Description of document:	U.S. Army Dugway Proving Ground Technical Report Bibliography for Corporate Author = Cornell Aeronautical Laboratory Inc., 2010
Requested date:	2009
Released date:	26-January-2010
Posted date:	21-November-2016
Source of document:	FOIA Request DPG Legal Office 5450 Doolittle Avenue Dugway, UT 84022-5002 Submit FOIA Request by email: Click here

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY DUGWAY PROVING GROUND
DUGWAY UT 84022-5000

January 26, 2010

REPLY TO
ATTENTION OF:

Office of the Command Judge Advocate

We are in receipt of your email in which you request copies of citations for reports produced by several corporate authors. Please find the following bibliographies enclosed:

a. Whirlpool Corporation – there are 23 records. Twenty of these documents are still classified.

b. Proctor and Gamble – there were six documents located and all are unclassified.

c. General Mills, Inc. – there are 151 documents, the majority of which are classified.

d. Cornell Aeronautical Lab Inc. – there are 280 documents, the majority of which are classified.

e. Dow Chemical – there were 62 records located, six of which are still classified.

Your request was processed in accordance with the provisions of the Freedom of Information Act (FOIA), 5 USC Section 552. While you agreed to pay processing costs, they were less than the minimum charge.

If you have questions regarding our response to your request, please direct them to Ms. Teresa S. Shinton, FOIA Officer, US Army Dugway Proving Ground, Legal Office, 5450 Doolittle Avenue MS#2, Dugway, Utah 84022-5002; telephone (435) 831-3333; email: teresa.shinton@us.army.mil

Sincerely,

Teresa Shinton

for Kateni T. Leakehe
Major, US Army
Command Judge Advocate

Enclosures

Date: 20100125
Criteria: (CORPAUTHOR CONTAINS_OR {dugway, deseret}) OR (REPORTNUM CONTAINS_OR {dpg*, wdtc*, dtc*}) AND (CORPAUTHOR CONTAINS_OR {cornell aeronautical})
Execution Time: 0.000 seconds
Your search yielded 34 records.

STAFF - S/(AllCaveats) Copyright - Y Export - Y

CBRNIAC Number: CB-069571
Site Holding: CB DW 536168 EDG E499472
AD Number:
Title: Project Chord: Volume 2. Semiannual Progress Report, Technical Discussion Appendices.
Author(s): O'Connor, Arthur D.
Report Number: DPG-62-2099 GM-1592-G-3 CRDL-TL-63-SRD-742
Publish Date: 19620228
Abstract: (Abstract is unavailable.)
Descriptive Note: Semiannual Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 556
CB Collection: CA
Media Type: CPDF
Document Classification: S/RD
Supplemental Notes:

CBRNIAC Number: CB-069824
Site Holding: CB DW 536170
AD Number:
Title: Joint USCONARC -- Plan for Integrated Systems Test of AN/USD-2 (XAE-2) Surveillance System.
Author(s):
Report Number: DPG-61-1391
Publish Date: 19610615
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 228
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-070622
Site Holding: CB DW 508365
AD Number:
Title: Project WASP. Summary Report, Volume 1.
Author(s):
Report Number: DPG-61-1418
Publish Date: 19610206
Abstract: (Abstract is unavailable.)
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY

Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 33
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074346
Site Holding: CB DW 525197
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 54, 1 June-30 June 1969.
Author(s): Reinnagel, R. E.
Report Number: IMPR-54 DTC-69-1191
Publish Date: 19690630
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 45
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074467
Site Holding: CB DW 524705
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 34, 1 April-30 April 1964.
Author(s):
Report Number: IMPR-34 DTC-64-685
Publish Date: 19640430
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 32
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074480
Site Holding: CB DW 524711
AD Number:
Title: Interim Progress Report on the Cal-Dita Program.
Author(s): Klingaman, R. M. O'Connor, A. D.
Report Number: WP-13 DTC-64-775 GM-1592
Publish Date: 19640401
Abstract: (Abstract is unavailable.)

Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 234
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074490
Site Holding: CB DW 524719
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 35, 1 May-31 May 1964.
Author(s):
Report Number: IMPR-35 DTC-64-984 GM-1592-G-72-519
Publish Date: 19640531
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progess Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 24
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074542
Site Holding: CB DW 524773 EDG E499466
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 26, 1-31 August 1963.
Author(s):
Report Number: DTC-63-643 IMPR-26 CRDL-63-S-985 CRDL-TL-64-S-428
Publish Date: 19630831
Abstract: Cornell Aeronautical Laboratory initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project is currently operating with six to eight scientific researchers and eight to ten supporting personnel. During this period, our activities were directed torward: Development of a work program for tactical incapaciting agent munitions (TIM). Preliminary experimentation in the DITA Special Study Area. Phase 1 effort on Concept No. 4 (POPCORN).
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 24
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074547
Site Holding: CB DW 524779 EDG E499467

AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 27, 1-30 September 1963.
Author(s):
Report Number: IMPR-27 DTC-63-731 CRDL-63-S-1067 CRDL-TL-64-S-932
Publish Date: 19630930
Abstract: CAL initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 25
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074552
Site Holding: CB DW 524797
AD Number:
Title: Mathematical, Statistical, and Operation Research Services.
Author(s):
Report Number: CAL-P-187 DTC-63-360
Publish Date: 19630617
Abstract: (Abstract is unavailable.)
Descriptive Note: Proposal
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 254
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074566
Site Holding: CB DW 524817
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 33, 1 March-31 March 1964.
Author(s):
Report Number: DTC-64-507 IMPR-33
Publish Date: 19640331
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 31
CB Collection: CA
Media Type: CPDF
Document Classification: C

Supplemental Notes:

CBRNIAC Number: CB-074569
Site Holding: CB DW 524822
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 36, 1 June-30 June 1964.
Author(s):
Report Number: IMPR-36 DTC-64-1130
Publish Date: 19640630
Abstract: CAL initiated performance on the subject contract (Code name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 26
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074570
Site Holding: CB DW 524828
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 37, 1 July-31 July 1964.
Author(s):
Report Number: IMPR-37 DTC-64-1276
Publish Date: 19640731
Abstract: CAL initiated performance on the subject contract (Code name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 26
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074742
Site Holding: CB DW 524833
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 38, 1 August-31 August 1964.
Author(s):
Report Number: DTC-64-1429 IMPR-38
Publish Date: 19640831
Abstract: CAL initiated performance in the subject contract (Code name: Project CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.

Subject Keywords:
Page Count: 33
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074757
Site Holding: CB DW 524840
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 39, 1 September-30 September 1964.
Author(s):
Report Number: DTC-64-1544 IMPR-39
Publish Date: 19640930
Abstract: CAL initiated performance on the subject contract (CODE name: Project CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 50
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074765
Site Holding: CB DW 524841
AD Number:
Title: Project CHORD. Working Paper No. 15.
Author(s):
Report Number: WP-15 DTC-64-1545
Publish Date: 19641016
Abstract: This paper presents a detailed description of the Explosive Acceleration Test Unit constructed at this Laboratory under Contract DA-18-108-CML-6628-A Project CHORD. To present experimental results on a timely basis, test results and a complimentary discussion are presented in Sections IV and V, respectively. Although the work to date has been limited, some conclusions derived from the test data are presented in Section VI. Additional experimental work is needed and planned. These efforts will be presented as available. Working Paper No. 15 will be referenced in future publiations so redundant equipment description can be omitted. The design, construction, and use of this facility are the direct efforts of Messrs. R. J. Sydow, H. Washburn, and C. J. Borkowski. The helpful suggestions of Mr. C. J. Schneidder, Jr. also are appreciated.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 38
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074793

Site Holding: CB DW 524884
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 1, 1 January-31 January 1965.
Author(s):
Report Number: DTC-65-1296 IMPR-1
Publish Date: 19650131
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 49
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074796
Site Holding: CB DW 524885
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 2, 1 February-28 February 1965.
Author(s):
Report Number: IMPR-2 DTC-65-1297
Publish Date: 19650228
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 47
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074798
Site Holding: CB DW 524889
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 3, 1 March-31 March 1965.
Author(s):
Report Number: IMPR-3 DTC-65-1484
Publish Date: 19650331
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 61
CB Collection: CA

Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074875
Site Holding: CB DW 524894
AD Number:
Title: Determination of Candidate Incapacitating Munition -- Ground Delivery Systems for Feasibility Study.
Author(s): Eusanio, L. A. O'Connor, A. D. Talley, R. L.
Report Number: DTC-65-1578 GM-1592-G-22
Publish Date: 19641201
Abstract: (Abstract is unavailable.)
Descriptive Note: Feasibility Study
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 102
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074880
Site Holding: CB DW 524899
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 5, 1 May-31 May 1965.
Author(s):
Report Number: DTC-65-1793 IMPR-5
Publish Date: 19650531
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 57
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074882
Site Holding: CB DW 524900
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 4, 1 April-30 April 1965.
Author(s):
Report Number: DTC-65-1713 IMPR-4
Publish Date: 19650430
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.

Subject Keywords:
Page Count: 55
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074885
Site Holding: CB DW 524910
AD Number:
Title: Project CHORD. Summary Report, 15 June 1961-31 December 1964.
Author(s): Reinnagel, Richard E.
Report Number: GM-1592-G-23 DTC-65-1925
Publish Date: 19641231
Abstract: This summary report has been prepared in accordance with the provisions of Contract No. DA-18-108-CML-6628-A abd covers the period from 15 June 1961 through 31 December 1964. This publication lists reference reports which describes the Phase I and Phase II efforts conducted by Cornell Aeronautical Laboratory, Inc (CAL) to determine effective means for delivery of lethal, incapacitating, flame, smoke, and incendiary chemical agents by air and ground weapons systems and to evolve new and novel chemical munitions which significantly enhance our military capability against any class of enemy in any type of conflict. In addition, a brief description and current status of the research and development program for each agent/munition/weapons system concept considered during the period covered by this report is presented.
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 51
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074887
Site Holding: CB DW 524912 EDG E499470
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 30, 1-31 December 1963.
Author(s):
Report Number: DTC-64-198 IMPR-30 CRDL-64-S-125 CRDL-TL-64-S-121
Publish Date: 19631231
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 47
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074890
Site Holding: CB DW 524914
AD Number:

Title: Project CHORD II. Informal Monthly Progress Report No. 6, 1 June-30 June 1965.
Author(s):
Report Number: IMPR-6 DTC-65-1987
Publish Date: 19650630
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 52
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076711
Site Holding: CB DW 522197 EDG E499465
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 25, 1-31 July 1963.
Author(s):
Report Number: IMPR-25 DTC-63-545 GM-1592-G CRDL-63-S-853 CRDL-TL-63-S-848
Publish Date: 19630731
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-076774
Site Holding: CB DW 524960
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 8, 1 August-31 August 1965.
Author(s):
Report Number: DTC-65-2190 IMPR-8
Publish Date: 19650831
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 43
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076788
Site Holding: CB DW 524975
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 11, 1 November-30 November 1965.
Author(s):
Report Number: DTC-66-288 IMPR-11
Publish Date: 19651130
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effectiveness means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 43
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077008
Site Holding: CB DW 525113
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 18, 1 June-30 June 1966.
Author(s):
Report Number: DTC-66-1400 IMPR-18
Publish Date: 19660630
Abstract: On 1 January 1965 effort on this project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 54
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-077225
Site Holding: CB DW 525192
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 53, 1 May-31 May 1969.
Author(s): Reinnagel, R. E.
Report Number: DTC-69-1099 IMPR-53
Publish Date: 19690531
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 46
CB Collection: CA

Media Type: CPDF
Document Classification: S/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-078131
Site Holding: CB DW 524788 EDG E499469
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 29, 1-30 November 1963.
Author(s):
Report Number: IMPR-29 DTC-64-33 CRDL-64-S-10 CRDL-TL-64-S-431
Publish Date: 19631130
Abstract: CAL initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services, such as shop and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 40
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes: Change Authority: Regraded Confidential by authority of DoD 5200.1-R, Nov 1975.

CBRNIAC Number: CB-078137
Site Holding: CB DW 524926 EDG E499471
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 31, 1-31 January 1964.
Author(s):
Report Number: IMPR-31 DTC-64-284 CRDL-64-S-192 CRDL-TL-64-S-433 CRDL-TL-65-S-285
Publish Date: 19640131
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 32
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: Regraded Confidential by authority of DoD 5200.1-R, 15 Jul 1976.

CBRNIAC Number: CB-085246
Site Holding: CB DW 524811
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 32, 1-29 February 1964.
Author(s):
Report Number: DTC-64-405 CRDL-64-S-300
Publish Date: 19640229
Abstract: CAL initiated performance on the subject contract (Code Name CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.

Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 36
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: Regraded Confidential by authority of DoD 5200.1-R, 16 Jul 1976.

CBRNIAC Number: CB-141768
Site Holding: CB DT DW 511886
AD Number: 507690
Title: Chemical Agents Munitions Systems for Tactical Employment (Project CHORD). Volume 2. Summary Report, 1 January 1965-15 November 1969.
Author(s): Reinnagel, Richard E.
Report Number: CAL-GM-1592-G-38-VOL-2 DTC-70-359
Publish Date: 19691101
Abstract: The objective of the work conducted under this contract was to determine effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapons systems. The program included the study of agents, tactics, weapons and targets to generate plans for weapon system feasibility studies and experimentation to be conducted under this contract. A total of twelve study tasks were conducted and are reported in Section 2 of this report. These tasks represented eight percent of the total program effort. Feasibility investigations relative to new techniques were conducted on ten concepts and are reported in Section 3. These investigations represented twenty-two percent of the total contract effort. Feasibility investigations relative to new weapons concepts were conducted on thirteen items and are reported in Section 4. These investigations represented forty-four percent of the total contract effort. Two weapons concepts were advanced to the engineering-development phase and are reported in Section 5. This effort represented twenty-six percent of the total effort. Each of the total of thirty-seven tasks are summarized and reference the reports generated under each task.
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010. NOFORN. This document contains export-controlled technical data.
Subject Keywords: CHEMICAL BOMBS; CHEMICAL PROJECTILES; CHEMICAL WARFARE AGENTS; DISTRIBUTION; FEASIBILITY STUDIES; TACTICAL WEAPONS
Page Count: 38
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes: See also Volume 1, AD-507689L. Change Authority: 19980311 -- S to C per OCA and Group-3, Nov 1981.

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CBRNIAC Number: CB-011686
Site Holding: CB DT DW 509658
AD Number: 380125
Title: CB Anti-materiel Applications. Final Report, 11 October 1965-11 July 1966.
Author(s): O'Connor, Arthur D. Rosenthal, Paul McAdams, Hiramie T.
Report Number: AFATL-TR-67-22 CAL-GM-2147-G-2 AFATL-66-5753
Publish Date: 19670301
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; Mar 1967. Other requests for this document shall be referred to the Air Force Armament Laboratory (ATCD), Eglin Air Force Base, FL 32542. This document contains export-controlled technical data.
Subject Keywords: AEROSOLS; AIR FORCE; AIRCRAFT; ALUMINUM; ALUMINUM ALLOYS; ARMORED VEHICLES; BEARING PROPERTIES; BIOLOGICAL WARFARE AGENTS; CAST IRON; CERAMICS; CHEMICAL WARFARE AGENTS; CONDUCTIVITY; COPPER; CORROSION; CORROSION PROPERTIES; CRACKING; DEGRADATION TEST; ELECTRONIC EQUIPMENT; GAS; GLASSES; IRON; LIQUID; MATERIALS; MATERIALS TESTS; MECHANICAL PROPERTIES; MERCURY; METALS; MILITARY EQUIPMENT; MUNITIONS STOCKPILES; OPTICAL PROPERTIES; PLASTICS; POLYMERS; RUBBERS; SOLID; STATE; STEEL; SUPPORT EQUIPMENT; TRANSPARENCY
Page Count: 265
CB Collection: CA
Media Type: CPDF
Document Classification: S
Supplemental Notes:

CBRNIAC Number: CB-012787
Site Holding: CB DT DW 524369
AD Number: 353009
Title: Project CHORD. Appendix I.
Author(s): Klingaman, Richard M. O'Connor, Arthur D.
Report Number: GM-1592-G-18
Publish Date: 19640515
Abstract: This Appendix to the Sixth Semiannual Progress Report for the CHORD Program contains information pertaining to Direct Injection Toxic Ammunition (DITA) studies performed and/or initiated during the period covered by the report.
Descriptive Note: Semiannual Progress Report No. 6, 1 Jan-15 May 1964
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Specific Authority; 15 May 1964. Other requests for this document shall be referred to Commanding Officer, US Army Chemical Research and Development Laboratory, Edgewood Arsenal, MD 21010.
Subject Keywords: CASUALTIES; CHEMICAL PROJECTILES; CHEMICAL WARFARE; FRAGMENTATION AMMUNITION; IMPACT SHOCK; PROBABILITY; PROJECTILES; TOXICITY; VELOCITY; VULNERABILITY; WAR POTENTIAL
Page Count: 42
CB Collection: CA

Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: DoD Directive 5200.10; 15 May 1976. 20000919 -- S to C.

CBRNIAC Number: CB-034070
Site Holding: DT
AD Number: B316556
Title: Feasibility Study Plan for Concept Number 5 -- POPGUN.
Author(s): Schneider, C. J., Jr.
Report Number: CAL-GM-1592-G-15
Publish Date: 19631001
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Further dissemination only as directed by Department of the Army, Attn: Public Affairs Office, Washington, DC 20310, October 1963; or higher DoD authority.
Subject Keywords: ANTIGUERRILLA MUNITIONS; CHEMICAL WARFARE AGENTS; FEASIBILITY STUDIES; MILITARY REQUIREMENTS; ORDNANCE; POPGUN WEAPON; PROJECTILES; PROTOTYPES; PYROTECHNICS; TEST AND EVALUATION; WEAPON SYSTEMS
Page Count: 15
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-040513
Site Holding: CB DT
AD Number: 833943
Title: Preparative Phase of the Agent CS Slurry Investigation.
Author(s): Schneider, C. J., Jr.
Report Number: CHORD-WORKING PAPER-20
Publish Date: 19641201
Abstract: The paper covers the preparative phase of the investigation into the dispersion of agent CS in slurries with characteristics useful in dissemination devices. Included are the results of the brief consideration given to the following items: choice of carrier liquid; surfactant hydrophile and lipophile balance; surfactant concentration; agent concentration; the use of a protective colloid; and the dissemination of slurries. The conclusion is reached that it is possible to prepare useful slurries containing high concentrations of agent CS and that these slurries possibly offer dissemination advantages. It is also conjectured that it should be possible by a similar investigation to develop a technique for the preparation of slurries of most other solid agents.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: BIOLOGICAL SLURRIES; CHEMISTRY; COLLOIDS; CONCENTRATION; CS AGENTS; DENSITY; DISTRIBUTION; PREPARATION; SOLIDS; SURFACE ACTIVE SUBSTANCES
Page Count: 29
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Limitation Change Authority: US Army Edgewood Arsenal letter dated 13 Dec 71.

CBRNIAC Number: CB-040526
Site Holding: CB DT DW 518841 EDG E504523
AD Number: 832023
Title: Utilization of a Sensor Network for Reconstructing a Biological Warfare Attack.
Author(s): Salz, Norman P.

Report Number: CAL-VP-2072-G-1
Publish Date: 19660301
Abstract: This report describes a method of determining (from data supplied by an agent sensor network) the location and length of the agent release line, the source strength, the biological decay constant, and the time of a covert biological agent attack. These parameters are compatible with the PICNIC model and computer program developed by the University of North Carolina and are used in estimating casualties. The method is dependent on the availability of accurate and automatic total dosage and time-to-threshold dosage sensors in a network within the area traversed by the cloud during a period within which the agent decay rate remains constant. The methodology is based on use of a time-varying standard deviation with the ORG-17 gaussian distribution model for concentration from a uniform finite line source normal to the wind. The solution is based on a least squares fit of sensor data to predicted values of total dosages and threshold times. A function is formulated whose minimum provides a best estimate (in the sense of least squares) for the values of the unknowns. The mathematical procedures required are sufficiently complex to necessitate the use of an automatic computer.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies only. Other requests for this document shall be referred to Army MUCOM Operations Research Group, Army Edgewood Arsenal, Edgewood Arsenal, MD 21010.
Subject Keywords: BIOLOGICAL WARFARE AGENTS; BIOLOGICAL WARFARE CASUALTIES; COMPUTER PROGRAMS; DETECTION; DETECTORS; DISTRIBUTION; DOSAGE; LEAST SQUARES METHOD; MATHEMATICAL MODELS; METEOROLOGICAL PHENOMENA; NETWORKS; POINT-SOURCE DISSEMINATION; STATISTICAL PROCESSES
Page Count: 86
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-043972
Site Holding: CB DT DW 546373
AD Number: 429813
Title: Chemical Ordnance Test Evaluation.
Author(s): Schneeberger, R. F.
Report Number: GM1851E2
Publish Date: 19640101
Abstract: This report presvts a review of the studies undertaken for Project COTE, Contract DA-18-108AMC-229(A), a program that is concerned with the evaluation of chemical agent ordnance testing. In this program estimates of repeatability and, in some cases, estimates of accuracy have been obtained for several of the analyses performed by the Field Evaluation Division (FED) of the Chemical Research and Development Laboratoraes (CRDL). Areas in which improvements can be obtained or in which additional testing is required have been specified for current FED practices. In addition, studies of the general problem of chemical agent munition testing have been undertaken including test requirements, test design, and particularly the influences of meteorological parameters. A tabulation of recommendations suggested as a consequence of the various phases of this program is presented.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AREA COVERAGE; BOMBLETS; CHEMICAL ANALYSIS; CHEMICAL WARFARE AGENTS; COLORIMETRIC ANALYSIS; DOSAGE; FIELD TESTS; G-AGENTS; MATHEMATICAL ANALYSIS; METEOROLOGICAL PHENOMENA; SAMPLERS; SCATTERING; TARGETS; V-AGENTS
Page Count: 1
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-044088
Site Holding: CB DT
AD Number: 421455
Title: Chemical Ordnance Test Evaluation.
Author(s): Schneeberber, R. F.
Report Number: GM-185E1
Publish Date: 19631001
Abstract: The evolution of chemical agent ordnance testing is studied. The results obtained thus far have been primarily in the specific areas of meteorology, data analysis and chemical processing as presently performed in the Field Evaluation Division of CRDL. A test has been proposed to assist in the evolution of test accuracy and precision. It is planned that in the following period, (1) the results of this test be analyzed, (2) the meteorology study continue and the diffusion model presented be analyzed further, (3) data analysis study be continued in order to define further areas of improvement with emphasis on automation, (4) the sampling equipment and chemical processing be further analyzed to determine accuracy and precision and (5) that studies in the area of test design, process control, phase testing and the like now receiving emphasis be completed.
Descriptive Note: Quarterly Progress Report no. 1, 5 Jul-1 Oct 63
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AMMUNITION; AREA COVERAGE; CHEMICAL ANALYSIS; CHEMICAL WARFARE AGENTS; CHEMICAL WARFARE LABORATORIES; DATA PROCESSING; DIFFUSION; DOSAGE; INSTRUMENTATION; METEOROLOGICAL PHENOMENA; PARTICLE SIZE; PARTICLES; SAMPLING; STATISTICAL ANALYSIS; TEST EQUIPMENT; TEST FACILITIES; TEST METHODS; WIND
Page Count: 48
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-044098
Site Holding: CB DT
AD Number: 420472
Title: Radiological Target Analysis Procedures.
Author(s): Ryll, Ewald
Report Number: VP-1699-G1
Publish Date: 19630628
Abstract: System aspects of large scale decontamination of populated areas were studied to determine optimal decontamination procedures for smal3scale areas. Simple techniques have been demonstrated that a populated area of 700,000 people exposed to fallout from a 1 MT attack outside of the area can be restored in roughly 1 month. Analysis was conducted of scheduling the entry of operators into a radioactive field. Techniques similar to dynamic programming were applied, with the result that for certain circumstances specific optimal start times can be determined. Computational procedures and computer programs have been evolved for testing procedures in simulated environments. Substantial analysis was performed on the shielding effect of structures in a target area.
Descriptive Note: Procedures
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: CIVIL DEFENSE; DECONTAMINATION; DOSE RATE; FALLOUT; MATHEMATICAL ANALYSIS; OPERATIONS RESEARCH; OPTIMIZATION; PROGRAMMING (COMPUTERS); RADIOACTIVE DECAY; RADIOLOGICAL WARFARE; SCHEDULING; SHIELDING; URBAN AREAS
Page Count: 159
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-044538

Site Holding: CB DT DW 536740
AD Number: 381951
Title: Project Wasp Evaluation Report. Volume 2, Detailed Evaluation of Seminar Data.
Author(s):
Report Number: CAL-GM-1494-G-6
Publish Date: 19610901
Abstract: (Abstract is unavailable.)
Descriptive Note: Evaluation Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; NOFORN. Other requests for this document shall be referred to Army Chemical Corps Research and Development Command, Washington, DC. This document contains export-controlled technical data.
Subject Keywords: ARMY RESEARCH; SYMPOSIA
Page Count: 262
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: See also Volume 1, AD-381 950. Change Authority: S to C Group-3.

CBRNIAC Number: CB-044622
Site Holding: CB DT DW 536768
AD Number: 377615
Title: Evaluation and Development of Test Technology.
Author(s): Schneeberger, Richard F.
Report Number: CAL-GM-1956-E-4
Publish Date: 19661101
Abstract: This report presents a detailed review of the studies, research and experiments carried out in support of the development of test technology. Primary emphasis is given to the Field Evaluation problems but Wind Tunnel and Explosion Chamber testing have also been examined. The recommendations proposed denote areas in which improvement can be obtained and the modifications to methods and techniques considered to be necessary. Directions for continued improvement of the test system and for broader application of results are presented.
Descriptive Note: Final Report, Jul 64-Oct 66
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No Foreign without approval. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010. This document contains export-controlled technical data.
Subject Keywords: AEROSOL GENERATORS; AEROSOLS; ANALYSIS OF VARIANCE; CALIBRATION; CHEMICAL WARFARE AGENTS; CHEMICAL WARFARE LABORATORIES; CLOUDS; COMPUTER PROGRAMMING; DATA PROCESSING; DELIVERY TACTICS; DENSITY; DISTRIBUTION; DOSAGE; EFFECTIVENESS; ELECTROMAGNETIC PULSES; ENVIRONMENTAL TESTS; ERRORS; EXPERIMENTAL DESIGN; INSTRUMENTATION; LINE-SOURCE DISSEMINATION; MANUFACTURING; METEOROLOGICAL PHENOMENA; MODEL TESTS; OPTIMIZATION; POINT-SOURCE DISSEMINATION; QUALITY CONTROL; RADIATION EFFECTS; SAMPLERS; SCATTERING; STATISTICAL ANALYSIS; SURFACE TARGETS; TEST METHODS; VAPORS; WIND TUNNEL MODELS
Page Count: 298
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: C to U Group-4.

CBRNIAC Number: CB-044732
Site Holding: CB DT DW 531456
AD Number: 374000
Title: An Investigation of the Thermal Decomposition of BIS (2, Ethyl Hexyl) Hydrogen Phosphite and Agent VX as Vapor at Elevated Temperatures.

Author(s): Lapp, Roy R. Schneider, Clayton J., Jr.
Report Number: CAL-GM-1592-G-5
Publish Date: 19620531
Abstract: This investigation has shown that both BIS (2, ethyl hexyl) hydrogen phosphite and agent VX undergo decomposition when exposed as vapors to elevated temperatures for millisecond intervals.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution Controlled. All requests for this document shall be referred to US Army, Public Affairs Office, Washington, DC; or higher DoD authority.
Subject Keywords: AEROSOL GENERATORS; AEROSOLS; CHEMICAL ANALYSIS; CHEMICAL WARFARE AGENTS; CHEMISTRY; CONCENTRATION (CHEMISTRY); DECOMPOSITION; ESTERS; FEASIBILITY STUDIES; HYDROGEN; LABORATORY EQUIPMENT; PHOSPHITE/BIS (2-ETHYLHEXYL); PHOSPHITES; PRODUCTION; SIMULATION; STANDARDS; TEMPERATURE; THERMAL STABILITY; TIME; VAPORIZATION; VX AGENT
Page Count: 51
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 980930 - Report Declassified IAW Classifiers markings on the cover. Distribution control changed to F/5 from 9 IAW DoDD 5230.24. (C to U/OCA; 31 May 79).

CBRNIAC Number: CB-044857
Site Holding: CB DT
AD Number: 370015
Title: Combat Surveillance and Target Acquisition Studies.
Author(s):
Report Number: CAL-CM-1977-H-7
Publish Date: 19660114
Abstract: The purpose of this effort is to provide a program of studies, investigations, and evaluations in the over all field of combat surveillance and target acquisition, including: manned and unmanned aerial surveillance systems; ground surveillance systems; sensors, including radar, photographic, infrared, acoustic, optical, passive electro magnetics, chemical, bacteriological and radiological; navigation and position location systems; information processing centers, data links and aerial relay platforms; and aerodynamic and ballistic vehicles.
Descriptive Note: Quarterly Progress Report No. 8, 1 Oct-31 Dec 65
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; 14 Jan 66. Other requests for this document shall be referred to US Army Electronics Command, Fort Monmouth, NJ.
Subject Keywords: ACOUSTIC DETECTORS; AERIAL RECONNAISSANCE; BIOLOGICAL WARFARE; CHEMICAL WARFAR; COMBAT SURVEILLANCE; DETECTION; INFRARED DETECTORS; NAVIGATION; OPTICAL EQUIPMENT; PASSIVE SYSTEMS; PHOTOGRAPHIC RECONNAISSANCE; POSITION FINDING; RADAR EQUIPMENT; RADIOLOGICAL WARFARE; SPACECRAFT; TARGET ACQUISITION
Page Count: 11
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 31 Jan 78, DoDD 5200.10.

CBRNIAC Number: CB-045012
Site Holding: CB DT DW
AD Number: 365764
Title: Project CHORD. Summary Report Covering the period 15 June 1961-31 December 1964.
Author(s): Reinnagel, Richard E.
Report Number: CAL-GM-1592-G-23

Publish Date: 19641231
Abstract: This publication lists reference reports which describe the Phase I and Phase II efforts conducted to determine effective means for delivery of lethal, incapacitating, flame, smoke, and incendiary chemical agents by air and ground weapons systems and to evolve new and novel chemical munitions which significantly enhance our military capability against any class of enemy in any type of conflict. In addition, a brief description and current status of the research and development program for each agent/munition/weapons system concept considered during the period covered by this report is presented. (Author).
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution Controlled. All requests for this document shall be referred to Commander, Chemical Research and Development Laboratories, Attn: STINFO/Technical Library, Edgewood Arsenal, MD.
Subject Keywords: FEASIBILITY STUDIES; INCAPACITATING AGENTS; RELEASE MECHANISMS; REPORTS; RESEARCH PROGRAM ADMINISTRATION; SCATTERING; VELOCITY
Page Count: 1
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: 990604 - Report downgraded per OCA; 31 Dec 76 IAW document markings. DoD distribution security control statement F assigned.

CBRNIAC Number: CB-045440
Site Holding: CB DT DW 524368
AD Number: 353008
Title: Project CHORD. Semi-annual Progress Report No. 6 Covering the Period 1 January-14 May 1964.
Author(s): Reinnagel, Richard E.
Report Number: GM-1592-G-18
Publish Date: 19640715
Abstract: Weapon system concepts, elements of concepts, or simply suggested techniques are considered in view of the objectives and are carefully screened before the expenditure of any sizable effort. A primary interest is the determination that a proposed system would be militarily useful. Effort is now focused in the area of exploratory development on specific weapon systems or elements of systems. Naturally, a supporting operations analysis is continued with each experimental program so as to have refined performance and use criteria available as the system matures.
Descriptive Note: Semi-annual Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AEROSOLS; ANALYSIS; CHEMICAL WARFARE; CHEMICAL WARFARE AGENTS; DISTRIBUTION; INCAPACITATING AGENTS; PARTICLE SIZE; SPRAY NOZZLES; TOXICITY; VX AGENT; WEAPON SYSTEMS
Page Count: 1
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-045486
Site Holding: CB DT DW 524358
AD Number: 352050
Title: Project CHORD Concept Number 1 (STOMP).
Author(s): Schneider, C. J., Jr.
Report Number: GM-1592-G-13
Publish Date: 19640115
Abstract: This report describes an investigation made of the feasibility of adding a complementary chemical agent capability to the XM22 mine. The STOMP designs described range from a simple, add-on agent container to a sophisticated airburst adapter yielding high agent dispersion. It is concluded that no device evaluated provides

improvement of the mine sufficient to warrant the additional cost and complexity that would result. However, techniques developed for the study program appear to be of value for other munitions. (Author).
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; NOFORN. This document contains export-controlled technical data.
Subject Keywords: AIRBURST; EXPLOSIVE ACTUATORS; MINES (ORDNANCE); PERFORMANCE (ENGINEERING); SPRINGS
Page Count: 14
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-045516
Site Holding: CB DT DW 523573
AD Number: 351232
Title: An Analysis of Potential Roles and Missions for Chemical Incapacitating Agents, Using CS, BZ, and 4X as Examples.
Author(s): Gerber, B. V. Hodges, S. W. O'Connor, A. Reinnagel, R. Talley, R.
Report Number: CRDL-SP-5-5
Publish Date: 19640301
Abstract: The objective of this analysis was to list all the targets vulnerable to chemical incapacitants and to state the requirements for defeating each target, irrespective of weapon capabilities. The study lists targets, with their defeat criteria, for three categories of warfare: counterinsurgency and limited and general war. In addition, each of the targets listed is considered for neutralization with CS, BZ, or 4X; 4X being a hypothetical agent similar in properties to BZ but requiring one fourth the dosage of the latter. The analysis presents in tabular form all the targets, with their defeat criteria, against which any current or future incapacitating agents can be compared.
Descriptive Note: Special Publication
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: B AGENTS; C AGENTS; CHEMICAL WARFARE AGENTS; COUNTERINSURGENCY; EFFECTIVENESS; GUERRILLA WARFARE; HAZARDS; INCAPACITATING AGENTS; LIMITED WAR; MILITARY REQUIREMENTS; MILITARY STRATEGY; TARGETS; VULNERABILITY; WEAPONS
Page Count: 90
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-045554
Site Holding: CB DT DW 524380
AD Number: 350378
Title: Project CHORD. Semi-Annual Progress Report Covering the Period 1 July-31 December 1963.
Author(s): Reinnage, Richard E.
Report Number: GM-1592-G-16
Publish Date: 19640301
Abstract: This report delineates the progress and current status of studies, investigations, and analyses of new and novel agent/munition/weapons systems being conducted for the effective employment of chemical warfare agents.
Descriptive Note: Semi-Annual Progress Report, 1 Jul-31 Dec 1963
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: ANALYSIS; AREA COVERAGE; CHEMICAL WARFARE; CHORD PROJECT; DESIGN; FEASIBILITY STUDIES; INCAPACITATING AGENTS; INSTRUMENTATION; MINE WARFARE; MUNITIONS INDUSTRY; PENETRATION; SLURRIES; WEAPON SYSTEMS; WEIGHT

Page Count: 1
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-045588
Site Holding: CB DT DW 522322
AD Number: 348702
Title: The Popgun Weapon System.
Author(s): Schneider, C. J., Jr.
Report Number: CAL-GM-1592-G-17
Publish Date: 19640101
Abstract: Popgun is a man-portable, expendable weapon capable of extremely rapid area coverage with agent CS. The weapon, complete and loaded with 96 projectiles, is housed in a backpack, which incorporates a folding bipod for ground-emplaced firing. The device, suggested by cal in response to requirements stated by CRDL on 23 July 1963, has been carried through the preliminary design and preprototype construction stages and was demonstrated at CRDL on 10 December 1963. This report describes the conceptual popgun weapon and provides detailed design and construction information for the preprototype model demonstrated.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution Controlled. All requests for this document shall be referred to Director, Chemical Research and Development Laboratory, Attn: STINFO/Technical Library, Edgewood Arsenal, MD.
Subject Keywords: BACKPACKS; BAGS (CONTAINERS); CHEMICAL WARFARE AGENTS; CONTAINERS; DESIGN; EFFECTIVENESS; FEASIBILITY STUDIES; FIRING MECHANISMS (WEAPON); PACKING MATERIALS; PORTABLE MAN-PORTABLE; PROJECTILES; PYROTECHNIC PROJECTORS; PYROTECHNICS; WEAPON; WEAPON SYSTEMS; WEIGHT
Page Count: 42
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 990603 - Report declassified IAW OCA directions on the document. DOD Distribution security control statement F in effect.

CBRNIAC Number: CB-045768
Site Holding: CB DT DW 524275
AD Number: 342844
Title: Project CHORD. Semi-annual Progress Report No. 4 Covering the Period 1 January-1 July 1963.
Author(s): Reinnagel, Richard E.
Report Number: CAL-GM-1592-G-12
Publish Date: 19630801
Abstract: The basic objective of the Chord project is the development of new and novel agent/munition/weapons systems for the effective employment of CW agents. To accomplish this objective the program employs two distinct types of effort: (1) Phase I which considers requirements, use concepts, characteristics of currently available systems, and the generation of weapon system concepts to yield an improvement in military capability. (2) Phase II, which is concerned with the development of these concepts, such that the military usefulness of a concept can be adequately demonstrated. During this report period, Phase I effort has been concerned primarily with special studies in the following areas: (1) unconventional warfare, (2) tactical incapacitating agent/munition studies, (3) direct injection toxic agent studies, and (4) incendiary warhead for the Lance missile. In parallel with the systems analysis effort in the generation of new concepts, prefeasibility experimentation has been conducted on several concepts that suggested themselves in the course of the Phase II experimental efforts. (Author).
Descriptive Note: Semi-annual Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution Controlled. All requests for this document shall be referred to Commander, Chemical Research and Development Laboratories, Attn: STINFO/Technical Library, Edgewood Arsenal, MD

21010.
Subject Keywords: ADAPTERS; CHEMICAL PROJECTILES; CHEMICAL WARFARE AGENTS; FEASIBILITY STUDIES; GUIDED MISSILE WARHEADS; GUIDED MISSILES; LOGISTICS; OPERATION; PENETRATION; PYROTECHNICS; TOXICITY
Page Count: 98
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: OCA; 1 Aug 75 DoDD 5230.24, Paragraph F.3.B.; 3 Jun 99. 990604 - Report downgraded to C IAW OCA markings on the document. DoD Distribution Security Control Statement F assigned. (S to C).

CBRNIAC Number: CB-045802
Site Holding: CB DT DW 524234 EDG E505626
AD Number: 340911
Title: Project WASP Derivative Studies. Final Report, December 1962.
Author(s): Reif, Hans G. Scamurra, Robert M.
Report Number: GM-1494-G-7 EA-S-3729(67) CRDL-TL-63-S-739
Publish Date: 19621201
Abstract: This report describes several studies derived from the analysis of the Project WASP R and D Guidance Seminar results. The studies deal with system studies of new B/C weapon system concepts and investigation of technical and operational aspects of weapon system concepts considered in the Seminar.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AREA COVERAGE; CHEMICAL WARFARE; DISTRIBUTION; GUIDANCE; MATHEMATICAL MODELS; PAYLOAD; PROJECT WASP; SURVEILLANCE; WEIGHT
Page Count: 123
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-045919
Site Holding: CB DT DW 524256
AD Number: 336552
Title: Preliminary Requirements for Incapacitating Agent/Munition Systems. Volume I.
Author(s): O'Connor, Arthur D.
Report Number: GM-1592G9-VOL-1
Publish Date: 19630331
Abstract: A preliminary evaluation of the requirements for future incapacitating agent/munition/delivery systems. Agents CS, DM and BZ are treated in detail; agents LSD and UC are considered but not in as much detail. Two broad areas of application of the presently known incapacitating agent family are defined, and potential system capabilities are presented in the detail permitted by available data within each area.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Further dissemination only as directed by US Department of the Army Public Affairs Office, Washington, DC; or higher DoD authority.
Subject Keywords: ACCEPTABILITY; BZ AGENTS; CHEMICAL WARFARE AGENTS; DM AGENTS; EFFECTIVENESS; LIMITED WAR; LYSERGIC ACIDS; SPECIFICATIONS; STAPHYLOCOCCUS; TOXINS AND ANTITOXINS; UC AGENT; WEAPON SYSTEMS
Page Count: 54
CB Collection: UA
Media Type: PDF
Document Classification: U

Supplemental Notes: 990423 - Report downgraded to C from S per OCA; 31 Mar 63 via document marking. Report declassified per OCA; 31 Mar 75 via document marking. Distribution security control statement F in effect.

CBRNIAC Number: CB-045920
Site Holding: CB DT DW 524232
AD Number: 336536
Title: Preliminary Requirements for Incapacitating Agent/Munition Systems. Volume 2. VII. Technical Discussion Appendices.
Author(s): Dufort, Robert H. Oconnor, Arthur D. Reif, Hans G.
Report Number: GM-15-92G9-VOL-2
Publish Date: 19630331
Abstract: This report presents a mission analysis defining the potential applications of incapacitating chemical agents in tactical military roles, and an evaluation of a number of agents and delivery systems in combination with current as well as hypothetical munitions, in these roles.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution Controlled. All requests for this document shall be referred to Department of the Army, Public Affairs Office, Pentagon, Washington, DC.
Subject Keywords: ANALYSIS; ANTIPERSONNEL AMMUNITION; AREA COVERAGE; ARTILLERY ROCKETS; BOMB CLUSTERS; BOMBLETS; CHEMICAL; CHEMICAL WARFARE; CLUSTER WARHEADS; DOSAGE; EFFECTIVENESS; HOWITZERS; LETHAL DOSAGE; LIGHTERS; M-456 CARTRIDGES (105-MM); MORTARS; NONLETHAL AGENTS; OPERATIONS RESEARCH; ROCKETS; TACTICAL WEAPONS; TARGETS; TRANSPORT AIRCRAFT; WEAPON SYSTEMS; WEAPONS
Page Count: 293
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 31 Mar 75 DoDD 5230.24, Para F.3.B.; 2 Jun 99 990603 - Report declassified DoD Distribution Security Control Statment F assigned. C to U.

CBRNIAC Number: CB-045962
Site Holding: CB DT DW 524224
AD Number: 335373
Title: Project CHORD. Semi-annual Progress Report No. 3 Covering the Period 15 June 1962-1 January 1963.
Author(s): Reinnagel, Richard E.
Report Number: GM-1592-G-8
Publish Date: 19630201
Abstract: (Abstract is unavailable.)
Descriptive Note: Semi-annual Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Specific Authority; 12 Apr 2000. Other requests for this document shall be referred to Army Chemical Research and Development Laboratory, Edgewood Arsenal, MD.
Subject Keywords: AEROSOL GENERATORS; AEROSOLS; ANTIPERSONNEL AMMUNITION; ANTITANK AMMUNITION; AREA COVERAGE; B FLAT MUNITION; BEEHIVE AMMUNITION; BOMBLETS; CHEMICAL BOMBS; CHEMICAL PROJECTILES; CHEMICAL WARFARE; CHEMICAL WARFARE AGENTS; CHORD PROJECT; COUNTERINSURGENCY; EFFECTIVENESS; FLECHETTES; GUERRILLA WARFARE; HARDENING; INSTRUMENTATION; LANCE MISSILES; M-23 MINES; M-55 ROCKETS (115-MM); MINE FUZES; NONLETHAL AGENTS; NOZZLES; PENETRATION; POPCORN PROJECT; PROTECTIVE CLOTHING; ROCKETS; SCATTERING; STING RAY; STOMP; SURFACE TARGETS; TARGETS; VASOL
Page Count: 196
CB Collection: UA
Media Type: PDF
Document Classification: U

Supplemental Notes: Change Authority: OCA; 1 Feb 75 IAW Document Markings 20000412 - S to C; C to U GR-4.

CBRNIAC Number: CB-046014
Site Holding: CB DT
AD Number: 334507
Title: Munition System Engineering and Operations Research Study No. 2, Volume 1.
Author(s):
Report Number: CAL-603
Publish Date: 19620601
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AIRCRAFT; ANTIPERSONNEL WEAPONS; BIOLOGICAL WARFARE; BIOLOGICAL WARFARE AGENTS; BOMBLETS; COSTS; DRONES; GUIDED MISSILES; HELICOPTERS; LOGISTICS; METEOROLOGICAL PHENOMENA; NONLEAKAGE PROBABILITY; NONLETHAL AGENTS; OPERATIONS RESEARCH; SCATTERING; TERRAIN
Page Count: 192
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: ST-A per Chemical Research Development letter, 29 Feb 1968. See also AD334508.

CBRNIAC Number: CB-046015
Site Holding: CB DT
AD Number: 334505
Title: Munition System Engineering and Operations Research Study No. 1, Volume 1.
Author(s):
Report Number: CAL-602
Publish Date: 19620625
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AGRICULTURE; AIRCRAFT; ANTICROP AGENTS; BIOLOGICAL WARFARE; BOMBLETS; COSTS; DRONES; GUIDED MISSILES; HELICOPTERS; LOGISTICS; METEOROLOGICAL PHENOMENA; MICROORGANISMS; OPERATIONS RESEARCH; PIRICULARIA; RUSTS (MICROORGANISMS); SCATTERING; TERRAIN
Page Count: 192
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: ST-A per Chemical Research and Development letter, 29 Feb 1968.

CBRNIAC Number: CB-046031
Site Holding: CB DT
AD Number: 334223
Title: Project Chord. Volume 2.
Author(s):
Report Number: CAL-GM-1592-G-7-VOL-2
Publish Date: 19620701
Abstract: Stingray, Davy Crockett, M-55 Rocket Launchers, 115-MM, M-91 Rocket Launchers, 115-Mm, Stomp, Area Coverage, Vasol, Hornets Nests.

Descriptive Note: Semiannual Progress Report No. 2, 1 Feb-15 Jun 62
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; Jul 62. Other requests for this document shall be referred to Army Chemical Research and Development Laboratories, Attn: STINFO, Technical Library, Edgewood Arsenal, MD.
Subject Keywords: 105-MM; 105-MM ORDNANCE ITEMS; 115-MM; 155-MM; AEROSOL GENERATORS; ANTIPERSONNEL AMMUNITION; B FLAT MUNITION; BEEHIVE AMMUNITION; CANISTER PROJECTILES; CHEMICAL PROJECTILES; CHEMICAL WARFARE; CHORD PROJECT; DAVY CROCKETT; EFFECTIVENESS; ERRORS; FEASIBILITY STUDIES; FLECHETTES; GUERRILLA WARFARE; GUNS; HARDENING; HOWITZERS; LAND MINES; M-1 HOWITZERS (155-MM); M-2 HOWITZERS (105-MM); M-70 MORITZERS (115-MM); M-91 ROCKET LAUNCHERS (115-MM); MORTAR AMMUNITION; NOZZLES; OPERATIONS RESEARCH; RECOILLESS GUNS; SCATTERING; SPRINGS; STING RAY; STOMP; SURFACE TARGETS; TARGETS; TOXICITY; ULTRASONIC RADIATION; V AGENTS; VASOL
Page Count: 238
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 31 Dec 69 per GDS document marking; 20040211 -- target created, S to C to U.

CBRNIAC Number: CB-046032
Site Holding: CB DT
AD Number: 334222
Title: Project Chord, Volume 1.
Author(s): O'Connor, Arthur D.
Report Number: CAL-GM-1592-G7-VOL-1
Publish Date: 19620701
Abstract: This Progrese Report summarizes all Project CHORD activities during the period 1 February 1962 to 15 June 1962. The purpose of this report is to provide, in a single source, a comprehensive summary of all phases of effort under this program during the report period. Although the project status at the beginning of thie period is reviewed in some detail in the Summary to provide a starting point for the progress reported herein, details concerning work accomplished in the period 15 June 1961 to 31 January 1962 are presented only in the First Semiannual Progress Report and are not repeated herein.
Descriptive Note: Semiannual Progress Report No. 2, 1 Feb-15 Jun 62
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; Jul 62. Other requests for this document shall be referred to Army Chemical Research and Development Laboratories, Attn: STINFO, Technical Library, Edgewood Arsenal, MD.
Subject Keywords: 105-MM; 115-MM; 115-MM ORDNANCE ITEMS; 155-MM; 42-IN; AEROSOLS; BEEHIVE AMMUNITION; CHEMICAL PROJECTILES; CHORD PROJECT; DAVY CROCKETT; DESIGN; EFFECTIVENESS; FEASIBILITY STUDIES; FLAT; FLECHETTES; FOAMING INHIBITORS; M-1 HOWITZERS (155-MM); M-2 HOWITZERS (105-MM); M-30 MORTARS (42-IN); M-55 ROCKETS (115-MM); MINE FUZES; NOZZLES; OPERATIONS RESEARCH; SCATTERING; STING RAY; STOMP; ULTRASONIC RADIATION; V AGENTS; VASOL
Page Count: 42
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 31 Dec 69 per GDS document marking.

CBRNIAC Number: CB-046182
Site Holding: CB DT DW 531455
AD Number: 329633
Title: Comparison of First-generation VX Vasol Munitions.

Author(s): Kamrass, Murry O'Connor, Arthur D.
Report Number: CAL-GM-1592-G-4
Publish Date: 19620301
Abstract: The comparative effectiveness of the 155 MM howitzer and the M55 rocket as means of delivering the chemical agent VX in vapor/fine aerosol (VASOL) form against troops in both hard (protected) and soft (unprotected) environments was investigated. Calculations were made to determine the number of rounds of each type of weapon required to produce several stated dosages (expressed in milligram minutes per cubic meter) at a point on the battlefield. The ranges to target selected for comparison were varied from about 3000 to 10,500 meters the maximum range of the rockets. Wind was considered both in the direction of fire and normal to the direction of fire. The use of subcanisters in both munitions in order to improve the agent distribution efficiency, the attack of large linear and area targets, and rate of fire and mobility factors appropriate to the two systems were also considered.
Descriptive Note: Special Evaluation Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Further dissemination only as directed by USA Chemical Corps, Chemical Research and Development Laboratory, Washington, DC; 27 Jul 1999; or higher DoD authority.
Subject Keywords: 115-MM; 155-MM ORDNANCE ITEMS; AEROSOL GENERATORS; ANALYSIS; CASUALTIES; CHEMICAL PROJECTILES; CHEMICAL WARFARE; CHEMICAL WARFARE AGENTS; CHEMICAL WARFARE CASUALTIES; COSTS; DOSAGE; EFFECTIVENESS; HARDENING; HOWITZERS; M-55 ROCKETS (115-MM); PROBABILITY; ROCKETS; TARGETS; TOXICITY; UNDERGROUND STRUCTURES; V AGENTS; WARHEADS; WIND
Page Count: 101
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: Mar 1974 IAW Document Markings DoDD 5230.24, Para f.3.b.; Mar 1962. 990728 -- Report declassified DoD distribution security control statement F in effect. (C to U).

CBRNIAC Number: CB-046183
Site Holding: CB DT DW 531454
AD Number: 329632
Title: Project Chord. Volume 1. Introduction, Summary and Preliminary Findings.
Author(s): O'Connor, Arthur D.
Report Number: CAL-GM-1592-G-3-VOL-1
Publish Date: 19620201
Abstract: Project CHORD phase I activity through 31 Jan 1962 is summarized. Progress is reported in three basic areas: weapon concept development; operations analysis; and experimental instrumentation program in support of specific concepts. Preliminary studies and data are presented in all areas of investigation. (Author).
Descriptive Note: Semiannual Progress Report No. 1
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Specific Authority; 7 Jun 1999. Other requests for this document shall be referred to Department of the Army, Public Affairs Office, Washington, DC.
Subject Keywords: AEROSOLS; ANTIPERSONNEL AMMUNITION; CHEMICAL PROJECTILES; CHEMICAL WARFARE AGENTS; CHORD PROJECT; DESIGN; FEASIBILITY STUDIES; FUZES (ORDNANCE); GRAVEL; LAND MINES; OPERATIONS RESEARCH; ORDNANCE; PHOTOSENSITIVITY; SCATTERING; V AGENTS; VASOL; WEAPONS
Page Count: 66
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: 990608 -- Report downgraded to C from S per OCA; Feb 1965 IAW document markings. Report declassified per OCA; Feb 1974 IAW document markings. DoD distribution security control statement C in effect.

CBRNIAC Number: CB-046913
Site Holding: CB DT EDG E505752
AD Number: 312564
Title: The Military Worth of BW-CW Weapons to the Tactical Air Force.
Author(s): Stein, Arthur
Report Number: CAL-GM-1170-G-4
Publish Date: 19590325
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: BIBLIOGRAPHIES; BIOLOGICAL WARFARE; BIOLOGICAL WARFARE AGENTS; CHEMICAL WARFARE; CHEMICAL WARFARE AGENTS; MILITARY REQUIREMENTS
Page Count: 207
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: S to C/OCA via GP-3 document markings, DoD Directive 5200.10, 29 Jun 1960.

CBRNIAC Number: CB-050023
Site Holding: CB DT
AD Number: 111569
Title: High Speed Tests of a 1000 Pound Chemical Corps Bomb Model in the Cornell Aeronautical Laboratory 4-Foot Transonic Tunnel.
Author(s): Kobitz, N.
Report Number: AA-879-W-1
Publish Date: 19530501
Abstract: Two configurations of a 1/8 scale model, 1000-pound cluster bomb, modified for external storage, were tested in the transonic facility for the Army Chemical Corps. One model was the standard ccnfiguration; the other model was an alternate configuration with a transition ring between cluster and tail cone to increase the overall length. Each model was tested over a Mach number range from .7 to 1.20 at angles of attack, at each Mach number, ranging from -5 to l2 deg. These tests were made to obtain experimental data on the longitudinal stability characteristics of these two configurations. The results include three component ballistic coefficients in a stability axes system as well as in a body axes system. In addition, some analysis of the data is performed to obtain the variation of center of pressure, pitching moment coefficient slope and zero lift drag with Mach number.
Descriptive Note: Munitions Test Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; May 53. Other requests for this document shall be referred to Chemical Corps, Army Chemical Center, MD.
Subject Keywords: CHEMICAL BOMBS; MODEL TESTS; PITCH (MOTION); TRANSONIC CHARACTERISTICS
Page Count: 69
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: May 65, DoDD 5200.10; 20030618 - target created C to U.

CBRNIAC Number: CB-056728
Site Holding: DT
AD Number: 392499
Title: Parametric Design Study for a Close Support Artillery Weapon, Armored, SP, 155mm Howitzer, XM179. Volume 1.
Author(s): Bakanas, V. Bilby, J. Capps, J. Cockrell, J. Hatheway, D.

Report Number: CAL-GM-2600-H-1-VOL-1
Publish Date: 19680701
Abstract: The methodology and results of a parametric design study of a close support artillery weapon system, self-propelled, 155mm, XM 179, which could be available in the 1970-1980 time frame are described in this report. Nine government-provided concepts and four reference weapon/vehicles were used as a data base from which parametric design relationships applicable to XM179 concepts could be established. Physical and performance requirements postulated in an approved qualitative materiel requirement were used to establish the spectrum of parametric values to be investigated. Ninety-five conceptual weapon/vehicle systems were synthesized using design relationships developed to establish a broader parametric base. The synthesized weapon/vehicles are defined in sufficient detail to identify all of the major dimensions, component weights and power requirements to permit cost and performance data to be derived. RDT and E, APE and PEA costs are estimated to obtain a total program cost which does not include costs of receipt, storage and distribution, troop installation, operation, maintenance and disposal. Trade-off analyses are conducted using the results of analysis of the synthesized concepts and the government provided concepts to provide the government with a large collection of data upon which to base decisions in selecting the best armored weapon/vehicle system concept for engineering development. Within the constraints imposed and assumptions made, the XM179 concept recommended for engineering development is a weapon/vehicle system that utilizes a composite armor to provide ballistic protection for the crew. (Author)
Descriptive Note: Final Report, 16 Feb-21 Jul 1968
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Distribution limited to US Gov't agencies only. Other requests for this document shall be referred to Commanding Officer, Army Armament Research and Development Command, ATTN: DRSAR-LEP. Dover, NJ 07801.
Subject Keywords: 155-MM; ALUMINUM ALLOYS; ARTILLERY CREWS; ARTILLERY FIRE; BIOLOGICAL WARFARE AGENTS; BREECH MECHANISMS; CHEMICAL WARFARE AGENTS; CLOSE SUPPORT; COSTS; CUPOLAS; DESIGN; FEASIBILITY STUDIES; FIRE CONTROL SYSTEMS; GUN MOUNTS; GUN TURRETS ARMOR PLATE; HUMAN FACTORS ENGINEERING; M-179 HOWITZERS(155-MM); OPERATORS(PERSONNEL); PERFORMANCE(ENGINEERING); PROTECTION; RADIOLOGICAL WARFARE AGENTS; RANGE(DISTANCE); ROADS; RODS; SELF PROPELLED GUNS; SPECIFICATIONS; TRACKED VEHICLES; TRADEOFFS; VELOCITY; WEIGHT
Page Count: 359
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes: See also Volume 2, AD-392 500L.

CBRNIAC Number: CB-067798
Site Holding: CB EDG E470104 EDG E470105
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 42, 1-31 December 1964.
Author(s):
Report Number:
Publish Date: 19641231
Abstract: CAL initiated performance on the subject contract (Code name: Project CHORD) on 15 June 1961. The contract was completed on 31 December 1964.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 29
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-069571

Site Holding: CB DW 536168 EDG E499472
AD Number:
Title: Project Chord: Volume 2. Semiannual Progress Report, Technical Discussion Appendices.
Author(s): O'Connor, Arthur D.
Report Number: DPG-62-2099 GM-1592-G-3 CRDL-TL-63-SRD-742
Publish Date: 19620228
Abstract: (Abstract is unavailable.)
Descriptive Note: Semiannual Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 556
CB Collection: CA
Media Type: CPDF
Document Classification: S/RD
Supplemental Notes:

CBRNIAC Number: CB-069824
Site Holding: CB DW 536170
AD Number:
Title: Joint USCONARC -- Plan for Integrated Systems Test of AN/USD-2 (XAE-2) Surveillance System.
Author(s):
Report Number: DPG-61-1391
Publish Date: 19610615
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 228
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-070622
Site Holding: CB DW 508365
AD Number:
Title: Project WASP. Summary Report, Volume 1.
Author(s):
Report Number: DPG-61-1418
Publish Date: 19610206
Abstract: (Abstract is unavailable.)
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 33
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074346
Site Holding: CB DW 525197

AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 54, 1 June-30 June 1969.
Author(s): Reinnagel, R. E.
Report Number: IMPR-54 DTC-69-1191
Publish Date: 19690630
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 45
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074467
Site Holding: CB DW 524705
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 34, 1 April-30 April 1964.
Author(s):
Report Number: IMPR-34 DTC-64-685
Publish Date: 19640430
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 32
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074480
Site Holding: CB DW 524711
AD Number:
Title: Interim Progress Report on the Cal-Dita Program.
Author(s): Klingaman, R. M. O'Connor, A. D.
Report Number: WP-13 DTC-64-775 GM-1592
Publish Date: 19640401
Abstract: (Abstract is unavailable.)
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 234
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074490
Site Holding: CB DW 524719
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 35, 1 May-31 May 1964.
Author(s):
Report Number: IMPR-35 DTC-64-984 GM-1592-G-72-519
Publish Date: 19640531
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progess Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 24
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074542
Site Holding: CB DW 524773 EDG E499466
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 26, 1-31 August 1963.
Author(s):
Report Number: DTC-63-643 IMPR-26 CRDL-63-S-985 CRDL-TL-64-S-428
Publish Date: 19630831
Abstract: Cornell Aeronautical Laboratory initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project is currently operating with six to eight scientific researchers and eight to ten supporting personnel. During this period, our activities were directed torward: Development of a work program for tactical incapaciting agent munitions (TIM). Preliminary experimentation in the DITA Special Study Area. Phase 1 effort on Concept No. 4 (POPCORN).
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 24
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074547
Site Holding: CB DW 524779 EDG E499467
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 27, 1-30 September 1963.
Author(s):
Report Number: IMPR-27 DTC-63-731 CRDL-63-S-1067 CRDL-TL-64-S-932
Publish Date: 19630930
Abstract: CAL initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY

Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 25
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074550
Site Holding: CB DW 524785 EDG E499468
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 28, 1-31 October 1963.
Author(s):
Report Number: IMPR-28 CRDL-63-S-1199 CRDL-TL-64-S-430
Publish Date: 19631001
Abstract: CAL initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074552
Site Holding: CB DW 524797
AD Number:
Title: Mathematical, Statistical, and Operation Research Services.
Author(s):
Report Number: CAL-P-187 DTC-63-360
Publish Date: 19630617
Abstract: (Abstract is unavailable.)
Descriptive Note: Proposal
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 254
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074566
Site Holding: CB DW 524817
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 33, 1 March-31 March 1964.
Author(s):
Report Number: DTC-64-507 IMPR-33
Publish Date: 19640331

Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 31
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074569
Site Holding: CB DW 524822
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 36, 1 June-30 June 1964.
Author(s):
Report Number: IMPR-36 DTC-64-1130
Publish Date: 19640630
Abstract: CAL initiated performance on the subject contract (Code name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 26
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074570
Site Holding: CB DW 524828
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 37, 1 July-31 July 1964.
Author(s):
Report Number: IMPR-37 DTC-64-1276
Publish Date: 19640731
Abstract: CAL initiated performance on the subject contract (Code name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 26
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074742
Site Holding: CB DW 524833

AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 38, 1 August-31 August 1964.
Author(s):
Report Number: DTC-64-1429 IMPR-38
Publish Date: 19640831
Abstract: CAL initiated performance in the subject contract (Code name: Project CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 33
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074757
Site Holding: CB DW 524840
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 39, 1 September-30 September 1964.
Author(s):
Report Number: DTC-64-1544 IMPR-39
Publish Date: 19640930
Abstract: CAL initiated performance on the subject contract (CODE name: Project CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 50
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074765
Site Holding: CB DW 524841
AD Number:
Title: Project CHORD. Working Paper No. 15.
Author(s):
Report Number: WP-15 DTC-64-1545
Publish Date: 19641016
Abstract: This paper presents a detailed description of the Explosive Acceleration Test Unit constructed at this Laboratory under Contract DA-18-108-CML-6628-A Project CHORD. To present experimental results on a timely basis, test results and a complimentary discussion are presented in Sections IV and V, respectively. Although the work to date has been limited, some conclusions derived from the test data are presented in Section VI. Additional experimental work is needed and planned. These efforts will be presented as available. Working Paper No. 15 will be referenced in future publiations so redundant equipment description can be omitted. The design, construction, and use of this facility are the direct efforts of Messrs. R. J. Sydow, H. Washburn, and C. J. Borkowski. The helpful suggestions of Mr. C. J. Schneidder, Jr. also are appreciated.
Descriptive Note: Working Paper

Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 38
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-074793
Site Holding: CB DW 524884
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 1, 1 January-31 January 1965.
Author(s):
Report Number: DTC-65-1296 IMPR-1
Publish Date: 19650131
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 49
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074796
Site Holding: CB DW 524885
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 2, 1 February-28 February 1965.
Author(s):
Report Number: IMPR-2 DTC-65-1297
Publish Date: 19650228
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 47
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074798
Site Holding: CB DW 524889
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 3, 1 March-31 March 1965.
Author(s):

Report Number: IMPR-3 DTC-65-1484
Publish Date: 19650331
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 61
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074875
Site Holding: CB DW 524894
AD Number:
Title: Determination of Candidate Incapacitating Munition -- Ground Delivery Systems for Feasibility Study.
Author(s): Eusanio, L. A. O'Connor, A. D. Talley, R. L.
Report Number: DTC-65-1578 GM-1592-G-22
Publish Date: 19641201
Abstract: (Abstract is unavailable.)
Descriptive Note: Feasibility Study
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 102
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074880
Site Holding: CB DW 524899
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 5, 1 May-31 May 1965.
Author(s):
Report Number: DTC-65-1793 IMPR-5
Publish Date: 19650531
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 57
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074882
Site Holding: CB DW 524900

AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 4, 1 April-30 April 1965.
Author(s):
Report Number: DTC-65-1713 IMPR-4
Publish Date: 19650430
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 55
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074885
Site Holding: CB DW 524910
AD Number:
Title: Project CHORD. Summary Report, 15 June 1961-31 December 1964.
Author(s): Reinnagel, Richard E.
Report Number: GM-1592-G-23 DTC-65-1925
Publish Date: 19641231
Abstract: This summary report has been prepared in accordance with the provisions of Contract No. DA-18-108-CML-6628-A abd covers the period from 15 June 1961 through 31 December 1964. This publication lists reference reports which describes the Phase I and Phase II efforts conducted by Cornell Aeronautical Laboratory, Inc (CAL) to determine effective means for delivery of lethal, incapacitating, flame, smoke, and incendiary chemical agents by air and ground weapons systems and to evolve new and novel chemical munitions which significantly enhance our military capability against any class of enemy in any type of conflict. In addition, a brief description and current status of the research and development program for each agent/munition/weapons system concept considered during the period covered by this report is presented.
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 51
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-074887
Site Holding: CB DW 524912 EDG E499470
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 30, 1-31 December 1963.
Author(s):
Report Number: DTC-64-198 IMPR-30 CRDL-64-S-125 CRDL-TL-64-S-121
Publish Date: 19631231
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY

Abstract: The following conclusions are made concerning armament for Army aircraft. Among possible HE armament, two types are the most suitable for the attack of tactical targets: shaped charge war head guided missile for hard-point targets and a repeating grenade-type weapon for area personnel targets. Rockets are not as effective as the weapons considered above, but are the best armament available for attack of hard-point targets from high-speed aircraft. Machine guns, though not as effective as the grenade weapon for personnel area fire, are the only light weapons immediately available which can be mounted on all aircraft. Warhead developments will improve the potential effectiveness of most weapons. No suitable missile exists for the attack of hard point targets from high-speed fixed-wing air craft. Weapons available for high-speed fixed wing launch are not efficient in the attack of area targets. One ultimate concept for an air borne weapon system in the time period under consideration is an S/VTOL aircraft-borne missile system capable of destroying a hard-point target without the aircraft actually being within sight of the target when the weapon impacts.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AIRCRAFT; MOBILE; RESEARCH MANAGEMENT; S/L CHANGE 8306; TACTICAL WARFARE; TACTICAL WEAPONS
Page Count: 88
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: Limitation removed CRD, D/A letter 29 Feb 1968; S to C and declassified on 31 Dec 1982 USAAMRDL notice 29 Dec 1972.

CBRNIAC Number: CB-075085
Site Holding: CB DT EDG E504804
AD Number: 339091
Title: Evaluation of Tactical Air Weapon Systems. Volume 2.
Author(s): Kamrass, Murray Heckroth, Erwin E.
Report Number: CAL-GM-1496-G-5-Vol-2 TREC-TR-62-78 H0145650013 CRDL-62-RDS-1023
Publish Date: 19620901
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: S/RD
Supplemental Notes:

CBRNIAC Number: CB-076385
Site Holding: CB EDG E505748
AD Number:
Title: Project TAMPA. Monthly Progress Report No. 2, 1-28 November 1965.
Author(s):
Report Number: CRDL-65-S-837 EA-S-1525(66) H0055720003
Publish Date: 19651210
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 22
CB Collection: CA

Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076386
Site Holding: CB EDG E505749
AD Number:
Title: Project TAMPA. Monthly Progress Report No. 4, 1-30 January 1966.
Author(s):
Report Number:
Publish Date: 19660204
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 7
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076387
Site Holding: CB EDG E505750
AD Number:
Title: Project TAMPA. Monthly Progress Report No. 6, 28 February-1 April 1966.
Author(s):
Report Number: TSD-TL-70-S-43 EA-S-551(66) H0043700004
Publish Date: 19660408
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 31
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076388
Site Holding: CB EDG E505751
AD Number:
Title: Project TAMPA. Monthly Progress Report No. 7, 2-30 April 1966.
Author(s):
Report Number:
Publish Date: 19660509
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 9
CB Collection: CA
Media Type: CPDF

Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076462
Site Holding: CB EDG E505796
AD Number:
Title: Project TAMPA. Monthly Progress Report No. 1, 11-31 October 1965.
Author(s):
Report Number: TSD-TL-66-S-607 CRDL-65-S-794 CRDL-65-S-780 H0607660021
Publish Date: 19651105
Abstract: During the initial three weeks of this program, effort was concentrated on collection and preliminary review of the available classified and unclassified literature. Considerable progress has been made in this search and review phase, including visits to Frankford Arsenal, the Chemical Research and Development Laboratories, and the Army Biological Laboratories. Information collected during these visits has provided several points of departure for continuing search and review, and has helped to provide input to the generation of overall classification schemes. The literature search is continuing on schedule, as discussed more fully in the PLANS section. We currently estimate that the literature search is approximately 30 percent complete. Also accomplished during this report period were the initial scheduling of personnel and planning of specific tasks to be accomplished in the program. Although plans have been developed for the entire program, redirection, or at least re-emphasis, may well be required as a result of the findings and preliminary output of the literature survey, or as a result of coordination with the Project Officer, planned for the middle of next month. Development of the mission array and target definitions, and agent classification, will be initiated on schedule, next month. No slippage in the program is noted as of this date.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 15
CB Collection: CA
Media Type: CPDF
Document Classification: S
Supplemental Notes:

CBRNIAC Number: CB-076464
Site Holding: CB EDG E505797
AD Number:
Title: CB Anti-materiel Applications. Project TAMPA Mid-contract Report, 25 February 1966.
Author(s): O'Connor, A. D. Rosenthal, P. McAdams, H. T.
Report Number: CAL-GM-2147-G-1 TSD-TL-68-S-2085 EAL-S-399(66) H2085680004
Publish Date: 19660225
Abstract: (Abstract is unavailable.)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 126
CB Collection: CA
Media Type: CPDF
Document Classification: S
Supplemental Notes:

CBRNIAC Number: CB-076710
Site Holding: CB DW 522195 EDG E499464
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 24, 1 June-30 June 1963.
Author(s):

Report Number: CRDL-63-S-730 IMPR-24 GM-1592-G-470-141
Publish Date: 19630630
Abstract: Cornell Aeronautical Laboratory initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project is currently operating with six to eight senior researchers and eight to ten supporting personnel.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 23
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-076711
Site Holding: CB DW 522197 EDG E499465
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 25, 1-31 July 1963.
Author(s):
Report Number: IMPR-25 DTC-63-545 GM-1592-G CRDL-63-S-853 CRDL-TL-63-S-848
Publish Date: 19630731
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-076774
Site Holding: CB DW 524960
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 8, 1 August-31 August 1965.
Author(s):
Report Number: DTC-65-2190 IMPR-8
Publish Date: 19650831
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 43
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-076788
Site Holding: CB DW 524975
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 11, 1 November-30 November 1965.
Author(s):
Report Number: DTC-66-288 IMPR-11
Publish Date: 19651130
Abstract: CAL initiated performance on the subject contract on 1 January 1965. The primary objective of the project is to develop effectiveness means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 43
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077008
Site Holding: CB DW 525113
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 18, 1 June-30 June 1966.
Author(s):
Report Number: DTC-66-1400 IMPR-18
Publish Date: 19660630
Abstract: On 1 January 1965 effort on this project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 54
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-077225
Site Holding: CB DW 525192
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 53, 1 May-31 May 1969.
Author(s): Reinnagel, R. E.
Report Number: DTC-69-1099 IMPR-53
Publish Date: 19690531
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 46
CB Collection: CA

Media Type: CPDF
Document Classification: S/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077362
Site Holding: CB DW 522183 EDG E489315
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 5, 1-31 August 1965.
Author(s):
Report Number: IMPR-5
Publish Date: 19650831
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 17
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-077367
Site Holding: CB DW 522194
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 24, 1 December-31 December 1966.
Author(s):
Report Number: IMPR-24
Publish Date: 19661231
Abstract: On 1 January 1965 effort on this project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 74
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077373
Site Holding: CB DW 522196
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 25, 1 January-31 January 1967.
Author(s):
Report Number: IMPR-25
Publish Date: 19670131
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-108-CML-6628A and continued under this contract through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Incremental funding under the contract has been handled on a calendar year basis. The objective of work under Project CHORD is to develop effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapon systems, with primary emphasis placed on ground-to-ground systems.

Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 63
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077460
Site Holding: CB DW 522198
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 26, 1 February-28 February 1967.
Author(s):
Report Number: IMPR-26
Publish Date: 19670228
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. The objective of work under Project CHORD is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground chemical weapon systems, with primary emphasis placed on ground-to-ground systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 74
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077471
Site Holding: CB DW 522199
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 27, 1 March-31 March 1967.
Author(s):
Report Number: IMPR-27
Publish Date: 19670331
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. The objective of work under Project CHORD is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground chemical weapon systems, with primary emphasis placed on ground-to-ground systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-

controlled technical data.
Subject Keywords:
Page Count: 73
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077473
Site Holding: CB DW 522200
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 28, 1 April-30 April 1967.
Author(s):
Report Number: IMPR-28
Publish Date: 19670430
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. The objective of work under Project CHORD is to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground chemical weapon systems, with primary emphasis placed on ground-to-ground systems.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 85
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077475
Site Holding: CB DW 522201
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 29, 1 May-31 May 1967.
Author(s): Reinnagel, R. E.
Report Number: IMPR-29
Publish Date: 19670531
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 83
CB Collection: CA
Media Type: CPDF

Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077477
Site Holding: CB DW 522202
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 30, 1 June-30 June 1967.
Author(s): Reinnagel, R. E.
Report Number: IMPR-30
Publish Date: 19670630
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077487
Site Holding: CB DW 522206
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 35, 1 November-30 November 1967.
Author(s): Reinnagel, R. E.
Report Number: IMPR-35
Publish Date: 19671130
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 37
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077488
Site Holding: CB DW 522207
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 36, 1 December-31 December 1967.

Author(s): Reinnagel, R. E.
Report Number: IMPR-36
Publish Date: 19671231
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 32
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077490
Site Holding: CB DW 522208
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 37, 1 January-31 January 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-37
Publish Date: 19680131
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-035-AMC-6628A and continued under this contract through 1 January 1965. The Project was continued under Contract No. DA-18-035-AMC-323A for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract was received during the month which provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. A modification to the contract is currently in process to provide funding for the period 15 February 1968 to 15 September 1968.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 39
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077491
Site Holding: CB DW 522209
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 38, 1 February-29 February 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-38
Publish Date: 19680229
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY

Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 47
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077494
Site Holding: CB DW 522210
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 39, 1 March-31 March 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-39
Publish Date: 19680331
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 52
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077502
Site Holding: CB DW 522211
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 40, 1 April-30 April 1968.
Author(s):
Report Number: IMPR-40
Publish Date: 19680430
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 40
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077505
Site Holding: CB DW 522212
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 41, 1 May-31 May 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-41
Publish Date: 19680531
Abstract: (Abstract is unavailable.)

Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 35
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077507
Site Holding: CB DW 522213
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 43, 1 July-31 July 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-43
Publish Date: 19680731
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077509
Site Holding: CB DW 522217
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 47, 1 November-30 November 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-47
Publish Date: 19681130
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 44
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077511
Site Holding: CB DW 522218
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 49, 1 January-31 January 1969.
Author(s): Reinnagel, R. E.
Report Number: IMPR-49

Publish Date: 19690131
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 59
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077512
Site Holding: CB DW 522219
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 50, 1 February-28 February 1969.
Author(s): Reinnagel, R. E.
Report Number: IMPR-50
Publish Date: 19690228
Abstract: (Abstract is unavailable.)
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 53
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-077516
Site Holding: CB DW 522327 EDG E489308
AD Number:
Title: Design Study of VX Aerosol Bomblet Employing the High-pressure, Single-fluid Nozzle Dissemination Technique.
Author(s): Matheis, C. W.
Report Number: GM-1592-G-29
Publish Date: 19671101
Abstract: The study is limited to an investigation of the effects on design resulting from the functioning of the high-pressure expulsion system only. Arbitrarily selected ranges of the variables involved are established to permit a parametric analysis of the concept to be conducted. The analysis is facilitated by a series of charts which permit the rapid evaluation of any given design configuration within the scope of the study. The results are presented in a series of figures which reflect the design implications and trends resulting from various combinations of the several interrelated parameters.
Descriptive Note: Special Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 65
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-078131
Site Holding: CB DW 524788 EDG E499469
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 29, 1-30 November 1963.
Author(s):
Report Number: IMPR-29 DTC-64-33 CRDL-64-S-10 CRDL-TL-64-S-431
Publish Date: 19631130
Abstract: CAL initiated performance on the subject contract (Code Name -- CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services, such as shop and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 40
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes: Change Authority: Regraded Confidential by authority of DoD 5200.1-R, Nov 1975.

CBRNIAC Number: CB-078137
Site Holding: CB DW 524926 EDG E499471
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 31, 1-31 January 1964.
Author(s):
Report Number: IMPR-31 DTC-64-284 CRDL-64-S-192 CRDL-TL-64-S-433 CRDL-TL-65-S-285
Publish Date: 19640131
Abstract: CAL initiated performance on the subject contract (Code Name: CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 32
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: Regraded Confidential by authority of DoD 5200.1-R, 15 Jul 1976.

CBRNIAC Number: CB-079857
Site Holding: CB EDG E505018
AD Number:
Title: Status Report for 155mm Howitzer VX Aerosol Program.
Author(s):
Report Number:
Publish Date: 19650801
Abstract: (Abstract is unavailable.)
Descriptive Note: Status Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 37
CB Collection: CA

Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082240
Site Holding: CB EDG E489304
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 58, 1-31 October 1969.
Author(s): Reinnagel, R. E.
Report Number: IMPR-58
Publish Date: 19691031
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 8
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082242
Site Holding: CB EDG E489307
AD Number:
Title: Analysis of Requirements and Design Study for a Special Purpose 40 MM Cartridge (Code Name GEE).
Author(s): Bullerdiek, W. A.
Report Number: GM-1592-G-28
Publish Date: 19670701
Abstract: A proposed plan for the design, fabrication and test phases of the program is presented in outline form. The overall experimental effort is divided into three principal categories to be accomplished on a concurrent basis. These categories are flight stability, agent dissemination, and fuze modification. The final phase of the program involves the design, fabrication, testing, and assessment of the overall performance of a complete prototype round.
Descriptive Note: Special Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 87
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-082246
Site Holding: CB EDG E489316
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 6, 1-30 September 1965.
Author(s):
Report Number: IMPR-6
Publish Date: 19650930
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.

Subject Keywords:
Page Count: 20
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082250
Site Holding: CB EDG E489317
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 7, 1-31 October 1965.
Author(s):
Report Number: IMPR-7
Publish Date: 19651031
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 27
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082252
Site Holding: CB EDG E489318
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 8, 1-30 November 1965.
Author(s):
Report Number: IMPR-8
Publish Date: 19651130
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 13
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082259
Site Holding: CB EDG E489319
AD Number:
Title: Project CHORD 2. Informal Monthly Progress Report No. 9, 1-31 December 1965.
Author(s):
Report Number: IMPR-9
Publish Date: 19651231
Abstract: (Abstract is unavailable.)
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:

Page Count: 11
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082262
Site Holding: CB EDG E489320
AD Number:
Title: Report of Ad Hoc Task No. 1 -- BAM. CHORD Working Paper No. 24.
Author(s): Novy, E. O'Connor, A.
Report Number: WP-24 CRDL-65-S-196 TSD-TL-66-S-92
Publish Date: 19650315
Abstract: This working paper has been prepared at Cornell Aeronautical Laboratory, Inc. to supplement CRDL's response to the US Army Missile Command request of Reference 1. The CAL effort on this task, referred to as Ad hoc Study No. 1, under Contract DA 18-035-AMC-(323)A, was initiated 9 February 1965, with a completion date of 25 March 1965.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 113
CB Collection: CA
Media Type: CPDF
Document Classification: S/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-082263
Site Holding: CB EDG E489321
AD Number:
Title: Assessment of Three Proposed Incapacitating Munition Systems. Project CHORD Working Paper No. 28.
Author(s): Heckroth, E. E. O'Connor, A. D.
Report Number: WP-28
Publish Date: 19650601
Abstract: This working paper summarizes the CAL effort on Ad hoc Task No. 4 under the CHORD 2 program. The task was initiated on 20 April 1965, in response to a request from CRDL as outlined in Reference 1. This working paper is intended to provide CRDL with the basic information required to allow CRDL's preparation of a technical response to the US Army Munitions Command request of Reference 2.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 29
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082268
Site Holding: CB EDG E489326
AD Number:
Title: Special POPCORN Bomblet. CHORD Working Paper No. 37.
Author(s): Washburn, H. A.
Report Number: WP-37

Publish Date: 19670801
Abstract: At the request of WDEL, the scope of the CAL effort was restricted solely to a design investigation, excluding all experimental fabrication and test work. It was recognized, therefore, that the resultant design would contain certain features which would require test verification before it could be considered ready for approval. The aerodynamic and flight characterisitics are not considered in this study except as influenced by fabrication problems, since the external configuration is based on an existing bomblet design. However, consideration is given to the design and location of internal components to provide dynamic balance of the bomblet. The investigation and resulting bomblet design is designated "Special POPCORN Concept".
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 127
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-082269
Site Holding: CB EDG E489328
AD Number:
Title: Feasibility Study of Poled, Lens Incendiary, 40 MM. CHORD Working Paper No. 39.
Author(s): Klingaman, R. M.
Report Number: WP-39
Publish Date: 19691014
Abstract: Inherent limitations exist that preclude the reliable, successful destruction of massive petroleum stores. It is apparent that such storage facilities are vulnerable to weapons delivery. The problem must reside, therefore, in the response of the target to the weapons challenge. The classical mode of hydrocarbon fuel destruction is combustion. The combustion of hydrocarbons involves the rapid oxidation of the fuel in the vapor phase. The reaction is a chain-type mechanism that is dependent on free radical formation. Such a chain mechanism indicates: that the hydrocarbon must mix with the oxidant, the air; that there exist certain concentration limits associated with the fuel and air in order to maintain propagation; and that there must be sufficient energy introduced to initiate free radical formation. The proper delivery and address of incendiary weapons and materials can provide and satisfy conditions of flame initiation and propagation.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 10
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082273
Site Holding: CB EDG E489330
AD Number:
Title: 40-MM Incendiary Fragmentation Cartridge Design Concepts. CHORD Working Paper No. 41.
Author(s): Klingaman, R. M. Washburn, H. A.
Report Number: WP-41
Publish Date: 19691101
Abstract: The purpose of this working paper is to present four design concepts for a 40-mm incendiary fragmentation cartridge which is compatible with the M79 Launcher. A complete discussion of both the rationale leading to the development of this material, as well as the research, development, and evaluation of the material, are

beyond the scope of this paper.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 34
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082281
Site Holding: CB EDG E489331
AD Number:
Title: 152-MM Round: Accuracy Analysis. CHORD Working Paper No. 45.
Author(s): Keller, A. C.
Report Number: WP-45
Publish Date: 19691001
Abstract: Section 2 presents a discussion of the error sources and magnitude estimates. The effects of these errors in terms of horizontal and vertical probable errors at the target are derived in Section 3. These effects are combined in Section 4 to define hit probabilities and to determine the expected number of rounds needed to insure a hit on the target.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 24
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082292
Site Holding: CB EDG E489332
AD Number:
Title: 152-MM Round: Mechanical Design and Analysis Study. CHORD Working Paper No. 46.
Author(s): Matheis, C. W.
Report Number: WP-46 GM-1592-G
Publish Date: 19690801
Abstract: (Abstract is unavailable.)
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 45
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082293
Site Holding: CB EDG E489333
AD Number:
Title: 152-MM Flame Round: Dissemination Characteristics. CHORD Working Paper No. 47.
Author(s): Klingaman, R. M.

Report Number: WP-47
Publish Date: 19691201
Abstract: (Abstract is unavailable.)
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 11
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082294
Site Holding: CB EDG E489334
AD Number:
Title: Feasibility Study of High-low Pressure Propulsion System Applied to 152 MM Flame Projectile. CHORD Working Paper No. 48.
Author(s): Vassallo, F. A. Kreger, T. C.
Report Number: WP-48
Publish Date: 19690723
Abstract: Conventional cased ammunition is designed to produce a rapid build-up of chamber pressure shortly after ignition. This relatively high pressure acts directly on the base of the projectile thus imparting the desired muzzle velocity and energy. However, the pressure level necessary to produce the required velocity results in extremely high "g" forces on the projectile. This report is concerned with a high-low pressure round which is designed to produce equivalent performance with a substantial reduction in the maximum "g" forces on the projectile. The high-low pressure situation is achieved through the use of two chambers within the case which are separated by a series of orifices with appropriate area to maintain a pressure differential between the chambers once combustion is initiated.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 22
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-082295
Site Holding: CB EDG E489335
AD Number:
Title: CS2 Bulk Agent Delivery Systems Study. CHORD Working Paper No. 49.
Author(s): Egan, Thomas W.
Report Number: WP-49
Publish Date: 19690613
Abstract: Data on munition costs, assuming quantity production, were obtained from a number of sources and have been reviewed to assure relative consistency. In addition, research and development expenditures required to complete CDC testing, and verify readiness for production commitment, have been estimated. The XM-925 and XM-28 systems have presently obtained this status; however, the other candidate systems would require an R&D phase with the cost and time requirements chargeable to these systems.
Descriptive Note: Working Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:

Page Count: 134
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-085246
Site Holding: CB DW 524811
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 32, 1-29 February 1964.
Author(s):
Report Number: DTC-64-405 CRDL-64-S-300
Publish Date: 19640229
Abstract: CAL initiated performance on the subject contract (Code Name CHORD) on 15 June 1961. The project continued to operate with an average of 14 engineering and scientific personnel, plus direct technical supporting services such as shop, publications, and graphic arts.
Descriptive Note: Informal Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 36
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: Change Authority: Regraded Confidential by authority of DoD 5200.1-R, 16 Jul 1976.

CBRNIAC Number: CB-085574
Site Holding: CB DW 522203
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 31, 1-31 July 1967.
Author(s): Reinnagel, R. E.
Report Number: IMPR-31
Publish Date: 19670731
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-108-CML-6628(A) and continued under this contract through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323(A) under sponsorship of the Weapons Development and Engineering Laboratory of the US Army Edgewood Arsenal for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract which was received during the month of February, provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. The objective of work under Project CHORD is to develop effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapon systems, with primary emphasis placed on ground-to-ground systems.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 53
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-085579
Site Holding: CB DW 522204

AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 32, 1-31 August 1967.
Author(s): Reinnagel, R. E.
Report Number: IMPR-32
Publish Date: 19670831
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-108-CML-6628(A) and continued under this contract through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323(A) under sponsorship of the Weapons Development and Engineering Laboratory of the US Army Edgewood Arsenal for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract, which was received during the month of February, provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. The objective of work under Project CHORD is to develop effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapon systems, with primary emphasis placed on ground-to-ground systems.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 45
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-085580
Site Holding: CB DW 522205
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 33, 1-30 September 1967.
Author(s): Reinnagel, R. E.
Report Number: IMPR-33
Publish Date: 19670930
Abstract: Effort on the CHORD Program was initiated at CAL on 1 June 1961 under Contract No. DA-18-108-CML-6628(A) and continued under this contract through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323(A) under sponsorship of the Weapons Development and Engineering Laboratory of the US Army Edgewood Arsenal for a three-year period beginning 1 January 1965 and during 1966 was extended to 31 March 1968. Modification No. 10 to the Contract, which was received during the month of February, provided funding to 15 February 1968 and extended the time of the basic contract to 1 January 1969. Modification No. 10 provides for 31650 man hours to be expended in CY 1967. The objective of work under Project CHORD is to develop effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapon systems, with primary emphasis placed on ground-to-ground systems.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 50
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-085582
Site Holding: CB DW 522215
AD Number:

Title: Project CHORD. Informal Monthly Progress Report No. 45, 1-30 September 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-45
Publish Date: 19680930
Abstract: Our Ashford Experimental Site, which has been in operation for approximately two years, has been of great value in the test and evaluation of chemical systems for these applications. Effort on the CHORD Program was performed at CAL under Contract No. DA-18-108-CML-6628(A) during the period 1 June 1961 through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323(A) under sponsorship of the Weapons Development and Engineering Laboratories, US Army Edgewood Arsenal, for a three-year period beginning 1 January 1965 and subsequently extended to 15 May 1969, with no increase in total effort. The program is currently funded to 15 February 1969. The CHORD Program has been conducted with incremental funding which mandates program planning based upon such funding. For calendar year 1968, the program was initially funded through 15 September 1958. A specific work program for the period 1 January through 15 September 1968, as tabulated was mutually agreed upon between representatives of WDEL and CAL at a Program Planning Meeting held at CAL on 25 January 1968. The actual conduct of the program for that period is also shown on the tabulation.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 60
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-085584
Site Holding: CB DW 522216
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 46, 1-31 October 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-46
Publish Date: 19681031
Abstract: Our Ashford Experimental Site, which has been in operation for approximately two years, has been of great value in the test and evaluation of chemical systems for these applications. Effort on the CHORD Program was performed at CAL under Contract No. DA-18-108-CML-6628(A) during the period 1 June 1961 through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323(A) under sponsorship of the Weapons Development and Engineering Laboratories, US Army Edgewood Arsenal, for a three-year period beginning 1 January 1965 and subsequently extended to 15 May 1969, with no increase in total effort. The program is currently funded to 15 February 1969. By Modification No. 13 to the contract, the CHORD Program is funded for the period 15 September 1968 through 15 February 1969.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 50
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-085586
Site Holding: CB DW 522214
AD Number:

Title: Project CHORD. Informal Monthly Progress Report No. 44, 1-31 August 1968.
Author(s): Reinnagel, R. E.
Report Number: IMPR-44
Publish Date: 19680831
Abstract: Our Ashford Experimental Site, which has been in operation for approximately two years, has been of great value in the test and evaluation of chemical systems for these applications. Effort on the CHORD Program was performed at CAL under Contract No. DA-18-108-CML-6628(A) during the period 1 June 1961 through 1 January 1965. The project was continued under Contract No. DA-18-035-AMC-323(A) under sponsorship of the Weapons Development and Engineering Laboratories, US Army Edgewood Arsenal, for a three-year period beginning 1 January 1965 and subsequently extended to 15 May 1969, with no increase in total effort. The program is currently funded to 15 September 1968.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. NOFORN. This document contains export-controlled technical data.
Subject Keywords:
Page Count: 37
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-097898
Site Holding: CB DT
AD Number: A952500
Title: Project SQUID, Analysis of a Dilute Diffusion Flame Maintained by Heterogeneous Reaction.
Author(s): Markstein,George H.
Report Number: CAL-89-P
Publish Date: 19631201
Abstract: A simplified model of a dilute diffusion flame of spherical symmetry maintained exclusively by heterogeneous reaction has been analyzed. This study was suggested by recent experimental results which indicated that in magnesium-oxygen-argon dilute diffusion flames the reaction took place predominantly on the surface of growing oxide-smoke particles. The treatment is based on the usual assumptions of negligible convective transport of nozzle reactant, constant temperature and pressure in the flame zone, and absence of depletion of atmosphere reactant. Additional assumptions adopted for the present problem are: the reaction product is present only in form of condensed-phase spherical particles that are convected by the radial flow of inert carrier gas; the rate of reaction is controlled by collision of nozzle-reactant molecules with the particle surface; nucleation of particles occurs only within a small central region of the flame and is not considered in the analysis. This model leads to a nonlinear system of two first-order differential equations which is solved numerically. The solutions contain two adjustable parameters that are shown to be related to the nucleation process.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: ARGON; CONVECTION; DIFFUSION; FLAMES; MAGNESIUM; MATHEMATICAL ANALYSIS; NOZZLES; OXIDES; OXYGEN; PARTICLES; PRESSURE; SMOKE; SURFACES; TEMPERATURE; TRANSPORT PROPERTIES
Page Count: 48
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Supersedes AD-425945. Presented at the AIAA Conference on Heterogeneous Combustion, Palm Beach, FL 11-13 December 1963.

CBRNIAC Number: CB-100723
Site Holding: CB DT

AD Number: B217091
Title: Analysis of 115mm Multitube Rocket System Effectiveness with Incapacitating Agent Warhead.
Author(s): O'Connor, Arthur D. Talley, Robert L.
Report Number: GM-1592-G-19
Publish Date: 19641201
Abstract: This report presents a critical examination of the potential effectiveness of the ll5-mm area rocket system with an agent BZ warhead. This examination was undertaken at the request CRDL to assist in establishing technical requirements for the design study effort at the Illinois Institute of Technology Research Institute NTRI). The analysis examines the casualty-producing potential of this system in agent BZ delivery roles. Detailed consideration is given to aim and dispersion delivery errors and resulting round distributions, and to sub S munition distribution requirements from individual rounds. These parameters have a profound influence on predicted round and launcher requirements, and hence on overall system potential Although the methods employed in this investigation may be easily generalized, the specific results are critically dependent on the dosage requirements and casualty-producing capabilities of the agent BZ fill. Therefore, it is imperative that inferences regarding the potential of this system with other fills be made with extreme care.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AMMUNITION; BZ AGENTS; DELIVERY; DISPERSING; DISTRIBUTION; DOSAGE; ERRORS; ILLINOIS; INCAPACITATING AGENTS; REQUIREMENTS; ROCKETS; WARHEADS
Page Count: 84
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-100730
Site Holding: CB DT
AD Number: B217519
Title: Pop-up Adapter for the M23 Chemical Land Mine.
Author(s):
Report Number: CAL-GM-1592-G-101
Publish Date: 19670101
Abstract: Mines of all types are, and have been, an integral and indispensable element of all combat operations and are of particular interest in the present-day, limited-type war. Until other devices, tactics, or techniques of superior over-all performance replace the mine, there will be a continuing interest in methods for the improvement of the capabilities of mines. The 'Pop-Up' adapter to the M23 Chemical Land Mine has been developed to improve its efficiency. The 'Pop-Up' adapter provides for airburst of the standard M23 Mine, resulting in greatly increased area coverage to a useful level.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC ITHACA NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: ADAPTERS; AIRBURST; AREA COVERAGE; CHEMICAL BOMBS; CHEMICAL WARFARE; COMBAT OPERATIONS; COMBAT SUPPORT; LAND MINE WARFARE; LAND MINES; M23 CHEMICAL LAND MINE; MILITARY OPERATIONS; POP UP ADAPTER; WARFARE
Page Count: 19
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Limitation Change Authority: TD, ECBC (AMSRD-ECB-CB-CR), D/A Form 1575, 11 Jul 2006.

CBRNIAC Number: CB-102302
Site Holding: CB DT
AD Number: 523140

Title: Design and Development of Sperical Rebounding Airburst Munition (POPCORN).
Author(s): Schneider, C. J. Jr.
Report Number: GM-2699-D-1
Publish Date: 19710901
Abstract: Under Contract No. DAAA-21-69-C-0040 issued by the US Army Picatinny Arsenal, Dover, NJ, a program was conducted towards the advbanced development of a weapon system concept of a very small, fragmentation subminution capable of rebounding on ground impact and airbursting at the altitude at the altitude at which it is most effective against personnel targets. The final bomblet configuration was one having a polyurethane elastomer outer shell with a four-vane design (for in-flight rotation and dispersal) and a payload (inner) shell of sintered powdered iron. Separation of the outer shell and propulsion of the inner shell is accomplished through an explosive-spring technique. Although a specification fuze was not developed, tests conducted using modified GFE fuzes verified the feasibility of the weapon system concept. The recommendations are: (1) Continuation of development of a bomblet having the external configuration developed during this program, including the development of an optimized payload and an approved fuze; and (2) Adaptation of the POPCORN approach to several other classes of munitions to take advantage of the enhancement of effects produced by an air burst; smoke producers, incendiaries, chemical agents, markers and other payload categories would profit by the air-burst or on-surface deposition possible with a POPCORN-based design.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS RESEARCH DEPT
Distribution Statement: Distribution limited to US Gov't agencies only; Test and Evaluation. Other requests for this document shall be referred to United States Army, Attn: SMUPA-TS-S, Picatinny Arsenal, Dover, NJ 07801.
Subject Keywords: AIRBURST; AMMUNITION AND EXPLOSIVES; ANTIPERSONNEL AMMUNITION; ANTIPERSONNEL WEAPONS; BALLISTICS; BOMB CLUSTERS; BOMBLETS; CLUSTER WARHEADS; COMPLETE ROUNDS; EXPLOSIONS; FRAGMENTATION; FREE FLIGHT TRAJECTORIES; FUZE FUNCTIONING ELEMENTS; FUZES; FUZES (ORDNANCE); IMPACT FUZES; MINIATURE FUZES; MOTION; ROTATION; TIME DELAY FUZES; WARFARE AND WEAPONS; WARHEADS
Page Count: 60
CB Collection: CL
Media Type: HC
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-108304
Site Holding: CB DT
AD Number: 659093
Title: A Theory of Approximations in Simulator Behavior.
Author(s): Foster, Mark G.
Report Number:
Publish Date: 19460801
Abstract: A mathematical expression is written for the changes in transient frequency and damping which result when the feedback branch of a single loop system is altered slightly. The result is applied in a general discussion of the accuracy of aerodynamic simulators with numerical examples of roll simulation, and suggested experiments to evaluate the approximations involved in practice. (Author).
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC ITHACA NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: APPROXIMATION (MATHEMATICS); CONTROL SYSTEMS; EQUATIONS OF MOTION; EXPERIMENTAL DESIGN; FLIGHT SIMULATORS; GUIDED MISSILES; NUMERICAL ANALYSIS; ROLL; SERVOMECHANISMS; SIMULATION; SIMULATORS
Page Count: 12
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-110265
Site Holding: CB DW 529143
AD Number:
Title: Final Report on Motion of Particulate Matter in the Atmosphere.
Author(s): Anderson, N. Y.
Report Number: VC-733-P1
Publish Date: 19510607
Abstract: This document investigates the technical problems involved in field tests to determine the motion of particulate matter in the atmosphere. Basically, these tests are to determine the effects of turbulent diffusion, fall-out, and cross-isobaric flow on the motion of particulate matter in the atmosphere. A number of tracer materials have been considered and their characteristics are summarized. A simple method of ejecting particulate matter into the atmosphere at a high rate and without excessive agglomeration has been developed. Some data on atmospheric pollution have been reduced and summarized. Several methods of detection and analysis have been investigated. They are: 1) the use of fluorescent particles collected on a polyfibre filter paper, which is subsequently reduced to a film; 2) the use of pure iron particles (such as carbonyl iron) detected and sized on the basis of their magnetic properties; and, 3) the use of a radioautographic technique involving a carrier made radioactive after pickup on the filter paper. Before final recommendations can be made for a test to determine fallout rates, more data on atmospheric pollution must be obtained, and detailed experimental work on the three detection methods proposed must be carried out.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY APPLIED PHYSICS DEPT
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: ATMOSPHERIC CONTAMINANTS; ATMOSPHERIC PHYSICS; ATMOSPHERIC POLLUTION; BETA PARTICLES; CARBONYL COMPOUNDS; CROSS-ISOBARIC FLOW; DETECTION; FALLOUT; FALLOUT RATES; FIELD TESTS; FLUORESCENCE; FLUORESCENT PARTICLES; ISOBARS (PRESSURE); PARTICULATE MATTER; PARTICULATES; RADIOAUTOGRAPH; TEST AND EVALUATION; TRACER STUDIES; TURBULENT DIFFUSION
Page Count: 92
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-110834
Site Holding: CB DT DW 506763
AD Number: 008042
Title: Thundercloud Electrification Studies, II.
Author(s): Chapman, Seville
Report Number: VC-603-P1
Publish Date: 19520620
Abstract: The investigation of the generation of electric charges in thun derclouds included experiments to determine the electrification generated by the disruption of rain drops, corona point strengths on the ground during blizzards, and the earth's upper air electric field during blizzards. Both positive and negative charges averaging from less than 10 to the -13 power to more than 10 to the -10th power coulombs/drop were generated by 4-mm drops of distilled water disrupted in a 4- x 8-in. vertical wind tunnel. These magnitudes were sufficient to account for either a negligible fraction or all of thundercloud electrification. Drop breaking experiments on 3-mm water drops supercooled to -6 deg and 14 deg C yielded average charges of 6.8 x 10 to the -12 power coulombs/drop,respectively. The magnitudes of electrification varied fromdrop to drop by a factor of 100 or more in all cases. Corona point records for 22 months showed currents of about 10 microamp and up to 20 microamp at points 32 and 54 ft above ground. The earth's field fluctuated markedly in magnitude and polarity over intervals of a few seconds in disturbed weather even in the absence of lightning. During a snow-storm, a variation from -10 to + or - 10 times normal was noted within a minute with no observable change in the storm. Corona-point records for lightning, rain, and snowstorms showed marked asymmetry in time and indicated horizontal inhomogeneties in storm-cloud structures. Radiosondes modified to measure the vertical component of the earth's electric field showed polarity reversals with altitude up to 10,000 ft. In one case the polarity was opposite to that of the fair weather fields

as high as 10,000 ft.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: ASYMMETRY; DISTILLED WATER; EARTH (PLANET); ELECTRIC CHARGE; ELECTRIC FIELDS; INTERVALS; LIGHTNING; MEAN; MEASUREMENT; POLARITY; RADIOSONDES; RAIN; RAINDROPS; REVERSIBLE; STORMS; UPPER ATMOSPHERE; VERTICAL ORIENTATION; WEATHER; WIND TUNNELS
Page Count: 1
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: ST-A Per ONR Letter, 9 Nov 77.

CBRNIAC Number: CB-112639
Site Holding: CB DW 506765
AD Number:
Title: Study of the Earth's Electrical Field.
Author(s): Garber, David H.
Report Number: RA764P9
Publish Date: 19531125
Abstract: The purpose of this project is to investigate the earth's electric field and atomspheric electrical conductivity, and to correlate these quantities with meteorological parameters. Present project effort is largely in the instrumentation phase, with emphasis on establishing reliable automatic recording of field and conductivity fluctuations. The conductivity measuring system and the rainfall recording equipment were completed and installed. Partial records were obtained for the field, positive and negative conductivity, barometric pressure, temperature, humidity, solar radiation intensity, and rainfall. Further periodic observations were made of selected meteorological conditions, including state of weather, wind speed, wind direction, visibility, cloud type, cover, and ceiling. All recording was interrupted for an extended period during relocation of the project shack and instrumentation.
Descriptive Note: Quarterly Report No. 9
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: BAROMETRIC PRESSURE; CONDUCTIVITY; EARTH (PLANET); EARTH ATMOSPHERE; EARTH SCIENCES; ELECTRIC FIELDS; HUMIDITY; METEOROLOGICAL INSTRUMENTS; METEOROLOGY; RAINFALL; SOLAR RADIATION; TEMPERATURE; VOLTMETERS
Page Count: 14
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-114029
Site Holding: CB DW 506768
AD Number:
Title: Study of the Earth's Electrical Field.
Author(s): Garber, David H.
Report Number: RA764P13
Publish Date: 19540920
Abstract: The purpose of this project is to investigate the earth's electric field and atomspheric electrical conductivity, and to correlate these quantities with meteorological parameters. During the period June 21, 1954 to July 2, 1954, the recording instruments at the project field station were operated in order to obtain data before, during, and after the solar eclipse of June 30, 1954, which was approximately 83% total in Buffalo. The field and conductivity records did not reveal any significant deviations from normal fluctuations and average values. A substantial cloud cover obscured the sun during most of the eclipse. Data anlysis continued for the records of 1953-1954. The analysis is still in progress.

Descriptive Note: Quarterly Report No. 13
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: BAROMETRIC PRESSURE; CONDUCTIVITY; EARTH (PLANET); EARTH ATMOSPHERE; ELECTRIC FIELDS; HUMIDITY; METEOROLOGICAL INSTRUMENTS; METEOROLOGY; SOLAR ECLIPSES; SOLAR RADIATION; TEMPERATURE
Page Count: 10
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-114030
Site Holding: CB DW 506767
AD Number:
Title: Study of the Earth's Electrical Field.
Author(s): Garber, David H.
Report Number: RA764P12
Publish Date: 19540511
Abstract: The purpose of this project is to investigate the earth's electric field and atomspheric electrical conductivity, and to correlate these quantities with meteorological parameters. On April 19, 1954, data recording was halted in order to conserve funds and to concentrate project efforts on the interpretation of data already accumulated. Data analysis continued for the records beginning about October 1, 1953. Essentially complete records were obtained up to April 19, 1954 for the following parameters: field, positive and negative conductivity, wind direction, solar radiation intensity, barometric pressure, temperature, and humidity. Partial records were observations were made of selected meteorological conditions, including cloud ceiling and type, cover, visibility, state of weather, state of ground, and wind speed.
Descriptive Note: Quarterly Report No. 12
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: BAROMETRIC PRESSURE; CONDUCTIVITY; EARTH (PLANET); ELECTRIC FIELD; HUMIDITY; METEOROLOGICAL INSTRUMENTS; METEOROLOGY; SOLAR RADIATION; TEMPERATURE
Page Count: 8
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-114031
Site Holding: CB DW 506766
AD Number:
Title: Study of the Earth's Electrical Field.
Author(s): Garber, David H.
Report Number: RA764P11
Publish Date: 19540326
Abstract: The purpose of this project is to investigate the earth's electric field and atomspheric electrical conductivity, and to correlate these quantities with meteorological parameters. The electric field meter system was calibrated using absolute values from independent measurements. Using the results of this calibration a tentative value of 2.3 + or - 0.3 was obtained for the electrostatic form factor of the generating voltmeter assembly, including the shielding effects of grounded cables and supports. Detailed analysis continued for records accumulated beginning about October 1, 1953. Essentially complete data were recorded for the following parameters: field, positive and negative conductivity, wind direction, solar radiation intensity, barometric pressure, temperature, and humidity. Precipitation recording was abandoned during the winter season. Further periodic observations were made of selected meteorological conditions, including cloud ceiling and type, over, visibility, state of weather, state of

ground, and wind speed.
Descriptive Note: Quarterly Report No. 11
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: CONDUCTIVITY; EARTH (PLANET); ELECTRIC FIELD; ELECTRICAL CONDUCTIVITY; ELECTROSTATIC ANALYZERS; METEOROLOGICAL INSTRUMENTS; METEOROLOGY; WEATHER COMMUNICATIONS
Page Count: 11
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Illustrations.

CBRNIAC Number: CB-114853
Site Holding: CB DT DW 506764
AD Number: 073693
Title: Study Of The Earth's Electrical Field.
Author(s): Garber, David H.
Report Number: AFCRL-TR55 273
Publish Date: 19550615
Abstract: The object of this project was to correlate measurements of the earth's electric field and positive and negative atmospheric electrical conductivity with other meteorological parameters.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: ATMOSPHERIC ELECTRICITY; EARTH; ELECTRIC FIELDS; ELECTRICAL PROPERTIES; MEASUREMENT; METEOROLOGY
Page Count:
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-123295
Site Holding: CB DW 531450
AD Number:
Title: Plan for Integrated Systems Test of AN/USD-2 (XAE-2) Surveillance System.
Author(s):
Report Number: CM-1212-G-21
Publish Date: 19610601
Abstract: It is the purpose of this document to present an integrated plan for an expedited Field Engineering and Service Test of the AN/USD-2 (XAE-2) surveillance system.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AIRCRAFT EQUIPMENT; CAMERAS; DRONES; FLIGHT TESTING; INFRARED SCANNING; MANNED; PERFORMANCE TESTS; RADAR; STANDARDS; SURVEILLANCE; SURVEILLANCE DRONES; TEST AND EVALUATION; TEST METHODS
Page Count: 222
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-123414

Site Holding: CB DW 38065
AD Number:
Title: Evaluation of Vehicle Performance and Equipment Studies in Reports Submitted in Response to ASR-13 and ASR-15.
Author(s): Dinolfo, R. S. Kline, J. Koegler, R. K. Schultz, R. W.
Report Number: GM-1494-G-3
Publish Date: 19610123
Abstract: This report is an extension of previous studies and presents two suitable factory or field modifications based on evaluative criteria. It is believed that the evaluation ratings as presented for the vehicle and powerplant and black box equipment are based on the same interpretation of the rating scale as were those of the other items considered in evaluating the documents. Thus, they may be included in the overall evaluation ratings.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: BW DELIVERY SYSTEM; CONTRACTORS; DATA LINKS; DELIVERY; DRONES; EQUIPMENT; MISSILES; MUNITIONS; NAVIGATION; NAVIGATION EQUIPMENT; NAVIGATION SYSTEM; SURVEILLANCE DRONES; TERRAIN AVOIDANCE; TEST AND EVALUATION; VEHICLES
Page Count: 40
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-124362
Site Holding: CB DW 507687
AD Number:
Title: Notes for an Integrated AN/USD-5 Systems Test Plan.
Author(s): Hoffman, R. Giles, D. Hill, F. Dahm, D. B.
Report Number:
Publish Date: 19610927
Abstract: A research document pertaining to the AN/USD-5 surveillance drone system. Objectives, measures of effectiveness, criteria, and data to be recorded and data analysis, were performed and reported by Fairchild Strato Corp, USASRDL, USAEPG, USCONARC. It was expected that functions performed by the use of airborne drone vehicles will place sensory or dissemination devices at specified target positions or areas. Concepts emerging from this work have been developed solely for testing the AN/USD-5 drone system as a means of collecting data and dissemination of BW-CW agents. Logistics described in final pages of this document.
Descriptive Note: Surveillance Drone Paper
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords:
Page Count: 274
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-124592
Site Holding: CB DW 531451
AD Number:
Title: Feasibility Plan for a VX Vasol Munition.
Author(s): O'Connor, A. D. Reinnagel, R. E.
Report Number: GM-159-2-G-1
Publish Date: 19611215
Abstract: This Feasibility Plan was developed specifically to evaluate the potential of a 155 mm VASOL munition in a hard target role. No attempt was made in the preparation of this plan to evaluate the merits of this system

relative to any other potential munitions in a VASOL delivery role. Subsequent to generation of this plan, a decision was made by the Chemical Corps to define the most potentially effective first-generation VASOL delivery system. An evaluation to accomplish this aim is currently underway as a joint effort among ORG, CRDL and CAL.
Descriptive Note: Weapon Concept Report
Corp Author Name: CORNELL AERONAUTICAL LABS INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; ARTILLERY AMMUNITION; CANISTER; CHEMICAL ORDNANCE; CHEMICAL WARFARE AGENTS; CHEMICAL WARFARE CASUALTIES; CLOUDS; DISSEMINATION; DOSAGE; EQUATIONS; FIRING TESTS (ORDNANCE); FUELS; FUZES (ORDNANCE); GB AGENT; HOWITZERS; INHALATION; NERVE AGENT; PARACHUTE DESCENTS; PARTICLE SIZE; PERCUTANEOUS; PHOTOGRAPHY; SARIN; TANKS (COMBAT VEHICLE); TOXICITY; VAPORS; VX AGENT
Page Count: 119
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-124593
Site Holding: CB DW 531452
AD Number:
Title: Feasibility Study Plan for a VX VASOL Munition for the M-55 Area Toxic Rocket.
Author(s): Reinnagel, R. E.
Report Number: GM-1592-G-1
Publish Date: 19611201
Abstract: This appendix to the Feasibility Study Plan condsiders the M55 as a VX VASOL delivery system using thermal generation so as to facilitate a direct comparison with the 155 MM howitzer.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: ALUMINUM; CHEMICAL WARFARE; DEFLECTION; FIRING TESTS (ORDNANCE); FUZES (ORDNANCE); GENERATORS; HANDLING; NOZZLES; PARACHUTE DESCENT; PARACHUTES; ROCKET WARHEADS; ROCKETS; SAFETY; SEPARATION; SOLID ROCKET FUELS; STATIC TESTS; STORAGE; TOXIC AGENTS; TOXICITY; TRAJECTORIES; VAPORS
Page Count: 50
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-124594
Site Holding: CB DW 531453
AD Number:
Title: Concept Analysis and Feasibility Study Plan for STOMP.
Author(s): Muzzey, Clifford L. O'Connor, Arthur D.
Report Number: CRDL-GM-1592G2
Publish Date: 19611215
Abstract: This Feasibility Plan presents a discussion of the STOMP munition concept and a plan for investigating its feasibility. The name STOMP, formed by the letters of the words Scatterable Toxic Mine, Persistent, is used to identify the concept. STOMP is a small, toxic antipersonnel mine obtained by adding a container of agent VX to the XM-22 high explosive mine developed by Picatinny Arsenal. The XM-22, presently undergoing Engineer Tests, appears to have many desirable characteristics as a barrier and harassment weapon. It is small, simple, and relatively cheap, and can be delivered from the air to remote locations not accessible to ground vehicles and personnel. Thus, the XM-22 mine can be employed for interdicting and harassing enemy movements deep within enemy territory where other mines requiring planting could not. STOMP is intended to exploit all of these useful features of the

XM-22 and to make the items even more effective by the addition of toxic agent to extend the effects radius to several times that of the HE version. The STOMP concept appears to be well suited to limited war and particularly guerrilla warfare situations.
Descriptive Note: Weapon Concept Report
Corp Author Name: CORNELL AERONAUTICAL LABS INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: ABSORPTION; AERIAL DELIVERY; ANTIPERSONNEL MINES; ARMING DEVICE; BARRIERS; CHEMICAL WARFARE AGENTS; CHEMICAL WARFARE CASUALTIES; CONTAMINATION; DESENSITIZING; DETONATIONS; DOSAGE; EQUATIONS; EVAPORATION; FEET; FLUIDS; FRICTION; FUZES (ORDNANCE); HIGH EXPLOSIVES; INHALATION; LAND MINES; NERVE AGENTS; ORDNANCE; PERCUTANEOUS; SAFING AND ARMING (ORDNANCE); SELF DESTRUCT DEVICES; STORAGE; TOXIC AGENTS; TOXICITY; VX AGENT
Page Count: 69
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-126081
Site Holding: CB DW 42770
AD Number:
Title: Combat Surveillance Project.
Author(s):
Report Number: CM-1212-G-28
Publish Date: 19621214
Abstract: A final report is presented on the Combat Surveillance Project, Contract DA 36-039 SC-74980, covering the period from 1 December 1957 to 14 December 1962. A summary of contract objectives is presented, and major technical effort expended under the contract is summarized briefly. A technical prospectus for future program planning in the area of combat surveillance is outlined.
Descriptive Note: Summary Report, 1957-1962
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL MAPPING; AERIAL PHOTOGRAPHY; AIRBORNE; AIRCRAFT; BIOLOGICAL WARFARE; CHEMICAL WARFARE; COMBAT SURVEILLANCE; CONTRACT ADMINISTRATION; ELECTROMAGNETISM; ENGINEERING; GUERRILLA WARFARE; LONG RANGE (TIME); MAPPING; MATERIEL; MID-RANGE (TIME); NUCLEAR DETONATION; NUCLEAR RADIATION; RADAR; SATELLITE NETWORKS; SPECIFICATIONS; STATE OF THE ART; SURVIVABILITY; TEST AND EVALUATION; TEST FACILITIES; THERMAL RADIATION; WEAPON SYSTEMS
Page Count: 49
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-126536
Site Holding: CB DT DW 512406B
AD Number: 358575
Title: Feasibility Study Plan For Concept Number 4 Popcorn.
Author(s): Schneider, C. J., Jr.
Report Number: CAL-GM-1592-G-11
Publish Date: 19630401
Abstract: The explosive spring is a unique device which can be added to an item such as a ball, grenade, bomb, mine, etc., for the purpose of projecting the item into the air to heights of 3 to 100 feet or more. This device, which adds less than 5% to the weight and volume of the projected object, has been demonstrated using articles which range in size from a golf ball to a bowling ball, and in shape from spherical to rectangular. A study is proposed

which will consider the feasibility of adding an air burst capability to typical warhead-scattered, ground functioning bomblets, such as the E136, through the inclusion of an explosive spring mechanism. The study takes a two-fold concurrent approach: (1) analysis to determine the improvement factor resulting from an air burst and an optimization of the burst height for a typical device; and (2) the design, construction, test and evaluation of a pop-up bomblet, based upon the E136 configuration.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AREA COVERAGE; BOMBLETS; CONFIGURATION; DESIGN; EXPLOSIVE ACTUATORS; FEASIBILITY STUDIES; MEASUREMENT; PARTICLES; POPCORN PROJECT; PROJECTORS (ORDNANCE); SCHEDULING; SPRINGS
Page Count: 20
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-127222
Site Holding: CB DW 522189
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 21, 1-31 March 1963.
Author(s):
Report Number: IMPR-21
Publish Date: 19630331
Abstract: This project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems. Project CHORD directs its efforts into the following gradiated listing: Completion of the report on Incapacitating Agent/Munition Systems, GM1592G9, including coordination of study results with CRDL and revision, editing and expansion of specific sections of the study; the completion of the Incendiary Warhead for the LANCE Missile Report; the preparation of a Feasibility Study Plan for a pop-up munition; Phase II effort on Concept 2, i.e. the preliminary design of the 155mm Howitzer B Flat munition, the design and test of a high-pressure, single-fluid nozzle dissemination system was continued, and the supporting systems analysis effort was continued; also Phase II type efort was continued on Concept 3 - the Airburst M23 Mine.
Descriptive Note: Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AIRBORNE; AMMUNITION; BOMBLETS; CLOUDS; CONTAMINATION; DISSEMINATION; DITA; FLIGHT TESTING; FRAGMENTS; GUIDED MISSILES; INCAPACITATING MUNITIONS; MINE WARFARE; NOZZLES; PARTICLE SIZE; PARTICLES; PENETRATION; POPCORN SYSTEM; PROJECTILES; SIMULATION; SUBMUNITIONS; TEST AND EVALUATION; WARHEADS
Page Count: 22
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-127223
Site Holding: CB DW 522191
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 22, 1-30 April 1963.
Author(s):
Report Number: IMPR-22
Publish Date: 19630430
Abstract: Project CHORD activities have shown emphasis on the following: publication and delivery of the report

on Incapacitating Agent/Munition Systems; hard target neutralization studies; dispersed target analysis; preliminary background studies in the new special study area concerned with DITA items; preliminary evaluation of the coverage and interaction effects of multi-source pop-up bomblets; Phase II type effort on Concept 2 (B-Flat); Phase II type effort on Concept 3 (Airburst M23 Mine); Feasibility Study Plan on Concept 4 (POPCORN); and preparation of inputs to the 4th Annual B/C Dissemination Research Symposium has been completed.
Descriptive Note: Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AIRBORNE; AMMUNITION; BOMBLETS; CLOUDS; CONTAMINATION; DISSEMINATION; DITA; FLIGHT TESTING; FRAGMENTS; GUIDED MISSILES; INCAPACITATING MUNITIONS; MINE WARFARE; NOZZLES; PARTICLE SIZE; PARTICLES; PENETRATION; POPCORN SYSTEM; PROJECTILES; SIMULATION; SUBMUNITIONS; TEST AND EVALUATION; WARHEADS
Page Count: 35
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-127224
Site Holding: CB DW 522193
AD Number:
Title: Project CHORD. Informal Monthly Progress Report No. 23, 1-31 May 1963.
Author(s):
Report Number: IMPR-23
Publish Date: 19630531
Abstract: Project CHORD's emphasis has centered on the following areas: hard target neutralization studies; dispersed target analysis; preliminary background studies concerned with DITA items; Phase II type effort on Concept 2 (B-Flat); Phase II effort on Concept 3 (Airburst M23 mine); and the Feasibility Study Plan on Concept 4 is being published and will be transmitted to CRDL in the near future.
Descriptive Note: Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AIRBORNE; AMMUNITION; BOMBLETS; CLOUDS; CONTAMINATION; DISSEMINATION; DITA; FLIGHT TESTING; FRAGMENTS; GUIDED MISSILES; INCAPACITATING MUNITIONS; MINE WARFARE; NOZZLES; PARTICLE SIZE; PARTICLES; PENETRATION; POPCORN SYSTEM; PROJECTILES; SIMULATION; SUBMUNITIONS; TEST AND EVALUATION; WARHEADS
Page Count: 24
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-127227
Site Holding: CB DW 522321
AD Number:
Title: The Feasibility Study of an Incendiary Warhead for the Lance Missile.
Author(s):
Report Number: GM-1592-G-10
Publish Date: 19630401
Abstract: The conclusions of this study noted that the payload and accuracy of the LANCE missile makes a general-purpose incendiary warhead of marginal worth against the relatively low unit density targets normally encountered. The chemical warhead being developed for LANCE will employ submunitions dispersed over a radius of 500 ft. If immediate action is desired, an incendiary bomblet based upon the E136 could be built and tested. This

report summarizes a three-month program of study and experimentation. Uses for the weapon are as follows: Attack ammunition dumps; Attack POL dumps; Attack military depots; ttack hard points of resistance occupying built-up areas; and Attack enemy assembly fire support elements utilizing forests for cover.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: BOMBLET; CHEMICAL AGENTS; CHEMICAL WARFARE AGENTS; EFFECTS; FRAGMENTATION WARHEADS; FUEL TANKS; INCENDIARY; INCENDIARY AMMUNITION; INCENDIARY BOMBS; INCENDIARY PROJECTILES; INCENDIARY WARHEAD; LANCE MISSILE; SUBMUNITIONS; TANKS (COMBAT VEHICLES); TARGETS; WARHEADS
Page Count: 95
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-127441
Site Holding: CB DT DW 524379
AD Number: 350366
Title: Project CHORD.
Author(s): Klingaman, Richard M. O'Connor, Arthur D.
Report Number: GM-1592-G-16
Publish Date: 19631231
Abstract: (Abstract is unavailable.)
Descriptive Note: Appendix 1 to Semiannual Appendix 1 to Semiannual Progress Report No. 5, 1 Jul-31 Dec 1963
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No foreign without approval. Other requests for this document shall be referred to Chemical Warfare/Chemical and Biological Defense Information Analysis Center (CBIAC), PO Box 196, Gunpowder Branch, Aberdeen Proving Ground, MD 21010-0196. This document contains export-controlled technical data.
Subject Keywords: AMMUNITION; CHEMICALS; DEHYDRATION; DESIGN; EFFECTIVENESS; FEASIBILITY STUDIES; FRAGMENTATION; PENETRATION; SHOCK (PATHOLOGY); TISSUES (BIOLOGY); TOXICITY
Page Count: 17
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-129015
Site Holding: CB DW 522320
AD Number:
Title: Exploratory-Development Plan for the Expendable Launcher Munition.
Author(s):
Report Number: GM-1592-G-20
Publish Date: 19641201
Abstract: This report describes a man-portable, expendable weapon, the Expendable Launcher, which is capable of producing rapid area coverage with agent CS. The weapon, suggested by CAL in response to requirements stated by CRDL, has been carried through the preliminary design and preprototype stages. This report discusses the preprototype munition and current Expendable Launcher designs as well as tests conducted to date which prove the feasibility of this concept. A status of the munitions development and a planned program for exploratory develoment are also presented.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESERCH DEPT
Distribution Statement: Distribution limited to DoD agencies only.

Subject Keywords: CS AGENTS; DIAPHRAGMS (MECHANICS); EXPENDABLE; EXPENDABLE LAUNCHER MUNITION; FIELD TESTS; FUZES (ORDNANCE); GRENADES; GUERILLA WARFARE; INCAPACITATING AGENT; KNAPSACK; LAUNCHERS; MUNITIONS; NON LETHAL AGENT; O-CHLOROBENZYLMALONONITRILE; PROJECTILES; PYROTECHNICS; SHORT RANGE (DISTANCE); TEAR AGENTS; TEST AND EVALUATION; TUBES
Page Count: 37
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-129016
Site Holding: CB DW 522323
AD Number:
Title: Analysis of 115mm Multitube Rocket System Effectiveness With Incapacitating Agent Warhead.
Author(s):
Report Number: GM-1592-G-19
Publish Date: 19641201
Abstract: This investigation consists of an assessment of the number of 115mm launcher loads required to affect neutralization of a number of target sizes appropriate to the system, which would be expected to occur over its operating range. The bulk of the calculations employ a simulation technique, wherein a set of round impact points is determined by sampling from the component aim and dispersion error distributions for the system, thereby allowing computation of casualties and coverage over a given target for that set of impacts. The process is repeated a number of times to derive estimates of an average expected casualty level and an indication of the variability in expected casualty levels from one trial to the next. Further, investigation of the influence of submunition distribution and delivery error components during the course of this analysis has led to rather specific conclusions with respect to the importance of these variables.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: ACCURACY; BZ AGENTS; CASUALTIES; CHEMICAL AGENTS; CHEMICAL WARFARE AGENTS; COMPUTERIZED SIMULATION; DOSAGE; FIRING TABLES; LAUNCHERS; MILITARY TACTICS; MODELS; PSYCHOCHEMICAL AGENTS; RIPPLES; ROCKETS; SIMULATION; TARGETS; TEST AND EVALUATION; WARHEADS
Page Count: 79
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-129406
Site Holding: CB DW 533219
AD Number:
Title: Chemical Ordnance Test Evaluation 2: Semi-Annual Report for the Period July 1, 1964-Dec 31, 1964.
Author(s): Schneeberger, R. F.
Report Number: GM-1956-E-1
Publish Date: 19641231
Abstract: The main objectives of this program are the following stated items. (1) To provide the experiment design, experimental techniques, analysis, specifications of control, and equipment use or concepts that will lead to an improvement in the sensitivity and reliability of munition testing. (2) To provide through the same type of effort the methods and equipment concepts for a test system that will allow a significant reduction in test time and manpower requirements. In order to meet these objectives, we proposed that major effort be expended in the following areas: (1) Experiment Design; (2) Data Reduction Techniques; (3) Statistical Control; (4) Meteorology; (5) Instrumentation Control; (6) Development of New Instrumentation Techniques. (Author)
Descriptive Note: Technical Report

Corp Author Name: CORNELL AERONAUTICAL LABORATORY INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: CHEMICAL ANALYSIS; CHEMICAL MUNITIONS; CHEMICAL WARFARE AGENTS; COMPUTER APPLICATIONS; COMPUTER TECHNIQUES; DATA REDUCTION; DIFFUSION THEORY; EXPERIMENTAL DESIGN; EXPLOSION CHAMBER DATA; EXPLOSIVES; GB AGENT; INSTRUMENTATION; INSTRUMENTATION TECHNIQUES; LASERS; LIQUID SHRAPNEL; MACHINE INTEGRATION; MANPOWER UTILIZATION; MATHEMATICAL MODELS; MATHEMATICAL THEORIES; METEOROLOGY; METHODOLOGY; MICROMANOMETERS; MUNITION TESTING; NERVE AGENTS; PERFORMANCE (ENGINEERING); PLANNING; RADAR; SARIN; SIMULANTS; STATISTICAL ANALYSIS; TEST AND EVALUATION; TEST FACILITIES; TEST METHODS; VAPORS; VX AGENT; WIND TUNNEL TESTS
Page Count: 180
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-130030
Site Holding: CB DT DW 518853
AD Number: 630882
Title: Project Ampirt Second Test Period Report.
Author(s): Walker, John E. Snider, George H.
Report Number: CAL-VE-2027-D-3 CAL-VE-1931-D-3
Publish Date: 19650801
Abstract: This report presents a chronological summary of the conduct of the photographic tests on the second field trip to Thailand, 1 June 1965 through 10 July 1965. Of the 479 rolls of 70 mm film which were planned to be exposed, 352 rolls of imagery were obtained for analysis. (Author)
Descriptive Note: Special Interim Report No. 3, and Interim Technical Report No. 1
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: (AERIAL PHOTOGRAPHY; (AERIAL RECONNAISSANCE; (PHOTOGRAPHIC RECONNAISSANCE; AERIAL); AMPIRT (ARPA MULTIBAND PHOTOGRAPHIC AND INFRARED RECO; ENVIRONMENTAL; PHOTOGRAPHIC EQUIPMENT; PHOTOINTERPRETABILITY); THAILAND
Page Count: 38
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-130127
Site Holding: CB DT DW 518649
AD Number: 460648
Title: Project Lake Effect: A Study of Interactions Between the Great Lakes and the Atmosphere.
Author(s): McVehil, G. E. Peace, R. L., Jr.
Report Number: CAL-VC-1967-P-1
Publish Date: 19650130
Abstract: Analyses have been made of a number of recent cases of lake effect snowfall along the southern and eastern shores of Lake Erie. Synoptic analyses are presented which show the largescale weather situations in which severe lake effect snowstorms occur, and also some of the mesoscale characteristics of the snow squall bands. Examples are included which show typical characteristics as they appeared in three different lake effect storms. Radar photographs taken from the US Weather Bureau radar at Buffalo have been analyzed to show the frequency of occurrence of the banded convective precipitation from the lake and the characteristics of the precipitation patterns. The results indicate that lake effect snow is quite common and that it may occur in any of several characteristic patterns. The most common patterns are single bands forming over the lake and single bands lying along a shoreline. Rates of heat exchange between the lake and the cold polar air masses in which lake effect storms

occur have been estimated from synoptic radiosonde data. Results of the calculations are presented for a two day period of lake effect weather.
Descriptive Note: Interim Report, 1 Jul 64-1 Jan 65
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: ATMOSPHERIC PRECIPITATION; ATMOSPHERIC TEMPERATURE; BAROMETRIC PRESSURE; GREAT LAKES; HEAT TRANSFER; MAPS; RADAR IMAGES; RADAR RECORDING CAMERAS; SNOW; WEATHER FORECASTING; WIND
Page Count: 65
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-130462
Site Holding: CB DT
AD Number: 665398
Title: LRTP Mathematical Model Brochure.
Author(s):
Report Number: CAL-VQ-2044-H-3
Publish Date: 19651030
Abstract: A brochure is presented to assist Headquarters, US Army Materiel Command in the application of the Long-Range Technical Plan choice model derived in Cornell Aeronautical Laboratory Report Number VQ-2044-H-2, 'The LRTP Process as it Relates to the US Army Materiel Command'. The brochure includes: (1) a mathematical description of the model; (2) a description of the computer program, including flow charts, FORTRAN listing, and a debugging log; and (3) numerical examples of program outputs using hypothetical input data. (Author)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: ARMY OPERATIONS; COMPILERS; COMPUTER PROGRAMS; COSTS; DATA PROCESSING; FLOW CHARTING; INSTRUCTION MANUALS; LRTP (LONG RANGE TECHNICAL PLANNING); MATHEMATICAL MODELS; OPTIMIZATION; PLANNING; PROGRAMMING LANGUAGES; PUNCHED CARDS; RESEARCH MANAGEMENT; SUBROUTINES
Page Count: 94
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-131475
Site Holding: CB DT DW 524488
AD Number: 368081
Title: Ballistic Behavior of Projectiles in Vegetation.
Author(s): Eusanio, Lawrence A. Magorian, Thomas R.
Report Number: CAL-GM-1924-G-1
Publish Date: 19650601
Abstract: This report describes Project FIBRE, an exploratory research program conducted to provide methods and data for estimating effectiveness degradation of small projectiles caused by vegetation. Controlled experiments were conducted with fragments, flechettes and bullets in grasses, shrubs and trees. Velocity data were obtained for all projectile-vegetation type combinations tested. For some combinations, mathematical models for estimating velocity decay were developed with aid of the data. Yaw and deflection data were obtained for the stabilized projectiles in all three vegetation categories. Development of a world-wide vegetation data base (quantitative description of world vegetation in terms of the parameters which appear to be significant in effectiveness degradation) was initiated. The report contains maps of grass density and height for major geographic areas of the world. It also contains information on trees (such as heights, diameters, spacings, types and frequency of occurrence of types) for

geographic areas where information is available. The experimental setup, instrumentation, design objectives, and error analysis are treated in some detail. The results of experimentation and examples to illustrate application of study results are also presented. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors. Other requests for this document shall be referred to Army Ballistic Research Lab, Aberdeen Proving Ground, MD.
Subject Keywords: ANTIPERSONNEL AMMUNITION; BALLISTICS; CORRELATION TECHNIQUES; DEFLECTION; DEGRADATION; DRAG; ECOLOGY; ENVIRONMENTAL TESTS; EXPERIMENTAL DESIGN; EXTERIOR BALLISTICS; FLECHETTES; FRAGMENTATION AMMUNITION; GEOGRAPHY; GRASSES; INSTRUMENTATION; MAPPING; MAPS; MATHEMATICAL MODELS; PHOTOGRAMMETRY; PLANTS (BOTANY); PROJECTILE TRAJECTORIES; SAMPLING; SMALL ARMS AMMUNITION; SPHERES; TABLES (DATA); TREES; VELOCITY; YAW
Page Count: 400
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-131650
Site Holding: CB DW 533220
AD Number:
Title: Chemical Ordnance Test Evaluation II.
Author(s): Schneeberger, R. F.
Report Number: GM-1956-E-2
Publish Date: 19650630
Abstract: The main objectives of this program are the following stated items. (1) To provide the experiment design, experimental techniques, analysis, specifications of control, and equipment use or concepts that will lead to an improvement in the sensitivity and reliability of munition testing. (2) To provide through the same type of effort the methods and equipments concepts for a test system that will allow a significant reduction in test time and manpower requirements. In order to meet these objectives, we proposed that major effort be expended in the following areas: (1) Experiment Design; (2) Data Reduction Techniques; (3) Statistical Control; (4) Meteorology; (5) Instrumentation Control; (6) Development of New Instrumentation Techniques. (Author)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LABORATORY INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: ATMOSPHERIC SCINTILLATION; CARBON DIOXIDE CLOUD; CHEMICAL ANALYSIS; CHEMICAL MUNITIONS; CHEMICAL WARFARE AGENTS; CLOUDS; COMPUTER APPLICATIONS; COMPUTER PROGRAMMING; CS AGENT; DATA REDUCTION; DECAY; DIFFUSION THEORY; ELECTROSTATIC FIELD; EXPERIMENTAL DESIGN; EXPLOSIVES; GD AGENT; HARMONIC ANALYSIS; HOPPER TEST CELL; INSTRUMENTATION; INSTRUMENTATION TECHNIQUES; LASER ATTENUATION; MANPOWER UTILIZATION; MATHEMATICAL MODELS; METEOROLOGY; METHODOLOGY; MICROWAVE RADAR; MICROWAVE SPECTROSCOPY; MUNITION TESTING; OPTICAL PROPAGATION; PERFORMANCE (ENGINEERING); PLANNING; PUFFS; SIMULANTS; SODA CLOUD; SOMAN; SPECTRA; STANDARD PROBE EFFICIENCY MEASUREMENT; STATISTICAL ANALYSIS; STEAM CLOUD; TEST AND EVALUATION; TEST FACILITIES; TEST METHODS; TURBULENCE; WIND TUNNEL TESTS
Page Count: 145
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Prepared for the Chemical Research Development Labs Field Evaluation Division. Continuation of contract DA18108AMC229A.

CBRNIAC Number: CB-131651

Site Holding: CB DW 533221
AD Number:
Title: Chemical Ordnance Test Evaluation 2. Semi-annual Report for the Period July 1, 1965-December 31, 1965.
Author(s): Schneeberger, R. F.
Report Number: GM-1956-E-3
Publish Date: 19651231
Abstract: The main objectives of this program are the following stated items. To provide the experiment design, experimental techniques, analysis, specifications of control, and equipment use or concepts that will lead to an improvement in the sensitivity and reliability of munition testing. To provide through the same type of effort the methods and equipment concepts for a test system that will allow a significant reduction in test time and manpower requirements. The current effort is directed toward a continued evaluation and updating of the test methods, techniques, and instrumentation presently employed in the testing of chemical agent munitions by the Field Evaluation Division (FED) of CRDL, and those methods, techniques and instruments which represent new approaches or state of the art advances. The scope of chemical munitions testing that forms a part of this effort includes the subjects of specification of test objectives, design of experiments, design of field facilities, application of facilities and equipment, test control, development of the fundamental models on which to base tha munition analysis and the analysis itself. In this report a review of the progress made in each of the six task areas of the program is presented in Section III. Section IV contains a tabulation of the conclusions and recommendations reached during this period and Section V contains an outline of the plans for the following period. As in previous reports, detail discussions of areas treated during this period are presented in the appendices, with one notable exception. Because of the immediate pertinence of the meteorological investigations, they were reported in detail in interim reports (Status Reports 7 & 8). (Author/Modified)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LABORATORY INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOL MODEL STUDIES; ATMOSPHERIC PHYSICS; ATTENUATION; CHEMICAL ANALYSIS; CHEMICAL MUNITIONS; CHEMICAL WARFARE AGENTS; COMPUTER APPLICATIONS; COMPUTER PROGRAMMING; CONTOURS OF CONSTANT DOSAGE; DATA REDUCTION; DIFFUSION THEORY; EDGEWOOD AEROSOL SAMPLER; ELECTROSTATIC FIELDS; EXPERIMENTAL DESIGN; EXPLOSIVES; GB AGENT; INSTRUMENTATION; INSTRUMENTATION TECHNIQUES; MANPOWER UTILIZATION; MATHEMATICAL MODELS; MATHEMATICAL THEORIES; METEOROLOGY; METHODOLOGY; MICROWAVE RADAR; MUNITION TESTING; OPTICAL PROPAGATION; PERFORMANCE (ENGINEERING); PLANNING; PROBABILITY; REPRODUCIBILITY; SARIN; SIMULANTS; SNOOT SAMPLER; SPECTRA; STATISTICAL ANALYSIS; STATISTICAL CONTROL PROCEDURES; TEST AND EVALUATION; TEST FACILITIES; TEST METHODS; VX AGENT; WIND TUNNEL TESTS
Page Count: 139
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Prepared for the Chemical R & D's Labs' Field Evaluation Division. Continuation of contract DA18108AMC229A.

CBRNIAC Number: CB-131689
Site Holding: CB DW 531457
AD Number:
Title: Chemical Ordnance Test Evaluation II.
Author(s): Schneeberger, R. F.
Report Number: GM-1956-E-3
Publish Date: 19651231
Abstract: The main objectives of this program are: 1) To provide the experiment design, experimental techniques, analysis, development of controls, and equipment application methods or concepts that will lead to an improvement in the sensitivity and reliability of munition testing; and 2) To provide the methods and equipment concepts for a test system that will allow a significant reduction in test time and manpower requirements.
Descriptive Note: Semiannual Report

Corp Author Name: CORNELL AERONAUTICAL LABS INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; CHEMICAL ORDNANCE; CHEMICAL WARFARE AGENTS; CLOUDS; COMPUTER PROGRAMMING; DATA PROCESSING; DENSITY; DETECTION; DETECTORS; DIFFUSION THEORY; DOSAGE; EQUATIONS; GRIDS; INSTRUMENTATION; METEOROLOGY; METHODOLOGY; MODEL TESTS; MODEL THEORY; MODELS; NERVE AGENTS; SAMPLING; STATISTICAL ANALYSIS; STATISTICAL DATA; STATISTICS; TEST AND EVALUATION; TURBULENCE; VARIABLES; VX AGENT; WIND; WIND TUNNEL TESTS
Page Count: 138
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133679
Site Holding: CB DW 522186
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 19, 1-31 July 1966.
Author(s):
Report Number: IMPR-19
Publish Date: 19660730
Abstract: This project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems. Project Chord II directs its efforts into the following gradiated listing: Prefeasibility Studies and Experimentation; 155mm Agent VX Aerosol Munition; Velocity-Generator Dissemination; POPCORN; E8 Launcher.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AGENTS; AIRBORNE; AMMUNITION; ANALYSES; ARTILLERY; BALLISTICS; CHEMICAL AGENTS; CHEMICAL WARFARE; CS AGENT; DISSEMINATION; EXPERIMENTAL DATA; FLIGHT TESTING; FUZES; GUIDED MISSILES; INCAPACITATING AGENTS; LAUNCHERS; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; POPCORN SYSTEM; PROJECTILES; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; VELOCITY; VELOCITY-GENERATOR; WEAPONS
Page Count: 69
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133680
Site Holding: CB DW 522324
AD Number:
Title: Analysis of Candidate CS Standoff Munitions Systems.
Author(s):
Report Number: GM-1592-G-25
Publish Date: 19660401
Abstract: On April 1965, CRDL requested that CAL conduct a special study under Contract No. DA18035AMC323A, relative to an Army Air-Delivered Tactical CS Munition. This task was assigned the code name CS-Helicopter Standoff, AD Hoc Task No. 3. CAL was requested to review the proposed QMR, examine the technical feasibility of conceptual approaches, perform comparative assessment of systems with respect to satisfying the QMR, and prepare gross time and cost estimates for exploratory development programs on selected systems. A new concept, code named HARASS (Helicopter Armament Area Suppression System) Ad Hoc Task No. 6, is to be evaluated and integrated in the framework of the previous analysis, to allow valid comparison of system performance.

Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AERODYNAMICS; AIMING; BOMBLET; CASUALTIES; COST ESTIMATES; CS AGENTS; CS MUNITION; DISTANCE MEASURING EQUIPMENT; DOSAGE; DRAG; FUZES; GRIDS; HARASS (HELICOPTER ARMAMENT AREA SUPPRESSION SYSTEM); HELICOPTERS; IMPACT; INCAPACITATING AGENTS; LAUNCHERS; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; PAYLOAD; PYROTECHNICS; RANGE (DISTANCE); ROCKETS; SALVOS; SUBMUNITIONS; TARGET; TEAR AGENTS; TEST AND EVALUATION; TRAJECTORIES; WARHEADS
Page Count: 165
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133681
Site Holding: CB DW 522185
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 17, 1-31 May 1966.
Author(s):
Report Number: IMPR-17
Publish Date: 19660530
Abstract: This project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems. Project Chord II directs its efforts into the following gradiated listing: Tactical Incapacitating Munitions (TIM); Prefeasibility Studies and Experimentation; 155mm Agent VX Aerosol Munition; Velocity-Generator Dissemination Subsystem; POPCORN; E8 Launcher; ANTIGUERILLA (Special Study Task No. 5); HARASS (Special Study Task No. 6); CS RIOT Control Munition (Special Study Task No. 7).
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AGENTS; AIRBORNE; AMMUNITION; ANALYSIS; ANTIGUERILLA; ARTILLERY; BALLISTICS; CHEMICAL AGENTS; CHEMICAL WARFARE; CS AGENT; DISSEMINATION; EXPERIMENTAL DATA; FLIGHT TESTING; FUZES; GUERILLA WARFARE; GUIDED MISSILES; INCAPACITATING AGENTS; INCAPACITATING MUNITIONS; LAUNCHERS; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; POPCORN SYSTEM; PROJECTILES; RIOT CONTROL AGENTS; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; TIM (TACTICAL INCAPACITATING MUNITIONS); VELOCITY; VELOCITY-GENERATOR; WEAPONS
Page Count: 73
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133682
Site Holding: CB DW 522184
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 16, 1-30 April 1966.
Author(s):
Report Number: IMPR-16
Publish Date: 19660430
Abstract: This project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems. Project Chord II directs its efforts into the following gradiated listing: Tactical Incapacitating Munitions (TIM); Prefeasibility Studies and Experimentation;155mm Agent VX Aerosol Munition; Velocity-Generator Dissemination Subsystem; POPCORN; E8 Launcher; ANTIGUERILLA (Special

Study Task No. 5); HARASS (Special Study Task No. 6); CS RIOT Control Munition (Special Study Task No. 7).
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AGENTS; AIRBORNE; AMMUNITION; ANALYSIS; ANTIGUERILLA; ARTILLERY; BALLISTICS; CHEMICAL WARFARE AGENTS; CS AGENT; DISSEMINATION; EXPERIMENTAL DATA; FLIGHT TESTING; FUZES; GUERILLA WARFARE; GUIDED MISSILES; INCAPACITATING AGENTS; INCAPACITATING MUNITIONS; LAUNCHERS; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; POPCORN SYSTEM; PROJECTILES; RIOT CONTROL AGENTS; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; TIM (TACTICAL INCAPACITATING MUNITIONS); VELOCITY; VELOCITY-GENERATOR; WEAPONS
Page Count: 60
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133683
Site Holding: CB DW 522187
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 20, 1-31 August 1966.
Author(s):
Report Number: IMPR-20
Publish Date: 19660830
Abstract: This project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems: Project Chord II directs its efforts into the following gradiated listing: Tactical Incapacitating Munitions (TIM); Prefeasibility Studies and Experimentation; 155mm Agent VX Aerosol Munition; Velocity-Generator Dissemination Subsystem; POPCORN; E8 Launcher; COTAMS.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AGENTS; AIRBORNE; AMMUNITION; ANALYSIS; ARTILLERY; BALLISTICS; BURSTING CHARGES; CHEMICAL AGENTS; CHEMICAL WARFARE; COTAMS (CHEMICAL OPERATIONS TRAINING AND MANEUVERS SYSTEMS; CS AGENT; DISSEMINATION; EXPERIMENTAL DATA; FLIGHT TESTING; FUZES; GUIDED MISSILES; INCAPACITATING AGENTS; LAUNCHERS; MINE WARFARE; NERVE AGENTS; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; POPCORN SYSTEM; PROJECTILES; RIOT CONTROL AGENTS; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; VELOCITY; VELOCITY-GENERATOR; VX AGENT; WEAPONS
Page Count: 55
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133684
Site Holding: CB DW 522188
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 21, 1-30 September 1966.
Author(s):
Report Number: IMPR-21
Publish Date: 19660930
Abstract: This project was initiated to develop effective means for delivery of lethal and incapacitating chemical agents by air and ground weapons systems. Project Chord II directs its efforts into the following gradiated listing: Tactical Incapacitating Munitions (TIM); Prefeasibility Studies and Experimentation; 155mm Agent VX Aerosol

Munition; Velocity-Generator Dissemination Subsystem; POPCORN; E8 Launcher.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AGENTS; AIRBORNE; AMMUNITION; ANALYSIS; ARTILLERY; BALLISTICS; BURSTING CHARGES; CHEMICAL AGENTS; CHEMICAL WARFARE; CS AGENT; DISSEMINATION; EXPERIMENTAL DATA; FLIGHT TESTING; FUZES; GUIDED MISSILES; INCAPACITATING AGENTS; LAUNCHERS; MINE WARFARE; NERVE AGENTS; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; POPCORN SYSTEM; PROJECTILES; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; VELOCITY; VELOCITY-GENERATOR; VX AGENT; WEAPONS
Page Count: 56
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133685
Site Holding: CB DW 522190
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report NO. 22, 1-31 October 1966.
Author(s):
Report Number: IMPR-22
Publish Date: 19661031
Abstract: A summarization of current effort includes the following: further effort with semi-explosive dissemination is being held in abeyance, while a program plan has been prepared for the M79 incendiary fragment round; a preliminary investigation of agent-explosive encapsulation and intimate mixtures has indicated that gaps exist in some of the fundamental areas of understanding; further experimental effort has thus been suspended temporarily until research into these areas allows a more meaningful experiment to be designed; a program was prepared for the development of an incendiary fragment round for the M79 grenade launcher which will consider analytical tradeoffs in powder metallurigical techniques and system considerations which dictate the payload-strength considerations.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AIRBORNE; AMMUNITION; ARTILLERY; BALLISTICS; BURSTING CHARGES; CENTRIFUGE SEPARATION; CHEMICAL AGENTS; CHEMICAL WARFARE; CS AGENT; DIAPHRAGMS (MECHANICS); EXPERIMENTAL DATA; FLIGHT TESTING; FUZES; GUIDED MISSILES; INCAPACITATING AGENTS; LAUNCHERS; MINE WARFARE; NON LETHAL AGENTS; PROJECTILES; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; TRAJECTORIES; VELOCITY; WEAPONS
Page Count: 63
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133686
Site Holding: CB DW 522192
AD Number:
Title: Project CHORD II, Informal Monthly Progress Report No. 23, 1-30 November 1966.
Author(s):
Report Number: IMPR-23
Publish Date: 19661130
Abstract: This project was initiated to develop effective means for delivery oflethal and incapacitating chemical

agents by air and ground weapons systems: Project CHORD II directs its efforts into the followinggradiated listing: Weapons Effects Study; Incendiary Fragment; Prefeasibility Studies and Experimentation; 155mm Agent VX AerosolMunition; Velocity-Generator Dissemination Subsystem; POPCORN; E8Launcher; COTAMS; Chemical Fill Technique.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AERIAL DELIVERY; AEROSOLS; AGENTS; AIRBORNE; AMMUNITION; ANALYSIS; ARTILLERY; BALLISTICS; BURSTINGCHARGES; CHEMICAL AGENTS; CHEMICAL WARFARE; COTAMS (CHEMICAL OPERATIONSTRAINING AND MANEUVERS SYSTEMS); CS AGENT; DISSEMINATION; EXPERIMENTAL DATA; FLIGHTTESTING; FUZES (ORDNANCE); GUIDED MISSILES; INCAPACITATING AGENTS; LAUNCHERS; MINE WARFARE; NON LETHAL AGENTS; O-CHLOROBENZYLMALONONITRILE; POPCORN SYSTEM; PROJECTILES; TACTICAL WEAPONS; TEAR AGENTS; TEST AND EVALUATION; VELOCITY; VELOCITY-GENERATOR; WEAPONS
Page Count: 72
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133687
Site Holding: CB DW 522325
AD Number:
Title: Feasibility Study Plan for CS 50-Caliber Round.
Author(s): Schneider, C. J.
Report Number: GM-1592-G-24
Publish Date: 19660215
Abstract: CRDL indicated to CAL that a mission existed for agent CS in the 200 to 1000 meter range, for both search and detroy operations, and close support of forward troops in siege operations. The .50 caliber CS round well fulfills the characteristics required for the 200 to 1000 meter range mission, if technical feasibility can be shown. Further, the most critical of the technical feasibility areas would be encountered early in a feasibility study, allowing timely decisions of further effort to be made.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: 50 CALIBER ROUND; BALLISTICS; CS AGENT; FEASIBILITY STUDY; IGNITION; INCAPACITATING AGENT; MACHINE GUNS; MISSIONS; MUNITIONS; MUZZLE VELOCITY; NON LETHAL AGENT; O-CHLOROBENZYLMALONONITRILE; PYROTECHNICS; STABILITY; TEAR AGENTS; VELOCITY
Page Count: 11
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133703
Site Holding: CB DW 518650
AD Number:
Title: Project Hawaii: An Investigation of Rain on the Island of Hawaii.
Author(s): Rogers, R. R. Jiusto J. E.
Report Number: C-401 CALVC-2049-P-1
Publish Date: 19660201
Abstract: The primary task for this report was to measure updraft structure and raindrop-size distributions using a Doppler weather radar. Independently of the radar experiments, aircraft measurements were made of cloud liquid water content, cloud droplet-size distributions, the temperature aloft, and condensation nucleus concentrations.

Surface measurements were also made of condensation nuclei. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AIRCRAFT EQUIPMENT; CLOUDS; DIFFUSION; DISTRIBUTION CURVES; DOPPLER RADAR; EQUATIONS; HAWAII; METEOROLOGY; RADAR EQUIPMENT; RAINFALL; STORMS; TEMPERATURE
Page Count: 123
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-133985
Site Holding: CB DT DW
AD Number: 376383
Title: Assessment of Flame and Incendiary Munition Effects (Project Heat Wave).
Author(s): Heckroth, E. E.
Report Number: CAL-GM-2168-G-1
Publish Date: 19660901
Abstract: The objectives of Project HEAT WAVE were to (1) assess the present state of knowledge regarding the effectiveness of flame and incendiary munitions in tactical employment, including identification of the data voids, (2) establish a methodology for the evaluation of the capabilities of flame and incendiary weapons employed in both the antimateriel and antipersonnel roles, and (3) specify the research needed to obtain the required data. A literature search was conducted for data regarding the effectiveness of flame and incendiary munitions in tactical employment, and discussions were held with personnel from various organizations that have been engaged in the testing and evaluation of flame munition effects. It is concluded that data required for the quantitative evaluation of flame weapons in tactical employment is lacking in all areas. Data needed for the quantitative evaluation of these weapons in tactical employment are identified, and specific research is recommended to obtain this data. Both full-scale and laboratory tests are needed to determine the principles, understand the process, and establish a methodology for the quantitative evaluation of flame munition effects. Full-scale testing is required to determine distribution and ignition characteristics, whereas laboratory investigations are necessary to investigate thermal output, heat transfer, ignition and continued burning characteristics, and thermal degradation of various materiels and target elements. (Author).
Descriptive Note: Final Report, Jan-Aug 66
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies only. Other requests for this document shall be referred to Commander, Army Chemical Research and Develpoment Center, Attn: DRSMC-CLJ-IR, Aberdeen Proving Ground, MD 21010.
Subject Keywords: BOMB CLUSTERS; BOMBLETS; CALORIMETRY; COMBUSTION; DEGRADATION; EFFECTIVENESS; ENVIRONMENT; FIREBOMBS; FLAME WARFARE; FLAMETHROWERS; FUELS; GRENADES; HYDROCARBONS; IGNITION; INCENDIARY AMMUNITION; INCENDIARY GELS; INSTRUMENTATION; MILITARY OPERATIONS; PLASTICS; THERMAL PROPERTIES; THERMITE; WHITE PHOSPHORUS; WOOD
Page Count: 216
CB Collection: CA
Media Type: CPDF
Document Classification: S
Supplemental Notes: Re-Grade per United States Army Edgewood Arsenal letter 25 Oct 73.

CBRNIAC Number: CB-134090
Site Holding: CB DW 533239
AD Number:
Title: Wall Deposition of Aerosol in the Edgewood Arsenal Sampler.
Author(s): Schneeberger, R. F.
Report Number: CALGM-1956-E-1

Publish Date: 19660330
Abstract: Document #1: Introduction -- In the evaluation of the Edgewood Aerosol Sampler (Snoot) in the COTE wind tunnel, it was found that a substantial amount of aerosol was being collected on the internal wall surfaces in addition to that collected on the fibre filter. Field Evaluation Division ran a series of tests in the Carrol Island tunnel. A brief analysis of the data is described herein. In some of the trials the amount of agent disseminated was reported. A short analysis of the tunnel performance for measurement of efficiency was included. Document #2: Introduction -- As noted in Memo, R. Schneeberger, 13 Jan 1966, Aerosol Munition Efficiency Study, Test Plan 110 - Trial 2, the basic purpose of Test Plan 110 is to determine the precision with which the assessment of aerosol munitions can be carried out. In particular, the measurement of munition efficiency will be determined. Trial 3 is the second test in this series and differs from the above-named memo in that a large particle aerosol was generated in Trial 3, only a very small amount of agent being carried through the vertical grid. The same analytical techniques presented in the above memo were employed in this analysis. The Total Recovery in this trial was found to be 97.5% Vertical Grid. Document #3: This program has as its objective the determination of the means by which the precision of test results may be improved, and by which the time requirements for a test program or for single test can be reduced. The present methods, techniques, and equipments used by Field Evaluation Div. are being evaluated. Modified techniques and new or modified equipment are being studied and recommended. Also efforts are in areas of design of experiments, data handling, and computer programs.
Descriptive Note: Technical Documentary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOL MUNITIONS; AEROSOLS; AGENT DISSEMINATION; AIR MASS ANALYSIS; AIRBORNE; ATMOSPHERIC PHYSICS; CHEMICAL WARFARE AGENTS; COMPUTER PROGRAMS; CONTOURS OF CONSTANT DENSITY; COTE WIND TUNNEL; DATA ACQUISITION; DESIGN OF EXPERIMENTS; DIFFUSION THEORY; EDGEWOOD ARSENAL (SNOOT) SAMPLER; FIBRE FILTER; FLOW; INSTRUMENTATION; ISOKINETICS; MASS MEDIAN DIAMETER; MATHEMATICAL MODELS; MUNITION TESTING; PARTICLES; SAMPLERS; TEST AND EVALUATION; TEST EQUIPMENT; TEST FACILITIES; TEST METHODS; WALL DEPOSITION; WALL SURFACES; WALLS; WIND TUNNELS; WIND VELOCITY
Page Count: 25
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: This is a compilation of three documents. Two are Memos for the Record and the last is a Status Report, all by the same author.

CBRNIAC Number: CB-134659
Site Holding: CB DT DW 518646
AD Number: 856243
Title: Characteristics of Vegetation at Field Test Sites and Various Geographic Areas, Volume II.
Author(s): Magorian, T. R.
Report Number: CAL-GM-2338-G-1-Vol-2
Publish Date: 19670901
Abstract: The Joint Environmental Effects Program (JEEP) is a tri-service multi-agency effort to determine the influence of various environments on the effectiveness of munitions. This report describes part of the first-year support provided by Cornell Aeronautical Laboratory to the JEEP effort with US Army Ballistic Research Laboratories. Volume I (AD-389 922) of this report describes efforts in identifying significant vegetational parameters and in relating the behavior of fragments, bullets and flechettes to these parameters. Descriptions of mathematical models developed to date and of experiments conducted are included. Volume II is concerned with the problem of qualitatively and quantitatively describing vegetation at munition field test sites in terms of those parameters which are known to be significant and those factors which may affect munition performance. The problem of inferring these parameters and factors for remote areas of the world is also included in this volume. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No Foreign. Other

requests for this document shall be referred to Commanding Officer, Aberdeen Research and Development Center, Aberdeen Proving Ground, MD 21005. This document contains export-controlled technical data.
Subject Keywords: AERIAL PHOTOGRAPHY; ANTIPERSONNEL AMMUNITION; DATA PROCESSING; EFFECTIVENESS; ENVIRONMENT; FLECHETTES; FRAGMENTATION AMMUNITION; JEEP; JOINT ENVIRONMENTAL EFFECTS PROGRAM; JUNGLES; KILL PROBABILITIES; MATHEMATICAL MODELS; MUD; PLANT CANOPIES; PLANTS (BOTANY); PROJECTILES; RAINFALL; REGRESSION ANALYSIS; TREE BRANCHES; TREES; TROPICAL RAIN FORESTS; WATER
Page Count: 236
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Errata sheet inserted. See also Volume 1, AD389922.

CBRNIAC Number: CB-134718
Site Holding: CB DT DW 518647
AD Number: 818975
Title: Ballistic Behavior of Projectiles in Vegetation Project Fibre II Volume II.
Author(s): Magorian, T. R. Naylor, J. N.
Report Number: CAL.GM-2146-G-1
Publish Date: 19670201
Abstract: This report describes the second-year efforts on a program designed to provide methods and data for estimating the effects of the vegetation on projectile performance. Volume I of this report describes efforts in identifying the significant vegetational parameters and in relating munition performance to these parameters. Included are descriptions of mathematical models developed to date. Volume II is concerned with the problem of obtaining values of the significant parameters on a world-wide basis. Quantitative and qualitative descriptions of vegetation at field test sites, with particular emphasis on the significant parameters of trees, are included in Volume II. (Author)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No Foreign. Other requests for this document shall be referred to Ballistic Research Laboratories, Aberdeen Proving Ground, MD 21005. This document contains export-controlled technical data.
Subject Keywords: DENSITY; EFFECTIVENESS; EXTERIOR BALLISTICS; FORESTS; KILL PROBABILITIES; MATHEMATICAL PREDICTION; MOISTURE; OPTIMIZATION; PERFORMANCE (ENGINEERING); PROJECTILES JUNGLES; TREES; TROPICAL REGIONS; VEGETATION; VELOCITY; YAW
Page Count: 206
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: See also Volume 1, AD383341.

CBRNIAC Number: CB-135877
Site Holding: CB DT
AD Number: 653199
Title: Condensation Droplet Growth in Rarefied Gases.
Author(s): Kang, Sang-Wook
Report Number: CAL-AD-1672-A-3ARL-67-0049
Publish Date: 19670301
Abstract: An analysis is made of thermal and diffusion effects on the droplet growth phenomena in a supersaturated vapor and inert carrier gas (see also AD-646 669). Two cases are considered: 1) constant fluid conditions, and 2) changing fluid conditions due to condensation effects. The analysis is so formulated as to describe the continuous growth process as the droplet size increases from microscopic (free-molecular) to rarefied, even to macroscopic (continuum). Equations for the conservation of mass and energy are derived by application of the Langmuir model in the rarefied (slip) regime and two correlation parameters for the mass transfer and the energy transfer are

introduced for analyzing this regime. Analytic solutions are obtained for the droplet growth with time by expressing the saturation vapor pressure as a linear function of temperature. The results indicate that the choice of these slip-regime parameters influence the droplet growth only when the ratio of the droplet size to the mean free path is of order one. However, when the droplet size is very small or very large compared to the mean free path, the values chosen for these parameters have a negligible effect on the droplet growth.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: CONDENSATION; DIFFUSION; DROPS; HEAT TRANSFER; KINETIC THEORY; MASS TRANSFER; MERCURY; PARTICLE SIZE; RAREFIED GAS DYNAMICS; VAPORS
Page Count: 44
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-136093
Site Holding: CB DW 522326
AD Number:
Title: A Proposal to Solve Mathematical, Statistical, and Operations Research Problems.
Author(s):
Report Number: CPN-791-67
Publish Date: 19670623
Abstract: This document is a response covering a proposed contract to furnish the requested mathematical, statistical, and operations research services. The proposed program is to be comprised of problems assigned by the sponsor rather than specific problems spelled out in the Request for Proposal. This document cites the interdisciplinary approach to many of the program tasks and calls upon extensive background and experience in the area of CB weapon systems. Test design and evaluation procedures are discussed as well as data analysis and project management. An extensive package of resumes on project personnel is included, as well as appendices on statistical analysis, grids, and samplers.
Descriptive Note: CAL Proposal 791-67
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; ATMOSPHERIC PHYSICS; BIOLOGICAL WARFARE AGENTS; CASUALTIES; CB MUNITIONS; CHEMICAL WARFARE AGENTS; CLOUDS; COMPUTERIZED SIMULATION; DATA ACQUISITION; DECAY; ENVIRONMENTAL MANAGEMENT; LABORATORY TESTS; LETHAL AGENTS; MATHEMATICAL MODELS; METEOROLOGICAL DATA; METHODOLOGY; MILITARY DOCTRINE; MILITARY TACTICS; NUMERICAL ANALYSIS; OPERATIONS RESEARCH; OPTICS; PERSONNEL; RESUMES; SIMULATION; STATISTICAL ANALYSIS; STATISTICS; TARGETS; TERRAIN MODELS; TEST AND EVALUATION; TOXICOLOGY; WEAPON SYSTEMS; WIND
Page Count: 181
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-136364
Site Holding: CB DT DW 522318
AD Number: 390339
Title: Popcorn Feasibility Study.
Author(s): Schneider, Clayton J., Jr.
Report Number: CAL-GM-1592-G-30
Publish Date: 19670901
Abstract: The POPCORN Bomblet utilizes a pop-up technique to achieve an airburst from a randomly impacting spherical bomblet. The design of a munition based upon the POPCORN principle has been shown feasible by the

successful conduct of approximately 250 complete round tests in which terminal velocity impact, unoriented rebound, and air burst were successfully demonstrated. The construction of the demonstration and test device is covered in some detail and a full set of working drawings is provided.
Descriptive Note: Technical Report, Jul 1962-Jul 1967
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commander, US Army Chemical Research and Development Center, Attn: SMCCR-SPS-IR, Aberdeen Proving Ground, MD 21010-5423.
Subject Keywords: AERODYNAMIC CHARACTERISTICS; AIRBURST; BOMBLETS; CONFIGURATION; CONSTRUCTION; DEGRADATION; DESIGN; DROP TESTS; EJECTORS (ORDNANCE); EXPLOSIVE CHARGES; EXPLOSIVE TRAINS; FAILURE; FEASIBILITY STUDIES; FIRING TESTS (ORDNANCE); HUMIDITY; IMPACT TESTS; INSTRUMENTATION; PAYLOAD; PYROTECHNICS; ROTATION; SIMULATION; STABILITY; SURFACE TO AIR; TACHOMETERS; VELOCITY
Page Count: 72
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-136365
Site Holding: CB DT DW 522759
AD Number: 389923
Title: Analysis of Fuze Burst Height Data for Vegetated Environments. Volume II.
Author(s): Zobel, S. P.
Report Number: CAL-GM-2338-G-2-Vol-2
Publish Date: 19670901
Abstract: The Joint Environmental Effects Program (JEEP) has included field tests of fuzes in vegetated environments. This report presents a preliminary analysis of the empirical height of burst distributions obtained for important artillery, mortar, grenade, and bomblet fuzes in temperate forest, tropical rain forest, jungle tangle, tropical grass, boreal forest, and corn crop environments. It is found that many of the cumulative distributions may be described by one of a set of simple models linear, second degree polynominal, exponential, normal, or log normal. Certain classes of models are found to be prevalent within broad fuze-munition-environment systems. An attempt is also made to relate the parameters of the models to the effects of vegetation and firing conditions. It was noted that the distributions in forests were generally stratified in rough correspondence to upper canopy, lower canopy, and trunk space. Vegetation has a pronounced effect on the height of burst of all fuze types tested except for the delay type fuzes which generally buried into the ground in all environments tests.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Distribution limited to US Gov't agencies and their contractors. Other requests for this document shall be referred to Ballistic Research Lab, Aberdeen Proving Ground, MD 21005.
Subject Keywords: AIRBURST; ALTITUDE; BOMB FUZES; DISTRIBUTION FUNCTIONS; ENVIRONMENTAL TESTS; FUZES (ORDNANCE); GRASSES; GRENADE FUZES; JUNGLES; MATHEMATICAL MODELS; MORTAR FUZES; PLANTS (BOTANY); TREES; TROPICAL REGIONS
Page Count: 142
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: See also Volume 1, AD-389 922.

CBRNIAC Number: CB-136366
Site Holding: CB DT DW 522845
AD Number: 389922
Title: Analysis of Fuze Burst Height Data for Vegetated Environments. Volume I.
Author(s): Zobel, S. P.
Report Number: CAL-GM-2338-G-2-VOL-1

Publish Date: 19670901
Abstract: The Joint Environmental Effects Program (JEEP) has included field tests of fuzes in vegetated environments. This report presents a preliminary analysis of the empirical height of burst distributions obtained for important artillery, motor, grenade, and bomblet fuzes in temperate forest, tropical rain forest, jungle tangle, tropical grass, boreal forest, and corn crop environments. It is found that many of the cumulative distributions may be described by one of a set of simple models linear, second degree polynominal, exponential, normal, or log normal. Certain classes of models are found to be prevalent within broad fuze-munition-environment systems. An attempt is also made to relate the parameters of the models to the effects of vegetation and firing conditions. It was noted that the distributions in forests were generally stratified in rough correspondence to upper canopy, lower canopy, and trunk space. Vegetation has a pronounced effect on the height of burst of all fuze types tested except for the delay type fuzes which generally buried into the ground in all environments tests. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Distribution limited to US Gov't agencies and their contractors. Other requests for this document shall be referred to Ballistic Research Labs, Aberdeen Proving Ground, MD 21005.
Subject Keywords: AIRBURST; ALTITUDE; BOMB FUZES; DISTRIBUTION FUNCTIONS; ENVIRONMENTAL TESTS; FUZES (ORDNANCE); GRASSES; GRENADE FUZES; JUNGLES; MATHEMATICAL MODELS; MORTAR FUZES; PLANTS (BOTANY); TREES; TROPICAL REGIONS
Page Count: 103
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: See also Volume 2, AD-389 923.

CBRNIAC Number: CB-136459
Site Holding: CB DT DW 524553
AD Number: 383341
Title: Ballistic Behavior of Projectiles in Vegetation. Project Fibre II. Volume 1.
Author(s): Eusanio, Lawrence A.
Report Number: CAL-GM-2146-G-1-VOL-1
Publish Date: 19670201
Abstract: This report describes a program to provide methods and data for estimating the effects of vegetation on projectile performance. Volume I of this report describes efforts in identifying the significant vegetational parameters and in relating munition performance to these parameters. Included are descriptions of mathematical models developed to date. Volume II is concerned with the problem of obtaining values of the significant parameters on a world-wide basis. Quantitative and qualitative descriptions of vegetation at field test sites, with particular emphasis on the significant parameters of trees, are included in Volume II.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors. Other requests for this document shall be referred to Ballistic Research Labs, Aberdeen Proving Ground, MD 21005.
Subject Keywords: BALLISTICS; EFFECTIVENESS; EXTERIOR BALLISTICS; JUNGLES; PERFORMANCE (ENGINEERING); PROJECTILES; STABILIZATION; TREES; VELOCITY; YAW
Page Count: 101
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-136479
Site Holding: CB DT DW 524547
AD Number: 382498
Title: B-Flat Munition System.
Author(s): Matheis, Charles W.
Report Number: CAL-GM-1592-G-27

Publish Date: 19670601
Abstract: The purpose of this program was to generate a VX aerosol munition concept and to establish the feasibility and effectiveness of the evolved system based upon the 155mm Howitzer as the delivery vehicle. A detailed description of the design and test development of the several subsystems of the resulting munition, code named B-FLAT employing several unique concepts including a high pressure, single fluid nozzle dissemination technique is presented. A description of the methodological approach, critical assumptions and mathematical techniques, employed to determine system performance, together with a quantitative analysis of effectiveness against point and area targets, is included. Feasibility of the system is established and effectiveness estimates for both percutaneous and respiratory modes of entry are generated.
Descriptive Note: Final Comprehensive Report, Aug 1961-Dec 1966
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: AEROSOLS; AREA COVERAGE; BALLISTICS; CHEMICAL PROJECTILES; DISTRIBUTION; DROP TESTS; EFFECTIVENESS; EXPLOSIVE TRAINS; NOSE FUZES; PARACHUTES; PENETRATION; PROPELLANT GRAINS; SOILS; SPRAY NOZZLES; T-197 FUZES; VX AGENT
Page Count: 286
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-138115
Site Holding: CB DT
AD Number: 686293
Title: Identification of Parameters by the Method of Quasilinearization.
Author(s): Larson, Duane B.
Report Number: CAL-164
Publish Date: 19680514
Abstract: The method of quasilinearization is a combination of the properties of the high-speed digital computer with established linearization techniques in such a fashion that it can be used as a method of identifying parameters. The mathematics used in the program is developed in detail and an example is given of its use. Essentially the method is an efficient device of searching for unknown parameters existing in a set of algebraic or differential equations. The mathematical concepts are historical but the combination of historical mathematics with the high-speed digital computer yields new and useful results. (Author)
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: APPROXIMATION (MATHEMATICS); COMPUTER PROGRAMMING; DIFFERENTIAL EQUATIONS; FLOW CHARTING; MATRICES (MATHEMATICS); NUMERICAL ANALYSIS; NUMERICAL INTEGRATION; QUASILINEARIZATION; SPLINE FUNCTIONS
Page Count: 24
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-138945
Site Holding: CB DT DW
AD Number: 667816
Title: Study of Nonequilibrium Flows.
Author(s): Rich, J. W.
Report Number: AFOSR-68-0240
Publish Date: 19680101
Abstract: The experimental part of the project concentrated on development and utilization of various spectroscopic

techniques for monitoring vibrational state populations in high-temperature relaxing gas flows. The theoretical part of the project centered on master-equation analyses of various models for systems of vibrationally relaxing molecules. Abstracts of reports and papers published under the contract are included. The most recent experimental data, which have not as yet been published, are also given.
Descriptive Note: Final Report, 1 Dec 1964-1 Dec 1967
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: ABSTRACTS; ANHARMONIC OSCILLATORS; ATOMIC ENERGY LEVELS; DIATOMIC MOLECULES; EQUATIONS OF MOTION; EXPANSION FLOW; INFRARED SPECTRA; LINE SPECTRA; NITROGEN; NONEQUILIBRIUM FLOW; NOZZLE GAS FLOW; OSCILLATORS; RELAXATION TIME; SHOCK WAVES; SPECTROSCOPY; THERMODYNAMICS; VIBRATION
Page Count: 22
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-139093
Site Holding: CB DT DW 524606
AD Number: 388233
Title: Investigation of the Velocity Generator as a Backup System for the B-Flat Munition.
Author(s): Wozer, John T.
Report Number: CALGM1592G26
Publish Date: 19680201
Abstract: This report describes the dissemination of an aerosol utilizing the velocity generator technique. It discusses the design, development and testing of a preprototype disseminator for use in a 155 mm projectile. The velocity generator was designed to minimize vaporization of liquid agent injected into the throat of a two-fluid nozzle and maximize the effects of aerodynamic forces on the liquid agent to obtain the smallest mass median diameter. The simple convergent-divergent nozzles located at either end of the disseminator were driven by a hot gas generated by the burning of a solid fuel grain. Dissemination tests were conducted in which Bis(2-ethylhexyl)Hydrogen Phosphite was disseminated by injection into the throat of the exit nozzles at liquid-to-gas weight flow ratios of 1.9, 1.56 and 1.09. The gas stream velocity and temperature at the throat were 3220 fps and 4690 R, respectively, for each test. It was determined that the particle size distribution appeared to be insensitive over the range of liquid to gas weight flow ratios since the observed particle sizes varied from 1-15 microns for all three tests. The thermal decomposition of about 45 percent for the tests is within the range of thermal decomposition associated with thermal generators operating at the same weight flow ratios. The techniques employed in the fabrication of the velocity generator showed that the disseminator is economically feasible.
Descriptive Note: Final Comprehensive Report, Jul 63-Dec 66
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Distribution limited to DoD agencies only; Other requests for this document shall be referred others to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: CHEMICAL PROJECTILES; COMPOSITE PROPELLANTS; DISTRIBUTION; GAS FLOW; IGNITERS; INJECTION; LIQUIDS; PHYSICAL PROPERTIES AEROSOL GENERATORS; PROPELLANTS; SPECIFICATIONS; VELOCITY; VX AGENT
Page Count: 192
CB Collection: MM
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-139146
Site Holding: CB DW 527874
AD Number:
Title: Aerosol Sampling In Laminar And Turbulent Flow.

Author(s): Springston, D. P.
Report Number: MPR-10
Publish Date: 19680430
Abstract: This program has as its objectives the evaluation of the merits of a number of aerosol sampling devices and the study and design of aerosol sizing devices in the particle size range of from 5 to 250 microns. Sampler efficiencies are to be measured in wind speeds of 4 to 20 miles per hour in both laminar and turbulent flow. Measurement of the efficiency of a recently developed Edgewood aerosol sampler is emphasized.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; CASELLA IMPACTOR; DISTRIBUTION FUNCTIONS; EDGEWOOD AEROSOL SAMPLER; FIELD TESTS; LAMINAR FLOW; MICROPHOTOGRAPHY; PARTICLE SIZE; SAMPLERS; SAMPLING; TEST AND EVALUATION; TURBULENT FLOW; VELOCITY; WIND VELOCITY
Page Count: 19
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-139447
Site Holding: CB DT DW 525093
AD Number: 393067
Title: Design Study of Heartburn Flechettes for the 105 MM Round.
Author(s): Washburn, H. A. Novy, E.
Report Number: CAL-GM-1592-G-21 EA-S-1931-68
Publish Date: 19680101
Abstract: Two separate study tasks were initiated to generate the data needed to allow preliminary determination of system feasibility and utility. Aerodynamic analysis indicates that the specific configuration chosen for study is marginally stable and will experience retardation in air somewhat greater that the current 7.2 grain BEEHIVE flechette. This latter consideration was found to have critical implications in the performance of the design in the system.
Descriptive Note: Final Comprehensive Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Chemical Research and Development Center, Attn: DRSMC-CLJ-IR, Edgewood Arsenal, MD 21010. NOFORN. This document contains export-controlled technical data.
Subject Keywords: CONFIGURATION; DESIGN; DRAG; FEASIBILITY STUDIES; FLECHETTES; FLOW CHARTING; IMPACT; INCENDIARY AMMUNITION; LAUNCHING; STABILITY; STRUCTURAL PROPERTIES; VELOCITY
Page Count: 96
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes:

CBRNIAC Number: CB-139699
Site Holding: CB DT DW 530175
AD Number: 841126
Title: Aerosol Sampling and Size Analysis in the 10 to 250 Micron Region.
Author(s): Schneeberger, R. F. Springston, D. P.
Report Number: CAL-AG-2473-E-1
Publish Date: 19680901
Abstract: The purpose of the research discussed in this report was twofold: (1) to determine the sampling efficiency of a number of aerosol sampling devices with emphasis placed on the Edgewood AK approaches to particle size distribution instrumentation. he controlled aerosol distribution instrumentation. The controlled aerosol distribution

instrumentation. The controlled aerosol distributions in laminar and turbulent flow using mass balance and optical techniques. Calibration curves for the samplers are presented. In the second area, particle sampling devices based on impaction phenomena were selected for and subjected to feasibility experiments. The results obtained showed that the approach selected offers significant promise for particles in the range of 10 to 250 microns.
Descriptive Note: Final Comprehensive Report, Jun 67-Jun 68
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies only; Test and Evaluation; 1 Jul 71. Other requests for this document shall be referred to Army Edgewood Arsenal, Attn: SMUEA-TS-TIT, Edgewood Arsenal, MD. 21010.
Subject Keywords: AEROSOLS; CALIBRATION; CHEMICAL WARFARE AGENTS; DISTRIBUTION; EFFICIENCY; FEASIBILITY STUDIES; HEATED INLET TESTS; IMPACT; INSTRUMENTATION; LAMINAR FLOW; MODEL TESTS; PARTICLE SIZE; PARTICLE TRAJECTORIES; SAMPLERS; SAMPLING; TURBULENCE; WIND TUNNEL MODELS
Page Count: 102
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Change Authority: Auth: USAEA letter, 30 Jun 71 (T&E, 1 Jul 71)

CBRNIAC Number: CB-139723
Site Holding: CB DT DW 701771
AD Number: 690169
Title: Off-Road Mobility Research, Volume 1.
Author(s): Bartlett, George E. Deutschman, Jerome N.
Report Number: CAL-VJ-2330-G3-VOL-1
Publish Date: 19681101
Abstract: A summary of research and engineering studies conducted on a long-range program of off-road mobility research is presented. These studies, some of which are only partially completed, are directed at providing technical knowledge which is required to match off-road vehicles with military mobility requirements. A hybrid computer model is described which will permit predicting vehicle dynamics performance of simulated vehicles traversing a broad spectrum of off-road situations. A critique of existing soil trafficability theories is made based on a review of the literature which treats the comparison of vehicle performance prediction with experimental results. Analytical and experimental studies of the velocity field and soil fabric in clay soil exposed to dynamic loads are summarized. A general method is discussed for processing mobility related environmental information and for mapping vehicle performance by computer methods. A concept is introduced for testing vehicles in relation to the total environment in order to define the vehicle performance envelope. Also a method is introduced for displaying potential vehicle performance in selected geographic areas and for producing testable specifications for off-road vehicles. Engineering studies of an off-road driving simulator for synthesizing dynamic visual displays and vehicle motion in the laboratory are reviewed. (Author)
Descriptive Note: Summary Technical Report No. 3, Aug 66-Oct 68
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: COMPUTERIZED SIMULATION; INTERFACES; MATHEMATICAL MODELS; MILITARY REQUIREMENTS; MOBILITY; OFF ROAD TESTS; SIMULATOR; SOIL MECHANICS; TERRAIN; TRAFFICABILITY; VEHICLES
Page Count: 100
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: See also Volume 2, AD-690 170.

CBRNIAC Number: CB-139739
Site Holding: CB DT DW 701799
AD Number: 847961
Title: Coatings for the Protection of Ammunition from Solar Heating; Volume II.

Author(s): Adams, Donald E. Brown, W. Richard
Report Number: CAL-GM-2278-W-2
Publish Date: 19681101
Abstract: Presently, artillery ammunition is, in effect, subloaded to accommodate the possibility of being fired after reaching elevated temperatures due to solar heating. Thermal control coatings having low solar absorptance and high thermal emittance are studied as a means for reducing solar heating, particularly in 175mm charges in metal shipping containers. In an initial phase, a mathematical heat transfer analysis of general utility in solar heating problems was developed, and used in conjunction with outdoor tests to determine that white (TiO2-epoxy) paints are very effective in reducing solar heating at the earth's surface. In the present work, it is shown that the visibility of white paints can be decreased by gloss reduction and by small additions of colored pigment, without degrading solar heating reduction excessively. It is shown that laboratory tests of absorptance and emittance can be used with analysis to minimize the need for outdoor testing. The analysis is used to calculate the temperature of coated and uncoated ammunition exposed to the most severe desert solar heating conditions, taking into account conduction and convection as well as radiation.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Specific Authority; 11 Nov 85. Other requests for this document shall be referred to Commanding Officer, Picatinny Arsenal, Attn: SMUPA-VA6, Dover, NJ 07801.
Subject Keywords: AMMUNITION; BRIGHTNESS; COATINGS; DESERT TESTS; DIOXIDES; EMISSIVITY; EPOXY RESINS; EQUATIONS; EXPLOSIVE CHARGES; HEAT TRANSFER; INFRARED DETECTORS; PACKAGING; PANAMA; PIGMENTS; PLASTIC PAINTS; REFLECTION; SIMULATION; SOLAR HEATING; SOLAR RADIATION; TEST METHODS; THICKNESS; TITANIUM (IV) OXIDE; TITANIUM COMPOUNDS
Page Count: 88
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: See also Volume 3, AD-847 551L.

CBRNIAC Number: CB-139793
Site Holding: CB DT DW 513829
AD Number: 868971
Title: Feasibility Study and Prototype Development of a Lightweight, Portable Riot Control Agent Disperser.
Author(s): Stiller, Paul F.
Report Number: CAL-GM-1592-G-32
Publish Date: 19691201
Abstract: A prototype riot control agent disperser has been developed to meet the requirements stated in CDCMR-U Draft Proposed SDR, dated 25 May 1967, entitled, Draft Proposed Small Development Requirement for a Standard Riot Control Agent Munition System. The disperser developed under this program is basically an electrically driven blower with a manifold and throwaway agent container attached to the blower. The basic design employs a large quantity of air (341 SCFM) at low pressure (6 inches of H2O) and moderate velocity (180 ft/s) to establish a jet flow into which the bulk CS is injected. Injection and entrainment are accomplished by low-pressure aeration of the agent and aspiration of it into the blower manifold. A prototype unit was completed and demonstrated at WDEL, Edgewood Arsenal, and USACDCMPA, Fort Gordon, Georgia on 19 April 1968.
Descriptive Note: Final Comprehensive Report, Aug 67-Jul 68
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: AEROSOL GENERATORS; CIRCUITS; CONTAINERS; COSTS; CS AGENT 2; CS AGENTS; DISTRIBUTION; ELECTRIC MOTORS; EQUATIONS; FANS; IRRITATING AGENTS; JETS; M-3 DISPENSERS; MODEL TESTS; NOZZLES; PNEUMATIC VALVES; PORTABLE EQUIPMENT; POWDERS; PRESSURE; RANGE (DISTANCE); REVIEWS; RIOT CONTROL AGENTS; SAFETY; STORAGE BATTERIES; VOLUME; WEIGHT
Page Count: 118
CB Collection: UA

Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-139818
Site Holding: CB DT DW 511216
AD Number: 864445
Title: Feasibility Study of a Liquid Droplet Detector and Size Analyzer.
Author(s): Talley, Robert L.
Report Number: CAL-QM-2767-D-1
Publish Date: 19691001
Abstract: The objective of this study was to develop a technique for liquid-droplet detection and size analysis based on the ability of liquid droplets which impact on pre- (or post) recorded magnetic tape to interact with the binder, thereby distorting or obliterating the recorded signal and permitting the distortion to be interpreted as droplet count and size on tape readout. The droplet size range of concern was 50 to 500 microns. Detailed aspects of droplet counting and sizing from magnetic tapes were investigated experimentally, and the useful aspects were synthesized into a sizing technique. Feasibility of this technique was established using commercially available magnetic tapes and chemical agent simulants BIS and TOP, but not over the complete size spectrum of interest. Recommendations for future research on tape-based size analysis systems are made. (Author)
Descriptive Note: Final Report, Feb-Sep 69
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS RESEARCH DEPT
Distribution Statement: Distribution limited to US Gov't agencies only. Other requests for this document shall be referred to Commanding General, Deseret Test Center, Fort Douglas, UT 84113.
Subject Keywords: AEROSOLS; CHEMICAL WARFARE AGENTS; COUNTING METHODS; DETECTORS; DROPS; FEASIBILITY STUDIES; INTERACTIONS; MAGNETIC TAPE; PARTICLE SIZE; SIGNAL-TO-NOISE RATIO; SPECTRUM SIGNATURES
Page Count: 65
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-140399
Site Holding: CB DT DW 527885
AD Number: 861294
Title: Sensitivity Enhancement Techniques for FMIR Liquid Droplet Detection.
Author(s): Baier, Robert E. DePalma, Vito A.
Report Number: CAL-RG-2818-P-1
Publish Date: 19691101
Abstract: This report describes results of an investigation of the surface properties of FMIR prisms and liquid agents. The objective of this work is to improve the volumetric efficiency of Frustrated Multiple Internal Reflection (FMIR) detection techniques by modification of the surface chemical properties of the FMIR cells. Project Activities are described under the following categories: (1) A brief review of methods and equipment used, (2) surface chemical factors considered, (3) Experimental results, (4) Discussion of experimental results, (5) Work in progress and future plans. A summary of results and conclusions to data supports the judgement that with the present level of accomplishment, a high volume-efficiency FMIR detection unit is completely feasible. With the anticipated level of accomplishment, such a unit will be very resistant to degradation of sensitivity under field conditions. (Author)
Descriptive Note: Quarterly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY APPLIED PHYSICS DEPT
Distribution Statement: Distribution limited to DoD agencies only; Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T. Edgewood Arsenal, Md. 21010.
Subject Keywords: ADSORPTION; AEROSOLS; CHEMICAL COMPOUNDS; CLEANING; CONTAMINATION; CONTROLLED ATMOSPHERES; DETECTION; DROPS; ESTERS; FMIR (FRUSTRATED MULTIPLE INTERNAL REFLECTION); FRUSTRATED MULTIPLE INTERNAL REFLECTION; GERMANIUM; GLOW DISCHARGES; INFRARED SPECTROPHOTOMETERS; INFRARED

SPECTROSCOPY; LIQUIDS; MOISTURE; POLYMERS; PRISMS (OPTICS); REFLECTION; SENSITIVITY; SIMULATION; SURFACE PROPERTIES; TOXIC AGENT ALARMS; VAPORS; WETTING
Page Count: 36
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-140986
Site Holding: CB DT
AD Number: 698345
Title: A Program to Acquire Environmental Field Data in Four Areas in a Humid Subtropic Environment.
Author(s): Walker, John E.
Report Number: CAL-VT-2636-0-1 AFCRL-69-0393
Publish Date: 19691101
Abstract: Multiband remote sensing provides a means of obtaining signatures for natural earth objects and backgrounds. Data were collected from four humid tropical environments in Puerto Rico. Irradiance spectral reflectance, surface temperature, soil moisture, soil granularity, air temperature, humidity, wind speed and direction measurements and ground photographs were obtained. The limited analysis resulted in the development of bi band methodology for determining whether variations in film image density of soil is caused by surface moisture or surface structure. It is concluded that an electro-optical multiband analysis system using bi band techniques can be developed to facilitate the task of terrain analysis and at the same time provide the tools necessary to extend the utility of multiband remote sensing to obtain spectral signatures for other earth objects and backgrounds.
Descriptive Note: Final Report, 1 May 1968-31 Aug 1969
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AERIAL PHOTOGRAPHS; ATMOSPHERIC TEMPERATURE; BEACHES; HUMIDITY; INFRARED RADIATION; MOISTURE; MULTIBAND SPECTRAL RECONNAISSANCE; PHOTOGRAMMETRY; PHOTOGRAPHIC IMAGES; PLANTS (BOTANY); PUERTO RICO; REFLECTIVITY; REMOTE SENSING; SOILS; SPECTRUM SIGNATURES; SURFACE TEMPERATURE; TERRAIN; TROPICAL REGIONS; WIND
Page Count: 166
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141362
Site Holding: CB DT DW 518648
AD Number: 686337
Title: Characterization of Forest Vegetation Analogs.
Author(s): Brown, Rodger A. McVehil, George E. Peace, Robert L., Jr. Coakley, Robert W.
Report Number:
Publish Date: 19690320
Abstract: Significant features of diffusion have been delineated which are influenced by forest characterization and associated met conditions. This study outlines the vertical transport of material or momentum through the canopy and in the boundary layer above the forest and its significance. This study involved an investigation of gross forest influences that may be involved in diffusion and met measurements in a variety of forests. Data from diffusion and munition tests in forest environments were analyzed to delineate differences between forests of different physical characteristics. Above-canopy wind speeds for various forests were plotted as a function of the below-canopy wind speeds and an Environmental Index developed. The study developed techniques for characterizing the significant properties of a forest (aerosol diffusion) on the basis of relatively simple physical forest measurements, followed by a trial application of statistical approaches, using a section of forest in Thailand. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY

Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AEROSOLS; ATMOSPHERIC MOTION; CANOPY (VEGETATION); DIFFUSION; DISTRIBUTION; FORESTRY; INDEXES; JUNGLES; MICROMETEOROLOGY; PHYSICAL PROPERTIES; PLANTS (BOTANY); ROUGHNESS; THAILAND; TRANSPORT PROPERTIES; TREES; TURBULENT BOUNDARY LAYER; WIND
Page Count: 105
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141532
Site Holding: CB DW 522220
AD Number:
Title: Project CHORD II. Informal Monthly Progress Report No. 57, 1-30 September 1969.
Author(s):
Report Number: IMPR-57
Publish Date: 19690930
Abstract: The object of the CHORD Program is the development of improved means for the delivery of lethal and incapacitating chemical agents by air and ground weapon systems, with primary emphasis placed on ground-to-ground systems. While the overall effort of the program encompasses all aspects of weapons development, emphasis has been directed toward the develoment and test of weapons systems which will find immediate use in the current conflict in Southeast Asia and in riot control operations. This document contains the lists of the reports and working papers which are outstanding as of 1 September 1969, their current status, and either the planned publication date or the planned submission date to WDEL for approval.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY WEAPONS RESEARCH LAB
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: CHEMICAL AGENTS; DISSEMINATION; INCAPACITATING AGENTS; INCENDIARY PROJECTILES; LETHAL AGENTS; RIOT CONTROL AGENTS; SCHEDULING; SOUTHEAST ASIA; TACTICAL WEAPONS; TEST AND EVALUATION; WEAPON SYSTEM EFFECTIVENESS; WEAPON SYSTEMS; WEAPONS; WORK; WORKLOAD
Page Count: 10
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141550
Site Holding: CB DW 518644
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19690331
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings. (Author)
Descriptive Note: Second Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; ASSAYING; EQUATIONS; PARTICLES; TEST AND EVALUATION; WIND

TUNNEL TESTS
Page Count: 16
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141551
Site Holding: CB DW 518645
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19690930
Abstract: The program has, as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings. (Author)
Descriptive Note: Eighth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LABS BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; FIELD TESTS; PARTICLES; TEST AND EVALUATION; WIND TUNNELS
Page Count: 5
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141552
Site Holding: CB DW 518842
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19690228
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings. (Author)
Descriptive Note: First Monthly Progress Report, 28 Feb 69
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; FIELD TESTS; PARTICLES; WIND TUNNELS
Page Count: 12
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141591
Site Holding: CB DW 527886

AD Number:
Title: Aerosol Sampling For Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19690630
Abstract: Studies updated are on the following: 1) Vertical wind tunnel test section; 2) Microflash instrumentation system; 3) Cup impactor data analysis.
Descriptive Note: Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: CAMERA COMPONENTS; COLLECTING METHODS; CUP IMPACTOR; DATA ACQUISITION; INSTRUMENTATION; MICROFLASH; OPTICS; TEST AND EVALUATION; WIND TUNNEL TESTS
Page Count: 12
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141627
Site Holding: CB DW 511211
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19691015
Abstract: This program has, as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5- to 300-micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings. The rotating cup impactor collection efficiency was determined in the vertical wind tunnel for one particle size at a constant tunnel and rotational velocity. The newly designed AK sampler probe was calibrated in the horizontal wind tunnel and preliminary evaluation tests were conducted on two cylindrical impactors.
Descriptive Note: Progress Report No. 9
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOL PLUME; AEROSOLS; ASPIRATED SAMPLERS; DISSEMINATOR; PARTICLE SIZE; ROTATING CUP IMPACTOR; SAMPLERS; TEST AND EVALUATION; VERTICAL WIND TUNNEL; WIND TUNNEL TESTS
Page Count: 14
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141646
Site Holding: CB DW 510937
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19690531
Abstract: This program designs, develops, and calibrates an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5-to 300-micron diameter. An analytical method based on

the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings.
Descriptive Note: Monthly Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; CENTRIFUGAL IMPACTOR; IMPACTOR CUPS; MICROPHOTOGRAPHY; PARTICLE VELOCITY; STATIC PORT; TRAJECTORIES; TURBULENCE; WIND TUNNEL TESTS
Page Count: 16
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-141749
Site Holding: CB DT DW 522317
AD Number: 509907
Title: Design Feasibility Study of a 152mm Flame Round.
Author(s): Klingaman, Richard M. Matheis, Charles W. Keller, Arnold C. Vassallo, Francis A. Gowin, Norman E.
Report Number: CAL-GM-1592-G-35
Publish Date: 19691201
Abstract: (Abstract is unavailable.)
Descriptive Note: Final Comprehensive Report, Jan-Jul 69
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS RESEARCH DEPT
Distribution Statement: Distribution limited to US Gov't agencies and their contractors. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: ACCURACY; COMPATIBILITY; DESIGN; FEASIBILITY STUDIES; INCENDIARY PROJECTILES; INTERIOR BALLISTICS; PROJECTILE FUZES; PROJECTILE TRAJECTORIES; RANGE (DISTANCE); STRESSES; STRUCTURAL PROPERTIES; TERMINAL BALLISTICS
Page Count: 136
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes:

CBRNIAC Number: CB-141767
Site Holding: CB DT DW 511902
AD Number: 507794
Title: Dissemination Studies. Final Report, January 1967-July 1969.
Author(s): Talley, Robert L.
Report Number: CAL-GM-1592-G-37
Publish Date: 19691201
Abstract: The techniques and concepts investigated, tests conducted, results obtained and considerations made relative to achieving improved assessment techniques and dissemination schemes are discussed in this report.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: AEROSOLS; AIRBORNE; CHEMICAL WARFARE AGENTS; DESIGN; DISTRIBUTION; EFFECTIVENESS; RECOVERY; SAMPLERS; SAMPLING
Page Count: 93
CB Collection: CA
Media Type: CPDF
Document Classification: C

Supplemental Notes:

CBRNIAC Number: CB-141768
Site Holding: CB DT DW 511886
AD Number: 507690
Title: Chemical Agents Munitions Systems for Tactical Employment (Project CHORD). Volume 2. Summary Report, 1 January 1965-15 November 1969.
Author(s): Reinnagel, Richard E.
Report Number: CAL-GM-1592-G-38-VOL-2 DTC-70-359
Publish Date: 19691101
Abstract: The objective of the work conducted under this contract was to determine effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapons systems. The program included the study of agents, tactics, weapons and targets to generate plans for weapon system feasibility studies and experimentation to be conducted under this contract. A total of twelve study tasks were conducted and are reported in Section 2 of this report. These tasks represented eight percent of the total program effort. Feasibility investigations relative to new techniques were conducted on ten concepts and are reported in Section 3. These investigations represented twenty-two percent of the total contract effort. Feasibility investigations relative to new weapons concepts were conducted on thirteen items and are reported in Section 4. These investigations represented forty-four percent of the total contract effort. Two weapons concepts were advanced to the engineering-development phase and are reported in Section 5. This effort represented twenty-six percent of the total effort. Each of the total of thirty-seven tasks are summarized and reference the reports generated under each task.
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010. NOFORN. This document contains export-controlled technical data.
Subject Keywords: CHEMICAL BOMBS; CHEMICAL PROJECTILES; CHEMICAL WARFARE AGENTS; DISTRIBUTION; FEASIBILITY STUDIES; TACTICAL WEAPONS
Page Count: 38
CB Collection: CA
Media Type: CPDF
Document Classification: C/NOFORN
Supplemental Notes: See also Volume 1, AD-507689L. Change Authority: 19980311 -- S to C per OCA and Group-3, Nov 1981.

CBRNIAC Number: CB-141769
Site Holding: CB DT DW 513041
AD Number: 507689
Title: Chemical Agents Munitions Systems for Tactical Employment (Project CHORD). Volume 1, 1 January 1965-15 November 1969.
Author(s): Reinnagel, Richard E.
Report Number:
Publish Date: 19691101
Abstract: The objective of the work conducted under this contract was to determine effective means for the delivery of lethal and incapacitating chemical agents by air and ground weapons systems. The program included the study of agents, tactics, weapons and targets to generate plans for weapon system feasibility studies and experimentation to be conducted under this contract.
Descriptive Note: Summary Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: CHEMICAL BOMBS; CHEMICAL PROJECTILES; CHEMICAL WARFARE AGENTS; DISTRIBUTION; FEASIBILITY STUDIES; INCAPACITATING AGENTS; NONLETHAL AGENTS; TACTICAL WEAPONS
Page Count: 126

CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: See also Volume 2, AD-507 690L.

CBRNIAC Number: CB-141838
Site Holding: CB DT DW 522760
AD Number: 504925
Title: Effects of Vegetation on Small Projectile Performance. Volume I.
Author(s): Eusanio, L. A. Winkleman, J. J., Jr.
Report Number: CAL-GM-2338-G-1-VOL-1-REV
Publish Date: 19690101
Abstract: The Joint Environmental Effects Program (JEEP) is a tri-service multi-agency effort to determine the influence of various environments on the effectiveness of munitions. This report describes part of the first-year support provided by Cornell Aeronautical Laboratory to the JEEP effort. Volume 1 of this report describes efforts in identifying significant vegetational parameters and in relating the behavior of fragments, bullets and flechettes to these parameters. Descriptions of mathematical models developed to date and of experiments conducted are included. Volume II is concerned with the problem of qualitatively and quantitatively describing vegetation at munition field test sites in terms of those parameters which are known to be significant and those factors which may affect munition performance. The problem of inferring these parameters and factors for remote areas of the world is also included in Volume II.
Descriptive Note: Final Report, Aug 66-Sep 67
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors. Other requests for this document shall be referred to Commanding Officer, Aberdeen Research and Development Center, Aberdeen Proving Ground, MD 21005.
Subject Keywords: AMMUNITION FRAGMENTS; DAMAGE; DEFLECTION; DRAG; EXTERIOR BALLISTICS; FIRING TESTS (ORDNANCE); FLECHETTES; FRAGMENTATION AMMUNITION; GRASSES; IMPACT TESTS; INTERFERENCE; JUNGLES; PENETRATION; PERFORMANCE (ENGINEERING); PLANTS (BOTANY); PROJECTILE TRAJECTORIES; SMALL ARMS AMMUNITION; TERMINAL BALLISTICS; TREES; VELOCITY
Page Count: 199
CB Collection: CA
Media Type: CPDF
Document Classification: C
Supplemental Notes: See also Volume 2, AD-856 243. Revision of report dated Sep 67.

CBRNIAC Number: CB-142006
Site Holding: CB DW 513115
AD Number:
Title: Project Fog Drops, Investigation of Warm Fog Properties and Fog Modification Concepts.
Author(s): Kocmond, Warren C. Pilie, Roland J.
Report Number: CALRM-1788-P-22
Publish Date: 19690215
Abstract: The Office of Aeronautical Research of the National Aeronautics and Space Administration has authorized this Laboratory, under Contract No. NASr-156, to investigate warm fog properties and possible fog modification concepts. Analytical and experimental work during the first four years of research led to the development of a concept for fog dispersal by seeding with carefully sized hygroscopic nuclei. During the fifth contract year that concept was thoroughly tested in the laboratory and preparations were made for a series of field experiments. One of the objectives of this year's research has been to evaluate the effects of seeding dense natural fog. This quarterly report summarizes the results of the field experiments and of the subsequent data analysis.
Descriptive Note: Quarterly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: CLIMATOLOGY; DROP SIZE; FOG; FOG DEPTH; FOG DISPERSAL; GROUND

SEEDING; HYGROSCOPICITY; LIQUID WATER CONTENT; PARTICLE DISSEMINATOR; PIPER AZTEC; VERTICLE TEMPERATURE DISTRIBUTION
Page Count: 10
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-142125
Site Holding: CB DW 521872
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19690430
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings. (Author.)
Descriptive Note: Third Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY ELECTRONICS RESEARCH DEPT
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; CENTRIFUGE SEPARATION; PARTICLE SIZE; PARTICLE TRAJECTORIES; PARTICLES; SAMPLING; TEST AND EVALUATION; TRAJECTORIES; WIND TUNNEL TESTS
Page Count: 21
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-142139
Site Holding: CB DW 521894
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D.
Report Number: MPR-6
Publish Date: 19690731
Abstract: During this reporting period, wind tunnel tests were conducted on a cylinder and cup impactor and an operational test was made on the Microflash system.
Descriptive Note: Progress Report
Corp Author Name: CORNELL AERONAUTICAL LABS BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: AEROSOLS; PARTICLES; TEST AND EVALUATION; WIND TUNNELS
Page Count: 11
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-142355
Site Holding: CB DT DW 514319

AD Number: 878044
Title: Ricochet of Unstabilized and Stabilized Projectiles off Various Surfaces.
Author(s): Lewandowski, Gregory M.
Report Number: CAL-GM-2338-G-5
Publish Date: 19701101
Abstract: Experiments are reported on the ricochet characteristics of various small projectiles as a function of impact angle, impact velocity, projectile mass and shape, and target surface parameters. Target materials include water and several types of clay and sand. The report contains descriptions of the tests performed and a compilation of the test results.
Descriptive Note: Final Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS GROUP
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; Nov 70. Other requests for this document shall be referred to the Army Materiel Command, Attn: AMCPA-SA, Washington DC 20315. This document contains export-controlled technical data.
Subject Keywords: ANALYSIS OF VARIANCE; ANGLE OF ARRIVAL; CLAY; COMPUTER PRINTOUTS; COMPUTER PROGRAMMING; EXPORT CONTROL; IMPACT; IMPACT ANGLE; PROJECTILES; RICOCHET CHARACTERISTICS; SAND; STABILIZED PROJECTILES; STATISTICAL PROCESSES; SURFACES; TERMINAL BALLISTICS; TEST EQUIPMENT; TEST METHODS; UNSTABILIZED PROJECTILES; VELOCITY; WATER
Page Count: 279
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-142499
Site Holding: CB DT DW 512313
AD Number: 868175
Title: Sensitivity Enhancement Techniques for FMIR Liquid Droplet Detection.
Author(s): Baier, Robert E. DePalma, Vito A. Bujalski, Robert L.
Report Number: CAL-RG-2818-P-2
Publish Date: 19700401
Abstract: The first quarterly report summarized successful methods for cleaning and surface chemical characterization of FMIR prisms, demonstrated spontaneous agent spreading on specially-treated surfaces for at least 40 hours, and advanced the concept that volumetric efficiency of an FMIR field alarm could be maintained indefinitely if surface modification of the prisms with monomolecular coupling agents could be achieved. This second quarterly report describes advanced work with glow discharge cleaning techniques, details the preparation, application to prisms, and evaluation of polypyrrolidone surface films which semi-permanently promote agent spreading, and discusses preliminary studies of new prism materials and better simulants for device testing. The major conclusion presented is that surface-modified FMIR cells demonstrate excellent volumetric efficiency indefinitely, even after severe outdoor exposure. There no longer exists any surface chemical bar to the development of a sensitive field alarm based on the FMIR method. (Author)
Descriptive Note: Quarterly Progress Report No. 2, Sep-Dec 69
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY APPLIED PHYSICS DEPT
Distribution Statement: Distribution limited to DoD agencies only; Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T. Edgewood Arsenal, MD 21010.
Subject Keywords: CHEMICAL WARFARE AGENTS; CLEANING; DEGRADATION; DETECTION; DROPS; EFFICIENCY; FMIR (FRUSTRATED MULTIPLE INTERNAL REFLECTION); GERMANIUM; GERMANIUM ALLOYS; GLOW DISCHARGES; INFRARED DETECTORS; INFRARED SPECTRA; INTERFACIAL TENSION; PLASTIC COATINGS; POLYAMIDE PLASTICS; POLYPYRROLIDONES; PRISMS (OPTICS); SENSITIVITY; SURFACE ACTIVE SUBSTANCES; SURFACES; TOXIC AGENT ALARMS; WARNING SYSTEMS; WETTING
Page Count: 82
CB Collection: UA
Media Type: PDF

Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-142520
Site Holding: CB DT DW 511953 DW 512511
AD Number: 867059
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Schneeberger, R. F. Springston, D. P.
Report Number: CAL-AG-2756-E-1
Publish Date: 19700101
Abstract: The program had as its objective the development and test of a device capable of providing estimates of particle size and particle size distribution in aerosol clouds for particles in the range of from 10 to 150 microns. The device, designated the Rotating Cup Impaction Sampler (RCIS), is based on impaction theory, wherein the sampling efficiency is a function of the impaction parameter, K, which is in turn a function of cup radius, cup velocity, and particle size. By employing several cups of differing sizes and speeds, a range of impaction parameters, and therefore sampling efficiencies can be achieved. Then by measuring the amount of aerosol material collected in each cup and comparing the collections between cups, mass median diameter and particle size distribution may be estimated. The experiments performed have demonstrated the particle sizing capability, though problems principally in the area of aerosol cloud definition in the test facility employed have tended to mask these results. Limitations in the design and application have been established and an outline of the data acquisition and processing procedures have been developed. Directions for further research are indicated.
Descriptive Note: Final Comprehensive Report, Jan 69-Jan 70
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY ELECTRONICS RESEARCH DEPT
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No foreign without approval. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSFE-A, Edgewood Arsenal, MD 21010. This document contains export-controlled technical data.
Subject Keywords: AEROSOLS; DESIGN; DISTRIBUTION; EFFICIENCY; OPERATION; PARTICLE SIZE; RCIS (ROTATING CUP IMPACTION SAMPLERS); SAMPLERS; WIND TUNNEL MODELS
Page Count: 105
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-142727
Site Holding: CB DT DW 514087
AD Number: 512425
Title: Dynamic Performance of Unstabilized Projectiles in Vegetation.
Author(s): Keller, Arnold C.
Report Number: CAL-GM-2338-G-3 DEP-MEWG-6
Publish Date: 19700201
Abstract: This report describes Cornell Aeronautical Laboratory's most recent support of the Degradation Effects Program in the task of relating unstabilized projectile, i.e., fragment, performance to significant vegetational and environmental parameters. In particular, CAL has conducted controlled experiments, which involve firing individual fragments through vegetation and through snow and has continued development of analytical models describing the velocity slowdown of fragments traveling through vegetative environments. Previous studies have resulted in several analytical models that are inadequate for describing the performance degradation of projectiles fired through vegetation arrays less homogeneous than fine grasses. A complete description of the distribution of residual velocities is required. This report describes progress in developing a probabilistic multiple impact model for the special case of identical vegetation elements. Comparison with experimental data shows that this model satisfactorily describes the shot-to-shot variability in residual velocity even though only two random variables vegetation mass intersected at each impact and number of impacts are used to generate the velocity probability distribution.
Descriptive Note: Technical Report

Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS DIV
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No foreign without approval. Other requests for this document shall be referred to Commanding General, Army Materiel Command, Attn: AMCPA-SA, Washington, DC 20315. This document contains export-controlled technical data.
Subject Keywords: AIRBURST; AMMUNITION FRAGMENTS; AREA COVERAGE; COMPUTER PROGRAMS; DECELERATION; DEGRADATION; DEP (DEGRADATION EFFECTS PROGRAM); DRAG; EFFECTIVENESS; FOLIAGE; FORESTS; INTERACTIONS; JEEP (JOINT ENVIRONMENTAL EFFECTS PROGRAM); JOINT MILITARY ACTIVITIES; JUNGLES; KILL PROBABILITIES; MATHEMATICAL MODELS; MUD; PROJECTILE TRAJECTORIES; PROJECTILES; RAIN; SAND; SMALL ARMS AMMUNITION; SNOW; TROPICAL TESTS; VEGETATION; VELOCITY; WATER; WEAPONS
Page Count: 99
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Report on Degradation Effects Program Methodology and Evaluation Working Group. Change Authority: C to U 31 December 1976 USAMSAA Notice, 15 December 1972.

CBRNIAC Number: CB-142982
Site Holding: CB DT DW 514318
AD Number: 878236
Title: Vegetation Characterization.
Author(s): Magorian, Thomas R.
Report Number: CAL-GM-2338-G-4 DEP-ECWG-2
Publish Date: 19700201
Abstract: The terrain environment in which a munition is to be employed can be an important factor in calculating its potential effectiveness in terms of velocity degradation, function height, yaw, and dispersion as a result of munition interaction with vegetation elements. This volume contains information on vegetation parameters to which effectiveness is related and the ecologic and geographic distribution of types of vegetation. Several applicable predictive measures of vegetation are developed. The most general is biomass density, the total mass of plant material in a suitably chosen unit cube. The growth curve of biomass density is a function of climate and site but is nearly independent of vegetation type. In addition, distributions of foliage leaves, twigs and larger branches by size and angle along direct and refracted-look angles have been compiled for a variety of forest, tangle (jungle) and grassland stands. Genetic factors in growth rates, forms, and maturities are closely adapted to environment in competitive trees. Study of a few common types such as beech, oak, mahogany, and cuipo is sufficient to define most broadleaf forest growth. Forest canopy branch data is analyzed to relate test sites to growth parameters independent of tree species. Knowing general branch-growth relations, estimates are made of significant canopy variables for a given site specified by regional terrain and climatic data. A relation of branch diameter to canopy area is developed.
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY SYSTEMS DIV
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; No foreign without approval. Other requests for this document shall be referred to Commanding General, Army Materiel Command, Attn: AMCPA-SA, Washington, DC 20315. This document contains export-controlled technical data.
Subject Keywords: AMMUNITION DAMAGE; BALLISTICS; BIOMASS; DEGRADATION; DENSITY; DISTRIBUTION; ECOLOGY; EFFECTIVENESS; GRASSES; GROWTH (PHYSIOLOGY); MODELS (SIMULATIONS); PLANTS (BOTANY); TREES
Page Count: 157
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: Report on Degradation Effects Program, Environmental Characterization Working Group.

CBRNIAC Number: CB-143005
Site Holding: CB DT DW 518653
AD Number: 877751

Title: Sensitivity Enhancement Techniques for Liquid Droplet Detection.
Author(s): DePalma, Vito A. Baier, Robert E. Lewczyk, Mary V.
Report Number: CAL-RG-2818-P-3
Publish Date: 19701001
Abstract: The objective of the contract continues to be the application of advanced surface chemical methodology to the characterization and improvement of detection and alarm devices for aerosolized liquid agents. These techniques are currently being applied to FMIR cells, to pigment papers, and to conductive strip detectors. This quarterly report describes the results obtained with a miniaturized and simplified glow discharge device and also discusses its addition to the FMIR infrared device fabricated for field use. It has also been demonstrated that the application of microfabric coatings to the prism surfaces completely masks the FMIR cells from interference by dust and other particulates. Thus, all known technical difficulties with the FMIR approach to efficient detection of liquid aerosols have been overcome. (Author)
Descriptive Note: Quarterly Progress Report, Jun-Aug 70
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies only; Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: AEROSOLS; CHEMICAL WARFARE AGENTS; COATINGS; DETECTION; FILMS; FMIR (FRUSTRATED MULTIPLE INTERNAL REFLECTION); FMIR ALARMS; GERMANIUM; GLOW DISCHARGES; INFRARED DETECTORS; INFRARED FIELD ALARMS; INFRARED SPECTROSCOPY; INTERFACES; LIQUID AGENT DETECTORS; POLYAMIDE PLASTICS; SURFACE CHEMISTRY; SURFACE PROPERTIES; TOXIC AGENT ALARMS; WEAR RESISTANCE
Page Count: 52
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: See also Quarterly Progress Report, AD868175L.

CBRNIAC Number: CB-143130
Site Holding: CB DT DW
AD Number: 875526
Title: A Study of Atmospheric Reactions of O2((a superscript 1) delta sub g)), O((superscript 1) D)) and N((superscript 2) D, (superscript 2)p)). Final Summary Progress Report No. 1, 31 July 1970.
Author(s): Fluegge, Robert A. Headrick, Dale
Report Number: CAL-RM-2777-P-1 DASA-2551
Publish Date: 19700731
Abstract: A molecular beams machine has been used as a detector of O2 (a singlet Delta(g)) formed by gas-phase reactions using an rf discharge and its flowing afterglow. This direct sampling technique has 'indicated' that the measured concentrations of the molecular-oxygen O2 (a singlet Delta(g)) metastables are considerably greater than would be predicted by other researchers using similar afterglows. The O2 (a singlet Delta(g)) concentration appears to be controlled by the O atom concentration or as an alternate to a two step process that forms vibrationally excited O2 as an intermediate. The transfer of this vibrational energy to form the O2 (a singlet Delta(g)) could be a result of O-atom quenching. Due to the lack of alternatives we find this reaction, or its equivalent two step process, is probable and necessary to explain our increasing O2 (a singlet Delta(g)) concentrations as a function of reaction time in the flowing afterglow.
Descriptive Note: Final Summary Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors; Administrative/Operational Use; 1 Sep 1999. Other requests for this document shall be referred to Defense Threat Reduction Agency, 45045 Aviation Drive, Dulles, VA 20166-7517.
Subject Keywords: AERONOMY; AFTERGLOWS; ATOMS; CHEMICAL REACTIONS; CONCENTRATION (CHEMISTRY); ELECTRIC DISCHARGES; EXCITATION; MOLECULAR BEAMS; MOLECULAR ENERGY LEVELS; OXYGEN; OZONE; REACTION KINETICS; UPPER ATMOSPHERE
Page Count: 51
CB Collection: UA
Media Type: PDF

Document Classification: U
Supplemental Notes: Report on Project Metastable Reactions. Change Authority: DTRA letter, 1 Sep 1999 distribution change from ST-B3 to ST-C2.

CBRNIAC Number: CB-145021
Site Holding: CB DT DW 518652
AD Number: 882103
Title: Sensitivity Enhancement Techniques for Liquid Droplet Detection.
Author(s): DePalma, Vito A. Baier, Robert E. Lewczyk, Mary V.
Report Number: CAL-RG-2818-P-4
Publish Date: 19710201
Abstract: The prime objective of this contract continues to be the application of advanced surface chemical methodology to the improvement of aerosolized liquid agent detectors and alarms. These techniques have been successfully applied to frustrated multiple internal reflection (FMIR) cells and are currently being applied to pigment tapes as LAD (Liquid Agent Detector) devices and conductive cell ALAD (Automatic Liquid Agent Detector) devices. This fourth quarterly report describes surface properties of three pigment tapes and of specially prepared conductive cell materials. It is shown that, in spite of good surface spreading on the pigment tapes, a bulk volume effect apparently dominates and limits the reaction rate. A detailed study of the raw materials used to fabricate the pigment tapes is required to achieve the desired sensitivity to aerosolized liquid agents and to improve the abrasion resistance of the tapes. Preliminary tests on conductive cells indicate that their surface properties and electrical response are not uniform. Thus, further study of the raw materials used in fabrication of the conductive cell is also required. New schemes incorporating surface active agents and thin modifying films are proposed to achieve both high sensitivity to liquid agents and high abrasion resistance.
Descriptive Note: Quarterly Progress Report, Sep-Nov 70
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only; Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: AEROSOLS; ALAD (AUTOMATIC LIQUID AGENT DETECTORS); AUTOMATIC; CHEMICAL AGENTS; CHEMICAL WARFARE AGENTS; COATINGS; COLORIMETRIC ANALYSIS; DETECTION; DETECTORS; DROPS; DUST; ELECTRICAL CONDUCTIVITY; FMIR (FRUSTRATED MULTIPLE INTERNAL REFLECTION); GAS DETECTORS; INFRARED DETECTORS; INTERFACIAL TENSION; INTERFERENCE; LAD (LIQUID AGENT DETECTORS); MICROFABRIC TAPES; NYLON; PAPER; PARYLENE C POLYMERS; PIGMENTS; PLASTIC PAINTS; POLYPROPYLENE PLASTICS; PROTECTIVE TREATMENTS; SENSITIVITY; SURFACE ACTIVE SUBSTANCES; SURFACE PROPERTIES; TAPES; TOXIC AGENT ALARMS; WEAR RESISTANCE; WEATHERPROOFING; WETTING; XYLYLENE
Page Count: 66
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-145178
Site Holding: DT DW
AD Number: 890228
Title: Instrumentation for Automatic Liquid Agent Detection (ALAD).
Author(s): Hodgson, Edward W., Jr.
Report Number: CAL-SD-5017-E-1
Publish Date: 19711001
Abstract: The research is concerned with automatic liquid agent detection by conductivity changes. Progress is reported in the development of detector elements and of a droplet collector based on a rotating cup impactor. A detector configuration consisting of parallel lines connected electrically in series has been shown to provide good response to single droplets of agent or simulant, and a plug-in-type construction for such an element has been conceived. Methods of producing detector elements have been investigated. A major problem has been encountered in the tendency of current conductive paint formulations to become insoluble in simulant and agent with age. Parameters for the droplet collector have been determined theoretically on the basis of desired device dimensions

and collection efficiency equipments.
Descriptive Note: Quarterly Report No. 1, Jul-Sep 71
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y ELECTRONICS RESEARCH DEPT
Distribution Statement: Distribution limited to US Gov't agencies only; Test and Evaluation; 6 Jan 72. Other requests for this document shall be referred to Commanding Officer, Army Chemical R&D Center, Attn: DRSMC-CLJ-IR, Aberdeen Proving Ground, MD 21010.
Subject Keywords: ALAD (AUTOMATIC LIQUID AGENT DETECTION); CELLULOSE ACETATES; CHEMICAL WARFARE AGENTS; COLLECTING METHOD; CONDUCTIVE PAINTS; DETECTORS; DROPS; ELECTRICAL RESISTANCE; IMPACTORS; LIQUID AGENT DETECTORS; METAL FILMS; PLASTIC PAINTS; SILVER; TOXIC AGENT ALARMS
Page Count: 53
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-145227
Site Holding: DT DW
AD Number: 886721
Title: Sensitivity Enhancement Techniques for Liquid Droplet Detection.
Author(s): DePalma, Vito A. Baier, Robert E.
Report Number: CAL-RG-2818-P-6
Publish Date: 19710801
Abstract: The prime objective continues to be the application of advanced surface chemical methodology to the improvement of aerosolized liquid agent detectors and alarms. Early reports summarized successful surface chemical experimentation on infrared detector surfaces, including maintenance of agent spreading, activation by glow discharge techniques, and masking from interference by dust and other particulates. The report presents an evaluation of the abrasion resistance offered by several silicone fluids. Three of these silicone fluids offer good abrasion resistance without sacrificing sensitivity to agent detection; however, they are undesirable as coatings because they make the detectors wet and highly reflective. Additional research on a Parylene and protein films which give a dry coating is underway. A planar detector has been developed which consists of only two electrodes separated by a thin dielectric. The capacitance of this detector changes during the application of agent, but it is expected that capacitance changes produced by agent will be negligible compared to temperature effects.
Descriptive Note: Quarterly Progress Report No. 6, Mar-May 71
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y
Distribution Statement: Distribution limited to US Gov't agencies only; Test and Evaluation; Aug 71. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TSTI-T, Edgewood Arsenal, MD 21010.
Subject Keywords: AEROSOLS; CHEMICAL WARFARE AGENTS; DESIGN; ELECTRODES; GAS DETECTORS; GERMANIUM; INFRARED DETECTORS; INFRARED FIELD ALARMS; LIQUID AGENT DETECTION; PLASTIC COATINGS; REFLECTIVITY; SILICONES; SURFACES; TOXIC AGENT ALARMS; WEAR RESISTANCE; WETTING
Page Count: 27
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes: See also Quarterly Progress Report No. 5 dated Apr 71, AD-885 282L.

CBRNIAC Number: CB-145532
Site Holding: DT DW
AD Number: 734887
Title: Surveillance, Target Acquisition and Night Observation (STANO) Phase I System Assessment Model (SAM). (Short Title: STANO Phase I SAM). Volume 2. User's Manual.
Author(s):

Report Number: USACDCSAG TR971VOL2 CALUM2709H6VOL2
Publish Date: 19710430
Abstract: The manual is intended to help and guide the user in the preparation and proper program operation for the Phase I System Assessment Model (SAM) developed under Cornell Aeronautical Laboratory, Inc. (CAL) Project Mobile Army Surveillance System (MASS). (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AERIAL RECONNAISSANCE; ARMY OPERATIONS; COMBAT SURVEILLANCE; COMPUTER PROGRAMS; CONTROL SEQUENCES; DIGITAL SIMULATION; INSTRUCTION MANUALS; MATHEMATICAL MODELS; MISSION PROFILES; NIGHT WARFARE; PROGRAMMING (COMPUTERS); SIMULATION; STANO; TARGET ACQUISITION; TARGET ACQUISITION AND NIGHT OBSERVATIO; TERRAIN INTELLIGENCE
Page Count: 284
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes: See also Volume 1, Part 1, AD-734 885 and Volume 1, Part 2, AD-734 886.

CBRNIAC Number: CB-145533
Site Holding: DT DW
AD Number: 734886
Title: Surveillance, Target Acquisition and Night Observation (STANO) Phase I System Assessment Model (SAM). (Short Title: STANO Phase I SAM). Volume 1. Model Description, Part 2.
Author(s):
Report Number: CAL-um-2709-h-6-vol-1-pt-2 USACDCSAG-TR-9-71-Vol-1-Pt-2
Publish Date: 19710430
Abstract: The STANO Phase I SAM is designed to simulate a brigade or smaller STANO System in a low-intensity conflict. The model will permit the establishment and evaluation of numerous effectiveness criteria for individual STANO sensors and subsystems. It will facilitate the formation of improved candidate STANO Systems, through better understanding of shortcomings in organization, materiel and concepts of employment. It has the capability of producing information permitting scientifically supportable evaluations and judgments of interface requirements and trade-off options of STANO subsystems. The model can be used for parametric analysis, trade-off analysis, and system performance sensitivity tests. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AERIAL RECONNAISSANCE; ARMY OPERATIONS; COMBAT SURVEILLANCE; DATA PROCESSING SYSTEMS; DIGITAL SIMULATION; ELECTRONIC EQUIPMENT; MATHEMATICAL MODELS; METEOROLOGICAL PARAMETERS; NIGHT WARFARE; PROGRAMMING (COMPUTERS); RELIABILITY ELECTRONICS; SENSORS; SIMULATION; STANO; SUBROUTINES; SURVEILLANCE TARGET ACQUISITION AND NIGHT OBSERVATION; TARGET ACQUISITION; TERRAIN INTELLIGENCE; WAR GAMES
Page Count: 554
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes: See also Volume 1, Part 1, AD-734 885 Volumes 2, and AD-734 887.

CBRNIAC Number: CB-145534
Site Holding: DT DW
AD Number: 734885
Title: Surveillance, Target Acquisition and Night Observation (STANO) Phase I System Assessment Model (SAM). (Short Title: STANO Phase I SAM). Volume 1. Model Description, Part 1.
Author(s):

Report Number: CAL-UM-2709-H-6-Vol-1-pt-1 USACDCSAG-TR-9-71-Vol-1-Pt-1
Publish Date: 19710430
Abstract: The STANO Phase I SAM is designed to simulate a brigade or smaller STANO System in a low-intensity conflict. The model will permit the establishment and evaluation of numerous effectiveness criteria for individual STANO sensors and subsystems. It will facilitate the formation of improved candidate STANO Systems, through better understanding of shortcomings in organization, materiel and concepts of employment. It has the capability of producing information permitting scientifically supportable evaluations and judgments of interface requirements and trade-off options of STANO subsystems. The model can be used for parametric analysis, trade-off analysis, and system performance sensitivity tests. Volume 1 contains a model description. (Author)
Descriptive Note: Final Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AERIAL RECONNAISSANCE; ARMY OPERATIONS; COMBAT SURVEILLANCE; DATA PROCESSING SYSTEMS; DIGITAL SIMULATION; GAME THEORY; MATHEMATICAL MODELS; NIGHT WARFARE; PROGRAMMING (COMPUTERS); RELIABILITY (ELECTRONICS); SENSORS; SIMULATION; STANO; SUBROUTINES; SURVEILLANCE TARGET ACQUISITION AND NIGHT OBSERVATION; TARGET ACQUISITION; WAR GAMES
Page Count: 466
CB Collection:
Media Type:
Document Classification: U
Supplemental Notes: See also Volume 1, Part 2, AD-734 886.

CBRNIAC Number: CB-146042
Site Holding: CB DW 531459
AD Number:
Title: An Investigation of the Effects of Fog on the Behavior of Tracer Aerosols.
Author(s): Mack, Eugene J. Katz, Ulrich
Report Number: CJ-5001-M-2
Publish Date: 19711201
Abstract: The Cornell Aeronautical Laboratory, Inc. (CAL), under Contract DAAD09-71-C-0049, and the Deseret Test Center (DTC) have performed a joint research program to determine the effects of fog on the behavior of tracer aerosols. The specific objectives of this program were: 1) the production of laboratory fogs with characteristics which closely resemble those of naturally occurring fogs; 2) the dissemination and recovery of tracer aerosols; and 3) the determination of droplet-tracer capture relationships for the conditions of the experiments. CAL was responsible for generating fog of controlled characteristics in its 6 x 10 to the 5th power liter Environmental Simulation Facility and making the necessary measurements to describe important fog properties. DTC was responsible for dissemination of the tracer materials and for making the measurements necessary for the mass balance analysis.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LABS INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords: ADVECTION; AEROSOLS; AIR FILTERS; ATMOSPHERIC PHYSICS; BACILLUS SUBTILIS; BIOLOGICAL AEROSOLS; CHAMBERS; CONCENTRATION (COMPOSITION); DISSEMINATION; DROPS; EQUATIONS; FLOW RATE; FOG; HUMIDITY; MICROPHOTOGRAPHY; NOZZLES; RADIATION; SLURRIES; SPRAY NOZZLES; TEMPERATURE; TRACER STUDIES; ULTRAVIOLET LAMPS; VISIBILITY; WATER TREATMENT
Page Count: 84
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-146547
Site Holding: CB DT

AD Number: 900483
Title: Instrumentation for Automatic Liquid Agent Detection. (ALAD).
Author(s): Hodgson, Edward W., Jr.
Report Number: CAL-SD-5017-E-3
Publish Date: 19720501
Abstract: Work performed in an investigation of Automatic Liquid Agent Detection (ALAD) during the three-month period from Jan 72 through Mar 72 is reported. Collection efficiency of the droplet collector fabricated for the proposed device has been experimentally determined, and final scavenger parameters have been identified. A design for detector elements has been achieved and its feasibility demonstrated. Performance of electronics previously fabricated has been verified.
Descriptive Note: Quarterly Report No. 3, Jan-Mar 1972
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY ELECTRONICS RESEARCH DEPT

Subject Keywords: AEROSOLS; ALAD (AUTOMATIC LIQUID AGENT DETECTORS); AUTOMATIC; CHEMICAL AGENTS; CHEMICAL WARFARE AGENTS; COMPATIBILITY; DETECTORS; DROPS; EFFICIENCY; ELECTRIC CONNECTORS; ELECTRIC CURRENTS; ELECTRIC MOTORS; ELECTRICAL CONDUCTIVITY; IMPACT; INTERFACES; LIQUIDS; M-42 AGENT ALARMS; M-8 AGENT DETECTORS; MASS MEDIAN DIAMETER; MATHEMATICAL MODELS; MODULAR STRUCTURES; PARTICLE SIZE; PARTICLES; POWER SUPPLIES; PRINTED CIRCUITS; RESPONSE; SAMPLERS; SENSITIVITY; SIMULATORS; TOXIC AGENT ALARMS; VOLTAGE
Page Count: 34
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-146556
Site Holding: DT DW
AD Number: 894114
Title: Instrumentation for Automatic Liquid Agent Detection (ALAD).
Author(s): Hodgson, Edward W., Jr.
Report Number: CAL-SD-5017-E-2
Publish Date: 19720401
Abstract: Work performed in an investigation of automatic liquid agent detection is reported. A study of conductive detector elements for liquid agent has led to the identification of a conductive paint formula and element storage technique which provides reliable long-term sensitivity to simulant and agent. A basis for the field identification of unresponsive detector elements has been determined. Modifications of the droplet collector to provide an increased volume sampling rate is reported. Electronics have been developed to monitor detector element resistance and to provide alarm indications when detector elements have been contracted by agent while rejecting slow changes of element resistance due to other environmental factors and element aging.
Descriptive Note: Quarterly Report No. 2, Oct-Dec 1971
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO N Y ELECTRONICS RESEARCH DEPT

Subject Keywords: AGING (MATERIALS); ALAD (AUTOMATIC LIQUID AGENT DETECTION); CELLULOSE ACETATES; CHEMICAL WARFARE AGENTS; CIRCUITS; COLLECTING METHODS; CONDUCTIVE PAINTS; DESIGN; DETECTORS; DROPS; ELECTRICAL RESISTANCE; IMPACTORS; LIQUID AGENT DETECTORS; METAL FILMS; PLASTIC PAINTS; PLASTICIZERS; SILVER; TOXIC AGENT ALARMS
Page Count: 50

CB Collection:
Media Type:
Document Classification: U
Supplemental Notes: See also AD-890 228L.

CBRNIAC Number: CB-146560
Site Holding: CB DT DW 515199
AD Number: 890794
Title: Sensitivity Enhancement Techniques for Liquid Droplet Detection.
Author(s): DePalma, Vito A. Baier, Robert E.
Report Number: CAL-RG-2818-P-7
Publish Date: 19720101
Abstract: The prime objective of the research was the improvement of aerosolized-liquid-agent detectors and alarms by the application of surface chemical methodology. Investigative techniques included contact angle measurements, internal reflection infrared spectroscopy, and thin film characterization using an automated surface balance. Spontaneous wetting and spreading of agents was guaranteed by the use of a novel radio frequency glow discharge cleaning device. All technical problems which limited the utility of the Frustrated Multiple Internal Reflection (FLMIR) detector element were solved including the elimination of dust interference by providing a porous microfabric screen. Liquid Agent Detectors (LADs) made by the rotogravure process and all raw materials used in their fabrication were surface-chemically characterized. A new porous plastic substrate for the agent sensitive resins overcomes the problem of abrasion-caused false alarms. Automatic Liquid Agent Detectors (ALADs) were also surface-chemically characterized. Silver particles used in these detectors were found to have an undesirable low energy coating, and they also exhibited poor abrasion resistance.
Descriptive Note: Final Report, Jun 69-Aug 71
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies only; Test and Evaluation; Aug 71. Other requests for this document shall be referred to Commanding Officer, Army Edgewood Arsenal, Attn: SMUEA-TS-R. Edgewood Arsenal, MD 21010.
Subject Keywords: ALAD (AUTOMATIC LIQUID AGENT DETECTION); CHEMICAL WARFARE AGENTS; CLEANING; COLLECTING METHODS; CONDUCTIVE PAINTS; COUPLING AGENTS; DESIGN; DETECTORS; DROPS; ELECTRICAL CONDUCTIVITY; ELECTRICAL RESISTANCE; FMIR SPECTROSCOPY; LIQUID AGENT DETECTORS; METAL FILMS; PARYLENE POLYMERS; PLASTIC COATINGS; SURFACE ACTIVE SUBSTANCES; SURFACES; TEST METHODS; TOXIC AGENT ALARMS; WEAR RESISTANCE
Page Count: 278
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-147167
Site Holding: CB DW 531124 NT PB-217842
AD Number:
Title: The Movement and Impact of Pesticides Used for Vector Control on the Aquatic Environment in the Northeastern United States.
Author(s): Reese, Charles D. Becker, David L.
Report Number:
Publish Date: 19720701
Abstract: In the northeastern United States the mosquito abatement programs are conducted for the vector control of Eastern equine encephalitis, to reduce the nuisance problem caused by mosquitoes, and to enhance recreation areas. Typically, these programs consist of the application of pesticides (vectoricides) and the drainage of stagnant water. The report summarizes a case study of a specific vectoricide use situation documenting the kinds and quantities used, their route from the point of initial application into the water environment, their ultimate effect on the ecosystem, and the laws and regulations which affect their use. Cape Cod was chosen for the study area.
Descriptive Note: Technical Report

Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Approved for Public Release; Distribution Unlimited.
Subject Keywords: AQUATIC BIOLOGY; BIOCIDES; BIODETERIORATION; CULICIDAE; DDT; DIELDRIN; DISEASE VECTORS; ECOLOGY; ENVIRONMENTAL IMPACT; ESTUARIES; INSECT CONTROL; INSECTICIDES; LARVAE; MALATHION; METABOLISM; MINERAL OILS; PESTICIDES; PUBLIC HEALTH; SWAMPS; TOXICITY; WATER POLLUTION
Page Count: 234
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes: See also NTIS Document PB-217843.

CBRNIAC Number: CB-147175
Site Holding: CB DW 531652
AD Number:
Title: Vegetation Characterization.
Author(s): Magorian, Thomas R.
Report Number: 61-JTCGME-7216
Publish Date: 19720215
Abstract: The canopy growth model has been validated as a general method of vegetation characterization. It is capable of simulating conifer as well as temperate and tropic hardwood forests from rainforests to open woodland. The approximate parameters for common tree types are discussed, sample simulation runs shown and related to the problem regional data base methodology. Validation is included for a test stand without underbrush in the temperate hardwood forest at Jefferson Proving Ground, Indiana. Sample data is presented for Germany and South Vietnam. (Author).
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only; Critical Technology. Other requests for this document shall be referred to Commanding General, US Army Materiel Command, Attn: AMCPA-SA, Washington, DC 20315. This document contains export-controlled technical data.
Subject Keywords: AGING (PHYSIOLOGY); BIOMASS; DENSITY; DIAMETERS; EQUATIONS; FOLIAGE; FORESTS; FORTRAN; GERMANY; GRASSES; GROWTH (PHYSIOLOGY); HARDWOODS; METHODOLOGY; MODELS; RAINFALL; STORAGE; TREE CANOPY; TREES; VEGETATION; WATER
Page Count: 132
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-164103
Site Holding: CB DW 547750
AD Number:
Title: Adapter for the M23 Chemical Land Mine.
Author(s):
Report Number: CALGM1592G101 GM1592G101
Publish Date: 19010101
Abstract: The "pop-up" adapter to the M23 Chemical Land Mine is an approach to the attainment of an air burst of a normally ground functioning device to obtain significant improvement in over-all munition efficiency.
Descriptive Note: Technical Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to US Gov't agencies and their contractors.
Subject Keywords: AIRBURST; CHEMICAL AGENTS; CHEMICAL WARFARE; CONTAMINATION; FUZES (ORDNANCE); LAND MINES; NERVE AGENTS; VX AGENTS; WIND
Page Count: 17
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Supplemental Notes:

CBRNIAC Number: CB-180808
Site Holding: CB EDG E491231
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690320
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for the period ending February 28, 1969.
Descriptive Note: First Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 7
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180820
Site Holding: CB EDG E491232
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690416
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending March 31, 1969.
Descriptive Note: Second Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 16
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180821
Site Holding: CB EDG E491233
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.

Report Number:
Publish Date: 19690501
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending April 30, 1969.
Descriptive Note: Third Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 19
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180823
Site Holding: CB EDG E491234
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690401
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending 31 May 1969.
Descriptive Note: Fourth Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 13
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180826
Site Holding: CB EDG E491235
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690501
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending 30 June 1969.
Descriptive Note: Fifth Progress Report

Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 11
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180848
Site Holding: CB EDG E491236
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690601
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings period ending 31 July 1969.
Descriptive Note: Sixth Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 10
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180851
Site Holding: CB EDG E491237
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690801
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending 31 August 1969.
Descriptive Note: Seventh Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 11
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180854
Site Holding: CB EDG E491238
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690801
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending September 1969.
Descriptive Note: Eighth Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 4
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180858
Site Holding: CB EDG E491239
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19690901
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending 31 October 1969.
Descriptive Note: Ninth Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 13
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-180862
Site Holding: CB EDG E491240
AD Number:
Title: Aerosol Sampling for Particle Size Analysis.
Author(s): Springston, D. P. Schneeberger, R. F.
Report Number:
Publish Date: 19691001
Abstract: This program has as its objectives, the design, development, and calibration of an aerosol particle sizing device capable of selective separation and retention of particles in the size range of 5 to 300 micron diameter. An

analytical method based on the quantitative assay of particles captured in various segments of the device will be developed to provide the size distribution of the polydisperse aerosol. A calibrated particle sizing device suitable for field test usage will be provided with a final report that includes design theory, analytical method, test summaries, and drawings for period ending 30 November 1969.
Descriptive Note: Tenth Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only. Other requests for this document shall be referred to Commander, US Army Soldier and Biological Chemical Command, ATTN: Technical Library, Aberdeen Proving Ground, MD 21010-5423.
Subject Keywords:
Page Count: 5
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181485
Site Holding: CB EDG E490953
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19670811
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions. Secondly, the design of particle sizing devices of high efficiency and isokinetic performance will be undertaken.
Descriptive Note: First Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 3
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181486
Site Holding: CB EDG E490954
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19670919
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions.
Descriptive Note: Secondly Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:

Page Count: 4
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181489
Site Holding: CB EDG E490955
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19671024
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions. Secondly, the design of particle sizing devices of high efficiency and isokinetic performance will be undertaken.
Descriptive Note: Third Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
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CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181490
Site Holding: CB EDG E490956
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19671127
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions. Secondly, the design of particle sizing devices of high efficiency and isokinetic performance will be undertaken.
Descriptive Note: Fourth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
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Subject Keywords:
Page Count: 3
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181495
Site Holding: CB EDG E490957
AD Number:

Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19671228
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions.
Descriptive Note: Fifth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 4
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181497
Site Holding: CB EDG E490958
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680122
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions.
Descriptive Note: Sixth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 9
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181498
Site Holding: CB EDG E490959
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680215
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions.
Descriptive Note: Seventh Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY

Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 9
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181500
Site Holding: CB EDG E490960
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680315
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions.
Descriptive Note: Eighth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 18
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181501
Site Holding: CB EDG E490961
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680422
Abstract: This program has as its objectives, the determination of the performance of a number of aerosol sampling devices in wind speeds between 4 and 20 miles per hour in both laminar and turbulent flow and for a wide range of particle sizes and densities. Particular emphasis will be placed on the development of performance characteristics of a recently developed Edgewood aerosol sampler. In addition, research and development will be undertaken first to design a sampler in which isokinetic sampling can be maintained with changing meteorological conditions.
Descriptive Note: Ninth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 12
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181502
Site Holding: CB EDG E490962
AD Number:

Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680510
Abstract: This program has as its objectives the evaluation of the merits of a number of aerosol sampling devices and the study and design of aerosol sizing devices in the particle size range of from 5 to 250 microns. Sampler efficiencies are to be measured in wind speeds of from 4 to 20 miles per hour in both laminar and turbulent flow. Measurements of the efficiency of a recently developed Edgewood aerosol sampler is emphasized.
Descriptive Note: Tenth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 16
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181503
Site Holding: CB EDG E490963
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680624
Abstract: This program has as its objectives the evaluation of the merits of a number of aerosol sampling devices and the study and design of aerosol sizing devices in the particle size range of from 5 to 250 microns. Sampler efficiencies are to be measured in wind speeds of from 4 to 20 miles per hour in both laminar and turbulent flow. Measurements of the efficiency of a recently developed Edgewood aerosol sampler is emphasized.
Descriptive Note: Eleventh Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
Page Count: 10
CB Collection: UA
Media Type: PDF
Document Classification: U
Supplemental Notes:

CBRNIAC Number: CB-181504
Site Holding: CB EDG E490964
AD Number:
Title: Aerosol Sampling in Laminar and Turbulent Flow.
Author(s): Springston, D. P.
Report Number:
Publish Date: 19680719
Abstract: This program has as its objectives the evaluation of the merits of a number of aerosol sampling devices and the study and design of aerosol sizing devices in the particle size range of from 5 to 250 microns. Sampler efficiencies are to be measured in wind speeds of from 4 to 20 miles per hour in both laminar and turbulent flow. Measurements of the efficiency of a recently developed Edgewood aerosol sampler is emphasized.
Descriptive Note: Twelfth Monthly Progress Report
Corp Author Name: CORNELL AERONAUTICAL LAB INC BUFFALO NY
Distribution Statement: Distribution limited to DoD agencies only.
Subject Keywords:
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