

Appendix 7  
To Annex A  
To Contract W8486-217384  
Dated \_\_\_\_\_

# INFORMATION ON WES SITES AND SIMULATION EQUIPMENT

# Table of Contents

- [WES Static Sites and Infrastructure](#)
- [WES Soldier Worn Equipment](#)
- [WES Vehicle Equipment](#)
- [WES Trailers](#)
- [Some Usage Statistics](#)

# WES Static Sites and Infrastructure

[Back to  
Table of Contents](#)



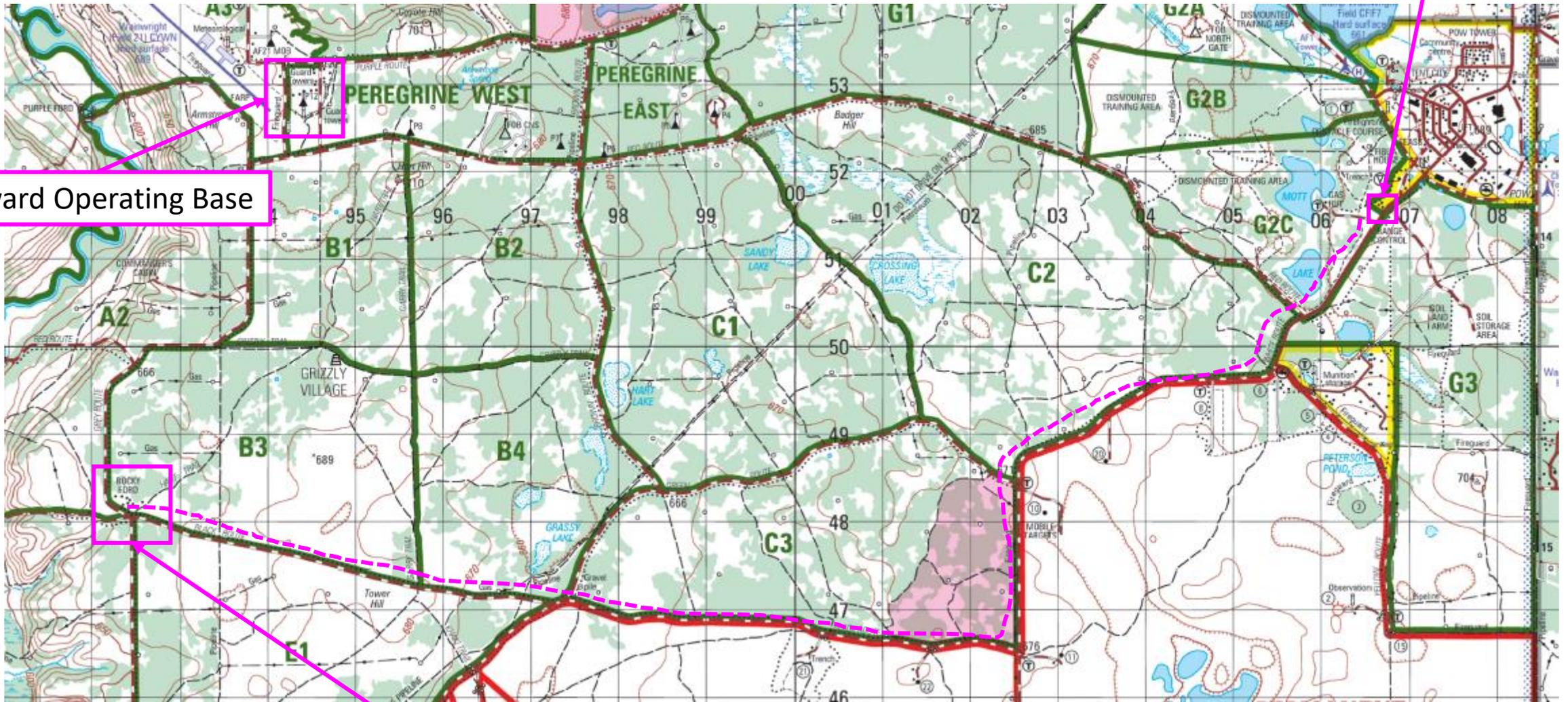
Wainwright, Alberta (Image Source Openstreets maps)

★ Indicates Garrison Area of the Base.



Wainwright – a portion of the ranges and training area map. Grid squares are 1 km  
Approximate driving distance from Range Control to the Rocky Ford urban site is 20km  
(shown by dashed pink line on the map)

Equipment issue for major training events such as EX MAPLE RESOLVE is often done at the Forward Operating Base

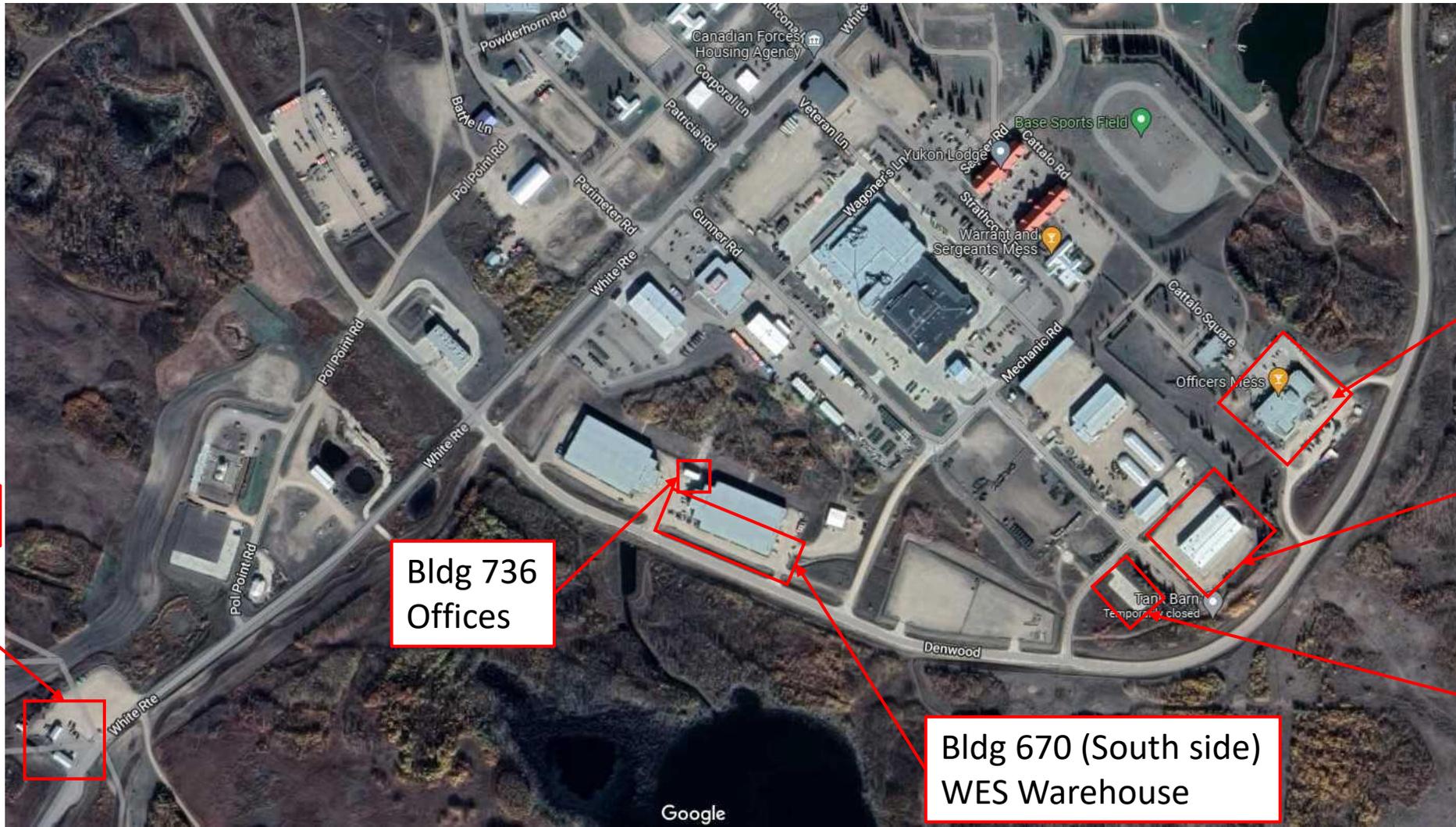


Range Control

Forward Operating Base

Rocky Ford Urban Site

Wainwright Garrison – (Image Source Google Earth)



Bldg 650  
CMTC HQ  
and  
WES EXCON

Bldg 576  
Tank Barn

Boresight  
Pad

Range Control

Bldg 736  
Offices

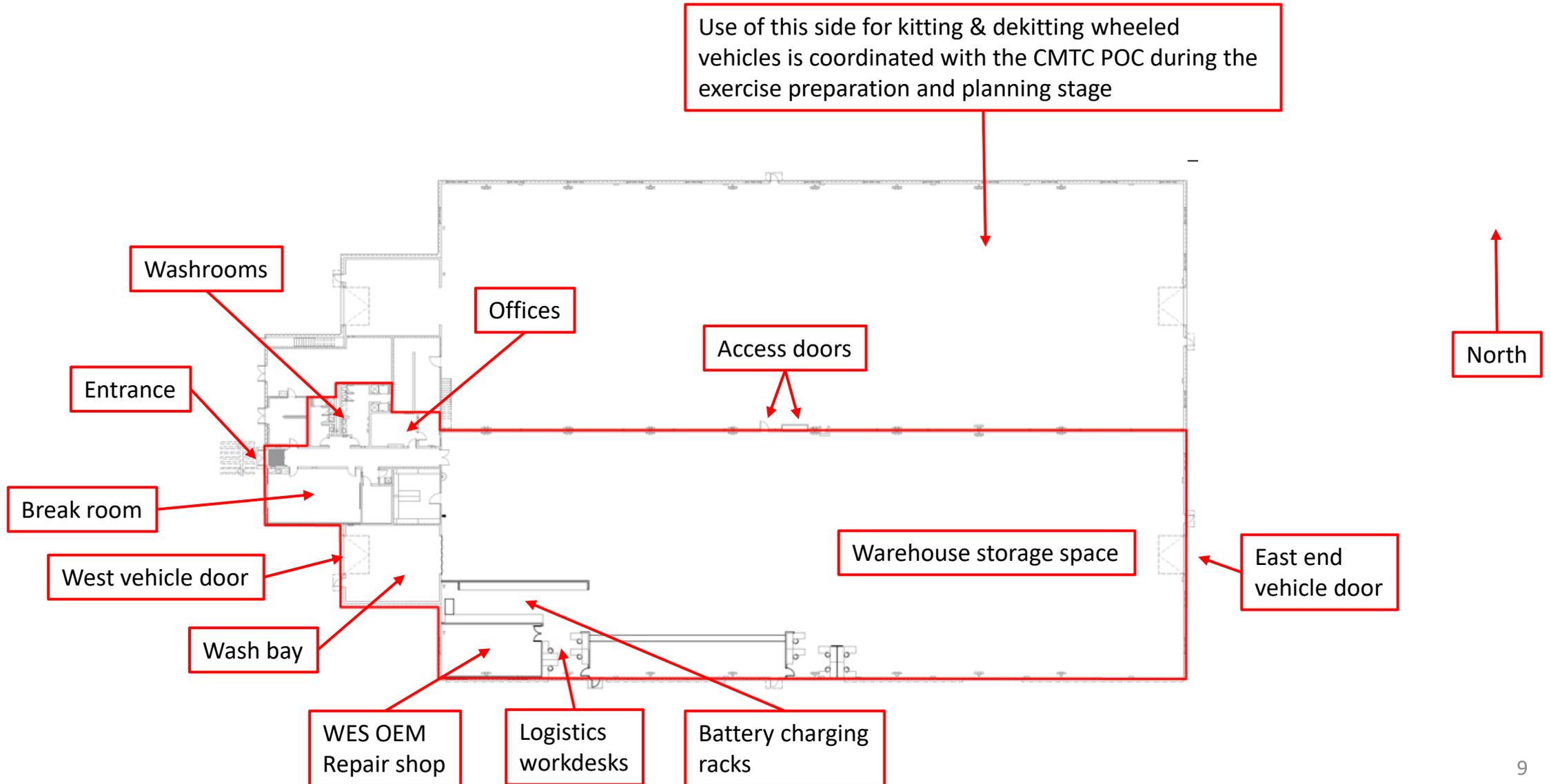
Bldg 670 (South side)  
WES Warehouse

Buildings 736 and 670 Facing North



# Building 670 Warehouse and Office Space

This diagram indicates the area outlined in red that the Contractor can occupy in building 670.



# Interior of Building 670 Warehouse

## View Towards the East End Vehicle Door



## View Towards the West End Vehicle Door and Wash Bay



## Office Trailer Building 736

This building can be used for extra office space when fulfilling taskings or when there is a requirement for a conference room.



Conference room takes up half the trailer space



## Building 576 - Tank Barn

The Contractor is not a custodian of this building, but is granted temporary access and use for the kitting and dekitting of Leopard2 main battle tanks and variants. This is coordinated with the CMTC POC during the exercise preparation and planning stage.



Tank pad near Building 576

This area is used for calibration and alignment checks for vehicles that are kitted on the base garrison.



## Wainwright Forward Operating Base (FOB)

A large tented camp in the western end of the training area. For larger exercises such as EX MAPLE RESOLVE, the soldier kit issue, sights alignment and training may occur at the FOB. This is coordinated well in advance with the Canadian Manoeuvre and Training Center Point of Contact (CMTC POC) during the exercise preparation and planning stage. The final activation and alignment checks of vehicles may also occur in the vicinity of the FOB.

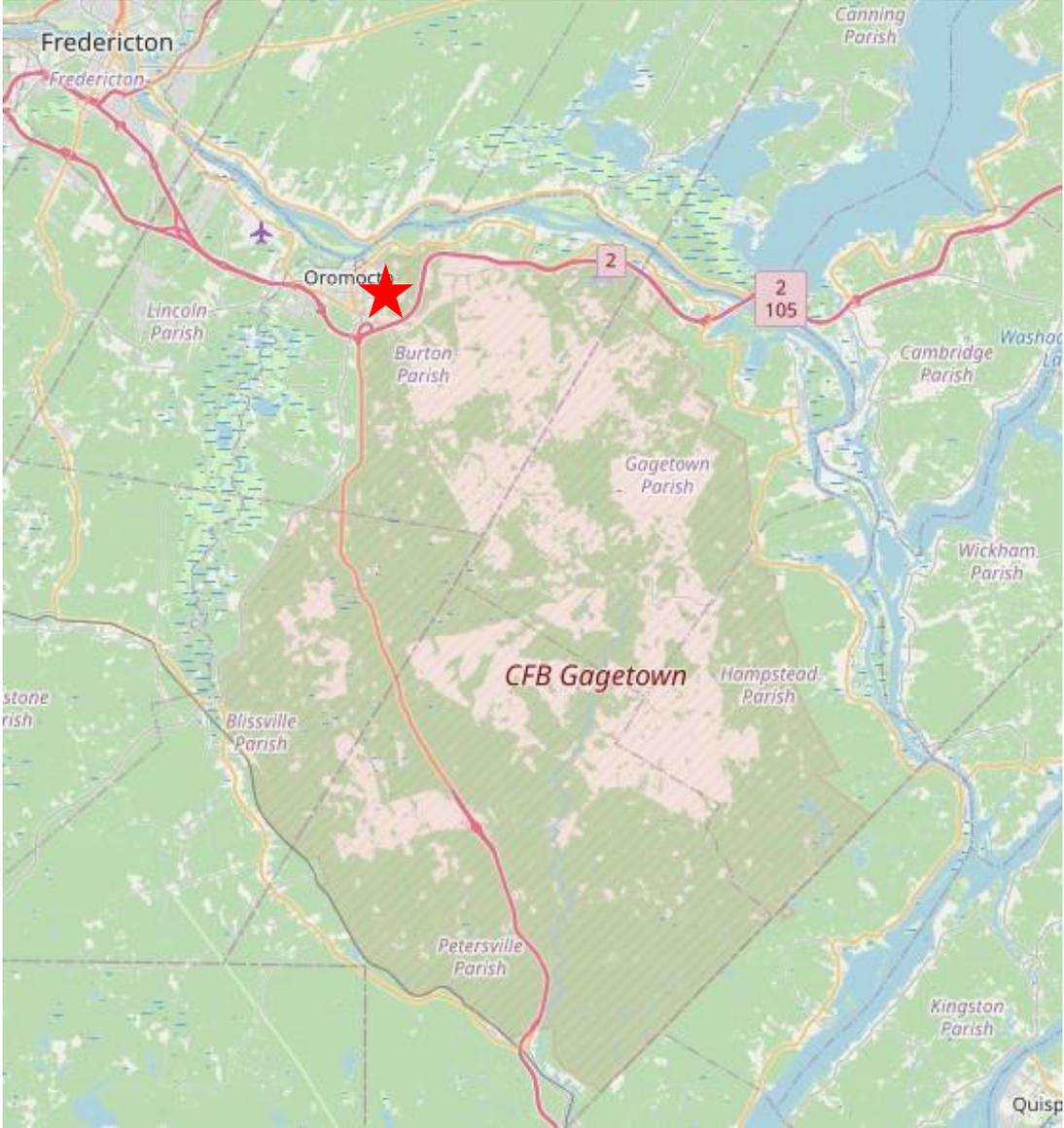


Wainwright Urban Site – Rocky Ford



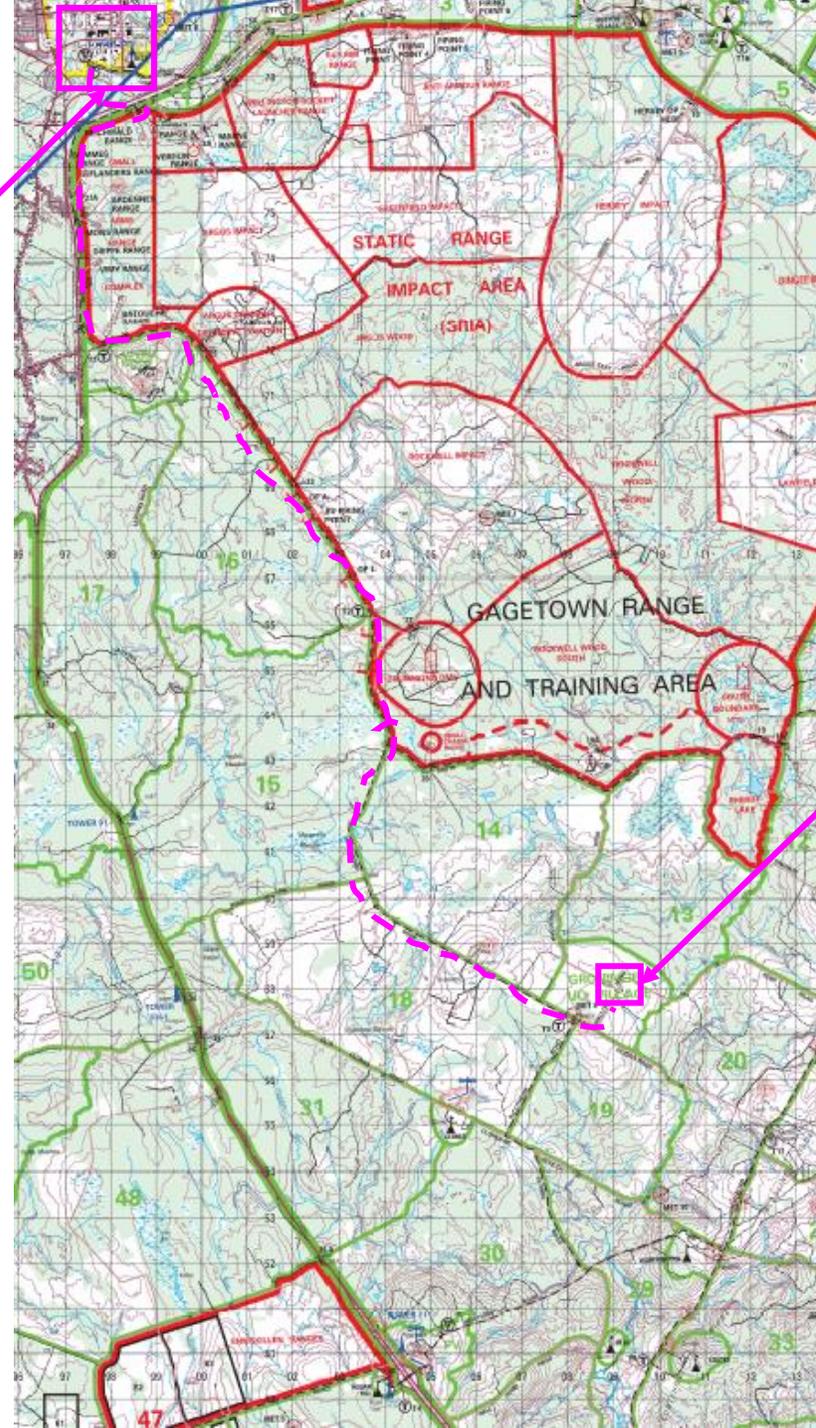
Gagetown, New Brunswick (Image Source Google Maps)

★ Indicates Garrison Area of the Base.



Gagetown – a portion of the ranges and training area map.  
Grid squares are 1 km.  
Approximate driving distance from Range Control to the urban EXCON and Logistics building is 32km (shown by dashed pink line on the map)

Gagetown  
Garrison and  
Range Control



Urban Site

Gagetown Garrison - (Image Source Google Earth)



Building K-13A  
Compound

Range Control

Gagetown Warehouse Building K-13A



# Gagetown Warehouse Building K-13A



Gagetown Urban Site – (Image Source Google Earth)



Groningen Urban Village

EXCON and Logistics Building

Gagetown Groningen Urban Village – (Image Source Google Earth)

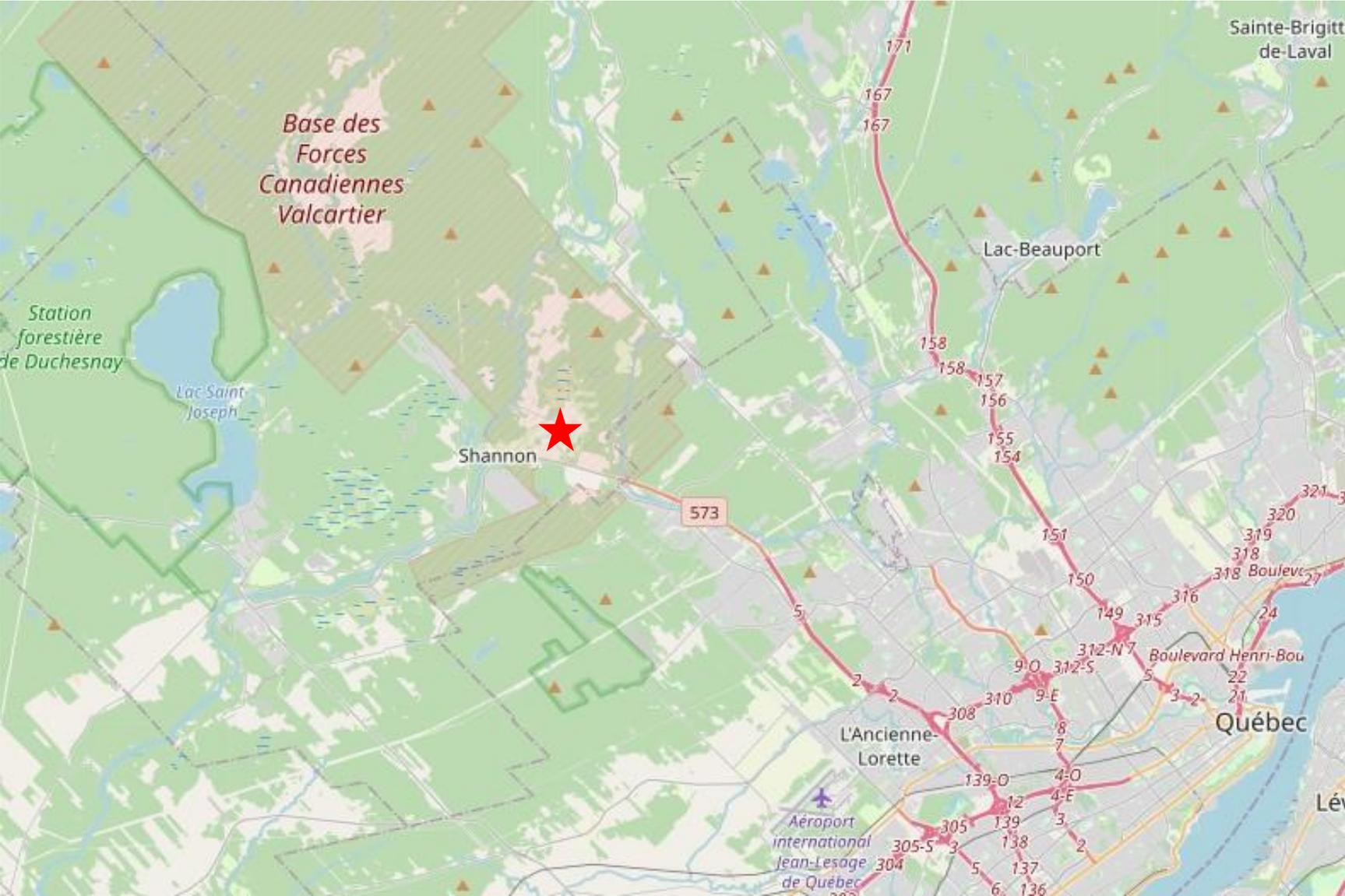


# Gagetown EXCON and Logistics Building



Valcartier, Quebec (Image Source Google Maps)

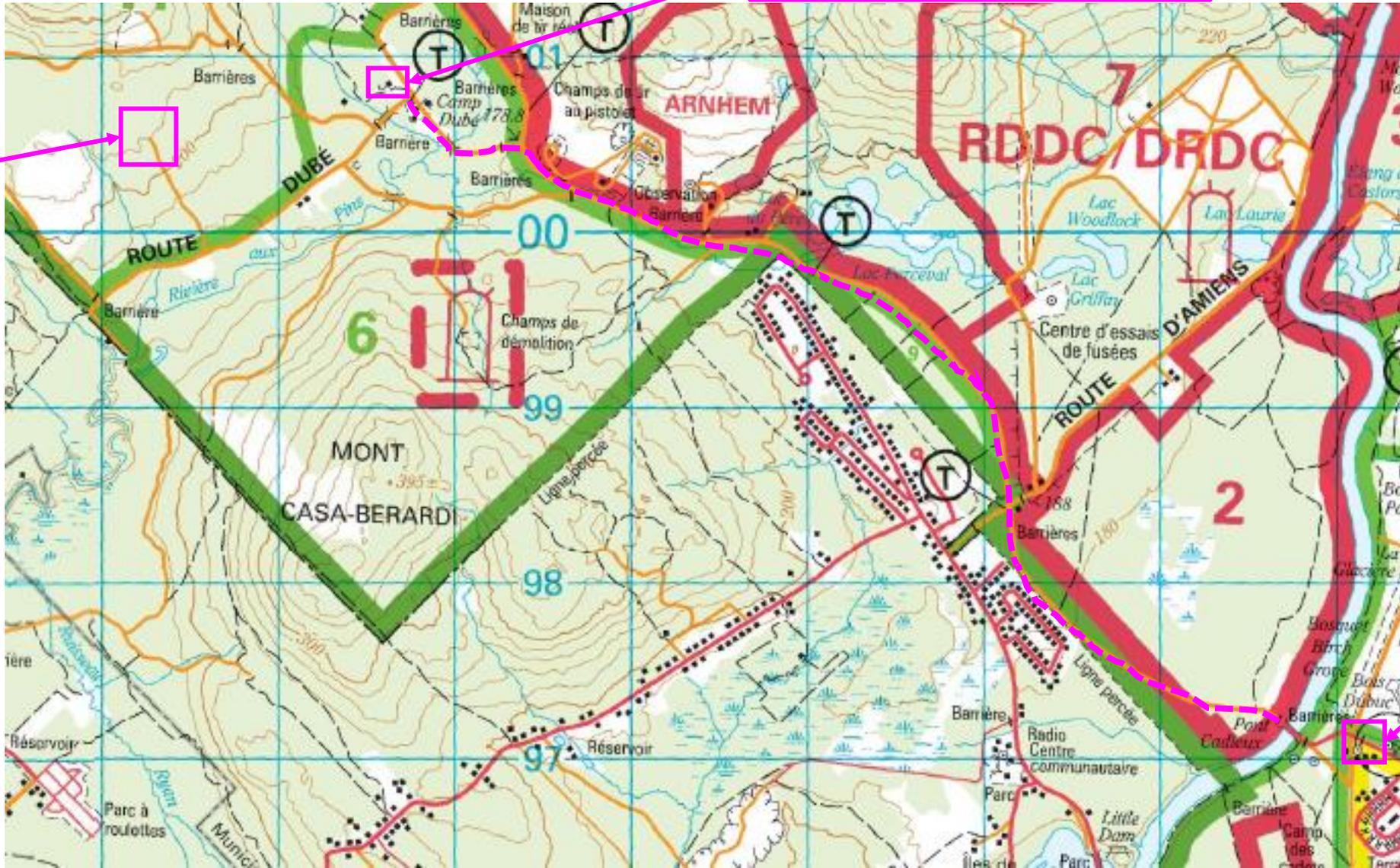
★ Indicates Garrison Area of the Base.



Valcartier – a portion of the ranges and training area map. Grid squares are 1 km.  
Approximate driving distance from Range Control to the EXCON and Logistics Building is 7.3km  
(shown by dashed pink line on the map)

EXCON and Logistics Building

Urban Village



Range Control

Valcartier Urban Site (Image Source Google Earth)



Valcartier Urban Village - (Image Source Google Earth)

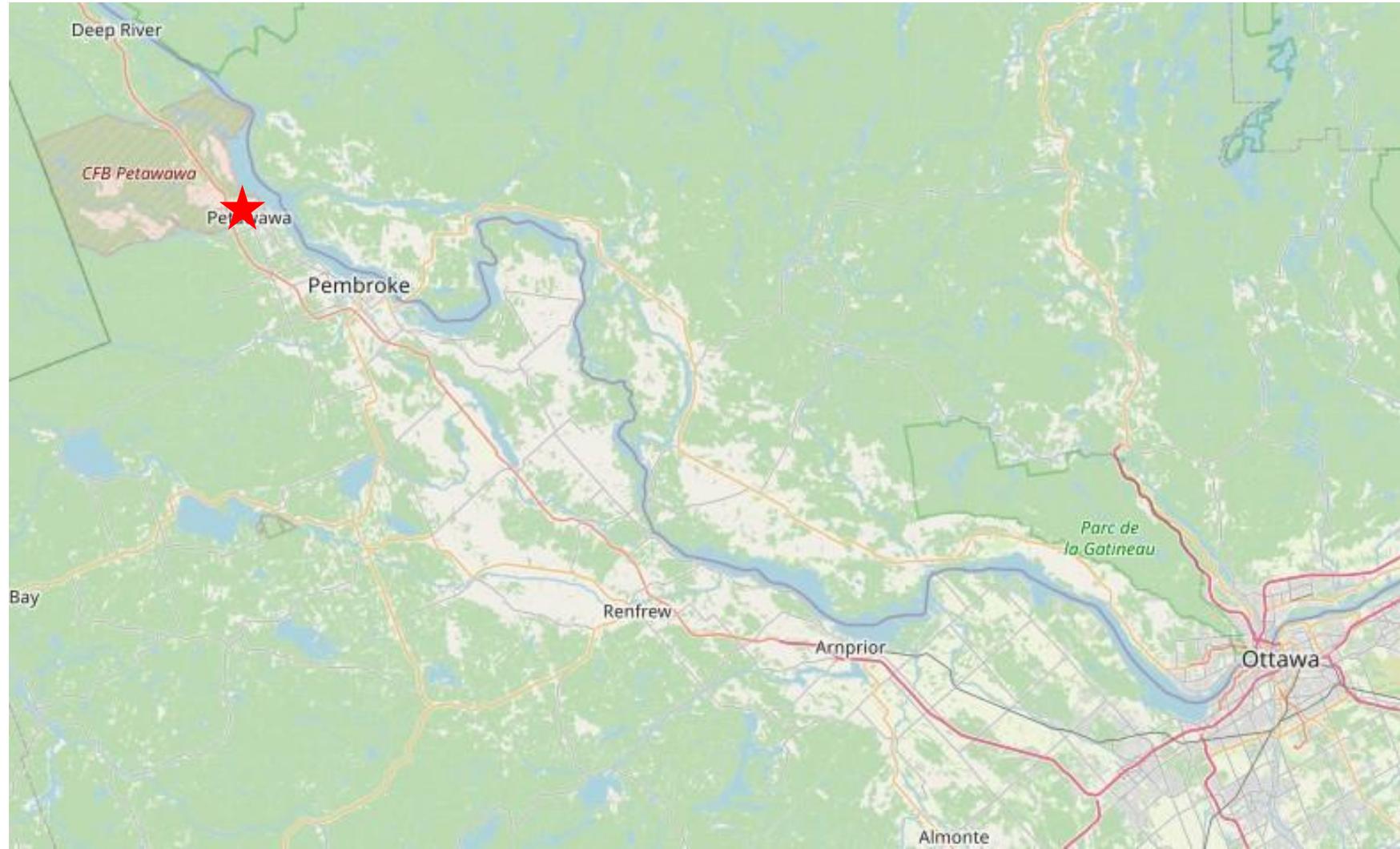


Valcartier EXCON and Logistics Building



Petawawa, Ontario (Image Source Google Maps)

★ Indicates Garrison Area of the Base.

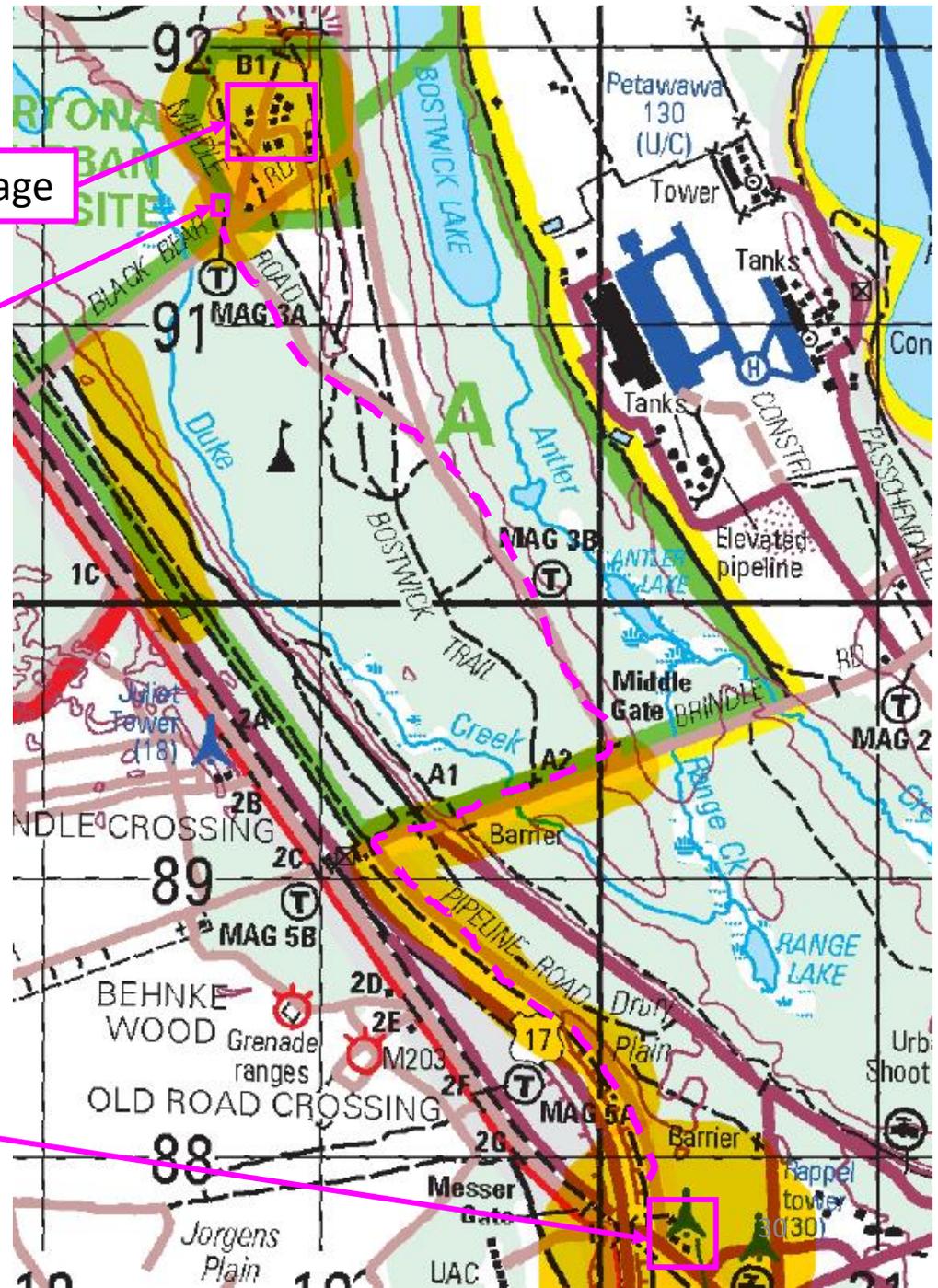


Petawawa – a portion of the ranges and training area map.  
Grid squares are 1 km.  
Approximate driving distance from Range Control to the  
EXCON and Logistics building is 5.2km  
(shown by dashed pink line on the map)

Ortona Urban Village

EXCON and Logistics Building

Range Control



Petawawa Urban Site – (Image Source Google Earth)



Ortona Urban Village

Hamlet –  
no Instrumentation

EXCON and Logistics Building

### Ortona Urban Ops Site



# Petawawa EXCON and Logistics Building



# Interior of Petawawa EXCON and Logistics Building – Logistics Side



# WES Soldier Worn Equipment and Ancillaries

[Back to  
Table of Contents](#)

# Integrated Harness Kit (IHK) Halo



# IHK Harness



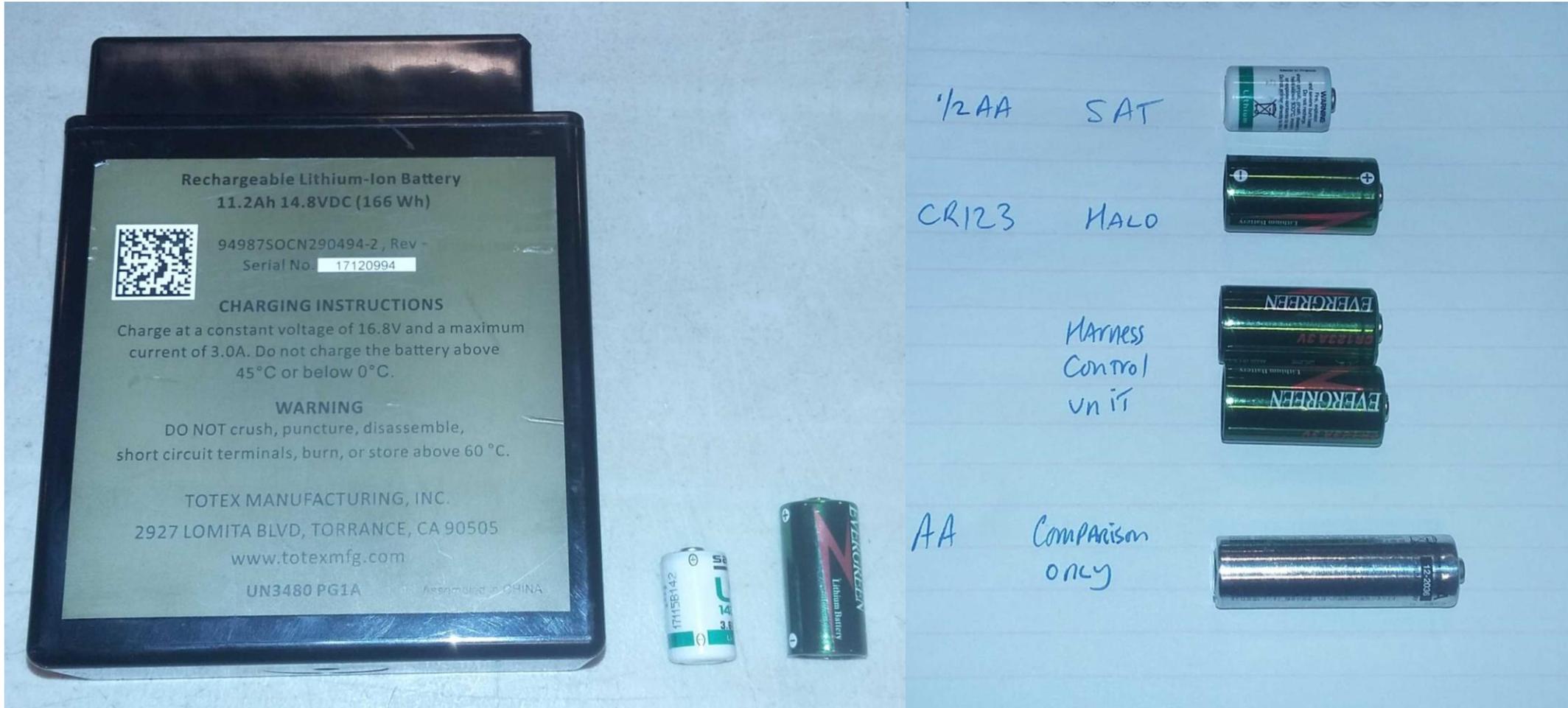
IHK Worn by Soldier Wearing a Tactical Vest



Civilians in the battlespace wearing the IHK. Some exercises may use personnel dressed in civilian clothing to add more complexity to the training scenarios. They may be civilian news crews, or they could be DND personnel acting as local police, insurgents, etc. In order to wear the IHK, they are also issued with a belt to which the IHK can be attached.



# Batteries for the IHK kit



# IHK Small Arms Transmitter (SAT) with Dry Fire Trigger (DFT)



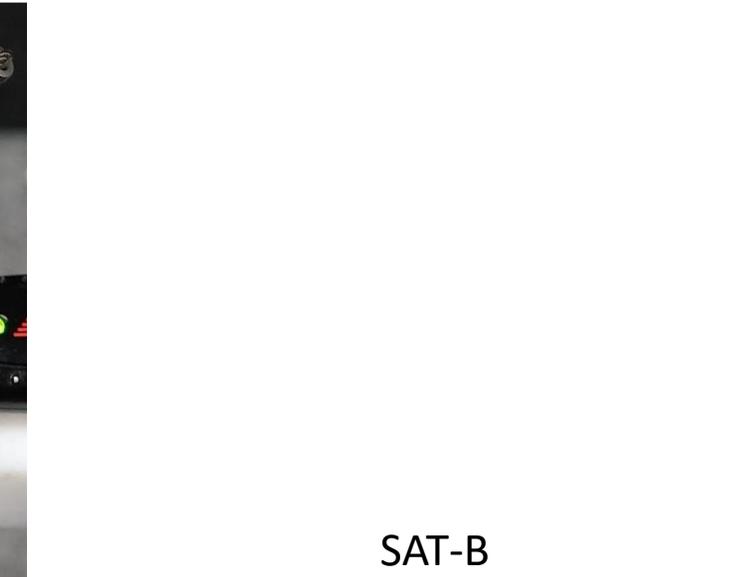
## Small Arms Transmitters (SATs)

SAT-A (short range), SAT-B (medium range) and SAT-C (Long range)

All with the same fit and form. The difference is in the laser beam divergence and power. All have been tested as Class 1 lasers and are authorized for use.



SAT-A



SAT-B



SAT-C



The table below indicates the distribution of WES soldier worn equipment at the sites across Canada to support training in the WES environment. The numbers on-site do fluctuate as training requirements change, equipment is shipped for repair, etc.

Equipment	Wainwright Warehouse	Gagetown Warehouse	Gagetown Urban Site	Petawawa Urban Site	Valcartier Urban Site
IHK harness and halo	2920	1050	150	155	155
SAT-A short range	2810	875	150	155	155
SAT-B medium range	396	175	29	29	29
SAT-C long range	331	47	14	14	14
Dry fire trigger	148	22	12	12	12
C7/C8/C9 mount bracket	2992	1050	150	155	155
84mm M2 mount bracket	30	0	0	0	0
84mm M3 mount bracket	60	0	0	0	0
C6 General Purpose Machine Gun mount bracket	299	35	6	7	7
.50 Cal Heavy Machine Gun mount bracket	32	12	4	5	5
C16 40mm Automatic Grenade Launcher System kit	58	10	5	5	5
IHK battery	4395	1575	225	225	225
IHK 32-station battery charger	22	10	5	5	5
Mirror Alignment Jig Kit (MAJiK)	30	10	5	5	5

C9 5.56mm Light Machine Gun with SAT-B attached



C-6 7.62mm General Purpose Machinegun with SAT-C attached



M2 .50 calibre Heavy Machine Gun with SAT-C attached



C15 .50 calibre Long Range Sniper Weapon with SAT-C attached



Sniper Weapon System with SAT-B attached



84mm M2 Carl Gustav with SAT-A attached



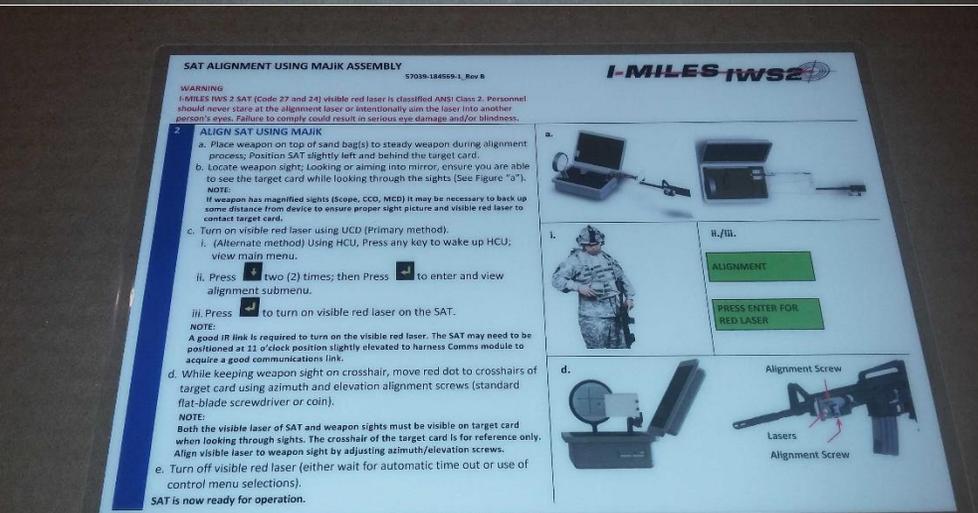
84mm M3 Carl Gustav with SAT-A attached



Torque screwdrivers for attaching SATs and brackets to small arms.  
Gold-20 lbf-in, Green-85 lbf-in, Red-120 lbf-in



# Mirror Alignment Jig Kit (MAJiK) for aligning SAT lasers to the weapon sights



Soldiers aligning SATs to weapons using the MAJiK.



Universal Control Gun. Portable device used in the field by OCTs and Contractor personnel. Commonly used functions include killing, resetting, and resurrecting players during a WES activity.



C-16 Automatic Grenade Launcher System WES kit.

Most of the simulation equipment is enclosed in a replacement ammunition can. The weapon's barrel is replaced by a surrogate barrel containing electronic components and sensors.



Soldiers being trained on the use of the WES soldier worn equipment



# WES Vehicle equipment

[Back to  
Table of Contents](#)

There are two 'families' of vehicle equipment.

1. Precision Gunnery System (PGS) Kit

This equipment is the suite delivered as part of the original WES project in 2006. It is also commonly referred to as the legacy kit.

2. Wireless Vehicle Kit (WVK)

This equipment was used in kitting out the latest Canadian Army vehicles so that they could operate in the WES environment. It is compatible with the PGS equipment as far as radio and laser based weapon effects are concerned. The hardware itself is not compatible or interchangeable with PGS. The system is not completely wireless as it is connected to the vehicle for power.

The vehicle equipment is kept in Wainwright, and only shipped to other training venues when the use of vehicle kits in a WES activity has been authorized by DND.

Within the 'families', there are two main groups of components for the vehicle kits:

1. The electronic boxes and components that are common and interchangeable between vehicle kits. There are certain components that are only used on certain vehicles – for example the PGS Laser Transmitter Unit is only mounted on vehicles that have a 25mm or 120mm cannon.

2. The cables, masts, and brackets that are specific to a certain vehicle, for attaching the electronic components or connecting to the vehicle power. There is some limited interchangeability for components.

# Some PGS Common Electronic Components



Power Control Unit



Short Range Radio Interface unit for crew association



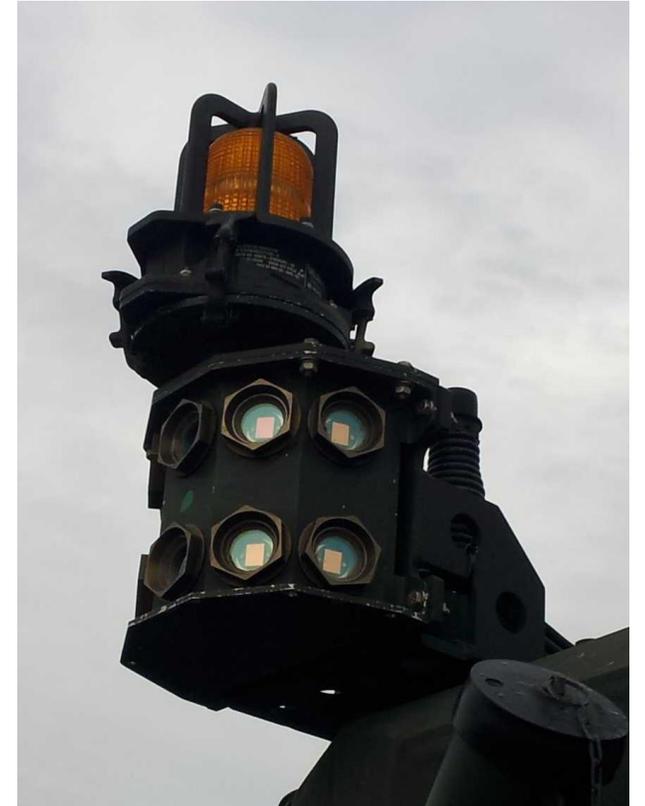
Speaker



Control Unit



GPS and Data Communications Network antennas

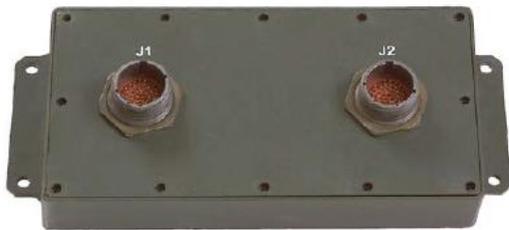


Kill Status Indicator (Flashing Light) Laser Detector Unit

# Some PGS Vehicle-specific Electronic Components



Laser Transmitter Unit  
Mounted in 120mm cannon (left)  
Mounted by 25mm cannon (right)



Vehicle Abstraction Layer (Leopard2 tank)



Loader Control Unit



Tracer Burst Unit (simulates fall of shot, gives feedback to gunner)



Main Gun Signature Simulator (MGSS)  
- Leopard 2 tanks only



MGSS Control Unit

## Some PGS Vehicle-specific Components

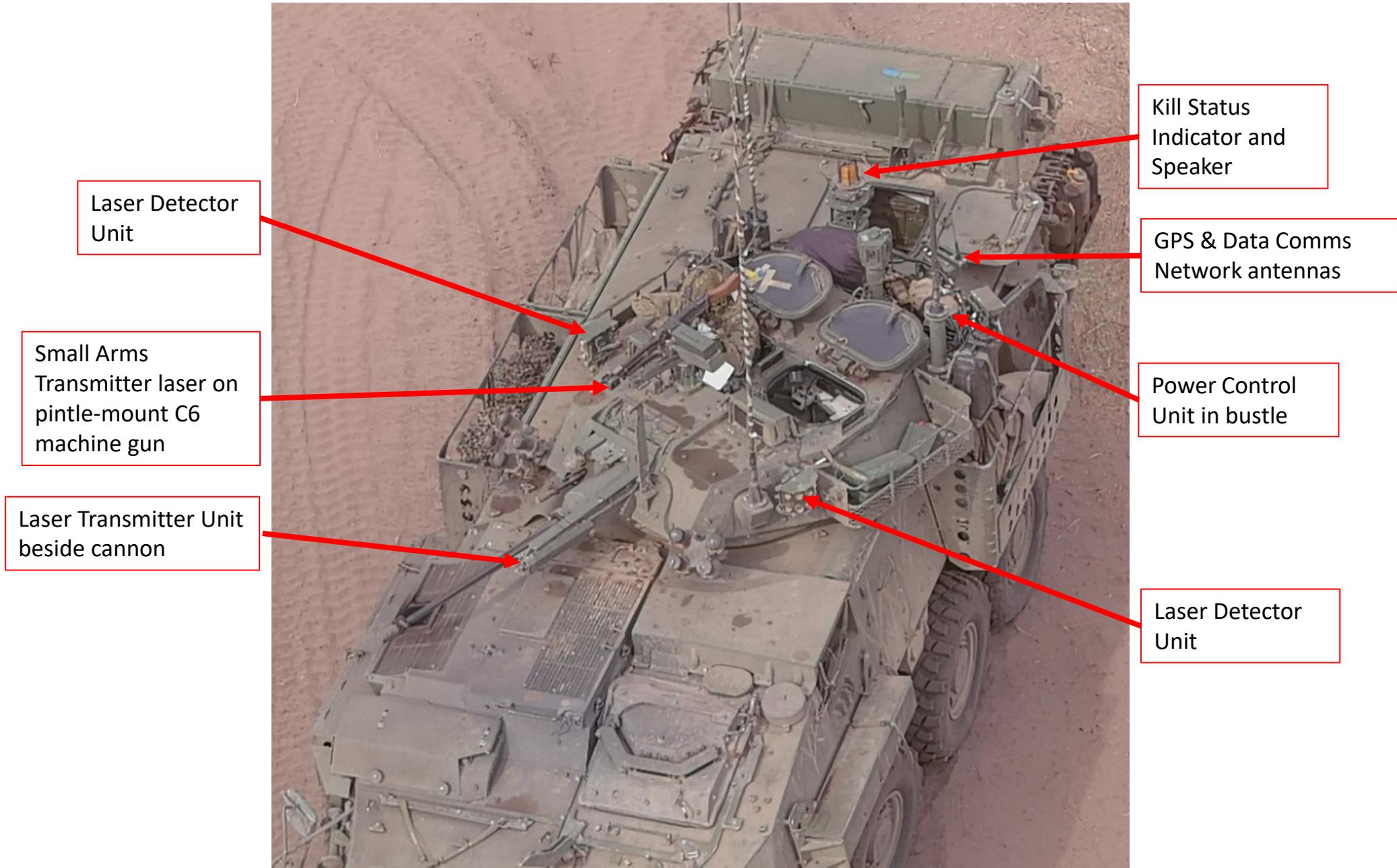


Assorted cables



Assorted mounts, masts, brackets and plates

PGS Kit Installed on a LAV-6 – all Kit Mounted on and in the Turret



Laser Detector Unit

Small Arms Transmitter laser on pintle-mount C6 machine gun

Laser Transmitter Unit beside cannon

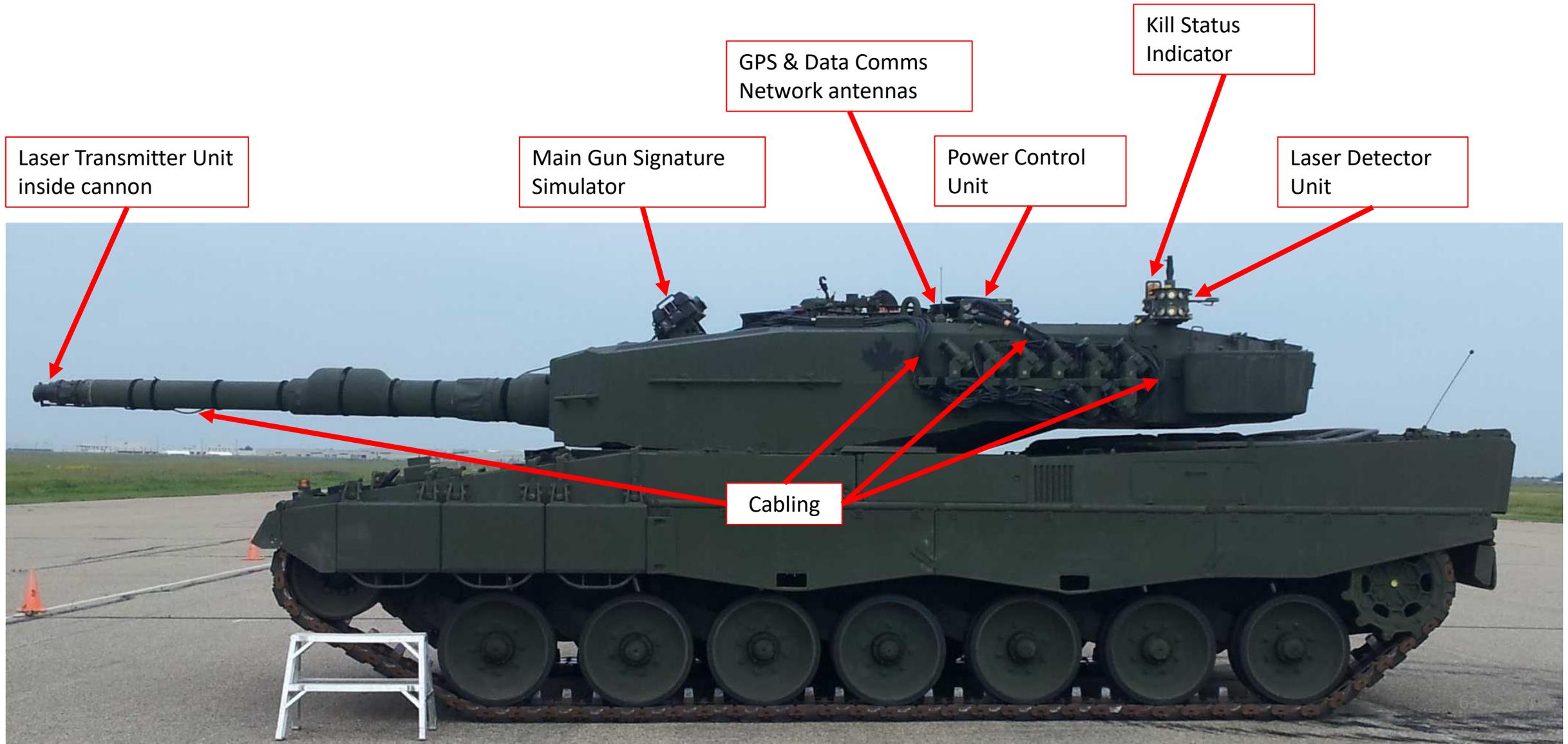
Kill Status Indicator and Speaker

GPS & Data Comms Network antennas

Power Control Unit in bustle

Laser Detector Unit

PGS kit Installed on a Leopard2 Tank – all Kit Mounted on or in the Turret



# PGS kit Installed on a Light Utility Vehicle Wheeled



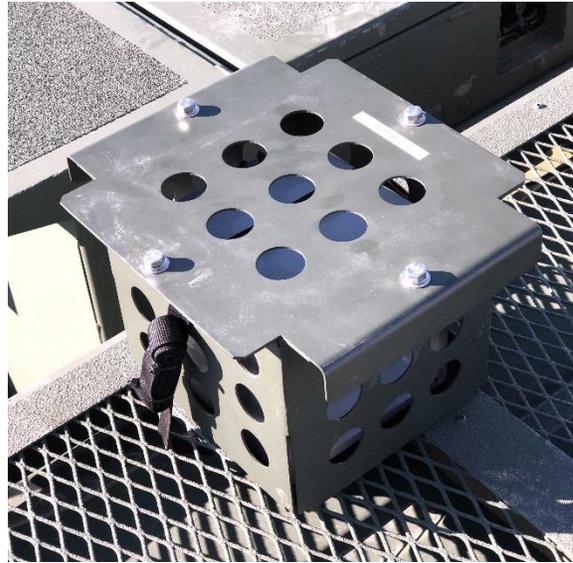
Equipment Quantities – PGS Vehicle Equipment.  
 Quantities include those awaiting repair or disposal.

Equipment	Number of different variants	Total quantity
Laser Transmitter Unit	1	262
Laser Detector Unit	1	1363
Power Control Unit	1	681
Kill Status Indicator	1	675
Speaker	1	678
Control Units	3	760
Main Gun Signature System	1	23
Short Range Radio Interface	1	345
GPS & DCN antenna	1	663
Tracer Burst Unit	1	229
Cables	65	5012
Masts, mounts, brackets and plates	68	4816

# Wireless Vehicle Kit Common Electronic Components



Vehicle Kill Controller



Speaker

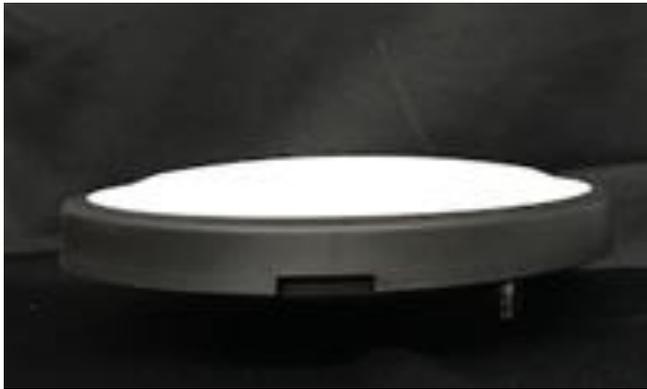


Wireless User Interface



Mast with four High Sensitivity Detectors and built in lights

# Additional Wireless Vehicle Kit Electronic Components for the Tactical Armoured Patrol Vehicle (TAPV)



GPS Antenna

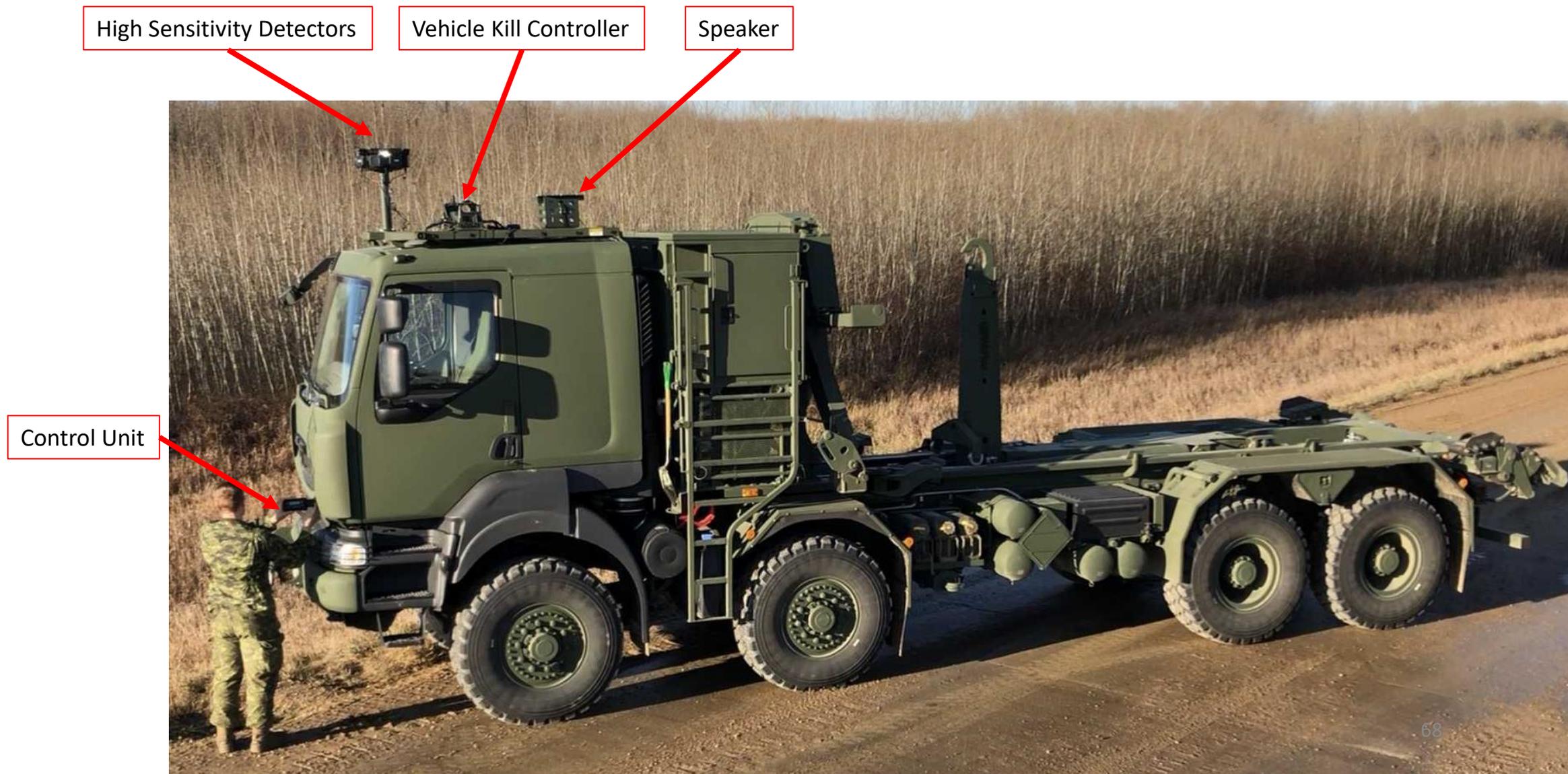


C16 40mm Grenade Launcher  
Surrogate Barrel Assembly



Ethernet Vehicle Abstraction Layer

# WVK kit Installed on the Medium Support Vehicle System – Standard Military Pattern



Equipment Quantities – WVK Vehicle Equipment  
Quantities include those awaiting repair or disposal.

Equipment	Number of different variants	Total quantity
Vehicle Kill Controller	1	106
High Sensitivity Detector	1	424
Speaker	1	106
Wireless User Interface	1	170
TAPV WVK components (GPS antennas, surrogate barrel assembly, vehicle abstraction layer)	3	256
Masts, mounts, brackets and plates	8	532
Cables	12	700

# WES Trailers

[Back to  
Table of Contents](#)

## Deployable Kit Trailer

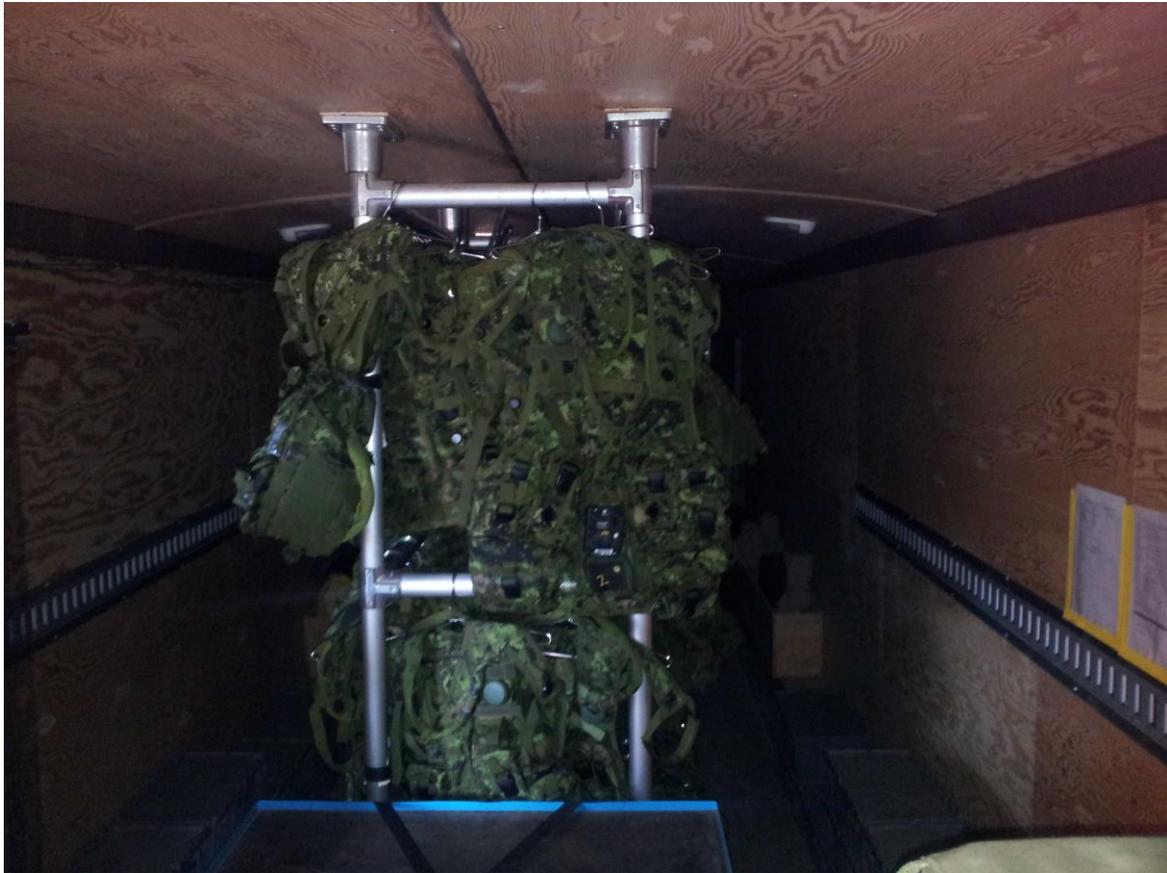
These are used for moving larger quantities of soldier-worn WES equipment to locations where training is being conducted. Each trailer holds about 300 soldier kits, as well as the necessary batteries and other equipment required for kit issue.



Deployable Kit Trailers in Gagetown K-13A Building Compound (Quantity 3)



# Interior of Deployable Kit Trailer



## Portable Test Suite (Mobile EXCON) Trailer

This trailer provides EXCON functionality in a location away from the static sites.



PTS Trailer Being Readied for Operation.



PTS Interior View



PTS Vehicle Plates



TRANSPORTATION DATA	
SHIPPING VOLUME:	2362 cft (67.12cm)
SHIPPING WEIGHT:	14,000 lbs (6350kg)
OVERALL LENGTH:	310 in (7.88m)
OVERALL WIDTH:	99 in (2.52m)
OVERALL HEIGHT:	133 in (3.38m)

**VEHICLE CERTIFICATION FOR TRAILERS**

MODEL A-20T/ITESS S/N 2083

MANUFACTURED BY: SHOOK MOBILE TECHNOLOGY

DATE OF MFG: FEBRUARY, 2016

GVWR: 14,000 lbs

GAWR INTERMEDIATE (1): 7,000 lbs

with 235/85R16 L. RANGE G tires,  
16 X 6 rims, @ 105 psi cold

GAWR REAR: 7,000 lbs

with 235/85R16 L. RANGE G tires,  
16 X 6 rims, @ 105 psi cold

THIS VEHICLE CONFORMS TO ALL  
APPLICABLE FEDERAL MOTOR VEHICLE  
SAFETY STANDARDS IN EFFECT ON:

FEBRUARY Mo. 2016 Yr.

VIN: 1S9EA2028GS779234

TYPE VEHICLE: TRAILER

## Exportability Trailer

These trailers provide WES radio network coverage zones which can be connected by microwave to a static EXCON building or the PTS trailer.



# Exportability Trailer



# Usage Statistics

[Back to  
Table of Contents](#)

Quantity of personnel issued with soldier-worn WES equipment for past EX MAPLE RESOLVEs in Wainwright. The exercises in 2021 and 2022 were reduced in scope due to COVID-19 concerns.

Year	Quantity
2017	2175
2018	2201
2019	2634
2021	1168
2022	1809

Daily WES throughput of personnel for EX MAPLE RESOLVEs in Wainwright. This included the Contractor issuing, fitting, aligning, and training of soldiers on the WES kit. The kitting schedule is heavily coordinated with the CMTC POC.

EX MAPLE RESOLVE 2019	
Date	Quantity
02 May	68
03 May	75
06 May	455
07 May	450
08 May	434
09 May	342
10 May	280
11 May	486

EX MAPLE RESOLVE 2021	
Date	Quantity
19 April	64
20 April	114
22 April	114
23 April	29
24 April	86
25 April	395
26 April	187
27 April	100
29 April	71

EX MAPLE RESOLVE 2022	
Date	Quantity
06 May	331
07 May	496
08 May	434
09 May	276

Quantity of vehicles kitted with WES equipment for past EX MAPLE RESOLVEs. This is not the full amount of vehicles that are present at the exercise. The exercises in 2021 and 2022 were reduced in scope due to COVID-19 concerns.

Vehicle type		2017	2018	2019	2021	2022
Leopard2 Tank	PGS	12	7	16	17	13
LAV-6 / Coyote / Engineer LAV-6	PGS	141	117	125	110	93
Bison family	PGS	9	0	4	2	5
M113/TLAV family	PGS	5	1	7	0	0
LSVW – Light Support Vehicle Wheeled	PGS	36	29	35	2	12
MLVW – Medium Logistic Vehicle Wheeled	PGS	16	21	16	0	N/A
HLVW – Heavy Logistic Vehicle Wheeled	PGS	37	29	37	0	1
LUVW – Light Utility Vehicle Wheeled	PGS	42	34	36	5	8
TAPV – Tactical Armoured Patrol Vehicle	WVK	N/A	N/A	N/A	N/A	21
MSVS – Medium Support Vehicle System	WVK	N/A	N/A	N/A	N/A	33

Daily kitting rates of vehicles for EX MAPLE RESOLVE 2021 in Wainwright. This included the Contractor issuing, fitting, aligning, and training of soldiers on the WES vehicle kit. The kitting schedule is heavily coordinated with the CMTC POC.

Vehicle type	12-Apr	13-Apr	14-Apr	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr	01-May
Leopard2 Tank		8	9																	
Engineer LAV-6									3	4						1				
LAV-6	1			13		19	13	2	14	2	14		1	2		13			1	
Coyote										3			2							2
Bison family				1				1												
LSVW	2																			
LUVW							3					2								
TAPV					13					9			5	4						1

Daily kitting rates of vehicles for EX MAPLE RESOLVE 2022 in Wainwright. This included the Contractor issuing, fitting, aligning, and training of soldiers on the WES vehicle kit. The kitting schedule is heavily coordinated with the CMTC POC.

Vehicle type	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	29-Apr	30-Apr	01-May	02-May	03-May	04-May	05-May	06-May	07-May	08-May
Leopard2 Tank																				13			
Engineer LAV-6											6		2	1		1							
LAV-6									2	2	6	2	2			8	12	10	19			12	8
Bison family				1	1		2	1															
LSVW	1				4	2	2	1										2					
HLVW								1															
LUVW	2	2					1			1	1							1					
TAPV			4			7		1	4		1	2						2					
MSVS		1	3	20	3		1	2	3														

## Deployed Exercise Support

The table below lists the rural training events that have taken place in the past 4 years up to October 2022, using resources and personnel located at the two warehouse locations. Note that there was a reduction in WES-supported training due to COVID-19. It is also expected that the increased use of WES at the urban sites will increase unit's desires to use WES equipment with rural training activities going into the future. The MAPLE RESOLVE exercises are not included in this chart.

Training date	Training location	Supported from	# of trainees involved	Other notes
Sept-Oct 2022	Gagetown	Gagetown		Ex ROYAL FORGE
Aug 2022	Wainwright	Wainwright		Ex GRIZZLY DEFENDER
May 2022	Comox, BC	Gagetown & Wainwright	174	Included PTS trailer and vehicle kits Ex COUGAR GAUNTLET
Oct 2021	Newfoundland	Gagetown	22	Ex THRUSTING BEAR
Nov 2019	Gagetown	Gagetown	220	
Nov 2019	Newfoundland	Gagetown	91	Ex THRUSTING BAYONET
Oct-Dec 2019	Gagetown	Gagetown	160	
Oct 2019	Meaford, ON	Gagetown	80	Ex AUTUMN GUNNER II
Aug 2019	Gagetown	Gagetown & Wainwright	576	Included PTS trailer and vehicle kits Ex MAROON RAIDER
Feb 2019	Belleville, ON	Gagetown & Wainwright	75	Included PTS trailer and vehicle kits Ex RIVER FORCE
Oct 2018	Gagetown	Gagetown	30	Ex RAGING BEAR
Nov 2018	Newfoundland	Gagetown	60	Ex THRUSTING BAYONET
Sept 2018	Cape Breton, NS	Gagetown	48	Ex STEEL ROBUR
Aug 2018	Gagetown	Gagetown & Wainwright	780	Included PTS trailer and vehicle kits Ex MAROON RAIDER <sup>86</sup>

## Urban Site Usage

The table below lists the urban training events at each of the 4 urban sites since September 2021. The number below each site name indicates the days where WES supported training took place. It does not include site reconnaissance, site preparations, clean up, etc.

Month	Gagetown	Valcartier	Petawawa	Wainwright
Sept 2022	5	7		
Aug 2022		28	9	9
Jul 2022		10	2	
Jun 2022		9	18	
May 2022		8	28	11
Apr 2022	8		23	
Mar 2022	3	10	7	5
Feb 2022	5		9	
Jan 2022				
Dec 2021				
Nov 2021	1	1	19	
Oct 2021	3	2		
Sep 2021		4	8	