



# Abrams Tank Systems



**Lessons Learned**  
**Operation Iraqi Freedom**  
**2003**

# Purpose



- As with all wars and contingency operations, capturing system performance and lessons learned are critical to improving the systems so we are better able to fulfill the warfighters requirements
- This briefing captures some of the key equipment performance issues and lessons learned as interpreted by PM Abram's personnel deployed forward with the Divisions during Operation Iraqi Freedom

# Topics of Discussion



- Armor Protection
- Firepower/Target Acquisition
- Automotive
- Logistics & Sustainment
- Summary

# Protection



- **NO catastrophic losses due to Iraqi direct or indirect fire weapons**
  - ◆ Several tanks were destroyed due to secondary effects attributed to enemy weapon systems
  - ◆ Majority of losses attributed to mechanical breakdown and vehicle either being stripped for parts or severely vandalized by Iraqi people
  - ◆ No reported case of an AGTM ever being fired at any U.S. Army vehicle
    - No Kornet missiles found in country
- **Frontal turret and hull armor continues to provide excellent crew protection. Top, side, and rear armor remains susceptible to penetration**
  - ◆ Documented instances where 25mm AP-DU and above ammunition disabled a tank from the rear
  - ◆ Left and right side non-ballistic skirts repeatedly penetrated by anti-armor RPG fire
  - ◆ Cosmetic damage only when struck by anti-personnel RPG rounds
  - ◆ No reported hits on ballistic skirts
  - ◆ No reported instance of tank hitting an anti-tank mine



# Protection (cont.)



- **Turret ammunition blast doors worked as designed**
  - ◆ Documented instance where turret ready rack compartment hit and main gun rounds ignited. Blast doors contained the explosion and crew survived unharmed except for fume inhalation
- **Externally stored items highly vulnerable to small arms fire**
  - ◆ In some instances, catastrophic losses resulted from burning EAPU material and/or packaged POL products dripping down into the engine compartment catching the engine on fire
  - ◆ Many instances where TA-50 lost or damaged due to enemy fire or secondary affect
  - ◆ Lesson Learned – Review and adhere to established load plans



# Protection (cont.)



- **Fear of vehicle/technology compromise led to decisions to destroy abandoned tanks**
  - ◆ Tanks repeatedly shot by friendly fire, however they NEVER catastrophically destroyed the tanks except in one instance
  - ◆ Took one thermite grenade, one sabot in turret ammunition compartment, and two Maverick missiles to finally destroy the tank. Ended up compromising the SAP armor package during the destruction process
  - ◆ Lesson learned – Determine ahead of time what/how much of the tank you want destroyed and train crews to execute mission
    - Is a sabot in the engine and a thermite grenade in the interior crew compartment enough?
- **Individual protective equipment worked well**
  - ◆ JLIST suits are much better than the old NBC suits
  - ◆ CVC's WILL stop a 7.62 mm round





# 26 March, An Najif - B24, 3-7 Div Cav

Vehicle disabled from 25mm penetration of engine compartment



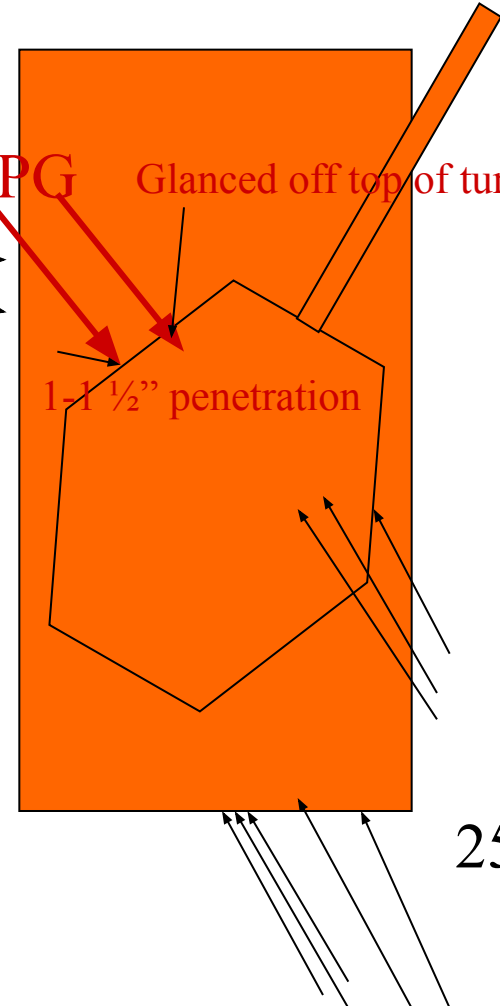
Pitting from multiple small arms

RPG

Glanced off top of turret

1-1 1/2" penetration

25mm



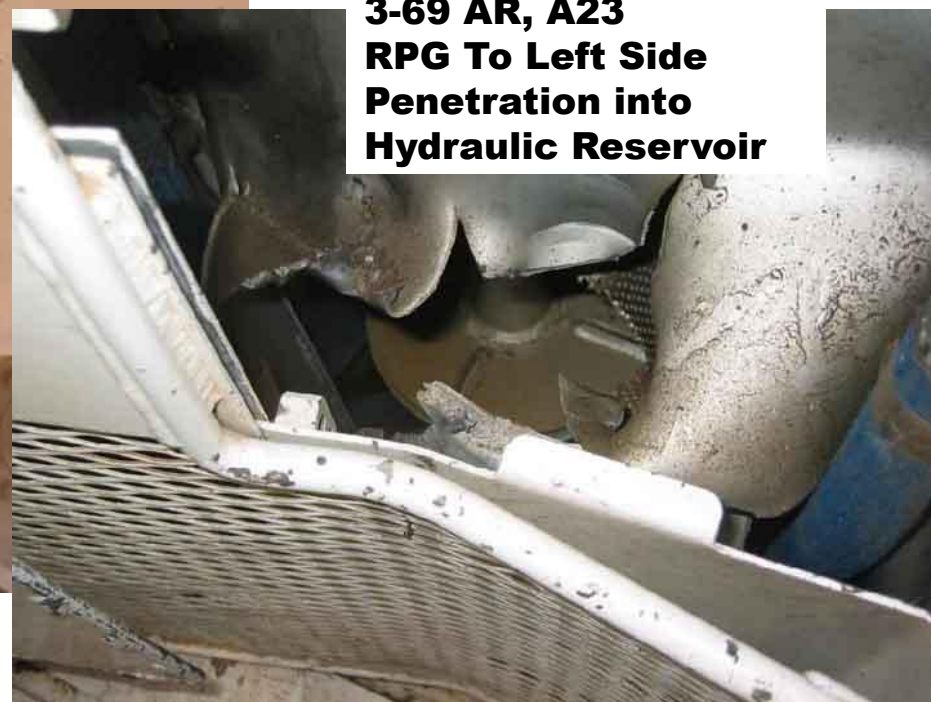
# 2 April, Karbala – Anti armor RPG attack



**3-69 AR, A23  
RPG To Left  
Side**



**3-69 AR, A23  
RPG To Left Side  
Penetration into  
Hydraulic Reservoir**



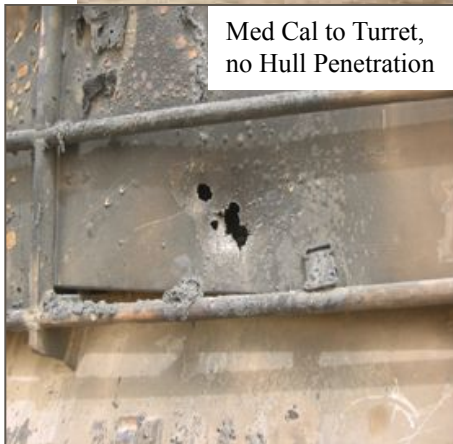


# 5 or 7 April, Baghdad - vehicle fire



1-64 AR, B24

Medium Cal to Left Sponson Box  
Initiated EAPU Fire. Affects from  
EAPU caused Engine Fire.  
Stripped of parts by US



Med Cal to Turret,  
no Hull Penetration

EAPU Fire

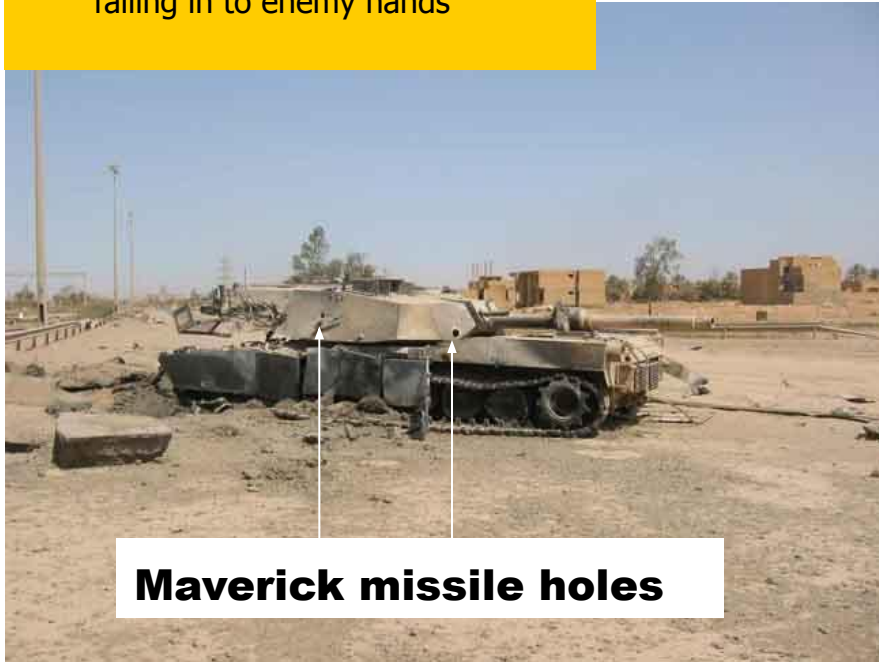


# 5 April, Baghdad - C12, 1-64 Ar Bn



1-64 AR, C12

Being towed back to UMCP because of engine fire. Purposely destroyed by unit to keep from falling in to enemy hands



**Maverick missile holes**



**Sabot hole**



# **Firepower/ Target Acquisition**

# Firepower



- **Overall, very little SABOT was used**
  - ◆ **Devastating effects when used**
- **Heat and MPAT ended up being the preferred main gun round**
  - ◆ **Effective against buildings and bunkers**
- **Crew served machine guns ended up being weapon of choice in numerous engagements**
  - ◆ **Target rich environment**
  - ◆ **Iraqis hid in fighting positions until tanks were very near before attacking thus negating the use of the main gun**





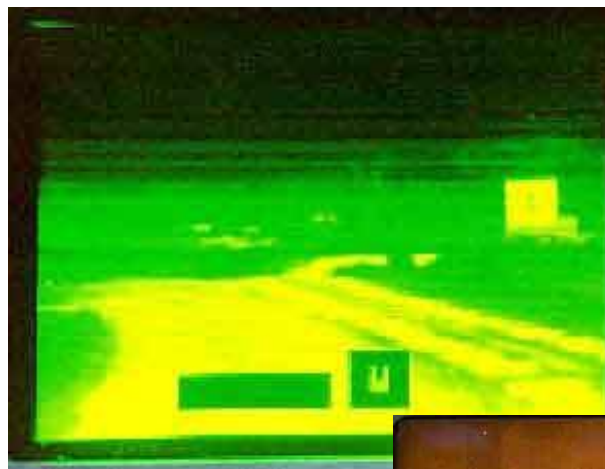
# Target Acquisition



- **First Gen FLIR again accomplished the mission but 2nd Gen FLIR needed to match capabilities of main gun fire control system ranges**
  - ◆ **Sand storms made target acquisition difficult**



**Sandstorm at OBJ RAMS  
25-27 March**



← 10X

50X →





# Automotive



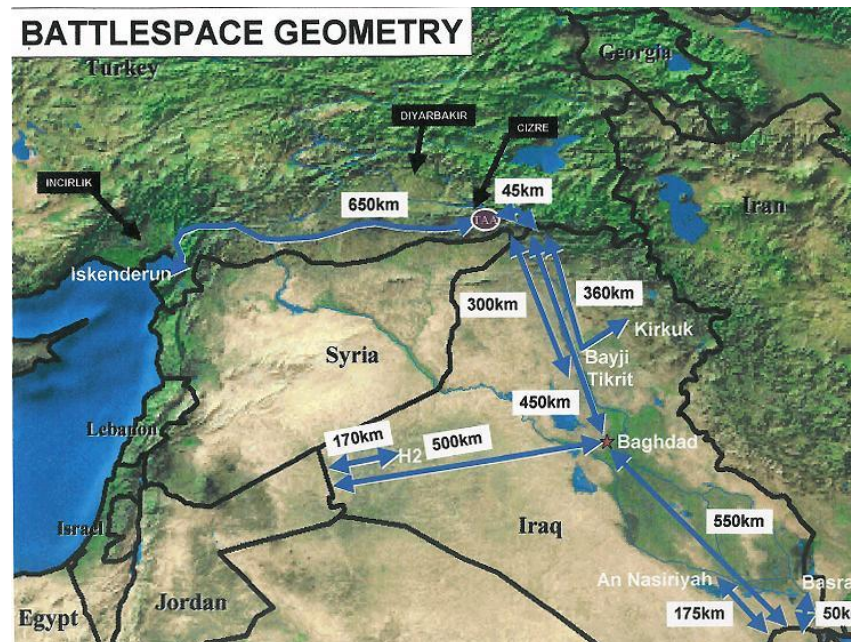
- **APS fleet is not equipped with PJAS. Given the extreme dusty conditions, VPACs required continuous cleaning and servicing by crews. Suspect lack of PJAS contributed to higher rate of engine failure**
- **Suspension Issues**
  - ◆ **High rate of failure on #2, #3 and #5 left and right road arms and assemblies**
    - **Under investigation by PM Abrams and GDLS engineers**
  - ◆ **Road wheels and track wear proved to be significant over long distances and high rates of speed**



# Automotive (cont.)



- Rate of movement and maneuvering over vast distances in a short period of time caused units to use more fuel than projected. Ended up taxing the logistics system
- Combat conditions placed a high demand on turret power and required continuous scanning. Mixed feedback on use and value added of external auxiliary power unit



# Logistics & Sustainment



- **Units that deployed with healthy ASL's and PLL's fared best**
  - ◆ **OPTEMPO of campaign did not facilitate pushing class IX parts forward until Baghdad secured**
  - ◆ **In some instances, critical end items were airlifted forward when weather permitted**
  - ◆ **If unit did not have a required part on hand then the vehicle was stripped of all usable components and left where it sat**
- **All division level units consistently displayed the inability to send SARRS data**
  - ◆ **Poor or no visibility on requisition status**
  - ◆ **Generally SARRS worked fine but communication links failed due to a variety of issues**
    - **Could not get through fire walls**
    - **Software and driver problems**
    - **Internet routing protocols**
- **Satellite based communications proving to be the most reliable form of communications**
  - ◆ **Distance and terrain**

# Logistics & Sustainment



- **TAP placement and retrograde process**
  - ◆ **TAP initially placed at Arifjan (Theater logistics hub). Now placed at Balad airfield north of Baghdad to better support 4 ID and 3 ACR**
  - ◆ **LRU/SRU's that can not be fixed by TAP forward are flown back from Balad to Arifjan where they are sent back to Ft. Hood for repair. Estimate minimum 30 day turn around time for replacement LRU/SRU to arrive back in country**

# Summary



- **The Abrams tank performed extremely well providing excellent maneuver, firepower, and overall crew protection**
- **Engines typically outlived expectancies and transmissions proved to be durable**
- **Specific areas of improvement include:**
  - ◆ **Side and rear armor protection**
  - ◆ **Wartime ASL/PLL authorization**
  - ◆ **Stowage plans**
  - ◆ **Suspension durability**



# Arches Into Baghdad from South



**Remember and honor those who  
made the supreme sacrifice for all  
of us to be here**

