



DISTRIBUTION STATEMENT A: APPROVED FOR
PUBLIC RELEASE. DISTRIBUTION IS UNLIMITED.



Potential 2.75 Inch Rocket System Applications for the Future

MARCH 2006

DON DAVIS
(256)876-5089
DSN 746-5089
don.davis1@us.army.mil

**U.S. ARMY AVIATION AND MISSILE
RESEARCH DEVELOPMENT &
ENGINEERING CENTER
REDSTONE ARSENAL, AL**



DISCLAIMERS



- **WE WILL PRESENT TECHNOLOGY POSSIBILITIES:**
 - **WE WILL NOT PRESENT PROGRAM PLANS!**
- **WE ARE INTERESTED IN LAUNCHER RELATED IDEAS THAT YOU MAY HAVE**
 - **NOTHING SAID HERE IS TO BE TAKEN AS A FORMAL SOLICITATION BY THE GOVERNMENT**
- **I AM NEITHER A MISSILE MAN NOR A ROCKET SCIENTIST:**
 - **I AM A LAUNCHER ENGINEER!**



BRIEFING OUTLINE



- **PURPOSE OF PRESENTATION**
- **BRIEF HISTORY**
- **DEFINE**
 - **DIGITAL & SMART LAUNCHERS**
 - **SMART ROCKET**
 - **SMALL DIAMETER MISSILES**
- **SMART LAUNCHER FEATURES**
- **POTENTIAL FUTURE TRENDS**
 - **POTENTIAL GUIDANCE SCHEMES**
 - **POSSIBLE APPLICATIONS**



PURPOSE OF THIS BRIEFING



- **PRESENT IDEAS OF WHAT CAN BE DONE WITH A 2.75” SMART MUNITIONS LAUNCHER**
- **STIMULATE THINKING ABOUT WHAT ROLE SMART ROCKETS WILL HAVE ONCE A SMART LAUNCHER IS AVAILABLE**
 - **THE LAUNCHER IS THE CURRENT LIMITER & THE FUTURE ENABLER**



THOUGHT CALIBRATION



Laura Houch / AF

THESE GUYS NEED & DESERVE OUR HELP!



HISTORY OF 2.75" ROCKETS

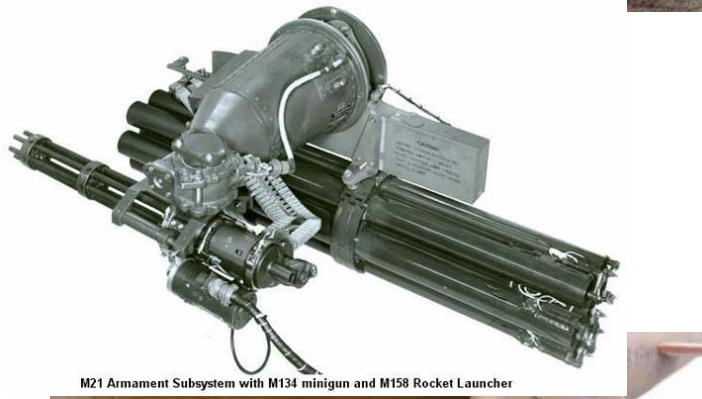
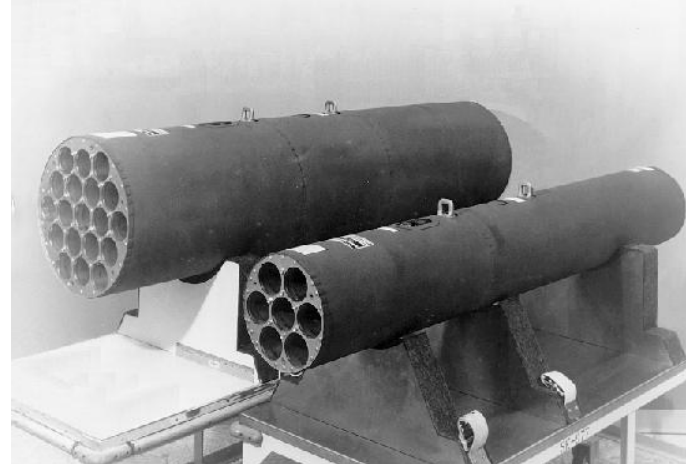
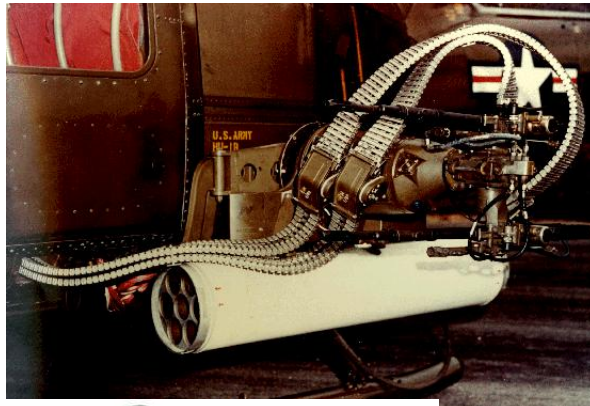


Lockheed F-94C
USAF Museum Photo Archives





HISTORY OF 2.75" LAUNCHERS



M21 Armament Subsystem with M134 minigun and M158 Rocket Launcher





DEFINITIONS



- **DIGITAL ROCKET LAUNCHER**
 - **MIL-STD-1760 COMPATIBLE LAUNCHER WITH INTERNAL ELECTRONICS PERFORM THE FIRING AND FUZING FUNCTIONS OF THE RMS**
- **SMART ROCKET LAUNCHER**
 - **A DIGITAL LAUNCHER WITH ADDED CAPABILITIES TO:**
 - **AUTOMATICALLY DETERMINE ROCKET TYPE AND LOCATION**
 - **PROVIDE PRE-LAUNCH POWER AND COMMUNICATIONS WITH SMART MUNITIONS**
 - **LASER CODES**
 - **BIT**
 - **PRE-LAUNCH NAVIGATION DATA**
 - **VIDEO**
 - **COMPLY WITH ADDITION LAUNCHER REQUIREMENTS**
 - **INSENSITIVE MUNITIONS COMPATIBILITY**
 - **BORESIGHT PROVISIONS**



DEFINITIONS CONTINUED



- **SMART ROCKET**
 - A ROCKET WITH A “STRAP-ON” SENSOR AND GUIDANCE PACKAGE
 - IT MAY HAVE A TAILORED MOTOR AND/OR WARHEAD
 - FIRE SIGNAL IS GENERATED BY THE LAUNCH PLATFORM
- **MISSILE**
 - AN INTEGRATED MUNITION, THAT POWERS UP THE GUIDANCE PRIOR TO LAUNCH AND GENERATES ITS OWN FIRING SIGNAL WHEN INTERNAL LAUNCH CONSTRAINTS AND RELEASE CONSENTS ARE MET



WHY ROCKETS?



- **ROCKETS PROVIDE FIRE POWER, ON CALL, TO SUPPORT THE GROUND FORCES**
- **UNGUIDED ROCKETS PROVIDE VOLUME FIRES FOR AREA ENGAGEMENTS**
- **SMART ROCKETS WILL PROVIDE FOR PRECISION ENGAGEMENT**
 - **MORE STOWED KILLS**
 - **BETTER MATCH FOR TARGET SET**
 - **REDUCED COLLATERAL DAMAGE**



WHY SMART ROCKET LAUNCHER?



- **SMART ROCKET LAUNCHER WILL BE THE KEY ENABLER FOR EMERGING SMART ROCKET TECHNOLOGY**
- **SMART ROCKETS NEED SMART LAUNCHERS TO:**
 - **PRE-FIRING POWER TO “WAKE UP”**
 - **ENGAGEMENT DATA INPUT PRIOR TO LAUNCH**
 - **SEEKER SIGNALS OUTPUT PRIOR TO LAUNCH**
 - **GENERAL CARE AND FEEDING**



POTENTIAL & EMERGING GUIDANCE SCHEMES



- **APKWS – CURRENT ARMY DEVELOPMENT**
 - LASER GUIDED
- **LOGIR – CURRENT NAVY S&T PROGRAM**
 - IMAGING IR & INS
- **RF/IR**
 - SEAD, SHUT DOWN RADAR UNITS
- **STINGER-LIKE MISSILE**
 - AIR-TO-AIR FOR FUTURE THREATS
- **OPTICALLY GUIDED**
 - IMAGING IR & VISIBLE
 - LOCK-ON BEFORE LAUNCH
- **GPS/INS GUIDANCE SCHEME**
 - CARGO & UNITARY
 - MORE “PRECISE AREA” ENGAGEMENTS
 - PRESET PATTERNS



EMERGING SYSTEM IMPROVEMENTS



- **ROCKET MOTORS**
 - **REDUCE DISPERSION**
 - **MORE IM COMPLIANT**
- **WARHEADS**
 - **MORE IM COMPLIANT**
 - **INCREASED LETHALITY AGAINST APKWS TARGET SET**
- **FUZES**
 - **DUAL SAFETY**
 - **DIGITAL REMOTE SET FUZE**



POSSIBLE ROCKET APPLICATIONS



- **REAL TIME TARGET LOCATION AND DAMAGE ASSESSMENT**
 - **MINI-UAV**
 - **TUBE LAUNCHED**
 - **SIGNIFICANT DURATION**
 - **MICRO-UAV**
 - **CARRIED IN CARGO WARHEAD**
 - **PARA-FOIL OR REGOLLO WING**
 - **DEPLOYED NEAR TARGET**
 - **PROPELLED OR UNPROPELLED**
 - **SHORT DURATION**
 - **BOTH WOULD BE EXPENDABLE**



MORE POSSIBLE APPLICATIONS



- **PLACEMENT OF REMOTE SENSORS**
 - **DEPLOY WITH CARGO WARHEAD CARRIER**
 - **ACOUSTIC**
 - **SEISMIC**
 - **NBC**
 - **OPTICAL**
- **LESS THAN LETHAL**
 - **TEAR GAS**
- **SMOKE ROCKETS TO FIGHT FOREST FIRES**
 - **DUAL USE TECHNOLOGY**
 - **START BACKFIRE IN REMOTE LOCATIONS**
- **UNMANNED AERIAL VEHICLES**



GROUND LAUNCH OPTION



- **SUPPLEMENT MORTARS**
 - **INFANTRY FIRE SUPPORT**
- **MOUNT SMART LAUNCHERS IN A TURRET**
 - **76 TO 100 ROCKETS**
 - **UNGUIDED OR SMART**
- **MOUNT TURRET ON MEDIUM VEHICLE**
 - **HMMWV**
 - **M793 SUSV**
- **SUPERIOR RANGE AND RATE OF FIRE**



IN SUMMARY



- **SMART ROCKETS WILL ADD TOOLS TO THE AVIATION WAR FIGHT'S KIT**
- **SMART ROCKET LAUNCHER WILL BE THE KEY ENABLER FOR THE SMART ROCKETS**
- **ROCKET APPLICATIONS ARE LIMITED ONLY BY IMAGINATION**



WHAT ARE YOUR IDEAS?