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ARTILLERY

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DDC-TAS-74-33

ARTILLERY

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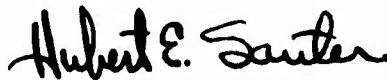
FOREWORD

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.

These citations were taken from entries processed into the Defense Documentation Center Data Bank during the period of 1953 to August 1974. Individual entries are arranged in AD number sequence under the heading AD Bibliographic references. Computer-generated indexes of Corporate Author-Monitoring Agency, Subject, Title, and Personal Author are provided.

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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
HOWITZERS(155-MM), 175-MM ORDNANCE ITEMS (U)

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)

UNCLASSIFIED

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 1V LINAM, O.T.1
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 SATISFACTORILY
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)

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/ZOM07

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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 1V

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 1V 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

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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 FRANCULLO, 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

11T RESEARCH INST CHICAGO ILL

LONG RANGE STUDY PROGRAM LIGHTWEIGHT ARTILLERY
WEAPON

(U)

APR 61 IV BRACH, R.M.:
CONTRACT: DA11 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)

UNCLASSIFIED

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)

UNCLASSIFIED

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. J.

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. |
CONTRACT: DA33 008 D01ORD1800

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 (1)
ISTP/MFA) AIR FORCE MISSILE DEVELOPMENT C
ENTER, HOLLOMAN 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 WING. 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.
(AUTHOR) (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)

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 1V 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. 101107320NS01DC 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 ALFOMULAS 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: DAO1 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

DDC 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.

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: DA11 070 5080RD1343

UNCLASSIFIED REPORT

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

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 1V BULLOCK, R.C.;
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. ;

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.:

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 1V 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: DALL 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. J.
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-F8241 (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 XM102
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. I

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,

(U)

NOMOGRAPHS

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 19/1
ARMY CONCEPT TEAM IN VIETNAM SAN FRANCISCO CALIF 96384

EMPLOYMENT OF ARTILLERY IN COUNTERINSURGENCY
OPERATIONS (U)

DESCRIPTIVE NOTE: FINAL REPT.
APR 65 IV
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 1V 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 I
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: DALL 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
HOWITZERS(105-MM) (U)

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: DALL 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 ;MCMAINS,
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 19/6 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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-478 880 19/7 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.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-479 517 19/5
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 DOVER N J

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

(U)

JAN 64 150P WASSERMAN, S. ; LATTAL, G. ;
SMOLNIK, J. I
PROJ: 2M0110018703
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, SAUEL ; 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, INTERIOR
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: 1PO 20401A327

TASK: 1PO 20401A32702, 1PO 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-66

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

DESCRIPTORS: (*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 19/4 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: NAVTRADEVCE 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 19/5 19/4
FOREIGN TECHNICAL INTELLIGENCE OFFICE ABERDEEN PROVING
GROUND MD

ANTIAIRCRAFT ARTILLERY FIRE ON AERIAL TARGETS, (U)

JUN 63 63P FESENKO, P. V. I
REPT. NO. FT10-22-63
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-1N523801A301

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-25001 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)

(U)

UNCLASSIFIED

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)

UNCLASSIFIED

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. IDIXON,
ROBERT R. IBRATKOWSKI, WALTER V. ;
CONTRACT: DAAA21-53-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 21P TRAYLOR, LARRY E. ;
PROJ: DA-1TO-14501-B-53A
TASK: 1TO-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)

UNCLASSIFIED

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)

UNCLASSIFIED

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 17/7 19/6
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 17/7 9/5 19/6
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: AAIS(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
ARTILLERISKOGO (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)

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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.
(AUTHOR) (U)

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: DAAH01-68-1-1245

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 19/1 19/4
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)

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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. ;
REPT. NO. FSTC-HT-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)

UNCLASSIFIED

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 P1-56.

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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-697 784 14/2 19/6
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 19/6
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)

UNCLASSIFIED

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)

UNCLASSIFIED

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)

UNCLASSIFIED

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 LUTZOW, 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 19/7 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 ,
JRI

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 HYPOTHESIZED 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 19/7 19/4
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 19/5 19/6
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
IDENTIFIERS: RECOIL, STEEPEST DESCENT METHOD

(U)

(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 19/5
NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A COMPARISON OF TWO PRECISION REGISTRATION
PROCEDURES.

(U)

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

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, LANCHESTER
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 LANCHESTER 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 19/5 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. :

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 19/5 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 55P
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 19/6 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

DDC 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 (U)
TESTS(ORDNANCE), MOTION
IDENTIFIERS: COMMON ENGINEERING TEST PROCEDURES, GUN (U)
CARRIAGES

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 (U)
PHOTOGRAPHIC MEASUREMENT.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOM07

AD-717 380 19/6 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 19/6 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, (U)
MEASURING INSTRUMENTS, PHOTOGRAPHY
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 19/5 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 19/6 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 19/6 19/3 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 19/6 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 19/7 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 19/5 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 (U)
PROCEDURES

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 19/6 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 19/5
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 19/6 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. VR1-3-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. : 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 19/6
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

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 19/5 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 STUDY.
(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
IDENTIFIERS: HONEST JOHN

(U)

(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 19/5
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. ;
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 17/1
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 GLASNIK
(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-MC-23-1204-72
PROJ: AF-2717

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF MONO.
ARTILLERIISKAYA 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 19/6 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 19/6
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 (U)
IDENTIFIERS: M-204 HOWITZERS(105-MM) (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)

AAN 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), ANTIAIRCRAFT 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 19/7 20/4
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)

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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 51P 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 19/7
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

(U)

IDENTIFIERS: LITTLE JOHN

(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 19/6 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 SALSBUURY, 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 19/5 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 19/5 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 19/7
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.
(AUTHOR) (U)

UNCLASSIFIED

DDC 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.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-830 284 19/1 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 19/1
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. /ZDM07

AD-834 988 19/5 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-2MD14501B538
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 68 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 19/6
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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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-857 235 19/7
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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-858 092 19/7 19/4
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.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-860 948 19/5 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.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-862 290 19/6 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. /ZOM07

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

/ZOM07

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-866 519 19/5 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

UNCLASSIFIED

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 19/5 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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-868 939 19/5
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 19/6
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), EROSION 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 CBTURATOR
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. I
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)

UNCLASSIFIED

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 19/6 19/3 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
(INDIRECT FIRE). (U)

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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/ZOM07

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-875 628 19/6 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)

UNCLASSIFIED

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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-879 093 19/1 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)

UNCLASSIFIED

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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-880 150 19/5
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)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOM07

AD-882 198 19/7

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 HONESTJOHN 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)

(U)

UNCLASSIFIED

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)

UNCLASSIFIED

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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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

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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

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ENGINEERING TEST OF OVERHEAD
COVER FOR FOXHOLES.
AD-870 127

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APG-MT-3559
PRODUCT IMPROVEMENT TEST (PHASE
II) OF SELF-PROPELLED, M107E1 AND
M110E1 WEAPON SYSTEMS.
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AD-903 024

• ABERDEEN PROVING GROUND MD

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FOR CHARGE, PROPELLING, 155-MM,
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AD-255 372

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