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ARTILLERY

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SEPTEMBER 1974

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**ARTILLERY**

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DDC-TAS-74-33	2. GOVT ACCESSION NO AD-785 300	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) ARTILLERY		5. TYPE OF REPORT & PERIOD COVERED Bibliography Jun 1956 - Feb 1974
7. AUTHOR(s)		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Defense Documentation Center Cameron Station Alexandria, Virginia 22314		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE September 1974
		13. NUMBER OF PAGES 334
		15. SECURITY CLASS. (of this report)  UNCLASSIFIED
		15a. DECLASSIFICATION, DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  <p style="text-align: center;">Reproduced by  <b>NATIONAL TECHNICAL  INFORMATION SERVICE</b>  US Department of Commerce  Springfield, VA 22151</p>		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
*Artillery	Mortars	Artillery
*Bibliographies	Artillery Rockets	Ammunition
Artillery Fire	Gun Mounts	Artillery Units
Howitzers	Antiaircraft Gunnery	
Self Propelled Guns	Fire Control Systems	
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
This bibliography contains unclassified and unlimited citations on Artillery Technology. Four computer generated indexes are included.		

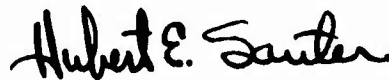
## F O R E W O R D

This unclassified and unlimited bibliography contains 251 selected citations of reports on *Artillery*. These citations provide information emphasizing mission profiles, control systems, antiaircraft gunnery, ballistics, artillery weapons, artillery ammunition, firing test, gun mounts, training and human performance in artillery technology.

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**HUBERT E. SAUTER**  
Administrator  
Defense Documentation Center

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-236 837

ROCK ISLAND ARSENAL ILL

INVESTIGATION OF HYDRO-PNEUMATIC RECOIL MECHANISM  
PACKING SPRING LOADS

(U)

APR 60 IV RAISBECK, L.R. I

UNCLASSIFIED REPORT

DESCRIPTORS: \*GASKETS, \*HOWITZERS, \*HYDRAULIC SEALS,  
\*PNEUMATIC DEVICES, \*RECOIL MECHANISMS, \*SEALS  
(STOPPERS), \*SPRINGS, EFFECTIVENESS, PISTONS,  
TEMPERATURE, TESTS

(U)

IDENTIFIERS: 155-MM ORDNANCE ITEMS, 105-MM ORDNANCE  
ITEMS, 75-MM ORDNANCE ITEMS, 8-IN. ORDNANCE ITEMS

(M)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-255 372  
ABERDEEN PROVING GROUND MD

ESTABLISHMENT OF CHARGE WEIGHTS FOR CHARGE,  
PROPELLING, 155-MM, XM51E1, (U)

MAY 61 IV SINE, S. S. I  
MONITOR: DPS, PA 209, TPR-TE-267

UNCLASSIFIED REPORT

DESCRIPTORS: \*PROPELLANTS, ACCEPTABILITY, HOWITZERS,  
PHYSICAL PROPERTIES, PROPELLING CHARGES, TESTS (M)  
IDENTIFIERS: 155-MM ORDNANCE ITEMS, M-51 PROPELLING  
CHARGES(155-MM), T-258 HOWITZERS(155-MM) (M)

TESTS WERE CONDUCTED TO ESTABLISH CHARGE WEIGHTS  
FOR CHARGE, DUAL-GRANULATION, XM51E1 FOR THE 155-MM  
HOWITZER, T258. THE M17 PROPELLANT TESTED  
CONSISTED OF A SINGLE-PERFORATED PROPELLANT FOR THE  
BASE CHARGE AND A MULTIPERFORATED PROPELLANT FOR  
CHARGES 2 THROUGH 6. IN THE EARLY PHASES OF THE  
TEST, THE SINGLE-PERFORATED PROPELLANT PRODUCED VERY  
ERRATIC CHAMBER PRESSURES WHEN FIRED WITH THE ZONE 6  
CHARGE. TO ESTABLISH A SATISFACTORY PROPELLING  
CHARGE, LOT PA-E-31526 WAS REPLACED WITH A  
PREVIOUSLY TESTED, MULTIPERFORATED, M17 PROPELLANT.  
USING THE MULTIPERFORATED PROPELLANT (WEB 0.019  
INCH) IN ZONE 1, AND 0.0576-INCH-WEB PROPELLANT IN  
ZONES 2 THROUGH 6, A SATISFACTORY CHARGE  
ESTABLISHMENT WAS COMPLETED AT NORMAL AND EXTREME  
TEMPERATURE. THE SINGLE-PERFORATED PROPELLANT WAS  
CONSIDERED SATISFACTORY FOR USE ONLY AS A ZONE 1  
CHARGE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-258 141  
WATERVLIET ARSENAL N Y

STRENGTH AND ECONOMIC COMPARISON OF AUTOFRETTAGED  
VERSUS JACKETED PRESSURE VESSEL CONSTRUCTION (U)

OCT 60 1V DAVIDSON, T.E.; KENDALL, D.P.  
REPT. NO. WVT RI 60021

UNCLASSIFIED REPORT

DESCRIPTORS: \*GUN BARRELS, \*GUNS, CONSTRUCTION,  
ECONOMICS, ELASTIC PROPERTIES, HOWITZERS, PRESSURE,  
PRESSURE VESSELS, PRODUCTION, STRESSES, THEORY (U)  
IDENTIFIERS: 155-MM ORDNANCE ITEMS, T-255 (U)  
HOWITZERS(155-MM), 175-MM ORDNANCE ITEMS

THE THEORETICAL ELASTIC STRENGTH OF AUTOFRETTAGED  
AND JACKETED THICK-WALL CYLINDERS IS PRESENTED IN THE  
FORM OF EQUATIONS AND GRAPHS. THE MECHANISM BY  
WHICH BOTH PROCESSES INCREASE THE ELASTIC STRENGTH OF  
A THICK-WALL CYLINDER IS DISCUSSED AND ILLUSTRATED  
GRAPHICALLY. THE ADVANTAGES OF A COMBINATION OF  
JACKETING AND AUTOFRETTAGE FOR VERY THICK-WALL,  
PRESSURE VESSEL APPLICATIONS ARE DISCUSSED AND  
ILLUSTRATED BY A SPECIFIC EXAMPLE. THE ECONOMIC  
ADVANTAGES OF AUTOFRETTAGE OVER JACKETING ARE  
PRESENTED BY A COST ANALYSIS OF TWO SPECIFIC  
EXAMPLES, NAMELY THE 175MM GUN, T256 AND THE  
155MM HOWITZER T255. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-260 052  
ROCK ISLAND ARSENAL ILL

LITTLEJOHN PHASE II LIGHTWEIGHT SYSTEM ROCKET  
HANDLING AND ANCILLARY EQUIPMENT (SOSR) (U)

JUN 61 IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, \*MAINTENANCE EQUIPMENT,  
AIR CONDITIONING EQUIPMENT, GUIDED MISSILE LAUNCHERS,  
HANDLING, HEATING PLANTS, HOISTS, MOBILE, OPERATION,  
PROTECTIVE COVERINGS, ROCKET WARHEADS, ROCKET LAUNCHERS,  
SMALL TOOLS, SOLID ROCKET PROPELLANTS, THERMAL  
INSULATION, TOOL KITS, TORPEDO COMPONENTS, TRAILERS,  
TRANSPORTATION (U)  
IDENTIFIERS: 318-MM ORDNANCE ITEMS, LITTLE JOHN (U)

DESCRIPTION, OPERATING PROCEDURE AND OTHER  
PERTINENT INFORMATION PERTAINING TO ANCILLARY  
EQUIPMENT FOR USE WITH THE LITTLE JOHN SYSTEM  
ARE GIVEN. THE INFORMATION DEALS DIRECTLY WITH USE  
OF THE EQUIPMENT WITH THE PHASE II LITTLE JOHN  
SYSTEM BUT IS NOT NECESSARILY LIMITED TO THAT SYSTEM.  
THE FOLLOWING PIECES OF EQUIPMENT ARE DISCUSSED:  
318-MM ROCKET, TRANSPORT CART ASSEMBLY; TRUCK-MOUNTED  
318 MM ROCKET, HANDLING UNIT; ROCKET CONDITIONING  
KIT; THERMAL INSULATING BLANKET; ROCKET-HANDLING LIFT  
BAR SET; CARGO BASKET; TRIPOD HOISTING UNIT; LAUNCHER  
COVER; TRAILER COVER; LIFTING SLINGS; ROCKET-HANDLING  
SLINGS; WARHEAD MATING FIXTURE; TOOLS AND RELATED  
EQUIPMENT. SHIPPING PROCEDURES ARE ALSO  
MENTIONED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-260 772

ROCK ISLAND ARSENAL ILL

ARTILLERY WEAPON SYSTEMS APPLIED RESEARCH IMPULSE  
GENERATOR RECOIL BRAKE (105MM HOWITZER, M2A2) (PHASE  
B. EXPERIMENTAL TESTING) (U)

APR 61 IV NOBLE, H.G. JR.:

UNCLASSIFIED REPORT

DESCRIPTORS: \*HOWITZERS, \*RECOIL MECHANISMS, ARTILLERY,  
PNEUMATIC DEVICES, PULSE GENERATORS, ROCKET ENGINES,  
TEST METHODS, TESTS (U)

IDENTIFIERS: 105-MM ORDNANCE ITEMS, T-266 ROCKETS (3.5-  
IN.), M-2 HOWITZERS (105-MM) (U)

EXPERIMENTAL TESTING OF AN IMPULSE GENERATOR AS A  
SUPPLEMENTARY RECOIL BRAKE TO A HYDROPNEUMATIC RECOIL  
MECHANISM WAS ACCOMPLISHED. TESTING WAS CONDUCTED  
UTILIZING THE 105MM HOWITZER CARRIAGE MATERIEL,  
M2A2, WITH A MODIFIED RECOIL MECHANISM AS THE  
TEST VEHICLE. THE T-266 ROCKET MOTOR WAS USED  
AS THE IMPULSE GENERATOR. THE RESULTS OF  
EXPERIMENTAL TESTING SUBSTANTIATE THE CONCLUSIONS OF  
PHASE A, THEORETICAL ANALYSIS, IN REGARD TO THE  
FEASIBILITY OF THIS CONCEPT. THE USE OF AN IMPULSE  
GENERATOR AS A SUPPLEMENTARY RECOIL BRAKE RESULTED IN  
A REDUCTION OF APPROXIMATELY 50% TO THE FORCE  
TRANSMITTED TO THE UNDERCARRIAGE OF THE WEAPON.  
INDICATIONS ARE THAT THERE ARE NO DETRIMENTAL  
EFFECTS ON THE ACCURACY OF THE WEAPON AS A RESULT OF  
THE IMPULSE GENERATOR ACTION. THE WEAPON APPEARS  
TO BE MORE STABLE WHEN UTILIZING THE IMPULSE  
GENERATOR. THE PRESSURE AS A RESULT OF THE ROCKET  
FIRING IS LESS THAN THAT ASSOCIATED WITH A MUZZLE  
BRAKE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-261 018

ORDNANCE MISSION WHITE SANDS MISSILE RANGE N MEX

HONEST JOHN. PRE-PRODUCTION ENVIRONMENTAL TESTING OF  
GENERATOR SET GASOLINE ENGINE M-25 (U)

JUL 61 IV LINAM, O.T. I  
REPT. NO. TM 887

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, \*GENERATORS, \*INTERNAL  
COMBUSTION ENGINES, ALTERNATING CURRENT, BLANKETS,  
CLIMATE, DIRECT CURRENT, ELECTRIC INSULATION, ELECTRIC  
POWER PRODUCTION, HEATING, MAINTENANCE, MEASUREMENT,  
PROTECTIVE COVERINGS, RADIO INTERFERENCE, RESISTANCE  
(ELECTRICAL), TEST METHODS, TESTS, TRANSPORTATION (U)  
IDENTIFIERS: HONEST JOHN (U)

RESULTS OF PERFORMANCE, ROAD, CLIMATIC AND  
ENVIRONMENTAL TESTS ON THE M-25 GENERATOR SET WERE  
PRESENTED. THE PRIMARY PURPOSE OF THESE TESTS WAS  
TO DETERMINE CONFORMANCE TO THE SPECIFICATIONS AND  
REQUIREMENTS STATED IN THE MILITARY PURCHASE  
DESCRIPTIONS (MPD). THE GENERATOR SET MET THE  
MDP IN GENERAL; HOWEVER, CERTAIN DEFICIENCIES WERE  
NOTED. WSMR RECOMMENDS THAT PRODUCTION OF THE  
GENERATOR SET BE CONTINUED AFTER RECOMMENDED  
CORRECTIONS HAVE BEEN ACCOMPLISHED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-261 495

WHIRLPOOL CORP EVANSVILLE IND

A TEST OF THE MUZZLE BURST FEATURE OF THE MT T369  
FUZE AT VARIOUS MUZZLE VELOCITIES FROM THE 105MM  
HOWITZER USING T388 EXTENDED RANGE (MODIFIED)  
PROJECTILES

(U)

JUN 61 IV CLARKE, C.C.; HAAG, CHARLES W.  
CONTRACT: DA33 008 5010RD1800

UNCLASSIFIED REPORT

DESCRIPTORS: •PROJECTILE FUZES, •TERMINAL BALLISTICS,  
•TIME DELAY FUZES, DETONATIONS, EXTERIOR BALLISTICS,  
FIRING MECHANISMS (AMMUNITION), FIRING MECHANISMS  
(WEAPON), GUN BARRELS, HOWITZERS, NOSE FUZES,  
PROJECTILES, TEST METHODS, TESTS

(U)

IDENTIFIERS: 105-MM ORDNANCE ITEMS, M-2 HOWITZERS (105-  
MM), BEEHIVE AMMUNITION, T-388 CARTRIDGES (105-MM), T-  
369 FUZES

(U)

TESTS WERE CONDUCTED ON THE MUZZLE BURST FEATURE OF  
THE MT T369 FUZE. TWENTY-FIVE INERT T388  
SHELL WERE EQUIPPED WITH THE MT T369 FUZE AND  
TESTED FOR DIRECT FIRE FUZES, TESTS, EXTERIOR  
BALLISTICS, FIRING MECHANISMS, HOWITZERS,  
PROJECTILES, •TERMINAL BALLISTICS, TEST  
METHODS, NOSE FUZES, GUN BARRELS, DETONATION,  
•TIME DELAY FUZES. OPEN-ENDED TERMS: T369  
FUZES, 105MM, T388 PROJECTILES, MUZZLE BURST,  
M2 HOWITZERS, BEEHIVE. TESTS WERE CONDUCTED  
ON THE MUZZLE BURST FEATURE OF THE MT T369 FUZE.  
TWENTY-FIVE INERT T388 SHELL WERE EQUIPPED WITH  
THE MT T369 FUZE AND TESTED FOR DIRECT FIRE, ZERO  
TIME PERFORMANCE. TWELVE ROUNDS WERE FIRED AT  
ZONE 10 CHARGE AND SATISFACTORY MUZZLE BURST FUZE  
FUNCTIONING WAS EVIDENCED SOMEWHERE BETWEEN 11.5 AND  
17 FEET FROM THE MUZZLE ON SIX OF THE TWELVE TESTS.  
THE OTHER SIX ROUNDS FUNCTIONED AT IMPACT. FOUR  
ROUNDS WERE FIRED AT A CHARGE TO GIVE 115% OF RATED  
PRESSURE. EACH OF THESE PERFORMED SATISFACTORYLY  
GIVING BURSTS 14 TO 17 FEET FROM THE MUZZLE. FIVE  
ROUNDS WERE FIRED AT ZONE 10 CHARGE CONDITIONED AT  
140 F. EACH OF THESE FUNCTIONED PROPERLY BETWEEN 10  
AND 13 FEET FROM THE MUZZLE. TWO ROUNDS AT ZONE 9  
CHARGE AND TWO ROUNDS AT ZONE 7 CHARGE FUNCTIONED  
NORMALLY AT 6 TO 7.5 FEET FROM THE MUZZLE. NO  
DEFINITE REASONS FOR THE FAILURES WERE ASCERTAINED  
FROM THE RECOVERED PARTS OF THIS TEST. (AUTHOR)

(U)

8

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AD-262 358

SPERRY UTAH CO SALT LAKE CITY

MOTOR TEMPERATURE SENSOR, SERGEANT ARTILLERY GUIDED MISSILE SYSTEM (U)

JUL 61 IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*GUIDED MISSILES, \*ROCKET ENGINES, \*TEMPERATURE, \*THERMOMETERS, ARTILLERY, AUTOMATIC, COMBUSTION CHAMBERS, HEAT TRANSFER, MEASUREMENT, SOLID ROCKET PROPELLANTS, SURFACE TO SURFACE (U)  
IDENTIFIERS: SERGEANT (U)

THE TEMPERATURE-CONDITIONING TEST RESULTS HAVE DEMONSTRATED THAT FOR ANY TEMPERATURE CONDITIONS WHICH MAY OCCUR WITHIN SERGEANT SPECIFICATIONS A SUFFICIENTLY ACCURATE VALUE FOR EFFECTIVE TEMPERATURE CAN BE DETERMINED FROM THE CAVITY AND AFTBODY TEMPERATURE MEASUREMENTS. THE BIMETALLIC SENSOR HAS BEEN SHOWN TO BE ACCURATE, RUGGED, AND COMPATIBLE WITH THE SYSTEM. USED IN CONJUNCTION WITH THE APPROPRIATE NOMOGRAPH, THE BIMETALLIC TEMPERATURE SENSOR PROVIDES A SATISFACTORY MEANS OF DETERMINING EFFECTIVE TEMPERATURE, THOUGH MANUAL AND VISUAL OPERATIONS ARE INVOLVED. THE AUTOMATIC TEMPERATURE SENSOR PROMISES TO BE EQUALLY RUGGED, MORE ACCURATE, AND WILL PROVIDE EFFECTIVE TEMPERATURE TO THE FIRING SET WITHOUT DEPENDENCE ON MANUAL OR VISUAL OPERATIONS. IT IS RECOMMENDED THAT THE BIMETALLIC TEMPERATURE SENSOR WITH ITS ASSOCIATED NOMOGRAPH BE UTILIZED AS AN INTERIM METHOD OF DETERMINING EFFECTIVE MOTOR TEMPERATURE UNTIL THE AUTOMATIC TEMPERATURE SENSOR IS COMPLETELY TESTED AND EVALUATED. THEREFORE, IT IS ALSO RECOMMENDED THAT THE EVALUATION OF THE AUTOMATIC TEMPERATURE SENSOR BE CONTINUED TO COMPLETION. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-263 387  
ROCK ISLAND ARSENAL ILL

155 MM HOWITZER CARRIAGE, M1A2E3 AND RECOIL  
MECHANISM, M6A2E2

(U)

AUG 61 IV

UNCLASSIFIED REPORT

DESCRIPTORS: •RECOIL MECHANISMS, •SELF PROPELLED GUNS,  
DESIGN, FIRE CONTROL SYSTEMS, HOWITZERS (U)  
IDENTIFIERS: 155-MM ORDNANCE ITEMS (M)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-264 770

PHILCO CORP WILLOW GROVE PA

SUBSYSTEM SSIA (AUTOMATIC DATA PROCESSING SYSTEM FOR  
FIELD ARTILLERY APPLICATIONS) (U)

JUN 61 IV GLAZER, H.; UNGERMAN, F.;

UNCLASSIFIED REPORT

DESCRIPTORS: •ARTILLERY FIRE, •DATA PROCESSING,  
ARTILLERY, AUTOMATIC, DATA TRANSMISSION SYSTEMS, DESIGN,  
DISPLAY SYSTEMS, FIRE CONTROL COMPUTERS, PROGRAMMING (U)  
(COMPUTERS) (U)  
IDENTIFIERS: AN/TYK-6, AN/TYC-1

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-265 341

CONSOLIDATED DIESEL ELECTRIC CORP STAMFORD CONN

AUXILIARY PROPELLING DEVICE FOR THE 155MM HOWITZER  
CARRIAGE, M1A2

(U)

DEC 61 1V FRANCUCCIO, W.M.;  
CONTRACT: DA11 070 5080RD1403

UNCLASSIFIED REPORT

DESCRIPTORS: \*HOWITZERS, \*PROPULSION SYSTEMS, CONTROL  
SYSTEMS, DRIVES, GUN MOUNTS, HYDRAULIC PRESSURE PUMPS,  
HYDRAULIC EQUIPMENT, TRANSPORTATION, VEHICLE WHEELS (U)  
IDENTIFIERS: M-1 HOWITZER CARRIAGES (155-MM), 155-MM  
ORDNANCE ITEMS (U)

A PROTOTYPE AUXILIARY PROPELLING SYSTEM WAS  
DEVELOPED WHICH EMBODIES, IN CONCEPT, A HYDROSTATIC  
TRANSMISSION UTILIZING VARIABLE DISPLACEMENT  
REVERSIBLE FLOW HYDRAULIC PUMPS, AND FIXED  
DISPLACEMENT REVERSIBLE MOTORS. THE SYSTEM, AS  
DESIGNED, DOES NOT IMPAIR THE FUNCTION OF THE WEAPON;  
ACHIEVES MINIMUM WEIGHT WITH COMPACTNESS; UTILIZES  
MODULAR CONSTRUCTION FOR FIELD MOBILITY, PORTABILITY;  
AND PROVIDES QUICK FIELD INSTALLATION AND  
MAINTENANCE. THE DRIVE SYSTEM UTILIZES THE EXTREME  
WEIGHT OF THE WEAPON AS AN ASSET RATHER THAN A  
LIABILITY IN ACHIEVING TRACTION. THE SYSTEM  
CONSISTS OF A HYDRAULIC POWER PACKAGE, TWO  
LIGHTWEIGHT WHEEL DRIVE GEAR BOXES, AND TWO HYDRAULIC  
LINES. THE SYSTEM UTILIZES CONTINENTAL ENGINE  
MODEL 4A084-1 AS THE POWER SOURCE. AN  
INTEGRATED MECHANICAL COMPUTER IN THE CONTROL UNIT  
PERMITS DIFFERENTIAL MOTION TO THE DRIVE WHEELS  
ALLOWING TURNING ON ANY RADIUS DOWN TO ZERO DEGREES.  
THE HYDRAULIC WHEEL DRIVE SYSTEM HAS NUMEROUS  
APPLICATIONS FOR BOTH COMMERCIAL AND MILITARY  
EQUIPMENT. (AUTHOR)

(U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-265 514  
IIT RESEARCH INST CHICAGO ILL

LONG RANGE STUDY PROGRAM LIGHTWEIGHT ARTILLERY  
WEAPON

(U)

APR 61 IV BRACH, R.M.:  
CONTRACT: DALL 0220RD2543

UNCLASSIFIED REPORT

DESCRIPTORS: \*DESIGN, \*ROCKET LAUNCHERS, AIR  
TRANSPORTATION, WEAPONS, ARTILLERY ROCKETS, ARTILLERY,  
AUTOMATIC, FEASIBILITY STUDIES, HELICOPTERS,  
MATHEMATICAL ANALYSIS, MATHEMATICAL COMPUTER DATA,  
MOBILE, MOTION, PROGRAMMING (COMPUTERS), TESTS (U)  
IDENTIFIERS: 115-MM ORDNANCE ITEMS, M-70 ROCKET  
LAUNCHERS(115-MM) (M)

THIS STUDY CONCERNED THE DEVELOPMENT OF A  
LIGHTWEIGHT ARTILLERY WEAPON LAUNCHER WHICH CAN BE  
TRANSPORTED BY HELICOPTER. THE PROTOTYPE NO. 3  
LAUNCHER, XM70E1, 115MM WAS INSTRUMENTED WITH  
STRAIN, PRESSURE AND DISPLACEMENT GAGES; THESE  
FURNISHED THE ACTUAL LOADING AND MOTION OF THE  
LAUNCHER STRUCTURE. IN ADDITION TO CERTAIN SIMPLE  
DYNAMIC ANALYSES, A 3-DEGREE-OF-FREEDOM, NONLINEAR  
MATHEMATICAL MODEL OF THE LAUNCHER DYNAMICS WAS  
DERIVED AND PROGRAMMED FOR SOLUTION ON ARMOUR  
RESEARCH FOUNDATION'S UNIVAC 1105. THE OUTPUT  
OF THE COMPUTER PROGRAM WAS CORRELATED WITH  
EXPERIMENT AND USED TO STUDY THE EFFECT OF PHYSICAL  
PARAMETER VARIATIONS. REGIONS OF INSTABILITY OF  
THE LAUNCHER MOTIONS WERE SHOWN TO EXIST FOR BURST  
FIRINGS; RELATIONSHIPS BETWEEN COMPONENT STIFFNESS  
AND DAMPING WERE FOUND WHICH OPTIMIZED THE LAUNCHER  
RESPONSE TO FIRING LOADS, BASED UPON A SIMPLE  
ACCURACY CRITERION. CERTAIN DESIGN SUGGESTIONS  
WERE EVALUATED AND SHOWN TO BENEFIT THE ACCURACY OF  
THE LAUNCHER. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-268 402

ARMY ELECTRONICS LABS FORT MONMOUTH N J

ANALYSIS OF BALLISTIC METEOROLOGICAL EFFECTS ON  
ARTILLERY FIRE

(U)

SEP 61 IV BELLUCCI, RAYMOND;

UNCLASSIFIED REPORT

DESCRIPTORS: •ARTILLERY FIRE, •BALLISTICS, •METEOROLOGY,  
ATMOSPHERIC SOUNDING, DIRECTION FINDING, ERRORS,  
HOWITZERS, METEOROLOGICAL INSTRUMENTS,  
PHOTOTHEODOLITES (U)  
IDENTIFIERS: AN/GMD-1 (U)

THE RESULTS AND CONCLUSIONS DERIVED FROM A SERIES  
OF METEOROLOGICAL SOUNDINGS TAKEN IN CONJUNCTION WITH  
HOWITZER FIRINGS AT FORT SILL, OKLAHOMA, DURING  
MARCH AND APRIL 1958 ARE GIVEN. THE TESTS  
PROVIDED INFORMATION FOR DETERMINING THE RELATIVE  
IMPORTANCE OF BALLISTIC AND METEOROLOGICAL SOURCES OF  
ERROR IN THE ARTILLERY SYSTEM. ESTIMATES ARE GIVEN  
FOR THE ERROR ARISING FROM EXISTING METEOROLOGICAL  
SOUNDING EQUIPMENT, SPACE AND TIME VARIABILITY OF  
METEOROLOGICAL DATA, AND OF GUNNERY AND BALLISTICS.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-268 622  
ROCK ISLAND ARSENAL ILL

DEVELOPMENT OF AN ELECTROMECHANICAL SYSTEM FOR  
MEASURING ARTILLERY RECOIL DISPLACEMENT AND  
VELOCITY

(U)

JUL 61 IV HANSON, J.C. | LEWIS, E.E. | HANSON, A.C. |

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY, \*RECOIL MECHANISMS, ANALOG  
SYSTEMS, DESIGN, ELECTRIC BRIDGES, GUNS,  
INSTRUMENTATION, MEASUREMENT, MOTION, TEST EQUIPMENT,  
TESTS, TRANSDUCERS, VELOCITY

(U)

THE DESIGN, CONSTRUCTION AND TESTING OF AN  
ELECTROMECHANICAL SYSTEM FOR OBTAINING SIMULTANEOUS  
ANALOGS OF ARTILLERY RECOIL DISPLACEMENT AND  
VELOCITY WITH CONVENTIONAL RECORDING OSCILLOGRAPHS  
ARE DESCRIBED. THE SYSTEM CONSISTS OF A  
TRANSDUCER AND ASSOCIATED ELECTRONIC CIRCUITRY. THE  
TRANSDUCER IS BASED ON THE VARIABLE RELUCTANCE  
PRINCIPLE. DISPLACEMENT IS OBTAINED BY CONNECTING  
IT ELECTRICALLY AS THE VARIABLE LEG IN A WHEATSTONE  
BRIDGE. VELOCITY IS OBTAINED WITH AN ELECTRONIC  
CIRCUIT BASED ON THE RESISTANCE-CAPACITANCE-  
DIFFERENTIATOR PRINCIPLE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-268 845

PHILCO CORP WILLOW GROVE PA

SUBSYSTEM SSIA (AUTOMATIC DATA PROCESSING SYSTEM FOR  
FIELD ARTILLERY APPLICATIONS) (U)

SEP 61 IV GLAZER, H.; JUNGEMAN, F.;

UNCLASSIFIED REPORT

DESCRIPTORS: \*DATA PROCESSING, \*FIRE CONTROL COMPUTERS,  
ARTILLERY, ARTILLERY FIRE, AUTOMATIC, COMBAT INFORMATION  
CENTERS, DATA TRANSMISSION SYSTEMS, DESIGN, DISPLAY  
SYSTEMS, MILITARY TRAINING, PROGRAMMING (COMPUTERS) (U)  
IDENTIFIERS: AN/TYK-6, AN/TYC-1 (U)

FINAL TESTING AND DEBUGGING OF THE FIRST  
DELIVERABLE BASICPAC SYSTEM WERE NEARLY COMPLETED.  
DEBUGGING OF THE SECOND SYSTEM WAS INITIATED.  
SHELTER LAYOUT AND MODIFICATION OF THE GFE  
SHELTER WAS COMPLETED FOR SYSTEM NO. 1 AND  
PARTIALLY COMPLETED FOR SYSTEM NO. 2. THE  
FIRST PHASE OF THE SSIA TRAINING PROGRAM FOR  
MILITARY PERSONNEL WAS COMPLETED AND PREPARATIONS  
WERE MADE FOR CONDUCTING THE FINAL PHASE AT FT.  
HUACHUCA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-268 847

PICATINNY ARSENAL DOVER N J AMMUNITION GROUP

STRESS INVESTIGATION OF THE BURSTER CONTAINER FOR THE  
155MM M121 VX PROJECTILE (U)

JUN 61 IV GEORGEVICH, DUSAN; ROBLES, MARCOS;  
REPT. NO. 29

UNCLASSIFIED REPORT

DESCRIPTORS: \*CHEMICAL PROJECTILES, CONTAINERS,  
EXPLOSIVES, FAILURE (MECHANICS), HOWITZERS, MATHEMATICAL  
ANALYSIS, STRESSES (U)  
IDENTIFIERS: 155-MM ORDNANCE ITEMS (M)

A STRESS ANALYSIS WAS CONDUCTED TO DETERMINE THE  
METAL PARTS SECURITY OF THE 155MM M121 VX  
PROJECTILE, WITH CLOSE BURSTER CONTAINER. IT WAS  
FOUND THAT THE BURSTER CONTAINER WAS STRESSED BEYOND  
YIELD, ALLOWING ELONGATION AND BUCKLING. ALTHOUGH  
THE CONTAINER BECOMES EXTERNALLY SUPPORTED BY THE  
CASING BEFORE THE ELONGATION IS SUFFICIENT TO CAUSE  
RUPTURE, THE RESULTANT DISTORTION OF THE EXPLOSIVE  
FILLER IS CONSIDERED HAZARDOUS AND A POSSIBLE CAUSE  
OF PREMATURE DETONATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-268 854

WHIRLPOOL CORP EVANSVILLE IND

A TEST OF THE MUZZLE BURST FEATURE OF THE MT T369  
FUZE AT ZONE 10 CHARGE FROM THE 105MM M2A2E2 HOWITZER  
USING T388 EXTENDED RANGE (MODIFIED) PROJECTILES (U)

DEC 61 IV HAAG, CHARLES W. CLARKE, CLARENCE C. I  
CONTRACT: DA33 008 D010RD1800

UNCLASSIFIED REPORT

DESCRIPTORS: \*PROJECTILE FUZES, ANTISUBMARINE FIRE  
CONTROL SYSTEMS, CANISTER PROJECTILES, FIN STABILIZED  
AMMUNITION, HOWITZERS, PHOTOGRAPHIC ANALYSIS, TESTS,  
TIME DELAY FUZES (U)  
IDENTIFIERS: 105-MM ORDNANCE ITEMS, BEEHIVE  
AMMUNITION, T-388 CARTRIDGES(105-MM), T-369 FUZES (U)

AD-2 8 8549 5 AD-268 855 DIV. 22, 3 U (I  
ISTP/MFA) AIR FORCE MISSILE DEVELOPMENT C  
ENTER, HOLLOWAY AIR FORCE BASE, N. MEX.  
TABLES OF THE INTEGRAL (P, C) = P 1 1-XC1+XCDX  
FOR THE COMPUTATION OF THE DISPLACEMENT OF THE  
ROCKET SLED, UNDER THRUST. FINAL REPORT, BY HEI Z  
. SC WINGE. NOV 61, 69P 1 CL. ILLUS. TABLES, 7  
REFS. (MDC-TDR 1-4) UNCLASSIFIED REPORT  
DESCRIPTORS: (\*ROCKET PROPELLED SLEDS,  
\*THRUST, AERODYNAMICS, DRAG, TESTS.) (\*BL  
OF \*INTEGRALS, DIFFERENTIAL EQUATIONS, FUNC  
IONS. THE COMPUTATION OF THE DISPLACEMENT OF THE  
ROCKET SLED UNDER THRUST ON THE HIGH-SPEED TRACK IS C  
ALCULATED FROM AN INTEGRAL. TABLES OF THIS FUNCTION  
FOR P-VALUES FROM .2 TO 1 AND C-VALUE FROM 1 TO 10  
ARE PRESENTED. THE APPLICATION OF THE TABLES FOR  
THE COMPUTATION OF THE DISPLACEMENT OF THE ROCKET  
SLED UNDER THRUST IS EXPLAINED IN DETAIL. THE  
RELATION OF THE INTEGRAL TO OTHER INTEGRAL SERIES  
AND CLASSICAL FUNCTIONS IS ALSO DESCRIBED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-270 710

AMERICAN MACHINE AND FOUNDRY CO CHICAGO ILL

FEASIBILITY STUDY OF AN AUXILIARY PROPELLED 155MM  
HOWITZER CARRIAGE, M1A2, PHASE IV (U)

JAN 62 IV SZYMSKI, E. J. :

UNCLASSIFIED REPORT

DESCRIPTORS: \*GUN MOUNTS, \*HOWITZERS, \*SELF PROPELLED  
GUNS, AIR DROP OPERATIONS, CLIMATE, GUNS, OPERATION,  
ROADS, TEMPERATURE, TESTS, TRANSPORTATION, VIBRATION (U)  
IDENTIFIERS: 155-MM ORDNANCE ITEMS, M-1 GUN  
MOUNTS(120-MM) (U)

A DESCRIPTION IS GIVEN OF THE FABRICATION AND  
PRELIMINARY TESTING OF 3 PROTOTYPE MODELS OF THE  
155MM AUXILIARY PROPELLED HOWITZER CARRIAGE  
XM123, THE PROTOTYPE DESIGN WAS PREPARED TO  
OVERCOME SOME SHORTCOMINGS OF THE EXPERIMENTAL  
VEHICLE BUILT UNDER PHASE II OF THE TASK.  
OVERCOMING THE DEFICIENCIES OF THE EXPERIMENTAL  
VEHICLE WERE THE DESIGN GOALS OF THE STUDY; NAMELY,  
TO INCREASE GROUND CLEARANCE AT WHEEL TRANSMISSIONS,  
TO DECREASE JACKING TIME, TO REDESIGN CASTER FOR MORE  
MUD CLEARANCE AND MORE ABUSE, TO DECREASE TOTAL KIT  
WEIGHT, TO REDUCE AMOUNT OF EXPOSED PLUMBING, AND TO  
PROVIDE EMERGENCY OPERATION IF AN ENGINE FAILS.  
FURTHER IMPROVEMENTS WERE MADE IN ELIMINATING THE  
WORM GEAR IN THE WHEEL TRANSMISSIONS, PROVIDING A  
MECHANICAL LINKAGE BETWEEN THE PUMP SWASH PLATE AND  
MOTOR SWASH PLATE AND PLACING THE HYDRAULIC  
RESERVOIRS BETWEEN THE TRAILS. FROM THE  
PRELIMINARY TEST REPORTS RECEIVED, IT APPEARS THAT  
THE DEFICIENCIES FOUND ARE MINOR. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-271 353

ROCK ISLAND ARSENAL ILL

FEASIBILITY AND CONCEPT STUDIES FOR RECOIL MECHANISM  
37MM SPOTTING RIFLE, XM36 (U)

DEC 61 IV NOBLE, HERBERT G. JR.;

UNCLASSIFIED REPORT

DESCRIPTORS: •ARTILLERY, •GUNS, •RECOIL MECHANISMS,  
•SPOTTING RIFLES, DESIGN, FEASIBILITY STUDIES,  
MATHEMATICAL ANALYSIS, TESTS (U)  
IDENTIFIERS: M-29 WEAPON SYSTEMS, 37-MM ORDNANCE  
ITEMS, M-64 GUNS(155-MM), M-77 GUNS(37-MM) (U)

THE FEASIBILITY OF UTILIZING A HYDRO-SPRING RECOIL MECHANISM FOR THE 37MM SPOTTING GUN, XM77, ADAPTED TO THE XM29 DELIVERY SYSTEM IS INDICATED. THE MECHANISM CAN BE CONCENTRIC TO THE SPOTTING RIFLE, UTILIZING ONLY THE SPOTTING RIFLE AS A RECOILING PART. THE RECOIL MECHANISM CAN THEN BE MOUNTED RIGIDLY TO THE FRONT OF THE XM64 GUN TUBE. THE SPOTTING RIFLE WILL THEN BE BENEATH AND PARALLEL TO THE MAJOR CAL XM64 TUBE. IT IS CONSIDERED FEASIBLE THAT THE TOTAL SPOTTING SYSTEM (GUN TUBE, BREECH, BRACKET, AND RECOIL MECHANISM) CAN BE BUILT FOR A TOTAL WEIGHT OF 55 LB. THE WEAPON SHOULD BE STABLE WITHIN A 10 MIL DEVIATION. THE PROTOTYPE MECHANISM OF THIS TYPE SHOULD PROVIDE A NEAT, COMPACT, ECONOMICAL PACKAGE, ALLOWING FOR EASY RETROFITTING TO THE EXISTING XM29 SYSTEM. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-271 759

ARMY ORDNANCE ARCTIC TEST ACTIVITY FORT WAINWRIGHT  
ALASKA

WINTER TEST (1962) OF MORTAR, SELF-PROPELLED, 4.2  
INCH, XM106, OMS 5610.11.701/0161 (U)

FEB 62 IV GIETZEN, KENNETH O.;  
REPT. NO. MR2

UNCLASSIFIED REPORT

DESCRIPTORS: \*MORTARS, \*SELF PROPELLED GUNS, CLIMATE,  
HEATERS, MOBILE, OPERATION, POLAR REGIONS, ROADWHEELS,  
TEMPERATURE, TESTS (U)

IDENTIFIERS: 4.2-IN. ORDNANCE ITEMS, M-106  
MORTARS(107-MM) (M)

SUCCESSFUL COLD STARTS WERE OBTAINED IN AMBIENT  
TEMPERATURES AS LOW AS -38 F. WITH A 10 MIN  
PREHEAT. ONLY ONE UNSUCCESSFUL START WAS  
ENCOUNTERED, PROBABLY BECAUSE OF LOW BATTERIES.  
THE DEFECTS ENCOUNTERED DURING THE TEST ARE  
BRIEFLY DESCRIBED. (AUTHOR) (U)

21

UNCLASSIFIED

/ZOM07

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-272 990

FRANKFORD ARSENAL PHILADELPHIA PA

EXPERIMENTAL LONG TERM STORAGE REPORT TEARDOWN  
INSPECTION OF M8 RECOIL MECHANISMS FOR 240 MM  
HOWITZER AT ROCK ISLAND ARSENAL, NOVEMBER 1958

(U)

DEC 61 IV SHIELDS, W. J. ;  
REPT. NO. M62 12 1

UNCLASSIFIED REPORT

DESCRIPTORS: \*HOWITZERS, \*RECOIL MECHANISMS, \*STORAGE,  
CORROSION, DEGRADATION, HUMIDITY, ORDNANCE, TESTS (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-273 712

ORDNANCE MISSION WHITE SANDS MISSILE RANGE N MEX

LITTLEJOHN. ROAD TRANSPORTATION TESTS STRAIN  
INVESTIGATION OF LITTLEJOHN XM-449 TRAILER (U)

MAR 62 IV FALKENBACH, CHARLES F.;

UNCLASSIFIED REPORT

DESCRIPTORS: •ARTILLERY ROCKETS, •TRAILERS,  
DETERMINATION, INSTRUMENTATION, ROADS, STRAIN GAGES,  
STRESSES, STRUCTURES, TESTS, TRANSPORTATION (U)  
IDENTIFIERS: M-449 TRAILERS, LITTLE JOHN (U)

THE XM-449 TRAILER WAS MONITORED FOR STRAIN  
DURING ROAD TRANSPORTATION TESTS CONDUCTED AT THE  
WHITE SANDS MISSILE RANGE, NEW MEXICO.  
THE MAX STRAIN LEVEL RECORDED WAS 872 MICROIN./IN.  
IT IS CONCLUDED THAT THE STRUCTURAL MEMBERS OF THE  
TRAILER ARE CAPABLE OF WITHSTANDING TRANSPORTATION  
WITHIN THE LIMITS OF THE INVESTIGATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-275 925

PICATINNY ARSENAL DOVER N J AMMUNITION GROUP

SHELF LIFE PROGRAM FOR Y-155 POWER PACK (PHASE I)  
(T39E4 WARHEAD - HONEST JOHN)

(U)

APR 62 IV CONANT, THEODORE W. I  
REPT. NO. 101107320NSO1DC TR 2 6 62

UNCLASSIFIED REPORT

DESCRIPTORS: •ARTILLERY ROCKETS, •POWER SUPPLIES,  
•ROCKET WARHEADS, AGING (PHYSIOLOGY), CLIMATE,  
CONTAINERS, DEGRADATION, HUMIDITY, LIFE EXPECTANCY,  
STORAGE, TESTS

(U)

IDENTIFIERS: T-39 WARHEADS, HONEST JOHN

(U)

SHELF LIFE TESTS OF THE Y-155 POWER PACK FOR THE HONEST  
JOHN WARHEAD. STORAGE TIME AND ENVIRONMENTAL  
CONDITIONS WERE CONSIDERED.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-276 154  
ROCK ISLAND ARSENAL ILL

CONTRIBUTION TO THE ANALYSIS OF MUZZLE BRAKE  
DESIGN

(U)

MAY 62 IV SCHLENKER, GEORGE I

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY, \*COMPUTERS, \*GUN BARREL  
ATTACHMENTS, \*INTERIOR BALLISTICS, ANALYSIS,  
BIBLIOGRAPHIES, DESIGN, DIGITAL COMPUTERS, EXPLOSIONS,  
GAS DISCHARGES, HEAT, IGNITERS, MATHEMATICAL ANALYSIS,  
PROGRAMMING (COMPUTERS), PROJECTILES, PROPELLANTS,  
THEORY

(U)

A THEORY OF GASEOUS DISCHARGE FROM THE END OF A  
TUBE WAS CONSTRUCTED USING AN ISENTROPIC MODEL WITH  
ACCOUNT TAKEN OF AXIAL GRADIENTS IN THE STATE  
VARIABLES. ON THE ASSUMPTION THAT THE FLOW RATES  
FROM SUCH A TUBE WERE NOT APPRECIABLY ALTERED BY THE  
PRESENCE OF CONVENTIONALLY DESIGNED MUZZLE BRAKES,  
ASSOCIATED WITH A COMPLEX BRAKE ANALYSIS, A DIGITAL  
COMPUTER PROGRAM WAS WRITTEN FOR THE ROYAL  
MCBEE, LGP-30 WHICH PERMITS ONE TO PERFORM AN  
ANALYSIS WITH RELATIVE EASE. THIS PROGRAM IS  
INCLUDED. A COMPREHENSIVE BIBLIOGRAPHY ON MUZZLE  
BRAKE STUDIES, GUN INDUCED SHOCK, AND ALLIED FIELDS  
IS ALFORMULAS FOR THE FORCES ON THE BRAKE AND TUBE  
WERE OBTAINED FOR BRAKES OF VARIOUS DESIGN. IN  
ORDER TO IMPLEMENT THE COMPUTATION OF PARAMETERS  
ASSOCIATED WITH A COMPLEX BRAKE ANALYSIS, A DIGITAL  
COMPUTER PROGRAM WAS WRITTEN FOR THE ROYAL  
MCBEE, LGP-30 WHICH PERMITS ONE TO PERFORM AN  
ANALYSIS WITH RELATIVE EASE. THIS PROGRAM IS  
INCLUDED. A COMPREHENSIVE BIBLIOGRAPHY ON MUZZLE  
BRAKE STUDIES, GUN INDUCED SHOCK, AND ALLIED FIELDS  
IS ALSO INCLUDED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-276 296

NORTH CAROLINA STATE UNIV RALEIGH

STUDY OF THE GUN-BOOSTED ROCKET SYSTEM

(U)

APR 62 IV BULLOCK, R.C.:  
CONTRACT: DA01 0090RD1022

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, ERRORS, FIN STABILIZED  
AMMUNITION, GUNS, INTERIOR BALLISTICS, LAUNCHING,  
MATHEMATICAL ANALYSIS, SPIN STABILIZED AMMUNITION,  
SURFACE TO SURFACE, THEORY, THRUST, WIND, YAW (U)

THEORETICAL, COMPUTATIONAL, AND EXPERIMENTAL  
STUDIES WERE CONTINUED OF ROCKET MOTION WITHIN THE  
LAUNCHER, DURING TIPOFF, AND DURING THE BURNING  
PERIOD FOR CONVENTIONAL ARTILLERY ROCKETS AND FOR  
GUN-BOOSTER ARTILLERY ROCKETS, BOTH SPINSTABILIZED  
AND FIN-STABILIZED. THE FACTORS CONTRIBUTING TO  
ROCKET INACCURACY ARE DESCRIBED. INVESTIGATION OF  
SOURCES OF DISPERSION OF BOTH FIN-STABILIZED AND  
SPIN-STABILIZED ROCKETS, EVALUATION OF THE RELATIVE  
EFFECTS OF THESE DISTURBING FACTORS, AND DEVELOPMENT  
OF CRITERIA FOR MINIMIZING THESE EFFECTS IN THE  
DESIGNING AND DEVELOPING OF NEW GUN-BOOSTED ROCKET  
LAUNCHER SYSTEMS WILL CONTINUE. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-276 670

PICATINNY ARSENAL DOVER N J AMMUNITION DEVELOPMENT  
DIV

SHELL. A COMPUTER PROGRAM FOR DETERMINING THE  
PHYSICAL PROPERTIES OF ARTILLERY SHELL AND RELATED  
ITEMS (U)

MAY 62 IV POLITZER, JAY L.;  
REPT. NO. SAAS 36

UNCLASSIFIED REPORT

DESCRIPTORS: AMMUNITION, ARTILLERY, COMPUTERS, INDEXES,  
PHYSICAL PROPERTIES, PROGRAMMING (COMPUTERS),  
PROJECTILES, PUNCHED CARDS (U)

THE SHELL PROGRAM IS A LOGICAL DEVICE FOR  
DETERMINING THE WEIGHT, POLAR AND TRANSVERSE MOMENTS  
OF INERTIA, TOTAL MOMENT OF INERTIA, VOLUME, AND  
CENTER OF GRAVITY OF ARTILLERY SHELL AND RELATED  
ITEMS BY MEANS OF A COMPUTER. THIS REPORT EXPLAINS  
THE USE OF THE PROGRAM AND IS INTENDED FOR THE  
ENGINEER WHO IS FAMILIAR WITH THE CALCULATIONS. NO  
KNOWLEDGE OF COMPUTERS OR PROGRAMMING IS ASSUMED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-276 837

BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD

EXPLORATORY ESTIMATES OF THE EFFECT OF RAIN ON  
ARTILLERY FIRE

(U)

DESCRIPTIVE NOTE: MEMORANDUM REPT.

FEB 62 60P ZARODNY, SERGE J. I

REPT. NO. BRL-MR-1389

PROJ: DA-503-03-001

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY FIRE, \*ATMOSPHERIC  
PRECIPITATION, \*CHEMICAL PRECIPITATION, \*CLOUDS,  
\*PROJECTILE TRAJECTORIES, ATMOSPHERES, CLIMATE, DENSITY,  
DRAG, ENERGY, ERRORS, FRAGMENTATION, METEOROLOGY,  
PROJECTILES, RAINDROPS, RANGES (DISTANCE), STATISTICAL  
ANALYSIS, WIND (U)

IDENTIFIERS: M-1 CARTRIDGES (105-MM), 105-MM ORDNANCE  
ITEMS (U)

THIS EXPLORATORY INVESTIGATION IS ONLY A  
PRELIMINARY STEP IN DECIDING WHETHER A CORRECTION OF  
AN INDIRECT ARTILLERY FIRE FOR RAIN, AND FOR THE  
PRESENCE OF CLOUDS ALONG A TRAJECTORY OF THE  
PROJECTILE NEED BE CONSIDERED. THE STUDY ATTEMPTS  
ONLY A ROUGH ESTIMATE OF THE POSSIBLE RANGE OF THE  
RESULTS OF A MORE THOROUGH INVESTIGATION. AN  
EXAMPLE, BASED ON THE MAX RANGE OF THE 105MM HOWITZER  
AND A MILDLY HEAVY RAIN IS GIVEN. ONLY ONE NOVEL  
COEFFICIENT HAS BEEN COMPUTED: THIS IS THE USUALLY-  
NEGLECTED EFFECT OF THE VERTICAL WIND. IT IS  
TENTATIVELY CONCLUDED THAT THE PRINCIPAL EFFECT OF  
RAIN IS THE THEORETICALLY MEASURABLE METEOROLOGICAL  
EFFECTS OF THE SATURATION OF AIR WITH WATER VAPOR.  
OUTSIDE OF THESE, THE RAIN MAY HAVE A SIGNIFICANT  
EFFECT ONLY IF IT IS VERY HEAVY, AND EXTENDS OVER A  
LARGE SEGMENT OF THE TRAJECTORY OF THE PROJECTILE.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-276 950

SUNDSTRAND AVIATION ROCKFORD ILL

DESIGN, AND DETAIL OF AN AUXILIARY, PROPELLED 105 MM  
HOWITZER (U)

APR 62 IV ZWIERZYCKI, W.J.;  
CONTRACT: DALL 070 508ORD1343

UNCLASSIFIED REPORT

DESCRIPTORS: \*HOWITZERS, AUXILIARY POWER PLANTS,  
HYDRAULIC ACCUMULATORS, HYDRAULIC PRESSURE PUMPS,  
HYDRAULIC SEALS, PROPULSION SYSTEMS (U)  
IDENTIFIERS: 105-MM ORDNANCE ITEMS (M)

CONSIDERATIONS INVOLVED IN THE DESIGN AND DETAILING  
OF AN AUXILIARY PROPULSION SYSTEM FOR THE 105MM  
HOWITZER ARE SUMMARIZED. THE DESIGN IS BASED ON  
HYDRAULIC PUMPS AND MOTORS WHICH USE THE SAME BASIC  
PARTS AS THE HYDRAULIC UNITS USED ON THE AUXILIARY  
PROPELLED 155MM HOWITZER. THE BASIS FOR SELECTING  
THE ENGINE, PUMP AND HYDRAULIC MOTOR IS DISCUSSED  
ALONG WITH THE CALCULATIONS USED TO ARRIVE AT THE  
FINAL DRIVE RATIO, THE WEAPON'S TOP SPEED AND RANGE  
AND THE MAGNITUDE OF THE HYDRAULIC LINE LOSSES.  
ALL OF THE REMAINING ITEMS REQUIRED BY THE SYSTEM  
ARE TREATED SEPARATELY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-277 973

NORTH CAROLINA STATE UNIV RALEIGH

STUDY OF THE GUN-BOOSTED ROCKET SYSTEM

(U)

MAY 62 IV BULLOCK, R.C. I  
CONTRACT: DA01 0090RD1022

UNCLASSIFIED REPORT

DESCRIPTORS: ARTILLERY ROCKETS, EXTERIOR BALLISTICS, FIN  
STABILIZED AMMUNITION, ROCKET TRAJECTORIES,  
SPINNING(MOTION), SPIN STABILIZED AMMUNITION, VELOCIT(U)

A DISCUSSION IS PRESENTED OF ROCKET ACCURACY FOR A  
SPECIFIC GROUP OF GUN-BOOSTED SPIN-STABILIZED ROUNDS  
FOR WHICH TYPICAL DATA ARE GIVEN. THE BACKGROUND  
FOR THE FORMULAS DISPLAYED, ALONG WITH THE FORMULAS  
THEMSELVES, APPEARS IN THE SUMMARY REPORT WHICH IS IN  
PREPARATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-281 759

NORTH CAROLINA STATE UNIV RALEIGH SCHOOL OF PHYSICAL  
SCIENCES AND APPLIED MATHEMATICS

STUDY OF THE GUN-BOOSTED ROCKET SYSTEM. (U)

DESCRIPTIVE NOTE: MONTHLY PROGRESS REPT. NO. 5, 1-30 JUN  
62,

JUN 62 1V BULLOCK, R. C. ;

CONTRACT: DA01 0090RD1022

PROJ: 5W-17-01-002

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, DYNAMICS, EQUATIONS,  
GRAVITY, THEORY (U)

IDENTIFIERS: BOOSTED ROCKETS (M)

THEORETICAL AND COMPUTATIONAL TREATMENT OF ROCKET  
MOTION DURING THE TIPOFF PERIOD IS PRESENTED FOR  
CONVENTIONAL ARTILLERY ROCKETS AND FOR GUN-BOOSTED  
ARTILLERY ROCKET, BOTH SPIN-STABILIZED AND FIN  
STABILIZED. (M)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-282 257

GENERAL PRECISION INC LITTLE FALLS N J KEARFOTT DIV

GYROSCOPIC AIMING DEVICE FOR A SELF-PROPELLED  
ARTILLERY WEAPON.

(U)

DESCRIPTIVE NOTE: FINAL ENGINEERING REPT.,

MAR 62 114P SPUTZ, J. P. I

REPT. NO. M60003

CONTRACT: DA30 069 5070RD2762

UNCLASSIFIED REPORT

DESCRIPTORS: \*GYROSCOPES, \*GYROSCOPIC SIGHTS, \*SELF  
PROPELLED GUNS, ACCELEROMETERS, ANALOG COMPUTERS,  
AUTOMATIC, AZIMUTH, COMPASSES, CONTROL PANELS, DESIGN,  
ELECTRONIC EQUIPMENT, INSTRUMENTATION, POWER SUPPLIES,  
TESTS

(U)

THE GYROSCOPIC AIMING DEVICE (GYRAD) WAS DESIGNED  
AND DEVELOPED TO MEET THE NEED FOR A FASTER AND MORE  
ACCURATE METHOD OF ORIENTING AND LAYING ARTILLERY IN  
AZIMUTH AND ELEVATION. DESIGNED TO BE MOUNTED ON A  
NON-RIGID BASE, IT IS AUTOMATIC, SELF-CONTAINED AND  
REQUIRES NO EXTERNAL INFORMATION OTHER THAN AN  
APPROXIMATE INDICATION OF LATITUDE. THE GYRAD  
WAS DESIGNED TO LAY AN ARTILLERY WEAPON IN AZIMUTH  
WITHIN + OR - 1 MIL AT A LATITUDE OF 45 DEG. AT  
ANY LATITUDE BETWEEN 75 DEG NORTH AND 75 DEG  
SOUTH, THE SYSTEM OPERATES EFFECTIVELY AND PROVIDES  
RELIABLE DATA. THE GYRAD CONSISTS OF FOUR MAJOR  
COMPONENTS: STABLE PLATFORM CONTROL ELECTRONICS,  
POWER SUPPLY, AND CONTROL PANEL. A BRIEF  
DESCRIPTION OF EACH OF THESE COMPONENTS IS GIVEN.  
(AUTHOR)

(M)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-282 305  
ILLINOIS UNIV URBANA

BALLISTIC EQUATIONS FOR ARTILLERY SHELLS (U)

JUL 62 1V WILMS, E.V. I  
REPT. NO. TAAM R 620  
CONTRACT: DALL 022 5080RD3505

UNCLASSIFIED REPORT

DESCRIPTORS: \*PROJECTILE TRAJECTORIES, \*PROJECTILES,  
ARTILLERY, COMPUTERS, DIFFERENTIAL EQUATIONS, EARTH,  
EQUATIONS, GRAVITY, MATHEMATICAL ANALYSIS, MOMENTS,  
MOTION, ROTATION, TRANSFORMATIONS (MATHEMATICS), VECTOR  
ANALYSIS, WIND (U)

A SET OF EQUATIONS DESCRIBING THE MOTION OF  
ARTILLERY SHELLS FOR CONVENIENT SOLUTION BY COMPUTER  
IS DERIVED. THE EFFECT OF MASS UNBALANCE IS TAKEN  
INTO ACCOUNT. THE EQUATIONS ARE SET UP IN AN  
INERTIAL COORDINATE SYSTEM, AND THE EFFECT OF THE  
ROTATION OF THE EARTH IS INCLUDED.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-288 032

FRANKLIN INST PHILADELPHIA PA LABS FOR RESEARCH AND  
DEVELOPMENT

DESIGN AND DEVELOPMENT OF A RAMMER-LOADER FOR THE NEW  
105MM LIGHT-WEIGHT HOWITZER (U)

AUG 62 IV BREUER, HOWARD R. I  
REPT. NO. F A2468  
CONTRACT: DA36 0340RD503

UNCLASSIFIED REPORT

DESCRIPTORS: •HOWITZERS, •LOADERS, AMMUNITION, HUMAN  
FACTORS ENGINEERING (U)  
IDENTIFIERS: ADAPTION KITS (M)

DEVELOPMENT OF A RAMMER-LOADER FOR THE NEW 105MM LIGHT-  
WEIGHT HOWITZER.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-290 599

ARMY ARTILLERY BOARD FORT SILL OKLA

TEST OF FLOTATION KIT FOR 155-MM HOWITZER, SELF-  
PROPELLED, T196E1

(U)

NOV 62 1V  
REPT. NO. FA 3459 2

UNCLASSIFIED REPORT

DESCRIPTORS: \*FLOATS, HOWITZERS, PHOTOGRAPHS, TESTS,  
TRACKED VEHICLES

(U)

IDENTIFIERS: T-196 HOWITZERS(155-MM), T-195  
HOWITZERS(105-MM)

(U)

TEST OF FLOTATION KIT FOR T196E1, 155-MM, SELF-  
PROPELLED HOWITZER.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-290 632

ILLINOIS UNIV URBANA

LOADS, REACTIONS AND DEFLECTIONS FOR SIMPLIFIED  
ARTILLERY PIECES

(U)

SEP 62 IV STIPPES, M. J.  
CONTRACT: DA11 022 5080RD3505

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY, \*GUNS, DEFLECTION, EQUATIONS,  
FRICTION, GEOMETRY, GUN MOUNTS, LOAD DISTRIBUTION,  
PROJECTILES, REACTION KINETICS

(U)

A UNIFIED METHOD IS PRESENTED FOR ANALYZING THE  
GROSS EFFECTS OF FRICTION, ROD PULL, AND GROUND  
SUPPORT ON THE MOTIONS AND REACTIONS IN AN ARTILLERY  
PIECE, A VARIETY OF MODELS ARE PRESENTED IN ORDER  
THAT THE CHANGES IN THESE EFFECTS MAY BE STUDIED AS  
A FUNCTION OF CONFIGURATION. ALL MODELS ARE THE  
SIMPLEST POSSIBLE GEOMETRICALLY AND AS SUCH DO NOT  
PERMIT INVESTIGATION OF SECOND ORDER EFFECTS.

(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-291 060

ABERDEEN PROVING GROUND MD

SUMMER DESERT ENVIRONMENTAL TEST, 1962, OF 105-  
MMHOWITZER, SELF-PROPELLED, XM104

(U)

NOV 62 IV RENCK, L.H.:

UNCLASSIFIED REPORT

DESCRIPTORS: •HOWITZERS, •SELF PROPELLED GUNS, •TRACKED  
VEHICLES, COOLING, COOLING FANS, FAILURE (MECHANICS),  
SAFETY BELTS, TERRAIN, TESTS (U)  
IDENTIFIERS: M-104 HOWITZERS(105-MM) (M)

SUMMER DESERT ENVIRONMENTAL TEST OF 105-MM HOWITZER,  
SELF-PROPELLED, XM104.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-291 558

AMERICAN MACHINE AND FOUNDRY CO STAMFORD CONN

105 MM HOWITZER XM 102

(U)

DEC 62 IV BONANNO, A.;  
CONTRACT: DALL 070AMC13

UNCLASSIFIED REPORT

DESCRIPTORS: \*AUXILIARY POWER PLANTS, \*HOWITZERS, \*SELF  
PROPELLED GUNS, DRIVES, FEASIBILITY STUDIES, INTERNAL  
COMBUSTION ENGINES, PROPULSION SYSTEMS,  
TRANSMISSIONS(MECHANICS) (U)

IDENTIFIERS: M-102 HOWITZERS(105-MM) (M)

105-MM HOWITZER XM-102 STUDY.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-292 083

PICATINNY ARSENAL DOVER N J

FEASIBILITY STUDY OF AN EXPLODING BRIDGEWIRE  
PROPELLANT IGNITION SYSTEM FOR A CLOSED BREECH WEAPON  
SYSTEM (U)

NOV 62 IV DEMBERG, EDMUND; SNOOK, RICHARD W.;  
HEINEMANN, ROBERT W.;  
REPT. NO. 415804040N501TM1094

UNCLASSIFIED REPORT

DESCRIPTORS: \*ELECTRIC IGNITERS, DRAFTING, ELECTRIC  
DETONATORS, FEASIBILITY STUDIES, GUNS, HOWITZERS,  
PHOTOGRAPHS, TEST METHODS, TESTS (U)  
IDENTIFIERS: DAVY CROCKETT, EXPLODING WIRE IGNITERS,  
ELECTROEXPLOSIVE DEVICES, M-1 HOWITZERS (155-MM) (U)

A STUDY WAS CONDUCTED TO DETERMINE THE FEASIBILITY  
OF UTILIZING AN EXPLODING BRIDGEWIRE (EBW)  
INITIATOR SYSTEM FOR THE IGNITION OF PROPELLANT IN A  
CLOSED BREECH SYSTEM. THE 155MM M1A1  
HOWITZER WAS SELECTED AS THE TEST VEHICLE IN THE  
STUDY. THE EBW PROPELLANT IGNITION SYSTEM  
YIELDED CHAMBER PRESSURES RANGING FROM 26,000-31,500  
PSI, AND PROJECTILE VELOCITIES RANGING FROM 1,774-1,  
797 FPS. THE SYSTEM CONSISTED OF A MODIFIED IE  
15-N EBW DETONATOR, AN X349 (DUPONT)  
MODIFIED MILD END PRIMER ATTACHED TO 18 INCHES OF 20/  
40 PYROCORE (DUPONT), 67.8 GRAMS OF A5 BLACK  
POWDER LOADED IN A CARDBOARD TUBE, 13.0 LBS OF M1  
OR 12.0 LBS OF M6, 0.33 WEB, PROPELLANT CHARGE AND  
A GENERAL LABORATORY ASSOCIATES SOLID STATE  
POWER PACK FIRING SYSTEM. IN 10 TESTS USING A  
0.375 MF CAPACITOR CHARGED TO 1,000 VOLTS, THE  
EBW SYSTEM AND BLACK POWDER WERE INITIATED. WHEN  
THE CAPACITOR WAS CHARGED TO 700 AND 850 VOLTS, NO  
INITIATION WAS OBTAINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-293 199

YUMA TEST STATION FORT WAINWRIGHT ALASKA

WINTER ARCTIC ENVIRONMENTAL TEST, 1963, OF 105MM  
HOWITZER, SELF-PROPELLED, XM104 (U)

DEC 62 IV BROOKS, WAHNER;  
REPT. NO. ENV 7 63W

UNCLASSIFIED REPORT

DESCRIPTORS: HOWITZERS, EXHAUST GASES, FAILURE  
(MECHANICS), HEATERS, INSTRUMENTATION, POLAR REGIONS,  
STARTING, STORAGE, TEST METHODS, TESTS, TOXICITY (U)  
IDENTIFIERS: M-104 HOWITZERS(105-MM) (M)

THE XM104 IS A SELF-PROPELLED, FULL-TRACKED,  
105MM HOWITZER. IT IS CAPABLE OF BEING TRANSPORTED  
BY HC-1B HELICOPTER OR ASSAULT AIRCRAFT AND  
DELIVERY BY AIRDROP. THE VEHICLE CARRIES A FOUR-  
MAN CREW AND IS DESIGNED TO PROVIDE CLOSEIN ARTILLERY  
SUPPORT. THE CHASSIS IS OF RIVETED ALUMINUM  
CONSTRUCTIO WITH NO SUPERSTRUCTURE AND WITH AN  
INDEPENDENTLY MOUNTED GUN AT THE REAR OF THE CHASSIS.  
A MECHANICAL OPERATED SPADE, MOUNTED AT THE REAR  
OF HE VEHICLE, AND SET OF HYDRAULIC SUSPENSION  
LUCK-OUTS ANCHOUR THE VEHICLE DURING FIRING.  
DURING THIS REPORTING PERIOD, THE INITIAL  
MECHANICAL INSPEC ION, STOWAGE TESTS, AND BREAK-IN  
ESI WERE CONDUCTED. TOXIC FUMES, BREAKING TESTS,  
COLD START, ND WARM-UP TESTS WERE ALSO COMMENCED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-293 292

HUMAN ENGINEERING LABS ABERDEEN PROVING GROUND MD

MUZZLE BLAST MEASUREMENTS ON HOWITZER, 105MM,  
XM103E1

(U)

OCT 62 IV HOLLAND, HOWARD H. JR.;  
REPT. NO. TM23 62

UNCLASSIFIED REPORT

DESCRIPTORS: \*HOWITZERS, \*PROPELLANT FLASHES, ARTILLERY  
FIRE, BLAST, EAR PROTECTORS, GUN BARREL ATTACHMENTS,  
HARBOR MODELS, INSTRUMENTATION, PERSONNEL, PHOTOGRAPHS,  
PRESSURE, TABLES (DATA), TEST METHODS, TESTS, TOWED  
BODIES

(U)

IDENTIFIERS: M-103 HOWITZERS (105-MM)

(M)

MEASUREMENTS OF MUZZLE-BLAST IN THE CREW AREA OF  
THE 105MM HOWITZER, XM103, WITHOUT A MUZZLE BRAKE  
AND WITH MUZZLE BRAKES WTV-F824 (HIGH  
EFFICIENCY), 5/K (MEDIUM EFFICIENCY), AND  
WTV-D8259 (LOW EFFICIENCY), WERE MADE TO  
DETERMINE THE PEAK OVERPRESSURES PRODUCED. THE  
OVERPRESSURES PRODUCED BY THE FOUR DIFFERENT BRAKE  
CONDITIONS WERE ONE OF THE MOST IMPORTANT FACTORS  
DETERMINING WHICH BRAKE WOULD BE USED ON THE XM103  
HOWITZER. THE HOWITZER WAS FIRED AT ELEVATIONS  
OF 2, 45, AND 62 - 68 DEGREES. IT IS RECOMMENDED  
THAT THE 5/K (MEDIUM EFFICIENCY) BRAKE IS  
THE MAXIMUM EFFICIENCY BRAKE TO BE CONSIDERED FOR  
THIS WEAPON. THE WATERTOWN BLAST SH ELD  
PROVIDED FOR THIS PROGRAM IS NOT RECOMMENDED FOR THIS  
WEAPON. IT IS RECOMMENDED THAT WEARING VSIR  
EARPLUGS SHOULD BE MANDATORY FOR ALL PERSONNEL  
LOCATED IN THE CREW AREA WHEN THE 105MM HOWITZER,  
XM102, IS FIRED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-294 752

NORTH CAROLINA STATE UNIV RALEIGH SCHOOL OF PHYSICAL  
SCIENCES AND APPLIED MATHEMATICS

STUDY OF THE GUN-BOOSTED ROCKET SYSTEM

(U)

DEC 62 IV

HARRINGTON, WALTER J.; BULLOCK, ROBERTS

C.;

CONTRACT: DA-01-021-ORD-1022, DA-01-021-ORD-3190

PROJ: SW17-01-002

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, BOOSTER ROCKETS,  
DYNAMICS, EQUATIONS, FIN STABILIZED AMMUNITION, GRAVITY,  
GUN LAUNCHERS, SCATTERING, SPIN STABILIZED AMMUNITION(U)

FINAL REPORT OF SEVERAL STUDIES OF THE GUNBOOSTED ROCKET  
SYSTEM.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-295 739

PICATINNY ARSENAL DOVER N J

A UNIQUE UNIVERSAL TYPE INSTRUMENT TO LOCATE CENTER  
OF GRAVITY OF VARIOUS WARHEADS (U)

DEC 62 IV STEIN, DAVID I WEINBERG, MARK H. I

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, \*ROCKET WARHEADS,  
GRAVITY, LOAD DISTRIBUTION, STABILITY, WARHEADS (U)  
IDENTIFIERS: HONEST JOHN, LITTLE JOHN (U)

A UNIQUE UNIVERSAL TYPE INSTRUMENT TO LOCATE CENTER OF  
GRAVITY OF VARIOUS WARHEADS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-295 824

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

FUNDAMENTALS OF DESIGN FOR SOLID-PROPELLANT ROCKET MISSILES (U)

DEC 62 IV KUROV, V. D. IDOLZHANSKIY, YU. M. ;  
REPT. NO. FTD-TT-62-1142

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM GOSUDARSTVENNOYE  
NAUCHNO-TEKHNICHESKOYE IZDATEL'STVO OBORONGIZ,  
MOSKVA, PP. 1-294, 1961.

DESCRIPTORS: \*ARTILLERY ROCKETS, \*GUIDED MISSILE  
WARHEADS, \*GUIDED MISSILES, \*ROCKET ENGINES, AERODYNAMIC  
CHARACTERISTICS, ARMOR PIERCING AMMUNITION,  
CONFIGURATION, DESIGN, EQUATIONS, EXTERIOR BALLISTICS,  
FLIGHT TESTING, FRAGMENTATION AMMUNITION, GUIDED MISSILE  
TRAJECTORIES, HIGH EXPLOSIVE AMMUNITION, INTERIOR  
BALLISTICS, MATERIALS, MATHEMATICAL ANALYSIS, PROPELLANT  
GRAINS, ROCKET WARHEADS, ROCKET NOZZLES, ROCKET NOSES,  
ROCKET TRAJECTORIES, SCATTERING, SHAPED CHARGES, SOLID  
ROCKET PROPELLANTS, STABILIZATION SYSTEMS, TESTS, THR(U)

FUNDAMENTALS OF DESIGN FOR SOLID-PROPELLANT  
ROCKET MISSILES. TRANSLATION OF SOVIET BOOK INTENDED  
FOR SECONDARY EDUCATIONAL INSTITUTIONS.



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-297 988

PICATINNY ARSENAL DOVER N J

NOMOGRAPHS FOR INTERIOR BALLISTICS

(U)

JAN 63 IV KRAVITZ, SIDNEY I

UNCLASSIFIED REPORT

DESCRIPTORS: •HOWITZERS, INTERIOR BALLISTICS,

NOMOGRAPHS

(U)

IDENTIFIERS: MUZZLE VELOCITY

(M)

NOMOGRAPHS FOR INTERIOR BALLISTICS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-298 115

PICATINNY ARSENAL DOVER N J

COMBUSTIBLE IGNITER TUBES FOR CHARGE, PROPELLING, M51  
AND XM115 FOR CANNON, HOWITZER, 155MM, T255 AND  
T258 (U)

FEB 63 IV DANIELS, EDWARD INADEL, ISIDORE G.;

UNCLASSIFIED REPORT

DESCRIPTORS: •IGNITERS, HOWITZERS, MATERIALS,  
NITROCELLULOSE, PROPELLING CHARGES (U)

IDENTIFIERS: T-255 HOWITZERS(155-MM), M-51 PROPELLING  
CHARGES(155-MM), T-258 HOWITZERS(155-MM) (U)

COMBUSTIBLE IGNITER TUBES FOR M51 AND XM115 PROPELLING  
CHARGE FOR 155 MM, T255 AND T258 HOWITZER CANNON.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-324 699 16/4 21/8  
ROHM AND HAAS CO HUNTSVILLE ALA

MISSILE A BOOSTER DEVELOPMENT.

(U)

JUL 61 IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, \*SOLID ROCKET  
PROPELLANTS, DESIGN, FLIGHT TESTING, IGNITERS,  
MANUFACTURING, PLASTICIZERS, PLASTICS, QUALITY CONTROL,  
ROCKET ENGINE CASES, ROCKET IGNITERS, ROCKET NOZZLES,  
ROCKET ENGINES, TESTS (U)  
IDENTIFIERS: MISSILE A, PADA (U)

A SUMMARY IS PRESENTED OF THE MISSILE A BOOSTER  
DEVELOPMENT PROGRAM. IN ADDITION, MOST OF THE  
METHODS AND TECHNIQUES USED IN PREPARING, CASTING,  
LOADING, AND DELIVERY OF THE MOTORS ARE DETAILED FOR  
REFERENCE INFORMATION. THE REQUIREMENTS OF THE  
BOOSTER SYSTEM ARE PRESENTED ALONG WITH THE PROBLEMS  
ENCOUNTERED DURING THE DEVELOPMENT PROGRAM AND THEIR  
SOLUTIONS, LEADING TO THE SUCCESSFUL COMPLETION OF  
THE PROGRAM. ALL THE MAJOR REQUIREMENTS WERE  
SATISFIED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-363 667 1971  
ARMY CONCEPT TEAM IN VIETNAM SAN FRANCISCO CALIF 96384

EMPLOYMENT OF ARTILLERY IN COUNTERINSURGENCY  
OPERATIONS (U)

DESCRIPTIVE NOTE: FINAL REPT.  
APR 65 1V  
PROJ: 1B153 0

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•ARTILLERY, COUNTERINSURGENCY), ARTILLERY,  
VIETNAM, MILITARY OPERATIONS, DEPLOYMENT, EFFECTIVENESS,  
MISSION PROFILES, MILITARY ORGANIZATIONS, AREA COVERAGE,  
AMMUNITION, OPERATIONS, ARMED FORCES(FOREIGN) (U)  
CASUALTIES, OBSERVATION AIRCRAFT, FIRE CONTROL SYSTEM(U)  
IDENTIFIERS: SOUTH VIETNAM (U)

THE PURPOSE OF THIS EVALUATION WAS TO DETERMINE THE  
CAPABILITY OF ARMY OF THE REPUBLIC OF VIETNAM  
(ARVN) ARTILLERY TO SUPPORT SECTOR OPERATIONS,  
REGULAR OPERATIONS, AND HAMLETS, VILLAGES, AND  
OUTPOSTS. ALTHOUGH THE EVALUATION WAS CONDUCTED  
PRIMARILY IN II AND III CORPS AND THE 7TH  
DIVISION AREA OF IV CORPS, SEPARATE  
QUESTIONNAIRES WERE COMPLETED BY BOTH ARVN  
ARTILLERY COMMANDERS AND THEIR US ADVISORS IN ALL  
THE ARTILLERY UNITS IN THE REPUBLIC OF VIETNAM  
(RVN). FORMS WERE USED TO COLLECT DATA ON  
AMMUNITION EXPENDITURES, MISSIONS FIRED, AND  
OPERATIONS CONDUCTED. FOUR PROVINCES WERE CHOSEN  
FOR DETAILED ANALYSIS OF ARTILLERY EFFECTIVENESS.  
IN NO CASE WAS A MISSION FIRED SOLELY FOR THE  
PURPOSE OF THE EVALUATION. ONLY THOSE MISSIONS  
WERE ANALYZED IN WHICH DATA WERE RECORDED WITH  
ACCURACY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-376 230 21/8.2 (U) 19/7 19/1  
20/13

ROHM AND HAAS CO HUNTSVILLE ALA REDSTONE RESEARCH  
LABS

DEVELOPMENT OF A ROCKET MOTOR FOR CROW. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
OCT 66 40P STONE, WILLIAM C. ;  
REPT. NO. S-113  
CONTRACT: DA-01-021-AMC-10037

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOLID PROPELLANT ROCKET ENGINES, RESEARCH  
MANAGEMENT) (U) \*ARTILLERY ROCKETS, FLIGHT TESTING,  
CAPTIVE TESTS, SURFACE TO SURFACE, IMPACT PREDICTION,  
ROCKET TRAJECTORIES, MISS DISTANCE, ROCKET WARHEADS,  
HIGH EXPLOSIVE AMMUNITION, DEGRADATION, ROCKET  
PROPELLANT GRAINS, BURNING RATE, TEMPERATURE CONTROL,  
CONFIGURATION, HEAT SHIELDS, NOZZLE INSERTS, ROCKET  
ENGINE CASES, THERMAL INSULATION, ROCKET IGNITERS (U)  
IDENTIFIERS: CROW (U)

A ROCKET MOTOR FOR THE CROW MISSILE WAS DEVELOPED  
IN A TIME PERIOD OF APPROXIMATELY FOUR MONTHS. THE  
MOTOR WAS 2.54 INCHES IN DIAMETER AND 20 INCHES IN  
LENGTH. THE MOTOR CONTAINED 3.1 POUNDS OF  
PLASTISOL NITROCELLULOSE COMPOSITE PROPELLANT IN A  
ROD-AND-TUBE GRAIN DESIGN AND WEIGHED SIX POUNDS  
READY TO FIRE. THE HIGH-STRENGTH STEEL CASE AND  
ALUMINUM NOZZLE WERE INSULATED TO PREVENT EXCESSIVE  
HEATING OF THE MOTOR CASE. NINETEEN MOTORS WERE  
STATIC TESTED AND FIVE WERE SUCCESSFULLY FLIGHT  
TESTED AT ACCELERATIONS OF APPROXIMATELY 110 G'S.  
THE MOTOR PRODUCED AN AVERAGE THRUST OF 4300 FOR A  
BURNING TIME OF 175 MICROSEC, AND DELIVERED A TOTAL  
IMPULSE OF 805 FT LB-SEC/THOUSAND LB. THE  
OPERATING PRESSURE WAS 4000 LB/SQ. IN ABSOLUTE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM67

AD-405 791

ABERDEEN PROVING GROUND MD

ENGINEER DESIGN TEST OF HOWITZER, LIGHT, SELF  
PROPELLED, 105-MM, XM104, (U)

MAY 63 IV GERARD, P.;  
PROJ: 545 03 030  
MONITOR: APG DPS955

UNCLASSIFIED REPORT

DESCRIPTORS: \*HOWITZERS, AMPHIBIOUS OPERA,  
MANEUVERABILITY, HAZARDS, CARBON MON, TRACKED VEHICLE,  
MOBILE, VIBRATION, LIFE EXPECTANCY, TEST METHODS, RELI,  
SELF PROPELLED GUNS, EFFECTIVENESS. (U)  
IDENTIFIERS: M-104 HOWITZERS(105-MM) (U)

THE XM104 SELF-PROPELLED HOWITZER, PILOT NO. 3,  
WAS TESTED TO DETERMINE THE READINESS OF THE WEAPON  
SYSTEM FOR ENGINEERING AND USER TESTS. THE  
AUTOMOTIVE PROGRAM CONSISTED OF AMPHIBIOUS OPERATIONS  
AND 4000 MILES OF ENDURANCE TESTING. AMPHIBIOUS  
CAPABILITIES ARE LIMITED BY LOW DRAW BAR PULL AND BY  
MANEUVERABILITY WHICH IS IN FLUENCED BY WIND EFFECTS  
ON THE CANVAS ENCLOSURE; CARBON MONOXIDE  
CONCENTRATIONS ARE ALSO A POTEN TIAL HAZARD. TRACK  
LIFE IS UNSATISFACTORY AND COMPONENT SERVICE LIFE AND  
MAINTENANCE ARE AD VERSELY INFLUENCED BY VEHICLE  
VIBRATION. IT IS RECOMMENDED THAT THE VEHICLE  
UNDERGO ENGINEERING AND USER TESTS AFTER THE  
APPROPRIATE MODIFICA TIONS ARE MADE IN THE PROBLEM  
AREAS REVEALED DURING THIS TEST. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-414 795

PICATINNY ARSENAL DOVER N J AMMUNITION ENGINEERING  
DIRECTORATE

PRODUCTION ENGINEERING OF WARHEAD SECTION 762MM  
ROCKET, PRACTICE: XM38 (M38),

(U)

JUL 63 52P GORDON, SYDNEY ;  
MONITOR: PA TECHNICAL REPT. NO. 3074

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (ARTILLERY ROCKETS, ROCKET WARHEADS),  
TRAINING AMMUNITION, PRODUCTION, WARHEADS, SMOKE  
MUNITIONS, ROCKET MOTORS (SOLID PROPELLANT), ROCKET  
FUZES, COSTS

(U)

IDENTIFIERS: HONEST JOHN, M-38 WARHEADS

(U)

THE WARHEAD SECTION, 762MM ROCKET,  
PRACTICE: M38 IS THE RESULT OF PRODUCTION  
ENGINEERING THE WARHEAD SECTION, 762MM ROCKET,  
PRACTICE: XM38. THE M38 WARHEAD IS AN  
HONEST JOHN WARHEAD WHICH CONSISTS OF AN  
AERODYNAMIC SHELL, STRUCTURAL MEMBERS, FUZING SYSTEM,  
TWO FLASH-SMOKE CHARGES AND A BALLAST ASSEMBLY. IT  
HAS THE SAME WEIGHT, CONTOUR AND CENTERS OF GRAVITY  
AS THE M144 (T2044E1) WARHEAD SECTION.  
THE M38 WARHEAD FLASH-SMOKE CHARGES ARE  
LOCATED IN THE AFT SECTION OF THE WARHEAD AND HAVE A  
MINIMAL WEIGHT CONSISTENT WITH VISIBILITY  
REQUIREMENTS. THE HONEST JOHN ROCKET IS A  
FREE-FLIGHT ARTILLERY ROCKET WITH A SOLID-PROPELLANT  
MOTOR. THE ROCKET WAS DESIGNED FOR TACTICAL USE BY  
THE FIELD ARTILLERY. THE M38 WARHEAD WILL BE  
UTILIZED PRIMARILY WITH THE XM50 ROCKET SYSTEM  
WHICH IS THE IMPROVED HONEST JOHN ROCKET.  
THE ROCKET IS LAUNCHED FROM THE SELF-PROPELLED  
XM386 LAUNCHER, WHICH IS VARIABLE IN AZIMUTH AND  
ELEVATION. WITH A 1,625-POUND WARHEAD SECTION,  
THE ROCKET HAS A MAXIMUM RANGE OF ABOUT 35,000  
METERS. THE M38 WARHEAD FOR THE HONEST  
JOHN HAS BEEN DESIGNED, PRODUCTION ENGINEERED,  
STANDARDIZED, AND IS IN PRODUCTION. THIS REPORT  
PROVIDES A FINAL SUMMARY OF THE INDUSTRIAL  
ENGINEERING EFFORT IN THE DEVELOPMENT OF THE M38  
PRACTICE WARHEAD. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-423 683

PICATINNY ARSENAL DOVER N J

EVALUATION OF A NEW SUPER-PROPELLING  
CHARGE, XM119 FOR PROJECTILE, HE, M107 TO  
PROVIDE EXTENDED RANGE IN THE 155MM HOWITZER,  
SELF-PROPELLED, M109 (T196E1),

(U)

OCT 63 22P HASSMANN, HARRY ;  
REPT. NO. PA-TM-1272

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (•AMMUNITION PROPELLANTS, FIRING TESTS  
(ORDNANCE)), (•PROJECTILE TRAJECTORIES, RANGES  
(DISTANCE)), PROJECTILES, SELF PROPELLED GUNS,  
HOWITZERS, EFFECTIVENESS, CIRCULAR ERROR PROBABLE,  
DESIGN, HIGH EXPLOSIVE AMMUNITION

(U)

IDENTIFIERS: 155-MM ORDNANCE ITEMS, M-107  
CARTRIDGES(155-MM), M-119 PROPELLING CHARGES(155-MM),  
M-109 HOWITZERS(155-MM), T-196 HOWITZERS(155-MM)

(U)

AN INVESTIGATION WAS INITIATED TO DETERMINE WHETHER  
THE READILY AVAILABLE STANDARD M107 PROJECTILE  
COULD BE USED TO SATISFY THE 18,000-METER MAXIMUM  
RANGE REQUIREMENT FOR THE M109 WEAPON. THE RANGE  
DISPERSION OF THE AMMUNITION WAS EXCELLENT. RANGE  
PROBABLE ERRORS OF ONLY 0.2% OR BETTER AT 18,  
400 METERS MAXIMUM RANGE WERE ACHIEVED IN ALMOST  
EVERY CASE. EVEN IN THE WORN TUBE, A VOLLEY OF 20  
ROUNDS PRODUCED A LOW-RANGE DISPERSION. COMPLETE  
DATA PERTAINING TO PROPELLING CHARGE DESCRIPTION,  
LETHALITY ADVANTAGES OF THE M107 PROJECTILE  
COMPARED WITH THE M470 PROJECTILE, AND BALLISTIC  
TEST DATA ARE GIVEN IN THIS REPORT. (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-425 365

AMERICAN MACHINE AND FOUNDRY CO STAMFORD CONN

HYDRAULIC COMPONENTS EVALUATION TEST PROGRAM PHASE  
IIB FOR THE AUXILIARY PROPULSION KIT FOR THE 105 MM  
HOWITZER XM102 PROGRAM. (U)

DESCRIPTIVE NOTE: FINAL REPT.,

OCT 63 25P BONANNO, A. ;

CONTRACT: DA11 070AMC13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*HOWITZERS, DRIVES), HYDRAULIC EQUIPMENT,  
CALIBRATION, EFFECTIVENESS, DATA, TABLES(DATA), PUMPS,  
INTERNAL COMBUSTION ENGINES, SPECIFICATIONS, TEST  
METHODS, TEST EQUIPMENT, INSTRUMENTATION, PERFORMANCE  
(ENGINEERING), PROPULSION SYSTEMS (U)

IDENTIFIERS: 105-MM ORDNANCE ITEMS, M-102 (U)  
HOWITZERS(105-MM)

THIS REPORT PRESENTS THE RESULTS OF A TEST  
EVALUATION PROGRAM TO DETERMINE EFFICIENCIES OF PUMP  
AND MOTOR COMBINATIONS FOR POSSIBLE USE IN THE XM  
102-105 MM HOWITZER DRIVE SYSTEM. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-426 312

DOW METAL PRODUCTS CO MIDLAND MICH

DESIGN, CONSTRUCTION AND TESTING OF MAGNESIUM  
WISHBONE BOX TRAIL FOR THE HOWITZER, LIGHT, TOWED  
105MM XM102, (U)

NOV 63 44P BUCKELEW, H. C. IELLIS, J. T.

CONTRACT: DA11 0700RD1576

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (H\*HOWITZERS, GUN MOUNTS), (G\*GUN, MAGNESIUM  
ALLOYS), (M\*MAGNESIUM ALLOYS, GUN MOUNTS), ALUMINUM  
ALLOYS, MECHANICAL PROPERTIES, LOADING (MECHANICS),  
DAMPING, COATINGS (U)

THE DESIRABILITY OF REDUCING THE WEIGHT OF THE  
EXPERIMENTAL AL GUN TRAIL WAS RECOGNIZED. GIVEN  
THE LOADING CONDITIONS, THE AL DESIGN WAS ADAPTED TO  
MG. SECTION THICKNESSES WERE CHANGED TO TAKE INTO  
ACCOUNT THE DIFFERENCES IN MECHANICAL PROPERTIES  
BETWEEN 5083 ALLOY AL AND THE ZE10A-H24 MG ALLOY  
USED. CERTAIN OTHER STRUCTURAL DESIGN CHANGES WERE  
MADE TO ACHIEVE MORE EFFICIENT USE OF METAL AND TO  
IMPROVE FABRICABILITY. ENGINEERING LAYOUT, AND  
DETAIL AND ASSEMBLY DRAWINGS WERE PREPARED. A  
PROTOTYPE OF THIS DESIGN WAS FABRICATED, WELDED,  
STRESS RELIEVED AND MACHINED. AN APPROVED  
PROTECTIVE FINISHING SYSTEM WAS APPLIED. THIS  
MAGNESIUM GUN TRAIL WEIGHS ONLY 309 POUNDS VS THE  
ALUMINUM WEIGHT OF 413 POUNDS. BASED ON STATIC  
LOADING TESTS PERFORMED, THE AMOUNT OF DEFLECTION AND  
PERMANENT SET WERE ONLY SLIGHTLY GREATER THAN IN THE  
AL VERSION. THE STRENGTH, STIFFNESS AND DAMPING  
CHARACTERISTICS OF THE MG DESIGN MEET REQUIREMENTS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-429 158

PICATINNY ARSENAL DOVER N J AMMUNITION ENGINEERING  
DIRECTORATE

APPLICATION AND EVALUATION OF A DIGITAL COMPUTER  
PROGRAM FOR INTERIOR BALLISTICS, (U)

JAN 64 17P LEVY,STUART ;MCHAINS,  
FORREST I  
REPT. NO. AED-TM-1291

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*INTERIOR BALLISTICS, PROGRAMMING  
(COMPUTERS)), (\*PROGRAMMING (COMPUTERS), INTERIOR  
BALLISTICS), DIGITAL COMPUTERS, GUNS, HOWITZERS,  
PROJECTILES, PROPELLANTS, MATHEMATICAL ANALYSIS,  
VELOCITY (U)

IDENTIFIERS: M-1 HOWITZERS(75-MM), M-103  
HOWITZERS(105-MM), M-1 GUNS(76-MM), M-113 GUNS(175-  
MM), M-2 HOWITZERS(105-MM), M-41 GUNS(90-MM), M-68  
GUNS(105-MM) (U)

A STUDY WAS MADE TO COMPARE SIMULATED FIRING  
RESULTS -- OBTAINED FROM A DIGITAL COMPUTER PROGRAM -  
- WITH ACTUAL FIRING DATA FROM EIGHT WEAPON SYSTEMS,  
THE 75MM HOWITZER, M1A1, M3; 76MM GUN,  
M1, M1A2; 90MM GUN, M41; 105MM HOWITZER,  
XM103E; 105MM GUN, M68; 155MM HOWITZER,  
M2; 175MM GUN, M113 AND 8-INCH HOWITZER,  
M2. THIS PROGRAM WILL BE VALUABLE IN ESTIMATING  
CHARGES AND VELOCITIES FOR NEW WEAPON SYSTEMS.  
MANY HOURS OF LABORIOUS WRITTEN CALCULATIONS MAY BE  
ELIMINATED AND SOLUTIONS OBTAINED IN A SHORTER TIME  
BY USING TWO IBM DATA CARDS AND ABOUT TWO MINUTES  
OF MACHINE TIME. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-431 529

PICATINNY ARSENAL DOVER N J

MALFUNCTION INVESTIGATION OF CARTRIDGE, 105MM  
HOWITZER: GAS, NONPERSISTENT, GB, M360, DUALGRAN W/  
BURSTER, M40, W/FUZE, PD, M508, (U)

FEB 64 35P CICCIA, JOSEPH F. ;  
MONITOR: PA TR3151

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*CARTRIDGES, FAILURE), PROJECTILE FUZES,  
HOWITZERS, TEMPERATURE, TEST METHODS, SAFETY (U)  
IDENTIFIERS: 105-MM ORDNANCE ITEMS, M-360  
CARTRIDGES(105-MM), M-508 FUZES (U)

PREMATURES WHICH OCCURRED WITH M360 CARTRIDGES  
FIRED FROM THE XM103E3 HOWITZER WERE PROBABLY  
CAUSED BY CONDITIONING AND FIRING ROUNDS AT A  
TEMPERATURE (+155 F) EXCEEDING THE MELTING POINT  
(+154.6 F) OF THE TETRYTOL USED IN THE M40  
BURSTER. DEFECTS OBSERVED, SUCH AS CONTAMINATED  
BURSTERS AND UNDERSIZED FELT PADS, COULD HAVE CAUSED  
PREMATURES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-475 961 1975  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA TEST AND  
RELIABILITY EVALUATION LAB

EVALUATION OF SCORING ACCURACY OF THE BIDOPS MISS  
DISTANCE INDICATOR, (U)

JUL 65 14P SMITH, JOE D. I  
REPT. NO. RT-TM-65-35

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRING ERROR INDICATORS, \*FIRING  
TESTS(ORDNANCE)), GUIDED MISSILES, TARGETS, DOPPLER  
SYSTEMS, SIDEBANDS, DETECTION, PROJECTILES, CAMERAS,  
INSTRUMENTATION, ERRORS, HOWITZERS (U)  
IDENTIFIERS: BIDOPS (U)

GROUND FIRING TESTS WERE CONDUCTED AT REDSTONE  
ARSENAL, ALABAMA, ON THE BIDOPS MISS DISTANCE  
INDICATOR WHICH WAS FABRICATED BY BABCOCK  
ELECTRONIC CORPORATION, TO DETERMINE ITS SCORING  
ACCURACY FROM 5 TO 50 FEET. THIRTY-THREE ROUNDS OF  
105 MM PROJECTILES WERE FIRED NEAR THE BIDOPS  
SYSTEM AT RANDOM MISS DISTANCES. TEST RESULTS  
REVEALED A SYSTEM BIAS OF 11.27 FEET PLUS A MEAN  
ERROR OF 3.6 FEET WITH A STANDARD DEVIATION OF 3.28  
FEET OVER A MISS DISTANCE RANGE OF 10 FEET TO 57.5  
FEET. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-476 223            19/1            19/7            19/4  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA ADVANCED  
SYSTEMS LAB

ACCURACY PARAMETERS FOR FREE FLIGHT PROJECTILES WITH  
MAXIMUM RANGES UP TO 75 KILOMETERS, (U)

AUG 65            63P            OSWELL ,H. R. ;JACKSON,M. B.

REPT. NO. RD-TR-65-16  
PROJ: DA-1-S-222901-A-202

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROJECTILES, \*FREE FLIGHT TRAJECTORIES),  
(\*ARTILLERY ROCKETS, FREE FLIGHT TRAJECTORIES),  
SCATTERING, WEIGHT, DRAG, VELOCITY, LAUNCHING, WIND,  
DENSITY, RANGE(DISTANCE), DEFLECTION, IMPACT FUZES, TIME  
DELAY FUZES, ALTITUDE, CIRCULAR ERROR PROBABLE (U)

THIS REPORT IS A COMPILATION OF GRAPHS WHICH WILL  
PERMIT ESTIMATION OF THE FREE FLIGHT ERRORS OF  
PROJECTILES FOR RANGES UP TO 75 KILOMETERS, PROVIDED  
THE BALLISTIC COEFFICIENT AND INITIAL VELOCITY ARE  
KNOWN. THE EFFECTS OF VARIATIONS IN INITIAL  
VELOCITY, DEPARTURE ANGLE, BALLISTIC COEFFICIENT,  
WIND, AND DENSITY HAVE BEEN EXAMINED PARAMETRICALLY,  
AND THE RESULTS ARE PRESENTED FOR BOTH IMPACT AND  
TIME-FUSING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-477 042 19/5  
PITTSBURGH UNIV WASHINGTON D C RESEARCH STAFF

DEVELOPMENT OF LIGHTWEIGHT LONG-RANGE SURVEY SYSTEM  
(LRSS). (U)

DESCRIPTIVE NOTE: INTERIM REPT.

DEC 65 11P

CONTRACT: DA-49-186-AMC-214(D)

PROJ: DA-1M643315D578

TASK: 12

MONITOR: AMC TIR-33.5.1.2(1)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPT. NO. TIR-33.5.1.2  
DATED FEB 65, AD-458 893L.

DESCRIPTORS: (\*FIRE CONTROL SYSTEMS, \*ARTILLERY),  
(\*RADIO RELAY SYSTEMS, \*FIRE CONTROL SYSTEMS), MAPPING,  
GEODESICS, AIRBORNE, POSITION FINDING, VEHICLES, WEAPON  
SYSTEMS, MOBILITY, RADIO TRANSMITTERS, RADIO RECEIVERS,  
TRANSPONDERS, LOG PERIODIC ANTENNAS, MANNED, TRANSMITTER  
RECEIVERS, METEOROLOGICAL PHENOMENA, ELECTROMAGNETIC  
RADIATION, PHASE SHIFT CIRCUITS, FIRE CONTROL  
COMPUTERS (U)

IDENTIFIERS: LRSS, MOHAWK AIRCRAFT (U)

THIS REPORT TRACES THE DEVELOPMENT OF THE  
LIGHTWEIGHT LONG-RANGE SURVEY SYSTEM (LRSS). THIS  
SYSTEM SUPPLIES SURVEY CONTROL DATA FOR MAPPING AND  
ARTILLERY FIRE CONTROL. THE GROUND ELEMENTS OF THE  
SYSTEM ARE: A MASTER STATION, A VEHICLE CONTAINING  
SHELTER-HOUSED CALIBRATION AND CHECK-OUT EQUIPMENT,  
POSITIONING EQUIPMENTS (PE'S), AND BASE STATIONS.  
THE AIRBORNE ELEMENT OF THE SYSTEM IS AN AIRBORNE  
RELAY INSTALLED IN AN OV-1 MOHAWK AIRPLANE.  
RELYING ON A PRESURVEYED BASE LINE (OR LINES),  
THE SYSTEM CAN FURNISH THE UNIVERSAL TRANSVERSE  
MERCATOR (UTM) GRID COORDINATES OF AS MANY AS 50  
POSITIONS FOR WHICH DATA ARE EITHER INCOMPLETE OR  
UNKNOWN AND MAKE THIS INFORMATION AVAILABLE QUICKLY  
FOR MAPPING AND FIRE CONTROL. TYPE CLASSIFICATION  
IS SCHEDULED FOR THE EARLY PART OF 1967.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-478 630 1976 8/13  
SOUTHWEST RESEARCH INST SAN ANTONIO TEX DEPT OF MECHANICAL  
SCIENCES

MODELING STUDIES ON THE RESPONSE OF WEAPON  
FOUNDATIONS IN SOILS. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON PHASE 2,  
MAR 66 84P WESTINE, PETER S. ;  
CONTRACT: DA-23-072-AMC-282(W)  
PROJ: SWRI-02-1548

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GUN MOUNTS, MODEL:(SIMULATIONS)), (\*SOIL  
MECHANICS, GUN MOUNTS), SIMULATION, FEASIBILITY STUDIES,  
DESIGN, CLAY, SAND, SCALE, GUNS, HOWITZERS, PLANNING,  
DYNAMICS, ANALYSIS, EXPERIMENTAL DATA, FIRING  
TESTS(ORDNANCE), RECOIL MECHANISMS, STABILITY, MOTION,  
FOUNDATIONS(STRUCTURES) (U)  
IDENTIFIERS: M-2 HOWITZERS(105-MM), SCALING (U)

THE DESIGN OF A PORTABLE MODEL FOUNDATION LOADING  
DEVICE CAPABLE OF APPLYING SQUARE WAVE IMPULSES WITH  
FORCES UP TO 1200 LBS FOR DURATIONS BETWEEN 10 AND  
120 MILLISECONDS IS DESCRIBED. THE MODEL LOADING  
DEVICE IS USED TO SIMULATE THE LOAD ON THE NON-  
RECOILING PARTS OF A HOWITZER FOUNDATION IN BOTH  
SANDS AND CLAYS. AN IMPORTANT PART OF THIS PROGRAM  
IS THE COMPARISON BETWEEN RESIDUAL DISPLACEMENTS AND  
ROTATIONS RESULTING FROM LOADING A GEOMETRICALLY  
SIMILAR 1/5 SCALE, REPLICA MODEL AND FIRING A 105 MM,  
M2A2 HOWITZER. THROUGH THIS PROGRAM,  
CONSIDERABLE INSIGHT HAS BEEN OBTAINED INTO THE  
DYNAMIC RESPONSE OF ARTILLERY FOUNDATIONS. THE  
FOUNDATION RESPONSE LIES IN NEITHER A QUASI-STATIC  
ANALYSIS NOR AN IMPULSE ANALYSIS REALM. LOAD  
LEVEL, THE DURATION OF LOADING, SOIL STRENGTH, THE  
MASS OF THE FOUNDATION, AND THE MASS MOMENT OF  
INERTIA OF THE FOUNDATION ARE ALL SIGNIFICANT IN  
DETERMINING THE RESPONSE OF ARTILLERY FOUNDATIONS.  
FURTHERMORE, VERTICAL TRANSLATIONAL, HORIZONTAL  
TRANSLATIONAL, AND ROTATIONAL RESPONSES OF THE  
FOUNDATION SHOULD BE COUPLED IN ANY DYNAMIC ANALYSIS  
OF THE RESPONSE. INCLUDED ARE PLANS FOR AN  
EXPERIMENTAL PROGRAM TO DEVELOP DATA FOR ANALYZING  
THE RESPONSE OF ARTILLERY FOUNDATIONS; ALSO, A  
DISCUSSION OF SOME EXPERIMENTAL RESULTS IN CLAY SOIL.  
(AUTHOR) (U)

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UNCLASSIFIED

/ZOM07



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-478 880 1977 16/4.2  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA ARMY INERTIAL  
GUIDANCE AND CONTROL LAB

DEVELOPMENT OF A PURE FLUID MISSILE CONTROL SYSTEM. (U)

DESCRIPTIVE NOTE: SUPPORTING RESEARCH SUMMARY REPT. FY-65.

SEP 65 103P  
REPT. NO. RG-TR-65-22  
PROJ: DA-1-S-222901-A-204

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY ROCKETS, \*INERTIAL GUIDANCE), (\*CONTROL SYSTEMS, \*PNEUMATIC DEVICES), (\*SURFACE TO SURFACE MISSILES, ARTILLERY ROCKETS), INSTRUMENTATION, ATTENUATION, GAIN, PULSE MODULATION, YAW, ROLL, FLUID AMPLIFIERS, DIGITAL SYSTEMS, INTEGRATORS, FLUID DYNAMICS, GYRO STABILIZERS, OSCILLATORS, SUPERSONIC FLOW, CASCADE STRUCTURES, VORTEX GENERATORS, PRESSURE REGULATORS, GAS GENERATOR ENGINES (U)  
IDENTIFIERS: FLUIDICES, LITTLE JOHN (U)

THIS REPORT SUMMARIZES THE COMPLETE EFFORTS WITHIN THE ARMY INERTIAL GUIDANCE AND CONTROL LABORATORY ON THE DEVELOPMENT OF PURE FLUID MISSILE CONTROL SYSTEMS. SPECIFIC OBJECTIVES OF THE PROGRAM, WHICH IS A CONTINUATION OF PREVIOUS EFFORTS, ARE TO: (1) DEVELOP, TEST, AND EVALUATE A PURE FLUID DIRECTIONAL CONTROL SYSTEM APPLICABLE TO AN ARTILLERY ROCKET SYSTEM; AND (2) DEVELOP, TEST, AND EVALUATE AN IMPROVED ROLL CONTROL SYSTEM USING FLUID COMPONENTS. COMPUTER STUDIES INDICATE THAT A SPINNING MISSILE WITH PROPORTIONAL ATTITUDE CONTROL WOULD HAVE MINIMUM CROSSRANGE VELOCITY AND POSITION AT BURNOUT FOR THE DIRECTIONAL CONTROL SYSTEM. A TWO-DEGREE-OF-FREEDOM GYRO, WITH PNEUMATIC SPIN UP AND PICKOFFS, IS UNDER DEVELOPMENT. THE PICKOFF HAS BEEN TESTED AND THE RESULTS ARE PRESENTED. A RATHER DETAILED DISCUSSION OF THE SIMULATION AND GYRO DEVELOPMENT IS PRESENTED. PROPORTIONAL AMPLIFIERS HAVE BEEN STAGED WITH LITTLE ATTENUATION IN GAIN, AND SOME OF THE PROBLEMS OF STAGING STANDARD UNITS ARE DISCUSSED. PULSE DURATION MODULATORS HAVE BEEN BUILT. A THREE POUND FORCE VALVE WAS MOUNTED ON A 200 POUND THRUST NOZZLE TO TEST THE EFFECTIVENESS OF COLD GAS, EXIT PLANE SECONDARY INJECTION.

61

(U)

UNCLASSIFIED

/ZOM07

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-479 517 1975  
COHEN (LEO J) ASSOCIATES INC TRENTON N J

MULTI-COMPUTER SIMULATION STUDY. (U)

DESCRIPTIVE NOTE: STUDY REPT. 30 NOV 65-31 JAN 66,  
MAR 66 66P COHEN, L. J.; PRENER, D. A.  
COMLY, H., JR.; HIXSON, C.;  
CONTRACT: DA-28-043-AMC-01056(E)  
TASK: JX6.40603.D494.02.23  
MONITOR: ECOM 01056-F

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE CONTROL COMPUTERS, \*COMPUTER  
PROGRAMMING), (\*ARTILLERY FIRE, SIMULATION), INPUT  
OUTPUT DEVICES, DIGITAL COMPUTERS, DYNAMIC PROGRAMMING,  
OPTIMIZATION, MULTIPLE OPERATION (U)  
IDENTIFIERS: IBM 7044 COMPUTER, IBM 7094 COMPUTERS,  
IBM 7090 COMPUTERS, TACFIRE PROGRAM (U)

THE MULTI-COMPUTER SYSTEM, AS ONE TYPE OF MULTI-SYSTEM, IS AMENABLE TO SIMULATION EXPERIMENT STUDIES. THE DESCRIPTION OF THE SALIENT CHARACTERISTICS OF THE HARDWARE AND OPERATING SYSTEM SOFTWARE FOR A MULTI-COMPUTER SYSTEM IS REPORTED. A GENERAL TECHNIQUE FOR REPRESENTING A SET OF PROGRAMS THAT SUCH A MULTI-COMPUTER SYSTEM MIGHT EXECUTE WAS DEVELOPED. THIS METHOD OF PROGRAM REPRESENTATION WAS USED TO CHARACTERIZE THE TACFIRE MISSION PROGRAMS AT THE DIVISION ARTILLERY LEVEL. WITH THE SIMULATION MODEL IN THE FORM OF A COMPUTER PROGRAM FOR EXECUTION ON THE IBM 7044/90/94, EXPERIMENTS WERE RUN USING THE SIMULATED TACFIRE PROGRAMS. THESE EXPERIMENTS WERE REPEATED FOR ONE, TWO AND THREE CPU SYSTEMS, AND RESULTED IN DATA GIVING OVER-ALL SYSTEM PERFORMANCE, RELATIVE SYSTEM PERFORMANCE AND PERFORMANCE ON A PAR PROGRAM BASIS. THE MAJOR PERFORMANCE CRITERIA IN THIS DATA IS THE TURN-AROUND TIME. MAINFRAME AND PERIPHERAL DEVICE OVERHEAD FIGURES WERE ACCUMULATED, AS WELL AS DISC UTILIZATION AND WAITING TIMES, AND DATA CHARACTERIZING THE PERFORMANCE OF THE OPERATING SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-495 037 15/7  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT - 2D BRIGADE, 9TH INFANTRY DIVISION, 4 JANUARY 1968. (U)

FEB 68 4P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*ARTILLERY UNITS), ARTILLERY FIRE, LIGHTING EQUIPMENT, PATROL CRAFT, FLAME WARFARE, NIGHT WARFARE, MILITARY TACTICS, DEPLOYMENT, INLAND WATERWAYS, RIVERS, COMMUNICATION AND RADIO SYSTEMS (U)  
IDENTIFIERS: 2ND BRIGADE, RIVERINE WARFARE, SOUTH VIETNAM, STROBOSCOPES, \*TRIP REPORTS (U)

ON 4 JANUARY, THE 2D BRIGADE, 9TH INFANTRY DIVISION WAS VISITED FOR THE PURPOSE OF OBTAINING THE MOST RECENT LESSONS LEARNED IN RIVERINE WARFARE, TO DISCUSS ARTILLERY SPAN OF CONTROL LIMITATIONS, AND TO GATHER INFORMATION ON THE USE OF STROBE LIGHTS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-495 083 15/7 19/6  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT - 4TH INFANTRY DIVISION, 15-16  
JAN 68.

(U)

JAN 68 5P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*INFANTRY),  
MORTARS, SELF PROPELLED GUNS, CLOSE SUPPORT, NIGHT  
WARFARE, DEPLOYMENT, FIRE CONTROL COMPUTERS, SHOCK  
ABSORBERS (U)  
IDENTIFIERS: 4TH INFANTRY DIVISION, SOUTH VIETNAM,  
\*TRIP REPORTS (U)

THE 4TH INFANTRY DIVISION WAS VISITED 15-16  
JANUARY 1968 TO SECURE INFORMATION AND INFANTRY  
MORTAR EMPLOYMENT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-495 086 15/7  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT TO 173D AIRBORNE BRIGADE. (U)

JAN 68 3P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), ARTILLERY  
FIRE, MORTARS, COMMAND AND CONTROL SYSTEMS,  
RANGE(DISTANCE), AIRMOBILE OPERATIONS, MORTAR  
AMMUNITION, ARTILLERY ROCKETS, ROCKET LAUNCHERS,  
LOGISTICS, MAINTENANCE EQUIPMENT, STROBOSCOPES, MILITARY  
REQUIREMENTS, FAILURE (U)

IDENTIFIERS: 173RD AIRBORNE BRIGADE, 81-MM MORTARS,  
4.2-IN. MORTARS, 60-MM MORTARS, 81-MM ORDNANCE ITEMS,  
4.2-IN. ORDNANCE ITEMS, 66-MM ROCKETS, M-72 ROCKET  
LAUNCHERS(66-MM), \*TRIP REPORTS (U)

LTC GREEN VISITED THE 173D AIRBORNE BRIGADE TO  
DISCUSS ARTILLERY SPAN OF CONTROL. OTHER SUBJECTS  
COVERED WERE: 81MM MORTARS, 4.2 INCH MORTARS,  
STROBE LIGHTS, CH-54 PODS, AND LAW. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-495 087 15/7 9/1  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT TO 199TH LIGHT INFANTRY  
BRIGADE.

(U)

JAN 68 3P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*INFANTRY,  
VIETNAM), ARTILLERY FIRE, CONTROL, COMMAND AND CONTROL  
SYSTEMS, COMMUNICATION AND RADIO SYSTEMS, HELICOPTERS,  
EXTERNAL STORES, MORTARS, RIFLE GRENADE LAUNCHERS,  
CARTRIDGES, LIGHTING EQUIPMENT, DEPLOYMENT, ARTILLERY,  
CLOSE SUPPORT, AIRCRAFT LANDINGS, FAILURE (U)

IDENTIFIERS: 4.2-IN. MORTARS, 81-MM MORTARS, AN/VRC-  
46, CH-54 AIRCRAFT, GRENADE LAUNCHERS, M-54 AIRCRAFT,  
M-576 CARTRIDGES, M-79 GRENADE LAUNCHERS, SOUTH  
VIETNAM, STROBOSCOPES, \*TRIP REPORTS, XM-576  
CARTRIDGES (U)

ON 19 JANUARY 1968, LTC GREEN VISITED THE  
199TH LIGHT INFANTRY BRIGADE TO DISCUSS SPAN OF  
CONTROL FOR ARTILLERY. OTHER SUBJECTS DISCUSSED  
WERE: CH-54 PODS, STROBE LIGHTS, 81MM AND 4.2  
INCH MORTARS, THE USE OF CS, AND XM576 MULTISHOT  
CARTRIDGE FOR THE M79. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-600 313

AMERICAN MACHINE AND FOUNDRY CO STAMFORD CONN

ENGINEERING AND DESIGN OF AUXILIARY PROPULSION KIT  
FOR 105 MM HOWITZER XM 102 AND TEST PROGRAM. (U)

DESCRIPTIVE NOTE: FINAL REPT., 7 JUN 63-6 APR 64,  
APR 64 118P BONANNO, A. I

CONTRACT: DALL 070AMC13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*GUN COMPONENTS, HOWITZERS), (\*SELF  
PROPELLED GUNS, HOWITZERS), (\*HOWITZERS, PROPULSION  
SYSTEMS), GUNS, MOBILE, HYDRAULIC PRESSURE PUMPS,  
PERFORMANCE (ENGINEERING) (U)

IDENTIFIERS: M-102 HOWITZERS(105-MM) (U)

THIS REPORT SUMMARIZES THE WORK DONE DURING THE  
PERIOD 7 JUNE 1963 TO 6 APRIL 1964. PHASE  
IIA CONSISTED OF ENGINEERING AND DESIGN OF AN  
AUXILIARY PROPULSION KIT TO PROVIDE THE 105 MM  
HOWITZER XM 102 WITH ITS OWN MOBILE POWER AND TO  
IMPROVE ITS PRESENT MOBILITY. THE OBJECTIVE WAS TO  
PREPARE ASSEMBLY AND DETAIL DRAWINGS WITH SUPPORTING  
CALCULATIONS AND PERFORMANCE PREDICTIONS. PHASE  
IIB CONSISTED OF TESTING SEVERAL HYDRAULIC MOTOR  
AND PUMP COMPONENTS SUBMITTED BY VENDORS. THE  
OBJECTIVE WAS TO DETERMINE WHICH MOTOR AND PUMP  
COMBINATION WOULD ACHIEVE THE LOWEST WEIGHT AND  
HIGHEST EFFICIENCY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-601 409

PICATINNY ARSENAL DVER N J

PARAMETRIC STUDIES ON USE OF BOOSTED ARTILLERY  
PROJECTILES FOR HIGH ALTITUDE RESEARCH PROBES,  
PROJECT HARP, (U)

JAN 64 150P WASSERMAN, S. FLATTAL, G. ;  
SMOLNIK, J. ;  
PROJ: 2M011001B703  
MONITOR: PA TR3147

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*SOUNDING ROCKETS, HIGH ALTITUDE),  
\*ROCKET-ASSISTED PROJECTILES, \*ATMOSPHERIC SOUNDING,  
ARTILLERY, DESIGN, PERFORMANCE (ENGINEERING),  
BALLISTICS, ROCKET IGNITERS (U)

A GENERAL PARAMETRIC AND PRELIMINARY DESIGN STUDY  
HAS BEEN COMPLETED DEFINING THE POTENTIAL  
CAPABILITIES OF ROCKET BOOSTED ARTILLERY PROJECTILES  
FOR HIGH ALTITUDE PROBES WHEN FIRED FROM EXISTING GUN  
SYSTEMS. THE STUDY INDICATES THAT SINGLE STAGE  
VEHICLES FIRED FROM A 5 INCH GUN CAN LIFT A 10-POUND  
PAYLOAD TO 650,000 FEET AND A 50-POUND PAYLOAD TO  
250,000 FEET. TWO STAGE VEHICLES FIRED FROM A 16.4  
INCH GUN CAN LIFT PAYLOADS OF 100 POUNDS TO ALTITUDES  
GREATER THAN 400 MILES. A 4.5 INCH ROCKET BOOSTED  
ARTILLERY PROJECTILE, SUB-CALIBERED IN THE 7 INCH  
GUN, WAS DESIGNED FOR A SPECIFIC REQUIREMENT FOR  
DELIVERING A 20-POUND PAYLOAD TO AN ALTITUDE OF 500,  
000 FEET WITH A MINIMUM IMPACT DISPERSION; HOWEVER,  
THIS DOES NOT REPRESENT THE MAXIMUM PAYLOAD OR  
ALTITUDE POSSIBLE FOR PROBES FIRED FROM THE 7 INCH  
GUN. COMPARISONS WERE MADE BETWEEN LONG BURNING  
SUSTAINER DESIGNS WITH ZERO IGNITION DELAY AND SHORT  
BURNING BOOSTER DESIGNS WITH AN OPTIMUM IGNITION  
DELAY. THE COMPARISONS INDICATED THAT BOTH TYPES  
WILL, FOR SIMILAR PAYLOADS AND PROPELLANT WEIGHTS,  
REACH APPROXIMATELY THE SAME ALTITUDE. A BRIEF  
DISCUSSION OF THE ORBITING CAPABILITIES OF ROCKET  
BOOSTED ARTILLERY PROJECTILES IS PRESENTED.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-601 728

ORDNANCE ENGINEERING ASSOCIATES INC DES PLAINES ILL

CONCEPT AND FEASIBILITY STUDIES OF MUZZLE BRAKE BLAST  
SUPPRESSION DEVICES FOR 105MM AND 155MM  
HOWITZERS. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 13 DEC 62-26 FEB 64.

FEB 64 111P LEVIN, SANUEL ; KAFADAR, A. D.

;  
CONTRACT: DA11 070AMC11  
PROJ: 2070

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*HOWITZERS, SHOCK WAVES), (\*SHOCK WAVES,  
ATTENUATION), (\*GUN BARREL ATTACHMENTS, DESIGN), BLAST,  
INHIBITION, PRESSURE, STRESSES, PROJECTILES, ANTERIOR  
BALLISTICS, GAS FLOW, FEASIBILITY STUDIES (U)  
IDENTIFIERS: MUZZLE BRAKES (U)

RESULTS OF THE FOLLOWING STUDIES ARE PRESENTED:  
ANALYTICAL DETERMINATION OF OVERPRESSURE MAPS  
RESULTING FROM FIRING HOWITZERS WITH MUZZLE BLAST  
SUPPRESSION DEVICES; ANALYSES FOR EVALUATING THE  
EFFECTS OF DESIGN PARAMETERS COMPRISING THE DEVICE;  
TECHNIQUES FOR COMPUTING THE DIMENSIONLESS PRESSURE  
AND MASS RATE OF DISCHARGE - DIMENSIONLESS TIME  
HISTORIES IN THE SUPPRESSION DEVICE; THE EFFECT OF  
TIME WHICH THE PROJECTILE REMAINS IN THE SUPPRESSION  
DEVICE; DESIGN PARAMETERS OF THE DEVICE WHICH CREATE  
ATTENUATED OVERPRESSURES IN THE CREW AREA; A PROPOSED  
DESIGN FOR THE 105MM HOWITZER BLAST SUPPRESSION  
DEVICE AND THE STRESS ANALYSIS OF THE DESIGN; AN  
ANALYTICAL STUDY RELATING TO THE DIRECTIONAL EFFECTS  
OF BLAST WAVES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-606 663

WATERVLIET ARSENAL N Y

BORE EVACUATOR VALVE TEST, CANNON 155MM HOWITZER,  
M126.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

AUG 64 104P

GIESEY, J. M. ; LAWSON, E. R. ;

ROSENBLUM, R. L. ;

MONITOR: WVT ,

116412

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART  
UNSATISFACTORY. REPRODUCTION HAS BEEN MADE FROM BEST  
AVAILABLE COPY.

DESCRIPTORS: (\*HOWITZERS, VALVES), (\*HIGH PRESSURE  
VALVES, GUN BARRELS), (\*FIRING TESTS (ORDNANCE),  
HOWITZERS), TEST METHODS, STRAIN (MECHANICS), STRAIN  
GAGES, DESIGN, LIFE EXPECTANCY, PERFORMANCE  
(ENGINEERING), PRESSURE, STRESSES, GUN COMPONENTS

(U)

IDENTIFIERS: M-126 HOWITZERS (155-MM)

(U)

THE LIMITED LIFE OF BORE EVACUATOR VALVE  
ASSEMBLY 8769384 DURING FIRING TESTS LED TO THE  
AUTHORIZATION OF A TEST PROGRAM TO FIND A VALVE  
ASSEMBLY WITH A LONGER LIFE. THE COST OF TESTING  
IN THE GUN (155MM HOW. M126) MADE IT  
ECONOMICAL TO BUILD A TEST APPARATUS WHICH  
SIMULUMIMULATED THE WEAPON. THE TEST PROGRAM WAS  
THE BASIS FOR THE INCORPORATION OF VALVE ASSEMBLY  
8769531 INTO THE WEAPON SYSTEM. A COMPARISON OF  
THE STRAIN LEVEL OF THE MODIFICATION IS PRESENTED.  
THE LIFE OF THE THEN CURRENT PRODUCTION VALVE  
ASSEMBLY AND THE NEW PRODUCTION VALVE ASSEMBLY UNDER  
DIFFERENT CHARGES IS ALSO GIVEN. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-607 565

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

NAVAL AIR DEFENSE OF SHIPS,

(U)

OCT 64 223P MOROSOW, K. V. I  
MONITOR: FTD ,TT TT64-585,64-71605

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MONO. LUFTABWEHR  
DER SCHIFFE, BERLIN, 1963, 119P. LEGIBILITY OF THIS  
DOCUMENT IS IN PART UNSATISFACTORY. REPRODUCTION HAS BEEN  
MADE FROM BEST AVAILABLE COPY.

DESCRIPTORS: (\*NAVAL VESSELS (COMBATANT), ANTI-AIRCRAFT  
DEFENSE SYSTEMS), (\*SHIPS, ANTI-AIRCRAFT DEFENSE  
SYSTEMS), (\*ANTI-AIRCRAFT DEFENSE SYSTEMS, SHIPBOARD),  
AERIAL WARFARE, ANTI-AIRCRAFT GUNS, FIRE CONTROL SYSTEMS,  
ANTI-AIRCRAFT AMMUNITION, ROCKETS, GUIDED MISSILES  
(SURFACE-TO-AIR), NAVAL OPERATIONS, EAST GERMANY (U)

CONTENTS: DEPLOYMENT OF AIR-COMBAT FACILITIES  
AGAINST NAVAL TARGETS; ANTI-AIRCRAFT ARTILLERY  
(ANTI-AIRCRAFT WEAPONS, AMMUNITIONS, FIRE-CONTROL  
EQUIPMENT, FIRING PREPARATION); ANTI-AIRCRAFT  
ROCKETS; COMBAT EXPERIENCE IN UTILIZATION OF AERIAL  
COMBAT FACILITIES; ORGANIZATION OF AIR DEFENSE ABOARD  
COMBAT VESSELS UNDER CONDITIONS OF MODERN WARFARE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-620 590

ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

BATTERY DISPLAY UNIT (FEASIBILITY MODEL). (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUN 65 44P EVERETT, SETH L. ,JR.; CICERO,  
ROBERT A. ;  
REPT. NO. ECOM-2601  
PROJ: IPO 20401A327  
TASK: IPO 20401A32702, IPO 20401A3270211

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ARTILLERY, FIRE CONTROL COMPUTERS),  
(\*FIRE CONTROL COMPUTERS, DISPLAY SYSTEMS), FEASIBILITY  
STUDIES, MODELS (SIMULATIONS), DECISION MAKING, COMPUTER  
LOGIC, DECODING, METEOROLOGICAL PHENOMENA, INPUT OUTPUT  
DEVICES (U)

THE REPORT DEALS WITH THE DESIGN AND FABRICATION OF  
A LABORATORY CONSTRUCTED BREADBOARD MODEL BATTERY  
DISPLAY UNIT (BDU). A SHORT HISTORY DISCUSSING  
THE REQUIREMENTS AND A PAST ATTEMPT TO PRODUCE A  
DISPLAY UNIT SIMILAR TO THE BDU IS INCLUDED. THE  
BDU SYSTEM DESIGN CONCEPT PERMITS IT TO RECEIVE AND  
DISPLAY DATA AT SPEEDS APPROACHING THAT OF THE LOGIC  
DECODING CIRCUITS. INFORMATION RECEPTION AT RATES  
WELL IN EXCESS OF THOSE REQUIRED IS EASILY  
OBTAINABLE. THE OPERATING PRINCIPLES OF THE  
ELECTRO-MAGNETIC INDICATORS USED IN THE BDU ARE  
DESCRIBED. THESE PRINCIPLES OFFER IMPORTANT  
OPERATING ADVANTAGES WITH RESPECT TO THE BDU  
APPLICATION. GENERAL BDU OPERATION THEORY AND  
DETAILED LOGIC CIRCUIT DESIGN INFORMATION ARE  
INCLUDED. EXCELLENT TEST RESULTS WERE OBTAINED WHEN  
OPERATING THE BDU AT THE REQUIRED 300 CHARACTERS/  
SECOND INPUT DATA RATE. EXCELLENT RESULTS WERE  
ALSO OBSERVED WHEN OPERATING THE BDU AT LOWER DATA  
RATES. THIS REPORT IS CONCLUDED BY COMPARING THE  
OPERATING CHARACTERISTICS OF THE BDU WITH THAT OF  
THE EXISTING FADU MODEL. RECOMMENDATIONS ARE  
MADE CONCERNING FURTHER IMPROVEMENTS AND USES OF THE  
BDU. CHARACTER CODING USED IN THE BDU IS  
DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-623 454

NAVAL AMMUNITION DEPOT CRANE IND

DEVELOPMENT OF A CONTAINER FOR THE MK 54 PHOTOFLASH  
CARTRIDGES AND MK 18 ARTILLERY AIR BURST SIMULATORS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

SEP 65 21P CONNER, CHARLES A. ;

REPT. NO. RDTR-68

MONITOR: IDEP 347.23.00.00-X9-03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PHOTOFLASH CARTRIDGES, CONTAINERS),

(\*TRAINING AMMUNITION, CONTAINERS), (\*PACKAGING,

AMMUNITION), ARTILLERY, AIRBURST, SIMULATORS, HANDLING,

PACKING MATERIALS, FOAM, STYRENE PLASTICS

(U)

IDENTIFIERS: MARK-54 CARTRIDGES

(U)

THIS REPORT DESCRIBES A CONTAINER THAT HAS BEEN  
DEVELOPED AND EVALUATED FOR PACKAGING THE MK 54  
PHOTOFLASH CARTRIDGES AND THE MK 18 ARTILLERY  
AIR BURST SIMULATORS. THE RECOMMENDED  
CONTAINER HOLDS TWENTY SIX CARTRIDGES OR SIMULATORS,  
WITH EACH CARTRIDGE OR SIMULATOR IN A CONTOURED  
CAVITY. THE CONTAINER IS CONSTRUCTED OF EXPANDED  
BEAD-TYPE POLYSTYRENE PLASTIC FOAM MATERIAL THAT IS  
ECONOMICAL AND LIGHT IN WEIGHT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-623 784 1975 1976 5/9  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ANTIAIRCRAFT ARTILLERY SERGEANT'S MANUAL BOOK 2,  
ANTIAIRCRAFT ARTILLERY OF SMALL AND MEDIUM CALIBER, (U)

65 343P KYUPAR, I. I. I  
MONITOR: TT, 65-64566

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: (TRANS. OF MONO. UCHEBNIK SERZHANTA  
ZENITNOI ARTILLERII. KNIGA 2, STRELBA ZENITNOI  
ARTILLERII MALOGO I SREDNEGO KALIBROV, MOSCOW,  
1949.

DESCRIPTORS: (\*ANTIAIRCRAFT GUNNERY, INSTRUCTION  
MANUALS), (\*MILITARY TRAINING, USSR), MILITARY  
PUBLICATIONS, ANTIAIRCRAFT FIRE CONTROL SYSTEMS,  
ARTILLERY, ANTIAIRCRAFT GUNS, ANTIAIRCRAFT AMMUNITION,  
BALLISTICS, MILITARY PERSONNEL, ARTILLERY, TRAINING (U)

TRANSLATION OF RUSSIAN RESEARCH: ANTIAIRCRAFT  
ARTILLERY SERGEANT'S MANUAL BOOK 2, ANTIAIRCRAFT ARTILLERY  
OF SMALL AND MEDIUM CALIBER.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-628 731 15/7 19/6  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

ARTILLERY WEAPON DUST ALLEVIATION TESTS. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,  
FEB 66 SIP DECELL, J. L. ;  
REPT. NO. AEWES-TR-3-714

UNCLASSIFIED REPORT

DESCR:PTORS: (\*ARTILLERY FIRE, DUST), (\*DUST, ARTILLERY  
FIRE), (\*CAMOUFLAGE, ARTILLERY FIRE), SOILS,  
STABILIZATION SYSTEMS, PROTECTIVE COVERINGS, FIRING  
TESTS(ORDNANCE), ORDNANCE LABORATORIES, ARTILLERY (U)

TESTS WERE CONDUCTED AT THE ROCK ISLAND  
ARSENAL AND THE YUMA PROVING GROUND TO  
DETERMINE THE EFFECTIVENESS OF MEDIUM-WEIGHT AND  
LIGHTWEIGHT GROUND COVERS WHEN USED AS DUST  
ALLEVIATORS BENEATH THE MUZZLE BLAST OF AN XM-102  
ARTILLERY WEAPON. THE GROUND COVERS PROVED TO BE  
ADEQUATE DUST ALLEVIATORS, AND TEST RESULTS INDICATE  
THAT A MINIMUM SIZE COVER OF 75 BY 75 FT SHOULD BE  
USED WITH THE XM-102 WEAPON. THE LIGHTWEIGHT  
GROUND COVERS TESTED INDICATE A DEFINITE NEED FOR  
REINFORCEMENT IN THE AREA WHERE THE WEAPON ITSELF IS  
SECURED TO THE GROUND. NONE OF THE GROUND COVERS  
WERE DAMAGED BY MUZZLE BLASTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-631 245 4/2 19/1 15/7  
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD  
FEASIBILITY TEST OF A POTENTIAL METEOROLOGICAL SHELL  
FOR THE STANDARD 175 MM GUN. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,  
FEB 66 19P BROWN, JOHN A. ; MARKS,  
SPENCE T. ;  
REPT. NO. BRL-TN-1584  
PROJ: RDT/E-1V014501B53C

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*ATMOSPHERIC SOUNDING, \*ARTILLERY),  
(\*METEOROLOGICAL INSTRUMENTS, GUN LAUNCHERS),  
(\*PROJECTILES, ATMOSPHERIC SOUNDING), METEOROLOGICAL,  
PROBES, HOWITZERS, WEATHER FORECASTING, MILITARY  
REQUIREMENTS, METEOROLOGY, BALLISTICS (U)  
IDENTIFIERS: BALLISTIC METEOROLOGY (U)

THE ACQUISITION OF TIMELY METEOROLOGICAL DATA HAS A  
GREAT BEARING ON THE ACCURACY OF PLACEMENT OF  
ARTILLERY ROUNDS. THIS REPORT DESCRIBES THE  
RESULTS OF A PROGRAM WHICH WAS CONDUCTED BY THE  
BALLISTIC RESEARCH LABORATORIES (BRL) AT THE  
NASA WOLLOPS ISLAND FACILITY TO DETERMINE THE  
FEASIBILITY OF EMPLOYING THE STANDARD 175 MM GUN AND  
A MODIFIED SHELL TO OBTAIN METEOROLOGICAL DATA  
QUICKLY. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-642 102 1974 4/2  
TRAVELERS RESEARCH CENTER INC HARTFORD CONN

BALLISTIC WINDS STUDY. (U)

DESCRIPTIVE NOTE: REPT. NO. 4 FINAL, 1 JUN 65-30 JUN 66,

OCT 66 147P OSTBY, FREDERICK P. ; PANDOLFO, JOSEPH P. ; VEIGAS, KEITH W. ; SPIEGLER, DAVID B.

REPT. NO. 7472-225  
CONTRACT: DA-28-043-AMC-01377(E)  
PROJ: DA-1V025001A126  
TASK: 1V025001A12601  
MONITOR: ECOM 01377-F

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WIND, \*BALLISTICS), (\*ARTILLERY FIRE, WIND), EXTERIOR BALLISTICS, MOUNTAINS, ATMOSPHERIC MOTION, ATMOSPHERIC SOUNDING, ATMOSPHERIC TEMPERATURE, DENSITY, METEOROLOGICAL CHARTS, COMPUTER PROGRAMMING, WEATHER FORECASTING (U)  
IDENTIFIERS: BALLISTIC METEOROLOGY, CONDITIONAL RELAXATION ANALYSIS METHOD (U)

A THREE-DIMENSIONAL OBJECTIVE ANALYSIS TECHNIQUE KNOWN AS CRAM (CONDITIONAL RELAXATION ANALYSIS METHOD) WAS APPLIED TO INVESTIGATE VARIOUS PROPERTIES OF BALLISTIC WINDS ON A MESOSCALE IN MOUNTAINOUS REGIONS. FROM A 12-DAY SAMPLE OF UPPER-AIR SOUNDINGS TAKEN 5 TIMES A DAY AT 2-HR INTERVALS FOR 12 RAWINSONDE STATIONS IN THE FT. HUACHUCA REGION OF SOUTHEASTERN ARIZONA, AND ARTILLERY FIRINGS TAKEN TWICE A DAY, CRAM ANALYSES OF TEMPERATURE, DENSITY, AND WINDS WERE PERFORMED FOR 10 ATMOSPHERIC ZONES BETWEEN THE SURFACE AND 8,000 M USING AN IBM-7094. IT WAS DETERMINED THAT THE CRAM TECHNIQUE PRODUCED FIELDS WHICH HAD THE DESIRABLE FEATURES OF MAP WINDS, I.E., THE CONTOUR PATTERNS WERE RELATIVELY SMOOTH AND VARIED SLOWLY WITH TIME. THE RESIDUAL DEFLECTION ERRORS WHICH RESULTED WERE SMALLER FOR CRAM (75.2 M) THAN FOR A SINGLE STATION (FT. HUACHUCA) NEAR THE FIRING RANGE (85.1 M). IT WAS ALSO FOUND THAT THE TIME DECAY OF BALLISTIC WINDS IN THE FIRING AREA WAS SMALLER USING CRAM THAN USING THE FT. HUACHUCA OBSERVATION, WHICH IMPLIES THAT CRAM IS A BETTER TOOL WITH WHICH TO MAKE A PERSISTENCE FORECAST THAN A SINGLE STATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-642 596 5/9  
OHIO STATE UNIV RESEARCH FOUNDATION COLUMBUS

STUDY OF THE PRESENT STATUS OF TRAINING AIDS AND  
DEVICES IN THE ARMY FIELD ARTILLERY TRAINING PROGRAM(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUN 56 77P HORROCKS, JOHN E. ;  
FOTHERINGHAM, WALLACE ; BOWLUS, DONALD ;  
CONTRACT: NONR-495(08)  
MONITOR: NAVTRADEVCECEN 495-8-1

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TRAINING DEVICES, ARTILLERY FIRE),  
MILITARY TRAINING, ARMY TRAINING, EFFECTIVENESS (U)

A STUDY WAS MADE OF THE FOLLOWING ARTILLERY  
OPERATIONS: (1) CONDUCT OF OBSERVED FIRE, (2)  
FIRE DIRECTION CENTER, (3) FLASH AND SOUND  
RANGING. THE TRAINING DEVICE RECOMMENDATIONS  
GROWING FROM THIS STUDY HAVE AS THEIR PURPOSE THE  
REDUCTION OF TIME AND COSTS AND THE INCREASE OF  
TRAINING EFFECTIVENESS. FIVE PERFORMANCE AREAS  
WARRANTING DEVICE DEVELOPMENT WERE ISOLATED. THE  
OBJECTIVES, SKILLS AND KNOWLEDGES TO BE TAUGHT,  
RESPONSES TO BE ELICITED AND SCORING AND VALIDATION  
REQUIREMENTS ARE LISTED FOR EACH DEVICE AREA. THE  
RECOMMENDATIONS SECTION OF THIS REPORT CONTAINS A  
BRIEF DESCRIPTION OF EACH OF THESE DEVICE  
RECOMMENDATIONS. THE APPENDICES CONTAIN DETAILED  
DESCRIPTIONS AND RATIONALE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-645 160 1976  
TECHNICAL OPERATIONS INC FORT BELVOIR VA COMBAT  
OPERATIONS RESEARCH GROUP

EVOLUTION OF THE US ARMY INFANTRY MORTAR SQUAD: THE  
ARGONNE TO PLEIKU. (U)

JUL 66 128P NEY, VIRGIL I  
CONTRACT: DA-04-200-AMC-1623(X)  
PROJ: 13428

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MORTARS, WARFARE), (\*WEAPONS, INFANTRY),  
ARMY, ARTILLERY, ARTILLERY FIRE, MORTAR AMMUNITION,  
LOADERS, GUNS, GRENADES, FIRE CONTROL SYSTEMS, MILITARY  
PERSONNEL, LEADERSHIP (U)

THE INFANTRY MORTAR SQUAD EVOLVED OVER A PERIOD OF  
SEVERAL CENTURIES. ITS BASIS RESTS IN ANTIQUITY.  
ITS PRESENT ORGANIZATION AND FUNCTION MAY BE DATED  
FROM THE TRENCH WARFARE OF WORLD WAR I. FROM  
THE MOST ANCIENT TIMES, MORTARS HAVE BEEN IDENTIFIED  
WITH ARTILLERY. THIS TRADITIONAL ASSOCIATION  
CONTINUED GENERALLY UNTIL THE ADVENT OF WORLD WAR  
I. THE MODERN INFANTRY MORTAR IS ESSENTIALLY A  
PRODUCT OF THE TRENCH WARFARE OF 1914-1918. IN THE  
POSTWAR YEARS, THE MORTAR BECAME A STANDARD WEAPON OF  
THE INFANTRY ARM OF ALL ARMIES. THE ADDITION OF  
THE MORTAR TO THE INFANTRY ARSENAL BROUGHT ARTILLERY  
CHARACTERISTICS AND DUTIES TO THE INFANTRY.  
MORTARS BECAME HIGHLY PORTABLE ARTILLERY POSSESSING  
GREAT FIRE POWER TO BE USED AGAINST TARGETS OFTEN  
INACCESSIBLE TO THE INFANTRY AND PATENTLY  
UNPROFITABLE FOR ENGAGEMENT BY HEAVIER ARTILLERY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-649 695 1975 1974  
FOREIGN TECHNICAL INTELLIGENCE OFFICE ABERDEEN PROVING  
GROUND MD

ANTIAIRCRAFT ARTILLERY FIRE ON AERIAL TARGETS, (U)

JUN 63 63P FESENKO, P. V. I  
REPT. NO. FTIO-22-63  
MONITOR: TT 67-61477

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. ANTIAIRCRAFT  
ARTILLERY FIRE: N.P., 1962.

DESCRIPTORS: (•ANTIAIRCRAFT GUNNERY, AERIAL TARGETS),  
BALLISTICS, MILITARY TRAINING, USSR (U)

CONTENTS: AERIAL TARGETS OF ANTIAIRCRAFT  
ARTILLERY; THE FOUNDATIONS (FUNDAMENTALS) OF  
FIRE ON AERIAL TARGETS, TERMINOLOGY AND  
SIGNIFICANCES, MEASUREMENT OF ANGLES, COORDINATES,  
PARAMETERS, SOLUTION OF INTERCEPTION PROBLEM, THE  
LAYING IN OF THE PIECE (THE GUN); PREPARATION  
FOR FIRE -- NORMAL CONDITIONS FOR FIRE; CONDUCT OF  
FIRE, OBSERVATION OF RESULTS OF FIRE; THE ACTION OF  
SHELLS IN FIRE UPON AERIAL TARGETS; DISPERSION IN  
FIRE; THE LAW OF DISPERSION AND THE AVERAGE  
(MEAN) DISPERSION IN SHOCK FIRE, THE LAW OF  
DISPERSION AND AVERAGE (MEAN) DEVIATIONS IN FIRE  
FOR RANGE (DISTANCE), CAUSES OF DISPERSION OF  
PROJECTILES, BATTERY DISPERSION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-658 665 5/2 19/1 19/6 15/7  
MILITARY ASSISTANCE COMMAND VIETNAM SAN FRANCISCO CALIF  
96222 TRAINING AIDS DIV

ARTILLERY GLOSSARY. ENGLISH-VIETNAMESE; VIETNAMESE-  
ENGLISH. FIRST EDITION (TU DIEN PHAO BINH. ANH-  
VIET, VIET-ANH. XUAT BAN LAN THU NHAT). (U)

MAY 67 572P  
REPT. NO. MACT-TAD-3, TD-100/2-9  
MONITOR: TT 67-62916

UNCLASSIFIED REPORT

DESCRIPTORS: (•DICTIONARIES, •VIETNAM), (•ARTILLERY,  
DICTIONARIES), WEAPONS, MILITARY OPERATIONS, HANDBOOKS,  
LANGUAGE, VOCABULARY (U)  
IDENTIFIERS: VIETNAMESE LANGUAGE (U)

THE DOCUMENT IS COMPRISED OF PAIRED LISTINGS OF  
CORRESPONDING TERMS AND PHRASES OF THE ENGLISH AND  
VIETNAMESE LANGUAGES IN THE FIELD OF ARTILLERY  
EQUIPMENT AND OPERATIONS. ENTRIES ARE LISTED  
ALPHABETICALLY, FIRST IN ENGLISH AND THEN IN  
VIETNAMESE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-660 334 19/4 19/1 14/2  
HARRY DIAMOND LABS WASHINGTON D C

CONSTRUCTION DETAILS OF HDL ARTILLERY SIMULATOR  
(PROTOTYPE).

(U)

AUG 67 22P MARTIN, HAROLD R. ;  
REPT. NO. HDL-TR-1356  
PROJ: DA-1NS23801A301

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SIMULATORS, BALLISTICS), (\*TEST  
EQUIPMENT, \*FUZES(ORDNANCE)), LIGHT GAS GUNS, ARTILLERY,  
FUZE FUNCTIONING ELEMENTS, ACCELERATION, ROTATION,  
DESIGN, IMPACT

(U)

DESIGN DATA ARE PRESENTED ON A PROTOTYPE ARTILLERY  
SIMULATOR CONSISTING OF A 2-IN. GUN, A ROTATING TUBE  
OR SPINNER, AND AUXILIARY EQUIPMENT. THE SYSTEM  
SIMULTANEOUSLY APPLIES LINEAR AND ANGULAR  
ACCELERATIONS TO A TEST VEHICLE TO SIMULATE THE  
ACCELERATIONS OF AN ARTILLERY ROUND WHEN FIRED FROM A  
RIFLED WEAPON. THE SPINNER IS DESIGNED TO CONDUCT  
ONE CHANNEL OF ELECTRICAL INFORMATION FROM A  
COMPONENT DURING A TEST. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-661 071 1974 4/2  
TRAVELERS RESEARCH CENTER INC HARTFORD CONN

BALLISTIC WINDS STUDY, (U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 1, 1 MAR-31 MAY  
1967,

OCT 67 41P OSTBY, FREDERICK P., JR;  
REPT. NO. 5  
CONTRACT: DAAB07-6-C-0296  
PROJ: DA-IVD-2500: A126-01-14  
MONITOR: ECOM 0296-1

UNCLASSIFIED REPORT

DESCRIPTORS: (•WIND, EXTERIOR BALLISTICS), (•ARTILLERY  
FIRE, WIND), METEOROLOGICAL CHARTS, ATMOSPHERIC  
SOUNDING, WEATHER FORECASTING, MILITARY REQUIREMENTS,  
MOUNTAINS, METEOROLOGICAL PHENOMENA, ATMOSPHERIC  
TEMPERATURE, DENSITY, COMPUTER PROGRAMS (U)

THE OVERALL OBJECTIVE OF THIS STUDY IS TO CONTINUE  
WORK BEGUN TO INVESTIGATE THE IMPROVEMENT OF AN  
INTEGRATED BALLISTIC MESSAGE FROM MULTIPLE STATIONS  
AND THE EFFECTS OF MOUNTAINOUS TERRAIN ON SPACE AND  
TIME VARIABILITY OF METEOROLOGICAL MEASUREMENTS.  
ONE OF THE INITIAL STEPS CARRIED OUT DURING THIS  
REPORTING INTERVAL WAS THE PREPARATION OF A DETAILED  
WORK PLAN FOR THE CONTRACT YEAR. THE PLAN DIVIDES  
THE TECHNICAL WORK INTO FIVE TASKS: (1) CRAM  
MODIFICATIONS AND TESTS; (2) BALLISTIC WINDS  
EVALUATION; (3) WITHHELD DATA EXPERIMENTS;  
(4) STABILITY EXPERIMENTS; AND (5) PREDICTION  
TECHNIQUES. THE PLAN IS CONTAINED IN THIS REPORT.  
DURING THE FIRST YEAR OF STUDY AN OBJECTIVE  
ANALYSIS PROGRAM, THE CONDITIONAL RELAXATION  
ANALYSIS METHOD (CRAM), WAS DEVELOPED AND  
APPLIED AS A TOOL FOR INVESTIGATION. UNDER THE  
FIRST TASK, MODIFICATIONS AND IMPROVEMENTS TO CRAM  
ARE PRESENTLY BEING CARRIED OUT. AS A PART OF THE  
SECOND TASK (BALLISTIC WIND EVALUATION) RESIDUAL  
ERRORS (DEFLECTION) BASED ON STATION OBSERVATIONS  
ALONG WITH THOSE FROM FT. HUACHUCA HAVE BEEN  
DERIVED AND ARE CONTAINED HEREIN. IN GENERAL, ONE  
DOES NOT FIND RESIDUAL ERRORS INCREASING AS DISTANCE  
INCREASES. THE MINIMUM RESIDUAL ERROR OCCURRED  
ONLY 2 TIMES IN 24 TEST FIRINGS AT THE STATION  
CLOSEST TO THE FIRING--FT. HUACHUCA. ON THE  
OTHER HAND, THE MINIMUM RESIDUAL ERROR OCCURRED 8  
TIMES 50 KM TO THE WEST SOUTHWEST, AT NOGALES.

(AUTHOR)

83

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-664 137 1975  
FRANKFORD ARSENAL PHILADELPHIA PA FIRE CONTROL  
DEVELOPMENT AND ENGINEERING LABS

COMPUTER, GUN DIRECTION M18 (FADAC) APPLICATIONS  
MANUAL.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTE:  
MAY 67 135P PRICE, THOMAS J. ;  
MONITOR: FA TN-1119

UNCLASSIFIED REPORT

DESCRIPTORS: (•FIRE CONTROL COMPUTERS, •INSTRUCTION  
MANUALS), DIGITAL COMPUTERS, INTEGRATED SYSTEMS,  
INTERFACES, SYSTEMS ENGINEERING, WEAPON SYSTEMS,  
ARTILLERY FIRE, INPUT OUTPUT DEVICES, AUTOMATIC, MEMORY  
DEVICES, COMPUTERS, CALIBRATION, TEST EQUIPMENT, CONTROL  
PANELS, HUMAN FACTORS ENGINEERING (U)  
IDENTIFIERS: FADAC(FIELD ARTILLERY DIGITAL AUTOMATIC  
COMPUTER), M-18 COMPUTERS (U)

THE FADAC APPLICATIONS MANUAL IS A SUMMARY  
DOCUMENT WHICH PROVIDES INFORMATION REQUIRED BY  
SYSTEM ENGINEERS FOR INTEGRATING THE M18 (FADAC)  
WITH PERIPHERAL DEVICES AND EQUIPMENT. BRIEF  
INTRODUCTORY DESCRIPTIONS OF THE M18  
CHARACTERISTICS AND COMMAND STRUCTURE ARE PROVIDED;  
WHEREAS THE INPUT-OUTPUT CAPABILITIES ARE DISCUSSED  
IN DETAIL AND RELATED LOGIC TERMS ARE FULLY DEFINED.  
DESCRIPTIONS OF INTERFACING WITH REPRESENTATIVE  
INPUT-OUTPUT DEVICES ARE PROVIDED TO INDICATE THE  
M18 INPUT-OUTPUT OPERATIONS. A BRIEF DISCUSSION  
OF SYSTEM DEVELOPMENT PROGRAMS THAT UTILIZE THE M18  
ARE ALSO PROVIDED, AS EXAMPLES, TO FURTHER DELINEATE  
THE INHERENT INPUT-OUTPUT FLEXIBILITY OF THE M18  
FOR SYSTEMS INTEGRATION. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-666 789 1971  
WESTINGHOUSE ELECTRIC CORP PITTSBURGH PA RESEARCH AND  
DEVELOPMENT CENTER

WIRE WOUND CARTRIDGE CASE. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 68 25P SAMPSON, RONALD N. DIXON,  
ROBERT R. IBRATKOWSKI, WALTER V. ;  
CONTRACT: DAAA21-58-C-0252

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CARTRIDGE CASES, WIRE), AMMUNITION,  
PLASTICS, ARTILLERY, BINDERS, GUNS, STEEL, TENSILE  
PROPERTIES, FEASIBILITY STUDIES, STRESSES,  
PERFORMANCE (ENGINEERING) (U)  
IDENTIFIERS: 152-MM ORDNANCE ITEMS (U)

RESULTS ARE PRESENTED OF A 3 MONTH CONCEPT STUDY OF  
A SECOND GENERATION CARTRIDGE CASE FOR 152 MM  
AMMUNITION. THE CONCEPT DESCRIBED HEREIN CONSISTS  
OF A WIRE WOUND CARTRIDGE CASE BONDED TOGETHER WITH A  
RESINOUS BINDER. THE WIRE MAY BE A METAL OR NON-  
METAL. ONE END OF THE WIRE IS FASTENED TO THE  
PROJECTILE AND AS THE PROJECTILE IS FIRED THE WIRE  
UNSPOLS AND IS CARRIED FROM THE GUN. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-667 910 1977 4/2 1974  
ATMOSPHERIC SCIENCES LAB WHITE SANDS MISSILE RANGE N  
MEX

PRELIMINARY STUDY OF THE WIND FREQUENCY RESPONSE OF  
THE HONEST JOHN M50 TACTICAL ROCKET, (U)

MAR 69 ZIP TRAYLOR, LARRY E. ;  
PROJ: DA-ITO-14501-B-53A  
TASK: ITO-14501-B-53A-10  
MONITOR: ECOM 5183

UNCLASSIFIED REPORT

DESCRIPTORS: (ARTILLERY ROCKETS, IMPACT PREDICTION),  
GUIDED MISSILE RANGES, EXTERIOR BALLISTICS, SURFACE TO  
SURFACE, METEOROLOGICAL PHENOMENA, FREQUENCY,  
METEOROLOGICAL BALLOONS, RESPONSE, POWER SPECTRA,  
PHOTOTHEODOLITES, ATMOSPHERIC SOUNDING, TABLES(DATA),  
ANEMOMETERS, ACCURACY, WIND, UPPER ATMOSPHERE (U)  
IDENTIFIERS: BALLISTIC METEOROLOGY, HONEST JOHN (U)

A STUDY OF THE EFFECT OF VARIOUS SPACE FREQUENCIES  
OF WIND ON THE IMPACT POINT OF THE HONEST JOHN  
M50 UNGUIDED TACTICAL ROCKET IS PRESENTED. THE  
WIND PROFILES WERE OBTAINED FROM FOURIER SERIES  
FITS TO PROFILES OBTAINED FROM JIMSPHERE BALLOONS.  
HIGH FREQUENCIES WERE TRUNCATED IN SUCCESSIVE STEPS  
TO ARRIVE AT THE EFFECT OF SUCH FREQUENCIES ON THE  
IMPACT POINT OF THE HONEST JOHN, AS COMPUTED WITH  
A FIVE-DEGREE-OF-FREEDOM BALLISTIC SIMULATION MODEL.  
SIGNIFICANT DEGRADATION OF ACCURACY CAN OCCUR WHEN  
FREQUENCIES DOWN TO .001 CYCLE/FT ARE TRUNCATED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-667 916 17/1 19/5  
ATMOSPHERIC SCIENCES LAB WHITE SANDS MISSILE RANGE N  
MEX

A STUDY IN ACOUSTIC DIRECTION FINDING, (U)

NOV 67 24P NORDQUIST, WALTER S. , JR  
PROJ: DA-1V2-50016-A-126  
TASK: 1V2-50016-A-126-01  
MONITOR: ECOM 545

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIRECTION FINDING, ACOUSTIC DETECTORS),  
(\*ARTILLERY FIRE, \*ACOUSTIC DETECTORS), ACOUSTIC  
SIGNALS, MICROPHONES, RADIOSONDES, CONFIGURATION,  
METEOROLOGICAL PHENOMENA, AZIMUTH, CORRECTIONS, ERRORS,  
MATHEMATICAL ANALYSIS, TABLES(DATA), SOUND TRANSMISSION (U)  
IDENTIFIERS: ACOUSTIC RAY TRACING (U)

THE AZIMUTH TO A GUN PROBE LAUNCHER POSITION FROM  
AN ACOUSTIC ARRAY LOCATED APPROXIMATELY SIX MILES  
DISTANT WAS DETERMINED FROM THE ACOUSTIC DATA  
ASSOCIATED WITH A SERIES OF SEVEN FIRINGS.  
APPLICATION OF A METEOROLOGICAL CORRECTION  
TECHNIQUE USING RAWINSONDE DATA INDICATES THAT THE  
AZIMUTH MAY BE CORRECTED UP TO FORTY PERCENT OF THE  
TOTAL ERROR IF THE RAWINSONDE SOUNDING IS TAKEN AT  
THE TIME OF FIRING AND DECREASES FROM THAT VALUE AT A  
RATE WHICH IS A FUNCTION OF THE STABILITY OF THE AIR  
MASS INVOLVED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-667 940 15/5 15/7  
TEXAS UNIV AUSTIN ENGINEERING MECHANICS RESEARCH LAB

GROUND IMPACT SHOCK MITIGATION HOWITZER 105MM M2A1, (U)

JUL 67 28P WIEDERANDERS, DAVID G. ;  
REPT. NO. EMRL-TR-1020  
CONTRACT: DA-19-129-ANC-582(N)  
PROJ: DA-1F121401D195  
MONITOR: USA-NLABS TR-68-50-AD

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AIR DROP OPERATIONS, HOWITZERS),  
(\*HOWITZERS, \*IMPACT SHOCK), IMPACT TESTS, TEST METHODS,  
DAMAGE ASSESSMENT, DESIGN, OPTIMIZATION, HONEYCOMB  
CORES, SANDWICH CONSTRUCTION, VELOCITY, LOAD  
DISTRIBUTION, HOISTS, TIRES, PRESSURE, MILITARY  
SUPPLIES (U)  
IDENTIFIERS: \*CUSHIONING SYSTEMS (U)

THE 105MM HOWITZER SUPPLIED TO THIS LABORATORY BY  
THE ARMY TANK AND AUTOMOTIVE COMMAND THROUGH  
ARRANGEMENTS MADE WITH NATICK LABORATORIES HAS  
BEEN DROPPED FIVE TIMES AT IMPACT VELOCITIES UP TO  
54.4 FPS, AND AT DESIGN ACCELERATIONS AS HIGH AS 30G.  
THE INITIAL MODIFICATIONS OF THE VEHICLE IN  
PREPARATION FOR THE DROP SERIES AND THE DESIGN  
CRITERION FOR THIS TEST SERIES ARE PRESENTED ALONG  
WITH A DESCRIPTION OF THE CUSHIONING SYSTEM USED AND  
THE DAMAGE SUSTAINED IN EACH DROP. IT IS CONCLUDED  
THAT THIS VEHICLE CAN BE DROPPED AT IMPACT VELOCITIES  
UP TO 50 FPS WITHOUT ANY DAMAGE, IF A PROPERLY  
DESIGNED CUSHIONING SYSTEM IS USED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-668 651 19/6 5/5  
HUMAN ENGINEERING LABS ABERDEEN PROVING GROUND MD

A LOADING STUDY OF THE XM-138 SELF-PROPELLED  
HOWITZER.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,  
DEC 67 26P DICKINSON, NONNIE F. , JR.;  
GANEM, GEORGE P. ; TORRE, JAMES P. , JR;  
REPT. NO. HEL-TN-7-67

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, LOADING(ORDNANCE PROJECTORS)),  
(\*LOADING(ORDNANCE PROJECTORS), \*HUMAN FACTORS  
ENGINEERING), (\*SELF PROPELLED GUNS, LOADING(ORDNANCE  
PROJECTORS)), LOADERS, PERFORMANCE(HUMAN), PROJECTILES,  
POWDER BAGS, INTERACTIONS, MILITARY REQUIREMENTS (U)

TESTS WERE CONDUCTED TO EVALUATE THE HUMAN  
ENGINEERING ASPECTS OF BOTH THE WATERVLJET AND U.  
S. ARMY TANK-AUTOMOTIVE CENTER (ATAC)  
VERSIONS OF THE XM-138 SELF-PROPELLED  
HOWITZER. THE EVALUATION PRODUCED TWO MAJOR  
CONCLUSIONS: (1) THERE ARE DIFFERENCES BETWEEN  
THE TWO SYSTEMS IN TERMS OF TIME TO LOAD, BUT THE  
REQUIRED RATES OF FIRE CAN BE MET WITH BOTH. (2)  
TWO-MAN TEAM-LOADING IS THE FASTEST AND SAFEST  
LOADING TECHNIQUE. VARIOUS RECOMMENDATIONS WERE  
MADE CONCERNING SAFETY AND EASE OF OPERATION OF  
SCOPES. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-681 931 17/7 19/6  
GENERAL ELECTRIC CO JOHNSON CITY N Y ARMAMENT AND CONTROL  
PRODUCTS SECTION

INERTIAL PLATFORM SUBSYSTEM FOR ARMY ARTILLERY  
INERTIAL SURVEY SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 62 99P SIEGEL, S. H. ;  
REPT. NO. R62APJ7  
CONTRACT: DA-44-009-ENG-4413

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPT. NO. R62APJ8,  
AD-681 932 AND REPT. NO. R62APJ9, AD-681 933.

DESCRIPTORS: (\*ARTILLERY FIRE, \*INERTIAL GUIDANCE),  
(\*STABILIZED PLATFORMS, SYSTEMS ENGINEERING), ELECTRONIC  
EQUIPMENT, POWER SUPPLIES, GYRO STABILIZERS, GIMBALS,  
SERVOAMPLIFIERS, MODULES(ELECTRONICS),  
PERFORMANCE(ENGINEERING), RELIABILITY(ELECTRONICS),  
PACKAGED CIRCUITS, DIAGRAMS, DESIGN (U)  
IDENTIFIERS: AAISS(ARMY ARTILLERY INERTIAL SURVEY  
SYSTEMS), \*ARMY ARTILLERY INERTIAL SURVEY SYSTEMS,  
\*MANAGEMENT INFORMATION SYSTEMS (U)

THIS REPORT DESCRIBES THE SUBSYSTEM ANALYSIS,  
DESIGN AND TEST OF AN INERTIAL PLATFORM  
SUBSYSTEM FOR THE INERTIAL SURVEY SYSTEM.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-681 932 1777 1976  
GENERAL ELECTRIC CO JOHNSON CITY N Y ARMAMENT AND CONTROL  
PRODUCTS SECTION

STABLE PLATFORM ASSEMBLY FOR ARMY ARTILLERY INERTIAL  
SURVEY SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 62 87P OLSON, E. N. ; POTEATE, W.  
B. ISEMINSKI, R. F. ;  
REPT. NO. R62APJ6  
CONTRACT: DA-44-009-ENG-4413

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPT. NO. R62APJ7,  
AD-681 931, AND REPT. NO. R62APJ9, AD-681 933.

DESCRIPTORS: (\*ARTILLERY FIRE, \*INERTIAL GUIDANCE),  
(\*STABILIZED PLATFORMS, DESIGN), GYRO STABILIZERS,  
THEODOLITES, AZIMUTH, ALIGNMENT, PURGING, NITROGEN,  
ASSEMBLY, PHYSICAL PROPERTIES, RADIO INTERFERENCE (U)  
IDENTIFIERS: AAISS (ARMY ARTILLERY INERTIAL SURVEY  
SYSTEMS), \*ARMY ARTILLERY INERTIAL SURVEY SYSTEMS,  
\*MANAGEMENT INFORMATION SYSTEMS (U)

THIS REPORT COVERS THE DESIGN AND TEST OF THE  
STABLE PLATFORM ASSEMBLY FOR AN INERTIAL  
SURVEY SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-681 933 1777 9/5 1976  
GENERAL ELECTRIC CO JOHNSON CITY N Y ARMAMENT AND CONTROL  
PRODUCTS SECTION

STABLE PLATFORM ELECTRONICS FOR ARMY ARTILLERY  
INERTIAL SURVEY SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 62 217P GABRIEL, R. R. ; GOLA, N. ,  
YACYNCH, W. ;  
REPT. NO. R62APJ9  
CONTRACT: DA-44-009-ENG-4413

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPT. NO. R62APJ7,  
AD-681 931 AND REPT. NO. R62APJ8, AD-681 932.

DESCRIPTORS: (\*ARTILLERY FIRE, \*INERTIAL GUIDANCE),  
(\*STABILIZED PLATFORMS, \*ELECTRONIC EQUIPMENT),  
MODULES(ELECTRONICS), PULSE GENERATORS, DIGITAL SYSTEMS,  
POWER SUPPLIES, RELAXATION OSCILLATORS, CURRENT  
AMPLIFIERS, INTEGRATORS, SERVOAMPLIFIERS, DESIGN,  
EMBEDDING SUBSTANCES, ENCAPSULATION,  
RELIABILITY(ELECTRONICS) (U)  
IDENTIFIERS: AAISS(ARMY ARTILLERY INERTIAL SURVEY  
SYSTEMS), \*ARMY ARTILLERY INERTIAL SURVEY SYSTEMS,  
\*MANAGEMENT INFORMATION SYSTEMS (U)

THIS REPORT COVERS THE WORK PERFORMED ON THE  
PLATFORM ELECTRONICS PACKAGE FOR THE ARMY  
ARTILLERY INERTIAL SURVEY SYSTEM.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-685 844 13/7 19/6  
ARMY WEAPONS COMMAND ROCK ISLAND ILL SCIENCE AND  
TECHNOLOGY LAB

MEASUREMENT OF THE GAS CONTENT OF OIL IN RECOIL  
MECHANISMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN 67-JUN 68,  
NOV 68 23P BLESSIN, FRED ;  
MONITOR: RIA 68-3165

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, \*RECOIL MECHANISMS),  
(\*HYDRAULIC EQUIPMENT, HYDRAULIC FLUIDS), CHEMISORPTION,  
LEAKAGE (FLUID), GAS ANALYSIS, SAMPLING, GASEOUS  
DIFFUSION SEPARATION (U)

THE PURPOSE OF THIS INVESTIGATION WAS TO DEVELOP A  
SIMPLE AND RELIABLE METHOD FOR MEASUREMENT OF THE GAS  
CONTENT OF OIL IN RECOIL MECHANISMS. SEVERAL  
PROPOSED METHODS WERE COMPARED WITH CURRENT METHODS,  
IN A SERIES OF MEASUREMENTS ON OIL SAMPLES CONTAINING  
KNOWN AMOUNTS OF NITROGEN. THE BEST METHOD WAS  
SELECTED AND A RECOMMENDED APPARATUS WAS DEVELOPED,  
DESIGNATED THE 'U-TUBE TYPE GAS INDICATOR.'  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-688 058 1976 5/9  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

PREPARATION OF ARTILLERY WEAPONS FOR FIRING, (U)

MAY 69 48P DENISOV, IVAN IVANOVICH I  
REPT. NO. FSTC-HT-23-928-68  
PROJ: FSTC-92236282301

UNCLASSIFIED REPORT

PORTIONS OF THIS DOCUMENT ARE ILLEGIBLE. SEE  
INTRODUCTION SECTION OF THIS ANNOUNCEMENT JOURNAL FOR  
CFSTI ORDERING INSTRUCTIONS.

SUPPLEMENTARY NOTE: TRANS. OF MONO. PODGOTOVKA  
ARTILLIERISKOGO (PREPARATION OF ARTILLERY WEAPON FOR  
FIRING), MOSCOW, 1962 P1-48.

DESCRIPTORS: (•ARMED FORCES (FOREIGN), MILITARY  
TRAINING), (•ARTILLERY, OPERATIONAL READINESS),  
ARTILLERY, ARTILLERY FIRE, BREECH MECHANISMS, GUN  
BARRELS, RECOIL MECHANISMS, HYDRAULIC FLUIDS, GUN  
MOUNTS, GUN SIGHTS, USSR (U)  
IDENTIFIERS: SOVIET EQUIPMENT, TRANSLATIONS (U)

THIS REPORT PRESENTS THE PRINCIPLES OF THE  
STRUCTURE AND OPERATION OF THE PRINCIPAL MECHANISMS  
OF ARTILLERY WEAPONS, AND ALSO LISTS THE PURPOSES OF  
THE MECHANISMS, THE REQUIREMENTS PLACED UPON THEM AND  
THEIR TESTING IN THE PREPARATION OF WEAPONS FOR  
FIRING. THE SEQUENCE INVOLVED IN PREPARATION OF  
SIGHTING DEVICES, CHECKING ZERO SETTINGS AND THE LINE  
OF SIGHTING AT ZERO SETTINGS OF SEVERAL MECHANICAL  
AND OPTICAL SIGHTS IS OUTLINED. ALSO, THIS REPORT  
BRIEFLY ANALYZES THE PROBLEM OF PREPARATION OF  
WEAPONS FOR THE MARCH. THE REPORT IS DESIGNED TO  
INCREASE THE MILITARY TECHNICAL KNOWLEDGE OF  
ARTILLERY NONCOMMISSIONED OFFICERS AND ENLISTED MEN  
AND THE JUNIOR OFFICERS OF OTHER BRANCHES OF THE  
ARMY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-690 596            19/5        19/6        19/7  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

ARTILLERY AND ROCKETS, (U)

MAY 69 434P        SERGEEV, G. M. ;  
REPT. NO. FSTC-HT-23-32-69  
PROJ: FSTC-92236282301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. ARTILLERIYA I  
RAKETY, MOSCOW, 1968.

DESCRIPTORS: (\*ARTILLERY, \*FIRE CONTROL SYSTEMS),  
(\*ROCKETS, FIRE CONTROL SYSTEMS), PROJECTILES,  
FUZES(ORDNANCE), FUZE FUNCTIONING ELEMENTS, PROJECTILE  
TRAJECTORIES, FIRE CONTROL COMPUTERS, GUN DIRECTORS,  
ARTILLERY ROCKETS, LIQUID ROCKET PROPELLANTS, SOLID  
ROCKET PROPELLANTS, GUIDED MISSILES, RADAR EQUIPMENT,  
LASERS, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

GENERAL DESCRIPTION OF OPERATION AND WORKING  
PRINCIPLES OF ARTILLERY PIECES, AMMUNITION, AND  
OPTICAL AND ELECTRONIC EQUIPMENT. METHODS OF  
DIRECTING FIRE AGAINST STATIONARY AND MOBILE TARGETS.  
PRINCIPLES AND OPERATION OF ROCKET STRUCTURE,  
PROPULSION- AND GUIDANCE SYSTEMS. DESCRIPTION OF  
RADAR, LASER, AND NUCLEAR DEVICES AND PRINCIPLES.  
EXPLANATIONS OF THE PRINCIPLES OF COMPUTER  
TECHNOLOGY AND QUANTUM-MECHANICAL DEVICES USED IN  
ARTILLERY-, ROCKET- AND TROOP CONTROL. (U)  
(AUTHOR)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-690 853 13/7 13/8 19 7  
SINGER-GENERAL PRECISION INC LITTLE FALLS N J KEARFOTT  
DIV

LOW COST PRODUCTION - STUDY OF A FLUIDIC MISSILE  
CONTROL SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUN 69 266P EVANS, JOHN ; HOFFMAN, JAY ;  
CONTRACT: DAAH01-68-1-1285

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY ROCKETS, CONTROL SYSTEMS),  
(\*TERMINAL GUIDANCE, FLUIDICS), (\*MANUFACTURING, COST  
EFFECTIVENESS), FLUID AMPLIFIERS, COSTS, SYSTEMS  
ENGINEERING, QUALITY CONTROL, ATTITUDE CONTROL SYSTEMS,  
GYRO STABILIZERS, DETECTORS, GAS GENERATING SYSTEMS,  
MANUFACTURING, ASSEMBLY, PRODUCTION CONTROL, DESIGN,  
RELIABILITY, MACHINE SHOP PRACTICE, INDUSTRIAL  
PRODUCTION (U)

IDENTIFIERS: MARS (MULTIPLE ARTILLERY ROCKET SYSTEM),  
MULTIPLE ARTILLERY ROCKET SYSTEM, MRRS (MULTIPLE RAIL  
ROCKET SYSTEM), MULTIPLE RAIL ROCKET SYSTEM (U)

THE PURPOSE OF THE STUDY IS TO INVESTIGATE ALL THE  
COSTS ASSOCIATED WITH THE MASS PRODUCTION OF A  
FLUIDIC DIRECTIONAL CONTROL SYSTEM FOR A TACTICAL  
ARTILLERY MISSILE. THIS REPORT CONSIDERS THE  
FOLLOWING FACTORS INFLUENCING THE COST OF THE CONTROL  
SYSTEM: PERFORMANCE REQUIREMENTS; DESIGN OF  
SYSTEM SUB-ASSEMBLIES; SPECIFIC IMPROVEMENTS IN  
DESIGN OF SUBASSEMBLIES; PRODUCTION MANUFACTURING  
TECHNIQUES FOR SYSTEM SUB-ASSEMBLIES; PRODUCTION  
ASSEMBLY TECHNIQUES FOR SUB-ASSEMBLIES AND THE  
SYSTEM; PRODUCTION TESTS REQUIRED FOR ADEQUATE  
QUALITY ASSURANCE; AND AREAS WHERE FURTHER  
DEVELOPMENT WILL LEAD TO IMPROVEMENTS IN COST OR  
WEIGHT OR PERFORMANCE. THE REPORT ALSO DEFINES THE  
ESTIMATING PHILOSOPHY USED AND THE LABOR RATES USED  
TO GENERATE THE COST ESTIMATE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-691 226 1971 1974  
LIBRARY OF CONGRESS WASHINGTON D C AEROSPACE TECHNOLOGY  
DIV

FOREIGN EXPLOSIVE ORDNANCE MATERIEL. (U)

DESCRIPTIVE NOTE: SURVEYS OF FOREIGN SCIENTIFIC AND  
TECHNICAL LITERATURE.

JUN 69 17P  
REPT. NO. ATD-69-84

UNCLASSIFIED REPORT

DESCRIPTORS: (•ORDNANCE, USSR), REVIEWS, CHEMICAL  
WARFARE AGENTS, TORPEDOES, NAVAL MINES, MINE CLEARANCE,  
MINE DETECTORS, GASOLINE, GELS, MINELAYING, ARTILLERY,  
MINESWEEPERS, MINE FUZES, GRENADES, SMALL ARMS,  
ABSTRACTS (U)

CONTENTS: CHEMICAL WEAPON; UNDERWATER  
OFFENSIVE WEAPONS; EXPERIENCE GAINED IN THE SEARCH  
FOR SUNKEN MUNITIONS; IS THERE A 'DRY' GASOLINE;  
LAYING OF MINES IN THE WINTER; TECHNOLOGICAL  
PROGRESS IN THE BULGARIAN ARMY (MINE  
DETECTORS); HOMELAND PROTECTION SHIELD  
(ARTILLERY); TRENDS IN THE DEVELOPMENT OF MINES  
AND MINESWEEPERS; FAMILIARIZATION WITH GRENADES;  
MINES DO NOT EXPLODE IMMEDIATELY; HEAVY  
ARTILLERY; AND FIRE POWER (SMALL ARMS  
WEAPONS). (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-692 302 1976  
ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS  
DIRECTORATE

OPTIMAL WEAPON STABILITY BY A STEEPEST-DESCENT  
METHOD. (U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,  
AUG 69 45P STREETER, T. D. ;  
REPT. NO. SY-R2-69  
PROJ: DA-1-P-014501-B-14-A  
TASK: 1-P-014501-B-14-A-05

UNCLASSIFIED REPORT

DESCRIPTORS: (ARTILLERY, RECOIL MECHANISMS),  
OPTIMIZATION, TIRES, LOADS(FORCES), ORIFICES, DESIGN,  
STEEPEST DESCENT METHOD, MATHEMATICAL MODELS, FIRING  
TESTS(ORDNANCE); STABILITY (U)  
IDENTIFIERS: M-164 HOWITZERS(105-MM), XM-164  
HOWITZERS(105-MM) (U)

THE PROBLEM TREATED FALLS INTO THE RAPIDLY  
DEVELOPING FIELD OF OPTIMAL DESIGN. THE DESIGN  
REQUIREMENTS STIPULATE THAT A WEAPON SYSTEM IS TO  
PERFORM SOME TASK AT SOME INDEX OF PERFORMANCE.  
THE OBJECTIVE OF THIS STUDY IS TO APPLY A  
RELATIVELY NEW STEEPEST-DESCENT PROCEDURE TO AN  
ARTILLERY DESIGN PROBLEM WHICH INVOLVES THE DYNAMIC  
BEHAVIOR OF A 105MM HOWITZER WHICH IS FIRED WHILE  
RESTING ON RUBBER TIRES, AND DETERMINE THE DESIGN  
PARAMETERS SUCH THAT THE PITCH MOTION OF THE WEAPON  
IS MINIMUM AT HIGH ANGLE FIRE. THUS, THE WEAPON  
WILL NOT ONLY PERFORM ITS TASK, BUT WILL ALSO HAVE  
MAXIMUM PERFORMANCE (IN THIS CASE, STABILITY).  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-696 188 15/3 16/4 19/5  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

ANTIAIRCRAFT MISSILE TROOPS AND ANTIAIRCRAFT  
ARTILLERY,

(U)

SEP 69 54P ASHKEROV, V. P. I  
REPT. NO. FSTC-MT-23-410-69  
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. ZENITNYE RAKETNYE  
VOISKA I ZENITNAYA ARTILLERIYA, MOSCOW, 1968  
56P.

DESCRIPTORS: (\*ANTIAIRCRAFT DEFENSE SYSTEMS, USSR),  
REVIEWS, SURFACE TO AIR MISSILES, ANTIAIRCRAFT GUNNERY,  
ARTILLERY, GUIDED MISSILE PERSONNEL, MILITARY TACTICS,  
MILITARY TRAINING, GUIDED MISSILES, ANTIAIRCRAFT  
AMMUNITION, PROJECTILES, ANTIAIRCRAFT GUNS, ANTIAIRCRAFT  
FIRE CONTROL SYSTEMS, FIRE CONTROL SYSTEM COMPONENTS,  
RADAR EQUIPMENT, ARMED FORCES(FOREIGN) (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE HISTORY OF THE DEVELOPMENT OF SOVIET  
ANTIAIRCRAFT ARTILLERY AND ANTIAIRCRAFT GUIDED  
MISSILE FORCES IS PRESENTED, AS WELL AS INFORMATION  
ON THE EQUIPMENT UTILIZED BY THESE FORCES. THE  
COMBAT EMPLOYMENT OF GUIDED MISSILES IS DISCUSSED.  
ONE SECTOR OF THE PUBLICATION IS DEVOTED TO A  
DESCRIPTION OF THE LIFE AND TRAINING OF SOVIET  
ANTIAIRCRAFT MISSILE AND ARTILLERY TROOPS.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-697 725 15/3  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

ANTI-AIRCRAFT MISSILE FORCES AND ANTI-AIRCRAFT  
ARTILLERY, (U)

NOV 69 48P ASHKEROV, V. P. ;  
REPT. NO. FSTC-HT-23-217-70  
PROJ: FSTC-0423100

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. MONO. ZENITNYE RAKETNYE  
VOISKA I ZENITNAYA ARTILLERIYA, MOSCOW, 1968 PI-56.

DESCRIPTORS: (•ANTIAIRCRAFT DEFENSE SYSTEMS, REVIEWS),  
SURFACE TO AIR MISSILES, NUCLEAR WARHEADS, INERTIAL  
GUIDANCE, HOMING DEVICES, RADAR INTERFERENCE,  
ANTIAIRCRAFT GUNNERY, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE ARTICLE IS DIVIDED INTO THE FOLLOWING  
SECTIONS: BRIEF ESSAY ON THE BIRTH AND DEVELOPMENT  
OF THE ANTI-AIRCRAFT ARTILLERY AND ON ITS COMBAT  
APPLICATIONS; MODERN MEANS OF AIR AND SPACE ATTACK  
AND THE POSSIBLE CHARACTER OF THEIR USE; BIRTH AND  
DEVELOPMENT OF ANTI-AIRCRAFT MISSILE FORCES; COMBAT  
APPLICATIONS OF ANTI-AIRCRAFT GUIDED MISSILES; AND  
LIFE AND COMBAT TRAINING OF ANTI-AIRCRAFT  
FORCES. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-697 784 14/2 1976  
WATERVLIET ARSENAL N Y BENET R AND E LABS

IMPROVEMENT OF EDDY CURRENT INSPECTION. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 69 22P FRANKEL, HERBERT ;  
MONITOR: WV1 6941

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, GUN BARRELS), (\*GUN BARRELS,  
\*NONDESTRUCTIVE TESTING), DEFECTS(MATERIALS), CRACKS,  
RIFLING, TRANSDUCERS, ELECTRIC FIELDS, MACHINE SHOP  
PRACTICE, QUALITY CONTROL (U)  
IDENTIFIERS: \*EDDY CURRENT INSPECTION, M-126 GUNS(155-  
MM) (U)

INSPECTION TIME CAN BE REDUCED 75% WITH A  
QUADRUPLE COIL TRANSDUCER WHICH WAS DEVELOPED TO WORK  
WITH EXISTING EDDY CURRENT EQUIPMENT. ITS LOWER  
SENSITIVITY CAN BE COMPENSATED BY INCREASING THE  
AVAILABLE GAIN OF THE DETECTION SYSTEM. THE  
PRINCIPAL DISADVANTAGE OF THE NEW TRANSDUCER IS THE  
GREATER DIFFICULTY IN ADJUSTING THE EQUIPMENT AS  
COMPARED WITH THE SINGLE COIL TRANSDUCER. THE  
O.D. OF TUBES CAN NOW BE INSPECTED DURING FINISH  
MACHINING BECAUSE OF AN EDDY CURRENT SYSTEM WHICH WAS  
DEVELOPED TO AUTOMATICALLY COMPENSATE FOR CHANGES IN  
SURFACE SCANNING SPEED CAUSED BY DIFFERENT DIAMETERS  
AT THE MUZZLE AND BREECH ENDS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-698 021 12/1 1976  
ARMY WEAPONS COMMAND ROCK ISLAND ILL SCIENCE AND  
TECHNOLOGY LAB

ANALOG COMPUTER STABILIZATION INVESTIGATION OF  
LAGRANGIAN EQUATIONS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. MAR 68-SEP 69.  
OCT 69 55P CACARI, PAUL I  
REPT. NO. TR-70-108  
PROJ: DA-1-T-061102-B-14-A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, RECOIL MECHANISMS), (\*RECOIL  
MECHANISMS, EQUATIONS OF MOTION), DIFFERENTIAL  
EQUATIONS, MATHEMATICAL MODELS, MATRICES (MATHEMATICS),  
NUMERICAL ANALYSIS, ANALOG COMPUTERS, SIMULATION,  
STABILITY (U)

IDENTIFIERS: COMPUTERIZED SIMULATION, DEGREES OF  
FREEDOM, FOUR DEGREES OF FREEDOM, \*LAGRANGE EQUATIONS  
OF MOTION (U)

THE USE OF LAGRANGE'S METHOD FOR DEVELOPMENT OF A  
MATHEMATICAL MODEL TO DEFINE THE ENERGY DISTRIBUTION  
OF A SYSTEM YIELDS IN NORMAL COORDINATES A SET OF  
DIFFERENTIAL EQUATIONS WHEREIN THE HIGHEST ORDER TERM  
OF EVERY VARIABLE APPEARS IN EVERY EQUATION. IN AN  
ATTEMPT TO SIMULATE SUCH A SYSTEM ON AN ANALOG  
COMPUTER, ALGEBRAIC LOOPS WITH GAINS = OR > MAY BE  
REQUIRED, BUT CAUSE INSTABILITY IN THE EQUIPMENT.  
THIS REPORT CONCERNS AN INVESTIGATION OF POSSIBLE  
METHODS OF EITHER ELIMINATING THE OFFENDING ALGEBRAIC  
LOOPS OR MINIMIZING THEIR GAIN. SPECIFICALLY, THE  
LAGRANGIAN METHOD, WHICH DEFINES THE SOFT-RECOIL  
SYSTEM FOR A 155MM HOWITZER, IS EXAMINED ONLY TO  
STABILIZE THE EQUATIONS RATHER THAN TO PERFORM A  
PARAMETRIC VARIATION STUDY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-698 462 14/2 1976  
WATERVLIET ARSENAL N Y QUALITY ASSURANCE DIV

THE DESIGN AND CONSTRUCTION OF A CANNON BREECH  
MECHANISM TESTING MACHINE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 69 30P PENROSE, JOHN H. ; WONDISFORD,  
WILLIAM A. ;  
REPT. NO. WVT-QA-6902  
PROJ: 99-7-PP1120-02-AW-M7

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, BREECH MECHANISMS), (\*BREECH  
MECHANISMS, TEST EQUIPMENT), (\*TEST EQUIPMENT, DESIGN),  
TEST FACILITIES, HYDRAULIC EQUIPMENT, HYDRAULIC  
SERVOMECHANISMS, HYDROSTATIC PRESSURE, CALIBRATION,  
INSTRUCTION MANUALS, TEST METHODS (U)  
IDENTIFIERS: CLOSED LOOP SYSTEMS, CONTROL, CONTROL  
SYSTEMS (U)

IN ORDER TO TEST BREECH MECHANISMS OF MAJOR CALIBER  
GUNS FOR MATERIAL AND FUNCTIONAL DEFECTS, A CANNON  
BREECH MECHANISM TESTING MACHINE WAS DESIGNED  
AND CONSTRUCTED AT WATERVLIET ARSENAL. THIS  
EQUIPMENT PERMITS RAPID TESTING AT THE MANUFACTURING  
FACILITY AND SUPPLEMENTS PROOF TESTING. PRIOR TO  
ITS DESIGN AND MANUFACTURE, 100% PROOF TESTING WAS  
REQUIRED. HOWEVER, WITH THE AVAILABILITY OF THIS  
TESTING MACHINE AND THE APPLICATION OF A PROOF  
SAMPLING PLAN, PROOF TESTING OF BREECH MECHANISMS CAN  
BE SUBSTANTIALLY REDUCED WITH ACCOMPANYING LOWER  
INSPECTION COSTS. THE MACHINE IS AN ELECTRONICALLY  
CONTROLLED, PNEUMATICALLY POWERED FAIL-SAFE TESTING  
UNIT. IT CAN SIMULATE ACTUAL GUN FIRING PRESSURES  
OF UP TO 75,000 PSI. IT CAN ALSO BE USED FOR  
CHECKING THE OBTURATOR PAD SEALING IN BAG LOADED TYPE  
WEAPONS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-699 490 15/3  
HUMAN RESOURCES RESEARCH ORGANIZATION ALEXANDRIA, VA

COLLECTED PAPERS PREPARED UNDER WORK UNIT AAA:  
FACTORS AFFECTING EFFICIENCY AND MORALE IN  
ANTIAIRCRAFT ARTILLERY BATTERIES. (U)

NOV 69 43P PALMER, FRANCIS H. MYERS,  
THOMAS I. METZGER, PAUL GOLD, BERTRAM I  
REPT. NO. HUMRRO PROFESSIONAL PAPER 33-69  
CONTRACT: DAHC19-70-C-0012  
PROJ: DA-2-Q-062107-A-712

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ANTIAIRCRAFT DEFENSE SYSTEMS,  
EFFECTIVENESS), (\*ARTILLERY, PERFORMANCE(HUMAN)),  
PERFORMANCE(HUMAN), MILITARY TRAINING, MAINTENANCE,  
RADAR TRACKING, FIRING TESTS(ORDNANCE), SIMULATION,  
MILITARY PERSONNEL, MORALE, GROUP DYNAMICS,  
SOCIOMETRICS, LEADERSHIP, HUMAN FACTORS ENGINEERING (U)  
IDENTIFIERS: ANTIAIRCRAFT ARTILLERY BATTERIES (U)

THE DOCUMENT REPORTS THE RESULTS OF A STUDY OF A  
NUMBER OF PARTICULARLY EFFECTIVE AND RELATIVELY  
INEFFECTIVE ON-SITE ANTIAIRCRAFT BATTERIES.  
INFORMATION WAS SOUGHT TO DETERMINE CERTAIN OF THE  
LESS OBVIOUS HUMAN FACTORS THAT CONTRIBUTE MOST  
HEAVILY TO GROUP PERFORMANCE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-700 967 1971  
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD

WEIGHT OF PROJECTILE-VELOCITY CHANGE FOR 75 MM  
GUN FIRING FNH POWDERS; (U)

SEP 68 21P KENT, R. H. I  
REPT. NO. BRL-119

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, PROJECTILES), (\*PROJECTILES,  
INTERIOR BALLISTICS), VELOCITY, RANGE TABLES, (U)  
STATISTICAL ANALYSIS (U)  
IDENTIFIERS: M-1897 GUNS(75-MM) (U)

FIRINGS WERE MADE TO DETERMINE THE WEIGHT OF  
PROJECTILE VELOCITY CHANGE IN THE 75 MM GUN FOR  
NORMAL AND REDUCED CHARGES. CORRECTIONS IN MUZZLE  
VELOCITY FOR PROJECTILE WEIGHT ARE OBTAINED FROM THE  
RESULTS. A COMPARISON IS MADE BETWEEN THE OBSERVED  
AND COMPUTED CHANGES TO DETERMINE WHETHER THE  
DIFFERENCE BETWEEN THE TWO ARE SIGNIFICANT.  
PROPOSALS ARE MADE FOR FURTHER INVESTIGATIONS.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-701 866 5/5 6/17 19/7 15/5  
QUARTERMASTER RESEARCH AND ENGINEERING CENTER NATICK  
MASS

HUMAN FACTORS STUDY OF QMC CLOTHING AND EQUIPMENT  
DURING COLD WEATHER TESTS OF THE LITTLE JOHN WEAPON  
SYSTEM. (U)

DESCRIPTIVE NOTE: RESEARCH STUDY REPT.,  
JUL 60 14P ROSINGER, GEORGE ;  
REPT. NO. QREC-PB-37  
PROJ: DA-7-X-9501001

UNCLASSIFIED REPORT

DESCRIPTORS: (ARTILLERY ROCKETS, MILITARY SUPPLIES),  
EXPOSURE SUITS, COMPATIBILITY, HUMAN FACTORS  
ENGINEERING, COLD WEATHER TESTS, ARCTIC REGIONS, ARMY  
OPERATIONS, LAUNCHING SITES, GROUND SUPPORT EQUIPMENT,  
CLOTHING (U)  
IDENTIFIERS: LITTLE JOHN (U)

OBSERVATIONS WERE MADE ON HUMAN FACTORS AND  
COMPATIBILITY PROBLEMS IN RELATION TO THE QMC  
CLOTHING WORN BY THE CREW AND THE EQUIPMENT OF THE  
LITTLE JOHN WEAPON SYSTEM DURING COLD WEATHER  
TESTS. THE ADEQUACY OF THE CLOTHING IN TERMS OF THE  
PROTECTION IT AFFORDED THE CREW, AND ITS  
COMPATIBILITY WITH THE EQUIPMENT HAVE BEEN DISCUSSED.  
WHERE APPROPRIATE, HUMAN FACTORS PROBLEMS WERE  
CONSIDERED IN RELATION TO OPERATIONAL EFFICIENCY OF  
THE EQUIPMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-702 923 19/5 15/7  
ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

NEW ANALYSES AND METHODS LEADING TO IMPROVED TARGET ACQUISITION REQUIREMENTS INVOLVING SYSTEMS, GEODETIC AND RE-ENTRY ERRORS, AND INCREASED WEAPONS EFFECTIVENESS FOR CONVENTIONAL WEAPONS (PART I). (U)

DESCRIPTIVE NOTE: RESEARCH NOTE,  
JAN 70 20P BAUSSUS-VON LUEZOW, HAN I  
REPT. NO. USAETL-RN-35

UNCLASSIFIED REPORT

DESCRIPTORS: (•TARGET ACQUISITION, OPTIMIZATION), (•ARTILLERY FIRE, EFFECTIVENESS), KILL PROBABILITIES, CIRCULAR ERROR PROBABLE, MATHEMATICAL ANALYSIS, STATISTICAL ANALYSIS, FRAGMENTATION, PROBABILITY, ERRORS, OPERATIONS RESEARCH (U)

AFTER A CURSORY CRITIQUE OF CURRENTLY USED METHODOLOGY FOR THE STUDY OF TARGET ACCURACY REQUIREMENTS FOR ARTILLERY WEAPONS, THIS RESEARCH REPORT IS CONCERNED WITH THE DEVELOPMENT OF ANALYTICAL METHODS AND TWO DIFFERENT THOUGH INTERRELATABLE AND ESSENTIALLY ADDITIVE OPTIMIZATION CONCEPTS. IF IMPLEMENTED WITHIN THE CONTEXT OF TACFIRE, THESE ARE CONSERVATIVELY ESTIMATED TO PROVIDE ON THE AVERAGE A 30% GREATER WEAPONS EFFECTIVENESS. ALTHOUGH THE INTRA AND EXTRA WEAPONS SYSTEMS EMPLOYMENT PARAMETERS ARE INTERDEPENDENT, VARIABLE, AND CHANGING, AN INTEGRATED OPERATIONAL OPTIMIZATION IS ACHIEVED. THE METHODS OUTLINED ARE ALSO USEFUL IN WEAPONS R AND D AND RELATED SYSTEMS ANALYSES. FURTHERMORE, THE RATHER COGENT REQUIREMENTS AND RELATED RECOMMENDATIONS OR CONCLUSIONS ARRIVED AT MAY BE OF CONSIDERABLE SIGNIFICANCE FOR CERTAIN R AND D AND COMBAT DEVELOPMENT ACTIVITIES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-704 166 1977 16/1  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ARTILLERY AND ROCKETS (SELECTED CHAPTERS), (U)

FEB 70 229P BARANYUK, V. A. ;  
REPT. NO. FTD-MT-24-437-69  
PROJ: FTD-31200

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO.  
ARTILLERIYA I RAKETY, N.P., 1968 P223-319, 341-375, 392-  
411, BY EDWIN P. PENTECOST.

DESCRIPTORS: (•ROCKETS, REVIEWS), (•ARTILLERY, REVIEWS),  
SURFACE TO SURFACE MISSILES, ANTITANK AMMUNITION,  
ROCKETS, TRAJECTORIES, PROPELLANTS, NUCLEAR WARHEADS,  
RADIATION EFFECTS, COMMAND AND CONTROL SYSTEMS,  
COMPUTERS, LASERS, QUANTUM THEORY, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

CHAPTER 7 DISCUSSES DIFFERENT CLASSES OF ROCKETS,  
TRAJECTORIES AND THE KINDS OF PROPELLANTS USED.  
CHAPTER 8 DEALS WITH THE ADVANTAGES AND  
DISADVANTAGES OF ROCKET AND TUBE ARTILLERY.  
ANTITANK MISSILES ARE DISCUSSED WITH A BRIEF  
HISTORY OF THEIR USE IN PAST WARS. IN CHAPTER 9  
THE AUTHORS DEAL WITH BALLISTIC ROCKETS AND THEIR  
USES, GIVING THE GERMAN V 2 AS AN EXAMPLE.  
CHAPTER 11 GOES INTO COMBAT CAPABILITIES OF ROCKETS  
AND RADIATION EFFECTS FROM NUCLEAR WARHEAD  
EXPLOSIVES. CHAPTER 12 IS DEVOTED TO A DESCRIPTION  
OF BATTLEFIELD CONTROL OF ROCKET AND ARTILLERY TROOPS  
BY MEANS OF A COMMANDER'S COMPUTER INTO WHICH ALL  
MILITARY ELEMENTS CAN BE PROGRAMMED. CHAPTER 14  
CONTAINS A RELATIVELY NON TECHNICAL DESCRIPTION OF  
VARIOUS QUANTUM MECHANICAL DEVICES SUITABLE FOR  
MILITARY AND SPACE ADAPTION. FUNDAMENTALS OF LASERS  
AND THEIR OPERATION ARE DISCUSSED. MILITARY USES OF  
LASERS ARE DESCRIBED. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-706 244 19/5  
ARMY ARTILLERY AND MISSILE SCHOOL FORT SILL OKLA

APPLICATION OF AUTOMATIC DATA PROCESSING SYSTEMS TO  
FIELD ARTILLERY TECHNICAL FIRE CONTROL INPUT/  
OUTPUT DATA. (U)

MAR 59 202P  
REPT. NO. USAAMS-STUDY-59-9

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARTILLERY FIRE, FIRE CONTROL SYSTEMS),  
(•FIRE CONTROL COMPUTERS, DATA PROCESSING), COMPUTER  
LOGIC, DATA TRANSMISSION SYSTEMS, DIGITAL COMPUTERS,  
CYCLIC RATE, PROJECTILE TRAJECTORIES, IMPACT PREDICTION,  
FLOW CHARTING, COMPUTER PROGRAMMING (U)  
IDENTIFIERS: FIELD ARTILLERY DIGITAL AUTOMATIC  
COMPUTERS, FADAC(FIELD ARTILLERY DIGITAL AUTOMATIC  
COMPUTERS) (U)

THE STUDY CONSIDERS FIELD ARTILLERY TECHNICAL FIRE  
CONTROL INPUT AND OUTPUT DATA. INPUTS AND OUTPUTS  
NECESSARY FOR SOLUTION OF THE TECHNICAL FIRE CONTROL  
PROBLEM AND THE FLOW OF THESE DATA ARE CONSIDERED AT  
BATTERY, BATTALION, DIVISION ARTILLERY, GROUP, CORPS  
AND ARMY ARTILLERY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-708 047 15/3 12/2 15/7  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

REQUIREMENTS FOR FIELD ARTILLERY MODELS OF COMBAT. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
APR 70 68P PERKINS, RANDALL AMBROSE ,  
JR;

UNCLASSIFIED REPORT

DESCRIPTORS: (•WARFARE, ARTILLERY FIRE), (•ARTILLERY,  
MODEL THEORY), GAME THEORY, MATHEMATICAL MODELS, FIRE  
CONTROL SYSTEMS, TARGET ACQUISITION, MISSION PROFILES,  
LANCHESTER EQUATIONS, WAR GAMES, OPTIMIZATION, THESES (U)  
IDENTIFIERS: SCENARIOS (U)

THIS THESIS CONTAINS A QUALITATIVE ANALYSIS OF THE  
REQUIREMENTS FOR FIELD ARTILLERY MODELS OF COMBAT.  
THE FIELD ARTILLERY SYSTEM AND THE ARTILLERY TEAM  
ALONG WITH THE ANATOMY OF COMBAT ARE COVERED TO  
FAMILIARIZE THE ANALYST WITH THE MAJOR COMPONENTS OF  
THE SYSTEM TO BE MODELED. THE TREATMENT IS  
PRESENTED FROM THE MODELING SIDE IN TERMS OF  
DESIRABLE CHARACTERISTICS TO BE INCLUDED AND PITFALLS  
TO BE AVOIDED IN A COMBAT MODEL AND FROM THE  
ARTILLERY VIEWPOINT IN TERMS OF SIGNIFICANT PROBLEMS  
THAT EXIST IN THE AREAS OF FIRE DIRECTION, TARGET  
ACQUISITION, AND WEAPONS EVALUATION. THE ANALYSIS  
COVERS THEORETICAL AND WORKING MODELS OF THE ABOVE  
AREAS, WHICH ARE IN AGREEMENT WITH ESTABLISHED FACTS  
OF WARFARE. THE CONCLUSION REACHED IS THAT FUTURE  
EMPHASIS IN COMBAT MODELING SHOULD CONCENTRATE ON  
INCREASING THE TARGET ACQUISITION CAPABILITIES OF THE  
FIELD ARTILLERY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-709 058 1975  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

ARTILLERY OBSERVER ERRORS IN FLASHING HIGH BURST  
REGISTRATIONS WITH THE M2 AIMING CIRCLE. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
JUN 70 47P CASTLEMAN, ROBERT JONES, JR

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARTILLERY FIRE, FIRE CONTROL SYSTEMS),  
(•AIMING CIRCLES, ERRORS), OFFICER PERSONNEL,  
PERFORMANCE (HUMAN), VISUAL PERCEPTION, ACCURACY,  
AIRBURST, SIMULATION, EXPERIMENTAL DATA, ANALYSIS OF  
VARIANCE, THESES (U)  
IDENTIFIERS: M-2 AIMING CIRCLES (U)

THIS THESIS IS ADDRESSED TO THE PROBLEM OF  
DETERMINING THE MAGNITUDE AND DIRECTION OF ARTILLERY  
OBSERVER ERRORS IN FLASHING HIGH BURST REGISTRATIONS  
WITH THE M2 AIMING CIRCLE. THE TASK OF FLASHING  
HIGH BURST REGISTRATIONS WAS SIMULATED BY USING NEON  
LAMPS TO REPRESENT THE VISUAL STIMULUS PRESENTED BY  
AN EXPLODING ARTILLERY ROUND. NINETEEN FIELD  
ARTILLERY OFFICERS WERE USED AS SUBJECTS IN AN  
EXPERIMENT CONDUCTED TO COLLECT THE NECESSARY  
INFORMATION. IT WAS FOUND THAT LARGER ERRORS WERE  
COMMITTED FOR MEASUREMENTS MADE IN THE VERTICAL  
DIRECTION THAN FOR THOSE IN THE HORIZONTAL DIRECTION.  
MOST ACCURATE MEASUREMENTS WERE MADE FOR FLASHES  
APPEARING IN THE FIRST QUADRANT OF THE AIMING CIRCLE  
RETICLE AND FOR THOSE APPEARING NEAR THE CENTER OF  
THE RETICLE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-709 063 1975  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A COMPARISON OF PRECISION REGISTRATION PROCEDURES. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
APR 70 SIP BREEN, WILLIAM WALLACE ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, FIRE CONTROL SYSTEMS),  
(\*FIRE CONTROL SYSTEMS, MATHEMATICAL MODELS), MISS  
DISTANCE, CIRCULAR ERROR PROBABLE, FIRE CONTROL  
COMPUTERS, GUNNERY, ACCURACY, SUBROUTINES, COMPUTER  
PROGRAMS, THESES (U)

IDENTIFIERS: COMPUTER ANALYSIS, COMPUTERIZED  
SIMULATION (U)

THE THESIS IS ADDRESSED TO THE PROBLEM OF SELECTING  
A PRECISION REGISTRATION PROCEDURE FOR THE FIELD  
ARTILLERY. THE AUTHOR HYPOTHEZIZED THAT, IN VIEW  
OF RECENTLY PROCURED AUTOMATIC DATA PROCESSING  
EQUIPMENT, THE CURRENT PROCEDURE IS NEITHER THE MOST  
ACCURATE NOR THE MOST ECONOMICAL PROCEDURE POSSIBLE.  
AN ALTERNATE PROCEDURE WAS DESIGNED AND COMPARED  
WITH THE CURRENT PROCEDURE THROUGH THE USE OF A  
COMPUTER SIMULATION MODEL. DATA FROM THE  
SIMULATION WAS ANALYZED AND CONCLUSIONS WERE DRAWN  
REGARDING THE RELATIVE ACCURACY AND ECONOMY OF THE  
TWO PROCEDURES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-711 270 1977 1974  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

INTERNAL BALLISTICS OF TUBE ARTILLERY SYSTEMS AND  
POWDER ROCKET (EXCERPTS), (U)

JAN 70 119P SEREBRYAKOV, M. E. I  
REPT. NO. FTD-HT-23-302-69  
PROJ: FTD-6040104

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MONO. VNUTRENNYAYA  
BALLISTIKA STVOLNYKH SISTEM I POROKHOVYKH RAKET,  
MOSCOW, 1962 P1-41, 54-57, 72-105, 697-707.

DESCRIPTORS: (\*ARTILLERY ROCKETS, \*INTERIOR BALLISTICS),  
SOLID ROCKET PROPELLANTS, SUPERSONIC NOZZLES, EQUATIONS  
OF STATE, THERMODYNAMICS, PRESSURE, THRUST, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE THIRD EDITION OF THIS BOOK HAS BEEN THOROUGHLY  
REVISED AND INCLUDES NEW MATERIAL REFLECTING THE  
RESULTS OF RECENT INVESTIGATIONS IN THE DOMAIN OF  
INTERNAL BALLISTICS. THE BOOK DESCRIBES THE GENERAL  
THEORETICAL BASES OF THE INTERNAL BALLISTICS OF  
VARIOUS TYPES OF BARREL SYSTEMS AND POWDER ROCKETS AS  
WELL AS CONTEMPORARY METHODS FOR SOLVING ITS CHIEF  
PROBLEMS. SPECIAL ATTENTION IS DEVOTED TO THE  
PHYSICAL ASPECT OF THE PROCESSES INVOLVED, THE LAWS  
OF HEATING OF THE POWDER CHARGES, AND THE PRINCIPLES  
OF THE PROCESSES ACTING IN THE CHANNEL OF THE GUN  
BARREL AND IN THE CHAMBER OF THE ROCKET. THE BOOK  
IS NOT ONLY A TEXTBOOK FOR STUDENTS IN TECHNICAL  
INSTITUTES BUT SHOULD BE USEFUL ALSO TO TECHNICIANS  
AND ENGINEERS IN INDUSTRY CONCERNED WITH ARTILLERY.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-711 541 1975 1976  
ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS  
DIRECTORATE

A STEEPEST-DESCENT METHOD APPLIED TO SOFT  
RECOIL.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,  
AUG 70 34P STREETER, T. D. I  
REPT. NO. SY-R2-70

UNCLASSIFIED REPORT

DESCRIPTORS: (ARTILLERY FIRE, MATHEMATICAL  
PROGRAMMING), RECOIL MECHANISMS, STEEPEST DESCENT  
METHOD, OPTIMIZATION

(U)

IDENTIFIERS: RECOIL, STEEPEST DESCENT METHOD

(U)

THE PURPOSE OF THIS STUDY IS TO APPLY THE STEEPEST-  
DESCENT ALGORITHM TO AN ARTILLERY DESIGN PROBLEM WITH  
THE SOFT RECOIL FEATURE. THE PROBLEM TREATED IN  
THIS REPORT WAS TO SATISFY THE CONSTRAINT FUNCTIONS  
WHICH DEFINE THE FIRING-OUT-OF-BATTERY CONCEPT.  
OTHER CONSTRAINTS ARE ALSO SATISFIED AND SEVERAL  
EXAMPLE PROBLEMS ARE SOLVED WITH RESULTS AND  
DISCUSSION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-712 797 1975  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A COMPARISON OF TWO PRECISION REGISTRATION PROCEDURES. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
SEP 70 49P MAGRUDER, ROBERT BRUCE I

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, ERRORS), (\*MISS DISTANCE, COMPUTER PROGRAMMING), CIRCULAR ERROR PROBABLE, AREA COVERAGE, FIRING ERROR INDICATORS, RANGE(DISTANCE), DEFLECTION, STATISTICAL ANALYSIS, COMPUTER PROGRAMS, THESES (U)

IDENTIFIERS: COMPUTER ANALYSIS, COMPUTERIZED SIMULATION (U)

THE THESIS IS ADDRESSED TO THE PROBLEM OF DETERMINING IF THE PRECISION REGISTRATION PROCEDURE CURRENTLY BEING USED BY THE FIELD ARTILLERY IS AS ACCURATE AND ECONOMICAL AS A PROCEDURE THAT HAS RECENTLY BEEN PROPOSED BY THE GUNNERY DEPARTMENT AT FORT SILL, OKLAHOMA. A COMPARISON OF THE TWO PROCEDURES WAS PERFORMED THROUGH THE USE OF A COMPUTER SIMULATION MODEL. DATA FROM THE SIMULATION WAS ANALYZED AND CONCLUSIONS WERE DRAWN REGARDING THE RELATIVE ACCURACY AND ECONOMY OF THE TWO PROCEDURES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-713 078 1975 15/7  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

TARGET ALLOCATION FOR FIELD ARTILLERY. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
SEP 70 70P GULLA, JOHN FRANCIS :

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, MATHEMATICAL MODELS),  
TARGET ACQUISITION, ARTILLERY, FIRE CONTROL SYSTEMS,  
CLOSE SUPPORT, ARTILLERY, KILL PROBABILITIES, LANCASTER  
EQUATIONS, THESES (U)  
IDENTIFIERS: \*TARGET ALLOCATION (U)

SEVERAL MODELS OF THE PROBLEM OF TARGET SELECTION FOR FIELD ARTILLERY FIRE AS A SUPPORTING WEAPON SYSTEM TO A MANEUVER ELEMENT IN A DIVISION FIELD ENVIRONMENT ARE PRESENTED IN THIS THESIS. THE FIELD ARTILLERY SYSTEM, ITS CAPABILITIES AND LIMITATIONS, AS WELL AS, THE CRITERIA UTILIZED BY MILITARY DECISION MAKERS TO PROVIDE TIMELY, ACCURATE, AND EFFECTIVE ARTILLERY FIRE SUPPORT TO THE MANEUVER COMMANDER, IS COVERED TO FAMILIARIZE THE ANALYST WITH THE SYSTEM TO BE MODELED. A DIFFERENTIAL EQUATION MODEL USING LANCASTER THEORY OF COMBAT AND THE MATHEMATICAL TECHNIQUE OF OPTIMAL CONTROL TO THE TARGET ALLOCATION PROBLEM IS PRESENTED. A SECOND MODEL PRESENTED USES AN ALLOCATION OF FIRE DEPENDENT UPON THE KILL POTENTIAL AND CAPABILITY OF THE RESPECTIVE FORCES. THE KILL POTENTIAL VARIES WITH THE LETHALITY AND RANGE OF THE WEAPON SYSTEM FROM THAT FORCE. A DISCUSSION OF THE WORTH OF COMBAT UNITS IN DYNAMIC COMBAT SITUATIONS IS ALSO PRESENTED. THE CONCLUSION REACHED IS THAT THERE IS A DIRE NEED FOR MORE MODELS IN THE AREA OF TARGET ALLOCATION THAT CAN CLEARLY DEPICT REALITY AND STILL MAINTAIN A CERTAIN MATHEMATICAL TRACTABILITY. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-713 525 1975 17/8 15/7 9/2  
ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

ADVANCED COMPUTATIONAL ALGORITHMS FOR LARGE SCALE,  
THREE DIMENSIONAL, ARTILLERY SURVEY APPLICATIONS,

(U)

70 15P GAMBINO, LAWRENCE A. I

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, RANGE FINDING), (\*DATA  
PROCESSING, NUMERICAL ANALYSIS), TACTICAL WARFARE,  
RANGE(DISTANCE), REGRESSION ANALYSIS,  
MATRICES(MATHEMATICS), ALGORITHMS (U)  
IDENTIFIERS: LONG RANGE POSITION DETERMINING SYSTEMS,  
LRPDS(LONG RANGE POSITION DETERMINING SYSTEM),  
COMPUTATION, COMPUTER AIDED ANALYSIS, DATA  
REDUCTION (U)

IT IS THE PURPOSE OF THIS PAPER TO DEMONSTRATE HOW  
A NEWLY DERIVED SET OF COMPUTATIONAL ALGORITHMS  
ALLOWS COMPLETE FLEXIBILITY AND RIGOR IN SOLVING FOR  
TRACKING STATION COORDINATES AND THEIR ASSOCIATED  
ERROR MODELS IN A LARGE, SIMULTANEOUS, THREE  
DIMENSIONAL ADJUSTMENT. THE ALGORITHMS WILL BE USED  
TO SOLVE A HYPOTHETICAL, ARTILLERY SURVEY PROBLEM.  
THE NEW SYSTEM IS CALLED THE LONG RANGE  
POSITION DETERMINING SYSTEM (LRPDS), AND IT  
IS BEING INVESTIGATED FOR ITS APPLICATION IN THE  
ARTILLERY PROBLEM. THE NEW ALGORITHMS ARE  
CONSIDERED TO PROVIDE A MAJOR COMPUTATIONAL BREAK-  
THROUGH FOR EFFICIENTLY HANDLING VERY LARGE, SECOND  
ORDER REGRESSION SCHEMES, AND THEY ALLOW THE  
ENGINEER TO EXTEND HIS HYPOTHESES ASSOCIATED WITH  
PROBLEMS OF SYSTEMATIC ERRORS. IT IS THE PURPOSE OF  
THIS PAPER TO DEVELOP A SECOND ORDER REGRESSION  
SCHEME FOR LRPDS AND TO SHOW THAT IT IS  
COMPUTATIONALLY FEASIBLE TO INVERT THIS LARGE SYSTEM  
OF EQUATIONS FOR ITS SOLUTION AND ERROR PROPAGATION.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-713 928 19/5 15/7 5/9  
GEORGE WASHINGTON UNIV ALEXANDRIA VA HUMAN RESOURCES  
RESEARCH OFFICE

CRITICAL COMBAT PERFORMANCES, KNOWLEDGES, AND  
SKILLS REQUIRED OF THE INFANTRY RIFLE SQUAD  
LEADER: USE OF INDIRECT SUPPORTING  
FIRES. (U)

DESCRIPTIVE NOTE: RESEARCH BY-PRODUCT,  
MAR 69 65P BROWN, FRANK L. ;  
CONTRACT: DA-44-188-ARO-2; DAHC19-69-C-0018  
PROJ: DA-2-J-024710-A-712  
TASK: 2-J-024701-A-71201

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TARGET ACQUISITION, ARTILLERY), (\*COMBAT  
SURVEILLANCE, ARMY TRAINING), (\*INFANTRY, LEADERSHIP),  
TARGET DISCRIMINATION, BINOCULARS, FIRE CONTROL SYSTEMS,  
WARFARE, PERFORMANCE (HUMAN), INSTRUCTION MANUALS (U)  
IDENTIFIERS: \*INFANTRY RIFLE SQUAD LEADERS (U)

THE PAPER COVERS THE KNOWLEDGES, SKILLS, AND  
PERFORMANCES REQUIRED OF THE INFANTRY RIFLE SQUAD  
LEADER TO DETECT, LOCATE, AND IDENTIFY TARGETS  
SUITABLE FOR ENGAGEMENT WITH MORTAR AND ARTILLERY  
FIRES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-714 913 1975 5/9  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

COURSE IN FIRING MEDIUM-CALIBER  
ANTIAIRCRAFT ARTILLERY OF THE RED ARMY. (U)

JUN 70 SEP  
REPT. NO. FSTC-HT-23-315-70

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. KURS STRELB  
SREDNEKALIBERNOI ZENITNOI ARTILLERII KRASNOI  
ARMII, MOSCOW, 1944.

DESCRIPTORS: (•ARTILLERY FIRE, INSTRUCTION MANUALS),  
(•ANTIAIRCRAFT GUNNERY, MILITARY TRAINING), GUNNERY  
TRAINERS, MILITARY PERSONNEL, FIRE CONTROL SYSTEMS,  
AERIAL TARGETS, IDENTIFICATION SYSTEMS, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE COURSE IN MARKSMANSHIP FOR MEDIUM CALIBER  
ANTI-AIRCRAFT ARTILLERY, 1944, INCLUDES A LISTING OF  
THE COMBAT MARKSMANSHIP EXERCISES WHICH HAVE BEEN  
SELECTED AS APPLICABLE TO THOSE MISSIONS CARRIED OUT  
BY MEDIUM CALIBER ARTILLERY IN A COMBAT SITUATION.  
COMBAT MARKSMANSHIP EXERCISES ARE DIVIDED INTO GUN,  
BATTERY AND BATTALION; AND ARE CONDUCTED IN  
ACCORDANCE WITH THE LIST OF RECORD FIRING IN A  
SEQUENCE WHICH INSURES TRANSITION FROM MORE SIMPLE TO  
MORE COMPLEX FIRING SITUATIONS. IN MASTERING THE  
'COURSE IN MARKSMANSHIP,' MARKSMANSHIP EXERCISES  
MUST BE CONDUCTED IN THE FIRST (PREPARATORY),  
SECOND AND THIRD MISSIONS. THE FIRING IS CONDUCTED  
AT SLEEVE TARGETS TOWED BY AIRCRAFT. IN THOSE CASES  
IN WHICH AN AIRCRAFT WITH SLEEVE TARGET CANNOT BY  
USED PERMISSION IS GRANTED TO CONDUCT FIRING AT  
AIRCRAFT FLYING AT REDUCED ALTITUDES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-714 917 1971 1973  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER WASHINGTON D  
C

TANK ARMAMENT INSTRUCTION GUIDE (CHAPTER  
V); (U)

SEP 70 26P ROGOV, IVAN VASILEVICH ;  
BOLSHEV, BORIS NIKOLAEVICH ;  
REPT. NO. FSTC-HT-23-524-70

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. METODIKA  
IZUCHENIYA MATERIALNOI CHASTI TANKOVOGO  
VOORUZHENIYA. CH. 5. METODIKA IZUCHENIYA  
BOEPRIPASOV, MOSCOW, 1968 P83-104.

DESCRIPTORS: (\*ARTILLERY, INSTRUCTION MANUALS),  
(\*TANKS (COMBAT VEHICLES), WEAPON SYSTEMS), PROJECTILES,  
PROJECTILE FUZES, TRAINING AMMUNITION, SMALL ARMS  
AMMUNITION, AMMUNITION PROPELLANTS, CONFIGURATION,  
USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE REPORT OUTLINES MATERIAL AND PRESCRIBES A  
SEQUENCE TO BE FOLLOWED BY AN INSTRUCTOR IN TEACHING  
STUDENTS THE BASIC FUNDAMENTALS OF THE AMMUNITION  
EMPLOYED IN TANK WEAPONRY. SPECIFICALLY DISCUSSED  
ARE VARIOUS TYPES OF ARTILLERY PROJECTILES WITH THE  
POWDER CHARGES, FUZES AND DETONATORS GENERALLY  
EMPLOYED. THE CONSTRUCTION AND BASIC PRINCIPLES OF  
OPERATION OF EACH TYPE OF PROJECTILE AND FUZE ARE  
SUMMARIZED. SECTIONAL DRAWINGS OF TYPICAL  
PROJECTILES AND FUZES ARE INCLUDED AND STANDARD SHELL  
MARKINGS AND DESIGNATORS ARE EXPLAINED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-715 393 13/13 19/4  
ARMY WEAPONS COMMAND ROCK ISLAND ILL RESEARCH AND  
ENGINEERING DIRECTORATE

INVESTIGATION OF A BIOLOGICALLY CONCEIVED  
STAKE FOR USE IN NONCOHESIVE SOIL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 70 21P MUFFLEY, HARRY C. I  
REPT. NO. AMSWE-RE-70-101  
PROJ: DA-1-T-061102-B-33-A

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ANCHORS(STRUCTURAL), DESIGN),  
(\*ARTILLERY, ANCHORS(STRUCTURAL)), FEASIBILITY STUDIES,  
SOIL MECHANICS, FORCE(MECHANICS), CONFIGURATION, TEST  
METHODS, NUMERICAL ANALYSIS (U)

TECHNIQUES FOR ANCHORING LIGHTWEIGHT ARTILLERY WERE  
INVESTIGATED FROM A BIOMECHANIC APPROACH. THE  
FEASIBILITY OF A CONCEPT STAKE WAS ESTABLISHED BY  
COMPARISON OF THE FORCES INVOLVED IN THE FIRING OF  
LIGHTWEIGHT ARTILLERY WITH THE THEORETICAL HOLDING  
CAPACITY OF THE STAKE ESTABLISHED FROM SOIL MECHANICS  
COMPUTATION. A PROTOTYPE STAKE WAS DRIVEN IN SAND  
OF DIFFERENT DENSITIES DEMONSTRATING THE OPERATIONAL  
CAPABILITY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-715 559 19/5 5/10  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

THE DECISION MAKING PROCESS INVOLVED IN  
FORMULATING THE S-3'S FIRE ORDER. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
DEC 70 65P OKRINA, LOREN J. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, DECISION MAKING),  
(\*OFFICER PERSONNEL, FIRE CONTROL SYSTEMS), MARINE  
CORPS, ARMY OPERATIONS, MISSION PROFILES,  
QUESTIONNAIRES, TIME, FACTOR ANALYSIS, STATISTICAL  
DISTRIBUTIONS, MATRICES(MATHEMATICS), COMPUTER  
PROGRAMMING, MILITARY TRAINING, THESES (U)

THE DECISION MAKING PROCESS INVOLVED IN FORMULATING  
THE S-3'S FIRE ORDER OF A DIRECT SUPPORT ARTILLERY  
BATTALION WAS STUDIED USING PSYCHOMETRIC SCALING  
PROCEDURES. TWO MISSIONS WERE CONSIDERED, AN AREA  
MISSION AND A PRECISION MISSION. FOR EACH MISSION  
A LIST OF FACTORS USUALLY CONSIDERED WHEN FORMULATING  
THE ORDER WAS DRAWN UP IN QUESTIONNAIRE FORM. EACH  
LIST WAS RATED AS TO THE RELATIVE IMPORTANCE OF  
FACTORS FOR BEING INCLUDED IN THE DECISION MAKING  
PROCESS AND FOR THE RELATIVE AMOUNT OF TIME EACH  
DEMANDED IN THE DECISION MAKING PROCESS. ALL LISTS  
WERE SCALED USING THE METHOD OF SUCCESSIVE-  
CATEGORIES. AS A CHECK, ONE LIST WAS SCALED USING  
THE METHOD OF PARTIAL-RANK ORDER. THE RESULTING  
SCALES PROVIDE A MEANS FOR COMPARING THE IMPORTANCE  
AND TIME DEMANDS OF MANY CRITICAL FACTORS ACCORDING  
TO MISSION TYPE AND ACCORDING TO THE AMOUNT OF FORMAL  
TRAINING RECEIVED BY QUESTIONNAIRE RESPONDENTS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-716 993 4/2 19/4  
ATMOSPHERIC SCIENCES LAB WHITE SANDS MISSILE RANGE N  
MEX

IMPACT DEFLECTION ESTIMATORS FROM SINGLE  
WIND MEASUREMENTS. (U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT TECHNICAL  
REPT.,

SEP 70 46P MILLER, WALTER B. IBLANCO,  
ABEL J. ITRAYLOR, L. E. I  
PROJ: DA-1-T-061102-B-53-A  
TASK: 1-T-061102-B-53-A-17  
MONITOR: ECOM 5328

UNCLASSIFIED REPORT

DESCRIPTORS: (WIND, UPPER ATMOSPHERE), (ARTILLERY  
ROCKETS, IMPACT PREDICTION), ROCKET TRAJECTORIES,  
CORRECTIONS, SIMULATION, DEFLECTION, STATISTICAL  
ANALYSIS (U)  
IDENTIFIERS: PROFILES, WIND, HONEST JOHN (U)

A STATISTICAL EXAMINATION IS MADE OF THE POWER LAW  
FORMULA CURRENTLY IN USE TO EXTRAPOLATE A WIND  
PROFILE FROM A SINGLE MEASUREMENT NEAR THE SURFACE TO  
THE BURNOUT ALTITUDE OF THE M50 HONEST JOHN  
ROCKET (400 MIL Q.E.) FOR THE PURPOSE OF  
OBTAINING LOW-LEVEL WIND CORRECTIONS TO THE LAUNCHER  
SETTINGS. TWO NEW STATISTICAL WIND DISPLACEMENT  
ESTIMATORS ARE DEVELOPED WHICH PROVIDE FROM 40% TO  
60% REDUCTION IN DISPERSION DUE TO LOW-LEVEL WIND  
BASED ON SIMULATED ROCKET TRAJECTORIES UTILIZING  
ACTUAL WIND PROFILES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-717 316 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

SELF-PROPELLED ARTILLERY. (U)

DESCRIPTIVE NOTE: REPT. ON MATERIEL TEST PROCEDURE.  
DEC 65 17P  
REPT. NO. MTP-3-2-506

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES ORDNANCE PROOF MANUAL  
30-65.

DESCRIPTORS: (•SELF PROPELLED GUNS, TEST METHODS),  
ARTILLERY, GUN MOUNTS, FIRE CONTROL SYSTEMS, RECOIL  
MECHANISMS (U)  
IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES (U)

THE OBJECTIVE OF THE TEST IS TO DETERMINE THE  
ABILITY OF THE ARMAMENT PORTION OF SELF-PROPELLED  
ARTILLERY TO FUNCTION PROPERLY. (AUTHOR) (U)



UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-717 379 19/6 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

HOP FIRING.

(U)

DESCRIPTIVE NOTE: REPT. ON MATERIEL TEST PROCEDURE.

JUN 66 12P

REPT. NO. MTP-3-2-816

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES ORDNANCE PROOF  
MANUALS 70-25 AND 60-241.

DESCRIPTORS: (\*GUN MOUNTS, TEST METHODS), (\*ARTILLERY  
FIRE, GUN MOUNTS), SHOCK(MECHANICS), FIRING  
TESTS(ORDNANCE), MOTION

(U)

IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES, GUN  
CARRIAGES

(U)

THE PROCEDURE DESCRIBES THE FOLLOWING TECHNIQUES  
FOR CONDUCTING HOP TESTS OF SELF-PROPELLED AND TOWED  
WEAPON CARRIAGES AND THE RELATIVE MOTION BETWEEN  
PARTS OF AN ASSEMBLY; HOP CARD TECHNIQUES;  
FINAL DISPLACEMENT MEASUREMENTS; AND  
PHOTOGRAPHIC MEASUREMENT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-717 380 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

RANGE FIRING OF CLOSE SUPPORT ROCKETS AND  
MISSILES. (U)

DESCRIPTIVE NOTE: REPT ON MATERIEL TEST PROCEDURE.  
JAN 67 8P  
REPT. NO. MTP-3-2-823

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, TEST METHODS), (\*ARTILLERY  
FIRE, CLOSE SUPPORT), FIRING TESTS(ORDNANCE), FIN  
STABILIZED AMMUNITION, SPIN STABILIZED AMMUNITION,  
RANGE(DISTANCE) (U)  
IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES, RANGE  
FIRING (U)

THE OBJECTIVE OF THE PROCEDURES IS TO PROVIDE A  
MEANS OF EVALUATING THE TECHNICAL PERFORMANCE AND  
CHARACTERISTICS OF CLOSE SUPPORT ROCKETS AND MISSILES  
THROUGH RANGE FIRINGS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-717 381 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

BALLISTIC DATA FOR BOOSTED PROJECTILES. (U)

DESCRIPTIVE NOTE: REPT. ON MATERIEL TEST PROCEDURE.  
DEC 66 12P  
REPT. NO. MTP-3-2-821

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, TEST METHODS), (\*PROJECTILE  
TRAJECTORIES, ARTILLERY), BALLISTICS, MEASUREMENT,  
MEASURING INSTRUMENTS, PHOTOGRAPHY (U)  
IDENTIFIERS: ARTILLERY MISSILES, COMMON ENGINEERING (U)  
TEST PROCEDURES

THE OBJECTIVE OF THE PROCEDURES IS TO PROVIDE A  
MEANS OF OBTAINING TRAJECTORY DATA DURING THE BOOSTED  
PORTION OF FLIGHT, TO DETERMINE THE SPACE COORDINATES  
AND TIME OF BURNOUT, AND TO DETERMINE THE INITIAL  
VELOCITY COMPONENTS OF THE BALLISTIC (FREE  
FLIGHT) TRAJECTORY OF BOOSTED PROJECTILES. (U)  
(AUTHOR)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-718 271 1975 15/7  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A COMPUTER SIMULATION FOR THE EVALUATION OF  
ARTILLERY DIRECT FIRE SUPPORT SYSTEMS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
SEP 70 228P MARTIN, LOWELL LEE ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, MATHEMATICAL MODELS),  
(\*ARMY OPERATIONS, CLOSE SUPPORT), TARGET ACQUISITION,  
KILL PROBABILITIES, COMPUTER PROGRAMMING, DATA  
PROCESSING, COMPUTER PROGRAMS, SIMULATION, THESES (U)  
IDENTIFIERS: INTERDICTION, FORTRAN, FORTRAN 4  
PROGRAMMING LANGUAGE, COMPUTERIZED SIMULATION (U)

A PROBABILISTIC EVENT STORE COMPUTER SIMULATION OF  
THE ARTILLERY DIRECT FIRE SUPPORT SYSTEM AT BRIGADE  
LEVEL IS PRESENTED. THE PURPOSE OF THE MODEL IS TO  
SERVE AS A TOOL IN EVALUATING CHANGES IN ARTILLERY  
FIRE SUPPORT SYSTEM EFFECTIVENESS AS SYSTEM AND  
BATTLEFIELD PARAMETERS ARE VARIED. PARAMETERS WHICH  
ARE VARIABLE IN THE MODEL PERTAIN TO THE GEOMETRIC  
CONFIGURATION OF THE BATTLEFIELD, ARTILLERY WEAPON  
EMPLOYMENT CONFIGURATIONS, ARTILLERY WEAPON BALLISTIC  
PARAMETERS, WEAPON LETHALITY, TARGET CONFIGURATION  
AND VULNERABILITY, ARTILLERY SYSTEM TIME PARAMETERS,  
WEAPON POSITION ACCURACY PARAMETERS, AND TARGET  
LOCATION ACCURACY PARAMETERS. A DESCRIPTION OF THE  
MODEL AND A FORTRAN IV PROGRAM LISTING ARE  
PROVIDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-718 674 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ACCURACY AND PRECISION. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.  
DEC 67 19P  
REPT. NO. MTP-3-3-506

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, FIRING TESTS(ORDNANCE)),  
(\*GUNS, FIRING TESTS(ORDNANCE)), (\*ARTILLERY, TEST  
METHODS), ACCURACY, EFFECTIVENESS (U)  
IDENTIFIERS: \*COMMON SERVICE TEST PROCEDURES,  
PRECISION (U)

THE OBJECTIVE OF THE DOCUMENT IS TO SET FORTH THE  
SERVICE TEST METHODOLOGY, TESTING TECHNIQUES AND  
MINIMUM TEST REQUIREMENTS NECESSARY FOR DETERMINING  
THE ACCURACY AND PRECISION OF A TUBE ARTILLERY WEAPON  
(HOWITZER OR GUN, TOWED OR SELF-PROPELLED) DURING  
DIRECT AND INDIRECT FIRING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-718 700 19/1 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

IGNITION SYSTEMS FOR ARTILLERY  
AMMUNITION.

(U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

MAR 66 25P

REPT. NO. MTP-4-2-701

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES ORDNANCE PROOF MANUAL  
10-60.

DESCRIPTORS: (\*IGNITERS, TEST METHODS), ARTILLERY,  
PROJECTILES, FIRING TESTS(ORDNANCE), VISUAL INSPECTION,  
PROPELLING CHARGES (U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES (U)

THE OBJECTIVE OF THIS PROCEDURE IS TO INSTRUCT  
PERSONNEL IN THE TECHNIQUE OF CONDUCTING AND  
EVALUATING TESTS ON IGNITION SYSTEMS FOR FIXED AND  
SEPARATE LOADING AMMUNITION FOR GUNS, HOWITZERS,  
RECOILLESS RIFLES AND MORTARS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-718 711 19/1 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

FUZES. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

DEC 70 15P

REPT. NO. MTP-4-2-055

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES INTERIM PAMPHLET 10-40.

DESCRIPTORS: (\*FUZES(ORDNANCE), TEST METHODS),  
ARTILLERY, RECOILLESS GUNS, MORTARS (U)

IDENTIFIERS: \*COMMODITY ENGINEERING TEST  
PROCEDURES (U)

THE OBJECTIVE OF THIS MATERIEL TEST PROCEDURE  
IS TO PROVIDE TESTING AND EVALUATION PROCEDURES FOR  
DETERMINING WHETHER ARTILLERY, MORTAR, AND RECOILLESS  
RIFLE AMMUNITION FUZES MEET ARMY REQUIREMENTS.

(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-718 728 1976 1973 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ROAD TESTS OF MOBILE WEAPONS.

(U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

DEC 65 BP

REPT. NO. MTP-2-2-511

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES ORDNANCE PROOF MANUAL  
60-140.

DESCRIPTORS: (\*ARTILLERY, ROAD TESTS), (\*ROAD TESTS,  
TEST METHODS), (\*ARMORED VEHICLES, ARTILLERY), VEHICLE  
CHASSIS COMPONENTS, GUN MOUNTS, ROCKET LAUNCHERS,  
VEHICLE BRAKES, AMPHIBIOUS OPERATIONS,  
SHOCK(MECHANICS)

(U)

IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES

(U)

THE OBJECTIVE OF THE PROCEDURE IS TO PERFORM ROAD  
TESTS ON MOBILE WEAPONS, EITHER TOWED OR MOUNTED ON  
VEHICLES, TO EVALUATE THEIR ABILITY TO BE TOWED OR  
MOUNTED WITHOUT CAUSING WEAPON OR VEHICLE DAMAGE.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-718 853 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ARTILLERY CANNON. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.  
DEC 70 15P  
REPT. NO. MTP-3-2-509

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GUNS, TEST METHODS), (\*ARTILLERY, FIRING  
TESTS(ORDNANCE)), (\*HOWITZERS, TEST METHODS), RECOIL  
MECHANISMS, ASSEMBLY, TEST METHODS, CYCLIC RATE,  
FAILURE, ENVIRONMENTAL TESTS, LIFE EXPECTANCY (U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES (U)

TEST PROCEDURES ARE IDENTIFIED FOR FIRING AND  
ENVIRONMENTAL TESTS OF THE CANNON PORTION OF GUNS AND  
HOWITZERS IN THE 40MM-280 MM SIZE RANGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-719 089 19/1 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

PROJECTILE, ARMOR-DEFEATING. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
DEC 70 13P

REPT. NO. MTP-4-3-107

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (•ANTIARMOR AMMUNITION, TEST METHODS),  
FIRING TESTS(ORDNANCE), ARTILLERY, ANTIPERSONNEL  
AMMUNITION, SMOKE PROJECTILES, CHEMICAL PROJECTILES,  
SAFETY, RELIABILITY, MAINTAINABILITY, KILL  
PROBABILITIES, TRACKING, BORESIGHTING (U)

PROCEDURES ARE DEFINED FOR EVALUATING ARMOR  
DEFEATING ARTILLERY CLASS AMMUNITION USED IN DIRECT  
FIRE WEAPONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-721 605 19/5 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

DIRECTION FINDING EQUIPMENT, GYROSCOPE. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

APR 69 18P  
REPT. NO. MTP-6-3-330

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIRECTION FINDING, GYROSCOPES),  
(\*ARTILLERY FIRE, DIRECTION FINDING), (\*GUN DIRECTORS,  
TEST METHODS), DETECTION, ELECTROMAGNETIC COMPATIBILITY, (U)  
SAFETY, VALUE ENGINEERING (U)  
IDENTIFIERS: COMMODITY SERVICE TEST PROCEDURES (U)

THE REPORT DESCRIBES THE METHODS, TECHNIQUES, AND  
TEST REQUIREMENTS NECESSARY FOR THE DETERMINATION OF  
THE DEGREE TO WHICH GYROSCOPIC DIRECTION FINDING  
EQUIPMENT IS SUITABLE FOR ARMY USE. SUCH  
EQUIPMENT CAN PROVIDE ARTILLERY UNITS WITH A RAPID,  
RELIABLE MEANS FOR ESTABLISHING DIRECTIONAL CONTROL  
IN TACTICAL SITUATIONS, THEREBY EXPEDITING SURVEY  
OPERATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-722 723 19/1 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ABNORMAL-TEMPERATURE TESTING OF ARTILLERY,  
MORTAR, AND RECOILLESS RIFLE PROPELLANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

FEB 71 10P  
REPT. NO. MTP-4-2-608  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AMMUNITION PROPELLANTS, TEST METHODS),  
INTERIOR BALLISTICS, ARTILLERY, MORTAR AMMUNITION,  
RECOILLESS GUNS, TEMPERATURE, FIRING TESTS(ORDNANCE) (U)  
IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES (U)

THE MATERIEL TEST PROCEDURE DESCRIBES  
PROCEDURES FOR TESTING ARTILLERY, MORTAR, AND  
RECOILLESS RIFLE PROPELLANTS TO DETERMINE THE EFFECTS  
OF ABNORMAL PROPELLANT TEMPERATURES ON WEAPON AND  
AMMUNITION PERFORMANCE. THE SELECTION, LOADING, AND  
TEMPERATURE CONDITIONING OF THE AMMUNITION AND THE  
SEQUENCE OF FIRING ARE DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-723 025 1977 16/4 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CLOSE SUPPORT ROCKETS AND MISSILES. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

MAR 71 18P

REPT. NO. MTP-4-2-015

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES INTERIM PAMPHLET 40-10.

DESCRIPTORS: (\*ANTITANK AMMUNITION, TEST METHODS),  
(\*ARTILLERY ROCKETS, TEST METHODS), (\*GUIDED MISSILES,  
TEST METHODS), SURFACE TO SURFACE MISSILES, SURFACE TO  
AIR MISSILES, RELIABILITY, MAINTENANCE, SAFETY,  
HANDLING, NOISE, CLOSE SUPPORT, GASES, TOXICITY,  
FUZES(ORDNANCE) (U)

IDENTIFIERS: COMMODITY ENGINEERING TEST  
PROCEDURES (U)

THE MATERIEL TEST PROCEDURE PROVIDES  
ENGINEERING TEST GUIDANCE FOR CLOSE SUPPORT ROCKETS  
AND MISSILES, SUCH AS: ARTILLERY ROCKETS UP TO  
APPROXIMATELY 6 INCHES IN DIAMETER AND SHOULDER-HELD,  
BAZOOKA-TYPE, ANTITANK ROCKETS; AND ANTITANK GUIDED  
MISSILES OR SHOULDER-FIRED, SURFACE-TO-AIR GUIDED  
MISSILES. IT DOES NOT INCLUDE PROCEDURES FOR  
TESTING LAUNCHERS, GUIDANCE SYSTEMS, AND SHAPED  
CHARGE WARHEADS. THE PROCEDURE DESCRIBES  
FUNCTIONING TESTS FOR COMPONENTS (WARHEAD, FUZE,  
AND MOTOR) AND OUTLINES PERFORMANCE TESTS FOR THE  
COMPLETE ROUND INCLUDING ENVIRONMENTAL AND ROUGH  
HANDLING EFFECTS TO BE DETERMINED. OTHER POINTS  
COVERED ARE NOISE AND BLAST, TOXIC GAS, VULNERABILITY  
TO BULLETS, RELIABILITY, MAINTENANCE EVALUATION, AND  
HUMAN FACTORS EVALUATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-725 539 1975 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CHRONOGRAPH, FIELD ARTILLERY. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.

JUL 68 21P

REPT. NO. MTP-6-3-034

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CHRONOMETERS, TEST METHODS), (\*FIRE  
CONTROL SYSTEMS, CALIBRATION), ARTILLERY FIRE, ACCURACY,  
MATHEMATICAL PREDICTION, TERMINAL BALLISTICS,  
TECHNICIANS (U)

IDENTIFIERS: MUZZLE VELOCITY, \*COMMODITY SERVICE TEST  
PROCEDURES (U)

THE OBJECTIVES OF THE MTP ARE TO DETERMINE THE  
SUITABILITY OF THE TEST ITEM FOR CALIBRATION OF  
ARTILLERY WEAPONS BY DETERMINATION OF MUZZLE VELOCITY  
TO AN ACCEPTABLE DEGREE OF ACCURACY AND TO DETERMINE  
COMPLIANCE OF THE TEST ITEM WITH THE ESSENTIAL  
CHARACTERISTICS OF THE QUALITATIVE MATERIEL  
REQUIREMENTS OR SMALL DEVELOPMENT REQUIREMENTS AND  
THE TECHNICAL CHARACTERISTICS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-726 002 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

HOWITZER/GUN, TOWED. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.  
DEC 67 17P  
REPT. NO. MTP-3-3-021

UNCLASSIFIED REPORT

DESCRIPTORS: (•HOWITZERS, TEST METHODS), ACCURACY, FIRE  
CONTROL SYSTEMS, STABILITY, MOBILITY, SAFETY, (U)  
MAINTENANCE, GUNS (U)  
IDENTIFIERS: COMMODITY SERVICE TEST PROCEDURES (U)

THE MATERIEL TEST PROCEDURE DESCRIBES TESTS  
CONDUCTED ON TOWED HOWITZERS OR GUNS. (U)  
(AUTHOR)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-726 959 19/1  
EDUTRONICS ANALYSIS INC SCOTCH PLAINS N J

DYNAMIC ANALYSIS OF THE GRAZE MODULE OF THE  
HI-PERFORMANCE POINT DETONATING FUZE. (U)

DESCRIPTIVE NOTE: REPT. NO. 1 (FINAL) SEP-DEC 70,  
JUL 71 104P SHELLEY, JOSEPH F. ;  
CONTRACT: DAAA21-71-C-0066

UNCLASSIFIED REPORT

DESCRIPTORS: (\*POINT DETONATING FUZES, TERMINAL  
BALLISTICS), NUMERICAL ANALYSIS, EQUATIONS OF MOTION,  
DETENTS, ACCELERATION, EQUILIBRIUM (PHYSIOLOGY),  
KINEMATICS, HOWITZERS (U)  
IDENTIFIERS: M-1 PROJECTILES (105-MM) (U)

THE EQUATIONS OF MOTION ARE PRESENTED FOR THE  
INERTIA WEIGHT, FIRING PIN AND DETENT BALLS OF THE  
GRAZE MODULE OF THE HIGH PERFORMANCE POINT DETONATING  
FUZE. THESE EQUATIONS ARE ALL IN TERMS OF THE  
GENERALIZED GRAZE FORCING FUNCTIONS. THE EQUATIONS  
ARE ALSO PRESENTED FOR THE CASE WHERE THE GRAZE  
FORCING FUNCTION-TIME PLOT IS ASSUMED TO HAVE A  
TRIANGULAR SHAPE. THE CRITERIA ARE ESTABLISHED FOR  
THE MINIMUM VALUES OF FORCING FUNCTIONS REQUIRED TO  
ACTIVATE THE GRAZE MODULE. ALL DIFFERENTIAL AND  
CONSTRAINT EQUATIONS ARE PRESENTED IN NUMERICAL FORM,  
BUT NO NUMERICAL RESULTS ARE OBTAINED. THE  
NUMERICAL CONSTANTS USED ARE FOR THE 105MM HOWITZER  
SHELL, M1. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-728 106 14/2 19/4 19/6  
HARRY DIAMOND LABS WASHINGTON D C

CORRELATION BETWEEN MEASURED AND CALCULATED  
DECELERATIONS FOR A HONEYCOMB ENERGY  
ABSORPTION SYSTEM,

(U)

JUL 71 25P LANIGAN, D. ;  
REPT. NO. HDL-TM-71-7  
PROJ: DA-1-B-262301-A-301, HDL-IMS85

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HONEYCOMB CORES, TERMINAL BALLISTICS),  
(\*PROJECTILES, TARGETS), (\*ARTILLERY, SIMULATORS),  
SANDWICH CONSTRUCTION, ACCELEROMETERS, PIEZOELECTRIC  
GAGES, MEASUREMENT, IMPACT, KINETIC ENERGY, COMPRESSIVE  
PROPERTIES, TEST METHODS (U)  
IDENTIFIERS: ENERGY ABSORPTION (U)

THE CORRELATION BETWEEN MEASURED AND CALCULATED  
DECELERATION OF A PROJECTILE IMPACTING ALUMINUM  
HONEYCOMB WITHIN A ROTATING TUBE WAS INVESTIGATED.  
A PIEZOELECTRIC ACCELEROMETER MOUNTED ON THE  
PROJECTILE MEASURED DECELERATION DIRECTLY. THE  
DECELERATION WAS ALSO CALCULATED FROM VALUES OF  
PROJECTILE IMPACT VELOCITY, PROJECTILE MASS, TARGET  
MASS, AND TARGET DIMENSIONAL CHANGE. IT WAS FOUND  
THAT WHEN THE HONEYCOMB WAS LOCATED NO MORE THAN AN  
INCH FROM THE ENTRANCE TO THE ROTATING TUBE, THE  
MAXIMUM PERCENTAGE DIFFERENCE BETWEEN THE MEASURED  
AND CALCULATED DECELERATION WAS 9.4 PERCENT. THE  
MEAN PERCENTAGE DIFFERENCE WAS 0.7 PERCENT AND THE  
STANDARD DEVIATION WAS 4.5 PERCENT. THE MARKED  
DISAGREEMENT BETWEEN MEASURED AND CALCULATED  
DECELERATIONS WHEN THE TARGET WAS PLACED FURTHER THAN  
ONE INCH FROM THE TUBE ENTRANCE IS ATTRIBUTED TO THE  
FACT THAT THE AIR TRAPPED BETWEEN THE PROJECTILE AND  
THE TARGET SLOWED THE PROJECTILE PRIOR TO IMPACT, SO  
THAT THE PROJECTILE VELOCITY USED IN THE CALCULATION  
WAS TOO HIGH. NEITHER PRECRUSHING THE HONEYCOMB,  
NOR CHANGING THE ROTATIONAL SPEED OF THE TUBE  
AFFECTED THE OBSERVED AGREEMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-729 089 1975  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

TYPES OF FIRE (VIDY OGNYA). (U)

71 11P  
REPT. NO. FSTC-HT-23-133-71

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF UNIDENTIFIED RUSSIAN  
LANGUAGE REPORT.

DESCRIPTORS: (•ARTILLERY FIRE, REVIEWS), TACTICAL (U)  
WARFARE, USSR (U)  
IDENTIFIERS: TRANSLATIONS (U)

TYPES OF ARTILLERY FIRE ACCORDING TO METHOD,  
DIRECTION AND INTENSITY ARE DISCUSSED. (U)  
(AUTHOR)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-729 813 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

WEAPON, SELF-PROPELLED, FULL TRACKED. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.  
FEB 68 31P  
REPT. NO. MTP-3-3-022

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SELF-PROPELLED GUNS, TEST METHODS),  
MOBILITY, STABILITY, MAINTENANCE, SAFETY, AMPHIBIOUS  
OPERATIONS, FIRE CONTROL SYSTEMS, MANEUVERABILITY (U)  
IDENTIFIERS: COMMODITY SERVICE TEST PROCEDURES (U)

THE OBJECTIVE OF THE PROCEDURE IS TO DETERMINE THE  
OVERALL SUITABILITY OF SELF-PROPELLED WEAPONS FOR  
ARTILLERY USE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-731 792 8/2 14/5 15/7  
ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

UTILIZATION OF A PHOTOGRAMMETRIC FACILITY  
(PF) IN HUMAN ENGINEERING LABORATORIES  
BATTALION ARTILLERY TEST NUMBER TWO  
(HELBAT II).

(U)

DESCRIPTIVE NOTE: SPECIAL REPT.,  
AUG 71 30P SCHNECK, RICHARD E. ;  
REPT. NO. ETL-SR-71-2  
PROJ: DA-4-A-662706-D-853

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SITE SELECTION, \*PHOTOGRAMMETRY),  
(\*ARTILLERY UNITS, SITE SELECTION), MAPPING, AERIAL  
PHOTOGRAPHY, STEREOSCOPIC MAP PLOTTERS, SURFACE TARGETS,  
POSITION FINDING, TACTICAL WARFARE (U)

THE REPORT COVERS TESTS OF THE CAPABILITY OF PHOTOGRAMMETRIC EQUIPMENT AND TECHNIQUES TO PROVIDE POSITIONAL DATA REQUIRED BY FIELD ARTILLERY OPERATIONS. COMMERCIAL GRADE PHOTOGRAMMETRIC EQUIPMENT WAS ASSEMBLED AND INSTALLED BY THE U.S. ARMY ENGINEER TOPOGRAPHIC LABORATORIES AND WAS OPERATED BY ENLISTED PERSONNEL FROM THE 30TH ENGINEER BATTALION (BT). THE TEST WAS DESIGNED AND IMPLEMENTED BY THE HUMAN ENGINEERING LABORATORIES IN CONCERT WITH AN ORGANIZATIONAL READINESS TRAINING TEST INVOLVING THE FIRST ARMORED DIVISION ARTILLERY AT FORT HOOD, TEXAS, DURING FEBRUARY 1971. RESULTS OF THE TOTAL TESTING EFFORT, HUMAN ENGINEERING LABORATORIES BATTALION ARTILLERY TEST NUMBER TWO (HELBAT II), ARE REPORTED IN A SEPARATE DOCUMENT BY THE HUMAN ENGINEERING LABORATORIES, ABERDEEN, MARYLAND. THE HIGH VISIBILITY GIVEN THE CONCEPT, EQUIPMENT, AND OPERATIONS OF THE PHOTOGRAMMETRIC FACILITY (PF) DURING HELBAT II RESULTED IN SUBJECTIVE EVALUATION AT ALL LEVELS OF COMMAND WHICH WAS SIGNIFICANT IN THE GENERAL ACCEPTANCE OF THE PF'S POTENTIAL FOR MILITARY SUPPORT. SUFFICIENT DATA FOR NUMERICAL ANALYSIS WERE GATHERED ONLY FOR FORWARD OBSERVER AND TARGET POSITIONING EXERCISES, BUT OTHER POTENTIAL APPLICATIONS WERE EXAMINED. TEST DATA INDICATE A 30% IMPROVEMENT IN THE CAPABILITY TO LOCATE FORWARD OBSERVERS AS COMPARED WITH THE DOCTRINAL MAP-SPOT TECHNIQUES, BUT A DEGRADATION IN THE ABILITY TO POSITION TARGETS WAS NOTED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-733 512 15/7 19/5 12/2  
VECTOR RESEARCH INC ANN ARBOR MICH

A STUDY ON THE FEASIBILITY OF ANALYTICALLY  
MODELING LEGAL MIX/REDLEG PROCESSES. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAR 71 143P BONDER, SETH ;  
REPT. NO. VRI-3-FR-71-1  
CONTRACT: DAAG25-70-C-0524

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, MATHEMATICAL MODELS),  
(\*ARTILLERY FIRE, MISSION PROFILES), FIRE CONTROL  
SYSTEMS, THREAT EVALUATION, DEPLOYMENT, TARGET  
ACQUISITION, SAMPLING, STOCHASTIC PROCESSES, MONTE CARLO  
METHOD, QUEUEING THEORY, PROBABILITY DENSITY FUNCTIONS,  
PROGRAMMING (COMPUTERS), STATISTICAL PROCESSES (U)  
IDENTIFIERS: ALLOCATION MODELS, BIRTH AND DEATH  
PROCESSES, COMPUTERIZED SIMULATION (U)

THE INITIAL OBJECTIVE OF THE STUDY WAS TO EXAMINE  
THE FEASIBILITY OF ALTERNATIVE APPROACHES TO  
ANALYTICALLY MODELING COMPONENT PARTS OF THE PROCESS  
CONSIDERED IN LEGAL MIX STUDIES. BASED ON  
INFORMATION DEVELOPED IN THE EARLY PART OF THE STUDY,  
THE PROJECT WAS REDIRECTED PRINCIPALLY TO EXAMINE THE  
FEASIBILITY OF PARAMETRIC MODELING OF THREAT SYSTEMS  
AND FRIENDLY TARGET-ACQUISITION SYSTEMS TO GENERATE  
DIFFERENT REALIZATIONS OF THE MISSION LIST, A  
PRINCIPAL INPUT TO LEGAL MIX STUDIES. RELATED  
SECONDARY TASKS INCLUDED ANALYSIS OF THE FIRE-  
ALLOCATION AND FIRE-EFFECTS SUBMODELS IN THE LEGAL  
MIX MODEL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-734 841 1971 1976  
ARMY WEAPONS COMMAND ROCK ISLAND ILL RESEARCH DEVELOPMENT  
AND ENGINEERING DIRECTORATE

FEASIBILITY STUDY OF THE XM123 PROPELLING  
CHARGE IN THE M109E1, 155MM, HOWITZER. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 71 187P CHU, SHIH-CHI ; HEBDON, DAVID

E. J. JR;  
REPT. NO. AMSWE-RE-71-14  
PROJ: DA-1-W-564602-D-373  
TASK: 1-W-564602-D-37309

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROPELLING CHARGES, FEASIBILITY STUDIES),  
(\*SELF-PROPELLED GUNS, PROPELLING CHARGES), GUN BARRELS,  
GUN MOUNTS, ELEVATING GEAR, BREECH MECHANISMS, STRESSES,  
NUMERICAL ANALYSIS (U)  
IDENTIFIERS: M-109 HOWITZERS (155-MM), M-123 PROPELLING  
CHARGES (U)

A DETAILED STRENGTH ANALYSIS OF THE M109E1  
CANNON MOUNT AND MOUNT SUPPORT STRUCTURE HAS BEEN  
PERFORMED BY THE RESEARCH DIRECTORATE OF THE  
WEAPONS LABORATORY AT ROCK ISLAND TO  
DETERMINE THE FEASIBILITY OF FIRING THE XM123  
PROPELLING CHARGE IN THE XM185 TUBE INSTALLED ON  
THE M109E1, 155MM HOWITZER. GENERALLY, THE  
STRUCTURE CAN BE EXPECTED TO WITHSTAND THE FIRING OF  
THE XM123 EXPERIMENTAL PROPELLING CHARGE WITH  
BREECH FORCE OF 1,368,780 POUNDS AND WITH RECOIL  
FORCE OF 59,465 POUNDS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-739 350 1976  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

MODERN ARTILLERY.

(U)

NOV 7; 279P LATUKHIN, A. N. ;  
REPT. NO. FSTC-HT-23-653-71  
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MONO. SOVREMENNAYA  
ARTILLERIYA, MOSCOW, 1970 320P.

DESCRIPTORS: (\*ARTILLERY, USSR), HANDBOOKS, SELF  
PROPELLED GUNS, TOWED BODIES, RECOILLESS GUNS, MORTARS,  
ARTILLERY ROCKETS, GUN TURRETS, AIRCRAFT GUNS, NAVAL  
GUNS, AMMUNITION, INSTRUMENTATION, REVIEWS (U)  
IDENTIFIERS: TRANSLATIONS (U)

THE BOOK PRESENTS INFORMATION ABOUT MODERN TOWED  
AND AUXILIARY PROPELLED GUNS, SELF-PROPELLED  
ARTILLERY AND RECOILLESS GUNS, MORTARS AND SALVO-FIRE  
FIELD ROCKET ARTILLERY, THE ARTILLERY ARMAMENT OF  
TANKS, AIRCRAFT AND THE NAVY. IT ALSO DISCUSSES  
VARIOUS TYPES OF AMMUNITION USED FOR GUNNERY, AS WELL  
AS ARTILLERY INSTRUMENTATION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-740 120 5/9 15/3  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

ARTILLERY IN SPECIAL CONDITIONS. (U)

JAN 72 137P DUDAREV, S. N. ; SHIPOV, B.  
V. 1  
REPT. NO. FSTC-HT-23-1197-71  
PROJ: FSTC-T7023012301

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF MOSCOW ARTILLERY AND  
OSOBYKH USLOVIYAKH, MOSCOW, 1970.

DESCRIPTORS: (\*ARTILLERY, USSR), (\*MILITARY TRAINING,  
\*ARTILLERY), ARTILLERY FIRE, FIRE CONTROL SYSTEMS,  
ARCTIC REGIONS, DESERTS, MOUNTAINS, TACTICAL WARFARE,  
STRATEGIC WARFARE (U)  
IDENTIFIERS: TRANSLATIONS (U)

ARTILLERY OPERATIONS UNDER SPECIAL COMBAT  
CONDITIONS SUCH AS MOUNTAIN WARFARE, DESERT WARFARE,  
AND NIGHT WARFARE ARE DISCUSSED IN THE REPORT.  
PECULIARITIES OF MOUNTAINS, DESERTS, AND VARIOUS  
OTHER REGIONS HAVE A DEFINITE INFLUENCE ON THE  
MILITARY USE OF ARTILLERY EQUIPMENT. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-741 811 14/2 19/5  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

FIELD ARTILLERY STATISTICS. (U)

DESCRIPTIVE NOTE: MATERIEL TEST PROCEDURE.  
MAR 72 340P  
REPT. NO. MTP-3-1-005

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, DATA PROCESSING), (\*TEST  
METHODS, ARTILLERY), MANAGEMENT PLANNING AND CONTROL,  
STATISTICAL ANALYSIS, STATISTICAL DISTRIBUTIONS,  
HANDBOOKS, MATHEMATICAL MODELS (U)  
IDENTIFIERS: MANAGEMENT INFORMATION SYSTEMS, \*COMMON (U)  
ENGINEERING TEST PROCEDURES (U)

THE MATERIEL TEST PROCEDURE (MTP) IS A GUIDE FOR  
THE PROJECT OFFICER FOR PLANNING THE TEST OF FIELD  
ARTILLERY MATERIEL AND ANALYZING THE TEST DATA. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-743 720 1975 15/7  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A COMPARISON OF TWO TARGET COVERAGE  
MODELS.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
MAR 72 104P WITT, WILLIAM WAYNE ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, MATHEMATICAL MODELS),  
(\*ARTILLERY, \*KILL PROBABILITIES), TERMINAL BALLISTICS,  
DAMAGE ASSESSMENT, PROBABILITY DENSITY FUNCTIONS,  
FRAGMENTATION AMMUNITION, AREA COVERAGE, COMPUTER  
PROGRAMS, THESES

(U)

IDENTIFIERS: LETHALITY, SALVO FIRE

(U)

THE REPORT EXAMINES SEVERAL MODELS FOR THE  
COMPUTATION OF TARGET COVERAGE WHEN MULTIPLE ROUNDS  
ARE FIRED AT A TARGET. FRACTIONAL KILL OF A  
FRAGMENT SENSITIVE TARGET BY A FRAGMENTING PROJECTILE  
AS A FUNCTION OF THE NUMBER OF ROUNDS FIRED IS  
COMPARED FOR TWO MODELS. THE FIRST IS A STANDARD  
SALVO-FIRE MODEL IN WHICH N ROUNDS ARE FIRED AT THE  
SAME AIM POINT. IN THE SECOND MODEL, SINGLE SHOT  
KILL PROBABILITY IS COMPUTED FOR A FRAGMENT SENSITIVE  
TARGET AND THEN FRACTIONAL KILL FROM THE FIRING OF  
N ROUNDS IS COMPUTED ACCORDING TO THE ASSUMPTION  
THAT THE EFFECTS OF EACH ROUND ARE INDEPENDENT.  
THE NEED FOR SOPHISTICATED TARGET COVERAGE MODELS  
(SUCH AS SALVO-FIRE MODELS) IS DEMONSTRATED BY  
THE RESULTS OF COMPUTATIONS PERFORMED IN THIS STU. Y.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-743 840 4/2 19/4 19/7  
ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N MEX  
ATMOSPHERIC SCIENCES LAB

13401 HONEST JOHN, MISSILE NO. 352, ROUND  
NO. 620 RML.

(U)

DESCRIPTIVE NOTE: METEOROLOGICAL DATA REPT.  
MAY 72 29P

REPT. NO. DR-710

PROJ: DA-1-T-665702-D-127

TASK: 1-T-665702-D-12702

UNCLASSIFIED REPORT

DESCRIPTORS: (\*METEOROLOGICAL PHENOMENA, \*UPPER  
ATMOSPHERE), (\*ARTILLERY ROCKETS, IMPACT PREDICTION),  
GUIDED MISSILE RANGES, ROCKET TRAJECTORIES,  
METEOROLOGICAL BALLOONS, BAROMETRIC PRESSURE, HUMIDITY,  
WIND, ATMOSPHERIC TEMPERATURE, NEW MEXICO (U)  
IDENTIFIERS: HONEST JOHN (U)

METEOROLOGICAL DATA GATHERED FOR THE LAUNCHING OF  
13401 HONEST JOHN MISSILE NUMBER 352, ROUND  
NUMBER 620 RML, ARE PRESENTED IN TABULAR FORM.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-745 887 17/1 1975  
ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N MEX  
ATMOSPHERIC SCIENCES LAB

ARTILLERY SOUND RANGING COMPUTER  
SIMULATIONS.

(U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT TECHNICAL  
REPT.:

MAY 72 63P LEE, ROBERT F. :

PROJ: DA-1-T061102-B-53-A  
TASK: 1-T-U61102-B-53-A-18  
MONITOR: ECOM 5441

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, \*SOUND RANGING),  
MICROPHONES, INSTALLATION, ACOUSTIC SIGNALS, IMAGES,  
PROPAGATION, METEOROLOGICAL PHENOMENA, LEAST SQUARES  
METHOD

(U)

IDENTIFIERS: COMPUTERIZED SIMULATION

(U)

THE REPORT DEMONSTRATES THAT ALIASING CAN OCCUR  
BETWEEN MICROPHONE PLACEMENT ERRORS AND WIND AND  
TEMPERATURE ESTIMATION ERRORS. A NEW TYPE OF FIELD  
TEST IS DESCRIBED TO MEASURE STATISTICALLY THE EFFECT  
OF WIND AND TEMPERATURE FIELDS ON ATMOSPHERIC SOUND  
RANGING. FROM THE CONTOUR ERROR CURVES PRESENTED IT  
CAN BE SEEN THAT WHEN A GEOMETRIC SOLUTION IS  
EMPLOYED THERE CAN BE AN INCREASE AS GREAT AS 25%  
IN THE AREA ENCLOSED BY A GIVEN ERROR CONTOUR IF  
THREE MICROPHONES ARE USED INSTEAD OF SIX. WITH  
THE DEVELOPMENT OF A PRACTICAL LEAST-SQUARES COMPUTER  
FOR FIELD USE, SIX MICROPHONES WOULD RESULT IN AN  
EVEN GREATER INCREASE IN USEABLE COVERAGE.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-745 920 4/1 19/5  
ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N MEX  
ATMOSPHERIC SCIENCES LAB

THE ACCURACY OF BALLISTIC DENSITY DEPARTURE  
TABLES 1934-1972. (U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT TECHNICAL  
REPT.,

APR 72 40P LOWENTHAL, MARVIN J. ;  
PROJ: DA-1-T-062111-A-126  
TASK: 1-T-062111-A-12605  
MONITOR: ECOM 5436

UNCLASSIFIED REPORT

DESCRIPTORS: (•RANGE TABLES, METEOROLOGICAL PHENOMENA),  
(•ARTILLERY FIRE, RANGE TABLES), DENSITY, TEMPERATURE,  
ANALYSIS OF VARIANCE, PERIODIC VARIATIONS,  
METEOROLOGICAL PHENOMENA, RADIOSONDES, MATHEMATICAL  
MODELS (U)

IDENTIFIERS: BALLISTIC DENSITY, COMPUTER AIDED  
ANALYSIS (U)

THE ACCURACY OF BALLISTIC DENSITY DEPARTURE TABLES  
IS EXAMINED, STARTING WITH THE EARLIEST AVAILABLE  
SETS IN 1934. THE EXTENSION OF THE TABLES  
(ORIGINALLY DEVELOPED FOR THE US) TO ENCOMPASS  
THE ENTIRE NORTHERN HEMISPHERE IS DISCUSSED AND  
THE SHORTCOMINGS OF THE CURRENT CLIMATOLOGICAL  
REGIONAL ZONES DESCRIBED. NEW TABLES, BASED ON  
CURRENT DATA AND USED FOR A MORE LIMITED GEOGRAPHICAL  
AREA, ARE SHOWN TO BE ACCURATE TO ONE HALF OF ONE  
PERCENT, HENCE FURNISH EXCELLENT BACK-UP INFORMATION  
WHEN A CURRENT SOUNDING IS NOT AVAILABLE FOR  
ARTILLERY FIRINGS. A PROCEDURE FOR MINIMIZING  
BALLISTIC DENSITY ERRORS THAT ACCRUE BETWEEN  
OBSERVATIONAL PERIODS IS ALSO PRESENTED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-747 759 4/2 1974  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

ACCURACY REQUIREMENTS FOR THE MEASUREMENT OF  
METEOROLOGICAL PARAMETERS WHICH AFFECT  
ARTILLERY FIRE. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
APR 72 31P BARR, WILLIAM C. I.  
REPT. NO. ECOM-5437  
PROJ: DA-1-T-062111-A-126  
TASK: 1-T-06211-A-12605

UNCLASSIFIED REPORT

DESCRIPTORS: (\*METEOROLOGICAL PHENOMENA, MEASUREMENT),  
(\*ARTILLERY FIRE, \*IMPACT PREDICTION), ACCURACY, FIRE  
CONTROL SYSTEMS, RANGE TABLES, WIND, ATMOSPHERIC  
TEMPERATURE, BAROMETRIC PRESSURE, ERRORS (U)

THE RESULTS OF AN ARTILLERY EFFECTIVENESS  
METHODOLOGY, WHICH WAS ORIGINALLY DEVELOPED TO  
DETERMINE TARGET LOCATION ACCURACIES, HAVE BEEN  
APPLIED TO DETERMINE THE ACCURACY REQUIREMENTS FOR  
THE MEASUREMENT OF THOSE METEOROLOGICAL PARAMETERS  
WHICH AFFECT ARTILLERY FIRE. BASED ON CERTAIN  
CRITERIA, THE EFFECTIVENESS METHODOLOGY DETERMINES  
THE MAXIMUM ALLOWABLE ERROR IN THE DISPLACEMENT OF  
THE CENTER OF THE EFFECTS PATTERN FROM THE CENTER OF  
THE TARGET. THIS MAXIMUM ERROR IS THEN RELATED TO  
THE ERRORS IN THE METEOROLOGICAL PARAMETERS WHICH  
PRODUCE IT. TO DO THIS IN A CONSISTENT MANNER,  
SPECIFIC MEASURING SYSTEMS MUST BE CONSIDERED TO  
DETERMINE THOSE PARAMETERS WHICH ARE MEASURED  
INDEPENDENTLY. IN THIS STUDY, THE STANDARD  
RADIOSONDE SYSTEM HAS BEEN ANALYZED, AND THE ACCURACY  
REQUIREMENTS FOR THIS SYSTEM HAVE BEEN DETERMINED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-750 150 1/3 1976  
BOEING CO PHILADELPHIA PA VERTOL DIV

AERIAL ARTILLERY DESIGN STUDY - TWO  
EXTERNALLY-MOUNTED XM 204 HOWITZERS ON A  
CH-47C HELICOPTER. (U)

DESCRIPTIVE NOTE: FINAL REPT. DEC 71-OCT 72,  
OCT 72 245P BONNELL, ALFRED ; DALLAS, STEVE  
S. ; GIANONIO, ROBERT P. ; GUMIENNY, LEO ;  
HIGGINS, EDWARD H. ;  
REPT. NO. D210-10506-1  
CONTRACT: DAAF03-72-C-0016

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WEAPON SYSTEMS, DESIGN), (\*HELICOPTERS,  
\*HOWITZERS), AIRCRAFT FIRE CONTROL SYSTEMS, MOUNTING  
BRACKETS, STRUCTURAL PROPERTIES, MISSION PROFILES,  
MODIFICATION KITS, INSTALLATION (U)  
IDENTIFIERS: XM-204 HOWITZERS(105-MM), M-204  
HOWITZERS(105-MM), AIRCRAFT, CH-47 AIRCRAFT,  
\*HELICOPTER GUNSHIPS, H-47 AIRCRAFT (U)

DESIGN ARRANGEMENT AND MOUNTING APPROACHES, WEIGHT  
ESTIMATES, BALANCE CALCULATIONS, STRESS ANALYSES, AND  
HELICOPTER PERFORMANCE PREDICTIONS OF AN AERIAL  
ARTILLERY SYSTEM UTILIZING TWO EXTERNALLY-MOUNTED  
105MM XM204 SOFT RECOIL HOWITZERS ON A CH-47C  
CHINOOK HELICOPTER ARE PRESENTED. THIS DESIGN  
PROVIDES FOR ALL THE FIRING MODES AND OPERATIONAL  
CAPABILITIES REQUIRED BY THE WEAPONS COMMAND,  
INCLUDING THE ABILITY TO OFFLOAD ONE HOWITZER WHEN  
THE HELICOPTER IS HOVERING. THE STUDY INCLUDES AN  
ANALYSIS OF THE STRUCTURAL INTEGRATION OF THE WEAPONS  
AND AIRCRAFT INCLUDING MUZZLE BLAST EFFECTS AND  
AIRFRAME DYNAMIC RESPONSES. A MINIMUM ADEQUATE FIRE  
CONTROL SYSTEM FOR AIR-TO-GROUND FIRING AND TYPICAL  
GROUND ARTILLERY FIRE CONTROL EQUIPMENT WAS INCLUDED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-750 333 1975 5/9  
HUMAN ENGINEERING LABS ABERDEEN PROVING GROUND MD

HUMAN ENGINEERING LABORATORY BATTALION  
ARTILLERY TESTS (HELBAT),

(U)

72 15P HORLEY, GARY L. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARTILLERY FIRE, ACCURACY), (•WEAPON  
SYSTEMS, ARMY PERSONNEL), ARMY TRAINING, TEST METHODS,  
HUMAN FACTORS ENGINEERING, ERRORS, FIRE CONTROL SYSTEMS,  
RANGE FINDING, ARTILLERY (U)  
IDENTIFIERS: M-109 HOWITZERS (155-MM) (U)

THE HUMAN ENGINEERING LABORATORY (HEL) HAS  
BEGUN TO DEVELOP THE INFORMATION THROUGH A SERIES OF  
FIELD EXPERIMENTS SUPERIMPOSED ONTO OPERATIONAL  
READINESS TESTS (ORT) WHICH ARMY UNITS MUST  
UNDERGO EACH YEAR. TWO OF THESE FIELD EXPERIMENTS,  
UNDER THE TITLE OF HUMAN ENGINEERING LABORATORY  
BATTALION ARTILLERY TEST (HELBAT), HAVE  
ALREADY BEEN COMPLETED AND A THIRD HELBAT HAS JUST  
BEEN CONDUCTED. THE ARTILLERY STUDIES ARE SCALED TO  
BATTALION SIZE. THE BATTALION IS THE ARTILLERY'S  
BASIC OPERATIONAL UNIT AND THUS PROVIDES THE GREATEST  
REALISM FOR OPERATIONAL STUDY. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-750 357 1976  
ARMY WEAPONS COMMAND ROCK ISLAND ILL

DEVELOPMENT AND VALIDATION OF MATHEMATICAL  
MODELS OF HOWITZER, MEDIUM, TOWED: 155MM,  
XM198,

(U)

72 15P NERDAHL, MICHAEL C. ;FRANTZ,  
JERRY W. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, MATHEMATICAL MODELS),  
EQUATIONS OF MOTION, RECOIL MECHANISMS, DESIGN (U)  
IDENTIFIERS: XM-198 HOWITZERS(155-MM), M-198  
HOWITZERS(155-MM), THREE DEGREES OF FREEDOM, DEGREES  
OF FREEDOM (U)

THE ENGINEERS AND ANALYSTS RESPONSIBLE FOR  
DEVELOPMENT OF THE XM198 HOWITZER HAVE  
EFFECTIVELY USED THESE MATHEMATICAL MODELS AS A  
DESIGN TOOL. THIS USE HAS SHORTENED THE TIME  
REQUIRED FOR DESIGN EVALUATION, PROVIDED A  
SATISFACTORY DATA BASE FOR COMPONENT DESIGN, AND  
ALLOWED FOR STUDY OF WEAPONS RESPONSE UNDER VARIOUS  
FIRING CONDITIONS. THE IMPORTANCE OF SEVERAL  
PARAMETERS, VARYING FROM LOCATION OF GROUND SUPPORT  
POINTS TO SECONDARY PATHS FOR FLUID FLOW, HAS BEEN  
IDENTIFIED AND A QUANTITATIVE DEFINITION OF  
SIGNIFICANCE HAS BEEN OBTAINED FROM THOSE SENSITIVITY  
STUDIES WHICH HAVE BEEN COMPLETED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-750 384 1975 1771  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

IMPROVED SOUND RANGING LOCATION OF ENEMY  
ARTILLERY,

(U)

72 15P SWINGLE, DONALD M. ; CRENSHAW,  
CRAIG M. ; BELLUCCI, RAYMOND ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, \*SOUND RANGING),  
MICROPHONES, DEPLOYMENT, ACOUSTIC SIGNALS,  
METEOROLOGICAL PHENOMENA, CIRCULAR ERROR PROBABLE,  
ANALYSIS OF VARIANCE

(U)

THE APPLIED RESEARCH DESCRIBED HAS BEEN BASICALLY  
DIRECTED TOWARD DEVELOPING IMPROVED METEOROLOGICAL  
TECHNIQUES FOR USE WITH TACTICAL SOUND RANGING  
SYSTEMS. IN THE COURSE OF THESE STUDIES IT BECAME  
APPARENT THAT SIGNIFICANT ERROR WAS BEING INJECTED  
INTO THE LOCATIONS FOUND USING THE STANDARD GR-8  
SOUND RANGING SYSTEM BY THE SOLUTION TECHNIQUE  
WHICH TRANSFORMS THE RELATIVE TIMES OF ARRIVAL OF  
SOUND AT SIX MICROPHONES INTO AN ESTIMATE OF SPATIAL  
LOCATION. A NUMBER OF CANDIDATE TECHNIQUES WERE  
EVALUATED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-750 564 19/4 17/9  
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD

DETERMINATION OF AERODYNAMIC DRAG FROM RADAR  
DATA. (U)

DESCRIPTIVE NOTE: MEMORANDUM REPT.,  
AUG 72 26P LIESKE, ROBERT F. ;  
MACKENZIE, ANTOINETTE M. ;  
REPT. NO. BRL-MR-2210  
PROJ: RDT/E-1-T-562603-A-041

UNCLASSIFIED REPORT

DESCRIPTORS: (•PROJECTILE TRAJECTORIES, •RADAR  
TRACKING), (•PROJECTILES, DRAG), AERODYNAMIC  
CHARACTERISTICS, RANGE TABLES, IMPACT PREDICTION,  
HOWITZERS, CORIOLIS EFFECT, ACCELERATION, EXTERIOR  
BALLISTICS (U)  
IDENTIFIERS: M-107 PROJECTILES (155-MM) (U)

A METHOD FOR UTILIZING POINT POSITION RADAR DATA TO  
DETERMINE THE AERODYNAMIC DRAG OF A PROJECTILE IS  
DESCRIBED. PROOF OF THE METHOD'S VALIDITY AND  
FEASIBILITY IS REPRESENTED BY RESULTS OBTAINED WITH  
FLIGHT TEST DATA TAKEN FOR A RANGE FIRING OF THE  
155MM HOWITZER WITH THE M107 PROJECTILE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-753 328 15/5  
ARMY WEAPONS COMMAND ROCK ISLAND ILL COST ANALYSIS  
DIV

OVERHAUL/REBUILD COST STUDY - WECOM  
ITEMS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 72 10P GANNON, PATRICK J. ; HARTMANN,  
WADE W. ; DORSEY, R. STEPHEN ;  
REPT. NO. AMSWE-CPE-72-11

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY EQUIPMENT, MAINTENANCE), ARTILLERY,  
SMALL ARMS, SELF PROPELLED GUNS, TOWED BODIES,  
TANKS (COMBAT VEHICLES), FIRE CONTROL SYSTEMS,  
MAINTAINABILITY, COSTS (U)  
IDENTIFIERS: COST ESTIMATING (U)

MAJOR ITEM HISTORICAL OVERHAUL/REBUILD DATA, DEPOT  
LABOR RATES AND OVERHAUL COST ESTIMATING  
RELATIONSHIPS (CER'S) ARE TABULATED IN SUFFICIENT  
DETAIL TO ALLOW THE ESTIMATION OF OVERHAUL/REBUILD  
COSTS FOR WECOM-MANAGED ITEMS. ITEM CLASSES  
ADDRESSED IN THE STUDY ARE ARTILLERY, COMBAT  
VEHICLES, FIRE CONTROL, AND SMALL ARMS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-754 531 1976  
WATERVLIET ARSENAL N Y

ON MAXIMUM FILLET STRESSES IN BREECH  
RING.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
OCT 72 22P CHENG, YEAN F. I  
REPT. NO. WVT-7255

UNCLASSIFIED REPORT

DESCRIPTORS: (\*BREECH MECHANISMS, STRESSES), CURVED  
PROFILES, THICKNESS, PHOTOELASTICITY, HOWITZERS (U)  
IDENTIFIERS: M-137 HOWITZERS(105-MM), FILLETS, FINITE  
ELEMENT ANALYSIS, STRESS CONCENTRATION (U)

THE EFFECT OF FILLET GEOMETRY AND WALL THICKNESS ON  
MAXIMUM FILLET STRESSES WAS INVESTIGATED IN THE 105MM  
M137 HOWITZER BREECH RING. THE NASTRAN FINITE  
ELEMENT ANALYSIS OF THREE FILLET GEOMETRIES AND TWO  
WALL THICKNESSES SHOWS THAT AN ELLIPTICAL FILLET IS  
PREFERRED. A LIMITED TWO-DIMENSIONAL PHOTOELASTIC  
EXPERIMENT SUBSTANTIATED ANALYTICAL FINDINGS. FOR  
THE PURPOSE OF OPTIMIZING THE COMBINATION OF FILLET  
GEOMETRY AND WALL THICKNESS, A THOROUGH PHOTOELASTIC  
INVESTIGATION IS DESIRABLE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-756 333 1975  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

FIRE CONTROL SYSTEM FOR COASTAL ARTILLERY,

(U)

JAN 73 12P MEMEDOVIC, MIHAILO ;  
REPT. NO. FTD-HC-23-1503-72  
PROJ: FTD-T71-05-09, FTD-T71-05-13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF VOJNI GLASKI  
(YUGOSLAVIA) NS P29-31 1971.

DESCRIPTORS: (•FIRE CONTROL SYSTEMS, ARTILLERY),  
ELECTRONIC EQUIPMENT, DISTANCE MEASURING EQUIPMENT,  
ACCURACY, RADAR EQUIPMENT, FIRE CONTROL COMPUTERS, US(U)  
IDENTIFIERS: TRANSLATIONS (U)

THIS SYSTEM IS COMPOSED OF VERY COMPLICATED  
ELECTRONIC EQUIPMENT WHICH CONNECTS AND SYNCHRONIZES  
ALL ELEMENTS IN THE SYSTEM, GIVES STARTING ELEMENTS  
FOR FIRING, PROVIDES FOR CONTINUOUS TRACKING OF THE  
TARGET AND CONTROLS ALL ELEMENTS DURING FIRING.  
ADVANTAGES OF THIS SYSTEM OVER THE PRESENT ONE ARE  
EVIDENT PARTICULARLY DURING NIGHT FIRING, UNDER LOW  
VISIBILITY CONDITIONS AND DURING THE DAYTIME OVER  
SHORT AND LONG DISTANCES. RADAR CAN REVEAL BATTERY  
POSITIONS AT NIGHT, AND MAKES IT POSSIBLE FOR THE  
BATTERY TO DO A MORE RELIABLE JOB. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-756 987 15/7  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

ARTILLERY RECONNAISSANCE. (U)

FEB 73 231P GORDON, YU. A. ;KHORENKOV,  
A. V. ;  
REPT. NO. FTD-HC-23-1204-72  
PROJ: AF-2717

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MONO.  
ARTILLERIIISKAYA RAZVEDKA, N.P., 1971 P1-143, 201-215.

DESCRIPTORS: (\*AERIAL RECONNAISSANCE, USSR), AERIAL  
PHOTOGRAPHY, MILITARY INTELLIGENCE, OPTICAL SIGHTS,  
ARTILLERY, RANGE FINDING (U)  
IDENTIFIERS: \*RECONNAISSANCE, TRANSLATIONS, ELECTRONIC  
RECONNAISSANCE (U)

THE CHARACTERISTICS OF ARTILLERY RECONNAISSANCE AND  
THE METHODS OF ACQUIRING RECONNAISSANCE DATA FOR  
ARTILLERY ARE GIVEN IN THE BOOK BASED ON UNRESTRICTED  
MATERIALS. THE WORK OF ARTILLERY COMMANDERS AND  
THEIR STAFFS IN ORGANIZING AND CONDUCTING  
RECONNAISSANCE IN MODERN WARFARE ALSO IS BRIEFLY  
EXAMINED. THE BOOK IS DESIGNED TO INCREASE THE  
MILITARY-TECHNICAL KNOWLEDGE OF SOLDIERS, SERGEANTS  
AND OFFICERS OF THE ARTILLERY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-757 163 1976 5/3  
ARMY WEAPONS COMMAND ROCK ISLAND ILL COST ANALYSIS  
DIV

COST ESTIMATING RELATIONSHIPS FOR  
MANUFACTURING HARDWARE COST OF GUN/HOWITZER  
CANNONS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
AUG 72 19P KALAL, GERALD W. ;  
REPT. NO. AMSWE-CPE-72-8

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, COSTS), MUNITIONS INDUSTRY,  
ECONOMICS, PRODUCTION, STATISTICAL DATA, REGRESSION  
ANALYSIS (U)  
IDENTIFIERS: CER(COST ESTIMATING RELATIONSHIPS), \*COST  
ANALYSIS, COST ESTIMATING RELATIONSHIPS (U)

COST ESTIMATING RELATIONSHIPS (CER'S) FOR  
PREDICTING THE IN-HOUSE MANUFACTURING HARDWARE UNIT  
COSTS FOR CANNONS DURING THE EARLY STAGES OF WEAPON  
SYSTEM DEVELOPMENT ARE DISCUSSED IN THIS STUDY.  
PHYSICAL/PERFORMANCE CHARACTERISTICS REGARDED AS  
'COST DRIVERS', KNOWN EARLY IN CANNON DEVELOPMENT,  
WERE SELECTED AS INDEPENDENT VARIABLES. SIX CER'S  
ARE PRESENTED IN ORDER OF DECREASING 'GOODNESS OF  
FIT', AND EACH EXHIBIT A CORRELATION AT THE ONE  
PERCENT LEVEL (F-TEST). (AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-757 164 1976 5/3  
ARMY WEAPONS COMMAND ROCK ISLAND ILL COST ANALYSIS  
DIV

COST ESTIMATING RELATIONSHIPS FOR  
MANUFACTURING HARDWARE COST OF HOWITZER  
CARRIAGES AND RECOIL MECHANISMS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 72 17P KALAL, GERALD W. ;  
REPT. NO. AMSWE-CPE-72-10

UNCLASSIFIED REPORT

DESCRIPTORS: (\*RECOIL MECHANISMS, COSTS), (\*HOWITZERS,  
\*GUN MOUNTS), MUNITIONS INDUSTRY, ECONOMICS, PRODUCTION,  
STATISTICAL DATA, REGRESSION ANALYSIS (U)  
IDENTIFIERS: CER(COST ESTIMATING RELATIONSHIPS), COST  
ANALYSIS, COST ESTIMATING RELATIONSHIPS (U)

COST ESTIMATING RELATIONSHIPS (CER'S) FOR  
PREDICTING THE IN-HOUSE MANUFACTURING HARDWARE UNIT  
COSTS FOR CARRIAGES AND RECOIL MECHANISMS DURING THE  
EARLY STAGES OF WEAPON SYSTEM DEVELOPMENT ARE  
DISCUSSED IN THIS STUDY. INDEPENDENT VARIABLES  
WHICH WERE MORE LIKELY TO BE KNOWN EARLY IN  
DEVELOPMENT WERE SELECTED AS 'COST DRIVERS'. FOUR  
CER'S ARE PRESENTED FOR ESTIMATING RECOIL MECHANISM  
UNIT COST IN ORDER OF DECREASING 'GOODNESS OF FIT',  
TWO CER'S ARE PRESENTED FOR ESTIMATING CARRIAGE  
UNIT COST, AND ONE ADDITIONAL CER IS PRESENTED FOR  
ESTIMATING THE SUM OF THE RECOIL MECHANISM AND  
CARRIAGE UNIT COST. EACH OF THE ABOVE CER'S  
EXHIBIT A CORRELATION AT A TEN PERCENT LEVEL (F-  
TEST) OR BETTER. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-759 954 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

SAFETY EVALUATION - ARTILLERY, MORTAR AND  
RECOILLESS RIFLE AMMUNITION. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
DEC 72 21P  
REPT. NO. MTP-4-2-504  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED 19 MAY 70,  
AD-872 135.

DESCRIPTORS: (\*AMMUNITION, TEST METHODS), SAFETY,  
ARTILLERY, GUNS, PROJECTILES, COMPATIBILITY, HAZARDS,  
PROPELLANTS, SMALL ARMS (U)  
IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES (U)

THE REPORT DESCRIBES SAFETY EVALUATION TEST  
PROCEDURES APPLICABLE TO ALL AMMUNITION FOR FIELD AND  
ANTIAIRCRAFT, TANK GUNS, RECOILLESS RIFLES AND  
MORTARS. ALTHOUGH PRIMARILY ORIENTED TOWARD  
EXPLOSIVE-LOADED PROJECTILES, PROCEDURES FOR NON-  
EXPLOSIVE PROJECTILES ARE INCLUDED. THE REPORT  
COVERS SAFETY EVALUATION OF LAUNCH, FLIGHT AND  
ENVIRONMENTAL HAZARDS AS WELL AS COMPATIBILITY OF THE  
AMMUNITION WITH THE WEAPON SYSTEM. TEST PHASES  
INCLUDE PROPELLANT CHECK-OUT, METAL PARTS CHECK-OUT  
STORAGE TEST, TRANSPORTATION, AND ROUGH HANDLING AND  
SUPPLEMENTAL TESTS. EXCLUDES NUCLEAR WEAPON  
PROJECTILES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-762 040 1976 1974  
NAVAL WEAPONS LAB DAHLGREN VA

FINITE DIFFERENCE CALCULATIONS OF THE FREE-  
AIR BLAST FIELD ABOUT THE MUZZLE AND A  
SIMPLE MUZZLE BRAKE OF A 105MM HOWITZER.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 73 38P MAILLIE, F. H. ;  
REPT. NO. NWL-TR-2938

UNCLASSIFIED REPORT

DESCRIPTORS: (•HOWITZERS, BLAST), GUN BARRELS, INTERIOR  
BALLISTICS, FLOW FIELDS, SHOCK WAVES, PRESSURE, SPECIFIC  
HEAT (U)

IDENTIFIERS: FINITE DIFFERENCE THEORY, COMPUTERIZED  
SIMULATION (U)

A TWO-DIMENSIONAL HYDRODYNAMIC CODE HAS BEEN USED  
TO CALCULATE THE FREE-AIR BLAST FIELD ABOUT THE  
MUZZLE AND MUZZLE DEVICE (BRAKE) OF A 105MM  
HOWITZER. THE CALCULATED BLAST PRESSURE WAVE AS  
A FUNCTION OF TIME IS PRESENTED ALONG WITH THE  
VELOCITY AND PRESSURE FIELDS. ALSO PRESENTED ARE  
THE PRESSURE AND FORCE ACTING ON THE BAFFLE AS A  
FUNCTION OF TIME, AS WELL AS THE IMPULSE THE BAFFLE  
EXERTS ON THE GUN. CALCULATED OVERPRESSURES AND  
RECOIL REDUCTION ARE COMPARED WITH EXPERIMENTAL DATA.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-762 190 17/1 19/5  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

IMPROVED SOUND RANGING LOCATION OF ENEMY  
ARTILLERY.

(U)

DESCRIPTIVE NOTE: RESEARCH AND DEVELOPMENT TECHNICAL  
REPT.,

APR 73 41P SWINGLE, DONALD M. ; BELLUCCI,  
RAYMOND ;

REPT. NO. ECOM-5486

PROJ: DA-1-T-062111-A-126

TASK: 1-T-062111-A-12605

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOUND RANGING, EFFECTIVENESS),  
(\*ARTILLERY FIRE, SOUND RANGING), DETECTION, TARGET  
ACQUISITION, FIRE CONTROL SYSTEM COMPONENTS, MISS  
DISTANCE, COSTS

(U)

IDENTIFIERS: COMPUTER AIDED ANALYSIS

(U)

A MAJOR IMPROVEMENT IN SOUND RANGING COMPUTATIONAL  
TECHNIQUES HAS BEEN DEVELOPED AND DEMONSTRATED.  
TARGET LOCATION DATA PRODUCED BY THE USRAN3  
TECHNIQUE ARE DEGRADED MUCH LESS BY ERRORS IN INPUT  
DATA, INCLUDING METEOROLOGICAL CORRECTION DATA, THAN  
ARE THOSE OF THE FIELD METHOD. WHEN TESTED ON A  
SET OF 1863 TARGET LOCATIONS, THE USRAN3 TECHNIQUE  
YIELDED 43% MORE FIXES WITH ERRORS LESS THAN 45  
METERS THAN DID THE FIELD METHOD. THE OVERALL  
PROBABLE ERROR OF TARGET LOCATION WAS REDUCED FROM  
117 METERS TO 96 METERS. THE PREVIOUSLY REPORTED  
MEDIAN TECHNIQUE YIELDED AN OVERALL PROBABLE ERROR OF  
101 METERS. BOTH METHODS ARE READILY ADAPTABLE TO  
EITHER MANUAL OR COMPUTER SOLUTION OF THE SOUND  
RANGING PROBLEM AND CAN BE IMPLEMENTED BY PERSONNEL  
HAVING THE SKILLS NORMALLY AVAILABLE IN GR-8  
OPERATIONS. (MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-762 562 1976 11/10  
ARMY WEAPONS COMMAND ROCK ISLAND ILL WEAPONS LAB

DEVELOPMENT OF POLYURETHANE HANDWHEELS FOR  
ARTILLERY.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
FEB 73 25P VEROEVEN, WILBUR M. ;  
REPT. NO. AMSWE-R-RR-T-3-9-73  
PROJ: DA-1-T-062105-A-329

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HAND CRANKS, DESIGN), (\*ARTILLERY, HAND  
CRANKS), (\*ISOCYANATE PLASTICS, HAND CRANKS),  
ELASTOMERS, CASTING, IMPACT SHOCK, SHOCK RESISTANCE,  
STRESSES, STRAIN(MECHANICS)

(U)

LIQUID POLYETHER URETHANE ELASTOMERS WERE  
COMPOUNDED AND EVALUATED BY PERSONNEL OF THE  
RESEARCH DIRECTORATE, WEAPONS LABORATORY,  
RIA, FOR USE AS STRUCTURAL MATERIALS FOR ARTILLERY  
HANDWHEELS IN PLACE OF THE PLASTISOL-COATED ALUMINUM  
HANDWHEELS CURRENTLY USED. THESE URETHANES HAVE  
EXCELLENT STRESS-STRAIN PROPERTIES, EXCELLENT IMPACT  
RESISTANCE OVER A BROAD TEMPERATURE RANGE, GOOD  
STABILITY AGAINST ENVIRONMENTAL DETERIORATION AND  
GOOD RESISTANCE TO VARIOUS FLUIDS AND LUBRICANTS.  
ARTILLERY HANDWHEELS FABRICATED FROM A LIQUID  
URETHANE COMPOUND ARE SIGNIFICANTLY LIGHTER IN WEIGHT  
AND HAVE SUPERIOR IMPACT RESISTANCE IN THE  
TEMPERATURE RANGE FROM +150F TO -67F WHEN  
COMPARED WITH HANDWHEELS FABRICATED FROM PLASTISOL-  
COATED ALUMINUM OR PHENOLIC PLASTIC. FIFTEEN- AND  
TWELVE-INCH DIAMETER ARTILLERY HANDWHEELS WERE  
DESIGNED AND FABRICATED FROM POLYURETHANES FOR FIELD  
SERVICE TESTING ON THE XM198 HOWITZER.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-763 204 1976  
ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS  
DIV

DECISION RISK ANALYSIS FOR XM204, 105MM  
HOWITZER, TOWED RELIABILITY/DURABILITY  
REQUIREMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 73 88P MAZZA, THOMAS N. IBANASH,  
ROBERT C. I  
REPT. NO. PAA-TRI-73

UNCLASSIFIED REPORT

DESCRIPTORS: (•HOWITZERS, PERFORMANCE(ENGINEERING)),  
TOWED VEHICLES, RELIABILITY, LIFE EXPECTANCY, COSTS,  
MAINTAINABILITY, LOGISTICS, SPARE PARTS  
IDENTIFIERS: M-204 HOWITZERS(105-MM)

(U)

(U)

THERE IS A CONTINUOUS DISCUSSION BETWEEN THE USER  
AND THE DESIGNER AS TO WHAT THE OPTIMAL RELIABILITY  
AND DURABILITY REQUIREMENTS FOR A WEAPON SYSTEM SUCH  
AS A HOWITZER SHOULD BE. THIS ANALYSIS DEVELOPS A  
RATIONALE FOR THE RELIABILITY AND DURABILITY  
REQUIREMENTS FOR THE XM204, 105MM TOWED,  
HOWITZER WHILE SIMULTANEOUSLY DEFINING A PLAN TO  
TEST FOR THESE REQUIREMENTS. THE SYSTEM RELIABILITY  
REQUIREMENTS, SUBSYSTEM DURABILITY REQUIREMENTS,  
RELIABILITY AND DURABILITY UNCERTAINTIES OF THE  
PROPOSED DESIGN, AND THE NUMBER OF PROTOTYPES AND  
TEST LENGTH TO ESTABLISH RELIABILITY AND DURABILITY  
PARAMETERS, ARE RELATED TO EXPECTED COST.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-764 057 13/3 15/5 15/7  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

A MULTI-COMPONENT PLATFORM CONSTRUCTION  
SYSTEM FOR USE ON ALL TYPES OF MARGINAL  
TERRAIN.

(U)

DESCRIPTIVE NOTE: TECHNICAL NOTE:  
MAY 73 49P GORDON, D. T. ; DURLAK, E.

R. ;

REPT. NO. NCEL-TN-1275  
PROJ: YF53.536  
TASK: YF53.536.108

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SUPPORTS, CONSTRUCTION), (\*TERRAIN,  
TRAFFICABILITY), (\*ARTILLERY, \*CLOSE SUPPORT), GUN  
MOUNTS, BOX BEAMS, FOUNDATIONS(STRUCTURES), PANELS,  
DESIGN, FIRING TESTS(ORDNANCE), MARINE CORPS (U)

AN INITIAL DEVELOPMENT STUDY WAS COMPLETED FOR A  
VERSATILE PLATFORM CONSTRUCTION SYSTEM TO BE USED BY  
THE MARINE CORPS IN ANY TYPE OF MARGINAL TERRAIN  
THAT MIGHT BE ENCOUNTERED; MARSHES, DRIFTING SAND,  
FROZEN SOIL, ETC. THESE PLATFORMS WOULD BE USED AS  
FOUNDATIONS FOR ARTILLERY EMPLACEMENTS, HELICOPTER OR  
VTOL PADS, AND VARIOUS SHELTERS. FOR  
CONSTRUCTION AT REMOTE SITES, ALL COMPONENTS OF THE  
SYSTEM MUST BE LIGHTWEIGHT, EASILY HANDLED BY TWO  
MEN, AND CAPABLE OF RAPID ASSEMBLY WITHOUT BOLTS OR  
SPECIAL TOOLS. A SYSTEM COMPOSED OF SEALED BOX  
BEAMS COVERED BY INTERCONNECTED DECKING PANELS WAS  
SELECTED FOR DEVELOPMENT. BOTH THE BEAM AND PANEL  
COMPONENTS WOULD PROVIDE BUOYANT SUPPORT ON LOW  
BEARING TERRAIN. THE BEAM SUBSTRUCTURE COULD BE  
USED TO ELEVATE THE PLATFORMS OVER UNCLEARED SITES.  
(MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-764 092 15/7  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A DEVELOPMENT OF A FIRE SUPPORT SIMULATION  
LOGIC FLOW. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
MAR 73 119P SCHUMACHER, LUDWIG JOHN ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AMPHIBIOUS OPERATIONS, CLOSE SUPPORT),  
(\*WAR GAMES, MATHEMATICAL MODELS), MARINE CORPS, FIRE  
CONTROL SYSTEMS, MILITARY TRAINING, ARTILLERY FIRE,  
MORTARS, NAVAL GUNNERY, COMPUTER PROGRAMMING,  
SIMULATION, THESES (U)  
IDENTIFIERS: FIRE SUPPORT, COMPUTERIZED  
SIMULATION (U)

THE PAPER DEVELOPS FIRE SUPPORT LOGIC FOR USE IN  
EDUCATIONAL WAR GAME SIMULATING GROUND COMBAT AT THE  
PLATOON/COMPANY LEVEL. INCLUDED WITHIN THE LOGIC  
ARE PROVISIONS FOR: GIVEN A REQUIREMENT FOR  
SUPPORTING FIRES, SELECTING A WEAPON SYSTEM:  
MORTARS; ARTILLERY; NAVAL GUNFIRE; OR AIR;  
SELECTION OF AN ARTILLERY UNIT TO FIRE;  
GENERATION OF AMOUNT AND TIME OF ORDNANCE DELIVERY  
FOR MORTARS, ARTILLERY AND NAVAL GUNFIRE; WORK WAS  
COORDINATED WITH THE DEVELOPMENT OF THE TACTICAL  
EXERCISE SIMULATOR AND EVALUATOR (TESE) BY  
THE UNITED STATES MARINE CORPS, AND WAS  
INTEGRATED INTO THE INITIAL MODELS FOR TESTING AND  
REFINEMENT. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-765 781 19/6 15/7  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

AN AIRBOURNE, ARTILLERY, SELF-PROPELLED  
UNIT (AVIYADESANTNAYA AVTILLERIISKAYA,  
SAMOYODNAYA);

(U)

NOV 72 6P KOSYREV, E. ;  
REPT. NO. FSTC-HT-23-1255-72

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. FROM VOENNYE ZNANIYA  
(USSR) P39 SEP 71, BY JAMES MCKAY.

DESCRIPTORS: (\*AIR DROP OPERATIONS, \*SELF PROPELLED  
GUNS), ANTI-AIRCRAFT GUNS, TRACKED VEHICLES, ARMORED  
VEHICLES, ARTILLERY, PARACHUTE DESCENTS, USSR  
IDENTIFIERS: TRANSLATIONS

(U)

(U)

THE REPORT DISCUSSES THE INNOVATIONS IN THE  
DEVELOPMENT OF HIGHLY MOBILE, SELF-PROPELLED  
ARTILLERY AND THE ADVANTAGES OF EQUIPPING AIRBORNE  
TROOPS WITH SELF-PROPELLED WEAPONS. TO AVOID  
IMPAIRING MOBILITY OF THE AIRBORNE INFANTRY, THE  
SELF-PROPELLED ARTILLERY MOUNTS WERE ADAPTED FOR  
DROPPING BY PARACHUTES. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-766 299 8/13 1976  
ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN  
ILL

SOIL STABILIZATION INVESTIGATION FOR 155 MM  
TOWED HOWITZER FIRING PADS.

(U)

DESCRIPTIVE NOTE: TECHNICAL MANUSCRIPT,  
JUL 73 45P KELLY, WILLIAM T. ;  
REPT. NO. CERL-TM-M-53

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOILS, STABILIZATION),  
(\*FOUNDATIONS(STRUCTURES), \*HOWITZERS), SUPPORTS,  
CALCIUM OXIDES, FEASIBILITY STUDIES, MOISTURE,  
COMPRESSIVE PROPERTIES, FLEXURAL STRENGTH,  
AGING(MATERIALS), MODULUS OF ELASTICITY, LOADS(FORCES),  
DEFORMATION, REGRESSION ANALYSIS, ACCEPTABILITY (U)  
IDENTIFIERS: \*SOIL STABILIZATION (U)

THE 155 MM HOWITZER IS PLACED IN ITS FIRING  
CONFIGURATION BY JACKING IT OFF ITS ROAD WHEELS ONTO  
A BASE PLATE SUPPORT. THE TRAILS ARE SPREAD AND  
THE TRAIL SPADES ARE DUG INTO THE GROUND. DURING  
NORMAL FIRING, THE RECOIL OF THE WEAPON IS ABSORBED  
BY THE BASE PLATE, RECOIL MECHANISM, AND TRAIL  
SPADES. FREQUENTLY, THE HOWITZER MUST BE  
POSITIONED IN SOILS WHICH HAVE LOW SHEAR STRENGTH  
AND/OR HIGH WATER CONTENT. WHEN THE HOWITZER  
RECOILS, THE TRAIL SPADES SHEAR THE SOIL PERMITTING  
EXCESSIVE LATERAL DISPLACEMENT. THIS CAN LEAD TO  
INACCURATE ARTILLERY FIRE OR EVEN A CEASE FIRE  
CONDITION DURING A FIRE MISSION. THE OBJECTIVE OF  
THIS STUDY WAS TO DETERMINE THE FEASIBILITY OF USING  
LIME-SOIL STABILIZATION AS A TECHNIQUE TO PROVIDE A  
STABLE FIRING PLATFORM FOR THE 155 MM HOWITZER.  
VARIABLES EVALUATED INCLUDED LIME CONTENT, MOISTURE  
CONTENT, COMPACTIVE EFFORT, AND CURING TIME; ALL  
FACTORS BEARING ON FIELD CONSTRUCTION AND OPERATIONS.  
(MODIFIED AUTHOR ABSTRACT) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-767 074 1975  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

FIELD ARTILLERY FIRE CONTROL SIGHTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON TEST OPERATIONS  
PROCEDURE.

FEB 73 43P

REPT. NO. TOP-3-2-709

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FIRE CONTROL SYSTEMS, TEST METHODS),  
(\*ARTILLERY, FIRE CONTROL SYSTEMS), ARTILLERY FIRE,  
OPTICAL SIGHTS, BORESIGHTING, FIRE CONTROL SYSTEMS  
COMPONENTS, ENVIRONMENTAL TESTS, FIRING TESTS(ORDNANC(U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES (U)

THE REPORT PROVIDES A METHOD OF EVALUATING THE  
PERFORMANCE OF OPTICAL-MECHANICAL SIGHTING SYSTEMS  
USED TO LAY THE MAJOR ARMAMENT OF TOWED AND SELF-  
PROPELLED ARTILLERY. IT INCLUDES TEST PREPARATIONS,  
TECHNIQUES FOR CHECKING BORESIGHT RETENTION,  
ALIGNMENT OF PANORAMIC TELESCOPE, SYNCHRONIZATION,  
AND OTHER FEATURES, ROAD TESTS ON RUGGED TEST  
COURSES, FIRING TESTS COVERING AMBIENT AND EXTREME  
TEMPERATURES, SOLAR RADIATION, AND NIGHT PERFORMANCE,  
RAIN TEST, AND HUMIDITY TEST. IT DESCRIBES METHODS  
FOR DETERMINING AZIMUTH ERROR, TESTING ACCURACY OF  
CANT CORRECTOR, AND ILLUSTRATING TEST RESULTS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-767 673 1975  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

APPLICATION OF STOCHASTIC APPROXIMATION  
THEORY TO FIELD ARTILLERY PRECISION  
FIRE.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
JUN 73 1975 TRATENSEK, MILIVOJ ;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, \*FIRE CONTROL SYSTEMS),  
CIRCULAR ERROR PROBABLE, MISS DISTANCE, IMPACT  
PREDICTION, RANGE TABLES, KILL PROBABILITIES, ARTILLERY,  
THESES, COMPUTER PROGRAMS, SIMULATION (U)  
IDENTIFIERS: COMPUTERIZED SIMULATION, STOCHASTIC  
APPROXIMATION (U)

THE THESIS IS ADDRESSED TO THE PROBLEM OF  
DETERMINING OPTIMAL PRECISION FIRE METHODS FOR THE  
FIELD ARTILLERY. THE CURRENT PRECISION FIRE  
TECHNIQUE HAS BEEN IN USE BY THE FIELD ARTILLERY  
SINCE 1941. BECAUSE OF THE GENERAL ACCEPTANCE THAT  
THE METHOD WORKS, THE PROCEDURE HAS REMAINED  
RELATIVELY UNCHANGED FOR 32 YEARS; NO DOCUMENTED  
EVIDENCE OF PREVIOUS EFFORTS TO ESTABLISH AN  
ANALYTICAL BASIS FOR THE PROCEDURE APPARENTLY EXISTS.  
EMPLOYING THE METHODS OF STOCHASTIC APPROXIMATION,  
THE THEORETICAL FOUNDATION FOR THE CURRENT PROCEDURE  
IS ESTABLISHED. USING THE DEVELOPED THEORETICAL  
FOUNDATION OF THE CURRENT PRECISION FIRE METHOD, A  
SIMPLIFIED, MORE EFFICIENT PROCEDURE IS DEVELOPED.  
IN ADDITION, AN OPTIMAL PRECISION FIRE PROCEDURE TO  
BE USED WHEN FORWARD OBSERVERS ARE EQUIPPED WITH  
LASER RANGE FINDERS IS PRESENTED. THE PROCEDURES  
ARE COMPARED ANALYTICALLY AND THROUGH COMPUTER  
SIMULATIONS TO ARRIVE AT CONCLUSIONS REGARDING  
SIMPLICITY, ACCURACY AND ECONOMY OF AMMUNITION  
EXPENDITURES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-769 396 15/7 19/5  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

THE ATTACK OF A TARGET WITH THE SIMULTANEOUS  
USE OF AIR AND ARTILLERY. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
SEP 73 BSP LARRIVA, RENE FELIPE :

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, \*FIRE SUPPORT),  
(\*TACTICAL AIR SUPPORT, KILL PROBABILITIES),  
CIRCULAR ERROR PROBABLE, BOMB TRAJECTORIES,  
PROJECTILE TRAJECTORIES, SLANT RANGE, BALLISTICS,  
MATHEMATICAL MODELS, THESES, CLOSE SUPPORT,  
GROUND SUPPORT, ATTACK BOMBERS (U)

THE PURPOSE OF THE REPORT IS TO ASSESS THE  
FEASIBILITY OF ATTACKING A TARGET WITH THE  
SIMULTANEOUS USE OF AIR AND ARTILLERY. A METHOD  
FOR GENERATING CIRCULAR ERROR PROBABILITY AS A  
FUNCTION OF RELEASE ALTITUDE IS PRESENTED.  
TECHNIQUES FOR DETERMINING PROBABILITIES OF KILL  
FOR THE AIR ATTACK SYSTEM, ARTILLERY SYSTEM, AND FOR  
THE COMBINED AIR-ARTILLERY ATTACK SYSTEM ARE  
EXAMINED. FROM THE PROBABILITY OF KILL INFORMATION  
AND FROM THE RATE OF FIRE (DELIVERY) OF THE  
SYSTEMS, EXPECTED TIME TO TARGET DESTRUCTION  
CALCULATIONS ARE DEVELOPED. THE RESTRICTIONS THAT  
ALLOW THE USE OF THE COMBINED AIR-ARTILLERY ATTACK  
SYSTEM ARE PRESENTED, AS WELL AS A DISCUSSION OF THE  
ADVANTAGES AND DISADVANTAGES OF THIS SYSTEM OF  
ATTACK. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-769 579 1974  
ARMY MATERIEL SYSTEMS ANALYSIS AGENCY ABERDEEN PROVING  
GROUND MD

THE DISTRIBUTION OF SUBMUNITION ARRIVAL  
TIMES.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 73 46P ATZINGER, ERWIN M. ;  
REPT. NO. AMSAA-TR-79  
PROJ: RDT/E-1-T-665706-M-541

UNCLASSIFIED REPORT

DESCRIPTORS: (ARTILLERY AMMUNITION, IMPACT  
PREDICTION), PROBABILITY DENSITY FUNCTIONS,  
PROJECTILE FUZES, ARRIVAL, DISPERSIONS,  
NUMERICAL ANALYSIS

(U)

IN ASSESSING THE EFFECTIVENESS OF AN ARTILLERY  
VOLLEY USING IMPROVED CONVENTIONAL MUNITIONS (ICM)  
IN A SITUATION WHERE THE PERSONNEL IN THE TARGET AREA  
MAY REACT TO SEEK PROTECTIVE COVER, ONE MUST CONSIDER  
BOTH THE DISTRIBUTION OF ARRIVAL TIME OF SUBMUNITIONS  
IN THE TARGET AREA AND THE REACTION TIME DISTRIBUTION  
FOR THE TARGET PERSONNEL. A METHODOLOGY IS DEvised  
TO QUANTITATIVELY ADDRESS THE FIRST OF THESE SOURCES  
OF VARIABILITY. THIS METHODOLOGY IS THEN APPLIED  
TO SEVERAL SPECIFIC FUZE-MUNITION CONFIGURATIONS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-770 033 1971  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ARTILLERY AMMUNITION. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON TEST OPERATIONS  
PROCEDURE.

OCT 73 12P  
REPT. NO. TOP-4-2-011

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY AMMUNITION, TEST  
METHODS), COMPLETE ROUNDS, PROJECTILES,  
HANDLING, PROPELLING CHARGES, INSPECTION,  
SAFETY (U)

IDENTIFIERS: \*COMMON ENGINEERING TEST  
PROCEDURES (U)

THE REPORT PROVIDES A CONSOLIDATION OF TEST  
PROCEDURES FOR ARTILLERY AMMUNITION INCLUDING ALL  
FIELD ARTILLERY, ANTIAIRCRAFT ARTILLERY, AND TANK  
AMMUNITION, 37-MM AND LARGER. IT DISCUSSES SAFETY  
PRECAUTIONS, TEST SEQUENCING, AND INITIAL INSPECTION;  
SAFETY EVALUATION INCLUDING PROPELLANT CHECKOUT,  
DESIGN STRENGTH, TRANSPORTABILITY, AND EMI; EXTREME  
TEMPERATURE TESTING; RELIABILITY; AND HUMAN FACTORS  
AND MAINTENANCE EVALUATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-770 363 1977 2074  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA AEROBALLISTICS  
DIRECTORATE

COMPARISONS BETWEEN EXPERIMENT AND AN  
APPROXIMATE TRANSONIC CALCULATIVE METHOD. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 73 43P SPRING, DONALD J. ;  
REPT. NO. RD-73-34  
PROJ: DA-1-M-262303-A-214

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, \*MODEL TESTS,  
OGIVES, WIND TUNNEL MODELS, ROCKET EXHAUST,  
TRANSONIC CHARACTERISTICS, FLOW FIELDS (U)

A METHOD HAS BEEN DEVELOPED BY WU AND AOYAMA  
(1) TO PREDICT THE SURFACE PRESSURES OVER TANGENT  
OGIVE BODIES AT ZERO ANGLE OF ATTACK. TO VERIFY THE  
USEFULNESS AND THE ACCURACY OF THE METHOD, AN  
EXPERIMENTAL PROGRAM WAS CONDUCTED OVER THE MACH  
NUMBER RANGE BETWEEN 0.7 AND 1.2. THE DATA OBTAINED  
DURING THE TEST PROGRAM ARE IN THE FORM OF PRESSURE  
COEFFICIENTS AND ARE PRESENTED AS PLOTS OF SURFACE  
PRESSURE DISTRIBUTION OVER THE BODY. (MODIFIED  
AUTHOR ABSTRACT) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-770 539 9/6  
MOTOROLA INC SCOTTSDALE ARIZ GOVERNMENT ELECTRONICS  
DIV

CRYSTAL CONTROLLED L-BAND TELEMETRY  
TRANSMITTER.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 73 58P WUNDERLICH, LOUIS ;  
CONTRACT: DAAG39-72-C-0074

UNCLASSIFIED REPORT

DESCRIPTORS: \*TELEMETERING TRANSMITTERS, L BAND,  
ARTILLERY AMMUNITION, PROJECTILES, CRYSTAL  
OSCILLATORS, TRANSISTOR AMPLIFIERS

(U)

THE EFFORT INCLUDED DEVELOPMENT OF AN L-BAND  
TELEMETRY TRANSMITTER HAVING APPROXIMATELY 150  
MW OUTPUT WITH AN EFFICIENCY OF 10 PERCENT. THE  
TRANSMITTER IS DESIGNED TO WITHSTAND FIRING FROM 105  
MM AND 155 MM ARTILLERY WEAPONS. IT OPERATES AT  
1510 MHZ AND IS CRYSTAL CONTROLLED TO OBTAIN A  
FREQUENCY STABILITY OF 0.002 PERCENT. THE UNIT IS  
CONSTRUCTED USING MICROSTRIP CIRCUITS USING HIGH  
DIELECTRIC CONSTANT CERAMIC SUBSTRATES. (MODIFIED  
AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-771 066 16/1  
NORTHROP SERVICES INC HUNTSVILLE ALA

ARTILLERY RESEARCH MISSILE LAUNCHER  
DEVELOPMENT PROGRAM.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

JUL 72 464P

REPT. NO. TR-230-1104

CONTRACT: DAAH01-71-C-1347

UNCLASSIFIED REPORT

DESCRIPTORS: •ARTILLERY ROCKETS, •GUIDED MISSILE  
LAUNCHERS, EXPERIMENTAL DESIGN, FIRE CONTROL  
SYSTEMS, FREE FLIGHT TRAJECTORIES, DYNAMIC RESPONSE,  
STRESS, PERFORMANCE(ENGINEERING)

(U)

THE ARTILLERY RESEARCH MISSILE LAUNCHER  
DESIGN/DEVELOPMENT PROGRAM DEMONSTRATES SEVERAL OF  
THE TACTICALLY DESIRABLE FEATURES OF A LAUNCHER  
EVOLVED DURING THE MULTIPLE ARTILLERY ROCKET  
SYSTEM (MARS) STUDIES AND NORTHROP-FUNDED  
STUDIES FOLLOWING THEM. NORTHROP STUDIES CULMINATED  
IN PROGRAMS PROPOSING AN ENGINEERING MODEL OF A HIGH  
FIRE-RATE, PROTECTED LAUNCHED SYSTEM; A FULL  
PROTOTYPE WEAPON SYSTEM WITH A NEW TACTICAL MISSILE  
PROTOTYPE AND THE DECEMBER 1970 PROPOSAL WHICH LED  
TO THE ARTILLERY RESEARCH MISSILE LAUNCHER  
DEVELOPMENT.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-771 980 19/1  
BREED CORP FAIRFIELD N J

ARTILLERY SAFETY AND ARMING DEVICE. (U)

DESCRIPTIVE NOTE: FINAL REPT.  
FEB 72 125P  
CONTRACT: DAAF39-71-C-0002

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY AMMUNITION, \*SAFETY AND  
ARMING(ORDNANCE), POINT DETONATING FUZES, FUZE  
FUNCTIONING ELEMENTS, DASHPOTS, DAMPING, SELF  
DESTRUCT DEVICES, ENVIRONMENTAL TESTS (U)

THE REPORT DESCRIBES A PROGRAM INITIATED TO DESIGN  
AND DEVELOP A SAFETY AND ARMING DEVICE FOR GENERAL  
ARTILLERY USE INCORPORATING DASHPOT FUNCTIONS TO  
DELAY ARMING AND SELF-DESTRUCTION. THE CONCEPT  
INVOLVED THE REPLACEMENT OF THE GEAR DRIVEN RUNAWAY  
ESCAPEMENT OF THE CURRENT M125A1 BOOSTER WITH A  
SIMPLER MECHANISM USING A SHARP EDGE ORIFICE DASHPOT  
FOR ARMING DELAY AND A LIQUID ANNULAR ORIFICE DASHPOT  
FOR SELF-DESTRUCT TO CLEAN UP DUD ROUNDS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-772 551 19/5 12/2  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

MODELS FOR THE FIELD ARTILLERY DESTRUCTION  
MISSION.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
SEP 71 SIP EVANS, ROBERT DOBSON ;  
REPT. NO. THESIS-E-774

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY FIRE, \*FIRE CONTROL SYSTEMS,  
ARTILLERY, KILL PROBABILITIES, IMPACT PREDICTION,  
RANGE FINDING, RANDOM VARIABLES, MATHEMATICAL  
MODELS, THESES

(U)

THE PURPOSE OF THE REPORT IS TO MATHEMATICALLY  
MODEL THE FIELD ARTILLERY DESTRUCTION  
MISSION. THE AUTHOR FELT THAT ADVANCES IN  
TECHNOLOGY MIGHT ALLOW THE DEVELOPMENT OF PROCEDURES  
THAT ARE MORE EFFICIENT THAN THOSE CURRENTLY IN USE.  
IN PARTICULAR TACFIRE, A COMPUTER BASED FIRE  
DIRECTION CENTER, AND THE LASER RANGE-FINDER WERE  
TAKEN INTO CONSIDERATION. USING THE CAPABILITIES  
RESULTING FROM THESE TECHNOLOGICAL ADVANCES, A  
CLASSICAL AND BAYESIAN MODEL OF THE DESTRUCTION  
MISSION WAS DEVELOPED. EACH MODEL WAS ANALYZED AND  
CONCLUSIONS WERE DRAWN REGARDING THE APPROPRIATE  
MODEL TO USE IN A GIVEN SITUATION. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-773 966 4/1 1977  
AIR FORCE CAMBRIDGE RESEARCH LABS L G HANSCOM FIELD  
MASS

TESTS OF LONG WIRE DEPLOYMENT FROM  
SUPERSONIC ROCKETS.

(U)

DESCRIPTIVE NOTE: INSTRUMENTATION PAPERS,  
AUG 73 37P KALAKOWSKY, CHARLES B. ;  
HIRST, GEORGE C. ; LEWIS, EDWARD A. ;  
REPT. NO. AFCRL-TR-73-0553, AFCRL-IP-201  
PROJ: ILIR-6-70

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY ROCKETS, \*LIGHTNING,  
SOUNDING ROCKETS, MECHANICAL CABLES, DEPLOYMENT,  
CONDUCTIVITY  
IDENTIFIERS: LITTLE JOHN

(U)

(U)

THE REPORT COVERS PRELIMINARY STUDIES UNDERTAKEN TO  
DEVELOP A TECHNIQUE FOR USING BALLISTIC MISSILES TO  
TOW LONG CONDUCTING WIRES INTO THUNDERCLOUDS. THIS  
WORK WAS IN SUPPORT OF EXPERIMENTS FOR ARTIFICIALLY  
TRIGGERING LIGHTNING DISCHARGES IN CLOUDS. SOME  
ELEMENTARY, HIGHLY IDEALIZED MECHANICAL PROPERTIES OF  
LONG WIRES ARE REVIEWED, AND TWO APPROACHES TO HIGH  
SPEED WIRE DISPENSING WERE CHOSEN FOR  
EXPERIMENTATION. THE MECHANICAL CONFIGURATIONS  
USED ARE DESCRIBED IN DETAIL AND THE RESULTS OF  
ACTUAL ROCKET TESTS AT WHITE SANDS MISSILE  
RANGE ARE GIVEN. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-775 816 1976 14/2  
ROCK ISLAND ARSENAL ILL GENERAL THOMAS J RODMAN LAB

BLAST FIELD STUDY FOR PROPOSED RIA (ROCK ISLAND ARSENAL) FIRING TUNNEL. (U)

DESCRIPTIVE NOTE: SUMMARY REPT. APR-JUN 73,  
FEB 74 43P SALSBUARY, MARK J. ;  
REPT. NO. SARRI-R-TR-74-007

UNCLASSIFIED REPORT

DESCRIPTORS: \*TEST FACILITIES, \*FIRING TESTS(ORDNANCE), WEAPONS, TUNNELS, BLAST, PRESSURE, ARTILLERY, LOADS(FORCES), OVERPRESSURE, SHOCK WAVES, MUZZLE BRAKES (U)

THE REPORT COVERS A BLAST FIELD STUDY CONDUCTED IN CONJUNCTION WITH A FIRING TUNNEL FEASIBILITY INVESTIGATION. THE EFFORT WAS AUTHORIZED UNDER A MCA PROJECT FOR EXPANDING THE FIRING FACILITIES AT ROCK ISLAND ARSENAL. MUZZLE BLAST DATA WAS COLLECTED FROM 105MM HOWITZER FIRINGS AND THE NEAR BLAST FIELD CHARACTERISTICS FOR LARGER ARTILLERY WEAPONS WERE PREDICTED BY APPLYING SCALING TECHNIQUES. THIS BLAST DATA WILL BE USED TO DETERMINE THE STRUCTURAL REQUIREMENTS OF A TUNNEL FOR TEST FIRING VARIOUS CALIBAR ARTILLERY WEAPONS AT 0 DEGREES QUADRANT ELEVATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-776 379 17/5  
BATTELLE COLUMBUS LABS OHIO

LOCATION OF ARTILLERY MUZZLE FLASHES AT  
NIGHT USING TERRESTRIAL PHOTOGRAMMETRY. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 74 34P STEPHAN, J. G. ; WENIG, JACOB  
; MCDOWELL, H. CLAY I  
CONTRACT: F33657-71-C-0529  
PROJ: LWL-12-P-72  
MONITOR: LWL CR-12P72

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY, \*PROPELLANT FLASHES,  
\*TARGET ACQUISITION, \*INFRARED PHOTOGRAPHY,  
PHOTOGRAMMETRY, FEASIBILITY STUDIES (U)

THE FEASIBILITY OF PHOTOGRAMMETRICALLY LOCATING THE  
POSITION OF ARTILLERY PIECES BY INFRARED PHOTOGRAPHY  
OF THE MUZZLE FLASH WAS CONSIDERED. AN INITIAL  
TEST WAS CONDUCTED SIMULATING THE MUZZLE FLASH WITH A  
LIGHT BULB. TWO FIELD TESTS WERE CONDUCTED WITH  
ACTUAL GUN FIRINGS - ONE AT FT. SILL, OK, AND  
ONE AT ABERDEEN PROVING GROUND, MD. A TV  
CAMERA SYSTEM WITH A RESPONSE EXTENDING TO THE NEAR  
IR IS RECOMMENDED AS A CONVENIENT REAL-TIME SENSOR  
FOR ARTILLERY FLASH WHICH SHOULD BE USABLE FOR BOTH  
DAY AND NIGHT DETECTIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-776 514 1976  
ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER CHARLOTTESVILLE  
VA

INSTRUCTIONS REGARDING MILITARY ENGINEERING  
REQUIREMENTS FOR ALL TROOPS OF THE SOVIET  
ARMY.

(U)

NOV 73 64P  
REPT. NO. FSTC-MT-23-1024-70A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: TRANS. OF UNIDENTIFIED RUSSIAN  
LANGUAGE MONO., PUB. BY MINISTRY OF DEFENSE USSR,  
MOSCOW, 1952.

DESCRIPTORS: \*ARTILLERY, \*MILITARY ENGINEERING,  
USSR, TRENCHING, TRANSLATIONS

(U)

THE ARTICLE DESCRIBES THE MILITARY ENGINEERING  
REQUIREMENTS FOR THE CONSTRUCTION OF PITS FOR  
OBSERVATION POSTS AND COVER FOR FIELD ARTILLERY.  
(AUTHOR)

(U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-778 876 5/10 5/9  
ARMY WAR COLL CARLISLE BARRACKS PA

THE ATT/TPI (ARMY TRAINING TEST/  
TECHNICAL PROFICIENCY INSPECTION) - A  
SINGLE EVENT.

(U)

DESCRIPTIVE NOTE: STUDENT ESSAY,  
NOV 73 22P GREENE, ROBERT J. ;

UNCLASSIFIED REPORT

DESCRIPTORS: •ARMY TRAINING, •ARTILLERY, •NUCLEAR  
WEAPONS, •TEST CONSTRUCTION (PSYCHOLOGY),  
•INSPECTION, HOWITZERS, QUESTIONNAIRES, DATA  
ACQUISITION, COMBAT READINESS, REVIEWS,  
EFFICIENCY

(U)

IDENTIFIERS: ESSAYS, ATT/TPI (ARMY TRAINING  
TEST/TECHNICAL PROFICIENCY INSPECTION),  
ARMY TRAINING TEST/TECHNICAL PROFICIENCY  
INSPECTION

(U)

THE ARMY TRAINING TEST/TECHNICAL  
PROFICIENCY INSPECTION (ATT/TPI), A COMBINING  
OF WHAT WAS FORMERLY A SEPARATE TEST AND AN  
INSPECTION FOR 155 MM HOWITZER FIELD ARTILLERY  
BATTALIONS, WAS IMPLEMENTED IN OCTOBER 1972.  
COMBINING THE EVENTS HAS RESULTED IN THE ESSENTIAL  
INTEGRATION OF TPI INSPECTORS, REPRESENTING HIGHER  
HEADQUARTERS, INTO LOWER HEADQUARTERS TESTING TEAMS;  
SOME CONFLICT IN SCHEDULING; AND A POSSIBLE  
DEGRADATION OF EITHER, OR BOTH, EVENTS: RESEARCH  
HAS BEEN RESTRICTED TO A BASIC QUESTIONNAIRE  
FURNISHED TO 15 SENIOR FIELD ARTILLERY COMMANDERS,  
DA AND CONARC STAFF OFFICERS; DISCUSSIONS WITH  
TEST TEAM MEMBERS AND INSPECTORS; AND A STUDY OF DA  
AND CONARC STAFF PAPERS RELATING TO THE ATT/  
TPI. (MODIFIED AUTHOR ABSTRACT)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-780 081 1975 9/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD  
SYSTEMS ANALYSIS DIRECTORATE

METHODOLOGY INVESTIGATION: TECHNICAL  
EVALUATION OF FIELD ARTILLERY DIGITAL  
AUTOMATIC COMPUTER (FADAC) TAPES. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
AUG 73 23P MCCOY, DONALD H. ;  
REPT. NO. SY-73-2

UNCLASSIFIED REPORT

DESCRIPTORS: \*ARTILLERY, \*FIRE CONTROL COMPUTERS,  
\*TAPES, DIGITAL COMPUTERS, INPUT OUTPUT  
PROCESSING, BALLISTIC TESTING, COMPUTER  
PROGRAMS (U)  
IDENTIFIERS: FADAC COMPUTER PROGRAM (U)

THE STUDY WAS CONDUCTED BY THE SYSTEMS ANALYSIS  
DIRECTORATE OF HEADQUARTERS, US ARMY TEST AND  
EVALUATION COMMAND, FOR THE PURPOSE OF  
DEMONSTRATING THE NEED AND FEASIBILITY OF COMPLETE  
TECHNICAL TESTING OF REVISED FADAC TAPES. BETTER  
TECHNICAL TESTING WAS SHOWN TO BE FEASIBLE AND  
DESIRABLE. RECOMMENDATIONS WERE MADE TO HAVE  
FRANKFORD ARSENAL CONDUCT COMPLETELY AUTOMATED  
TECHNICAL TESTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY      SEARCH CONTROL NO. /ZOM07

AD-804 815                      1975                      14/2  
ARMY WEAPONS COMMAND ROCK ISLAND ILL RESEARCH AND  
ENGINEERING DIV

DEVELOPMENT OF A GAS GUN TO INVESTIGATE OBSCURATION  
EFFECTS. (U)

DESCRIPTIVE NOTE: INTERIM REPT. JUL 65-SEP 66,  
NOV 66                      75P                      TOWNSEND, PHILIP E. ;  
PROJ: DA-1-L-0-13001-A-91A  
MONITOR: RIA                      66-3281

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARTILLERY FIRE, GUN SMOKE), (•BLAST,  
VISIBILITY), GUN BARRELS, LIGHT GAS GUNS, RARE GASES,  
DEFLECTION, DUST, TEST METHODS, INSTRUMENTATION,  
PERFORMANCE(ENGINEERING) FLAT PLATE MODELS (U)

THE OBJECTIVE OF THIS STUDY WAS TO DEVELOP A METHOD  
FOR THE INVESTIGATION OF OBSCURATION. A SERIOUS  
PROBLEM ASSOCIATED WITH ARTILLERY FIRINGS IS THE  
OBSCURATION OF THE TARGET BY THE CLOUD OF SMOKE,  
DUST, AND DEBRIS RAISED BY THE MUZZLE BLAST. IN AN  
ATTEMPT TO STUDY THIS PROBLEM A DEVELOPMENT PROGRAM  
WAS OUTLINED AND INITIATED ON A MODEL BASIS UNDER  
LABORATORY CONDITIONS. A GAS GUN WAS DESIGNED AND  
TESTED IN CONDITIONS MODELING A PROTOTYPE TEST USING  
FLAT PLATES AS BLAST DEFLECTORS. THE GAS GUN  
SYSTEM OPERATED SATISFACTORILY EXCEPT FRICTION IN THE  
MECHANISM CAUSED SOME CONCERN. THE RESULTS OF THE  
MODEL TEST PARALLELED THOSE OF THE PROTOTYPE TEST BUT  
WERE CONSISTANTLY LOWER IN EFFICIENCY LEVEL. THE  
TECHNIQUE SHOWS PROMISE AND FURTHER EFFORT  
DEVELOPMENT IS RECOMMENDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-808 887 4/2 19/7 14/2  
ARMY ARTILLERY BOARD FORT SILL OKLA

SERVICE TEST OF WIND SPEED SIMULATOR AN/GMM-71  
)

(U)

DESCRIPTIVE NOTE: FINAL REPT. 19 OCT 66-13 JAN 67,  
FEB 67 34P KELSEY, ROBERT G. ;  
REPT. NO. USAARTYBD-FA-964-1  
PROJ: RDT/E-1A579191D689, USATECOM-2-4-0031-03

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY ROCKETS, LAUNCHING), (\*WIND,  
INSTRUMENTATION), VELOCITY, METEOROLOGICAL INSTRUMENTS,  
PERFORMANCE(ENGINEERING), ACCURACY, MAINTENANCE, HUMAN  
FACTORS ENGINEERING, ACCEPTABILITY, CHECKOUT EQUIPMENT,  
EXTERIOR BALLISTICS, LOW ALTITUDE, MICROMETEOROLOGY,  
SIMULATORS (U)

IDENTIFIERS: AN/MMQ-1, AN/PMQ-6, HONEST JOHN, LITTLE  
JOHN (U)

TESTS WERE CONDUCTED BY THE US ARMY ARTILLERY  
BOARD AT FORT SILL, OKLAHOMA, FROM 19  
OCTOBER 1966 TO 13 JANUARY 1967. THE SERVICE  
TEST DETERMINED SUITABILITY OF THE TEST ITEM FOR USE  
WITH ARTILLERY HONEST JOHN AND LITTLE JOHN UNITS  
TO PROVIDE CONFIDENCE CHECKS FOR THE WIND  
MEASURING SETS AN/MMQ-1 AND AN/PMQ-6.

THE TEST ITEM IS CONSIDERED ADEQUATE FOR ARMY USE  
WHEN ALL SHORTCOMINGS HAVE BEEN CORRECTED.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-809 426 4/2 1977  
ATMOSPHERIC SCIENCES LAB WHITE SANDS MISSILE RANGE N  
MEX

HONEST JOHN MISSILE NO. 1778, ROUND NO. 547 RGL (1  
MARCH 1967). (U)

DESCRIPTIVE NOTE: METEOROLOGICAL DATA REPT.

MAR 67 10P

REPT. NO. DR-163

PROJ: DA-1-V-650212-A-127

TASK: 1-V-650212-A-12702

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY ROCKETS, LAUNCHING),  
(\*METEOROLOGICAL PHENOMENA, GUIDED MISSILE RANGES),  
EXTERIOR BALLISTICS, WIND, ALTITUDE, PRESSURE,  
TEMPERATURE, HUMIDITY, DEW POINT, DENSITY, REFRACTIVE  
INDEX, SOUND TRANSMISSION, VELOCITY, ROCKET  
TRAJECTORIES (U)

IDENTIFIERS: HONEST JOHN (U)

METEOROLOGICAL DATA GATHERED FOR THE LAUNCHING OF  
HONEST JOHN, MISSILE NUMBER 1778, ROUND  
NUMBER 547 RGL, ARE PRESENTED IN TABULAR FORM.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-815 047 15/7  
ARMY COMBAT DEVELOPMENTS COMMAND FORT ORD CALIF  
EXPERIMENTATION COMMAND

CONTROLLABILITY OF PENTANA-TYPE COMPANIES IN MOBILE  
OPERATIONS. VOLUME III: ARTILLERY SUPPORT. (U)

DESCRIPTIVE NOTE: FINAL REPT.  
DEC 58 55P

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-815 048.

DESCRIPTORS: (\*ARTILLERY, ARMY OPERATIONS), INFANTRY,  
CLOSE SUPPORT, TACTICAL WARFARE, SIMULATION, MOBILITY,  
MILITARY TRANSPORTATION, NUCLEAR WEAPONS, DEPLOYMENT,  
RANGE(DISTANCE), INTENSITY, EFFICIENCY, ANTITANK  
AMMUNITION, COMBAT SURVEILLANCE, TARGET ACQUISITION,  
ARMY RESEARCH, COMMAND AND CONTROL SYSTEMS, ARTILLERY  
FIRE (U)  
IDENTIFIERS: PENTANA, RIFLE COMPANIES (U)

THIS VOLUME REPORTS ON THE REQUIREMENTS FOR AND  
EMPLOYMENT OF ARTILLERY IN SUPPORT OF A PENTANA-  
TYPE COMBAT GROUP, AS DETERMINED DURING THE SUBJECT  
FIELD EXPERIMENT. AN ARTILLERY PLATOON OF FOUR  
WEAPONS, SIMULATING A BATTERY OF EIGHT TUBES, WAS  
EMPLOYED IN SUPPORT OF THE PENTANA-TYPE RIFLE  
COMPANY DURING SIMULATED COMBAT OPERATIONS AGAINST A  
MECHANIZED AGGRESSOR TASK FORCE. CONCLUSIONS ARE  
BASED ON THE FIRE MISSION DATA AND MILITARY  
OBSERVATIONS OBTAINED IN THE FIELD. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-818 344 19/6 14/1  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A COST-EFFECTIVENESS METHODOLOGY FOR ARTILLERY WEAPONS SYSTEMS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
JUN 67 84P ALLINDER, MYRL W., JR.

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, \*COST EFFECTIVENESS), THESES, COMPUTER PROGRAMMING, LOGISTICS, MOBILITY, HOWITZERS, SELF PROPELLED GUNS, ROCKETS, GUIDED MISSILES, RANGE(DISTANCE), TRANSPORTATION, FIRE CONTROL SYSTEMS, MAINTENANCE, EFFECTIVENESS (U)

THE COMPOSITION OF AN ARTILLERY SYSTEM AND ITS MISSION IN A NON-NUCLEAR ENVIRONMENT IS DISCUSSED. FOUR SCENARIOS ARE DEFINED IN WHICH THE ARTILLERY SYSTEM MUST PERFORM ITS MISSION, AND THE TASKS ARE DETAILED. A CONCEPT FOR A MEASURE OF EFFECTIVENESS (MOE) FOR ARTILLERY IS DEVELOPED AND A METHODOLOGY IS PRESENTED. THE EFFECTS OF THE SCENARIOS ON THE MOE ARE ANALYZED AND THE CONSTRAINTS ARE DISCUSSED. A MOBILITY CONCEPT IS DEVELOPED AND A DEFINITION IS PRESENTED. COSTING CONCEPTS AND TECHNIQUES ARE PRESENTED WITH NOTATION DEVELOPED FOR COMPUTER APPLICATION TO THE ARTILLERY SYSTEM COSTING PROBLEM. SOME COST ESTIMATING RELATIONSHIPS (CER'S) ARE SUGGESTED. A COST-EFFECTIVENESS ANALYSIS IS MADE EMPLOYING THE DEVELOPED MOE AND COSTING PROCEDURE. SOME DECISION CRITERIA ARE STATED AND DISCUSSED. (U)  
(AUTHOR)

UNCLASSIFIED

DIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-828 729 19/1 9/2  
LITTON SYSTEMS INC WOODLAND HILLS CALIF

CERAMIC MEMORY FOR ORDNANCE FUZING. (U)

DESCRIPTIVE NOTE: FINAL REPT. APR-AUG 67 ON PHASE 3,  
SEP 67 67P KAUFMAN, ALVIN B. INEWHOFF,  
HARRY R. ;  
CONTRACT: DA-49-186-AMC-250(D)  
MONITOR: HDL TR-250(D)-3

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, PROJECTILE FUZES),  
(\*PROJECTILE FUZES, MEMORY DEVICES), (\*MEMORY DEVICES,  
CERAMIC MATERIALS), FERROELECTRIC MATERIALS, VOLTAGE,  
SHOCK(MECHANICS), ENCAPSULATION, OPTIMIZATION, FIRING  
TESTS(ORDNANCE), EPOXY RESINS, TEMPERATURE (U)  
IDENTIFIERS: GRAPHS(CHARTS) (U)

THIS FINAL PHASE OF THE PROGRAM ENCOMPASSED TWO  
TASKS: THE COMPLETION OF THE DEVELOPMENT OF THE  
CERAMIC MEMORY FOR ARTILLERY USE AND THE PRODUCTION  
OF 31 MODELS FOR GUN-FIRING TESTS. THE MOD VI-  
A AND MOD VII BENDER MEMORIES DEVELOPED  
REPRESENT THE DEVELOPMENTAL OPTIMIZATION OF BENDER  
TYPE, NONRESONANT, CERAMIC MEMORY DEVICES. THE  
CERAMIC MATERIALS DEEMED MOST SUITABLE WERE  
EVALUATED, AS WERE GEOMETRIC CONFIGURATIONS; BOTH  
FROM ECONOMIC AND TECHNICAL CONSIDERATIONS.  
PACKAGING FOR THE HIGH G AND TEMPERATURE  
ENVIRONMENT WAS DEVELOPED UTILIZING EITHER 'SOLID' OR  
RIGID FOAM EPOXIES. IMPROVED 'VOLTAGE DOUBLER'  
INTERROGATION CIRCUITRY WAS DEVELOPED WHICH SUPPLIES  
A DRIVE TO THE MEMORY APPROXIMATELY TWICE THAT  
AVAILABLE FROM THE (BATTERY) SUPPLY LINE.  
(AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-829 986 1973  
ARMY ARMOR AND ENGINEER BOARD FORT KNOX KY

SERVICE TEST OF PRODUCT IMPROVED COMPONENTS FOR  
SHERIDAN WEAPON SYSTEM (CLOSED BREECH SCAVENGER  
SYSTEM).

(U)

DESCRIPTIVE NOTE: PARTIAL REPT. NO. 1,  
MAR 68 29P WATSON, VADEN K. ; SICKS,  
TRUMAN E. ;  
PROJ: USATECOM-1-4-2528-33

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARMORED VEHICLES, SELF PROPELLED GUNS),  
(•SELF PROPELLED GUNS, BREECH MECHANISMS), TANKS (COMBAT  
VEHICLES), RELIABILITY, SYSTEMS ENGINEERING, COMPRESSED  
AIR, COMPRESSOR NOISE, COMPRESSORS, COMPATIBILITY,  
INSTALLATION, DESIGN, VIBRATION, ROAD TESTS, PAVEMENTS,  
HUMAN FACTORS ENGINEERING, COMBUSTION DEPOSITS,  
CARTRIDGE CASES, ENVIRONMENTAL TESTS,  
DEFECTS (MATERIALS), GUN TURRETS, GUN BARRELS, GAS  
CYLINDERS, PURGING, HEAT TOLERANCE, ARMY PERSONNEL (U)  
IDENTIFIERS: CLOSED BREECH SCAVENGERS, CROSS COUNTRY  
TESTS, M-551 VEHICLES, M-81 GUNS (152-MM) (U)

TEST OBJECTIVES WERE: TO ASSESS THE CAPABILITY  
OF THE COMPRESSOR TO WITHSTAND THE VEHICLE  
ENVIRONMENT; TO DETERMINE IF THE COMPRESSOR, THE  
REMAINDER OF THE SCAVENGER SYSTEM, AND THE RESTOWAGE  
OF THE TURRET IS COMPATIBLE WITH CREW FUNCTIONS; TO  
DETERMINE TIME REQUIRED TO RECHARGE THE COMPRESSED  
AIR BOTTLE, AND TO ASSESS THE BOTTLE CAPACITY AND  
COMPRESSOR RECHARGE RATE WITH REGARD TO ITS ADEQUACY  
FOR FIRING MISSIONS, AND TO DESCRIBE ANY RESIDUE NOT  
CLEANED BY THE SCAVENGER. RESULTS ARE BASED ON  
OPERATION OF THE COMPRESSOR FOR 50 HOURS, FIRING OF  
58 ROUNDS, AND MOVEMENT OVER PAVED AND UNPAVED ROADS  
AND CROSS COUNTRY FOR 496 MILES. RESTOWAGE OF THE  
TURRET COMPONENTS WAS IN GENERAL COMPATIBLE WITH CREW  
FUNCTIONS. TIME REQUIRED TO RECHARGE THE AIR  
BOTTLE FROM MINIMUM FIRING PRESSURE OF 1,000 PSI TO  
MAXIMUM PRESSURE WAS 31 MINUTES. NO BURNING  
RESIDUE EXPERIENCED IN FIRING 58 ROUNDS.  
NONBURNING RESIDUE WAS EVIDENT IN BREECH CAVITY  
AFTER EACH ROUND. RELIABILITY DEFICIENCIES INCLUDE  
HOSE FAILURE, COMPRESSOR CONTACT POINT FAILURE, WATER  
IN SYSTEM. USAARENBD CONCLUDED DURATION OF TEST  
WAS INSUFFICIENT TO DETERMINE SUITABILITY.

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(U)

UNCLASSIFIED

/ZOM07

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-830 284 1971 13/8  
ARMY MATERIEL COMMAND WASHINGTON D C

ENGINEERING DESIGN HANDBOOK. AMMUNITION SERIES  
SECTION 5, INSPECTION ASPECTS OF ARTILLERY AMMUNITION  
DESIGN. (U)

MAR 66 30P  
REPT. NO. AMC-PAM-706-248

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AMMUNITION, QUALITY CONTROL),  
(\*HANDBOOKS, AMMUNITION), DESIGN, ARTILLERY,  
TOLERANCES(MECHANICS), DEFECTS(MATERIALS),  
CLASSIFICATION, SAMPLING, ACCEPTABILITY (U)  
IDENTIFIERS: POISSON DISTRIBUTION (U)

THE TOPICS COVERED IN THE HANDBOOK ARE:  
QUALITY ASSURANCE ASPECTS OF AMMUNITION DESIGN;  
EFFECT OF DIMENSIONING AND TOLERANCING ON  
INSPECTION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-830 290 1971  
ARMY MATERIEL COMMAND WASHINGTON D C

ENGINEERING DESIGN HANDBOOK. AMMUNITION SERIES,  
SECTION I, ARTILLERY AMMUNITION-GENERAL, WITH TABLE  
OF CONTENTS, GLOSSARY AND INDEX FOR SERIES. (U)

SEP 63 86P  
REPT. NO. AMC-PAM-706-244

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON RESEARCH AND DEVELOPMENT  
OF MATERIEL.

DESCRIPTORS: (\*HIGH EXPLOSIVE AMMUNITION, \*ARTILLERY);  
INDEXES, HANDBOOKS, DICTIONARIES, DESIGN, AMMUNITION  
COMPONENTS, TERMINAL BALLISTICS, BLAST, FLIGHT CONTROL  
SYSTEMS, LAUNCHING, INTERIOR BALLISTICS, QUALITY  
CONTROL, MANUFACTURING, PROJECTILE FUZES (U)

THIS SERIES CONSISTS OF SIX SECTIONS. SECTION I  
IS AN INTRODUCTION TO THE GENERAL SUBJECT OF  
AMMUNITION AND ITS DESIGN. IT IS PRIMARILY  
INTENDED TO FAMILIARIZE NEWCOMERS TO THE FIELD WITH  
THE NOMENCLATURE AND CLASSIFICATION OF AMMUNITION  
ITEMS. FOR CONVENIENCE IN PUBLICATION, THE  
FEATURES APPLYING TO THE ENTIRE SERIES, SUCH AS TABLE  
OF CONTENTS, GLOSSARY AND INDEX, HAVE BEEN BOUND WITH  
SECTION I. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-830 293 1976

OFFICE OF THE CHIEF OF ORDNANCE WASHINGTON D C

ORDNANCE ENGINEERING DESIGN HANDBOOK. CARRIAGES AND  
MOUNTS SERIES: EQUILIBRATORS. (U)

APR 60 68?

REPT. NO. ORDP-20-345

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GUNS, STABILIZATION SYSTEMS),  
(\*HANDBOOKS, \*GUN MOUNTS), DESIGN, OPERATION, PNEUMATIC  
DEVICES, SPRINGS, MECHANICS, PERFORMANCE(ENGINEERING),  
DATA, ARTILLERY, TORQUE, MATHEMATICAL ANALYSIS (U)  
IDENTIFIERS: CARRIAGES(ORDNANCE) (U)

THE HANDBOOK PRESENTS INFORMATION ON THE  
FUNDAMENTAL OPERATING PRINCIPLES OF EQUILIBRATORS,  
ON THAT PART OF THE ARTILLERY ASSEMBLAGE WHICH  
OVERCOMES THE UNBALANCE OF THE TIPPING PARTS, OR IN  
THE CASE OF AN AZIMUTH EQUILIBRATOR, COMPENSATES FOR  
THE EFFECT OF TILT OF THE MOUNT. COMPARISONS OF  
VARIOUS TYPES OF EQUILIBRATORS ARE PRESENTED WITH  
GUIDES FOR THE SELECTION OF THE DESIRABLE TYPE.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-830 296 1971  
ARMY MATERIEL COMMAND WASHINGTON D C

ENGINEERING DESIGN HANDBOOK. AMMUNITION SERIES.  
SECTION IV. DESIGN FOR PROJECTION. (U)

JUL 64 198P  
REPT. NO. AMC-PAM-706-247

UNCLASSIFIED REPORT

DESCRIPTORS: (•PROJECTILES, •AMMUNITION PROPELLANTS),  
DESIGN, HANDBOOKS, INTERIOR BALLISTICS, MANUFACTURING,  
BURNING RATE, IGNITION, THERMODYNAMICS, TEST METHODS,  
CARTRIDGE CASES, RIFLING, EROSION, STRESSES, ARTILLERY,  
PROPELLANT GRAINS, SENSITIVITY, STABILITY (U)  
IDENTIFIERS: GRAPHS(CHARTS) (U)

THIS HANDBOOK IS THE FOURTH OF SIX HANDBOOKS ON  
ARTILLERY AMMUNITION AND FORMS A PART OF THE  
ENGINEERING DESIGN HANDBOOK SERIES OF THE  
ARMY MATERIEL COMMAND. THE PURPOSE OF  
PROPELLANT DESIGN IS TO SELECT THE CORRECT  
FORMULATION AND GRANULATION TO SATISFY A GIVEN SET OF  
CONDITIONS. THE LIMITATIONS IMPOSED BY THESE  
CONDITIONS CONSTITUTE THE DESIGN PROBLEMS. TO  
ACHIEVE THE DESIRED RESULTS FROM A GIVEN PROPELLANT,  
IT IS NECESSARY TO CONSIDER SUCH FACTORS AS CARTRIDGE  
CASE VOLUME, RATE OF BORE EROSION, REDUCTION OF FLASH  
AND SMOKE, BALLISTIC UNIFORMITY, AND HIGH-VELOCITY  
REQUIREMENTS BALANCED AGAINST PRESSURE LIMITATIONS.  
IT MAY NOT BE POSSIBLE TO SATISFY ALL OF THESE  
CONSIDERATIONS; THEREFORE, A CERTAIN AMOUNT OF  
COMPROMISE IS NECESSARY. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-834 988 1975 9/2  
NORTH AMERICAN AVIATION INC ANAHEIM CALIF AUTONETICS  
DIV

GUN DIRECTION COMPUTER XM18 (FADAC) DESCRIPTION AND  
OPERATION. VOLUME 1. (U)

DESCRIPTIVE NOTE: NOTES ON DEVELOPMENT TYPE MATERIEL.

JUN 61 344P

PROJ: TW-105, DA-513-07-011

MONITOR: FA FCDD-361-VOL-1

UNCLASSIFIED REPORT

DESCRIPTORS: (•GUN DIRECTORS, DIGITAL COMPUTERS),  
(•DIGITAL COMPUTERS, INSTRUCTION MANUALS), MAINTENANCE,  
OPERATION, INSTALLATION, COMPUTER PROGRAMMING, COMPUTER  
LOGIC, MECHANICAL DRAWING, ARTILLERY, DATA STORAGE  
SYSTEMS, INPUT OUTPUT DEVICES, EQUATIONS OF MOTION,  
PROJECTILES, PARTICLE TRAJECTORIES, HOWITZERS, GUNS,  
COMPUTERS (U)

IDENTIFIERS: •FADAC(FIELD ARTILLERY DIGITAL AUTOMATIC  
COMPUTER) (U)

THE PURPOSE OF THE PUBLICATION IS TO DESCRIBE THE  
PHYSICAL AND OPERATING CHARACTERISTICS OF THE FIELD  
ARTILLERY DIGITAL AUTOMATIC COMPUTER (FADAC),  
FURNISH INSTALLATION AND MAINTENANCE INFORMATION, AND  
PROVIDE THEORY AND INSTRUCTIONS FOR COMPUTER  
PROGRAMMING AND LOGIC DESIGN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-837 668 15/7 9/2  
HAMILTON STANDARD SYSTEM CENTER FARMINGTON CONN

METEOROLOGICALLY ORIENTED COMPUTER PLAYED COMBAT  
SIMULATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. 15 OCT 66-30 JUN 68,  
JUN 68 150P PIKUL, ROBERT P. ;GARVIS,  
MERLE E. ;WOOLVERTON, DANIEL P. ;O'CONNELL,  
HERBERT F. ;KAMP, JOHN P. ;  
REPT. NO. HSER-5089  
CONTRACT: DAHCO4-67-C-0010  
PROJ: DA-2MD14501B53B  
MONITOR: AROD 6790:1-EN

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TACTICAL WARFARE, \*METEOROLOGICAL  
PHENOMENA), (\*ARMY OPERATIONS, \*ARTILLERY), SIMULATION,  
TARGET ACQUISITION, MATHEMATICAL MODELS, COMPUTER  
PROGRAMMING, PUNCHED CARDS, INSTRUCTION MANUALS,  
TERRAIN, KILL PROBABILITIES, EXTERIOR BALLISTICS,  
PROJECTILES, WAR GAMES (U)  
IDENTIFIERS: \*TWSP (TACTICAL WARFARE SIMULATION  
PROGRAM) (U)

THIS REPORT PRESENTS THE RESULTS OF STUDYING THE  
IMPACT OF VARIOUS LEVELS OF METEOROLOGICAL SUPPORT ON  
ARTILLERY OPERATIONS. THIS IMPACT WAS MEASURED BY  
SIMULATION, IN TERMS OF THE EFFECTIVENESS OF THE  
ARTILLERY SUPPORT PROVIDED TO AN INFANTRY FORCE  
ENGAGING OPPOSING FORCES AS IT MOVES THROUGH A GIVEN  
TERRAIN. A DIGITAL COMPUTER SIMULATION PROGRAM WAS  
UTILIZED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-842 677 15/2 6/5  
TRAVELERS RESEARCH CENTER INC HARTFORD CONN

FURTHER DEVELOPMENTS IN TECHNIQUES FOR DOSAGE  
PREDICTION. VOLUME II. CALCULATION  
METHODS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 8 JUN 67-8 FEB 68,  
JUL 68 119P LEIBOWITZ, PETER M.; KOCH,  
ROBERT C.; THAYER, SCOTT D.; MILLY, GEORGE H.

1  
REPT. NO. TRC-315-VOL-2  
CONTRACT: DAAD09-67-C-0119  
PROJ: DA-1V025001A128

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME I, AD-842  
676L.

DESCRIPTORS: (\*DOSAGE, TERRAIN), (\*CHEMICAL WARFARE  
AGENTS, DOSAGE), CONCENTRATION (CHEMISTRY), DIFFUSION,  
MATHEMATICAL PREDICTION, SPRAYS, DROPS, AEROSOLS,  
ATTENUATION, TEST METHODS, G AGENTS, CONTAMINATION,  
METEOROLOGICAL PHENOMENA, DISTRIBUTION,  
MICROMETEOROLOGY, ATMOSPHERIC PRECIPITATION, HOWITZERS,  
CARTRIDGES, PLANTS (BOTANY) (U)  
IDENTIFIERS: 155-MM ORDNANCE ITEMS, GB AGENTS (U)

THIS SIX-MONTH STUDY REPRESENTS A FOLLOW-ON TO AN  
EARLIER ONE-YEAR STUDY WHOSE TECHNICAL OBJECTIVE WAS  
TO ASSEMBLE, INTEGRATE AND VALIDATE THE CURRENTLY  
AVAILABLE KNOWLEDGE OF CB AGENT DIFFUSION AND  
TRANSPORT IN THE ATMOSPHERE, TO DETERMINE THE PRESENT  
CAPABILITY FOR DOSAGE PREDICTION, TO INCORPORATE  
APPROPRIATE NEW FIELD DATA AND THEORETICAL  
DEVELOPMENTS, AND TO IDENTIFY KNOWLEDGE GAPS BEARING  
ON OUR ABILITY TO PREDICT DIFFUSION AND TRANSPORT.  
VOLUME II CONTAINS DETAILED AND EXPLICIT  
CALCULATION PROCEDURES FOR DOSAGE PREDICTION RELATED  
TO THE SPECIFIC SOURCE AND TERRAIN CONFIGURATIONS  
DISCUSSED IN DETAIL IN VOLUME I. SUPPORTING  
DISCUSSION AND DATA TABLES ARE INCLUDED. VOLUME  
I OF THIS FOLLOW-ON STUDY REPRESENTS ADDITIONAL  
VALIDATION ANALYSES EMPLOYING FIELD DATA WHICH HAVE  
BECOME AVAILABLE SINCE THE ORIGINAL STUDY WAS  
CONDUCTED, AND COVERS THE SUBJECTS OF DIFFUSION OVER  
SHORT DISTANCES OF TRAVEL, DIFFUSION FROM SOURCES  
WITHIN VEGETATION, AND DIFFUSION OVER URBAN AREAS  
FROM ELEVATED LINE RELEASES. VOLUME II PRESENTS  
CALCULATION PROCEDURES FOR THE CASES REPRESENTED BY  
THE NEW DATA. (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-844 198 1975  
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

DETERMINING OPERATIONAL HIT PROBABILITIES FOR  
FIELD ARTILLERY WEAPONS SYSTEMS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,  
JUN 68 73P BOES, RICHARD WILLIAM ;  
GARVEY, RICHARD EDWARD , JR;

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, KILL PROBABILITIES),  
(\*KILL PROBABILITIES, MATHEMATICAL MODELS), TARGET  
ACQUISITION, TARGET DESIGNATORS, RANGE TABLES, FIRE  
CONTROL COMPUTERS, IMPACT FLASH, BIOLOGICAL WARFARE,  
CHEMICAL WARFARE, RADIOLOGICAL WARFARE, ERRORS, ANALYSIS  
OF VARIANCE, STATISTICAL TESTS, FIRING TESTS (ORDNANCE),  
THESES (U)  
IDENTIFIERS: \*HIT PROBABILITIES (U)

THE DEPARTMENT OF THE ARMY HAS EXPRESSED A NEED  
FOR THE DETERMINATION OF THE OPERATIONAL HIT  
PROBABILITIES OF SEVERAL WEAPONS SYSTEMS IN USE  
THROUGHOUT THE ARMY. THESE HIT PROBABILITIES,  
TOGETHER WITH LETHALITY MODELS, SHOULD YIELD  
PREDICTIONS OF THE EFFECTS SUCH SYSTEMS WILL HAVE  
UNDER VARIOUS CONDITIONS OF COMBAT. IN THIS  
THESIS, OPERATIONAL HIT PROBABILITY (OHP) IS  
DEFINED AS THE PROBABILITY THAT THE CENTER OF IMPACT  
OF A VOLLEY OF ARTILLERY FIRE WILL FALL WITHIN A  
SPECIFIED DISTANCE OF THE CENTER OF AN AREA TARGET.  
A GENERAL EXPERIMENTAL METHODOLOGY, WHICH COULD BE  
USED TO ESTIMATE OHP'S (UNDER SIMULATED COMBAT  
CONDITIONS) FOR A FIELD ARTILLERY WEAPONS SYSTEM,  
IS PRESENTED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-849 051 15/7 19/6  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT - 25TH INFANTRY DIVISION, 8  
JANUARY 1968.

(U)

JAN 6A 5P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*ARTILLERY,  
DEPLOYMENT), INFANTRY, COMMUNICATION AND RADIO SYSTEMS,  
CLOSE SUPPORT, COMMAND AND CONTROL SYSTEMS, ARTILLERY  
FIRE, HOWITZERS, HIGH EXPLOSIVE AMMUNITION, HELICOPTERS,  
MORTARS, STROBOSCOPES, PROTECTIVE MASKS, FLECHETTES (U)  
IDENTIFIERS: 25TH INFANTRY DIVISION, BEEHIVE  
AMMUNITION, CH-54 AIRCRAFT, H-54 AIRCRAFT, SOUTH  
VIETNAM, STROBOSCOPES, \*TRIP REPORTS (U)

ON 8 JANUARY A SENIOR LIAISON OFFICER  
VISITED THE 25TH INFANTRY DIVISION FOR THE  
PURPOSE OF GATHERING INFORMATION CONCERNING SPAN OF  
CONTROL PROBLEMS AND SURVEY REQUIREMENTS FOR  
ARTILLERY, USE OF STROBE LIGHTS, EMPLOYMENT OF  
BEEHIVE, ORGANIZATION AND EMPLOYMENT OF MORTARS, AND  
CHEMICAL USES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY      SEARCH CONTROL NO. /ZOM07

AD-849 056              15/7              19/6  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT - 1ST INFANTRY DIVISION, 13  
JANUARY 1968.

(U)

JAN 68              5P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*ARTILLERY,  
DEPLOYMENT), INFANTRY, MORTARS, CLOSE SUPPORT,  
COMMUNICATION AND RADIO SYSTEMS, FREQUENCY MODULATION,  
ARTILLERY FIRE, HOWITZERS, RANGE(DISTANCE), MOBILITY (U)  
IDENTIFIERS: 1ST INFANTRY DIVISION, SOUTH VIETNAM,      (U)  
•TRIP REPORTS

THE ACTING SENIOR LIAISON OFFICER VISITED 1ST  
INFANTRY DIVISION ARTILLERY AND 1ST BATTALION  
16TH INFANTRY ON 13 JANUARY 1968 TO SECURE  
INFORMATION ON ARTILLERY AND MORTAR ORGANIZATION AND  
EMPLOYMENT. THIS IS A REPORT OF COMMENTS RECEIVED  
CONCERNING ARTILLERY COMMAND AND CONTROL.      (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-849 058 15/7 1976  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT - AMERICAL DIVISION, 20-21 JAN  
68.

(U)

JAN 68 5P

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*ARTILLERY,  
DEPLOYMENT), ARTILLERY, HELICOPTERS, CLOSE SUPPORT,  
ARTILLERY FIRE, ARMY PERSONNEL, COMMUNICATION AND RADIO  
SYSTEMS, RANGE(DISTANCE), MORTARS, MEDICAL EQUIPMENT,  
PORTABLE EQUIPMENT (U)

IDENTIFIERS: 4TH INFANTRY DIVISION, AMERICAL DIVISION,  
CH-54 AIRCRAFT, H-54 AIRCRAFT, SOUTH VIETNAM, \*TRIP  
REPORTS (U)

THE ACTING SENIOR LIAISON OFFICER VISITED  
AMERICAL DIVISION 20-21 JANUARY 1968 TO SECURE  
INFORMATION ON ARTILLERY COMMAND AND CONTROL AND ON  
INFANTRY MORTAR ORGANIZATION AND EMPLOYMENT.  
POSSIBLE USE OF CH-54 PODS WAS ALSO  
DISCUSSED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-849 063 1/3  
ARMY AVIATION SYSTEMS TEST ACTIVITY EDWARDS AFB CALIF

ARMY PRELIMINARY EVALUATION OF THE PROTOTYPE  
BHC MODEL 211 (HUEYTUG). (U)

DESCRIPTIVE NOTE: FINAL REPT. SEP 68-MAR 69,  
MAR 69 104P WRIGHT, THEODORE K. ;  
RUNDGREN, IVAR W. ; NAGATA, JOHN I. ;  
REPT. NO. USAAVNTA-68-46  
PROJ: USAAVSCOM-68-46

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HELICOPTERS, ARTILLERY), (\*AIR  
TRANSPORTATION, \*ARTILLERY), ACCEPTABILITY, HELICOPTER  
HOISTS, FLIGHT TESTING, ARTILLERY, HOWITZERS,  
SPECIFICATIONS, AIRSPEED, STABILITY (U)  
IDENTIFIERS: HUEYTUG AIRCRAFT, H-1 AIRCRAFT,  
MODIFICATIONS, UH-1C AIRCRAFT (U)

IN 1966 THE BELL HELICOPTER COMPANY (BHC)  
COMMENCED THE DEVELOPMENT OF AN ARTILLERY-PRIME  
MOVER VERSION OF THE UH-1 HELICOPTER.  
CONCURRENTLY, BHC ALSO BEGAN DEVELOPING THE  
DYNAMIC COMPONENTS FOR A 2000 SHAFT HORSEPOWER  
(SHP) DRIVE SYSTEM. IN EARLY 1968, A CONVERTED  
MODEL UH-1C WITH INCREASED HORSEPOWER, LARGER  
ROTOR BLADES AND ADDITIONAL MODIFICATIONS WAS FIRST  
FLOWN AND INTRODUCED AS THE BHC MODEL 211  
(HUEYTUG). THE PROTOTYPE HUEYTUG WAS  
DESIGNED TO TRANSPORT SLING LOADS WEIGHING UP TO 6000  
POUNDS AT A DESIGN TAKE OFF GROSS WEIGHT OF 14,000  
POUNDS. THE HUEYTUG IS ALSO DESIGNED FOR  
BATTLEFIELD RECOVERY OF DOWNED AIRCRAFT, COMMAND AND  
CONTROL, MEDICAL EVACUATION AND RESUPPLY MISSIONS.  
THE US ARMY AVIATION SYSTEMS TEST  
ACTIVITY WAS DIRECTED BY THE US ARMY AVIATION  
SYSTEMS COMMAND TO PERFORM AN ARMY  
PRELIMINARY EVALUATION (APE) ON THE PROTOTYPE  
BHC MODEL 211 (HUEYTUG). (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-852 079 15/7 9/2 13/6 15/5  
ARMY COMBAT DEVELOPMENTS COMMAND SAN FRANCISCO CALIF 96375  
LIAISON DETACHMENT

TRIP REPORT - FIELD ARTILLERY DIGITAL  
AUTOMATIC COMPUTER (FADAC), AND M548 6-TON  
TRACKED CARGO CARRIER. (U)

APR 69 9P  
REPT. NO. TRIP-29-69

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY OPERATIONS, VIETNAM), (\*FIRE CONTROL  
COMPUTERS, EFFECTIVENESS), (\*CARGO VEHICLES,  
PERFORMANCE(ENGINEERING)), DIGITAL COMPUTERS, AUTOMATIC,  
ARTILLERY, FIRE CONTROL SYSTEMS, TRACKED VEHICLES,  
MAINTENANCE, ROAD TESTS, RELIABILITY, GENERATORS, ARMY  
EQUIPMENT (U)

IDENTIFIERS: FADAC, M-548 VEHICLES(6-TON), SOUTH  
VIETNAM, \*TRIP REPORTS (U)

THE 23D AND 54TH FIELD ARTILLERY GROUPS, AND  
G4, II FIELD FORCE VIETNAM ARTILLERY WERE  
VISITED TO DISCUSS AND DETERMINE OPERATIONAL STATUS  
AND PROBLEM AREAS OF FIELD ARTILLERY DIGITAL  
AUTOMATIC COMPUTER (FADAC), AND M548 6-TON  
TRACKED CARGO CARRIER. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-656 034 13/6 19/3  
ARMY ARCTIC TEST CENTER FORT GREELY ALASKA

CHECK TEST OF WINTERIZATION KIT FOR  
RECOVERY VEHICLE, FULL-TRACKED, LIGHT,  
ARMORED, M578, UNDER ARCTIC WINTER  
CONDITIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 2 NOV 67-31 MAR 68,  
MAY 69 136P DURSO, JOSEPH P. , JR. I  
WAYNE, ROBERT A. ;  
PROJ: RDT/E-1-M-543009-D-272, USATECOM-14592062

UNCLASSIFIED REPORT

DESCRIPTORS: (\*WINTERIZATION KITS, TRACKED VEHICLES),  
(\*RECOVERY VEHICLES, WINTERIZATION KITS), ARMORED  
VEHICLES, COLD WEATHER TESTS, ROAD TESTS, STARTING,  
HUMAN FACTORS ENGINEERING, MAINTENANCE, RELIABILITY,  
VEHICLE HEATERS, SELF PROPELLED GUNS, HOWITZERS,  
IGNITION SYSTEMS, COOLANTS, ENGINE STARTERS, ARMORED  
VEHICLES, ARCTIC REGIONS

(U)

IDENTIFIERS: M-107 GUNS(175-MM), M-110 HOWITZERS(8-  
IN.), \*M-578 VEHICLES

(U)

A CHECK TEST OF THE WINTERIZATION KIT FOR  
THE M578 LIGHT RECOVERY VEHICLE WAS  
CONDUCTED. THE OBJECTIVES OF THE TEST WERE TO  
DETERMINE THE SUITABILITY OF THE WINTERIZATION KIT  
FOR USE UNDER ARCTIC WINTER CONDITIONS, DETERMINE IF  
THE PREVIOUSLY REPORTED DEFICIENCIES AND SHORTCOMINGS  
HAD BEEN CORRECTED AND TO EVALUATE THE MODIFIED  
WINTERIZATION KIT COMPONENTS. THE TEST VEHICLE  
WITH WINTERIZATION KIT AND MODIFIED COMPONENTS  
INSTALLED WAS OPERATED FOR 474.3 MILES AND 57.5 HOURS  
DURING THE FY68 TEST SEASON, AND FOR 914.4 MILES  
AND 213.3 HOURS DURING THE FY69 TEST SEASON.  
COLD STARTING, SUITABILITY OF THE CREW  
HEATER SYSTEM, FUNCTIONAL SUITABILITY OF  
MODIFIED COMPONENTS, HUMAN FACTORS  
ENGINEERING, MAINTENANCE EVALUATION AND  
DURABILITY AND RELIABILITY SUB-TESTS WERE  
CONDUCTED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-857 235 1977  
NORTHROP CORP HUNTSVILLE ALA

MULTIPLE ARTILLERY ROCKET SYSTEM (MARS)  
CONCEPTUAL DESIGN STUDIES. APPENDIX C.  
ENGINEERING DRAWINGS AND DATA. PART TWO.  
ENGINEERING DATA. (U)

DESCRIPTIVE NOTE: FINAL STUDY REPT.  
JUL 69 289P  
REPT. NO: TR-790-9-584-APP-C-PT-2  
CONTRACT: DAAH01-69-C-1044

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO APPENDIX C, PART 1,  
AD-503 778L.

DESCRIPTORS: (\*ARTILLERY ROCKETS, DESIGN), (\*ROCKET  
LAUNCHERS, DATA), ROCKET WARHEADS, BLAST, LOADS(FORCES),  
HEATING, HEAT TRANSFER, SERVOMECHANISMS, PITCH(MOTION),  
YAW, TOWED VEHICLES, SELF PROPELLED GUNS, AERODYNAMIC  
HEATING, STRUCTURAL PROPERTIES, THERMAL PROPERTIES,  
MATHEMATICAL MODELS (U)  
IDENTIFIERS: \*MARS(MULTIPLE ARTILLERY ROCKET SYSTEMS),  
\*ARTILLERY ROCKETS, \*MULTIPLE OPERATION (U)

THE FOLLOWING LISTED ENGINEERING DATA IS CONTAINED  
IN THIS PART OF APPENDIX C AS REFERENCE AND  
SUPPORTING STUDY INFORMATION FOR THE MARS FINAL  
STUDY REPORT: BLAST LOADS AND HEATING  
EFFECT ON LAUNCHER VEHICLE--AERODYNAMIC  
HEATING EFFECT ON MISSILE; ELASTIC BODY  
RESPONSE OF MARS SELF-PROPELLED LAUNCHER;  
RIGID BODY RESPONSE; POWER AND SERVO  
SYSTEM FOR MARS MISSILE LAUNCHER; AND  
STRUCTURAL DESIGN CALCULATIONS. (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-858 092 1977 1974  
CHRYSLER CORP DETROIT MICH MISSILE DIV

MULTIPLE ARTILLERY ROCKET SYSTEM (MARS).  
CONCEPTUAL DESIGN STUDIES. VOLUME II.  
DESIGN CONSIDERATIONS. BOOK 8.

(U)

DESCRIPTIVE NOTE: FINAL REPT.

JUL 69 98P

REPT. NO. MAR-1-1-VOL-2-BK-8

CONTRACT: DAAH01-69-C-1051

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, BOOK 1, AD-  
504 032L.

DESCRIPTORS: (\*ARTILLERY ROCKETS, DESIGN), (\*ROCKET  
TRAJECTORIES, MATHEMATICAL MODELS), ROCKET LAUNCHERS,  
SYSTEMS ENGINEERING, VEHICLE WHEELS, TRACKED VEHICLES,  
SELF PROPELLED GUNS, LOADERS, CARGO VEHICLES, TOW BARS,  
CENTER OF GRAVITY, EQUATIONS OF MOTION, COMPUTER  
PROGRAMMING, DIGITAL COMPUTERS, MOBILITY, MISSION  
PROFILES, TERRAIN, SOILS, TRAFFICABILITY, EARTH  
MODELS

(U)

IDENTIFIERS: \*MARS(MULTIPLE ARTILLERY ROCKET SYSTEMS),  
\*ARTILLERY ROCKETS, \*MULTIPLE OPERATION

(U)

THIS REPORT CONTAINS, AS APPENDIX A, AN OUTLINE  
OF THE THREE-DIMENSIONAL TRAJECTORY PROGRAM FOR A  
DIGITAL COMPUTER. THE REPORT INCLUDES THE BASIC  
EQUATIONS OF MOTION AND A DISCUSSION OF THE TREATMENT  
OF THREE AND SIX DEGREE OF FREEDOM PROBLEMS. THE  
GENERAL METHOD OF SOLUTION AND VARIOUS OPTIONS ARE  
DESCRIBED. IN APPENDIX B MARS MOBILITY  
PROCEDURES ARE DISCUSSED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-860 948 1975 17/6  
ARMY FIELD ARTILLERY BOARD FORT SILL OKLA

MILITARY POTENTIAL TEST OF FENNEL GYRO  
THEODOLITE, KT-2. (U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JUN-13 AUG 69,  
SEP 69 71P NETTESHEIM, RICHARD ;  
REPT. NO. USAFABD-FA-969  
PROJ: USATECOM-2-ES-375000003

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GYROSCOPES, \*THEODOLITES), (\*ARTILLERY;  
TESTS), AZIMUTH, DETERMINATION, SURVEYING(GEOGRAPHIC);  
ARMY EQUIPMENT, ACCURACY, RELIABILITY, ACCEPTABILITY (U)  
IDENTIFIERS: QUALIFICATION TESTS (U)

A MILITARY POTENTIAL TEST WAS CONDUCTED AT FORT  
SILL, OKLAHOMA. THE PURPOSE OF THE TEST WAS TO  
ASSESS THE CAPABILITY OF THE FENNEL GYRO  
THEODOLITE, KT-2, TO MEET THE CRITERIA STATED IN  
THE QUALITATIVE MATERIEL REQUIREMENT (QMR) FOR  
SURVEY INSTRUMENT, AZIMUTH, GYRO,  
LIGHTWEIGHT, AND TO DETERMINE THE SPECIFIC  
CHARACTERISTICS OF THE TEST ITEM. OVER 240 AZIMUTH  
DETERMINATIONS WERE MADE TO ASSESS ACCURACY AND  
PRECISION. IN ADDITION, THE TEST ITEM WAS  
TRANSPORTED OVER VARYING TERRAIN AND SUBJECTED TO  
PROLONGED USE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-862 290 1976 9/2  
AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

GUN INTERNAL BALLISTICS. (U)

DESCRIPTIVE NOTE: FINAL REPT. JAN-MAY 69,  
SEP 69 56P HITCHCOCK, JAMES E. ; DUDA,  
W. GREGORY ;  
REPT. NO. AFRPL-TR-69-211

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, GUN BARRELS), (\*GUN BARRELS,  
INTERIOR BALLISTICS), (\*INTERIOR BALLISTICS, COMPUTER  
PROGRAMMING), DIFFERENTIAL EQUATIONS, EQUATIONS OF  
MOTION, EROSION BURNING, APPROXIMATION (MATHEMATICS),  
DRAG, FLOW CHARTING, COMPUTER PROGRAMS (U)  
IDENTIFIERS: COMPUTER ANALYSIS, M-68 GUNS (105-MM) (U)

AN APPROXIMATE METHOD OF ANALYSIS IS FORMULATED FOR  
GUN INTERNAL BALLISTICS. THE METHOD IS  
INCORPORATED IN A DIGITAL COMPUTER PROGRAM WHICH IS  
DESCRIBED. THE VALIDITY OF THE METHOD OF ANALYSIS  
AND COMPUTATIONAL PROCEDURE IS SUBSTANTIATED BY  
COMPARISON OF THEORETICAL RESULTS WITH EXPERIMENTAL  
BALLISTIC DATA FROM AN INSTRUMENTED 105 MM M68 GUN  
FIRED AT ABERDEEN PROVING GROUND, MARYLAND.  
INVESTIGATED GUN PERFORMANCE INCLUDES BREECH  
PRESSURES TO 70,000 PSIA, MUZZLE VELOCITIES TO 6300  
FPS, AND MAXIMUM ACCELERATIONS TO 80,000 G'S.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZDM07

AD-864 109 4/2  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J

EVALUATION OF LOW-ALTITUDE, FAST-RISE  
METEOROLOGICAL BALLOON ML-635(XE-1)/  
UM. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
DEC 69 20P WELT, RUTH M. ;  
REPT. NO. ECOM-3203  
PROJ: DA-1-H-664705-D-511  
TASK: 1-H-664705-D-51105

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, METEOROLOGY), (\*METEOROLOGICAL  
BALLOONS, FLIGHT TESTING), METEOROLOGICAL PHENOMENA,  
SYNTHETIC RUBBER, LOW ALTITUDE, ASCENT TRAJECTORIES,  
RUPTURE, MILITARY REQUIREMENTS (U)  
IDENTIFIERS: BALLISTIC METEOROLOGY, ML-635 BALLOONS,  
ML-635(XE-1) BALLOONS (U)

METEOROLOGICAL BALLOON ML-635()/UM IS A LOW-  
ALTITUDE, FAST-RISING BALLOON WHICH HAS BEEN  
DEVELOPED TO MEET THE NEED OF U. S. ARTILLERY  
METEOROLOGICAL SECTIONS. IT IS AN INEXPENSIVE,  
SPHERICAL NEOPRENE BALLOON WITH A NOMINAL WEIGHT OF  
150 GRAMS, CAPABLE OF ATTAINING A MINIMUM ALTITUDE OF  
11 KILOMETERS AT A MINIMUM ASCENT RATE OF 400 METERS  
PER MINUTE. TWO HUNDRED OF THESE BALLOONS WERE  
FLIGHT-TESTED IN AN INTENSIVE PROGRAM TO DETERMINE  
MILITARY POTENTIAL AND SUITABILITY OF THE ML-635.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-864 376 13/7 19/7  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA ARMY INERTIAL  
GUIDANCE AND CONTROL LAB AND CENTER

MARS II FLUIDIC CONTROL SYSTEM EVALUATION,

(U)

JUN 69 107P AYRE, V. H. ; WILLIAMS, J.  
G. ;  
REPT. NO. RG-TR-69-10  
PROJ: DA-1-M-263303-D-581

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARTILLERY ROCKETS, ATTITUDE CONTROL  
SYSTEMS), (•FLUID AMPLIFIERS, PERFORMANCE (ENGINEERING)),  
FLUIDICS, VALVES, PULSE DURATION MODULATION, GAS  
GENERATING SYSTEMS, COLD FLOW, TEST METHODS (U)  
IDENTIFIERS: FLUERICS, MARS (MULTIPLE ARTILLERY ROCKET  
SYSTEM), MARS-2 MISSILES, MARS-1 MISSILES, MULTIPLE  
ARTILLERY ROCKET SYSTEM, TWO DEGREES OF FREEDOM (U)

A FLUIDIC MISSILE ATTITUDE CONTROL SYSTEM  
CONSISTING PRIMARILY OF A SINGER-KEARFOTT PULSE  
DURATION MODULATION (PDM) GYRO, FOUR U. S.  
ARMY MISSILE COMMAND FLUIDIC REACTION VALVES, A  
MAROTTA VALVE CORPORATION VALVE/REGULATOR  
ASSEMBLY, AND FOUR ROHM AND HAAS COMPANY GAS  
GENERATORS WAS EVALUATED STATICALLY ON BOTH COLD AND  
HOT GAS. DURING THE COURSE OF THE EVALUATION,  
CERTAIN PROBLEM AREAS WERE DISCLOSED AND ARE  
DISCUSSED. DATA FROM BOTH COLD AND HOT GAS RUNS  
ARE PRESENTED; HOWEVER, MUCH OF THE SECONDARY DATA IS  
NOT INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-866 519 1975 18/2  
ARMY FIELD ARTILLERY BOARD FORT SILL OKLA

SERVICE TEST OF RADIOACTIVELY ILLUMINATED  
FIRE CONTROL FOR THE M102 WEAPON SYSTEM. (U)

DESCRIPTIVE NOTE: FINAL TEST REPT. 15 JUN-5 NOV 69,  
JAN 70 67P READ, JOHN J. ;  
REPT. NO. USAFABD-FA-268-2  
PROJ: RDT/E-1-W-542709-D-360, USATECOM-2-WE-207-  
102-001

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ILLUMINATED SIGHTS, \*RADIOACTIVE  
ISOTOPES), (\*TELESCOPIC GUN SIGHTS, LUMINESCENCE),  
HOWITZERS, LOW LIGHT LEVELS, INSTRUMENT DIALS,  
SHIELDING, RADIOACTIVE CONTAMINATION, DOSIMETERS,  
MAINTENANCE PERSONNEL, MAINTAINABILITY, DOSE RATE,  
PROMETHIUM, TRITIUM, SILICONE PLASTICS, ENCAPSULATION,  
FIRE CONTROL SYSTEM COMPONENTS, ENVIRONMENTAL TESTS,  
LIFE EXPECTANCY, ACCEPTABILITY, SAFETY (U)  
IDENTIFIERS: KRYPTON 85, M-102 HOWITZERS(105-MM), (U)  
PROMETHIUM 147

THE SERVICE TEST WAS CONDUCTED AT FORT  
SILL, OKLAHOMA. LABORATORY ANALYSIS OF  
RADIOACTIVE COMPONENTS WAS CONDUCTED BY THE US  
ARMY ENVIRONMENTAL HYGIENE AGENCY, EDGEWOOD  
ARSENAL, MARYLAND. THE OBJECTIVES WERE TO  
PROVIDE A SAFETY CONFIRMATION OF THE RADIOACTIVELY  
ILLUMINATED FIRE CONTROL EQUIPMENT FOR THE M102  
HOWITZER, DETERMINE THE FUNCTIONING SUITABILITY AND  
DURABILITY OF THE MODIFIED FIRE CONTROL EQUIPMENT,  
AND PERFORM A MAINTENANCE EVALUATION. THE RESULTS  
WERE COMPARED TO STANDARD EQUIPMENT USED ON THE  
M102 HOWITZER. THE US ARMY FIELD ARTILLERY  
BOARD CONCLUDED THAT THE RADIOACTIVELY  
ILLUMINATED FIRE CONTROL EQUIPMENT FOR THE  
M102 HOWITZER WAS SUITABLE AND SAFE FOR USE BY  
TROOPS IN THE FIELD. THE USAFB RECOMMENDED  
THAT: THE RADIOACTIVELY ILLUMINATED FIRE  
CONTROL EQUIPMENT FOR THE M102 HOWITZER BE  
PROVIDED FOR USE ON THE M102 HOWITZER;  
RADIOACTIVELY ILLUMINATED COMPONENTS BE PROVIDED FOR  
ALL FIELD ARTILLERY FIRE CONTROL EQUIPMENT; A SAFETY  
CONFIRMATION BE ISSUED FOR USE BY TROOPS; THE  
RADIOACTIVELY ILLUMINATED FIRE CONTROL EQUIPMENT ON  
THE M102 HOWITZER BE CONSIDERED SUITABLE FOR USE BY  
TROOPS IN THE FIELD; AND THAT IT BE ADAPTED ON ALL  
FIELD ARTILLERY WEAPONS. 218 (U)

UNCLASSIFIED

/ZOM07

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-867 236 19/6 14/4  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

WEAPONS FUNCTIONING. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

NOV 69 14P

REPT. NO. MTP-3-3-510

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMY EQUIPMENT, GUNS), (\*GUNS, CHECKOUT PROCEDURES), FAILURE, TEST METHODS, ARTILLERY, AUTOMATIC WEAPONS, RECOIL MECHANISMS, DEFECTS(MATERIALS), CYCLIC RATE, VISUAL INSPECTION, MILITARY PERSONNEL, MILITARY TRAINING, MAINTENANCE (U)

THIS ARMY SERVICE TEST PROCEDURE DESCRIBES TEST METHODS AND TECHNIQUES FOR DETERMINING WEAPONS FUNCTIONING AND DETECTING WEAPONS MALFUNCTIONING. IT APPLIES, IN COMMON, TO THE EVALUATION OF DIFFERENT TYPES OF WEAPONS BUT IS INTENDED PRIMARILY FOR EVALUATION OF ARTILLERY CALIBER AND AUTOMATIC CREW-SERVED WEAPONS. THIS PARTICULAR TEST IS ONE PORTION OF THE OVERALL SERVICE TEST WHICH ASCERTAINS THE SUITABILITY OF THE TEST ITEM FOR SERVICE USE BY THE U. S. ARMY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-868 079 1975 9/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

COMPUTERS, DIGITAL. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
FEB 70 30P

REPT. NO. MTP-6-3-062

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, FIRE CONTROL COMPUTERS),  
(\*DIGITAL COMPUTERS, FIRE CONTROL COMPUTERS), (\*FIRE  
CONTROL COMPUTERS, TEST METHODS), OPERATION,  
INTERFERENCE, MAINTENANCE, HUMAN FACTORS ENGINEERING,  
ARMY EQUIPMENT (U)  
IDENTIFIERS: COMMODITY SERVICE TEST PROCEDURES (U)

THIS ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
OPERATIONAL PERFORMANCE AND CHARACTERISTICS OF  
DIGITAL COMPUTERS AS RELATED TO THE CRITERIA  
EXPRESSED IN QUALITATIVE MATERIEL REQUIREMENTS,  
SMALL DEVELOPMENT REQUIREMENTS, OR OTHER  
APPROPRIATE DESIGN REQUIREMENTS AND SPECIFICATIONS.  
THE OBJECTIVE OF SUCH EVALUATION IS TO DETERMINE  
THE SUITABILITY OF THE TESTED ITEM FOR SERVICE USE BY  
THE U. S. ARMY. (AUTHOR) (U)



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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-868 939 1975  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

FLASH RANGING EQUIPMENT. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
FEB 70 15P

REPT. NO. MTP-6-2-331  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, TARGET ACQUISITION),  
(\*RANGE FINDING, OPTICAL EQUIPMENT), TEST METHODS,  
ACCURACY (U)  
IDENTIFIERS: \*FLASH RANGING (U)

THE REPORT DESCRIBES TEST METHODS AND TECHNIQUES  
FOR EVALUATING THE TECHNICAL PERFORMANCE AND  
CHARACTERISTICS OF FLASH RANGING EQUIPMENTS  
USED BY ARTILLERY TARGET ACQUISITION  
ORGANIZATIONS, AND FOR DETERMINING THEIR SUITABILITY  
FOR THEIR INTENDED EMPLOYMENT. THE EVALUATION IS  
RELATED TO CRITERIAL EXPRESSED IN APPROPRIATE  
QUALITATIVE MATERIEL REQUIREMENTS (QMR),  
SMALL DEVELOPMENT REQUIREMENTS (SDR),  
TECHNICAL CHARACTERISTICS (TC), OR OTHER  
APPROPRIATE DESIGN REQUIREMENTS AND SPECIFICATIONS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-869 437 1976  
DEVELOPMENT AND PROOF SERVICES ABERDEEN PROVING GROUND  
MD

PARTIAL REPORT ON ENGINEERING TEST OF  
CHARGE, PROPELLING, 155-MM, XM119, WITH  
PROJECTILE, 155-MM, HE, M107, FOR HOWITZER,  
155-MM, M126 (T255E3) (EROSION  
PHASE). (U)

DESCRIPTIVE NOTE: REPT. FOR 3 FEB-27 MAR 64,  
JUN 64 143P WHITCRAFT, JAMES S. ;  
REPT. NO. DPS-1345  
PROJ: RDT/E-1-A-542715-D-379, USATECOM-2-4-0006-02

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, \*PROPELLING CHARGES),  
(\*EROSION, \*GUN BARRELS), EROSIIVE BURNING, FIRING  
TESTS(ORDNANCE), LIFE EXPECTANCY, ACCURACY, CIRCULAR  
ERROR PROBABLE, STATISTICAL DATA, ROTATING BANDS, SELF  
PROPELLED GUNS, REDUCTION, ADDITIVES (U)  
IDENTIFIERS: GAS EROSION, M-107 CARTRIDGES(155-MM), M-  
109 HOWITZERS(155-MM), M-119 PROPELLING CHARGES(155-  
MM), M-126 HOWITZERS(155-MM), XM-119 PROPELLING  
CHARGES(155-MM) (U)

AN EROSION LIFE TEST WAS CONDUCTED FROM THE 155-MM  
HOWITZER, M126. FIRING WAS CONDUCTED WITH THE  
M107 PROJECTILE AND XM119 PROPELLING CHARGE TO  
DETERMINE THE ACCURACY TUBE LIFE WITH THE NEWLY  
DEVELOPED CHARGE. TESTING CONSISTED OF FIRING FOR  
RANGE ACCURACY, FUZE FUNCTIONING PERFORMANCE, AND  
RECOVERY AS WELL AS FIRING WITH SPECIAL SELECTED  
VARIATIONS OF AMMUNITION TYPES OR CONDITIONS OF TEST  
FOLLOWING DETERMINATION OF THE END OF ACCURATE TUBE  
LIFE. A WEAR RATE CURVE WAS ESTABLISHED FOR A  
LIMITED NUMBER OF ROUNDS FIRED WITH THE XM119  
PROPELLING CHARGE WITH A WEAR REDUCING ADDITIVE  
COMPOSITION. THE TUBE EFFECTS ON THE FUNCTIONING OF  
ALL PROJECTILE INITIATING FUZES USED WERE CONSIDERED  
ACCEPTABLE. THE FIRING OF A SPECIAL OBTURATOR  
EQUIPPED PROJECTILE PROVED SUCCESSFUL IN PREVENTING  
GAS EROSION OF THE ROTATING BAND. THE LIMITED  
FIRING PERFORMED WITH WEAR REDUCING ADDITIVE  
ASSEMBLED TO THE XM119 CHARGE INDICATED A GREATLY  
REDUCED RATE OF TUBE WEAR. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-870 127 6/17 13/13  
ABERDEEN PROVING GROUND MD MATERIEL TESTING  
DIRECTORATE

ENGINEERING TEST OF OVERHEAD COVER FOR  
FOXHOLES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 14 APR-23 JUN 69,  
SEP 69 52P STEINBACH, R. L. ISCHUELER,  
GERALD J. ;  
REPT. NO. APG-MT-3290  
PROJ: RDT/E-1-J-564606-D-464, USATECOM-8-ES-825-  
000-001  
TASK: 1-J-564606-D-46414

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROTECTIVE COVERINGS, UNDERGROUND  
STRUCTURES), (\*UNDERGROUND STRUCTURES, ROOFS), SUPPORTS,  
LIFE EXPECTANCY, RELIABILITY, PRESSURE, BLAST, DAMAGE  
ASSESSMENT, PROJECTILES, VISUAL INSPECTION, STANDARDS,  
STATISTICAL ANALYSIS, ARTILLERY FIRE, AIRBURST, WEIGHT,  
FAILURE(MECHANICS), LAMINATED PLASTICS (U)  
IDENTIFIERS: 105-MM AMMUNITION, 155-MM AMMUNITION,  
FORTIFICATIONS, EMPLACEMENTS, FORTIFICATIONS, FOXHOLE  
COVERS, OVERPRESSURE (U)

AN ENGINEERING TEST OF THE OVERHEAD COVER FOR  
FOXHOLES WAS CONDUCTED AT ABERDEEN PROVING  
GROUND FROM 14 APRIL TO 23 JUNE 1969. THE  
TEST WAS DIVIDED INTO THREE PHASES: AN  
OVERPRESSURE EVALUATION, AN EMPLACEMENT LIFE TEST,  
AND AN ARTILLERY AIR BURST TEST. THE OVERPRESSURE  
EVALUATION WAS BASED ON RESULTS OBTAINED WITH  
PROTOTYPE COVERS IN OPERATION PRAIRIE FLAT  
CONDUCTED BY THE CANADIAN DEFENSE RESEARCH  
BOARD IN AUGUST 1968. FORTY COVERS WERE USED IN  
THE EMPLACEMENT LIFE TEST. THIRTY COVERS WERE  
EMPLACED FOR 48 + OR - 2 HOURS AND TEN FOR 168 +  
OR - 2 HOURS. EMPLACEMENT WAS IN ACCORDANCE WITH  
THE INSTRUCTION SHEET PROVIDED WITH EACH ITEM.  
AFTER THE EMPLACEMENT LIFE TEST, EACH COVER  
INSTALLATION AND TEN TIMBER INSTALLATIONS WERE  
SUBJECTED TO THE ARTILLERY AIR BURST TEST. A 105-MM  
PROJECTILE WAS STATICALLY DETONATED OVER EACH TIMBER  
INSTALLATION AND EACH OF 30 COVER INSTALLATIONS. A  
155-MM PROJECTILE WAS STATICALLY DETONATED OVER EACH  
OF TEN COVER INSTALLATIONS. THE PROJECTILE HEIGHTS  
VARIED BETWEEN 2.5 AND 13.0 FEET. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-870 607 16/4 19/7  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ACCURACY (FIRING). (U)

DESCRIPTIVE NOTE: FINAL REPT. OF MATERIEL TEST PROCEDURE.  
MAR 70 16P  
REPT. NO. MTP-5-3-528  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SURFACE TO AIR MISSILES, ACCURACY),  
(\*ARTILLERY ROCKETS, ACCURACY), (\*FIRING  
TESTS(ORDNANCE), TEST METHODS), FIRE CONTROL SYSTEMS,  
TERMINAL BALLISTICS, KILL PROBABILITIES, EFFECTIVENESS,  
MISS DISTANCE, SPECIFICATIONS (U)

THIS ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
PERFORMANCE CHARACTERISTICS OF MISSILE AND ROCKET  
WEAPON SYSTEMS WITH REGARD TO THEIR FIRING  
ACCURACY. THE EVALUATION IS RELATED TO CRITERIA  
EXPRESSED IN APPLICABLE QUALITATIVE MATERIEL  
REQUIREMENTS (QMR), SMALL DEVELOPMENT  
REQUIREMENTS (SDR), TECHNICAL CHARACTERISTICS  
(TC), OR OTHER APPROPRIATE DESIGN REQUIREMENTS AND  
SPECIFICATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-871 333 13/7 19/7  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA ARMY INERTIAL  
GUIDANCE AND CONTROL LAB AND CENTER

MARS II CONTROL SYSTEM, (U)

SEP 68 13P HODGES, WILLIAM H. ;  
REPT. NO. RG-TM-68-2

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY ROCKETS, FLIGHT CONTROL  
SYSTEMS), (\*GAS GENERATING SYSTEMS,  
PERFORMANCE(ENGINEERING)), PNEUMATIC VALVES, CHECK  
VALVES, FLUID AMPLIFIERS, EXHAUST NOZZLES, MECHANICAL  
DRAWINGS, ASSEMBLY (U)  
IDENTIFIERS: FLUERICS, MARS(MULTIPLE ARTILLERY ROCKET  
SYSTEM), MARS-2 MISSILES, ARTILLERY ROCKETS, MULTIPLE  
OPERATION (U)

THE REPORT DESCRIBES EFFORTS TO DESIGN AND  
FABRICATE A HYBRID PNEUMATIC CONTROL SYSTEM FOR THE  
16-INCH DIAMETER MARS II MISSILE, WITH ALL  
COMPONENTS MOUNTED AT THE REAR ON THE MISSILE NOZZLE,  
WITH A VIEW TO UTMOST SIMPLICITY IN PACKAGE ASSEMBLY,  
QUICK INTERCHANGE OF PARTS, ELIMINATION OF TUBING AND  
PLUMBING INSOFAR AS POSSIBLE, AND TO PRESENT A NEAT  
AND COMPACT PACKAGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-871 343 16/1  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

MISSILE STATION, GUIDANCE AND LAUNCHING,  
VEHICULAR MOUNTED. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

APR 70 15P  
REPT. NO. MTP-5-3-061  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, GUIDED MISSILES), (\*TRACKED  
VEHICLES, GUIDED MISSILE LAUNCHERS), (\*GUIDED MISSILE  
LAUNCHERS, ACCEPTABILITY), GUIDED MISSILE PERSONNEL,  
GUIDED MISSILE SAFETY, MOBILITY, MANEUVERABILITY, FIRING  
TESTS(ORDNANCE), ACCURACY, MAINTAINABILITY, HUMAN  
FACTORS ENGINEERING, TEST METHODS (U)

THIS ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
PERFORMANCE AND CHARACTERISTICS OF MISSILE  
STATION, GUIDANCE AND LAUNCHING, VEHICULAR  
MOUNTED, AND FOR DETERMINING THEIR SUITABILITY FOR  
SERVICE USE BY THE US ARMY. THE EVALUATION IS  
RELATED TO CRITERIA EXPRESSED IN APPLICABLE  
QUALITATIVE MATERIEL REQUIREMENTS (QMR),  
TECHNICAL CHARACTERISTICS (TC), OR OTHER  
APPROPRIATE DESIGN REQUIREMENTS AND SPECIFICATIONS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-871 787 13/6 15/3  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

VEHICLES, FIELD ARTILLERY APPLICATION. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
MAY 70 26P

REPT. NO. MTP-2-3-132

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, VEHICLES), (\*VEHICLES, TEST  
METHODS), SCHEDULING, VISUAL INSPECTION,  
PERFORMANCE(ENGINEERING), MOBILITY, LOADS(FORCES),  
MANEUVERABILITY, HUMAN FACTORS ENGINEERING, MAINTENANCE,  
SAFETY, TEST METHODS (U)  
IDENTIFIERS: COMMODITY SERVICE TEST PROCEDURES (U)

THIS ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
PERFORMANCE AND CHARACTERISTICS OF VEHICLES WITH  
REGARD TO THEIR SUITABILITY FOR SERVICE USE IN ARMY  
FIELD ARTILLERY ROLES. THE EVALUATION IS  
RELATED TO CRITERIA EXPRESSED IN APPLICABLE  
QUALITATIVE MATERIEL REQUIREMENTS, SMALL  
DEVELOPMENT REQUIREMENTS (SDR), TECHNICAL  
CHARACTERISTICS, OR OTHER APPROPRIATE DESIGN  
REQUIREMENTS AND SPECIFICATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDM07

AD-871 812 13/6 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

MUZZLE BLAST DAMAGE TO COMBAT  
VEHICLES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

OCT 69 16P

REPT. NO. MTP-2-2-625

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GUNNERY, TRACKED VEHICLES), (\*VEHICLE  
CHASSIS COMPONENTS, DAMAGE ASSESSMENT), STRUCTURAL  
PROPERTIES, LOADS(FORCES), SHOCK WAVES, STRESSES, STRAIN  
GAGES, ARTILLERY (U)

IDENTIFIERS: \*COMBAT VEHICLES, \*COMMON ENGINEERING  
TEST PROCEDURES, \*BLAST, \*GUN BARRELS, OVERPRESSURE (U)

THE ENGINEERING TEST PROCEDURE DESCRIBES TEST  
METHODS AND TECHNIQUES FOR EVALUATING THE EFFECT OF  
MUZZLE BLAST AND FIRING SHOCKS ON COMBAT  
VEHICLES AND THEIR COMPONENTS. THE PROCEDURES  
ARE APPLIED TO COMPONENTS OF SELF-PROPELLED AND  
TOWED ARTILLERY, IN ASSESSING DAMAGE RESULTING  
FROM FIRING OF THEIR WEAPONS. (AUTHOR) (U)



UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-872 085 19/6 19/3 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ROUND-TO-ROUND DISPERSION. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

JUN 70 18P  
REPT. NO. MTP-3-3-512  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARMORED VEHICLES, WEAPON SYSTEMS),  
(\*GUNNERY, EFFECTIVENESS), (\*ARTILLERY, \*FIRING  
TESTS(ORDNANCE)), KILL PROBABILITIES, AMMUNITION, FIRE  
CONTROL SYSTEMS (U)  
IDENTIFIERS: \*COMBAT VEHICLE MOUNTED WEAPON SYSTEMS,  
COMMON SERVICE TEST PROCEDURES, DISPERSION FIRING (U)

THE ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
DISPERSION CHARACTERISTICS AND HIT PROBABILITY OF  
ARTILLERY CLASS WEAPONS. THE PROCEDURE IS INTENDED  
FOR APPLICATION TO TEST OF LARGE-CALIBER, DIRECT-FIRE  
VEHICLE-MOUNTED WEAPONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-872 101 1976 1973 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

FIRST AND SUBSEQUENT ROUND HITTING. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
JUN 70 12P  
REPT. NO. MTP-3-3-513  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, \*KILL PROBABILITIES), FIRING  
TESTS(ORDNANCE), RANGE(DISTANCE), BORESIGHTING, FIRE  
CONTROL SYSTEMS, SIGHTS, TARGETS (U)  
IDENTIFIERS: COMMON SERVICE TEST PROCEDURES (U)

THE ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
CAPABILITY OF DIRECT-FIRE ARTILLERY CLASS  
WEAPONS, IN FIRST AND SUBSEQUENT ROUND HITTING ON  
VERTICAL TARGETS. THIS PROCEDURE IS INTENDED FOR  
COMBAT VEHICLE-MOUNTED LARGE CALIBER WEAPONS SYSTEMS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-872 261 9/2 15/3 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

COMPUTER, DIGITAL, FIELD ARTILLERY. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
MAY 70 20P  
REPT. NO. MTP-6-3-063  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, FIRE CONTROL COMPUTERS),  
(\*FIRE CONTROL COMPUTERS, RELIABILITY), ELECTRICAL  
PROPERTIES, PERSONNEL, INTERFERENCE, COMPATIBILITY,  
VULNERABILITY, TRANSPORTATION, LIFE EXPECTANCY,  
MAINTENANCE, WEATHERPROOFING, HUMAN FACTORS  
ENGINEERING (U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PRODECURES,  
EVALUATION (U)

THE ARMY SERVICE TEST PROCEDURE DESCRIBES TEST  
METHODS AND TECHNIQUES FOR EVALUATING THE PERFORMANCE  
AND CHARACTERISTICS OF DIGITAL COMPUTERS FOR FIELD  
ARTILLERY APPLICATIONS, AND FOR DETERMINING THEIR  
SUITABILITY FOR SERVICE USE BY THE U. S. ARMY.  
THE EVALUATION IS RELATED TO CRITERIA EXPRESSED IN  
APPLICABLE QUALITATIVE MATERIEL REQUIREMENTS (QMR),  
SMALL DEVELOPMENT REQUIREMENTS (SDR), TECHNICAL  
CHARACTERISTICS (TC), OR OTHER APPROPRIATE DESIGN  
REQUIREMENTS AND SPECIFICATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-872 508 9/2 19/4 16/4.2 15/7  
OHIO STATE UNIV COLUMBUS SYSTEMS RESEARCH GROUP

LAND COMBAT MODEL DYNCOM PROGRAMMER'S  
MANUAL.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
APR 70 711P CLARK, GORDON M. ; PARRY, SAM  
H. ; HUTCHERSON, DON C. ; RHEINFRANK, JOHN J. ;  
III ; PETTY, GERALD R. ;  
REPT. NO. RF-2376-FR-70-4A(U)  
CONTRACT: DAAH01-67-C-1240  
PROJ: OSURF-2376

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TACTICAL WARFARE, ARTILLERY FIRE),  
(\*SURFACE TO SURFACE MISSILES, EFFECTIVENESS),  
(\*TERMINAL BALLISTICS, MATHEMATICAL MODELS), (\*COMPUTER  
PROGRAMMING, \*INSTRUCTION MANUALS), TANKS (COMBAT  
VEHICLES), ARTILLERY, KILL PROBABILITIES, TERRAIN  
INTELLIGENCE, ENEMY PERSONNEL, DEPLOYMENT, LOGISTICS,  
MISS DISTANCE, MINEFIELDS, CONTROL SEQUENCES (U)  
IDENTIFIERS: COMPUTERIZED SIMULATION, DYNCOM COMPUTER  
PROGRAM, LAND COMBAT SUPPORT SYSTEMS, SCENARIOS (U)

THE DYNCOM MODEL IS A HIGH-RESOLUTION SIMULATION  
OF BATTALION-SIZED COMBAT UNITS HAVING ARMOR, CREW-  
SERVED ANTI-TANK, AERIAL-PLATFORM, AND ARTILLERY  
WEAPONS. THESE WEAPONS CAN BE EQUIPPED WITH  
MISSILES, AND THE MODEL WAS DEVELOPED TO PREDICT THE  
EFFECT OF MISSILE PERFORMANCE CHARACTERISTICS ON THE  
EFFECTIVENESS OF TACTICAL UNITS IN ENGAGEMENTS WITH  
ENEMY FORCES. THE DESIGN OF PRINCIPAL SUBMODELS IS  
DESCRIBED IN VOLUMES 1, 2, 3, AND 5 OF THIS REPORT.  
DETAILED INSTRUCTIONS ON THE DYNCOM COMPUTER  
PROGRAM ARE PRESENTED IN VOLUME 4. THE PROGRAM  
HAS BEEN WRITTEN FOR THE IBM SYSTEM 360 COMPUTER SO  
THAT INSTRUCTIONS ON THE PREPARATION OF CONTROL  
CARDS AND PROGRAM ORGANIZATION ARE SPECIFICALLY  
DIRECTED TOWARD THAT COMPUTER. THIS VOLUME  
CONSISTS OF A CHAPTER CONTAINING INSTRUCTIONS ON THE  
USE OF DYNCOM AND SEVEN APPENDIXES. APPENDIX A  
SHOWS A SAMPLE DATA DECK TO ILLUSTRATE THE  
ORGANIZATION OF INPUT DATA. THE COMMON-AREA  
DESCRIPTIONS ARE PRESENTED IN APPENDIX B. A  
CROSS REFERENCE BETWEEN COMMON AREAS AND THE CHAPTERS  
WHICH DESCRIBE THE MODEL THEY ARE ASSOCIATED WITH IS  
PRESENTED IN APPENDIX C. APPENDIX D GIVES  
PROGRAM DESCRIPTIONS AND FLOW CHARTS FOR ROUTINES  
USED IN DATA PREPARATION OF TERRAIN AND MISSILE DATA.(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-872 678 16/4 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

MISSILE SYSTEM, FIELD ARTILLERY. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

JUN 70 24P

REPT. NO. MTP-5-3-055

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY, SURFACE TO SURFACE MISSILES),  
(\*SURFACE TO SURFACE MISSILES, TEST METHODS),  
OPERATIONAL READINESS, STORAGE, MAINTENANCE, SAFETY,  
DETECTION, VULNERABILITY (U)  
IDENTIFIERS: \*COMMODITY SERVICE TEST PROCEDURES (U)

THE ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
PERFORMANCE AND CHARACTERISTICS OF MISSILE WEAPON  
SYSTEMS, AND FOR DETERMINING THEIR SUITABILITY FOR  
SERVICE USE BY THE U. S. ARMY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-872 844 19/4  
LTV AEROSPACE CORP WARREN MICH MISSILES AND SPACE DIV-  
MICHIGAN

SALVO-FIRE ANALYSIS. PHASE II. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 70 177P WOLFE, J. P. ;  
REPT. NO. 7-55110/70R-39  
CONTRACT: DA-01-021-AMC-15514(Z)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO REPORT ON PHASE I, AD-  
816 522.

DESCRIPTORS: (\*ARTILLERY ROCKETS, ROCKET TRAJECTORIES),  
(\*ROCKET TRAJECTORIES, INTERACTIONS), MATHEMATICAL  
MODELS, WIND TUNNEL MODELS, GUST LOADS, INTERACTIONS,  
THRUST, ALIGNMENT, WAKE, COMPUTER PROGRAMS (U)  
IDENTIFIERS: COMPUTER ANALYSIS, SALVO FIRE (U)

THE REPORT DESCRIBES THE DEVELOPMENT OF A  
MATHEMATICAL MODEL DEPICTING THE AERODYNAMIC  
INTERACTIONS OF PROJECTILES FIRED IN SALVO. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-873 533 19/1 19/4 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ARTILLERY RANGE AND BALLISTIC MATCH FIRINGS (U)  
(INDIRECT FIRE).

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

JUN 70 19P

REPT. NO. MTP-3-1-004

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*ARTILLERY FIRE, \*FIRING TESTS(ORDNANCE)),  
BALLISTICS, RECOILLESS GUNS, MORTARS, RANGE TABLES (U)  
IDENTIFIERS: BALLISTIC MATCH FIRINGS, RANGE  
FIRING (U)

THE BACKGROUND DOCUMENT PROVIDES GENERAL  
TESTING INFORMATION RELATIVE TO CONDUCTING RANGE  
(INDIRECT-FIRE) AND BALLISTIC MATCH FIRINGS OF  
ALL TYPES OF ARTILLERY WEAPONS, RECOILLESS RIFLES,  
AND MORTARS. DIRECT-FIRE TANK AND ANTI-TANK GUNS  
ARE NOT PROVIDED FOR. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-875 313 14/2 21/8.1  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA TEST AND  
RELIABILITY EVALUATION LAB

THRUST MEASUREMENT FOR LANCE ENGINE  
TESTING, EXTENDED RANGE LANCE TESTS  
THROUGH TEST NO. 6922.

(U)

DESCRIPTIVE NOTE: TEST EVALUATION REPT.,  
MAR 70 53P PRESSON, A. W. ;  
REPT. NO. RT-TR-70-5  
PROJ: DA-1-X-222251-D-231

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TEST EQUIPMENT, \*LIQUID PROPELLANT ROCKET  
ENGINES), (\*CAPTIVE TESTS, \*ARTILLERY ROCKETS),  
FORCE(MECHANICS), MEASUREMENT, LOADS(FORCES), THRUST,  
CALIBRATION, REGRESSION ANALYSIS (U)  
IDENTIFIERS: LANCE MISSILES, SIX DEGREES OF  
FREEDOM (U)

THE LANCE ENGINE TESTING HAS BEEN PERFORMED ON  
TEST STANDS DESIGNED TO MEASURE THE SIX COMPONENTS OF  
THRUST REACTION. THE BASIC PROBLEM INHERENT IN SUCH  
STANDS IS THAT OF RESTRAINING THE ENGINE WITH A  
MEASUREMENT SYSTEM THAT PERMITS THE ENGINE 6 DEGREES  
OF FREEDOM WITHOUT THE INTRODUCTION OF UNKNOWN  
EFFECTS UPON THE ENGINE. THIS IS FURTHER COMPOUNDED  
BY THE REQUIREMENT TO SUPPLY PROPELLANTS THROUGH A  
HIGH-PRESSURE PLUMBING SYSTEM THAT SHUNTS THE  
MEASUREMENT SYSTEM. THIS REPORT PROVIDES DETAILS OF  
THE CALIBRATION PROCEDURES, DATA ACQUISITION AND  
ANALYSIS METHODS, AND RESULTS THAT ARE RELEVANT TO  
THE PERIOD OF 'C' CASTING TESTS THROUGH ENGINE TEST  
NO. 6922. BECAUSE PRIOR EXPERIENCE HAD INDICATED  
SYNERGISTIC EFFECTS AMONG THE COMPONENTS, THE PROGRAM  
ADOPTED WAS GEARED TO AN EMPIRICAL APPROACH. THE  
PREMISE OF THIS SCHEME WAS THAT A PRACTICAL NUMBER OF  
THE INFINITE NUMBER OF POSSIBLE COMBINATIONS OF  
COMPONENTS COULD BE EVALUATED TO DERIVE EQUATIONS  
RELATING THE TRUE INPUT COMPONENTS TO THE OBSERVED  
OUTPUT COMPONENTS. A STEP-WISE MULTIPLE LINEAR  
REGRESSION TECHNIQUE WAS USED TO DEFINE THESE  
RELATIONSHIPS. CALIBRATION HARDWARE WAS DEvised TO  
PROVIDE SERVO-CONTROLLED AND CYCLED INPUT LOADS TO  
THE MEASUREMENT SYSTEM WHILE THE COMPLETE DATA  
ACQUISITION SYSTEM WAS UTILIZED TO MONITOR THE INPUTS  
AND THE OUTPUTS SIMULTANEOUSLY. PROPELLANT LINE  
PRESSURIZATION AND FLOW DYNAMICS EFFECTS WERE ALSO  
TESTED.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-875 628 1976 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

ARCTIC ENVIRONMENTAL TEST OF ARTILLERY  
WEAPONS (HOWITZER, GUNS). (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
JUL 70 16P  
REPT. NO. MTP-3-4-009  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*HOWITZERS, COLD WEATHER TESTS), (\*GUNS,  
COLD WEATHER TESTS); ARTILLERY, ARCTIC REGIONS,  
ENVIRONMENTAL TESTS, BORESIGHTING, ACCURACY, FIRE  
CONTROL SYSTEMS, MANEUVERABILITY, SAFETY, MAINTENANCE,  
MOBILE, HUMAN FACTORS ENGINEERING (U)

THE ENVIRONMENTAL TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
PERFORMANCE AND CHARACTERISTICS OF ARTILLERY WEAPONS  
(HOWITZER, GUNS) UNDER ARCTIC WINTER  
ENVIRONMENTAL CONDITIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-875 699 19/1 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CALIBRATION FIRING FOR MASTER AND REFERENCE  
LOTS OF PROPELLANT. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

JUL 70 25P

REPT. NO. MTP-4-2-606

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED 24 JAN  
67.

DESCRIPTORS: (\*AMMUNITION PROPELLANTS, TEST METHODS),  
CALIBRATION, FIRING TESTS(ORDNANCE), MORTARS, RIFLES,  
RECOILLESS GUNS, ARTILLERY, TANKS(COMBAT VEHICLES),  
BALLISTICS (U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES (U)

THE ENGINEERING TEST PROCEDURE DESCRIBES TEST  
METHODS AND TECHNIQUES FOR CONDUCTING CALIBRATION  
FIRINGS OF MASTER AND REFERENCE LOTS OF PROPELLANT.  
CALIBRATION VALUES ARE ESTABLISHED FOR ARTILLERY,  
TANK, MORTAR, AND RECOILLESS RIFLE AMMUNITION.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-875 700 19/1 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

CHECK FIRING OF MASTER AND REFERENCE  
PROPELLANTS. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
JUL 70 12P  
REPT. NO. MTP-4-2-607  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES REPORT DATED 1 SEP  
66.

DESCRIPTORS: (\*AMMUNITION PROPELLANTS, TEST METHODS),  
CALIBRATION, FIRING TESTS(ORDNANCE), ARTILLERY,  
TANKS(COMBAT VEHICLES), MORTARS, RIFLES, RECOILLESS  
GUNS (U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES (U)

THE ENGINEERING TEST PROCEDURE DESCRIBES TEST  
METHODS AND TECHNIQUES FOR CHECK FIRING OF ARTILLERY  
AMMUNITION PROPELLANTS TO DETERMINE WHETHER THEIR  
CONTINUED USE AS CALIBRATION LOTS IS SATISFACTORY.  
MASTER OR REFERENCE PROPELLANTS LOTS ARE  
CONSIDERED. ARTILLERY AMMUNITION INCLUDES FIELD  
ARTILLERY, TANK, MORTAR, AND RECOILLESS RIFLE  
AMMUNITION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-875 705 1971 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

PROJECTILE, ANTIPERSONNEL/ANTIMATERIEL. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.

JUL 70 24P

REPT. NO. MTP-4-3-104

PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROJECTILES, TEST METHODS), ARTILLERY,  
ANTIPERSONNEL AMMUNITION, BALLISTICS, SAFETY, HUMAN  
FACTORS ENGINEERING, FIRE CONTROL SYSTEMS (U)  
IDENTIFIERS: COMMODITY SERVICE TEST PROCEDURES (U)

THE ARMY SERVICE TEST PROCEDURE DESCRIBES  
TEST METHODS AND TECHNIQUES FOR EVALUATING THE  
PERFORMANCE AND CHARACTERISTICS OF PROJECTILES FOR  
DIRECT-FIRE ARTILLERY WEAPONS WITH REGARD TO THEIR  
ANTIPERSONNEL/ANTIMATERIEL EFFECTIVENESS.  
ARMOR DEFEATING CAPABILITIES ARE NOT CONSIDERED IN  
THE TEST. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-875 841 13/4 19/7 1/2  
AIR FORCE SPECIAL WEAPONS CENTER KIRTLAND AFB N MEX

AIR TRANSPORTABILITY TESTING OF THE  
PALLETIZED SERGEANT M481 WEAPON/CONTAINER  
CONFIGURATION.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 16 MAR-26 JUN 70,  
SEP 70 25P CAMERON, CHARLES D. ;  
REPT. NO. AFSWC-TR-70-14  
PROJ: AF-9112

UNCLASSIFIED REPORT

DESCRIPTORS: (CONTAINERS, AIR TRANSPORTATION),  
(ARTILLERY ROCKETS, STORAGE), PALLETS, TRANSPORT  
AIRCRAFT, COMPATIBILITY, ACCELERATION, LOADS(FORCES),  
STRAIN(MECHANICS), CABLE GRIPS, FLIGHT TESTING (U)  
IDENTIFIERS: C-130 AIRCRAFT, C-141 AIRCRAFT, C-133  
AIRCRAFT, MGM-29 MISSILES, M-481 CONTAINERS,  
SERGEANT (U)

AIRCRAFT PALLETIZED CONFIGURATION FOR TRANSPORT OF  
THE SERGEANT M481 CONTAINER IN THE C-130,  
C-133, AND C-141 AIRCRAFT WERE DESIGNED AND  
TESTED BY THE AIR FORCE SPECIAL WEAPONS  
CENTER AT THE REQUEST OF THE AIR FORCE  
WEAPONS LABORATORY TO PROVIDE SOURCE DATA FOR  
11N-B1105-1 TECHNICAL ORDERS. AS A RESULT  
OF TESTING, IT WAS FOUND THAT TWO CONTAINERS PER  
PALLET WILL NOT WITHSTAND SIDE ACCELERATIONS WITHOUT  
EXCESSIVE MOVEMENT. ONE CONTAINER PER PALLET MET  
THE ACCEPTANCE CRITERIA SPECIFIED BY THE AIR  
FORCE WEAPONS LABORATORY. THE DEVELOPED  
TIEDOWN CONFIGURATION, TEST PROCEDURES, TEST DATA,  
AND NOTATIONS OF TEST OBSERVATIONS ARE PRESENTED IN  
THIS REPORT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-875 855 17/7 19/7  
ARMY MISSILE COMMAND REDSTONE ARSENAL ALA ARMY INERTIAL  
GUIDANCE AND CONTROL LAB AND CENTER

ANALYSIS OF THE MISTIC SYSTEM AUTOPILOTS, (U)

APR 70 35P ALONGI, ROBERT E. ; REZMER,  
MATTHEW D. ;  
REPT. NO. RG-TN-70-4  
PROJ: DA-1-M-263301-A-221

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AUTOMATIC PILOTS, NUMERICAL ANALYSIS),  
(\*ARTILLERY ROCKETS, INERTIAL GUIDANCE), FLIGHT CONTROL  
SYSTEMS, ROLL, PITCH(MOTION), ANGLE OF ATTACK, ASCENT  
TRAJECTORIES, DESCENT TRAJECTORIES, EQUATIONS OF MOTION,  
PROPORTIONAL NAVIGATION (U)  
IDENTIFIERS: MISTIC(MISSILE SYSTEM TARGET ILLUMINATOR  
CONTROLLED), MISSILE SYSTEM TARGET ILLUMINATOR  
CONTROLLED (U)

THE PURPOSE OF THIS STUDY WAS TO DETERMINE BY  
ANALYTICAL MEANS THE GAINS AND COMPENSATION NETWORKS  
REQUIRED FOR THREE TYPES OF AUTOPILOTS FOR THE  
MISSILE SYSTEM TARGET ILLUMINATOR  
CONTROLLED (MISTIC) STUDIES. THESE AUTOPILOTS  
CONSIST OF A PITCH ATTITUDE, A PITCH RATE, AND A ROLL  
ATTITUDE. THE PITCH ATTITUDE AUTOPILOT IS USED IN  
THE INDIRECT FIRE MODE TO PITCH THE MISSILE OVER TO A  
REQUIRED ATTITUDE DURING THE BOOST CONTROL PHASE.  
THE PITCH ATTITUDE AUTOPILOT IS DEACTIVATED WHEN  
THE REQUIRED ATTITUDE IS OBTAINED. THE MISSILE WILL  
THEN FREE FALL TO THE TARGET AREA. IN THE TERMINAL  
PORTION OF FLIGHT, THE PITCH RATE AUTOPILOT IS  
ACTIVATED SO THAT THE MISSILE CAN BE GUIDED BY MEANS  
OF PROPORTIONAL NAVIGATION TO THE TARGET. THE ROLL  
ATTITUDE AUTOPILOT IS USED TO ROLL STABILIZE THE  
MISSILE THROUGHOUT ITS COMPLETE FLIGHT FOR INDIRECT  
AND DIRECT FIRE MISSIONS. THE PITCH ATTITUDE OR THE  
PITCH RATE AUTOPILOT (NOT BOTH) AND PROPORTIONAL  
NAVIGATION WILL BE USED FROM LIFT OFF TO TARGET  
IMPACT IN THE DIRECT FIRE CASE. THE GAINS AND  
COMPENSATION NETWORKS OBTAINED FROM THIS ANALYTICAL  
ANALYSIS MUST BE OPTIMIZED ON AN ANALOG COMPUTER TO  
OBTAIN THE FINAL DESIGN VALUES. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-876 180 1976  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

VULNERABILITY OF WEAPONS. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
AUG 70 8P  
REPT. NO. MTP-3-2-531  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*GUNS, VULNERABILITY), (\*VULNERABILITY,  
TEST METHODS), ARTILLERY, RIFLES, RECOILLESS GUNS (U)  
IDENTIFIERS: \*COMMON ENGINEERING TEST PROCEDURES, GUN (U)  
BARRELS

THE ENGINEERING TEST PROCEDURE DESCRIBES TEST  
METHODS AND TECHNIQUES FOR ASSESSING THE  
VULNERABILITY OF ARTILLERY, RECOILLESS RIFLE AND TANK  
GUN WEAPONS. VULNERABILITY TO DIRECT PROJECTILE  
IMPACT AND FRAGMENT HITS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-877 256 1976  
ABERDEEN PROVING GROUND MD MATERIEL TESTING  
DIRECTORATE

PRODUCT IMPROVEMENT TEST (PHASE II) OF  
SELF-PROPELLED, M107E1 AND M110E1  
WEAPON SYSTEMS. (U)

DESCRIPTIVE NOTE: FINAL REPT. 16 JAN 69-6 APR 70,  
JUL 70 201P NELSON, R. H.; DIETER, T.

P. : KOTRAS, E. C. ;  
REPT. NO. APG-MT-3559  
PROJ: USATECOM-2-WE-100-107-001

UNCLASSIFIED REPT

DESCRIPTORS: (•SELF PROPELLED GUNS,  
PERFORMANCE(ENGINEERING)), HOWITZERS, ROAD TESTS,  
MAINTAINABILITY, RELIABILITY, VISUAL INSPECTION,  
STRESSES, STRAIN(MECHANICS), STABILITY, GUN TURRETS,  
HYDRAULIC EQUIPMENT, DECELERATION, LIFE EXPECTANCY, FUEL (U)  
TANKS, BULKHEADS, MODIFICATION KITS  
IDENTIFIERS: M-107 GUNS(175-MM), \*M-110E1 GUNS(8-IN.), (U)  
M-110 GUNS(8-IN.), \*M-107E1 GUNS(175-MM)

THESE TESTS WERE CONDUCTED TO EVALUATE NUMEROUS  
ENGINEERING CHANGES TO THE M107E1 AND M110E1  
WEAPON SYSTEM. THE IMPROVEMENTS WERE INTENDED TO  
OVERCOME THE OPERATIONAL PROBLEMS, BOTH ARMAMENT AND  
AUTOMOTIVE, WHICH HAD BEEN REPORTED FROM THE FIELD;  
MAINLY, FROM THE SOUTHEAST ASIA THEATER OF  
OPERATIONS. TESTING CONCENTRATED ON THE ENGINEERING  
AND DURABILITY ASPECTS OF THE SYSTEMS, WITH A BRIEF  
SUMMARY OF MAINTAINABILITY AND RELIABILITY VALUES.  
PRIOR TO CONDUCTING THE MAIN ARMAMENT TESTS, AN  
INITIAL INSPECTION, AND A 50-MILE RUN-IN CHECK WERE  
CONDUCTED. ALL ROAD TESTING WAS DONE WITH THE 175-  
MM GUN, M113 (I.E., M107E1 SYSTEM). FOR  
VARIOUS TECHNICAL REASONS, THE MAIN ARMAMENT TESTING  
WAS ACCOMPLISHED IN THREE STEPS; AFTER 50-MILE  
CHECKS, AFTER A SPECIAL 323-MILE ROAD TEST, AND AFTER  
3886 MILES OF AUTOMOTIVE ROAD TESTING. BOTH THE  
175-MM GUN, M113, AND THE 8-INCH HOWITZER,  
M2A1E1, WERE UTILIZED AT VARIOUS TEST FIRING  
STAGES, IN ORDER THAT AS WIDE A SPECTRUM AS POSSIBLE,  
OF MAXIMUM STRESS VERSUS STRAIN DATA, COULD BE  
COLLECTED ON CRITICAL AREAS. THESE INCLUDED THE  
TEST SPADES (I.E., NEW AND INTERIM), FUEL CELL  
BULKHEAD, TRAVERSING ASSEMBLY MOUNTING PLATE, AND  
ANCHOR SUPPORT FOR NO. 3 LOCKOUT CYLINDER. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-879 093 1971 14/2  
ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND  
MD

TESTING AMMUNITION AND EXPLOSIVES. (U)

DESCRIPTIVE NOTE: FINAL REPT. ON MATERIEL TEST PROCEDURE.  
DEC 70 9P  
REPT. NO. MTP-4-1-001  
PROJ: AMCR-310-6

UNCLASSIFIED REPORT

DESCRIPTORS: (\*AMMUNITION, TEST METHODS), (\*EXPLOSIVES,  
TEST METHODS), ARTILLERY, ANTITANK AMMUNITION,  
PYROTECHNICS, GRENADES, FLAMETHROWERS, ANTIAIRCRAFT  
AMMUNITION, MORTARS, RECOILLESS GUNS, ENVIRONMENTAL  
TESTS, SAFETY (U)

THE DOCUMENT PROVIDES BACKGROUND INFORMATION  
RELATIVE TO TESTING OF AMMUNITION AND EXPLOSIVES.  
IT IDENTIFIES THE PRINCIPAL AGENCIES AND OFFICES  
CONCERNED WITH SUCH TESTING, AND THEIR INVOLVEMENT OF  
EACH. IN ADDITION TO AMMUNITION FOR ARTILLERY,  
TANK, RECOILLESS RIFLE, MORTAR, SMALL ARMS AND  
AIRCRAFT WEAPONS, IT ALSO CONCERNS SMALL ROCKETS AND  
MISSILES, MINES, DEMOLITION EQUIPMENT, PYROTECHNICS,  
GRENADES AND FLAME THROWERS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-879 429 13/5 13/4 15/5  
AIR FORCE SPECIAL WEAPONS CENTER KIRTLAND AFB N MEX

TIEDOWN TESTS FOR AIR TRANSPORT OF THE  
LANCE XM511E2 CONTAINER. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. JUN-SEP 70,  
DEC 70 28P GRAY, GRANT W. ;  
REPT. NO. AFSWC-TR-70-32  
PROJ: AF-921A-9112-02282

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DETENTS, ACCEPTABILITY), (\*CONTAINERS,  
DETENTS), (\*AIR TRANSPORTATION, ARTILLERY ROCKETS),  
TRANSPORT AIRCRAFT, CARGO, POSITIONING  
DEVICES(MACHINERY), PALLETS, CONFIGURATION,  
LOADS(FORCES), REACTION KINETICS (U)  
IDENTIFIERS: HCU-6/E PALLETS, LANCE MISSILES, MGM-52A  
MISSILES, M-511 SHIPPING CONTAINERS, XM-511E2 SHIPPING  
CONTAINERS (U)

AIRCRAFT TIEDOWN CONFIGURATIONS FOR TRANSPORT OF  
THE XM511E2 CONTAINER IN CURRENT CARGO AIRCRAFT  
WERE DESIGNED AND TESTED TO PROVIDE SOURCE DATA FOR -  
16 TECHNICAL ORDERS. TIEDOWNS DIRECTLY TO THE  
AIRCRAFT TIE POINTS AND TO THE HCU-6/E PALLET FOR  
463L-EQUIPPED AIRCRAFT WERE REQUIRED. THE  
DEVELOPED TIEDOWN CONFIGURATIONS, TEST PROCEDURE,  
TEST DATA, AND NOTATIONS OF TEST OBSERVATIONS ARE  
PRESENTED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-880 150 1975  
ARMY ENGINEER TOPOGRAPHIC LABS FORT BELVOIR VA

NEW ANALYSES AND METHODS LEADING TO  
IMPROVED TARGET ACQUISITION REQUIREMENTS  
INVOLVING SYSTEMS, GEODETIC AND RE-ENTRY  
ERRORS, AND INCREASED WEAPONS EFFECTIVENESS  
FOR CONVENTIONAL WEAPONS. PART II. (U)

DESCRIPTIVE NOTE: RESEARCH NOTE,  
DEC 70 14P BAUSSUS-VON LUETZOW, HANS G.

1  
REPT. NO. ETL-RN-70-3

UNCLASSIFIED REPORT

DESCRIPTORS: (•TARGET ACQUISITION, MATHEMATICAL MODELS),  
(•ARTILLERY FIRE, OPTIMIZATION), AIRBURST,  
FRAGMENTATION, DISTRIBUTION FUNCTIONS, TERMINAL  
BALLISTICS, ERRORS, TERRAIN INTELLIGENCE (U)

THE PAPER REPRESENTS A SUPPLEMENTAL ANALYSIS FOR  
HEIGHT BURSTS AS WELL AS VERTICAL TARGET LOCATION  
ERRORS, CONSIDERING FLAT AND CONTOURED TERRAIN, AND  
THUS COMPLETES THE DEVELOPMENT OF OPTIMAL METHODS FOR  
WEAPONS RESEARCH AND DEVELOPMENT AND A BROAD SPECTRUM  
OF REQUIREMENT ANALYSES. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-882 198 1977  
AIR FORCE SPECIAL WEAPONS CENTER KIRTLAND AFB N MEX

AIR TRANSPORTABILITY TESTING OF THE  
PALLETIZED HONEST JOHN M480 WEAPON/  
CONTAINER CONFIGURATION.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT. 30 APR-29 MAY 70,  
FEB 71 29P CAMERON, CHARLES D. ;  
REPT. NO. AFSWC-TR-70-35  
PROJ: AF-9112

UNCLASSIFIED REPORT

DESCRIPTORS: (•ARTILLERY ROCKETS, CONTAINERS), (•AIR  
TRANSPORTATION, ARTILLERY ROCKETS), TRANSPORT AIRCRAFT,  
PALLETS, CONFIGURATION, TESTS, FITTINGS, LOADS(FORCES),  
CHAINS (U)  
IDENTIFIERS: HONEST JOHN, M-480 CONTAINERS (U)

AIRCRAFT PALLETIZED CONFIGURATIONS FOR TRANSPORT OF  
THE HONEST JOHN M480 CONTAINER IN THE C-130,  
C-133, AND C-141 AIRCRAFT WERE DESIGNED AND  
TESTED. AS A RESULT IT WAS FOUND THAT TWO  
CONTAINERS PER PALLET WILL NOT MEET THE ACCEPTANCE  
CRITERIA FOR THE C-130 AND C-133 AIRCRAFT. A  
LACK OF AVAILABLE FLOOR TIEDOWN FITTINGS RESTRICTS  
THE PALLETIZED CONFIGURATION TO ONE M480 CONTAINER  
PER PALLET IN THE ABOVE MENTIONED AIRCRAFT. TWO  
CONTAINERS PER PALLET WILL MEET THE ACCEPTANCE  
CRITERIA FOR THE C-141 AIRCRAFT. THE DEVELOPED  
TIEDOWN CONFIGURATIONS, TEST PROCEDURES, TEST DATA,  
AND NOTATIONS OF TEST OBSERVATIONS ARE PRESENTED.  
(AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-903 024 1973  
ABERDEEN PROVING GROUND MD MATERIEL TESTING  
DIRECTORATE

COMPARISON TEST OF TANK, COMBAT, FULL-  
TRACKED, 105-MM GUN, M60A1.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 25 APR-4 AUG 72,  
SEP 72 34P KOTRAS, EDWARD C. ;  
REPT. NO. APG-MT-4142  
PROJ: USATECOM-1-VC-080-060-026

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TANKS (COMBAT VEHICLES),  
PERFORMANCE (ENGINEERING), ROAD TESTS, TANK TURRETS,  
HOWITZERS, FIRING TESTS (ORDNANCE), FAILURE (MECHANICS),  
TANK ENGINES, FUEL INJECTORS, NOISE, WHEEL HUBS, SEALS,  
STEERING, TRANSMISSIONS (MECHANICS) (U)  
IDENTIFIERS: \*M-60A1 TANKS, M-60 TANKS, M-68 GUNS (105-  
MM) (U)

A THIRD SAMPLE INSPECTION COMPARISON M60A1  
TANK WAS OPERATED FOR 2018 MILES DURING COMPARISON  
TESTING. IN ADDITION TO THE ENDURANCE TEST,  
CONSTRUCTION, AUTOMOTIVE, AND TURRET PERFORMANCE  
TESTS WERE ACCOMPLISHED. FIRING PROGRAMS WERE ALSO  
CONDUCTED ON THE 105-MM GUN, M68, AND THE MACHINE  
GUN INSTALLATIONS. TEST RESULTS INDICATED THAT THE  
VEHICLE DID NOT MEET ALL OF THE REQUIREMENTS OF  
SPECIFICATION MIL-T-45379C(M0), SPECIFICALLY,  
NOISE LEVEL.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-909 829 1977  
LTV AEROSPACE CORP WARREN MICH MICHIGAN DIV

FEASIBILITY FLIGHT TESTING OF ROCKET  
IMPELLED PROJECTILE (RIP). (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 73 281P TOMLINSON, E. M. ;  
REPT. NO. 7-52100/3R-5  
CONTRACT: DAAH01-72-C-1073

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROJECTILES, \*SOLID PROPELLANT ROCKET  
ENGINES), (\*ARTILLERY ROCKETS, FIRING TESTS(ORDNANCE)),  
(\*ROCKET LAUNCHERS, SABOT PROJECTILES), ADAPTERS,  
ARTILLERY FIRE, THRUST, BURNING RATE, IMPACT PREDICTION,  
RADAR TRACKING, FINS, INTERIOR BALLISTICS, DETENTS,  
EXTERIOR BALLISTICS, SPIN STABILIZED AMMUNITION, TEST  
EQUIPMENT, ERRORS, BALLISTIC CAMERAS, ROCKET  
TRAJECTORIES, ACCURACY, SURFACE TARGETS, VULNERABILITY(U)  
IDENTIFIERS: 155-MM PROJECTILES, 155-MM ROCKETS, 6-IN.  
ROCKET MOTORS, MULTIPLE LAUNCHING, RIP(ROCKET IMPELLED  
PROJECTILE), \*ROCKET IMPELLED PROJECTILES, SHEAR PINS,  
ZAP ROCKET MOTORS (U)

THIS TEST PROGRAM WAS CONDUCTED TO DEMONSTRATE THE  
MINIMUM TIP-OFF TUBE LAUNCHER CONCEPT, EVALUATE THE  
REAL-TIME RADAR REGISTRATION TECHNIQUE, AND EVALUATE  
ROCKET PRECISION FOR THE 6-INCH DIAMETER, 218-POUND  
RIP ROCKET. THE PROGRAM HAS BEEN COMPLETED WITH  
THE LAUNCH OF ALL EIGHT ROCKETS, AND HAS PROVIDED  
DATA TO INDICATE SUCCESSFUL ACCOMPLISHMENT OF ALL  
OBJECTIVES. IN ADDITION, THIS FLIGHT PROGRAM HAS  
UNCOVERED SPECIFIC AREAS FOR FURTHER INVESTIGATION,  
AND HAS STRENGTHENED THE POSITION THAT FREE ROCKETS  
OF THIS SIZE CAN BE SATISFACTORILY LAUNCHED FROM A  
STEPPED TUBE WITH MINIMUM TIP-OFF ERROR. (THE 1  
SIGMA TOLERANCE IN THE COMPUTED 71 MILLIRADIANS/  
SECONDS TIPOFF WITH A ONE-SIGMA VARIATION OF 97.2  
MILLIRADIANS/SECONDS IS DUE TO THE LIMITED 8-TEST  
SAMPLE SIZE, AND TO INACCURACIES IN THE READING OF  
CAMERA TIP-OFF DATA.) THE RADAR REAL-TIME  
REGISTRATION PROGRAM PREDICTED IMPACT (HENCE,  
IMMEDIATE RE-AIM) TO WITHIN 60 FEET OF ACTUAL  
SURVEYED IMPACT. THE PAIRED FIRINGS PROVIDED A  
PRECISION OF 6.24 MILS, A VALUE ACHIEVED  
NOTWITHSTANDING ENVIRONMENTAL CHANGES OCCURRING IN  
THE 25-MINUTES BETWEEN ROUNDS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-912 813 17/9 19/5 9/2  
PACER SYSTEMS INC FORT WASHINGTON PA

TACTICAL SYSTEMS ANALYSIS.

(U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 3, DEC 72-MAR  
73,

AUG 73 45P KLEIN, F. J. ;

CONTRACT: DAAB07-72-C-0186

PROJ: DA-1-S-663703-D-654

TASK: 1-S-663703-D-65401

MONITOR: ECOM 0186-3-72

UNCLASSIFIED REPORT

DESCRIPTORS: (\*MORTAR LOCATOR RADAR, ARTILLERY FIRE),  
(\*RADAR TRACKING, PROJECTILE TRAJECTORIES), (\*RADAR  
RANGE COMPUTERS, POSITION FINDING), SYSTEMS ENGINEERING,  
ARTILLERY, RADAR TARGETS, DIGITAL COMPUTERS, DATA  
PROCESSING, COMPUTER PROGRAMS, INTERFACES, RADAR  
OPERATORS, DISPLAY SYSTEMS, MEMORY DEVICES, ALGORITHMS,  
SEARCH RADAR, TARGET ACQUISITION, ARTILLERY (U)  
IDENTIFIERS: COMPUTER PROGRAMS, KALMAN FILTERS (U)

AN ARTILLERY LOCATING RADAR SYSTEM IS USED TO  
DETECT, TRACK, AND ESTIMATE THE LAUNCH POINT OF  
ARTILLERY SHELLS DURING TACTICAL ENGAGEMENTS. THIS  
REQUIRES THAT FOUR SYSTEM FUNCTIONS BE ALLOCATED TO A  
GENERAL PURPOSE (GP) COMPUTER. PERFORMING THE  
TRACKING AND EXECUTIVE CONTROL FUNCTIONS REQUIRE THAT  
THE COMPUTER INTERFACE WITH THE THREE SPECIAL PURPOSE  
COMPUTERS. THE TRAJECTORY ESTIMATION FUNCTION IS  
COMPLETELY INTERNAL TO THE GP COMPUTER, WHILE THE  
OPERATOR INTERFACE FUNCTION REQUIRES A DIRECT  
INTERFACING WITH OPERATOR CONTROLS AND DISPLAY.  
THOSE SYSTEM FUNCTION PROGRAMS AS WELL AS THE  
COLLECTIVE FILES OF INFORMATION EXISTING IN PRIMARY  
AND SECONDARY STORAGES, WHICH IS UTILIZED BY THE  
EXECUTIVE CONTROL PROGRAMS, WILL COMPRISE THE  
DEFINITION OF THE DATA BASE. THE DATA BASE  
CONTENTS INCLUDES EXECUTIVE CONTROL PROGRAMS,  
APPLICATION PROGRAMS, DATA FILES, AND DISPLAY FILE,  
ETC. ALSO, CONSIDERATION CRITERIA OF PROGRAM'S  
LOCATION, PROGRAM SIZE AS WELL AS DATA FILE SIZE ARE  
ROUGHLY ESTIMATED. FINALLY, THE STORAGE ALLOCATION  
METHOD IS PRESENTED. (AUTHOR) (U)

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CORPORATE AUTHOR - MONITORING AGENCY

• ABERDEEN PROVING GROUND MD MATERIEL TESTING DIRECTORATE

• • •  
 APG-MT-3290  
 ENGINEERING TEST OF OVERHEAD COVER FOR FOXHOLES.  
 AD-870 127

• • •  
 APG-MT-3559  
 PRODUCT IMPROVEMENT TEST (PHASE II) OF SELF-PROPELLED, M107E1 AND M110E1 WEAPON SYSTEMS.  
 AD-877 256

• • •  
 APG-MT-4142  
 COMPARISON TEST OF TANK, COMBAT, FULL-TRACKED, 105-MM GUN, M60A1.  
 AD-903 024

• ABERDEEN PROVING GROUND MD

• • •  
 ESTABLISHMENT OF CHARGE WEIGHTS FOR CHARGE, PROPELLING, 155-MM, XM51E1, (DPS-209)  
 AD-255 372

• • •  
 SUMMER DESERT ENVIRONMENTAL TEST, 1962, OF 105-MM HOWITZER, SELF-PROPELLED, XM104  
 AD-291 060

• • •  
 APG-DPS955  
 ENGINEER DESIGN TEST OF HOWITZER, LIGHT, SELF PROPELLED, 105-MM, XM104,  
 AD-405 791

• • •  
 DPS 221  
 EVALUATION TEST OF HOWITZER, 105-MM, M2A1L, GERMAN  
 AD-255 815

• AIR FORCE CAMBRIDGE RESEARCH LABS L & HANSCOM FIELD MAES

• • •  
 AFCRL-IP-201  
 TESTS OF LONG WIRE DEPLOYMENT FROM SUPERSONIC ROCKETS.  
 AD-773 966

• • •  
 AFCRL-TR-73-0553  
 TESTS OF LONG WIRE DEPLOYMENT FROM SUPERSONIC ROCKETS.  
 AD-773 966

• AIR FORCE ROCKET PROPULSION LAB EDWARDS AFB CALIF

• • •  
 AFRPL-TR-69-211  
 GUN INTERNAL BALLISTICS.  
 AD-862 290

• AIR FORCE SPECIAL WEAPONS CENTER KIRTLAND AFB N MEX

• • •  
 AFSWC-TR-70-14  
 AIR TRANSPORTABILITY TESTING OF THE PALLETIZED SERGEANT M481 WEAPON/CONTAINER CONFIGURATION.  
 AD-875 841

• • •  
 AFSWC-TR-70-32  
 TIEDOWN TESTS FOR AIR TRANSPORT OF THE LANCE XM51E2 CONTAINER.  
 AD-879 429

• • •  
 AFSWC-TR-70-35  
 AIR TRANSPORTABILITY TESTING OF THE PALLETIZED HONEST JOHN M480 WEAPON/CONTAINER CONFIGURATION.  
 AD-882 198

• AMERICAN MACHINE AND FOUNDRY CO CHICAGO ILL

• • •  
 FEASIBILITY STUDY OF AN AUXILIARY PROPELLED 155MM HOWITZER CARRIAGE, M1A2, PHASE IV  
 AD-270 710

• AMERICAN MACHINE AND FOUNDRY CO STAMFORD CONN

• • •  
 105 MM HOWITZER XM 102  
 AD-291 558

• • •  
 HYDRAULIC COMPONENTS EVALUATION TEST PROGRAM PHASE IIB FOR THE AUXILIARY PROPULSION KIT FOR THE 105 MM HOWITZER XM102 PROGRAM.



ARM-ARM

- AD-425 365  
 \* \* \*  
 ENGINEERING AND DESIGN OF  
 AUXILIARY PROPULSION KIT FOR 105 MM  
 HOWITZER XM 102 AND TEST PROGRAM.  
 AD-400 313
- \*ARMY ARCTIC TEST CENTER FORT GREELY  
 ALASKA  
 \* \* \*  
 CHECK TEST OF WINTERIZATION KIT  
 FOR RECOVERY VEHICLE, FULL-TRACKED,  
 LIGHT, ARMORED, M570, UNDER ARCTIC  
 WINTER CONDITIONS.  
 AD-856 034
- \*ARMY ARMOR AND ENGINEER BOARD FORT  
 KNOX KY  
 \* \* \*  
 SERVICE TEST OF PRODUCT  
 IMPROVED COMPONENTS FOR SHERIDAN  
 WEAPON SYSTEM (CLOSED BREECH  
 SCAVENGER SYSTEM).  
 AD-829 986
- \*ARMY ARTILLERY AND MISSILE SCHOOL  
 FORT SILL OKLA  
 \* \* \*  
 USAAMS-STUDY-89-9  
 APPLICATION OF AUTOMATIC DATA  
 PROCESSING SYSTEMS TO FIELD  
 ARTILLERY TECHNICAL FIRE CONTROL  
 INPUT/OUTPUT DATA.  
 AD-706 244
- \*ARMY ARTILLERY BOARD FORT SILL OKLA  
 \* \* \*  
 FA 3459 2  
 TEST OF FLOTATION KIT FOR 155-  
 MM HOWITZER, SELF-PROPELLED, T196E1  
 AD-290 599  
 \* \* \*  
 USAARTYBD-FA-964-1  
 SERVICE TEST OF WIND SPEED  
 SIMULATOR AN/6MM-7( ).  
 AD-808 887
- \*ARMY AVIATION SYSTEMS TEST ACTIVITY  
 EDWARDS AFB CALIF  
 \* \* \*  
 USAAVNTA-68-46

ARMY PRELIMINARY EVALUATION OF  
 THE PROTOTYPE BHC MODEL 211  
 (HUEYTUG).  
 AD-840 063

- \*ARMY COMBAT DEVELOPMENTS COMMAND  
 FORT ORD CALIF EXPERIMENTATION  
 COMMAND  
 \* \* \*  
 CONTROLLABILITY OF PENTANA-TYPE  
 COMPANIES IN MOBILE OPERATIONS.  
 VOLUME III: ARTILLERY SUPPORT.  
 AD-815 047
- \*ARMY COMBAT DEVELOPMENTS COMMAND SAN  
 FRANCISCO CALIF 96378 LIAISON  
 DETACHMENT  
 \* \* \*  
 TRIP REPORT - 2D BRIGADE, 9TH  
 INFANTRY DIVISION, 4 JANUARY 1968.  
 AD-495 037  
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 TRIP REPORT - 4TH INFANTRY  
 DIVISION, 15-16 JAN 68.  
 AD-495 083  
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 TRIP REPORT TO 173D AIRBORNE  
 BRIGADE.  
 AD-495 086  
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 TRIP REPORT TO 199TH LIGHT  
 INFANTRY BRIGADE.  
 AD-495 087  
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 TRIP REPORT - 25TH INFANTRY  
 DIVISION, 8 JANUARY 1968.  
 AD-849 051  
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 TRIP REPORT - 1ST INFANTRY  
 DIVISION, 13 JANUARY 1968.  
 AD-849 056  
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 TRIP REPORT - AMERICAL  
 DIVISION, 20-21 JAN 68.  
 AD-849 058  
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 TRIP-29-69  
 TRIP REPORT - FIELD ARTILLERY  
 DIGITAL AUTOMATIC COMPUTER (FADAC);  
 AND M548 6-TON TRACKED CARGO  
 CARRIER.

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AD-852 079

•ARMY CONCEPT TEAM IN VIETNAM SAN FRANCISCO CALIF 96384  
 •••  
 EMPLOYMENT OF ARTILLERY IN COUNTERINSURGENCY OPERATIONS  
 AD-363 667

•ARMY CONSTRUCTION ENGINEERING RESEARCH LAB CHAMPAIGN ILL  
 •••  
 CERL-TM-M-53  
 SOIL STABILIZATION INVESTIGATION FOR 185 MM TOWED HOWITZER FIRING PADS.  
 AD-766 299

•ARMY ELECTRONICS COMMAND FORT MONMOUTH N J  
 •••  
 IMPROVED SOUND RANGING LOCATION OF ENEMY ARTILLERY.  
 AD-750 384  
 •••  
 ECON-0186-3-72  
 TACTICAL SYSTEMS ANALYSIS.  
 AD-912 813  
 •••  
 ECON-0296-1  
 BALLISTIC WINDS STUDY.  
 AD-661 071  
 •••  
 ECON-01377-F  
 BALLISTIC WINDS STUDY.  
 AD-642 102  
 •••  
 ECON-01856-F  
 MULTI-COMPUTER SIMULATION STUDY.  
 AD-479 517  
 •••  
 ECON-2601  
 BATTERY DISPLAY UNIT (FEASIBILITY MODEL).  
 AD-620 590  
 •••  
 ECON-3203  
 EVALUATION OF LOW-ALTITUDE, FAST-RISE METEOROLOGICAL BALLOON ML-635(XE-1)/UM.

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