

**UNCLASSIFIED**

**AD-740 960**

# **CIVIL DEFENSE SYSTEMS:**

**SHELTERS**

## **A DDC BIBLIOGRAPHY**

**DDC-TAS-72-14-I**

**APRIL 1972**

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| DOCUMENT CONTROL DATA - R & D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                               |                                                    |
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| 3. REPORT TITLE<br><br>CIVIL DEFENSE SYSTEMS: SHELTERS. Volume I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                               | 2b. GROUP                                          |
| 4. DESCRIPTIVE NOTES (Type of report and inclusive dates)<br>Bibliography (January 1970 - October 1971)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                               |                                                    |
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| 13. ABSTRACT<br><br>This bibliography -- one in a series on Civil Defense Systems -- contains a compilation of references on Civil Defense Systems: Shelters. References included cover such topics as fallout structure evaluation; individual shelter plans for operations within the large shelter; design procedures for shelter entrance structures to resist blast overpressure and radiation effects; air distribution in shelters; storage stability of civil defense shelter rations, etc. Entries were processed into the AD data bank during the period January 1970 through January 1972. This volume updates an earlier bibliography, AD-704 500.<br><br>Corporate Author-Monitoring Agency, Subject, Title, Contract, and Report Number Indexes are included. |                                                                                               |                                                    |

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|-----|---------------------------------|--------|----|--------|----|--------|----|
|     |                                 | ROLE   | WT | ROLE   | WT | ROLE   | WT |
|     | *Bibliographies                 |        |    |        |    |        |    |
|     | *Civil Defense Systems          |        |    |        |    |        |    |
|     | *Shelters                       |        |    |        |    |        |    |
|     | *Fallout Shelters               |        |    |        |    |        |    |
|     | Ventilation                     |        |    |        |    |        |    |
|     | Cooling & Ventilating Equipment |        |    |        |    |        |    |
|     | Urban Areas                     |        |    |        |    |        |    |
|     | Urban Planning                  |        |    |        |    |        |    |
|     | Underground Structures          |        |    |        |    |        |    |
|     | Damage Assessment               |        |    |        |    |        |    |
|     | Nuclear Explosion Damage        |        |    |        |    |        |    |
|     | Nuclear Radiation               |        |    |        |    |        |    |
|     | Blast                           |        |    |        |    |        |    |
|     | Costs                           |        |    |        |    |        |    |
|     | Medical Supplies                |        |    |        |    |        |    |
|     | Food                            |        |    |        |    |        |    |
|     | Storage                         |        |    |        |    |        |    |
|     | Public Opinion                  |        |    |        |    |        |    |
|     | Acceptability                   |        |    |        |    |        |    |

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**CIVIL DEFENSE SYSTEMS:  
SHELTERS**

**A DDC BIBLIOGRAPHY**

**DDC-TAS-72-14-1**

January 1970 - October 1971

**APRIL 1972**

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CAMERON STATION  
ALEXANDRIA, VIRGINIA 22314**

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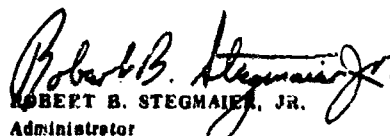
## FOREWORD

This bibliography is a compilation of references on *Civil Defense Systems: Shelters*. It is one in a series of bibliographies on Civil Defense Systems. It contains 40 entries processed into the Defense Documentation Center's data bank during the period of January 1970 through January 1972 and updates an earlier bibliography, AD-704 506

Corporate Author-Monitoring Agency, Subject, Title, Contract, and Report Number Indexes are included.

BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY

OFFICIAL

  
ROBERT B. STEGMAIER, JR.  
Administrator  
Defense Documentation Center

## C O N T E N T S

|                                         | <u>Page</u> |
|-----------------------------------------|-------------|
| FOREWORD.....                           | iii         |
| AD BIBLIOGRAPHIC REFERENCES.....        | 1           |
| INDEXES                                 |             |
| CORPORATE AUTHOR-MONITORING AGENCY..... | 0-1         |
| SUBJECT.....                            | D-1         |
| TITLE.....                              | T-1         |
| CONTRACT.....                           | C-1         |
| REPORT NUMBER.....                      | R-1         |

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-701 132 13/1 13/13 15/3  
PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF  
ARCHITECTURAL ENGINEERING

THE FEASIBILITY OF AUGMENTING BELOW-GRADE SHELTER  
HABITABILITY WITH CONDITIONED AIR. (U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 70 12:00P EVERETTS, JOHN, JR.; MITT,  
DONALD R. MCCLAUGHLIN, EVERETT R. ;  
CONTRACT: DAMC20-66-C-D175  
PROJ: OCD-1233D

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COLOR OTHER THAN BLACK AND WHITE ARE AVAILABLE UNTIL STOCK  
IS EXHAUSTED. REPRODUCTIONS WILL BE MADE IN BLACK AND  
WHITE ONLY.

DESCRIPTORS: (•FALLOUT SHELTERS, •VENTILATION),  
(•AIR CONDITIONING EQUIPMENT, FALLOUT SHELTERS),  
CIVIL DEFENSE SYSTEMS, COOLING, BUILDINGS,  
HUMIDITY (U)

BELOW-GRADE SHELTERS IN BUILDINGS WITH COMFORT AIR  
CONDITIONING MAY BE MADE MORE HABITABLE BY UTILIZING  
THE AIR CONDITIONING EQUIPMENT TO COOL ALL OR PART OF  
THE VENTILATION AIR. THE VARIOUS TYPES OF AIR  
CONDITIONING EQUIPMENT ARE CONSIDERED FOR THEIR  
CHARACTERISTICS PERTINENT TO OPERATING UNDER  
CONDITIONS OF TEMPERATURE AND HUMIDITY HIGHER THAN  
NORMAL FOR COMFORT STANDARDS AND HOW THE SYSTEMS  
MIGHT BE MODIFIED TO SUPPLY THE CONDITIONED AIR TO A  
BELOW-GRADE SPACE. COMPUTATION PROGRAMS ARE  
INCLUDED TO EXPEDITE THE CALCULATIONS OF SHELTER  
CONDITIONS. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-701 763 15/3  
OAK RIDGE NATIONAL LAB TENN

SYSTEMS ANALYSIS OF U. S. CIVIL DEFENSE VIA  
NATIONAL BLAST SHELTER SYSTEMS,

(U)

MAR 70 203P HAALAND, CARSTEN M. I  
REPT. NO. ORNL-TM-2457  
CONTRACT: OCU-PS-64-284

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, SHELTERS,  
(SHELTERS, FEASIBILITY STUDIES), BLAST,  
SURFACE BURST, UNDERGROUND STRUCTURES, REVETMENTS,  
DOORS, PERFORMANCE (HUMAN),  
REACTION (PSYCHOLOGY), NUCLEAR EXPLOSION DAMAGE,  
COSTS, COST EFFECTIVENESS, POPULATION,  
ALGORITHMS

(U)

IDENTIFIERS: COMPUTER ANALYSIS

(U)

THEORETICALLY FEASIBLE ALTERNATIVE NATIONAL BLAST  
SHELTER SYSTEMS, INCLUDING DEPLOYMENT SCHEMES, COSTS,  
AND EFFECTIVENESS AGAINST NUCLEAR ATTACKS ARE  
STUDIED. VARIOUS FEASIBLE ALTERNATIVES ARE  
DESCRIBED WITH A LIST OF INDEPENDENT PARAMETERS OF  
FUNCTION AND OPERATION. THE USEFUL DOMAIN OF THE  
PARAMETERS ARE ESTABLISHED BY INVESTIGATION OF THE  
RANGE OF FEASIBILITY AND PRACTICALITY. VARIOUS  
KINDS OF SYSTEMS ARE THEN THEORETICALLY CONSTRUCTED  
WITHIN THE BOUNDARIES ESTABLISHED BY THE IMPOSED  
LIMITATIONS. THESE SYSTEMS WERE INVESTIGATED FOR  
COST, AND FOR THE NUMBER OF FATALITIES RESULTING FROM  
VARIOUS SIZE NUCLEAR ATTACKS. THE COST PER SURVIVOR  
ADDED WAS USED AS A MEASURE OF EFFECTIVENESS.  
INVESTIGATIONS WERE PERFORMED ANALYTICALLY AND BY  
DIGITAL COMPUTER. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-703 935 15/3 5/10  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF

FURTHER STUDY OF THE ADOPTION-DIFFUSION PROCESSES  
IN DEVELOPMENT OF SHELTER IN NEW CONSTRUCTION. (U)

FEB 70 132P WELLISCH, J. B. ; BANCROFT,  
B. H. ; HANEY, T. P. ; BORDONE, R. ;  
REPT. NO. SDC-TM-4213/005/00  
CONTRACT: DAHC20-67-C-0106  
PROJ: OCU-4832C

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS, SHELTERS),  
(\*POPULATION, ATTITUDES), CALIFORNIA, ARIZONA,  
QUESTIONNAIRES, STATISTICAL ANALYSIS, BUILDINGS,  
HOUSING (U)  
IDENTIFIERS: COLLECTIVE PROTECTION, HOME  
MODIFICATION (U)

THE DOCUMENT PRESENTS THE METHODOLOGY AND FINDINGS  
OF TWO STUDIES OF THE DIRECT MAIL SHELTER  
DEVELOPMENT PLAN. IN ONE STUDY OGD COMPUTER  
PRINTOUT DATA ARE ANALYZED; IN THE OTHER, DATA FROM  
INTERVIEWS WITH OWNERS IN CALIFORNIA AND ARIZONA  
ARE ANALYZED. FINDINGS FROM THE STUDIES DEMONSTRATE  
THAT THERE ARE MARKED DIFFERENCES BETWEEN PUBLIC AND  
PRIVATE OWNERS IN THE DIMENSIONS OF ATTITUDE,  
INFORMATION LEVEL, AND ACTIONS TAKEN IN RELATION TO  
THE ADOPTION OF THE INNOVATION. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZDML7

AD-704 500 15/3 13/13  
DEFENSE DOCUMENTATION CENTER ALEXANDRIA VA

CIVIL DEFENSE SYSTEMS: SHELTERS. VOLUME 1. (U)

DESCRIPTIVE NOTE: REPORT BIBLIOGRAPHY FEB 60-A116 69.  
APR 70 265P  
REPT. NO. DDC-TAS-70-36-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO VOLUME 2, AD-668  
250L.

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS,  
BIBLIOGRAPHIES), (SHELTERS, CIVIL DEFENSE  
SYSTEMS), FALLOUT SHELTERS, RADIOACTIVE FALLOUT,  
NUCLEAR EXPLOSIONS, SHIELDING, CONCRETE, FIRE  
SAFETY, VENTILATION, CIVIL DEFENSE PERSONNEL,  
UNDERGROUND STRUCTURES, LIFE EXPECTANCY, CONFINED  
ENVIRONMENTS, FOOD, STRESS(PSYCHOLOGY),  
TRAINING (U)

THE BIBLIOGRAPHY IS VOLUME 1 OF A TWO-VOLUME SET  
ON CIVIL DEFENSE SYSTEMS: SHELTERS. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-705 387 13/13 15/3  
IIT RESEARCH INST CHICAGO ILL

DISTRIBUTION OF SLANTABLE CONSTRUCTION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

MAK 7U 142P STEPANEK, OTTO J. I

REPT. NO. IITRI-J6151-FR

CONTRACT: DAMC20-68-C-U153

PROJ: OCD-1634A, IITRI-J6151

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, BUILDINGS).  
(BUILDINGS, STATISTICAL ANALYSIS), URBAN AREAS,  
SHELTERS, PREDICTIONS

(U)

THE OBJECTIVE OF THE STUDY WAS TO DEVELOP A METHOD OF DETERMINING LOCATIONS AND DESCRIPTIONS OF NEW CONSTRUCTION ANTICIPATED IN A SAMPLE STANDARD METROPOLITAN STATISTICAL AREA (SMSA) OVER THE PERIOD 1970 TO 1980. THE METHOD FIRST ESTABLISHED THE STATE OF EXISTING CONSTRUCTION BY MEANS OF A FIELD INVESTIGATION; THEN PROJECTIONS ARE MADE WITH THE USE OF TREND CURVES DEVELOPED FROM RECORDED DATA. STRUCTURE PLAN AREAS, TOTAL AREAS, AND BASEMENT AREAS ARE PRESENTED FOR VARIOUS CATEGORIES OF BUILDINGS. METHODS ARE ALSO PRESENTED FOR EXTENDING THIS TECHNIQUE TO OTHER SMSA'S OR THE ENTIRE NATION, DEPENDING UPON THE DESIRED DEGREE OF REFINEMENT. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-706 236 15/3 5/11  
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND  
ANTHROPOLOGY

DIFFUSION OF FALLOUT SHELTER INNOVATIONS. A STUDY  
OF PUBLIC AND HOME FALLOUT SHELTER ADOPTION IN THE  
U. S. A. 1964, 1966, 1968. (U)

DESCRIPTIVE NOTE; FINAL REPT.,  
FEB 70 124P KLONGLAN, GERALD E. ;  
YARBROUGH, PAUL ; LUTZ, GENE M. ;  
REPT. NO. RURAL SOCIOLOGY-81  
CONTRACT: DAMC20-69-C-0103  
PROJ: OCD-4811H

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS, FALLOUT  
SHELTERS), (\*FALLOUT SHELTERS, PUBLIC OPINION),  
STATISTICAL DATA, ATTITUDES (U)  
IDENTIFIERS: COLLECTIVE PROTECTION, HOME  
MODIFICATION, TRANSFER OF TECHNOLOGY (U)

THE STUDY ANALYZES THE U.S. POPULATION'S  
ADOPTION AND DIFFUSION OF PUBLIC AND HOME FALLOUT  
SHELTER INNOVATIONS. THE ANALYSIS IS BASED ON DATA  
COLLECTED IN THE 1968 NATIONAL CIVIL DEFENSE  
STUDY AND COMPARED TO THE 1964 AND 1964 NATIONAL  
STUDIES, EACH SAMPLING 1500 RESPONDENTS.  
(AUTHOR) (U)

UNCLASSIFIED

/ZOML7

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZONL7

AD-706 844 13/1 13/13 15/3  
RESEARCH TRIANGLE INST DURHAM N C OPERATIONS RESEARCH AND  
ECONOMICS DIV

VENTILATION KIT APPLICATION STUDY.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-FEB 70.  
FEB 70 124P WRIGHT, MILTON D. HILL.  
EDWARD L. ISANYER, CARL T. I  
REPT. NO. RTI-OU-400-F  
CONTRACT: DAHC20-68-C-D166  
PROJ: UCU-12338, RTI-OU-400

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, FALLOUT  
SHELTERS), (FALLOUT SHELTERS, COOLING +  
VENTILATING EQUIPMENT), VENTILATION, PUMPS,  
BUILDINGS, COSTS, DEPLOYMENT

(U)

THE REPORT DESCRIBES THE DEVELOPMENT AND FIELD  
TESTING OF A METHODOLOGY FOR ALLOCATING AND DEPLOYING  
EMERGENCY VENTILATION EQUIPMENT TO FALLOUT SHELTERS.  
THE METHODOLOGY DEVELOPED IS BASED ON SIX BASIC  
SHELTER CONFIGURATIONS INTO WHICH NFSS STRUCTURES  
WHICH REQUIRE ADDITIONAL VENTILATION MAY BE  
CATEGORIZED. DEVELOPMENT OF THE METHODOLOGY  
CONSISTED OF USING NFSS DATA FOR BUILDINGS AND  
DEFINING A STANDARD SET OF VENTILATION EQUIPMENT  
DEPLOYMENT PLANS FOR EACH COMBINATION OF SHELTER AND  
APERTURE CONFIGURATION. THE VENTILATION EQUIPMENT  
CONSIDERED IN THIS METHODOLOGY INCLUDED A 30-INCH  
MANUALLY-POWERED PVK, A 36-INCH KEARNEY PUMP, AND  
A 72-INCH KEARNEY PUMP. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

DD-708 574 13/1 13/13 15/3  
STANFORD RESEARCH INST MENLO PARK CALIF

VENTILATING AND MIXING PROCESSES IN NONUNIFORM  
SHELTER ENVIRONMENTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JAN 70 126P ALLEN, FRANK C. I  
CONTRACT: DAHC20-68-C-0155  
PROJ: UCD-1236A, SRI-MU-7327

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, FALLOUT  
SHELTERS), (FALLOUT SHELTERS, VENTILATION),  
MATHEMATICAL MODELS, MOISTURE, COOLING +  
VENTILATING EQUIPMENT, ENVIRONMENT, EQUATIONS  
IDENTIFIERS: COLLECTIVE PROTECTION

(U)

(U)

VENTILATING SYSTEMS FOR SHELTERS CAN BE SIMULATED  
BY EITHER OF TWO ANALYTICAL MODELS. THE FIRST, THE  
'ISOSTATE' MODEL, IS BASED ON THE ASSUMPTION THAT THE  
ENVIRONMENT IS SPATIALLY UNIFORM. THIS STATE OF  
UNIFORMITY CAN BE APPROACHED ONLY WITH A SYSTEM THAT  
INCLUDES DISTRIBUTION DUCTWORK AND DIFFUSION OUTLETS.  
THE SECOND, THE NONISOSTATE OR 'VARISTATE' MODEL,  
IS BASED ON THE INCREMENTAL TRANSFER OF METABOLIC  
HEAT AND MOISTURE TO THE AIR AS IT STREAMS THROUGH AN  
OCCUPIED SPACE. THE VARISTATE MODEL IS ASSOCIATED  
WITH NONUNIFORM ENVIRONMENTS AND SYSTEMS THAT DO NOT  
DISTRIBUTE AIR. EQUATIONS ARE DERIVED FOR  
VENTILATING AND MIXING PROCESSES AND FOR VARIABLE  
PARAMETERS. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-711 118 15/3 5/11  
PITTSBURGH UNIV PA DEPT OF SOCIOLOGY

THE PUBLIC'S PERCEPTION OF LOCAL CIVILIAN DEFENSE  
EFFORTS AND FACILITIES. (U)

MAR 70 41P COHEN, PEARL B. I  
CONTRACT: DAMC20-67-C-0122  
PROJ: OCU-48128

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ONE IN A SERIES OF REPORTS ON  
AMERICAN'S VIEWS ABOUT CIVIL DEFENSE ISSUES.

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS; \*PUBLIC  
OPINION); QUESTIONNAIRES, REVIEWS, FALLOUT  
SHELTERS, NUCLEAR WARFARE (U)

AN OVERWHELMING MAJORITY OF AMERICANS INDICATED  
IN JUNE 1968 THAT THE COUNTRY WOULD NOT BE ENGAGED  
IN A NUCLEAR WAR WITHIN THE NEXT FIVE YEARS. THE  
HIGHER THE SOCIO-ECONOMIC CLASS, THE MORE OPTIMISM  
PREVAILED. CONSEQUENTLY PUBLIC INTEREST IN CIVIL  
DEFENSE AND RELEVANT INDIVIDUAL ACTIVITY WAS LOW.  
ALTHOUGH PEOPLE WERE MORE CERTAIN OF WHERE SHELTER  
WOULD BE SOUGHT IF A NUCLEAR ATTACK OCCURRED WHILE AT  
WORK RATHER THAN AT HOME, FEW PEOPLE HAD GIVEN THE  
MATTER SERIOUS THOUGHT. MOST CITIZENS KNEW NOTHING  
OF WHAT WAS BEING ACCOMPLISHED BY CIVIL DEFENSE  
OFFICERS ON THE LOCAL LEVEL. PEOPLE APPEARED  
UNCONCERNED AND REFUSED GENERALLY TO EVALUATE LOCAL  
CIVIL DEFENSE PROGRAMS. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-712 365 6/8 15/3  
GEORGIA EXPERIMENT STATION EXPERIMENT

STORAGE STABILITY OF CIVIL DEFENSE SHELTER  
RATIONS.

(U)

DESCRIPTIVE NOTE: ANNUAL REPT. NO. 8, 1 JUL 69-30 JUN  
70,

JUN 70 105P CECIL, SAM R. :  
REPT. NO. 153-VIII-GES  
CONTRACT: DAMC20-69-C-U415  
PROJ: UCU-1312C, UGA-ST-1-53

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL REPT. NO. 7, AD-  
690 209.

DESCRIPTORS: (\*FOOD, STORAGE), (\*FALLOUT  
SHELTERS, FOOD), CIVIL DEFENSE SYSTEMS, CEREALS,  
CARBOHYDRATES, STABILITY, TEMPERATURE, MOISTURE,  
CONTAINERS, PH, ODORS, ACCEPTABILITY  
IDENTIFIERS: \*SHELTER RATIONS, FLAVOR

(U)

(U)

A STORAGE STUDY WAS CONDUCTED OVER A SEVEN-YEAR  
PERIOD TO DETERMINE THE STABILITY OF REPRESENTATIVE  
TYPES OF CIVIL DEFENSE SHELTER RATIONS. AT THE  
BEGINNING OF THIS PERIOD, 10 CEREAL ITEMS WERE  
DEPOSITED IN STORAGE OVER AN INTERVAL OF FOUR MONTHS,  
AND 3 CARBOHYDRATE SUPPLEMENTS WERE STORED ABOUT A  
YEAR LATER. DETERMINATIONS WERE ALSO MADE OF THE  
STABILITY OF PACKAGING MATERIALS IN WHICH THE RATIONS  
WERE STORED. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-713 017 13/13 13/12 15/3  
IIT RESEARCH INST CHICAGO ILL

FIRE LABORATORY TESTS. PHASE I.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

SEP 70 44P WATERMAN, THOMAS E. I

CONTRACT: DAMC20-70-C-0206

PROJ: UCD-1135A; IITRI-J6183

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FALLOUT SHELTERS, \*FIRE SAFETY),  
(\*TEST FACILITIES, CONSTRUCTION), CIVIL DEFENSE  
SYSTEMS, PANELS(STRUCTURAL), REINFORCED  
CONCRETE, CONSTRUCTION MATERIALS, GASES, HEAT,  
TEMPERATURE SENSITIVE ELEMENTS, VENTS, TEST  
METHODS

(U)

THE PROGRAM REPORTED HEREIN HAS THE OBJECTIVE OF PROVIDING A VERSATILE, REUSEABLE FIRE TEST FACILITY FOR EVALUATING THE FLOW OF HEAT AND FIRE GASES INTO UNSEALED BASEMENT SHELTERS. INCLUDED IN THE FIRST YEAR OF EFFORT WERE THE CONSTRUCTION AND GENERAL INSTRUMENTATION OF THE FACILITY AS WELL AS THE CONDUCT OF AN INITIAL PROGRAM OF TESTS. BY PROVIDING A FULL-SCALE STRUCTURE HAVING MANY OF THE CONTROLLED FEATURES OF LABORATORY EXPERIMENTATION, THE FACILITY IS ADAPTABLE TO SYSTEMATIC STUDY OF VARIOUS PARAMETERS, AS WELL AS FOR SPOT CHECKING RESULTS OF THEORETICAL OR SMALL-SCALE LABORATORY STUDIES. LIMITED RESULTS TO DATE INDICATE THAT DEBRIS FIRES CONTAINED WITHIN THE STRUCTURAL INTERIOR DO NOT TEND TO DIRECT TOXIC GASES TOWARD NEARGROUND VENT LOCATIONS. HOWEVER, THE HEATING CAUSED BY THE DEBRIS FIRE OF A LIGHTLY PARTITIONED RESIDENTIAL OCCUPANCY ADDED A HEAT LOAD THROUGH 12 IN. OF CONCRETE TO THE BASEMENT SHELTER EQUAL TO THAT PRODUCED BY THE OCCUPANTS. (AUTHOR)

(U)

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UDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-714 304 5/3 15/6 15/3  
URS RESEARCH CO SAN MATEO CALIF

DAMAGE TO THE DRUG INDUSTRY FROM NUCLEAR  
ATTACK AND RESULTING REQUIREMENTS FOR REPAIR  
AND RECLAMATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
JUL 70 182P STAACKMANN, HILTON ; VAN HORN,  
WILLIAM H. ; FOGEL, CARL R. ;  
REPT. NO. URS-796-4  
CONTRACT: DAMC20-70-C-0268  
PROJ: UCD-3311D

UNCLASSIFIED REPORT

DESCRIPTORS: (•INDUSTRIAL PLANTS, NUCLEAR EXPLOSION  
DAMAGE), (•NUCLEAR WARFARE, •INDUSTRIES),  
(•DRUGS, INDUSTRIAL PLANTS), MATHEMATICAL  
MODELS, CIVIL DEFENSE SYSTEMS, RECOVERY,  
MAINTENANCE, COSTS, PENICILLINS, SULFON  
COMPOUNDS, MANAGEMENT PLANNING  
IDENTIFIERS: DRUG INDUSTRY, POST ATTACK  
OPERATIONS, PREATTACK PLANNING

(U)

(U)

THE STUDY IDENTIFIES THE PROCESSES AND EQUIPMENT  
COMMONLY USED BY INDUSTRIES OF THE DRUG GROUP,  
SELECTS DRUGS REPRESENTATIVE OF THOSE DEEMED TO BE  
LIFESAVING IN THE POSTATTACK PERIOD, ESTIMATES DAMAGE  
TO DRUG INDUSTRY EQUIPMENT RESULTING FROM NUCLEAR  
WEAPON ATTACK, AND ESTIMATES THE CONSEQUENT REPAIR  
REQUIREMENTS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-714 306 13/1 13/13 15/3  
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL  
AMERICAN RESEARCH DIV

SHELTER OCCUPANCY STUDIES OF VENTILATOR  
UTILIZATION.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-JUN 69,  
JUL 70 225P ANDERSON, J. A. IJAGO, A.  
G. FRIEDMAN, R. C. I  
REPT. NO: GARD-1480-F  
CONTRACT: DAMC20-68-C-U123  
PROJ: OCD-15228

UNCLASSIFIED REPORT

DESCRIPTORS: (•FALLOUT SHELTERS, VENTILATION),  
(•CIVIL DEFENSE SYSTEMS, FALLOUT SHELTERS),  
COOLING + VENTILATING EQUIPMENT, INSTRUCTION  
MANUALS, MANAGEMENT ENGINEERING,  
PERFORMANCE (HUMAN), ASSEMBLING, CONFINED  
ENVIRONMENTS  
IDENTIFIERS: •SHELTER MANAGEMENT

(U)

(U)

THE REPORT DESCRIBES THREE SHELTER OCCUPANCY  
EXPERIMENTS DESIGNED TO INVESTIGATE SHELTER  
MANAGEMENT PROBLEMS INVOLVING SHELTEREE NEEDS AND  
RESPONSES, CONTROL OF THE SHELTER ENVIRONMENT,  
SHELTER ORGANIZATION, AND THE OPERATION OF SHELTER  
VENTILATION EQUIPMENT. RECOMMENDATIONS FROM THE  
THREE HABITABILITY STUDIES MODIFIED BOTH VENTILATOR  
DESIGN AND INSTRUCTION MATERIAL. THE FINAL VERSION  
OF THE ASSEMBLY, DEPLOYMENT AND OPERATING  
INSTRUCTIONS ARE INCLUDED IN THE REPORT.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-715 405 13/1 13/13 15/3  
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL  
AMERICAN RESEARCH DIV

AIR DISTRIBUTION IN SHELTERS DUE TO KEARNY  
PUMPS AND PEDAL VENTILATORS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 30 JAN 69-28 FEB 70,  
AUG 70 101P HATHMANN, CARL E. I  
REPT. NO. GARD-1476-1-F  
CONTRACT: DAMC20-68-C-0123  
PROJ: OCU-1217C

UNCLASSIFIED REPORT

DESCRIPTORS: (\* COOLING + VENTILATING EQUIPMENT,  
PUMPS), (\*FALLOUT SHELTERS, VENTILATION),  
CIVIL DEFENSE SYSTEMS, GAS FLOW, AIR, TESTS

(U)

IDENTIFIERS: \*KEARNEY PUMPS, \*PEDAL VENTILATORS,  
EVALUATION

(U)

THE REPORT DESCRIBES THE RESULTS OF EVALUATING THE  
AIR-MOVING CAPABILITIES OF THE KEARNY PUMPS IN  
BOTH FLOW-THROUGH AND DEAD-END ROOM APPLICATION.  
SPECIFIC RECOMMENDATIONS FOR THE UTILIZATION OF THE  
PUMP ARE INCLUDED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-715 416 13/13 15/3  
APPLIED PARKING TECHNIQUES INC RESTON VA

SHELTER POTENTIAL IN PARKING GARAGES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

NOV 7J 211P MCGAVIN, CHARLES T. I  
REPT. NO. APT-1170  
CONTRACT: DAHC20-69-C-0414  
PROJ: OCU-16248

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHELTERS, URBAN AREAS), (\*CIVIL  
DEFENSE SYSTEMS, FEASIBILITY STUDIES), SITE  
SELECTION, CONSTRUCTION, DESIGN, DISTRICT OF  
COLUMBIA, LOUISIANA, CALIFORNIA, RHODE ISLAND,  
FALLOUT SHELTERS

(U)

IDENTIFIERS: \*PARKING GARAGES, NEW  
ORLEANS(LOUISIANA), SAN  
JOSE(CALIFORNIA), PROVIDENCE(RHODE  
ISLAND)

(U)

THE OBJECTIVE OF THE STUDY WAS TO PRESENT PERTINENT  
FACTUAL DATA ON FIVE SELECTED CITIES WHICH WILL  
PERMIT THE OFFICE OF CIVIL DEFENSE TO EVALUATE  
PARKING GARAGES AS POTENTIAL SHELTER SYSTEMS. IN  
EACH CITY AN INVESTIGATION WAS MADE OF THE PARKING  
CAPACITY GAINS OF THE PAST BY TYPE OF FACILITY. A  
STUDY WAS MADE OF THE FORCES OF CHANGE WHICH WILL  
AFFECT THE RATE OF PARKING DEVELOPMENT DURING THE  
DECADE 1970 TO 1980. A PROJECTION WAS MADE OF THE  
NUMBER OF SQUARE FEET OF PARKING SPACE WHICH CAN  
FEASIBLY BE BUILT BY 1980 IN THE CENTRAL AREAS OF THE  
CITIES STUDIED. AND A BREAKDOWN WAS MADE OF THE  
DIVISION OF SPACE BETWEEN ABOVE-GROUND AND BELOW-  
GROUND PARKING FACILITIES. INCLUDED IN THE STUDY  
WAS AN INVESTIGATION OF NEW TECHNIQUES OF DESIGN,  
LOCATION, CONSTRUCTION AND OPERATION WHICH MAY BE  
USED TO SLANT FUTURE PARKING DEVELOPMENT TO DUAL  
PURPOSE SHELTER ADVANTAGE. THE AUTHOR MAKES  
ECONOMIC FEASIBILITY STUDIES OF SEVERAL FACILITIES  
AND ESTIMATES THE DAYTIME AND NIGHTTIME POPULATION  
LOCATED WITHIN 3/4 MILE OF THE GARAGES.  
(AUTHOR)

(U)

UNCLASSIFIED

UDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-715 422 18/6 18/8 15/3  
ILLINOIS UNIV URBANA

A STUDY OF THE PENETRATION OF GAMMA  
RADIATION THROUGH THIN SLABS ORIENTED AT  
RIGHT ANGLES TO EACH OTHER.

(U)

SEP 70 126P MORRIS, E. E. I  
REPT. NO. NRSS-14  
CONTRACT: DAHC20-70-C-0203  
PROJ: OCU-1113A

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON NUCLEAR RADIATION  
SHIELDING STUDIES.

DESCRIPTORS: (\*GAMMA EMISSION, \*SHIELDING),  
(\*RADIOACTIVE FALLOUT, FALLOUT SHELTERS),  
CONCRETE, ATTENUATION, GAMMA COUNTERS, MONTE  
CARLO METHOD, PROGRAMMING (COMPUTERS), CIVIL  
DEFENSE SYSTEMS, NUCLEAR EXPLOSIONS  
IDENTIFIERS: RASP 2 COMPUTER CODE

(U)

(U)

THE REPORT FIRST MAKES A THEORETICAL ANALYSIS OF  
THE PENETRATION OF GAMMA RADIATION THROUGH A SHIELD  
CONSISTING OF TWO SLABS AT RIGHT ANGLES TO ONE  
ANOTHER AND THEN APPLIES THE RESULTS OF SUCH AN  
ANALYSIS TO THE PROBLEM OF FALLOUT RADIATION  
PENETRATION IN-AND-DOWN THROUGH THE WALLS AND FLOOR  
OF A BLOCKHOUSE INTO A BASEMENT. CERTAIN  
ASSUMPTIONS ARE MADE TO SIMPLIFY THE BASIC  
CALCULATIONS TO BE CONSIDERED. COMPARISONS ARE  
MADE WITH THEORETICAL RESULTS OF OTHER WORKERS AND  
AN EFFORT IS MADE TO REPRODUCE DATA AVAILABLE FROM  
EXPERIMENTAL BLOCKHOUSE WORK. DISCREPANCIES BETWEEN  
RESULTS ARE DISCUSSED. COMPARISONS WITH THE  
ENGINEERING MANUAL APPROACH TO OVERHEAD BARRIER  
FACTOR PREDICTIONS ARE MADE. EFFECT OF WALL HEIGHT  
AND STRUCTURE ECCENTRICITY ON THIS BARRIER FACTOR ARE  
PREDICTED. (AUTHOR)

(U)

UNCLASSIFIED

/ZOML7

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-716 360 13/1 15/3  
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL  
AMERICAN RESEARCH DIV

LIGHTING KIT. (U)

DESCRIPTIVE NOTE: FINAL REPT.:  
SEP 70 59P JAGO, ARTHUR G. IKAPIL, AJIT

L. ;  
REPT. NO. GARD-1508-F  
CONTRACT: DAMC20-68-C-0123  
PROJ: OCU-14278

UNCLASSIFIED REPORT

DESCRIPTORS: (•LIGHTING EQUIPMENT, •FALLOUT  
SHELTERS), (•CIVIL DEFENSE SYSTEMS, LIGHTING  
EQUIPMENT), GENERATORS, DRIVES, GEARS,  
ELECTRICAL EQUIPMENT, TESTS (U)  
IDENTIFIERS: AC GENERATORS, •PEDAL POWERED  
LIGHTING KITS (U)

THE REPORT DESCRIBES THE RESEARCH, DEVELOPMENT,  
FABRICATION AND TESTING OF A PEDAL-POWERED LIGHTING  
KIT. THE UNIT USES A NOTCHED V-BELT  
TRANSMISSION TO DRIVE AN ALTERNATOR (WITH  
FLYWHEEL) AND POWER TWO 20-WATT FLUORESCENT BULBS.  
IT CAN ALSO POWER INCANDESCENT LIGHTING AND OTHER  
ELECTRICAL ACCESSORIES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-71. 256 5/10 15/3  
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND  
ANTHROPOLOGY

SYSTEM AND PERSONAL VARIABLES AS PREDICTORS  
OF INDIVIDUAL ADOPTION BEHAVIOR.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 70 133P YARBROUGH, PAUL I KLONGLAN,  
GERALD E. LUTZ, GENE M. I  
REPT. NO. RURAL SOCIOLOGY-86  
CONTRACT: DAHC20-69-C-3103

UNCLASSIFIED REPORT

DESCRIPTORS: (\*BEHAVIOR, \*CIVIL DEFENSE SYSTEM),  
(\*FALLOUT SHELTERS, BEHAVIOR), ATTITUDES,  
SOCIOLOGY, REGRESSION ANALYSIS  
IDENTIFIERS: COLLECTIVE PROTECTION

(U)  
(U)

THE STUDY ATTEMPTS TO PREDICT INDIVIDUAL ADOPTION  
BEHAVIOR RELATED TO FALLOUT SHELTER INNOVATIONS USING  
SYSTEM VARIABLES AND PERSONAL VARIABLES. SYSTEM  
VARIABLES INCLUDE THE GENERAL SITUATION AND CIVIL  
DEFENSE AGENCY ACTIVITY. PERSONAL VARIABLES INCLUDE  
INDIVIDUAL STATUS-ROLES, INDIVIDUAL GENERAL  
ORIENTATIONS, AND INDIVIDUAL CIVIL DEFENSE  
ORIENTATIONS. DATA IS UTILIZED FROM THE  
INTEGRATED MANAGEMENT INFORMATION SYSTEM AND  
THE 1968 NATIONAL CIVIL DEFENSE SURVEY.  
THREE ANALYSIS PROCEDURES WERE USED IN THE  
PREDICTION: ZERO-ORDER CORRELATION AND REGRESSION,  
MULTI-VARIABLE CORRELATION AND REGRESSION, AND  
NETWORK (PATH) ANALYSIS. EACH ANALYSIS YIELDS  
ITS PARTICULAR PREDICTIONS OF INDIVIDUAL ADOPTION  
BEHAVIOR. OVERALL FINDINGS INDICATE THE RELATIVELY  
LARGER INFLUENCE OF PERSONAL STATUS-ROLES AND  
INDIVIDUAL ORIENTATIONS IN THE PREDICTIONS COMPARED  
TO OTHERS. CIVIL DEFENSE ACTIVITY IS ESPECIALLY  
NON-INFLUENTIAL IN PREDICTING ADOPTION BEHAVIOR.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-718 924 5/11 15/3  
MICHIGAN STATE UNIV EAST LANSING DEPT OF  
COMMUNICATION

THE HOME FALLOUT PROTECTION SURVEY IN  
MICHIGAN: ITS IMPACT ON THE GENERAL  
PUBLIC,

(U)

APR 70 12P BERLO, DAVID K. ;  
REPT. NO. HFPS-3  
CONTRACT: DAMC20-67-C-0119

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON THE PUBLIC OPINION ON  
SHARING HOME BASEMENTS DURING STORM OR  
RADIOACTIVE FALLOUT DISASTERS.

DESCRIPTORS: (\*DISASTERS, ATTITUDES);  
(\*SHELTERS, PUBLIC OPINION); STORMS,  
RADIOACTIVE FALLOUT, CIVIL DEFENSE SYSTEMS, SOCIAL  
COMMUNICATION, STATISTICAL ANALYSIS (U)  
IDENTIFIERS: SHELTER OCCUPANCY; HOME BASEMENTS.  
EMERGENCY HOME SHARING, INTERVIEWS (U)

THE REPORT FOCUSES ON THE RESPONSES MADE BY A  
STATE-WIDE PROBABILITY SAMPLE OF MICHIGAN RESIDENTS  
TO QUESTIONS DEALING WITH THEIR WILLINGNESS TO SHARE  
THEIR HOME BASEMENTS--IN THE EVENT OF NATURAL  
DISASTER, OR NUCLEAR ATTACK, WITH EITHER FRIENDS,  
NEIGHBORS, OR STRANGERS. SUBGROUPS OF THE  
POPULATION WERE STUDIED IN RESPONSE TO THESE  
QUESTIONS: A WIDE VARIETY OF SUBGROUPS WERE EXAMINED  
ALONG DIFFERING LEVELS OF CIVIL DEFENSE ATTITUDES AND  
INFORMATION, COMMUNICATIONS WITH RESPECT TO CIVIL  
DEFENSE, AND DEMOGRAPHIC FACTORS. THE FINDINGS WERE  
THEN COMPARED WITH SIMILAR QUESTIONS ASKED IN OTHER  
MID-WEST URBAN AND RURAL AREAS, AND IN A NATION-WIDE  
PROBABILITY SAMPLE. ALL THREE SETS OF RESULTS  
CONSISTENTLY SHOWED HIGH LEVELS OF PUBLIC SUPPORT FOR  
HOMESHARING IN THE EVENT OF NUCLEAR ATTACK.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-719 306 13/13 15/3  
STANFORD RESEARCH INST MENLO PARK CALIF

EXISTING STRUCTURES EVALUATION. PART IV.  
TWO-WAY ACTION WALLS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
SEP 70 256P WIEHLE, CARL X. BOCKHOLT,  
JAMES L. ;  
CONTRACT: DAMC20-67-C-0136  
PROJ: OGD-1154F, SRI-6300

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART J, AD-701 088.

DESCRIPTORS: (\*WALLS, VULNERABILITY), (\*NUCLEAR  
EXPLOSION DAMAGE, BLAST), (\*CIVIL DEFENSE SYSTEMS,  
SHELTERS), DAMAGE ASSESSMENT,  
LOADING(MECHANICS), STRUCTURAL PROPERTIES,  
TRANSPARENT PANELS, REINFORCED CONCRETE, BRICK,  
MATHEMATICAL MODELS, STATISTICAL ANALYSIS

(U)

IDENTIFIERS: BLAST LOADING, NFSS(NATIONAL  
FALLOUT SHELTER SURVEYS), NATIONAL FALLOUT  
SHELTER SURVEYS, OVERPRESSURE, WINDOWS, COMPUTER  
ANALYSIS, \*BLAST SHELTERS

(U)

THE OBJECTIVE OF THE INVESTIGATION WAS TO DEVELOP  
AN EVALUATION PROCEDURE APPLICABLE TO EXISTING  
NFSS-TYPE STRUCTURES AND PRIVATE HOMES FOR  
DETERMINING THE BLAST PROTECTION AFFORDED AND THE  
COST OF STRUCTURE MODIFICATIONS TO IMPROVE THE BLAST  
PROTECTION. THE APPROACH ADOPTED WAS TO FORMULATE A  
PROCEDURE THAT WOULD PERMIT EXAMINING THE RESPONSE OF  
A STRUCTURE OVER A RANGE OF INCIDENT OVERPRESSURE  
LEVELS TO DETERMINE THE PRESSURE AT WHICH FAILURE OF  
THE VARIOUS ELEMENTS OCCURS. PAST EFFORTS IN THIS  
PROGRAM HAVE BEEN CONCERNED WITH EXAMINING EXTERIOR  
WALLS, WINDOW GLASS, AND STEEL FRAME CONNECTIONS.  
THE PHASE OF THE WORK PRESENTED IN THIS REPORT  
EXTENDED THE EXTERIOR WALL RESPONSE MODELS PREVIOUSLY  
DEVELOPED BY INCLUDING EXTERIOR WALLS WITH TWO-WAY  
ACTION AND WINDOW OPENINGS. THE EVALUATION  
PROCEDURE WAS ALSO EXTENDED TO INCLUDE A PROBABILITY  
DISTRIBUTION FOR EACH OF THE VARIOUS 'UNKNOWN' WALL  
AND LOAD PARAMETERS. USING THE WALL EVALUATION  
PROCEDURE, A LIMITED SENSITIVITY ANALYSIS WAS  
PERFORMED AND A COMPARISON WAS MADE OF THE AVAILABLE  
EXPERIMENTAL INFORMATION ON DYNAMICALLY LOADED WALL  
ELEMENTS WITH THEORETICAL PREDICTIONS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-720 219 13/4 15/3  
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL  
AMERICAN RESEARCH DIV

NON-CORRODIBLE DUAL-PURPOSE WATER  
CONTAINER.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-FEB 70,  
FEB 70 87P KAPIL, AJIT L. ;  
REPT. NO. GARD-1479-F  
CONTRACT: DAMC20-68-C-0123  
PROJ: OGD-1433F

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CONTAINERS, WATER), (\*FALLOUT  
SHELTERS, WATER SUPPLIES), LIFE SUPPORT,  
SANITARY ENGINEERING, TOILET FACILITIES,  
POLYETHYLENE PLASTICS, CONFIGURATION, FIRE  
RESISTANT MATERIALS, PUMPS, COSTS, TEST METHODS,  
CIVIL DEFENSE SYSTEMS

(U)

IDENTIFIERS: \*WATER CONTAINERS, NONCORRODIBLE  
CONTAINERS, EVALUATION

(U)

THE REPORT DESCRIBES THE DESIGN, FABRICATION AND  
EVALUATION OF A NON-CORRODIBLE, DUAL-PURPOSE WATER  
CONTAINER FOR USE IN FALLOUT SHELTERS. THE DESIGN  
ALLOWS AN EMPTY CONTAINER TO BE CONVERTED INTO A  
CUMMODO FOR IN-SHELTER USE. TESTS ON PROTOTYPES  
SHOW THE DESIGN MEETS ALL REQUIREMENTS ESTABLISHED  
FOR SUCH A CONTAINER. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AJ-722 242 15/3 13/4  
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL  
AMERICAN RESEARCH DIV

COLLAPSIBLE WATER CONTAINER KIT. (U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 68-NOV 69,  
JAN 71 83P GORECKI, EDWARD A. /JAGO.

ARTHUR G. I  
REPT. NO. GARD-1478-F  
CONTRACT: UAMC20-68-C-0123  
PROJ: OCD-1433E

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, WATER  
TANKS), (WATER TANKS, FALLOUT SHELTERS),  
WATER SUPPLIES, TESTS: STEEL, PLASTICS,  
EXTENDABLE STRUCTURES (U)  
IDENTIFIERS: COLLAPSIBLE WATER CONTAINERS,  
EVALUATION, POTABLE WATER (U)

THE REPORT DESCRIBES THE DESIGN AND TEST EVALUATION  
OF THREE COLLAPSIBLE, LARGE-CAPACITY WATER CONTAINERS  
FOR USE IN FALLOUT SHELTERS. A 350-GALLON, STEEL-  
WALL CONTAINER WITH A POLYVINYL CHLORIDE LINER AND  
NECESSARY ACCESSORIES WAS CHOSEN AS THE MOST  
ACCEPTABLE DESIGN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-722 243 15/3 15/5  
GENERAL AMERICAN TRANSPORTATION CORP NILES ILL GENERAL  
AMERICAN RESEARCH DIV

BUNKING SYSTEM CONCEPTS.

(U)

DESCRIPTIVE NOTE: SUMMARY OF FINAL REPT.,  
DEC 70 113P RATHMANN, CARL E. ;  
REPT. NO. GARD-1509-F  
CONTRACT: DAHC20-68-C-0123  
PROJ: OCU-1427C

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS, BEDDING),  
(\*BEDDING, \*FALLOUT SHELTERS), COSTS,  
VENTILATION, POPULATION, TESTS  
IDENTIFIERS: \*BUNK BEDS, BUNKING SYSTEMS

(U)

(U)

ECONOMIC INVESTIGATIONS OF REDUCING SHELTER COSTS  
PER OCCUPANT AND INCREASING SHELTER OCCUPANCY VIA THE  
INCLUSION OF BUNKING SYSTEMS ARE ITEMIZED.  
(AUTHOR)

(U)

UNCLASSIFIED

UDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-722 856 15/3 13/13 18/6  
KANSAS STATE UNIV MANHATTAN ENGINEERING EXPERIMENT  
STATION

A UNIVERSITY DESIGN STUDY OF REDUCTION  
FACTORS IN TYPICAL AMERICAN HOUSES WITH  
FALLOUT SHELTERS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
FEB 71 68P REYNOLDS, R. S. IFAM, R.  
E. ; ROBINSON, M. J. ;  
REPT. NO. KEES-SR-92  
CONTRACT: UAMC20-69-C-0412

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, FALLOUT  
SHELTERS), (SHIELDING, RADIOACTIVE FALLOUT),  
(FALLOUT SHELTERS, DESIGN), SIMULATION,  
RADIOACTIVE ISOTOPES, COBALT, CONCRETE,  
CONSTRUCTION MATERIALS, SPECIFICATIONS, COSTS,  
REGRESSION ANALYSIS

(U)

THE PURPOSE OF THIS WORK WAS TO MEASURE THE  
FALLOUT-RADIATION PROTECTION PROVIDED IN A TYPICAL  
RESIDENTIAL STRUCTURE BY FALLOUT SHELTERS DESIGNED BY  
THE NATIONAL ASSOCIATION OF HOME BUILDERS  
(NAHB). NAHB DESIGNS SPECIFIED DIMENSIONS AND  
MATERIALS OF CONSTRUCTION ALONG WITH TABLES OF  
EXPECTED MASS THICKNESSES. OUR CALCULATIONS  
CONFIRMED THAT SHELTERS WITH WALLS AND OVERHEAD OF  
THE EXPECTED MASS THICKNESSES WOULD INDEED PROVIDE  
PROTECTION FACTORS OF AT LEAST 40. HOWEVER, IT WAS  
FOUND THAT CONSTRUCTION ACCORDING TO MATERIALS  
SPECIFICATIONS DID NOT YIELD THE EXPECTED MASS  
THICKNESSES. IN SOME INSTANCES, THE SHELTERS WERE  
OF OVERLY CONSERVATIVE DESIGN YIELDING PROTECTION  
FACTORS AS HIGH AS 116. THIS WAS TYPICAL OF  
BASEMENT SHELTERS. ON THE OTHER HAND, ABOVE-GRADE  
SHELTERS WERE TYPICALLY UNDER-DESIGNED WITH  
PROTECTION FACTORS AS LOW AS 20. IT IS RECOMMENDED  
THAT NAHB DESIGNS BE REVISED WITH MASS THICKNESS AS  
THE CONTROLLING SPECIFICATION. INSTRUCTIONS SHOULD  
THEN BE GIVEN AS TO HOW THESE MASS THICKNESSES COULD  
BE ACHIEVED WITH VARIOUS BUILDING MATERIALS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-723 045 13/5 13/13 15/3  
ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG  
MISS

DYNAMIC TESTS OF LARGE REINFORCING BAR  
SPICES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.:

APR 71 183P FLATHAU, WILLIAM J. I  
REPT. NO. AENES-TR-N-71-2

UNCLASSIFIED REPORT

DESCRIPTORS: (METAL JOINTS, STRUCTURAL  
PROPERTIES), (REINFORCING MATERIALS, JOINING),  
(SHELTERS, REINFORCED CONCRETE), BLAST,  
DEFORMATION, STRAIN (MECHANICS), WELDING,  
WELDS, STRESSES, TEST METHODS, CIVIL DEFENSE  
SYSTEMS, NUCLEAR EXPLOSIONS

(U)

IDENTIFIERS: HARDENED INSTALLATIONS, BLAST  
RESISTANT STRUCTURES

(U)

DYNAMIC TENSILE TESTS WERE CONDUCTED AT RAPID,  
INTERMEDIATE, AND SLOW RATES OF STRAIN ON SPECIMENS  
OF NO. 11 REINFORCING BARS OF GRADES 60 AND 75  
A615 BILLET STEEL. AS-ROLLED BARS, MACHINED  
BARS, BUTT-WELDED SPLICES, THERMIT SPLICES, AND  
CAWELDED SPLICES WERE PREPARED. THE AS-ROLLED AND  
MACHINED SPECIMENS WERE TESTED PRIMARILY TO DETERMINE  
THE TENSILE STRENGTH CHARACTERISTICS OF THE GRADES  
60 AND 75 BARS FOR USE WHEN ASSESSING HOW EFFECTIVE  
THE VARIOUS SPICED SPECIMENS WERE WHEN TESTED.  
ALL TESTS WERE CONDUCTED IN A 200,000-POUND-  
CAPACITY DYNAMIC LOADER. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-724 164 15/3  
MICHIGAN STATE UNIV EAST LANSING DEPT OF  
COMMUNICATION

THE HOME FALLOUT PROTECTION SURVEY AND  
COMMUNITY SHELTER PLANS IN MICHIGAN:  
THEIR IMPACT ON THE GENERAL PUBLIC. FAMILY  
COMMUNICATION ABOUT CIVIL DEFENSE TOPICS:  
A REPORT OF TWO PILOT STUDIES.

(U)

DESCRIPTIVE NOTE: PILOT STUDY REPT. NO. 4,  
JAN 71 19P BERLO, DAVID K. JACKMAN,  
DANIEL B. IERICSON, PHILIP M. I  
CONTRACT: DAMC20-67-C-0119

UNCLASSIFIED REPORT

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, PUBLIC  
OPINION), (FALLOUT SHELTERS, CIVIL DEFENSE  
SYSTEMS), REACTION (PSYCHOLOGY), EDUCATION,  
ATTITUDES, QUESTIONNAIRES, NUCLEAR RADIATION,  
NUCLEAR WARFARE  
IDENTIFIERS: HOME FALLOUT PROTECTION SURVEYS

(U)  
(U)

THE REPORT SUMMARIZES TWO PILOT RESEARCH STUDIES  
WHICH EXPLORED HOW AMERICAN FAMILIES PROCESS AND  
UTILIZE CIVIL DEFENSE INFORMATION. THE FIRST STUDY  
COMPARED PUBLIC REACTIONS TO COMMUNITY SHELTER  
PLAN INFORMATION TO HOME FALLOUT PROTECTION  
SURVEY INFORMATION AND FOUND THEM SIMILAR IN  
AWARENESS, PROCESSING, USE IN PLANNING, AND  
EVALUATION OF THE INFORMATION. THE STRENGTHS AND  
WEAKNESS OF CSP INFORMATION ARE NOTED. THE  
SECOND STUDY EXAMINED HOW A SAMPLE OF 30 LOWER AND  
MIDDLE CLASS COUPLES INTERACTED ABOUT CIVIL DEFENSE  
TOPICS. THE FINDINGS INDICATED NUCLEAR ROLE  
ASSIGNMENT FOR CIVIL DEFENSE IN THE FAMILIES, LOW  
PRIORITY TO ITS IMPORTANCE, BUT USE OF THE SAME BASIC  
INTERACTION STYLE IN DISCUSSING IT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-724 710 13/13 18/3 15/3  
URS RESEARCH CO SAN MATEO CALIF

ANALYSIS OF THE EFFECT OF SHELTER OPENINGS ON  
BLAST PROTECTION.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 70 197P MELICHAR, JOSEPH F. I  
REPT. NO. URS-773-6  
CONTRACT: DANC20-67-C-0136

UNCLASSIFIED REPORT

DESCRIPTORS: (\*FALLOUT SHELTERS, BLAST), (\*CIVIL  
DEFENSE SYSTEMS, NUCLEAR EXPLOSIONS), NUCLEAR  
EXPLOSION DAMAGE, SURVIVAL, SHELTERS, DESIGN,  
MOVEMENTS, DAMAGE ASSESSMENT, KILL PROBABILITIES (U)  
IDENTIFIERS: \*BLAST SLANTED SHELTERS,  
OPENINGS (U)

THE TRANSLATION OF SHELTERED PERSONS IN BLAST  
SLANTED BASEMENT CIVIL DEFENSE SHELTERS WAS STUDIED.  
ANALYTICAL AND NUMERICAL AND EXPERIMENTAL  
SIMULATIONS WERE USED TO DEVELOP SUPPORTIVE DATA.  
JUDGMENTS ON TRANSLATION POTENTIAL ARE PRESENTED  
AND THE DIFFICULTIES OF MAKING PREDICTIONS FOR THE  
GENERAL CASE ARE SUMMARIZED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-724 727 15/3  
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND  
ANTHROPOLOGY

THE HOME FALLOUT PROTECTION SURVEY AND  
RESULTING CHANGES IN SHELTER ADOPTION.  
SUMMARY REPORT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.:  
SEP 70 56P YARBROUGH, PAUL ; KLONLAN,  
GERALD E. ;  
REPT. NO. RURAL SOCIOLOGY-85A  
CONTRACT: DAHC20-67-C-0123  
PROJ: OCO-4811E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON SOCIOLOGICAL STUDIES IN  
CIVIL DEFENSE. PREPARED IN COOPERATION WITH IOWA  
AGRICULTURAL AND HOME ECONOMICS EXPERIMENT  
STATION. PROJECT 1529. SEE ALSO APPENDICES, AD-  
724 726.

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS; ATTITUDES);  
QUESTIONNAIRES; REVIEWS; IOWA  
IDENTIFIERS: SURVEYS; HOME FALLOUT PROTECTION

(U)

(U)

THE STUDY INVESTIGATED RESPONSES MADE BY ADULTS IN  
DES MOINES, IOWA, TO THE HOME FALLOUT  
PROTECTION SURVEY (HFPS). A PANEL OF 308  
PERSONS WERE INTERVIEWED BEFORE AND AFTER HFPS.  
THE AUDIENCE WAS FOUND TO HAVE RESPONDED QUITE  
FAVORABLY IN TERMS OF ATTENTION GIVEN HFPS  
MESSAGES; ATTITUDINAL ACCEPTANCE OF THE PROGRAM AND  
CHANGE IN ADOPTION OF PUBLIC AND HOME FALLOUT  
SHELTERS. OVER 66 PERCENT WERE AWARE OF THE  
PROGRAM AND NEARLY 30 PERCENT READ AT LEAST SOME OF  
THE HFPS BOOKLET. COMBINED ADOPTION OF HOME AND  
PUBLIC SHELTERS INCREASED FROM 26 PERCENT OF ALL  
HOUSEHOLDS BEFORE HFPS TO 44 PERCENT AFTERWARDS.  
HOWEVER, COMPREHENSION OF SUCH KEY CONCEPTS AS  
'PROTECTION FACTOR' AND 'ADDED WEIGHT' WAS QUITE LOW  
AND CONSTITUTED ONE OF THE WEAKEST LINKS IN THE  
PROGRAM. THE DISPOSITIONAL MODEL DID NOT HOLD WELL  
IN PREDICTING ATTENTION TO HFPS, BUT DID HOLD IN  
PREDICTING COMPREHENSION AND ACCEPTANCE RESPONSES.  
THE USE OF PANEL METHODOLOGY WAS FOUND TO  
CONTRIBUTE SIGNIFICANT BIAS TO THE OBSERVED RESPONSE  
TO HFPS. (AUTHOR)

(U)

UNCLASSIFIED

UDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-724 728 15/3  
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND  
ANTHROPOLOGY

THE HOME FALLOUT PROTECTION SURVEY AND  
RESULTING CHANGES IN SHELTER ADOPTION.  
APPENDICES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
SEP 70 378P YARBROUGH, PAUL ; KLONLAN,  
GERALD E. I  
REPT. NO. RURAL SOCIOLOGY-85B  
CONTRACT: DAMC20-67-C-0123  
PROJ: OCD-4811E

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON SOCIOLOGICAL STUDIES IN  
CIVIL DEFENSE. PREPARED IN COOPERATION WITH IOWA  
AGRICULTURAL EXPERIMENT STATION, PROJECT 1529. SEE  
ALSO SUMMARY REPORT, AD-724 727.

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, ATTITUDES);  
(FALLOUT SHELTERS, CIVIL DEFENSE SYSTEMS);  
QUESTIONNAIRES, REVIEWS, IOWA  
IDENTIFIERS: SURVEYS, HOME FALLOUT PROTECTION

(U)

(U)

THE STUDY INVESTIGATED RESPONSES MADE BY ADULTS IN  
DES MOINES, IOWA, TO THE HOME FALLOUT  
PROTECTION SURVEY (HFPS). A PANEL OF 308  
PERSONS WERE INTERVIEWED BEFORE AND AFTER HFPS.  
THE AUDIENCE WAS FOUND TO HAVE RESPONDED QUITE  
FAVORABLY IN TERMS OF ATTENTION GIVEN HFPS  
MESSAGES, ATTITUDINAL ACCEPTANCE OF THE PROGRAM AND  
CHANGE IN ADOPTION OF PUBLIC AND HOME FALLOUT  
SHELTERS. THIS VOLUME PRESENTS APPENDICES GIVING  
THE DETAILED METHODOLOGY AND ANALYSIS OF EACH  
VARIABLE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-726 456 15/2 5/10  
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA

AN EXPLORATORY STUDY TO DETERMINE THE  
EFFECTS OF PHYSICAL HAZARD ON SHELTER  
MANAGEMENT BEHAVIOR.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1969-1970.  
APR 71 82P SMITH, ROBERT W. COLLINS.  
ROBERT A. MEAGLEY, DONALD E. I  
REPT. NO. AIR-77802-4/71-FR  
CONTRACT: DANC20-68-C-0122

UNCLASSIFIED REPORT

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS, FALLOUT  
SHELTERS), (\*BEHAVIOR, THREAT EVALUATION),  
(\*FALLOUT SHELTERS, \*MANAGEMENT ENGINEERING),  
PERFORMANCE(HUMAN), REACTION(PSYCHOLOGY),  
STRESS(PSYCHOLOGY), ADJUSTMENT(PSYCHOLOGY),  
ANXIETY

IDENTIFIERS: THREAT, MANAGEMENT PERFORMANCE

(U)

(U)

THE OBJECTIVE OF THE STUDY WAS TO GENERATE A  
PERCEPTION OF ENVIRONMENTAL THREAT IN SUBJECTS UNDER  
CONTROLLED CONDITIONS AND TO ASSESS ITS EFFECT ON  
PERFORMANCE THAT COULD BE RELATED TO FALLOUT SHELTER  
MANAGEMENT RESPONSIBILITIES. OF THE TEN TEST  
SUBJECTS, FIVE APPEARED TO PERCEIVE THREAT AS  
EVIDENCED BY NONCOMMITTAL REACTIONS TO CONCERNS  
EXPRESSED BY THEIR COMPANIONS. OVERT SYMPTOMS OF  
ANXIETY, RELATIVELY FREQUENT ATTEMPTS TO COMMUNICATE  
WITH THE RESEARCH STAFF, AND SUBSEQUENT VERBAL  
ACKNOWLEDGEMENT OF PERCEIVED THREAT. CLEAR  
RELATIONSHIPS EXISTED BETWEEN THE PERCEPTION OF  
THREAT AND MANAGEMENT PERFORMANCE, PARTICULARLY IN  
THE AREA OF SOCIAL BEHAVIOR. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-726 965 6/8 15/3  
GEORGIA UNIV EXPERIMENT DIV OF FOOD SCIENCE

STORAGE STABILITY OF CIVIL DEFENSE SHELTER  
RATIONS. (U)

DESCRIPTIVE NOTE: FINAL SUMMARY REPT. (PART 1), 1  
JUL 69-30 JUN 71,

MAY 71 131P CECIL, SAM R. I

REPT. NO. TR-153-9-FS  
CONTRACT: DAHC20-69-C-0415  
PROJ: OCD-1312C, UGA-01-0053

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO ANNUAL REPT. NO. 8 DATED  
JUN 70, AD-712 365. SUMMARY INSERTED.

DESCRIPTORS: (FOOD, STORAGE), (FALLOUT  
SHELTERS, FOOD), CIVIL DEFENSE SYSTEMS, CEREALS,  
CARBOHYDRATES, STABILITY, TEMPERATURE, MOISTURE,  
CONTAINERS, PH, ODORS, ACCEPTABILITY (U)  
IDENTIFIERS: SHELTER RATIONS, FLAVOR (U)

THIS IS THE FINAL SUMMARY REPORT IN A STUDY OF THE  
STABILITY OF REPRESENTATIVE TYPES OF CIVIL  
DEFENSE SHELTER FOODS AND THEIR CONTAINERS WHEN  
STORED FOR EXTENDED PERIODS. THE PURPOSE OF THE  
STUDY WAS TO MAINTAIN CONTROLLED STORAGE CONDITIONS  
COVERING THE RANGE OF CONDITIONS LIKELY TO EXIST IN  
WAREHOUSES AND SHELTERS IN WHICH, BEGINNING IN 1962,  
LARGE QUANTITIES OF FOOD WERE STORED UNDER THE  
CIVIL DEFENSE PROGRAM. THESE INCLUDED TYPES  
OF FOOD NOT PREVIOUSLY PROCURED, REPRESENTING NEW  
FORMULATIONS, PROCESSES AND CONTAINERS ON WHICH  
LITTLE OR NO LONG-TERM STORAGE INFORMATION WAS  
AVAILABLE. DURING THE COURSE OF THE STUDY, SAMPLES  
OF RATIONS WERE DRAWN FROM VARIOUS ESTABLISHED  
SHELTERS AND STORAGE DEPOTS FOR COMPARISONS WITH THE  
ITEMS HELD IN CONTROLLED STORAGE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AJ-728 139 15/6 15/3  
INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA PROGRAM  
ANALYSIS DIV

A SENSITIVITY ANALYSIS OF URBAN BLAST  
FATALITY CALCULATIONS.

(U)

DESCRIPTIVE NOTE: RESEARCH PAPER,  
JAN 71 216P SCHMIDT, LEO A. I  
REPT. NO. RP-P-762  
CONTRACT: DAHC20-70-C-0287

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHELTERS, VULNERABILITY),  
(\*NUCLEAR EXPLOSION DAMAGE, \*MATHEMATICAL MODELS),  
(\*URBAN AREAS, \*KILL PROBABILITIES), (\*NUCLEAR  
WARFARE, URBAN AREAS), CASUALTIES, SURVIVAL,  
PROGRAMMING (COMPUTERS), STATISTICAL  
DISTRIBUTIONS, CORRELATION TECHNIQUES, MONTE CARLO  
METHOD, CIVIL DEFENSE SYSTEMS, MATHEMATICAL  
PROGRAMMING, CURVE FITTING  
IDENTIFIERS: \*SENSITIVITY ANALYSIS

(U)

(U)

THE PAPER ATTEMPTS TO PROVIDE A BASIS FOR IMPROVING  
THE ANALYSIS OF STRATEGIC WARFARE BY STUDYING IN  
DETAIL THE SENSITIVITY OF URBAN BLAST FATALITY  
CALCULATIONS. IT EXAMINES THE EFFECTS OF VARIOUS  
ASSUMPTIONS ON THE RESULTING ESTIMATES OF FATALITIES  
AND ATTEMPTS TO UNCOVER AREAS WHERE ERRORS ARE MADE.  
TWO BASIC TOOLS ARE USED: A COMPUTER PROGRAM THAT  
COMPUTES SURVIVORS IN A CITY UNDER AN OPTIMIZED  
ATTACK WITH A GIVEN NUMBER OF WEAPONS, AND A QUASI-  
ANALYTICAL DAMAGE LAW--THE SQUAKE ROOT DAMAGE  
LAW. THE COMPUTER PROGRAM IS USED TO STUDY SUCH  
EFFECTS AS SENSITIVITY OF FATALITIES TO WEAPON YIELD,  
RELIABILITY, OR TARGET VULNERABILITY. AND THE  
SQUAKE ROOT DAMAGE LAW IS USED TO CORRELATE  
THE RESULTS. A FEW METROPOLITAN AREAS ARE STUDIED  
IN DETAIL. WHERE POSSIBLE A RATIONALE IS DEVELOPED  
TO EXPLAIN THE RESULTS OBTAINED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-728 849 15/3  
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND  
ANTHROPOLOGY

PUBLIC RESPONSE TO COMMUNITY SHELTER  
PLANNING: DES MOINES AND POLK COUNTY,  
IOWA. SUMMARY REPORT.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 71 50P YARBROUGH, PAUL IKLONGLAN,  
GERALD E. IPADGITT, STEVE;  
REPT. NO. SOCIOLOGY-87A  
CONTRACT: DAHC20-69-C-0103  
PROJ: OCD-4811G

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON SOCIOLOGICAL STUDIES IN  
CIVIL DEFENSE. PREPARED IN COOPERATION WITH IOWA  
AGRICULTURAL AND HOME ECONOMICS EXPERIMENT  
STATION. PROJECT 1754. SEE ALSO APPENDICES. AD-  
728 849.

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS, ATTITUDES),  
(\*FALLOUT SHELTERS, \*ATTITUDES), QUESTIONNAIRES,  
SOCIOLOGY

(U)

THE STUDY INVESTIGATED RESPONSES MADE BY ADULTS IN  
DES MOINES, IOWA, TO A COMMUNITY SHELTER  
PLAN (CSP) AND ALSO TO AN OFFICE OF CIVIL  
DEFENSE BOOKLET ENTITLED, 'IN TIME OF  
EMERGENCY' (M-14). A TOTAL OF 938 INTERVIEWS  
WERE COMPLETED DURING THE STUDY. THE DETAILED  
METHODOLOGY AND ANALYSIS FOR EACH VARIABLE  
INVESTIGATED, IS PRESENTED IN A SEPARATE VOLUME--SEE  
AD-728 849. (AUTHOR)

(U)

UNCLASSIFIED

UDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-728 849 15/3  
IOWA STATE UNIV AMES DEPT OF SOCIOLOGY AND  
ANTHROPOLOGY

PUBLIC RESPONSE TO COMMUNITY SHELTER  
PLANNING: DES MOINES AND POLK COUNTY,  
IOWA. APPENDICES.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,  
MAY 71 344P YARBROUGH, PAUL (KLONLAN,  
GERALD E. PADGITT, STEVE ;  
REPT. NO. SOCIOLOGY-878  
CONTRACT: DAHC20-69-C-0103  
PROJ: OGD-4811G

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON SOCIOLOGICAL STUDIES IN  
CIVIL DEFENSE, PREPARED IN COOPERATION WITH IOWA  
AGRICULTURAL AND HOME ECONOMICS EXPERIMENT  
STATION, PROJECT 1754. SEE ALSO SUMMARY REPORT,  
AD-728 848.

DESCRIPTORS: (\*CIVIL DEFENSE SYSTEMS, ATTITUDES),  
(\*FALLOUT SHELTERS, \*ATTITUDES), QUESTIONNAIRES,  
SOCIOLOGY

(U)

THE STUDY INVESTIGATED RESPONSES MADE BY ADULTS IN  
DES MOINES, IOWA, TO THE COMMUNITY SHELTER  
PLAN (CSP). A TOTAL OF 938 INTERVIEWS WERE  
COMPLETED DURING THE STUDY. THIS INCLUDED ADEQUATE  
CONTROL SAMPLES BEFORE AND AFTER PUBLICATION OF CSP  
AS WELL AS PANELS. ONE PANEL WAS INITIATED BEFORE  
CSP, OTHER WERE CONTINUED FROM THE RESEARCHERS'  
EARLIER HOME FALLOUT PROTECTION SURVEY STUDY.  
THE CSP MESSAGE INCLUDED A PLAN ALLOCATING PUBLIC  
FALLOUT SHELTERS TO RESIDENTS BASED ON PLACE OF  
RESIDENCE. IT WAS PUBLISHED IN THE FORM OF A 12-  
PAGE SUNDAY NEWSPAPER ADVERTISING SUPPLEMENT.  
ATTENTION GIVEN THE MESSAGE WAS ABOUT AVERAGE WITH  
SIMILAR SUPPLEMENTS (SLIGHTLY LESS THAN HALF OF THE  
TOTAL AUDIENCE), BUT COMPREHENSION OF THE PLAN WAS  
LOW. ONLY SEVEN PERCENT OF OUR CONTROL SAMPLE  
COULD RECALL THE NAME OR LOCATION OF A SHELTER  
ALLOCATED FOR HIS USE AND ONLY FOUR PERCENT COULD  
RECALL HOW THEY WERE INSTRUCTED TO TRAVEL TO THE  
SHELTER. ACCEPTANCE RESPONSES WERE LOW. A SLIGHT  
INCREASE WAS OBSERVED IN LEVEL OF KNOWLEDGE ABOUT A  
LOCAL CIVIL DEFENSE PROGRAM AND IN THE ANTICIPATORY  
DECISION TO CONCURRENTLY ADOPT PUBLIC OR HOME SHELTER  
PROTECTION ALTERNATIVES. THE DISPOSITIONAL MODEL  
DID NOT HOLD WELL IN PREDICTING ATTENTION TO CSP, (U)

34  
UNCLASSIFIED

/ZOML7

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-732 359 13/13 15/3 18/3  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

DESIGN PROCEDURES FOR SHELTER ENTRANCE  
STRUCTURES TO RESIST BLAST OVERPRESSURE AND  
RADIATION EFFECTS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT. NOV 69-JUN 70,  
SEP 71 161P FERRITTO, JOHN M. ;  
REPT. NO. NCEL-TR-736  
PNQJ: YF38.534.006.001.01

UNCLASSIFIED REPORT

DESCRIPTORS: (DOORS, STRUCTURAL PROPERTIES),  
(SHELTERS, NUCLEAR EXPLOSIONS), (CIVIL DEFENSE  
SYSTEMS, SHELTERS), LOADING(MECHANICS),  
PRESSURE, RADIATION HAZARDS, SHIELDING,  
CONCRETE (U)  
IDENTIFIERS: OVERPRESSURE, HARDENED ENTRANCE  
STRUCTURES, PLUMBBOB OPERATION (U)

THE REPORT PRESENTS ENGINEERING METHODS TO DESIGN  
HARDENED ENTRANCE STRUCTURES OF NUCLEAR WARFARE  
SHELTERS TO RESIST THE EFFECTS OF BOTH BLAST  
OVERPRESSURE AND RADIATION. THE DESIGN  
OVERPRESSURE LEVEL CAN BE DETERMINED FROM PROBABILITY  
DATA, AND THE ENTRANCE CAN BE SIZED TO ACCOMMODATE  
THE REQUIRED TRAFFIC FLOW. METHODS ARE PRESENTED  
TO CALCULATE THE REFLECTED PRESSURE ON THE ENTRANCE  
DOOR FOR VARIOUS ENTRANCE CONFIGURATIONS. PROCEDURES  
ARE GIVEN TO DESIGN THE DOOR STRUCTURALLY TO RESIST  
THE APPLIED LOADS. RADIATION ATTENUATION METHODS  
ARE PRESENTED TO EVALUATE THE REQUIREMENT FOR  
ADDITIONAL SHIELDING. VARIOUS MATERIALS ARE  
CONSIDERED TO PROVIDE MORE EFFECTIVE ECONOMICAL  
SHIELDS. SUMMARIES OF DOOR TESTS PERFORMED IN THE  
OPERATION PLUMBBOB TEST SERIES ARE GIVEN.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AD-732 360 13/13 15/3 18/3  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

COST-OPTIMIZATION STUDY OF SHELTER ENTRANCE  
STRUCTURES TO RESIST BLAST OVERPRESSURE AND  
RADIATION EFFECTS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. NOV 69-DEC 70,  
SEP 71 36P FERRITTO, JOHN M. I  
REPT. NO. NCEL-TR-737  
PROJ: YF38.534.001.01.011

UNCLASSIFIED REPORT

DESCRIPTORS: (DOORS, STRUCTURAL PROPERTIES),  
(SHELTERS, NUCLEAR EXPLOSIONS), (CIVIL DEFENSE  
SYSTEMS, SHELTERS), PRESSURE, PROTECTION, COST  
EFFECTIVENESS, STEEL, REINFORCED CONCRETE,  
PROGRAMMING (COMPUTERS), RADIATION HAZARDS  
IDENTIFIERS: OVERPRESSURE, BLAST DOORS, BLAST  
RESISTANT SHELTERS

(U)

(U)

THE BLAST DOOR IS AN IMPORTANT PART OF THE NUCLEAR  
BLAST RESISTANT SHELTER. THE BLAST DOOR MUST BE A  
MOVABLE ELEMENT REQUIRING A SUPPORT SYSTEM WITH A  
COST VERY SENSITIVE TO THE WEIGHT AND DIMENSIONS OF  
THE DOOR. A COMPUTER PROGRAM HAS BEEN DEVELOPED  
AND IS AVAILABLE TO STUDY 96 DOOR-ENTRANCE  
COMBINATIONS FOR VARIOUS DOOR SIZES AND RADIATION-  
OVERPRESSURE LEVELS. THE RELATIVE COSTS OF VARIOUS  
DOORS, ENTRANCES, AND DOOR-ENTRANCE COMBINATIONS HAVE  
BEEN EVALUATED TO OBTAIN THE MOST COST-EFFECTIVE  
COMBINATIONS. STEEL TENSION MEMBRANE DOORS AND  
REINFORCED CONCRETE SLAB DOORS ARE THE MOST  
ECONOMICAL. AERODYNAMIC TRIANGULAR OBSTRUCTIONS  
PLACED IN FRONT OF A DOOR, SLOPED DOORS, AND  
UNPROTECTED DOORS ARE THE MOST COST-EFFECTIVE.  
(AUMOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /ZOML7

AJ-732 362 13/13 15/3 18/3  
NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

USE OF AN AERODYNAMIC OBSTRUCTION TO SHIELD A  
BLAST DOOR--RESULTS OF AN EXPERIMENTAL  
MODEL TEST.

(U)

DESCRIPTIVE NOTE: FINAL REPT. JUN 70-APR 71,  
OCT 71 34P FERRITTO, J. M. ;  
REPT. NO. NCEL-TR-739  
PROJ: YF38-534-001-01-011

UNCLASSIFIED REPORT

DESCRIPTORS: (\*REVELMENTS, EFFECTIVENESS),  
(\*DOORS, BLAST), (\*SHELTERS, NUCLEAR  
EXPLOSIONS), CIVIL DEFENSE SYSTEMS, PROTECTION,  
AERODYNAMIC CONFIGURATIONS, PRISMATIC BODIES,  
SHIELDING, MODELS(SIMULATIONS), TEST  
METHODS

(U)

IDENTIFIERS: \*BLAST RESISTANT STRUCTURES, \*BLAST  
DOORS

(U)

TRIANGULAR PRISMATIC AERODYNAMIC OBSTRUCTIONS CAN  
BE USED TO SHIELD A BLAST DOOR. THE OBJECTIVES OF  
THIS PROJECT WERE TO EVALUATE THE PROTECTION AFFORDED  
BY AN OBSTRUCTION AND TO DETERMINE THE RELATIVE WIDTH  
OF OBSTRUCTION REQUIRED TO PROTECT A GIVEN WIDTH OF  
ENTRANCE. A STUDY WAS PERFORMED FROM WHICH  
SIMILITUDE RELATIONSHIPS WERE DEVELOPED. A SERIES  
OF TESTS WAS CONDUCTED IN WHICH A PROTECTED AND AN  
UNPROTECTED MODEL STRUCTURE WERE SUBJECTED TO BLAST  
WAVES FROM EXPLOSIVE CHARGES. A 45-DEGREE  
TRIANGULAR PRISMATIC OBSTRUCTION WAS USED TO SHIELD  
THE PROTECTED STRUCTURE. FIFTEEN VARIATIONS OF  
WIDTH AND POSITION OF OBSTRUCTION WERE EVALUATED.  
RESULTS SHOW THAT AT THE 100-PSI OVERPRESSURE LEVEL  
AN OBSTRUCTION 1 DOOR-HEIGHT HIGH AND 2 DOOR-WIDTHS  
WIDE PLACED FROM 1 TO 2 DOOR-HEIGHTS AWAY FROM A  
STRUCTURE CAN REDUCE THE PEAK REFLECTED PRESSURE BY  
SUB. (AUTHOR)

(U)

UNCLASSIFIED

UDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZONL7

AJ-732 514 13/13 15/3  
AMERICAN INSTITUTES FOR RESEARCH PITTSBURGH PA

MODEL LARGE INDIVIDUAL SHELTER PLANS.

(U)

DESCRIPTIVE NOTE: FINAL REPT. 1 JUL 70-30 SEP 71:  
JUL 71 49P COLLINS, ROBERT A.; IMANN,  
SHEILA B. ;  
REPT. NO. AIR-77804-7/71-FR  
CONTRACT: DAMC20-68-C-0122  
PROJ: OCU-1519F

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SHELTERS, \*CIVIL DEFENSE SYSTEMS),  
MANAGEMENT PLANNING, PENNSYLVANIA  
IDENTIFIERS: PITTSBURGH(PENNSYLVANIA)

(U)

(U)

THE GOALS OF THE PROJECT WERE TO DEVELOP AN  
INDIVIDUAL SHELTER PLAN (ISP) FOR OPERATIONS WITHIN  
THE LARGE SHELTER, AND A REPORT DESCRIPTIVE OF THE  
PROCESSES OF PLAN DEVELOPMENT. A 'MODEL' STRUCTURE,  
SATISFYING THE CRITERIA DESCRIPTIVE OF 'LARGE'  
SHELTERS WAS SELECTED. THIS BUILDING WAS SURVEYED  
IN TERMS OF STRUCTURE, SUPPLIES, FACILITIES, AND  
EQUIPMENT PERTINENT TO ITS FUNCTION AS A SHELTER.  
UTILIZING THIS INFORMATION, AND LEVELS OF FIRE AND  
RADIATION AS ENVIRONMENTAL DESCRIPTORS, SHELTER  
MANAGEMENT ACTIONS WERE GENERATED FOR CRITICAL  
SHELTER SERVICES. THESE ACTIONS WERE FORMATTED IN  
A SMALL FLIP CHART ARRANGED FOR EASY ACCESS.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL No. /ZOML7

AD-733 343 15/3 13/13  
STANFORD RESEARCH INST MENLO PARK CALIF

EXISTING STRUCTURES EVALUATION. PART V:  
APPLICATIONS.

(U)

DESCRIPTIVE NOTE: FINAL REPT.,

JUL 71 103P WIEHLE, CARL K. ROCKHOLT,

JAMES L. I

CONTRACT: DAMC20-67-C-0136

PROJ: OGD-1154F, SKI-630U

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO PART 4, AD-719 106.

DESCRIPTORS: (CIVIL DEFENSE SYSTEMS, SHELTERS),  
(HALLS, VULNERABILITY), (NUCLEAR EXPLOSION  
DAMAGE, BUILDINGS), PROTECTION, PREDICTIONS,  
STRUCTURES, LOADING(MECHANICS), MATHEMATICAL  
MODELS, GLASS, STEEL, REINFORCED CONCRETE,  
SHELTERS

(U)

IDENTIFIERS: PRIVATE RESIDENCES, BLAST PROTECTION,  
EVALUATION, OVERPRESSURE, COLLAPSE-OVERPRESSURE

(U)

THE OBJECTIVE OF THE OVERALL RESEARCH PROGRAM IS TO  
DEVELOP AN EVALUATION PROCEDURE FOR DETERMINING THE  
BLAST PROTECTION AFFORDED BY EXISTING (NATIONAL  
FALLOUT SHELTER SURVEYS)-TYPE STRUCTURES AND  
PRIVATE RESIDENCES. THE PURPOSE OF THE APPLICATION  
PHASE OF THE RESEARCH WAS TO USE THE INTERIM  
EVALUATION TECHNIQUE TO PREDICT THE DAMAGE TO ACTUAL  
NATIONAL FALLOUT SHELTER SURVEYS STRUCTURES.  
PREVIOUSLY DEVELOPED MATHEMATICAL MODELS FOR  
EXTERIOR WALLS WERE USED TO PREDICT THE COLLAPSE  
OVERPRESSURE FOR SELECTED STRUCTURES. THE REPORT  
PRESENTS THE RESULTS OF THE DYNAMIC ANALYSIS OF THE  
EXTERIOR WALLS OF ONE STRUCTURE LOCATED ON THE  
STANFORD UNIVERSITY CAMPUS, AND FIVE STRUCTURES  
LOCATED IN DETROIT, MICHIGAN. (AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. /40ML7

AD-733 944 8/13 13/13 15/3  
NATIONAL BUREAU OF STANDARDS WASHINGTON D C BUILDING  
RESEARCH DIV

EARTH TEMPERATURES BENEATH FIVE DIFFERENT  
SURFACES.

(U)

DESCRIPTIVE NOTE: FINAL REPT. MAR 69-FEB 70.  
FEB 71 146P KUSUDA, T. ;  
PROJ: NBS-4212436, OCD-1211A  
MONITOR: NBS 10373

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SOILS; TEMPERATURE) (\*FALLOUT  
SHELTERS; THERMAL PROPERTIES); HEAT TRANSFER,  
UNDERGROUND STRUCTURES, DESIGN, MATHEMATICAL  
PREDICTION, MEASUREMENT, MOISTURE, SURFACE  
TEMPERATURES, PROBES, CIVIL DEFENSE SYSTEMS,  
THERMOCOUPLES, GRASSES, SOLAR RADIATION,  
PAVEMENTS, TABLES  
IDENTIFIERS: SOIL PROPERTIES, SOIL MOISTURE

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THE REPORT COVERS THE EXPERIMENTAL EFFORT OF  
MEASURING, PROCESSING AND ANALYZING EARTH TEMPERATURE  
DATA BENEATH FIVE DIFFERENT SURFACE. SINCE THE  
INSTRUMENTATION AND DATA PROCESSING PHASES OF THE  
ENDEAVOR HAVE BEEN DESCRIBED IN THE PREVIOUS NBS  
REPORT 10223 ENTITLED 'AUTOMATED EARTH  
TEMPERATURE STATION', ONLY THE ANALYSIS OF THE  
DATA IS GIVEN IN THIS REPORT. ANNUAL AND TYPICAL  
DAILY PLOTS OF EARTH TEMPERATURE UNDER BLACK, WHITE,  
BARE, SHORT GRASS, AND LONG GRASS SURFACES ARE  
PRESENTED TOGETHER WITH THE SURFACE WEATHER  
CONDITIONS AND SOIL MOISTURE CONTENT. (AUTHOR)

(U)

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CORPORATE AUTHOR - MONITORING AGENCY

\*AMERICAN INSTITUTES FOR RESEARCH  
PITTSBURGH PA

\*\*\*  
AIR-77802-4/71-FR  
AN EXPLORATORY STUDY TO  
DETERMINE THE EFFECTS OF PHYSICAL  
HAZARD ON SHELTER MANAGEMENT  
BEHAVIOR.  
AD-726 456

\*\*\*  
AIR-77804-7/71-FR  
MODEL LARGE INDIVIDUAL SHELTER  
PLANS.  
AD-732 514

\*APPLIED PARKING TECHNIQUES INC RESTON  
VA

\*\*\*  
APT-1170  
SHELTER POTENTIAL IN PARKING  
GARAGES.  
AD-715 416

\*ARMY ENGINEER WATERWAYS EXPERIMENT  
STATION VICKSBURG MISS

\*\*\*  
AEWES-TR-N-71-2  
DYNAMIC TESTS OF LARGE  
REINFORCING BAR SPLICES.  
AD-723 045

\*DEFENSE DOCUMENTATION CENTER  
ALEXANDRIA VA

\*\*\*  
DDC-TAS-70-36-1  
CIVIL DEFENSE SYSTEMS:  
SHELTERS. VOLUME I.  
AD-704 500

\*GENERAL AMERICAN TRANSPORTATION CORP  
NILES ILL GENERAL AMERICAN  
RESEARCH DIV

\*\*\*  
GARD-1476-1-F  
AIR DISTRIBUTION IN SHELTERS  
DUE TO KEARNY PUMPS AND PEDAL  
VENTILATORS.  
AD-713 405

\*\*\*  
GARD-1478-F  
COLLAPSIBLE WATER CONTAINER

KIT.  
AD-722 242

\*\*\*  
GARD-1479-F  
NON-CORRODIBLE DUAL-PURPOSE  
WATER CONTAINER.  
AD-720 219

\*\*\*  
GARD-1480-F  
SHELTER OCCUPANCY STUDIES OF  
VENTILATOR UTILIZATION.  
AD-714 308

\*\*\*  
GARD-1508-F  
LIGHTING KIT.  
AD-716 360

\*\*\*  
GARD-1509-F  
BUNKING SYSTEM CONCEPTS.  
AD-722 243

\*GEORGIA EXPERIMENT STATION  
EXPERIMENT

\*\*\*  
153-VIII-GES  
STORAGE STABILITY OF CIVIL  
DEFENSE SHELTER RATIONS.  
AD-712 365

\*GEORGIA UNIV EXPERIMENT DIV OF FOOD  
SCIENCE

\*\*\*  
TR-153-9-FS  
STORAGE STABILITY OF CIVIL  
DEFENSE SHELTER RATIONS.  
AD-726 965

\*IIT RESEARCH INST CHICAGO ILL  
FIRE LABORATORY TESTS. PHASE  
I.  
AD-713 017

\*\*\*  
IITRI-J6151-FR  
DISTRIBUTION OF SLANTABLE  
CONSTRUCTION.  
AD-705 387

\*ILLINOIS UNIV URBANA  
NRSS-14

A STUDY OF THE PENETRATION OF  
GAMMA RADIATION THROUGH THIN SLABS  
ORIENTED AT RIGHT ANGLES TO EACH  
OTHER.

AD-715 422

\*INSTITUTE FOR DEFENSE ANALYSES  
ARLINGTON VA PROGRAM ANALYSIS DIV

RP-P-762

A SENSITIVITY ANALYSIS OF URBAN  
BLAST FATALITY CALCULATIONS.

AD-723 139

\*IOWA STATE UNIV AMES DEPT OF  
SOCIOLOGY AND ANTHROPOLOGY

RURAL SOCIOLOGY-81

DIFFUSION OF FALLOUT SHELTER  
INNOVATIONS. A STUDY OF PUBLIC AND  
HOME FALLOUT SHELTER ADOPTION IN  
THE U. S. A. 1964, 1966, 1968.

AD-706 238

RURAL SOCIOLOGY-85A

THE HOME FALLOUT PROTECTION  
SURVEY AND RESULTING CHANGES IN  
SHELTER ADOPTION. SUMMARY REPORT.

AD-724 727

RURAL SOCIOLOGY-85R

THE HOME FALLOUT PROTECTION  
SURVEY AND RESULTING CHANGES IN  
SHELTER ADOPTION. APPENDICES.

AD-724 728

RURAL SOCIOLOGY-86

SYSTEM AND PERSONAL VARIABLES  
AS PREDICTORS OF INDIVIDUAL  
ADOPTION BEHAVIOR.

AD-718 256

SOCIOLOGY-87A

PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. SUMMARY REPORT.

AD-728 848

SOCIOLOGY-87B

PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND

POLK COUNTY, IOWA. APPENDICES.  
AD-728 849

\*KANSAS STATE UNIV MANHATTAN  
ENGINEERING EXPERIMENT STATION

KEES-SR-92

A UNIVERSITY DESIGN STUDY OF  
REDUCTION FACTORS IN TYPICAL  
AMERICAN HOUSES WITH FALLOUT  
SHELTERS.

AD-722 856

\*MICHIGAN STATE UNIV EAST LANSING  
DEPT OF COMMUNICATION

THE HOME FALLOUT PROTECTION  
SURVEY AND COMMUNITY SHELTER PLANS  
IN MICHIGAN: THEIR IMPACT ON THE  
GENERAL PUBLIC. FAMILY  
COMMUNICATION ABOUT CIVIL DEFENSE  
TOPICS: A REPORT OF TWO PILOT  
STUDIES.

AD-724 164

HFPS-3

THE HOME FALLOUT PROTECTION  
SURVEY IN MICHIGAN: ITS IMPACT ON  
THE GENERAL PUBLIC.

AD-718 924

\*NATIONAL BUREAU OF STANDARDS  
WASHINGTON D C BUILDING RESEARCH  
DIV

NBS-10373

EARTH TEMPERATURES BENEATH FIVE  
DIFFERENT SURFACES.

AD-733 944

\*NAVAL CIVIL ENGINEERING LAB PORT  
HUENEME CALIF

NCCL-TR-736

DESIGN PROCEDURES FOR SHELTER  
ENTRANCE STRUCTURES TO RESIST BLAST  
OVERPRESSURE AND RADIATION EFFECTS.

AD-732 359

NCCL-TR-737

COST-OPTIMIZATION STUDY OF

UNCLASSIFIED

OAK-URS

SHELTER ENTRANCE STRUCTURES TO  
RESIST BLAST OVERPRESSURE AND  
RADIATION EFFECTS.

AD-732 360

\*\*\*

NCEL-T2-739

USE OF AN AERODYNAMIC  
OBSTRUCTION TO SHIELD A BLAST DOOR--  
RESULTS OF AN EXPERIMENTAL MODEL  
TEST.

AD-732 362

\*OAK RIDGE NATIONAL LAB TENN

\*\*\*

ORNL-TM-2457

SYSTEMS ANALYSIS OF U. S. CIVIL  
DEFENSE VIA NATIONAL BLAST SHELTER  
SYSTEMS,  
AD-701 763

\*PENNSYLVANIA STATE UNIV UNIVERSITY  
PARK DEPT OF ARCHITECTURAL  
ENGINEERING

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THE FEASIBILITY OF AUGMENTING  
BELOW-GRADE SHELTER HABITABILITY  
WITH CONDITIONED AIR.  
AD-701 132

\*PITTSBURGH UNIV PA DEPT OF  
SOCIOLOGY

\*\*\*

THE PUBLIC'S PERCEPTION OF  
LOCAL CIVILIAN DEFENSE EFFORTS AND  
FACILITIES.  
AD-711 118

\*RESEARCH TRIANGLE INST DURHAM N C  
OPERATIONS RESEARCH AND ECONOMICS  
DIV

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RTI-N-OU-400-F

VENTILATION KIT APPLICATION  
STUDY.  
AD-706 849

\*STANFORD RESEARCH INST MENLO PARK  
CALIF

\*\*\*

VENTILATING AND MIXING  
PROCESSES IN NONUNIFORM SHELTER

ENVIRONMENTS.

AD-708 574

\*\*\*

EXISTING STRUCTURES EVALUATION.  
PART IV. TWO-WAY ACTION WALLS.  
AD-719 306

\*\*\*

EXISTING STRUCTURES EVALUATION.  
PART V: APPLICATIONS.  
AD-733 343

\*SYSTEM DEVELOPMENT CORP SANTA MONICA  
CALIF

\*\*\*

SDC-TM-4213/005/00

FURTHER STUDY OF THE ADOPTION-  
DIFFUSION PROCESSES IN DEVELOPMENT  
OF SHELTER IN NEW CONSTRUCTION.  
AD-703 935

\*URS RESEARCH CO SAN MATEO CALIF

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URS-773-6

ANALYSIS OF THE EFFECT OF  
SHELTER OPENINGS ON BLAST  
PROTECTION.  
AD-724 710

\*\*\*

URS-796-4

DAMAGE TO THE DRUG INDUSTRY  
FROM NUCLEAR ATTACK AND RESULTING  
REQUIREMENTS FOR REPAIR AND  
RECLAMATION.  
AD-714 304

UNCLASSIFIED

SUBJECT INDEX

- \*AIR CONDITIONING EQUIPMENT  
FALLOUT SHELTERS  
THE FEASIBILITY OF AUGMENTING  
BELOW-GRADE SHELTER HABITABILITY  
WITH CONDITIONED AIR.\*  
AD-701 132
- \*ATTITUDES  
FALLOUT SHELTERS  
PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. SUMMARY  
REPORT.\*  
AD-728 848  
PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. APPENDICES.\*  
AD-728 849
- \*BEDDING  
FALLOUT SHELTERS  
BUNKING SYSTEM CONCEPTS.\*  
AD-722 243
- \*BEHAVIOR  
CIVIL DEFENSE SYSTEMS  
SYSTEM AND PERSONAL VARIABLES AS  
PREDICTORS OF INDIVIDUAL ADOPTION  
BEHAVIOR.\*  
AD-718 256
- THREAT EVALUATION  
AN EXPLORATORY STUDY TO  
DETERMINE THE EFFECTS OF PHYSICAL  
HAZARD ON SHELTER MANAGEMENT  
BEHAVIOR.\*  
AD-726 456
- \*BIBLIOGRAPHIES  
CIVIL DEFENSE SYSTEMS  
CIVIL DEFENSE SYSTEMS:  
SHELTERS. VOLUME I.\*  
AD-704 500
- \*BUILDINGS  
STATISTICAL ANALYSIS  
DISTRIBUTION OF SLANTABLE  
CONSTRUCTION.\*  
AD-705 387
- \*CIVIL DEFENSE SYSTEMS
- ATTITUDES  
THE HOME FALLOUT PROTECTION  
SURVEY AND RESULTING CHANGES IN  
SHELTER ADOPTION. SUMMARY REPORT.\*  
AD-724 727  
THE HOME FALLOUT PROTECTION  
SURVEY AND RESULTING CHANGES IN  
SHELTER ADOPTION. APPENDICES.\*  
AD-724 728  
PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. SUMMARY  
REPORT.\*  
AD-728 848  
PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. APPENDICES.\*  
AD-728 849
- BEDDING  
BUNKING SYSTEM CONCEPTS.\*  
AD-722 243
- BEHAVIOR  
SYSTEM AND PERSONAL VARIABLES AS  
PREDICTORS OF INDIVIDUAL ADOPTION  
BEHAVIOR.\*  
AD-718 256
- BIBLIOGRAPHIES  
CIVIL DEFENSE SYSTEMS:  
SHELTERS. VOLUME I.\*  
AD-704 500
- BUILDINGS  
DISTRIBUTION OF SLANTABLE  
CONSTRUCTION.\*  
AD-705 387
- FALLOUT SHELTERS  
DIFFUSION OF FALLOUT SHELTER  
INNOVATIONS. A STUDY OF PUBLIC AND  
HOME FALLOUT SHELTER ADOPTION IN  
THE U. S. A. 1964, 1966, 1968.\*  
AD-706 238  
VENTILATION KIT APPLICATION  
STUDY.\*  
AD-706 849  
VENTILATING AND MIXING PROCESSES  
IN NONUNIFORM SHELTER  
ENVIRONMENTS.\*

D-1

UNCLASSIFIED

CON-DIS

UNCLASSIFIED

AD-708 574  
SHELTER OCCUPANCY STUDIES OF  
VENTILATOR UTILIZATION.\*  
AD-714 308  
A UNIVERSITY DESIGN STUDY OF  
REDUCTION FACTORS IN TYPICAL  
AMERICAN HOUSES WITH FALLOUT  
SHELTERS.\*  
AD-722 856  
AN EXPLORATORY STUDY TO  
DETERMINE THE EFFECTS OF PHYSICAL  
HAZARD ON SHELTER MANAGEMENT  
BEHAVIOR.\*  
AD-726 456  
  
FEASIBILITY STUDIES  
SHELTER POTENTIAL IN PARKING  
GARAGES.\*  
AD-715 416  
  
LIGHTING EQUIPMENT  
LIGHTING KIT.\*  
AD-716 360  
  
NUCLEAR EXPLOSIONS  
ANALYSIS OF THE EFFECT OF  
SHELTER OPENINGS ON BLAST  
PROTECTION.\*  
AD-724 710  
  
PUBLIC OPINION  
THE PUBLIC'S PERCEPTION OF LOCAL  
CIVILIAN DEFENSE EFFORTS AND  
FACILITIES.\*  
AD-711 118  
THE HOME FALLOUT PROTECTION  
SURVEY AND COMMUNITY SHELTER PLANS  
IN MICHIGAN: THEIR IMPACT ON THE  
GENERAL PUBLIC. FAMILY  
COMMUNICATION ABOUT CIVIL DEFENSE  
TOPICS: A REPORT OF TWO PILOT  
STUDIES.\*  
AD-724 164  
  
SHELTERS  
SYSTEMS ANALYSIS OF U. S. CIVIL  
DEFENSE VIA NATIONAL BLAST SHELTER  
SYSTEMS.\*  
AD-701 763  
FURTHER STUDY OF THE ADOPTION-  
DIFFUSION PROCESSES IN DEVELOPMENT

OF SHELTER IN NEW CONSTRUCTION.\*  
AD-703 935  
EXISTING STRUCTURES EVALUATION.  
PART IV. TWO-WAY ACTION WALLS.\*  
AD-719 306  
DESIGN PROCEDURES FOR SHELTER  
ENTRANCE STRUCTURES TO RESIST BLAST  
OVERPRESSURE AND RADIATION  
EFFECTS.\*  
AD-732 359  
COST-OPTIMIZATION STUDY OF  
SHELTER ENTRANCE STRUCTURES TO  
RESIST BLAST OVERPRESSURE AND  
RADIATION EFFECTS.\*  
AD-732 360  
MODEL LARGE INDIVIDUAL SHELTER  
PLANS.\*  
AD-732 514  
EXISTING STRUCTURES EVALUATION.  
PART V: APPLICATIONS.\*  
AD-733 343  
  
WATER TANKS  
COLLAPSIBLE WATER CONTAINER  
KIT.\*  
AD-722 242  
  
\*CONTAINERS  
WATER  
NON-CORRODIBLE DUAL-PURPOSE  
WATER CONTAINER.\*  
AD-720 219  
  
\*COOLING + VENTILATING EQUIPMENT  
FALLOUT SHELTERS  
VENTILATION KIT APPLICATION  
STUDY.\*  
AD-706 849  
  
PUMPS  
AIR DISTRIBUTION IN SHELTERS DUE  
TO KEARNY PUMPS AND PEDAL  
VENTILATORS.\*  
AD-715 405  
  
\*DISASTERS  
ATTITUDES  
THE HOME FALLOUT PROTECTION  
SURVEY IN MICHIGAN: ITS IMPACT ON  
THE GENERAL PUBLIC.\*  
AD-718 924

D-2  
UNCLASSIFIED

UNCLASSIFIED

DOO-FAL

\*DOORS

BLAST

USE OF AN AERODYNAMIC  
OBSTRUCTION TO SHIELD A BLAST DOOR--  
RESULTS OF AN EXPERIMENTAL MODEL  
TEST.\*

AD-732 362

STRUCTURAL PROPERTIES

DESIGN PROCEDURES FOR SHELTER  
ENTRANCE STRUCTURES TO RESIST BLAST  
OVERPRESSURE AND RADIATION  
EFFECTS.\*

AD-732 359

COST-OPTIMIZATION STUDY OF  
SHELTER ENTRANCE STRUCTURES TO  
RESIST BLAST OVERPRESSURE AND  
RADIATION EFFECTS.\*

AD-732 360

\*DRUGS

INDUSTRIAL PLANTS

DAMAGE TO THE DRUG INDUSTRY FROM  
NUCLEAR ATTACK AND RESULTING  
REQUIREMENTS FOR REPAIR AND  
RECLAMATION.\*

AD-714 304

\*FALLOUT SHELTERS

ATTITUDES

PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. SUMMARY  
REPORT.\*

AD-728 848

PUBLIC RESPONSE TO COMMUNITY  
SHELTER PLANNING: DES MOINES AND  
POLK COUNTY, IOWA. APPENDICES.\*

AD-728 849

BEDDING

BUNKING SYSTEM CONCEPTS.\*

AD-722 243

BEHAVIOR

SYSTEM AND PERSONAL VARIABLES AS  
PREDICTORS OF INDIVIDUAL ADOPTION  
BEHAVIOR.\*

AD-718 256

BLAST

ANALYSIS OF THE EFFECT OF  
SHELTER OPENINGS ON BLAST  
PROTECTION.\*

AD-724 710

CIVIL DEFENSE SYSTEMS

THE HOME FALLOUT PROTECTION  
SURVEY AND COMMUNITY SHELTER PLANS  
IN MICHIGAN: THEIR IMPACT ON THE  
GENERAL PUBLIC. FAMILY  
COMMUNICATION ABOUT CIVIL DEFENSE  
TOPICS: A REPORT OF TWO PILOT  
STUDIES.\*

AD-724 164

THE HOME FALLOUT PROTECTION  
SURVEY AND RESULTING CHANGES IN  
SHELTER ADOPTION. APPENDICES.\*

AD-724 728

COOLING + VENTILATING EQUIPMENT  
VENTILATION KIT APPLICATION  
STUDY.\*

AD-706 849

DESIGN

A UNIVERSITY DESIGN STUDY OF  
REDUCTION FACTORS IN TYPICAL  
AMERICAN HOUSES WITH FALLOUT  
SHELTERS.\*

AD-722 856

FIRE SAFETY

FIRE LABORATORY TESTS. PHASE  
I.\*

AD-713 017

FOOD

STORAGE STABILITY OF CIVIL  
DEFENSE SHELTER RATIONS.\*

AD-712 365

STORAGE STABILITY OF CIVIL  
DEFENSE SHELTER RATIONS.\*

AD-726 965

LIGHTING EQUIPMENT

LIGHTING KIT.\*

AD-716 360

MANAGEMENT ENGINEERING

AN EXPLORATORY STUDY TO  
DETERMINE THE EFFECTS OF PHYSICAL

FIR-MAT

UNCLASSIFIED

HAZARD ON SHELTER MANAGEMENT  
BEHAVIOR.\*  
AD-726 456

PUBLIC OPINION  
DIFFUSION OF FALLOUT SHELTER  
INNOVATIONS. A STUDY OF PUBLIC AND  
HOME FALLOUT SHELTER ADOPTION IN  
THE U. S. A. 1964, 1966, 1968.\*  
AD-706 238

THERMAL PROPERTIES  
EARTH TEMPERATURES BENEATH FIVE  
DIFFERENT SURFACES.\*  
AD-733 944

VENTILATION  
THE FEASIBILITY OF AUGMENTING  
BELOW-GRADE SHELTER HABITABILITY  
WITH CONDITIONED AIR.\*  
AD-701 132  
VENTILATING AND MIXING PROCESSES  
IN NONUNIFORM SHELTER  
ENVIRONMENTS.\*

AD-708 574  
SHELTER OCCUPANCY STUDIES OF  
VENTILATOR UTILIZATION.\*  
AD-714 308  
AIR DISTRIBUTION IN SHELTERS DUE  
TO KEARNY PUMPS AND PEDAL  
VENTILATORS.\*  
AD-715 405

WATER SUPPLIES  
NON-COPRODIBLE DUAL-PURPOSE  
WATER CONTAINER.\*  
AD-720 219

WATER TANKS  
COLLAPSIBLE WATER CONTAINER  
KIT.\*  
AD-722 242

\*FIRE SAFETY  
FALLOUT SHELTERS  
FIRE LABORATORY TESTS. PHASE  
I.\*  
AD-713 017

\*FOOD  
STORAGE

STORAGE STABILITY OF CIVIL  
DEFENSE SHELTER RATIONS.\*  
AD-712 365  
STORAGE STABILITY OF CIVIL  
DEFENSE SHELTER RATIONS.\*  
AD-726 965

\*GAMMA EMISSION  
SHIELDING  
A STUDY OF THE PENETRATION OF  
GAMMA RADIATION THROUGH THIN SLABS  
ORIENTED AT RIGHT ANGLES TO EACH  
OTHER.\*  
AD-715 422

\*INDUSTRIAL PLANTS  
NUCLEAR EXPLOSION DAMAGE  
DAMAGE TO THE DRUG INDUSTRY FROM  
NUCLEAR ATTACK AND RESULTING  
REQUIREMENTS FOR REPAIR AND  
RECLAMATION.\*  
AD-714 304

\*INDUSTRIES  
NUCLEAR WARFARE  
DAMAGE TO THE DRUG INDUSTRY FROM  
NUCLEAR ATTACK AND RESULTING  
REQUIREMENTS FOR REPAIR AND  
RECLAMATION.\*  
AD-714 304

\*KILL PROBABILITIES  
URBAN AREAS  
A SENSITIVITY ANALYSIS OF URBAN  
BLAST FATALITY CALCULATIONS.\*  
AD-728 139

\*LIGHTING EQUIPMENT  
FALLOUT SHELTERS  
LIGHTING KIT.\*  
AD-716 360

\*MANAGEMENT ENGINEERING  
FALLOUT SHELTERS  
AN EXPLORATORY STUDY TO  
DETERMINE THE EFFECTS OF PHYSICAL  
HAZARD ON SHELTER MANAGEMENT  
BEHAVIOR.\*  
AD-726 456

\*MATHEMATICAL MODELS

D-4  
UNCLASSIFIED

UNCLASSIFIED

MET-SHE

- NUCLEAR EXPLOSION DAMAGE
  - A SENSITIVITY ANALYSIS OF URBAN BLAST FATALITY CALCULATIONS.\*  
AD-728 139
- \*METAL JOINTS
  - STRUCTURAL PROPERTIES
  - DYNAMIC TESTS OF LARGE REINFORCING BAR SPLICES.\*  
AD-723 045
- \*NUCLEAR EXPLOSION DAMAGE
  - BLAST
    - EXISTING STRUCTURES EVALUATION. PART IV. TWO-WAY ACTION WALLS.\*  
AD-719 306
  - BUILDINGS
    - EXISTING STRUCTURES EVALUATION. PART V: APPLICATIONS.\*  
AD-733 343
  - MATHEMATICAL MODELS
    - A SENSITIVITY ANALYSIS OF URBAN BLAST FATALITY CALCULATIONS.\*  
AD-728 139
- \*NUCLEAR WARFARE
  - INDUSTRIES
    - DAMAGE TO THE DRUG INDUSTRY FROM NUCLEAR ATTACK AND RESULTING REQUIREMENTS FOR REPAIR AND RECLAMATION.\*  
AD-714 304
  - URBAN AREAS
    - A SENSITIVITY ANALYSIS OF URBAN BLAST FATALITY CALCULATIONS.\*  
AD-728 139
- \*POPULATION
  - ATTITUDES
    - FURTHER STUDY OF THE ADOPTION-DIFFUSION PROCESSES IN DEVELOPMENT OF SHELTER IN NEW CONSTRUCTION.\*  
AD-703 935
- \*PUBLIC OPINION
  - CIVIL DEFENSE SYSTEMS
    - THE PUBLIC'S PERCEPTION OF LOCAL CIVILIAN DEFENSE EFFORTS AND
- FACILITIES.\*  
AD-711 118
- \*RADIOACTIVE FALLOUT
  - FALLOUT SHELTERS
    - A STUDY OF THE PENETRATION OF GAMMA RADIATION THROUGH THIN SLABS ORIENTED AT RIGHT ANGLES TO EACH OTHER.\*  
AD-715 422
- \*REINFORCING MATERIALS
  - JOINING
    - DYNAMIC TESTS OF LARGE REINFORCING BAR SPLICES.\*  
AD-723 045
- \*REVETMENTS
  - EFFECTIVENESS
    - USE OF AN AERODYNAMIC OBSTRUCTION TO SHIELD A BLAST DOOR--RESULTS OF AN EXPERIMENTAL MODEL TEST.\*  
AD-732 362
- \*SHELTERS
  - CIVIL DEFENSE SYSTEMS
    - CIVIL DEFENSE SYSTEMS: SHELTERS. VOLUME I.\*  
AD-704 500
    - MODEL LARGE INDIVIDUAL SHELTER PLANS.\*  
AD-732 514
- FEASIBILITY STUDIES
  - SYSTEMS ANALYSIS OF U. S. CIVIL DEFENSE VIA NATIONAL BLAST SHELTER SYSTEMS.\*  
AD-701 753
- NUCLEAR EXPLOSIONS
  - DESIGN PROCEDURES FOR SHELTER ENTRANCE STRUCTURES TO RESIST BLAST OVERPRESSURE AND RADIATION EFFECTS.\*  
AD-732 359
  - COST-OPTIMIZATION STUDY OF SHELTER ENTRANCE STRUCTURES TO RESIST BLAST OVERPRESSURE AND RADIATION EFFECTS.\*  
AD-732 360

D-5  
UNCLASSIFIED

SHI-WAT

UNCLASSIFIED

- USE OF AN AERODYNAMIC  
OBSTRUCTION TO SHIELD A BLAST DOOR--  
RESULTS OF AN EXPERIMENTAL MODEL  
TEST.\*  
AD-732 362
- PUBLIC OPINION  
THE HOME FALLOUT PROTECTION  
SURVEY IN MICHIGAN: ITS IMPACT ON  
THE GENERAL PUBLIC.\*  
AD-716 924
- REINFORCED CONCRETE  
DYNAMIC TESTS OF LARGE  
REINFORCING BAR SPLICES.\*  
AD-723 045
- URBAN AREAS  
SHELTER POTENTIAL IN PARKING  
GARAGES.\*  
AD-715 416
- VULNERABILITY  
A SENSITIVITY ANALYSIS OF URBAN  
BLAST FATALITY CALCULATIONS.\*  
AD-728 139
- \*SHIELDING  
GAMMA EMISSION  
A STUDY OF THE PENETRATION OF  
GAMMA RADIATION THROUGH THIN SLABS  
ORIENTED AT RIGHT ANGLES TO EACH  
OTHER.\*  
AD-713 422
- RADIOACTIVE FALLOUT  
A UNIVERSITY DESIGN STUDY OF  
REDUCTION FACTORS IN TYPICAL  
AMERICAN HOUSES WITH FALLOUT  
SHELTERS.\*  
AD-722 356
- \*SOILS  
TEMPERATURE  
EARTH TEMPERATURES BENEATH FIVE  
DIFFERENT SURFACES.\*  
AD-733 944
- \*TEST FACILITIES  
CONSTRUCTION  
FIRE LABORATORY TESTS. PHASE
- I.\*  
AD-713 017
- \*URBAN AREAS  
KILL PROBABILITIES  
A SENSITIVITY ANALYSIS OF URBAN  
BLAST FATALITY CALCULATIONS.\*  
AD-728 139
- \*VENTILATION  
FALLOUT SHELTERS  
THE FEASIBILITY OF AUGMENTING  
BELOW-GRADE SHELTER HABITABILITY  
WITH CONDITIONED AIR.\*  
AD-701 132
- \*WALLS  
VULNERABILITY  
EXISTING STRUCTURES EVALUATION.  
PART IV. TWO-WAY ACTION WALLS.\*  
AD-719 306  
EXISTING STRUCTURES EVALUATION.  
PART V: APPLICATIONS.\*  
AD-733 343
- \*WATER TANKS  
FALLOUT SHELTERS  
COLLAPSIBLE WATER CONTAINER  
KIT.\*  
AD-722 242

D-6  
UNCLASSIFIED

## UNCLASSIFIED

## TITLE INDEX

|                                                                                                                                                 |            |                                                                                                                                                                                                                       |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| AIR DISTRIBUTION IN<br>SHELTERS DUE TO KEARNY PUMPS AND<br>PEDAL VENTILATORS. (U)                                                               | AD-715 405 | DYNAMIC TESTS OF LARGE<br>REINFORCING BAR SPLICES. (U)                                                                                                                                                                | AD-723 045 |
| *COOLING + VENTILATING EQUIPMENT                                                                                                                |            | *METAL JOINTS                                                                                                                                                                                                         |            |
| ANALYSIS OF THE EFFECT<br>OF SHELTER OPENINGS ON BLAST<br>PROTECTION. (U)                                                                       | AD-724 710 | EARTH TEMPERATURES<br>BENEATH FIVE DIFFERENT SURFACES. (U)                                                                                                                                                            | AD-733 944 |
| *FALLOUT SHELTERS                                                                                                                               |            | *SOILS                                                                                                                                                                                                                |            |
| BUNKING SYSTEM<br>CONCEPTS. (U)                                                                                                                 | AD-722 243 | EXISTING STRUCTURES<br>EVALUATION. PART IV.<br>ACTION WALLS. (U)                                                                                                                                                      | AD-719 306 |
| *CIVIL DEFENSE SYSTEMS                                                                                                                          |            | *WALLS                                                                                                                                                                                                                |            |
| CIVIL DEFENSE SYSTEMS:<br>SHELTERS. VOLUME I. (U)                                                                                               | AD-704 500 | EXISTING STRUCTURES<br>EVALUATION. PART V:<br>APPLICATIONS. (U)                                                                                                                                                       | AD-733 343 |
| *CIVIL DEFENSE SYSTEMS                                                                                                                          |            | *CIVIL DEFENSE SYSTEMS                                                                                                                                                                                                |            |
| COLLAPSIBLE WATER<br>CONTAINER KIT. (U)                                                                                                         | AD-722 242 | AN EXPLORATORY STUDY TO<br>DETERMINE THE EFFECTS OF PHYSICAL<br>HAZARD ON SHELTER MANAGEMENT<br>BEHAVIOR. (U)                                                                                                         | AD-726 456 |
| *CIVIL DEFENSE SYSTEMS                                                                                                                          |            | *CIVIL DEFENSE SYSTEMS                                                                                                                                                                                                |            |
| COST-OPTIMIZATION STUDY<br>OF SHELTER ENTRANCE STRUCTURES TO<br>RESIST BLAST OVERPRESSURE AND<br>RADIATION EFFECTS. (U)                         | AD-732 360 | THE FEASIBILITY OF<br>AUGMENTING BELOW-GRADE SHELTER<br>HABITABILITY WITH CONDITIONED<br>AIR. (U)                                                                                                                     | AD-701 132 |
| *DOORS                                                                                                                                          |            | *FALLOUT SHELTERS                                                                                                                                                                                                     |            |
| DAMAGE TO THE DRUG<br>INDUSTRY FROM NUCLEAR ATTACK AND<br>RESULTING REQUIREMENTS FOR REPAIR<br>AND RECLAMATION. (U)                             | AD-714 304 | FIRE LABORATORY TESTS.<br>PHASE I. (U)                                                                                                                                                                                | AD-713 017 |
| *INDUSTRIAL PLANTS                                                                                                                              |            | *FALLOUT SHELTERS                                                                                                                                                                                                     |            |
| DESIGN PROCEDURES FOR<br>SHELTER ENTRANCE STRUCTURES TO<br>RESIST BLAST OVERPRESSURE AND<br>RADIATION EFFECTS. (U)                              | AD-732 359 | FURTHER STUDY OF THE<br>ADOPTION-DIFFUSION PROCESSES IN<br>DEVELOPMENT OF SHELTER IN NEW<br>CONSTRUCTION. (U)                                                                                                         | AD-703 935 |
| *DOORS                                                                                                                                          |            | *CIVIL DEFENSE SYSTEMS                                                                                                                                                                                                |            |
| DIFFUSION OF FALLOUT<br>SHELTER INNOVATIONS. A STUDY OF<br>PUBLIC AND HOME FALLOUT SHELTER<br>ADOPTION IN THE U. S. A. 1960.<br>1960. 1960. (U) | AD-706 238 | THE HOME FALLOUT<br>PROTECTION SURVEY AND COMMUNITY<br>SHELTER PLANS IN MICHIGAN: THEIR<br>IMPACT ON THE GENERAL PUBLIC.<br>FAMILY COMMUNICATION ABOUT CIVIL<br>DEFENSE TOPICS: A REPORT OF TWO<br>PILOT STUDIES. (U) | AD-724 160 |
| *CIVIL DEFENSE SYSTEMS                                                                                                                          |            | *CIVIL DEFENSE SYSTEMS                                                                                                                                                                                                |            |
| DISTRIBUTION OF<br>SLANTABLE CONSTRUCTION. (U)                                                                                                  | AD-705 387 | THE HOME FALLOUT<br>PROTECTION SURVEY AND RESULTING                                                                                                                                                                   | AD-724 728 |
| *CIVIL DEFENSE SYSTEMS                                                                                                                          |            |                                                                                                                                                                                                                       |            |

T-1

UNCLASSIFIED

THE-VEN

UNCLASSIFIED

CHANGES IN SHELTER ADOPTION.  
APPENDICES.(U)  
\*CIVIL DEFENSE SYSTEMS

THE HOME FALLOUT PROTECTION SURVEY AND RESULTING  
CHANGES IN SHELTER ADOPTION.  
SUMMARY REPORT.(U)  
\*CIVIL DEFENSE SYSTEMS AD-724 727

THE HOME FALLOUT PROTECTION SURVEY IN MICHIGAN: ITS  
IMPACT ON THE GENERAL PUBLIC.(U)  
\*DISASTERS AD-718 924

LIGHTING KIT.(U) AD-716 360  
\*LIGHTING EQUIPMENT

MODEL LARGE INDIVIDUAL SHELTER PLANS.(U) AD-732 514  
\*SHELTERS

NON-CORRODIBLE DUAL-PURPOSE WATER CONTAINER.(U) AD-720 219  
\*CONTAINERS

PUBLIC RESPONSE TO COMMUNITY SHELTER PLANNING: DES  
MOINES AND POLK COUNTY, IOWA.  
APPENDICES.(U)  
\*CIVIL DEFENSE SYSTEMS AD-728 849

PUBLIC RESPONSE TO COMMUNITY SHELTER PLANNING: DES  
MOINES AND POLK COUNTY, IOWA.  
SUMMARY REPORT.(U)  
\*CIVIL DEFENSE SYSTEMS AD-728 848

THE PUBLIC'S PERCEPTION OF LOCAL CIVILIAN DEFENSE EFFORTS  
AND FACILITIES.(U)  
\*CIVIL DEFENSE SYSTEMS AD-711 118

A SENSITIVITY ANALYSIS OF URBAN BLAST FATALITY  
CALCULATIONS.(U)  
\*SHELTERS AD-728 139

SHELTER OCCUPANCY STUDIES OF VENTILATOR  
UTILIZATION.(U) AD-714 308

\*FALLOUT SHELTERS

SHELTER POTENTIAL IN PARKING GARAGES.(U) AD-715 416  
\*SHELTERS

STORAGE STABILITY OF CIVIL DEFENSE SHELTER RATIONS.(U)  
\*FOOD AD-712 365

STORAGE STABILITY OF CIVIL DEFENSE SHELTER RATIONS.(U)  
\*FOOD AD-726 965

A STUDY OF THE PENETRATION OF GAMMA RADIATION  
THROUGH THIN SLABS ORIENTED AT  
RIGHT ANGLES TO EACH OTHER.(U)  
\*GAMMA EMISSION AD-715 422

SYSTEM AND PERSONAL VARIABLES AS PREDICTORS OF  
INDIVIDUAL ADOPTION BEHAVIOR.(U)  
\*BEHAVIOR AD-718 256

SYSTEMS ANALYSIS OF U.S. CIVIL DEFENSE VIA NATIONAL BLAST  
SHELTER SYSTEMS.(U)  
\*CIVIL DEFENSE SYSTEMS AD-701 763

A UNIVERSITY DESIGN STUDY OF REDUCTION FACTORS IN  
TYPICAL AMERICAN HOUSES WITH  
FALLOUT SHELTERS.(U)  
\*CIVIL DEFENSE SYSTEMS AD-722 856

USE OF AN AERODYNAMIC OBSTRUCTION TO SHIELD A BLAST DOOR--  
RESULTS OF AN EXPERIMENTAL MODEL  
TEST.(U)  
\*REVENEMENTS AD-732 362

VENTILATING AND MIXING PROCESSES IN NONUNIFORM SHELTER  
ENVIRONMENTS.(U)  
\*CIVIL DEFENSE SYSTEMS AD-708 974

VENTILATION KIT APPLICATION STUDY.(U)  
\*CIVIL DEFENSE SYSTEMS AD-706 849

T-2

UNCLASSIFIED

## UNCLASSIFIED

## CONTRACT INDEX

\*DAHC20-67-C-0119  
MICHIGAN STATE UNIV EAST LANSING  
DEPT OF COMMUNICATION  
HFPS-3  
AD-718 924  
AD-724 164

\*DAHC20-67-C-0122  
PITTSBURGH UNIV PA DEPT OF  
SOCIOLOGY  
AD-711 118

\*DAHC20-67-C-0123  
IOWA STATE UNIV AMES DEPT OF  
SOCIOLOGY AND ANTHROPOLOGY  
RURAL SOCIOLOGY-85A  
F AD-724 727  
RURAL SOCIOLOGY-85B  
F AD-724 728

\*DAHC20-67-C-0136  
STANFORD RESEARCH INST MENLO PARK  
CALIF  
AD-719 306  
F AD-733 343  
URS RESEARCH CO SAN MATEO CALIF  
URS-773-6  
F AD-724 710

\*DAHC20-68-C-0122  
AMERICAN INSTITUTES FOR RESEARCH  
PITTSBURGH PA  
AIR-77802-4/71-FR  
F AD-726 436  
AIR-77804-7/71-FR  
F AD-732 514

\*DAHC20-68-C-0123  
GENERAL AMERICAN TRANSPORTATION  
CORP CHICAGO ILL GENERAL AMERICAN  
RESEARCH DIV  
GARD-1480-F  
F AD-714 308  
GARD-1476-1-F  
F AD-715 405  
GARD-1508-F  
F AD-716 360  
GARD-1479-F  
F AD-720 219  
GARD-1478-F  
F AD-722 242

GARD-1509-F  
S AD-722 243

\*DAHC20-68-C-0153  
IIT RESEARCH INST CHICAGO ILL  
IITRI-J6151-FR  
F AD-705 387

\*DAHC20-68-C-0155  
STANFORD RESEARCH INST MENLO PARK  
CALIF  
F AD-708 574

\*DAHC20-68-C-0166  
RESEARCH TRIANGLE INST DUNHAM NC  
OPERATIONS RESEARCH AND ECONOMICS  
DIV  
RTI-R-OU-400-F  
F AD-706 849

\*DAHC20-68-C-0175  
PENNSYLVANIA STATE UNIV UNIVERSITY  
PARK DEPT OF ARCHITECTURAL  
ENGINEERING  
F AD-701 132

\*DAHC20-69-C-0103  
IOWA STATE UNIV AMES DEPT OF  
SOCIOLOGY AND ANTHROPOLOGY  
RURAL SOCIOLOGY-81  
F AD-706 238  
RURAL SOCIOLOGY-86  
F AD-718 256  
SOCIOLOGY-87A  
F AD-728 848  
SOCIOLOGY-87B  
F AD-728 849

\*DAHC20-69-C-0106  
SYSTEM DEVELOPMENT CORP SANTA  
MONICA CALIF  
SOC-TM-4213/005/00  
AD-703 935

\*DAHC20-69-C-0412  
KANSAS STATE UNIV MANHATTAN  
ENGINEERING EXPERIMENT STATION  
KEES-SR-92  
F AD-722 856

\*DAHC20-69-C-0410

C-1

UNCLASSIFIED

DAH-OCO

UNCLASSIFIED

APPLIED PARKING TECHNIQUES INC

RESTON VA

APT-1170

F AD-715 416

\*DAHC20-69-C-0415

GEORGIA EXPERIMENT STATION

EXPERIMENT

153-VIII-6ES

AD-712 365

GEORGIA UNIV EXPERIMENT DIV OF

FOOD SCIENCE

TR-153-9-FS

F AD-726 965

\*DAHC20-70-C-0203

ILLINOIS UNIV URBANA

NRSS-14

AD-715 422

\*DAHC20-70-C-0206

IIT RESEARCH INST CHICAGO ILL

F AD-713 017

\*DAHC20-70-C-0207

INSTITUTE FOR DEFENSE ANALYSES

ARLINGTON VA PROGRAM ANALYSIS

DIV

RP-P-762

AD-728 139

\*DAHC20-70-C-0208

URS RESEARCH CO SAN MATEO CALIF

URS-746-4

F AD-714 304

\*OCD-PS-64-284

OAK RIDGE NATIONAL LAB TENN

ORNL-TN-2457

AD-701 763

C-2

UNCLASSIFIED

## UNCLASSIFIED

## REPORT NUMBER INDEX

|                   |                     |
|-------------------|---------------------|
| 183-VIII-6ES      | NCEL-TR-737         |
| AD-712 365        | AD-732 360          |
| AEMES-TR-N-71-2   | NCEL-TR-739         |
| AD-723 045        | AD-732 362          |
| AIR-77802-4/71-FR | NRSS-14             |
| AD-726 456        | AD-715 422          |
| AIR-77804-7/71-FR | ORNL-TM-2457        |
| AD-732 514        | AD-701 763          |
| APT-1170          | RP-P-762            |
| AD-715 416        | AD-728 139          |
| DOC-TAS-70-36-1   | RTI-R-OU-400-F      |
| AD-704 500        | AD-706 849          |
| GARD-1476-1-F     | RURAL SOCIOLOGY-81  |
| AD-715 405        | AD-706 238          |
| GARD-1478-F       | RURAL SOCIOLOGY-85A |
| AD-722 242        | AD-724 727          |
| GARD-1479-F       | RURAL SOCIOLOGY-85B |
| AD-720 219        | AD-724 728          |
| GARD-1480-F       | RURAL SOCIOLOGY-86  |
| AD-714 308        | AD-718 256          |
| GARD-1508-F       | SDC-TM-4213/005/00  |
| AD-716 360        | AD-703 935          |
| GARD-1509-F       | SOCIOLOGY-87A       |
| AD-722 243        | AD-728 848          |
| MFPS-3            | SOCIOLOGY-87B       |
| AD-718 924        | AD-728 849          |
| IITRI-J6161-FR    | TR-153-9-FS         |
| AD-705 387        | AD-726 965          |
| KEES-SR-92        | URS-773-6           |
| AD-722 056        | AD-724 710          |
| NBS-18373         | URS-796-4           |
| AD-733 944        | AD-714 304          |
| NCEL-TR-734       |                     |
| AD-732 359        |                     |

R-1  
UNCLASSIFIED

UNCLASSIFIED

Security Classification

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| 13. ABSTRACT<br><br>This bibliography -- one in a series on Civil Defense Systems -- contains a compilation of references on Civil Defense Systems: Shelters. References included cover such topics as fallout structure evaluation; individual shelter plans for operations within the large shelter; design procedures for shelter entrance structures to resist blast overpressure and radiation effects; air distribution in shelters; storage stability of civil defense shelter rations, etc. Entries were processed into the AD data bank during the period January 1970 through January 1972. This volume updates an earlier bibliography, AD-704 500.<br><br>Corporate Author-Monitoring Agency, Subject, Title, Contract, and Report Number Indexes are included. |                                                                                           |                                                    |  |

UNCLASSIFIED

Security Classification

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|--------|----|--------|----|
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UNCLASSIFIED

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