



 Netherlands 



Mission Experiences

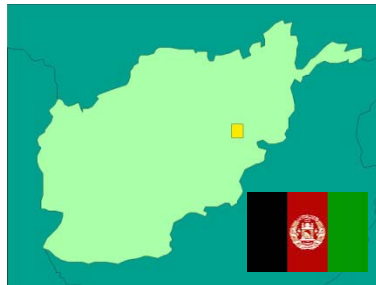
On Infantry Ammunition



Army



Marines



Afghanistan



Airforce



 Netherlands 

Mission Area

Afghanistan



TFU Task Force Uruzgan

Appr: 1.900 People

6 month rotations

2008-2010



Netherlands Armed Forces



Airforce Base **Eindhoven**



Port **Eemshaven**



Population: 16 Million

| | |
|--------------------|---------------|
| Total Size: | 68.300 |
| -Army: | 26.000 |
| -Navy: | 10.000 |
| -Airforce: | 10.000 |

Budget: Appr 8,3 Billion €



Netherlands Camps

Camp Hadrian

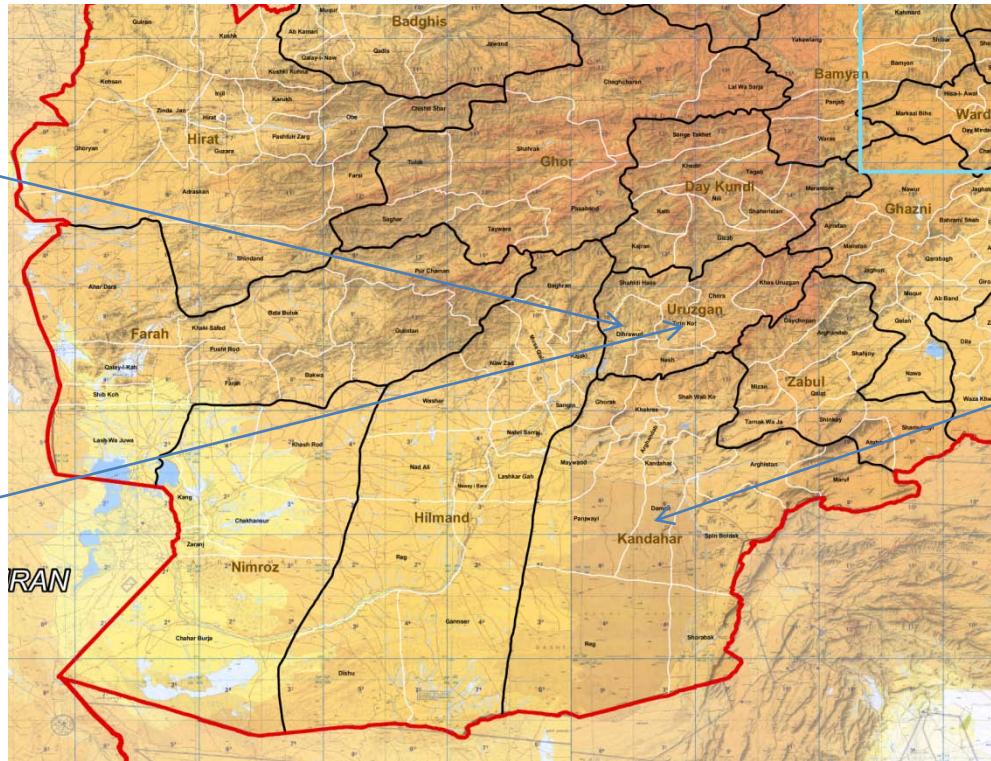
Deh Rawood



Tarin Kowt



Camp Holland



Kandahar

Airforce Base



Afghanistan



Kandahar



Deh Rawood



Tarin Kowd





Netherlands

Armed Forces

To Afghanistan

6.000 km
2 days

10.000 km
25-45 days

Airforce Base **Eindhoven**



Port **Eemshaven**



KDC-10





IL-76



C-17



 75.000 Kg; 500h
 Short landing track (1 km)



Netherlands Mission Area

Some Equipment in Afghanistan

For transport

C-130

(17.000 kg/128 passengers)



F16



Apache

For missions

YPR



MB



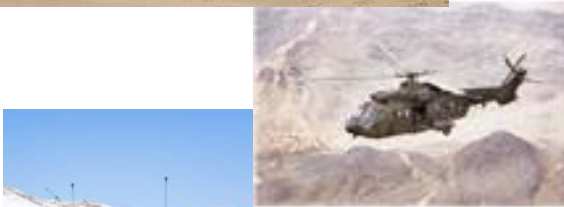
Patria



Fennek



Bushmaster



Cougar



PzH2000



Chinook



Viking



Convoy's





Close Cooperation with ANA





 TFU 

Experiences

Ammunition



Extremely High Need for Ammunition

Ammunition:

Need for high quantities

Need for good quality

Need for improved performance
(urban targets)





TFU

Experiences

Infantry Ammunition

- **Small Caliber Ammunition** (upto 12,7 mm)
- **Medium Caliber Ammunition**
 - ✓ 25mmx137 for 25mm Canon IFV
 - ✓ 40mmx46 for Underslung and Stand Alone (Low Velocity)
 - ✓ 40mmx53 for AGL (High Velocity)
- **Mortar Ammunition**
 - ✓ 60mm
 - ✓ 81mm
- **AT/AS ammunition**
 - ✓ AT4
 - ✓ LAW M72A1
 - ✓ PzF / Bunkerfaust
 - ✓ Gill

Storage





TFU

Experiences

“Infantry Support” Weaponsystems (≡ Ammunition)

- **155mm PzH2000NL**
- **Apache AH-64D Helicopter**
 - ✓ 30mm HEDP
 - ✓ 2,75" Rockets
 - ✓ Hellfire Missiles
- **F16 A/B MLU Aircraft**
 - ✓ 20mm FAP (now M70 mix)
 - ✓ Bombs (laserguided/GPS)
 - ✓ Missiles (only Air-to-Air)





TFU

Experiences

Other Infantry Ammunition

- Handgrenades



- Smoke grenades
(vehicle protection)



Special Forces



 TFU 
Experiences

MOUT Targets

Quala's



Clay Walls (av. 80cm thick); Sundried, mixed with stones and other materials



TFU Experiences

Extreme Environment

Sandstorm



HOT



Winter conditions



COLD



TFU Experiences

Extreme Mistreatment of Ammunition



Tune Up the qualification programs ?



TFU Experiences

Small Caliber Ammunition (upto 12,7mm)



5,56mm



Diemaco Minimi



7,62 COAX



7,62 MAG



Long Range Rifles



8,6mm



Shotgun

7,62mm



Not very effective against Quala targets

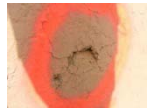
High quantity use



12,7mm



12,7mm



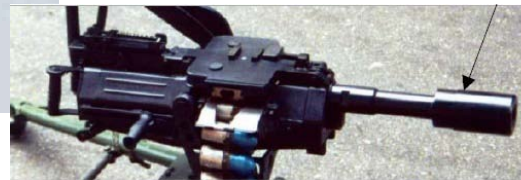


 **TFU** 
Experiences

Medium Caliber Ammunition



- ✓ 25mmx137 for 25mm Canon IFV
- ✓ 40mmx46 for Underslung and Stand Alone (Low Velocity)
- ✓ 40mmx53 for AGL (High Velocity)





Malfunctioning

25mm APDS-T, nr121

RWMS: TLB073
Soft metal cartridge case

 **TFU** 
Experiences

25mm Ammunition (IFV)



Linked Ammo

Qualified for use
upto +63 C



STANAG 4173



High quantity use

Initial quantity from:

DNK & CND (C137)



25mm APFSDS-T, nr554

RWMS: PLB090
Hard metal cartridge case



 TFU 
Experiences

25mm Ammunition (IFV)



1 rnd
No penetration



3 rnds
Penetration

25mm APFSDS-T

NOT very effective against Quala targets
Effective at ranges > 2.000m (other type of targets)



TFU Experiences

40mmx53 High & Low Velocity Ranges



CIS 40GL



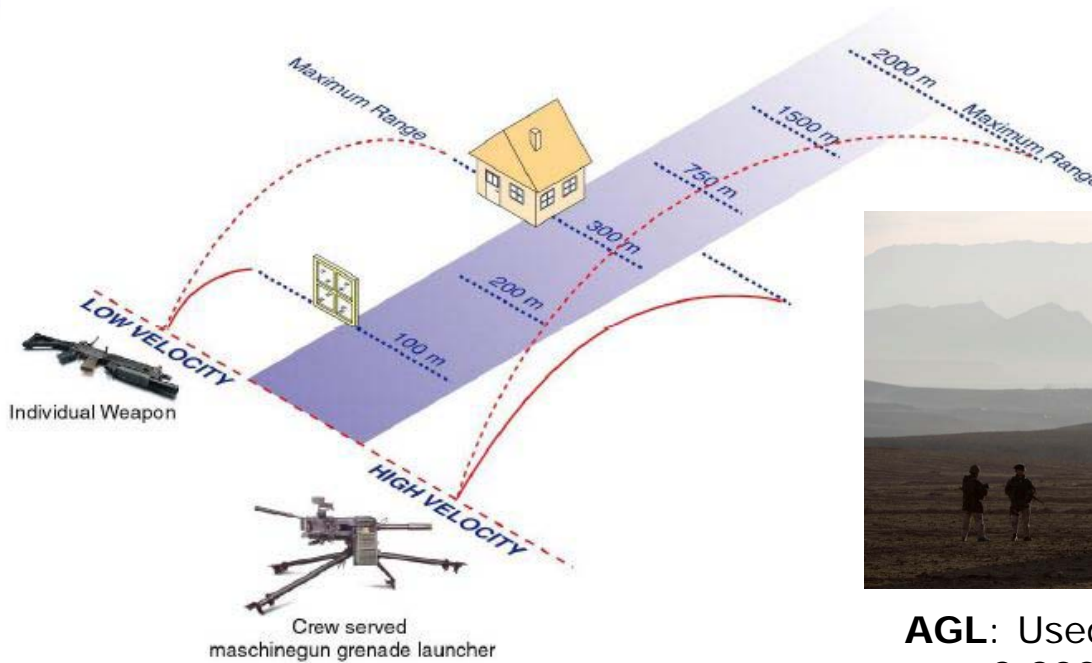
M203



HK 69A1



M79



CIS 40AGL



Mk 19



GMG



LAG 40



AGL: Used at firing ranges
2,200m - 2.500m



TFU Experiences

40mmx46 (Low Velocity Ammunition)

Underslung
AG36



Stand alone

HK 69A1



❑ Need for a wide range of different types of rounds; from HE to Less than Lethal (F&B; IR ILL).
Different colours of smoke (Marking).

High quantity use

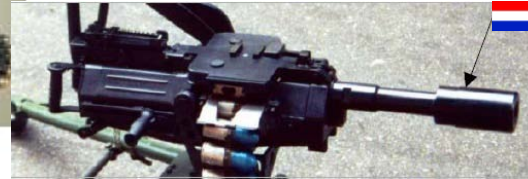


TFU Experiences

40mmx53 (High Velocity Ammunition)



40 x 53mm High Velocity Ammunition



40mm AGL
H&K

Used at firing ranges
2,200m - 2.500m

40mmx53
HEDP M430

USA support



DIEHL
40mmx53
HE-T SD DM111

GER support



High quantity use
Very effective



 **TFU** 
Experiences

Mortar Ammunition



60mm Hotchkiss

- ✓ 60mm
- ✓ 81mm



81mm L16A1 / L16A2



TFU

Experiences

60mm Mortar

60mm Rounds (examples)



HE



SMK
WP



ILL



Usefull equipment
(Platoon Level)

Ranges: 400m – 1.000m

High quantity use

Ammo quality problems:

- SMK (Low smoke production)
- ILL (Non functioning)



TFU Experiences

81mm Mortar



HE
with Fuzes PD or Prox



SMK
WP

SMK
RP

ILL
Also IILL IR

High quantity use



New ammo family
coming up.



 **TFU** 
Experiences

AT/AS Ammunition

- ✓ **AT4**
- ✓ **LAW M72A1**
- ✓ **PzF**
- ✓ **Bunkerfaust**
- ✓ **Gill**



TFU Experiences

AT4 and LAW72A1



Special Forces



AT 4



M72A1

Not effective against
Quala's



TFU Experiences

Panzerfaust Family

Heavy System
(in case of walking)



PzF DM12A2



Developed to defeat armour
with inserted probe: HESH mode

Scalable effect!



**BF most effective
system to defeat
Quala's**



BF DM32



Developed to
defeat bunkers



 **TFU** 
Experiences

Gill

High Cost System



Effective to defeat Quala's
Alternative: Apache / Art support
but that takes more time





TFU

Experiences

"Infantry Support"

Weaponsystems (≡ Ammunition)

- **155mm PzH2000NL**
- **Apache Helicopter**
 - ✓ 30mm HEDP
 - ✓ 2,75" Rockets
 - ✓ Hellfire Missiles
- **F16 Aircraft**
 - ✓ 20mm FAP (now M70 mix)
 - ✓ Bombs (Laserguided/GPS)
 - ✓ Missiles (Air-to-Air)





TFU Experiences

155mm PzH2000NL ammunition



HE

DM131A1 40km

M107  18km

SMK HC

DM115 >20km

ILL

DM116 >20km

High quantity use
All types



Propelling charges
M4
Nr13 (8th charge)
Modullar Charges DM92



TFU Experiences

Apache Helicopter

- ✓ 30mm HEDP
- ✓ 2,75" Rockets
- ✓ Hellfire Missiles



30mm HEDP
M789

LW30mm
M789
HEDP
Medium Caliber
Ammunition



Effective Ammunition
Against Quala's ?



30mm M231



High quantity use
All types



Hellfire II, AGM-114N,
for use against buildings, bunkers:

Effective against Quala's ?

High cost system





TFU

Experiences

F16 Aircraft

- ✓ 20mm FAP (now: M70)
- ✓ Bombs
- ✓ Missiles



Laserguided (GBU12)

GPS guided (GBU38)

Laser/GPS (GBU49)



20mm FAP



High cost systems



High quantity use

All types





TFU Experiences

Other Infantry Ammunition Handgrenades



High quantity use
All types
Extreme Rough Handling
(tune up qualification programm?)



Fragmentation

Offensive

Incendary

Smoke Color

F&B

Teargas



66mm Launchers on
MB Special Forces

 **TFU** 
Experiences

Smoke Grenades

76mm Launchers on
Fennek



66mm SMK RP

Patria
YPR
Viking



PzH2000

76mm Smoke RP

**No info on High
quantity use**



Investigation on operational
functioning in extreme climate
area's



TFU Experiences

IED threat



Working Levels



Protection



Mild Traumatic Brain Injury (mTBI)



Extremey Dangerous



RKG3



DATA Loggers



Pilot Data Collecting

- Shock
- Temperature (solar radiation)
- Humidity

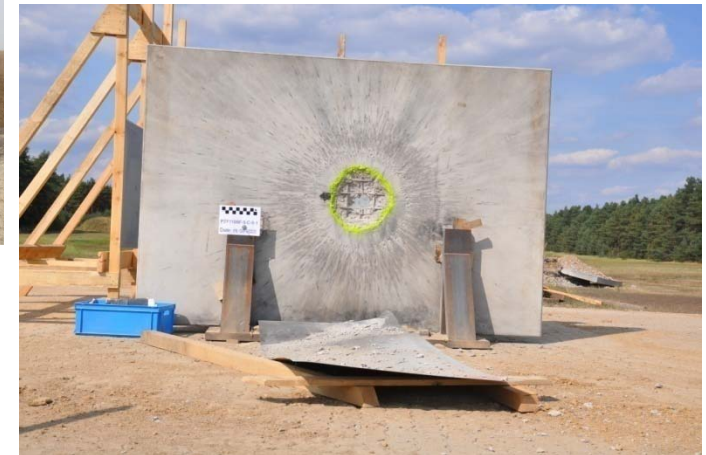
 120mm Leopard 2



MOUT Experiment

120mm Tank Ammunition
155mm Artillery Ammunition

35mm IFV Ammunition
AT/AS Panzerfaust Family



In planning:
Gill, Hellfire (?),
Medium Caliber (25, 30, 35, 40)
Others?

International Data Exchange

GER, TV28

USA, DEA1182

DNK, CH, CAN



HEAT-T



120mm



HE/PD-SQ
TP-T



MOUT Experiment Ammunition Involved



PELE



TPCSDS-T



Canister



155mm

HE



TP & TP with Spotting Charge

35mm

KETF



TPFDS-T





MOUT Experiment

AT/AS Ammunition Involved

Dynamit Nobel

PzF HEAT DM12A2

BF DM32



Inserted Probe:
HESH mode



PzF90 HEAT

PzF60 HESH DM62



PzF90 ASM





Breaching Experiment



Diemaco
C7/C8



Simon



HK 69A1

Underslung AG36



40mmx46
Breaching





New IFV with 35mm ammunition



Studies on 30/35mm:
Life Cycle Cost
Ammunition Effectiveness
Firing Doctrines



OLD → NEW

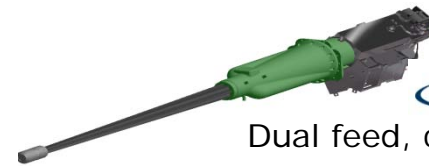
YPR 765 with 25mm KBA B02B

ERA protection (TFU)



DNK

CV9035NLD with 35mm Bushmaster III



Dual feed, chaingun.
Linked ammunition



35mm Linked Ammunition



> 400 particles



Effectiveness study

Under Development



APFSDS-T, PMD343



APDS-T, nr555



TPFDS-T, nr469



FAPDS-T, DM33
Temporary



KETF, nr468



TP-T, PMD064



HEI-T, PMD040



Additional Protection Programm CV9035NLD



ERA ?



APS ?



Problems



Problems

Standardisation of Ammunition

AN ABSOLUTE MUST !



Small Caliber Ammo



Working together
with
coalition partners

A CHALLENGE



CIS 40AGL



Mk 19



GMG



LAG 40



40 x 53mm High Velocity Ammunition

40mmx53



STANAG 4172
STANAG 2310
STANAG 4090



STANAG 4403



Male - Female



Problems



Problems

Standardisation of Ammunition

Not System Ready

AN ABSOLUTE MUST !

Everything is different



US Ammo in Leo and VV

120mm Tank Ammunition



STANAG 4385



Working together with coalition partners

A CHALLENGE



M252, L16, etc

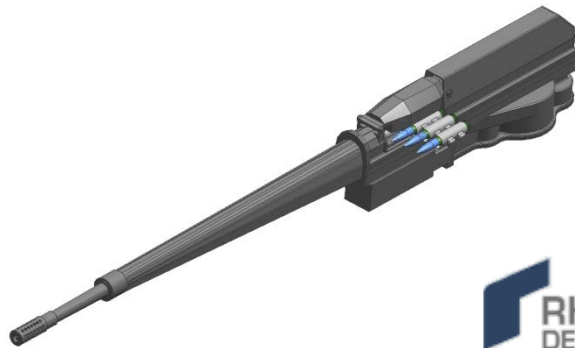
81mm Mortar Ammunition



STANAG 2427



Some Interesting Developments



Lightweight 12,7mm

External Powered

Dual feed

Linkless Ammunition



40mmx46 MV
Existing Weapons?

Lightweight 25mm

External Powered

Dual feed

New Caliber (25mmx59)



STANAG 4383

Standardisation vs Modernisation

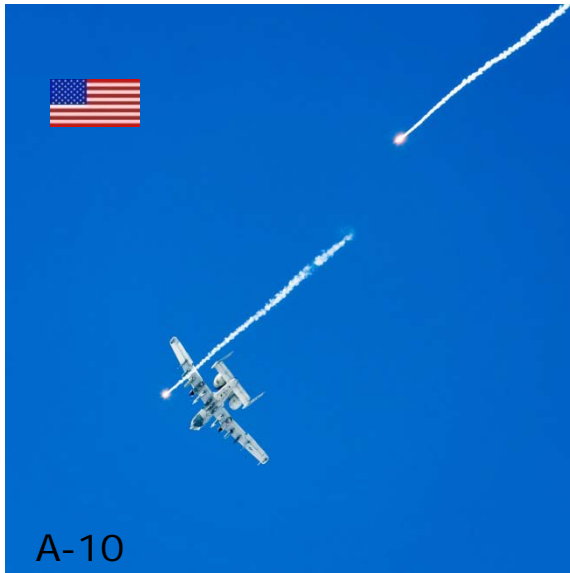
Warfighter Focused
Technology Driven



STANAG 4173



Systems In Action



A-10



F-16 NLD

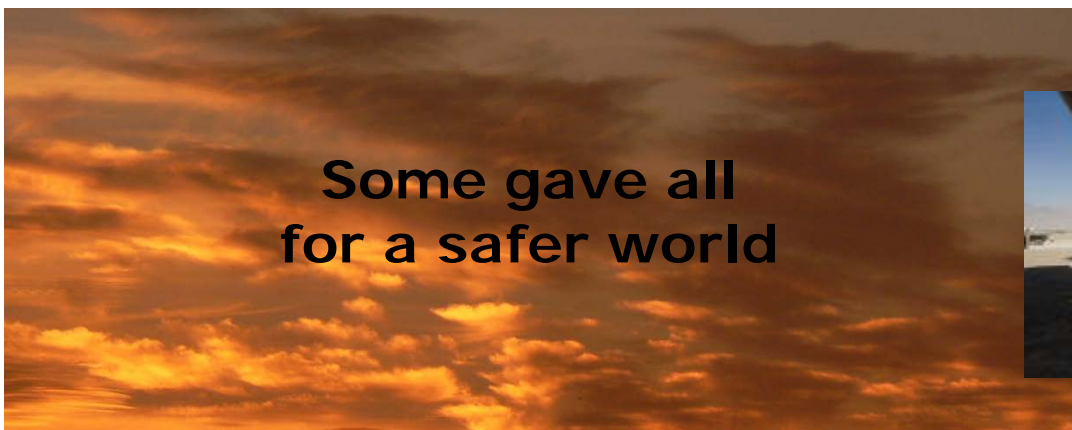


PzH2000 NLD

**Peace Keeping Operation
with
High Ammunition Use**



Sunset in Afghanistan





Thank You for your Attention

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Defence Materiel Organisation



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