

# **South Africa-US International Armaments Cooperation (IAC) Framework**



**Duncan Lang  
Africa, India and Singapore Desk Officer  
International Cooperation Directorate  
Office of the Under Secretary of Defense  
(Acquisition, Technology & Logistics)**

## **OUSD(AT&L)/IC Mission**

- Represent USD(AT&L), currently Mr. Frank Kendall, for all international cooperative matters
- Facilitate international armaments cooperation with Allies and friendly foreign countries and industry in concert with the DoD policy and the National Security Strategy
- Advocate international cooperation early in Component-unique and Joint acquisition programs to meet future coalition requirements
- Resolve international issues associated with acquisition efforts

# What is International Armaments Cooperation (IAC)?

**International armaments cooperation (IAC)** is “cooperative research, development, test, and evaluation of defense technologies, systems, or equipment; joint production and follow-on support of defense articles or equipment; and procurement of foreign technology, equipment, systems or logistics support.

Cooperative research, development, and acquisition projects and programs include:

- Harmonization of Military Requirements.
- Exchanges of information and personnel.
- Research, development, test, and evaluation (RDT&E) of defense technologies, subsystems, and systems or equipment.
- Cooperative production (including follow-on support) of defense articles or equipment resulting from a cooperative Research and Development (R&D) program.
- DoD procurement of foreign equipment, technology, or logistics support.

# Perspectives

- **Presidents and Prime Ministers**
  - We must have it.
- **Defense Ministers:**
  - We must be interoperable and our resource constraints demand we cooperate.
- **Chiefs of Staff:**
  - Yes, certainly--but don't jeopardize my program.
- **Planners:**
  - Sounds good, but if I can't absolutely depend on it, I can't plan for it.
- **Program Managers:**
  - What?! Two budget systems? Two Congresses? Currency exchange fluctuation? Change my specifications? Joint Program Office? MOU? Oh, man....

**It doesn't come naturally**

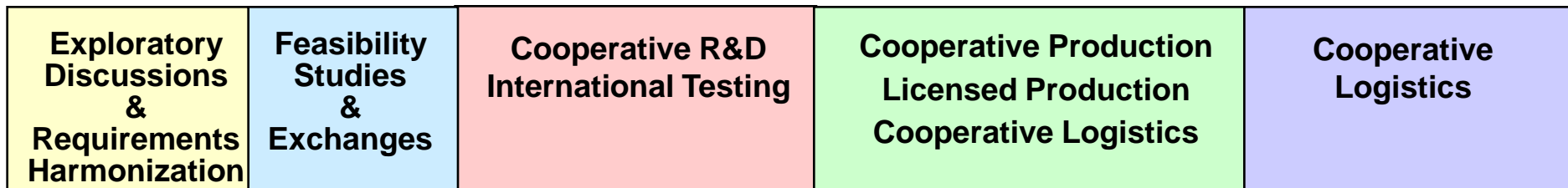
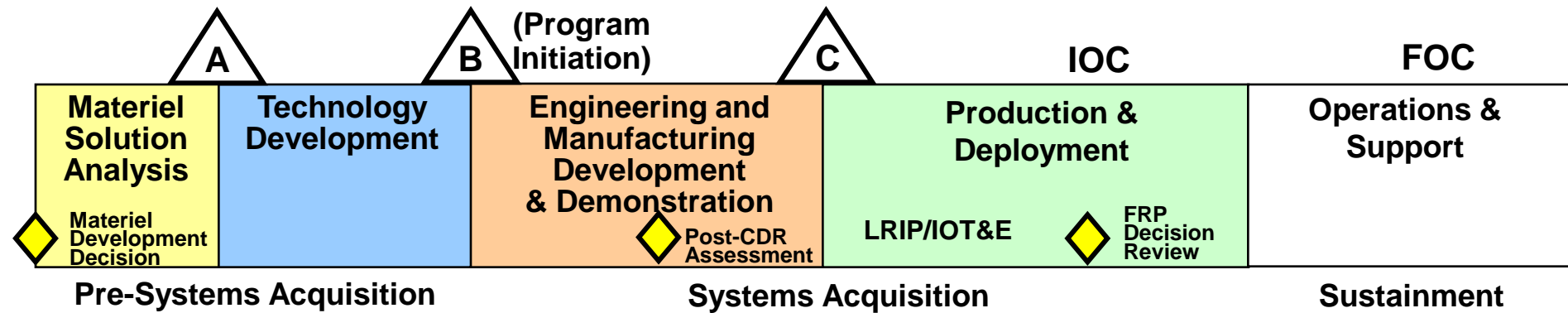
# The Why – IAC Objectives

- **Operational** - increase military effectiveness through interoperability and partnership with allies and coalition partners.
- **Economic** - reduce weapons acquisition cost and achieve Better Buying Power (BBP) by sharing costs and economies of scale, avoiding duplication of development efforts; and achieving the cooperative production or sales of more weapons systems to our allies and friends.
- **Technical** - access the best defense technology worldwide, and help minimize the capabilities gap with allies and coalition partners.
- **Political** – strengthen alliances and relationships with other friendly countries.
- **Industrial** – bolster domestic and allied defense industrial bases.

## The How – IAC Activities

- Information Exchanges (Tech data exchanges)
- Engineer and Scientist Exchanges
- Joint Concept Technology Demonstrations
- Technology Research and Development Projects
- Cooperative Development (components, systems)
- Cooperative Test & Evaluation
- Foreign Comparative Testing
- Licensed Production and Coproduction
- Acquisition and Cross-Servicing
- Strategic Logistics
- Purchases and Sales of Defense Equipment

# The When – IAC Opportunities



**Cooperation across the spectrum**

## **South Africa-US IAC - Background**

- South Africa-US Defense Committee (DEFCON) since 1997
- Originally part of Gore-Mbeki BiNational Commission (new Strategic Dialogue began 2010)
- Current schedule (officially) every 12 months: last meeting Sep 12 in US; next meeting TBD (tentatively Oct 14) in South Africa
- Full normalization of US-South Africa defense trade not finalized until Sep 2004 (Apartheid-era debarment fully rescinded)



# Acquisition & Technology Working Group (A&TWG)

- One of six working groups under DEFCOM
- “Senior bilateral forum” between the US DoD and South African DoD “for discussion and coordination of matters involving research, development, test, evaluation, production, follow-on support and disposal of defense equipment”
- Co-Chairs:
  - SA: Chief, Defence Matériel (Currently Mr. Mthobisi Zondi)
  - US: Director, International Armaments Cooperation, OUSD(AT&L) (currently Mr. Matt Warren)
- Normally meets in conjunction with DEFCOM, but has met twice on its own
- All Partners Access Network (APAN) Community

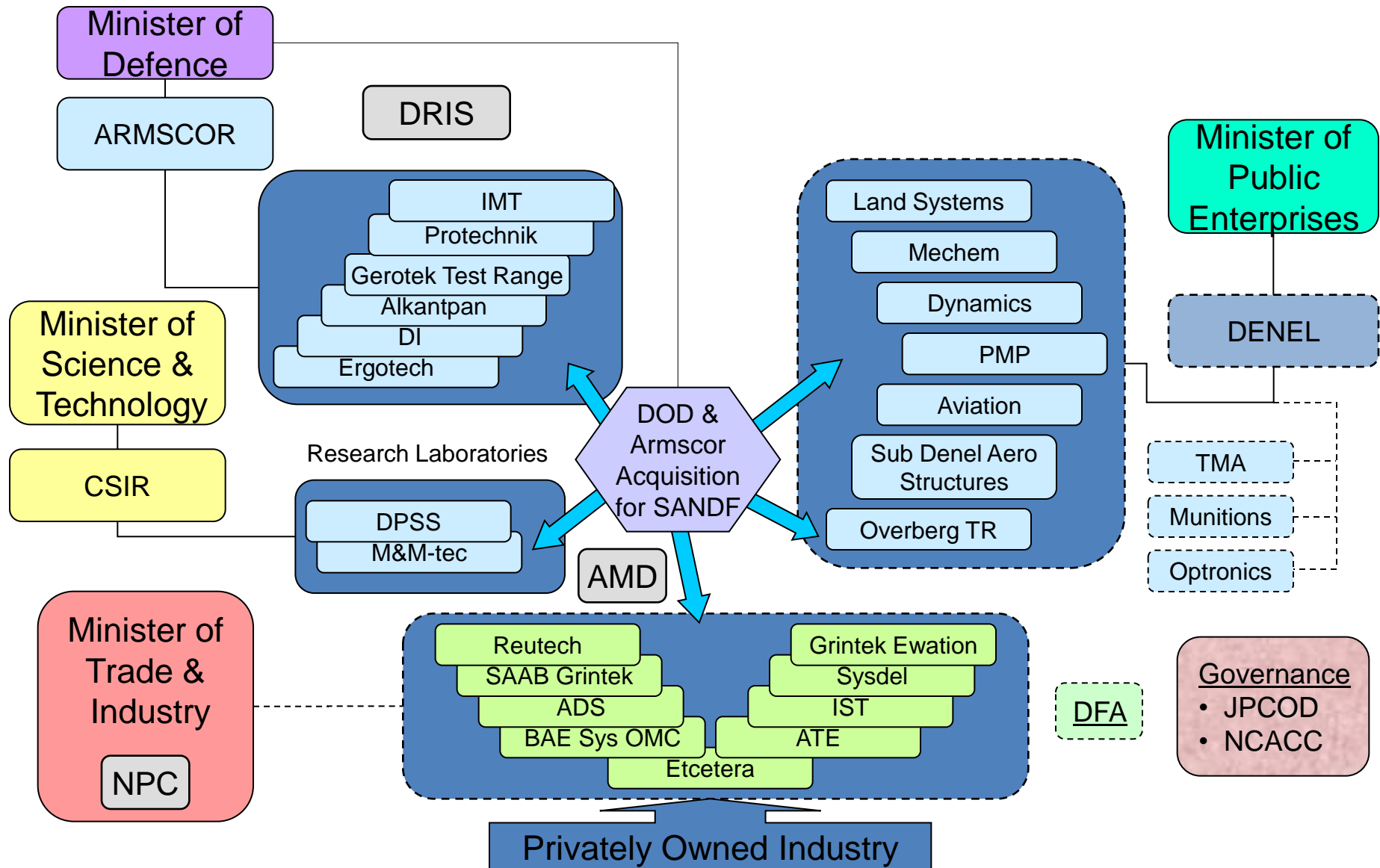
# International Agreements

- Master Information Exchange Agreement (MIEA) (Apr 01)
- Information Exchange Annex (IEA) on Artillery and Mortars (May 04)
- State Department Science and Technology (S&T) Agreement (Dec 05)
- Research, Development, Test and Evaluation (RDT&E) Agreement in negotiation (possibly completed Sep 14)
- Possible IEAs on Counter-IED, Energetics, Chemical Defense, Naval Surface Warfare and Oceanography and Hydrography have been discussed
- Engineer and Scientist Exchange Program (ESEP) has been proposed

# South Africa is Unique Partner for Defense R&D

- Most Research & Development capacity resides outside of DoD:
  - Some with Defence, Peace, Safety and Security (DPSS), part of Council for Scientific and Industrial Research (CSIR) which is government, but belongs to the Department of Science & Technology.
  - Some with state-owned enterprises such as Denel, which belongs to the Department of Public Enterprises.
  - Some with enterprises that are partly state-owned or privately owned by South Africa, but also partially owned by companies from another country such as Rheinmetall Denel Munitions or Saab Avitronics.
- Test and Evaluation (T&E) facilities are also under various arrangements including:
  - Wind tunnels owned by CSIR.
  - Artillery (Alkantpan) and vehicle (Gerotek) test facilities owned by Armscor, the government defense acquisition entity.
  - Missile (Overberg) test range, a division of Denel.
- However, although now from different organizations, most of these entities/facilities were at one time consolidated under DoD and Armscor so there is some “family connection.”

# RSA DEFENCE RELATED INDUSTRIES



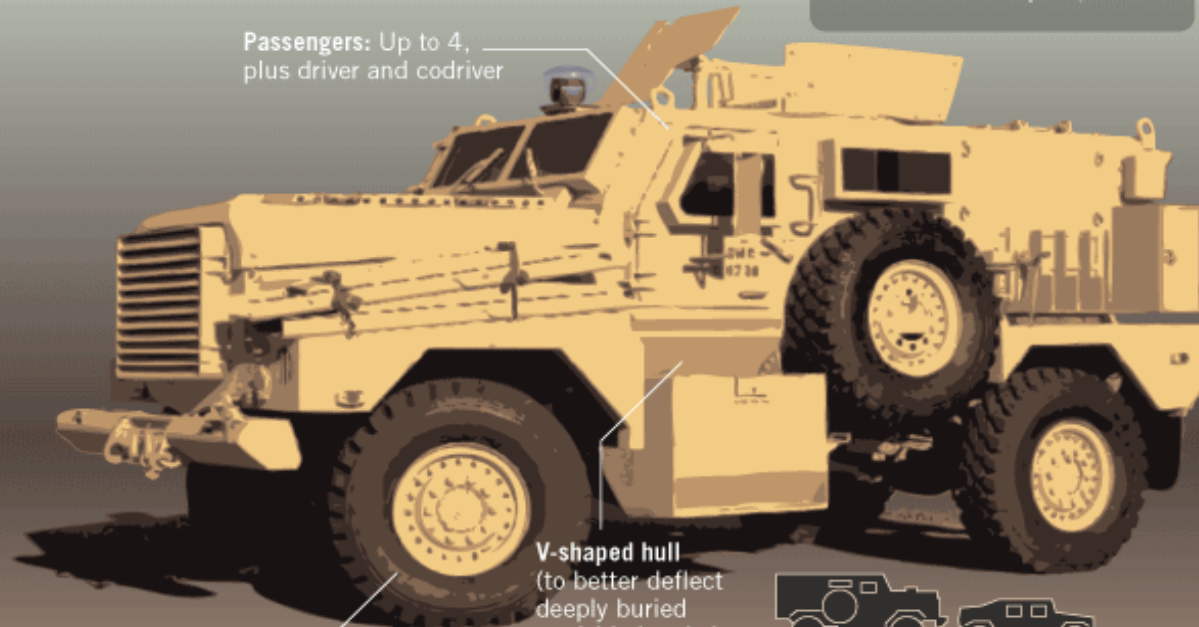
# MRAP

## Mine-Resistant, Ambush-Protected Vehicle (MRAP)

MRAPs like the Cougar can weigh two to five times as much as humvees, prompting concerns that they could cause some bridges to collapse. But sitting up high allows soldiers to see more.

HORSEPOWER ..... 330 at 2,400 rpm  
RANGE ..... 420 miles  
HEIGHT ..... Approx. 104 inches  
WIDTH ..... 108 inches  
LENGTH OVERALL .... 233 inches  
WEIGHT ..... 32,000 lbs.  
PAYLOAD MAX ..... Up to 6,000 lbs.

Passengers: Up to 4,  
plus driver and codriver



V-shaped hull  
(to better deflect  
deeply buried  
roadside bombs)

Run-flat tires



COUGAR

HUMVEE

# Mine-Protected Vehicles - Background

- Increasing mine incidents in Rhodesia and the Caprivi Strip in South West Africa (now Namibia) led the Defence Research Unit of South Africa to begin studying “mine protecting” vehicles in 1972.
- Early designs used modified chasses and available materials to come up with odd-looking vehicles with names like Camel, Pookie, Rino, etc.
- Eventually proven design features were incorporated into purpose-built vehicles with the Casspir, introduced in 1979, being the best known.



Rino

Casspir



## **Mine-Protected Vehicles - Features**

- V-shaped hulls
- Blast deflection
- Avoidance of “traps” for explosive gases
- Additional/special armor
- Engineered damage characteristics
- Damage resistant tires
- Measures to minimize passenger injury

# Mine-Protected Vehicles - Effectiveness



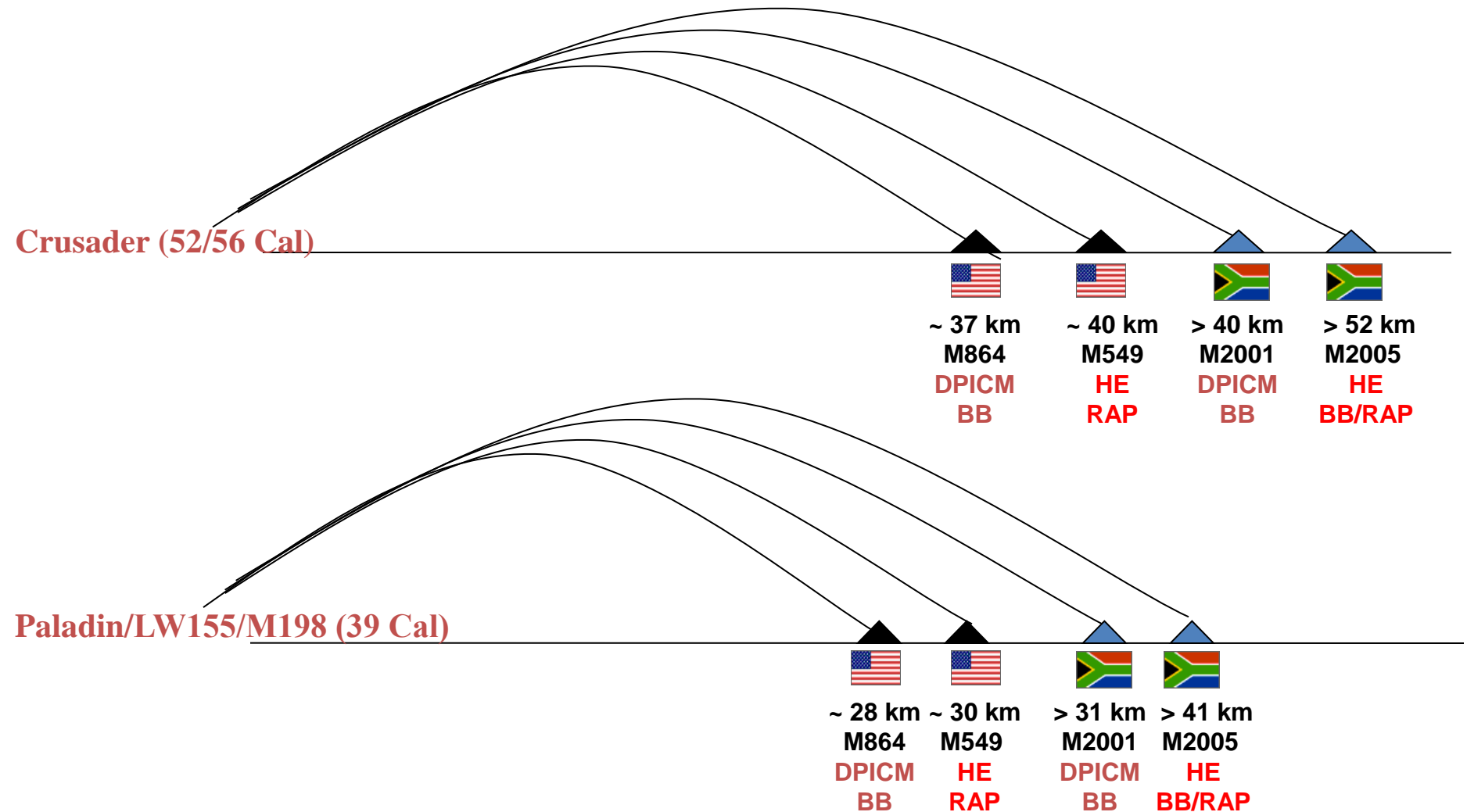
“The VBIED (orange and white GMC Suburban) detonated ...just off the right front of the Casspir vehicle (number three in the convoy main body). The Casspir vehicle was flipped and rolled off the road. Passengers in the Casspir vehicle sustained minor injuries.” - US Contractor, Iraq, 18 Dec 2004



# Advanced Cannon Artillery Ammunition Program (ACA2P)

- US Army (PM - Combat Ammunition Systems (PM-CAS)), General Dynamics Ordnance and Tactical Systems (GD-OTS) and Denel Naschem (now Rheinmetall -Denel Munitions teaming arrangement
- To produce longer-ranged , more lethal 105mm and 155mm artillery ammunition for US Army
- Two rounds:
  - 105mm Insensitive Munitions (IM) High Explosive (HE) Pre-formed Fragmentation (Pff)
  - 155mm IM HE
- 105mm Pff round comparable in range and lethality (to most target sets) to our M107 155mm round
- 105mm contract signed (first 30,000 projectiles and 25% of remaining production produced in South Africa)
- 155mm tested, but not procured

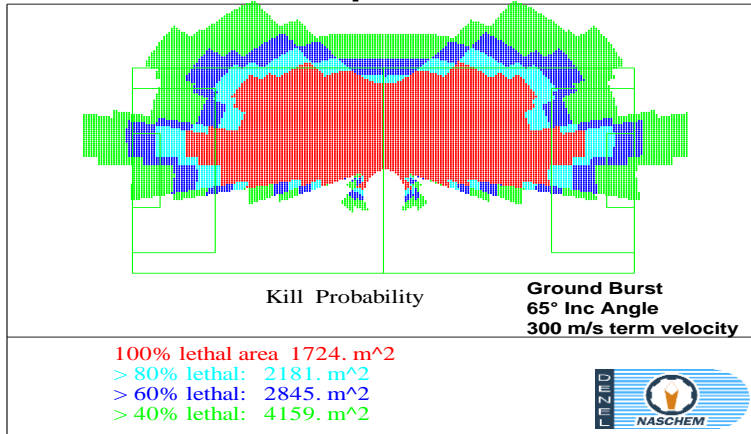
# Range Comparison – Current US vs. ACA<sup>2</sup>P



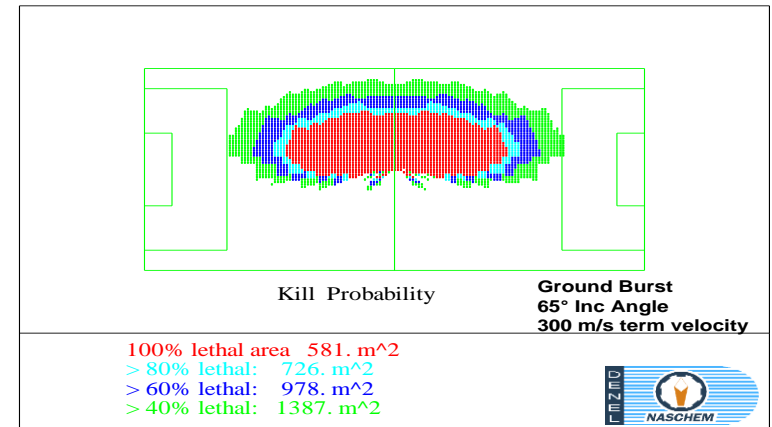
# Denel 105mm pff

## LETHALITY COMPARISON @ GROUND LEVEL

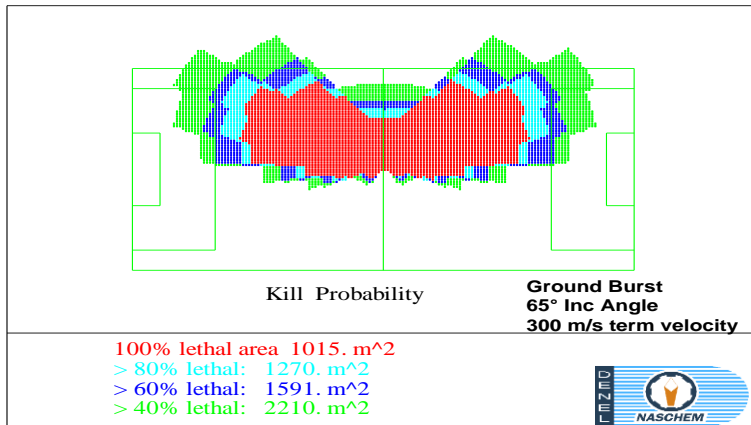
**105mm pff M9759A3**



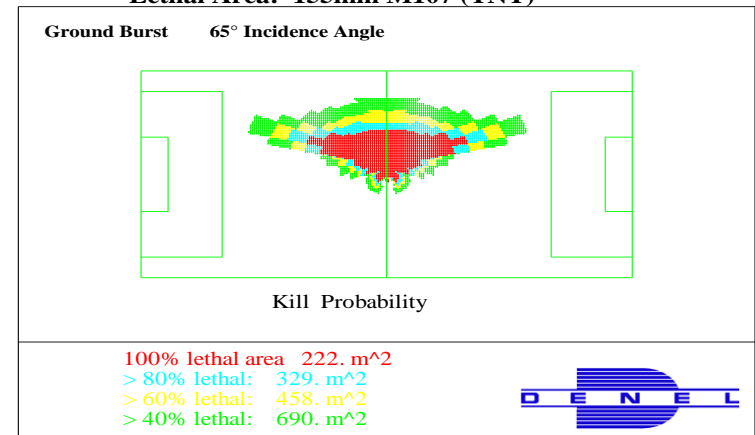
**105mm NAT M9727A3**



**M1\_155mm**



**Lethal Area: 155mm M107 (TNT)**



Denel 105mm pff exceeds US 155mm M107 lethality

## Humanitarian Demining (HD)

- Humanitarian Demining Research and Development (HD R&D) Program, had at least four projects in cooperation with South Africa's Council for Scientific and Industrial Research (CSIR):
  - Protective Mine Boots
  - Minefield Marking Kit
  - Vehicular Array Mine Detection System (VAMIDS)
  - Mechem Explosive and Drug Detection System (MEDDS)

# Foreign Comparative Testing (FCT)

- 7 FCT projects; 4 tested successfully
- Procurement approximately \$90 M; total invested approximately \$11.1 M.

## FCT Procurements:

105mm Preformed Fragments	Army	2008
Corona Monitoring System for Navy VLF/LF Comms	Navy	2003
Mine Protected Clearance Vehicle	Army	2002
Interim Vehicle-Mounted Metallic Mine Detector	Army	1997

## FCT projects:

Anti-Material Rifle	SOCOM	2007
105mm Preformed Fragments	Army	2003
155mm Ammunition	Army	2003
Corona Monitoring System for Navy VLF/LF Comms	Navy	2003
Bradley Fighting Vehicle Long-Life Roadwheels	Army	2001
Mine Protected Clearance Vehicle	Army	2000
Interim Vehicle-Mounted Metallic Mine Detector	Army	1995

# Other Potential Cooperation

- Water Security - US Army Corps of Engineers Research & Development (R&D) Program Directorate interested in Water Security issues, coastal mapping, and various other projects which are also of interest to South Africa's Defence Decision Support Institute (DDSI) (under ARMSCOR) and the Council for Scientific and Industrial Research (CSIR)
- RAMJET fuel injection technology - US Naval Air Systems Command's (NAVAIR) Naval Air Warfare Center Weapons Division (NAWCWD) China Lake interested in cooperating with ARMSCOR R&D on RAMJET fuel injection technology.
- Sensor Technology - US Army Research Office (ARO) has ongoing sensor technology development programs that could be similar to sensor development programs being conducted by CSIR in support of current South African border and maritime security issues.
- Aerostats - ARMSCOR and CSIR have submitted Letters of Request (LOR) for Price and Availability (P&A) for possible acquisition of Excess Defense Articles (EDA) program aerostats for conducting sensor technology development. They have additionally released a public tender notification for new acquisition of tethered aerostats towards developing new sensor capabilities and improving maritime and border security observation.
- Ad-hoc Networks - US Naval Research Laboratory (NRL) and US Air Force Space and Missile Systems Center (SMC) are interested in cooperating with CSIR on project SpiderWeb, a US Navy project with South Africa to develop prototype technology for communication and data transfer for ad-hoc networks in denied environments (FY15-16).

# **Africa Aerospace & Defence (AAD)**

- Largest defense expo in Africa
- Biennial in even years; next one 17-21 Sep 2014 at AFB Waterkloof near Pretoria, South Africa
- Sponsors: South African DoD, Armscor (defense acquisition agency), South African Aerospace, Maritime and Defence Industries Association (AMD), and Commercial Aviation Association of Southern Africa (CAASA)
- 350 + companies from 35+ countries
- Top leadership of the South African National Defence Force (SANDF) and defense ministers, chiefs of defense, and/or chiefs of services from many other African countries

# Industry-to-Industry Cooperation

- US National Defense Industrial Association (NDIA) and South African Aerospace, Maritime & Defence Industries Association (AMD) signed Memorandum of Understanding (MOU) in Sep 10.
- In conjunction with the past two Africa Aerospace & Defence (AAD) expositions there have been US-South Africa Defense Industry Cooperation Symposiums hosted by U.S. Commercial Service - South Africa (CSSA):
  - Sep 10 - Industry Support to US and South African strategic interests
  - Sep 12 – Industry Support to Peacekeeping Operations
- For the Sep 14 AAD, CSSA is working with the AAD Executive Committee on a possible symposium on Border Security Technology.
- NDIA has also proposed an Attaché Luncheon co-hosted by NDIA and South African Defense Attache to provide U.S. defense industry an opportunity to meet South African government representatives and for South Africa attaché staff to provide industry with briefings on South African defense industry and acquisition programs.



# Questions?

