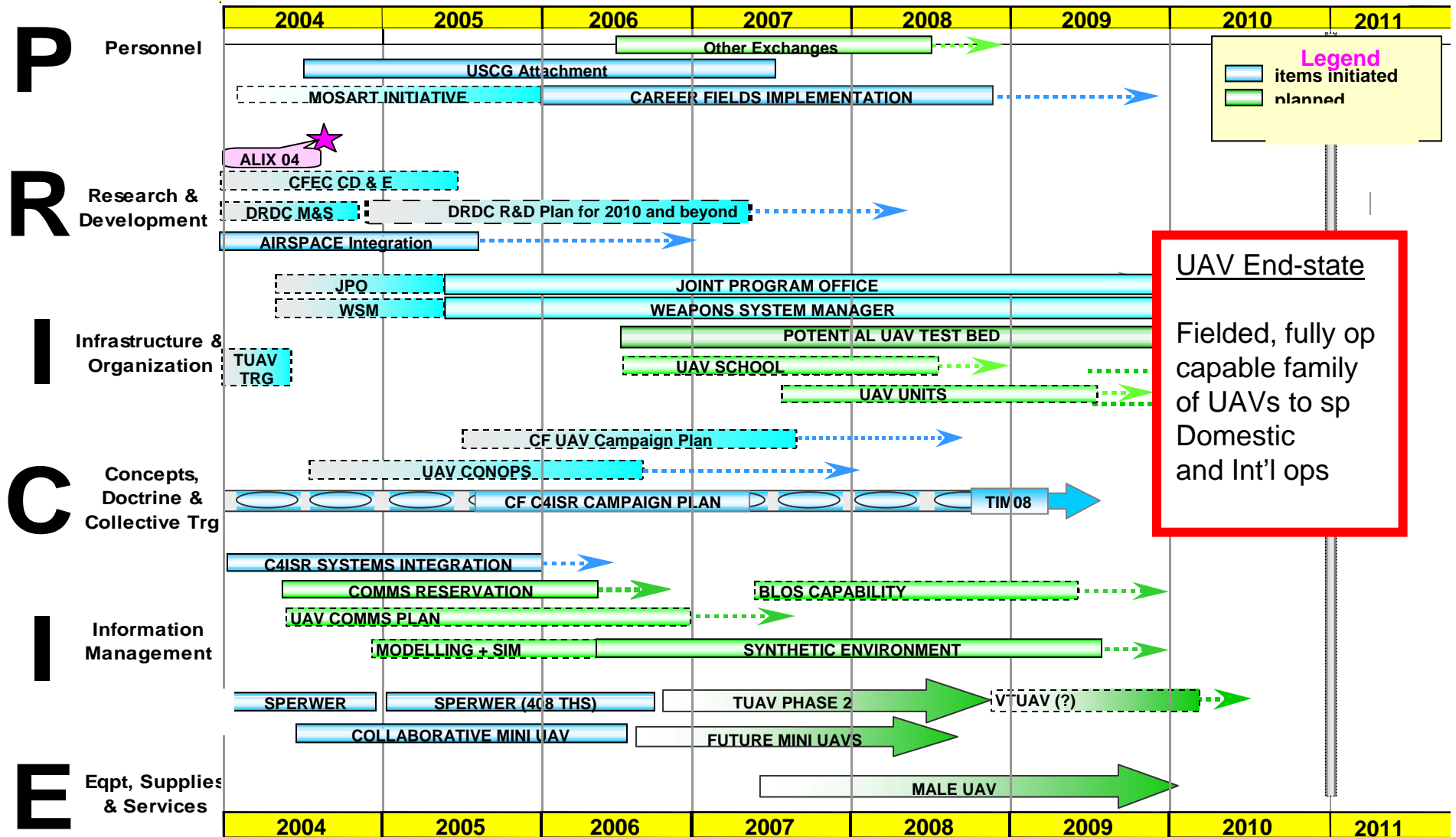
300 m

Coordination level



Micro

150 m



Legend
▬ items initiated
▬ planned

UAV End-state
 Fielded, fully op
 capable family
 of UAVs to sp
 Domestic
 and Int'l ops



JUSTAS Project

Joint UAV Surveillance and Target Acquisition System

- Aim – To establish a *Fully Integrated* Joint UAV Capability to support CF domestic and deployed operations.
- Systems must be interoperable to provide C4I connectivity in support of Maritime, Land, Air or Joint roles and/or missions.
- Due to the evolving nature of UAVs the concept is to use a “buy a little, test a lot” approach to identify the issues, better understand the military utility and develop concepts for employment.
- *Requires the right mix of:* CONOPS, Comms, Personnel, Sensors/Payloads, Common Ground Control stations, exploitation capability and reliable platforms.

Resources

- ✦ **Fiscal.** Funding for the JUSTAS Project has been identified as part of the Strategic Capabilities Investment Program (SCIP)

\$500M (Cdn)

	06-07	07-08	08-09	09-10	10-11	11-12
JUSTAS	5M	80M	100M	120M	120M	75M

- ✦ **Human.** 300 PY have been allocated to the capability as part of the 5000 PY increase to the Regular Force

General Sperwer System

- **Responsive to Comd's needs**
- **Field Deployable**
 - ✦ **Able to be deployed with the supported force**
- **Capable of covering full AOR**
- **Real Time feedback to Tactical Comd**

Context for Afghanistan

Teething Problems

- ✦ Little relevant experience
- ✦ Integration of Air Force ‘air’ experience & skills
- ✦ Training was by contractor and not to CF standards
- ✦ Capability took some time to become ‘operationally effective’

Current Deployment

- ✦ TUAV Tp in Afghanistan
- ✦ TUAV Tp in France undergoing training
- ✦ 10 x TUAV in refit

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Interim Small UAV



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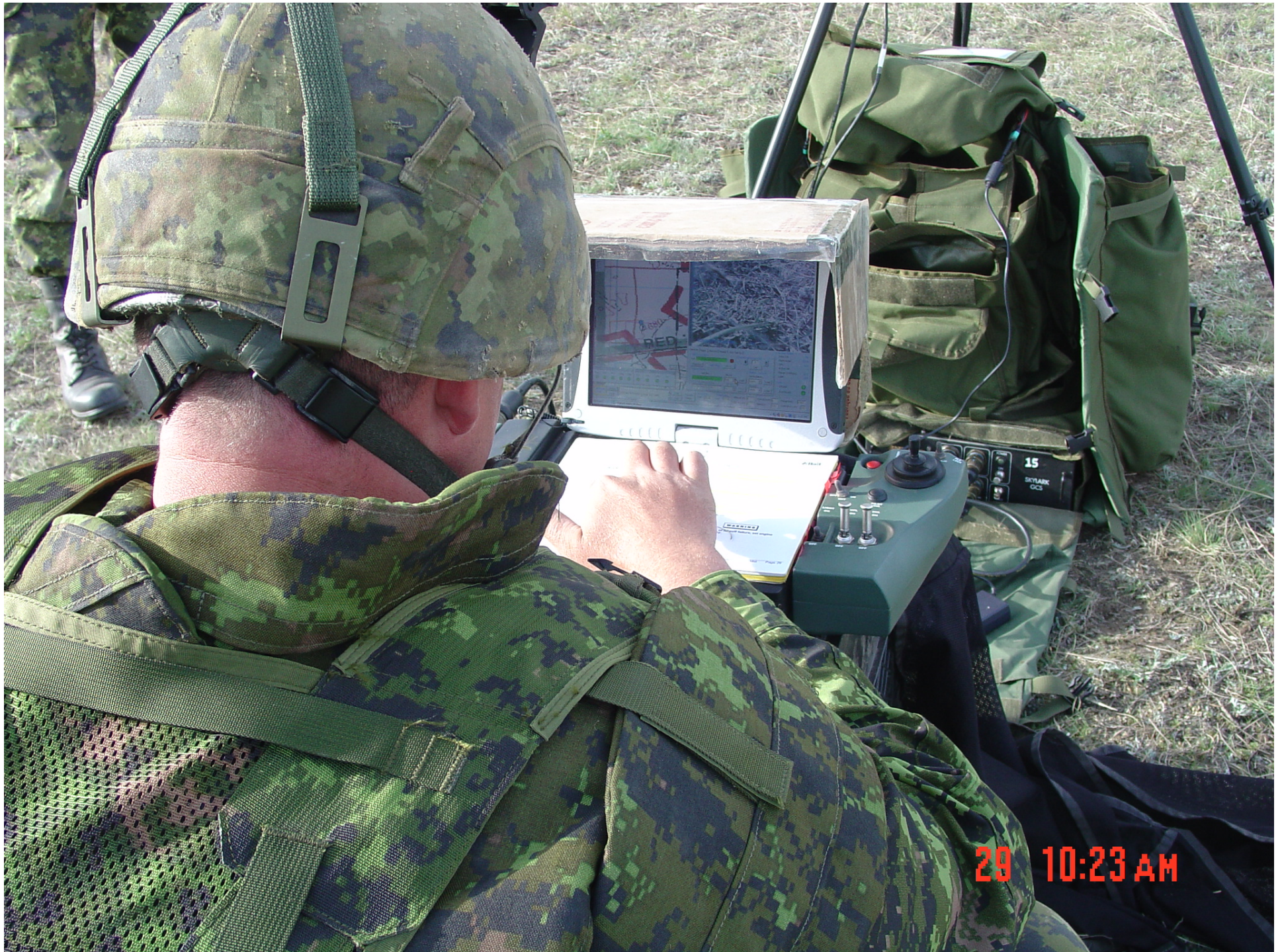


Mini UAV



Skylark





29 10:23 AM







Summary

- Canadian Aerial Targets will need a rocket simulator for C-RAM
- Canadian UAV projects \$500M avail for JUSTAS project.



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QUESTIONS???



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