

STATEMENT
BY
COLONEL JAMES G. BURTON
TO THE
RESEARCH AND DEVELOPMENT SUBCOMMITTEE
HOUSE ARMED SERVICES COMMITTEE
U.S. HOUSE OF REPRESENTATIVES

JANUARY 28, 1985

CLEARED
FOR OPEN PUBLICATION

JAN 28 1986 23

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

STATEMENT

THANK YOU MR. CHAIRMAN FOR THE OPPORTUNITY TO ADDRESS THIS COMMITTEE AND EXPLAIN THE JOINT LIVE FIRE TEST PROGRAM. THE PURPOSE OF THIS PROGRAM IS, QUITE SIMPLY, TO SAVE U.S. LIVES BY TESTING TO ENSURE THAT: 1) U.S. WEAPONS PLATFORMS DO NOT UNNECESSARILY ENDANGER THEIR CREWS, AND 2) THE WEAPONS U.S. SERVICEMEN FIRE ACTUALLY STOP THE ENEMY. THIS PROGRAM AFFECTS THE LIVES OF OVER 300,000 SERVICEMEN WHO MAY HAVE TO USE THIS EQUIPMENT IN COMBAT.

THERE HAS NEVER BEEN A PROGRAM TO SHOOT REAL SOVIET WEAPONS AT U.S. VEHICLES LOADED WITH THE DANGEROUS MATERIALS THEY HAVE TO CARRY IN COMBAT; FUEL, HYDRAULIC FLUID AND LIVE AMMUNITION. NOR HAS THERE BEEN A PROGRAM TO SHOOT U.S. WEAPONS AGAINST COMBAT LOADED SOVIET VEHICLES.

OUR WEAPON SYSTEMS TODAY ARE PROCURED WITH COMPUTER-BASED VULNERABILITY/LETHALITY ESTIMATES, LITTLE FIRING DATA AND NO FULL UP LIVE FIRING RESULTS. WHAT ARE THE CONSEQUENCES OF NOT CONDUCTING REALISTIC-COMBAT LIVE FIRE TESTING? WHEN ACTUAL COMBAT OCCURS, WE DISCOVER, TOO LATE, SERIOUS SHORT COMINGS IN OUR WEAPON SYSTEMS; SHORT COMINGS WHICH COST LIVES. THERE ARE MANY ACCOUNTS FROM WWII, KOREA AND VIETNAM WHERE U.S. "BAZOOKAS" FAILED TO

STOP ENEMY TANKS DUE TO INADEQUATE WARHEADS. IN WWII, KOREA AND ISRAEL, U.S. TANKS PROVED EXCESSIVELY FLAMMABLE AND VULNERABLE. THE ISRAELI EXPERIENCE OF 1973 SHOWED THAT THE U.S. M-60 BURNED OR BLEW UP TWICE AS OFTEN WHEN HIT AS THE BRITISH CENTURION, AND MORE OFTEN THAN ITS PREDECESSOR, THE M-48. CONCERN OVER EXCESSIVE CASUALTIES CAUSED THE ISRAELIS TO MAKE SEVERAL CHANGES TO THEIR M-60s; DIFFERENT HYDRAULIC FLUID, FIRE EXTINGUISHERS, SPECIAL ARMOR PACKAGES, ETC. THIS PAINFULL EXPERIENCE OF EXCESSIVE CASUALTIES ALSO LED THEM TO A UNIQUE ARMOR CONCEPT IN THEIR MERKAVA TANK WHICH SACRIFICES THE TANK IN ORDER TO PROTECT THE CREW. IN VIETNAM, U.S. FIGHTERS ALSO PROVED TO BE UNNECESSARILY FLAMMABLE AND VULNERABLE. FIRE AND EXPLOSION CAUSED THE LOSS OF AT LEAST 60 PER CENT OF THE 5,000 U.S. AIRCRAFT DOWNED IN VIETNAM. DURING THE COURSE OF THE WAR, SURVIVABILITY IMPROVEMENT KITS HAD TO BE HASTILY DEVELOPED AND INSTALLED ON FIGHTERS SUCH AS F-4 AND F-105 TO REDUCE THEIR VULNERABILITY. IN 1982, CONGRESS DIRECTED A COMPETITIVE "SHOOT OFF" BETWEEN CANDIDATE MODERN DAY BAZOOKAS TO DETERMINE WHICH ONE THE ARMY WOULD PROCURE FOR ITS INFANTRYMEN TO KILL TANKS. SIX CANDIDATES WERE TESTED, AND A WINNER WAS SELECTED, THE AT-4. OVER 400 ROUNDS WERE FIRED DURING THAT MAJOR COMPETITION, YET NOT ONE ROUND WAS FIRED AGAINST AN ACTUAL TANK; NOT EVEN ON AN EMPTY TANK, LET ALONE ONE LOADED WITH FUEL, HYDRAULIC FLUID AND LIVE AMMUNITION. AS A CONSEQUENCE OF NOT DOING COMBAT-REALISTIC LIVE FIRE TESTING, WE HAVE NO IDEA WHETHER TODAY'S

"BAZOOKA," TANKS OR FIRST LINE FIGHTERS HAVE IMPROVED THIS SITUATION. THE JOINT LIVE FIRE TEST PROGRAM WAS INITIATED BY OSD IN 1984 TO ANSWER THIS QUESTION, AND TO ASSIST IN MAKING SURE REAL IMPROVEMENTS HAPPEN.

THE PROGRAM WAS FORMALLY CHARTERED BY OSD TO BEGIN IN LATE FY 85 AND CONDUCT LIVE FIRE TESTING OF FRONT LINE U.S. ARMOR AND AIRCRAFT SYSTEMS. SOVIET ANTI-ARMOR WEAPONS ARE BEING TESTED AGAINST U.S. TANKS (M-1, M1A1, M-60) AND ARMORED PERSONNEL CARRIERS (M-2/3 BRADLEY, M-113, LAV, AND LVTP7). U.S. ANTIARMOR WEAPONS SUCH AS LAW, AT-4, TOW, ETC. ARE BEING TESTED AGAINST SOVIET TANKS AND ARMORED PERSONNEL CARRIERS. SOVIET ANTIAIRCRAFT WEAPONS ARE BEING TESTED AGAINST ACTUAL F-15, F-16, F-18, A-V8B, A-6E/F, US-60 and AH-64 AIRCRAFT. CONVERSELY, U.S. ANTIAIR WEAPONS ARE BEING FIRED AGAINST SOVIET AIRCRAFT. THE PROGRAM SCHEDULE IS ATTACHED TO THIS STATEMENT.

SINCE THE PROGRAM BEGAN IN LATE FY 85, THERE HAS BEEN CONSIDERABLE PROGRESS. TO DATE WE HAVE: 1) COMPLETED A TEST TO DESTRUCTION OF THE F-15/16 ENGINE VULNERABILITY TO FUEL INGESTION, 2) COMPLETED THREE LIVE FIRE SHOTS OF U.S. 105MM TANK ROUND AGAINST THE SOVIET T-62 TANK. FIRINGS OF OTHER U.S. ROUNDS, INCLUDING WE HOPE, THE AT-4 ANTITANK ROCKET, AGAINST T-62s WILL BEGIN IN LATE FEBRUARY, 3) FINALIZING THE TEST PLAN FOR 50 + LIVE FIRE SHOTS AGAINST THE M1A1 TANK TO START THIS MARCH, AND 4) COMPLETED 10 LIVE FIRE

SHOTS AGAINST THE BRADLEY, AND THE SOVIET BMP (SOVIET COUNTERPART TO THE BRADLEY), AND NINE SHOTS AGAINST THE IMPROVED TOW VEHICLE VERSION OF THE M-113 ARMORED PERSONNEL CARRIER.

SINCE THE PRIMARY PURPOSE OF THE JOINT LIVE FIRE PROGRAM TO ENSURE THAT U.S. WEAPONS PLATFORMS DO NOT UNNECESSARILY ENDANGER THEIR CREWS, LET US EXAMINE WHAT WE HAVE LEARNED ABOUT CASUALTIES FROM THE BRADLEY TESTS. THE MOST IMPORTANT LESSONS ARE:

1) AMMUNITION STORED IN THE TROOP COMPARTMENT IS THE MAJOR CAUSE OF UNNECESSARY CASUALTIES. WHEN THIS AMMUNITION IS HIT, BRADLEY CASUALTIES INCREASE BY FACTORS OF TWO TO THREE; THE SAME CAN BE SAID FOR THE SOVIET BMP AS WELL AS THE U.S. ITV.

2) FUEL AND FIRE EXTINGUISHERS IN THE TROOP COMPARTMENT MAY FORCE THE TROOPS OUT OF THE VEHICLE ALMOST EVERY TIME IT IS HIT, THEREBY CAUSING GREATER RISK OF ADDED CASUALTIES. THE ATMOSPHERE INSIDE THE VEHICLE AFTER A HIT IS SIMPLY INTOLERABLE.

3) BRADLEY CASUALTIES CAN BE SIGNIFICANTLY REDUCED. MOVING AMMUNITION, FUEL AND EXTINGUISHERS OUT OF THE TROOP COMPARTMENT WOULD PROVIDE THE GREATEST COMBAT CASUALTY REDUCTIONS.

4) WHEN AMMUNITION IS HIT, M-2 BRADLEY CASUALTIES ARE ABOUT THE SAME AS THE SOVIET BMP CASUALTIES; THE BRADLEY'S AMMUNITION PRESENTS ABOUT THREE TIMES AS MUCH AREA TO HITS AS DOES THE BMP'S AMMUNITION. THUS IN COMBAT, GREATER TOTAL CASUALTIES CAN BE EXPECTED.

SINCE THERE HAS NEVER BEEN A PROGRAM LIKE THIS BEFORE, IT WOULD ALSO BE USEFUL TO EXAMINE WHAT WE HAVE LEARNED ABOUT THE EFFECTIVE CONDUCT OF LIVE FIRE TESTS FROM THE BRADLEY EXPERIENCE:

1) INDEPENDENT OVERSIGHT AND REVISION OF INITIAL SERVICE TEST PLANS, WHERE APPROPRIATE, IS CRUCIAL.

2) INDEPENDENT ON-SITE OBSERVATION OF THE TESTS AND ACCESS TO ALL RAW DATA IS CRUCIAL.

3) AN INDEPENDENT ASSESSMENT ON RESULTS, IN PARALLEL WITH THE SERVICEASSESSMENT, IS CRUCIAL.

4) THERE MUST BE NO COMPROMISE WITH THE PRINCIPLE OF SHOOTING REAL WEAPONS AT REAL COMBAT-LOADED TARGETS-
- DESPITE THE VESTED INTERESTS OF PROGRAM ADVOCATES AND THE PRECONCEPTIONS OF TECHNICAL SPECIALISTS.

THERE ARE TWO FINAL INSIGHTS FROM THIS EXPERIENCE WHICH ARE WORTHY OF NOTE:

WE NEED LIVE FIRE TESTING FOR EVERY SYSTEM THAT EXPOSES SIGNIFICANT NUMBERS OF SERVICEMEN TO DANGER IN COMBAT. WE NEED THIS TESTING BOTH BEFORE THE DESIGN IS FINALIZED, AND FOR THE PRODUCTION VERSION.

WITHOUT CONTINUING YEAR-IN AND YEAR-OUT ATTENTION FROM THE SECRETARY OF DEFENSE AND THE FUNDING SUPPORT FROM CONGRESS, COMBAT- REALISTIC LIVE FIRE TESTING WILL FADE AWAY.

PURPOSE OF JOINT LIVE FIRE TEST PROGRAM

SAVE U.S. LIVES BY TESTING TO ENSURE:

- I. THAT U.S. WEAPONS PLATFORMS DO NOT
UNNECESSARILY ENDANGER THEIR CREWS.**
- II. THE WEAPONS U.S. SERVICEMENT FIRE
ACTUALLY STOP THE ENEMY.**

**THIS PROGRAM AFFECTS THE
LIVES OF ABOUT 300,000
SERVICEMEN IN COMBAT**

WHY IS THE JOINT LIVE FIRE TEST PROGRAM NEEDED?

- o THERE HAS NEVER BEEN A PROGRAM TO SHOOT REAL SOVIET WEAPONS AT REAL COMBAT-LOADED U.S. VEHICLES AND AIRCRAFT (NOR VICE VERSA)..**
- o SOME CONSEQUENCES:**
 - oo IN WWII, KOREA AND VIETNAM, U.S. "BAZOOKAS" FAILED TO STOP ENEMY TANKS.**
 - oo IN WWII, KOREA AND ISRAEL, U.S. TANKS PROVED EXCESSIVELY FLAMMABLE/VULNERABLE.**
 - oo IN VIETNAM, U.S. FIGHTERS PROVED UNNECESSARILY FLAMMABLE/VULNERABLE.**

**WE HAVE NO IDEA WHETHER TODAY'S
"BAZOOKA," TANK OR FIRST LINE
FIGHTERS HAVE IMPROVED THIS SITUATION.**

**WHAT VEHICLES AND WEAPONS ARE SCHEDULED
FOR JOINT LIVE FIRE TESTING?**

JLF ARMOR SCHEDULE

FY85 FY86 FY87 FY88 FY89

SYSTEM

U.S. VEHICLES

M-1

*M-1A1

*M-2/3

*M-113

LAV

LVTP7

M60

SOVIET VEHICLES

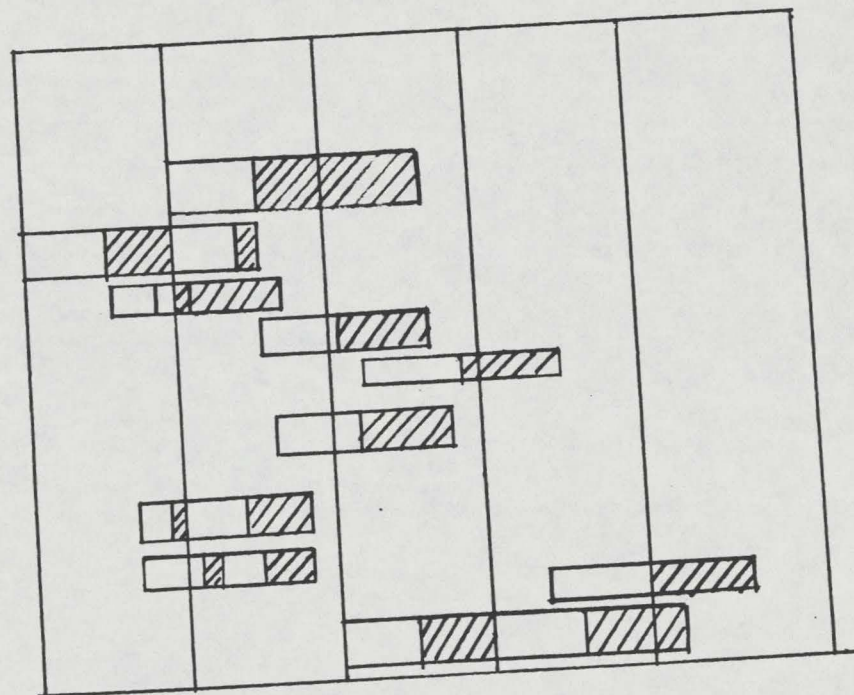
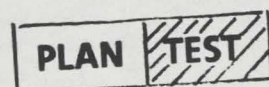
T-62

BMP-1/2

BRDM

FOREIGN TANKS

* FUNDED BY U.S. ARMY





JLF SCHEDULE/AIRCRAFT



	SUBSYSTEMS	FY85	FY86	FY87	FY88	FY89	FY90
F-15	FUEL SYSTEMS PROPULSION STRUCTURES	▲	▲ F100 ENGINE	▲ ▲ ▲ ▲ FUSE, WING, CFT	▲ WING, EMPENN	▲ PROOF TESTS	
F-16	FUEL SYSTEMS PROPULSION STRUCTURES	SAME AS F-15	▲ ▲ HYDRAZINE	▲ ▲ WING, EMPENN	▲ PROOF TESTS		
F-18	FUEL SYSTEMS PROPULSION STRUCTURES		▲ ▲ WING, FUSE	▲ ▲ F404	▲ EMPENN	▲ PROOF TESTS	
AV-8B	FUEL SYSTEMS PROPULSION FLIGHT CONTROLS		▲ ▲ PNEUMATIC, MECH	▲ ▲ WING, FUSELAGE	▲ PEGASUS	▲ PROOF TESTS	

NOTE: FOR CLARITY, NOT ALL TEST ARE SHOWN





JLF SCHEDULE/AIRCRAFT



	SUBSYSTEMS	FY85	FY86	FY87	FY88	FY89	FY90
A-6 E/F	FUEL SYSTEMS			FUSE, WING	△	△	△
	PROPULSION				△ △	△	
	FLT CONTROL/STRUCT				△	△	△
						△	△ PROOF TESTS
UH-60	FUEL SYSTEMS			△ △	△		
	PROPULSION		△	△	△		
	FLT CONTROL/STRUCT		△ △ △	△	△ △	△	
		△	△ △ △	△	△ △	△	△ PROOF TESTS
AH-64	FUEL SYSTEMS			△ △	△		
	PROPULSION			△ △	△		
	FLT CONTROL/STRUCT			△ △	△	△	
					△ △	△	△ PROOF TESTS
FOREIGN A/C (2)	FUEL SYSTEMS			△ △	△		
	PROPULSION			△ △	△ △	△	
	FLIGHT CONTROLS				△ △ △	△	
	STRUCTURES				△ △	△	△ PROOF TESTS

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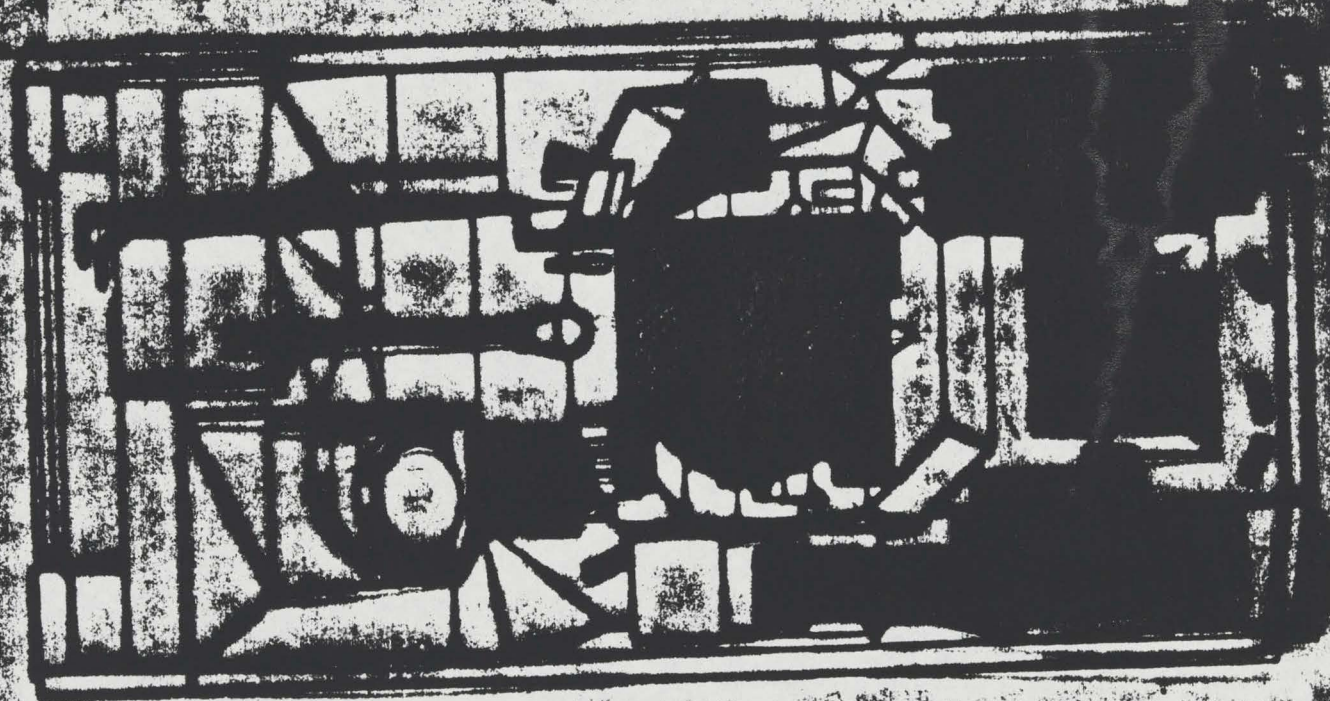
JOINT LIVE FIRE ACHIEVEMENTS TO DATE

- o COMPLETED TEST TO DESTRUCTION OF THE F-15/F-16 ENGINE VULNERABILITY TO FUEL INGESTION.**
- o COMPLETED THREE LIVE FIRE SHOTS OF U.S. 105MM TANK ROUND AGAINST SOVIET T-62 TANK.**
- o FINALIZING TEST PLAN FOR 50 + LIVE FIRE SHOTS AGAINST M1A1 TO START THIS MARCH.**
- o COMPLETED 10 LIVE FIRE SHOTS AGAINST BRADLEY, SOVIET BMP AND NINE AGAINST THE ITV VERSION OF M113.**

WHAT HAVE WE LEARNED FROM THE BRADLEY TESTS?

CONFIGURATION OF AMMUNITION IN THE BRADLEY M-1

90° AZIMUTH
90° ELEVATION



■ TWO SHOOTER
■ AGNO
■ DIESEL FUEL

WHAT HAVE WE LEARNED ABOUT CASUALTIES FROM THE BRADLEY TESTS?

- o **AMMUNITION IN THE TROOP COMPARTMENT IS THE
MAJOR CAUSE OF UNNECESSARY CASUALTIES:**

**WHEN AMMO IS HIT, BRADLEY CASUALTIES
INCREASE BY FACTORS OF 2 TO 3;
SAME FOR BMP AND ITV**

- o **FUEL + FIRE EXTINGUISHERS IN THE TROOP
COMPARTMENT MAY FORCE TROOPS OUT OF THE
VEHICLE ALMOST EVERY TIME IT IS HIT.**
- o **BRADLEY CASUALTIES CAN BE SIGNIFICANTLY
REDUCED; MOVING AMMO, FUEL AND EXTINGUISHERS
OUT OF THE TROOP COMPARTMENT WOULD PROVIDE
THE GREATEST COMBAT CASUALTY REDUCTIONS.**
- o **WHEN AMMUNITION WAS HIT, M2 BRADLEY
CASUALTIES WERE ABOUT THE SAME AS BMP
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- o THERE MUST BE NO COMPROMISE WITH
THE PRINCIPLE OF SHOOTING REAL
WEAPONS AT REAL, COMBAT-LOADED
TARGETS--DESPITE THE VESTED INTERESTS
OF PROGRAM ADVOCATES AND THE
PRECONCEPTIONS OF TECHNICAL
SPECIALISTS.**

LAST INSIGHTS

- o WE NEED LIVE FIRE TESTING FOR EVERY SYSTEM THAT EXPOSES SIGNIFICANT NUMBERS OF SERVICEMEN TO DANGER IN COMBAT--BOTH BEFORE THE DESIGN IS FINALIZED AND FOR THE PRODUCTION VERSION.**
- o WITHOUT CONTINUING YEAR-IN AND YEAR-OUT ATTENTION FROM THE SEC DEF AND THE FUNDING SUPPORT FROM CONGRESS, COMBAT-REALISITC LIVE FIRE TESTING WILL FADE AWAY.**