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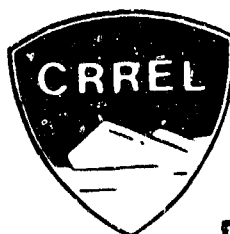
CBR OPERATIONS IN COLD WEATHER:
A BIBLIOGRAPHY
VOLUME 1

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U.S. Army Fellow
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RESEARCH DIRECTORATE

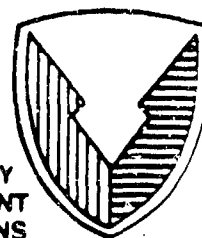
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November 1989



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19. ABSTRACT (Continue on reverse if necessary and identify by block number) Complex military operations can be severely hampered in cold weather. An extensive search of the literature has been completed, from which more than 60 reports and references have been selected for the comprehensive bibliography that is presented here in two volumes. Volume 1 includes only UNCLASSIFIED entries for convenient desktop reference, whereas, Volume 2 includes citations at the RESTRICTED, CONFIDENTIAL, and SECRET levels. Both volumes are cross-indexed by several schemes, including title, subject, author, and year. Abstracts for all references are provided, where available. This report is intended to provide an up-to-date guide to CBR operations in cold weather and to offer users the most authoritative information available concerning this topic.					
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Freezing
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Human factors
Ice
Low Temperature, low

Meteorology
Nuclear weapons
Polar regions
Protective clothing
Sampling methods

Snow
Visibility
Water
Wind
Winter (-)

PREFACE

The work described in this report was authorized under Project No. 1C162622-A553I, CB Simulants, Survivability and Systems Science. This work was started in September 1988 and completed in July 1989.

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CONTENTS

	Page
1. INTRODUCTION	7
2. INDEX BY SUBJECT	9
3. INDEX BY PRINCIPAL AUTHOR	31
4. INDEX BY TITLE OF REFERENCE	47
5. INDEX BY YEAR OF PUBLICATION	53
6. THE UNCLASSIFIED BIBLIOGRAPHY	61

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CBR OPERATIONS IN COLD WEATHER: A BIBLIOGRAPHY

VOLUME 1

1. INTRODUCTION

Complex military operations can be severely hampered in cold weather. Yet the literature of cold weather warfare involving chemical, biological and radiological (CBR) operations has remained fragmented and difficult to access. In an attempt to remedy this situation the authors have completed an extensive search of the related literature, and have carefully selected more than 60 reports and references of high quality for inclusion here. These represent the most authoritative and up-to-date information available concerning CBR operations in cold weather.

The bibliography is organized into two volumes. Volume 1, which is intended for convenient desktop reference, contains only unclassified entries but includes unclassified indexing to Volume 2, which contains information at the RESTRICTED, CONFIDENTIAL and SECRET levels. Abstracts are provided in the proper volume for all references, where these are available. Many earlier reports did not contain abstracts.

The volumes are cross-indexed by several schemes including by subject, by principal author (or by "corporate author" when authors' names are not given), by title of reference, and by year of publication.

The index by subject is in Section 2 of this volume. Keywords or descriptors are listed alphabetically with the DOD/DROLS numbers ("AD numbers") needed to access appropriate references. Throughout this report, all references are indexed using their DOD/DROLS numbers.

The index by principal author is in Section 3 of this volume. Where the names of individual authors are not known, the names of their organizations ("corporate authors") are given instead. Also shown are the year of publication, organization, title, and DOD/DROLS number.

The index by title of reference is in Section 4 of this volume. Only the title and DOD/DROLS number is given. References with classified titles are listed in this way. This indicates that their titles can be found in Volume 2 of this report.

The index by year of publication is in Section 5 of this volume. Listed are the authors names, title, and DOD/DROLS number for access.

The unclassified bibliography itself is in Section 6 of this volume. It is indexed by the DOD/DROLS access number, and lists all other available information including the abstract of each reference, if available. Classified abstracts appear only in Volume 2, and the words "(classified abstract)" indicate this here.

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IGNITERS	DOD/DROLS 366855L
IMPACT	DOD/DROLS A166321
INFRARED COUNTERMEASURES	DOD/DROLS B089094
INFRARED RADIATION	DOD/DROLS B115486
INFRARED SPECTRA	DOD/DROLS P200226
INJECTIONS (MEDICINE)	DOD/DROLS B009895 DOD/DROLS B954550L
INSTRUCTION MANUALS	DOD/DROLS 416493
INSTRUMENTATION	DOD/DROLS A158593 DOD/DROLS B115486
INTENSITY	DOD/DROLS 391458L DOD/DROLS B099962L
INTERACTIONS	DOD/DROLS B115486
INTERFACES	DOD/DROLS B121807
KITS	DOD/DROLS B066840L
KOREA	DOD/DROLS B099962L
LABORATORIES	DOD/DROLS B009895
LAYERS	DOD/DROLS B115486
LEWISITE	DOD/DROLS B066840L
LIGHT	DOD/DROLS A166321

LIGHT TRANSMISSION

DOD/DROLS B115486
DOD/DROLS P200226
DOD/DROLS P200228

LIQUIDS

DOD/DROLS B121807
DOD/DROLS B123137L

LITERATURE SURVEYS

DOD/DROLS A166321
DOD/DROLS A178349
DOD/DROLS B106382L
DOD/DROLS B111608L
DOD/DROLS B115298
DOD/DROLS B123137L

LOGISTICS

DOD/DROLS 279048
DOD/DROLS 353593
DOD/DROLS B111608L

LOGISTICS SUPPORT

DOD/DROLS A158593
DOD/DROLS A158729
DOD/DROLS C955028

LOW TEMPERATURE

DOD/DROLS 528525L
DOD/DROLS A166321
DOD/DROLS A178349
DOD/DROLS B066840L
DOD/DROLS B099962L
DOD/DROLS B115298
DOD/DROLS B122022L
DOD/DROLS B122961L
DOD/DROLS B123801L
DOD/DROLS B954550L
DOD/DROLS B955545L
DOD/DROLS C953524L
DOD/DROLS P200228

LOW TEMPERATURE RESEARCH

DOD/DROLS 290358

MAINTENANCE EQUIPMENT

DOD/DROLS 451291
DOD/DROLS 451292

MATERIALS

DOD/DROLS B111608L

MATHEMATICAL MODELS

DOD/DROLS 451292
DOD/DROLS B114740
DOD/DROLS C953524L
DOD/DROLS P200228

MEASUREMENT

DOD/DROLS B089095
DOD/DROLS B115486
DOD/DROLS B122961L

MEASURING INSTRUMENTS

DOD/DROLS B115486

MEDICINE

DOD/DROLS B099962L

METEOROLOGICAL DATA	DOD/DROLS B009895
METEOROLOGICAL PHENOMENA	DOD/DROLS 345779L DOD/DROLS 451291 DOD/DROLS 451292 DOD/DROLS B090991L DOD/DROLS P200226
METHODOLOGY	DOD/DROLS B123137L DOD/DROLS B955545L
METHYL RADICALS	DOD/DROLS B121807
METHYL SULFOXIDE	DOD/DROLS B122961L
MICHIGAN	DOD/DROLS B090991L
MICROMETEOROLOGY	DOD/DROLS 596030L DOD/DROLS 896351L
MICROORGANISMS	DOD/DROLS A166321
MILITARY DOCTRINE	DOD/DROLS C953524L
MILITARY EQUIPMENT	DOD/DROLS C950164L DOD/DROLS C950165L
MILITARY FACILITIES	DOD/DROLS 274259
MILITARY OPERATIONS	DOD/DROLS 264130 DOD/DROLS 272856 DOD/DROLS C950164L DOD/DROLS C950165L
MILITARY SUPPLIES	DOD/DROLS 366855L
MILITARY TRAINING	DOD/DROLS C950164L
MILLIMETER WAVES	DOD/DROLS B090991L DOD/DROLS B115486
MODELS	DOD/DROLS A178349 DOD/DROLS B115298
MOISTUREPROOFING	DOD/DROLS 366855L
MOUNTAINS	DOD/DROLS B099962L
MUSTARD AGENTS	DOD/DROLS B066840L DOD/DROLS B122961L DOD/DROLS B123801L DOD/DROLS B963860L
NATURAL RADIOACTIVITY	DOD/DROLS 272856

NAVAL SHORE FACILITIES	DOD/DROLS 264130
NERVE AGENTS	DOD/DROLS A178349 DOD/DROLS B066840L
NEUTRALIZATION	DOD/DROLS B123137L
NORTH AMERICA	DOD/DROLS B099962L
NORWAY	DOD/DROLS C955838
NUCLEAR BLAST	DOD/DROLS 391458L
NUCLEAR EXPLOSION DAMAGE	DOD/DROLS 391458L
NUCLEAR MAGNETIC RESONANCE	DOD/DROLS B114543
NUCLEAR RADIATION	DOD/DROLS 391458L
NUCLEAR WARFARE	DOD/DROLS A166321
NUCLEAR WEAPONS	DOD/DROLS 279048 DOD/DROLS 416493 DOD/DROLS A166321
OBSCURATION	DOD/DROLS B089094 DOD/DROLS B089095 DOD/DROLS B090991L DOD/DROLS P200226 DOD/DROLS P200228
OPERATION	DOD/DROLS B099962L
OPERATIONAL EFFECTIVENESS	DOD/DROLS B099962L
OPTICAL DATA	DOD/DROLS B115486
OPTICAL DETECTORS	DOD/DROLS B090991L
ORGANIC PHOSPHORUS COMPOUNDS	DOD/DROLS B121807
ORGANOPHOSPHATES	DOD/DROLS A178349
PAINTS	DOD/DROLS 366855L
PARTICLES	DOD/DROLS 596030L DOD/DROLS 896351L
PATIENT WRAPS	DOD/DROLS A173203
PERSONNEL	DOD/DROLS 353593 DOD/DROLS B099962L
PERSPIRATION	DOD/DROLS A173203

PHENOLS	DOD/DROLS B114331L
PHOSPHONATES	DOD/DROLS B121807
PHOSPHORUS	DOD/DROLS B089094 DOD/DROLS P200228
PHOTOLYSIS	DOD/DROLS B115298
PHYSICAL PROPERTIES	DOD/DROLS 596030L DOD/DROLS B123137L
PHYSIOLOGICAL EFFECTS	DOD/DROLS A173203
PHYSIOLOGY	DOD/DROLS A173203
POLAR REGIONS	DOD/DROLS 222753 DOD/DROLS 264130 DOD/DROLS 272856 DOD/DROLS 274259 DOD/DROLS 294093 DOD/DROLS 345779L DOD/DROLS 391458L DOD/DROLS 528525L DOD/DROLS B121807
PREDICTIONS	DOD/DROLS A178349
PRESSURE	DOD/DROLS 296248
PROTECTION	DOD/DROLS A166321
PROTECTIVE	DOD/DROLS 366855L
PROTECTIVE CLOTHING	DOD/DROLS 352690 DOD/DROLS 366855L DOD/DROLS A173203 DOD/DROLS B009895 DOD/DROLS B099962L DOD/DROLS B111608L DOD/DROLS C953524L
PROTECTIVE EQUIPMENT	DOD/DROLS A173203 DOD/DROLS B009895 DOD/DROLS B099962L DOD/DROLS C953524L
PROTECTIVE MASKS	DOD/DROLS 366855L DOD/DROLS B099962L
PROTOTYPES	DOD/DROLS A173203 DOD/DROLS B042605L DOD/DROLS B066840L
PSYCHOLOGY	DOD/DROLS B099962L

PYROLYSIS	DOD/DROLS B123137L
RADAR REFLECTIONS	DOD/DROLS B115486
RADIATION DOSAGE	DOD/DROLS 264130 DOD/DROLS 451292
RADIATION EFFECTS	DOD/DROLS 290358 DOD/DROLS 296248
RADIATION HAZARDS	DOD/DROLS 416493
RADIATION MONITORS	DOD/DROLS 451292
RADIOACTIVE CONTAMINATION	DOD/DROLS 451291 DOD/DROLS 451292
RADIOACTIVITY	DOD/DROLS 416493 DOD/DROLS 451291
RADIOLOGICAL DECONTAMINATION	DOD/DROLS 451292
RADIOLOGICAL MONITORS	DOD/DROLS 451291
RADIOLOGICAL WARFARE	DOD/DROLS 272856 DOD/DROLS A158729
RANGE (EXTREMES)	DOD/DROLS B122961L DOD/DROLS B123801L
RATES	DOD/DROLS B115298 DOD/DROLS B121807 DOD/DROLS B122022L DOD/DROLS B122961L
RECONNAISSANCE	DOD/DROLS 279048 DOD/DROLS A166321
RECOVERY	DOD/DROLS 896351L
REFLECTIVITY	DOD/DROLS B115486
RELIABILITY	DOD/DROLS A158593 DOD/DROLS A178349 DOD/DROLS B066840L
REQUIREMENTS	DOD/DROLS A158593
RESPIRATION	DOD/DROLS 596030L DOD/DROLS 896351L
ROADS	DOD/DROLS 676153
ROCKETS	DOD/DROLS 343006

ROOFS	DOD/DROLS 451291
ROTARY WINGS	DOD/DROLS 279048
SAFETY	DOD/DROLS 353593 DOD/DROLS A158593 DOD/DROLS B038724L
SAMPLERS	DOD/DROLS 352690 DOD/DROLS 596030L
SAMPLING	DOD/DROLS 352690 DOD/DROLS 352698 DOD/DROLS 451291 DOD/DROLS 451292 DOD/DROLS 596030L DOD/DROLS 896351L DOD/DROLS B042605L
SATURATION	DOD/DROLS B122961L
SCATTERING	DOD/DROLS 343006 DOD/DROLS 352690 DOD/DROLS B115486
SEDIMENTS	DOD/DROLS A178349
SEISMIC WAVES	DOD/DROLS B115486
SELF TREATMENT	DOD/DROLS B954550L
SENSITIVITY	DOD/DROLS B042605L
SERRATIA	DOD/DROLS 294093
SHELTERS	DOD/DROLS 272856 DOD/DROLS 345779L DOD/DROLS A166321 DOD/DROLS B099962L
SHOCK WAVES	DOD/DROLS 391458L
SIMULATION	DOD/DROLS 274259 DOD/DROLS 290358 DOD/DROLS 296248 DOD/DROLS 352698 DOD/DROLS 451291 DOD/DROLS 451292 DOD/DROLS C953524L
SLANT PATH	DOD/DROLS B115486
SMOKE	DOD/DROLS B089094 DOD/DROLS B090991L DOD/DROLS B115486

	DOD/DROLS P200226
	DOD/DROLS P200228
SMOKE GENERATORS	DOD/DROLS B089094
SMOKE MUNITIONS	DOD/DROLS B089095
	DOD/DROLS P200228
SMOKE SCREENS	DOD/DROLS B089094
	DOD/DROLS P200228
SNOW	DOD/DROLS 451291
	DOD/DROLS 451292
	DOD/DROLS 676153
	DOD/DROLS A166321
	DOD/DROLS A178349
	DOD/DROLS B089094
	DOD/DROLS B089095
	DOD/DROLS B090991L
	DOD/DROLS B114740
	DOD/DROLS B115298
	DOD/DROLS B115486
	DOD/DROLS B121807
	DOD/DROLS B122022L
	DOD/DROLS B963860L
	DOD/DROLS P200226
SNOW COVER	DOD/DROLS B089094
	DOD/DROLS B115298
	DOD/DROLS B115486
	DOD/DROLS B122022L
	DOD/DROLS P200228
SNOW REMOVAL	DOD/DROLS 451291
SNOW VEHICLES	DOD/DROLS 451291
	DOD/DROLS 451292
SOIL TESTS	DOD/DROLS B042605L
SOILS	DOD/DROLS A178349
SOLUBILITY	DOD/DROLS B115298
	DOD/DROLS B121807
SOLUTIONS (GENERAL)	DOD/DROLS B123801L
SOLUTIONS (MIXTURES)	DOD/DROLS B111608L
	DOD/DROLS B114543
SOLVENTS	DCD/DROLS B123137L
SORPTION	DOD/DROLS A178349
SPRAY NOZZLES	DOD/DROLS 596030L

SPRAY TANKS	DOD/DROLS 343006
STANNATES	DOD/DROLS 294093
STORAGE	DOD/DROLS A158593
STORMS	DOD/DROLS A166321
STRATEGIC WARFARE	DOD/DROLS 279048
SUBARCTIC REGIONS	DOD/DROLS B954550L
SURFACES	DOD/DROLS 290358 DOD/DROLS B115298 DOD/DROLS B121807 DOD/DROLS B122961L
SURVEYS	DOD/DROLS A166321
SURVIVAL(PERSONNEL)	DOD/DROLS B099962L DOD/DROLS C953524L
SYMPOSIA	DOD/DROLS B089095 DOD/DROLS B115486
TACTICAL AIR SUPPORT	DOD/DROLS 279048
TACTICAL ANALYSIS	DOD/DROLS B095941
TACTICAL WARFARE	DOD/DROLS 279048
TARGET ACQUISITION	DOD/DROLS B090991L
TARGET DETECTION	DOD/DROLS B090991L
TARGET SIGNATURES	DOD/DROLS B090991L
TEMPERATE REGIONS	DOD/DROLS A166321
TEMPERATURE	LDD/DROLS 222753 DOD/DROLS 294093 DOD/DROLS 296248 DOD/DROLS 343006 DOD/DROLS B009895 DOD/DROLS B115486 DOD/DROLS B122961L
TEMPERATURE INVERSION	DOD/DROLS B106382L
TENTS	DOD/DROLS B009895
TERRAIN	DOD/DROLS B115298 DOD/DROLS B115486

TEST AND EVALUATION	DOD/DROLS A173203
	DOD/DROLS B038724L
	DOD/DROLS B042605L
	DOD/DROLS B115298
TEST EQUIPMENT	DOD/DROLS B066840L
	DOD/DROLS B089095
TEST METHODS	DOD/DROLS 355685L
	DOD/DROLS A158593
	DOD/DROLS A158729
	DOD/DROLS B115298
	DOD/DROLS B955545L
TESTS	DOD/DROLS 272856
	DOD/DROLS 345779L
	DOD/DROLS 352698
	DOD/DROLS 353593
	DOD/DROLS 514709L
	DOD/DROLS 514727L
	DOD/DROLS 514730L
	DOD/DROLS 514731L
	DOD/DROLS 514798L
	DOD/DROLS 596057L
TETRAFLUOROETHYLENE RESINS	DOD/DROLS B121807
THERMAL INSULATION	DOD/DROLS 596030L
	DOD/DROLS B009895
THERMAL PROPERTIES	DOD/DROLS B115298
THERMAL STABILITY	DOD/DROLS B114543
THREAT EVALUATION	DOD/DROLS B095941
	DOD/DROLS B114740
THREATS	DOD/DROLS A173203
	DOD/DROLS B099962L
TIME DEPENDENCE	DOD/DROLS C953524L
TOXIC AGENTS	DOD/DROLS B009895
TOXIC HAZARDS	DOD/DROLS C953524L
TRACER STUDIES	DOD/DROLS 274259
	DOD/DROLS 596030L
	DOD/DROLS 896351L
TRACKING	DOD/DROLS B122022L
TRANSMISSOMETERS	DOD/DROLS B115486
	DOD/DROLS P200228

TRANSMITTANCE	DOD/DROLS B115486
TRANSPORTATION	DOD/DROLS A158593
UNDERWATER EXPLOSIONS	DOD/DROLS 391458L
UNMANNED	DOD/DROLS B115486
USSR	DOD/DROLS B095941 DOD/DROLS B099962L DOD/DROLS B123801L
V AGENTS	DOD/DROLS B955545L
VACUUM CLEANERS	DOD/DROLS 451291 DOD/DROLS 451292
VALIDATION	DOD/DROLS B115298
VALLEYS	DOD/DROLS B099962L
VAPOR PRESSURE	DOD/DROLS B122961L
VAPORIZATION	DOD/DROLS B122961L
VEHICLES	DOD/DROLS 676153
VELOCITY	DOD/DROLS B122961L
VIABILITY	DOD/DROLS 596030L DOD/DROLS 896351L
VISIBILITY	DOD/DROLS B089094 DOD/DROLS B090991L DOD/DROLS B106382L DOD/DROLS B115486
VISIBLE SPECTRA	DOD/DROLS B115486 DOD/DROLS P200226
VOLATILITY	DOD/DROLS A166321
VX AGENT	DOD/DROLS B066840L DOD/DROLS B122022L DOD/DROLS B123801L
WARFARE	DOD/DROLS 279048 DOD/DROLS B099962L DOD/DROLS B123137L
WARSAW PACT COUNTRIES	DOD/DROLS A166321
WATER	DOD/DROLS A048334 DOD/DROLS A166321 DOD/DROLS B066840L

	DOD/DROLS B111608L
	DOD/DROLS B121807
	DOD/DROLS B123801L
WATER ANALYSIS	DOD/DROLS B066840L
WATER POLLUTION	DOD/DROLS B066840L
WATER SUPPLIES	DOD/DROLS B066840L
	DOD/DROLS B111608L
WEATHER	DOD/DROLS B115486
WEIGHT REDUCTION	DOD/DROLS A173203
WHITE PHOSPHORUS	DOD/DROLS B089095
	DOD/DROLS P200228
WIND	DOD/DROLS 596030L
	DOD/DROLS A166321
WIND VELOCITY	DOD/DROLS B122961L
WINTER	DOD/DROLS A166321
	DOD/DROLS B089094
	DOD/DROLS B089095
	DOD/DROLS B090991L
	DOD/DROLS B099962L
	DOD/DROLS B115298
	DOD/DROLS B115486
	DOD/DROLS B121807
	DOD/DROLS B123137L
	DOD/DROLS P200226

3. INDEX BY PRINCIPAL AUTHOR

ADAMS D

- | | | | |
|------|---|--|----------------------|
| 1984 | KLIMEK W G ;DIETZ K
L ;ADAMS D ;FARMER W
M ;STALLINGS E S ; | SMOKE WEEK VI/SNOW TWO.
VOLUME 1A. OBSCURANT
CHARACTERIZATION
MEASUREMENTS SUMMARY. | DOD/DROLS
B089094 |
| 1984 | KLIMEK W G ;DIETZ K
L ;ADAMS D ;FARMER W
M ;STALLINGS E S ; | SMOKE WEEK VI/SNOW TWO.
VOLUME 1B. OBSCURANT
CHARACTERIZATION
MEASUREMENTS SUMMARY. | DOD/DROLS
B089095 |

AMOR A

- | | | | |
|------|--|--|----------------------|
| 1974 | WORSLEY D ;AMOR A
;HUGHES W P ;INCE N
; RAMSAY D ; | PHYSIOLOGICAL TRIAL OF COLD
WEATHER CLOTHING AND
EQUIPMENT. EXERCISE HONKY
TONK I. NORWAY 1974, | DOD/DROLS
B009895 |
|------|--|--|----------------------|

APKER D

- | | | | |
|------|--|--|----------------------|
| 1985 | HAMMERMAN G ;APKER D
;MARTELL P
;PETTERSON L ; | COLD-WEATHER COMBAT
ANALOGIES TO CHEMICAL
COMBAT. | DOD/DROLS
B095941 |
|------|--|--|----------------------|

ARMY ARCTIC TEST CENTER FORT GREELY ALASKA

- | | | | |
|------|--|---|---------------------|
| 1961 | ARMY ARCTIC TEST
CENTER FORT GREELY
ALASKA | GENERAL CONCEPT OF NORTHERN
OPERATIONS | DOD/DROLS
279048 |
|------|--|---|---------------------|

ARMY COMBAT DEVELOPMENTS COMMAND FORT MCCLELLAN AL CHEMICAL- BIOLOGICAL-RAD

- | | | | |
|------|--|--|-----------------------|
| 1960 | ARMY COMBAT
DEVELOPMENTS COMMAND
FORT MCCLELLAN AL
CHEMICAL-
BIOLOGICAL-RADIOLOGICAL
AGENCY | CW OPERATIONS IN LOW
TEMPERATURE AREAS. | DOD/DROLS
B955545L |
|------|--|--|-----------------------|

ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD

- | | | | |
|------|--|--|----------------------|
| 1985 | ARMY TEST AND
EVALUATION COMMAND
ABERDEEN PROVING
GROUND MD | COLD REGIONS ENVIRONMENTAL
TEST OF NUCLEAR, BIOLOGICAL,
AND CHEMICAL DECONTAMINATION
EQUIPMENT. | DOD/DROLS
A158593 |
| 1985 | ARMY TEST AND
EVALUATION COMMAND
ABERDEEN PROVING | COLD REGIONS LOGISTIC
SUPPORTABILITY TESTING OF
CHEMICAL, BIOLOGICAL, AND | DOD/DROLS
A158729 |

GROUND MD

RADIOLOGICAL DEFENSE
EQUIPMENT.

ASSING JAMES V

1965	HALLANGER N L ;ASSING JAMES V ;DAITCH A MICHAEL;	PROJECT NIGHT TRAIN - SUPPLEMENTAL ANALYSIS.	DOD/DROLS 514709L
------	--	---	----------------------

BAUM JOSEPH V

1987	REIDY JOHN J ;BAUM JOSEPH V ;HILL TERRANCE E ; RUDOLPH ROBERT C ;STANFORD THOMAS B ;	COLD WEATHER DECONTAMINATION OPERATIONS.	DOD/DROLS B111608L
------	--	---	-----------------------

BLANCH J H

1974	BLANCH J H	(CLASSIFIED TITLE)	DOD/DROLS C955838
1978	BLANCH J H ;ONGSTAD L ;	HYDROLYTIC STABILITY OF SOMAN.	DOD/DROLS B114543

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

1964	BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF	ANALYSES OF THE BG DATA FROM THE NIGHT TRAIN TRIALS.	DOD/DROLS 514730L
1964	BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF	NIGHT TRAIN ANALYSIS.	DOD/DROLS 514731L
1967	BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF	SUN DOWN TEST DATA ANALYSIS.	DOD/DROLS 514798L

BRADBURY HOWELL G

1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451291
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451292

BRANDLER PHILIP

1982	HERZ MATTHEW L ;BRANDLER PHILIP;	IMPACT OF LOW TEMPERATURE ON INDIVIDUAL CHEMICAL PROTECTION.	DOD/DROLS C953524L
------	-------------------------------------	--	-----------------------

BRITTON K B

1986	BRITTON K B ;	LOW TEMPERATURE EFFECTS ON SORPTION, HYDROLYSIS AND PHOTOLYSIS OF ORGANOPHOSPHONATES A LITERATURE REVIEW.	DOD/DROLS A178349
------	---------------	---	----------------------

BRUNO JOHN E

1987	STANSBURY MARY M; METZ DENNIS F; MCNALLY RICHARD E; BRUNO JOHN E	ARCTIC THREAT ASSESSMENT.	DOD/DROLS B114740
------	---	---------------------------	----------------------

CADARETTE BRUCE S

1986	CADARETTE BRUCE S ;SPECKMAN KAREN L ;STEPHENSON LOU A ;	PHYSIOLOGICAL ASSESSMENTS OF CHEMICAL THREAT PROTECTIVE PATIENT WRAPS IN THREE ENVIRONMENTS.	DOD/DROLS A173203
------	---	---	----------------------

CAMMARANO MARIO V

1963	WHEELER C HERBERT J R;CAMMARANO MARIO V ;	CIVIL DEFENSE MANUAL FOR RADIOLOGICAL DECONTAMINATION OF MUNICIPALITIES.	DOD/DROLS 416493
------	---	--	---------------------

CARSON JEFFERY L

1987	CARSON JEFFERY L ;	FIRST ARTICLE - INITIAL PRODUCTION TEST (FA- IPT) OF DECONTAMINATION KIT, INDIVIDUAL EQUIPMENT, M280.	DOD/DROLS B114331L
------	--------------------	--	-----------------------

CAUDLE KENNETH F

1968	CAUDLE KENNETH F ;FARLEY THOMAS E ;	NUCLEAR WEAPON EFFECTS IN ARCTIC ASW,	DOD/DROLS 391458L
------	--	--	----------------------

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

1987	COLD REGIONS	SNOW SYMPOSIUM VI HELD IN	DOD/DROLS
------	--------------	---------------------------	-----------

RESEARCH AND
ENGINEERING LAB
HANOVER NH

HANOVER, NEW HAMPSHIRE ON
AUGUST 1986. VOLUME 1.

B115486

COWN W B

1957	KETHLEY T W;FINCHER E L;COWN W B;	THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF AIRBORNE BACTERIA	DOD/DROLS 294093
------	--------------------------------------	---	---------------------

DAITCH A MICHAEL

1965	HALLANGER N L ;ASSING JAMES V ;DAITCH A MICHAEL;	PROJECT NIGHT TRAIN - SUPPLEMENTAL ANALYSIS.	DOD,DROLS 514709L
------	--	---	----------------------

DEFENCE NBC SCHOOL SALISBURY (ENGLAND)

1973	DEFENCE NBC SCHOOL SALISBURY (ENGLAND)	(CLASSIFIED TITLE)	DOD/DROLS C950164L
1974	DEFENCE NBC SCHOOL SALISBURY (ENGLAND)	(CLASSIFIED TITLE)	DOD/DROLS C950165L

DESERET TEST CENTER FORT DOUGLAS UTAH

1962	DESERET TEST CENTER FORT DOUGLAS UTAH	WHISTLE DOWN.	DOD/DROLS 352690
1963	DESERET TEST CENTER FORT DOUGLAS UTAH	NIGHT TRAIN.	DOD/DROLS 352698
1963	DESERET TEST CENTER FORT DOUGLAS UTAH	WHISTLE DOWN.	DOD/DROLS 345779L
1964	DESERET TEST CENTER FORT DOUGLAS UTAH	COPPER HEAD	DOD/DROLS 353593
1964	DESERET TEST CENTER FORT DOUGLAS UTAH	NIGHT TRAIN	DOD/DROLS 355685L

DIETZ K L

1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089094
1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089095

DUGWAY PROVING GROUND UTAH

1957	DUGWAY PROVING GROUND UTAH	BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES, OPERATION 'ICICLE' BW 330-B.	DOD/DROLS 596030L
1957	DUGWAY PROVING GROUND UTAH	BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES, OPERATION 'ICICLE', BW 330-B, TRIALS 3, 4, AND 5.	DOD/DROLS 896351L
1961	DUGWAY PROVING GROUND UTAH	POLAR RESEARCH. CHEMICAL CORPS PARTICIPATION IN LEAD DOG 60	DOD/DROLS 272856
1962	DUGWAY PROVING GROUND UTAH	CHEMICAL OPERATIONS IN LOW-TEMPERATURE AREAS.	DOD/DROLS 596051L
1962	DUGWAY PROVING GROUND UTAH	LOW TEMPERATURE FIELD TESTING OF CHEMICAL TOXICOLOGICAL AGENTS	DOD/DROLS 343006
1963	DUGWAY PROVING GROUND UTAH	SUMMARY OF CHEMICAL AND BIOLOGICAL OPERATIONS IN NORTHERN POLAR REGIONS.	DOD/DROLS 528525L

DUGWAY PROVING GROUND UTAH BW ASSESSMENT LABS

1955	DUGWAY PROVING GROUND UTAH BW ASSESSMENT LABS	(CLASSIFIED TITLE)	DOD/DROLS 596057L
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EBERSOLE J F

1984	EBERSOLE J F ;KLIMEK W ;	SMOKE WEEK VI/SNOW-TWO OBSERVATIONS,	DOD/DROLS P200226
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ELIOT JOHAN W

1948	ELIOT JOHAN W ;GODDARD WILLIAM L ;	(CLASSIFIED TITLE)	DOD/DROLS C955028
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ESSIG CARL F

1949	ESSIG CARL F ;MC SHANE WILLIAM P ;STREICHER EUGENE;FLEISCHMANN WALTER;	TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.	DOD/DROLS B954550L
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FARLEY THOMAS E

1968	CAUDLE KENNETH F ;FARLEY THOMAS E ;	NUCLEAR WEAPON EFFECTS IN ARCTIC ASW,	DOD/DROLS 391458L
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FARMER W M

1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089094
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1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089095
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FINCHER E L

1957	KETHLEY T W;FINCHER E L;COWN W B;	THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF AIRBORNE BACTERIA	DOD/DROLS 294093
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FLEISCHMANN WALTER

1949	ESSIG CARL F ;MC SHANE WILLIAM P ;STREICHER EUGENE;FLEISCHMANN WALTER;	TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.	DOD/DROLS B954550L
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FRIEL JOSEPH V

1988	FRIEL JOSEPH V; GRAHAM MICHAEL G; VANCHERI FRANK J	EVALUATION OF AQUEOUS-BASED DECONTAMINATING APPROACHES AT EXTREME COLD TEMPERATURES.	DOD/DROLS B123801L
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GODDARD WILLIAM L

1948	ELIOT JOHAN W ;GODDARD WILLIAM L ;	(CLASSIFIED TITLE)	DOD/DROLS C955028
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GRAHAM MICHAEL G

1988	FRIEL JOSEPH V; GRAHAM MICHAEL G; VANCHERI FRANK J	EVALUATION OF AQUEOUS-BASED DECONTAMINATING APPROACHES AT EXTREME COLD TEMPERATURES.	DOD/DROLS B123801L
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GRAYSON B L

1979	GRAYSON B L ;RICE W H ;	DEVELOPMENT TEST II (PROTOTYPE QUALIFICATION TEST - GOVERNMENT) OF XM9 CHEMICAL AGENT DETECTOR PAPER EXPOSED AT ENVIRONMENTAL SITES.	DOD/DROLS B042605L
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HALLANGER N L

1965	HALLANGER N L ;ASSING JAMES V ;DAITCH A MICHAEL;	PROJECT NIGHT TRAIN - SUPPLEMENTAL ANALYSIS.	DOD/DROLS 514709L
1967	JOHNSTON R C ;HANNEMANN M M D ;HALLANGER N L ;KROTH J R ;WESTLAKE WILFRED J ;	SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L

HAMILTON WILLIAM M

1953	HAMILTON WILLIAM M;KAYE SAUL;	PRINCIPLES AND PRACTICE OF BW DECONTAMINATION. 8. COLD WEATHER EVALUATION OF SOME BW DECONTAMINATION METHODS	DOD/DROLS 222753
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HAMMERMAN G

1985	HAMMERMAN G ;APKER D ;MARTELL P ;PETTERSON L ;	COLD-WEATHER COMBAT ANALOGIES TO CHEMICAL COMBAT.	DOD/DROLS B095941
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HANNA ALFRED E

1963	HANNA ALFRED E;	SIMULATED COLD WEATHER RADIOLOGICAL DECONTAMINATION OF RECOVERY EQUIPMENT.	DOD/DROLS 296248
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HANNEMANN M M D

1967	JOHNSTON R C ;HANNEMANN M M D ;HALLANGER N L ;KROTH J R ;WESTLAKE WILFRED J ;	SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L
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HELLBERG E N

1961	TAYLOR D;HELLBERG E N;	RADIOLOGICAL DECONTAMINATION METHODS AND EQUIPMENT FOR COLD-WEATHER REGIONS	DOD/DROLS 264130
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HERZ MATTHEW L

1982	HERZ MATTHEW L ;BRANDLER PHILIP;	IMPACT OF LOW TEMPERATURE ON INDIVIDUAL CHEMICAL PROTECTION.	DOD/DROLS C953524L
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HILL TERRANCE E

1987	REIDY JOHN J ;BAUM JOSEPH V ;HILL TERRANCE E ; RUDOLPH ROBERT C ;STANFORD THOMAS B ;	COLD WEATHER DECONTAMINATION OPERATIONS.	DOD/DROLS B111608L
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HUGHES W P

1974	WORSLEY D ;AMOR A ;HUGHES W P ;INCE N ; RAMSAY D ;	PHYSIOLOGICAL TRIAL OF COLD WEATHER CLOTHING AND EQUIPMENT. EXERCISE HONKY TONK I. NORWAY 1974,	DOD/DROLS B009895
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INCE N

1974	WORSLEY D ;AMOR A ;HUGHES W P ;INCE N ; RAMSAY D ;	PHYSIOLOGICAL TRIAL OF COLD WEATHER CLOTHING AND EQUIPMENT. EXERCISE HONKY TONK I. NORWAY 1974,	DOD/DROLS B009895
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JOHNSTON R C

1967	JOHNSTON R C ;HANNEMANN M M D ;HALLANGER N L ;KROTH J R ;WESTLAKE WILFRED J ;	SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L
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JORDON R

1984	JORDON R ;	SNOW-TWO DATA REPORT. VOLUME 2. SYSTEM PERFORMANCE.	DOD/DROLS B090991L
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KAYE SAUL

1953	HAMILTON WILLIAM M;KAYE SAUL;	PRINCIPLES AND PRACTICE OF BW DECONTAMINATION. 8. COLD WEATHER EVALUATION OF SOME BW DECONTAMINATION METHODS	DOD/DROLS 222753
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KETHLEY T W

1957	KETHLEY T W;FINCHER E L;COWN W B;	THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF AIRBORNE BACTERIA	DOD/DROLS 294093
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KLIMEK W G

1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089094
1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089095
1984	EBERSOLE J F ;KLIMEK W ;	SMOKE WEEK VI/SNOW-TWO OBSERVATIONS,	DOD/DROLS P200226

KROTH J R

1967	JOHNSTON R C ;HANNEMANN M M D ;HALLANGER N L ;KROTH J R ;WESTLAKE WILFRED J ;	SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L
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LEGGETT DANIEL C

1987	LEGGETT DANIEL C	PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD. PART 1. LITERATURE REVIEW AND THEORETICAL EVALUATION,	DOD/DROLS B115298
1988	LEGGETT DANIEL C	PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD,	DCD/DROLS B121807

MALONEY JOSEPH C

1962	MALONEY JOSEPH;MEREDITH JOHN L;	COLD WEATHER DECONTAMINATION STUDY - MCCOY I	DOD/DROLS 274259
1962	MALONEY JOSEPH C;MEREDITH JOHN L;	COLD WEATHER DECONTAMINATION STUDY - MCCOY II	DOD/DROLS 290358
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451291
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451292
1968	MALONEY JOSEPH C ;	EFFECTS OF VEHICULAR OPERATION ON CONTAMINATED SLUSHY ROADS.	DOD/DROLS 676153

MARTELL P

1985	HAMMERMAN G ;APKER D ;MARTELL P ;PETTERSON L ;	COLD-WEATHER COMBAT ANALOGIES TO CHEMICAL COMBAT.	DOD/DROLS B095941
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MATISE B K

1984	MATISE B K ;	MODELING THE EFFECTS OF A COLD ENVIRONMENT ON SCREENING SMOKES,	DOD/DROLS P200228
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MCNALLY RICHARD E

1987	STANSBURY MARY M; METZ DENNIS F; MCNALLY RICHARD E; BRUNO JOHN E	ARCTIC THREAT ASSESSMENT.	DOD/DROLS B114740
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MCSHANE WILLIAM P

1949	ESSIG CARL F ;MCSHANE WILLIAM P ;STREICHER EUGENE;FLEISCHMANN WALTER;	TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.	DOD/DROLS B954550L
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MEREDITH JOHN L

1962	MALONEY JOSEPH C;MEREDITH JOHN L;	COLD WEATHER DECONTAMINATION STUDY - MCCOY II	DOD/DROLS 290358
1962	MALONEY JOSEPH;MEREDITH JOHN L;	COLD WEATHER DECONTAMINATION STUDY - MCCOY I	DOD/DROLS 274259
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451291
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451292

METZ DENNIS F

1987	STANBURY MARY M; METZ DENNIS F; MCNALLY RICHARD E; BRUNO JOHN E	ARCTIC THREAT ASSESSMENT.	DOD/DROLS B114740
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MILLER WILLIAM R

1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451291
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451292

NELSON JOHN D

1979	NELSON JOHN D ;	DEVELOPMENT TEST II OF XM9 CHEMICAL AGENT DETECTOR PAPER.	DOD/DROLS B038724L
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ONGSTAD L

1978	BLANCH J H ;ONGSTAD L ;	HYDROLYTIC STABILITY OF SOMAN.	DOD/DROLS B114543
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PARISH HELEN J

1988 PODOLL R T; PARISH
HELEN J

EXPERIMENTAL MEASUREMENTS OF
THE PROPERTIES OF CHEMICAL
SURETY MATERIALS UNDER
CONDITIONS OF EXTREME COLD.

DOD/DROLS
B122961L

PARKER LOUISE V

1988 PARKER LOUISE V

DECONTAMINATION OF CHEMICAL
AGENTS ON THE WINTER
BATTLEFIELD| A LITERATURE
REVIEW AND PRELIMINARY
ASSESSMENT,

DOD/DROLS
B123137L

PARKIN JERRY L

1968 PARKIN JERRY L ;

DTC TEST 66-3 - SWAMP OAK.

DOD/DROLS
389838L

PERALTA ROBERTO

1953 PERALTA ROBERTO;

ARCTIC TESTS AT FORT
CHURCHILL, WINTER 1952-
1953.

DOD/DROLS
366855L

PETTERSON L

1985 HAMMERMAN G ;APKER D
;MARTELL P
;PETTERSON L ;

COLD-WEATHER COMBAT|
ANALOGIES TO CHEMICAL
COMBAT.

DOD/DROLS
B095941

PODOLL R T

1988 PODOLL R T; PARISH
HELEN J

EXPERIMENTAL MEASUREMENTS OF
THE PROPERTIES OF CHEMICAL
SURETY MATERIALS UNDER
CONDITIONS OF EXTREME COLD.

DOD/DROLS
B122961L

RAMSAY D

1974 WORSLEY D ;AMOR A
;HUGHES W P ;INCE N
; RAMSAY D ;

PHYSIOLOGICAL TRIAL OF COLD
WEATHER CLOTHING AND
EQUIPMENT. EXERCISE HONKY
TONK I. NORWAY 1974,

DOD/DROLS
B009895

REIDY JOHN J

1987 REIDY JOHN J ;BAUM

COLD WEATHER DECONTAMINATION

DOD/DROLS

JOSEPH V ;HILL TERRANCE E ; RUDOLPH ROBERT C ;STANFORD THOMAS B ;	OPERATIONS.	B111608L
RICE W H 1979 GRAYSON B L ;RICE W H ;	DEVELOPMENT TEST II (PROTOTYPE QUALIFICATION TEST - GOVERNMENT) OF XM9 CHEMICAL AGENT DETECTOR PAPER EXPOSED AT ENVIRONMENTAL SITES.	DOD/DROLS B042605L
RUDOLPH ROBERT C		
1987 REIDY JOHN J ;BAUM JOSEPH V ;HILL TERRANCE E ; RUDOLPH ROBERT C ;STANFORD THOMAS B ;	COLD WEATHER DECONTAMINATION OPERATIONS.	DOD/DROLS B111608L
SPECKMAN KAREN L		
1986 CADARETTE BRUCE S ;SPECKMAN KAREN L ;STEPHENSON LOU A ;	PHYSIOLOGICAL ASSESSMENTS OF CHEMICAL THREAT PROTECTIVE PATIENT WRAPS IN THREE ENVIRONMENTS.	DOD/DROLS A173203
STALLINGS E S		
1984 KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089094
1984 KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089095
STANFORD THOMAS B		
1987 REIDY JOHN J ;BAUM JOSEPH V ;HILL TERRANCE E ; RUDOLPH ROBERT C ;STANFORD THOMAS B ;	COLD WEATHER DECONTAMINATION OPERATIONS.	LOD/DROLS B111608L

STANSBURY MARY M

1987	STANSBURY MARY M; METZ DENNIS F; MCNALLY RICHARD E; BRUNO JOHN E	ARCTIC THREAT ASSESSMENT.	DOD/DROLS B114740
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STEARMAN ROEBERT L

1985	STEARMAN ROEBERT L ;	PROBLEMS OF CHEMICAL DEFENSE OPERATIONS IN EXTREME COLD.	DOD/DROLS B099962L
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STEPHENSON LOU A

1986	CADARETTE BRUCE S ;SPECKMAN KAREN L ;STEPHENSON LOU A ;	PHYSIOLOGICAL ASSESSMENTS OF CHEMICAL THREAT PROTECTIVE PATIENT WRAPS IN THREE ENVIRONMENTS.	DOD/DROLS A173203
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STREICHER EUGENE

1949	ESSIG CARL F ;MCSHANE WILLIAM P ;STREICHER EUGENE;FLEISCHMANN WALTER;	TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.	DOD/DROLS B954550L
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SUFFIELD EXPERIMENTAL STATION RALSTON (ALBERTA)

1953	SUFFIELD EXPERIMENTAL STATION RALSTON (ALBERTA)	THE EVAPORATION OF MUSTARD GAS IN COLD WEATHER.	DOD/DROLS B963860L
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TANNER WILLIAM S

1966	TANNER WILLIAM S ;	TEST 65-3--WEST SIDE.	DOD/DROLS 373325L
1968	TANNER WILLIAM S ;	DTC TEST 67-7.	DOD/DROLS 391137L

TAYLOR L

1961	TAYLOR D;HELLBERG E N;	RADIOLOGICAL DECONTAMINATION METHODS AND EQUIPMENT FOR COLD-WEATHER REGIONS	DOD/DROLS 264130
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TESKO S

1985	TESKO S ;	COLD WEATHER ASPECTS OF NBC (NUCLEAR, BIOLOGICAL AND CHEMICAL) OPERATIONS - A SURVEY OF SELECTED WARSAW PACT OPEN SOURCE LITERATURE.	DOD/DROLS A166321
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VANCHERI FRANK J

1982	VANCHERI FRANK J ;	ADVANCED DEVELOPMENT OF A DETECTOR KIT FOR CHEMICAL AGENTS IN WATER.	DOD/DROLS B066840L
1988	FRIEL JOSEPH V; GRAHAM MICHAEL G; VANCHERI FRANK J	EVALUATION OF AQUEOUS-BASED DECONTAMINATING APPROACHES AT EXTREME COLD TEMPERATURES.	DOD/DROLS B123801L

WESTLAKE WILFRED J

1967	JOHNSTON R C ;HANNEMANN M M D ;HALLANGER N L ;KROTH J R ;WESTLAKE WILFRED J ;	SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L
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WHEELER C HERBERT J R

1963	WHEELER C HERBERT J R;CAMMARANO MARIO V ;	CIVIL DEFENSE MANUAL FOR RADIOLOGICAL DECONTAMINATION OF MUNICIPALITIES.	DOD/DROLS 416493
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WORSLEY D

1974	WORSLEY D ;AMOR A ;HUGHES W P ;INCE N ; RAMSAY D ;	PHYSIOLOGICAL TRIAL OF COLD WEATHER CLOTHING AND EQUIPMENT. EXERCISE HONKY TONK I. NORWAY 1974,	DOD/DROLS B009895
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YUROW HARVEY W

1986	YUROW HARVEY W ;	ICE FOG AND CLATHRATE HYDRATE FORMATION AND THEIR CORRELATION WITH AGENT USE IN ARTIC REGIONS A LITERATURE SURVEY.	DOD/DROLS B106382L
1988	YUROW HARVEY W	THE USE OF AGENTS IN ARCTIC REGIONS BASIC	DOD/DROLS B122022L

**CONSIDERATIONS AND
PROPOSALS.**

4. INDEX BY TITLE OF REFERENCE

ADVANCED DEVELOPMENT OF A DETECTOR KIT FOR CHEMICAL AGENTS IN WATER.	DOD/DROLS B066840L
ANALYSES OF THE BG DATA FROM THE NIGHT TRAIN TRIALS.	DOD/DROLS 514730L
ARCTIC TESTS AT FORT CHURCHILL, WINTER 1952- 1953.	DOD/DROLS 366855L
ARCTIC THREAT ASSESSMENT.	DOD/DROLS B114740
BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES, OPERATION 'ICICLE' BW 330-B.	DOD/DROLS 596030L
BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES, OPERATION 'ICICLE', BW 330-B, TRIALS 3, 4, AND 5.	DOD/DROLS 896351L
CHEMICAL OPERATIONS IN LOW-TEMPERATURE AREAS.	DOD/DROLS 596051L
CIVIL DEFENSE MANUAL FOR RADIOLOGICAL DECONTAMINATION OF MUNICIPALITIES.	DOD/DROLS 416493
CLASSIFIED TITLE	DOD/DROLS 596057L DOD/DROLS C950164L DOD/DROLS C950165L DOD/DROLS C955028 DOD/DROLS C955838
COLD REGIONS ENVIRONMENTAL TEST OF NUCLEAR, BIOLOGICAL, AND CHEMICAL DECONTAMINATION EQUIPMENT.	DOD/DROLS A158593
COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL DEFENSE EQUIPMENT.	DOD/DROLS A158729
COLD WEATHER ASPECTS OF NBC (NUCLEAR, BIOLOGICAL AND CHEMICAL) OPERATIONS - A SURVEY OF SELECTED WARSAW PACT OPEN SOURCE LITERATURE.	DOD/DROLS A166321
COLD WEATHER DECONTAMINATION OPERATIONS.	DOD/DROLS B111608L
COLD WEATHER DECONTAMINATION STUDY - MCCOY I	DOD/DROLS 274259

COLD WEATHER DECONTAMINATION STUDY - MCCOY II	DOD/DROLS 290358
COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451291 DOD/DROLS 451292
COLD-WEATHER COMBAT ANALOGIES TO CHEMICAL COMBAT.	DOD/DROLS B095941
COPPER HEAD	DOD/DROLS 353593
CW OPERATIONS IN LOW TEMPERATURE AREAS.	DOD/DROLS B955545L
DECONTAMINATION OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD A LITERATURE REVIEW AND PRELIMINARY ASSESSMENT,	DOD/DROLS B123137L
DEVELOPMENT TEST II (PI .OTYPE QUALIFICATION TEST - GOVERNMENT) OF XM9 CHEMICAL AGENT DETECTOR PAPER EXPOSED AT ENVIRONMENTAL SITES.	DOD/DROLS B042605L
DEVELOPMENT TEST II OF XM9 CHEMICAL AGENT DETECTOR PAPER.	DOD/DROLS B038724L
DTC TEST 66-3 - SWAMP OAK.	DOD/DROLS 389838L
DTC TEST 67-7.	DOD/DROLS 391137L
EFFECTS OF VEHICULAR OPERATION ON CONTAMINATED SLUSHY ROADS.	DOD/DROLS 676153
EVALUATION OF AQUEOUS-BASED DECONTAMINATING APPROACHES AT EXTREME COLD TEMPERATURES.	DOD/DROLS B123801L
EXPERIMENTAL MEASUREMENTS OF THE PROPERTIES OF CHEMICAL SUKETY MATERIALS UNDER CONDITIONS OF EXTREME COLD.	DOD/DROLS B122961L
FIRST ARTICLE - INITIAL PRODUCTION TEST (FA- IPT) OF DECONTAMINATION KIT, INDIVIDUAL EQUIPMENT, M280.	DOD/DROLS B114331L
GENERAL CONCEPT OF NORTHERN OPERATIONS	DOD/DROLS 279048
HYDROLYTIC STABILITY OF SOMAN.	DOD/DROLS B114543

ICE FOG AND CLATHRATE HYDRATE FORMATION AND THEIR CORRELATION WITH AGENT USE IN ARTIC REGIONS A LITERATURE SURVEY.	DOD/DROLS B106382L
IMPACT OF LOW TEMPERATURE ON INDIVIDUAL CHEMICAL PROTECTION.	DOD/DROLS C953524L
LOW TEMPERATURE EFFECTS ON SORPTION, HYDROLYSIS AND PHOTOLYSIS OF ORGANOPHOSPHONATES A LITERATURE REVIEW.	DOD/DROLS A178349
LOW TEMPERATURE FIELD TESTING OF CHEMICAL TOXICOLOGICAL AGENTS	DOD/DROLS 343006
MODELING THE EFFECTS OF A COLD ENVIRONMENT ON SCREENING SMOKES,	DOD/DROLS P200228
NIGHT TRAIN	DOD/DROLS 355685L
NIGHT TRAIN ANALYSIS.	DOD/DROLS 514731L
NIGHT TRAIN.	DOD/DROLS 352698
NUCLEAR WEAPON EFFECTS IN ARCTIC ASW,	DOD/DROLS 391458L
PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD,	DOD/DROLS B121807
PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD. PART 1. LITERATURE REVIEW AND THEORETICAL EVALUATION,	DOD/DROLS B115298
PHYSIOLOGICAL ASSESSMENTS OF CHEMICAL THREAT PROTECTIVE PATIENT WRAPS IN THREE ENVIRONMENTS.	DOD/DROLS A173203
PHYSIOLOGICAL TRIAL OF COLD WEATHER CLOTHING AND EQUIPMENT. EXERCISE HONKY TONK I. NORWAY 1974,	DOD/DROLS B009895
POLAR RESEARCH. CHEMICAL CORPS PARTICIPATION IN LEAD DOG 60	DOD/DROLS 272856
PRINCIPLES AND PRACTICE OF BW DECONTAMINATION. 8. COLD WEATHER EVALUATION OF SOME BW DECONTAMINATION METHODS	DOD/DROLS 222753

PROBLEMS OF CHEMICAL DEFENSE OPERATIONS IN EXTREME COLD.	DOD/DROLS B099962L
PROJECT NIGHT TRAIN - SUPPLEMENTAL ANALYSIS.	DOD/DROLS 514709L
RADIOLOGICAL DECONTAMINATION METHODS AND EQUIPMENT FOR COLD-WEATHER REGIONS	DOD/DROLS 264130
SIMULATED COLD WEATHER RADIOLOGICAL DECONTAMINATION OF RECOVERY EQUIPMENT.	DOD/DROLS 296248
SMOKE WEEK VI/SNOW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089094
SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089095
SMOKE WEEK VI/SNOW-TWO OBSERVATIONS,	DOD/DROLS P200226
SNOW SYMPOSIUM VI HELD IN HANOVER, NEW HAMPSHIRE ON AUGUST 1986. VOLUME 1.	DOD/DROLS B115486
SNOW-TWO DATA REPORT. VOLUME 2. SYSTEM PERFORMANCE.	DOD/DROLS B090991L
SUMMARY OF CHEMICAL AND BIOLOGICAL OPERATIONS IN NORTHERN POLAR REGIONS.	DOD/DROLS 528525L
SUN DOWN TEST DATA ANALYSIS.	DOD/DROLS 514798L
SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L
TEST 65-3--WEST SIDE.	DOD/DROLS 373325L
TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.	DOD/DROLS B954550L
THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF AIRBORNE BACTERIA	DOD/DROLS 294093
THE EVAPORATION OF MUSTARD GAS IN COLD WEATHER.	DOD/DROLS B963860L
THE USE OF AGENTS IN ARCTIC REGIONS BASIC CONSIDERATIONS AND PROPOSALS.	DOD/DROLS B122022L

WHISTLE DOWN.

DOD/DROLS 345779L
DOD/DROLS 352690

BLANK

5. INDEX BY YEAR OF PUBLICATION

1948

1948	ELIOT JOHAN W ;GODDARD WILLIAM L ;	(CLASSIFIED TITLE)	DOD/DROLS C955028
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1949

1949	ESSIG CARL F ;MCSHANE WILLIAM P ;STREICHER EUGENE;FLE SCHMANN WALTER;	TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.	DOD/DROLS B954550L
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1953

1953	HAMILTON WILLIAM M;KAYE SAUL;	PRINCIPLES AND PRACTICE OF BW DECONTAMINATION. 8. COLD WEATHER EVALUATION OF SOME BW DECONTAMINATION METHODS	DOD/DROLS 222753
1953	PERALTA ROBERTO;	ARCTIC TESTS AT FORT CHURCHILL, WINTER 1952- 1953.	DOD/DROLS 366855L
1953	SUFFIELD EXPERIMENTAL STATION PALSTON (ALBERTA)	THE EVAPORATION OF MUSTARD GAS IN COLD WEATHER.	DOD/DROLS B963860L

1955

1955	DUGWAY PROVING GROUND UTAH BW ASSESSMENT LAB.	(CLASSIFIED TITLE)	DOD/DROLS 596057L
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1957

1957	DUGWAY PROVING GROUND UTAH	BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES, OPERATION 'ICICLE' BW 330-B.	DOD/DROLS 596030L
1957	DUGWAY PROVING GROUND UTAH	BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES, OPERATION 'ICICLE', BW 330-B, TRIALS 3, 4, AND 5.	DOD/DROLS 896351L
1957	KETHLEY T W;FINCHER E L;COWN W B;	THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF AIRBORNE BACTERIA	DOD/DROLS 294093

1960

1960	ARMY COMBAT DEVELOPMENTS COMMAND FORT MCCLELLAN AL CHEMICAL- BIOLOGICAL-RADIOLOGICAL AGENCY	CW OPERATIONS IN LOW TEMPERATURE AREAS.	DOD/DROLS B955545L
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1961

1961	ARMY ARCTIC TEST CENTER FORT GREELY ALASKA	GENERAL CONCEPT OF NORTHERN OPERATIONS	DOD/DROLS 279048
1961	DUGWAY PROVING GROUND UTAH	POLAR RESEARCH. CHEMICAL CORPS PARTICIPATION IN LEAD DOG 60	DOD/DROLS 272856
1961	TAYLOR D;HELLBERG E N;	RADIOLOGICAL DECONTAMINATION METHODS AND EQUIPMENT FOR COLD-WEATHER REGIONS	DOD/DROLS 264130

1962

1962	DESERET TEST CENTER FORT DOUGLAS UTAH	WHISTLE DOWN.	DOD/DROLS 352690
1962	DUGWAY PROVING GROUND UTAH	CHEMICAL OPERATIONS IN LOW-TEMPERATURE AREAS.	DOD/DROLS 596051L
1962	DUGWAY PROVING GROUND UTAH	LOW TEMPERATURE FIELD TESTING OF CHEMICAL TOXICOLOGICAL AGENTS	DOD/DROLS 343006
1962	MALONEY JOSEPH C;MEREDITH JOHN L;	COLD WEATHER DECONTAMINATION STUDY - MCCOY II	DOD/DROLS 290358
1962	MALONEY JOSEPH;MEREDITH JOHN L;	COLD WEATHER DECONTAMINATION STUDY - MCCOY I	DOD/DROLS 274259

1963

1963	DESERET TEST CENTER FORT DOUGLAS UTAH	NIGHT TRAIN.	DOD/DROLS 352698
1963	DESERET TEST CENTER FORT DOUGLAS UTAH	WHISTLE DOWN.	DOD/DROLS 345779L
1963	DUGWAY PROVING GROUND UTAH	SUMMARY OF CHEMICAL AND BIOLOGICAL OPERATIONS IN	DOD/DROLS 528525L

NORTHERN POLAR REGIONS.

1963	HANNA ALFRED E;	SIMULATED COLD WEATHER RADIOLOGICAL DECONTAMINATION OF RECOVERY EQUIPMENT.	DOD/DROLS 296248
1963	WHEELER C HERBERT J R;CAMMARANO MARIO V ;	CIVIL DEFENSE MANUAL FOR RADIOLOGICAL DECONTAMINATION OF MUNICIPALITIES.	DOD/DROLS 416493
1964			
1964	BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF	ANALYSES OF THE BG DATA FROM THE NIGHT TRAIN TRIALS.	DOD/DROLS 514730L
1964	BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF	NIGHT TRAIN ANALYSIS.	DOD/DROLS 514731L
1964	DESERET TEST CENTER FORT DOUGLAS UTAH	COPPER HEAD	DOD/DROLS 353593
1964	DESERET TEST CENTER FORT DOUGLAS UTAH	NIGHT TRAIN	DOD/DROLS 355685L
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451291
1964	MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER WILLIAM R ;	COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,	DOD/DROLS 451292
1965			
1965	HALLANGER N L ;ASSING JAMES V ;DAITCH A MICHAEL;	PROJECT NIGHT TRAIN - SUPPLEMENTAL ANALYSIS.	DOD/DROLS 514709L
1966			
1966	TANNER WILLIAM S ;	TEST 65-3---WEST SIDE.	DOD/DROLS 373325L
1967			
1967	BOOZ-ALLEN APPLIED RESEARCH INC LOS	SUN DOWN TEST DATA ANALYSIS.	DOD/DROLS 514798L

ANGELES CALIF

1967	JOHNSTON R C ;HANNEMANN M M D ;HALLANGER N L ;KROTH J R ;WESTLAKE WILFRED J ;	SWAMP OAK TEST DATA ANALYSIS.	DOD/DROLS 514727L
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1968

1968	CAUDLE KENNETH F ;FARLEY THOMAS E ;	NUCLEAR WEAPON EFFECTS IN ARCTIC ASW,	DOD/DROLS 391458L
1968	MALONEY JOSEPH C ;	EFFECTS OF VEHICULAR OPERATION ON CONTAMINATED SLUSHY ROADS.	DOD/DROLS 676153
1968	PARKIN JERRY L ;	DTC TEST 66-3 - SWAMP OAK.	DOD/DROLS 389838L
1968	TANNER WILLIAM S ;	DTC TEST 67-7.	DOD/DROLS 391137L

1973

1973	DEFENCE NBC SCHOOL SALISBURY (ENGLAND)	(CLASSIFIED TITLE)	DOD/DROLS C950164L
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1974

1974	BLANCH J H	(CLASSIFIED TITLE)	DOD/DROLS C955838
1974	DEFENCE NBC SCHOOL SALISBURY (ENGLAND)	(CLASSIFIED TITLE)	DOD/DROLS C950165L
1974	WORSLEY D ;AMOR A ;HUGHES W P ;INCE N ; RAMSAY D ;	PHYSIOLOGICAL TRIAL OF COLD WEATHER CLOTHING AND EQUIPMENT. EXERCISE HONKY TONK I. NORWAY 1974,	DOD/DROLS B009895

1978

1978	BLANCH J H ;ONGSTAD L ;	HYDROLYTIC STABILITY OF SOMAN.	DOD/DROLS B114543
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1979

1979	GRAYSON B L ;RICE W H ;	DEVELOPMENT TEST II (PROTOTYPE QUALIFICATION)	DOD/DROLS B042605L
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TEST - GOVERNMENT) OF XM9
CHEMICAL AGENT DETECTOR
PAPER EXPOSED AT
ENVIRONMENTAL SITES.

1979	NELSON JOHN D ;	DEVELOPMENT TEST II OF XM9 CHEMICAL AGENT DETECTOR PAPER.	DOD/DROLS B038724L
1982			
1982	HERZ MATTHEW L ;BRANDLER PHILIP;	IMPACT OF LOW TEMPERATURE ON INDIVIDUAL CHEMICAL PROTECTION.	DOD/DROLS C953524L
1982	VANCHERI FRANK J ;	ADVANCED DEVELOPMENT OF A DETECTOR KIT FOR CHEMICAL AGENTS IN WATER.	DOD/DROLS B066840L
1984			
1984	EBERSOLE J F ;KLIMEK W ;	SMOKE WEEK VI/SNOW-TWO OBSERVATIONS,	DOD/DROLS P200226
1984	JORDON R ;	SNOW-TWO DATA REPORT. VOLUME 2. SYSTEM PERFORMANCE.	DOD/DROLS B090991L
1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089094
1984	KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS E S ;	SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.	DOD/DROLS B089095
1984	MATISE B K ;	MODELING THE EFFECTS OF A COLD ENVIRONMENT ON SCREENING SMOKES,	DOD/DROLS P200223
1985			
1985	ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD	COLD REGIONS ENVIRONMENTAL TEST OF NUCLEAR, BIOLOGICAL, AND CHEMICAL DECONTAMINATION EQUIPMENT.	DOD/DROLS A158593
1985	ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD	COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL DEFENSE	DOD/DROLS A158729

EQUIPMENT.

1985	HAMMERMAN G ;APKER D ;MARTELL P ;PETTERSON L ;	COLD-WEATHER COMBAT ANALOGIES TO CHEMICAL COMBAT.	DOD/DROLS B095941
1985	STEARMAN ROEBERT L ;	PROBLEMS OF CHEMICAL DEFENSE OPERATIONS IN EXTREME COLD.	DOD/DROLS B099962L
1985	TESKO S ;	COLD WEATHER ASPECTS OF NBC (NUCLEAR, BIOLOGICAL AND CHEMICAL) OPERATIONS - A SURVEY OF SELECTED WARSAW PACT OPEN SOURCE LITERATURE.	DOD/DROLS A166321

1986

1986	BRITTON K B ;	LOW TEMPERATURE EFFECTS ON SORPTION, HYDROLYSIS AND PHOTOLYSIS OF ORGANOPHOSPHONATES A LITERATURE REVIEW.	DOD/DROLS A178349
1986	CADARETTE BRUCE S ;SPECKMAN KAREN L ;STEPHENSON LOU A ;	PHYSIOLOGICAL ASSESSMENTS OF CHEMICAL THREAT PROTECTIVE PATIENT WRAPS IN THREE ENVIRONMENTS.	DOD/DROLS A173203
1986	YUROW HARVEY W ;	ICE FOG AND CLATHRATE HYDRATE FORMATION AND THEIR CORRELATION WITH AGENT USE IN ARTIC REGIONS A LITERATURE SURVEY.	DOD/DROLS B106382L

1987

1987	CARSON JEFFERY L ;	FIRST ARTICLE - INITIAL PRODUCTION TEST (FA- IPT) OF DECONTAMINATION KIT, INDIVIDUAL EQUIPMENT, M280.	DOD/DROLS B114331L
1987	COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH	SNOW SYMPOSIUM VI HELD IN HANOVER, NEW HAMPSHIRE ON AUGUST 1986. VOLUME 1.	DOD/DROLS B115486
1987	LEGGETT DANIEL C	PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD. PART 1. LITERATURE REVIEW AND THEORETICAL EVALUATION,	DOD/DROLS B115298

1987	REIDY JOHN J ;BAUM JOSEPH V ;HILL TERRANCE E ; RUDOLPH ROBERT C ;STANFORD THOMAS B ;	COLD WEATHER DECONTAMINATION OPERATIONS.	DOD/DROLS B111608L
1987	STANSBURY MARY M; METZ DENNIS F; MCNALLY RICHARD E; BRUNO JOHN E	ARCTIC THREAT ASSESSMENT.	DOD/DROLS B114740
1988			
1988	FRIEL JOSEPH V; GRAHAM MICHAEL G; VANCHERI FRANK J	EVALUATION OF AQUEOUS-BASED DECONTAMINATING APPROACHES AT EXTREME COLD TEMPERATURES.	DOD/DROLS B123801L
1988	LEGGETT DANIEL C	PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD,	DOD/DROLS B121807
1988	PARKER LOUISE V	DECONTAMINATION OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD A LITERATURE REVIEW AND PRELIMINARY ASSESSMENT,	DOD/DROLS B123137L
1988	PODOLL R T; PARISH HELEN J	EXPERIMENTAL MEASUREMENTS OF THE PROPERTIES OF CHEMICAL SURETY MATERIALS UNDER CONDITIONS OF EXTREME COLD.	DOD/DROLS B122961L
1988	YUROW HARVEY W	THE USE OF AGENTS IN ARCTIC REGIONS BASIC CONSIDERATIONS AND PROPOSALS.	DOD/DROLS B122022L

BLANK

6. THE UNCLASSIFIED BIBLIOGRAPHY

DOD/DROLS 222753

1953

PRINCIPLES AND PRACTICE OF BW DECONTAMINATION. 8. COLD
WEATHER EVALUATION OF SOME BW DECONTAMINATION METHODS

ARMY BIOLOGICAL LABS FREDERICK MD

HAMILTON WILLIAM M; KAYE SAUL;

XXXXXX HC COST: \$ 5.00

(Abstract not available)

DOD/DROLS 264130

1961

RADIOLOGICAL DECONTAMINATION METHODS AND EQUIPMENT FOR
COLD-WEATHER REGIONS

NAVAL CIVIL ENGINEERING LAB PORT HUENEME CALIF

TAYLOR D; HELLBERG E N;

88P HC COST: \$ 5.00 NCEL-TR-105

THE EFFECTS OF COLD WEATHER UPON THE OPERATION OF THE BASIC
RADIOLOGICAL RECOVERY PLAN ARE POINTED OUT; THE MAJOR
PROBLEM AREAS MOST LIKELY TO BE ENCOUNTERED IN RECOVERING A
FIXED MILITARY INSTALLATION SUBJECTED TO RADIOLOGICAL
CONTAMINATION IN COLD CLIMATIC CONDITIONS ARE OUTLINED, AND
METHODS AND EQUIPMENT TO BE USED FOR RADIOLOGICAL
DECONTAMINATION ARE INDICATED AND ILLUSTRATED FOR VARIOUS
COLD-WEATHER CONDITIONS. (AUTHOR)

DOD/DROLS 272856

1961

POLAR RESEARCH. CHEMICAL CORPS PARTICIPATION IN LEAD DOG 60

DUGWAY PROVING GROUND UTAH

DUGWAY PROVING GROUND UTAH

XXXXXX HC COST: \$ 5.00 TR277

THE PERFORMANCE OF THE CHEMICAL CORPS EQUIPMENT TESTED
DURING OPERATION LEAD DOG 60 INDICATES THAT IT IS
ESSENTIALLY SATISFACTORY FOR USE IN THE POLAR ENVIRONMENT.
THE EQUIPMENT WAS TESTED DURING PERIODS OF BLOWING SNOW AND
TEMPERATURES RANGING FROM -20 F TO A MAXIMUM OF 46 F. SIX
M17 PROTECTIVE MASKS WERE FOUND TO BE COMFORTABLE AND
EFFICIENT. FIVE M6 FILTER UNITS FUNCTIONED SATISFACTORYLY
AT ALL TIMES. M18 SMOKE GRENADES FUNCTIONED
SATISFACTORYLY AT ALL TIMES. THE FACT THAT RED SMOKE WAS
THE EASIEST TO IDENTIFY ON THE EDGE OR MARGINAL AREAS OF

THE ICECAP AND THE GREEN SMOKE WAS THE EASIEST TO IDENTIFY ON THE MAIN PART OF THE ICECAP MAY CALL FOR A CHANGE IN METHODS FOR THE USE OF SIGNALING GRENADES IN THE POLAR REGION. THE RADIOLOGICAL BACKGROUND MONITORING INDICATES THAT THE EASTERN PORTION OF GREENLAND, ON THE AVERAGE, HAS A HIGHER BACKGROUND COUNT THAN THE WESTERN PORTION OF THE ISLAND. (AUTHOR)

DOD/DROLS 274259

1962

COLD WEATHER DECONTAMINATION STUDY - MCCOY I
ARMY NUCLEAR DEFENSE LAB EDGEWOOD ARSENAL MD
MALONEY JOSEPH;MEREDITH JOHN L;
XXXXXX HC COST: \$ 5.00 TR24

(Abstract not available)

DOD/DROLS 279048

1961

GENERAL CONCEPT OF NORTHERN OPERATIONS
ARMY ARCTIC TEST CENTER FORT GREELY ALASKA
ARMY ARCTIC TEST CENTER FORT GREELY ALASKA
XXXXXX HC COST: \$ 5.00

(Abstract not available)

DOD/DROLS 290358

1962

COLD WEATHER DECONTAMINATION STUDY - MCCOY II
ARMY NUCLEAR DEFENSE LAB EDGEWOOD ARSENAL MD
MALONEY JOSEPH C;MEREDITH JOHN L;
XXXXXX HC COST: \$ 5.00 TR32

(Abstract not available)

DOD/DROLS 294693

1957

THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF AIRBORNE
BACTERIA
ARCTIC AEROMEDICAL LAB FORT WAINWRIGHT ALASKA

KETHLEY T W; FINCHER E L; COWN W B;

XXXXXX HC COST: \$ 5.00 TR83

RESULTS ARE REPORTED FOR STUDIES ON VARIOUS AIRBORNE BACTERIA UNDER VARYING CONDITIONS OF RELATIVE HUMIDITY AT LOW TEMPERATURES. EMPLOYING AIRBORNE BACTERIAL PARTICLES DISPERSED FROM BEEF BROTH CULTURES, STUDIES ARE REPORTED FOR SERRATIA MARCESCENS, AND ESCHERICHIA COLI FOR THE RANGE OF TEMPERATURES 80 TO -40 F. PRELIMINARY STUDIES ARE REPORTED FOR SERRATIA INDICA, MICROCCOCUS PYOGENES VAR. AUREUS AND MICROCCOCUS PYOGENES VAR. ALBUS. IT IS CONCLUDED THAT THE EXPERIMENTAL BACTERIAL PARTICLES STUDIED ARE VERY SIMILAR TO THOSE ARISING FROM NATURAL CAUSES AND THAT THE FINDINGS ARE GENERALLY APPLICABLE TO MANY NATURALLY OCCURRING AIRBORNE BACTERIA. THE VERY LOW DEATH RATE OBSERVED FOR THE EXPERIMENTAL BACTERIAL AEROSOLS AT LOW TEMPERATURES IS CONSISTENT WITH PREVIOUS REPORTS OF THE PRESENCE OF VIABLE BACTERIA IN THE UPPER ATMOSPHERES. IT IS SUGGESTED THAT THE COMPOSITION OF THE NON-LIVING MATERIAL ASSOCIATED WITH THE AIRBORNE BACTERIAL PARTICLE IS THE MOST IMPORTANT SINGLE FACTOR IN DETERMINING THE FATE OF SUCH ORGANISMS. (AUTHOR)

DOD/DROLS 296248

1963

SIMULATED COLD WEATHER RADIOLOGICAL DECONTAMINATION OF RECOVERY EQUIPMENT.

NAVAL CIVIL ENGINEERING LAB PORT HUENENE CALIF

HANNA ALFRED E;

12P HC COST: \$ 5.00 NCEL-TN-481

TESTS WERE CONDUCTED IN COLD CHAMBER, IN WHICH COMPRESSED AIR, STEAM, VACUUM, WATER, AND ANTIFREEZE SOLUTION WERE USED TO REMOVE A FLUORESCENT FALLOUT SIMULANT FROM A LARGE TRACTOR AT TEMPERATURES DOWN TO MINUS 10 DEGREES F. IT IS CONCLUDED THAT ANTIFREEZE SOLUTION AND WATER, IF WARMED, ARE THE MOST EFFECTIVE MATERIALS; STEAM MAY BE ACCEPTABLY EFFECTIVE, AND AIR AND VACUUM HAVE LIMITED USE. (AUTHOR)

DOD/DROLS 343006

1962

LOW TEMPERATURE FIELD TESTING OF CHEMICAL TOXICOLOGICAL AGENTS

DUGWAY PROVING GROUND UTAH

DUGWAY PROVING GROUND UTAH

SUMMARY REPT. 62P HC COST: \$ 5.00

FROM A REVIEW OF THE TRIALS OF GB-FILLED MUNITIONS
CONDUCTED AT TEMPERATURES BELOW 20 F BY DUGWAY PROVING
GROUND, UTAH, IT IS CONCLUDED THAT BOTH THE RATE OF AGENT
DISSEMINATION AND THE AMOUNT OF VAPOR DISSEMINATED DURING
THE PASSAGE OF THE INITIAL VAPOR CLOUD DECREASED IN A
FAIRLY WELL DEFINED MANNER WITH DECREASE IN TEMPERATURE.
MEASURED BY SUCH CRITERIA, THE EFFECTIVENESS OF THIS
NON-PERSISTENT AGENT DECREASES IN COLD WEATHER. IT IS ALSO
CONCLUDED THAT FURTHER LOW TEMPERATURE TESTING BY VAPOR
DOSAGE SAMPLING WOULD ONLY CONFIRM DATA NOW AVAILABLE.
THEREFORE, IT IS RECOMMENDED THAT NO MORE SUCH TESTING BE
DONE AT DUGWAY PROVING GROUND. AN ALTERNATE COLD WEATHER
PROGRAM IS SUGGESTED AND PROCEDURES ARE DETAILED HEREIN.
(AUTHOR)

DOD/DROLS 345779L

1963

WHISTLE DOWN.

DESERET TEST CENTER FORT DOUGLAS UTAH

DESERET TEST CENTER FORT DOUGLAS UTAH

FINAL REPT., 1 DEC 62-5 FEB 63. 330P HC COST: \$ 21.10

(CLASSIFIED ABSTRACT)

DOD/DROLS 352690

1962

WHISTLE DOWN.

DESERET TEST CENTER FORT DOUGLAS UTAH

DESERET TEST CENTER FORT DOUGLAS UTAH

55P HC COST: \$ 5.00

(CLASSIFIED ABSTRACT)

DOD/DROLS 352698

1963

NIGHT TRAIN.

DESERET TEST CENTER FORT DOUGLAS UTAH

DESERET TEST CENTER FORT DOUGLAS UTAH

100P HC COST: \$ 5.00

(CLASSIFIED ABSTRACT)

COPPER HEAD

DESERET TEST CENTER FORT DOUGLAS UTAH

DESERET TEST CENTER FORT DOUGLAS UTAH

68P HC COST: \$ 5.00 TEST65-1, DTC-64-1098

(CLASSIFIED ABSTRACT)

NIGHT TRAIN

DESERET TEST CENTER FORT DOUGLAS UTAH

DESERET TEST CENTER FORT DOUGLAS UTAH

FINAL REPT. XXXXXX HC COST: \$ 5.00 TEST-64-5,
DTC-64-1449

(CLASSIFIED ABSTRACT)

ARCTIC TESTS AT FORT CHURCHILL, WINTER 1952- 1953.

DUGWAY PROVING GROUND UTAH

PERALTA ROBERTO:

95P HC COST: \$ 5.00 ETDR-1

THE OBJECTIVE OF THIS PROGRAM WAS TO DETERMINE THE PERFORMANCE AND USABILITY OF THE FOLLOWING ITEMS UNDER ARCTIC WINTER CONDITIONS: SET, GAS-IDENTIFICATION, DETONATION, MI; SET, ACCESSORIES, GAS-IDENTIFICATION, DETONATION, MI; APPARATUS, DECONTAMINATING, PORTABLE, 3-GALLON, MI; DANC SOLUTION UNIT 4 1/2- GALLON, M4; PAINT, LIQUID-VESICANT DETECTOR, M5; PAPER, LIQUID- VESICANT DETECTOR, M6; IGNITER, WP, M15 AND M16; IGNITER, NA, M16; GRENADE, HAND, TEAR, CN, M7A1; SQUIB, ELECTRIC, FLASH-VENTED, ML; KIT, CHEMICAL AGENT DETECTOR, M9A2; KIT, WINTERIZING, MASK, E14R10; MASK, PROTECTIVE, FIELD, M9AL, NEW, WITH GRS RUBBER COMPONENTS AND NEW HEAD HARNESS; MASK, PROTECTIVE, ARCTIC, E15R2; MASK, PROTECTIVE, ARCTIC, E58R4; BAG, WATERPROOFING, PROTECTIVE MASK, ML; PROTECTOR, COLLECTIVE, 600 CFM, GASOLINE-ENGINE-DRIVEN, E28. (AUTHOR)

DOD/DROLS 373325L

1966

TEST 65-3--WEST SIDE.

DESERET TEST CENTER FORT DOUGLAS UTAH

TANNER WILLIAM S ;

FINAL REPT. ON PHASE 1, 240P HC COST: \$ 14.80
DTC-653114R

(CLASSIFIED ABSTRACT)

DOD/DROLS 389838L

1968

DTC TEST 66-3 - SWAMP OAK.

DESERET TEST CENTER FORT DOUGLAS UTAH

PARKIN JERRY L ;

FINAL REPT., 138P HC COST: \$ 7.66 DTC-6603151R
ORIGINAL CONTAINS COLOR PLATES: ALL DDC REPRODUCTIONS WILL
BE IN BLACK AND WHITE. ORIGINAL MAY BE SEEN I' DDC
HEADQUARTERS.

(CLASSIFIED ABSTRACT)

DOD/DROLS 391137L

1968

DTC TEST 67-7.

DESERET TEST CENTER FORT DOUGLAS UTAH

TANNER WILLIAM S ;

FINAL REPT., 174P HC COST: \$ 10.18 DTC-6707155R
INCLUDES ERRATA SHEET DATED 5 JUL 68.

(CLASSIFIED ABSTRACT)

DOD/DROLS 391458L

1968

NUCLEAR WEAPON EFFECTS IN ARCTIC ASW,

NAVAL ORDNANCE LAB WHITE OAK MD

CAUDLE KENNETH F ; FARLEY THOMAS E ;

37P HC COST: \$ 5.00 NOLTR-68-86

(CLASSIFIED ABSTRACT)

CIVIL DEFENSE MANUAL FOR RADIOLOGICAL DECONTAMINATION OF
MUNICIPALITIES.

CURTISS-WRIGHT CORP CALDWELL N J

WHEELER C HERBERT J R; CAMMARANO MARIO V ;

415P HC COST: \$ 27.05

THIS MANUAL COVERS THE OPERATIONAL RECOVERY PHASE OF RADIOLOGICAL DEFENSE, WHICH IS CONCERNED WITH DECONTAMINATION OF STRUCTURES AND AREAS MADE DANGEROUS OR LETHAL BY FALLOUT. IT ASSUMES THAT NO SIGNIFICANT DAMAGE HAS BEEN SUSTAINED IN THE AREA DUE TO BLAST OR FIRE. THE PURPOSE OF THE MANUAL IS TO FURNISH INFORMATION AND PLANNING TECHNIQUES WHICH WILL ENABLE CIVIL DEFENSE PLANNERS TO FORMULATE AND IMPLEMENT PLANS OF ACTION FOR OPERATIONAL RECOVERY FROM NUCLEAR ATTACK IN AREAS SUBJECT TO RADIOACTIVE FALLOUT. THE MANUAL IS WRITTEN FOR MUNICIPAL PLANNERS AND ENGINEERS, AND FOR SPECIAL GROUPS, SUCH AS EQUIPMENT OPERATORS AND MEDICAL DOCTORS, TO WHOM INDIVIDUAL CHAPTERS WILL BE OF PARTICULAR VALUE AND INTEREST. DETAILED TECHNICAL INFORMATION ON METHODS OF DECONTAMINATION IS PRESENTED. THE INSTRUCTIONS COVER THE CLEANING OF BUILDING STRUCTURES, PAVEMENT, AND NATURAL AREAS. ONE CHAPTER DEALS WITH COLD WEATHER DECONTAMINATION PROBLEMS. THE EFFICIENCIES OF DECONTAMINATION METHODS AND EQUIPMENT ARE EVALUATED IN TERMS OF HUMAN EFFORT. (AUTHOR)

COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,

GENERAL DYNAMICS/FORT WORTH TEX

MEREDITH J L ; MALONEY J C ; BRADBURY HOWELL G; MILLER
WILLIAM R ;

228P HC COST: \$ 13.96

THIS PROJECT PRESENTS EXPERIMENTS AND DATA PERTAINING TO RADIOLOGICAL DECONTAMINATION UNDER COLD-WEATHER AND THAWING CONDITIONS, AS REQUIRED BY THE POST ATTACK RESEARCH PROGRAM OF THE OFFICE OF CIVIL DEFENSE (OCD). THE SPECIFIC OBJECTIVE OF THIS PHASE OF THE PROJECT WAS TO DETERMINE BETTER METHODS FOR DECONTAMINATING SPECIFIC SURFACES; EFFECTIVENESS WAS BASED ON AMOUNT OF CONTAMINATION REMOVED AND THE EFFORT EXPENDED. THIS PROJECT TESTED ADDITIONAL TYPES OF SURFACES AND CONDUCTED MULTIPLE-EFFORT EXPERIMENTS TO SUPPLEMENT PREVIOUS WORK. A SERIES OF TESTS WERE CONDUCTED AT CAMP MCCOY, WISCONSIN, TO DETERMINE THE EFFECTIVENESS OF MAINTENANCE, SNOW-REMOVAL, FIRE-FIGHTING,

AND MANUAL EQUIPMENT TO DECONTAMINATE SNOW, ICE, FROZEN
AND THAWING GROUND, PAVED SURFACES, AND ROOFS. (AUTHOR)

DOD/DROLS 451292

1964

COLD WEATHER DECONTAMINATION STUDY - MCCOY IV,

GENERAL DYNAMICS/FORT WORTH TEX

MEREDITH J L ;MALONEY J C ;BRADBURY HOWELL G; MILLER
WILLIAM R ;

113P HC COST: \$ 5.91

THIS REPORT PRESENTS EXPERIMENTS AND DATA PERTAINING TO
RADIOLOGICAL DECONTAMINATION UNDER COLD-WEATHER AND
THAWING CONDITIONS, AS REQUIRED BY THE POST ATTACK RESEARCH
PROGRAM OF THE OFFICE OF CIVIL DEFENSE (OCD). THE SPECIFIC
OBJECTIVE OF THIS PHASE OF THE PROJECT WAS TO DETERMINE
BETTER METHODS FOR DECONTAMINATING SPECIFIC SURFACES;
EFFECTIVENESS WAS BASED ON AMOUNT OF CONTAMINATION REMOVED
AND THE EFFORT EXPENDED. THIS PROJECT TESTED ADDITIONAL
TYPES OF SURFACES AND CONDUCTED MULTIPLE-EFFORT EXPERIMENTS
TO SUPPLEMENT PREVIOUS WORK. (AUTHOR)

DOD/DROLS 514709L

1965

PROJECT NIGHT TRAIN - SUPPLEMENTAL ANALYSIS.

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

HALLANGER N L ;ASSING JAMES V ;DAITCH A MICHAEL;

DATA ANALYSIS REPT., 157P HC COST: \$ 8.99
BAARINC-402-1-R37

(CLASSIFIED ABSTRACT)

DOD/DROLS 514727L

1967

SWAMP OAK TEST DATA ANALYSIS.

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

JOHNSTON R C ;FANNEMANN M M D ;HALLANGER N L ;KROTH J
R ;WESTLAKE WILFRED J ;

REPT. FOR MAR-APR 66, 260P HC COST: \$ 16.20
BAARINC-402-2-R26(17)

(CLASSIFIED ABSTRACT)

DOD/DROLS 514730L

1964

ANALYSES OF THE BG DATA FROM THE NIGHT TRAIN TRIALS.

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

93P HC COST: \$ 5.00 BAARINC-851-1-R12

(CLASSIFIED ABSTRACT)

DOD/DROLS 514731L

1964

NIGHT TRAIN ANALYSIS.

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

57P HC COST: \$ 5.00 BAARINC-851-1-R6

(CLASSIFIED ABSTRACT)

DOD/DROLS 514799L

1967

SUN DOWN TEST DATA ANALYSIS.

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

BOOZ-ALLEN APPLIED RESEARCH INC LOS ANGELES CALIF

127P HC COST: \$ 6.89 BAARINC-402-2-R25(16)

(CLASSIFIED ABSTRACT)

DOD/DROLS 528525L

1963

SUMMARY OF CHEMICAL AND BIOLOGICAL OPERATIONS IN NORTHERN
POLAR REGIONS.

DUGWAY PROVING GROUND UTAH

DUGWAY PROVING GROUND UTAH

TECHNICAL REPT. 43P HC COST: \$ 5.00 DPG-TR-343

THE OBJECTIVE OF THIS REPORT IS TO PROVIDE A SUMMARY OF THE
KNOWLEDGE CONCERNING COLD WEATHER REGIONS, WITH EMPHASIS ON
THE NORTHERN POLAR REGIONS, ACQUIRED BY ENVIRONMENTAL FIELD
TEST DIVISION THROUGH A REVIEW OF AVAILABLE LITERATURE,
TESTS CONDUCTED IN GREENLAND BY THE POLAR ENVIRONMENTAL

TEST AND RESEARCH TEAM (PETRT), AND PARTICIPATION IN LEAD DOG 60. THIS REPORT COVERS THE FOLLOWING: (1) A SUMMARY OF THOSE METEOROLOGICAL AND TERRAIN FEATURES OF THE NORTHERN POLAR REGIONS WHICH ARE OF GREATEST IMPORTANCE FOR ALL MILITARY AS WELL AS CHEMICAL AND BIOLOGICAL OPERATIONS. AND (2) A SUMMARY OF PRESENT DOCTRINE REGARDING OPERATIONS IN THE NORTHERN POLAR REGIONS, WITH SPECIAL EMPHASIS ON CHEMICAL AND BIOLOGICAL APPLICATIONS. INCLUDED ARE THE RESULTS OF TESTS CONDUCTED BY PETRT AND A FORECAST OF THE PERFORMANCE OF ITEMS NOT TESTED IN GREENLAND.

DOD/DROLS 596030L

1957

BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES,
OPERATION 'ICICLE' BW 330-B.

DUGWAY PROVING GROUND UTAH

DUGWAY PROVING GROUND UTAH

INTERIM REPT. 15P HC COST: \$ 5.00 DPG-IR-1003

THE OBJECTIVES OF THESE TWO TRIALS WERE (UNDER CONDITIONS OF SUB-FREEZING TEMPERATURES): (1) TO DETERMINE THE SOURCE STRENGTH AND MUNITION EFFICIENCY OF THE UL- AND BG-FILLED PT- 12 TEST FIXTURES; (2) TO DETERMINE AND COMPARE THE DOWNWIND TRAVEL CHARACTERISTICS OF UL AND BG AEROSOLS; (3) TO STUDY THE GUINEA PIG DOSE-MORTALITY RESPONSE TO UL AEROSOLS; AND (4) TO PROVIDE LIMITED INFORMATION CONCERNING THE PERCENTAGES OF ORGANISMS ASSOCIATED WITH PARTICLES SUFFICIENTLY SMALL TO BE COLLECTED BY AN IMPINGER IN SERIES WITH A PRE-IMPINGER. (AUTHOR)

DOD/DROLS 596051L

1962

CHEMICAL OPERATIONS IN LOW-TEMPERATURE AREAS.

DUGWAY PROVING GROUND UTAH

DUGWAY PROVING GROUND UTAH

TECHNICAL REPT. JAN 60-JUN 61. 30P HC COST: \$ 5.00
DPG-R-325

(CLASSIFIED ABSTRACT)

DOD/DROLS 596057L

1955

(CLASSIFIED TITLE)

DUGWAY PROVING GROUND UTAH BW ASSESSMENT LABS

DUGWAY PROVING GROUND UTAH BW ASSESSMENT LABS

TECHNICAL REPT. 33P HC COST: \$ 5.00 BWALR-9A

(CLASSIFIED ABSTRACT)

DOD/DROLS 676153

1968

EFFECTS OF VEHICULAR OPERATION ON CONTAMINATED SLUSHY ROADS.

ARMY NUCLEAR DEFENSE LAB EDGEWOOD ARSENAL MD

MALONEY JOSEPH C ;

TECHNICAL MEMO., 29P HC COST: \$ 5.00 NDI-TM-45

THE OBJECTIVE OF THIS PROJECT WAS TO DEVELOP AND TEST RADIOLOGICAL COUNTERMEASURES THAT ARE APPLICABLE TO POST-NUCLEAR- ATTACK RECOVERY OPERATIONS. THE SPECIFIC OBJECTIVE OF THIS PHASE OF THE PROJECT WAS TO DETERMINE THE EFFECTS OF VEHICULAR TRAFFIC ON DISPLACING FALLOUT ON BARE ROADS AND ON PACKED-SNOW-COVERED ROADS, THE BUILDUP OF ACTIVITY ON VEHICLE SURFACES, AND THE VARIATION OF SUBSEQUENT ROADWAY DECONTAMINATION EFFECTIVENESS ALONG THE PATH OF DECONTAMINATION EFFORT. DUE TO WEATHER CONDITIONS THAT DEVELOPED AT THE TIME OF BOTH TESTS, THE ROADS WERE COVERED WITH SLUSH. FOR VEHICULAR TRAFFIC OVER A RADIOACTIVELY CONTAMINATED SLUSHY ROAD AND SUBSEQUENT ROADWAY DECONTAMINATION, THE FOLLOWING CONCLUSIONS WERE ESTABLISHED: (1) EXPOSURE RATES TO OPERATING PERSONNEL OF VEHICLES WERE SIGNIFICANTLY INCREASED DUE TO VEHICULAR CONTAMINATION. (2) VEHICLES REQUIRED DECONTAMINATION FOLLOWING OPERATION. (3) THE DECONTAMINATION EFFORTS CONDUCTED ON SLUSHY ROADS WERE MUCH LESS EFFECTIVE THAN THOSE CONDUCTED DURING WARM OR COLD DRY WEATHER. (AUTHOR)

DOD/DROLS 896351L

1957

BEHAVIOR OF BW AEROSOLS IN SUB-FREEZING TEMPERATURES,
OPERATION 'ICICLE', BW 330-B, TRIALS 3, 4, AND 5.

DUGWAY PROVING GROUND UTAH

DUGWAY PROVING GROUND UTAH

INTERIM REPT. 8P HC COST: \$ 5.00 DPG-IR-1007

THIS REPORT PRESENTS THE RESULTS OF THREE SEPARATE TESTS IN WHICH THREE PT-12 TEST FIXTURES, FILLED UL, THREE PT-12 TEST FIXTURES, FILLED BG, AND TWO E61R4 BOMBLETS, FILLED FP, WERE FUNCTIONED SIMULTANEOUSLY UNDER SUB-FREEZING TEMPERATURES. THE TOTAL DECAY RATES FOR THE BG AND UL AEROSOLS WERE MEASURED AND COMPARED FOR A DISTANCE OF

THREE-QUARTERS OF A MILE FROM THE SOURCE. THE INFECTIVE CAPACITY OF THE UL AEROSOL WAS ALSO ASCERTAINED.

DOD/DROLS A158593

1985

COLD REGIONS ENVIRONMENTAL TEST OF NUCLEAR, BIOLOGICAL, AND CHEMICAL DECONTAMINATION EQUIPMENT.

ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD

ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD

FINAL REPT. 43P HC COST: \$ 5.00 TOP-8-4-007 SUPERSEDES REPORT DATED 29 AUG 69.

THIS TOP PRESCRIBES METHODS FOR EVALUATING NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) DECONTAMINATION EQUIPMENT IN THE NATURAL COLD REGIONS ENVIRONMENT. IT CONTAINS PROCEDURES FOR EVALUATING STORAGE, TRANSPORTATION, ENVIRONMENTAL PERFORMANCE, LOGISTIC SUPPORTABILITY, RELIABILITY, HUMAN FACTORS, AND SAFETY. IT DESCRIBES THE NECESSARY FACILITIES AND INSTRUMENTATION REQUIREMENTS FOR TEST ACCOMPLISHMENT.

DOD/DROLS A158729

1985

COLD REGIONS LOGISTIC SUPPORTABILITY TESTING OF CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL DEFENSE EQUIPMENT.

ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD

ARMY TEST AND EVALUATION COMMAND ABERDEEN PROVING GROUND MD

FINAL REPT. ON TEST OPERATIONS PROCEDURE. 29P HC COST: \$ 5.00 TOP-8-4-015

THIS DOCUMENT DESCRIBES TEST METHODS AND TECHNIQUES NECESSARY TO PERFORM A LOGISTIC SUPPORTABILITY TEST OF CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL DEFENSE EQUIPMENT IN A COLD REGIONS ENVIRONMENT. ORIGINATOR SUPPLIED KEYWORDS INCLUDE: LOGISTICS SUPPORT OF ARMY EQUIPMENT; COLD WEATHER FIELD TESTS; RADIOLOGICAL DEFENSE EQUIPMENT; CHEMICAL, BIOLOGICAL. (AUTHOR)

DOD/DROLS A166321

1985

COLD WEATHER ASPECTS OF NBC (NUCLEAR, BIOLOGICAL AND CHEMICAL) OPERATIONS - A SURVEY OF SELECTED WARSAW PACT OPEN SOURCE LITERATURE.

ORI INC ALEXANDRIA VA

TESKO S ;

FINAL REPT., 24P

HC COST: \$ 5.00 ORI-TR-2455

THIS PAPER PRESENTS A VERY BRIEF SURVEY OF WARSAW PACT VIEWS ON THE IMPACT OF COLD WEATHER ON NBC OPERATIONS DRAWN FROM UNCLASSIFIED OPEN SOURCE REPORTING. EVEN THOUGH THE UNIVERSE OF DOCUMENTS WAS LIMITED, A NUMBER OF IMPORTANT OBSERVATIONS ARE WORTH NOTING: (1) LOW TEMPERATURES ALLOW THE USE OF OTHERWISE HIGHLY VOLATILE AGENTS REQUIRING LOWER AMMUNITION EXPENDITURES TO INFLICT A PARTICULAR LEVEL OF DAMAGE. (2) PROVISION OF UNFROZEN WATER AND DECONTAMINANTS IS AN EXTRA BURDEN. (3) THE INCREASED VIABILITY OF ORGANISMS IN COLD AND LOW LIGHT CONDITIONS COULD MAKE THEM MORE ATTRACTIVE IN WINTER OR ARCTIC SITUATIONS, THAN IN MORE TEMPERATE REGIONS. (4) EXTREME COLD ENCOURAGES CONGREGATION OF PERSONNEL IN SHELTERS THEREBY PROMOTING DISEASE SPREAD. THIS IS A HAZARD UNAFFECTED BY COLLECTIVE PROTECTION SYSTEMS OR DECONTAMINATION. (5) THERMAL INJURIES FROM NUCLEAR WEAPONS WILL GENERALLY DECREASE IN COLD WEATHER DUE TO PERSONNEL WEARING INCREASED CLOTHING. (6) NBC RECONNAISSANCE IS GREATLY COMPLICATED IN WINTER (SNOW) OR ARCTIC ENVIRONMENT, DUE TO COVERED OR FROZEN CONTAMINATION AS WELL AS SNOW AND WIND STORMS WHICH CAN CREATE CONTAMINATION ZONES OF UNUSUAL SHAPE. KEYWORDS: NUCLEAR BIOLOGICAL CHEMICAL OPERATIONS.

DOD/DROLS A173203

1986

PHYSIOLOGICAL ASSESSMENTS OF CHEMICAL THREAT PROTECTIVE PATIENT WRAPS IN THREE ENVIRONMENTS.

ARMY RESEARCH INST OF ENVIRONMENTAL MEDICINE NATICK MA

CADARETTE BRUCE S ;SPECKMAN KAREN L ;STEPHENSON LOU A ;

MANUSCRIPT REPT., 23P

HC COST: \$ 5.00 USARIEM-M-56-86

PRESENTED AT THE ANNUAL AEROSPACE MEDICAL ASSOCIATION MEETINGS (57TH), NASHVILLE, TN, 20-24 APR 86.

COMPARISONS OF PHYSIOLOGICAL RESPONSES OF EIGHT RESTING SUPINE SUBJECTS TO 2-H ENCAPSULATION IN THE CURRENT CHEMICAL WARFARE AGENT PROTECTIVE PATIENT WRAP, AND SEVEN PROTOTYPES WERE CONDUCTED IN A WARM (T SUB DB = 30C, T SUB DP = 7C) ENVIRONMENT. OXYGEN AND CARBON DIOXIDE CONCENTRATIONS WITHIN THE WRAP, AND THE SUBJECTS' RECTAL TEMPERATURE (T SUB RE), HEART RATE (HR) AND SWEATING RATES WERE DETERMINED. THE SUBJECTS' SWEATING RATES AND FINAL T SUB RE AND HR WERE NOT DIFFERENT AMONG WRAPS. TWO PROTOTYPE WRAPS WERE FURTHER TESTED IN THE HEAT (T SUB DB = 49C, T SUB DP = 17C) AND COLD (T SUB DB = -39C). THE CHOSEN WRAPS WERE THE WRAP OF NYCO TWILL SHELL AND 3M MELT-BLOWN POLYPROPYLENE CORE WHICH SHOWED THE SMALLEST CHANGES IN O2 AND CO2 (FINAL O2 = 19.3%, CO2 = 1.2%) OF THE PROTOTYPES,

AND THE NYCO OXFORD SHELL AND BONDINA MARK IV CORE WRAP WHICH HAD THE THIRD SMALLEST CHANGES IN O₂ AND CO₂ LEVELS (FINAL O₂ = 18.8%, CO₂ = 1.6%) IN THE WARM ENVIRONMENT. BOTH WRAPS RESULTED IN THE SMALLEST T SUB RE INCREASE (0.2C) IN THE WARM ENVIRONMENT. IN THE HEAT, FINAL O₂ CONCENTRATION WAS GREATER (0.5%; P = 0.05) FOR THE NYCO TWILL 3M WRAP ALTHOUGH FINAL T RE, HR AND WEIGHT LOSS WERE NOT DIFFERENT BETWEEN WRAPS. IN THE COLD, THERE WERE NO DIFFERENCES BETWEEN THE WRAPS IN THESE PHYSIOLOGICAL RESPONSES. THESE RESULTS SHOW THAT THE NYCO TWILL 3M PATIENT WRAP IS EQUAL OR BETTER THAN THE SIX PROTOTYPE WRAPS IN THE WARM AND HOT ENVIRONMENTS, AND PERFORMS AS WELL AS THE BONDINA MARK IV IN THE COLD.

DOD/DROLS A178349

1986

LOW TEMPERATURE EFFECTS ON SORPTION, HYDROLYSIS AND
PHOTOLYSIS OF ORGANOPHOSPHONATES: A LITERATURE REVIEW.

NEW HAMPSHIRE UNIV DURHAM DEPT OF CHEMISTRY

BRITTON K B ;

SPECIAL REPT., 82P HC COST: \$ 5.00

A SURVEY WAS MADE OF THE OPEN LITERATURE TO DETERMINE THE INFORMATION AVAILABLE ON THE PERSISTENCE OF ORGANOPHOSPHONATE CHEMICAL AGENTS IN THE ENVIRONMENT. THIS REVIEW FOCUSES ON LOW TEMPERATURE HYDROLYTIC AND PHOTOLYTIC DEGRADATION OF THE NERVE AGENTS GA (TABUN), GB (SARIN), GD (SOMAN) AND VX. THE ROLE OF ADSORPTION TO ICE, SNOW AND FROZEN SOILS AND SEDIMENTS IS ALSO DISCUSSED IN RELATION TO THESE DEGRADATIVE PROCESSES. SUGGESTIONS ARE MADE FOR THE INVESTIGATION OF AGENT DECOMPOSITION USING SIMULANTS. THE METHOD PROPOSED FOR THE STUDY OF AGENT PERSISTENCE IS BASED ON THE USE OF LINEAR FREE ENERGY RELATIONSHIPS, WHICH SHOULD ALLOW FOR MORE RELIABLE PREDICTION OF AGENT BEHAVIOR THAN IF A SINGLE SIMULANT IS USED AS A MODEL COMPOUND. KEYWORDS: TABUN, SARIN, SOMAN, ORGANOPHOSPHONATE PESTICIDES, CHEMICAL WARFARE AGENTS

DOD/DROLS B009895

1974

PHYSIOLOGICAL TRIAL OF COLD WEATHER CLOTHING AND EQUIPMENT.
EXERCISE HONKY TONK I. NORWAY 1974,

ARMY PERSONNEL RESEARCH ESTABLISHMENT FARNBOROUGH (ENGLAND)

WORSLEY D ;AMOR A ;HUGHES W P ;INCE N ; RAMSAY D ;

181P HC COST: \$ 10.67 APRE-16/74

EXERCISE HONKY TONK I WAS A COLD CLIMATE PHYSIOLOGICAL

TRIAL PERFORMED BY THE ARMY PERSONNEL RESEARCH ESTABLISHMENT WITH THE ASSISTANCE OF MEN OF 48 AMF(L) COY RAOC IN SOUTHERN NORWAY IN JANUARY-FEBRUARY 1974. THE MAIN AIMS WERE TO ASSESS THE THERMAL PROTECTION PROVIDED BY A NUMBER OF DEVELOPMENT ITEMS OF CLOTHING AND PERSONAL EQUIPMENT, TO INVESTIGATE SOME NBC ASPECTS OF COLD WEATHER OPERATIONS, TO MEASURE THE ENERGY COST OF SOME MILITARY TASKS, TO OBTAIN METEOROLOGICAL DATA AND ASSESS SIMPLE UNIT METEOROLOGICAL EQUIPMENT, TO STUDY TENT CONDITIONS AND TO GAIN EXPERIENCE IN THE CONDUCT OF FIELD TRIALS IN COLD CLIMATES. THE CLIMATIC CONDITIONS WERE RELATIVELY MILD AND ERRATIC, AND WERE SELDOM SUFFICIENTLY STRESSFUL FOR THE FULL REALISATION OF THE AIMS, ALTHOUGH USEFUL DATA WAS COLLECTED AND EXPERIENCE GAINED. IN VIEW OF THE IMPORTANCE ATTACHED TO THE THERMAL PROTECTION STUDIES A POST- FIELD TRIAL COLD CHAMBER PHASE WAS PERFORMED IN JUNE-JULY 1974 AND ACTIVE PREPARATIONS INITIATED FOR A FURTHER EXERCISE IN FORT CHURCHILL MANITOBA CANADA. (AUTHOR)

DOD/DROLS B038724L

1979

DEVELOPMENT TEST II OF XM9 CHEMICAL AGENT DETECTOR PAPER.

ARMY COLD REGIONS TEST CENTER FORT GREELY AK

NELSON JOHN D ;

FINAL REPT. OCT 78-FEB 79, 52P

HC COST: \$ 5.00

CRTC CONDUCTED A DTII OF THE XM9 CHEMICAL AGENT DETECTION PAPER FROM OCTOBER 1978 THROUGH FEBRUARY 1979 AT FT. GREELY, AK. TESTING WAS CONDUCTED AT TEMPERATURES BETWEEN 35 F TO - 26 F. SUBTESTS INCLUDED ADHESIVENESS, USABLE LIFE, HUMAN FACTORS, SAFETY, AND TECHNICAL PUBLICATION ADEQUACY. THE XM9 PAPER DID NOT ADHERE TO ALL SURFACES FOR THE REQUIRED PERIOD, BUT IT COULD BE USED SATISFACTORILY BY CAREFULLY CHOOSING WHERE AND HOW IT WAS APPLIED OR BY USING ADDITIONAL MEANS TO SECURE IT TO THE CARRIER MATERIAL. THE XM9 COULD NOT BE USED UNDER BLACKOUT CONDITIONS WHILE USING A LIGHT WITH A RED FILTER. (AUTHOR)

DOD/DROLS B042605L

1979

DEVELOPMENT TEST II (PROTOTYPE QUALIFICATION TEST - GOVERNMENT) OF XM9 CHEMICAL AGENT DETECTOR PAPER EXPOSED AT ENVIRONMENTAL SITES.

ARMY DUGWAY PROVING GROUND UT

GRAYSON B L ;RICE W H ;

FINAL RPT. JAN-FEB 79, 30P
DPG-FR-79-202

HC COST: \$ 5.00

DT II TESTING OF THE XM9 CHEMICAL AGENT DETECTOR PAPER EXPOSED TO WEATHERING, WORN ON CLOTHING, AND SUBJECTED TO SOIL ADHESION WAS CONDUCTED DURING JANUARY AND FEBRUARY 1979 AT DUGWAY PROVING GROUND. TESTS WERE CONDUCTED TO EVALUATE THE STATUS OF THE DEVELOPMENT AND PROTOTYPE QUALIFICATIONS OF THE XM9. THE EFFECTS OF EXPOSURE OF THE PAPER AT THREE ENVIRONMENTAL SITES, US ARMY YUMA PROVING GROUND, US ARMY COLD REGIONS TEST CENTER, AND US ARMY TROPIC TEST CENTER WERE EVALUATED. SAMPLES OF THE PREVIOUSLY EXPOSED PAPER WERE CHALLENGED WITH AGENT GD AT CLIMATIC CONDITIONS SIMILAR TO THOSE OF THE ENVIRONMENTAL SITES. (AUTHOR)

DOD/DROLS B066840L

1982

ADVANCED DEVELOPMENT OF A DETECTOR KIT FOR CHEMICAL AGENTS IN WATER.

MINE SAFETY APPLIANCES CO MURRYSVILLE PA

VANCHERI FRANK J ;

FINAL COMPREHENSIVE RPT. SEP 81-MAY 82 ON PHASE 3, 139P
HC COST: \$ 7.73 A-100-A004 ORIGINAL CONTAINS COLOR
PLATES: ALL DTIC REPRODUCTIONS WILL BE IN BLACK AND WHITE.
SEE ALSO AD-B062 508L.

THE MAJOR EMPHASIS IN PHASE III WAS THE CORRECTION OF ALL KIT DEFICIENCIES AND THE TESTING REQUIRED TO VERIFY THESE CHANGES. COLD TEMPERATURE OPERATIONS REQUIRED A NUMBER OF COMPONENT AND DESIGN CHANGES INCLUDING NEW ZINC MIX FILL, ADDITIONAL MATCHES, HEAT SHIELD FOR REACTOR BOTTLE AND CLIP FOR HOLDING TICKET. CHANGES TO MANUAL AND INSTRUCTION CARD WERE MADE TO REFLECT NEW COLD TEMPERATURE OPERATING PROCEDURES. RELIABILITY FOR ALL NEW APPARATUS AND PROCEDURES WAS DEMONSTRATED.

DOD/DROLS B089094

1984

SMOKE WEEK VI/SNCW TWO. VOLUME 1A. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.

TENNESSEE UNIV SPACE INST TULLAHOMA

KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS
E S ;

FINAL REPT. 9 JAN-18 JAN 84, 611P HC COST: \$ 40.77 SEE
ALSO VOLUME 1B, AD-B089 095.

SMOKE WEEK VI WAS A WINTER TIME REPLICATION OF PREVIOUS LARGE SCALE SMOKE WEEKS. THE PREVIOUS LARGE SCALE TESTS WERE SMOKE WEEKS I-IV. SMOKE WEEKS VA AND VB WERE SMALL,

SPECIALIZED, FIELD TESTS. SMOKE WEEK VI WAS THE FIRST MAJOR TEST OF BATTLEFIELD SMOKES AND OBSCURANTS IN A WINTER ENVIRONMENT. THERE WAS A BASE OF SNOW 0. 5M DEEP ACROSS THE ENTIRE TEST SITE WITH FRESH SNOW FALLING NEARLY EVERY TEST DAY. THE TEMPERATURE RANGED FROM -15 TO -6 C (+5 TO +21 F) DURING THE TRIALS. IN THESE FIELD TRIALS, STANDARD AND EXPERIMENTAL IR SCREENERS WERE TESTED UNDER CLEAR AND SNOWING CONDITIONS. IN GENERAL THE TRIALS WERE CONDUCTED AS PLANNED. IN ALL, 51 TRIALS WERE SUCCESSFULLY COMPLETED. THE WINTER CONDITIONS DID NOT PROVE TO BE A MAJOR HARDSHIP ON EITHER EQUIPMENT OR PERSONNEL. IT WAS CONCLUDED THAT WINTER CONDITIONS DID NOT HINDER CLOUD PRODUCTION FROM ANY SOURCE TYPE EXCEPT THE RED PHOSPHORUS PELLETS.

DOD/DROLS B089095

1984

SMOKE WEEK VI/SNOW TWO. VOLUME 1B. OBSCURANT CHARACTERIZATION MEASUREMENTS SUMMARY.

TENNESSEE UNIV SPACE INST TULLAHOMA

KLIMEK W G ;DIETZ K L ;ADAMS D ;FARMER W M ;STALLINGS
E S ;

FINAL REPT., 315P HC COST: \$ 20.05 SEE ALSO VOLUME 2,
AD-C036 017.

THE SMOKE WEEK VI FIELD EXPERIMENT WAS HOSTED BY THE OFFICE FOR THE PROJECT MANAGER SMOKE/OBSCURANTS IN CONJUNCTION WITH THE SNOW-TWO FIELD EXPERIMENT SPONSORED BY U.S. ARMY COLD REGIONS RESEARCH AND ENGINEERING LABORATORY. FIFTY-ONE TRIALS WERE SUCCESSFULLY COMPLETED TO TEST EQUIPMENT, EXPERIMENTAL AND STANDARD OBSCURANT SMOKES, AND DETONATION PROCEDURES UNDER WINTER CONDITIONS. DETAILED MEASUREMENTS OF CLOUD SMOKE AND OBSCURANT PHYSICAL PARAMETERS WERE MADE ON BOTH A MACROSCALE AND A MICROSCALE BASIS. VOLUME 1B IS A CONTINUATION OF THE DATA SECTION, SECTION 3, INITIATED IN SMOKE WEEK VI OBSCURANT CHARACTERIZATION MEASUREMENT SUMMARY, VOLUME 1A. DATA FOR THE PHOSPHORUS TRIALS, TRIALS 110 THROUGH 412, ARE PRESENTED. THE TRIALS ARE GROUPED IN ORDER TO OBSCURANT SOURCE TYPE, PLASTISIZED WHITE PHOSPHOROUS, WHITE PHOSPHOROUS, AND RED PHOSPHOROUS. THIS VOLUME CONCLUDES THE DATA SECTION OF THE UNCLASSIFIED PORTION OF THE SMOKE WEEK VI FINAL REPORT.

DOD/DROLS B090991L

1984

SNOW-TWO DATA REPORT. VOLUME 2. SYSTEM PERFORMANCE.

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

JORDON R ;

SPECIAL REPT., 422P HC COST: \$ 27.54
CRREL-SR-84-20-VOL-2

THE SNOW-TWO/SMOKE WEEK VI FIELD EXPERIMENT HELD AT CAMP GRAYLING, MICHIGAN, WAS A COOPERATIVE EFFORT OF THE U.S. ARMY COLD REGIONS RESEARCH AND ENGINEERING LABORATORY AND THE OFFICE OF THE PROJECT MANAGER SMOKE/OBSCURANTS, THE MAIN OBJECTIVE OF WHICH WAS TO STUDY THE EFFECTS OF MANMADE AND NATURAL OBSCURANTS ON THE PERFORMANCE OF ELECTRO-OPTICAL AND MILLIMETER WAVELENGTH DEVICES. THIS REPORT PRESENTS THE RESULTS OBTAINED BY CRREL AND SOME 20 OTHER AGENCIES DURING THE SNOW-TWO PHASE OF THE EXPERIMENT, COVERING THE PERIODS 28 NOVEMBER TO 21 DECEMBER 1983 AND 4 JANUARY TO 9 MARCH 1984. IT IS FOURTH IN A SERIES OF DATA REPORTS ON THE SNOW FIELD EXPERIMENTS SPONSORED BY THE U.S. ARMY CORPS OF ENGINEERS WINTER BATTLEFIELD OBSCURATION RESEARCH PROGRAM. THE REPORT IS IN TWO MAIN VOLUMES WITH A SUPPLEMENTAL CLASSIFIED VOLUME. THE FIRST VOLUME COVERS THE GENERAL TOPICS OF METEOROLOGY AND SNOW CHARACTERIZATION; THE SECOND COVERS THE TOPICS OF ELECTROMAGNETIC WAVE TRANSMISSION THROUGH FALLING AND BLOWING SNOW, TARGET/ BACKGROUND SIGNATURES, AND SYSTEM PERFORMANCE IN SNOW. KEYWORDS: ELECTROMAGNETIC WAVE PROPAGATION, HYDROMETEORS, MANMADE OBSCURANTS, METEOROLOGICAL PHENOMENA, OBSCURATION, ATMOSPHERIC, PRECIPITATION, PROPAGATION, SYSTEM PERFORMANCE, TARGET ACQUISITION, TARGET/ BACKGROUND SIGNATURES, TARGET DETECTION, VISIBILITY, AND WINTER.

DOD/DROLS B095941

1985

COLD-WEATHER COMBAT: ANALOGIES TO CHEMICAL COMBAT.

INSTITUTE FOR DEFENSE ANALYSES ALEXANDRIA VA

HAMMERMAN G ;APKER D ;MARTELL P ;PETTERSON L ;

FINAL REPT., 57P HC COST: \$ 5.00 IDA-P-1863 PREPARED
IN COOPERATION WITH HISTORICAL EVALUATION AND RESEARCH
ORGANIZATION, FAIRFAX, VA.

COLD WEATHER COMBAT IS USED AS AN ANALOGY TO EXPLORE
POSSIBLE CHARACTERISTICS OF COMBAT IN A CHEMICAL WARFARE
ENVIRONMENT. CHARACTERISTICS OF COLD WEATHER COMBAT ARE
DEFINED USING HISTORICAL EXAMPLES, AND THESE ARE APPLIED
JUDGMENTALLY TO CHEMICAL COMBAT.

DOD/DROLS B099962L

1985

PROBLEMS OF CHEMICAL DEFENSE OPERATIONS IN EXTREME COLD.

ARMY DUGWAY PROVING GROUND UT

STEARMAN ROEBERT L ;

PROBLEMS ENCOUNTERED IN CHEMICAL DEFENSE OPERATIONS IN EXTREME COLD WERE STUDIED. THE AMERICAN SOLDIER HAS NOT FARED WELL IN WINTER WARFARE FROM VALLEY FORGE TO KOREA. A SIGNIFICANT PORTION OF NORTH AMERICA AND EURASIA IS ARCTIC, SUBARCTIC, OR HIGH ALTITUDE. HIGH LATITUDE AND HIGH ALTITUDE CAN PROVOKE MEDICAL PROBLEMS AND PSYCHOLOGICAL ABERRATIONS. IN REGIONS OF EXTREME COLD, THE SOLDIER'S FIRST EFFORT GOES INTO SURVIVING THE ENVIRONMENT. CHEMICAL DEFENSE OPERATIONS WILL ADD TO THE HEAVY BURDEN. THE ARMY OF THE CHINESE PEOPLES REPUBLIC PROVED ITS ABILITY TO FIGHT IN WINTER IN KOREA. SOVIET DOCTRINE AND TRAINING EMPHASIZE OPERATIONS IN COLD WEATHER BECAUSE THEY BELIEVE THEY CAN WIN IN WINTER. THE POTENTIAL FOR CHEMICAL ATTACK IN EXTREME COLD IS EXPLORED. PROBLEMS ENCOUNTERED BY ALASKAN PERSONNEL IN USING CHEMICAL EQUIPMENT ARE DISCUSSED. CONCLUSIONS AND RECOMMENDATIONS ARE PROVIDED. KEYWORDS: AEROSOLS, CHEMICAL CONTAMINATION, CHEMICAL WARFARE AGENTS, CLOTHING, COLD WEATHER COMBAT BOOT, DEFENSE OPERATIONS, DONNING AND DOFFING EQUIPMENT DECONTAMINATION, MOUNTAINS, OVERGARMENT, PERSONNEL DECONTAMINATION, POTENTIAL THREAT, PROTECTIVE EQUIPMENT, PROTECTIVE HOOD, PROTECTIVE MASK, SEVERE COLD CASUALTIES, SHELTER, TEST AND EVALUATION.

DOD/DROLS B106382L

1986

ICE FOG AND CLATHRATE HYDRATE FORMATION AND THEIR CORRELATION WITH AGENT USE IN ARCTIC REGIONS: A LITERATURE SURVEY.

CHEMICAL RESEARCH DEVELOPMENT AND ENGINEERING CENTER
ABERDEEN PROVING GROUND MD

YUROW HARVEY W ;

SPECIAL PUBLICATION REPT. MAY-OCT 85, 21P
5.00 CRDEC-SP-86021

HC COST: \$

ICE FOG AND CLATHRATE HYDRATE FORMATION, OFTEN FOUND IN ARCTIC REGIONS, MAY STRONGLY INFLUENCE USE OF AGENTS IN THESE AREAS. THE ICE FOG FORMATION, WHICH INVOLVES RAPID COOLING OF WATER VAPOR TO FORM EXTREMELY SMALL ICE PARTICLES THAT REMAIN SUSPENDED FOR EXTENDED PERIODS, MAY SERVE AS A COVER FOR AGENT DISSEMINATION. THE HYDRATE FORMATION TRAPS GASES OR LOW BOILING LIQUIDS IN CRYSTALS THAT RESEMBLE SNOW OR LOOSE ICE. AS TEMPERATURES RISE, THE COMPOUND RAPIDLY BREAKS DOWN.

DOD/DROLS B111608L

1987

COLD WEATHER DECONTAMINATION OPERATIONS.

BATTELLE COLUMBUS DIV OH

REIDY JOHN J ;BAUM JOSEPH V ;HILL TERRANCE E ; RUDOLPH
ROBERT C ;STANFORD THOMAS B ;

CONTRACTOR REPT. JUL 86-JAN 87, 72P HC COST: \$ 5.00

LITERATURE REVIEWS, STUDIES AND TESTS WERE CONDUCTED TO
DETERMINE THE ABILITY OF WATER BASED SYSTEMS TO PERFORM
DECONTAMINATION IN COLD WEATHER. THIS INCLUDES BOTH THE
EQUIPMENT AND THE PROTECTIVE CLOTHING THAT THE OPERATORS
WEAR. IT ALSO INCLUDES CONSIDERATIONS OF THE EFFECTS OF
ANTIFREEZE WATER SOLUTIONS FROM BOTH A LOGISTICS AS WELL AS
A MATERIALS COMPATIBILITY STANDPOINT. KEYWORDS: AQUEOUS.

DOD/DROLS B114331L

1987

FIRST ARTICLE - INITIAL PRODUCTION TEST (FA- IPT) OF
DECONTAMINATION KIT, INDIVIDUAL EQUIPMENT, M280.

ARMY COLD REGIONS TEST CENTER FORT GREELY AK

CARSON JEFFERY L ;

FINAL LETTER REPT. 3 MAR-29 APR 87, 69P HC COST: \$
5.00

THE COLD REGIONS TEST CENTER (CRTC), FORT GREELY, ALASKA,
CONDUCTED A LIMITED FA-IPT OF THE M280 DECONTAMINATION KIT,
INDIVIDUAL EQUIPMENT (DKIE) AND ITS ASSOCIATED TRAINING
AID, INDIVIDUAL EQUIPMENT DECONTAMINATION TRAINING AID
(IEDTA) FROM 3 MARCH 1987 TO 29 APRIL 1987 AT FORT GREELY,
ALASKA. TEST PARTICIPANTS WERE 10 TEST SUPPORT SOLDIERS
FROM VARIOUS FORCES COMMAND (FORSCOM) UNITS WITH MILITARY
SKILL OCCUPATION (MOS) BEING IMMATERIAL. EACH SQUAD
CONTAINER CONTAINED 20 INDIVIDUAL DECONTAMINATION
CONTAINERS. A TOTAL OF 47 DKIE INDIVIDUAL CONTAINERS WERE
USED, WITH 24 BEING CARRIED FOR A TOTAL OF 1.082 HOURS.

DOD/DROLS B114543

1978

HYDROLYTIC STABILITY OF SOMAN.

NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT KJELLER

BLANCH J H ;ONGSTAD L ;

INTERN RAPPORT, 10P HC COST: \$ 5.00 FFI-TOX-89

THE RATE OF HYDROLYSIS OF SOMAN HAS BEEN STUDIED IN
CONCENTRATED AQUEOUS SOLUTION. THESE VALUES, AND VALUES FOR
THE FREEZING-POINT DEPRESSION CURVE OF SOMAN IN WATER WERE
USED IN COMBINATION WITH A THEORETICAL MODEL TO PREDICT THE
STABILITY OF SOMAN ON SNOW AND ICE BELOW 0 C. THE PREDICTED
VALUES HAVE BEEN VERIFIED BY OTHER EXPERIMENTAL DATA.

ARCTIC THREAT ASSESSMENT.

SCIENCE APPLICATIONS INTERNATIONAL CORP MCLEAN VA

STANSBURY MARY M; METZ DENNIS F; MCNALLY RICHARD E;
BRUNO JOHN E

CONTRACTOR REPT. JUL 86-APR 87, 111P HC COST: \$ 5.77

IN THE PAST, CB THREAT ASSESSMENTS HAVE BEEN DIRECTED PRIMARILY AT AN EUROPEAN ENVIRONMENT. RECENT EFFORTS HAVE EXPANDED ASSESSMENTS TO A MIDDLE EAST ENVIRONMENT. THERE IS A CURRENT NEED TO EXPAND EFFORTS TO INCLUDE ARCTIC ENVIRONMENTS. ALTHOUGH DATA REQUIRED TO PERFORM SUCH ASSESSMENTS IS SCARCE, THERE IS ENOUGH DATA AVAILABLE TO CONDUCT A PRELIMINARY ASSESSMENT OF THREAT IN AN ARCTIC ENVIRONMENT. THE OVERALL OBJECTIVE OF THE ARCTIC THREAT ASSESSMENT TASK WAS TO SIMULATE THE CHEMICAL HAZARD IN AN ARCTIC ENVIRONMENT. INPUT PARAMETERS WERE DETERMINED FOR THE NUSSE3 AND VEHW MODELS TO EVALUATE PERFORMANCE OF A CHEMICAL AGENT IN AN ARCTIC ENVIRONMENT, AND THREAT SITUATIONS WERE DEVELOPED TO INCLUDE AGENT/MUNITION COMBINATIONS AND DISSEMINATION CHARACTERISTICS. FINALLY, A COMPARISON OF SAMPLE RESULTS PRODUCED BY NUSSE3 AND VEHW WITH RESULTS PRODUCED BY THE NORWEGIAN MODEL (PREDICT) WAS MADE. (AUTHOR)

PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD.
PART 1. LITERATURE REVIEW AND THEORETICAL EVALUATION,

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

LEGGETT DANIEL C

27P HC COST: \$ 5.00 CRREL-87-12-PT-1

LITERATURE CONCERNING PERSISTENCE OF CHEMICAL WARFARE AGENTS AND RELATED CHEMICALS IN COLD ENVIRONMENTS IS ANALYZED. AN EXISTING MODEL OF DROPLET PERSISTENCE IS DISCUSSED IN RELATION TO EVAPORATION THEORY AND PRACTICAL UNCERTAINTIES. THIS MODEL WAS QUESTIONED IN THE CASE OF ICE AND SNOW-COVERED TERRAIN -- A NEW MODEL MAY BE NEEDED, BUT THE NECESSARY EXPERIMENTAL DATA FOR TESTING AND VALIDATION ARE NOT YET AVAILABLE. EXPERIMENTAL EVAPORATION DATA FOR CHEMICALS ON SNOW ARE NEEDED AS WELL AS THE SOLUBILITIES OF ICE IN THE RELEVANT CHEMICALS. SINCE EVAPORATION FROM ICE IS INFERRED TO BE SIGNIFICANTLY RETARDED, IT WAS EMPHASIZED THAT THE RATES OF CHEMICAL DEGRADATION NEED TO BE ADDRESSED UNDER THESE CONDITIONS. HYDROLYSIS IS A MECHANISM OF AGENT DEGRADATION ALREADY EXPERIMENTALLY DEMONSTRATED IN ICE.

MORE EXPERIMENTS ARE NEEDED UNDER CONDITIONS REALISTICALLY SIMULATING AGENT DISSEMINATION OVER SNOW AND ICE COVERS. PHOTOLYSIS IS A THIRD POTENTIAL MECHANISM OF AGENT DISSIPATION. THEORETICAL AND INDIRECT EXPERIMENTAL EVIDENCE SUGGEST THAT IT IS A WIDER PATHWAY. BECAUSE THERMAL ACTIVATION IS THEORETICALLY NOT REQUIRED, IT MAY PROCEED EQUALLY RAPIDLY AT LOW OR HIGH TEMPERATURES. SUGGESTIONS FOR RELEVANT EXPERIMENTS-- DROPLET EVAPORATION AND SOLUBILITY TESTS, AND TESTS OF HYDROLYSIS AND PHOTOLYSIS OF DROPLETS ON ICE AND SNOW SURFACES -- WERE MADE. KEYWORDS: CHEMICAL AGENTS, CHEMICAL WARFARE, COLD REGIONS, EVAPORATION, HYDROLYSIS, PHOTOLYSIS.

DOD/DROLS B115486

1987

SNOW SYMPOSIUM VI HELD IN HANOVER, NEW HAMPSHIRE ON AUGUST 1986. VOLUME 1.

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

SPECIAL REPT. 213P HC COST: \$ 12.91
CRREL-SR-87-12-VOL-1

PARTIAL CONTENTS: PROPERTIES OF FALLING SNOW AND SNOW PACK--SNOW-III WEST DATA BASE PREVIEW SCAVENGING OF INFRARED SCREENER EA 5763 BY FALLING SNOW, ARCTIC/WINTER CAMOUFLAGE PATTERN, HUMIDITY AND TEMPERATURE MEASUREMENTS OBTAINED FROM AN UNMANNED AERIAL VEHICLE, AND ACOUSTIC-TO-SEISMIC COUPLING THROUGH A SNOW LAYER; VISIBLE AND INFRARED RADIATION INTERACTION WITH SNOW AND SNOW COVER--SNOW-SMOKE SYNERGISM DATA REVIEW, SMART TRANSMISSION SUPPORT AT SNOW IV, FORWARD SCATTER METER FOR MEASURING EXTINCTION IN ADVERSE WEATHER, EFFECT OF TRANSMISSOMETER BEAM GEOMETRY ON SNOW TRANSMITTANCE MEASUREMENTS, PRELIMINARY REPORT IN EXTINCTION AND SCATTERING DUE TO FALLING SNOW; SLANT PATH EXTINCTION AND VISIBILITY MEASUREMENTS FROM AN UNMANNED AERIAL VEHICLE, AND EFFECT OF INSTRUMENT CONFIGURATION ON MEASUREMENT OF TRANSMITTANCE IN SNOW; MILLIMETER WAVELENGTH INTERACTION WITH SNOW AND SNOW PACK--WET PRECIPITATION IN SUBFREEZING AIR BELOW A CLOUD INFLUENCES RADAR BACKSCATTERING, PULSE AIRBORNE MILLIMETER WAVE MEASUREMENTS OF SNOW- COVERED GROUND, MEASUREMENTS ON THE REFLECTIVITY OF SNOW-COVERED TERRAIN AT 94 GHZ, MILLIMETRIC RADAR BACKSCATTER TRIALS.

DOD/DROLS B121807

1988

PERSISTENCE OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD,

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

LEGGETT DANIEL C

16P HC COST: \$ 5.00 CRREL-88-3

VERY LITTLE INFORMATION IS AVAILABLE ON THE EVAPORATION OF LIQUID CHEMICALS FROM ICE OR SNOW. ORGANOPHOSPHORUS CHEMICAL AGENTS AND THEIR SIMULANTS HAVE APPRECIABLE MUTUAL SOLUBILITY WITH WATER. THEORETICALLY, THIS WOULD BE EXPECTED TO LEAD TO SIMPLE DILUTION, CAUSING RETARDATION OF THEIR EVAPORATION AT THE ICE/AIR INTERFACE. POLAR CHEMICALS SUCH AS THESE ARE ALSO KNOWN TO SPREAD WHEN APPLIED TO ICE ENHANCING EVAPORATION DUE TO SURFACE AREA EXPANSION OR A 'SPREAD FACTOR' RELATIVE TO NON-SPREADING DROPLETS. THESE NOTIONS WERE TESTED BY COMPARING EVAPORATION OF DIMETHYL METHYLPHOSPHONATE (DMMP) FROM ICE AND TEFLON, A NON-SPREADING SURFACE. EVAPORATION FROM ICE WAS INITIALLY MUCH SLOWER, BUT INCREASED WITH TIME, WHILE THE EVAPORATION RATE FROM TEFLON WAS NEARLY CONSTANT. THE DATA SUGGEST THAT DISSOLUTION OF ICE AT THE INTERFACE RETARDS DMMP EVAPORATION. THIS IS SUPPORTED BY THE EQUILIBRIUM SOLUBILITY OF ICE IN DMMP, WHICH WAS MEASURED CONCURRENTLY. THESE PRELIMINARY RESULTS IMPLY THAT EVAPORATION OF CHEMICAL AGENTS DISPERSED ON ICE WILL BE RETARDED TO SOME DEGREE BY THE DISSOLUTION PROCESS. FURTHER EXPERIMENTATION WILL BE NEEDED TO EXPLAIN THE OBSERVED INCREASE IN EVAPORATION RATE WITH TIME.

DOD/DROLS B122022L

1988

THE USE OF AGENTS IN ARCTIC REGIONS: BASIC CONSIDERATIONS AND PROPOSALS.

CHEMICAL RESEARCH DEVELOPMENT AND ENGINEERING CENTER
ABERDEEN PROVING GROUND MD

YUROW HARVEY W

SPECIAL PUBLICATION FEB 85-JUN 86, 35P HC COST: \$ 5.00
CRDEC-SP-88018

AGENTS INTRODUCED INTO ARCTIC REGIONS TEND TO REMAIN CONCENTRATED AROUND THE POINT OF INTRODUCTION. EVAPORATION RATES ARE RETARDED BY LOW TEMPERATURES, AIR INVERSIONS, SNOW COVER, AND THE POSSIBILITY OF CLATHRATE HYDRATE FORMATION. HYDROLYSIS RATES ARE SLOWER ALTHOUGH CATALYTIC EFFECTS IN SNOW MAY ENHANCE KINETICS. HAZARDS UNIQUE TO THIS AREA INCLUDE TRACKING OF CONTAMINATED SNOW INTO HEATED ENCLOSURES AND PERCUTANEOUS ABSORPTION OF AGENTS VIA ICE FOGS. KEYWORDS: CHEMICAL AGENTS, DISSEMINATION, VX AGENT, GB AGENT, HD, ARCTIC, ANALYSIS, DECONTAMINATION, CLATHRATE HYDRATE, ICE FOG, SNOW.

EXPERIMENTAL MEASUREMENTS OF THE PROPERTIES OF CHEMICAL
SURETY MATERIALS UNDER CONDITIONS OF EXTREME COLD.

INTERNATIONAL MENLO PARK CA

DOLL R T; PARISH HELEN J

CONTRACTOR REPT. JUL 86-SEP 87, 88P HC COST: \$ 5.00

OUR GENERAL OBJECTIVE WAS TO INVESTIGATE THE VAPORIZATION OF PERSISTENT CHEMICAL AGENTS UNDER COLD CONDITIONS. SPECIFIC TASKS INCLUDED THE MEASUREMENT OF THE VAPOR PRESSURE OF CHEMICAL AGENTS, GB, GD, AND HD AND SIMULANTS DI-N-BUTYL SULFIDE AND DIMETHYL SULFOXIDE AT TEMPERATURES RANGING FROM -40 C TO 0 C AND THE VAPORIZATION RATES OF THESE AGENTS AND SIMULANTS FROM SURFACES OVER THE SAME TEMPERATURE RANGE AND AT AIR VELOCITIES OF 0- 10 M/SEC. VAPOR PRESSURES WERE MEASURED USING THE GAS SATURATION METHOD AND WERE FITTED TO LINEAR PLOTS OF $\log P$ VERSUS $1/T$ WHERE P IS THE VAPOR PRESSURE AND T IS THE ABSOLUTE TEMPERATURE. IN THE FIRST PHASE OF THE VAPORIZATION STUDIES, POOL EVAPORATION EXPERIMENTS WERE CONDUCTED TO CORRELATE CHEMICAL FLUX TO TEMPERATURE AND WIND SPEED. IN THE SECOND PHASE, DROPLET VAPORIZATION WAS MEASURED AND THESE LABORATORY DATA WERE USED TO ESTIMATE THE PERSISTENCE OF NEAT AGENT DROPLETS ON CONTAMINATED SURFACES AT COLD TEMPERATURES. KEYWORDS: CHEMICAL AGENTS; VAPOR PRESSURES, VAPORIZATION, COLD TEMPERATURES, MUSTARD AGENTS, GB AGENTS, GD AGENTS. (MJM)

DECONTAMINATION OF CHEMICAL AGENTS ON THE WINTER BATTLEFIELD:
A LITERATURE REVIEW AND PRELIMINARY ASSESSMENT,

COLD REGIONS RESEARCH AND ENGINEERING LAB HANOVER NH

PARKER LOUISE V

65P HC COST: \$ 5.00 CRREL-88-7

THIS REPORT REVIEWS THE LITERATURE EXISTING PRIOR TO 1987 ON THE EFFECTIVENESS OF CHEMICAL DECONTAMINATION IN A COLD OR WINTER ENVIRONMENT. BOTH CHEMICAL NEUTRALIZATION TECHNIQUES AND PHYSICAL METHODS FOR DECONTAMINATION ARE DISCUSSED WITH RESPECT TO THEIR USE ON A WINTER BATTLEFIELD. THE U.S. ARMY'S CURRENT STANDARD DECONTAMINANTS ARE COMPARED TO OTHER CHEMICAL NEUTRALIZING AGENTS. PHYSICAL DECONTAMINATION METHODS THAT ARE DISCUSSED INCLUDE THERMAL DECOMPOSITION METHODS, HOT AIR DECONTAMINATION, AQUEOUS AND SOLVENT CLEANING TECHNIQUES, ABRASIVE CLEANING TECHNIQUES, AND THE USE OF ABSORBENTS.

THE POTENTIAL UTILITY OF FIELD EXPEDIENT METHODS ON A WINTER BATTLEFIELD IS REVIEWED. FINAL RECOMMENDATIONS CITE SPECIFIC AREAS WHERE RESEARCH IS NEEDED SO THAT COLD WEATHER DECONTAMINATION DOCTRINE CAN BE BETTER DEFINED. CHEMICAL WARFARE AGENTS, CHEMICAL WARFARE, COLD REGIONS, DECONTAMINATION, WINTER WARFARE. (MJM)

DOD/DROLS B123801L

1988

EVALUATION OF AQUEOUS-BASED DECONTAMINATING APPROACHES AT EXTREME COLD TEMPERATURES.

MSA RESEARCH CORP PITTSBURGH PA

FRIEL JOSEPH V; GRAHAM MICHAEL G; VANCHERI FRANK J

CONTRACTOR REPT. MAR-DEC 87, 59P HC COST: \$ 5.00
INCLUDES ERRATA SHEET DATED 25 MAY 88.

THERE ARE INDICATIONS IN THE LITERATURE THAT SOVIET DOCTRINE DETAILS THE USE OF CHEMICAL WARFARE AGENTS ON THE BATTLEFIELD UNDER EXTREME COLD CONDITIONS. THE OBJECTIVE OF THIS REPORT IS TO EVALUATE AQUEOUS-BASED DECONTAMINATION AS A SOLE DECONTAMINATION APPROACH AND IN CONJUNCTION WITH DS2 FOR THE DECONTAMINATION OF CHEMICAL AGENTS AT EXTREME COLD TEMPERATURES. KEYWORDS: COLD WEATHER, DECONTAMINATION, HEATED WATER, WATER/GLYCOL SOLUTION, VX AGENT, MUSTARD AGENTS. (MJM)

DOD/DROLS B954550L

1949

TEST OF ATROPINE AMPINS UNDER SUB-ARCTIC CONDITIONS.

CHEMICAL CORPS ARMY CHEMICAL CENTER MD

ESSIG CARL F ;MC SHANE WILLIAM P ;STREICHER
EUGENE;FLEISCHMANN WALTER;

MEDICAL DIVISION REPT., 22P HC COST: \$ 5.00 MDR-202

(Abstract not available)

DOD/DROLS B955545L

1960

CW OPERATIONS IN LOW TEMPERATURE AREAS.

ARMY COMBAT DEVELOPMENTS COMMAND FORT MCCLELLAN AL CHEMICAL-
BIOLOGICAL-RADIOLOGICAL AGENCY

ARMY COMBAT DEVELOPMENTS COMMAND FORT MCCLELLAN AL CHEMICAL-
BIOLOGICAL-RADIOLOGICAL AGENCY

FINAL REPT. 90P HC COST: \$ 5.00 CMLCD-59-1

(Abstract not available)

DOD/DROLS B963860L

1953

THE EVAPORATION OF MUSTARD GAS IN COLD WEATHER.

SUFFIELD EXPERIMENTAL STATION RALSTON (ALBERTA)

SUFFIELD EXPERIMENTAL STATION RALSTON (ALBERTA)

12P HC COST: \$ 5.00 SES-FIELD EXPERIMENT-385

(Abstract not available)

DOD/DROLS C950164L

1973

(CLASSIFIED TITLE)

DEFENCE NBC SCHOOL SALISBURY (ENGLAND)

DEFENCE NBC SCHOOL SALISBURY (ENGLAND)

55P HC COST: \$ 5.00 R2/73 ORIGINAL CONTAINS COLOR
PLATES: ALL DDC REPRODUCTIONS WILL BE IN BLACK AND WHITE.

(CLASSIFIED ABSTRACT)

DOD/DROLS C950165L

1974

(CLASSIFIED TITLE)

DEFENCE NBC SCHOOL SALISBURY (ENGLAND)

DEFENCE NBC SCHOOL SALISBURY (ENGLAND)

79P HC COST: \$ 5.00 R2/74

(CLASSIFIED ABSTRACT)

DOD/DROLS C953524L

1982

IMPACT OF LOW TEMPERATURE ON INDIVIDUAL CHEMICAL PROTECTION.

ARMY NATICK RESEARCH AND DEVELOPMENT CENTER MA

HERZ MATTHEW L ; BRANDLER PHILIP;

FINAL REPT. 1979-1982, 123P HC COST: \$ 6.61
NATICK/TR-85/038L

(Abstract not available)

DOD/DROLS C955028

1948

(CLASSIFIED TITLE)

QUARTERMASTER RESEARCH AND ENGINEERING COMMAND NATICK MASS

ELIOT JOHAN W ;GODDARD WILLIAM L ;

24P HC COST: \$ 5.00 137

(CLASSIFIED ABSTRACT)

DOD/DROLS C955838

1974

(CLASSIFIED TITLE)

NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT KJELLER

BLANCH J H

17P HC COST: \$ 5.00 NDRE-S11

(Abstract not available)

DOD/DROLS P200226

1984

SMOKE WEEK VI/SNOW-TWO OBSERVATIONS,

CREATIVE OPTICS INC BEDFORD MA

EBERSOLE J F ;KLIMEK W ;

3P HC COST: \$ 5.00 THIS ARTICLE IS FROM 'SNOW
SYMPOSIUM IV: HANOVER, NEW HAMPSHIRE, 14-16 AUGUST 1984.
VOLUME 1,' AD-B090 935, P405-407.

WE REPORT ON OBSERVATIONS BASED ON VIDEO AND PHOTOGRAPHIC
DATA OBTAINED AT SMOKE WEEK VI/SNOW-TWO IN SNOW/COLD
ENVIRONMENTAL CONDITIONS. WE DISCUSS FIELD RESULTS WHICH
ARE UNIQUE TO SMOKE TESTS IN WINTER ENVIRONMENTS VERSUS
THOSE CONDUCTED IN TEMPERATURE CLIMATES. INCLUDED IS
CONSIDERATION OF SMOKE/OBSCURANT TYPES, THEIR METHOD OF
DISSEMINATION, AND THE EFFECTS PRODUCED BY VARIOUS
METEOROLOGICAL CONDITIONS.

DOD/DROLS P200228

1984

MODELING THE EFFECTS OF A COLD ENVIRONMENT ON SCREENING
SMOKES,

OPTIMETRICS INC ANN ARBOR MI

MATISE B K ;

17P HC COST: \$ 5.00 THIS ARTICLE IS FROM 'SNOW
SYMPOSIUM IV: HANOVER, NEW HAMPSHIRE, 14-16 AUGUST 1984.
VOLUME 1,' AD-B090 935, P417-433.

MODELS HAVE BEEN DEVELOPED TO REPRESENT SOME OF THE MORE
SIGNIFICANT EFFECTS OF COLD TEMPERATURES AND SNOW COVER ON
INVENTORY SMOKE PERFORMANCE. OF GREATEST IMPORTANCE ARE THE
EFFECTS OF SNOW EXTINGUISHING RED PHOSPHORUS WEDGES AND A
CHANGE IN FOG OIL EXTINCTION AT 1.06 MICRONS. THE EFFECTS
OF LOW ABSOLUTE HUMIDITY ON HYGROSCOPIC SMOKE YIELD FACTOR
AND EXTINCTION COEFFICIENT HAVE ALSO BEEN MODELED. THE
ENVIRONMENTAL CONDITIONS ENCOUNTERED AT SMOKE WEEK VI WERE
RELATIVELY SIMILAR. TEMPERATURES RANGED FROM -5C TO - 15C
AND RELATIVE HUMIDITY TENDED TO BE IN THE VICINITY OF 80%
FOR THE HYGROSCOPIC SMOKE TRIALS. AS A RESULT, FOR
TEMPERATURES SIGNIFICANTLY COLDER THAN -15C AND RELATIVE
HUMIDITY ABOVE 85%, THE MODELING MAY NOT ADEQUATELY
DESCRIBE THE OBSCURANT.